El Paso Water – Public Service Board

Request for Proposals

RFP SW 03-23

November 10, 2022

To: Interested parties
Re: Request for Proposals to Provide Construction Manager At-Risk Services (CMAR) for the Will Ruth Pond and Conveyance Improvements and Palisades Stormwater System and Trailhead Improvements, the "Project".

El Paso Water (EPWater) is pleased to request proposals for this one-stage procurement to provide Construction Manager At-Risk (CMAR) services for the Will Ruth Pond and Conveyance Improvements and Palisades Stormwater System and Trailhead Improvements.

Please find attached the following document: RFP SW 03-23
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The due date for Proposals is January 4, 2023, at 3:00 PM local time. Please submit your Proposal at the following address:

Attention: Mirtha Solis, Senior Purchasing Agent
EPWater - Public Service Board
1154 Hawkins Boulevard El Paso, Texas 79925

Please submit the Proposal in sealed envelope to Ms. Mirtha Solis. Note: the Fee Proposal must be presented in a separate, sealed envelope. **Do not submit to the ground floor lobby front (security) desk.**

Proposals received by January 4, 2023, at 3:00 PM local time will be publicly opened at 3:15 PM. Proposers and the Public are invited to virtually attend the opening via the GoToMeeting application. Details for joining the virtual meeting are found in section 5 of this RFP.

REQUEST FOR PROPOSALS

Construction Manager-at-Risk (CMAR) Contractor Services For Will Ruth Pond and Conveyance, Palisades Stormwater System and Trailhead Improvements Project

El Paso, Texas

El Paso Water RFP Number SW 03-23

DATE ISSUED
November 10, 2022

El Paso Water

Request for Proposals
Construction Manager-at-Risk (CMAR) Contractor Services
For
Will Ruth Pond and Conveyance Improvements
and
Palisades Stormwater System and Trailhead Improvements
El Paso Water RFP
Number SW 03-23

Table of Contents

1. RFP BACKGROUND 3
2. PROJECT SUMMARY AND OBJECTIVES 3
3. CMAR SCOPE OF SERVICES 6
3.1 Pre-Construction Phase Services 7
3.2 Construction Phase Services 7
4. PROCUREMENT PROCESS 8
5. PROPOSAL SUBMISSION REQUIREMENTS: 9
6. PROPOSAL CONTENT 10
7. PROPOSAL EVALUATION CRITERIA AND SELECTION PROCESS 17
7.1 Minimum Qualification Requirements 17
7.2 Proposal Evaluation Criteria 18
7.3 Interviews 19
7.4 Scoring and Selection 19
8. CONDITIONS FOR PROPOSERS 19
8.1 Conflict of Interest 20
8.2 Proprietary Information 20
8.3 Rights of the Owner 21
8.4 Obligation to Keep Project Team Intact 22
8.5 Protests 22
8.6 TWDB Instructions to Bidders for Construction, Phase 2 22
ATTACHMENT A – DEFINITION OF TERMS 24
ATTACHMENT B – SCOPE OF CMAR SERVICES 25
ATTACHMENT C – WILL RUTH POND AND CONVEYANCE IMPROVEMENTS AND PALISADES STORMWATER SYSTE AND TRAILHEAD IMPROVEMENTS: DESIGN DRAWINGS 37
ATTACHMENT D – TEMPLATE FORMS FOR AFFIRMATION OF COMPLIANCE 38
ATTACHMENT E – COST PROPOSAL FORMS (SUBMITTED IN SEPARATE ENVELOPE) 51
ATTACHMENT F – PROPOSAL TEMPLATE FORMS 55
ATTACHMENT G – CMAR CONTRACT TEMPLATES 58

1. RFP BACKGROUND

The purpose of this Request for Proposals (RFP) # SW 03-23 by El Paso Water (EPWater), hereinafter referred to as the Owner, is to solicit proposals from qualified contractors to provide preconstruction and construction services for the Will Ruth Pond and Conveyance Improvements and Palisades Stormwater System and Trailhead Improvements (the "Project") using the Construction Manager-at-Risk (CMAR) method of project delivery. Included in the scope of services is collaboration with the Engineer during the design phase, providing constructability and value engineering guidance, development of guaranteed maximum price (GMP) proposal(s), and, assuming successful negotiation of GMP(s) with the Owner, ultimately entering into a construction agreement for the construction of the Project.

Responses to this RFP will be evaluated to identify contractors with the requisite experience, qualifications, and resources to complete the Project successfully within an agreed upon GMP(s) in accordance with project requirements that will be specified by the Owner.

This RFP is subject to revision after the date of issuance via written addenda. Any such addenda will be announced on EPWater's web site located at:

https://www.epwater.org/business_center/purchasing_overview/bids/construction.

Proposers shall register on the EPWater website and monitor it for announcement of addenda. EPWater will not transmit addenda to potential Proposers. **It is each Proposer's responsibility to obtain all RFP addenda prior to submitting its proposal**.

Proposers will be bound to all direct or inferred obligations made in their Proposal for a period of 180 days after the proposal submission date. In no event will EPWater be liable for any costs incurred by any Proposer or any other party in developing or submitting a Proposal.

2. PROJECT SUMMARY AND OBJECTIVES

Since its selection in 2008 to oversee stormwater planning, capital improvements, operations, and maintenance, EPWater has completed many flood control improvement projects throughout El Paso, TX. With this CMAR project, EPWater continues its effort towards flood control projects. The following provides general description of the Project:

Will Ruth Pond and Conveyance Improvements
The Will Ruth Pond and Conveyance Improvements (Will Ruth Pond) is located in the Northeast of El Paso at 5516 Will Ruth Avenue. It includes working in flood areas, during the monsoon, phasing works to mitigate risk and expedite project delivery; excavation for a new pond, providing proper disposal of excavation waste sediments, large concrete conduits, large concrete junction boxes; working on private property with access through an easement; water pipelines, water valves and fittings, hydrants, wastewater pipelines, sanitary sewer manholes, submit and obtain traffic control plan/permit (city of El Paso and TxDOT); construct and/or install rock wall, wrought iron fence and gates, sidewalks and curbs, HMAC paving, work in TxDOT right of way, landscaping, testing of water and sanitary sewer pipelines, disinfection of water pipelines, and coordination with area neighbors. The design of this project is at least 95% complete. **Figure 1** provides a general project location.

Figure 1. *Will Ruth Pond site location.*

Palisades Stormwater System and Trailhead Improvements

The Palisades Stormwater System and Trailhead Improvements (Palisades Dam) is located in central El Paso near the intersection of East Robinson Avenue and Kingery Drive. It includes working in a flooding area during monsoon, phasing of work to mitigate risk and expedite project delivery, excavation of one or more dams in hard rock, disposal of excavation waste, access ramps, access gates, gravel and concrete paving for walking trails, irrigation, landscaping, sidewalks and curbs, signage for walking trails, bike stations, lighting for walking trails, fountain water line installation for trailhead, removal and disposal of boulders, RCP, gates, paving, reseeding of native vegetation, traffic control plan including pedestrian traffic, and strong coordination with area neighbors, stakeholders and representatives from local government. The design of this project is in progress. **Figure 2** provides a general project location. It is noted that three (3) design alternatives are being considered for this project. Drawings for Alternative 3 are not yet available, Attachment C provides a preliminary rendering.

Figure 2. *Palisades Stormwater System site location.*

The Owner intends to hire a qualified Construction Manager-at-Risk to assist in the design process and to serve as the General Contractor (GC) for the construction phase of the Project. It is anticipated that preconstruction services will be required of the CMAR contractor beginning in Spring 2023. Onsite construction activities are anticipated to begin in the Summer 2023 contingent upon completion of preconstruction activities and final completion is expected to be Summer 2025.

The Owner has retained Arcadis, as the engineering firm to provide engineering and project administration services. The CMAR Firm being solicited under this RFP will be part of a collaborative team including the Owner and Arcadis (Engineer) and design firms.

Included in the scope of services is collaboration with the Engineer during the Preconstruction phase, providing constructability and value engineering services, development of guaranteed maximum price(s) (GMP) and a detailed construction schedule, and, assuming successful negotiation of a GMP with the Owner, ultimately entering into a general contracting agreement for the construction of the Project.

EPWater's objectives for delivery of the Project include:

- **Quality:** Provide facilities as designed and equipment that is specified that will be sustainable and will reliably meet the preliminary project technical requirements set forth

in Attachment C.

- **Cost:** Minimize life-cycle cost.

- **GMP**: Maintain separate GMPs for the Will Ruth Pond and Palisades Dam throughout the project duration.

- **Schedule:** Achieve the scheduled final completion date of Summer 2025 for design, construction, performance testing, final completion, final and turnover of the Project.

- **Risk:** Achieve an optimal balance of risk allocation between EPWater and the CMAR Firm.

- **Safety:** Implement a project safety program complying with EPWater, federal, state, and local regulatory requirements as well as the selected CMAR company requirements.

- **Public Safety and Communication:** Implement a project safety program that complies with EPWater, federal, state, and federal regulatory requirements. Develop a detailed and proactive communication plan to maintain the public, stakeholders, and local government informed on any impacts due to these projects, safety, and project progress and schedule updates.

- **Operations Input:** Provide a forum for O&M input into design development and construction planning.

- **Based Value Selection of the CMAR:** Select the firm best qualified to perform this project.

- **Construction Input into Design:** Provide for regular constructability and value analysis throughout the design phase.

- **Minority Participation in the Project:** EPWater's policy for its projects is to encourage the participation of Small Locally-Owned Businesses (SLBE), Minority Business Enterprises (MBE), and Women-Owned Business Enterprises (WBE). The utility's minimum goals for this project are:
    - 25% FOR SMALL LOCALLY- OWNED BUSINESSES
    - 10% FOR MINORITY-OWNED BUSINESSES
    - 7% FOR WOMEN-OWNED BUSINESSES

3. CMAR SCOPE OF SERVICES

The anticipated CMAR scope of services will span the preconstruction and construction phases of the Project. Preconstruction-phase services generally consist of the CMAR participating in the review of the Project design and providing suggestions and recommendations based on experience, culminating in the negotiation of a GMP(s) for project construction. Construction-phase services generally encompass input to the Project's final design, construction, management, and performance testing. It is noted that the CMAR Firm may be asked to provide construction work and/or field investigation in the form of Early Work Packages during the Preconstruction Phase. Additional detail on the CMAR scope of services are presented next.

3.1 Pre-Construction Phase Services

Preconstruction Services will include the CMAR working with the Owner and Engineer in an interactive basis to share ideas and experience in assisting the Engineer in developing construction documents suitable for preparing a GMP(s) and ultimately suitable for construction.

RFP Attachment B, Part A identifies the draft Scope of Services to be performed by the CMAR during the Preconstruction Phase. Proposer's shall use this scope to develop their Preconstruction Services fee which is a cost component to be submitted with the Proposal.

3.2 Construction Phase Services

Following execution of a general contracting agreement, the CMAR Contractor responsibilities during the construction phase are generally as follows:

1. Establish and maintain the project field office to be used by the entire project team.

2. Review Drawings and Specifications developed by the Engineer as they are advanced toward final design completion and notify the Owner and Engineer of any inconsistencies between the Guaranteed Maximum Price and the Drawings and Specifications issued for construction.

3. Manage the procurement process for all materials, equipment and subcontracted services procured by the CMAR Contractor, inclusive of bid quotations, bid solicitations, issuance of bid package documents and addenda, opening of bid proposals, and award of subcontracts.

4. Plan, schedule and manage the construction of the Project to be not more than the GMP based on detailed open book bid pricing.

    a. Coordinate planning and sequencing of construction activities.
    b. Coordinate work with equipment suppliers for onsite services
    c. Coordinate work of all subcontractors.

5. Maintain health and safety requirements for the project and ensure adherence to provide a safe work site for all project participants.

6. Comply with all Federal, State, and local construction permitting requirements.

7. Provide monthly cash flow forecasts.

8. Provide a construction Quality Control/Quality Assurance program.

9. Provide regular open book financial status reports on project costs.

10. Provide regular status reports on the project schedule.

11. Conduct checkout and testing in coordination with Engineer.

12. Prepare and submit all project records.

13. Provide warranty coverage as specified within the contract.

14. Manage construction work to assure compliance with all equipment installation

15. Complete construction activity such that it does not interfere with the communication tower access, pedestrian traffic, and vehicular traffic.

4. PROCUREMENT PROCESS

Each potential Proposer shall provide EPWater within five (5) working days after the Pre-proposal Meeting and Site Tour an email acknowledgement that it is a potential Proposer. Such acknowledgement shall be sent in writing and a copy electronically transmitted to EPWater's point of contact and shall identify and provide full contact information for the Proposer Representative. The Proposer Representative shall be the Proposer's single point of contact for the receipt of any future documents, and notices associated with this RFP. It is recommended that Proposers also subscribe to bids on EPWater's website.

On behalf of EPWater, Mirtha Solis, Senior Purchasing Agent, will act as the sole point of contact for this RFP and shall administer the procurement process. All communications shall be submitted in writing, or by email, and shall specifically reference this RFP. All questions or comments should be directed to the EPWater Contact as follows:

Mirtha Solis
Senior Purchasing Agent
EPWater – Public Service Board
1154 Hawkins Boulevard
El Paso, Texas 79925
Phone (915) 594-5473
Email addresses:
msolis@epwater.org and Purchasing.info@epwater.org

No oral communications from the EPWater Contact or other individual is binding. The Cone of Silence is imposed on this RFP at the first posting of the advertisement and prohibits communication with EPWater employees to attempt to influence the purchasing decision. No contact with EPWater staff, board members, any public official or the Engineer concerning the Project during the procurement process is allowed. A violation of this provision may result in disqualification of Proposer. More information on the Cone of Silence may be found on EPWater's website at the following link:

https://www.epwater.org/business_center/purchasing_overview/cone_of_silence

The following table presents the milestone activities and dates for the procurement and execution of the Will Ruth Pond and Conveyance Improvements and Palisades Stormwater System and Trailhead Improvements. EPWater reserves the right to modify the activities and dates as required without notice.

Schedule Milestone Activity	Date
Issue the Request for Proposal	11/10/2022
Nonmandatory pre-proposal meeting and site visit	11/30/2022 at 10 AM
Deadline for questions	12/02/2022
EPW publishes clarifications	12/09/2022
Deadline for submission of proposals	1/04/2023 at 3 PM
Optional interviews	1/12/2023
CMAR firms notified of rankings	1/13/2023
PSB Board considerations for approval	3/08/2023
Notice to Proceed	April 2023
Preconstruction Phase Start	April 2023
Early Work Packages	April 2023
Construction Notice to Proceed	April 2023
Construction Final Completion	Summer 2025

The non-mandatory pre-proposal meeting will be held in the Conference Rooms 1 and 2, located at the third floor of the Main office at 1154 Hawkins Boulevard, El Paso, TX 79925. At this meeting, EPWater will offer information about the Project and the procurement process. The Pre-proposal Site Tour will be held shortly thereafter at the project site to provide Proposers the opportunity to familiarize themselves with site conditions and constraints. Only one Visit will be held.

Upon request, the meeting can be made available via MS Teams.

5. PROPOSAL SUBMISSION REQUIREMENTS:

All interested Proposers are required to submit eight (8) copies of their proposals with the required materials as well as one electronic version on a jump drive in PDF format. Proposals for the Will Ruth Pond and Conveyance Improvements and Palisades Stormwater System and Trailhead Improvements will be received by the Owner until 3:00 p.m. local time on January 4, 2023. Any Proposal received after the submittal deadline will be deemed nonresponsive and returned. Each Proposer assumes full responsibility for timely delivery of its Proposal at the required location.

Following receipt of Proposals, EPWater will convene a public opening of the Proposals scheduled from 3:15 to 3:45 PM. Proposals received in conformance with RFP submission requirements will be opened, and the names of the Proposers identified. Cost proposals for each Proposer will also be opened and read aloud. Proposers and the Public may attend the opening virtually.

Virtual attendance will be provided through the GoToMeeting application. Proposers can use the following link to install the GoToMeeting application. https://meet.goto.com/install

Proposers are advised to install and confirm the application is functioning properly in advance of the 3:15 PM meeting. Through the application, virtual attendees can join the meeting from their computer, tablet, or smartphone by opening the following link:
https://meet.goto.com/243980445

Proposers can also join by phone:

United States (Toll Free): +1 (866) 899-4679
United States: +1 (571) 317-3116
Access Code: 243-980-445

Hard copies of bound Proposal documents and the jump drive shall be sealed in a box which shall note "Proposal Response to RFP/CMAR SW 03-23 Enclosed" on its face. The Fee Proposal document shall be submitted in a separate, sealed envelope which shall note "Fee Proposal for RFP/CMAR SW 03-23 Enclosed" on its face. Fee proposal information shall not be copied onto the jump drive. Both the sealed box and envelope shall be addressed to:

Attn: Mirtha Solis
Senior Purchasing Agent
EPWater – Public Service Board
1154 Hawkins Boulevard El Paso, Texas 79925

Boxed Proposals and the sealed Fee Proposal are not to be submitted to the ground floor lobby front (security) desk.

Proposal shall be no more than 35 total pages (on 8½ x 11 inch paper with 1-inch or greater margins), excluding the transmittal letter, index or table of contents, front and back covers, title pages/separation tabs, and appendices. A maximum of three (3) of the total pages may be 11 × 17-inch tri-fold format can be used for the Executive Summary, Organizational Chart, and Proposer's Choice. Each 11 x 17 page will count as a single page. Eleven-point font or larger must be used throughout the Proposal.

Proposers seeking clarification or additional information relevant to the RFP or the Project shall submit their questions to the EPWater Senior Purchasing Agent, Mirtha Solis, by email at purchasing.info@EPWaterater.org and at msolis@epwater.org. Questions should be copied to the Engineer, Atzuko Reveles, P.E. of Arcadis, U.S. by email at atzuko.reveles@arcadis.com. Within the email, provide detailed reference to the Improvement Project, design sheets, specifications or other RFP information to provide context for questions. Proposers are advised that responses to questions will only be official and binding when issued in a formal written addendum to the RFP. Questions will not be received after 5 p.m. local time on December 2, 2022.

6. PROPOSAL CONTENT

The content requirements set forth in this RFP represent the minimum content requirements for the Proposal. It is the Proposer's responsibility to include in its Proposal relevant information for this project. The Proposal should not contain standard marketing or other general materials.

The Proposal shall include the following sections in the order listed:

- Transmittal Letter (maximum 2 pages)
- Part 1 – Executive Summary (maximum 2 pages)
- Part 2 – CMAR Firm Profile (maximum 3 pages)

- Part 3 – Project Team (maximum 3 pages, not including resumes for Key Personnel)
- Part 4 – Relevant Project Experience (maximum 6 pages)
- Part 5 – Project Approach (maximum 19 pages)
- Part 6 – CMAR Contract Markup (maximum 1 page)
- Part 7 – Cost Proposal (maximum 1 page; to be provided in separate sealed envelope)

- Appendix A – Affirmation of Compliance Documents
- Appendix B – CMAR Contract Markup
- Appendix C – Cost Proposal Forms

Each page shall be numbered, and each section separated by tabs. Information listed below shall be provided with each Proposal.

Transmittal Letter
Proposers must submit a transmittal letter on the Proposer's letterhead. It must be signed by a representative of the Proposer who is authorized to sign such material and to commit the Proposer to the obligations contained in the Proposal. The transmittal letter must include the name, address, phone number and e-mail address for the Proposer Signatory Contact and must specify the physical address and title of the CMAR Firm's signatory to any contract documents executed with EPWater. The transmittal letter may include other information deemed relevant by the Proposer and must acknowledge receipt of all addenda.

Part 1 – Executive Summary
The executive summary must include a concise overview of the key elements of the Proposal and must summarize information in the Proposal. The executive summary shall not be used to convey additional information not found elsewhere in the Proposal.

Part 2 – CMAR Firm Profile
A detailed and complete description of the CMAR Firm must be provided in Part 2 of the Proposal. (The term "CMAR Firm" can refer to either a single entity, partnership, or a joint venture.) Information concerning Key Personnel and other firms that may be included on the Project Team, such as sub-consultants and subcontractors, should be provided in Part 3. The CMAR Firm Profile must include the following information.

- General. Provide general information about the CMAR Firm, such as lines of business and service offerings, locations of home and other offices, number of employees (professional and non-professional), years in business, and evidence of required licenses. Provide licenses in Appendix A of the Proposal.

- Legal structure. Identify whether the CMAR Firm is organized as a corporation, limited-liability company (LLC), general partnership, joint venture, limited partnership, or other form of legal entity. Identify whether the CMAR Firm is publicly or privately owned. As applicable, identify the owners of the CMAR Firm (e.g., shareholders, members, partners, and the like) who hold an interest of 10 percent or more. In Proposal Appendix A, provide information on owners of the CMAR Firm who hold an interest of 10 percent or more.

- Project office location. Identify where the CMAR Firm intends to maintain its project office(s) and the location where the construction management work will be performed.

- Financial condition. In Proposal Appendix A, provide audited financial statements for

the CMAR Firm for the past three years and quarterly financial statements, certified by the chief financial officer, for the current year. If the CMAR Firm is a joint venture, LLC or partnership, such financial statements must be provided for each partner or member.

- Payment and performance bonds. In Proposal Appendix A, provide a letter from the CMAR Firm's surety to verify the availability of a bond of at least $45 million for this Project. The surety must be authorized by law to do business in the State of Texas and must have an A.M. Best Company Rating of not less than A VIII. The surety must also be listed in the U.S. Department of Treasury's Circular 570.

- Insurance. In Proposal Appendix A, provide a letter or Certificate of Insurance from the CMAR Firm's insurance company stating its ability to acquire and provide the following minimum limits for the required insurance:

    - Statutory workers compensation insurance (as required by state law): $1,000,000.
    - Commercial general liability insurance: $1 million per occurrence; $2 million annual aggregate; $2 million for Completed / Operations aggregate.
    - Commercial automobile liability insurance: $1 million combined single limit per accident for bodily injury and property damage.
    - Umbrella (combined single limit) excess liability insurance above the employer's, general and automobile insurance: $5 million.
    - Pollution Liability insurance: $1 million per claim, $2 million aggregate

  The required insurance must be obtained and maintained from insurance companies that have an A.M. Best rating of not less than A VIII or better and are duly licensed or authorized in the State of Texas.

- Safety. Provide a description of the CMAR Firm's corporate safety program and include safety statistics or records indicating categories of accidents and their incidence or frequency rates for the past three years. Identify any state or federal regulatory safety violations received in the last three years. In Proposal Appendix A provide the following safety records for the CMAR Firm for the current and past three years:

    - Documentation of the CMAR Firm's experience modification rate (EMR) calculated by the National Council on Compensation Insurance or similar rating bureau. (The EMR is also referred to as the experience modification rating, experience modification factor, experience modifier or X-mod.) An EMR rating of 1.0 meets the minimum score for this evaluation criteria.

  CMAR Firms are advised that key positions identified in Attachment A of this RFP shall be required to take and pass the EPWater Online Safety and Contractor Orientation before beginning construction activity at the worksite.

The Proposal must provide the following additional information pertaining to factors or events that have the potential to adversely impact the CMAR Firm's ability to perform its contractual commitments.

- Material adverse changes in financial position. Describe any material historical, existing, or anticipated changes in financial position, including mergers, acquisitions, takeovers, joint ventures, bankruptcies, divestitures, or any material changes in the mode of conducting business.

- Legal proceedings and judgments. List and briefly describe any pending or past (within 10 years) legal proceedings and judgments, or any contingent liability that could adversely affect the financial position or ability to perform contractual commitments to EPWater. If no such proceedings or judgments are listed, provide a sworn statement to that effect from the CMAR Firm's general counsel.

- Project claims and disputes. List and briefly describe current or potential project claims or disputes that could adversely affect the financial position or ability to perform contractual commitments to EPWater.

- Completion of contracts. Identify if the CMAR Firm failed to complete any contract, or if any contract has been terminated due to alleged poor performance or default within the past 10 years. If so, describe the circumstances.

- Violation of laws. Identify if the CMAR Firm has been convicted of any criminal conduct or been found in violation of any federal, state, or local statute, regulation, or court order concerning antitrust, public contracting, employment discrimination or prevailing wages within the past 10 years. If so, describe the circumstances.

- Debarred from bidding. Identify if the CMAR Firm has been debarred within the past 10 years, or is it currently under consideration for debarment, on public contracts by the federal government or by any state. If so, describe the circumstances.

If any of the above questions are answered in a manner that indicates that any of these unfavorable factors or events are present, it is the Proposer's responsibility to: (1) describe in detail the unfavorable factor or event and (2) provide sufficient information to demonstrate that the unfavorable factor or event will not adversely impact the Proposer's ability to perform its contractual commitments. Include these responses in Appendix A of the Proposal.

The Proposer must notify EPWater of any changes in the Firm profile subsequent to submission of the Proposal and before the selection process is completed (and, in the case of the selected Proposer, before executing the CMAR Contract).

Part 3 – Project Team
Describe the composition, organization, and management of the Project Team in two separate subsections.

CMAR Firm/other firms:
- Identify any other firms (such as subcontractors and sub-consultants) included on the Project Team and describe the scope of the CMAR Firm's and each other firm's services and responsibilities during the preconstruction and construction phases.

- Provide preconstruction- and construction-phase organizational charts showing the reporting relationships and responsibilities of the CMAR Firm and any other firms and describe the CMAR Firm's overall approach for managing this Project Team.

Key Personnel
- Identify all Key Personnel (and their firm affiliations) on the Project Team and describe their specific responsibilities during the preconstruction and construction phases of the Project. Key Personnel are identified in Attachment A of this RFP.
- Provide preconstruction and construction-phase organizational charts showing the reporting

relationships of all Key Personnel (along with their firm affiliations) and describe the CMAR Firm's approach to the management of such Key Personnel.

- Indicate the commitment of all Key Personnel in terms of an estimated percentage of time during each phase of the Project.
- Proposer shall provide resumes for all Key Personnel identified in RFP Attachment A. Resumes are limited to a single page and are to be included in Proposal Part 3. Resumes are not included in the page limits established in this Section. Key personnel experience is to be documented using the resume template provided in RFP Attachment F.

Part 4 – Relevant Project Experience

The proposal must describe the performance history and experience of the Project Team and its Key Personnel with similar projects and must also provide information concerning safety.

Reference Projects

Within Part 4, the Proposer shall summarize their relevant project experience for the Will Ruth Pond and Conveyance Improvements and Palisades Stormwater System and Trailhead Improvements in one-page project descriptions. Proposer is limited to submitting six (6) projects. CMAR Firms shall include at least one (1) project experience utilizing the CMAR delivery model. Submitted reference projects should be of similar scope and complexity to the proposed Project and have a minimum contract value of $10 million. Representative reference projects shall have been completed within the last ten years. The follow list further clarifiers the project experience requirements. It is noted that a given project may satisfy multiple project experience requirements and CMAR firms must clearly state so on its proposal.

- At least two (2) earthwork projects with minimum excavation of 25,000 cubic yards.
- At least one (1) hard excavation project.
- At least one (1) TxDOT right of way project.
- At least one (1) large (greater than 24 inches) stormwater conduit project.
- At least one (1) project working in flood areas during monsoon.

Reference projects descriptions are to follow the requirements identified in RFP Attachment F. In addition to the individual project descriptions, the Proposer is to submit a Reference Project Summary Table. A template for this table is provided in RFP Attachment F.

EPWater intends to contact references listed in the Proposer's Proposal and may contact other potential references if referred to them during this evaluation. EPWater reserves the right to contact any party it deems appropriate and by submitting a Proposal, the Proposer releases the Owner and any references from all liability concerning this exchange of information.

Part 5 – Project Approach

Provide a preliminary description of the CMAR Firm's approach for managing and performing its services during the Project's preconstruction and construction phases. At a minimum, the approach shall address the following items:

- Identify obstacles schedule for meeting deadlines and how do you intend to deliver.

- Describe the Proposer's general project management approach for CMAR projects. Identify project management tools used to adhere to contract requirements, administer project correspondence, track progress, maintain a safe working environment, manage

cost, quality, and risk.

- Discuss the Proposer's approach for the Palisades Dam site in terms of 1) communication plan with the public and stakeholders, 2) hard material excavation, 3) providing continue access to communication towers, 4) pedestrian including hikers and cyclists, and 5) meeting the May 2024 deadline.

- Discuss the Proposer's approach for Will Ruth Pond key elements including 1) residential/commercial driveway access, 2) trash pick-up, 3) mailbox access, 4) access for emergency response vehicles, 5) school bus access, 6) elderly and ADA access, 7) water and wastewater service disconnections, 8) utility coordination, 9) traffic impacts, and 10) working in TxDOT right of way and private land with easement.

- Based on the Proposer's site visits and familiarity with the project locations, discuss how you intend to protect the Work in flood areas during monsoon as it relates to safety and meeting deadlines.

- Discuss the Proposer's approach to staff these projects during labor shortages as it relates to meeting the substantial completion deadline and potentially working on both projects in parallel.

- Identify and discuss key Project risks and the approach for their mitigations. Summarize key project risks in a project risk register which provides the following information: risk description, potential cost and schedule impacts if a risk is realized, probabilities of occurrence and impact, and summary risk mitigation plan. Discuss how the Proposer will utilize the risk register to establish the project contingency carried in the GMP proposal.

- Based on the Proposers review of the drawings, identify and discuss potential cost savings ideas.

- Provide a summary description of the Proposer's approach to project safety. Provide narrative on how the project safety program will be developed, implemented, and maintained throughout the project. Based on the Proposer's review of the project technical documents, provide an initial lists of potential safety risks and how these risks will be mitigated.

- Provide narrative discussing the Proposers approach to meeting quality expectations identified in the construction documents. Additionally, discuss your approach for correcting non-conforming or deficient work and how the costs for rework are to be compensated under a GMP contract.

- Based on the Proposer's prior experience with CMAR delivery, provide specific example(s) demonstrating how the Proposer through value engineering, innovative construction methods, early work packaging, work sequencing, etc. was able to deliver representative projects for less than the negotiated GMP.

As it relates to the Project Approach, Proposer may provide other relevant criteria deemed to be in the best interest of EPWater.

Part 6 – CMAR Contract Markup (maximum 1 page)
The Proposer shall provide a summary narrative (maximum 1 page) of the Proposer's review comments on the CMAR Contract. Additionally, the Proposer shall provide in Appendix B (CMAR Contract Markup) a printed version of the proposed modifications of the CMAR Contract (including its attachments) in redlined/strikeout format, setting forth any and all revisions requested by the Proposer. Within the body of the document, explain the rationale for such revisions and the specific benefits to EPWater such as risk allocation, cost, or time savings. Proposers are encouraged to suggest revisions that would more efficiently allocate risk, improve the parties' understanding of risk allocation, and improve clarity of any terms of the CMAR Contract where ambiguities or uncertainties may arise in their application or interpretation.

In addition to the printed version of the edited contract to be submitted within the proposal document, the Proposer shall provide on a jump drive an editable Word file carrying suggested contract modifications.

Although EPWater will undertake negotiations of the CMAR Contract, the CMAR Contract Markup provided in this proposal will be treated as a de facto offer that the EPWater can accept as is, which would result in a binding contract between the CMAR Firm without further negotiations or revision. EPWater is not obligated to accept any of the requested exceptions, modifications, additions, etc. submitted by the Proposer in the CMAR Contract Markup when negotiating and finalizing the CMAR Contract. Furthermore, EPWater may request additional revisions during negotiations and before finalizing the CMAR Contract.

Proposers are encouraged to carefully review RFP Attachment G (CMAR Contract) and to submit written questions and comments by the deadline specified in Section 4 of this RFP. Based on its assessment of the comments submitted, EPWater (at its sole discretion) may modify the CMAR Contract via addenda. EPWater expects that this review and comment process will substantially reduce the need for extensive post-selection negotiation.

Part 7 – Cost Proposal
The Proposer shall acknowledge in their Proposal that they have completed and submitted the cost proposal form consistent with the RFP requirements. **Proposers shall submit two (2) proposals, one for each project.**

RFP Attachment E provides the template Cost Proposal Form to be completed by the Proposer. Cost components are to be provided for Preconstruction Phase Services, Labor multiplier for home office and project site salaried employees, and the Construction Fee the Proposer will apply to the project GMP. If deemed necessary by the Proposer, a one-page supporting narrative may be submitted with the Cost Proposal. The completed Cost Proposal form with the required pricing information will be transmitted to EPWater in a separate, sealed envelope as Proposal Appendix C.

In developing the Preconstruction Services fee to be provided in the Cost Proposal, Proposers shall base their fee on fulfilling the requirements identified in RFP Attachment B, Part A, Preconstruction Phase Services.

Be advised that EPWater is not interested in proposed fees or rates that provide excessive discounts from the CMAR Firm's anticipated actual costs for the requested services. If EPWater determines (at its sole discretion) that the fees and rates included in a Proposal are unacceptably low to perform the services or that a Proposer's fees and rates are substantially or unacceptably below other Proposals, EPWater may (at its sole discretion) either declare that

Proposal to be non-responsive and disqualify the Proposer, or seek additional detailed information from that Proposer regarding the cost basis for its cost proposal, prior to rendering a decision on the Proposal's responsiveness.

7. PROPOSAL EVALUATION CRITERIA AND SELECTION PROCESS

EPWater's selection committee (with assistance provided by outside advisors if desired by EPWater) will review and evaluate the Proposals according to the requirements and criteria outlined in this Section 7. During the Proposal evaluation process, written questions or requests for clarifications may be submitted by EPWater to a Proposer regarding its Proposal or related matters. Failure to respond in a timely manner to any such questions or requests may be grounds for elimination of a Proposer from further consideration. In addition, EPWater may require that all or a limited number of Proposers participate in interviews.

7.1 Minimum Qualification Requirements

Each Proposal will be initially reviewed to determine whether it is responsive and responsible to this RFP and whether the Proposer meets minimum qualification requirements identified below. Failure to comply and meet the requirements of this RFP may result in rejection of the Proposal as non-responsive / non-responsible. At its sole discretion, however, the selection committee may waive any such failure to meet a requirement of this RFP and may request clarification or additional information to remedy a failure.

- Refer to Section 6, Proposal Content, for additional information regarding the following table.

- Performance bond. Ability of the CMAR Firm to provide a performance bond in the amount of $45 million.

- Material adverse condition. The CMAR Firm must not be subject to a material adverse condition, such as pending litigation, insufficient liquidity, weak operating net income or cash flow, or excessive leverage, that gives rise to reasonable doubt concerning its ability to continue to operate as an ongoing concern, to provide performance bonds or insurance, or to maintain sufficient financial strength to undertake and successfully complete the Project and to mitigate/absorb Project risks.

- Licensing and registration. The CMAR Firm and each other firm included in the Proposal must be licensed in the State of Texas for the type of work to be performed.

- CMAR Firm experience. Within the past 10 years, the CMAR Firm must have successfully completed at least six (6) projects of which at least two (2) involve earthwork of comparable scale and complexity in the United States using Design-Bid-Build, CM At-Risk, Competitive Sealed Proposal or Design-Build project delivery methods. Projects submitted in Part 4 of Proposer's Proposal will be used for evaluating this requirement.

Minimum Qualification Requirements	Scoring Basis
Proposer's financial condition considering: • Current Bonding capacity (at least $45 million) and current available capacity • Insurability • Tangible net worth/capitalization • Material adverse conditions	Pass/Fail
Prior 10 years earthwork project experience (25,000 cubic yards minimum per project)	Pass/Fail
Prior 10 years excavation of rock conditions project experience	Pass/Fail
Prior 10 years working in TxDOT right of way project experience	Pass/Fail
Prior 10 years large stormwater conduits project experience	Pass/Fail
Prior 10 years working in flood areas during monsoon project experience	Pass/Fail
Last 5 years EMR rating	Pass/Fail
Legal/Litigation history for the last 10 years	Pass/Fail
Licensing and Registration (as required) in the State of Texas	Pass/Fail

7.2 Proposal Evaluation Criteria

Through a public meeting, EPWater will open, and read aloud the names of the Proposing firms and their proposed Contract Fee. The selection committee will evaluate and rank responsive Proposals by applying the following weighted evaluation criteria to information provided in Proposals meeting the minimum qualification requirements.

- CMAR Firm Profile - 15%
  - General Information
  - Legal Structure
  - Principal Office Location
  - Project Office Location
  - Craft Training Program Highlights
  - Financial Condition
  - Material Adverse Condition

- Project Team - 25%
  - CMAR Firm and associated Firms
  - Key Personnel Experience
  - Team Management Approach (firms and personnel)
  - Self-performance Capabilities in Texas

- Relevant Project Experience - 20%
  - Projects
  - Safety performance

- Project approach - 30%
  - Understanding and responses

- Cost Proposal - 10%

In ranking the proposals, the selection committee will use a 100-point scale whereby the maximum points awarded for each of the evaluation criteria will be based on the percentage

weight set forth above. The selection committee will perform their non-price evaluation and complete its awarding of the non-price criteria points of the proposals before interview (if required) and before scoring the cost proposal forms.

7.3 Interviews

EPWater may conduct formal interviews to allow the Proposers to further explain their written Proposal, focusing on their specific approach to successfully execute both phases of this CMAR project. Interviews will be limited to 60 minutes, providing 40 minutes for the Proposers to discuss their project approach and where the Proposers creativity and innovation will be beneficial to reducing project cost and risk. The presentation will be followed by up to 20 minutes of questions posed by EPWater selection committee members.

Interview attendees will be limited to the ten Proposer's Key Staff identified in the Proposers Proposal. While the Proposer is free to develop their own approach to the interview, EPWater does not expect all ten key staff to participate in the interview process. Interviews, if conducted, will be scored by the selection committee using a 10-point scale.

The Prosers are referred to the schedule included with this document for potential interview date.

7.4 Scoring and Selection

EPWater will select the CMAR submitting the proposal offering best value to the utility based on the selection criteria and scoring approach identified in this RFP. EPWater will attempt to negotiate final contract terms, if required, with the top ranked Proposer. If EPWater is unable to successfully negotiate final contract terms with the top ranked Proposer, it shall formally notify the Proposer it is ending negotiations and proceed to negotiate final contract terms in the order of the selection ranking until a contract is reached or negotiations with all ranked Proposers ends. At any time during this process, EPWater has the option to cancel the CMAR procurement, and have the Engineer complete the design and competitively bid construction of the Project.

Proposers are advised that the cone of silence will remain in effect until after award of the CMAR contract. Following selection and successful negotiation of the CMAR contract, EPWater will debrief unsuccessful Proposers if requested. Requests and inquiries concerning a request for a debriefing shall be directed to purchasing.info@epwater.org.

8. CONDITIONS FOR PROPOSERS

EL PASO WATER UTILITIES – PUBLIC SERVICE BOARD, a component of the City of El Paso, whose Board of Trustees is vested with management and control of the City of El Paso water, wastewater, and stormwater system is a public entity in the State of Texas created under Texas Government Code Chapter 10. The procurement process for this Project is authorized under Subchapter F, Section 2269.251.

The following firms and individuals are serving in an advisory capacity to the Owner for this Project and are therefore not eligible to assist or participate with any Proposer that submits a Proposal for the Project.

- Arcadis, U.S. Inc.
- Huitt-Zollars

- Moreno Cardenas Inc.

8.1 Conflict of Interest

EPWater mandates the public disclosure of certain information concerning persons doing business or seeking to do business with the utility, including affiliations and business and financial relationships such persons may have with EPWater officers. The ethical standards of conduct required of employees, vendors, potential vendors, and anyone acting on behalf of EPWater are listed below and are designed as a general guidance and are not to conflict with Federal, State, and local laws.

Code of Ethics:

1. To consider first, the interest of the Utility in all transactions and to carry out and believe in its established policies.

2. To buy without prejudice or personal gain, seeking to obtain the maximum ultimate value for each dollar of expenditure.

3. To grant all competitive suppliers equal consideration insofar as local, state, or applicable federal statutes permit.

4. To accord a prompt and courteous reception, so far as conditions will permit, to all who call on a legitimate business mission.

5. To conduct business with potential and current suppliers in an atmosphere of good faith, devoid of intentional misrepresentation.

6. To subscribe to and work for honesty and truth in buying and selling, and to denounce all forms and manifestations of commercial bribery.

7. To respect his/her obligations and to require that obligations to him/her and the Utility be respected, consistent with good business ethics.

8. To be receptive to competent counsel from his/her colleagues and to be guided by such counsel without impairing the dignity and responsibility of his/her office.

9. To cooperate with all organizations and individuals engaged in activities designed to enhance the development and standing of purchasing.

10. To decline offers for personal gain from an actual or potential vendor.

11. To ensure that he/she does not knowingly disclose confidential information for personal gain to actual or potential vendor.

12. Employees are prohibited from soliciting anything of value for personal gain from an actual or potential vendor.

Employees must comply with EPWater Ethic's policy as well as the City of El Paso Ethics ordinance, both located in the Utility’s intranet under Administrative policies.

8.2 Proprietary Information

All materials submitted to EPWater become public property and are subject to the Texas Public Information Act, Chapter 522, Texas Government Code "(the Act"). Most information collected,

assembled, or maintained by the City and/or EPWater in connection with the transaction of official business is public information subject to disclosure upon written request. The Act exempts certain categories of information from required public disclosure. The Office of the Attorney General determines whether information may be withheld, not the City or EPWater.

All information provided to EPWater will be handled in accordance with the Act and the requirements of the Texas Public Information Act while in EPWater's possession. All documents provided to EPWater should be regarded as public records and subject to disclosure; provided however, such documents will be held in confidence by EPWater as required by the Act.

PRIVATE ENTITIES ARE CAUTIONED THAT ONCE A DOCUMENT IS PROVIDED TO EPWATER, ALL INFORMATION CONTAINED THEREIN WILL BE AVAILABLE TO THE PUBLIC UNLESS THE INFORMATION IS EXCEPTED FROM THE REQUIREMENTS OF THE PUBLIC INFORMATION ACT.

Private Entities who claim that information provided to EPWater should be protected from public disclosure may be asked to support such claim if the City or EPWater receives an Open Records request for the information and requests a determination by the Attorney General.

8.3 Rights of the Owner

In connection with this procurement process, including the receipt and evaluation of Proposals and award of the CMAR Contract, Owner reserves to itself (at its sole discretion) all rights available to it under applicable law, including without limitation, with or without cause and with or without notice, the right to:

- Cancel, withdraw, postpone, or extend this RFP, in whole or in part, at any time prior to the execution of the CMAR Contract, without incurring any obligations or liabilities.
- Modify the procurement schedule.
- Suspend and terminate the procurement process or terminate evaluations of Proposals received.
- Permit corrections to data submitted with any Proposal.
- Conduct discussions and correspondence, with one or more of the Proposers to seek an improved understanding of any information contained in a Proposal.
- Seek or obtain, from any source, data that has the potential to improve the understanding and evaluation of the Proposals.
- Seek clarification from any Proposer to fully understand information provided in the Proposal and to help evaluate and rank the Proposers.
- Reject a Proposal containing exceptions, additions, qualifications or conditions not called for in the RFP or otherwise not acceptable to the Owner.
- Conduct an independent investigation of any information, including prior experience, included in a Proposal by contacting project references, accessing public information, contacting independent parties, or any other means.

- Through EPWater's Procurement Contact identified in this RFP, request additional information from a Proposer during the evaluation of its Proposal.

- EPWater reserves the right to use any/all information provided by the Proposer under this solicitation to deliver the highest value project for EPW.

- EPWater shall not be responsible for any cost incurred by Proposers because of participation in this selection process. Each Proposer shall bear its own expense in connection with the preparation and submission of materials and the provision of any supplemental information requested. The Owner shall have no liability for cost incurred by Proposers in connection with the review and evaluation of qualification materials and any findings and determinations made therefrom.

8.4 Obligation to Keep Project Team Intact

Proposers are advised that all firms and Key Personnel identified in the Proposal shall remain on the Project Team for the duration of the procurement process and execution of the Project. (The anticipated dates for award of the CMAR Contract and for completion of the Project are set forth in Section 4 of this RFP.) If extraordinary circumstances require a change, it must be submitted in writing to the identified EPWater Contact, who, at his or her sole discretion, will determine whether to authorize a change, recognizing that certain circumstances (such as termination of employment) may occur that are beyond the CMAR Firm's control. Unauthorized changes to the Project Team at any time during the procurement process may result in elimination of the Proposer from further consideration.

8.5 Protests

Any protest to an Owner's action in connection with this procurement must be filed in writing no later than five (5) business days following such action and must be in strict accordance with EPWater's applicable procedures and with applicable law.

8.6 TWDB Instructions to Bidders for Construction, Phase 2

This project will be partially funded by the Texas Water Development Board (TWDB). The following four (4) statements will apply during bidding of the construction phase (Phase 2) for the **Will Ruth Pond only**.

1. Contingent Award of Contract

This contract is contingent upon release of funds from the Texas Water Development Board. Any contract or contracts awarded under this Invitation for Bids is/are expected to be funded in part by a loan or grant from the Texas Water Development Board. Neither the state of Texas, nor any of its departments, agencies, or employees are or will be a party to this Invitation for Bids or any resulting contract.

2. U.S. Iron and Steel (Does not apply to SWIFT Projects funded prior to May 1, 2019)

Any contract(s) awarded under this Invitation for Bids is/are subject to the United States Iron and Steel requirements of Texas Water Code §17.183 and/or Texas Government Code, Chapter 2252, Subchapter F, as amended by SB 1289, 85th Legislative Session. The contractor must complete the statement of understanding regarding this requirement, found in the Supplemental Contract Conditions, Item No. 9. Refer to TWDB-1105 – United States Iron and Steel (US I&S) Guidance.

3. Bid Guarantee
Each bidder shall furnish a bid guarantee equivalent to five percent of the bid price (Water Code §17.183). If a bid bond is provided, the Contractor shall utilize a surety company which is authorized to do business in Texas in accordance with Surety Bonds and Related Instruments, Chapter 3503 of the Insurance Code.

4. Award of Contract to Nonresident Bidder
A governmental entity may not award a governmental contract to a nonresident bidder unless the nonresident underbids the lowest bid submitted by a responsible resident bidder by an amount that is not less than the amount by which a resident bidder would be required to underbid the nonresident bidder to obtain a comparable contract in the state in which the nonresident's principal place of business is located. A non-resident bidder is a Contractor whose corporate offices or principal place of business is outside of the state of Texas (Source: Texas Government Code, Chapter 2252, Subchapter A, Nonresident Bidders, §2252.002).
The bidder will complete form TWDB-0459, Vendor Compliance with Reciprocity on Non-Resident Bidders, **which must be submitted with the bid.**

ATTACHMENT A – DEFINITION OF TERMS

The definitions of some of the capitalized terms used in this RFP are presented below:

CMAR Firm or CMAR– The entity that will enter into the CMAR Contract with EPWater and that will be the single point of accountability to EPWater for delivery of the services and the Project. The term "CMAR Firm" can refer to either a single entity, partnership, or a joint venture.

Engineer – The engineering firm that will provide professional design services and have responsible charge of the design, including preparation of the construction documents.

Draft CMAR Contract – The draft Contract, including the agreement and all of its attachments, presented as RFP Attachment G.

Key Personnel – The individuals, employed by the CMAR Firm or other firms included on the Project Team, who would fill certain key roles in delivery of the Project and related services, including the following positions:

Project Manager	Construction Manager	Site Safety Officer
Preconstruction Manager	Lead Estimator	General Superintendent
Quality Manager	Scheduler	

Project – Will Ruth Pond and Conveyance Improvements and Palisades Stormwater System and Trailhead Improvements Projects

Project Team – The CMAR Firm, Key Personnel, and any additional firms (such as subcontractors and sub-consultants) included in the Proposal.

Proposer – The CMAR Firm entity responding to this RFP by submitting a Proposal.

TWDB – Texas Water Development Board (TWDB) is the agency partially funding the Will Ruth Pond Project.

ATTACHMENT B – SCOPE OF CMAR SERVICES

The CMAR Firm will provide the following preconstruction- and construction-phase services, as identified and described in the Proposal.

A. PRECONSTRUCTION-PHASE SERVICES

Preconstruction-phase services will include the following tasks, subject to negotiation of the final Preconstruction Services contract:

Will Ruth Pond and Conveyance Improvements and Palisades Stormwater System and Trailhead Improvements

This Preconstruction Services Scope of Work is to be provided by (insert name), the selected Construction Manager At-Risk (CMAR), for El Paso Water's (EPWater's) Will Ruth Pond and Conveyance Improvements and Palisades Stormwater System and Trailhead Improvements ("Project").

For the Preconstruction Phase, the CMAR will support EPWater and the Engineer with design development, performance of field investigations, estimating construction costs, constructability reviews, pursuing project value, and managing an integrated project schedule. CMAR shall provide advice on construction means and methods and sequencing of the work to provide for a seamless integration of the new Project into existing EPWater infrastructure.

Based on the Draft 100% Design Submittal, CMAR shall develop a Guaranteed Maximum Price (GMP) proposal to construct the work in accordance with the Construction Agreement. The Construction Phase shall begin upon successful negotiation of the CMAR's GMP Proposal and Construction contract.

The performance period for Preconstruction Phase services is expected to span 6 months. Tasks to be performed during the Preconstruction Phase scope of services are organized into the following four (4) major tasks. Specific details and deliverables for each task and associated subtasks are established on the following pages. Changes or modifications to the scope of services and associated deliverables identified in these tasks shall be amended according to the provisions contained within the Preconstruction Agreement.

Task 1 - Project Management
Task 2 - Site Investigations
Task 3 - Design Reviews, Cost Estimates, and Value Engineering
Task 4 - GMP Proposal Preparation and Negotiation

Task 1 - Project Management
Task 1 provides for management, administration, and coordination with EPWater, the Engineer, and other project stakeholders. Services to be provided by the CMAR are detailed in the following subtasks comprising Task 1.

Task 1.1 Develop the Project Management Plan

Within 20 calendar days of receipt of the preconstruction phase Notice to Proceed, the CMAR is to prepare a Draft Project Management Plan (PMP). The PMP shall include a communication

plan, risk management plan, and procedures for cost and schedule control, document control, change management, and other Project Management requirements. EPWater and their Engineer will review the draft PMP and provide comments to the CMAR. The CMAR will resolve the review comments with EPWater and the Engineer for incorporation into the final PMP.

Task 1.2 Conduct Project Kickoff and Project Partnering

Within 20 calendar days of the Notice to Proceed, the CMAR will be responsible for planning and conducting a Project Kick-off Meeting. Attendees will include key staff from EPWater, CMAR, and Engineer. The purpose of the meeting is to discuss issues dealing with project administration, and to discuss and implement procedures allowing EPWater, CMAR, and Engineer to perform their respective obligations under the CMAR Contract and the Engineer Contract. The CMAR will prepare a meeting summary and will distribute to the attendees.
Project Partnering shall be conducted in El Paso by an outside consultant/facilitator and shall be sponsored by the CMAR. Participants in the half-day workshop shall include key staff from the CMAR, EPWater, and Engineer. Follow-up partnering meetings will be determined during the kickoff meeting.

Task 1.3 Contract Management and Administration

This task involves managing the Preconstruction Phase Contract and confirming compliance with its terms and conditions and developing any scope amendments that may be required (e.g., field investigations, surveying), including communications between EPWater and CMAR as required. CMAR will provide oversight of project staff and shall prepare and submit monthly invoices by the 10th of each month.

Task 1.4 Project Management System

CMAR shall implement a web-based project management system utilizing Procore for both the preconstruction and construction phases of the project. This system will be deployed to provide access for EPWater, Engineer, and CMAR subcontractors and suppliers. EPWater will provide the Procore license. CMAR shall be the Procore project administrator

Task 1.5 On-site Project Facilities

The CMAR will develop a plan for establishing, maintaining, and demobilizing the Site Office. This plan will designate the location of the Site Office with respect to the construction work, required laydown areas, staff parking requirements, egress/ingress routes, and utility requirements. Additionally, the plan will identify the space requirements for CMAR, EPWater, and Engineer staff. The draft plan will be submitted for review and comment by EPWater and Engineer. The CMAR will incorporate the comments received and submit a final plan for EPWater review and approval. EPWater and the CMAR will jointly determine where the Site Office is to be located, and when this determination is made, the CMAR will implement the plan.

Task 1.6 Project Schedule

Within 30 calendar days of the Notice to Proceed, the CMAR will submit a draft baseline Project schedule, using the latest Primavera P6 version. The baseline schedule will include detail level activities for CMAR's pre-construction scope and summary level detail for the construction activities. The Engineer will provide the CMAR with its detailed baseline schedule for design phase activities for incorporation into the overall project schedule. The Project Schedule will be updated monthly in accordance with the requirements of Section 3 of the Preconstruction

Agreement. As the design approaches completion, the CMAR shall expand the baseline schedule to include detailed construction activities. The expanded baseline schedule will be incorporated into the CMAR's GMP Proposal.

Task 1.7 Project Reporting

By the 10th day of the month, CMAR will prepare and submit their monthly project report for the preconstruction services phase of the project. Monthly reports will summarize activities completed for the current invoice period as well as activities planned for the upcoming month. Project controls information will be included in the report. A cost summary will be provided, presenting actual costs versus planned costs with details regarding any variances to plan. A summary narrative of planned schedule progress versus actual progress will be presented with updates on key milestones dates and activities. The report will include narrative regarding design development support activities, project risks, and issues being faced by the project team. The current Risk Register, and Issues Log will be included as attachments to monthly reports. Monthly project reports will be presented in a format to be agreed upon between the CMAR and EPWater within 30 days of Notice to Proceed.

Task 1.8 Progress Meetings

Progress Meetings will be conducted by the CMAR monthly during the preconstruction phase. The standing meeting agenda will be developed by the CMAR with input from EPWater and the Engineer. Progress Meetings will be conducted via MS Teams. Attendees will include EPWater, the Engineer, designers, the CMAR, and the CMAR's subcontractors. Each meeting is assumed to last no more than 2 hours. CMAR will submit minutes for each progress meeting.

Task 1.9 General Coordination Meetings

CMAR will coordinate with Engineer throughout the advancement of the design from the Draft 100% Design Submittal to the Final 100% Design Submittal through participation in bi-weekly Design Progress meetings when request by the Engineer. CMAR will participate via MS Teams to address project specific issues or questions.

Task 1.10 Project Health and Safety

CMAR is to engage with Engineer and EPWater to gather information needed for developing the project Safety Plan to support site investigations during the preconstruction services phase of the project. Site investigations to be performed include soil borings, subsurface utility locations, environmental, and confirmation of facility as-builts.
CMAR will develop a Safety Plan suitable for the site investigations to be performed that provide the controls needed to prevent occupational injuries, illnesses, and damage to EPWater property. CMAR will submit a draft Safety Plan for EPWater review and comment. CMAR will reconcile and incorporate EPWater comments into the final Safety Plan.

Task 1.11 Quality Assurance and Quality Control (QA/QC) for Preconstruction and Construction

The CMAR will identify a Quality Manager who will be responsible for developing and implementing the project QA/QC Program. The CMAR’s Quality Manager will convene a meeting (not more than 2 hours) with EPWater and Engineer to present CMAR's proposed approach for implementation and management of the construction QA/QC program. This meeting will discuss the CMAR's recommended approach for the performance of quality control

and quality assurance during the construction of the project. A key aspect of this discussion will be to reach agreement on the roles and responsibilities for the CMAR, EPWater, Engineer, and third-party testing agencies. The results of the meeting will be memorialized in a memo to be submitted by the CMAR.

Task 1.12 Construction Procurement Planning

CMAR will develop a Construction Procurement Plan prepared in compliance with Texas Government Code Title 10, Subtitle F, Chapter 2269, Subchapter F, Sections 2269.255 and 256. This Plan will describe the CMAR's approach for establishing a pool of prequalified construction trade subcontractors, equipment vendors, and material suppliers that will be invited to submit competitive bids for the construction trade work packages, and requests for quotations for equipment and material.

Based on the expected work to be performed for the project, the CMAR will identify how the work will be broken into work packages that will maximize bidder participation and competition. It is noted that the GMP for the Will Ruth Pond shall not be combined with that of Palisades Dam. CMAR shall also detail in the Plan their approach to encouraging participation of small locally owned, minority-owned, and women-owned businesses in the project.

The Engineer is preparing an early work packages for the removal of contaminated soil at the Will Ruth Pond. The CMAR is to bid on this. In developing the Construction Procurement Plan, the CMAR will investigate the need for additional early packages that would need to be initiated during the preconstruction phase. Working with the Engineer and EPWater, the CMAR’s investigation will include outreach to prospective equipment vendors and material suppliers to understand fabrication and supply chain constraints having the potential to disrupt construction sequencing and delay on-time completion of the project. The results of these investigations will be documented in the draft Plan.

The initial draft Plan shall identify construction work packages (subcontract, vendor, and supplier) and those work packages the CMAR plans to submit their own sealed, competitive bid(s). The process to be used by the CMAR for solicitation and receipt of competitive bids and quotations will also be identified in the Plan and will comply with applicable EPWater procurement requirements. CMAR will also describe their approach for evaluating, scoring, and recommending awards for construction subcontracts, and equipment and material purchases.

A draft Plan shall be submitted to EPWater for review and comment not later than 30 calendar days after the CMAR has received Notice to Proceed for the preconstruction services phase. EPWater will return review comments to the CMAR within 10 calendar days of CMAR's submission. Within 7 calendar days after CMAR's receipt of EPWater comments, CMAR will convene a workshop to review and resolve EPWater comments on the Plan. CMAR will submit a revised, final Plan incorporating EPWater's comments within 7 days of the workshop.

Project Management Deliverables

Task	Deliverable	Quantity	Media*
1.1	Draft Project Management Plan Final Project Management Plan	1	Electronic submittal
1.2	Initial Project Kickoff and Partnering Meeting and Monthly Partnering Meeting Minutes	8	Electronic submittal
1.3	Monthly invoices	1	Electronic submittal
1.5	Draft On-site Project Facilities Plan	1	Electronic submittal

Task	Deliverable	Quantity	Media*
	Final On-site Project Facilities Plan		
1.6	Project Baseline Schedule Monthly Schedule Updates	1	Electronic submittal
1.7	Monthly Project Reports	1	Electronic submittal
1.8	Monthly Progress Meeting Minutes	1	Electronic submittal
1.10	Safety Plan	1	Electronic submittal
1.11	Construction QA/QC Approach Memo	1	Electronic submittal
1.12	Draft Construction Procurement Plan Final Construction Procurement Plan	1	Electronic submittal

Task 2 - Site Investigations

CMAR shall coordinate with the Engineer and EPWater to identify field investigations required to support design development, prepare risk mitigation plans, and gather information needed to mitigate risk and expedite construction delivery.

Task 2.1 Geotechnical Investigations

If additional geotechnical investigations are deemed necessary, the CMAR shall coordinate with Engineer on the locations and number of soils borings and provide recommendations on additional borings if needed beyond those recommended by the Engineer. It is assumed that this task will include two (2) meetings/site visits.

Note: Cost for this task will be determined and negotiated during the Pre-Construction Phase once design drawings initiated to determine the associated level of effort.

Task 2.2 Subsurface Utility Verifications

CMAR shall assist the Engineer in field verification of existing utility locations within the boundaries of the site work areas if requested. CMAR shall be responsible for subcontracting for subsurface utility verification services. CMAR is to assume this task will include two meetings/site visits/investigations. Engineer will support these investigations by providing documentation of the findings with a memo and marked up site plan. CMAR and Engineer will determine if the utility verifications identify impacts on the design and construction of the project.

Note: Cost for this task will be determined and negotiated during the Pre-Construction Phase once design drawings initiated to determine the associated level of effort.

Task 2.3 Verification of As-Built Conditions

CMAR shall assist Engineer in the validation of as-built conditions of the existing facilities to identify constructability issues which may impact construction means and methods. CMAR will participate in up to two on site meetings (up to four hours each) with Engineer to evaluate and document as-built conditions through annotated drawings.

Note: Cost for this task will be determined and negotiated during the Pre-Construction Phase once design drawings initiated to determine the associated level of effort.

Site Investigation Deliverables

Task	Deliverable	Quantity	Media
2.1	Site plan illustrating locations for proposed additional soil borings	1	Electronic submittal
2.2	Memo and site plan illustrating utility verification locations and findings	1	Electronic submittal
2.3	Annotated record drawings	1	Electronic submittal

Task 3 – Design Reviews, Cost Estimates, and Value Engineering

The design engineering firms will complete and provide design documents at 30%, 60%, and 95% complete. The CMAR Firm will assist with design reviews, value engineering, and cost estimates. It is noted that the Will Ruth Pond design is completed to 95%. The Palisades Dam design is in progress. The following table summarizes the services to be provided as follows:

	Project	Design Reviews and Cost Estimates		
		30%	60%*	95%
1	Will Ruth Pond	No	No	Yes
2	Palisades Dam	No	No	Yes

*CMAR is expected to participate in an options review meeting ahead of the 95% design completion. Options are developed by the Engineer; CMAR will participate in the workshop as described under Task 3.4

Task 3.1 Design Coordination

As the design advances for Will Ruth Pond and Palisades Dam, the CMAR will support the Engineer through this design phase. CMAR will address day-to-day matters of design development involving constructability, cost, pipeline/conduit tie-in, design discipline coordination, risk identification and their planned mitigations, and others matters that Engineer and EPWater seek support.

Throughout this interaction, CMAR will develop and actively maintain a Design Evolution Log, Issues Log, and Risk Register, and provide formal updates at regularly scheduled project meetings with the Engineer and EPWater.

Task 3.2 Value Engineering and Constructability Review

Value Engineering and CR comments generated in the workshop shall be recorded by the CMAR in a spreadsheet summarizing the comment, its positive or negative benefits, as well as an order of magnitude assessment of the impact on project cost and schedule. The CMAR will submit the spreadsheet to EPWater and the Engineer for review and evaluation.

Within two (2) weeks of each workshop, CMAR shall convene a meeting (not to exceed two hours, each) to receive input and address questions from EPWater and the Engineer on the CMAR's review comments. At this meeting, EPWater shall identify Value Engineering and

Constructability Review comments which are to be incorporated into the project scope and design. The CMAR will incorporate EPWater approved modifications into the Design Evolution Log to record design modifications and their overall impact on the project cost and schedule.

Task 3.3 Cost Estimates

The CMAR Firm will prepare cost estimates in accordance with the guidelines established by the Association for the Advancement of Cost Engineering (AACE), recommended practice 19R-97, as follows:

- Class A: at 95% design complete,
- Class B: at 60% design complete, and
- Class C: at 30% design complete

The CMAR will prepare the estimate in the format developed in Task 1.12 and submit to EPWater for review. Engineer will complete an independent cost estimate and submit to EPWater for review.

Following reviews from EPWater and Engineer, the CMAR Firm will prepare and submit revised cost estimates incorporating the results of the reconciliation review as well as an updated Design Evolution Log.

Proposers are referred to the table included at the begging of this Task 3 for expected level of effort.

Task 3.4 Workshops

Following the preparation of design documents at 60%, and 95%, the CMAR Firm will convene workshop meetings (lasting no more than 2 hours, each) with the Engineer and EPWater to review its findings on the following:

- Design Review
- Constructability Review
- Value Engineering
- Cost Estimates

The purpose of these workshops is to identify elements that appear to be misaligned with the project intended scope, develop and offer design alternatives with the potential to reduce cost, simplify construction, mitigate known risks, improve facility operability and construction, avoid conflicts with current traffic, public safety and access, and simplify maintenance activities. The workshops are anticipated to be in person with representatives from EPWater and Engineer. Additional staff members not based in El Paso will be invited to participate via MS Teams.

Proposers are referred to the table included at the begging of this Task 3 for expected level of effort.

The CMAR Firm will convene the following anticipated workshops:

Project	Workshops
Will Ruth Pond	2
Palisades Dam	3
Total	**5**

Palisades Dam will include an initial workshop to review 3 design options prepared by the Engineer, workshop goal is to have all project team members (including CMAR) select the best option to continue into construction. During this workshop, factors will be evaluated, and a ranking will be completed by the project team that will conclude with the best option moving forward with 95% design and GMP development in accordance with Tasks 3 and 4 of this Attachment B.

Task 3.5 Cost Model

CMAR shall develop a Construction Cost Model for the project for EPWater's review and approval. The purpose of the model is to describe the cost estimating framework to be implemented by the CMAR so that cost estimates can be effectively reviewed and reconciled at each design milestone. The Cost Model will specify how the estimate is to be organized, grouped, and summarized as well as how scope items are to be conveyed in discrete, line-item detail within the estimate. The Cost Model shall identify all costs that will be included in the GMP, including labor with manhours and dollars, material, equipment, detailed and transparent general conditions, bonds, taxes, construction fee, contingency, and allowances. CMAR will submit the Cost Model in memo format for EPWater and Engineer review and comment. CMAR will convene a meeting (no more than 2 hours) to discuss and resolve EPWater and Engineer comments. CMAR will submit a final memo incorporating the results of the review meeting.

Note: Cost for this task will be determined and negotiated during the Pre-Construction Phase once design drawings initiated to determine the associated level of effort. Proposers are referred to the table included at the begging of this Task 3 for expected level of effort.

Task 3.6 Design Reviews

CMAR will identify impacts to the project scope, schedule, and budget resulting from the advancement of the design, 30%, 60%, and 95% complete. Identified impacts will be documented in the Design Evolution Log. Final 100% Design Submittal review comments and a revised Design Evolution Log will be submitted to the Engineer and EPWater.

Proposers are referred to the table included at the begging of this Task 3 for expected level of effort.

This Task focuses on supporting EPWater and Engineer through the design effort as it relates to the preparation of final, sealed design documents to be used for project permitting and construction. Additionally, review comments made on the design submittal will be reconciled with the GMP Proposal, as required.

Task 3.7 GMP Proposal Reconciliation

Based on the results of design reviews, value engineering, and constructability reviews, CMAR will prepare/update GMP Proposal, as required.

Design Review, Value Engineering, Constructability Reviews, and Meeting Deliverables

Task	Deliverable	Quantity	Media
3.1	Updated Risk Register, Issues Log, and Design Evolution Log	1	Electronic submittal
3.2	Value engineering and constructability reviews spreadsheet at 30%, 60%, and 95%. Refer to table.	1	Electronic submittal file
3.3	Cost estimates at 30%, 60%, and 95% for each Improvement Package, refer to table.	1	Electronic submittal
3.4	Cost Model Memo	1	Electronic submittal
3.5	Minutes and agendas from meetings/workshops	1	Electronic submittal
Proposers are referred to the table included at the begging of this Task 3 for expected level of effort.			

Task 4 - GMP Proposal Preparations and Negotiations

It is noted that the GMPs for Will Ruth Pond and Palisades Dam will be maintained separated throughout the project duration; therefore, the CMAR Firm shall prepare separate GMPs and shall never be combined.

In accordance with Preconstruction Contract articles 1.2 and 5.1, EPWater plans to contract for the Project construction services in two separate phases. In Phase 1, EPWater will enter into an Initial GMP for non-construction services including design review, constructability review, cost estimates, project coordination, and project management. Refer to Attachment B. In Phase 2, EPWater will enter into a final GMP for the remainder of the Project construction work. It is noted that the there may be multiple GMP relative to Phase 2.

Prior to starting Construction Phase and shortly after project award, the CMAR Firm will begin the Early Work Packages. Refer to Sections 2.1, 2.2, and 2.3. For projects described in Sections 2.1 and 2.2, constructability review and cost estimates will follow the preparation of a GMP.

CMAR will develop and negotiate the GMP proposals in accordance with the approved Construction Procurement Plan. This task includes utilizing the design documents from the Improvement Packages for bidding portions of the work, trade subcontract work packages, and requesting binding quotations for equipment and materials. CMAR will competitively bid the work in accordance with the Construction Procurement Plan and Construction contract.

CMAR will develop GMP proposals based on CMAR's recommendation for award of trade subcontract bids, and quotations for equipment and permanent materials. CMAR's recommendations for award are to be documented in an open book format. CMAR recommendations for award can be based on cost and non-cost criteria. Examples of non-cost criteria include subcontractor/vendor qualifications, project approach, acceptance of subcontract and purchase order terms, and other risk factors.

The GMP Proposal format will be developed consistent with the requirements established in the Preconstruction Contract.

Task 4.1 Development of GMP

The CMAR will prepare a GMP for the Improvement Projects that are ready for construction.

For each GMP, the CMAR Firm will prepare workshops as follows:

Task 4.1.1 Initial GMP Workshop 1 – CMAR will conduct the Initial GMP workshop (not longer than 2 hours, each) with EPWater and Engineer. This workshop will be used to describe the CMAR's approach to competitive bidding of the packages, and will also detail the CMAR's process for receiving, evaluating, and recommending bids and quotations used to establish the basis for the Initial GMP.

Task 4.1.2 Implement the Construction Procurement Plan for the Initial GMP – CMAR will update the Construction Procurement Plan based on the CMAR's final approach to bidding the Early Work Packages.

Task 4.1.3 Competitive Bidding – CMAR will conduct the competitive bidding process in accordance with the Construction Procurement Plan. CMAR shall follow the bidding requirements of the Construction Procurement Plan if they elect to compete for trade subcontract work.

Task 4.1.4 Initial GMP Workshop 2, Proposal Presentation – CMAR will develop the Initial GMP proposal in accordance with the provisions of the Construction Contract. Within 21 days after receipt of bids and quotations, CMAR will convene a second Initial GMP workshop (not longer than 2 hours, each) to present the Initial GMP Proposal to EPWater. The purpose of this workshop is to 1) familiarize EPWater with the proposal contents and 2) identify the CMAR's basis of selection of trade subcontractor bids and supplier quotations used to establish the Initial GMP.

Task 4.1.5 Negotiation of the Initial GMP Proposal – Within 14 days of the GMP Proposal Presentation workshop with EPWater, the CMAR will convene a series of meetings to negotiate the Initial GMP Proposal.

Task 4.2 Development of the Final GMP

Task 4.2.1 Final GMP Workshop 1 – CMAR will conduct a Final GMP workshop 1 (not longer than 2 hours) with EPWater and Engineer. This workshop will be used to describe the CMAR's approach to competitive bidding of the remainder of the work not incorporated in the Initial GMP. CMAR will also detail the process for receiving, evaluating and recommending bids and quotations used to establish the basis for the Final GMP.

Task 4.2.2 Implement the Construction Procurement Plan – CMAR will update the Construction Procurement Plan based on the CMAR's final approach to bidding the project. CMAR will use the Draft 100% Design Submittal documents for the technical content to be provided in the trade subcontract bid documents, and equipment and material requests for quotations.

Task 4.2.3 Competitive Bidding – CMAR will conduct the competitive bidding process in accordance with the Construction Procurement Plan. CMAR shall follow the bidding requirements of the Construction Procurement Plan if they elect to compete for trade subcontract work.

Task 4.2.4 Final GMP Workshop 2, Proposal Presentation – CMAR will develop the Final GMP proposal in accordance with the provisions of the Construction Contract. Within 21 days after receipt of bids and quotations, CMAR will convene a second Final GMP workshop (not longer than 4 hours) to present the Final GMP Proposal to EPWater. The purpose of this

workshop is to 1) familiarize EPWater with the proposal contents and 2) identify the CMAR's basis of selection of trade subcontractor bids and supplier quotations used to establish the Final GMP.

Task 4.2.5 Negotiation of the GMP Proposal – Within 14 days of the Final GMP Proposal Presentation workshop with EPWater, the CMAR will convene a series of meetings to negotiate the Final GMP Proposal.

GMP Proposal Deliverables

Task	Deliverable	Quantity	Media
4.1.1	Minutes from Initial GMP Workshop 1	1	Electronic submittal
4.1.2	Updated Construction Procurement Plan	1	Electronic submittal
4.1.3	Bid schedule Bid and solicitation advertisement(s) Bid and solicitation request(s)	1 1 1	Electronic submittal Electronic submittal Electronic submittal
4.1.4	Initial GMP Proposal	1	Electronic submittal
4.1.5	Negotiated Initial GMP Proposal	1	Electronic submittal
4.2.1	Minutes from Final GMP Workshop 1	1	Electronic submittal
4.2.2	Updated Construction Procurement Plan	1	Electronic submittal
4.2.3	Bid schedule Bid and solicitation advertisement(s) Bid and solicitation request(s)	1 1 1	Hard copy and 1 PDF digital file Hard copy and 1 PDF digital file Hard copy and 1 PDF digital file
4.2.4	Final GMP Proposal	1	Hard copy and 1 PDF digital file
4.2.5	Negotiated Final GMP Proposal	1	Hard copy and 1 PDF digital file

B. CONSTRUCTION-PHASE SERVICES

Construction-phase services will include the following activities:

Project Management

1. Provide all Key Personnel identified in the RFP and other personnel necessary to fully meet the CMAR Firm's obligations for construction services;
2. In conformance with the CMAR contract, obtain the necessary bonds and insurance;
3. Within 14 days of the notice to proceed for the construction phase, update the construction management plan and implement the safety, quality, and subcontractor management plans;
4. Convene and manage up to three (3) Project kick-off meetings for construction-phase services;
5. Coordinate with various local and state agencies, stakeholders, and community meetings, as necessary;
6. Implement procedures for the tracking, review and approval of submittals, shop drawings, pay requests, etc.;
7. Manage shop drawing preparation for permanent equipment and materials to be incorporated into the project;

Construction

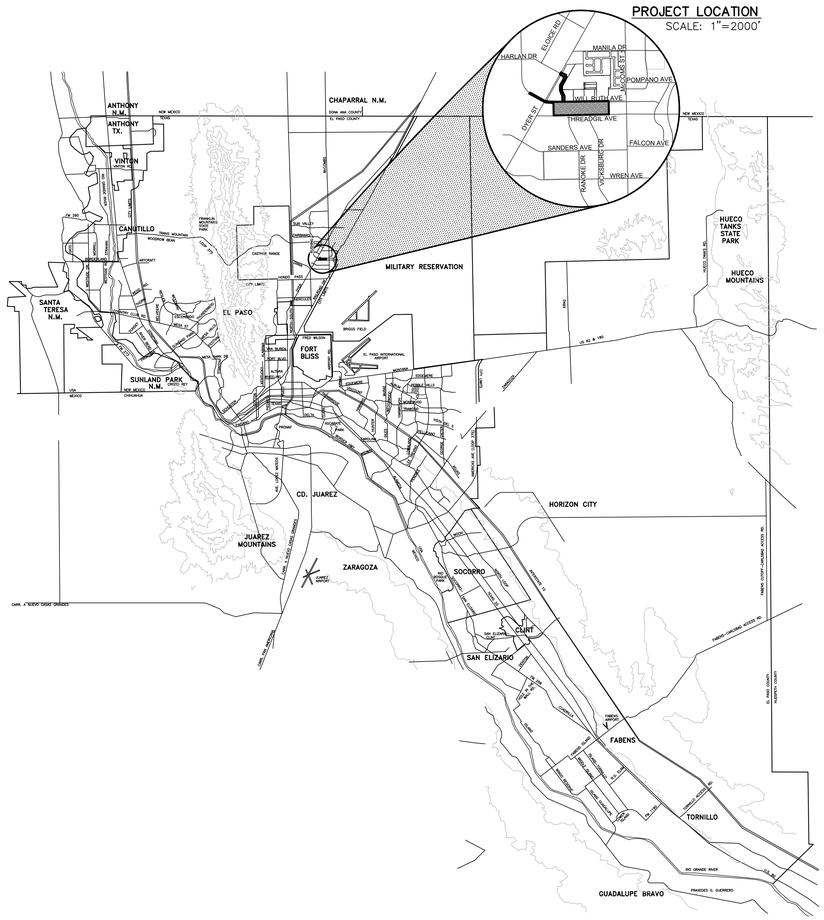
1. Perform construction in strict accordance with the CMAR Contract;
2. Maintain the project site including storm water runoff, dust control, removal of refuse temporary utilities, etc.;

3. Establish and implement procedures to track, expedite and process all submittals, change orders, and requests for information;
4. Develop, review and process shop drawings and other documents for submission to Engineer;
5. Maintain the critical path method schedule for the Project established in the preconstruction phase, monitor and update the construction schedule monthly, prepare two-week look ahead work schedules consistent with overall schedule;
6. Review and process all pay applications from subcontractors;
7. Conduct monthly progress meetings to be attended by EPWater, the Engineer, on-site subcontract trade foremen and/or superintendents;
8. Procure material and equipment to support construction activities of the CMAR and their trade subcontractors;
9. Coordinate and manage all construction including all required facilities, appurtenances, site improvements, and other associated work required to make a complete and operable system within the GMP and the specified contract time;
10. Provide regular inspection of all construction work performed by the CMAR and their subcontractors to ensure conformance with the contract documents;
11. Prepare and submit timely monthly progress report and payment application with current cost and schedule information;
12. Maintain current hard copies of project as-built drawings, including all subcontracted work, and submit monthly in hard copy, PDF and electronic format, as specified by the CMAR contract;

Warranty and Closeout

1. Supervise and manage the warranties provided to EPWater for the equipment and construction work;
2. Gather warranty work items from the subcontractors and vendors, and provide these to EPWater upon final completion of the Project;
3. Conduct a walk-through with EPWater and Engineer to ensure that EPWater, Engineer, and CMAR are in agreement that the construction phase work is complete before the one-year warranty goes into effect; this includes substantial and final completion walkthroughs
4. Implement close-out procedures necessary for EPWater to accept the Project as being finally complete; provide lien waivers from all subcontractors and material suppliers.

ATTACHMENT C – WILL RUTH POND AND CONVEYANCE IMPROVEMENTS AND PALISADES STORMWATER SYSTE AND TRAILHEAD IMPROVEMENTS: DESIGN DRAWINGS



LOCATION MAP
SCALE: 1"=2 MILES

THESE PLANS WERE RELEASED UNDER THE AUTHORITY OF MARCOS MEDINA, PE #93830 TO BE ISSUED AS A **100% SUBMITTAL** FOR REVIEW ONLY. IT IS NOT TO BE USED FOR CONSTRUCTION OR FINAL PERMIT ISSUANCE.

OWNER

el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT

PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

el paso WATER

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

BID NUMBER: SW53-22

OCTOBER 2022

PUBLIC SERVICE BOARD MEMBERS

DR. KRISTINA O. MENA	CHAIR
DR. IVONNE SANTIAGO	VICE CHAIR
BRYAN MORRIS	SECRETARY-TREASURER
STEFANIE BLOCK URIBARRI	MEMBER
CHARLIE INTEBI	MEMBER
LISA SAENZ	MEMBER
MAYOR OSCAR LEESER	EX-OFFICIO MEMBER

JOHN E. BALLIEW, P.E.	PRESIDENT/CEO
MARCELA NAVARRETE, C.P.A.	VICE PRESIDENT
PAUL RIVAS.	INTERIM VICE PRESIDENT
IRAZEMA ROJAS, P.E.	INTERIM CHIEF TECHNICAL OFFICER
FELIPE LOPEZ, P.E.	CHIEF OPERATIONS OFFICER-DISTRIBUTION AND COLLECTION
MARTIN NORIEGA, P.E.	CHIEF OPERATIONS OFFICER-SUPPORT
GILBERT TREJO, P.E.	INTERIM CHIEF OPERATIONS OFFICER-PRODUCTION AND TREATMENT
GISELA DAGNINO, P.E.	CHIEF OPERATIONS OFFICER - STORMWATER

LOCATION MAP SCALE 1" = 500'

GENERAL NOTES:

1. THE CONTRACTOR SHALL VISIT AND BECOME FAMILIAR WITH THE PROJECT SITE PRIOR TO SUBMITTING BIDS.
2. THE CONTRACTOR SHALL SCHEDULE AND PERFORM WORK SO AS TO PROVIDE PROPER PASSAGE OF ANY STORM WATER DURING THE COURSE OF CONTRACTOR OPERATIONS. ALL LABOR, TOOLS, EQUIPMENT AND SUPERVISION REQUIRED TO ASSURE SUCH PROPER PASSAGE OF RUNOFF WATER AND ANY REMOVAL OR HANDLING OF WATER IN ORDER TO MAINTAIN DRY CONDITIONS SHALL BE CONSIDERED AS INCIDENTAL TO THE REMAINDER OF THE WORK AND SHALL BE AT THE EXPENSE OF THE CONTRACTOR. CONTRACTOR SHALL PUMP THE WATER OUT OF THE BASIN AFTER A STORM EVENT. THE PUMPING OPERATIONS AND DISCHARGE POINTS SHALL BE COORDINATED AND APPROVED BY EL PASO WATER. CONTRACTOR IS RESPONSIBLE FOR FULL PROJECT SITE ONCE THE NOTICE TO PROCEED IS ISSUED. THE CONTRACTOR SHALL PROTECT NEW DRAINAGE STRUCTURES FROM ALL STORM EVENTS. STRUCTURES THAT ARE DAMAGED SHALL BE REMOVED AND REPLACED AT CONTRACTOR'S EXPENSE.
3. VERIFY ALL DIMENSIONS AND GRADES BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR IMMEDIATELY NOTIFYING THE ENGINEER AND THE OWNER OF ANY DISCREPANCIES.
4. ESTABLISH A TRUCK ROUTE AND OBTAIN ITS APPROVAL. TRUCK ROUTE MUST BE APPROVED BY THE CITY OF EL PASO AND STREET AND MAINTENANCE DEPARTMENT. CONTRACTOR SHALL MAINTAIN UPDATED PERMITS AT ALL TIMES.
5. ACQUIRE REQUIRED PERMITS FROM THE CITY OF EL PASO PRIOR TO DEMOLITION AND NEW CONSTRUCTION. THE COST OF THE PERMITS WILL BE AT THE CONTRACTOR'S EXPENSE.
6. THE CONTRACTOR SHALL COMPLY WITH ALL STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS, PERTAINING TO THE LOCATION OF ALL UTILITY FACILITIES. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES CAUSED BY HIS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES IN THE PLANNING AND CONDUCTING OF EXCAVATION. EL PASO WATER MAKES NO REPRESENTATION PERTAINING THERE TO AND ASSUMES NO RESPONSIBILITY OF LIABILITY. THEREFORE, IF THE UTILITY FACILITIES ARE DAMAGED DURING CONSTRUCTION ALL PAVEMENT, ADJACENT UTILITIES, STRUCTURES, ETC. DISTURBED OR DAMAGED AS A RESULT OF CONSTRUCTION SHALL BE REPLACED TO ORIGINAL OR BETTER CONDITION BY THE CONTRACTOR AT NO ADDITIONAL COST TO EL PASO WATER. UNDERGROUND/OVERHEAD UTILITY FACILITIES SHOWN ON THESE DRAWINGS ARE FOR PLANNING DESIGN PURPOSES ONLY. OTHER UTILITY FACILITIES MAY EXIST WHICH ARE NOT SHOWN ON THE DRAWINGS. THE LOCATION, DEPTH AND SIZE OF THESE UTILITIES SHOWN ARE FOR INFORMATION PURPOSES ONLY AND MUST BE VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL CONTACT A NOTIFICATION CENTER OR THE PROPER UTILITY COMPANY 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE FACILITY'S EXACT DEPTH AND LOCATION BY SAFE AND ACCEPTABLE MEANS WITHIN THE MARKED FACILITY AREA. THE CONTRACTOR IS EXPECTED TO MAINTAIN A MINIMUM CLEARANCE OF (2) TWO FEET PLUS THE WIDTH OF THE LINE BETWEEN MARKED AND UNEXPOSED FACILITIES AND THE CUTTING EDGE OR POINT OF ANY POWER-OPERATED EXCAVATION OR EARTH-MOVING EQUIPMENT. EXCAVATION SHOULD BE PERFORMED VERY CAREFULLY WITH HAND TOOLS AND WITHOUT DAMAGE AND SHALL BE DONE AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR IS RESPONSIBLE FOR PAYING COST OF FEES REQUIRED TO HOLD EL PASO ELECTRIC POWER POLES IN ORDER TO INSTALL REQUIRED ITEMS.
7. THE UNDERGROUND UTILITIES SHOWN ON THE SURVEY HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND UTILITY COMPANY AS-BUILT DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES ARE IN THE EXACT LOCATION INDICATED. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
8. CONTRACTOR SHALL NOTIFY NEIGHBORING PROPERTY OWNERS OF CONSTRUCTION ACTIVITIES 2 WEEKS BEFORE CONSTRUCTION BEGINS AND COORDINATE WITH EL PASO WATER FOR ALL RESIDENT/BUSINESS COORDINATION EFFORTS.
9. DO NOT ENTER PRIVATE PROPERTY WITHOUT PRIOR WRITTEN APPROVAL BY THE OWNER.
10. SHOP DRAWINGS SHALL BE PREPARED WITH SUFFICIENT DETAIL AND NOTATION FOR FIELD ERECTION AND INSTALLATION. SHOP DRAWINGS SHALL BE SEPARATE DRAWINGS PREPARED BY THE SUPPLIER OF MATERIALS. PHOTO COPIES OF THE CONTRACT DRAWINGS FOR USE AS SHOP DRAWINGS WILL NOT BE PERMITTED.
11. CONTACT A NOTIFICATION CENTER OR THE PROPER UTILITY COMPANY UTILITY LOCATOR SERVICES 48 HRS. PRIOR TO PERFORMING ANY EXCAVATION. ADDITIONALLY, THE FOLLOWING LOCAL PERSONNEL SHALL BE CONTACTED BY THE CONTRACTOR PRIOR TO COMMENCING WORK.

UTILITY AND AGENCY CONTACTS		
COMPANY NAME	CONTACT	PHONE NUMBER
EL PASO ELECTRIC CO. (DISTRI. DEPT.)	FRANK VEJIL	(915) 543-2075
EL PASO WATER (WATER & WASTEWATER)	ALEX SOTO	(915) 594-5609
EL PASO WATER (STORMWATER)	ALBERTO HERNANDEZ	(915) 540-2977
EL PASO WATER (STORMWATER OPERATIONS)	ENRIQUE OCHOA	(915) 263-4070
TEXAS GAS SERVICE	FRANCISCO CAMPA	(915) 680-7275
SPECTRUM	RAUL ROJAS	(915) 373-6326
AT&T	DUSTIN FLAHIE	(915) 478-2462
EL PASO STREET AND MAINTENANCE DEPT.	HAROLD KUTZ	(915) 212-0151
EP SAM (SIGN & STRIPING)	RUBEN GONZALEZ	(915) 212-0151
EP SAM (TRAFFIC CONTROL PERMITS)	RUBEN ARZAGA	(915) 212-0151
EP SAM (ILLUMINATION)	ORLANDO TREJO	(915) 212-0151
EP SAM (LANDSCAPE & IRRIGATION)	ORLANDO TREJO	(915) 212-8014
ROBIN HOOD GAS SERVICES	JOHN HERNANDEZ	(915) 539-1955
ROBIN HOOD PARK MANAGEMENT	LORRAINE LEE	(915) 234-2430
EMERGENCIES AND HAZMAT	–	911
DIG TESS	–	(800) 344-8377
EP LIGHT & COMMUNICATION:	LINESPOTS@ELPASOTEXAS.GOV	

12. KEEP ALL DEBRIS AND SOILS OUT OF DRAINS, CULVERTS, AND DROP INLETS AND ENSURE THAT THEY DO NOT BECOME CLOGGED AS A RESULT OF CONSTRUCTION ACTIVITIES.
13. CONTRACTOR SHALL PROCURE AND PAY FOR THE NECESSARY PERMIT(S) FROM THE CITY OF EL PASO FOR REMOVAL OF CONSTRUCTION OVERBURDEN DEBRIS TO THE DUMP SITE LOCATION. POSSIBLE HAZARDOUS MATERIAL IDENTIFIED MUST BE COMMUNICATED IMMEDIATELY TO THE CONSTRUCTION MANAGER AND EL PASO WATER PROJECT MANAGER.
14. SECURE ALL WORK AREAS TO PREVENT ANY UNAUTHORIZED ACCESS.
15. KEEP THE TOTAL PROJECT LIMITS IN A CLEAN AND SAFE CONDITION. SEQUENCING OF WORK DOES NOT RELIEVE THE CONTRACTOR OF HOUSE CLEANING THROUGHOUT THE COMPLETE PROJECT LIMITS. ACTIVITIES INCLUDED, BUT ARE NOT LIMITED TO, WATER EXTRACTION, STREET SWEEPING, DEBRIS REMOVAL, ETC.
16. PROTECT THE NEW CONSTRUCTION FROM DAMAGE.
17. SOILS REPORT IS AVAILABLE FOR INFORMATION PURPOSES ONLY AND UPON REQUEST, BUT IT IS NOT PART OF THE CONTRACT DOCUMENTS.
18. SUBMITTALS WHICH UTILIZE ELECTRONIC FILES OF ANY OF THE DRAWINGS IN THE CONTRACT DOCUMENTS MAY NOT BE USED, UNLESS A WRITTEN AGREEMENT THAT STIPULATES THE CONDITION UNDER WHICH THESE DOCUMENTS MAY BE USED, IS EXCUTED BETWEEN THE USER AND THE ENGINEER OF RECORD.
19. MATERIALS BEING EXCAVATED ARE UNCLASSIFIED. MATERIALS SHALL BE CONSIDERED UNCLASSIFIED THROUGHOUT THE ENTIRE PROJECT LIMITS. REMOVAL OF UNCLASSIFIED MATERIALS ENCOUNTERED DURING EXCAVATION SUCH AS LUMPED SUBSOIL, BOULDERS, ROCK, DEBRIS AND CONCRETE, OF ANY TYPE AND SIZE WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO THE EXCAVATION ITEM. POSSIBLE HAZARDOUS MATERIAL IDENTIFIED MUST BE COMMUNICATED IMMEDIATELY TO THE CONSTRUCTION MANAGER AND EL PASO WATER PROJECT MANAGER.
20. SURVEY WAS PREPARED BY BARRAGAN & ASSOCIATES INC. ON MARCH 1ST, 2017 (SEE SURVEYORS GENERAL NOTES IN THIS SHEET FOR DATUM INFORMATION).
21. IF DURING CONSTRUCTION ACTIVITIES, CONTRACTOR FORESEES WORK MAY AFFECT PRIVATE STRUCTURES, HE MUST NOTIFY THE ENGINEER IMMEDIATELY.
22. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AUTOMOBILE AND PEDESTRIAN ACCESS AT ALL TIMES, INCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS TO AREAS RESIDENTS AND FACILITY USERS. THIS INCLUDES, BUT NOT LIMITED TO DRIVEWAYS, STREETS AND ALLEYS. THIS REQUIREMENT IS SUBSIDIARY TO THE BID PREVENTIVE MEASURES THROUGHOUT CONSTRUCTION.
23. CONTRACTOR SHALL AVOID THE USE OF HEAVY MACHINERY NEAR OR ADJACENT TO CONCRETE STRUCTURES AND CONDUITS. ANY DAMAGE CAUSED TO SUCH STRUCTURES SHALL BE REPLACED AT THE CONTRACTOR'S COST.
24. ANY CITY MONUMENTS DAMAGED OR RELOCATED DUE TO CONSTRUCTION ACTIVITIES SHALL BE REPLACED AND/OR RELOCATED BY A LICENCED SURVEYOR AND CERTIFIED.
25. REMOVAL OF CURB AND GUTTER SHALL BE IN SECTIONS NO LESS THAN 10' OR TO THE NEAREST CONSTRUCTION JOINT. ON SIDEWALK SHALL BE IN SECTIONS NO LESS THAN 5' (TYPICAL).
26. THE PROJECT WILL BE CONSIDERED COMPLETE WHEN THE CITY OF EL PASO ACCEPTS THE CONSTRUCTED IMPROVEMENTS FOR MAINTENANCE.
27. SUBMIT COPY OF THE FINAL AS-BUILT PLANS TO PROJECT MANAGER PRIOR TO FINAL INSPECTION/WALKTHROUGHS; ADDITIONAL COMMENTS MAY BE GENERATED UPON REVIEW AND FOLLOW UP INSPECTION(S) FROM AS-BUILT DRAWINGS AND REDLINES.

PROJECT CONTROL/BENCHMARK REFERENCE/LEGENDS

IMPROVEMENTS
- BUILDING
- CONCRETE WALL
- ROCK WALL
- BRICK WALL
- CURB
- GATE
- PIPE
- x x CHAIN LINK FENCE
- IRON FENCE
- WOOD FENCE

UTILITY LINES
- G GAS LINE
- P OVERHEAD POWER LINE
- U UTILITY LINE
- S SANITARY SEWER
- W WATER LINE
- SD STORM SEWER
- *P.R.E.P.C.T. PLAT RECORDS OF EL PASO COUNTY, TEXAS.

LINE WORK
- CENTER LINE
- PROPERTY LINE
- PROPERTY LINE ADJACENT LOTS

UTILITY
- ANCHOR
- UTILITY BOX
- FIRE HYDRANT
- GM GAS METER
- GV GAS VALVE
- WV WATER VALVE
- WM WATER METER
- IV IRRIGATION VALVE
- POWER POLE
- STREET LAMP
- S MANHOLE, SEWER
- W MANHOLE, WATER
- METAL PLATE
- SIGN
- D MANHOLE, STORM SEWER

HATCH/PATTERNS
- CONCRETE
- PAVEMENT
- ROCK MORTARED (RIP-RAP)
- 3995 MAJOR CONTOUR
- 3992 MINOR CONTOUR

ABBREVIATIONS

- ASV.....ANTI-SIPHON VALVE
- CATV.....CABLE TV PEDESTAL
- CC.....CONCRETE
- EBX.....ELECTRIC BOX
- FH.....FIRE HYDRANT
- FOMKR.....FIBER OPTIC MARKER
- GM.....GAS METER
- GP.....GUARDPOST
- GR.....NATURAL GROUND
- GU.....GUTTER
- GV.....GAS VALVE
- IV.....IRRIGATION VALVE
- LP.....LIGHT POLE
- MBX.....MAILBOX
- NOM.....NOMINAL
- OC.....OF CENTER
- OCEW.....OF CENTER EACH WAY
- PP.....POWER POLE
- ROE.....RIGHT OF ENTRY
- ROW.....RIGHT OF WAY
- SCO.....SEWER CLEANOUT
- SP.....0.2"ø SIGNPOST
- TBA.....TO BE ABANDONED
- TBR.....TO BE REMOVED
- TBX.....TELEPHONE PEDESTAL
- TC.....TOP OF CURB
- TD.....TOP OF DRIVEWAY
- TG.....TOP OF GROUND
- TMH.....TELEPHONE MANHOLE
- TP.....TOP OF PAVEMENT
- TS.....TOP OF SIDEWALK
- TSBX.....TRAFFIC SIGNAL BOX
- TW.....TOP OF WALL
- WV.....WATER VALVE
- WM.....WATER METER

SURVEYORS GENERAL NOTES:

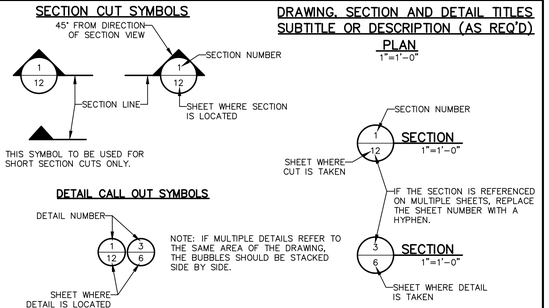
1. LOCATION OF ALL UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ALL UTILITY COMPANIES FOR THE EXACT LOCATION OF UNDERGROUND AND OVERHEAD UTILITIES INCLUDING UTILITIES NOT SHOWN ON PLANS. THE CONTRACTOR SHALL PROTECT ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND ANY UTILITIES NOT SHOWN ON THIS PLAN DURING CONSTRUCTION. THE CONTRACTOR WILL PERFORM ALL UTILITY INSTALLATION.
2. REMOVAL AND RELOCATION'S AS PER LOCAL UTILITY CONSTRUCTION SPECIFICATIONS BEARINGS SHOWN ARE BASED PLAT OF PARKWOOD SUBDIVISION UNIT 7 AS RECORDED IN VOLUME 40, PAGE 30, PLAT RECORDS OF EL PASO COUNTY, TEXAS. DISTANCES ARE GROUND A AND MAY BE CONVERTED TO GRID DIVIDING BY 1.000231.
3. THESE NAVD 88 ELEVATIONS WERE DERIVED FROM APPLICATION OF THE GEOID 2003 MODEL TO RTK CO-OP ELLIPSOID HEIGHTS (ACCURACY ± 0.16') AND THEN CONVERTED TO CITY DATUM. (ELEVATIONS SHOWN ARE IN CITY DATUM)
4. THIS PROPERTY MAY BE SUBJECT TO EASEMENTS WHETHER OF RECORD OR NOT. (NOT SHOWN).
5. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES ARE IN THE EXACT LOCATION INDICATED. THEY ARE LOCATED AS ACCURATE AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

BENCHMARK:

CITY MONUMENT LOCATED AT CENTERLINE INTERSECTION OF RANCHITO AVENUE AND RUTLEDGE PLACE.

ELEVATION: 3899.33' (NAVD 88) (BY RTK OBSERVATION)

SECTION AND DETAIL CROSS REFERENCING



SPECIFICATION REFERENCE:

XX XXX SERIES OF NUMBERS ON PLANS USED TO CROSS-REFERENCE THE APPLICABLE TECHNICAL SPECIFICATION SECTION.

SHEET INDEX

DESCRIPTION	SHEET NO.
COVER SHEET	–
AREA MAPS, ABBREVIATIONS, SHEET INDEX, GENERAL NOTES, BENCHMARK REFERENCING AND LEGEND	C1.0
SURVEY/MAPPING	
TOPOGRAPHIC SURVEY	V0.0–V0.5
CIVIL	
CONSTRUCTION SEQUENCE PLAN	C2.0
PROPOSED ROADWAY TYPICAL SECTIONS	C3.0–C3.1
EXISTING UTILITY PLAN	C4.0–C4.3
DEMOLITION PLAN	C5.0–C5.3
OVERALL WATERSHED MAP	C6.0–C6.1
SITE PLAN	C7.0–C7.3
HORIZONTAL & VERTICAL CONTROL PLANS	C8.0–C8.2
GRADING PLAN	C9.0–C9.2
NOT USED	C10.0
DETENTION POND PLAN & PROFILES	C11.0–C11.1
DYER ST. PLAN & PROFILES	C12.0
RUSHING ROAD PAVEMENT, SIGNING & STRIPING PLAN	C12.1
WILL RUTH AVENUE PAVEMENT, SIGNING & STRIPING PLAN	C12.2–C12.4
THREADGILL AVENUE PAVEMENT, SIGNING & STRIPING PLAN	C12.5–C12.7
DYER STREET PAVEMENT, SIGNING & STRIPING PLAN	C12.8–C12.9
DYER STREET PLAN & PROFILES	C12.10
STORM SEWER PLAN & PROFILES	C13.0–C13.8
STORM LATERAL PLAN & PROFILES	C14.0–C14.1
PIPE SCHEDULE	C14.2
TYPICAL ROADWAY DETAILS	C15.0–C15.9
DRAINAGE DETAILS	C16.0–C16.11
SPILLWAY SECTIONS AND DETAILS	C16.12
ROADWAY UTILITY SECTIONS	C17.0–C17.12
SWPPP NOTES	C18.0
SWPPP PLANS	C19.0
SWPPP DETAILS	C20.0
TRAFFIC CONTROL AND DETOUR PLANS	C21.0–C21.13
TRAFFIC CONTROL STANDARDS	C21.14–C21.21
LANDSCAPE	
LANDSCAPE SITE PLAN	L1.01–L1.04
LANDSCAPE IRRIGATION PLAN	L2.01–L2.03
LANDSCAPE DETAILS	L3.01–L3.03
STRUCTURAL	
STRUCTURAL NOTES	S1.0
STRUCTURAL DETAILS	S1.1
STRUCTURAL SITE PLAN	S1.2
STRUCTURAL OUTLET PLAN 1 AND 2	S2.0–S2.1
STRUCTURAL SPILLWAY SECTIONS AND DETAILS	S2.2
STRUCTURAL OUTLET PLAN 3 AND 4	S3.0–S4.0
STRUCTURAL INLET 1 – 19	S5.0–S13.0
STRUCTURAL JUNCTION BOX 1 – 3	S14.0–S15.0
STRUCTURAL INLET 20 –31	S16.0–S26.0
STRUCTURAL JUNCTION BOX 5 – 8	S27.0–S30.0
STRUCTURAL DETAILS	S31.0
WATER AND SEWER	
SANITARY SEWER PLAN & PROFILE	1 OF 5
SANITARY SEWER PLAN & PROFILE	2 OF 5
SANITARY SEWER PLAN & PROFILE	3 OF 5
SANITARY SEWER PLAN & PROFILE	4 OF 5
SANITARY SEWER DETAILS	5 OF 5
WATER PLAN	1 OF 5
WATER PLAN	2 OF 5
WATER PLAN	3 OF 5
WATER PLAN	4 OF 5
WATER DETAILS	5 OF 4

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
1-800-DIG-TESS
1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES
linespots@elpasotexas.gov

ENGINEER'S SEAL
THESE PLANS WERE RELEASED UNDER THE AUTHORITY OF MARCOS MEDINA, PE #93830 TO BE ISSUED AS A **100% SUBMITTAL** TO EL PASO WATER FOR REVIEW. IT IS NOT TO BE USED FOR CONSTRUCTION OR FINAL PERMIT ISSUANCE.

DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

GENERAL NOTES & SHEET INDEX PLAN

THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH POND AND CONVEYANCE IMPROVEMENTS", MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO. 16-133
SEQUENCE NO. 1 OF 1
SHEET NO. C1.0

F:\16133\DWG\16133 - C1.0_DWG_General Notes & Sheet Index Plan.dwg Time:Oct07,2022 - 12:42pm Login:elejandra

TOPOGRAPHIC SURVEY

ALONG WILL RUTH AVENUE, ROANOKE DRIVE, RUTLEDGE PLACE, RANCHITO AVENUE, RUSHING ROAD, THREADGILL AVENUE, AND DYER STREET, CITY OF EL PASO, EL PASO COUNTY, TEXAS

GRAPHIC SCALE
40' 0 20' 40' 80'
SCALE: 1"=40'

BENCHMARK

AN EXISTING CITY MONUMENT LOCATED ON THE CENTERLINE INTERSECTION OF RANCHITO AVENUE AND RUTLEDGE PLACE.

ELEVATION= NAVD 88 (3899.33)

GENERAL NOTES

1. LOCATION OF ALL UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ALL UTILITY COMPANIES FOR THE EXACT LOCATION OF UNDERGROUND AND OVERHEAD UTILITIES INCLUDING UTILITIES NOT SHOWN ON PLANS. THE CONTRACTOR SHALL PROTECT ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND ANY UTILITIES NOT SHOWN THIS PLAN DURING CONSTRUCTION. THE CONTRACTOR WILL PERFORM ALL UTILITY INSTALLATION. REMOVAL AND RELOCATION'S AS PER LOCAL UTILITY CONSTRUCTION SPECIFICATIONS.
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3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF EL PASO STANDARD SPECIFICATIONS AND DETAILS.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITTING NECESSARY FOR EARTHWORK OPERATIONS.
5. CONTRACTOR SHALL COORDINATE RELOCATION OF ALL EXISTING UTILITIES AND MANHOLE WITH RESPECTIVE UTILITY COMPANIES.
6. CONTRACTOR SHALL PERFORM ALL EARTHWORK REQUIREMENTS AS PER GEOTECHNICAL STUDY REPORT.
7. A CALL WAS PLACED TO 811 TO ACQUIRE LINE-SPOTS. CONFIRMATION NUMBERS ARE 16856152?6, 19555100093, AND 16856152?0.
8. ALL IMPROVEMENTS AND TOPOGRAPHIC SHOTS OBSERVED, ARE SIDEWALK TO SIDEWALK (NO FENCES OR WALLS SHOWN) AS PER CLIENTS REQUEST.

SURVEY NOTES

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5. THIS SURVEY IS NOT A BOUNDARY SURVEY AND SHALL NOT BE USED AS A BOUNDARY SURVEY. (LINEWORK SHOWN IS FOR DRAWING PURPOSES ONLY.)

DUST AND EROSION CONTROL NOTE

CONTRACTOR SHALL MAKE PROVISIONS FOR TEMPORARY DUST AND EROSION CONTROL WHERE EXTENSIVE DIRT OR DUST OPERATIONS ARE PERFORMED. USE WATER SPRINKLING AND OTHER METHODS TO LIMIT DUST AND DIRT MIGRATION. COMPLY WITH GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.

BEFORE YOU DIG - CALL

EL PASO ELECTRIC COMPANY	1-800-592-1634
AT & T	1-877-213-1053
SOUTHERN UNION GAS COMPANY	(915) 544-6300
EMERGENCY HOT LINE	562-8411/562-2003
PUBLIC SERVICE BOARD (WATER&SEWER)	(915) 594-5500
TIME WARNER CABLE	1-800-222-5355
EL PASO NATURAL GAS COMPANY	1-800-334-8047
TEXAS EXCAVATION SAFETY SYSTEM	811

LEGEND

- CURB
- IRON FENCE
- POST - BOLLARD
- ROCK WALL
- SIGN
- POWER POLE
- WATER VALVE
- FIRE HYDRANT
- BUSH
- WATER METER
- ANCHOR
- UTILITY BOX
- LAMP
- MANHOLE, COMMUNICATIONS
- MANHOLE, SEWER
- MAILBOX
- TRAFFIC SIGNAL
- BENCH
- 3905 MAJOR CONTOUR
- 3904 MINOR CONTOUR
- TRAFFIC SIGNAL LIGHT
- POWER LINE
- SANITARY SEWER
- APPROXIMATE LOCATION OF WATER LINE
- CONCRETE
- PAVEMENT
- APPROXIMATE LOCATION OF COMMUNICATIONS LINE
- APPROXIMATE LOCATION OF UNDERGROUND ELECTRIC LINE
- APPROXIMATE RIGHT-OF-WAY (AS PER PLANS, REFER TO SURVEY NOTE NO. 4)

REVISIONS		
DATE	DESCRIPTION	BY
03/08/17	ADDED/MODIFIED WATER LINES	DJ
03/20/17	ADDED ADDITIONAL IMPROVEMENTS	DJ
02/26/19	ADDITIONAL TOPO	BB

Date: 03/01/17 Drawn by: DJ Job No. 190225-17

Barragan & Associates Inc.
LAND PLANNING & LAND SURVEYING
TBPLS FIRM # 10151200
10950 Pellicano Dr. Bldg. F - El Paso TX 79935
Phone (915) 591-5709 Fax (915) 591-5706

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PROJECT NAME

WILL RUTH POND PHASE I

SHEET 2

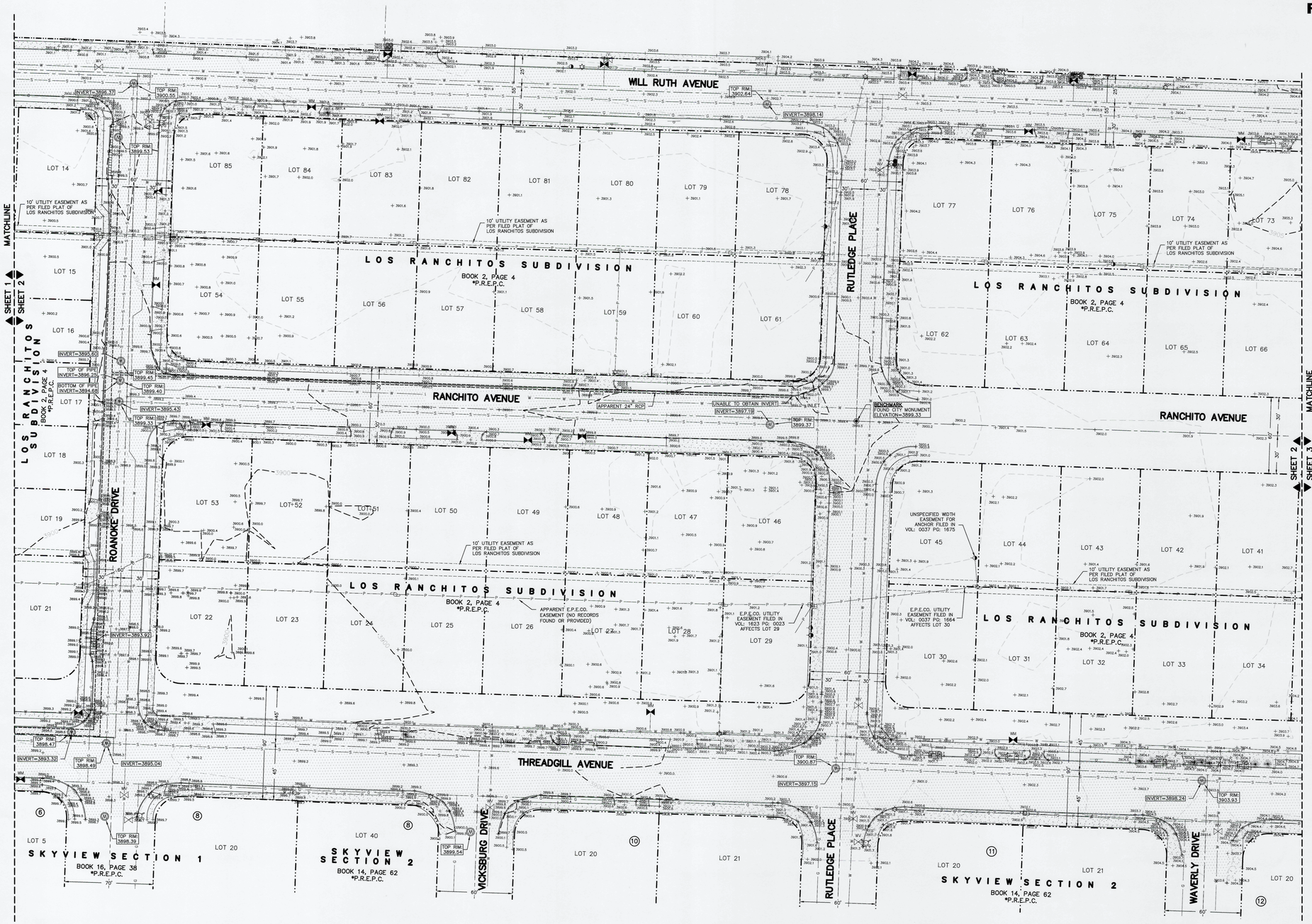
PREPARED BY AND UNDER THE SUPERVISION OF:

STATE OF TEXAS REGISTERED BENITO BARRAGAN 5615 PROFESSIONAL LAND SURVEYOR

BENITO BARRAGAN TX. R.P.L.S. NO. 5615

TOPOGRAPHIC SURVEY

ALONG WILL RUTH AVENUE, ROANOKE DRIVE, RUTLEDGE PLACE, RANCHITO AVENUE, RUSHING ROAD, THREADGILL AVENUE, AND DYER STREET, CITY OF EL PASO, EL PASO COUNTY, TEXAS



GRAPHIC SCALE
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SCALE: 1"=40'

BENCHMARK

AN EXISTING CITY MONUMENT LOCATED ON THE CENTERLINE INTERSECTION OF RANCHITO AVENUE AND RUTLEDGE PLACE.

ELEVATION= NAVD 88 (3899.33)

GENERAL NOTES

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8. ALL IMPROVEMENTS AND TOPOGRAPHIC SHOTS OBSERVED, ARE SIDEWALK TO SIDEWALK (NO FENCES OR WALLS SHOWN) AS PER CLIENTS REQUEST.

SURVEY NOTES

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TIME WARNER CABLE	1-800-222-5355
EL PASO NATURAL GAS COMPANY	1-800-334-8047
TEXAS EXCAVATION SAFETY SYSTEM	811

LEGEND

- CURB
- IRON FENCE
- POST - BOLLARD
- ROCK WALL
- SIGN
- POWER POLE
- WATER VALVE
- FIRE HYDRANT
- BUSH
- WATER METER
- ANCHOR
- UTILITY BOX
- LAMP
- MANHOLE, COMMUNICATIONS
- MANHOLE, SEWER
- MAILBOX
- TRAFFIC SIGNAL
- BENCH
- 3905 MAJOR CONTOUR
- 3904 MINOR CONTOUR
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REVISIONS		
DATE	DESCRIPTION	BY
03/08/17	ADDED/MODIFIED WATER LINES	DJ
03/20/17	ADDED ADDITIONAL IMPROVEMENTS	DJ
02/26/19	ADDITIONAL TOPO	IB

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PROJECT NAME

WILL RUTH POND PHASE I

SHEET 3

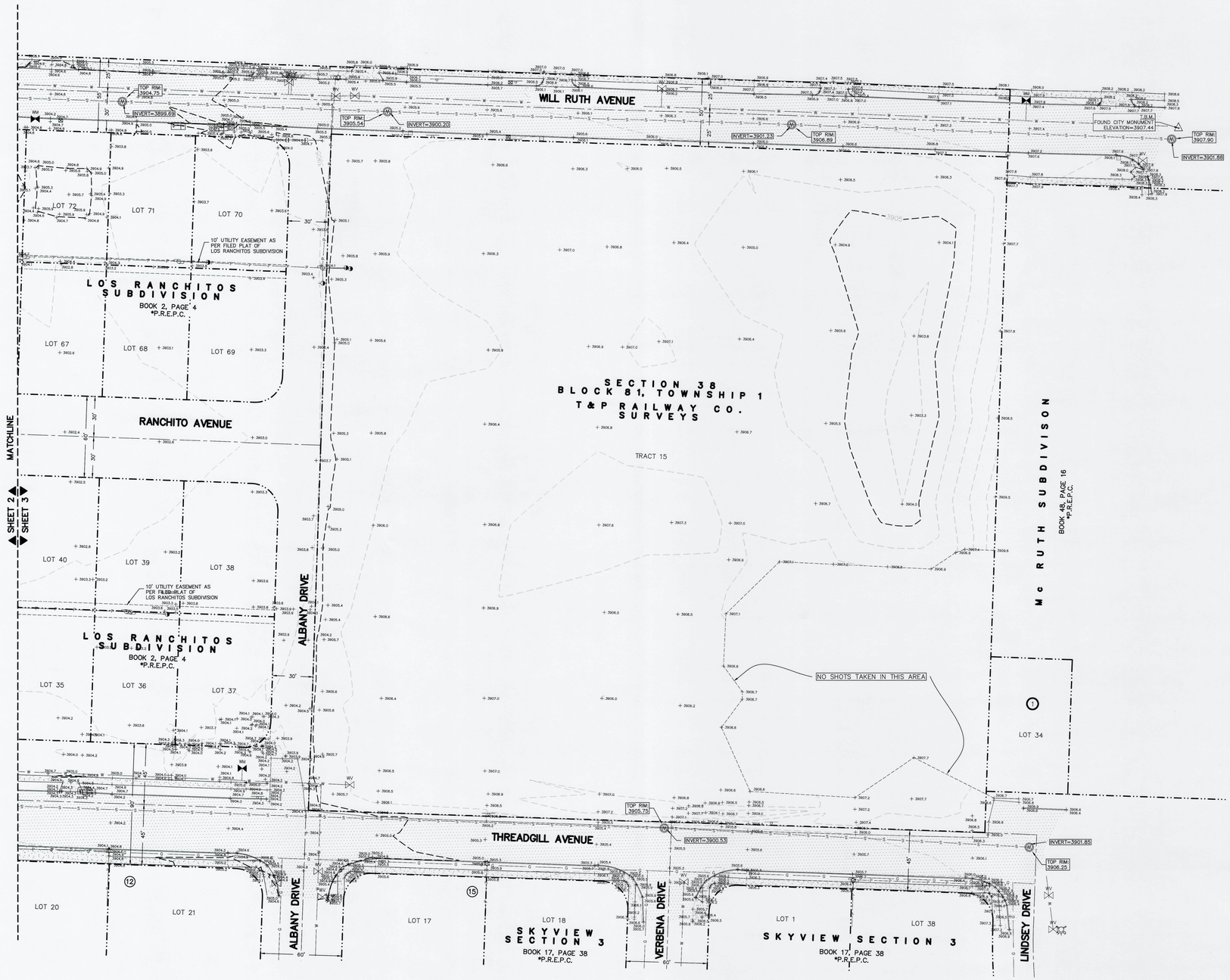
PREPARED BY AND UNDER THE SUPERVISION OF:

STATE OF TEXAS
BENITO BARRAGAN
5615
LICENSED
PROFESSIONAL
LAND SURVEYOR

BENITO BARRAGAN
TX. R.P.L.S. NO. 5615

TOPOGRAPHIC SURVEY

ALONG WILL RUTH AVENUE, ROANOKE DRIVE, RUTLEDGE PLACE, RANCHITO AVENUE, RUSHING ROAD, THREADGILL AVENUE, AND DYER STREET, CITY OF EL PASO, EL PASO COUNTY, TEXAS



GRAPHIC SCALE

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SCALE: 1"=40'

BENCHMARK

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- S — S — SANITARY SEWER
- W — APPROXIMATE LOCATION OF WATER LINE
- CONCRETE
- PAVEMENT
- COM — APPROXIMATE LOCATION OF COMMUNICATIONS LINE
- UGE — APPROXIMATE LOCATION OF UNDERGROUND ELECTRIC LINE
- APPROXIMATE RIGHT-OF-WAY (AS PER PLANS, REFER TO SURVEY NOTE NO. 4)

REVISIONS		
DATE	DESCRIPTION	BY
03/08/17	ADDED/MODIFIED WATER LINES	DJ
03/20/17	ADDED ADDITIONAL IMPROVEMENTS	DJ
02/26/19	ADDITIONAL TOPO	IB

Date: 03/01/17 Drawn by: DJ Job No. 190225-17

Barragan & Associates Inc.
LAND PLANNING & LAND SURVEYING
TBPLS FIRM # 10151200
10950 Pellicano Dr. Bldg. F - El Paso TX 79935
Phone (915) 591-5709 Fax (915) 591-5706

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PROJECT NAME

WILL RUTH POND PHASE I

SHEET 4

PREPARED BY AND UNDER THE SUPERVISION OF:

STATE OF TEXAS REGISTERED BENITO BARRAGAN 5615 PROFESSIONAL LAND SURVEYOR

BENITO BARRAGAN
TX. R.P.L.S. NO. 5615

TOPOGRAPHIC SURVEY

PORTION OUT OF SECTION 38, BLOCK 81, TOWNSHIP 1, TEXAS AND PACIFIC RAILWAY COMPANY SURVEYS, EL PASO COUNTY, TEXAS

GENERAL NOTES

1. LOCATION OF ALL UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ALL UTILITY COMPANIES FOR THE EXACT LOCATION OF UNDERGROUND AND OVERHEAD UTILITIES INCLUDING UTILITIES NOT SHOWN ON PLANS. THE CONTRACTOR SHALL PROTECT ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND ANY UTILITIES NOT SHOWN THIS PLAN DURING CONSTRUCTION. THE CONTRACTOR WILL PERFORM ALL UTILITY INSTALLATION. REMOVAL AND RELOCATION'S AS PER LOCAL UTILITY CONSTRUCTION SPECIFICATIONS.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS, CONDITIONS, AND ELEVATIONS ON SITE AND SHALL CONTACT THE DESIGN ENGINEER AND REPORT ANY DISCREPANCIES, OMISSIONS AND/OR ERRORS ON PLANS PRIOR TO COMMENCING WORK.
3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF EL PASO STANDARD SPECIFICATIONS AND DETAILS.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITTING NECESSARY FOR EARTHWORK OPERATIONS.
5. CONTRACTOR SHALL COORDINATE RELOCATION OF ALL EXISTING UTILITIES AND MANHOLE WITH RESPECTIVE UTILITY COMPANIES.
6. CONTRACTOR SHALL PERFORM ALL EARTHWORK REQUIREMENTS AS PER GEOTECHNICAL STUDY REPORT.
7. A CALL WAS PLACED TO TEXAS DIG SAFE NUMBER (811) TO ACQUIRE LINE-SPOTS. CONFIRMATION NUMBER IS 2158946894, 2158946987, AND 2158947010.

SURVEY NOTES

1. BEARINGS SHOWN ARE GRID BEARINGS DERIVED FROM RTK OBSERVATIONS TO THE TEXAS CO-OP NETWORK. REFERRED TO THE TEXAS COORDINATE SYSTEM (NAD 83) CENTRAL ZONE.
2. DISTANCES ARE GROUND DISTANCES AND MAY BE CONVERTED TO GRID DIVIDING BY 1.000231.
3. THESE NAVD 88 ELEVATIONS WERE DERIVED FROM RTK OBSERVATION FROM THE APPLICATION OF THE TEXAS RTK CO-OP NETWORK, GEOID 2012A MODEL. (ACCURACY ± 0.16')
4. THIS PROPERTY MAY BE SUBJECT TO EASEMENTS WHETHER OF RECORD OR NOT, (ONLY EASEMENT LISTED ON THE TITLE COMMITMENT SHOWN). NO ADDITIONAL RESEARCH WAS PERFORMED BY B&A INC. FOR ANY RESERVATION, BUILDING LINE, AND OR EASEMENTS WHICH MAY OR MAY NOT AFFECT SUBJECT PARCEL.
5. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES ARE IN THE EXACT LOCATION INDICATED. THEY ARE LOCATED AS ACCURATE AS POSSIBLE FROM INFORMATION PROVIDED BY OTHERS. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
6. THIS SURVEY IS NOT A BOUNDARY SURVEY AND SHALL NOT BE USED AS A BOUNDARY SURVEY.

BENCHMARK

CITY MONUMENT AT THE INTERSECTION OF RANCHITO AVENUE AND RUTLEDGE PLACE.
N: 10701033.71 (GRID)
E: 410617.59 (GRID)
ELEVATION: 3899.33 (NAVD 88)

T.B.M.

SET NAIL
N: 10702602.53 (GRID)
E: 409871.87 (GRID)
ELEVATION: 3911.06 (NAVD 88)

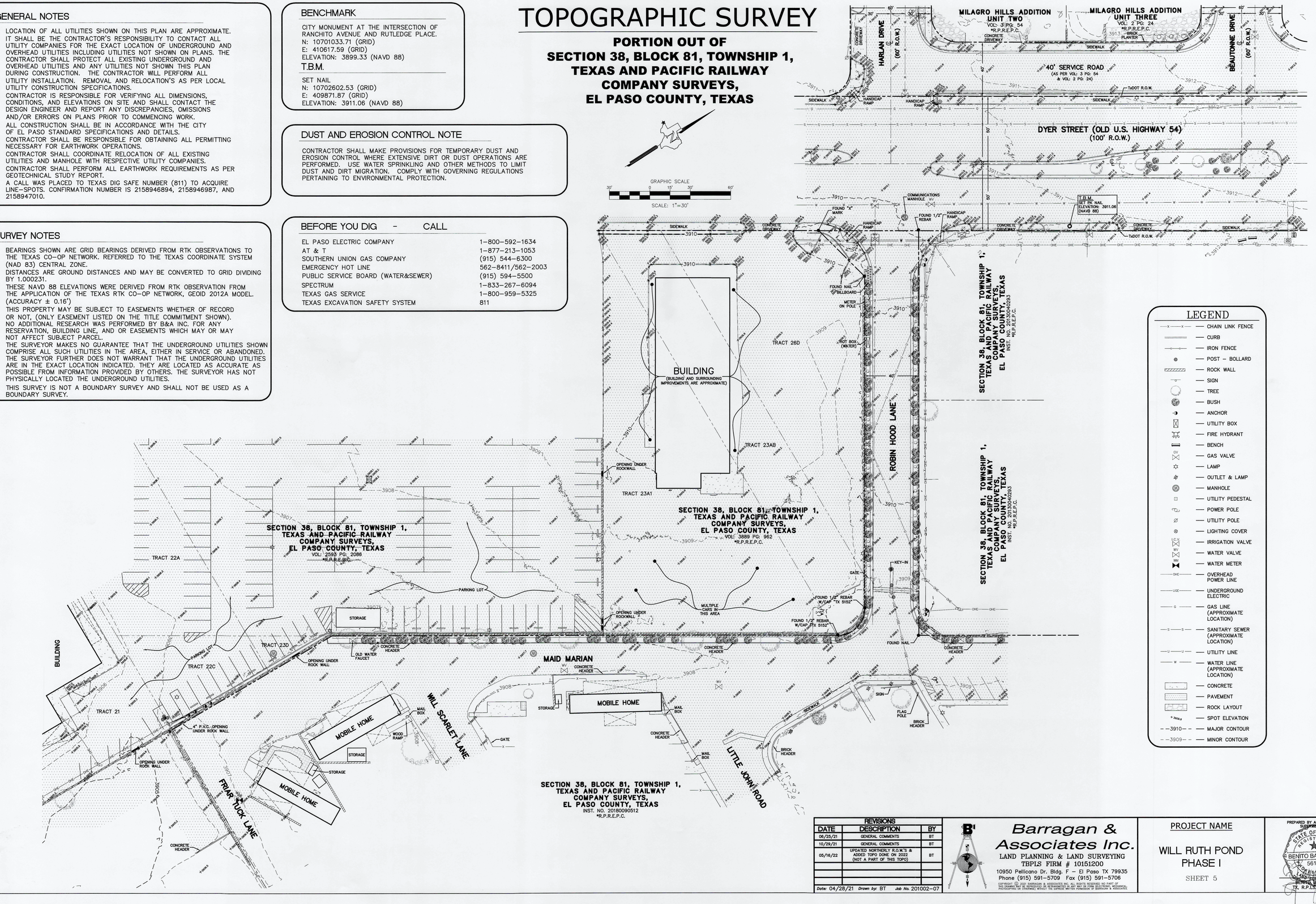
DUST AND EROSION CONTROL NOTE

CONTRACTOR SHALL MAKE PROVISIONS FOR TEMPORARY DUST AND EROSION CONTROL WHERE EXTENSIVE DIRT OR DUST OPERATIONS ARE PERFORMED. USE WATER SPRINKLING AND OTHER METHODS TO LIMIT DUST AND DIRT MIGRATION. COMPLY WITH GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.

BEFORE YOU DIG - CALL

EL PASO ELECTRIC COMPANY	1-800-592-1634
AT & T	1-877-213-1053
SOUTHERN UNION GAS COMPANY	(915) 544-6300
EMERGENCY HOT LINE	562-8411/562-2003
PUBLIC SERVICE BOARD (WATER&SEWER)	(915) 594-5500
SPECTRUM	1-833-267-6094
TEXAS GAS SERVICE	1-800-959-5325
TEXAS EXCAVATION SAFETY SYSTEM	811

GRAPHIC SCALE
30' 0 15' 30' 60'
SCALE: 1"=30'



LEGEND

- CHAIN LINK FENCE
- CURB
- IRON FENCE
- POST – BOLLARD
- ROCK WALL
- SIGN
- TREE
- BUSH
- ANCHOR
- UTILITY BOX
- FIRE HYDRANT
- BENCH
- GAS VALVE
- LAMP
- OUTLET & LAMP
- MANHOLE
- UTILITY PEDESTAL
- POWER POLE
- UTILITY POLE
- LIGHTING COVER
- IRRIGATION VALVE
- WATER VALVE
- WATER METER
- OVERHEAD POWER LINE
- UNDERGROUND ELECTRIC
- GAS LINE (APPROXIMATE LOCATION)
- SANITARY SEWER (APPROXIMATE LOCATION)
- UTILITY LINE
- WATER LINE (APPROXIMATE LOCATION)
- CONCRETE
- PAVEMENT
- ROCK LAYOUT
- SPOT ELEVATION
- 3910 MAJOR CONTOUR
- 3909 MINOR CONTOUR

REVISIONS		
DATE	DESCRIPTION	BY
06/25/21	GENERAL COMMENTS	BT
10/29/21	GENERAL COMMENTS	BT
05/16/22	UPDATED NORTHERLY R.O.W.'S & ADDED TOPO DONE ON 2022 (NOT A PART OF THIS TOPO)	BT

Date: 04/28/21 Drawn by: BT Job No. 201002-07

Barragan & Associates Inc.
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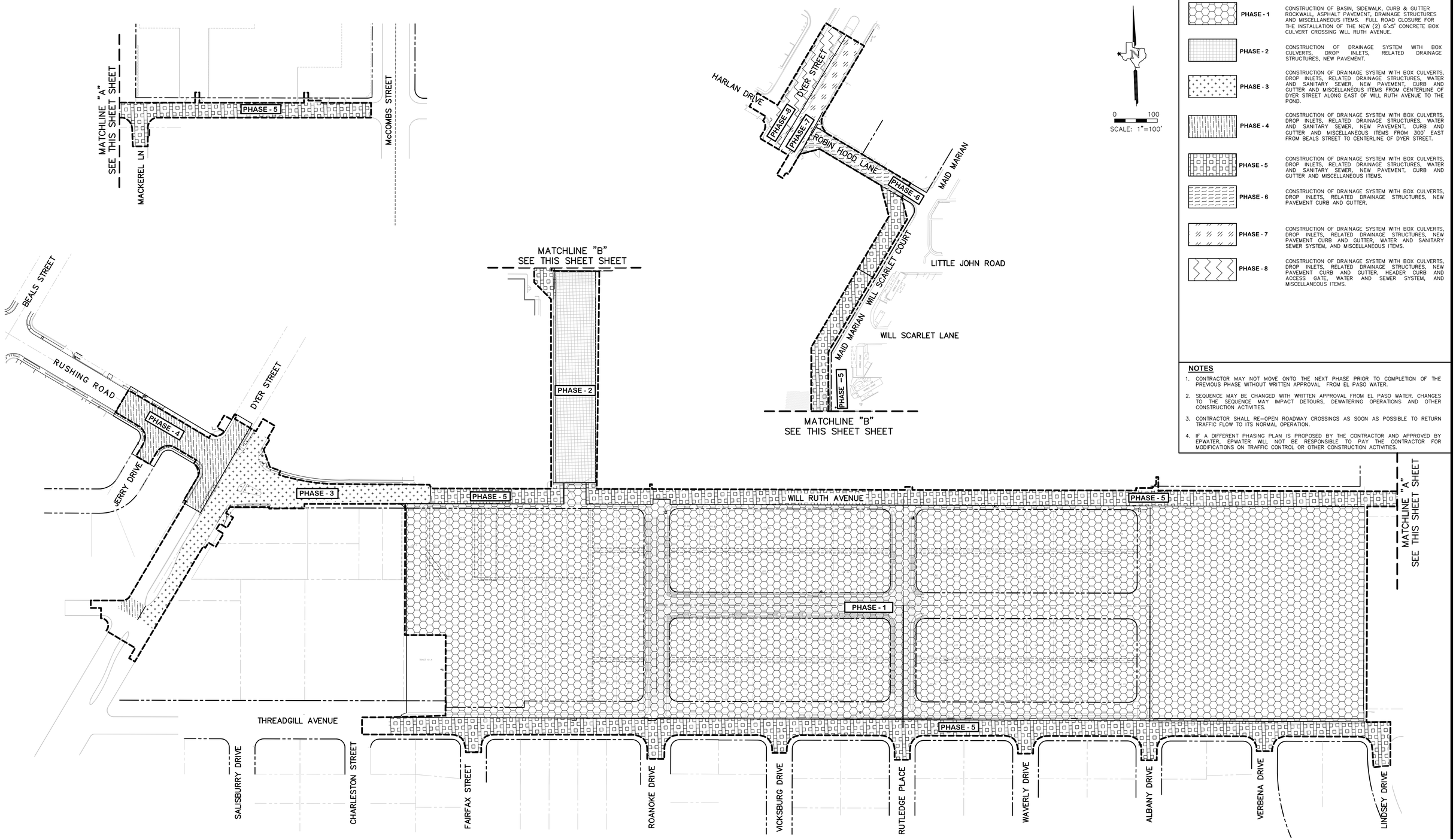
PROJECT NAME

WILL RUTH POND PHASE I

SHEET 5

PREPARED BY AND UNDER THE SUPERVISION OF:
STATE OF TEXAS REGISTERED BENITO BARRAGAN 5615 PROFESSIONAL LAND SURVEYOR
BENITO BARRAGAN TX. R.P.L.S. NO. 5615



PROPOSED SEQUENCE OF WORK

PHASE - 1 CONSTRUCTION OF BASIN, SIDEWALK, CURB & GUTTER ROCKWALL, ASPHALT PAVEMENT, DRAINAGE STRUCTURES AND MISCELLANEOUS ITEMS. FULL ROAD CLOSURE FOR THE INSTALLATION OF THE NEW (2) 6'x5' CONCRETE BOX CULVERT CROSSING WILL RUTH AVENUE.

PHASE - 2 CONSTRUCTION OF DRAINAGE SYSTEM WITH BOX CULVERTS, DROP INLETS, RELATED DRAINAGE STRUCTURES, NEW PAVEMENT.

PHASE - 3 CONSTRUCTION OF DRAINAGE SYSTEM WITH BOX CULVERTS, DROP INLETS, RELATED DRAINAGE STRUCTURES, WATER AND SANITARY SEWER, NEW PAVEMENT, CURB AND GUTTER AND MISCELLANEOUS ITEMS FROM CENTERLINE OF DYER STREET ALONG EAST OF WILL RUTH AVENUE TO THE POND.

PHASE - 4 CONSTRUCTION OF DRAINAGE SYSTEM WITH BOX CULVERTS, DROP INLETS, RELATED DRAINAGE STRUCTURES, WATER AND SANITARY SEWER, NEW PAVEMENT, CURB AND GUTTER AND MISCELLANEOUS ITEMS FROM 300' EAST FROM BEALS STREET TO CENTERLINE OF DYER STREET.

PHASE - 5 CONSTRUCTION OF DRAINAGE SYSTEM WITH BOX CULVERTS, DROP INLETS, RELATED DRAINAGE STRUCTURES, WATER AND SANITARY SEWER, NEW PAVEMENT, CURB AND GUTTER AND MISCELLANEOUS ITEMS.

PHASE - 6 CONSTRUCTION OF DRAINAGE SYSTEM WITH BOX CULVERTS, DROP INLETS, RELATED DRAINAGE STRUCTURES, NEW PAVEMENT CURB AND GUTTER.

PHASE - 7 CONSTRUCTION OF DRAINAGE SYSTEM WITH BOX CULVERTS, DROP INLETS, RELATED DRAINAGE STRUCTURES, NEW PAVEMENT CURB AND GUTTER, WATER AND SANITARY SEWER SYSTEM, AND MISCELLANEOUS ITEMS.

PHASE - 8 CONSTRUCTION OF DRAINAGE SYSTEM WITH BOX CULVERTS, DROP INLETS, RELATED DRAINAGE STRUCTURES, NEW PAVEMENT CURB AND GUTTER, HEADER CURB AND ACCESS GATE, WATER AND SEWER SYSTEM, AND MISCELLANEOUS ITEMS.

NOTES

1. CONTRACTOR MAY NOT MOVE ONTO THE NEXT PHASE PRIOR TO COMPLETION OF THE PREVIOUS PHASE WITHOUT WRITTEN APPROVAL FROM EL PASO WATER.
2. SEQUENCE MAY BE CHANGED WITH WRITTEN APPROVAL FROM EL PASO WATER. CHANGES TO THE SEQUENCE MAY IMPACT DETOURS, DEWATERING OPERATIONS AND OTHER CONSTRUCTION ACTIVITIES.
3. CONTRACTOR SHALL RE-OPEN ROADWAY CROSSINGS AS SOON AS POSSIBLE TO RETURN TRAFFIC FLOW TO ITS NORMAL OPERATION.
4. IF A DIFFERENT PHASING PLAN IS PROPOSED BY THE CONTRACTOR AND APPROVED BY EPWATER, EPWATER WILL NOT BE RESPONSIBLE TO PAY THE CONTRACTOR FOR MODIFICATIONS ON TRAFFIC CONTROL OR OTHER CONSTRUCTION ACTIVITIES.

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
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1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES
linespots@elpasotexas.gov

ENGINEER'S SEAL
THESE PLANS WERE RELEASED UNDER THE AUTHORITY OF MARCOS MEDINA, PE #93830 TO BE ISSUED AS A **60%: SUBMITTAL** TO EL PASO WATER FOR REVIEW. IT IS NOT TO BE USED FOR CONSTRUCTION OR FINAL PERMIT ISSUANCE.

DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

CONSTRUCTION SEQUENCE PLAN

THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH POND AND CONVEYANCE IMPROVEMENTS", MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO. 16-133
SEQUENCE NO. 1 OF 1
SHEET NO. C2.0

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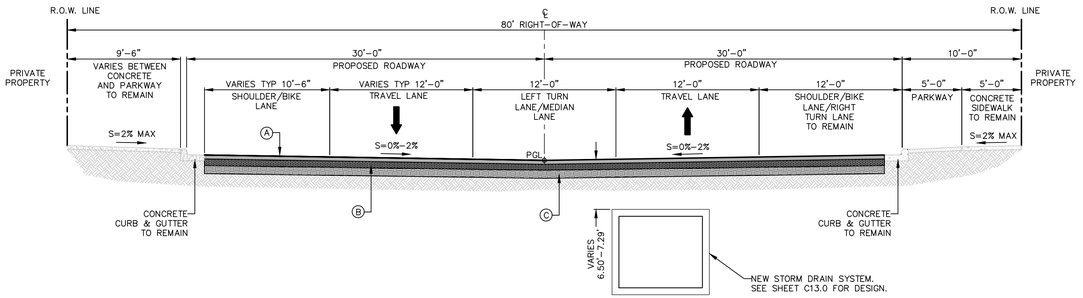
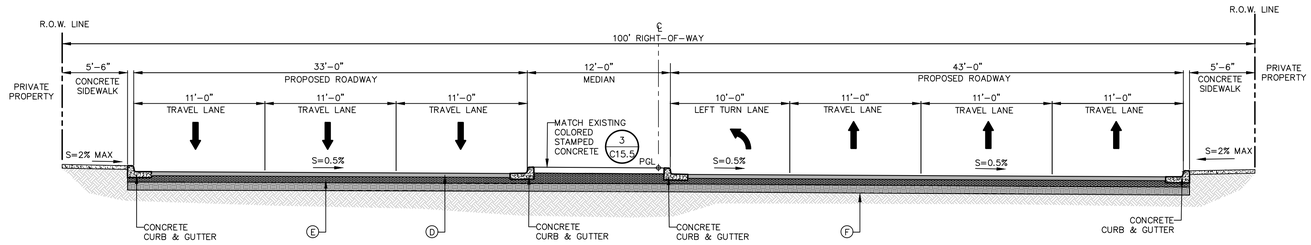
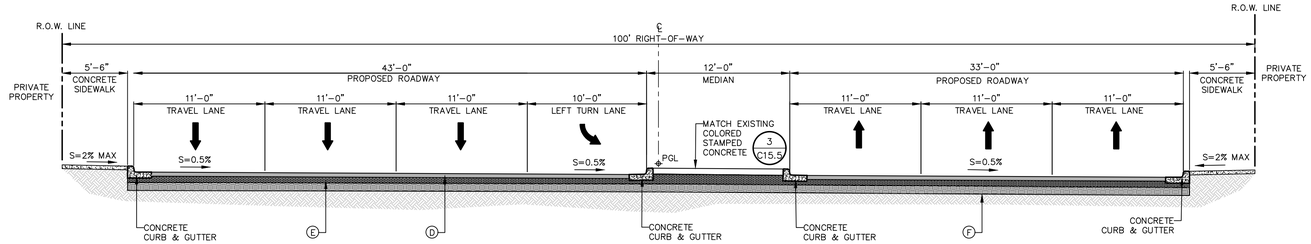


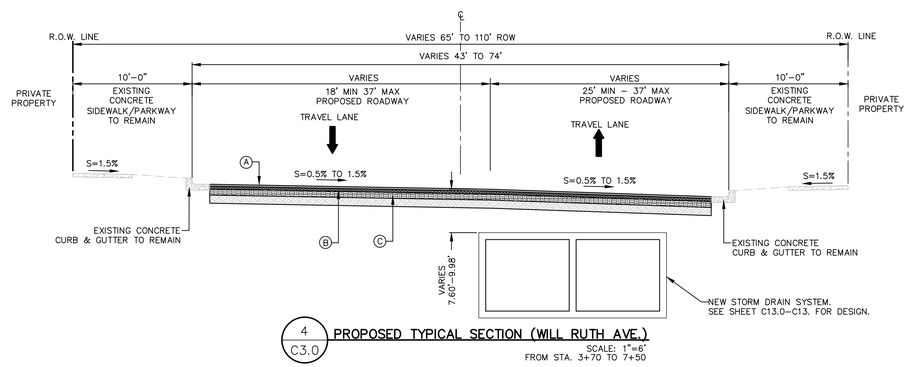
1 C3.0 **PROPOSED TYPICAL SECTION WITH CURB AND GUTTER (RUSHING ROAD) (EASTBOUND)**
SCALE: 1"=6'
FROM STA. 0+00 TO 2+00



2 C3.0 **PROPOSED TYPICAL SECTION WITH CURB AND GUTTER (DYER STREET) (NORTHBOUND)**
SCALE: 1"=6'
FROM STA. 0+55 TO 1+68



3 C3.0 **PROPOSED TYPICAL SECTION WITH CURB AND GUTTER (DYER STREET) (NORTHBOUND)**
SCALE: 1"=6'
FROM STA. 2+27 TO 2+95



4 C3.0 **PROPOSED TYPICAL SECTION (WILL RUTH AVE.)**
SCALE: 1"=6'
FROM STA. 3+70 TO 7+50

PROPOSED PAVEMENT DESIGN:

(A) 4" HOT MIX ASPHALTIC CONCRETE (HMAC), TXDOT ITEM 341. TYPE C. HMAC SHALL BE PLACED IN LAYERS NO MORE THAN 2" THICK, TYP.

(B) PRIME COAT TXDOT ITEM 310-CSS-1H 6" FLEXIBLE BASE MATERIAL TXDOT ITEM 247, TYPE A GRADE 3(2). 95% ASTM D-1557

(C) 8" SCARIFIED, MOISTURE CONDITIONED AND COMPACTED SUITABLE NATIVE SOILS 95% ASTM D-1557

WITH CONCRETE PAVEMENT SECTION:

(D) 10" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT, TXDOT ITEM 360 CLASS P-REINFORCED PER TXDOT STANDARDS. REFERENCE SHEET C15.9

(E) PRIME COAT TXDOT ITEM 310-CSS-1H (RESIDUAL ASPHALT NON-DILUTED). APPLICATION RATE AT 0.15 TO 0.20 GAL/YD^2. 5" FELXIBLE BASE COURSE MATERIAL TXDOT ITEM 247, TYPE A GRADE 1-2 OR APPROVED EXISTING RECYCLED BASE MATERIAL.

(F) 8" SCARIFIED, MOISTURE CONDITIONED AND COMPACTED SUITABLE NATIVE SOILS

WITH FLEXIBLE PAVEMENT SECTION:

(D) 2" HOT MIX ASPHALTIC CONCRETE (HMAC), TXDOT ITEM 341-TYPE C [1]. 3" HOT MIX ASPHALTIC CONCRETE(HMAC), TXDOT ITEM 340-TYPE B [1]

(E) PRIME COAT TXDOT ITEM 310-CSS-1H (RESIDUAL ASPHALT NON-DILUTED). APPLICATION RATE AT 0.15 TO 0.20 GAL/YD^2. 6" FLEXIBLE BASE MATERIAL TXDOT ITMEM 247, TYPE A GRADE 3[2]

(F) 8" SCARIFIED, MOISTURE CONDITIONED AND COMPACTED SUITABLE SELECT FILL OR APPROVED SUITABLE SUBGRADE SOILS.

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REV.	DATE	BY	DESCRIPTION

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ENGINEER'S SEAL
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
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2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

PROPOSED ROADWAY TYPICAL SECTIONS

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"WILL RUTH POND AND CONVEYANCE IMPROVEMENTS",
MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO. 16-133
SEQUENCE NO. 1 OF 2
SHEET NO. C3.0

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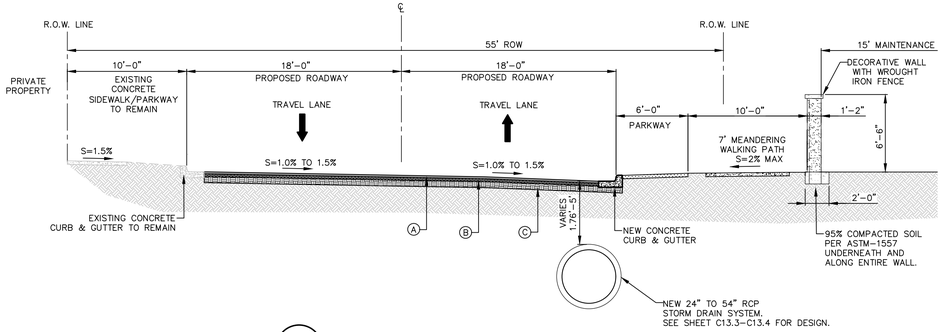
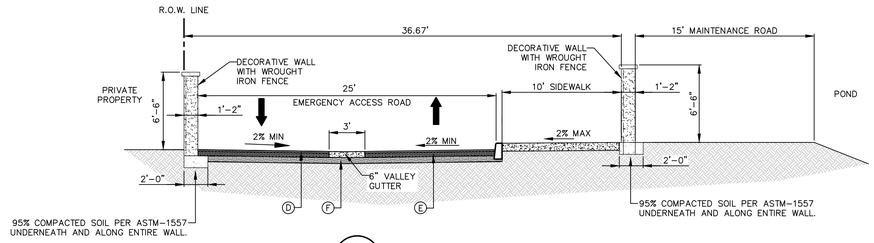
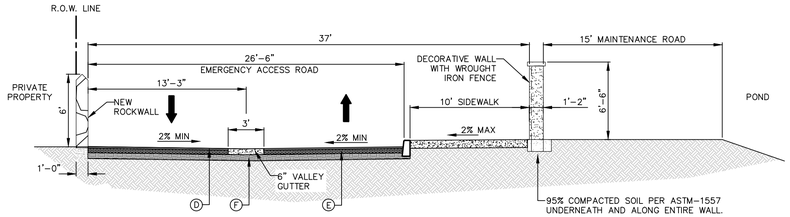


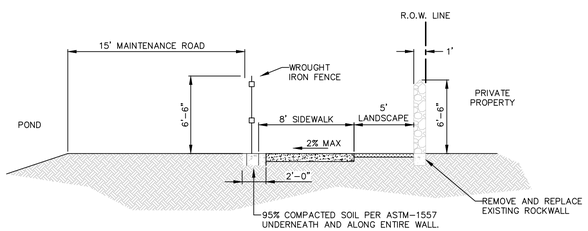
1 C3.1 **PROPOSED TYPICAL SECTION (WILL RUTH AVE.)**
SCALE: 1"=6'
FROM STA. 7+50 TO 29+40



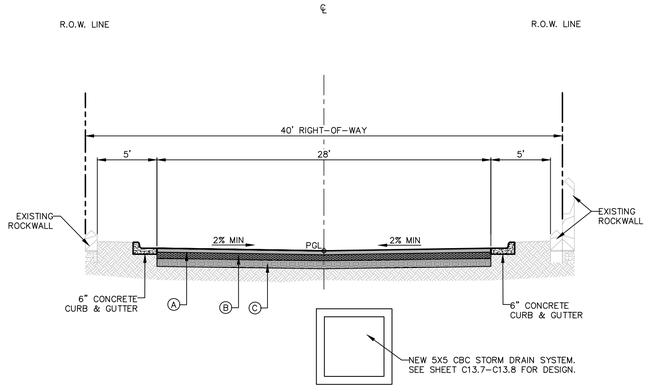
2 C3.1 **PROPOSED ALLEY TYPICAL SECTION POND WEST BOUNDARY**
SCALE: 1"=6'
FROM STA. 0+00 TO 2+87



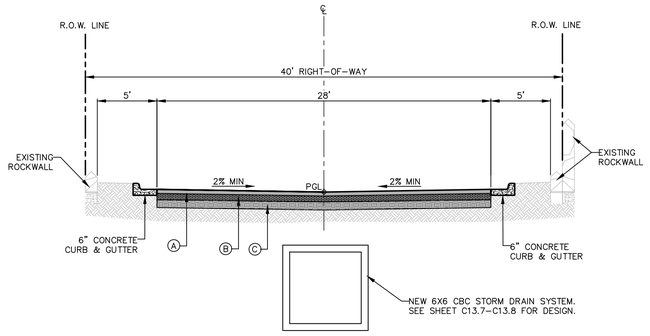
3 C3.1 **PROPOSED ALLEY TYPICAL SECTION POND WEST BOUNDARY**
SCALE: 1"=6'
FROM STA. 2+87 TO 6+12



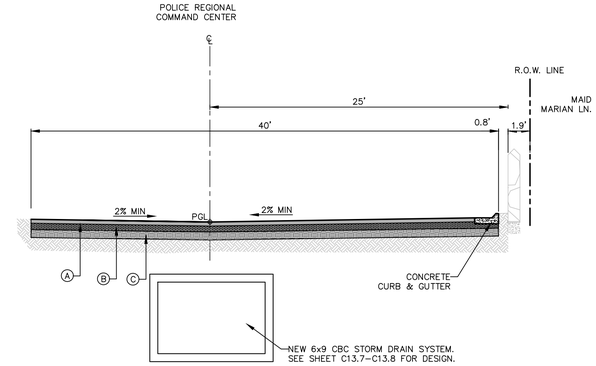
4 C3.1 **PROPOSED TYPICAL SECTION POND EAST BOUNDARY**
SCALE: 1"=6'
FROM STA. 29+50 TO 30+64



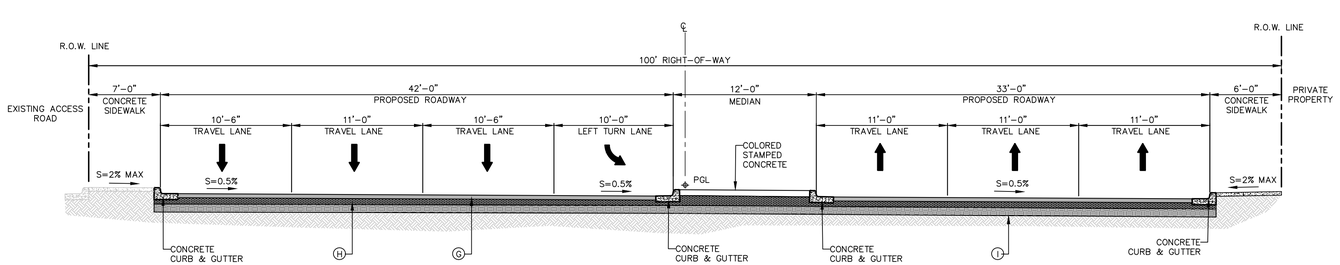
5 C3.1 **PROPOSED TYPICAL SECTION (ROBIN HOOD LANE)**
SCALE: 1"=6'
FROM STA. 0+00 TO 1+95



6 C3.1 **PROPOSED TYPICAL SECTION (ROBIN HOOD LANE)**
SCALE: 1"=6'
FROM STA. 1+95 TO 10+37



7 C3.1 **PROPOSED TYPICAL SECTION (POLICE COMMAND CENTER)**
SCALE: 1"=6'
FROM STA. 4+24 TO 9+30



7 C3.1 **PROPOSED TYPICAL SECTION (DYER STREET)**
AT ROBIN HOOD LANE INTERSECTION SCALE: 1"=6'

PROPOSED PAVEMENT DESIGN:

- (A) 4" HOT MIX ASPHALTIC CONCRETE (HMAC), TxDOT ITEM 341. TYPE C. HMAC SHALL BE MIN 2" THICK AS PER TXDOT ITEM 341.
- (B) PRIME COAT TXDOT ITEM 310-CSS-1H 6" FLEXIBLE BASE MATERIAL TxDOT ITEM 247, TYPE A GRADE 3(2). 95% ASTM D-1557
- (C) 8" SCARIFIED, MOISTURE CONDITIONED AND COMPACTED SUITABLE NATIVE SOILS 95% ASTM D-1557
- (D) 2" HOT MIX ASPHALTIC CONCRETE (HMAC), TXDOT ITEM 341-TYPE C
- (E) PRIME COAT TxDOT ITEM 310 4.5" FLEXIBLE BASE MATERIAL TxDOT ITEM. 247 TYPE A GRADE 3(2)
- (F) 6" SCARIFIED, MOISTURE CONDITIONED AND COMPACTED SUITABLE NATIVE SOILS
- (G) 10" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT, TXDOT ITEM 360 CLASS P-REINFORCED PER TxDOT STANDARDS
- (H) PRIME COAT TXDOT ITEM 310-CSS-1H (RESIDUAL ASPHALT NON-DILUTED). APPLICATION RATE AT 0.15 TO 0.20 GAL/YD^2. 5" FELXIBLE BASE COURSE MATERIAL TxDOT ITEM 247, TYPE A GRADE 1-2 OR APPROVED EXISTING RECYCLED BASE MATERIAL
- (I) 8" SCARIFIED, MOISTURE CONDITIONED AND COMPACTED SUITABLE NATIVE SOILS

F:\16133\DWG\16133 - C3.0_DWG_TYP_SECT.dwg Time:Oct03,2022 - 01:46pm Login:Ben

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REV.	DATE	BY	DESCRIPTION

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ENGINEER'S SEAL
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

PROPOSED ROADWAY TYPICAL SECTIONS

THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH POND AND CONVEYANCE IMPROVEMENTS". MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO. 16-133
SEQUENCE NO. 2 OF 2
SHEET NO. C3.1

SUE TEST HOLE DATA SHEET

HALFF TBPE #F-312
9500 Amberglen Blvd.
Building F, Suite 125
Austin, Texas 78729
Tel: 512.777.4600
Fax: 512.252.8141

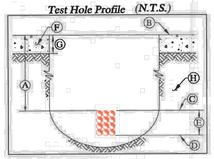
Halff Project # 035084.001
CSJ # N/A
City/ County Name: EL PASO/EL PASO
Location: DYER ST.
Limits: AT WILL RUTH AVE./RUSHING RD.

Test Hole # 4
Utility: TELEPHONE DUCT BANK
Owner: AT&T
Date: 4/30/19
Weather: SUNNY

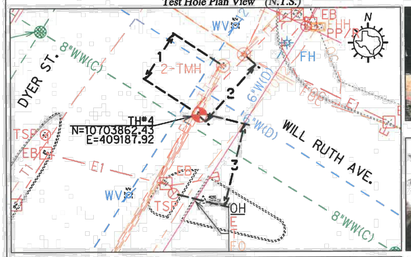
Test Hole Data

Approx. Sta. N/A Offset: N/A
Offset pulled from: N/A
(A) Measured Depth of Hole: 3.37'
(B) Surface Elevation: 3904.00'
(C) Elev. @ Top of Utility: 3900.63'
(D) Elev. @ Bottom of Utility: 3899.30' (CALC.)
(E) Size of Utility: 12-4" CONDUITS
Utility Material: PVC
Utility Condition: GOOD
(F) Thickness of Pvmt.: 8"
(G) Type of Pvmt., Base, etc: ASPHALT/ROADBASE
(H) Description of soil: SAND/ROCK
Unit of Measure: English X Metric
Survey Control: Grid Surface X Scale Factor: 1.000231

Test Hole Profile (N.T.S.)

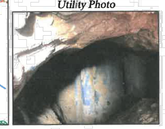


Test Hole Plan View (N.T.S.)



Test Hole Photo

Utility Photo



TIE	SWING TIE POINT DESCRIPTION	DISTANCE
1	TEST HOLE TO TELEPHONE MANHOLE	21.9'
2	TEST HOLE TO TELEPHONE MANHOLE	30.7'
3	TEST HOLE TO TRAFFIC SIGNAL POLE	34.3'

Field Notes/Legend:

- TEST HOLE
- TMH — TELEPHONE MANHOLE
- TSP — TRAFFIC SIGNAL POLE

Certification: I hereby certify that the information shown hereon is correct to the best of my knowledge and belief.

STATE OF TEXAS — MARC R. EPPEILY — 102075 — LICENSED PROFESSIONAL ENGINEER

6/12/19

SUE TEST HOLE DATA SHEET

HALFF TBPE #F-312
9500 Amberglen Blvd.
Building F, Suite 125
Austin, Texas 78729
Tel: 512.777.4600
Fax: 512.252.8141

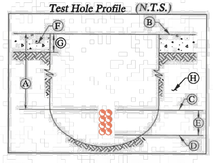
Halff Project # 035084.001
CSJ # N/A
City/ County Name: EL PASO/EL PASO
Location: DYER ST.
Limits: AT WILL RUTH AVE./RUSHING RD.

Test Hole # 3
Utility: TELEPHONE
Owner: AT&T
Date: 4/30/19
Weather: SUNNY

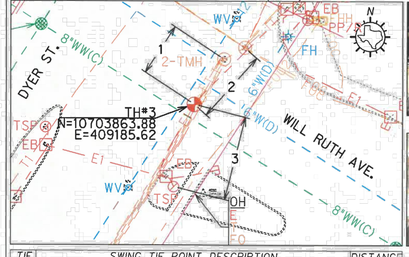
Test Hole Data

Approx. Sta. N/A Offset: N/A
Offset pulled from: N/A
(A) Measured Depth of Hole: 2.16'*
(B) Surface Elevation: 3904.02'
(C) Elev. @ Top of Utility: 3901.86' (TOP OF CONCRETE)
(D) Elev. @ Bottom of Utility: N/A
(E) Size of Utility: 8-4" CONDUITS (PER MH INSPECTION)
Utility Material: PVC (PER MH INSPECTION)
Utility Condition: GOOD
(F) Thickness of Pvmt.: 8"
(G) Type of Pvmt., Base, etc: ASPHALT/ROADBASE
(H) Description of soil: SAND/CLAY
Unit of Measure: English X Metric
Survey Control: Grid Surface X Scale Factor: 1.000231

Test Hole Profile (N.T.S.)



Test Hole Plan View (N.T.S.)



Test Hole Photo

Utility Photo

TIE	SWING TIE POINT DESCRIPTION	DISTANCE
1	TEST HOLE TO TELEPHONE MANHOLE	21.9'
2	TEST HOLE TO TELEPHONE MANHOLE	30.7'
3	TEST HOLE TO TRAFFIC SIGNAL POLE	34.3'

Field Notes/Legend:

- TEST HOLE
- TMH — TELEPHONE MANHOLE
- TSP — TRAFFIC SIGNAL POLE

* UTILITY IS ENCASED WITHIN CONCRETE. FOUND 4" ELECTRIC CONDUIT AT 1.11'

Certification: I hereby certify that the information shown hereon is correct to the best of my knowledge and belief.

STATE OF TEXAS — MARC R. EPPEILY — 102075 — LICENSED PROFESSIONAL ENGINEER

6/12/19

SUE TEST HOLE DATA SHEET

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Tel: 512.777.4600
Fax: 512.252.8141

Halff Project # 035084.001
CSJ # N/A
City/ County Name: EL PASO/EL PASO
Location: DYER ST.
Limits: AT WILL RUTH AVE./RUSHING RD.

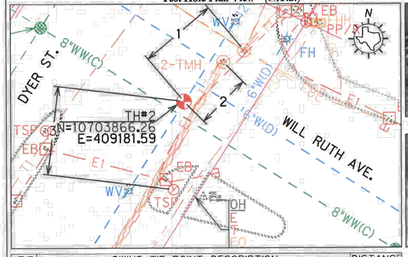
Test Hole # 2
Utility: WATER
Owner: CITY OF EL PASO
Date: 4/30/19
Weather: SUNNY

Test Hole Data

Approx. Sta. N/A Offset: N/A
Offset pulled from: N/A
(A) Measured Depth of Hole: 3.61'
(B) Surface Elevation: 3904.00'
(C) Elev. @ Top of Utility: 3900.39'
(D) Elev. @ Bottom of Utility: 3899.72' (CALC.)
(E) Size of Utility: 8"
Utility Material: CAST IRON
Utility Condition: GOOD
(F) Thickness of Pvmt.: 8"
(G) Type of Pvmt., Base, etc: ASPHALT/ROADBASE
(H) Description of soil: SAND/CLAY
Unit of Measure: English X Metric
Survey Control: Grid Surface X Scale Factor: 1.000231

Test Hole Profile (N.T.S.)

Test Hole Plan View (N.T.S.)



Test Hole Photo

Utility Photo

TIE	SWING TIE POINT DESCRIPTION	DISTANCE
1	TEST HOLE TO TELEPHONE MANHOLE	32.0'
2	TEST HOLE TO TELEPHONE MANHOLE	22.6'
3	TEST HOLE TO TRAFFIC SIGNAL POLE	35.9'

Field Notes/Legend:

- TEST HOLE
- TMH — TELEPHONE MANHOLE
- TSP — TRAFFIC SIGNAL POLE

Certification: I hereby certify that the information shown hereon is correct to the best of my knowledge and belief.

STATE OF TEXAS — MARC R. EPPEILY — 102075 — LICENSED PROFESSIONAL ENGINEER

6/12/19

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HALFF TBPE #F-312
9500 Amberglen Blvd.
Building F, Suite 125
Austin, Texas 78729
Tel: 512.777.4600
Fax: 512.252.8141

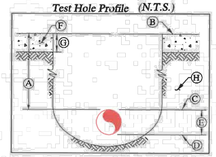
Halff Project # 035084.001
CSJ # N/A
City/ County Name: EL PASO/EL PASO
Location: DYER ST.
Limits: AT WILL RUTH AVE./RUSHING RD.

Test Hole # 1
Utility: GAS
Owner: TEXAS GAS SERVICE
Date: 5/7/19
Weather: SUNNY

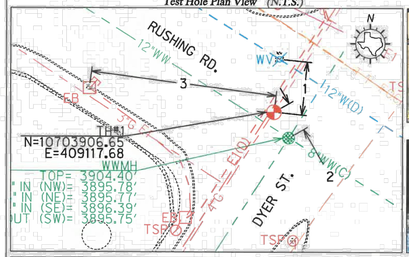
Test Hole Data

Approx. Sta. N/A Offset: N/A
Offset pulled from: N/A
(A) Measured Depth of Hole: 2.02'
(B) Surface Elevation: 3904.60'
(C) Elev. @ Top of Utility: 3902.58'
(D) Elev. @ Bottom of Utility: 3902.25' (CALC.)
(E) Size of Utility: 4"
Utility Material: STEEL
Utility Condition: GOOD
(F) Thickness of Pvmt.: 6"
(G) Type of Pvmt., Base, etc: ASPHALT/ROADBASE
(H) Description of soil: SAND/ROCK
Unit of Measure: English X Metric
Survey Control: Grid Surface X Scale Factor: 1.000231

Test Hole Profile (N.T.S.)



Test Hole Plan View (N.T.S.)



Test Hole Photo

Utility Photo

TIE	SWING TIE POINT DESCRIPTION	DISTANCE
1	TEST HOLE TO WATER VALVE	21.5'
2	TEST HOLE TO WASTEWATER MANHOLE	12.0'
3	TEST HOLE TO ELECTRIC BOX	75.2'

Field Notes/Legend:

- TEST HOLE
- WV — WATER VALVE
- WWMH — WASTEWATER MANHOLE
- EB — ELECTRIC BOX

Certification: I hereby certify that the information shown hereon is correct to the best of my knowledge and belief.

STATE OF TEXAS — MARC R. EPPEILY — 102075 — LICENSED PROFESSIONAL ENGINEER

6/12/19

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
1-800-DIG-TESS
1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES

DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

EXISTING UTILITY PLAN
(DYER STREET INTERSECTION SUBSURFACE UTILITY ENGINEERING INFORMATION)

THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH POND AND CONVEYANCE IMPROVEMENTS". MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO. 16-133
SEQUENCE NO. 1 OF 4
SHEET NO. C4.0

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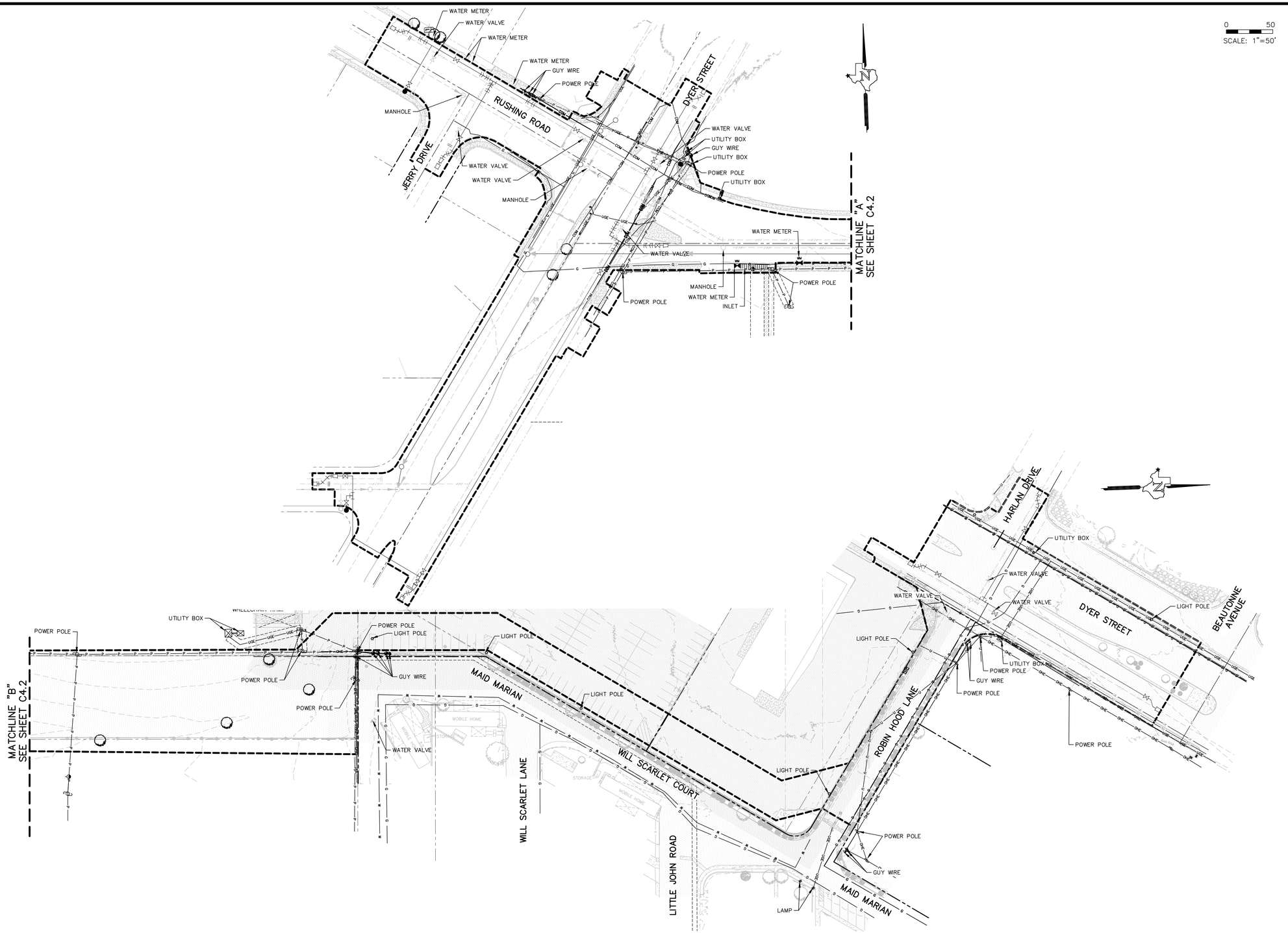
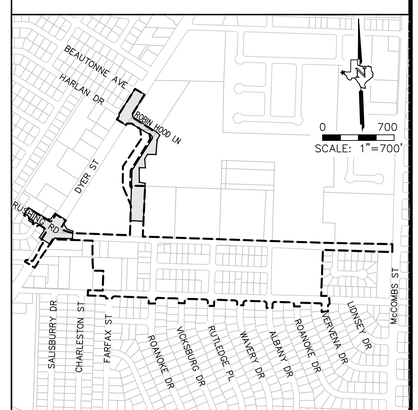


LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- CONCRETE
- PAVEMENT
- ROCK LAYOUT
- EXISTING FABER OPTIC
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING SANITARY SEWER
- EXISTING OVERHEAD POWER LINE
- EXISTING UNDERGROUND ELECTRIC
- STORM DRAINAGE-BOX CULVERTS
- EXISTING UTILITY LINE
- EXISTING ROCKWALL
- GUARD RAIL
- EXISTING CURB
- ANCHOR
- UTILITY BOX
- PEDESTAL POLE
- FIRE HYDRANT
- WV WATER VALVE
- GV GAS VALVE
- POWER POLE
- LIGHTPOLE
- MANHOLE, COMMUNICATIONS
- MANHOLE, SEWER
- MANHOLE, STORM DRAIN
- MANHOLE
- DROP INLET
- WM WATER METER
- GM GAS METER
- IV IRRIGATION VALVE
- MAILBOX
- GUARD POST/BOLLARD
- SIGN
- SHRUB/TREE
- BUILDING

NOTES



100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
1-800-DIG-TESS
1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES
linespots@elpasotexas.gov

ENGINEER'S SEAL
THESE PLANS WERE RELEASED UNDER THE AUTHORITY OF MARCOS MEDINA, PE #93830 TO BE ISSUED AS A **100% SUBMITTAL** TO EL PASO WATER FOR REVIEW. IT IS NOT TO BE USED FOR CONSTRUCTION OR FINAL PERMIT ISSUANCE.

DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

EXISTING UTILITY PLAN

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JOB NO. 16-133
SEQUENCE NO. 2 OF 4
SHEET NO. C4.1

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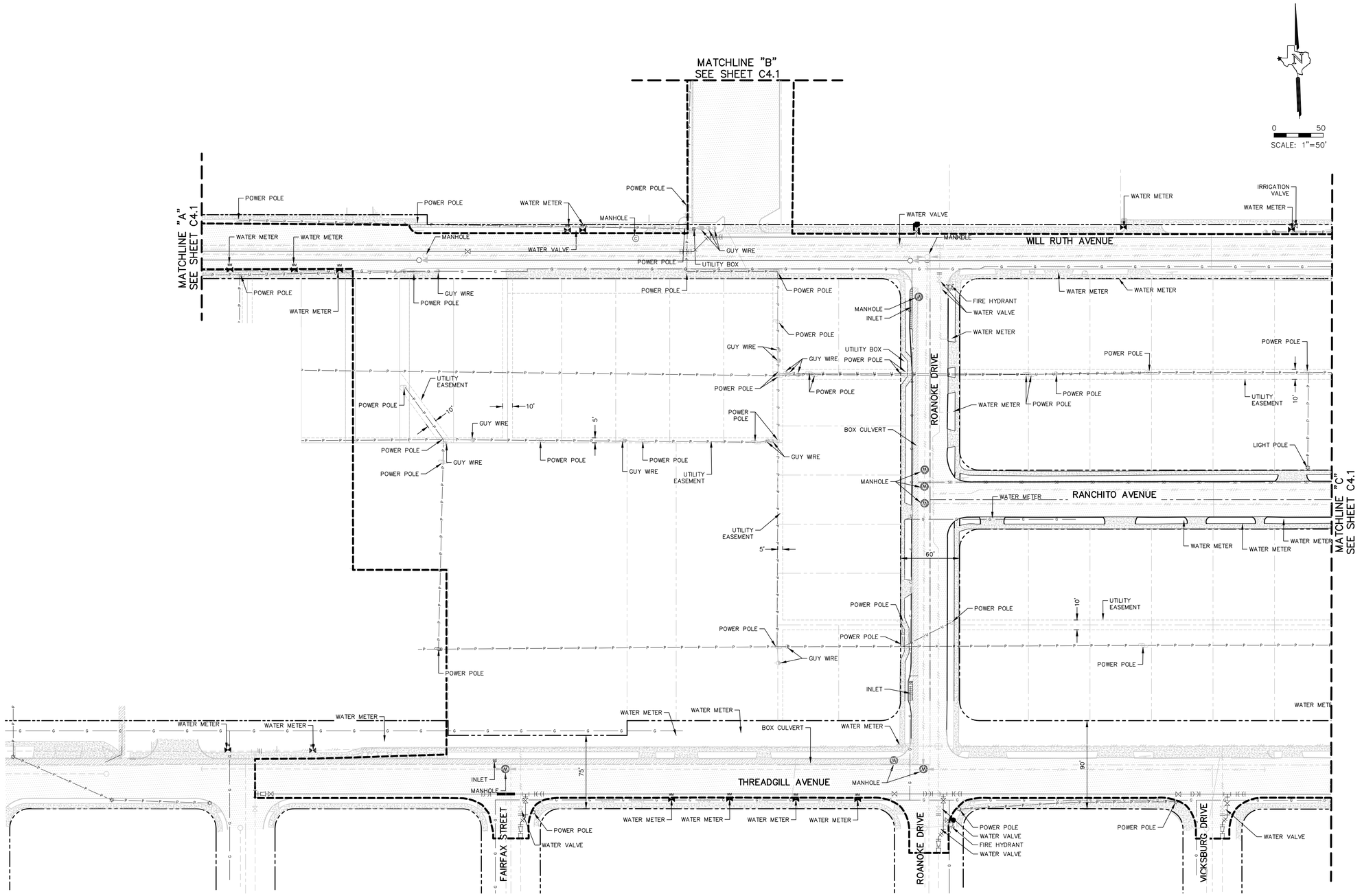

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
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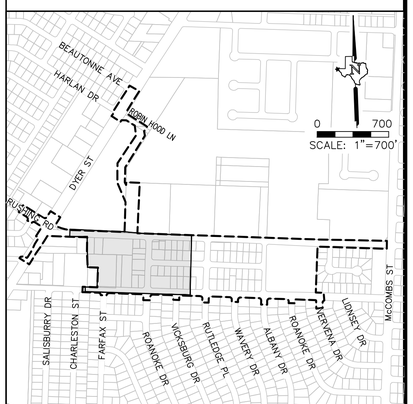
- GUARD RAIL
- EXISTING CURB
- ANCHOR
- UTILITY BOX
- PEDESTAL POLE
- FIRE HYDRANT
- WV WATER VALVE
- GV GAS VALVE
- POWER POLE
- LIGHTPOLE
- C MANHOLE, COMMUNICATIONS
- S MANHOLE, SEWER
- D MANHOLE, STORM DRAIN
- W MANHOLE
- DROP INLET
- WM WATER METER
- GM GAS METER
- IV IRRIGATION VALVE
- MAILBOX
- GUARD POST/BOLLARD
- SIGN
- SHRUB/TREE
- BUILDING

NOTES

1. ALL UTILITY LINES SHOWN ARE BASED ON ACTUAL SURVEY PERFORMED DURING THE MONTH OF MARCH 2017 BY BARRAGAN & ASSOCIATES, AND IDENTIFIED FROM AVAILABLE RECORD DRAWINGS.
2. THE CONTRACTOR IS RESPONSIBLE TO LOCATE ALL UTILITIES PRIOR TO BEGIN WORK.
3. ALL POT-HOLES WERE PERFORMED DURING THE MONTH OF MAY 2019 BY HALFF AND ASSOCIATES.



100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
1-800-DIG-TESS
1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES
linespots@elpasotexas.gov

ENGINEER'S SEAL
THESE PLANS WERE RELEASED UNDER THE AUTHORITY OF MARCOS MEDINA, PE #93830 TO BE ISSUED AS A **100% SUBMITTAL** TO EL PASO WATER FOR REVIEW. IT IS NOT TO BE USED FOR CONSTRUCTION OR FINAL PERMIT ISSUANCE.

DESIGNED	B.O.
DRAWN	E.G./A.M.
CHECKED	M.M.
DATE	10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

EXISTING UTILITY PLAN

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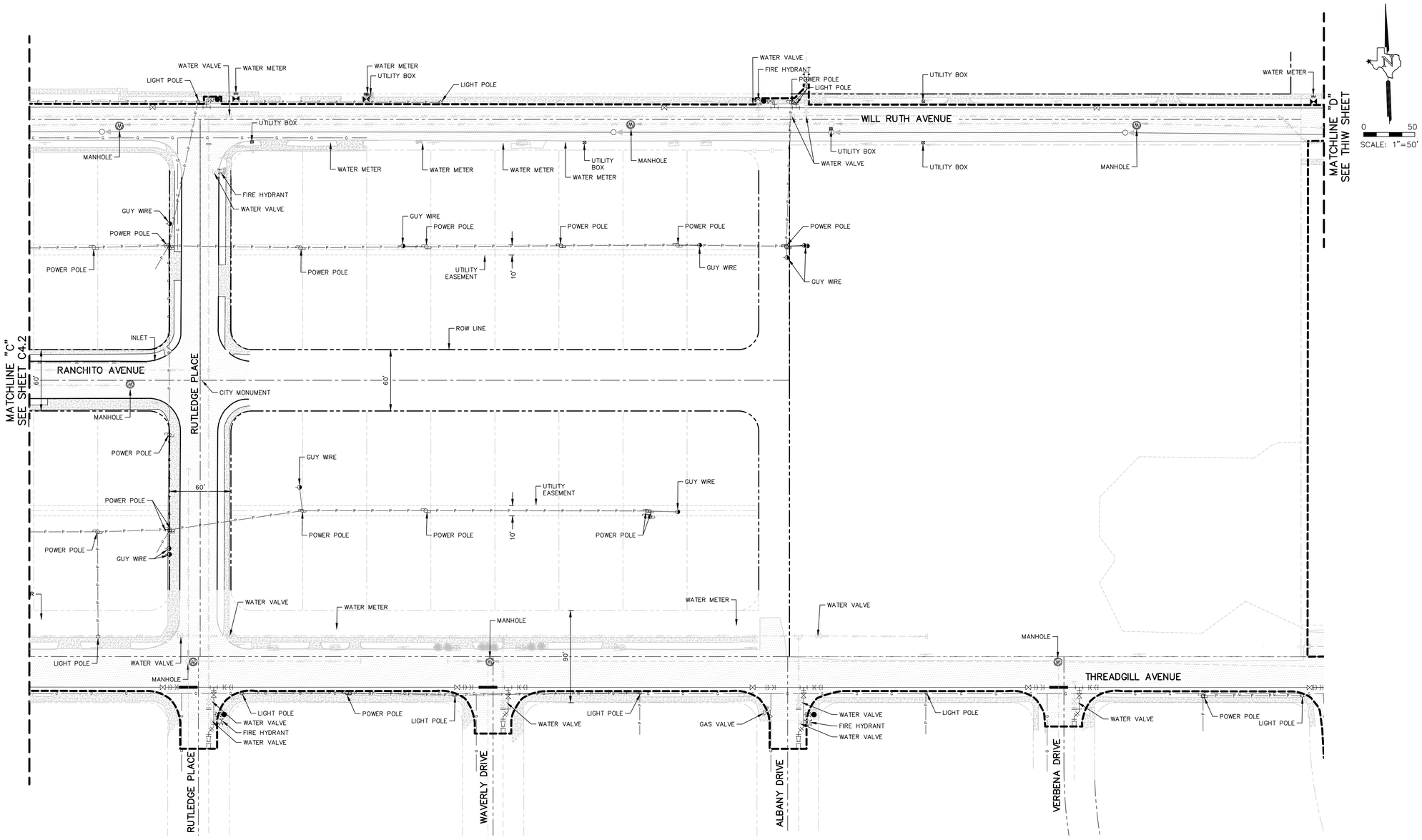
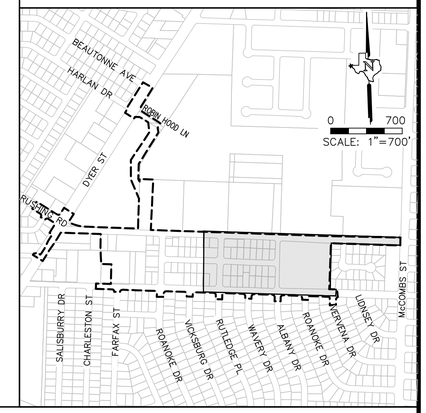
MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO.	16-133
SEQUENCE NO.	3 OF 4
SHEET NO.	C4.2

F:\16133\DWG\16133 - C4.0-C4.3_DWG_UTL.dwg Time:Oct07,2022-08:35am Login:alejandra





LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- CONCRETE
- PAVEMENT
- ROCK LAYOUT
- EXISTING FABER OPTIC
- EXISTING WATER LINE
- EXISTING GAS LINE
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- Ⓒ MANHOLE, COMMUNICATIONS
- Ⓢ MANHOLE, SEWER
- Ⓓ MANHOLE, STORM DRAIN
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- IV IRRIGATION VALVE
- MAILBOX
- GUARD POST/BOLLARD
- SIGN
- SHRUB/TREE
- BUILDING

NOTES

1. ALL UTILITY LINES SHOWN ARE BASED ON ACTUAL SURVEY PERFORMED DURING THE MONTH OF MARCH 2017 BY BARRAGAN & ASSOCIATES, AND IDENTIFIED FROM AVAILABLE RECORD DRAWINGS.
2. THE CONTRACTOR IS RESPONSIBLE TO LOCATE ALL UTILITIES PRIOR TO BEGIN WORK.
3. ALL POT-HOLES WERE PERFORMED DURING THE MONTH OF MAY 2019 BY HALFF AND ASSOCIATES.

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
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1-800-344-8377
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000534

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

EXISTING UTILITY PLAN

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JOB NO. 16-133
SEQUENCE NO. 4 OF 4
SHEET NO. C4.3

F:\16133\DWG\16133 - C4.0-C4.3_DWG_UTL.dwg Time:Oct07,2022-08:36am Login:elpjndro

NOTES

1. SEE SHEET C5.3 FOR POINTS INFORMATION.
2. ALL EXISTING/PROPOSED STREET LIGHTS SHALL BE IN COORDINATION WITH STREET & MAINTENANCE–FACILITIES–RUBEN ARZAGA AND EPE.
3. ALL EXISTING STRUCTURES FOUND DURING EXCAVATION SHALL BE REMOVED AND PROPERLY DISPOSED OF.
4. ALL TRAFFIC SIGNALS TO BE INSTALLED, REMOVED, REPLACED, ADJUSTED AND/OR MODIFIED SHALL BE IN COORDINATION AND APPROVED BY STREETS AND MAINTENANCE–TRAFFIC SIGNALS SECTION–ANDRES RICO.
5. C&G/STD CURB SHALL BE REMOVED IN SECTIONS NO LESS THAN 10' OR TO NEAREST CONSTRUCTION JOINT.

LEGEND

- EXISTING RIGHT–OF–WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 — STATIONING / CENTERLINE ALIGNMENT
- 1 A — KEYNOTE

KEYED NOTES

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1	LIMITS OF DEMOLITION, SAW–CUT EXISTING PAVEMENT/SIDEWALK
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12	EXISTING CONCRETE BOX CULVERT
13	EXISTING DROP INLET
14	EXISTING SANITARY SEWER MANHOLE
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17	EXISTING WATER LINE
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33	EXISTING CHAINLINK FENCE
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35	CUT & PLUG
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37	EXISTING TRAFFIC CONTROLLER CABINET BOX
38	EXISTING SCHOOL ZONE FLASHER
39	EXISTING UTILITY MANHOLE
40	EXISTING MAILBOX
41	EXISTING WROUGHT IRON GATE
42	EXISTING GATE CONTROLLER AND MOTOR
43	EXISTING STAMPED CONCRETE
44	EXISTING IRRIGATION
45	EXISTING LANDSCAPE

A

A	REMOVE AND REPLACE
B	REMOVE AND RELOCATE
* C	REMAIN UNDISTURBED AND PROTECTED
D	ADJUST TO NEW GRADE
E	REMOVE AND PROPERLY DISPOSE OF
F	CLEAR AND GRUB
G	REMOVE AND SALVAGE
H	COORDINATE REMOVAL/RELOCATION WITH APPROPRIATE UTILITY
I	TO BE ABANDONED

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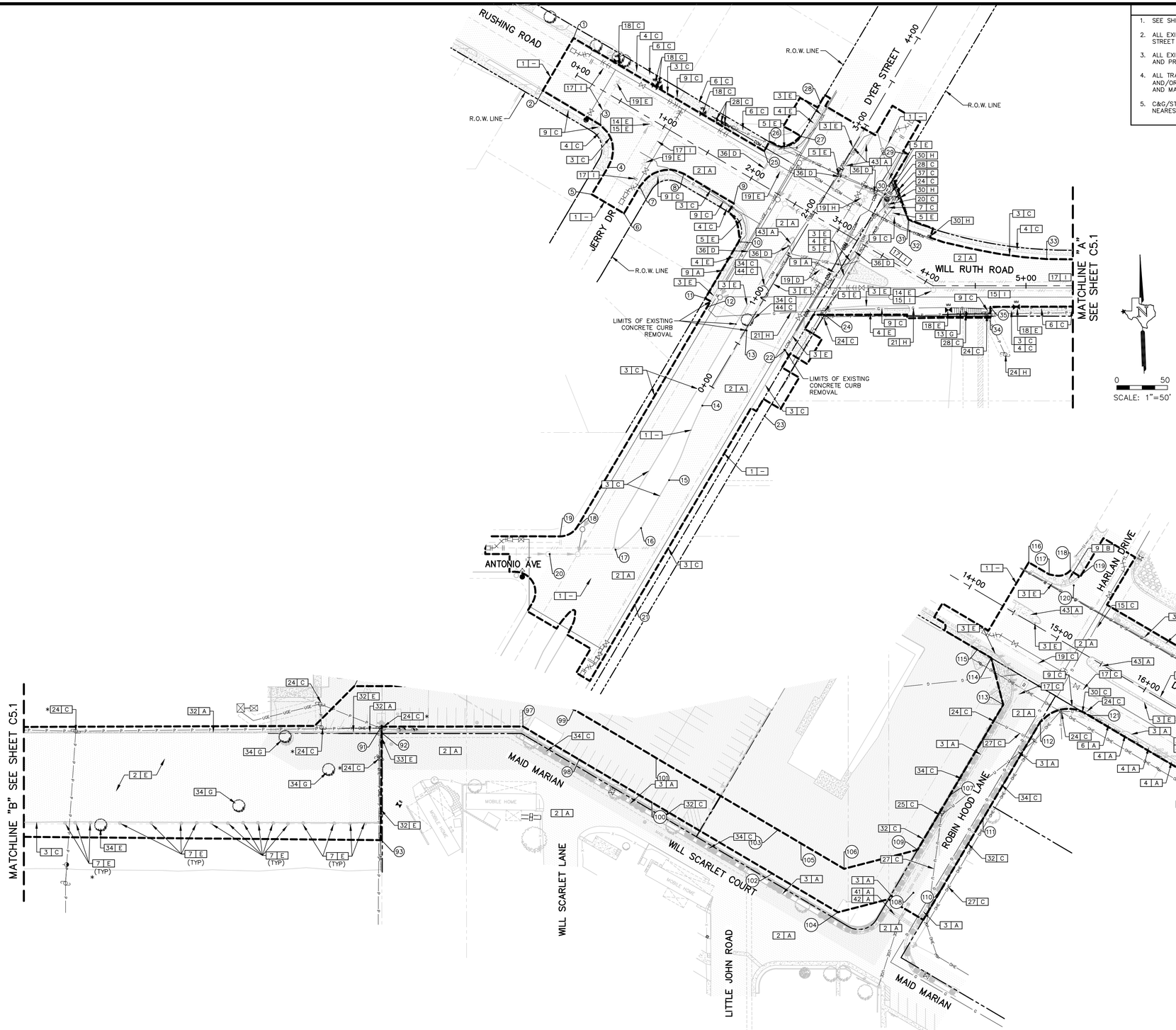
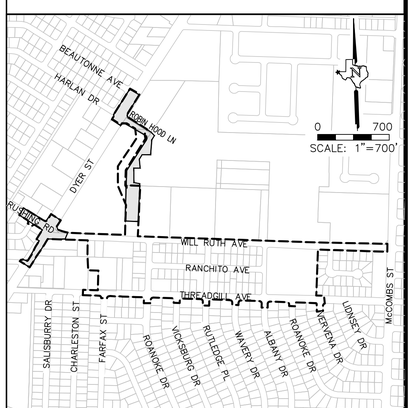
** CULVERT LIMITS OF DEMOLITION AT POND DAY LIGHT ELEVATION.





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REV.	DATE	BY	DESCRIPTION

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594–5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DEMOLITION PLAN

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JOB NO. 16–133
SEQUENCE NO. 1 OF 4
SHEET NO. C5.0

F:\16133\DWG\16133 - C5.0–C5.3_DWG_DEM.dwg Time:Oct07,2022–10:41am Login:alejandra

NOTES

1. SEE SHEET C5.3 FOR POINTS INFORMATION.
2. ALL EXISTING/PROPOSED STREET LIGHTS SHALL BE IN COORDINATION WITH STREET & MAINTENANCE–FACILITIES–RUBEN ARZAGA AND EPE.
3. ALL EXISTING STRUCTURES FOUND DURING EXCAVATION SHALL BE REMOVED AND PROPERLY DISPOSED OF.
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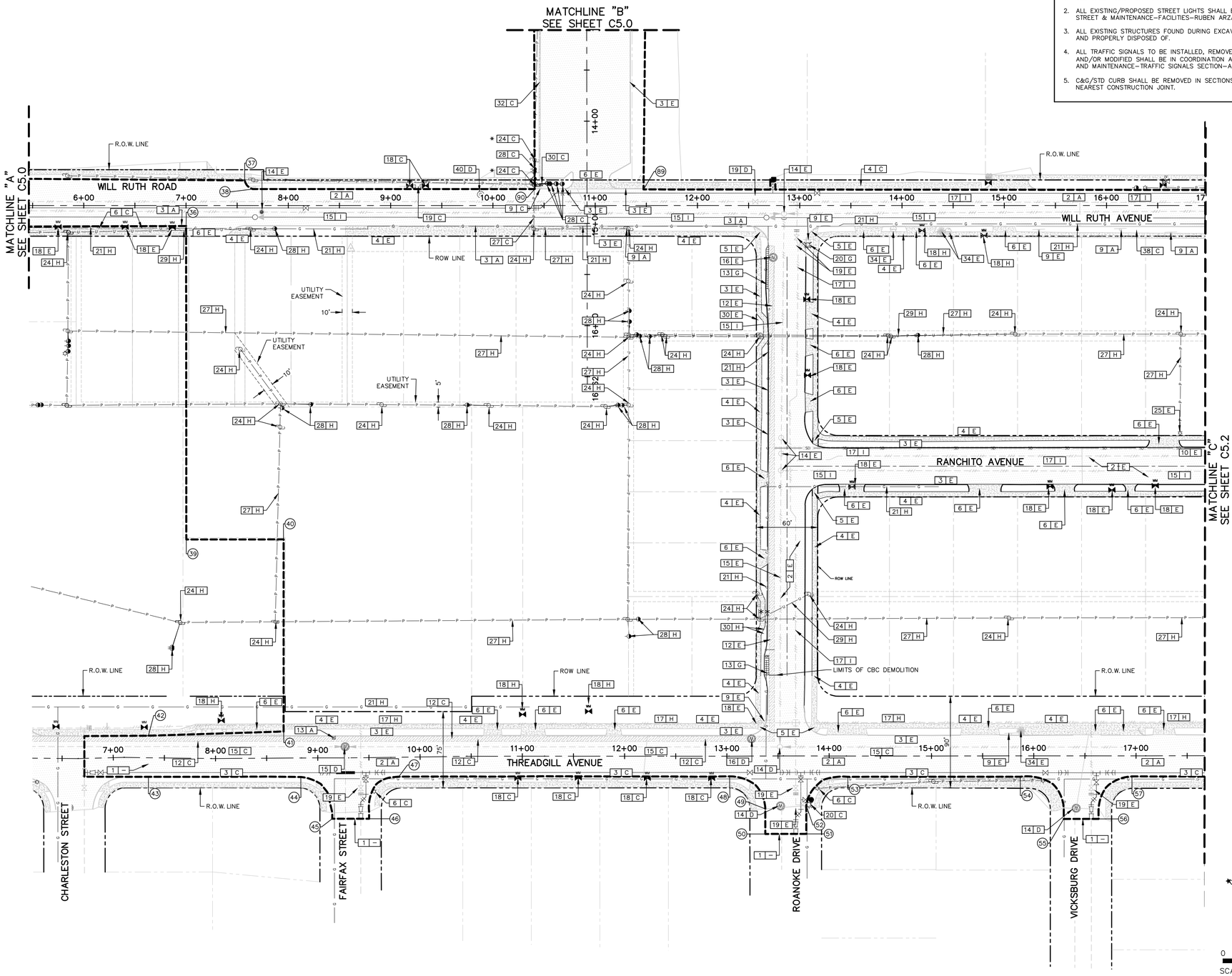

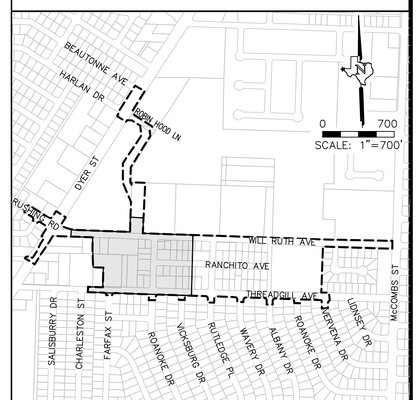

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JOB NO. 16–133
SEQUENCE NO. 2 OF 4
SHEET NO. C5.1

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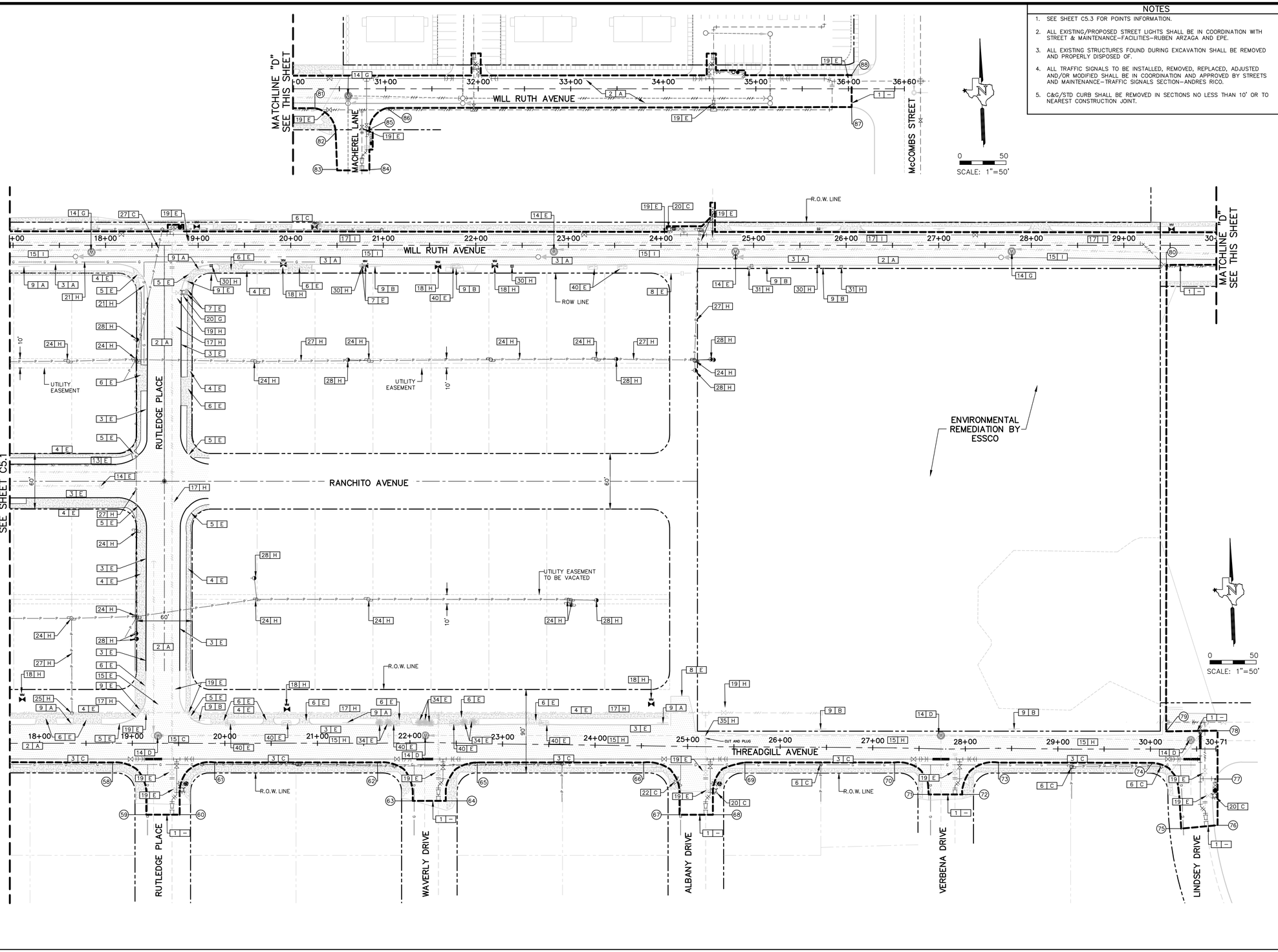

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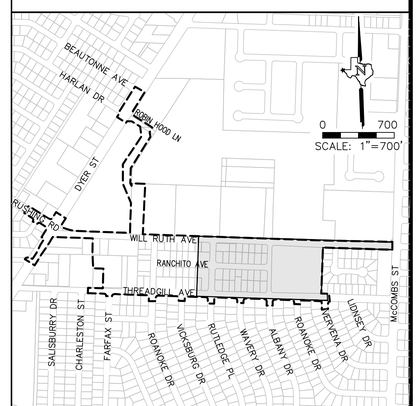

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JOB NO. 16–133
SEQUENCE NO. 3 OF 4
SHEET NO. C5.2

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HORIZONTAL CONTROL TABLE			
POINT NO.	DESCRIPTION	NORTHING	EASTING
9	LIMITS OF DEMOLITION	10703898.23	409073.26
65	DEMOLITION LIMITS	10703190.54	411039.89
1	LIMITS OF DEMOLITION	10704066.78	408920.85
2	LIMITS OF DEMOLITION	10704015.98	408888.64
3	LIMITS OF DEMOLITION	10703980.00	408944.52
4	LIMITS OF DEMOLITION	10703938.04	408950.33
5	LIMITS OF DEMOLITION	10703912.00	408933.46
6	LIMITS OF DEMOLITION	10703892.21	408964.57
7	LIMITS OF DEMOLITION	10703918.07	408981.02
8	LIMITS OF DEMOLITION	10703929.20	409024.82
10	LIMITS OF DEMOLITION	10703860.27	409076.65
11	LIMITS OF DEMOLITION	10703805.60	409041.88
12	LIMITS OF DEMOLITION	10703796.98	409043.33
13	LIMITS OF DEMOLITION	10703772.62	409081.52
14	LIMITS OF DEMOLITION	10703700.02	409035.35
15	LIMITS OF DEMOLITION	10703627.64	409000.08
16	LIMITS OF DEMOLITION	10703581.32	408970.79
17	LIMITS OF DEMOLITION	10703560.95	408944.93
18	LIMITS OF DEMOLITION	10703584.62	408907.86
19	DEMOLITION LIMITS	10703575.94	408890.68
20	DEMOLITION LIMITS	10703558.81	408879.75
21	DEMOLITION LIMITS	10703506.18	408962.24
22	DEMOLITION LIMITS	10703751.86	409118.82
23	DEMOLITION LIMITS	10703687.60	409096.37
24	DEMOLITION LIMITS	10703785.13	409159.44
25	DEMOLITION LIMITS	10703948.89	409104.96
26	DEMOLITION LIMITS	10703957.80	409110.24
27	DEMOLITION LIMITS	10703962.18	409141.71
28	DEMOLITION LIMITS	10703994.56	409162.03
29	DEMOLITION LIMITS	10703940.68	409246.52
30	DEMOLITION LIMITS	10703917.41	409231.59
31	DEMOLITION LIMITS	10703876.57	409244.74
32	DEMOLITION LIMITS	10703865.35	409245.63
33	DEMOLITION LIMITS	10703832.85	409379.82
34	DEMOLITION LIMITS	10703777.09	409322.28
35	DEMOLITION LIMITS	10703787.68	409322.69
36	DEMOLITION LIMITS	10703780.37	409557.69
37	DEMOLITION LIMITS	10703823.04	409616.45
38	DEMOLITION LIMITS	10703814.30	409624.09
39	DEMOLITION LIMITS	10703473.97	409547.41
40	DEMOLITION LIMITS	10703470.75	409642.44
41	DEMOLITION LIMITS	10703282.98	409636.01
42	DEMOLITION LIMITS	10703283.38	409503.75
43	DEMOLITION LIMITS	10703243.23	409502.44
44	DEMOLITION LIMITS	10703237.90	409651.35
45	DEMOLITION LIMITS	10703196.02	409680.64
46	DEMOLITION LIMITS	10703194.81	409716.68
47	DEMOLITION LIMITS	10703234.98	409747.18
48	DEMOLITION LIMITS	10703224.16	410070.33
49	DEMOLITION LIMITS	10703191.19	410104.15

HORIZONTAL CONTROL TABLE			
POINT NO.	DESCRIPTION	NORTHING	EASTING
50	DEMOLITION LIMITS	10703166.70	410103.33
51	DEMOLITION LIMITS	10703165.37	410143.39
52	DEMOLITION LIMITS	10703193.10	410144.32
53	DEMOLITION LIMITS	10703219.82	410185.83
54	DEMOLITION LIMITS	10703214.13	410354.37
55	DEMOLITION LIMITS	10703171.37	410395.39
56	DEMOLITION LIMITS	10703170.24	410429.45
57	DEMOLITION LIMITS	10703210.69	410463.51
58	DEMOLITION LIMITS	10703204.05	410646.19
59	DEMOLITION LIMITS	10703146.41	410680.54
60	DEMOLITION LIMITS	10703145.19	410716.54
61	DEMOLITION LIMITS	10703200.28	410756.17
62	DEMOLITION LIMITS	10703194.29	410932.15
63	DEMOLITION LIMITS	10703151.44	410968.78
64	DEMOLITION LIMITS	10703150.24	411004.39
66	DEMOLITION LIMITS	10703184.35	411219.33
67	DEMOLITION LIMITS	10703126.64	411256.19
68	DEMOLITION LIMITS	10703125.40	411292.28
69	DEMOLITION LIMITS	10703180.68	411328.82
70	DEMOLITION LIMITS	10703175.09	411490.19
71	DEMOLITION LIMITS	10703139.28	411526.08
72	DEMOLITION LIMITS	10703138.05	411562.32
73	DEMOLITION LIMITS	10703171.16	411602.61
74	DEMOLITION LIMITS	10703165.20	411769.06
75	DEMOLITION LIMITS	10703093.08	411797.39
76	DEMOLITION LIMITS	10703095.42	411832.77
77	DEMOLITION LIMITS	10703145.38	411835.86
78	DEMOLITION LIMITS	10703197.58	411837.80
79	DEMOLITION LIMITS	10703198.64	411784.71
80	DEMOLITION LIMITS	10703702.45	411802.41
81	DEMOLITION LIMITS	10703699.96	411879.97
82	DEMOLITION LIMITS	10703672.85	411901.40
83	DEMOLITION LIMITS	10703632.95	411901.61
84	DEMOLITION LIMITS	10703631.37	411936.49
85	DEMOLITION LIMITS	10703674.86	411937.81
86	DEMOLITION LIMITS	10703697.47	411957.52
87	DEMOLITION LIMITS	10703681.36	412459.40
88	DEMOLITION LIMITS	10703715.82	412460.51
89	DEMOLITION LIMITS	10703800.85	410005.89
90	DEMOLITION LIMITS	10703804.85	409899.53
91	DEMOLITION LIMITS	10704313.49	409915.41
92	DEMOLITION LIMITS	10704314.01	409923.34
93	DEMOLITION LIMITS	10704309.30	410028.23
94	DEMOLITION LIMITS	10704287.78	409875.51
95	DEMOLITION LIMITS	10704384.93	409878.77
96	DEMOLITION LIMITS	10704464.97	409881.45
97	DEMOLITION LIMITS	10704452.69	409921.06
98	DEMOLITION LIMITS	10704506.91	409955.65
99	DEMOLITION LIMITS	10704503.37	409905.95
100	DEMOLITION LIMITS	10704577.00	410000.36

HORIZONTAL CONTROL TABLE			
POINT NO.	DESCRIPTION	NORTHING	EASTING
101	DEMOLITION LIMITS	10704582.77	409956.60
102	DEMOLITION LIMITS	10704693.48	410074.66
103	DEMOLITION LIMITS	10704700.52	410031.71
104	DEMOLITION LIMITS	10704756.77	410115.03
105	DEMOLITION LIMITS	10704722.62	410045.80
106	DEMOLITION LIMITS	10704764.29	410072.39
107	DEMOLITION LIMITS	10704870.91	410003.69
108	DEMOLITION LIMITS	10704831.78	410098.37
109	DEMOLITION LIMITS	10704837.43	410056.14
110	DEMOLITION LIMITS	10704862.24	410091.60
111	DEMOLITION LIMITS	10704902.94	410027.86
112	DEMOLITION LIMITS	10704962.97	409933.82
113	DEMOLITION LIMITS	10704926.80	409916.14
114	DEMOLITION LIMITS	10704916.50	409869.48
115	DEMOLITION LIMITS	10704903.07	409860.91
116	DEMOLITION LIMITS	10704956.83	409776.65
117	DEMOLITION LIMITS	10704976.57	409789.16
118	DEMOLITION LIMITS	10704997.57	409786.02
119	DEMOLITION LIMITS	10705005.41	409792.91
120	DEMOLITION LIMITS	10705000.42	409800.81
121	DEMOLITION LIMITS	10705010.83	409929.70
122	DEMOLITION LIMITS	10705220.29	409939.93
123	DEMOLITION LIMITS	10705164.29	410027.66

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REV.	DATE	BY	DESCRIPTION

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ENGINEER'S SEAL

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

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PLANNING ENGINEERING PROJECT MANAGEMENT
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EL PASO • SAN ANTONIO
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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000534

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DEMOLITION PLAN

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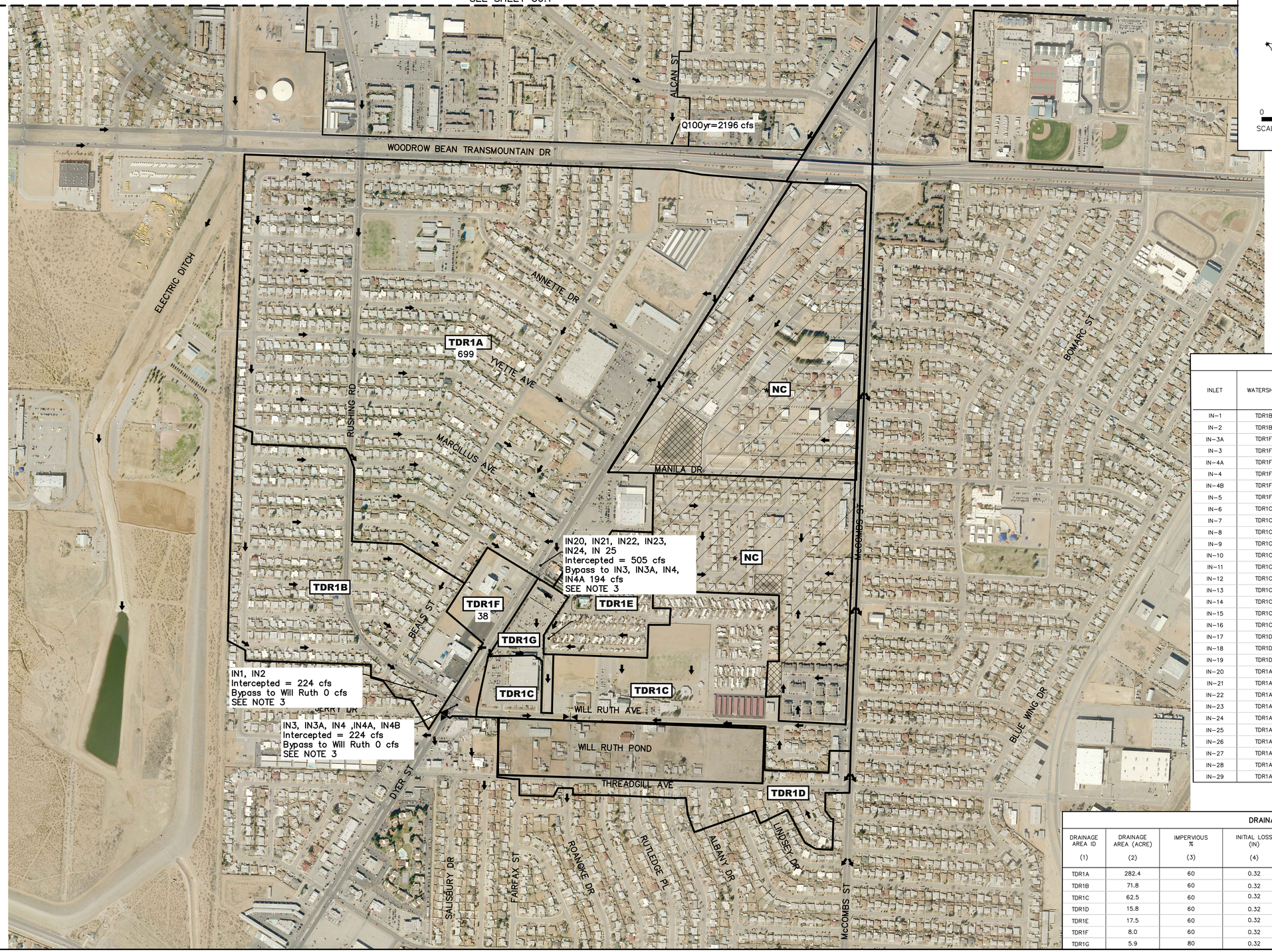
JOB NO. 16-133
SEQUENCE NO. 4 OF 4
SHEET NO. C5.3

F:\16133\DWG\16133 - C5.0-C5.3_DWG_DEM.dwg Time:Oct07,2022 - 08:24am Login:alejandro

MATCHLINE "A"
SEE SHEET C6.1



0 400
SCALE: 1"=400'

FLOOD ZONE "AH"
AREAS OF 100-YEAR FLOOD; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS DETERMINED.

FIRM – FLOOD INSURANCE RATE MAP CITY OF EL PASO, EL PASO COUNTY, TX.

PANEL 19 OF 52 COMMUNITY – PANEL NUMBER 480214 0019 B
MAP REVISED: OCTOBER 15, 1982

PANEL 20 OF 52 COMMUNITY – PANEL NUMBER 480214 0020 B
MAP REVISED: OCTOBER 15, 1982

LEGEND

DA - X	DRAINAGE AREA IDENTIFICATION
	HIGH POINT
	LOW POINT
	DRAINAGE AREA BOUNDARY
	FLOW DIRECTION
NC	NON-CONTRIBUTING AREA
	PROPOSED WILL RUTH POND LIMITS
	EXISTING POND AREA

NOTES

1. WATERSHEDS AREAS NORTH OF TRANSMOUNTAIN DR. CONTRIBUTE TO THE PROJECT RUNOFF BY TOPOGRAPHY
2. THE UNDERGROUND STORM WATER DRAINAGE SYSTEM IS DESIGNED TO CAPTURE AND CONVEY RUNOFF GENERATED BY THE STREET IMPROVEMENTS WITHIN THE CITY'S RIGHT-OF-WAY ONLY. ALL OTHER AREAS WILL REMAIN AS ON-SITE PONDING.
3. RUN-OFF CALCULATIONS ARE ONLY FROM AREAS DOWNSTREAM LOOP 375, CONTRIBUTING AREAS UPSTREAM LOOP 375 WILL BE CAPTURED BY A FUTURE SYSTEM AT ALCAN ST AREA.

* AREA DOES NOT CONTRIBUTE.

DRAINAGE INLETS

INLET	WATERSHED	Q 100 YEAR CFS	Q INTERCEPTED CFS	BYPASS CFS	TO INLET	INLET LENGTH
IN-1	TDR1B	224	112	112	IN-2	60
IN-2	TDR1B	112	112	0	IN-4B	60
IN-3A	TDR1F	120	60	60	IN-3	41
IN-3	TDR1F	60	60	0	IN-4B	41
IN-4A	TDR1F	88	44	44	IN-4	30
IN-4	TDR1F	44	44	0	IN-4B	30
IN-4B	TDR1F	10	10	0	IN-5	50
IN-5	TDR1F	10	10	0	IN-6	30
IN-6	TDR1C	4	2	2	IN-7	6
IN-7	TDR1C	17	17	SAG	NA	10
IN-8	TDR1C	30	15	15	IN-7	10
IN-9	TDR1C	45	15	30	IN-8	10
IN-10	TDR1C	60	15	45	IN-9	10
IN-11	TDR1C	75	15	60	IN-10	10
IN-12	TDR1C	90	15	75	IN-11	10
IN-13	TDR1C	105	15	90	IN-12	10
IN-14	TDR1C	120	15	105	IN-13	10
IN-15	TDR1C	135	15	120	IN-14	10
IN-16	TDR1C	150	15	135	IN-15	10
IN-17	TDR1D	32	24	8	IN-18	10
IN-18	TDR1D	8	8	SAG	NA	10
IN-19	TDR1D	14	14	0	IN-18	6
IN-20	TDR1A	130	62	68	IN-24	40
IN-21	TDR1A	130	62	68	IN-20	31
IN-22	TDR1A	290	35	230	IN-24	30
IN-23	TDR1A	350	60	290	IN-22	30
IN-24	TDR1A	508	24	360	1520FS-IN26-2080FS, IN3A,IN4A	26
IN-25	TDR1A	107	20	87	IN-4A	30
IN-26	TDR1A	152	38	114	IN-27	30
IN-27	TDR1A	114	38	76	IN-28	30
IN-28	TDR1A	76	38	38	IN-29	30
IN-29	TDR1A	38	38	0	CHANNEL	30

DRAINAGE AREA COMPUTATIONS

DRAINAGE AREA ID (1)	DRAINAGE AREA (ACRE) (2)	IMPERVIOUS % (3)	INITIAL LOSS (IN) (4)	UNIFORM LOSS (IN/HR) (5)	LAG TIME (HR) (6)	PEAKING COEFFICIENT Cp (7)	100-YEAR DISCHARGE CFS (8)
TDR1A	282.4	60	0.32	0.16	0.38	0.6719	699.10
TDR1B	71.8	60	0.32	0.16	0.26	0.6719	224.41
TDR1C	62.5	60	0.32	0.16	0.40	0.6719	150.38
TDR1D	15.8	60	0.32	0.16	0.17	0.6719	60.82
TDR1E	17.5	60	0.32	0.16	0.13	0.6719	77.44
TDR1F	8.0	60	0.32	0.16	0.12	0.6719	37.36
TDR1G	5.9	80	0.32	0.16	0.13	0.6719	27.60

100-YR RETURN FREQUENCY
TOTAL RAIN DEPTH (INCHES) BY DURATION

TIME	INTENSITY (IN)
5 MIN	0.58
15 MIN	1.12
1 HR	1.84
2 HR	2.36
3 HR	2.49
6 HR	2.78
12 HR	3.06
1 DAY	3.34

REFERENCE:
CITY OF EL PASO
ENGINEERING DEPARTMENT
DRAINAGE DESIGN MANUAL (2008)

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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

OVERALL WATERSHED MAP

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JOB NO. 16-133
SEQUENCE NO. 1 OF 2
SHEET NO. C6.0

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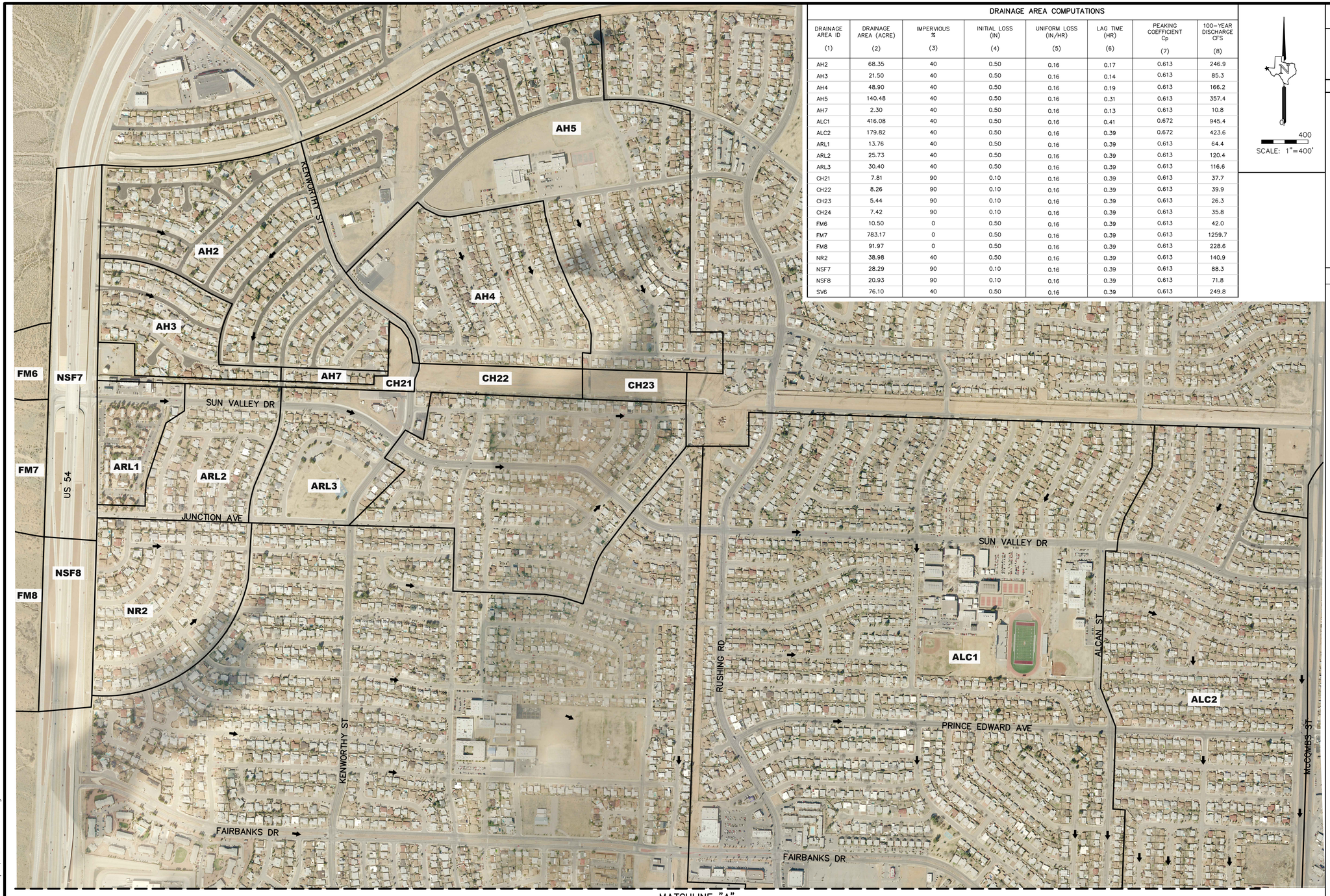

MATCHLINE "A"
SEE SHEET C6.0

DRAINAGE AREA COMPUTATIONS

DRAINAGE AREA ID (1)	DRAINAGE AREA (ACRE) (2)	IMPERVIOUS % (3)	INITIAL LOSS (IN) (4)	UNIFORM LOSS (IN/HR) (5)	LAG TIME (HR) (6)	PEAKING COEFFICIENT Cp (7)	100-YEAR DISCHARGE CFS (8)
AH2	68.35	40	0.50	0.16	0.17	0.613	246.9
AH3	21.50	40	0.50	0.16	0.14	0.613	85.3
AH4	48.90	40	0.50	0.16	0.19	0.613	166.2
AH5	140.48	40	0.50	0.16	0.31	0.613	357.4
AH7	2.30	40	0.50	0.16	0.13	0.613	10.8
ALC1	416.08	40	0.50	0.16	0.41	0.672	945.4
ALC2	179.82	40	0.50	0.16	0.39	0.672	423.6
ARL1	13.76	40	0.50	0.16	0.39	0.613	64.4
ARL2	25.73	40	0.50	0.16	0.39	0.613	120.4
ARL3	30.40	40	0.50	0.16	0.39	0.613	116.6
CH21	7.81	90	0.10	0.16	0.39	0.613	37.7
CH22	8.26	90	0.10	0.16	0.39	0.613	39.9
CH23	5.44	90	0.10	0.16	0.39	0.613	26.3
CH24	7.42	90	0.10	0.16	0.39	0.613	35.8
FM6	10.50	0	0.50	0.16	0.39	0.613	42.0
FM7	783.17	0	0.50	0.16	0.39	0.613	1259.7
FM8	91.97	0	0.50	0.16	0.39	0.613	228.6
NR2	38.98	40	0.50	0.16	0.39	0.613	140.9
NSF7	28.29	90	0.10	0.16	0.39	0.613	88.3
NSF8	20.93	90	0.10	0.16	0.39	0.613	71.8
SV6	76.10	40	0.50	0.16	0.39	0.613	249.8

N

0 400

SCALE: 1"=400'

FLOOD ZONE "AH"

AREAS OF 100-YEAR FLOOD; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS DETERMINED.

FIRM – FLOOD INSURANCE RATE MAP CITY OF EL PASO, EL PASO COUNTY, TX.

PANEL 19 OF 52 COMMUNITY – PANEL NUMBER 480214 0019 B
MAP REVISED: OCTOBER 15, 1982

PANEL 20 OF 52 COMMUNITY – PANEL NUMBER 480214 0020 B
MAP REVISED: OCTOBER 15, 1982

LEGEND

- DA - X — DRAINAGE AREA IDENTIFICATION
- HIGH POINT
- LOW POINT
- DRAINAGE AREA BOUNDARY
- FLOW DIRECTION
- NC — NON-CONTRIBUTING AREA
- PROPOSED WILL RUTH POND LIMITS
- EXISTING POND AREA

NOTES

1. WATERSHEDS AREAS NORTH OF TRANSMOUNTAIN DR. CONTRIBUTE TO THE PROJECT RUNOFF BY TOPOGRAPHY
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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

OVERALL WATERSHED MAP

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JOB NO. 16-133
SEQUENCE NO. 2 OF 2
SHEET NO. C6.1

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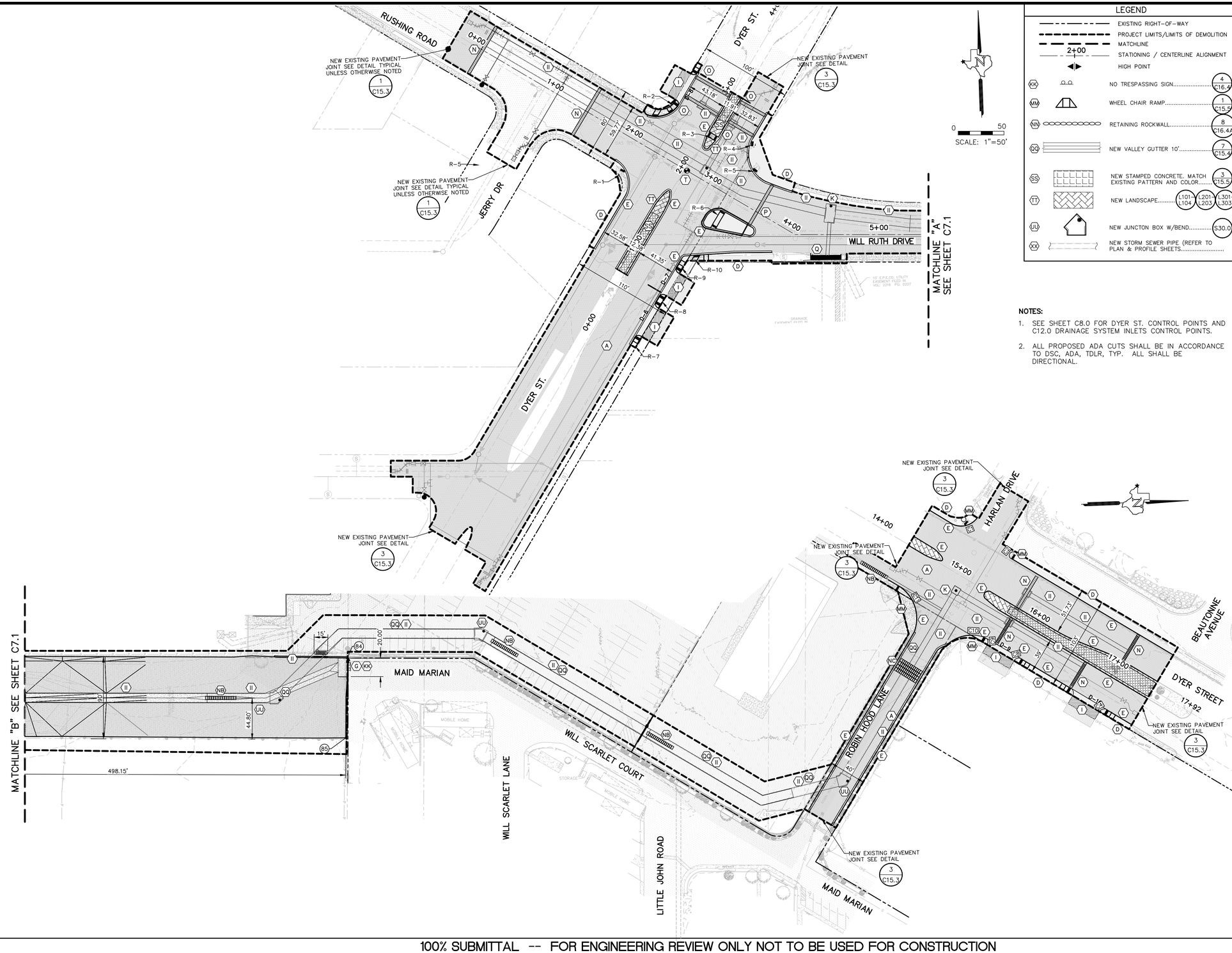


LEGEND

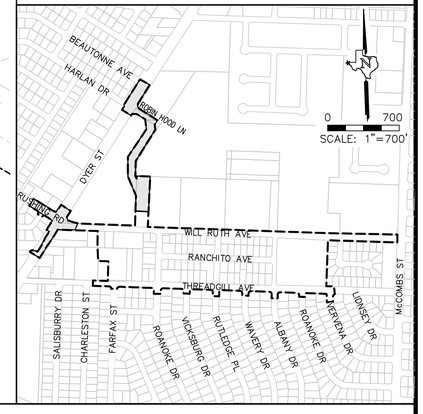
- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- HIGH POINT
- (KK) NO TRESPASSING SIGN 4 C16.4
- (MM) WHEEL CHAIR RAMP 1 C15.5
- (NN) RETAINING ROCKWALL 8 C16.4A
- (QQ) NEW VALLEY GUTTER 10' 7 C15.4
- (SS) NEW STAMPED CONCRETE, MATCH EXISTING PATTERN AND COLOR 3 C15.5
- (TT) NEW LANDSCAPE L101-L104 L201-L203 L301-L303
- (UU) NEW JUNCTON BOX W/BEND S30.0
- (XX) NEW STORM SEWER PIPE (REFER TO PLAN & PROFILE SHEETS) .....

KEYED LEGEND

- (A) NEW HMAC PAVEMENT RECONSTRUCTION 1-6 C15.4
- (C) NEW MORTARED ROCK RIP RAP 5 C16.4
- (D) NEW CONCRETE SIDEWALK 3 C15.5
- (E) NEW CONCRETE CURB & GUTTER 6 C15.1
- (F) NEW ROCKWALL 7 C15.1
- (G) NEW WROUGHT IRON FENCE 1 C16.4A
- (H) NEW WROUGHT IRON GATE 2 C16.4A
- (I) NEW CONCRETE DRIVEWAY 1 C15.3
- (J) NEW POND DEPTH GAUGE 3 C16.4
- (K) JUNCTION BOXES ..... M S27.0 N S28.0 P S29.0
- (L) SIGN "FOR EMERGENCY PURPOSES ONLY" 4 C15.0
- (M) NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS, SEE STRUCTURAL SHEETS FOR DETAILS 1 C16.10 3 C16.10
- (N) NEW GRATE INLET 1 C16.5 1-4 C16.6
- (O) NEW GRATE INLET 2 C16.5 3 C16.5
- (P) NEW GRATE INLET 4 C16.5
- (Q) NEW GRATE INLET 5 C16.5
- (NB) NEW GRATE INLET 6-10 C16.6
- (NC) NEW GRATE INLET 5 C16.6
- (R) NEW GRATE INLET 6-11 C16.6
- (S) EXISTING CITY MONUMENT
- (T) NEW CITY MONUMENT 5 C15.4
- (X) CONCRETE EMERGENCY SPILLWAY 1 C16.12
- (Y) DESTILING BASIN 2 C16.10 4 C16.10
- (AA) DECORATIVE WALL 10 C16.4A
- (BB) CONCRETE VALLEY GUTTER 3' 4 C15.1
- (II) BOX CULVERT 1 C16.8 1 C16.9
- (JJ) CONCRETE RIP-RAP 1-6 C16.22

NOTES:

1. SEE SHEET C8.0 FOR DYER ST. CONTROL POINTS AND C12.0 DRAINAGE SYSTEM INLETS CONTROL POINTS.
2. ALL PROPOSED ADA CUTS SHALL BE IN ACCORDANCE TO DSC, ADA, TDLR, TYP. ALL SHALL BE DIRECTIONAL.



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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

SITE PLAN

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JOB NO. 16-133
SEQUENCE NO. 1 OF 4
SHEET NO. C7.0

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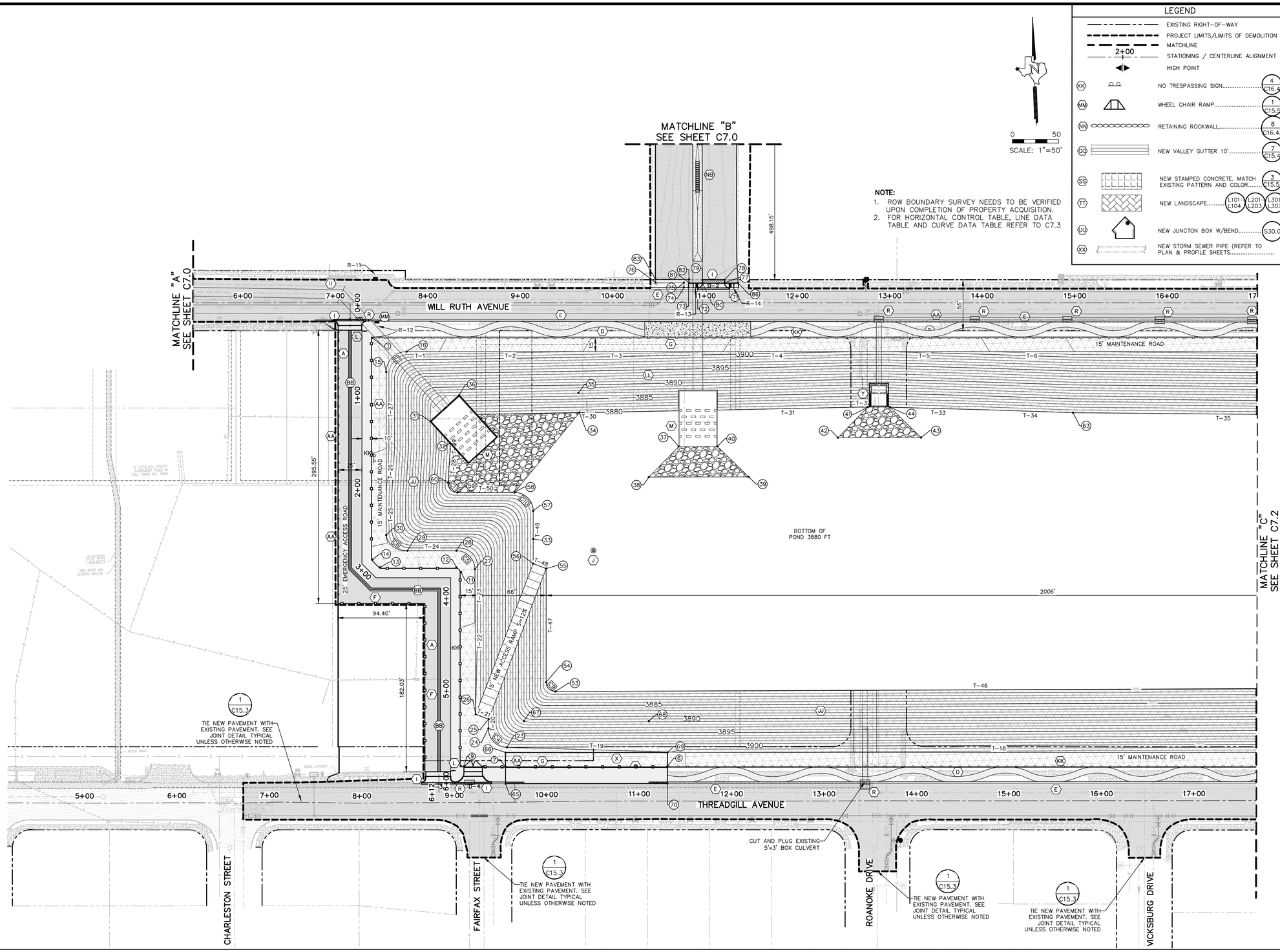


0 50
SCALE: 1"=50'

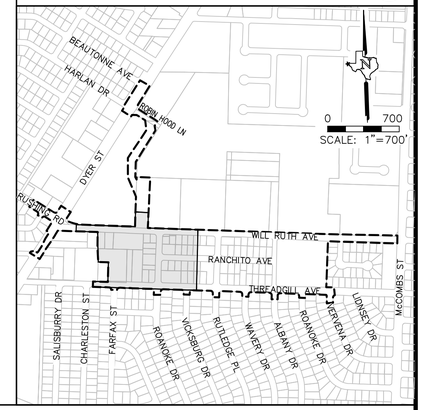
NOTE:
1. ROW BOUNDARY SURVEY NEEDS TO BE VERIFIED UPON COMPLETION OF PROPERTY ACQUISITION.
2. FOR HORIZONTAL CONTROL TABLE, LINE DATA TABLE AND CURVE DATA TABLE REFER TO C7.3

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- HIGH POINT
- KK NO TRESPASSING SIGN ..... 4 / C16.4
- MM WHEEL CHAIR RAMP ..... 1 / C15.5
- NN RETAINING ROCKWALL ..... 8 / C16.4A
- DQ NEW VALLEY GUTTER 10' ..... 7 / C15.4
- SS NEW STAMPED CONCRETE, MATCH EXISTING PATTERN AND COLOR ..... 3 / C15.5
- TT NEW LANDSCAPE ..... L101-L104 / L201-L203 / L301-L303
- UU NEW JUNCTON BOX W/BEND S30.0
- XX NEW STORM SEWER PIPE (REFER TO PLAN & PROFILE SHEETS)

KEYED LEGEND

- A NEW HMAC PAVEMENT RECONSTRUCTION ..... 1-6 / C15.4
- C NEW MORTARED ROCK RIP RAP ..... 5 / C16.4
- D NEW CONCRETE SIDEWALK ..... 3 / C15.5
- E NEW CONCRETE CURB & GUTTER ..... 6 / C15.1
- F NEW ROCKWALL ..... 7 / C15.1
- G NEW WROUGHT IRON FENCE ..... 1 / C16.4A
- H NEW WROUGHT IRON GATE ..... 2 / C16.4A
- I NEW CONCRETE DRIVEWAY ..... 1 / C15.3
- J NEW POND DEPTH GAUGE ..... 3 / C16.4
- K JUNCTION BOXES ..... M S27.0 / N S28.0 / P S29.0
- L SIGN "FOR EMERGENCY PURPOSES ONLY" ..... 4 / C15.0
- M NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS, SEE STRUCTURAL SHEETS FOR DETAILS ..... 1 / C16.10 ; 3 / C16.10
- N NEW GRATE INLET ..... 1 / C16.5 ; 1-4 / C16.6
- O NEW GRATE INLET ..... 2 / C16.5 ; 3 / C16.5
- P NEW GRATE INLET ..... 4 / C16.5
- Q NEW GRATE INLET ..... 5 / C16.5
- NB NEW GRATE INLET ..... 6-10 / C16.6
- NC NEW GRATE INLET ..... 5 / C16.6
- R NEW GRATE INLET ..... 6-11 / C16.6
- S EXISTING CITY MONUMENT
- T NEW CITY MONUMENT ..... 5 / C15.4
- X CONCRETE EMERGENCY SPILLWAY ..... 1 / C16.12
- Y DESTILING BASIN ..... 2 / C16.10 ; 4 / C16.10
- AA DECORATIVE WALL ..... 10 / C16.4A
- BB CONCRETE VALLEY GUTTER 3' ..... 4 / C15.1
- II BOX CULVERT ..... 1 / C16.9 ; 1 / C16.9
- JJ CONCRETE RIP-RAP ..... 1-6 / C16.22



0 700
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CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

SITE PLAN

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JOB NO. 16-133
SEQUENCE NO. 2 OF 4
SHEET NO. C7.1

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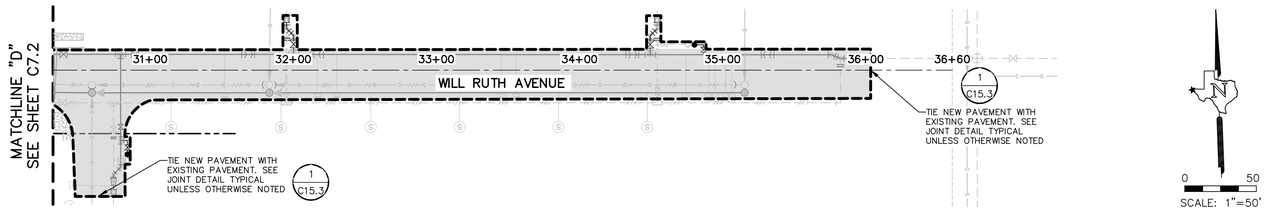
NOTE:
1. ROW BOUNDARY SURVEY NEEDS TO BE VERIFIED UPON COMPLETION OF PROPERTY ACQUISITION.

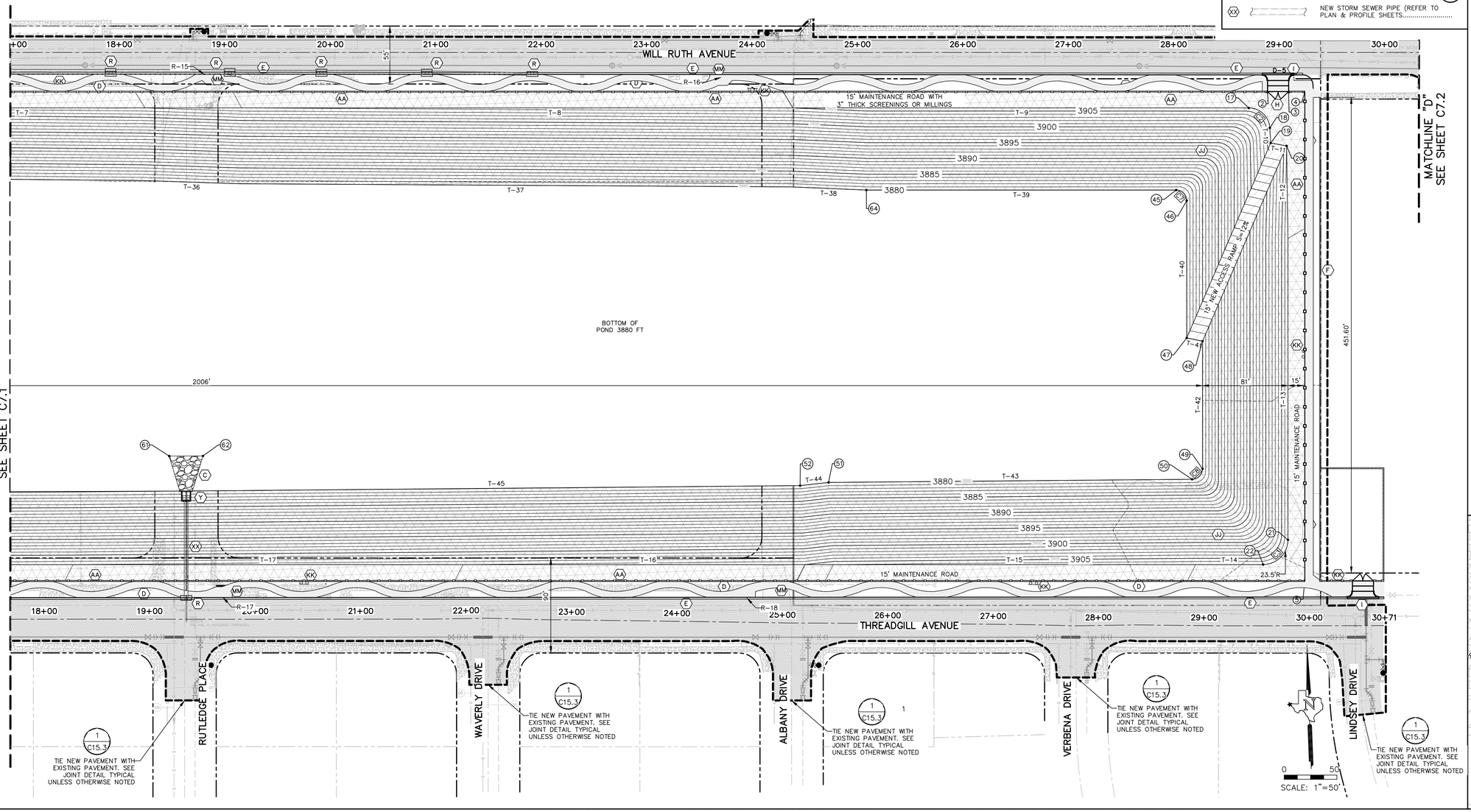


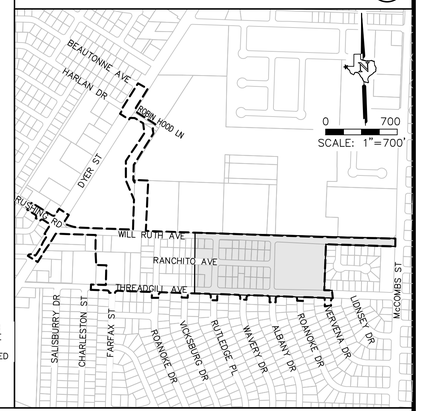
LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- HIGH POINT
- (KK) NO TRESPASSING SIGN..... 4 C16.4
- (MM) WHEEL CHAIR RAMP..... 1 C15.5
- (NN) RETAINING ROCKWALL..... 8 C16.4A
- (QQ) NEW VALLEY GUTTER 10'..... 7 C15.4
- (SS) NEW STAMPED CONCRETE, MATCH EXISTING PATTERN AND COLOR..... 3 C15.5
- (TT) NEW LANDSCAPE..... L101-L104 L201-L203 L301-L303
- (UU) NEW JUNCTON BOX W/BEND..... S30.0
- (XX) NEW STORM SEWER PIPE (REFER TO PLAN & PROFILE SHEETS.....

KEYED LEGEND

- (A) NEW HMAC PAVEMENT RECONSTRUCTION..... 1-6 C15.4
- (C) NEW MORTARED ROCK RIP RAP..... 5 C16.4
- (D) NEW CONCRETE SIDEWALK..... 3 C15.5
- (E) NEW CONCRETE CURB & GUTTER..... 6 C15.1
- (F) NEW ROCKWALL..... 7 C15.1
- (G) NEW WROUGHT IRON FENCE..... 1 C16.4A
- (H) NEW WROUGHT IRON GATE..... 2 C16.4A
- (I) NEW CONCRETE DRIVEWAY..... 1 C15.3
- (J) NEW POND DEPTH GAUGE..... 3 C16.4
- (K) JUNCTION BOXES..... M S27.0 N S28.0 P S29.0
- (L) SIGN "FOR EMERGENCY PURPOSES ONLY"..... 4 C15.0
- (M) NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS, SEE STRUCTURAL SHEETS FOR DETAILS..... 1 C16.10 3 C16.10
- (N) NEW GRATE INLET..... 1 C16.5 1-4 C16.6
- (O) NEW GRATE INLET..... 2 C16.5 3 C16.5
- (P) NEW GRATE INLET..... 4 C16.5
- (Q) NEW GRATE INLET..... 5 C16.5
- (NB) NEW GRATE INLET..... 6-10 C16.6
- (NC) NEW GRATE INLET..... 5 C16.6
- (R) NEW GRATE INLET..... 6-11 C16.5
- (S) EXISTING CITY MONUMENT
- (T) NEW CITY MONUMENT..... 5 C15.4
- (X) CONCRETE EMERGENCY SPILLWAY..... 1 C16.12
- (Y) DESTILING BASIN..... 2 C16.10 4 C16.10
- (AA) DECORATIVE WALL..... 10 C16.4A
- (BB) CONCRETE VALLEY GUTTER 3'..... 4 C15.1
- (II) BOX CULVERT..... 1 C16.8 1 C16.9
- (JJ) CONCRETE RIP-RAP..... 1-6 C16.22





100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

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CALL
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1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES
linespots@elpasotexas.gov

ENGINEER'S SEAL
THESE PLANS WERE RELEASED UNDER THE AUTHORITY OF MARCOS MEDINA, PE #93830 TO BE ISSUED AS A **100% SUBMITTAL** TO EL PASO WATER FOR REVIEW. IT IS NOT TO BE USED FOR CONSTRUCTION OR FINAL PERMIT ISSUANCE.

DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
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JOB NO. 16-133
SEQUENCE NO. 3 OF 4
SHEET NO. C7.2

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HORIZONTAL CONTROL TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING
1	NEW ROCKWALL	10703761.28	409597.10
2	NEW ROCKWALL	10703687.81	411744.84
3	NEW ROCKWALL	10703687.12	411764.83
4	NEW ROCKWALL	10703686.60	411780.12
5	NEW ROCKWALL	10703223.34	411764.26
6	NEW MAINTENANCE ROAD	10703287.18	409900.06
7	NEW ROCKWALL	10703293.17	409725.16
8	NEW IRON GATE	10703293.99	409701.17
9	NEW IRON GATE	10703294.75	409680.18
10	NEW ROCKWALL	10703294.81	409677.08
11	NEW ROCKWALL	10703504.93	409684.28
12	NEW ROCKWALL	10703510.10	409679.45
13	NEW ROCKWALL	10703512.92	409597.16
14	NEW ROCKWALL	10703521.76	409588.90
15	NEW MAINTENANCE ROAD	10703723.87	409610.83
16	NEW MAINTENANCE ROAD	10703745.10	409633.57
17	NEW MAINTENANCE ROAD	10703673.43	411726.53
18	NEW MAINTENANCE ROAD	10703653.83	411745.84
19	NEW ACCESS RAMP	10703639.41	411746.13
20	NEW ACCESS RAMP	10703636.15	411761.17
21	NEW MAINTENANCE ROAD	10703262.36	411749.59
22	NEW MAINTENANCE ROAD	10703239.68	411725.30
23	NEW MAINTENANCE ROAD	10703313.81	409727.50
24	NEW MAINTENANCE ROAD	10703334.89	409708.13
25	NEW ACCESS RAMP	10703344.84	409708.68
26	NEW ACCESS RAMP	10703350.58	409694.82
27	NEW MAINTENANCE ROAD	10703507.42	409699.37
28	NEW MAINTENANCE ROAD	10703528.09	409680.07
29	NEW MAINTENANCE ROAD	10703529.90	409627.20
30	NEW MAINTENANCE ROAD	10703547.68	409604.80
31	NEW MORTARED ROCK RIP-RAP	10703668.77	409656.75
32	NEW MORTARED ROCK RIP-RAP	10703644.72	409677.15
33	NEW MORTARED ROCK RIP-RAP	10703538.02	409763.46
34	NEW MORTARED ROCK RIP-RAP	10703672.87	409817.97
35	NEW MORTARED ROCK RIP-RAP	10703694.23	409817.79
36	NEW MORTARED ROCK RIP-RAP	10703695.99	409688.75
37	NEW MORTARED ROCK RIP-RAP	10703632.51	409924.11
38	NEW MORTARED ROCK RIP-RAP	10703600.57	409890.73
39	NEW MORTARED ROCK RIP-RAP	10703597.08	409998.69
40	NEW MORTARED ROCK RIP-RAP	10703631.15	409966.08
41	NEW MORTARED ROCK RIP-RAP	10703668.07	410129.86
42	NEW MORTARED ROCK RIP-RAP	10703636.14	410096.49
43	NEW MORTARED ROCK RIP-RAP	10703633.23	410186.45
44	NEW MORTARED ROCK RIP-RAP	10703667.23	410154.02
45	NEW BOTTOM OF POND	10703597.83	411655.01
46	NEW BOTTOM OF POND	10703587.49	411664.67
47	NEW ACCESS RAMP	10703457.17	411660.20
48	NEW ACCESS RAMP	10703453.57	411675.09
49	NEW BOTTOM OF POND	10703332.57	411670.94
50	NEW BOTTOM OF POND	10703322.92	411660.69

HORIZONTAL CONTROL TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING
51	NEW BOTTOM OF POND	10703331.71	411315.93
52	NEW BOTTOM OF POND	10703329.62	411288.88
53	NEW BOTTOM OF POND	10703372.25	409781.84
54	NEW BOTTOM OF POND	10703382.59	409772.16
55	NEW ACCESS RAMP	10703505.48	409776.37
56	NEW BOTTOM OF POND	10703511.31	409762.54
57	NEW BOTTOM OF POND	10703568.22	409764.49
58	NEW BOTTOM OF POND	10703588.90	409745.19
59	NEW BOTTOM OF POND	10703591.02	409683.21
60	NEW BOTTOM OF POND	10703601.95	409673.60
61	NEW GABION MATTRESS	10703378.19	410691.64
62	NEW GABION MATTRESS	10703377.15	410723.73
63	NEW BOTTOM OF POND	10703654.48	410351.53
64	NEW BOTTOM OF POND	10703607.88	411361.30
65	NEW SPILLWAY	10703274.62	409724.53
66	NEW SPILLWAY	10703308.16	409725.66
67	NEW SPILLWAY	10703341.41	409746.80
68	NEW SPILLWAY	10703336.86	409881.72
69	NEW SPILLWAY	10703302.17	409900.56
70	NEW SPILLWAY	10703268.72	409899.43
71	NEW CONCRETE DRIVEWAY	10703802.11	409984.63
72	NEW CONCRETE DRIVEWAY	10703803.25	409950.65
73	TOP OF SIDEWALK	10703804.10	409940.67
74	TOP OF SIDEWALK	10703804.28	409935.67
75	TOP OF SIDEWALK	10703809.50	409935.85
76	TOP OF SIDEWALK	10703810.55	409905.16
77	TOP OF ASPHALT PAVEMENT	10703807.77	409979.82
78	TOP OF ASPHALT PAVEMENT	10703810.99	409979.93
79	TOP OF ASPHALT PAVEMENT	10703811.82	409955.94
80	TOP OF ASPHALT PAVEMENT	10703808.58	409955.83
81	TOP OF ASPHALT PAVEMENT	10703809.07	409941.34
82	TOP OF ASPHALT PAVEMENT	10703812.79	409941.47
83	TOP OF ASPHALT PAVEMENT	10703814.05	409905.28
84	TOP OF CONCRETE FLUME	10704312.66	409923.54
85	TOP OF ASPHALT PAVEMENT	10704308.36	410010.33
86	TOP OF ASPHALT PAVEMENT	10703807.28	409994.28
87	TOP OF CONCRETE FLUME	10704311.99	409943.53
88	TOP OF CONCRETE FLUME	10704302.00	409943.07
89	TOP OF CONCRETE FLUME	10704302.67	409923.08
90	NEW CONCRETE SWALE	10704302.51	409927.64
91	NEW CONCRETE SWALE	10704302.15	409938.51
92	NEW CONCRETE SWALE	10704292.31	409934.89
93	NEW CONCRETE SWALE	10704293.69	409938.46
94	NEW CONCRETE SWALE	10704221.40	409959.14
95	NEW CONCRETE SWALE	10704221.92	409962.22
96	NEW CONCRETE SWALE	10704222.58	409966.08
97	NEW CONCRETE SWALE	10704223.11	409969.20
98	NEW CONCRETE SWALE	10704189.95	409961.19
99	NEW CONCRETE SWALE	10704189.83	409965.02
100	NEW CONCRETE SWALE	10704156.47	409960.10

HORIZONTAL CONTROL TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING
101	NEW CONCRETE SWALE	10704156.35	409963.93
102	NEW CONCRETE SWALE	10703940.08	409953.10
103	NEW CONCRETE SWALE	10703939.96	409956.92
104	NEW CONCRETE SWALE	10703906.60	409952.01
105	NEW CONCRETE SWALE	10703906.48	409955.84
106	NEW CONCRETE SWALE	10703842.04	409949.90
107	NEW CONCRETE SWALE	10703841.91	409953.73
108	NEW CONCRETE SWALE	10703832.15	409946.51
109	NEW CONCRETE SWALE	10703831.81	409956.50

LINE DATA TABLE

LINE ID	BEARING	LENGTH
T-1	N88° 02' 19.24"W	35.41
T-2	N88° 02' 34.12"W	155.35
T-3	N88° 02' 03.99"W	151.57
T-4	N88° 02' 19.24"W	144.61
T-5	N88° 02' 19.24"W	143.60
T-6	N88° 02' 19.24"W	91.44
T-7	N88° 02' 19.24"W	416.68
T-8	N88° 02' 16.79"W	594.33
T-9	N88° 02' 22.90"W	361.20
T-10	N1° 08' 10.38"W	14.43
T-11	N77° 47' 00.14"W	15.40
T-12	N1° 10' 15.26"E	87.94
T-13	N1° 57' 41.01"E	286.03
T-14	S88° 02' 19.24"E	64.04
T-15	S88° 02' 19.24"E	343.70
T-16	S88° 02' 19.24"E	351.35
T-17	S88° 02' 19.24"E	369.91
T-18	S88° 01' 53.00"E	676.81
T-19	S86° 22' 25.29"E	193.45
T-20	S3° 07' 40.27"W	9.97
T-21	S67° 31' 14.34"E	15.00
T-22	S1° 39' 48.82"W	156.90
T-23	S1° 57' 39.95"W	57.78
T-24	S88° 02' 19.24"E	52.90
T-25	S1° 57' 40.76"W	43.49
T-26	S1° 57' 40.76"W	50.12
T-27	S1° 57' 40.76"W	82.68
T-28	S5° 23' 12.07"W	35.10
T-29	S1° 54' 54.25"W	7.83
T-30	N89° 03' 31.45"W	218.56
T-31	N89° 13' 38.73"W	151.48
T-32	N88° 02' 22.10"W	12.56
T-33	N86° 29' 16.17"W	107.28
T-34	N86° 09' 31.33"W	92.14
T-35	N87° 30' 36.60"W	325.00
T-36	N86° 09' 40.72"W	91.73
T-37	N87° 42' 34.26"W	522.59
T-38	N85° 37' 39.39"W	71.58
T-39	N88° 02' 22.90"W	293.89
T-40	N1° 57' 41.01"E	130.39
T-41	N76° 23' 51.16"W	15.32
T-42	N1° 57' 41.01"E	121.07
T-43	S88° 32' 19.61"E	344.88
T-44	N85° 34' 19.84"E	27.13
T-45	S88° 32' 16.61"E	576.46
T-46	S88° 16' 42.08"E	919.06
T-47	S1° 57' 38.96"W	122.96
T-48	S67° 09' 13.16"E	15.00
T-49	S1° 57' 39.95"W	56.95
T-50	S88° 02' 19.24"E	62.01

CURVE DATA TABLE

CURVE ID	LENGHT	RADIUS	TANGENT	DELTA	CHORD	(X , Y) COORDTINATE	(X , Y) COORDTINATE
C1	34.56	22.00	22.00	90.00	31.11	409633.569, 10703745.100	409610.829, 10703723.866
C2	30.34	20.00	18.95	86.90	27.51	411745.840, 10703653.835	411726.528, 10703673.427
C3	36.91	23.50	23.50	90.00	33.23	411725.296, 10703239.683	411749.587, 10703262.365
C4	31.90	20.00	20.49	91.38	28.62	409708.134, 10703334.889	409727.495, 10703313.807
C5	31.42	20.00	20.00	90.00	28.28	409699.372, 10703507.418	409680.069, 10703528.091
C6	31.55	20.75	19.73	87.11	28.60	409604.795, 10703547.678	409627.200, 10703529.901
C7	15.71	10.00	10.00	90.00	14.14	411664.665, 10703587.492	411655.013, 10703597.829
C8	15.62	10.00	9.91	89.50	14.08	411660.695, 10703322.916	411670.944, 10703332.571
C9	15.73	10.00	10.03	90.15	14.16	409772.158, 10703382.591	409781.837, 10703372.253
C10	31.42	20.00	20.00	90.00	28.28	409764.492, 10703568.225	409745.188, 10703588.898
C11	16.31	10.00	10.62	93.43	14.56	409673.596, 10703601.953	409683.210, 10703591.020

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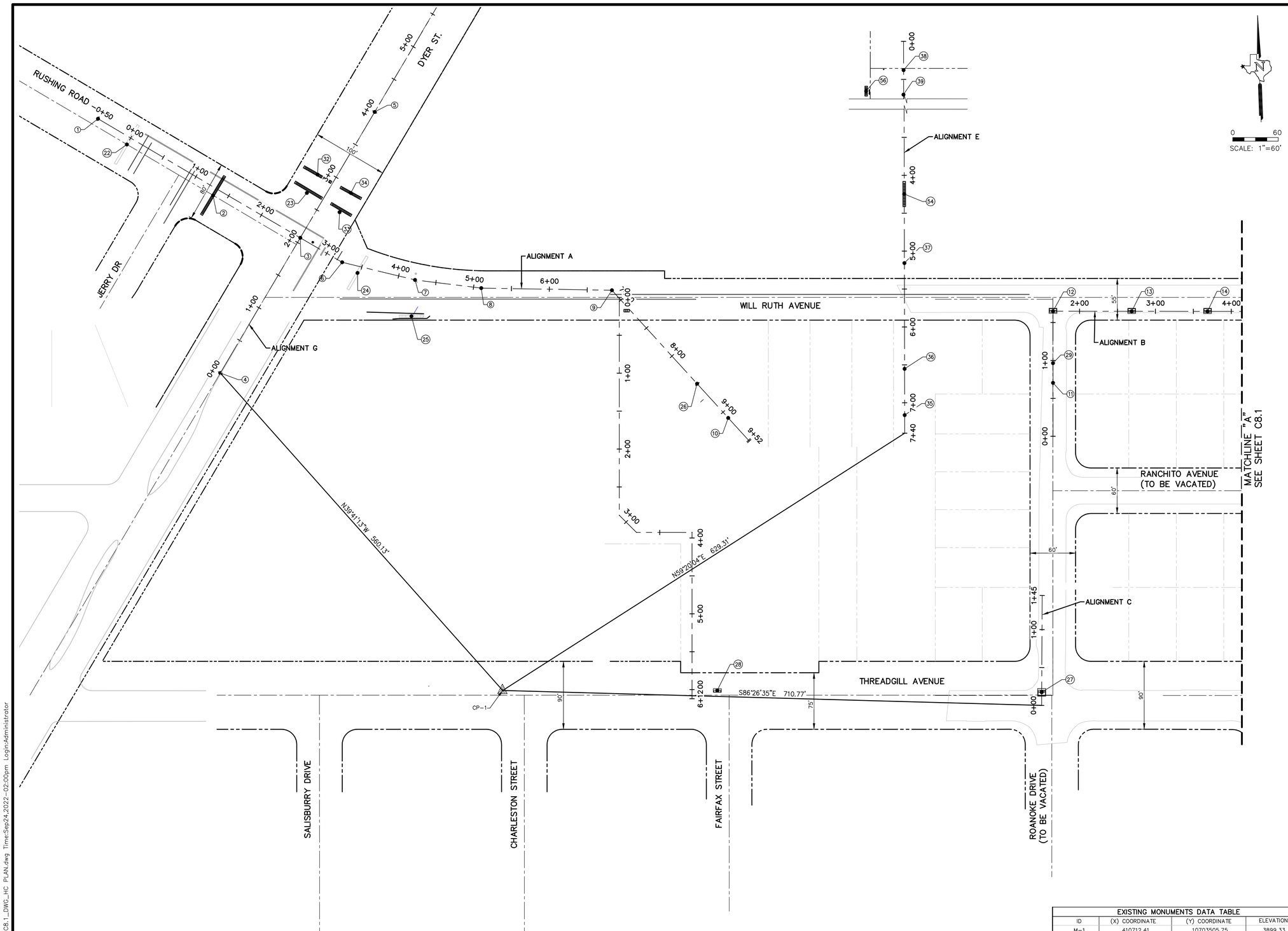


LEGEND

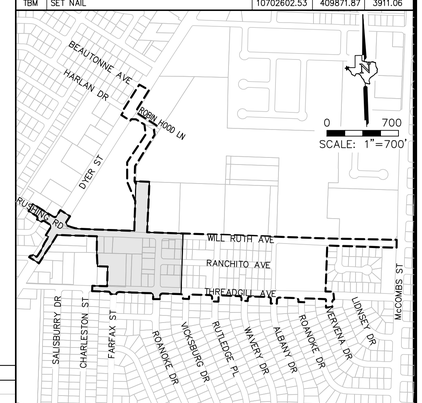
- PROJECT LIMITS/LIMITS OF DEMOLITION
- EXISTING RIGHT-OF-WAY
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- PGL PROPOSED GRADE LINE (PGL)
- NEW CITY MONUMENT
- EXISTING CONTROL POINT

HORIZONTAL CONTROL TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING	ALIGNMENT
1	REFERENCE POINT STA. −00+50.00, OFF. 0.00'	10704058.84	408895.64	A
2	NEW INLET STA. 01+32.09, OFF. 9.83''	10703952.56	409043.77	A
3	NEW CBC STA. 02+59.45, OFF. 0.00'	10703892.79	409156.77	A
4	REFERENCE POINT STA. 2+59.45, OFF. −207.24'	10703718.15	409045.29	G
5	REFERENCE POINT STA. 02+59.45, OFF. 192.81'	10704055.32	409260.51	G
6	NEW CBC STA. 03+23.40, OFF. 0.00'	10703858.63	409210.83	A
7	NEW CBC STA. 04+22.23, OFF. 0.00'	10703832.10	409306.03	A
8	NEW CBC STA. 05+10.19, OFF. 0.00'	10703818.32	409392.90	A
9	NEW CBC STA. 06+82.53, OFF. 0.00'	10703809.61	409565.02	B
10	NEW OUTLET STA. 09+10.04, OFF. 0.00'	10703636.07	409712.47	B
11	NEW OUTLET. STA. 0+70.42, OFF. 0.00'	10703667.65	410141.96	B
12	NEW INLET STA. 01+64.91, OFF. 0.00	10703762.09	410145.19	B
13	NEW INLET STA. 02+68.78, OFF. 0.00	10703758.46	410248.89	B
14	NEW INLET STA. 03+68.78, OFF. 0.00	10703754.96	410348.83	B
15	NEW INLET STA. 04+68.67, OFF. 0.00	10703751.46	410448.77	B
16	NEW INLET STA. 05+68.78, OFF. 0.00	10703747.95	410548.70	B
17	NEW INLET STA. 06+68.78, OFF. 0.00	10703744.45	410648.64	B
18	NEW INLET STA. 07+68.67, OFF. 0.00	10703740.95	410748.58	B
19	NEW INLET STA. 08+68.78, OFF. 0.00	10703737.45	410848.52	B
20	NEW INLET STA. 09+68.78, OFF. 0.00	10703733.95	410948.46	A
21	NEW INLET STA. 10+68.82, OFF. 0.00	10703728.76	411048.34	A
22	NEW INLET STA. −00+00.00 OFF. 9.83	10704023.65	408932.48	A
23	NEW INLET STA. 02+37.06 OFF. −52.72	10703951.70	409167.50	G
24	NEW INLET STA. 03+56.38, OFF. 8.85	10703843.94	409230.59	A
25	NEW INLET+ STA. 04+23.43 OFF. 48.07	10703784.48	409299.69	C
26	NEW OUTLET STA. 08+48.90. OFF. 0.00	10703682.56	409672.97	D
27	NEW INLET STA. 00+17.37, OFF. 0.00	10703260.32	410113.09	B
28	NEW INLET STA. 00+06.66, OFF. −1017.93	10703277.42	409685.78	D
29	NEW OUTLET STA. 00+81.09, OFF. 0.00	10703693.63	410142.85	D
30	NEW OUTLET STA. 01+08.90, OFF. 0.00	10703344.65	410706.62	A
31	NEW OUTLET STA. 00+07.31, OFF. 0.00	10703243.12	410703.14	A
32	NEW INLET STA. 02+37.06, OFF. −83.49	10703975.34	409182.43	G
33	NEW INLET STA. 02+87.09, OFF. −55.30	10703924.78	409209.67	G
34	NEW INLET STA. 02+87.09, OFF. −84.66	10703949.60	409225.34	G
35	NEW OUTLET STRUCTURE	10703631.83	409945.09	E
36	NEW OUTLET STRUCTURE	10703692.80	409947.06	E
37	HEAD WALL	10703832.22	409951.58	E

EXISTING CONTROL DATA TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP−1	CITY MONUMENT WILL RUTH AND MACKEREL	10703720.30	411921.61	3907.44
CP−2	CHISELED SQUARE	10703287.12	409403.01	3899.78
TBM	SET NAIL	10702602.53	409871.87	3911.06



EXISTING MONUMENTS DATA TABLE

ID	(X) COORDINATE	(Y) COORDINATE	ELEVATION
M−1	410712.41	10703505.75	3899.33

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
1-800-DIG-TESS
1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES
linespots@elpasotexas.gov

ENGINEER'S SEAL
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
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EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

HORIZONTAL CONTROL PLAN

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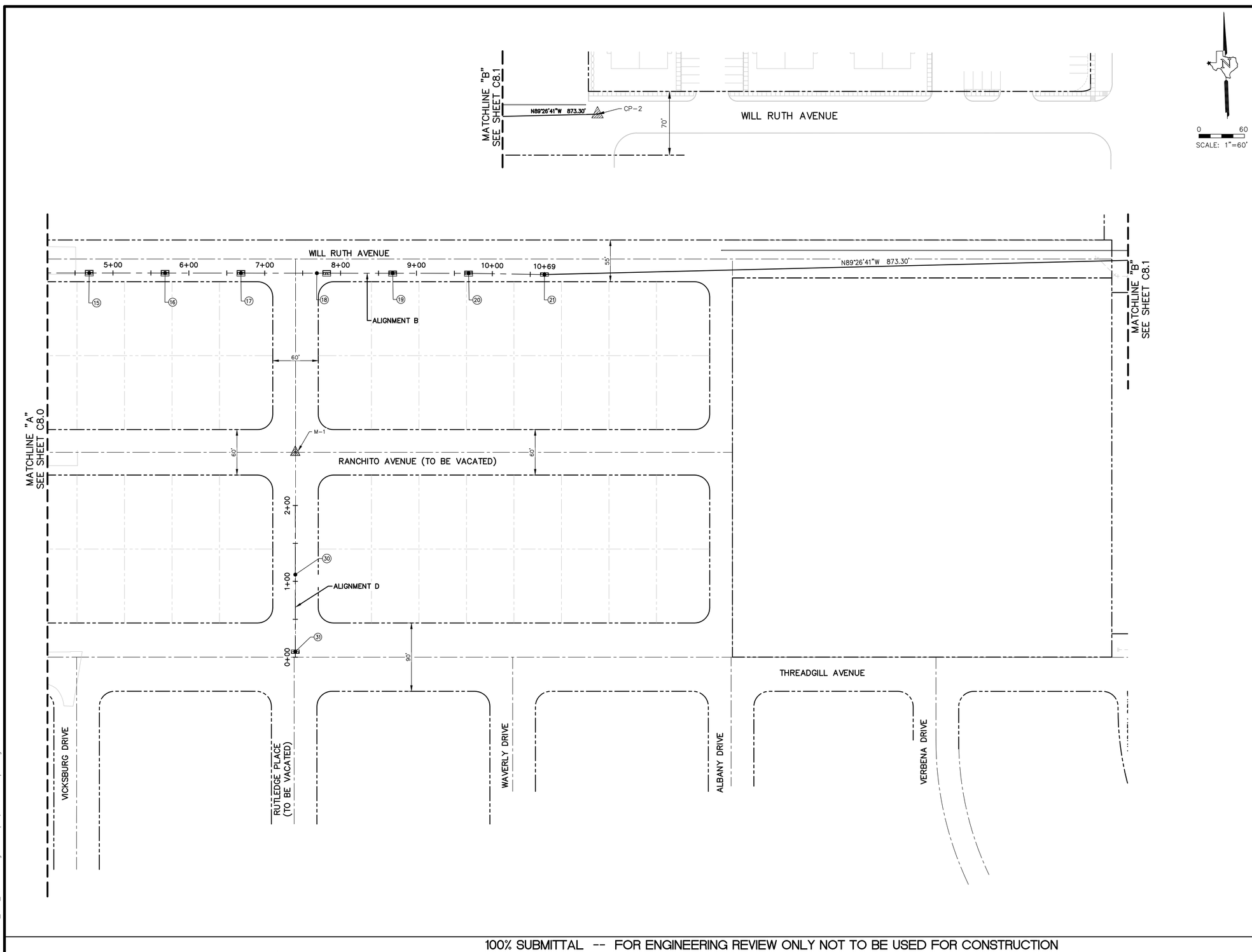
JOB NO. 16-133
SEQUENCE NO. 1 OF 3
SHEET NO. C8.0

F:\16133\DWG\16133 - C8.0-C8.1_DWG_HC PLAN.dwg Time:Sep24,2022 - 02:00pm Login:Administrator



LEGEND

- PROJECT LIMITS/LIMITS OF DEMOLITION
- EXISTING RIGHT-OF-WAY
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- PGL PROPOSED GRADE LINE (PGL)
- NEW CITY MONUMENT
- EXISTING CONTROL POINT

EXISTING MONUMENTS DATA TABLE

ID	(X) COORDINATE	(Y) COORDINATE	ELEVATION
M-1	410712.41	10703505.75	3899.33

EXISTING CONTROL DATA TABLE

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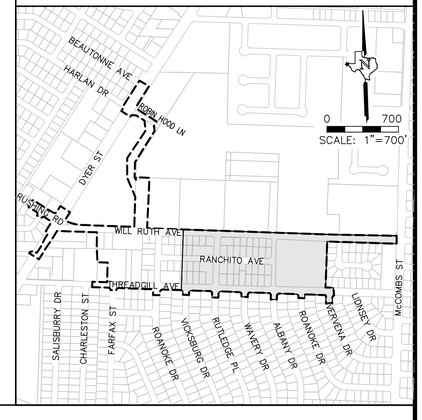
TBM	SET NAIL	10702602.53	409871.87	3911.06



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CHECKED	M.M.
DATE	10/7/2022

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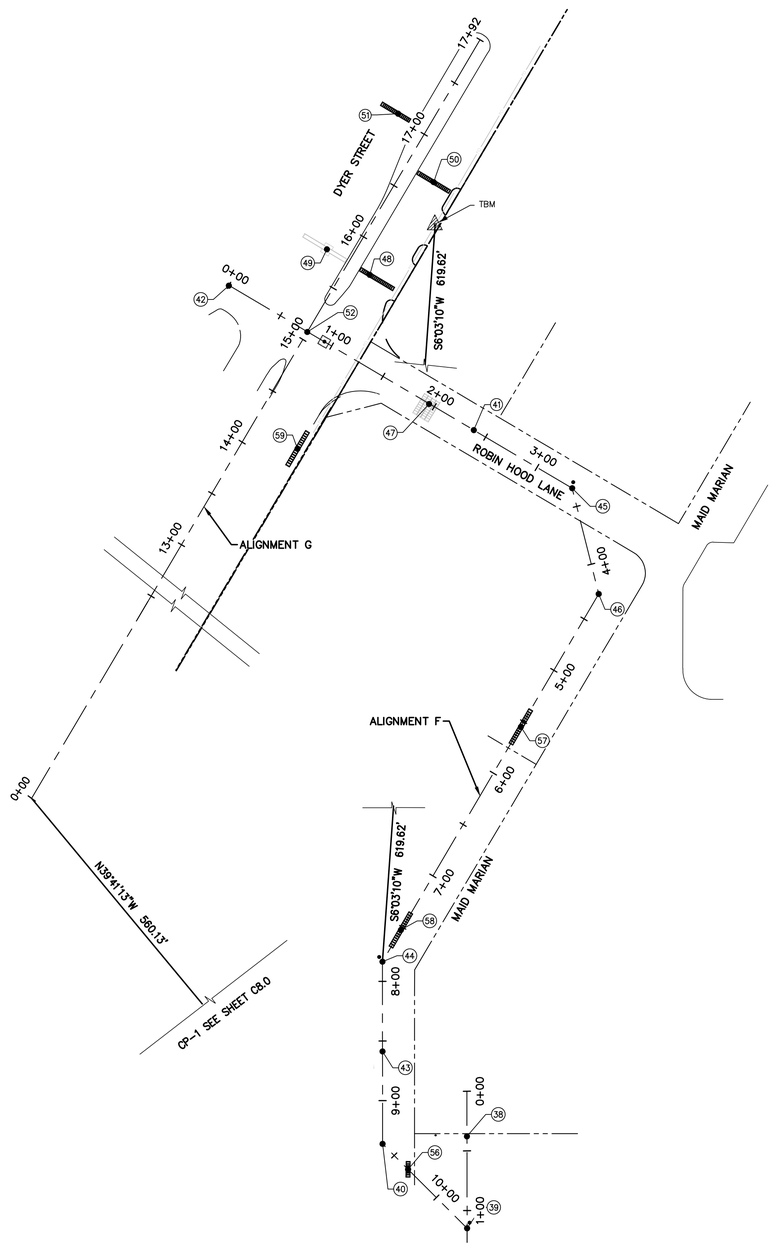
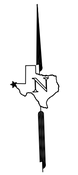
JOB NO.	16-133
SEQUENCE NO.	2 OF 3
SHEET NO.	C8.1

F:\16133\DWG\16133 - C8.0-C8.1_DWG_HC PLAN.dwg Time:Sep24,2022-02:02pm Login:Administrator





60
SCALE: 1"=60'

LEGEND

- PROJECT LIMITS/LIMITS OF DEMOLITION
- EXISTING RIGHT-OF-WAY
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- PGL PROPOSED GRADE LINE (PGL)
- NEW CITY MONUMENT
- EXISTING CONTROL POINT

HORIZONTAL CONTROL TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING	ALIGNMENT
38	MAINTENANCE ROAD	10704309.89	409967.04	F
39	REFERENCE POINT STA. 10+19.00 OFF. 0.22'	10704232.84	409964.55	F
40	NEW CBC STA. 8+45.30 OFF 0.00'	10704305.99	409896.13	F
41	NEW CBC STA. 4+42.09 OFF 0.00'	10704901.65	409993.04	F
42	REFERENCE POINT 15+07.29 OFF 76.37	10705029.72	409791.92	F
43	NEW INLET STA. 7+78.07 OFF 0.00'	10704383.49	409898.73	F
44	NEW INLET STA. 6+78.07 OFF 0.00'	10704458.69	409901.25	F
45	NEW INLET STA. 5+78.07 OFF 0.00'	10704850.09	410073.81	F
46	NEW INLET STA. 4+78.07 OFF 0.00'	10704760.73	410093.04	F
47	NEW INLET STA. 1+81.57 OFF 0.00'	10704924.80	409956.31	F
48	NEW INLET STA. 15+75.29 OFF. 67.92'	10705034.74	409910.34	G
49	NEW INLET STA. 15+70.87 OFF. 63.75'	10705057.38	409875.17	G
50	NEW INLET STA 16+69.57 OFF. 162.30'	10705110.57	409966.58	G
51	NEW INLET STA. 17+03.63 OFF. 196.35'	10705169.01	409938.71	G
52	REFERENCE POINT CL STA. 0+76.37 OFF 0.00'	10704988.65	409856.31	F
54	NEW INLET CL STA. 0+76.37 OFF 0.00'	10703923.28	409954.47	E
55	NEW INLET CL STA. 0+76.37 OFF 0.00'	10704173.15	409962.56	E
56	NEW INLET CL STA. 0+76.37 OFF 48.26'	10704283.94	409916.75	G
57	NEW INLET CL STA. 0+76.37 OFF 44.45'	10704651.52	410023.98	F
58	NEW INLET CL STA. 0+76.37 OFF 45.89'	10704484.76	409917.61	F
59	NEW INLET STA. 1+81.57 OFF 88.45'	10704891.09	409844.78	G

EXISTING CONTROL DATA TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
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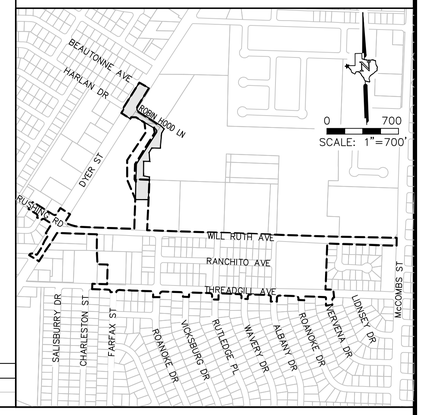

EXISTING MONUMENTS DATA TABLE

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

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JOB NO. 16-133
SEQUENCE NO. 3 OF 3
SHEET NO. C8.2

F:\16133\DWG\16133 - C8.0-C8.1_DWG_HC PLAN.dwg Time:Oct05,2022 - 02:24pm Login:alejandra

ELEVATION TABLE		
POINT NO.	DESCRIPTION	ELEVATION
1	TOP OF MAINTENANCE ROAD	3903.00
2	TOP OF MAINTENANCE ROAD	3906.70
3	TOP OF MAINTENANCE ROAD	3906.74
4	TOP OF MAINTENANCE ROAD	3906.76
5	TOP OF MAINTENANCE ROAD	3907.00
6	TOP OF MAINTENANCE ROAD	3901.00
7	TOP OF MAINTENANCE ROAD	3900.26
8	TOP OF MAINTENANCE ROAD	3901.00
9	TOP OF MAINTENANCE ROAD	3901.00
10	TOP OF MAINTENANCE ROAD	3901.00
11	TOP OF MAINTENANCE ROAD	3901.34

ELEVATION TABLE		
POINT NO.	DESCRIPTION	ELEVATION
12	TOP OF MAINTENANCE ROAD	3901.39
13	TOP OF MAINTENANCE ROAD	3901.84
14	TOP OF MAINTENANCE ROAD	3901.92
15	TOP OF POND	3903.00
16	TOP OF POND	3903.00
17	TOP OF POND	3906.00
18	TOP OF POND	3906.00
19	TOP OF ACCESS RAMP	3906.00
20	TOP OF ACCESS RAMP	3906.00
21	TOP OF POND	3907.00
22	TOP OF POND	3907.00
23	TOP OF POND	3900.00
24	TOP OF POND	3900.00
25	TOP OF ACCESS RAMP	3900.00
26	TOP OF ACCESS RAMP	3900.00
27	TOP OF POND	3901.00
28	TOP OF POND	3901.00
29	TOP OF POND	3901.00
30	TOP OF POND	3902.00
31	BOTTOM OF POND	3880.00

ELEVATION TABLE		
POINT NO.	DESCRIPTION	ELEVATION
32	TOP OF MORTARED ROCK RIP-RAP	3880.00
33	TOP OF MORTARED ROCK RIP-RAP	3880.00
34	TOP OF MORTARED ROCK RIP-RAP	3880.00
35	BOTTOM OF POND	3880.00
36	BOTTOM OF POND	3880.00
37	TOP OF MORTARED ROCK RIP-RAP	3880.00
38	TOP OF MORTARED ROCK RIP-RAP	3880.00
39	TOP OF MORTARED ROCK RIP-RAP	3880.00
40	TOP OF MORTARED ROCK RIP-RAP	3880.00
41	TOP OF MORTARED ROCK RIP-RAP	3880.00
42	TOP OF MORTARED ROCK RIP-RAP	3880.00
43	TOP OF MORTARED ROCK RIP-RAP	3880.00
44	TOP OF MORTARED ROCK RIP-RAP	3880.00
45	BOTTOM OF POND	3880.00
46	BOTTOM OF POND	3880.00
47	BOTTOM OF ACCESS RAMP	3880.00
48	BOTTOM OF ACCESS RAMP	3880.00
49	BOTTOM OF POND	3880.00
50	BOTTOM OF POND	3880.00
51	BOTTOM OF POND	3880.00

ELEVATION TABLE		
POINT NO.	DESCRIPTION	ELEVATION
52	BOTTOM OF POND	3880.00
53	BOTTOM OF POND	3880.00
54	BOTTOM OF POND	3880.00
55	BOTTOM OF ACCESS RAMP	3880.00
56	BOTTOM OF ACCESS RAMP	3880.00
57	BOTTOM OF POND	3880.00
58	TOP OF MORTARED ROCK RIP-RAP	3880.00
59	TOP OF MORTARED ROCK RIP-RAP	3880.00
60	TOP OF MORTARED ROCK RIP-RAP	3880.00
61	TOP OF MORTARED ROCK RIP-RAP	3880.00
62	TOP OF MORTARED ROCK RIP-RAP	3880.00
63	BOTTOM OF POND	3880.00
64	BOTTOM OF POND	3880.00
65	TOP OF CURB/RAMP	3899.01
66	TOP OF MAINTENANCE ROAD	3900.26
67	TOP OF SPILLWAY	3891.35
68	BOTTOM OF POND	3880.00
69	TOP OF MAINTENANCE ROAD	3901.00
70	TOP OF CURB/RAMP	3899.70
96	BOTTOM OF POND	3880.00

ELEVATION TABLE		
POINT NO.	DESCRIPTION	ELEVATION
101	SIDEWALK	3900.72
102	SIDEWALK	3902.30
103	SIDEWALK	3904.59
104	SIDEWALK	3904.89
105	SIDEWALK	3905.70
106	SIDEWALK	3906.37
107	SIDEWALK	3906.95
108	SIDEWALK	3901.40
109	SIDEWALK	3901.84
110	SIDEWALK	3902.03
111	SIDEWALK	3903.23
112	SIDEWALK	3902.54
113	SIDEWALK	3901.91
114	SIDEWALK	3901.25
115	SIDEWALK	3901.42
116	SIDEWALK	3902.21
117	SIDEWALK	3903.00
118	SIDEWALK	3903.94
119	SIDEWALK	3904.68
120	SIDEWALK	3905.58

ELEVATION TABLE		
POINT NO.	DESCRIPTION	ELEVATION
121	SIDEWALK	3906.21
122	SIDEWALK	3907.01
123	SIDEWALK	3907.40
124	SIDEWALK	3908.83
125	SIDEWALK	3907.86
126	ROCKWALL OPENING	3903.28
127	ROCKWALL OPENING	3903.43
128	BEGIN RETAINING ROCKWALL	3902.38
129	END RETAINING ROCKWALL	3904.12

ELEVATION TABLE		
POINT NO.	DESCRIPTION	ELEVATION
130	TOP OF PAVEMENT	3909.65
131	TOP OF PAVEMENT	3909.60
132	TOP OF PAVEMENT	3909.01
133	TOP OF PAVEMENT	3909.06
134	WROUGHT IRON FENCE	3908.48
135	WROUGHT IRON FENCE	3908.33
136	TOP OF FLUME	3907.17
137	TOP OF FLUME	3906.84
138	TOP OF FLUME	3906.07
139	TOP OF FLUME	3906.07
140	NEW WROUGHT IRON FENCE	3905.50
141	NEW WROUGHT IRON FENCE	3905.50
142	TOP OF PAVEMENT	3906.60

RUSHING ROAD
DYER STREET
SEE SHEET C12.1 FOR HORIZONTAL CONTROL INFORMATION
SEE SHEET C12.0 FOR INTERSECTION PLAN & PROFILE AND HORIZONTAL CONTROL INFORMATION
WILL RUTH AVENUE
MATCHLINE "A" SEE SHEET C9.1
SEE SHEET C12.9 FOR HORIZONTAL CONTROL INFORMATION
HARLAN DRIVE
ROBIN HOOD LANE
BEAUTONNIE AVENUE
MATCHLINE "B" SEE SHEET C9.1
MAID MARIAN
WILL SCARLET COURT
WILL SCARLET LANE
LITTLE JOHN ROAD
MOBILE HOME

0 50
SCALE: 1"=50'

0 700
SCALE: 1"=700'

BEAUTONNIE AVE
HARLAN DR
ROBIN HOOD LN
DYER ST
RUSHING RD
WILL RUTH AVE
RANCHITO AVE
THREADGILL AVE
SALISBURY DR
CHARLESTON ST
FARFAX ST
VICKSBURG DR
RUTLEDGE PL
WAVERLY DR
ALBANY DR
ROANOKE DR
VERDENA DR
LINNET DR
McCOMBS ST

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- 3805 NEW MAJOR CONTOUR AND ELEVATION
- 3804 NEW MINOR CONTOUR
- CROSS SECTION
- SPOT ELEVATION
- LOW POINT
- HIGH POINT
- FLOW DIRECTION
- NEW HMAC PAVEMENT RECONSTRUCTION
- NEW REINFORCED CONCRETE RIP RAP
- NEW MORTARED ROCK RIP RAP
- NEW CONCRETE SIDEWALK REFER TO LANDSCAPE DRAWINGS
- NEW PARKWAY
- EMERGENCY SPILLWAY
- DECORATIVE WALL
- CONCRETE VALLEY GUTTER
- 15' ACCESS RAMP
- NEW CONCRETE CURB & GUTTER
- NEW ROCKWALL
- NEW WROUGTH IRON FENCE
- NEW WROUGHT IRON GATE
- NEW CONCRETE DRIVEWAY
- NEW POND DEPTH GAUGE
- JUNCTION BOXES
- SIGN "FOR EMERGENCY PURPOSES ONLY"
- NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS. SEE STRUCTURAL SHEETS FOR DETAILS
- CONCRETE RIP-RAP
- 8"-12" LOOSE RIP-RAP
- RETAINING ROCKWALL

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REV.	DATE	BY	DESCRIPTION

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

GRADING PLAN

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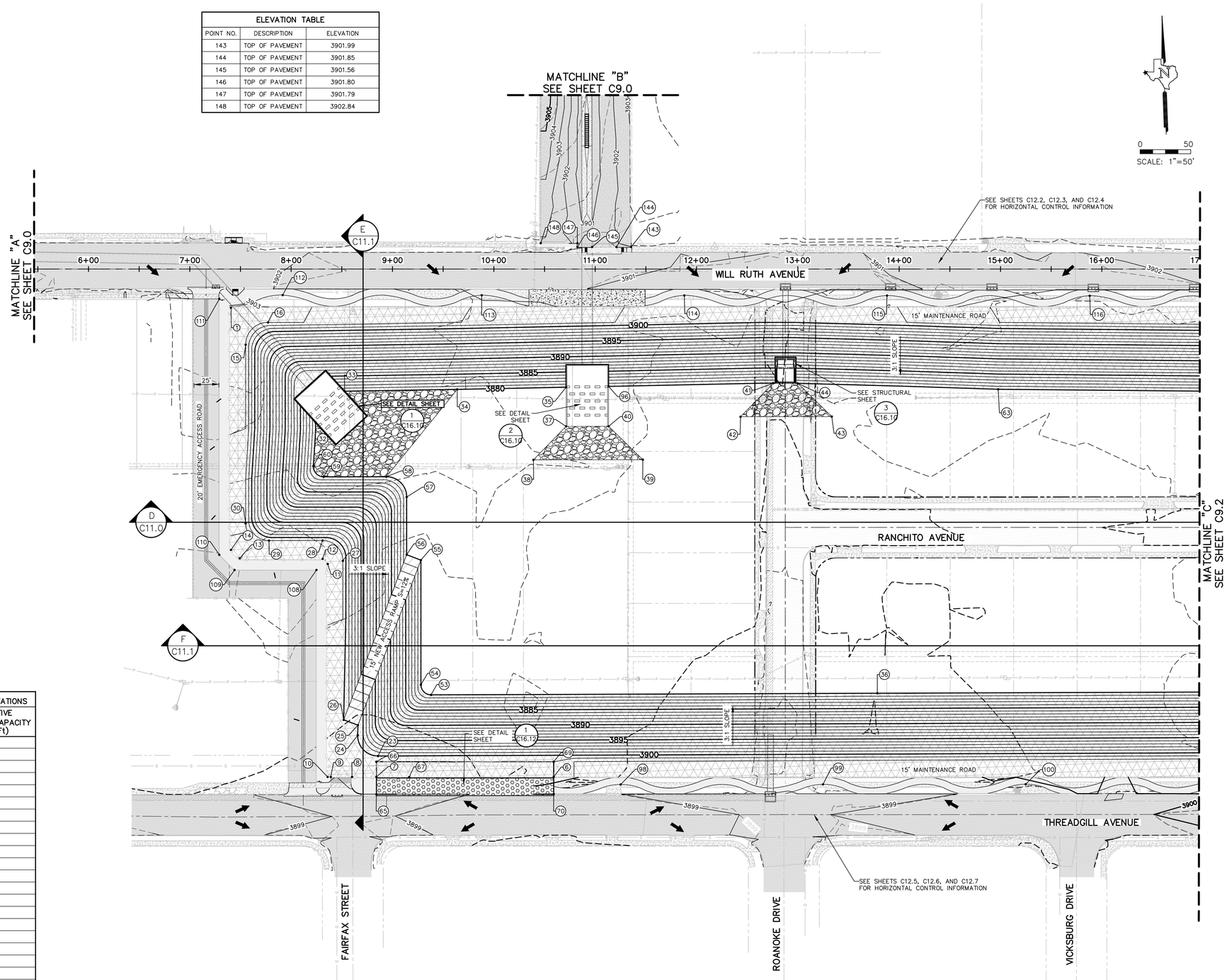
JOB NO. 16-133
SEQUENCE NO. 1 OF 3
SHEET NO. C9.0

F:\16133\DWG\16133 - C9.0-C9.2_DWG_GRADING PLAN.dwg Time:Oct07,2022-09:09am Login:edgar

ELEVATION TABLE		
POINT NO.	DESCRIPTION	ELEVATION
143	TOP OF PAVEMENT	3901.99
144	TOP OF PAVEMENT	3901.85
145	TOP OF PAVEMENT	3901.56
146	TOP OF PAVEMENT	3901.80
147	TOP OF PAVEMENT	3901.79
148	TOP OF PAVEMENT	3902.84



POND CAPACITY COMPUTATIONS	
CONTOUR ELEVATION (FT)	CUMULATIVE STORAGE CAPACITY (Ac-Ft)
3880	0
3881	13
3882	27
3883	41
3884	55
3885	70
3886	84
3887	100
3888	115
3889	131
3890	147
3891	164
3892	180
3893	198
3894	215
3895	233
3896	251
3897	270
3898	289
3899	308
3900	328

LEGEND

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- 3804 NEW MINOR CONTOUR
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- SPOT ELEVATION
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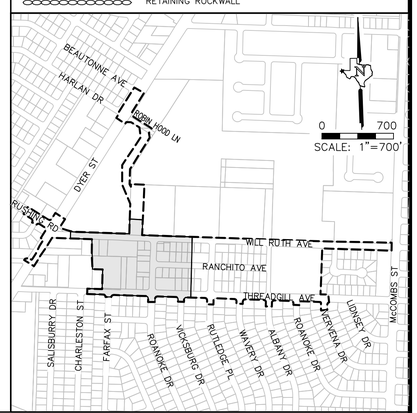
- HIGH POINT
- FLOW DIRECTION
- NEW HMAC PAVEMENT RECONSTRUCTION
- NEW REINFORCED CONCRETE RIP RAP
- NEW MORTARED ROCK RIP RAP
- NEW CONCRETE SIDEWALK REFER TO LANDSCAPE DRAWINGS
- NEW PARKWAY
- EMERGENCY SPILLWAY
- DECORATIVE WALL
- CONCRETE VALLEY GUTTER
- 15' ACCESS RAMP
- NEW CONCRETE CURB & GUTTER
- NEW ROCKWALL
- NEW WROUGTH IRON FENCE
- NEW WROUGHT IRON GATE
- NEW CONCRETE DRIVEWAY
- NEW POND DEPTH GAUGE
- JUNCTION BOXES
- SIGN "FOR EMERGENCY PURPOSES ONLY"
- NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS. SEE STRUCTURAL SHEETS FOR DETAILS
- CONCRETE RIP-RAP
- 8"-12" LOOSE RIP-RAP
- RETAINING ROCKWALL



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REV.	DATE	BY	DESCRIPTION

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DESIGNED	DRAWN	CHECKED	DATE
B.O.	E.G./A.M.	M.M.	10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

GRADING PLAN

THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH POND AND CONVEYANCE IMPROVEMENTS", MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO.	SEQUENCE NO.	SHEET NO.
16-133	2 OF 3	C9.1

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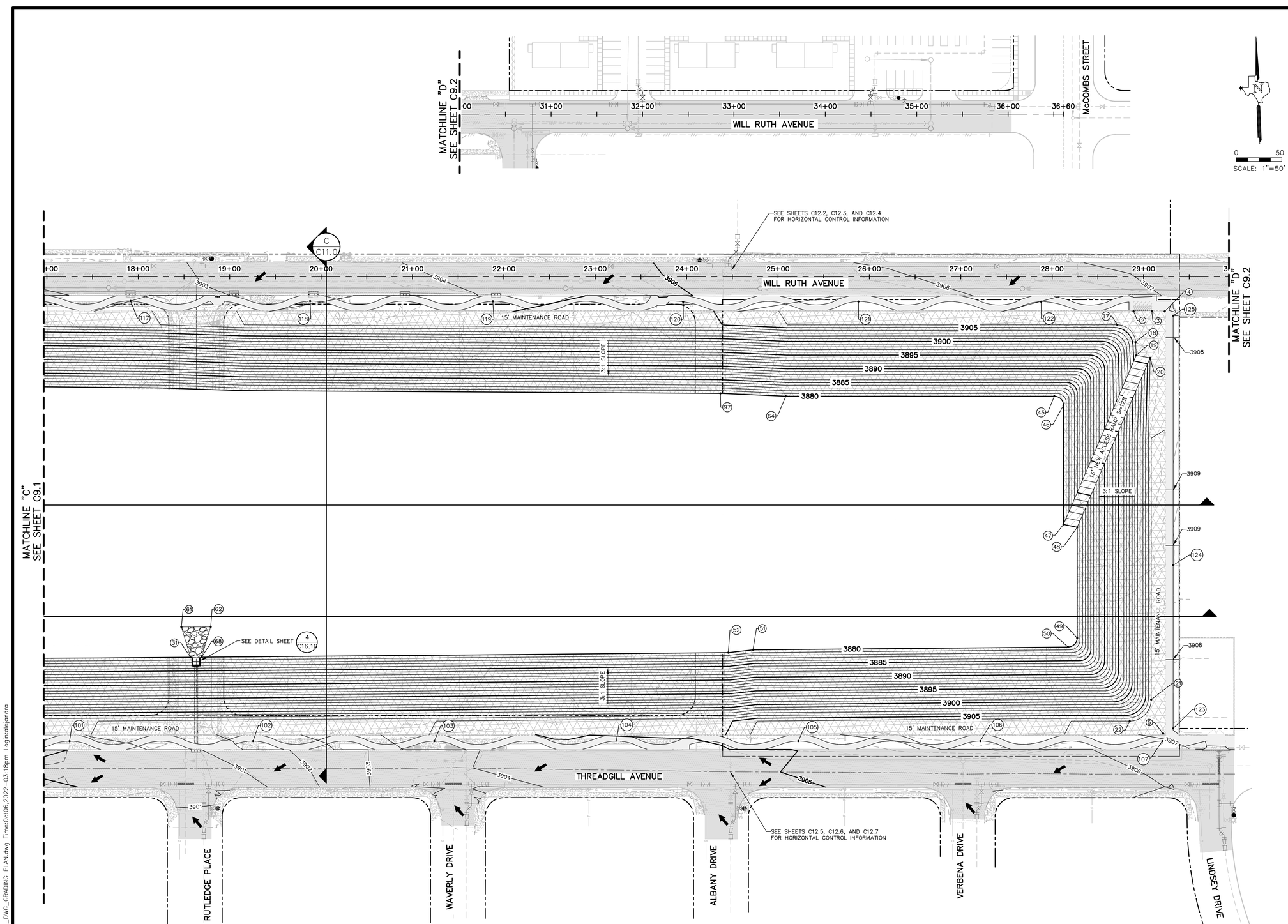

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- 3805 NEW MAJOR CONTOUR AND ELEVATION
- 3804 NEW MINOR CONTOUR
- CROSS SECTION
- SPOT ELEVATION
- LOW POINT
- HIGH POINT
- FLOW DIRECTION
- NEW HMAC PAVEMENT RECONSTRUCTION
- NEW REINFORCED CONCRETE RIP RAP
- NEW MORTARED ROCK RIP RAP
- NEW CONCRETE SIDEWALK REFER TO LANDSCAPE DRAWINGS
- NEW PARKWAY
- EMERGENCY SPILLWAY
- DECORATIVE WALL
- CONCRETE VALLEY GUTTER
- 15' ACCESS RAMP
- NEW CONCRETE CURB & GUTTER
- NEW ROCKWALL
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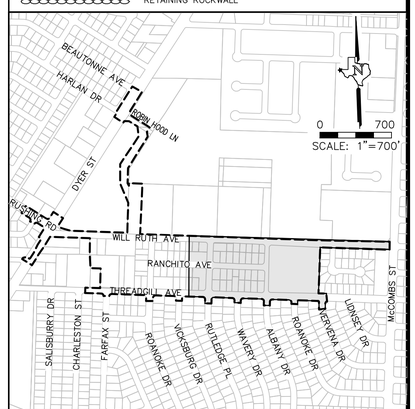

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JOB NO.	16-133
SEQUENCE NO.	3 OF 3
SHEET NO.	C9.2

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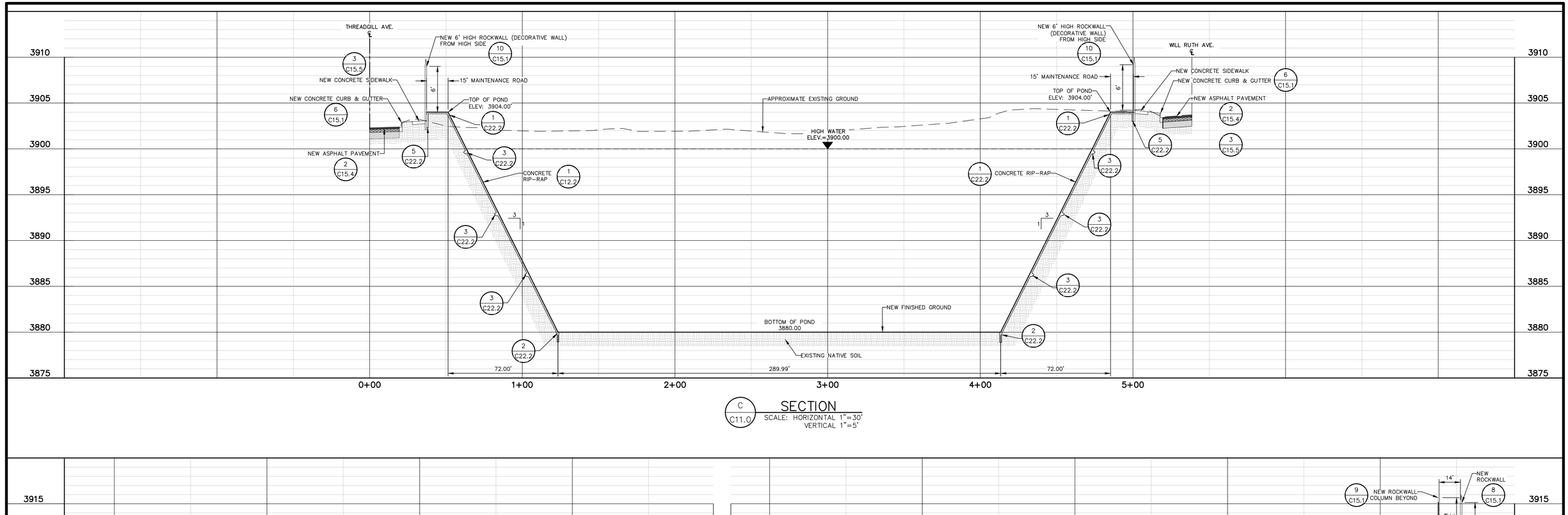
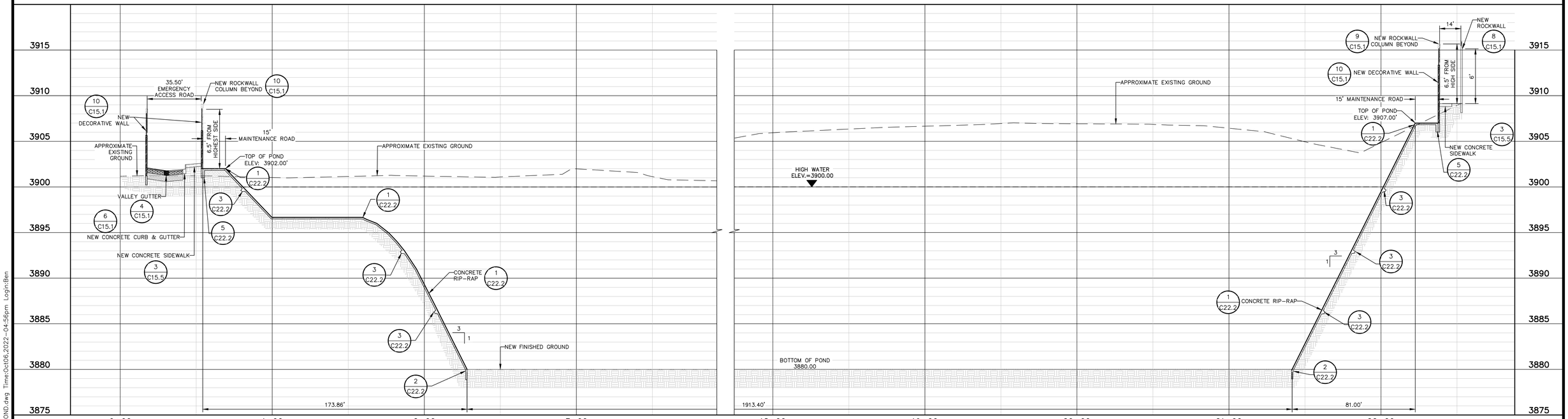


C / C11.0 SECTION
SCALE: HORIZONTAL 1"=30'
VERTICAL 1"=5'



D / C11.0 SECTION
SCALE: HORIZONTAL 1"=30'
VERTICAL 1"=5'

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DETENTION POND SECTIONS

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JOB NO. 16-133
SEQUENCE NO. 1 OF 2
SHEET NO. C11.0

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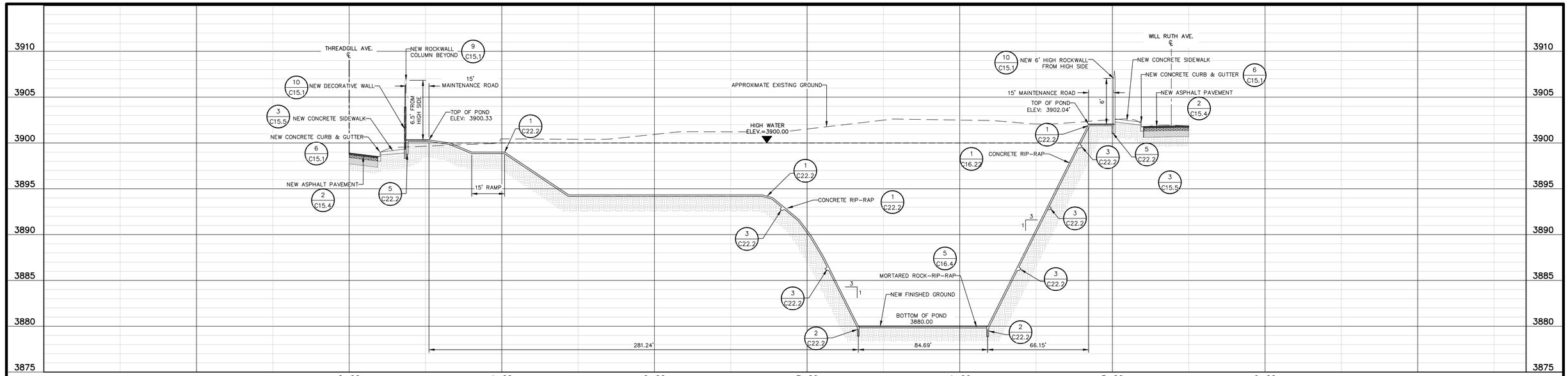
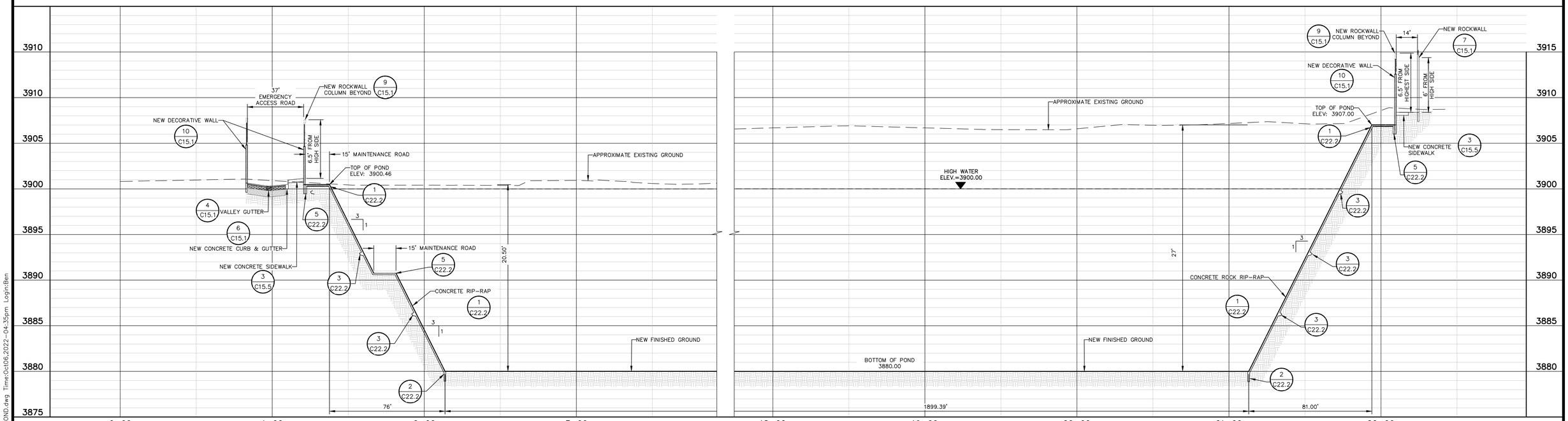


E C11.1 SECTION
SCALE: HORIZONTAL 1"=30'
VERTICAL 1"=5'



F C11.1 SECTION
SCALE: HORIZONTAL 1"=30'
VERTICAL 1"=5'

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SEQUENCE NO. 2 OF 2
SHEET NO. C11.1

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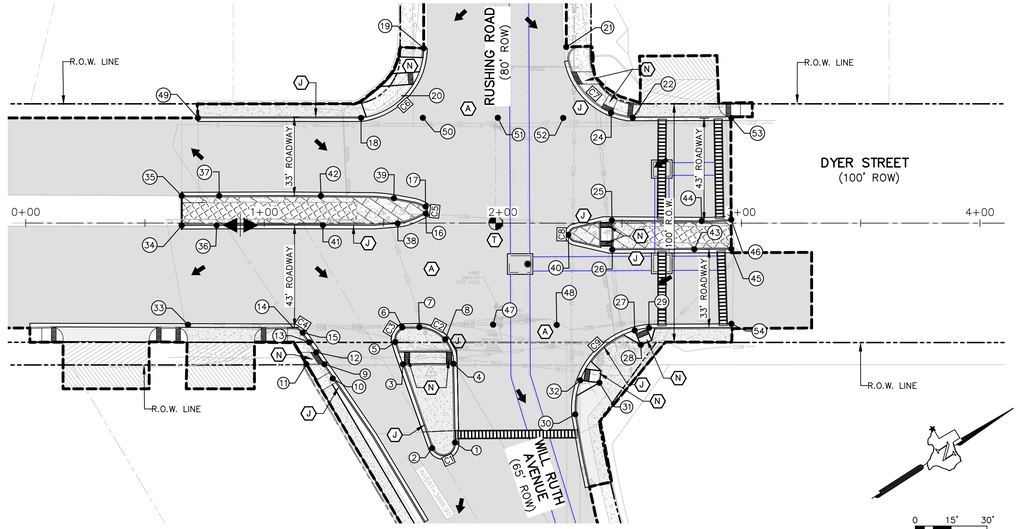
HORIZONTAL CONTROL TABLE				
POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	TOP OF PAVEMENT	10703820.44	409219.67	3903.52
2	TOP OF PAVEMENT	10703811.05	409216.47	3903.50
3	BOTTOM OF RAMP	10703819.64	409180.23	3903.69
4	BOTTOM OF RAMP	10703837.62	409191.50	3903.69
5	TOP OF PAVEMENT	10703821.90	409170.69	3903.75
6	TOP OF PAVEMENT	10703827.72	409167.06	3903.78
7	TOP OF PAVEMENT	10703833.80	409170.85	3903.77
8	TOP OF PAVEMENT	10703840.19	409181.00	3903.73
9	BOTTOM OF RAMP	10703791.90	409162.54	3903.77
10	TOP OF RAMP	10703791.62	409169.46	3904.22
11	BACK OF LANDING	10703785.51	409158.48	3904.37
12	BOTTOM OF RAMP	10703791.69	409156.48	3903.80
13	TOP OF RAMP	10703791.48	409151.39	3904.34
14	TOP OF PAVEMENT	10703789.12	409142.54	3903.86
15	TOP OF PAVEMENT	10703791.31	409146.49	3903.86
16	TOP OF PAVEMENT	10703861.69	409132.12	3904.28
17	TOP OF PAVEMENT	10703863.17	409129.63	3904.35
18	TOP OF PAVEMENT	10703860.34	409083.76	3904.48
19	TOP OF PAVEMENT	10703898.23	409073.26	3904.80
20	BOTTOM OF RAMP	10703880.71	409085.72	3904.63
21	TOP OF PAVEMENT	10703948.89	409104.95	3904.80
22	TOP OF PAVEMENT	10703956.42	409144.97	3904.45
24	BOTTOM OF RAMP	10703949.89	409138.31	3904.54
25	BOTTOM OF RAMP	10703925.93	409176.52	3904.37
26	BOTTOM OF RAMP	10703919.42	409186.95	3904.35
27	BOTTOM OF RAMP	10703909.14	409220.57	3903.99
28	TOP OF RAMP	10703908.04	409227.04	3904.59
29	TOP OF PAVEMENT	10703914.80	409222.89	3904.03
30	TOP OF PAVEMENT	10703869.26	409236.81	3903.60
31	TOP OF RAMP	10703884.90	409231.11	3904.33
32	BOTTOM OF RAMP	10703878.66	409225.90	3903.73



PLAN

0 15' 30'

SCALE: 1"=30'

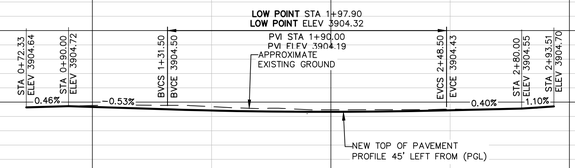
HORIZONTAL CONTROL TABLE				
POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
33	TOP OF PAVEMENT	10703752.56	409117.79	3903.86
34	TOP OF PAVEMENT	10703772.74	409081.33	3904.67
35	TOP OF PAVEMENT	10703779.41	409070.87	3904.65
36	TOP OF PAVEMENT	10703785.11	409089.15	3904.69
37	TOP OF PAVEMENT	10703792.69	409079.29	3904.69
38	TOP OF PAVEMENT	10703849.52	409129.31	3904.32
39	TOP OF PAVEMENT	10703853.86	409119.57	3904.35
40	TOP OF PAVEMENT	10703907.26	409171.82	3904.31
41	TOP OF PAVEMENT	10703822.69	409113.06	3904.48
42	TOP OF PAVEMENT	10703828.61	409102.26	3904.50
43	TOP OF PAVEMENT	10703948.53	409205.34	3904.58
44	TOP OF PAVEMENT	10703957.46	409196.97	3904.61
45	TOP OF PAVEMENT	10703961.65	409213.63	3904.73
46	TOP OF PAVEMENT	10703968.29	409203.16	3904.73
47	TOP OF PAVEMENT	10703860.39	409186.58	3903.82
48	TOP OF PAVEMENT	10703882.84	409201.02	3903.90
49	TOP OF PAVEMENT	10703802.71	409046.99	3904.64
50	TOP OF PAVEMENT	10703882.24	409097.66	3904.41
51	TOP OF PAVEMENT	10703908.73	409114.54	3904.32
52	TOP OF PAVEMENT	10703931.81	409129.35	3904.38
53	TOP OF PAVEMENT	10703991.20	409167.29	3904.73
54	TOP OF PAVEMENT	10703944.81	409240.03	3904.32

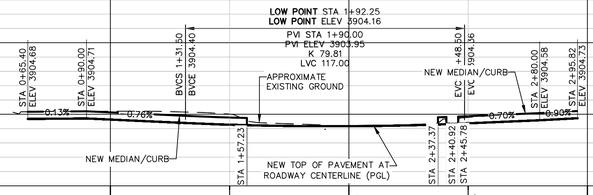
CURVE DATA TABLE						
CURVE ID	LENGHT	RADIUS	TANGENT	DELTA	CHORD DIRECTION	CHORD LENGHT
C1	14.43	5.00	38.76	165.30	S18° 49' 14"W	9.92
C2	12.30	16.00	6.47	44.03	N57° 46' 35"E	12.00
C3	7.56	5.00	4.71	86.56	N31° 57' 14"W	6.86
C4	4.69	5.00	2.53	53.72	N60° 57' 56"E	4.52
C5	3.44	1.72	2.67	114.52	S59° 13' 45"E	2.89
C6	42.87	30.00	26.02	81.86	S15° 29' 03"E	39.31
C7	44.75	30.00	27.72	85.46	N79° 20' 13"E	40.72
C8	7.95	3.00	11.91	151.72	S60° 18' 20"E	5.82
C9	52.78	34.00	33.38	88.94	N17° 00' 43"W	47.64

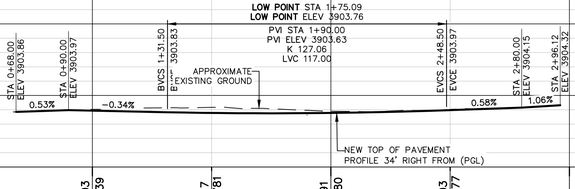
KEYED LEGEND

- PROJECT LIMITS/LIMITS OF DEMOLITION
- EXISTING RIGHT-OF-WAY
- 1+00 STATIONING AND NEW GRADE CENTERLINE (CL)
- PGL PROPOSED GRADE LINE (PGL)
- LOW POINT
- HIGH POINT
- FLOW DIRECTION
- (A) NEW HMAC PAVEMENT RECONSTRUCTION..... 1-6 / C15.4
- (J) NEW CONCRETE 6" CURB & GUTTER..... 6 / C15.1
- (N) NEW WHEELCHAIR RAMP W/ 5'X5' LANDING..... 1 / C15.4
- (T) NEW CITY MONUMENT..... 3 / C15.4
- (I) NEW CONCRETE DRIVEWAY..... 1 / C15.1
- (XX) NEW HEADER CURB..... 5 / C15.1
- (XX) CONTROL POINT & SPOT ELEVATION REFER TO SPOT ELEVATION TABLES
- CX CURVE DATA POINT REFER TO CURVE DATA TABLES

1. SEE SHEET C12.8 FOR DYER ST. PAVEMENT, SIGNING AND STRIPING PLAN.



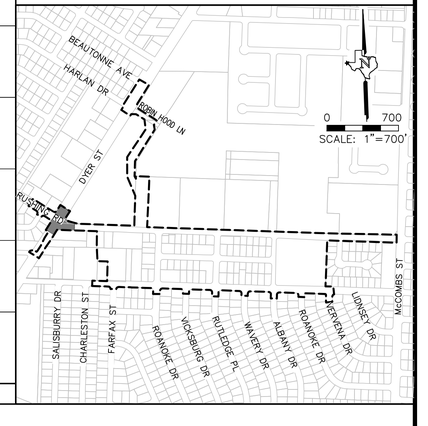




EXISTING GROUND ELEVATION

FINISHED GROUND ELEVATION

0+00 1+00 2+00 PROFILE 3+00 4+00



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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DYER STREET
PLAN & PROFILE
STA. 0+00.00 TO STA. 4+00.00

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JOB NO. 16-133
SEQUENCE NO. 1 OF 1
SHEET NO. C12.0

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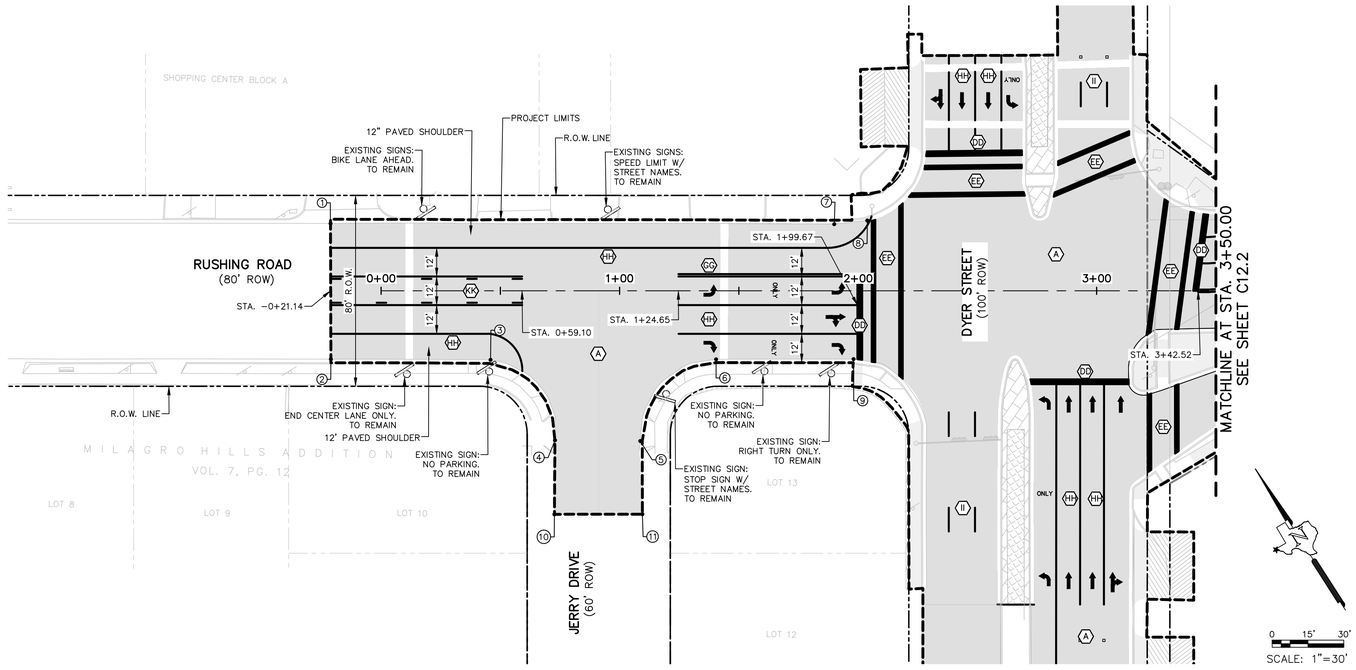

LEGEND

- EXISTING RIGHT-OF-WAY
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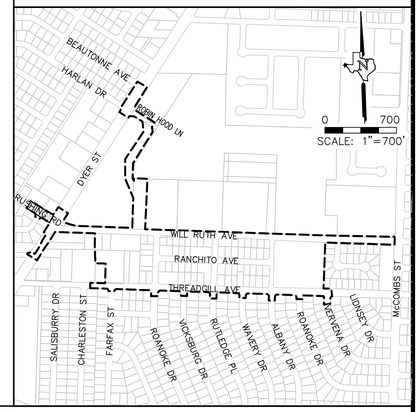
- MATCHLINE
- 2+00 — STATIONING / CENTERLINE ALIGNMENT
- 3805 — NEW MAJOR CONTOUR AND ELEVATION
- 3806 — NEW MINOR CONTOUR
- (A) NEW HMAC PAVEMENT RECONSTRUCTION..... 1-6 C15.4
- (DD) NEW 24" THERMOPLASTIC PAVEMENT MARKING..... 4 C15.5 (WHITE)(SOLID)(100 MILS) (SEE SHEETS C12.1-C12.4)
- (EE) NEW 18" THERMOPLASTIC PAVEMENT MARKING..... 4 C15.5 (WHITE)(SOLID)(100 MILS) (SEE SHEETS C12.1-C12.4)
- (FF) NEW 18" THERMOPLASTIC PAVEMENT MARKING..... 4 C15.5 (WHITE)(SOLID)(100 MILS) (SEE SHEETS C12.1-C12.4)
- (GG) NEW 4" THERMOPLASTIC PAVEMENT MARKING..... 4 C15.5 (DOUBLE)(YELLOW)(SOLID)(100 MILS) (SEE SHEETS C12.1-C12.4)
- (HH) NEW 4" THERMOPLASTIC PAVEMENT MARKING..... 4 C15.5 (WHITE)(SOLID)(100 MILS) (SEE SHEETS C12.1-C12.4)
- (II) NEW 4" THERMOPLASTIC PAVEMENT MARKING..... 4 C15.5 (BROKEN)(WHITE)(SOLID)(100 MILS) (SEE SHEETS C12.1 & C12.8)
- (JJ) NEW 24" X 36" THERMOPLASTIC PAVEMENT MARKING..... 4 C15.5 (WHITE)(SOLID)(100 MILS) (SEE SHEET C12.2)
- (KK) NEW 4" THERMOPLASTIC PAVEMENT MARKING..... 4 C15.5 (DOUBLE)(YELLOW)(SOLID)(BROKEN)(100 MILS) (SEE SHEET C12.1)
- EXISTING SIGN SYMBOL
- NEW SIGN SYMBOL..... 2 C15.0 5 C15.0
- (XX) CONTROL POINT & SPOT ELEVATION REFER TO HORIZONTAL CONTROL TABLE

1. CONTRACTOR SHALL COORDINATE WITH THE STREET AND MAINTENANCE DEPARTMENT THROUGH CITY PROJECT MANAGER FOR REMOVAL, REPLACEMENT, RELOCATION AND/OR NEW INSTALLATION OF ANY EXISTING AND/OR PROPOSED SIGNS.
2. FOR SIGN BASE INFORMATION SEE DETAIL: 5 C15.0 6 C15.0
3. SEE SHEET C12.0 FOR FULL PLAN & PROFILE DESIGN OF DYER ST.

HORIZONTAL CONTROL TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	TOP OF PAVEMENT	10704065.30	408919.91	3906.01
2	TOP OF PAVEMENT	10704017.24	408889.44	3905.97
3	TOP OF PAVEMENT	10703980.99	408945.73	3905.62
4	TOP OF PAVEMENT	10703938.04	408950.33	3905.73
5	TOP OF PAVEMENT	10703918.53	408980.32	3905.63
6	TOP OF PAVEMENT	10703930.31	409025.54	3905.02
7	TOP OF PAVEMENT	10703951.47	409097.79	3904.84
8	TOP OF PAVEMENT	10703945.30	409110.30	3904.75
9	TOP OF PAVEMENT	10703899.41	409074.19	3904.80
10	MATCH EXISTING PAVEMENT	10703912.00	408933.46	0.00
11	MATCH EXISTING PAVEMENT	10703892.21	408964.57	0.00



100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

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1-800-344-8377
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ENGINEER'S SEAL
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

RUSHING ROAD
PAVEMENT, SIGNING & STRIPING PLAN
STA. 0+00.00 TO STA. 3+50.00

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JOB NO. 16-133
SEQUENCE NO. 1 OF 1
SHEET NO. C12.1

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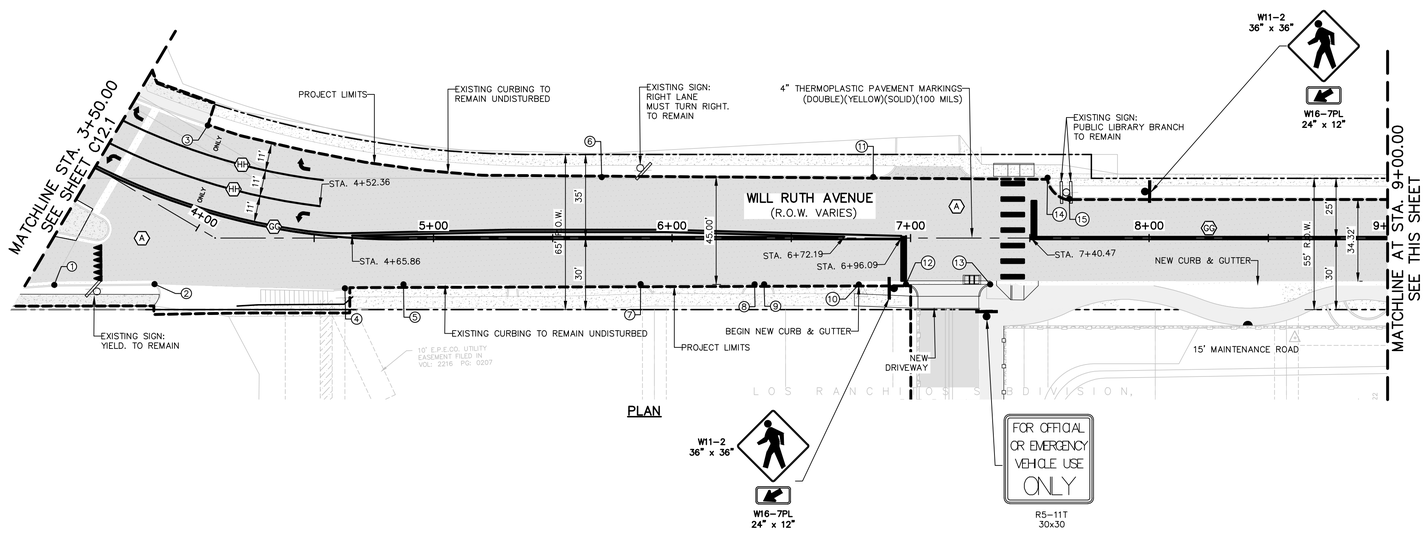
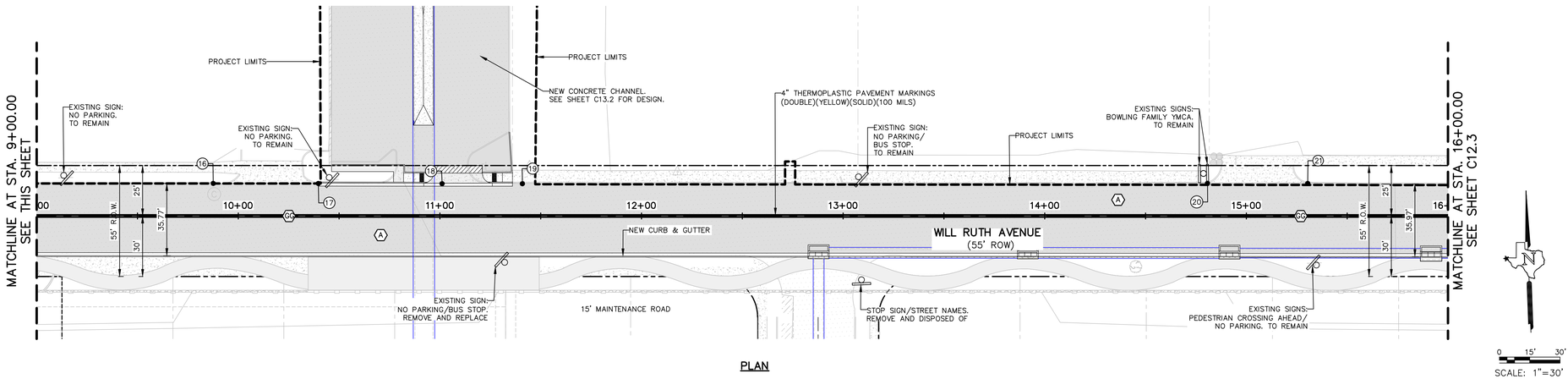


PLAN



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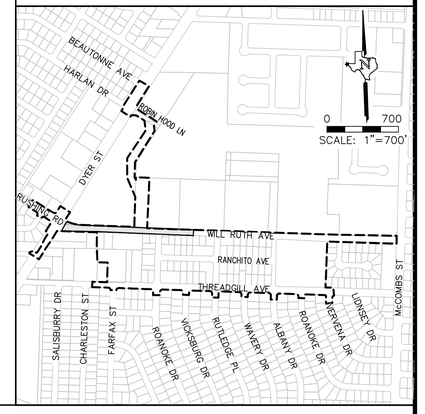

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- 3805 NEW MAJOR CONTOUR AND ELEVATION
- 3806 NEW MINOR CONTOUR
- (A) NEW HMAC PAVEMENT RECONSTRUCTION..... 1-6 / C15.4
- (DD) NEW 24" THERMOPLASTIC PAVEMENT MARKING..... 4 / C15.5 (WHITE)(SOLID)(100 MILS) (SEE SHEETS C12.1-C12.4)
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2. FOR SIGN BASE INFORMATION SEE DETAIL: 5 / C15.0 6 / C15.0
3. SEE SHEET C12.4 FOR HORIZONTAL CONTROL TABLE.
4. SEE SHEET C15.0 FOR FULL PLAN & PROFILE DESIGN OF DYER ST.
5. EXISTING SIGNS REMOVAL SHALL BE COORDINATED WITH SAM-SIGNS DEPARTMENT.

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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

WILL RUTH AVENUE
PAVEMENT, SIGNING & STRIPING PLAN
STA. 3+50.00 TO STA. 16+00.00

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JOB NO. 16-133
SEQUENCE NO. 1 OF 3
SHEET NO. C12.2

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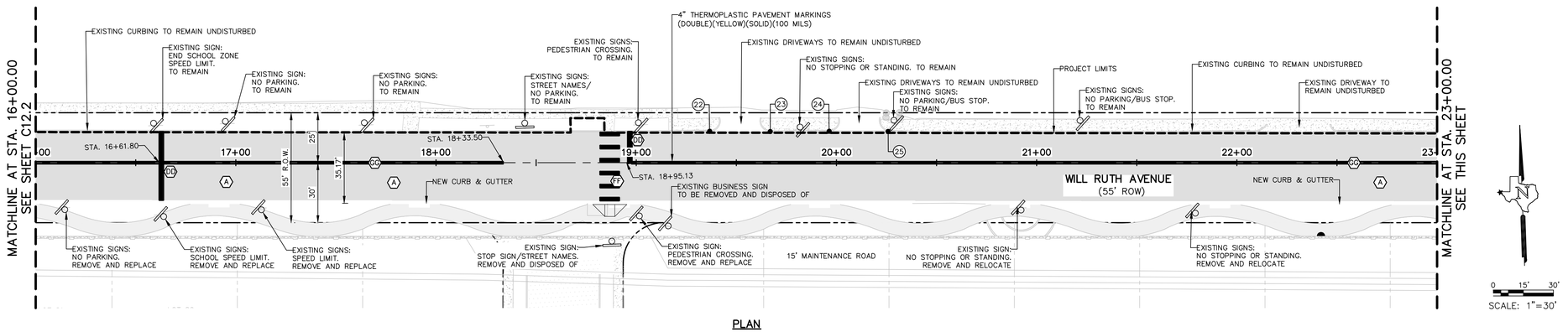
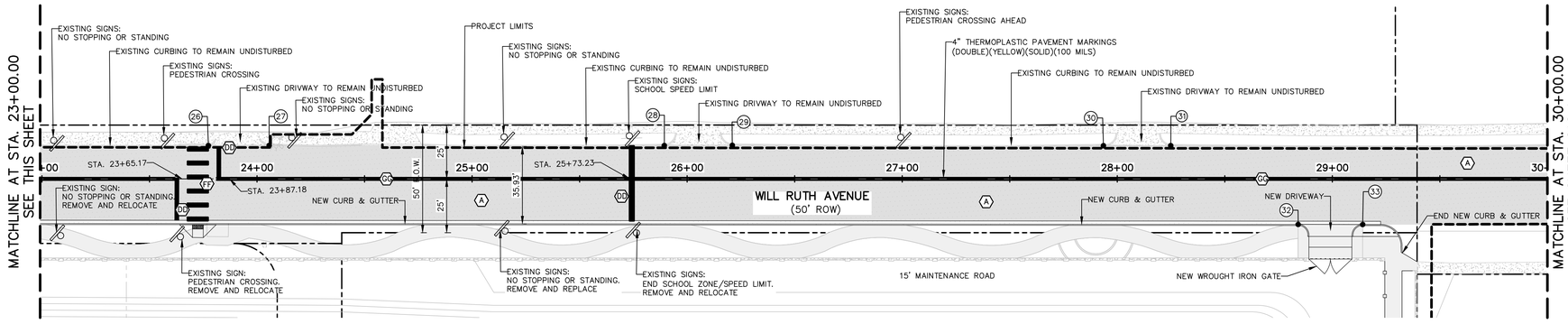


PLAN



PLAN

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- 3805 NEW MAJOR CONTOUR AND ELEVATION
- 3806 NEW MINOR CONTOUR
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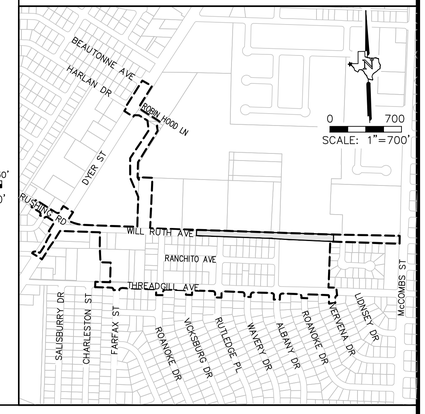
3. SEE SHEET C12.4 FOR HORIZONTAL CONTROL TABLE.



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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

WILL RUTH AVENUE
PAVEMENT, SIGNING & STRIPING PLAN
STA. 16+00.00 TO STA. 30+00.00

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JOB NO. 16-133
SEQUENCE NO. 2 OF 3
SHEET NO. C12.3

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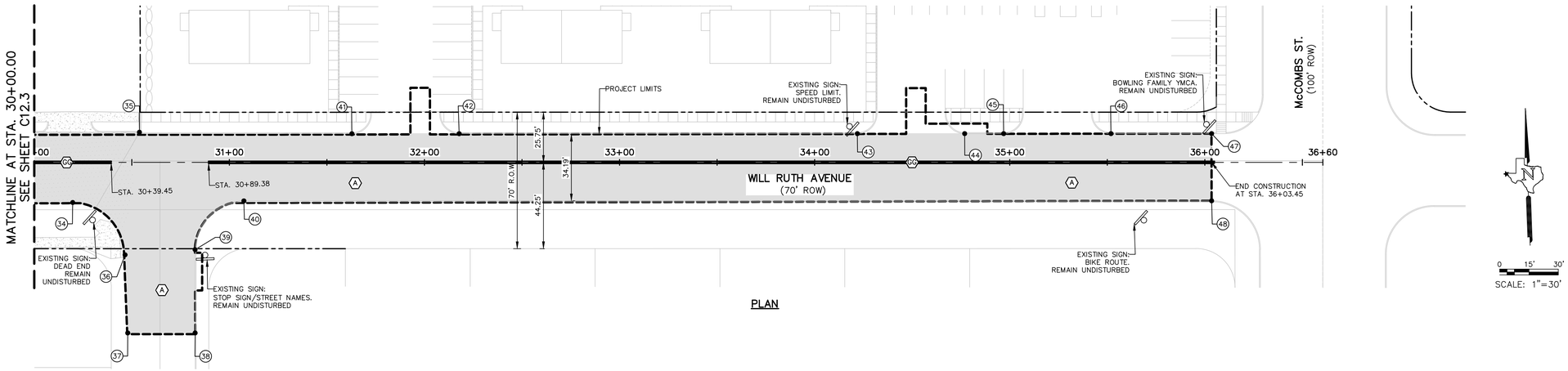

PLAN

0 15' 30'

SCALE: 1"=30'

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- 3805 NEW MAJOR CONTOUR AND ELEVATION
- 3806 NEW MINOR CONTOUR
- (A) NEW HMAC PAVEMENT RECONSTRUCTION..... 1-6 C15.4
- (DD) NEW 24" THERMOPLASTIC PAVEMENT MARKING..... 4 C15.5
  (WHITE)(SOLID)(100 MILS)
  (SEE SHEETS C12.1-C12.4)
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  (SEE SHEETS C12.1 & C12.8)
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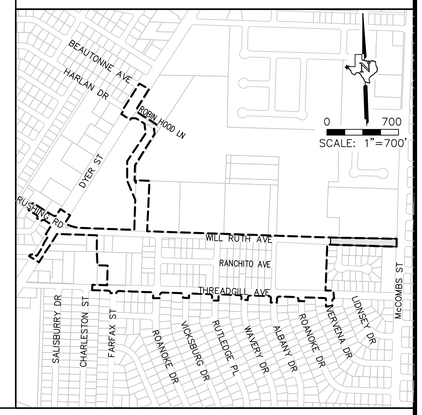
- (KK) NEW 4" THERMOPLASTIC PAVEMENT MARKING..... 4 C15.5
  (DOUBLE)(YELLOW)(SOLID)(BROKEN)(100 MILS)
  (SEE SHEET C12.1)
- EXISTING SIGN SYMBOL
- NEW SIGN SYMBOL..... 2 C15.0 5 C15.0
- (XX) CONTROL POINT & SPOT ELEVATION
  REFER TO HORIZONTAL CONTROL TABLE

HORIZONTAL CONTROL TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	TOP OF PAVEMENT	10703793.05	409198.92	3903.54
2	TOP OF PAVEMENT	10703791.94	409240.92	3903.28
3	TOP OF PAVEMENT	10703857.67	409265.51	3903.37
4	TOP OF PAVEMENT	10703787.49	409320.63	3902.94
5	TOP OF PAVEMENT	10703788.30	409345.22	3902.91
6	TOP OF PAVEMENT	10703830.37	409429.83	3902.86
7	TOP OF PAVEMENT	10703784.97	409444.58	3902.75
8	TOP OF PAVEMENT	10703783.27	409492.32	3902.67
9	TOP OF PAVEMENT	10703783.13	409496.30	3902.66
10	TOP OF PAVEMENT	10703781.69	409535.98	3902.63
11	TOP OF PAVEMENT	10703826.50	409543.57	3902.98
12	TOP OF PAVEMENT	10703781.13	409555.75	3902.61
13	TOP OF PAVEMENT	10703779.87	409591.01	3902.15
14	TOP OF PAVEMENT	10703823.73	409616.59	3902.91
15	TOP OF PAVEMENT	10703814.60	409625.39	3902.46
16	TOP OF PAVEMENT	10703806.72	409846.31	3901.96
17	TOP OF PAVEMENT	10703804.90	409898.39	3901.77
18	TOP OF PAVEMENT	10703802.69	409959.73	3901.35
19	TOP OF PAVEMENT	10703801.34	409999.53	3901.23
20	TOP OF PAVEMENT	10703789.88	410339.13	3901.80

HORIZONTAL CONTROL TABLE

POINT NO.	DESCRIPTION	
21	TOP OF PAVEMENT	10
22	TOP OF PAVEMENT	10
23	TOP OF PAVEMENT	10
24	TOP OF PAVEMENT	10
25	TOP OF PAVEMENT	10
26	TOP OF PAVEMENT	10
27	TOP OF PAVEMENT	10
28	TOP OF PAVEMENT	10
29	TOP OF PAVEMENT	10
30	TOP OF PAVEMENT	10
31	TOP OF PAVEMENT	10
32	TOP OF PAVEMENT	10
33	TOP OF PAVEMENT	10
34	MATCH TOP OF PAVEMENT	10
35	MATCH TOP OF PAVEMENT	10
36	MATCH TOP OF PAVEMENT	10
37	MATCH TOP OF PAVEMENT	10
38	MATCH TOP OF PAVEMENT	10
39	MATCH TOP OF PAVEMENT	10
40	MATCH TOP OF PAVEMENT	10



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PAVEMENT, SIGNING & STRIPING PLAN
STA. 30+00.00 TO STA. 36+03.45

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JOB NO. 16-133
SEQUENCE NO. 3 OF 3
SHEET NO. C12.4

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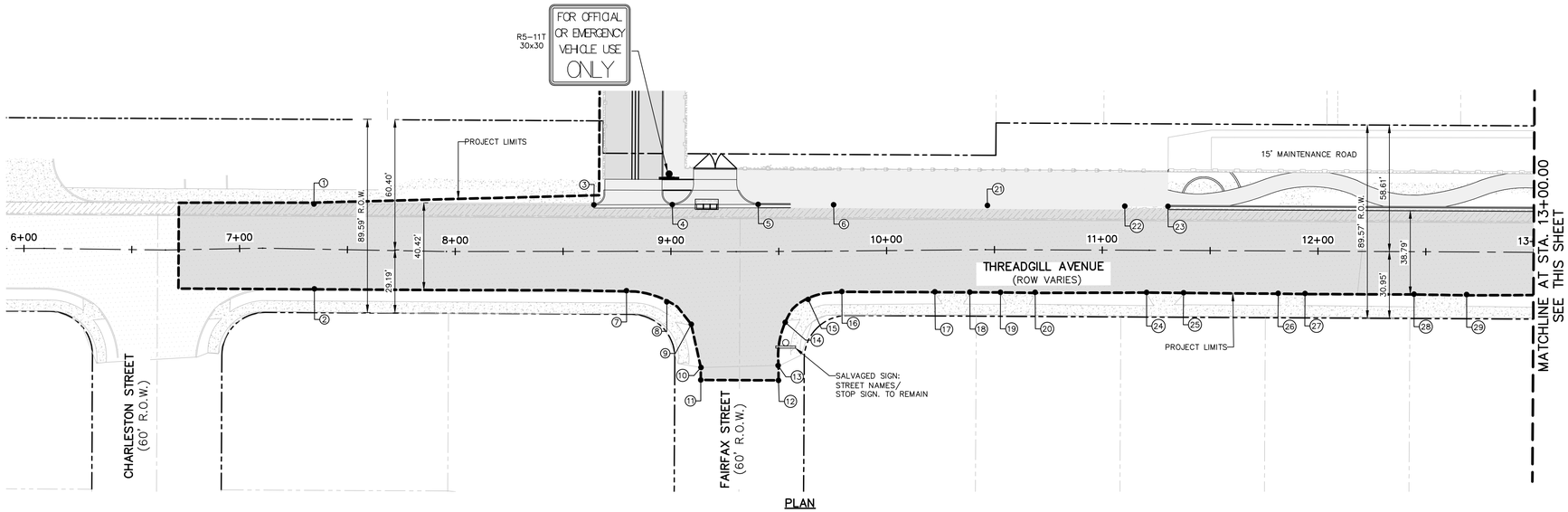

PLAN

LEGEND

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- 2+00 STATIONING / CENTERLINE ALIGNMENT
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- NEW SIGN SYMBOL..... (2 / C15.0) (5 / C15.0)
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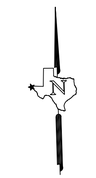
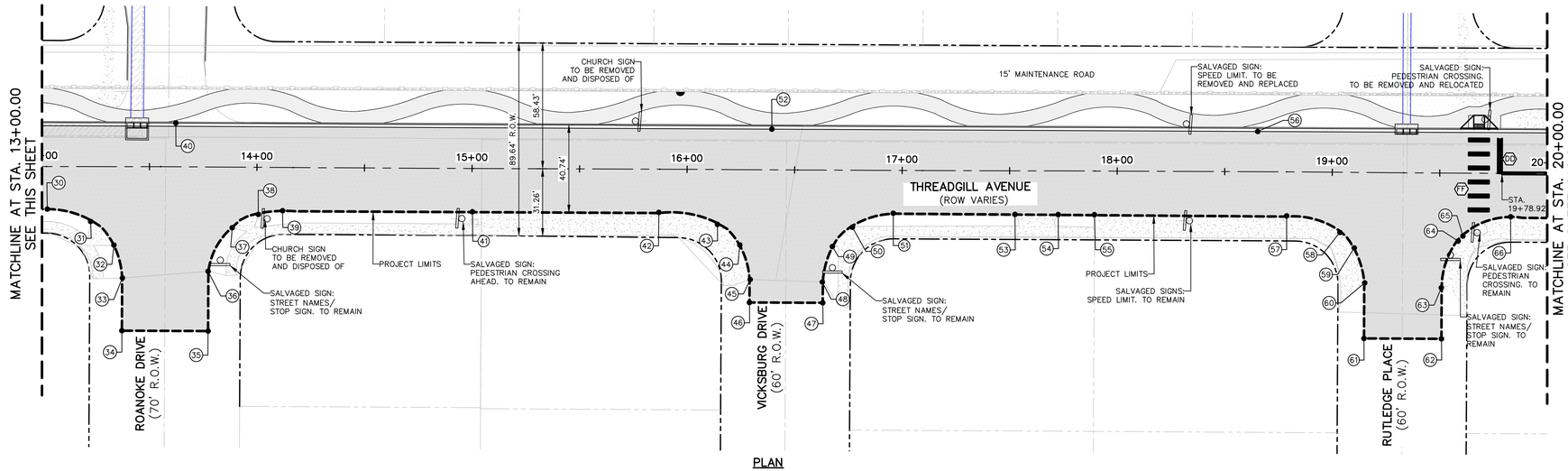
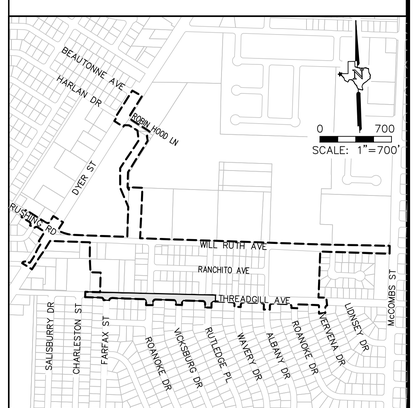
4. SEE SHEET C12.0 FOR FULL PLAN & PROFILE DESIGN OF DYER ST.





PLAN



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REV.	DATE	BY	DESCRIPTION

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

THREADGILL AVENUE
PAVEMENT, SIGNING & STRIPING PLAN
STA. 7+34.38 TO STA. 20+00.00

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JOB NO. 16-133
SEQUENCE NO. 1 OF 3
SHEET NO. C12.5

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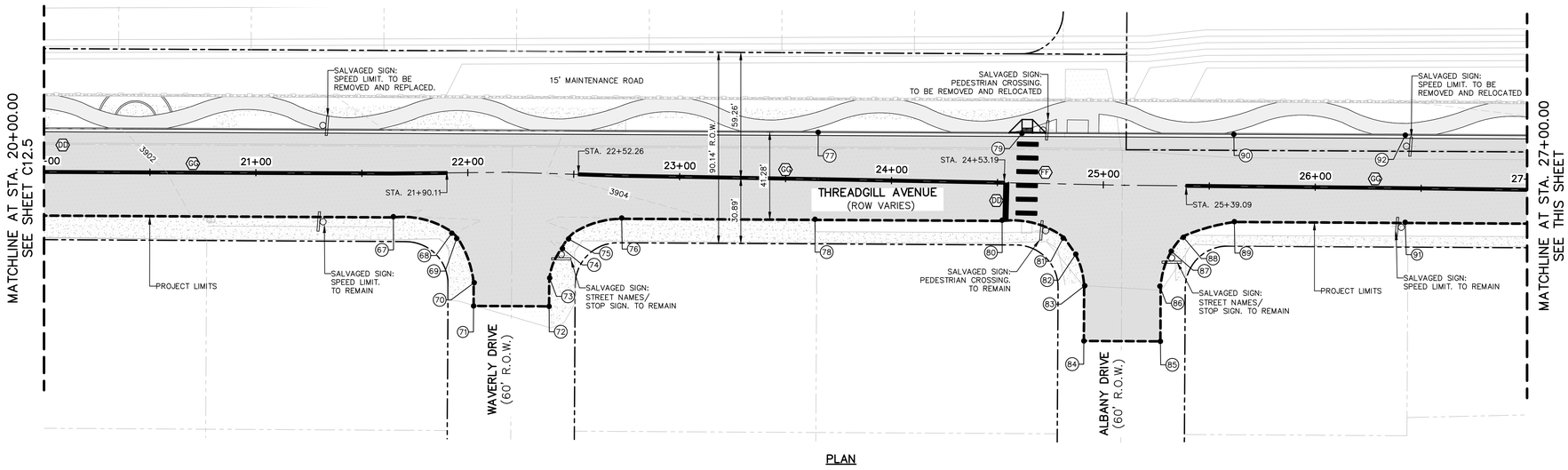

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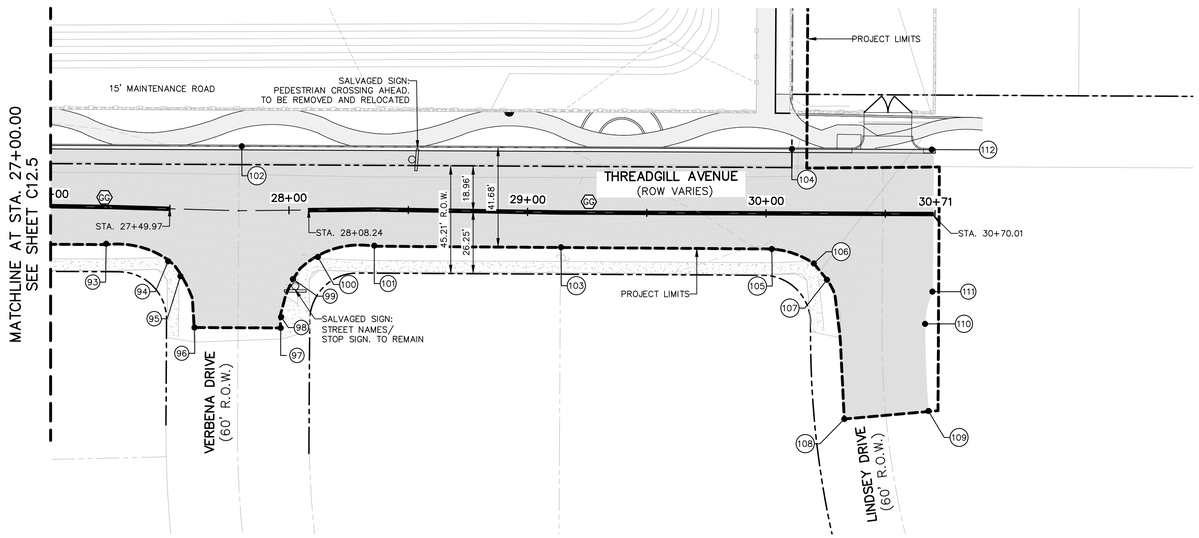

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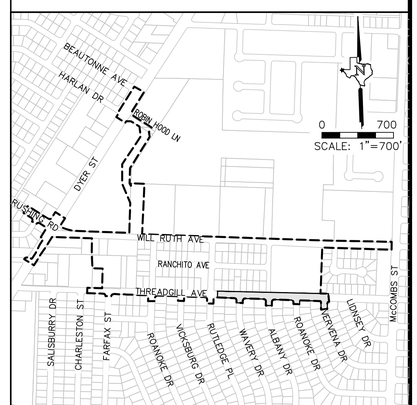

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 — STATIONING / CENTERLINE ALIGNMENT
- 3805 — NEW MAJOR CONTOUR AND ELEVATION
- 3806 — NEW MINOR CONTOUR
- (A) NEW HMAC PAVEMENT RECONSTRUCTION..... 1-6 / C15.4
- (DD) NEW 24" THERMOPLASTIC PAVEMENT MARKING..... 4 / C15.5
  (WHITE)(SOLID)(100 MILS)
  (SEE SHEETS C12.1–C12.4)
- (EE) NEW 18" THERMOPLASTIC PAVEMENT MARKING..... 4 / C15.5
  (WHITE)(SOLID)(100 MILS)
  (SEE SHEETS C12.1–C12.4)
- (FF) NEW 18" THERMOPLASTIC PAVEMENT MARKING..... 4 / C15.5
  (WHITE)(SOLID)(100 MILS)
  (SEE SHEETS C12.1–C12.4)
- (GG) NEW 4" THERMOPLASTIC PAVEMENT MARKING..... 4 / C15.5
  (DOUBLE)(YELLOW)(SOLID)(100 MILS)
  (SEE SHEETS C12.1–C12.4)
- (HH) NEW 4" THERMOPLASTIC PAVEMENT MARKING..... 4 / C15.5
  (WHITE)(SOLID)(100 MILS)
  (SEE SHEETS C12.1–C12.4)
- (II) NEW 4" THERMOPLASTIC PAVEMENT MARKING..... 4 / C15.5
  (BROKEN)(WHITE)(SOLID)(100 MILS)
  (SEE SHEETS C12.1 & C12.8)
- (JJ) NEW 24" X 36" THERMOPLASTIC PAVEMENT MARKING..... 4 / C15.5
  (WHITE)(SOLID)(100 MILS)
  (SEE SHEET C12.2)
- (KK) NEW 4" THERMOPLASTIC PAVEMENT MARKING..... 4 / C15.5
  (DOUBLE)(YELLOW)(SOLID)(BROKEN)(100 MILS)
  (SEE SHEET C12.1)
- EXISTING SIGN SYMBOL
- NEW SIGN SYMBOL..... 2 / C15.0 — 5 / C15.0
- (XX) CONTROL POINT & SPOT ELEVATION
  REFER TO HORIZONTAL CONTROL TABLE

1. CONTRACTOR SHALL COORDINATE WITH THE STREET AND MAINTENANCE DEPARTMENT THROUGH CITY PROJECT MANAGER FOR REMOVAL, REPLACEMENT, RELOCATION AND/OR NEW INSTALLATION OF ANY EXISTING AND/OR PROPOSED SIGNS.
2. FOR SIGN BASE INFORMATION SEE DETAIL: 5 / C15.0 — 6 / C15.0
3. SEE SHEET C12.7 FOR HORIZONTAL CONTROL TABLE.

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JOB NO. 16-133
SEQUENCE NO. 2 OF 3
SHEET NO. C12.6

F:\16133\DWG\16133 - C12.5-C12.7_DWG_THREADGILL AVE_Pavement & SPM.dwg Time:Sep30,2022 - 01:03pm LoginAdministrator

HORIZONTAL CONTROL TABLE				
POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	TOP OF PAVEMENT	10703282.74	409503.76	3899.29
2	TOP OF PAVEMENT	10703243.43	409502.80	3898.98
3	TOP OF PAVEMENT	10703278.63	409633.48	3898.85
4	TOP OF PAVEMENT	10703277.67	409669.82	3898.41
5	TOP OF PAVEMENT	10703276.62	409709.60	3898.51
6	TOP OF PAVEMENT	10703275.44	409744.57	3898.58
7	TOP OF PAVEMENT	10703238.41	409647.41	3898.85
8	TOP OF PAVEMENT	10703232.70	409665.97	3899.16
9	TOP OF PAVEMENT	10703221.99	409677.00	3898.68
10	TOP OF PAVEMENT	10703201.82	409680.93	3898.39
11	MATCH TOP OF PAVEMENT	10703196.02	409680.64	MATCH TP
12	MATCH TOP OF PAVEMENT	10703194.81	409716.68	MATCH TP
13	TOP OF PAVEMENT	10703201.70	409716.70	3898.40
14	TOP OF PAVEMENT	10703221.61	409720.56	3898.61
15	TOP OF PAVEMENT	10703231.94	409731.51	3899.21
16	TOP OF PAVEMENT	10703235.11	409747.23	3898.82
17	TOP OF PAVEMENT	10703233.76	409790.33	3899.07
18	TOP OF PAVEMENT	10703233.14	409806.50	3899.10
19	TOP OF PAVEMENT	10703232.66	409820.71	3899.19
20	TOP OF PAVEMENT	10703232.18	409836.78	3899.34

HORIZONTAL CONTROL TABLE				
POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
21	TOP OF PAVEMENT	10703273.04	409815.83	3899.00
22	TOP OF PAVEMENT	10703270.90	409879.50	3899.34
23	TOP OF PAVEMENT	10703270.22	409899.49	3899.29
24	TOP OF PAVEMENT	10703230.65	409888.45	3899.42
25	TOP OF PAVEMENT	10703229.99	409905.58	3899.60
26	TOP OF PAVEMENT	10703228.45	409949.40	3899.46
27	TOP OF PAVEMENT	10703228.01	409961.85	3899.42
28	TOP OF PAVEMENT	10703226.24	410012.35	3899.26
29	TOP OF PAVEMENT	10703225.38	410036.73	3899.16
30	TOP OF PAVEMENT	10703224.17	410070.31	3899.02
31	TOP OF PAVEMENT	10703217.86	410090.28	3899.30
32	TOP OF PAVEMENT	10703206.56	410100.77	3898.76
33	TOP OF PAVEMENT	10703191.18	410104.28	3898.67
34	MATCH TOP OF PAVEMENT	10703166.70	410103.33	MATCH TP
35	MATCH TOP OF PAVEMENT	10703165.37	410143.39	MATCH TP
36	TOP OF PAVEMENT	10703193.12	410144.19	3898.63
37	TOP OF PAVEMENT	10703213.04	410155.99	3898.69
38	TOP OF PAVEMENT	10703218.85	410168.32	3899.33
39	TOP OF PAVEMENT	10703220.25	410179.63	3898.78
40	TOP OF PAEMENT	10703262.41	410131.18	3898.45

HORIZONTAL CONTROL TABLE				
POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
41	TOP OF PAVEMENT	10703217.22	410267.85	3899.03
42	TOP OF PAVEMENT	10703214.44	410354.48	3899.20
43	TOP OF PAVEMENT	10703208.08	410381.57	3899.85
44	TOP OF PAVEMENT	10703198.22	410391.68	3899.36
45	TOP OF PAVEMENT	10703182.04	410396.05	3899.48
46	MATCH TOP OF PAVEMENT	10703171.37	410395.39	MATCH TP
47	MATCH TOP OF PAVEMENT	10703170.24	410429.45	MATCH TP
48	TOP OF PAVEMENT	10703179.89	410429.54	3899.66
49	TOP OF PAVEMENT	10703196.23	410434.67	3899.59
50	TOP OF PAVEMENT	10703204.93	410444.23	3900.00
51	TOP OF PAVEMENT	10703210.88	410463.42	3899.76
52	TOP OF PAVEMENT	10703251.58	410408.15	3899.43
53	TOP OF PAVEMENT	10703208.73	410519.98	3899.86
54	TOP OF PAVEMENT	10703208.07	410540.09	3899.91
55	TOP OF PAVEMENT	10703207.52	410556.92	3899.95
56	TOP OF PAVEMENT	10703243.97	410633.93	3900.40
57	TOP OF PAVEMENT	10703204.37	410646.26	3900.24
58	TOP OF PAVEMENT	10703196.00	410670.77	3900.63
59	TOP OF PAVEMENT	10703188.58	410677.23	3900.80
60	TOP OF PAVEMENT	10703172.22	410681.64	3901.20

HORIZONTAL CONTROL TABLE				
POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
61	MATCH TOP OF PAVEMENT	10703146.41	410680.54	MATCH TP
62	MATCH TOP OF PAVEMENT	10703145.19	410716.54	MATCH TP
63	TOP OF PAVEMENT	10703168.89	410717.16	3901.30
64	TOP OF PAVEMENT	10703190.38	410725.62	3901.05
65	TOP OF PAVEMENT	10703192.62	410727.91	3900.96
66	TOP OF PAVEMENT	10703200.97	410750.33	3900.57
67	TOP OF PAVEMENT	10703194.64	410932.15	3903.73
68	TOP OF PAVEMENT	10703186.08	410959.49	3904.04
69	TOP OF PAVEMENT	10703183.51	410961.74	3904.04
70	TOP OF PAVEMENT	10703162.41	410969.40	3903.72
71	MATCH TOP OF PAVEMENT	10703151.44	410968.78	MATCH TP
72	MATCH TOP OF PAVEMENT	10703150.24	411004.39	MATCH TP
73	TOP OF PAVEMENT	10703163.61	411005.05	3903.71
74	TOP OF PAVEMENT	10703177.30	411011.47	3904.10
75	TOP OF PAVEMENT	10703181.76	411014.48	3903.86
76	TOP OF PAVEMENT	10703190.92	411039.83	3903.92
77	TOP OF PAVEMENT	10703228.63	411133.68	3904.19
78	TOP OF PAVEMENT	10703187.66	411131.02	3904.09
79	BOTTOM OF RAMP	10703225.39	411229.82	MATCH TP
80	TOP OF PAVEMENT	10703184.69	411219.26	3904.33

HORIZONTAL CONTROL TABLE				
POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
81	TOP OF PAVEMENT	10703175.44	411247.84	3904.46
82	TOP OF PAVEMENT	10703167.66	411253.55	3904.40
83	TOP OF PAVEMENT	10703152.68	411257.35	3904.56
84	MATCH TOP OF PAVEMENT	10703126.64	411256.19	MATCH TP
85	MATCH TOP OF PAVEMENT	10703125.40	411292.28	MATCH TP
86	TOP OF PAVEMENT	10703151.42	411292.80	3904.96
87	TOP OF PAVEMENT	10703167.78	411298.66	3904.84
88	TOP OF PAVEMENT	10703174.16	411304.55	3904.80
89	TOP OF PAVEMENT	10703180.84	411328.82	3904.85
90	TOP OF PAVEMENT	10703222.02	411329.73	3904.92
91	TOP OF PAVEMENT	10703178.19	411409.37	3905.05
92	TOP OF PAVEMENT	10703219.29	411410.64	3905.19
93	TOP OF PAVEMENT	10703175.45	411490.21	3905.26
94	TOP OF PAVEMENT	10703167.36	411515.96	3905.52
95	TOP OF PAVEMENT	10703160.93	411520.92	3905.93
96	MATCH TOP OF PAVEMENT	10703139.27	411526.20	3905.69
97	MATCH TOP OF PAVEMENT	10703138.05	411562.32	3905.71
98	TOP OF PAVEMENT	10703142.64	411562.63	3905.66
99	TOP OF PAVEMENT	10703158.37	411568.04	3905.57
100	TOP OF PAVEMENT	10703167.33	411578.76	3906.18

HORIZONTAL CONTROL TABLE				
POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
101	TOP OF PAVEMENT	10703171.40	411602.53	3905.48
102	TOP OF PAVEMENT	10703214.66	411548.20	3905.66
103	TOP OF PAVEMENT	10703168.48	411680.78	3905.66
104	TOP OF PAVEMENT	10703206.89	411778.71	3906.43
105	TOP OF PAVEMENT	10703165.20	411769.06	3905.96
106	TOP OF PAVEMENT	10703158.62	411786.50	3906.31
107	TOP OF PAVEMENT	10703151.62	411791.83	3906.26
108	TOP OF PAVEMENT	10703093.08	411797.40	MATCH TP
109	TOP OF PAVEMENT	10703095.41	411832.77	MATCH TP
110	TOP OF PAVEMENT	10703131.97	411832.40	MATCH TP
111	TOP OF PAVEMENT	10703145.38	411835.86	MATCH TP
112	TOP OF PAVEMENT	10703204.91	411837.31	3906.41
113	BOTTOM OF RAMP	10703242.09	410734.34	3901.28
114	BOTTOM OF RAMP	10703241.92	410739.34	3901.33
115	BOTTOM OF RAMP	10703225.22	411234.81	MATCH TP

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PAVEMENT, SIGNING & STRIPING PLAN

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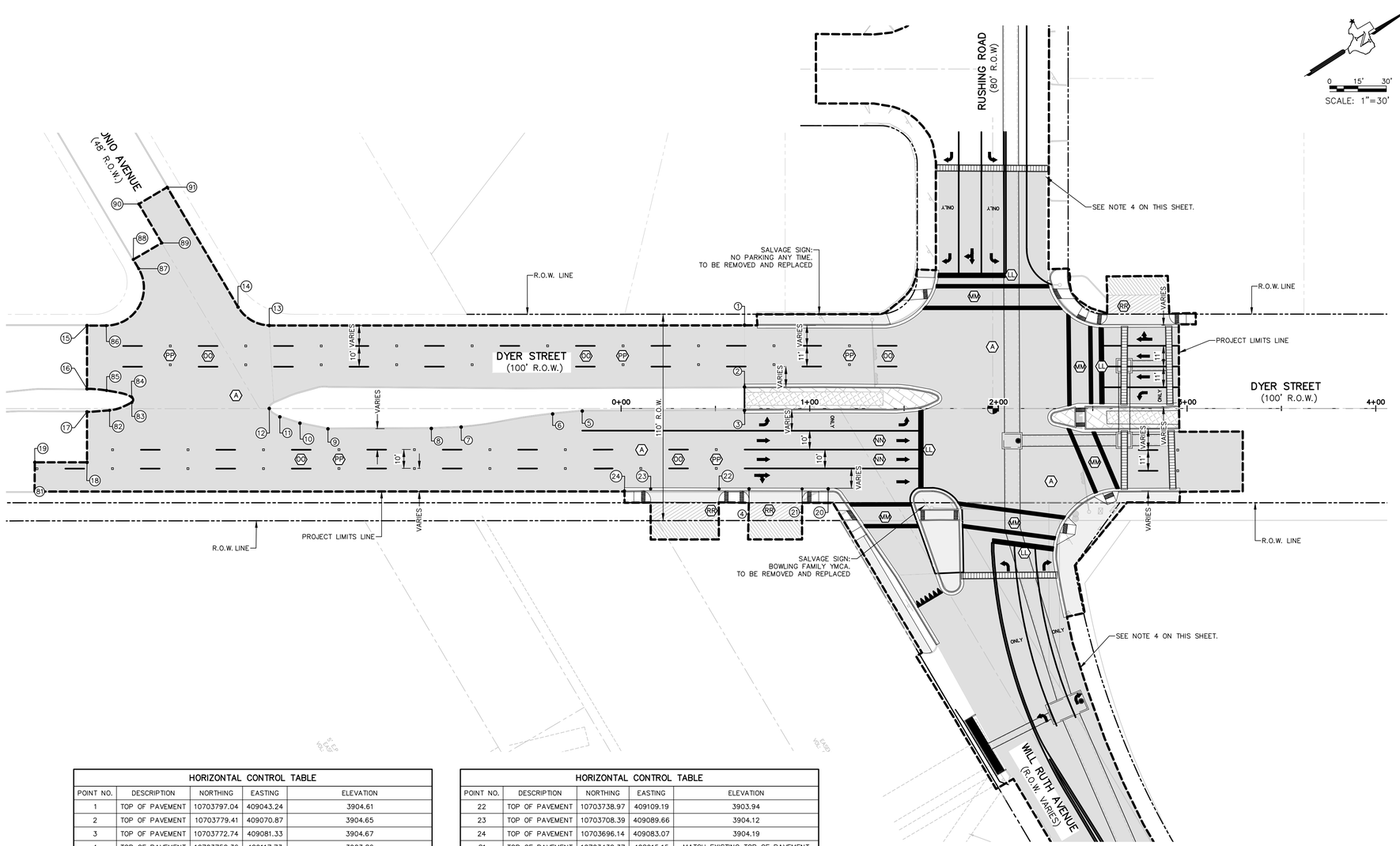

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- EXISTING RIGHT-OF-WAY
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- 3805 — NEW MAJOR CONTOUR AND ELEVATION
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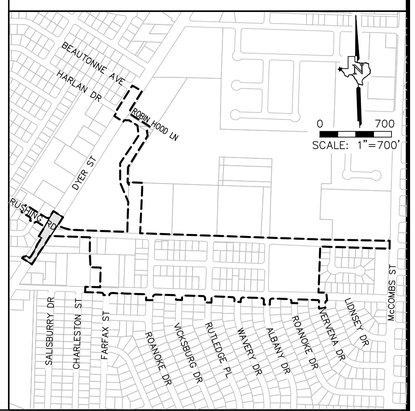
- (A) NEW HMAC PAVEMENT RECONSTRUCTION.... (2 C15.4) (4 C15.4)
- (LL) NEW 24" (REFLECTORIZED) PAVEMENT MARKING... (WHITE)(SOLID)(100 MILS) (SEE SHEET C12.8) (4 C15.5)
- (MM) NEW 18" (REFLECTORIZED) PAVEMENT MARKING... (WHITE)(SOLID)(100 MILS) (SEE SHEET C12.8) (4 C15.5)
- (NN) NEW 4" (REFLECTORIZED) PAVEMENT MARKING (WHITE)(SOLID)(100 MILS)..... (SEE SHEET C12.8) (4 C15.5)
- (OO) NEW 4" (REFLECTORIZED) PAVEMENT..... MARKING (BROKEN)(WHITE)(SOLID) (100 MILS) (SEE SHEET C12.8) (4 C15.5)
- (PP) NEW 4" (REFLECTORIZED) PAVEMENT MARKING..... (SEE SHEET C12.8) (C15.5)
- (RR) NEW CONCRETE DRIVEWAY..... (1 C15.3)
- EXISTING SIGN SYMBOL
- NEW SIGN SYMBOL
- (XX) CONTROL POINT & SPOT ELEVATION REFER TO HORIZONTAL CONTROL TABLE

1. CONTRACTOR SHALL COORDINATE WITH TxDOT FOR REMOVAL, REPLACEMENT, RELOCATION AND/OR NEW INSTALLATION OF ANY EXISTING AND/OR PROPOSED SIGNS.
2. FOR SIGN BASE INFORMATION SEE DETAIL: (5 C15.0) (6 C15.0)
3. SEE SHEET C12.0 FOR FULL PLAN & PROFILE DESIGN OF DYER ST.
4. SEE SHEETS C12.1 AND C12.2 FOR PAVEMENT, SIGNING & STRIPING PLANS FOR RUSHING ROAD AND WILL RUTH AVENUE.



HORIZONTAL CONTROL TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	TOP OF PAVEMENT	10703797.04	409043.24	3904.61
2	TOP OF PAVEMENT	10703779.41	409070.87	3904.65
3	TOP OF PAVEMENT	10703772.74	409081.33	3904.67
4	TOP OF PAVEMENT	10703752.36	409117.73	3903.86
5	TOP OF PAVEMENT	10703700.02	409035.35	MATCH EXISTING TOP OF PAVEMENT
6	TOP OF PAVEMENT	10703685.98	409028.18	MATCH EXISTING TOP OF PAVEMENT
7	TOP OF PAVEMENT	10703641.36	409007.98	MATCH EXISTING TOP OF PAVEMENT
8	TOP OF PAVEMENT	10703627.64	409000.08	MATCH EXISTING TOP OF PAVEMENT
9	TOP OF PAVEMENT	10703581.32	408970.79	MATCH EXISTING TOP OF PAVEMENT
10	TOP OF PAVEMENT	10703570.46	408960.28	MATCH EXISTING TOP OF PAVEMENT
11	TOP OF PAVEMENT	10703563.25	408951.71	MATCH EXISTING TOP OF PAVEMENT
12	TOP OF PAVEMENT	10703560.95	408944.93	MATCH EXISTING TOP OF PAVEMENT
13	TOP OF PAVEMENT	10703584.62	408907.86	MATCH EXISTING TOP OF PAVEMENT
14	TOP OF PAVEMENT	10703575.94	408890.68	MATCH EXISTING TOP OF PAVEMENT
15	TOP OF PAVEMENT	10703503.16	408855.92	MATCH EXISTING TOP OF PAVEMENT
16	TOP OF PAVEMENT	10703485.12	408884.19	MATCH EXISTING TOP OF PAVEMENT
17	TOP OF PAVEMENT	10703478.56	408894.47	MATCH EXISTING TOP OF PAVEMENT
18	TOP OF PAVEMENT	10703464.17	408917.03	MATCH EXISTING TOP OF PAVEMENT
19	TOP OF PAVEMENT	10703440.83	408902.14	MATCH EXISTING TOP OF PAVEMENT
20	TOP OF PAVEMENT	10703787.72	409140.30	MATCH EXISTING TOP OF PAVEMENT
21	TOP OF PAVEMENT	10703776.06	409132.86	3903.95

HORIZONTAL CONTROL TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
22	TOP OF PAVEMENT	10703738.97	409109.19	3903.94
23	TOP OF PAVEMENT	10703708.39	409089.66	3904.12
24	TOP OF PAVEMENT	10703696.14	409083.07	3904.19
81	TOP OF PAVEMENT	10703432.37	408915.15	MATCH EXISTING TOP OF PAVEMENT
82	TOP OF PAVEMENT	10703489.07	408900.24	MATCH EXISTING TOP OF PAVEMENT
83	TOP OF PAVEMENT	10703501.24	408903.04	MATCH EXISTING TOP OF PAVEMENT
84	TOP OF PAVEMENT	10703502.72	408900.57	MATCH EXISTING TOP OF PAVEMENT
85	TOP OF PAVEMENT	10703493.41	408890.50	MATCH EXISTING TOP OF PAVEMENT
86	TOP OF PAVEMENT	10703511.75	408861.40	MATCH EXISTING TOP OF PAVEMENT
87	TOP OF PAVEMENT	10703542.49	408845.22	MATCH EXISTING TOP OF PAVEMENT
88	TOP OF PAVEMENT	10703542.69	408839.58	MATCH EXISTING TOP OF PAVEMENT
89	TOP OF PAVEMENT	10703560.16	408840.31	MATCH EXISTING TOP OF PAVEMENT
90	TOP OF PAVEMENT	10703560.99	408816.33	MATCH EXISTING TOP OF PAVEMENT
91	TOP OF PAVEMENT	10703578.48	408816.94	MATCH EXISTING TOP OF PAVEMENT

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REV.	DATE	BY	DESCRIPTION

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
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2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DYER ST.
PAVEMENT, SIGNING & STRIPING PLAN
STA. 0+00.00 TO STA. 3+50.00

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JOB NO. 16-133
SEQUENCE NO. 1 OF 1
SHEET NO. C12.8

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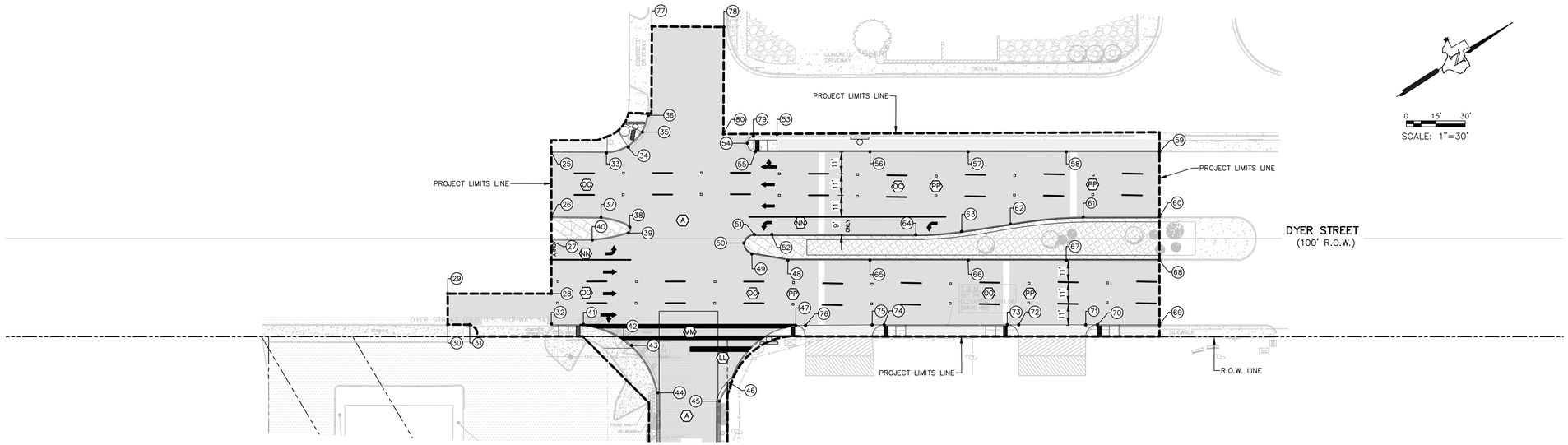


LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 — STATIONING / CENTERLINE ALIGNMENT
- 3805 — NEW MAJOR CONTOUR AND ELEVATION
- 3806 — NEW MINOR CONTOUR
- (A) NEW HMAC PAVEMENT RECONSTRUCTION.... 2/C15.4, 4/C15.4
- (LL) NEW 24" (REFLECTORIZED) PAVEMENT MARKING... (WHITE)(SOLID)(100 MILS) (SEE SHEET C12.8) 4/C15.5
- (MM) NEW 18" (REFLECTORIZED) PAVEMENT MARKING... (WHITE)(SOLID)(100 MILS) (SEE SHEET C12.8) 4/C15.5
- (NN) NEW 4" (REFLECTORIZED) PAVEMENT MARKING (WHITE)(SOLID)(100 MILS)..... (SEE SHEET C12.8) 4/C15.5
- (OO) NEW 4" (REFLECTORIZED) PAVEMENT..... MARKING (BROKEN)(WHITE)(SOLID) (100 MILS) (SEE SHEET C12.8) 4/C15.5
- (PP) NEW 4" (REFLECTORIZED) PAVEMENT MARKING..... (SEE SHEET C12.8) C15.5
- (RR) NEW CONCRETE DRIVEWAY..... 1/C15.3
- EXISTING SIGN SYMBOL
- NEW SIGN SYMBOL
- (XX) CONTROL POINT & SPOT ELEVATION REFER TO HORIZONTAL CONTROL TABLE

1. CONTRACTOR SHALL COORDINATE WITH TxDOT FOR REMOVAL, REPLACEMENT, RELOCATION AND/OR NEW INSTALLATION OF ANY EXISTING AND/OR PROPOSED SIGNS.
2. FOR SIGN BASE INFORMATION SEE DETAIL: 5/C15.0, 6/C15.0
3. SEE SHEET C12.0 FOR FULL PLAN & PROFILE DESIGN OF DYER ST.
4. SEE SHEETS C12.1 AND C12.2 FOR PAVEMENT, SIGNING & STRIPING PLANS FOR RUSHING ROAD AND WILL RUTH AVENUE.

HORIZONTAL CONTROL TABLE

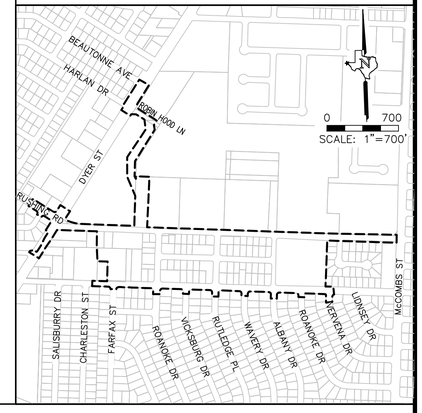
POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
25	TOP OF PAVEMENT	10704953.57	409781.76	3910.26
26	TOP OF PAVEMENT	10704935.89	409809.47	3910.57
27	TOP OF PAVEMENT	10704929.29	409819.82	3910.78
28	TOP OF PAVEMENT	10704914.80	409842.51	3909.94
29	TOP OF PAVEMENT	10704870.25	409814.09	MATCH EXISTING TOP OF PAVEMENT
30	TOP OF PAVEMENT	10704861.79	409827.34	MATCH EXISTING TOP OF PAVEMENT
31	TOP OF PAVEMENT	10704871.18	409833.42	MATCH EXISTING TOP OF PAVEMENT
32	TOP OF PAVEMENT	10704906.50	409855.53	3909.50
33	TOP OF PAVEMENT	10704977.01	409797.18	3910.52
34	TOP OF PAVEMENT	10704987.98	409800.65	3910.51
35	TOP OF PAVEMENT	10704998.25	409798.06	3910.50
36	TOP OF PAVEMENT	10705005.45	409792.51	3910.50
37	TOP OF PAVEMENT	10704957.09	409823.34	3910.38
38	TOP OF PAVEMENT	10704966.68	409835.46	3910.31
39	TOP OF PAVEMENT	10704964.45	409837.58	3910.32
40	TOP OF PAVEMENT	10704947.05	409830.74	3910.39
41	TOP OF PAVEMENT	10704920.10	409864.50	3909.58
42	TOP OF PAVEMENT	10704933.34	409881.98	3909.64
43	TOP OF PAVEMENT	10704935.05	409886.76	3909.62
44	TOP OF PAVEMENT	10704933.46	409914.34	3909.64

HORIZONTAL CONTROL TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
45	TOP OF PAVEMENT	10704957.42	409934.72	3909.60
46	TOP OF PAVEMENT	10704967.12	409929.88	3909.82
47	TOP OF PAVEMENT	10705011.07	409923.21	3910.05
48	TOP OF PAVEMENT	10705025.61	409892.98	3910.14
49	TOP OF PAVEMENT	10705011.82	409880.43	3910.11
50	TOP OF PAVEMENT	10705011.36	409873.57	3910.14
51	TOP OF PAVEMENT	10705018.20	409872.75	3910.16
52	TOP OF PAVEMENT	10705025.74	409877.58	3910.16
53	TOP OF PAVEMENT	10705055.41	409835.94	3911.12
54	TOP OF PAVEMENT	10705040.21	409831.62	3910.78
55	TOP OF PAVEMENT	10705041.39	409837.43	3910.56
56	TOP OF PAVEMENT	10705090.62	409868.87	3910.88
57	TOP OF PAVEMENT	10705132.76	409895.78	3911.24
58	TOP OF PAVEMENT	10705174.90	409922.69	3911.62
59	TOP OF PAVEMENT	10705214.88	409948.40	3911.92
60	TOP OF PAVEMENT	10705197.07	409976.30	3912.29
61	TOP OF PAVEMENT	10705164.24	409955.38	3912.01
62	TOP OF PAVEMENT	10705131.11	409938.43	3911.53
63	TOP OF PAVEMENT	10705108.11	409928.26	3911.16
64	TOP OF PAVEMENT	10705087.51	409917.11	3910.83

HORIZONTAL CONTROL TABLE

POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
65	TOP OF PAVEMENT	10705060.85	409915.51	3910.44
66	TOP OF PAVEMENT	10705102.97	409942.46	3911.05
67	TOP OF PAVEMENT	10705145.09	409969.40	3911.69
68	TOP OF PAVEMENT	10705185.13	409995.01	3912.15
69	TOP OF PAVEMENT	10705167.49	410022.64	3911.26
70	TOP OF PAVEMENT	10705140.81	410005.61	3911.07
71	TOP OF PAVEMENT	10705135.78	410002.39	3911.03
72	TOP OF PAVEMENT	10705107.01	409984.02	3910.78
73	TOP OF PAVEMENT	10705102.13	409980.90	3910.74
74	TOP OF PAVEMENT	10705049.17	409947.12	3910.31
75	TOP OF PAVEMENT	10705044.07	409943.92	3910.26
76	TOP OF PAVEMENT	10705015.25	409925.84	3910.06
77	TOP OF PAVEMENT	10705031.26	409755.30	MATCH EXISTING TOP OF PAVEMENT
78	TOP OF PAVEMENT	10705061.99	409775.27	MATCH EXISTING TOP OF PAVEMENT
79	TOP OF PAVEMENT	10705044.79	409830.23	3910.60
80	TOP OF PAVEMENT	10705032.49	409821.10	MATCH EXISTING TOP OF PAVEMENT



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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DYER ST.
PAVEMENT, SIGNING & STRIPING PLAN
STA. X+00.00 TO STA. X+X0.00

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JOB NO. 16-133
SEQUENCE NO. 1 OF 1
SHEET NO. C12.9

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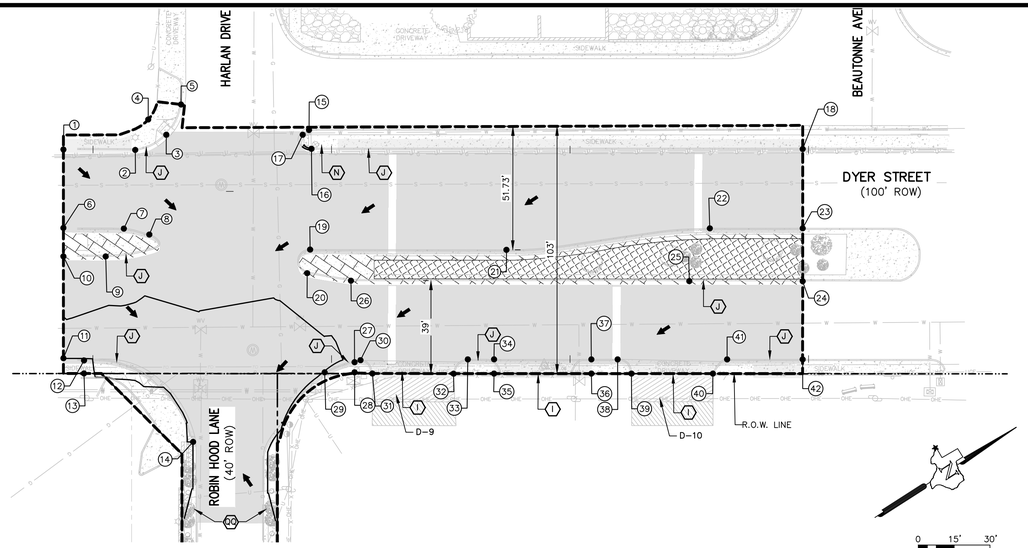
HORIZONTAL CONTROL TABLE				
POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	TOP OF PAVEMENT	10704953.57	409781.76	3910.26
2	TOP OF PAVEMENT	10704978.86	409798.11	3910.51
3	BOTTOM OF RAMP	10704993.27	409799.73	3910.52
4	TOP OF RAMP	10704990.32	409790.27	3910.62
5	TOP OF PAVEMENT	10705005.28	409792.37	3910.50
6	TOP OF PAVEMENT	10704935.89	409809.47	3910.47
7	TOP OF PAVEMENT	10704957.09	409823.34	3910.28
8	TOP OF PAVEMENT	10704964.77	409831.18	3910.34
9	TOP OF PAVEMENT	10704944.40	409829.08	3910.41
10	TOP OF PAVEMENT	10704929.47	409819.53	3910.78
11	TOP OF PAVEMENT	10704906.50	409855.53	3909.50
12	TOP OF RAMP	10704913.30	409860.95	3910.13
13	TOP OF RAMP	10704910.33	409865.54	3910.23
14	TOP OF PAVEMENT	10704933.46	409914.34	3909.64
15	TOP OF PAVEMENT	10705044.79	409830.23	3910.60
16	TOP OF PAVEMENT	10705041.39	409837.43	3910.56
17	BOTTOM OF RAMP	10705041.47	409830.51	3910.77
18	TOP OF PAVEMENT	10705214.96	409948.27	3911.92
19	TOP OF PAVEMENT	10705018.20	409872.75	3910.16
20	TOP OF PAVEMENT	10705011.82	409880.43	3910.11
21	TOP OF PAVEMENT	10705087.51	409917.11	3910.83
22	TOP OF PAVEMENT	10705164.24	409955.38	3912.01
23	TOP OF PAVEMENT	10705197.07	409976.30	3912.29
24	TOP OF PAVEMENT	10705185.13	409995.01	3912.15
25	TOP OF PAVEMENT	10705145.09	409969.40	3911.69



PLAN

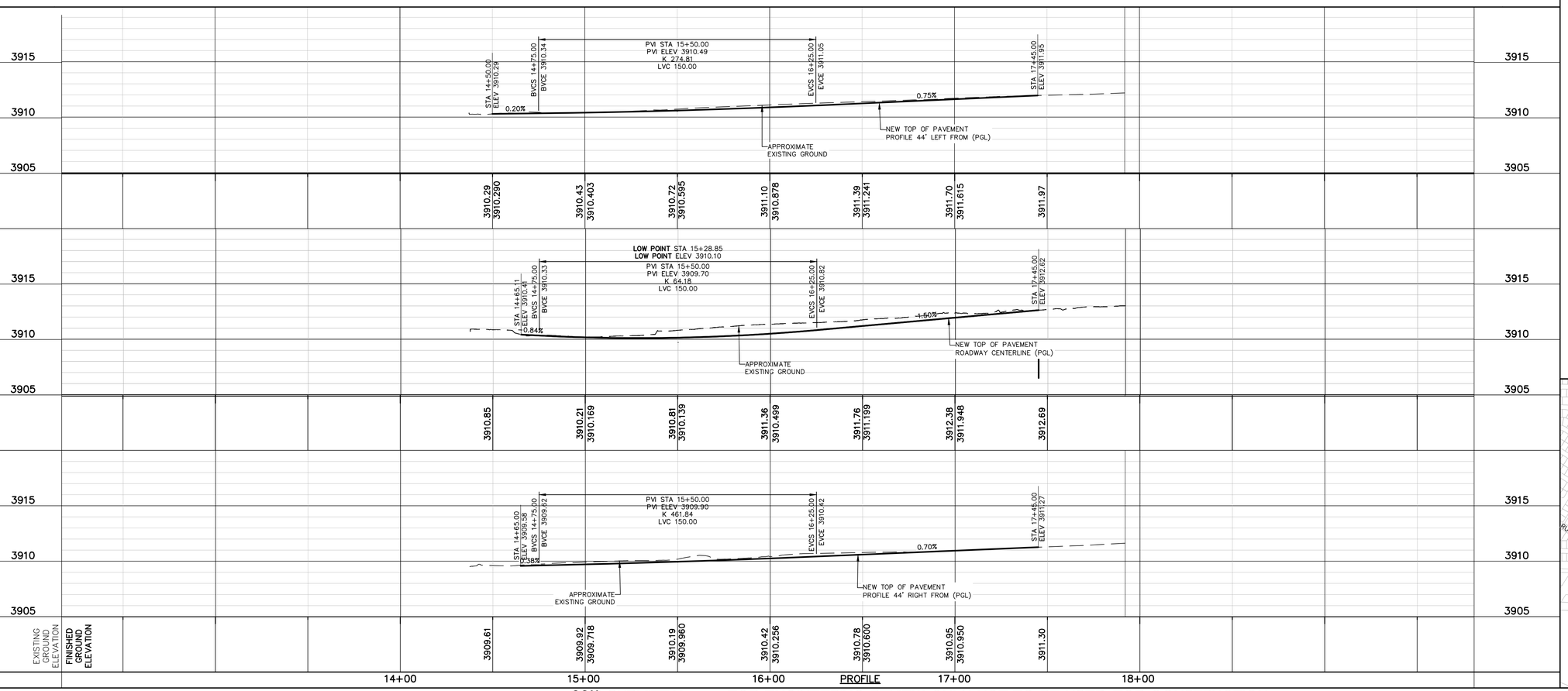
SCALE: 1"=30'

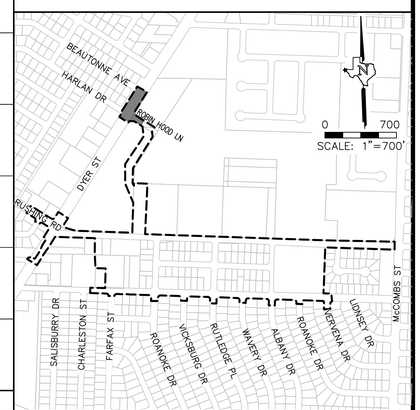
HORIZONTAL CONTROL TABLE				
POINT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
26	TOP OF PAVEMENT	10705025.61	409892.98	3910.14
27	BOTTOM OF RAMP	10705008.52	409922.59	3910.05
28	BOTTOM OF RAMP	10705006.23	409926.17	3910.13
29	TOP OF PAVEMENT	10704995.66	409919.42	3910.01
30	TOP OF PAVEMENT	10705011.07	409923.21	3910.05
31	TOP OF DRIVEWAY	10705012.26	409930.61	3910.17
32	TOP OF DRIVEWAY	10705040.90	409948.98	3910.38
33	TOP OF PAVEMENT	10705049.17	409947.12	3910.31
34	TOP OF PAVEMENT	10705058.46	409953.03	3910.38
35	TOP OF SIDEWALK	10705055.25	409958.05	3910.99
36	TOP OF SIDEWALK	10705089.63	409980.00	3911.27
37	TOP OF PAVEMENT	10705092.83	409974.99	3910.66
38	TOP OF PAVEMENT	10705102.13	409980.90	3910.74
39	TOP OF DRIVEWAY	10705103.80	409989.04	3910.90
40	TOP OF DRIVEWAY	10705132.57	410007.41	3911.15
41	TOP OF PAVEMENT	10705140.81	410005.61	3911.07
42	TOP OF PAVEMENT	10705167.49	410022.64	3911.26
43	TOP OF PAVEMENT	10704969.48	409927.92	3909.94
44	TOOP OF PAVEMENT	10704958.52	409835.82	3910.37

KEYED LEGEND

- PROJECT LIMITS/LIMITS OF DEMOLITION
- EXISTING RIGHT-OF-WAY
- 1+00 — STATIONING AND NEW GRADE CENTERLINE (CL)
- PGL — PROPOSED GRADE LINE (PGL)
- LOW POINT
- HIGH POINT
- FLOW DIRECTION
- (A) — NEW HMAC PAVEMENT RECONSTRUCTION..... 2/C15.4, 4/C15.4
- (J) — NEW CONCRETE 6" CURB & GUTTER..... 6/C15.1
- (N) — NEW WHEELCHAIR RAMP W/ 5'X5' LANDING..... 1/C15.5
- (T) — NEW CITY MONUMENT..... 3/C15.4
- (I) — NEW CONCRETE DRIVEWAY..... 1/C15.2
- (QQ) — NEW HEADER CURB..... 5/C15.1
- (XX) — CONTROL POINT & SPOT ELEVATION REFER TO SPOT ELEVATION TABLES
- CX — CURVE DATA POINT REFER TO CURVE DATA TABLES

1. SEE SHEET C12.8 FOR DYER ST. PAVEMENT, SIGNING AND STRIPING PLAN.
2. SEE SHEET C15.3 FOR DRIVEWAY DETAILS.





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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 5/16/2022

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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DYER STREET
PLAN & PROFILE
STA. 14+37.69 TO
STA. 17+47.62

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JOB NO. 16-133
SEQUENCE NO. 1 OF 1
SHEET NO. C12.10

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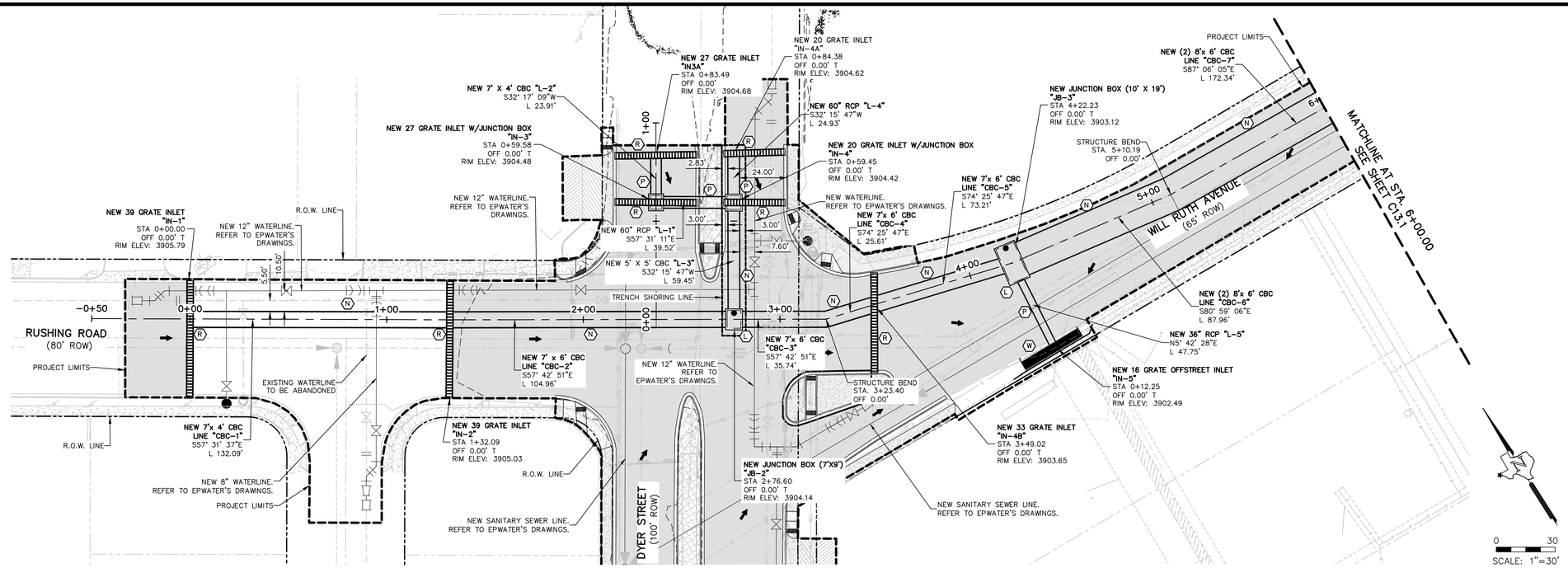
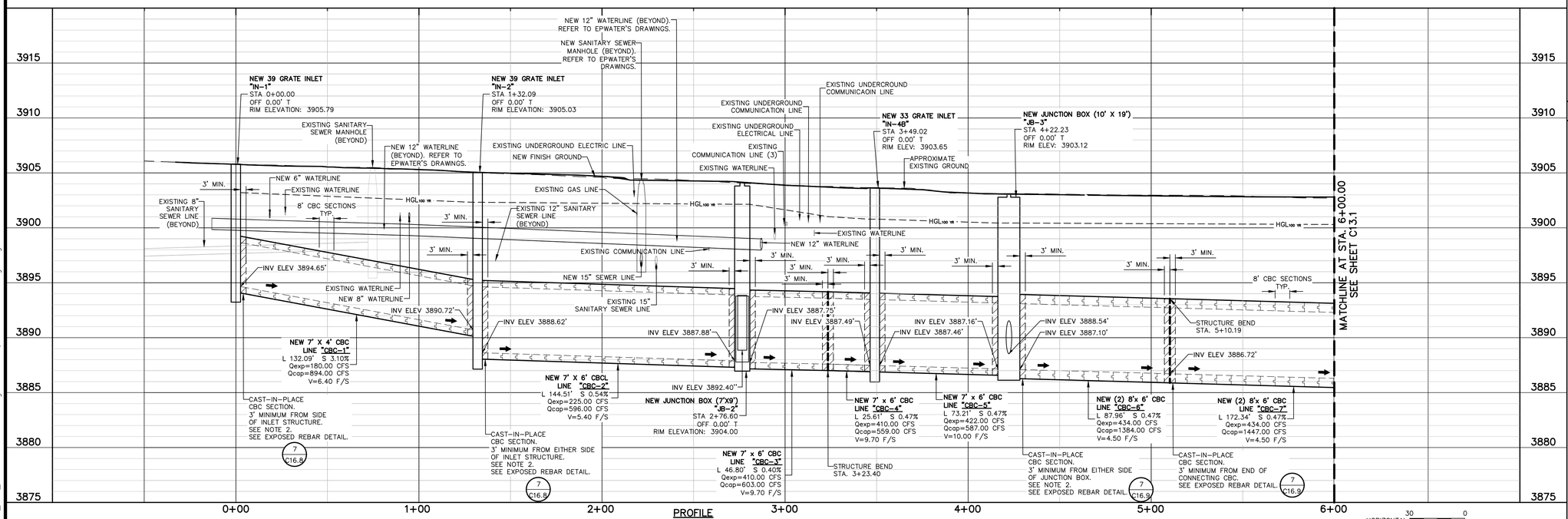


PLAN



PROFILE

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- TRENCH SHORING LINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- LOW POINT
- HIGH POINT
- FLOW DIRECTION
- (C) NEW MORTARED ROCK RIP RAP..... 4 C16.4
- (L) NEW ACCESS 72" MH WITH JUNCTION BOX. SEE STRUCTURAL SHEETS FOR DETAILS..... S14.0 S15.0 S27.0 S28.0 S29.0 S30.0
- (M) NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS..... 1 C16.10 2 C16.10
- (N) NEW CAST-IN-PLACE AND/OR PRECAST CONCRETE BOX CULVERT..... C16.8 C16.9
- (P) NEW STORM SEWER PIPE (REFER TO PLAN & PROFILE SHEETS).....
- (Q) NEW INLET..... 6 C16.5
- (R) NEW INLET..... 1 C16.5 2 C16.5 3 C16.5 4 C16.5
- (W) NEW OFFSTREET INLET..... 5 C16.5
- (X) NEW INLET W/ JUNCTION BOX..... 7 C16.5 8 C16.5 9 C16.5 10 C16.5
- (Y) NEW OUTFALL STRUCTURE..... 3 C16.10
- (Z) NEW OUTFALL STRUCTURE..... 4 C16.10

NOTES

1. REFER TO SHEETS C14.0–C14.1 FOR STORM SEWER LATERALS.
2. REFER TO SHEET C14.2 FOR BOX CULVERT AND PIPE SCHEDULE.
3. REFER TO EPWATER'S DRAWINGS FOR NEW WATER AND SEWER LINE INSTALLATIONS.
4. INSTALL CONCRETE BOX, FITTING, AND ACCESSORIES WITH MANUFACTURER'S INSTRUCTIONS. SEAL JOINTS WATERTIGHT. SEE SECTION 3.4 IN SPECIFICATIONS.
5. CONTRACTOR SHALL PROTECT MAILBOXES, TELECOMMUNICATION, GAS, AND ELECTRICAL UTILITY LINES DURING TRENCH EXCAVATION ACTIVITIES.

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STORM SEWER PLAN & PROFILE

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JOB NO. 16-133
SEQUENCE NO. 1 OF 9
SHEET NO. C13.0

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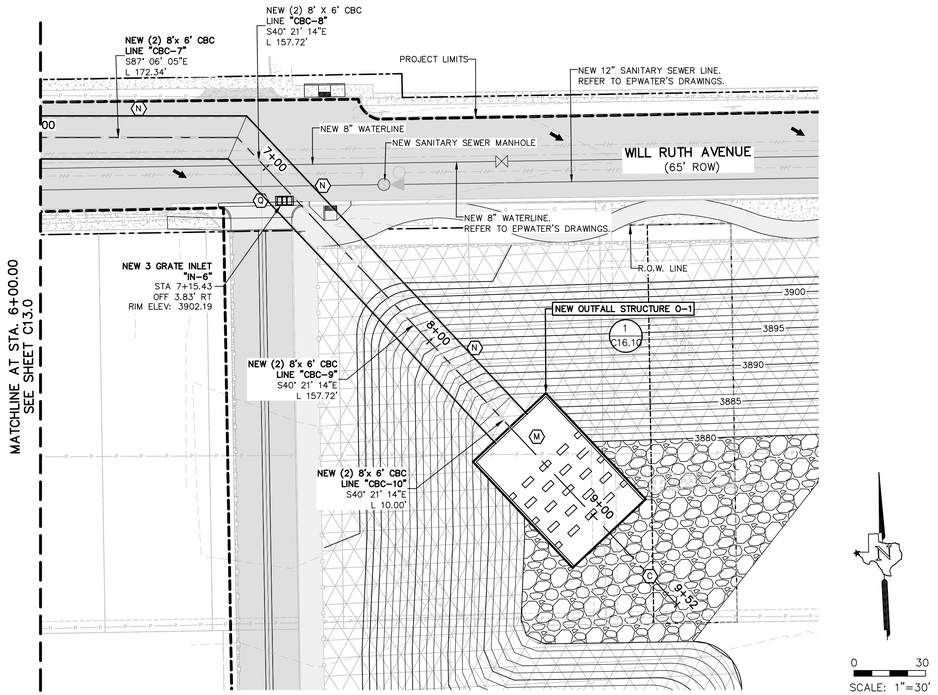
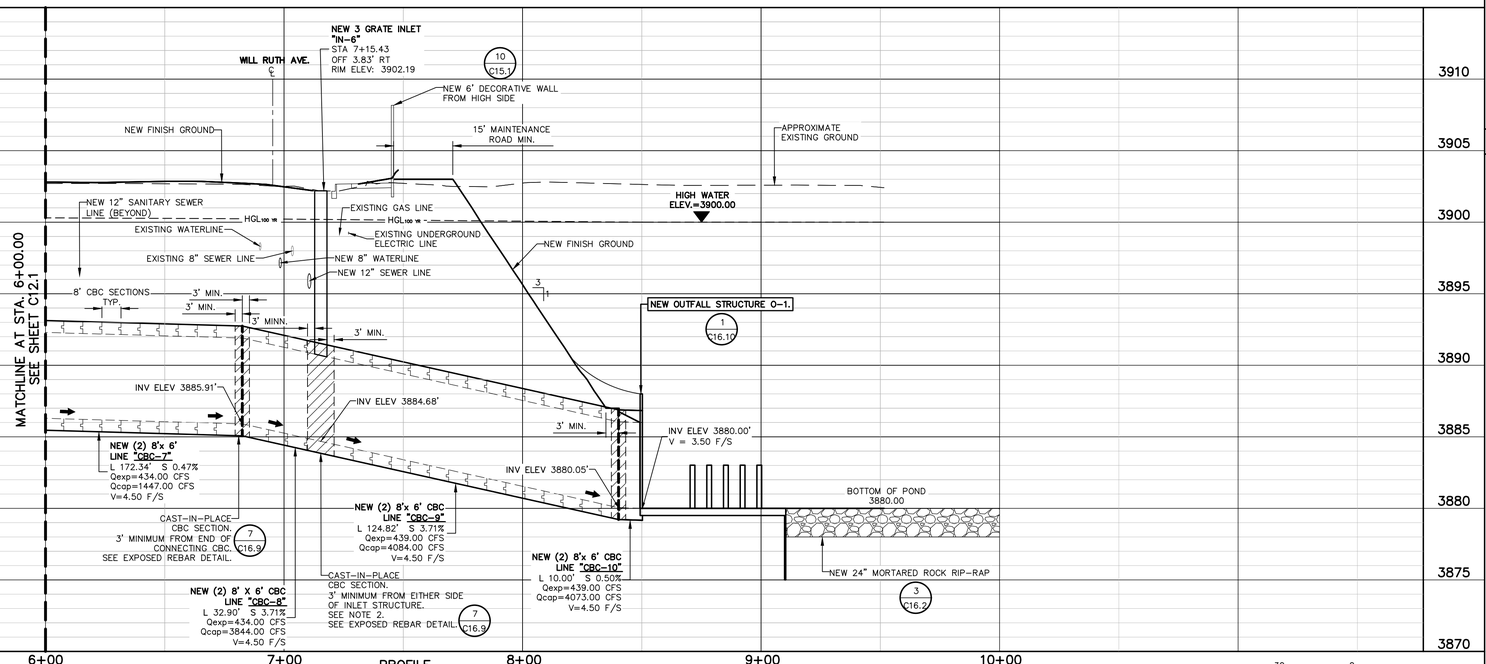


PLAN



PROFILE

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- TRENCH SHORING LINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- LOW POINT
- HIGH POINT
- FLOW DIRECTION
- (C) NEW MORTARED ROCK RIP RAP..... 4 C16.4
- (L) NEW ACCESS 72" MH WITH JUNCTION BOX. SEE STRUCTURAL SHEETS FOR DETAILS..... S14.0 S15.0 S27.0 S28.0 S29.0 S30.0
- (M) NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS..... 1 C16.10 2 C16.10
- (N) NEW CAST-IN-PLACE AND/OR PRECAST CONCRETE BOX CULVERT..... C16.8 C16.9
- (P) NEW STORM SEWER PIPE (REFER TO PLAN & PROFILE SHEETS).....
- (Q) NEW INLET..... 6 C16.5
- (R) NEW INLET..... 1 C16.5 2 C16.5 3 C16.5 4 C16.5
- (W) NEW OFFSTREET INLET..... 5 C16.5
- (X) NEW INLET W/ JUNCTION BOX..... 7 C16.5 8 C16.5 9 C16.5 10 C16.5
- (Y) NEW OUTFALL STRUCTURE..... 3 C16.10
- (Z) NEW OUTFALL STRUCTURE..... 4 C16.10

NOTES

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2. REFER TO SHEET C14.2 FOR BOX CULVERT AND PIPE SCHEDULE.
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
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2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STORM SEWER PLAN & PROFILE

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JOB NO. 16-133
SEQUENCE NO. 2 OF 9
SHEET NO. C13.1

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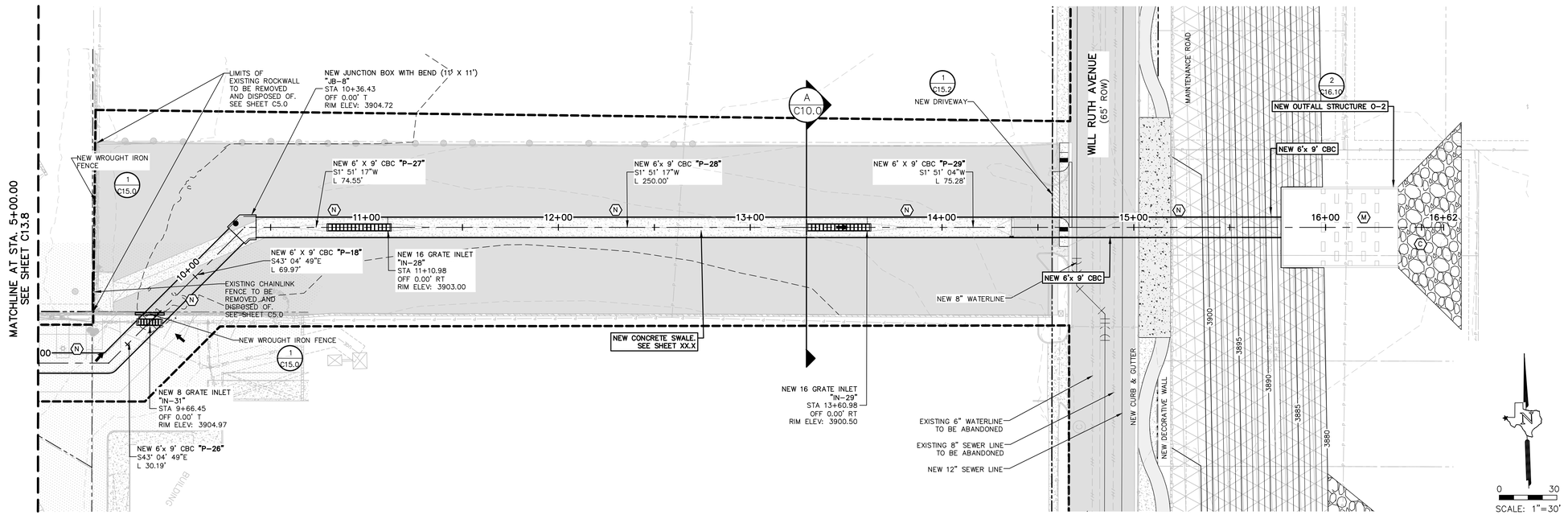
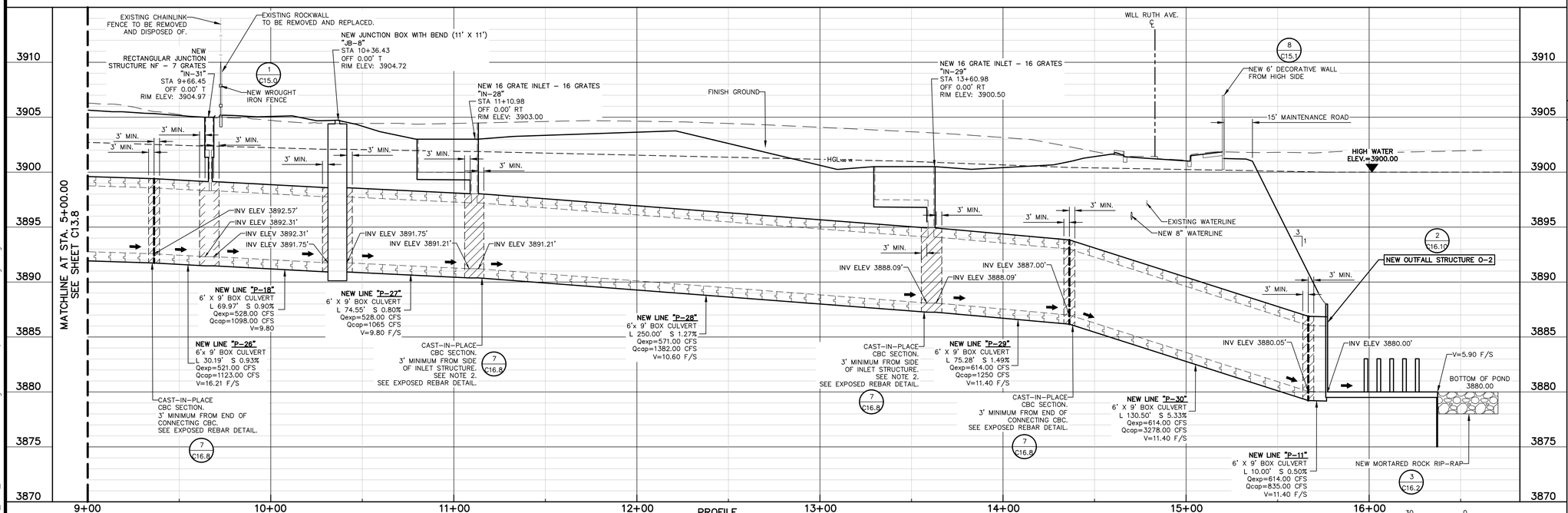


PLAN



PROFILE

LEGEND

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- (M) NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS..... 1/C16.10 2/C16.10
- (N) NEW CAST-IN-PLACE AND/OR PRECAST CONCRETE BOX CULVERT..... C16.8 C16.9
- (P) NEW STORM SEWER PIPE (REFER TO PLAN & PROFILE SHEETS).....
- (Q) NEW INLET..... 6/C16.5
- (R) NEW INLET..... 1/C16.5 2/C16.5 3/C16.5 4/C16.5
- (W) NEW OFFSTREET INLET..... 5/C16.5
- (X) NEW INLET W/ JUNCTION BOX..... 7/C16.5 8/C16.5 9/C16.5 10/C16.5
- (Y) NEW OUTFALL STRUCTURE..... 3/C16.10
- (Z) NEW OUTFALL STRUCTURE..... 4/C16.10

NOTES

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

CONCRETE DRAINAGE CHANNEL & STORM SEWER PLAN & PROFILE

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JOB NO. 16-133
SEQUENCE NO. 3 OF 9
SHEET NO. C13.2

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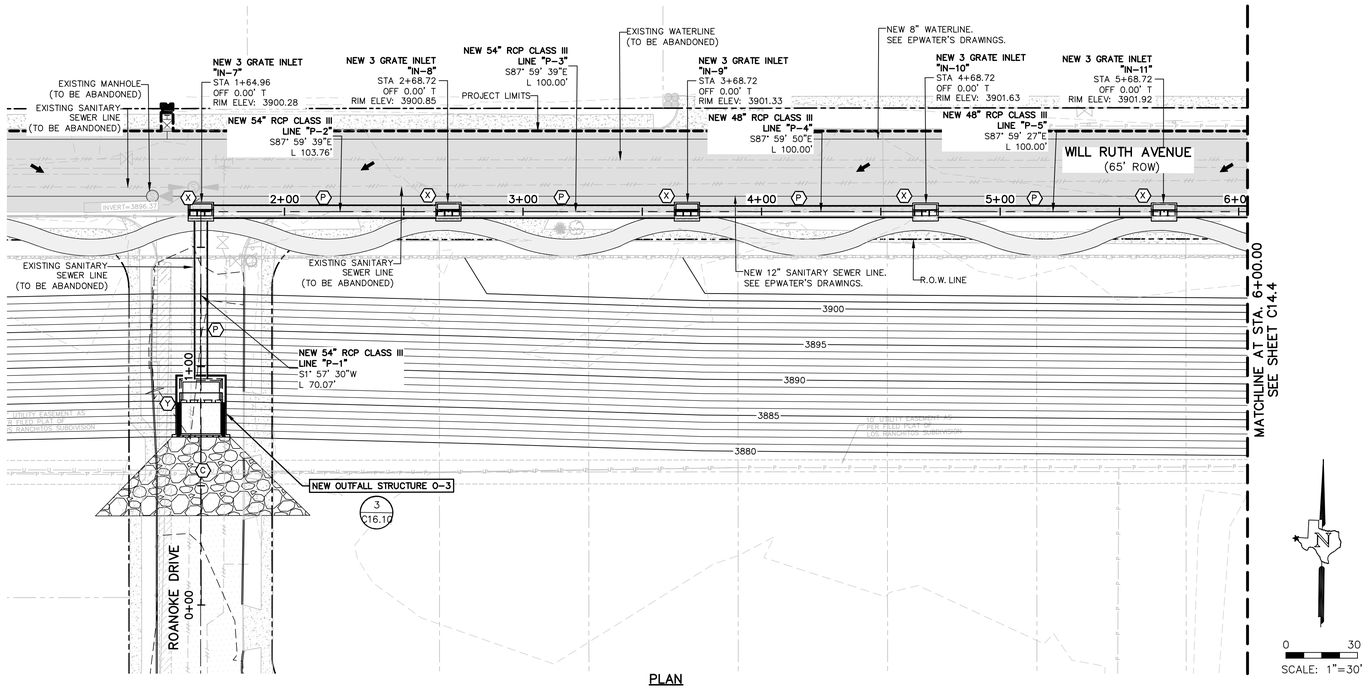
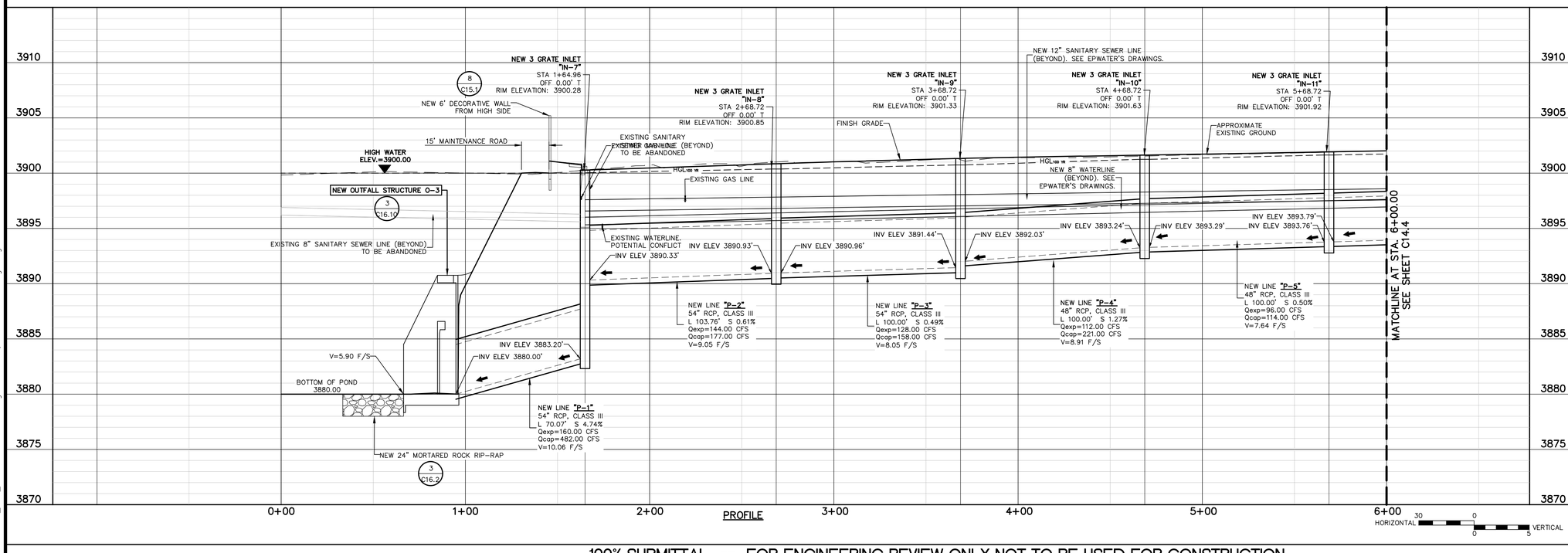


PLAN



PROFILE

LEGEND

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- (Y) NEW OUTFALL STRUCTURE..... 3 C16.10
- (Z) NEW OUTFALL STRUCTURE..... 4 C16.10

NOTES

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CHECKED M.M.
DATE 10/7/2022

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STORM SEWER PLAN & PROFILE

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JOB NO. 16-133
SEQUENCE NO. 4 OF 9
SHEET NO. C13.3

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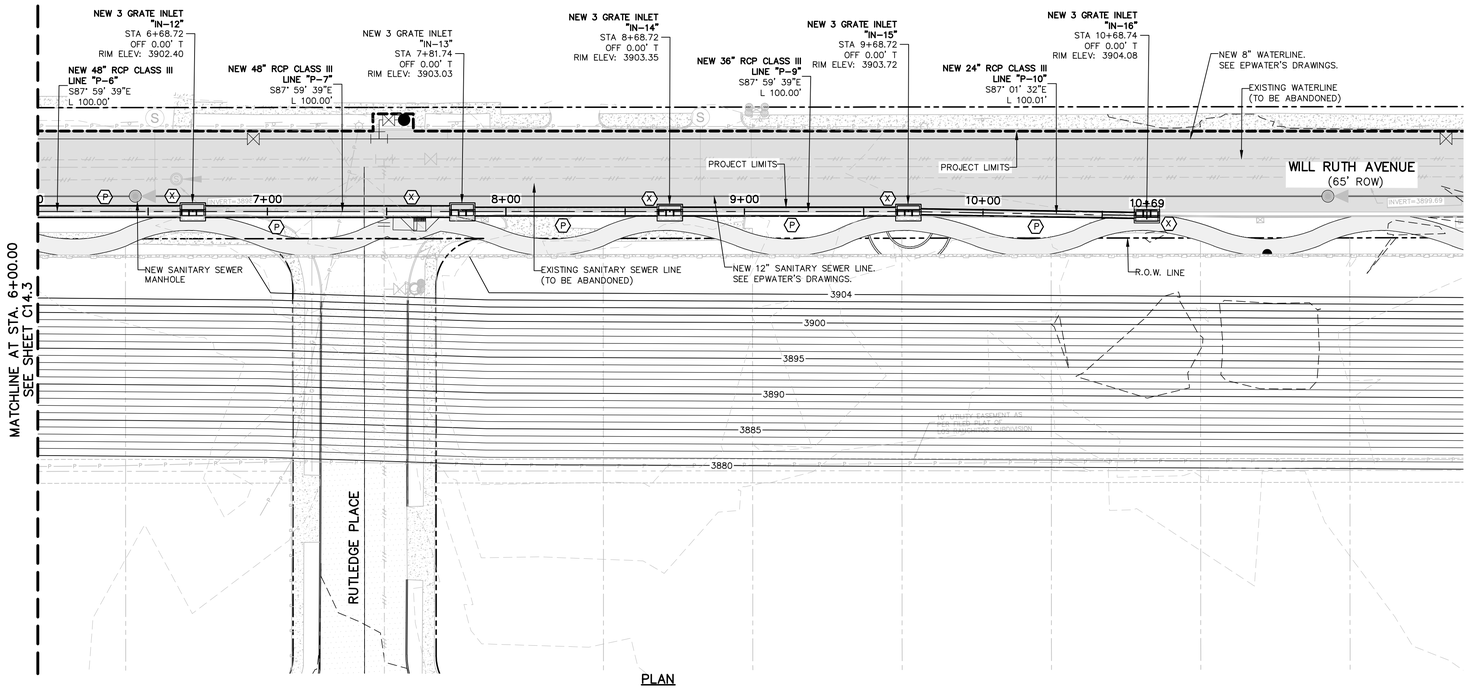

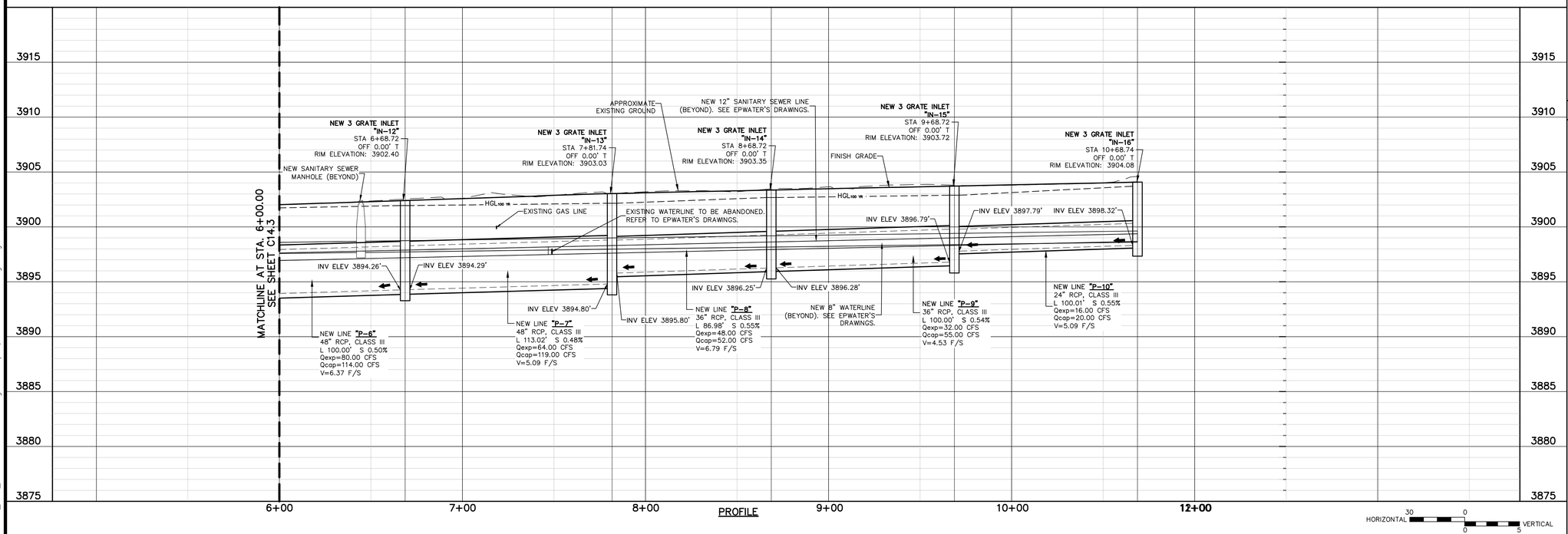

LEGEND

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- MATCHLINE
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- (C) NEW MORTARED ROCK RIP RAP..... 4/C16.4
- (L) NEW ACCESS 72" MH WITH JUNCTION BOX. SEE STRUCTURAL SHEETS FOR DETAILS..... S14.0 S15.0 S27.0 S28.0 S29.0 S30.0
- (M) NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS..... 1/C16.14 2/C16.17
- (N) NEW CAST-IN-PLACE AND/OR PRECAST CONCRETE BOX CULVERT..... C16.8 C16.9
- (P) NEW STORM SEWER PIPE (REFER TO PLAN & PROFILE SHEETS).....
- (Q) NEW INLET..... 6/C16.5
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- (X) NEW INLET W/ JUNCTION BOX..... 7/C16.5 8/C16.5 9/C16.5 10/C16.5
- (Y) NEW OUTFALL STRUCTURE..... 3/C16.17
- (Z) NEW OUTFALL STRUCTURE..... 4/C16.17

NOTES

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CHECKED M.M.
DATE 10/7/2022

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EL PASO, TEXAS 79925
(915) 594-5500

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STORM SEWER PLAN & PROFILE

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JOB NO. 16-133
SEQUENCE NO. 5 OF 9
SHEET NO. C13.4

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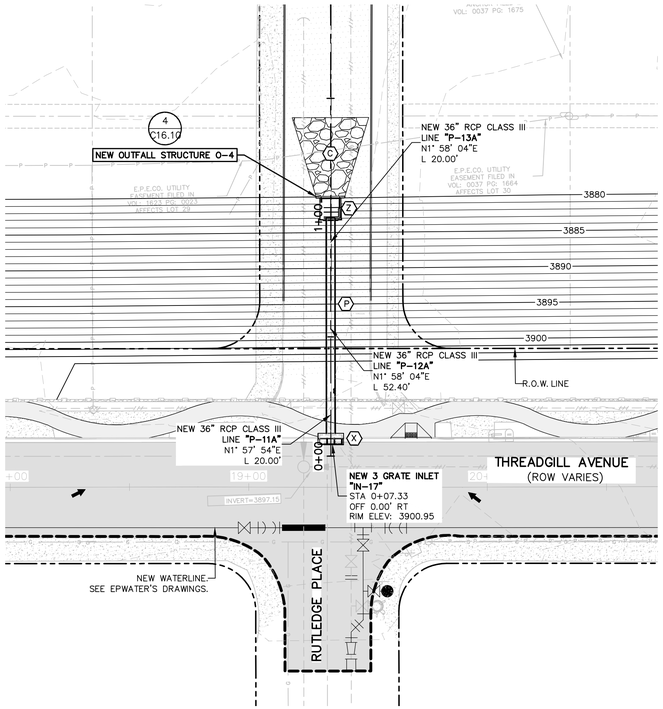
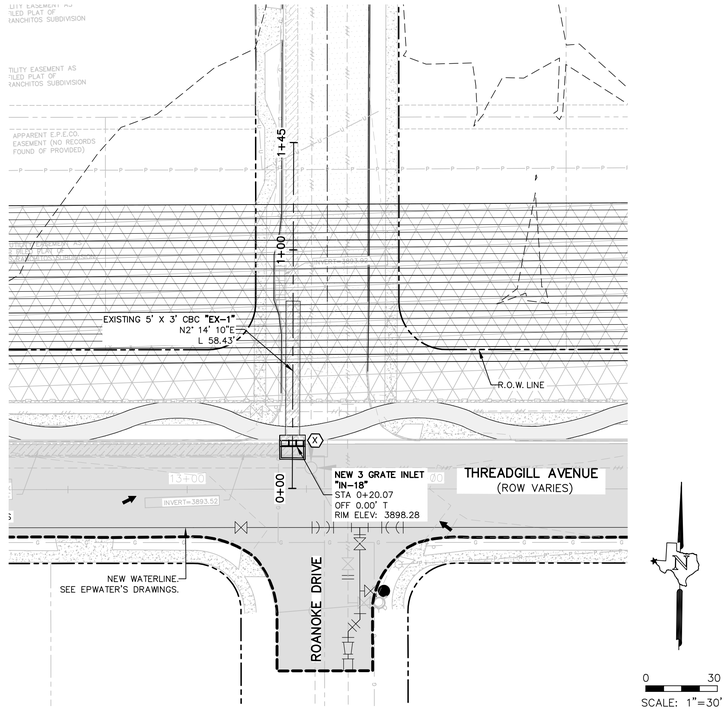


PLAN



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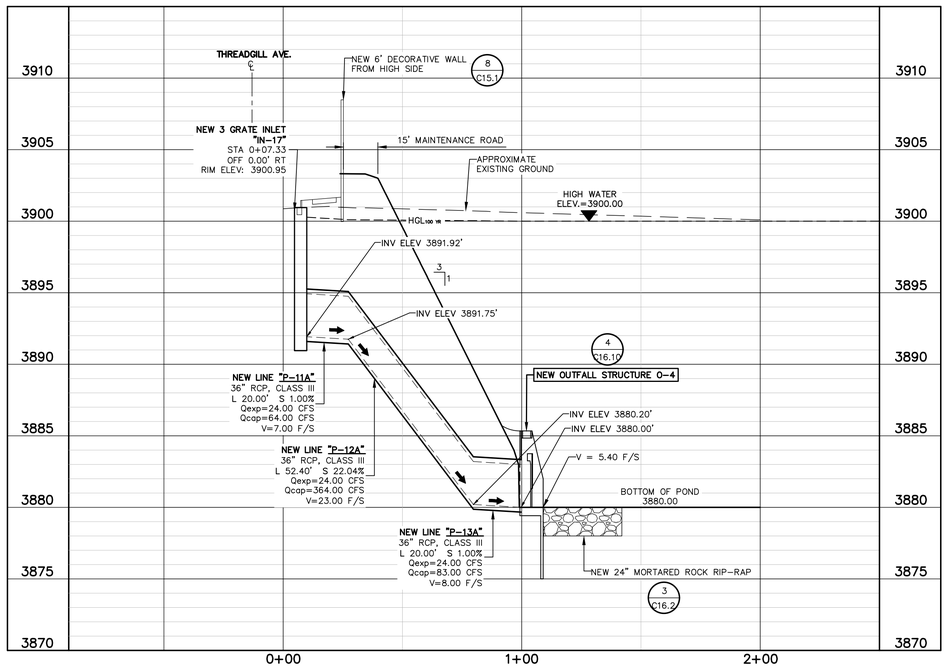
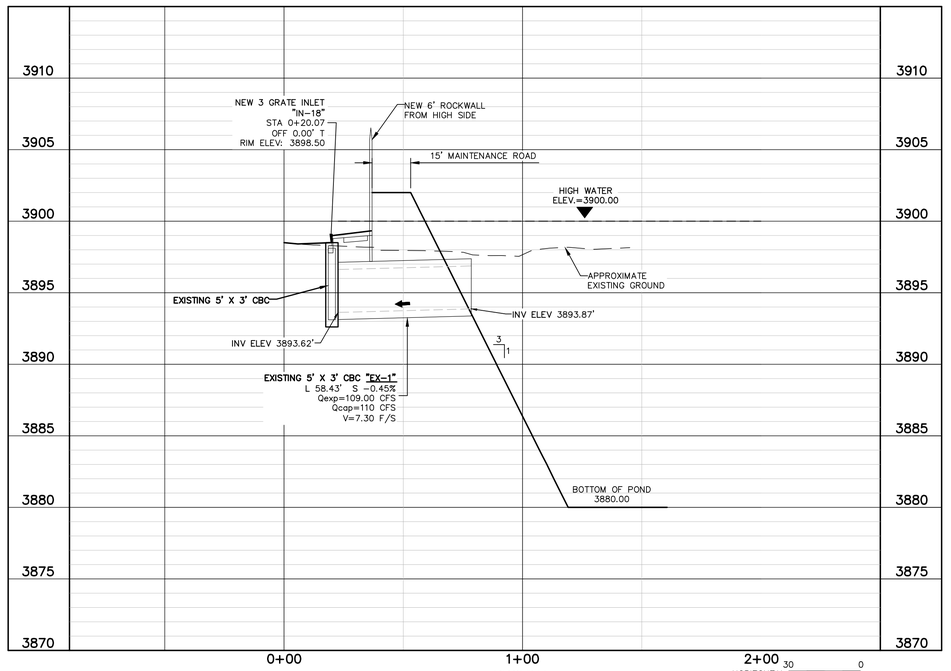


PROFILE



PROFILE

LEGEND

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STORM SEWER PLAN & PROFILE

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JOB NO. 16-133
SEQUENCE NO. 6 OF 9
SHEET NO. C13.5

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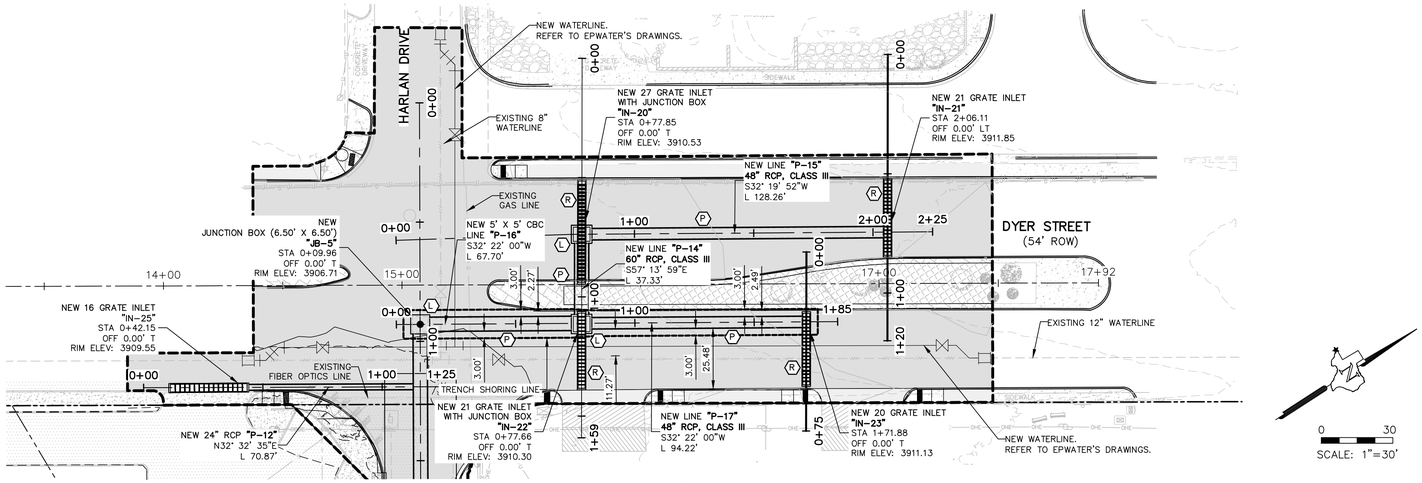
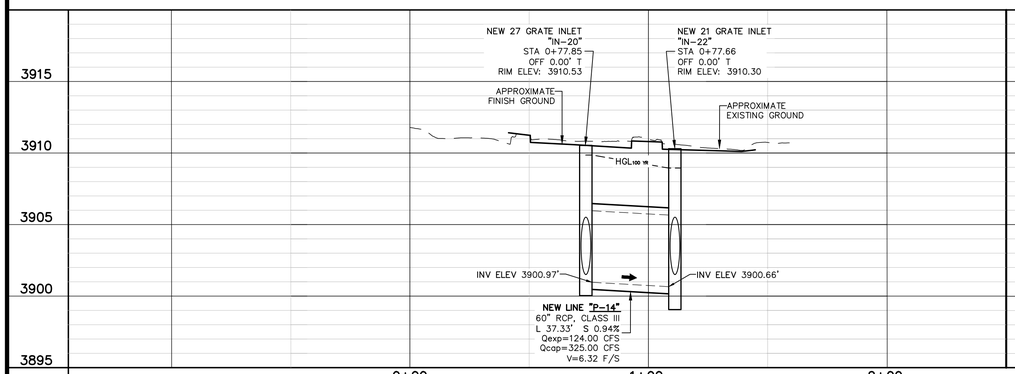
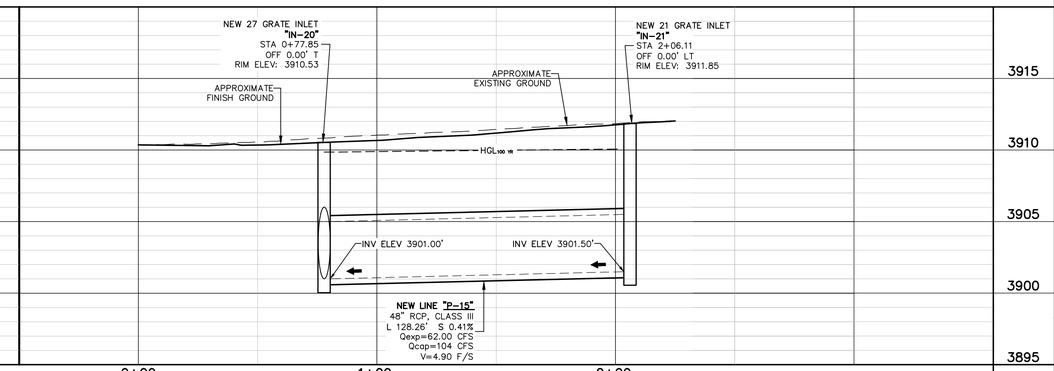
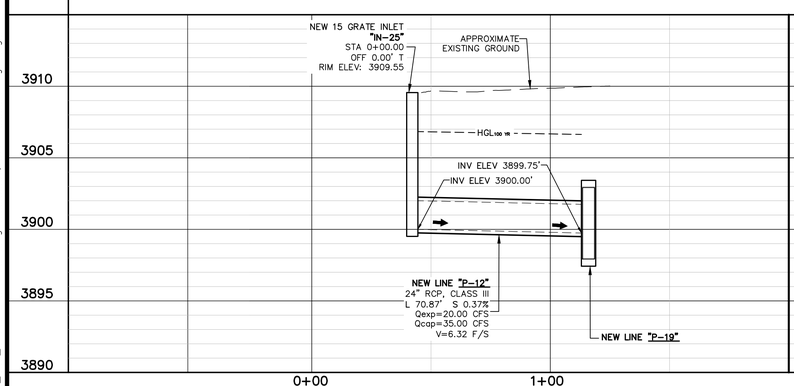
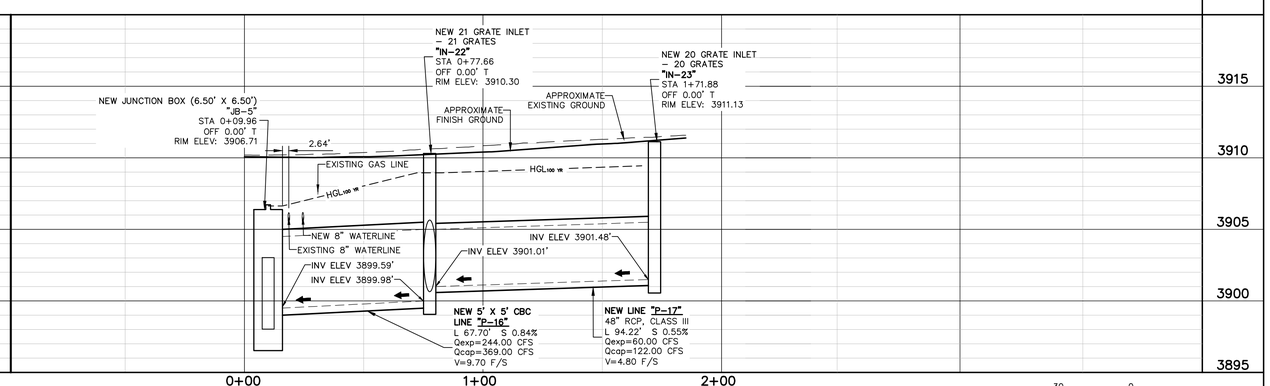


PLAN









HORIZONTAL 30 0 — VERTICAL 0 5

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- LOW POINT
- HIGH POINT
- FLOW DIRECTION
- (C) NEW MORTARED ROCK RIP RAP..... 4 C16.4
- (L) NEW ACCESS 72" MH WITH JUNCTION BOX. SEE STRUCTURAL SHEETS FOR DETAILS..... S14.0 S15.0 S27.0 S28.0 S29.0 S30.0
- (M) NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS..... 1 C16.1 2 C16.1
- (N) NEW CAST-IN-PLACE AND/OR PRECAST CONCRETE BOX CULVERT..... C16.8 C16.9
- (P) NEW STORM SEWER PIPE (REFER TO PLAN & PROFILE SHEETS).....
- (Q) NEW INLET..... 6 C16.5
- (R) NEW INLET..... 1 C16.5 2 C16.5 3 C16.5 4 C16.5
- (W) NEW OFFSTREET INLET..... 5 C16.5
- (X) NEW INLET W/ JUNCTION BOX..... 7 C16.5 8 C16.5 9 C16.5 10 C16.5
- (Y) NEW OUTFALL STRUCTURE..... 3 C16.1
- (Z) NEW OUTFALL STRUCTURE..... 4 C16.1

NOTES

1. REFER TO SHEETS C14.0-C14.1 FOR STORM SEWER LATERALS.
2. REFER TO SHEET C14.2 FOR BOX CULVERT AND PIPE SCHEDULE.
3. REFER TO EPWATER'S DRAWINGS FOR NEW WATER AND SEWER LINE INSTALLATIONS.
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REV.	DATE	BY	DESCRIPTION

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ENGINEER'S SEAL
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STORM SEWER PLAN & PROFILE

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JOB NO. 16-133
SEQUENCE NO. 7 OF 9
SHEET NO. C13.6

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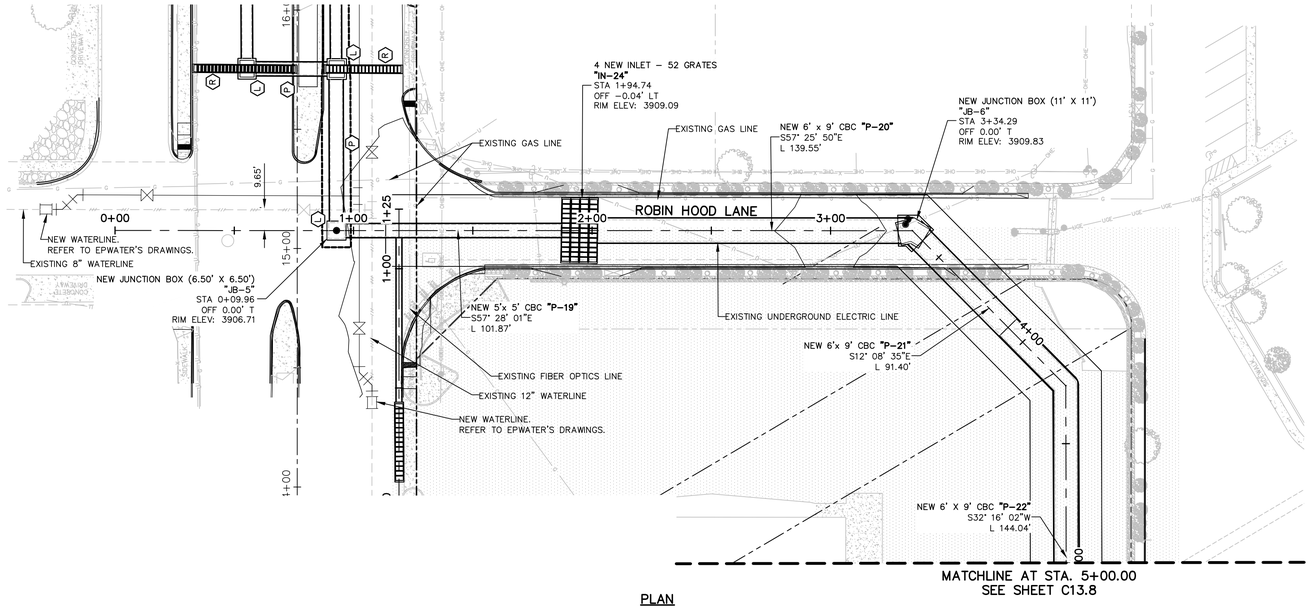
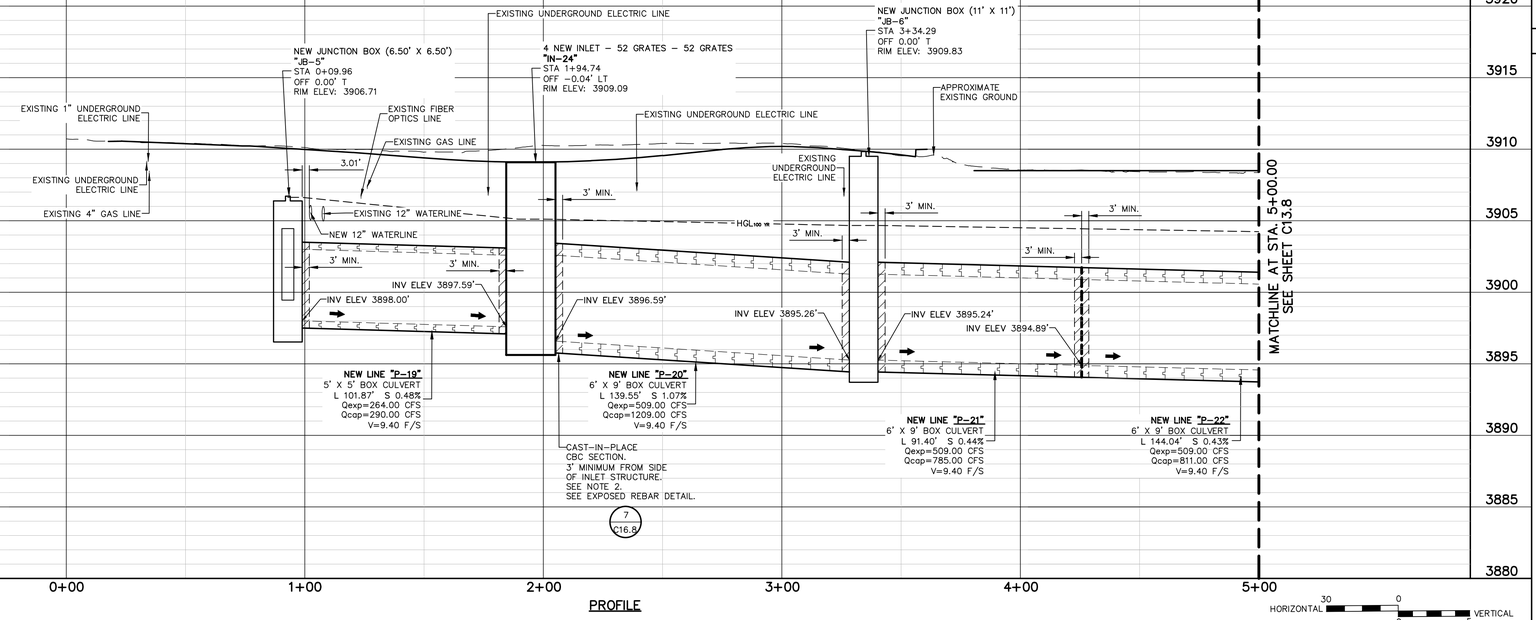


PLAN



PROFILE

0 30
SCALE: 1"=30'

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- LOW POINT
- HIGH POINT
- FLOW DIRECTION
- (C) NEW MORTARED ROCK RIP RAP..... 4 C16.4
- (L) NEW ACCESS 72" MH WITH JUNCTION BOX. SEE STRUCTURAL SHEETS FOR DETAILS..... S14.0 S15.0 S27.0 S28.0 S29.0 S30.0
- (M) NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS..... 1 C16.17 2 C16.17
- (N) NEW CAST-IN-PLACE AND/OR PRECAST CONCRETE BOX CULVERT..... C16.8 C16.9
- (P) NEW STORM SEWER PIPE (REFER TO PLAN & PROFILE SHEETS).....
- (Q) NEW INLET..... 6 C16.5
- (R) NEW INLET..... 1 C16.5 2 C16.5 3 C16.5 4 C16.5
- (W) NEW OFFSTREET INLET..... 5 C16.5
- (X) NEW INLET W/ JUNCTION BOX..... 7 C16.5 8 C16.5 9 C16.5 10 C16.5
- (Y) NEW OUTFALL STRUCTURE..... 3 C16.17
- (Z) NEW OUTFALL STRUCTURE..... 4 C16.17

NOTES

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STORM SEWER PLAN & PROFILE

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JOB NO. 16-133
SEQUENCE NO. 8 OF 9
SHEET NO. C13.7

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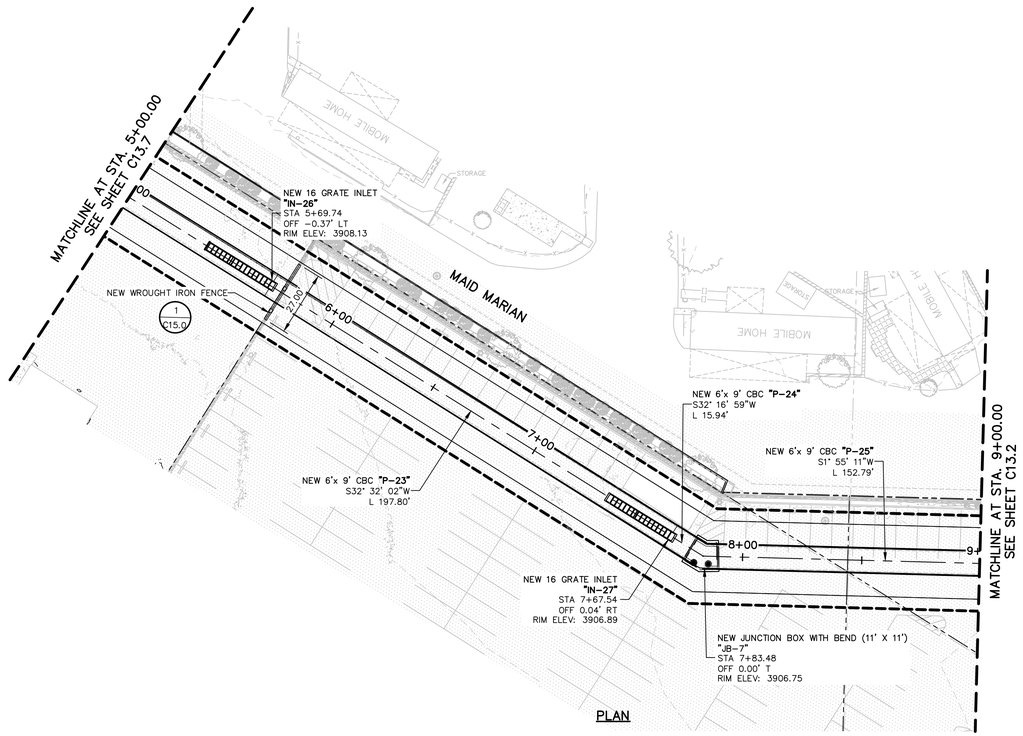
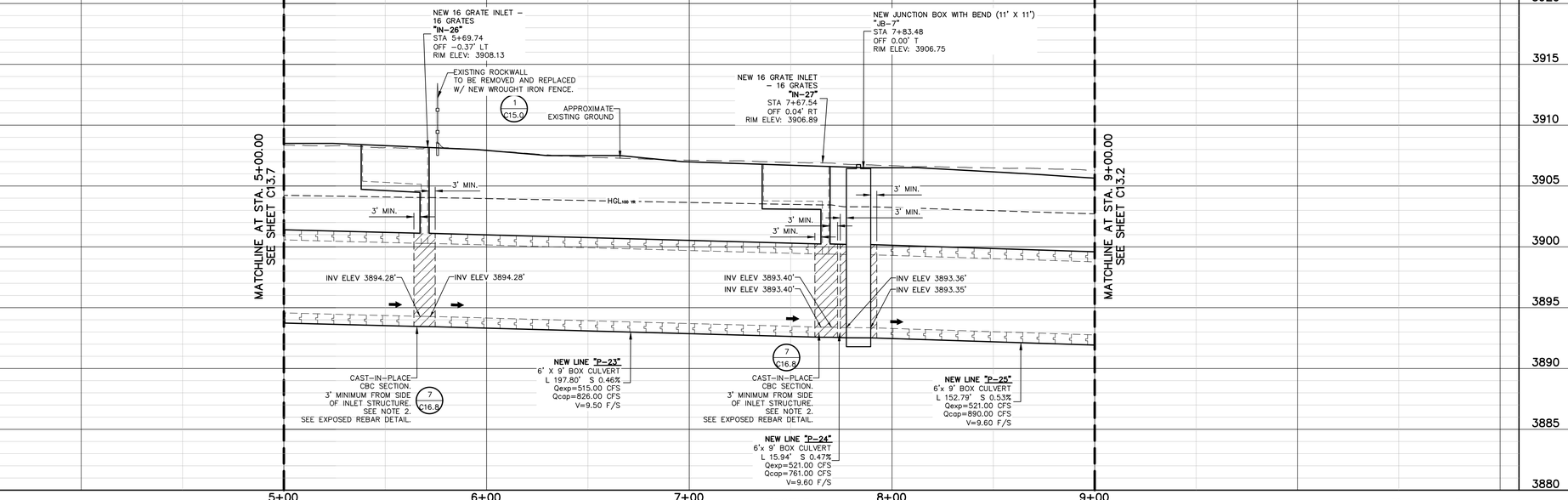


PLAN

0 30
SCALE: 1"=30'



PROFILE

HORIZONTAL 30 0 VERTICAL 0 5

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- LOW POINT
- HIGH POINT
- FLOW DIRECTION
- (C) NEW MORTARED ROCK RIP RAP..... 4 C16.4
- (L) NEW ACCESS 72" MH WITH JUNCTION BOX. SEE STRUCTURAL SHEETS FOR DETAILS..... S14.0 S15.0 S27.0 S28.0 S29.0 S30.0
- (M) NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS..... 1 C16.17 2 C16.17
- (N) NEW CAST-IN-PLACE AND/OR PRECAST CONCRETE BOX CULVERT..... C16.8 C16.9
- (P) NEW STORM SEWER PIPE (REFER TO PLAN & PROFILE SHEETS).....
- (Q) NEW INLET..... 6 C16.5
- (R) NEW INLET..... 1 C16.5 2 C16.5 3 C16.5 4 C16.5
- (W) NEW OFFSTREET INLET..... 5 C16.5
- (X) NEW INLET W/ JUNCTION BOX..... 7 C16.5 8 C16.5 9 C16.5 10 C16.5
- (Y) NEW OUTFALL STRUCTURE..... 3 C16.17
- (Z) NEW OUTFALL STRUCTURE..... 4 C16.17

NOTES

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STORM SEWER PLAN & PROFILE

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JOB NO. 16-133
SEQUENCE NO. 9 OF 9
SHEET NO. C13.8

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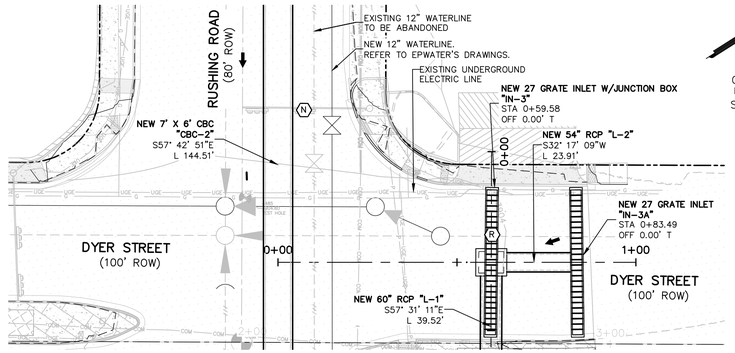

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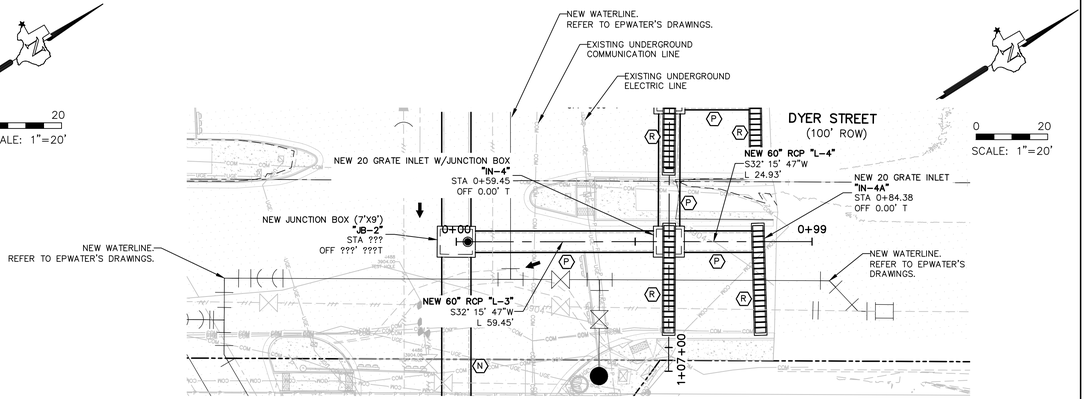
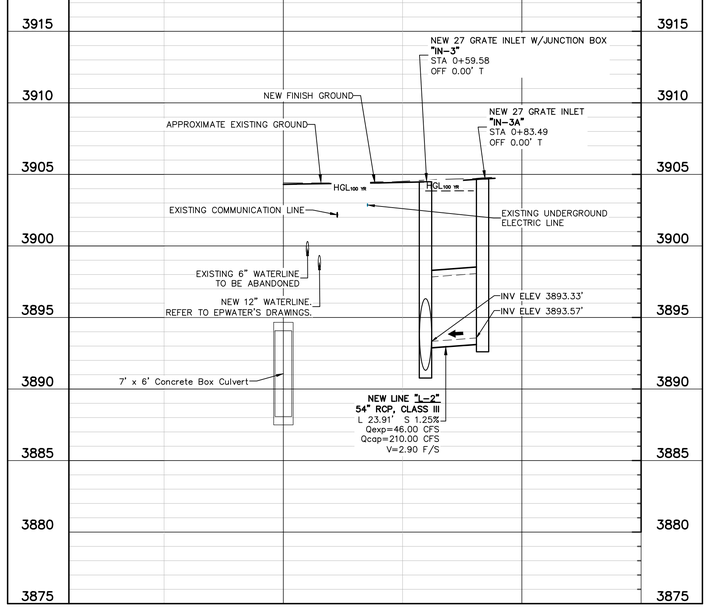
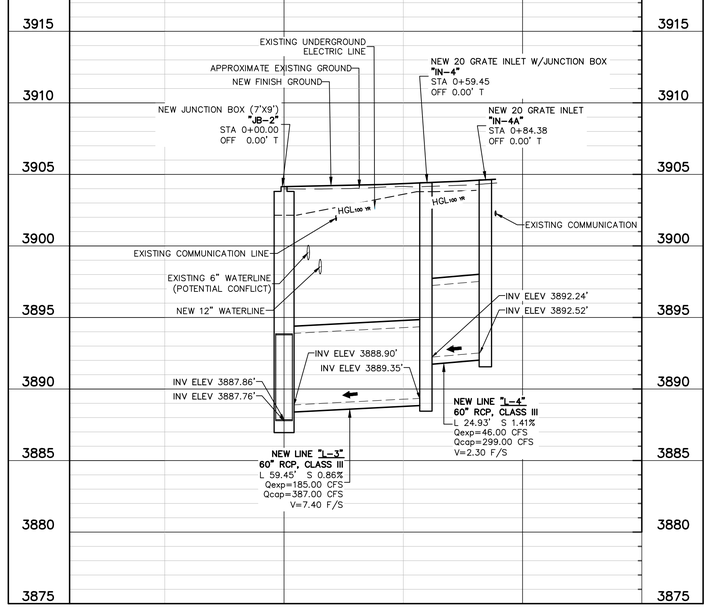


PLAN



PROFILE



PROFILE

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
- MATCHLINE
- 2+00 STATIONING / CENTERLINE ALIGNMENT
- LOW POINT
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- FLOW DIRECTION
- (C) NEW MORTARED ROCK RIP RAP..... 4/C16.4
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- (M) NEW CONCRETE OUTFALL WITH BAFFLE BLOCKS..... 1/C16.10 2/C16.10
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- (P) NEW STORM SEWER PIPE (REFER TO PLAN & PROFILE SHEETS).....
- (Q) NEW INLET..... 6/C16.5
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- (X) NEW INLET W/ JUNCTION BOX..... 7/C16.5 8/C16.5 9/C16.5 10/C16.5
- (Y) NEW OUTFALL STRUCTURE..... 3/C16.10
- (Z) NEW OUTFALL STRUCTURE..... 4/C16.10

NOTES

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STORM LATERALS PLAN & PROFILE

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JOB NO. 16-133
SEQUENCE NO. 1 OF 2
SHEET NO. C14.0

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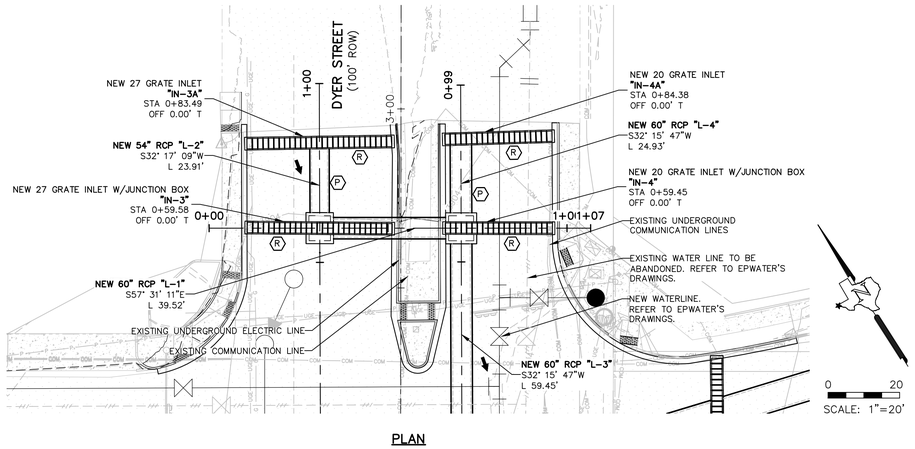
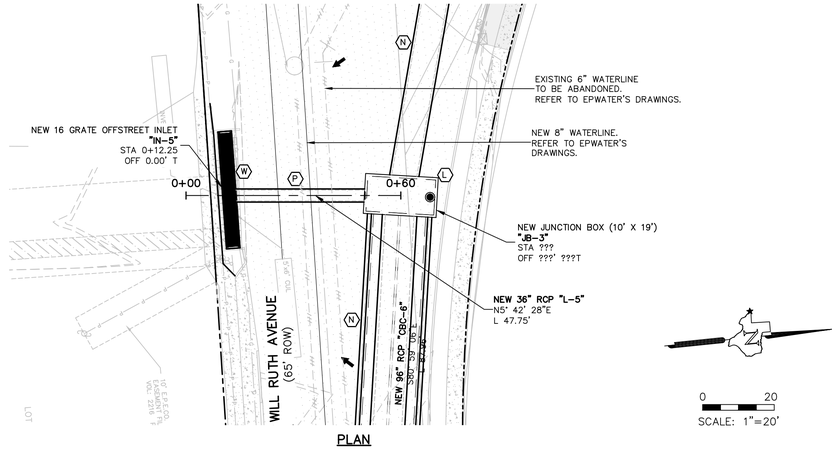


PLAN



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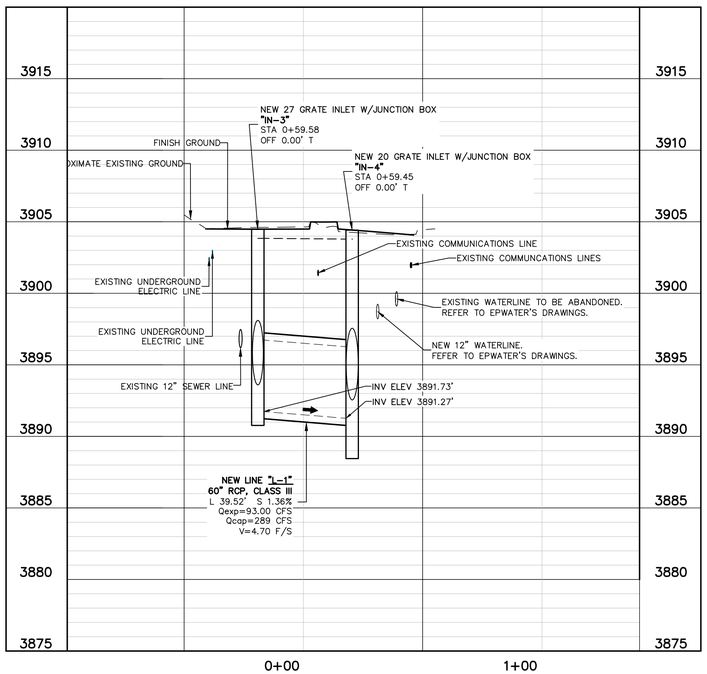
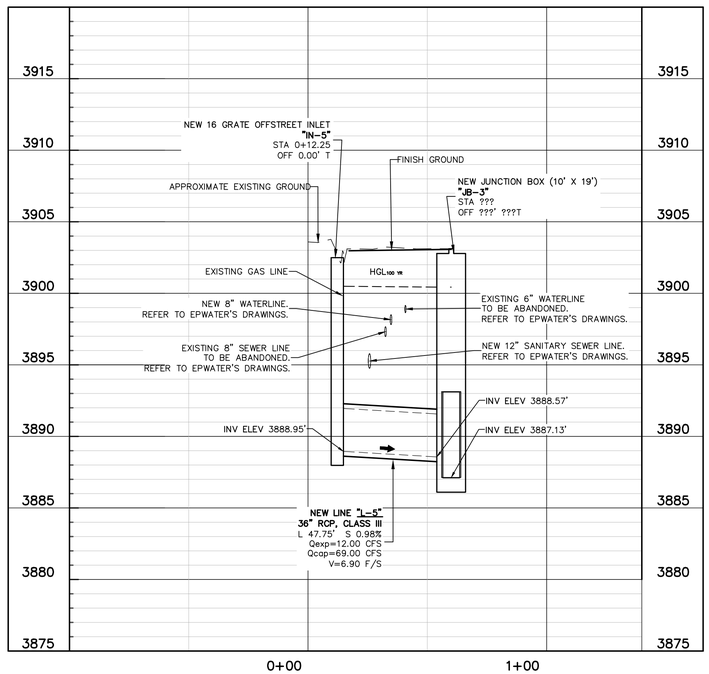


PROFILE



PROFILE

LEGEND

- EXISTING RIGHT-OF-WAY
- PROJECT LIMITS/LIMITS OF DEMOLITION
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NOTES

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JOB NO. 16-133
SEQUENCE NO. 2 OF 2
SHEET NO. C14.1

F:\16133\DWG\16133 - C14.0-C14.2_DWG_STORM LATERAL P&P.dwg Time:Oct07,2022 - 10:39am Login:edgar

STORM DRAIN LINKS HYDRAULIC DATA 100 YEAR

LINK ID	LINK UPSTREAM NODE	LINK DOWNSTREAM NODE	LINK SHAPE	LINK RISE (FT)	LINK SPAN (FT)	NUMBER OF BARRELS	LINK ACTUAL LENGTH (FT)	LINK MANNING'S n VALUE	LINK SLOPE (%)	LINK INVERT UPSTREAM (FT)	LINK INVERT DOWNSTREAM (FT)	LINK DISCHARGE (CFS)	LINK CAPACITY (CFS)	LINK ACTUAL VELOCITY DOWNSTREAM (FPS)	LINK HGL UPSTREAM (FT)	LINK HGL DOWNSTREAM (FT)
CBC-1	IN1	IN2	Box	4	7	1	130.34	0.012	3.10	3894.65	3890.72	180.00	894.00	6.43	3903.22	3902.32
CBC-2	IN2	JB2	Box	6	7	1	151.69	0.012	0.54	3888.62	3887.89	225.00	596.82	5.36	3902.32	3902.14
CBC-3	JB2	Bend	Box	6	7	1	29.95	0.012	0.40	3887.77	3887.60	410.00	603.56	9.76	3902.14	3901.02
CBC-4	Bend	IN4B	Box	6	7	1	23.21	0.012	0.47	3887.60	3887.49	410.00	559.33	9.76	3901.02	3900.78
CBC-5	IN4B	JB3	Box	6	7	1	68.70	0.012	0.47	3887.46	3887.13	422.00	587.22	10.05	3900.78	3900.43
CBC-6	JB3	Bend	Box	6	8	2	82.28	0.012	0.47	3887.10	3886.72	434.00	1384.33	4.52	3900.43	3900.38
CBC-7	Bend	Bend	Box	6	8	2	166.22	0.012	0.47	3886.72	3885.91	434.00	1447.14	4.52	3900.38	3900.24
CBC-8	Bend	IN-6	Box	6	8	2	32.66	0.012	3.71	3885.91	3884.67	434.00	3844.07	4.52	3900.24	3900.09
CBC-9	IN-6	Vert Bend	Box	6	8	2	117.70	0.012	3.71	3884.67	3880.05	439.00	4084.18	4.57	3900.09	3900.01
CBC-10	Vert Bend	O2	Box	6	8	2	7.20	0.012	0.50	3880.05	3880.00	439.00	1473.06	4.57	3900.01	3900.00
L-1	IN3	IN4	Circular	5	n/a	1	26.32	0.012	1.36	3891.73	3891.27	93.00	289.46	4.74	3903.84	3903.79
L-2	IN3A	IN3	Circular	4.5	n/a	1	26.34	0.012	1.25	3893.57	3893.33	46.00	210.91	2.89	3903.85	3903.84
L-3	IN4	JB2	Box	5	5	1	51.32	0.012	0.86	3889.35	3888.90	185.00	387.71	7.40	3903.79	3902.14
L-4	IN4A	IN4	Circular	5	n/a	1	26.69	0.012	1.41	3892.52	3892.24	46.00	299.81	2.34	3903.88	3903.79
L-5	IN5	JB3	Circular	3	n/a	1	43.90	0.012	0.98	3888.95	3888.57	12.00	69.23	1.70	3900.49	3900.43
P-1	IN-7	O-3A	Circular	4.5	n/a	1	70.23	0.012	4.74	3883.20	3880.00	160.00	482.27	10.06	3899.91	3899.50
P-2	IN-8	IN-7	Circular	4.5	n/a	1	97.61	0.012	0.61	3890.94	3890.33	144.00	177.21	9.05	3900.37	3899.91
P-3	IN-9	IN-8	Circular	4.5	n/a	1	96.25	0.012	0.49	3891.44	3890.96	128.00	158.41	8.05	3900.74	3900.37
P-4	IN-10	IN-9	Circular	4	n/a	1	95.22	0.012	1.27	3893.24	3891.50	112.00	221.45	8.91	3901.25	3900.74
P-5	IN-11	IN-10	Circular	4	n/a	1	96.09	0.012	0.50	3893.76	3893.29	96.00	114.59	7.64	3901.64	3901.25
P-6	IN-12	IN-11	Circular	4	n/a	1	95.60	0.012	0.50	3894.26	3893.79	80.00	114.87	6.37	3901.94	3901.64
P-7	IN-13	IN-12	Circular	4	n/a	1	95.56	0.012	0.48	3894.80	3894.29	64.00	119.68	5.09	3902.15	3901.94
P-8	IN-14	IN-13	Circular	3	n/a	1	95.96	0.012	0.55	3896.25	3895.80	48.00	52.10	6.79	3902.67	3902.15
P-9	IN-15	IN-14	Circular	3	n/a	1	95.85	0.012	0.54	3896.79	3896.28	32.00	55.49	4.53	3902.88	3902.67
P-10	IN-16	IN-15	Circular	2	n/a	1	93.36	0.012	0.55	3898.32	3897.79	16.00	19.43	5.09	3903.70	3902.88
P-11	Vert Bend	CO-4	Box	6	9	1	8.00	0.012	0.50	3880.05	3880.00	614.00	835.20	11.37	3900.04	3900.00
P-12	IN-25	JB5	Circular	3	n/a	1	72.57	0.012	0.37	3898.14	3897.96	20.00	35.21	2.83	3906.83	3906.63
P-14	IN-20	P-19	Circular	5	n/a	1	30.33	0.012	0.94	3901.00	3900.50	124.00	325.58	6.32	3909.86	3908.95
P-15	IN-21	IN-20	Circular	4	n/a	1	125.96	0.012	0.41	3901.50	3901.00	62.00	104.64	4.93	3910.07	3909.86
P-16	IN-22	JB5	Box	5	5	1	63.71	0.012	0.84	3900.00	3899.50	244.00	369.39	9.76	3908.95	3906.63
P-17	IN-23	IN-22	Circular	4	n/a	1	92.16	0.012	0.55	3901.50	3901.00	60.00	121.98	4.78	3909.44	3908.95
P-18	IN-31	JB-8	Box	6	9	1	66.38	0.012	0.90	3892.31	3891.75	528.40	1097.51	9.79	3902.37	3902.08
P-19	JB5	IN-24	Box	5	5	1	92.83	0.012	0.48	3898.00	3897.56	264.00	289.78	10.56	3906.63	3905.11
P-20	IN-24	JB6	Box	6	9	1	135.69	0.012	1.07	3896.59	3895.26	509.00	1208.97	9.43	3905.11	3904.67
P-21	JB6	Bend	Box	6	9	1	86.13	0.012	0.44	3895.26	3894.89	509.00	785.19	9.43	3904.67	3904.42
P-22	Bend	IN-26	Box	6	9	1	136.94	0.012	0.43	3894.89	3894.28	509.00	810.81	9.43	3904.42	3904.05
P-23	IN-26	IN-27	Box	6	9	1	192.85	0.012	0.46	3894.28	3893.40	514.90	826.31	9.54	3904.05	3903.44
P-24	IN-27	JB7	Box	6	9	1	13.03	0.012	0.47	3893.40	3893.33	521.30	761.57	9.65	3903.44	3903.29
P-25	JB7	Bend	Box	6	9	1	145.28	0.012	0.53	3893.35	3892.57	521.30	889.65	9.65	3903.29	3902.46
P-26	Bend	IN-31	Box	6	9	1	26.76	0.012	0.93	3892.57	3892.31	521.30	1122.58	9.65	3902.46	3902.37
P-27	JB-8	IN-28	Box	6	9	1	67.41	0.012	0.80	3891.75	3891.21	528.40	1065.77	9.79	3902.08	3901.87
P-28	IN-28	IN-29	Box	6	9	1	245.22	0.012	1.27	3891.21	3888.09	571.20	1382.95	10.58	3901.87	3900.95
P-29	IN-29	Vert Bend	Box	6	9	1	101.32	0.012	1.49	3888.09	3887.00	614.00	1250.83	11.37	3900.95	3900.43
P-30	Vert Bend	Vert Bend	Box	6	9	1	93.26	0.012	5.33	3887.00	3880.05	614.00	3278.40	11.37	3900.43	3900.04
P-11A	IN-17	Vert Bend	Circular	3	n/a	1	21.02	0.012	1.00	3891.92	3891.75	24.00	64.82	3.40	3900.30	3900.10
P-12A	O4BRK2	Vert Bend	Circular	3	n/a	1	48.47	0.012	22.04	3891.75	3880.20	24.00	364.68	3.40	3900.10	3900.03
P-13A	O4BRK	O-4A	Circular	3	n/a	1	15.54	0.012	1.00	3880.20	3880.00	24.00	82.99	3.40	3900.03	3900.00

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 7/10/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

PIPE SCHEDULE

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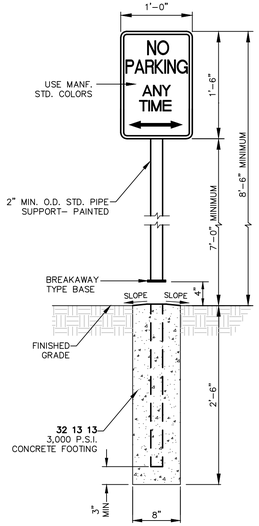
JOB NO. 16-133
SEQUENCE NO. 1 OF 1
SHEET NO. C14.2

LEGEND	
01 00 00	SPECIFICATION DIVISION NUMBER



GENERAL NOTES:

1. WELD TOGETHER ALL ASSEMBLY BOLTS TO TENSION BANDS AND TENSION BANDS TO POST TO PREVENT DISASSEMBLY.

CONSTRUCTION KEY NOTES:

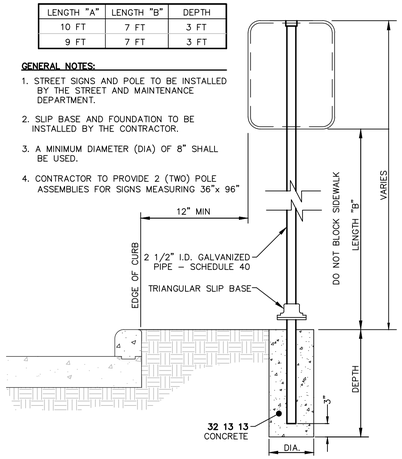
A. 4" O.D. PIPE (9.11 LB./FT.)
B. 2 7/8" O.D. PIPE (3.65 LB./FT.) GATE FRAME WELDED AT ALL JOINTS TO MAKE A SOLID FRAME.
C. 1 5/8" O.D. PIPE (2.27 LB./FT.)
D. 3/8" DIA. TRUSS ROD WITH TRUSS TIGHTENER (TYP.)
E. 2,500 PSI CONCRETE.
F. POST CAP (TYP.)
G. PLUNGER ROD LATCH, BOLTS WELDED TO PREVENT DISASSEMBLY.
H. HINGE ASSEMBLY, BOLTS WELDED TO PREVENT DISASSEMBLY.
I. 9 GA. GALVANIZED 2" CHAIN-LINK FABRIC.
J. BARBED TAPE, 24" COIL WITH 3 ROWS OF 3 STRAND BARBED WIRE
K. 1 5/8" O.D. PIPE (2.27 LB./FT.) PLUNGER ROD.
L. 2 3/8" O.D. PIPE (3.65 LB./FT.) PLUNGER ROD GUIDE.
M. 2,500 PSI CONCRETE COLLAR AROUND ROD GUIDE.
N. GRAVEL SUMP.

1 C15.0 NO PARKING SIGN DETAIL
SCALE: 1"=1'-0"

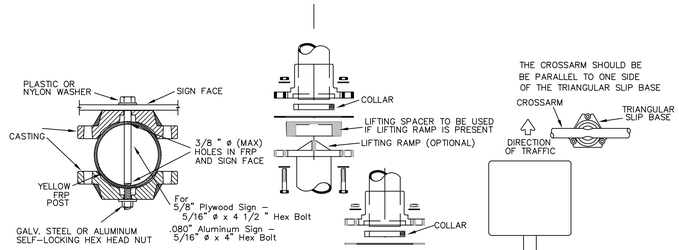
LENGTH "A"	LENGTH "B"	DEPTH
10 FT	7 FT	3 FT
9 FT	7 FT	3 FT

GENERAL NOTES:

1. STREET SIGNS AND POLE TO BE INSTALLED BY THE STREET AND MAINTENANCE DEPARTMENT.
2. SLIP BASE AND FOUNDATION TO BE INSTALLED BY THE CONTRACTOR.
3. A MINIMUM DIAMETER (DIA) OF 8" SHALL BE USED.
4. CONTRACTOR TO PROVIDE 2 (TWO) POLE ASSEMBLIES FOR SIGNS MEASURING 36"x 96"



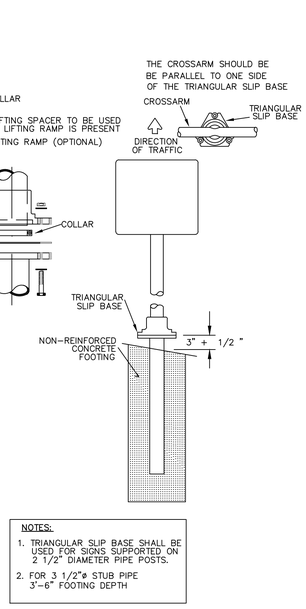
2 C15.0 SIGN POST INSTALLATION
SCALE: 1/8"=1'-0"



GENERAL NOTES:

1. SUPPORT AND DESIGN SHALL CONFORM WITH AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS OF SIGNS AND TRAFFIC SIGNALS WITH A DESIGN WIND SPEED OF OF 70 MPH.
2. STEEL PIPE SHALL BE GALVANIZED IN ACCORDANCE TO ASTM DESIGNATION A123.

   SUPPORTS
3. MATERIALS AND FABRICATION SHALL CONFORM TO THE REQUIREMENTS OF DEPARTMENT MATERIAL SPECIFICATION D-9-4410 AND WILL BE FURNISHED IN A YELLOW OR GRAY COLOR AS SPECIFIED ELSEWHERE IN THE PLANS.
4. THICKNESS OF FRP SIGN SUPPORT IS 0.125 INCH + 0.031 inch, – 0.0 inch.
5. FOR FRP SIGN SUPPORT, ALL BOLTS, NUTS, SCREWS, WASHERS AND OTHER MISCELLANEOUS HARDWARE, SHALL BE TYPE 304 STAINLESS STEEL OR GALVANIZED IN ACCORDANCE TO ASTM DESIGNATION: A-153, CLASS C or D, B-695 CLASS 50 OR B633 CLASS FE/ZN 8 UNLESS OTHERWISE SPECIFIED
6. FRP SIGN SUPPORTS FOR A SINGLE TYPE SIGN SUPPORT MAY BE USED FOR SIGNS UP TO AND 16 SQUARE FEET. DUAL POST INSTALLATION MAY BE USED FOR SIGNS UP TO AND INCLUDING 32 SQUARE FEET.



NOTES:

1. TRIANGULAR SLIP BASE SHALL BE USED FOR SIGNS SUPPORTED ON 2 1/2" DIAMETER PIPE POSTS.
2. FOR 3 1/2"ø STUB PIPE 3'-6" FOOTING DEPTH

3 C15.0 TRIANGULAR SLIP BASE
SCALE: CITY STANDARD

Identifier : R5-11T_30x30;
1.9" Radius, 0.8" Border, 0.5" Indent, Black on White;
[FOR OFFICIAL] C;
[OR EMERGENCY] C 90} spacing;
[VEHICLE USE] C; [ONLY] C;

4 C15.0 EMERGENCY VEHICLE SIGN
SCALE: CITY STANDARD

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

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EL PASO, TEXAS 79925
(915) 594-5500

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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

ROADWAY DETAILS

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JOB NO. 16-133
SEQUENCE NO. 1 OF 9
SHEET NO. C15.0

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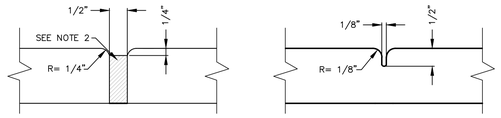
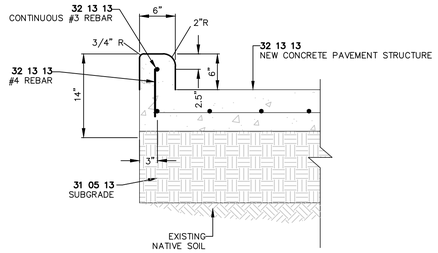
GENERAL NOTES:

1. CONTROL JOINTS (TOOL JOINT) TO BE SPACED 5' O.C. TYPICAL EXPANSION JOINTS TO BE EVERY THIRD JOINT
2. 1/2" PREMOLDED BITUMINOUS EXPANSION JOINT.



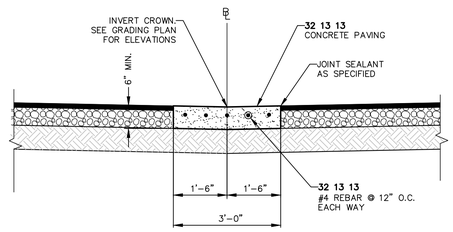
EXPANSION JOINT CONTROL JOINT

2 C15.1 **TYPICAL CONCRETE JOINT DETAIL**
SCALE: 1/2"=1'-0"

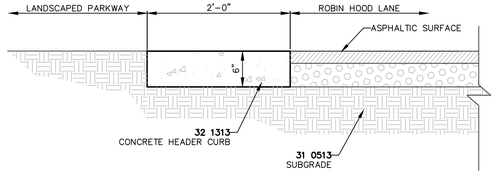


STANDARD 6" CURB
32 13 13

3 C15.1 **STANDARD CONCRETE CURB DETAIL (ALTERNATE FOR DYER STREET)**
SCALE: 1"=1'-0"



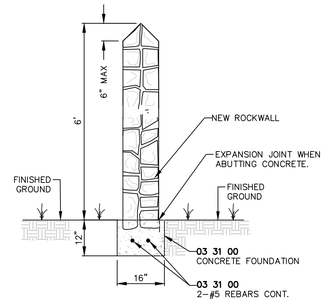
4 C15.1 **VALLEY GUTTER FOR EMERGENCY ACCESS**
SCALE: 1/2"=1'-0"



CONCRETE HEADER CURB NOTES:

1. DUMMY JOINTS REQUIRED AT 10' O.C.
2. 1/2" PREMOLDED BITUMINOUS EXPANSION JOINT (AASHTO M-33) IS REQUIRED FOR ALL CURBS RETURNS. TRIM BITUMINOUS MATERIAL 1/4" LESS THAN NEAT CURB DIMENSION.
3. EXPANSION JOINTS REQUIRED AT 50' O.C. WHEN FORMING FOR CURBS

5 C15.1 **CONCRETE HEADER CURB**
SCALE: 1"=1'-0"

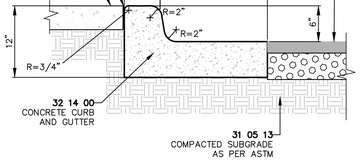


ROCKWALL SECTION

ROCK WALL GENERAL NOTES:

1. STONE FOR ROCKWALL SHALL BE UNIFORM IN SECTIONS. THE STONE SHALL BE DENSE AND RESISTANT OF AIR AND WATER. THE STONE FACE SHALL HAVE A MINIMUM 6-INCH APPEARANCE.
2. MORTAR MUST BE TYPE "S: 1,800 P.S.I. AS PER ASTM C270.
3. MASONRY WALL OVER SIX (6) FEET IN HEIGHT AND THOSE USED FOR EARTH RETENTION OVER TWO (2) FEET MUST BE DESIGNED AS STRUCTURAL WALLS.
4. WALLS ADJACENT TO PONDING AREAS OR DRAINAGE DITCHES SHALL NOT BE LESS THAN SIX (6) FEET HIGH.
5. ROCKWALL MORTAR JOINTS TO BE 3/4" MINIMUM AND 1" MAXIMUM. MORTAR JOINTS SHALL ALSO BE RECESSED ONE (1) INCH.
6. PROVIDE ONE (1) INCH EXPANSION JOINTS AT EVERY 100 FEET.
7. ALL STONE SHALL BE THOROUGHLY SOAKED BEFORE BEING PLACED.
8. ALL STONE FOR ROCKWALLS SHALL BE FRACTURED QUARRIED ROCK, NO RIVER ROCK SHALL BE ALLOWED.
9. ALL STONE FOR ROCKWALL SHALL BE THUNDERBIRD RHYOLITE, SEE SPECIFICATION SECTION 02215.

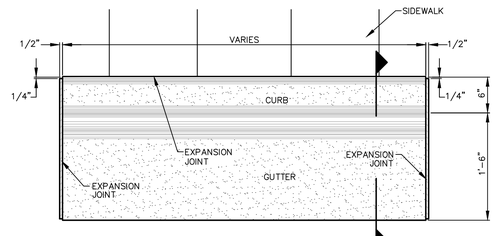
7 C15.1 **TYPICAL ROCKWALL DETAILS**
SCALE: 1/2"=1'-0"



CONCRETE CURB GENERAL NOTES:

1. CONCRETE TO BE 3,500 PSI MIN. AT 28 DAYS.
2. DUMMY JOINT REQUIRED AT 10' O.C. FOR CURB AND 5' O.C. FOR SIDEWALK.
3. EXPANSION MATERIAL REQUIRED AT CURB RETURNS, AND AT 20' O.C. FOR SIDEWALKS WITH 1/2" PREMOLDED ASPHALT IMPREGNATED EXPANSION MATERIAL.
4. SUBGRADE UNDER CURB MUST BE FORMED AND COMPACTED TO 95% ASTM D-1557.
5. EXPANSION JOINTS REQUIRED AT 50' O.C. WHEN FORMING FOR CURBS.
6. PROVIDE EXPANSION JOINT MATERIAL WHERE SIDEWALK MEETS CURB, AND AT ALL SIDES WHERE CONCRETE PARKWAY MEETS SIDEWALK AND CURB.

A C15.1 **SECTION**



PLAN A C15.1

6 C15.1 **CURB AND GUTTER DETAIL**
SCALE: 1"=1'-0"

LEGEND	
01 00 00	SPECIFICATION DIVISION NUMBER

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EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

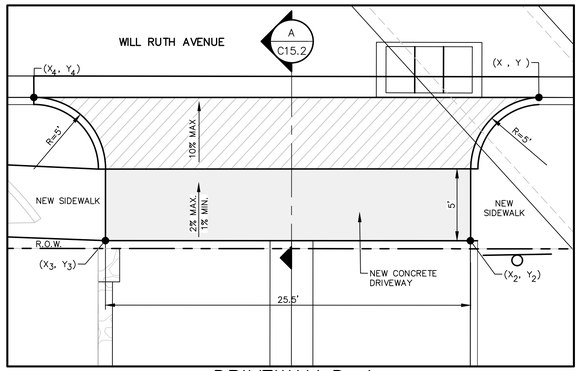
WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

ROADWAY DETAILS

THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH POND AND CONVEYANCE IMPROVEMENTS". MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

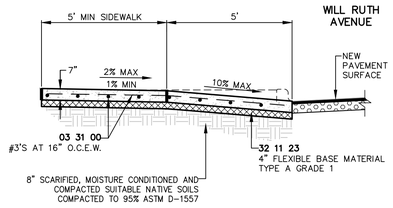
JOB NO. 16-133
SEQUENCE NO. 2 OF 9
SHEET NO. C15.1

F:\16133\DWG\16133 - C15.0_DWG_Roadway_Details.dwg Time:Oct05,2022 - 02:46pm Login:olejandro



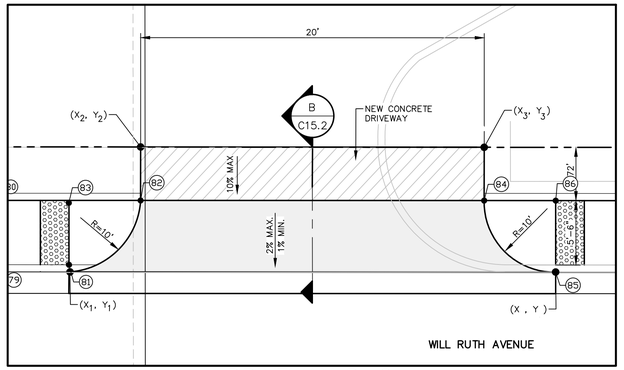
DRIVEWAY D–1

SCALE: 1"=5'



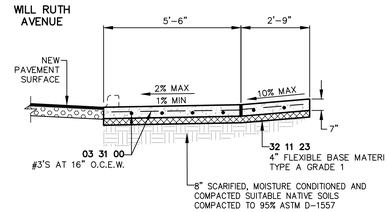
A C15.2 SECTION

SCALE: 1"=3'



DRIVEWAY D–2

SCALE: 1"=5'



B C15.2 SECTION

SCALE: 1"=3'

GENERAL NOTES

1. A MAXIMUM 2.0% CROSS SLOPE SHALL BE MAINTAINED ON SIDEWALKS. CONTRACTOR WILL BE RESPONSIBLE FOR REPLACING NON–COMPLIANT SIDEWALK AT THEIR OWN EXPENSE.
2. MAXIMUM DRIVEWAY SLOPE SHALL BE 10% FOR THE FIRST 12 FEET AND 14% MAXIMUM THEREAFTER. SLOPES TO BE FIELD ADJUSTED IN ACCORDANCE TO EXISTING CONDITIONS.
3. RAISED CURB MIGHT BE SLOPED TO MATCH WITH EXISTING CONDITIONS.
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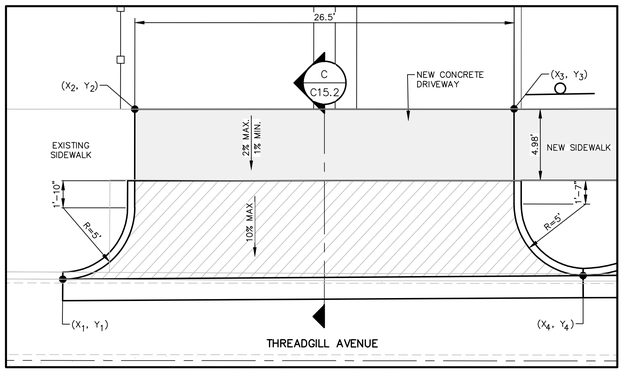
5. STRENGTH OF CONCRETE DRIVEWAYS 3,500 P.S.I. AND SIDEWALK 3,500 P.S.I.
6. MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. AT 28 DAYS IN PUBLIC R.O.W.

LEGEND

01 00 00	SPECIFICATION DIVISION NUMBER



DRIVEWAY D–3

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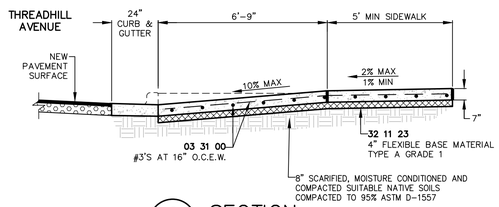
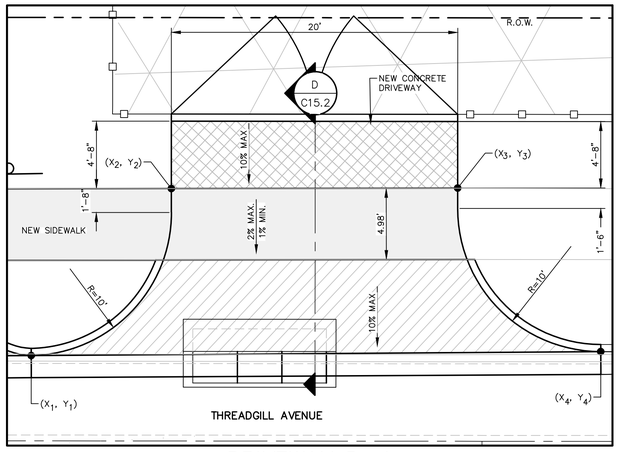


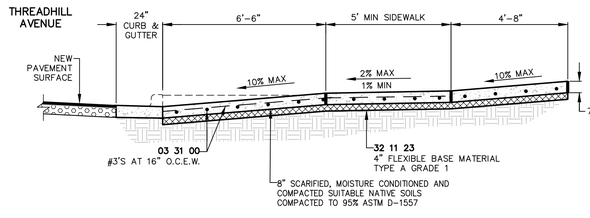
C C15.2 SECTION

SCALE: 1"=3'



DRIVEWAY D–4

SCALE: 1"=5'



D C15.2 SECTION

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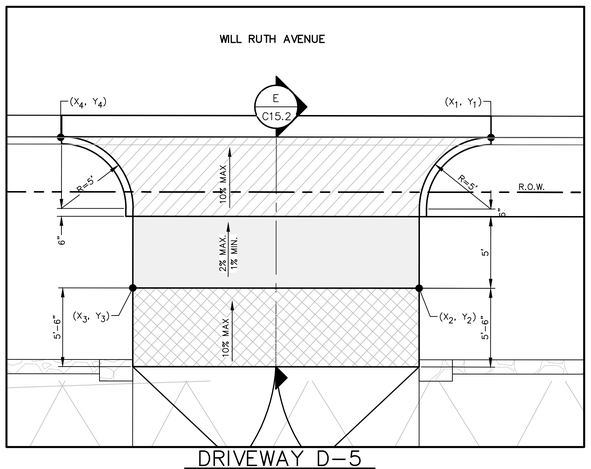
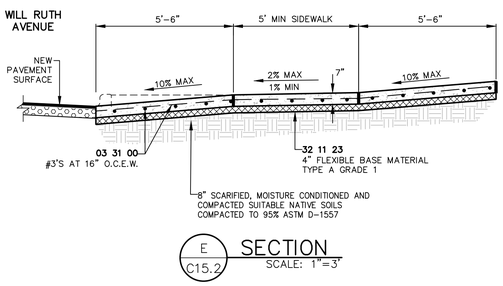


DRIVEWAY D–5

SCALE: 1"=5'



E C15.2 SECTION

SCALE: 1"=3'

DRIVEWAY DATA TABLE

LOCATION	DRIVEWAY ID	CL STATION AND OFFSET	WIDTH	(X_1, Y_1) COORDINATE	(X_1, Y_1) ELEVATION	(X_1, Y_1) STATION AND OFFSET	(X_2, Y_2) COORDINATE	(X_3, Y_3) COORDINATE	(X_4, Y_4) COORDINATE	(X_4, Y_4) ELEVATION	(X_4, Y_4) STATION AND OFFSET
WILL RUTH AVENUE	D–1	7+16.10 , 19.42' RT	25.50'	X=409591.01 Y=10703779.87	3902.15	7+33.38 , 19.42' RT	X=409585.91 Y=10703770.02	X=409560.41 Y=10703770.88	X=409555.75 Y=10703781.04	3902.61	6+98.09 , 19.45' RT
	D–2	11+09.00 , 14.77' LT	20.00'	X=409950.59 Y=10703801.75	3901.35	10+92.00 , 14.76' LT	X=409955.94 Y=10703811.82	X=409979.93 Y=10703810.10	X=409984.58 Y=10703800.61	3901.23	11+26.00 , 14.78' LT
THREADGILL AVENUE	* D–3	8+82.49 , 21.61' LT	26.50'	X=409633.48 Y=10703278.62	3898.85	8+64.32 , 21.59' LT	X=409638.91 Y=10703290.33	X=409665.39 Y=10703289.47	X=409669.82 Y=10703277.67	3898.41	9+00.58 , 21.71' LT
	* D–4	9+20.48 , 21.82' LT	20.00'	X=409669.82 Y=10703277.67	3898.41	9+00.58 , 21.71' LT	X=409679.99 Y=10703289.01	X=409699.99 Y=10703288.38	X=409709.60 Y=10703276.62	3898.51	9+40.54 , 21.85' LT
WILL RUTH AVENUE	D–5	28+99.10 , 21.17' RT	20.00'	X=411770.40 Y=10703703.47	3906.97	29+14.10 , 21.18' RT	X=411765.03 Y=10703693.12	X=411745.04 Y=10703693.80	X=411740.42 Y=10703704.52	3906.83	28+84.10 , 21.16' RT

* EMERGENCY ACCESS ROAD ALIGNMENT

1 C15.2 PLAN AND SECTIONS DRIVEWAY LAYOUT

SCALE: AS SHOWN

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
1–800–DIG–TESS
1–800–344–8377
FOR FIELD LOCATING EXISTING UTILITIES
linespots@elpasotexas.gov

ENGINEER'S SEAL

THESE PLANS WERE RELEASED UNDER THE AUTHORITY OF MARCOS MEDINA, PE #93830 TO BE ISSUED AS A **100% SUBMITTAL** TO EL PASO WATER FOR REVIEW. IT IS NOT TO BE USED FOR CONSTRUCTION OR FINAL PERMIT ISSUANCE.

DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594–5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
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JOB NO. 16–133
SEQUENCE NO. 3 OF 9
SHEET NO. C15.2

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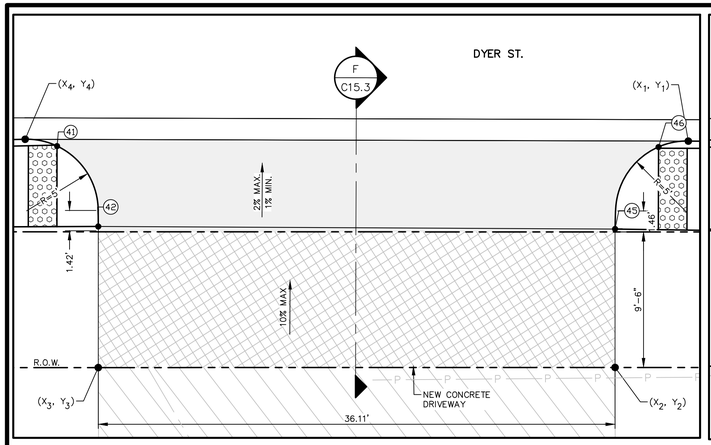
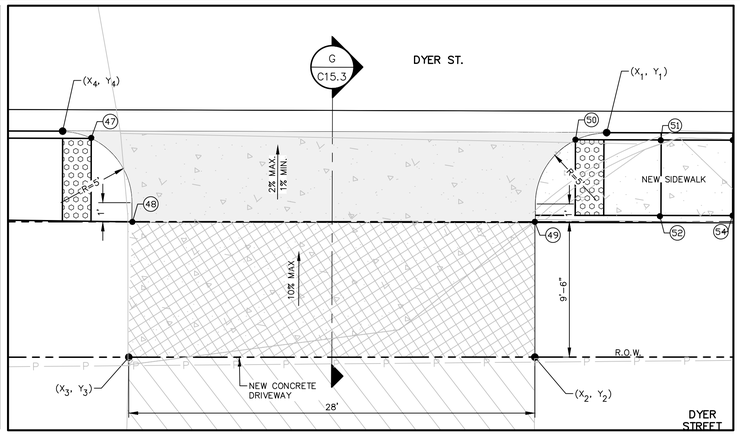


DRIVEWAY D–6
SCALE: 1"=5'



DRIVEWAY D–7
SCALE: 1"=5'

GENERAL NOTES

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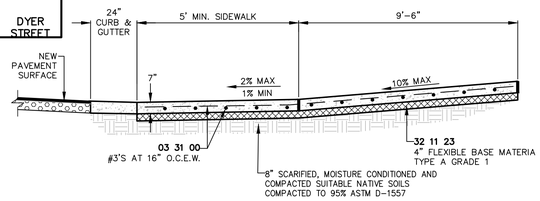
LEGEND

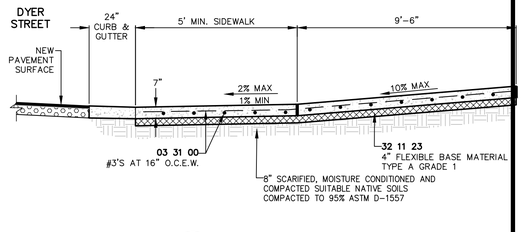
01 00 00	SPECIFICATION DIVISION NUMBER

DRIVEWAY DATA TABLE

LOCATION	DRIVEWAY ID	CL STATION AND OFFSET	WIDTH	(X_1, Y_1) COORDINATE	(X_1, Y_1) ELEVATION	(X_1, Y_1) STATION AND OFFSET	(X_2, Y_2) COORDINATE	(X_3, Y_3) COORDINATE	(X_4, Y_4) COORDINATE	(X_4, Y_4) ELEVATION	(X_4, Y_4) STATION AND OFFSET
DYER STREET	D–6	0+33.67 , 43.59' RT	36.00'	X=409115.89 Y=10703747.60	390X	0+56.85 , 43.65' RT	X=409123.27 Y=10703729.79	X=409103.86 Y=10703699.35	X=409087.65 Y=10703703.61	39X	0+10.54 , 43.54' RT
	D–7	0+81.88 , 43.72' RT	28.00'	X=409136.48 Y=10703779.68	390X	1+00.93 , 43.77' RT	X=409146.99 Y=10703766.99	X=409131.72 Y=10703743.05	X=409115.89 Y=10703747.60	39X	0+62.82 , 43.67' RT
	D–8	2+73.89 , 44.52' LT	33.00'	X=409143.52 Y=10703954.62	390X	2+52.18 , 44.43' LT	X=409133.40 Y=10703967.61	X=409150.55 Y=10703995.18	X=409166.74 Y=10703991.32	38X	2+95.59 , 44.60' LT
	D–9	15+84.81 , 44.16' RT	34.00'	X=409947.12 Y=10705049.18	390X	16+07.17 , 43.98' RT	X=409957.65 Y=10705035.92	X=409938.99 Y=10705006.80	X=409923.21 Y=10705011.07	38X	15+62.18 , 44.34' RT
	D–10	16+92.93 , 43.97' RT	34.00'	X=410005.56 Y=10705140.74	390X	17+15.78 , 43.98' RT	X=410015.84 Y=10705127.19	X=409997.47 Y=10705098.42	X=409980.90 Y=10705102.13	390X	16+70.00 , 43.97' RT



F C15.3 SECTION
SCALE: 1"=3"



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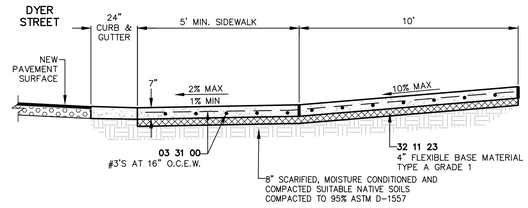

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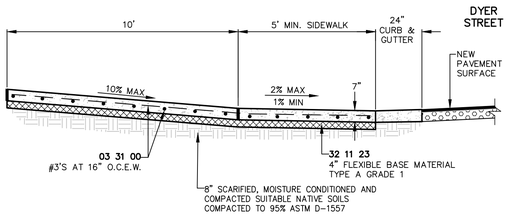

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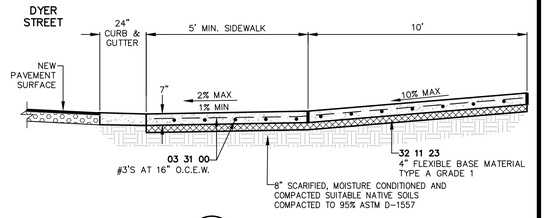
SCALE: 1"=3"



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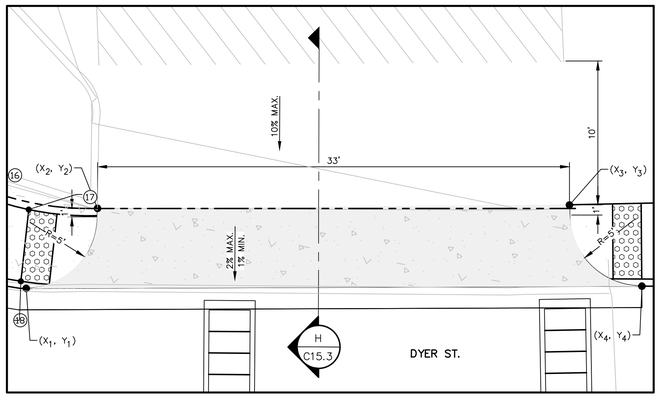
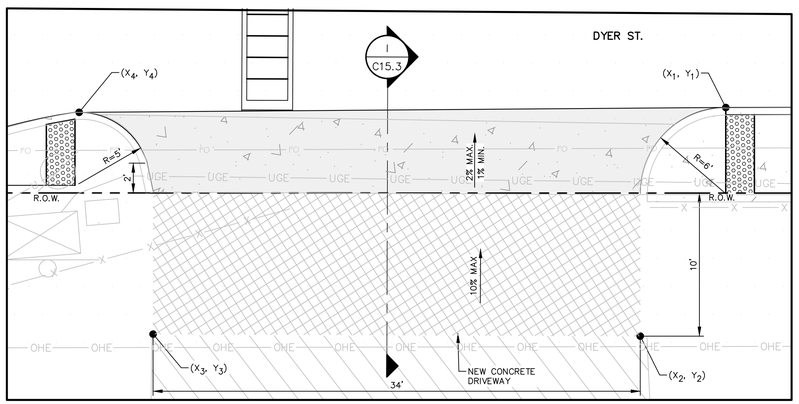
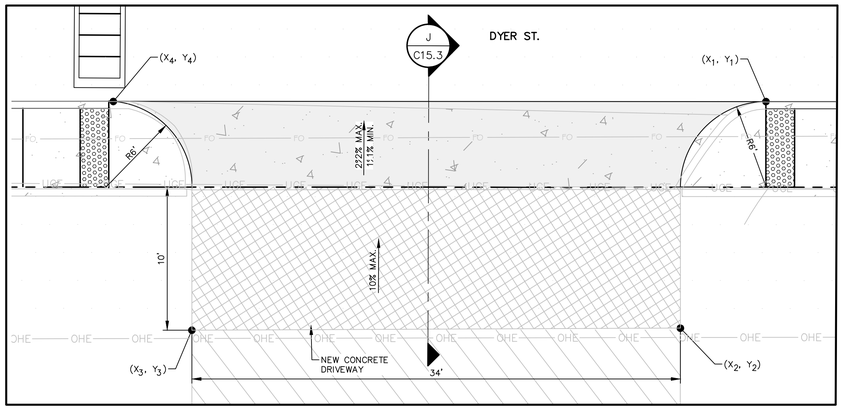
SCALE: 1"=3"



DRIVEWAY D–8
SCALE: 1"=5'



DRIVEWAY D–9
SCALE: 1"=5'



DRIVEWAY D–10
SCALE: 1"=5'

1 C15.3 PLAN AND SECTIONS DRIVEWAY LAYOUT
SCALE: AS SHOWN

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
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DESIGNED	B.O.
DRAWN	E.G./A.M.
CHECKED	M.M.
DATE	10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594–5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
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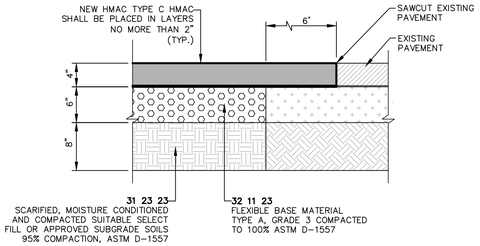
JOB NO.	16–133
SEQUENCE NO.	4 OF 9
SHEET NO.	C15.3

F:\16133\DWG\16133 - C15.0_DWG_Roadway_Details.dwg Time:Oct05,2022–03:00pm Login:alejandra

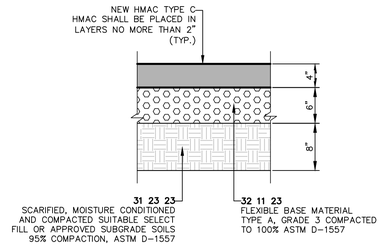
LEGEND	
01 00 00	SPECIFICATION DIVISION NUMBER



WILL RUTH AVENUE/ RUSHING ROAD/
THREADGILL AVENUE/ROBIN HOOD LANE

1 C15.4 TYPICAL ASPHALT PAVEMENT JOINT

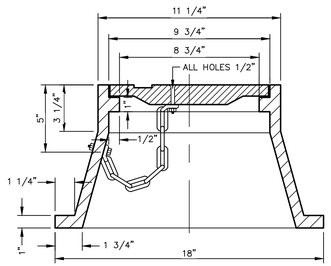
SCALE: 1"=1'-0"



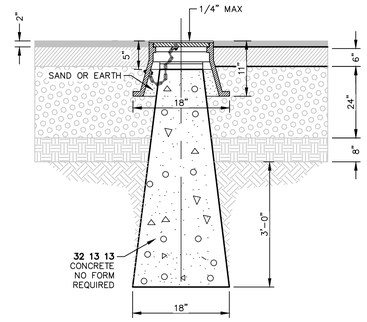
WILL RUTH AVENUE/ RUSHING ROAD/
THREADGILL AVENUE/ROBIN HOOD LANE

2 C15.4 FLEXIBLE PAVEMENT SECTION

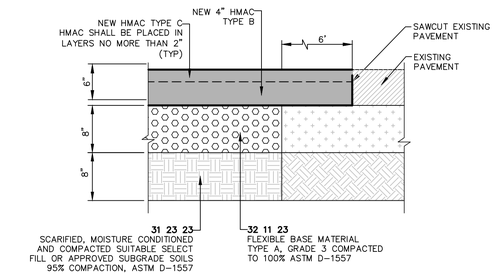
SCALE: 1"=1'-0"



MONUMENT BOX



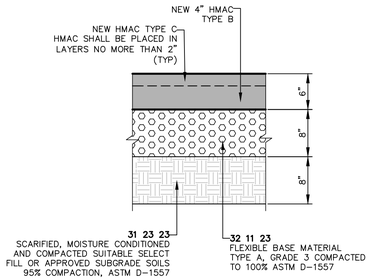
SECTION VIEW



DYER STREET

3 C15.4 TYPICAL ASPHALT PAVEMENT JOINT

SCALE: 1"=1'-0"



DYER STREET

4 C15.4 FLEXIBLE PAVEMENT SECTION

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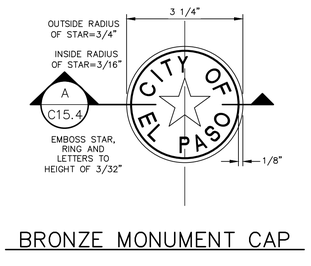
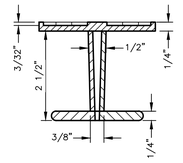
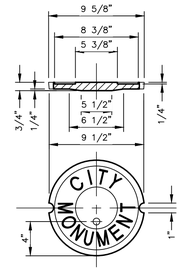


BRONZE MONUMENT CAP



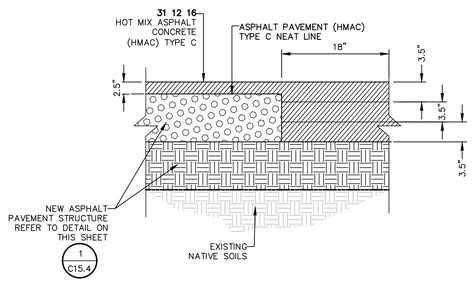
A C15.4 SECTION



COVER

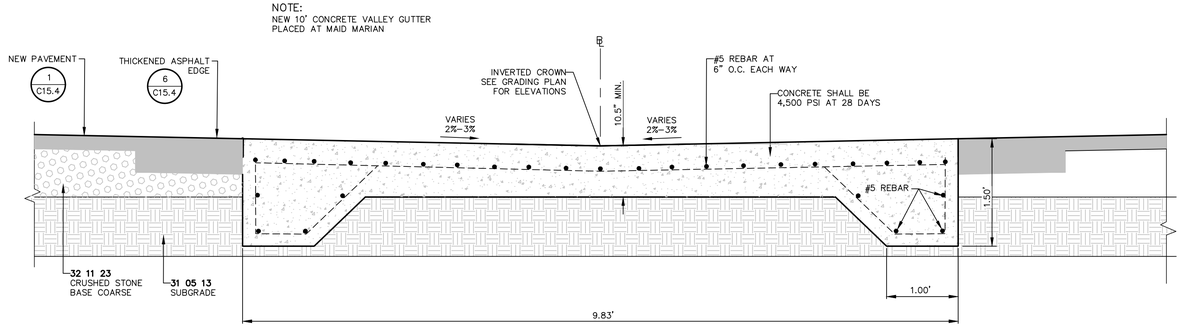
5 C15.4 CITY MONUMENT DETAILS

CITY OF EL PASO STANDARDS



6 C15.4 THICKENED ASPHALT EDGE

SCALE: 1"= 1'-0"



AT ROBIN HOOD STOP & GO, COMMAND CENTER SYSTEM

7 C15.4 VALLEY GUTTER

SCALE: 1/2"=1'-0"

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REV.	DATE	BY	DESCRIPTION

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DESIGNED	B.O.
DRAWN	E.G./A.M.
CHECKED	M.M.
DATE	10/7/2022

UTILITY OWNER

el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT

PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

ROADWAY DETAILS

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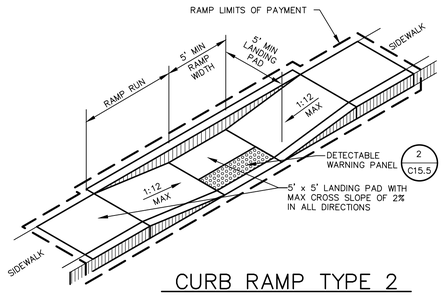
JOB NO.	16-133
SEQUENCE NO.	5 OF 9
SHEET NO.	C15.4

F:\16133\DWG\16133 - C15.0_DWG_Roadway_Details.dwg Time:Oct05,2022-03:14pm Login:alejandra

LEGEND	
01 00 00	SPECIFICATION DIVISION NUMBER



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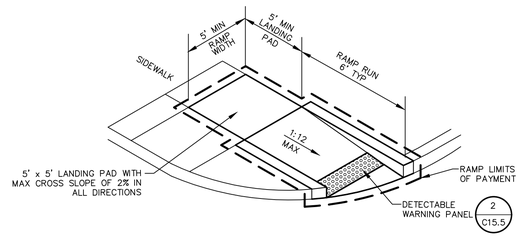

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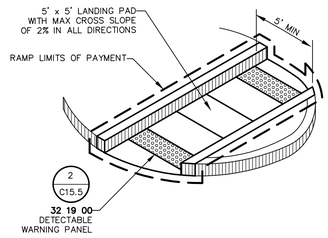

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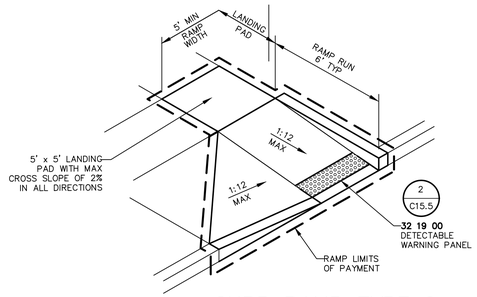

CURB RAMP TYPE 6

1 C15.4 WHEELCHAIR RAMPS
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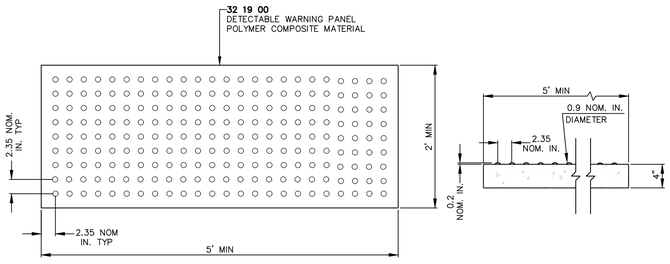
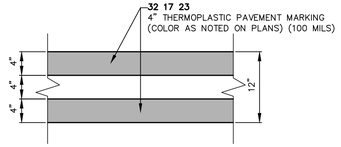
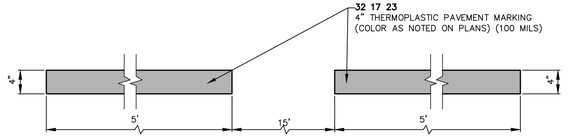


2 C15.5 DETECTABLE WARNING PANEL
SCALE: 1"=1'-0"



4" DOUBLE THERMOPLASTIC PAVEMENT MARKING
SCALE: 1"= 1'-0"



4" BROKEN THERMOPLASTIC PAVEMENT MARKING
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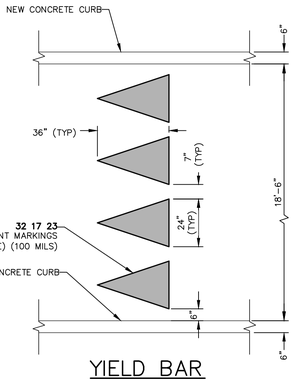
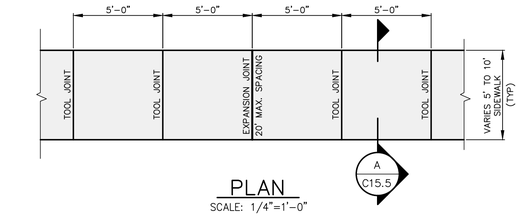
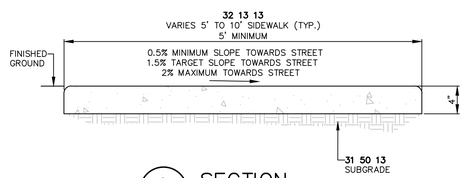


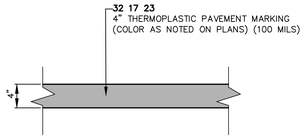
YIELD BAR



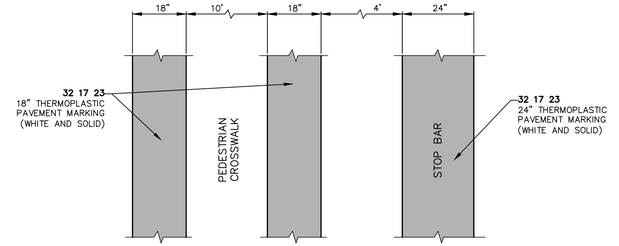
PLAN
SCALE: 1/4"=1'-0"



A C15.5 SECTION
SCALE: 1"=1'-0"



4" SINGLE THERMOPLASTIC PAVEMENT MARKING
SCALE: 1"= 1'-0"



THERMOPLASTIC PAVEMENT MARKING AT INTERSECTIONS
SCALE 1/2"=1'-0"

3 C15.5 TYPICAL CONCRETE SIDEWALK
SCALE: AS SHOWN

4 C15.5 THERMOPLASTIC PAVEMENT MARKINGS
SCALE: 1"=1'-0"

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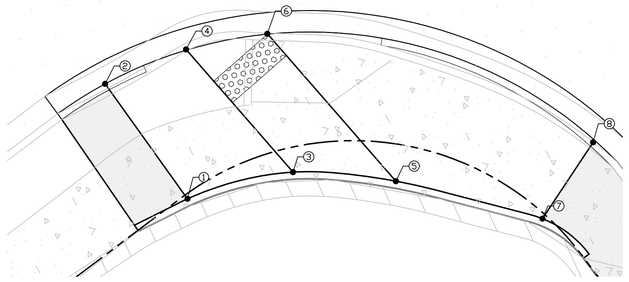
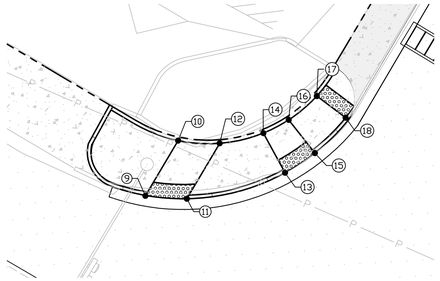
JOB NO.	16-133
SEQUENCE NO.	6 OF 9
SHEET NO.	C15.5

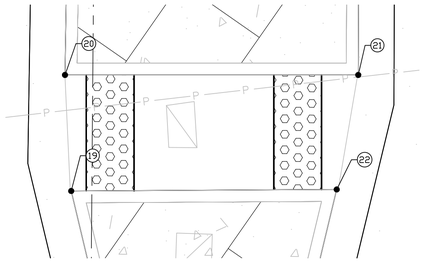
F:\16133\DWG\16133 - C15.0_DWG_Roadway_Details.dwg Time:Oct05,2022--03:15pm Login:alejandra



WHEELCHAIR RAMPS R–1
SCALE: 1"=3'



WHEELCHAIR RAMPS R–2
SCALE: 1"=10'



WHEELCHAIR RAMPS R–3
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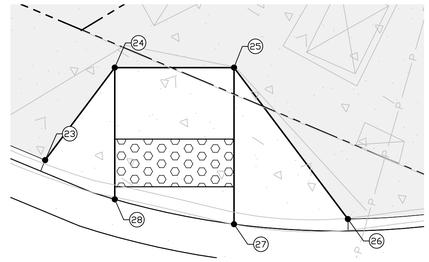

WHEELCHAIR RAMPS R–4
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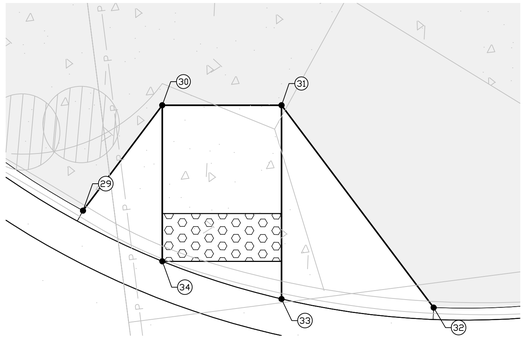

WHEELCHAIR RAMPS R–5
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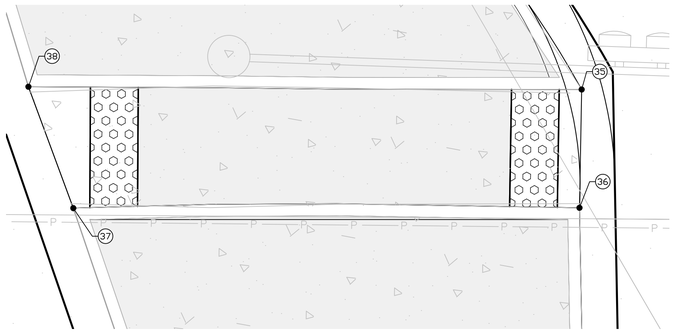
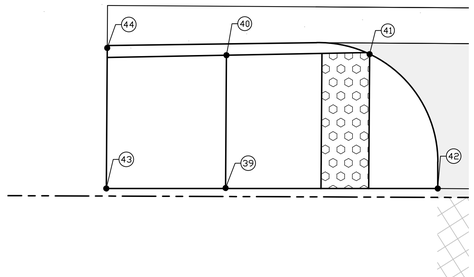
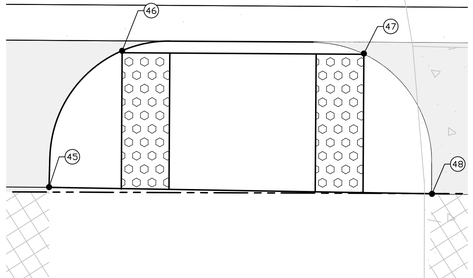


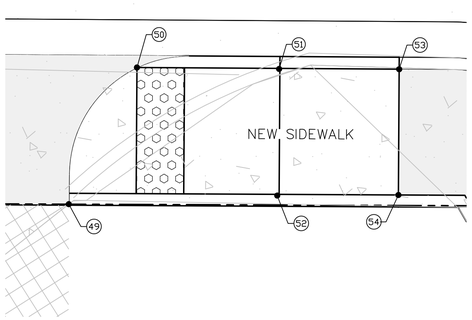
WHEELCHAIR RAMPS R–6
SCALE: 1"=3'



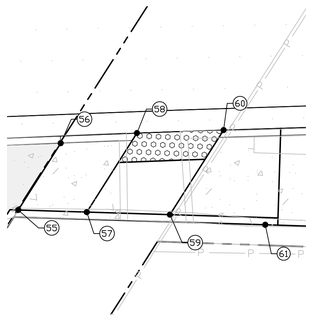
WHEELCHAIR RAMPS R–7
SCALE: 1"=3'



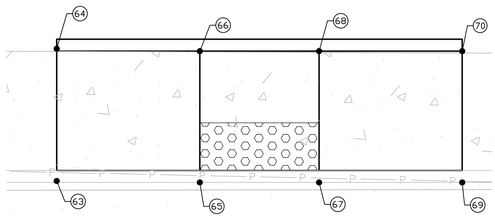
WHEELCHAIR RAMPS R–8
SCALE: 1"=3'



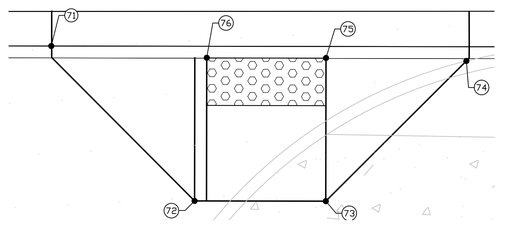
WHEELCHAIR RAMPS R–9
SCALE: 1"=3'



WHEELCHAIR RAMPS R–10
SCALE: 1"=5'



WHEELCHAIR RAMPS R–11
SCALE: 1"=3'



WHEELCHAIR RAMPS R–12
SCALE: 1"=3'

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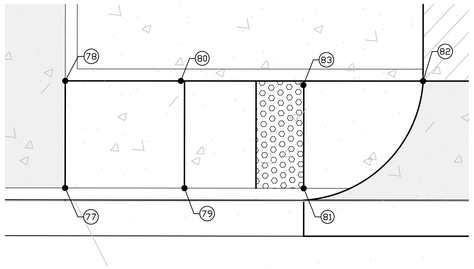
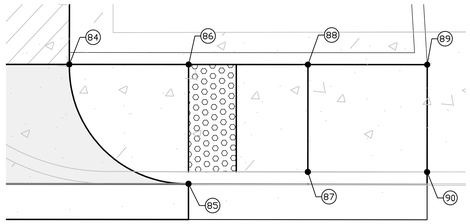
JOB NO. 16–133
SEQUENCE NO. 7 OF 9
SHEET NO. C15.6

F:\16\133\DWG\16133 – C15.0_DWG_Roadway_Details.dwg Time:Oct05,2022–03:18pm Login:elejandro



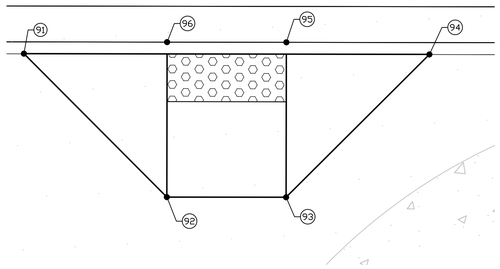
WHEELCHAIR RAMPS R-13

SCALE: 1"=3'



WHEELCHAIR RAMPS R-14

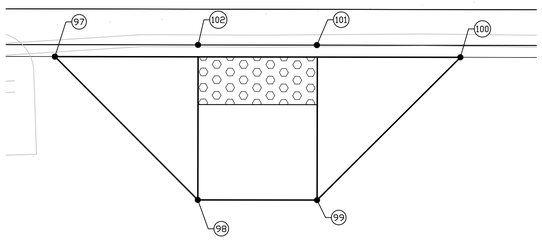
SCALE: 1"=3'



WHEELCHAIR RAMPS R-15

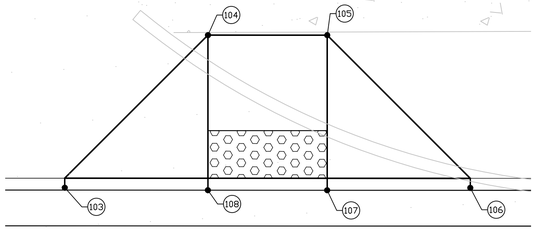
SCALE: 1"=3'

WILL RUTH AVI



WHEELCHAIR RAMPS R-16

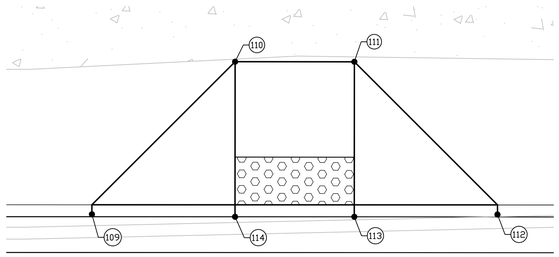
SCALE: 1"=3'



THREADGILL AVENUE

WHEELCHAIR RAMPS R-17

SCALE: 1"=3'



THREADGILL AVENUE

WHEELCHAIR RAMPS R-18

SCALE: 1"=3'

Point Table			
Point #	Elevation	Northing	Easting
1	3905.46	10703887.64	409070.88
2	3905.15	10703895.84	409076.39
3	3904.95	10703881.39	409075.20
4	3904.73	10703891.38	409080.62
5	3904.95	10703874.43	409077.12
6	3904.68	10703886.45	409083.63
7	3905.14	10703863.92	409078.25
8	3904.99	10703862.47	409084.48
9	3904.72	10703944.95	409114.80
10	3904.88	10703952.51	409119.62
11	3904.78	10703944.34	409120.57
12	3904.84	10703951.93	409125.42
13	3904.56	10703947.51	409134.40
14	3904.68	10703953.16	409131.56
15	3904.52	10703950.13	409138.67
16	3904.63	10703954.88	409135.16
17	3904.60	10703958.08	409139.20
18	3904.96	10703954.93	409143.13
19	3904.36	10703921.69	409174.17
20	3904.37	10703925.94	409176.53

Point Table			
Point #	Elevation	Northing	Easting
21	3904.35	10703919.42	409186.95
22	3904.34	10703915.83	409183.63
23	3904.56	10703916.49	409224.54
24	3904.15	10703912.97	409227.88
25	3904.14	10703908.04	409227.04
26	3904.48	10703904.40	409219.98
27	3904.01	10703909.14	409220.57
28	3904.04	10703913.89	409222.43
29	3904.36	10703886.84	409221.89
30	3903.98	10703888.10	409227.27
31	3904.00	10703884.90	409231.11
32	3904.32	10703874.30	409230.56
33	3903.73	10703878.66	409225.90
34	3903.85	10703883.08	409223.08
35	3903.72	10703840.33	409187.34
36	3903.69	10703837.62	409191.50
37	3903.69	10703819.64	409180.23
38	3903.72	10703820.75	409174.92
39	3904.78	10703697.14	409090.77
40	3904.66	10703700.14	409086.08

Point Table			
Point #	Elevation	Northing	Easting
41	3904.17	10703705.24	409089.25
42	3904.26	10703704.64	409095.54
43	3904.80	10703692.90	409088.11
44	3904.69	10703696.08	409083.15
45	3904.08	10703735.00	409115.11
46	3903.95	10703740.64	409111.92
47	3903.91	10703749.14	409117.43
48	3904.01	10703748.40	409123.93
49	3904.10	10703772.11	409139.05
50	3903.97	10703777.59	409135.73
51	3904.42	10703782.59	409138.97
52	3904.51	10703779.69	409143.41
53	3904.41	10703786.84	409141.67
54	3904.51	10703783.99	409146.11
55	3904.53	10703786.32	409148.19
56	3904.34	10703790.99	409151.15
57	3903.93	10703786.17	409152.98
58	3903.80	10703791.69	409156.48
59	3903.91	10703785.99	409158.79
60	3903.77	10703791.90	409162.54

Point Table			
Point #	Elevation	Northing	Easting
61	3904.44	10703785.29	409165.45
62	3904.22	10703792.02	409169.45
63	3903.00	10703824.60	409593.94
64	3903.70	10703830.13	409594.14
65	3902.75	10703824.32	409599.94
66	3903.19	10703829.82	409600.13
67	3902.80	10703824.15	409604.93
68	3903.24	10703829.64	409605.13
69	3902.86	10703823.93	409610.93
70	3903.34	10703829.43	409611.12
71	3902.16	10703779.77	409593.65
72	3902.70	10703773.07	409599.42
73	3902.80	10703772.86	409604.92
74	3902.75	10703778.52	409611.02
75	3902.72	10703778.86	409605.14
76	3902.49	10703779.04	409600.14
77	3901.93	10703804.10	409940.67
78	3902.02	10703808.59	409940.82
79	3901.92	10703803.93	409945.67
80	3902.01	10703808.43	409945.67

Point Table			
Point #	Elevation	Northing	Easting
81	3901.57	10703803.76	409950.66
82	3901.54	10703808.08	409955.81
83	3901.77	10703808.08	409950.80
84	3901.79	10703807.27	409979.80
85	3901.19	10703802.11	409984.63
86	3901.79	10703807.10	409984.80
87	3901.70	10703802.44	409989.64
88	3901.79	10703806.93	409989.80
89	3901.80	10703806.76	409994.79
90	3901.71	10703802.26	409994.64
91	3903.38	10703739.24	410735.20
92	3903.46	10703733.03	410740.99
93	3903.53	10703732.85	410745.98
94	3903.47	10703738.64	410752.18
95	3902.94	10703739.35	410746.21
96	3902.91	10703739.52	410741.21
97	3905.32	10703722.23	411220.62
98	3905.46	10703716.02	411226.41
99	3905.48	10703715.85	411231.40
100	3905.39	10703721.63	411237.61

Point Table			
Point #	Elevation	Northing	Easting
101	3904.86	10703722.34	411231.61
102	3904.84	10703722.52	411226.63
103	3901.71	10703242.39	410728.35
104	3901.82	10703248.58	410734.56
105	3901.88	10703248.41	410739.56
106	3901.90	10703241.81	410745.34
107	3901.33	10703241.92	410739.34
108	3901.28	10703242.09	410734.34
109	3904.76	10703225.69	411223.82
110	3904.88	10703231.88	411230.04
111	3904.88	10703231.71	411235.03
112	3904.76	10703225.12	411240.81
113	3904.26	10703225.22	411234.81
114	3904.26	10703225.39	411229.82

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REV.	DATE	BY	DESCRIPTION

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

ROADWAY DETAILS

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JOB NO. 16-133
SEQUENCE NO. 8 OF 9
SHEET NO. C15.7

F:\16133\DWG\16133 - C15.0_DWG_Roadway_Details.dwg Time:Oct05,2022-03:12pm Login:alejandra

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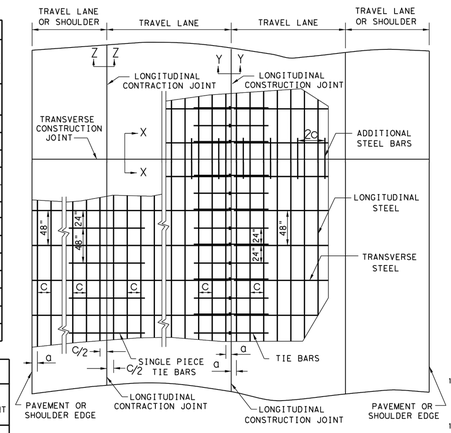
TABLE NO.1 LONGITUDINAL STEEL					
SLAB THICKNESS AND BAR SIZE		REGULAR STEEL BARS	FIRST SPACING AT EDGE OR JOINT	ADDITIONAL STEEL BARS AT TRANSVERSE CONSTRUCTION JOINT (SECTION X-X)	
T (IN.)	BAR SIZE	SPACING C (IN.)	SPACING a (IN.)	SPACING 2 X C (IN.)	LENGTH L (IN.)
7.0	#5	6.5	3 TO 4	13	50
7.5	#5	6.0	3 TO 4	12	50
8.0	#6	9.0	3 TO 4	18	50
8.5	#6	8.5	3 TO 4	17	50
9.0	#6	8.0	3 TO 4	16	50
9.5	#6	7.5	3 TO 4	15	50
10.0	#6	7.0	3 TO 4	14	50
10.5	#6	6.75	3 TO 4	13.5	50
11.0	#6	6.5	3 TO 4	13	50
11.5	#6	6.25	3 TO 4	12.5	50
12.0	#6	6.0	3 TO 4	12	50
12.5	#6	5.75	3 TO 4	11.5	50
13.0	#6	5.5	3 TO 4	11	50

TABLE NO.2 TRANSVERSE STEEL AND TIE BARS						
SLAB THICKNESS (IN.)	TRANSVERSE STEEL		TIE BARS AT LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z)		TIE BARS AT LONGITUDINAL CONSTRUCTION JOINT (SECTION Y-Y)	
	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)
7.0 - 7.5	#5	48	#5	48	#5	24
8.0 - 13.0	#5	48	#6	48	#6	24

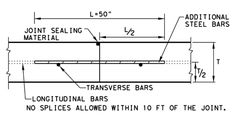


TYPICAL PAVEMENT LAYOUT

PLAN VIEW (NOT TO SCALE)

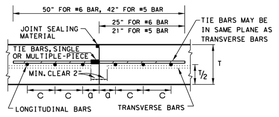
GENERAL NOTES

1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT ARE NOT COVERED BY THIS STANDARD.
2. USE COARSE AGGREGATES WITH A RATED COEFFICIENT OF THERMAL EXPANSION (COTE) OF NOT MORE THAN 5.5 X 10^{-6} IN/IN/ °F AS LISTED IN THE CONCRETE RATED SOURCE QUALITY CATALOG (CRSQC).
3. ALL THE REINFORCING STEEL AND TIE BARS SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615 (GRADE 60) OR ASTM A 996 (GRADE 60) OR ABOVE. STEEL BAR SIZES AND SPACINGS SHALL CONFORM TO TABLE NO.1 AND TABLE NO.2.
4. STEEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1 IN. HORIZONTALLY AND +/- 0.5 IN. VERTICALLY. CALCULATED AVERAGE BAR SPACING (CONCRETE PLACEMENT WIDTH / NUMBER OF LONGITUDINAL BARS) SHALL CONFORM TO TABLE NO.1
5. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
6. THE SAW CUT DEPTH FOR THE LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z) SHALL BE ONE THIRD OF THE SLAB THICKNESS (T/3).
7. WHEN TYING CONCRETE GUTTER AT A LONGITUDINAL JOINT, THE TIE BAR LENGTH OR POSITION MAY BE ADJUSTED. PROVIDE 3 IN. OF CONCRETE COVER FROM THE BACK OF GUTTER TO THE END OF TIE BAR.
8. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN.10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
9. OMIT TIE BARS LOCATED WITHIN 18-IN. OF THE TRANSVERSE CONSTRUCTION JOINTS (SECTION X-X). USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL FORMED JOINTS.
10. LONGITUDINAL REINFORCING STEEL SPLICES SHALL BE A MINIMUM OF 25 IN. STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT.
11. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."



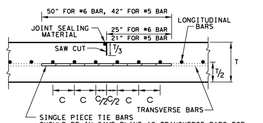
TRANSVERSE CONSTRUCTION JOINT

SECTION X - X



LONGITUDINAL CONSTRUCTION JOINT

SECTION Y - Y



LONGITUDINAL CONTRACTION JOINT

SECTION Z - Z

SHEET 1 OF 2

Texas Department of Transportation | Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

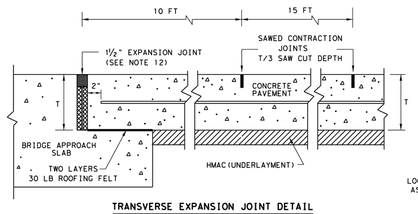
ONE LAYER STEEL BAR PLACEMENT

T - 7 to 13 INCHES

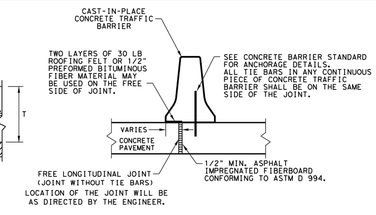
CRCP(1)-20

FILE: crcp120.dgn	DN: TxDOT	CK: KM	DW: AN	CK: VP
©TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10/12/2011 ADD DN STDS				
04/05/2013 REMOVE 8" AND 8.5" AND ADD STD REQUIREMENTS	DIST	COUNTY		SHEET NO.
05/05/2017 CHG AS RATED A/S				

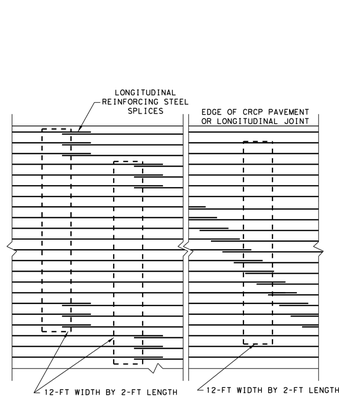
DATE:
FILE:



TRANSVERSE EXPANSION JOINT DETAIL AT BRIDGE APPROACH



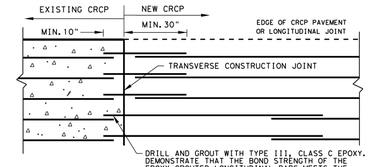
FREE LONGITUDINAL JOINT DETAIL



STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT. ANY OTHER LAP CONFIGURATION MEETING THIS REQUIREMENT WILL BE ALLOWED.

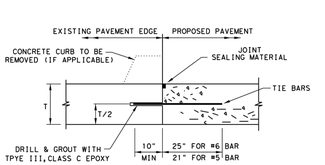
EXAMPLES OF LAP CONFIGURATION

PLAN VIEW (NOT TO SCALE)



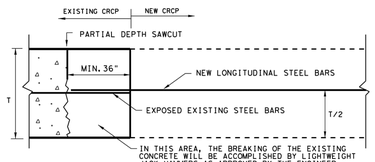
OPTION A: DRILL AND EPOXY

PLAN VIEW (NOT TO SCALE)



1. BEFORE WIDENING WORK, DEMONSTRATE THAT THE BOND STRENGTH OF THE EPOXY-GROUTED TIE BARS MEETS THE REQUIRMENTS OF PULL-OUT TEST SPECIFIED IN ITEM 361.
2. SPACE TIE BARS AT 24" SPACING. USE #6 TIE BARS FOR 8" AND THICKER SLABS, USE #5 TIE BARS FOR LESS THAN 8" THICK SLABS.

LONGITUDINAL WIDENING JOINT DETAIL



OPTION B: BREAKBACK AND LAP

TRANSVERSE TIE JOINT DETAIL

EXISTING CRCP TO NEW CRCP

SHEET 2 OF 2

Texas Department of Transportation | Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

ONE LAYER STEEL BAR PLACEMENT

T - 7 to 13 INCHES

CRCP(1)-20

FILE: crcp120.dgn	DN: TxDOT	CK: KM	DW: AN	CK: VP
©TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
03/16/2020 REMOVED TABLE 1A	DIST	COUNTY		SHEET NO.

DATE:
FILE:

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REV.	DATE	BY	DESCRIPTION

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER

el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT

PLANNING ENGINEERING PROJECT MANAGEMENT

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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

CUT AND RESTORE PAVEMENT DETAIL

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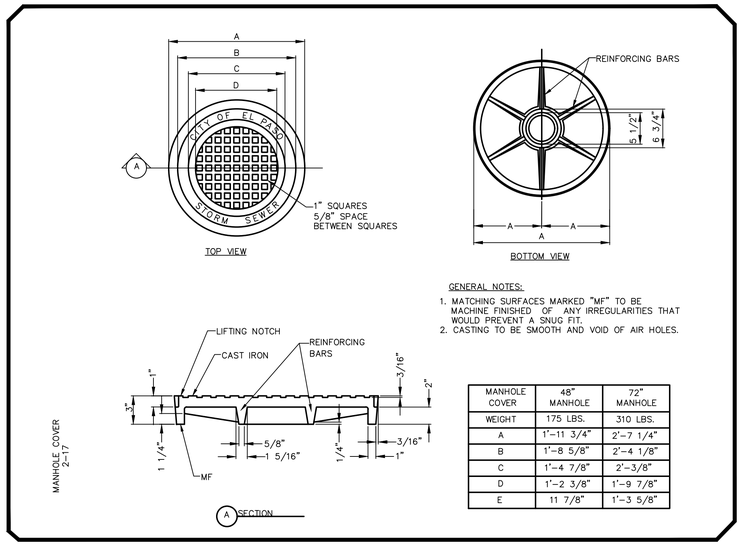
JOB NO. 16-133
SEQUENCE NO. 9 OF 9
SHEET NO. C15.8

F:\16133\DWG\16133 - C15.0_DWG_Roadway_Details.dwg Time:Oct05,2022 - 03:19pm Login:alejandro

LEGEND	
01 00 00	SPECIFICATION DIVISION NUMBER

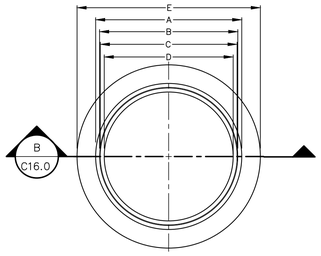


GENERAL NOTES:

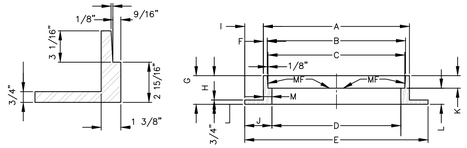
1. MATCHING SURFACES MARKED "MF" TO BE MACHINE FINISHED OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.
2. CASTING TO BE SMOOTH AND VOID OF AIR HOLES.

MANHOLE COVER	48" MANHOLE	72" MANHOLE
WEIGHT	175 LBS.	310 LBS.
A	1'-11 3/4"	2'-7 1/4"
B	1'-8 5/8"	2'-4 1/8"
C	1'-4 7/8"	2'-3/8"
D	1'-2 3/8"	1'-9 7/8"
E	11 7/8"	1'-3 5/8"

1 C16.0 MANHOLE COVER



PLAN



DETAIL

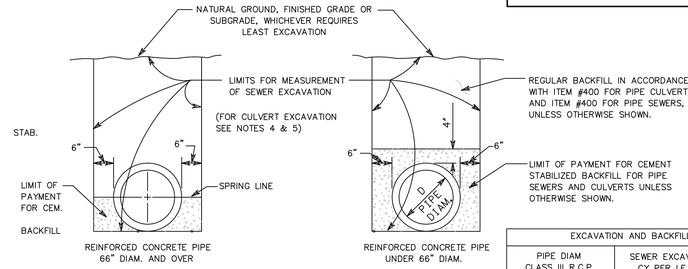
B C16.0 SECTION

MANHOLE RING	MANHOLE – ALL TYPES
A	33"
B	31 3/4"
C	31 1/2"
D	30"
E	39 1/2"
F	5/8"
G	5"
H	4 1/4"
I	3 1/4"
J	4 3/4"
K	2 3/16"
L	2 13/16"
M	1 1/2"
WEIGHT	220 lbs.

2 C16.0 MANHOLE RING DETAIL
SCALE: 1/2"=1'-0"

GENERAL NOTES

1. MATCHING SURFACES MARKED "MF" TO BE FINISHED OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.
2. SHADED DIMENSIONS IN THE TABLE FOR REFERENCE ONLY. SOURCE: CITY OF EL PASO DESIGN STANDARDS FOR CONSTRUCTION, DETAIL 2-16.

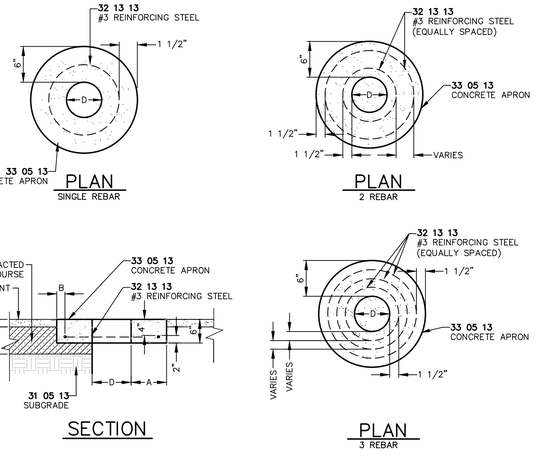


1. SHADED AREA INDICATES LIMIT FOR MEASUREMENTS OF CEMENT STABILIZED BACKFILL.
2. CEMENT STABILIZED BACKFILL WILL BE PLACED AS SHOWN ON SEWER/CULVERT PROFILE SHEETS.
3. CEMENT STABILIZED BACKFILL SHALL BE IN ACCORDANCE WITH ITEM #400.
4. CULVERT EXCAVATION WILL BE MEASURED IN ACCORDANCE WITH ITEM #400.
5. FOR PIPE CULVERTS NO MATERIAL OUTSIDE OF VERTICAL PLANES 6" BEYOND THE HORIZONTAL PROJECTION OF THE OUTSIDE SURFACES OF THE PIPE AND PARALLEL THERETO WILL BE MEASURED.

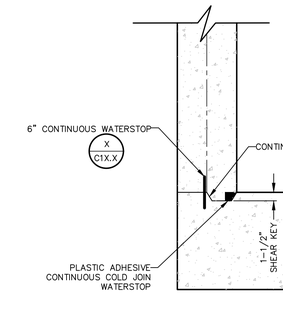
EXCAVATION AND BACKFILL FACTORS		
PIPE DIAM CLASS III R.C.P. (IN)	SEWER EXCAV. CY PER LF PER FT OF DEPTH	CEM. STAB. BKFL. CY PER LF
12	0.086	0.086
18	0.108	0.137
24	0.130	0.184
30	0.151	0.239
36	0.173	0.302
42	0.194	0.365
48	0.216	0.437
54	0.238	0.519
60	0.259	0.595

EXCAVATION AND BACKFILL DIAGRAMS FOR SEWERS AND DRAINAGE STRUCTURES

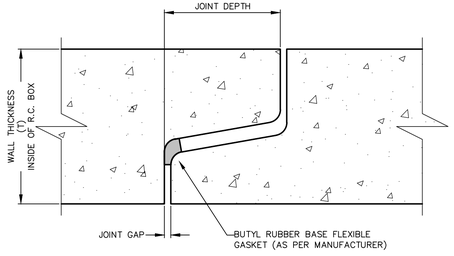
CONCRETE APRON FOR CIRCULAR PENETRATIONS IN ASPHALT PAVEMENTS				
"D" DIAMETER OF PENETRATION (INCHES)	"A" CONCRETE HORIZONTAL DIMENSION FROM PENETRATION (INCHES)	NUMBER OF NO. 3 REINFORCING STEEL BARS (INCHES)	"B" MINIMUM CLEARANCE FROM EDGE OF CONCRETE APRON TO CENTER OF NEAREST REBAR (INCHES)	"C" MINIMUM CLEARANCE FROM PENETRATION EDGE TO CENTER OF NEAREST REBAR (INCHES)
18.01 AND OVER	12	3	1 1/2"	1 1/2"



3 C16.0 CONCRETE PENETRATION APRON FOR RING COVERS
SCALE: 1/2"=1'-0"

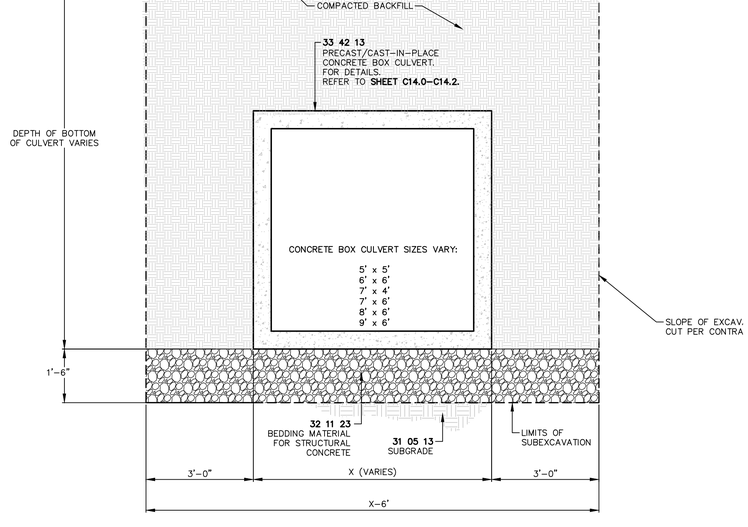


4 C16.0 WATERSTOP AT SHEAR KEY DETAIL
SCALE: 1"=1'



4 C16.0 SECTION THRU BOX JOINT
SCALE: 1/2"=1'-0"

5 C16.0 BEDDING FOR STORM SEWER CONCRETE PIPE DETAIL
SCALE: 1/2"=1'-0"



6 C16.10 BEDDING FOR CONCRETE BOX CULVERT
SCALE: 1/2"=1'-0"

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REV.	DATE	BY	DESCRIPTION

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1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES
linespots@elpasotexas.gov

ENGINEER'S SEAL
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DESIGNED	B.O.
DRAWN	E.G./A.M.
CHECKED	M.M.
DATE	10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DRAINAGE TYPICAL DETAILS

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JOB NO.	16-133
SEQUENCE NO.	1 OF 13
SHEET NO.	C16.0

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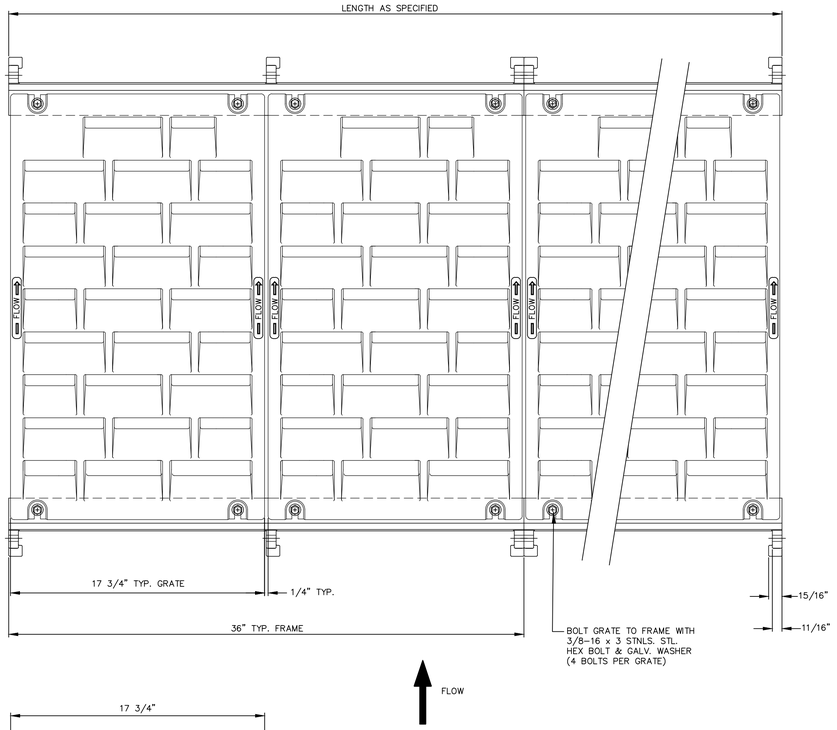
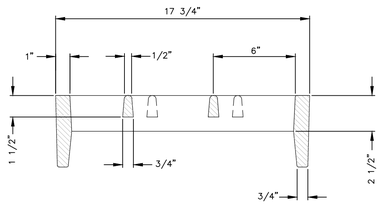
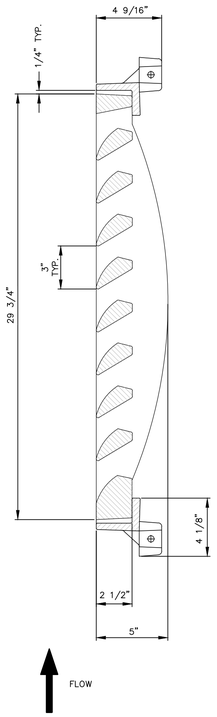
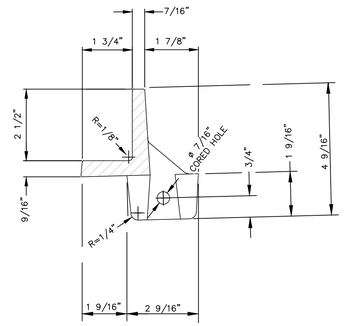
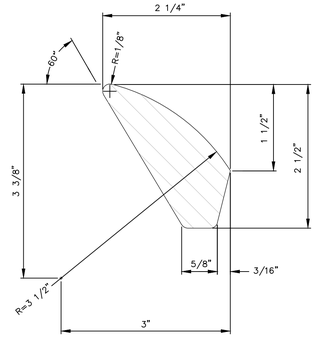








SECTION THRU FRAME



VANE DETAIL

1 / C16.1 GRATE FOR INLETS IN-1, IN-2, IN-3
IN-3A, IN-4
IN-4A, IN-4B

SCALE: AS DIMENSIONED

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CHECKED M.M.
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JOB NO. 16-133
SEQUENCE NO. 2 OF 13
SHEET NO. C16.1

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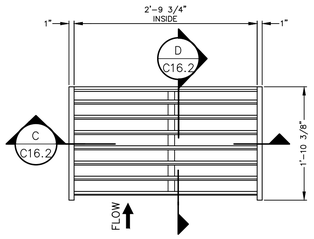
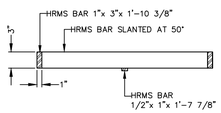
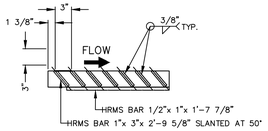


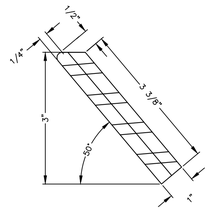
GRATE



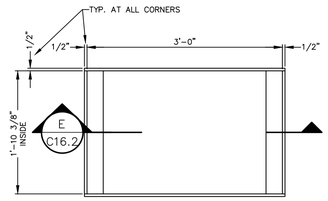
C / C16.2 GRATE SECTION



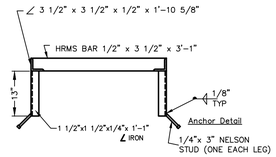
D / C16.2 GRATE SECTION



SLANTED BAR DETAIL

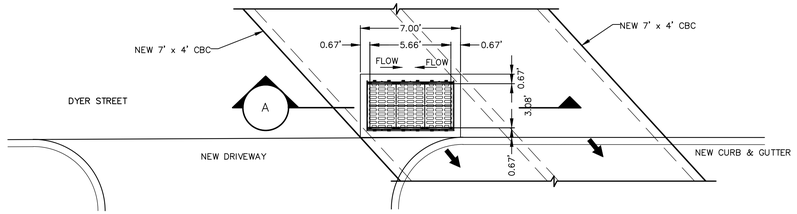


FRAME

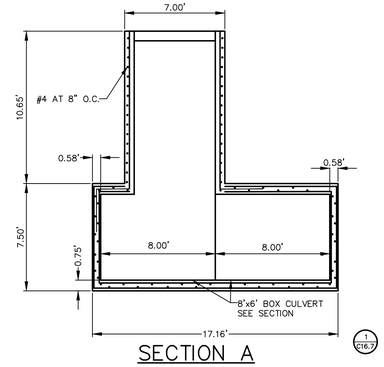


E / C16.2 FRAME SECTION

1 / C16.2 GRATE FOR INLET 5
SCALE: AS DIMENSIONED

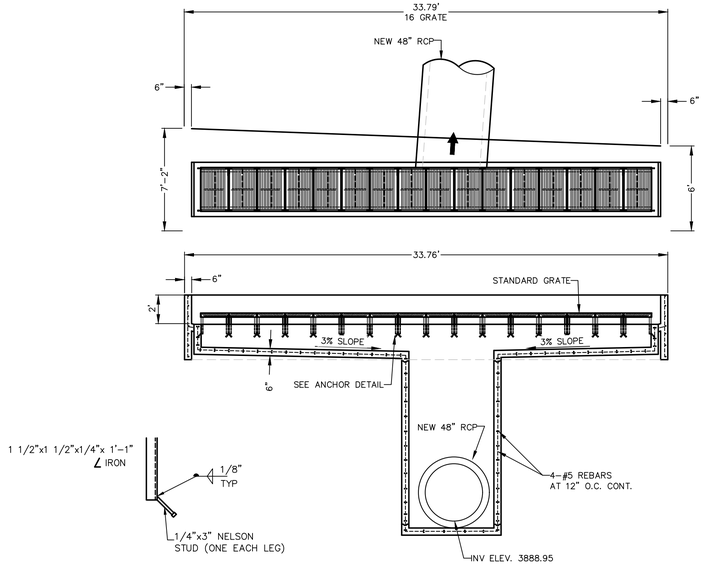


PLAN VIEW
1" = 5'

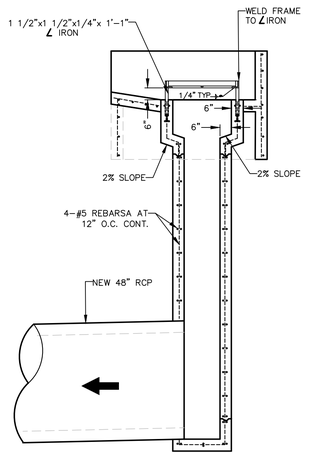


SECTION A

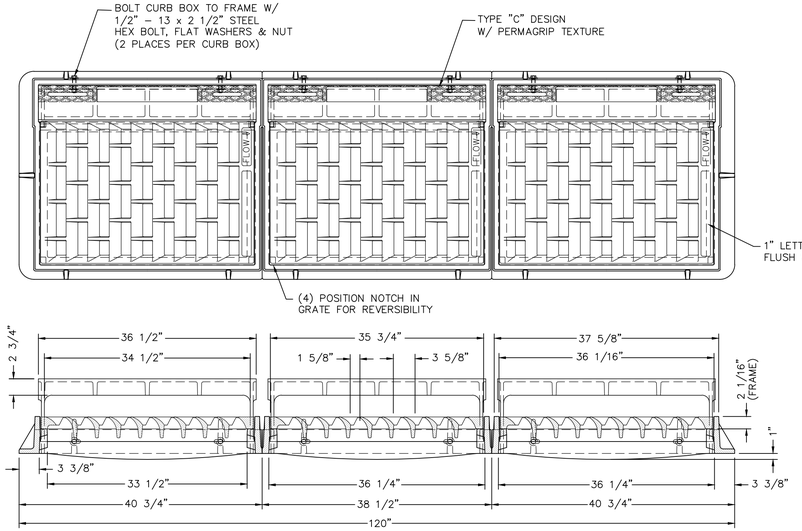
3 / C16.2 CONNECTION INLET 6
SCALE: 1"=5'

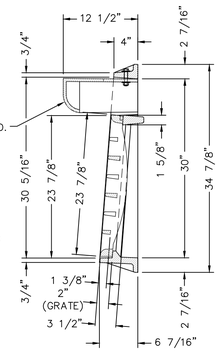


Anchor Detail



2 / C16.2 INLET 5





COMPONENT NOS.: FRAME w/ LEFT FLANGE REMOVED 3246-0043
FRAME w/ RIGHT FLANGE REMOVED 3246-0044
FRAME w/ BOTH FLANGES REMOVED 3246-0045
GRATE (3) PCS. 3246-3000; CURB BOX (3) PCS. 3290-7000
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B, FINISH: NO PAINT

4 / C16.2 GRATE FOR IN-7 THROUGH 18
SCALE: AS DIMENSIONED

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DESIGNED	DRAWN	CHECKED	DATE
B.O.	E.G./A.M.	M.M.	10/7/2022

UTILITY OWNER
el paso WATER
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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

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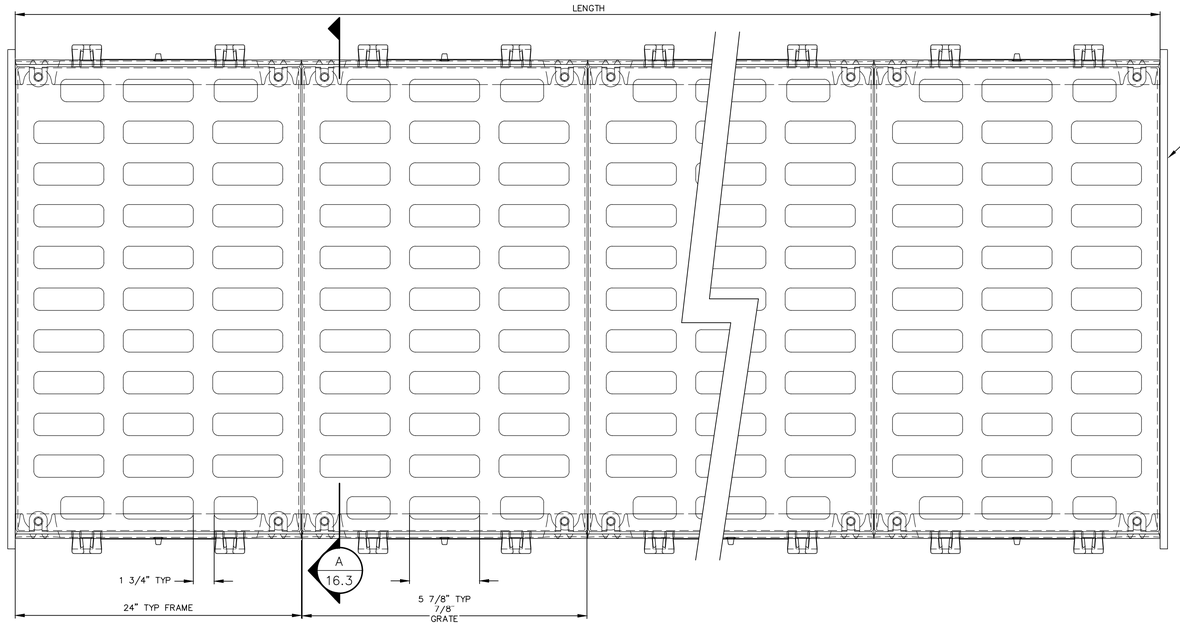
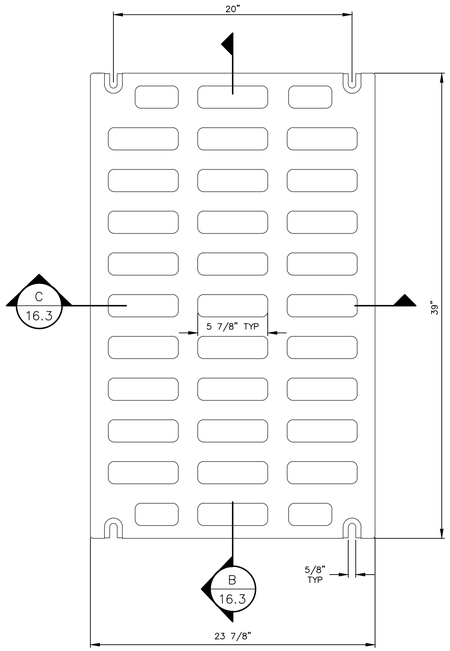
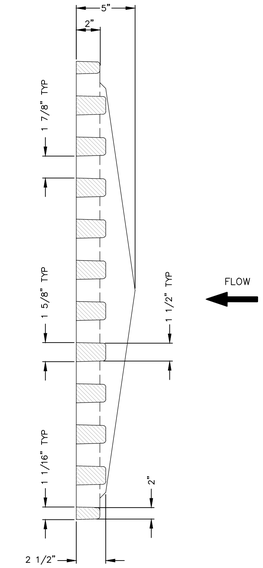
JOB NO.	SEQUENCE NO.	SHEET NO.
16-133	3 OF 13	C16.2

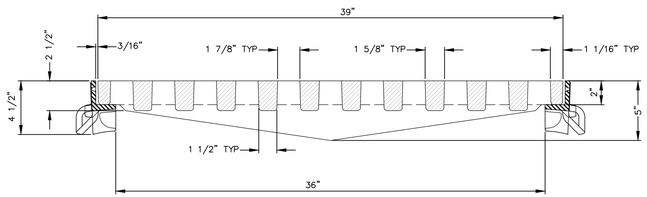
F:\16133\DWG\16133 - C16.0_DWG_Drainage Details.dwg Time:Sep25,2022 - 11:06pm LoginAdministrator



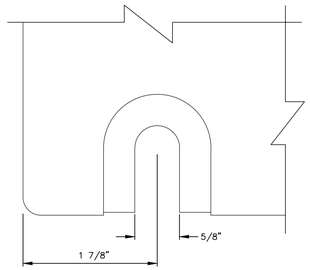




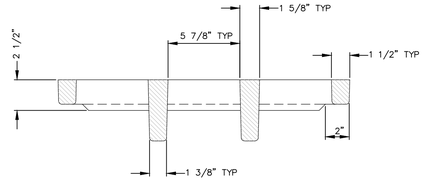
B 16.3 SECTION



A 16.3 SECTION



BOLT SLOT DETAIL



C 16.3 SECTION

NOTE: FREE OPEN AREA: 356 SQ. IN.
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NO PAINT, UNLESS SPECIFIED ON PURCHASE ORDER.
WEIGHT: 364 LBS.

NOTES: DO NOT DISSASSEMBLE BEFORE INSTALLATION. FRAMES MAY NEED ADJUSTMENT FROM MOVEMENT DURING SHIPMENT. CHECK FOR PROPER SPACING BETWEEN FRAMES. FRAMES AND COVERS ARE FURNISHED IN STANDARD 2'-0" INCREMENTS. SPECIAL LENGTH FRAMES AND COVERS ARE FURNISHED FOR ANY OVERALL LENGTH.
MATERIAL: SIDE PC. FRAMES - CAST GRAY IRON ASTM A-48, CLASS 35A, END PC. FRAMES & GRATES - CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NO PAINT

1 / 16.3 GRATE FOR IN-6 AND IN-19
SCALE: AS DIMENSIONED

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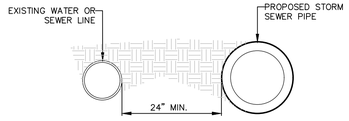
JOB NO. 16-133
SEQUENCE NO. 4 OF 13
SHEET NO. C16.3

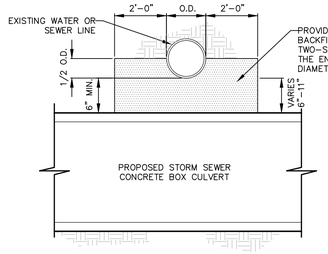
F:\16133\DWG\16133 - C16.0_DWG_Drainage Details.dwg TimeSep25,2022-11:07pm LoginAdministrator

GENERAL NOTES

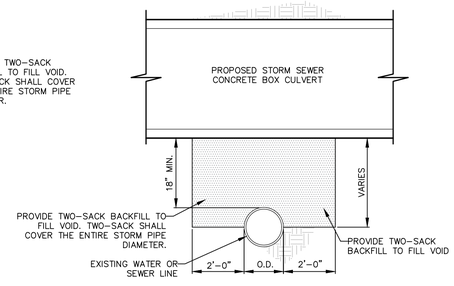
1. CASE "A": A MINIMUM OF 24" OF HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN THE NEW STORM SEWER PIPE AND EXISTING WATER/SEWER LINES. **THIS REQUIREMENT ALSO APPLIES FOR EXISTING GAS LINES**
2. CASE "B": A MINIMUM OF 6" OF VERTICAL SEPARATION SHALL BE MAINTAINED BETWEEN THE NEW STORM SEWER LINE (BELOW) AND EXISTING WATER/SEWER LINES (ABOVE). CONTRACTOR SHALL PROVIDE TWO-SACK BACKFILL FOR SEPARATION OF OF 6" (MIN.) TO 24".
3. CASE "C": A MINIMUM OF 12" OF VERTICAL SEPARATION SHALL BE MAINTAINED BETWEEN THE NEW STORM SEWER LINE (ABOVE) AND EXISTING WATER/SEWER LINES (BELOW). CONTRACTOR SHALL PROVIDE TWO-SACK BACKFILL FOR SEPARATION OF OF 12" (MIN.) TO 24".
4. CONCRETE COLLARS TO BE HAND FORMED.



CASE A

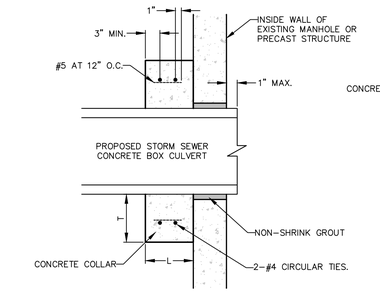


CASE B

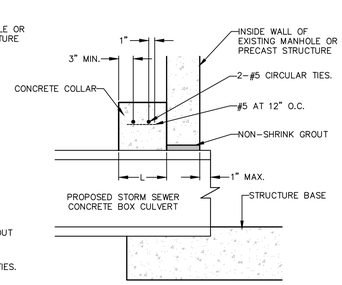


CASE C

1 C16.4 PROTECTION OF EXISTING WATER AND STORM SEWER LINES
SCALE: 1/2"=1'-0"



DROP INLET PIPE CONNECTION



PIPE CONNECTION AT BASE

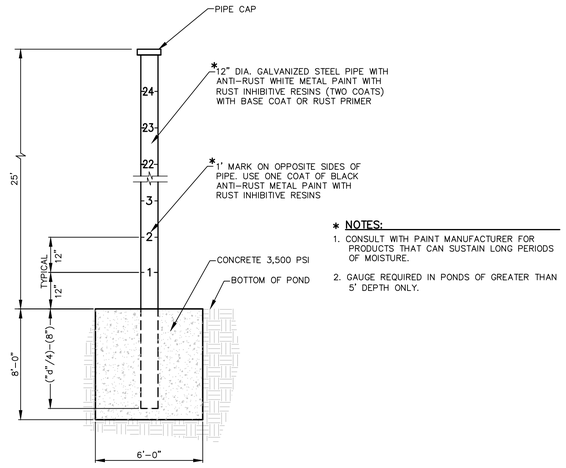
TABLE		
D	L	T
18"	12"	12"
24"	12"	12"
30"	12"	12"
36"	18"	18"
42"	18"	18"
60"	24"	24"

GENERAL NOTE:

1. PROVIDE CONCRETE LATERAL CONNECTION AT ALL PRECAST AND CAST-IN-PLACE CONCRETE STRUCTURES.

LATERAL CONNECTION FOR PRECAST OR CAST-IN-PLACE JUNCTION BOXES AND/OR EXISTING MANHOLES

2 C16.4
SCALE: 1/2"=1'-0"



*** NOTES:**

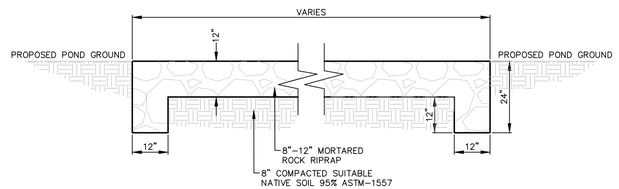
1. CONSULT WITH PAINT MANUFACTURER FOR PRODUCTS THAT CAN SUSTAIN LONG PERIODS OF MOISTURE.
2. GAUGE REQUIRED IN PONDS OF GREATER THAN 5' DEPTH ONLY.

3 C16.4 POND DEPTH GAUGE
SCALE: 1/2"=1'-0"

GENERAL NOTES:

1. SIGN MATERIAL TO BE 16 GAUGE GALVANIZED SHEET METAL.
2. TOP PART OF SIGN SHALL SHOW BLACK LETTERS ON A WHITE BACKGROUND.
3. BOTTOM PART OF SIGN SHALL SHOW WHITE LETTERS ON A BLACK BACKGROUND.

4 C16.4 NO TRESPASSING WARNING SIGN
SCALE: CITY STANDARD



5 C16.4 MORTARED ROCK RIP-RAP
SCALE: 1/2"=1'-0"

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DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DRAINAGE TYPICAL DETAILS

THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH POND AND CONVEYANCE IMPROVEMENTS", MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO. 16-133
SEQUENCE NO. 5 OF 13
SHEET NO. C16.4

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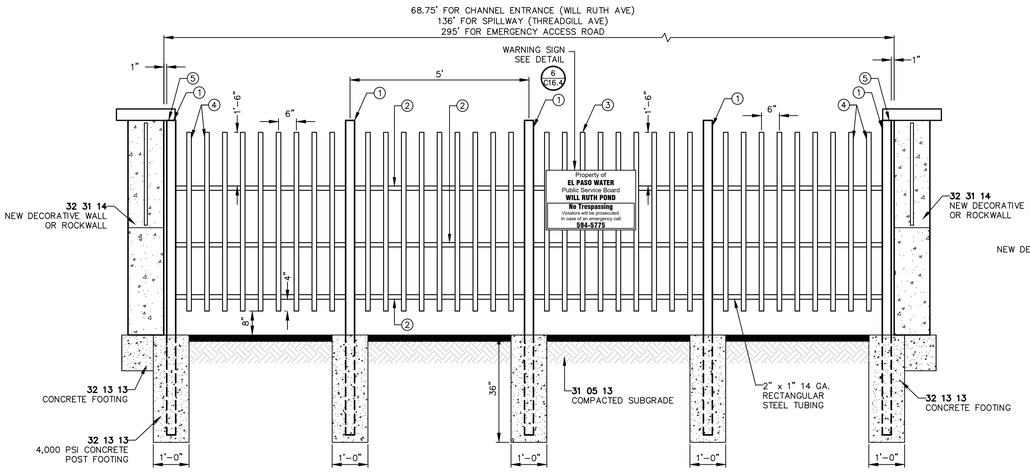
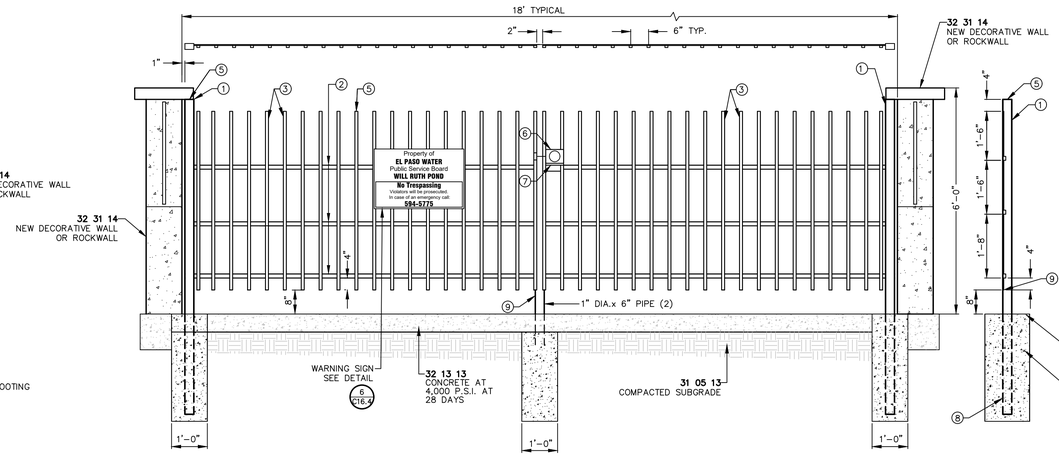


FENCE ELEVATION

1 C16.4A WROUGHT IRON FENCE
SCALE: 1/2"=1'-0"



GATE ELEVATION

2 C16.4A WROUGHT IRON GATE
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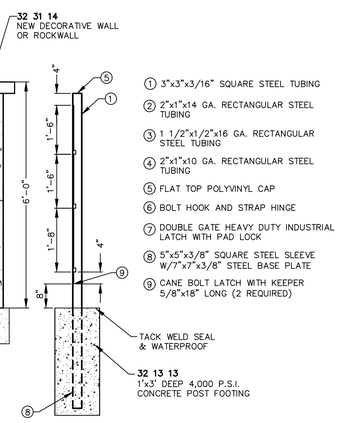
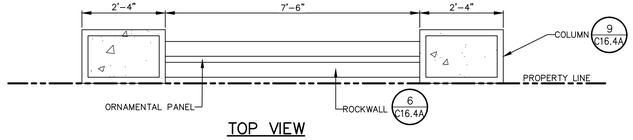
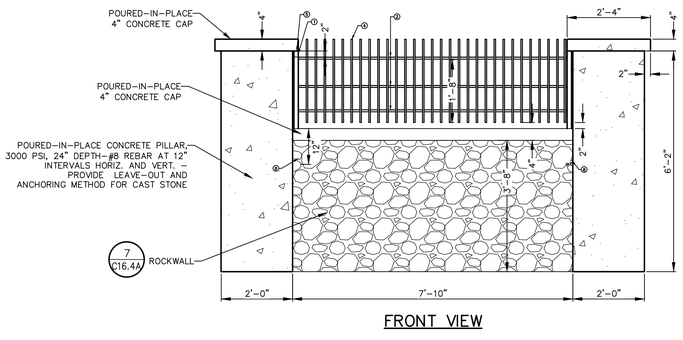


GATE SECTION

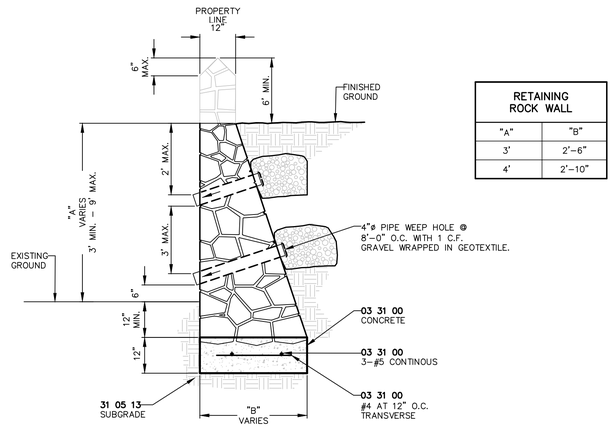


TOP VIEW



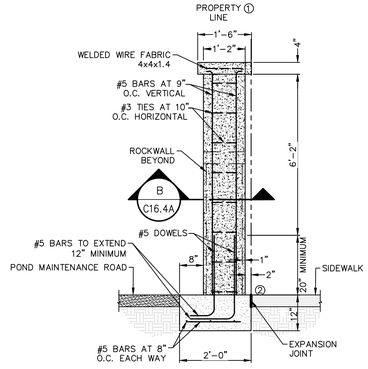
FRONT VIEW

10 C16.4A DECORATIVE WALL
SCALE: 1"= 2'

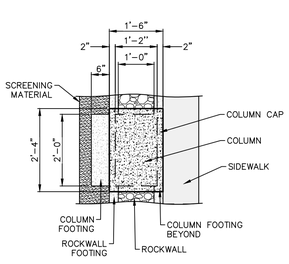


RETAINING ROCK WALL	
"A"	"B"
3'	2'-6"
4'	2'-10"

8 C16.4A RETAINING WALL SECTION
SCALE: 1/2"=1'-0"

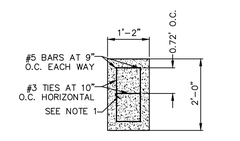


9 C16.4A (CAST IN PLACE) 03 3100 COLUMN AND FOOTING DETAIL
SCALE: 1"=1'-0"



PLAN VIEW

GENERAL NOTES
1. EDGE OF FOOTING SHALL BE INSTALLED ADJACENT TO PROPERTY LINE.
2. EDGE FOOTING SHALL BE ADJACENT TO EXISTING SIDEWALK ALONG BYWOOD DR. AND ESCARPA DR.
3. BROOM FINISH SHALL BE APPLIED FOR ALL EXPOSED CONCRETE FOOTING WHERE APPLICABLE.
4. EXPANSION JOINT TO BE INSTALLED ADJACENT TO EXISTING SIDEWALK PER SPECIFICATION 07 9200.



NOTES
1. ALTERNATE POSITION OF HOOKS IN PLACING SUCCESSIVE SETS OF TIES IN ACCORDANCE WITH ACI STANDARDS.
2. ALL COVER SHALL BE 3" TO THE CENTERLINE OF REINFORCEMENT

B C16.4A (CAST IN PLACE) 03 3100 COLUMN SECTION
SCALE: 1"=1'-0"

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SEQUENCE NO. 6 OF 13
SHEET NO. C16.4A

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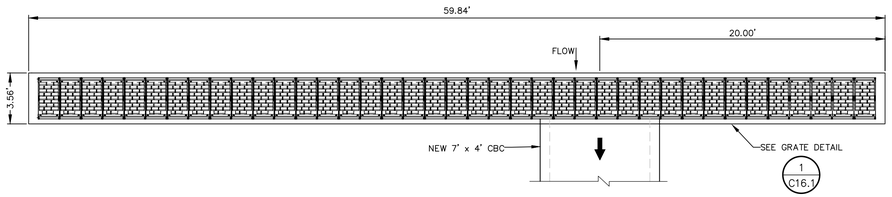
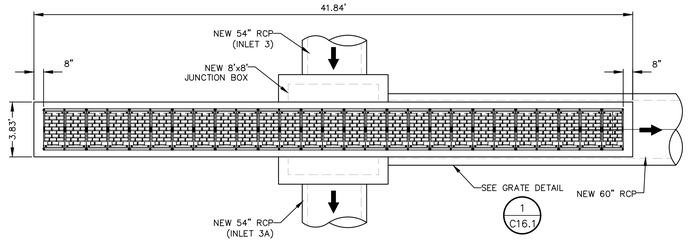
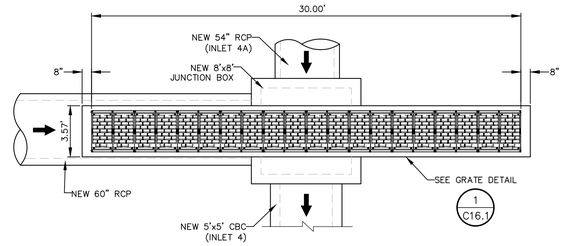


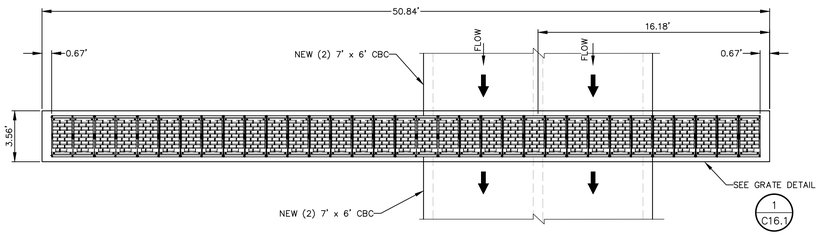
1 C16.5 IN-1 & IN-2 – 39 GRATES
1" = 5'



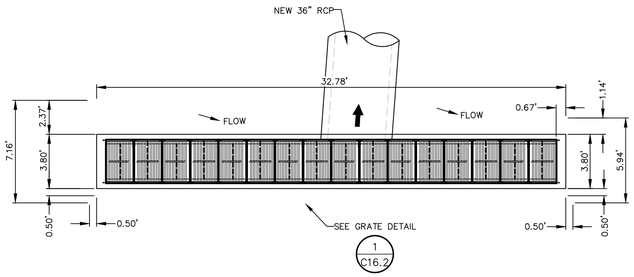
2 C16.5 IN-3 & 3A – 27 GRATES
1" = 5'



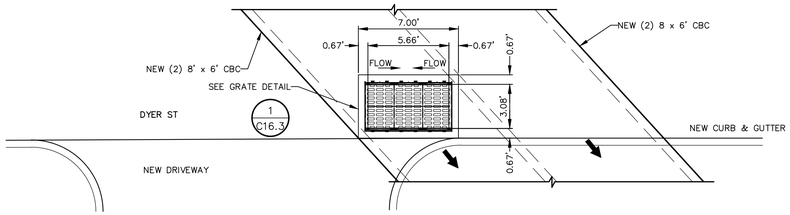
3 C16.5 IN-4 & 4A – 20 GRATES
1" = 5'



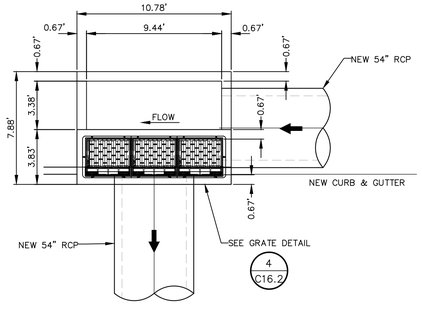
4 C16.5 INLET 4B – 33 GRATES
1" = 5'



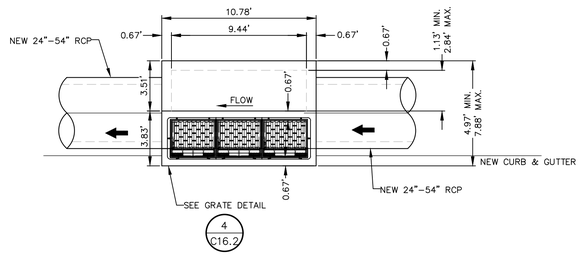
5 C16.5 IN-5 OFFSTREET – 16 GRATES
1" = 5'



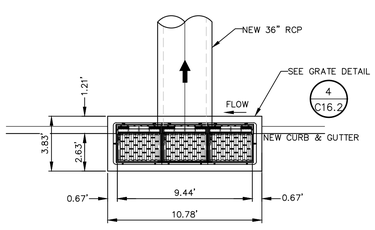
6 C16.5 IN-6 – 3 GRATES
1" = 5'



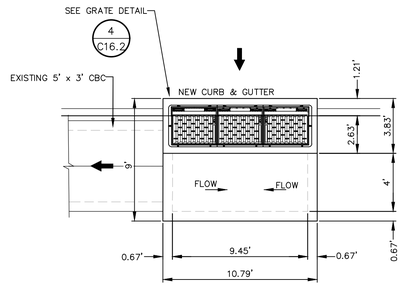
7 C16.5 IN-7 – 3 GRATES
1" = 5'



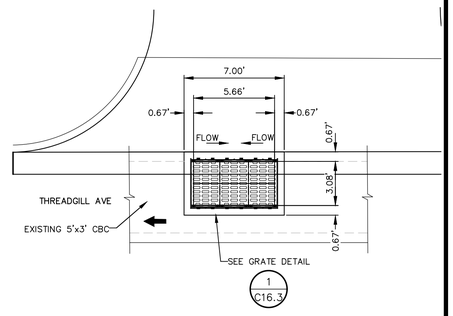
8 C16.5 IN-8 THRU IN-16 – 3 GRATES
1" = 5'



9 C16.5 IN-17 – 3 GRATES
1" = 5'



10 C16.5 IN-18 – 3 GRATES
1" = 5'



11 C16.5 IN-19 – 3 GRATES
1" = 5'

NOTES:
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SEQUENCE NO. 7 OF 13
SHEET NO. C16.5

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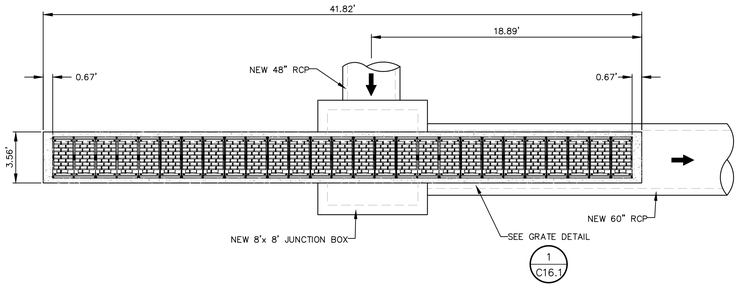
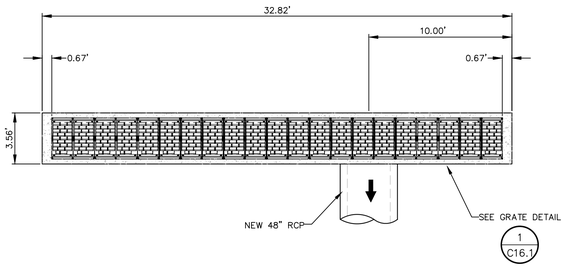
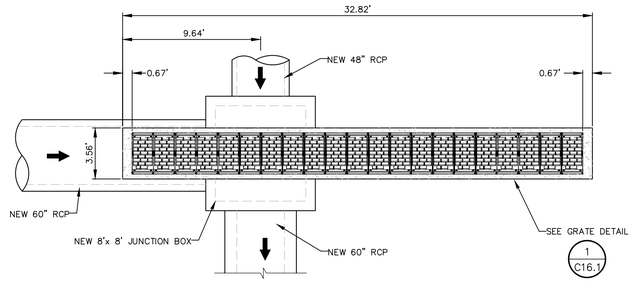


1 C16.6 IN-20 – 27 GRATES
1" = 5'



2 C16.6 IN-21 – 21 GRATES
1" = 5'



3 C16.6 IN-22 – 21 GRATES
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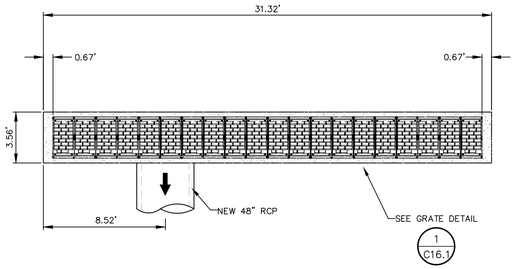

4 C16.6 IN-23 – 20 GRATES
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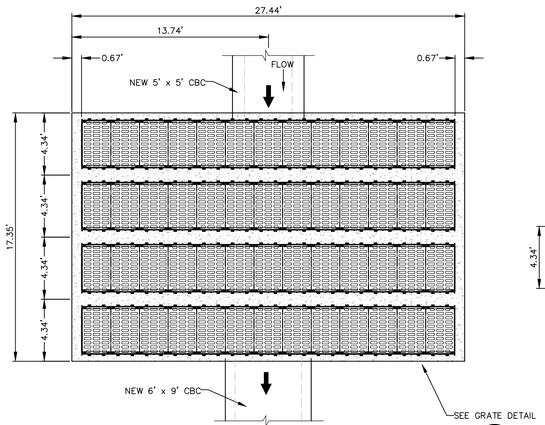
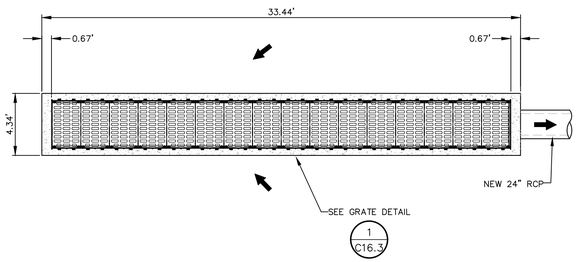
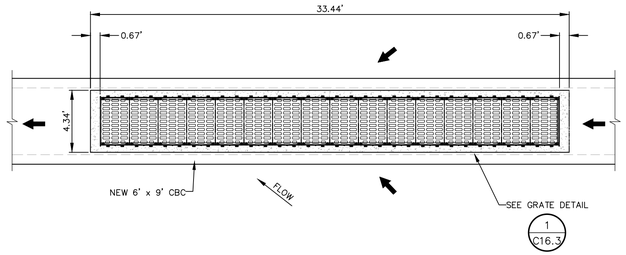


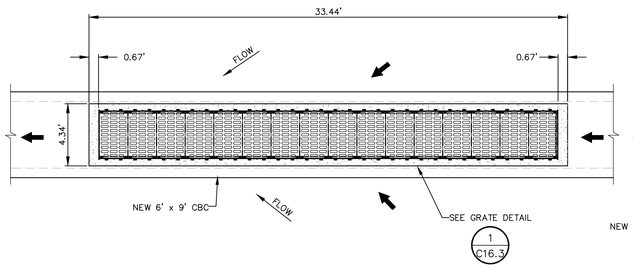
5 C16.6 IN-24 – 52 GRATES
1" = 5'



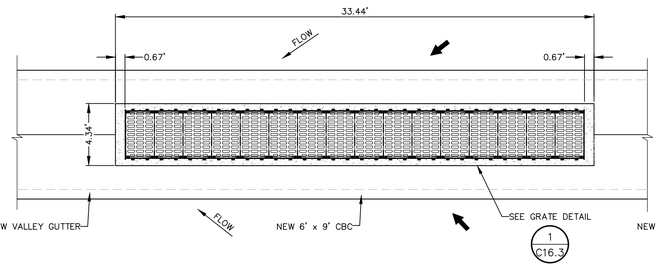
6 C16.6 IN-25 – 16 GRATES
1" = 5'



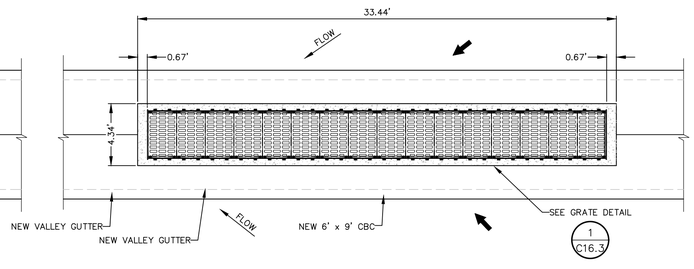
7 C16.6 IN-26 – 16 GRATES
1" = 5'



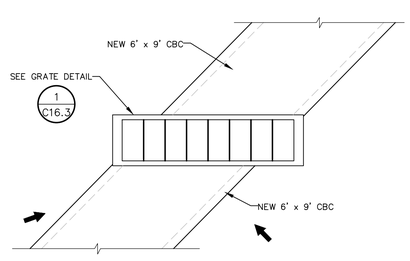
8 C16.6 IN-27 – 16 GRATES
1" = 5'



9 C16.6 IN-28 – 16 GRATES
1" = 5'



10 C16.6 IN-29 – 16 GRATES
1" = 5'



11 C16.6 IN-31 – 8 GRATES
1" = 5'

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SEQUENCE NO. 8 OF 12
SHEET NO. C16.6

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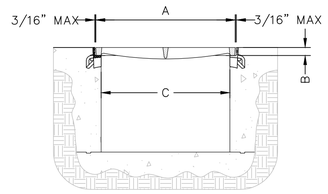


SECTION VIEW OF COMPLETED TRENCH INSTALLATION
FIGURE 1

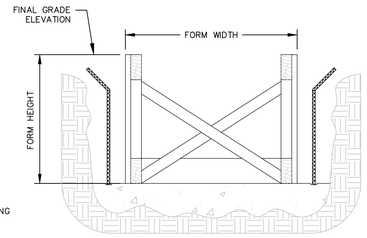


FIGURE 2

UNBOLTED UNITS

MATERIALS
UNDER NORMAL SITUATIONS, USE 3/4 INCH PLYWOOD FOR FORMING WALLS. 2X4'S ARE SUITABLE FOR STUDS, PLATES, BRACING AND SPREADERS. A TYPICAL INSTALLATION IS SHOWN IN FIGURE 2.

FORMING PROCEDURES
POUR THE FLOOR SLAB OF THE TRENCH ACCORDING TO THE PLANS AND SPECIFICATIONS. THE WIDTH OF THE FORMING, (SEE FIGURE 2) MEASURED FROM THE OUTSIDE EDGES OF THE FORMS, CORRESPONDS TO THE "C" DIMENSION ON FIGURE 1. DURING THE ENTIRE FORMING PROCEDURE, VERIFY THAT THE FORMS ARE PLUMB, STRAIGHT, SOLID AND LEVEL.

THE HEIGHT OF THE FORM CORRESPONDS TO THE FINAL GRADE ELEVATION WHEN INSTALLING THE NON-BOLTED FRAMES AND GRATES/LIDS. EXTEND THE SPREADERS BEYOND THE EDGE OF THE FORMS (SEE FIGURE 3 AND 4) TO PROVIDE A STOP FOR THE FRAME AND SEAT FORM.

TO ATTACH THE CAST IRON FRAME TO THE FORMING, THE USE OF A "SEAT FORM" IS RECOMMENDED TO ASSURE THAT THE FRAME IS AT THE PROPER ELEVATION AND TRUE. THE SEAT FORM HAS THE SAME DIMENSIONS AS THE FRAME, WITH THE HEIGHT CORRESPONDING TO THE FRAME HEIGHT (THE "B" DIMENSION), AND THE WIDTH THE SAME AS THE SEAT WIDTH OF THE FRAME. THE SEAT WIDTH SHOULD BE FIELD MEASURED TO ASSURE A PROPER FIT. ALL NEENAH FRAMES HAVE A SLIGHT RADIUS AT THE CORNER OF THE SEAT AND VERTICAL FACE SO THE SEAT FORM SHOULD BE BEVELED TO ACCOMODATE THE RADIUS. MOST 2X4'S HAVE THIS RADIUS.

NAIL THE SEAT FORM TO THE FORM SHOWN IN FIGURE 2. THEN NAIL THE FRAME TO THE SEAT FORM USING THE HOLES IN THE FRAME. (FIGURE 3)

NOTE: FRAMES SHOULD BUTT TOGETHER SNUGLY, LEAVING AS LITTLE GAP AS POSSIBLE.

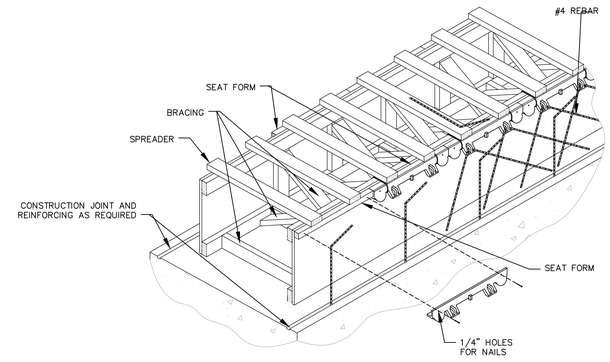


FIGURE 3

(THE REBAR SHOWN IN THE VERTICAL WALLS OF THE TRENCH IS FOR ILLUSTRATIVE PURPOSES ONLY. PROPER SIZING AND PLACEMENT IS THE RESPONSIBILITY OF THE ENGINEERING FIRM PROVIDING THE PROJECT DESIGN.)

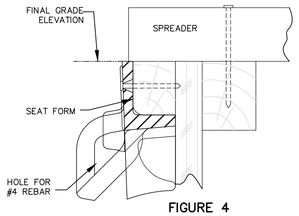


FIGURE 4

PLACE A 90° BENT #4 REBAR THROUGH THE HOLES IN THE ANCHOR LUGS TO PROVIDE ANCHORAGE IN THE CONCRETE. VERIFY THE SPACE BETWEEN THE EDGE OF THE GRATE AND FRAME) SO GRATES WILL FIT PROPERLY. THIS SHOULD BE NO GREATER THAN 3/16" (SEE FIGURE 1).

POUR CONCRETE AND USE THE TOP EDGE OF THE FRAME AS A SCREED POINT.

BOLTED UNITS

BOLTED FRAMES AND GRATES ARE FURNISHED ASSEMBLED AND THEREFORE REQUIRE DIFFERENT FORMING PROCEDURES. **AT NO TIME SHOULD THE UNITS BE DISASSEMBLED PRIOR TO OR DURING INSTALLATION!** DO CHECK THAT THE 3/16" MAXIMUM GAP HAS NOT CHANGED IN TRANSPORT.

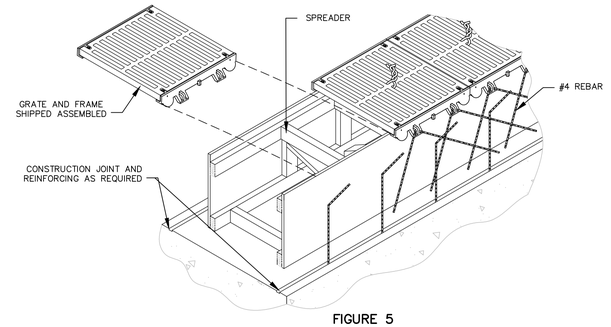
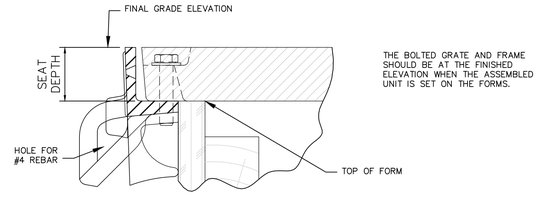


FIGURE 5

(THE REBAR SHOWN IN THE VERTICAL WALLS OF THE TRENCH IS FOR ILLUSTRATIVE PURPOSES ONLY. PROPER SIZING AND PLACEMENT IS THE RESPONSIBILITY OF THE ENGINEERING FIRM PROVIDING THE PROJECT DESIGN.)



THE BOLTED GRATE AND FRAME SHOULD BE AT THE FINISHED ELEVATION WHEN THE ASSEMBLED UNIT IS SET ON THE FORMS.

FIGURE 6

WHEN INSTALLING THE FRAME AND GRATE UNITS ON THE FORMS, KEEP THE SECTIONS TIGHT TO ONE ANOTHER TO ELIMINATE CREEP. WHEN THE SECTIONS ARE IN THE PROPER POSITION, WIRE THEM TO THE BRACING AS SHOWN IN FIGURE 5. PLACE A #4 REBAR BENT AT 90° THROUGH THE HOLES IN THE ANCHOR LUGS TO PROVIDE PROPER ANCHORAGE IN THE CONCRETE.

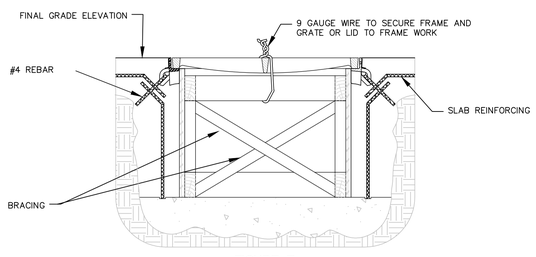


FIGURE 7

WHEN THE CONCRETE HAS SUFFICIENTLY CURED, REMOVE THE GRATES, NOTING THEIR POSITION AND ORIENTATION. THE GRATES NEED TO BE PUT BACK IN THE EXACT WAY THEY CAME OUT. DEBRIS CHUTES ARE PROVIDED TO ALLOW DEBRIS TO PASS THROUGH THE BOLT HOLES IN FRAME. STRIP THE FORMS. REPLACE THE GRATES IN THE SAME LOCATION AND WITH THE SAME ORIENTATION AS THEY CAME OUT. BOLTS SHOULD BE TIGHTENED TO 15 FOOT-POUNDS. THE COMPLETED INSTALLATION SHOULD RESEMBLE FIGURE 8.

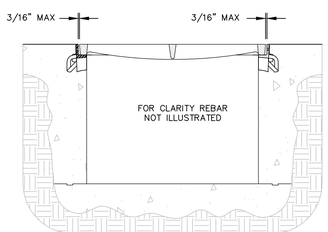


FIGURE 8

GENERAL COMMENTS

ALL FRAME SECTIONS ARE MANUFACTURED AND FURNISHED IN STANDARD LENGTHS. IT IS THE RESPONSIBILITY OF THE INSTALLER TO CUT FRAME PCS. TO THE PROPER LENGTH AND MITER CORNERS WHERE APPLICABLE. IN CASES WHERE TRENCH DIRECTION MUST CHANGE, SPECIAL DRAWINGS WILL BE FURNISHED BY OUR ENGINEERING SERVICES DEPARTMENT. THESE PRINTS WILL SHOW SPECIAL LENGTHS AND CUTS OF GRATES/LIDS, AND OTHER ESSENTIAL INFORMATION.

(1 / C16.7) INLET GRATES FORMING INSTRUCTIONS

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
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1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
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MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DRAINAGE TYPICAL DETAILS

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JOB NO. 16-133
SEQUENCE NO. 9 OF 13
SHEET NO. C16.7

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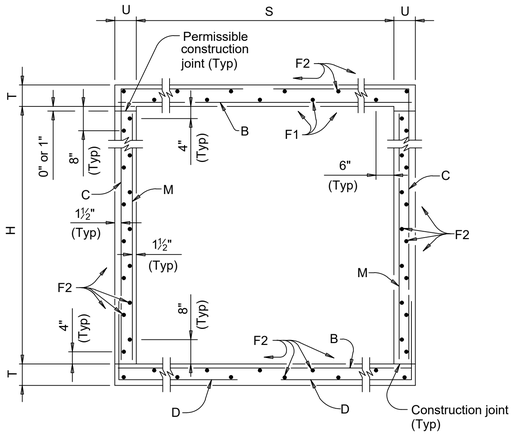
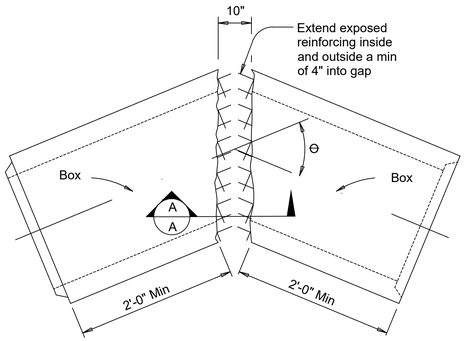
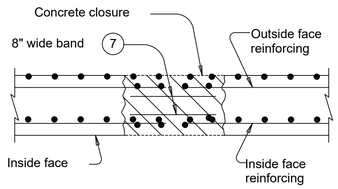
SECTION DIMENSIONS				⑤ FILL HEIGHT	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																											QUANTITIES					
					Bars B					Bars C							Bars D							Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
7'–0"	4'–0"	9"	7"	20'	108	#6	9"	7'–11"	1,284	162	#5	6"	9'–1"	1,535	4'–8"	4'–5"	162	#5	6"	7'–2"	1,211	4'–5"	2' 9"	108	9"	4'–0"	289	5	39'–9"	133	31	39' 9"	823	7'–11"	21	18	50	0.627	131.9	0.6	71	25.7	5,346
7'–0"	6'–0"	9"	7"	20'	108	#6	9"	7'–11"	1,284	162	#5	6"	11' –1"	1,873	6'–8"	4'–5"	162	#5	6"	7'–2"	1,211	4' 5"	2' 9"	108	9"	6'–0"	433	5	39'–9"	133	39	39'–9"	1,036	7'–11"	21	18	50	0.713	149.3	0.6	71	29.1	6,041



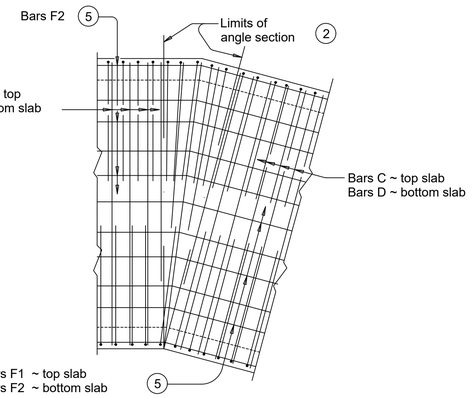
1 C16.8 TYPICAL SECTION



3 C16.8 ANGLE DETAIL



4 C16.8 SECTION A–A



5 C16.8 ANGLE SECTION OVER 0^ TO 15^

GENERAL NOTES:
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DESIGNED TO THE MAXIMUM FILL HEIGHT SHOWN.
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ALL CONCRETE SHALL BE CLASS "C" WITH THESE EXCEPTIONS: USE CLASS "S" FOR TOP SLABS OF CULVERTS WITH OVERLAY, WITH 1–TO–2 COURSE SURFACE TREATMENT, OR WITH THE TOP SLAB AS THE FINAL RIDING SURFACE. CLASS "C" CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,600 PSI. CLASS "S" CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.
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THE BOTTOM EDGE OF THE TOP SLAB SHALL BE CHAMFERED 3" AT THE ENTRANCE.
REINFORCING BARS SHALL BE ADJUSTED TO PROVIDE A MINIMUM OF 1 " CLEAR COVER.
CONSTRUCTION JOINTS SHOWN AT THE FLOW LINE MAY BE RAISED A MAXIMUM OF 6" AT THE CONTRACTOR'S OPTION.
IF THIS OPTION IS USED, BARS E MAY BE CUT OFF OR RAISED, AND BARS C AND D MAY BE REVERSED.
SEE STANDARD SCC–MD FOR SKEWED ENDS, ANGLE SECTIONS AND LENGTHENING DETAILS.

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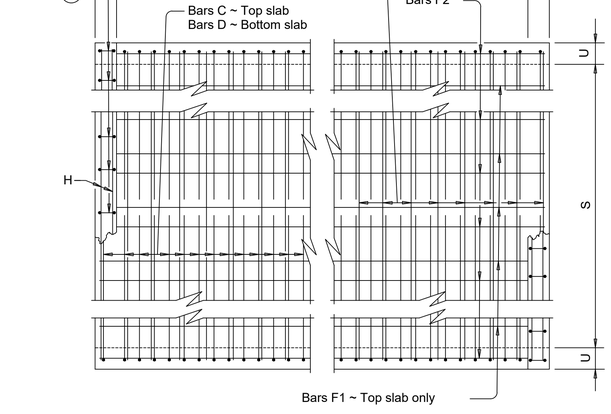
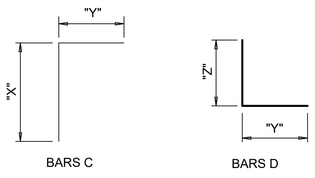
③ BARS F AND F SHALL BE CONTINUOUS THROUGH THE ANGLE SECTION. THEY SHALL BE BENT TO REMAIN PARALLEL TO THE WALLS OF THE BOX CULVERT.

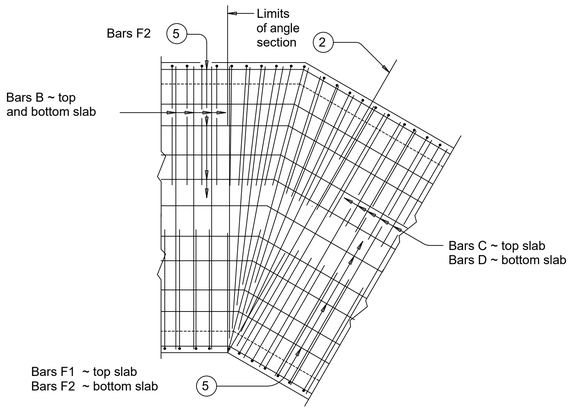
④ BANDS OF REINFORCING MATCHING THE INSIDE AND OUTSIDE FACE REINFORCING SHALL BE PLACED IN THE GAPS OF THE TOP AND BOTTOM SLABS. A BAND MATCHING THE OUTSIDE FACE REINFORCING OF THE WALL SHALL BE PLACED IN THE GAPS OF THE WALLS (PLACED IN THE OUTSIDE FACE ONLY). THE BANDS SHALL BE TACK WELDED TO THE EXPOSED REINFORCING AT EACH POINT OF CONTACT.



2 C16.8 PLAN OF REINF STEEL

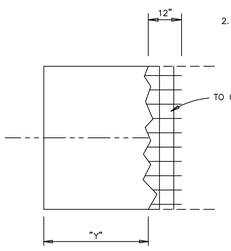


CAST IN PLACE CULVERT BOX



6 C16.8 ANGLE SECTION OVER 15^ TO 30^

NOTES:
1. EXPOSED REINFORCING INSIDE AND OUTSIDE SHALL EXTEND A MINIMUM OF 12"
2. INSTALL CONCRETE BOX, FITTING, AND ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. SEAL JOINT WATERTIGHT. SEE SECTION 3.4 OF THE SPECIFICATIONS.



7 C16.8 PRECAST BOX, CAST IN PLACE BOX CONNECTION

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

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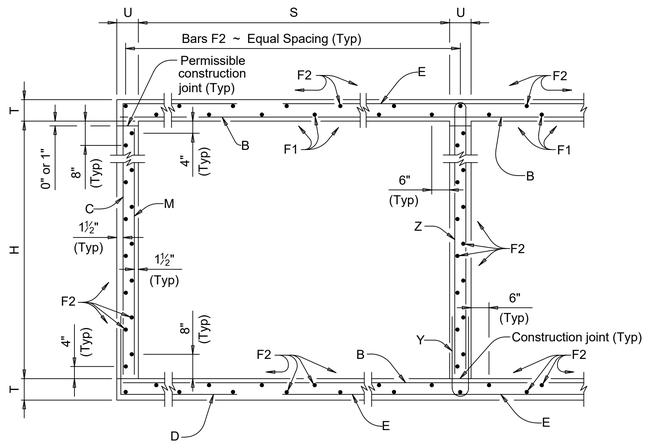
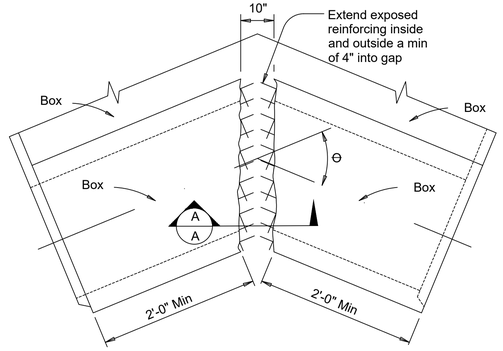
JOB NO. 16–133
SEQUENCE NO. 10 OF 13
SHEET NO. C16.8

F:\16133\DWG\16133 - C16.0_DWG_Drainage Details.dwg Time:Sep25,2022 - 11:36pm LoginAdministrator

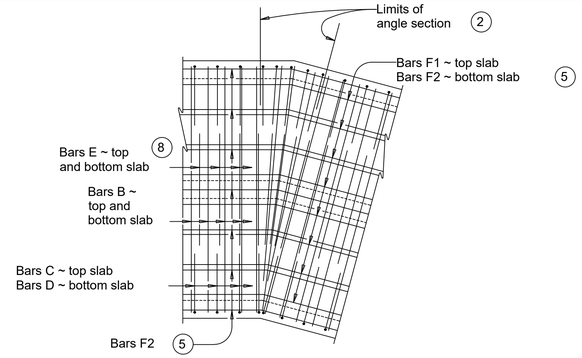
NUMBER OF SPANS	SECTION DIMENSIONS				BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																														QUANTITIES					
					Bars B					Bars C & D							Bars E					Bars F1 ~ #4				Bars F2 ~ #4				Bars M ~ #4				Bars Y & Z ~ #4						Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total	
	S	H	T	U	No.	Size	Spa	Length	Wt	No.	Size	Spa	Bars C Length	Bars C Wt	Bars D Length	Bars D Wt	No.	Size	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Bars Y Length	Bars Y Wt	Bars Z Length	Bars Z Wt	Length	Wt	No.	Wt	Conc (CY)	Renf (Lb)	Conc (CY)	Renf (Lb)	Conc (CY)	Renf (Lb)
2	6'-0"	4'-0"	8"	7"	108	#6	9"	13'-6"	2,190	108	#5	9"	8'-7"	967	6'-8"	751	108	#6	9"	6'-9"	1,095	10	18"	39'-9"	266	50	18"	39'-9"	1,328	108	9"	4'-0"	289	54	9"	4'-7"	165	9'-3"	334	13'-6"	36	30	84	0.938	184.6	1.0	120	38.5	7,505
2	8'-0"	6'-0"	9"	8"	162	#6	6"	17'-9"	4,319	108	#6	9"	11'-9"	1,906	8'-3"	1,338	162	#6	6"	8' 3"	2,007	12	18"	39'-9"	319	68	18"	39'-9"	1,806	82	12"	6'-0"	329	41	12"	4'-10"	132	13'-6"	370	17'-9"	47	38	106	1.444	313.2	1.3	153	59.1	12,679
2	7' 0"	6'-0"	8"	7"	108	#6	9"	15'-6"	2,514	162	#5	6"	10'-11"	1,845	7'-0"	1,183	108	#6	9"	7'-5"	1,203	10	18"	39'-9"	266	66	18"	39'-9"	1,752	108	9"	6'-0"	433	54	9"	4'-7"	165	13'-3"	478	15'-6"	41	34	95	1.167	246.0	1.2	136	47.8	9,975



1 C16.9 TYPICAL SECTION



3 C16.9 ANGLE DETAIL



5 C16.9 ANGLE SECTION OVER 0^ TO 15^

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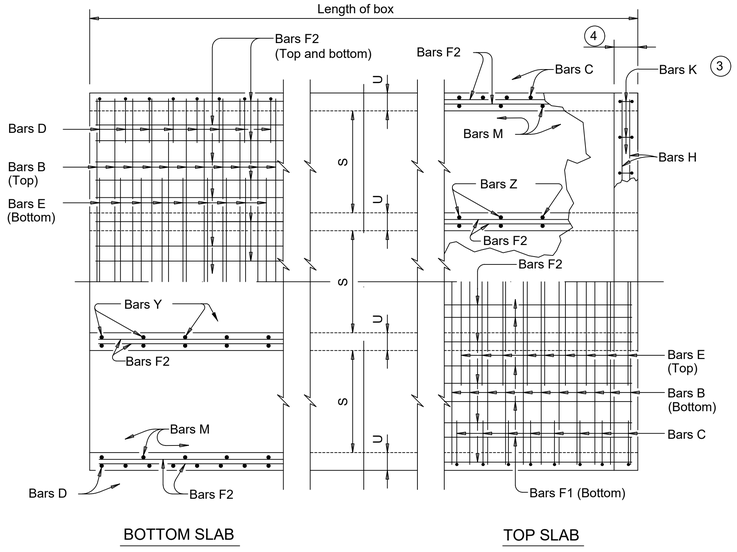
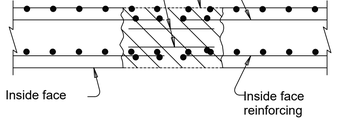
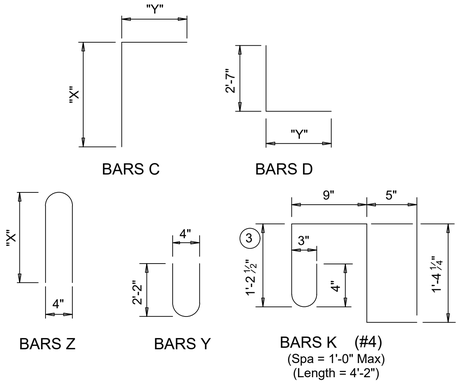


BOTTOM SLAB TOP SLAB

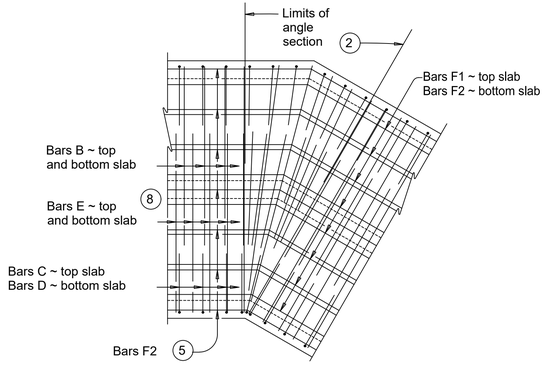
2 C16.9 PLAN OF REINF STEEL



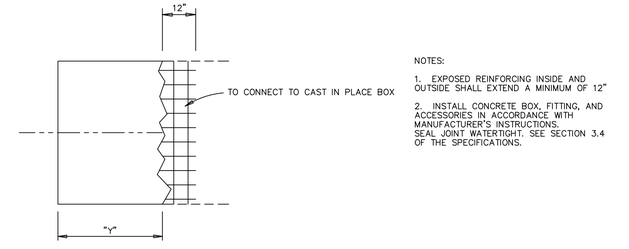
4 C16.9 SECTION A-A



CAST IN PLACE CULVERT BOX

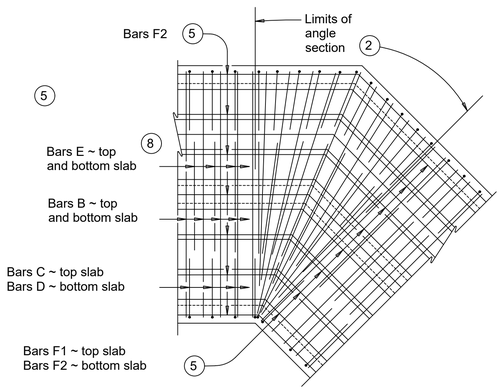


6 C16.9 ANGLE SECTION OVER 15^ TO 30^



NOTES:
1. EXPOSED REINFORCING INSIDE AND OUTSIDE SHALL EXTEND A MINIMUM OF 12"
2. INSTALL CONCRETE BOX, FITTING, AND ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. SEAL JOINT WATERTIGHT. SEE SECTION 3.4 OF THE SPECIFICATIONS.

7 C16.9 PRECAST BOX, CAST IN PLACE BOX CONNECTION



8 C16.9 ANGLE SECTION OVER 30^ TO 45^

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REV.	DATE	BY	DESCRIPTION

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ENGINEER'S SEAL
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
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EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DRAINAGE TYPICAL DETAILS

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JOB NO. 16-133
SEQUENCE NO. 11 OF 13
SHEET NO. C16.9

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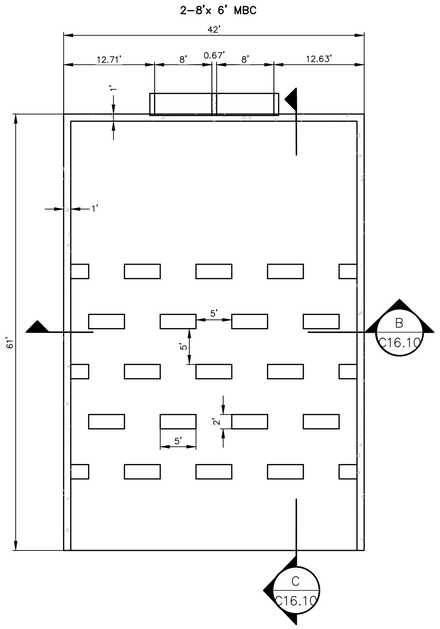
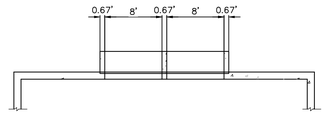
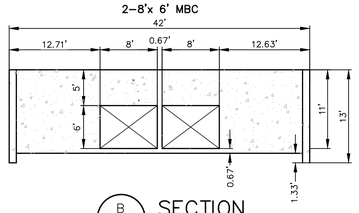
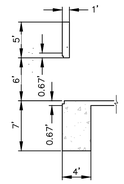




A C16.10 HEADWALL PLAN VIEW

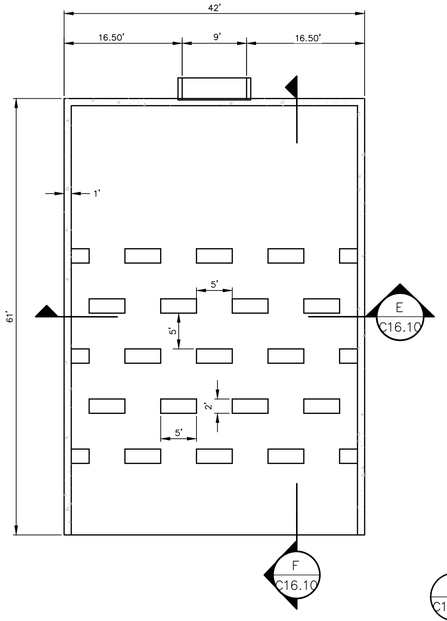


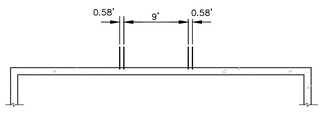
B C16.10 SECTION



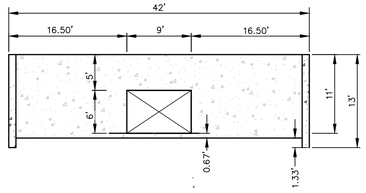
C C16.10 SECTION

1 C16.10 OUTLET 1
1" = 10'

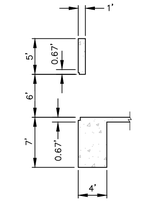




D C16.10 HEADWALL PLAN VIEW

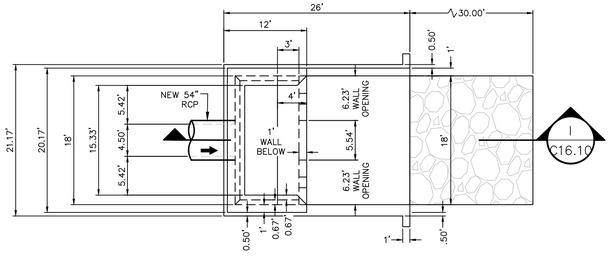


E C16.10 SECTION

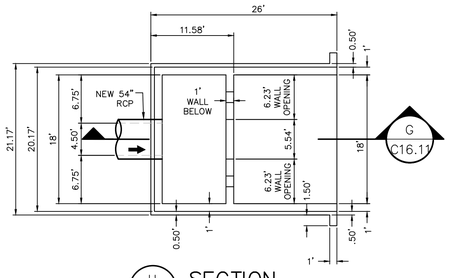


F C16.10 SECTION

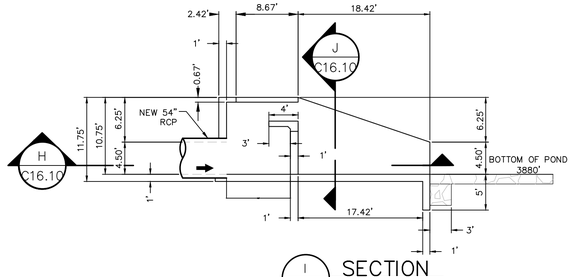
2 C16.10 OUTLET 2
1" = 10'



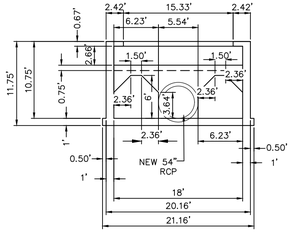
G C16.11 SECTION



H C16.11 SECTION

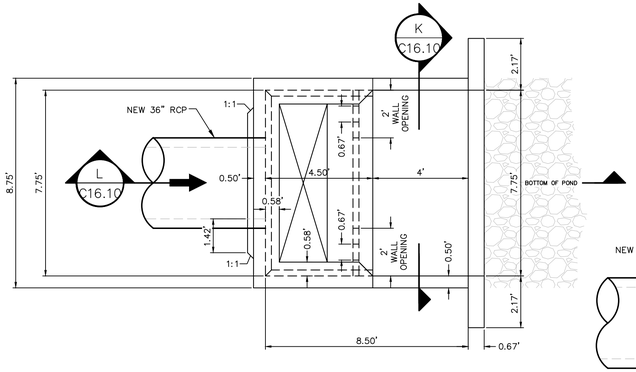


I C16.10 SECTION

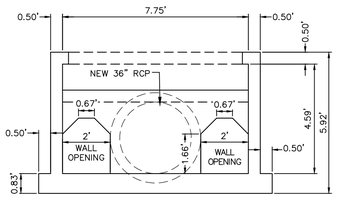


J C16.10 SECTION

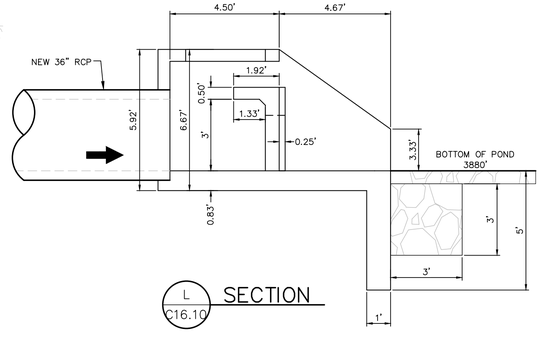
3 C16.10 OUTFALL 3
1" = 10'



PLAN VIEW



K C16.10 SECTION



L C16.10 SECTION

4 C16.10 OUTFALL 4
1" = 3'

NOTES:
1. REFER TO STRUCTURAL SHEETS FOR CONCRETE DIMENSIONS AND REINFORCEMENT

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DRAINAGE TYPICAL DETAILS

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JOB NO. 16-133
SEQUENCE NO. 12 OF 13
SHEET NO. C16.10

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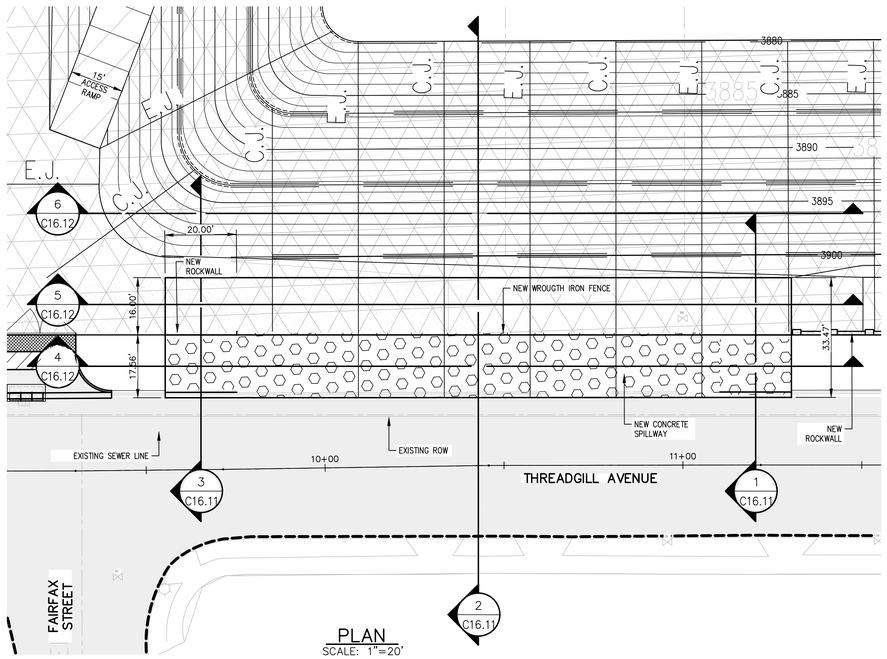
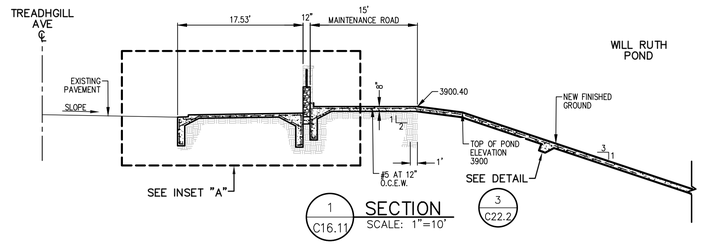


PLAN
SCALE: 1"=20'



1 C16.11 SECTION
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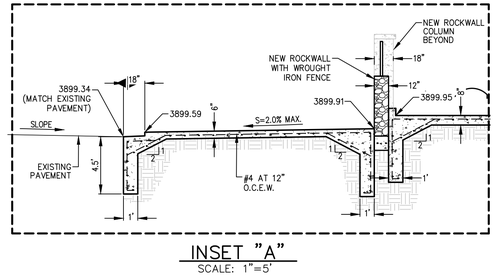

INSET "A"
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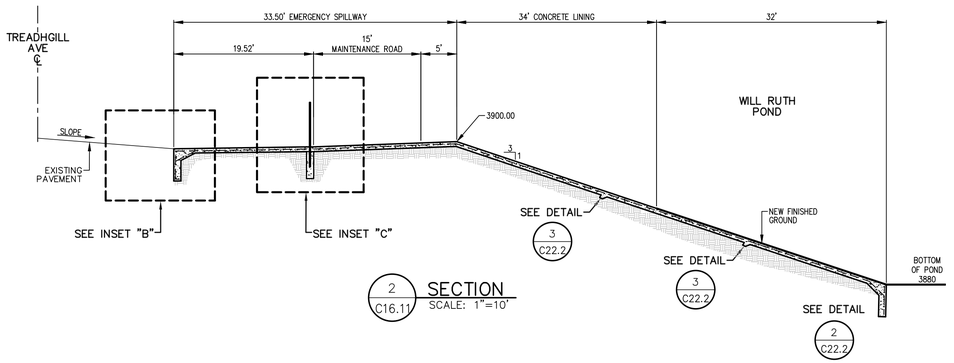

2 C16.11 SECTION
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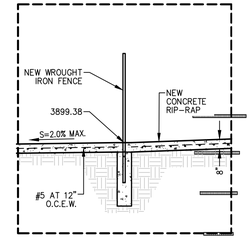

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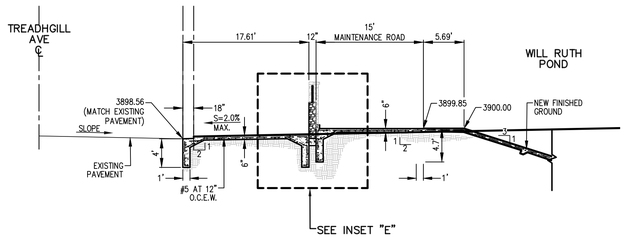

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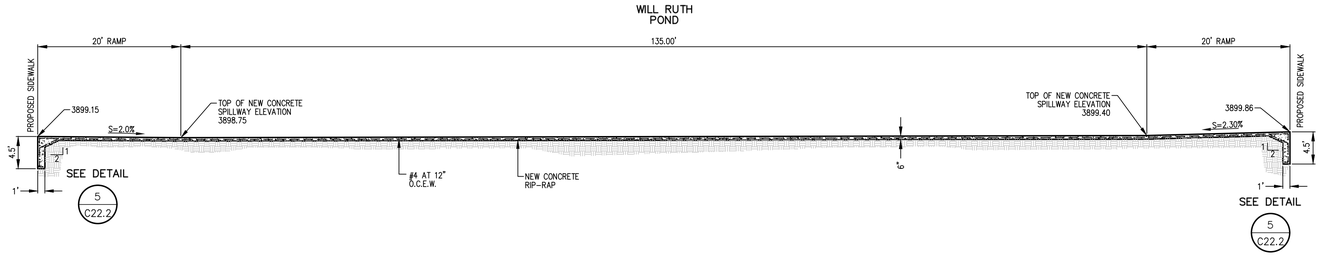

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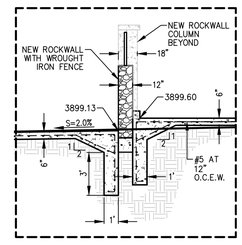

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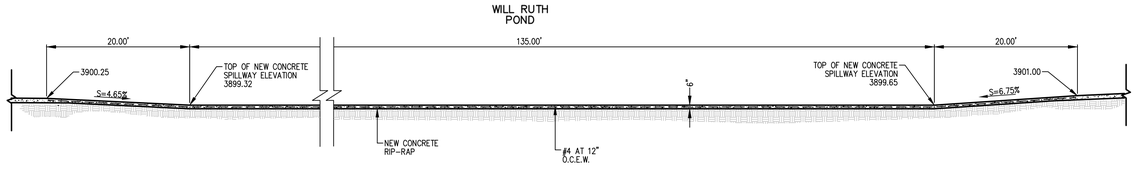

5 C16.11 SECTION
SCALE: 1"=10'

1 C16.11 EMERGENCY SPILLWAY SECTIONS AND DETAILS

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REV.	DATE	BY	DESCRIPTION

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
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EL PASO, TEXAS 79925
(915) 594-5500

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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

SPILLWAY SECTIONS & DETAILS

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JOB NO. 16-133
SEQUENCE NO. 13 OF 13
SHEET NO. C16.11

F:\16133\DWG\16133 - C16.11 _SPILLWAY SECTIONS AND DETAILS.dwg Time:Oct04,2022 - 04:41pm Login:Ben

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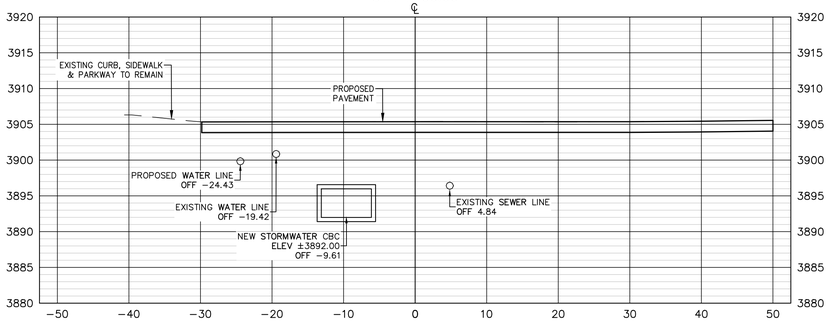

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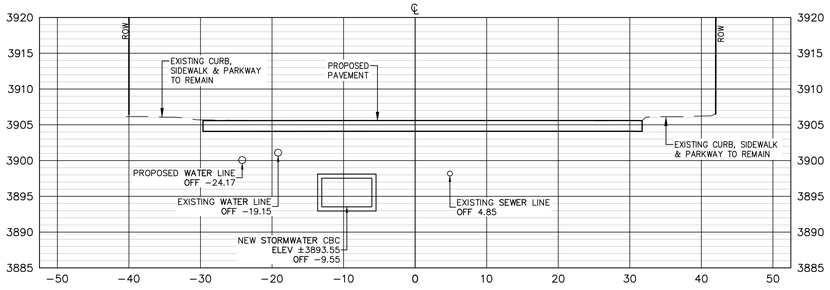

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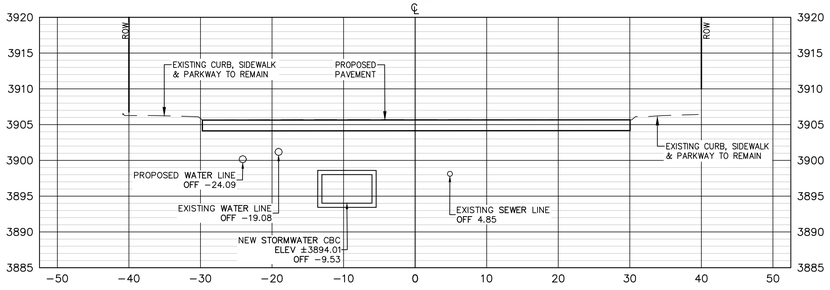

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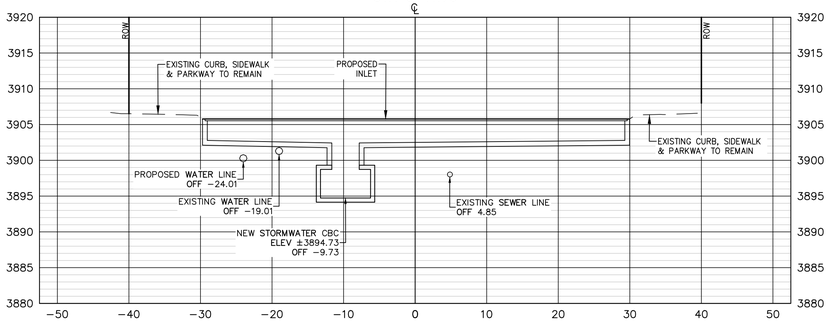

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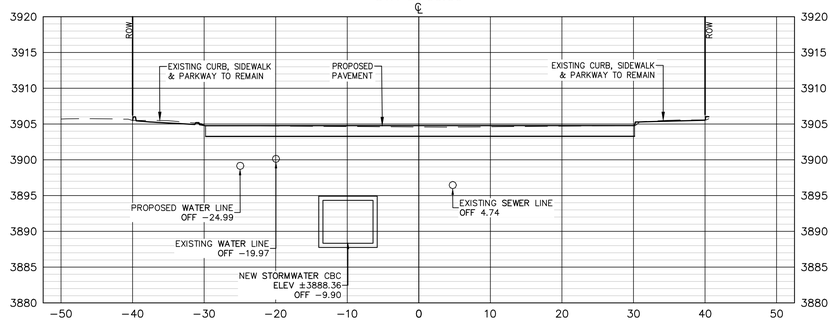

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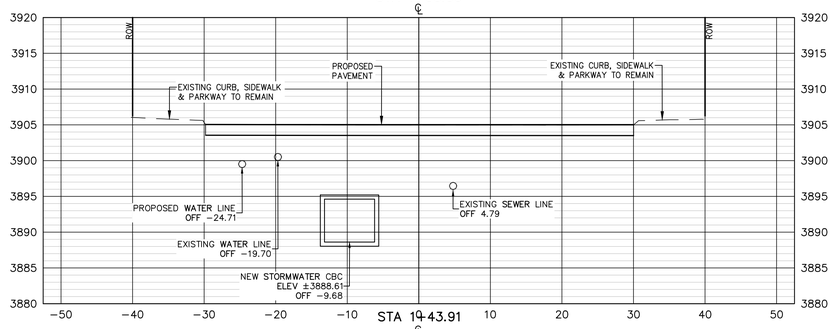

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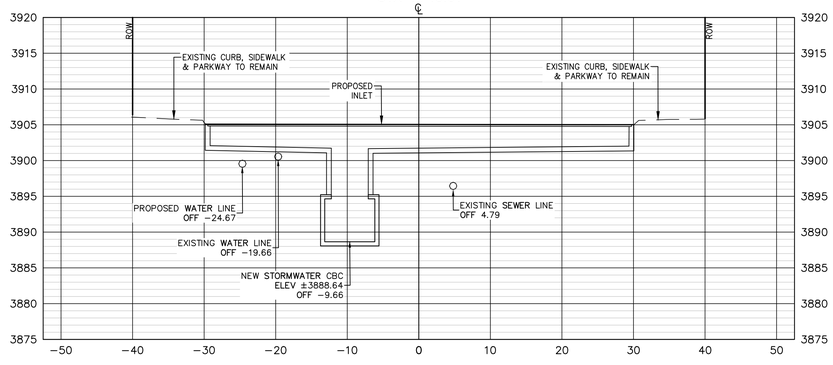

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 5/16/2022

UTILITY OWNER
el paso WATER
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EL PASO, TEXAS 79925
(915) 594-5500

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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

WILL RUTH AVENUE
CROSS SECTIONS
STA 0+11.79 TO
STA 2+00.00

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JOB NO. 16-133
SEQUENCE NO. 1 OF 13
SHEET NO. C17.0

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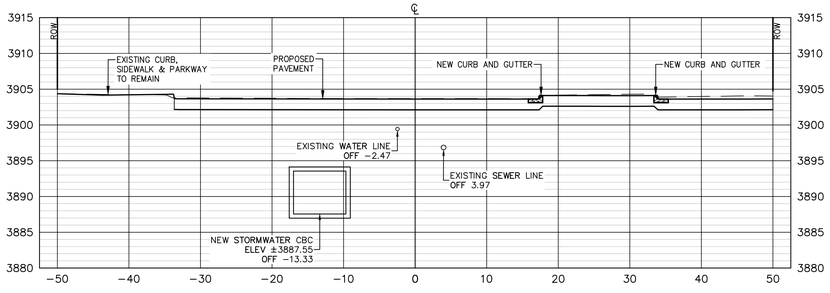

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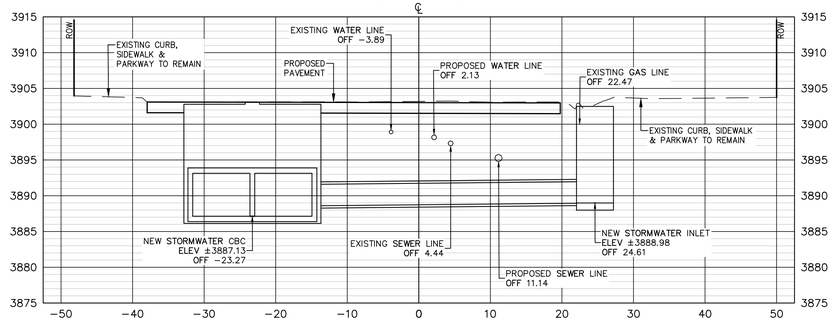

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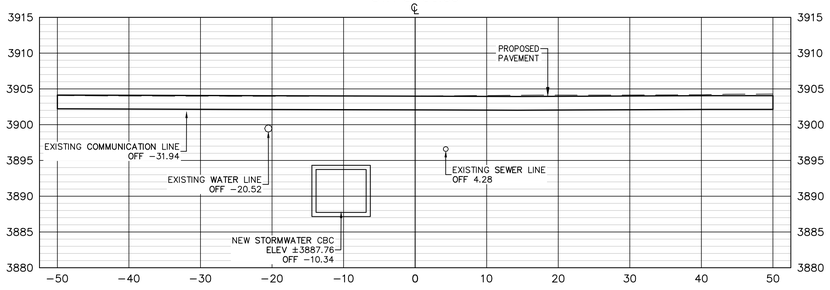
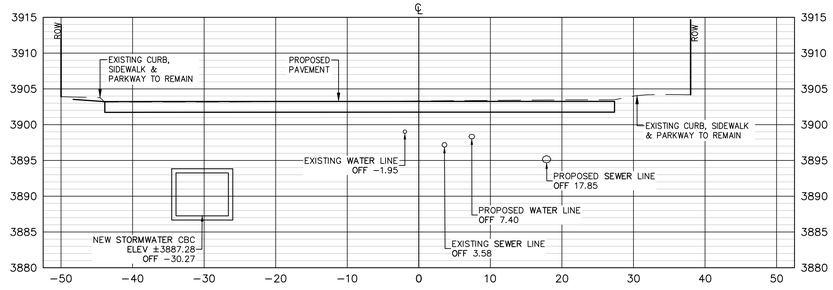
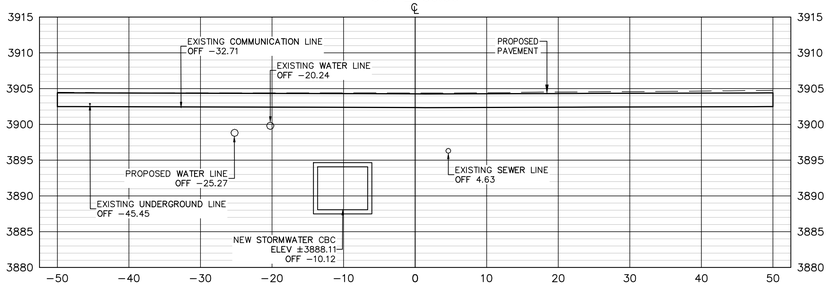


STA 4+00.00



STA 2+50.00



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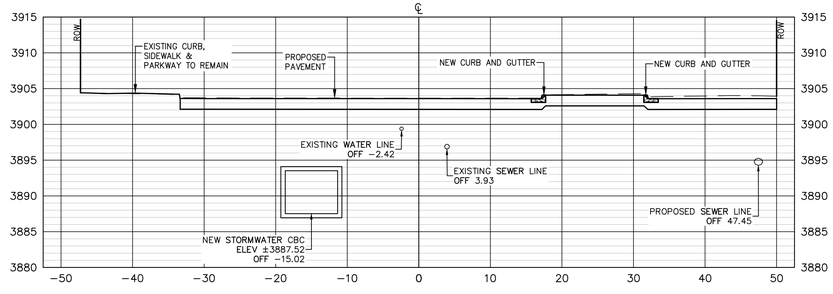

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

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ENGINEER'S SEAL
THESE PLANS WERE RELEASED UNDER THE AUTHORITY OF MARCOS MEDINA, PE #93830 TO BE ISSUED AS A **100% SUBMITTAL** TO EL PASO WATER FOR REVIEW. IT IS NOT TO BE USED FOR CONSTRUCTION OR FINAL PERMIT ISSUANCE.

DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 5/16/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

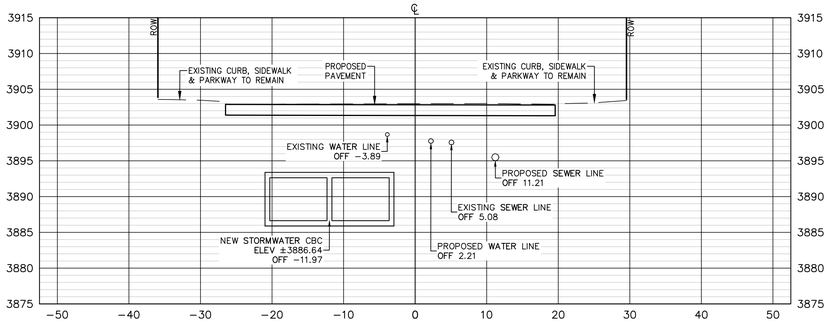
WILL RUTH AVENUE
CROSS SECTIONS
STA 2+50.00 TO
STA 4+44.90

THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH POND AND CONVEYANCE IMPROVEMENTS". MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

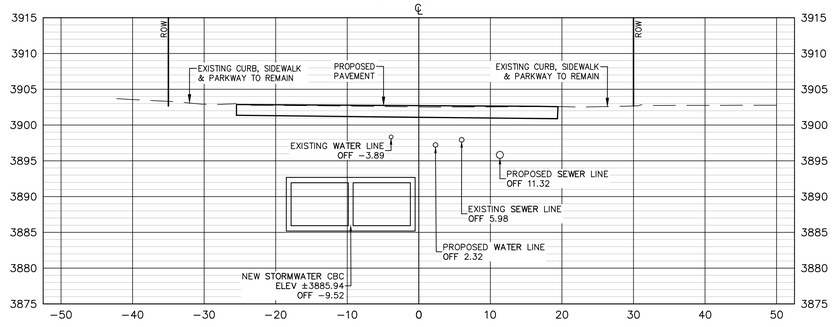
JOB NO. 16-133
SEQUENCE NO. 2 OF 13
SHEET NO. C17.1

F:\16133\DWG\16133 - C17.0 _ROWY UTIL SCT.dwg Time:Sep23,2022 - 09:03am Login:edgar

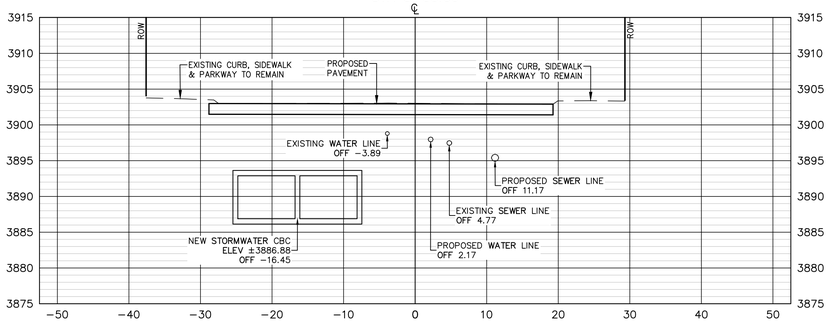
STA 5+50.00



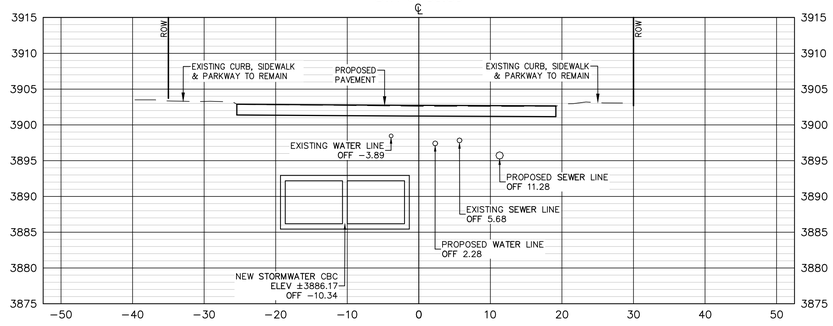
STA 7+00.00



STA 5+00.00



STA 6+50.00



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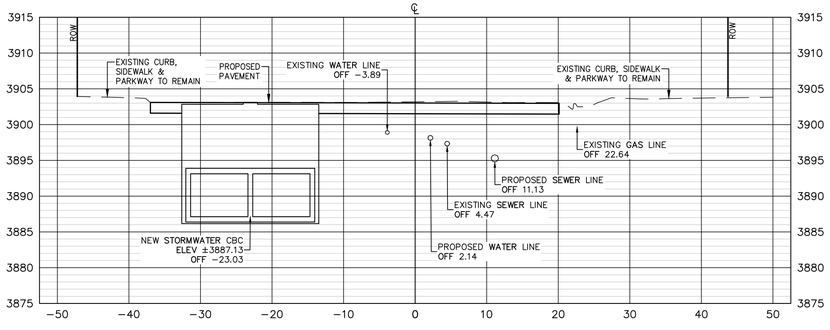

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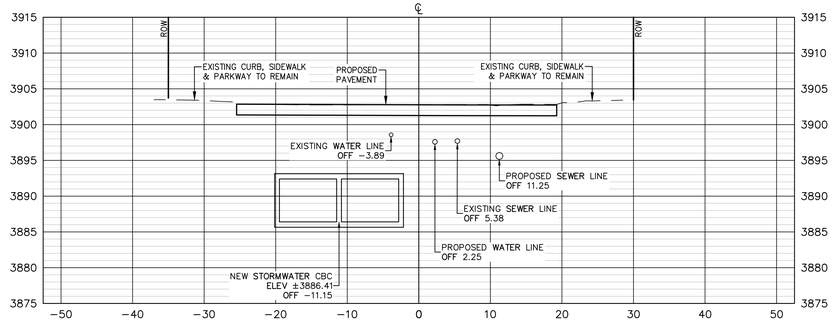

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ENGINEER'S SEAL
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DRAWN E.G./A.M.
CHECKED M.M.
DATE 5/16/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

WILL RUTH AVENUE
CROSS SECTIONS
STA 4+50.00 TO
STA 7+00.00

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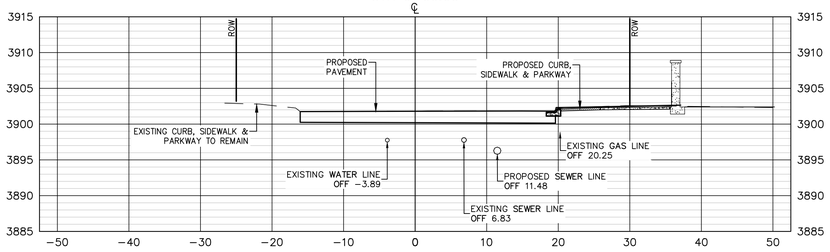
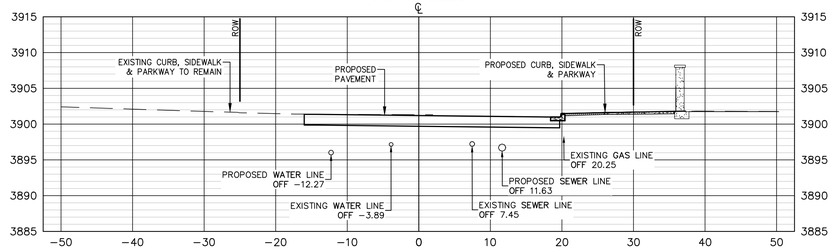
JOB NO. 16-133
SEQUENCE NO. 3 OF 13
SHEET NO. C17.2

F:\16133\DWG\16133 - C17.0 _ROWY UTIL SCT.dwg Time:Sep23,2022-09:04am Login:edgar

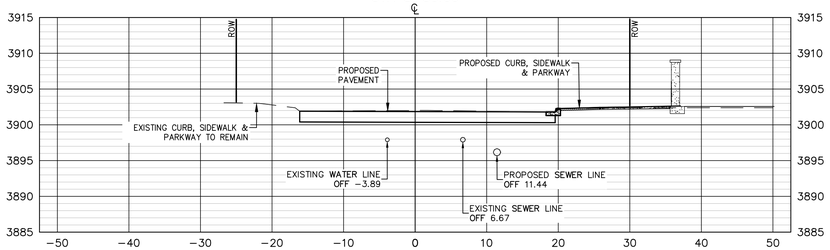
STA 9+00.00



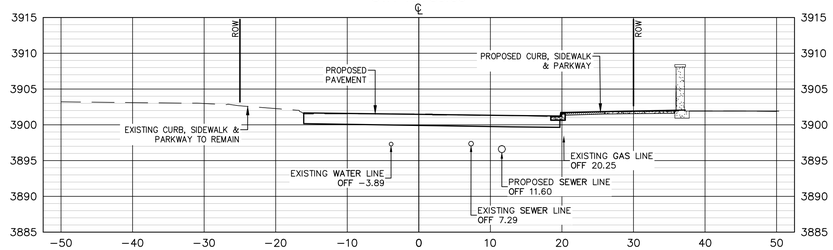
STA 11+00.00



STA 8+50.00



STA 10+50.00



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STA 10+00.00

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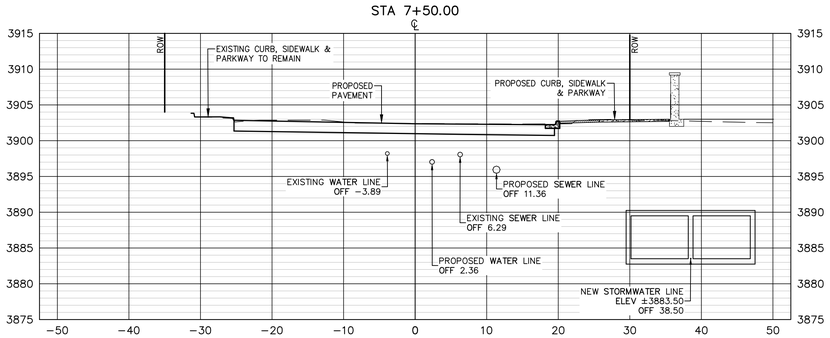

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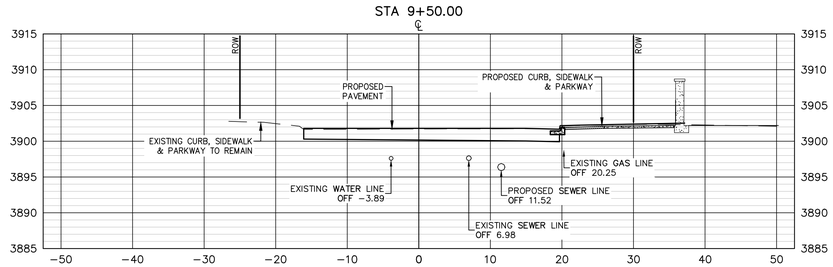

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REV.	DATE	BY	DESCRIPTION

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CALL
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ENGINEER'S SEAL
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 5/16/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

WILL RUTH AVENUE
CROSS SECTIONS
STA 7+50.00 TO
STA 11+00.00

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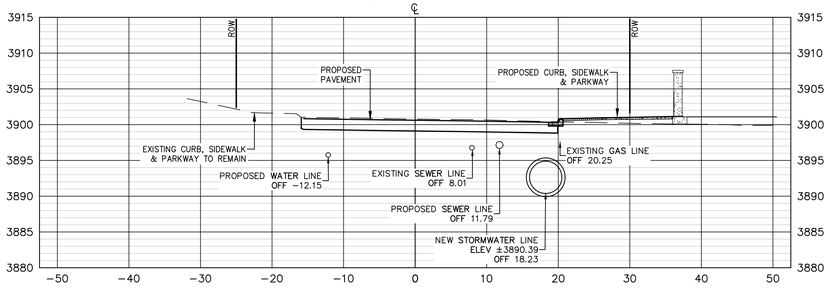
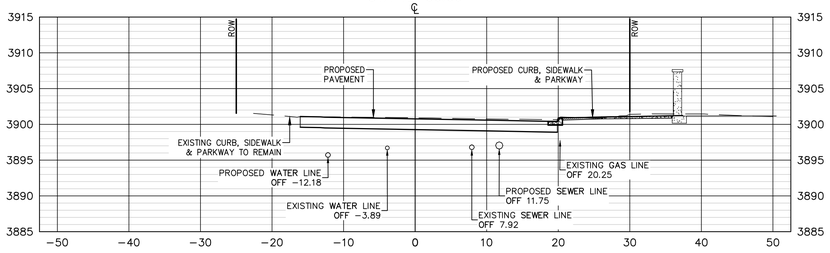
JOB NO. 16-133
SEQUENCE NO. 4 OF 13
SHEET NO. C17.3

F:\16133\DWG\16133 - C17.0 _ROWY UTIL SCT.dwg Time:Sep23,2022 - 09:05am Login:edgar

STA 13+00.00



STA 12+50.00



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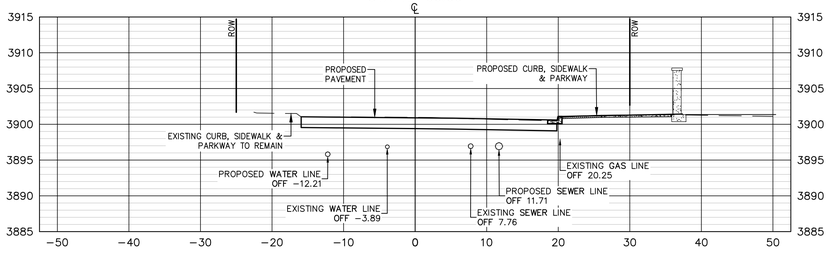
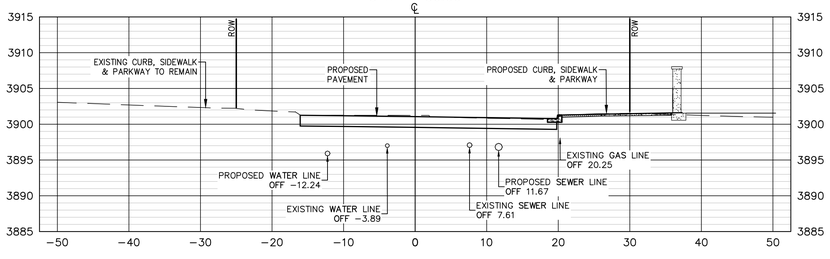


STA 11+50.00



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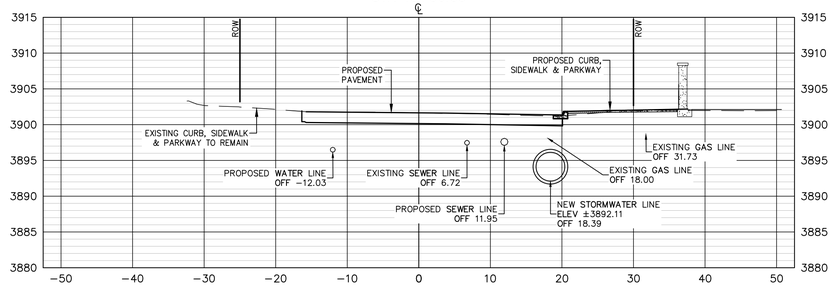

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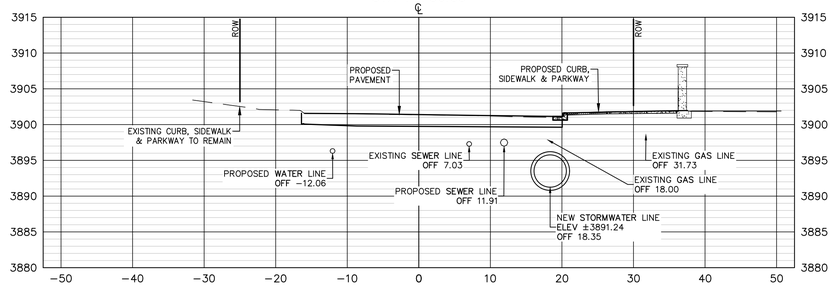

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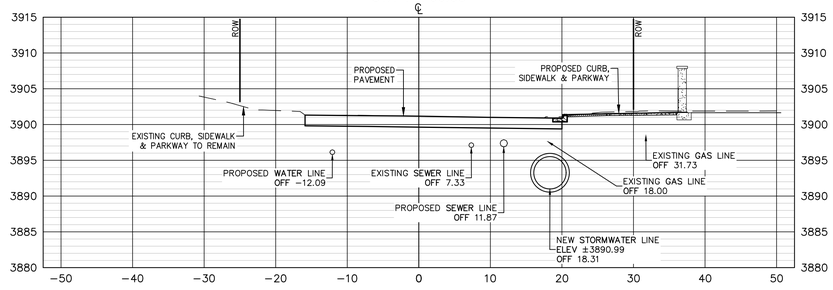
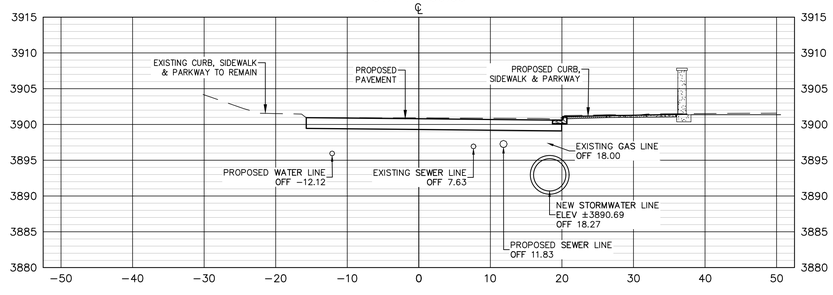


STA 13+50.00



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REV.	DATE	BY	DESCRIPTION

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ENGINEER'S SEAL
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 5/16/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

WILL RUTH AVENUE
CROSS SECTIONS
STA 11+50.00 TO
STA 15+00.00

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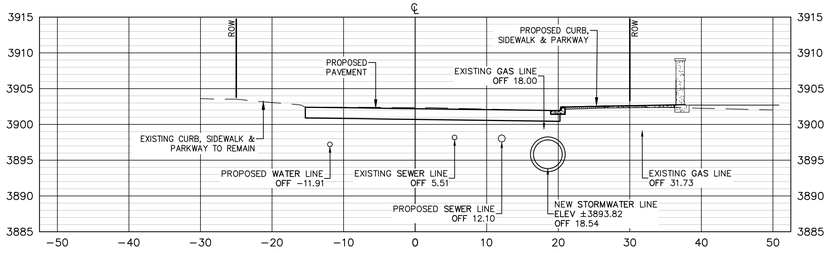
JOB NO. 16-133
SEQUENCE NO. 5 OF 13
SHEET NO. C17.4

F:\16133\DWG\16133 - C17.0 _ROWY UTIL SCT.dwg Time:Sep23,2022-09:07am Login:edgar

STA 17+00.00



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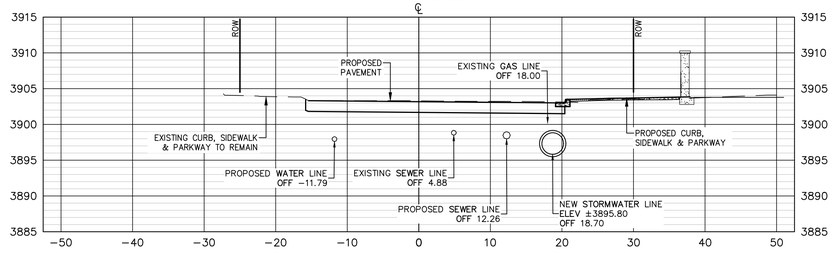

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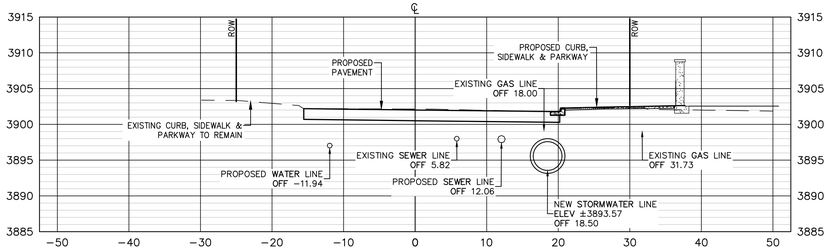
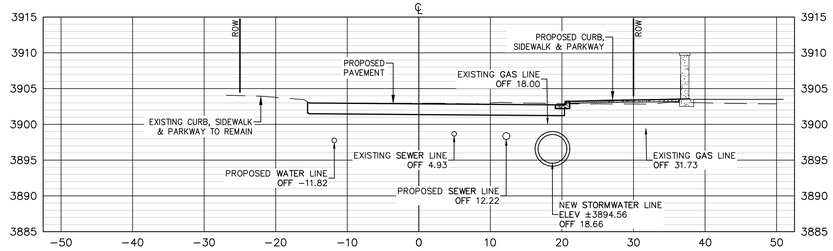
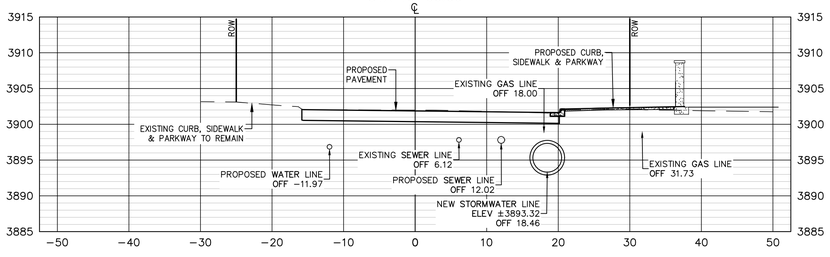


STA 18+50.00



STA 16+00.00



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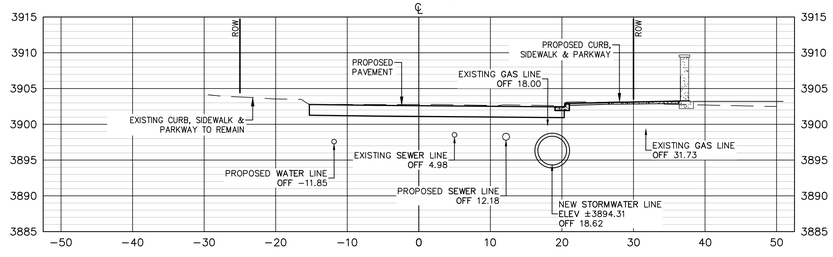
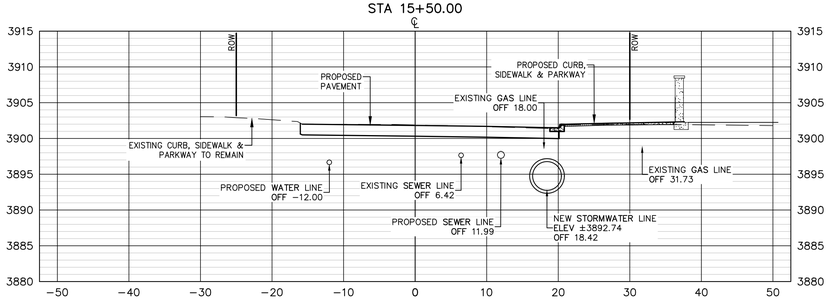
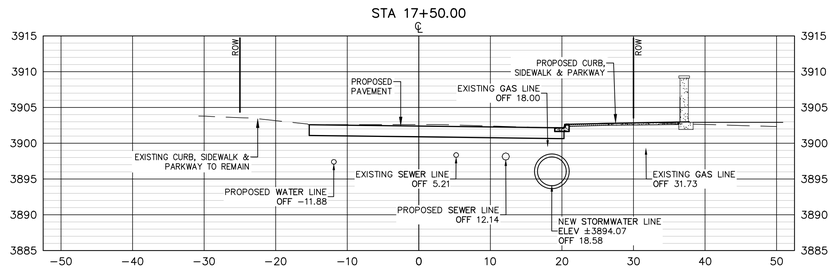


STA 15+50.00



STA 17+50.00



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DESIGNED	B.O.
DRAWN	E.G./A.M.
CHECKED	M.M.
DATE	5/16/2022

UTILITY OWNER
el paso WATER
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EL PASO, TEXAS 79925
(915) 594-5500

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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

WILL RUTH AVENUE
CROSS SECTIONS
STA 15+50.00 TO
STA 19+00.00

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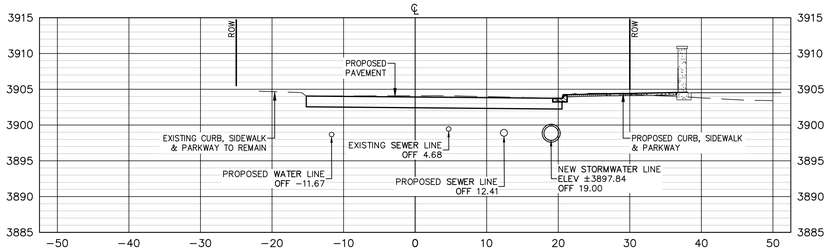
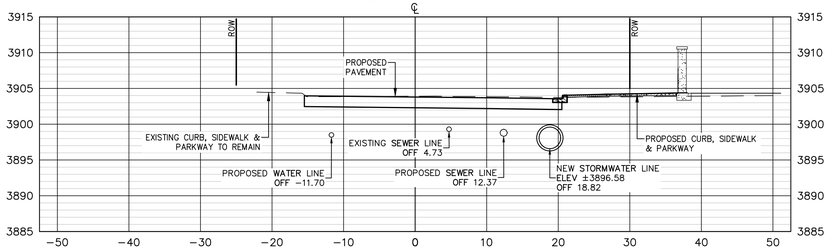
JOB NO.	16-133
SEQUENCE NO.	6 OF 13
SHEET NO.	C17.5

F:\16133\DWG\16133 - C17.0 _ROWY UTIL SCT.dwg TimeSep23,2022-09:07am Login:edgor

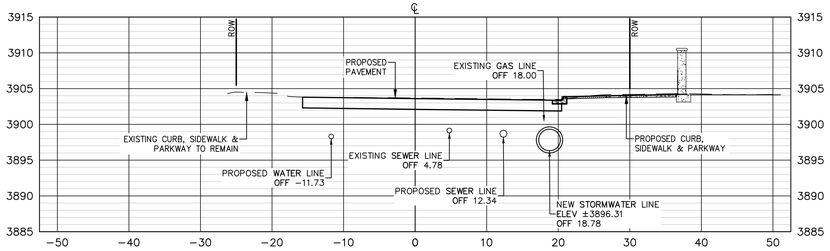
STA 21+00.00



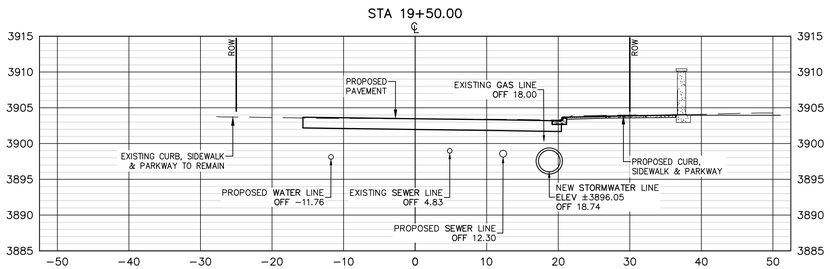
STA 20+50.00



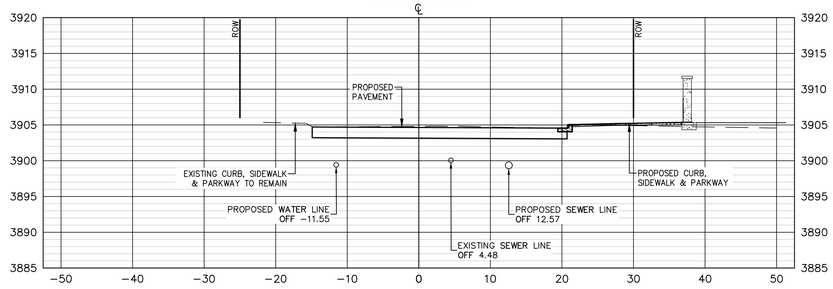
STA 20+00.00



STA 19+50.00



STA 23+00.00



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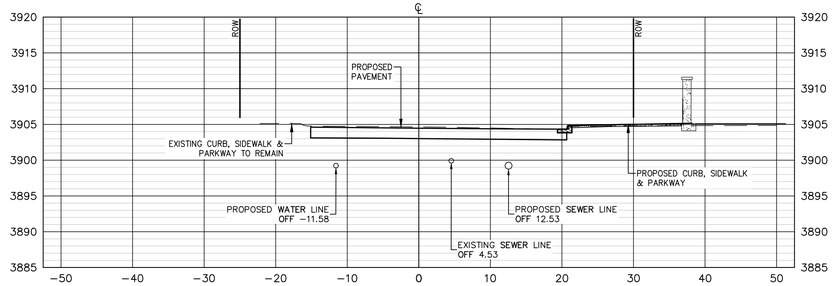

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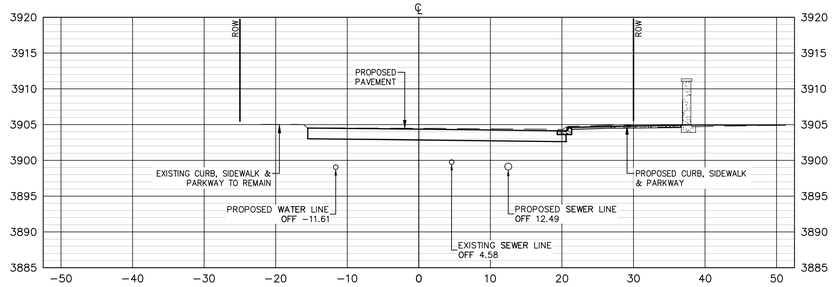

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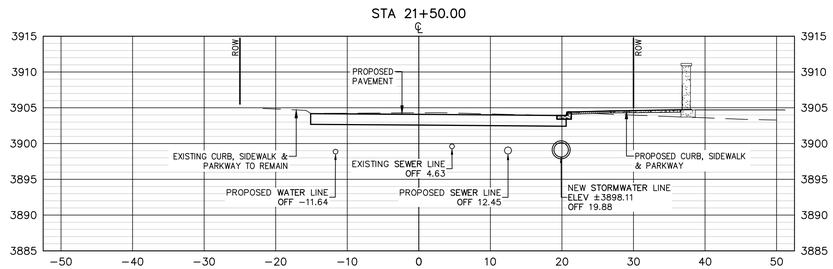

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REV.	DATE	BY	DESCRIPTION

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ENGINEER'S SEAL
THESE PLANS WERE RELEASED UNDER THE AUTHORITY OF MARCOS MEDINA, PE #93830 TO BE ISSUED AS A **100% SUBMITTAL** TO EL PASO WATER FOR REVIEW. IT IS NOT TO BE USED FOR CONSTRUCTION OR FINAL PERMIT ISSUANCE.

DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 5/16/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594−5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

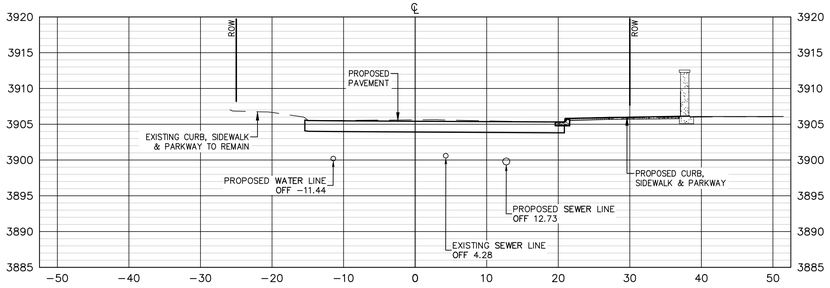
WILL RUTH AVENUE
CROSS SECTIONS
STA 19+50.00 TO
STA 23+00.00

THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH POND AND CONVEYANCE IMPROVEMENTS". MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO. 16−133
SEQUENCE NO. 7 OF 13
SHEET NO. C17.6

F:\16133\DWG\16133 − C17.0 _ROWY UTIL SCT.dwg TimeSep23,2022−09:09am Login:edgar

STA 25+00.00



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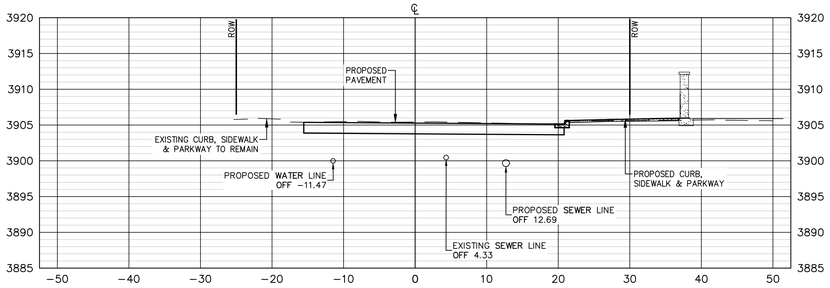

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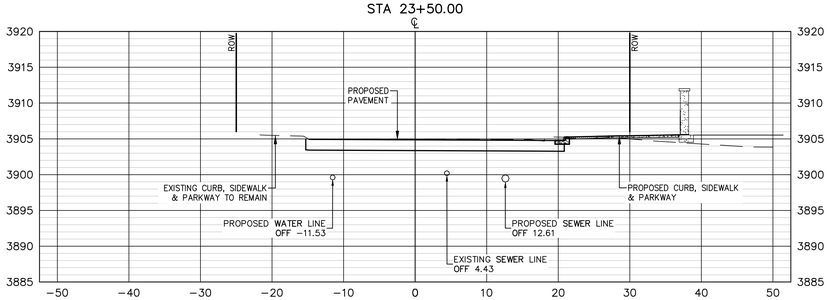
STA 23+50.00



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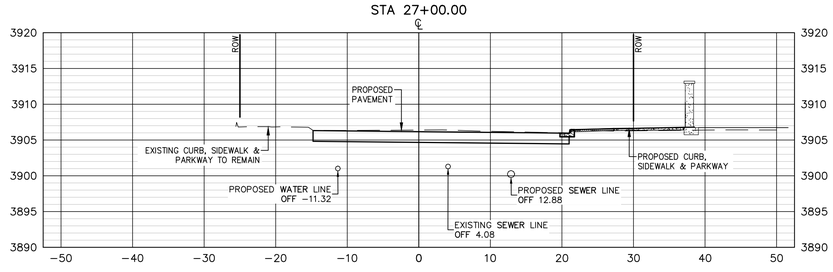

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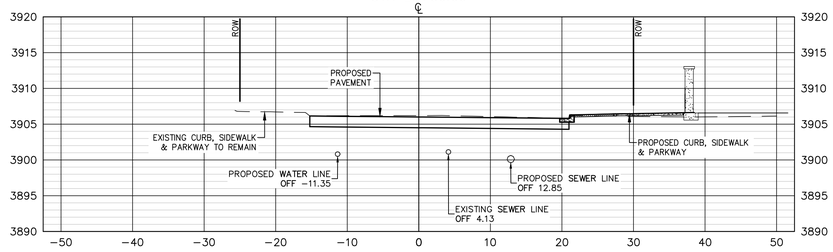

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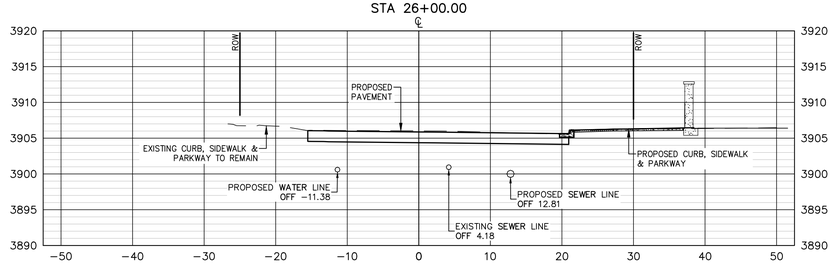

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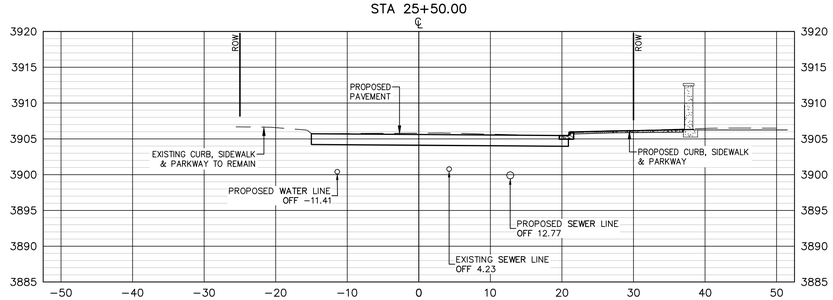

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ENGINEER'S SEAL
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DESIGNED	B.O.
DRAWN	E.G./A.M.
CHECKED	M.M.
DATE	5/16/2022

UTILITY OWNER
el paso WATER
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EL PASO, TEXAS 79925
(915) 594-5500

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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

WILL RUTH AVENUE
CROSS SECTIONS
STA 23+50.00 TO
STA 27+00.00

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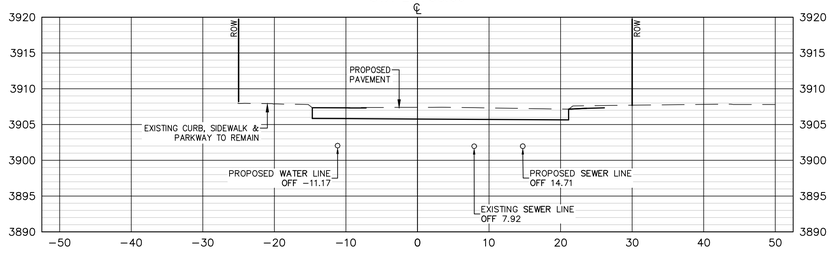
JOB NO.	16-133
SEQUENCE NO.	8 OF 13
SHEET NO.	C17.7

F:\16133\DWG\16133 - C17.0 _RDWY UTIL SCT.dwg Time:Sep23,2022 - 09:11am Login:edgar

STA 29+50.00



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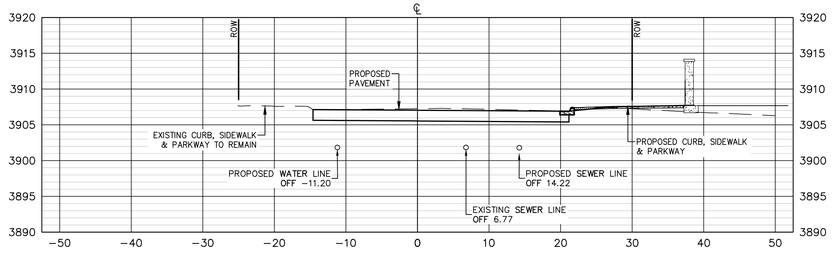
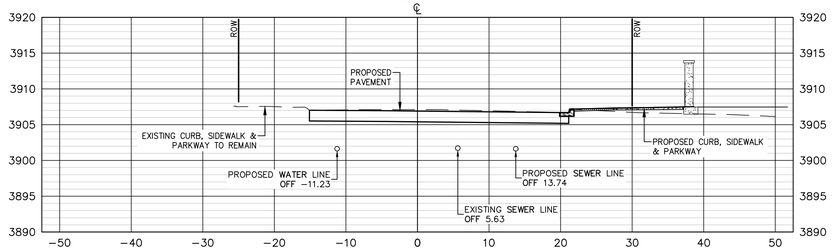


STA 28+50.00



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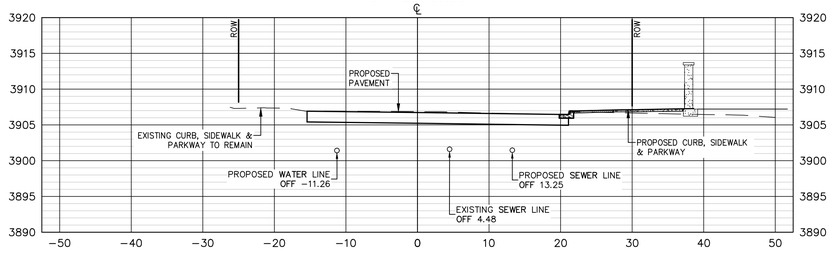

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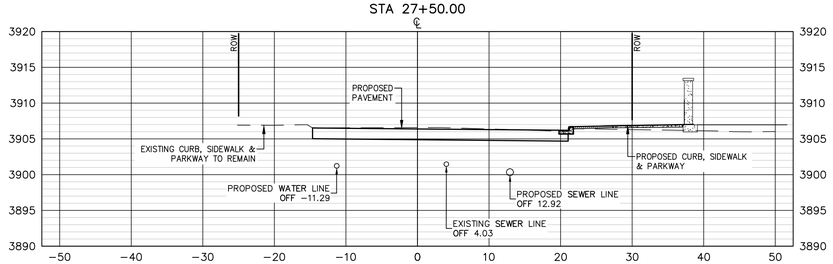

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DRAWN E.G./A.M.
CHECKED M.M.
DATE 5/16/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

WILL RUTH AVENUE
CROSS SECTIONS
STA 27+50.00 TO
STA 29+50.00

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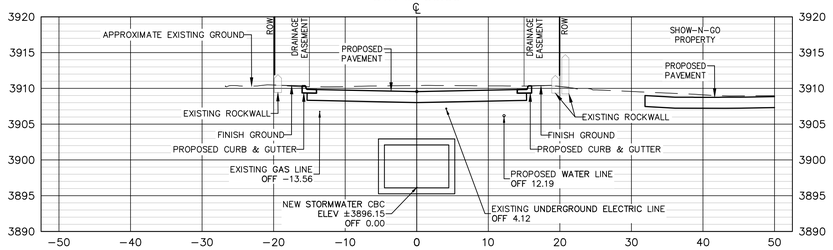
JOB NO. 16-133
SEQUENCE NO. 9 OF 13
SHEET NO. C17.8

F:\16133\DWG\16133 - C17.0 _ROWY UTIL SCT.dwg Time:Sep23,2022-09:11am Login:edgar

STA 2+50.00



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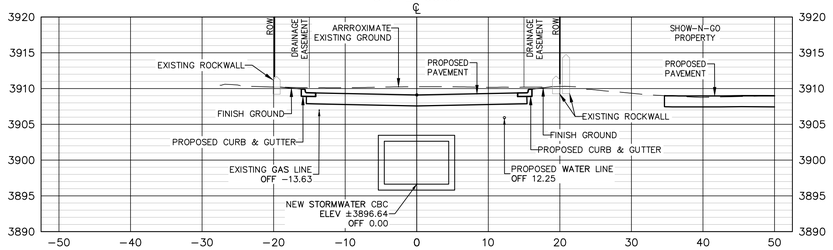

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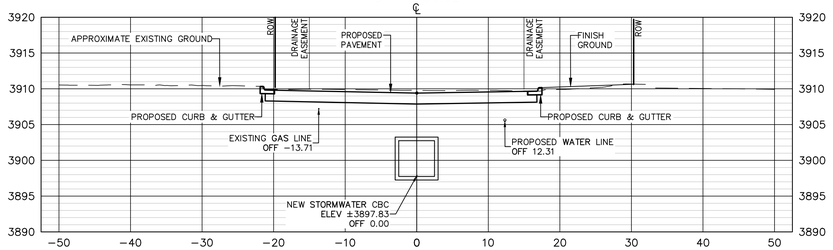
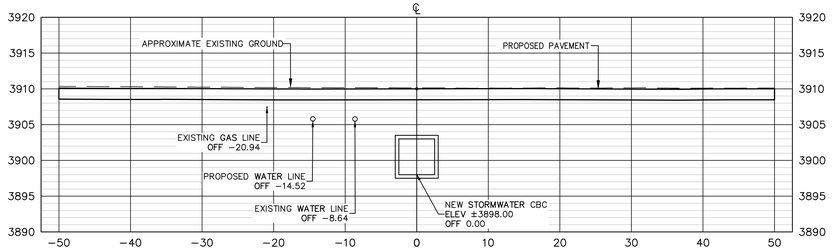


STA 0+97.59



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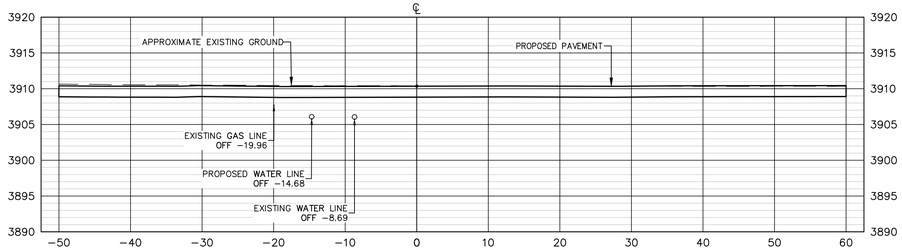
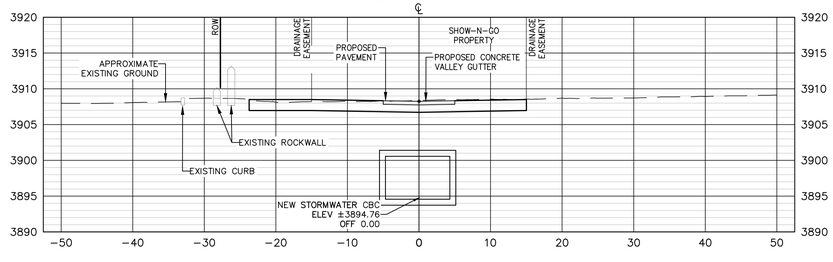
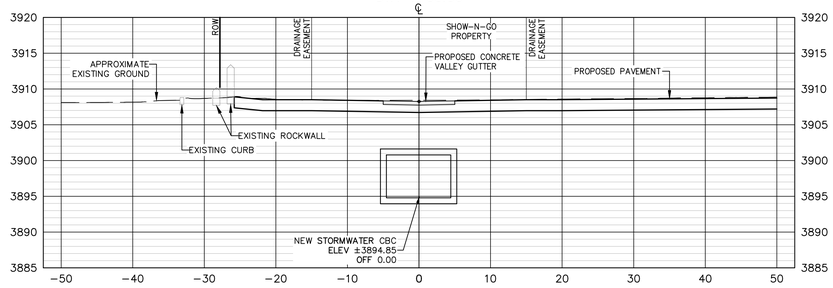


STA 5+00.01



STA 4+50.00



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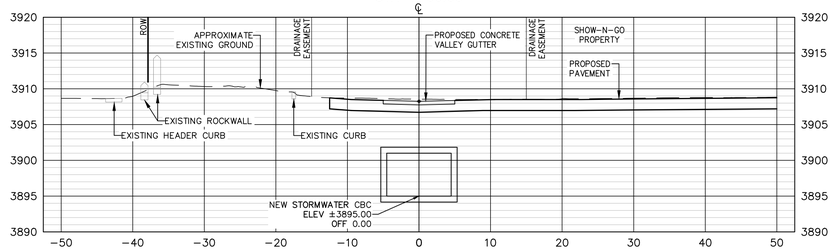

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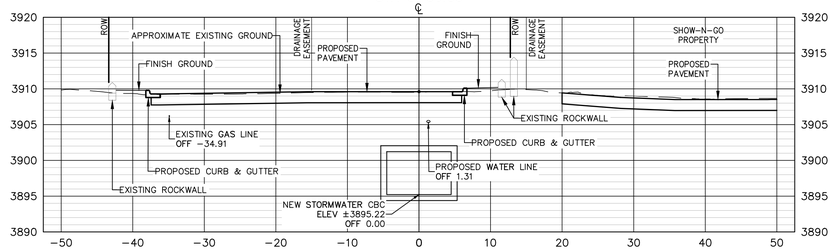
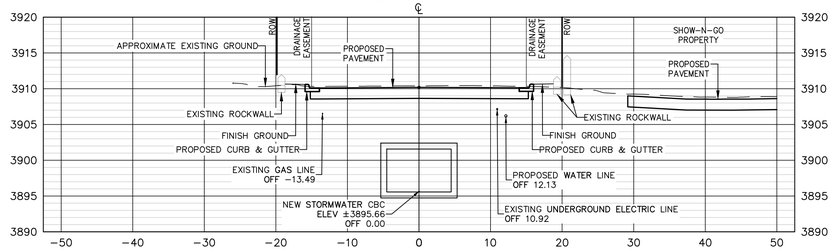


STA 3+00.00



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ENGINEER'S SEAL

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DESIGNED	B.O.
DRAWN	E.G./A.M.
CHECKED	M.M.
DATE	5/16/2022

UTILITY OWNER

el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT

PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

ROBIN HOOD STORM SYSTEM
CROSS SECTIONS
STA 0+55.75 TO
STA 5+00.01

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JOB NO.	16-133
SEQUENCE NO.	10 OF 13
SHEET NO.	C17.9

F:\16133\DWG\16133 - C17.0 _ROWY UTIL SCT.dwg Time:Sep23,2022 - 09:13am Login:edgar

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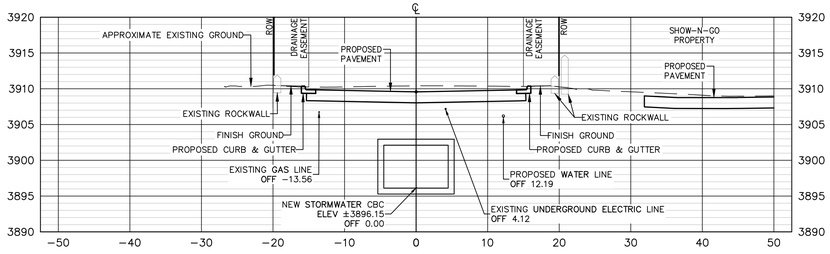

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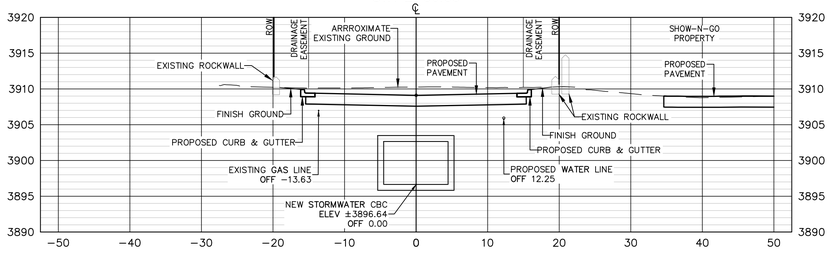

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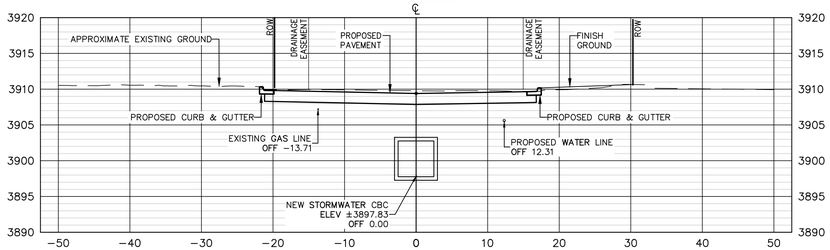
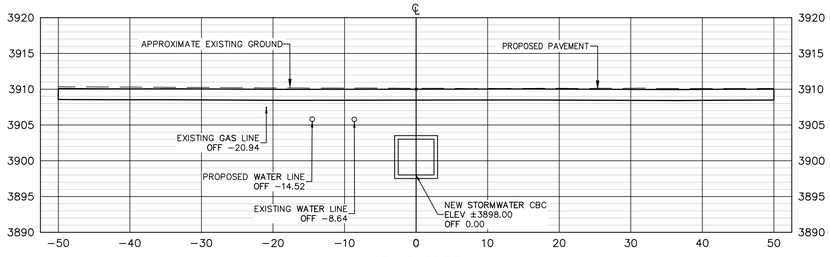
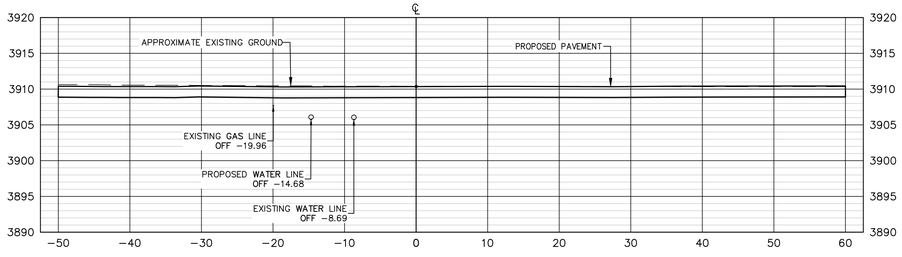


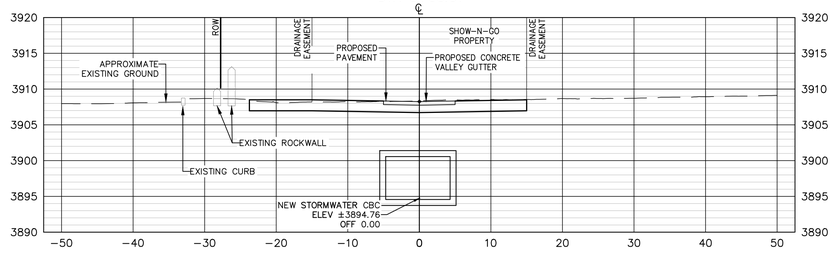
STA 0+97.59



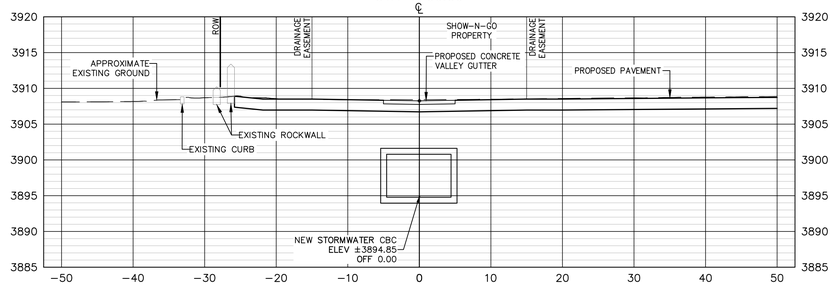
STA 0+55.75



STA 5+00.01



STA 4+50.00



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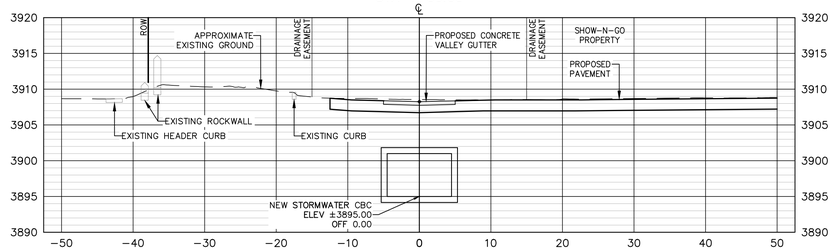
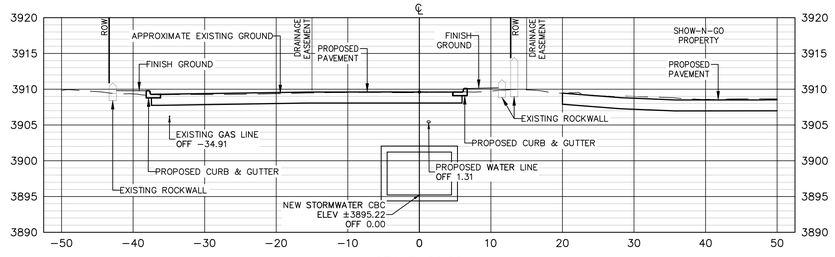
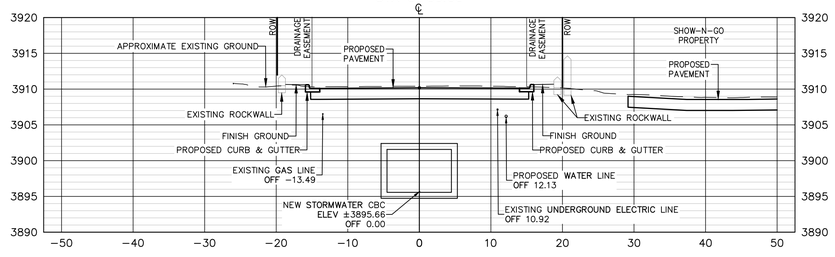


STA 3+50.00



STA 3+00.00



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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

ROBIN HOOD STORM SYSTEM
CROSS SECTIONS
STA 27+50.00 TO
STA 29+50.00

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JOB NO.	16-133
SEQUENCE NO.	11 OF 13
SHEET NO.	C17.10

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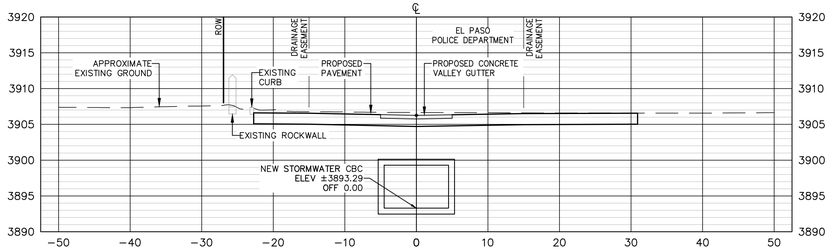

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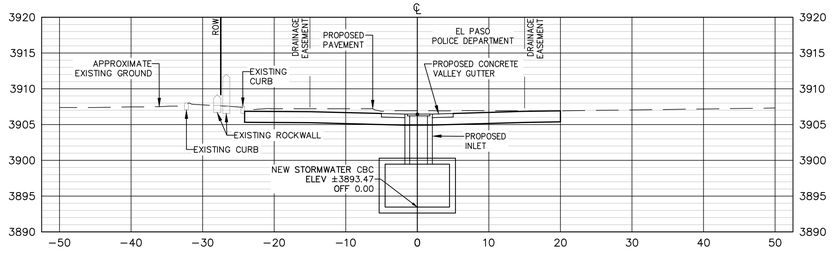

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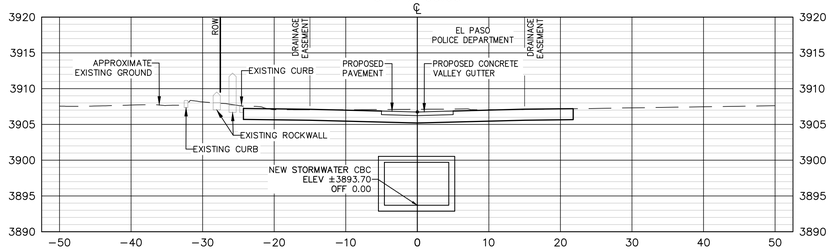

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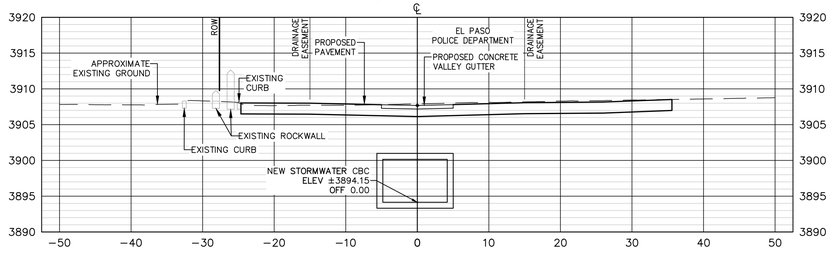

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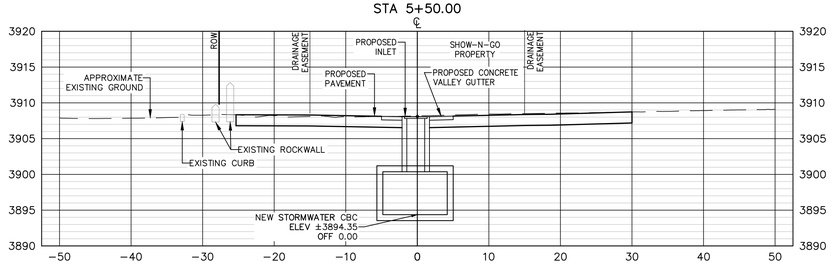

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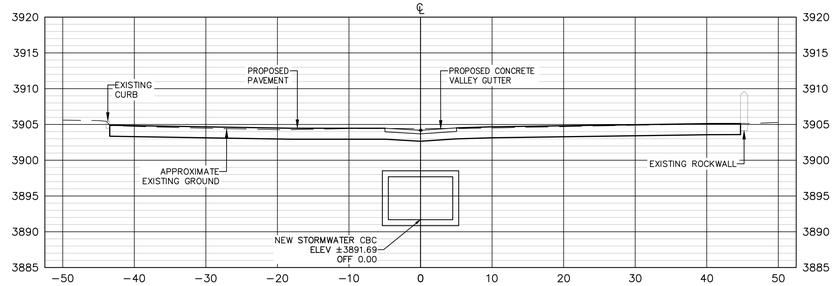

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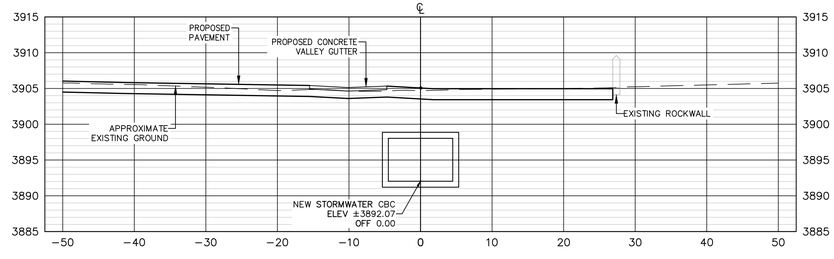

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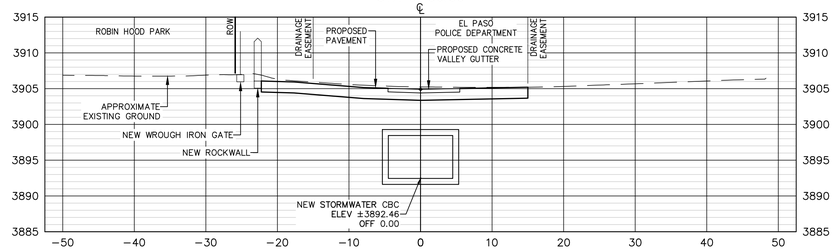

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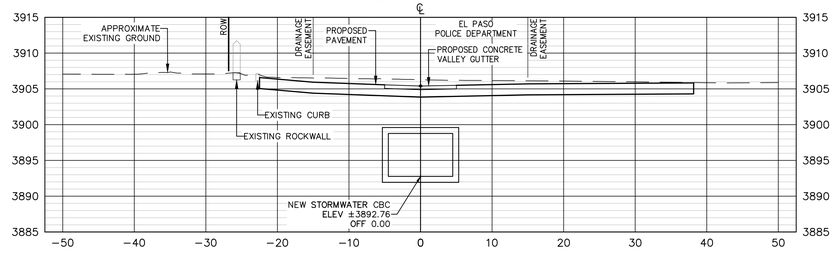

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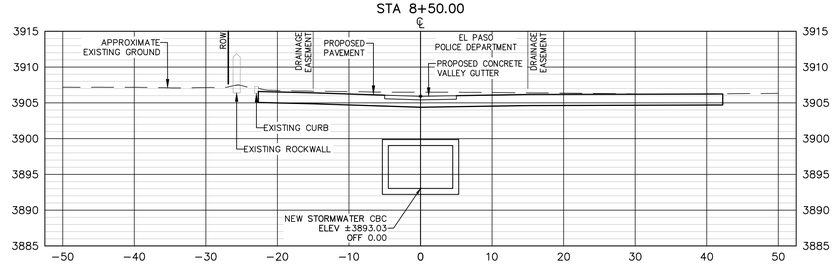

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 5/16/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

ROBIN HOOD STORM SYSTEM
CROSS SECTIONS
STA 27+50.00 TO
STA 29+50.00

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JOB NO. 16-133
SEQUENCE NO. 12 OF 13
SHEET NO. C17.11

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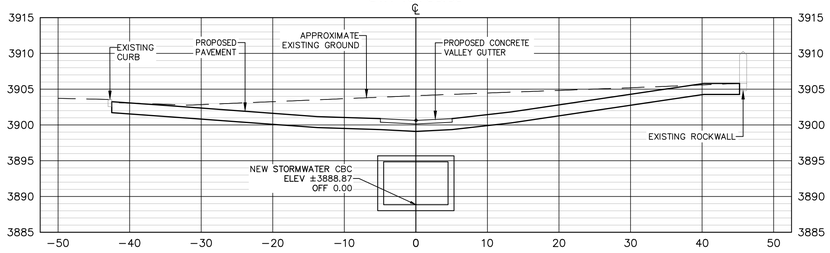

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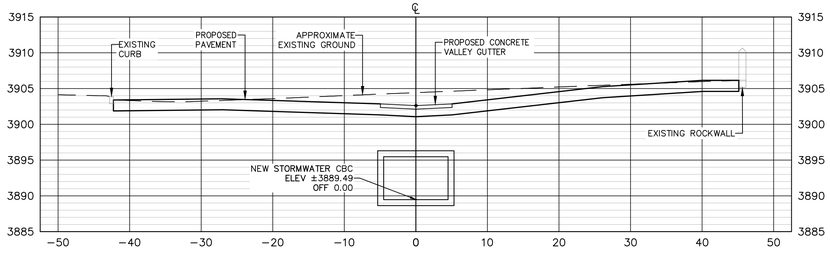

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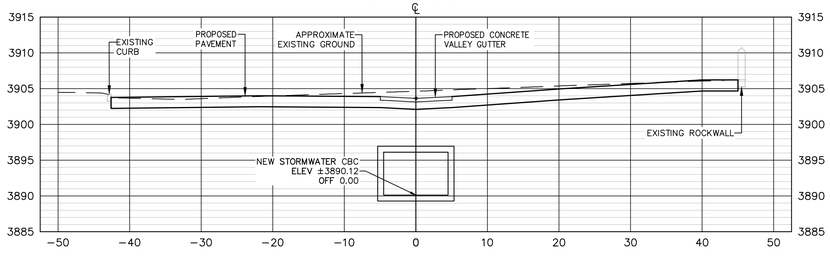

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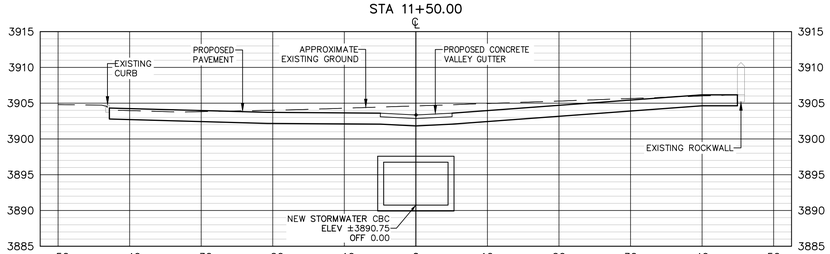

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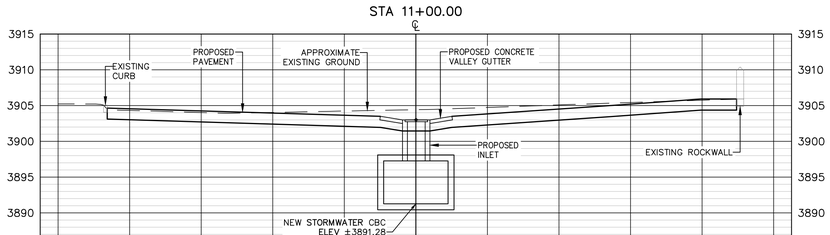

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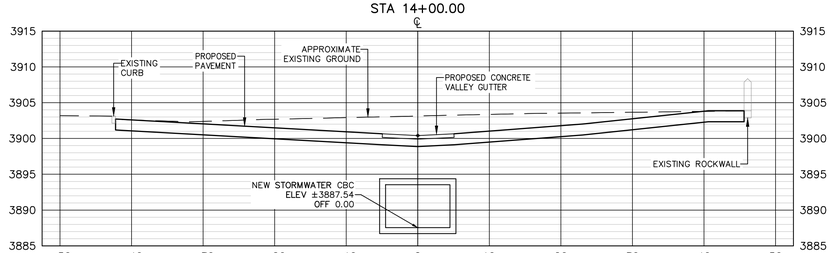

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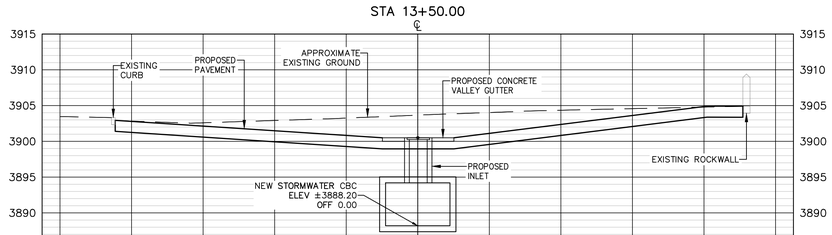

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

ROBIN HOOD STORM SYSTEM
CROSS SECTIONS
STA 27+50.00 TO
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JOB NO. 16-133
SEQUENCE NO. 13 OF 13
SHEET NO. C17.12

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SITE DESCRIPTION

PROJECT NAME AND LIMITS: **WILL RUTH POND & CONVEYANCE IMPROVEMENTS**
THE PROJECT IS LOCATED WITHIN A 37–ACRE AREA APPROXIMATELY 350 FEET EAST OF THE INTERSECTION OF DYER AND WILL RUTH AVENUE/RUSHING ROAD WHICH IS LOCATED IN NORTH EAST EL PASO. THE MAJORITY OF THE PROJECT IS BOUNDED BY WILL RUTH AVENUE TO THE NORTH, THREADGILL AVENUE TO THE SOUTH, RESIDENTIAL AREAS TO THE EAST, AND COMMERCIAL AREAS TO THE WEST. A NEW DRAINAGE CHANNEL WILL RUN PERPENDICULAR TO THE NORTH SIDE OF WILL RUTH AVENUE AND UNDERGROUND CULVERTS WILL RUN ALONG RUSHING ROAD, CROSSING DYER STREET AND THEN ALONG WILL RUTH AVENUE INTO THE POND. ALSO, ANOTHER UNDERGROUND CULVERT WILL RUN FROM DYER STREET ALONG ROBIN HOOD LANE MAID MARIAN. INSIDE ROBIN HOOD MOBILE HOME PARK DISCHARGING INTO THE NEW DRAINAGE CHANNEL MENTIOINED ABOVE

PROJECT DESCRIPTION:
THE PROPOSED PROJECT CONSISTS OF A 37–ACRE, 25 FEET DEEP DETENTION POND. THE POND WILL CONSIST OF A RECTANGULAR AREA AND WILL HAVE SIDE SLOPES OF 1:3 (VERTICAL:HORIZONTAL). THE PROJECT WILL ALSO CONSIST OF DRAINAGE IMPROVEMENTS IN THE AREA SURROUNDING THE DETENTION POND WHICH CONSISTS OF ADDING NEW BOX CULVERTS ALONG ADJACENT STREETS AND AN OPEN CONCRETE CHANNEL LOCATED IN A PERPENDICULAR LOT ADJACENT TO THE POND.

EXISTING CONDITIONS: ALL EXISTING INFRASTRUCTURE, CONSISTING OF RESIDENTIAL HOMES, COMMERCIAL BUILDINGS, AND STREET IMPROVEMENTS WERE ACQUIRED AND VACATED TO ALLOW FOR THE POND IMPROVEMENTS.

MAJOR SOIL DISTURBING ACTIVITIES:
MAJOR SOIL DISTURBING ACTIVITIES WILL CONSIST OF EARTH EXCAVATION WITHIN THE PONDING AREA AND SOME EXCAVATION WITHIN SOME OF THE PUBLIC STREETS IN THE AREA SURROUNDING THE POND.

TOTAL PROJECT AREA: ±37 ACRES

TOTAL AREA TO BE DISTURBED: ±37 ACRES

WEIGHTED RUNOFF COEFFICIENT
(AFTER CONSTRUCTION): 0.85

EXISTING CONDITION OF SOIL AND VEGETATIVE
COVER AND % OF EXISTING VEGETATIVE COVER: THE PROPOSED PONDING AREA IS VACANT LAND COVERED WITH SPORADIC VEGETATION CONSISTING OF GRASSES AND SMALL CLUSTERS OF PRICKLY PEAR CACTUS. THE SOIL CONSISTS MOSTLY OF SILTY SAND TO CALCAREOUS SAND AND GRAVEL. AREAS SURROUNDING THE POND CONSIST OF STREETS AND OTHER DEVELOPED PARCELS OF LAND WITHOUT VEGETATION. SOIL MAP CLASIFY THE AREA AS TURNEY–BERINO ASSOCIATION: NEARLY LEVEL AND GENTLY SLOPING SOILS THAT HAVE CLAY LOAM SUBSOIL AND ARE MODERATELY DEEP OVER SOFT CALICHE; IN THE HUECO BOLSOM.

NAME OF RECEIVING WATERS:
SURFACE RUN–OFF AND EXISTING STORM DRAIN SYSTEMS FROM THE AREAS OF WILL RUTH AVENUE, THREADGILL AVENUE/RUSHING ROAD AND DYER STREET.

EROSION AND SEDIMENT CONTROL

SOIL STABILIZATION PRACTICES

- ____ TEMPORARY SEEDING
- ____ PERMANENT PLANTING, SODDING, OR SEEDING
- ____ MULCHING
- ____ SOIL RETENTION BLANKET
- X BUFFER ZONES
- X PRESERVATION OF NATURAL RESOURCES

OTHER:

STRUCTURAL PRACTICES:

- X SILT FENCES
- ____ HAY BALES
- ____ ROCK BERMS
- ____ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- ____ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- ____ DIVERSION DIKE AND SWALE COMBINATION
- X PIPE SLOPE DRAINS
- X CONCRETE FLUMES
- X ROCK BEDDING AT CONSTRUCTION EXIT (TEMPORARY)
- ____ TIMBER MATTING AT CONSTRUCTION EXIT
- X CHANNEL LINERS
- ____ SEDIMENT TRAPS
- ____ SEDIMENT BASINS
- ____ STORM INLET SEDIMENT TRAP
- ____ STONE OUTLET STRUCTURES
- X CURBS AND GUTTERS
- X STORM DRAINS
- ____ VELOCITY CONTROL DEVICES
- ____ VEGETATED SWALES & NATURAL DEPRESSIONS

OTHER:

NARRATIVE – SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:
1. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS (e.g. SILT FENCE AND/OR STABILIZED CONSTRUCTION ENTRANCE).
2. CLEARING, DEMOLITION AND EXCAVATION OF POND AREA, AND APPLICABLE STREETS;
3. SUBGRADE PREPARATION, CHANNEL LINING;
4. NEW PIPE STRUCTURES AND INLETS,
5. WHEN ALL CONSTRUCTION ACTIVITY RELATED IN DEVELOPMENT OF THE SITE IS COMPLETE, REMOVE TEMPORARY CONTROLS IN 1. ABOVE

BEGIN DATE: 10–2023 (APPROXIMATE)
END DATE: 04–2025 (APPROXIMMATE)

BEST MANAGEMENT PRACTICES CONTROLS

I. **WASTE MATERIALS:**
ALL WASTE MATERIALS, INCLUDING CONSTRUCTION DEBRIS, SHALL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. NO CONSTRUCTION WASTE MATERIAL SHALL BE BURIED ON SITE. THE TRANSIT DUMPSTER SHALL COMPLY WITH ORDINANCE 18.52.010 (ENCLOSURE AND REMOVAL OF WASTE MATERIALS DURING CONSTRUCTION). THE DUMPSTER SHALL BE EMPTIED AS NECESSARY OR AS REQUIRED BY ORDINANCE 9.04 (SOLID WASTE MANAGEMENT) AND THE TRASH SHALL BE HAULED TO A LICENSED LANDFILL.

II. **HAZARDOUS WASTE:**
AT A MINIMUM, ANY PRODUCTS IN THE FOLLOWING CATEGORIES SHALL BE CONSIDERED HAZARDOUS: PAINT, ACIDS FOR CLEANING MASONRY SURFACES, CLEANING SOLVENTS, ASPHALT PRODUCTS, CHEMICAL ADDITIVES FOR SPILL STABILIZATION, CURING COMPOUNDS AND ADDITIVES. IN THE EVENT OF A SPILL WHICH MAY BE HAZARDOUS, THE CONTRACTOR SHALL TAKE IMMEDIATE ACTION AND CONTACT THE FIRE DEPT. AND TNRCC.

III. **SANITARY WASTE:**
ALL SANITARY WASTE SHALL BE COLLECTED FROM THE CONSTRUCTION PORTABLE UNITS AS NECESSARY OR AS REQUIRED, CHAPTER 18.08 (BUILDING CODE), BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR. ALL WASTE MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

IV. **SPILL PREVENTION:**
THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURES OF MATERIALS TO STORM WATER RUNOFF.

V. **GOOD HOUSEKEEPING:**
A. STORE ONLY ENOUGH PRODUCTS REQUIRED TO DO THE JOB
B. NEATLY STORE MATERIALS ON–SITE IN AN ORDERLY MANNER
C. KEEP PRODUCTS IN THEIR ORIGINAL CONTAINER
D. DO NOT MIX SUBSTANCES WITH ONE ANOTHER, UNLESS OTHERWISE RECOMMENDED BY THE MANUFACTURER
E. USE ENTIRE CONTENTS OF A PRODUCT BEFORE DISPOSING THE CONTAINER
F. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL

VI. **HAZARDOUS PRODUCTS:**
PRACTICES USED TO REDUCE RISKS:
A. KEEP PRODUCTS IN THEIR ORIGINAL CONTAINER IF AT ALL POSSIBLE
B. RETAIN ORIGINAL LABELS, PRODUCT INFORMATION AND MATERIAL SAFETY DATA SHEETS (MSDS)
C. DISPOSE SURPLUS PRODUCT IN ACCORDANCE WITH MANUFACTURER'S OR LOCAL & STATE RECOMMENDED METHODS

VII. **PETROLEUM PRODUCTS:**
ALL ON–SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT SUBSTANCES USED ON–SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.

VIII. **SPILL CONTROL PRACTICES:**
A. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES:
B. MATERIALS AND EQUIPMENT NECESSARY FOR CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON–SITE:
C. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY
D. SPILL AREA SHALL BE WELL VENTILATED AND APPROPRIATE CLOTHING WILL BE WORN:
E. ANY SPILL SHALL BE REPORTED TO THE APPROPRIATE GOVERNMENTAL AGENCY
F. MEASURES SHALL BE TAKEN TO PREVENT A SPILL FROM REOCCURRING

IX. **MAINTENANCE AND INSPECTION PROCEDURES:**
ALL POLLUTION PREVENTION MEASURES SHALL BE INSPECTED AT LEAST ONCE A MONTH OR WITHIN 24–HOURS PRIOR TO ANTICIPATED STORM EVENT AND FOLLOWING A STORM EVENT OF 0.5 INCHES OR MORE. INSPECTION IN FINAL STABILIZED AREAS OR DURING ARID PERIODS WILL BE CONDUCTED MONTHLY, BEST MANAGEMENT PRACTICES AND POLLUTION CONTROL PROCEDURES SHALL BE INSPECTED FOR ADEQUACY.

X. **REMARKS:**
DISPOSAL AREAS, STOCKPILES, AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL THE AMOUNT OF SEDIMENT THAT MAY ENTER RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WETLAND, WATERBODY OR STREAMBED. CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AREAS SHALL BE CONSTRUCTED BY THE CONTRACTOR IN A MANNER TO MINIMIZE THE RUNOFF OF POLLUTANTS. ALL WATERWAYS SHALL BE CLEANED AS SOON AS PRACTICABLE OF TEMPORARY EMBANKMENT, TEMPORARY BRIDGES, MATTING, FALSEWORK, PILING DEBRIS OR OTHER OBSTRUCTIONS PLACED DURING CONSTRUCTION OPERATIONS THAT ARE NOT A PART OF THE FINISHED WORK.

XI. **OFFSITE VEHICLE TRACKING:**
IN ADDITION TO THE STABILIZED CONSTRUCTION ENTRANCES, THE FOLLOWING MEASURES SHALL BE OBSERVED DURING CONSTRUCTION:
– HAUL ROADS SHALL BE DAMPENED FOR DUST CONTROL
– LOADED HAUL TRUCKS SHALL BE COVERED WITH TARPAULIN
– EXCESS DIRT ON ROAD SHALL BE REMOVED IMMEDIATELY
– STABILIZED CONSTRUCTION ENTRANCE
– OTHER:

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN GENERAL NOTES

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JOB NO. 16–133
SEQUENCE NO. 1 OF 1
SHEET NO. C18.0

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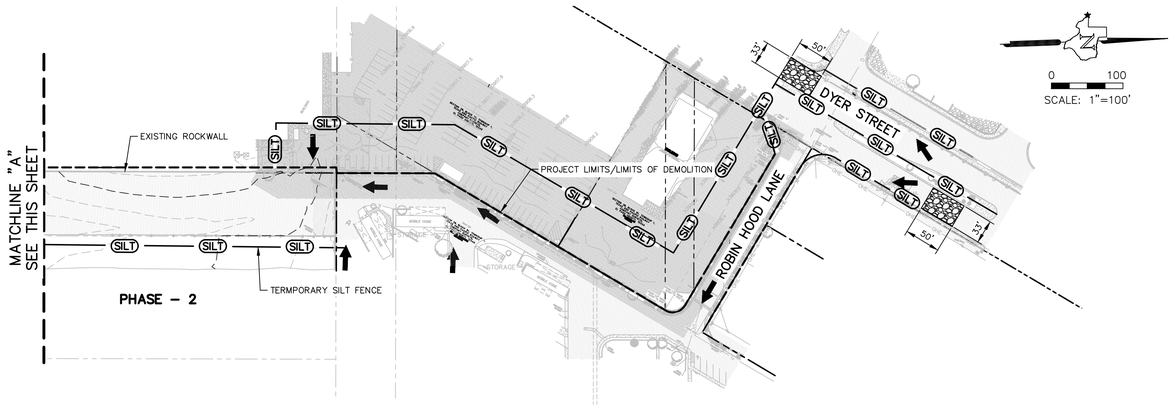
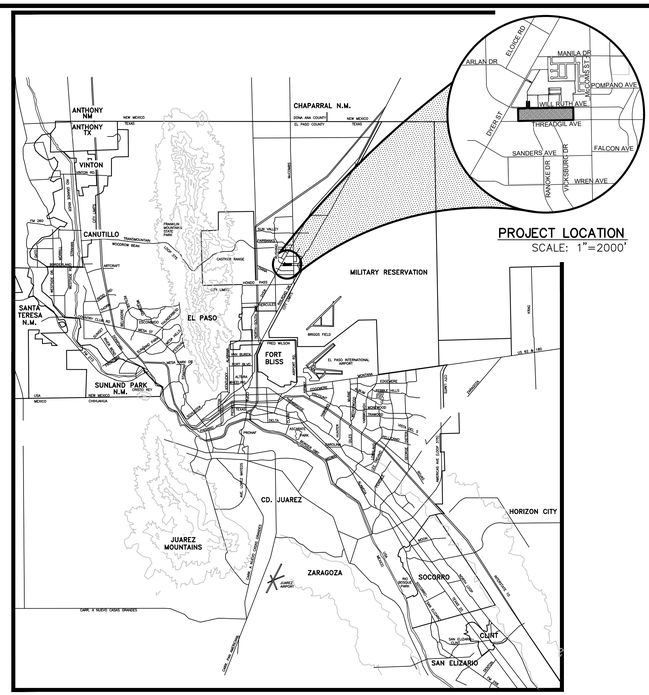




VICINITY MAP
SCALE: 1"=3 MILES

FLOOD ZONE "AH" & ZONE "C"

FLOOD ZONE AH: AREAS OF 100–YEAR SHALLOW FLOODING WHERE DEPTHS ARE BETWEEN ONE(1) AND THREE (3) FEET; BASE FLOOD ELEVATIONS ARE SHOWN, BUT NO FLOOD HAZARD FACTORS ARE DETERMINED.

FLOOD ZONE C: AREAS OF MINIMAL FLOODING.

FIRM – FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, TX.

PANEL 19 OF 52, COMMUNITY – PANEL NUMBER 480214 0019 B
MAP REVISED: OCTOBER 15, 1982

PANEL 20 OF 52, COMMUNITY – PANEL NUMBER 480214 0020 B
MAP REVISED: OCTOBER 15, 1982

LEGEND

SILT — TEMPORARY SEDIMENT CONTROL FENCE

FLOW DIRECTION

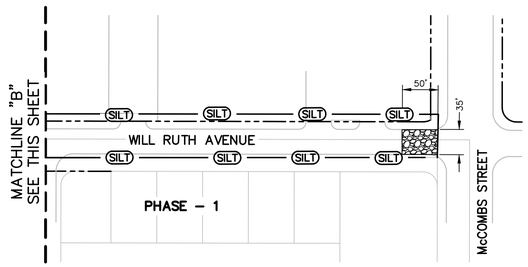
STABILIZED CONSTRUCTION ENTRANCE/ EXIT

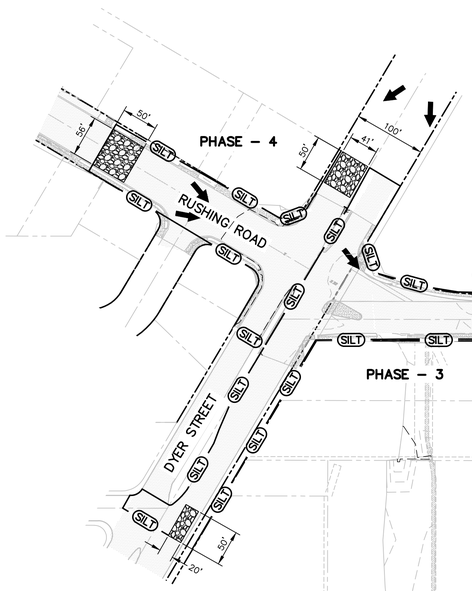
STAGING AREA

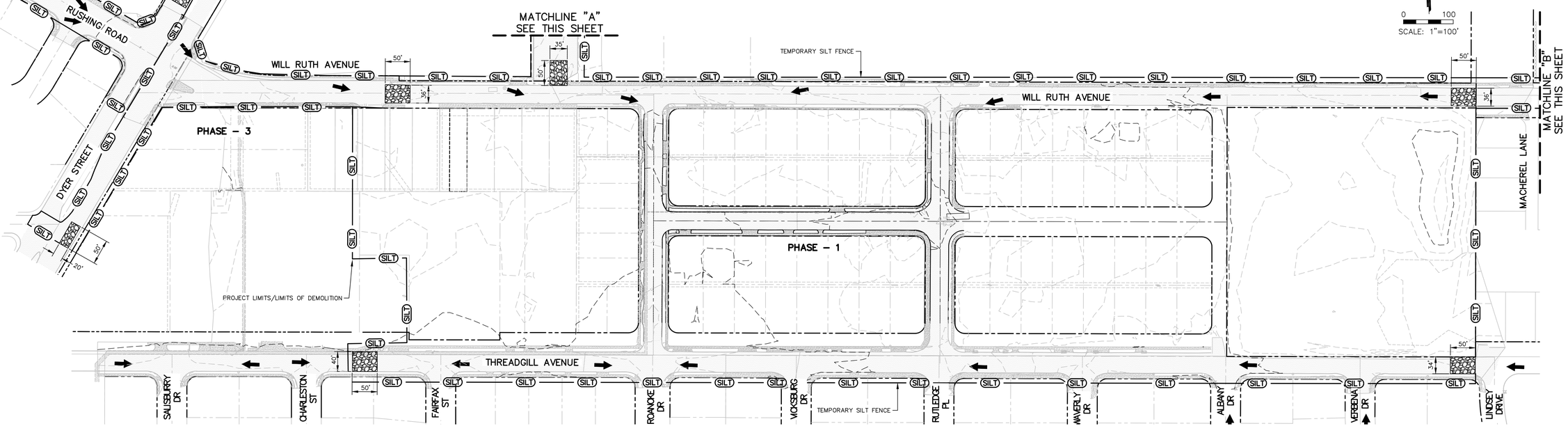
CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN AREA TO BE USED FOR STAGING.

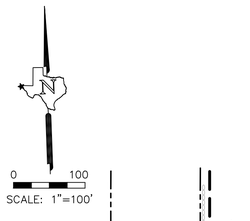
NOTES

1. STABILIZED CONSTRUCTION EXITS TO BE PLACED AT ACCESS POINTS COORDINATED WITH AND APPROVED BY THE STREET DEPARTMENT.
2. SW3P LOCATED WITHIN ON–SITE OFFICE.
3. CONTRACTOR TO POST T.C.E.Q. CONSTRUCTION SITE NOTICE ON THE JOB SITE.
4. SEDIMENT CONTROL FENCE AND ROCK FILTER DAMS TO BE LOCATED DOWNSTREAM ROW LINE OR AT PROPOSED GRADING LIMITS OR AS PER DIRECTION OF THE ENGINEER.
5. LOCATION OF CONSTRUCTION EXITS ARE PRELIMINARY AND ARE TO BE LOCATED AS PER DIRECTION OF THE ENGINEER.









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ENGINEER'S SEAL
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594–5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
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2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN

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JOB NO. 16–133
SEQUENCE NO. 1 OF 1
SHEET NO. C19.0

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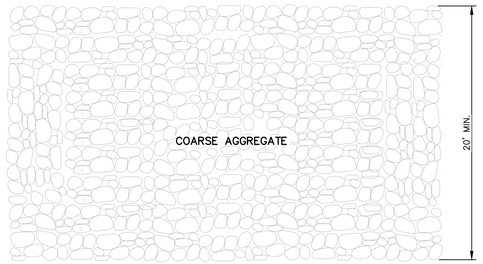
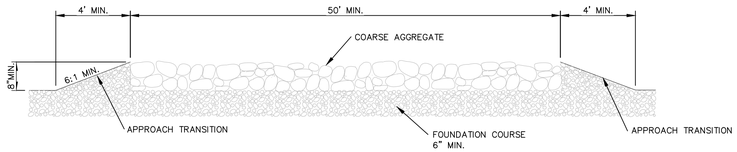


PLAN

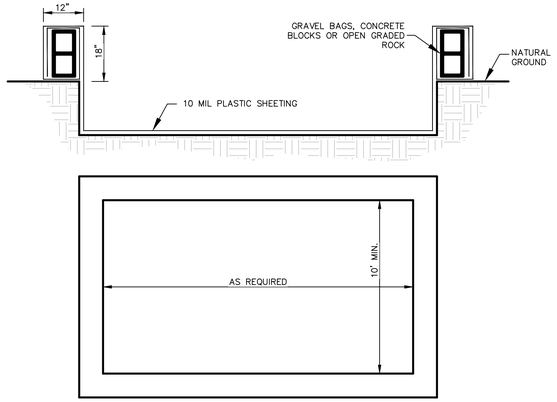


PROFILE

GENERAL NOTES:

1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6:1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE. 6.THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

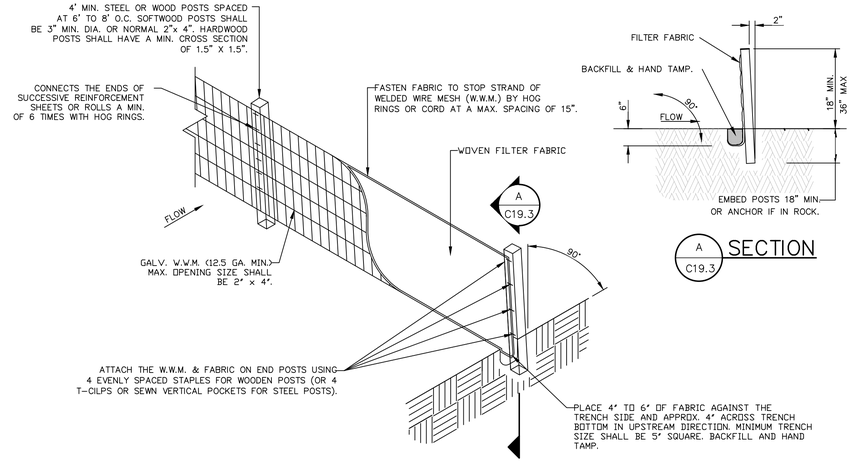
1 C20.0 CONSTRUCTION EXIT (TYPE 1)
SCALE NOT NEEDED



GENERAL NOTES

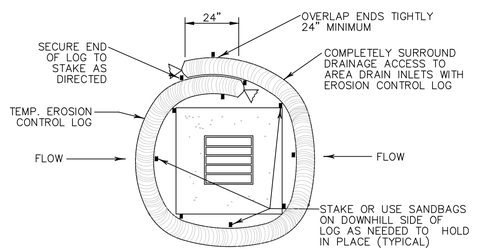
1. THE EXCAVATION FOR THE CONCRETE TRUCK WASHOUT SHALL BE A MINIMUM OF 10' WIDE AND OF SUFFICIENT LENGTH AND DEPTH TO ACCOMMODATE 7 GALLONS OF WASHOUT WATER AND CONCRETE PER TRUCK PER DAY AND/OR 50 GALLONS OF WASHOUT WATER AND CONCRETE PER PUMP TRUCK PER DAY.
2. IN THE EVENT THAT THE SELF-INSTALLED CONCRETE TRUCK WASHOUT IS CONSTRUCTED ABOVE GROUND, IT SHALL BE 10' WIDE AND 10' LONG WITH THE SAME REQUIREMENTS FOR CONTAINMENT AS DESCRIBED IN ITEM 1.
3. THE CONTAINMENT ARE SHALL BE LINED WITH 10 MIL PLASTIC SHEETING, WITHOUT HOLES OR TEARS. WHERE THERE ARE SEAMS, THESE SHALL BE SECURED ACCORDING TO MANUFACTURER'S DIRECTIONS.
4. THE PLASTIC SHEETING SHALL BE OF SUFFICIENT SIZE SO THAT IT WILL OVERLAP THE TOP OF THE CONTAINMENT AREA AND BE WRAPPED AROUND THE GRAVEL BAGS, CONCRETE BLOCKS OR OPEN GRADED ROCK AT LEAST 2 TIMES.
5. THE GRAVEL BAGS OR CONCRETE BLOCKS SHALL BE PLACED ABUTTING EACH OTHER TO FORM A CONTINUOUS BERM AROUND THE PERIMETER OF THE CONTAINMENT AREA.
6. THE BERM CONSISTING OF GRAVEL BAGS, CONCRETE BLOCKS, OR OPEN GRADED ROCK SHALL BE NO LESS THAN 18" HIGH AND NO LESS THAT 12" WIDE.
7. THE CONTAINMENT AREA SHALL NOT EXCEED 50% OF CAPACITY AT ANY ONE TIME.
8. SOLIDS SHALL BE REMOVED FROM THE CONTAINMENT AREA AND DISPOSED OF PROPERLY AND ANY DAMAGE TO THE PLASTIC SHEETING SHALL BE REPAIRED OR SHEETING REPLACED BEFORE NEXT USE.

2 C20.0 CONCRETE TRUCK WASHOUT
SCALE: NTS

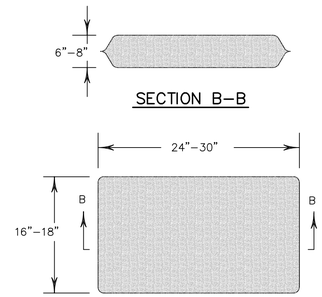


A C19.3 SECTION

3 C20.0 TEMPORARY SEDIMENT CONTROL FENCE
ISOMETRIC VIEW



NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



4 C20.0 EROSION CONTROL LOG AT CURB INLET
CL-DI

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B.O.	E.G./A.M.	M.M.	10/7/2022

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STORMWATER POLLUTION PREVENTION DETAILS

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JOB NO.	SEQUENCE NO.	SHEET NO.
16-133	1 OF 1	C20.0

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TCP SELECTION TABLE

LOCATION	TYPE OF WORK	STANDARD SHEET	SHEET DESCRIPTION	SHEET DIAGRAM	SUGGESTED USE
DYER ST	CONSTRUCTION OF DRAINAGE SYSTEM WITH BOX CULVERTS, DROP INLETS RELATED DRAINAGE STRUCTURES WATER AND SANITARY SEWER, NEW PAVEMENT, CURB AND GUTTER AND MISCELLANEOUS ITEMS.	TCP(2-5)-18	LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL	TCP(2-5b)	LONG TERM LANE CLOSURES FOR PHASES 3,4,7, & 8 DURING CONSTRUCTION USE TMA AS SHOWN - OPEN LANES AFTER CONSTRUCTION IS COMPLETE
DYER ST		WZ(RCD)-13	WORK ZONE ROAD CLOSURE DETAILS	ROAD CLOSURE AT THE INTERSECTION	ROAD CLOSURE FOR PHASES 3,4,7 & 8 AT INTERSECTIONS.
DYER ST		WZ(BRK)-13	WORK ZONE "GIVE US A BRAKE" SIGNS	UNDIVIDED HIGHWAY	BEFORE AND THROUGHOUT PROJECT LIMITS, INCLUDE SIGNS FOR AN UNDIVIDED HIGHWAY FOR PHASES 3,4,7 & 8.

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

TRAFFIC CONTROL
CONSTRUCTION SEQUENCE

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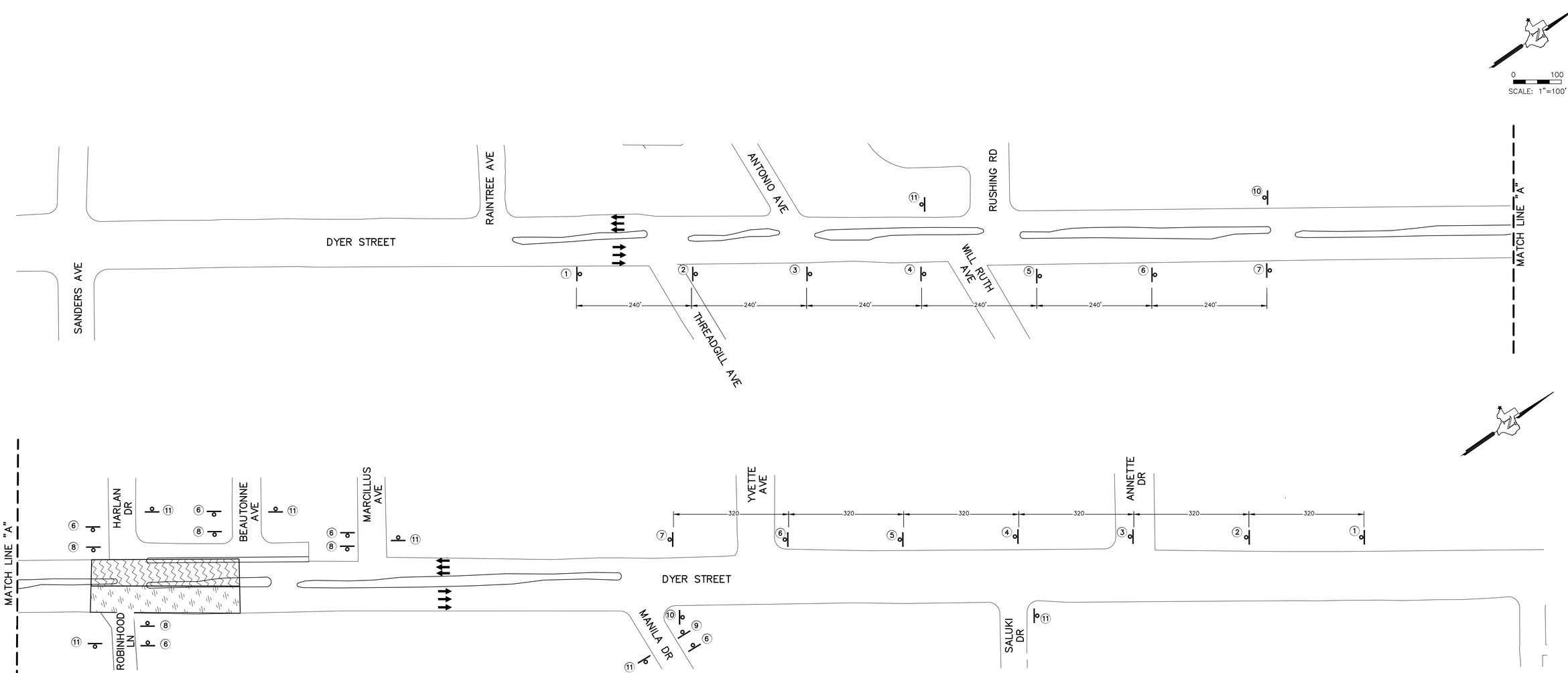
SEQUENCE NO. 1 OF 1
SHEET NO. C21.0



LEGEND

- WORK ZONE–PHASE 7
- WORK ZONE–PHASE 8
- CONSTRUCTION SIGNING
- TRAFFIC LANE AND DIRECTION OF TRAFFIC

1	Give Us A BRAKE	CW21–1T	48x48
2	OBEY WARNING SIGNS STATE LAW	R20–3T	48x42
3	STAY ALERT TALK OR TEXT LATER	G20–10T	60x48
4	WORK ZONE / TRAFFIC FINES DOUBLE / WHEN WORKERS ARE PRESENT	G20–9TP R20–5T R20–5aTP	36x30 36x36 36x18
5	SPEED LIMIT 40	R2–1	36x48
6	ROAD WORK AHEAD	CW20–1D	48x48
7	BEGIN ROAD WORK NEXT 1 MILE / NAME ADDRESS CITY STATE / CONTRACTOR	G20–5T G20–6	48x24 48x30
8	ROAD WORK ← NEXT 1 MILE NEXT 1 MILE →	G20–1bT	72x36
9	ROAD WORK ← NEXT 1 MILE	G20–1bL	48x24
10	END ROAD WORK	G20–2	48x24
11	END WORK ZONE	G20–2bT	36x18

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CHECKED M.M.
DATE 10/7/2022

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EL PASO, TEXAS 79925
(915) 594–5500

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

TRAFFIC CONTROL
LINE DIAGRAM PHASE 7 AND 8
(DYER STREET)

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JOB NO. 16–133
SEQUENCE NO. 1 OF 1
SHEET NO. C21.1

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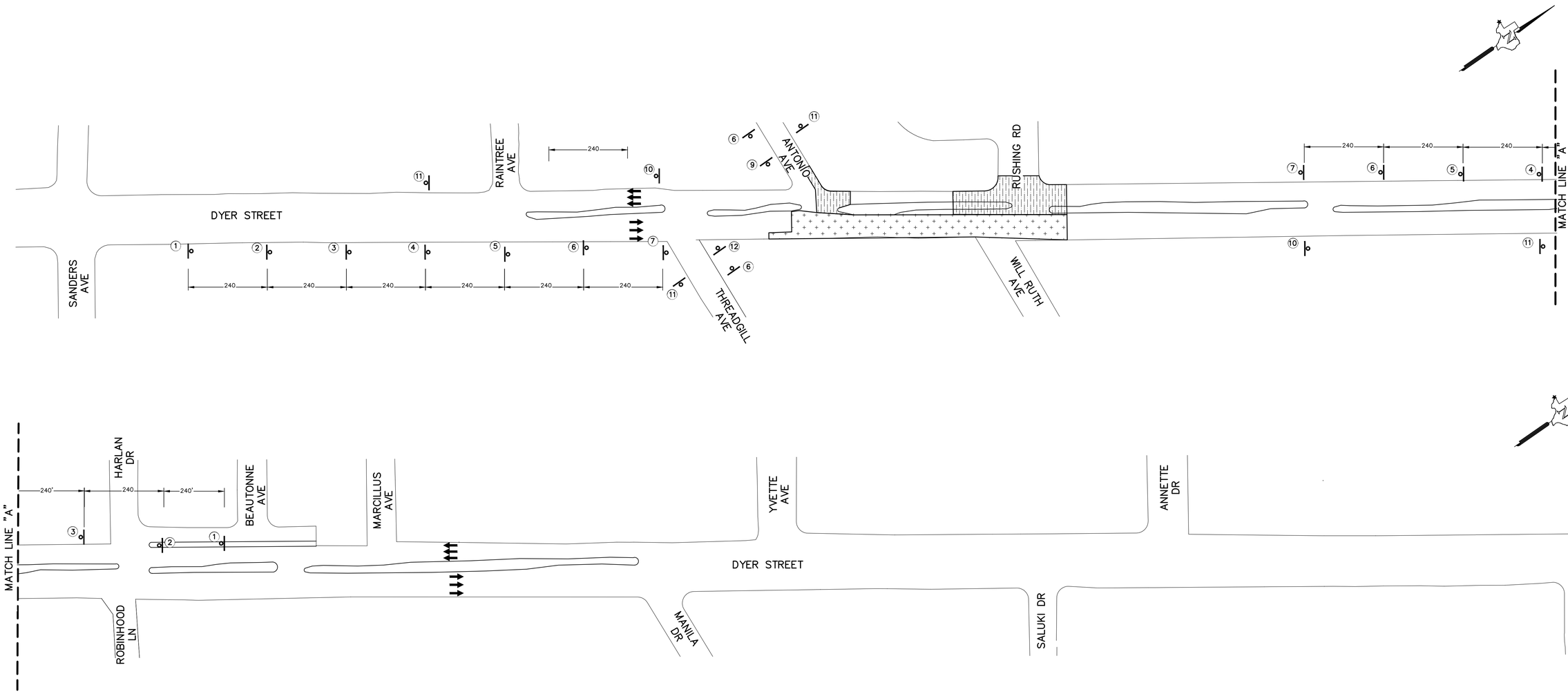

LEGEND

- WORK ZONE–PHASE 3
- WORK ZONE–PHASE 4
- CONSTRUCTION SIGNING
- TRAFFIC LANE AND DIRECTION OF TRAFFIC

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
Give Us A BRAKE	OBEY WARNING SIGNS STATE LAW	STAY ALERT TALK OR TEXT LATER	WORK ZONE / TRAFFIC FINES DOUBLE / WHEN WORKERS ARE PRESENT	SPEED LIMIT 35	ROAD WORK AHEAD	BEGIN ROAD WORK NEXT 1 MILE / NAME ADDRESS CITY STATE CONTRACTOR	ROAD WORK NEXT 1 MILE NEXT 1 MILE	ROAD WORK NEXT 1 MILE	END ROAD WORK	END WORK ZONE	ROAD WORK NEXT 1 MILE
CW21–1T 48x48	R20–3T 48x42	G20–10T 60x48	G20–9TP 36x30; R20–5T 36x36; R20–5aTP 36x18	R2–1 36x48	CW20–1D 48x48	G20–5T 48x24; G20–6 48x30	G20–1bT 72x36	G20–1bL 48x24	G20–2 48x24	G20–2bT 36x18	G20–1bL 48x24

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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

TRAFFIC CONTROL
LINE DIAGRAM PHASE 3 AND 4

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JOB NO. 16–133
SEQUENCE NO. 1 OF 1
SHEET NO. C21.2

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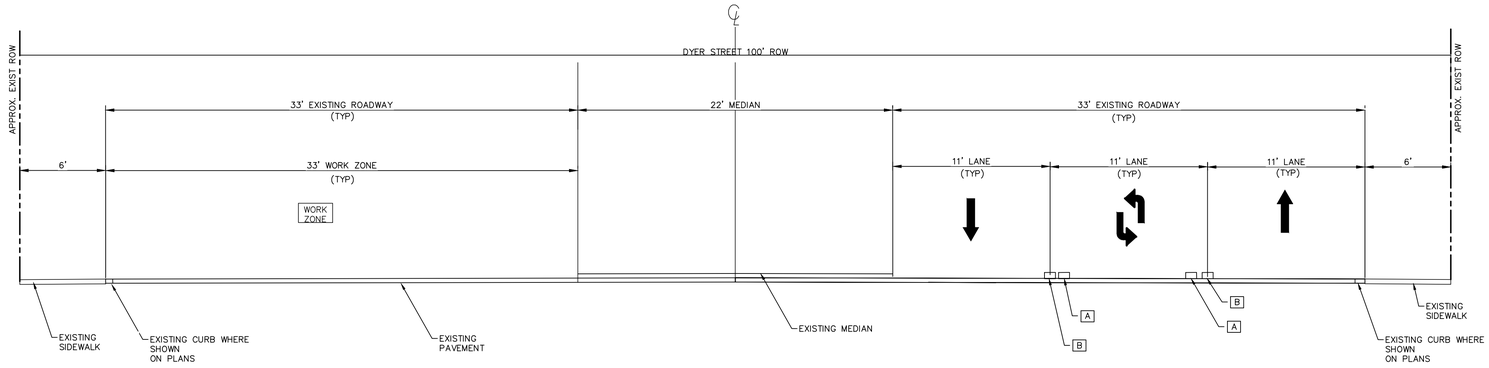
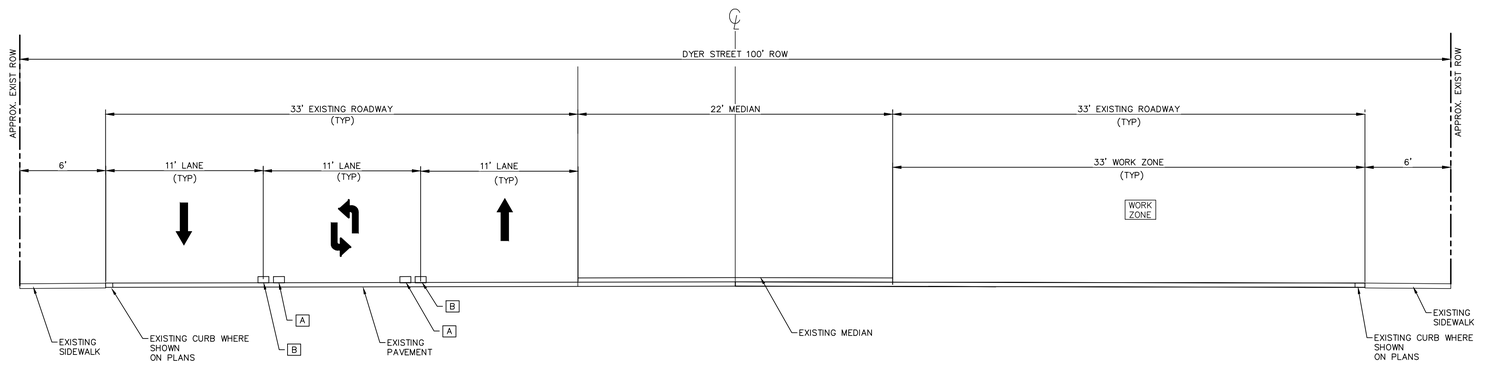
B 0662-6104 WK ZN PAV MRK REMOV (SLD W/MRKR)



PHASE 4 – FROM ANTONIO AVE TO RUSHING RD
PHASE 7 – FROM HARLAN DR TO BEAUTONE AVE (SOUTH BOUND ON DYER ST)

SCALE 1"=5'



PHASE 3 – FROM ANTONIO AVE TO WILL RUTH
PHASE 8 – FROM ROBIN HOOD LN TO BEAUTONE AVE (NORTH BOUND ON DYER ST)

SCALE 1"=5"

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ENGINEER'S SEAL

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

TRAFFIC CONTROL
TYPICAL SECTIONS

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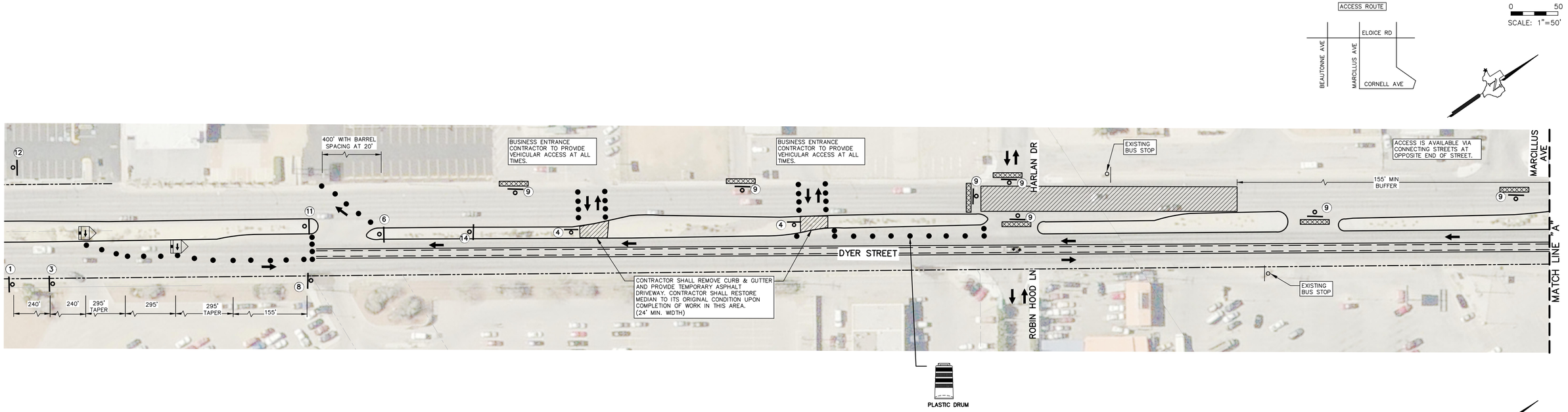
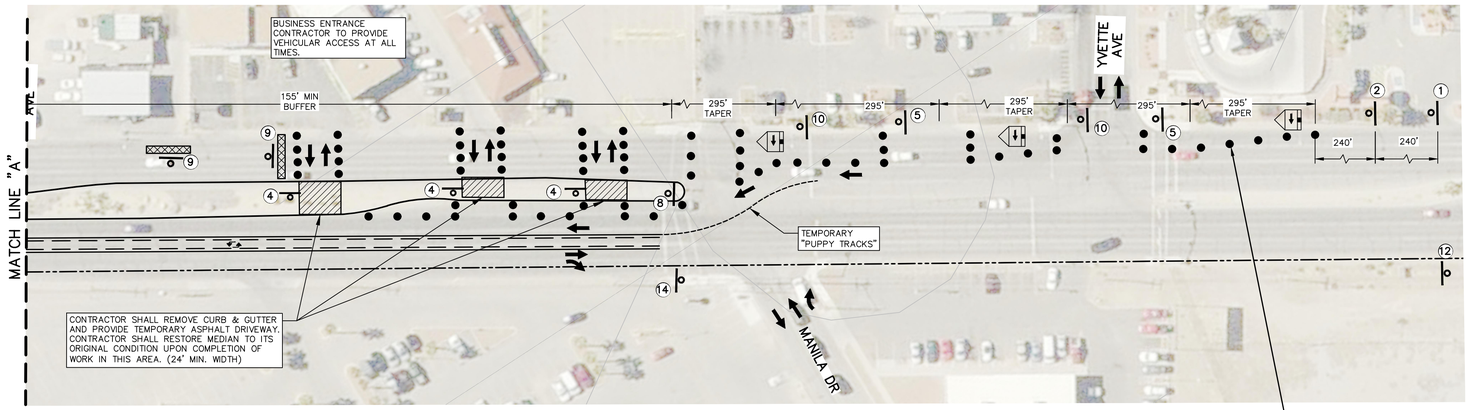
JOB NO. 16-133
SEQUENCE NO. 1 OF 1
SHEET NO. C21.3





NOTES:

1. TRAFFIC CONTROL PLAN SHALL BE COORDINATED WITH CITY OF EL PASO– TRAFFIC DEPARTMENT AND TXDOT 72 HOURS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL NOT HAVE EXCLUSIVE USE OF THE RIGHT OF WAY BUT SHALL COOPERATE IN USE OF THE RIGHT OF WAY WITH THE CITY OF EL PASO AND TXDOT AS WELL AS VARIOUS PUBLIC UTILITY COMPANIES AS MAY BE REQUIRED. IN THE EVENT OF UNFORESEEN UTILITY ADJUSTMENTS, THE CONTRACTOR SHALL EXECUTE WORK IN SUCH A MANNER AND SEQUENCE AS TO ALLOW THE ADJUSTMENTS TO BE MADE WITH MINIMAL DISRUPTION TO TRAFFIC.
3. TRAFFIC MUST BE HANDLED APPROPRIATELY THROUGH THE PROJECT DURING CONSTRUCTION AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE FOR THE SAFETY AND COMFORT OF THE TRAVELING PUBLIC AT ALL TIMES. THE CONTRACTOR SHALL BE REQUIRED TO GIVE THE TRAVELING PUBLIC AT LEAST 7–DAY ADVANCED NOTICE OF ANY LANE CLOSURES OR CHANGE IN TRAFFIC FLOW DIRECTION.
4. THE CONTRACTOR'S ATTENTION IS CALLED TO THE NECESSITY OF ERECTING AND MAINTAINING BARRICADES, WARNING SIGNS, AND DIRECTIONAL SIGNS AT ALL APPROACH STREET INTERSECTIONS IN ORDER TO PROPERLY DIRECT TRAFFIC WITHIN THE LIMITS OF THIS PROJECT. ALL SUCH BARRICADES, WARNING SIGNS, AND DIRECTIONAL SIGNS SHALL COMPLY WITH THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
5. REFER TO LATEST B.C. (BARRICADE AND CONSTRUCTION STANDARDS) SHEETS FOR PROPER SPACING OF PLASTIC DRUMS AND OTHER CHANNELIZING DEVICES.
6. PLACEMENT OF WARNING SIGNS, AS SHOWN ON THESE PLANS, MAY BE ALTERED TO ACCOMMODATE FIELD CONDITIONS OR VISUAL OBSTRUCTIONS.
7. CONFLICTING PAVEMENT MARKINGS/SIGNS MUST BE REMOVED/COVERED FOR LONG–TERM PROJECTS, WORK–ZONE MARKINGS MUST BE INSTALLED WHERE NEEDED.
8. FOR NIGHTTIME, USE APPROPRIATE FLASHING WARNING LIGHTS IN ADVANCE WARNING AREA.
9. ACCESS TO PROPERTIES AND BUSINESSES ADJACENT TO THE RIGHT OF WAY MUST BE PROVIDED AND MAINTAINED AT ALL TIMES UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE CONTRACTOR WILL PERSONALLY CONTACT THE BUSINESS OR PROPERTY OWNER AT LEAST 5 DAYS IN ADVANCED OF ANY DRIVEWAY CLOSURE. IF THE PROPERTY HAS MORE THAN ONE DRIVEWAY, THEY SHALL BE CLOSED ONLY ONE AT A TIME. IF THE PROPERTY ONLY HAS ONE ACCESS, THE DRIVEWAY SHALL BE CLOSED IN HALF SECTIONS. IF CLOSURE OF A SINGLE ACCESS TO ANY BUSINESS IS REQUIRED FOR UTILITY WORK, THIS ACTIVITY SHALL BE PERFORMED DURING OFF–PEAK HOURS OR AS DIRECTED BY THE ENGINEER.
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    4:00 P.M. TO 6:00 P.M.
11. ADVANCED WARNING LANE CLOSURE SIGNS SHALL BE COVERED WHEN ALL EXISTING LANES ARE OPEN TO TRAFFIC.
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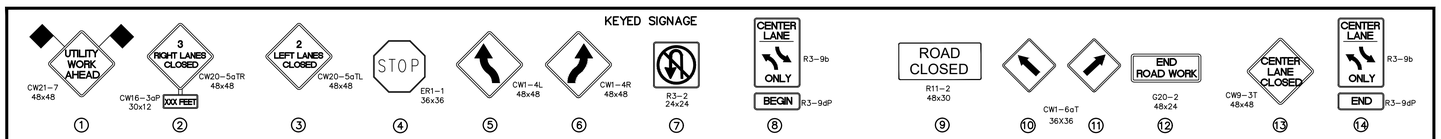
13. CONTRACTOR SHALL MAINTAIN ACCESS TO BUSINESSES AFFECTED BY PROJECT AREAS THROUGHOUT THE DURATION OF CONSTRUCTION
14. THIS TRAFFIC CONTROL IS FOR CONSTRUCTIOIN ON TXDOT ROW ONLY, FOR CITY OF EL PASO ROW CONTRACTOR SHALL PROVIDE SEPARATE TRAFFIC CONTROL PLAN.

LEGEND

- WORK ZONE
- TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION SIGNING
- CHANNELIZING DEVICE (BARREL)
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW PANEL

KEYED SIGNAGE



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REV.	DATE	BY	DESCRIPTION

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CALL
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ENGINEER'S SEAL
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594–5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

TRAFFIC CONTROL
PHASE 7 – HARLAN AND
DYER INTERSECTION

THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF
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MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO. 16–133
SEQUENCE NO. 1 OF 1
SHEET NO. C21.4

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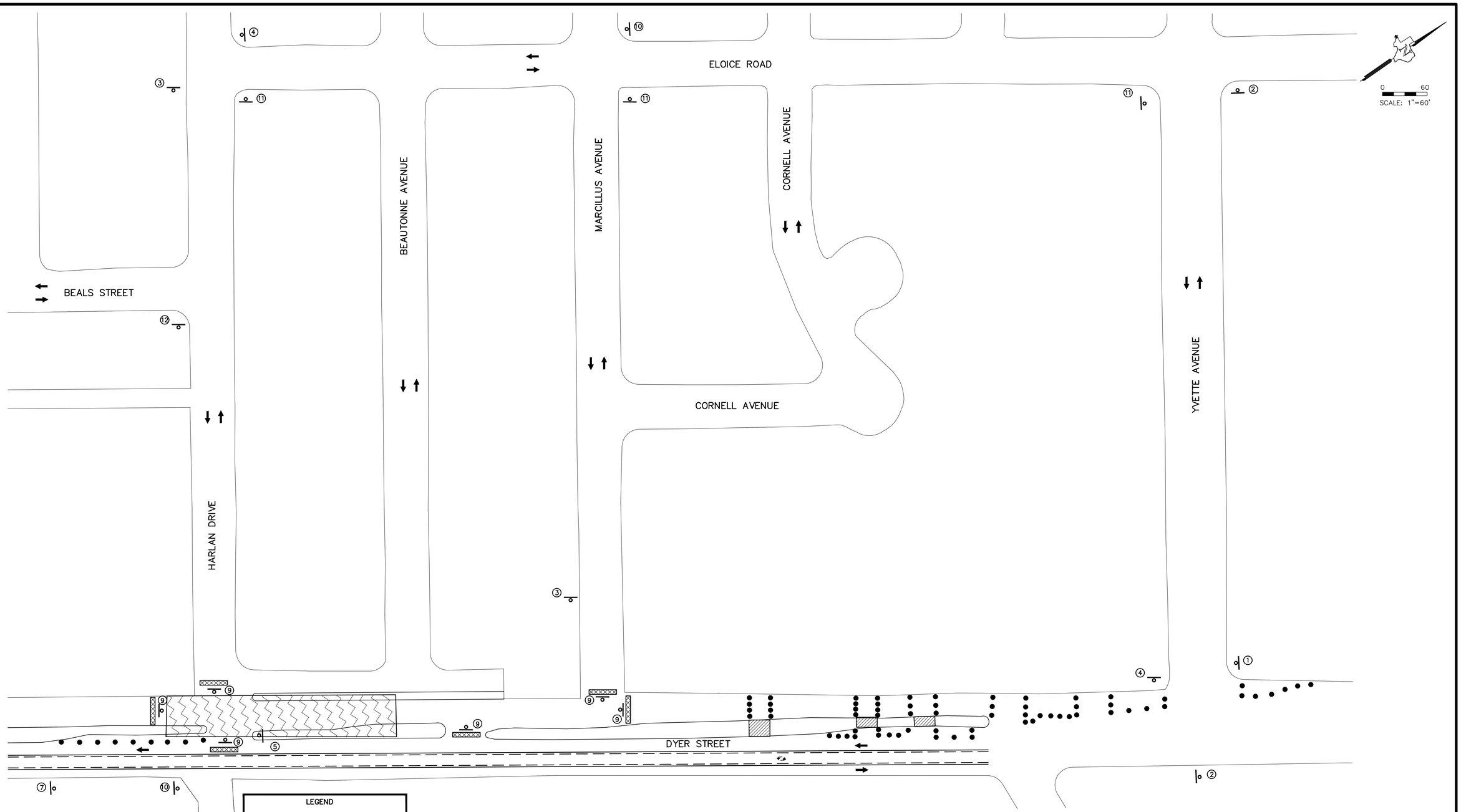

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DETOUR PLAN
PHASE 7

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JOB NO. 16-133
SEQUENCE NO. 1 OF 1
SHEET NO. C21.5

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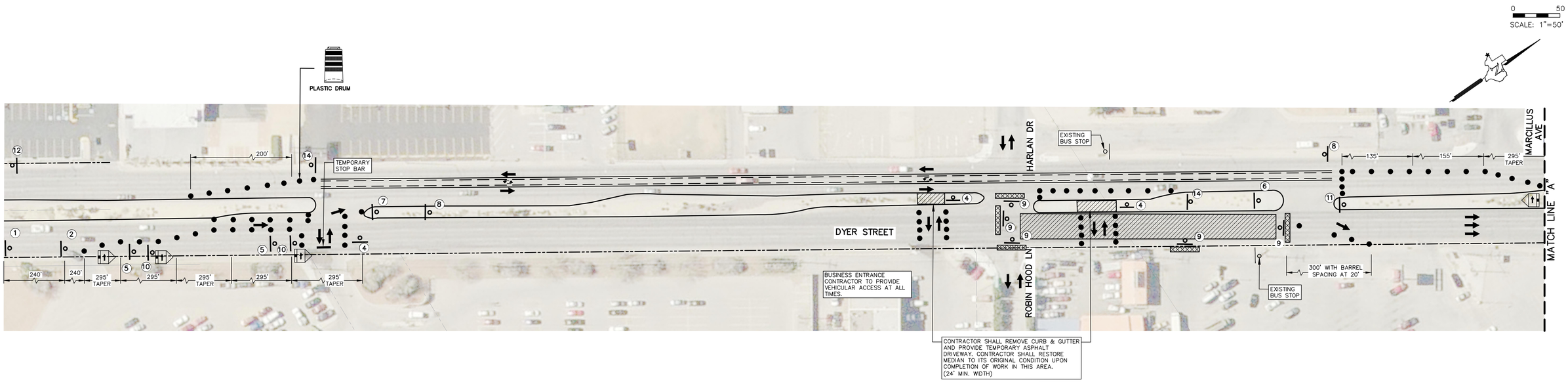

NOTES:

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LEGEND

- WORK ZONE
- TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION SIGNING
- CHANNELIZING DEVICE (BARREL)
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW PANEL

KEYED SIGNAGE

① UTILITY WORK AHEAD. CW21–7 48x48	② 3 RIGHT LANES CLOSED CW20–5TR 48x48; CW16–3aP 30x12 XXX FEET	③ 2 LEFT LANES CLOSED CW20–5aTL 48x48; CW16–3aP 30x12 XXX FEET	④ STOP ER1–1 36x36	⑤ CW1–4L 48x48	⑥ CW1–4R 48x48	⑦ R3–2 24x24	⑧ CENTER LANE ONLY R3–9b; BEGIN R3–9dP	⑨ ROAD CLOSED R11–2 48x30	⑩ CW1–6aT 36x36	⑪	⑫ END ROAD WORK G20–2 48x24	⑬ CW9–3T 48x48 CENTER LANE CLOSED	⑭ CENTER LANE ONLY R3–9b; END R3–9dP

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

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EL PASO, TEXAS 79925
(915) 594–5500

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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

TRAFFIC CONTROL
PHASE 8 – ROBIN HOOD
AND DYER INTERSECTION

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JOB NO. 16–133
SEQUENCE NO. 1 OF 1
SHEET NO. C21.6

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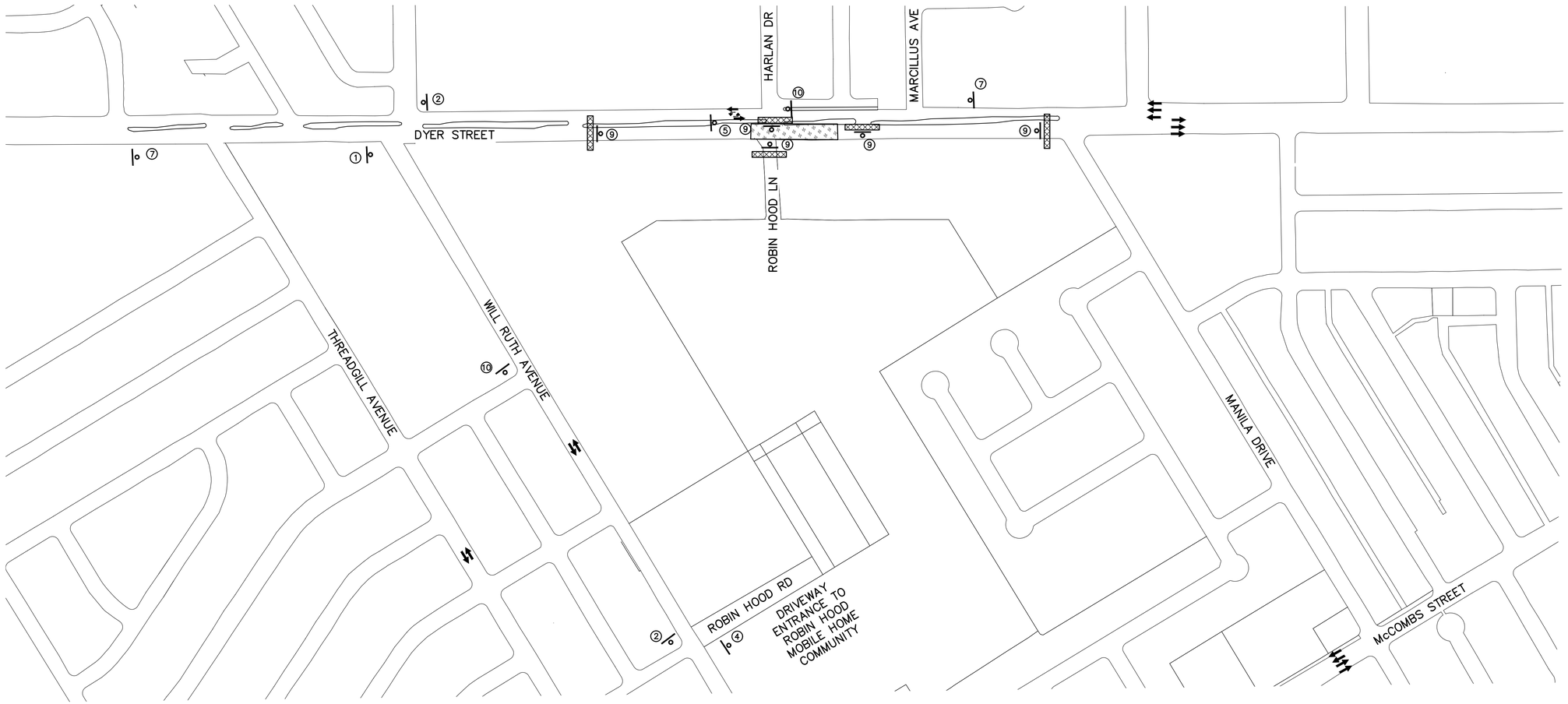

LEGEND

- WORK ZONE
- TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION SIGNING
- CHANNELIZING DEVICE (BARREL)
- TYPE III BARRICADE

ROBIN HOOD LN / DETOUR M4-12T VARx12 / M4-9 30x24 ①	ROBIN HOOD LN / DETOUR M4-12T VARx12 / M4-9 48x18 ②	ROAD CLOSED AHEAD CW20-3D 48x48 ③	END DETOUR M4-8a 24x18 ④	R3-1 24x24 ⑤	R3-2 24x24 ⑥	DETOUR AHEAD CW20-2D 48x18 ⑦	ROAD CLOSED TO THRU TRAFFIC R11-4 60x30 ⑧	ROAD CLOSED R11-2 48x30 ⑨	ROBIN HOOD LN / DETOUR M4-12T VARx12 / M4-9 30x24 ⑩

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1-800-344-8377
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DETOUR PLAN
PHASE 8

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JOB NO. 16-133
SEQUENCE NO. 1 OF 1
SHEET NO. C21.7

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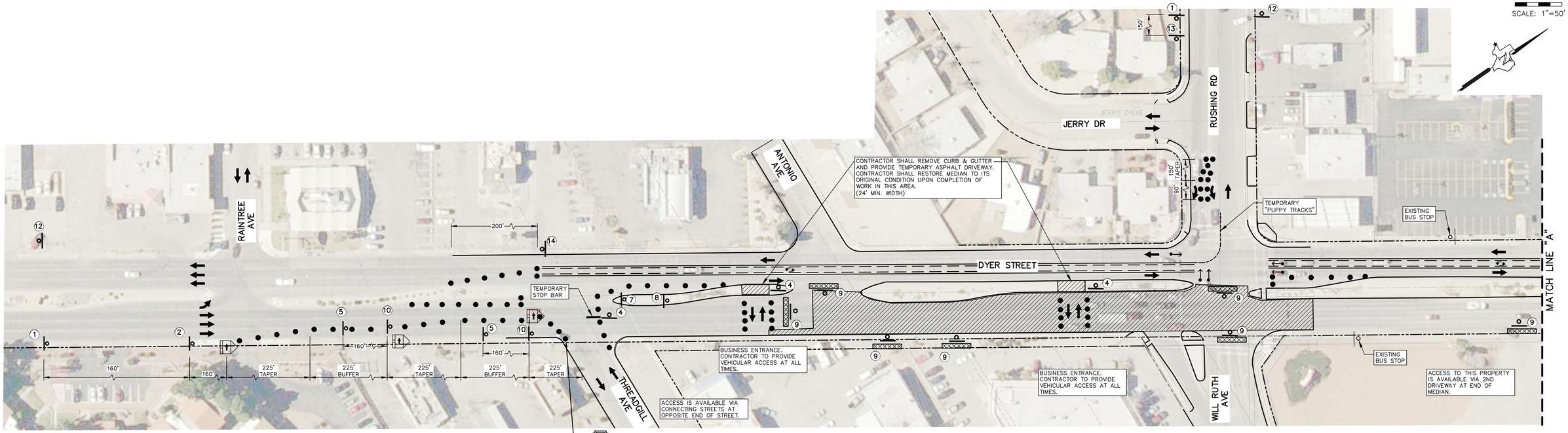

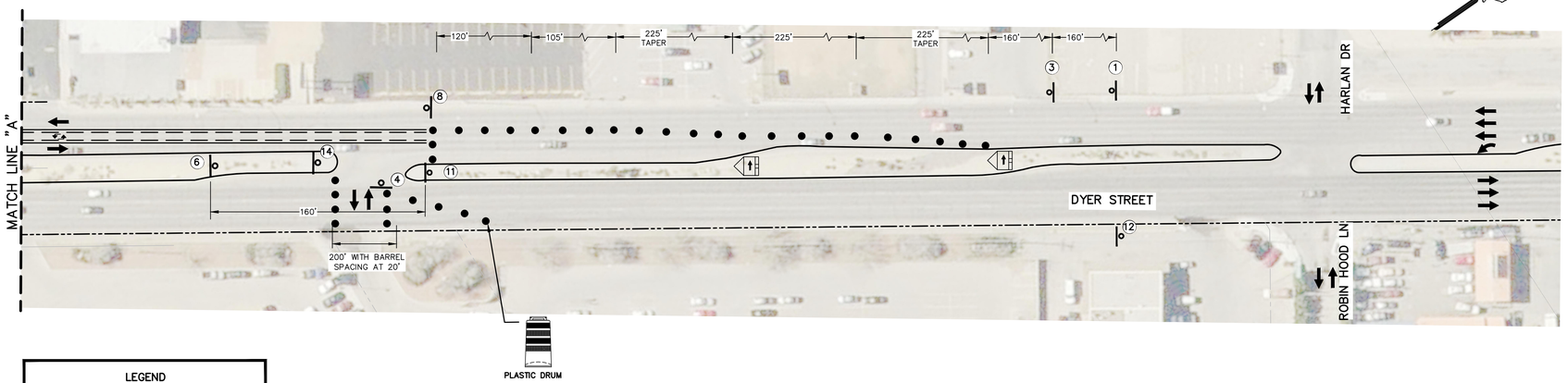

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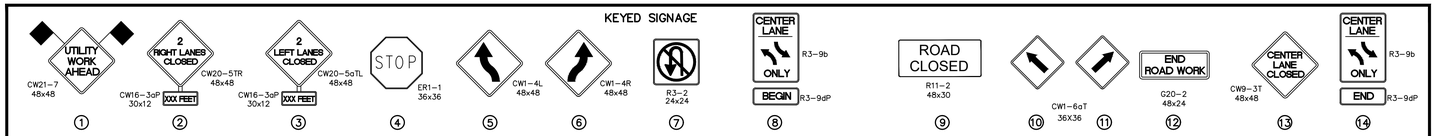
LEGEND

- WORK ZONE
- TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION SIGNING
- CHANNELIZING DEVICE (BARREL)
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW PANEL
- TEMPORARY TRAFFIC SIGNAL

KEYED SIGNAGE



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DESIGNED B.O.
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DATE 10/7/2022

UTILITY OWNER
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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

TRAFFIC CONTROL
PHASE 3 – DYER STREET

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JOB NO. 16–133
SEQUENCE NO. 1 OF 1
SHEET NO. C21.8

F:\16133\DWG\16133 – C21.0_DWG_Traffic_Control.dwg Time:Oct07,2022–07:19am Loginedgar

SCALE: 1"=200'

DYER STREET
ANTONIO AVE
JERRY DR
RUSHING ROAD
SANDERS AVENUE
SHOPPERS ROAD
SALISBURY DRIVE
CHARLESTON STREET
FAIRFAX STREET
THREADGILL AVENUE
WILL RUTH AVENUE
ROANOKE DRIVE
VICKSBURG DR
RUTLEDGE PL
WAVERLY DR
ALBANY DR
ROBIN HOOD RD
McCOMBS STREET
TARPON DR
STURGEON DR
PICKEREL DR
POMPANO AVE
FLOUNDER DR

LEGEND

- WORK ZONE
- TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION SIGNING
- CHANNELIZING DEVICE (BARREL)
- TYPE III BARRICADE

ROAD CLOSED AHEAD CW20-3D 48x48	END DETOUR M4-8a 24x18	DETOUR AHEAD CW20-2D 48x18	ROAD CLOSED R11-2 48x30	WILL RUTH DETOUR M4-12T VARx12 M4-9 30x24	WILL RUTH DETOUR M4-12T VARx12 M4-9 48x18	WILL RUTH DETOUR M4-12T VARx12 M4-9 48x18	DYER DETOUR M4-12T VARx12 M4-9 30x24	DYER DETOUR M4-12T VARx12 M4-9 48x18	DYER DETOUR M4-12T VARx12 M4-9 48x18
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DETOUR PLAN
PHASE 3

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JOB NO. 16-133
SEQUENCE NO. 1 OF 1
SHEET NO. C21.9

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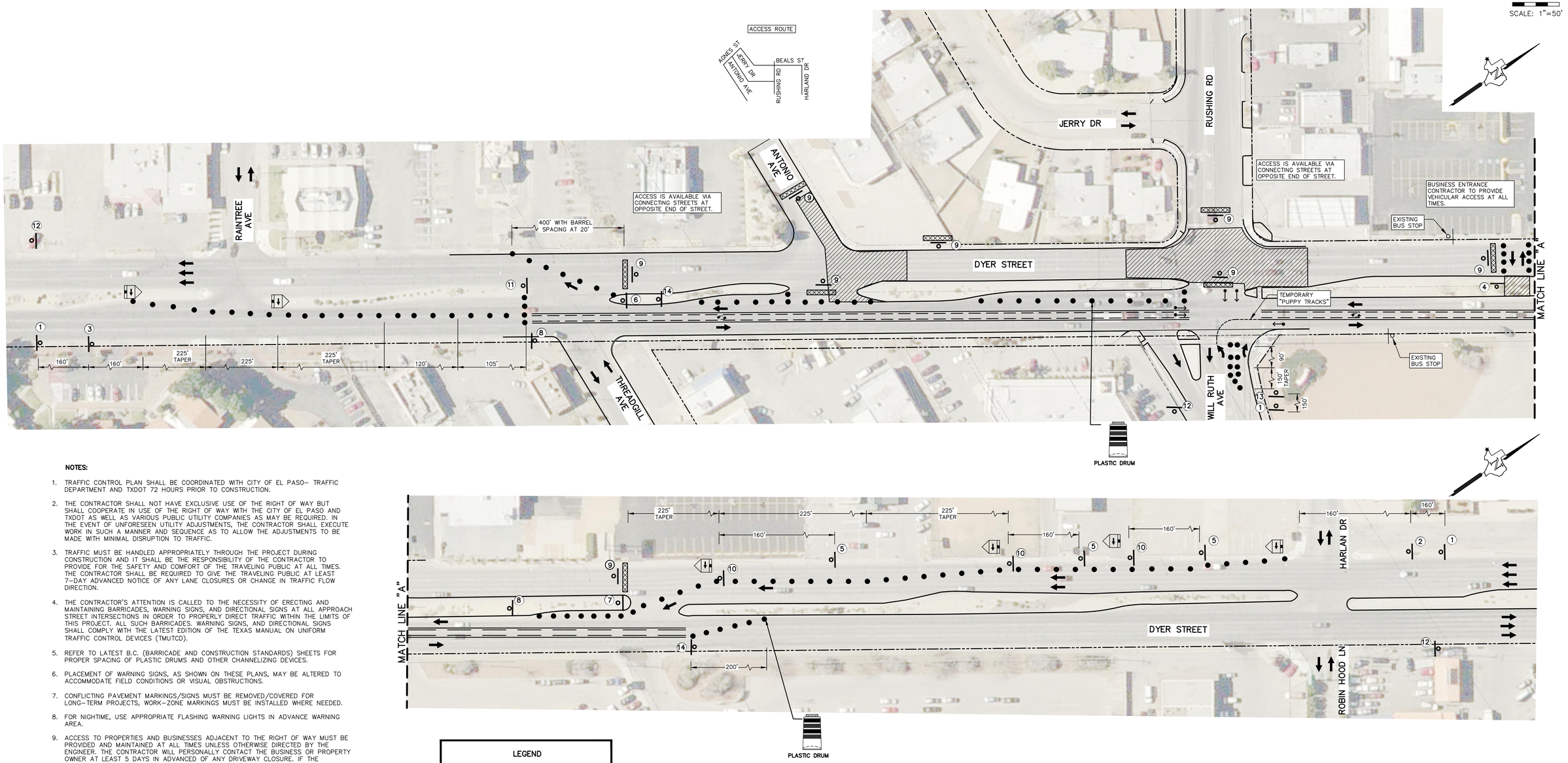

NOTES:

1. TRAFFIC CONTROL PLAN SHALL BE COORDINATED WITH CITY OF EL PASO– TRAFFIC DEPARTMENT AND TXDOT 72 HOURS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL NOT HAVE EXCLUSIVE USE OF THE RIGHT OF WAY BUT SHALL COOPERATE IN USE OF THE RIGHT OF WAY WITH THE CITY OF EL PASO AND TXDOT AS WELL AS VARIOUS PUBLIC UTILITY COMPANIES AS MAY BE REQUIRED. IN THE EVENT OF UNFORESEEN UTILITY ADJUSTMENTS, THE CONTRACTOR SHALL EXECUTE WORK IN SUCH A MANNER AND SEQUENCE AS TO ALLOW THE ADJUSTMENTS TO BE MADE WITH MINIMAL DISRUPTION TO TRAFFIC.
3. TRAFFIC MUST BE HANDLED APPROPRIATELY THROUGH THE PROJECT DURING CONSTRUCTION AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE FOR THE SAFETY AND COMFORT OF THE TRAVELING PUBLIC AT ALL TIMES. THE CONTRACTOR SHALL BE REQUIRED TO GIVE THE TRAVELING PUBLIC AT LEAST 7–DAY ADVANCED NOTICE OF ANY LANE CLOSURES OR CHANGE IN TRAFFIC FLOW DIRECTION.
4. THE CONTRACTOR'S ATTENTION IS CALLED TO THE NECESSITY OF ERECTING AND MAINTAINING BARRICADES, WARNING SIGNS, AND DIRECTIONAL SIGNS AT ALL APPROACH STREET INTERSECTIONS IN ORDER TO PROPERLY DIRECT TRAFFIC WITHIN THE LIMITS OF THIS PROJECT. ALL SUCH BARRICADES, WARNING SIGNS, AND DIRECTIONAL SIGNS SHALL COMPLY WITH THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
5. REFER TO LATEST B.C. (BARRICADE AND CONSTRUCTION STANDARDS) SHEETS FOR PROPER SPACING OF PLASTIC DRUMS AND OTHER CHANNELIZING DEVICES.
6. PLACEMENT OF WARNING SIGNS, AS SHOWN ON THESE PLANS, MAY BE ALTERED TO ACCOMMODATE FIELD CONDITIONS OR VISUAL OBSTRUCTIONS.
7. CONFLICTING PAVEMENT MARKINGS/SIGNS MUST BE REMOVED/COVERED FOR LONG–TERM PROJECTS, WORK–ZONE MARKINGS MUST BE INSTALLED WHERE NEEDED.
8. FOR NIGHTIME, USE APPROPRIATE FLASHING WARNING LIGHTS IN ADVANCE WARNING AREA.
9. ACCESS TO PROPERTIES AND BUSINESSES ADJACENT TO THE RIGHT OF WAY MUST BE PROVIDED AND MAINTAINED AT ALL TIMES UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE CONTRACTOR WILL PERSONALLY CONTACT THE BUSINESS OR PROPERTY OWNER AT LEAST 5 DAYS IN ADVANCED OF ANY DRIVEWAY CLOSURE. IF THE PROPERTY HAS MORE THAN ONE DRIVEWAY, THEY SHALL BE CLOSED ONLY ONE AT A TIME. IF THE PROPERTY ONLY HAS ONE ACCESS, THE DRIVEWAY SHALL BE CLOSED IN HALF SECTIONS. IF CLOSURE OF A SINGLE ACCESS TO ANY BUSINESS IS REQUIRED FOR UTILITY WORK, THIS ACTIVITY SHALL BE PERFORMED DURING OFF–PEAK HOURS OR AS DIRECTED BY THE ENGINEER.
10. PEAK HOURS ARE DEFINED AS FOLLOWS:
    MONDAY THRU FRIDAY
    7:00 A.M. TO 9:00 A.M. AND
    4:00 P.M. TO 6:00 P.M.
11. ADVANCED WARNING LANE CLOSURE SIGNS SHALL BE COVERED WHEN ALL EXISTING LANES ARE OPEN TO TRAFFIC.
12. THE INFORMATION SHOWN ON THE TCP PLAN SHEETS IS FOR THE ENTIRE PROJECT, HOWEVER, IT IS THE INTENT TO LIMIT TRAFFIC CONTROL TO ONLY THOSE AREAS THAT ARE BEING CONSTRUCTED.
13. CONTRACTOR SHALL MAINTAIN ACCESS TO BUSINESSES AFFECTED BY PROJECT AREAS THROUGHOUT THE DURATION OF CONSTRUCTION
14. THIS TRAFFIC CONTROL IS FOR CONSTRUCTIOIN ON TXDOT ROW ONLY, FOR CITY OF EL PASO ROW CONTRACTOR SHALL PROVIDE SEPARATE TRAFFIC CONTROL PLAN.

LEGEND

- WORK ZONE
- TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION SIGNING
- CHANNELIZING DEVICE (BARREL)
- TYPE III BARRICADE
- TRAILER MOUNTED FLASHING ARROW PANEL
- TEMPORARY TRAFFIC SIGNAL

KEYED SIGNAGE

UTILITY WORK AHEAD CW21–7 48x48	3 RIGHT LANES CLOSED CW16–3aP 30x12 XXX FEET CW20–5TR 48x48	2 LEFT LANES CLOSED CW16–3aP 30x12 XXX FEET CW20–5aTL 48x48	STOP ER1–1 36x36	CW1–4L 48x48	CW1–4R 48x48	R3–2 24x24	CENTER LANE ONLY BEGIN R3–9b R3–9dP	ROAD CLOSED R11–2 48x30	CW1–6aT 36x36	END ROAD WORK G20–2 48x24	CENTER LANE CLOSED CW9–3T 48x48	CENTER LANE ONLY END R3–9b R3–9dP	
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594–5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

TRAFFIC CONTROL
PHASE 4 – DYER STREET

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JOB NO. 16–133
SEQUENCE NO. 1 OF 1
SHEET NO. C21.10

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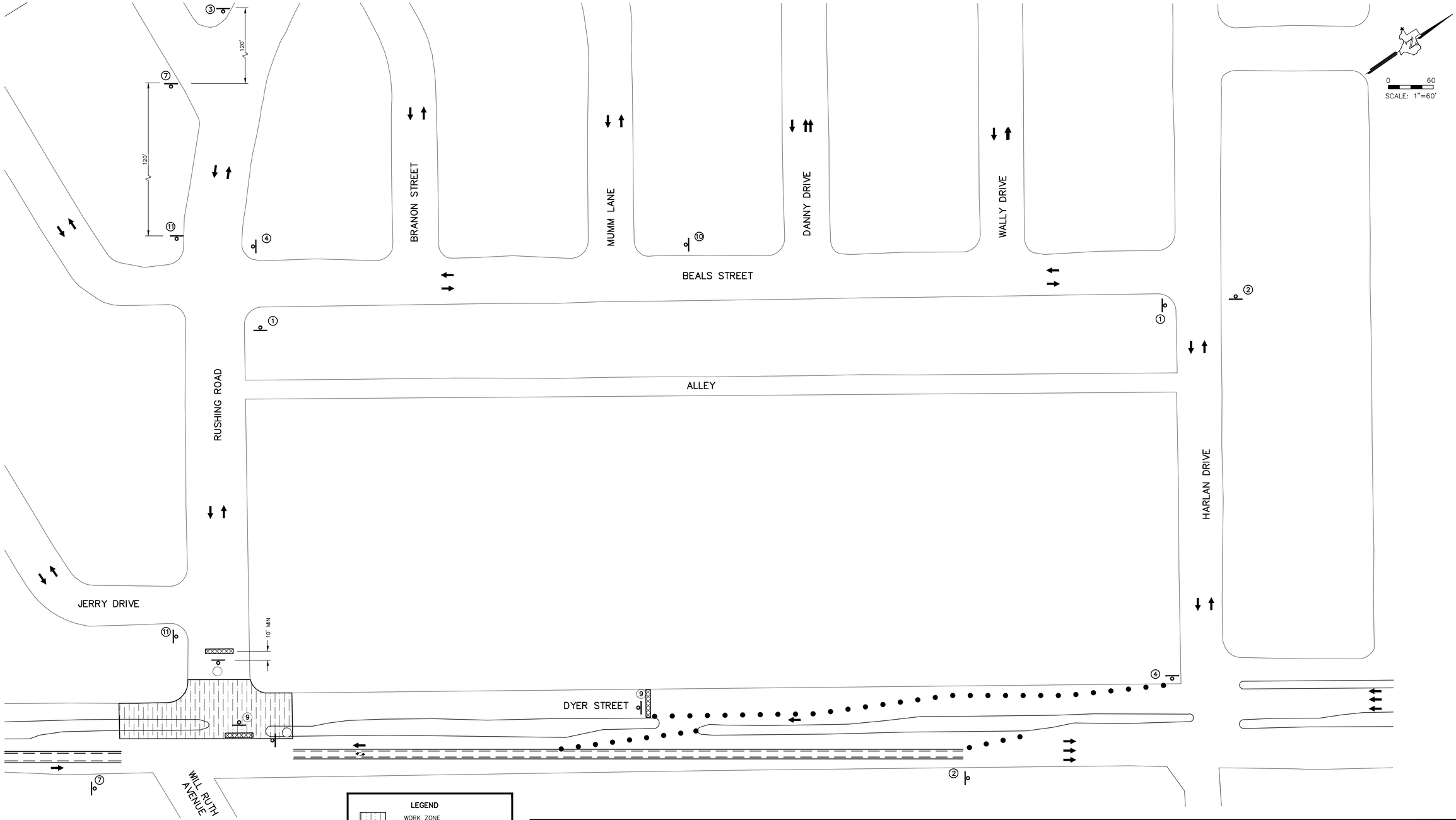

LEGEND

- WORK ZONE
- TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION SIGNING
- CHANNELIZING DEVICE (BARREL)
- TYPE III BARRICADE

DYER ST / DETOUR	RUSHING ROAD / DETOUR	ROAD CLOSED AHEAD	END DETOUR			DETOUR AHEAD	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED	RUSHING RD / DETOUR	DYER ST / DETOUR
M4-12T VARx12 M4-9 30x24	M4-12T VARx12 M4-9 48x18	CW20-3D 48x48	M4-8a 24x18	R3-1 24x24	R3-2 24x24	CW20-2D 48x18	R11-4 60x30	R11-2 48x30	M4-12T VARx12 M4-9 48x18	M4-12T VARx12 M4-9 48x18
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪

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DESIGNED	DRAWN	CHECKED	DATE
B.O.	E.G./A.M.	M.M.	10/7/2022

UTILITY OWNER
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EL PASO, TEXAS 79925
(915) 594-5500

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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DETOUR PLAN
PHASE 4

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JOB NO.	SEQUENCE NO.	SHEET NO.
16-133	1 OF 1	C21.11

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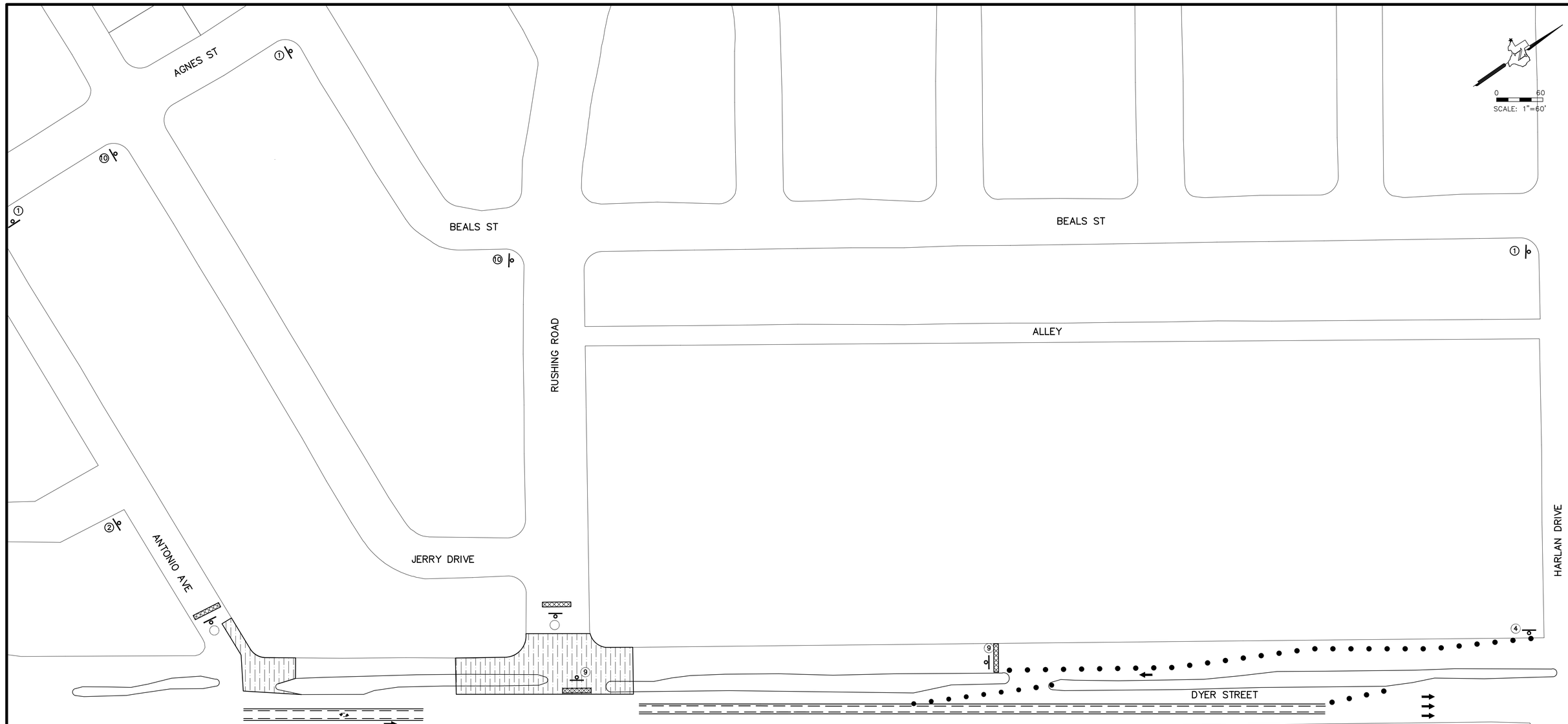

LEGEND

- WORK ZONE
- TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION SIGNING
- CHANNELIZING DEVICE (BARREL)
- TYPE III BARRICADE

DYER ST / DETOUR M4-12T VARx12 / M4-9 30x24	DYER ST / DETOUR M4-12T VARx12 / M4-9 48x18	ROAD CLOSED AHEAD CW20-3D 48x48	END DETOUR M4-8a 24x18	R3-1 24x24	R3-2 24x24	DETOUR AHEAD CW20-2D 48x18	ROAD CLOSED TO THRU TRAFFIC R11-4 60x30	ROAD CLOSED R11-2 48x30	DYER ST / DETOUR M4-12T VARx12 / M4-9 48x18
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DETOUR PLAN
FOR ANTONIO AVE

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SEQUENCE NO. 1 OF 1
SHEET NO. C21.12

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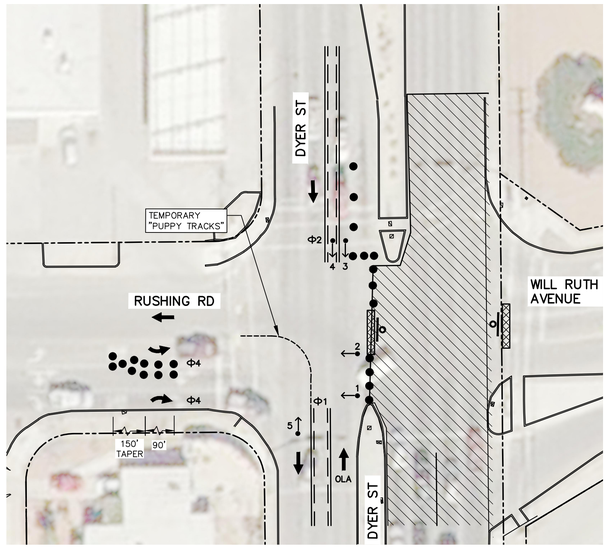
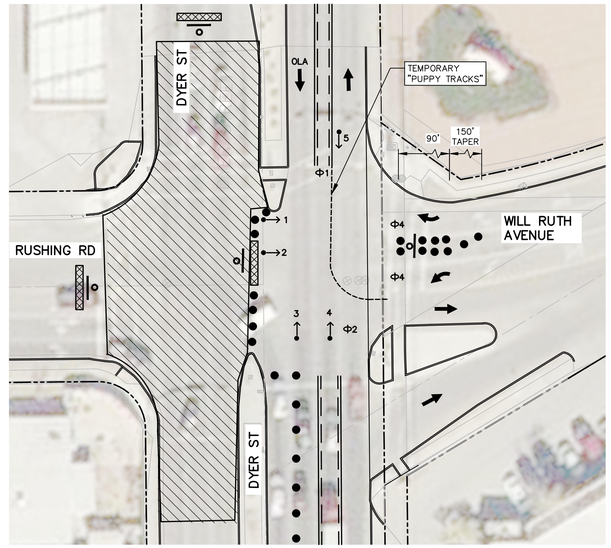
PHASE 3

0 30
SCALE: 1"=30'

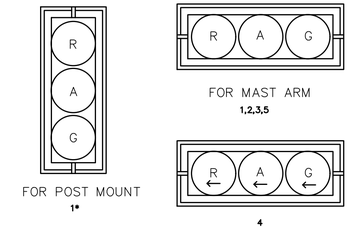


PHASE 4

0 30
SCALE: 1"=30'



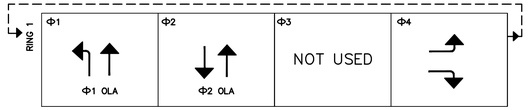
TEMPORARY SIGNAL HEAD



* CAN BE USED ON TEMPORARY POST MOUNT IF NEEDED.

DETAIL A

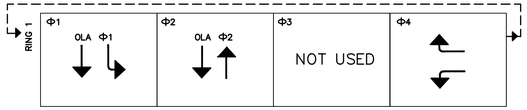
DYER STREET PHASE
(WITH 4-PHASE CONTROLLER)



Φ = PHASE NUMBER
= PROTECTED MOVEMENT
= PERMITTED MOVEMENT
OLA = OVERLAP "A"

RUSHING RD PHASE

DYER STREET PHASE



Φ = PHASE NUMBER
= PROTECTED MOVEMENT
= PERMITTED MOVEMENT
OLA = OVERLAP "A"

RUSHING RD PHASE

LEGEND

- WORK ZONE
- TRAFFIC LANE AND DIRECTION OF TRAFFIC
- CONSTRUCTION SIGNING
- CHANNELIZING DEVICE (BARREL)
- TYPE III BARRICADE
- TEMPORARY TRAFFIC SIGNAL

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

DYER AND WILL RUTH – TEMPORARY TRAFFIC SIGNAL LAYOUT

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SEQUENCE NO. 1 OF 1
SHEET NO. C21.13

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP)is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.
11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control devices.
13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.
2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

SHEET 1 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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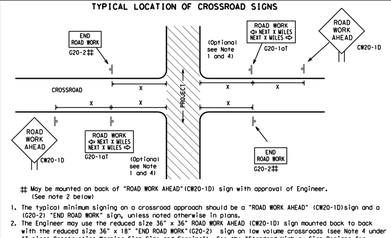
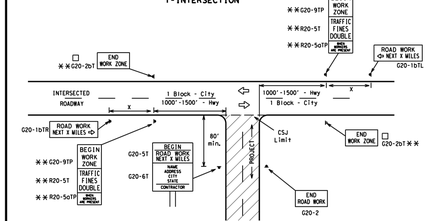
REVISIONS 4-03 7-13 9-07 8-14 5-10 5-21	DIST	COUNTY		SHEET NO.

DATE:
FILE:

TYPICAL LOCATION OF CROSSROAD SIGNS



T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-Intersection, the Contractor shall place the "CONTRACTOR NAME" (G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(1)) also). The "ROAD WORK NEXT X MILES" (left arrow)(G20-1oTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1oTR)" signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING[4,5,6]

SIZE: Sign Number or Series	SIZE: Conventional Road	SIZE: Expressway/ Freeway
CW20[4], CW21, CW22, CW23, CW25	48" x 48"	48" x 48"
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"

SPACING: Posted Speed	SPACING: Sign △ Spacing "X"
MPH	Feet (Apprx.)
30	120
35	160
40	240
45	320
50	400
55	500 [2]
60	600 [2]
65	700 [2]
70	800 [2]
75	900 [2]
80	1000 [2]
*	* [3]

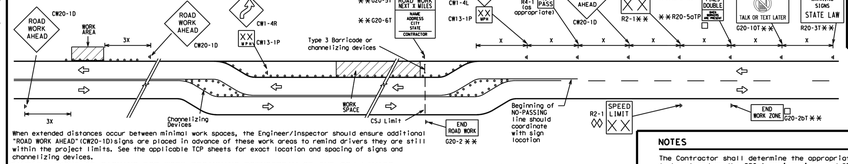
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

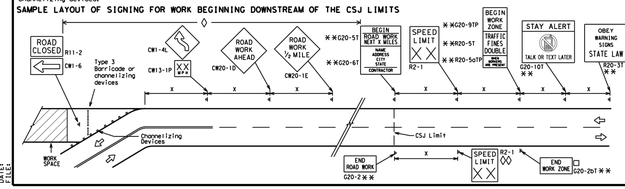
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

□ The "BEGIN WORK ZONE" (G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ limits where traffic fines may double if workers are present.

** CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◊ Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

⊢⊣	Type 3 Barricade
○○○	Channelizing Devices
▬	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

SHEET 2 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 9-07 8-14 7-13 5-21	DIST	COUNTY		SHEET NO.

DATE:
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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
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2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

TRAFFIC CONTROL STANDARDS

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JOB NO. 16-133
SEQUENCE NO. 1 OF 13
SHEET NO. C21.14

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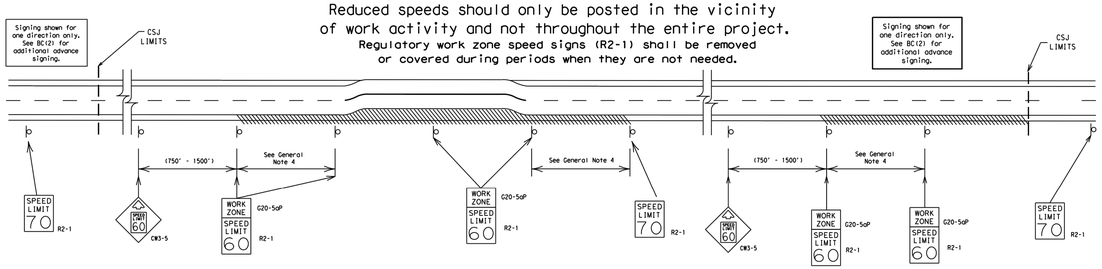
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project. Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Long/intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:
a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver
As long as any of these conditions exist, the work zone speed limit signs should remain in place.

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered.
(See Removing or Covering on BC(4)).

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT"(CW3-5)sign, "WORK ZONE"(G20-5aP) plaque and the "SPEED LIMIT"(R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Low enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

SHEET 3 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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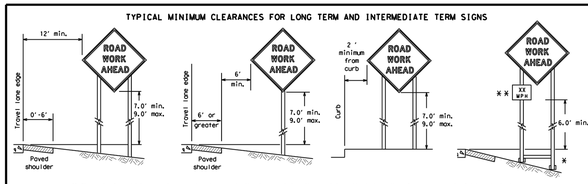
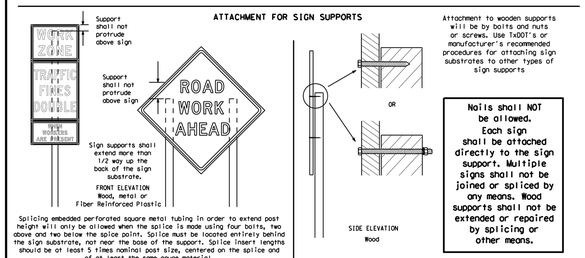
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



ATTACHMENT FOR SIGN SUPPORTS



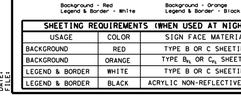
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
2. STOP/SLOW paddles shall be retroreflectorized when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B_H OR C_L SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LOGO), or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated at their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRS standard sheets or the CMUTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-Term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type 4, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B_H or Type C_{HL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
6. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
7. Sandbags shall only be placed atop or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

SHEET 4 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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TRAFFIC CONTROL STANDARDS

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SHEET NO. C21.15

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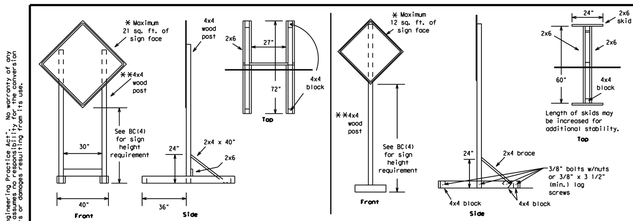
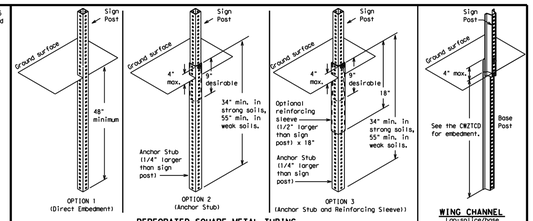


SKID MOUNTED WOOD SIGN SUPPORTS

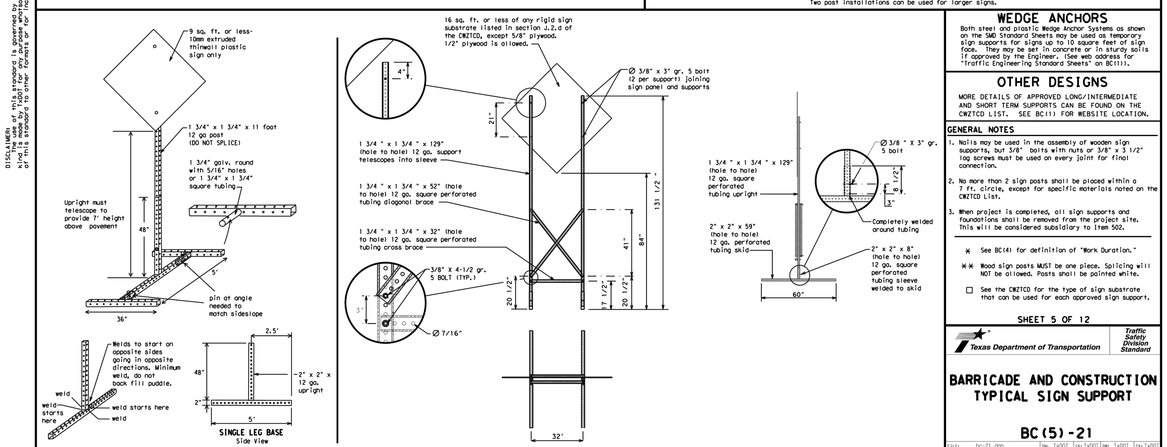
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

Refer to the CMTCD and the manufacturer's installation procedure for each type sign support.
The maximum sign square footage shall adhere to the manufacturer's recommendation.
Two post installations can be used for larger signs.



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CMTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CMTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

* See BC(4) for definition of "Work Duration."

** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

☐ See the CMTCD for the type of sign substrate that can be used for each approved sign support.

SHEET 5 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
3. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
4. Use the word "EXIT" to refer to an exit ramp on a freeway i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
8. The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. Do not present redundant information on a two-phase messages i.e., keeping two lines of the message the same and changing the third line.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
15. PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
16. Each line of text should be centered on the message board rather than left or right justified.
17. If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Cannot	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DONT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHLDR
Emergency	EMER	Slippery	SLIP
Emergency Vehicle	EMER VEH	South	S
Entrance, Enter	ENT	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
Expressway	EXPWY	Street	ST
XXXX Feet	XXXX FT	Sunday	SUN
Fog Ahead	FOG AHD	Telephone	PHONE
Freeway	FRWY, FWY	Temporary	TEMP
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DWNTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Hazardous Material	HAZMAT	Travelers	TRVLRS
High-Occupancy Vehicle	HOV	Tuesday	TUES
Highway	HWY	Time Minutes	TIME MIN
Hour(s)	HR, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHS
It Is	IT'S	Warning	WARN
Junction	JCT	Wednesday	WED
Left	LFT	Weight Limit	WT LIMIT
Left Lane	LFT LN	West	W
Lane Closed	LN CLOSED	Westbound	(route) W
Lower Level	LWR LEVEL	Wet Pavement	WET PVMT
Maintenance	MAINT	Will Not	WONT

Roadway designation = IH-number, US-number, SH-number, FM-number

DATE:
FILE:

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

(The Engineer may approve other messages not specifically covered here.)

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED	ROADWORK XXX FT	ROAD REPAIRS XXXX FT
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	FLAGGER XXXX FT	LANE NARROWS XXXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
CENTER LANE CLOSED	DAYTIME LANE CLOSURES	LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	DETOUR X MILE	ROUGH ROAD XXXX FT
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE	ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
EXIT CLOSED	RIGHT LN TO BE CLOSED	BUMP XXXX FT	US XXX EXIT X MILES
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	TRAFFIC SIGNAL XXXX FT	LANES SHIFT *
XXXXXXXX BLVD CLOSED			

Other Condition List

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List		Location List	Warning List	** Advance Notice List
MERGE RIGHT	FORM X LINES RIGHT	AT FM XXXX	SPEED LIMIT XX MPH	TUE-FRI XX AM- X PM
DETOUR NEXT X EXITS	USE XXXXX RD EXIT	BEFORE RAILROAD CROSSING	MAXIMUM SPEED XX MPH	APR XX-XX X PM-X AM
USE EXIT XXX	USE EXIT I-XX NORTH	NEXT X MILES	MINIMUM SPEED XX MPH	BEGINS MONDAY
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N	PAST US XXX EXIT	ADVISORY SPEED XX MPH	BEGINS MAY XX
TRUCKS USE US XXX N	WATCH FOR TRUCKS	XXXXXXX TO XXXXXXX	RIGHT LANE EXIT	MAY X-X XX PM - XX AM
WATCH FOR TRUCKS	EXPECT DELAYS	US XXX TO FM XXXX	USE CAUTION	NEXT FRI-SUN
EXPECT DELAYS	PREPARE TO STOP		DRIVE SAFELY	XX AM TO XX PM
REDUCE SPEED XXX FT	END SHOULDER USE		DRIVE WITH CARE	NEXT TUE AUG XX
USE OTHER ROUTES	WATCH FOR WORKERS			TONIGHT XX PM- XX AM
STAY IN LANE *				

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

1. Only 1 or 2 phases are to be used on a PCMS.
2. The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
6. For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

WORDING ALTERNATIVES

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
4. Highway names and numbers replaced as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. FT and MI, MILE and MILES interchanged as appropriate.
8. AT, BEFORE and PAST interchanged as needed.
9. Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

1. When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
2. When symbol signs, such as the "Flagger Symbol" (CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
3. When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

SHEET 6 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE:	bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
	REVISIONS				
9-07	8-14	DIST	COUNTY		SHEET NO.
7-13	5-21				

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100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
1-800-DIG-TESS
1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES
linespots@elpasotexas.gov

ENGINEER'S SEAL
THESE PLANS WERE RELEASED UNDER THE AUTHORITY OF MARCOS MEDINA, PE #93830 TO BE ISSUED AS A **100% SUBMITTAL** TO EL PASO WATER FOR REVIEW. IT IS NOT TO BE USED FOR CONSTRUCTION OR FINAL PERMIT ISSUANCE.

DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

TRAFFIC CONTROL STANDARDS

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JOB NO. 16-133
SEQUENCE NO. 3 OF 13
SHEET NO. C21.16

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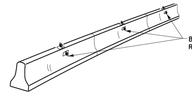
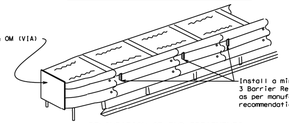
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



CONCRETE TRAFFIC BARRIER (CTB)

3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
4. Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional)while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.

LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

END TREATMENTS FOR CTB'S USED IN WORK ZONES

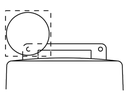
End treatments used on CTB's in work zones shall meet the appropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CMTCD List for approved end treatments and manufacturers.

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



Warning reflector may be round or square.Must have a yellow reflective surface area of at least 30 square inches

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B_{SL} or C_{SL} Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

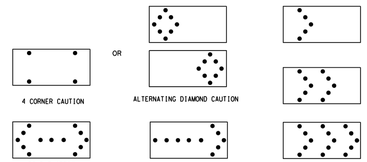
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CMTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
6. The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

1. The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
3. The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
4. The Flashing Arrow Board should be able to display the following symbols:



5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage.
8. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
9. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
10. The sequential arrow display is NOT ALLOWED.
11. The flashing arrow display is the 1x001 standard; however, the sequential chevron display may be used during daylight operations.
12. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
13. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
14. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
15. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS			
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

FLASHING ARROW BOARDS

SHEET 7 OF 12

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CMTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CMTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				

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GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections, one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

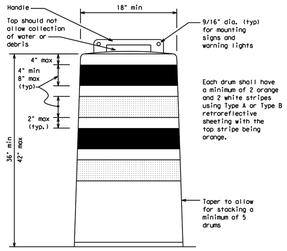
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
5. The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

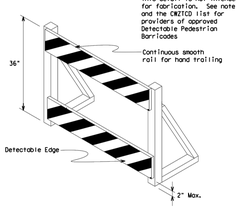
RETROREFLECTIVE SHEETING

1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. Recycled truck fire sidewalls may be used for ballast on drums approved for this type of ballast on the CMTCD list.
4. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
5. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.





DETECTABLE PEDESTRIAN BARRICADES

1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CMTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{SL} or Type C_{SL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

SHEET 8 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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4-03 8-14	DIST	COUNTY		SHEET NO.
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7-13				

(10)

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO • SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

TRAFFIC CONTROL STANDARDS

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JOB NO. 16-133
SEQUENCE NO. 4 OF 13
SHEET NO. C21.17

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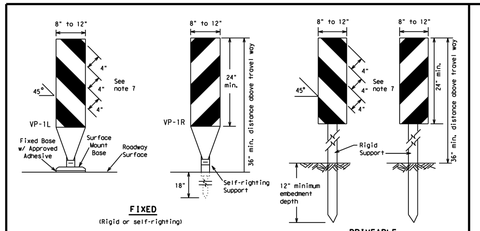
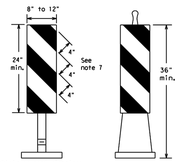


FIXED
(Rigid or self-righting)

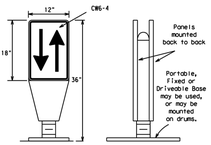
DRIVEABLE



PORTABLE

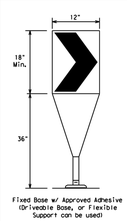
VERTICAL PANELS (VPs)

1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.



OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

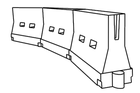
1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B_H or Type C_H conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.



Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_H or Type C_H conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The Installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.

Posted Speed	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45		450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55	$L=WS$	550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

**Taper lengths have been rounded off.
L=Length of Taper (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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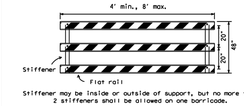
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road, striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire liner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.

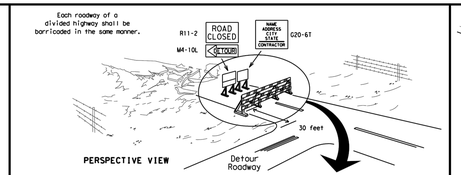
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

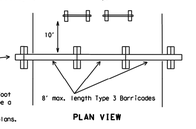
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

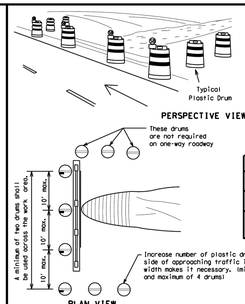
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

PLAN VIEW

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

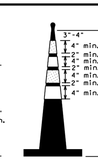
PLAN VIEW

1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.

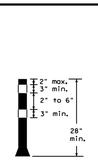
LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

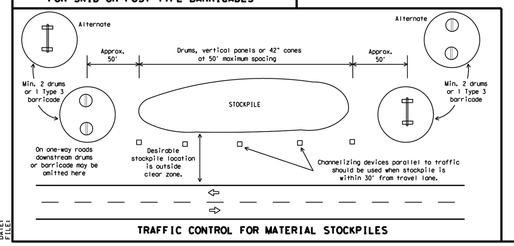
Two-Piece cones



One-Piece cones



Tubular Marker



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

28" Cones shall have a minimum weight of 9 1/2 lbs.

42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.

SHEET 10 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
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SEQUENCE NO. 5 OF 13
SHEET NO. C21.18

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WORK ZONE PAVEMENT MARKINGS

GENERAL

1. The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
2. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
3. Additional supplemental pavement marking details may be found in the plans or specifications.
4. Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
5. When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
6. When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs at the beginning of sections where passing is permitted.
7. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
2. Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240.

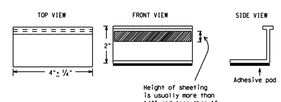
MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless slight distance is restricted by roadway geometrics.
4. Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

REMOVAL OF PAVEMENT MARKINGS

1. Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
2. The above shall not apply to detours in place for less than three days, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
3. Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Blast cleaning may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.
10. Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

Temporary Flexible-Reflective Roadway Marker Tabs



STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:
YELLOW - two amber reflective surfaces with yellow body).
WHITE - one silver reflective surface with white body).

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).

SHEET 11 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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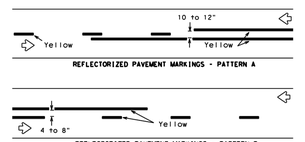
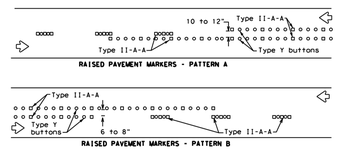
PAVEMENT MARKING PATTERNS



REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



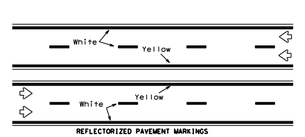
RAISED PAVEMENT MARKERS - PATTERN A

REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

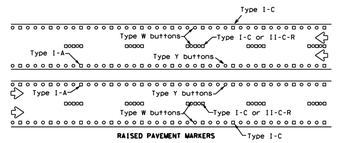
RAISED PAVEMENT MARKERS - PATTERN B

Pattern A is the TxDOT Standard, however Pattern B may be used if approved by the Engineer.
Prefabricated markings may be substituted for reflectorized pavement markings.

CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



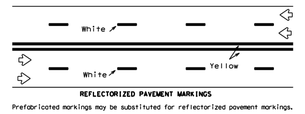
REFLECTORIZED PAVEMENT MARKINGS



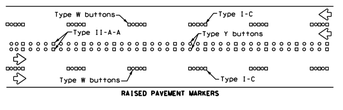
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



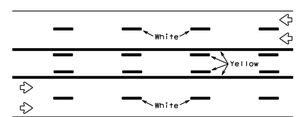
REFLECTORIZED PAVEMENT MARKINGS



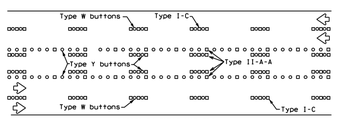
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

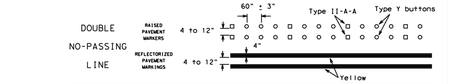
TWO-WAY LEFT TURN LANE

DATE:
FILE:

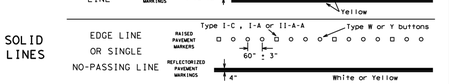
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

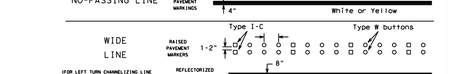
DOUBLE NO-PASSING LINE — RAISED PAVEMENT MARKERS / REFLECTORIZED PAVEMENT MARKINGS



EDGE LINE OR SINGLE NO-PASSING LINE — RAISED PAVEMENT MARKERS / REFLECTORIZED PAVEMENT MARKINGS

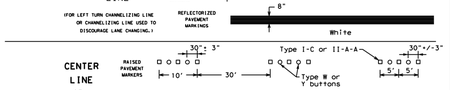


WIDE LINE (FOR LEFT TURN CHANNELIZING LINE OR CHANNELIZING LINE USED TO DISCOURAGE LANE CHANGING.) — RAISED PAVEMENT MARKERS / REFLECTORIZED PAVEMENT MARKINGS

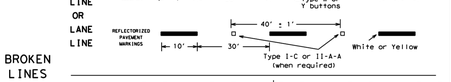


BROKEN LINES

CENTER LINE OR LANE LINE — RAISED PAVEMENT MARKERS / REFLECTORIZED PAVEMENT MARKINGS

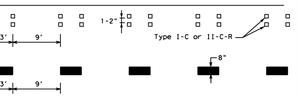


AUXILIARY OR LANEDROP LINE — RAISED PAVEMENT MARKERS / REFLECTORIZED PAVEMENT MARKINGS



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.



Centerline only - not to be used on edge lines

Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

SHEET 12 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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DESIGNED	B.O.
DRAWN	E.G./A.M.
CHECKED	M.M.
DATE	10/7/2022

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el paso WATER
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EL PASO, TEXAS 79925
(915) 594-5500

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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

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SEQUENCE NO.	6 OF 13
SHEET NO.	C21.19

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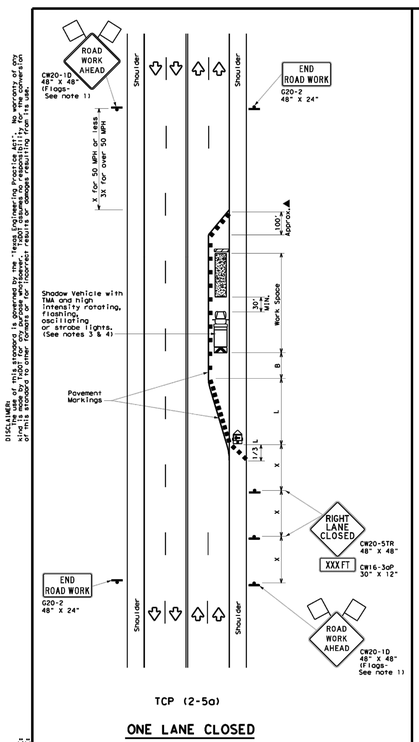
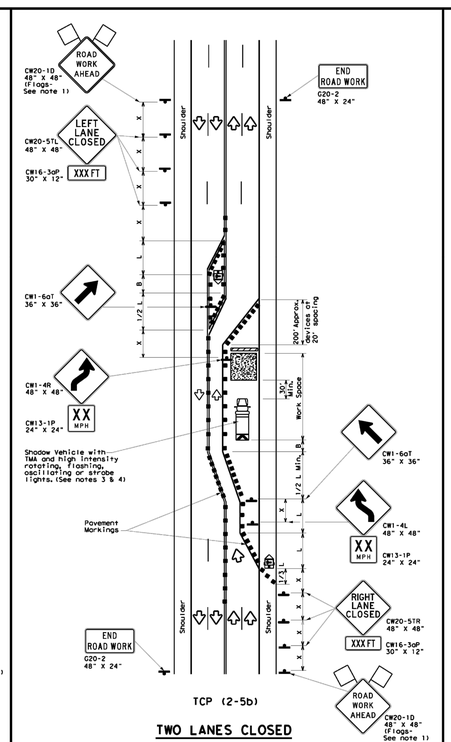


TCP (2-5a)

ONE LANE CLOSED



TCP (2-5b)

TWO LANES CLOSED

LEGEND			
	Type 3 Barricade	■ ■	Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

TYPICAL USAGE

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
			✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
4. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
5. The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

TCP (2-5a)

6. If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic, with the arrow board placed in the closed lane near the end of the merging taper.

TCP (2-5b)

7. Conflicting pavement markings shall be removed for long-term projects.

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.

TCP(2-5)-18

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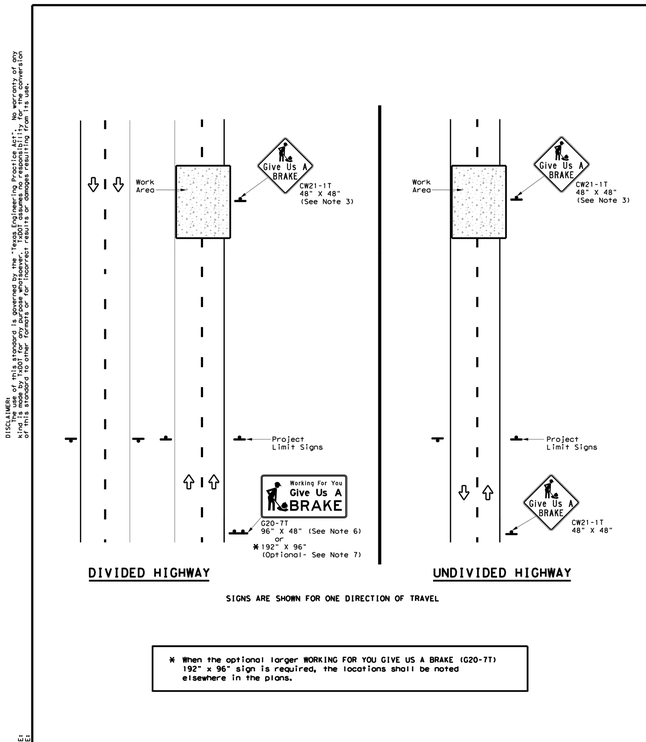
4-98 2-18					



SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

* When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL Size	(LF) ①	(LF) ②	DRILLED SHAFT 24" DIA. (LF)
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS

PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL}
BLACK	LEGEND & BORDERS	NON-REFLECTIVE ACRYLIC FILM

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   Item 636 - Aluminum Signs
   Item 647 - Large Roadside Sign Supports and Assemblies.
   Item 416 - Drilled Shaft Foundations
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

Texas Department of Transportation — Traffic Operations Division Standard

WORK ZONE
"GIVE US A BRAKE"
SIGNS

WZ(BRK)-13

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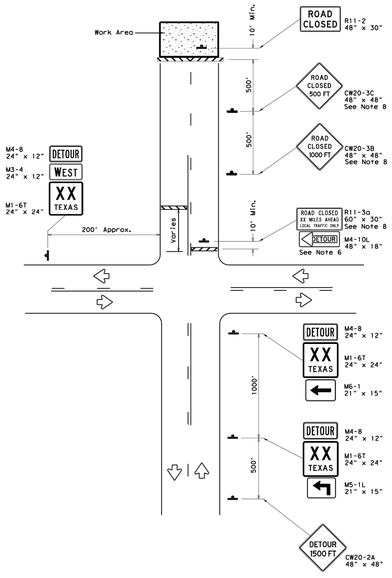
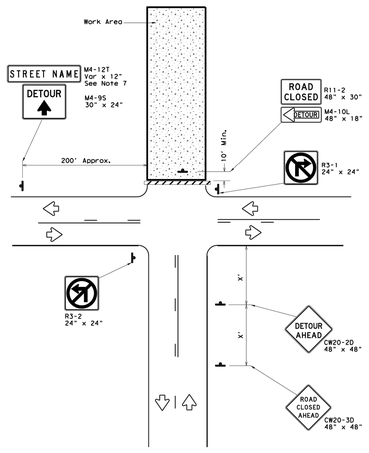


ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

* Conventional Roads Only

GENERAL NOTES

1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
3. Stockpiled materials shall not be placed on the traffic side of barricades.
4. Barricades at the road closure should extend from pavement edge to pavement edge.
5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

Texas Department of Transportation | Traffic Operations Division Standard

WORK ZONE ROAD CLOSURE DETAILS

WZ(RCD)-13

FILE:	wzrcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995		CONT	SECT	JOB	HIGHWAY
REVISIONS					
1-97 4-98 7-13		DIST	COUNTY		SHEET NO.
2-98 3-03					

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
1-800-DIG-TESS
1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES
linespots@elpasotexas.gov

ENGINEER'S SEAL
THESE PLANS WERE RELEASED UNDER THE AUTHORITY OF MARCOS MEDINA, PE #93830 TO BE ISSUED AS A **100% SUBMITTAL** TO EL PASO WATER FOR REVIEW. IT IS NOT TO BE USED FOR CONSTRUCTION OR FINAL PERMIT ISSUANCE.

DESIGNED B.O.
DRAWN E.G./A.M.
CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING ENGINEERING PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
EL PASO · SAN ANTONIO
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

TRAFFIC CONTROL STANDARDS

THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH POND AND CONVEYANCE IMPROVEMENTS". MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO. 16-133
SEQUENCE NO. 8 OF 8
SHEET NO. C21.21

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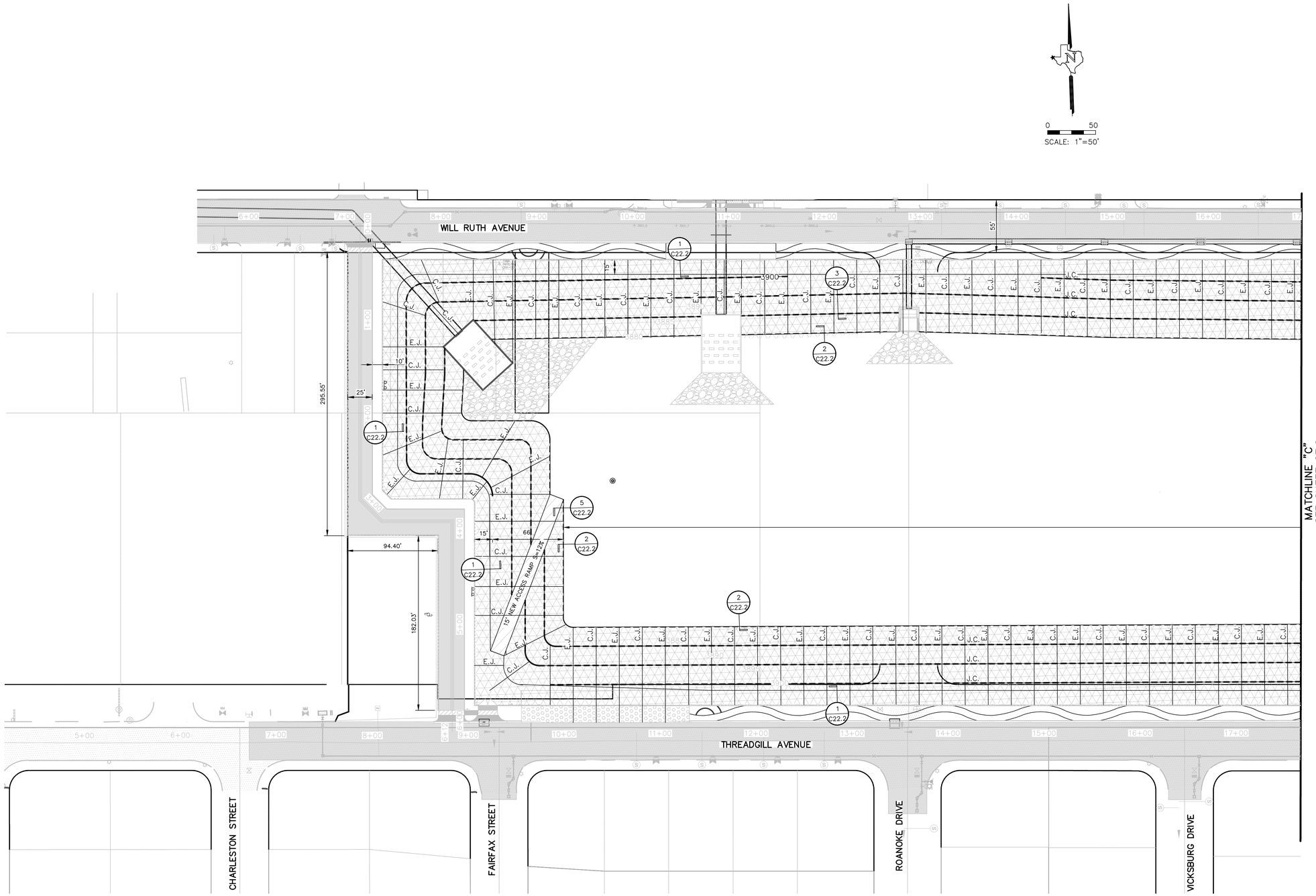
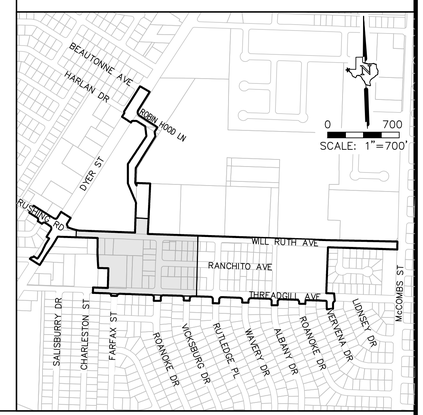


LEGEND

E.J.	EXPANSION JOINT	4 / C22.2
C.J.	CONTROL JOINT	6 / C22.2
J.C.	JOINT CONSTRUCTION	3 / C22.2



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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STRUCTURAL SITE PLAN

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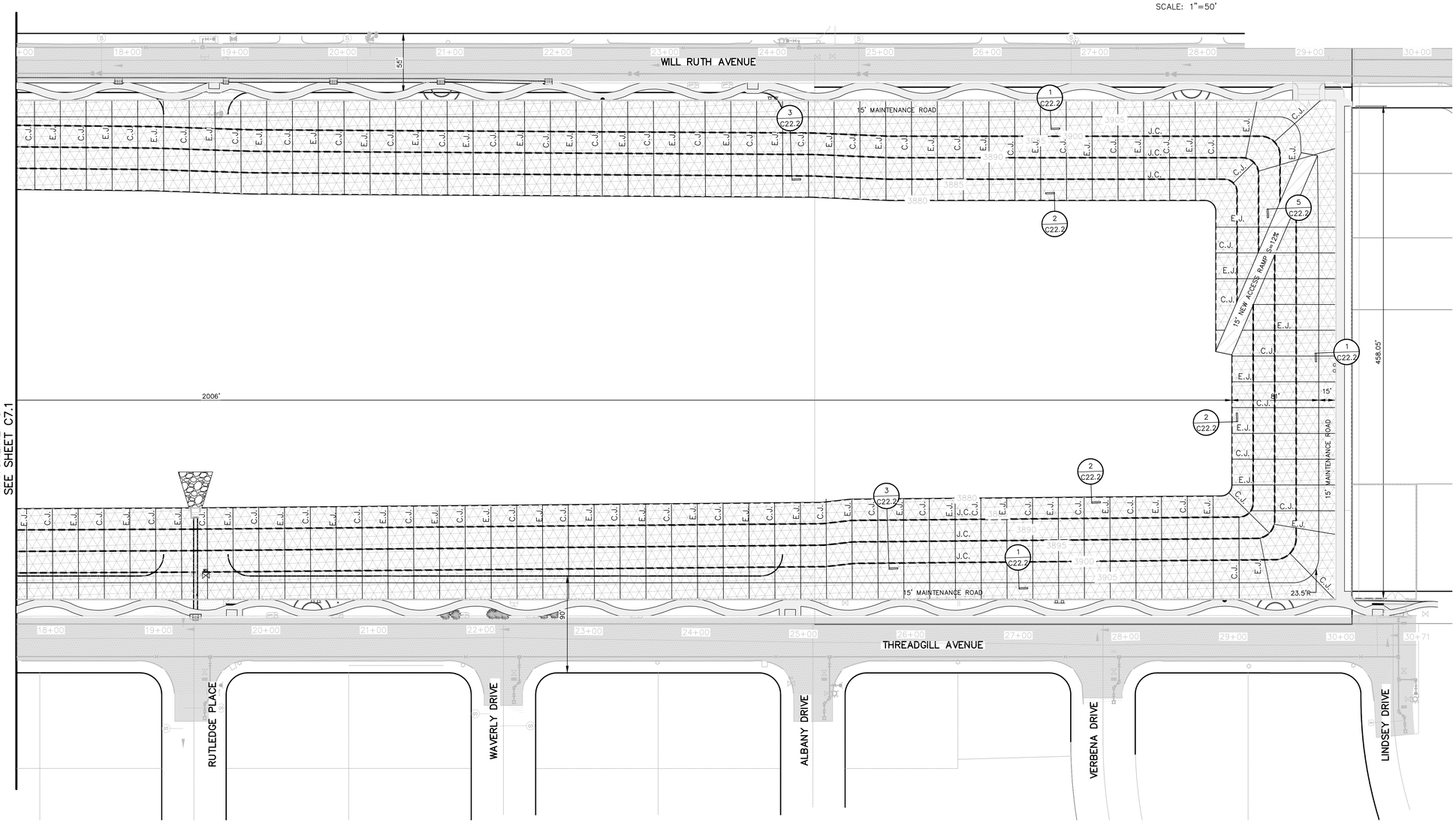
JOB NO.	16-133
SEQUENCE NO.	1 OF 3
SHEET NO.	C22.0

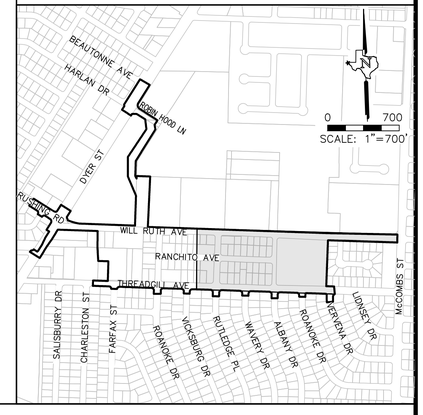
F:\16133\DWG\16133 - C22.0_DWG_Structural_Site_Plan.dwg TimeSep30,2022 - 12:48pm Login:Administrator

LEGEND

E.J.	EXPANSION JOINT	4 / C22.2
C.J.	CONTROL JOINT	6 / C22.2
J.C.	JOINT CONSTRUCTION	3 / C22.2

0 50
SCALE: 1"=50'





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DATE	10/7/2022

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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000534

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STRUCTURAL SITE PLAN

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JOB NO.	16-133
SEQUENCE NO.	2 OF 3
SHEET NO.	C22.1

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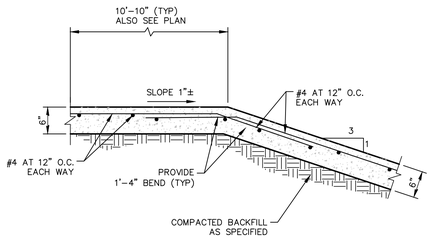
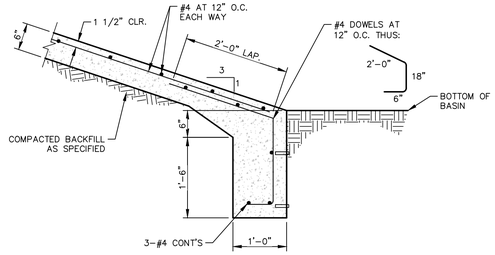
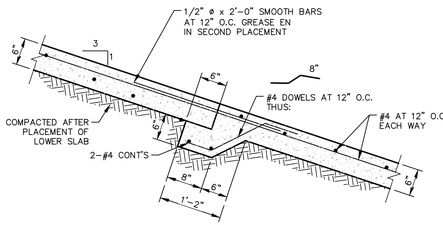


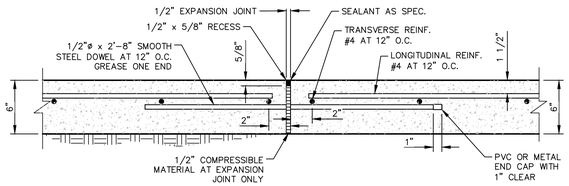
1 C22.2 **JOINT BREAKLINE (J.B.)**
SCALE: 3/4"=1'-0"



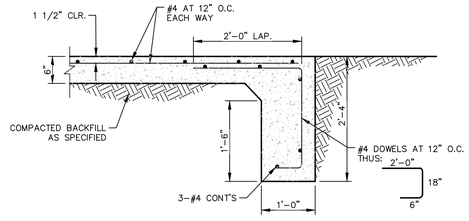
2 C22.2 **SECTION**
SCALE: 3/4"=1'-0"



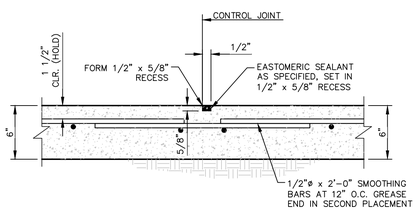
3 C22.2 **JOINT CONSTRUCTION (J.C.)**
SCALE: 3/4"=1'-0"



4 C22.2 **EXPANSION JOINT (E.J.)**
SCALE: 1 1/2"=1'-0"



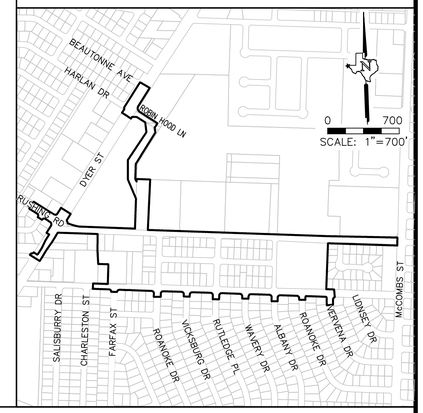
5 C22.2 **SECTION**
SCALE: 3/4"=1'-0"



6 C22.2 **CONTROL JOINT (C.J.)**
SCALE: 1 1/2"=1'-0"

LEGEND

E.J.	EXPANSION JOINT	4 / C22.2
C.J.	CONTROL JOINT	6 / C22.2
J.C.	JOINT CONSTRUCTION	3 / C22.2



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DESIGNED B.O.
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CHECKED M.M.
DATE 10/7/2022

UTILITY OWNER
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(915) 594-5500

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9601 McAllister Freeway #207, San Antonio TX 78216 (210) 314-3553
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

STRUCTURAL SITE PLAN

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JOB NO. 16-133
SEQUENCE NO. 2 OF 3
SHEET NO. C22.2

F:\16133\DWG\16133 - C22.0_DWG_Structural_Site_Plan.dwg TimeSep30,2022 - 12:51pm LoginAdministrator

Texas 811
Know what's below.
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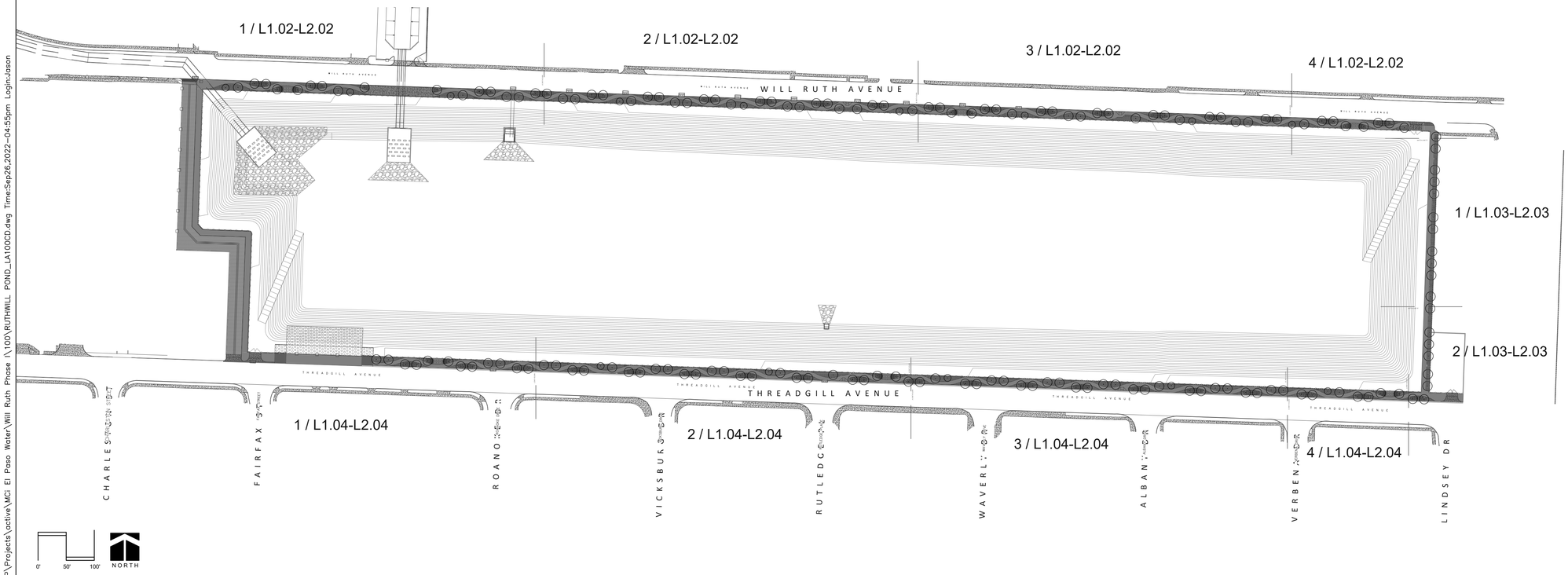
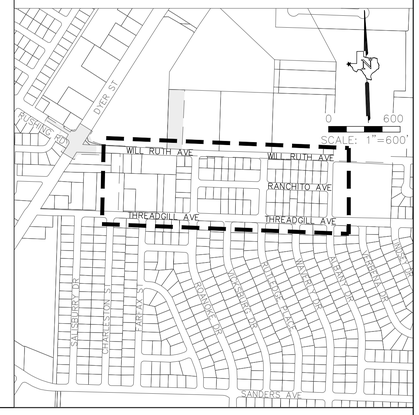
PLANT SCHEDULE				
TYPE / COMMON NAME	SCIENTIFIC NAME		SIZE	SPACING
TREES				
RAYWOOD ASH	*Fraxinus angustifolia 'Raywood'*	24	4" CAL / B&B	per plans
CHINESE PISTACHE	*Pistachia chinensis*	43	4" CAL / B&B	per plans
THORNLESS TEXAS HONEY MESQUITE	*Prosopis glandulosa*	30	47" BOX	per plans
DESERT MUSEUM PALO VERDE	*Palo Verde 'Desert Museum'*	17	47" BOX	per plans
DESERT WILLOW	*Chilopsis linearis*	29	47" BOX	per plans
LACEBARK ELM	*Ulmus parvifolia*	12	4" CAL / B&B	per plans
ELDARICA PINE	*Pinus eldarica*	14	#65 Container	per plans





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REV.	DATE	BY	DESCRIPTION

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BEFORE YOU DIG
CALL
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1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES

UTILITY LOCATOR SERVICES

EL PASO ELECTRIC COMPANY	(915) 543-5720
EL PASO ENERGY CORPORATION	(915) 496-5244
EL PASO WATER	(915) 594-5527
MCI TELECOMM	(800) 245-4545
SPECTRUM	(915) 772-1123
TEXAS GAS SERVICE COMPANY	(915) 544-6300
AT&T	(915) 595-5107
TESS (MEMBER UTILITIES)	(800) 852-3786
U.S. SPRINT TELECOMM	(800) 521-0579

ARCHITECT'S SEAL

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DESIGNED	PW
DRAWN	PW
CHECKED	PW
DATE	10/07/22

UTILITY OWNER

el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT

PRAIRIE WORKSHOP LLC
LANDSCAPE ARCHITECTURE TEXAS + NEW MEXICO
www.prairieworkshop.com
2409 29th Street, Lubbock, TX 79411
(806) 773-1508 jhodges@prairieworkshop.com
Texas Board of Architectural Examiners BR 1285

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

LANDSCAPE SITE PLAN
OVERALL KEY

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JOB NO.	16-133
SEQUENCE NO.	1 OF 4
SHEET NO.	L1.01

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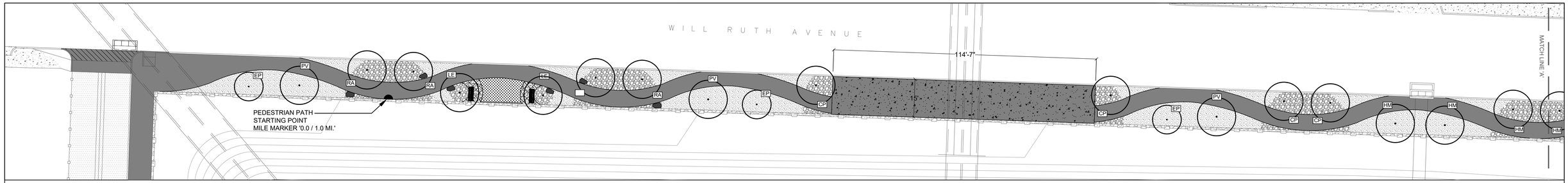
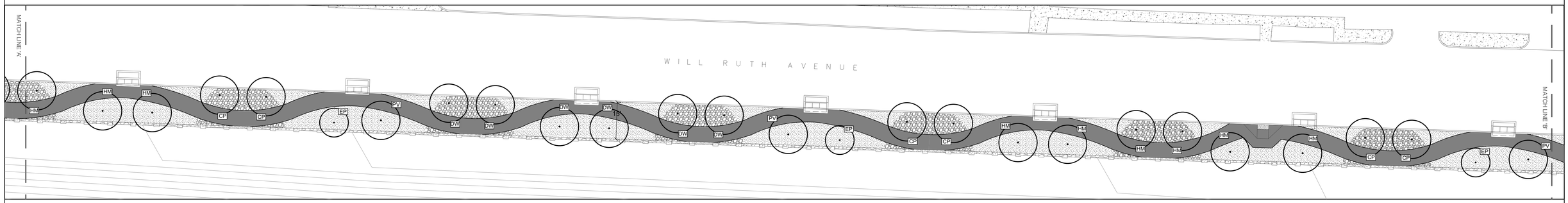
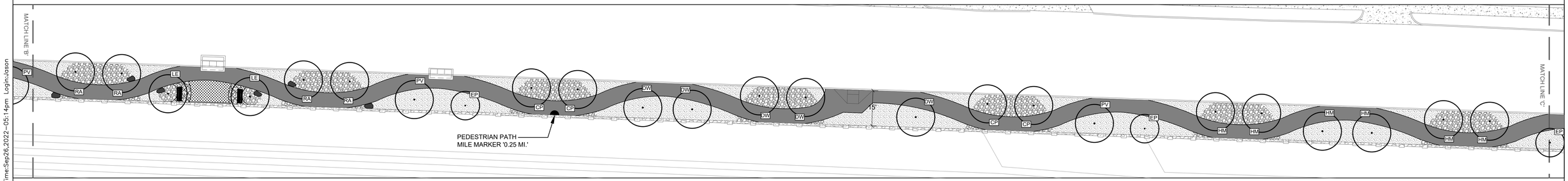
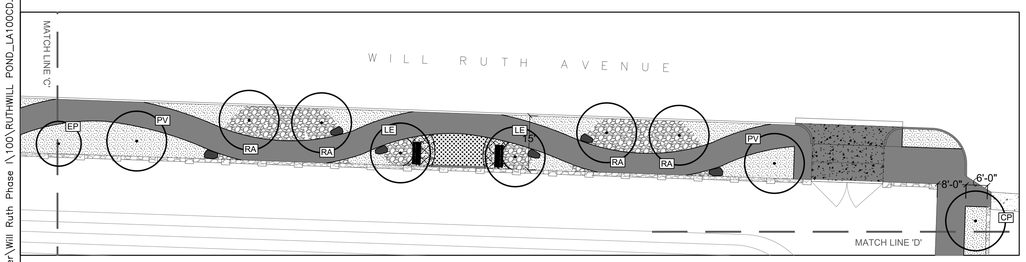




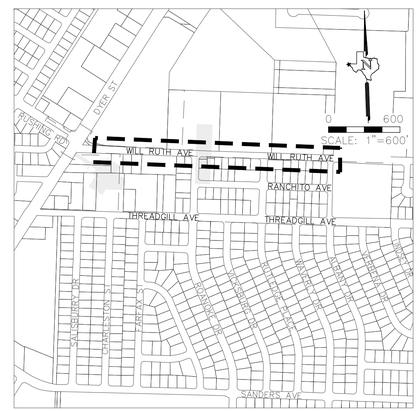




LEGEND

- HEAVY DUTY VEHICULAR CONCRETE RE: CIVIL
- GREY CONCRETE SIDEWALK
- EXPOSED AGGREGATE CONCRETE WITH DECORATIVE (24"X24" GRID ON 45) SAW-CUT SCORING
- PITTED RIVER COBBLE AS SPEC'D
- GRAVEL MULCH AS SPEC'D
- SYNTHETIC TURF LAWN
- BENCH AS SPEC'D
- DISTANCE MARKER AS SPEC'D
- BOULDERS AS SPEC'D

- CP CHINESE PISTACHE
- HM THORNLESS TEXAS HONEY MESQUITE
- RA RAYWOOD ASH
- PV 'DESERT MUSEUM' PALO VERDE
- DW DESERT WILLOW
- LE LACEBARK ELM
- EP ELDARICA PINE



0' 20' 40'

NORTH

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REV.	DATE	BY	DESCRIPTION

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ARCHITECT'S SEAL

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DESIGNED	PW
DRAWN	PW
CHECKED	PW
DATE	10/07/22

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(806) 773-1508 jhodges@prairieworkshop.com
Texas Board of Architectural Examiners BR 1285

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

SITE PLAN – WILL RUTH AVENUE

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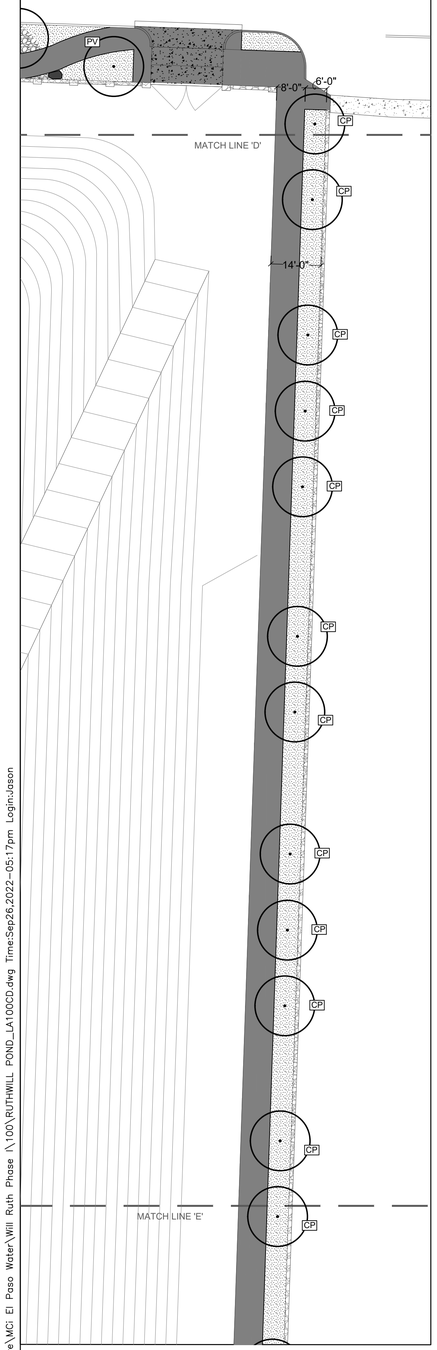
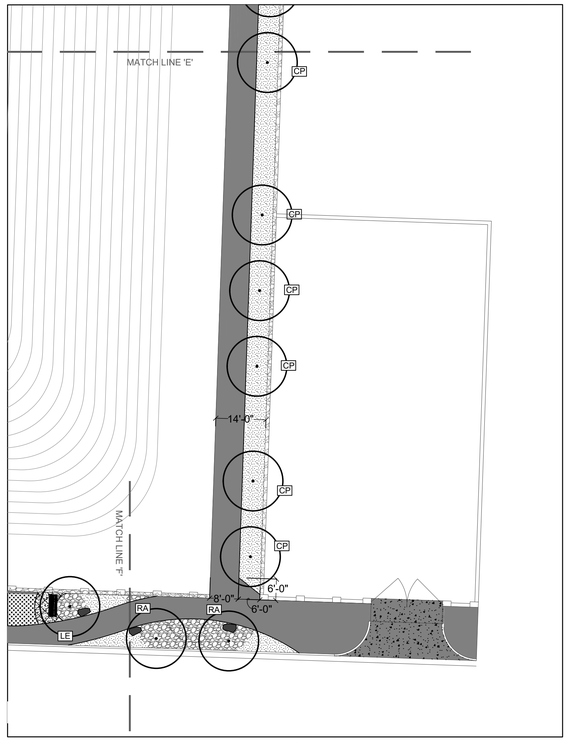
JOB NO.	16-133
SEQUENCE NO.	2 OF 4
SHEET NO.	L1.02

C:\Users\Jason\PRAIRIE WORKSHOP\Projects\active\MCI El Paso Water\Will Ruth Phase I\100\RUTHWILL POND_LA100CD.dwg Time:Sep26,2022-05:14pm Login:Jason



1/L1.03 East End Pedestrian Path

SCALE: 1" = 20'-0"



2/L1.03 East End Pedestrian Path

SCALE: 1" = 20'-0"

LEGEND

- HEAVY DUTY VEHICULAR CONCRETE RE: CIVIL
- GREY CONCRETE SIDEWALK
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- PITTED RIVER COBBLE AS SPEC'D
- GRAVEL MULCH AS SPEC'D
- SYNTHETIC TURF LAWN
- BENCH AS SPEC'D
- DISTANCE MARKER AS SPEC'D
- BOULDERS AS SPEC'D

- CP CHINESE PISTACHE
- HM THORNLESS TEXAS HONEY MESQUITE
- RA RAYWOOD ASH
- PV 'DESERT MUSEUM' PALO VERDE
- DW DESERT WILLOW
- LE LACEBARK ELM
- EP ELDARICA PINE

0' 20' 40'

NORTH

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

SITE PLAN – WILL RUTH AVENUE

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JOB NO.	16-133
SEQUENCE NO.	3 OF 4
SHEET NO.	L1.03

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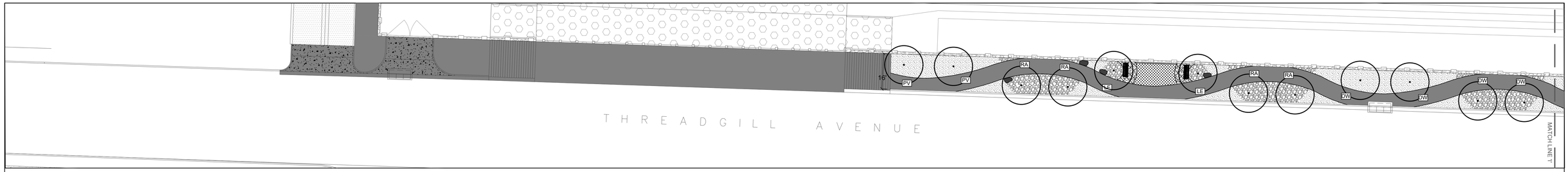
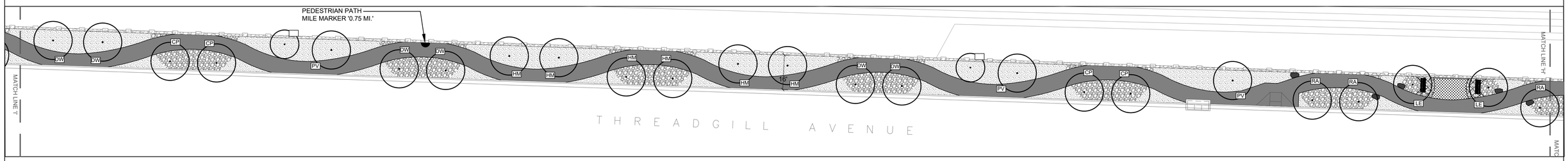


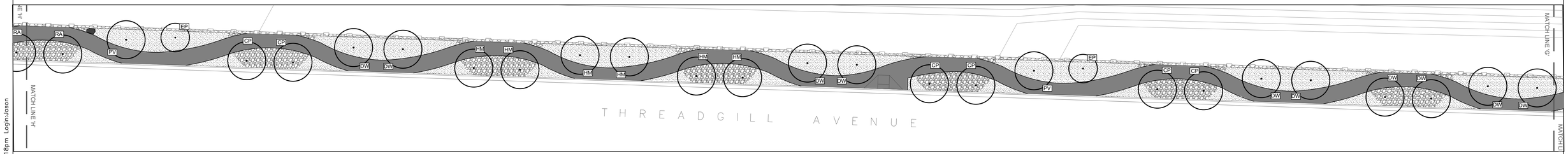
1/L1.04 Threadgill Avenue Parkway Area 'A'

SCALE: 1" = 20'-0"



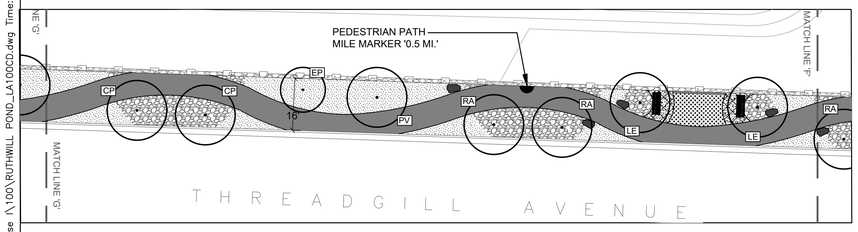
2/L1.04 Threadgill Avenue Parkway Area 'B'

SCALE: 1" = 20'-0"



3/L1.04 Threadgill Avenue Parkway Area 'C'

SCALE: 1" = 20'-0"



4/L1.04 Threadgill Avenue Parkway Area 'D'

SCALE: 1" = 20'-0"

0' 20' 40' NORTH

LEGEND

- HEAVY DUTY VEHICULAR CONCRETE RE: CIVIL
- GREY CONCRETE SIDEWALK
- EXPOSED AGGREGATE CONCRETE WITH DECORATIVE (24"X24" GRID ON 45) SAW-CUT SCORING
- PITTED RIVER COBBLE AS SPEC'D
- GRAVEL MULCH AS SPEC'D
- SYNTHETIC TURF LAWN
- BENCH AS SPEC'D
- DISTANCE MARKER AS SPEC'D
- BOULDERS AS SPEC'D
- CP CHINESE PISTACHE
- HM THORNLESS TEXAS HONEY MESQUITE
- RA RAYWOOD ASH
- PV 'DESERT MUSEUM' PALO VERDE
- DW DESERT WILLOW
- LE LACEBARK ELM
- EP ELDARICA PINE

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DESIGNED	PW
DRAWN	PW
CHECKED	PW
DATE	10/07/22

UTILITY OWNER

el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT

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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

SITE PLAN – THREADGILL AVE.

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JOB NO.	16-133
SEQUENCE NO.	4 OF 4
SHEET NO.	L1.04

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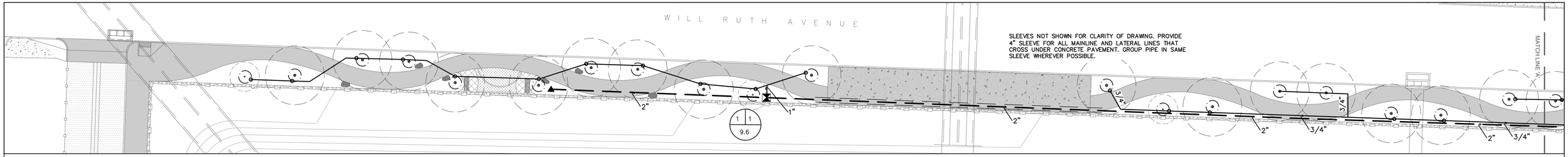
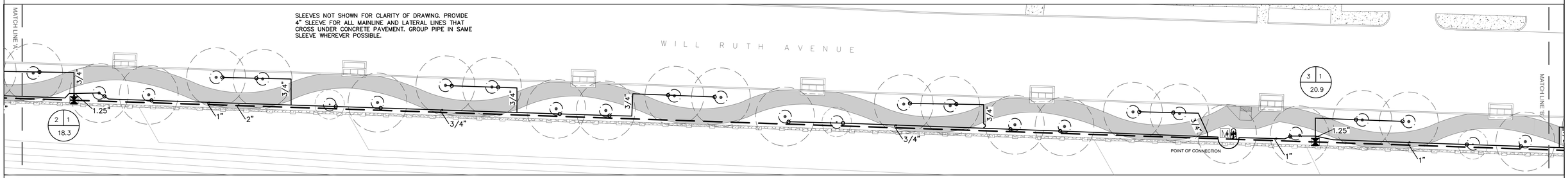


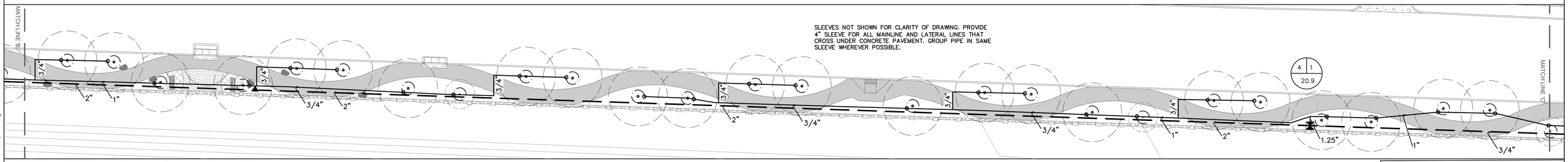
1/L2.01 Will Ruth Avenue Parkway Area 'A'

SCALE: 1" = 20'-0"



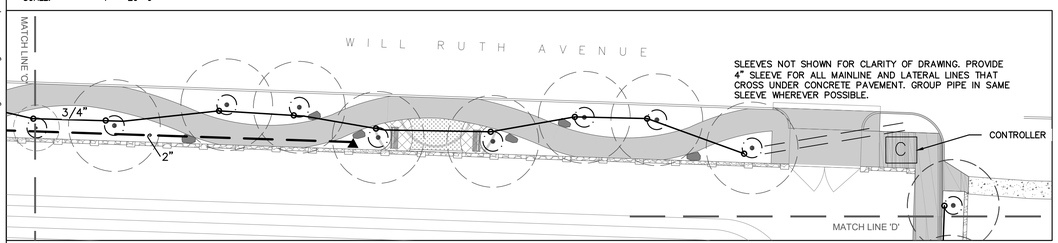
2/L2.01 Will Ruth Avenue Parkway Area 'B'

SCALE: 1" = 20'-0"



3/L2.01 Will Ruth Avenue Parkway Area 'C'

SCALE: 1" = 20'-0"



4/L2.01 Will Ruth Avenue Parkway Area 'D'

SCALE: 1" = 20'-0"

VALVE LEGEND

VALVE ZONE # — # — VALVE SIZE

0 — ZONE GALLONS PER MINUTE (GPM)

PROPOSED TREE

This system requires 45 GPM @ 50PSI for proper operation

Pipe sizes shown at points of connection and where changes in pipe sizes occur. Pipe shall be the size of the last preceding size called out upstream of each section unless otherwise noted on plan.

This plan is diagrammatic in nature. Contractor to be responsible for obtaining full coverage in all irrigated areas with specified equipment.

All sleeve pipe shall be Schedule 40 PVC.

DRIP = Netafim Techline CV – 0.9GPH @ 12" emitter spacing with 18" techline CV row spacing.

IRRIGATION LEGEND

SYM	ITEM
M	(2) x 1–1/2" METERs
C	NEW CONTROLLER W/ RAIN FREEZE SENSOR – TIE ALL ZONE WIRING TO THIS LOCATION
	1.5" WATTS WYE STRAINER 1.5" MATCO–NORCA BRASS BALL VALVE, IN VALVE BOX 1.5" RPZ W/ WEATHER PROOF ENCLOSURE
	1" DRIP CONTROL ZONE VALVE – WITH ISOLATION VALVE (SIZE ON PLAN)
	1" QUICK COUPLING VALVE IN VALVE BOX, PROVIDE OWNER W/ TWO KEYS
	0.9 GPH TREE DRIP RING PER DETAILS (ALL TREES ON DEDICATED ZONES)
	MAINLINE–CLASS 200 SEE PLAN FOR SIZES
	LATERAL LINE – CLASS 200 SEE PLAN FOR SIZES
	4" PVC SLEEVE – SCHEDULE 40 2 PER LOCATION

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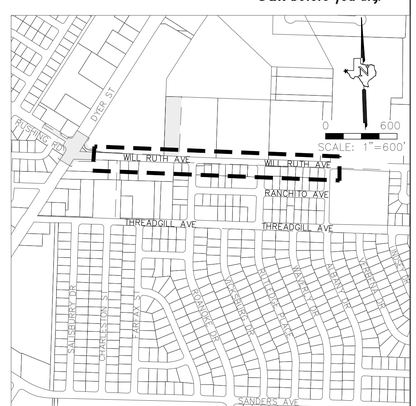

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DESIGNED	PW
DRAWN	PW
CHECKED	PW
DATE	10/07/22

UTILITY OWNER

el paso WATER
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EL PASO, TEXAS 79925
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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

IRRIGATION PLAN – WILL RUTH AVENUE

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JOB NO.	16–133
SEQUENCE NO.	1 OF 3
SHEET NO.	L2.01

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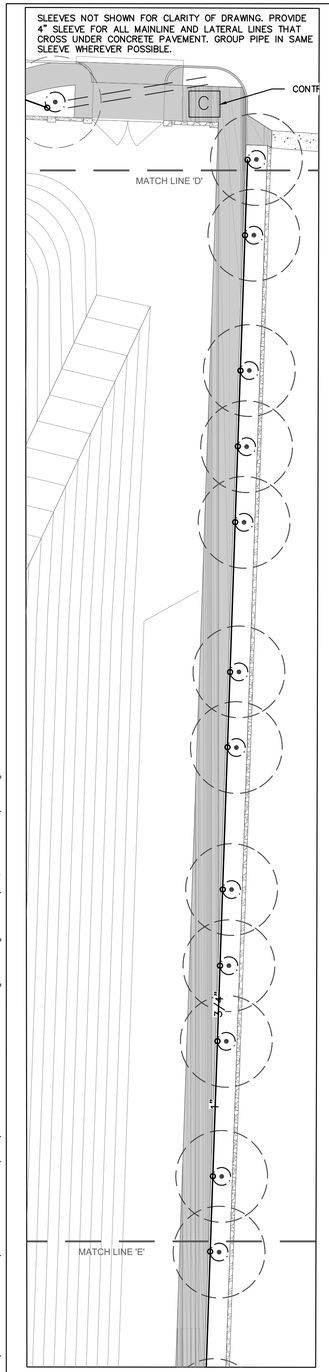
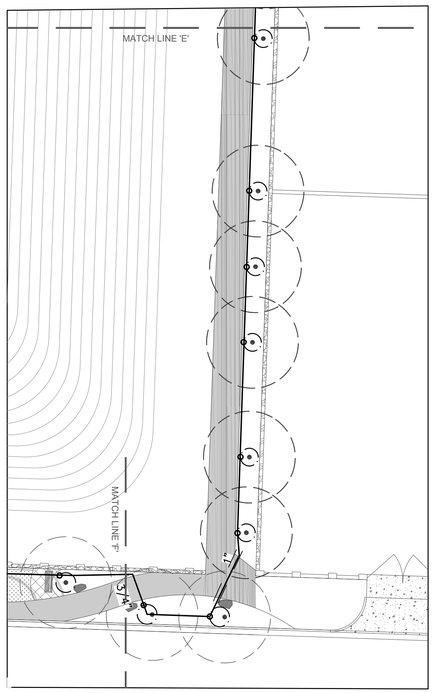


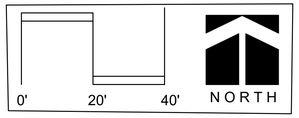
1/L2.02 East End Pedestrian Path

SCALE: 1" = 20'-0"



2/L2.02 East End Pedestrian Path

SCALE: 1" = 20'-0"



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PRECIPITATION RATE TABLE

Station #	Valve Size	Type of Sprinkler Emitter	Area Being Irrigated	Total GPM's	# of Sprinkler/ Emitter	Precipitation Rates	Water Application 1" Run Time*
1	1"	Netafim CV Drip	Trees	9.6	12" emitter/ 18" row	0.96 in/hr	64 minutes
2	1"	Netafim CV Drip	Trees	18.3	12" emitter/ 18" row	0.96 in/hr	64 minutes
3	1"	Netafim CV Drip	Trees	20.9	12" emitter/ 18" row	0.96 in/hr	64 minutes
4	1"	Netafim CV Drip	Trees	20.9	12" emitter/ 18" row	0.96 in/hr	64 minutes
5	1"	Netafim CV Drip	Trees	23.5	12" emitter/ 18" row	0.96 in/hr	64 minutes
6	1"	Netafim CV Drip	Trees	22.6	12" emitter/ 18" row	0.96 in/hr	64 minutes
7	1"	Netafim CV Drip	Trees	16.5	12" emitter/ 18" row	0.96 in/hr	64 minutes
8	1"	Netafim CV Drip	Trees	17.4	12" emitter/ 18" row	0.96 in/hr	64 minutes

WATERING SCHEDULE

Meter 1	Station #	Total GPM"s	Run Time
	1	9.6	1 hr 4 minutes
	2	18.3	1 hr 4 minutes
	3	20.9	1 hr 4 minutes
	4	20.9	1 hr 4 minutes
Meter 1 Totals	4 stations total with drip	69.7 GPM	Total Run Time = 4.3 hrs.
Meter 2	Station #	Total GPM"s	Run Time
	5	23.5	1 hr 4 minutes
	6	22.6	1 hr 4 minutes
	7	16.5	1 hr 4 minutes
	8	17.4	1 hr 4 minutes
Meter 2 Totals	4 stations total with drip	80.0 GPM	Total Run Time = 4.3 hrs.

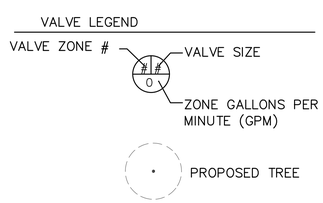
This system requires 45 GPM @ 50PSI for proper operation

Pipe sizes shown at points of connection and where changes in pipe sizes occur. Pipe shall be the size of the last preceding size called out upstream of each section unless otherwise noted on plan.

This plan is diagrammatic in nature. Contractor to be responsible for obtaining full coverage in all irrigated areas with specified equipment.

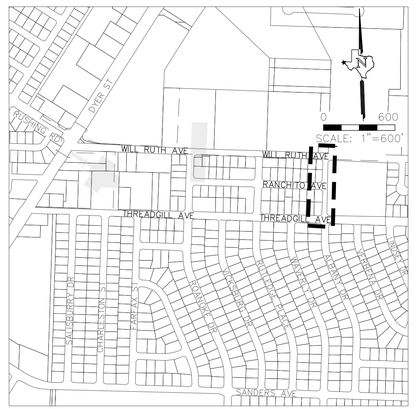
All sleeve pipe shall be Schedule 40 PVC.

DRIP = Netafim Techline CV – 0.9GPH @ 12" emitter spacing with 18" techline CV row spacing.



IRRIGATION LEGEND

SYM	ITEM
M	(2) x 1–1/2" METERs
C	NEW CONTROLLER W/ RAIN FREEZE SENSOR – TIE ALL ZONE WIRING TO THIS LOCATION
	1.5" WATTS WYE STRAINER 1.5" MATCO–NORCA BRASS BALL VALVE, IN VALVE BOX 1.5" RPZ W/ WEATHER PROOF ENCLOSURE
	1" DRIP CONTROL ZONE VALVE – WITH ISOLATION VALVE (SIZE ON PLAN)
	1" QUICK COUPLING VALVE IN VALVE BOX, PROVIDE OWNER W/ TWO KEYS
	0.9 GPH TREE DRIP RING PER DETAILS (ALL TREES ON DEDICATED ZONES)
	MAINLINE–CLASS 200 SEE PLAN FOR SIZES
	LATERAL LINE – CLASS 200 SEE PLAN FOR SIZES
	4" PVC SLEEVE – SCHEDULE 40 2 PER LOCATION



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DESIGNED	PW
DRAWN	PW
CHECKED	PW
DATE	10/07/22

UTILITY OWNER

el paso WATER
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EL PASO, TEXAS 79925
(915) 594–5500

CONSULTANT

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IRRIGATION PLAN – WILL RUTH AVENUE

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JOB NO.	16–133
SEQUENCE NO.	2 OF 3
SHEET NO.	L2.02

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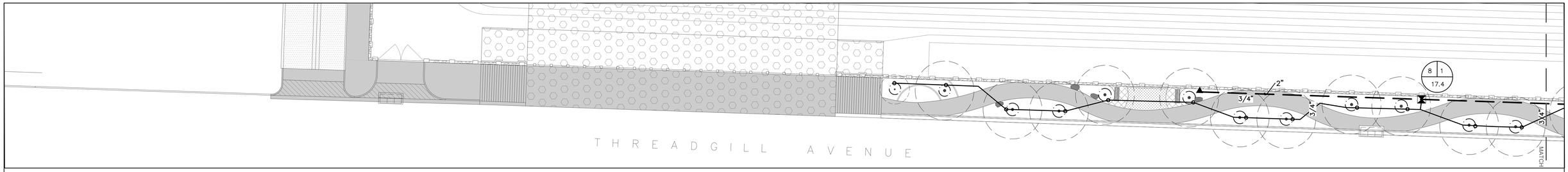
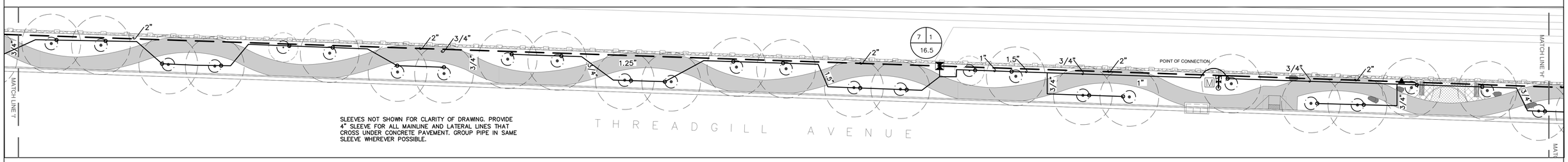


1/L2.03 Threadgill Avenue Parkway Area 'I'

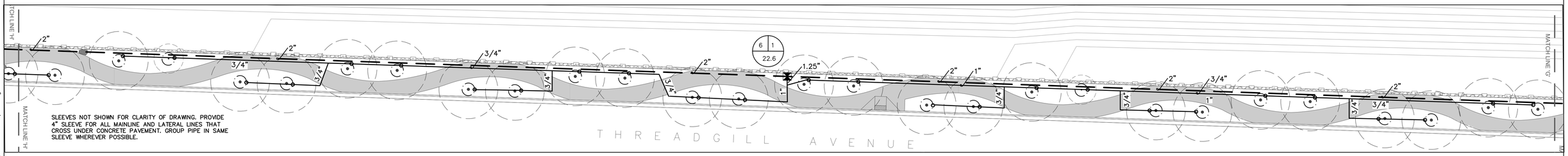
SCALE: 1" = 20'-0"



SLEEVES NOT SHOWN FOR CLARITY OF DRAWING. PROVIDE 4" SLEEVE FOR ALL MAINLINE AND LATERAL LINES THAT CROSS UNDER CONCRETE PAVEMENT. GROUP PIPE IN SAME SLEEVE WHEREVER POSSIBLE.

2/L2.03 Threadgill Avenue Parkway Area 'I-H'

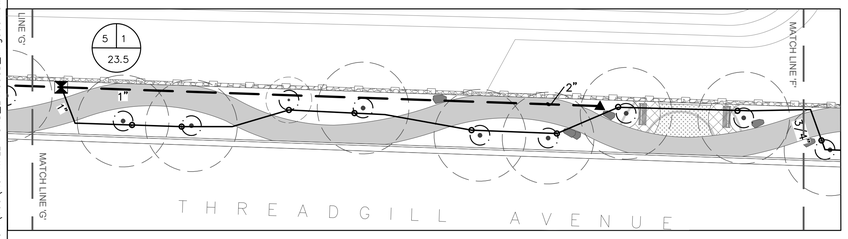
SCALE: 1" = 20'-0"



SLEEVES NOT SHOWN FOR CLARITY OF DRAWING. PROVIDE 4" SLEEVE FOR ALL MAINLINE AND LATERAL LINES THAT CROSS UNDER CONCRETE PAVEMENT. GROUP PIPE IN SAME SLEEVE WHEREVER POSSIBLE.

3/L2.03 Threadgill Avenue Parkway Area 'H-G'

SCALE: 1" = 20'-0"



4/L2.03 Threadgill Avenue Parkway Area 'G-F'

SCALE: 1" = 20'-0"

VALVE LEGEND

VALVE ZONE # — #/0 — VALVE SIZE

ZONE GALLONS PER MINUTE (GPM)

PROPOSED TREE

IRRIGATION LEGEND

SYM	ITEM
M	(2) x 1-1/2" METERs
C	NEW CONTROLLER W/ RAIN FREEZE SENSOR – TIE ALL ZONE WIRING TO THIS LOCATION
	1.5" WATTS WYE STRAINER 1.5" MATCO-NORCA BRASS BALL VALVE, IN VALVE BOX 1.5" RPZ W/ WEATHER PROOF ENCLOSURE
	1" DRIP CONTROL ZONE VALVE – WITH ISOLATION VALVE (SIZE ON PLAN)
	1" QUICK COUPLING VALVE IN VALVE BOX, PROVIDE OWNER W/ TWO KEYS
	0.9 GPH TREE DRIP RING PER DETAILS (ALL TREES ON DEDICATED ZONES)
	MAINLINE-CLASS 200 SEE PLAN FOR SIZES
	LATERAL LINE – CLASS 200 SEE PLAN FOR SIZES
	4" PVC SLEEVE – SCHEDULE 40 2 PER LOCATION

This system requires 45 GPM @ 50PSI for proper operation

Pipe sizes shown at points of connection and where changes in pipe sizes occur. Pipe shall be the size of the last preceding size called out upstream of each section unless otherwise noted on plan.

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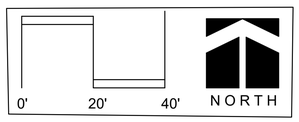
All sleeve pipe shall be Schedule 40 PVC.

DRIP = Netafim Techline CV – 0.9GPH @ 12" emitter spacing with 18" techline CV row spacing.



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DESIGNED PW
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(806) 773-1508 jhodges@prairieworkshop.com
Texas Board of Architectural Examiners BR 1285

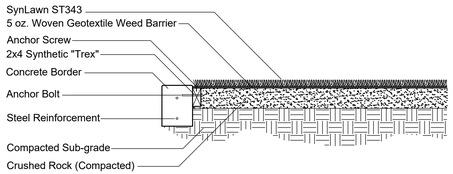
WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

IRRIGATION PLAN – WILL RUTH AVENUE

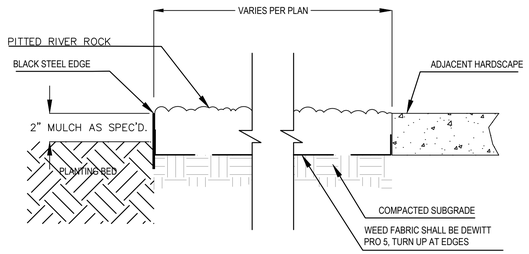
THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH POND & CONVEYANCE IMPROVEMENTS". MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO. 16-133
SEQUENCE NO. 3 OF 3
SHEET NO. L2.03

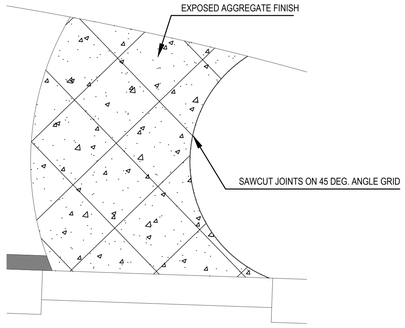
C:\Users\Jason\PRAIRIE WORKSHOP\Projects\active\MCi El Paso Water\Will Ruth Phase 1\100\RUTHWILL POND_LA100CD_irrigation.dwg Time:Sep26,2022--05:28pm Login:Jason



1 SYNTHETIC TURF
NOT TO SCALE

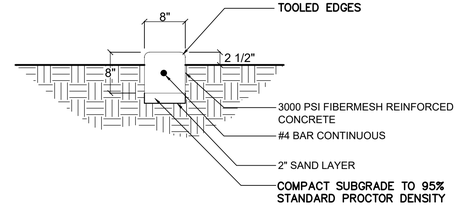


2 RIVER COBBLE AREAS
NOT TO SCALE

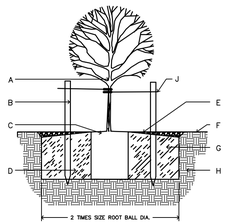


3 SPECIALTY CONCRETE FINISH
NOT TO SCALE

NOTE:
1. PROVIDE HORIZONTAL CONTROL JOINTS EVERY 5' O.C. TYP.
2. PROVIDE 1/2" EXPANSION JOINTS 20' O.C. TYP.



4 CONCRETE MAINTENANCE STRIP

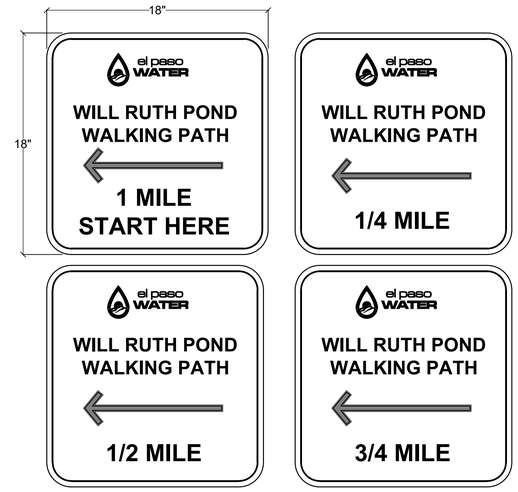


1. KEEP SOIL BELOW ROOT BALL UNDISTURBED TO PREVENT TREE FROM SETTLING.
2. REMOVE ANY EXCESS SOIL FROM TOP OF ROOTBALL TO EXPOSE ROOT FLARE (WHERE TOP MOST ROOT EMERGES FROM THE TRUNK). PLANT WITH ROOT FLARE THAN FINISH GRADE 1"–2" HIGHER.
3. REMOVE CONTAINER AND CUT ANY ROOTS THAT ARE CIRCLING THE CONTAINER. PRIOR TO SETTING TREE IN PLANTING HOLE (PIT), FOR BALLED & BURLAPPED TREES, PRIOR TO BACKFILLING, REMOVE BURLAP, ROPE, TWINE, AND WIRE FROM SIDES AND TOP OF ROOTBALL AND FROM PLANTING HOLE, CUT ANY ROOTS THAT ARE CIRCLING THE CONTAINER.
4. TAMP SOIL FIRMLY AROUND BASE OF ROOTBALL WITH FOOT PRESSURE.
5. AT TIME OF PLANTING, ONLY PRUNE CO-DOMINANT LEADERS (DOES NOT APPLY TO MULTI-TRUNK SPECIMENS), CROSSOVER LIMBS, AND DEAD OR BROKEN BRANCHES.
6. DO NOT ALLOW MULCH IN CONTACT WITH TREE TRUNK, KEEP AT LEAST 4" AWAY FROM TRUNK.
7. INSTALL TREE GUARD.
8. WHEN DONE, THOUROUGHLY WATER TO ELIMINATE AIR POCKETS.
9. STAKING IS NOT REQUIRED – STAKE TREES ONLY IF TREE CANNOT STAND ALONE AND WITH APPROVAL OF THE LANDSCAPE ARCHITECT. CONTRACTOR SHALL NOT STAKE ALL TREES INDISCRIMINANTELY, APPROVAL MUST BE OBTAINED TO STAKE TREES.
10. WITH APPROVAL, PROVIDE MIN. 3 STAKES/ TREE (TYP.) IN A TRIANGULAR PATTERN, STAKED INTO UNDISTURBED SOIL WITH CLARK'S TREE STAKE KIT OR APPROVED EQUAL. REMOVE AFTER ONE GROWING SEASON.
11. TOP OF ROOT BALL SHALL BE LEVEL WITH TOP OF MULCH. MULCH SHALL BE FEATHERED TO FULL DEPTH.

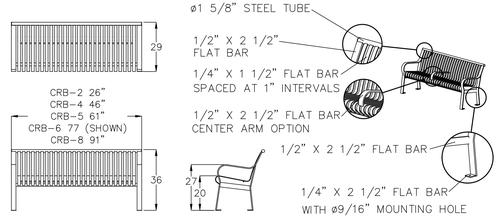
A. TREE
B. STAKING NEEDED
C. 4" SPACE BETWEEN MULCH AND TREE
D. ROUGHEN SIDES OF PLANTING HOLE
E. DEPTH OF GRAVEL MULCH–SEE PLAN
F. FINISH SOIL GRADE
G. BACKFILL WITH EXISTING NATIVE SOIL
H. UNDISTURBED SOIL
J. TIES TO STAKES TO HAVE RUBBER HOSE TO PROTECT TREE TRUNK FROM DAMAGE BY WIRE. WIRE TIES TO BE LOOSE (1" TO 2" PLAY ON PLAN) TO PROTECT TREE TRUNK FROM DAMAGE. WIRE TIES TO BE SET ON SAME TRUNK OR MAIN TRUNK.

GENERAL NOTES:
1. TREES PLANTED IN ROCKY, CALICHE AND CLAY SOILS TO HAVE PIT EXCAVATED 5 TIMES THE SIZE OF THE ROOTBALL.
2. TREES PLANTED IN ROCKY, CALICHE AND CLAY SOILS TO HAVE 1/3 TO 1/2 TOP SOIL BLENDED WITH CLAY SOIL AND USED AS BACKFILL.
3. TREES PLANTED IN ROCKY SOIL ARE TO HAVE ALL ROCKY MATERIAL LARGER THAN 1" IN SIZE REMOVED.

5 TREE PLANTING
NOT TO SCALE



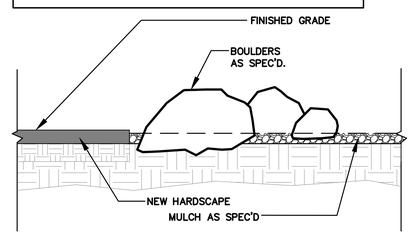
6 TRAIL DISTANCE MARKERS
NOT TO SCALE



HORIZONTAL STRAP OPTION ALSO AVAILABLE
SITE FURNISHING IS POWDER COATED WITH TGIC POLYESTER. STEEL SURFACE PREP INCLUDES MECHANICAL AND CHEMICAL ETCHING FOLLOWED WITH A COATING TO IMPROVE ADHESION AND CORROSION RESISTANCE.

7 SITE FURNISHINGS INSTALLATION
NOT TO SCALE

LANDSCAPE BOULDERS SHALL BE "PLANTED" INTO THE SOIL AND MULCH TO CREATE THE IMPRESSION OF NATURAL EXPOSURE.



8 LANDSCAPE BOULDERS
NOT TO SCALE

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
1-800-DIG-TESS
1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES

UTILITY LOCATOR SERVICES

EL PASO ELECTRIC COMPANY	(915) 543-5720
EL PASO ENERGY CORPORATION	(915) 496-5244
EL PASO WATER	(915) 594-5527
MCI TELECOMM	(800) 245-4545
SPECTRUM	(915) 772-1123
TEXAS GAS SERVICE COMPANY	(915) 544-6300
AT&T	(915) 595-5107
TESS (MEMBER UTILITIES)	(800) 852-3786
U.S. SPRINT TELECOMM	(800) 521-0579

ARCHITECT'S SEAL
THESE PLANS WERE RELEASED UNDER THE AUTHORITY OF JASON HODGES PLA #2096 TO BE ISSUED AS A 95% SUBMITTAL TO EL PASO WATER FOR PRELIMINARY REVIEW. IT IS NOT TO BE USED FOR CONSTRUCTION OR FINAL PERMIT ISSUANCE.

DESIGNED PW
DRAWN PW
CHECKED PW
DATE 10/07/22

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PRAIRIE WORKSHOP LLC
LANDSCAPE ARCHITECTURE TEXAS + NEW MEXICO
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WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

LANDSCAPE ARCHITECTURAL DETAILS

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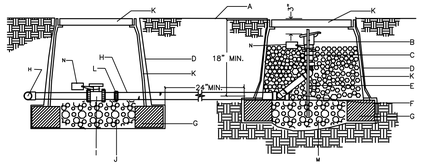
JOB NO. 16-133
SEQUENCE NO. 1 OF 3
SHEET NO. L3.01

C:\Users\Jason\PRAIRIE WORKSHOP\Projects\active\MCI El Paso Water\Will Ruth Phase 1\100\RUTHWILL POND_LA100CD.dwg Time:Sep26,2022-05:22pm Login:Jason

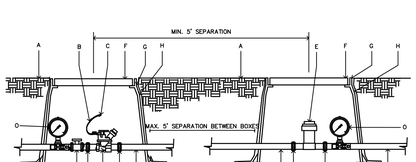


A. FINISH GRADE.
B. 1" BUCKNER QUICK COUPLER VALVE, DOUBLE SLOT, PURPLE TOP–MODEL QBSNPIO WITH LASCO SNAP–LOK W/MALE BRASS STABILIZER ELBOW.
C. MIN. 12" SECTION 1" DIA. PVC, SECTION SHOULD EXTEND BEYOND BOTH REBAR SECTION, STABILIZE IN GRAVEL.
D. PROVIDE DEWITT PRO 5 WEED CLOTH ALONG SIDES AND BASE OF VALVE BOX. TAPE TO ALL INLET AND OUTLET PIPE AND VALVE BOX WITH HEAVY DUTY 3M PLASTIC TAPE.
E. 1/2" OR 3/8" REBAR, MIN. 30" LENGTH, ONE ON EITHER SIDE OF QUICK COUPLER FOR STABILITY.
F. LASCO SWING JOINT (PRE–ASSEMBLED).
G. 8" X 8" X 16" SOLID CMU BLOCK
H. IRRIGATION MAINLINE
I. ISOLATION BALL VALVE, SEE IRRIGATION LEGEND.
J. 6" DEPTH OF 3/8" WASHED PEA GRAVEL.
K. CARSON PRODUCTS INC. 1419–18 BODY (ABS) VALVE BOX AND EXTENSION(S) W/BOLT DOWN COVER (COLOR TO BE PURPLE).
L. PROVIDE PVC UNION FOR PIPE SIZES LESS THAN THREE INCHES IN DIAMETER OR PROVIDE. FLANGES FOR PIPE SIZES THREE INCHES IN DIAMETER OR LARGER.
M. 3/8" WASHED PEA GRAVEL FILLED TO QUICK COUPLER FOR STABILITY.
N. WEATHER PROOF TAG THAT READS. "NON–PORTABLE WATER, NOT SAFE FOR DRINKING." FLANGES FOR PIPE SIZES THREE INCHES IN DIAMETER OR LARGER.

NOTE: INSTALL AN 8" X 8" X 16" SOLID CMU BLOCK AT EACH CORNER OF THE VALVE BOX. INSTALL 3/8" PEA GRAVEL BELOW THE 1419–18 VALVE BOX WITH BOLT DOWN COVER. EXTEND PEA GRAVEL UP TO COLLAR OF QUICK COUPLER VALVE. INSTALL A TEE, FLANGE & BALL VALVE OFF OF THE MAIN LINE IMMEDIATELY UPSTREAM OF THE QUICK COUPLER VALVE.

1 QUICK COUPLER VALVE

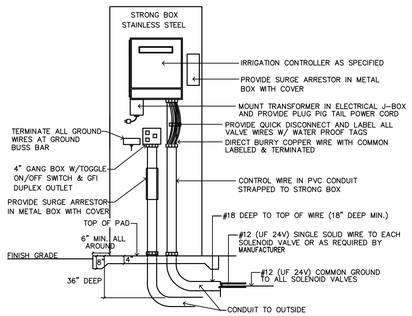
NOT TO SCALE



A. FINISH GRADE.
B. 24" WIRE LOOP.
C. DRY SPLICE CONNECTOR OR EQUAL.
D. AUTOMATIC VALVE INCLUDED IN CONTROL ZONE KIT. SEE IRRIGATION LEGEND.
E. BASKET FILTER STRAINER INCLUDED IN CONTROL ZONE KIT SHALL BE INSTALLED TO PROVIDE ACCESS FOR MAINTENANCE AND REPLACEMENT. SEE IRRIGATION LEGEND.
F. LOCKING VALVE BOX COVER FLAT LID WITH BOLT.
G. 1419–18 CARSON PRODUCTS INC. VALVE BOX W/BOLT DOWN COVER COVER COLOR TO MATCH FINISH MATERIAL AND EXTENSION AS NECESSARY.
H. PROVIDE DEWITT PRO 5 WEED CLOTH ALONG SIDES AND BASE OF VALVE BOX AND BLOCKS TAPE TO ALL INLET & OUTLET PIPE WITH 3M HEAVY DUTY PLASTIC TAPE.
I. 8"x8"x16" CMU SOLID CONCRETE BLOCK @ EACH CORNER.
J. BALL VALVE, INCLUDED IN CONTROL ZONE KIT, SEE IRRIGATION LEGEND.
K. 4" LAYER OF 3/8" WASHED PEA GRAVEL.
L. PVC PIPE SIZED PER PLAN WITH WELD ON THREADED FITTINGS ON EACH END.
M. LATERAL LINE
N. PROVIDE PVC UNION FOR PIPE SIZES LESS THAN THREE INCHES IN DIAMETER OR PROVIDE. FLANGES FOR PIPE SIZES THREE INCHES IN DIAMETER OR LARGER.
O. HORIZONTAL HYGIENIC PRESSURE GAUGE
NOTE: PROVIDE 1 PRESSURE GAUGE ON MAIN LINE UPSTREAM OF BALL VALVE AND ANOTHER DOWNSTREAM OF KITS PRESSURE REGULATOR. PROVIDE 5" SEPARATION BETWEEN BOXES. IF SPACE IS NOT AVAILABLE, PROVIDE A MIN. 5" SEPARATION AT CENTER LINES OF BOXES. SET GAGES HORIZONTAL TO BRE READABLE.

2 DRIP VALVE/BASKET FILTER KIT

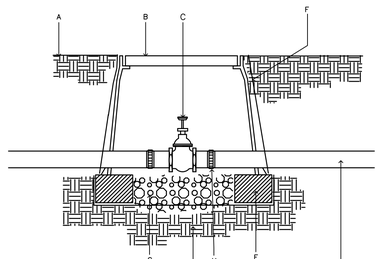
NOT TO SCALE



NOTES: 1. GROUND CABINET WITH #10 GAUGE OR HEAVIER STRANDED COPPER WIRE TO GROUNDING ROD AS PER MANUFACTURER'S SPECIFICATIONS.
2. PEDESTAL ENCLOSURE TO BE SIZED TO HOUSE EQUIPMENT PROPERLY.

3 CONTROLLER PEDESTAL ENCLOSURE DETAIL

NOT TO SCALE

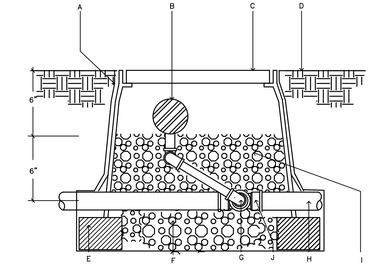


NOTE: PVC PIPE TO BE CLEAR OF VALVE BOX AND SOLID CMU BLOCK.

A. FINISH GRADE.
B. CARSON PRODUCTS INC. 1419–18(ABS) VALVE BOX WITH BOLT DOWN FLAT LID COVER TO MATCH COLOR OF FINISH MATERIAL AND 8" EXTENSIONS AS NECESSARY.
C. BRASS ISOLATION VALVE– SEE IRRIGATION LEGEND.
D. IRRIGATION MAINLINE.
E. 8"X 8"X16" SOLID CMU SOLID BLOCK @ EACH CORNER.
F. PROVIDE DEWITT PRO 5 WEED CLOTH ALONG SIDES AND BASE OF VALVE BOX INSTALLATION. TAPE TO ALL INLET AND OUTLET PIPE AND VALVE BOX WITH HEAVY DUTY PLASTIC 3M TAPE.
G. 4" DEPTH, 3/8" WASHED PEA GRAVEL.
H. FLANGE (3" AND ABOVE) AND UNION (BELOW 3" PIPE SIZE)

4 ISOLATION VALVE

NOT TO SCALE

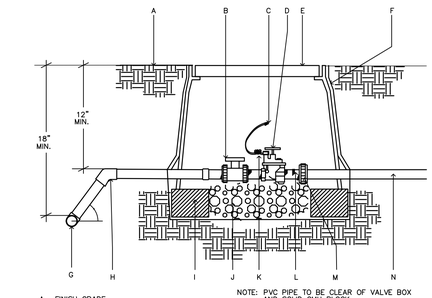


A. PROVIDE DEWITT PRO 5 WEED CLOTH ALONG SIDES AND BASE OF VALVE BOX INSTALLATION. TAPE TO ALL INLET AND OUTLET PIPE AND VALVE BOX WITH HEAVY DUTY PLASTIC 3M TAPE.
B. AIR RELEASE VALVE.
C. CARSON PRODUCTS, INC. 1419–18 (ABS) VALVE BOX WITH BOLT DOWN COVER, EXTENSIONS AS NECESSARY. COLOR TO MATCH FINISHED MATERIAL.
D. FINISH GRADE.
E. 8"X8"X16" SOLID CMU BLOCK @ EACH CORNER.
F. 1 CUBIC FOOT 3/8" WASHED PEA GRAVEL.
G. LASCO–PREASSEMBLED SWING JOINT.
H. IRRIGATION MAINLINE/LATERAL MAINLINE.
I. 6" DEPTH OF 3/8" PEA GRAVEL.
J. PVC TEE FITTING.

NOTE: PVC PIPE TO BE CLEAR OF VALVE BOX AND SOLID CMU BLOCK.

5 AIR RELEASE VALVE

NOT TO SCALE

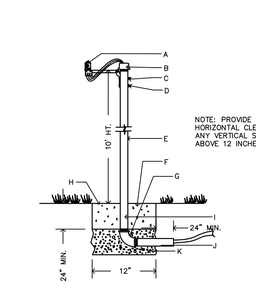


NOTE: PVC PIPE TO BE CLEAR OF VALVE BOX AND SOLID CMU BLOCK.

A. FINISH GRADE.
B. BALL VALVE.
C. DRY SPLICE CONNECTOR OR EQUAL.
D. ELECTRIC VALVE –SEE IRRIGATION LEGEND.
E. CARSON PRODUCTS INC. 1419–18(ABS) VALVE BOX WITH BOLT DOWN FLAT LID COVER TO MATCH COLOR OF FINISHED MATERIAL AND 8" EXTENSIONS AS NECESSARY.
F. PROVIDE DEWITT PRO 5 WEED CLOTH ALONG SIDES AND BASE OF VALVE BOX INSTALLATION. TAPE TO ALL INLET AND OUTLET PIPE AND VALVE BOX WITH HEAVY DUTY PLASTIC 3M TAPE.
G. PVC MAINLINE–SEE IRRIGATION LEGEND.
H. SCH 80 – 45 DEGREE FITTING.
I. 8"X8"X16" SOLID CMU BLOCK @ EACH CORNER.
J. 4" DEPTH, 3/8" DIAMETER WASHED PEA GRAVEL.
K. 24" WIRE EXPANSION COIL, EXTEND WIRE 12" ABOVE VALVE BOX FOR SERVICE.
L. SCHEDULE 80 PVC CLOSE NIPPLE.
M. FLANGE (3" AND ABOVE) AND UNION (BELOW 3" PIPE SIZE)
N. LATERAL LINE.

6 IRRIGATION CONTROL VALVE

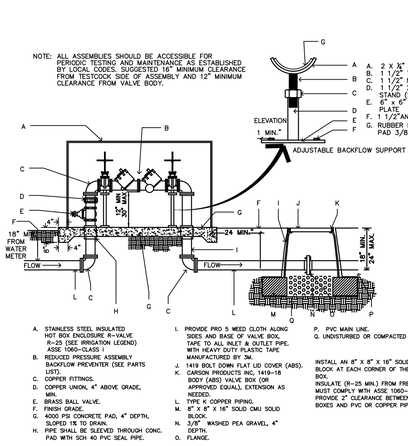
NOT TO SCALE



A. RAIN BIRD RSD–BE× RAIN SENSOR. SET TO 1/8"
B. 2" PIPE CAP WITH HOLE FOR WIRES AND SEAL WITH EXTERIOR GRADE SILICONE SEALANT.
C. DRILL TWO 3/16" HOLES IN PIPE FOR SENSOR BRACKET.
D. (2) NO. 8–32 MACHINE SCREWS WITH WASHER, LOCK WASHER AND NUT.
E. 2 1/2" SCH 40 GALVANIZED PIPE–10 FT. HT. A.G.
F. 12"X12" CONCRETE BASE, MIN. 24" DEEP.
G. PIPE ELBOW.
H. FINISH GRADE
I. PIPE TO BE SEALED AFTER CABLE IS RUN, USE 4 MIL. PLASTIC AND TAPED NIPPLE AND THE CABLE WITH HIGH GRADE 3M WEATHER PROOF PLASTIC TAPE.
J. NIPPLE, GALVANIZED PIPE IN CONCRETE FOOTING TO BE WRAPPED WITH WEATHER PROOF TAPE TO PROTECT FROM CORROSION.
K. 6" THICK, 3/8" DIAMETER WASHED PEA GRAVEL.

7 RAIN SENSOR

NOT TO SCALE

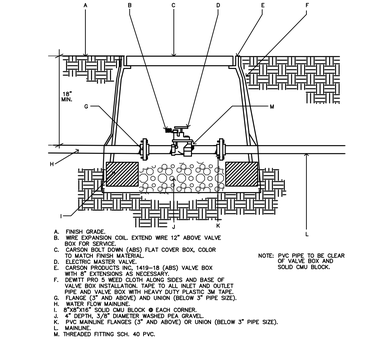


A. STAINLESS STEEL INSULATED HOT BOX ENCLOSURE R–VALVE R–25 (SEE IRRIGATION LEGEND) ASSE 1060–CLASS I
B. REDUCED PRESSURE ASSEMBLY BACKFLOW PREVENTER (SEE PARTS LIST).
C. COPPER FITTINGS.
D. COPPER UNION, 4" ABOVE GRADE, MIN.
E. BRASS BALL VALVE.
F. FINISH GRADE.
G. 4000 PSI CONCRETE PAD, 4" DEPTH, SLOPED 1% TO DRAIN.
H. PIPE SHALL BE SLEEVED THROUGH CONC. PAD WITH SCH 40 PVC SEAL PIPE.
I. PROVIDE PRO 5 WEED CLOTH ALONG SIDES AND BASE OF VALVE BOX, TAPE TO ALL INLET & OUTLET PIPE. WITH HEAVY DUTY PLASTIC TAPE
J. 1419 BOLT DOWN FLAT LID COVER (ABS).
K. CARSON PRODUCTS INC. 1419–18 BODY (ABS) VALVE BOX (OR APPROVED EQUAL), EXTENSION AS NEEDED.
L. TYPE K COPPER PIPING.
M. 8" X 8" X 16" SOLID CMU SOLID BLOCK.
N. 3/8" WASHED PEA GRAVEL, 4" DEPTH.
O. FLANGE.
P. PVC MAIN LINE.
Q. UNDISTURBED OR COMPACTED SOILS.

INSTALL AN 8" X 8" X 16" SOLID CMU BLOCK AT EACH CORNER OF THE VALVE BOX.
INSULATE (R–25 MIN.) FROM FREEZING MUST COMPLY WITH ASSE 1060–CLASS I. PROVIDE 2" CLEARANCE BETWEEN VALVE BOXES AND PVC OR COPPER PIPING.

8 REDUCED PRESSURE BACKFLOW PREVENTER

NOT TO SCALE

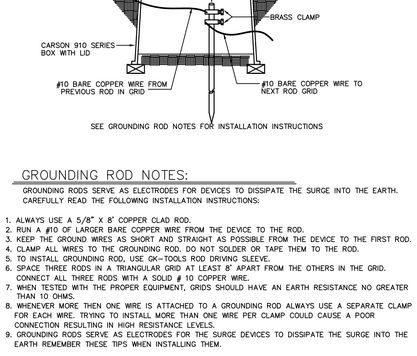


NOTE: PVC PIPE TO BE CLEAR OF VALVE BOX AND SOLID CMU BLOCK.

A. FINISH GRADE.
B. WIRE EXPANSION COIL. EXTEND WIRE 12" ABOVE VALVE BOX FOR SERVICE.
C. CARSON BOLT DOWN (ABS) FLAT COVER BOX, COLOR TO MATCH FINISH MATERIAL.
D. ELECTRIC MASTER VALVE.
E. CARSON PRODUCTS INC 1419–18 (ABS) VALVE BOX WITH 3" EXTENSIONS AS NECESSARY.
F. PROVIDE DEWITT PRO 5 WEED CLOTH ALONG SIDES AND BASE OF VALVE BOX INSTALLATION. TAPE TO ALL INLET AND OUTLET PIPE AND VALVE BOX WITH HEAVY DUTY PLASTIC 3M TAPE.
G. FLANGE (3" AND ABOVE) AND UNION (BELOW 3" PIPE SIZE).
H. WATER FLOW MANLINE.
I. 8"X8"X16" SOLID CMU BLOCK @ EACH CORNER.
J. 4" DEPTH, 3/8" DIAMETER WASHED PEA GRAVEL.
K. PVC MAINLINE FLANGES (3" AND ABOVE) OR UNION (BELOW 3" PIPE SIZE).
L. MAINLINE.
M. THREADED FITTING SCH. 40 PVC.

9 IRRIGATION MASTER VALVE

NOT TO SCALE



SEE GROUNDING ROD NOTES FOR INSTALLATION INSTRUCTIONS

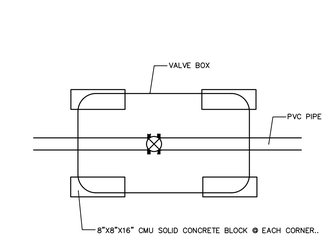
10 GROUNDING WIRES IN GRID DETAIL – INITAL TERMINAL

NOT TO SCALE

GROUNDING ROD NOTES:

GROUNDING RODS SERVE AS ELECTRODES FOR DEVICES TO DISSIPATE THE SURGE INTO THE EARTH. CAREFULLY READ THE FOLLOWING INSTALLATION INSTRUCTIONS:

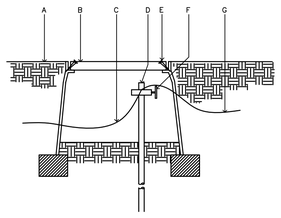
1. ALWAYS USE A 5/8" X 8' COPPER CLAD ROD.
2. RUN A #10 OF LARGER BARE COPPER WIRE FROM THE DEVICE TO THE ROD.
3. KEEP THE GROUND WIRES AS SHORT AND STRAIGHT AS POSSIBLE FROM THE DEVICE TO THE FIRST ROD.
4. CLAMP ALL WIRES TO THE GROUNDING ROD. DO NOT SOLDER OR TAPE THEM TO THE ROD.
5. TO INSTALL GROUNDING ROD, USE GK–TOOLS ROD DRIVING SLEEVE.
6. SPACE THREE RODS IN A TRIANGULAR GRID AT LEAST 8' APART FROM THE OTHERS IN THE GRID. CONNECT ALL THREE RODS WITH A SOLID # 10 COPPER WIRE.
7. WHEN TESTED WITH THE PROPER EQUIPMENT, GRIDS SHOULD HAVE AN EARTH RESISTANCE NO GREATER THAN 10 OHMS.
8. WHENEVER MORE THEN ONE WIRE IS ATTACHED TO A GROUNDING ROD ALWAYS USE A SEPARATE CLAMP FOR EACH WIRE. TRYING TO INSTALL MORE THAN ONE WIRE PER CLAMP COULD CAUSE A POOR CONNECTION RESULTING IN HIGH RESISTANCE LEVELS.
9. GROUNDING RODS SERVE AS ELECTRODES FOR THE SURGE DEVICES TO DISSIPATE THE SURGE INTO THE EARTH REMEMBER THESE TIPS WHEN INSTALLING THEM.



NOTE: BLOCKS TO SIT ON WEED CLOTH ON UNDISTURBED SOIL. DISTURBED SOILS SHALL BE COMPACTED WITH TAMPER PRIOR TO SETTING WEED CLOTH & BLOCKS. VALVE BOX AND EXTENSIONS TO SIT ON BLOCKS. VALVE BOX AND EXTENSIONS TO HAVE A MINIMUM 2" CLEARANCE TO THE TOP OF PVC PIPE.

11 BRICK PLACEMENT ON VALVE BOXES

NOT TO SCALE

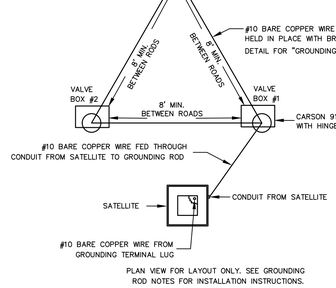


A. FINISH GRADE.
B. CARSON 910 SERIES VALVE BOX WITH LID AND SCREWS, COLOR TO MATCH MULCH
C. No. 10 BARE COPPER WIRE FROM PREVIOUS ROD IN GRID.
D. GROUNDING ROD FROM GK–UL3ROD THREE ROD KIT.
E. INSTALL SELF TAPING #8, 2" LONG BRASS SCREWS.
F. BRASS CLAMP.
G. No. 10 BARE COPPER WIRE CONTINUING TO NEXT ROD IN GRID.

NOTE: SEE GROUNDING ROD NOTES FOR INSTALLATION INSTRUCTIONS.

12 GROUND WIRES – INTERMEDIATE

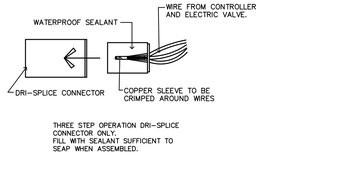
NOT TO SCALE



PLAN VIEW FOR LAYOUT ONLY. SEE GROUNDING ROD NOTES FOR INSTALLATION INSTRUCTIONS.

13 TRIANGULAR GROUNDING PLAN VIEW DETAIL

NOT TO SCALE



THREE STEP OPERATION DRI–SPLICE CONNECTOR ONLY. FILL WITH SEALANT SUFFICIENT TO SEAP WHEN ASSEMBLED.

14 WIRE CONNECTORS

NOT TO SCALE

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

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1–800–344–8377
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DESIGNED	PW
DRAWN	PW
CHECKED	PW
DATE	10/07/22

UTILITY OWNER

el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594–5500

CONSULTANT

PRAIRIE WORKSHOP LLC
LANDSCAPE ARCHITECTURE TEXAS + NEW MEXICO
www.prairieworkshop.com
2409 29th Street, Lubbock, TX 79411
(806) 773–1508 jhodges@prairieworkshop.com
Texas Board of Architectural Examiners BR 1285

WILL RUTH POND AND CONVEYANCE IMPROVEMENTS

LANDSCAPE ARCHITECTURAL DETAILS

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JOB NO.	16–133
SEQUENCE NO.	2 OF 3
SHEET NO.	L3.02

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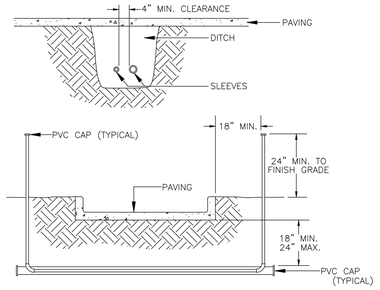


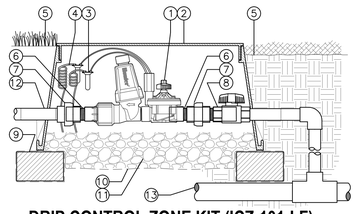
NOTES:
1. ALL PVC IRRIGATION SLEEVES TO BE CLASS 200 PIPE.
2. ALL JOINTS TO BE SOLVENT WELDED AND WATERTIGHT.
3. WHERE THERE IS MORE THAN ONE SLEEVE, EXTEND THE SMALLER SLEEVE TO 24-INCHES MINIMUM ABOVE FINISH GRADE.
4. MECHANICALLY TAMP TO 95% PROCTOR.

1 SLEEVING

NOT TO SCALE

LEGEND

1. HUNTER REMOTE CONTROL VALVE (ICZ) WITH FILTER REGULATOR
2. IRRIGATION VALVE BOX: HEAT STAMP LID WITH 'RCV' IN 2" LETTERS
3. WATERPROOF CONNECTORS (2)
4. 18"-24" COILED WIRE TO CONTROLLER
5. FINISH GRADE AT ADJACENT SURFACE (TURF OR MULCH)
6. SCH. 80 CLOSE NIPPLE, MATCH SIZE TO VALVE
7. PVC SLIP X FPT UNION
8. ISOLATION VALVE, SIZE AND TYPE PER PLAN
9. BRICK SUPPORTS (4)
10. FILTER FABRIC – WRAP TWICE AROUND BRICK SUPPORTS
11. 3/4" WASHED GRAVEL – 4" MIN. DEPTH
12. IRRIGATION LATERAL
13. MAINLINE LATRAL AND FITTINGS



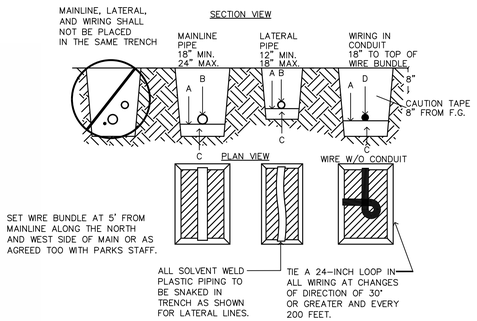
2 DRIP CONTROL ZONE KIT (ICZ-101-LF) WITH UNIONS AND ISOLATION VALVE

Hunter

NO SCALE

3 RAINBIRD ESP SITE SATELLITE CONTROLLER

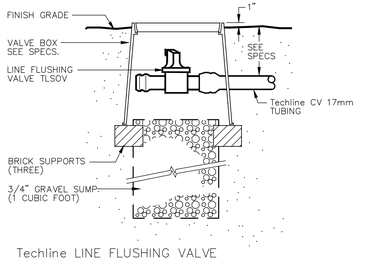
NOT TO SCALE



NOTES:
- A. BOTTOM OF EXCAVATED TRENCH WHERE NONE ROCKY SOILS ARE EXPOSED (ENCOUNTERED).
- B. IRRIGATION SYSTEM PIPING.
- C. MINIMUM 4" DEEP BEDDING SANDY SOILS MATERIAL WHERE ROCKY SOILS ARE EXPOSED.
- D. IRRIGATION SYSTEM VALVE WIRING.
- E. BACKFILL SOILS MATERIAL MAY BE NATIVE SOILS IF IT IS FREE OF CALICHE OR STONES LARGER THANK 1" IN SIZE AND ORGANIC MATTER OR WASTE DEBRIS. SOILS COMPACTION IN TURF AREAS TO BE 80% TO 85% DENSITY BY ASTM D-1557 STANDARD AND AT 95% DENSITY UNDER PAVED OR HARDSCAPE SURFACES.

4 PIPE/WIRE IN TRENCH

NOT TO SCALE



Techline LINE FLUSHING VALVE
(PLUMBED TO POLY)

5 DRIP LINE MANUAL FLUSH VALVE

N.T.S.

1. FINISH GRADE/TOP OF MULCH
2. QUICK-COUPLING VALVE: RAIN BIRD MODEL 44RC
3. VALVE BOX WITH COVER: 6" ROUND
4. 6-INCH MINIMUM DEPTH OF 3/4-INCH WASHED GRAVEL
5. PVC SCH 80 SWING JOINT (KBI MODEL TSA-1000-TT)
6. BRICK (1 OF 2)
7. PVC SCH 40 TEE OR ELL
8. PVC MAINLINE PIPE

6 RAINBIRD QUICK COUPLER VALVE MODEL 44RC

NOT TO SCALE

7 TREE DRIP RING DETAIL

NOT TO SCALE

8 DRIP LINE START CONNECTION W/ PVC RISER

DETAIL - NO SCALE

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JOB NO.	16-133
SEQUENCE NO.	3 OF 3
SHEET NO.	L3.03

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STRUCTURAL NOTES

GENERAL

1. ALL DETAILS ARE TYPICAL AND SHALL APPLY TO SIMILAR CONDITIONS UNLESS NOTED OTHERWISE.

2. THE CONTRACTOR SHALL COORDINATE THE SIZE AND LOCATION OF ALL HOLES AND SLEEVES THROUGH WALLS AND SLABS WITH ARCHITECTURAL, MECHANICAL, PLUMBING, ELECTRICAL AND CIVIL DRAWINGS. ALL PLUMBING AND MECHANICAL PENETRATIONS THROUGH WALLS AND SLABS SHALL BE PROPERLY SLEEVED. PENETRATING FOOTINGS, BEAMS, JOISTS, OR COLUMNS IS PROHIBITED. PLUMBING AND CONDUITS SHALL NOT BE INSTALLED BELOW FOOTINGS WITHOUT PRIOR WRITTEN APPROVAL FROM STUBBS ENGINEERING, INC.

3. THE STRUCTURE AS SHOWN IN THESE DRAWINGS IS STABLE UNDER THE FINAL CONDITION. THE STRUCTURE IS DESIGNED FOR THE IN-SERVICE LOADS ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE STRUCTURAL STABILITY DURING CONSTRUCTION. SEQUENCE OF CONSTRUCTION, SHORING, AND MEANS AND METHODS SHALL BE DETERMINED BY THE CONTRACTOR.

4. NON-LOAD BEARING ELEMENTS SHALL BE CONNECTED TO THE STRUCTURE BY METHODS THAT ALLOW VERTICAL DEFLECTION OF THE STRUCTURE. ALLOWABLE DEFLECTIONS OF THE STRUCTURE SHALL BE THE MAXIMUM OF EITHER A HALF INCH OR THE STRUCTURAL SPAN DIVIDED BY 360.

5. NOTCHING, CUTTING OR MODIFYING STRUCTURAL ELEMENTS IN THE FIELD IS PROHIBITED.

6. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER.

7. THE ATTACHMENT OF ROOF TOP EQUIPMENT TO THE STRUCTURE SHALL BE INSTALLED PER DESIGNS PROVIDED BY THE MANUFACTURE. THE MANUFACTURE SHALL CERTIFY THAT THE ATTACHMENTS HAVE BEEN DESIGN TO WITHSTAND LOADS BASED ON THE DESIGN CRITERIA LISTED BELOW.

DESIGN CRITERIA

1. THE STRUCTURAL DESIGN WAS COMPLETED IN ACCORDANCE WITH THE FOLLOWING CODES:
   IBC 2015
   ASCE 7-10
   ACI 318-14
   AASHTO LRFD BRIDGE 2014

2. DEAD LOAD ARE CALCULATED IN ACCORDANCE WITH CHAPTER 3 OF THE ASCE 7-10.

3. LIVE LOADS ARE CALCULATED IN ACCORDANCE WITH CHAPTER 4 OF THE ASCE 7-10 AS FOLLOWS:

OCCUPANCY OR USE	UNIFORM (psf.)	CONCENTRATED (lbs.)
TYPICAL FLOOR	100	2,000

4. WIND PRESSURES SHALL BE CALCULATED IN ACCORDANCE WITH CHAPTER 26-31 OF THE ASCE 7-10 AS FOLLOWS:

RISK CATEGORY	II
WIND VELOCITY	90 MPH
DIRECTIONAL FACTORS (Kd)	0.85 MFRS 0.85 COMPONENTS
TOPOGRAPHIC FACTOR (Kzt)	1.00
WIND EXPOSURE	C
INTERNAL PRESSURE COEFFICIENT	±0.18

5. SEISMIC LOADS SHALL BE CALCULATED IN ACCORDANCE WITH CHAPTER 11 AND 12 OF THE ASCE 7-10 AS FOLLOWS:

RISK CATEGORY	II
MAPPED MCE	S_s=0.350 S_1=0.100
SPECTRAL RESPONSE COEFFICIENT	S_{DS}=0.125 S_{D1}=0.050
SITE CLASSIFICATION	D
IMPORTANCE FACTOR	1.00
SEISMIC DESIGN CATEGORY	B
ANALYSIS PROCEDURE	EQUIVALENT FORCE METHOD

SHOP DRAWINGS

1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ARCHITECT/ENGINEER PRIOR TO FABRICATION AS REQUIRED BY THE SPECIFICATIONS AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING SUBMITTALS:
   - STRUCTURAL FILL AND EARTHWORK
   - REINFORCING STEEL
   - CONCRETE MIX DESIGNS
   - PRODUCT DATA FOR CONCRETE INSERTS

2. REVIEWS BY THE ENGINEER SHALL BE FOR GENERAL CONFORMANCE TO THE PLANS AND SPECIFICATIONS ONLY. MODIFICATIONS, COMMENTS AND INFORMATION PROVIDED BY THE ENGINEER ON THE SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR FROM THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.

3. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING DIMENSIONS AT THE JOB SITE AND COORDINATING THEM WITH THE PLANS AND SPECIFICATIONS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

4. THE FABRICATION AND CONSTRUCTION PROCESS, MEANS AND METHODS OF CONSTRUCTION, AND COORDINATING ALL TRADES FOR PERFORMING THE WORK IN A SAFE AND SATISFACTORY METHOD SHALL REMAIN THE RESPONSIBILITY OF THE CONTRACTOR.

5. REPRODUCTION OF CONSTRUCTION DOCUMENTS AS PART OF THE SHOP DRAWINGS IS PROHIBITED. THE SHOP DRAWINGS SHALL BE INDEPENDENTLY PRODUCED DRAWINGS BASED ON THE CONSTRUCTION DOCUMENTS. USE OF ELECTRONIC FILES PRODUCED BY STUBBS ENGINEERING, INC. TO GENERATE SHOP DRAWINGS IS PROHIBITED WITHOUT PRIOR WRITTEN APPROVAL FROM STUBBS ENGINEERING, INC. IF ELECTRONIC DRAWINGS PRODUCED BY THE STUBBS ENGINEERING, INC. ARE USED IN THE PRODUCTION OF THE SHOP DRAWINGS, ANY COMPANY LOGOS, TITLE BLOCKS AND SEALS SHALL BE REMOVED FROM THE SUBMITTAL.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DELAYS DUE TO REJECTION OF INADEQUATE OR INCORRECT SHOP DRAWINGS.

7. SHOP DRAWINGS SUBMITTED WITHOUT PRIOR REVIEW BY THE GENERAL CONTRACTOR SHALL NOT BE REVIEWED BY THE ENGINEER.

8. REQUESTS FOR SUBSTITUTION SHALL BE CLEARLY SHOWN ON SHOP DRAWINGS. SUBSTITUTIONS SHALL NOT BE IMPLEMENTED UNLESS SPECIFICALLY APPROVED IN WRITING BY THE ENGINEER.

FOUNDATION

1. THE CONTRACTOR SHALL REVIEW AND BECOME FAMILIAR WITH THE SOIL, WATER AND SITE CONDITIONS DESCRIBED IN THE SOILS REPORT PRIOR TO BIDDING THE PROJECT. SOILS BORINGS AND CONDITIONS DESCRIBED IN THE SOILS REPORT ARE FOR GENERAL INFORMATION PURPOSES ONLY. THE ACTUAL CONDITIONS MAY VARY AT THE SITE.

2. ALL EARTHWORK AND SITE PREPARATION SHALL BE IN COMPLIANCE WITH THE GEOTECHNICAL REPORT PREPARED BY CQC TESTING AND ENGINEERING, DATED APRIL 26, 2019. THE GEOTECHNICAL ENGINEER'S PROJECT NUMBER IS ACCQC17-001. ADDITIONAL INFORMATION IS CONTAINED IN THE GEOTECHNICAL REPORT.

3. THE SITE SHALL BE PREPARED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT TO PROVIDE A MINIMUM ALLOWABLE BEARING PRESSURE OF 2,500 PSF.

4. REMOVE ALL BRUSH, RUBBISH, AND VEGETATION MATERIAL FROM THE BUILDING PAD PRIOR TO EXCAVATION.

5. THE SITE SHALL BE OVEREXCAVATED TO ALLOW FOR A MINIMUM OF 12 INCHES OF STRUCTURAL SELECT FILL BELOW ALL FOOTINGS AND A MINIMUM OF 8 INCHES OF STRUCTURAL SELECT FILL BELOW ALL SLABS ON GRADE. OVEREXCAVATION SHALL EXTEND A MINIMUM OF 1 FOOT BEYOND THE EXTENT OF THE BUILDING PAD. REFERENCE DETAIL - / ----R TYPICAL SUBGRADE PREPARATION.

6. NATIVE SOILS BELOW STRUCTURAL SELECT FILL SHALL BE SCARIFIED TO A MINIMUN DEPTH OF 8 INCHES. THE NATIVE SOILS SHALL BE COMPACTED TO A MINIMUM DRY DENSITY OF 95% PER THE MODIFIED PROCTOR (ASTM D1557) AT A MOISTURE CONTENT OF +/- 3% OPTIMUM. WEAK OR COMPRESSIBLE NATIVE SOILS IDENTIFIED DURING EARTHWORK SHALL BE REMOVED AND REPLACED WITH STRUCTURAL SELECT FILL PER THE REQUIREMENTS FOR STRUCTURAL FILL.

7. STRUCTURAL SELECT FILL SHALL BE FREE OF ROCKS, ROOTS, VEGETABLE MATTER, CLAY CLUMPS OR ROCKS GREATER THAN 3 INCHES IN ANY DIMENSION. STRUCTURAL SELECT FILL SHALL MEET THE FOLLOWING REQUIREMENTS:
   NO EXPANSIVE MATERIAL
   MAXIMUM LIQUID LIMIT (ASTM D4318): 35
   MAXIMUM PLASTICITY INDEX (ASTM D4318): 12
   UNIFIED SOILS CLASSIFICATION SYSTEM: SP-SM, SM, SC, SC-SM, GC, GC-GM, GP-GM & GP-GC
   GRADATION (ASTM D422)

SIEVE SIZE	PERCENT PASSING
3-INCH	100%
3/4-INCH	75-100%
NO. 4	40-100%
NO. 200	5-40%

8. PLACE ALL STRUCTURAL SELECT FILL IN 8 INCH MAXIMUM LOOSE LIFTS. MOISTEN TO A MOISTURE CONTENT OF +/- 3% OPTIMUM MOISTURE CONTENT AND COMPACT TO A MINIMUM DENSITY OF 95% MODIFIED PROCTOR (ASTM D1557) MAXIMUM DRY DENSITY.

9. ALL EARTHWORK SHALL BE INSPECTED BY A LICENSED GEOTECHNICAL ENGINEER TO ENSURE ALLOWABLE BEARING PRESSURE IS MET, THERE IS A LOW SETTLEMENT POTENTIAL AND THE ABSENCE OF EXPANSIVE MATERIAL. TESTING SHALL BE PERFORMED AT THE FOLLOWING MINIMUM RATES. THE GEOTECHNICAL ENGINEER MAY DETERMINE MORE STRINGENT TESTING IF REQUIRED:-
   - ONE MOISTURE-DENSITY CURVE, IN ACCORDANCE WITH ASTM D1557, FOR EACH TYPE OF STRUCTURAL SELECT FILL OR EACH SOURCE OF STRUCTURAL FILL USED FOR THE PROJECT.
   - ONE FIELD DENSITY TEST, IN ACCORDANCE WITH ASTM D1556, D2167 OR D2922, PER EACH 2,500 SQUARE FEET OF COMPACTED NATIVE SUBGRADE PRIOR TO PLACING STRUCTURAL SELECT FILL OR FLOOR SLAB. PROVIDE A MINIMUM OF THREE TESTS.
   - EACH HORIZONTAL LIFT OF STRUCTURAL SELECT FILL SHALL BE TESTED WITH ONE FIELD DENSITY TEST, IN ACCORDANCE WITH ASTM D1556, D2167 OR D2922, PER EACH 2,500 SQUARE FEET AND 100 FEET OF CONTINUOUS FOOTING WITH A MINIMUM OF THREE TESTS.

10. VAPOR BARRIERS SHALL BE PLACED DIRECTLY BELOW ALL SLABS ON GRADE BETWEEN THE SLAB AND THE SUBGRADE. THE VAPOR BARRIER SHALL HAVE A MINIMUM THICKNESS OF 10 MILS AND SHALL MEET THE REQUIREMENTS OF ASTM1745 WITH A WATER VAPOR PERMEANCE LESS THAN 0.030 PERMS. CONTRACTOR SHALL LAP AND SEAL ALL EDGES. PUNCTURES AND PENETRATIONS SHALL BE SEALED AND REPAIR PER THE MANUFACTURE'S RECOMMENDATIONS.

11. CONSTRUCTION JOINTS IN FOOTINGS AND STEM WALL CAN BE PLACED AT CONTRACTOR'S OPTION. FOOTINGS AND STEM WALL CONSTRUCTION JOINTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAIL 4 / S1.1 .

12. SAW CUT CONTROL JOINTS AS INDICATED ON PLANS WITHIN 12 HOURS OF PLACING CONCRETE.

CONCRETE

1. ALL CONCRETE SHALL BE PROPORTIONED, CONSTRUCTED AND CONFORM TO THE SPECIFICATION OF ACI 301-16. CONCRETE DESIGN SHALL CONFORM TO ACI 318-14.

2. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150, TYPE I OR II. CONCRETE IN CONTACT WITH SOIL SHALL BE TYPE II CEMENT.

3. FLY ASH SHALL NOT BE USED IN ARCHITECTURALLY EXPOSED CONCRETE, TILTWALLS OR SLABS ON GRADE. FLY ASH IS ALLOWED IN ALL OTHER NON-ARCHITECTURALLY EXPOSED CONCRETE, UP TO A MAXIMUM OF 20% OF THE CEMENT CONTENT. THE MIX DESIGN SHALL INDICATE THAT THE FLY ASH SHALL NOT ADVERSELY EFFECT THE PERFORMANCE OF OTHER PRODUCTS AND MATERIALS THAT WILL BE IN CONTACT WITH THE CONCRETE.

4. CONCRETE SHALL BE PROPORTIONED TO THE FOLLOWING REQUIREMENTS:

LOCATION	f'c AT 28 DAYS	MAX SIZE AGGREGATE	SLUMP	AIR CONTENT	CONCRETE TYPE	MAXIMUM WATER TO CEMENT RATIO
FOOTINGS	3,000 PSI	1 - INCH	3 - 5 INCH	0 - 5%	NORMAL WEIGHT	0.55
STEM WALLS	4,000 PSI	3/4 - INCH	3 - 5 INCH	0 - 5%	NORMAL WEIGHT	0.55
RETAINING WALLS	4,000 PSI	3/4 - INCH	3 - 5 INCH	0 - 5%	NORMAL WEIGHT	0.55
SLAB ON GRADE	4,000 PSI	3/4 - INCH	3 - 5 INCH	0 - 5%	NORMAL WEIGHT	0.55

CONCRETE SHALL BE PROPORTIONED TO EXCEED 75% OF THE 28-DAY STRENGTH IN 7 DAYS.

5. CONCRETE REINFORCING STEEL AND EMBEDS SHALL HAVE THE FOLLOWING PROPERTIES:

TYPE	DESIGNATION ON PLAN	ASTM	YIELD STRENGTH	NOTES
REBAR	#	A615	60 KSI	NOT WELDABLE
WELDED WIRE REINF.	WWF	A185	60 KSI	FLAT SHEETS ONLY
DEFORMED BAR ANCHORS	DBA	A496	60 KSI	WELDABLE
HEADED ANCHOR STUDS	HAS	A108, B	70 KSI	

6. UNLESS OTHERWISE SHOWN THE CLEAR DISTANCE FOR THE FACE OF CONCRETE FORMS TO THE REINFORCING STEEL SHALL BE:

CONDITION	CLEAR DISTANCE	NOTES
CONCRETE CAST AGAINST EARTH OR WATER	3 - INCH	EXCLUDES SLABS ON GRADE
CONCRETE CAST TO FORMS EXPOSED TO EARTH, WATER OR WEATHER	2 - INCH	NO. 6 BAR AND LARGER
	1 1/2 - INCH	NO. 5 BAR AND SMALLER
CONCRETE CAST TO FORMS NOT EXPOSED TO EARTH, WATER OR WEATHER	1 - INCH	SLABS AND JOISTS
	1 1/2 - INCH	BEAMS, COLUMNS, & WALLS
SLABS ON GRADE	2 - INCH	FROM BOTTOM SURFACE
	1 1/2 - INCH	FROM TROWLED SURFACE
	3/4 - INCH	FROM SCREED SURFACE

7. REINFORCING DETAILING AND PLACEMENT SHALL BE IN COMPLIANCE WITH ACI 315-08.

8. ALL REBAR SHALL BE SPLICED IN ACCORDANCE WITH DETAIL 2 / S1.1 AND STANDARD HOOK SHALL BE PROVIDED PER DETAIL 1 / S1.1 .

9. ALL REBAR AND REINFORCING MESH SHALL BE CHAIRED TO PROVIDE REQUIRED COVER AND SUPPORT THE REINFORCING ADEQUATELY TO PREVENT ACCIDENTAL DISPLACEMENT. CHAIRS FOR SLABS ON GRADE SHALL BE SPECIFICALLY DESIGNED FOR USE ON SOIL. CHAIRS FOR SLABS ON METAL DECK SHALL BE SPECIFICALLY DESIGNED FOR USE ON METAL DECK.

10. SIZE AND LOCATION OF EQUIPMENT SUPPORTS AND EMBEDS SHALL BE COORDINATED WITH THE EQUIPMENT SUPPLIER AND SHALL BE IN ACCORDANCE WITH APPROVED SHOP DRAWINGS.

11. ALL CONCRETE SHALL BE CONSOLIDATED BY VIBRATORY MEANS. CONSOLIDATIONS SHALL BE OBSERVED BY INSPECTION AGENCY.

12. CONCRETE DIMENSIONS SHOWN ON DRAWINGS ARE ACTUAL DIMENSIONS NOT NOMINAL DIMENSIONS.

13. ALL CONTINUOUS REINFORCING IN FOOTINGS AND WALLS SHALL EITHER BE CONTINUOUS AROUND CORNERS OR HAVE BENT CORNER BARS OF THE SAME SIZE AND SPACING AS THE HORIZONTAL BARS.

14. FORM TIES SHALL BE EITHER OF THE THREADED OR SNAP OFF TYPE. NO EXPOSED METAL SHALL BE ALLOWED WITHIN ONE INCH OF THE SURFACE. ALL RECESSES SHALL BE POINTED WITH MORTAR.

15. ALL DOWELS, EMBEDS AND REINFORCING BARS SHALL BE SECURELY TIED PRIOR TO PLACING CONCRETE. INSTALLATION OF ITEMS INTO WET CONCRETE WILL NOT BE ALLOWED.

16. ALL EXPOSED CONCRETE CORNERS SHALL HAVE A 3/4" CHAMFER.

17. CONCRETE SHALL NOT BE DROPPED VERTICALLY MORE THAN 5 FEET WITHOUT THE USE OF A TREMIE.

BAR GRATING

1. BAR GRATING SHALL HAVE 1 1/2"x3/16" BARS @ 1 3/16" O.C. SPACING AND 1 1/2"x3/16" CROSS BARS @ 4" O.C. TRANSVERSE.

2. ALL STAIR TREADS AND BAR GRATE PANELS SHALL BE BANDED WITH 1 1/2"x3/16" BARS.

3. ALL BARS AND COMPONENTS SHALL BE WELDED. PRESS LOCK BARS WILL NOT BE ALLOWED.

4. PRIMARY BARS SHALL BE ORIENTED IN THE SPAN DIRECTION.

POST INSTALLED ANCHORS

1. ALL CONCRETE EXPANSION ANCHORS TO BE USED SHALL HAVE AN ICC-ES REPORT AND MEET THE REQUIREMENTS OF ACI 318 APPENDIX D FOR CRACKED & UNCRACKED CONCRETE. ANCHORS SHALL BE APPROVED FOR SEISMIC LOADS AND CRACKED CONCRETE. PRODUCT DATA SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. ANCHORS SHALL BE INSTALLED PER THE ICC-ES REPORT AND MANUFACTURES RECOMMENDATIONS. CONCRETE ANCHORS SHALL BE GALVANIZED CARBON STEEL. CONCRETE EXPANSION ANCHORS SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS UNLESS NOTED OTHERWISE.

DESIGNATION ON PLAN	MINIMUM EMBEDMENT	ULTIMATE NON-SEISMIC TENSILE LOAD	ULTIMATE NON-SEISMIC SHEAR LOAD
3/8"Ø CEA	2"	2,070 LBS	3,005 LBS
1/2"Ø CEA	3-1/4"	4,554 LBS	12,450 LBS
3/4"Ø CEA	4-3/4"	8,780 LBS	22,800 LBS

ALL ULTIMATE (LRFD) LOADS ARE PROVIDED FOR CONCRETE WITH f'c = 4Kpsi, UNCRACKED & FOR NON SEISMIC LOADS

QUALITY ASSURANCE

STRUCTURAL INSPECTION AND TESTING

1. STRUCTURAL INSPECTIONS SHALL BE PROVIDED IN ACCORDANCE WITH CHAPTER 17 OF THE 2015 IBC.

2. IT IS THE GENERAL CONTRACTORS RESPONSIBILITY TO SCHEDULE AND COORDINATE THE PERFORMANCE OF INSPECTIONS AND TESTING IN ACCORDANCE WITH THE SPECIFICATIONS, BUILDING CODE AND THE SPECIAL INSPECTION SCHEDULES.

3. SPECIAL INSPECTION AND TESTING SHALL BE PERFORMED BY A QUALIFIED PERSON OR AGENCY THAT IS APPROVED BY THE BUILDING OFFICIAL. INSPECTIONS PROVIDED BY LOCAL BUILDING OFFICIALS SHALL NOT BE CONSIDERED A SUBSTITUTION FOR SPECIAL INSPECTIONS OR TESTING REQUIREMENTS.

4. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPETOR:
   A. THE SPECIAL INSPECTOR SHALL INSPECT THE WORK AS REQUIRED BY THE SPECIAL INSPECTION SCHEDULES TO ENSURE THAT THE WORK IS IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.
   B. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL IMPLEMENT A TIMELY PLAN TO CORRECT ANY DISCREPANCIES. IN THE EVENT THE DISCREPANCIES ARE NOT CORRECTED, THE ENGINEER, ARCHITECT AND BUILDING OFFICIAL SHALL BE NOTIFIED.
   C. THE SPECIAL INSPECTOR SHALL PROVIDE INSPECTION REPORTS TO THE GENERAL CONTRACTOR, ARCHITECT, ENGINEER AND THE BUILDING OFFICIAL IN A TIMELY MANNER.

REQUIRED SPECIAL INSPECTION AND TESTS OF SOILS

VERIFICATION AND INSPECTION TASK	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED	IBC REFERENCE
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATION ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY		X	1705.6
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL		X	1705.6
3. PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS		X	1705.6
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	X		1705.6
5. PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY		X	1705.6

REQUIRED SPECIAL INSPECTION AND TESTS OF CONCRETE CONSTRUCTION

VERIFICATION AND INSPECTION TASK	FREQUENCY OF INSPECTION: CONTINUOUS DURING TASK LISTED	FREQUENCY OF INSPECTION: PERIODICALLY DURING TASK LISTED	REFERENCE FOR CRITERIA: IBC SECTION	REFERENCE FOR CRITERIA: REFERENCE STANDARD
1. INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS AND PLACEMENT		X	1910.4	ACI 318:Ch. 20, 25.2,25.3, 26.6.1-26.6.3
2. REINFORCING BAR WELDING:				
a. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706		X		AWS D1.4 ACI 318: CH. 26.6.4
b.INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"		X		
c. INSPECT ALL OTHER WELDS	X			
3. INSPECT ANCHORS CAST IN CONCRETE		X		ACI 318: 17.8.2
4.INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS				
a. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS	X			ACI 318: CH. 17.8.2.4 ACI 318: CH 17.8.2
b. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.a.		X		
5. VERIFY USE OF REQUIRED DESIGN MIX		X	1904.1, 1904.2, 1908.2, 1908.3	ACI318: Ch.19, 26.4.3, 26.4.4
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X		1908.10	ASTM C172 ASTMC31 ACI318: CH. 26.4, 26.12
7. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X		1908.6, 1908.7, 1908.8	ACI 318: 26.5
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES		X	1908.9	ACI 318: CH. 26.5.3-26.5.5
9. INSPECT PRESTRESSED CONCRETE FOR:				
a. APPLICATION OF PRESTRESSING FORCES	X			ACI 318: CH. 26.10
b. GROUTING OF BONDED PRESTRESSING TENDONS	X			
10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS		X		ACI 318:CH. 26.8
11. VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORING AND FORMS FROM BEAMS AND STRUCTURAL SLABS.		X		ACI 318: CH. 26.11.2
12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED		X		ACI 318: CH. 26.11.1.2(b)

FOR SI: 1 INCH = 25.4mm

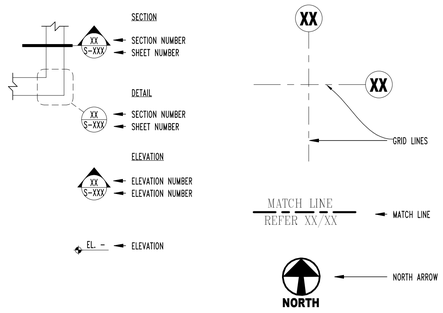
a. WHERE APPLICABLE, SEE ALSO SECTION 1705.11, SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE

b. SPECIFIC REQUIREMENTS FOR SPECIAL INSPECTION SHALL BE INCLUDED IN THE RESEARCH REPORT FOR THE ANCHOR ISSUED BY AN APPROVED SOURCE IN ACCORDANCE WITH ACI 355.2 OR OTHER QUALIFICATION PROCEDURES. WHERE SPECIFIC REQUIREMENTS ARE NOT PROVIDED, SPECIAL INSPECTION REQUIREMENTS SHALL BE SPECIFIED BY THE REGISTERED DESIGN PROFESSIONAL AND SHALL BE APPROVED BY THE BUILDING OFFICIAL PRIOR TO THE COMMENCEMENT OF THE WORK.

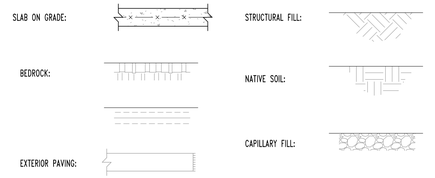
ABBREVIATIONS

&	- AND	FIN.	- FINISH
@	- AT	FLR.	- FLOOR
°	- DEGREE	F.V.	- FIELD VERIFY
Ø	- DIAMETER	HAS	- HEADED ANCHOR STUD
ALT.	- ALTERNATE	FT.	- FEET
ALUM.	- ALUMINUM	FTG.	- FOOTING
ANSI.	- AMERICAN NATIONAL STANDARDS INSTITUTE	GA.	- GAGE
		GALV.	- GALVANIZED
APPROX.	- APPROXIMATE	GR.	- GRADE
ARCH.	- ARCHITECTURAL	HORIZ.	- HORIZONTAL
ASTM.	- AMERICAN SOCIETY FOR TESTING AND MATERIALS	HSS	- HOLLOW STEEL SECTION
		lb.	- POUNDS
AWS	- AMERICAN WELDING SOCIETY	LT.	- LIGHT
B/F	- BOTTOM OF FOOTING	LLH	- LONG LEG HORIZONTAL
BLDG.	- BUILDING	LLV	- LONG LEG VERTICAL
BOT.	- BOTTOM	JST.	- JOIST
BRG.	- BEARING	MAX.	- MAXIMUM
CANT.	- CANTILEVER	MCJ	- MASONRY CONTROL JOINT
CEA	- CONCRETE EXPANSION ANCHOR	MFG.	- MANUFACTURE
CIP.	- CAST IN PLACE	MIN.	- MINIMUM
CJ	- CONTROL JOINT	NTS	- NOT TO SCALE
℄	- CENTERLINE	OPP.	- OPPOSITE
CLR.	- CLEARANCE	PCP.	- PRECAST CONCRETE PANEL
CMU	- CONCRETE MASONRY UNIT	PEN.	- PENETRATION
COL.	- COLUMN	PL	- PLATE
CONC.	- CONCRETE	PREFAB.	- PREFABRICATED
CONST.	- CONSTRUCTION	REFER	- REFERENCE
CONT.	- CONTINUOUS	REINF.	- REINFORCE, REINFORCEMENT
CONX.	- CONNECTION	SCHL.	- SCHEDULE
COORD.	- COORDINATE	SIM.	- SIMILAR
DBL.	- DOUBLE	SPEC.	- SPECIFICATION
DEMO.	- DEMOLISH, DEMOLITION	SQ.	- SQUARE
DET.	- DETAIL	STD.	- STANDARD
DIM.	- DIMENSION	STRL.	- STRUCTURAL
DWG.	- DRAWING	TOS	- TOP OF STEEL
EA	- EPOXY ANCHOR	TOW	- TOP OF WALL
EJ	- EXPANSION JOINT	TYP.	- TYPICAL
EL	- ELEVATION	VERT.	- VERTICAL
EXIST.	- EXISTING	WWF	- WELDED WIRE FABRIC
EQ.	- EQUAL		

MISCELLANEOUS SYMBOLS



DETAIL LEGEND



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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

STRUCTURAL NOTES

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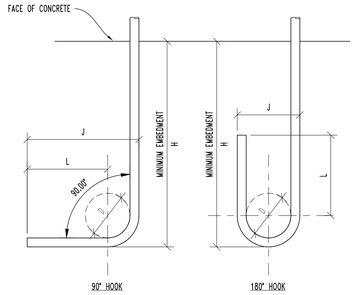
JOB NO.
SEQUENCE NO.
OF
SHEET NO. S1.0

REBAR STANDARD HOOKS

REBAR SIZE	D (IN.)	90° HOOK				180° HOOK			
		J (IN.)	L (IN.)	H (IN.)		J (IN.)	L (IN.)	H (IN.)	
#3	2¼	6	4½	f'c = 3000PSI	9	3	1½	f'c = 3000PSI	6
				f'c = 4000PSI	7			f'c = 4000PSI	6
#4	3	8	6	f'c = 3000PSI	11	4	2	f'c = 3000PSI	7
				f'c = 4000PSI	10			f'c = 4000PSI	7
#5	3¾	10	7½	f'c = 3000PSI	14	5	2½	f'c = 3000PSI	7
				f'c = 4000PSI	12			f'c = 4000PSI	7
#6	4½	12	9	f'c = 3000PSI	17	6	3	f'c = 3000PSI	8
				f'c = 4000PSI	15			f'c = 4000PSI	8
#7	5¼	14	10½	f'c = 3000PSI	19	7	3½	f'c = 3000PSI	9
				f'c = 4000PSI	17			f'c = 4000PSI	9
#8	6	16	12	f'c = 3000PSI	22	8	4	f'c = 3000PSI	10
				f'c = 4000PSI	19			f'c = 4000PSI	10
#9	9½	19	13½	f'c = 3000PSI	25	11¼	4½	f'c = 3000PSI	12
				f'c = 4000PSI	22			f'c = 4000PSI	12
#10	10¾	22	15¼	f'c = 3000PSI	28	13¼	5¼	f'c = 3000PSI	14
				f'c = 4000PSI	24			f'c = 4000PSI	14

NOTES:
1. THE HOOK DIMENSIONS GIVEN SHALL BE USED FOR BEAMS, JOISTS, COLUMNS, WALLS, SLABS AND FOOTINGS.
2. HOOKS SHALL BE ROTATED TO FIT IN SPACE AND MAINTAIN ADEQUATE COVER. NO NOT CUT HOOK WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.



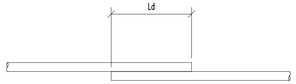
1 REBAR STANDARD HOOKS

SCALE: N.T.S.

CONCRETE REINFORCING SPLICE SCHEDULE

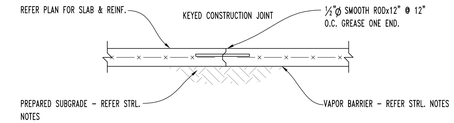
f'C (PSI)	SPLICE TYPE	BAR SIZE							
		#3	#4	#5	#6	#7	#8	#9	#10
3,000	TOP BARS	28	37	47	56	81	93	105	118
	OTHER BARS	22	29	36	43	63	72	81	91
4,000	TOP BARS	24	32	40	48	70	80	91	102
	OTHER BARS	19	25	31	37	54	62	70	79
5,000	TOP BARS	22	29	36	43	63	72	81	91
	OTHER BARS	17	22	28	33	49	55	63	70
6,000	TOP BARS	20	26	33	40	58	66	74	83
	OTHER BARS	15	20	25	31	44	51	57	64

NOTES:
1. ALL REBAR SPLICE LENGTHS (Ld) PROVIDED ARE IN INCHES.
2. TOP BARS ARE DEFINED AS HORIZONTAL REINFORCEMENT PLACED SO THAT MORE THAN 12 INCHES OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.
3. THE SPLICE LENGTHS GIVEN SHALL BE USED FOR BEAMS, JOISTS, COLUMNS WALLS, SLABS AND FOOTINGS.
4. WHEN THE CLEAR SPACING BETWEEN BARS IS LESS THAN 2 BAR DIAMETERS AND/OR THE CLEAR COVER IS LESS THAN 1 BAR DIAMETER, MULTIPLY THE SPLICE LENGTH IN THE TABLE BY 1.50.
5. WHEN SPLICING BARS OF DIFFERENT SIZE, USE THE SPLICE LENGTH OF THE LARGER BAR.



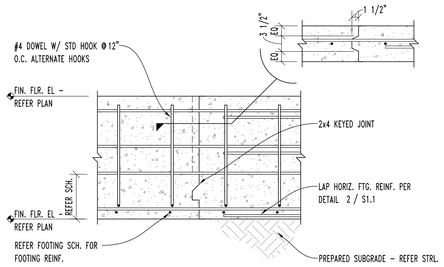
2 CONCRETE REINFORCING SPLICE SCHEDULE

SCALE: N.T.S.



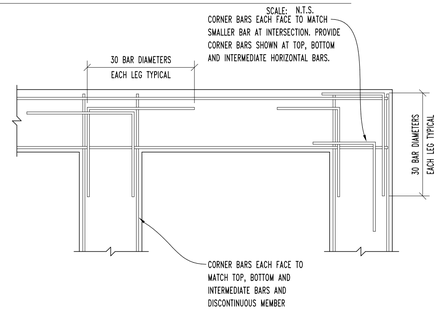
3 TYPICAL SLAB CONSTRUCTION JOINT

SCALE: 3/4" = 1'-0"



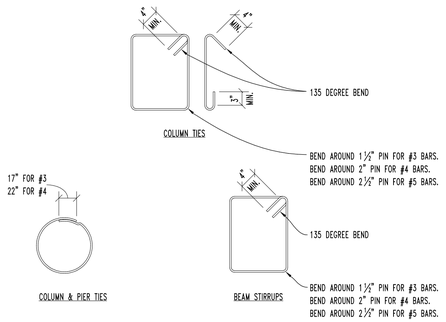
4 TYPICAL FOOTING CONSTRUCTION JOINTS

SCALE: 3/4" = 1'-0"



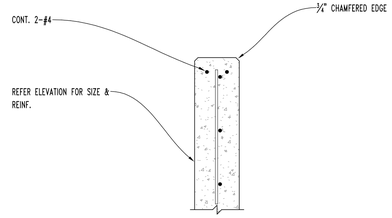
5 TYPICAL CORNER BARS AT WALL OR GRADE BEAM INTERSECTION DETAIL

SCALE: N.T.S.



6 TYPICAL CONCRETE REINFORCING BAR DETAILS

SCALE: 3/4" = 1'-0"



7 TYPICAL CONCRETE WALL EDGE

SCALE: 3/4" = 1'-0"

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WILL RUTH POND IMPROVEMENTS

STRUCTURAL DETAILS

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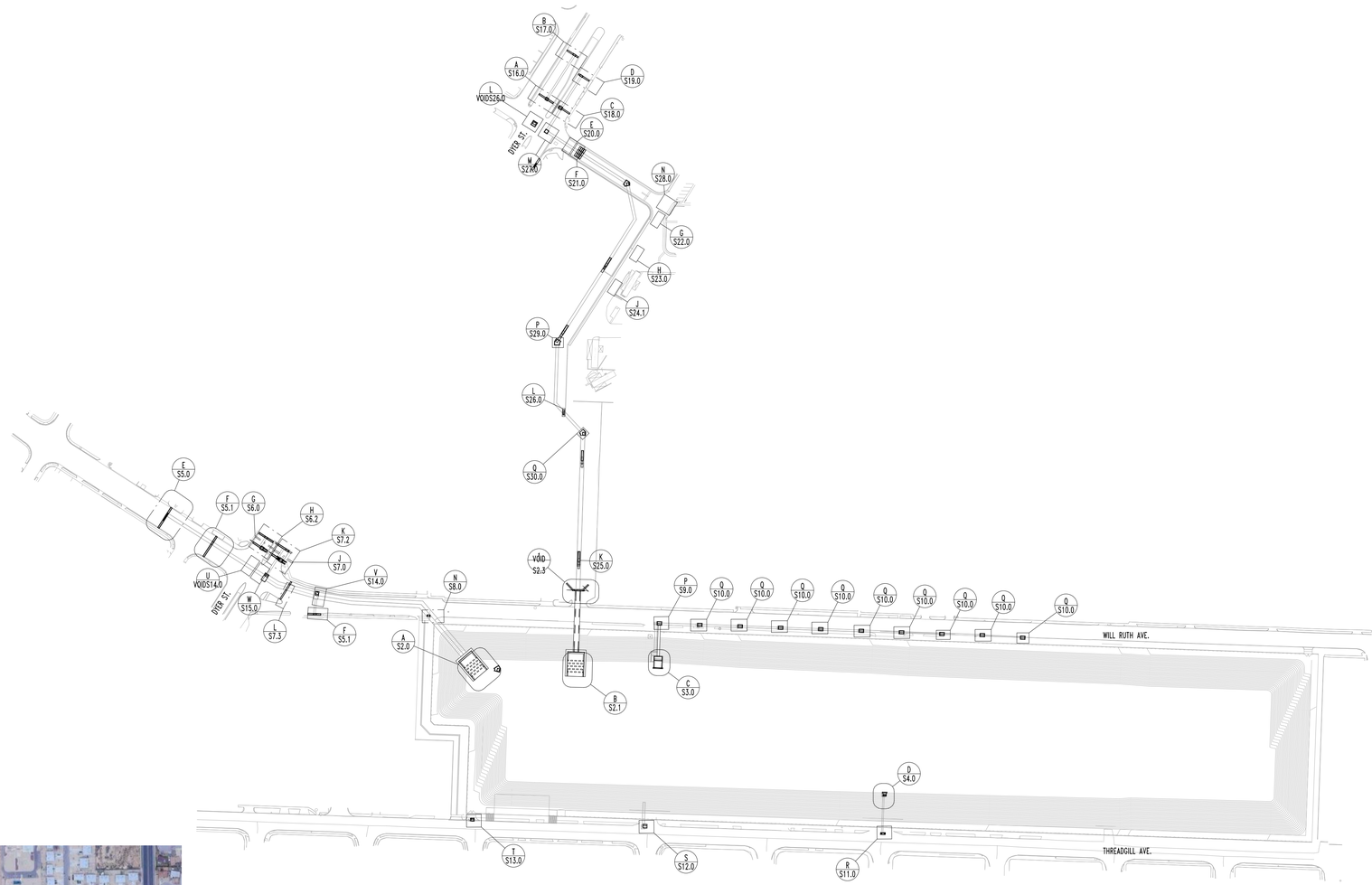
JOB NO.
SEQUENCE NO.
OF
SHEET NO. S1.1



OVERALL SITE PLAN

SCALE: 1" = 160'-0"

NORTH

OVERALL SITE PLAN

SCALE: 1/2" = 1'-0"

NORTH

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REV.	DATE	BY	DESCRIPTION

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WILL RUTH POND IMPROVEMENTS

OVERALL SITE PLAN

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SEQUENCE NO.	
OF	
SHEET NO.	S1.2

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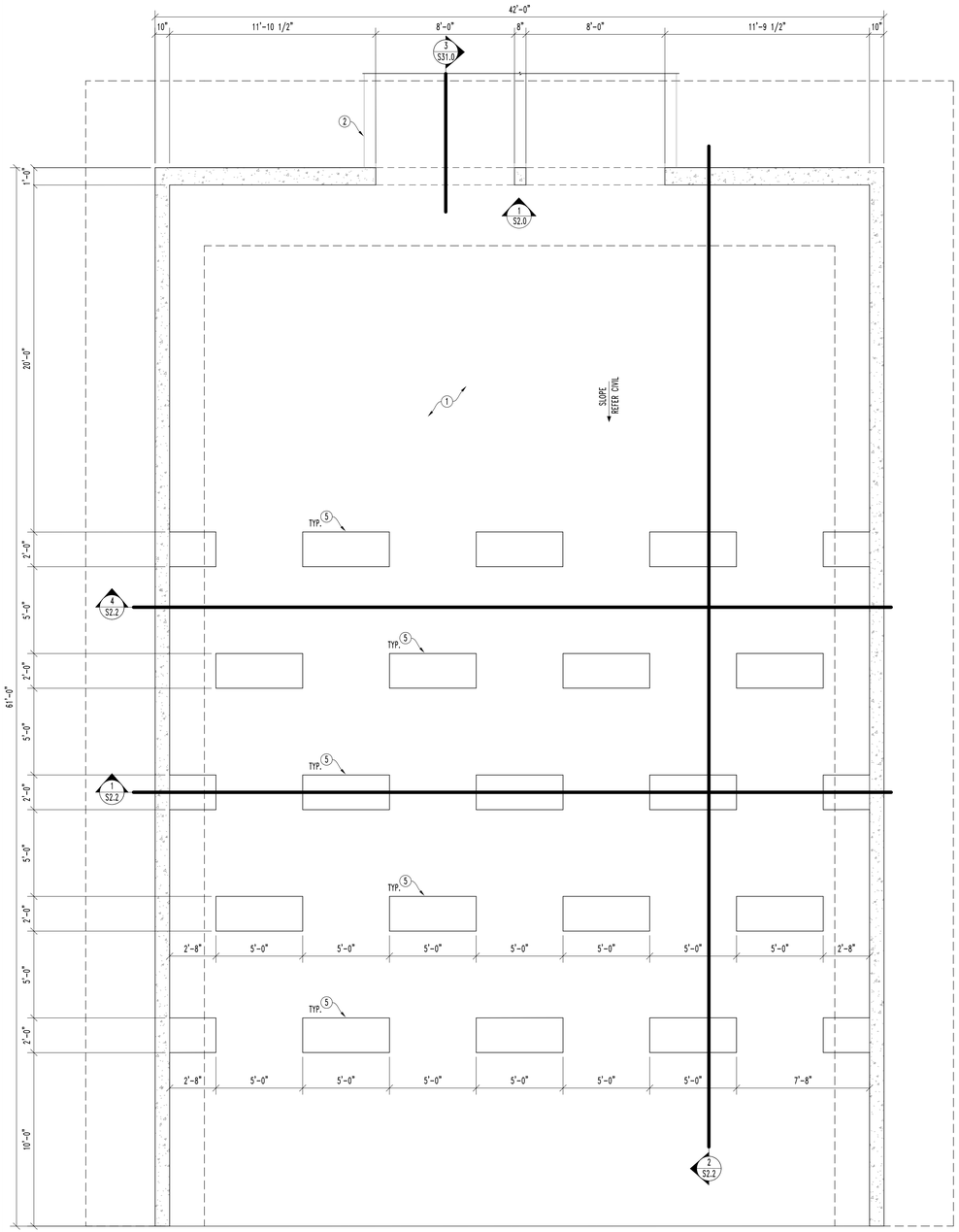
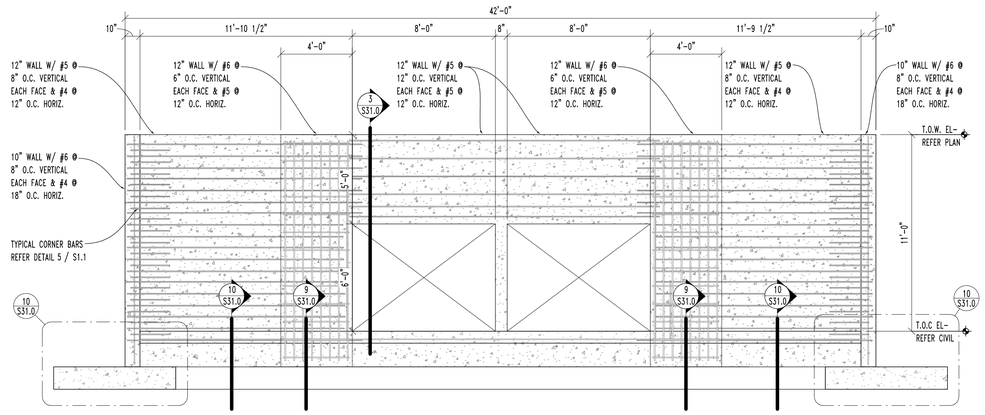


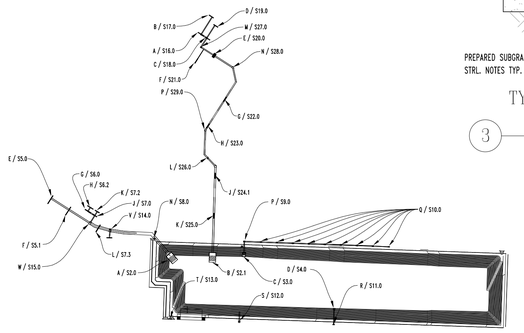
A OUTLET 1 PLAN

SCALE: 1/4" = 1'-0"



1 HEADWALL ELEVATION

SCALE: 1/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

PLAN NOTES

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REFER TO CIVIL DRAWINGS FOR GRATE/FRAME ANCHOR DETAILS

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4 . CONCRETE PIPE - REFER CIVIL.

5 . BAFFLE BLOCK - REFER DETAIL 3/S2.2.

6 . 8" CONCRETE SLAB WITH #8 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

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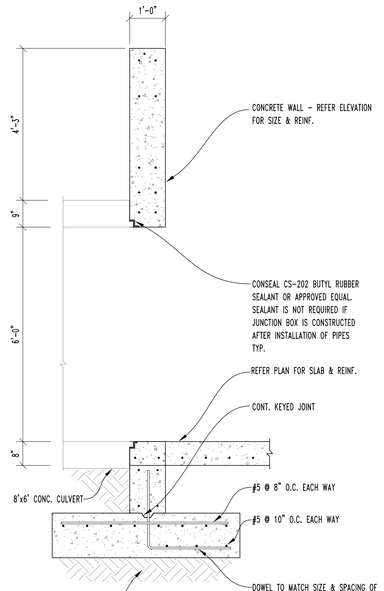
9 . 8" CONCRETE SLAB WITH #6 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP



TYPICAL SECTION @ CULVERT TO HEADWALL

3

SCALE: 1/2" = 1'-0"

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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05/26/22

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CHECKED
DATE 08/18/22

UTILITY OWNER
el paso WATER
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EL PASO, TEXAS 79925
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Leaders in Project Delivery & Performance
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

OUTLET 1 PLAN

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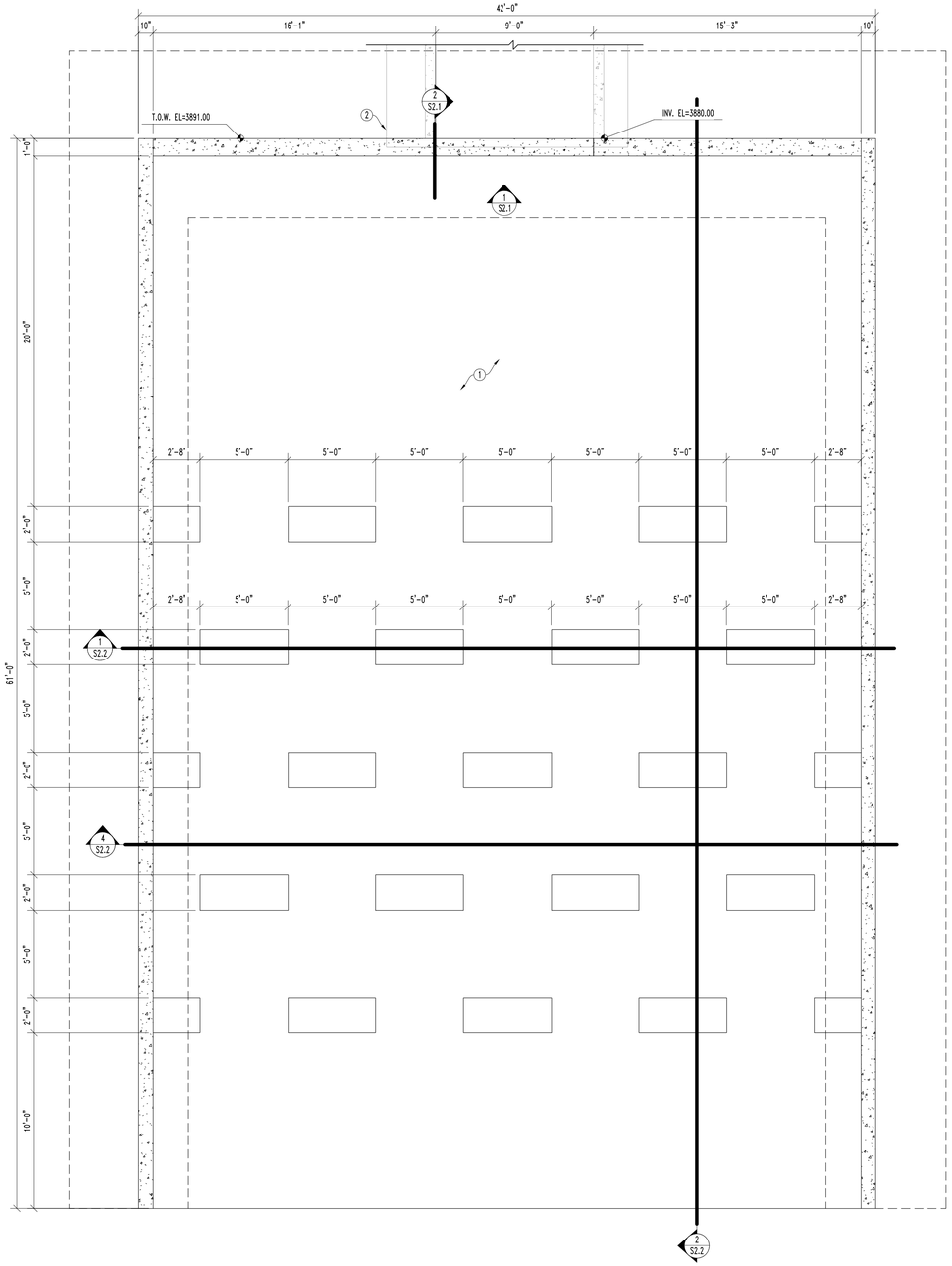
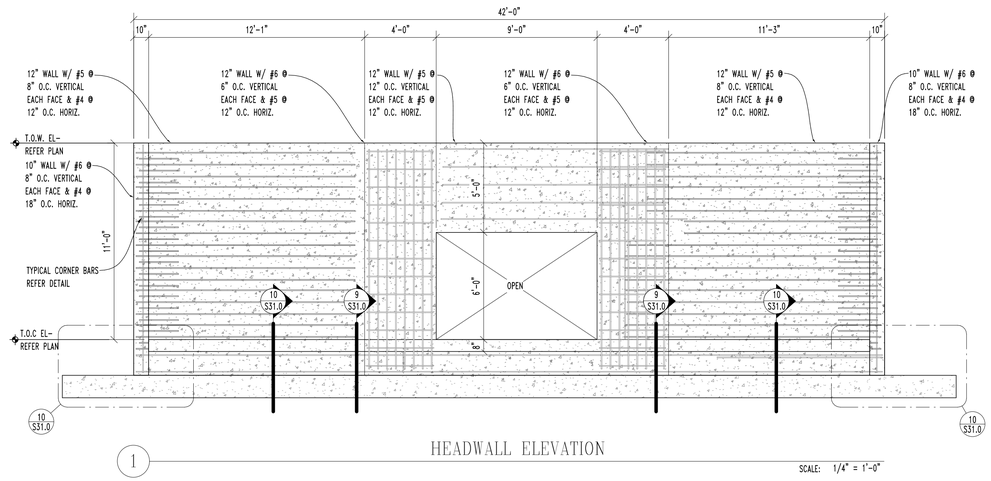
JOB NO.
SEQUENCE NO.
OF
SHEET NO. S2.0



B OUTLET 2 PLAN

SCALE: 1/4" = 1'-0"



1 HEADWALL ELEVATION

SCALE: 1/4" = 1'-0"

PLAN NOTES

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5 . BAFFLE BLOCK - REFER DETAIL 3/S2.2.

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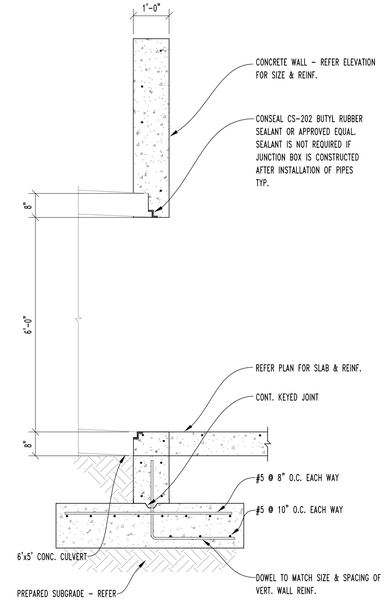
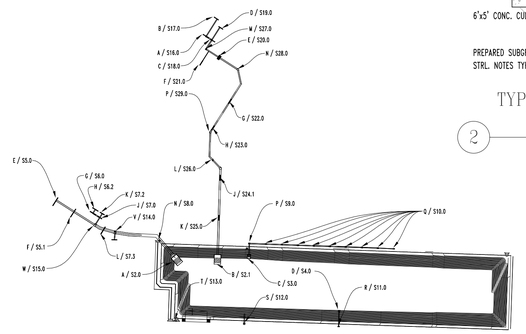
9 . 8" CONCRETE SLAB WITH #6 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP



TYPICAL SECTION @ CULVERT TO HEADWALL

2

SCALE: 1/2" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

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WILL RUTH POND IMPROVEMENTS

OUTLET 2 PLAN

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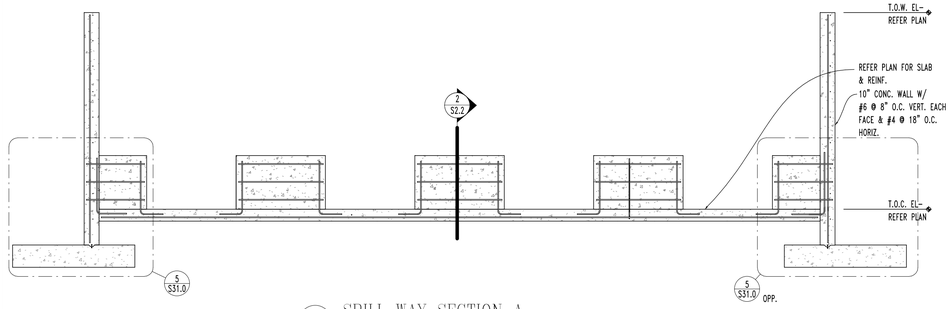
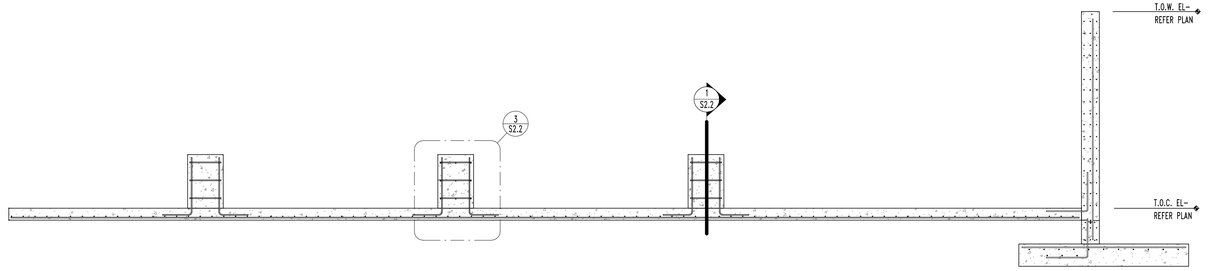
JOB NO.	
SEQUENCE NO.	
OF	
SHEET NO.	S2.1



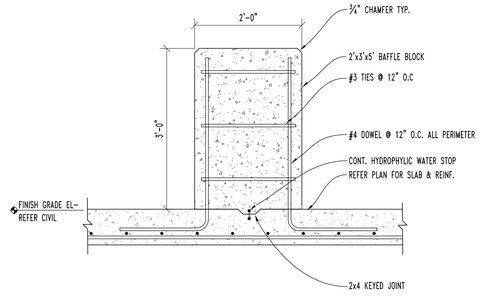
1 SPILL WAY SECTION A

SCALE: 1/4" = 1'-0"



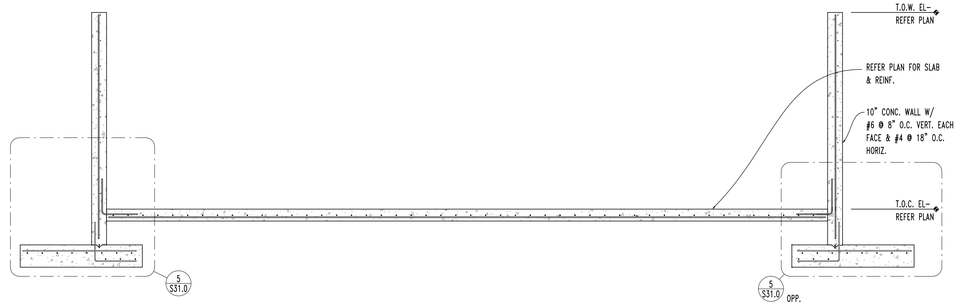
2 SPILL WAY SECTION B

SCALE: 1/4" = 1'-0"



3 TYPICAL 2'-0" X 3'-0" BAFFLE BLOCK

SCALE: 3/4" = 1'-0"



4 SPILL WAY SECTION C

SCALE: 1/4" = 1'-0"

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WILL RUTH POND IMPROVEMENTS

SPILLWAY SECTIONS AND DETAILS

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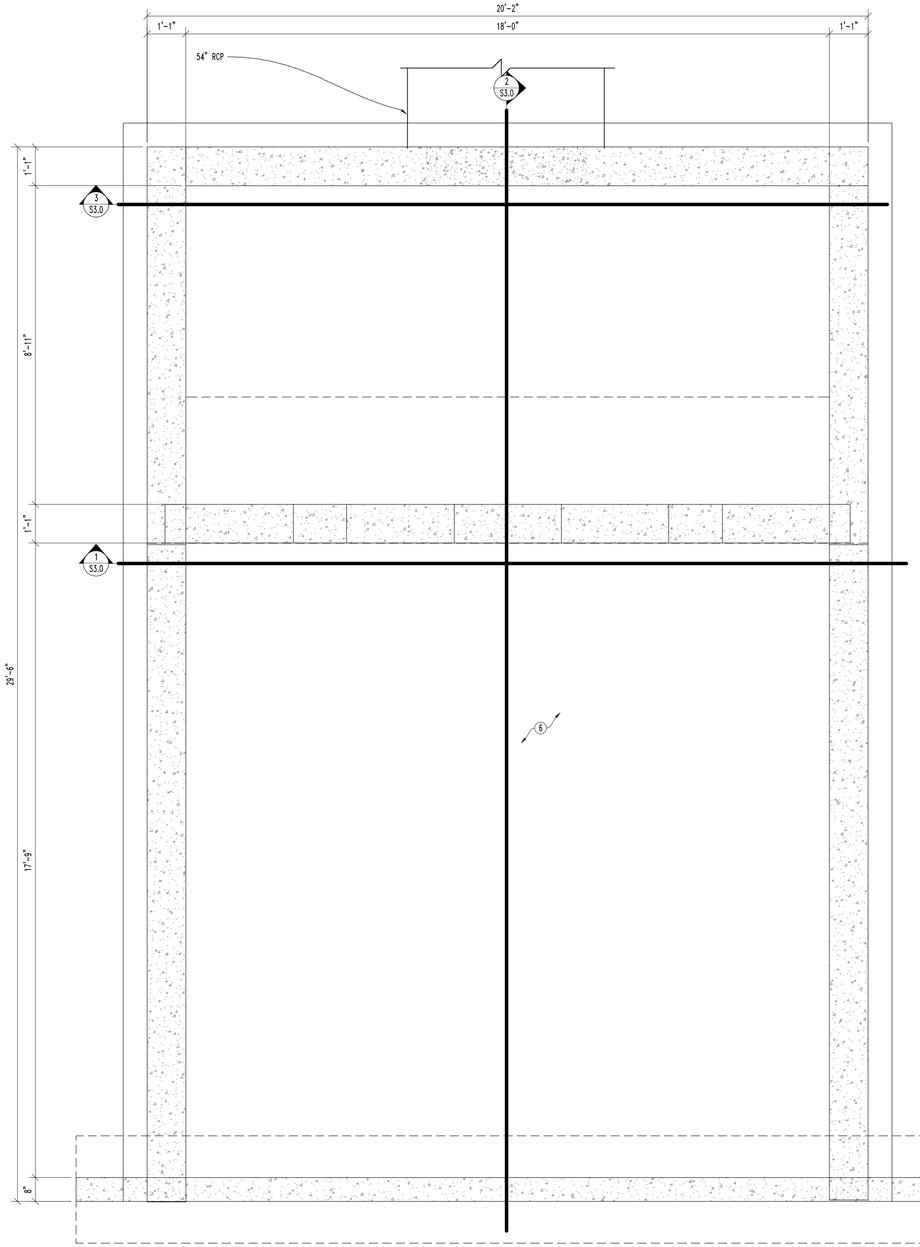
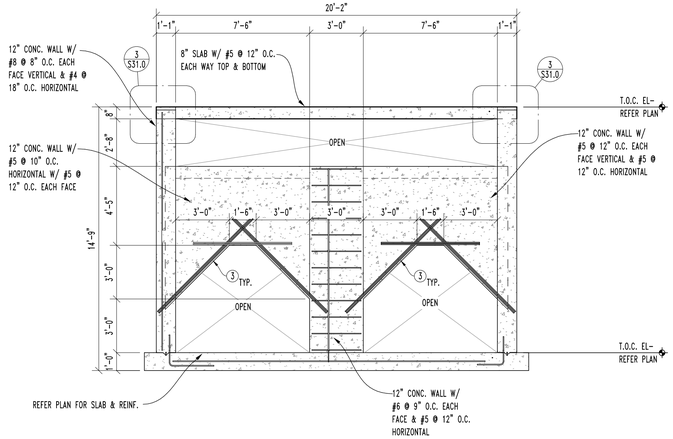
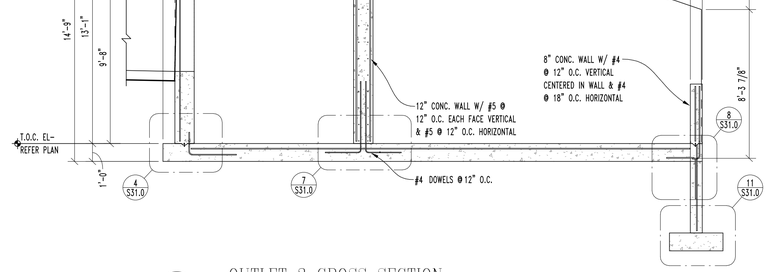
JOB NO.
SEQUENCE NO.
OF
SHEET NO.
S2.2



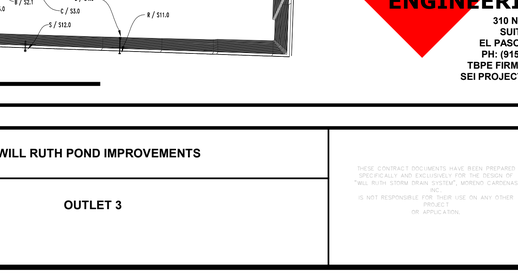
C OUTLET 3
SCALE: 1/2" = 1'-0"



1 OUTLET 3 SECTION
SCALE: 1/4" = 1'-0"



2 OUTLET 3 CROSS SECTION
SCALE: 1/4" = 1'-0"



3 OUTLET 3 CROSS SECTION
SCALE: 1/4" = 1'-0"

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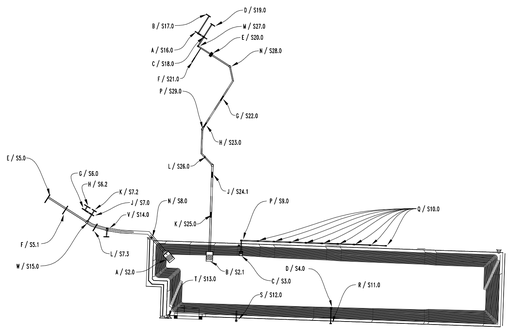

WILL RUTH SYSTEM KEY PLAN
SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
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WILL RUTH POND IMPROVEMENTS

OUTLET 3

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JOB NO.
SEQUENCE NO.
OF
SHEET NO. S3.0

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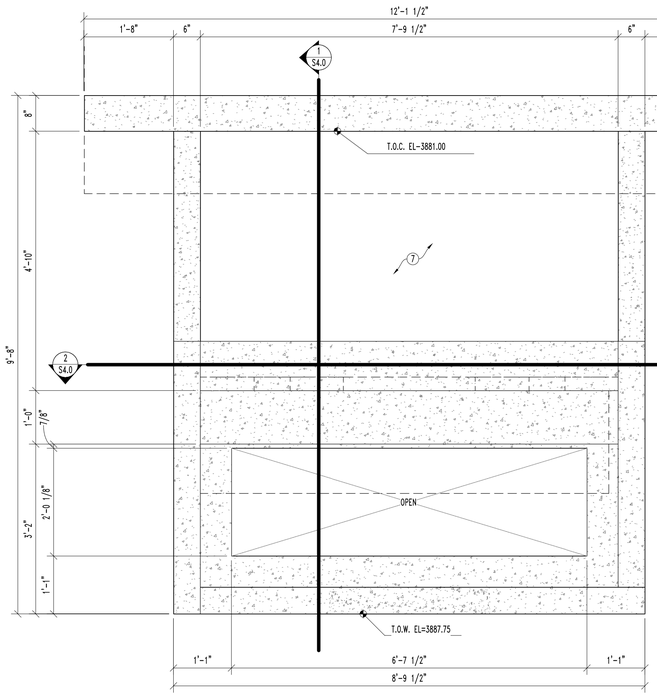
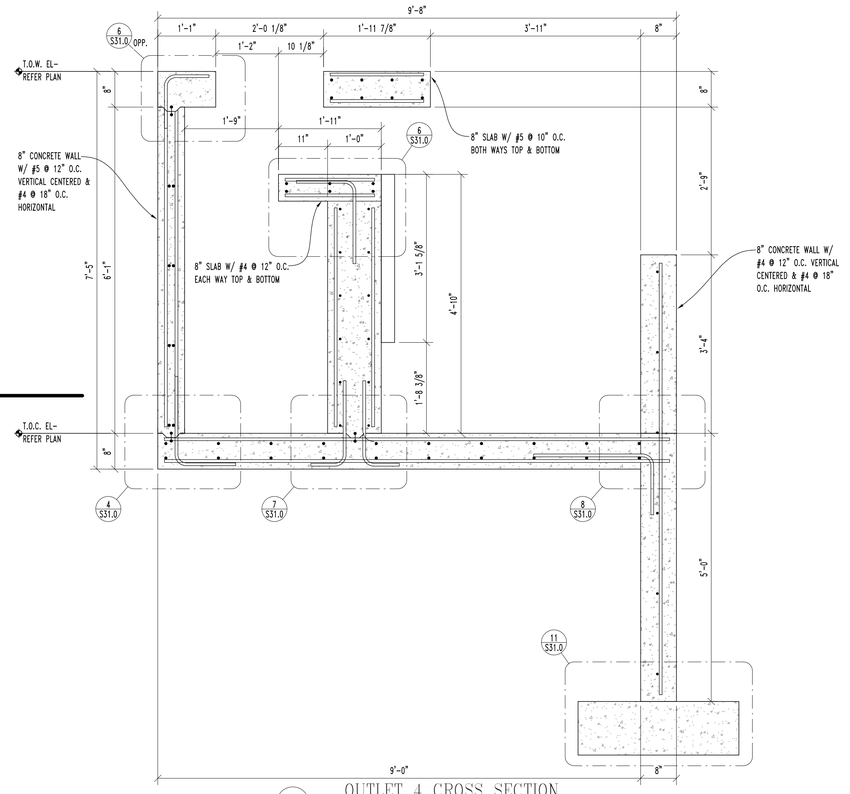
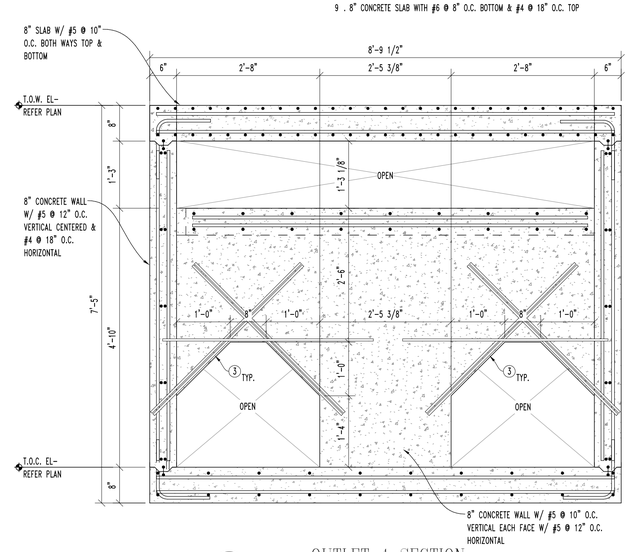


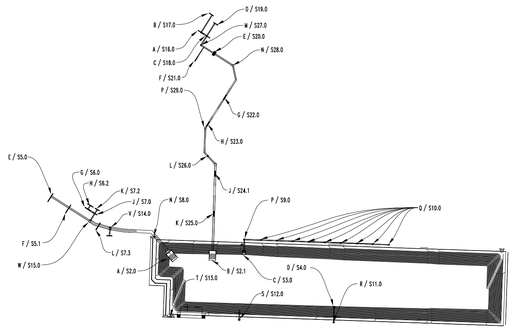
D OUTLET 4
SCALE: 3/4" = 1'-0"



1 OUTLET 4 CROSS SECTION
SCALE: 3/4" = 1'-0"



2 OUTLET 4 SECTION
SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN
SCALE: N.T.S.

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WILL RUTH POND IMPROVEMENTS

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OF
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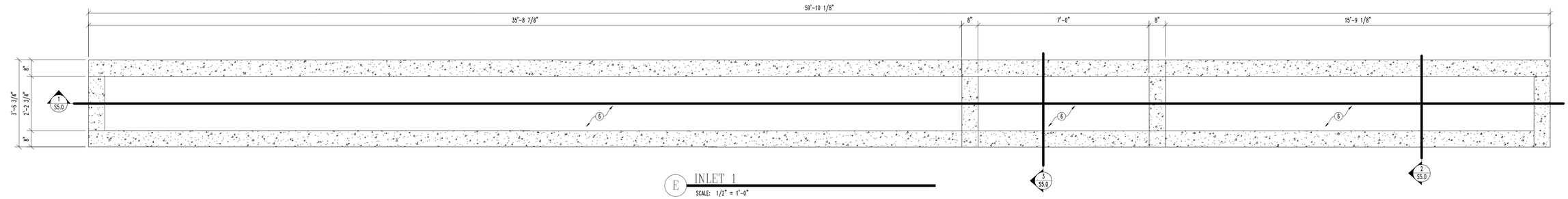
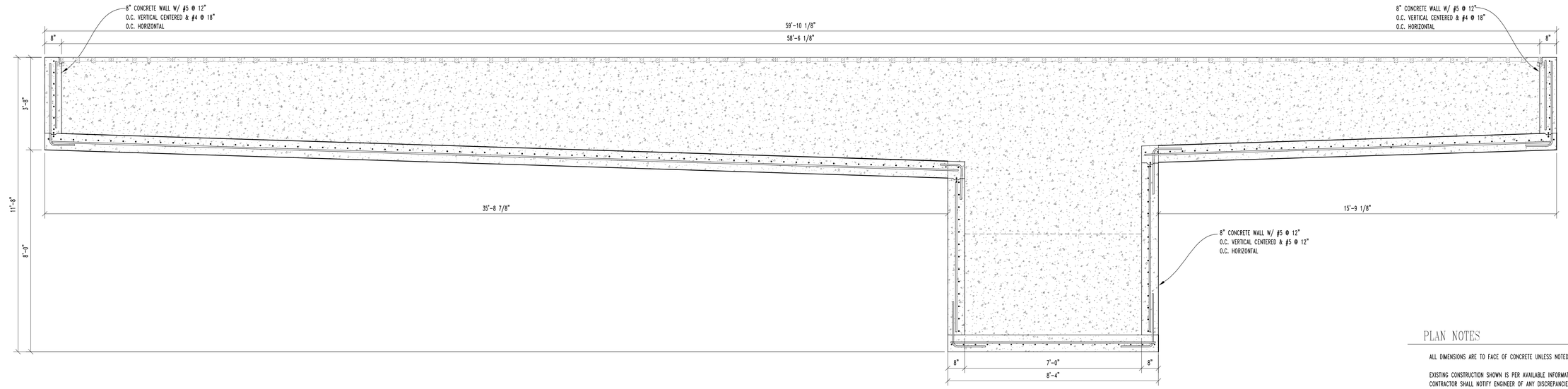
S4.0



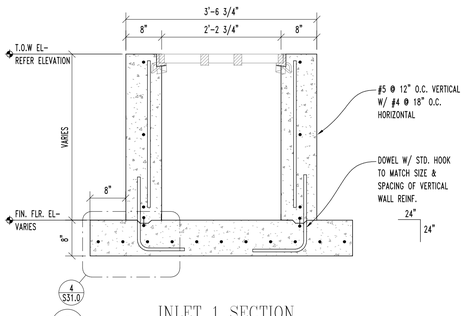
E INLET 1

SCALE: 1/2" = 1'-0"



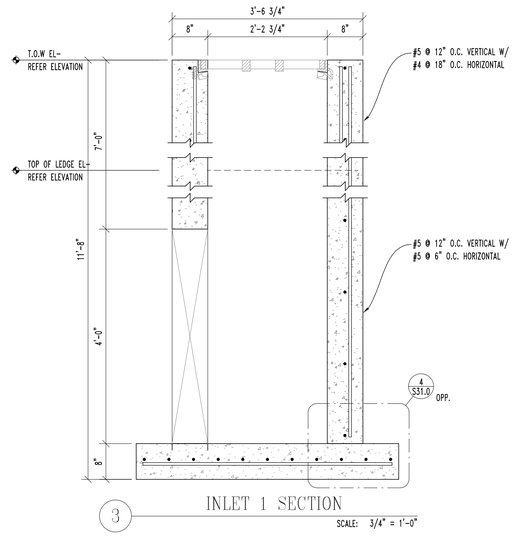
1 INLET 1 CROSS SECTION

SCALE: 1/2" = 1'-0"



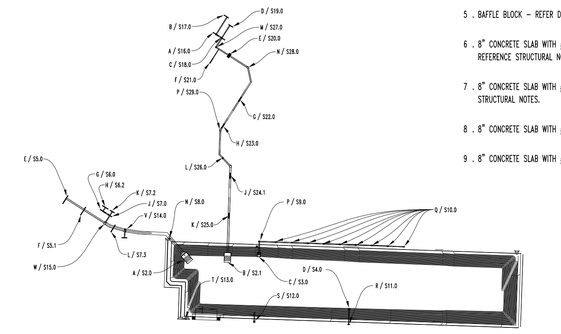
2 INLET 1 SECTION

SCALE: 3/4" = 1'-0"



3 INLET 1 SECTION

SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

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REFER TO CIVIL DRAWINGS FOR GRATE/FRAME ANCHOR DETAILS

○ KEY NOTES

1. 8" CONCRETE SLAB WITH #4 @ 12" O.C. CENTERED IN SLAB EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.
2. CONCRETE CULVERT - REFER CIVIL
3. 2-#5 OPENING REINFORCEMENT TO EXTEND 2'-0" PAST EDGE OF OPENING.
4. CONCRETE PIPE - REFER CIVIL.
5. BAFFLE BLOCK - REFER DETAIL 3/S2.2.
6. 8" CONCRETE SLAB WITH #8 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.
7. 8" CONCRETE SLAB WITH #5 @ 12" O.C. BOTH FACES EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.
8. 8" CONCRETE SLAB WITH #5 @ 12" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY
9. 8" CONCRETE SLAB WITH #6 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP

STUBBS ENGINEERING, INC.
310 N. MESA,
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EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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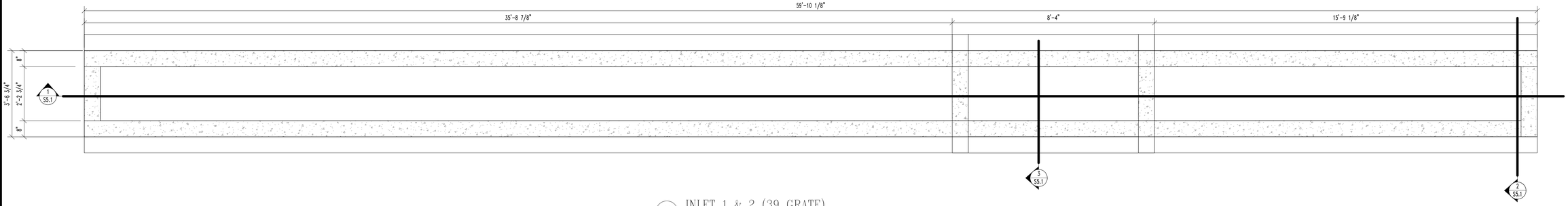
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

INLET 1

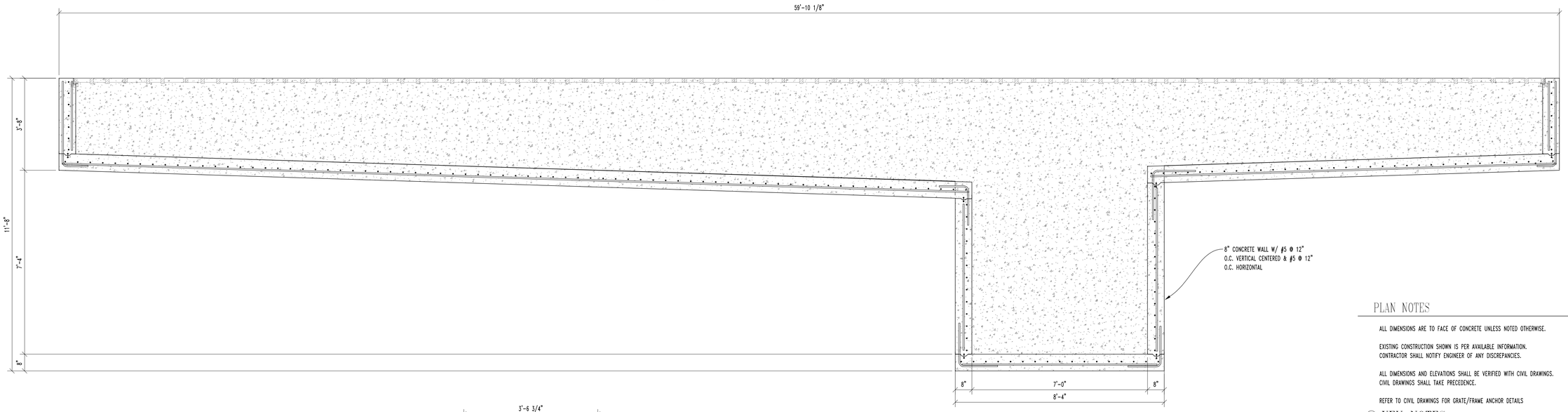
THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH STORM DRAIN SYSTEM". MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO.
SEQUENCE NO.
OF
SHEET NO. S5.0



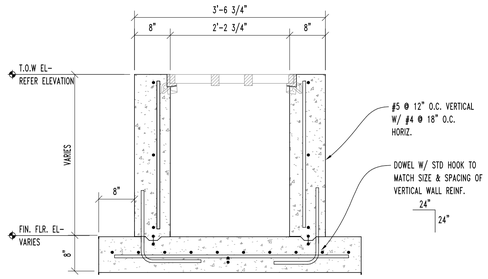
F INLET 1 & 2 (39 GRATE)

SCALE: 1/2" = 1'-0"



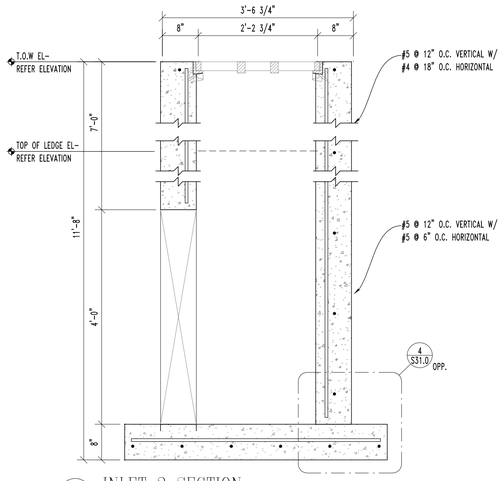
1 INLET 1 & 2 CROSS SECTION

SCALE: 1/2" = 1'-0"



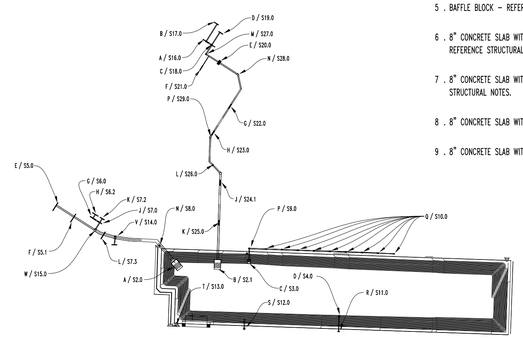
2 INLET 1 & 2 SECTION

SCALE: 3/4" = 1'-0"



3 INLET 2 SECTION

SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

PLAN NOTES

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3 . 2-#5 OPENING REINFORCEMENT TO EXTEND 2'-0" PAST EDGE OF OPENING.

4 . CONCRETE PIPE - REFER CIVIL.

5 . BAFFLE BLOCK - REFER DETAIL 3/S2.2.

6 . 8" CONCRETE SLAB WITH #8 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

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WILL RUTH POND IMPROVEMENTS

INLET 2

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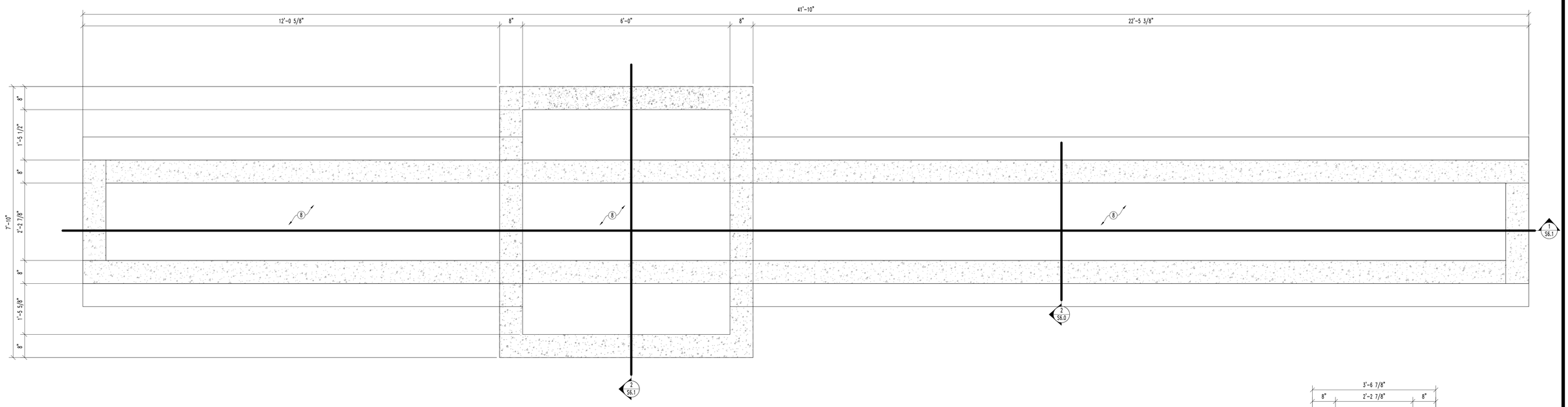
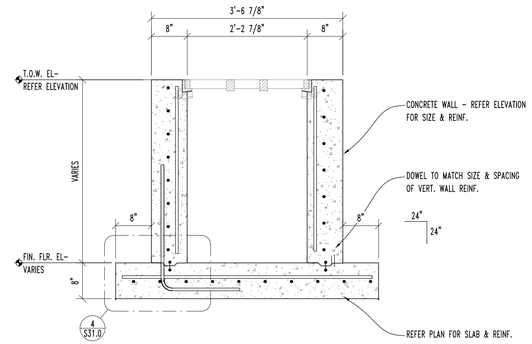
S5.1



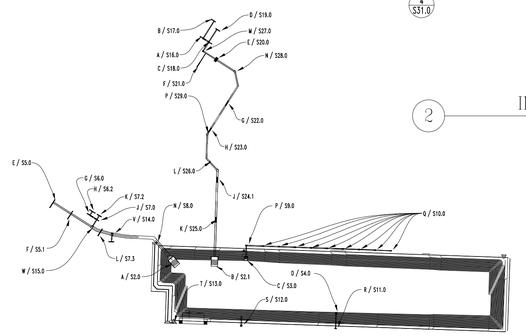
G INLET 3 (GRATE 27)

SCALE: 3/4" = 1'-0"



2 INLET 3 SECTION

SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

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WILL RUTH POND IMPROVEMENTS

INLET 3

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SEQUENCE NO.
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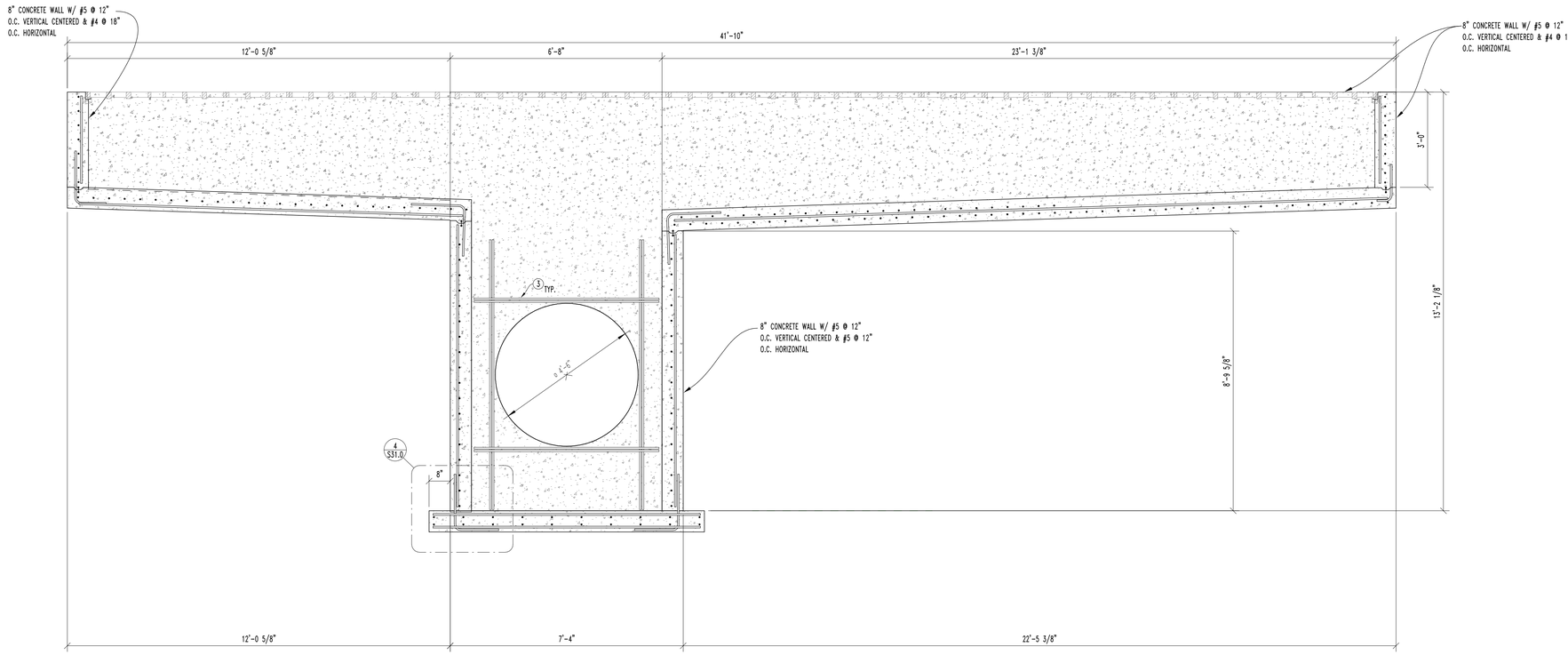
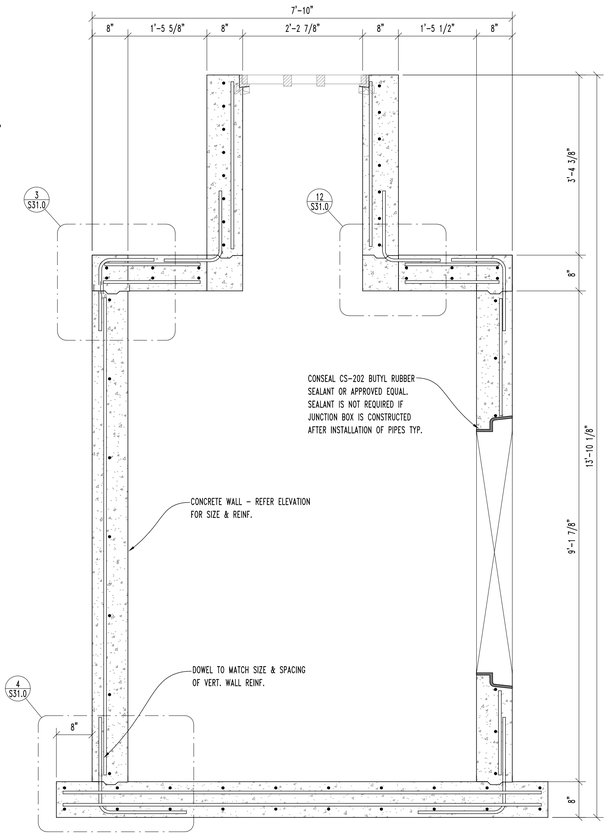
SHEET NO. S6.0



1 INLET 3 CROSS SECTION

SCALE: 1/2" = 1'-0"



2 INLET 3 CROSS SECTION 2

SCALE: 3/4" = 1'-0"

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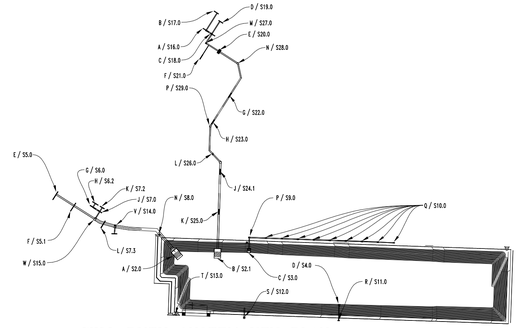

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

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WILL RUTH POND IMPROVEMENTS

INLET 3

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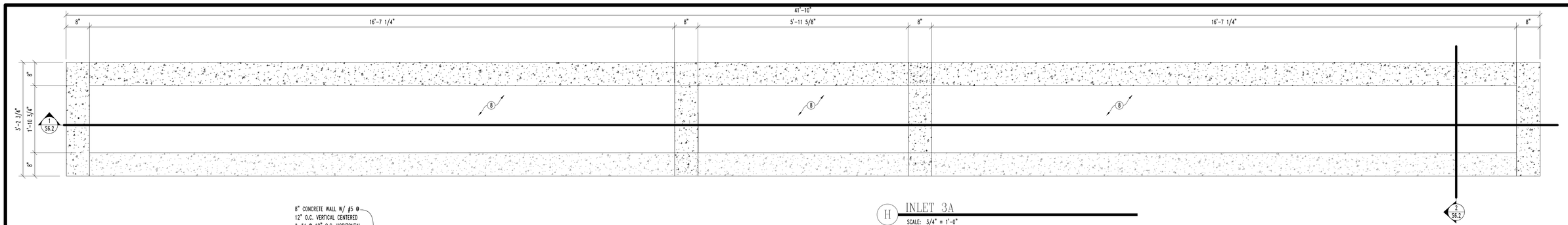
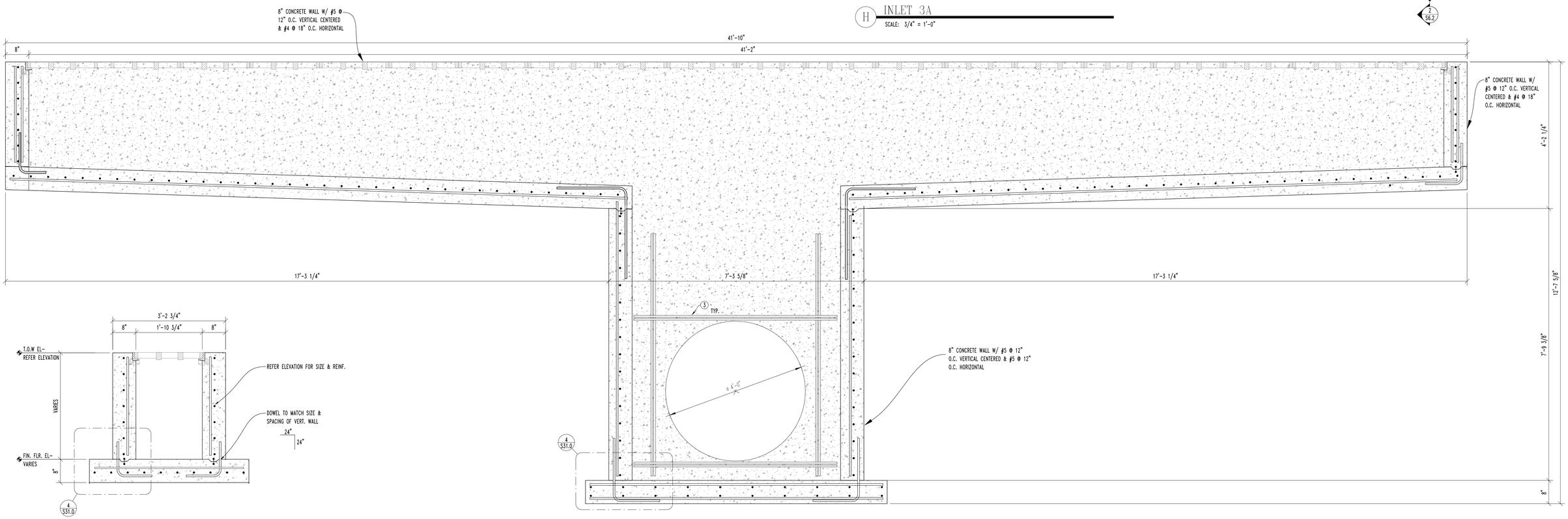
SHEET NO. S6.1



H INLET 3A

SCALE: 3/4" = 1'-0"



2 INLET 3A SECTION

SCALE: 3/4" = 1'-0"

KEY NOTES

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5 . BAFFLE BLOCK - REFER DETAIL 3/S2.2.

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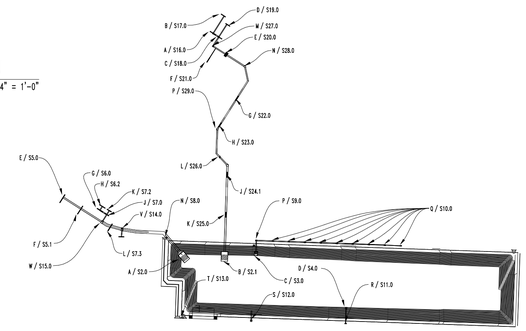

1 INLET 3A CROSS SECTION

SCALE: 3/4" = 1'-0"

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

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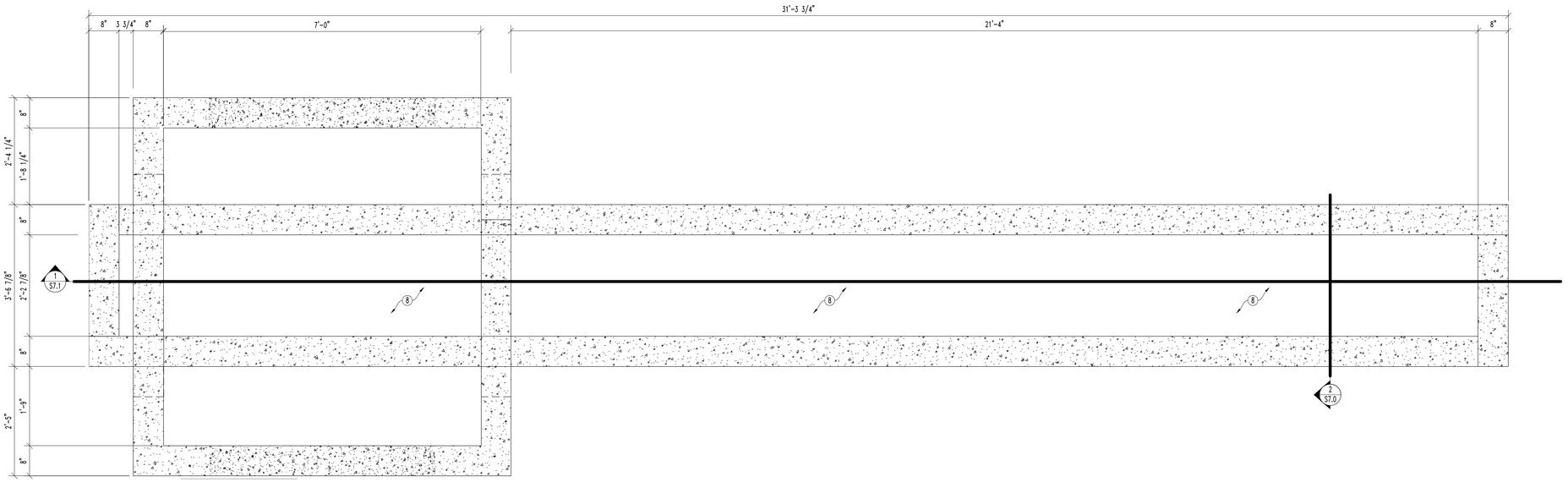
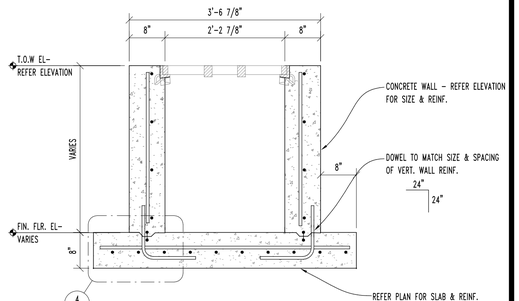


J INLET 4

SCALE: 3/4" = 1'-0"



2 INLET 4 SECTION

SCALE: 3/4" = 1'-0"

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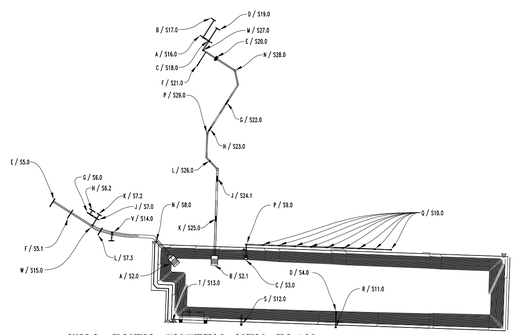

WILL RUTH SYSTEM KEY PLAN

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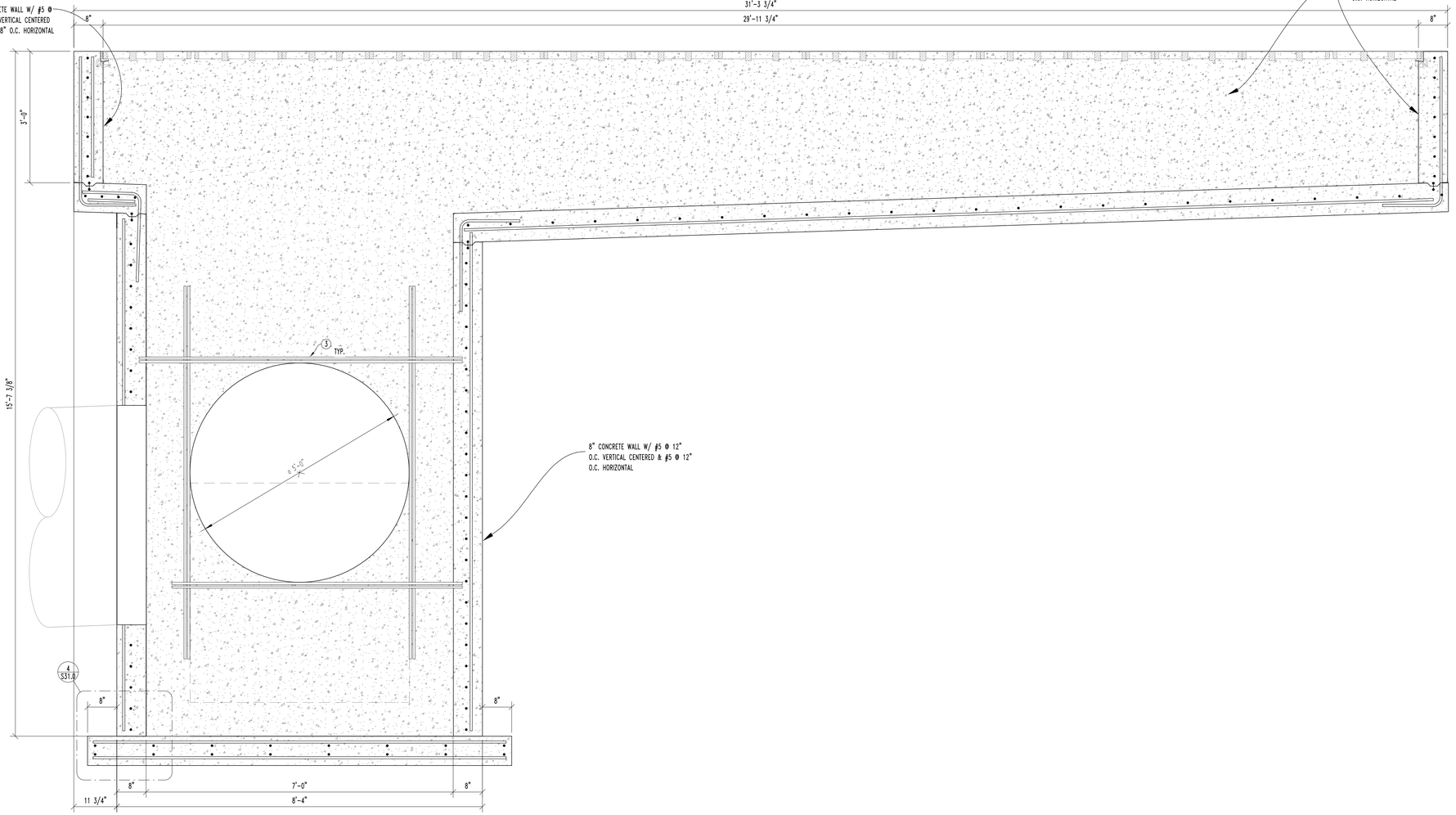
WILL RUTH POND IMPROVEMENTS

INLET 4

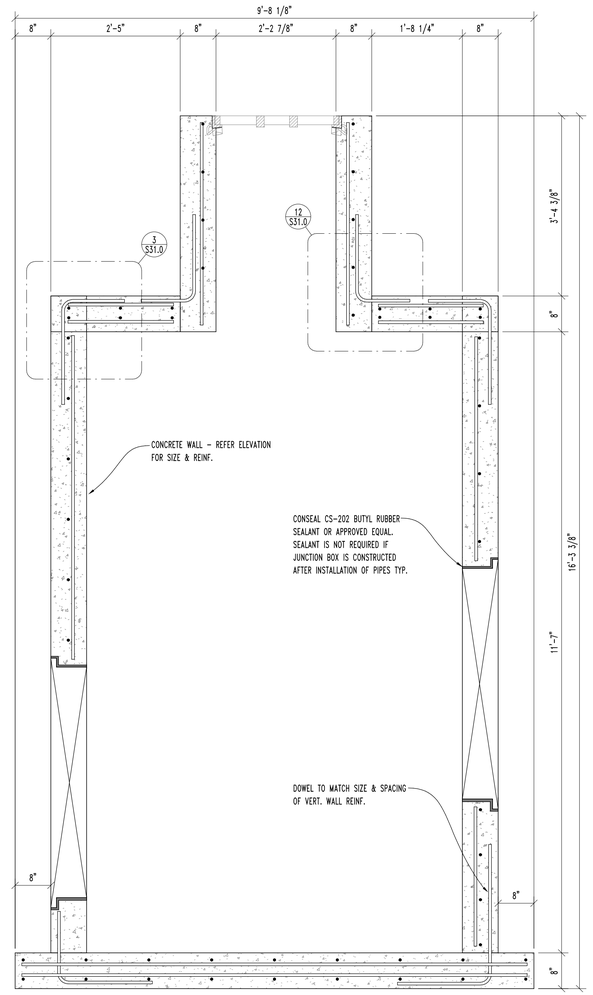
THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE "DESIGN OF WILL RUTH STORM DRAIN SYSTEM", MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO.
SEQUENCE NO.
OF
SHEET NO. S7.0



1 INLET 4 CROSS SECTION

SCALE: 3/4" = 1'-0"



2 INLET 4 CROSS SECTION 2

SCALE: 3/4" = 1'-0"

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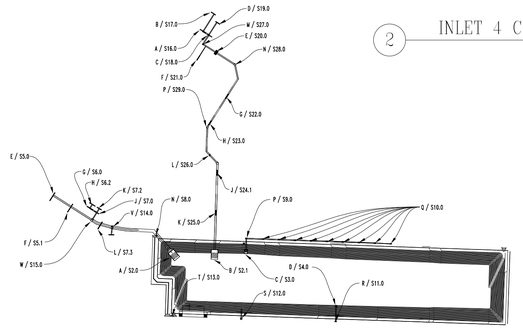

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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REV.	DATE	BY	DESCRIPTION

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UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

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MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
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SEQUENCE NO.
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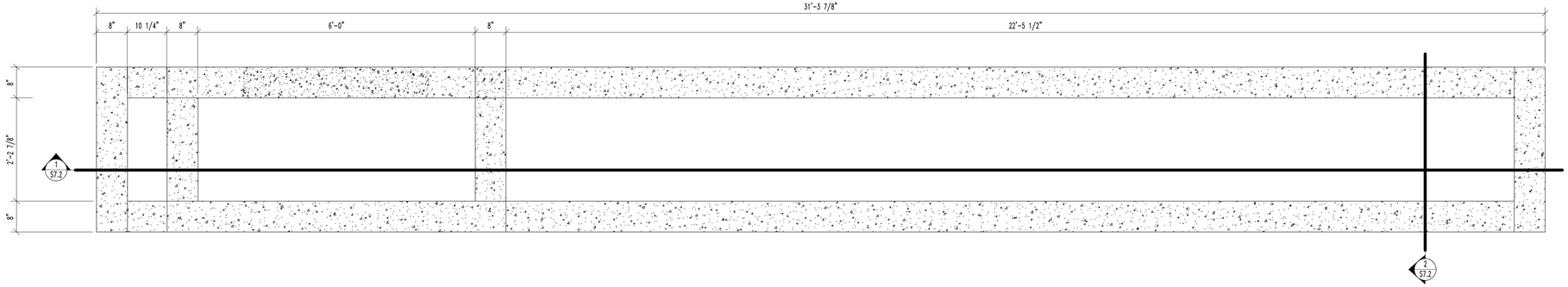
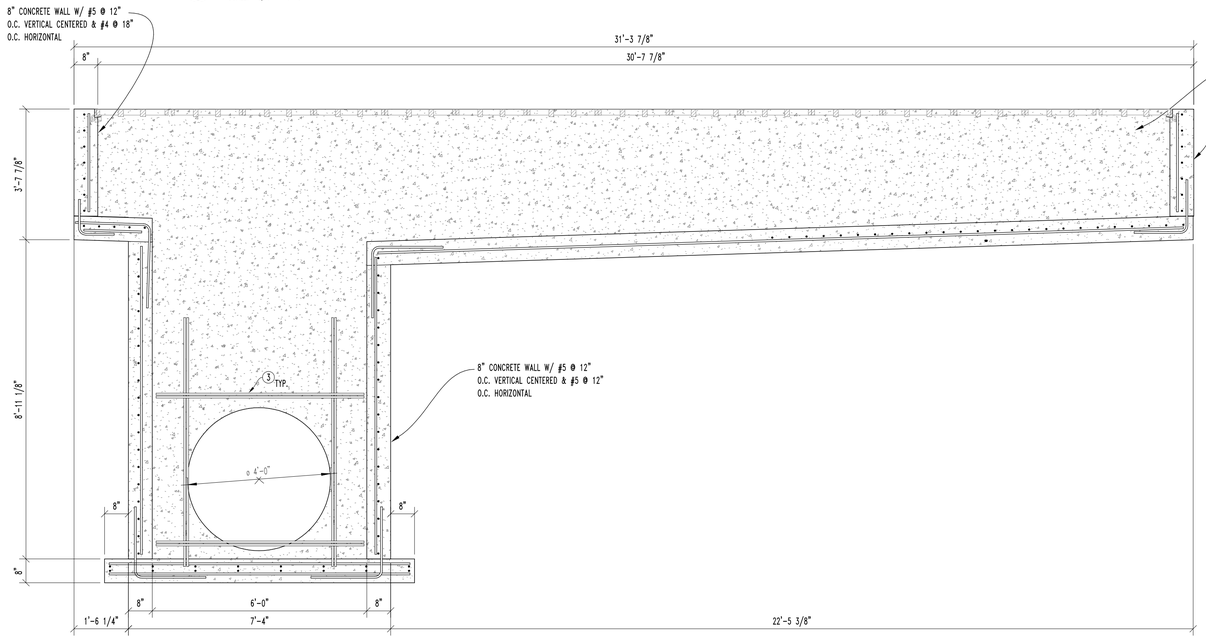
SHEET NO.
S7.1



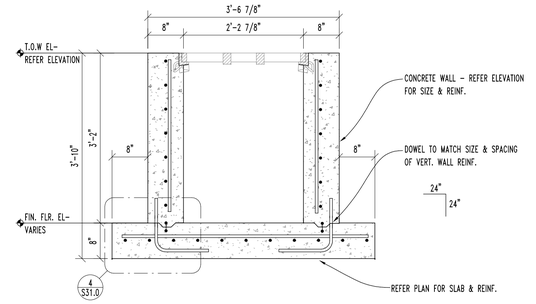
K INLET 4A

SCALE: 3/4" = 1'-0"



1 INLET 4A CROSS SECTION

SCALE: 1/2" = 1'-0"



2 INLET 4A SECTION

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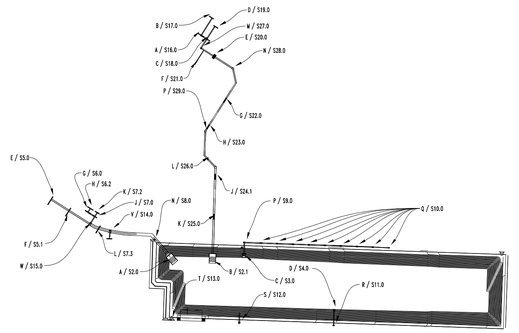

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

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WILL RUTH POND IMPROVEMENTS

INLET 4A

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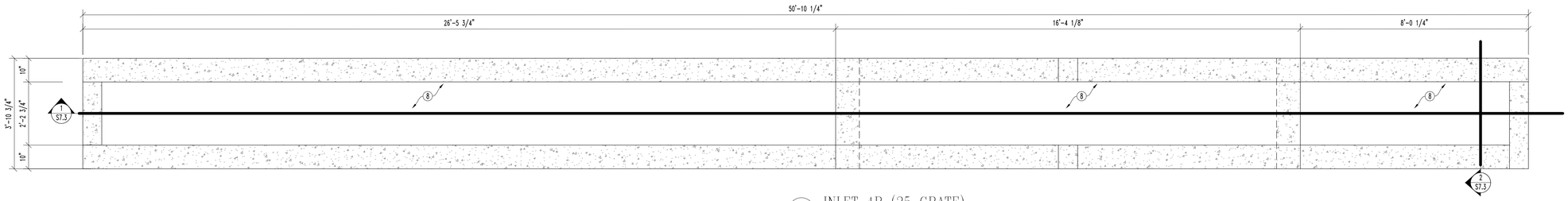
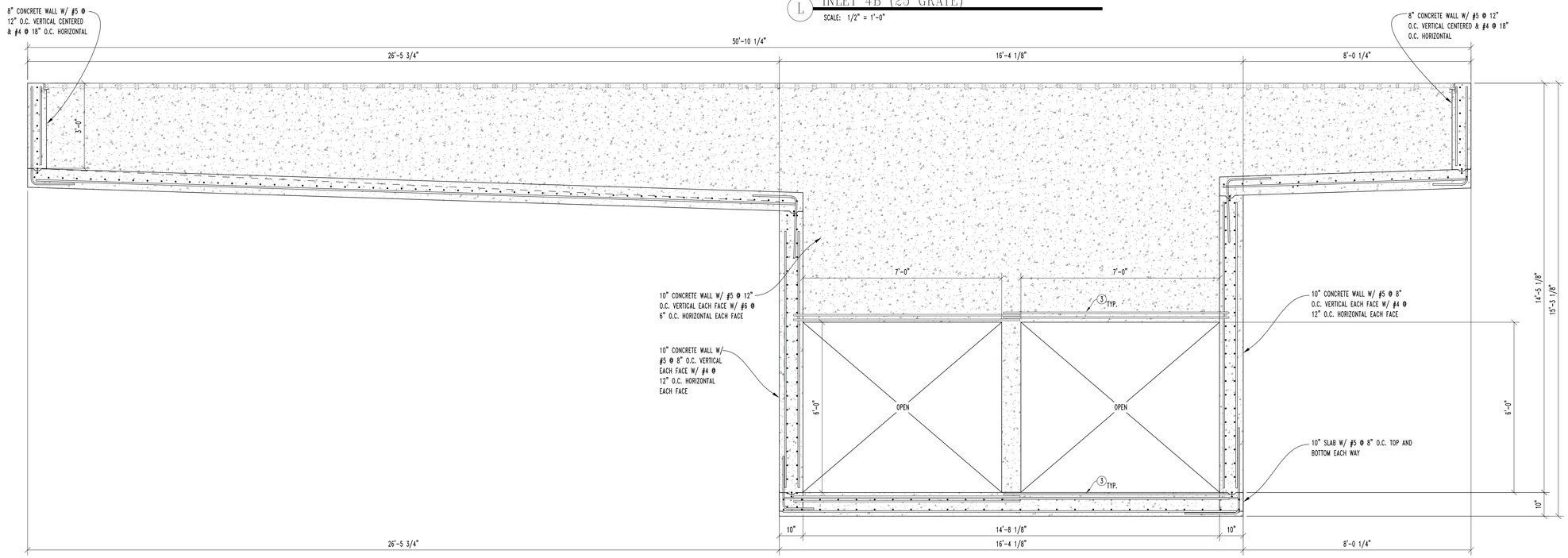


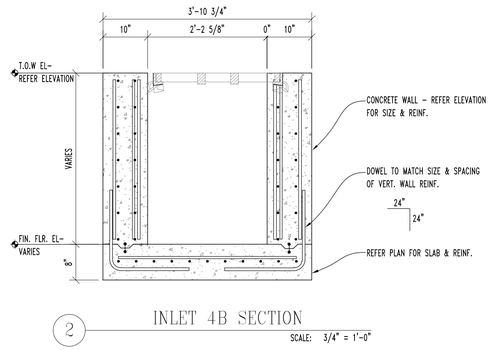
L INLET 4B (25 GRATE)

SCALE: 1/2" = 1'-0"



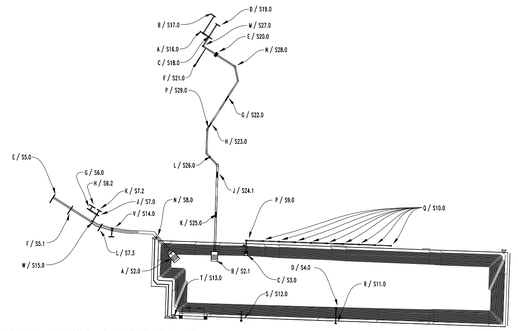
1 INLET 4B CROSS SECTION

SCALE: 1/2" = 1'-0"



2 INLET 4B SECTION

SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

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INLET 4B

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JOB NO.
SEQUENCE NO.
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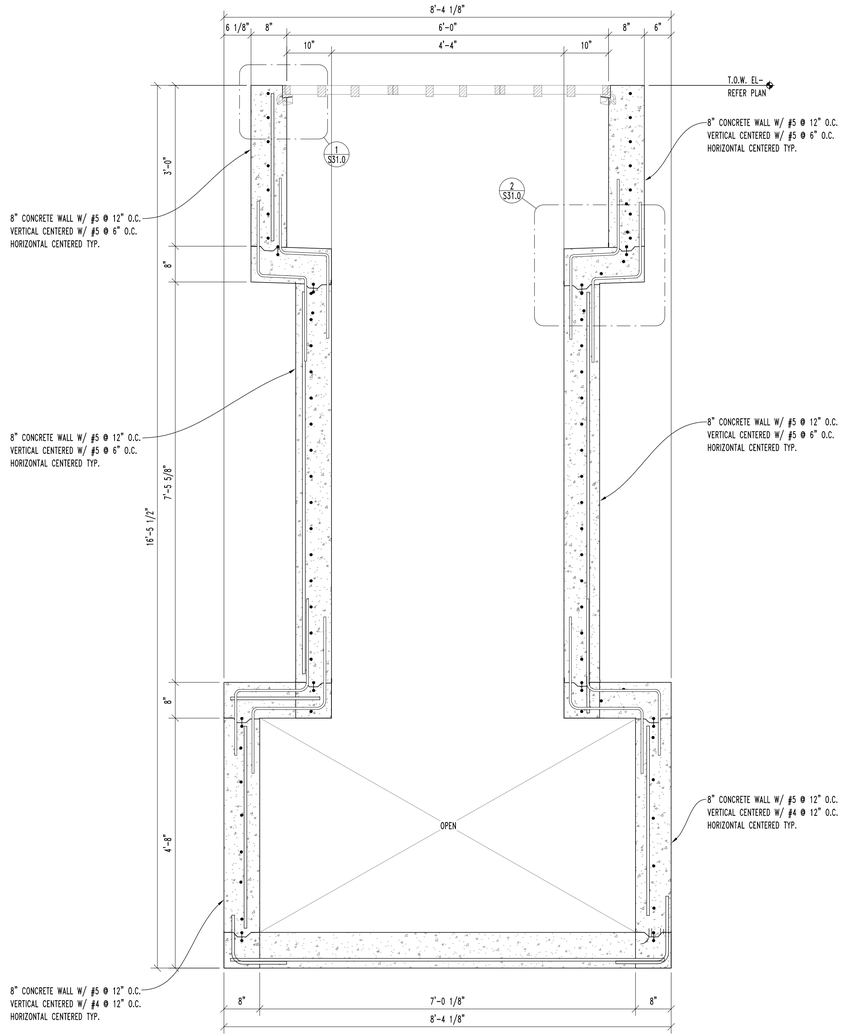
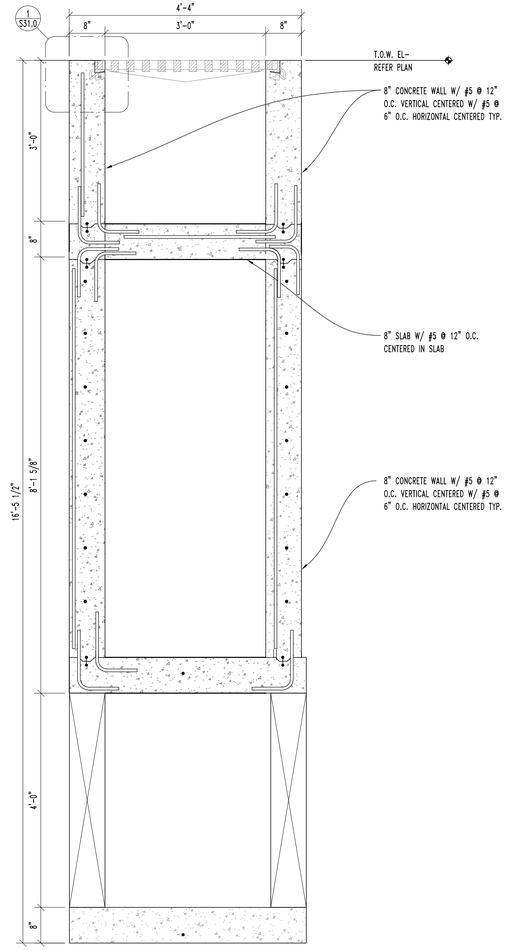
SHEET NO.
S7.3



1 INLET 6 CROSS SECTION

SCALE: 3/4" = 1'-0"



2 INLET 6 SECTION

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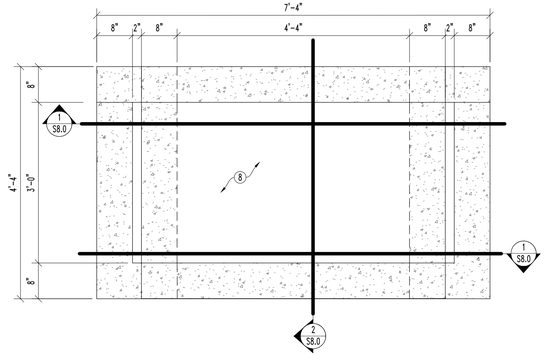
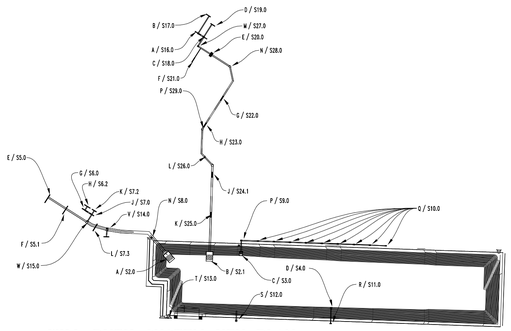


N INLET 6 (3 GRATE) PLAN

SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

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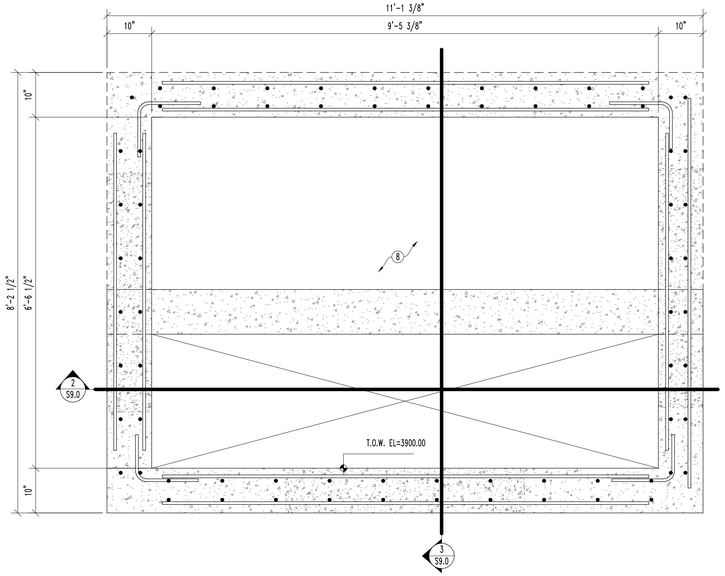
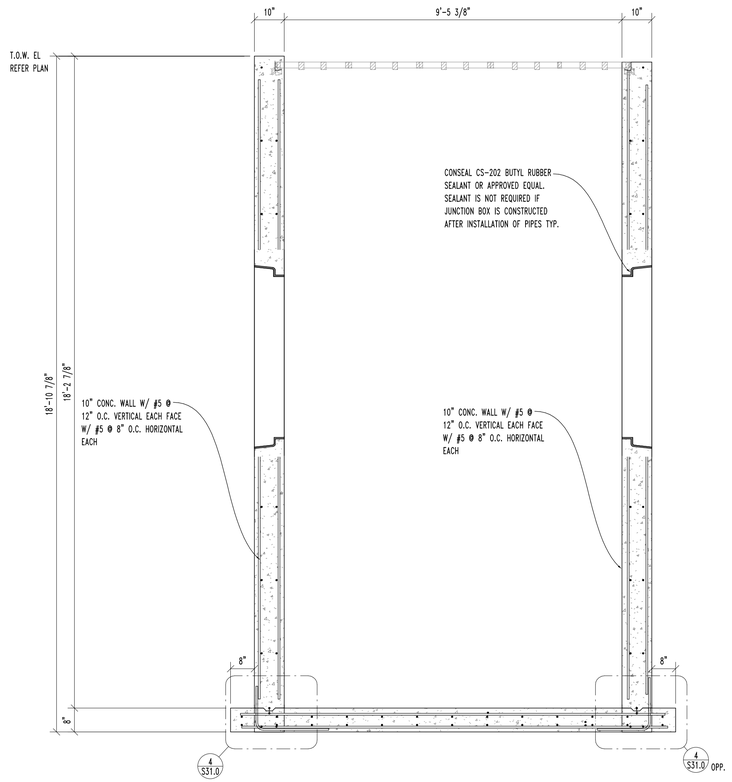


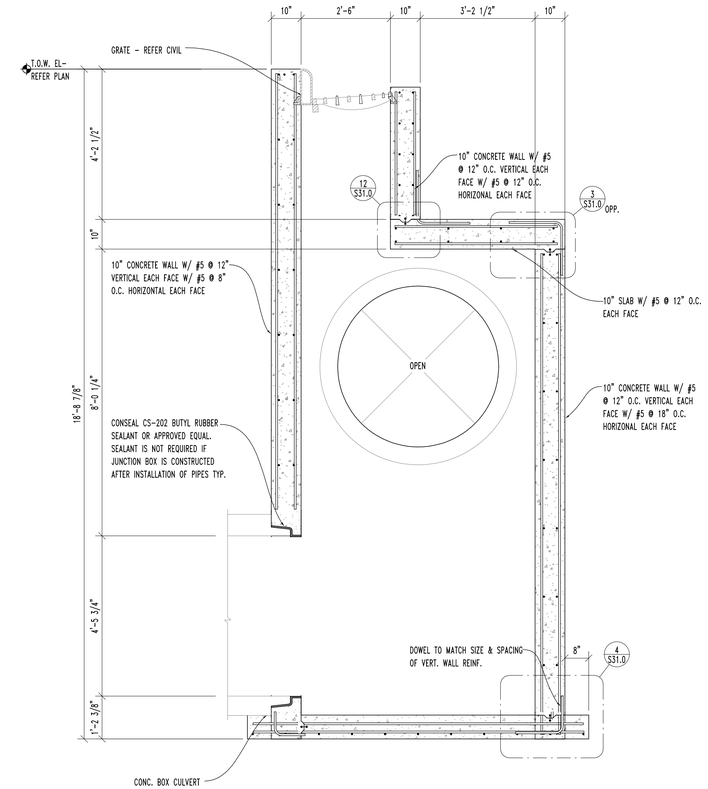
P INLET 7 (3 GRATE)

SCALE: 3/4" = 1'-0"



2 INLET 7 CROSS SECTION

SCALE: 1/2" = 1'-0"



3 INLET 7 SECTION

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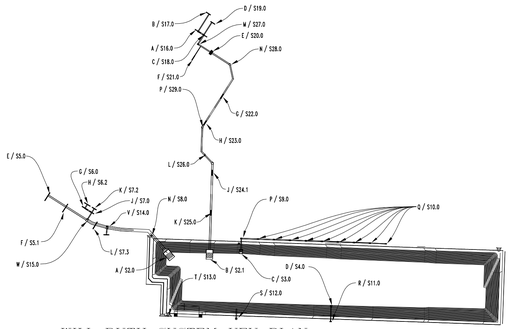

WILL RUTH SYSTEM KEY PLAN

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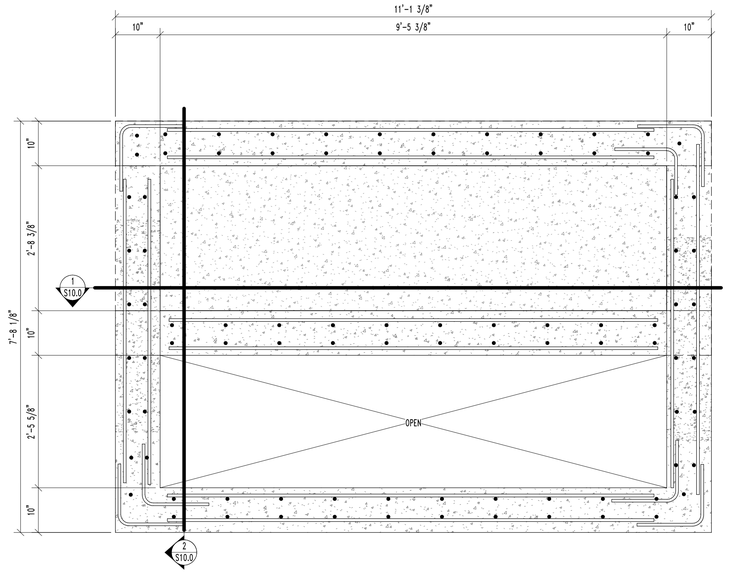
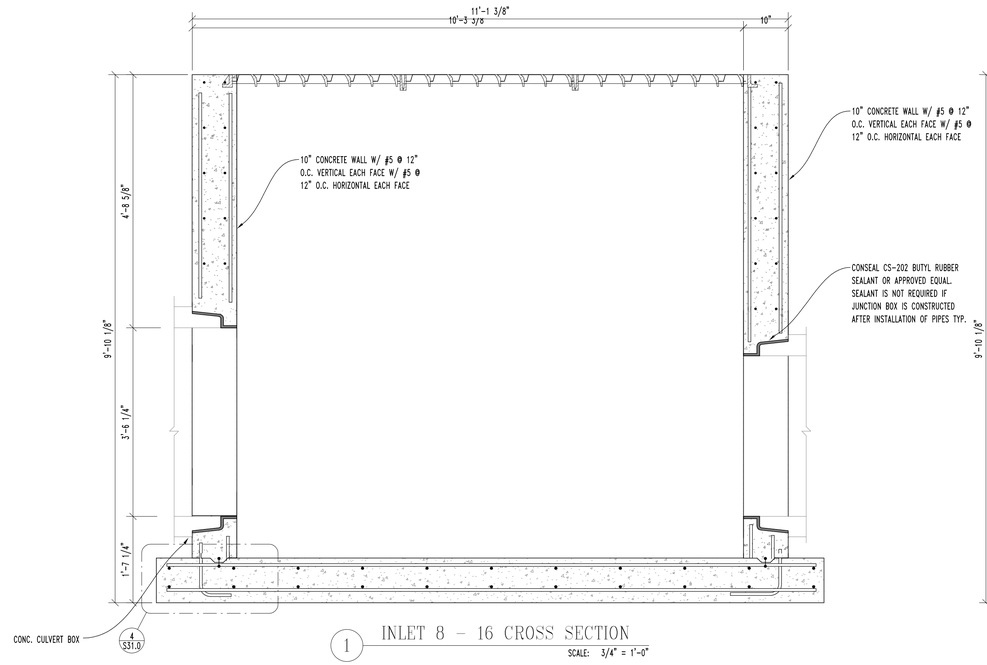


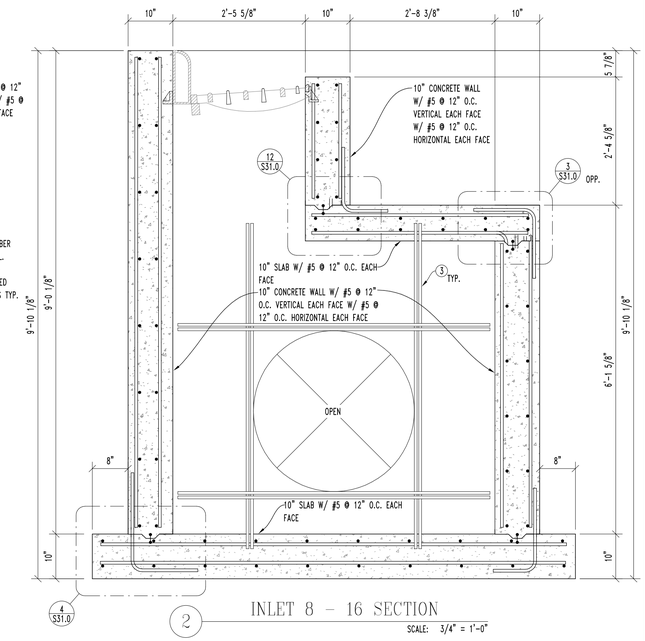
Q INLET 8-16 (3 GRATE)

SCALE: 3/4" = 1'-0"



1 INLET 8 - 16 CROSS SECTION

SCALE: 3/4" = 1'-0"



2 INLET 8 - 16 SECTION

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REFER TO CIVIL DRAWINGS FOR GRATE/FRAME ANCHOR DETAILS

○ KEY NOTES

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3 . 2-#5 OPENING REINFORCEMENT TO EXTEND 2'-0" PAST EDGE OF OPENING.

4 . CONCRETE PIPE - REFER CIVIL.

5 . BAFFLE BLOCK - REFER DETAIL 3/S2.2.

6 . 8" CONCRETE SLAB WITH #8 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

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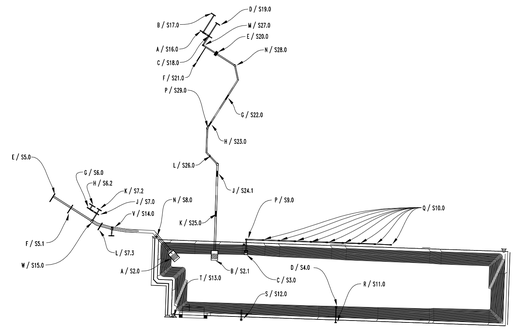

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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REV.	DATE	BY	DESCRIPTION

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TEXAS
PE NO. 92018
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05/26/22

DESIGNED
DRAWN
CHECKED
DATE 08/18/22

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING • ENGINEERING • PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

INLET 8 THRU INLET 16

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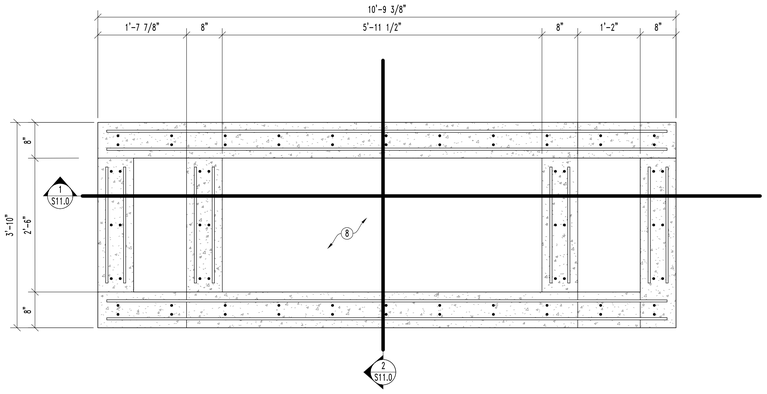
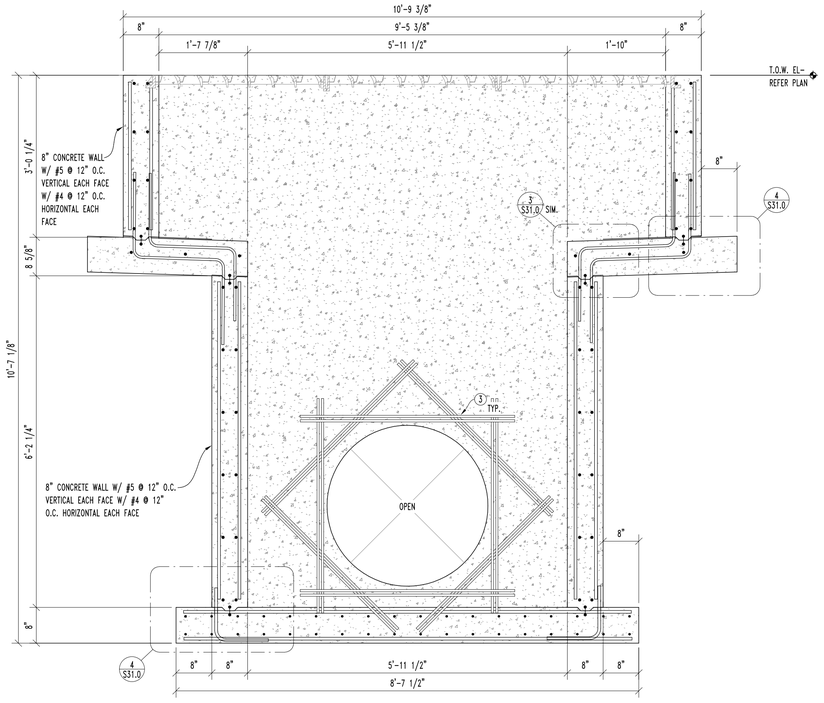
JOB NO.
SEQUENCE NO.
OF
SHEET NO. S10.0



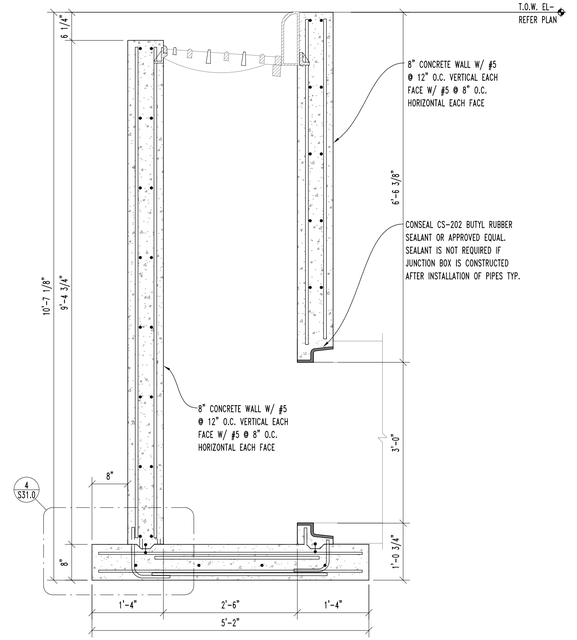
R INLET 17 (GRATE 3)

SCALE: 3/4" = 1'-0"



1 INLET 17 CROSS SECTION

SCALE: 3/4" = 1'-0"



2 INLET 17 SECTION

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5 . BAFFLE BLOCK – REFER DETAIL 3/S2.2.

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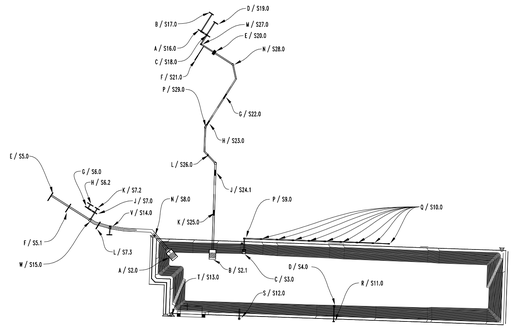

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
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EL PASO, TX 79901
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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

INLET 17

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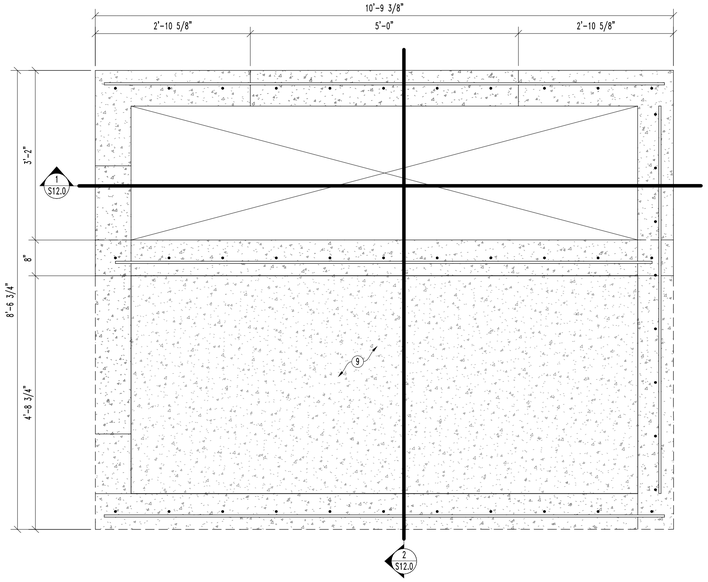
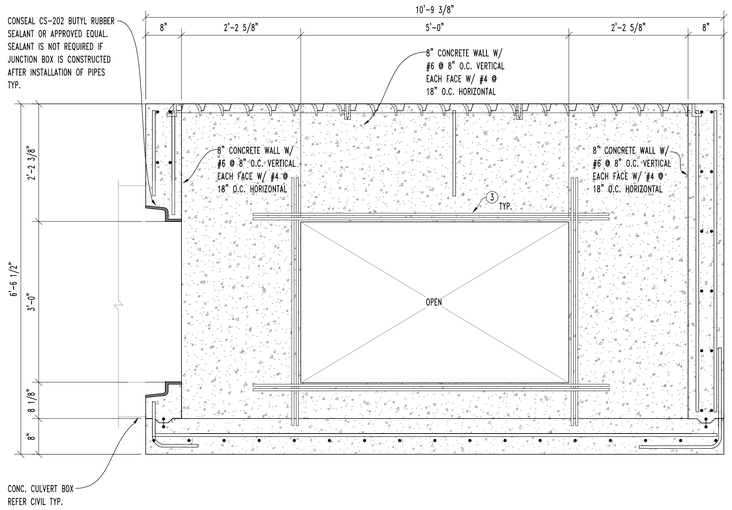
JOB NO.
SEQUENCE NO.
OF
SHEET NO. S11.0



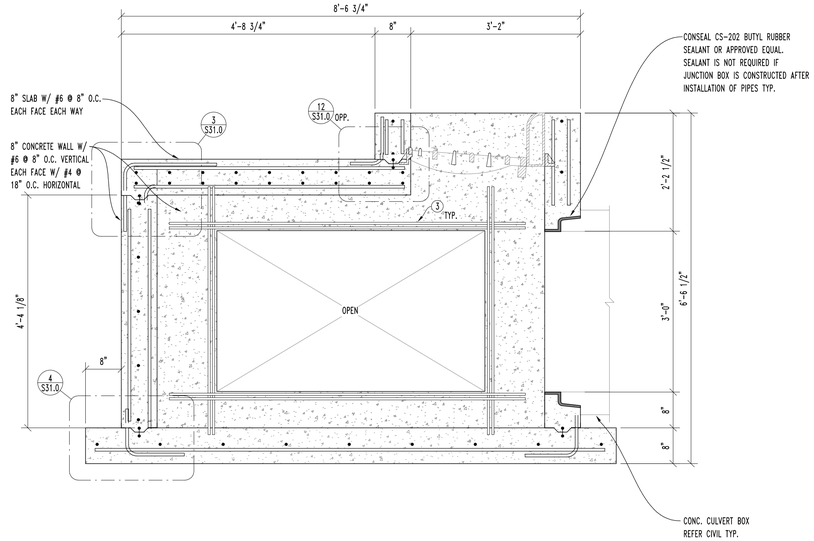
S INLET 18 PLAN

SCALE: 3/4" = 1'-0"



1 INLET 18 CROSS SECTION

SCALE: 3/4" = 1'-0"



2 INLET 18 SECTION

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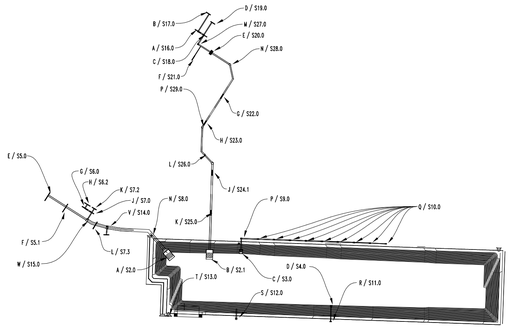

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

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1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES

ENGINEER'S SEAL: MICHAEL A. STUBBS, PE, TEXAS, PE NO. 92018 — FOR INTERIM REVIEW ONLY — NOT FOR CONSTRUCTION — 05/26/22

DESIGNED
DRAWN
CHECKED
DATE 08/18/22

UTILITY OWNER: el paso WATER, 1154 HAWKINS BLVD. EL PASO, TEXAS 79925 (915) 594-5500

CONSULTANT: MCi Moreno Cardenas Inc. — PLANNING • ENGINEERING • PROJECT MANAGEMENT — *Leaders in Project Delivery & Performance* — *2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091 Texas Board of Professional Engineers Registration No. F-000554*

WILL RUTH POND IMPROVEMENTS

INLET 18

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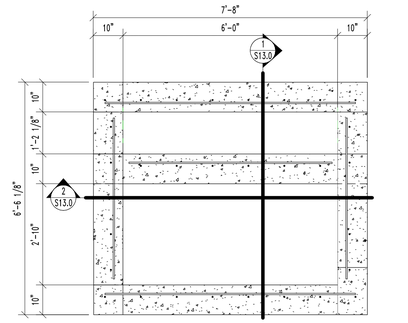
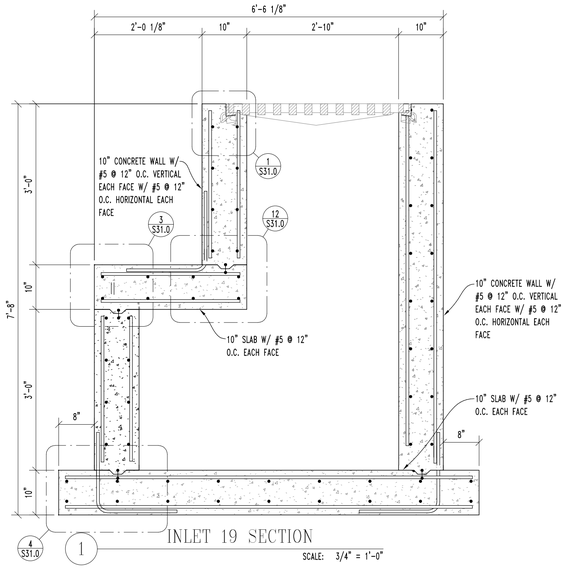
JOB NO.
SEQUENCE NO.
OF
SHEET NO. S12.0



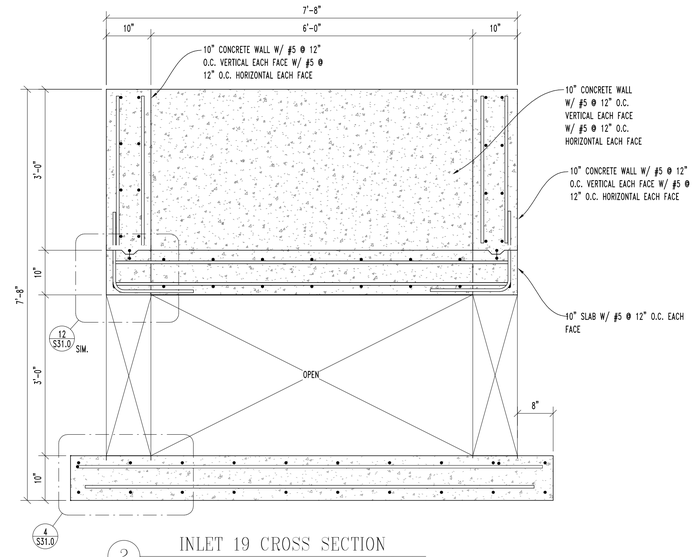
T INLET 19 PLAN

SCALE: 1/2" = 1'-0"



1 INLET 19 SECTION

SCALE: 3/4" = 1'-0"



2 INLET 19 CROSS SECTION

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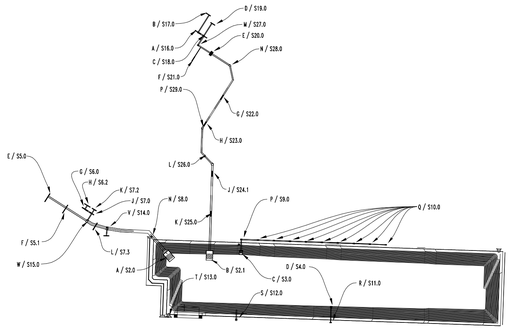

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
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WILL RUTH POND IMPROVEMENTS

INLET 19

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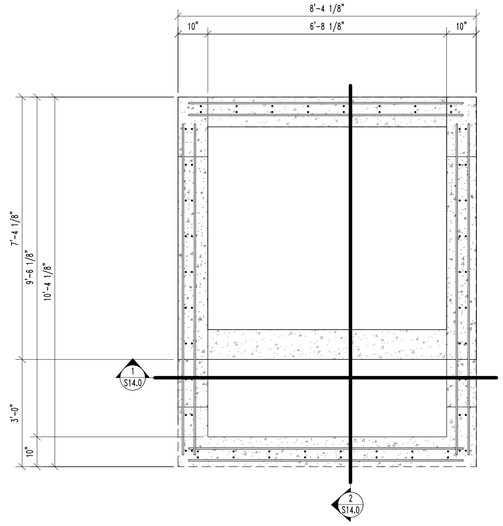
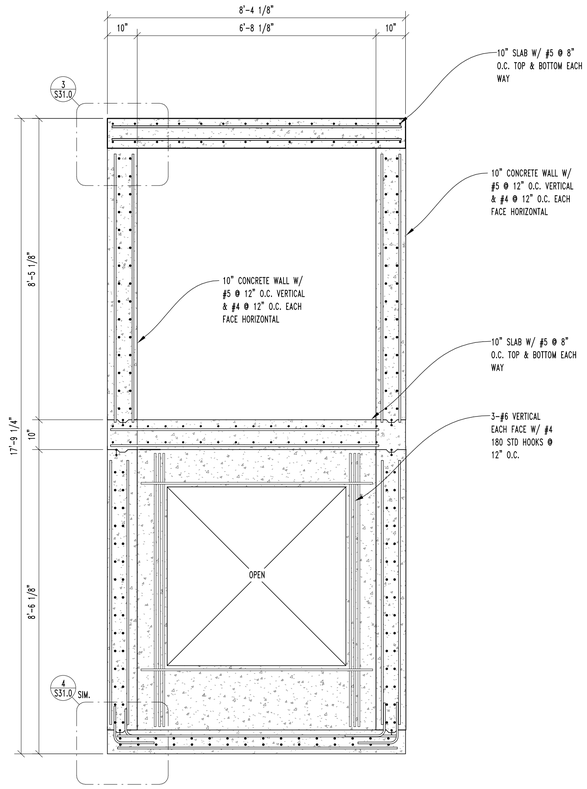
JOB NO.
SEQUENCE NO.
OF
SHEET NO. S13.0



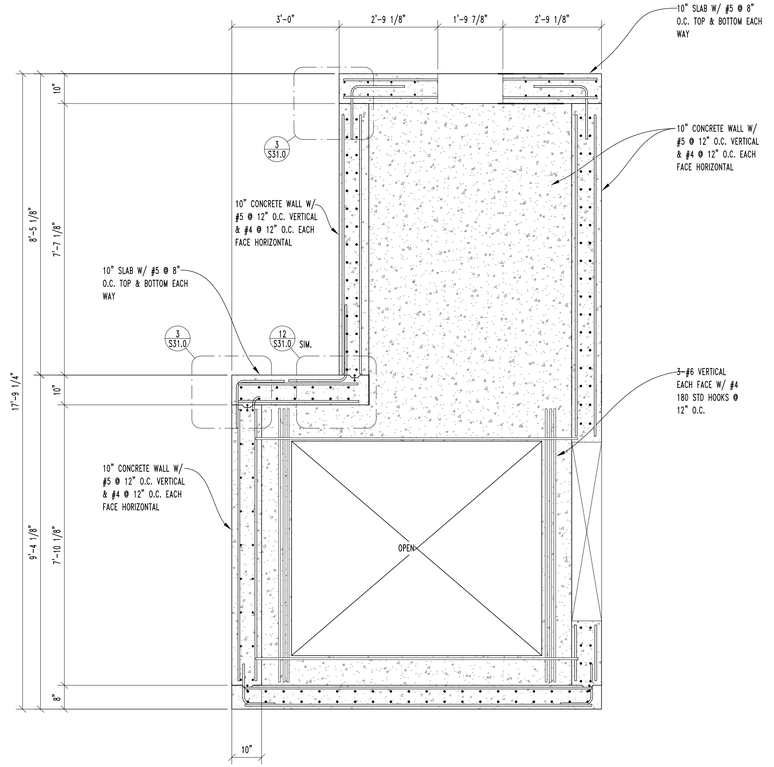
V JUNCTION BOX 2

SCALE: 1/2" = 1'-0"



1 JUNCTION BOX 2 CROSS SECTION

SCALE: 1/2" = 1'-0"



2 JUNCTION BOX 2 SECTION

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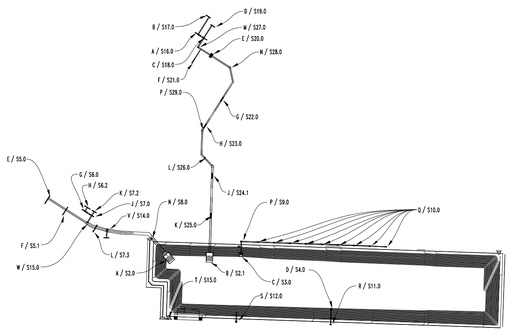

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

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EL PASO, TX 79901
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WILL RUTH POND IMPROVEMENTS

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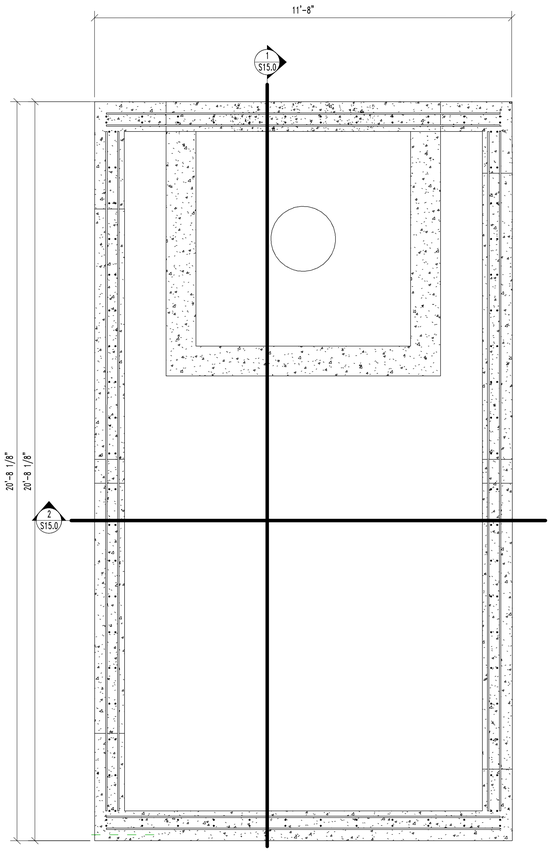
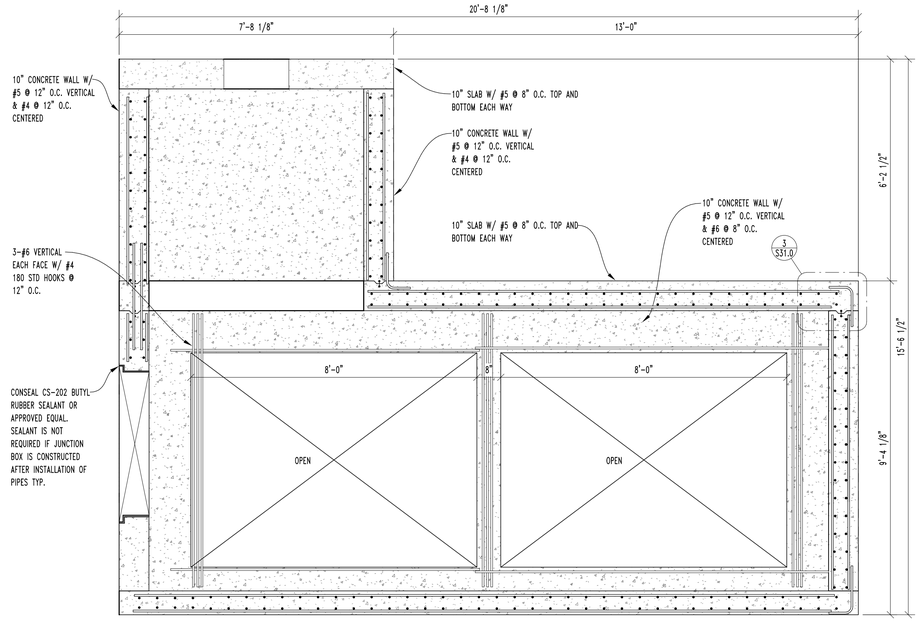
SHEET NO. S14.0



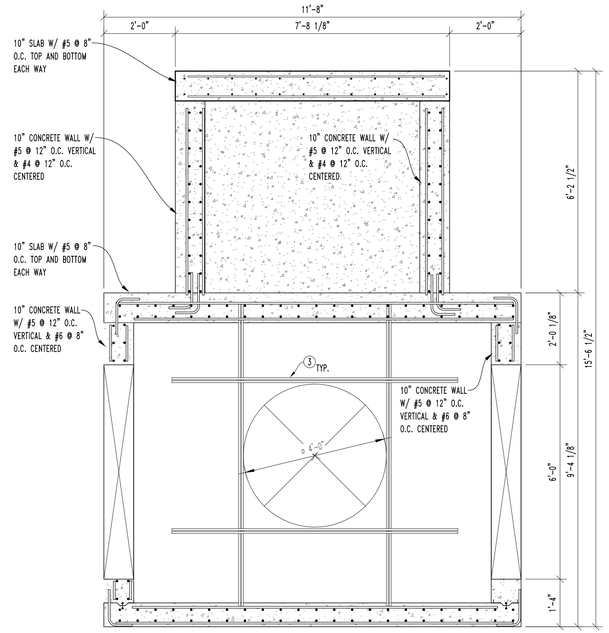
W JUNCTION BOX 3

SCALE: 1/2" = 1'-0"



1 JUNCTION BOX 3 CROSS SECTION

SCALE: 1/2" = 1'-0"



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1 . 8" CONCRETE SLAB WITH #4 @ 12" O.C. CENTERED IN SLAB EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

2 . CONCRETE CULVERT - REFER CIVIL

3 . 2-#5 OPENING REINFORCEMENT TO EXTEND 2'-0" PAST EDGE OF OPENING.

4 . CONCRETE PIPE - REFER CIVIL.

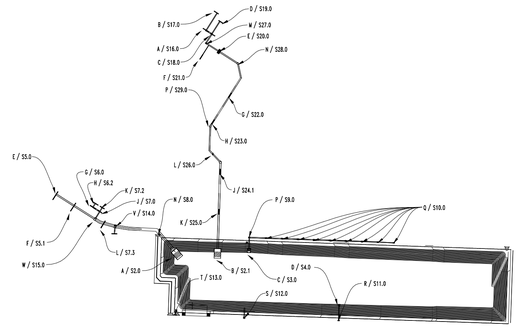
5 . BAFFLE BLOCK - REFER DETAIL 3/S2.2.

6 . 8" CONCRETE SLAB WITH #3 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

7 . 8" CONCRETE SLAB WITH #5 @ 12" O.C. BOTH FACES EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

8 . 8" CONCRETE SLAB WITH #5 @ 12" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY

9 . 8" CONCRETE SLAB WITH #6 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

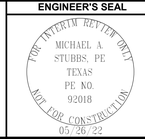
STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
1-800-DIG-TESS
1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES

ENGINEER'S SEAL



DESIGNED
DRAWN
CHECKED
DATE 08/18/22

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

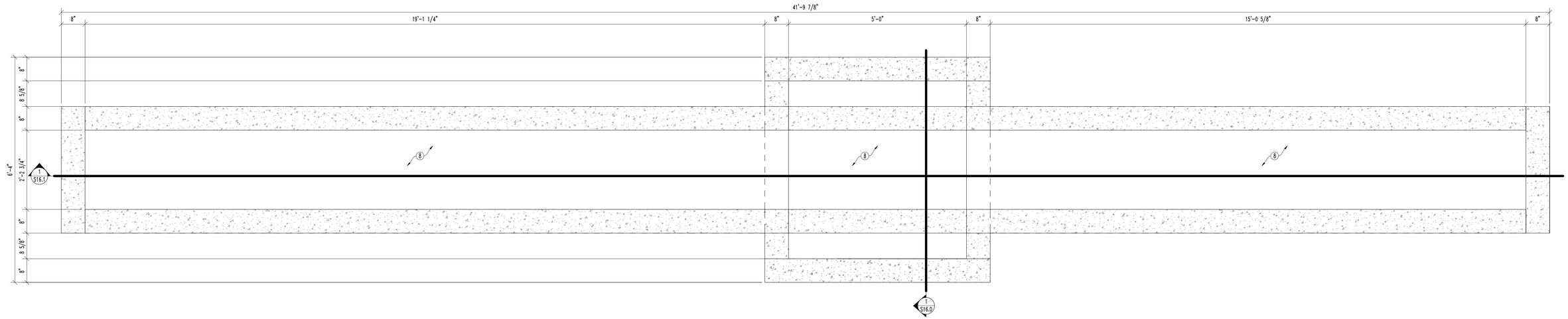
CONSULTANT
PLANNING • ENGINEERING • PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

JUNCTION BOX 3

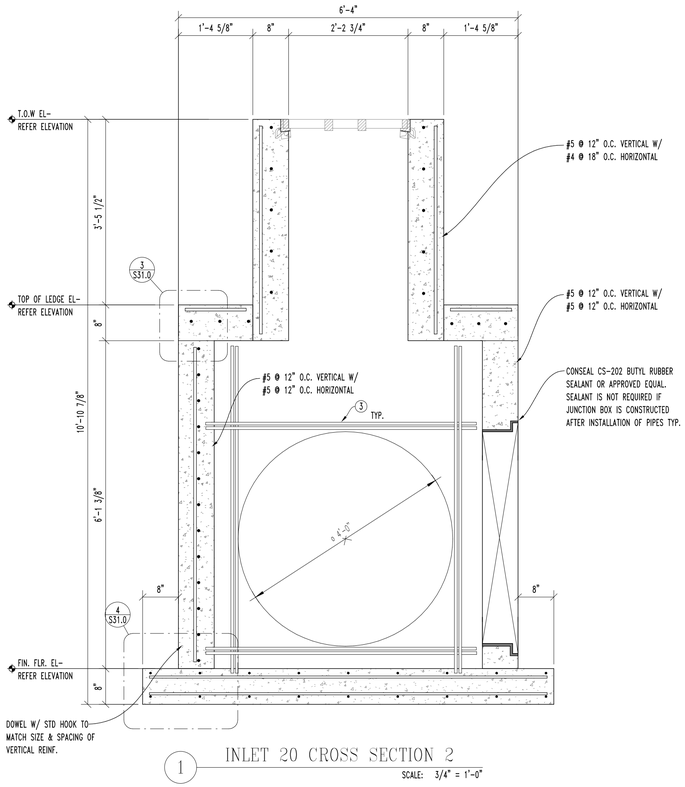
THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH STORM DRAIN SYSTEM", MORENO CARDENAS, INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO.
SEQUENCE NO.
OF
SHEET NO. S15.0



A INLET 20

SCALE: 3/4" = 1'-0"



1 INLET 20 CROSS SECTION 2

SCALE: 3/4" = 1'-0"

PLAN NOTES

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4 . CONCRETE PIPE – REFER CIVIL.

5 . BAFFLE BLOCK – REFER DETAIL 3/S2.2.

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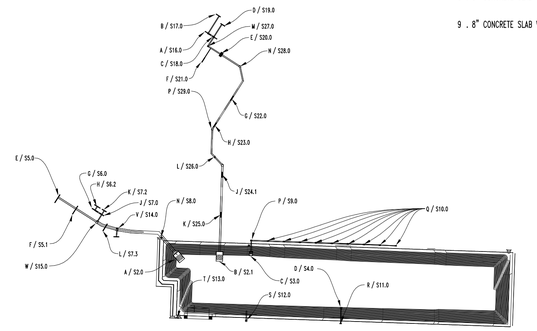

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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REV.	DATE	BY	DESCRIPTION

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CALL
1-800-DIG-TESS
1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES

ENGINEER'S SEAL
TOP - INTERIM REVIEW ONLY!!
MICHAEL A. STUBBS, PE
TEXAS
PE NO. 92018
NOT FOR CONSTRUCTION
05/26/22

DESIGNED
DRAWN
CHECKED
DATE 08/18/22

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING • ENGINEERING • PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

INLET 20

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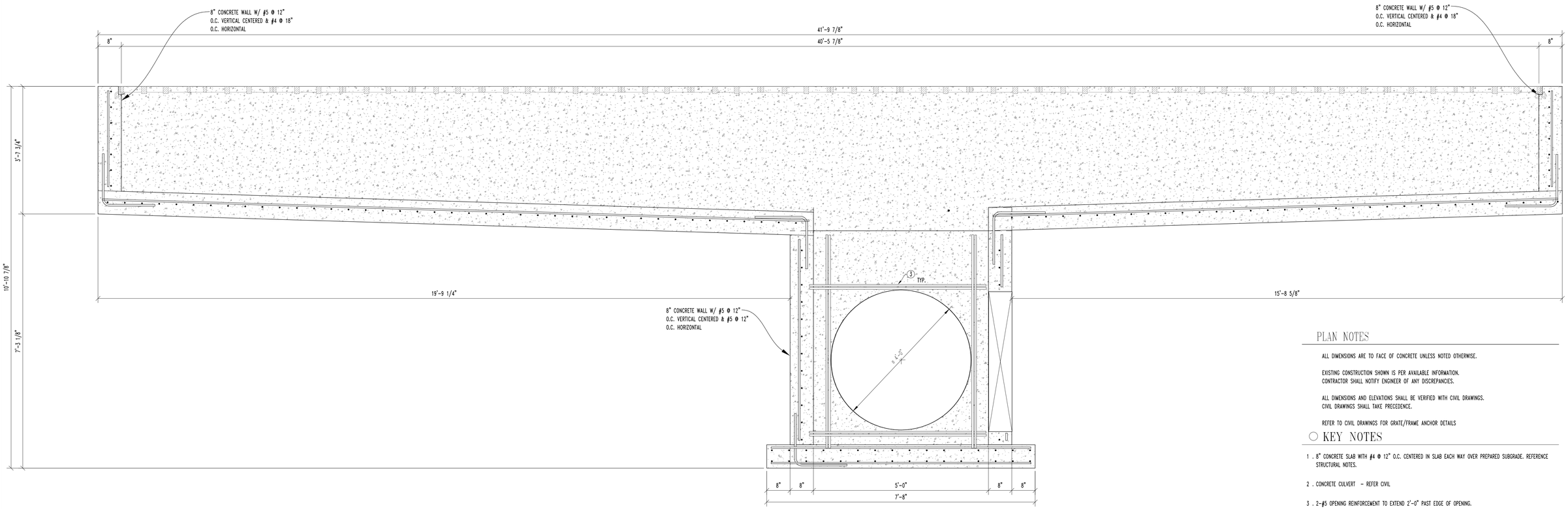
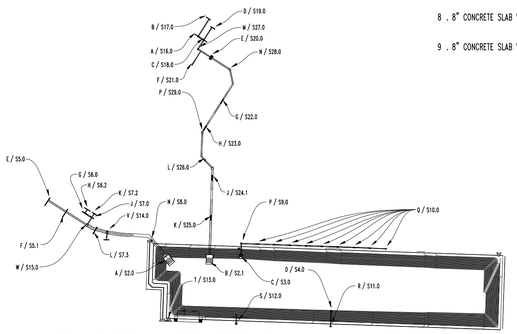
JOB NO.
SEQUENCE NO.
OF
SHEET NO. S16.0



1 INLET 20 CROSS SECTION

SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

PLAN NOTES

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STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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1-800-DIG-TESS
1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES

ENGINEER'S SEAL: MICHAEL A. STUBBS, PE, TEXAS, PE NO. 92018, FOR INTERIM REVIEW ONLY, NOT FOR CONSTRUCTION, 05/26/22

DESIGNED
DRAWN
CHECKED
DATE 08/18/22

UTILITY OWNER: el paso WATER, 1154 HAWKINS BLVD. EL PASO, TEXAS 79925 (915) 594-5500

CONSULTANT: MCi Moreno Cardenas Inc. — PLANNING • ENGINEERING • PROJECT MANAGEMENT — *Leaders in Project Delivery & Performance* — 2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091 — Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

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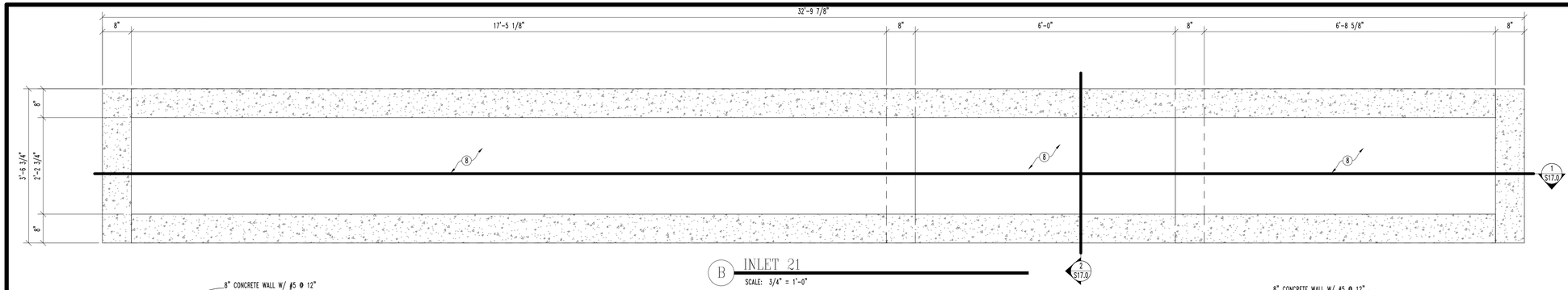
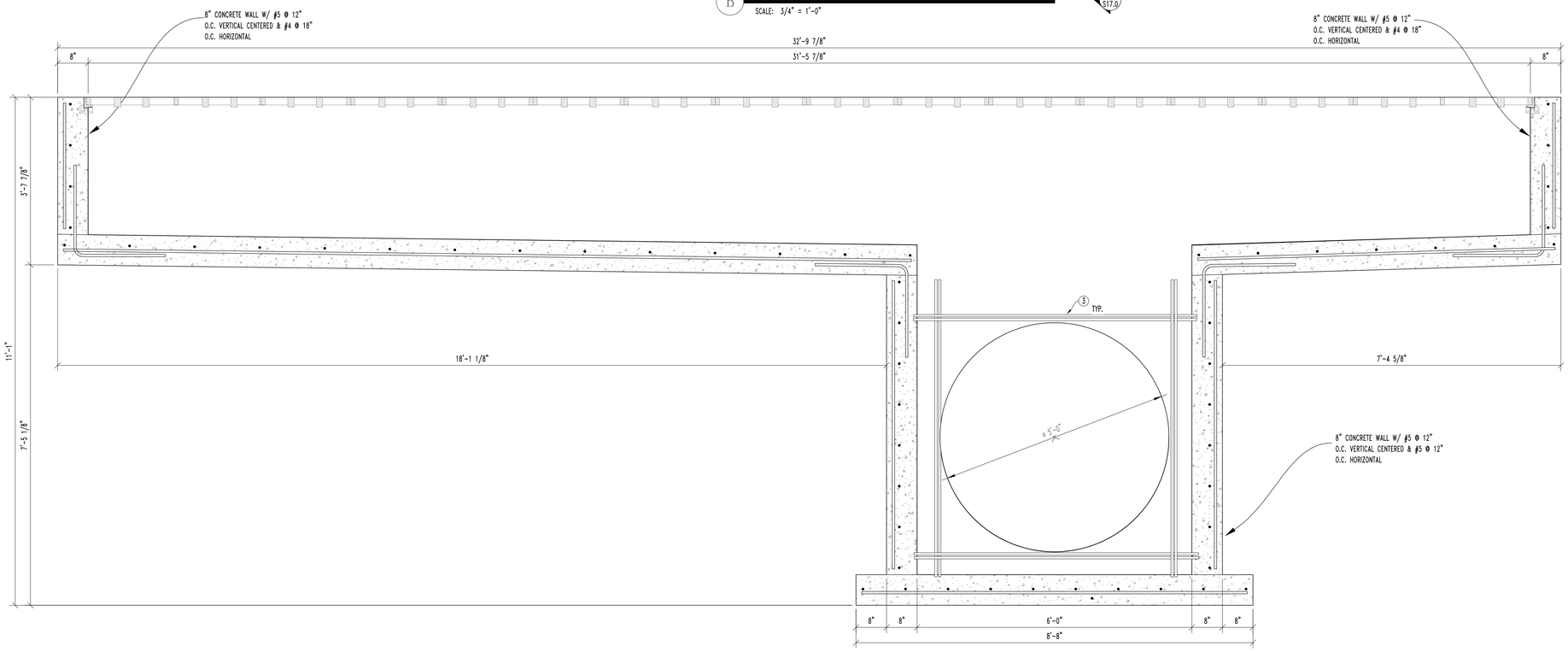
JOB NO.
SEQUENCE NO.
OF
SHEET NO. S16.1



B INLET 21
SCALE: 3/4" = 1'-0"



1 INLET 21 CROSS SECTION
SCALE: 3/4" = 1'-0"

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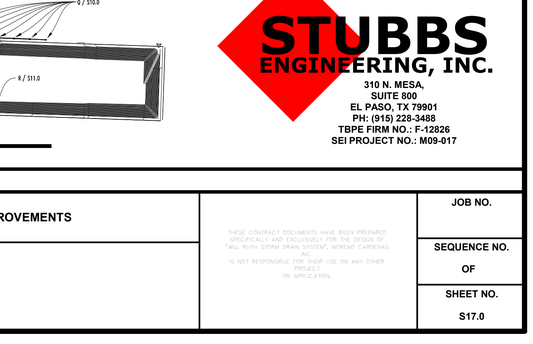
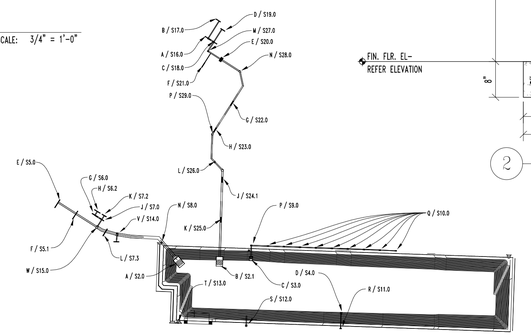


2 INLET 21 CROSS SECTION 2
SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN
SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

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1-800-344-8377
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ENGINEER'S SEAL
FOR INTERIM REVIEW ONLY
MICHAEL A. STUBBS, PE
TEXAS
PE NO. 92018
NOT FOR CONSTRUCTION
05/26/22

DESIGNED
DRAWN
CHECKED
DATE 08/18/22

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
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Leaders in Project Delivery & Performance
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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

INLET 21

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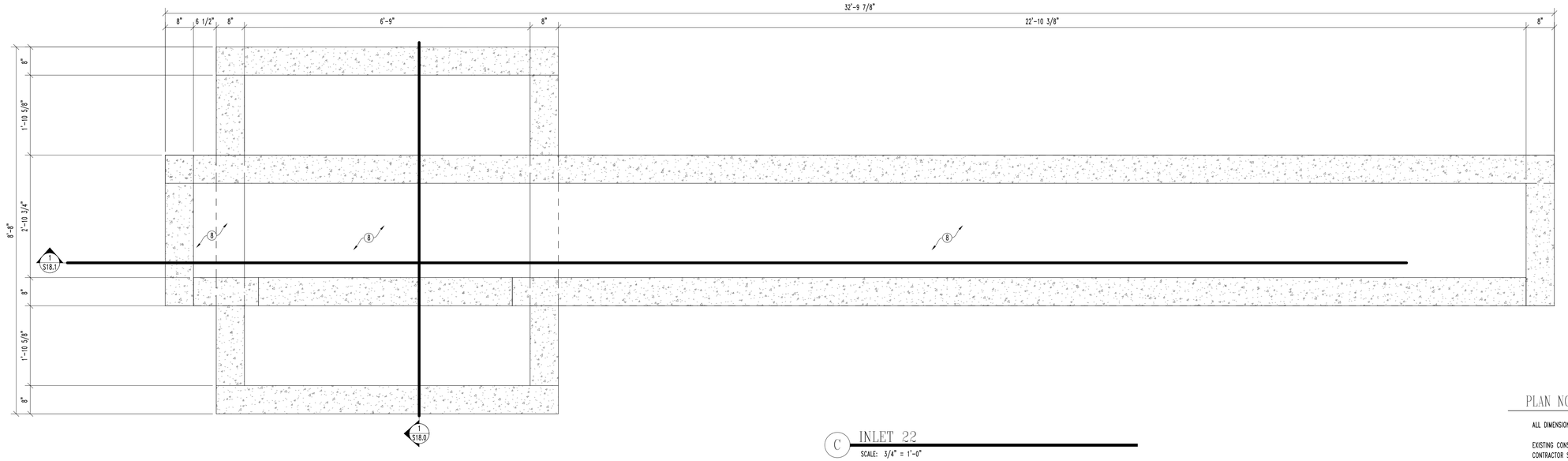
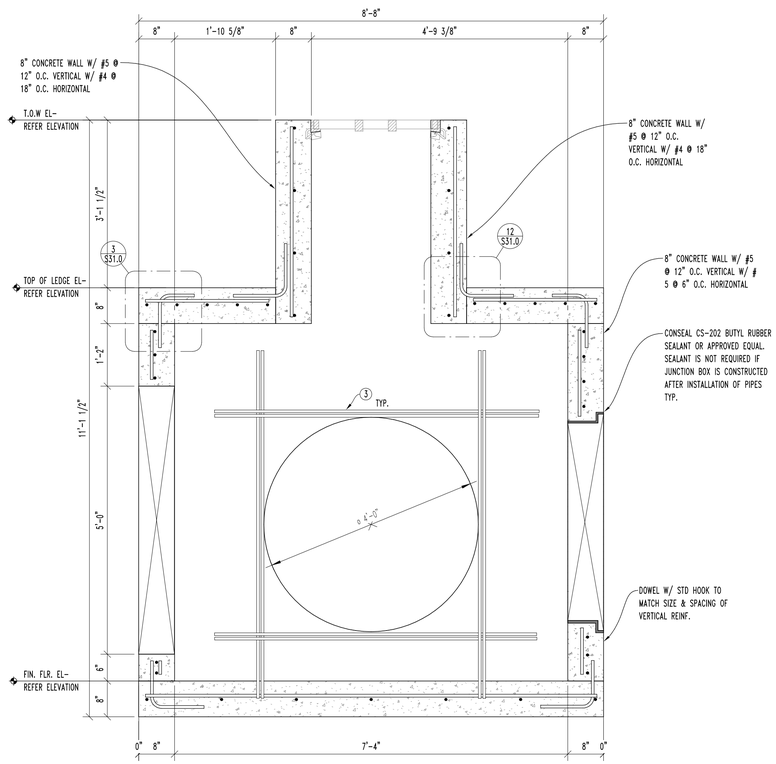
JOB NO.
SEQUENCE NO.
OF
SHEET NO.
S17.0



C INLET 22

SCALE: 3/4" = 1'-0"



1 INLET 22 CROSS SECTION 2

SCALE: 3/4" = 1'-0"

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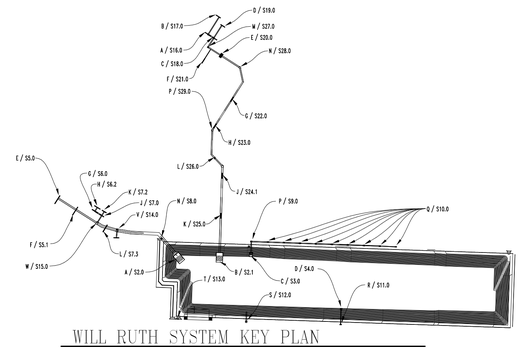

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

INLET 22

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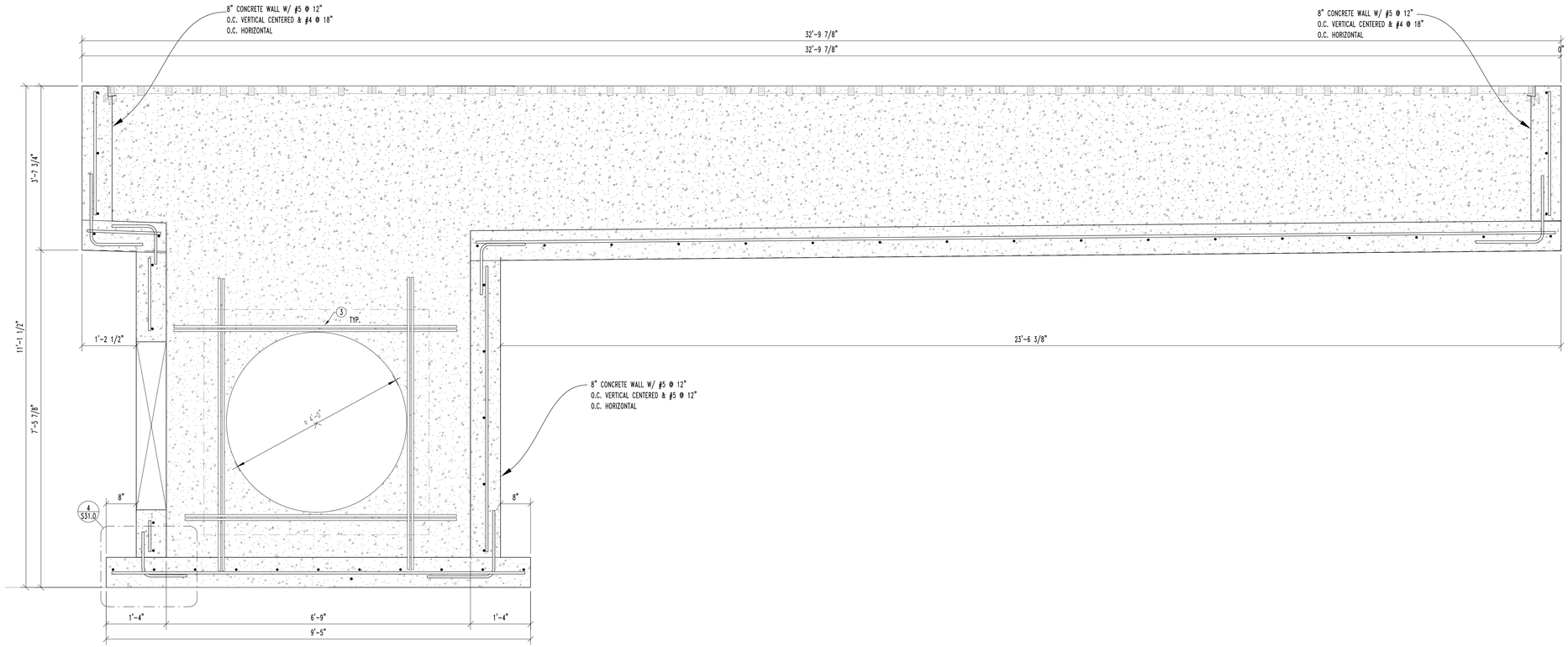
JOB NO.
SEQUENCE NO.
OF
SHEET NO.
S18.0



1 INLET 22 CROSS SECTION

SCALE: 3/4" = 1'-0"

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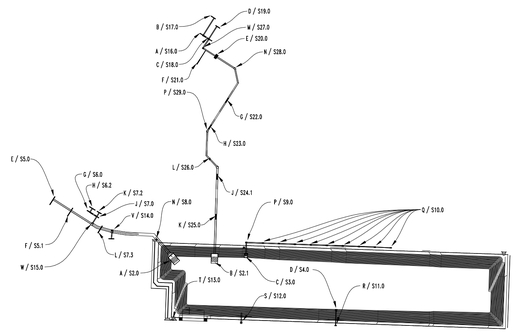

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SCALE: N.T.S.

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WILL RUTH POND IMPROVEMENTS

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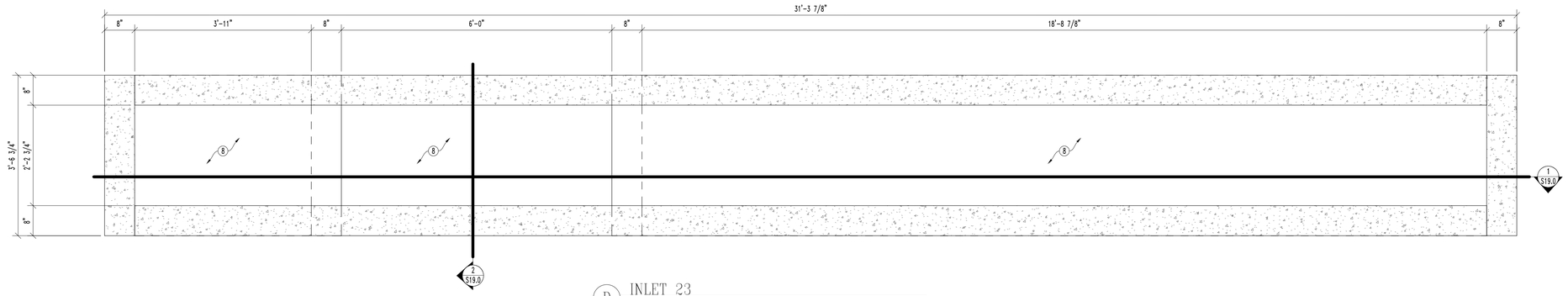
SEQUENCE NO.
OF
SHEET NO.
S18.1



D INLET 23

SCALE: 3/4" = 1'-0"

PLAN NOTES

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○ KEY NOTES

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3 . 2-#5 OPENING REINFORCEMENT TO EXTEND 2'-0" PAST EDGE OF OPENING.

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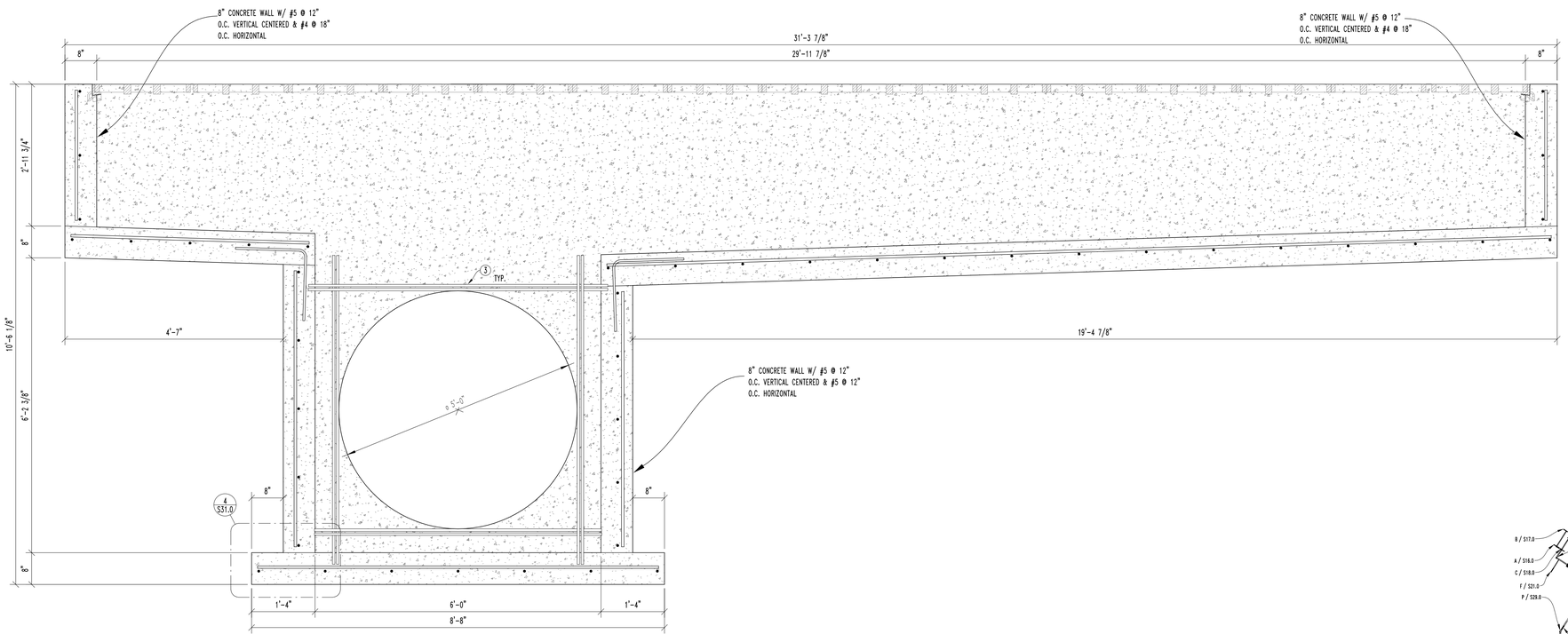
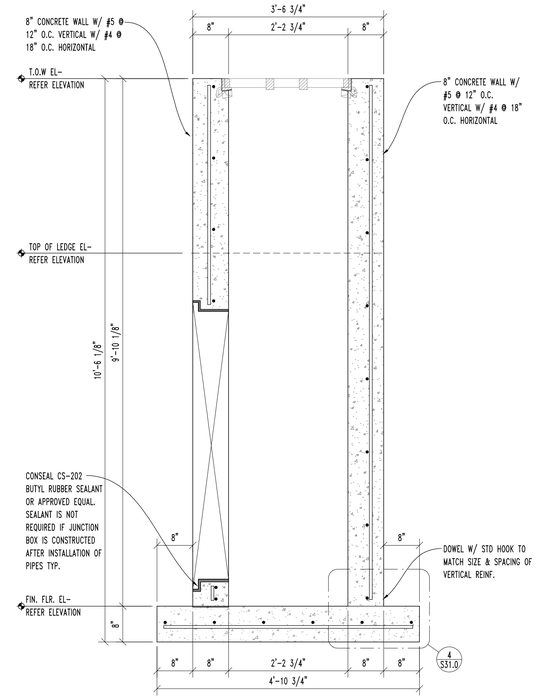
9 . 8" CONCRETE SLAB WITH #6 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP



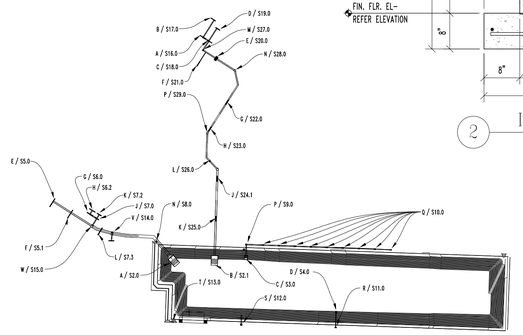
1 INLET 23 CROSS SECTION

SCALE: 3/4" = 1'-0"



2 INLET 23 CROSS SECTION 2

SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
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1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES

ENGINEER'S SEAL
MICHAEL A. STUBBS, PE
TEXAS
PE NO. 92018
FOR INTERIM REVIEW ONLY
NOT FOR CONSTRUCTION
05/26/22

DESIGNED
DRAWN
CHECKED
DATE 08/18/22

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

CONSULTANT
PLANNING • ENGINEERING • PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

INLET 23

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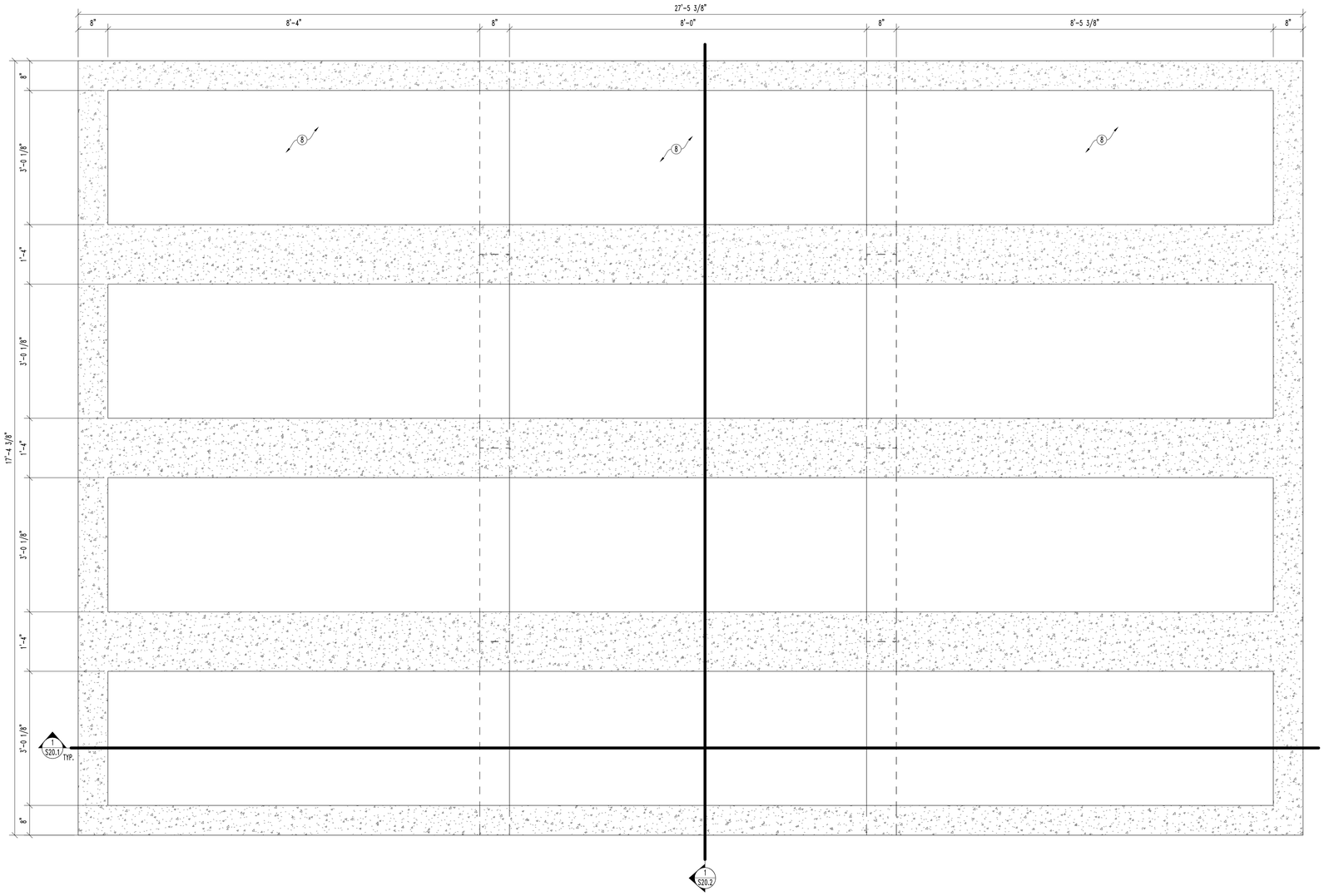
JOB NO.
SEQUENCE NO.
OF
SHEET NO.
S19.0



E INLET 24

SCALE: 3/4" = 1'-0"

PLAN NOTES

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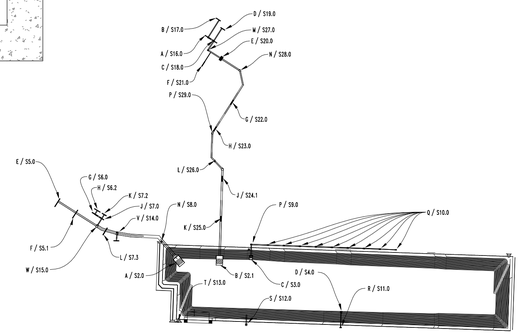

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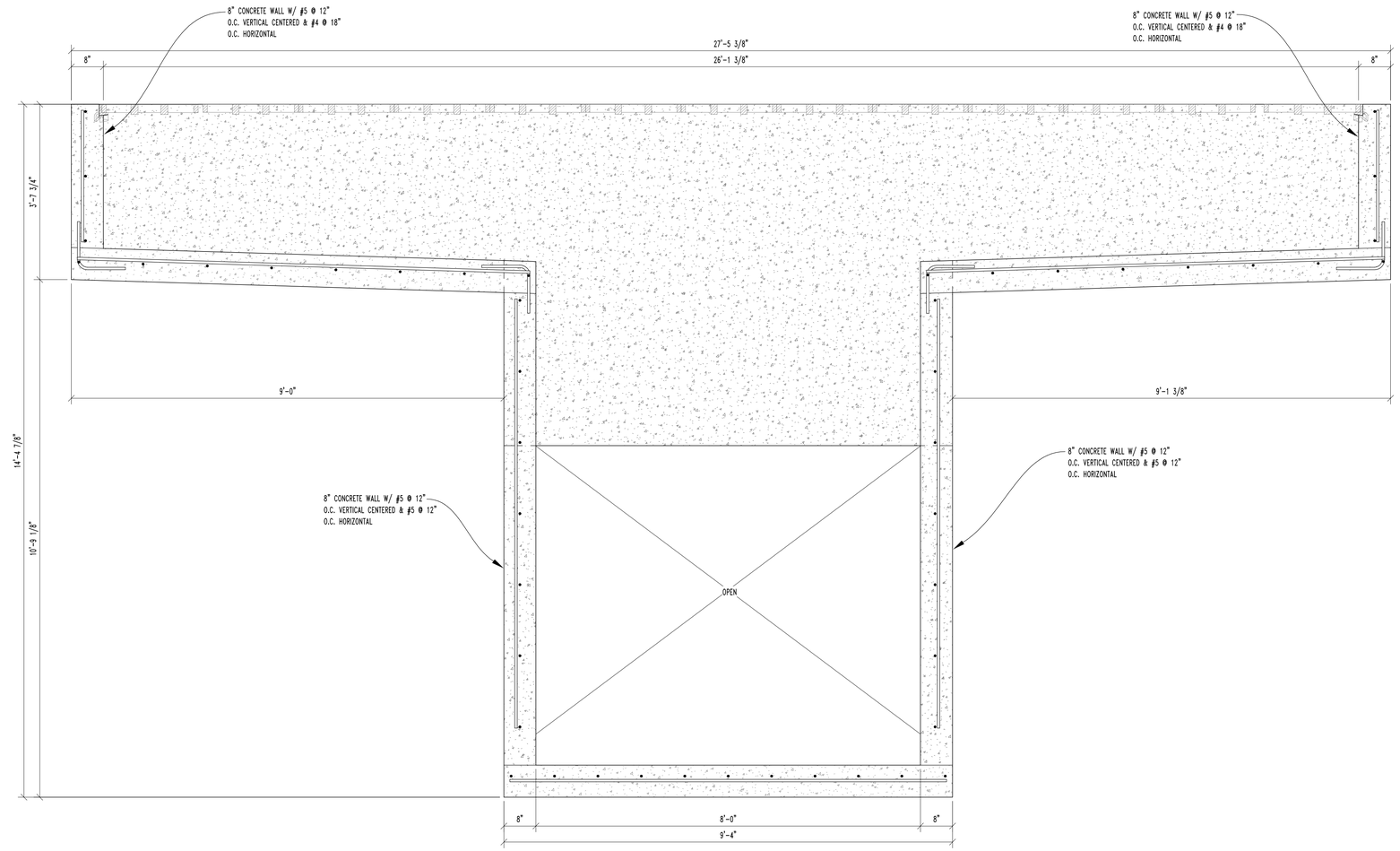

1 INLET 24 CROSS SECTION

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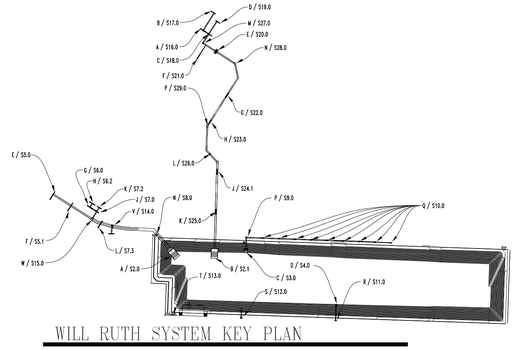

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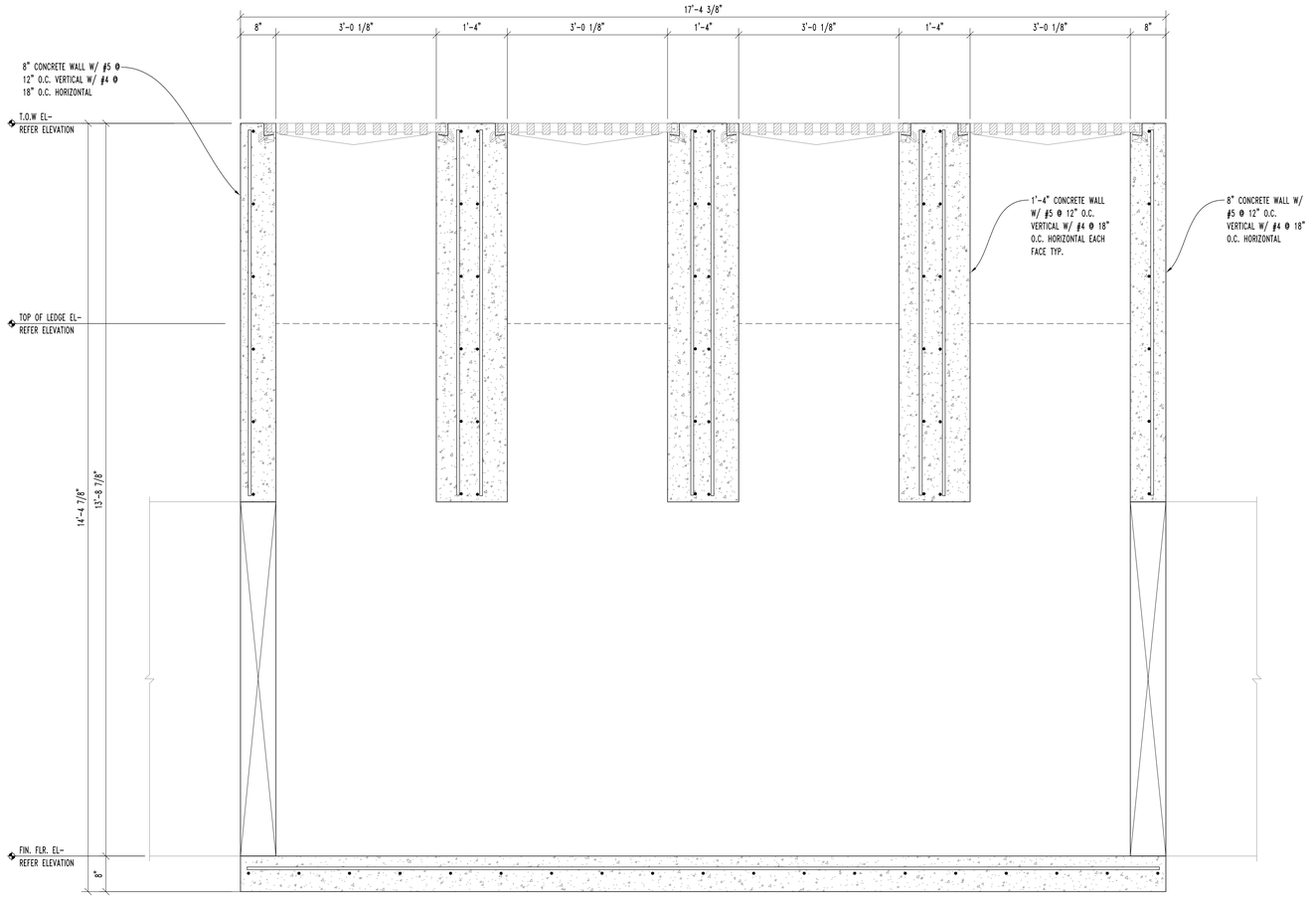
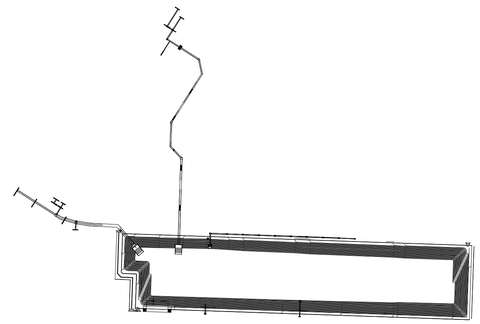
SHEET NO. S20.1



1 INLET 24 CROSS SECTION 2

SCALE: 3/4" = 1'-0"



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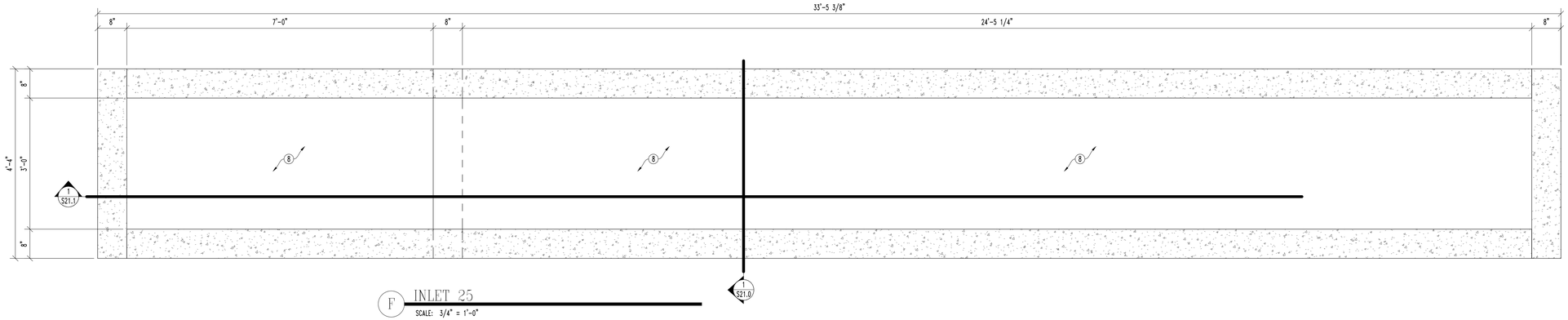
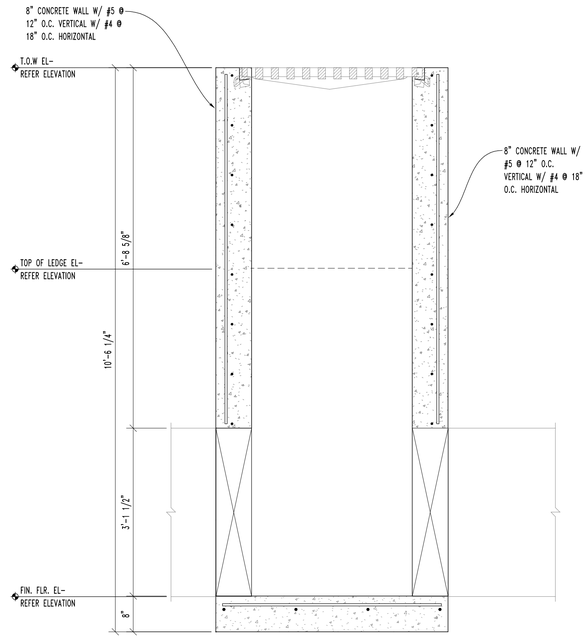
SEQUENCE NO.	
OF	
SHEET NO.	S20.2



F INLET 25

SCALE: 3/4" = 1'-0"



1 INLET 25 CROSS SECTION 2

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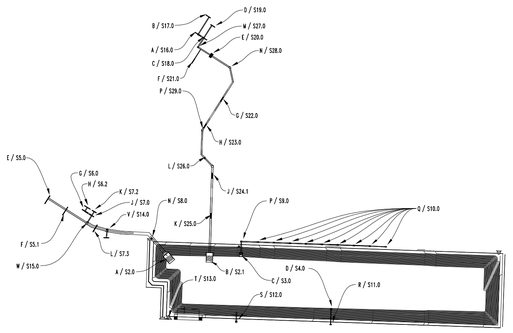

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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INLET 25

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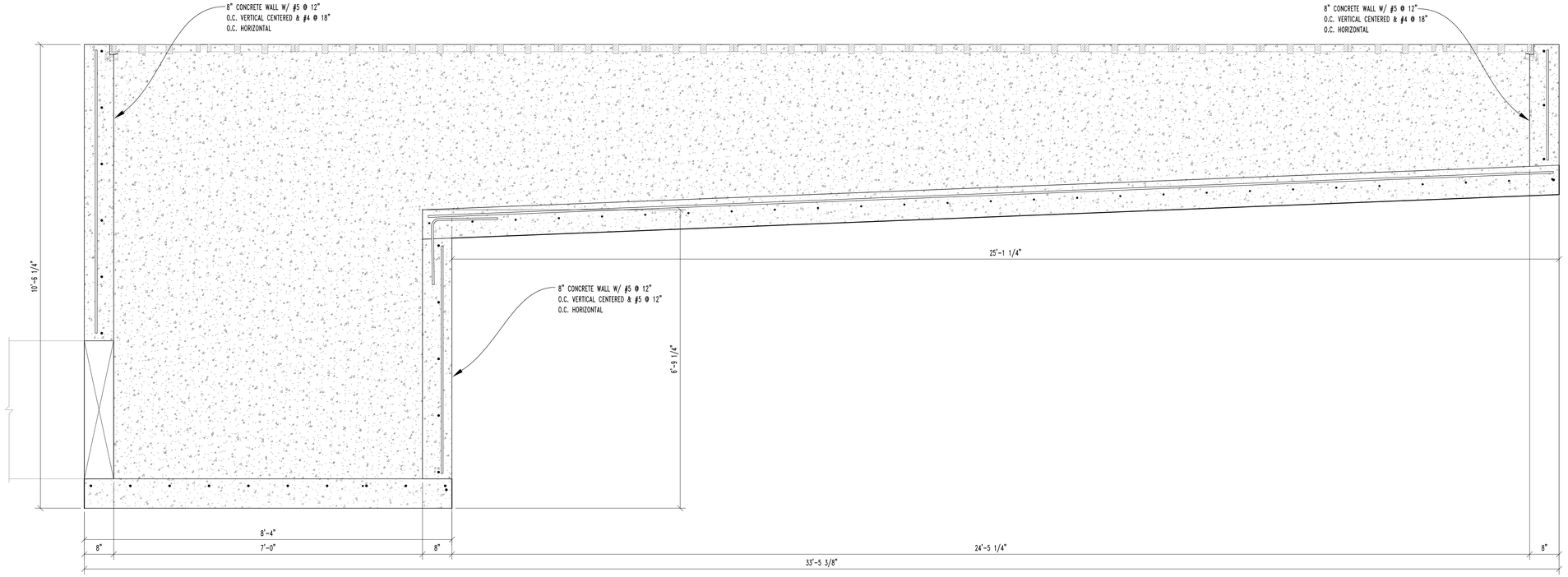
SEQUENCE NO.
OF
SHEET NO. S21.0



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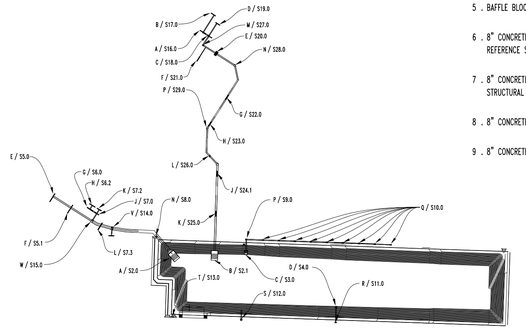

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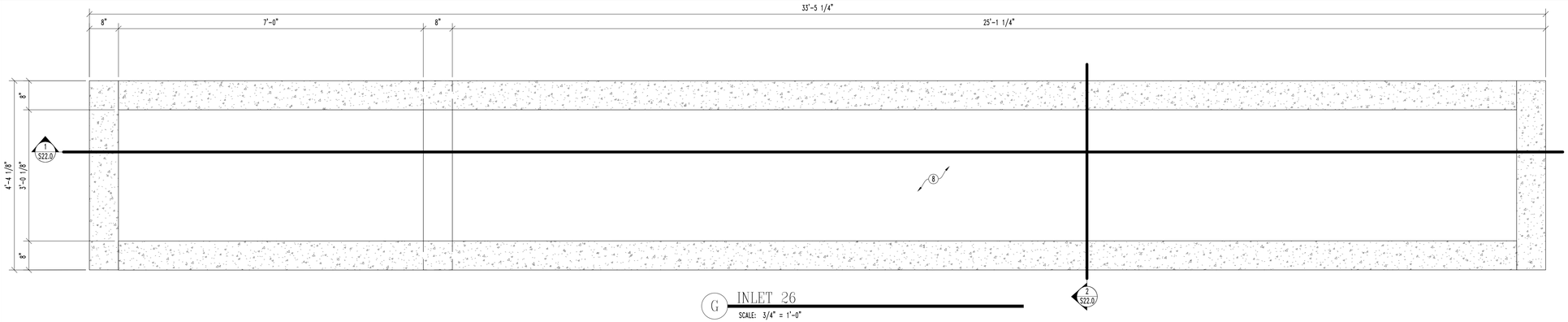
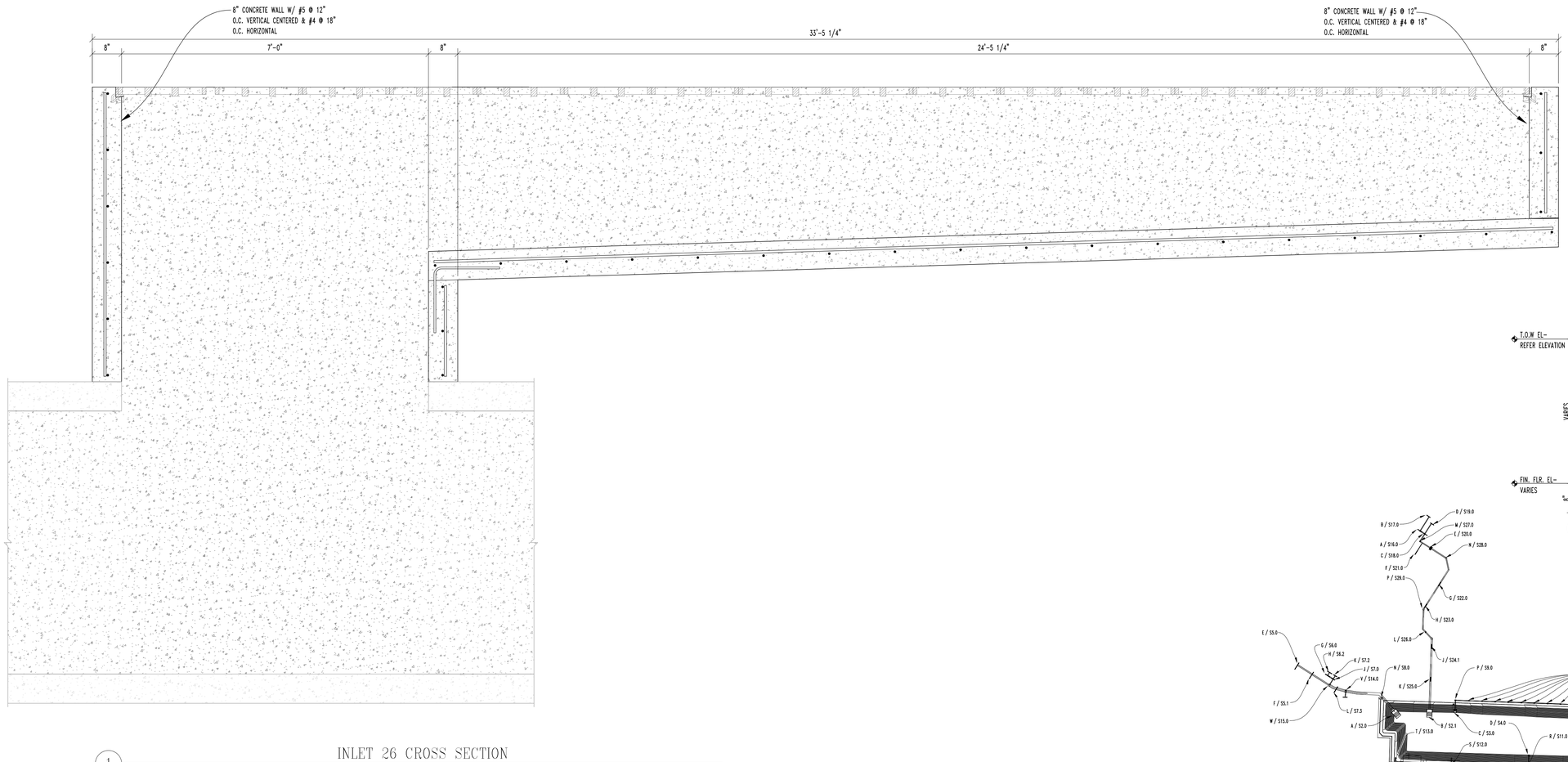


G INLET 26
SCALE: 3/4" = 1'-0"



1 INLET 26 CROSS SECTION
SCALE: 3/4" = 1'-0"

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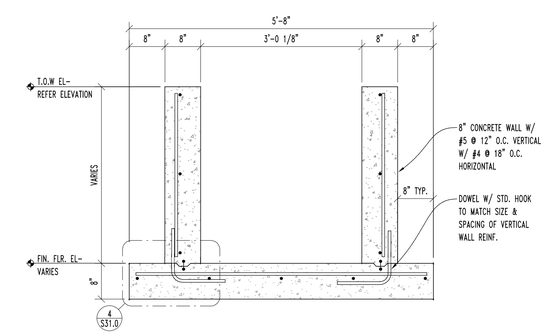
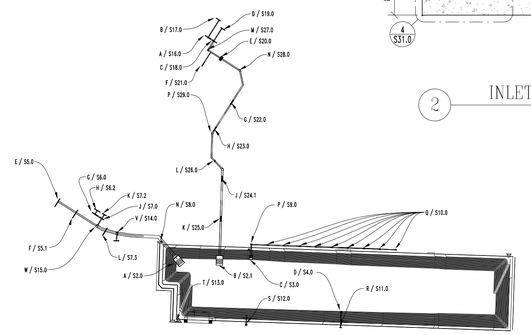


2 INLET 26 CROSS SECTION
SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN
SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

100% SUBMITTAL -- FOR ENGINEERING REVIEW ONLY NOT TO BE USED FOR CONSTRUCTION

REV.	DATE	BY	DESCRIPTION

WARNING ! BEFORE YOU DIG
CALL
1-800-DIG-TESS
1-800-344-8377
FOR FIELD LOCATING EXISTING UTILITIES

ENGINEER'S SEAL
MICHAEL A. STUBBS, PE
TEXAS
PE NO. 92018
FOR INTERIM REVIEW ONLY
NOT FOR CONSTRUCTION
05/26/22

DESIGNED
DRAWN
CHECKED
DATE 08/18/22

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

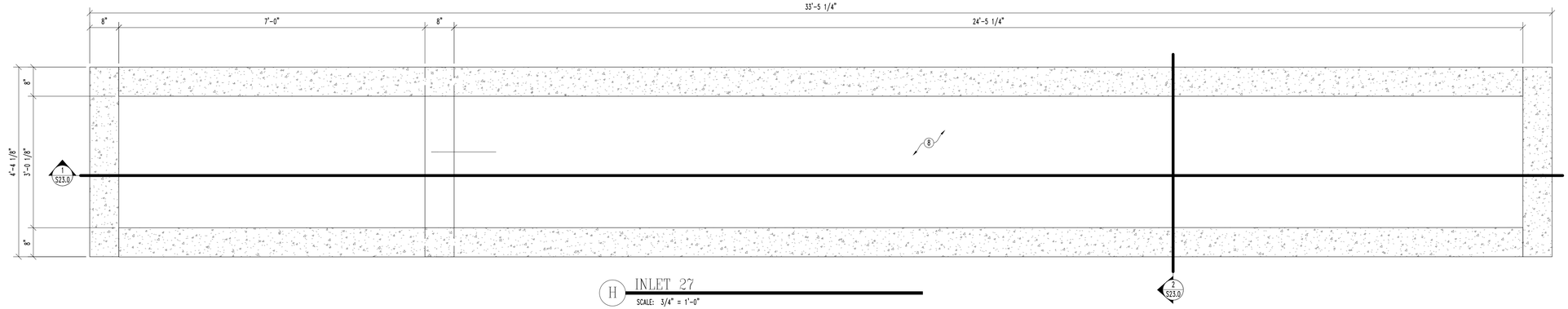
CONSULTANT
PLANNING • ENGINEERING • PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

INLET 26

THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH STORM DRAIN SYSTEM", MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO.
SEQUENCE NO.
OF
SHEET NO.
S22.0



H INLET 27

SCALE: 3/4" = 1'-0"

PLAN NOTES

ALL DIMENSIONS ARE TO FACE OF CONCRETE UNLESS NOTED OTHERWISE.

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CIVIL DRAWINGS SHALL TAKE PRECEDENCE.

REFER TO CIVIL DRAWINGS FOR GRATE/FRAME ANCHOR DETAILS

○ KEY NOTES

1 . 8" CONCRETE SLAB WITH #4 @ 12" O.C. CENTERED IN SLAB EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

2 . CONCRETE CULVERT – REFER CIVIL

3 . 2-#5 OPENING REINFORCEMENT TO EXTEND 2'-0" PAST EDGE OF OPENING.

4 . CONCRETE PIPE – REFER CIVIL.

5 . BAFFLE BLOCK – REFER DETAIL 3/S2.2.

6 . 8" CONCRETE SLAB WITH #5 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

7 . 8" CONCRETE SLAB WITH #5 @ 12" O.C. BOTH FACES EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

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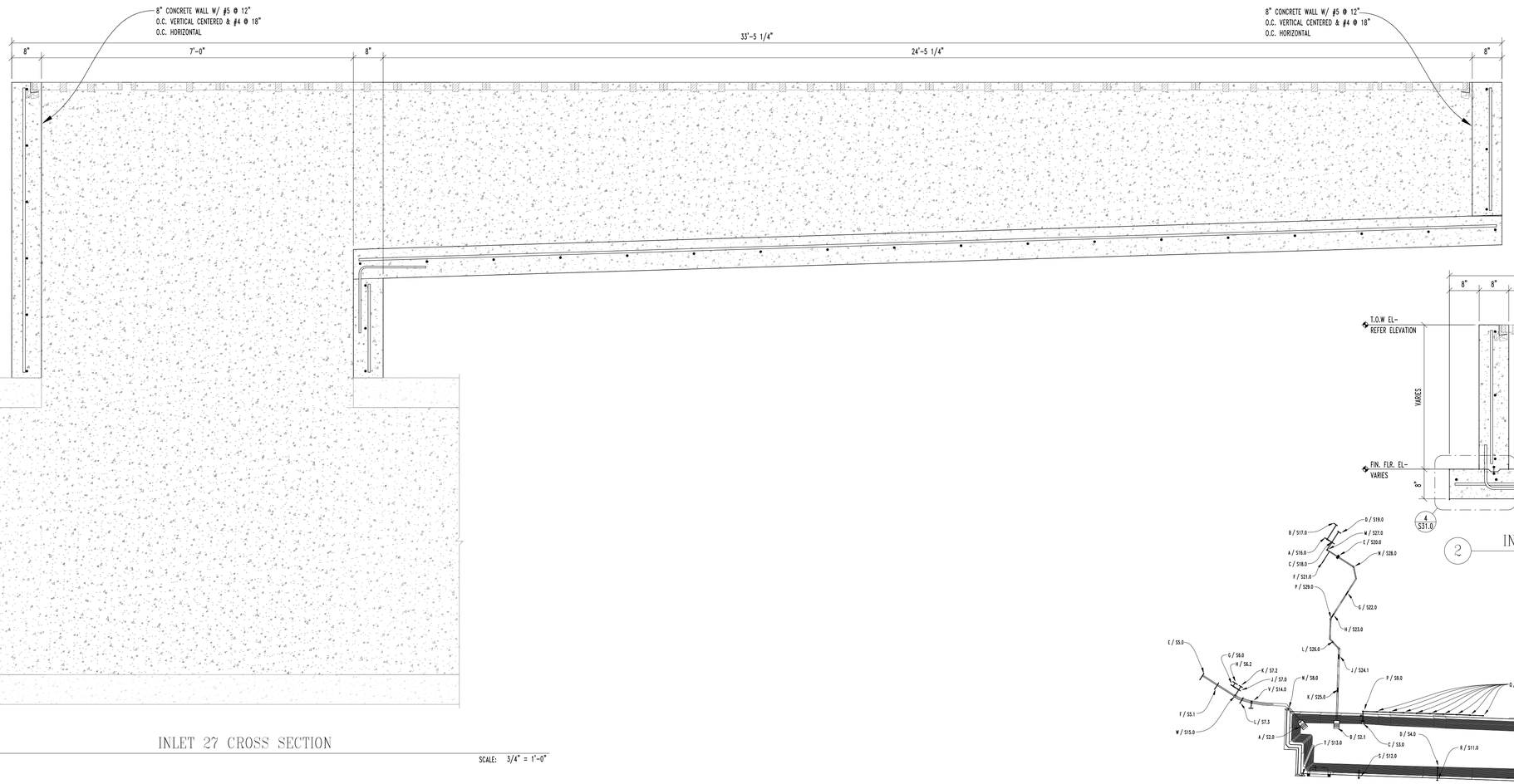
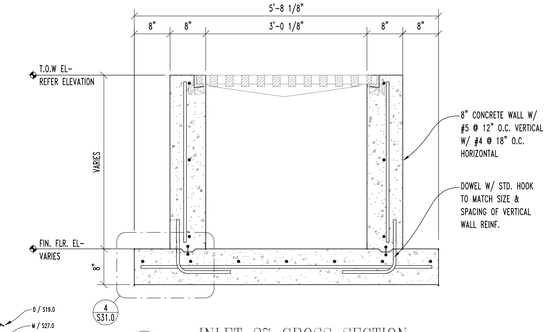
9 . 8" CONCRETE SLAB WITH #6 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP



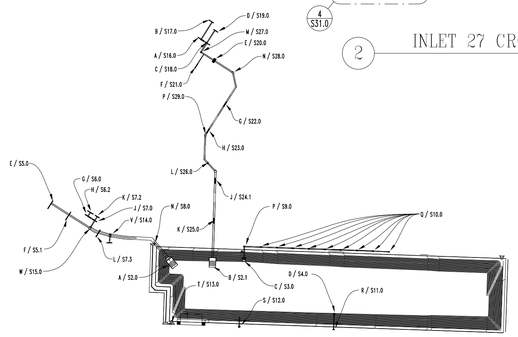
1 INLET 27 CROSS SECTION

SCALE: 3/4" = 1'-0"



2 INLET 27 CROSS SECTION

SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

INLET 27

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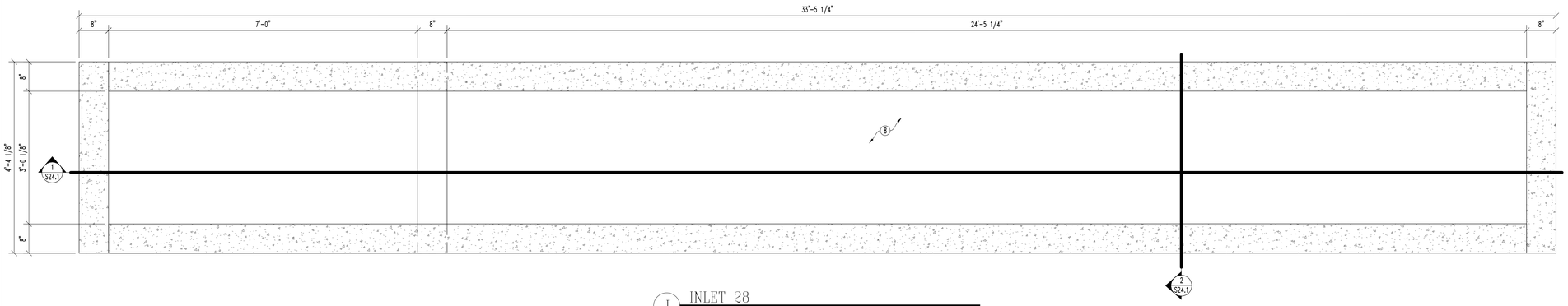
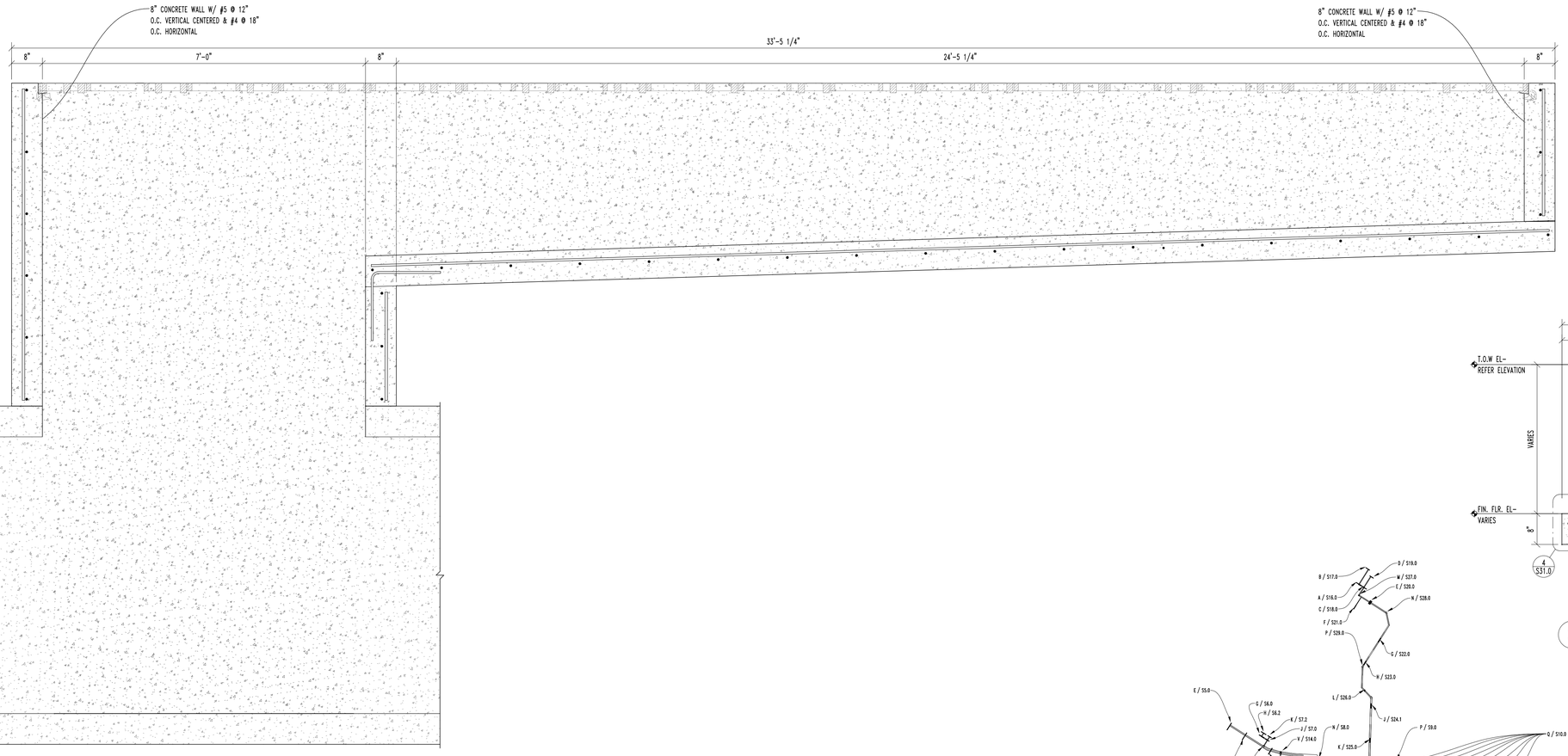
JOB NO.
SEQUENCE NO.
OF
SHEET NO. S23.0



J INLET 28

SCALE: 3/4" = 1'-0"



1 INLET 28 CROSS SECTION

SCALE: 3/4" = 1'-0"

PLAN NOTES

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4 . CONCRETE PIPE – REFER CIVIL.

5 . BAFFLE BLOCK – REFER DETAIL 3/S2.2.

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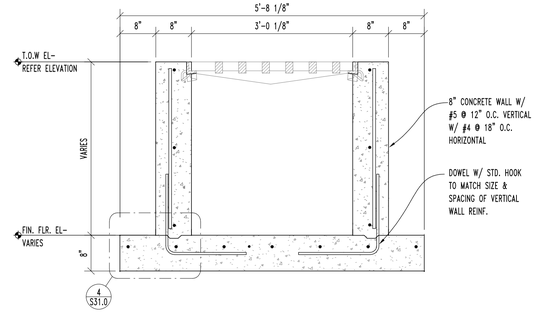
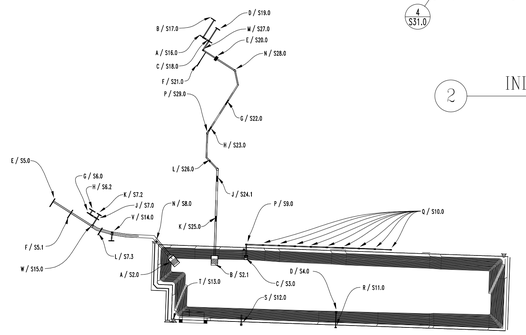
9 . 8" CONCRETE SLAB WITH #6 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP



2 INLET 28 CROSS SECTION

SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

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TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

INLET 28

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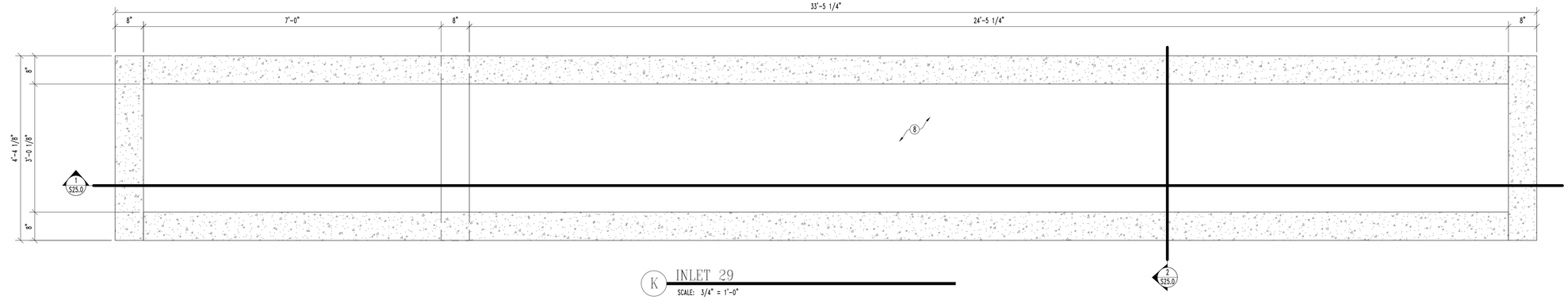
JOB NO.
SEQUENCE NO.
OF
SHEET NO.
S24.1



K INLET 29

SCALE: 3/4" = 1'-0"

PLAN NOTES

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○ KEY NOTES

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3 . 2–#5 OPENING REINFORCEMENT TO EXTEND 2'–0" PAST EDGE OF OPENING.

4 . CONCRETE PIPE – REFER CIVIL.

5 . BAFFLE BLOCK – REFER DETAIL 3/S2.2.

6 . 8" CONCRETE SLAB WITH #8 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

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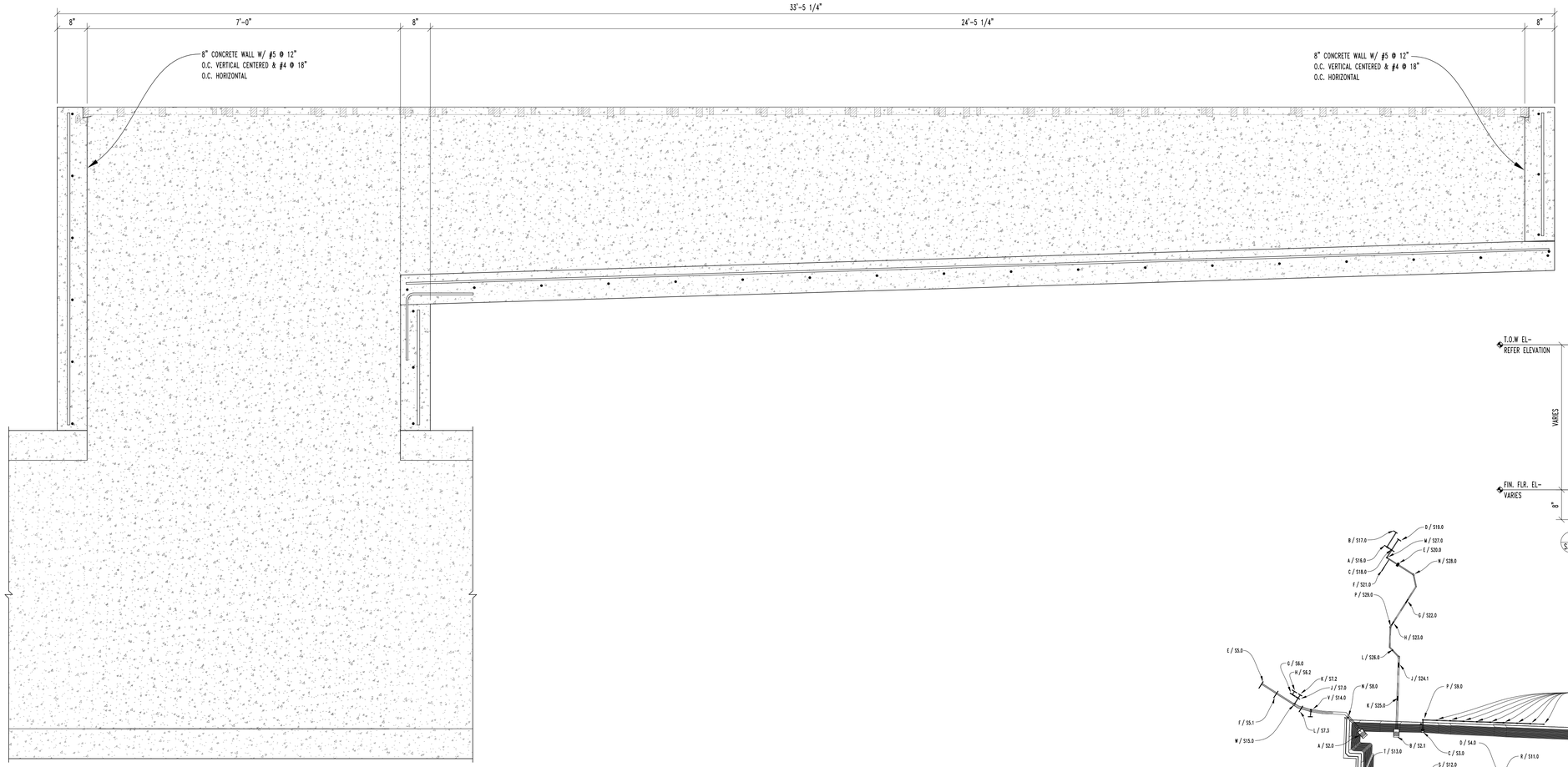
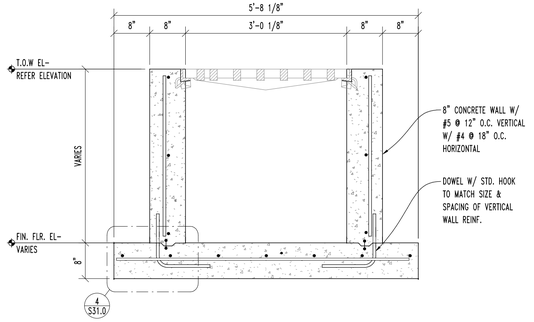
9 . 8" CONCRETE SLAB WITH #6 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP



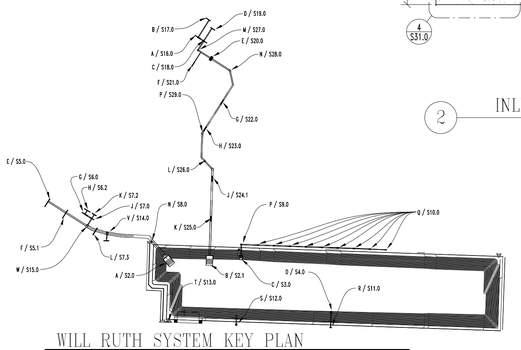
1 INLET 29 CROSS SECTION

SCALE: 3/4" = 1'-0"



2 INLET 29 CROSS SECTION

SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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WILL RUTH POND IMPROVEMENTS

INLET 29

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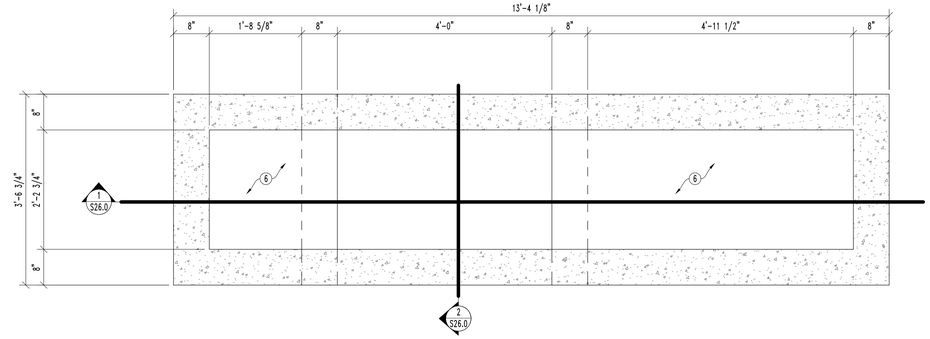
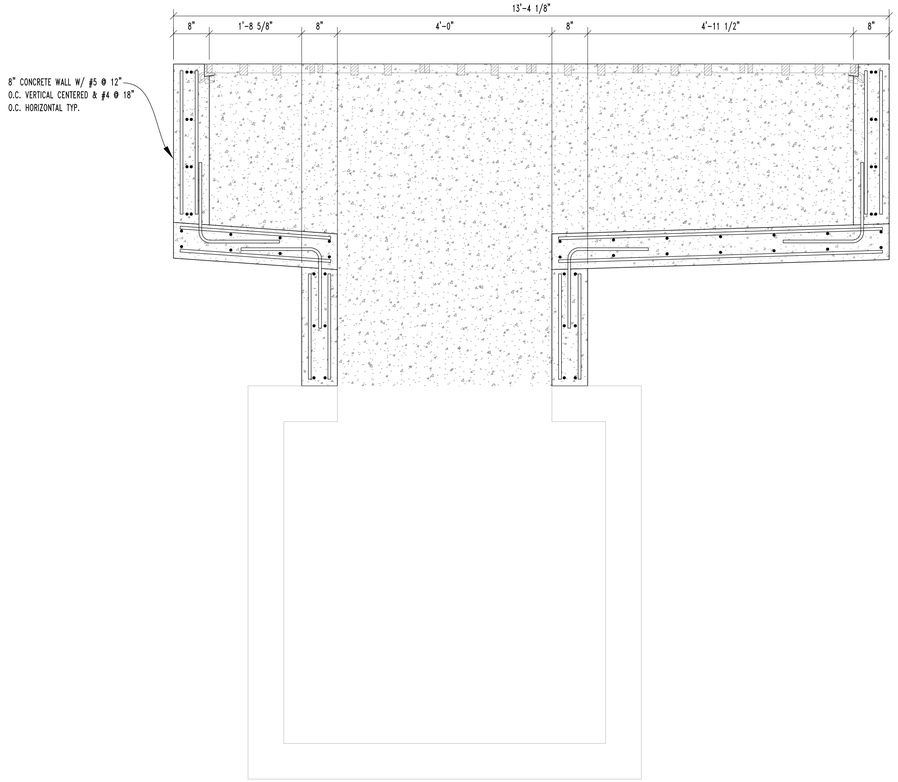
JOB NO.
SEQUENCE NO.
OF
SHEET NO. S25.0



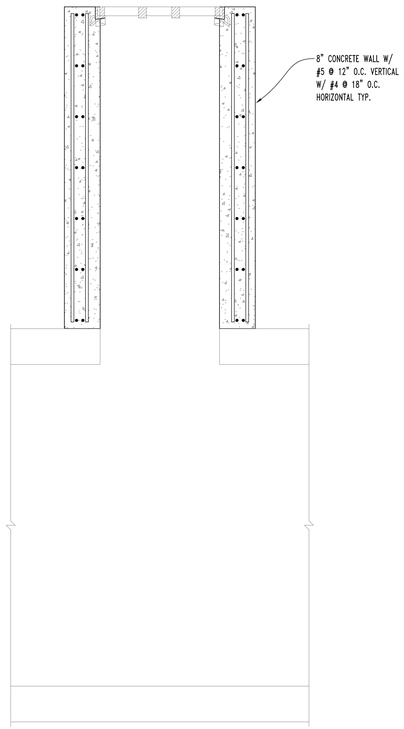
L INLET 31

SCALE: 3/4" = 1'-0"



1 INLET 31 CROSS SECTION

SCALE: 3/4" = 1'-0"



2 INLET 31 CROSS SECTION

SCALE: 3/4" = 1'-0"

PLAN NOTES

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6 . 8" CONCRETE SLAB WITH #8 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

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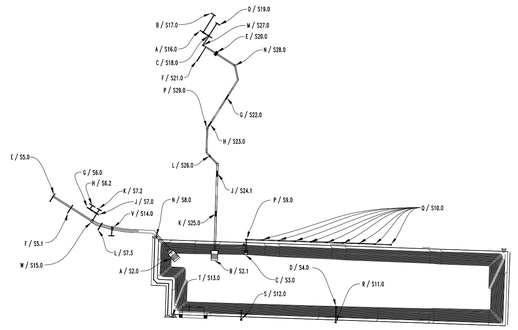
8 . 8" CONCRETE SLAB WITH #5 @ 12" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY

9 . 8" CONCRETE SLAB WITH #6 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
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EL PASO, TX 79901
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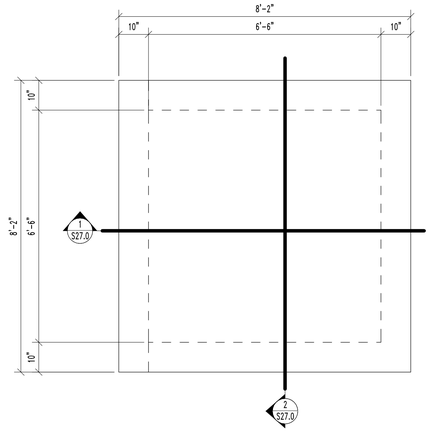
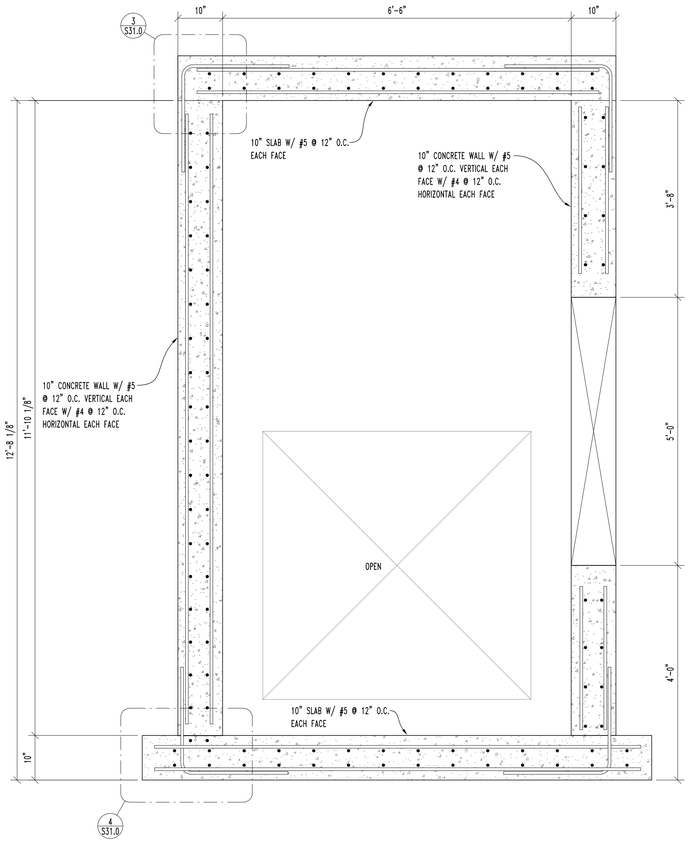
SEQUENCE NO.
OF
SHEET NO. S26.0



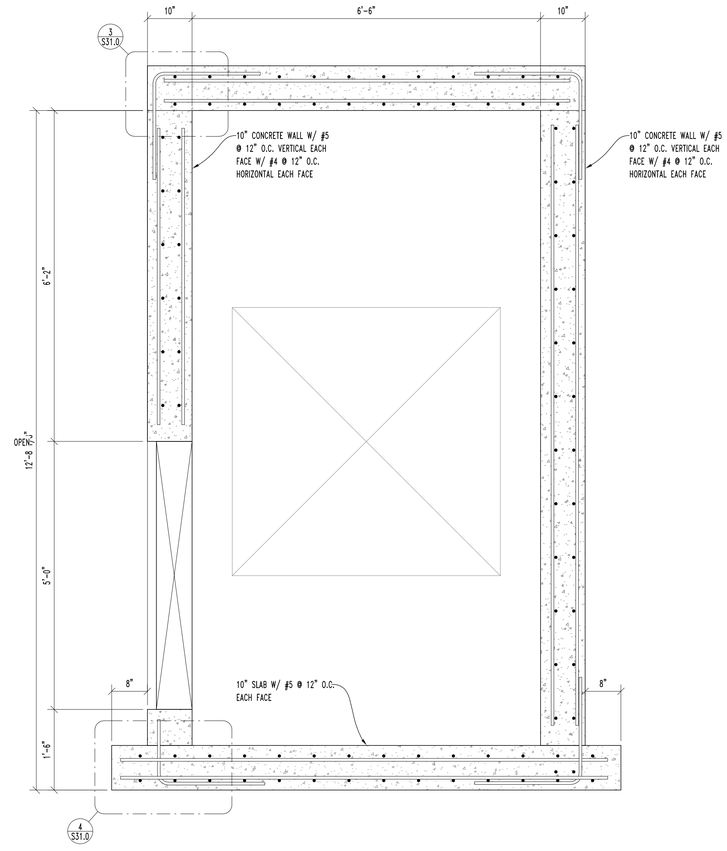
M JUNCTION BOX 5

SCALE: 1/2" = 1'-0"



1 JUNCTION BOX 5 SECTION 1

SCALE: 3/4" = 1'-0"



2 JUNCTION BOX 5 SECTION 2

SCALE: 3/4" = 1'-0"

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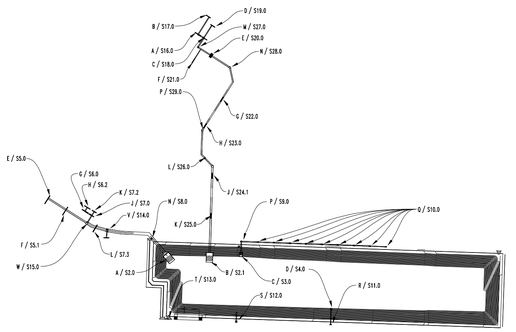

WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

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FOR FIELD LOCATING EXISTING UTILITIES

ENGINEER'S SEAL
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MICHAEL A. STUBBS, PE
TEXAS
PE NO. 92018
NOT FOR CONSTRUCTION
05/26/22

DESIGNED
DRAWN
CHECKED
DATE 08/18/22

UTILITY OWNER
el paso WATER
1154 HAWKINS BLVD.
EL PASO, TEXAS 79925
(915) 594-5500

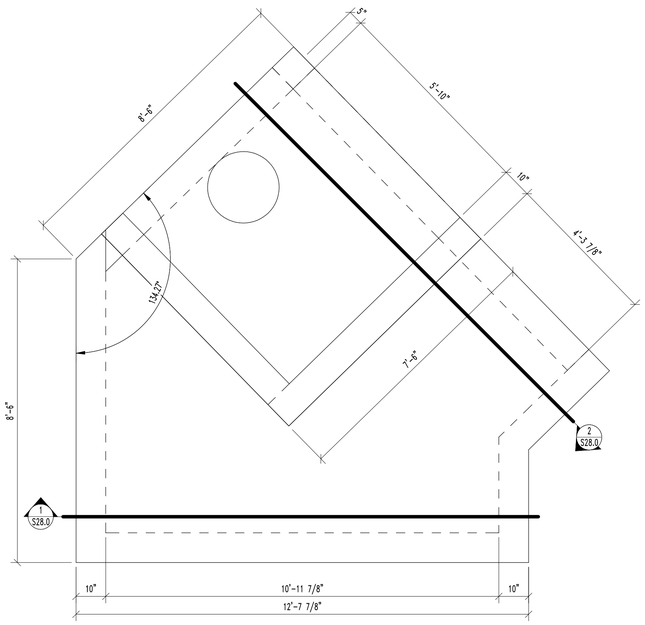
CONSULTANT
PLANNING, ENGINEERING, PROJECT MANAGEMENT
MCi Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
2505 E. Missouri Ave. El Paso, TX 79903 (915) 532-2091
Texas Board of Professional Engineers Registration No. F-000554

WILL RUTH POND IMPROVEMENTS

JUNCTION BOX 5

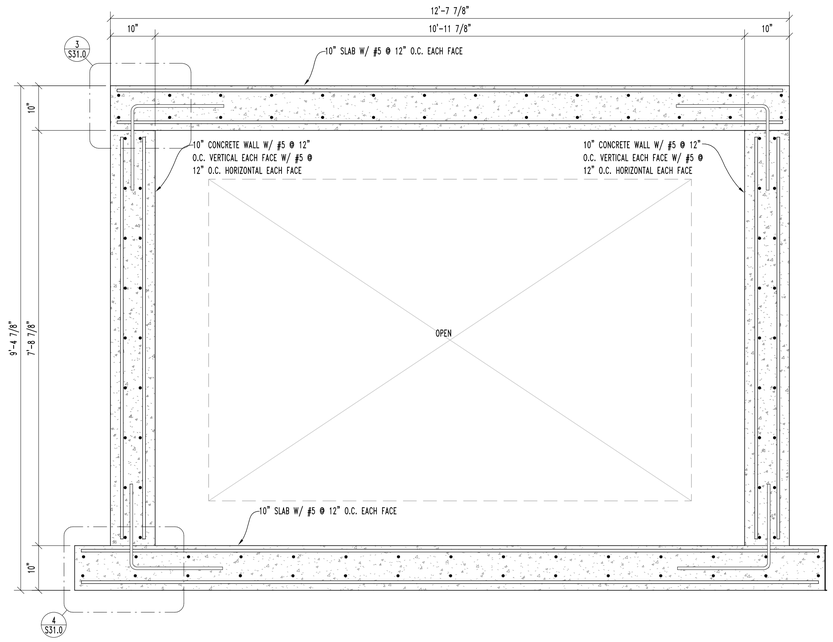
THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED SPECIFICALLY AND EXCLUSIVELY FOR THE DESIGN OF "WILL RUTH STORM DRAIN SYSTEM", MORENO CARDENAS INC. IS NOT RESPONSIBLE FOR THEIR USE ON ANY OTHER PROJECT OR APPLICATION.

JOB NO.
SEQUENCE NO.
OF
SHEET NO. S27.0



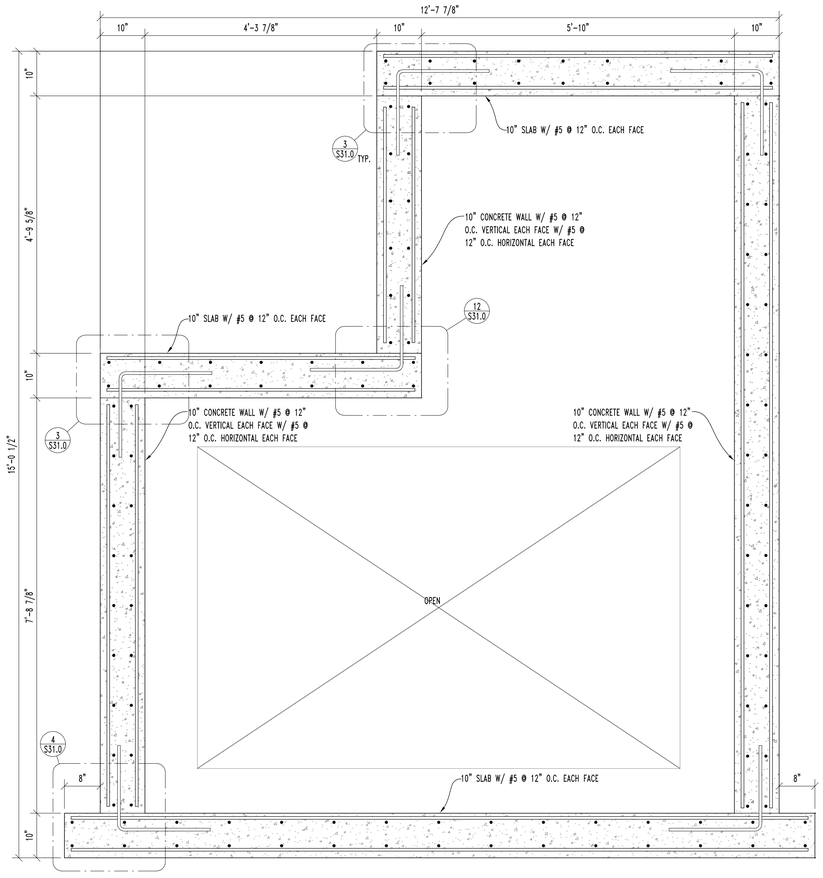
N JUNCTION BOX 6

SCALE: 1/2" = 1'-0"



1 JUNCTION BOX 6 SECTION 1

SCALE: 3/4" = 1'-0"



2 JUNCTION BOX 6 SECTION 2

SCALE: 3/4" = 1'-0"

PLAN NOTES

ALL DIMENSIONS ARE TO FACE OF CONCRETE UNLESS NOTED OTHERWISE.

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CIVIL DRAWINGS SHALL TAKE PRECEDENCE.

REFER TO CIVIL DRAWINGS FOR GRATE/FRAME ANCHOR DETAILS

KEY NOTES

1 . 8" CONCRETE SLAB WITH #4 @ 12" O.C. CENTERED IN SLAB EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

2 . CONCRETE CULVERT – REFER CIVIL

3 . 2–#5 OPENING REINFORCEMENT TO EXTEND 2'–0" PAST EDGE OF OPENING.

4 . CONCRETE PIPE – REFER CIVIL.

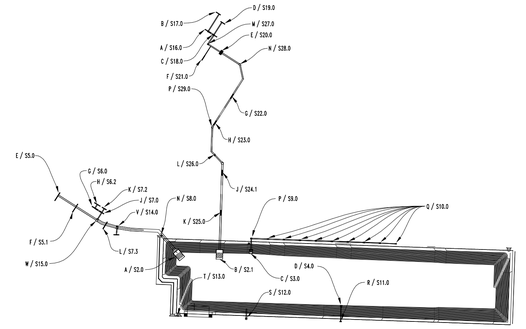
5 . BAFFLE BLOCK – REFER DETAIL 3/S2.2.

6 . 8" CONCRETE SLAB WITH #8 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

7 . 8" CONCRETE SLAB WITH #5 @ 12" O.C. BOTH FACES EACH WAY OVER PREPARED SUBGRADE. REFERENCE STRUCTURAL NOTES.

8 . 8" CONCRETE SLAB WITH #5 @ 12" O.C. BOTTOM & #4 @ 18" O.C. TOP EACH WAY

9 . 8" CONCRETE SLAB WITH #6 @ 8" O.C. BOTTOM & #4 @ 18" O.C. TOP



WILL RUTH SYSTEM KEY PLAN

SCALE: N.T.S.

STUBBS ENGINEERING, INC.
310 N. MESA,
SUITE 800
EL PASO, TX 79901
PH: (915) 228-3488
TBPE FIRM NO.: F-12826
SEI PROJECT NO.: M09-017

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REV.	DATE	BY	DESCRIPTION

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WILL RUTH POND IMPROVEMENTS

JUNCTION BOX 6

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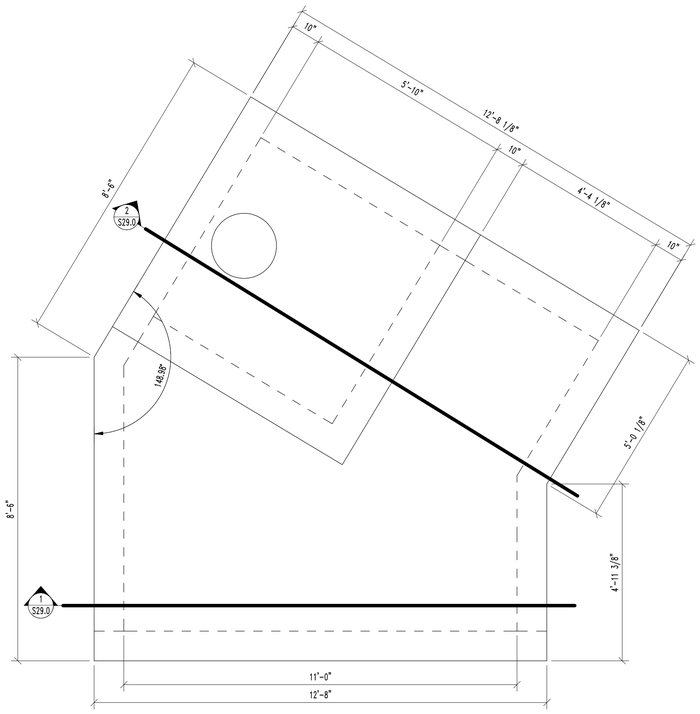
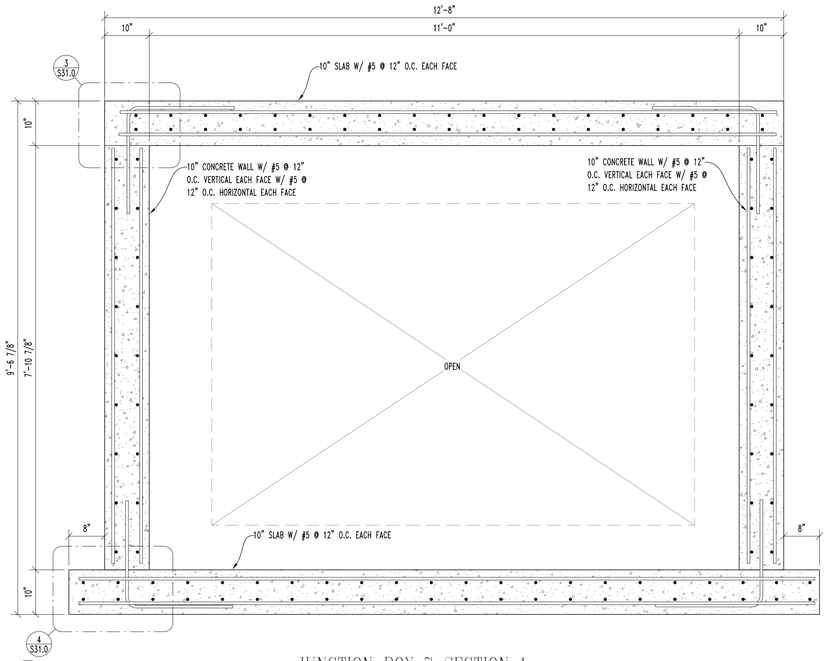
JOB NO.
SEQUENCE NO.
OF
SHEET NO.
S28.0



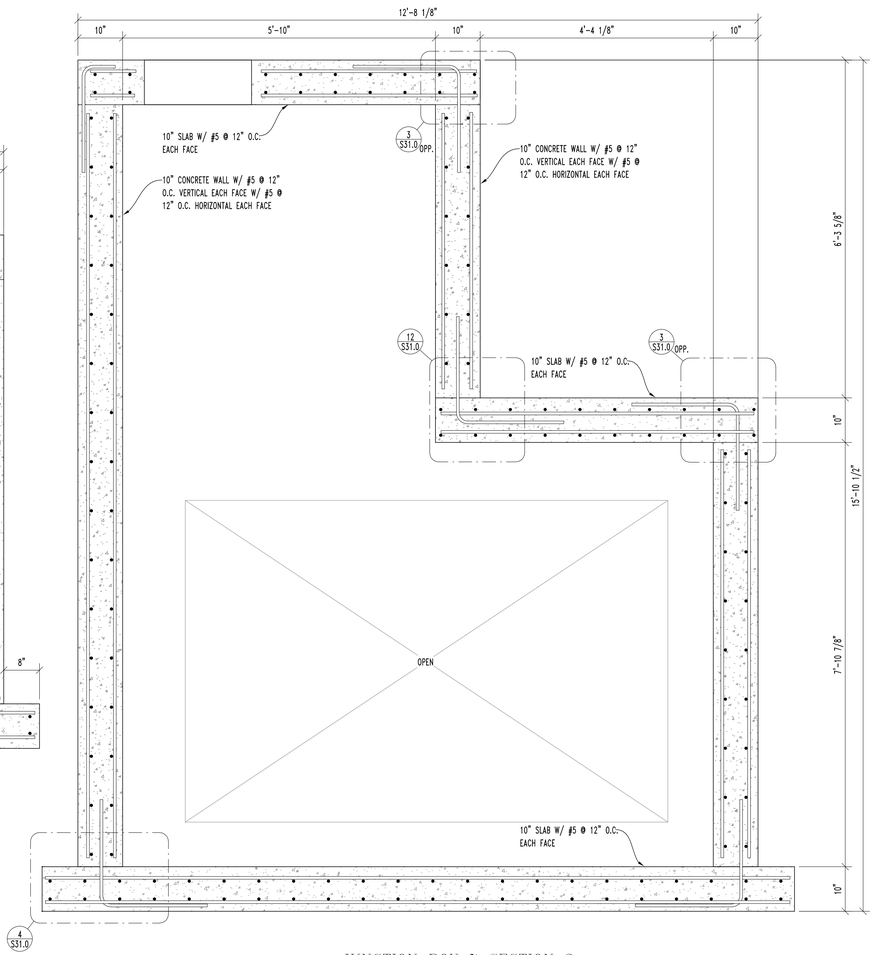
P JUNCTION BOX 7

SCALE: 1/2" = 1'-0"



1 JUNCTION BOX 7 SECTION 1

SCALE: 3/4" = 1'-0"



2 JUNCTION BOX 7 SECTION 2

SCALE: 3/4" = 1'-0"

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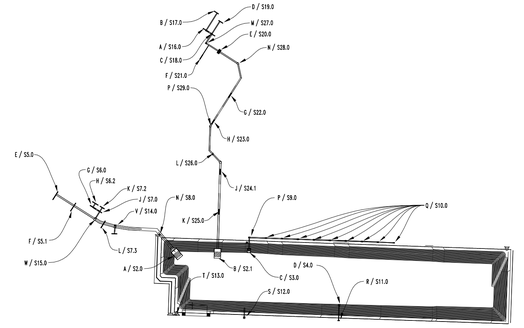

WILL RUTH SYSTEM KEY PLAN

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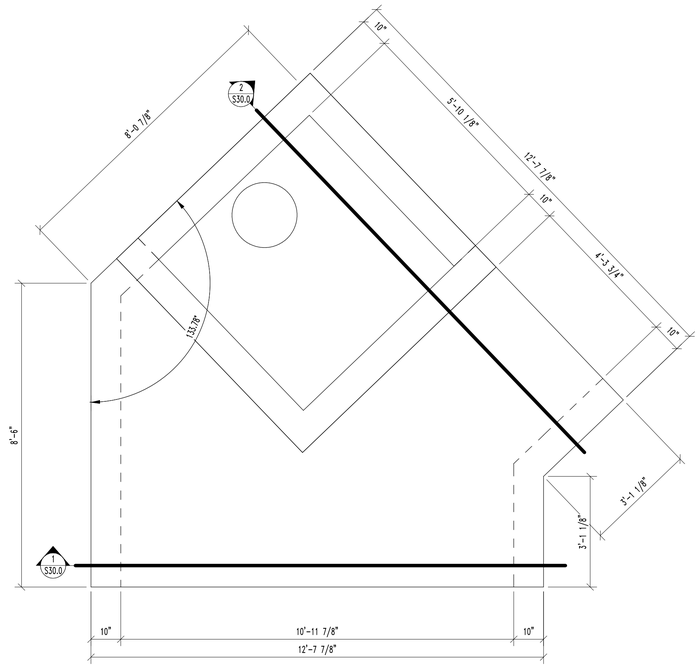
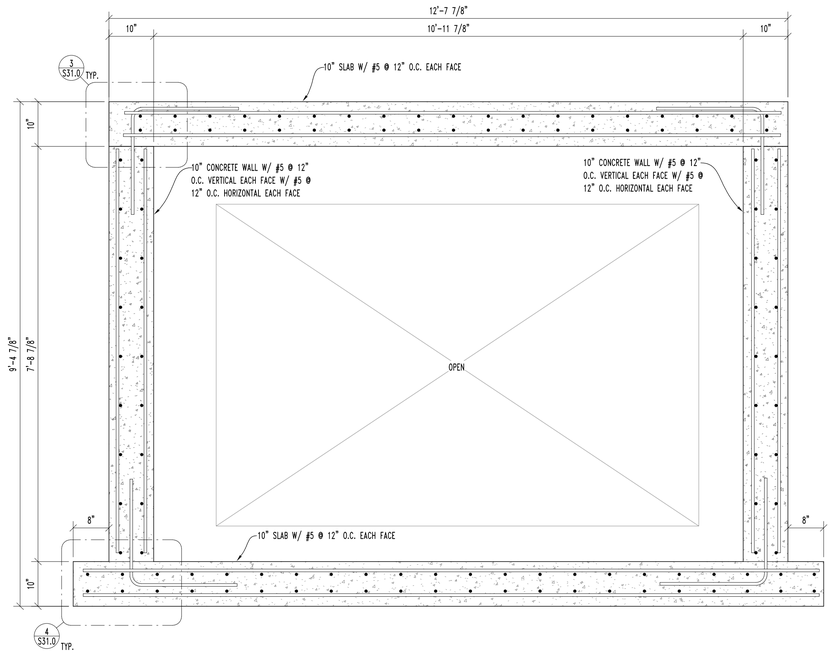
SEQUENCE NO.
OF
SHEET NO. S29.0



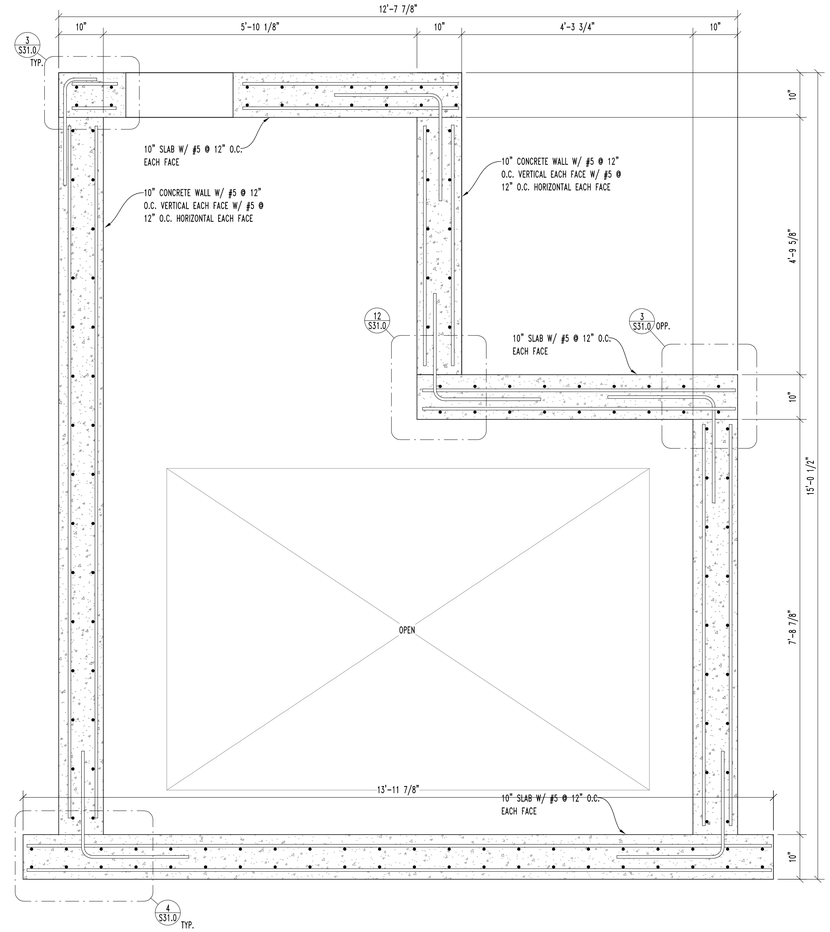
Q JUNCTION BOX 8

SCALE: 1/2" = 1'-0"



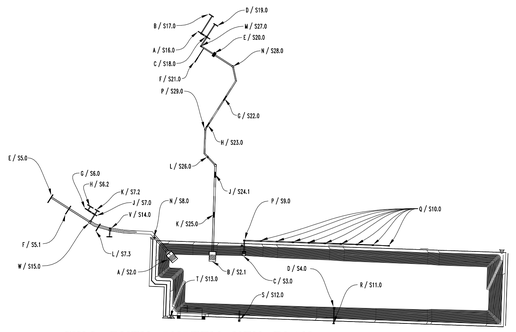
1 JUNCTION BOX 8 SECTION 1

SCALE: 3/4" = 1'-0"



2 JUNCTION BOX 8 SECTION 2

SCALE: 3/4" = 1'-0"



WILL RUTH SYSTEM KEY PLAN

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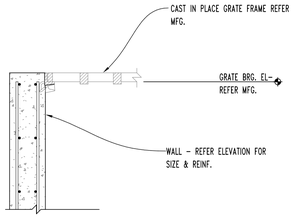
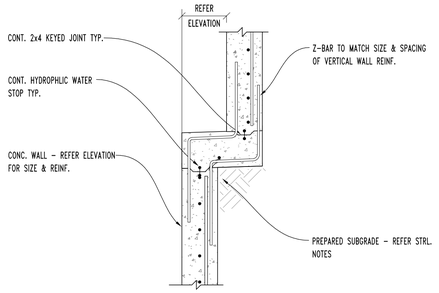
OF
SHEET NO. S30.0



1 SCALE: 3/4" = 1'-0"



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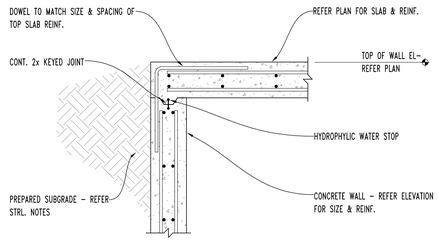

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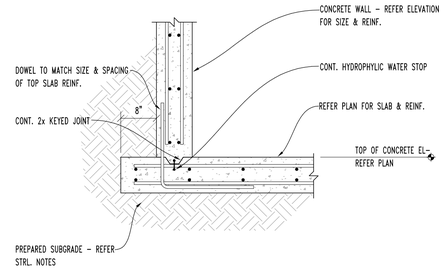
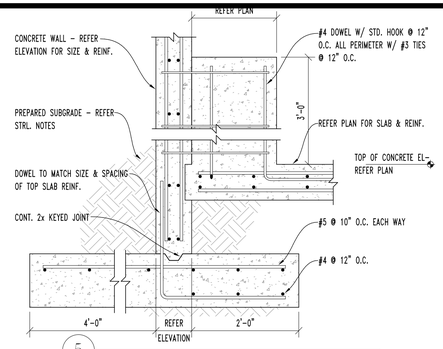
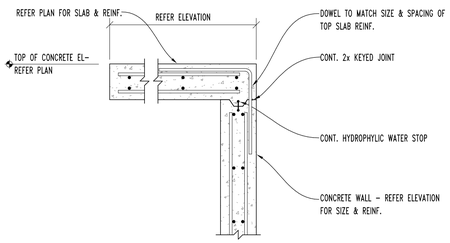


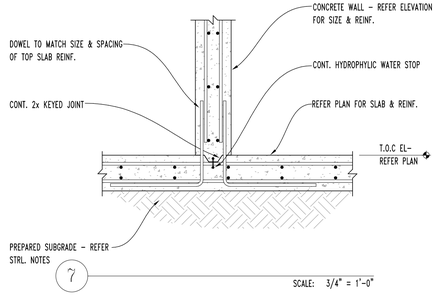
4 SCALE: 3/4" = 1'-0"



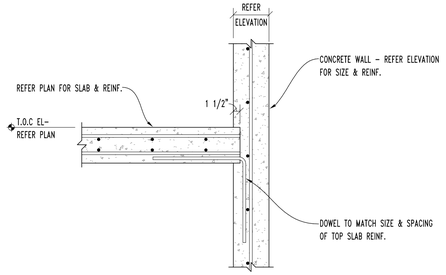
5 SCALE: 3/4" = 1'-0"



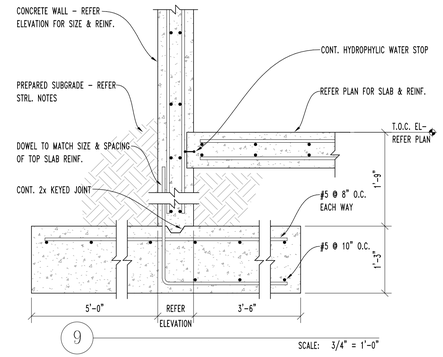
6 SCALE: 3/4" = 1'-0"



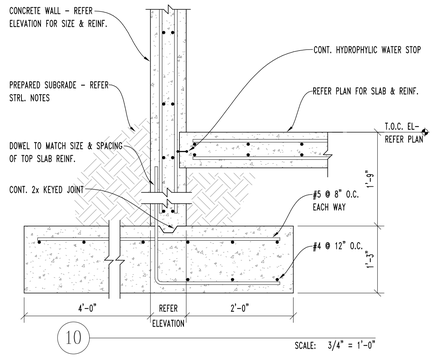
7 SCALE: 3/4" = 1'-0"



8 SCALE: 3/4" = 1'-0"



9 SCALE: 3/4" = 1'-0"



10 SCALE: 3/4" = 1'-0"

11 SCALE: 3/4" = 1'-0"

12 SCALE: 3/4" = 1'-0"

STUBBS ENGINEERING, INC.
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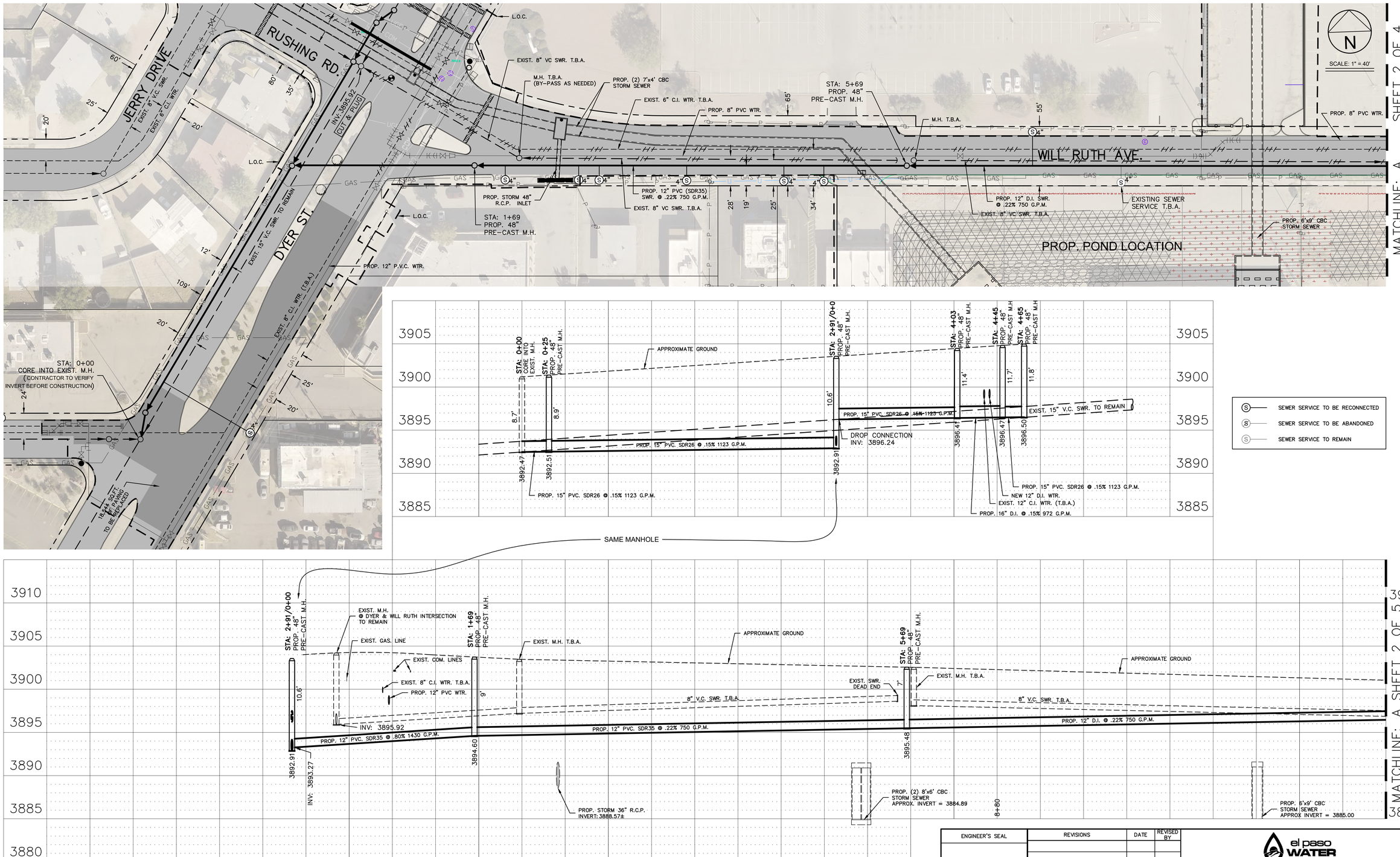
SHEET NO. S31.0



- (S) SEWER SERVICE TO BE RECONNECTED
- (S) SEWER SERVICE TO BE ABANDONED
- (S) SEWER SERVICE TO REMAIN

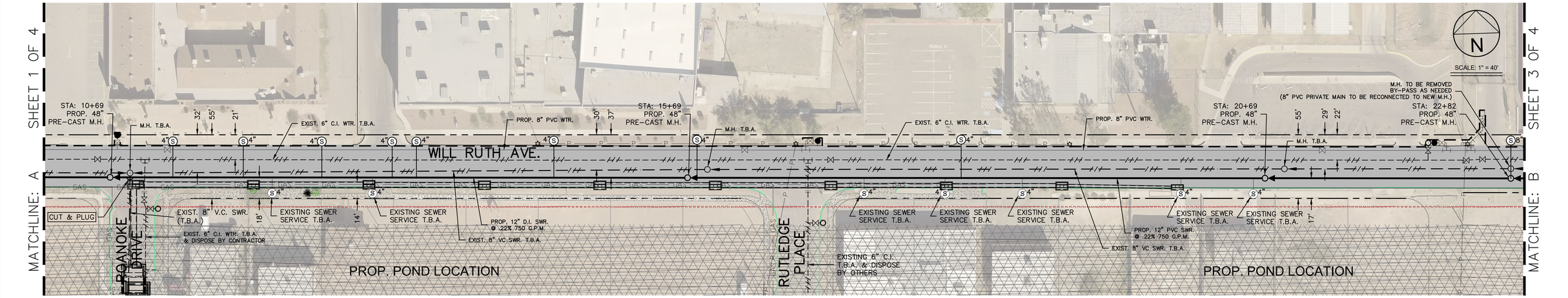
NOT FOR CONSTRUCTION

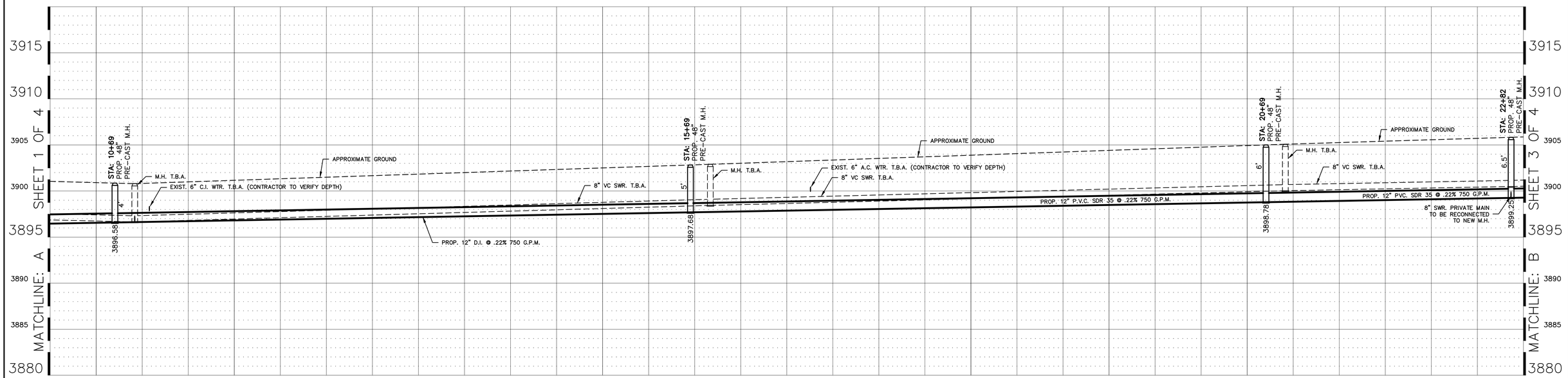
ENGINEER'S SEAL	REVISIONS	DATE	REVISED BY

el paso WATER

WILL RUTH POND SANITARY SEWER IMPROVEMENTS

SCALE	DRAWN BY	JOB NO.	DATE
HOR. 1" = 40'	R.A.R.	20-9034	01/08/20
VERT. 1" = 5'	CHECKED BY A.S.	DESIGNED BY A.C.	SHT 1 OF 5





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el paso WATER

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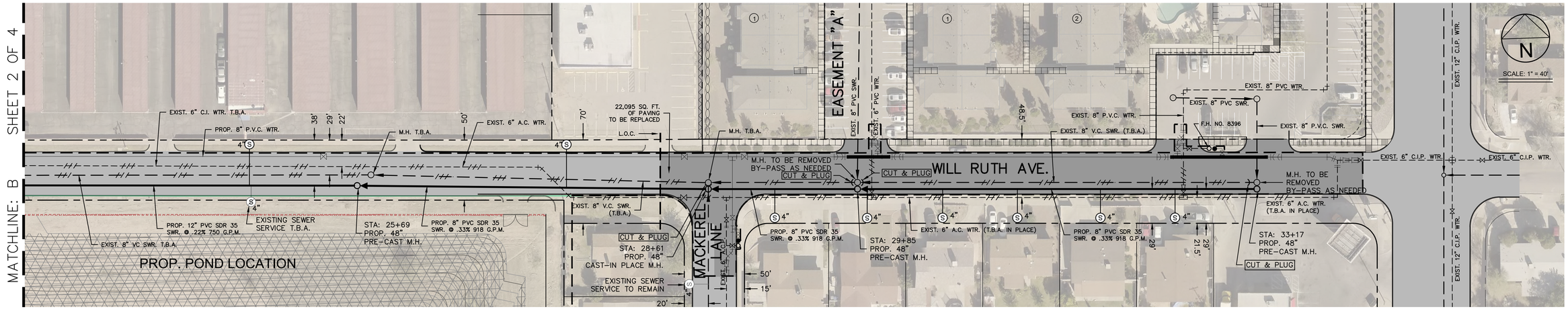

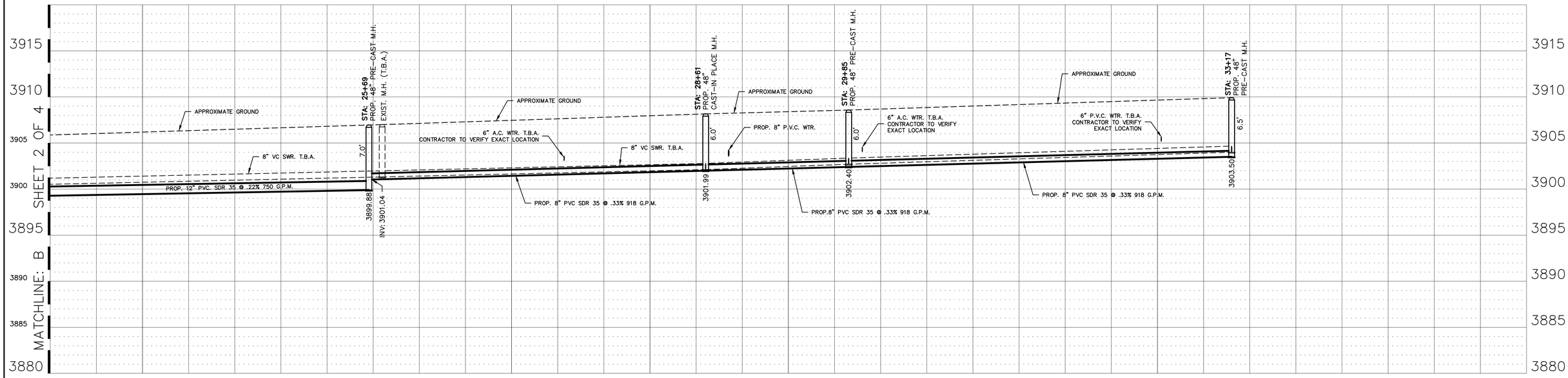

Ⓢ SEWER SERVICE TO BE RECONNECTED
Ⓢ SEWER SERVICE TO BE ABANDONED
Ⓢ SEWER SERVICE TO REMAIN

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ENGINEER'S SEAL	REVISIONS	DATE	REVISED BY

el paso WATER

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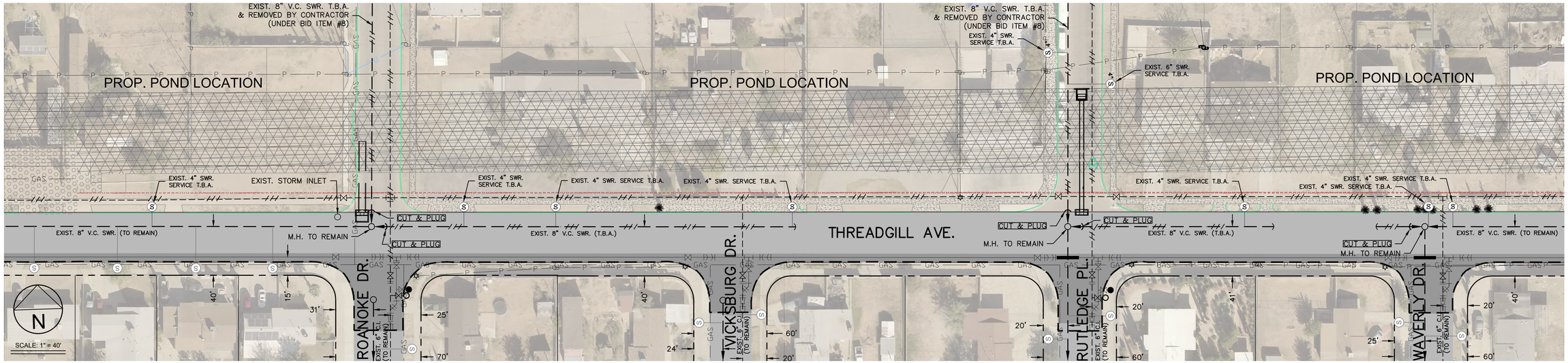
VERT. 1" = 5'	CHECKED BY A.S.	DESIGNED BY A.C.	SHT 3 OF 5



GENERAL NOTES

1.) CONTACT UTILITY COMPANIES FOR EXACT LOCATION OF UNDERGROUND UTILITIES IN THIS AREA BEFORE EXCAVATION.
2.) THIS WORK TO BE DONE IN CONJUNCTION WITH "WILL RUTH POND AND CONVEYANCE IMPROVEMENT" PROJECT.
3.) CONTRACTOR SHALL PAY CLOSE ATTENTION TO THE UTILITY SHEETS; COORDINATE SEQUENCE OF WORK, AND SHALL COORDINATE FIELD LOCATIONS OF ALL UTILITIES WITH THE APPROPRIATE UTILITY COMPANIES IN ORDER TO MINIMIZE CONFLICTS DURING WATER AND SANITARY SEWER CONSTRUCTION AND TO PREVENT DAMAGE TO ANY UTILITIES.
4.) INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES EXCEEDING A DEPTH OF 5–FEET AS PER O.S.H.A. STANDARDS.
6.) TxDOT UTILITY PERMIT REQUIRED BEFORE EXCAVATION ON DYER.
5.) CITY PAVING CUT PERMIT REQUIRED BEFORE EXCAVATING WITHIN CITY STREETS.
7.) WHEN EXISTING PAVEMENT AND BASE ARE TO BE CUT & RESTORED IN CITY ROW, CONTRACTOR SHALL PLACE 12–INCHES OF CEMENT STABILIZED BACKFILL (2–SACK) AND 2–INCHES OF ASPHALT. TYPE OF REPLACEMENT MATERIALS MUST BE APPROVED BY ENGINEER.
8.) WHEN EXISTING PAVEMENT AND BASE ARE TO BE CUT & RESTORED IN TxDOT ROW, CONTRACTOR SHALL PLACE CEMENT STABILIZED BACKFILL (2–SACK) AS NEEDED AND 5–INCHES OF ASPHALT. TYPE OF REPLACEMENT MATERIALS MUST BE APPROVED BY TxDOT.
9.) CONTRACTOR IS RESPONSIBLE FOR ACQUIRING AND PAYING ALL PERMITS ASSOCIATED WITH WATER AND SANITARY SEWER CONSTRUCTION.
10.) ALL EXISTING FACILITIES CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING WATER AND SANITARY SEWER LINES (INCLUDING SERVICES) FROM DAMAGE AS A RESULT OF CONSTRUCTION ACTIVITIES.
10.) RECONNECTION OF EXISTING FACILITIES SHOWN ON THIS PLAN MUST BE MADE SUCH THAT MINIMAL INTERRUPTION OF WATER AND SANITARY SEWER SERVICE TO CUSTOMER IS MADE.
11.) CONTRACTOR SHALL PROVIDE TEMPORARY SERVICE TO CUSTOMERS IF SERVICE WILL BE INTERRUPTED FOR MORE THAN 4 HOURS IN A 24–HOUR PERIOD AND SHALL ISSUE A 48–HOUR ADVANCE NOTICE TO THE CUSTOMERS WHOSE SERVICES WILL BE INTERRUPTED.
12.) ALL WORK REQUIRED TO SAW–CUT THE EXISTING PAVEMENT, EXISTING CONCRETE SIDEWALKS, EXISTING DRIVEWAYS, ETC., AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.
13.) USE CAUTION WHEN DIGGING IN THE AREA OF EXISTING ELECTRIC, GAS MAINS, AT&T ETC..
14.) BENCHMARK: CITY MONUMENT LOCATED AT CENTERLINE INTERSECTION OF RANCHITO AVENUE AND RUTLEDGE PLACE. ELEVATION: 3899.33 (NAVD 88) (BY RTK OBSERVATION)
15.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PRIVATE PROPERTY CAUSED BY THE CONSTRUCTION PROJECT. THE CONTRACTOR UPON RECEIPT OF A COMPLAINT OF DAMAGE, SHALL WITHIN 10 DAYS, RESPOND IN WRITING WITH A PROPOSAL TO REPAIR SAID DAMAGE.
16.) EMERGENCY RESPONSE NOTE: THE CONTRACTOR SHALL IMMEDIATELY CALL AND NOTIFY THE EL PASO WATER UTILITIES DISPATCHER AT 594–5775 OR 594–5778 WHEN A WATER OR SANITARY SEWER MAIN IS BROKEN DURING CONSTRUCTION EXCAVATION AND THE EXTEND OF THE BREAK FOR IMPLEMENTATION OF UTILITIES EMERGENCY RESPONSE ACTION PLAN. THE CONTRACTOR SHALL ALSO IMMEDIATELY NOTIFY THE EL PASO WATER UTILITIES FIELD INSPECTOR AND PROJECT ENGINEER ASSIGNED TO THE PROJECT.

(S) SEWER SERVICE TO BE RECONNECTED
(S) SEWER SERVICE TO BE ABANDONED
(S) SEWER SERVICE TO REMAIN

NOT FOR CONSTRUCTION

SANITARY SEWER NOTES

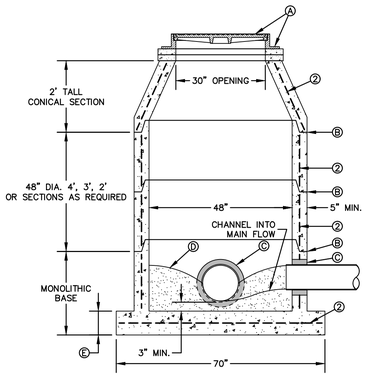
1.) PROVIDE MANHOLE ADAPTER WHERE PVC & D.I. PIPE CONNECTS TO MANHOLE.
2.) ALL PVC PIPE & D.I. ON THIS PLAN SHALL BE ENCASED WITH SELECT BEDDING MATERIAL.
3.) LOCATIONS OF EXISTING SANITARY SEWER SERVICES AT THE EXISTING MAINS WERE OBTAINED BY TELEVISING THE SANITARY SEWER MAINS, WHERE POSSIBLE. HOWEVER, THE SERVICE LOCATION AND DEPTH AT THE EXISTING OR NEW RIGHTS–OF–WAY ARE NOT AVAILABLE. CONTRACTOR SHALL VERIFY EXACT LOCATION OF SERVICES, AT AND WITH RESPECT TO THE NEW RIGHT–OF–WAY, PRIOR TO CONSTRUCTION.
4.) CONTRACTOR TO RECONNECT OR ABANDON EXISTING SEWER SERVICES PER PLANS TO NEW MAIN AND ADJUST LOCATION AND ELEVATION OF SERVICE AS NEEDED TO MAKE PROPER CONNECTION. SANITARY SEWER SERVICE INSTALLATION SHALL BE AS PER CITY'S PLUMBING CODES.
5.) CONTRACTOR TO EXTEND ANY NEW SANITARY SEWER SERVICE STUB–OUTS TO PROPOSED PROPERTY (RIGHT–OF–WAY) LINE.
6.) CONTRACTOR SHALL SET NEW TOP OF MANHOLE RIMS TO MATCH TEMPORARY TRAFFIC LANES AND FINISHED STREET GRADES.
7.) ALL NEW SANITARY SEWER LINES ARE TO BE COMPLETED, ACCEPTED FOR USE AND OPERATIONAL BEFORE THE EXISTING SANITARY SEWER LINES AND MANHOLES ARE ABANDONED.
8.) EXISTING SEWER LINES TO BE ABANDONED WILL BE CHECKED FOR FLOW BY INSERTING A PLUG IN THE DOWNSTREAM MANHOLE AND CHECKING DAILY FOR ACCUMULATION OF SEWAGE FOR A PERIOD OF ONE WEEK.
9.) SEWER LINES TO BE ABANDONED IN PLACE SHALL BE COMPLETELY DEWATERED BEFORE THEY ARE PLUGGED. THE LINES TO BE ABANDONED SHALL BE CUT AND PLUGGED AT ALL OPENINGS.
10.) AFTER IT HAS BEEN DETERMINED THAT THE LINE TO THE MANHOLE IS DEAD, THE ABANDONMENT OF THE MANHOLE WILL PROCEED.
11.) ABANDONMENT OF EXISTING MANHOLES WILL CONSIST OF CUTTING AND PLUGGING AT THE OUTSIDE OF THE MANHOLE ALL CONNECTING MAINS; REMOVAL OF CONE SECTION OR SUFFICIENT AMOUNT TO BE BELOW SUBGRADE; AND FILL WITH CEMENT STABILIZED BACKFILL (2 SACKS OF CEMENT PER CUBIC YARD OF SOIL) TO BOTTOM OF PROPOSED SUBGRADE. WHERE INDICATED ON THE PLANS, IN CONFLICT WITH PROPOSED LINES, OR DIRECTED BY THE ENGINEER, MANHOLE IS TO BE REMOVED AT NO ADDITIONAL COST TO THE OWNER. CSB UTILIZED FOR ABANDONMENT OF MANHOLES WILL NOT BE MEASURED SEPARATELY FOR PAYMENT, BUT SHALL BE CONSIDERED SUBSIDIARY TO THIS ITEM.
12.) REMOVAL OF SEWER SYSTEM AS NEEDED WILL NOT BE MEASURED SEPARATELY FOR PAYMENT, BUT SHALL BE CONSIDERED SUBSIDIARY TO BID ITEM #8
13.) BY–PASSING TO MAINTAIN SEWER MAINS AND SERVICES SHALL BE PROVIDED BY THE CONTRACTOR. ALL REQUIRED PLUGGING AND BYPASSING SHALL BE CONSIDERED SUBSIDIARY TO THE PARTICULAR SEWER WORK BEING DONE. AN EXISTING SEWER SYSTEM MAP OF THE PROJECT AREA CAN BE OBTAINED FROM EL PASO WATER UTILITIES AND IS AVAILABLE FOR REVIEW AT THEIR OFFICE, 1154 HAWKINS BLVD., EL PASO TX. 79925, DURING REGULAR BUSINESS HOURS.
14.) CONTRACTOR SHALL COORDINATE INSTALLATION OF NEW MANHOLES WITH FINISHED ROAD ELEVATIONS AND SHALL ADJUST NEW MANHOLES TO TEMPORARY AND FINISHED GRADES AS REQUIRED FOR CONSTRUCTION. PER SPECIFICATION, ALL ADJUSTMENT COSTS FOR NEW MANHOLES SHALL BE CONSIDERED SUBSIDIARY TO THE MANHOLE UNIT.
15.) CONTRACTOR TO INSTALL TEMPORARY SIPHON ON EXIST. SEWER MAINS AT CROSSINGS WITH PROP. SEWER MAIN IF NECESSARY TO RESOLVE ELEVATION CONFLICTS BETWEEN BOTH MAINS. NO ADDITIONAL COMPENSATION WILL BE PROVIDED FOR THIS WORK.
16.) CONTRACTOR TO CONFIRM INVERT ELEVATIONS OF ALL PROP. MANHOLES & MAINS CONNECTING TO EXISTING SANITARY SEWER MAINS PRIOR TO CONSTRUCTION.
17.) INSTALLATION OF PROP. SANITARY SEWER MAINS, MANHOLES AND SERVICE RECONNECTION SHALL ALSO INCLUDE REMOVAL OF EXISTING SEWER FACILITIES SCHEDULED FOR ABANDONMENT, INCLUDING BUT NOT LIMITED TO MANHOLES, MAINS AND SERVICES AS NECESSARY FOR PROPER INSTALLATION OF PROP. SANITARY SEWER IMPROVEMENTS.

ENGINEER'S SEAL	REVISIONS	DATE	REVISED BY

el paso WATER

WILL RUTH POND SANITARY SEWER IMPROVEMENTS

SCALE	DRAWN BY	JOB NO.	DATE
HOR. 1" = 40'	R.A.R.	20–9034	01/08/20
VERT. 1" = 5'	CHECKED BY A.S.	DESIGNED BY A.C.	SHT 4 OF 5

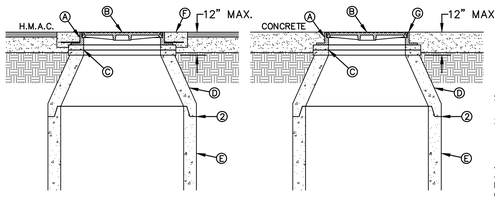


SECTION

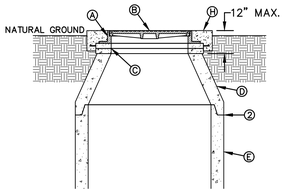
GENERAL NOTES:
1. MANHOLE TYPE "A" SHALL BE USED FOR LINES 21" AND SMALLER.
2. PRE-CAST MANHOLE SECTIONS SHALL BE OF REINFORCED CONCRETE CONFORMING TO ASTM C-478 AND SHALL MEET HS-20 LOADING. PROVIDE REINFORCEMENT WITHIN 3" ø OPENINGS OR KNOCKOUTS, OPENINGS (UP TO 8") MADE IN FIELD SHALL BE CORE DRILLED.
3. CEMENT SHALL BE TYPE I-II, PER ASTM C-150, AND MUST CONTAIN A MINIMUM OF 4% FLY ASH OF THE TOTAL MANHOLE WEIGHT.
4. THE BASE & RISER SHALL BE INTEGRALLY CAST. CONCRETE SHALL BE MIN. 28 DAY COMPRESSIVE STRENGTH 4000psi.
5. MANUFACTURER TO PROVIDE LIFTERS OF ADEQUATE SIZE AS NEEDED.
6. THE SUBGRADE UNDER THE BASE SHALL BE COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM D-1557.
7. MANHOLES BELOW GROUNDWATER TO BE EXTERNALLY AND INTERNALLY COATED WITH BITUMINOUS COATING.

CONSTRUCTION KEY NOTES:
A. MANHOLE RING AND COVER (SEE DETAILS 377 & 378). SET FRAME AND COVER FLUSH WITH ROADWAY SURFACE OR FINISHED GRADE (SEE DETAIL 185).
B. ALL JOINTS TO BE TONGUE, GROOVE AND SEALED WITH RAM-NEK OR APPROVED EQUAL.
C. PIPE OPENINGS/KNOCKOUTS AS REQUIRED TO FIT PIPE SIZE AND SHALL HAVE FLEXIBLE PIPE TO MANHOLE CONNECTORS (COMPRESSION TYPE ASTM-923), "KOR-N-SEAL" OR APPROVED EQUAL.
D. GROUT AS REQUIRED.
E. CONCRETE BASE SHALL BE 8" FOR MH's UP TO 12' DEEP AND 12" FOR DEPTHS GREATER THAN 12'.

MANHOLE TYPE "A"
DETAIL No. **370-1** N.T.S.



ASPHALT ROADWAY CONCRETE ROADWAY

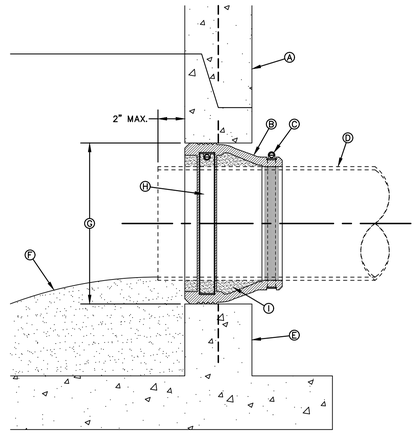


UNPAVED AREAS

GENERAL NOTES:
1. MANHOLE TYPE SHALL BE AS SHOWN ON THE PLANS.
2. SEAL JOINTS PER SPECIFICATIONS.

CONSTRUCTION KEY NOTES:
A. MANHOLE RING (SEE DETAIL 377).
B. MANHOLE COVER (SEE DETAIL 378).
C. CONCRETE ADJUSTMENT RINGS AS REQUIRED.
D. MANHOLE CONE SECTION.
E. MANHOLE BARREL SECTION.
F. CONCRETE COLLAR (SEE DETAIL 184-1) FLUSH WITH TOP OF H.M.A.C.
G. MANHOLE RING FLUSH WITH TOP OF CONCRETE, CONCRETE COLLAR NOT NEEDED.
H. CONCRETE APRON (SEE DETAIL 184-2) FLUSH WITH MANHOLE RING AND 2" ABOVE NATURAL GROUND.

MANHOLE RING AND COVER INSTALLATION
DETAIL No. **185** N.T.S.

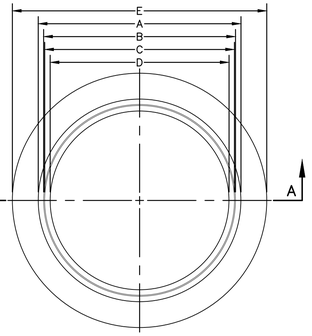


SECTION

GENERAL NOTES:
1. MANHOLE CONNECTOR SHALL BE KOR-N-SEAL OR EQUAL MEETING THE REQUIREMENTS OF ASTM C-923. CONNECTOR SHALL BE FURNISHED BY CONTRACTOR.

CONSTRUCTION KEY NOTES:
A. PRECAST MANHOLE BARREL.
B. FLEXIBLE CONNECTOR.
C. PIPE CLAMP SS 316.
D. APPROVED PIPE.
E. PRECAST MANHOLE BASE.
F. GROUT AS REQUIRED TO FORM SMOOTH CHANNEL TO MANHOLE INVERT.
G. PIPE OPENINGS/KNOCKOUTS AS REQUIRED TO FIT PIPE SIZE.
H. EXPANSION BAND SS 316.
I. FILL SPACE WITH GROUT.

PIPE CONNECTION TO MANHOLE
DETAIL No. **376** N.T.S.

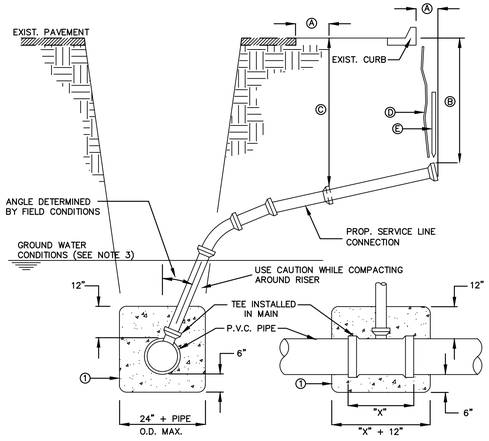


GENERAL NOTES:
1. MATCHING SURFACES MARKED "MF" TO BE FINISHED OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.
2. CASTING TO BE SMOOTH & VOID OF AIR HOLES.
3. CASTING MUST MEET REQUIREMENTS OF AASHTO M306-07.
4. AS-CAST DIMENSIONS MAY VARY ⅛"± / PER FOOT (AASHTO M306-07).
5. WEIGHT MAY VARY 5%± (AASHTO M306-07).

MANHOLE RING	MANHOLE - ALL TYPES	*MANHOLE TYPE A, A1, A2 & C
A	33"	25½"
B	31¾"	24⅛"
C	31½"	23⅞"
D	30"	22½"
E	39½"	32"
F	⅝"	1/16"
WEIGHT	205 lbs.	170 lbs.

***OBSOLETE -DO NOT USE (FOR REFERENCE ONLY)**

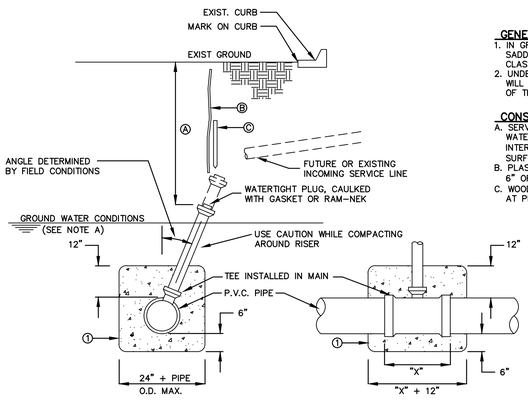
SEWER MANHOLE RING
DETAIL No. **377** N.T.S.



GENERAL NOTES:
1. IN GROUNDWATER CONDITIONS ONLY, P.V.C. SADDLES OR TEES ARE TO BE ENCASED WITH CLASS B CONCRETE.
2. UNDER CERTAIN CONDITIONS FIELD INVESTIGATIONS WILL BE REQUIRED TO DETERMINE THE ADEQUACY OF THE DEPTH ON THE LATERAL.
3. WHEN GROUND WATER IS ENCOUNTERED SERVICE RISER SHALL BE EXTENDED ABOVE ANTICIPATED WATER TABLE LEVEL.

CONSTRUCTION KEY NOTES:
A. CONTRACTOR TO INSTALL SEWER SERVICE LINE FROM THE MAIN TO A LOCATION 6" BEHIND THE CURB OR 18" BEYOND THE EDGE OF PAYMENT, UNLESS CONDITIONS REQUIRE OTHERWISE.
B. 18" FOR STANDARD SUBDIVISION, 3.5' FOR SUBDIVISIONS WITH ON-SITE PONDING OR FLAT TERRAIN.
C. RISERS OR LATERALS EXTENDING BEYOND EXISTING PAVING SHALL BE INSTALLED TO 3.5' MINIMUM TOP OF GROUND OR PAVEMENT, UNLESS CONDITIONS REQUIRE OTHERWISE.
D. PLASTIC METALLIC MARKING TAPE RISING TO WITHIN 6" OF GROUND SURFACE OR METALLIC DISK.
E. WOODEN STAKE (1"x2"x36") VERTICALLY PLACED AT PLUGGED END OF PROPOSED SERVICE LINE.

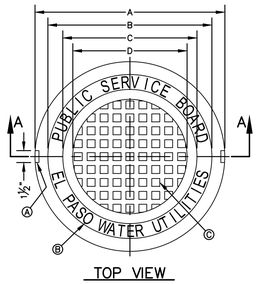
SEWER SERVICE RISER AND SERVICE LINE CONNECTION
DETAIL No. **391** N.T.S.



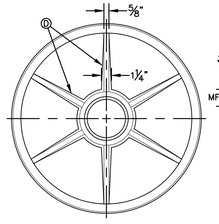
GENERAL NOTES:
1. IN GROUNDWATER CONDITIONS ONLY, P.V.C. SADDLES OR TEES ARE TO BE ENCASED WITH CLASS B CONCRETE.
2. UNDER CERTAIN CONDITIONS FIELD INVESTIGATIONS WILL BE REQUIRED TO DETERMINE THE ADEQUACY OF THE DEPTH ON THE LATERAL.

CONSTRUCTION KEY NOTES:
A. SERVICE LINE TO BE EXTENDED ABOVE GROUND WATER LEVEL OR TO A DEPTH OF THE INTERSECTING SERVICE LINE, OR TO WITHIN 6' OF SURFACE (WHICH EVER IS APPROPRIATE & SAFER).
B. PLASTIC METALLIC MARKING TAPE RISING TO WITHIN 6" OF GROUND SURFACE OR METALLIC DISK.
C. WOODEN STAKE (1"x2"x36") VERTICALLY PLACED AT PLUGGED END OF RISER.

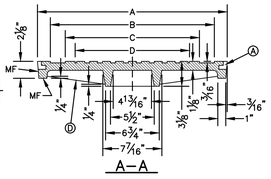
SEWER SERVICE RISER CONNECTION
DETAIL No. **390** N.T.S.

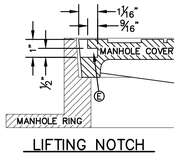


TOP VIEW



BOTTOM VIEW





LIFTING NOTCH

MANHOLE COVER	MANHOLE - ALL TYPES	*MANHOLE TYPE A, A1, A2 & C
A	31⅜"	23⅞"
B	28⅛"	20⅞"
C	24⅜"	16⅞"
D	21⅞"	14⅜"
WEIGHT	200 lbs.	165 lbs.

***OBSOLETE -DO NOT USE (FOR REFERENCE ONLY)**

SEWER MANHOLE COVER
DETAIL No. **378** N.T.S.

GENERAL NOTES:
1. MATCHING SURFACES MARKED "MF" TO BE FINISHED OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.
2. CASTING TO BE SMOOTH & VOID OF AIR HOLES.
3. CASTING MUST MEET REQUIREMENTS OF AASHTO M306-07.
4. AS-CAST DIMENSIONS MAY VARY ⅛"± / PER FOOT (AASHTO M306-07).
5. WEIGHT MAY VARY 5%± (AASHTO M306-07).

CONSTRUCTION KEY NOTES:
A. LIFTING NOTCH.
B. ¾" RAISED LETTERING.
C. 1" SQUARES (3/16" TALL) WITH ⅝" SPACE BETWEEN.
D. REINFORCING RIBS.
E. SLOT.

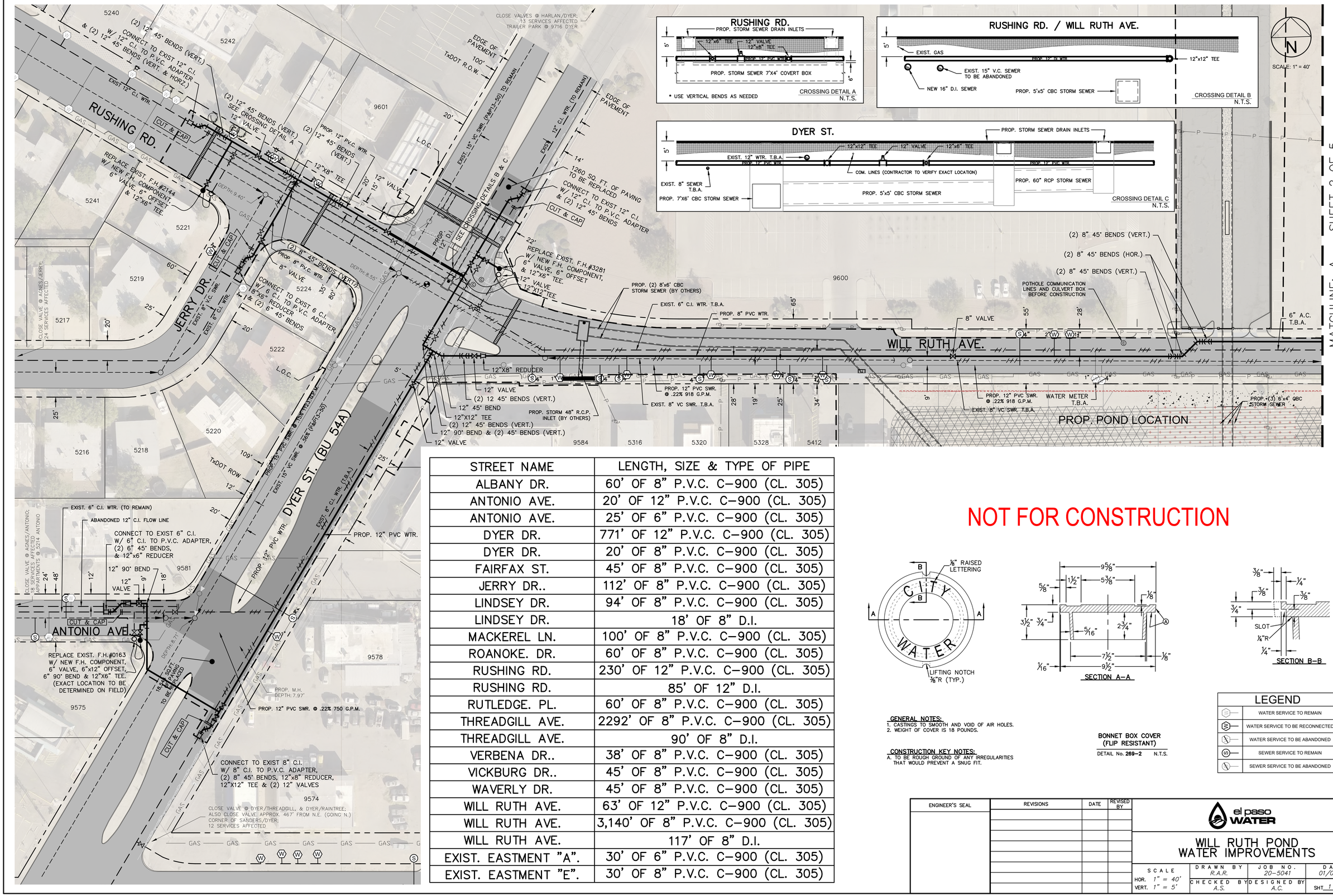
NOT FOR CONSTRUCTION

ENGINEER'S SEAL	REVISIONS	DATE	REVISED BY

el paso WATER

WILL RUTH POND SANITARY SEWER IMPROVEMENTS

SCALE	DRAWN BY	JOB NO.	DATE
HOR. 1" = 40'	R.A.R.	20-9034	01/08/20
VERT. 1" = 5'	CHECKED BY A.S.	DESIGNED BY A.C.	SHT 5 OF 5



STREET NAME	LENGTH, SIZE & TYPE OF PIPE
ALBANY DR.	60' OF 8" P.V.C. C-900 (CL. 305)
ANTONIO AVE.	20' OF 12" P.V.C. C-900 (CL. 305)
ANTONIO AVE.	25' OF 6" P.V.C. C-900 (CL. 305)
DYER DR.	771' OF 12" P.V.C. C-900 (CL. 305)
DYER DR.	20' OF 8" P.V.C. C-900 (CL. 305)
FAIRFAX ST.	45' OF 8" P.V.C. C-900 (CL. 305)
JERRY DR..	112' OF 8" P.V.C. C-900 (CL. 305)
LINDSEY DR.	94' OF 8" P.V.C. C-900 (CL. 305)
LINDSEY DR.	18' OF 8" D.I.
MACKEREL LN.	100' OF 8" P.V.C. C-900 (CL. 305)
ROANOKE. DR.	60' OF 8" P.V.C. C-900 (CL. 305)
RUSHING RD.	230' OF 12" P.V.C. C-900 (CL. 305)
RUSHING RD.	85' OF 12" D.I.
RUTLEDGE. PL.	60' OF 8" P.V.C. C-900 (CL. 305)
THREADGILL AVE.	2292' OF 8" P.V.C. C-900 (CL. 305)
THREADGILL AVE.	90' OF 8" D.I.
VERBENA DR..	38' OF 8" P.V.C. C-900 (CL. 305)
VICKBURG DR..	45' OF 8" P.V.C. C-900 (CL. 305)
WAVERLY DR.	45' OF 8" P.V.C. C-900 (CL. 305)
WILL RUTH AVE.	63' OF 12" P.V.C. C-900 (CL. 305)
WILL RUTH AVE.	3,140' OF 8" P.V.C. C-900 (CL. 305)
WILL RUTH AVE.	117' OF 8" D.I.
EXIST. EASTMENT "A".	30' OF 6" P.V.C. C-900 (CL. 305)
EXIST. EASTMENT "E".	30' OF 8" P.V.C. C-900 (CL. 305)

NOT FOR CONSTRUCTION

GENERAL NOTES:
1. CASTINGS TO SMOOTH AND VOID OF AIR HOLES.
2. WEIGHT OF COVER IS 18 POUNDS.

CONSTRUCTION KEY NOTES:
A. TO BE ROUGH GROUND OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.

BONNET BOX COVER (FLIP RESISTANT)
DETAIL No. **269-2** N.T.S.

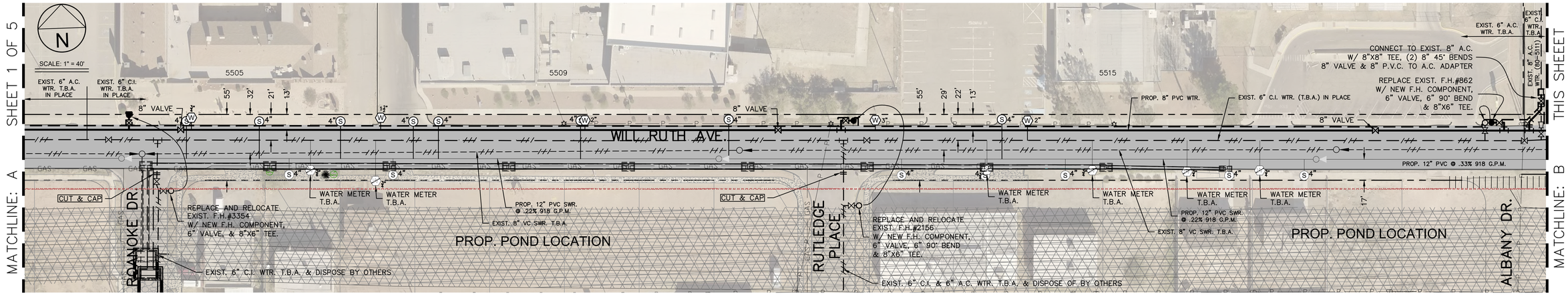
LEGEND	
	WATER SERVICE TO REMAIN
	WATER SERVICE TO BE RECONNECTED
	WATER SERVICE TO BE ABANDONED
	SEWER SERVICE TO REMAIN
	SEWER SERVICE TO BE ABANDONED

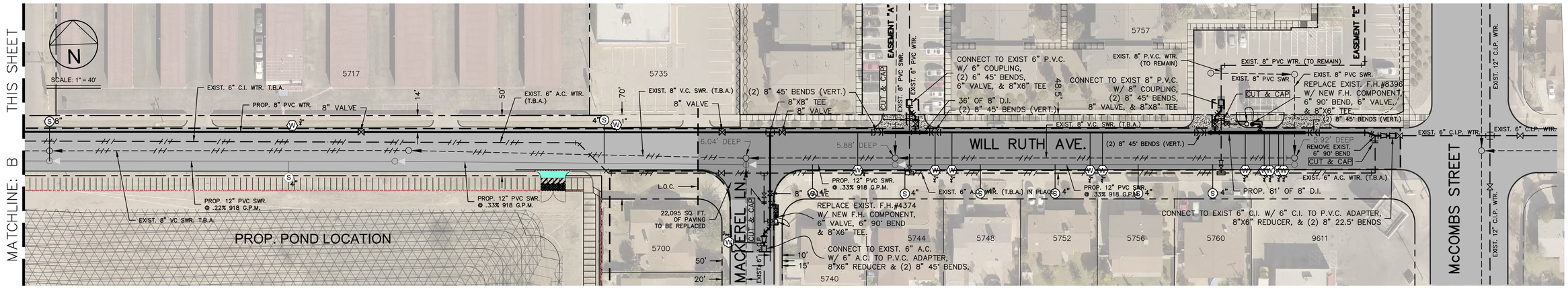
ENGINEER'S SEAL	REVISIONS	DATE	REVISED BY

el paso WATER

WILL RUTH POND WATER IMPROVEMENTS

SCALE	DRAWN BY	JOB NO.	DATE
HOR. 1" = 40'	R.A.R.	20-5041	01/08/20
VERT. 1" = 5'	CHECKED BY A.S.	DESIGNED BY A.C.	SHT 1 OF 5





GENERAL NOTES

1.) CONTACT UTILITY COMPANIES FOR EXACT LOCATION OF UNDERGROUND UTILITIES IN THIS AREA BEFORE EXCAVATION.
2.) THIS WORK TO BE DONE IN CONJUNCTION WITH "WILL RUTH POND AND CONVEYANCE IMPROVEMENT" PROJECT.
3.) CONTRACTOR SHALL PAY CLOSE ATTENTION TO THE UTILITY SHEETS; COORDINATE SEQUENCE OF WORK, AND SHALL COORDINATE FIELD LOCATIONS OF ALL UTILITIES WITH THE APPROPRIATE UTILITY COMPANIES IN ORDER TO MINIMIZE CONFLICTS DURING WATER AND SANITARY SEWER CONSTRUCTION AND TO PREVENT DAMAGE TO ANY UTILITIES.
4.) INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES EXCEEDING A DEPTH OF 5–FEET AS PER O.S.H.A. STANDARDS.
5.) TxDOT AND CITY PAVING CUT PERMIT REQUIRED BEFORE EXCAVATING WITHIN STREETS.
6.) WHEN EXISTING PAVEMENT AND BASE ARE TO BE CUT & RESTORED, CONTRACTOR SHALL PLACE 12–INCHES OF CEMENT STABILIZED BACKFILL (2–SACK) AND 5–INCHES OF ASPHALT. TYPE OF REPLACEMENT MATERIALS MUST BE APPROVED BY TxDOT.
7.) CONTRACTOR IS RESPONSIBLE FOR ACQUIRING AND PAYING ALL PERMITS ASSOCIATED WITH WATER AND SANITARY SEWER CONSTRUCTION.
8.) ALL EXISTING FACILITIES CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING WATER AND SANITARY SEWER LINES (INCLUDING SERVICES) FROM DAMAGE AND PROVIDE NECESSARY ASSISTANCE TO FACILITIES AS A RESULT OF CONSTRUCTION ACTIVITIES.
9.) RECONNECTION OF EXISTING FACILITIES SHOWN ON THIS PLAN MUST BE MADE SUCH THAT MINIMAL INTERRUPTION OF WATER AND SANITARY SEWER SERVICE TO CUSTOMER IS MADE.
10.) ALL WORK REQUIRED TO SAW–CUT THE EXISTING PAVEMENT, EXISTING CONCRETE SIDEWALKS, EXISTING DRIVEWAYS, ETC., AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.
11.) USE CAUTION WHEN DIGGING IN THE AREA OF EXISTING ELECTRIC, GAS MAINS, AT&T ETC..
12.) BENCHMARK: CITY MONUMENT LOCATED AT CENTERLINE INTERSECTION OF RANCHITO AVENUE AND RUTLEDGE PLACE. ELEVATION: 3899.33 (NAVD 88)
13.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PRIVATE PROPERTY CAUSED BY THE CONSTRUCTION PROJECT. THE CONTRACTOR UPON RECEIPT OF A COMPLAINT OF DAMAGE, SHALL WITHIN 10 DAYS, RESPOND IN WRITING WITH A PROPOSAL TO REPAIR SAID DAMAGE.
14.) EMERGENCY RESPONSE NOTE: THE CONTRACTOR SHALL IMMEDIATELY CALL AND NOTIFY THE EL PASO WATER UTILITIES DISPATCHER AT 594–5775 OR 594–5778 WHEN A WATER OR SANITARY SEWER MAIN IS BROKEN DURING CONSTRUCTION EXCAVATION AND THE EXTEND OF THE BREAK FOR IMPLEMENTATION OF UTILITIES EMERGENCY RESPONSE ACTION PLAN. THE CONTRACTOR SHALL ALSO IMMEDIATELY NOTIFY THE EL PASO WATER UTILITIES FIELD INSPECTOR AND PROJECT ENGINEER ASSIGNED TO THE PROJECT.

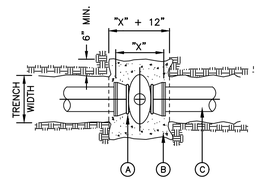
NOT FOR CONSTRUCTION

WATER NOTES

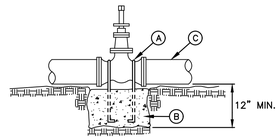
1.) DUE TO COVID–19 CIRCUMSTANCES CONTRACTOR IS RESPONSIBLE FOR ANY COORDINATION WITH EPWATER OFFICIALS WHEN REQUESTING WATER SYSTEM SHUT–OFFS FOR WATER MAIN TIE–INS TO BE PERFORMED AT 10 P.M. WITHIN 4 HOURS AND ENSURE THAT A PROPER WATER SHUT–OFF PLAN IS DEVELOPED WHICH SHALL INCLUDE AND PROVIDE THE FOLLOWING: SCHEDULE SITE MEETING 72 HOURS PRIOR TO SHUT–OFF DATE TO DISCUSS PROPOSED WATER SHUT–OFF PLAN, APPROVED AND INSTALLED TCP , MATERIALS TO BE ON SITE, TIE–IN LOCATIONS TO BE POT–HOLED OR EXPOSED BEFORE PERFORMING THE TIE–IN TO VERIFY SIZE & TYPE OF EXISTING PIPE, AND PROVIDE 48–HOUR ADVANCE NOTICE WITH 3 GALLONS OF WATER PER EACH SERVICE BEING IMPACT BY THE SHUT–OFF.
2.) PROVIDE BOTH ADEQUATE CONCRETE THRUST BLOCKING AND MECHANICAL RESTRAINT DEVICES AT THE FOLLOWING: TAPPING SLEEVES, TEES, BENDS, PLUGS, AND ALL FITTINGS.
3.) ALL P.V.C. & D.I. PIPE ON THIS PLAN SHALL BE ENCASED WITH SELECT BEDDING MATERIAL.
4.) ALL VALVES ON PVC OR D.I. WATER MAINS SHALL BE ANCHORED IN CONCRETE, AS PER DETAILS AND SPECIFICATIONS.
5.) INSTALL 6" AND 8" NEW WATER LINE WITH MIN. OF 4 FEET OF COVER UNDER PROP. FINISHED GRADE.
6.) INSTALL 12" NEW WATER LINE WITH MIN. OF 5 FEET OF COVER UNDER PROP. FINISHED GRADE.
7.) LOCATION OF EXISTING WATER SERVICES IS APPROXIMATE. CONTRACTOR SHALL VERIFY EXACT LOCATION OF SERVICES, AT AND WITH RESPECT TO THE NEW RIGHT–OF–WAY, PRIOR TO CONSTRUCTION.
8.) LOCATION OF NEW FIRE HYDRANTS TO BE DETERMINED IN THE FIELD FOLLOWING THE EL PASO WATER STANDARD DETAIL 282.
9.) BYPASS OF EXISTING WATER MAINS AND/OR SERVICES TO ASSIST IN CONSTRUCTION ACTIVITIES SHALL BE SUBSIDIARY TO THE WATER SYSTEM CONSTRUCTION.
10.) WHEN IN CONFLICT WITH PURPOSED UTILITIES, REMOVAL OF EXISTING ASBESTOS CEMENT PIPE SCHEDULE TO BE ABANDONED IN PLACE SHALL BE HANDLE AND DISPOSED IN ACCORDANCE WITH STATE REQUIREMENTS & SPECIFICATIONS; COORDINATION WITH EPWATER OFFICIALS WILL BE REQUIRED AND FINAL DECISION FOR REMOVAL OF ASBESTOS PIPE WILL BE DETERMINED BY EPWATER.
11.) REMOVAL OF WATER SYSTEM AS NEEDED WILL NOT BE MEASURED SEPARATELY FOR PAYMENT, BUT SHALL BE CONSIDERED SUBSIDIARY TO BID ITEM #8
12.) ALL PRESSURIZED PVC PIPE SHALL BE MARKED WITH DUAL INDICATOR LINES AT THE SPIGOT END INDICATING PROPER PENETRATION WHEN THE JOINT IS ASSEMBLED. IN LIEU OF DUAL LINES, BELL PROTECTION SYSTEM AT EACH JOINT TO PREVENT OVER INSERTION MAY BE USED.

PROJECT OVERVIEW AND SEQUENCE OF WORK (AT NO ADDITIONAL COST TO THE OWNER

1.) THIS WORK TO BE DONE IN CONJUNCTION WITH "WILL RUTH POND AND CONVEYANCE IMPROVEMENTS" PROJECT.
2.) CONTRACTOR SHALL COORDINATE WATER AND SANITARY SEWER SYSTEM CONSTRUCTION AND SEQUENCE OF WORK WITH CITY TRAFFIC CONTROL AND TxDOT TRAFFIC CONROL PLANS. ANY ADJUSTMENTS AND/OR MODIFICATIONS TO THE EXISTING TRAFFIC CONTROL PLANS THAT ARE REQUIRED FOR THE WATER AND SANITARY SEWER SYSTEM CONSTRUCTION WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE TRAFFIC CONTROL BID ITEM INCLUDING NIGHTTIME AND WEEKEND WORK AS NEEDED.
3.) THE CONTRACTOR MAY NEED TO WORK DURING OFF–HOURS, NIGHTS AND/OR WEEKENDS TO INSTALL THE WATER AND SANITARY SEWER MAINS AND TO EXTEND SERVICES ACROSS THE STREET TO ASSURE ADEQUATE CONSTRUCT ABILITY AND OPERATION OF THESE TWO SYSTEMS.
4.) WATER AND SANITARY SEWER MAIN AND ASSOCIATED SERVICE LINE INSTALLATION MAY REQUIRE THAT CERTAIN PORTIONS OF THIS WORK BE PERFORMED OUTSIDE THE RESPECTIVE WORK ZONE AREA LIMITS SHOWN ON THE PLANS FOR CONSTRUCTION. THEREFORE, THE WORK ZONE AREA LIMITS SHALL BE INCREASED, EXTENDED AND/OR MODIFIED AS NEEDED TO ACCOMMODATE THIS WORK.



PLAN



SECTION

GENERAL NOTES:
1. THE ENGINEER SHALL PROVIDE DESIGN FOR ALL VALVES GREATER THAN 12".
2. COMPLY WITH REQUIREMENTS OF AWWA C–550, PROTECTIVE EPOXY INTERIOR COATINGS FOR VALVES.

CONSTRUCTION KEY NOTES:
A. TWO No. 5 REBAR HAIR PINS. PAINT UNEMBEDDED PORTION OF REBARS WITH TWO COATS OF COAL TAR EPOXY.
B. CONCRETE VALVE SUPPORT, 2500 PSI. CONCRETE.
C. APPROVED PIPE.

VALVE ANCHOR
DETAIL No. 271 N.T.S.

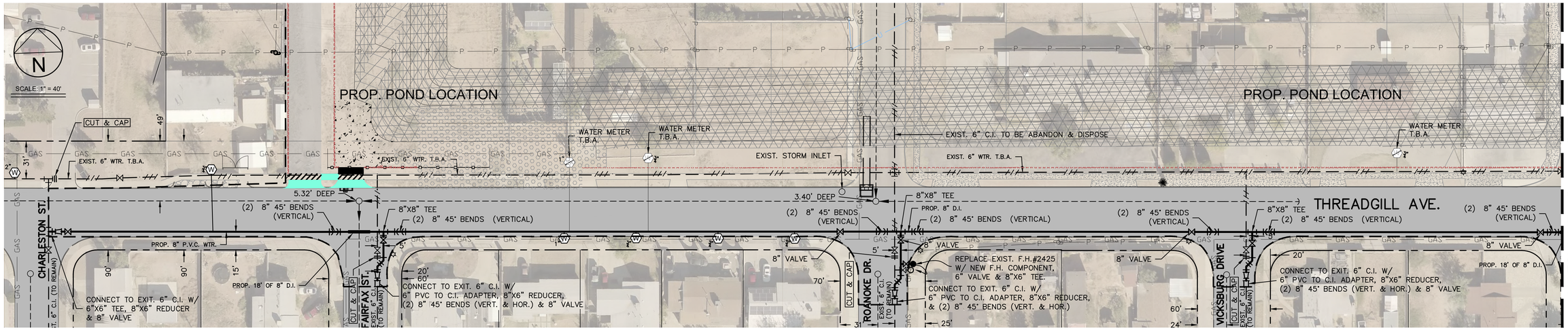
LEGEND	
	WATER SERVICE TO REMAIN
	WATER SERVICE TO BE RECONNECTED
	WATER SERVICE TO BE ABANDONED

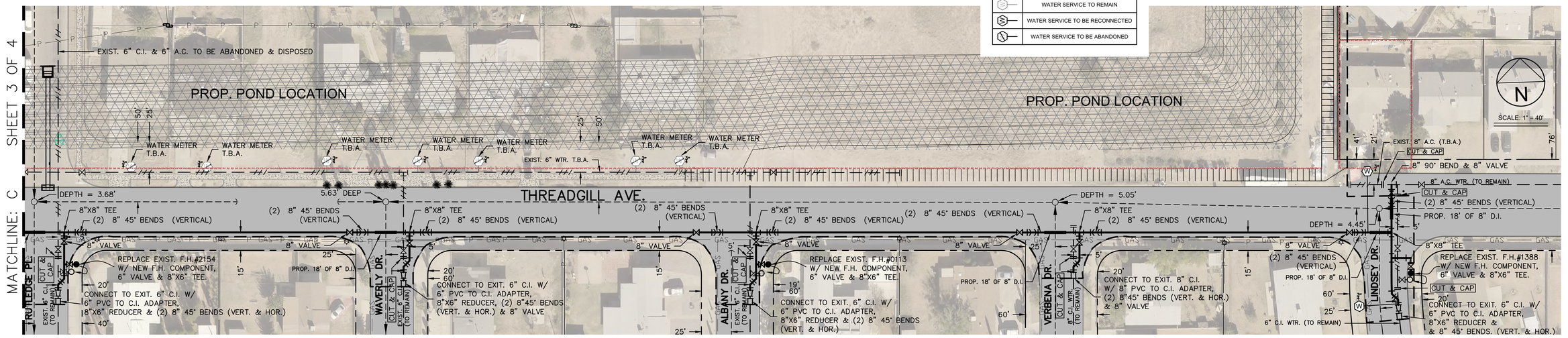
ENGINEER'S SEAL	REVISIONS	DATE	REVISED BY

el paso WATER

WILL RUTH POND WATER IMPROVEMENTS

SCALE	DRAWN BY	JOB NO.	DATE
HOR. 1" = 40'	R.A.R.	20–5041	01/08/20
VERT. 1" = 5'	CHECKED BY A.S.	DESIGNED BY A.C.	SHT 2 OF 5



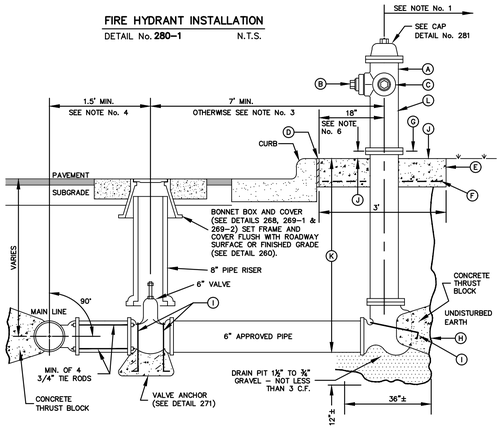


LEGEND

	WATER SERVICE TO REMAIN
	WATER SERVICE TO BE RECONNECTED
	WATER SERVICE TO BE ABANDONED

FIRE HYDRANT INSTALLATION

DETAIL No. **280-1** N.T.S.



GENERAL NOTES:

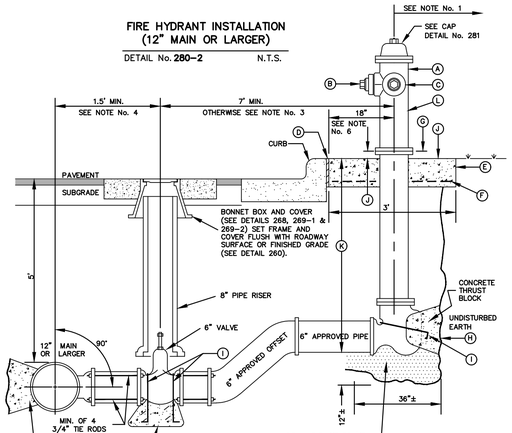
1. NO OBSTRUCTIONS WILL BE PERMITTED WITHIN 5 FT. IN ALL DIRECTIONS OF FIRE HYDRANT (PER EL PASO MUNICIPAL CODE, TITLE 12). FIRE HYDRANT SHALL NOT BE PLACED IN WHEEL CHAIR RAMP OR DRIVEWAY.
2. FIRE HYDRANT SHALL BE LOCATED AT THE BEGINNING OF CURB RETURN OR AT THE PROPERTY LINE COMMON TO ADJOINING LOTS, UNLESS OTHERWISE SHOWN ON PLANS. REFER TO DETAIL No. 282 FOR SPECIAL CASES.
3. WHERE DISTANCE IS LESS THAN 7', HYDRANT SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL No. 282.
4. VALVE MAY BE CONNECTED TO TEE AT MAIN LINE. USE FLANGED MECHANICAL JOINT ENDS. WHERE SPOOL IS REQUIRED BETWEEN TEE AND VALVE, USE FLANGED MECHANICAL ENDS WITH ¾" DIAMETER TIE RODS.
5. COMPLY WITH REQUIREMENTS OF AWWA C-550, DRY BARREL FIRE HYDRANTS AND AWWA C-550, PROTECTIVE EPOXY INTERIOR COATINGS FOR VALVES AND HYDRANTS.
6. WHEN INSTALLATION IS WITHIN TxDOT RIGHT OF WAY, HYDRANT SHALL NOT BE PLACED IN SIDEWALK AREA OR ANY CLOSER THAN 5' FROM BACK OF CURB.

CONSTRUCTION KEY NOTES:

A. FIRE HYDRANT PER SPEC'S.
B. PUMPER NOZZLE 4" TO BE FACING THE TRAVELED WAY, UNLESS OTHERWISE NOTED IN THE PLANS.
C. HOSE NOZZLE 2½".
D. ½" PREMOLDED EXPANSION JOINT WITH 1" TOP FILLER.
E. 3'x3'x6" CONC. SQ. PAD, TO BE CONSTRUCTED AROUND FIRE HYDRANT'S CENTER LINE WHEN NOT LOCATED WITHIN SIDEWALK OR CONC. AREA.
F. #10; 6/6 WWF.
G. CONTROLLED ELEVATION LINE, LEVEL IN ALL DIRECTIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING TOP FLANGE OF THE HYDRANT TO CONTROLLED ELEVATION.
H. CONC. THRUST BLOCK, APPROX. 2'x2'x3' TO BE POURED AGAINST UNDISTURBED EARTH, F.H. WEEP HOLE MUST BE UNOBSTRUCTED.
I. 2"x1/4" STEEL ANCHOR PINS.
J. TOP OF SLAB SHALL BE AT CURB LEVEL, 4" TO 6" BELOW THE BREAK LINE OF THE HYDRANT.
K. MAXIMUM OF ONE (1) SPOOL EXTENSION ALLOWED TO MAINTAIN THE CONTROLLED ELEVATION LINE TO TOP OF SLAB. ADDITIONAL ADJUSTMENT MUST ME MADE WITH OFFSETS & FITTINGS AS NEEDED.
L. REQUIRED – DAVIDSON ANTI TERRORISM CORROSION RESISTANT VALVE KIT (DATV).

FIRE HYDRANT INSTALLATION (12" MAIN OR LARGER)

DETAIL No. **280-2** N.T.S.



GENERAL NOTES:

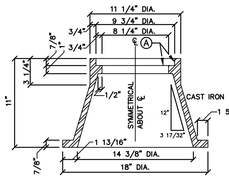
1. NO OBSTRUCTIONS WILL BE PERMITTED WITHIN 5 FT. IN ALL DIRECTIONS OF FIRE HYDRANT (PER EL PASO MUNICIPAL CODE, TITLE 12). FIRE HYDRANT SHALL NOT BE PLACED IN WHEEL CHAIR RAMP OR DRIVEWAY.
2. FIRE HYDRANT SHALL BE LOCATED AT THE BEGINNING OF CURB RETURN OR AT THE PROPERTY LINE COMMON TO ADJOINING LOTS, UNLESS OTHERWISE SHOWN ON PLANS. REFER TO DETAIL No. 282 FOR SPECIAL CASES.
3. WHERE DISTANCE IS LESS THAN 7', HYDRANT SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL No. 282.
4. VALVE MAY BE CONNECTED TO TEE AT MAIN LINE. USE FLANGED MECHANICAL JOINT ENDS. WHERE SPOOL IS REQUIRED BETWEEN TEE AND VALVE, USE FLANGED MECHANICAL ENDS WITH ¾" DIAMETER TIE RODS.
5. COMPLY WITH REQUIREMENTS OF AWWA C-502, DRY BARREL FIRE HYDRANTS AND AWWA C-550, PROTECTIVE EPOXY INTERIOR COATINGS FOR VALVES AND HYDRANTS.
6. WHEN INSTALLATION IS WITHIN TxDOT RIGHT OF WAY, HYDRANT SHALL NOT BE PLACED IN SIDEWALK AREA OR ANY CLOSER THAN 5' FROM BACK OF CURB.

CONSTRUCTION KEY NOTES:

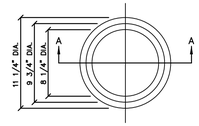
A. FIRE HYDRANT PER SPEC'S.
B. PUMPER NOZZLE 4" TO BE FACING THE TRAVELED WAY, UNLESS OTHERWISE NOTED IN THE PLANS.
C. HOSE NOZZLE 2½".
D. ½" PREMOLDED EXPANSION JOINT WITH 1" TOP FILLER.
E. 3'x3'x6" CONC. SQ. PAD, TO BE CONSTRUCTED AROUND FIRE HYDRANT'S CENTER LINE WHEN NOT LOCATED WITHIN SIDEWALK OR CONC. AREA.
F. #10; 6/6 WWF.
G. CONTROLLED ELEVATION LINE, LEVEL IN ALL DIRECTIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING TOP FLANGE OF THE HYDRANT TO CONTROLLED ELEVATION.
H. CONC. THRUST BLOCK, APPROX. 2'x2'x3' TO BE POURED AGAINST UNDISTURBED EARTH, F.H. WEEP HOLE MUST BE UNOBSTRUCTED.
I. 2"x1/4" STEEL ANCHOR PINS.
J. TOP OF SLAB SHALL BE AT CURB LEVEL, 4" TO 6" BELOW THE BREAK LINE OF THE HYDRANT.
K. MAXIMUM OF ONE (1) SPOOL EXTENSION ALLOWED TO MAINTAIN THE CONTROLLED ELEVATION LINE TO TOP OF SLAB. ADDITIONAL ADJUSTMENT MUST ME MADE WITH OFFSETS & FITTINGS AS NEEDED.
L. REQUIRED – DAVIDSON ANTI TERRORISM CORROSION RESISTANT VALVE KIT (DATV).

BONNET BOX

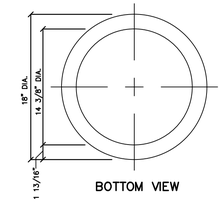
DETAIL No. **268** N.T.S.



SECTION A–A



TOP VIEW



BOTTOM VIEW

GENERAL NOTES:

1. CASTING TO BE SMOOTH AND VOID OF AIR HOLES.
2. WEIGHT OF BONNET BOX IS 95 POUNDS.

CONSTRUCTION KEY NOTES:

A. TO BE ROUGH GROUND OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.

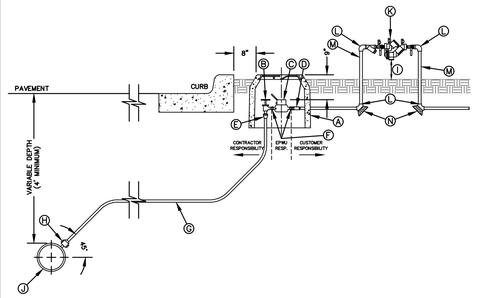
NOT FOR CONSTRUCTION

ENGINEER'S SEAL	REVISIONS	DATE	REVISED BY

el paso WATER

WILL RUTH POND WATER IMPROVEMENTS

SCALE	DRAWN BY	JOB NO.	DATE
HOR. 1" = 40'	R.A.R.	20-5041	01/08/20
VERT. 1" = 5'	CHECKED BY A.S.	DESIGNED BY A.C.	SHT 3 OF 5



GENERAL NOTES:

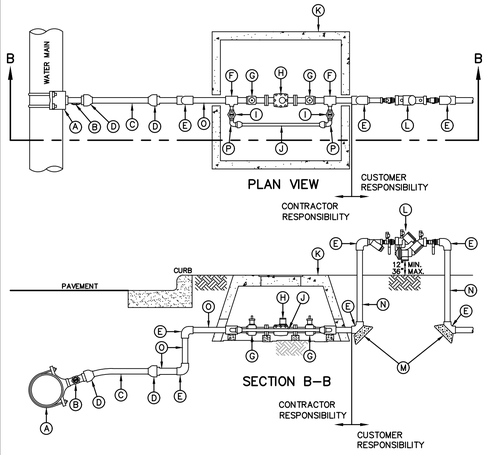
1. DETAIL SHOWN FOR A 3/4" SERVICE, 1" SERVICE INSTALLATION IS SIMILAR EXCEPT FOR SIZES OF PIPE, FITTING, METER AND BOX (TYPE "B").
2. WHERE NO CURB EXISTS, METER IS TO BE SET NEAR PROPERTY LINE OR AT DESIGNATED LOCATION.
3. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY PIPE, FITTINGS, AND METER BOXES REQUIRED. IT SHALL BE THE RESPONSIBILITY OF THE PRIVATE OWNER TO HAVE A CERTIFIED PLUMBER INSTALL A BACKFLOW PREVENTER AND EXTEND SERVICE LINE ON DISCHARGE SIDE OF METER.
4. NO SPLICING SHALL BE ALLOWED. FULL LENGTH OF PIPING SERVICE SHALL BE INSTALLED.
5. THE EPWU WILL FURNISH AND INSTALL THE METER.

CONSTRUCTION KEY NOTES:

A. METER BOX TYPE "A" (SEE DETAILS 291 & 292) SHALL BE SET SLIGHTLY HIGHER THAN SURROUNDING GROUND OR AT CURB LEVEL.
B. 3/4" BALL ANGLE SERVICE VALVE WITH PADLOCK WINGS.
C. WATER METER (CENTER INSIDE METER BOX).
D. WHEN REQUIRED BY EPWU, A DUAL CHECK BACKFLOW PREVENTER SHALL BE INSTALLED ON THE OUTLET SIDE OF THE METER.
E. END FLARE OF SERVICE LINE.
F. INLET AND OUTLET COUPLING.
G. 3/4" COPPER SERVICE LINE (SEE NOTE 4).
H. 5/8" X 3/4" CORPORATION STOP.
I. 12" MIN. – 36" MAX.
J. WATER MAIN.
K. 3/4" BACKFLOW PREVENTER WHEN REQUIRED BY EPWU.
L. 3/4" FEMALE THREADED 90° ELBOW.
M. 3/4" BRASS PIPE–LENGTH AS REQUIRED.
N. THRUST BLOCKING AS REQUIRED.

SERVICE LINE ¾" AND 1" INSTALLATION BY CONTRACTOR

DETAIL No. 290–4 N.T.S.



GENERAL NOTES:

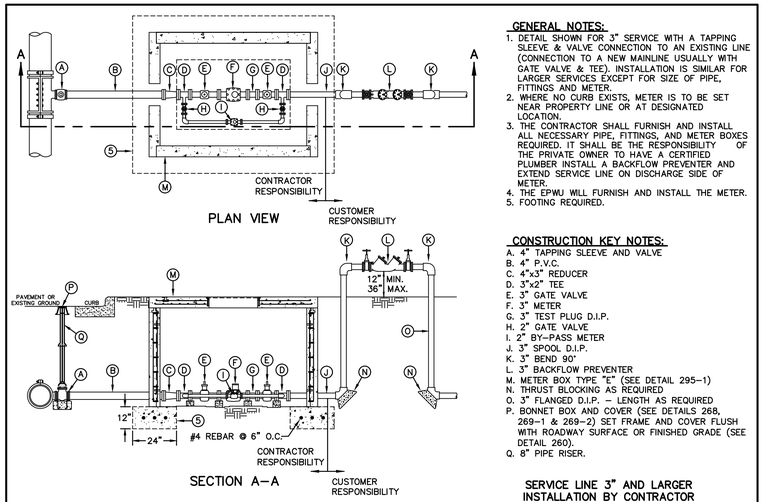
1. DETAIL SHOWN FOR 1½" SERVICE; INSTALLATION SIMILAR FOR 2" SERVICE EXCEPT FOR SIZES OF PIPE, FITTINGS, METER AND METER BOX. WHEN SPECIFIED A 1" BY–PASS METER SHALL BE INSTALLED WITH A 1½" SERVICE, A 2" SERVICE SHALL INCLUDE A 1" BY–PASS METER.
2. WHERE NO CURB EXISTS, METER IS TO BE SET NEAR PROPERTY LINE OR AT DESIGNATED LOCATION.
3. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY PIPE, FITTINGS, AND METER BOXES REQUIRED. IT SHALL BE THE RESPONSIBILITY OF THE PRIVATE OWNER TO HAVE A CERTIFIED PLUMBER INSTALL A BACKFLOW PREVENTER AND EXTEND SERVICE LINE ON DISCHARGE SIDE OF METER.
4. THE EPWU WILL FURNISH AND INSTALL THE METER.

CONSTRUCTION KEY NOTES:

A. SERVICE SADDLE
B. 1½" TAP WITH CORPORATION STOP
C. 1½" COPPER PIPE. FOR 1¼" & 2" SERVICE INSTALLATIONS, ALL PIPING SHALL BE COPPER AND ALL FITTINGS SHALL BE BRONZE UNLESS OTHERWISE SPECIFIED.
D. 1½" FLARED CONNECTION
E. 1½" FEMALE THREADED 90° ELBOW
F. 1½"x1" FEMALE THREADED TEE
G. 1½" FLANGED BY FEMALE THREADED BALL VALVE
H. 1½" TURBINE METER
I. 1" FEMALE THREADED CURB VALVE WITH PADLOCK WINGS
J. 1" COPPER
K. METER BOX TYPE "C" (SEE DETAIL 293) FOR 1½" OR TYPE "D" (SEE DETAIL 294) FOR 2".
L. 1½" BACKFLOW PREVENTER WHEN REQUIRED BY EPWU
M. THRUST BLOCKING AS REQUIRED
N. 1½" BRASS PIPE–LENGTH AS REQUIRED
O. 1½" THREADED NIPPLE
P. 1" FLARED BY MALE THREADED 90° ELBOW

SERVICE LINE 1½" AND 2" INSTALLATION BY CONTRACTOR

DETAIL No. 290–5 N.T.S.



GENERAL NOTES:

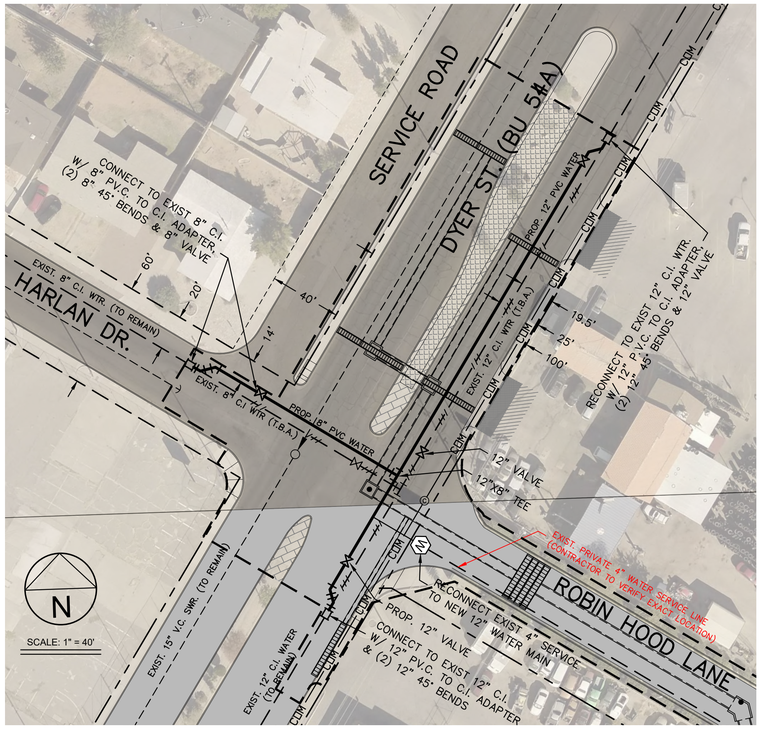
1. DETAIL SHOWN FOR 3" SERVICE WITH A TAPPING SLEEVE & VALVE CONNECTION TO AN EXISTING LINE (CONNECTION TO A NEW MAINLINE USUALLY WITH GATE VALVE & TEE). INSTALLATION IS SIMILAR FOR LARGER SERVICES EXCEPT FOR SIZE OF PIPE, FITTINGS AND METER.
2. WHERE NO CURB EXISTS, METER IS TO BE SET NEAR PROPERTY LINE OR AT DESIGNATED LOCATION.
3. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY PIPE, FITTINGS, AND METER BOXES REQUIRED. IT SHALL BE THE RESPONSIBILITY OF THE PRIVATE OWNER TO HAVE A CERTIFIED PLUMBER INSTALL A BACKFLOW PREVENTER AND EXTEND SERVICE LINE ON DISCHARGE SIDE OF METER.
4. THE EPWU WILL FURNISH AND INSTALL THE METER.
5. FOOTING REQUIRED.

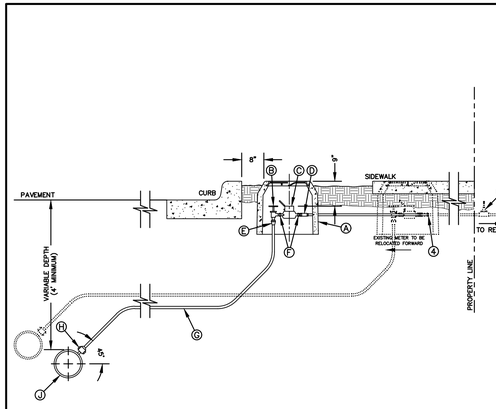
CONSTRUCTION KEY NOTES:

A. 4" TAPPING SLEEVE AND VALVE
B. 4" P.V.C.
C. 4"x3" REDUCER
D. 3"x2" TEE
E. 3" GATE VALVE
F. 3" METER
G. 3" TEST PLUG D.I.P.
H. 2" GATE VALVE
I. 2" BY–PASS METER
J. 3" SPOOL D.I.P.
K. 3" BEND 90°
L. 3" BACKFLOW PREVENTER
M. METER BOX TYPE "E" (SEE DETAIL 295–1)
N. THRUST BLOCKING AS REQUIRED
O. 3" FLANGED D.I.P. – LENGTH AS REQUIRED
P. BONNET BOX AND COVER (SEE DETAILS 268, 269–1 & 269–2) SET FRAME AND COVER FLUSH WITH ROADWAY SURFACE OR FINISHED GRADE (SEE DETAIL 260).
Q. 8" PIPE RISER.

SERVICE LINE 3" AND LARGER INSTALLATION BY CONTRACTOR

DETAIL No. 290–6 N.T.S.





GENERAL NOTES:

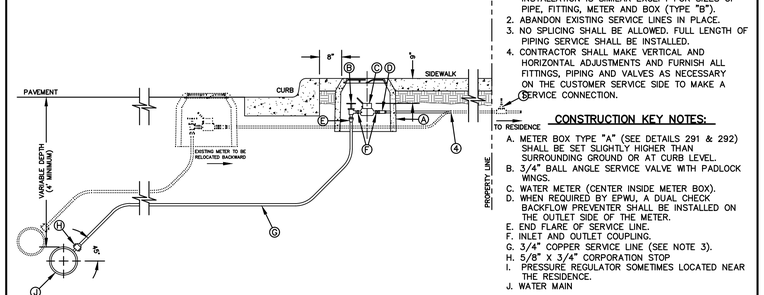
1. DETAIL SHOWN FOR A 3/4" SERVICE, 1" SERVICE INSTALLATION IS SIMILAR EXCEPT FOR SIZES OF PIPE, FITTING, METER AND BOX (TYPE "B").
2. ABANDON EXISTING SERVICE LINES IN PLACE.
3. NO SPLICING SHALL BE ALLOWED. FULL LENGTH OF PIPING SERVICE SHALL BE INSTALLED.
4. CONTRACTOR SHALL MAKE VERTICAL AND HORIZONTAL ADJUSTMENTS AND FURNISH ALL FITTINGS, PIPING AND VALVES AS NECESSARY ON THE CUSTOMER SERVICE SIDE TO MAKE A SERVICE CONNECTION.

CONSTRUCTION KEY NOTES:

A. METER BOX TYPE "A" (SEE DETAILS 291 & 292) SHALL BE SET SLIGHTLY HIGHER THAN SURROUNDING GROUND OR AT CURB LEVEL.
B. 3/4" BALL ANGLE SERVICE VALVE WITH PADLOCK WINGS.
C. WATER METER (CENTER INSIDE METER BOX).
D. WHEN REQUIRED BY EPWU, A DUAL CHECK BACKFLOW PREVENTER SHALL BE INSTALLED ON THE OUTLET SIDE OF THE METER.
E. END FLARE OF SERVICE LINE.
F. INLET AND OUTLET COUPLING.
G. 3/4" COPPER SERVICE LINE (SEE NOTE 3).
H. 5/8" X 3/4" CORPORATION STOP
I. PRESSURE REGULATOR SOMETIMES LOCATED NEAR THE RESIDENCE.
J. WATER MAIN

SERVICE LINE ¾" AND 1" INSTALLATION FOR RECONNECTION BY CONTRACTOR (EXAMPLE 1)

DETAIL No. 290–7 N.T.S.



GENERAL NOTES:

1. DETAIL SHOWN FOR A 3/4" SERVICE, 1" SERVICE INSTALLATION IS SIMILAR EXCEPT FOR SIZES OF PIPE, FITTING, METER AND BOX (TYPE "B").
2. ABANDON EXISTING SERVICE LINES IN PLACE.
3. NO SPLICING SHALL BE ALLOWED. FULL LENGTH OF PIPING SERVICE SHALL BE INSTALLED.
4. CONTRACTOR SHALL MAKE VERTICAL AND HORIZONTAL ADJUSTMENTS AND FURNISH ALL FITTINGS, PIPING AND VALVES AS NECESSARY ON THE CUSTOMER SERVICE SIDE TO MAKE A SERVICE CONNECTION.

CONSTRUCTION KEY NOTES:

A. METER BOX TYPE "A" (SEE DETAILS 291 & 292) SHALL BE SET SLIGHTLY HIGHER THAN SURROUNDING GROUND OR AT CURB LEVEL.
B. 3/4" BALL ANGLE SERVICE VALVE WITH PADLOCK WINGS.
C. WATER METER (CENTER INSIDE METER BOX).
D. WHEN REQUIRED BY EPWU, A DUAL CHECK BACKFLOW PREVENTER SHALL BE INSTALLED ON THE OUTLET SIDE OF THE METER.
E. END FLARE OF SERVICE LINE.
F. INLET AND OUTLET COUPLING.
G. 3/4" COPPER SERVICE LINE (SEE NOTE 3).
H. 5/8" X 3/4" CORPORATION STOP
I. PRESSURE REGULATOR SOMETIMES LOCATED NEAR THE RESIDENCE.
J. WATER MAIN

SERVICE LINE ¾" AND 1" INSTALLATION FOR RECONNECTION BY CONTRACTOR (EXAMPLE 2)

DETAIL No. 290–8 N.T.S.

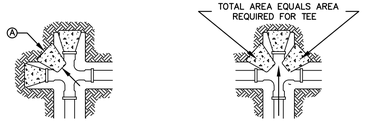
NOT FOR CONSTRUCTION

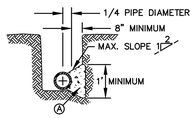
ENGINEER'S SEAL	REVISIONS	DATE	REVISED BY

el paso WATER

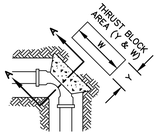
WILL RUTH POND WATER IMPROVEMENTS

SCALE	DRAWN BY	JOB NO.	DATE
HOR. 1" = 40'	R.A.R.	20–5041	01/08/20
VERT. 1" = 5'	CHECKED BY A.S.	DESIGNED BY A.C.	SHT 4 OF 5





SECTION "A"



CONCRETE THRUST BLOCKING

DETAIL No. **270** N.T.S.

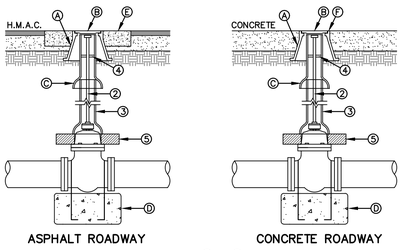
GENERAL NOTES:

1. TABLE IS BASED ON 2000#/SQ. FT. SOIL. IF CONDITIONS ARE FOUND TO INDICATE SOIL BEARING IS LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
2. AREAS FOR PIPE LARGER THAN 18" SHALL BE CALCULATED.
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 2500 PSI.
4. THRUST BLOCK IS TO EXTEND TO UNDISTURBED SOIL.
5. SIZE MAY BE DECREASED FOR LESSER DEGREE BENDS AS DETERMINED BY ENGINEER.
6. KEEP CONCRETE CLEAR OF M.J. OR BELL AND SPIGOT JOINTS.
7. BLOCK IN A SIMILAR MANNER AT TEES, HYDRANTS, PLUG OR OTHER LOCATIONS AS REQUIRED.
8. WHEN NECESSARY ADDITIONAL THRUST RESTRAINT METHODS MAY BE USED, SUCH AS MECHANICAL JOINT RESTRAINTS, TIE-RODS (INSTALLED PER MANUFACTURERS' RECOMMENDATIONS) OR OTHER APPROVED METHODS.

CONSTRUCTION KEY NOTES:

A. LENGTH "Y & W" AS REQUIRED TO OBTAIN BEARING AREA AGAINST UNDISTURBED SOIL.
B. ADDITIONAL EXCAVATION IF NECESSARY TO OBTAIN REQUIRED BEARING AREA.
C. MINIMUM THRUST BLOCK AREA REQUIREMENTS FOR (Y & W) AS FOLLOWS:

PIPE SIZE	WATER PIPE	
	TEE, DEAD END 90° BEND	45° AND 22 1/2° BENDS
4" & LESS	3 SQ. FEET	3 SQ. FEET
6"	4 SQ. FEET	3 SQ. FEET
8"	6 SQ. FEET	3 SQ. FEET
10"	9 SQ. FEET	5 SQ. FEET
12"	13 SQ. FEET	7 SQ. FEET
16"	23 SQ. FEET	12 SQ. FEET
18"	29 SQ. FEET	15 SQ. FEET
24"	62 SQ. FEET	31 SQ. FEET
30"	131 SQ. FEET	66 SQ. FEET



GENERAL NOTES:

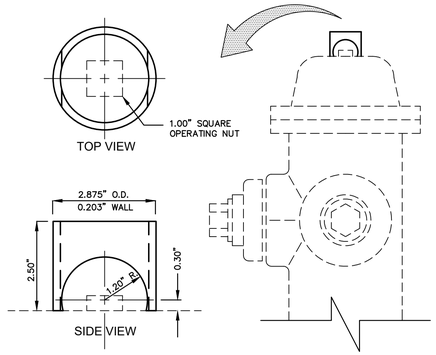
1. VALVE TYPE AND VALVE ENDS SHALL BE AS SHOWN ON THE PLANS.
2. ALL BURIED VALVES 5' AND DEEPER SHALL BE PROVIDED WITH SOLID STEEL EXTENSION STEM OPERATOR WITH 2" SQUARE AWWA NUT WITHIN 36" OF VALVE BOX COVER. NUT IS TO INDICATE DIRECTION OF ROTATION TO OPEN VALVE.
3. 8" DIA. MINIMUM VITRIFIED CLAY OR SDR 35 P.V.C. PIPE, PIPE SHALL NOT REST ON VALVE BODY.
4. ¾" THICK STEEL TRASH RING VALVE BOX INSIDE DIAMETER MINUS ⅛".
5. MINIMUM 2½" CONCRETE OR BRICK ALL AROUND.
6. CLEAN BONNET BOX OF ALL DEBRIS AND SOIL.
7. COAT BURIED PIPE AND BONNET BOX PER SPECIFICATIONS, VALVE SHALL BE WRAPPED IN POLYETHYLENE IN ACCORDANCE WITH SPECIFICATIONS.

CONSTRUCTION KEY NOTES:

A. BONNET BOX (SEE DETAIL 268).
B. BONNET BOX COVER (SEE DETAILS 269-1 & 269-2).
C. FINAL EXTENSION TO BONNET BOX SHALL BE WITH BELL AND SPIGOT ENDS (CLAY OR SDR 35 P.V.C. SPOOL).
D. CONCRETE VALVE ANCHOR (SEE DETAIL 271).
E. CONCRETE COLLAR (SEE DET 184-1) FLUSH WITH TOP OF H.M.A.C.
F. BONNET BOX FLUSH WITH TOP OF CONCRETE, CONCRETE COLLAR NOT NEEDED.
G. CONCRETE APRON (SEE DETAIL 184-2) FLUSH WITH BONNET BOX AND 2" ABOVE NATURAL GROUND.

GATE VALVE INSTALLATION

DETAIL No. **260** N.T.S.

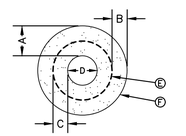


GENERAL NOTES:

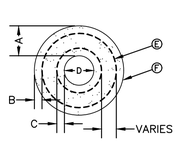
1. STEEL CAPS TO BE MACHINED FROM STEEL PIPE: NOMINAL SIZE = 2 1/2" DIA. OUTSIDE DIA. = 2.875" WALL THICKNESS = 0.203 LBS/FT. = 5.79
2. CAPS ARE TO BE TACK WELDED OR BRAZED ON FIRE HYDRANT BONNET OR WEATHER CAP.
3. THE CAPS OVER THE OPERATING NUT WILL PREVENT ACCESS TO THE UNAUTHORIZED USE OF HYDRANT WATER.

FIRE HYDRANT CAP

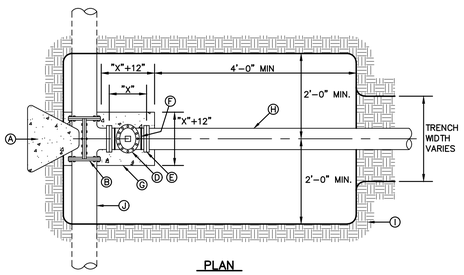
DETAIL No. **281** N.T.S.



PLAN VIEW – SINGLE REBAR



PLAN VIEW – TWO REBARS



PLAN

GENERAL NOTES:

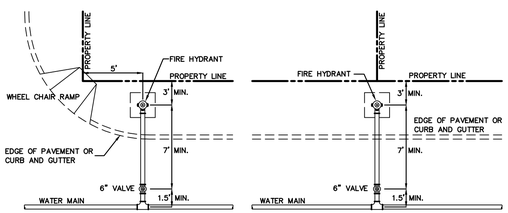
1. THRUST BLOCKING SHALL EXTEND TO UNDISTURBED EARTH.
2. TAPPING SLEEVE SHALL BE 18" MINIMUM FROM ANY BELL, COUPLING, VALVE OR FITTING LOCATED ALONG EXISTING WATER LINE TO BE TAPPED.
3. REPLACE EXCAVATED MATERIAL WITH CEMENT STABILIZED BACKFILL PRIOR TO PAVING.
4. JOINTS AND BOLTS SHALL BE CLEAR OF CONCRETE.
5. INSTALL PERMANENT THRUST BLOCKING UNDER VALVE BEFORE TAP IS MADE. JOINTS AND BOLTS TO BE CLEAR OF CONCRETE.

CONSTRUCTION KEY NOTES:

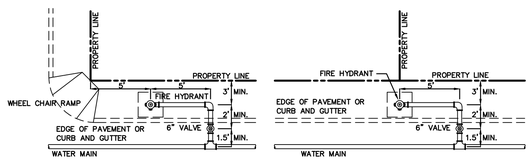
A. CONCRETE THRUST BLOCKING, PER DETAIL 270.
B. TAPPING SLEEVE.
C. RISER INSTALLATION, PER DETAIL 260.
D. TAPPING VALVE.
E. VALVE ENDS FOR TYPE OF PIPE INSTALLED.
F. 2-#5 REBAR HAIRPINS, PAINT UNEMBEDDED PORTION OF BARS WITH 2-COATS OF COAL TAR EPOXY, THEN COVER WITH 2" MINIMUM OF CEMENT MORTAR.
G. CONCRETE VALVE SUPPORT, PER DETAIL 271.
H. NEW WATER LINE TO BE INSTALLED.
I. UNDISTURBED EARTH.
J. EXISTING WATER MAIN TO BE TAPPED.

TAPPING SLEEVE AND VALVE INSTALLATION

DETAIL No. **266** N.T.S.



STANDARD LOCATIONS



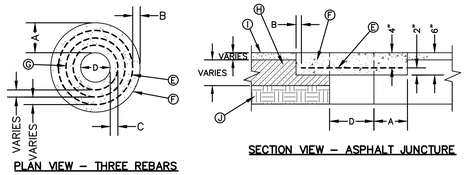
SPECIAL LOCATIONS

GENERAL NOTES:

1. FOR CASE 1 FIRE HYDRANT SHALL BE LOCATED AT A DISTANCE OF 5 FT. MINIMUM FROM THE PROPERTY LINE OR AT THE BEGINNING OF CURB RETURN.
2. FOR CASE 2 FIRE HYDRANT SHALL BE LOCATED AT THE PROPERTY LINE COMMON TO ADJOINING LOTS.
3. FOR CASE 3 AND IV WHERE THE DISTANCE BETWEEN THE VALVE AND THE HYDRANT IS LESS THAN 7 FT. PLACE HYDRANT AS SHOWN.
4. FOR INSTALLATION OF FIRE HYDRANT SEE DETAIL 280-1 OR 280-2.
5. A MINIMUM CLEARANCE OF 5 FT. WILL BE PROVIDED BETWEEN A FIRE HYDRANT AND A PERMANENT OBSTRUCTION (UTILITY POLE, LIGHT STANDARD, TRAFFIC SIGNAL, WHEEL CHAIR RAMP, FENCE PROTECTIVE POSTS, ETC.).
6. WHEN INSTALLATION IS WITHIN TxDOT RIGHT OF WAY, HYDRANT SHALL NOT BE PLACED IN SIDEWALK AREA OR ANY CLOSER THAN 5' FROM BACK OF CURB.

FIRE HYDRANT LOCATIONS

DETAIL No. **282** N.T.S.



PLAN VIEW – THREE REBARS

SECTION VIEW – ASPHALT JUNCTURE

"D" DIAMETER OF PENETRATION	NUMBER OF #3 REINFORCING STEEL BARS	"A" MINIMUM CONCRETE HORIZONTAL DIMENSION FROM PENETRATION	"B" MINIMUM CLEARANCE FROM EDGE OF CONCRETE COLLAR TO CENTER OF NEAREST REBAR	"C" MINIMUM CLEARANCE FROM PENETRATION EDGE TO CENTER OF NEAREST REBAR
0" TO 6"	1	6"	1½"	1½"
6.1" TO 18"	2	8"	1½"	1½"
18.1" AND OVER	3	12"	1½"	1½"

GENERAL NOTES:

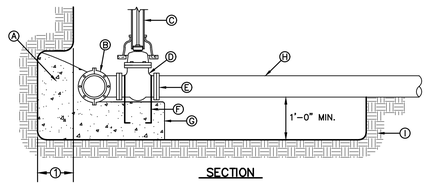
1. THE CONCRETE COLLAR SHOULD BE CAST IN-PLACE CONCRETE. (MINIMUM 28 DAY COMPRESSIVE STRENGTH 4000 PSI. HIGH EARLY CONCRETE IS REQUIRED)
2. TOPS OF CONCRETE COLLAR SHALL BE FLUSH WITH ROADWAY SURFACE OR FINISHED GRADE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
3. ANY DISTURBED SUBGRADE UNDER THE CONCRETE COLLAR SHALL BE COMPACTED TO 95% DENSITY ± 3% OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D-1557.
4. ANY DISTURBED BASE COARSE UNDER THE CONCRETE COLLAR SHALL BE COMPACTED TO 100% DENSITY ± 2% OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D-1557.
5. PROVIDE A MINIMUM OF 1 1/2" OF CONCRETE COVER FOR ALL REINFORCEMENT STEEL.
6. REINFORCING SHALL MEET ASTM C-478 AND TRAFFIC LOADING (HS-20).
7. NO. 3 REINFORCING STEEL HOOPS SHALL BE SPACED EQUALLY.

CONSTRUCTION KEY NOTES:

E. #3 REINFORCING STEEL TYP.
F. CONCRETE COLLAR.
G. #3 REINFORCING STEEL EQUALLY SPACED.
H. COMPACTED BASE COARSE.
I. PAVEMENT.
J. COMPACTED SUBGRADE.

CONCRETE COLLAR INSTALLATION IN PAVED AREAS

DETAIL No. **184-1** N.T.S.



SECTION

NOT FOR CONSTRUCTION

ENGINEER'S SEAL	REVISIONS	DATE	REVISED BY

el paso WATER

WILL RUTH POND WATER IMPROVEMENTS

SCALE	DRAWN BY	JOB NO.	DATE
HOR. 1" = 40'	R.A.R.	20-5041	01/08/20
VERT. 1" = 5'	CHECKED BY A.S.	DESIGNED BY A.C.	SHT 5 OF 5

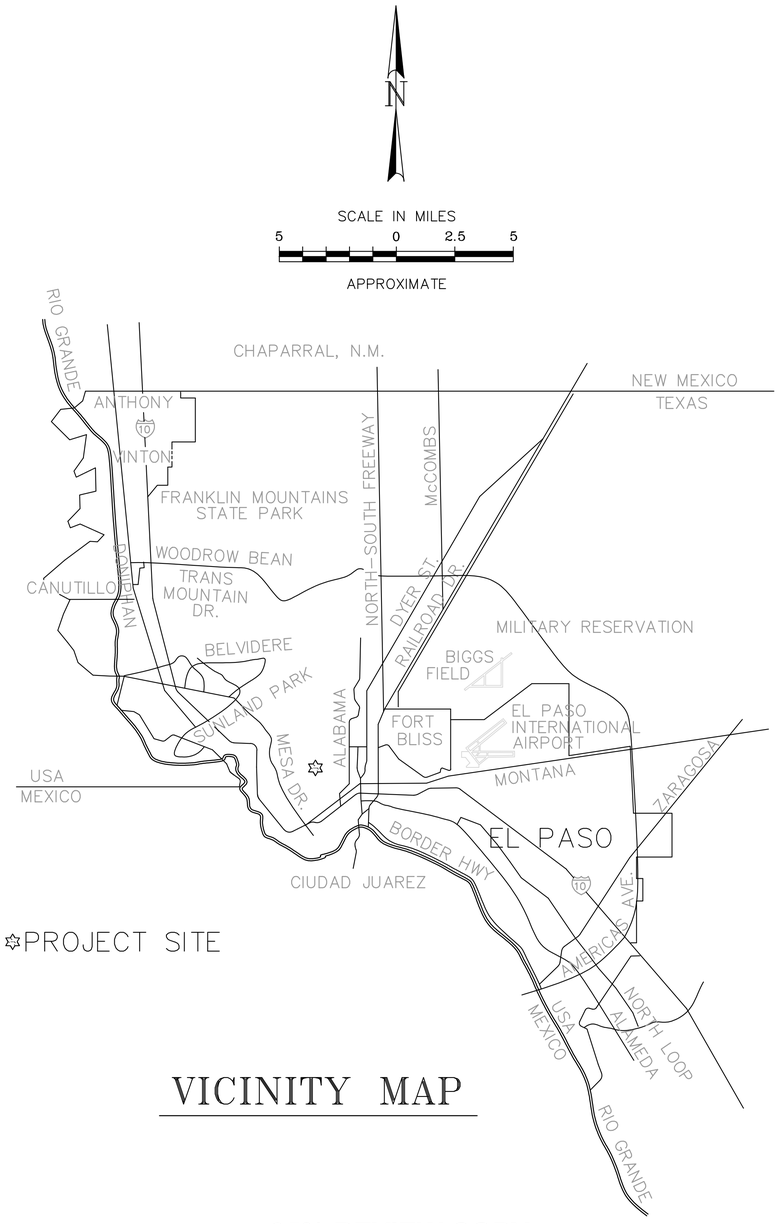
OPTION 1

el paso WATER

PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

BID NUMBER XX-XX

CIP NO.____



VICINITY MAP

95% REVIEW COPY

OWNER

el paso WATER
1154 HAWKINS BLVD. EL PASO TEXAS 79925 (915) 594-5500

PREPARED BY

HUITT-ZOLLARS INC.
ENGINEERING / SURVEYING
5822 CROMO DRIVE, SUITE 210 EL PASO, TEXAS 79912
PH. (915) 587-4339 / FAX (915) 587-5247
FIRM REGISTRATION F-161

ENG / PROJECT I.D. __-____ / __________

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SHEET INDEX

DESCRIPTION	DWG No.	SHEET No.
COVER/INDEX SHEET	GI-101	1
GENERAL NOTES	GI-102	2
OVERALL PROJECT LAYOUT	GI-103	3
CEXISTING CONDITIONS /DEMOLITION PLAN	GI-104	4
DAM:		
PLAN VIEW	CG-101	5
OUTLET PROFILE	CG-102	6
OUTLET DETAILS	CG-501	7
FILTER DIAPHRAGM DETAILS	CG-502	8
CHANNEL:		
PLAN & PROFILE (UPPER REACH)	CG-104	9
SECTIONS	CG-504	10
PLAN & PROFILE (LOWER REACH)	CG-103	11
SECTIONS	CG-503	12
SEDIMENT BASIN:		
PLAN VIEW	CG-105	13
SECTIONS	CG-505	14
ACB DETAILS	CG-508	15
RISER DETAIL	CG-510	16
RETENTION BASIN:		
GRADING PLAN	CG-511	17
CROSS SECTIONS 01	CG-512	18
CROSS SECTIONS 02	CG-513	19
CROSS SECTIONS 03	CG-514	20
LANDSCAPE PLANS:		
LANDSCAPE SURFACING PLAN AREA 1	L-1	21
LANDSCAPE SURFACING PLAN AREA 1	L-2	22
LANDSCAPE SURFACING PLAN AREA 1	L-3	23
LANDSCAPE SURFACING DETAILS	L-4	24

GENERAL NOTES:

1. DATE OF FIELD SURVEY IS JULY 30, 2020.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, WHETHER INDICATED ON THE DRAWINGS OR NOT, TO POTHOLE AND VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND SUBSTRUCTURES AND PROTECT THEM FROM DAMAGE AT LEAST FOURTEEN (14) DAYS AHEAD OF ANY WORK. THE ACTUAL LOCATION AND DEPTH OF ALL EXISTING WATER LINES, SEWER LINES AND OTHER UTILITIES IS TO BE VERIFIED BY THE CONTRACTOR AND ANY DISCREPANCY IS TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CORRECTION AND THEN SUBMITTED TO THE EPWU FOR APPROVAL. EXPLORATORY EXCAVATIONS SHALL BE SCHEDULED SUFFICIENTLY AHEAD OF CONSTRUCTION AND PRIOR TO FABRICATION OF MATERIALS TO ALLOW FOR DESIGN REVISIONS, IF NECESSARY.
3. POTHOLES ON PAVED AREAS SHALL BE BACKFILLED WITH 2-SACK FLOWABLE FILL MATERIAL. THE BACKFILL SHALL BE PLACED ALL THE WAY TO THE SURFACE OF THE POTHOLE, FULL DEPTH. THE SURFACE OF THE POTHOLES IN PAVED AREAS SHALL BE NEATLY CORED OR SAW CUT. CUTS MADE BY HAND TOOLS OR JACK HAMMERS WILL NOT BE ALLOWED.
4. EFFORTS HAVE BEEN MADE TO INDICATE EXISTING UTILITIES ON THESE PLANS, USING RECORD INFORMATION DRAWINGS WHEN AVAILABLE. HOWEVER, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL UTILITIES INCLUDING SERVICE CONNECTIONS (WHETHER OR NOT INDICATED ON PLANS) PRIOR TO AND DURING CONSTRUCTION. SERVICE CONNECTIONS ARE NOT SHOWN ON THESE PLANS; HOWEVER, ANY DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
5. INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES AS PER O.S.H.A. STANDARDS.
6. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH GAS, STORM, PETROLEUM, ELECTRIC, TELEPHONE, CABLE TV, COMMUNICATIONS, FIBER OPTICS AND/OR OTHER UTILITIES FOR ANY RELOCATION AND/OR PROTECTION OF EXISTING LINES OR CABLES AS REQUIRED DUE TO CONSTRUCTION ACTIVITIES.
7. ALL EXISTING UTILITIES CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION OF THE PROPOSED FACILITIES. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES (INCLUDING SERVICE CONNECTIONS) FROM DAMAGE AS A RESULT OF CONSTRUCTION ACTIVITIES. ANY DAMAGE SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
8. WHERE APPLICABLE, ALL EXISTING STREET DRIVEWAYS, CURBS, FENCES, LANDSCAPING, SIDEWALKS, AND ALL OTHER MISCELLANEOUS STRUCTURES DAMAGED REMOVED, OR AFFECTED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL OR BETTER THAN ORIGINAL CONDITION. ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF EPWU. ALL RESTORATION SHALL BE COMPLETED PROMPTLY TO MINIMIZE INCONVENIENCE TO PEDESTRIANS, AND RESIDENTS. ALL RESTORATIONS, SIDEWALKS, DRIVEWAYS, AND HANDICAP CURB RAMPS SHALL BE RESTORED TO CONFORM WITH ADA/TAS REQUIREMENTS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASCERTAINING THE NATURE AND EXTENT OF ANY COLLATERAL WORK DONE BY OTHER TRADES. CONTRACTOR SHALL BE AWARE OF ANY AND ALL CONCURRENT WORK IN THE AREA THAT WILL REQUIRE COORDINATION OF THIS WORK. IF NECESSARY, TO AVOID OR MINIMIZE DAMAGE OR DELAY, THE CONTRACTOR SHALL MOBILIZE HIS WORK FORCE TO OTHER AREAS OF THE WORK AT NO ADDITIONAL COST TO THE OWNER.
10. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN AT ALL TIMES ON THE JOB SITE AN 'AS-BUILT" RECORD OF ALL MODIFICATIONS INSTALLED UNDER THIS CONTRACT AND PROVIDE SAID RECORD TO THE ENGINEER AT THE COMPLETION OF THE CONTRACT. FINAL ACCEPTANCE WILL NOT BE ISSUED PRIOR TO THE "AS-BUILT" REDLINES BEING SUBMITTED TO THE ENGINEER.
11. A GEOTECHNICAL STUDY WAS PERFORMED ON DECEMBER 16 2020. THE STUDY IS AVAILABLE FOR THE CONTRACTOR'S REVIEW AT ANY TIME AT THE ENGINEER'S OFFICES.
12. CONTRACTOR TO SUPPORT AND MAINTAIN ALL EXISTING EXPOSED UTILITIES IN SERVICE.
13. PROJECT BENCHMARK: SEE SHEET CG-104.
14. PAVING CUT AND EXCAVATION PERMITS FOR BORE PITS, TRENCHING, POT-HOLING, AND ANY OTHER EXCAVATION SHALL BE OBTAINED FROM THE CITY OF EL PASO ENGINEERING DEPARTMENT, PRIOR TO CONSTRUCTION. CONTACT THE ENGINEERING DEPARTMENT AT (915) 541-4200.
15. NO EQUIPMENT MATERIALS OR DEBRIS SHALL BE STORED ON ANY PORTION OF THE CITY RIGHT-OF-WAY.
16. THE CONTRACTOR SHALL PROVIDE TO THE CITY ENGINEERING DEPARTMENT ENVIRONMENTAL DIVISION A CONTAINMENT POLICY FOR THE WASTE TO BE GENERATED BY ALL EXCAVATIONS, BORINGS, AND POT-HOLING OPERATIONS. THE CONTRACTOR SHALL PROVIDE THE LOCATION(S) OF ALL WASTE DISPOSAL SITE(S) TO BE USED FOR THE CONSTRUCTION DEBRIS AND ALL WASTE GENERATED BY EXCAVATIONS, BORING, AND POT-HOLING OPERATIONS, AS PER ALL APPLICABLE EL PASO COUNTY, CITY OF EL PASO, AND TCEQ RULES AND REGULATIONS.
17. THE CONTRACTOR SHALL NOTIFY THE CITY'S ENGINEERING DEPARTMENT ENVIRONMENTAL DIVISION IMMEDIATELY, IF SUBSURFACE CONTAMINATION IS ENCOUNTERED OR SUSPECTED DURING POT-HOLING, EXCAVATION OR BORING. ALL EXCAVATION AND CONSTRUCTION OPERATIONS SHALL BE CEASED UNTIL FURTHER NOTICE FROM THE CITY ENGINEER.
18. THE CONTRACTOR SHALL SUBMIT A PROJECT SCHEDULE, COMMENCEMENT AND COMPLETION OF THE CONSTRUCTION, FOR REVIEW BY THE ENGINEER, PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE TWO WEEK CONSTRUCTION SCHEDULE, UPDATE WEEKLY, TO ENGINEER. ENGINEER SHALL BE NOTIFIED AND CONSULTED WITH BEFORE ANY DEVIATION FROM THE APPROVED LOCATION OF CONSTRUCTION OR IF ANY ABNORMALITY IS ENCOUNTERED.
22. THE CONTRACTOR SHALL NOTIFY RESIDENTS THAT THEY MAY BE AFFECTED BY THE CONSTRUCTION FOURTEEN DAYS PRIOR TO START OF CONSTRUCTION.

GENERAL NOTES (CON'T):

23. THE CONTRACTOR, AT ALL TIMES DURING CONSTRUCTION, SHALL PROVIDE ACCESS TO RESIDENTS THAT MAY BE AFFECTED BY THE CONSTRUCTION.
24. CONTRACTOR SHALL RESTORE ALL CITY OF EL PASO STREET PAVEMENT MARKINGS TO ORIGINAL OR BETTER CONDITION PER CITY OF EL PASO STANDARDS AND APPROVAL.
25. CONTRACTOR WILL BE REQUIRED TO REPLACE ANY PAVEMENT OUTSIDE THE WORK AREA/PAVEMENT REPLACEMENT AREA DAMAGED IN THE COURSE OF CONSTRUCTION AT NO ADDITIONAL COST TO OWNER.
26. SHOP DRAWINGS SUBMITTALS: THE CONTRACTOR SHALL SUBMIT, WITHIN 14 CALENDAR DAYS OF NOTICE TO PROCEED, TO THE ENGINEER FOR REVIEW AND APPROVAL SHOP DRAWINGS AND COMPLETE DESIGN DATA SHOWING METHODS AND EQUIPMENT THE CONTRACTOR PROPOSES TO UTILIZE FOR WORK.
27. THE CONTRACTOR WILL ACQUIRE A PAVING CUT PERMIT AND APPROVED TRAFFIC CONTROL PLAN FROM THE CITY OF EL PASO NO LATER THAN ONE WEEK PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR WILL SET UP TRAFFIC CONTROL ACCORDING TO THE APPROVED PLAN BEFORE STARTING CONSTRUCTION AND WILL DISPLAY THE PERMIT ON SITE DURING CONSTRUCTION.
28. IF DISTURBED, CONTRACTOR SHALL BRING CURB AND GUTTER, TRAFFIC CONDUITS, SIDEWALKS, DRIVEWAYS, AND RAMPS TO CURRENT CITY STANDARDS, AND IS SUBSIDIARY TO THIS WORK.
29. THE CONTRACTOR SHALL REPLACE ALL SURFACE MATERIAL, AND SHALL RESTORE ALL SURFACES DISTURBED, TO A CONDITION EQUAL TO THAT BEFORE THE WORK BEGAN, FURNISHING ALL LABOR AND MATERIALS INCIDENTAL THERETO. WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE EPWU.
30. ANY CHANGES OF THE APPROVED CONSTRUCTION PLANS MUST BE REVIEWED AND APPROVED BY ENGINEER PRIOR TO THE INSTALLATION OF SUCH CHANGES AND THE CHANGES SHALL BE "AS-BUILT" ONTO THE IMPROVEMENTS PLANS.
31. THE CONTRACTOR SHALL HAVE COPIES OF APPROVED SHOP DRAWINGS AT THE JOB SITE AT ALL TIMES AND PRIOR TO CONSTRUCTION.
32. THE CONTRACTOR SHALL CONTACT THE TEXAS EXCAVATION SAFETY SYSTEM (1-800-344-8377) AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION.
33. CONTRACTOR SHALL NOT EXCAVATE WITHIN 10 FEET OF ANY EXISTING OVERHEAD ELECTRIC POLE. IF EXCAVATION NEEDS TO TAKE PLACE WITHIN 10 FEET, THEN CONTRACTOR MUST COORDINATE WITH EPEC PRIOR TO EXCAVATING AND ADHERE TO EPEC SAFETY REQUIREMENTS.
34. A SIGNED SET OF CONSTRUCTION PLANS DOES NOT IMPLY THAT CONSTRUCTION MAY BEGIN. CONSTRUCTION MAY ONLY BEGIN UPON RECEIPT OF A WRITTEN NOTICE TO PROCEED PROVIDED BY EPWU.
35. CONTRACTOR SHALL KEEP ALL DEBRIS AND SPOIL OUT OF DRAINS, CULVERTS, AND DROP INLETS AND ENSURE THAT THEY DO NOT BECOME CLOGGED AS A RESULT OF CONSTRUCTION ACTIVITIES. IMPLEMENT BEST MANAGEMENT PRACTICES.
36. PRIOR TO ANY CONSTRUCTION THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE CONTRACT DOCUMENTS AND SPECIFICATIONS, THE PLANS INCLUDING ALL NOTES, AND OTHER APPLICABLE STANDARDS OR SPECIFICATIONS RELEVANT TO THE PROPER COMPLETION OF THE WORK SPECIFIED. FAILURE ON THE PART OF THE CONTRACTOR TO FAMILIARIZE HIMSELF WITH ALL STANDARDS OR SPECIFICATIONS PERTAINING TO THIS WORK SHALL IN NO WAY RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PERFORMING THE WORK IN ACCORDANCE WITH ALL SUCH APPLICABLE STANDARDS AND SPECIFICATIONS.
37. CONTRACTOR SHALL HAVE IN HIS POSSESSION, PRIOR TO CONSTRUCTION, ALL NECESSARY PERMITS, LICENSES, ETC. NO WORK SHALL BE PERFORMED WITHIN DESIGNATED WATERS OF THE UNITED STATES WITHOUT A PERMIT FROM THE US ARMY CORPS OF ENGINEERS. NO WORK SHALL BE PERFORMED ON THE DAM OR SPILLWAY WITHOUT PROPER PERMIT AND AUTHORIZATION FROM THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY DAM SAFETY PROGRAM. CONTRACTOR SHALL HAVE AT LEAST ONE SET OF APPROVED ENGINEERING PLANS AND SPECIFICATIONS ON-SITE AT ALL TIMES.
38. ALL WORK SHALL CONFORM TO THE PUBLIC WORKS CONSTRUCTION STANDARDS AND THE CITY OF EL PASO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. THE ENGINEER'S DECISION SHALL APPLY IN THE EVENT AN ITEM IS NOT COVERED BY CITY OF EL PASO. THE ENGINEER SHALL HAVE FINAL DECISION ON ALL CONSTRUCTION MATERIALS, METHODS, AND PROCEDURES.
39. CONSTRUCTION INSPECTION WILL BE PERFORMED BY REPRESENTATIVES OF THE OWNER, ENGINEER, GEOTECHNICAL ENGINEER, AND REVIEWING AUTHORITIES AND AGENCIES. UNRESTRICTED ACCESS SHALL BE PROVIDED TO THEM AT ALL TIMES. CONTRACTOR IS RESPONSIBLE FOR UNDERSTANDING AND SCHEDULING REQUIRED INSPECTIONS.
40. ALL CONTRACTORS MUST CONFINE THEIR ACTIVITIES TO THE WORK AREA. NO ENCROACHMENTS ONTO DEVELOPED OR UNDEVELOPED AREAS WILL BE ALLOWED, UNLESS SPECIFICALLY NOTED ON PLANS. ANY DAMAGE RESULTING THERE FROM, SHALL BE CONTRACTOR'S RESPONSIBILITY TO REPAIR.
41. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING PUBLIC AND PRIVATE UTILITIES THROUGHOUT THE CONSTRUCTION OF THIS PROJECT. CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES FOR LINE LOCATIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION AND SHALL ASSUME FULL LIABILITY TO THOSE COMPANIES FOR ANY DAMAGES CAUSED TO THEIR FACILITIES. CALL 1-800-DIG-TESS.
42. IF UNFORESEEN PROBLEMS OR CONFLICTS ARE ENCOUNTERED IN THE CONSTRUCTION FOR WHICH AN IMMEDIATE SOLUTION IS NOT APPARENT, THE ENGINEER AND OWNER SHALL BE NOTIFIED IMMEDIATELY.
43. CONTRACTOR SHALL BE RESPONSIBLE FOR PRECISE UTILITY FIELD LOCATIONS AND WORKING AROUND EXISTING UTILITIES AND IMPROVEMENTS.
44. TRAFFIC CONTROL MEASURES SHALL BE INSTALLED FOR ANY WORK ACTIVITY THAT TAKES PLACE ON OR ADJACENT TO ANY PUBLIC STREET OR ROADWAY. TRAFFIC CONTROL MEASURES SHALL CONFORM TO PART IV OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
45. CONTRACTOR MUST REFERENCE PALISADES DAM GEOTECHNICAL INVESTIGATION CQC GEOTECHNICAL REPORT NO. AGCQC13-015. ALL WORK MUST COMPLY WITH THOSE REQUIREMENTS AND RECOMMENDATIONS.

COMPACTION NOTES

1. THE DAM EMBANKMENT MAY CONSIST OF ON-SITE MATERIALS OR EQUAL, FREE OF ROOTS, VEGETATION AND LARGE ROCKS OVER 6 INCHES IN SIZE.
2. CLAY SOILS USED FOR THE CLAY CORE SHOULD BE FREE OF ROOTS, VEGETATION, LARGE ROCK AND ROCKY/GRAVELY CLAY LAYERS AS SPECIFIED ON THE GEOTECHNICAL REPORT.
3. ALL FILL, INCLUDING FILL FOR THE DAM EMBANKMENT AND THE CLAY CORE SHOULD BE PLACED IN MAXIMUM 6 INCH THICK HORIZONTAL BENCHED LIFTS AND COMPACTED AT 0% TO +3% ABOVE OPTIMUM MOISTURE CONTENT TO 95% ASTM D-1557.
4. THE CLAY FOR THE CORE SHOULD HAVE A PI BETWEEN 18 AND 35. THE COMPACTED CLAY CORE SHOULD EXTEND TO THE TOP OF THE DAM. COMPACTION MUST BE ACHIEVED WITHIN THE FULL WIDTH OF THE CLAY CORE AND FOR THE ENTIRE LIFT THICKNESS.

UTILITY COMPANIES AND AGENCIES

EL PASO WATER UTILITY
PUBLIC SERVICE BOARD:
EL PASO WATER
1154 HAWKINS BLVD., 3RD FLOOR
EL PASO, TX 79925

TECHNICAL SERVICES
CHIEF TECHNICAL OFFICER
GILBERT TREJO, P.E.

WATER AND WASTEWATER ENGINEERING
ENGINEERING DIVISION MANAGER
AMY CASTNER, P.E.

PLANNING AND DEVELOPMENT
ENGINEERING DIVISION MANAGER
ADRIANA CASTILLO, P.E.

PROJECT ADMINISTRATION
ENGINEERING DIVISION MANAGER
GEOFFREY A. ESPINELI, P.E.

STORMWATER ENGINEERING
STORMWATER ENGINEERING MANAGER
GISELA DAGNINO, P.E.

CONSTRUCTION PROJECT MANAGER
ENGINEERING DIVISION MANAGER
IVAN HERNANDEZ, P.E.

KINDER-MORGAN ENERGY
11621 RAILROAD
EL PASO, TX 79934
JESUS RESENDEZ
PHONE 915-772-7400
CEL 915-471-0146

TEXAS GAS SERVICE
4700 POLLARD ST
EL PASO, TX 79930
915-680-7275
ALEJANDRO LIMON
REGIONAL ENGINEERING MANAGER

EL PASO NATURAL GAS CO.
12600 McCOMBS
EI PASO, TX 79934
915-544-5234
JOAQUIN GARIBAY
915-842-7315

ELECTRIC:
EL PASO ELECTRIC CO.
501 W. SAN ANTONIO ST.
EL PASO, TX 79902
915-543-2087
AREA REPRESENTATIVE
CARDIEL TREVIZO

TELEPHONE:
AT&T TEXAS
11200 PELLICANO DRIVE
EL PASO, TX 79935
915-595-5125/595-5100
MANAGER ENGINEERING DIVISION
DIANA MACK

TELEVISION:
TIME WARNER CABLE
20 CONCORD STREET, SUITE A
EL PASO, TX 79906
JOHN MARES
915-772-1123

TELECOMMUNICATION:
XSPEDIUS COMMUNICATIONS
201 E. MAIN ST., STE 901
EL PASO, TX 79901
CABLE LOCATOR
BILL CAMPBELL
915-544-9499

CITY OF EL PASO
CAPITAL IMPROVEMENT
300 N. CAMPBELL, 2ND FLOOR
EL PASO, TX 79901
915-212-0000

EL PASO COUNTY
PUBLIC WORKS DEPARTMENT
800 E. OVERLAND RM 200
EL PASO, TX 79901
PUBLIC WORKS DIRECTOR
NORMA RIVERA

RAILROAD CONTACT NUMBERS
UNION PACIFIC (UP)
(800) 848-8715
BURLINGTON NORTHERN SANTA FE (BNSF)
(800) 832-5452

"1 CALL" UTILITY LOCATING
1-800-DIGTESS (344-8377)
TX. 1 CALL (1-800-245-4545)
LONE STAR (1-800-669-8344)

						SCALE
						HOR:
						VER:
						DWG: 09042102GI002.1.DWG
						DATE: 12/23/2020
						DESIGN BY: R.A.P.
						DRAWN BY: J.R.F.
						CHKD. BY: R.A.
	TB	REV.	DATE	BY:	DESCRIPTION	

ENGINEER'S SEAL

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RUSSELL ALLEN PARR
P.E. 88072

ON

DECEMBER 23, 2020
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HUITT-ZOLLARS INC.
ENGINEERING / SURVEYING
5822 CROMO DRIVE, SUITE 210
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FIRM REGISTRATION F-761

el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

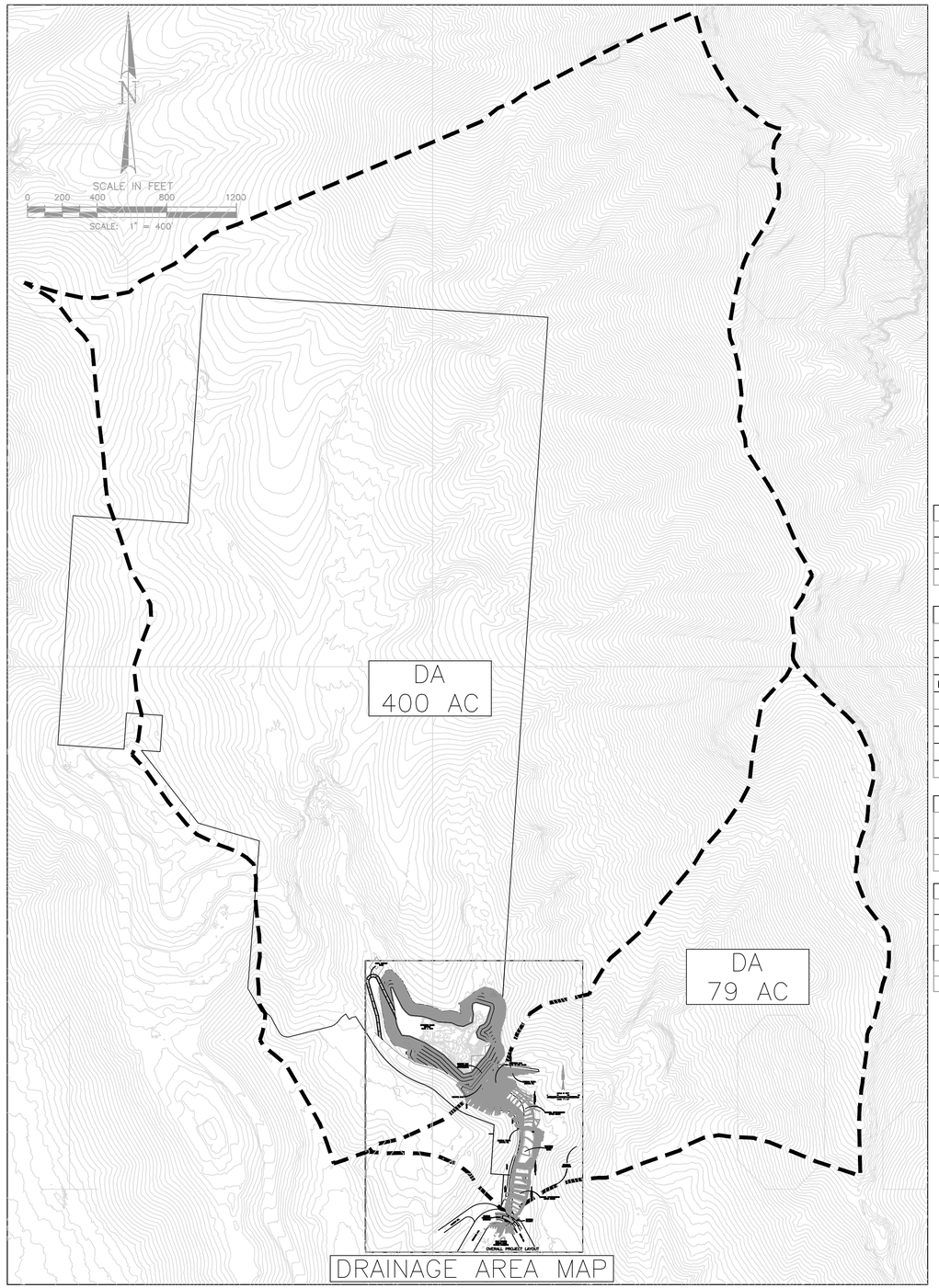
GENERAL NOTES

JOB NO. R300608.01

GI-102

SHEET NO. 2 OF 20

J:\R300\R300608.01 - PALISADES STORMWATER MSTP\ AND TRM\ARCH\10 CADD & BIM\10.1 AUTOCAD\DWGS\09042102GI002.1.DWG



DRAINAGE AREA MAP

PROJECT LEGEND

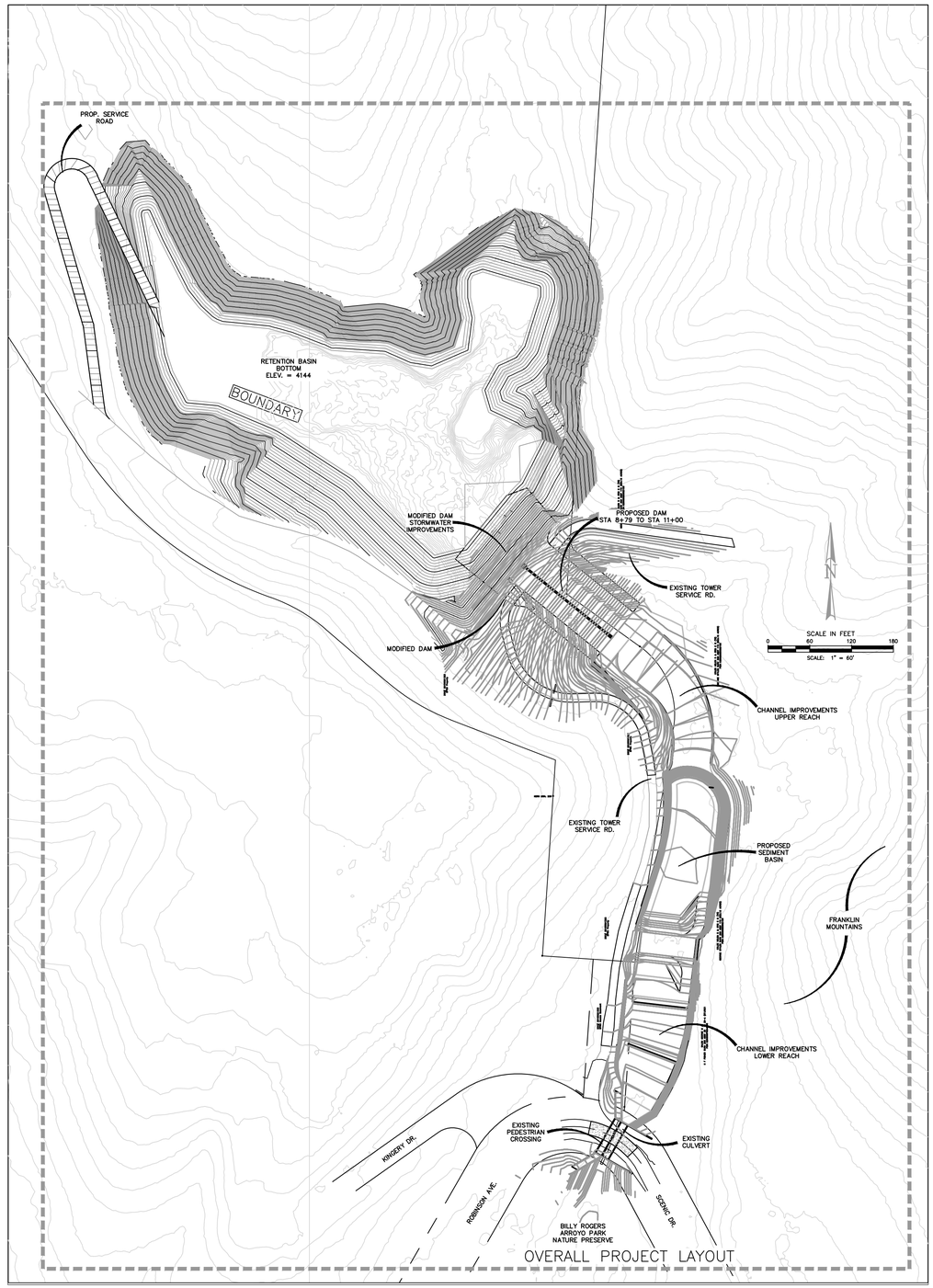
- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- W — PROPOSED WATER MAIN
- W — WATER LINE (AS NOTED)
- TV — EXISTING TIME WARNER CABLE LINE
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR

BASIN DATA				
SUBBASIN	ACREAGE	SOIL TYPE	CURVE NO.	LAG TIME
	(AC)			(HRS)
A	400	Gravelly Sandy Loam	88	0.55
B	79	Gravelly Sandy Loam	88	0.233

STORM DATA					
		PROPOSED		PROPOSED	
		PEAK	PROPOSED	PEAK	PROPOSED
	24 HOUR	DISCHARGE	POND	DISCHARGE	PEAK
RECURRENCE	RAIN DEPTH	TO POND	PEAK W.S.E.	AT ROBINSON	STORAGE
(YEAR)	(IN)	(CFS)	(FT)	(CFS)	(AC-FT)
25	2.60	468.60	4159.20	0.00	53.70
50	2.96	554.80	4161.80	0.00	65.50
100	3.34	838.10	4164.50	0.00	79.00
75% PMP	6.53	2386.80	4173.50	1937.70	126.80

OUTLET STRUCTURE DATA		
PRIMARY LOW LEVEL	EMERGENCY SPILLWAY	TOP OF DAM
OUTLET ELEVATION	CREST ELEVATION	ELEVATION
4148.00	4169.00	4175.00

DAM CLASSIFICATION		
STORAGE	HEIGHT	CLASSIFICATION
(AC-FT)	(FT)	
126.8	31	SMALL
HAZARD		DESIGN EVENT
HIGH		100 YR



OVERALL PROJECT LAYOUT

						SCALE	ENGINEER'S SEAL
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						DWG: 09042102GI003.DWG	ON
						DATE: 12/23/2020	DECEMBER 23, 2020
						DESIGN BY: R.A.P.	IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES
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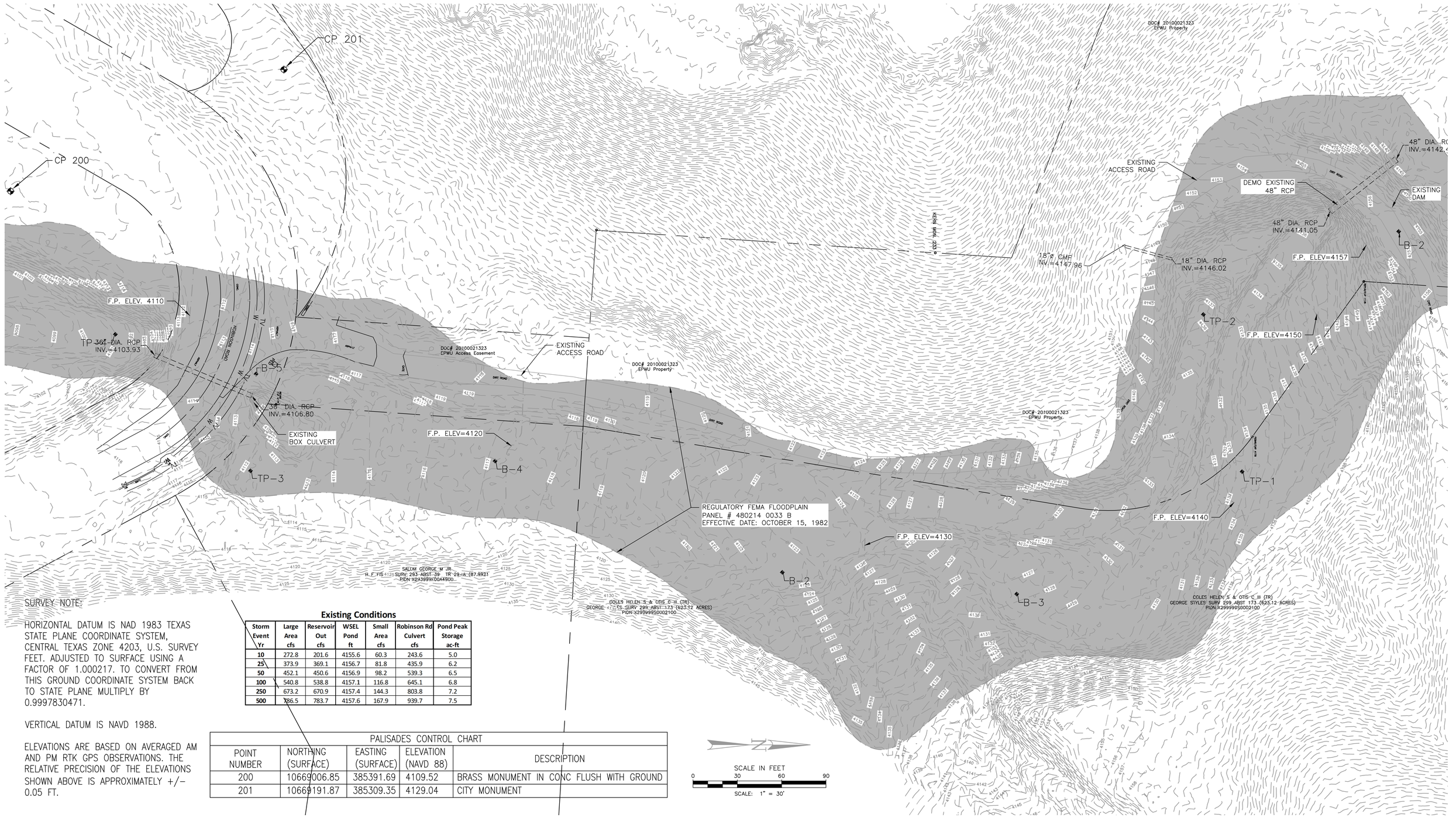
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

JOB NO. R300608.01

OVERALL PROJECT LAYOUT AND DRAINAGE AREA MAP

GI103

SHEET NO. 3 OF 20



SURVEY NOTE:

HORIZONTAL DATUM IS NAD 1983 TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL TEXAS ZONE 4203, U.S. SURVEY FEET. ADJUSTED TO SURFACE USING A FACTOR OF 1.000217. TO CONVERT FROM THIS GROUND COORDINATE SYSTEM BACK TO STATE PLANE MULTIPLY BY 0.9997830471.

VERTICAL DATUM IS NAVD 1988.

ELEVATIONS ARE BASED ON AVERAGED AM AND PM RTK GPS OBSERVATIONS. THE RELATIVE PRECISION OF THE ELEVATIONS SHOWN ABOVE IS APPROXIMATELY +/- 0.05 FT.

Existing Conditions

Storm Event Yr	Large Area cfs	Reservoir Out cfs	WSEL Pond ft	Small Area cfs	Robinson Rd Culvert cfs	Pond Peak Storage ac-ft
10	272.8	201.6	4155.6	60.3	243.6	5.0
25	373.9	369.1	4156.7	81.8	435.9	6.2
50	452.1	450.6	4156.9	98.2	539.3	6.5
100	540.8	538.8	4157.1	116.8	645.1	6.8
250	673.2	670.9	4157.4	144.3	803.8	7.2
500	786.5	783.7	4157.6	167.9	939.7	7.5

PALISADES CONTROL CHART

POINT NUMBER	NORTHING (SURFACE)	EASTING (SURFACE)	ELEVATION (NAVD 88)	DESCRIPTION
200	10669006.85	385391.69	4109.52	BRASS MONUMENT IN CONC FLUSH WITH GROUND
201	10669191.87	385309.35	4129.04	CITY MONUMENT

SCALE IN FEET
0 30 60 90
SCALE: 1" = 30'

TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: AS NOTED
VER:

DWG: 09042102G004.1.DWG
DATE: 12/23/2020
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CHKD. BY: R.A.

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ON

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el paso WATER
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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

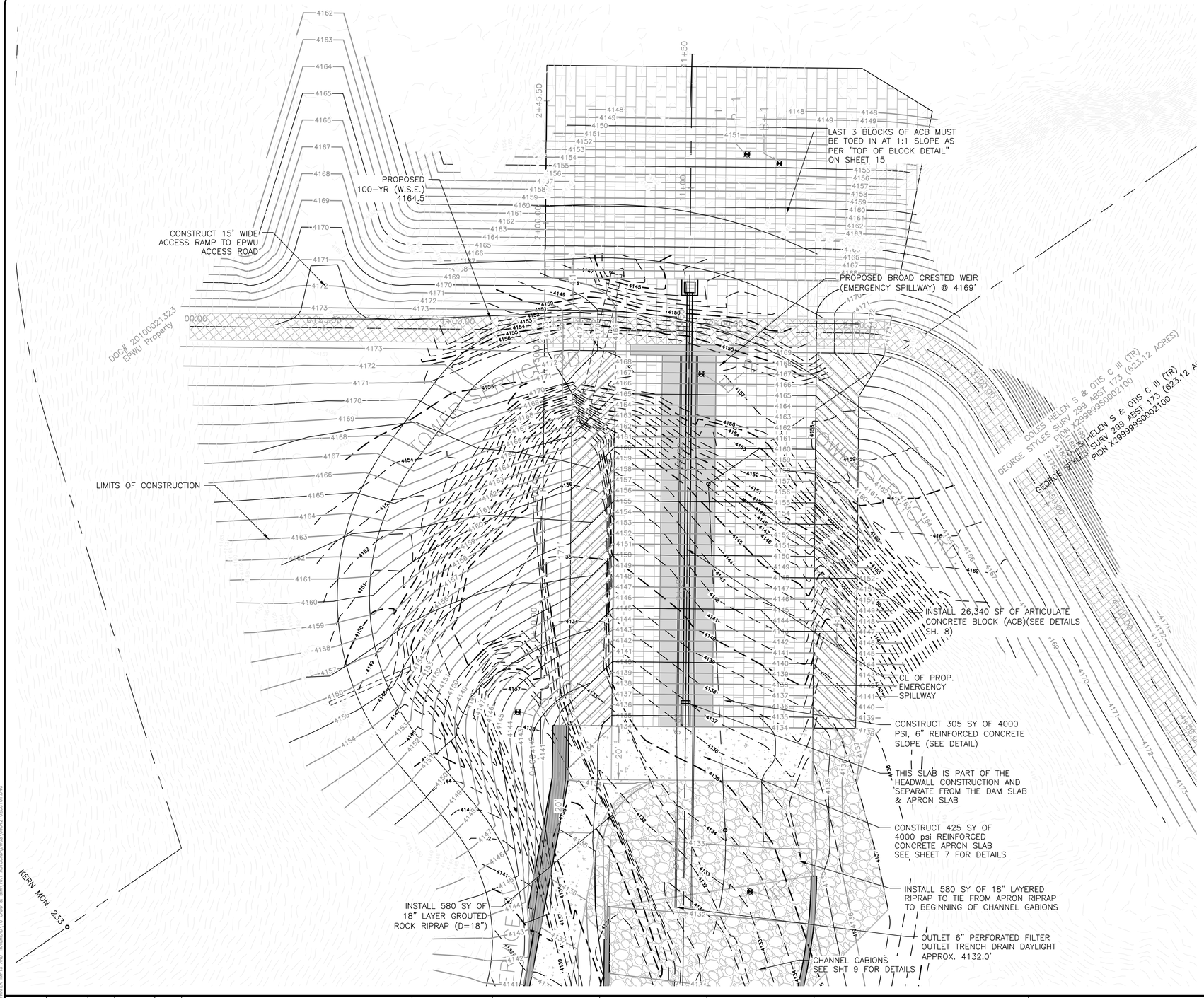
EXISTING CONDITIONS/DEMOLITION PLAN

JOB NO. R300608.01

G-104

SHEET NO. 4 OF 20

J:\R300\R300608.01 - PALISADES STORMWATER MPTS AND TRM\MSD\10 CADD & BIM\10.1 AUTOCAD\DWG\09042102G004.1.DWG



PROJECT LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- W — PROPOSED WATER MAIN
- W — WATER LINE (AS NOTED)
- TV — EXISTING TIME WARNER CABLE LINE
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR

NOTES:
1. UNLESS NOTED OTHERWISE, ALL CHANNEL BOTTOM WILL BE COVERED WITH 18" LOOSE ROCK RIPRAP WITH A GEOTEXTILE UNDERLINER.
2. TAN ARMOR-FLEX COLOR TO BE USED FOR ARTICULATE CONCRETE BLOCK

DIAPHRAGM DIMENSIONS

WIDTH:	46 FEET
HEIGHT:	21 FEET (TOP AT 4167)
THICKNESS:	4 FEET

FILTER OUTLET TRENCH (DRAIN OUTLET)

WIDTH:	28 FEET (9 FEET EACH SIDE OF 4X4 BC)
LENGTH:	164 FEET
THICKNESS:	5 FEET
PIPE BEDDING:	1 FOOT

TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: AS NOTED
VER:

DWG: 09042102cg101.dwg
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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

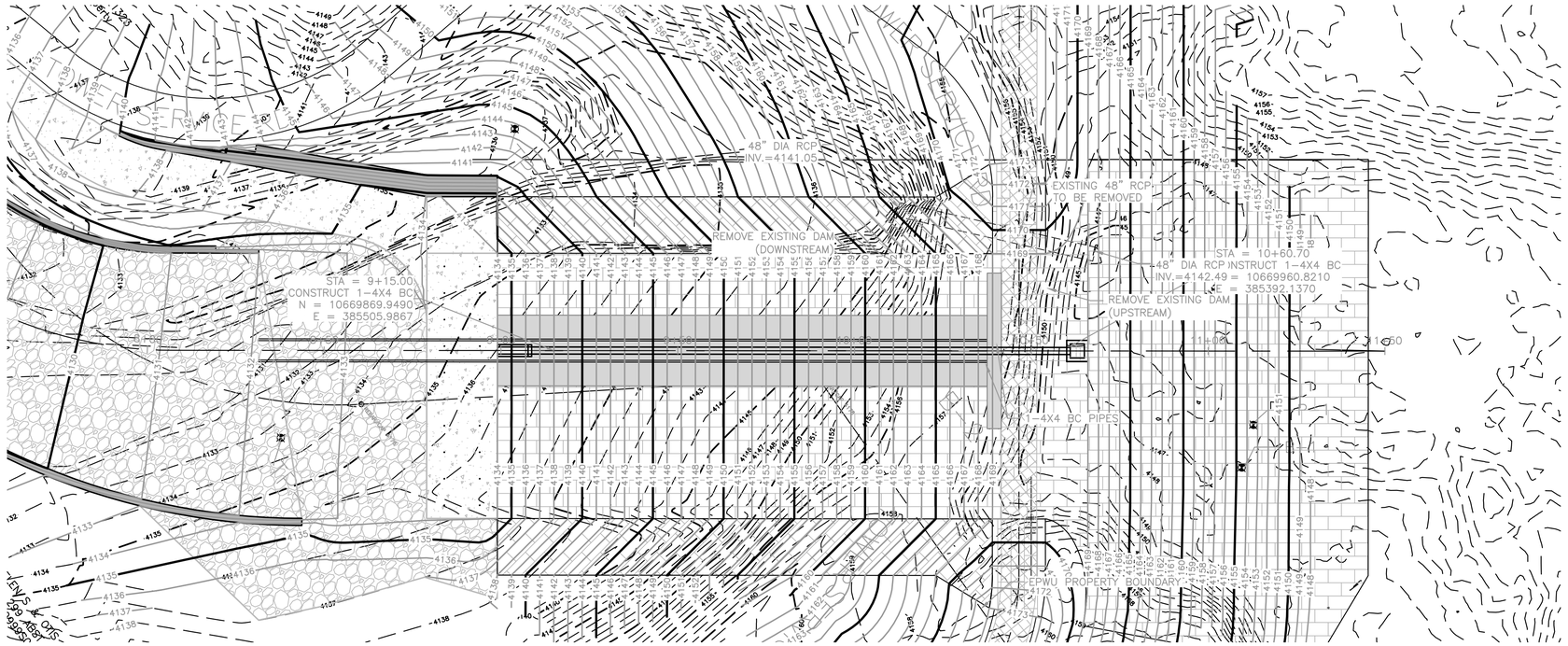
DAM PLAN VIEW

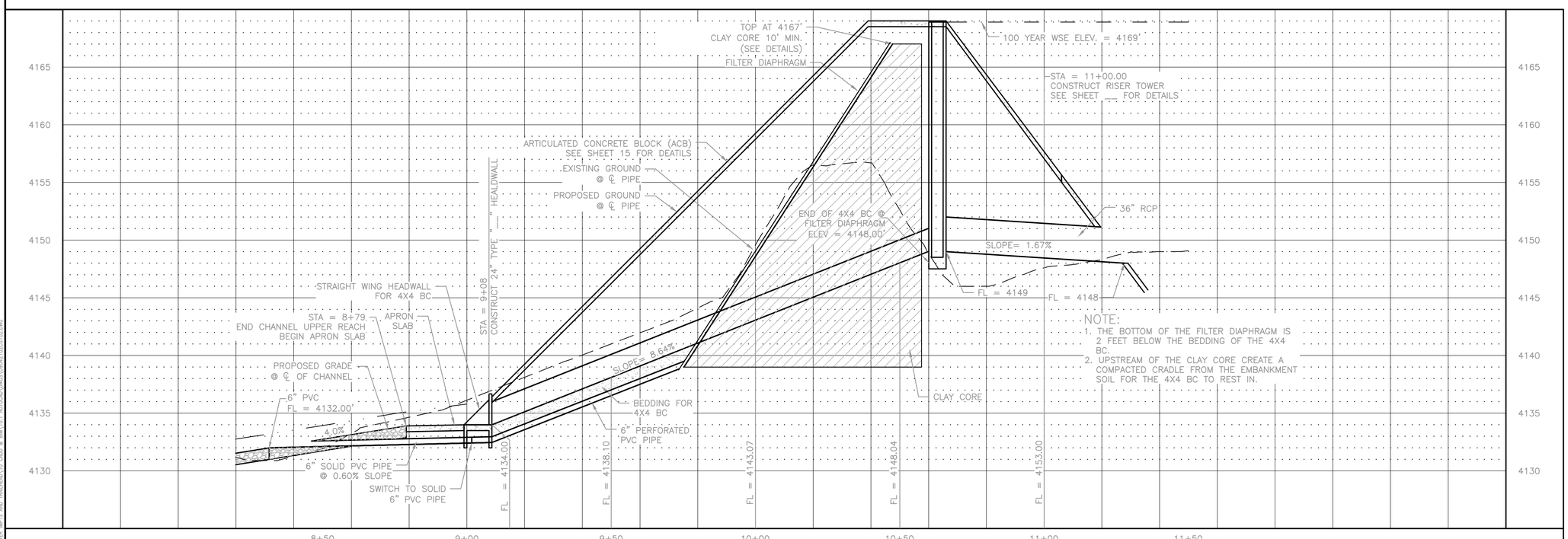
JOB NO. R300608.01

CG-101

SHEET NO. 5 OF 20

J:\PROJ\R300608.01 - PALISADES STORMWATER (MPTS AND TRAILHEAD)\10 CADD & BIM\10.1 AUTOCAD\DWGS\09042102CG101.DWG





CLAY CORE NOTES:

1. THE CROSS-SECTIONAL THICKNESS OF A CLAY CORE ZONE SHOULD NOT BE LESS THAN THE REMAINING HEIGHT OF THE EMBANKMENT ABOVE IT FOR ANY GIVEN ELEVATION AND SHOULD NOT BE LESS THAN 10 FEET.
2. THE CROSS-SECTIONAL THICKNESS OF A CLAY CORE ZONE SHOULD BE AT LEAST 2.5 TIMES THE HEIGHT OF THE DAM AT ITS BASE.
3. THE CORE ZONE SHOULD EXTEND VERTICALLY TO WITHIN SEVERAL FEET BELOW THE EMBANKMENT CREST.
4. THE CORE ZONE (AND ITS IMPERVIOUS MATERIAL) SHOULD INCORPORATE THE LIMITS OF THE DAM FOUNDATION'S KEY TRENCH.
5. THE MATERIALS USED TO CONSTRUCT THE EARTHEN DAM SHOULD MEET THE REQUIREMENTS INDICATED IN SECTION 12.1 OF THE GEOTECHNICAL REPORT.
6. IMPERVIOUS CORE FILL MATERIALS USED TO CONSTRUCT THE EARTHEN DAM SHOULD BE LIMITED TO THOSE MATERIALS THAT EXHIBIT A MINIMUM PERMEABILITY OF 1X10-6 CM/SEC, AS MEASURED BY ASTM D 5084. FURTHERMORE, ADDITIONAL SOIL PROPERTIES ARE LISTED BELOW:
   LIQUID LIMIT: 30% MIN.
   PLASTICITY INDEX: 18 TO 35%
   IMPERVIOUS CORE FILL MATERIALS SHALL CLASSIFY AS GC, SC, CL, ML, OR CH ACCORDING TO THE USCS.
7. THE CORE FILL SHOULD BE PLACED AT 95 PERCENT OF MAXIMUM DRY DENSITY AND ± 3 PERCENTAGE POINTS OF OPTIMUM MOISTURE AS DETERMINED BY TEST METHOD ASTM D-1557 OR ASTM D-698, DEPENDING ON THE FINAL APPROVAL MATERIAL BY THE ENGINEER.

DAM FOUNDATION NOTES:

1. BASED ON THE BORING LOGS AND SOILS CLASSIFICATION TESTS, THE GEOTECHNICAL ENGINEER RECOMMEND THAT THE EXISTING SOILS THAT WILL SUPPORT THE DAM BE REMOVED TO A DEPTH OF AT LEAST 36 INCHES. THESE SOILS SHOULD BE REPLACED AND/OR REPROCESSED TO MEET THE REQUIREMENTS OF SELECT FILL IN THE GEOTHECNICAL REPORT.
2. THE FILL SHOULD BE PLACED IN LOOSE LIFTS NOT TO EXCEED 8 INCHES AND RE-COMPACTED TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY AND AT 0 TO + 3 PERCENT OF OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D 1557 UNTIL PERMANENTLY COVERED.
3. A KEY TRENCH MAY BE CONSTRUCTED AT THE BOTTOM CENTERLINE OF THE DAM IN ORDER TO BOND THE IMPERVIOUS ZONE OF THE EMBANKMENT TO THE FOUNDATION OF THE DAM. IT IS RECOMMENDED THAT THE BOTTOM WIDTH OF THE KEY TRENCH SHALL BE AT LEAST 10 FEET AND THE DEPTH 5 FEET. THE KEY SHOULD ALSO EXTEND HORIZONTALLY AND VERTICALLY INTO THE NATIVE SOIL AND/OR BEDROCK MATERIALS ALONG THE DAM EDGES. THE HORIZONTAL DEPTH OF EXCAVATION ALONG THE DAM EDGES SHOULD BE AT LEAST 5 TO 10 FEET INTO NATIVE SOIL AND/OR ROCK MATERIAL.
4. A TEMPORARY GROUT PILE OR DRILL SHAFT CURTAIN MAY BE INSTALLED TO ALLOW FOR CONSTRUCTION EXCAVATION OF THE HORIZONTAL KEY AND TO MITIGATE SOIL SLOUGHING.

PROJECT LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- W — PROPOSED WATER MAIN
- W — WATER LINE (AS NOTED)
- TV — EXISTING TIME WARNER CABLE LINE
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR

SCALE IN FEET
0 10 20 40 60
SCALE: 1" = 20'

TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: AS NOTED
VER: ____
DWG: 09042102cg102.dwg
DATE: 12/23/2020
DESIGN BY: R.A.P.
DRAWN BY: J.R.F.
CHKD. BY: R.A.

ENGINEER'S SEAL

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P.E. 88072

ON

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HUITT-ZOLLARS INC.
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FIRM REGISTRATION F-761

el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

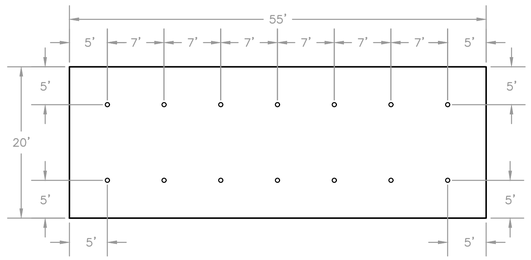
OUTFALL PIPE
PLAN & PROFILE

JOB NO. R300608.01

CG-102

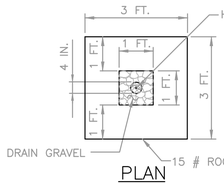
SHEET NO. 6 OF 20

I:\EPWU\R300608.01 - PALISADES STORMWATER IMPTS. AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\DWG\DWG\210202\09042102CG102.DWG

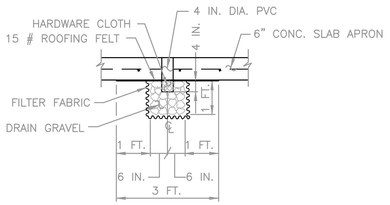


APRON SLAB WEEP HOLE PATTERN

N.T.S.



PLAN



SECTION

WEEP HOLE DETAIL

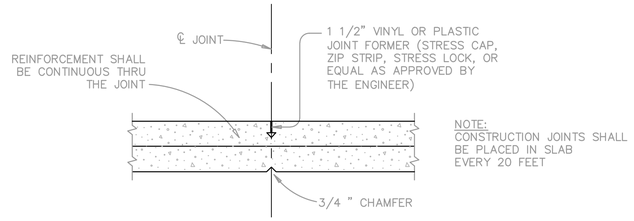
N.T.S.

WEEP HOLE NOTES:

1. MATERIALS:
   a. PIPE: 4 INCH DIA. SCH. 40 PVC
   b. DRAIN GRAVEL – SEE SHEET 11 FOR GRADATION
   c. HARDWARE CLOTH: MIN. OPEN MAX. OPEN
   d. FILTER FABRIC: 1/8 IN 1/4 IN
   NON–WOVEN GEOTEXTILE

MIN. AOS	SIEVE NO.	120 MIN
MAX. AOS	SIEVE NO.	50 MAX
WEIGHT	OZ/SY	4 OZ. MIN

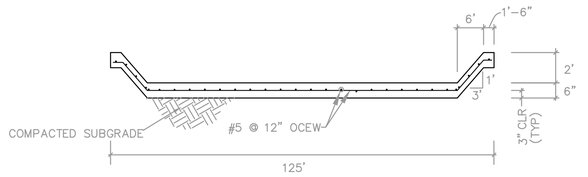
2. CUT WEEP HOLE PIPE FLUSH WITH CONCRETE SURFACE.



CONSTRUCTION JOINT DETAIL

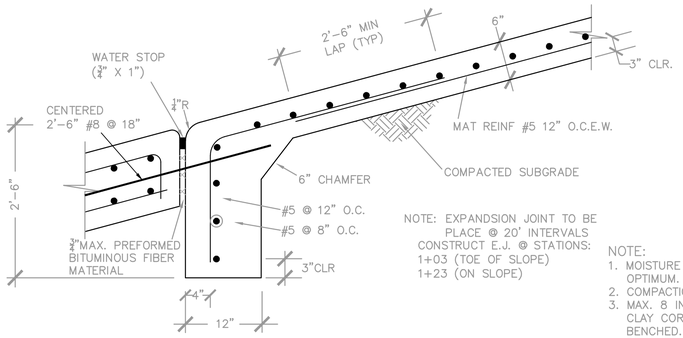
N.T.S.

NOTE:
EXPANSION JOINTS TO BE PLACED AT LOCATIONS WHERE CONCRETE CHANGES SLOPE (i.e. AT VERTICAL BENDS)



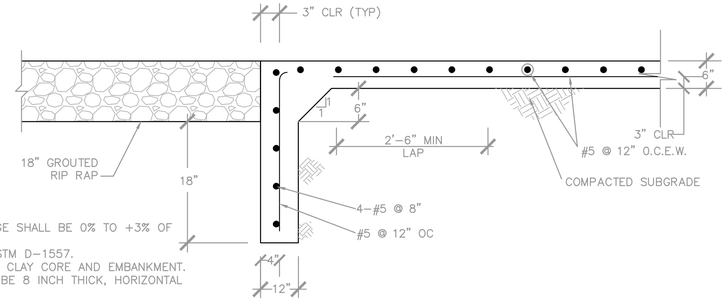
TYPICAL CONCRETE SLOPE SECTION B–B

N.T.S.



NOTE: EXPANDSION JOINT TO BE PLACE @ 20' INTERVALS CONSTRUCT E.J. @ STATIONS:
1+03 (TOE OF SLOPE)
1+23 (ON SLOPE)

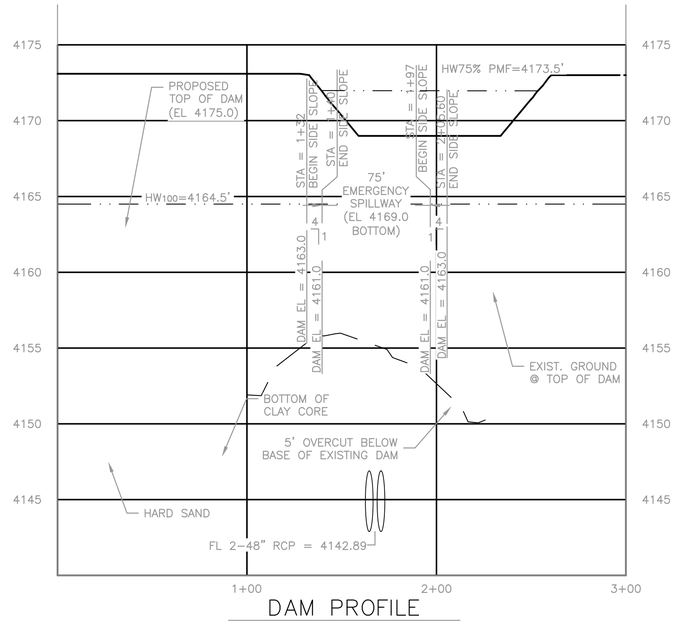
EXPANSION JOINT DETAIL–SLAB



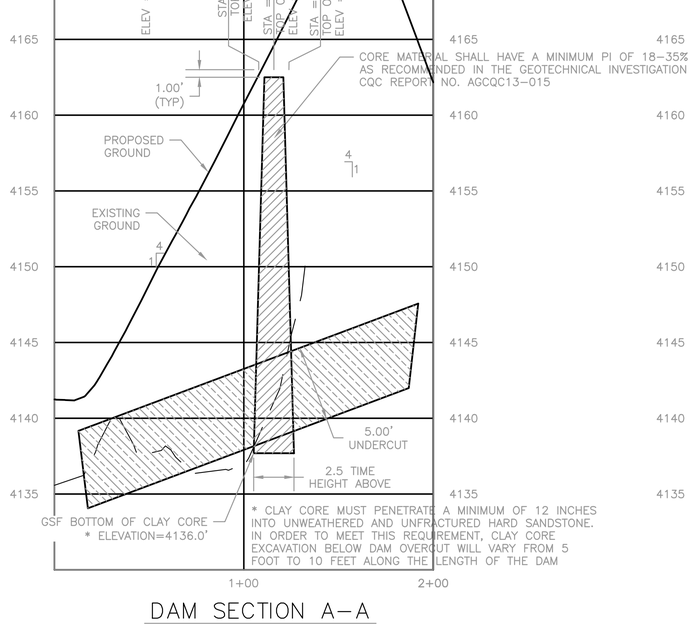
NOTE:
1. MOISTURE DENSITY RANGE SHALL BE 0% TO +3% OF OPTIMUM.
2. COMPACTION TO 95% ASTM D–1557.
3. MAX. 8 INCH LIFTS FOR CLAY CORE AND EMBANKMENT. CLAY CORE LIFT SHALL BE 8 INCH THICK, HORIZONTAL BENCHED.
4. 4 INCHES OF TOP SOIL SHALL BE PLACED ON DAM EMBANKMENT FILL.

TOE WALL SECTION C–C

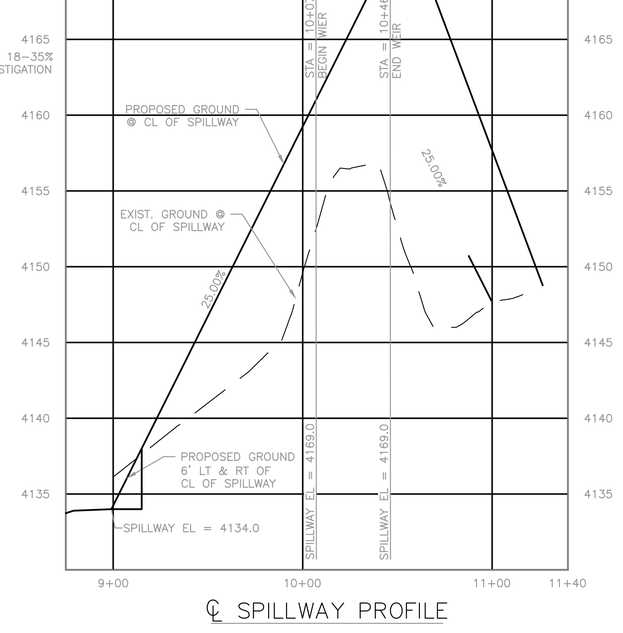
N.T.S.



DAM PROFILE



DAM SECTION A–A



℄ SPILLWAY PROFILE

NOTE:
1. THICKNESS OF CLAY CORE AT ANY ELEV. IS THE HEIGHT OF EMBANKMENT ABOVE THAT ELEV. MINIMUM THICK=10'.
2. REMOVE ENTIRE EXISTING DAM EMBANKMENT TO A DEPTH OF AT LEAST 5' BELOW "EXISTING" GROUND.
3. REPLACE AND/OR REPROCESS THESE SOILS TO MEET THE REQUIREMENTS OF STRUCTURAL FILL SPECIFIED IN LATEST CQC GEOTECH REPORT.
4. THE FILL SHOULD BE PLACED IN LOOSE LIFTS NOT TO EXCEED 8 INCHES AND RECOMPACTED TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY AND AT 0 TO +3 PERCENT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D–1557 UNTIL PERMANENTLY COVERED.
5. A KEY TRENCH AT LEAST 10 FEET WIDE AND 5 FEET DEEP TO BE CONSTRUCTED AT THE BOTTOM CENTERLINE OF THE DAM IN ORDER TO BOND THE IMPERVIOUS ZONE OF THE EMBANKMENT TO THE FOUNDATION OF THE DAM. EXTEND KEY TRENCH HORIZONTALLY AND VERTICALLY INTO THE NATIVE SOIL AND/OR BEDROCK MATERIALS ALONG THE DAM EDGES.
6. THE HORIZONTAL DEPTH OF EXCAVATION ALONG DAM SLOPES WILL BE AT LEAST 5–10 FEET INTO NATIVE SOIL AND/OR ROCK MATERIAL.
7. A TEMPORARY GROUT PILE MAY BE INSTALLED TO ALLOW FOR CONSTRUCTION OF THE HORIZONTAL KEY AND TO MITIGATE SOIL SLOUGHING.
8. IMPERVIOUS CORE FILL MATERIALS SHALL EXHIBIT A MINIMUM PERMEABILITY OF 1X10^–6 cm/sec. AS MEASURED BY ASTM D–5084 AND WITH A LIQUID LIMIT : 30% MIN., PI FROM 18–35% IMPERVIOUS CORE FILL MATERIALS SHALL CLASSIFY AS GC, SC, CL, ML, OR CH ACCORDING TO THE USGS.
9. CORE FILL SHOULD BE PLACED AT 95% OF MAX. DRY DENSITY AND ±3% OF OPTIMUM MOISTURE AS DETERMINED BY TEST METHOD ASTM D–1557 OR ASTM D–698.
10. CONTRACTOR TO FOLLOW ALL RECOMMENDATIONS IN THE LATEST CQC GEOTECH REPORT.

REV.	DATE	BY:	DESCRIPTION
TB			

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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

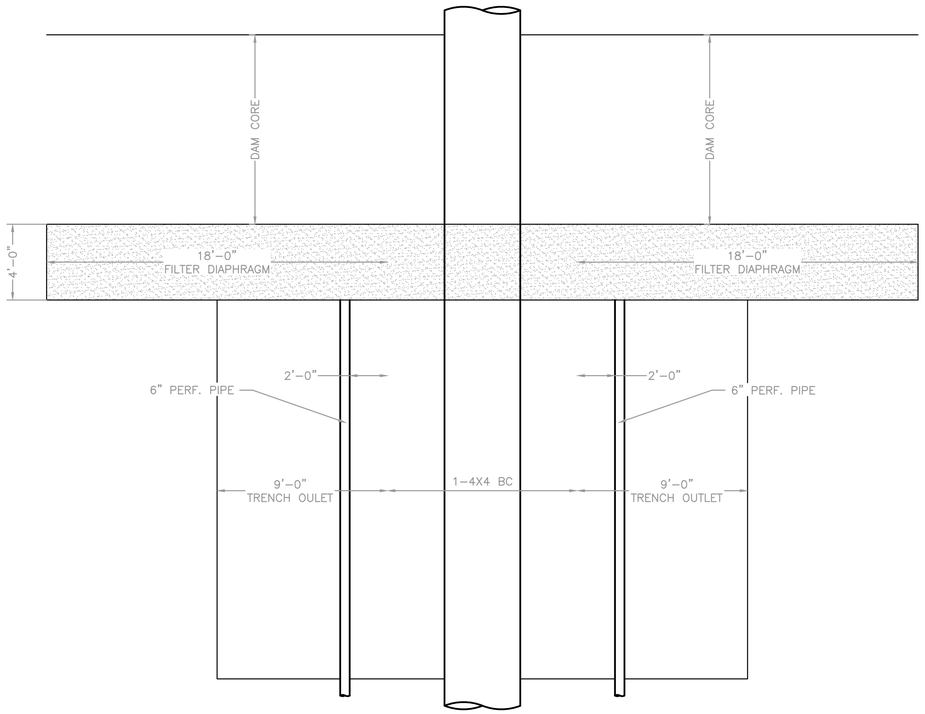
DAM OUTLET DETAILS

JOB NO. R300608.01

CG–501

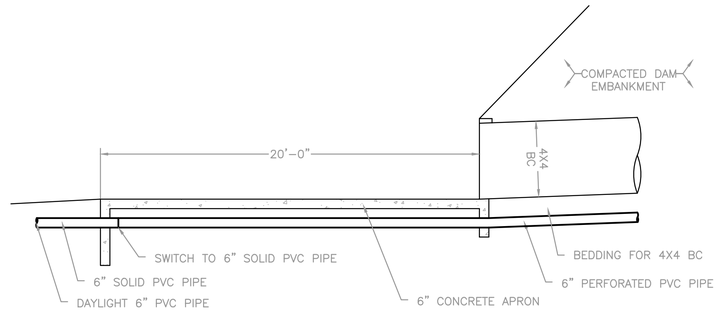
SHEET NO. 7 OF 20

J:\PROJ\R300608.01 - PALISADES STORMWATER, WPPS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\DWGS\09042102CG501.DWG



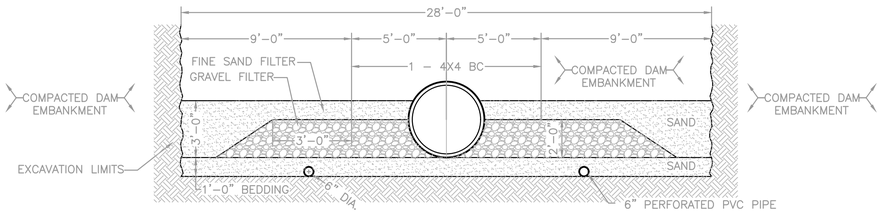
FILTER DIAPHRAGM – PLAN VIEW

SCALE : N.T.S.



6" PVC PIPE – PROFILE VIEW

SCALE : N.T.S.



OUTLET TRENCH – PROFILE VIEW

SCALE : N.T.S.

PROJECT SPECIFIC FILL GRADATION TABLES

Filter Diaphragm Select Fill Gradation

Sieve Size (Square Opening)	% Passing by Weight
3/8 - inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	5-30
No. 100	0-10
No. 200	0-1

Select Fill Gradation Table

Sieve Size (Square Opening)	% Passing by Weight
3 - inch	100
3/4 - inch	70-100
No. 4	45-100
No. 200	5-45

Sediment Basin Select Backfill Gradation Table

Sieve Size (Square Opening)	% Passing by Weight
3 - inch	100
3/4 - inch	70-100
No. 4	40-100
No. 200	13-45

Structural/Engineering Fill Gradation Table

Sieve Size (Square Opening)	% Passing by Weight
2 1/2 - inch	100
1 3/4 - inch	90-100
No. 4	25-55
No. 40	15-50

NOTE: REFER TO GEOTECHNICAL REPORT FOR OTHER REQUIREMENTS
PERFORATION SIZE IN 6" PVC PIPE : 1/4 INCH

FILTER DIAPHRAGM NOTES:

- THE GEOTECHNICAL ENGINEER IS TO CONFIRM THE BASE SOIL GRADATION PRIOR TO FILTER DIAPHRAGM CONSTRUCTION AND CONVEY RESULTS TO THE DESIGN ENGINEER. IF THE BASE SOIL GRADATION IS SIGNIFICANTLY DIFFERENT THAN WHAT THE FILTER DIAPHRAGM DESIGN WAS BASED ON, THEN THE DESIGN ENGINEER WILL USE THIS INFORMATION TO ADJUST THE REQUIRED SAND FILTER GRADATION.
- FILTER DIAPHRAGM SAND SHALL BE PLACED UNIFORMLY IN LAYERS NOT TO EXCEED 8 INCHES THICK BEFORE COMPACTION. EACH LAYER SHALL BE THOROUGHLY WETTED PRIOR TO COMPACTION.
- EACH LAYER OF SAND SHALL BE COMPACTED BY A MINIMUM OF TWO PASSES OF A VIBRATORY PLATE COMPACTOR WEIGHING AT LEAST 160 POUNDS. THE COMPACTOR SHALL HAVE A MINIMUM CENTRIFUGAL FORCE OF 2,450 POUNDS AT A VIBRATING FREQUENCY OF NO LESS THAN 5,000 CYCLES PER MINUTE. USE A HAND OPERATED VIBRATOR AROUND 4X4 BC.
- THE SAND SHALL BE PLACED TO AVOID SEGREGATION OF PARTICLE SIZES AND TO ENSURE THE CONTINUITY AND INTEGRITY OF ALL ZONES. NO FOREIGN MATERIAL SHALL BE ALLOWED TO BECOME INTERMIXED WITH OR OTHERWISE CONTAMINATE THE DRAINFILL.
- TRAFFIC SHALL NOT BE PERMITTED TO CROSSOVER FILTER ZONES AT RANDOM. EQUIPMENT CROSSOVERS SHALL BE MAINTAINED, AND THE NUMBER AND LOCATION OF SUCH CROSSOVERS SHALL BE ESTABLISHED AND APPROVED BEFORE THE BEGINNING OF DIAPHRAGM PLACEMENT. EACH CROSSOVER SHALL BE CLEANED OF ALL CONTAMINATING MATERIAL AND SHALL BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE THE PLACEMENT OF ADDITIONAL DRAIN FILL MATERIAL.
- ANY DAMAGE TO THE FOUNDATION SURFACE OR THE TRENCH SIDES OR BOTTOM OCCURRING DURING PLACEMENT OF SAND FILTER SHALL BE REPAIRED BEFORE THE SAND FILTER ZONE PLACEMENT IS CONTINUED.
- THE UPPER SURFACE OF THE SAND FILTER ZONE CONSTRUCTED CONCURRENTLY WITH ADJACENT ZONES OF EARTHFILL SHALL BE MAINTAINED AT A MINIMUM ELEVATION OF 1 FOOT ABOVE THE UPPER SURFACE OF ADJACENT EARTHFILL.
- THE FILTER DIAPHRAGM SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF A ONE POINT STANDARD PROCTOR (ASTM D698A) ENERGY TEST ON A DRY SAND SAMPLE.
- THE FILTER DIAPHRAGM SHALL BE DESIGNED ACCORDING TO THE GUIDELINES LISTED IN SECTION 5.6 OF THE GEOTECHNICAL REPORT.

QUALITY CONTROL NOTES:

- MATERIALS SHOULD BE VISUALLY INSPECTED TO DETERMINE WHETHER THEY LIKELY MEET THE MATERIAL SPECIFICATIONS. IF IN DOUBT, TESTING SHOULD BE REQUESTED TO VERIFY THE GRADATION AND QUALITY OF THE FURNISHED FILTER SAND AND GRAVEL.
- THE PLACED MATERIAL SHOULD BE VISUALLY INSPECTED TO DETERMINE THAT SEGREGATION HAS NOT OCCURRED FROM TRANSPORTING AND PLACING THE FILTERS. BROADLY GRADED SANDS ARE MOST PRONE TO SEGREGATION. DROPPING THE MATERIAL FROM HEIGHTS MORE THAN 4 FEET ALSO CAN PROMOTE SEGREGATION. LIMIT MATERIAL DROP TO NO MORE THAN 2–3'.
- PLACEMENT AND COMPACTION SHOULD BE ACCOMPLISHED IN LIFT THICKNESSES THAT ARE NO THICKER THAN SPECIFIED.
- OBSERVATION SHOULD DETERMINE IF SANDS ARE EITHER PLACED VERY DRY OR THAT THEY ARE WETTED IMMEDIATELY PRIOR TO COMPACTION WITH EQUIPMENT.
- CLEAN WATER SHOULD BE USED TO WET FILTER ZONES TO AVOID ADDING CLAY FINES.

TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: AS NOTED
VER:
DWG: 09042102CG502.DWG
DATE: 12/23/2020
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DRAWN BY: J.R.F.
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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

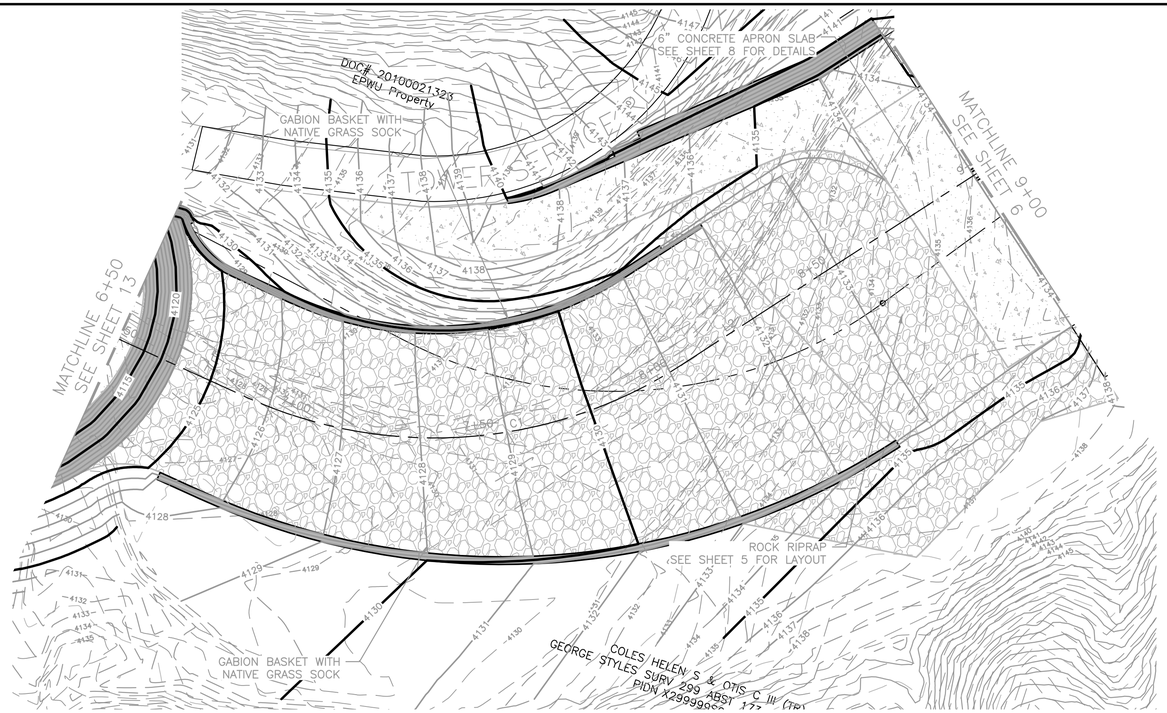
DAM OUTLET DETAILS

JOB NO. R300608.01

CG-502

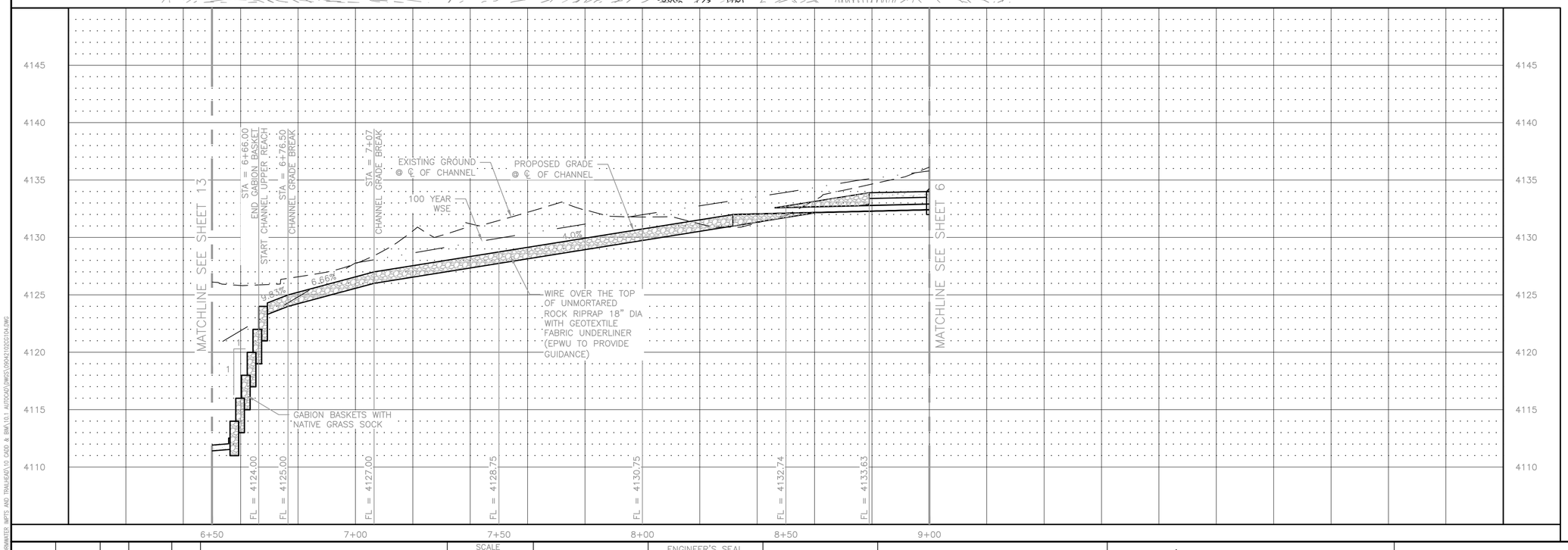
SHEET NO. 8 OF 20

J:\PROJ\R300608.01 - PALISADES STORMWATER (APTS AND TRAILHEAD)\10 CAD\ & BIM\10.1 AUTOCAD\DWGS\09042102CG502.DWG



Line Table		
Line #	Length	Direction
L2	342.82	N50° 57' 41"W

Curve Table				
Curve #	Radius	Length	Chord Direction	Chord Length
C1	120.00	120.27	N22° 14' 54"W	115.30



SCALE IN FEET
0 10 20 40 60
SCALE: 1" = 20'

NOTES:

1. ALL FILL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY OBTAINABLE WITH THE STANDARD PROCTOR TEST METHOD (ASTM STANDARD D-698).
2. DOUBLE TWISTED GABION BASKET & MATTRESS MATERIALS SHALL MEET SPECIFICATIONS AS ASSIGNED IN THE CONTRACT DOCUMENTS AS IN ACCORDANCE WITH ASTM D-975-75.

PROJECT LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- W — PROPOSED WATER MAIN
- W — WATER LINE (AS NOTED)
- TV — EXISTING TIME WARNER CABLE LINE
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR

TB	REV.	DATE	BY:	DESCRIPTION

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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

CHANNEL UPPPER REACH
PLAN & PROFILE

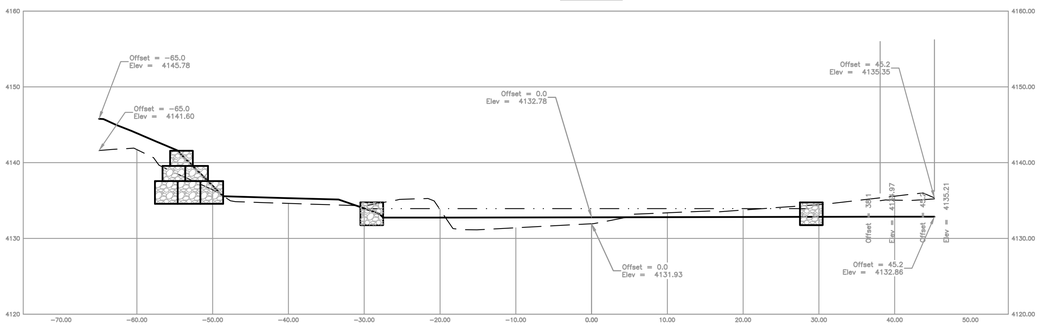
JOB NO.
R300608.01

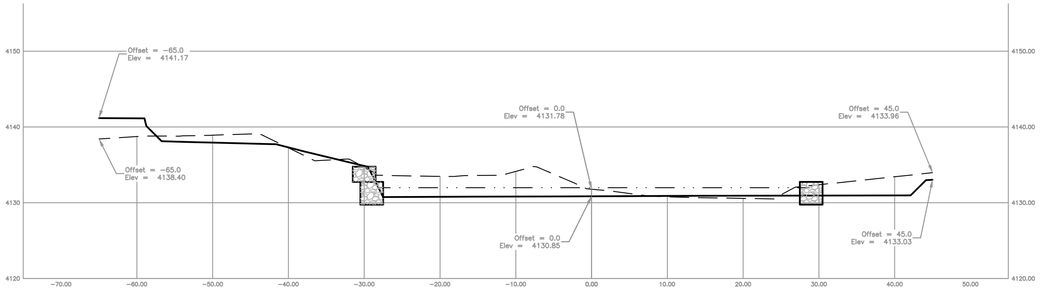
CG-104

SHEET NO.
9 OF 20

J:\PROJ\R300608.01 - PALISADES STORMWATER INFRS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\DWGS\09042102CG104.DWG

8+50.00





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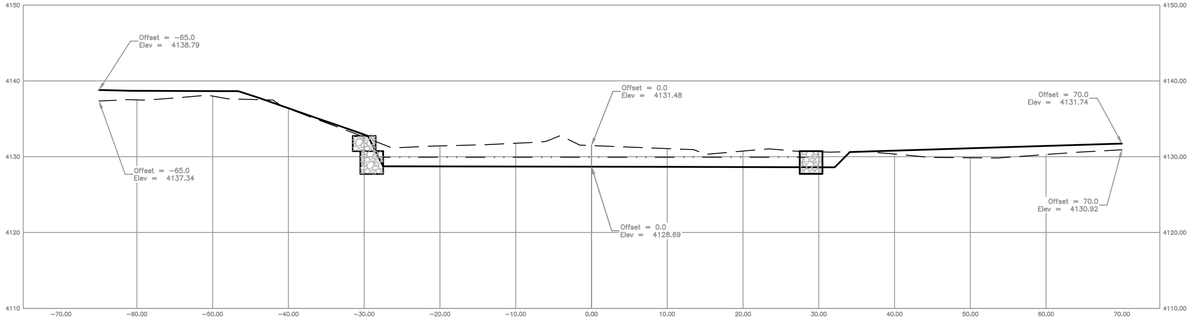

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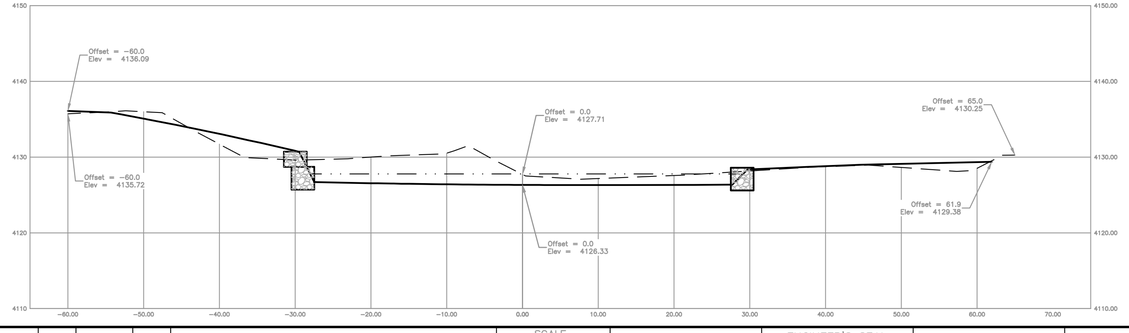

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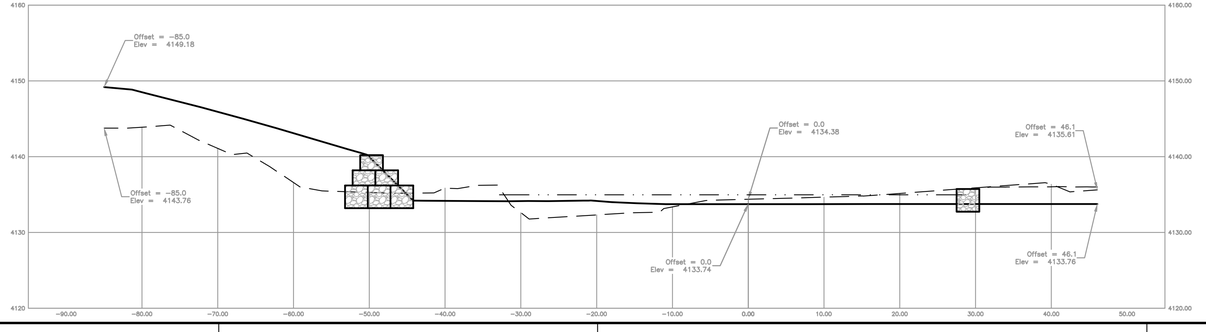

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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

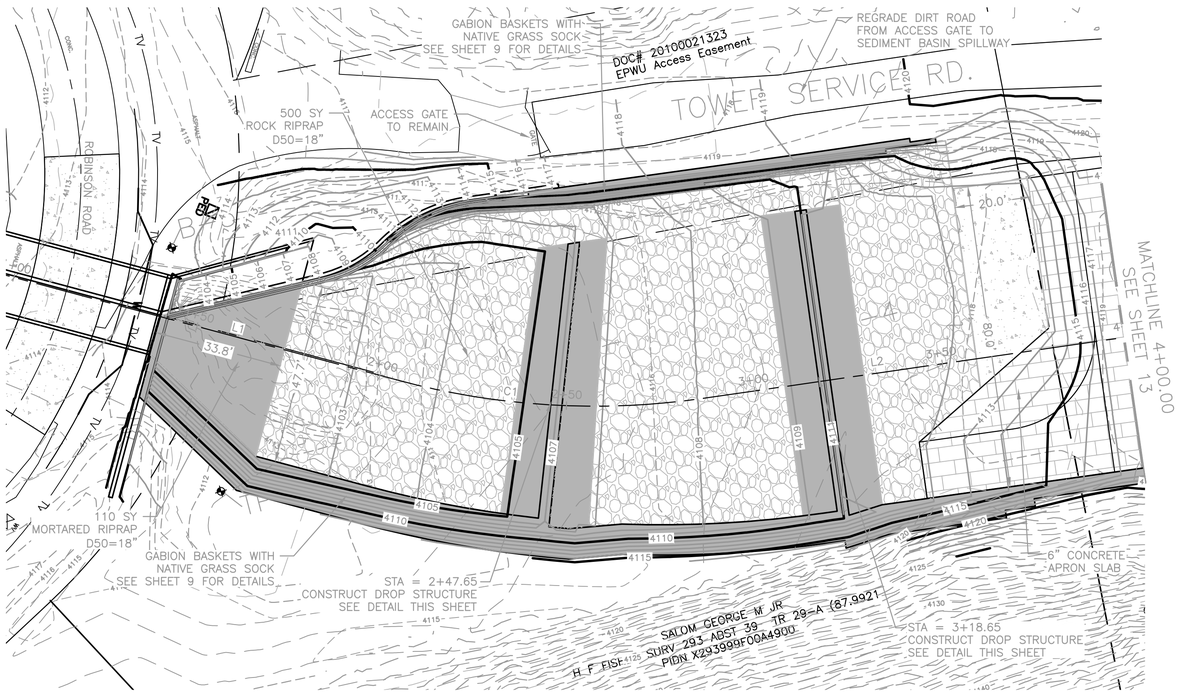
CHANNEL SECTIONS
UPPER REACH

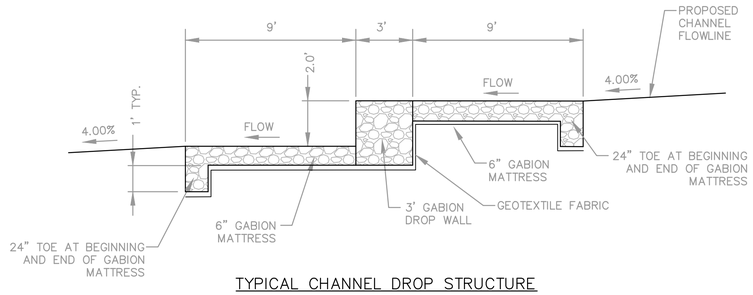
JOB NO.
R300608.01

CG-504

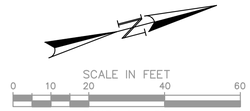
SHEET NO.
10 OF 20

J:\R300\R300608.01 - PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE\PLANS AND TRAFFIC\10 CAD & BIM\10.1 AUTOCAD\DWGS\09042102CG504.DWG





TYPICAL CHANNEL DROP STRUCTURE
N.T.S.

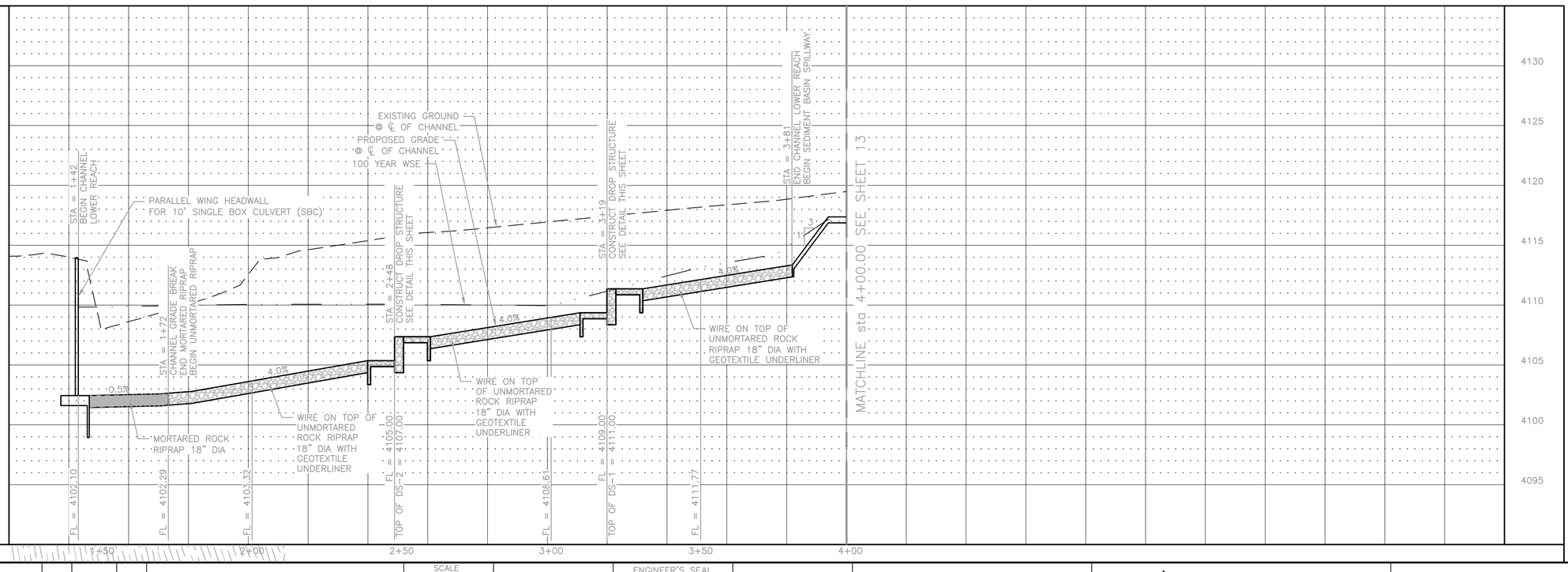


Line Table		
Line #	Length	Direction
L1	121.31	N29° 40' 53"E
L2	400.71	N06° 27' 54"E

Curve Table				
Curve #	Radius	Length	Chord Direction	Chord Length
C1	200.00	81.04	N18° 04' 23"E	80.49

NOTES:

1. ALL FILL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY OBTAINABLE WITH THE STANDARD PROCTOR TEST METHOD (ASTM STANDARD D-698).
2. DOUBLE-TWISTED GABION BASKET & MATTRESS MATERIALS SHALL MEET SPECIFICATIONS AS ASSIGNED IN THE CONTRACT DOCUMENTS AS IN ACCORDANCE WITH ASTM D-975-75.



BENCHMARKS

Benchmark # 1:
rebar with red plastic cap stamped random point.
Elevation XXX.XX.

Benchmark # 4:
rebar with red plastic cap stamped random point.
Elevation XXX.XX.

Benchmark # 5:
rebar with red plastic cap stamped random point.
Elevation XXX.XX.

PROJECT LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- W — PROPOSED WATER MAIN
- W — WATER LINE (AS NOTED)
- TV — EXISTING TIME WARNER CABLE LINE
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR

TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: AS NOTED
VER:

DWG: 09042102CG103.DWG
DATE: 12/23/2020
DESIGN BY: R.A.P.
DRAWN BY: J.R.F.
CHKD. BY: R.A.

ENGINEER'S SEAL

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RUSSELL ALLEN PARR
P.E. 88072

ON

DECEMBER 23, 2020
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HUITT-ZOLLARS INC.
ENGINEERING / SURVEYING
5822 CROMO DRIVE, SUITE 210
EL PASO, TEXAS 79912
PH. (915) 587-4339 / FAX (915) 587-5247
FIRM REGISTRATION F-761

el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

CHANNEL LOWER REACH
PLAN & PROFILE

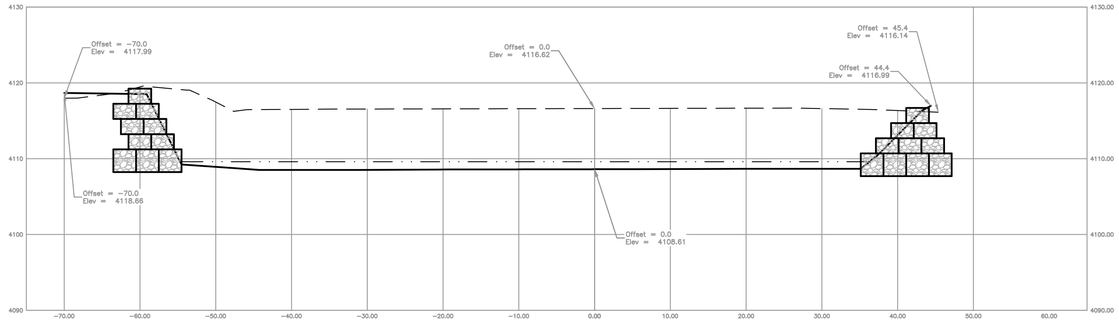
JOB NO.
R300608.01

CG-103

SHEET NO.
11 OF 20

J:\PROJ\R300608.01 - PALISADES STORMWATER INVITS AND TRAILHEAD\10 CAD\ & BIM\10.1 AUTOCAD\DWGS\09042102CG103.DWG

3+00.00



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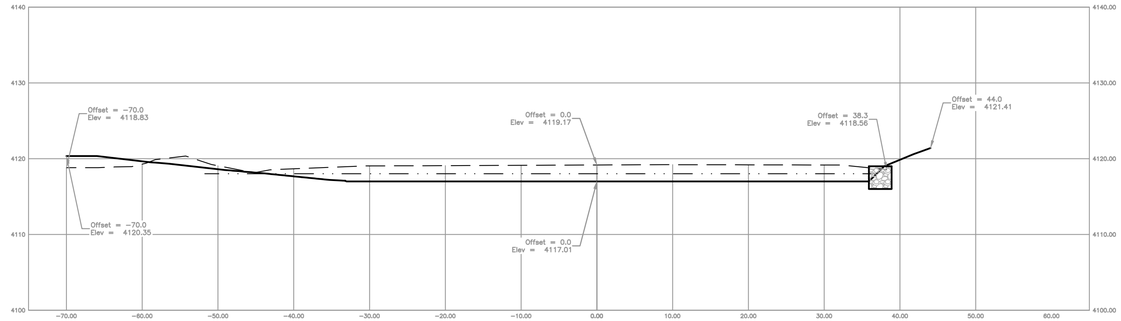

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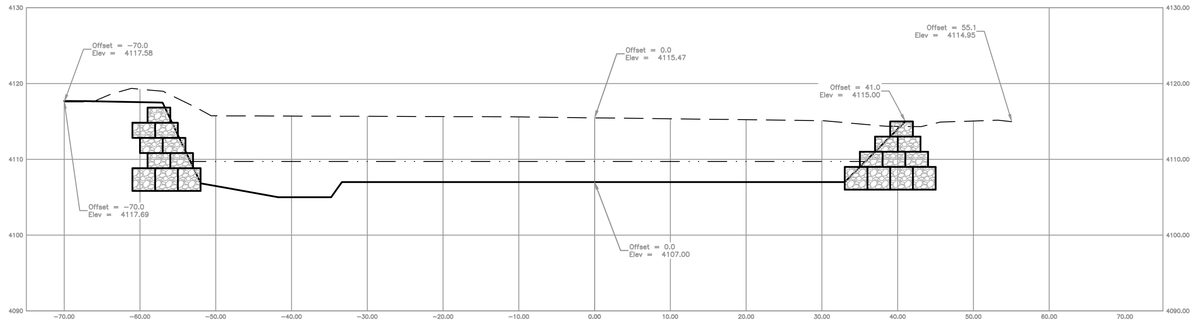

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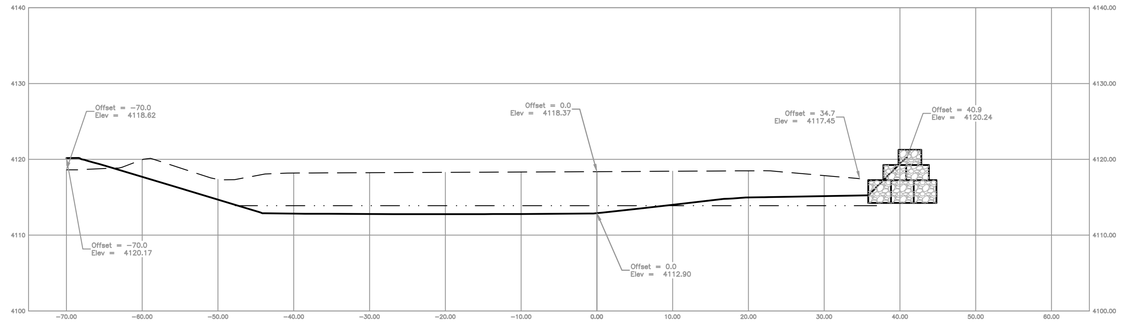

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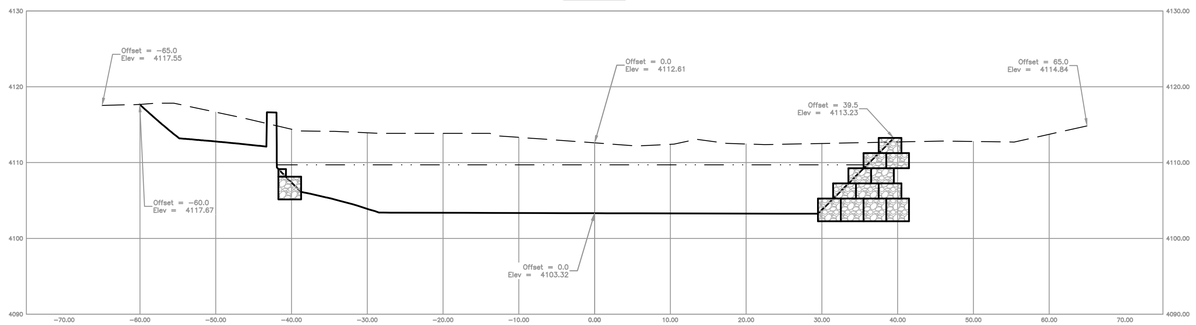

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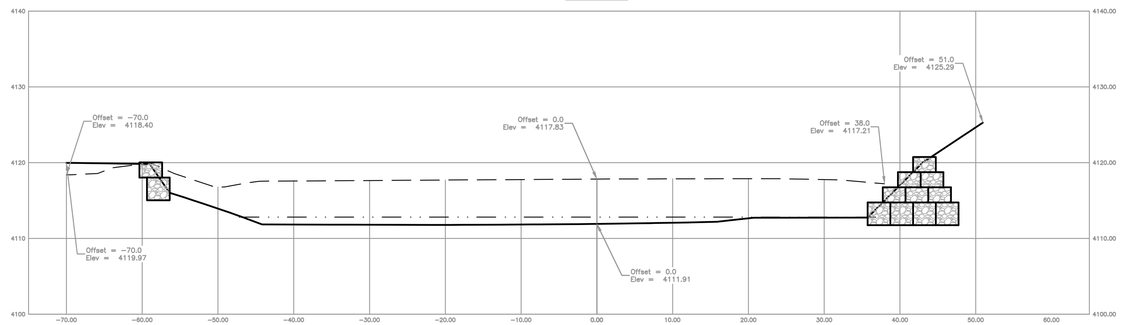

TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: AS NOTED
VER: ____

DWG: 09042102CG503.DWG
DATE: 12/23/2020
DESIGN BY: R.A.P.
DRAWN BY: J.R.F.
CHKD. BY: R.A.

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el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

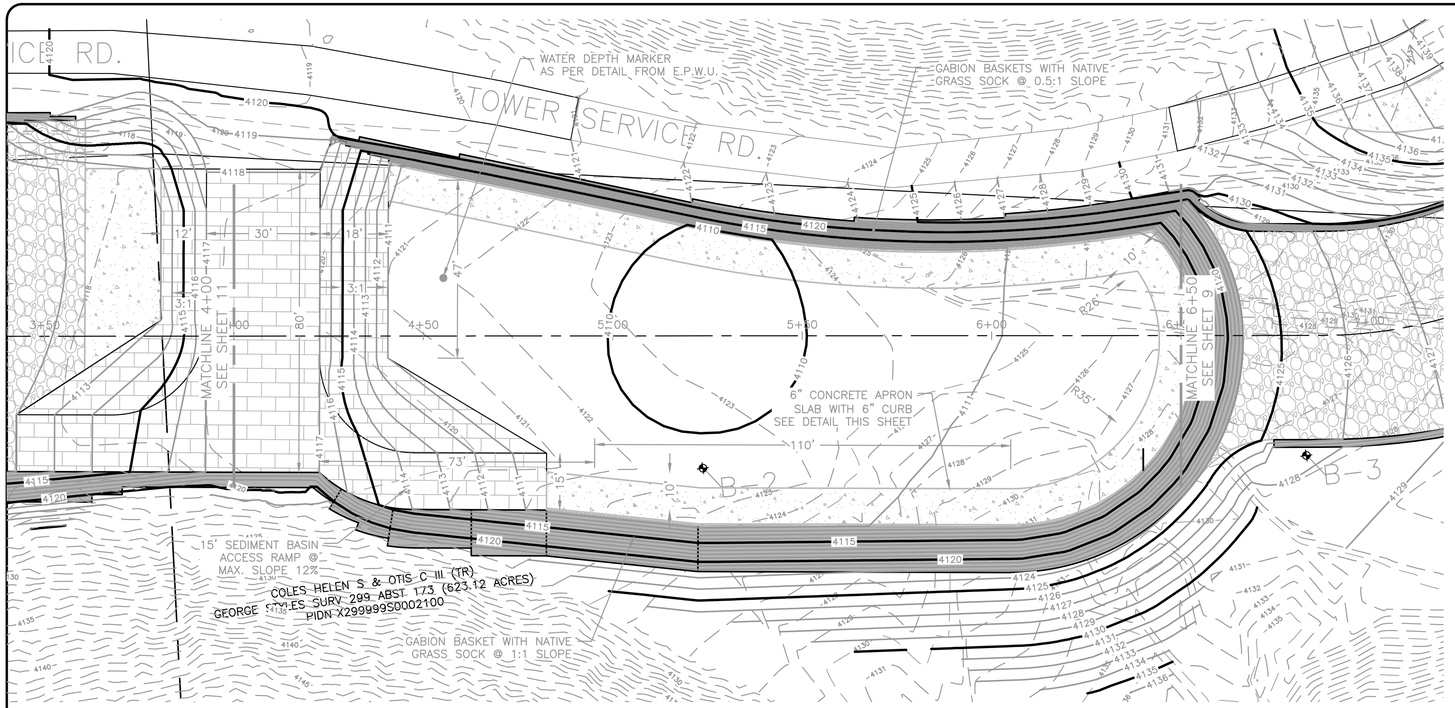
CHANNEL SECTIONS
LOWER REACH

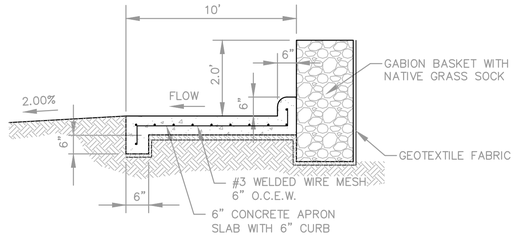
JOB NO. R300608.01

CG-503

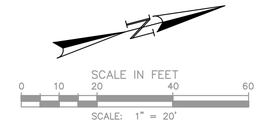
SHEET NO. 12 OF 20

J:\PROJ\R300608.01 - PALISADES STORMWATER (APTS AND TRAILHEAD)\10 CADD & BIM\10.1 AUTOCAD\DWGS\09042102CG503.DWG





CONCRETE APRON SLAB
AT GABION BASKET
N.T.S.



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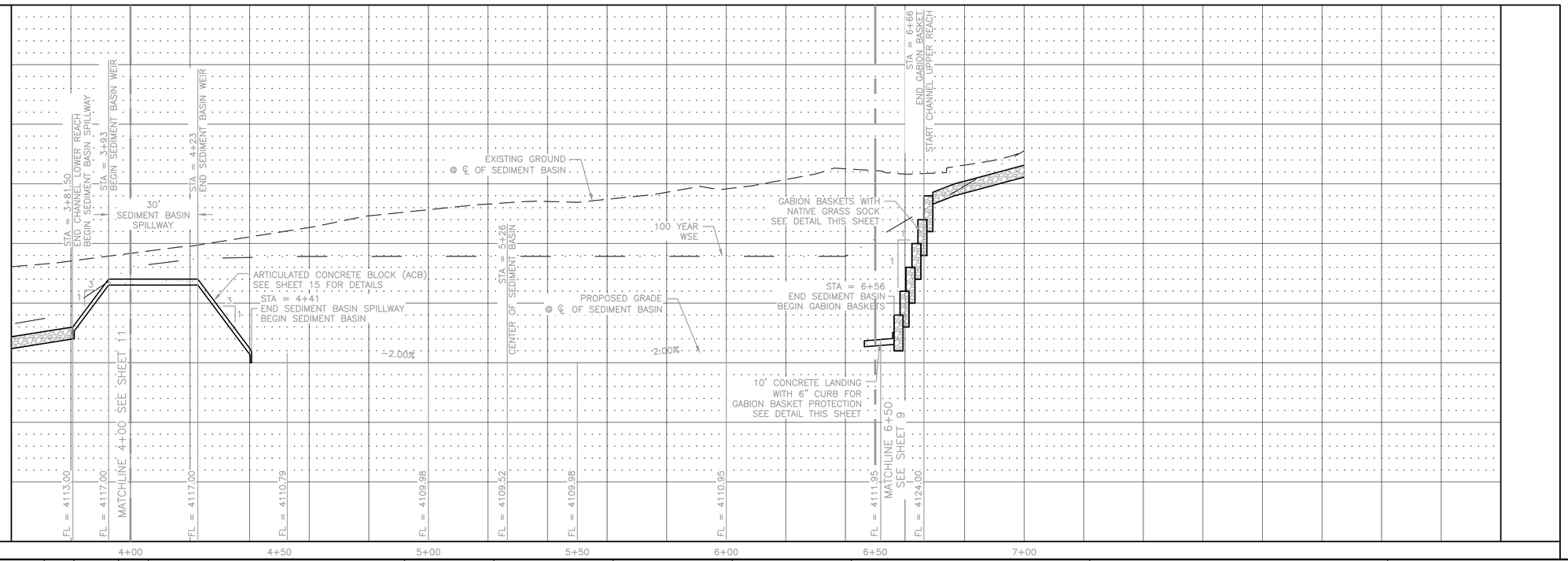

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HOR: AS NOTED
VER: ____

DWG: 09042102CG105.DWG
DATE: 12/23/2020
DESIGN BY: R.A.P.
DRAWN BY: J.R.F.
CHKD. BY: R.A.

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el paso WATER
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PALISADES STORMWATER DRAINAGE &
DEVELOPMENT OF NATURAL OPEN SPACE

SEDIMENT BASIN
PLAN & PROFILE

JOB NO.
R300608.01

CG-105

SHEET NO.
13 OF 20

J:\PROJ\R300608.01 - PALISADES STORMWATER JNRTS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\DWGS\09042102CG105.DWG

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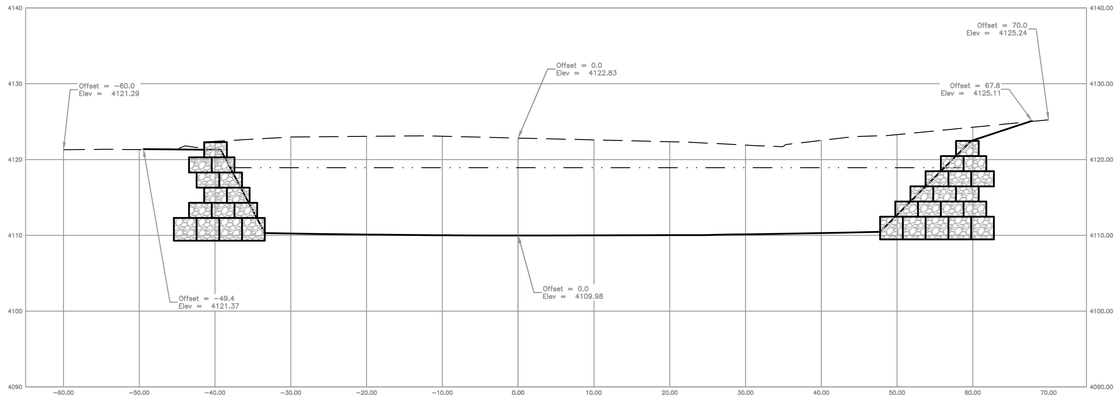

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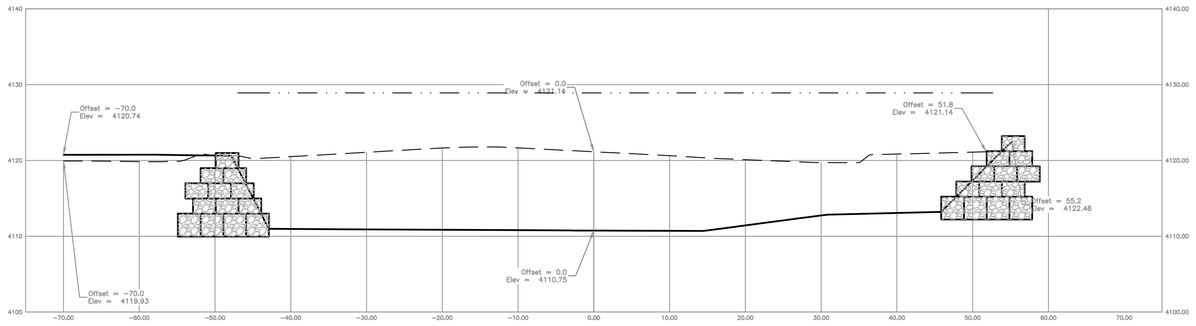

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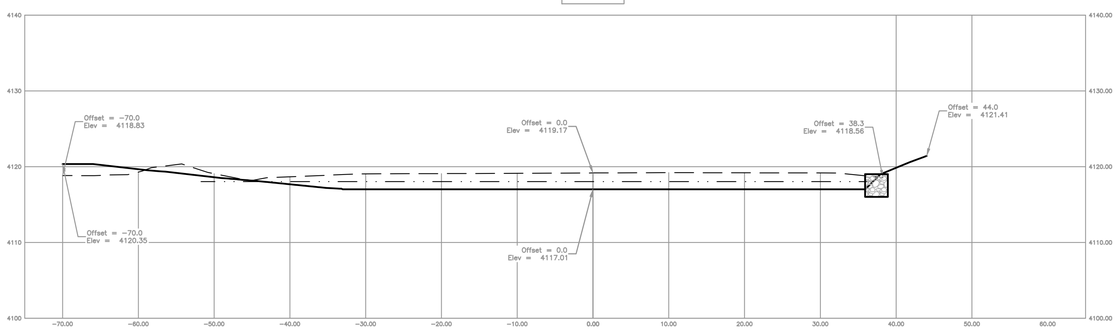

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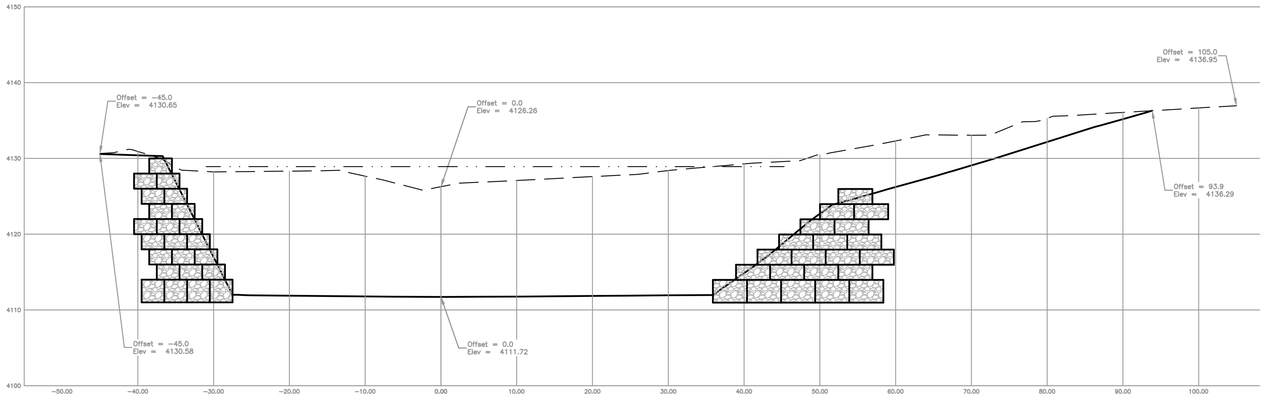

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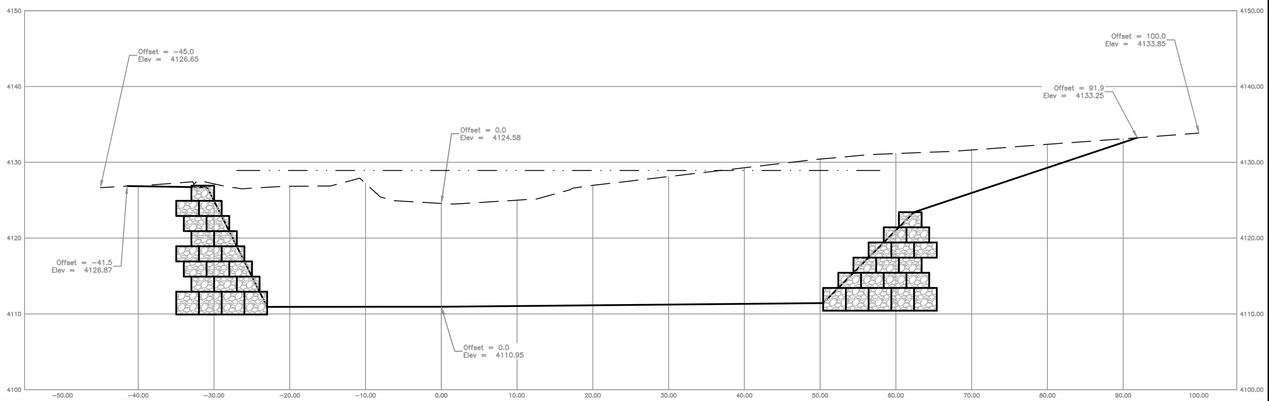

TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: AS NOTED
VER:

DWG: 09042102CG505.DWG
DATE: 12/23/2020
DESIGN BY: R.A.P.
DRAWN BY: J.R.F.
CHKD. BY: R.A.

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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

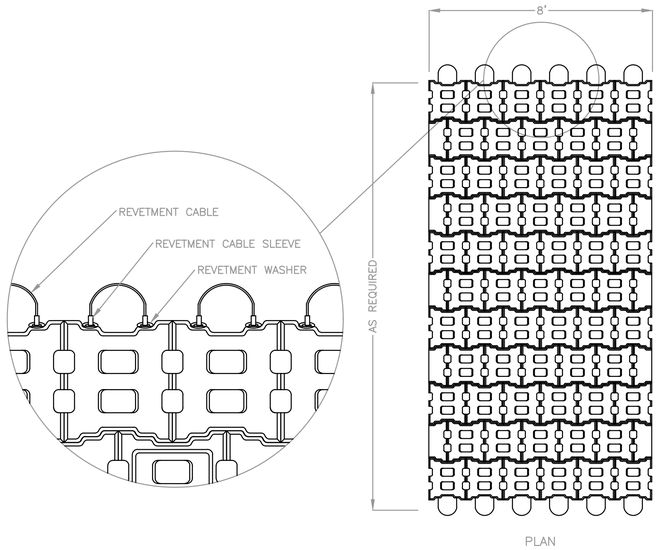
SEDIMENT BASIN SECTIONS

JOB NO. R300608.01

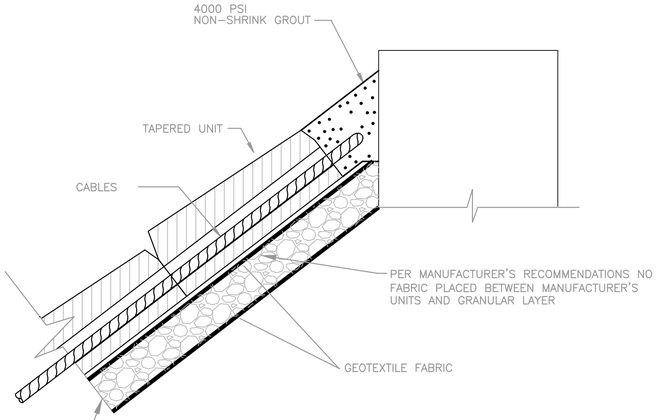
CG-505

SHEET NO. 14 OF 20

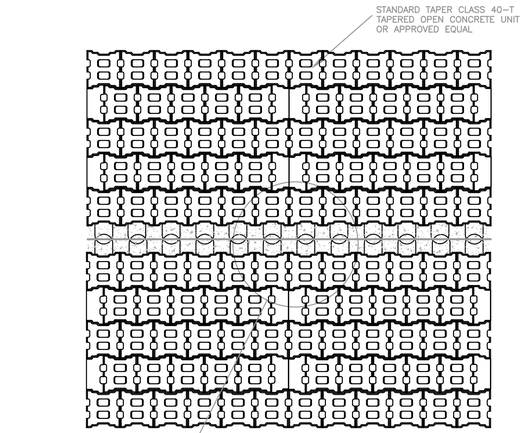
J:\JOBS\R300608.01 - PALISADES STORMWATER INFO\ AND TRAVERSE\10 CADD & GIS\10.1 AUTOCAD\DWGS\09042102CG505.DWG

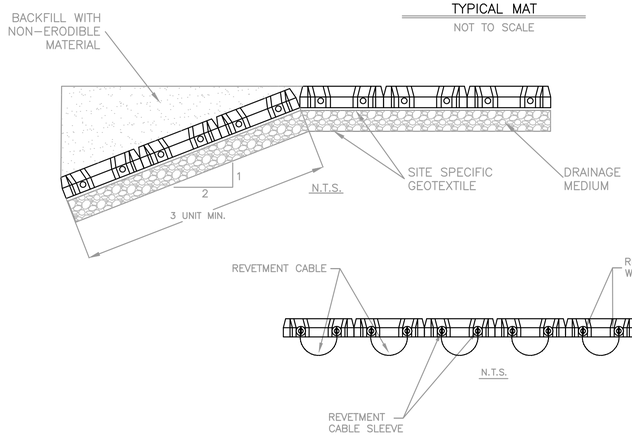


TYPICAL MAT
NOT TO SCALE



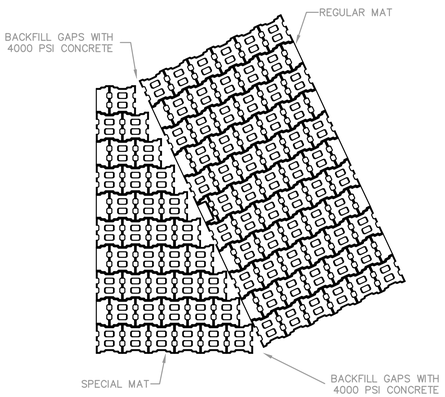
MAT TO WALL DETAIL
NOT TO SCALE





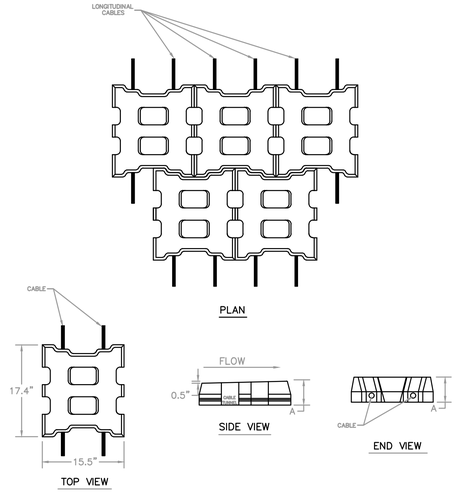
NOTES:

1. REFER TO MANUFACTURER'S SPECIFICATIONS AND INSTALLATION GUIDELINES.
2. A REPRESENTATIVE FROM MANUFACTURER'S SHALL BE ONSITE DURING CONSTRUCTION OF ACB AS SPECIFIED IN THE CONTRACT DOCUMENTS.

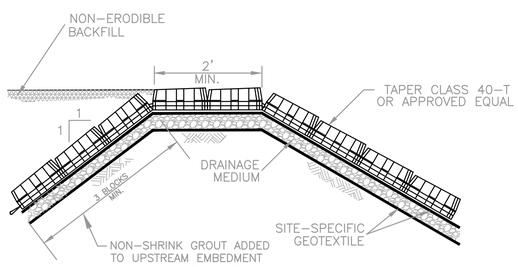


SPECIAL MATS
NOT TO SCALE

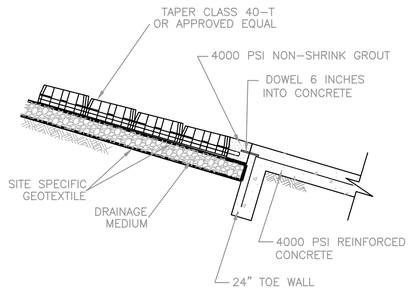
NOTE:
SPECIAL MATS WILL BE CONSTRUCTED BY OMITTING THE REQUIRED UNITS SO THE REQUIRED MAT DIMENSIONS CAN BE OBTAINED.



UNIT THICKNESS "A"
CLASS 40-T 4.75"



TOP OF SLOPE DETAIL
DRAINAGE MEDIUM REQUIRED WITH TAPER UNITS
NOT TO SCALE



TOE OF SLOPE DETAIL
DRAINAGE MEDIUM REQUIRED WITH TAPER UNITS
NOT TO SCALE

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR:
VER:
DWG: 09042102CG508.DWG
DATE: 12/23/2020
DESIGN BY: R.A.P.
DRAWN BY: J.R.F.
CHKD. BY: R.A.

ENGINEER'S SEAL

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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

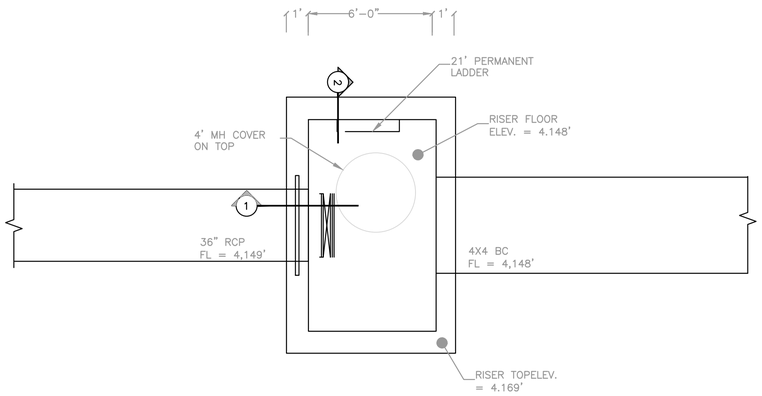
ARTICULATING CONCRETE BLOCK DETAILS

JOB NO. R300608.01

CG-508

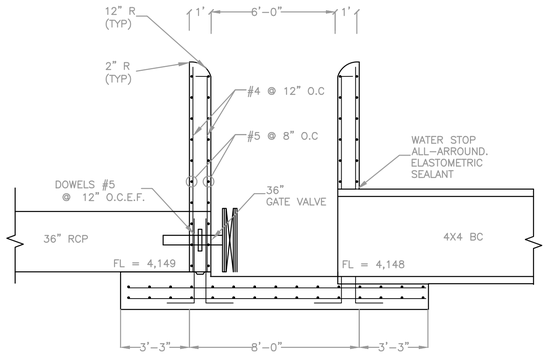
SHEET NO. 15 OF 20

J:\PROJ\03090608.01 - PALISADES STORMWATER UNITS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\DWGS\09042102CG508.DWG



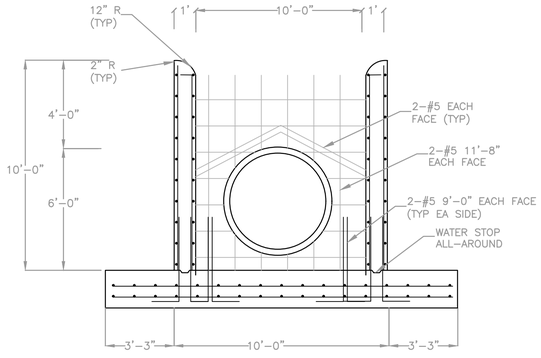
RISER PLAN VIEW

NOT TO SCALE



SECTION 1

NOT TO SCALE



SECTION 2

NOT TO SCALE

NOTES:

1. FC= 4000 PSI @ 28 DAYS NORMAL WEIGHT COARSE AGGREGATE SIZE NO. 57, 1" MAXIMUM AIR-ENTRAINMENT 3 1/2% ± 1% BY VOLUME WATER-CEMENT RATIO 0.44 CEMENT CONTENT 560 LBS PER CUBIC YARD MIN. SLUMP 3" WITH WATER REDUCING ADMIXTURE
2. CONSTRUCT AND CURE ALL REINFORCED CONCRETE TO COMPLY WITH RECOMMENDATIONS OF ACI 318 AND ACI 301 UNLESS OTHERWISE NOTED OR SPECIFIED.
3. ALL ADDITIVES FOR AIR ENTRAINMENT, WATER REDUCTION, AND SET CONTROL SHALL BE USED I.N ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS, ASTM STANDARDS, AND WEATHER CONDITIONS.
4. MINERAL ADMIXTURE (FLY ASH/POZZOLOAN PER ASTM C 618) CLASS C OR F MAY BE ADDED AT A RATIO NOT TO EXCEED 20% OF THE TOTAL WEIGHT OF CEMENT PLUS MINERAL ADMIXTURE.
5. COLD AND HOT WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI 306 AND ACI 305 RECOMMENDED PRACTICES RESPECTIVELY.
6. DETAIL, FABRICATE AND PLACE ALL REINFORCING STEEL TO COMPLY WITH RECOMMENDATION OF THE "ACI DETAILING MANUAL", LATEST EDITION.
7. REINFORCING BARS SHALL HAVE MINIMUM STRENGTH OF 60 KSI (GRADE 60) AND SHALL COMPLY WITH ASTM A615 STANDARD. SMOOTH DOWELS SHALL COMFORM TO ASTM A36 OR ASTM A306.
8. CHAIR AND SUPPORT BARS SHALL BE PROVIDED IN ACCORDANCE WITH ACI STANDARDS.
9. PROVIDE AND INSTALL REINFORCING BAR ACCESSORIES IN ACCORDANCE WITH RECOMMENDATIONS OF ACI 315.
10. USE "SIKA" ARMATEC 110 OR EQUAL BONDING AGENT AT ALL COLD JOINTS.
11. WALL PIPE TO BE 36" DIA. X 2 '-6" LONG FLANGED X PLAIN END DUCTILE IRON PIPE EQUAL TO CLOW # F-1426.
12. GATE VALVE TO BE AWWA DOUBLE DISC IRON BODY BRONZE MOUNTED, PARALLEL SEAT, FLANGED ENDS W/NON RISING STEAM EQUAL TO CLOW # F-5070. DELETE HANDWHEEL AND REPLACE WITH 3" SQUARE OPERATING UNIT.
13. WATERSTOP SHALL BE BENTONITE WATER STOP, "VOLCLAY" RX-101 WATERSTOP OR EQUIVALENT.
14. CONCRETE FORM WORK, SHORING, FORM REMOVAL, AND RESHORING/BACKSHORING ARE CONSTRUCTION MEANS AND METHODS, AND ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE IN ACCORDANCE WITH "ACI" GUIDE TO FORM WORK FOR CONCRETE (ACI 347).
15. RISER PAD SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT.
16. RISER SUBGRADE MATERIAL SHALL BE FREE OF ROOTS AND VEGETATION. SUBGRADE MATERIAL SHALL HAVE PL ABOVE 7 AND SHALL BE COMPACTED AT -2% TO +2% OF OPTIMUM TO 98% ASTM D698.
17. THE TRENCH FOR THE 36" RCP AND 4X4 BC SHALL BE EXCAVATED WITHIN THE COMPACTED EMBANKMENT.
18. ALL COMPACTION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR:
VER:
DWG: R300608.01 RISER DET.DWG
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PH. (915) 587-4339 / FAX (915) 587-5247
FIRM REGISTRATION F-761

el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

RISER DETAIL

JOB NO. R300608.01

CG-510

SHEET NO. 16 OF 20

J:\R300\R300608.01 - PALISADES STORMWATER MPTF AND TRAILHEAD\10 CADD & RWA\10.1 AUTOCAD\DWGS\R300608.01 RISER DET.DWG

ELEV. = 4,185

INSTALL 9,012 CY OF GABION BASKETS W/ NATIVE GRASS SOCK S=1.5:1

INSTALL 82,190 SF OF ARTICULATED CONC. BLOCK. S=4:1

ARTICULATED CONC. BLOCK. S=4:1

ELEV. = 4,144

PROP. ACCESS ROAD

GABION BASKETS W/ NATIVE GRASS SOCK S=1.5:1

EXISTING ACCESS ROAD

REFER TO SHEET 6 FOR DAM PLAN VIEW

SCALE IN FEET
0 20 40 80 120
SCALE: 1" = 40'

NOTES:

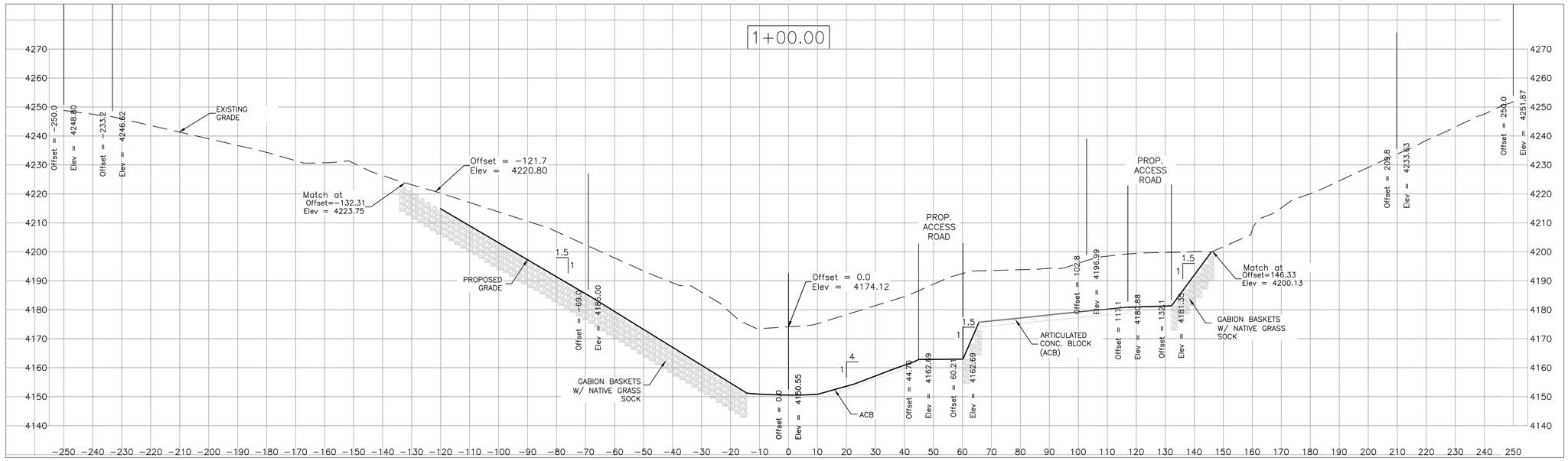
1. ALL FILL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY OBTAINABLE WITH THE STANDARD PROCTOR TEST METHOD (ASTM STANDARD D-698).
2. DOUBLE TWISTED GABION BASKETS & MATTRESS MATERIALS SHALL MEET SPECIFICATIONS AS ASSIGNED IN THE CONTRACT DOCUMENTS AS IN ACCORDANCE WITH ASTM D-975-75.

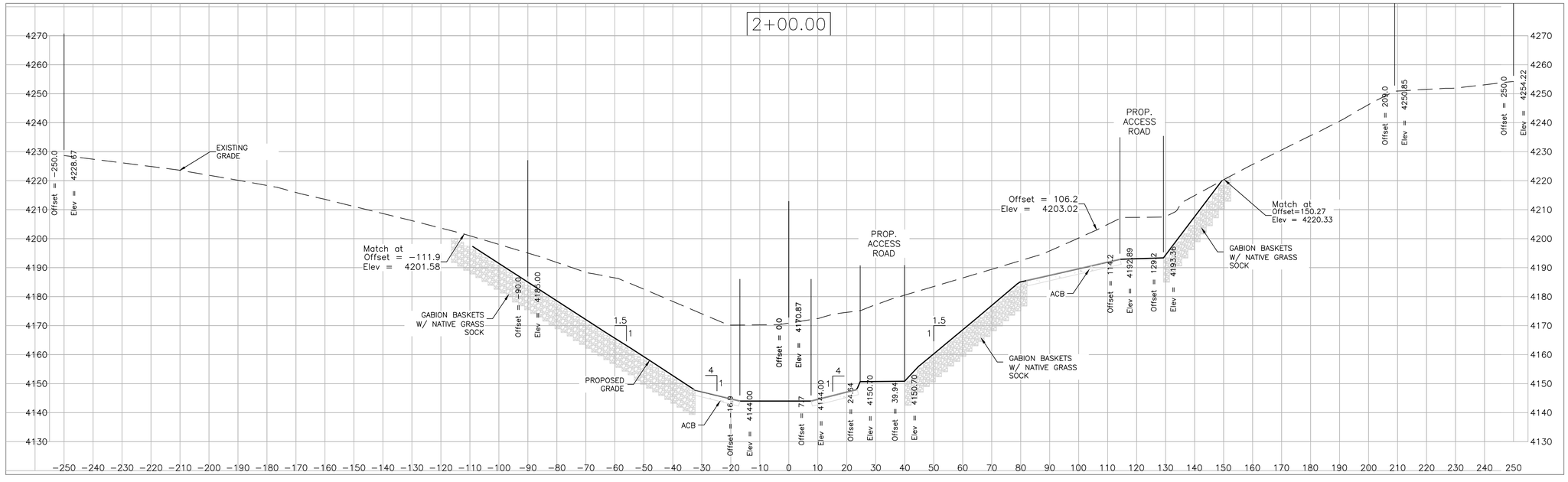
PROJECT LEGEND

- RIGHT-OF-WAY
- W — PROPOSED WATER MAIN
- W — WATER LINE (AS NOTED)
- TV — EXISTING TIME WARNER CABLE LINE
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR
- PROPOSED ACCESS ROAD

						SCALE	ENGINEER'S SEAL	HUITT-ZOLLARS INC.	el paso WATER	PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE	JOB NO. R300608.01
						HOR: AS NOTED	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RUSSELL ALLEN PARR P.E. 88072 ON DECEMBER 23, 2020 IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES	ENGINEERING / SURVEYING 5822 CROMO DRIVE, SUITE 210 EL PASO, TEXAS 79912 PH. (915) 587-4339 / FAX (915) 587-5247 FIRM REGISTRATION F-761	1154 HAWKINS BLVD. EL PASO TEXAS 79925 (915) 594-5500	RETENTION BASIN PLAN VIEW	CG-511
						VER:					SHEET NO. 17 OF 20
						DWG: R300608.01 RET BASIN.DWG					
						DATE: 12/23/2020					
						DESIGN BY: R.A.P.					
						DRAWN BY: J.R.F.					
	TB	REV.	DATE	BY:	DESCRIPTION	CHKD. BY: R.A.					

J:\R-DRIVE\R300608.01 - PALISADES STORMWATER MSTR AND TDM\EXCEL\10 CADD & BMA\10.1 AUTOCAD DWG\R300608.01 RET BASIN.DWG





	TB	REV.	DATE	BY:	DESCRIPTION	

SCALE
HOR: AS NOTED
VER:
DWG: RETENTION BASIN - 1 SEC SHEETS.DWG
DATE: 12/23/2020
DESIGN BY: R.A.P.
DRAWN BY: J.R.F.
CHKD. BY: R.A.

ENGINEER'S SEAL

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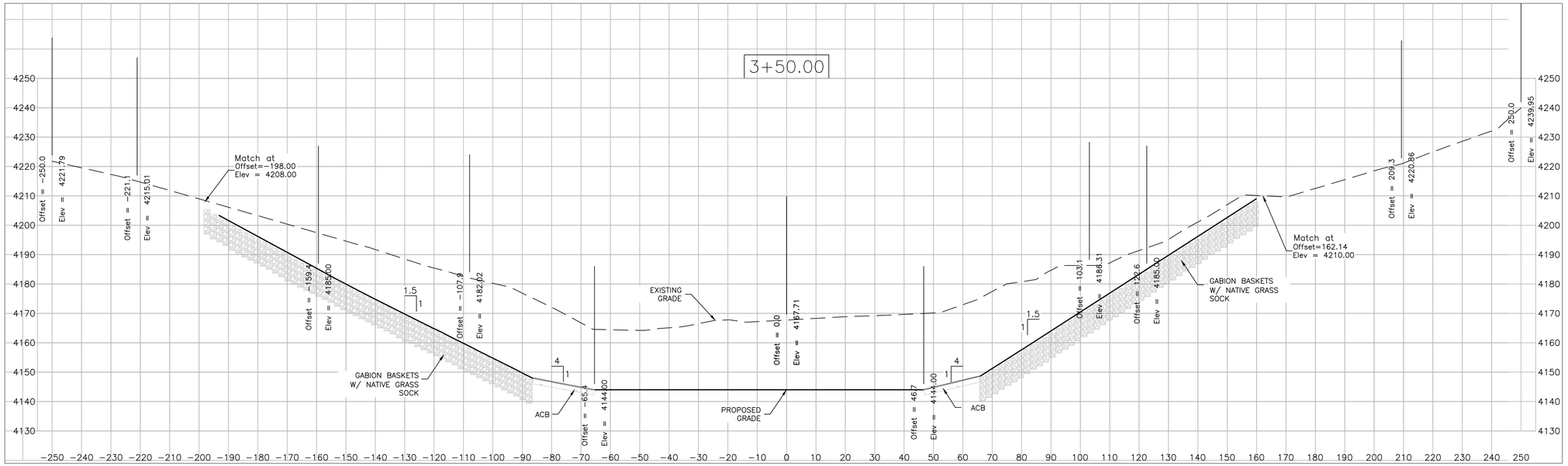
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

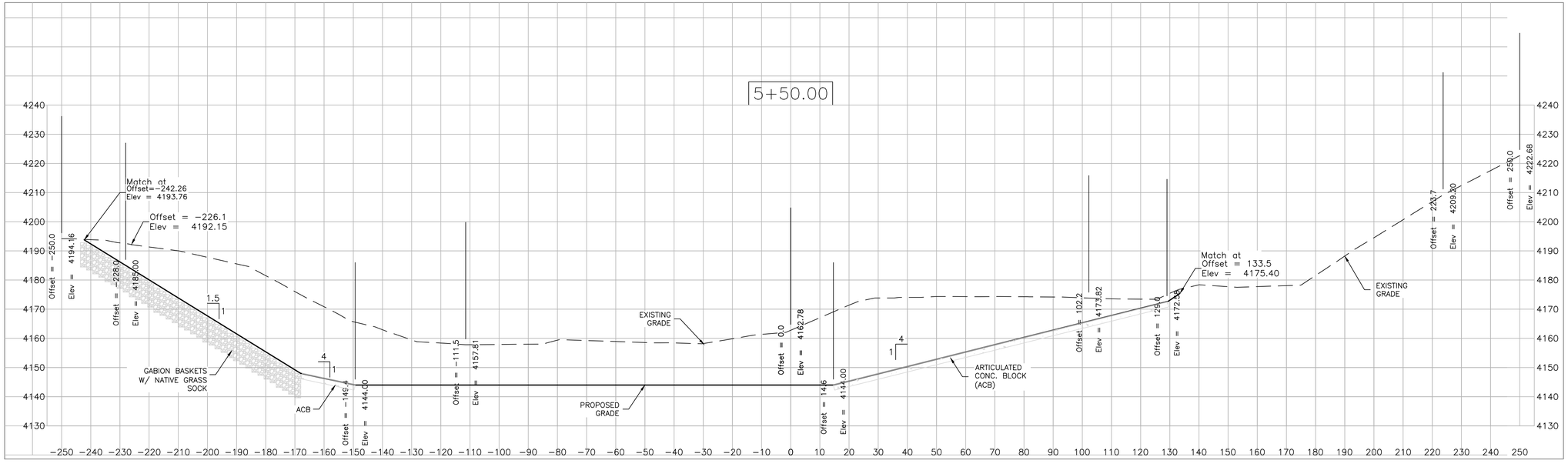
RETENTION BASIN
CROSS SECTIONS 01

JOB NO.
R300608.01

SHEET NO.
18 OF 20

J:\R300\R300608.01 - PALISADES STORMWATER MPTP AND TRM\MODEL\10 CADD & BIM\10.1 AUTOCAD\DWG\10300608.01 RET BASIN - X SEC SHEETS.DWG





TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: AS NOTED
VER:

DWG: RETENTION BASIN - 2 SEC SHEETS.DWG
DATE: 12/23/2020
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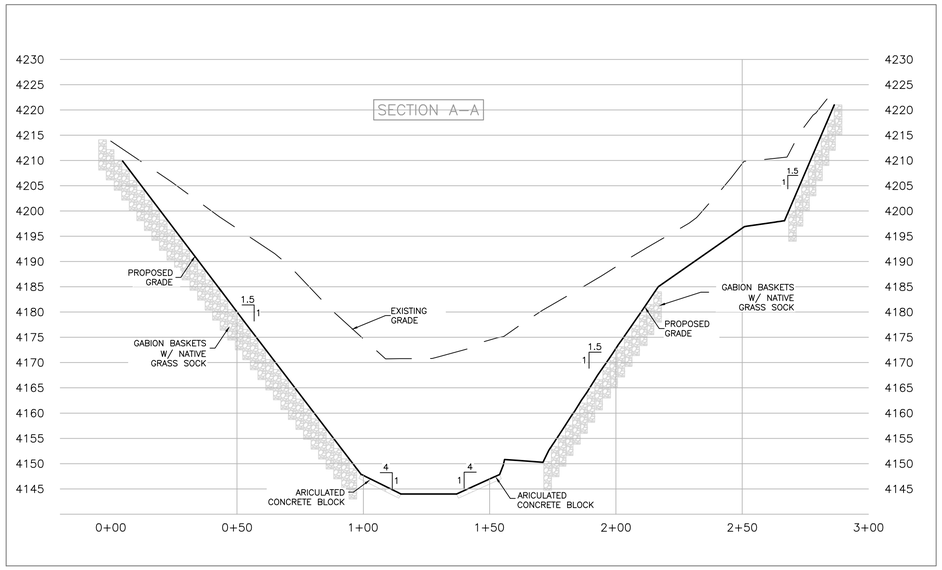
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

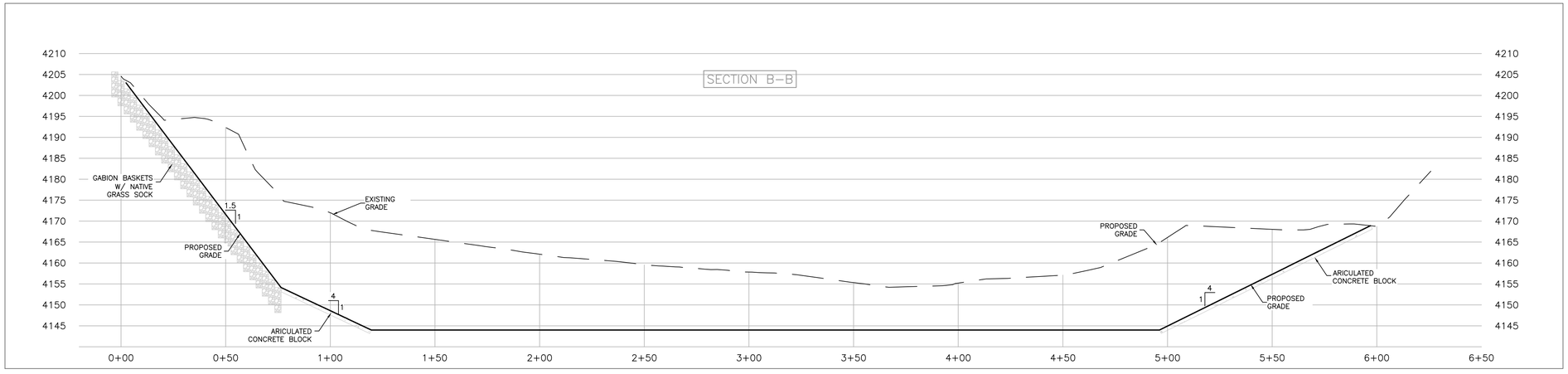
RETENTION BASIN
CROSS SECTIONS 02

JOB NO.
R300608.01

SHEET NO.
19 OF 20

J:\R300\R300608.01 - PALISADES STORMWATER\PLANS AND TRAVERSES\10 CADD & BIM\10.1 AUTOCAD\DWGS\R300608.01 RET BASIN - X SEC SHEETS.DWG





	TB	REV.	DATE	BY:	DESCRIPTION	

SCALE
HOR: AS NOTED
VER:

DWG: RETENTION BASIN - 3 XSC SHEETS.DWG
DATE: 12/23/2020
DESIGN BY: R.A.P.
DRAWN BY: J.R.F.
CHKD. BY: R.A.

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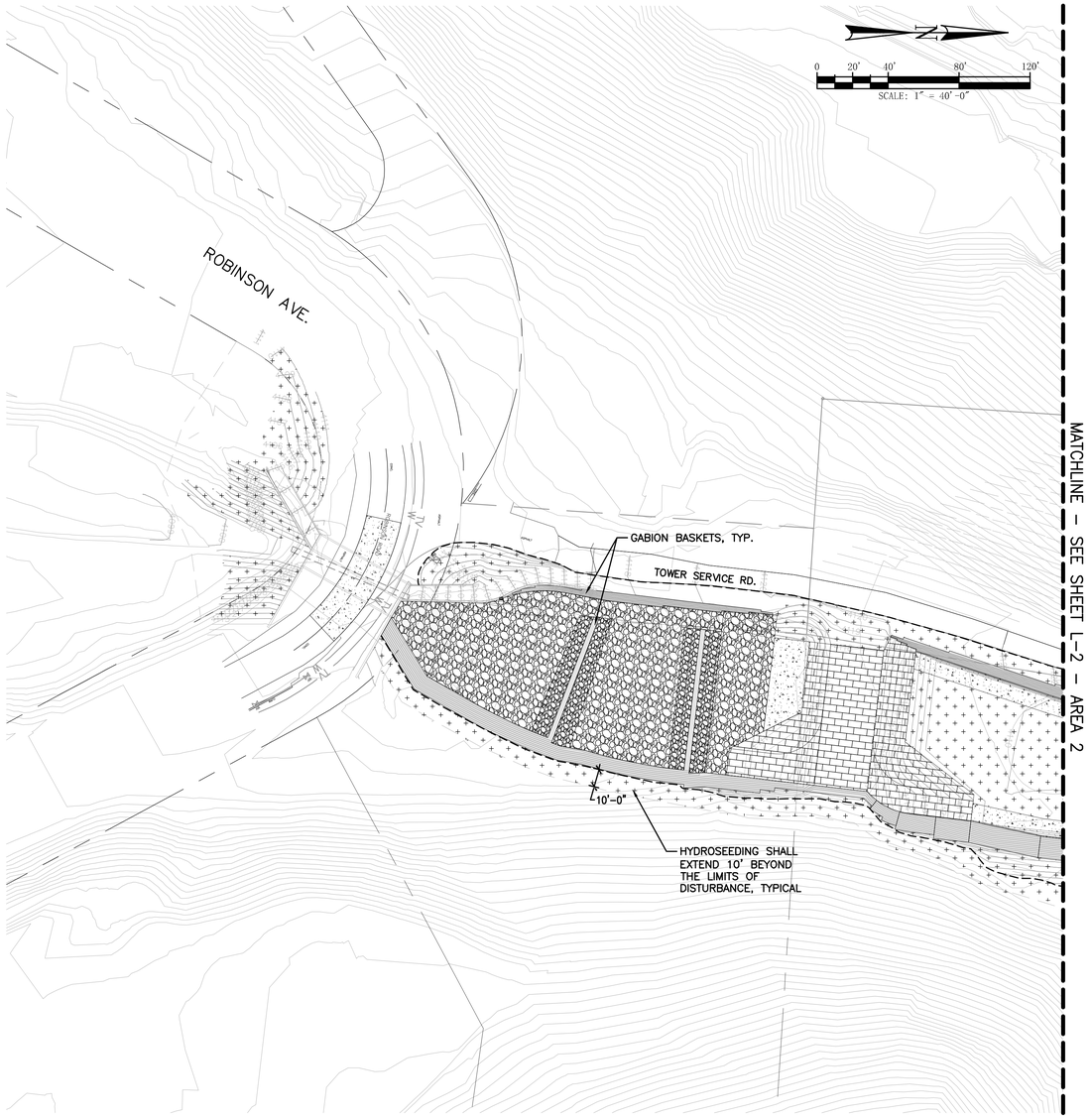
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

RETENTION BASIN
CROSS SECTIONS 03

JOB NO.
R300608.01

SHEET NO.
20 OF 20

J:\R300\R300608.01 - PALISADES STORMWATER MGMT\ AND TRAILHEAD\10 CADD & BWA\10.1 AUTOCAD\DWGS\R300608.01 RET BASIN - 3 XSC SHEETS.DWG



LANDSCAPE SURFACING PLAN – AREA 1

SCALE: 1" = 40'-0"

SURFACE TREATMENT LEGEND

SURFACE TREATMENT TYPE 1: EXPOSED SOIL AND ROCK SURFACES (NOT ARMORED)

ALL EXPOSED SOIL OR ROCK SURFACES THAT HAVE BEEN GRADED OR DISTURBED BY CONSTRUCTION SHALL RECEIVE THE FOLLOWING TREATMENT:

- SOIL SURFACES: ALL EXPOSED NATIVE AND IMPORTED SOIL SHALL BE HYDROSEEDED WITH HYDROSEED MIX TYPE 1 – NATIVE TREES, SHRUBS, GRASSES, AND FORBS
- ROCK SURFACES: ALL EXPOSED BEDROCK, EXCAVATED SUB–SURFACE ROCK, AND ANY IMPORTED ROCK MATERIAL THAT DOES NOT MATCH THE EXISTING NATURAL EXPOSED SURFACE ROCK SHALL BE TREATED WITH NATINA ROCK SOLUTION

SURFACE TREATMENT TYPE 2: ARTICULATED CONCRETE BLOCK (ACB)

ALL ACB SLOPE PROTECTION SURFACES SHALL RECEIVE THE FOLLOWING SURFACE TREATMENTS:

- COMPOST: ALL OPEN CELLS OF THE ACB SHALL BE FILLED TO A DEPTH OF 2/3 TOTAL HEIGHT OF CELL.
- HYDROSEED: ALL OPEN CELLS OF THE ACB SHALL RECEIVE HYDROSEED MIX TYPE 2, LOW GROW NATIVE GRASSES AND FORBS
- ROCK MULCH: ALL OPEN CELLS OF THE ACB SHALL RECEIVE A 1" LAYER OF ROCK MULCH, 3/4" TO 1" DIA. SIZE SCREENED MATERIAL. COLOR SHALL MATCH THE EXISTING NATURAL EXPOSED SURFACE ROCK OF THE SITE
- ACB SURFACES: ALL EXPOSED ACB SURFACES SHALL BE TREATED WITH NATINA CONCRETE SOLUTION

SURFACE TREATMENT TYPE 3: RIP RAP SURFACING

ALL RIP RAP SURFACING (18" DIA SIZE) LOCATED IN THE CHANNEL IMPROVEMENT AREA SHALL RECEIVE THE FOLLOWING SURFACE TREATMENT:

- RIP RAP ROCK MATERIAL: ALL EXPOSED SURFACES OF THE RIP RAP ROCK MATERIAL THAT DOES NOT MATCH THE COLOR OF THE EXISTING NATURAL EXPOSED SURFACE ROCK OF THE SITE SHALL BE TREATED WITH NATINA ROCK SOLUTION

SURFACE TREATMENT TYPE 4: CONCRETE SURFACES

ALL CONCRETE SURFACES, INCLUDING BUT NOT LIMITED TO CONCRETE APRONS, EXPOSED CONCRETE GROUT (IN GROUTED RIP RAP AREAS), CONCRETE HEADWALLS, ETC. SHALL RECEIVE THE FOLLOWING SURFACE TREATMENT:

- CONCRETE SURFACES: ALL EXPOSED CONCRETE SURFACES SHALL BE TREATED WITH NATINA CONCRETE SOLUTION

SURFACE TREATMENT TYPE 5: CHANNEL GABIONS AND GABION MATTRESSES

ALL CHANNEL GABIONS AND GABION MATTRESSES SHALL RECEIVE THE FOLLOWING SURFACE TREATMENT:

- CHANNEL GABIONS AND GABION MATRESSES CAGES: THE EXPOSED SURFACE OF ALL STEEL WIRE MESH CAGES SHALL BE TREATED WITH NATINA STEEL SOLUTION
- GABION ROCK FILL MATERIAL: THE EXPOSED SURFACE OF ALL ROCK FILL MATERIAL LOCATED INSIDE THE CHANNEL GABION AND GABION MATTRESS CAGES SHALL BE TREATED WITH NATINA ROCK SOLUTION

— — — — LIMITS OF GRADING / DISTURBANCE

NOTE: SEE HYDROSEED MIX SCHEDULE, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

						SCALE	
						HOR: HOR:	
						VER:	
						DWG:	
						DATE: 12/21/20	
						DESIGN BY:	
						DRAWN BY:	
	TB	REV.	DATE	BY:	DESCRIPTION	CHKD. BY:	

LANDSCAPE ARCHITECT'S SEAL

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SCOTT RICHARD MARTINEZ
P.L.A., 2715

ON

December 21, 2020
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HUITT-ZOLLARS INC.
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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

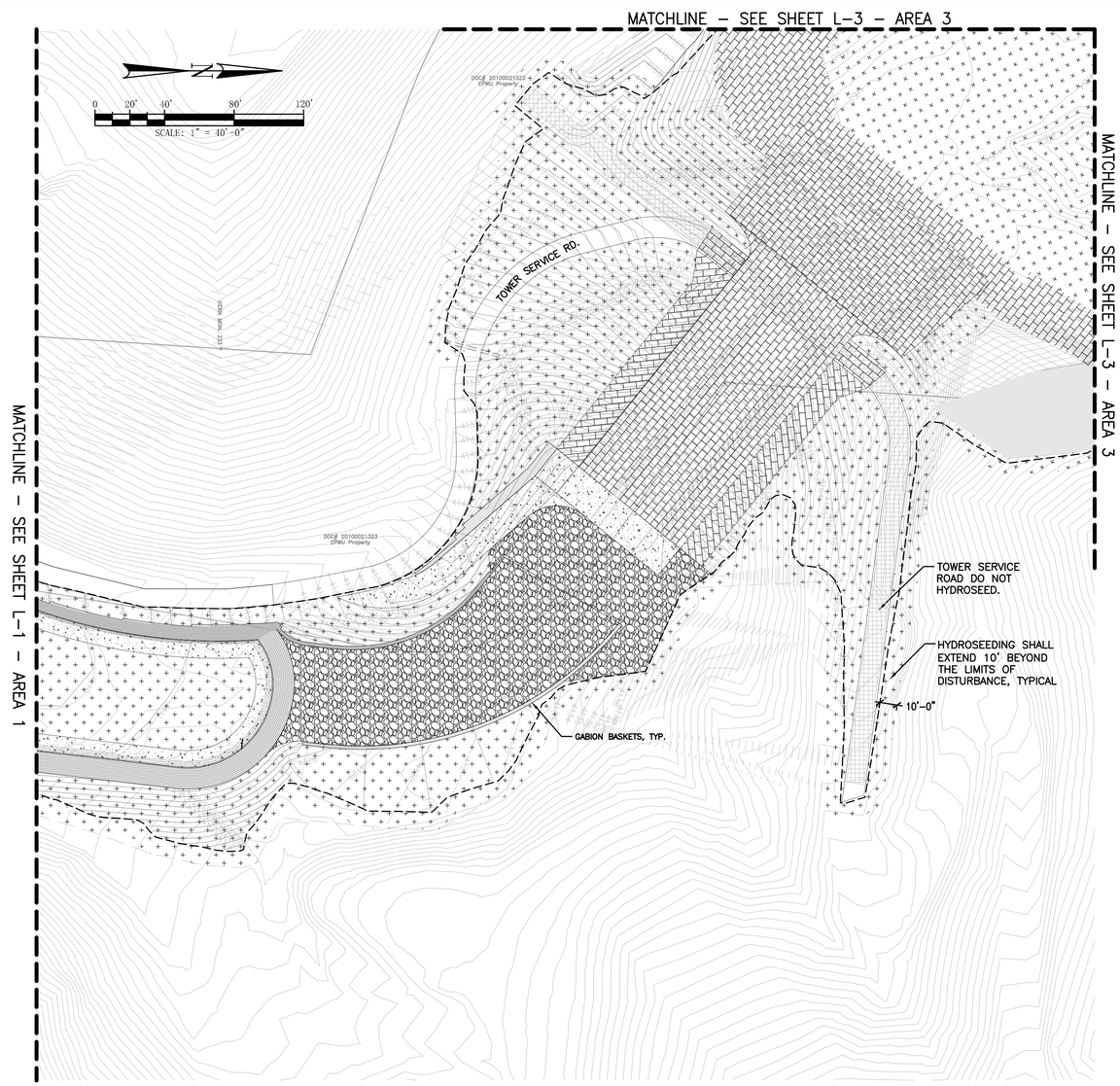
LANDSCAPE SURFACING PLAN
AREA 1

JOB NO.
R09-0421.02

L-1

SHEET NO.
1 OF 4

C:\PROJECTS\20-118-PALISADES-PARK-EL PASO\DRAWINGS\PRELIMINARY\20-118-L1-MATCHLINES.DWG



LANDSCAPE SURFACING PLAN – AREA 2

SCALE: 1" = 40'-0'

SURFACE TREATMENT LEGEND

SURFACE TREATMENT TYPE 1: EXPOSED SOIL AND ROCK SURFACES (NOT ARMORED)

ALL EXPOSED SOIL OR ROCK SURFACES THAT HAVE BEEN GRADED OR DISTURBED BY CONSTRUCTION SHALL RECEIVE THE FOLLOWING TREATMENT:

- SOIL SURFACES: ALL EXPOSED NATIVE AND IMPORTED SOIL SHALL BE HYDROSEEDED WITH HYDROSEED MIX TYPE 1 – NATIVE TREES, SHRUBS, GRASSES, AND FORBS
- ROCK SURFACES: ALL EXPOSED BEDROCK, EXCAVATED SUB–SURFACE ROCK, AND ANY IMPORTED ROCK MATERIAL THAT DOES NOT MATCH THE EXISTING NATURAL EXPOSED SURFACE ROCK SHALL BE TREATED WITH NATINA ROCK SOLUTION

SURFACE TREATMENT TYPE 2: ARTICULATED CONCRETE BLOCK (ACB)

ALL ACB SLOPE PROTECTION SURFACES SHALL RECEIVE THE FOLLOWING SURFACE TREATMENTS:

- COMPOST: ALL OPEN CELLS OF THE ACB SHALL BE FILLED TO A DEPTH OF 2/3 TOTAL HEIGHT OF CELL.
- HYDROSEED: ALL OPEN CELLS OF THE ACB SHALL RECEIVE HYDROSEED MIX TYPE 2, LOW GROW NATIVE GRASSES AND FORBS
- ROCK MULCH: ALL OPEN CELLS OF THE ACB SHALL RECEIVE A 1" LAYER OF ROCK MULCH, 3/4" TO 1" DIA. SIZE SCREENED MATERIAL. COLOR SHALL MATCH THE EXISTING NATURAL EXPOSED SURFACE ROCK OF THE SITE
- ACB SURFACES: ALL EXPOSED ACB SURFACES SHALL BE TREATED WITH NATINA CONCRETE SOLUTION

SURFACE TREATMENT TYPE 3: RIP RAP SURFACING

ALL RIP RAP SURFACING (18" DIA SIZE) LOCATED IN THE CHANNEL IMPROVEMENT AREA SHALL RECEIVE THE FOLLOWING SURFACE TREATMENT:

- RIP RAP ROCK MATERIAL: ALL EXPOSED SURFACES OF THE RIP RAP ROCK MATERIAL THAT DOES NOT MATCH THE COLOR OF THE EXISTING NATURAL EXPOSED SURFACE ROCK OF THE SITE SHALL BE TREATED WITH NATINA ROCK SOLUTION

SURFACE TREATMENT TYPE 4: CONCRETE SURFACES

ALL CONCRETE SURFACES, INCLUDING BUT NOT LIMITED TO CONCRETE APRONS, EXPOSED CONCRETE GROUT (IN GROUTED RIP RAP AREAS), CONCRETE HEADWALLS, ETC. SHALL RECEIVE THE FOLLOWING SURFACE TREATMENT:

- CONCRETE SURFACES: ALL EXPOSED CONCRETE SURFACES SHALL BE TREATED WITH NATINA CONCRETE SOLUTION

SURFACE TREATMENT TYPE 5: CHANNEL GABIONS AND GABION MATTRESSES

ALL CHANNEL GABIONS AND GABION MATTRESSES SHALL RECEIVE THE FOLLOWING SURFACE TREATMENT:

- CHANNEL GABIONS AND GABION MATRESSES CAGES: THE EXPOSED SURFACE OF ALL STEEL WIRE MESH CAGES SHALL BE TREATED WITH NATINA STEEL SOLUTION
- GABION ROCK FILL MATERIAL: THE EXPOSED SURFACE OF ALL ROCK FILL MATERIAL LOCATED INSIDE THE CHANNEL GABION AND GABION MATTRESS CAGES SHALL BE TREATED WITH NATINA ROCK SOLUTION

— — — — LIMITS OF GRADING / DISTURBANCE

NOTE: SEE HYDROSEED MIX SCHEDULE, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: HOR:
VER:
DWG:
DATE: 12/21/20
DESIGN BY:
DRAWN BY:
CHKD. BY:

LANDSCAPE ARCHITECT'S SEAL

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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

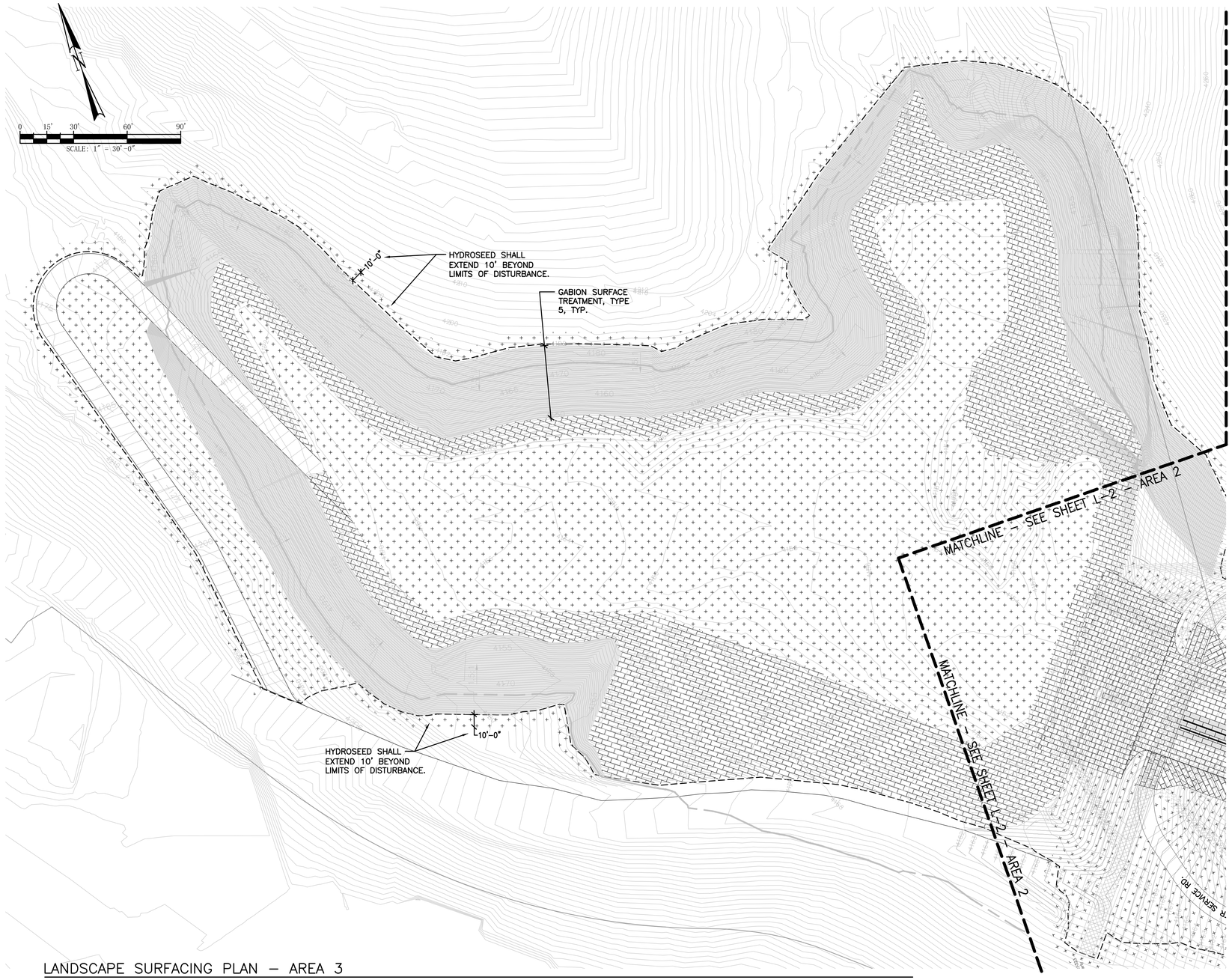
LANDSCAPE SURFACING PLAN
AREA 2

JOB NO.
R09-0421.02

L-2

SHEET NO.
2 OF 4

C:\PROJECTS\20-188-PALISADES-PARK-EL PASO\DWG\SHEETS\LANDSCAPE\20-188-L2-MATCHLINES.DWG



SURFACE TREATMENT LEGEND

SURFACE TREATMENT TYPE 1: EXPOSED SOIL AND ROCK SURFACES (NOT ARMORED)

ALL EXPOSED SOIL OR ROCK SURFACES THAT HAVE BEEN GRADED OR DISTURBED BY CONSTRUCTION SHALL RECEIVE THE FOLLOWING TREATMENT:

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- ROCK SURFACES: ALL EXPOSED BEDROCK, EXCAVATED SUB–SURFACE ROCK, AND ANY IMPORTED ROCK MATERIAL THAT DOES NOT MATCH THE EXISTING NATURAL EXPOSED SURFACE ROCK SHALL BE TREATED WITH NATINA ROCK SOLUTION

SURFACE TREATMENT TYPE 2: ARTICULATED CONCRETE BLOCK (ACB)

ALL ACB SLOPE PROTECTION SURFACES SHALL RECEIVE THE FOLLOWING SURFACE TREATMENTS:

- COMPOST: ALL OPEN CELLS OF THE ACB SHALL BE FILLED TO A DEPTH OF 2/3 TOTAL HEIGHT OF CELL.
- HYDROSEED: ALL OPEN CELLS OF THE ACB SHALL RECEIVE HYDROSEED MIX TYPE 2, LOW GROW NATIVE GRASSES AND FORBS
- ROCK MULCH: ALL OPEN CELLS OF THE ACB SHALL RECEIVE A 1" LAYER OF ROCK MULCH, 3/4" TO 1" DIA. SIZE SCREENED MATERIAL. COLOR SHALL MATCH THE EXISTING NATURAL EXPOSED SURFACE ROCK OF THE SITE
- ACB SURFACES: ALL EXPOSED ACB SURFACES SHALL BE TREATED WITH NATINA CONCRETE SOLUTION

SURFACE TREATMENT TYPE 3: RIP RAP SURFACING

ALL RIP RAP SURFACING (18"DIA SIZE) LOCATED IN THE CHANNEL IMPROVEMENT AREA SHALL RECEIVE THE FOLLOWING SURFACE TREATMENT:

- RIP RAP ROCK MATERIAL: ALL EXPOSED SURFACES OF THE RIP RAP ROCK MATERIAL THAT DOES NOT MATCH THE COLOR OF THE EXISTING NATURAL EXPOSED SURFACE ROCK OF THE SITE SHALL BE TREATED WITH NATINA ROCK SOLUTION

SURFACE TREATMENT TYPE 4: CONCRETE SURFACES

ALL CONCRETE SURFACES, INCLUDING BUT NOT LIMITED TO CONCRETE APRONS, EXPOSED CONCRETE GROUT (IN GROUTED RIP RAP AREAS), CONCRETE HEADWALLS, ETC. SHALL RECEIVE THE FOLLOWING SURFACE TREATMENT:

- CONCRETE SURFACES: ALL EXPOSED CONCRETE SURFACES SHALL BE TREATED WITH NATINA CONCRETE SOLUTION

SURFACE TREATMENT TYPE 5: CHANNEL GABIONS AND GABION MATTRESSES

ALL CHANNEL GABIONS AND GABION MATTRESSES SHALL RECEIVE THE FOLLOWING SURFACE TREATMENT:

- CHANNEL GABIONS AND GABION MATRESSES CAGES: THE EXPOSED SURFACE OF ALL STEEL WIRE MESH CAGES SHALL BE TREATED WITH NATINA STEEL SOLUTION
- GABION ROCK FILL MATERIAL: THE EXPOSED SURFACE OF ALL ROCK FILL MATERIAL LOCATED INSIDE THE CHANNEL GABION AND GABION MATTRESS CAGES SHALL BE TREATED WITH NATINA ROCK SOLUTION

— — — — LIMITS OF GRADING / DISTURBANCE

NOTE: SEE HYDROSEED MIX SCHEDULE, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

LANDSCAPE SURFACING PLAN – AREA 3

SCALE: 1" = 40'-0'

TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: HOR:
VER:
DWG:
DATE: 12/21/20
DESIGN BY:
DRAWN BY:
CHKD. BY:

LANDSCAPE ARCHITECT'S SEAL

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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

LANDSCAPE SURFACING PLAN
AREA 3

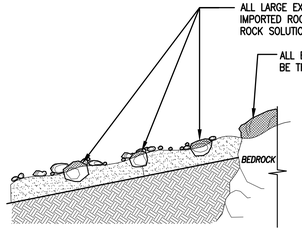
JOB NO.
R09-0421.02

L-3

SHEET NO.
3 OF 4

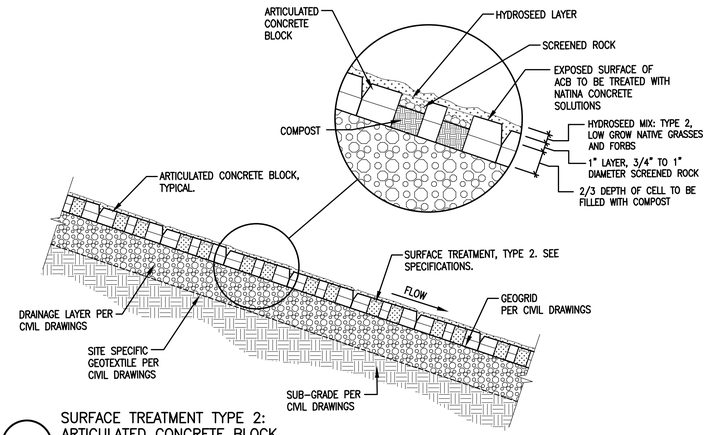
C:\PROJECTS\09-118-PALISADES-PARK-1-EPWU\DRAWINGS\PRELIMINARY\09-118-L1-MATCHLINES.DWG

NOTES:
1. NO PRE-EMERGENT HERBICIDES TO BE USED IN SEEDED AREAS.
2. GROUND SURFACE TO BE PREPARED FOR HYDROSEEDING. SEE SPECIFICATIONS.
3. SEEDING TO BE APPLIED AFTER APPLICATION OF ROCK MULCH.
4. HYDROSEED SLURRY MIX FOR SURFACE TREATMENT TYPE 1. AREAS SHALL CONSIST OF SEED, WOOD FIBER MULCH, TACKIFIER, FERTILIZER, AND WATER. SEE SPECIFICATIONS.



2 SURFACE TREATMENT: TYPE 1
EXPOSED SOIL AND ROCK SURFACES
N.T.S.

NOTES:
1. NO PRE-EMERGENT HERBICIDES TO BE USED IN SEEDED AREAS.
2. GROUND SURFACE TO BE PREPARED FOR HYDROSEEDING. SEE SPECIFICATIONS.
3. SEEDING TO BE APPLIED AFTER APPLICATION OF COMPOST AND ROCK MULCH.
4. HYDROSEED SLURRY MIX FOR SURFACE TREATMENT TYPE 2. AREAS SHALL CONSIST OF SEED, WOOD FIBER MULCH, TACKIFIER, FERTILIZER, AND WATER. SEE SPECIFICATIONS.



2 SURFACE TREATMENT TYPE 2:
ARTICULATED CONCRETE BLOCK
SCALE: N.T.S.

HYDROSEED SCHEDULE

HYDROSEED MIX #1	BOTANICAL NAME	COMMON NAME	PURE LIVE SEED (PLS) RATE	
HYDROSEEDED MIX TYPE 1: NATIVE TREES, SHRUBS, GRASSES AND FORBES	ACACIA CONSTRICTA	WHITETHORN ACACIA	0.5	APPLY USING HYDROSEEDING TECHNIQUES W/ WOOD FIBER MULCH @ 2,000 LBS. PER ACRE SEE SPECIFICATIONS.
	ATRIPLEX CANESCENS	FOUR WING SALTBUSH	1.0	
	ERIOGONUM SP	BUCKWHEAT SP	0.5	
	KRASCHENINNIKOVIA LANATA	WINTERFAT	1.0	
	LARREA TRIDENTATA	CREOSOTE BUSH	0.5	
	PARTHENIUM INCANUM*	MARIOLA	1.0	
	PURSHIA TRIDENTATA	ANTELOPE BITTERBRUSH	1.0	
	BAILEYA MULTIRADIATA	DESERT MARIGOLD	0.5	
	LINDHEIMERI TEXANA	TEXAS YELLOW STAR	0.5	
	ESCHSCHOLZIA CALIFORNICA SSP. MEXICANA	MEXICAN GOLD POPPY	1.0	
	GAILLARDIA PULCHELLA	FIREWHEEL	0.5	
	MONARDA CITRIODORA	PURPLE HORSEMINT	0.5	
	PENSTEMON PARRYI	PARRY PENSTEMON	0.5	
	DALEA PURUREA	PURPLE PRAIRIE CLOVER	0.5	
	RATIBIDA COLUMNIFERA	PRAIRIE CONEFLOWER	0.5	
	SPHAERALCEA COCCINEA	SCARLET GLOBEMALLOW	0.5	
	VERBENA GOODDINGII	DESERT VERBENA	0.5	
	ACHNATHERUM HYMENOIDES	INDIAN RICE GRASS	1.0	
	ARISTIDA PURPUREA	PURPLE THREE-AWN	1.0	
	BOTHRIOCHOLA BARINOIDES	CANE BLUESTEM	1.0	
	BOUTELOUA CURTIPENDULA	SIDEOATS GRAMA	1.0	
	BOUTELOUA GRACILIS	BLUE GRAMA	1.0	
	FESTUCA ARUNDINACEA	TALL FESCUE	1.0	
	HESPEROSTIPA NEOMEXICANA	NEW MEXICO FEATHERGRASS	0.5	
	HOPIA OBTUSA	VINE MESQUITE	0.5	
	MUHLENBERGIA PORTERI	BUSH MUHLY	0.5	
	LEPTOCHLOA DUBIA	GREEN SPRANGLETOP	1.0	
	SPOROBOLUS AIROIDES	ALKALI SACATON	0.5	

*IF UNAVAILABLE COLLECT SEED ON SITE

HYDROSEED MIX #2	BOTANICAL NAME	COMMON NAME	PURE LIVE SEED (PLS) RATE	
HYDROSEEDED MIX TYPE 2: NATIVE GRASSES AND FORBES	LINDHEIMERI TEXANA	TEXAS YELLOW STAR	1.0	APPLY USING HYDROSEEDING TECHNIQUES W/ WOOD FIBER MULCH @ 1,500 LBS. PER ACRE SEE SPECIFICATIONS.
	ESCHSCHOLZIA CALIFORNICA SSP. MEXICANA	MEXICAN GOLD POPPY	1.0	
	GAILLARDIA PULCHELLA	FIREWHEEL	1.0	
	MONARDA CITRIODORA	PURPLE HORSEMINT	1.0	
	DALEA PURUREA	PURPLE PRAIRIE CLOVER	1.0	
	RATIBIDA COLUMNIFERA	PRAIRIE CONEFLOWER	1.0	
	SPHAERALCEA COCCINEA	SCARLET GLOBEMALLOW	1.0	
	HILARIA BELANGERI	CURLY MESQUITE	1.0	
	ACHNATHERUM HYMENOIDES	INDIAN RICE GRASS	1.0	
	ARISTIDA PURPUREA	PURPLE THREE-AWN	1.0	
	BOTHRIOCHOLA BARINOIDES	CANE BLUESTEM	1.0	
	BOUTELOUA CURTIPENDULA	SIDEOATS GRAMA	1.0	
	BOUTELOUA GRACILIS	BLUE GRAMA	1.0	
	FESTUCA ARUNDINACEA	TALL FESCUE	1.0	
	HESPEROSTIPA NEOMEXICANA	NEW MEXICO FEATHERGRASS	1.0	
	HOPIA OBTUSA	VINE MESQUITE	1.0	
	MUHLENBERGIA PORTERI	BUSH MUHLY	1.0	
	LEPTOCHLOA DUBIA	GREEN SPRANGLETOP	1.0	
	SPOROBOLUS AIROIDES	ALKALI SACATON	1.0	
	SPOROBOLUS CRYPTANDRUS	SAND DROPSEED	1.0	

NATINA SURFACE TREATMENT IS AN ENVIRONMENTALLY-SAFE AND LONG LASTING COLOR SOLUTION FOR ROCK, CONCRETE, AND GAVLANIZED STEEL. NATINA NATURALLY REACTS WITH EACH OF THESE MATERIALS WHICH CREATES A MAINTENANCE-FREE EARTHY BROWN FINISH. THIS PRODUCT IS OFTEN USED IN NATURAL AREAS THAT HAVE BEEN DISTURBED BY CONSTRUCTION ACTIVITIES TO NATURALLY COLOR NEWLY EXPOSED SUB-SURFACE ROCK TO MATCH THE PRE-EXISTING NATURAL COLORS.

THIS NATURAL COLORANT IS PROPOSED FOR USE IN THIS PROJECT ON THE FOLLOWING EXPOSED SURFACES:
- UNEARTHED ROCK AND NEWLY EXPOSED BEDROCK
- ARTICULATED CONCRETE BLOCK
- RIP RAP MATERIAL
- CONCRETE SURFACES
- CHANNEL GABIONS AND GABION MATTRESSES ON THE BOTH THE STEEL WIRE CAGES AND ROCK FILL MATERIAL

VISIT WWW.NATINA.COM OR CALL 866-809-0544 FOR MORE INFORMATION.

BEFORE AND AFTER IMAGES ARE SHOWN BELOW: PASEO DE LAS IGELSIAS PROJECT, TUCSON, AZ

BEFORE:

AFTER:

3 NATINA SURFACE TREATMENT
N.T.S.

C:\PROJECTS\11-18-PALISADES-PARK-SD-PASO\DRAWINGS\PRELIMINARY\L-4 DETAILS.DWG

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: HOR:
VER:
DWG:
DATE: 12/21/20
DESIGN BY:
DRAWN BY:
CHKD. BY:

LANDSCAPE ARCHITECT'S SEAL

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF

SCOTT RICHARD MARTINEZ
P.L.A., 2715

ON

December 21, 2020
IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

LANDSCAPE SURFACING DETAILS

JOB NO. R09-0421.02

L-4

SHEET NO. 4 OF 4

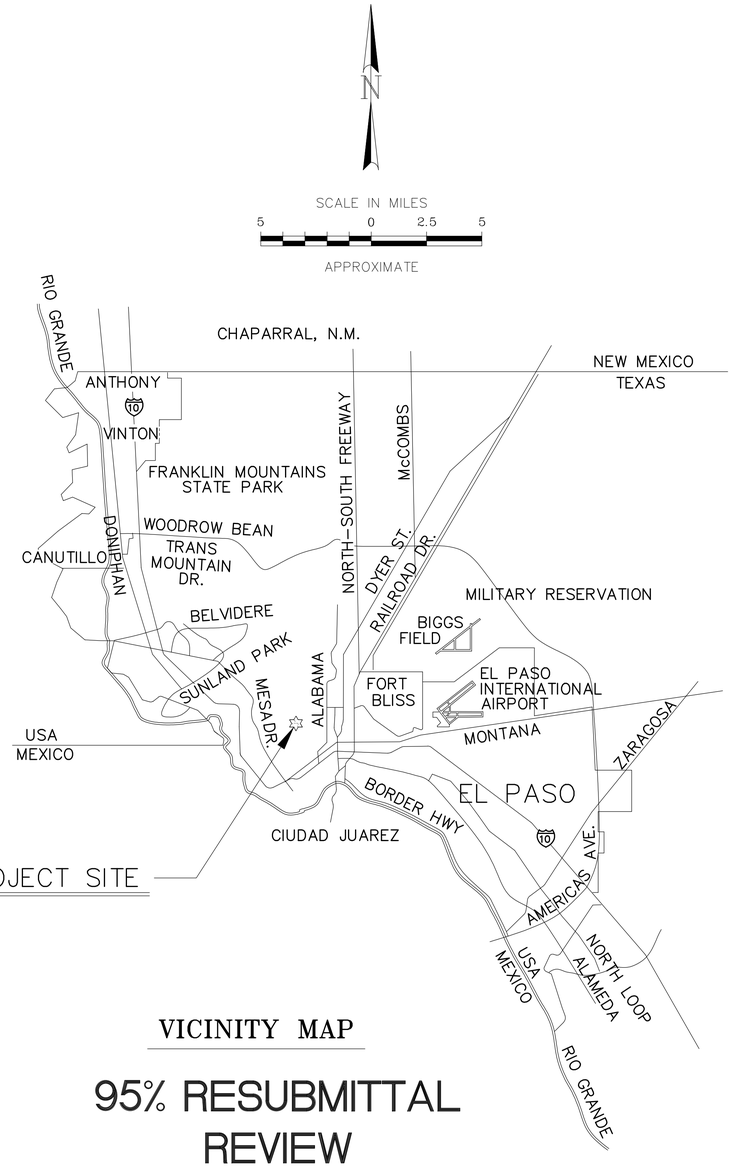
OPTION 2

el paso WATER

PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

BID NUMBER SW36-22

APRIL, 2022



VICINITY MAP

95% RESUBMITTAL REVIEW

SHEET INDEX

DESCRIPTION	SHEET NUMBER
COVER/INDEX SHEET	1
GENERAL NOTES	2
OVERALL PROJECT LAYOUT AND DRAINAGE AREA MAP	3
EXISTING CONDITIONS AND DEMOLITION PLAN	4
DAM PLAN VIEW	5
DAM AND 3' X 3' CONCRETE BOX CULVERT P&P 01	6
DAM AND 3' X 3' CONCRETE BOX CULVERT P&P 02	7
DAM ELEVATIONS	8
GRADE BEAMS ELEVATIONS PLAN AND PROFILE	9
DETAILS 01 – 03	10–12
SEDIMENT BASIN PLAN AND PROFILE	13
SEDIMENT BASIN CROSS SECTIONS	14
RETENTION BASIN PLAN VIEW	15
RETENTION BASIN CROSS SECTIONS 01 – 02	16–17
TEMPORARY ROAD PLAN AND PROFILE	18
CONSTRUCTION PHASING PLAN	19
TEMPORARY TRAFFIC CONTROL FOR PEDESTRIANS 01 – 02	20–21
STORMWATER POLLUTION PREVENTION PLAN	22
LANDSCAPE PLANS	L1 – L4

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FIRM REGISTRATION F-161

CIP NO. _____
ENG / PROJECT I.D. __-____ / _____

GENERAL NOTES:

1. DATE OF FIELD SURVEY IS JULY 30, 2020.
2. INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES AS PER O.S.H.A. STANDARDS.
3. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH GAS, STORM, PETROLEUM, ELECTRIC, TELEPHONE, CABLE TV, COMMUNICATIONS, FIBER OPTICS AND/OR OTHER UTILITIES FOR ANY RELOCATION AND/OR PROTECTION OF EXISTING LINES OR CABLES AS REQUIRED DUE TO CONSTRUCTION ACTIVITIES.
4. ALL EXISTING UTILITIES CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION OF THE PROPOSED FACILITIES. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES (INCLUDING SERVICE CONNECTIONS) FROM DAMAGE AS A RESULT OF CONSTRUCTION ACTIVITIES. ANY DAMAGE SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASCERTAINING THE NATURE AND EXTENT OF ANY COLLATERAL WORK DONE BY OTHER TRADES. CONTRACTOR SHALL BE AWARE OF ANY AND ALL CONCURRENT WORK IN THE AREA THAT WILL REQUIRE COORDINATION OF THIS WORK. IF NECESSARY, TO AVOID OR MINIMIZE DAMAGE OR DELAY, THE CONTRACTOR SHALL MOBILIZE HIS WORK FORCE TO OTHER AREAS OF THE WORK AT NO ADDITIONAL COST TO THE OWNER.
6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN AT ALL TIMES ON THE JOB SITE AN "AS-BUILT" RECORD OF ALL MODIFICATIONS INSTALLED UNDER THIS CONTRACT AND PROVIDE SAID RECORD TO THE ENGINEER AT THE COMPLETION OF THE CONTRACT. FINAL ACCEPTANCE WILL NOT BE ISSUED PRIOR TO THE "AS-BUILT" REDLINES BEING SUBMITTED TO THE ENGINEER.
7. A GEOTECHNICAL STUDY WAS PERFORMED ON JANUARY 4 2021. THE STUDY IS AVAILABLE FOR THE CONTRACTOR'S REVIEW.
8. CONTRACTOR TO SUPPORT AND MAINTAIN ALL EXISTING EXPOSED UTILITIES IN SERVICE.
9. PROJECT BENCHMARK: SEE SHEET CG-104.
10. NO EQUIPMENT MATERIALS OR DEBRIS SHALL BE STORED ON ANY PORTION OF THE CITY RIGHT-OF-WAY.
11. THE CONTRACTOR SHALL PROVIDE TO THE CITY ENGINEERING DEPARTMENT ENVIRONMENTAL DIVISION A CONTAINMENT POLICY FOR THE WASTE TO BE GENERATED BY ALL EXCAVATIONS, BORINGS, AND POT-HOLING OPERATIONS. THE CONTRACTOR SHALL PROVIDE THE LOCATION(S) OF ALL WASTE DISPOSAL SITE(S) TO BE USED FOR THE CONSTRUCTION DEBRIS AND ALL WASTE GENERATED BY EXCAVATIONS, BORING, AND POT-HOLING OPERATIONS, AS PER ALL APPLICABLE EL PASO COUNTY, CITY OF EL PASO, AND TCEQ RULES AND REGULATIONS.
12. THE CONTRACTOR SHALL NOTIFY THE CITY'S ENGINEERING DEPARTMENT ENVIRONMENTAL DIVISION IMMEDIATELY, IF SUBSURFACE CONTAMINATION IS ENCOUNTERED OR SUSPECTED DURING POT-HOLING, EXCAVATION OR BORING. ALL EXCAVATION AND CONSTRUCTION OPERATIONS SHALL BE CEASED UNTIL FURTHER NOTICE FROM THE CITY ENGINEER.
13. THE CONTRACTOR SHALL SUBMIT A PROJECT SCHEDULE, COMMENCEMENT AND COMPLETION OF THE CONSTRUCTION, FOR REVIEW BY THE ENGINEER, PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE TWO WEEK CONSTRUCTION SCHEDULE, UPDATE WEEKLY, TO ENGINEER. ENGINEER SHALL BE NOTIFIED AND CONSULTED WITH BEFORE ANY DEVIATION FROM THE APPROVED LOCATION OF CONSTRUCTION OR IF ANY ABNORMALITY IS ENCOUNTERED.
14. THE CONTRACTOR SHALL NOTIFY TELECOMMUNICATION TOWER ROAD USERS, RESIDENTS. AND/OR ANY STAKEHOLDER THAT THEY MAY BE AFFECTED BY THE CONSTRUCTION FOURTEEN DAYS PRIOR TO START OF CONSTRUCTION.
15. THE CONTRACTOR, AT ALL TIMES DURING CONSTRUCTION, SHALL PROVIDE ACCESS TO TELECOMMUNICATION TOWER ROAD USERS, RESIDENTS. AND/OR ANY STAKEHOLDER THAT MAY BE AFFECTED BY THE CONSTRUCTION.
23. SHOP DRAWINGS SUBMITTALS: THE CONTRACTOR SHALL SUBMIT, WITHIN 14 CALENDAR DAYS OF NOTICE TO PROCEED, TO THE ENGINEER FOR REVIEW AND APPROVAL SHOP DRAWINGS AND COMPLETE DESIGN DATA SHOWING METHODS AND EQUIPMENT THE CONTRACTOR PROPOSES TO UTILIZE FOR WORK.
24. THE CONTRACTOR SHALL REPLACE ALL SURFACE MATERIAL, AND SHALL RESTORE ALL SURFACES DISTURBED, TO A CONDITION EQUAL TO THAT BEFORE THE WORK BEGAN, FURNISHING ALL LABOR AND MATERIALS INCIDENTAL THERETO. WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE EPWU.
25. ANY CHANGES OF THE APPROVED CONSTRUCTION PLANS MUST BE REVIEWED AND APPROVED BY ENGINEER PRIOR TO THE INSTALLATION OF SUCH CHANGES AND THE CHANGES SHALL BE "AS-BUILT" ONTO THE IMPROVEMENTS PLANS.
26. THE CONTRACTOR SHALL HAVE COPIES OF APPROVED SHOP DRAWINGS AT THE JOB SITE AT ALL TIMES AND PRIOR TO CONSTRUCTION.
27. 27. THE CONTRACTOR SHALL CONTACT THE TEXAS EXCAVATION SAFETY SYSTEM (1-800-344-8377) AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION.
24. CONTRACTOR SHALL NOT EXCAVATE WITHIN 10 FEET OF ANY EXISTING OVERHEAD ELECTRIC POLE. IF EXCAVATION NEEDS TO TAKE PLACE WITHIN 10 FEET, THEN CONTRACTOR MUST COORDINATE WITH EPEC PRIOR TO EXCAVATING AND ADHERE TO EPEC SAFETY REQUIREMENTS.
25. A SIGNED SET OF CONSTRUCTION PLANS DOES NOT IMPLY THAT CONSTRUCTION MAY BEGIN. CONSTRUCTION MAY ONLY BEGIN UPON RECEIPT OF A WRITTEN NOTICE TO PROCEED PROVIDED BY EPWATER.
26. CONTRACTOR SHALL KEEP ALL DEBRIS AND SPOIL OUT OF DRAINS, CULVERTS, AND ENSURE THAT THEY DO NOT BECOME CLOGGED AS A RESULT OF CONSTRUCTION ACTIVITIES. IMPLEMENT BEST MANAGEMENT PRACTICES.
27. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL GET FAMILIAR WITH THE CONTRACT DOCUMENTS AND SPECIFICATIONS, THE PLANS INCLUDING ALL NOTES, AND OTHER APPLICABLE STANDARDS OR SPECIFICATIONS RELEVANT TO THE PROPER COMPLETION OF THE WORK SPECIFIED. FAILURE ON THE PART OF THE CONTRACTOR TO GET FAMILIAR WITH ALL STANDARDS OR SPECIFICATIONS PERTAINING TO THIS WORK SHALL IN NO WAY RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PERFORMING THE WORK IN ACCORDANCE WITH ALL SUCH APPLICABLE STANDARDS AND SPECIFICATIONS.

GENERAL NOTES (CON'T):

28. CONTRACTOR SHALL HAVE IN POSSESSION, PRIOR TO CONSTRUCTION, ALL NECESSARY PERMITS, LICENSES, ETC. NO WORK SHALL BE PERFORMED WITHIN DESIGNATED WATERS OF THE UNITED STATES WITHOUT A PERMIT FROM THE US ARMY CORPS OF ENGINEERS. NO WORK SHALL BE PERFORMED ON THE DAM OR SPILLWAY WITHOUT PROPER PERMIT AND AUTHORIZATION FROM THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY DAM SAFETY PROGRAM. CONTRACTOR SHALL HAVE AT LEAST ONE SET OF APPROVED ENGINEERING PLANS AND SPECIFICATIONS ON-SITE AT ALL TIMES.
29. CONSTRUCTION INSPECTION WILL BE PERFORMED BY REPRESENTATIVES OF THE OWNER, ENGINEER, GEOTECHNICAL ENGINEER, AND REVIEWING AUTHORITIES AND AGENCIES. UNRESTRICTED ACCESS SHALL BE PROVIDED TO THEM AT ALL TIMES. CONTRACTOR IS RESPONSIBLE FOR UNDERSTANDING AND SCHEDULING REQUIRED INSPECTIONS.
30. ALL CONTRACTORS MUST CONFINE THEIR ACTIVITIES TO THE WORK AREA. NO ENCROACHMENTS ONTO DEVELOPED OR UNDEVELOPED AREAS WILL BE ALLOWED, UNLESS SPECIFICALLY NOTED ON PLANS. ANY DAMAGE RESULTING THERE FROM, SHALL BE CONTRACTOR'S RESPONSIBILITY TO REPAIR.
31. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING PUBLIC AND PRIVATE UTILITIES THROUGHOUT THE CONSTRUCTION OF THIS PROJECT. CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES FOR LINE LOCATIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION AND SHALL ASSUME FULL LIABILITY TO THOSE COMPANIES FOR ANY DAMAGES CAUSED TO THEIR FACILITIES. CALL 1-800-DIG-TESS.
32. IF UNFORESEEN PROBLEMS OR CONFLICTS ARE ENCOUNTERED IN THE CONSTRUCTION FOR WHICH AN IMMEDIATE SOLUTION IS NOT APPARENT, THE ENGINEER AND OWNER SHALL BE NOTIFIED IMMEDIATELY.
33. CONTRACTOR SHALL BE RESPONSIBLE FOR PRECISE UTILITY FIELD LOCATIONS AND WORKING AROUND EXISTING UTILITIES AND IMPROVEMENTS.
34. TRAFFIC CONTROL MEASURES SHALL BE INSTALLED FOR ANY WORK ACTIVITY THAT TAKES PLACE ON OR ADJACENT TO ANY PUBLIC STREET OR ROADWAY. TRAFFIC CONTROL MEASURES SHALL CONFORM TO PART IV OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
35. CONTRACTOR MUST REFERENCE PALISADES DAM GEOTECHNICAL INVESTIGATION CQC GEOTECHNICAL REPORT NO. ACQC13-015-01. ALL WORK MUST COMPLY WITH THOSE REQUIREMENTS AND RECOMMENDATIONS.
36. THE USE OF HEAVY EQUIPMENT WILL BE REQUIRED FOR ALL EXCAVATION WORK, INCLUDING INSTALLATION OF CBC AND SHALL BE ACCOUNTED FOR IN THE RESPECTIVE BID ITEM.

COMPACTION NOTES

1. EXCAVATED SOILS MAY BE REPLACED AND/OR REPROCESSED TO MEET THE REQUIREMENTS OF SELECT FILL IN THE GEOTHECNICAL REPORT. IF THE NATIVE MATERIAL EXCAVATED IS UNSUITABLE AS BACKFILL MATERIAL, OR THE REQUIRED COMPACTION IS UNATTAINABLE, THE CONTRACTOR SHALL AT HIS EXPENSE, IMPORT SELECT MATERIAL TO BE MIXED OR USED IN PLACE OF THE NATIVE MATERIAL.
2. THE DAM AND SEDIMENT BASIN EMBANKMENT MAY CONSIST OF ON-SITE MATERIALS OR EQUAL, FREE OF ROOTS, VEGETATION AND LARGE ROCKS OVER 6 INCHES IN SIZE.
3. CLAY SOILS USED FOR THE CLAY CORE SHALL BE FREE OF ROOTS, VEGETATION, LARGE ROCK AND ROCKY/GRAVELY CLAY LAYERS AS SPECIFIED ON THE GEOTECHNICAL REPORT.
4. IMPERVIOUS CORE FILL MATERIALS USED IN EARTHEN DAM SHALL HAVE A LL=30% MIN. AND PI BETWEEN 18 AND 35%. THE CORE SHALL BE PLACED AT 95% OF MAXIMUM DRY DENSITY AND ±3% POINTS OF OPTIMUM MOISTURE AS DETERMINED BY TEST METHODS ASTM D-1557 OR ASTM D-698.
5. ALTERNATIVE MATERIALS PROPOSED FOR USE AS EARTHEN FILL SHALL BE SUBMITTED TO THE ENGINEER FOR TESTING AND EVALUATION BEFORE ACCEPTANCE.
6. ALL FILL, INCLUDING FILL FOR THE DAM EMBANKMENT, SEDIMENT BASIN, THE CLAY CORE, AND TEMPORARY ACCESS ROADS SHALL BE PLACED IN MAXIMUM 6 INCH THICK HORIZONTAL BENCHED LIFTS AND COMPACTED AT ±3% OF OPTIMUM MOISTURE CONTENT TO 95% ASTM D-1557.
7. REFER TO THE GENERAL GEOTECHNICAL SUBSURFACE SOILS EVALUATION REPORT FOR EL PASO WATER – PALISADES CANYON STORMWATER DRAINAGE IMPROVEMENTS FOR PROJECT SPECIFICATION INFORMATION. THE REPORT WAS PREPARED BY CONSTRUCTION QUALITY CONTROL TESTING AND ENGINEERING (CQC), FINAL REPORT DATE JANUARY 4, 2021.

REINFORCED CONCRETE NOTES

1. CONCRETE REINFORCING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-615, OR A-706. REINFORCEMENTS AND ACCESSORIES SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF ACI PUBLICATION 315.
2. FLYASH MAY BE USED TO REPLACE A PORTION OF THE PORTLAND CEMENT. THE TOTAL FLYASH/CEMENT RATIO SHALL NOT EXCEED 20%. FLYASH SHALL CONFORM TO ASTM C618, TYPE C OR F.
3. NO WATER SHALL BE ADDED TO THE CONCRETE AT THE JOBSITE. THE USE OF CALCIUM CHLORIDE OR OTHER CHLORIDE BEARING SALTS SHALL NOT BE PERMITTED.
4. THE USE OF PLASTICIZERS, RETARDANTS AND OTHER ADDITIVES ARE SUBJECT TO THE STRUCTURAL ENGINEER APPROVAL.
5. CONCRETE SLUMP TESTS SHALL BE MADE BEFORE AND AFTER THE ADDITION OD ADMIXTURES AND MAY BE TAKEN AT THE BACK OF THE TRUCK. FOR TEST CYLINDERS, CONCRETE SHALL BE TAKEN FROM THE HOSE END FOR CONCRETE PLACED BY PUMP.
6. UNLESS NOTED OTHERWISE, CONCRETE JOINTS TO BE LOCATED APPROXYMATELY 400 SW. FT. GRIDS.
7. PROTECT CONCRETE SLAB AT ALL TIMES FROM RAIN, HAIL OR OTHER WEATHER CONDITIONS. PROTECT CONCRETE SURFACE BETWEEN FINISHING OPERATIONS ON HOT, DRY DAYS OR ANY OTHER TIME THAT PLASTIC SHRINKAGE CRACKS COULD DEVELOP BY USING WET BURLAP, PLASTIC MEMBRANE OR FOGGING.
8. UNLESS SPECIFIED, CONCRETE MUST REACH 40% OF ITS 28-DAY COMPRESSIVE STRENGTH (f'c), BEFORE FORMS MAY BE REMOVED.
9. CONTRACTOR TO HAVE ITS OWN CERTIFIED TESTING LABORATORY TO VERIFY AND PROVIDE REPORTS CERTIFYING:
   - 9.1.1.1. CONCRETE PLANT BATCH TICKETS FOR EACH TRUC VERIFY THAT THE CONCRETE MATCHES THE APPROVED DESIGN MIX.
   - 9.1.1.2. CONCRETE SLUMP IS IN ACCORDANCE WITH APPROVED DESIGN MIX.
   - 9.1.1.3. CONCRETE PLACEMENTS PREPARATIONS ARE IN ACCORDANCE WITH ACI SPECIFICATIONS.
   - 9.1.1.4. CONTROL JOINTS ARE INSTALLED WITHIN THE ACI TIME ALLOWANCE.
   - 9.1.1.5. PROPER CURING METHODS ARE BEING UTILIZED.

EPWATER TO HAVE INDEPENDENT CERTIFIED LABORATORY FOR TESTING IF NEEDED.

10. UNLESS NOTED, CONCRETE SHALL MEET OR EXCEED THE MINIMUM COMPRESSIVE STRENGTH, AND REINFORCEMENT COVER SHALL MEET THE FOLLOWING:
    - A. CONCRETE DESIGN STRENGTH:
      - A.A. SLAB ON GRADE f'c = 4,000 PSI
11. CONCRETE QUALITY SCHEDULE:
    - A. SLAB ON GRADE AND GRADE BEAMS: 4,000 PSI AT 28 DAYS, 1" MA. AGGREGATE SIZE, 5" ± 1" SLUMP.
12. MINIMUM CONCRETE COVER PROTECTION FOR REINFORCEMENT BARS SHALL BE AS FOLLOWS:
    - A. SLABS ON GRADE
      - A.A. SINGLE LAYER OR TOP LAYER 2 INCHES
      - A.B. BOTTOM LAYER CAST AGAINST SOIL 3 INCHES
      - A.C. BOTTOM LAYER NOT CAS AGAINST SOIL 2 INCHES
    - B. GRADE BEAMS
      - B.A. TOP 1-1/2 INCHES
      - B.B. BOARD FORMED SIDES 2 INCHES
      - B.C. EARTH FORMED SIDES 3 INCHES
      - B.D. BOTTOM 3 INCHES

PROVIDE STANDARD BAR CHAIRS AND SPACERS AS REQUIRED TO MAINTAIN CONCRETE PROTECTION SPECIFIED.

GABION BASKET NOTES

1. GABIONS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:
   - 1.1. WIRE FOR FABRICATION SHALL BE HOT-DIPPED GALVANIZED
   - 1.2. THE WIRE SHALL HAVE A MINIMUM TENSILE STRENGTH OF 3,500 PLF WITH A MINIMUM PUNCH TEST RESISTANCE OF 6,000 LBS. AND CONNECTING SELVEDGES OF 1,400 PLF.
   - 1.3. GALVANIZED STEEL WIRE SHALL CONFORM TO MINIMUM PROPERTIES OF ASTM A945-97.
   - 1.4. ALL GABIONS SHALL BE FILLED IN ACCORDANCE TO ASTM D6711 WITH ROCK SIZES 4-IN MIN. TO 8-IN MAX.
   - 1.5. ROCK MUST HAVE UNIT WEIGHT OF 165 PCF AND MAXIMUM VOID OF 15%.
   - 1.6. ONLY DOUBLE TWISTED WIRE GABIONS WILL BE ACCEPTED. NO WELDED GABIONS ARE PERMITTED.
2. ALL SUBGRADE TO BE COMPACTED TO 95% AS PER ASTM D1557.
3. GROUND STABILIZATION FABRIC SHALL BE A WOVEN GEOTEXTILE FILTER FABRIC.
4. ALL GABIONS SHALL BE PROPERLY FASTENED TO EACH OTHER.
5. AREA SHALL BE CLEARED FROM ANY DEBRIS OR OBSTRUCTION BEFORE PLACEMENT OF GABIONS.
6. GABIONS AND BEDDING OR SPECIFIED GEOTEXTILE SHALL NOT BE PLACED UNTIL THE FOUNDATION PREPARATION IS COMPLETED.
7. FOUNDATION ON WHICH THE GABIONS ARE TO BE PLACED SHALL BE CUT OR FILLED AND GRADED AS REQUIRED IN ORDER TO MAKE FLOW CONTINUOUS.
8. AT BO POINT IN THE FILLING PROCESS MAY ROCK BE MECHANICALYY PLACED FROM A HEIGHT OF OVER 36" FROM MACHINE TO FILL AREA.
9. THE LAST LAYER OF ROCK SHALL BE UNIFORMLY HAND LEVELED TO THE TOP EDGES OF THE GABIONS.
10. ANY DAMAGE TO THE WIRE OR COATING DURING ASSEMBLY, PLACEMENT, AND FILLING SHALL BE REPAIRED PROMPTLY IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR REPLACED WITH UNDAMAGED GABION BASKETS.

UTILITY COMPANIES AND AGENCIES

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EL PASO, TX 79925

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ENGINEERING DIVISION MANAGER
GEOFFREY A. ESPINELI, P.E.

STORMWATER ENGINEERING
STORMWATER ENGINEERING MANAGER
GISELA DAGNINO, P.E.

CONSTRUCTION PROJECT MANAGER
ENGINEERING DIVISION MANAGER
IVAN HERNANDEZ, P.E.

TELECOMMUNICATION:
XSPEDIUS COMMUNICATIONS
201 E. MAIN ST., STE 901
EL PASO, TX 79901
CABLE LOCATOR
BILL CAMPBELL
915-544-9499

ELECTRIC:
EL PASO ELECTRIC CO.
501 W. SAN ANTONIO ST.
EL PASO, TX 79902
915-543-2087
AREA REPRESENTATIVE
CARDIEL TREVIZO

KINDER-MORGAN ENERGY
11621 RAILROAD
EL PASO, TX 79934
JESUS RESENDEZ
PHONE 915-772-7400
CEL 915-471-0146

TEXAS GAS SERVICE
4700 POLLARD ST
EL PASO, TX 79930
915-680-7275
ALEJANDRO LIMON
REGIONAL ENGINEERING MANAGER

EL PASO NATURAL GAS CO.
12600 McCOMBS
El PASO, TX 79934
DAVE CAMPBELL
915-544-5234
JOAQUIN GARIBAY
915-842-7315

"1 CALL" UTILITY LOCATING
1-800-DIGTESS (344-8377)
TX. 1 CALL (1-800-245-4545)
LONE STAR (1-800-669-8344)

H:\PROJ\R300608.01 - PALISADES STORMWATER IMPTS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\XLS\ DESIGN\SHEETS\R300608.01 - 2 - G102 NOTES.DWG

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR:
VER:
DWG: R300608.01 - 2 - G102 NOTES.DWG
DATE: 2/4/2022
DESIGN BY: R.A.P.
DRAWN BY: L.V.
CHKD. BY: R.A.P.

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RUSSELL ALLEN PARR
P.E. 88072
ON
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HUITT-ZOLLARS INC.
ENGINEERING / SURVEYING
5822 CROMO DRIVE, SUITE 210
EL PASO, TEXAS 79912
PH. (915) 587-4339 / FAX (915) 587-5247
FIRM REGISTRATION F-761

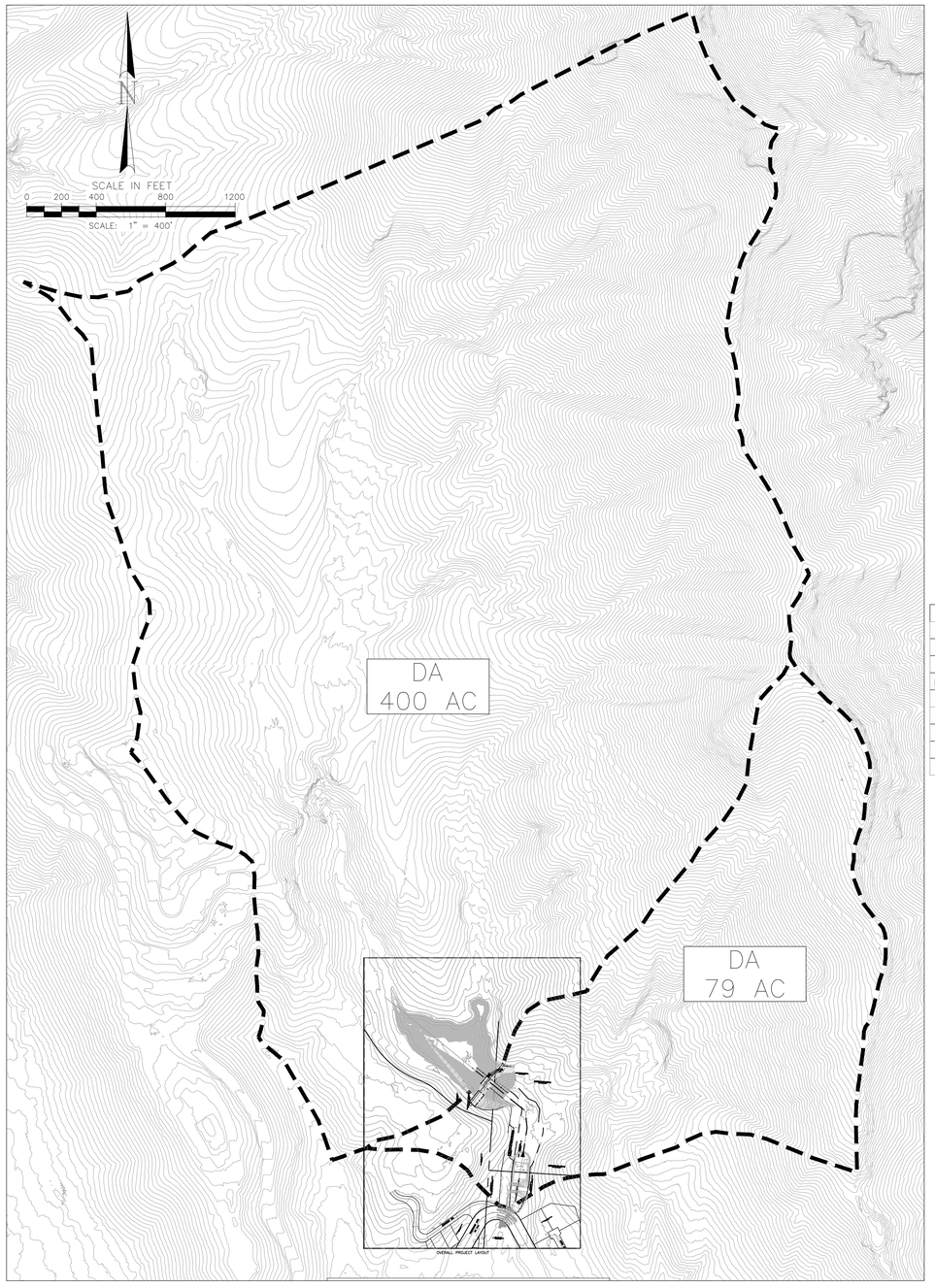
el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

GENERAL NOTES

JOB NO. R300608.01

SHEET NO. 2 OF 22



PROJECT LEGEND

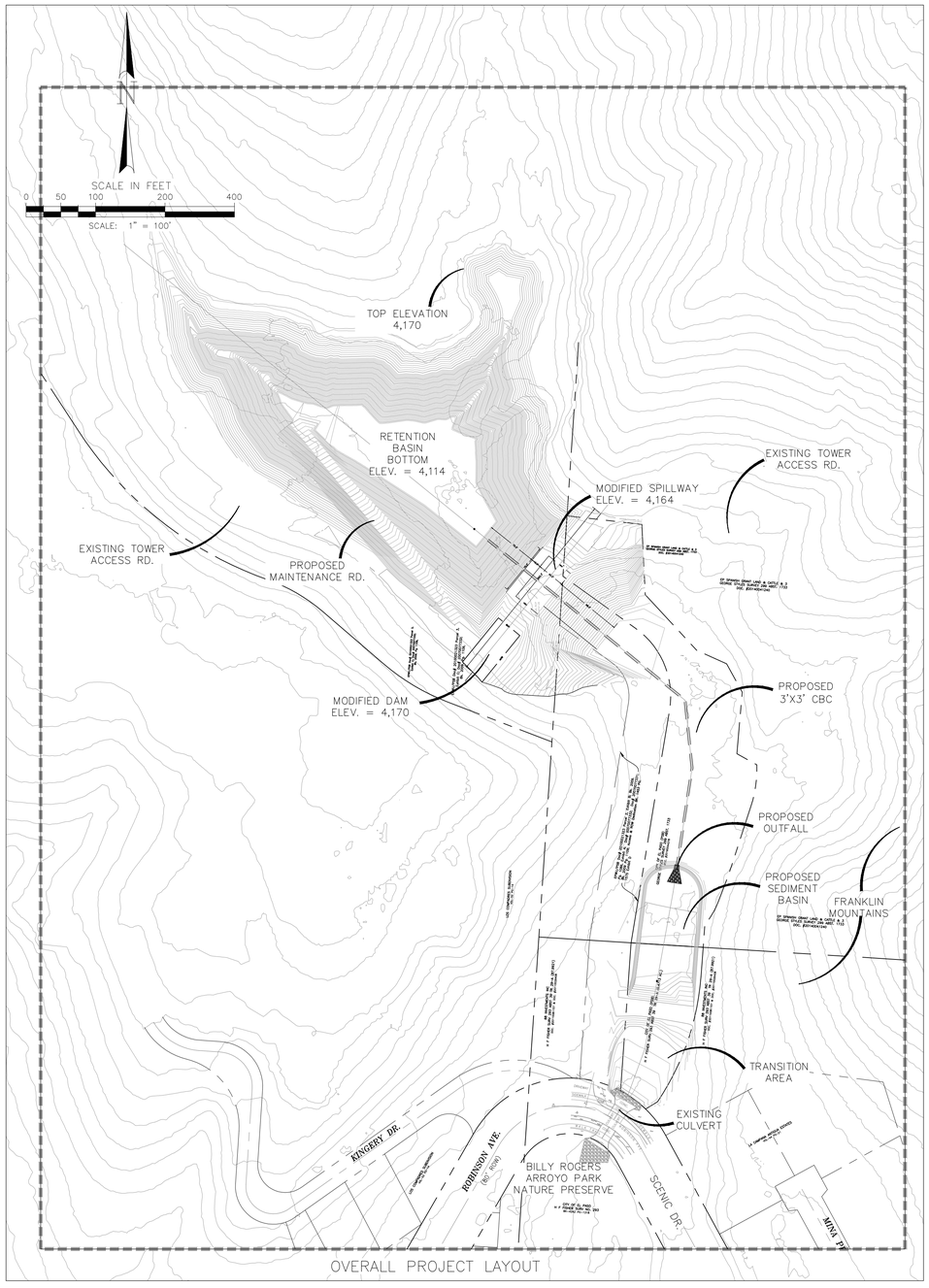
- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- W — PROPOSED WATER MAIN
- w — WATER LINE (AS NOTED)
- TV — EXISTING TIME WARNER CABLE LINE
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR

BASIN DATA				
SUBBASIN	ACREAGE	SOIL TYPE	CURVE NO.	LAG TIME
	(AC)			(HRS)
A	400	Gravelly Sandy Loam	88	0.55
B	79	Gravelly Sandy Loam	88	0.233

STORM DATA					
		PROPOSED		PROPOSED	PROPOSED
		PEAK	PROPOSED	PEAK	RET. BASIN
	24 HOUR	DISCHARGE	RET. BASIN	DISCHARGE	PEAK
RECURRENCE	RAIN DEPTH	RET. BASIN	PEAK W.S.E.	AT ROBINSON	STORAGE
(YEAR)	(IN)	(CFS)	(FT)	(CFS)	(AC-FT)
25	2.60	405.50	4147.60	44.70	41.10
50	2.96	481.60	4151.70	47.90	49.60
100	4.18	763.90	4164.20	56.50	82.30
75% PMF	6.53	2203.00	4168.80	1979.80	99.00

OUTLET STRUCTURE DATA		
PRIMARY LOW LEVEL	EMERGENCY SPILLWAY	TOP OF DAM
OUTLET ELEVATION	CREST ELEVATION	ELEVATION
4119.25	4164.30	4170.00

DAM CLASSIFICATION		
STORAGE	HEIGHT	CLASSIFICATION
(AC-FT)	(FT)	
99	56	SMALL
HAZARD		DESIGN EVENT
HIGH		100 YR



NO.	BY:	DATE	REV.	TB	DESCRIPTION

SCALE
HOR: AS NOTED
VER:
DWG: R300608.01 - 3 - GI03 LAYOUT.DWG
DATE: 12/23/2021
DESIGN BY: R.A.P.
DRAWN BY: L.V.
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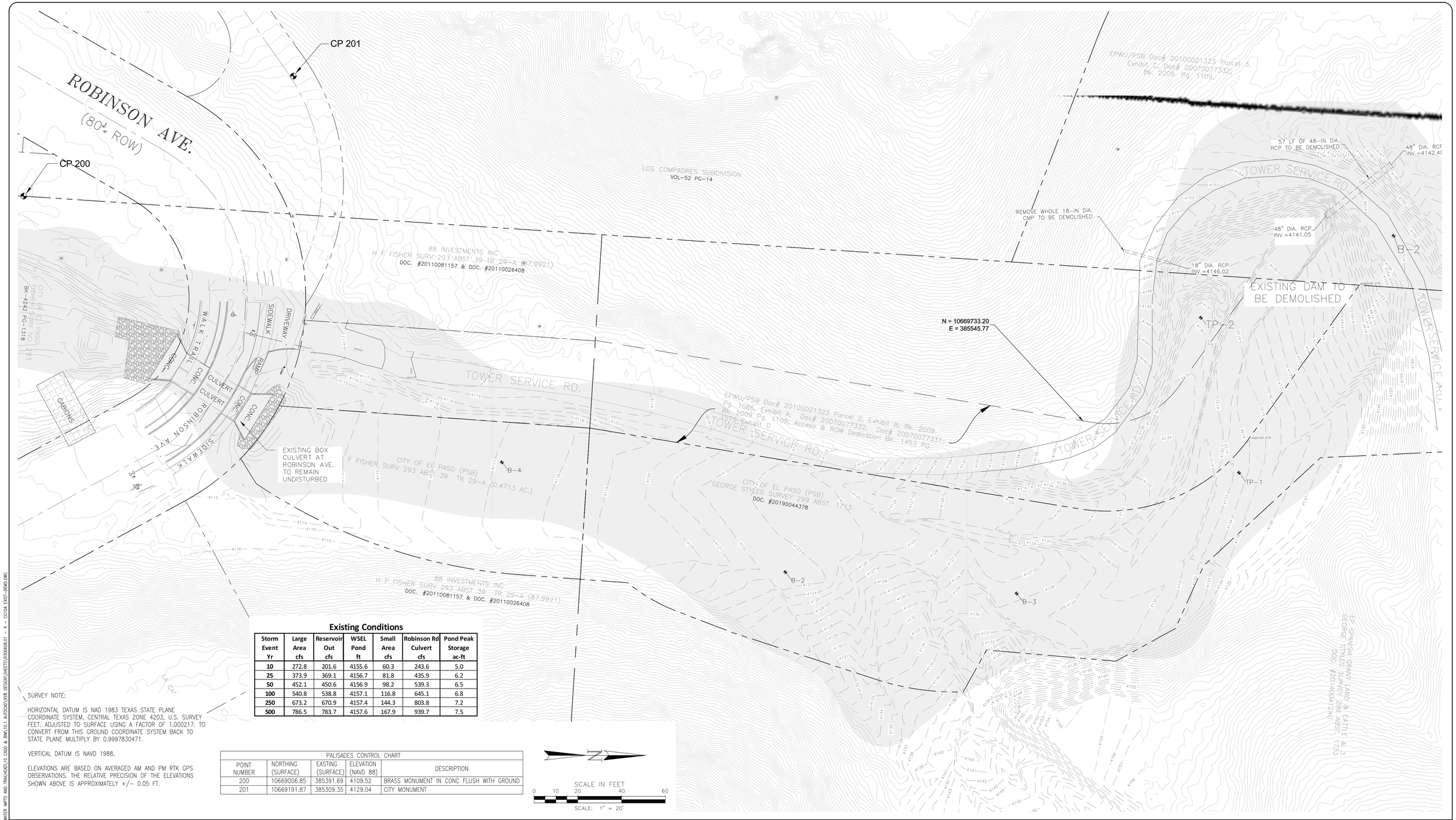
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

OVERALL PROJECT LAYOUT AND DRAINAGE AREA MAP

JOB NO. R300608.01

SHEET NO. 3 OF 22

J:\EPWU\R300608.01 - PALISADES STORMWATER MPTS AND TRAILHEAD\1.0 CADD & BIM\1.01 AUTOCAD\EXHIBIT DESIGN\SHEETS\R300608.01 - 3 - GI03 LAYOUT.DWG



SURVEY NOTE:

HORIZONTAL DATUM IS NAD 1983 TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL TEXAS ZONE 4203, U.S. SURVEY FEET. ADJUSTED TO SURFACE USING A FACTOR OF 1.000217. TO CONVERT FROM THIS GROUND COORDINATE SYSTEM BACK TO STATE PLANE MULTIPLY BY 0.9997830471.

VERTICAL DATUM IS NAVD 1988.

ELEVATIONS ARE BASED ON AVERAGED AM AND PM RTK GPS OBSERVATIONS. THE RELATIVE PRECISION OF THE ELEVATIONS SHOWN ABOVE IS APPROXIMATELY +/- 0.05 FT.

Existing Conditions

Storm Event Yr	Large Area cfs	Reservoir Out cfs	WSEL Pond ft	Small Area cfs	Robinson Rd Culvert cfs	Pond Peak Storage ac-ft
10	272.8	201.6	4155.6	60.3	243.6	5.0
25	373.9	369.1	4156.7	81.8	435.9	6.2
50	452.1	450.6	4156.9	98.2	539.3	6.5
100	540.8	538.8	4157.1	116.8	645.1	6.8
250	673.2	670.9	4157.4	144.3	803.8	7.2
500	786.5	783.7	4157.6	167.9	939.7	7.5

PALISADES CONTROL CHART				
POINT NUMBER	NORTHING (SURFACE)	EASTING (SURFACE)	ELEVATION (NAVD 88)	DESCRIPTION
200	10669006.85	385391.69	4109.52	BRASS MONUMENT IN CONC FLUSH WITH GROUND
201	10669191.87	385309.35	4129.04	CITY MONUMENT

N

SCALE IN FEET
0 10 20 40 60
SCALE: 1" = 20'

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: _____
VER: _____
DWG: R300601-1-4-22SW-EXIST-DEMOLDWG
DATE: 2/4/2022
DESIGN BY: R.A.P.
DRAWN BY: L.V.
CHKD. BY: R.A.P.

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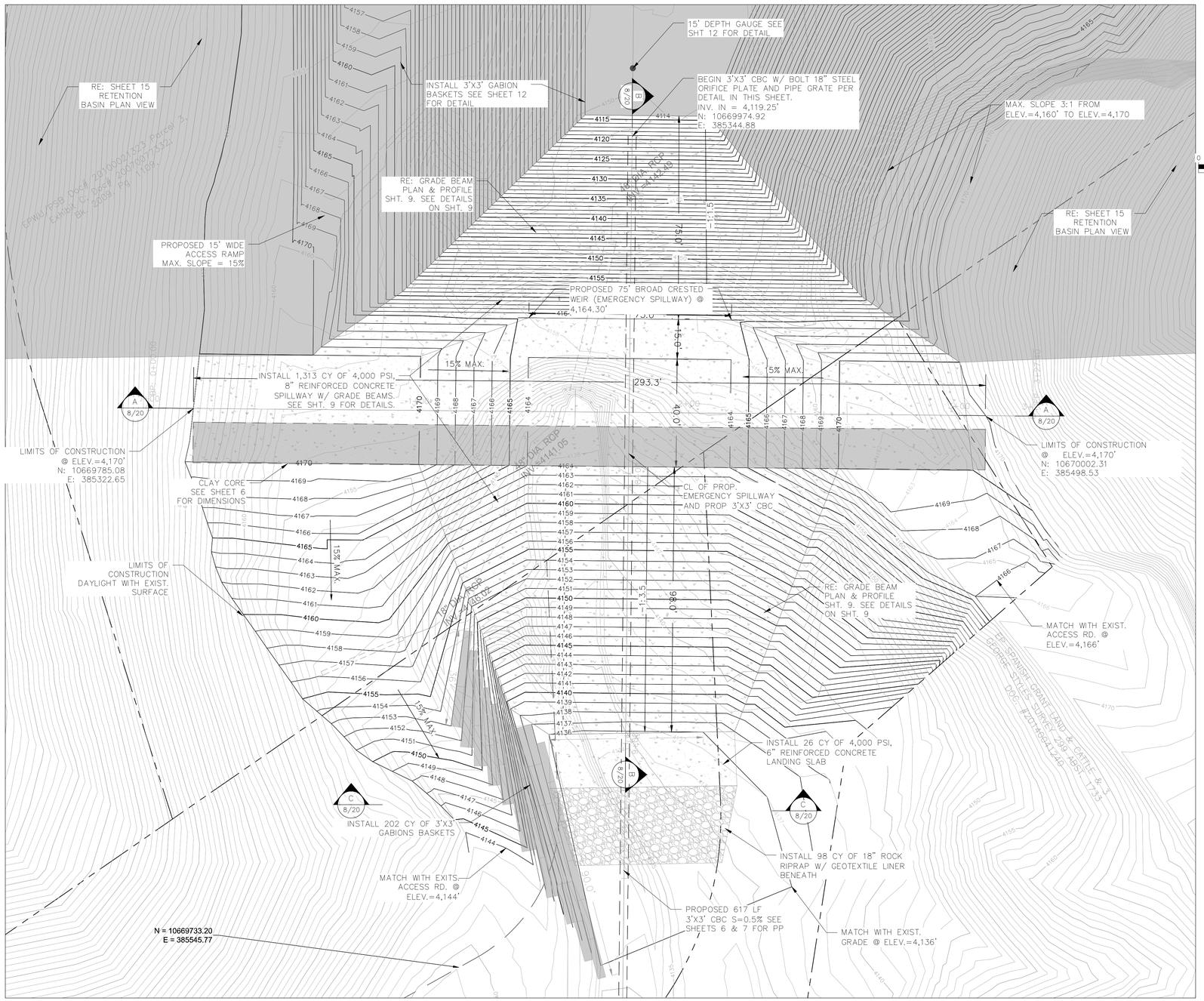
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

EXISTING CONDITIONS/ DEMOLITION PLAN

JOB NO. R300608.01

SHEET NO. 4 OF 22

H:\PROJ\R300608.01 - PALISADES STORMWATER MPTS AND TRANSFER\110 CADD & BIM\10.1 AUTOCAD\05X PLOTS\SHEETS\R300608.01 - 4 - EX104 EXIST-DEMOLDWG



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SCALE: 1" = 20'

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DIAPHRAGM DIMENSIONS

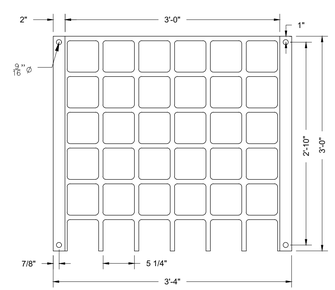
WIDTH:	293.3 FEET (DAM EXTENT)
HEIGHT:	54 FEET (TOP AT 4163)
THICKNESS:	15 FEET

FILTER OUTLET TRENCH (DRAIN OUTLET)

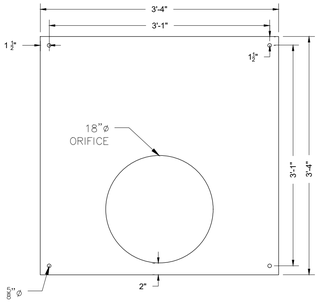
WIDTH:	23 FEET (10 FEET EACH SIDE OF 3X3 BC)
LENGTH:	98.5 FEET
THICKNESS:	5 FEET
PIPE BEDDING:	1 FOOT

DAM FOUNDATION NOTES:

1. BASED ON THE BORING LOGS AND SOILS CLASSIFICATION TESTS, THE GEOTECHNICAL ENGINEER RECOMMEND THAT THE EXISTING SOILS THAT WILL SUPPORT THE DAM BE REMOVED TO A DEPTH OF AT LEAST 36 INCHES. THESE SOILS SHALL BE REPLACED AND/OR REPROCESSED TO MEET THE REQUIREMENTS OF SELECT FILL IN THE GEOTHECNICAL REPORT.
2. THE FILL SHALL BE PLACED IN LOOSE LIFTS NOT TO EXCEED 8 INCHES AND RE-COMPACTED TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY AND AT 0 TO + 3 PERCENT OF OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D 1557 UNTIL PERMANENTLY COVERED.
4. IF THE NATIVE MATERIAL EXCAVATED FROM THE TRENCH IS UNSUITABLE AS BACKFILL MATERIAL, OR THE REQUIRED COMPACTION IS UNATTAINABLE, THE CONTRACTOR SHALL AT HIS EXPENSE, IMPORT SELECT MATERIAL TO BE MIXED OR USED IN PLACE OF THE NATIVE MATERIAL. SELECT MATERIAL MUST BE APPROVED BY THE ENGINEER.
5. THE USE OF HEAVY EQUIPMENT WILL BE REQUIRED FOR EXCAVATION OF EXISTING DAM AND SHALL BE ACCOUNTED FOR IN THE RESPECTIVE BID ITEM.



36" SQUARE CULVERT PIPE GRATE
N.T.S.



36" ORIFICE PLATE
N.T.S.

ORIFICE PLATE AND PIPE GRATE NOTES:

1. GALVANIZED STEEL MATERIAL SHALL BE USED.
2. ORIFICE STEEL PLATE AND PIPE GRATE ARE SUBSIDIARY TO CONCRETE BOX CULVERT, NOT TO BE PAID SEPARATELY.
3. REFER TO MANUFACTURER FOR SPECIFICATIONS AND INSTALLATION INSTRUCTIONS.

TRASHRACKS.com
101 IRONWOOD ROAD
MIDDLESBORO, KY 40965
PH: (606) 248-5560
FAX: (606) 248-6308
JRHOE.COM

						SCALE	ENGINEER'S SEAL	HUITT-ZOLLARS INC.	el paso WATER	PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE	JOB NO. R300608.01
						HOR:	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RUSSELL ALLEN PARR P.E. 88072 ON FEBRUARY 4, 2022 IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES	ENGINEERING / SURVEYING 5822 CROMO DRIVE, SUITE 210 EL PASO, TEXAS 79912 PH. (915) 587-4339 / FAX (915) 587-5247 FIRM REGISTRATION F-761	1154 HAWKINS BLVD. EL PASO TEXAS 79925 (915) 594-5500	DAM PLAN VIEW	SHEET NO. 5 OF 22
						VER:					
						DWG: R300608-1-GS01 DAM PLAN VIEW.DWG					
						DATE: 2/4/2022					
						DESIGN BY: R.A.P.					
						DRAWN BY: L.V.					
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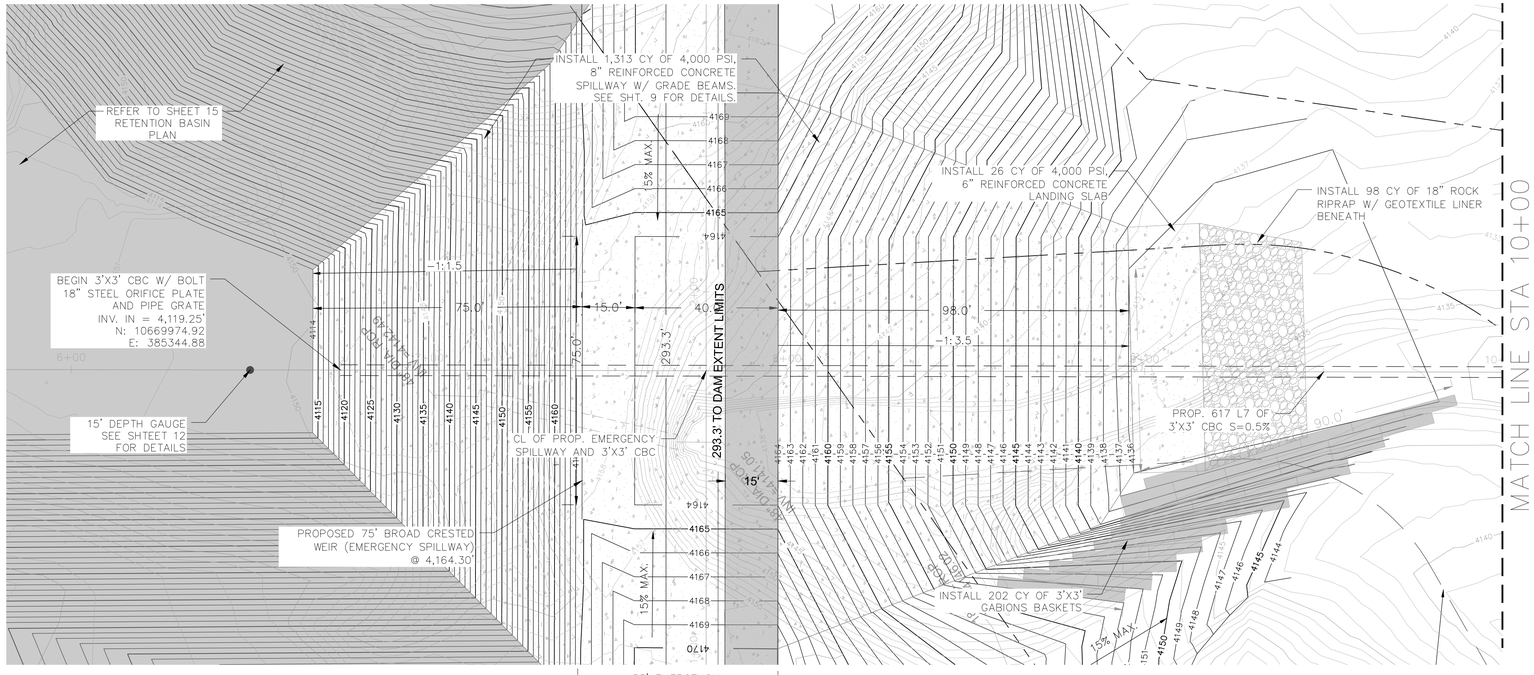
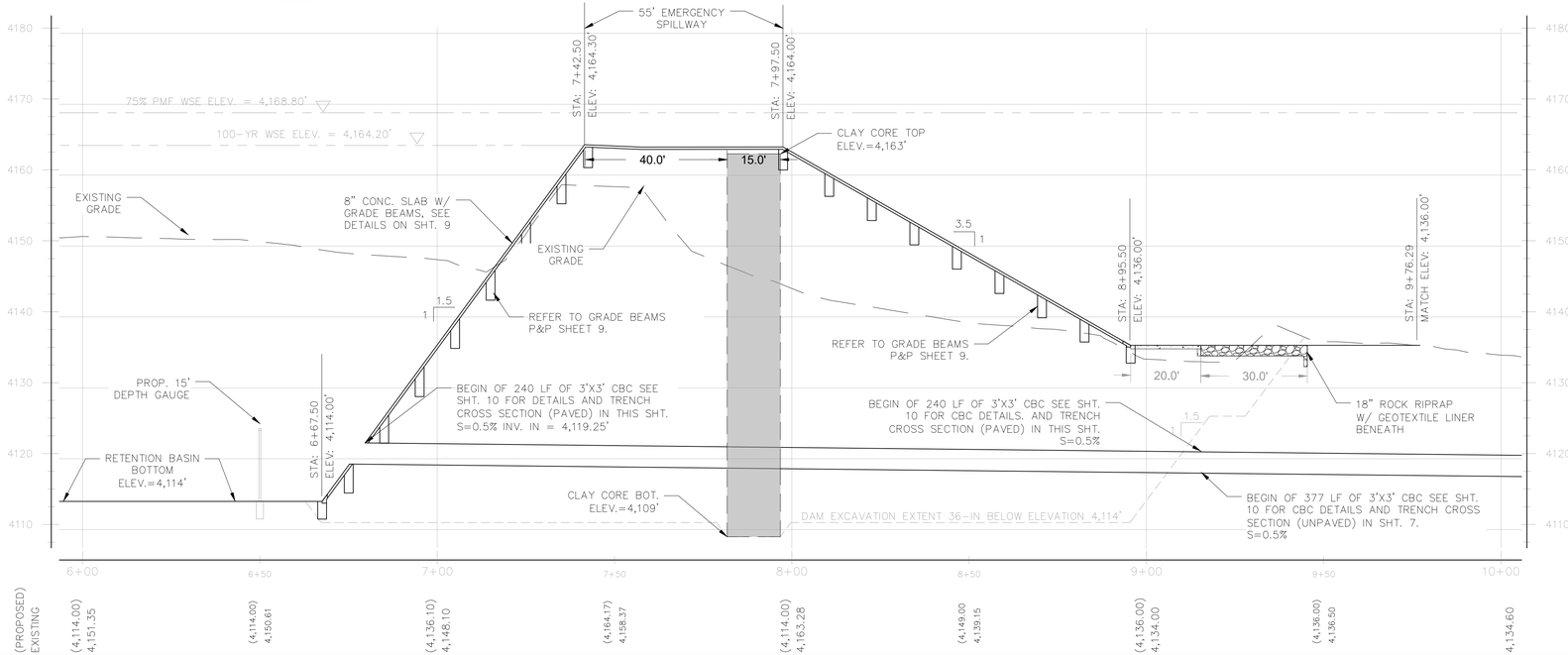
H:\PROJ\R300608.01 - PALISADES STORMWATER MPTS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\MS DESIGN\SHEETS\R300608.01 - 5 - GS10 DAM PLAN VIEW.DWG





PROJECT LEGEND

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- RIGHT-OF-WAY
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- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR

SCALE IN FEET
0 10 20 40 60
SCALE: 1" = 20'

CLAY CORE NOTES:

1. THE CROSS-SECTIONAL THICKNESS OF A CLAY CORE ZONE SHALL NOT BE LESS THAN THE REMAINING HEIGHT OF THE EMBANKMENT ABOVE IT FOR ANY GIVEN ELEVATION AND SHALL NOT BE LESS THAN 10 FEET.
2. THE CROSS-SECTIONAL THICKNESS OF A CLAY CORE ZONE SHALL BE AT LEAST 2.5 TIMES THE HEIGHT OF THE DAM AT ITS BASE.
3. THE CORE ZONE SHALL EXTEND VERTICALLY TO WITHIN SEVERAL FEET BELOW THE EMBANKMENT CREST.
4. THE CORE ZONE (AND ITS IMPERVIOUS MATERIAL) SHALL INCORPORATE THE LIMITS OF THE DAM FOUNDATION'S KEY TRENCH.
5. THE MATERIALS USED TO CONSTRUCT THE EARTHEN DAM SHALL MEET THE REQUIREMENTS INDICATED IN SECTION 12.1 OF THE GEOTECHNICAL REPORT.
6. IMPERVIOUS CORE FILL MATERIALS USED TO CONSTRUCT THE EARTHEN DAM SHALL BE LIMITED TO THOSE MATERIALS THAT EXHIBIT A MINIMUM PERMEABILITY OF 1X10-6 CM/SEC, AS MEASURED BY ASTM D 5084. FURTHERMORE, ADDITIONAL SOIL PROPERTIES ARE LISTED BELOW:
   LIQUID LIMIT: 30% MIN.
   PLASTICITY INDEX: 18 TO 35%
   IMPERVIOUS CORE FILL MATERIALS SHALL CLASSIFY AS GC, SC, CL, ML, OR CH ACCORDING TO THE USCS.
7. THE CORE FILL SHALL BE PLACED AT 95 PERCENT OF MAXIMUM DRY DENSITY AND ± 3 PERCENTAGE POINTS OF OPTIMUM MOISTURE AS DETERMINED BY TEST METHOD ASTM D-1557 OR ASTM D-698, DEPENDING ON THE FINAL APPROVAL MATERIAL BY THE ENGINEER.

DAM FOUNDATION NOTES:

1. BASED ON THE BORING LOGS AND SOILS CLASSIFICATION TESTS, THE GEOTECHNICAL ENGINEER RECOMMEND THAT THE EXISTING SOILS THAT WILL SUPPORT THE DAM BE REMOVED TO A DEPTH OF AT LEAST 36 INCHES. THESE SOILS SHALL BE REPLACED AND/OR REPROCESSED TO MEET THE REQUIREMENTS OF SELECT FILL IN THE GEOTECNICAL REPORT.
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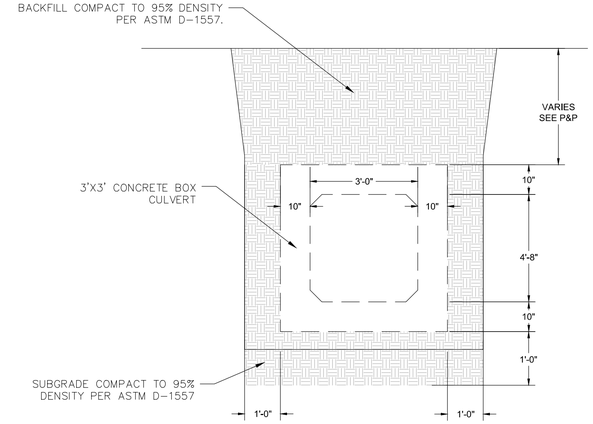
4. IF THE NATIVE MATERIAL EXCAVATED FROM THE TRENCH IS UNSUITABLE AS BACKFILL MATERIAL, OR THE REQUIRED COMPACTION IS UNATTAINABLE, THE CONTRACTOR SHALL AT HIS EXPENSE, IMPORT SELECT MATERIAL TO BE MIXED OR USED IN PLACE OF THE NATIVE MATERIAL. SELECT MATERIAL MUST BE APPROVED BY THE ENGINEER.
5. THE USE OF HEAVY EQUIPMENT WILL BE REQUIRED FOR EXCAVATION OF EXISTING DAM AND SHALL BE ACCOUNTED FOR IN THE RESPECTIVE BID ITEM.



CBC NOTES:

1. REFER TO SHEET 9 FOR MATERIALS AND GENERAL NOTES. SEE BOX DATA TABLE ON SHEET 9 FOR CBC DIMENSIOS AND REINFORCING.
2. COMPACTION REQUIREMENTS VARY FOR PAVED AND UNPAVED CONDITIONS AND FOR CBC SECTION THROUGH DAM. REFER TO GENERAL NOTES FOR DAM COMPACTION.
3. PROVIDE TRENCH SAFETY SYSTEM FOR TRENCH DEPTHS GREATER THAT 5 FEET. PROTECTIVE SYSTEMS DEIGNED BY A REGISTERED PROFESSIONAL ENGINEER WILL BE REQUIRED. TRENCHES 20 FEET DEEP OR GREATER REQUIRE THAT THE PROTECTIVE SYSTEM BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER OR BE BASED ON TABULATED DATA PREPARED AND/OR APPROVED BY A REGISTERED PROFESSIONAL ENGINEER (IN THE STATE OF TEXAS) IN ACCORDANCE WITH 1926.652(b) ABD (c).
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TRENCH CROSS SECTION (PAVED)
N.T.S.

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SCALE
HOR: _____
VER: _____
DWG: R300608.01-1-CG102 CBC PP-1.DWG
DATE: 2/4/2022
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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

DAM AND 3'X3' CONCRETE BOX CULVERT PLAN AND PROFILE 01

JOB NO. R300608.01

SHEET NO. 6 OF 22

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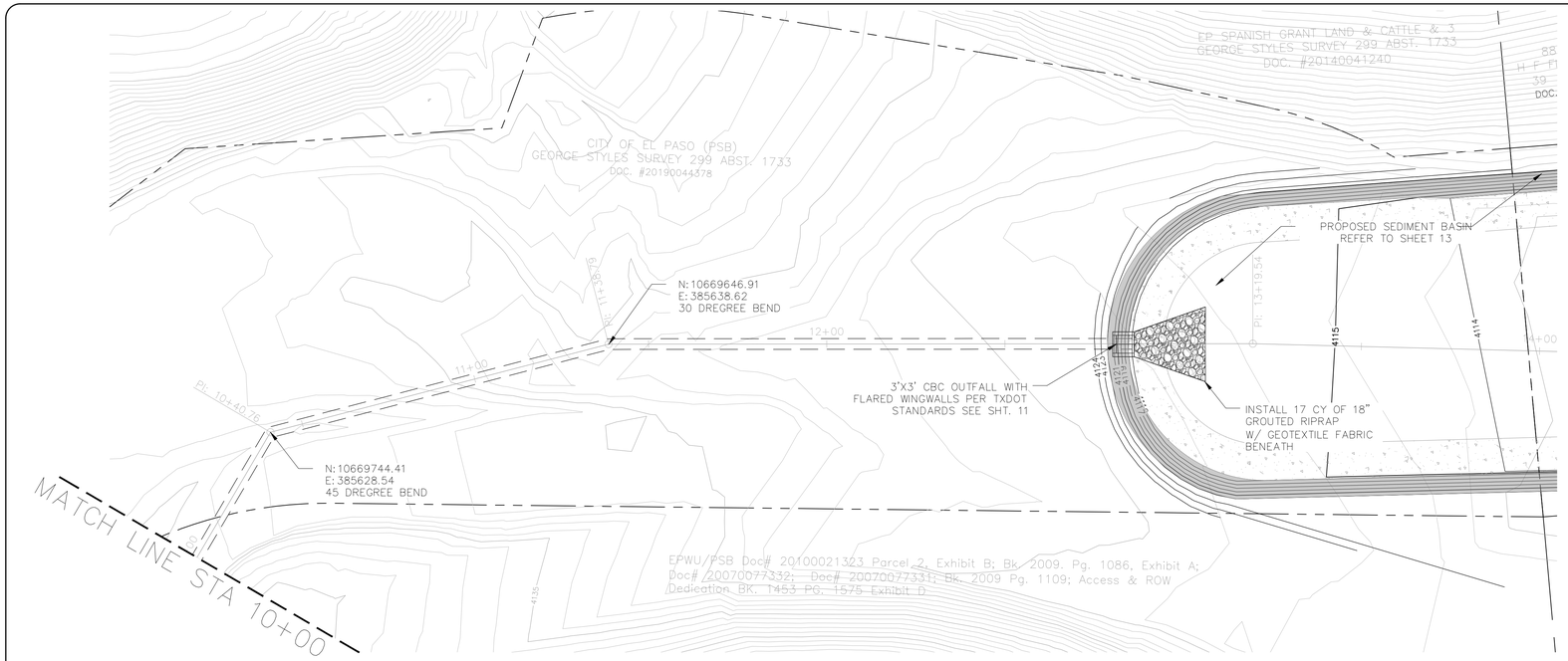

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SCALE IN FEET
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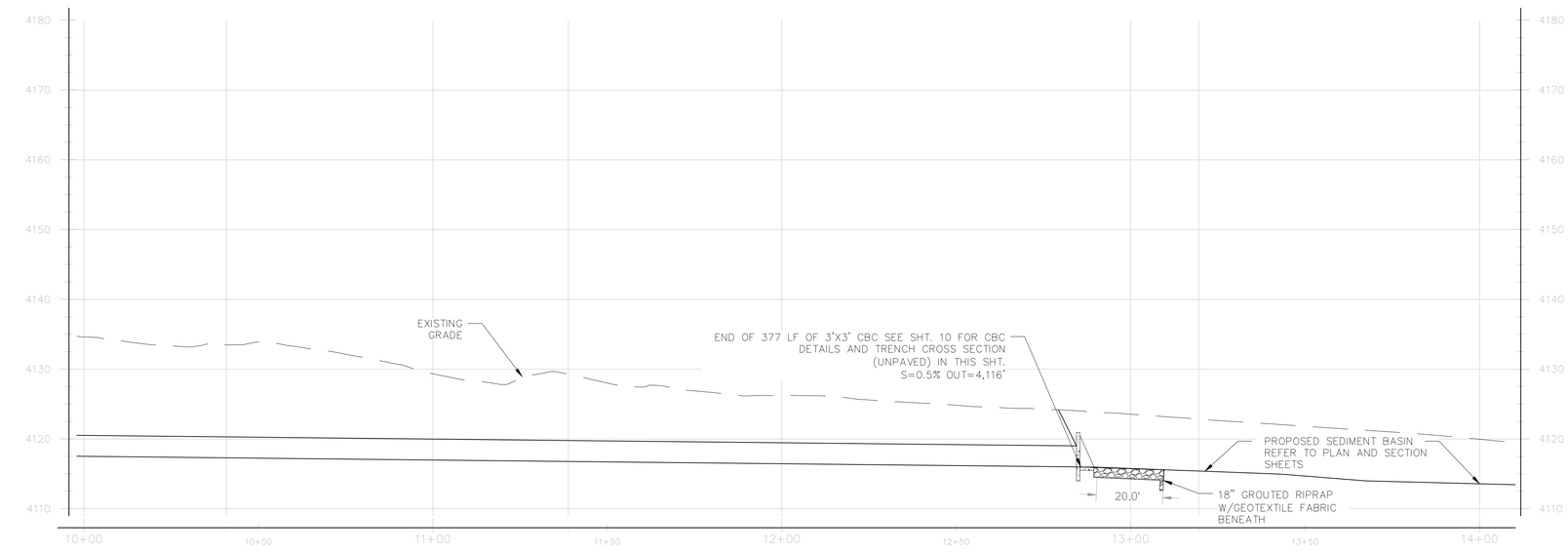
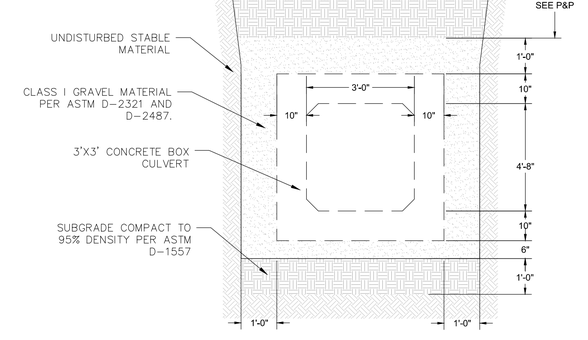
SCALE: 1" = 20'





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TRENCH CROSS SECTION (UNPAVED)
N.T.S.

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
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DWG: R300608.01-7-CS103 CBC PP 2.DWG
DATE: 2/4/2022
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EL PASO, TEXAS 79912
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FIRM REGISTRATION F-761

el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

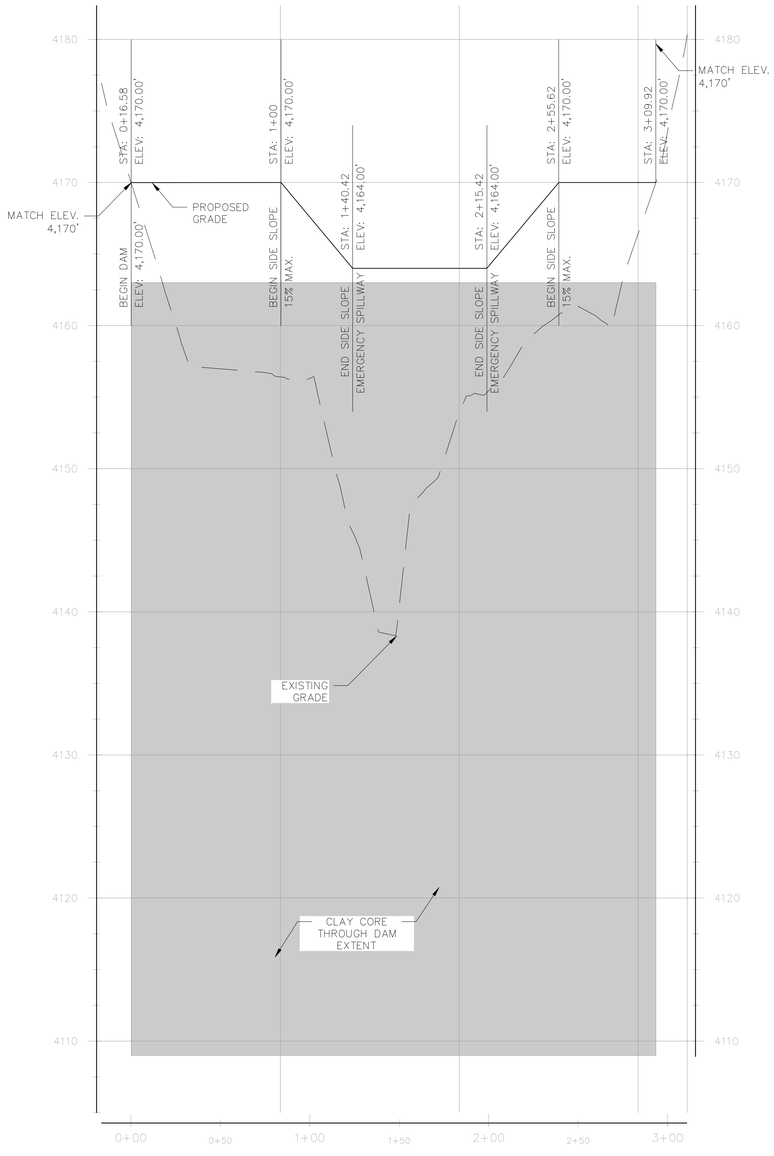
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

DAM AND 3'X3' CONCRETE BOX CULVERT PLAN AND PROFILE 02

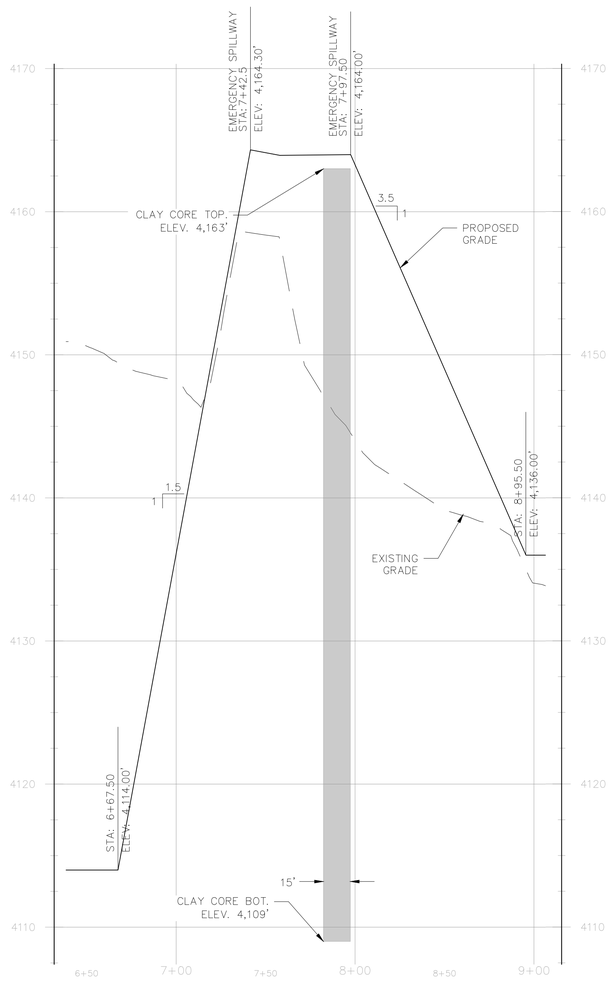
JOB NO. R300608.01

SHEET NO. 7 OF 22

H:\PROJ\R300608.01 - PALISADES STORMWATER MPTS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\SHEETS\R300608.01 - 7 - CS103 CBC PP 2.DWG



A–A DAM PROFILE



B–B SPILLWAY PROFILE

C–C TOWER RD SLOPE SECTION

NOTE:
1. THICKNESS OF CLAY CORE AT ANY ELEVATION OF THE EMBANKMENT SHALL BE 15'.
2. REMOVE ENTIRE EXISTING DAM EMBANKMENT TO A DEPTH OF AT LEAST 36" BELOW "PROPOSED" RETENTION BASIN BOTTOM ELEVATION..
3. REPLACE AND/OR REPROCESS THESE SOILS TO MEET THE REQUIREMENTS OF STRUCTURAL FILL SPECIFIED IN LATEST CQC GEOTECH REPORT.
4. THE FILL SHALL BE PLACED IN LOOSE LIFTS NOT TO EXCEED 8 INCHES AND RECOMPACTED TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY AND AT 0 TO +3 PERCENT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D-1557 UNTIL PERMANENTLY COVERED.
5. THE HORIZONTAL DEPTH OF EXCAVATION ALONG DAM SLOPES WILL BE AT LEAST 5-10 FEET INTO NATIVE SOIL AND/OR ROCK MATERIAL.
6. IMPERVIOUS CORE FILL MATERIALS SHALL EXHIBIT A MINIMUM PERMEABILITY OF 1X10^-6 cm/sec. AS MEASURED BY ASTM D-5084 AND WITH A LIQUID LIMIT : 30% MIN., PI FROM 18-35% IMPERVIOUS CORE FILL MATERIALS SHALL CLASSIFY AS GC, SC, CL, ML, OR CH ACCORDING TO THE USGS.
7. CORE FILL SHALL BE PLACED AT 95% OF MAX. DRY DENSITY AND ±3% OF OPTIMUM MOISTURE AS DETERMINED BY TEST METHOD ASTM D-1557 OR ASTM D-698.
8. CONTRACTOR SHALL FOLLOW ALL RECOMMENDATIONS IN THE LATEST CQC GEOTECH REPORT.

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: H: 1"=40'
VER: V: 1"=5'
DWG: R300608.01-8-DAM ELEVATIONS.DWG
DATE: 2/4/2022
DESIGN BY: R.A.P.
DRAWN BY: L.V.
CHKD. BY: R.A.P.

ENGINEER'S SEAL

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RUSSELL ALLEN PARR
P.E. 88072

ON

FEBRUARY 4, 2022
IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

HUITT-ZOLLARS INC.
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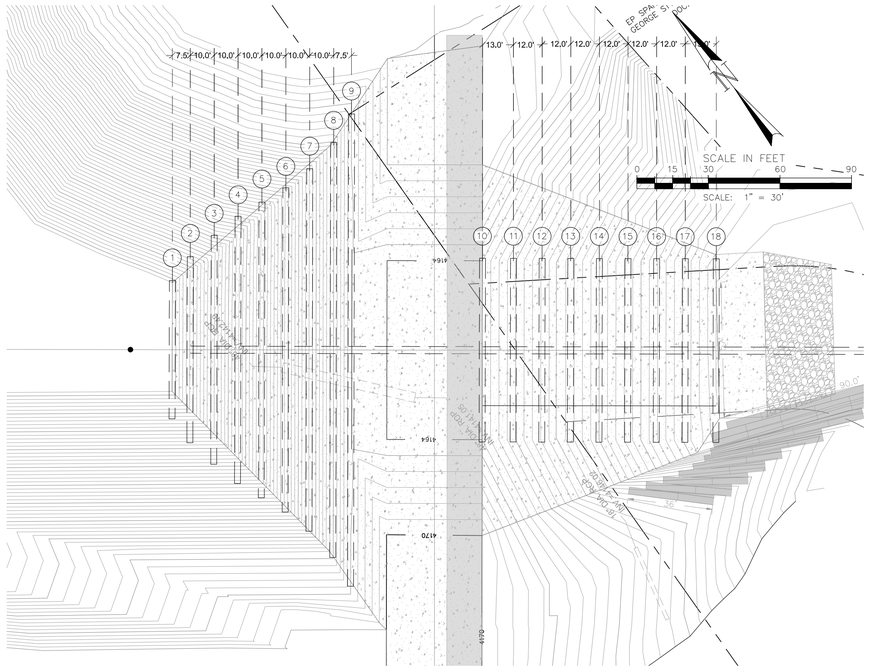
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

DAM ELEVATIONS

JOB NO. R300608.01

SHEET NO. 8 OF 22

H:\PROJ\R300608.01 - PALISADES STORMWATER IMPTS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\SITE DESIGN\SHEETS\R300608.01 - 8 - DAM ELEVATIONS.DWG

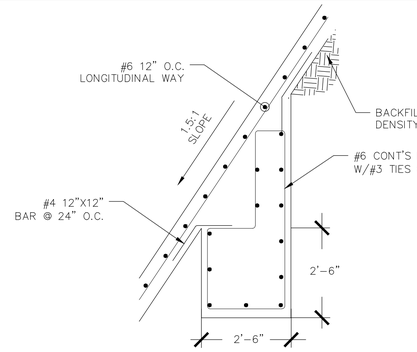


PROJECT LEGEND

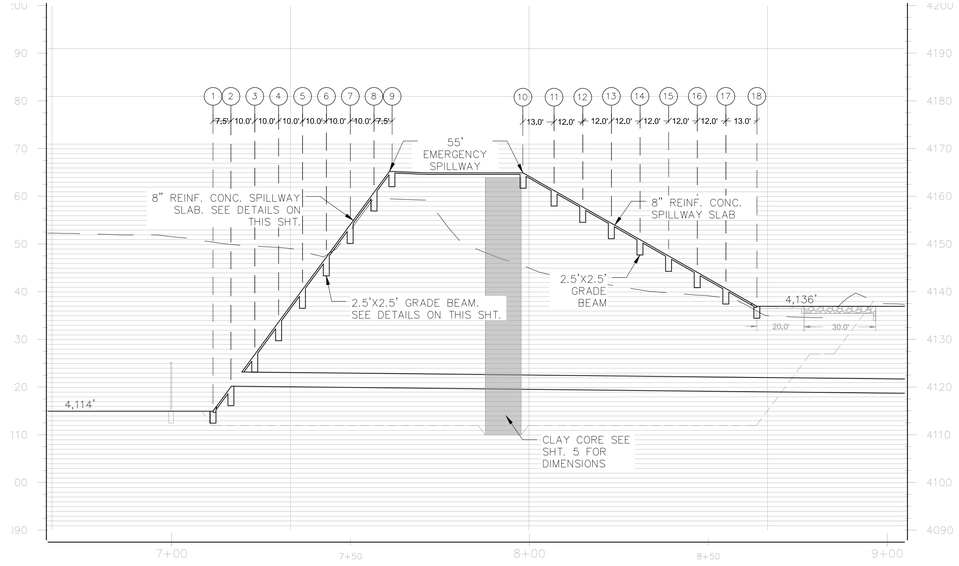
- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- W — PROPOSED WATER MAIN
- W — WATER LINE (AS NOTED)
- TV — EXISTING TIME WARNER CABLE LINE
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR
- PROPOSED GRADE BEAM

GRADE BEAM DIMENSIONS			
No.	H (FT)	W (FT)	L (FT)
1	2.5	2.5	58
2	2.5	2.5	78
3	2.5	2.5	96
4	2.5	2.5	112
5	2.5	2.5	124
6	2.5	2.5	136
7	2.5	2.5	152
8	2.5	2.5	174
9	2.5	2.5	198
10	2.5	2.5	77
11	2.5	2.5	77
12	2.5	2.5	77
13	2.5	2.5	77
14	2.5	2.5	77
15	2.5	2.5	77
16	2.5	2.5	77
17	2.5	2.5	77
18	2.5	2.5	77

GRADE BEAM DIMENSIONS TABLE



GRADE BEAM DETAIL



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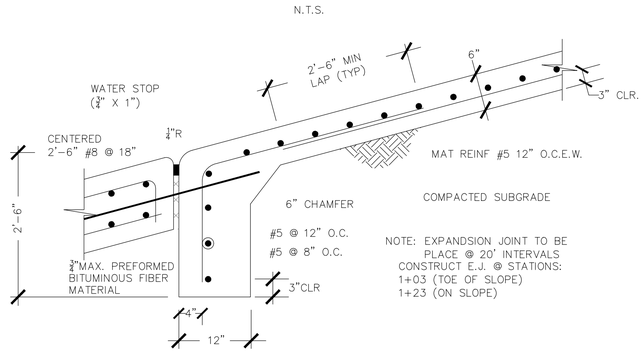
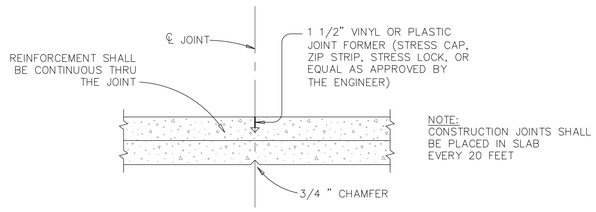


EXPANSION JOINT DETAIL-SLAB

N.T.S.



CONSTRUCTION JOINT DETAIL

N.T.S.

						SCALE	ENGINEER'S SEAL	HUITT-ZOLLARS INC.	el paso WATER	PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE	JOB NO. R300608.01
						HOR:	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF	ENGINEERING / SURVEYING	1154 HAWKINS BLVD.	GRADE BEAMS ELEVATIONS PLAN AND PROFILE	GI-102
						VER:	RUSSELL ALLEN PARR P.E. 88072	5822 CROMO DRIVE, SUITE 210	EL PASO TEXAS 79925		
						DWG: R300608.01-9-GI102 GRADE BMS.DWG	ON	EL PASO, TEXAS 79912	(915) 594-5500		SHEET NO. 9 OF 22
						DATE: 2/4/2022	FEBRUARY 4, 2022	PH. (915) 587-4339 / FAX (915) 587-5247			
						DESIGN BY: R.A.P.	IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES	FIRM REGISTRATION F-761			
						DRAWN BY: L.V.					
	TB	REV.	DATE	BY:	DESCRIPTION	CHKD. BY: R.A.P.					

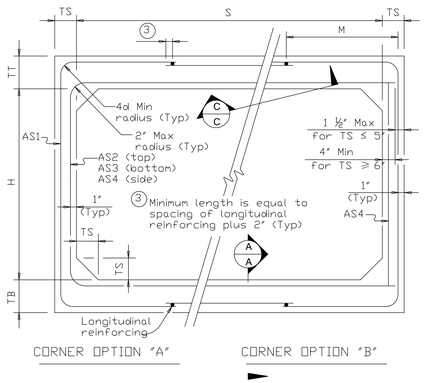
H:\PROJ\R300608.01 - PALISADES STORMWATER AMPS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\SITE DESIGN\SHEETS\R300608.01 - 9 - GI102 GRADE BMS.DWG

BOX DATA

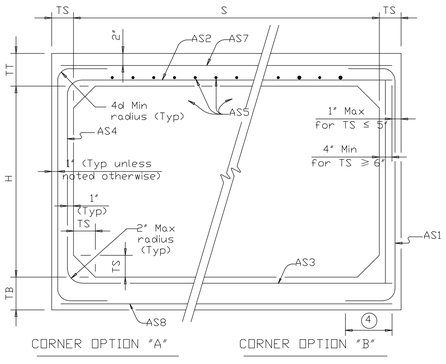
SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
3	2	7	6	4	< 2	–	0.17	0.25	0.16	0.10	0.17	0.17	0.14	3.3
3	2	4	4	4	2 < 3	31	0.13	0.19	0.18	0.10	–	–	–	2.4
3	2	4	4	4	3 – 5	31	0.10	0.11	0.12	0.10	–	–	–	2.4
3	2	4	4	4	10	31	0.10	0.10	0.10	0.10	–	–	–	2.4
3	2	4	4	4	15	31	0.10	0.13	0.13	0.10	–	–	–	2.4
3	2	4	4	4	20	31	0.11	0.17	0.17	0.10	–	–	–	2.4
3	2	4	4	4	25	31	0.14	0.21	0.21	0.10	–	–	–	2.4
3	2	4	4	4	30	31	0.17	0.25	0.25	0.10	–	–	–	2.4
3	2	4	4	4	35	31	0.20	0.29	0.30	0.10	–	–	–	2.4
3	3	7	6	4	< 2	–	0.17	0.27	0.17	0.10	0.17	0.17	0.14	3.7
3	3	4	4	4	2 < 3	31	0.10	0.22	0.21	0.10	–	–	–	2.8
3	3	4	4	4	3 – 5	31	0.10	0.14	0.14	0.10	–	–	–	2.8
3	3	4	4	4	10	31	0.10	0.11	0.11	0.10	–	–	–	2.8
3	3	4	4	4	15	31	0.10	0.14	0.15	0.10	–	–	–	2.8
3	3	4	4	4	20	31	0.10	0.18	0.19	0.10	–	–	–	2.8
3	3	4	4	4	25	31	0.10	0.23	0.23	0.10	–	–	–	2.8
3	3	4	4	4	30	31	0.12	0.27	0.28	0.10	–	–	–	2.8
3	3	4	4	4	35	31	0.14	0.32	0.32	0.10	–	–	–	2.8

(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

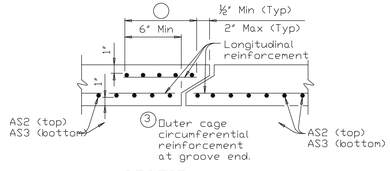


FILL HEIGHT 2 FT AND GREATER



FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



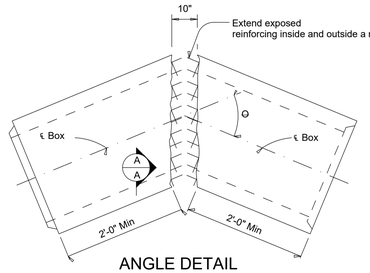
SECTION A-A

(Showing top and bottom slab joint reinforcement.)

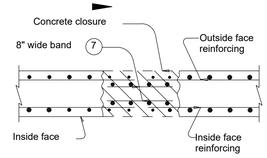
MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

SINGLE BOX CULVERTS PRECAST 3'–0" SPAN

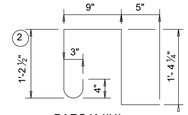


ANGLE DETAIL

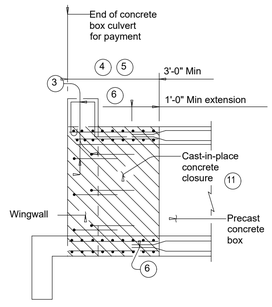


SECTION A-A

BARS C (#4)
(Spa = 1'-0" Max)

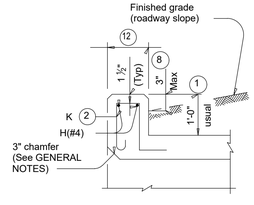


BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")



WINGWALL CONNECTION

(Also applies to safety end treatment.)



SECTION THRU CURB

QUANTITIES PER FOOT OF CURB (10)	
Reinforcing Steel	4.12 Lb
Concrete	0.037 CY

(1) 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail, or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

(2) For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.

(3) Extend curb, wingwall, or safety end treatment reinforcing into concrete closure. Bend or trim, as necessary, any reinforcing that does not fit into closure area.

(4) Provide a 3'-0" Min cast-in-place concrete closure. Break back boxes in the field or cast boxes short. Provide bands of reinforcing in the closure that are the same size and spacing as in the precast box section. Provide #4 longitudinal reinforcement spaced at 12 inches Max within the closure. Except where shown otherwise, construct the cast-in-place closure flush with the inside and outside faces of the precast box section.

(5) For multiple unit placements, adjust the length of the closure for the interior walls as necessary. Provide a 3'-0" Min cast-in-place closure in the top slab, bottom slab, and exterior wall. See Section B-B detail when interior walls are cast full length.

(6) Extend precast box reinforcing a minimum of 1'-0" into concrete closure (Typ).

(7) Place bands of reinforcing matching the inside and outside face reinforcing in the gaps of the top and bottom slabs. Place a band matching the outside face reinforcing of the wall in the gaps of the walls (placed in the outside face only). Tack weld the bands to the exposed reinforcing at each point of contact.

(8) For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(9) Cement stabilized backfill between boxes is considered part of the box culvert for payment.

(10) All curb concrete and reinforcing is considered part of the box culvert for payment.

(11) Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.

(12) 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.

(13) For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in Detail "A".

(14) This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box". No payment will be made for any additional material in the gap between adjacent boxes.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide ASTM A1064 welded wire reinforcement.
Provide Class C concrete (f'c = 3,600 psi) for the closures.
Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill for Structures."
Any additional concrete required for the closures will be considered subsidiary to the box culvert.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to the Single Box Culverts Precast (SCP) standard sheets for details and notes not shown.
Chamfer the bottom edge of the top slab closure 3 inches at culvert closure ends.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bars dimensions are out-to-out of bars.

BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: _____
VER: _____
DWG: R300801-1-01-D101DETAILS.DWG
DATE: 2/4/2022
DESIGN BY: R.A.P.
DRAWN BY: L.V.
CHKD. BY: R.A.P.

ENGINEER'S SEAL

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P.E. 88072
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P.E. 59641
ON
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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

JOB NO. R300608.01

DETAILS 01

D-101

SHEET NO. 9 OF 22

H:\PROJ\R300608.01 - PALISADES STORMWATER MPTS AND TRANS\R&D\10 ARCH & ENV\10.1 AUTOCAD\DSK DESIGN\SHEETS\R300608.01 - 10-12 - CD105 DETAILS.DWG

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing length (2~wings) ③	
					Bars J1		Bars J2			
Maximum Height Hw	Wingwall W	X	Y	Z	Size	Spa	Size	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-0"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING
(2~wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:
(All values are in feet.)

Hw = H + T + C − 0.250'
A = (Hw − 0.333') (SL)
B = (A) tangent (30°)
Lw = (A) ÷ cosine (30°)

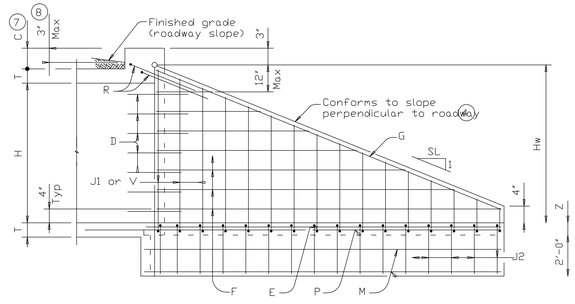
For cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (U)

For precast culverts:
Ltw = (N) (2U + S) + (N − 1) (0.5')

Total wingwall area (two wings ~ SF) = (Hw + 0.333') (Lw)

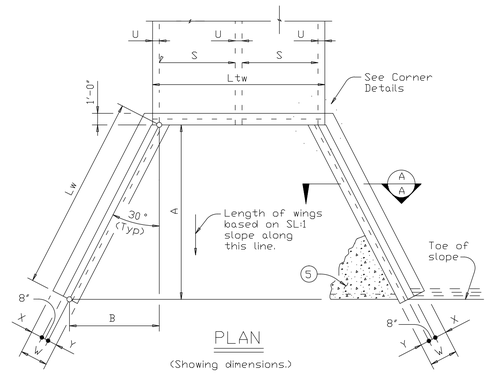
Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans

See applicable box culvert standard sheet for H, S, T, and U values.



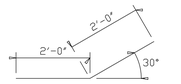
INSIDE ELEVATION

(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)

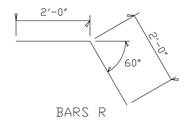


PLAN

(Showing dimensions.)



BARS D



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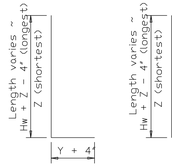
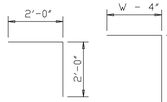
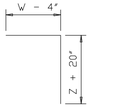


BARS J1

BARS V



BARS L



BARS J2

① Extend Bars P 3'-0" minimum into bottom slab of box culvert.

② Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.

③ Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.

④ Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.

⑤ When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.

⑥ At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.

⑦ 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

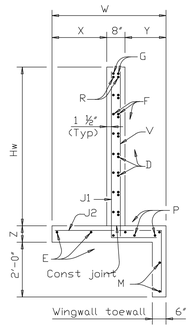
⑧ For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

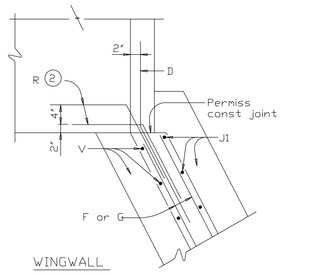
MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.



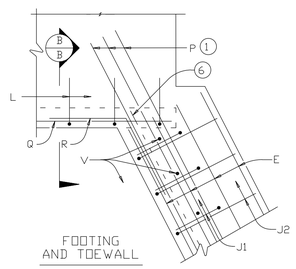
SECTION A-A



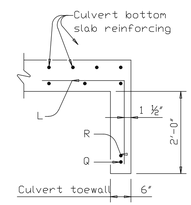
WINGWALL

CORNER DETAILS

(Culvert and culvert toewall reinforcing not shown for clarity.)



FOOTING AND TOEWALL

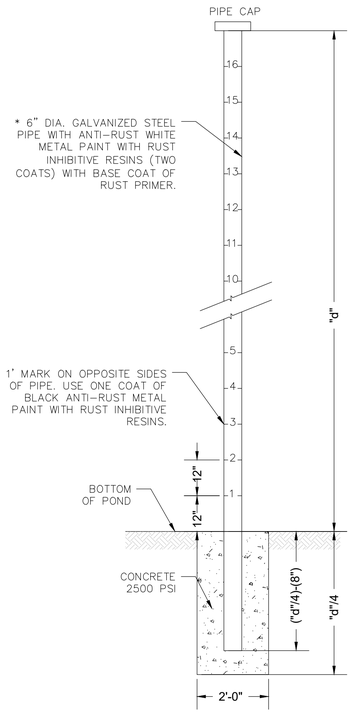


SECTION B-B ⑤

CONCRETE WINWALLS WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS

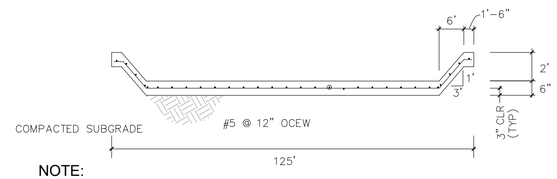
						SCALE	ENGINEER'S SEAL		HUITT-ZOLLARS INC.	el paso WATER	PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE	JOB NO. R300608.01
						HOR:	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RUSSELL ALLEN PARR P.E. 88072 ON FEBRUARY 4, 2022 IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF WILLIAM ANTHONY WALLACE P.E. 59641 ON FEBRUARY 4, 2022 IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES	ENGINEERING / SURVEYING 5822 CROMO DRIVE, SUITE 210 EL PASO, TEXAS 79912 PH. (915) 587-4339 / FAX (915) 587-5247 FIRM REGISTRATION F-761	1154 HAWKINS BLVD. EL PASO TEXAS 79925 (915) 594-5500	DETAILS 02	SHEET NO. 10 OF 22
						VER:						
						DWG: R300608.01-15-02-16 DETAILS.DWG						
						DATE: 2/4/2022						
						DESIGN BY: R.A.P.						
						DRAWN BY: L.V.						
TB	REV.	DATE	BY:	DESCRIPTION		CHKD. BY: R.A.P.						

H:\PROJ\R300608.01 - PALISADES STORMWATER MPTS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\XSE DESIGN\SHEETS\R300608.01 - 10-12 - 02105 DETAILS.DWG



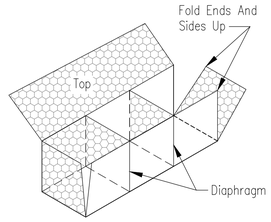
NOTES:
1. CONSULT WITH PAINT MANUFACTURER FOR PRODUCTS THAT CAN SUSTAIN LONG PERIODS OF MOISTURE.
2. "d" = DEPTH.

DEPTH GAUGE DETAIL
N.T.S.

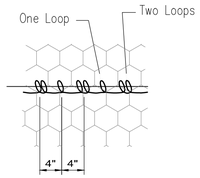


NOTE:
EXPANSION JOINTS TO BE PLACED AT LOCATIONS WHERE CONCRETE CHANGES SLOPE (i.e. AT VERTICAL BENDS)

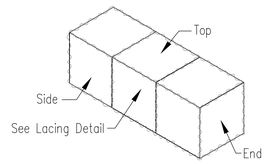
TYPICAL CONCRETE SLOPE DETAIL
N.T.S.



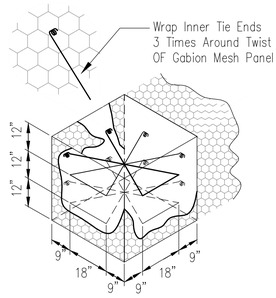
ASSEMBLY DETAIL



LACING DETAIL



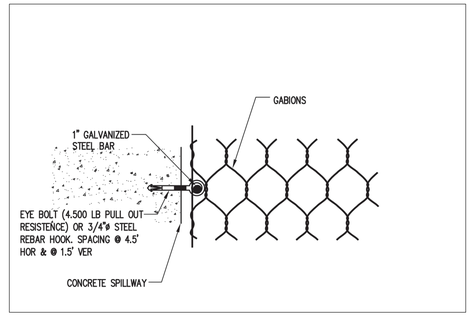
WIRE LACING DETAIL



INNER TIE WIRE DETAILS

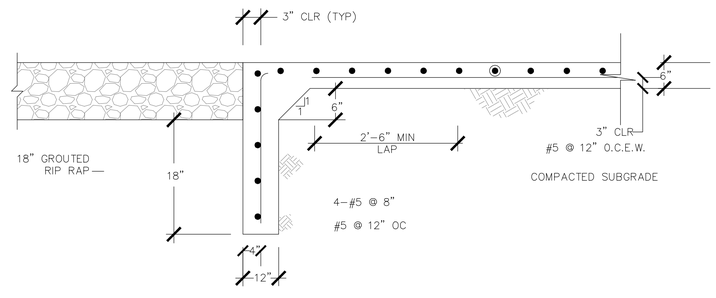
NOTES:
1. The ends of a lacing wire will be secured by looping it thru the mesh and twisting. Proceed to lace with alternate two loops and one loop at approximately 4 inch intervals.
2. Other lacing methods may be used if recommended by the manfuacturer and approved by the engineer/inspector.
3. The "X" shaped inner tie may be twisted at the "X" to tighten, if placed too loosely.

GABION ASSEMBLY AND LACING DETAILS
N.T.S.

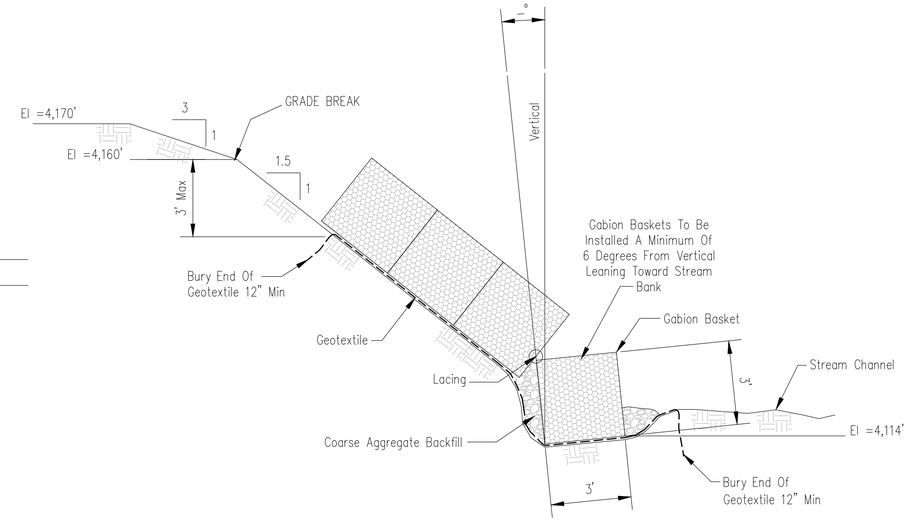


GABION CONNECTION DETAIL W/ CONCRETE SPILLWAY
N.T.S.

NOTES:
1. The coarse aggregate backfill shall meet the geotechnical report requirement for Gradation CA-1, CA-3 or RR-1.
2. The Gabions shall be installed according to construction specification.
3. Baskets which are stacked in tiers shall have vertical seams staggered for each row and tier.
4. Geotextile (non-woven, needle punched) min. criteria:
   Grab Tensile strength (lb) ASTM D 4632_____202
   Elongation at failure (%) ASTM D 4632_____≥50
   Trapezoidal tear strength (lb) ASTM D 4533_____79
   Puncture strength (lb) ASTM D 6241 _____433
   Ultraviolet light (% retained strength) ASTM 4355_____min 50
   Apparent opening size (AOS) ASTM D 4751____
   max 0.22 mm (US sieve size 70)
   Permittivity sec^{-1}/ ASTM D 4491_____min 0.70
5. Any geotextile splices shall overlap a minimum of 18 inches, with upstream or upslope geotextile overlapping the abutting downslope geotextile.



TOE WALL DETAIL
N.T.S.



STRUCTURAL STREAMBANK STABILIZATION GABION BASKET
N.T.S.

TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: _____
VER: _____
DWG: R300831-1012-DEVELSETALS.DWG
DATE: 2/4/2022
DESIGN BY: R.A.P.
DRAWN BY: L.V.
CHKD. BY: R.A.P.

ENGINEER'S SEAL

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P.E. 88072
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P.E. 59641
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HUITT-ZOLLARS INC.
ENGINEERING / SURVEYING
5822 CROMO DRIVE, SUITE 210
EL PASO, TEXAS 79912
PH. (915) 587-4339 / FAX (915) 587-5247
FIRM REGISTRATION F-761

el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

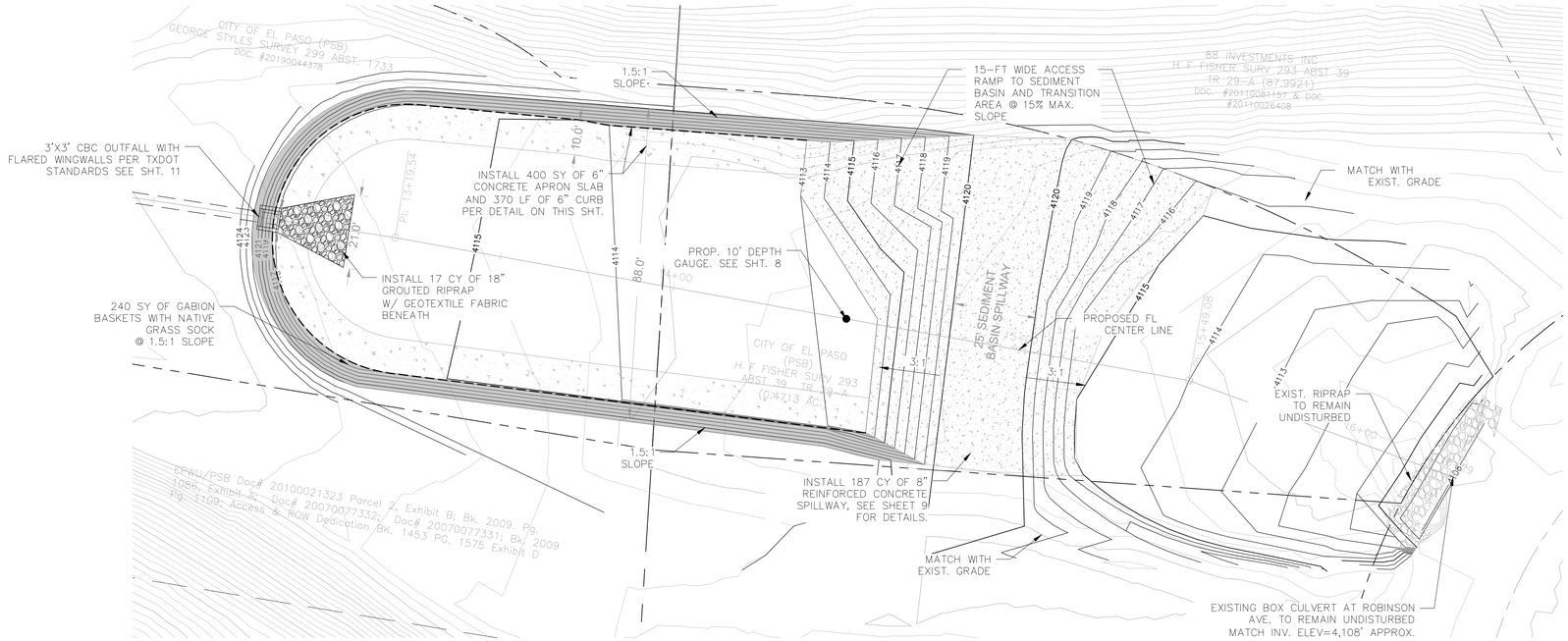
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

DETAILS 03

JOB NO. R300608.01

SHEET NO. 11 OF 22

H:\PROJ\R300608.01 - PALISADES STORMWATER MAPS AND TRAVERSE\10 CADD & BIM\10.1 AUTOCAD\SITE DESIGN\SHEETS\R300608.01 - 10-12 - CD10 DETAILS.DWG



PROJECT LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- W — PROPOSED WATER MAIN
- W — WATER LINE (AS NOTED)
- TV — EXISTING TIME WARNER CABLE LINE
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR

N

SCALE IN FEET
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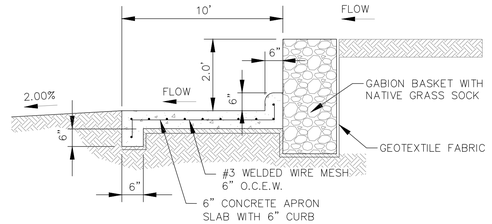
SCALE: 1" = 20'

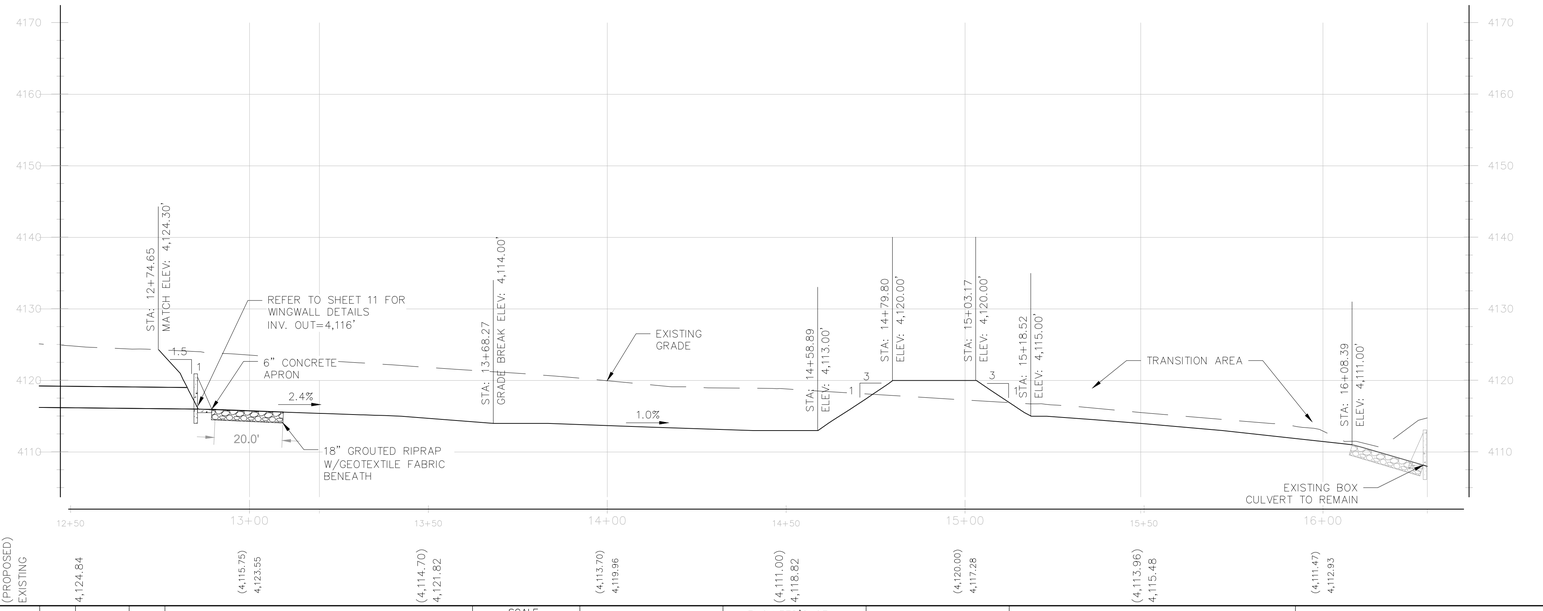


CONCRETE APRON SLAB AT GABION BASKET

N.T.S.

NOTES:

1. ALL FILL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY OBTAINABLE WITH THE STANDARD PROCTOR TEST METHOD (ASTM STANDARD D-698).
2. IF THE NATIVE MATERIAL EXCAVATED FROM THE TRENCH IS UNSUITABLE AS BACKFILL MATERIAL, OR THE REQUIRED COMPACTION IS UNATTAINABLE, THE CONTRACTOR SHALL AT HIS EXPENSE, IMPORT SELECT MATERIAL TO BE MIXED OR USED IN PLACE OF THE NATIVE MATERIAL. SELECT MATERIAL MUST BE APPROVED BY THE ENGINEER.
2. DOUBLE TWISTED GABION BASKET & MATTRESS MATERIALS SHALL MEET SPECIFICATIONS AS ASSIGNED IN THE CONTRACT DOCUMENTS AS IN ACCORDANCE WITH ASTM D-975-75.
3. THE USE OF HEAVY EQUIPMENT WILL BE REQUIRED FOR EXCAVATION OF SEDIMENT BASIN AND SHALL BE ACCOUNTED FOR IN THE RESPECTIVE BID ITEM.



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SCALE
HOR:
VER:
DWG: [illegible]
DATE: 2/4/2022
DESIGN BY: R.A.P.
DRAWN BY: L.V.
CHKD. BY: R.A.P.

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1154 HAWKINS BLVD.
EL PASO TEXAS 79925
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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

SEDIMENT BASIN PLAN AND PROFILE

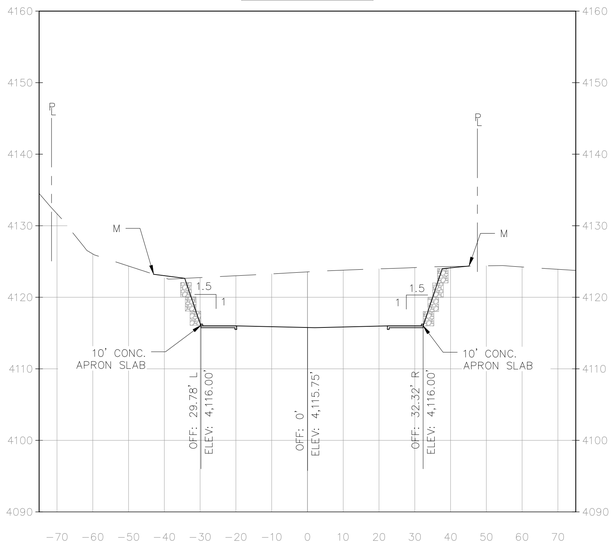
JOB NO. R300608.01

SHEET NO. 13 OF 22

H:\PROJ\R300608.01 - PALISADES STORMWATER IMPTS AND TRAILHEAD\10 CAD\ & BWA\10.1 AUTOCAD\MS DESIGN\SHEETS\R300608.01 - 13- C0106 SEDIMENT BAS PP.DWG

HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

13+00.00



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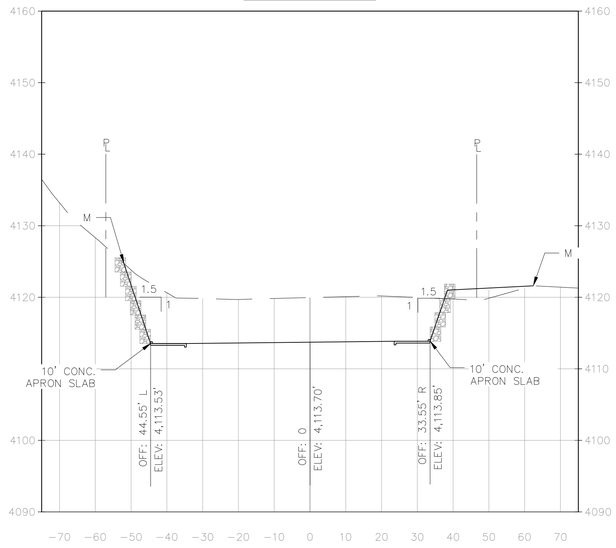

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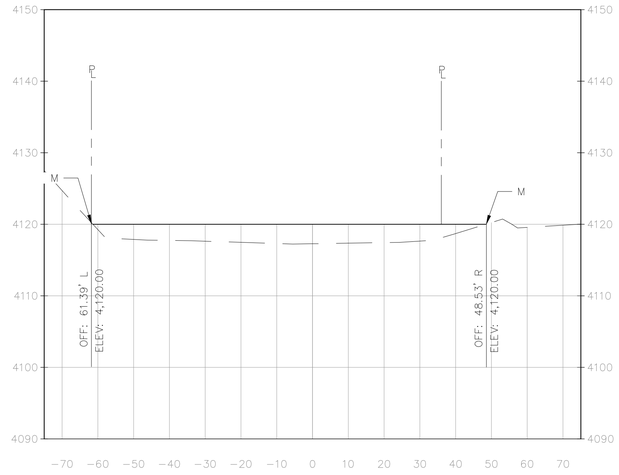

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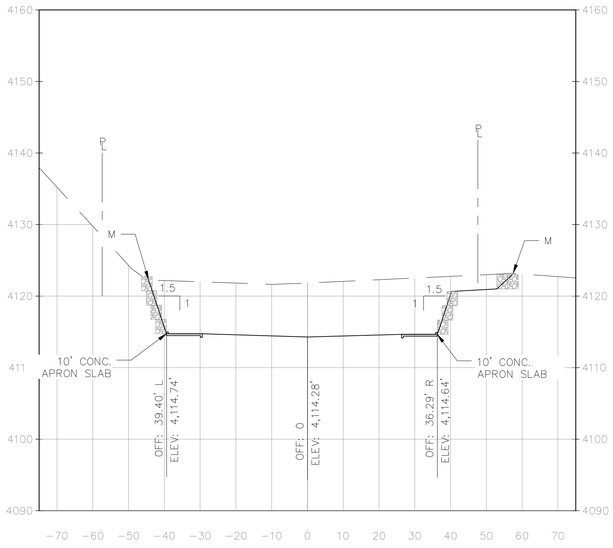

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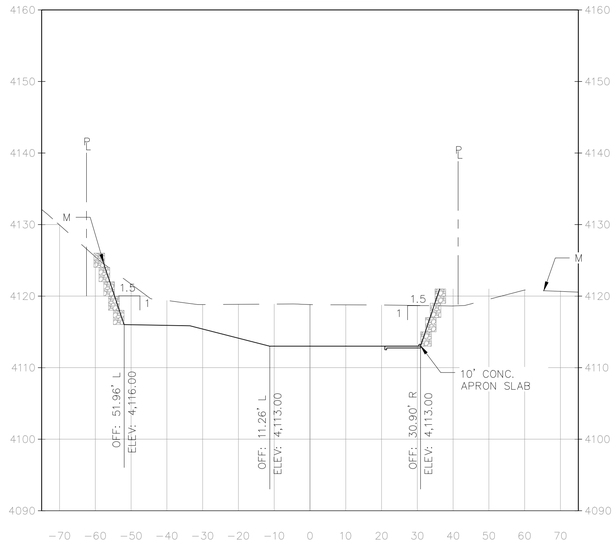

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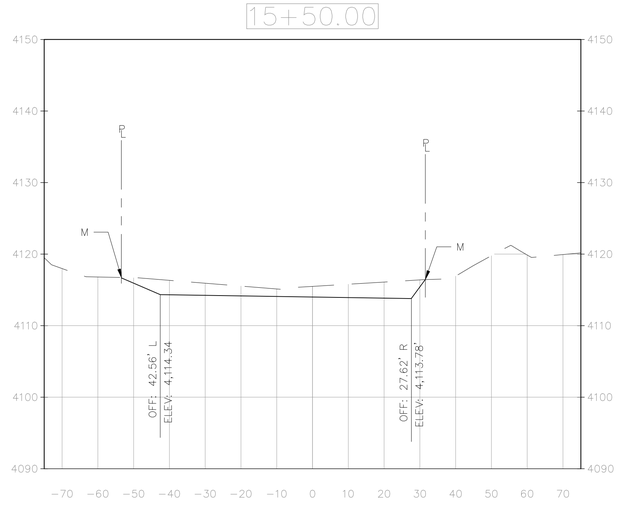

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: ____
VER: ____
DWG: R300608.01 - 14 CONT SEDIMENT BAS X-SEC.DWG
DATE: 2/4/2022
DESIGN BY: R.A.P.
DRAWN BY: L.V.
CHKD. BY: R.A.P.

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el paso WATER
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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

SEDIMENT BASIN CROSS SECTIONS

JOB NO. R300608.01

SHEET NO. 14 OF 22

H:\PROJ\R300608.01 - PALISADES STORMWATER IMPTS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\WS DESIGN\SHEETS\R300608.01 - 14 - CONT SEDIMENT BAS X-SEC.DWG

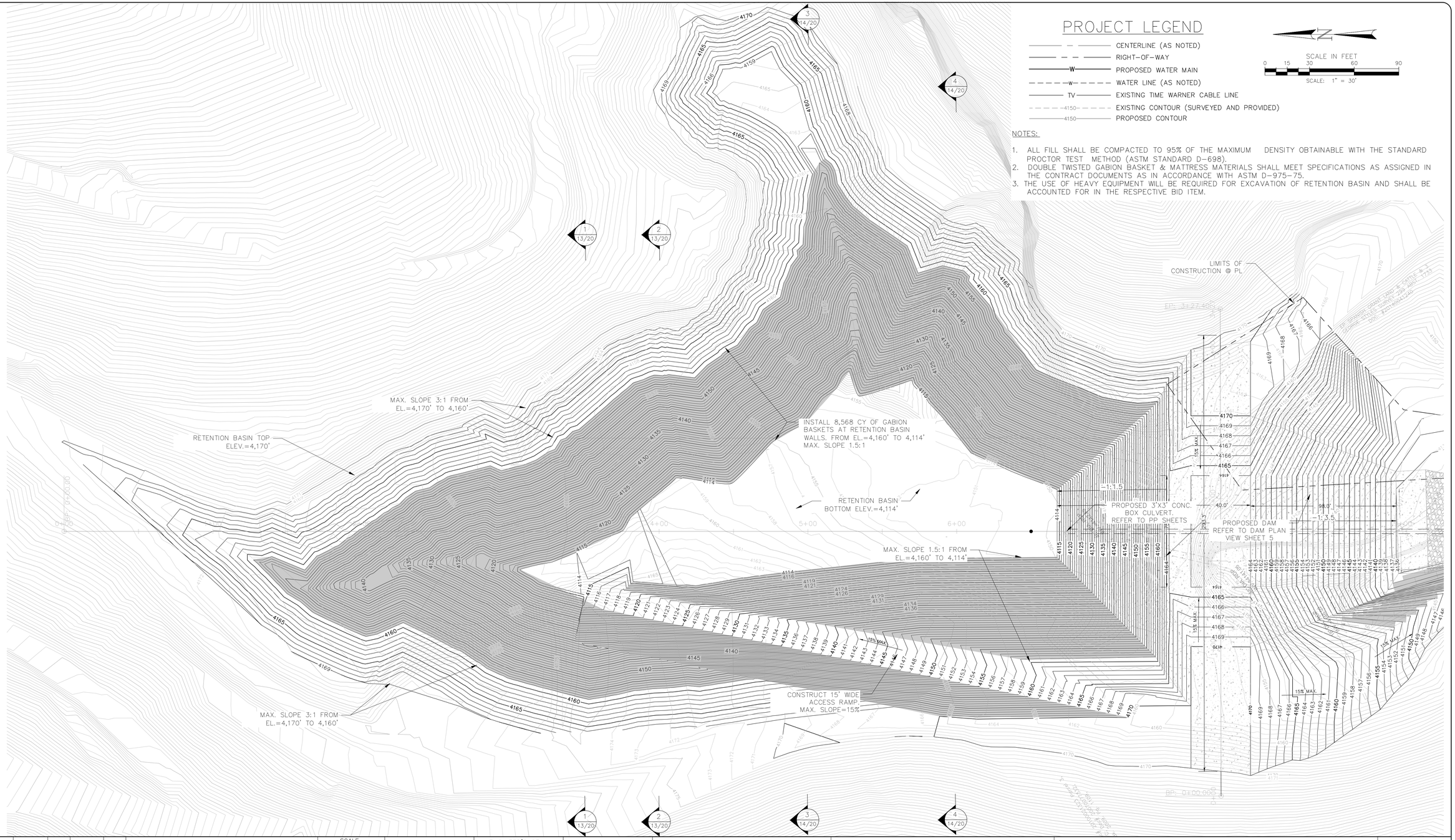
PROJECT LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- W — PROPOSED WATER MAIN
- w — WATER LINE (AS NOTED)
- TV — EXISTING TIME WARNER CABLE LINE
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR

SCALE IN FEET
0 15 30 60 90
SCALE: 1" = 30'

NOTES:

1. ALL FILL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY OBTAINABLE WITH THE STANDARD PROCTOR TEST METHOD (ASTM STANDARD D-698).
2. DOUBLE TWISTED GABION BASKET & MATTRESS MATERIALS SHALL MEET SPECIFICATIONS AS ASSIGNED IN THE CONTRACT DOCUMENTS AS IN ACCORDANCE WITH ASTM D-975-75.
3. THE USE OF HEAVY EQUIPMENT WILL BE REQUIRED FOR EXCAVATION OF RETENTION BASIN AND SHALL BE ACCOUNTED FOR IN THE RESPECTIVE BID ITEM.



	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: ____
VER: ____
DWG: ____
DATE: 2/4/2022
DESIGN BY: R.A.P.
DRAWN BY: L.V.
CHKD. BY: R.A.P.

ENGINEER'S SEAL

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RUSSELL ALLEN PARR
P.E. 88072

ON

FEBRUARY 4, 2022
IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

HUITT-ZOLLARS INC.
ENGINEERING / SURVEYING
5822 CROMO DRIVE, SUITE 210
EL PASO, TEXAS 79912
PH. (915) 587-4339 / FAX (915) 587-5247
FIRM REGISTRATION F-761

el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

RETENTION BASIN
PLAN VIEW

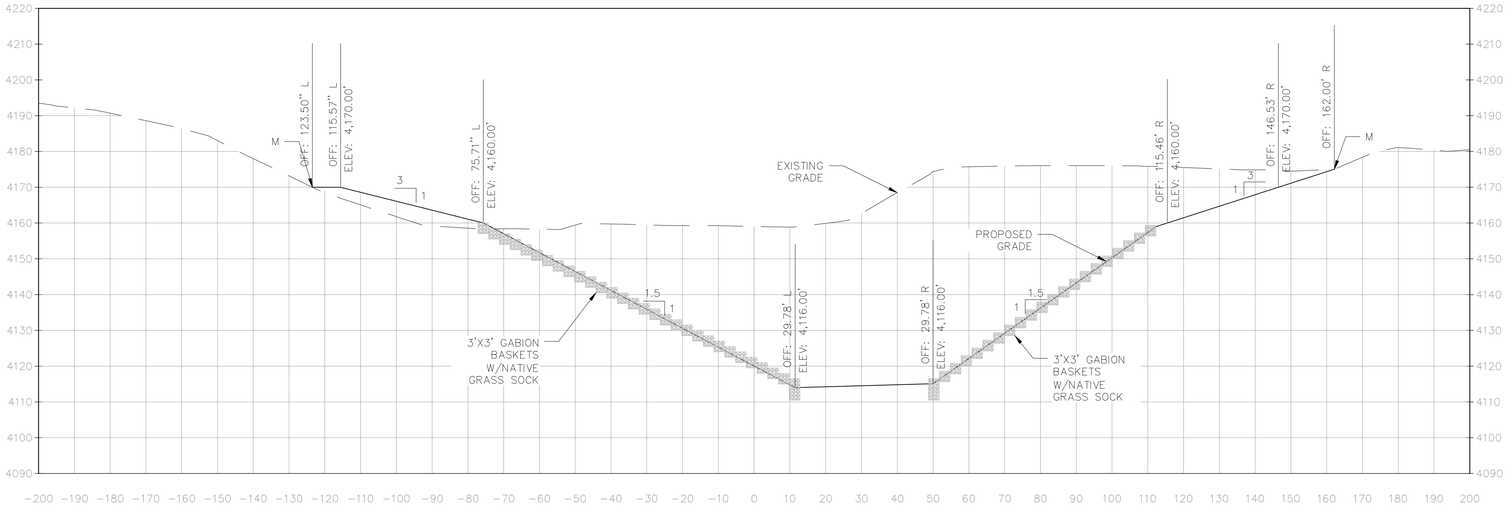
JOB NO.
R300608.01

SHEET NO.
15 OF 22

H:\PROJ\R300608.01 - PALISADES STORMWATER (MPTS AND TRAILHEAD)\10 CAD & BIM\10.1 AUTOCAD\WSE DESIGN\SHEETS\R300608.01 - 15 - CO110 RETENTIONPOND.DWG

1–1 RETENTION BASIN CROSS SECTION

3+50.00



2–2 RETENTION BASIN CROSS SECTION

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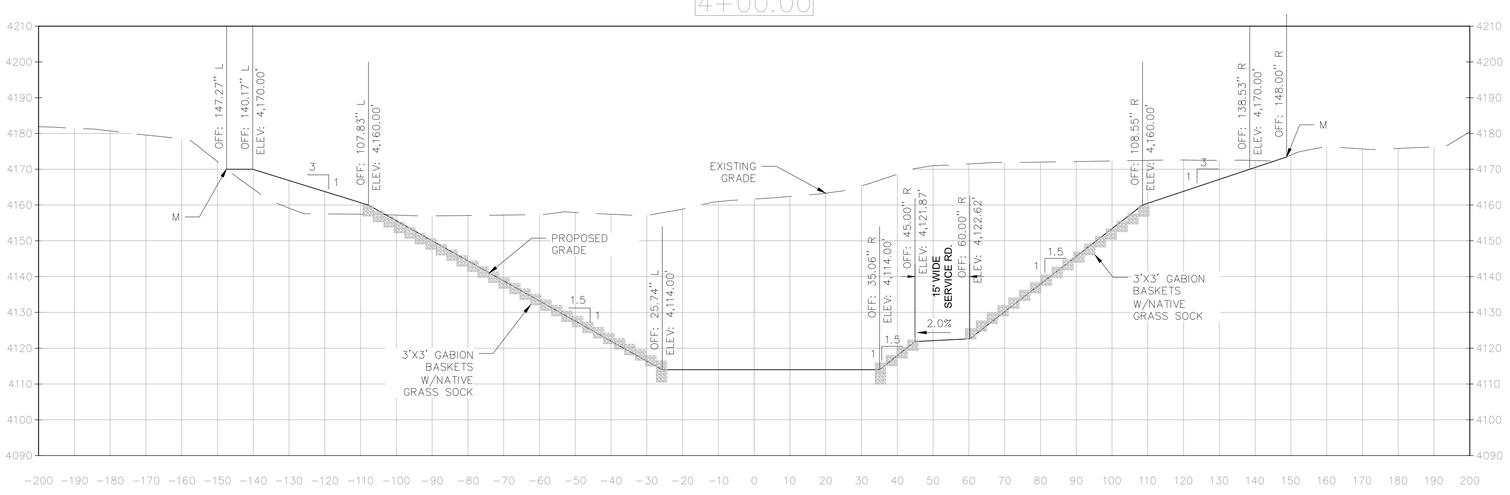

HORIZONTAL: 1"=20'
VERTICAL: 1"=20'

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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

RETENTION BASIN CROSS SECTIONS 01

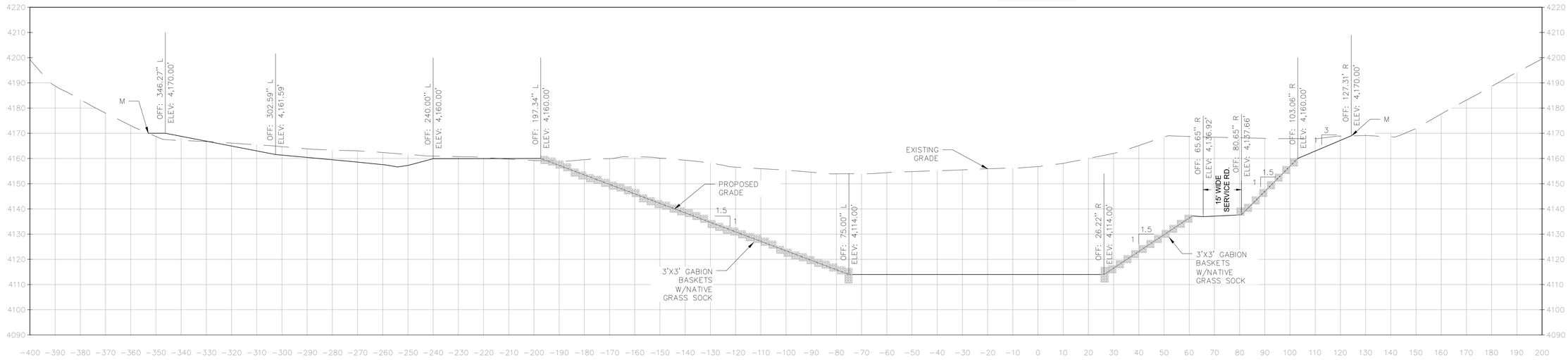
JOB NO. R300608.01

SHEET NO. 16 OF 22

H:\PROJ\R300608.01 - PALISADES STORMWATER IMPTS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\WSE DESIGN\SHEETS\R300608.01 - 16-17 - CS111 RETENTIONPOND X-SEC.DWG

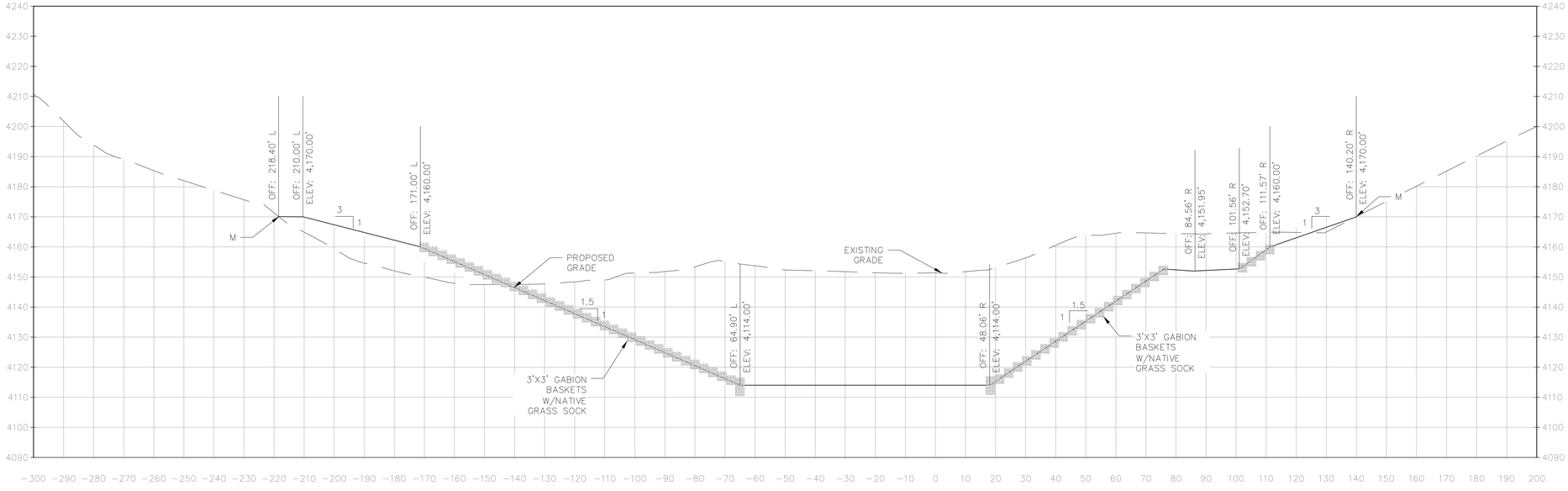
2-2 RETENTION BASIN CROSS SECTION

5+00.00



2-2 RETENTION BASIN CROSS SECTION

6+00.00



HORIZONTAL: 1"=20'
VERTICAL: 1"=20'

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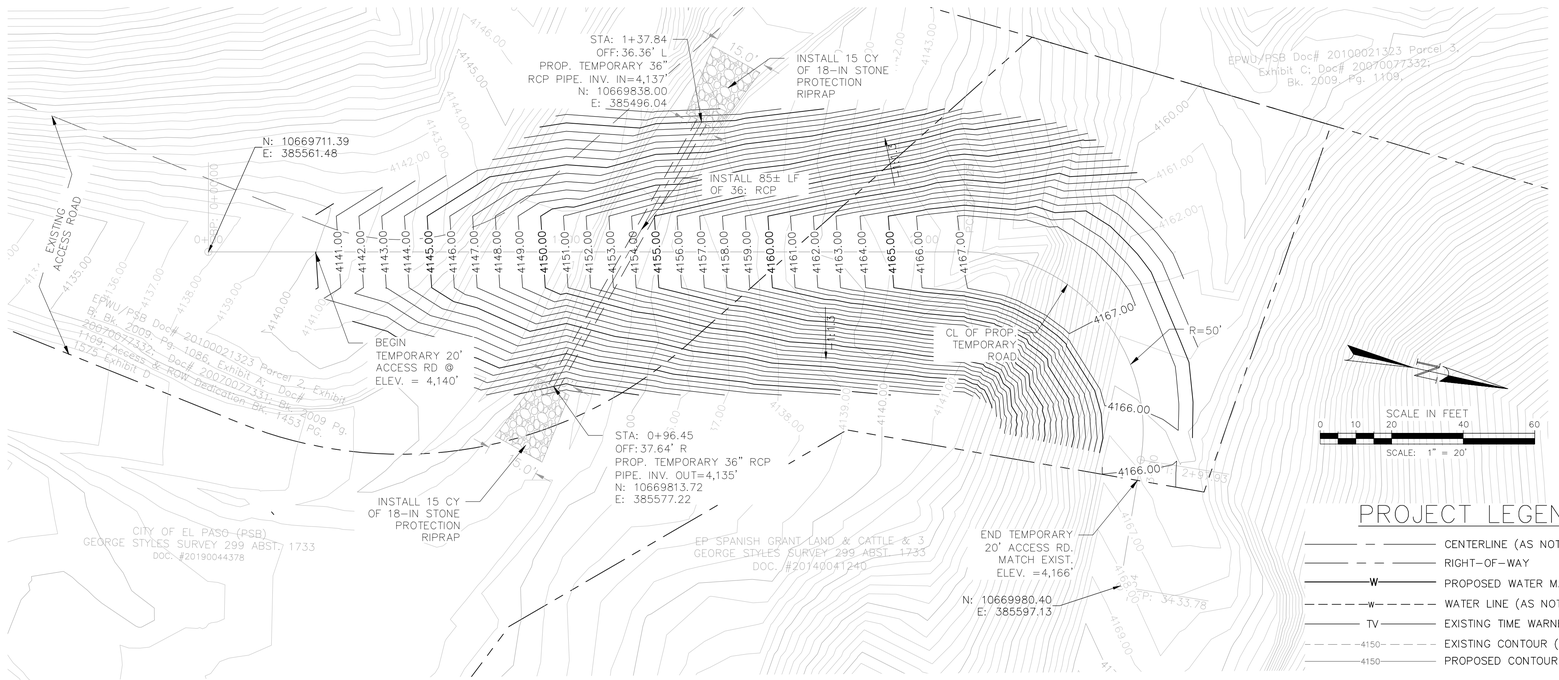
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

RETENTION BASIN CROSS SECTIONS 02

JOB NO. R300608.01

SHEET NO. 17 OF 22

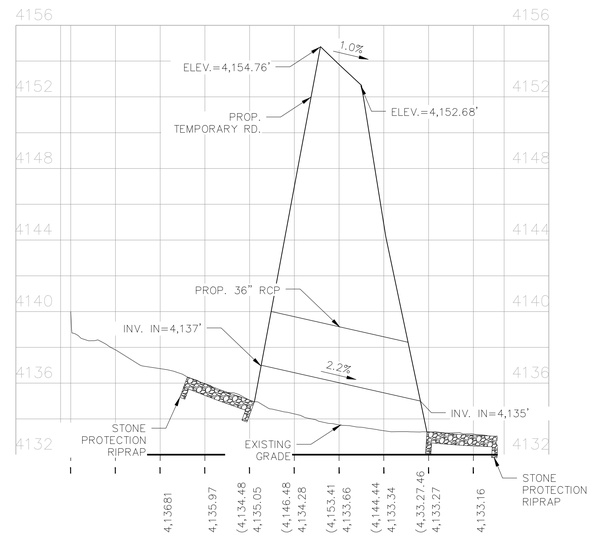
H:\PROJ\R300608.01 - PALISADES STORMWATER INPTS AND TRAILHEAD\10 CAD & BIM\10.1 AUTOCAD\WSE DESIGN\SHEETS\R300608.01 - 16-17 - GS111 RETENTIONPOND X-SEC.DWG

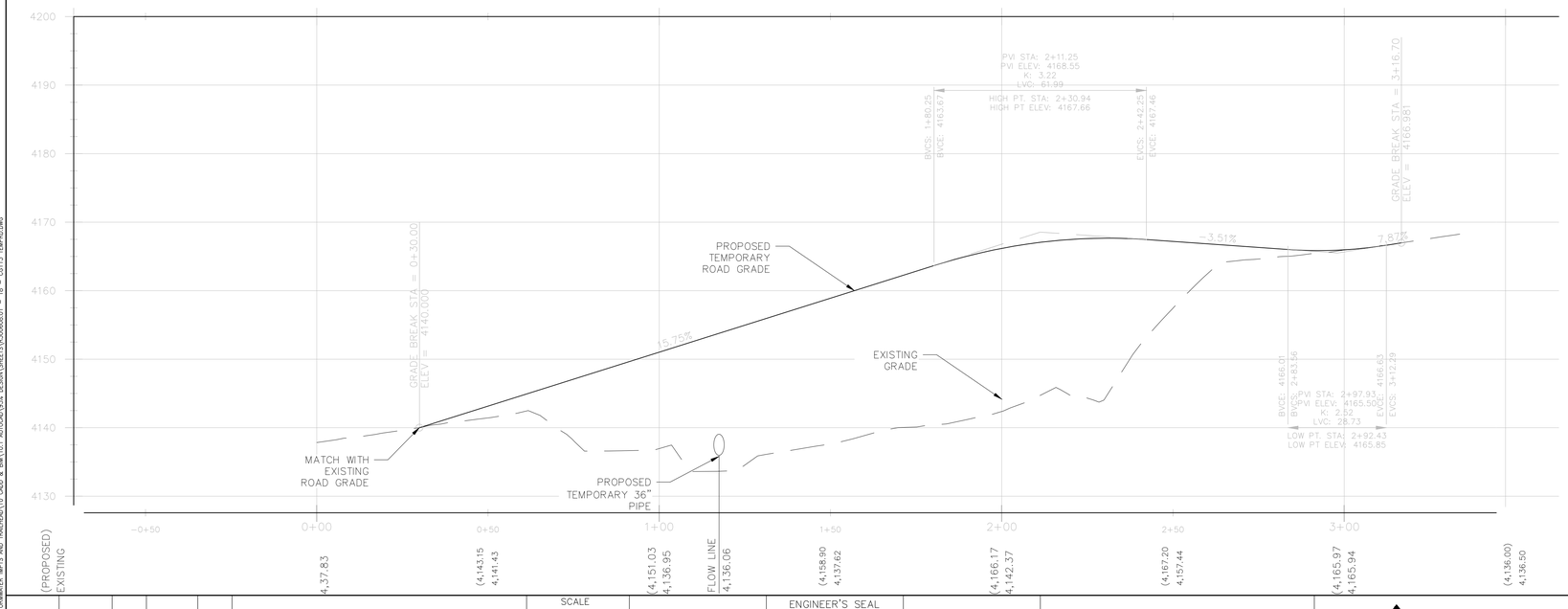


PROJECT LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- PROPOSED WATER MAIN
- WATER LINE (AS NOTED)
- TV — EXISTING TIME WARNER CABLE LINE
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR

PROPOSED TEMPORARY 36" PIPE PROFILE





TEMPORARY ROAD NOTES:

1. FILL SHOULD BE PLACED AT 95 PERCENT OF MAXIMUM DRY DENSITY AND ± 3 PERCENTAGE POINTS OF OPTIMUM MOISTURE AS DETERMINED BY TEST METHOD ASTM D-1557 OR ASTM D-698, DEPENDING ON THE FINAL APPROVAL MATERIAL BY THE ENGINEER.
2. 36-IN RCP PIPE AND STONE PROTECTION RIPRAP TO ME REMOVED AND DISPOSED ONCE TEMPORARY ROAD IS DEMOLISHED.
3. TEMPORARY ROAD SHALL REMAIN ACCESSIBLE TO OWNER AND STAKEHOLDERS AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR COORDINATION.
4. INSTALLATION AND REMOVAL OF STONE PROTECTION RIPRAP AND 36-IN RCP, INCLUDING TEMPORARY ROAD ARE SUBSIDIARY TO TEMPORARY ROAD LINE ITEM.

TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: _____
VER: _____

DWG: R300608.01-18-CG113TEMPROD.DWG
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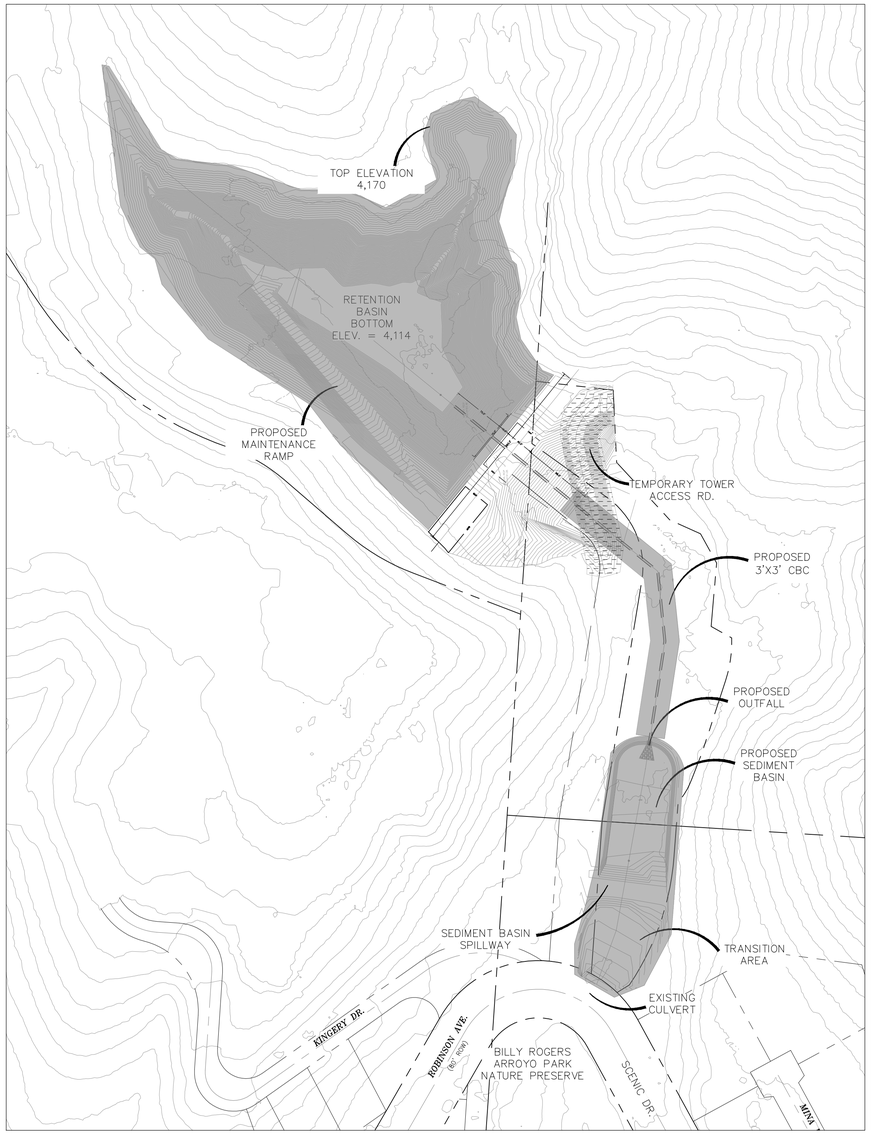
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

TEMPORARY ROAD PLAN AND PROFILE

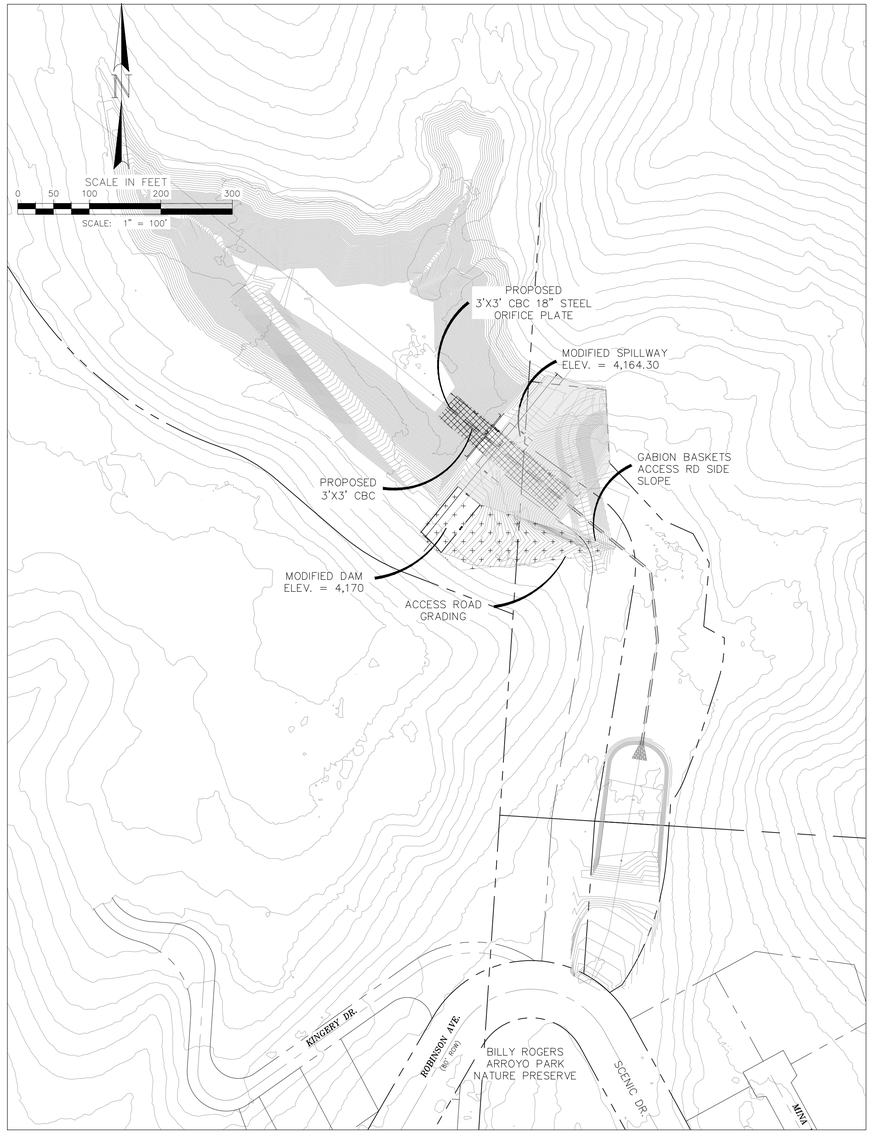
JOB NO. R300608.01

SHEET NO. 18 OF 22

H:\PROJ\R300608.01 - PALISADES STORMWATER MPTS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\ESE DESIGN\SHEETS\R300608.01 - 18 - CG113 TEMPROD.DWG



PHASE I



PHASE II

PROJECT LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- W — PROPOSED WATER MAIN
- W — WATER LINE (AS NOTED)
- TV — EXISTING TIME WARNER CABLE LINE
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 — PROPOSED CONTOUR

RECOMMENDED SEQUENCE OF WORK

PHASE I

STAGE A
- START RETENTION BASIN EXCAVATION
- BUILD RETENTION BASIN 15' WIDE MAINTENANCE RAMP
- INSTALL GABION BASKETS (S=1.5:1) FOR RETENTION BASIN SIDE SLOPES
- INSTALL 12' GAUGE DEPTH
- START SEDIMENT BASIN EXCAVATION AND TRANSITION AREA GRADING
- BUILD ±400 LF OF 3'X3' CBC FROM STA: 8+81.50 TO 12+80.21
- BUILD OUTFALL STRUCTURE TO SEDIMENT BASIN
- INSTALL GABION BASKETS (S=1.5:1) FOR SEDIMENT BASIN SIDESLOPES
- BUILD SEDIMENT BASIN CONCRETE SPILLWAY
- BUILD 15' WIDE MAINTENANCE RAMP FOR SEDIMENT BASIN AND TRANSITION AREA
- INSTALL 12' GAUGE DEPTH

STAGE B
- BUILD TEMPORARY TOWER ACCESS ROAD
- BUILD RETENTION BASIN 15' MAINTENANCE ROAD
- INSTALL GABION BASKETS (S=1.5:1) FOR RETENTION BASIN
- INSTALL GANION BASKETS FOR SEDIMENT BASIN

PHASE II

STAGE C
- START ACCESS ROAD GRADING TO CREST OF DAM @ ELEV.4,170'
- INSTALL GABION BASKETS FOR ACCESS ROAD EAST SIDE SLOPE
- INSTALL CONCRETE FOR DAM CREST

STAGE D
- BUILD ±217 LF OF 3'X3' CBC FROM STA: 6+76.35 AND CONNECT 3'X3' AT STA: 8+81.50
- INSTALL 18" ORIFICE STEEL PLATE FOR 3'X3' CBC. INV. IN = 4,119.25'

STAGE E
- BUILD DAM AT 4,170' WITH 75' WIDE SPILLWAY AT 4,164.30'
- INSTALL 6" CONCRETE FOR DAM CREST AND UPSTREAM AND DOWNSTREAM SLOPE

NOTES
1. THIS CONSTRUCTION PHASING IS RECOMMENDED, CONTRACTOR CAN MODIFY ANY STAGE OR PHASING TO HIS CONVENIENCE.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO TELECOMMUNICATION TOWER ROADS AT ALL TIMES DURING CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH STAKEHOLDERS ACCESS RESTRICTIONS TO ROADS DUE TO CONSTRUCTION ACTIVITIES.

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DWG: R300608.01 - 19- CD114 PHASING.DWG
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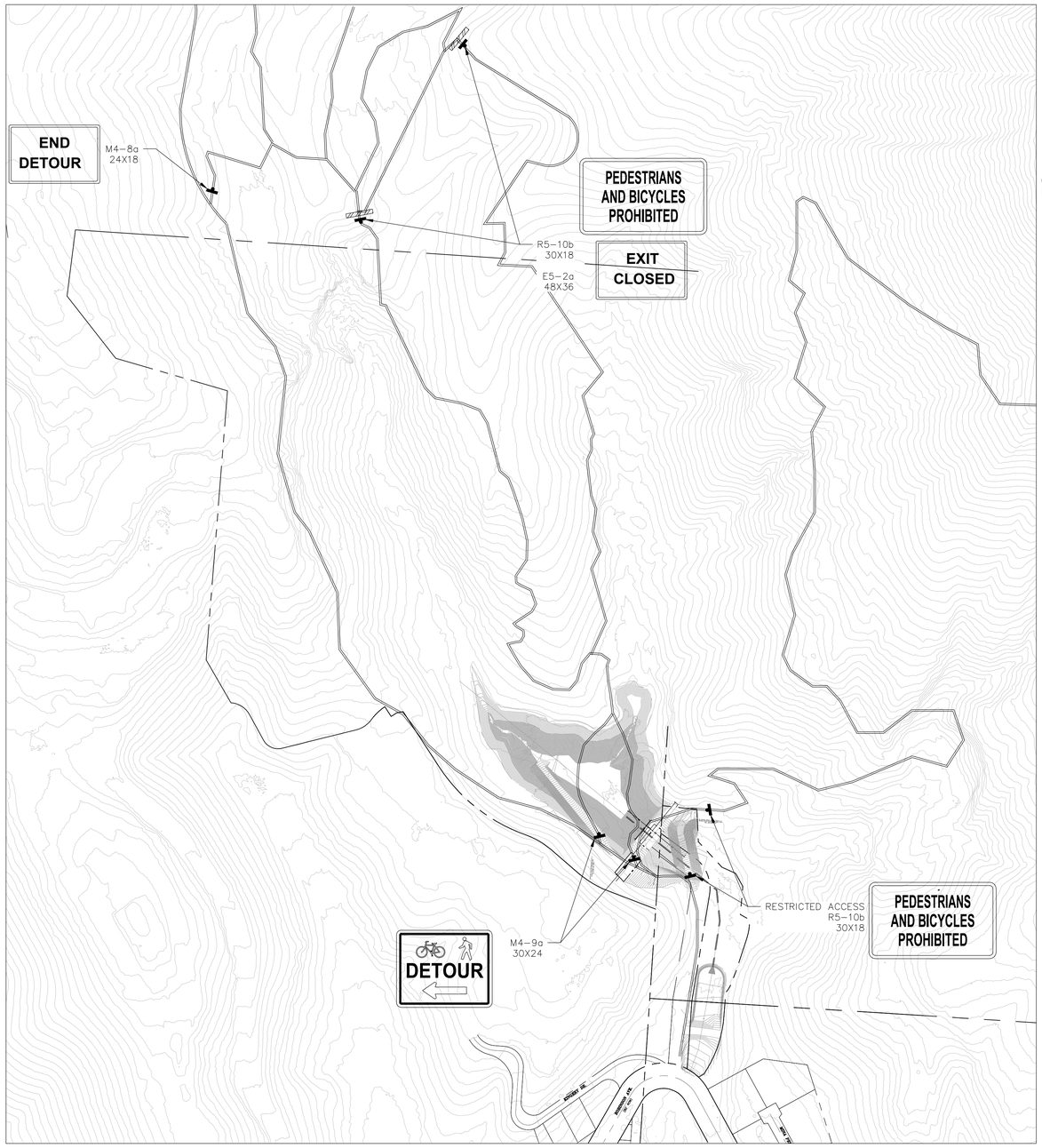
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

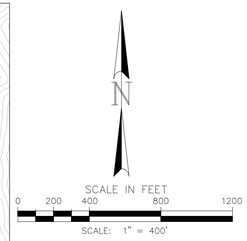
CONSTRUCTION PHASING PLAN

JOB NO. R300608.01

SHEET NO. 19 OF 22

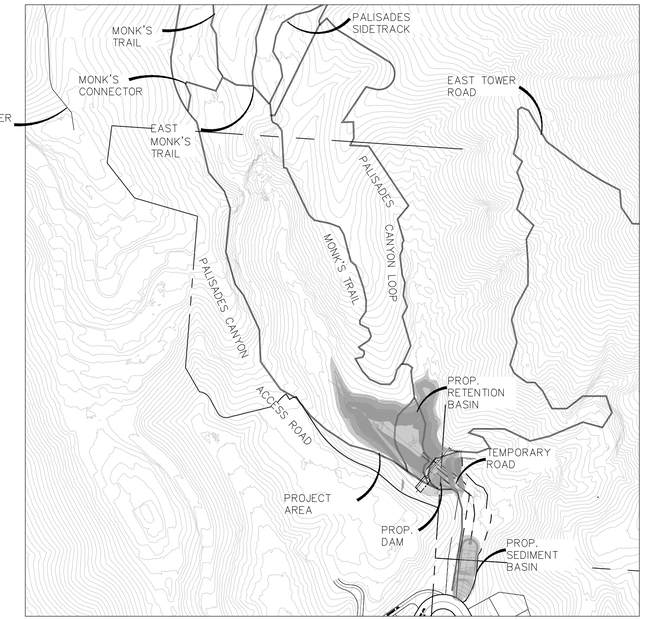
H:\PROJ\R300608.01 - PALISADES STORMWATER IMPS. AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\SITE DESIGN\SHEETS\R300608.01 - 19- CD114 PHASING.DWG





PROJECT LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- 4150 EXISTING CONTOUR (SURVEYED AND PROVIDED)
- 4150 PROPOSED CONTOUR
- EXISTING HIKING AND BIKING TRAIL
- PROJECT AREA



PALISADES CANYON HIKING AND BIKING TRAILS
SCALE 1" = 400'

NOTES

1. ALL SIGNS MUST COMPLY WITH THE LATEST VERSION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TXMUTCD).
2. BARRICADES AND SIGNS SHALL BE PLACED IN ACCORDANCE WITH TXDOT BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARDS.
3. THE DIMENSIONS OF SIGNS AND PLAQUES MAY BE INCREASED AS NECESSARY FOR GREATER LEGIBILITY OR EMPHASIS IN 6-IN INCREMENTS.
4. ALL SIGNS SHALL BE RETROREFLECTIVE WITH A MATERIAL THAT HAS A SMOOTH, SEALED OUTER SURFACE TO SHOW THE SAME SHAPE AND SIMILAR COLOR BOTH DAY AND NIGHT.
5. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING TRAFFIC CONTROL LEGIBLE AND IN GOOD CONDITIONS AT ALL TIMES.
6. CONTRACTOR IS RESPONSIBLE FOR PROVIDING APPROPRIATE SIGNAGE INDICATING WHETHER HIKING/BIKING IS ALLOWED OR RESTRICTED.
7. CONTRACTOR MAY RESTRICT HIKING/BIKING AS NEEDED DUE TO CONSTRUCTION ACTIVITIES.
8. COORDINATE WITH STAKEHOLDERS ACCESS RESTRICTIONS TO ROADS DUE TO CONSTRUCTION ACTIVITIES.

TB	REV.	DATE	BY:	DESCRIPTION

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VER:

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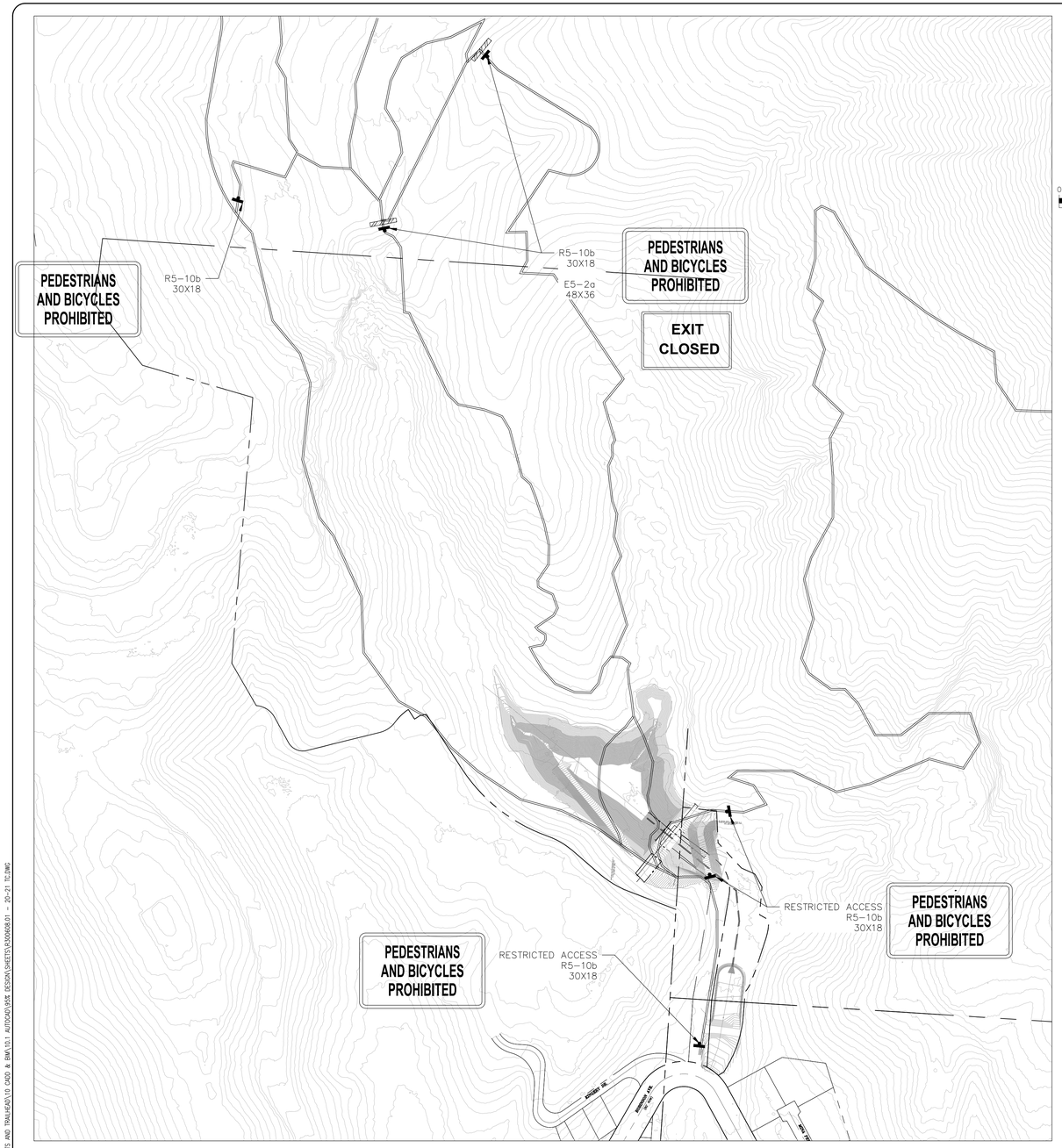
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

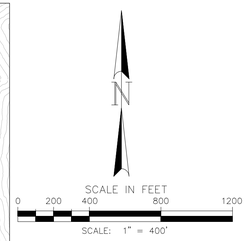
TEMPORARY TRAFFIC CONTROL FOR PEDESTRIANS – PHASE I

JOB NO. R300608.01

SHEET NO. 20 OF 22

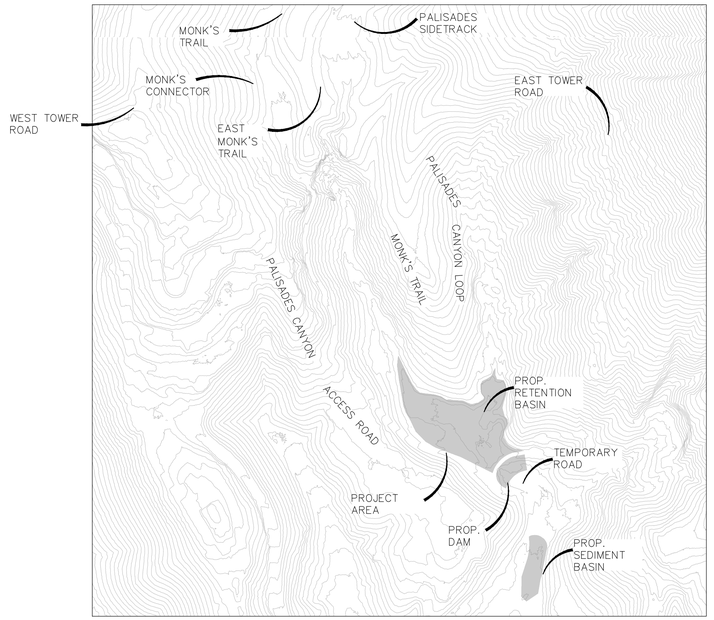
H:\PROJ\R300608.01 - PALISADES STORMWATER IMPTS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\MS DESIGN\SHEETS\R300608.01 - 20-21 TC.DWG





LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- 4150 EXISTING CONTOUR (SURVEYED AND PROVIDED)
- PROPOSED SIGN
- PROPOSED BARRICADE
- EXISTING HIKING AND BIKING TRAIL
- PROJECT AREA



PALISADES CANYON HIKING AND BIKING TRAILS
SCALE 1" = 400'

NOTES

1. ALL SIGNS MUST COMPLY WITH THE LATEST VERSION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TXMUTCD).
2. BARRICADES AND SIGNS SHALL BE PLACED IN ACCORDANCE WITH TXDOT BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARDS.
3. THE DIMENSIONS OF SIGNS AND PLAQUES MAY BE INCREASED AS NECESSARY FOR GREATER LEGIBILITY OR EMPHASIS IN 6-IN INCREMENTS.
4. ALL SIGNS SHALL BE RETROREFLECTIVE WITH A MATERIAL THAT HAS A SMOOTH, SEALED OUTER SURFACE TO SHOW THE SAME SHAPE AND SIMILAR COLOR BOTH DAY AND NIGHT.
5. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING TRAFFIC CONTROL LEGIBLE AND IN GOOD CONDITIONS AT ALL TIMES.
6. CONTRACTOR IS RESPONSIBLE FOR PROVIDING APPROPRIATE SIGNAGE INDICATING WHETHER HIKING/BIKING IS ALLOWED OR RESTRICTED.
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8. COORDINATE WITH STAKEHOLDERS ACCESS RESTRICTIONS TO ROADS DUE TO CONSTRUCTION ACTIVITIES.

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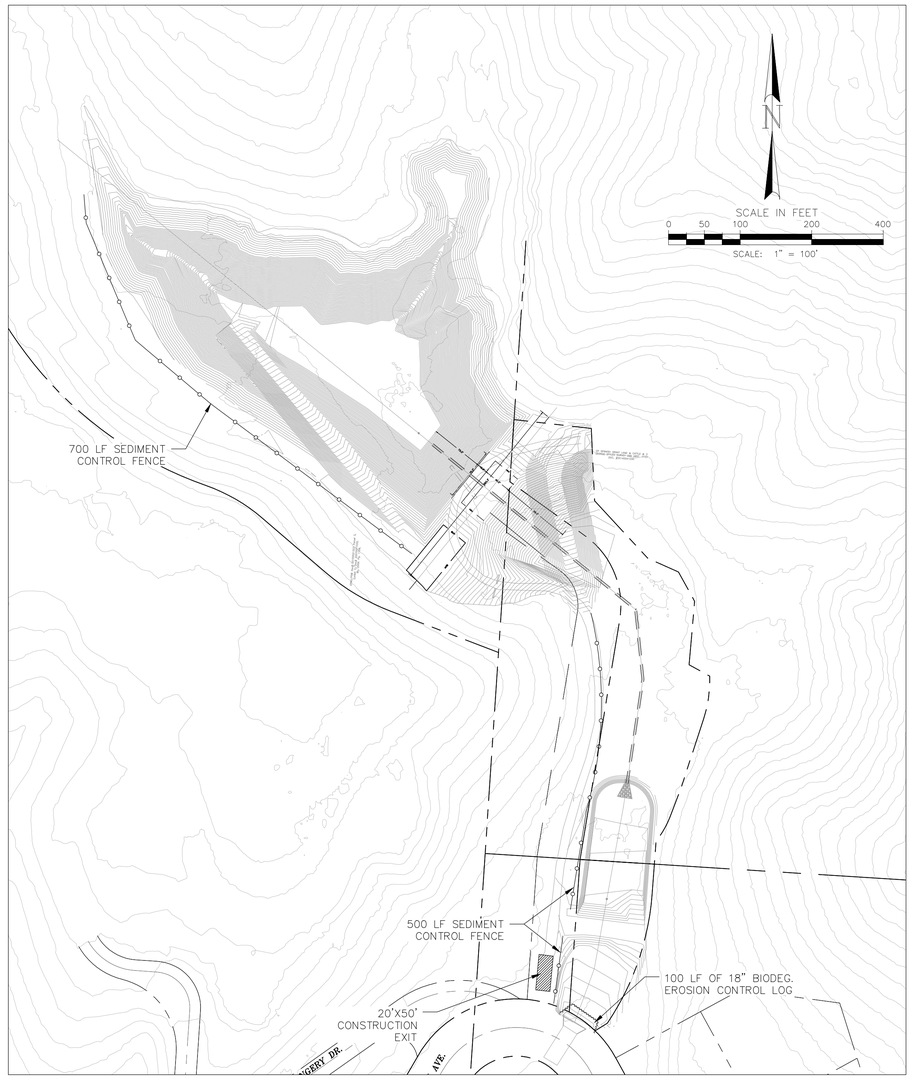
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

TEMPORARY TRAFFIC CONTROL FOR PEDESTRIANS – PHASE II

JOB NO. R300608.01

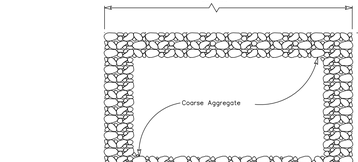
SHEET NO. 21 OF 22

H:\PROJ\R300608.01 - PALISADES STORMWATER IMPTS AND TRAILHEAD\10 CADD & BIM\10.1 AUTOCAD\MS DESIGN\SHEETS\R300608.01 - 20-21 TC.DWG

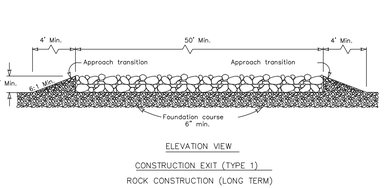


PROJECT LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- EXISTING CONTOUR (SURVEYED AND PROVIDED)
- PROPOSED CONTOUR
- EXISTING HIKING AND BIKING TRAIL
- SEDIMENT CONTROL FENCE
- EROSION CONTROL LOG



PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
6. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
7. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
8. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
9. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

PLAN VIEW

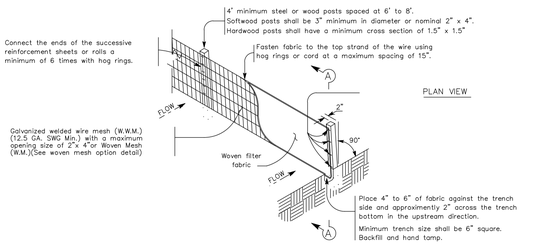
ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



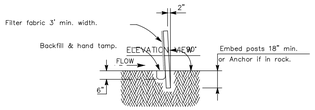
TEMPORARY SEDIMENT CONTROL FENCE

ELEVATION VIEW

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT . Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.



SECTION A-A

STORM WATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TPDES General Permit TXR150000.The operator,The Texas Department of Transportation ensures that:Project specifications provide that adequate BMPs have been developed for this project. The contractor shall be the party responsible for implementing the BMPs described herein. The contractor shall implement changes approved by the Project Engineer to the SWP3 within the times specified in the SWP3 or the TPDES General Permit. Operators affected by modifications to specifications will be notified in a timely manner.

1.SITE OR PROJECT DESCRIPTION:

NATURE OF THE CONSTRUCTION ACTIVITY:

CONSTRUCTION OF A CONCRETE DAM, RETENTION BASIN, SEDIMENT BASIN, AND 3'X3' CONCRETE BOX CULVERT INTO EPWU PRIVATE PROPERTY.

POTENTIAL POLLUTANTS AND SOURCES:

Sediment laden storm water	Construction vehicles and storage
Construction debris and waste	Various construction activities
	Restroom facilities
	Construction site and Receptacles

SEQUENCE OF ACTIVITIES THAT WILL DISTURB SOILS:

INSTALL SWPPP
CLEAR & GRUB SITE
EXCAVATION
ROUGH GRADE SITE
TRENCHING
BUILDING CONSTRUCTION
CLEAN UP AND REMOVE SWPPP

TOTAL AREA OF PROJECT: 7.5 ACRES
TOTAL AREA OF SOIL DISTURBANCE: 7.5 ACRES
TOTAL AREA OFF-SITE: 0 ACRES
WEIGHTED RUNOFF COEFFICIENT (BEFORE AND AFTER CONSTRUCTION): 0.95

DATA DESCRIBING THE SOIL:

The project area is located at the Franklin Mountains Palisades Canyon. The project is in a mountainous and undisturbed area. Cover consists of mostly natural ground.

GENERAL LOCATION MAP: SEE TITLE SHEET
DETAILED SITE MAP: SEE THIS SHEET
THE LOCATION AND DESCRIPTION OF CONCRETE AND ASPHALT PLANTS:

NAME OF RECEIVING WATERS: Rio Grande

A COPY OF TPDES CGP TXR150000 IS INCLUDED IN THE SWP3 FILE.

This project will require a Construction Site Notice.

401 WATER QUALITY CERTIFICATION: YES☐ NO☒

2.BEST MANAGEMENT PRACTICES (BMPs):

EROSION AND SEDIMENT CONTROLS: Erosion and sediment controls have been designed to retain sediment on-site.Controls shall be utilized to reduce off site transport of suspended sediments and pollutants.If it is necessary to pump water from the site,Control measures shall be installed per specifications or as directed. Sediment must be removed from controls per the plan requirements or manufacturers recommendations,but no later than the time that design capacity has been reduced by 50%. If sediment escapes the site, accumulations will be removed to minimize further negative effects. Controls will be developed to limit the off site transportation of litter, construction debris, and construction materials.

INTERIM(INT), PERMANENT(PER), AND 401 CERTIFICATION BMP'S:

EROSION CONTROLS:	401	INT	PER
☐ Composition & Tracking of slopes	—	X	—
☒ Erosion Control Log	—	—	—
☐ Preserve Existing Vegetation	—	—	—
☐ Soil Stabilization	—	—	—
☐ Permanent Vegetation	—	—	—
☐ No Erosion Controls are Required.			

SEDIMENT CONTROLS:	401	INT	PER
☒ Silt Fence	—	X	—
☐ Rock Berm	—	—	—
☐ Buffer Zones	—	—	—
☐ Vegetative Filter Strips	—	—	—
☐ Ditch Block	—	—	—
☐ No Sediment Controls are Required.			

POST CONSTRUCTION TSS CONTROL (401 CERTIFICATION ONLY):

☐ Vegetation Lined Drainage Ditch
☐ Retention/Irrigation
☐ Erosion Control Compost
☐ Grassy Swales
☐ Vegetative Filter Strips
☒ No Post Construction TSS Control Required.

SEQUENCE OR SCHEDULE OF IMPLEMENTATION:

1. Install erosion control measures
2. Install silt fences and erosion control logs
3. Maintain erosion and sediment control devices until all disturbed areas are established.
4.
5.
6.

The El Paso District of the Texas Department of Transportation uses Site-Manager, a computer based construction record-keeping system. Documentation describing major grading activities, temporary or permanent cessation of construction,and stabilization measures is a part of this system and is incorporated by reference into this SWPPP.

Stabilization measures must be initiated within 14 days when practicable in portions of the site where construction has temporarily or permanently ceased, If earth disturbing activities will not be resumed within 21 days.

3.STRUCTURAL CONTROL PRACTICES:

Structural control practices for this project are listed above.

4.PERMANENT STORM WATER CONTROLS:

Structural control practices installed during construction will be maintained and inspected after construction has ceased on the site and until final stabilization is attained. Unless specified in the plans, after project acceptance TxDOT will assume maintenance responsibilities for the controls and measures. Other permanent controls include existing and proposed/grap ol culvert inlets and outlets,diversion dikes, swales, retaining walls, and other similar devices.

5.OTHER CONTROLS:

OFF-SITE VEHICLE TRACKING OF SEDIMENTS AND THE GENERATION OF DUST: The off site vehicle tracking of sediments shall be minimized by removal of excess dirt from the road and at entrances to the work site. The generation of dust will be minimized as directed by The Project Engineer by dampening haul roads and covering haul trucks with a tarpaulin.

CONSTRUCTION AND WASTE MATERIALS: The contractor will maintain a clean, orderly construction site.Construction waste including trash, rubble, scrap and vegetation shall be disposed of in lidded dumpsters or in a manner approved by the Project Engineer. Disposal methods must meet Federal, State, and Local waste management guidelines. No construction waste will be buried or burned on site. Spoils disposal, material storage, and materials resulting from the destruction of existing roads and structures shall be stored in areas designated by the Project Engineer and protected from run-off. All waterways shall be cleared of temporary embankment,temporary bridges,matting, false work, piling, debris, or other obstructions placed during construction operations, that are not part of the finished work, as soon as practicable.All excess soil generated by the construction will be collected and disposed of by the contractor. Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, water body, or stream bed.

POLLUTANT SOURCES FROM AREAS OTHER THAN CONSTRUCTION: Staging areas and vehicle maintenance areas shall be located and constructed in a manner to minimize the runoff of pollutants. If potential pollutant sources are identified after the start of construction, controls and measures shall be implemented as directed by the Project Engineer.

DEDICATED ASPHALT PLANTS: Asphalt or asphaltic material for this project will be produced off site.If the project requires a dedicated asphalt plant and the plant within 1 mile of the project limits it will be considered an off site PSL. Consideration shall be given to on site plant and storage facilities and measures implemented as directed by the Project Engineer.

DEDICATED CONCRETE PLANTS: Cement or Concrete material for this project will be produced off site. If the project requires a dedicated concrete plant and the plant is within 1 mile of the project limits it will be considered an off site PSL. Consideration shall be given to on site plant and storage facilities and measures implemented as directed by the Project Engineer. Concrete trucks shall be washed or washed out in locations designated by the Project Engineer. The locations shall be protected by a berm sufficient to contain all waste and wash water.Wash water shall not be allowed to enter any storm drainage system or waterway. The residual material and contaminated soil shall be collected and disposed of in accordance with Federal, State, and Local guidelines. Staging areas and vehicle maintenance areas shall be located and constructed in a manner to minimize the runoff of pollutants.

HAZARDOUS MATERIALS AND SPILL REPORTING: The contractor shall take appropriate measures to prevent, minimize, and control the spillage or leakage of hazardous materials and any associated wastes on site and in maintenance and staging areas. hazardous materials shall include but are not limited to paints, acids, solvents, asphalt products, chemical additives, curing compounds, oils, fuels, and lubricants. Hazardous materials shall not be stored, accumulated, or transported in open containers subject to precipitation or spillage, but shall be stored,accumulated, or transported in closed containers of the type recommended by the manufacturer. In the event of a spill the Project Engineer should be contacted immediately.All spills shall be immediately cleaned and any contaminated soil removed and disposed of in accordance with Local, State, and Federal laws. Fuel tanks shall be protected by a secondary containment, such as a lined berm, capable of containing 1.5 times the capacity of the tank, or as approved by the Project Engineer.

OFF SITE PSLs: All off site project specific locations including dedicated asphalt plants, concrete plants, or utility installations, required by the contractor, are the contractor's responsibility. The contractor shall secure all permits required by local, state, or federal laws for off site PSLs. The contractor shall provide diagrams and areas of disturbance for all PSL's within 1 mile of the project.

SANITARY FACILITIES: All sanitary or septic wastes that are generated onsite shall be treated and disposed of in accordance with state and local regulations. Raw sewage or septage shall not be discharged or buried on site. Precaution shall be taken to prevent illicit discharges to storm water. Licensed waste management contractors shall be required to dispose of sanitary waste. Porta johns will be required for the construction site or as directed by the Project Engineer.

VELOCITY DISSIPATION DEVICES: Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as shown in the plans or as directed by the Project Engineer to provide a non-erosive flow velocity from the structure to a watercourse so that the natural physical and biological characteristics and functions are maintained and protected.

6.APPROVED STATE AND LOCAL PLANS: This SWP3 is consistent with requirements specified in applicable sediment and erosion site plans or site permits, or storm water management site plans or permits approved by federal, state, or local officials.

7.MAINTENANCE: Control measures shall be properly installed according to specifications. If inspections or other information indicates a control has been installed, used, or is performing inadequately,the contractor must replace or modify the control as soon as practicable after discovery. Control measures shall be maintained in effective operating condition. If inspections determine that BMP's are not operating effectively maintenance will be performed as necessary to continue the effectiveness of the controls. Maintenance must be accomplished as soon as practicable. Controls adjacent to creeks, culverts, bridges, and water crossings shall have priority. Controls that have been disabled, run over, removed, or otherwise rendered ineffective must be corrected immediately upon discovery.

8.INSPECTION OF CONTROLS: A TxDOT inspector will inspect disturbed areas of the site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, and structural controls for evidence of, or the potential for, pollutants entering the drainage system. Sediment and erosion controls measures identified in the SWP3 will be inspected to ensure that they are operating correctly. Locations where vehicles enter or exit the site will be inspected for evidence of off-site vehicle tracking. Inspections will be conducted every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. The SWP3 will be modified based on the result of these inspections. Revisions will be completed within 7 Calendar days following the inspection. Revised implementation schedules will be described in the SWP3 and implemented as soon as practicable. Rain gages will be maintained on site for the duration of the project. Reports summarizing the scope of the inspections are included in the SWP3 file.

9.NON-STORM WATER COMPONENTS: The contractor shall be required to implement appropriate pollution prevention controls and measures for all eligible non-storm water components of the discharge as approved and directed by the Project Engineer.

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						VER:
						DWG: R300608.01 - 22 SWPPP.DWG
						DATE: 2/4/2022
						DESIGN BY: R.A.P.
						DRAWN BY: L.V.
	TB	REV.	DATE	BY:	DESCRIPTION	CHKD. BY: R.A.P.

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ENGINEER'S SEAL

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RUSSELL ALLEN PARR
P.E. 88072

ON

FEBRUARY 4, 2022
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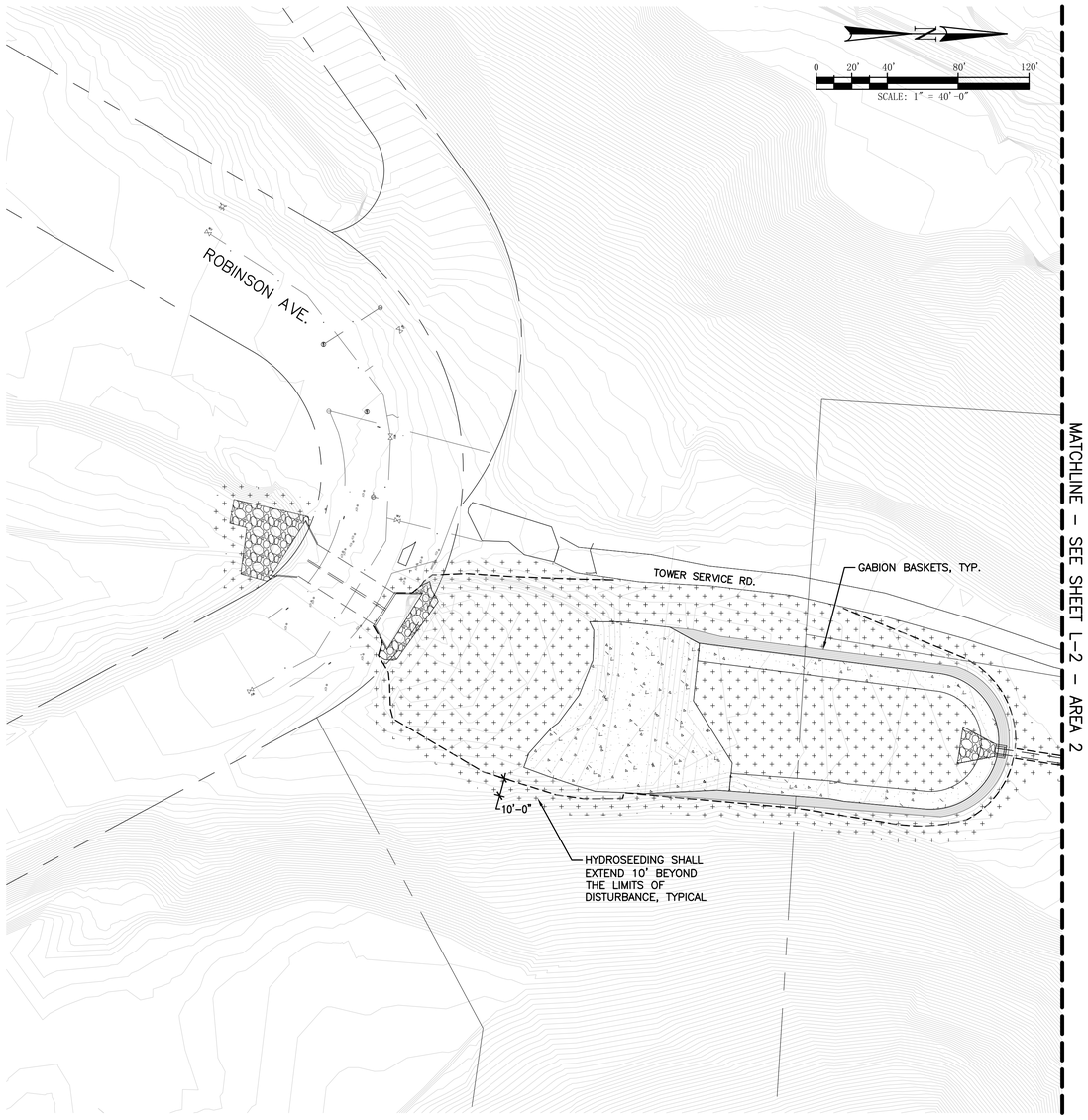
PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

JOB NO. R300608.01

STORMWATER POLLUTION PREVENTION PLAN

SHEET NO. 22 OF 22



LANDSCAPE SURFACING PLAN – AREA 1

SCALE: 1" = 40'-0"

SURFACE TREATMENT LEGEND

SURFACE TREATMENT TYPE 1: EXPOSED SOIL AND ROCK SURFACES (NOT ARMORED)

ALL EXPOSED SOIL OR ROCK SURFACES THAT HAVE BEEN GRADED OR DISTURBED BY CONSTRUCTION SHALL RECEIVE THE FOLLOWING TREATMENT:

- SOIL SURFACES: ALL EXPOSED NATIVE AND IMPORTED SOIL SHALL BE HYDROSEEDED WITH HYDROSEED MIX TYPE 1 – NATIVE TREES, SHRUBS, GRASSES, AND FORBS
- ROCK SURFACES: ALL EXPOSED BEDROCK, EXCAVATED SUB–SURFACE ROCK, AND ANY IMPORTED ROCK MATERIAL THAT DOES NOT MATCH THE EXISTING NATURAL EXPOSED SURFACE ROCK SHALL BE TREATED WITH NATINA ROCK SOLUTION

SURFACE TREATMENT TYPE 3: RIP RAP SURFACING

ALL RIP RAP SURFACING (18" DIA SIZE) LOCATED IN THE CHANNEL IMPROVEMENT AREA SHALL RECEIVE THE FOLLOWING SURFACE TREATMENT:

- RIP RAP ROCK MATERIAL: ALL EXPOSED SURFACES OF THE RIP RAP ROCK MATERIAL THAT DOES NOT MATCH THE COLOR OF THE EXISTING NATURAL EXPOSED SURFACE ROCK OF THE SITE SHALL BE TREATED WITH NATINA ROCK SOLUTION

SURFACE TREATMENT TYPE 4: CONCRETE SURFACES

ALL CONCRETE SURFACES, INCLUDING BUT NOT LIMITED TO CONCRETE APRONS, EXPOSED CONCRETE GROUT (IN GROUTED RIP RAP AREAS), CONCRETE HEADWALLS, ETC. SHALL RECEIVE THE FOLLOWING SURFACE TREATMENT:

- CONCRETE SURFACES: ALL EXPOSED CONCRETE SURFACES SHALL BE TREATED WITH NATINA CONCRETE SOLUTION

SURFACE TREATMENT TYPE 5: CHANNEL GABIONS AND GABION MATTRESSES

ALL CHANNEL GABIONS AND GABION MATTRESSES SHALL RECEIVE THE FOLLOWING SURFACE TREATMENT:

- CHANNEL GABIONS AND GABION MATRESSES CAGES: THE EXPOSED SURFACE OF ALL STEEL WIRE MESH CAGES SHALL BE TREATED WITH NATINA STEEL SOLUTION
- GABION ROCK FILL MATERIAL: THE EXPOSED SURFACE OF ALL ROCK FILL MATERIAL LOCATED INSIDE THE CHANNEL GABION AND GABION MATTRESS CAGES SHALL BE TREATED WITH NATINA ROCK SOLUTION

— — — — LIMITS OF GRADING / DISTURBANCE

NOTE: SEE HYDROSEED MIX SCHEDULE, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

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DATE: 01/21/22
DESIGN BY:
DRAWN BY:
CHKD. BY:

LANDSCAPE ARCHITECT'S SEAL

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SCOTT RICHARD MARTINEZ
P.L.A.. 2715

ON

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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

LANDSCAPE SURFACING PLAN
AREA 1

JOB NO.
R09-0421.02

L-1

SHEET NO.
1 OF 4

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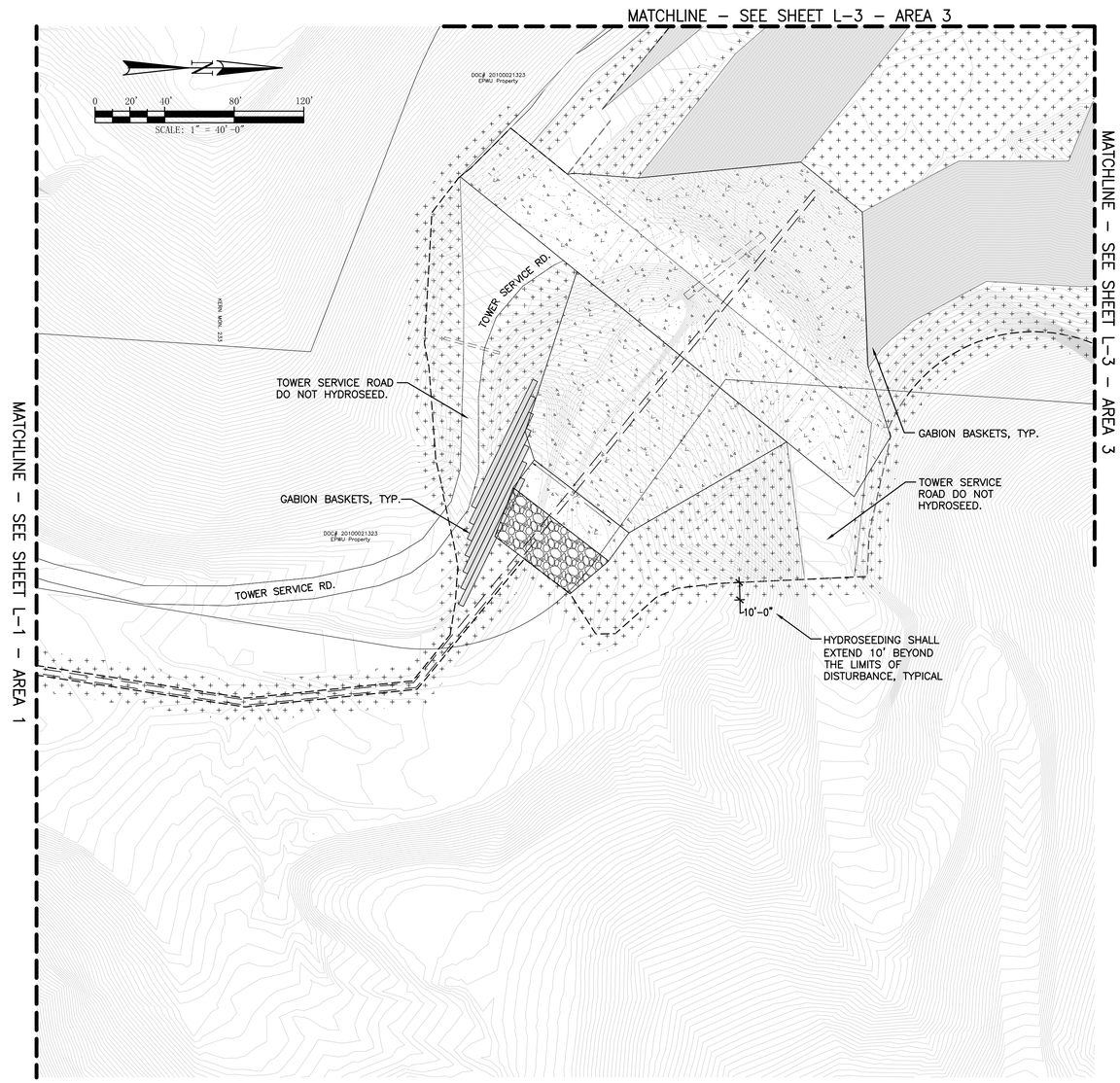

LANDSCAPE SURFACING PLAN – AREA 2

SCALE: 1" = 40'-0'

SURFACE TREATMENT LEGEND

SURFACE TREATMENT TYPE 1: EXPOSED SOIL AND ROCK SURFACES (NOT ARMORED)

ALL EXPOSED SOIL OR ROCK SURFACES THAT HAVE BEEN GRADED OR DISTURBED BY CONSTRUCTION SHALL RECEIVE THE FOLLOWING TREATMENT:

- SOIL SURFACES: ALL EXPOSED NATIVE AND IMPORTED SOIL SHALL BE HYDROSEEDED WITH HYDROSEED MIX TYPE 1 – NATIVE TREES, SHRUBS, GRASSES, AND FORBS
- ROCK SURFACES: ALL EXPOSED BEDROCK, EXCAVATED SUB-SURFACE ROCK, AND ANY IMPORTED ROCK MATERIAL THAT DOES NOT MATCH THE EXISTING NATURAL EXPOSED SURFACE ROCK SHALL BE TREATED WITH NATINA ROCK SOLUTION

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— — — — LIMITS OF GRADING / DISTURBANCE

NOTE: SEE HYDROSEED MIX SCHEDULE, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

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LANDSCAPE ARCHITECT'S SEAL

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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

LANDSCAPE SURFACING PLAN
AREA 2

JOB NO.
R09-0421.02

L-2

SHEET NO.
2 OF 4

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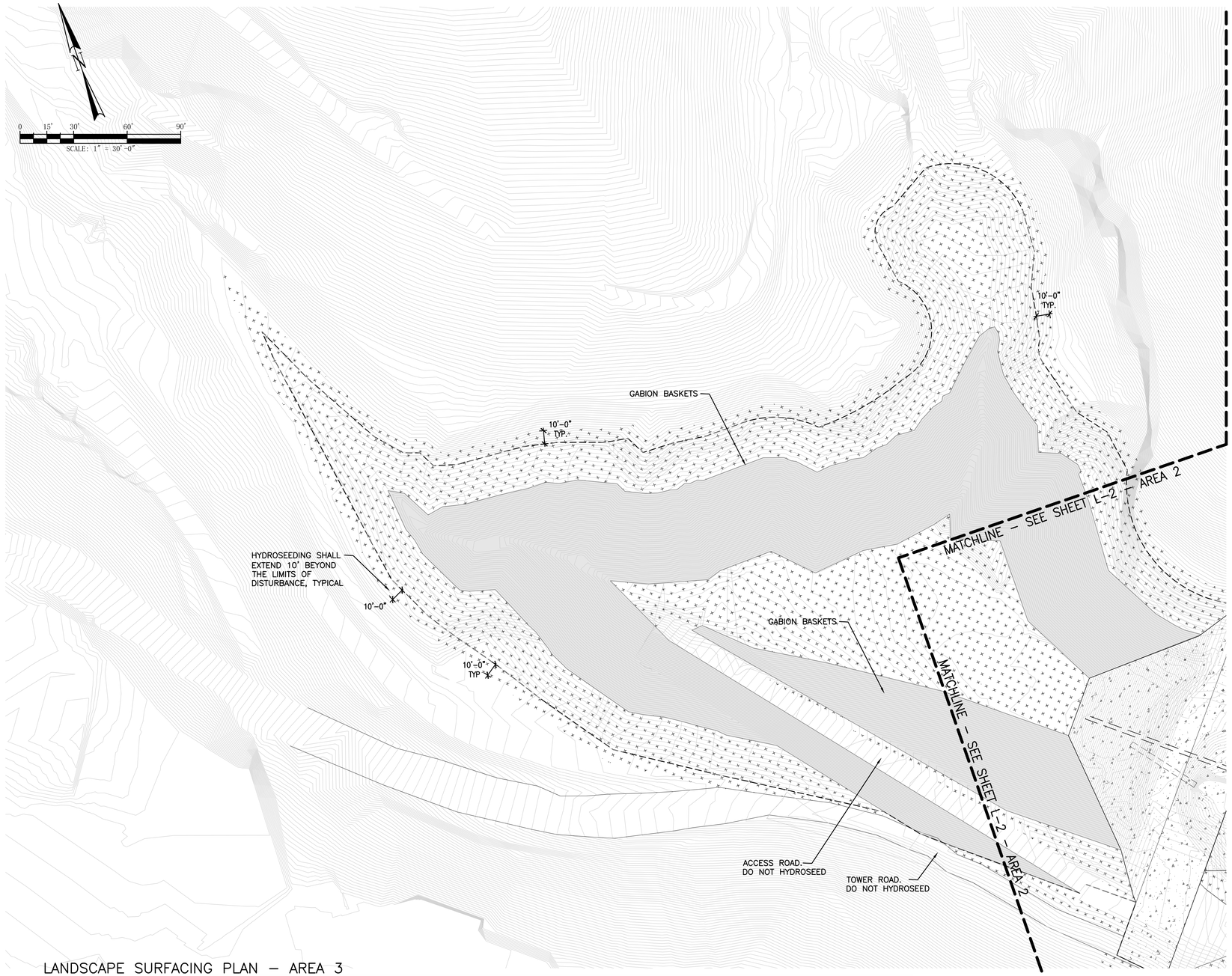

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— — — — LIMITS OF GRADING / DISTURBANCE

NOTE: SEE HYDROSEED MIX SCHEDULE, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

LANDSCAPE SURFACING PLAN – AREA 3

SCALE: 1" = 40'-0'

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PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

LANDSCAPE SURFACING PLAN
AREA 3

JOB NO. R09-0421.02

L-3

SHEET NO. 3 OF 4

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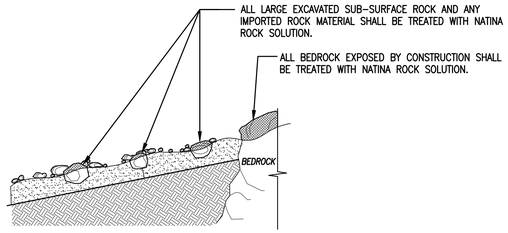
NOTES:
1. NO PRE-EMERGENT HERBICIDES TO BE USED IN SEEDED AREAS.
2. GROUND SURFACE TO BE PREPARED FOR HYDROSEEDING. SEE SPECIFICATIONS.
3. SEEDING TO BE APPLIED AFTER APPLICATION OF ROCK MULCH.
4. HYDROSEED SLURRY MIX FOR SURFACE TREATMENT TYPE 1. AREAS SHALL CONSIST OF SEED, WOOD FIBER MULCH, TACKIFIER, FERTILIZER, AND WATER. SEE SPECIFICATIONS.



1 SURFACE TREATMENT: TYPE 1
EXPOSED SOIL AND ROCK SURFACES
N.T.S.

NATINA SURFACE TREATMENT IS AN ENVIRONMENTALLY-SAFE AND LONG LASTING COLOR SOLUTION FOR ROCK, CONCRETE, AND GAVLANIZED STEEL. NATINA NATURALLY REACTS WITH EACH OF THESE MATERIALS WHICH CREATES A MAINTENANCE-FREE EARTHY BROWN FINISH. THIS PRODUCT IS OFTEN USED IN NATURAL AREAS THAT HAVE BEEN DISTURBED BY CONSTRUCTION ACTIVITIES TO NATURALLY COLOR NEWLY EXPOSED SUB-SURFACE ROCK TO MATCH THE PRE-EXISTING NATURAL COLORS.

THIS NATURAL COLORANT IS PROPOSED FOR USE IN THIS PROJECT ON THE FOLLOWING EXPOSED SURFACES:
- UNEARTHED ROCK AND NEWLY EXPOSED BEDROCK
- ARTICULATED CONCRETE BLOCK
- RIP RAP MATERIAL
- CONCRETE SURFACES
- CHANNEL GABIONS AND GABION MATTRESSES ON THE BOTH THE STEEL WIRE CAGES AND ROCK FILL MATERIAL

VISIT WWW.NATINA.COM OR CALL 866-809-0544 FOR MORE INFORMATION.

BEFORE AND AFTER IMAGES ARE SHOWN BELOW: PASEO DE LAS IGELSIAS PROJECT, TUCSON, AZ

BEFORE:

AFTER:

2 NATINA SURFACE TREATMENT
N.T.S.

HYDROSEED SCHEDULE

HYDROSEED MIX #1	BOTANICAL NAME	COMMON NAME	PURE LIVE SEED (PLS) RATE
HYDROSEEDED MIX TYPE 1: NATIVE TREES, SHRUBS, GRASSES AND FORBES	ACACIA CONSTRICTA	WHITETHORN ACACIA	0.5
	ATRIPLEX CANESCENS	FOUR WING SALTBUSH	1.0
	ERIOGONUM SP	BUCKWHEAT SP	0.5
	KRASCHENINNIKOVIA LANATA	WINTERFAT	1.0
	LARREA TRIDENTATA	CREOSOTE BUSH	0.5
	PARTHENIUM INCANUM*	MARIOLA	1.0
	PURSHIA TRIDENTATA	ANTELOPE BITTERBRUSH	1.0
	BAILEYA MULTIRADIATA	DESERT MARIGOLD	0.5
	LINDHEIMERI TEXANA	TEXAS YELLOW STAR	0.5
	ESCHSCHOLZIA CALIFORNICA SSP. MEXICANA	MEXICAN GOLD POPPY	1.0
	GAILLARDIA PULCHELLA	FIREWHEEL	0.5
	MONARDA CITRIODORA	PURPLE HORSEMINT	0.5
	PENSTEMON PARRYI	PARRY PENSTEMON	0.5
	DALEA PURUREA	PURPLE PRAIRIE CLOVER	0.5
	RATIBIDA COLUMNIFERA	PRAIRIE CONEFLOWER	0.5
	SPHAERALCEA COCCINEA	SCARLET GLOBEMALLOW	0.5
	VERBENA GOODDINGII	DESERT VERBENA	0.5
	ACHNATHERUM HYMENOIDES	INDIAN RICE GRASS	1.0
	ARISTIDA PURPUREA	PURPLE THREE-AWN	1.0
	BOTHRIOCHOLA BARINOIDES	CANE BLUESTEM	1.0
	BOUTELOUA CURTIPENDULA	SIDEOATS GRAMA	1.0
	BOUTELOUA GRACILIS	BLUE GRAMA	1.0
	FESTUCA ARUNDINACEA	TALL FESCUE	1.0
	HESPEROSTIPA NEOMEXICANA	NEW MEXICO FEATHERGRASS	0.5
	HOPIA OBTUSA	VINE MESQUITE	0.5
	MUHLENBERGIA PORTERI	BUSH MUHLY	0.5
	LEPTOCHLOA DUBIA	GREEN SPRANGLETOP	1.0
	SPOROBOLUS AIROIDES	ALKALI SACATON	0.5

APPLY USING HYDROSEEDING TECHNIQUES W/ WOOD FIBER MULCH @ 2,000 LBS. PER ACRE SEE SPECIFICATIONS.

*IF UNAVAILABLE SEED SHALL BE COLLECTED ON SITE.

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LANDSCAPE ARCHITECT'S SEAL

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF

SCOTT RICHARD MARTINEZ
P.L.A.. 2715

ON

JANUARY 21, 2022
IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

HUITT-ZOLLARS INC.
ENGINEERING / SURVEYING
5822 CROMO DRIVE, SUITE 210
EL PASO, TEXAS 79912
PH. (915) 587-4339 / FAX (915) 587-5247
FIRM REGISTRATION F-761

el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

LANDSCAPE SURFACING DETAILS

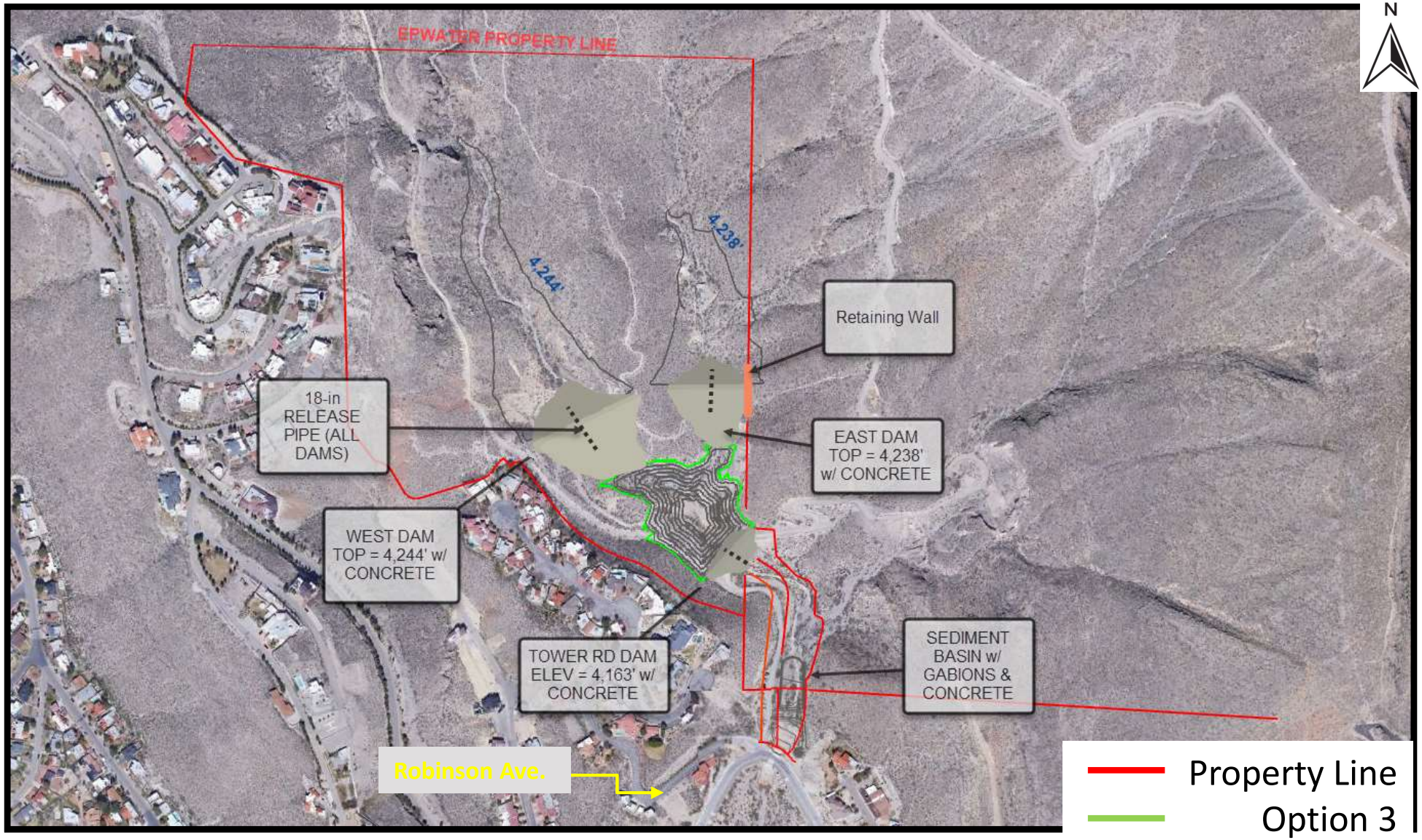
JOB NO. R09-0421.02

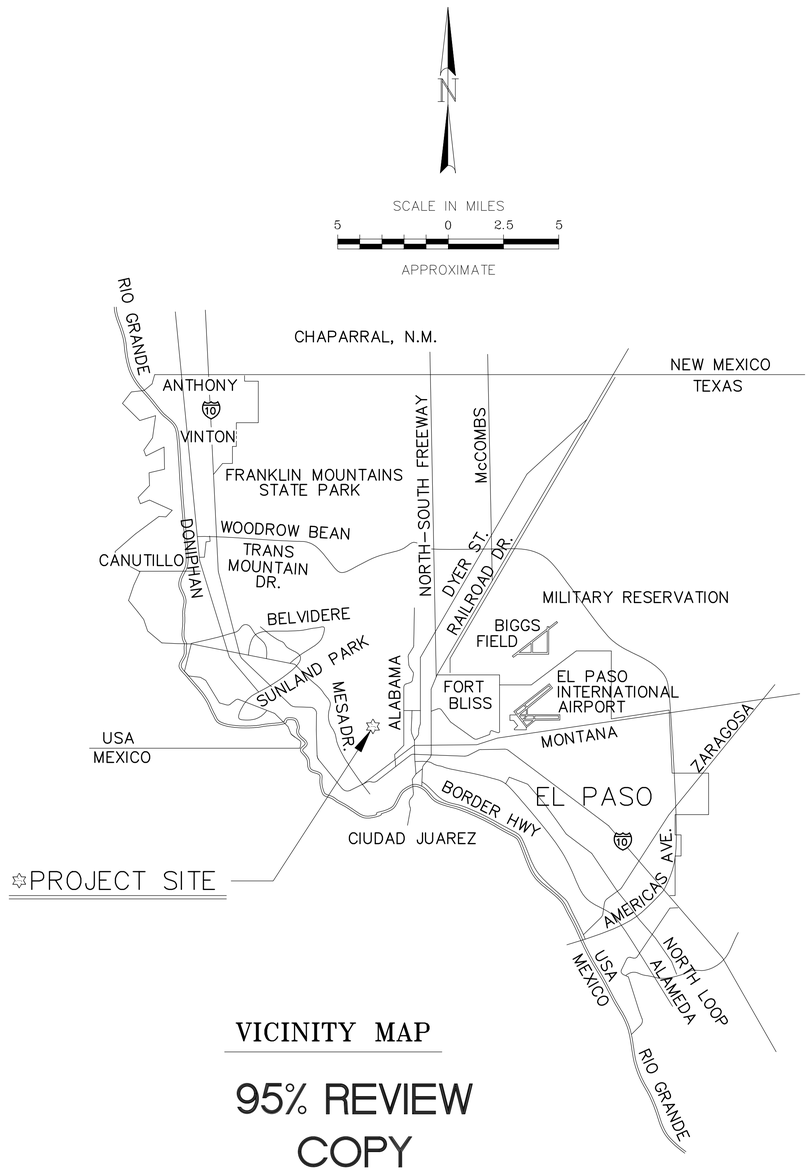
L-4

SHEET NO. 4 OF 4

C:\PROJECTS\2021\11-08-PALISADES PARK-EL PASO\DRAWINGS\PLANS\PALISADES-L-01-11-18-21.DWG

Option 3


EPWATER PROPERTY LINE
4,238'
4,244'
Retaining Wall
18-in RELEASE PIPE (ALL DAMS)
EAST DAM TOP = 4,238' w/ CONCRETE
WEST DAM TOP = 4,244' w/ CONCRETE
TOWER RD DAM ELEV = 4,163' w/ CONCRETE
SEDIMENT BASIN w/ GABIONS & CONCRETE
Robinson Ave.
N
Property Line
Option 3



VICINITY MAP

95% REVIEW COPY

OWNER

el paso WATER

1154 HAWKINS BLVD. EL PASO TEXAS 79925 (915) 594-5500

PREPARED BY

HUITT-ZOLLARS INC.

ENGINEERING / SURVEYING

5822 CROMO DRIVE, SUITE 210
EL PASO, TEXAS 79912
PH. (915) 587-4339 / FAX (915) 587-5247
FIRM REGISTRATION F-161

CIP NO. _____
ENG / PROJECT I.D. __-____ / _____

el paso WATER

PALISADES STORMWATER DRAINAGE & DEVELOPMENT OF NATURAL OPEN SPACE

BID NUMBER SW36-22

MAY, 2022

PUBLIC SERVICE BOARD MEMBERS

KRISTINA MENA	CHAIR
IVONNE SANTIAGO, P.E.	VICE CHAIR
BRYAN MORRIS, P.E.	SECRETARY-TREASURER
CHARLIE INTEBI	MEMBER
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JOHN E. BALLIEW, P.E.	PRESIDENT/CEO
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GILBERT TREJO, P.E.	INTERIM CHIEF OPERATIONS OFFICER
IRAZEMA SOLIS ROJAS, P.E.	INTERIM CHIEF TECHNICAL OFFICER

GENERAL NOTES:

1. DATE OF FIELD SURVEY IS JULY 30, 2020.
2. INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES AS PER O.S.H.A. STANDARDS.
3. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH GAS, STORM, PETROLEUM, ELECTRIC, TELEPHONE, CABLE TV, COMMUNICATIONS, FIBER OPTICS AND/OR OTHER UTILITIES FOR ANY RELOCATION AND/OR PROTECTION OF EXISTING LINES OR CABLES AS REQUIRED DUE TO CONSTRUCTION ACTIVITIES.
4. ALL EXISTING UTILITIES CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION OF THE PROPOSED FACILITIES. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES (INCLUDING SERVICE CONNECTIONS) FROM DAMAGE AS A RESULT OF CONSTRUCTION ACTIVITIES. ANY DAMAGE SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASCERTAINING THE NATURE AND EXTENT OF ANY COLLATERAL WORK DONE BY OTHER TRADES. CONTRACTOR SHALL BE AWARE OF ANY AND ALL CONCURRENT WORK IN THE AREA THAT WILL REQUIRE COORDINATION OF THIS WORK. IF NECESSARY, TO AVOID OR MINIMIZE DAMAGE OR DELAY, THE CONTRACTOR SHALL MOBILIZE HIS WORK FORCE TO OTHER AREAS OF THE WORK AT NO ADDITIONAL COST TO THE OWNER.
6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN AT ALL TIMES ON THE JOB SITE AN "AS-BUILT" RECORD OF ALL MODIFICATIONS INSTALLED UNDER THIS CONTRACT AND PROVIDE SAID RECORD TO THE ENGINEER AT THE COMPLETION OF THE CONTRACT. FINAL ACCEPTANCE WILL NOT BE ISSUED PRIOR TO THE "AS-BUILT" REDLINES BEING SUBMITTED TO THE ENGINEER.
7. A GEOTECHNICAL STUDY WAS PERFORMED ON JANUARY 4 2021. THE STUDY IS AVAILABLE FOR THE CONTRACTOR'S REVIEW.
8. CONTRACTOR TO SUPPORT AND MAINTAIN ALL EXISTING EXPOSED UTILITIES IN SERVICE.
9. PROJECT BENCHMARK: SEE SHEET CG-104.
10. NO EQUIPMENT MATERIALS OR DEBRIS SHALL BE STORED ON ANY PORTION OF THE CITY RIGHT-OF-WAY.
11. THE CONTRACTOR SHALL PROVIDE TO THE CITY ENGINEERING DEPARTMENT ENVIRONMENTAL DIVISION A CONTAINMENT POLICY FOR THE WASTE TO BE GENERATED BY ALL EXCAVATIONS, BORINGS, AND POT-HOLING OPERATIONS. THE CONTRACTOR SHALL PROVIDE THE LOCATION(S) OF ALL WASTE DISPOSAL SITE(S) TO BE USED FOR THE CONSTRUCTION DEBRIS AND ALL WASTE GENERATED BY EXCAVATIONS, BORING, AND POT-HOLING OPERATIONS, AS PER ALL APPLICABLE EL PASO COUNTY, CITY OF EL PASO, AND TCEQ RULES AND REGULATIONS.
12. THE CONTRACTOR SHALL NOTIFY THE CITY'S ENGINEERING DEPARTMENT ENVIRONMENTAL DIVISION IMMEDIATELY, IF SUBSURFACE CONTAMINATION IS ENCOUNTERED OR SUSPECTED DURING POT-HOLING, EXCAVATION OR BORING. ALL EXCAVATION AND CONSTRUCTION OPERATIONS SHALL BE CEASED UNTIL FURTHER NOTICE FROM THE CITY ENGINEER.
13. THE CONTRACTOR SHALL SUBMIT A PROJECT SCHEDULE, COMMENCEMENT AND COMPLETION OF THE CONSTRUCTION, FOR REVIEW BY THE ENGINEER, PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE TWO WEEK CONSTRUCTION SCHEDULE, UPDATE WEEKLY, TO ENGINEER. ENGINEER SHALL BE NOTIFIED AND CONSULTED WITH BEFORE ANY DEVIATION FROM THE APPROVED LOCATION OF CONSTRUCTION OR IF ANY ABNORMALITY IS ENCOUNTERED.
14. THE CONTRACTOR SHALL NOTIFY TELECOMMUNICATION TOWER ROAD USERS, RESIDENTS. AND/OR ANY STAKEHOLDER THAT THEY MAY BE AFFECTED BY THE CONSTRUCTION FOURTEEN DAYS PRIOR TO START OF CONSTRUCTION.
15. THE CONTRACTOR, AT ALL TIMES DURING CONSTRUCTION, SHALL PROVIDE ACCESS TO TELECOMMUNICATION TOWER ROAD USERS, RESIDENTS. AND/OR ANY STAKEHOLDER THAT MAY BE AFFECTED BY THE CONSTRUCTION.
16. SHOP DRAWINGS SUBMITTALS: THE CONTRACTOR SHALL SUBMIT, WITHIN 14 CALENDAR DAYS OF NOTICE TO PROCEED, TO THE ENGINEER FOR REVIEW AND APPROVAL SHOP DRAWINGS AND COMPLETE DESIGN DATA SHOWING METHODS AND EQUIPMENT THE CONTRACTOR PROPOSES TO UTILIZE FOR WORK.
17. THE CONTRACTOR SHALL REPLACE ALL SURFACE MATERIAL, AND SHALL RESTORE ALL SURFACES DISTURBED, TO A CONDITION EQUAL TO THAT BEFORE THE WORK BEGAN, FURNISHING ALL LABOR AND MATERIALS INCIDENTAL THERETO. WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE EPWU.
18. ANY CHANGES OF THE APPROVED CONSTRUCTION PLANS MUST BE REVIEWED AND APPROVED BY ENGINEER PRIOR TO THE INSTALLATION OF SUCH CHANGES AND THE CHANGES SHALL BE "AS-BUILT" ONTO THE IMPROVEMENTS PLANS.
19. THE CONTRACTOR SHALL HAVE COPIES OF APPROVED SHOP DRAWINGS AT THE JOB SITE AT ALL TIMES AND PRIOR TO CONSTRUCTION.
20. THE CONTRACTOR SHALL CONTACT THE TEXAS EXCAVATION SAFETY SYSTEM (1-800-344-8377) AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION.
21. CONTRACTOR SHALL NOT EXCAVATE WITHIN 10 FEET OF ANY EXISTING OVERHEAD ELECTRIC POLE. IF EXCAVATION NEEDS TO TAKE PLACE WITHIN 10 FEET, THEN CONTRACTOR MUST COORDINATE WITH EPEC PRIOR TO EXCAVATING AND ADHERE TO EPEC SAFETY REQUIREMENTS.
22. A SIGNED SET OF CONSTRUCTION PLANS DOES NOT IMPLY THAT CONSTRUCTION MAY BEGIN. CONSTRUCTION MAY ONLY BEGIN UPON RECEIPT OF A WRITTEN NOTICE TO PROCEED PROVIDED BY EPWATER.
23. CONTRACTOR SHALL KEEP ALL DEBRIS AND SPOIL OUT OF DRAINS, CULVERTS, AND ENSURE THAT THEY DO NOT BECOME CLOGGED AS A RESULT OF CONSTRUCTION ACTIVITIES. IMPLEMENT BEST MANAGEMENT PRACTICES.
24. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL GET FAMILIAR WITH THE CONTRACT DOCUMENTS AND SPECIFICATIONS, THE PLANS INCLUDING ALL NOTES, AND OTHER APPLICABLE STANDARDS OR SPECIFICATIONS RELEVANT TO THE PROPER COMPLETION OF THE WORK SPECIFIED. FAILURE ON THE PART OF THE CONTRACTOR TO GET FAMILIAR WITH ALL STANDARDS OR SPECIFICATIONS PERTAINING TO THIS WORK SHALL IN NO WAY RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PERFORMING THE WORK IN ACCORDANCE WITH ALL SUCH APPLICABLE STANDARDS AND SPECIFICATIONS.

GENERAL NOTES (CON'T):

26. CONTRACTOR SHALL HAVE IN POSSESSION, PRIOR TO CONSTRUCTION, ALL NECESSARY PERMITS, LICENSES, ETC. NO WORK SHALL BE PERFORMED WITHIN DESIGNATED WATERS OF THE UNITED STATES WITHOUT A PERMIT FROM THE US ARMY CORPS OF ENGINEERS. NO WORK SHALL BE PERFORMED ON THE DAM OR SPILLWAY WITHOUT PROPER PERMIT AND AUTHORIZATION FROM THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY DAM SAFETY PROGRAM. CONTRACTOR SHALL HAVE AT LEAST ONE SET OF APPROVED ENGINEERING PLANS AND SPECIFICATIONS ON-SITE AT ALL TIMES
27. CONSTRUCTION INSPECTION WILL BE PERFORMED BY REPRESENTATIVES OF THE OWNER, ENGINEER, GEOTECHNICAL ENGINEER, AND REVIEWING AUTHORITIES AND AGENCIES. UNRESTRICTED ACCESS SHALL BE PROVIDED TO THEM AT ALL TIMES. CONTRACTOR IS RESPONSIBLE FOR UNDERSTANDING AND SCHEDULING REQUIRED INSPECTIONS.
28. ALL CONTRACTORS MUST CONFINE THEIR ACTIVITIES TO THE WORK AREA. NO ENCROACHMENTS ONTO DEVELOPED OR UNDEVELOPED AREAS WILL BE ALLOWED, UNLESS SPECIFICALLY NOTED ON PLANS. ANY DAMAGE RESULTING THERE FROM, SHALL BE CONTRACTOR'S RESPONSIBILITY TO REPAIR.
29. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING PUBLIC AND PRIVATE UTILITIES THROUGHOUT THE CONSTRUCTION OF THIS PROJECT. CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES FOR LINE LOCATIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION AND SHALL ASSUME FULL LIABILITY TO THOSE COMPANIES FOR ANY DAMAGES CAUSED TO THEIR FACILITIES. CALL 1-800-DIG-TESS.
30. IF UNFORESEEN PROBLEMS OR CONFLICTS ARE ENCOUNTERED IN THE CONSTRUCTION FOR WHICH AN IMMEDIATE SOLUTION IS NOT APPARENT, THE ENGINEER AND OWNER SHALL BE NOTIFIED IMMEDIATELY.
31. CONTRACTOR SHALL BE RESPONSIBLE FOR PRECISE UTILITY FIELD LOCATIONS AND WORKING AROUND EXISTING UTILITIES AND IMPROVEMENTS.
32. TRAFFIC CONTROL MEASURES SHALL BE INSTALLED FOR ANY WORK ACTIVITY THAT TAKES PLACE ON OR ADJACENT TO ANY PUBLIC STREET OR ROADWAY. TRAFFIC CONTROL MEASURES SHALL CONFORM TO PART IV OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
33. CONTRACTOR MUST REFERENCE PALISADES DAM GEOTECHNICAL INVESTIGATION CQC GEOTECHNICAL REPORT NO. AGCQC13-015-01. ALL WORK MUST COMPLY WITH THOSE REQUIREMENTS AND RECOMMENDATIONS.
34. THE USE OF HEAVY EQUIPMENT WILL BE REQUIRED FOR ALL EXCAVATION WORK, INCLUDING INSTALLATION OF CBC AND SHALL BE ACCOUNTED FOR IN THE RESPECTIVE BID ITEM.

UTILITY COMPANIES AND AGENCIES

EL PASO WATER UTILITY
PUBLIC SERVICE BOARD:
EL PASO WATER
1154 HAWKINS BLVD., 3RD FLOOR
EL PASO, TX 79925

TECHNICAL SERVICES
CHIEF TECHNICAL OFFICER
IRAZEMA ROJAS, P.E.

WATER AND WASTEWATER ENGINEERING
ENGINEERING DIVISION MANAGER
AMY CASTNER, P.E.

PLANNING AND DEVELOPMENT
ENGINEERING DIVISION MANAGER
ADRIANA CASTILLO, P.E.

PROJECT ADMINISTRATION
ENGINEERING DIVISION MANAGER
GEOFFREY A. ESPINELI, P.E.

STORMWATER ENGINEERING
STORMWATER ENGINEERING MANAGER
GISELA DAGNINO, P.E.

CONSTRUCTION PROJECT MANAGER
ENGINEERING DIVISION MANAGER
IVAN HERNANDEZ, P.E.

TELECOMMUNICATION:
XSPEDIUS COMMUNICATIONS
201 E. MAIN ST., STE 901
EL PASO, TX 79901
CABLE LOCATOR
BILL CAMPBELL
915-544-9499

ELECTRIC:
EL PASO ELECTRIC CO.
501 W. SAN ANTONIO ST.
EL PASO, TX 79902
915-543-2087
AREA REPRESENTATIVE
CARDIEL TREVIZO

KINDER-MORGAN ENERGY
11621 RAILROAD
EL PASO, TX 79934
JESUS RESENDEZ
PHONE 915-772-7400
CEL 915-471-0146

TEXAS GAS SERVICE
4700 POLLARD ST
EL PASO, TX 79930
915-680-7275
ALEJANDRO LIMON
REGIONAL ENGINEERING MANAGER

EL PASO NATURAL GAS CO.
12600 McCOMBS
El PASO, TX 79934
DAVE CAMPBELL
915-544-5234
JOAQUIN GARIBAY
915-842-7315

"1 CALL" UTILITY LOCATING
1-800-DIGTESS (344-8377)
TX. 1 CALL (1-800-245-4545)
LONE STAR (1-800-669-8344)

CITY OF EL PASO GENERAL NOTES

1. THE CONTRACTOR SHALL VISIT AND FAMILIARIZE HIMSELF WITH THE PROJECT SITE PRIOR TO SUBMITTING HIS BID.
2. CONTRACTOR SHALL BE FAMILIAR WITH PLANS, DETAILS AND SPECIFICATIONS AS THEY PERTAIN TO THE SITE, IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE OWNER'S REPRESENTATIVE IF ANY ITEMS CONTAINED WITHIN THE SCOPE OF WORK DEFINED HEREIN, ARE IN CONFLICT WITH THE PROPOSED CONTRACT.
3. EXISTING UTILITY LINES ARE TO BE BLUE STAKED PRIOR TO EXCAVATION, CHECK AND FIELD VERIFY ALL SITE CONDITIONS, UTILITIES AND SERVICES PRIOR TO EXCAVATION. CONSTRUCTION WORK IN CLOSE PROXIMITY TO UNDER-GROUND UTILITIES SHALL BE COORDINATED WITH APPROPRIATE AGENCY.
4. THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION SCHEDULE WITH OWNER, ALL AFFECTED UTILITY COMPANIES, AND ALL OTHER ENTITIES HAVING JURISDICTION OVER THE PROJECT.
5. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES PRIOR TO COMMENCING WITH THE WORK. ANY DISCREPANCY NOTED SHALL BE REPORTED IMMEDIATELY TO THE PROJECT MANAGER. FAILURE OF THE CONTRACTOR TO REPORT ANY FIELD AND PLAN DISCREPANCIES SHALL MAKE THE CONTRACTOR RESPONSIBLE FOR WORK THAT IS PERFORMED.
6. VIBRATORY ROLLERS SHALL NOT BE PERMITTED ON ANY PHASE OF THIS PROJECT, UNLESS APPROVED IN WRITING BY THE CITY ENGINEER.
7. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN STRICT CONFORMANCE WITH ALL CURRENT SAFETY CODES AND STANDARDS, INCLUDING BUT NOT LIMITED TO, OSHA REQUIREMENTS.
8. WARNING! BEFORE EXCAVATING, CONTRACTOR SHALL LOCATE AND PROTECT ALL UNDERGROUND UTILITIES LINES. CONTRACTOR SHALL REPLACE ANY UTILITIES DAMAGED DURING CONSTRUCTION AT NO ADDITIONAL COST TO OWNER.
9. CONTRACTOR SHALL WATER CONSTRUCTION SITE AREA A MINIMUM OF TWICE A DAY TO DUST CONTROL, ONCE IN THE MORNING AND ONCE IN THE AFTERNOON. THIS SHALL ALSO BE DONE ON WEEKENDS AND HOLIDAYS.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING IMPROVEMENTS IN THE PROJECT AREA AND ITS VICINITY. ANY DAMAGE RESULTING FROM CONTRACTOR WORK SHALL BE RESTORED AT NO COST TO OWNER.
11. CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATION DURING CONSTRUCTION ACTIVITY.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ENVIRONMENTAL FINES RESULTING FROM HIS/HER WORK AND HOLD THE OWNER HARMLESS IN SUCH CASES.
13. CONTRACTOR SHALL SECURE THE SITE DURING CONSTRUCTION TO PROTECT THE AREA FROM VANDALISM AND ILLEGAL TRESPASSING. CONTRACTOR SHALL SECURE THE SITE AT HIS/HER OWN COST. CONTRACTOR SHALL SITE PROTECTION MEASURES SHALL BE SUBMITTED TO THE PARKS AND RECREATION DEPT. FOR APPROVAL.
14. ALL EXISTING UTILITIES CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION EXCEPT AS NOTED IN THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES (INCLUDING SERVICE CONNECTIONS) FROM DAMAGE AS A RESULT OF CONSTRUCTION ACTIVITIES.
15. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO VERIFY LOCATION OF EXISTING UTILITIES & CONTRACTOR SHALL CALL THE RESPECTIVE "1-CALL" NUMBER FOR SUCH UTILITIES.
16. CONTRACTOR SHALL INSURE THE FOLLOWING: ALL ACCESSIBLE ROUTES SHALL NOT EXCEED A RUNNING SLOPE GREATER THEN 1:20(5%). NO WHERE SHALL THE CROSS SLOPE OF AN ACCESSIBLE ROUTE EXCEED 1:50(2%). MAXIMUM SLOPE OF ADJOINING GUTTERS, ROAD SURFACE IMMEDIATELY ADJACENT TO THE CURB RAMP, OR ACCESSIBLE ROUTE SHALL NOT EXCEED 1:20(5%). MAXIMUM RUNNING SLOPE OF ANY CURB RAMP SHALL NOT EXCEED 1:12(8.33%) SLOPE. ALL ACCESSIBLE PATHS SHALL COMPLY WITH TAS AND ADAAG.

CITY OF EL PASO IRRIGATION PLAN GENERAL NOTES

1. IRRIGATION PLAN IS DIAGRAMMATIC IN NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR ACCOMPLISHING FULL COVERAGE IN ALL AREAS WITH SPECIFIED EQUIPMENT. ANY DISCREPANCIES IN THE PLAN SHOULD BE BROUGHT TO THE PROJECT MANAGER'S ATTENTION DURING CONSTRUCTION.
2. ALL FITTINGS AND NECESSARY EQUIPMENT REQUIRED TO MAKE THIS IRRIGATION SYSTEM OPERATE PROPERLY AND TO COMPLY WITH LOCAL AND STATE CODES ARE INCIDENTAL TO THESE PLANS AND ARE THE CONTRACTOR'S RESPONSIBILITY.
3. CONTRACTOR WILL BE HELD LIABLE FOR GAINING ACCESS UNDER ALL PAVEMENTS.
4. SLEEVES SHOWN ON THE PLANS SHOULD BE VERIFIED FOR ACCESSIBILITY AND FEASIBILITY BEFORE BID IS MADE.
5. THE CONTRACTOR SHALL LOCATE AND VERIFY EACH WATER TAP TO WHICH THE IRRIGATION SYSTEM WILL CONNECT. ALL EQUIPMENT AND INSTALLATION METHODS SHALL COMPLY WITH THE STANDARDS OF THE CITY OF EL PASO AND THE SPECIFICATIONS.
6. CONTRACTOR IS RESPONSIBLE FOR ALL CONNECTIONS AND VALVES REQUIRED FOR THE FULL IMPLEMENTATION OF THE SYSTEM.
7. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO INITIATING WORK.
8. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE OR INTERRUPTION IN SERVICE CAUSED BY HIS EXCAVATIONS AND/OR WORK.
9. EACH CONTROLLER WILL HAVE AN INDEPENDENT COMMON WIRE LOOPED TO THE VALVES CONNECTED TO IT.
10. REMOTE CONTROL VALVE WIRES ARE TO BE IN A SEPARATE TRENCH 5' FROM MAIN LINE ON NORTH OR WEST SIDE OF MAINLINE.
11. ALL REMOTE CONTROL VALVE WIRES NEED TO BE LABELED AT VALVE W/ WEATHER (WATER) PROOF LABELS AND AT CONTROLLER WITH CORRESPONDING LABEL. (LETTER AND/OR NUMBER TAGS IN SEQUENTIAL ORDER WILL BE PROVIDED).
12. SPLICING OF REMOTE CONTROL VALVE WIRES IS NOT ALLOWED BETWEEN CONTROLLER & VALVE BOX FOR WIRES MUST BE CONTINUOUS FROM CONTROLLER TO REMOTE CONTROL VALVE WITHOUT SPLICING.
13. ALL SPRINKLER HEADS SHALL BE ON STAINLESS STEEL RISERS WITH CHECK VALVE.
14. CONTRACTOR SHALL PROVIDE SLEEVES FOR NEW IRRIGATION LINES CROSSING UNDER CONCRETE SIDEWALKS. SLEEVES SHALL BE 2 TIMES THE PIPE SIZE EXTENDED 24" BEYOND EDGE OF SURFACE, BE WRAPPED WITH MINIMUM 4 MIL PLASTIC AND TAPED WITH 3M BRAND HEAVY DUTY PLASTIC.

CITY OF EL PASO SPECIFIC NOTES:

1. CURB AND GUTTER SHALL BE REPLACED IN TEN FOOT SECTIONS.
2. APPLY THE CITY OF EL PASO "DESIGN STANDARDS FOR CONSTRUCTION".
3. ENSURE THAT ALL PAVEMENT JOINTS ARE EITHER MID-POINT OF THE VEHICLE WHEEL PAD OR EXTEND 1' BEYOND, NO JOINTS WILL BE ALLOWED ON WHEEL PATHS.
4. USE CITY OF EL PASO TYPE C ASPHALT FOR PROPOSED PAVING ON CITY R-O-W.
5. APPLY ASPHALTIC EMULSION TO PROPOSED PAVED AREAS TWENTY-FOUR HOURS PRIOR TO PAVING.
6. PAVING MUST BE PERFORMED WITH APPROVED PAVING EQUIPMENT.

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR: _____
VER: _____
DWG: _____
DATE: 5/31/2022
DESIGN BY: _____
DRAWN BY: LV
CHKD. BY: FJ

ENGINEER'S SEAL

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF

FLOYD JOHNSON
P.E. # 95506

ON

MAY 31, 2022
IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

HUITT-ZOLLARS INC.
ENGINEERING / SURVEYING
5822 CROMO DRIVE, SUITE 210
EL PASO, TEXAS 79912
PH. (915) 587-4339 / FAX (915) 587-5247
FIRM REGISTRATION F-761

el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

PALISADES TRAILHEAD

GENERAL NOTES

JOB NO. R09-0421.02

C-101

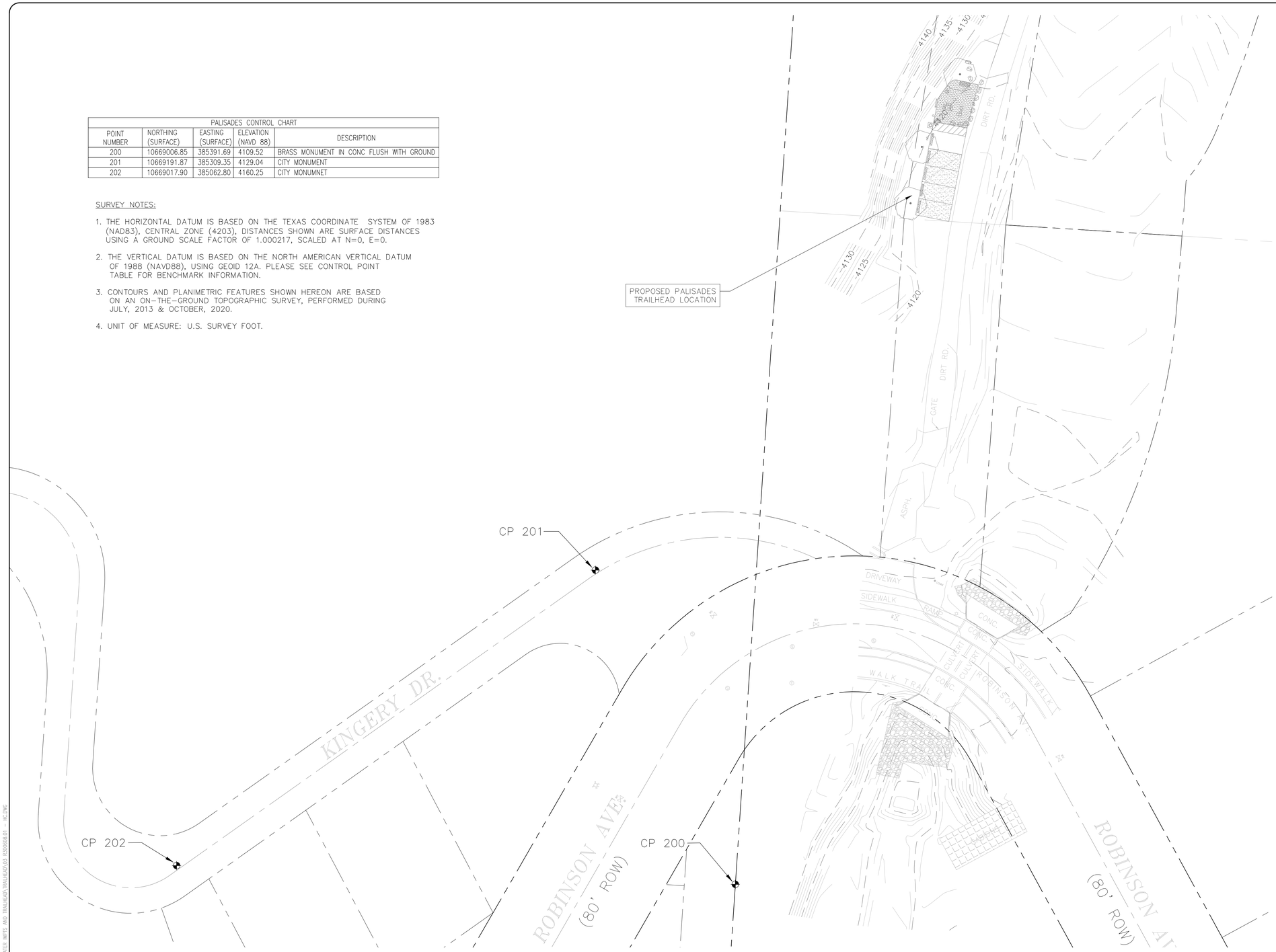
SHEET NO. 2 OF 9

J:\R09\0421.02\WORK\01 - PALISADES STORMWATER JNTPS AND TRAILHEAD\TRAILHEAD\01 8/30/2021 - ON SITE

PALISADES CONTROL CHART				
POINT NUMBER	NORTHING (SURFACE)	EASTING (SURFACE)	ELEVATION (NAVD 88)	DESCRIPTION
200	10669006.85	385391.69	4109.52	BRASS MONUMENT IN CONC FLUSH WITH GROUND
201	10669191.87	385309.35	4129.04	CITY MONUMENT
202	10669017.90	385062.80	4160.25	CITY MONUMNET

SURVEY NOTES:

1. THE HORIZONTAL DATUM IS BASED ON THE TEXAS COORDINATE SYSTEM OF 1983 (NAD83), CENTRAL ZONE (4203), DISTANCES SHOWN ARE SURFACE DISTANCES USING A GROUND SCALE FACTOR OF 1.000217, SCALED AT N=0, E=0.
2. THE VERTICAL DATUM IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), USING GEOID 12A. PLEASE SEE CONTROL POINT TABLE FOR BENCHMARK INFORMATION.
3. CONTOURS AND PLANIMETRIC FEATURES SHOWN HEREON ARE BASED ON AN ON-THE-GROUND TOPOGRAPHIC SURVEY, PERFORMED DURING JULY, 2013 & OCTOBER, 2020.
4. UNIT OF MEASURE: U.S. SURVEY FOOT.



N

SCALE IN FEET
0 15 30 60 90
SCALE: 1" = 30'

LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- -W- EXISTING WATER MAIN
- -SS- EXISTING SANITARY SEWER MAIN
- -COMM- EXISTING COMMUNICATIONS
- -4150- EXISTING CONTOUR (SURVEYED AND PROVIDED)

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR:
VER:
DWG:
DATE:
DESIGN BY:
DRAWN BY: JK
CHKD. BY: CW

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MAY 31, 2022

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PALISADES TRAILHEAD

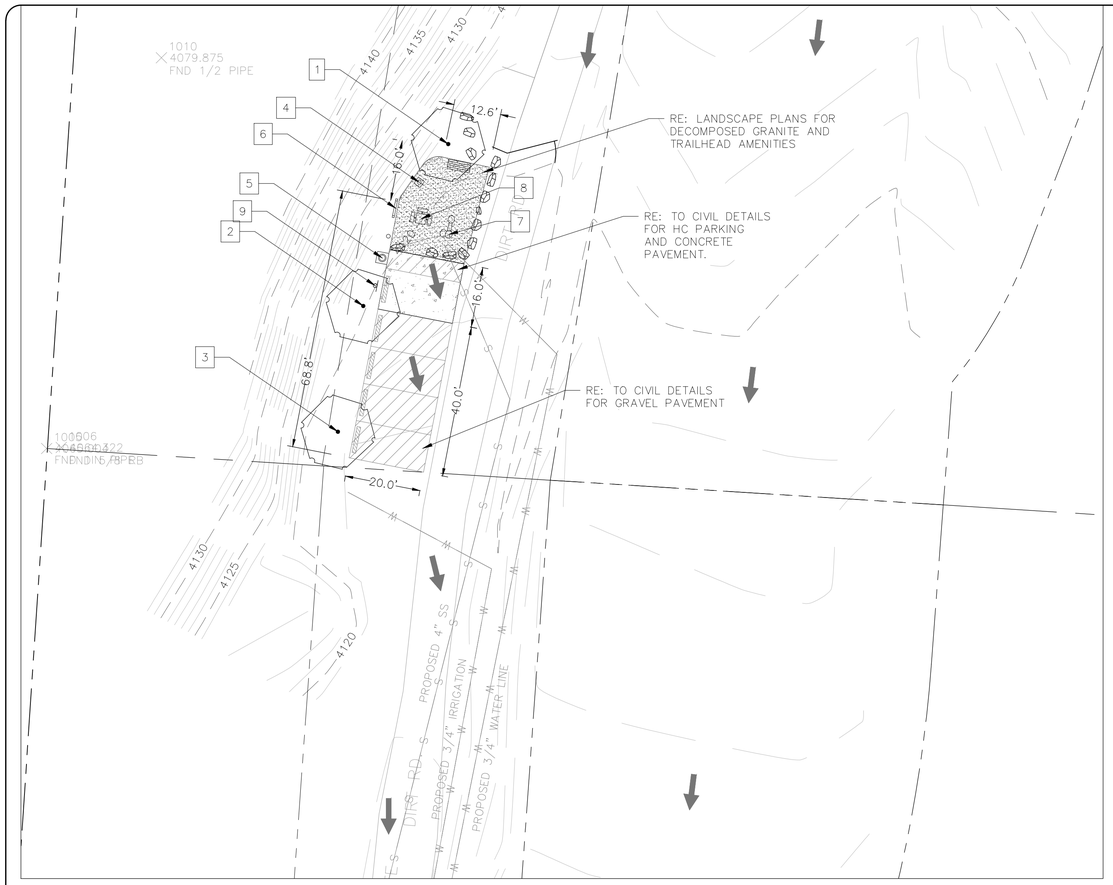
HORIZONTAL CONTROL PLAN

JOB NO. R09-0421.02

C-103

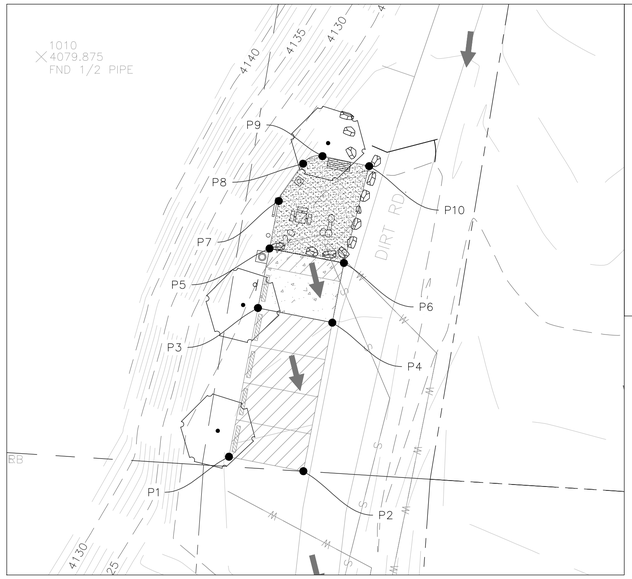
SHEET NO. 3 OF 9

J:\R\09\0421.02\0000\01 - PALISADES TRAILHEAD\CIVIL\DWG\01 - PALISADES STORMWATER INFO AND TRAILHEAD TRAILHEAD\09_0421_02_0000_C01 - HC.DWG



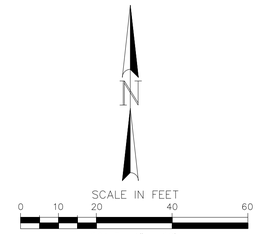
DRAINAGE PLAN

Coordinates Table			
NO.	DESCRIPTION	NORTHING	EASTING
1	TREE	10669483.81	385523.94
2	TREE	10669441.09	385501.51
3	TREE	10669407.9	385494.82
4	LITTER RECEPTACLE	10669473.73	385516.28
5	LITTER RECEPTACLE	10669453.76	385506.51
6	BIKE REPAIR STATION	10669466.83	385510.13
7	DRINKING FOUNTAIN	10669459.96	385524.03
8	PICNINC TABLE	10669464.11	385516.77
9	ADA PARKING SIGN	10669446.43	385504.66



GRADING PLAN

Spot Elevation Table				
Point #	Existing Elevation	Proposed Elevation	Northing	Easting
P1	4118.90	4118.90	10669401.03	385497.77
P2	4118.64	4118.64	10669397.20	385517.40
P3	4120.00	4119.68	10669440.29	385505.42
P4	4119.80	4119.00	10669436.46	385525.05
P5	4120.00	4120.18	10669456.00	385508.48
P6	4119.80	4119.35	10669452.17	385528.11
P7	4120.26	4120.77	10669468.53	385510.92
P8	4120.49	4120.93	10669478.37	385517.33
P9	4120.65	4120.65	10669480.37	385522.46
P10	4120.27	4120.04	10669477.73	385534.78



LEGEND

- RIGHT-OF-WAY
- W — PROPOSED WATER MAIN
- SS — PROPOSED SANITARY SEWER
- 4150 — EXISTING CONTOUR
- P# — SPOT ELEVATION
- DRAINAGE FLOW
- 3 — COORDINATES FOR ELEMENTS
- CONCRETE PAVEMENT
- GRAVEL PAVEMENT
- DECOMPOSED GRANITE

GENERAL ROUGH GRADING NOTES:

1. THIS GRADING PLAN SHALL BE COORDINATED WITH OTHER APPLICABLE CONSTRUCTIONS DRAWINGS FOR DIMENSIONS AND LAYOUT.

2. CLEARING AND GRUBBING: CLEAR SITE OF TREES, SHRUBS AND OTHER VEGETATION; COMPLETELY REMOVE STUMPS, ROOTS AND OTHER DEBRIS PROTRUDING THROUGH GROUND SURFACE; FILL DEPRESSIONS CAUSED BY CLEARING AND GRUBBING OPERATIONS WITH SATISFACTORY FILL MATERIAL UNLESS FURTHER EXCAVATION OF EARTHWORK IS INDICATED; REMOVE EXISTING ABOVE-GRADE AND BELOW-GRADE IMPROVEMENTS AS INDICATED AND AS NECESSARY TO FACILITATE NEW CONSTRUCTION. BURNING IS NOT PERMITTED ON OWNER'S PROPERTY. REMOVE WASTE MATERIALS FROM OWNER'S PROPERTY.

3. SATISFACTORY FILL MATERIALS: FILL MATERIALS SHALL BE FREE OF ANY ORGANIC OR DELETERIOUS SUBSTANCE AND SHALL NOT CONTAIN ROCKS OR LUMPS OVER 3 INCHES IN GREATEST DIMENSION AND SHALL BE DEFINED AS THOSE COMPLYING WITH ASTM D2487 SOIL CLASSIFICATION GROUPS GW, GP, GM, GC, SM, SP, SW, AND SC.

4. UNSATISFACTORY FILL MATERIAL: ARE DEFINED AS THOSE COMPLYING WITH ASTM D2487 SOIL CLASSIFICATION GROUPS ML, MH, CL, CH, OL, OH, AND PT, OR WHERE THE PLASTICITY INDEX

5. EXCAVATION IS UNCLASSIFIED AND INCLUDES EXCAVATION AND FILL TO ELEVATIONS INDICATED, REGARDLESS OF CHARACTER OF MATERIAL AND OBSTRUCTIONS ENCOUNTERED.

6. GROUND SURFACE PREPARATION FOR FILL: REMOVE VEGETATION, DEBRIS, UNSATISFACTORY SOIL MATERIAL, OBSTRUCTIONS, AND DELETERIOUS MATERIAL FROM GROUND SURFACE UPON WHICH THE FILL IS TO BE PLACED. THE SURFACE SHALL THEN BE SCARIFIED TO A DEPTH OF AT LEAST 6-INCHES, AND UNTIL THE SURFACE IS FREE FROM RUTS, HUMMOCKS, OR OTHER UNEVEN FEATURES WHICH WOULD PREVENT UNIFORM COMPACTION. PLOW STRIP, OR BREAK UP SLOPED SURFACES STEEPER THAN 1 VERTICAL TO 4 HORIZONTAL SO THAT FILL MATERIAL WILL BOND WITH EXISTING SURFACE. AFTER PLOWING AND SCARIFYING FILL AREA, IT SHALL THEN BE DISCED OR BLADED UNTIL IT IS UNIFORM AND FREE FROM LARGE CLODS, BROUGHT TO OPTIMUM MOISTURE, AND COMPACTED TO 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D-1557.

7. PLACEMENT OF FILL: PLACE BACKFILL AND FILL MATERIALS IN LAYERS NOT MORE THAN 8 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, AND NOT MORE THAN 4 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND-OPERATED TAMPERS. BEFORE COMPACTION, MOISTEN OR AERATE EACH LAYER AS NECESSARY TO PROVIDE OPTIMUM MOISTURE CONTENT. PLACE FILL MATERIALS EVENLY ADJACENT TO SITE APPURTENANCES, PIPING, OR CONDUIT TO REQUIRED ELEVATIONS. PREVENT WEDGING ACTION OF BACKFILL AGAINST SITE APPURTENANCES OR DISPLACEMENT OF PIPING OR CONDUIT BY CARRYING MATERIAL UNIFORMLY AROUND SITE APPURTENANCES, PIPING, OR CONDUIT TO APPROXIMATELY SAME ELEVATION IN EACH LIFT. COMPACT SOIL TO NOT LESS THAN 95% OF MAXIMUM DENSITY, IN ACCORDANCE WITH ASTM D-1557.

8. MOISTURE CONTROL: WHERE SUBGRADE OR LAYER OF SOIL MATERIAL MUST BE CONDITIONED FOR OPTIMUM MOISTURE BEFORE COMPACTION, UNIFORMLY APPLY WATER TO SURFACE OF SUBGRADE OR LAYER OF SOIL MATERIAL. APPLY WATER IN MINIMUM QUANTITY AS NECESSARY TO PREVENT FREE WATER FROM APPEARING ON SURFACE DURING OR SUBSEQUENT TO COMPACTION OPERATIONS. WATER CONTENT SHALL BE WITHIN 3 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT. REMOVE AND REPLACE, OR SCARIFY AND AIR DRY SOIL MATERIAL THAT IS TOO WET TO PERMIT COMPACTION TO SPECIFIED DENSITY.

9. QUALITY CONTROL: FIELD DENSITY TESTS SHALL BE MADE BY GEOTECHNICAL ENGINEER OF THE COMPACTION OF EACH LAYER OF FILL. DENSITY TESTS SHALL BE TAKEN IN THE COMPACTED MATERIAL BELOW THE DISTURBED SURFACE. WHEN THESE TESTS INDICATED THAT THE DENSITY OF ANY LAYER OF FILL OR PORTION THEREOF IS BELOW THE REQUIRED DENSITY, THE PARTICULAR LAYER OR PORTION SHALL BE REWORKED UNTIL THE REQUIRED DENSITY HAS BEEN OBTAINED. SUPERVISION BY THE GEOTECHNICAL ENGINEER SHALL BE CONTINUOUS DURING THE GRADING OPERATIONS TO ENSURE GRADING WORK IN ACCORDANCE WITH THIS PLAN AND SPECIFICATIONS.

10. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES PRIOR TO ANY EXCAVATION.

11. REFER TO LANDSCAPE PLANS FOR DETAILED GRADING.

11. CONTRACTOR SHALL VERIFY DIMENSIONS SHOWN IN THIS PLAN AND OTHER SHEETS WITHIN THE PLAN SET, INCLUDING DETAILS, LANDSCAPE, UTILITY, AND IRRIGATION PLANS.

WARNING!
IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, WHETHER INDICATED ON THE DRAWINGS OR NOT, TO VERIFY THE LOCATION, DEPTH, AND CONDITION OF ALL EXISTING UTILITIES AND SUBSTRUCTURES AND PROTECT THEM FROM DAMAGE. THE CONTRACTOR SHALL CONTACT ALL THE UTILITY COMPANIES AND CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION.

WARNING !
BEFORE YOU DIG
CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

UTILITY LOCATOR SERVICES
TEXAS 811 1-811
EL PASO WATER UTILITIES 1-915-594-5526

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR:
VER:
DWG:
DATE: 5/31/2022
DESIGN BY:
DRAWN BY: LV
CHKD. BY: FJ

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P.E. # 95506
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PALISADES TRAILHEAD

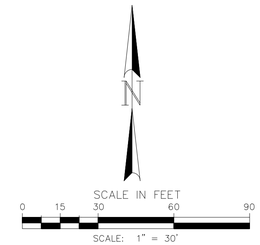
JOB NO. R09-0421.02

GRADING AND DRAINAGE PLAN

C-104

SHEET NO. 4 OF 9

AutoCAD 2019 DWG: R:\09-0421.02 - PALISADES - CROMO\CAD\PLANSET\ PLAN AND TRAILHEAD TRAILHEAD 04 GRADING.DWG



KEY NOTES

1. INSTALL 3/4" IRRIGATION METER AND BACKFLOW PREVENTER. REFER TO IRRIGATION PLANS FOR DETAILS.
2. INSTALL 3/4" CORP STOP FOR DOMESTIC WATER CONNECTION.
3. INSTALL 8"X4" SEWER REDUCING TEE FOR SEWER SERVICE.
4. SS AND W CONNECTION AT DRINKING WATER FOUNTAIN. RE: LANDSCAPE PLANS.

LEGEND

- CENTERLINE (AS NOTED)
- RIGHT-OF-WAY
- W — EXISTING WATER MAIN
- S — EXISTING 8-IN SANITARY SEWER MAIN
- COMM — EXISTING COMMUNICATIONS
- 4150 — EXISTING CONTOUR (SURVEYED AND PROVIDED)
- W — PROPOSED 3/4" WATER SERVICE AND IRRIGATION
- S — PROPOSED 4" SANITARY SEWER

UTILITY GENERAL NOTES:

1. THE CONTRACTOR SHALL INSTALL AT NO ADDITIONAL COST TO THE OWNER, ALL STANDARD AND/OR SPECIAL PIPE FITTINGS AND BENDS TO AVOID EXISTING UTILITY CONFLICTS, THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL KNOWN EXISTING UTILITIES PRIOR TO INSTALLING THE PIPELINE.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, WHETHER INDICATED ON THE DRAWINGS OR NOT, TO POTHOLE AND VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND SUBSTRUCTURES AND PROTECT THEM FROM DAMAGE.
3. WORK MUST BE COORDINATED WITH ALL UTILITY COMPANIES, CITY OF EL PASO SHALL BE NOTIFIED FORTY-EIGHT HOURS PRIOR TO COMMENCING ANY WORK. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH GAS, STORM, ELECTRIC, TELEPHONE, CABLE TV, COMMUNICATIONS, FIBER OPTICS AND/OR OTHER UTILITIES FOR ANY RELOCATION AND/OR PROTECTION OF EXISTING LINES OR CABLES AS REQUIRED DUE TO CONSTRUCTION ACTIVITIES.
4. INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES AS PER O.S.H.A. STANDARDS.
5. ALL EXISTING UTILITIES CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION OF THE PROPOSED FACILITIES.
6. WHERE APPLICABLE, ALL EXISTING STREET DRIVEWAYS, CURB & GUTTER, MONUMENTS, FENCES, LANDSCAPING, SIDEWALKS, AND ALL OTHER MISCELLANEOUS STRUCTURES DAMAGED, REMOVED, OR AFFECTED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL OR BETTER THAN ORIGINAL CONDITION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASCERTAINING THE NATURE AND EXTENT OF ANY COLLATERAL WORK DONE BY OTHER TRADES. CONTRACTOR SHALL BE AWARE OF ANY AND ALL CONCURRENT WORK IN THE AREA THAT WILL REQUIRE COORDINATION FOR PROPOSED CONNECTIONS OF THIS WORK.
8. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN AT ALL TIMES ON THE JOB SITE AN "AS-BUILT" RECORD OF ALL MODIFICATIONS INSTALLED UNDER THIS CONTRACT AND PROVIDE SAID RECORD TO THE ENGINEER AT THE COMPLETION OF THE CONTRACT. FINAL ACCEPTANCE WILL NOT BE ISSUED PRIOR TO THE "AS-BUILT" REDLINES BEING SUBMITTED TO THE ENGINEER.
9. THE CONTRACTOR, AT ALL TIMES DURING CONSTRUCTION, SHALL PROVIDE ACCESS TO BIKE/HIKE TRAILS.

WARNING!
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PALISADES TRAILHEAD

UTILITY PLAN

JOB NO. R09-0421.02

C-105

SHEET NO. 5 OF 9

J:\PROJ\R09\0421\04\01 - PALISADES TRAILHEAD\CAD\PLOT FILES AND TEMPLATES\TEMPLATE\04 - SITE LAYOUT & UTILITY.DWG

STORM WATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TPDES General Permit TXR150000.The operator,The Texas Department of Transportation ensures that:Project specifications provide that adequate BMPs have been developed for this project. The contractor shall be the party responsible for implementing the BMPs described herein. The contractor shall implement changes approved by the Project Engineer to the SWP3 within the times specified in the SWP3 or the TPDES General Permit. Operators affected by modifications to specifications will be notified in a timely manner.

1.SITE OR PROJECT DESCRIPTION:

NATURE OF THE CONSTRUCTION ACTIVITY:

ADDITION OF LANDSCAPE, PARKING AREAS, AND PARK AMENITIES SUCH AS: WATER FOUNTAIN, SOLAR TABLE, BENCHES, AND BIKE REPAIR STATION.

POTENTIAL POLLUTANTS AND SOURCES:

Sediment laden storm water	Construction vehicles
Construction debris and waste	Various construction activities
Trash	Restroom facilities
	Construction site and Receptacles

SEQUENCE OF ACTIVITIES THAT WILL DISTURB SOILS:

1. INSTALL SWPPP
2. CLEAR & GRUB SITE
3. ROUGH GRADE SITE
4. TRENCHING AND UTILITY INSTALLATION
5. PORE CONCRETE FOR ADA PARKING SPACES
6. INSTALL AMENITIES
7. CLEAN UP AND REMOVE SWPPP

AREAS:

TOTAL AREA OF PROJECT: 0.5 ACRES

TOTAL AREA OF SOIL DISTURBANCE: 0.5 ACRES

WEIGHTED RUNOFF COEFFICIENT (BEFORE AND AFTER CONSTRUCTION): 0.50

DATA DESCRIBING THE SOIL:

The project area is located at the Palisades Canyon south of Mount Franklin and north of Robinson Ave. The project is in an undeveloped and undisturbed area. Cover consists of mostly natural ground.

GENERAL LOCATION MAP: SEE TITLE SHEET

DETAILED SITE MAP: SEE THIS SHEET

THE LOCATION AND DESCRIPTION OF CONCRETE AND ASPHALT PLANTS:

NAME OF RECEIVING WATERS: Rio Grande

A COPY OF TPDES CGP TXR150000 IS INCLUDED IN THE SWP3 FILE.

REMARKS: This project will require a Construction Site Notice.

401 WATER QUALITY CERTIFICATION: YES☐ NO☒

2.BEST MANAGEMENT PRACTICES (BMPs):

EROSION AND SEDIMENT CONTROLS: Erosion and sediment controls have been designed to retain sediment on-site.Controls shall be utilized to reduce off site transport of suspended sediments and pollutants if it is necessary to pump water from the site.Control measures shall be installed per specifications or as directed. Sediment must be removed from controls per the plan requirements or manufacturers recommendations,but no later than the time that design capacity has been reduced by 50%. If sediment escapes the site, accumulations will be removed to minimize further negative effects. Controls will be developed to limit the off site transportation of litter, construction debris, and construction materials.

INTERIM(INT), PERMANENT(PER), AND 401 CERTIFICATION BMP'S:

EROSION CONTROLS:	401	INT	PER
☐ Compaction & Tracking of slopes			
☐ Diversion Dike			
☐ Preserve Existing Vegetation			
☐ Soil Stabilization			
☐ Permanent Vegetation			
☐ No Erosion Controls are Required.			

SEDIMENT CONTROLS:	401	INT	PER
☒ Silt Fence		X	
☒ Rock Berm			
☐ Buffer Zones			
☐ Vegetative Filter Strips			
☐ Ditch Block			
☐ No Sediment Controls are Required.			

POST CONSTRUCTION TSS CONTROL (401 CERTIFICATION ONLY):

- ☐ Vegetation Lined Drainage Ditch
- ☐ Retention/Irrigation
- ☐ Erosion Control Compost
- ☐ Grassy Swales
- ☐ Vegetative Filter Strips
- ☒ No Post Construction TSS Control Required.

SEQUENCE OR SCHEDULE OF IMPLEMENTATION:

1. Install erosion control measures
2. Install silt fences
3. Maintain erosion and sediment control devices until all disturbed areas are established.
4.
5.
6.

The El Paso District of the Texas Department ofTransportation uses Site-Manager, a computer based construction record-keeping system. Documentation describing major grading activities, temporary or permanent cessation of construction,and stabilization measures is a part of this system and is incorporated by reference into this SWPPP.

Stabilization measures must be initiated within 14 days when practicable in portions of the site where construction has temporarily or permanently ceased, if earth disturbing activities will not be resumed within 21 days.

3.STRUCTURAL CONTROL PRACTICES:

Structural control practices for this project are listed elsewhere herein.

4.PERMANENT STORM WATER CONTROLS:

Structural control practices installed during construction will be maintained and inspected after construction has ceased on the site and until final stabilization is attained. Unless specified in the plans, after project acceptance TxDOT will assume maintenance responsibilities for the controls and measures. Other permanent controls include existing and proposed riprap at culvert inlets and outlets,diversion dikes, swales, retaining walls, and other similar devices.

5.OTHER CONTROLS:

OFF-SITE VEHICLE TRACKING OF SEDIMENTS AND THE GENERATION OF DUST: The off site vehicle tracking of sediments shall be minimized by removal of excess dirt from the road and at entrances to the work site. The generation of dust will be minimized as directed by the Project Engineer by dampening haul roads and covering haul trucks with a tarpaulin.

CONSTRUCTION AND WASTE MATERIALS: The contractor will maintain a clean, orderly construction site.Construction waste including trash, rubble, scrap and vegetation shall be disposed of in lidded dumpsters or in a manner approved by the Project Engineer. Disposal methods must meet Federal, State, and Local waste management guidelines. No construction waste will be buried or burned on site. Spoils disposal, material storage, and materials resulting from the destruction of existing roads and structures shall be stored in areas designated by the Project Engineer and protected from run-off. All waterways shall be cleared of temporary embankment,temporary bridges,matting, false work, piling, debris, or other obstructions placed during construction operations, that are not part of the finished work, as soon as practicable.All excess soil generated by the construction will be collected and disposed of by the contractor. Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, water body, or stream bed.

POLLUTANT SOURCES FROM AREAS OTHER THAN CONSTRUCTION: Staging areas and vehicle maintenance areas shall be located and constructed in a manner to minimize the runoff of pollutants. If potential pollutant sources are identified after the start of construction, controls and measures shall be implemented as directed by the Project Engineer.

DEDICATED ASPHALT PLANTS: Asphalt or asphaltic material for this project will be produced off site.If the project requires a dedicated asphalt plant and the plant within 1 mile of the project limits it will be considered an off site PSL. Consideration shall be given to on site plant and storage facilities and measures implemented as directed by the Project Engineer.

DEDICATED CONCRETE PLANTS: Cement or Concrete material for this project will be produced off site. If the project requires a dedicated concrete plant and the plant is within 1 mile of the project limits it will be considered an off site PSL. Consideration shall be given to on site plant and storage facilities and measures implemented as directed by the Project Engineer. Concrete trucks shall be washed or washed out in locations designated by the Project Engineer. The locations shall be protected by a berm sufficient to contain all waste and wash water.Wash water shall not be allowed to enter any storm drainage system or waterway. The residual material and contaminated soil shall be collected and disposed of in accordance with Federal, State, and Local guidelines. Staging areas and vehicle maintenance areas shall be located and constructed in a manner to minimize the runoff of pollutants.

HAZARDOUS MATERIALS AND SPILL REPORTING: The contractor shall take appropriate measures to prevent, minimize, and control the spillage or leakage of hazardous materials and any associated wastes on site and in maintenance and staging areas. hazardous materials shall include but are not limited to paints, acids, solvents, asphalt products, chemical additives, curing compounds, oils, fuels, and lubricants. Hazardous materials shall not be stored, accumulated, or transported in open containers subject to precipitation or spillage, but shall be stored,accumulated, or transported in closed containers of the type recommended by the manufacturer. In the event of a spill the Project Engineer should be contacted immediately.All spills shall be immediately cleaned and any contaminated soil removed and disposed of in accordance with Local, State, and Federal laws. Fuel tanks shall be protected by a secondary containment, such as a lined berm, capable of containing 1.5 times the capacity of the tank, or as approved by the Project Engineer.

OFF SITE PSLs: All off site project specific locations including dedicated asphalt plants, concrete plants, or utility installations, required by the contractor, are the contractor's responsibility. The contractor shall secure all permits required by local, state, or federal laws for off site PSLs. The contractor shall provide diagrams and areas of disturbance for all PSL's within 1 mile of the project.

SANITARY FACILITIES: All sanitary or septic wastes that are generated onsite shall be treated and disposed of in accordance with state and local regulations. Raw sewage or septage shall not be discharged or buried on site. Precaution shall be taken to prevent illicit discharges to storm water. Licensed waste management contractors shall be required to dispose of sanitary waste. Porta johns will be required for the construction site or as directed by the Project Engineer.

VELOCITY DISSIPATION DEVICES: Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as shown in the plans or as directed by the Project Engineer to provide a non-erosive flow velocity from the structure to a watercourse so that the natural physical and biological characteristics and functions are maintained and protected.

6.APPROVED STATE AND LOCAL PLANS:

This SWP3 is consistent with requirements specified in applicable sediment and erosion site plans or site permits, or storm water management site plans or permits approved by federal, state, or local officials.

7.MAINTENANCE:

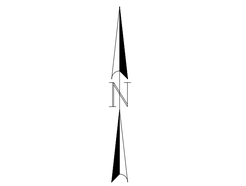
Control measures shall be properly installed according to specifications. If inspections or other information indicates a control has been installed, used, or is performing inadequately,the contractor must replace or modify the control as soon as practicable after discovery. Control measures shall be maintained in effective operating condition. If inspections determine that BMPs are not operating effectively maintenance will be performed as necessary to continue the effectiveness of the controls. Maintenance must be accomplished as soon as practicable. Controls adjacent to creeks, culverts, bridges, and water crossings shall have priority. Controls that have been disabled, run over, removed, or otherwise rendered ineffective must be corrected immediately upon discovery.

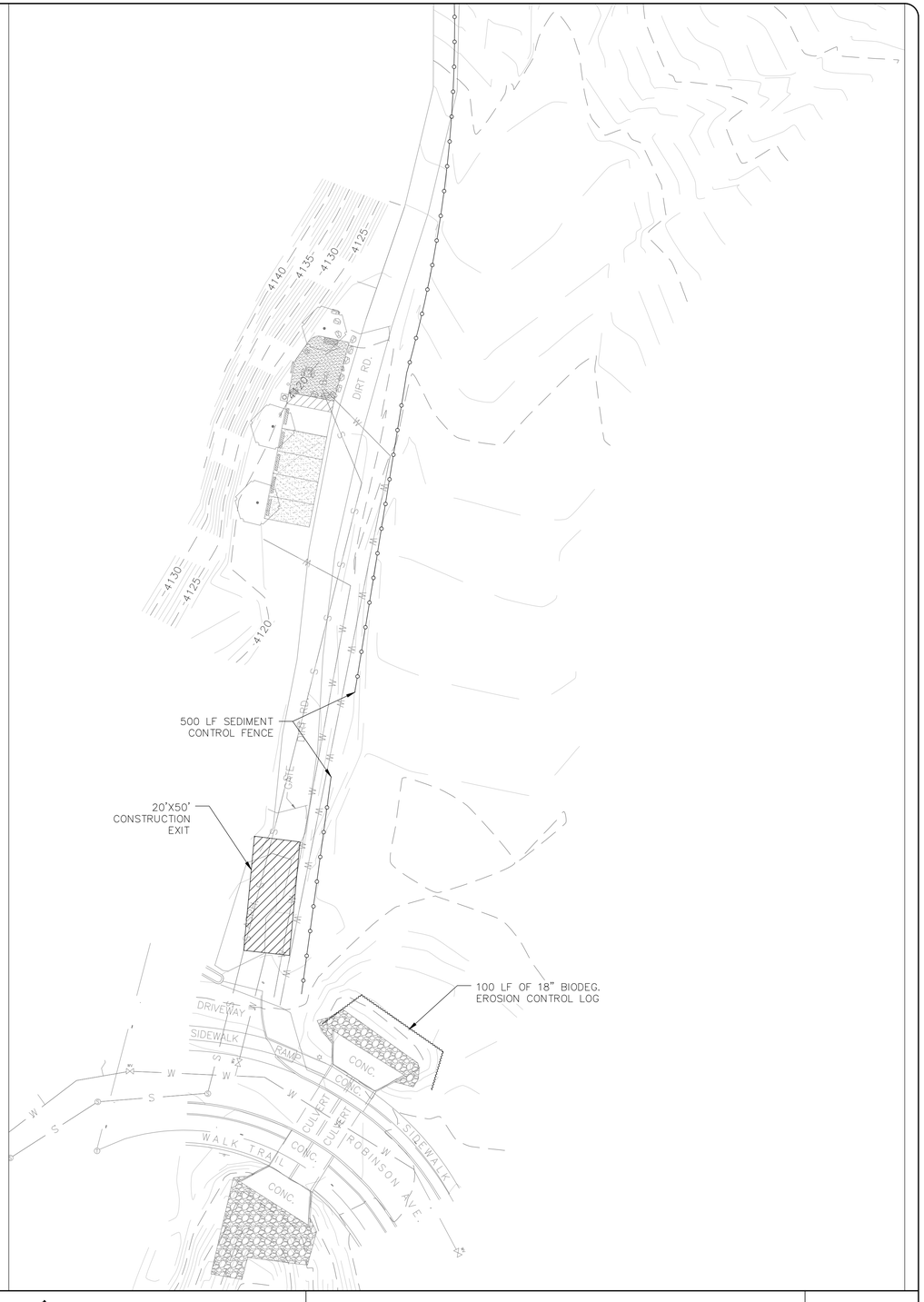
8.INSPECTION OF CONTROLS:

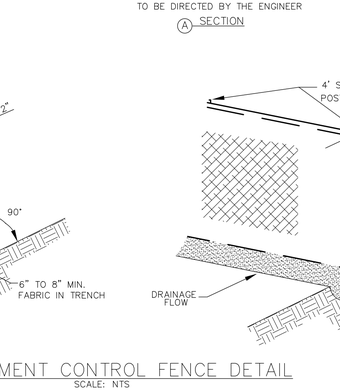
A TxDOT inspector will inspect disturbed areas of the site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, and structural controls for evidence of, or the potential for, pollutants entering the drainage system. Sediment and erosion controls measures identified in the SWP3 will be inspected to ensure that they are operating correctly. Locations where vehicles enter or exit the site will be inspected for evidence of off-site vehicle tracking. Inspections will be conducted every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. The SWP3 will be modified based on the result of these inspections. Revisions will be completed within 7 Calendar days following the inspection. Revised implementation schedules will be described in the SWP3 and implemented as soon as practicable. Rain gages will be maintained on site for the duration of the project. Reports summarizing the scope of the inspections are included in the SWP3 file.

9.NON-STORM WATER COMPONENTS:

The contractor shall be required to implement appropriate pollution prevention controls and measures for all eligible non-storm water components of the discharge as approved and directed by the Project Engineer.

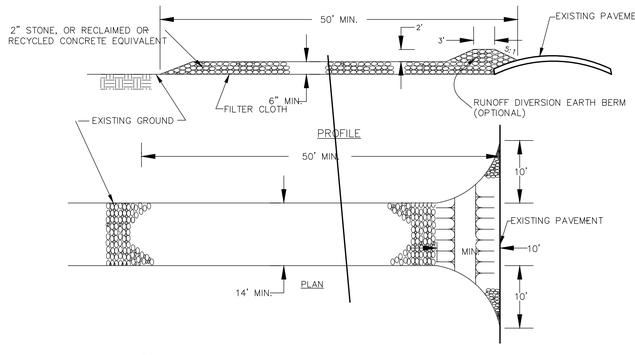






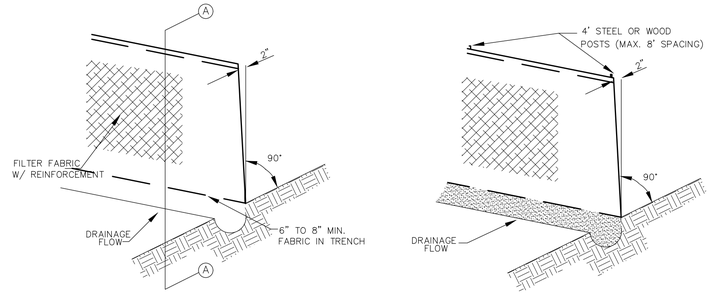
REINFORCEMENT AND FILTER FABRIC TO BE DIRECTED BY THE ENGINEER

A SECTION



2 C-X STABILIZED CONSTRUCTION ENTRANCE DETAIL

SCALE: NTS

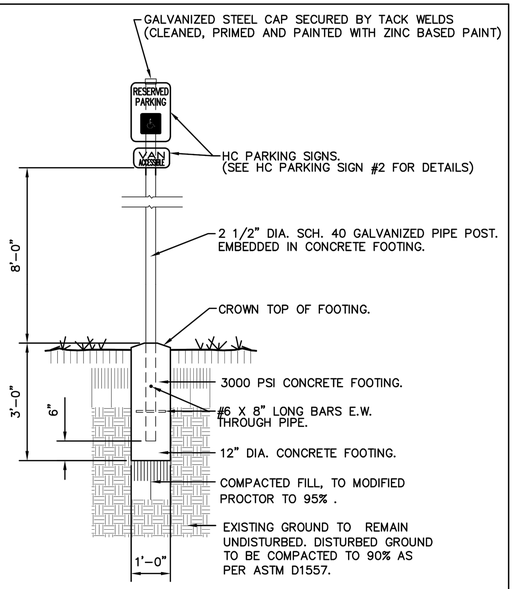


1 C-X SEDIMENT CONTROL FENCE DETAIL

SCALE: NTS

						SCALE	ENGINEER'S SEAL	HUITT-ZOLLARS INC.	el paso WATER	PALISADES TRAILHEAD	JOB NO. R09-0421.02
						HOR:	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF FLOYD JOHNSON P.E. # 95506 ON MAY 31, 2022 IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES	ENGINEERING / SURVEYING 5822 CROMO DRIVE, SUITE 210 EL PASO, TEXAS 79912 PH. (915) 587-4339 / FAX (915) 587-5247 FIRM REGISTRATION F-761	1154 HAWKINS BLVD. EL PASO TEXAS 79925 (915) 594-5500	STORMWATER POLLUTION PREVENTION PLAN	C-106
						VER:					SHEET NO. 6 OF 9
						DWG:					
						DATE: 5/31/2022					
						DESIGN BY:					
						DRAWN BY: LV					
	TB	REV.	DATE	BY:	DESCRIPTION	CHKD. BY: FJ					

H:\ROW\R09\0421.02 - PALISADES CANYON\WATER MAPS AND TRAILHEAD\PLAN\04 A1200608.01 - SWP3.DWG



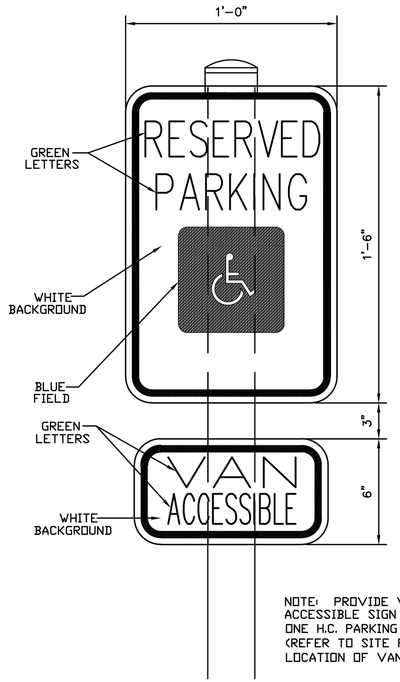
DETAIL NO.
500

CITY OF EL PASO
PARKS & RECREATION

DETAIL NAME

HC PARKING SIGN #1

NTS



NOTE: PROVIDE VAN ACCESSIBLE SIGN AT ONE H.C. PARKING SPACE (REFER TO SITE PLAN FOR LOCATION OF VAN SPACE).

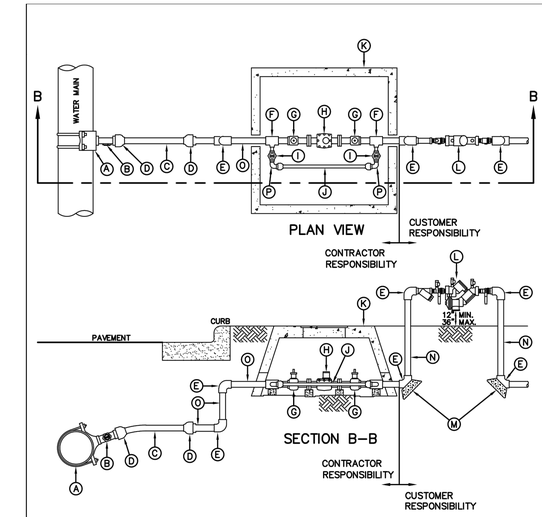
DETAIL NO.
501

CITY OF EL PASO
PARKS & RECREATION

DETAIL NAME

HC PARKING SIGN #2

NTS



GENERAL NOTES:

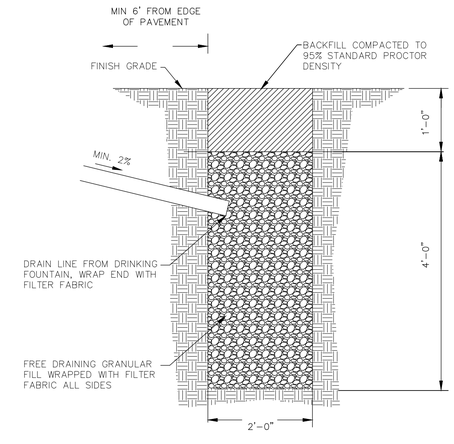
1. DETAIL SHOWN FOR 1½" SERVICE; INSTALLATION SIMILAR FOR 2" SERVICE EXCEPT FOR SIZES OF PIPE, FITTINGS, METER AND METER BOX. WHEN SPECIFIED A 1" BY-PASS METER SHALL BE INSTALLED WITH A 1½" SERVICE, A 2" SERVICE SHALL INCLUDE A 1" BY-PASS METER.
2. WHERE NO CURB EXISTS, METER IS TO BE SET NEAR PROPERTY LINE OR AT DESIGNATED LOCATION.
3. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY PIPE, FITTINGS, AND METER BO: REQUIRED. IT SHALL BE THE RESPONSIBILITY OF THE PRIVATE OWNER TO HAVE A CERTIFIED PLUMBER INSTALL A BACKFLOW PREVENTER AND EXTEND SERVICE LINE ON DISCHARGE SIDE OF METER.
4. THE EPWU WILL FURNISH AND INSTALL THE MET

CONSTRUCTION KEY NOTES:

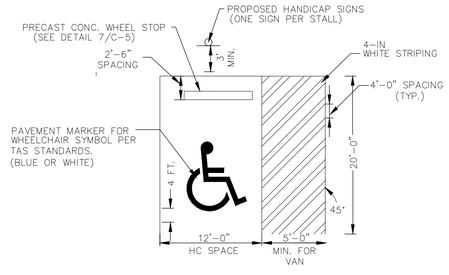
A. SERVICE SADDLE
B. 1½" TAP WITH CORPORATION STOP
C. 1½" COPPER PIPE. FOR 1½" & 2" SERVICE INSTALLATIONS, ALL PIPING SHALL BE COPPER AND ALL FITTINGS SHALL BE BRONZE UNLESS OTHERWISE SPECIFIED.
D. 1½" FLARED CONNECTION
E. 1½" FEMALE THREADED 90° ELBOW
F. 1½"x1" FEMALE THREADED TEE
G. 1½" FLANGED BY FEMALE THREADED BALL VALV
H. 1½" TURBINE METER
I. 1" FEMALE THREADED CURB VALVE WITH PADLC WINGS
J. 1" COPPER
K. METER BOX TYPE "C" (SEE DETAIL 293) FOR 1½ OR TYPE "D" (SEE DETAIL 294) FOR 2".
L. 1½" BACKFLOW PREVENTER WHEN REQUIRED BY EPWU
M. THRUST BLOCKING AS REQUIRED
N. 1½" BRASS PIPE-LENGTH AS REQUIRED
O. 1½" THREADED NIPPLE
P. 1" FLARED BY MALE THREADED 90° ELBOW

STANDARD DETAIL	DATE: 4/21/1998 REV: 5/10/2017	SERVICE LINE 1½" AND 2" INSTALLATION BY CONTRACTOR N.T.S.	el paso WATER	DETAIL 290-S

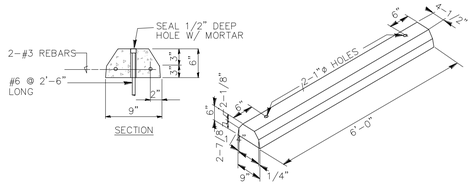
1 SERVICE LINE 1/2" AND 2" INSTALLATION BY CONTRACTOR
N.T.S.



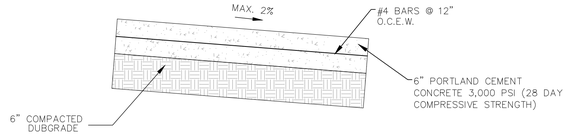
3 SUMP DRAIN
N.T.S.



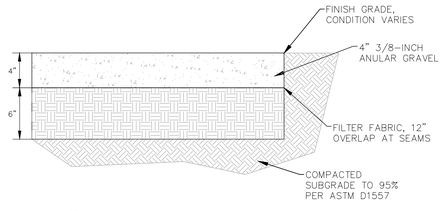
4 HANDICAP SPACES DETAIL
N.T.S.



5 PRECAST CONCRETE WHEEL STOP
N.T.S.



2 GRAVEL (TYP.)
N.T.S.



6 GRAVEL (TYP.)
N.T.S.

						SCALE
						HOR:
						VER:
						DWG:
						DATE: 5/31/2022
						DESIGN BY:
						DRAWN BY: LV
	TB	REV.	DATE	BY:	DESCRIPTION	CHKD. BY: FJ

ENGINEER'S SEAL

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FLOYD JOHNSON
P.E. # 95506

ON

MAY 31, 2022
IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

HUITT-ZOLLARS INC.
ENGINEERING / SURVEYING
5822 CROMO DRIVE, SUITE 210
EL PASO, TEXAS 79912
PH. (915) 587-4339 / FAX (915) 587-5247
FIRM REGISTRATION F-761

el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

PALISADES TRAILHEAD

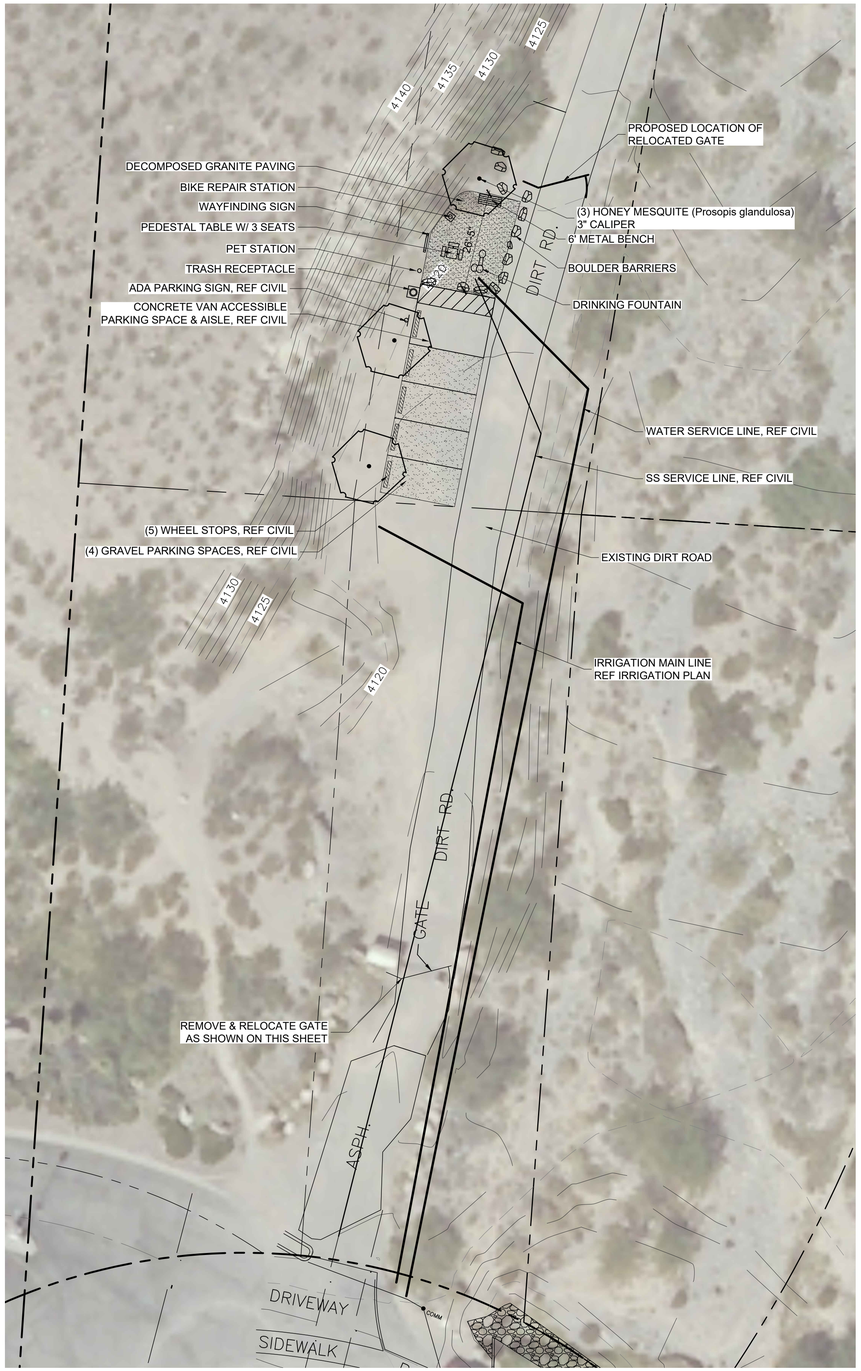
CIVIL DETAILS

JOB NO. R09-0421.02

C-107

SHEET NO. 7 OF 9

J:\PROJ_PATHWORK\PALISADES TRAILHEAD\PLANS\CIVIL\PLOTTED_PLOTS AND TRAILHEAD\210506R09-01 - DETAILS.DWG



N

0 20'

Scale: 1" = 20'

PLANTING NOTES

1. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND SHALL AVOID DAMAGE TO ALL UTILITIES DURING THE COURSE OF THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY AND ALL DAMAGE TO UTILITIES, STRUCTURES, SITE APPURTENANCES, ETC. WHICH OCCURS AS A RESULT OF THE LANDSCAPE CONSTRUCTION AT NO COST TO THE OWNER.
2. PLANTS SHALL BE HEALTHY, FREE OF PESTS AND DISEASE, AND IN FLOURISHING CONDITION AT THE END OF THE WARRANTY PERIOD. PLANTS SHALL BE FREE OF DEAD AND DYING BRANCHES AND BRANCH TIPS, AND SHALL BEAR FOLIAGE OF NORMAL DENSITY, SIZE, AND COLOR. STANDARDS SET FORTH IN "AMERICAN STANDARD FOR NURSERY STOCK" REPRESENT GUIDELINE SPECIFICATIONS ONLY AND SHALL CONSTITUTE MINIMUM QUALITY REQUIREMENTS FOR PLANT MATERIAL.
3. ALL PLANTS MUST BE CONTAINER GROWN OR BALLED AND BURLAPPED AS INDICATED ON THE PLANT LIST.
4. ALL TREES MUST BE STRAIGHT TRUNKED AND FULL HEADED, UNLESS SPECIFIED OTHERWISE, AND MUST MEET ALL REQUIREMENTS SPECIFIED ON PLANS AND DETAILS.
5. ALL TREES AND SHRUBS SHALL BE INSTALLED PER STANDARD PLANTING DETAILS.
6. ALL PLANTS ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT BEFORE, DURING, AND AFTER CONSTRUCTION.
7. ALL PLANTING AREAS MUST BE COMPLETELY MULCHED WITH A LAYER OF ROCK MULCH PER DETAILS. MULCH SHALL NOT BE PLACED IMMEDIATELY ADJACENT TO TREE TRUNKS, BUT SHALL BE KEPT AT LEAST 3" FROM ROOT COLLAR AT THE SOIL LINE.
8. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON THE THESE PLANS BEFORE PRICING THE WORK.
9. THE CONTRACTOR IS RESPONSIBLE TO REMOVE LITTER, DEBRIS AND WASTE MATERIAL DAILY.
10. THE CONTRACTOR IS RESPONSIBLE FOR FULLY MAINTAINING ALL PLANTING MATERIAL (INCLUDING BUT NOT LIMITED TO: WATERING, SPRAYING, MULCHING, FERTILIZING, WEEDING, ETC.) IN ALL PLANTING AREAS AND LAWN AREAS UNTIL THE WORK IS ACCEPTED IN TOTAL BY THE OWNER.
11. PLANTS SHALL BE WARRANTED FOR A PERIOD OF ONE YEAR AFTER THE DATE OF WRITTEN APPROVAL OF SUBSTANTIAL COMPLETION BY THE OWNER. WHEN THE WORK IS ACCEPTED IN PARTS, THE WARRANTY PERIODS SHALL EXTEND FROM EACH OF THE PARTIAL ACCEPTANCES TO THE TERMINAL DATE OF THE LAST WARRANTY PERIOD. THUS, ALL WARRANTY PERIODS TERMINATE AT ONE TIME.
12. ALL UNSUITABLE SOIL CONDITIONS ARE TO BE REMEDIED TO ELIMINATE HARD SOILS, STONY SOILS, HIGH CALICHE SOILS, CLAY SOILS, COARSE SANDS AND CONTAMINATED SOILS TO A MINIMUM DEPTH DEPICTED IN PLANTING PLANS, PLANTING DETAILS AND PROJECT TECHNICAL SPECIFICATIONS: 329113 SOIL PREPARATION.

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR:
VER:
DWG:
DATE:
DESIGN BY:
DRAWN BY: JH
CHKD. BY: CS

ENGINEER'S SEAL

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JEFFREY B. HOLBA
TX RLA #2378

ON

MAY 31, 2022
IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

HUITT-ZOLLARS INC.
ENGINEERING / SURVEYING
5822 CROMO DRIVE, SUITE 210
EL PASO, TEXAS 79912
PH. (915) 587-4339 / FAX (915) 587-5247
FIRM REGISTRATION F-761

el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

PALISADES TRAILHEAD

LANDSCAPE PLAN

JOB NO. R09-0421.02

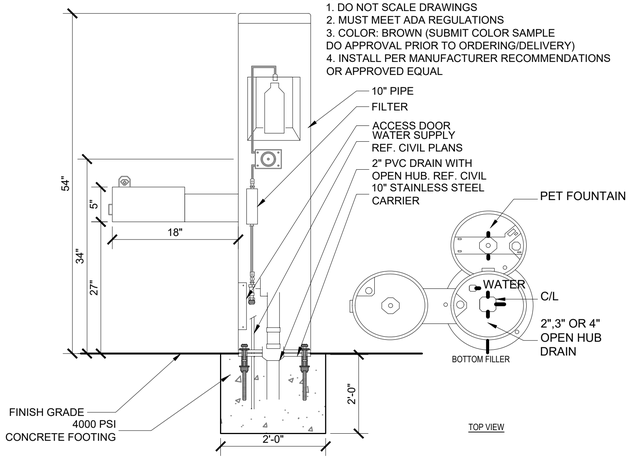
L-1

SHEET NO. X OF #

\\ELPASO\DOCS\PROJ\R0906008.01 - PALISADES STORMWATER IMPTS AND TRAILHEAD\TRAILHEAD\LANDSCAPE LAYOUT\SHEETS\LANDSCAPE.DWG

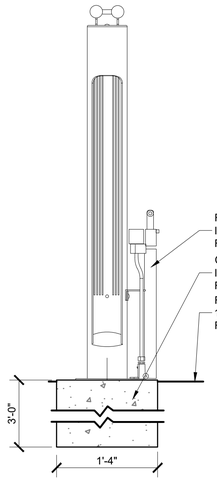
MDF MODEL 10155SMSS WITH PET FOUNTAIN

NOTES:
1. DO NOT SCALE DRAWINGS
2. MUST MEET ADA REGULATIONS
3. COLOR: BROWN (SUBMIT COLOR SAMPLE DO APPROVAL PRIOR TO ORDERING/DELIVERY)
4. INSTALL PER MANUFACTURER RECOMMENDATIONS OR APPROVED EQUAL



1 DRINKING FOUNTAIN

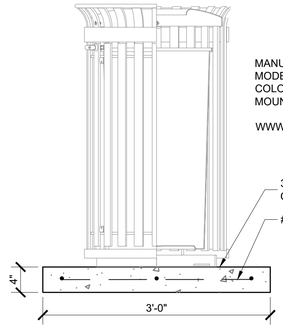
SCALE: 1" = 1'-0"



MANUFACTURER: DERO
MODEL: FIXIT WITH AIR KIT 2
MOUNT: SURFACE MOUNT
COLOR: BRONZE (SUBMIT COLOR SAMPLE FOR APPROVAL PRIOR TO ORDERING/DELIVERY)
INSTALL PER MANUFACTURER'S RECOMMENDATIONS OR APPROVED EQUAL

4 BIKE REPAIR STATION

SCALE: 1" = 1'-0"



MANUFACTURER: DUMOR
MODEL: RECEPTACLE 438
COLOR: BRONZE
MOUNTING: SURFACE MOUNT

WWW.DUMOR.COM

3000 PSI
CONCRETE PAD

3 REBAR AT 15" O.C.E.W.

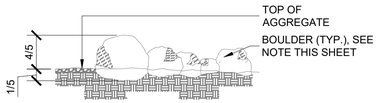
6 TRASH RECEPTACLE

SCALE: 1" = 1'-0"

BOULDER NOTE:
BOULDERS SHALL VARY IN HEIGHT, WIDTH, AND DEPTH. OVER ALL LENGTHS AND WIDTH 3' TO 5'. HEIGHTS TO VARY FROM 24" TO 36". COLOR & TYPE TO MATCH EXISTING.

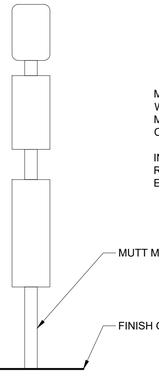
BOULDERS SHALL BE FIRMLY IMBEDDED IN PLACE AND NOT WOBBLE OR OR ROCK WHEN STEPPED UPON.

CONTRACTOR SHALL NOT LEAVE OPEN VOIDS UNDER BOULDERS.



7 BOULDER DETAIL

SCALE: 1" = 1'-0"



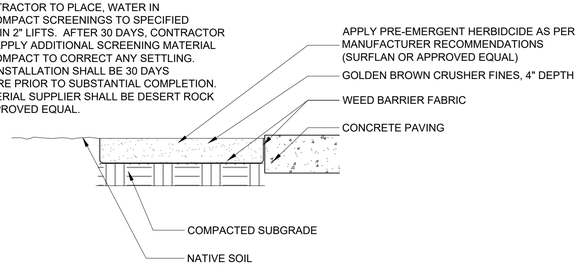
MANUFACTURER:MUTT MITT
WWW.MUTTMITT.COM OR APPROVED EQUAL
MODEL: BEST CHOICE
COLOR: DARK GREEN

INSTALL PER MANUFACTURER RECOMMENDATIONS OR APPROVED EQUAL

2 PET STATION

SCALE: 1" = 1'-0"

NOTES:
1. CONTRACTOR TO PLACE, WATER IN AND COMPACT SCREENINGS TO SPECIFIED DEPTH IN 2" LIFTS. AFTER 30 DAYS, CONTRACTOR TO REAPPLY ADDITIONAL SCREENING MATERIAL AND COMPACT TO CORRECT ANY SETTLING. FIRST INSTALLATION SHALL BE 30 DAYS OR MORE PRIOR TO SUBSTANTIAL COMPLETION.
2. MATERIAL SUPPLIER SHALL BE DESERT ROCK OR APPROVED EQUAL.

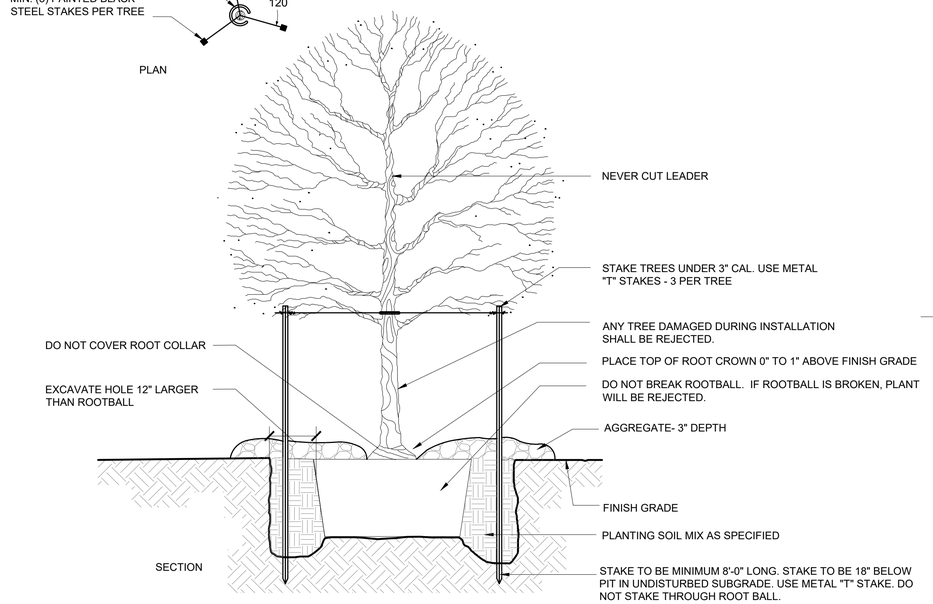


3 COMPACTED AGGREGATE

SCALE: 1" = 1'-0"

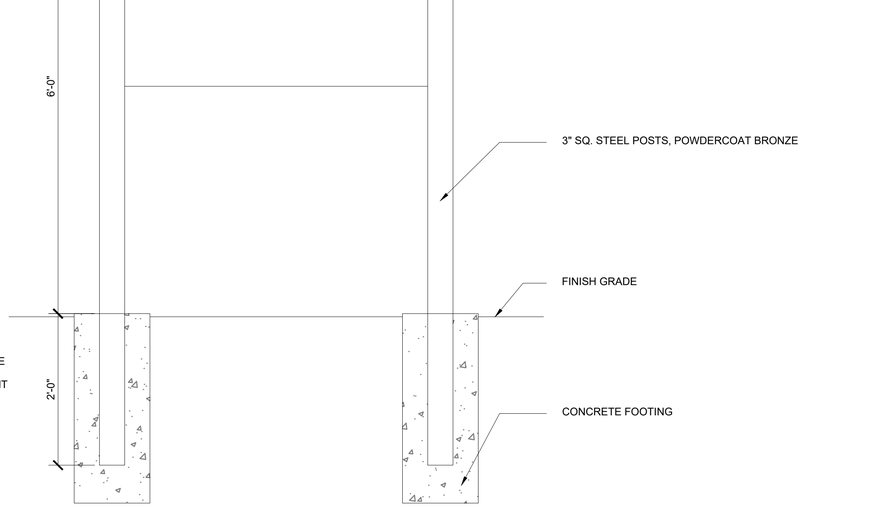
NOTE:

1. ROOTBALL SIZE SHALL CONFORM TO THE 2004 AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS.
2. ROOTBALL WIDTH SHOULD BE DETERMINED BY THE FOLLOWING: 10" OF ROOTBALL FOR EACH CALIPER INCH OF TREE TRUNK.
3. ROOTBALL DEPTH IS 2/3rds OF THE DIAMETER.



5 SHADE TREE DETAIL

SCALE: 1" = 1'-0"



8 WAYFINDING SIGN DETAIL

SCALE: 1" = 1'-0"

	TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR:
VER:
DWG:
DATE:
DESIGN BY:
DRAWN BY: JH
CHKD. BY: CS

ENGINEER'S SEAL

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TX RLA #2378

ON

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EL PASO TEXAS 79925
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PALISADES TRAILHEAD

LANDSCAPE DETAILS

JOB NO. R09-0421.02

L-2

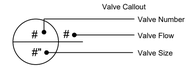
SHEET NO. X OF

\\ELPASO\JOBS\PROJ\R09\0608.01 - PALISADES STORMWATER MPTS AND TRAILHEAD\TRAILHEAD\LANDSCAPE LAYOUT\SHEETS\DETAILS.DWG

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL
25 50 10 20	HUNTER PCB 10

SYMBOL	MANUFACTURER/MODEL
	HUNTER ICV-G-DC 1"
	BRASS 1" SHUT OFF VALVE
MV	HUNTER ICV-G-DC 1"
D	DRAIN VALVE
BF	FEBCO 860 3/4"
C	HUNTER XCH-0600-SS
P	HUNTER XCHSPOLE
WS	HUNTER MWS-FR
M	WATER METER 3/4"
	LATERAL: PVC CL 200 SDR 21: 3/4"
	MAINLINE: PVC SCH 40: 1 1/2"
	PIPE SLEEVE: PVC SCHEDULE 40 3"



CRITICAL ANALYSIS

P.O.C. NUMBER: 01
Water Source Information:

FLOW AVAILABLE	
Water Meter Size:	3/4"
Flow Available	10.2 GPM
PRESSURE AVAILABLE	
Static Pressure at POC:	110.00 PSI
Elevation Change:	5.00 ft
Service Line Size:	3/4"
Length of Service Line:	20 ft
Pressure Available:	105.00 psi
DESIGN ANALYSIS	
Maximum Station Flow:	6 GPM
Flow Available at POC:	10.2 GPM
Residual Flow Available:	4.2 GPM
Pressure Req. at Critical Station:	33.46 PSI
Loss for Fittings:	0.03 PSI
Loss for Main Line:	0.28 PSI
Loss for POC to Valve Elevation:	0 PSI
Loss for Backflow:	13.28 PSI
Loss for Master Valve:	2.6 PSI
Loss for Water Meter:	0.75 PSI
Critical Station Pressure at POC:	50.4 PSI
Pressure Available:	105 PSI
Residual Pressure Available:	54.6 PSI

TB	REV.	DATE	BY:	DESCRIPTION

SCALE
HOR:
VER:
DWG:
DATE: 5/31/2022
DESIGN BY:
DRAWN BY: HF
CHKD. BY: CD

ENGINEER'S SEAL

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HARRISON FLORES
TX LI #20369

ON

MAY 31, 2022
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HUITT-ZOLLARS INC.
ENGINEERING / SURVEYING
5822 CROMO DRIVE, SUITE 210
EL PASO, TEXAS 79912
PH. (915) 587-4339 / FAX (915) 587-5247
FIRM REGISTRATION F-761

el paso WATER
1154 HAWKINS BLVD.
EL PASO TEXAS 79925
(915) 594-5500

PALISADES TRAILHEAD

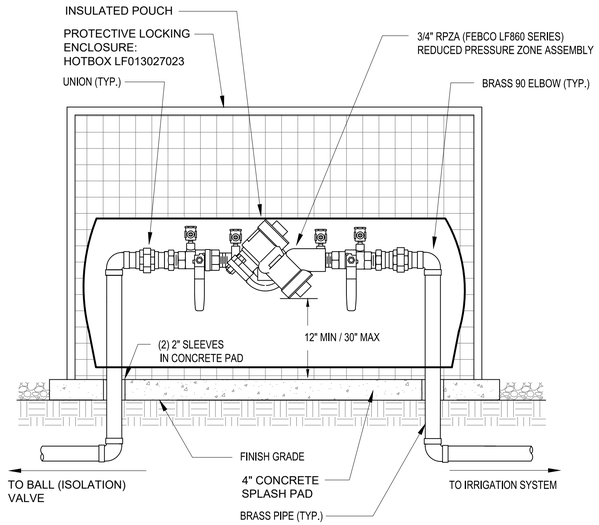
IRRIGATION PLAN

JOB NO.
R09-0421.02

L-3

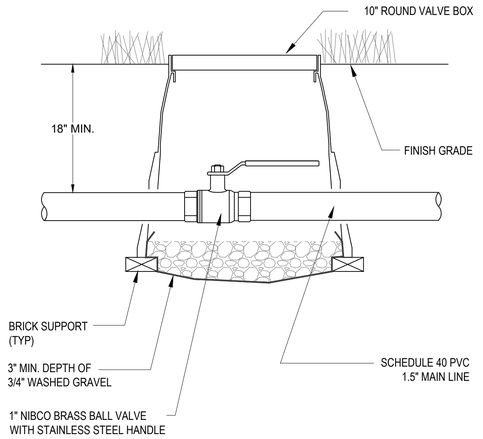
SHEET NO.
1 OF 5

\\VELPASO\JOBS\PROJ\D3008001 - PALISADES STORMWATER, MPTS, AND TRAILHEAD\TRAILHEAD\LANDSCAPE LAYOUT\SHEETS\IRRIGATION.DWG



RPZA BACKFLOW PREVENTER - 3/4"

(N.T.S.)

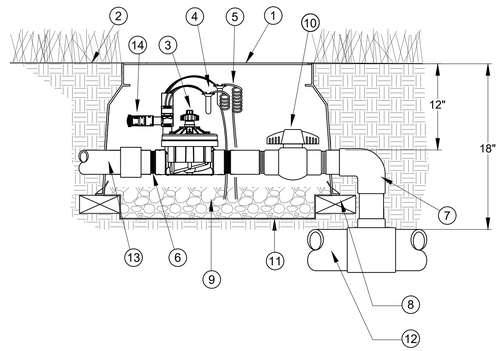


NOTE:

INSTALL AT THE POINTS OF CONNECTION AND WHERE SHOWN TO ISOLATE SECTIONS OF THE IRRIGATION SYSTEM AS NEEDED TO PERFORM MAINTENANCE AND REPAIRS.

ISOLATION VALVE - 1" BRASS VALVE

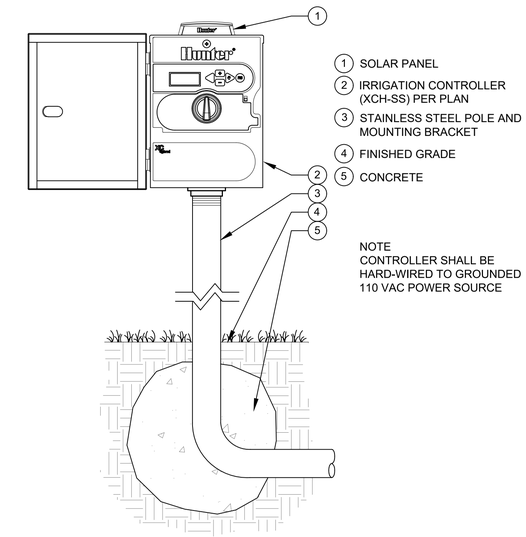
(N.T.S.)



1. 19" X 23" VALVE BOX
2. FINISH GRADE
3. STATION VALVE MODELS ICV-G-DC-101
4. DBRY-6 WATERPROOF CONNECTORS (2)
5. 30" COILED WIRE
6. SCH 80 NIPPLE
7. MAIN LINE & FITTINGS
8. BRICK SUPPORT (TYP)
9. 1 CUBIC FOOT OF 3/4" WASHED GRAVEL - MIN. 4" DEPTH
10. BALL VALVE - SIZED PER CONTROL VALVE
11. LANDSCAPE FABRIC
12. SCH 40 MAIN LINE - 1.5"
13. LATERAL LINE - SEE PLAN FOR SIZE
14. ACCU-SYNC AS-ADJ

1" ICV CONTROL VALVE

(N.T.S.)



HUNTER SOLAR CONTROLLER - XCH-600-SS

(N.T.S.)

J:\EL PASO\DISKS\PROJ\R09\0421.02\01 - PALISADES, STORMWATER MPTS, AND TRAILHEAD\TRAILHEAD\LANDSCAPE LAYOUT\SHEETS\IRRIGATION DETAILS.DWG

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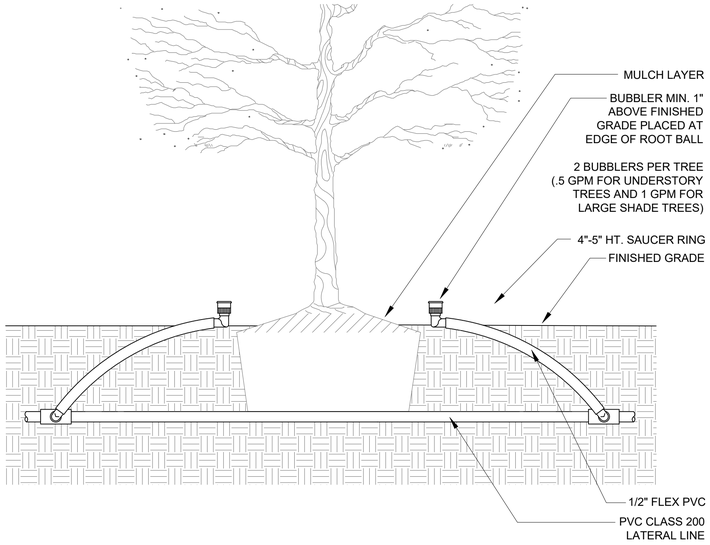
PALISADES TRAILHEAD

IRRIGATION DETAILS

JOB NO. R09-0421.02

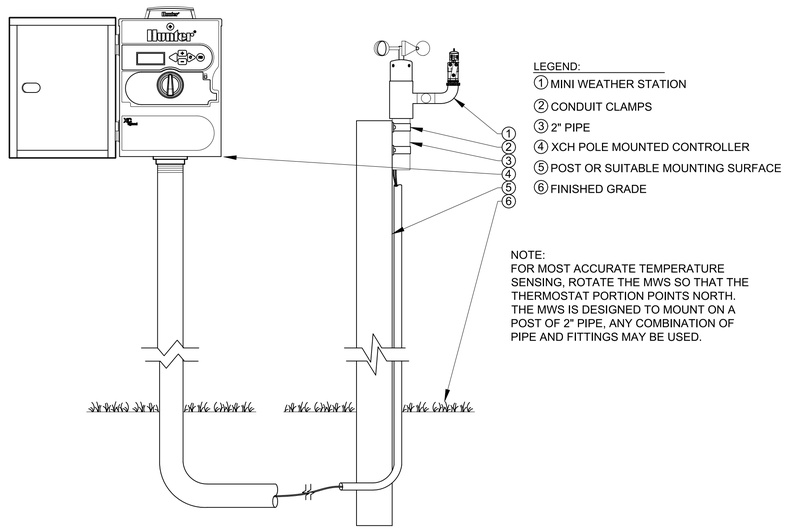
L-4

SHEET NO. 2 OF 5



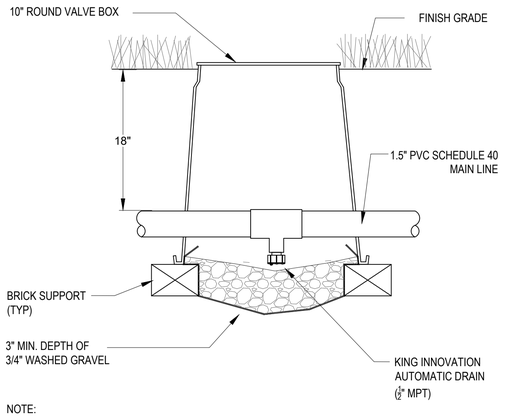
TREE BUBBLERS

(N.T.S.)



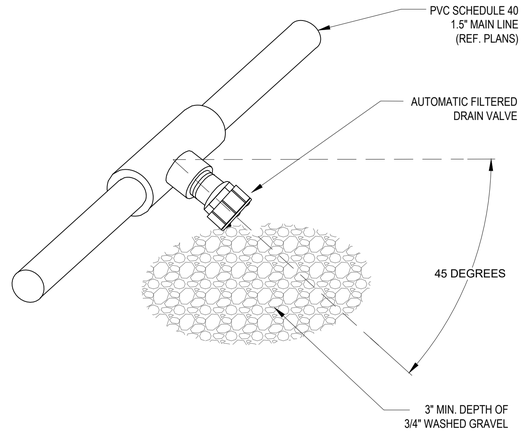
HUNTER MINI WEATHER STATION W/ POST MOUNT

(N.T.S.)



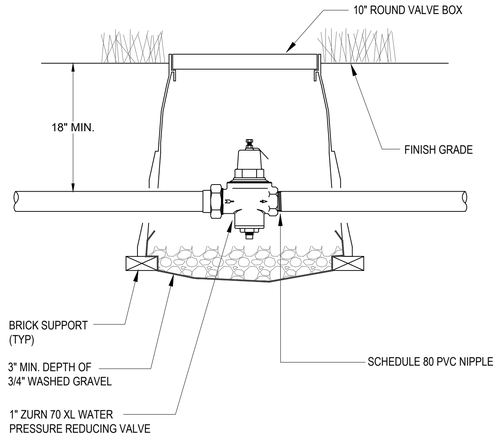
NOTE:

INSTALL AT LOW POINTS, AS SHOWN ON PLAN, OF THE IRRIGATION SYSTEM AND ORIENT THE FITTING AND DRAIN AT A 45 DEGREE ANGLE TOWARD THE GRAVEL.



AUTOMATIC MAIN LINE DRAIN VALVE

(N.T.S.)



NOTE:

INSTALL PRESSURE REGULATING VALVE A MIN OF 6" DOWNSTREAM OF THE BALL VALVE IF THE STATIC PRESSURE READING IS GREATER THAN THE DESIGNED PRESSURE OF 65 PSI.

PRESSURE REDUCER VALVE - ZURN 70 XL

(N.T.S.)

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PALISADES TRAILHEAD

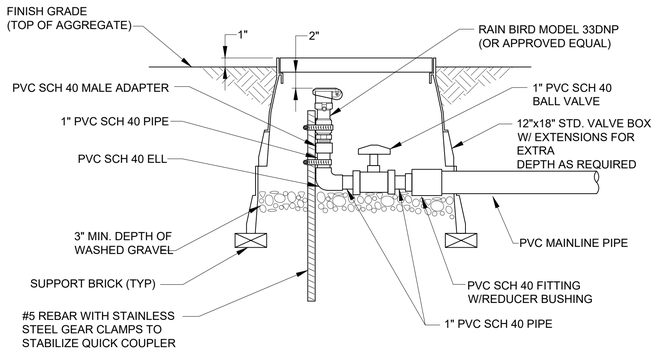
IRRIGATION DETAILS

JOB NO. R09-0421.02

L-5

SHEET NO. 3 OF 5

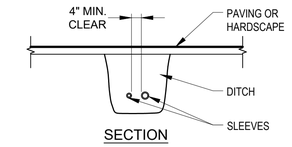
\\ELPASOJDSCVPROJ\CD09\09.01 - PALISADES STORMWATER MPTS AND TRAILHEAD\TRAILHEAD\LANDSCAPE LAYOUT\SHEETS\IRRIGATION DETAILS.DWG



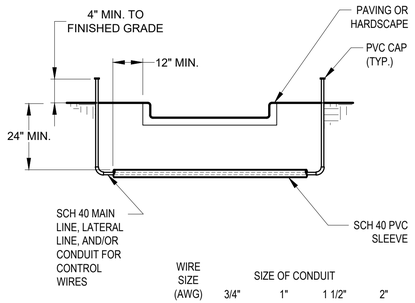
NOTE: QUICK COUPLER LID SHALL BE STAMPED WITH INTERNATIONAL NON-POTABLE WARNING SYMBOL AND "DO NOT DRINK" IN SPANISH AND ENGLISH.

QUICK COUPLER

(N.T.S.)



SECTION



WIRE SIZE (AWG)	SIZE OF CONDUIT 3/4"	1"	1 1/2"	2"
14	5	7	25	40

MAX NO. OF WIRES INSTALLED IN CONDUIT

NOTES:

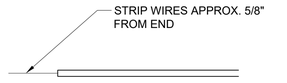
1. IRRIGATION SLEEVES TO BE SCHEDULE 40 PVC UNDER HARDSCAPE FEATURES AND STREETS.
2. SLEEVES TO BE 2X THE DIAMETER OF MAIN LINES, LATERAL LINES, AND CONDUIT.
3. EXTEND AND CAP THE SLEEVED PIPE 4 INCHES MINIMUM ABOVE FINISH GRADE.
4. ALL SLEEVES TO EXTEND 12 INCHES BEYOND THE EDGE OF PAVEMENT.
5. VALVE WIRES TO BE SLEEVED AND BUNDLED WITH TAPE TO BE NO MORE THAN 50% OF THE PIPE DIAMETER.
6. CLEAN BACKFILL, MECHANICALLY TAMP TO 95% COMPACTION.
7. PIPE AND WIRE SHALL BE INSTALLED IN SEPARATE SLEEVES.

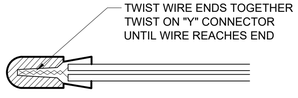
SLEEVE SIZING CHART	
LINE SIZE	SLEEVE SIZE
3/4"	2"
1"	2"
1 1/4"	2 1/2"
1 1/2"	3"
2"	4"

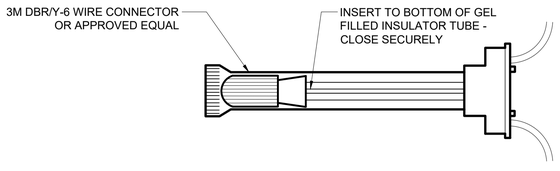
SLEEVES

(N.T.S.)

NOTE: DO NOT LET IRRIGATION CONTROL WIRES SIT IN WATER AT ANY TIME. MAKE WATERPROOF WIRE CONNECTION PRIOR TO APPLYING ANY IRRIGATION WATER ON THE ENTIRE SITE. ENSURE CONTROL WIRE SHOWS NO CORROSION/DAMAGE PRIOR TO SPLICING WIRES. REMOVE CORRODED/DAMAGED CONTROL WIRE AS NECESSARY.

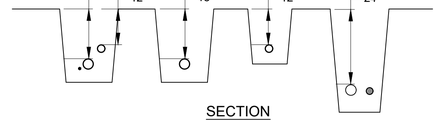




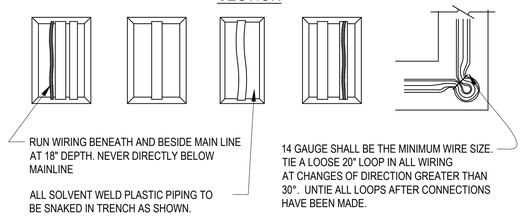


3M WIRE CONNECTOR

(N.T.S.)



SECTION



NOTES:

1. SLEEVE BELOW ALL HARDSCAPE ELEMENTS AND PAVING. REFER TO SLEEVING DETAIL.
2. TAPE A 30 INCH LOOP IN ALL WIRING AT CHANGES OF DIRECTION, IN VALVE BOXES, AND AT WIRE SPLICE LOCATIONS.

PIPE & WIRE TRENCHING

(N.T.S.)

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PALISADES TRAILHEAD

IRRIGATION DETAILS

JOB NO. R09-0421.02

L-6

SHEET NO. 4 OF 5

L:\EPELPASO\DISCV\PROJ\309608.01 - PALISADES, STORMWATER MMTS AND TRAILHEAD\TRAILHEAD\LANDSCAPE LAYOUT\SHEETS\IRRIGATION DETAILS.DWG

IRRIGATION NOTES

1. MAIN LINE AND LATERAL LINES ARE DIAGRAMMATIC. ADJUST ACCORDINGLY TO ACCOMMODATE EXISTING FIELD CONDITIONS.

2. EXTREME CARE SHALL BE EXERCISED IN EXCAVATING AND WORKING NEAR UTILITIES. CONTRACTOR SHALL VERIFY THE LOCATION AND CONDITION OF ALL UTILITIES AND WILL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES.

   THE LICENSED IRRIGATION CONTRACTOR (L.I.C.) IS REQUIRED BY LAW TO NOTIFY ONE OF THE FOLLOWING (2) WORKING DAYS PRIOR TO ANY EXCAVATION:
   A. TEXAS ONE CALL; 800-245-4545
   B. TEXAS EXCAVATION SAFETY SYSTEM (TESS); 800-344-8377
   C. LONE STAR NOTIFICATION CENTER; 800-669-8344

3. ALL MAIN LINE PVC PIPING SHALL BE BURIED TO HAVE A MINIMUM COVER OF 18". ALL LATERAL PVC LINES DOWNSTREAM OF THE VALVE SHALL HAVE A MINIMUM COVER OF 12". ALL PVC SLEEVES FOR WIRES AND PIPE UNDER PAVEMENT SHALL HAVE A MINIMUM COVER OF 24".

4. ALL PVC PIPING SHALL BE INSTALLED SO THE FLOW OF THE WATER DOES NOT EXCEED A VELOCITY OF 5 FT. PER SECOND.

5. ALL PVC PIPING SHALL BE PRIMED WITH A COLOR PRIMER PRIOR TO APPLYING THE PVC CEMENT, IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE, SECTION 316.

6. SCHEDULE 40 PVC FOR MAIN LINES AND SLEEVES, CLASS 200 PVC FOR LATERAL LINES.

7. AT ANY LOW POINT IN THE MAIN LINES, AUTOMATIC DRAIN VALVES ARE TO BE INSTALLED IN A 10" VALVE BOX W/ A GRAVEL SUMP TO FACILITATE DRAINAGE OF SYSTEM DURING FREEZING TEMPERATURES.

8. FOR DRIP ZONES, THE CONTRACTOR SHALL INSTALL FLUSH VALVES AT LOW POINTS TO PREVENT FREEZE DAMAGE. AIR RELIEF VALVES ARE TO BE INSTALLED AT HIGH POINTS OF SUBSURFACE (TURF) AREAS. INDICATOR HEADS SHALL BE INSTALLED WITHIN ONE FOOT OF FLUSH VALVES FOR BOTH PLANTING AND TURF AREAS.

9. VALVE BOXES SHALL BE 12" X 16" FOR STATION / ZONE VALVES AND 24" x 33" FOR THE DOUBLE CHECK ASSEMBLY. QUICK COUPLER VALVE BOXES SHALL HAVE LOCKABLE PURPLE LIDS. ANY MASTER VALVE, QUICK COUPLER, BALL (ISOLATION) VALVE, WIRE JUNCTION, AND RODS FOR CONTROLLER GROUNDING ARE TO BE IN 10" VALVE BOXES. DRIP LINE AIR RELIEF VALVES AND FLUSH LINE VALVES SHALL BE IN 7" VALVE BOXES.

10. A BALL (ISOLATION) VALVE MUST BE INSTALLED UPSTREAM OF ANY QUICK COUPLER CONNECTING A HOSE BIB TO AN IRRIGATION SYSTEM.

11. ALL WIRING FROM CONTROLLER TO THE VALVES SHALL BE GAUGE APPROPRIATE (12 OR 14 AWG) FOR THE DISTANCE BETWEEN THE VALVES AND CONTROLLER, A SINGLE CONDUCTOR, DIRECT BURIAL APPROVED, AND IN CONDUIT UNDER PAVEMENT AND AT THE CONTROLLER. WATERPROOF CONNECTORS ARE TO BE USED ON ALL WIRE CONNECTIONS. WIRING MUST ALSO BE BURIED WITH A MINIMUM OF COVER OF 6".

12. IRRIGATION HEADS SHALL NOT BE INSTALLED CLOSER THAN 4" FROM ANY HARDSCAPE, SUCH AS A BUILDING FOUNDATION, SIDEWALK, BACK OF CURB, FENCE, PAVERS, OR STONE WITH MORTAR.

13. IRRIGATION HEADS SHALL NOT LEAN AND NOT BE INSTALLED HIGHER OR LOWER THAN FINISHED GRADE. ANTI-DRAIN CHECK VALVES TO BE INSTALLED AT HEADS WITH MORE THAN A 2 FT ELEVATION CHANGE TO PREVENT LOW HEAD DRAINAGE.

14. CONTRACTOR SHALL NOT DISTURB THE ROOTS OF EXISTING TREES. THERE SHALL BE NO MACHINE TRENCHING BELOW THE DRIP LINE OF EXISTING TREES.

15. STATIC PRESSURE IS DESIGNED PER 65 PSI AT THE POINTS OF CONNECTION. CONTRACTOR SHALL VERIFY ACTUAL STATIC PRESSURE PRIOR TO STARTING WORK AND NOTIFY LANDSCAPE ARCHITECT IF PRESSURE IS LESS THAN 55-65 PSI. IF STATIC PRESSURE IS GREATER THAN 15% OF 55-65 PSI, THE CONTRACTOR SHALL INSTALL A PRESSURE REGULATING VALVE AFTER THE METER.

16. CONTRACTOR SHALL PROVIDE A NEW OR ADJUSTED SEASONAL WATERING SCHEDULE TO THE OWNER'S REPRESENTATIVE AT COMPLETION OF THE IRRIGATION SYSTEM INSTALLATION PER STATE REGULATION.

17. CONTRACTOR SHALL PROVIDE COPIES OF MANUFACTURER'S LITERATURE, CERTIFICATIONS, AND/OR OPERATION INSTRUCTIONS FOR THE CONTROLLER AND ACCESSORIES, BACKFLOW PREVENTER, RAIN / FREEZE AND FLOW SENSORS, HEADS, VALVES (MANUAL, AUTOMATIC AND REMOTE CONTROL), DRIP LINE AND ACCESSORIES.

18. THE CONTRACTOR SHALL BE A REGISTERED LICENSED IRRIGATOR IN THE STATE OF TEXAS. CONTRACTOR MUST CONFORM TO ALL CODES AS STATED IN SECTION 34 OF THE TEXAS WATER CODE AND THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ).

19. A LICENSED IRRIGATOR OR LICENSED IRRIGATION TECHNICIAN SHALL BE ON THE SITE AT ALL TIMES TO SUPERVISE THE INSTALLATION OF THE IRRIGATION SYSTEM.

20. PRELIMINARY REVIEW OF COMPLETED INSTALLATION WILL BE MADE BY THE LANDSCAPE ARCHITECT PRIOR TO BACKFILLING OF TRENCHES AND DURING HYDROSTATIC TESTING.

21. FINAL REVIEW SHALL BE MADE IN CONJUNCTION WITH THE FINAL REVIEW OF THE LAWN, SHRUB GROUNDCOVER, AND TREE PLANTINGS.

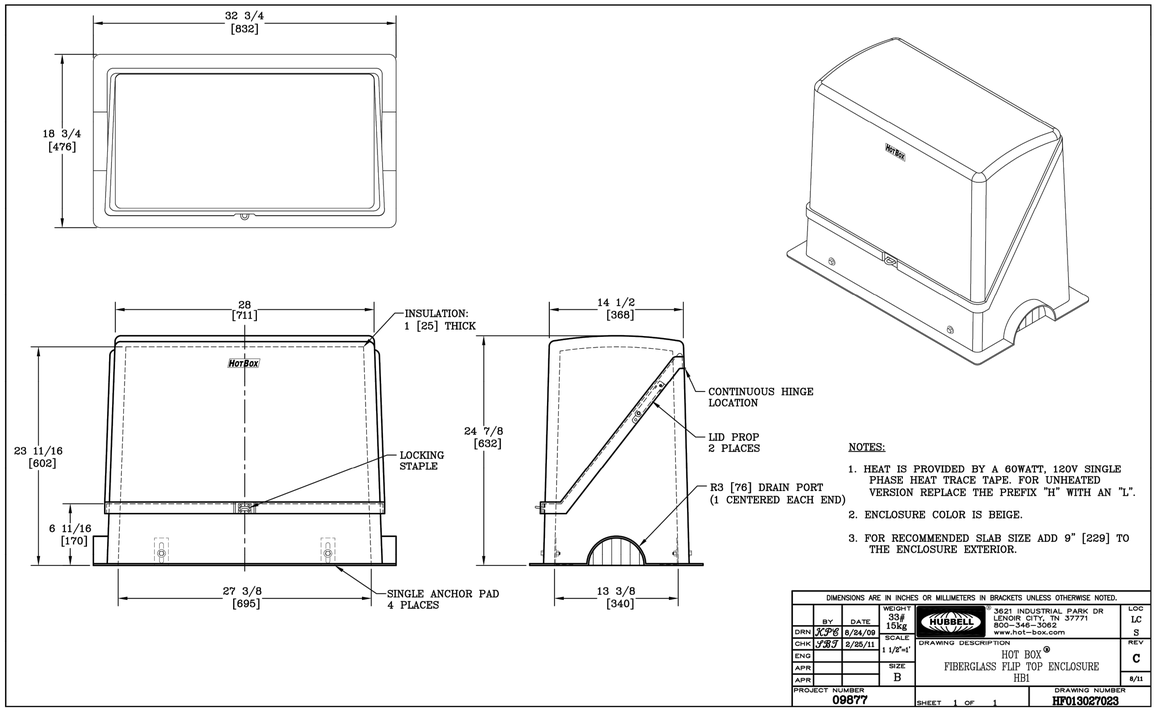
22. CONTRACTOR SHALL OBTAIN PERMIT, PAY ALL FEES AND GIVE ALL NECESSARY NOTICES FOR THE COMPLETION OF WORK.

23. CONTRACTOR SHALL PROVIDE AN AS-BUILT DRAWING FOR THE COMPLETE IRRIGATION SYSTEM IN ACCORDANCE WITH THE GENERAL AND SPECIAL CONDITIONS.

24. CONTRACTOR SHALL REMOVE ALL DEBRIS FROM ENTIRE WORK AREA PRIOR TO FINAL ACCEPTANCE TO THE SATISFACTION OF THE OWNER.

25. CONTRACTOR SHALL WARRANT ALL WORK FOR ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE AGAINST DEFECTS IN MATERIAL, EQUIPMENT AND WORKMANSHIP.

26. UNDERGROUND PIPING INSTALLED USING OPEN DITCH CONSTRUCTION MUST BE MARKED WITH COLOR-CODED CONCRETE OR PLASTIC TAPE (TWO STRANDS OF 4-INCH MINIMUM WIDTH) PLACED ABOVE PIPING CROSSING WITHIN THE EASEMENT. COLOR CODES MUST COMPLY WITH AMERICAN PUBLIC WORKS ASSOCIATION STANDARDS. A MINIMUM VERTICAL SEPARATION OF 18 INCHES MUST BE MAINTAINED BETWEEN THE BOTTOM OF ATMOS ENERGY'S FACILITIES AND TOP OF THIRD PARTY'S MARKING MATERIAL



NOTES:

1. HEAT IS PROVIDED BY A 60WATT, 120V SINGLE PHASE HEAT TRACE TAPE. FOR UNHEATED VERSION REPLACE THE PREFIX "H" WITH AN "L".
2. ENCLOSURE COLOR IS BEIGE.
3. FOR RECOMMENDED SLAB SIZE ADD 9" [229] TO THE ENCLOSURE EXTERIOR.

DIMENSIONS ARE IN INCHES OR MILLIMETERS IN BRACKETS UNLESS OTHERWISE NOTED.

	BY	DATE	WEIGHT	HUBBELL	LOC
DRN	KPG	8/24/09	33# 15kg	3621 INDUSTRIAL PARK DR LENOIR CITY, TN 37771 800-346-3062 www.hot-box.com	LC S
CHK	VBT	2/25/11	SCALE 1 1/2"=1'	DRAWING DESCRIPTION	REV
ENG				HOT BOX® FIBERGLASS FLIP TOP ENCLOSURE HB1	C
APR			SIZE B		8/11
APR					
PROJECT NUMBER 09877				SHEET 1 OF 1	DRAWING NUMBER HFG13027023

						SCALE
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PALISADES TRAILHEAD

IRRIGATION DETAILS

JOB NO. R09-0421.02

L-7

SHEET NO. 5 OF 5

\\ELPASO\DOCS\PROJ\R0906808.01 - PALISADES STORMWATER MPTS AND TRAILHEAD\TRAILHEAD\LANDSCAPE LAYOUT\SHEETS\IRRIGATION DETAILS.DWG

ATTACHMENT D – TEMPLATE FORMS FOR AFFIRMATION OF COMPLIANCE

- Qualification and Financial Disclosure Documentation
- Affidavit of No Legal Proceedings or Judgements
- Affidavit of Ability to Obtain All Necessary Permits, Licenses, and Other Necessary Authorizations to Work in Texas
- Affidavit of No Debarment from Bidding
- Affidavit of No Fraud or Felony Collusion
- Code of Ethics Compliance Form

Qualification and Financial Disclosure Statement

(Note: Proposer may provide their responses using this form or in a format of their own choosing)

1. ORGANIZATION

1.1 How many years has your organization been in business as a Contractor?

1.2 How many years has your organization been in business under its present business name?

1.2.1 Under what other or former names has your organization operated?

1.3 If your organization is a corporation, answer the following:

1.3.1 Date of incorporation: _____

1.3.2 State of incorporation: _____

1.3.3 President's name: _____

1.3.4 Vice-president's name(s): _____

_____

1.3.5 Secretary's name: _____

1.3.6 Treasurer's name: _____

1.4 If your organization is a partnership, answer the following:

1.4.1 Date of organization: _____

1.4.2 Type of partnership (if applicable):_____

1.4.3 Name(s) of general partner(s):

_____

1.5 If your organization is an individually owned sole proprietorship, answer the following:

1.5.1 Date of organization: _____

1.5.2 Name of owner: _____

1.6 If your organization is a Joint Venture, answer the following:

1.6.1 Date of Organization: _____

1.6.2 Names of Joint Venture Partner Organizations: _____

_____

1.6.3 Identify the Managing Partner

of the Joint Venture: _____

1.7 If the form of your organization is other than those listed above, describe it and name the principals:

2. LICENSING

2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable. Indicate name, and license number(s) and expiration dates.

2.2 List jurisdictions in which your organization's partnership or trade name is filed.

3. EXPERIENCE

3.1 List the categories of work that your organization normally performs with its own forces.

3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)

3.2.1 Has your organization ever failed to complete any work awarded to it?

3.2.2 Are there any judgments, claims, arbitration proceedings, or suits pending or outstanding against your organization or its officers?

3.2.3 Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years?

3.3 Within the last five years, has any officer or principal of your organization been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)

3.4 On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.

3.4.1 State total worth of work in progress and under contract.

4. REFERENCES

4.1 Trade References:

4.2 Bank References:

4.3 Surety:

Name and telephone number of Bonding Company: _____

Name, telephone, and address of Agent: _____

_____

5. FINANCING

5.1 Financial Statement

5.1.1 Attach the most recent audited financial statement including your organization's latest balance sheet and income statement showing the following items:

a. Cash Flow Statement

b. Notes to Financial Statement

c. Auditor Statement

d. Comparison Statements, if available

5.1.2 Name and address of firm preparing attached financial statement, and date thereof.

5.1.3 Is the attached financial statement for the identical organization named on page one?

5.1.4 If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidiary).

5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

6. SIGNATURE

6.1 To be executed by a Principal of the firm authorized to certify the foregoing information:

_____, being duly sworn, deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

6.2 Dated at _____ this _____ day of_____, 20____.

Name of Organization: _____

By: _____

(Printed Name) _____

Title: _____

Affidavit of No Legal Proceeding or Judgements

Insert addressee Information

The undersigned hereby certifies that, the undersigned firm has no legal proceeding and judgments or any contingent liability within the past 10 years, that could adversely affect the firm's ability to perform the contractual and financial commitments to the Owner for the above listed project.

Dated: _____ By:_____
(Signature of Proposer's Authorized Representative)

By:_____
(Printed Name of Proposer's Authorized Representative)

Title:_____
(Title of Proposer's Authorized Representative)

For:_____
(Proposer's Corporate Identity)

_____
(Notary Public)

State of _____

County of _____

On this_____day of_____, 20___, before me appeared_____, personally known to me to be the person described in and who executed this_____and acknowledged that (she/he) signed the same freely and voluntarily for the uses and purposed therein described.

In witness thereof, I have hereunto set my hand and affixed my official seal the day and year last written above.

_____

Notary Public in and for the state of _____

(seal)

_____

(Printed Name)

Affidavit of Ability to Obtain All Necessary Permits, Licenses, and Other Necessary Authorizations to Work in Texas

Insert Addressee Information

The undersigned hereby certifies that, the undersigned firm and its affiliates have the ability to obtain all necessary permits, licenses and other necessary authorizations to work in Texas.

Dated:_____ By:_____
(Signature of Proposer's Authorized Representative)

By:_____
(Printed Name of Proposer's Authorized Representative)

Title:_____
(Title of Proposer's Authorized Representative)

For:_____
(Proposer's Corporate Identity)

_____
(Notary Public)

State of_____

County of_____

On this_____day of_____, 20___, before me appeared

_____, personally known to me to be the person described in and who executed this_____and acknowledged that (she/he) signed the same freely and voluntarily for the uses and purposes therein described.

In witness thereof, I have hereunto set my hand and affixed my official seal the day and year last written above.

_____

Notary Public in and for the state of _____

(seal)

_____

(Printed Name)

Affidavit of No Debarment from Bidding

Insert Addressee Information

The undersigned hereby certifies that, the undersigned firm has not been debarred within the past 10 years, nor under consideration for disbarment on public contracts by the federal government or any state.

Dated: _____ By: _____

(Signature of Proposer's Authorized Representative)

By: _____

(Printed Name of Proposer's Authorized Representative)

Title: _____

(Title of Proposer's Authorized Representative)

For: _____

(Proposer's Corporate Identity)

_____

(Notary Public)

State of _____

County of _____

On this_____day of_____, 20___, before me appeared_____, personally known to me to be the person described in and who executed this_____and acknowledged that (she/he) signed the same freely and voluntarily for the uses and purposed therein described.

In witness thereof, I have hereunto set my hand and affixed my official seal the day and year last written above.

_____

Notary Public in and for the state of _____

(seal)

_____

(Printed Name)

Affidavit of No Fraud or Felony Conviction

Insert Addressee Information

The undersigned hereby certifies that, no officer of the undersigned firm nor officer of any affiliates of the undersigned firm have ever been convicted of fraud or a felony by any federal or state court.

Dated: _____ By: _____

(Signature of Proposer's Authorized Representative)

By: _____

(Printed Name of Proposer's Authorized Representative)

Title: _____

(Title of Proposer's Authorized Representative)

For: _____

(Proposer's Corporate Identity)

_____

(Notary Public)

State of _____

County of _____

On this_____day of_____, 20___, before me appeared_____, personally known to me to be the person described in and who executed this_____and acknowledged that (she/he) signed the same freely and voluntarily for the uses and purposed therein described.

In witness thereof, I have hereunto set my hand and affixed my official seal the day and year last written above.

_____

Notary Public in and for the state of _____

(seal)

_____

(Printed Name)

EPWater Code of Ethics
Compliance Form

The undersigned, acknowledges that, the undersigned firm has read EPWater's Code of Ethics and are familiar with, and agree to be bound by, the standards that govern EPWater's ethical conduct of their consultants, contractors and suppliers. The undersigned, is responsible for compliance and administration of the Code, including any ethics matters that may arise thereunder. If those obligations reside with another representative of the firm, the contact information for that person has been provided below.

The undersigned acknowledges the code will be followed throughout the CMAR procurement for the **Will Ruth Pond and Conveyance Improvements and Palisades Stormwater System and Trailhead Improvements**. The undersigned further acknowledges this code has been distributed to those persons who work for or represent the Contractor on EPWater matters. They have read this Code and are familiar with, and agree to be bound by, the standards that govern the conduct of Contractors. Further, if selected for this project, the Contractor shall distribute this Code (i) immediately to all personnel engaged by the Contractor who will be working on or representing the Contractor on EPWater matters.

_____ _____

Signature Title

_____ _____

Printed Name Contractor Entity Name

Contractor Contact for Code administration: _____

Phone number: _____ Email address: _____

(Notary Public)

State of _____

County of _____

On this_____day of_____, 20___, before me appeared_____, personally known to me to be the person described in and who executed this_____and acknowledged that (she/he) signed the same freely and voluntarily for the uses and purposed therein described.

In witness thereof, I have hereunto set my hand and affixed my official seal the day and year last written above.

_____

Notary Public in and for the state of _____

_____

(seal) (Printed Name)

ATTACHMENT E – COST PROPOSAL FORMS (SUBMITTED IN SEPARATE ENVELOPE)

Cost Element 1 – Preconstruction Services Fee

Minimum Fee	$ 35,000
Additional Fee (Proposer's discretion, cannot be negative)	$_____
Total Preconstruction Services Fee	$_____

Cost Element 2 – Salaried employee labor multiplier

Provide the labor multiplier to be applied to raw salary rates for project site employees and home office staff supporting the project _____

Cost Element 3 - Contractors Construction Fee Percentage

The following table mirrors the format for development of the GMP proposal as described within the Preconstruction Services Agreement. Given this format for development of the GMP, Proposer is to identify their proposed Contractors Fee as a percentage value. This Fee will be the actual fee applied in the Project's GMP Proposal to be submitted at the conclusion of the projects' Preconstruction Phase.

GMP Cost Element	Amount
1. Contractors General Conditions (See note 1)	$ ----------
2. Cost of Work (See note 2)	
2.1. Early Work Packages	$ ----------
2.2. Balance of Work	$ ----------
2.3. Contractors Contingency	$ ----------
2.4. Contractors Fee (see note 3)	$ ----------
GMP Subtotal (Items 1 + 2)	$ ----------
3. Allowances (See note 4)	
3.1. Item	$ ----------
3.2. Item	$ ----------
3.3. Item	$ ----------
Allowance Subtotal (Item 3)	$ ----------
GMP Total (Items 1 + 2 + 3)	$ ----------

Contractor Fee: %_____

Notes (see next pages):

1. Contractor's General Conditions costs are defined within the Preconstruction Services Agreement, Exhibit 5.2.1, article 2.
2. Cost of work are those costs defined within the Preconstruction Services Agreement, Exhibit 5.2.1, article 1.
3. Contractors Fee is defined within Preconstruction Services Agreement Article 1.
4. Allowances are defined within Preconstruction Services Agreement Article 1.

EXHIBIT 5.2.1
ELEMENTS OF THE GMP
(DRAFT)

1. Cost of the Work.

The term "Cost of the Work" shall mean costs reasonably and actually incurred by Contractor in the proper performance of the Work. The Cost of the Work shall include only the following:

.1 Wages of construction workers directly employed by Contractor to perform the Work at the Site or, with Owner's agreement, at locations off the Site.

.2 A multiplier applied to the wages of the employees of Contractor covered under Section 1.1 above as compensation for the costs incurred or customarily paid for employee benefits, project-related bonuses, premiums, taxes, insurance, contributions and assessments required by law, and/or collective bargaining agreements. The multiplier for craft/field, hourly-based on-site personnel shall be _____%. The multiplier for all off-site personnel shall be _____%.

.3 Payments properly made by Contractor to Subcontractors for performance of portions of the Work, including any bond premiums incurred by Subcontractors.

.4 Costs incurred by Contractor in repairing or correcting defective, damaged or nonconforming Work (including any warranty or corrective Work performed after Substantial Completion), provided that such Work was beyond the reasonable control of Contractor, or caused by the ordinary mistakes or inadvertence, and not the negligence, of Contractor or those working by or through Contractor, and provided further that no Contractor's Fee shall apply to such costs. If the costs associated with such Work are recoverable from insurance or Subcontractors, Contractor shall exercise reasonable commercial efforts to obtain recovery from the appropriate source and provide a credit to Owner if recovery is obtained, net of any costs and expenses reasonably incurred by Contractor in pursuing and obtaining such recovery.

.5 Costs, including transportation, inspection, testing, storage and handling, of materials, equipment and supplies incorporated or reasonably used in completing the Work.

.6 Costs (less salvage value) of Equipment and Materials, supplies, temporary facilities, machinery, equipment and hand tools not customarily owned by the workers that are not fully consumed in the performance of the Work and which remain the property of Contractor, including the costs of transporting, inspecting, testing, handling, installing, maintaining, dismantling and removing such items.

.7 Rental charges and the costs of transportation, installation, minor repairs and replacements, dismantling and removal of temporary facilities, machinery, equipment and hand tools not customarily owned by the workers, which are provided by Contractor at the Site, whether rented from Contractor or others, and incurred in the performance of the Work.

.8 Fuel and utility costs incurred in the performance of the Work.

.9 Costs for Governmental Approvals, permits, royalties, licenses, tests, and inspections incurred by the Contractor as a requirement of the Contract Documents.

.10 The cost of defending suits or claims for infringement of patent rights arising from the use of a particular design, process, or product required by the Owner, paying legal judgments against Contractor resulting from such suits or claims, and paying settlements with the Owner's consent, provided that no Contractor's Fee shall apply to such costs.

.11 Costs incurred in preventing damage, injury or loss in case of an emergency affecting the safety of persons and property.

.12 Premiums for the Performance and Payment Bonds, and Builder's Risk insurance.

.13 Sales, use or similar taxes, tariffs, or duties incurred in the performance of the Work.

.14 Other costs reasonably and properly incurred in the performance of the Work to the extent approved in writing by Owner.

2. <u>Contractor's General Conditions</u>.

The term "Contractor's General Conditions" shall mean Contractor's costs reasonably and actually incurred by Contractor for supervisory, construction management and overhead-related items in connection with the proper performance of the Work and which are not covered by the Cost of the Work. Contractor's General Conditions shall include only the following, unless specifically agreed upon otherwise by Owner and Contractor during the development of the GMP Proposal and execution of the Construction Contract.

.1 Base wages or salaries of Contractor's supervisory and administrative personnel engaged in the performance of the Work and who are located at the Site or working off-Site to assist in the production or transportation of Equipment and Materials, or any material or equipment necessary for the Work.

.2 A multiplier applied to the wages of the employees of Contractor covered under Section 2.2 above as compensation for the costs incurred or customarily paid by Contractor for employee benefits, project-related bonuses, premiums, taxes, insurance, contributions and assessments required by law, and/or collective bargaining agreements. The multiplier for professional, salary-based on-site personnel shall be _____%. The multiplier for craft/field, hourly-based on-site personnel shall be _____%. The multiplier for all off-site personnel shall be _____%.

.3 Costs of removal of debris and waste from the Site not performed or required to be performed by Subcontractors.

.4 The reasonable costs and expenses incurred in establishing, operating and demobilizing the Site office, including the cost of facsimile transmissions, long distance telephone calls, postage and express delivery charges, telephone service, photocopying, reasonable petty cash expenses.

.5 Vehicles for the transport of persons, such as passenger cars and pick-up trucks, to the extent used by any of Contractor's personnel while performing their Project-related responsibilities.

.6 Accounting and data processing costs related to the Work where previously identified and approved by Owner.

7.3 Non-Reimbursable Costs.

The Cost of the Work and Contractor's General Conditions shall not include the following:

.1 Salaries and other compensation for Contractor personnel stationed at Contractor's principal or branch offices, except as specifically provided for in Sections 2.1 and 2.2 above.

.2 Expenses of Contractor's principal office and offices other than the Project Site office.

.3 Overhead and general expenses, except for Contractor's General Conditions.

.4 Bonuses, profit sharing, thrift or similar plans paid to employees of Contractor, whether or not such employee worked on the Project, except as set forth in Sections 1.2 and 2.2 above.

.5 The cost of Contractor's capital used in the performance of the Work.

.6 Insurance premiums incurred or paid by Contractor, other than the Builder's Risk insurance.

.7 Any costs not specifically set forth in the Cost of the Work (Section 1) and Contractor's General Conditions (Section 2).

.8 Costs that would cause the GMP to be exceeded.

.9 Costs and expenses incurred to obtain any Governmental Approval, permit, license, registration, or other approval, or fee or charge incurred, in connection with the general operations of Contractor and not required specifically and exclusively for the performance of the Work.

.10 Any cost or expense incurred in connection with the performance of the Preconstruction Agreement.

ATTACHMENT F – PROPOSAL TEMPLATE FORMS

Key Personnel Resume Template Requirements

Resumes are limited to one page in length and shall cover the following six topics. Proposers shall utilize the following resume template for key personnel resumes identified in Part 3 of RFP section 6.

<table>
<tr><td rowspan="2">Photograph</td><td>Staff Name and
Project Role</td></tr>
<tr><td>Summary of Experience
Years of experience, types of projects experience with alternative project delivery methods, technical and managerial skills</td></tr>
<tr><td>Education:
• List…

Licensing and Certifications:
• List…

Professional and Technical Affiliations:
• List…

Expected Time Commitment:
• Preconstruction %
• Construction %</td><td>Prior Project Experience
Identify the project name, location, project size, delivery model, major elements of work and any unique challenges to construction. Describe staff member’s project role, and responsibility on the project and how this experience is relevant to the staff member’s role on the Will Ruth Pond and Conveyance Improvements and Palisades Stormwater System and Trailhead Improvements Project. If an alternative delivery project, elaborate on the staff member’s specific responsibilities during preconstruction and construction phases of the project.</td></tr>
</table>

Reference Project Experience Template Requirements

Reference project descriptions are limited to one page in length. Proposers shall organize their information consistent with the following template.

<table>
<tr><td colspan="3">Project Name
Role of Proposer</td></tr>
<tr><td colspan="2">Photo(s)</td><td>Owner Name:

Project Location:

Owner reference and contact information:
• Name and title
• Address
• Phone
• Email

Engineer:

Delivery Model:

Contract Type (i.e. cost plus, fixed price, GMP)</td></tr>
<tr><td colspan="3">Project Summary</td></tr>
<tr><td colspan="3">Project Features, Highlights and Relevance to the Project</td></tr>
<tr><td>Construction Cost
• Initial
• Final</td><td>Change orders
• Value
• Percentage of original cost</td><td>Completion Date
• Scheduled
• Actual</td></tr>
</table>

Reference Project Experience Summary Table Template

Proposers shall utilize the following template to develop their Project Experience Summary Table.

Project name, Owner, and location	Project cost ($)	Year completed	Project delivery model	Type of facility (i.e. Dam, Pond, etc.)	Other relevant criteria selected by Proposer

ATTACHMENT G – CMAR CONTRACT TEMPLATES

STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT

THIS AGREEMENT (this "Agreement") is made this ___ day of _____, 202_ ("Effective Date"), by and between El Paso Water Utilities – Public Service Board, a component unit of the City of El Paso, Texas ("Owner"), and _____, a corporation organized under the laws of the state of _____ ("Contractor"), for certain services related to a construction project known as the "_____" ("Project").

WITNESSETH:

WHEREAS, Owner and Contractor entered into a Preconstruction Services Agreement dated _____, 202_, whereunder Contractor provided preconstruction services for the Project; and

WHEREAS, as part of its preconstruction services under the Preconstruction Services Agreement, Contractor submitted to Owner a proposal to perform the construction of the Project on a guaranteed maximum price basis ("GMP Proposal") for the work or for a portion of the work ("Initial GMP Proposal); and

WHEREAS, on or about _____, Owner and Contractor agreed upon the terms of the GMP Proposal (or Initial GMP Proposal), for a portion of the work and Owner issued Contractor a notice of intent to award this Agreement; and

WHEREAS, on or about _____, the Public Service Board of the City of El Paso, Texas approved the award of this Agreement to Contractor; and

WHEREAS, Contractor has fulfilled all conditions precedent to the award of this Agreement, including but not limited to providing Owner with requisite performance and payment bonds.

NOW, THEREFORE, in consideration of the mutual covenants and obligations contained herein, Owner and Contractor hereby agree as follows:

ARTICLE 1-WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents.

ARTICLE 2- THE PROJECT

2.01 The Project is described as the _____ Project ("Project").

ARTICLE 3-CONSTRACTOR'S RESPONSIBLITIES

3.01 The Contractor shall perform all preconstruction, procurement, construction, start-up and performance testing services required by the Contract Documents. The Contractor shall provide all material, equipment, tools, labor, and supervision and coordination necessary to complete the Work in full accord with and reasonably inferable from the Contract Documents. The Contractor shall be responsible for its own construction means, methods, techniques, sequences, and procedures unless the Contract Documents provide other specific instructions or requirements.

The Contractor shall permit only fit and skilled persons to perform the Work. The Contractor shall enforce safety procedures, discipline, security, and good order among persons performing all

SAMPLE

aspects of the Work. The Contractor shall maintain good order and cleanliness at the site.

3.02 General Responsibilities

A. The Contractor shall comply with any and all applicable licensing requirements in the jurisdiction where the Project is located.

B. The Contractor, with the assistance of the Owner, shall prepare and file documents required to obtain necessary approvals of governmental authorities having jurisdiction over the Project.

C. The Contractor shall designate in writing a representative who is authorized to act on the Contractor's behalf with respect to the Project. Such designation may not be changed without written notice to and approval of the Owner, such approval may not be unreasonably withheld.

D. The Contractor shall perform the Work in strict accordance with the Contract Documents. The Contractor shall not be relieved of the obligation to perform the Work in accordance with the Contract Documents by the activities, tests, inspections or approvals of the Owner.

1. The Contractor shall perform the Work in compliance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities. If the Contractor performs Work contrary to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, the Contractor shall assume responsibility for such Work and shall bear the costs attributable to correction.

2. Neither the Contractor nor any Subcontractor, Consultant, Engineer, or Architect shall be obligated to perform any act which they believe will violate any applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities. If the Contractor determines that implementation of any instruction received from the Owner, including those from the Engineer, would cause a violation of any applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall notify the Owner and the Engineer in writing. Upon verification by the Owner that a change to the Construction Documents is required to remedy the violation, the Owner and the Contractor shall execute a contract modification in accordance with the General Conditions.

E. The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Consultants, Subcontractors, and their agents and employees, and other persons or entities performing portions of the Work.

F. If part of the Work requires design, engineering, or other professional services of the Contractor or its consultants, or when applicable law requires that services be performed by licensed professionals, the Contractor shall provide those services through qualified, licensed professionals in accordance with the Texas Occupations Code and all applicable legal standards of care applicable to design professionals, including the standard of care described in the General Conditions.

G. The Owner and Contractor may agree, in consultation with the Engineer, for the Construction Phase to commence prior to completion of the Preconstruction Phase, in which case, both phases will proceed concurrently. The Contractor shall identify a representative authorized to act on behalf

SAMPLE

of the Contractor with respect to the Project.

ARTICLE 4- ENGINEER

4.01 The Owner has retained _____("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract Documents. The part of the Project that pertains to the Work has been designed by Engineer. The duties of each Engineer will be assigned by Owner as Owner sees fit.

ARTICLE 5- CONTRACT TIMES

5.01 *Time is of the Essence*

A. All of the Contract Times, individually and collectively, are of the essence of the Agreement. By executing this Agreement, the Contractor confirms that the Contract Times is reasonable period for performing the Work.

B. The Contractor shall not, except by agreement of the Owner in writing, commence the Work prior to the effective date of insurance, other than property insurance, required by this Agreement. The Contract Time shall not be adjusted as a result of the Contractor's failure to obtain insurance required under this Agreement.

C. The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

D. The date of commencement of the Work shall be stated in a Notice to Proceed issued by the Owner. The date of commencement, as that term is used in the Contract Documents, shall mean the commencement of the Construction Phase which will be evidenced by the Owner's acceptance of the Contractor's GMP Proposal (or Initial GMP Proposal) or the Owner's issuance of a Notice to Proceed, whichever occurs earlier.

5.02 *Contract Times: Dates*

Contractor shall achieve Substantial Completion of the Work on or before the following date ("Scheduled Substantial Completion Date"):

- For Initial GMP: ___ calendar days from the issuance of the Notice to Proceed.
- For subsequent GMPs: TBD calendar days from the issuance of the Notice to Proceed.

Contractor shall achieve Final Completion of the Work as expeditiously as reasonably practicable, but in no event later than the following date after Substantial Completion ("Scheduled Final Completion Date"):

- For Initial GMP:__ calendar days after Substantial Completion.
- For subsequent GMPs: TBD calendar days after Substantial Completion.

5.03 *Schedule Adjustments*

A. All of the scheduled completion dates set forth in Paragraphs 5.02 above (collectively the "Contract Times") shall be subject to adjustment in accordance with the General Conditions.

SAMPLE

5.04 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 5.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

Substantial Completion: If Substantial Completion has not been achieved on or before the Scheduled Substantial Completion Date, then Contractor shall pay to Owner the following liquidated damages:

- For Initial GMP: $_____ per day for each day until Substantial Completion is achieved.

- For subsequent GMPs: $TBD per day for each day until Substantial Completion is achieved.

Final Completion: If Final Completion has not been achieved on or before the Scheduled Final Completion Date, then Contractor shall pay to Owner the following liquidated damages:

- For Initial GMP: $_____ per day for each day until Final Completion is achieved is achieved.

- For subsequent GMPs: $TBD per day for each day until Final Completion is achieved.

B. The Parties acknowledge, recognize and agree on the following:

1. That because of the unique nature of the Project, it is difficult or impossible to determine with precision the amount of damages that would or might be incurred by Owner as a result of Contractor's failure to complete the Work on or before the applicable Contract Time(s);

2. That any sums which would be payable under Paragraph 5.04.A are in the nature of liquidated damages, and not a penalty, and are fair and reasonable and such payment represents a reasonable estimate of fair compensation for the losses that may reasonably be anticipated from such failure;

3. That any sums which would be payable herein shall be in lieu of all liability for any and all extra costs, losses, expenses, claims, penalties and any other damages, whether special or consequential, and of whatsoever nature incurred by Owner which are occasioned by any delay in achieving the applicable Contract Time(s) for the above-referenced Work. Notwithstanding the above, liquidated damages are not intended to excuse Contractor from liability for any other breach of its obligations under the Contract Documents; and

4. That, in recognition of the acknowledgments above, Contractor is expressly estopped from arguing, and waives any rights it may have to argue, that the liquidated damages in Paragraph 5.04.A are a penalty and that they are not enforceable.

SAMPLE

C. Owner shall have the right to deduct the liquidated damages set forth in Paragraph 5.04.A from any monies unpaid, otherwise due, or to become due, to Contractor, to demand and receive payment from Contractor of such liquidated damages, and to initiate applicable dispute resolution procedures under the General Conditions to recover such liquidated damages. The deductions of such damages from any monies unpaid, otherwise due, or to become due shall be in addition to retainage under the Contract Documents. Owner has the discretion to allow liquidated damages to accrue without collecting and by doing so does not waive any rights to collect them at a later time.

D. Delays and Extension of Times: Unless otherwise set forth in this Section, Project delays shall be governed in accordance with the General Conditions.

1. Claims relating to time and adjustment to GMP shall be made in accordance with applicable provisions of the General Conditions.

2. This Section 5.04 does not preclude recovery of damages for delay by Owner under other provisions of the Contract Documents.

3. The procedure for the determination of time extensions for unusually severe weather is as described in this Section. In order for the Owner to award a time extension under this clause, the following conditions must be satisfied.

a. The weather experienced at the Project site during the Contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the Project location during any given month.

b. The unusually severe weather must actually cause a delay to the completion of the Project.

4. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the Project location and will constitute the base line for monthly weather time evaluations. The Contractor's activity durations provided in the progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY WORK DAYS
BASED ON FIVE (5) DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
(4)	(3)	(3)	(2)	(3)	(4)	(8)	(8)	(6)	(5)	(3)	(4)

5. For the duration of the Agreement, the Contractor shall maintain in its daily reports an accurate and contemporaneous record of the occurrence of adverse weather and resultant impact to normally scheduled Work. Delay from adverse weather unless Work on the overall Project's critical activities is prevented for 50 percent or more of the Contractor's scheduled workday. The number of actual adverse weather days shall be calculated monthly. If the number of actual adverse weather delay days in a month exceed the number of days for that month as referenced above, the Owner upon notification by the Contractor, will convert any qualifying delays to calendar days, giving full consideration for equivalent

SAMPLE

fair weather workdays, and a modification shall be issued in accordance with the Agreement.

ARTICLE 6- CONTRACT PRICE

6.01 *Contract Price.*

A. Owner shall pay Contractor a contract price for the proper performance of the Work and all other obligations under the Contract Documents (the "Contract Price'). The Contract Price is comprised of, and equals the sum of, the following:

1. The Cost of the Work, as defined in Paragraph 7.01 below;

2. Contractor's General Conditions, as defined in Paragraph 7.02 below; and

3. Contractor's Fee, as defined in Article 8 below.

B. Owner's obligation to pay Contractor is subject to the Guaranteed Maximum Price and the limitations set forth in Article 9 below.

ARTICLE 7- COST OF THE WORK AND CONTRACTOR'S GENERAL CONDITIONS

7.01 The term "Cost of the Work" shall mean costs reasonably and actually incurred by Contractor in the proper performance of the Work and, except as otherwise may be agreed to in writing by Owner, will be in amounts no higher than those commonly incurred in the locality of the Project. The Cost of the Work shall include only the items set forth in Exhibit 9.01.

7.02 The term "Contractor's General Conditions" shall mean Contractor's costs reasonably and actually incurred by Contractor for supervisory, construction management and overhead-related items in connection with the proper performance of the Work and which are not covered by the Cost of the Work. Except as otherwise may be agreed to in writing by Owner, the items set forth in Contractor's General Conditions will be in amounts no higher than those commonly incurred in the locality of the Project, and shall only include the items set forth in Exhibit 9.01.

7.03 The term "Non-Reimbursable Costs" shall mean costs set forth in Exhibit 9.01 of this Agreement, which costs are: (a) not included as either a Cost of the Work or Contractor's General Conditions; and (b) compensated to Contractor through Contractor's Fee.

ARTICLE 8- CONTRACTOR'S FEE

8.01 Contractor's Fee shall be $_____and represents the compensation to Contractor for profit and the Non-Reimbursable Costs.

8.02 Contractor's Fee will be adjusted as follows for the following:

A. For additive Change Orders, including additive Change Orders arising from both additive and deductive items, it is agreed that Contractor shall receive a Fee not to exceed ___ percent (__%) of the additional Costs of the Work incurred for that Change Order.

B. For Costs of the Work that are drawn from the Owner Contingency or Project Contingency, it is agreed that Contractor shall receive a Fee not to exceed _____ percent (_%) of such Costs of the Work.

SAMPLE

C. For deductive Change Orders, including deductive Change Orders arising from both additive and deductive items, an amount equal to _____percent (_%) applied to the direct costs of the net reduction (which amount will account for a reduction associated with Contractor's Fee).

ARTICLE 9- GUARANTEED MAXIMUM PRICE

9.01 *Guaranteed Maximum Price.*

A. Contractor guarantees that the maximum amount payable by Owner (Guaranteed Maximum Price, or GMP) for the sum of the Cost of the Work, Contractor's General Conditions and Contractor's Fee will not exceed the following, subject to increases or decreases to the GMP made in accordance with the General Conditions:

- Initial GMP not exceed $_____for the portion of the Work identified by Owner and Contractor as more fully described in Exhibit 9.01.

The Parties agree that the Initial GMP will be amended, through a Guaranteed Maximum Price Amendment to the Standard Form of Agreement Between Owner and Construction Manager, when the Owner accepts Contractor's subsequent GMP Proposal(s) for the remainder of the Work pursuant to the Preconstruction Services Agreement between the parties.

B. Contractor shall be responsible for paying all costs of completing the Work which exceed the accepted GMP(s). The GMP may only be adjusted as allowed in the Contract Documents.

9.02 *Owner Contingency.*

A. The Owner Contingency will be used by Owner to fund items that would otherwise be subject to a Change Order. If the Owner Contingency is totally depleted, the Owner will fund these items, or replenish the Owner Contingency, by increasing the GMP by Change Order in accordance with the General Conditions. Neither Owner nor Contractor's rights or obligations under the Contract Documents shall be affected by the Owner Contingency.

B. For the avoidance of doubt, for all items covered by the Owner Contingency, Contractor shall be obligated to comply with all of the requirements set forth in the General Conditions, with respect to the item that forms the basis for the Change Order.

C. Any unused amounts of the Owner Contingency shall be reflected in a Change Order that increases or decreases the GMP by such amounts, with the understanding that Contractor shall not be entitled to share in any savings on this contingency.

9.03 *Project Contingency.*

A. The Initial GMP and subsequent GMPs include a project contingency line item ("Project Contingency"). The Project Contingency is available for Contractor's exclusive use for unanticipated Costs of the Work that it has incurred that are not the basis for a Change Order under the Contract Documents, plus the applicable Contractor's Fee. By way of example, and not as a limitation, such costs may include: (a) trade buy-out differentials; (b) overtime or acceleration; (c) escalation of labor and material costs; (d) correction of defective, damaged or nonconforming Work; (e) Subcontractor defaults; and (f) deductibles incurred by Contractor under the insurance required under the Contract Documents (but not to exceed $25,000 per occurrence). The Project Contingency is not available to Owner for any reason, including, but

SAMPLE

not limited to, changes in scope or any other item which would enable Contractor to increase the GMP under the Contract Documents.

B. Contractor may draw upon the Project Contingency by making a written request to Owner, identifying the reason and amount of the draw, and by obtaining Owner's written approval, which shall not be unreasonably withheld. If Owner approves a draw against the Project Contingency, Contractor shall, in its Applications for Payment, show an increase in the relevant line item by the amount drawn and a decrease in the line item for the Project Contingency.

C. Contractor agrees that with respect to any expenditure from the Project Contingency relating to a Subcontractor default for which insurance or bond may provide reimbursement, Contractor will in good faith exercise reasonable steps to obtain performance from the Subcontractor and/or recovery from any surety or insurance. If Contractor is subsequently reimbursed for said costs, then said recovery will be credited back to the Project Contingency, net of any reasonable costs and expenses incurred by Contractor in pursuing such recovery.

9.04 *Allocation of Savings.*

A. If upon Final Completion the sum of: (1) the actual Cost of the Work incurred by Contractor (e.g., not including any unused portions of the Contingency, Allowance Payment Values, or Project Contingency Allowance); (2) Contractor's General Conditions; and (3) Contractor's Fee, is less than the GMP(s), as such GMP may have been adjusted over the course of the Project, then the difference ("Savings") shall be treated as follows: Savings will be returned or credited to Owner.

ARTICLE 10- SUBCONTRACTORS

10.01 *Subcontractor Default.*

A. If there is Subcontractor selected to perform any elements of the Work and the selected Subcontractor defaults in the performance of its work or fails to execute a subcontract after being selected in accordance with the process set forth above, Contractor may itself fulfill, without advertising, the contract requirements or select a replacement Subcontractor to fulfill the contract requirements.

ARTICLE 11- CONSULTATION AND SCHEDULING

11.01. The Contractor shall schedule and conduct progress meetings with the Owner, on a weekly basis, to review matters such as procedures, progress in construction, coordination, and scheduling of the Work.

11.02 *Progress Reports.*

A. The Contractor shall keep the Owner informed of the progress and quality of the Work. On a monthly basis, or otherwise as agreed to by the Owner and Contractor, the Contractor shall submit written progress reports to the Owner. The reports shall be generated using the software specified by the Owner. The reports shall show estimated percentages of completion and other information identified below:

a. Work completed for the period;
b. Project schedule status;

SAMPLE

c. Submittal schedule and status report, including a summary of outstanding Submittals;
d. Responses to requests for information to be provided by the Owner;
e. Approved Change Orders and Change Directives;
f. Pending Change Order and Change Directive status reports;
g. Tests and inspection reports;
h. Status report of Work rejected by the Owner;
i. Status of Claims previously submitted;
j. Cumulative total of the Cost of the Work to date including the Construction Manager's compensation and Reimbursable Expenses, if any;
k. Current Project cash-flow and forecast reports; and
l. Additional information as agreed to by the Owner and Contractor.

B. In addition, where the Contract Price is the Cost of the Work, the Contractor shall include the following additional information in its progress reports:

a. Contractor's work force report;
b. Equipment utilization report; and
c. Cost summary, comparing actual costs to updated cost estimates.

C. The Contractor shall perform the Work in general accordance with the most recent schedules submitted to and approved by the Owner. The schedule shall be updated regularly and in advance of periodic Project meetings with the Owner and Owner's Engineer. Such schedules shall be posted at the Project meetings in a convenient location for review and approval by the Owner. Contractor shall request approval of Owner of any change to the approved schedule. Subcontractors completing the scope of work are also subject to the approved schedules.

D. The Contractor shall exercise reasonable care in preparing schedules and estimates. The Contractor, however, does not warrant or guarantee estimates and schedules except as may be included as part of the Guaranteed Maximum Price. The Contractor is not required to ascertain that the Drawings and Specifications are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Engineer and Owner any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Engineer may require. Any failure by Contractor to report known deviations or noncompliance will result in a waiver of any associated claims by the Contractor and shall require the Contractor to indemnify and hold the Owner harmless for any costs associated with the Contractor's failure in this regard.

ARTICLE 12- CERTIFICATIONS

12.01 If applicable and upon the Owner's written request, the Contractor shall obtain from its Consultants and Subcontractors, and furnish to the Owner, certifications with respect to the documents and services provided by Contractor's Consultants and Subcontractors that, to the best of their knowledge, information and belief, the documents or services to which the certifications relate (1) are consistent with the Contract Documents, except to the extent specifically identified in the certificate, and (2) comply with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities governing the design of the Project; and (3) that the Owner and Owner's Engineer shall be entitled to rely upon the accuracy of the representations and statements contained in the certifications.

SAMPLE

ARTICLE 13- CONTRACTOR'S SUBMITTALS

13.01 Prior to submission of any Submittals, the Contractor shall prepare a Submittal schedule, and shall submit the schedule for the Owner's and Engineer's approval. The Owner's approval shall not unreasonably be delayed or withheld. The Submittal schedule shall (1) be coordinated with the Engineer's schedule provided in this Section, (2) allow the Owner and Engineer reasonable time to review Submittals, and (3) be periodically updated to reflect the progress of the Work. If the Contractor fails to submit a Submittal schedule, the Contractor shall not be entitled to any increase in Contract Price or extension of Contract Time based on the time required for review of Submittals.

13.02 By providing Submittals the Contractor represents to the Owner that it has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, and (3) checked and coordinated the information contained within such Submittals with the requirements of the Work and of the Contract Documents.

13.03 The Contractor shall perform no portion of the Work for which the Contract Documents require Submittals until the Owner and Engineer have approved the respective Submittal.

13.04 The Work shall be in accordance with approved Submittals. Work done in compliance of an approved Submittal does not relieve the Contractor of its responsibility to perform the Work consistent with the requirements of the Contract Documents and the design intent if the Work subject to an approved Submittal fails or is deemed defective by the Owner or Owner's Engineer. The Work may deviate from the Contract Documents only if the Contractor has notified the Owner and Owner's Engineer in writing of a deviation from the Contract Documents at the time of the Submittal and a Modification is executed authorizing the identified deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Submittals or by the Owner's or Engineer's approval of the Submittals.

13.05 Any professional design services or certifications to be provided by the Contractor, including all drawings, calculations, specifications, certifications, shop drawings and other Submittals, shall contain the signature and seal of the licensed design professional preparing them. Submittals related to the Work designed or certified by the licensed design professionals, if prepared by others, shall bear the licensed design professional's written approval. The Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals. All design work product shall be generated using the software specified by Owner.

ARTICLE 14- OWNER'S RESPONSIBLITIES

14.01 The Owner's responsibilities shall be governed in accordance with the General Conditions.

ARTICLE 15-PAYMENT PROCEDURES

15.01 *Submittal and Processing of Payments.*

Contractor shall submit Applications for Payment in accordance with the General Conditions. Applications for Payment will indicate the amount of Contractor's Fee then payable. Applications for Payment will be processed by Construction Manager as provided in the General Conditions.

SAMPLE

15.02 *Progress Payments; Retainage*.

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment as recommended by Construction Manager in accordance with the General Conditions. All such payments will be measured by the Schedule of Values established as provided in the General Conditions or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

B. Owner will withhold retainage in the amount of five percent (5%) on progress payments due Contractor. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to one hundred percent (100%) of the Work completed, less such amounts set off by Owner pursuant to the General Conditions, which will be considered valid reasons for a bona fide dispute, and less two hundred percent (200%) of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

15.03 *Final Payment.*
Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with the General Conditions.

15.04 *Consent of Surety.*
Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

15.05 *Interest.*
Timelines and interest due on payments to the Contractor are subject to the and controlled by Chapter 2251 of the Texas Government Code.

ARTICLE 16- BOOKS AND RECORDS

16.01 *Retention and Audit of Books and Records.*

A. Contractor shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management, using accounting and control systems in accordance with generally accepted accounting principles, consistently applied, and as may be provided in the Contract Documents. During the Book and Records Period, Owner and its accountants shall be afforded access to, and the right to audit from time-to-time, upon reasonable notice, all Books and Records relating to the Work, all of which Contractor shall preserve during the Books and Record Period. Such inspection shall take place at Contractor's offices during normal business hours unless another location and time is agreed to by the Parties. Owner may take possession of such Books and Records by reproducing such Books and Records for off-site review or audit. When requested in Owner's written notice of examination and/or audit, Contractor shall provide Owner with copies of electronic and electronically stored Books and Records in a reasonably usable format that allows Owner to access and analyze all such Books and Records. For Books and Records that require proprietary software to access and analyze, Contractor shall provide Owner with the means to do so, including a license authorizing Owner to access and analyze all such Books and Records.

SAMPLE

16.02 *Items Not Subject to Audit.*

A. For the avoidance of doubt, Owner shall not have the right to audit any items for which it has accepted a lump sum proposal or agreed upon a fixed price/lump sum, including, but not limited to any multipliers or markups agreed to by the Owner and Contractor as part of this Agreement, which are only subject to audit to confirm that such multiplier or markup has been charged in accordance with this Agreement.

16.03 *Flow-Down into Subcontracts.*

A. Contractor shall insert a clause containing all the provisions of this Article 16 in all Subcontracts.

ARTICLE 17-CONTRACT DOCUMENTS

17.01 *Contents.*

A. The Contract Documents consist of all of the following:

1.This Agreement.

2. General Conditions.

3. GMP Proposal or Initial GMP Proposal and subsequent GMP Proposals

4. Exhibits to this Agreement.

5. The following which shall be designated, completed, delivered, prepared, issued and incorporated to the Contract Documents after the Effective Date of the Agreement and are not attached hereto:

- The Construction Documents
- Guaranteed Maximum Price Amendment(s) to the Standard Form of Agreement Between Owner and Construction Manager
- Work Change Directives
- Change Orders
- Field Orders

B. The Contract Documents listed in Paragraph 17.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 17.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract Documents.

17.02 *Order of Precedence.*

A. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The following order of precedence shall apply in the case of direct, irresolvable conflicts between or among Contract Documents:

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1. Change Orders
2. Work Change Directives
3. Field Orders
4. Written amendments
5. This Agreement, and all of the Exhibits except for Exhibit 9.01 (GMP Proposal)
6. General Conditions of Contract
7. The Construction Documents
8. GMP Proposal or Initial GMP Proposal (Exhibit 9.01)

ARTICLE 18- REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

18.01 *Contractor's Representations*.

A. In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents.

2. Contractor has visited the Plant, conducted a thorough visual examination of the Plant, including the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the GMP Proposal or Initial GMP Proposal.

5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the GMP Proposal or Initial GMP Proposal.

6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Plant; information and observations obtained from visits to the Plant, including the Site; and the Contract Documents, with respect to the effect of such information and observations, on: (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies,

SAMPLE

or data are necessary for the performance of the Work within the GMP(s), within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Contractor is aware of the general nature of work to be performed by Owner and others at the Plant that relates to the Work as indicated in the Contract Documents.

9. Contractor has given Owner and Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Contract Documents are sufficiently complete to indicate and convey an understanding of all terms and conditions for performance and furnishing of the Work, including having enabled Contractor to establish the GMP(s).

11. The GMP(s) contain sufficient monies to perform all Work, including Contractor's obligation to provide and construct any items that are not explicitly contained in the GMP Proposal Design Documents but which are reasonably inferable from the GMP Proposal Design Documents and necessary to provide a fully-functioning Project meeting the intent of the Contract Documents.

18.02 *Contractor's Certifications*.

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 18.02:

1. The term "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. The term "fraudulent practice" means an intentional misrepresentation of facts made; (a) to influence the bidding process or the execution of the Contract to the detriment of Owner; (b) to establish Bid or Contract prices at artificial non-competitive levels; or (c) to deprive Owner of the benefits of free and open competition;

3. The term "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. The term "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 19-MISCELLANEOUS

19.01 *Compliance with Owner's Policies*.

A. Drug and Alcohol-Free Workplace.

Owner maintains a drug and alcohol-free workplace in accordance with the Drug-Free Workplace Act of 1988. Contractor shall publicize a statement notifying its employees that the

SAMPLE

unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the workplace, including at the Plant.

B. Smoking.
Owner maintains specific rules regarding smoking on Owner's properties. Contractor shall adhere to such rules at the Plant.

C. Firearms.
Owner maintains specific rules regarding firearms and Contractor shall adhere to such rules at the Plant.

Additionally, in accordance with Section 2274.002 of the Texas Government Code, Contractor does not have a practice, policy, guidance or directive that discriminates against a firearm entity or firearm trade association and will not discriminate during the term of the contract against a firearm entity or firearm trade association.

D. Good Faith Efforts to Obtain Minority Participation in the Project.
Owner encourages the participation of Small Locally-Owned Businesses, Minority Business Enterprises and Women-Owned Business Enterprises. The goals and requirements of this program are set forth in Exhibit 19.01(D), and Contractor shall comply with the terms of such Exhibit.

E. Owner's Safety Requirements.
While at the Plant, Contactor shall comply with Owner's Safety Manual (dated June 12, 2018).

F. Israel.
Contractor confirms that it does not boycott Israel and will not do so during the term of this Agreement.

G. Traffic Safety.
Owner maintains specific rules regarding traffic safety on Owner's properties. Contractor shall adhere to such rules at the Plant.

H. Project Wage Rates.
The wage rates and other requirements of Exhibit 19.01(H) are applicable to all Work performed under the Contract Documents. Contractor and any subcontractor shall pay not less than the general prevailing wage rates in the Exhibit to all laborers, workmen and mechanics employed by Contractor and any subcontractor. Contractor confirms that it will comply with the terms of such Exhibit.

I. Energy Companies.
In accordance with Chapter 2274 of the Texas Government Code, Contractor does not boycott energy companies and will not boycott energy companies during the term of the contract.

SAMPLE

19.02 *Governing Law.* The Contract shall be governed by the law of the state of Texas.

19.03 *Venue.* This Agreement is entered into and performed in El Paso County, Texas, and the Contractor and the Owner agree that mandatory venue for any legal action related to this contract shall be in the court of competent jurisdiction sitting in El Paso County, Texas.

19.04 *Successors and Assigns.* The Owner and Contractor, respectively, bind themselves, their partners, successors, assigns and legal representatives to the covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract in whole or in part without the express written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract and the attempted assignment shall be of no legal force or effect as to the other party.

19.05 *Notice.*

A. Whenever the Contract Documents require that notice be provided to the other Party, notice will be deemed to have been validly given: (a) if delivered in person to the individual intended to receive such notice; or (b) four (4) days after being sent by registered or certified mail, postage pre-paid, with return receipt requested, to the address indicated in the Agreement, or (c) one (1) business day after being sent by overnight delivery via a nationally recognized courier service (e.g., FedEx or UPS), postage, transmittal or shipping charges prepaid, to the address set forth below:

If to Contractor:

_____
_____

If to Owner:

El Paso Water Utilities – Public Service Board
John E. Balliew, President/CEO
1154 Hawkins Blvd.
El Paso, Texas 79925

19.06 *Insurance and Bonds.*

A. Insurance. Contractor shall obtain and maintain, at its own cost and expense, the insurance coverages specified in Exhibit 19.06, which insurance shall be in accordance with the requirements of the General Conditions.

B. Bonds and Other Performance Security. In accordance with the General Conditions and Texas Government Code Chapter 2253, Contractor shall provide performance bond and labor and material payment bonds.

SAMPLE

19.07 *Right and Remedies.*

A. Duties and obligations imposed by the Contract Documents, and rights and remedies available thereunder, shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

B. No action or failure to act by the Owner or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

19.08 *Interpretation.*

Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

19.09 *Independent Contractor.*

The Contractor is an independent contractor and shall not act on behalf of or in the name of the Owner except as may be provided in this Agreement or the Contract Documents and as expressly authorized by the Owner's Representative. The relationship of the parties is not intended in any way to create a fiduciary obligation between them.

19.10 *Confidential Information.*

A. Confidential Information is defined as information which is determined by the transmitting Party to be of a confidential or proprietary nature and: (a) the transmitting Party identifies as either confidential or proprietary; (b) the transmitting Party takes steps to maintain the confidential or proprietary nature of the information; and (c) the document is not otherwise available in or considered to be in the public domain. The receiving Party agrees to maintain the confidentiality of the Confidential Information and agrees to use the Confidential Information solely in connection with the Project.

B. A party receiving Confidential Information may disclose the Confidential Information as required by law or court order, including a subpoena or other form of compulsory legal process issued by a court or governmental entity. A party receiving Confidential Information may also disclose the Confidential Information to its employees, consultants or contractors in order to perform services or work solely and exclusively for the Project, provided those employees, consultants and contractors are subject to the restrictions on the disclosure and use of Confidential Information as set forth in this Contract.

19.11 *Open Records Act/Texas Public Information Act Requests.*

The Contractor recognizes that this Project is publicly owned and the Owner is subject to the disclosure requirements of the Texas Public Information Act ("Act"). As part of its obligations within the Contract Documents, the Contractor agrees, at no additional cost to the Owner, to cooperate with the Owner for any particular needs or obligations arising out of the Owner's obligations under the Act. This acknowledgement and obligation are in addition to and complimentary to the Owner's audit rights in the General Conditions. Additionally, notwithstanding this section or any other language of this Agreement, Contractor acknowledges that Owner is subject to the Texas Public Information Act ("Act) and Owner will comply with the Act. Owner will not be liable for disclosure of information pursuant to the Act or under court order.

SAMPLE

19.12 *Contracting Information.*

Contractor must preserve all contracting information related to this Agreement as provided by the records retention schedule requirements applicable to the Owner for the duration of this Agreement. Contractor will promptly provide the Owner any contracting information related to this Agreement that is in the custody or possession of the Contractor on request of the Owner. On completion of this Agreement, Contractor will either provide at no cost to the Owner all contracting information related to this Agreement that is in the custody or possession of the Contractor or preserve the contracting information related to this Agreement as provided by the records retention requirements applicable to the Owner.

19.13 *TERMINATION FOR FAILURE TO COMPLY WITH SUBCHAPTER J, CHAPTER 552, GOVERNMENT CODE.*

The requirements of subchapter J, Chapter 552, Government Code, may apply to this Agreement and the CONTRACTOR or vendor agrees that the Agreement can be terminated if the contractor or vendor knowingly or intentionally fails to comply with a requirement of that subchapter.

19.14 *Exhibits.*

A. The following exhibits ("Exhibits") are specifically made part of, and incorporated by reference into, this Agreement:

Exhibit 9.01	GMP Proposal or Initial GMP Proposal
Exhibit 19.01(D)	Good Faith Efforts to Obtain Minority Participation in the Project
Exhibit 19.01(H)	Project Wage Rates
Exhibit 19.06	Contractor's Insurance Requirements

SAMPLE

IN WITNESS WHEREOF, intending to be bound, the Parties have entered into this Agreement as of the Effective Date of the Agreement.

CONTRACTOR:

_____

By:_____

OWNER:

EL PASO WATER UTILITIES – PUBLIC SERVICE BOARD

_____
John E. Balliew
President/CEO

APPROVED AS TO FORM:

_____
Sol M. Cortez
Deputy General Counsel

APPROVED AS TO CONTENT:

_____
Irazema S. Rojas
Interim Chief Technical Officer

SAMPLE

GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

Page

Article 1—Definitions and Terminology 1

1.01 Defined Terms 1

1.02 Terminology 7

Article 2—Preliminary Matters 8

2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance 8

2.02 Copies of Documents 9

2.03 Preconstruction Conference; Designation of Authorized Representatives 9

2.04 Key Personnel 9

2.05 Electronic Transmittals 9

Article 3—Contract Documents: Intent, Requirements, Reuse 10

3.01 Intent 10

3.02 Reference conducts 10

3.03 Reporting and Resolving Discrepancies 11

3.04 Requirements of the Contract Documents 11

3.05 Reuse of Documents 12

Article 4—Commencement and Progress of the Work 12

4.01 Notice to Proceed 12

4.02 Starting the Work 12

4.03 Reference Points 12

4.04 Progress Schedule 13

4.05 Delays in Contractor's Progress 13

Article 5—Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions 14

5.01 Availability of Lands 14

5.02 Use of Site and Other Areas 15

5.03 Subsurface and Physical Conditions 16

5.04 Differing Subsurface or Physical Conditions 16

5.05 Underground Facilities 18

5.06 Hazardous Environmental Conditions at Site 20

SAMPLE

Article 6—Bonds and Insurance 21
6.01 Performance, Payment, and Other Bonds 21
6.02 Insurance—General Provisions 22
Article 7—Contractor's Responsibilities 24
7.01 Contractor's Means and Methods of Construction 24
7.02 Supervision and Superintendence 25
7.03 Labor; Working Hours 25
7.04 Services, Materials, and Equipment 25
7.05 "Or Equals" 25
7.06 Substitutes 26
7.07 Concerning Subcontractors and Suppliers 28
7.08 Patent Fees and Royalties 29
7.09 Permits 29
7.10 Taxes 30
7.11 Laws and Regulations 30
7.12 Record Documents 30
7.13 Safety and Protection 30
7.14 Hazard Communication Programs 32
7.15 Emergencies 32
7.16 Submittals 32
7.17 Contractor's General Warranty and Guarantee 35
7.18 Indemnification 36
7.19 Delegation of Professional Design Services 36
Article 8—Other Work at the Site 37
8.01 Other Work 37
8.02 Coordination 38
8.03 Legal Relationships 38
Article 9—Owner's Responsibilities 39
9.01 Communications to Contractor 39
9.02 Replacement of Engineer 39
9.03 Furnish Data 39
9.04 Pay When Due 40
9.05 Lands and Easements; Reports, Tests, and Drawings 40

SAMPLE

9.06 Change Orders 40
9.07 Inspections, Tests, and Approvals 40
9.08 Limitations on Owner's Responsibilities 40
9.09 Undisclosed Hazardous Environmental Condition 40
9.10 Evidence of Financial Arrangements 40
9.11 Safety Programs 40
Article 10—Engineer's Status During Construction 40
10.01 Owner's Representative 40
10.02 Visits to Site 41
10.03 Resident Project Representative 41
10.04 Engineer's Authority 41
10.05 Determinations for Unit Price Work 41
10.06 Decisions on Requirements of Contract Documents and Acceptability of Work 41
10.07 Limitations on Engineer's Authority and Responsibilities 42
10.08 Compliance with Safety Program 42
Article 11—Changes to the Contract 42
11.01 Amending and Supplementing the Contract 42
11.02 Change Orders 43
11.03 Work Change Directives 43
11.04 Field Orders 43
11.05 Owner-Authorized Changes in the Work 44
11.06 Unauthorized Changes in the Work 44
11.07 Change of the GMP 44
11.08 Change of the Contract Times 45
11.09 Change Proposals 45
11.10 Notification to Surety 46
Article 12—Claims 46
12.01 Claims 46
Article 13—Cost of the Work; Contractor's General Conditions; Allowances; Unit Price Work 48
13.01 Cost of the Work and Contractor's General Conditions 48
13.02 Allowances 48
13.03 Unit Price Work 48
Article 14—Tests and Inspections; Correction, Removal, or Acceptance of Defective Work 49

SAMPLE

14.01 Access to Work 49
14.02 Tests, Inspections, and Approvals 49
14.03 Defective Work 50
14.04 Acceptance of Defective Work 51
14.05 Uncovering Work 51
14.06 Owner May Stop the Work 51
14.07 Owner May Correct Defective Work 52
Article 15—Payments to Contractor; Set-Offs; Completion; Correction Period 52
15.01 Progress Payments 52
15.02 Contractor's Warranty of Title 55
15.03 Substantial Completion 55
15.04 Partial Use or Occupancy 56
15.05 Final Inspection 57
15.06 Final Payment 57
15.07 Waiver of Claims 58
15.08 Correction Period 59
Article 16—Suspension of Work and Termination 60
16.01 Owner May Suspend Work 60
16.02 Owner May Terminate for Cause 60
16.03 Owner May Terminate for Convenience 61
16.04 Contractor May Stop Work or Terminate 61
ARTICLE 17—Dispute Resolution 62
17.01 Commitment to Resolve Disputes 62
17.02 Mediation 62
17.03 Litigation 62
Article 18—Miscellaneous 62
18.01 Computation of Times 62
18.02 Cumulative Remedies 62
18.03 Waiver of Consequential Damages 62
18.04 No Waiver 63
18.05 Survival of Obligations 63
18.06 Controlling Law 63
18.07 Assignment of Contract 63

SAMPLE

18.08 Successors and Assigns 63
18.09 Headings 63
18.10 Severability 63
18.11 Amendments 63
18.12 Railroads 63
18.13 Working Near Utilities 64
18.14 EPCWID #1 Dewater Permit Requirements 65

SAMPLE

GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Affiliate* – Means, with respect to any particular company or entity, a company or entity that: (a) owns and controls, directly or indirectly, such company or entity; (b) is owned and controlled, directly or indirectly, by such company or entity; or (c) is owned and controlled, directly or indirectly, by the same company or entity that owns and controls such company or entity. The term "control" for purposes of this definition means: (i) ownership, directly or indirectly, of fifty percent (50%) or more of the issued voting shares of a company or entity or ownership of equivalent rights to determine the decisions of such company or entity; or (ii) having the right to appoint at least fifty percent (50%) of the members of the board of directors or equivalent governing body of such company or entity.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the GMP and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Allowance Payment Item* – If applicable, those items of Work set forth in the Agreement.

4. *Allowance Payment Value* – If applicable, those monetary values for Allowance Payment Items set forth in the Agreement.

5. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or Final Payment, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

6. *Books and Records* – All documents (whether paper, electronic, or other media) and electronically stored information, including, but not limited to, any and all books, correspondence, receipts, vouchers, estimates, records, contracts, cost data, schedules, subcontracts, schedules, job cost reports, and other data, including computations and projections, of Contractor related to bidding, negotiating, pricing, or performing the Preconstruction Services and/or Work.

7. *Books and Records Period* – That period starting on the Effective Date of Contract and ending at the later of four (4) years after Final Payment, provided, however, that if litigation, a claim, or an audit is in process, or if audit findings are not resolved, such Books and Records Period shall be extended until the later of the final conclusion of the litigation, claim, audit, or audit finding resolution.

SAMPLE

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the GMP or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in the GMP or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*

    a. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of the GMP, Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

    b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

    c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of Final Payment.

    d. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Confidential Information* – Has the meaning set forth in the Agreement.

13. *Contingency* – Has the meaning set forth in the Agreement.

14. *Construction Documents* – Those Drawings and Specifications signed and sealed by Engineer and to be used by Contractor in performing the Work.

15. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.

16. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

SAMPLE

17. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents, as defined in the Agreement.

18. *Contract Times*—The Scheduled Substantial Completion Date, Scheduled Final Completion Date, and, if applicable, the completion dates set forth in the Agreement by which Contractor shall achieve milestones.

19. *Contractor*—The entity identified as "Contractor" in the Agreement.

20. *Contractor-Related Entity* – Subcontractors, Sub-Subcontractors, Suppliers and anyone for whose acts any of them may be legally or contractually responsible.

21. *Contractor's Fee* – Has the meaning set forth in the Agreement.

22. *Contractor's General Conditions* – Has the meaning set forth in the Agreement.

23. *Cost of the Work*—Has the meaning set forth in the Agreement.

24. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

25. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

26. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

27. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

28. *Engineer*—The individual or entity named as such in the Agreement.

29. *Equipment and/or Material* – All of the equipment, materials, machinery, apparatus, structures, supplies and other goods required by the Contract Documents to complete the Work and to be incorporated into the Project or provided to Owner. The term "Equipment and/or Materials" shall not be construed to include any construction equipment, supplies, materials, apparatus or tools owned by Contractor or any Contractor-Related Entity that are used to complete the Work but are not contemplated under the Contract Documents to become incorporated into the Project or to be provided to Owner.

30. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the GMP or the Contract Times.

31. *Final Completion* – The event set forth in Paragraph 15.06.D below.

32. *Final Payment* – Has the meaning set forth in Paragraph 15.06 below.

33. *Guaranteed Maximum Price (GMP)* – Has the meaning set forth in of the Agreement.

SAMPLE

34. *GMP Proposal* – That document attached as an Exhibit of the Agreement.

35. *GMP Proposal Design Documents* – Those design documents referenced as such in the GMP Proposal.

36. *Governmental Approval* – Any authorization, consent, approval, license, lease, ruling, permit, certification, exemption, or registration by or with any Governmental Unit.

37. *Governmental Unit* – Any national, state or local government, any political subdivision thereof, or any governmental, quasi-governmental, judicial, public or statutory instrumentality, administrative agency, authority, body or other person and/or entity having jurisdiction over the Site, performance of the Work, the Project or the Parties.

38. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

    b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

    c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

39. *Health and Safety Plan* – the document referenced as such in the GMP Proposal.

40. *Laws and Regulations; Laws or Regulations*—Any and all applicable federal, state and local laws, codes, ordinances, rules, statutes, regulations, orders and decrees, and other requirements of any Governmental Unit, including, without limitation, any interpretation of such items by the applicable Governmental Unit.

41. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

42. *Milestone*— Those elements of the Work set forth in the Agreement if appliable.

43. *Non-Reimbursable Costs* – Those costs set forth in Agreement.

44. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

45. *Open Book Basis* – Means allowing Owner to review all underlying assumptions, records, stand-alone Subcontractor and Supplier quotes, and other data associated with each element of pricing, or any adjustment thereto, including assumptions as to Costs of the Work, schedule, composition of equipment, equipment rates, labor rates and burdens, production rates, estimating factors, contingency and indirect costs, risk pricing, inflation and deflation rates, profit, home office overhead rates, fees, charges, levies, incentives, and other items reasonably required by Owner to satisfy itself as to the reasonableness and accuracy of the amounts proposed by Contractor.

SAMPLE

46. *Owner*— El Paso Water Utilities – Public Service Board, a component of the City of El Paso, Texas.

47. *Owner Indemnitee* – Each of Owner and Engineer and, with respect to each of the foregoing, each of its respective representatives, officers, employees, members or other constituent entities, authorized agents, and other duly authorized representatives.

48. *Party or Parties* – Owner or Contractor singularly, and Owner and Contractor in plural.

49. *Plant* – means the Roberto R. Bustamante Wastewater Treatment Plant.

50. *Preconstruction Services* – Those services performed by Contractor under the Preconstruction Services Agreement.

51. *Preconstruction Services Agreement* – That agreement referenced in Preamble to the Agreement.

52. P*rogress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.

53. *Project*—The project identified in the Agreement.

54. *Project Contingency*– Has the meaning set forth in the Agreement.

55. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

56. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

57. *Savings* -- Has the meaning set forth in the Agreement.

58. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

59. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the GMP to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

60. *Scheduled Final Completion Date* – Has the meaning set forth in the Agreement.

61. *Scheduled Substantial Completion Date* – Has the meaning set forth in the Agreement.

62. *Self-Perform* – Work performed by employees of the Contractor or any of its Affiliates.

63. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

64. *Site*— the area of the Plant upon which the Project is located, as set forth in the Construction Documents.

SAMPLE

65. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

66. *Subcontractor*—An individual or entity having a direct contract with Contractor as an independent contractor for the performance of a part of the Work, and shall include materialmen and Suppliers.

67. *Sub-Subcontractor* – Any person or entity having a direct contract with a Subcontractor.

68. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

69. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

70. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or any Contractor-Related Entity to provide Equipment and Materials, or construction equipment, supplies or other goods to be used in the performance of the Work but not incorporated into the Work.

71. *Technical Data*

    a. Those items expressly identified as Technical Data in the GMP Proposal, with respect to either: (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities); or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

SAMPLE

c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

72. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

73. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all Equipment and Materials into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

74. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

75. *Work Product* – All cost estimates, schedules, bid packages, studies, data, models, documents, photographs, videos, and work developed or produced by or on behalf of Contractor, whether in hard-copy, digital or electronic data, or any other medium, and whether completed or not completed, including all Work Product developed or produced by or on behalf of Contractor under the Preconstruction Agreement.

76. *Unit Price Work*—Work to be paid for on the basis of unit prices.

1.02 *Terminology*

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

SAMPLE

C. *Day*: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*: The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;

2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

3. has been damaged prior to Engineer's recommendation of Final Payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, Equipment and Materials, means to supply and deliver said services, Equipment or Materials to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, Equipment and Materials, means to put into use or place in final position said services, Equipment or Materials, complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, Equipment and Materials, means to furnish and install said services, Equipment or Materials, complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, Equipment or Materials, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, Equipment or Materials, complete and ready for intended use.

F. *GMP or Contract Times*: References to a change in "GMP or Contract Times" or "Contract Times or GMP" or similar, indicate that such change applies to: (1) the GMP; (2) Contract Times; or (3) both the GMP and Contract Times, as warranted, even if the term "or both" is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond.

B. *Evidence of Contractor's Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in Paragraph 6.02.K below), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

SAMPLE

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.04 *Key Personnel*

A. Contractor's Key Personnel are set forth in Contractor's GMP Proposal. Contractor acknowledges that the qualifications of its Key Personnel were an essential element to Contractor being awarded the Agreement, and further acknowledges the importance of its Key Personnel in successfully performing the Work. Absent separation of employment, none of the Key Personnel may be withdrawn from the Project without prior written approval of Owner, with it being understood and agreed that Contractor will provide Owner with at least thirty (30) days written notice of any request to withdraw any Key Personnel. Any replacement personnel shall have equivalent skill, experience and reputation. Contractor shall remove or replace, or have removed or replaced, any personnel performing the work if Owner has a reasonable objection to such individual.

2.05 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

SAMPLE

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all. In the case of direct, irresolvable conflicts between or among Contract Documents, the conflict shall be resolved through the order of precedence set forth in the Agreement.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral, including but not limited to the Preconstruction Agreement.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Contractor-Related Entity; or

2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any Contractor-Related Entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

A. *Standards Specifications, Codes, Laws and Regulations*

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect on the Effective Date of the Contract, except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

SAMPLE

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until Final Payment, Contractor shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

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B. Engineer will, within fourteen (14) days of Contractor's submission, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve: (1) the performance or acceptability of the Work under the Contract Documents; (2) the design (as set forth in the Drawings, Specifications, or otherwise); or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive Final Payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Notice to Proceed*

A. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date set forth in the Notice to Proceed. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for

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the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule set forth in the GMP Proposal, as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the GMP or Contract Times. The equitable adjustment in the GMP will be for the categories of costs identified in the Agreement.

B. Contractor shall not be entitled to an adjustment in the GMP or Contract Times for delay, disruption, or interference caused by or within the control of Contractor or any Contractor-Related Entity.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible (including Contractor-Related Entities), then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. Abnormal weather conditions;

3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

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D. Contractor's entitlement to an adjustment of the Contract Times or the GMP is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

2. Contractor shall not be entitled to an adjustment in the GMP for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

2. Adjustments of the Contract Times are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in the Contract Times or the GMP must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and

5. The impact on the GMP, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are

SAMPLE

to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of Equipment and Materials.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of Equipment and Materials, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or Equipment or Materials. Contractor shall assume full responsibility for: (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall: (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) **TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, INDEMNIFY AND HOLD HARMLESS THE OWNER INDEMNITEES FROM AND AGAINST ANY SUCH CLAIM, AND AGAINST ALL COSTS, LOSSES, AND DAMAGES (INCLUDING BUT NOT LIMITED TO ALL FEES AND CHARGES OF ENGINEERS, ARCHITECTS, ATTORNEYS, AND OTHER PROFESSIONALS AND ALL COURT OR ARBITRATION OR OTHER DISPUTE RESOLUTION COSTS) ARISING OUT OF OR RELATING TO ANY CLAIM OR ACTION, LEGAL OR EQUITABLE, BROUGHT BY ANY SUCH OWNER OR OCCUPANT AGAINST THE OWNER INDEMNITEES TO THE EXTENT CAUSED DIRECTLY OR INDIRECTLY, IN WHOLE OR IN PART BY, OR BASED UPON, CONTRACTOR'S PERFORMANCE OF THE WORK, OR BECAUSE OF OTHER ACTIONS OR CONDUCT OF CONTRACTOR OR ANY CONTRACTOR-RELATED ENTITY.**

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The GMP Proposal identifies:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by Contractor on Technical Data*: Contractor may reasonably rely upon the accuracy of the Technical Data expressly identified in the GMP Proposal.

D. *Limitations of Other Data and Documents*: Except for reliance on Technical Data as set forth in Paragraph C above, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

SAMPLE

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the GMP or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

    b. With respect to Work that is paid for on a unit price basis, any adjustment in the GMP will be subject to the provisions of Paragraph 13.03; and,

    c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

SAMPLE

2. Contractor shall not be entitled to any adjustment in the GMP or Contract Times with respect to a subsurface or physical condition if:

    a. Contractor knew of the existence of such condition as of the Effective Date of the Contract;

    b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Contract Documents to be conducted by or for Contractor prior to the Effective Date of the Contract; or

    c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the GMP or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the GMP or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the GMP Proposal, the cost of all of the following are included in the GMP, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

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C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the GMP or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

   a. With respect to Work that is paid for on a unit price basis, any adjustment in the GMP will be subject to the provisions of Paragraph 13.03;

   b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

   c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the GMP or Contract Times, then any such adjustment will be set forth in a Change Order.

SAMPLE

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the GMP or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The GMP Proposal identifies:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may reasonably rely upon the accuracy of the Technical Data expressly identified in the GMP Proposal with respect to such reports and drawings. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Where Owner has advised Contractor of known Constituents of Concern or Hazardous Environmental Conditions at the Site, these Constituents of Concern and Hazardous Environmental Conditions are part of the Work and Contractor shall take such action as is necessary, in accordance with applicable Laws and/or Regulations, to plan for and to remediate and render harmless all such Constituents of Concern and Hazardous Environmental Conditions. Remediation plans for such known Constituents of Concern and Hazardous Environmental Conditions shall be provided to the Owner for approval prior to undertaking the remediation.

D. If Contractor encounters any unknown Hazardous Environmental Conditions at the Site, it shall stop Work immediately in the affected part of the Work to the extent required to avoid

SAMPLE

any such safety or health hazard until it has taken such action as is necessary, in accordance with applicable Laws and/or Regulations, to protect the interests of any affected party. Contractor shall, immediately upon encountering any Hazardous Environmental Conditions at the Site, notify Owner and, if required by Laws and/or Regulations, assist Owner in providing notifications to all Governmental Units having jurisdiction over the Project or Site.

E. Contractor, working with Owner, shall take all necessary measures required to ensure that Hazardous Environmental Conditions are remediated or rendered harmless in accordance with applicable Laws and/or Regulations. Contractor shall, as may be directed by Owner and prior to proceeding with any such work: (a) obtain all environmental site assessments of the affected property and submit copies of such assessments to Owner for its approval; (b) develop remediation plans for the Hazardous Environmental Conditions, subject to Owner's approval; and (c) obtain on Owner's behalf all applicable Governmental Approvals to implement such plans. During the period of any investigation and remediation efforts, Contractor shall take all necessary measures to isolate and contain such Hazardous Environmental Conditions from the unaffected parts of the Work, and shall continue the Work to the maximum extent possible on unaffected parts of the Work.

F. Except for those Hazardous Environmental Conditions and Constituents of Concern set forth in Paragraph G below, Contractor will be entitled to submit a request for an adjustment to the Contract Price and/or Contract Times, in accordance with the requirements of Article 4 above and Article 11 below, to the extent Contractor's cost and/or time of performance have been adversely impacted by the presence, removal or remediation of unknown Hazardous Environmental Conditions.

G. Notwithstanding anything to the contrary in this Paragraph 5.06, Contractor shall bear full responsibility for the handling, treatment, storage, removal, remediation, avoidance, or other appropriate action (if any), with respect to: (a) any Constituents of Concern or Hazardous Environmental Condition present at, on, in or under, or migrating and/or emanating to or from the Site, that were brought or caused to be brought on the Site due to the breach of contract, negligence, recklessness or willful misconduct of Contractor or any Contractor-Related Entity; (b) Constituents of Concern or Hazardous Environmental Conditions that are expressly provided in the Contract Documents to be part of the Work; and (c) the creation or exacerbation of any Hazardous Environmental Condition due to the breach of contract, negligence, recklessness or willful misconduct of Contractor or any Contractor-Related Entity. **TO THE FULLEST EXTENT PERMITTED BY LAWS AND/OR REGULATIONS, CONTRACTOR SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS EACH OWNER INDEMNITEE FROM AND AGAINST ALL CLAIMS, LOSSES, DAMAGES, LIABILITIES AND EXPENSES, INCLUDING ATTORNEYS' FEES AND EXPENSES, ARISING OUT OF OR RESULTING FROM ITEMS (A), (B) AND/OR (C) ABOVE**.

H. Nothing contained in this Paragraph 5.06 is intended to identify the Contractor as the generator of any pre-existing Constituents of Concern or Hazardous Environmental Condition, except as set forth in applicable Laws and/or Regulations.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor has, as of the Effective Date, furnished a performance bond and a payment bond, each in an amount at least equal to the GMP, as security for the faithful performance and

SAMPLE

payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when Final Payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations.

B. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements that was applicable for the original surety.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Contractor-Related Entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Contractor-Related Entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

A. Contractor shall obtain and maintain, at its own cost and expense, the insurance coverages specified in the Agreement, which insurance shall be in accordance with this Paragraph 6.02.

B. All insurance required by this Paragraph 6.02 shall be from insurance companies that have at least an A.M. Best's Insurance Guide ("Best's Guide") Rating of A- and Financial Size Category of Class VII or better, according to the most current edition of the Best's Guide, and are an eligible, admitted and duly licensed insurer authorized to do business in the state of Texas.

C. Contractor shall deliver to Owner, with copies to each additional insured identified in Paragraph 6.02.K below, the following:

1. Certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required hereunder, with the understanding that updated, compliant certificates of insurance and endorsements shall be delivered annually, at least ten (10) days prior to the expiration of any policy, to evidence renewal of the required insurance coverages.

2. Upon request by Owner or any additional insured, other evidence of such required insurance, including but not limited to copies (including electronic copies) of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Contractor and its Subcontractors. In any documentation furnished under this provision, Contractor or its Subcontractors may block out (redact) any confidential premium or pricing information or other information not applicable to this Project or Contract.

Failure of Owner or additional insured to demand the documents required by this Paragraph 6.02.C, or failure of Owner to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the obligation of the relevant party (i.e., Contractor or its Subcontractor) to obtain and maintain such insurance.

SAMPLE

D. Contractor shall require its Subcontractors to purchase and maintain the insurance coverages specified under the Agreement.

E. Without prejudice to any other right or remedy, if Contractor has failed to obtain required insurance, Owner may elect (but is in no way obligated) to obtain equivalent insurance to protect Owner and additional insureds' interests at the expense of Contractor, and the GMP and Contract Price will be adjusted accordingly.

F. Owner does not represent that insurance coverage and limits established in the Agreement will be adequate to protect the interests of Contractor or any of its Subcontractors. Each such party is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

G. The insurance and insurance limits required under this Paragraph 6.02 are minimums and shall not be deemed as a limitation on Contractor's liability, or that of its Subcontractors, under the indemnities granted to the Owner Indemnitees.

H. If in any instance Contractor has not performed its obligations respecting obtaining and maintaining insurance coverage required hereunder, or is unable to enforce and collect any such insurance for failure to assert claims in accordance with the terms of the insurance policies, then for purposes of determining Contractor's liability and the limits thereon or determining reductions in compensation due from Owner to Contractor on account of available insurance, Contractor shall be treated as if it has elected to self-insure up to the full amount of insurance coverage that would have been available had Contractor performed such obligations and not committed such failure.

I. Contractor and its Subcontractors shall be solely responsible for any and all deductibles or self-insured retentions that shall apply under any required, or otherwise purchased, insurances and shall have no recourse against Owner for any such costs.

J. All policies of insurance that Contractor is required to purchase and maintain under this Paragraph 6.02 shall:

    1. Contain a provision requiring the insurer to give not less than thirty (30) days' prior notice to Owner whenever the insurer gives Contractor a notice of cancellation or non-renewal with respect to the policy (except in the case of any non-premium payment, not less than ten (10) days' prior notice, which the insurer shall be obligated to give to Owner simultaneously with providing such notice to Contractor). The provision required by the preceding sentence shall not be deemed to infer a right of cancellation that would otherwise not exist in the absence of such provision.

    2. Contain coverage terms and conditions that reflect the industry standard for projects of a similar size, scope, and nature of this Project that the commercial market will provide and support as of the date of such insurance procurement and any subsequent renewals.

    3. Other than worker's compensation/employer's liability insurance and builder's risk insurance, include cross-liability clauses allowing one insured to bring a claim against another insured party. With regard to pollution liability insurance, a cross-liability clause will be allowed as long as it does not impact Owner's ability to sue another insured party and collect under the policy.

SAMPLE

4. Be endorsed so that the insurer agrees to waive, to the extent permitted by law, all rights of subrogation or action that it may have or acquire against any Owner Indemnitee.

5. Other than for professional liability insurance, worker's compensation/employer's liability insurance, automobile liability insurance, and contractor pollution liability insurance, contain a provision under which the insurer agrees that the failure of one insured to observe and fulfill the terms of the policy will not prejudice the coverage of the other insureds.

6. With regard to builder's risk and any other first-party property insurance, have each policy endorsed to contain a standard mortgagee clause to the effect that Owner and other insureds will not be prejudiced by an unintended and/or inadvertent error, omission or mistaken description of the risk interest in property insured under the policies, incorrect declaration of values, failure to advise insurers of any change of risk interest or property insured, or failure to comply with a statutory requirement.

7. Not include defense costs within the limits of coverage or permit erosion of coverage limits by defense costs, except that defense costs may be included within the limits of coverage of the contractor pollution liability policy.

K. Contractor's commercial general liability, automobile liability, umbrella or excess, pollution liability, and marine protection and indemnity policies must:

1. Include and list as additional insureds Owner and other Owner-Related Parties;

2. Include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. Afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. Not seek contribution from insurance maintained by the additional insured; and

5. As to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of Contractor-Related Entities, in the performance of Contractor's operations.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

SAMPLE

7.02 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees, Contractor-Related Entities and their employees.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, Equipment and Materials, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All Equipment and Materials must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of Equipment and Materials.

C. All Equipment and Materials must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

A. *Contractor's Request; Governing Criteria*: Whenever an item of Equipment or Material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the GMP has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of

SAMPLE

Equipment or Material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of Equipment or Material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of Equipment or Material will be considered functionally equal to an item so named if:

    a. in the exercise of reasonable judgment Engineer determines that the proposed item:

        1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

        2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

        3) has a proven record of performance and availability of responsive service; and

        4) is not objectionable to Owner.

    b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

        1) there will be no increase in cost to the Owner or increase in Contract Times; and

        2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in the GMP. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of Equipment or Material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of Equipment or Material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of Equipment or Material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

SAMPLE

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of Equipment or Material proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of Equipment or Material from anyone other than Contractor.
2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
3. Contractor shall make written application to Engineer for review of a proposed substitute item of Equipment or Material that Contractor seeks to furnish or use. The application:
    a. will certify that the proposed substitute item will:
        1) perform adequately the functions and achieve the results called for by the general design;
        2) be similar in substance to the item specified; and
        3) be suited to the same use as the item specified.
    b. will state:
        1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
        2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
        3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
    c. will identify:
        1) all variations of the proposed substitute item from the item specified; and
        2) available engineering, sales, maintenance, repair, and replacement services.
    d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in the GMP, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed fourteen (14) days to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes the GMP or Contract Times. Engineer will advise Contractor in writing of any negative determination.

SAMPLE

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work, in accordance with the Agreement. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

E. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment to the GMP or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

F. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

SAMPLE

G. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

H. Contractor shall be fully responsible to Owner for all acts and omissions of the Contractor-Related Entities, just as Contractor is responsible to Owner for Contractor's own acts and omissions.

I. Contractor is solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. **TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER INDEMNITEES FROM AND AGAINST ALL CLAIMS, COSTS, LOSSES, AND DAMAGES (INCLUDING BUT NOT LIMITED TO ALL FEES AND CHARGES OF ENGINEERS, ARCHITECTS, ATTORNEYS, AND OTHER PROFESSIONALS AND ALL COURT OR ARBITRATION OR OTHER DISPUTE RESOLUTION COSTS) ARISING OUT OF OR RELATING TO ANY INFRINGEMENT OF PATENT RIGHTS OR COPYRIGHTS INCIDENT TO THE USE IN THE PERFORMANCE OF THE WORK OR RESULTING FROM THE INCORPORATION IN THE WORK OF ANY INVENTION, DESIGN, PROCESS, PRODUCT, OR DEVICE NOT SPECIFIED IN THE CONTRACT DOCUMENTS.**

7.09 *Permits*

A. Unless otherwise provided in the GMP Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable

SAMPLE

as of the Effective Date of the Contract. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. **IF CONTRACTOR PERFORMS ANY WORK OR TAKES ANY OTHER ACTION KNOWING OR HAVING REASON TO KNOW THAT IT IS CONTRARY TO LAWS OR REGULATIONS, CONTRACTOR SHALL BEAR ALL RESULTING COSTS AND LOSSES, AND SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER INDEMNITEES FROM AND AGAINST ALL CLAIMS, COSTS, LOSSES, AND DAMAGES (INCLUDING BUT NOT LIMITED TO ALL FEES AND CHARGES OF ENGINEERS, ARCHITECTS, ATTORNEYS, AND OTHER PROFESSIONALS AND ALL COURT OR ARBITRATION OR OTHER DISPUTE RESOLUTION COSTS) ARISING OUT OF OR RELATING TO SUCH WORK OR OTHER ACTION. IT IS NOT CONTRACTOR'S RESPONSIBILITY TO MAKE CERTAIN THAT THE WORK DESCRIBED IN THE CONTRACT DOCUMENTS IS IN ACCORDANCE WITH LAWS AND REGULATIONS, BUT THIS DOES NOT RELIEVE CONTRACTOR OF ITS OBLIGATIONS UNDER PARAGRAPH 3.03.**

C. Changes in Laws and Regulations that occur after the Effective Date of the Contract and affect the cost or time of performance shall be the subject of an equitable adjustment in the GMP or Contract Times, provided, however, that Contractor requests such equitable adjustment in accordance with Articles 4 and 11 hereunder. Notwithstanding anything to the contrary, the relief afforded by this Paragraph C shall not apply to the creation of or changes in any Laws or Regulations relating to: (a) any federal, state or local income or gross receipts tax; (b) any Contractor-Related Entity's corporate existence or the maintenance of its business; or (c) labor or employment matters.

7.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve any Contractor-Related Entity of its responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

SAMPLE

B. Contractor has designated in its GMP Proposal as part of its Key Personnel a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and Equipment and Materials, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the Health and Safety Plan. Any Owner's safety programs that are applicable to the Work are identified or included in the Specifications.

H. Contractor shall inform Owner and Engineer of the specific requirements of the Health and Safety Plan with which Owner's and Engineer's employees and representatives must comply while at the Site.

I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

SAMPLE

K. Within twenty-four (24) hours of receiving a request from Owner, Contractor shall furnish to Owner documentation substantiating representations made in the Health and Safety Plan including, but not limited to, that each of the Contractor's employees has received training on the Health and Safety Plan as well as any other training necessary to competently effectuate the Health and Safety Plan.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer written notice no later than seven (7) days from the date of the emergency if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all Equipment and Materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

SAMPLE

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, Equipment and Materials Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals, provided, however, that unless stated differently in the Schedule of Submittals, Engineer shall provide its review no later than fourteen (14) days from the date it has received the Shop Drawing or Sample. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation

SAMPLE

thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or the GMP, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

   a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

   b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals, provided, however, that unless stated differently in the Schedule of Submittals, Engineer shall provide its review no later than fourteen (14) days from the date it has received the Submittal. Engineer shall return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

SAMPLE

c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor or any Contractor-Related Entity; or

2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

2. Recommendation by Engineer or payment by Owner of any progress or Final Payment;

3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Engineer;

7. The end of the correction period established in Paragraph 15.08;

8. Any inspection, test, or approval by others; or

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9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 ***INDEMNIFICATION***

A. TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, AND IN ADDITION TO ANY OTHER OBLIGATIONS OF CONTRACTOR UNDER THE CONTRACT OR OTHERWISE, CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER INDEMNITEES FROM LOSSES, CLAIMS, SUITS, DAMAGES, LIABILITIES, CAUSES OF ACTION, COSTS, AND JUDGMENTS (INCLUDING BUT NOT LIMITED TO ALL FEES AND CHARGES OF ENGINEERS, ARCHITECTS, ATTORNEYS, AND OTHER PROFESSIONALS, AND ALL COURT OR ARBITRATION OR OTHER DISPUTE RESOLUTION COSTS) ARISING FROM THIRD-PARTY CLAIMS OR ACTIONS RELATING TO OR RESULTING FROM THE PERFORMANCE OR FURNISHING OF THE WORK, PROVIDED THAT ANY SUCH CLAIM, ACTION, LOSS, COST, JUDGMENT OR DAMAGE IS ATTRIBUTABLE TO BODILY INJURY, SICKNESS, DISEASE, OR DEATH, OR TO DAMAGE TO OR DESTRUCTION OF TANGIBLE PROPERTY (OTHER THAN THE WORK ITSELF), INCLUDING THE LOSS OF USE RESULTING THEREFROM, BUT ONLY TO THE EXTENT CAUSED BY ANY NEGLIGENT ACT OR OMISSION, OR RECKLESSNESS OR INTENTIONAL MISCONDUCT, OF CONTRACTOR OR ANY CONTRACTOR-RELATED ENTITY.

B. IN ANY AND ALL CLAIMS AGAINST AN OWNER INDEMNITEE BY ANY EMPLOYEE (OR THE SURVIVOR OR PERSONAL REPRESENTATIVE OF SUCH EMPLOYEE) OF CONTRACTOR OR ANY CONTRACTOR-RELATED ENTITY, THE INDEMNIFICATION OBLIGATION UNDER PARAGRAPH 7.18.A WILL NOT BE LIMITED IN ANY WAY BY ANY LIMITATION ON THE AMOUNT OR TYPE OF DAMAGES, COMPENSATION, OR BENEFITS PAYABLE BY OR FOR CONTRACTOR OR ANY CONTRACTOR-RELATED ENTITY UNDER WORKERS' COMPENSATION ACTS, DISABILITY BENEFIT ACTS, OR OTHER EMPLOYEE BENEFIT ACTS. THE PURPOSE OF THIS PROVISION IS NOT TO CHANGE ANY LIABILITY/BENEFIT BETWEEN CONTRACTOR-RELATED ENTITY AND ITS EMPLOYEE, BUT TO PROTECT THE OWNER INDEMNITEES TO THE FULL EXTENT TO WHICH AN EMPLOYEE MAY ASSERT A CLAIM AGAINST AN OWNER INDEMNITEE ARISING UNDER PARAGRAPH 7.18.A ABOVE.

7.19 *Delegation of Professional Design Services*

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor or a Contractor-Related Entity for submittal to Engineer, then such Shop Drawing

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or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the following professional standard of care and the performance and design criteria: architectural or engineering services must be performed with the professional skill and care ordinarily provided by competent architects or engineers practicing under the same or similar circumstances and professional license.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;
2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer. However, Contractor retains the responsibility of providing written disclosure of known defects within a reasonable time after such defects are discovered or reasonably should have been discovered using ordinary diligence before or during construction.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

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D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the GMP or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the Effective Date of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment to the GMP will be conditioned on Contractor assigning to Owner all Contractor's

SAMPLE

rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or the GMP is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and **(2) INDEMNIFY AND HOLD HARMLESS OWNER INDEMNITEES FROM AND AGAINST ANY SUCH CLAIMS, AND AGAINST ALL COSTS, LOSSES, AND DAMAGES (INCLUDING BUT NOT LIMITED TO ALL FEES AND CHARGES OF ENGINEERS, ARCHITECTS, ATTORNEYS, AND OTHER PROFESSIONALS AND ALL COURT OR ARBITRATION OR OTHER DISPUTE RESOLUTION COSTS) ARISING OUT OF OR RELATING TO SUCH DAMAGE, DELAY, DISRUPTION, OR INTERFERENCE.**

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

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9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.07 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.08 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.09 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.10 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.11 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

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10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in writing by Owner to Contractor.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in writing by Owner to Contractor.

10.04 *Engineer's Authority*

A. Engineer has the authority to reject Work in accordance with Article 14.

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for

SAMPLE

initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor or any Contractor-Related Entity.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Contractor-Related Entity.

D. Engineer's review of the Application for Final Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the GMP or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve: (1) the performance or acceptability of the Work; (2) the design (as set forth in the Drawings, Specifications, or otherwise); or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

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11.02 *Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes the GMP or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes the GMP resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from Allowance Payment Items; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

A. A Work Change Directive will not change the GMP or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the GMP and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of the GMP.

B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in the Contract Times or the GMP is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in the Contract Times or the GMP is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the GMP or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

SAMPLE

B. If Contractor believes that a Field Order justifies an adjustment in the GMP or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on the Contract Times or the GMP; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the GMP or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of the GMP*

A. The GMP may only be changed by a Change Order. Any Change Proposal for an adjustment in the GMP must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of the GMP must comply with the provisions of Article 12.

B. An adjustment in the GMP will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for Contractor's Fee; or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus Contractor's Fee, as determined in Paragraph 7.02 of the Agreement.

4. Where the Work involved results in an extension of the Contract Times as set forth in Paragraph 11.08 below, Contractor's General Conditions may be subject to an adjustment: (a) to the extent that Contractor demonstrates that Contractor's General Conditions have been increased as a result of such time extension; and (b) provided,

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however that the basis for the time extension does not arise from the events set forth in Paragraph 4.05.C above.

11.08 *Change of the Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content*: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or the GMP; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or the GMP, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change the GMP or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

    a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

    b. Change proposals related to a change of the GMP must include full and detailed accounts of Equipment and Materials and labor and equipment used for the subject Work.

    The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a

SAMPLE

copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of Final Payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, the GMP or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the GMP or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of Final Payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or the GMP, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the

SAMPLE

amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations, with the understanding that such exchange and negotiations will initially take place between the authorized representatives of Owner and Contractor, and then, if the Claim is not resolved, by negotiations between senior representatives of Owner and Contractor. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding, subject to the right of the other party to invoke the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, as may be extended by mutual agreement of the parties, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, subject to the right of the parties to invoke the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the GMP.

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ARTICLE 13—COST OF THE WORK; CONTRACTOR'S GENERAL CONDITIONS; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work and Contractor's General Conditions*

A. *Purposes for Determination of Cost of the Work and Contractor's General Conditions*: The terms "Cost of the Work" and "Contractor's General Conditions" are used for two distinct purposes:

1. To determine Cost of the Work and Contractor's General Conditions as components of the GMP; and

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment to the GMP. When the value of any such adjustment is determined on the basis of Cost of the Work and/or Contractor's General Conditions, Contractor is entitled only to those additional costs directly required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: The costs included as Cost of the Work and Contractor's General Conditions are identified in the Agreement.

C. *Costs Excluded*: The Cost of the Work and Contractor's General Conditions shall not include any Non-Reimbursable Costs.

D. *Documentation and Audit*: For the avoidance of doubt, all of the Costs of the Work and Contractor's General Conditions shall be made available to Owner on an Open Book Basis, and subject to the Books and Records requirements of the Agreement to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 *Allowances*

A. If Applicable, it is understood that Contractor has included in the GMP Allowance Payment Items, with corresponding Allowance Payment Values. The administration of such items shall be as set forth in the Agreement.

B. *Owner Contingency*: Contractor agrees that an Owner Contingency, if any, is for the sole use of Owner to cover unanticipated costs.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the GMP will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of determining the GMP. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

SAMPLE

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of the GMP will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change the GMP is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

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D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
2. to attain Owner's and Engineer's acceptance of Equipment and Materials;
3. by manufacturers of Equipment furnished under the Contract Documents;
4. for testing, adjusting, and balancing of mechanical, electrical, and other Equipment; and
5. for acceptance of Materials, mix designs, or Equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to Final Payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

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14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to Final Payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to Final Payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the GMP, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after Final Payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, Equipment and Material.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the GMP or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this

SAMPLE

right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. Contractor shall, within seven (7) days of receipt of written notice from Engineer that the Work is defective, take meaningful steps to commence correction of such nonconforming Work, including the correction, removal or replacement of the defective Work and any damage caused to other parts of the Work affected by the nonconforming Work. If Contractor fails to commence the necessary steps within such seven (7) day period, then Owner, in addition to any other remedies provided under the Contract Documents, may send a seven (7) days' written notice to Contractor, for Contractor to correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all Equipment and Materials stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

1. On or about the first (1st) day of each month, Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of Equipment or Materials not yet incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale,

SAMPLE

invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by Contractor for the Equipment and Materials; (b) at Owner's request, documentation warranting that Owner has received the Equipment and Materials free and clear of all Liens; and (c) evidence that the Equipment and Materials are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

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4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including Final Payment, will impose responsibility on Engineer:

    a. to supervise, direct, or control the Work;

    b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

    c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

    e. to determine that title to any of the Work, Equipment and Materials has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

    a. the Work is defective, requiring correction or replacement;

    b. the GMP has been reduced by Change Orders;

    c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

    d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

    e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Twenty (20) days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

    a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

SAMPLE

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The GMP has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or Final Completion;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, Equipment and Materials furnished under the Contract will pass to Owner free and clear of: (1) all Liens and other title defects; and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

SAMPLE

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before Final Payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before Final Payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to Final Payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

G. Contractor will provide Owner with all Supplier warranties upon Substantial Completion

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

SAMPLE

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within seven (7) days after such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 15.03 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for Final Payment.

2. The Application for Final Payment must be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to Final Payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, Equipment and Materials has passed to Owner free and clear of any Liens or other title defects, or will so pass upon Final Payment.

   d. a list of all duly pending Change Proposals and Claims; and

SAMPLE

e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, Equipment and Material for which a Lien could be filed; and (b) all payrolls, Equipment and Material bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application for Final Payment and Recommendation of Payment*: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the Application for Final Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the Application for Final Payment, indicate in writing Engineer's recommendation of Final Payment and present the Application for Final Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Final Payment to Contractor, indicating in writing the reasons for refusing to recommend Final Payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Final Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the Application for Final Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Final Completion*: The Work is complete (subject to surviving obligations) when it is ready for Final Payment as established by the Engineer's written recommendation of Final Payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the Application for Final Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for Final Payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the Application for Final Payment from Engineer.

15.07 *Waiver of Claims*

A. By making Final Payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after Final Payment.

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B. The acceptance of Final Payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;
2. correct such defective Work;
3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

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ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the GMP or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable Equipment or Materials, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all Equipment and Materials stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the GMP exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, Contractor will only be entitled to be paid for Work performed prior to its default, and the balance will be for the account of and retained by Owner. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such

SAMPLE

claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including Contractor's Fee on such Work;

2. Cost of the Work and Contractor's General Conditions incurred prior to the effective date of termination in performing services and furnishing labor, Equipment or Materials, as required by the Contract Documents in connection with uncompleted Work, plus Contractor's Fee on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment to the GMP or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

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ARTICLE 17—DISPUTE RESOLUTION

17.01 *Commitment to Resolve Disputes*

A. The Parties are fully committed to working with each other and agree to communicate regularly with each other at all times so as to avoid or minimize and resolve any disputes. If any disputes do arise, Contractor and Owner each commit to resolving such disputes in an amicable, professional and expeditious manner.

17.02 *Mediation*

A. If a dispute cannot be resolved on terms satisfactory to both Parties, the Parties may mutually agree to mediate the dispute. Any mediation will be based upon a process mutually agreed upon by the Parties.

17.03 *Litigation*

A. Any and all disputes between the Parties shall be finally resolved through litigation. Legal proceedings between the Parties shall be solely and exclusively initiated and maintained in a court of competent jurisdiction sitting in El Paso County, Texas. Contractor irrevocably consents to the jurisdiction of such courts in any such proceeding and waives any objection it may have to the jurisdiction of any such proceeding. Mediation will be a condition precedent to filing a cause of action in court.

ARTICLE 18—MISCELLANEOUS

18.01 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.02 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.03 *Waiver of Consequential Damages*

A. To the fullest extent permitted by law, and notwithstanding any other provision of the Agreement, in no event, whether arising out of contract, breach of warranty (express or implied), tort (including negligence), strict liability, or any other cause of or form of action whatsoever, shall either Party be liable to the other for any consequential damages (including damages for loss of use, loss of profits or anticipated profits, loss of revenue, and loss of business opportunity) arising out of or in connection with the performance or non-performance of its obligations under the Contract Documents.

SAMPLE

18.04 *No Waiver*

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.05 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive Final Payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.06 *Controlling Law*

A. This Contract is to be governed by the laws of the state of Texas, without giving effect to its conflict of law principles.

18.07 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.08 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.09 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

18.10 *Severability*

If any provision or any part of a provision of the Contract Documents shall be finally determined to be superseded, invalid, illegal, or otherwise unenforceable pursuant to any applicable Legal Requirements, such determination shall not impair or otherwise affect the validity, legality, or enforceability of the remaining provision or parts of the provision of the Contract Documents, which shall remain in full force and effect as if the unenforceable provision or part were deleted.

18.11 *Amendments*

The Contract Documents may not be changed, altered, or amended in any way except in writing signed by a duly authorized representative of each party.

18.12 Railroads

A. Union Pacific Railroad Company Contractor's Right of Entry: Contractor shall acquire, and pay all associated expenses (including railroad company inspection fees), Contractor's right-of-entry from, the Union Pacific Railroad Company. Refer to Union Pacific Railroad's "Contractor's Right

SAMPLE

of Entry" form and its exhibits, included in the Project Manual following these Supplementary Conditions. Right-of-entry requirements are interrelated with the railroad liability insurance requirements and both are Contractor's cost responsibility. Contractor shall acquire railroad company's authorization prior to commencing work in the railroad right-of-way. Submit to Owner and Engineer executed copies of Contractor's "Right of Entry" form prior to commencing work on railroad property.

B. Railroad Liability Insurance: Contractor shall obtain Railroad Liability Insurance in the form and amount required by the Union Pacific Railroad Company. Such insurance shall be in effect and cover all necessary work and operations required of Contractor within the railroad right-of-way. Refer to the railroad's "Contractor's Right of Entry" form and its exhibits. Insurance requirements of this paragraph are interrelated with the right-of-entry requirements in Paragraph SC-17.09.A and is Contractor's responsibility.

C. For clarification of the requirements and costs of railroad permits and insurance, contact:

Manager Utilities Work
Union Pacific Railroad Company
Contracts and Real Estate Department
1400 Douglas Street STOP 1690
Omaha, Nebraska 68179-1690
Phone: (402) 544-8620
Fax: (402) 501-1519

18.13 Working Near Utilities

A. Construction Adjacent to High Voltage Electric Lines:

1. Contractor shall comply with Laws and Regulations, including U.S. Occupational Safety and Health Administration (OSHA) safety standards regarding construction adjacent to high-voltage electric lines and facilities, including trenching, crane operations, final grading, and other associated work which may result in impaired clearance to an existing electrical line or facility.

2. It is a violation of OSHA regulations to operate equipment in a manner that results in persons or equipment coming within ten feet of an energized electric line. Such Laws and Regulations are enforced by OSHA, and violators are subject to penalties imposed under federal Law.

3. Texas Law prohibits function or activity where it is possible for the person performing such activity to come within six feet of an overhead power line.

4. Contractor shall notify the El Paso Electric Company in writing of Contractor's anticipated dates and times when such work is scheduled. Written notification of El Paso Electric Company shall be at least six working days prior to each scheduled activity near El Paso Electric Company power lines and facilities, so that El Paso Electric Company personnel can coordinate with Contractor to provide proper clearance of energized electric lines. No other type of notice will be acceptable and work shall not be initiated until proper clearance and arrangements are confirmed by Contractor with the El Paso Electric Company.

SAMPLE

5. Submit written notification to:

Raul Guel, Distribution Engineering Design
El Paso Electric Company
P. O. Box 982
El Paso, Texas 79960
(915) 543-4015

6. Simultaneously submit one copy of the notification letter to Owner's Contracts Development Manager and retain copy in Contractor's file.

7. Below are selected El Paso Electric Company phone numbers:

Claims Director	(915) 543-4158
Trouble & Emergencies	(915) 543-5720
Field Services/Power Consultants	(915) 543-2255
Cable Locator	(915) 543-4051

B. Construction Adjacent to Gas Lines: Contractor shall comply with the One-Call Notification and System Protection Program developed by Southern Union Gas Company, and with State Damage Prevention Law, HB 2295:

- Contact Texas Gas Co. not less than two working days before commencing excavation activities
- Determine exact location of all underground utilities by safe and acceptable means
- Employ the two foot safety rule
- Utilize "Professional Excavator's Manual" as revised

18.14 EPCWID #1 Dewater Permit Requirements

A. A license agreement for "Discharge of Foreign Waters into District Drain Ditches" is required between Owner and the El Paso County Water Improvement District (EPCWID) #1 before Contractor may begin dewatering operations. Contractor shall be a co-licensee with Owner. Terms and conditions of the license agreement are applicable to Contractor, who will function, relative to the license EPCWID #1 agreement only, as an agent of Owner, by preparing an approvable plan and carrying out the terms of the plan and the EPCWID #1 license agreement. Contractor shall, to the extent permitted by law, defend and hold harmless Owner, its employees, insurers and agents; and the Engineer and Engineer's consultants, and their employees, officers, insurers, and agents from claims arising out of damages caused by actions, or inactions, of Contractor or as a result of EPCWID's exercise of any or all options given it under the license agreement.

B. Contractor shall prepare and submit to Engineer a "Dewatering Plan", a "Final Schedule for Dewatering", and an estimate of fees due EPCWID #1. Submit "Dewatering Plan" within 15 days of the date that the Contract Times commence running. "Dewatering Plan" shall include the estimated quantities of dewatering for each month of the Contract, the design capacity and number of pumps to be used by Contractor, and the point(s) of dewatering pump discharge. Engineer will review for acceptability the "Dewatering Plan" and, when the submittal is acceptable to Engineer, Engineer will forward it, through Owner, to EPCWID #1. Prepare and

SAMPLE

submit the submittal and schedule the Work so that Owner receives the “Dewatering Plan” submittal not less than 14 days before the start of dewatering operations at the Site. Owner will pay the fees as estimated in the "Dewatering Plan".

C. Estimate the dewatering fees on the following basis:

1. Drain maintenance fee of $1,000 for each six months a discharge occurs. Fee for maintenance is non-refundable. Subsequent semi-annual fee payments are payable to Owner by Contractor in advance of each respective six-month period.

2. Dewatering fee at the rate of $150 per acre foot of water discharged. For a month in which the discharge exceeds the amount estimated under the “Dewatering Plan”, Contractor shall advise Owner and Engineer in writing, that such excess fees may be due so that the Owner may consider its liability for, and take action to make payment of, such excess fees to EPCWID #1. Owner will pay such excess fees only to the extent that such fees are incurred through no fault of Contractor.

D. Samples of the discharge water shall be tested by a qualified testing laboratory hired by Contractor. Submit to Engineer results of total dissolved solids (TDS) tests, which Engineer will transmit to EPCWID #1. Submit to Engineer and Owner monthly reports of discharge quantities and quality (TDS and sulfates), which specific requirements may be more particularly indicated in the Specifications and in the associated discharge permit; Engineer will transmit monthly reports to EPCWID #1.

E. Contractor will not be eligible for final payment by Owner until final dewatering fees based upon actual quantities and damages (if any) due EPCWID # 1 have been paid and payment due from Contractor has been made. A “Final Release” from EPCWID # 1 shall be received by Owner as a condition precedent to Contractor applies for final payment.

SAMPLE

PRECONSTRUCTION SERVICES AGREEMENT

THIS PRECONSTRUCTION SERVICES AGREEMENT (this "Agreement") is made this ___ day of _____, 2022 ("Effective Date"), by and between El Paso Water Utilities – Public Service Board, a component of the City of El Paso, Texas ("Owner"), and _____, a corporation organized under the laws of the state of _____("Contractor"), for certain services related to a construction project known as the "_____" project ("Project").

WITNESSETH:

WHEREAS, Owner has determined that its best interests are served in delivering the Project through a "construction manager at-risk" process, as provided for by Chapter 2269, Subchapter F of the Texas Government Code ("Enabling Law"); and

WHEREAS, under this Enabling Law, a governmental entity is to contract with: (a) an engineer for design and construction phase services to the governmental entity on the project, including preparing the project's construction documents; and (b) a construction manager-at-risk ("CMAR") to serve as the general contractor and to provide consultation during the design and construction of the Project; and

WHEREAS, Owner entered into a contract with _____("Engineer"), whereby Engineer was engaged to provide design and construction phase services to Owner on the Project, including the preparation of the Project's construction documents; and

WHEREAS, on or about _____, 202_, Owner issued a Request for Proposals ("RFP") soliciting interested proposers to respond to the RFP to serve as the CMAR for the Project; and

WHEREAS, on or about_____, 202_, Contractor submitted its proposal ("Proposal") in response to the RFP; and

WHEREAS, on or about _____, 202_, Owner notified Contractor that it was the successful proposer; and

WHEREAS, on or about _____, 202_, the Public Service Board of the City of El Paso, Texas approved the award of this Agreement to Contractor.

NOW, THEREFORE, in consideration of the mutual covenants and obligations contained herein, Owner and Contractor hereby agree as follows:

ARTICLE 1
DEFINITIONS AND GENERAL PRINCIPLES

1.1 Definitions. For the purposes of this Agreement, the following words and terms shall have the meanings specified below.

Affiliate means, with respect to any particular company or entity, a company or entity that: (a) owns and controls, directly or indirectly, such company or entity; (b) is owned and controlled, directly or indirectly, by such company or entity; or (c) is owned and controlled, directly or indirectly, by the same company or entity that owns and controls such company or entity. The term "control" for purposes of this definition means: (i) ownership, directly or indirectly, of fifty percent (50%) or more of the issued voting shares of a company or entity or ownership of equivalent rights to determine the decisions of such company

SAMPLE

or entity; or (ii) having the right to appoint at least fifty percent (50%) of the members of the board of directors or equivalent governing body of such company or entity.

Agreement means this written document executed by Owner and Contractor, and including all Exhibits.

Allowance Payment Item means an item or portion of the Work which has not been defined sufficiently, or for which the Owner has yet to make certain decisions necessary, to permit pricing by Contractor.

Allowance Payment Value means the estimated dollar amount included in the GMP Proposal or other budget document as a placeholder value for an Allowance Payment Item.

Baseline Schedule means the schedule developed by Contractor in accordance with Section 5.2.4 below and approved by Owner, demonstrating, among other things, how Contractor shall complete all Work timely and achieve Substantial Completion on or before the Scheduled Substantial Completion Date.

Books and Records means all documents (whether paper, electronic, or other media) and electronically stored information, including, but not limited to, any and all books, correspondence, receipts, vouchers, estimates, records, contracts, cost data, schedules, subcontracts, schedules, job cost reports, and other data, including computations and projections, of Contractor related to bidding, negotiating, pricing, or performing the Preconstruction Services and/or Work.

Books and Records Period means that period starting on the Effective Date and ending at the later of four (4) years after: (a) Final Payment under this Agreement; or (b) Final Payment under the Construction Contract, provided, however, that if litigation, a claim, or an audit is in process, or if audit findings are not resolved, such Books and Records Period shall be extended until the later of the final conclusion of the litigation, claim, audit, or audit finding resolution.

Confidential Information has the meaning set forth in Section 14.6 below.

Contingency has the meaning set forth in Section 5.8.1 below.

Construction Contract means that contract awarded by Owner for the construction of the Project in accordance with the Construction Contract Documents.

Construction Contract Documents means those documents that are referenced as such in the Construction Contract.

Construction Documents means those final, complete design documents that have been signed and sealed by Engineer and are to be used for performing the Work under the Construction Contract.

Contractor means _____

Contractor-Related Entity means Contractor, Subcontractors, Sub-Subcontractors, Suppliers and anyone for whose acts any of them may be legally or contractually responsible.

Contractor's Fee is ____ percent (_) and represents the compensation to Contractor for profit and Non-Reimbursable Costs.

Contractor's General Conditions means those costs set forth in Exhibit 5.2.1.

SAMPLE

Cost of the Work means those costs set forth in Exhibit 5.2.1.

Early Work Packages has the meaning set forth in Section 5.9 below.

Engineer means_____, and its subconsultants.

Equipment and/or Material mean all of the equipment, materials, machinery, apparatus, structures, supplies and other goods required by the Construction Contract Documents to complete the Work and to be incorporated into the Project or provided to Owner. The term "Equipment and Materials" shall not be construed to include any construction equipment, supplies, materials, apparatus or tools owned by any Contractor-Related Entity that are used to complete the Work and are not contemplated under the Construction Contract Documents to become incorporated into the Project or to be provided to Owner.

Guaranteed Maximum Price (GMP) means the sum of the Cost of the Work, Contractor's General Conditions, and Contractor's Fee, as such sum may be adjusted in accordance with the Construction Contract Documents.

GMP Proposal(s) means that proposal submitted by Contractor to Owner under Article 5 hereof.

GMP Proposal Design Documents mean those design documents referenced in Section 5.2 below and upon which the GMP Proposal is based.

Governmental Approval means any authorization, consent, approval, license, lease, ruling, permit, certification, exemption, or registration by or with any Governmental Unit.

Governmental Unit means any national, state or local government, any political subdivision thereof, or any governmental, quasi-governmental, judicial, public or statutory instrumentality, administrative agency, authority, body or other person and/or entity having jurisdiction over the Site, performance of the Preconstruction Services, the Work, the Project or the Parties.

Initial GMP Proposal means that proposal submitted by Contractor to Owner under Article 5 hereof when the Work of the Project is divided into separate Work packages.

Laws and/or Regulations means all applicable federal, state and local laws, codes, ordinances, rules, statutes, regulations, orders and decrees, and other requirements of any Governmental Unit, including, without limitation, any interpretation of such items by the applicable Governmental Unit.

Liquidated Damages has the meaning set forth in Section 3.3.4 below.

Non-Reimbursable Costs mean those costs set forth in Exhibit 5.2.1.

Notice of Intent to Award means the written notice provided from Owner to Contractor that Owner intends to award Contractor the Construction Contract.

Notice of Non-Award means the written notice provided from Owner to Contractor that Owner does not intend to award Contractor the Construction Contract.

Open Book Basis means allowing Owner to review all underlying assumptions, records, stand-alone Subcontractor and Supplier quotes, and other data associated with each element of pricing, or any adjustment thereto, including assumptions as to Costs of the Work, schedule, composition of equipment,

SAMPLE

equipment rates, labor rates and burdens, production rates, estimating factors, contingency and indirect costs, risk pricing, inflation and deflation rates, profit, home office overhead rates, fees, charges, levies, incentives, and other items reasonably required by Owner to satisfy itself as to the reasonableness and accuracy of the amounts proposed by Contractor.

Owner means El Paso Water Utilities – Public Service Board, a component unit of the City of El Paso, Texas.

Owner Indemnitee means and includes each of Owner and Engineer and, with respect to each of the foregoing, each of its respective representatives, officers, employees, members or other constituent entities, authorized agents, and other duly authorized representatives.

Party or Parties means, as applicable: (a) in the singular, Owner or Contractor; or (b) in the plural, Owner and Contractor.

Plant means the_____.

Preconstruction Services mean the work performed by Contractor under this Agreement, including but not limited to those Preconstruction Services set forth in Exhibit 2.1.

Pre-Existing Intellectual Property has the meaning set forth in Section 13.4 hereof.

Project means the _____Project.

Project Team means Owner, Engineer, Contractor and other stakeholders who are responsible for making decisions regarding the Project.

Proposal Acceptance Period means no less than one hundred twenty (120) days from the date Owner receives the GMP Proposal from Contractor.

Scheduled Substantial Completion Date means the date that is set forth in the Construction Contract Documents, which is the date by which Contractor is obligated to achieve Substantial Completion of the entire Work, subject to adjustment as set forth in the Construction Contract Documents.

Security Bond means the bond provided by Contractor pursuant to Exhibit 7.1.1.

Self-Perform means Work performed by employees of the Contractor or any of its Affiliates.

Site means the area of the Plant upon which the Project is located, as set forth in Exhibit 1.1(b).

Subcontract means any contract entered into by Contractor and any other Contractor-Related Entity in connection with the carrying out a portion of this Agreement or the Work.

Subcontractor is any person or entity having a direct contract with Contractor as an independent contractor to perform a portion of the Work and shall include materialmen and Suppliers.

Sub-Subcontractor is any person or entity having a direct contract with a Subcontractor.

Substantial Completion means that: (a) the Work (or a specified part thereof) is sufficiently complete in accordance with the Construction Contract Documents so that Owner can beneficially use and occupy the Project (or a specified part thereof) for its intended purposes and with functionality intended;

SAMPLE

and (b) Contractor has satisfied or fulfilled all other requirements set forth in the Construction Contract Documents for Substantial Completion.

Supplier is any person or entity retained by a Contractor-Related Entity to provide Equipment and Materials, or construction equipment, supplies or other goods to be used in the performance of the Work but not incorporated into the Work.

Work means the entire construction or the various separately identifiable parts thereof required to be provided under the Construction Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all Equipment and Materials into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Construction Contract Documents.

Work Product means all cost estimates, schedules, bid packages, studies, data, models, documents, photographs, videos, and work developed or produced by or on behalf of Contractor, whether in hard-copy, digital or electronic data, or any other medium, and whether completed or not completed.

1.2 Contracting Approach. Owner has entered into this Agreement with Contractor for the limited purpose of having Contractor provide preconstruction services in support of the Project. As part of its scope of work, Contractor will provide Owner with a GMP Proposal(s) that will establish the commercial terms for it performing the Work in accordance with the Construction Contract Documents, including but not limited to performing the Work within the GMP and achieving Substantial Completion no later than Scheduled Substantial Completion Date. The Parties agree that if the Work of the Project is divided into separate work packages, Contractor will provide an Initial GMP Proposal. If the Parties are in agreement with the terms of the GMP Proposal or Initial GMP Proposal, it is anticipated that Owner will issue Contractor a Notice of Intent to Award, with the understanding that Construction Contract will incorporate the agreed-upon GMP Proposal or Initial GMP Proposal. If an Initial GMP Proposal is accepted by Owner, all subsequent GMP Proposals for the remainder of the Work provided by Contractor in accordance with this Agreement that are accepted by the Owner after the Parties enter the Construction Contract will be incorporated into the Construction Contract. If the Parties are unable to agree upon the terms of the GMP Proposal or Initial GMP Proposal, or if Owner determines for any other reason not to award Contractor the Construction Contract, Owner will issue Contractor a Notice of Non-Award, which will end Contractor's involvement on the Project.

1.3 Owner's Rights to Deliver the Project. For the avoidance of doubt, and notwithstanding anything else to the contrary in this Agreement, Contractor acknowledges that Owner is under no obligation to enter into any further agreement with Contractor, including the Construction Contract. Owner has the unconditional right to deliver the Project without Contractor's involvement and using, in Owner's sole and absolute discretion, whatever means of delivering the Project Owner determines to be in its best interests.

1.4 Relationship between Owner and Contractor. Owner and Contractor agree to proceed with the Project on the basis of trust, good faith and fair dealing, and shall take all actions reasonably necessary to perform this Agreement in an economical and timely manner.

ARTICLE 2
SCOPE OF WORK

2.1 Preconstruction Services. Contractor's Preconstruction Services are set forth in Exhibit 2.1 and consist of Basic Preconstruction Services and Additional Preconstruction Services.

SAMPLE

2.2 Standard of Care. Contractor's standard of care in performing the Preconstruction Services will be the care and skill ordinarily used by construction contractors providing similar services on projects similar to this Project.

2.3 No Responsibility for Design. Notwithstanding anything to the contrary in this Agreement, Contractor is not responsible for providing, nor does Contractor control, the Project design and contents of the design documents. By performing constructability, value engineering and other reviews of the design as part of the Preconstruction Services, Contractor shall not be deemed to assume responsibility or liability, in whole or in part, for the Project design and contents of the design documents, or for any of the contractual or customary responsibilities or duties of the Engineer. However, Contractor retains the responsibility of providing written disclosure of known defects within a reasonable time after such defects are discovered or reasonably should have been discovered using ordinary diligence before or after construction.

2.4 Changes to Preconstruction Services. Owner, without invalidating this Agreement, may make changes to the Preconstruction Services, including the authorization of Additional Preconstruction Services, by written notice to Contractor. If Contractor believes that any such change will affect the cost or time to perform its responsibilities under this Agreement, Contractor shall, before proceeding with the change, notify Owner in writing and await further instruction from Owner. Contractor shall not perform any Additional Preconstruction Services, or any other work that is not specified as basic Preconstruction Services, unless approved in writing by Owner.

2.5 Construction Activities at the Site. As of the Effective Date, the Preconstruction Services do not include the performance by Contractor of any construction activities (e.g., Site clearing, demolition, or construction of permanent Work) at the Site. If Owner and Contractor determine that the best interests of the Project would be served by having Contractor perform one or more Early Work Packages involving construction activities at the Site, they will proceed in accordance with Section 5.9 below. For the avoidance of doubt, Contractor's Site visits and investigations shall not be construed as being construction activities. Additionally, the Parties agree that if the Work of the Project is divided into separate Work packages and the Parties enter into a Construction Contract after the Owner's acceptance of the Initial GMP Proposal, Contractor will perform construction activities pursuant to the Construction Contract while Contractor continues performance of Preconstruction Services for the remainder of the Work packages.

2.6 Key Personnel. Contractor's Key Personnel are set forth in Exhibit 2.6. Contractor acknowledges that the qualifications of its Key Personnel were an essential element to Contractor being awarded this Agreement, and further acknowledges the importance of its Key Personnel in successfully performing the Preconstruction Services and, if a Construction Contract is awarded to Contractor, the Work. Absent separation of employment, none of the Key Personnel may be withdrawn from the Project without prior written approval of Owner, with it being understood and agreed that Contractor will provide Owner with at least thirty (30) days written notice of any request to withdraw any Key Personnel. Any replacement personnel shall have equivalent skill, experience and reputation. Contractor shall remove or replace, or have removed or replaced, any personnel performing the work if Owner has a reasonable objection to such individual.

2.7 Project Kick-Off Meeting. The parties will meet within seven (7) days after the Effective Date to discuss issues affecting the administration of this Agreement, including potential Subcontractor involvement, processes relating to submittals and payment, and other matters that will facilitate the ability of the parties to perform their obligations under this Agreement.

SAMPLE

ARTICLE 3
TIME FOR RENDERING PERFORMANCE

3.1 Commencement. Contractor shall begin rendering the Preconstruction Services as of the Effective Date of the Agreement.

3.2 Performance Time. Specific periods of time and/or dates for Contractor rendering the Preconstruction Services are, as applicable, provided in Exhibit 2.1. If such periods of time or dates are changed through no fault of Contractor, the rates and amounts of compensation provided for in this Agreement shall be subject to equitable adjustment.

3.3 Project Schedule.

3.3.1 Development and Maintenance of Project Schedule. Contractor will develop and maintain the Project Schedule on behalf of the entire Project Team. The fundamental purpose of the Project Schedule is to identify, coordinate, manage and monitor the tasks and activities to be performed by all Project Team members for all phases of the Project. Among other things, the Project Schedule will depict: (a) the production of various design phase documents; (b) long-lead procurements; (c) permitting requirements; (d) any real estate and right-of-way acquisition; (e) bid packaging strategy and awards to Subcontractors and Suppliers; (f) major stages of construction; (g) coordination with third-party utilities and Governmental Units; (h) start-up and commissioning; and (h) substantial completion. Each Project Team member is responsible for complying with the Project Schedule.

3.3.2 Further Development of Project Schedule. The Project Schedule is intended to become more detailed as the design progresses, evolving from conceptual to detailed. Early Project Schedules will concentrate on milestones for each design phase deliverable (e.g., 30%, 60%, 90%, 100%) design, Equipment lead times and general construction durations. Contractor will expand and update the Project Schedule throughout the term of this Agreement such that it will not require significant changes at the start of the construction phase to incorporate Contractor's plan for the performance of the construction phase work under the Construction Contract. It is intended that the Baseline Schedule submitted by Contractor pursuant to Section 5.2.4 below will be derived from the most current Project Schedule.

3.3.3 Updates. Contractor will provide updates and/or revisions to the Project Schedule for use by the Project Team, whenever required, but no less often than monthly.

3.3.4 Liquidated Damages. If Contractor does not achieve completion of the Work required under the Construction Agreement in accordance with the Contract Times specified in the Construction Agreement, Owner will suffer damages which are difficult to determine and accurately specify. To compensate Owner for those damages, the Parties will agree upon liquidated damages ("Liquidated Damages"), which will be set forth in the Construction Agreement.

ARTICLE 4
COMPENSATION AND PAYMENT

4.1 Compensation. Owner shall pay Contractor for services properly performed or furnished under this Agreement on the basis set forth in Exhibit 4.1.

4.2 Payment Process. Contractor shall submit an Application for Payment to Owner by the tenth (10th) day of each month following the performance of services for which Contractor is entitled to payment hereunder. Each Application for Payment shall: (a) be in the form approved by Owner; (b) identify

SAMPLE

the services performed during the preceding month; (c) indicate the total amount requested for payment; (d) indicate the total amount paid Contractor through the date of the Application for Payment; and (e) include such other information or documentation as Owner may reasonably require.

4.3 Payment by Owner. Owner shall make payment to Contractor of all properly supported invoiced amounts in accordance with Chapter 2251 of the Texas Government Code following receipt of an acceptable Application for Payment. In the event of a disputed or contested invoice, Owner will provide notice to Contractor in accordance with Chapter 2251 of the Texas Government Code and Owner may withhold from payment only that portion so contested and shall pay the undisputed portion.

4.4 Final Payment. Owner shall make final payment to Contractor of all monies due under this Agreement in accordance with Chapter 2251 of the Texas Government Code, after its receipt from Contractor of a Final Application for Payment. The Final Application for Payment shall be accompanied by such documentation as Owner may require, including appropriate releases. Contractor shall submit its Final Application for Payment after Owner's award to Contractor of the Construction Contract or the Notice of Non-Award.

4.5 Interest. Payments due and unpaid by Owner to Contractor shall bear interest commencing thirty (30) days after payment is due as established in Chapter 2251 of Texas Government Code.

4.6 Contractor's Right to Suspend for Late Payment. If Owner fails to make any undisputed payment due Contractor for services and expenses in accordance with Chapter 2251 Texas Government Code, after receipt of Contractor's invoice, then Contractor may, after giving seven (7) days written notice to Owner, suspend performing of services under this Agreement until Owner has paid Contractor in full all undisputed amounts due.

ARTICLE 5
GMP PROPOSAL

5.1 GMP Proposal(s). When directed by Owner, Contractor shall submit to Owner a GMP Proposal in accordance with this Article 5. The Parties agree that if the Work of the Project is divided into separate Work packages, the Contactor will be directed to submit an Initial GMP Proposal for the first Work package. If the Owner and Contractor enter into a Construction Contract after the Owner's acceptance of the Initial Proposal, the Contract will provide the Owner subsequent GMP Proposals for the remainder of the Work packages in accordance with the requirements of this Agreement. The format of the GMP Proposal(s) or Initial GMP Proposal shall be initially developed by Contractor and provided to Owner for its review and approval. At a minimum, the supporting documentation will include a complete line item cost estimate indicating the itemized costs that comprise the GMP(s).

5.2 Contents of GMP Proposal(s) or Initial GMP Proposal. The GMP Proposal(s) or Initial GMP Proposal shall include the following, unless the Parties mutually agree otherwise:

.1 A proposed GMP, which shall be the sum of:

(a) The estimated Cost of the Work, inclusive of the Contingency;

(b) Contractor's General Conditions, including the methodology proposed for calculating the amount of Contractor's General Conditions and the process by which Contractor's General Conditions will be paid; and

SAMPLE

(c) Contractor's Fee. The proposed GMP shall be supported by a detailed cost estimate organized in a manner agreed upon by Owner and Contractor to facilitate cost estimate reviews including any Allowance Payment Items and Contingency.

.2 The GMP Proposal Design Documents upon which the GMP Proposal is based, with such documents to be listed and attached to the GMP Proposal.

.3 A list of the assumptions and clarifications made by Contractor in the preparation of the GMP Proposal, which list is intended to supplement the information contained in the GMP Proposal Design Documents.

.4 A proposed Baseline Schedule and the Scheduled Substantial and Final Completion Dates upon which the proposed GMP is based.

.5 A Schedule of Values for all of the Work, which will include quantities and prices of items which when added together equal the proposed GMP and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work, and otherwise in form and detail as requested by Owner.

.6 A cash flow projection estimating that portion of the proposed GMP to be due during each month of performance.

.7 If applicable, a list of Allowance Payment Items, Allowance Payment Values, and a statement of their basis.

.8 If applicable, a schedule of alternate prices.

.9 If applicable, a schedule of unit prices.

.10 If applicable, a statement of additional services which may be performed, but which are not included in the proposed GMP and which, if performed, shall be the basis for an increase in the GMP and/or Scheduled Substantial Completion Date.

.11 A list of Subcontractors whose bids/proposals have been accepted by Owner, including the Subcontractor's classification (i.e., Small Locally-Owned Business Enterprise, Minority Business Enterprise, Woman-Owned Business Enterprise), which bids/proposals are deemed to be part of the GMP and GMP Proposal.

.12 An updated notarized letter from Contractor's surety or sureties verifying that Contractor has bonding capacity in the amount of the proposed GMP.

.13 A commitment letter from Contractor's insurance broker that it will provide: (a) a Builder's Risk insurance policy compliant with the terms of the Construction Contract prior to the execution of the Construction Contract; and (b) a specimen Builder's Risk insurance policy with all appropriate attachments, sub-limits, etc.

.14 An updated list of Key Personnel and an updated organizational chart.

.15 A completed Minority Certification and Participation Summary form demonstrating that Contractor has met the participation goals set forth in Exhibit 14.1.4.

SAMPLE

.16 A completed Texas Ethics Commission Form 1295 ("Certificate of Interested Parties").

.17 Such other information and materials as Owner may reasonably request.

.18 Confirmation that the proposed GMP Proposal(s) or Initial GMP Proposal will remain valid during the Proposal Acceptance Period.

5.3 Review and Adjustment to GMP Proposal(s) or Initial GMP. After submission of the GMP Proposal(s) or Initial GMP Proposal, Contractor and Owner shall meet to discuss and review such proposal, with the understanding that: (a) all information shall be provided by Contractor on an Open Book Basis; (b) Contractor shall provide such information as Owner may reasonably request relative to the GMP Proposal(s) or Initial GMP Proposal; and (c) Contractor shall identify and justify any costs that are significantly different than Contractor's latest cost model. If Owner has any comments regarding the GMP Proposal(s) or Initial GMP Proposal, or finds any inconsistencies or inaccuracies in the information presented, it shall promptly notify Contractor of such comments or findings. If appropriate, Contractor shall, upon receipt of Owner's notice, make appropriate adjustments to the GMP Proposal(s) or Initial GMP Proposal. Contractor is also on notice that Owner shall, at any time, submit the GMP Proposal(s) or Initial GMP Proposal to either Engineer or an independent third party for review and verification.

5.4 Negotiation of and Owner's Actions on GMP Proposal.

5.4.1 Negotiation. If Owner determines that there is merit in considering the GMP Proposal(s) or Initial GMP Proposal as the basis for entering into a Construction Contract, it shall so notify Contractor and, as applicable, the Parties shall negotiate in good faith, and attempt to reach agreement on the terms of the GMP Proposal(s) or Initial GMP Proposal.

5.4.2 Agreement on GMP Proposal or Initial GMP Proposal. If the Parties reach agreement on the GMP Proposal or Initial GMP Proposal, as may be amended by Contractor to reflect discussions between the Parties, and Owner intends to award the Construction Contract, then Owner shall issue Contractor a Notice of Intent to Award. The Construction Contract shall incorporate the agreed-upon GMP Proposal or Initial GMP Proposal. As a condition to award, Contractor shall provide the Performance and Payment Bonds as required by Section 7.2 below.

5.4.3 Failure to Agree upon GMP Proposal or Initial GMP Proposal. If the Parties are unable to reach an agreement on the GMP Proposal or Initial GMP Proposal, Owner may:

.1 Continue to evaluate and suggest modifications to the GMP Proposal or Initial GMP Proposal, whereupon, if Owner accepts such GMP Proposal or Initial GMP Proposal or such modifications are accepted in writing by Contractor, then the Parties shall be deemed to have agreed upon the GMP Proposal or Initial GMP Proposal and accepted modifications, in which case Owner may issue Contractor a Notice of Intent to Award in accordance with Section 5.4.2 above;

.2 Authorize Contractor to continue to provide services under this Agreement, and provide another GMP Proposal or Initial GMP Proposal at the appropriate time in accordance with this Article 5; or

.3 Exercise its rights under Section 5.5 below.

5.5. Notice of Non-Award. At any time before entering into a Construction Contract, Owner may issue Contractor a Notice of Non-Award. In such case or upon termination of this Agreement after

SAMPLE

entering into a Construction Contract, Owner will have, in addition to any other right available under Laws and Regulations, the right to complete the Project by whatever means it so chooses, without the involvement of Contractor. If Owner issues a Notice of Non-Award, Contractor's sole and exclusive right and remedy shall be to be paid for all Preconstruction Services properly performed through the date of the Notice of Non-Award. Contractor shall not be entitled to any Contractor's Fee, or any other overhead or profit, on unperformed Preconstruction Services or services of any other kind. In no case shall Contractor or any other Contractor-Related Entity be entitled to anticipatory or unearned profits, unabsorbed overhead, opportunity costs, or consequential or other damages as a result of Owner's issuance of a Notice of Non-Award.

5.6 Contractor's Rights if Owner Fails to Act within the Proposal Acceptance Period. If Owner fails to issue Contractor a Notice of Intent to Award or a Notice of Non-Award within the Proposal Acceptance Period (as such period may be extended by mutual agreement of the Parties), then Contractor may, after giving Owner seven (7) days written notice of its intention to do so, declare: (a) the GMP Proposal null and void; and/or (b) that Owner has constructively issued a Notice of Non-Award, in which case Contractor's rights shall be as stated in Section 5.5 above.

5.7. Subsequent GMP Proposals after award of Construction Contract.

The Parties agree that if the Work of the Project is divided into separate Work packages and the Parties enter into a Construction Contract after the Owner's acceptance of the Contractor's Initial GMP, the Contractor will submit subsequent GMP Proposals to the Owner for the remainder of the Work packages in accordance with the requirements of this Agreement. All GMP Proposals accepted by Owner subsequent to entering the Construction Contract, will be incorporated into the Construction Contract.

5.8 Contingency.

5.8.1 Purpose. The GMP Proposal(s) or Initial GMP Proposal and any subsequent GMP Proposal(s) will include a contingency line item ("Contingency") as part of the estimated Cost of the Work. The Contingency will be made up of two parts, the Owner's Contingency and the Project Contingency.

The Owner's Contingency is available for Costs of Work not included in any GMP that would be the basis for a Change Order. The Owner's Contingency is available for the Owner's exclusive use.

The Project Contingency is available for Contractor's exclusive use for unanticipated Costs of the Work that it has incurred that are not the basis for a Change Order under the Contract Documents, plus the applicable Contractor's Fee. By way of example, and not as a limitation, such costs may include: (a) trade buy-out differentials; (b) overtime or acceleration; (c) escalation of labor and material costs; (d) correction of defective, damaged or nonconforming Work; (e) Subcontractor defaults; and (f) deductibles incurred by Contractor under the insurance required under the Contract Documents (but not to exceed $25,000 per occurrence). The Project Contingency is not available to Owner for any reason, including, but not limited to, changes in scope or any other item which would enable Contractor to increase the GMP under the Contract Documents.

All potential work elements comprising the Owner Contingency will be detailed in a Risk Register prepared and maintained by the Contractor.

The Risk Register will assign an estimated cost for each Owner Contingent work element and the percentage or probability of occurrence and percentage or probability of impact. The weighted cost (estimated cost x percentage occurrence x percentage impact) of each Owner Contingent work element will then be summed up and inserted in the GMP as the Owner's Contingency.

SAMPLE

The Risk Register will also assign an estimated cost for each Project Contingent work element and the percentage or probability of occurrence and percentage and probability of impact. The weighted cost (estimated cost x percentage occurrence x percentage impact) of each Project Contingent work element will then be summed up and inserted in the GMP as the Project's Contingency.

5.8.2 Criteria. The criteria for development of the Contingency will be discussed by the Parties and must ultimately be acceptable to Owner. It is understood that the Contingency amount will be negotiated between Owner and Contractor, with input from Engineer.

5.8.3 Draws upon Contingency. The Construction Contract will establish the terms and conditions associated with Contractor's use of the Contingency.

5.9 Early Work Packages. The Parties anticipate that some elements of the Work may be ready to start before the Parties arrive at a GMP or Initial GMP for the entire Work ("Early Work Packages"), prior to the Parties entering into a Construction Contract. Owner shall have the sole discretion as to whether or not to consider and authorize that Contractor perform an Early Work Package. If Owner chooses to authorize Contractor to prepare a commercial proposal for an Early Work Package, the Parties will agree upon the specific process for doing so, with the understanding that the process is intended to generally follow the submittal and negotiation process set forth above for a GMP Proposal.

5.10 Relationship between GMP Proposal Design Documents and Construction Documents.

5.10.1 Agreed-Upon Assumptions and Clarifications. Owner shall authorize and cause the Engineer to incorporate into the Construction Documents the agreed-upon assumptions and clarifications contained in an accepted GMP Proposal(s) or Initial GMP Proposal. Contractor shall promptly notify Owner and Engineer if such revised documents are inconsistent with the agreed-upon assumptions and clarifications, with the goal that such revised documents will be provided to Contractor before the execution of the Construction Contract.

5.10.2 GMP Proposal Design Documents Not Fully Completed Design Documents. The Parties acknowledge that the GMP Proposal Design Documents are not fully completed design documents, and that such documents will continue to be developed into what will eventually become the Construction Documents. In formulating the GMP Proposal(s) or Initial GMP Proposal, Contractor represents that it has accounted for this continued development, and that the GMP and GMP Proposal(s) or Initial GMP Proposal assumes that the Construction Documents will represent a reasonably inferable and logical development of the design intent of the GMP Proposal Design Documents. The GMP Proposal(s) or Initial GMP Proposal (including the GMP itself) represents Contractor's offer to construct the Project or portions of the Project in accordance with the Construction Documents, at no increase in the GMP, with the understanding that the Contingency amount accounts for clarifications, assumptions, and further development of the GMP Proposal Design Documents into the Construction Documents.

5.11 Effect and Administration of the GMP. By executing the Construction Contract with the GMP or subsequent GMPs, including the Initial GMP, if the Work is divided into separate Work packages, Contractor will be guaranteeing that Owner's payment obligations shall not exceed the amount of the GMP accepted by the Owner, and that Contractor shall be responsible for paying all costs of completing the Work which exceed the GMP for the Work or portion of the Work, as the GMP may be adjusted in accordance with the Contract Documents. The Construction Contract will address the treatment of overall savings under the GMP (i.e., the difference between: (a) the GMP, as adjusted in accordance with the terms of the Construction Contract; and (b) the sum of: (1) the actual Cost of the Work incurred by Contractor; (2) Contractor's General Conditions; and (3) Contractor's Fee.)

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ARTICLE 6
SUBCONTRACTS

6.1 Subcontractor and Supplier Participation in Performance of the Preliminary Services. If Contractor wishes to retain any Subcontractor or Supplier to provide assistance to Contractor in the performance of the Preliminary Services, Contractor shall so notify Owner. The Parties shall meet and confer about the most appropriate way of having such Subcontractors/Suppliers participate, and Owner will have ultimate authority to determine whether any Subcontractor or Supplier will be awarded a Subcontract to provide Preliminary Services under this Agreement and, if so, the commercial arrangement for such award.

6.2 Major Elements of the Work to be Performed through Subcontractors and Suppliers. It is contemplated that all major elements of the Work other than the minor work that may be included in the General Conditions will be carried out by Subcontractors and Suppliers. Contractor shall be responsible for dividing the Work into suitable bid packages. If Contractor desires to Self-Perform certain portions of the Work, it will seek permission from Owner to be one of the approved bidders/proposers for those specific bid packages. Contractor's bid/proposal will be evaluated in accordance with Section 6.6 below.

6.3 Procurement of Subcontractors and Suppliers for Work. All first-tier Subcontractors and Suppliers are to be awarded fixed-price subcontracts for the Work through the competitive procurement process set forth below, unless otherwise authorized by Owner in writing. Contractor shall publicly advertise for bids or proposals and receive bids or proposals from Subcontractors and Suppliers in accordance with all applicable Laws. In connection with all such procurements, Contractor shall:

.1 Develop procurement procedures in consultation with Owner and prepare all necessary procurement documents;

.2 Publicly advertise for bids or proposals and receive bids or proposals;

.3 Open and review all bids or proposals in a manner that does not disclose the contents of the bids or proposals to persons not employed by Contractor, Owner or Engineer;

.4 Evaluate the bids or proposals in accordance with the selection criteria established in the procurement documents; and

.5 Recommend a bid or proposal for approval by Owner in accordance with such evaluation.

All bids or proposals shall be made available to Owner on request and to the public after the later of the award of the contract or the seventh (7th) day after the date of final selection of bids or proposals.

6.4 Award to Subcontractors and Suppliers for Work. Owner shall have the ultimate authority to determine which Subcontractor and/or Supplier will be awarded a Subcontract. If Contractor reviews, evaluates, and recommends to Owner a bid or proposal from a Subcontractor or Supplier, but Owner requires another bid or proposal to be accepted, Owner shall compensate Contractor by a change in price, time, or GMP for any additional cost and risk that Contractor incurs because of Owner's requirement that another bid or proposal be accepted.

6.5 Owner and Engineer's Rights to Participate in Procurement Process for Subcontractors and/or Suppliers for Work. Without limiting any of the foregoing, Contractor acknowledges and agrees

SAMPLE

that Owner and Engineer shall have the right to: (a) review and comment on all procurement documents; (b) attend any bid or proposal openings; (c) attend any meetings with prospective Subcontractors or Suppliers, including scope review meetings; (d) review all bids, proposals, and other information developed or otherwise resulting from any competitive procurement, including Contractor's tabulation, scoring or evaluation materials; and (e) otherwise participate in the negotiation and contract award process. Upon subcontract award, Contractor shall provide Owner with a description of the competitive process undertaken in connection with such subcontract award, together with copies of all material documents used in connection therewith and agreements resulting therefrom.

6.6 Ability to Self-Perform Work. Contractor shall be allowed to Self-Perform Work if: (a) Contractor submits its bid or proposal for those portions of the work in the same manner as all other Subcontractors or Suppliers; and (b) Owner determines that Contractor's bid or proposal provides the best value for Owner. If Contractor does wish to Self-Perform, Owner shall have the right to require the submittal of all bids or proposals for such work directly to Owner and/or Engineer (and not to Contractor) for review and evaluation.

6.7 Subcontractor Default. If a selected Subcontractor defaults in the performance of its work or fails to execute a subcontract after being selected in accordance with the process set forth above, Contractor may itself fulfill, without advertising, the contract requirements or select a replacement Subcontractor to fulfill the contract requirements.

ARTICLE 7
BONDS AND INSURANCE

7.1 Bonds.

7.1.1 Security Bond. Contractor shall provide the Security Bond within ten (10) days of the Effective Date. The form of the Security Bond is set forth in Exhibit 7.1.1.

7.1.2 Performance and Payment Bonds. Contractor shall, within ten (10) days of Owner's issuance of the Notice of Intent to Award, and as a condition to Owner executing the Construction Contract, provide Owner with: (a) a performance bond in the penal amount equal to one hundred percent (100%) of the GMP, which bond shall cover the faithful performance of all Contractor's obligations under the Construction Contract Documents ("Performance Bond"); and (b) a payment bond in the penal amount equal to one hundred percent (100%) of the GMP ("Payment Bond"). The forms of the Performance and Payment Bonds are set forth in Exhibits 7.1.2(a) and 7.1.2(b) respectively. If Contractor fails to provide such bonds, Contractor may be found in material default of this Agreement, permitting Owner to terminate this Agreement for cause and draw upon the Security Bond.

7.1.3 Requirements for Surety. The Security, Performance and Payment Bonds shall be provided by a surety authorized by applicable Laws and Regulations to do business in the State of Texas, with an A.M. Best Company Rating of not less than A VIII. The surety must also be listed in the U.S. Department of Treasury's Circular 570.

7.2 Insurance. Contractor shall procure and maintain the following insurance as required by Exhibit 7.2.

ARTICLE 8
INDEMNIFICATION

SAMPLE

8.1 **CONTRACTOR'S INDEMNITY. TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAWS AND REGULATIONS, CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER INDEMNITEES FOR, FROM AND AGAINST ANY AND ALL LOSSES, CLAIMS, SUITS, DAMAGES, LIABILITIES, DEBTS, LIENS, OBLIGATIONS, CAUSES OF ACTION, COSTS AND EXPENSES (INCLUDING REASONABLE ATTORNEYS' FEES, COURT COSTS, INTEREST, LITIGATION EXPENSES, AND THE COSTS OF APPELLATE PROCEEDINGS) TO WHICH ANY SUCH OWNER INDEMNITEES MAY BECOME SUBJECT, UNDER ANY THEORY OF LIABILITY WHATSOEVER ("CLAIMS") ONLY TO THE EXTENT THAT SUCH CLAIMS (OR ACTIONS IN RESPECT THEREOF) ARE CAUSED BY THE NEGLIGENT ACTS OR OMISSIONS, RECKLESSNESS OR INTENTIONAL MISCONDUCT OF ANY CONTRACTOR-RELATED ENTITY IN CONNECTION WITH THE PERFORMANCE OF THIS AGREEMENT.**

8.2 **NO LIMITATION. IF AN EMPLOYEE OF ANY CONTRACTOR-RELATED ENTITY HAS A CLAIM AGAINST ANY OWNER INDEMNITEE, CONTRACTOR'S INDEMNITY OBLIGATION SET FORTH IN SECTION 8.1 ABOVE SHALL NOT BE LIMITED BY ANY LIMITATION ON THE AMOUNT OF DAMAGES, COMPENSATION OR BENEFITS PAYABLE BY OR FOR ANY CONTRACTOR-RELATED ENTITY UNDER ANY EMPLOYEE BENEFIT ACTS, INCLUDING WORKERS' COMPENSATION OR DISABILITY ACTS. THE PURPOSE OF THIS PROVISION IS NOT TO CHANGE ANY LIABILITY/BENEFIT BETWEEN ANY CONTRACTOR-RELATED ENTITY AND ITS EMPLOYEE, BUT TO PROTECT OWNER INDEMNITEES TO THE FULL EXTENT TO WHICH AN EMPLOYEE MAY ASSERT A CLAIM AGAINST AN OWNER INDEMNITEE ARISING UNDER SECTION 8.1 ABOVE.**

ARTICLE 9
TERMINATION AND SUSPENSION

9.1 Termination for Cause.

9.1.1 Process. If either Party fails to perform material obligations under this Agreement, then the other Party may provide written notice to the breaching Party that it intends to terminate the Agreement unless the problem cited is cured, or commenced to be promptly cured, within seven (7) days of the breaching Party's receipt of such notice. If the breaching Party fails to cure, or reasonably commence and diligently continue to cure, such problem, then the non-breaching Party may give a second written notice to the breaching Party of its intent to terminate within an additional seven (7) day period. If the breaching Party, within such second seven (7) day period, fails to cure, or reasonably commence and diligently continue to cure, such problem, then the non-breaching Party may declare the Agreement terminated for default by providing written notice to the breaching Party of such declaration.

9.1.2 Remedies. If Owner is terminated for cause pursuant to Section 9.1.1 above, Contractor's sole and exclusive right and remedy shall be that set forth in Section 9.2 below. If Contractor is terminated for cause, Owner shall have the remedies available to it under applicable Laws and Regulations, subject to the terms of this Agreement.

9.2 Termination for Convenience. Owner may, upon ten (10) days written notice to Contractor, terminate this Agreement, in whole or in part, for the convenience of Owner, without prejudice to any right or remedy otherwise available to Owner. Upon receipt of such notice, Contractor shall immediately discontinue all Preconstruction Services affected unless such notice directs otherwise. In the event of a termination for convenience, Contractor's sole and exclusive right and remedy shall be to be paid for all Preconstruction Services properly performed through the date of the notice of termination.

Contractor shall not be entitled to any overhead or profit on unperformed Preconstruction Services or services of any other kind. In no case shall Contractor or any other Contractor-Related Entity be entitled to anticipatory or unearned profits, unabsorbed overhead, opportunity costs, or consequential or other damages as a result of Owner's termination for convenience.

9.3 Owner's Right to Suspend. Owner may order Contractor in writing to suspend, delay or interrupt all or any part of the Preconstruction Services without cause for such period of time as Owner may determine to be appropriate for its convenience. Contractor shall be entitled to seek an adjustment to its compensation and time of performance from such suspension.

9.4 Termination for Failure to Comply with Subchapter J, Chapter 552, Government Code. This clause is applicable to contracts that have a stated expenditure or result in the expenditure of at least $1 million.

The requirements of Subchapter J, Chapter 552, Government Code, may apply to this Agreement and the Contractor agrees that this Agreement can be terminated if the Contractor knowingly or intentionally fails to comply with a requirement of that subchapter.

ARTICLE 10
BOOKS AND RECORDS

10.1 Retention and Audit of Books and Records. Contractor shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management, using accounting and control systems in accordance with generally accepted accounting principles, consistently applied, and as may be provided in the Contract Documents. During the Book and Records Period, Owner and its accountants shall be afforded access to, and the right to audit from time-to-time, upon reasonable notice, all Books and Records relating to the Work, all of which Contractor shall preserve during the Books and Record Period. Such inspection shall take place at Contractor's offices during normal business hours unless another location and time is agreed to by the Parties. Owner may take possession of such Books and Records by reproducing such Books and Records for off-site review or audit. When requested in Owner's written notice of examination and/or audit, Contractor shall provide Owner with copies of electronic and electronically stored Books and Records in a reasonably usable format that allows Owner to access and analyze all such Books and Records. For Books and Records that require proprietary software to access and analyze, Contractor shall provide Owner with the means to do so, including a license authorizing Owner to access and analyze all such Books and Records.

10.2 Items Not Subject to Audit. For the avoidance of doubt, Owner shall not have the right to audit any items for which it has accepted a lump sum proposal or agreed upon a fixed price/lump sum, including, but not limited to any multipliers or markups agreed to by the Owner and Contractor as part of this Agreement, which are only subject to audit to confirm that such multiplier or markup has been charged in accordance with this Agreement. Notwithstanding any language of this Agreement, the Parties agree that Owner is subject to the Texas Public Information Act ("Act") and Contractor will provide Owner any and all information related to this Project necessary to comply with the Act.

10.3 Flow-Down into Subcontracts. Contractor shall insert a clause containing all the provisions of this Article 10 in all Subcontracts.

10.4 Contracting Information. This clause is applicable to contracts that have a stated expenditure or result in the expenditure of at least $1 million.

SAMPLE

The Contractor must preserve all contracting information related to this contract as provided by the records retention schedule requirements applicable to Owner for the duration of this contract. Contractor will promptly provide Owner any contracting information related to this contract that is in the custody or possession of the Contractor on request of Owner. On completion of this Agreement, Contractor will either provide at no cost to Owner all contracting information related to this contract that is in the custody or possession of the Contractor or preserve the contracting information related to this contract as provided by the records retention requirements applicable to Owner.

ARTICLE 11
LAWS AND REGULATIONS

11.1 Laws and Regulations. This Agreement is based on the Laws and Regulations applicable as of the Effective Date. Changes to these requirements after the Effective Date may be the basis for modifications to Contractor's compensation, scope, and schedule. Contractor shall perform the Preconstruction Services in accordance with all Laws and Regulations and shall provide all notices applicable to the Preconstruction Services as required by all Laws and Regulations.

11.2 Change in Laws and/or Regulations. Contractor shall be entitled to an adjustment in its compensation or time to perform the Preconstruction Services for changes in Laws or Regulations enacted after the Effective Date, provided, however, that no adjustments shall be allowed for changes in Laws or Regulations relating to any Contractor-Related Entity's corporate existence or the maintenance of its business, or a change in Laws or Regulations affecting labor or employment matters.

ARTICLE 12
LIMITATIONS OF LIABILITY

12.1 Waiver of Consequential Damages. To the fullest extent permitted by law, and notwithstanding any other provision of the Agreement, in no event, whether arising out of contract, breach of warranty (express or implied), tort (including negligence), strict liability, or any other cause of or form of action whatsoever, shall either Party be liable to the other for any consequential damages (including but not limited to damages for loss of use, loss of profits or anticipated profits, loss of revenue, and loss of business opportunity) arising out of or in connection with the performance or non-performance of its obligations under this Agreement.

ARTICLE 13
WORK PRODUCT

13.1 Owner's Rights in Work Product. Contractor hereby assigns and conveys to Owner all right, title, and interest, including all copyrights, patents, or any other intellectual property rights (but excluding Pre-Existing Intellectual Property) in all Work Product and all ideas or methods specifically developed for such Work Product. All Work Product will become the property of Owner on the Owner's payment to Contractor of monies due in accordance with this Agreement and not subject to a good faith dispute. Owner's use of any Work Product for any purpose other than the Project, without the involvement of Contractor, shall be at its own risk, and Contractor shall have no liability to Owner for or relating to any such use.

13.2 Contractor-Related Entities. Except as specifically provided in Section 13.4 below, no Contractor-Related Entity will own or claim any copyright, patent, or any other intellectual property right in or with respect to any Work Product or ideas or methods specifically developed for such Work Product.

SAMPLE

13.3 Contractor Right to Retain Copies of Work Product. Contractor may make and retain copies of the Work Product for information, reference and use by the Contractor-Related Entities solely with respect to the Work. No Contractor-Related Entity may use the Work Product for any other purpose without the specific written consent of Owner.

13.4 Pre-Existing Intellectual Property. Owner acknowledges and agrees that in the performance of services under this Agreement, Contractor may use proprietary algorithms, software, hardware, databases, other background technology, and other proprietary information that Contractor developed or licensed from third parties prior to the Effective Date ("Pre-Existing Intellectual Property"). Without limiting Owner's rights with respect to the Work Product or the Project, Contractor will retain all right, title, and interest in such Pre-Existing Intellectual Property. However, Owner shall have the irrevocable, perpetual, and unrestricted right from and after the Effective Date to use (or permit use of) all Pre-Existing Intellectual Property incorporated in the Work Product or the Project, all oral information received by Owner in connection with the Work, and all ideas or methods represented by Pre-Existing Intellectual Property incorporated in the Work Product or the Project, in each case without additional compensation. Contractor hereby licenses such irrevocable, perpetual, and unrestricted rights to Owner. Owner's use of such license rights for any purpose other than the Project shall be at its own risk, and Contractor shall have no liability to Owner for or relating to any such use.

ARTICLE 14
MISCELLANEOUS

14.1 Compliance with Owner's Policies.

14.1.1 Drug and Alcohol-Free Workplace. Owner maintains a drug and alcohol-free workplace in accordance with the Drug-Free Workplace Act of 1988. Contractor shall publicize a statement notifying its employees that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the workplace, including at the Plant.

14.1.2 Smoking. Owner maintains specific rules regarding smoking on Owner's properties. Contractor shall adhere to such rules at the Plant.

14.1.3 Firearms. Owner maintains specific rules regarding firearms and Contractor shall adhere to such rules at the Plant.

14.1.4 Good Faith Efforts to Obtain Minority Participation in the Project. Owner encourages the participation of Small Locally-Owned Businesses, Minority Business Enterprises and Women-Owned Business Enterprises. The goals and requirements of this program are set forth in Exhibit 14.1.4, and Contractor shall comply with the terms of such Exhibit.

14.1.5 Owner's Safety Requirements. While at the Plant, Contactor shall comply with Owner's Safety Manual (dated June 12, 2018).

14.1.6 Israel. Contractor confirms that it does not boycott Israel and will not do so during the term of this Agreement.

14.1.7 Traffic Safety. Owner maintains specific rules regarding traffic safety on Owner's properties. Contractor shall adhere to such rules at the Plant.

SAMPLE

14.1.8 Project Wage Rates and Apprenticeship Requirements. The wage rates and other requirements of Exhibit 14.1.8 are applicable to all work performed by Contractor under this Agreement, and all work under the Construction Contract. Contractor confirms that it will comply with the terms of such Exhibit.

14.1.9 Energy Companies. In accordance with Chapter 2274 of the Texas Government Code, Contractor affirms it does not boycott energy companies and will not boycott energy companies during the term of this Agreement.

14.1.10 Firearm Entity or Trade Association. In accordance with Section 2274.002 of the Texas Government Code, Contractor does not have a practice, policy, guidance or directive that discriminates against a firearm entity or firearm trade association and will not discriminate during the term of this Agreement against a firearm entity or firearm trade association.

14.1.11 Foreign-Owned Company. Contractor affirms it is not a foreign-owned company that is owned or controlled by citizens of or directly controlled by the government of China, Iran, North Korea, Russia or a designated country pursuant to Chapter 2274 of the Texas Government Code. Additionally, Contractor affirms it is not a company that is headquartered in China, Iran, North Korea, Russia or a designated country pursuant to Chapter 2274 of the Texas Government Code.

14.2 Contractor's Certifications Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing this Agreement. For the purposes of this Section 14.2:

.1 "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Agreement execution;

.2 "fraudulent practice" means an intentional misrepresentation of facts made; (a) to influence the bidding process or the execution of this Agreement to the detriment of Owner; (b) to establish bid or contract prices at artificial non-competitive levels; or (c) to deprive Owner of the benefits of free and open competition;

.3 "collusive practice" means a scheme or arrangement between two or more proposers/bidders to this Agreement, with or without the knowledge of Owner, a purpose of which is to establish bid or contract prices at artificial, non-competitive levels; and

.4 "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Agreement.

14.3 Dispute Resolution and Governing Law.

14.3.1 Commitment to Resolve Disputes. The Parties are fully committed to working with each other and agree to communicate regularly with each other at all times so as to avoid or minimize and resolve any disputes. If any disputes do arise, Contractor and Owner each commit to resolving such disputes in an amicable, professional and expeditious manner.

14.3.2 Mediation. If a dispute cannot be resolved on terms satisfactory to both Parties, the Parties may mutually agree to mediate the dispute through non-binding mediation. For the avoidance of doubt,

SAMPLE

mediation is a condition precedent to the initiation of litigation. Any mediation will be based upon a process mutually agreed upon by the Parties.

14.3.3 Litigation. Any and all disputes between the Parties shall be finally resolved through litigation. Legal proceedings between the Parties shall be solely and exclusively initiated and maintained in a court of competent jurisdiction sitting in El Paso County, Texas. Contractor irrevocably consents to the jurisdiction of such courts in any such proceeding and waives any objection it may have to the jurisdiction of any such proceeding.

14.3.4 Governing Law. This Agreement shall be governed by the laws of the state of Texas, without giving effect to its conflict of law principles.

14.4 No Third Party Beneficiaries. Nothing under this Agreement shall be construed to give any rights or benefits in this Agreement to anyone other than Owner and Contractor, and all duties and responsibilities undertaken pursuant to this Agreement will be for the sole and exclusive benefit of Owner and Contractor and not for the benefit of any other party.

14.5 Independent Contractor. Contractor is and will be an independent contractor and whatever measure of control Owner exercises over the work or deliverable pursuant to the Agreement will be as to the results of the work only. No provision in this Agreement will give or be construed to give Owner the right to direct Contractor as to the details of accomplishing the work or deliverable. These results will comply with all applicable Laws and Regulations.

14.6 Confidential Information. Confidential Information is defined as information which is determined by the transmitting Party to be of a confidential or proprietary nature and: (a) the transmitting Party identifies as either confidential or proprietary; (b) the transmitting Party takes steps to maintain the confidential or proprietary nature of the information; and (c) the document is not otherwise available in or considered to be in the public domain. Subject to applicable Laws, such as the Texas Public Information Act, the receiving Party agrees to maintain the confidentiality of the Confidential Information and agrees to use the Confidential Information solely in connection with the Project. Notwithstanding the language of this section or any other section in this Agreement, Contractor understands that Owner is subject to the Act and that Owner will follow all the requirements of the Act. Owner will not be liable for disclosure of information pursuant to the Act or under court order.

14.7 Assignment. Neither the Agreement nor any right, privilege, delegation, or interest thereunder may be assigned or transferred in whole or in part by Owner or Contractor without the prior written consent of the other Party, and any attempted assignment or transfer without such written consent shall be void.

14.8 Severability. If any provision or any part of a provision of this Agreement is held as a matter of law to be unenforceable by a court of competent jurisdiction, the remainder of this Agreement shall be enforceable without such provision.

14.9 No Waiver. The failure of either Owner or Contractor to insist, in any one or more instances, on the performance of any of the obligations required by the other under the Agreement shall not be construed as a waiver or relinquishment of such obligation or right with respect to future performance.

14.10 Survival. The obligations of the Parties under Article 8 (Indemnity), Article 10 (Books and Records), Article 12 (Limitations of Liability), Article 13 (Work Product) and Section 14.6 (Confidential Information) shall survive completion or termination of this Agreement.

SAMPLE

14.11 Notice. Whenever the Agreement requires that notice be provided to the other Party, notice will be deemed to have been validly given: (a) if delivered in person to the individual intended to receive such notice; or (b) four (4) days after being sent by registered or certified mail, postage pre-paid, with return receipt requested, to the address indicated in the Agreement, or (c) one (1) business day after being sent by overnight delivery via a nationally recognized courier service (e.g., FedEx or UPS), postage, transmittal or shipping charges prepaid, to the address set forth below:

If to Contractor:

_____
_____
_____

If to Owner:

El Paso Water Utilities – Public Service Board
President/CEO
1154 Hawkins Blvd.
El Paso, TX 79925

Copy to:
El Paso Water Utilities – Public Service Board
_____
1154 Hawkins Blvd.
El Paso, TX 79925

14.12 Exhibits. The following exhibits ("Exhibits") are specifically made part of, and incorporated by reference into, this Agreement:

Exhibit 1.1(a)	Site Description
Exhibit 2.1	Contractor's Preconstruction Services
Exhibit 2.6	List of Key Personnel
Exhibit 4.1	Contractor's Compensation
Exhibit 5.2.1	Elements of the GMP
Exhibit 7.1.1	Form of Security Bond
Exhibit 7.1.2(a)	Form of Performance Bond
Exhibit 7.1.2(b)	Form of Payment Bond
Exhibit 7.2	Insurance Requirements
Exhibit 14.1.4	Good Faith Efforts to Obtain Minority Participation in the Project
Exhibit 14.1.8	Project Wage Rates and Apprenticeship Requirements

14.13 Force Majeure. If, by reason of Force Majeure, either party hereto will be rendered unable wholly or in part to carry out its obligations under this Agreement then such party will give notice and full particulars of such Force Majeure in writing to the other party within a reasonable time after occurrence of the event or cause relied upon, and the obligation of the party giving such notice, so far as it is affected by such Force Majeure, will be suspended for only thirty (30) days during the continuance of the inability then claimed, except as hereinafter provided, but for no longer period, and such party will try to remove or overcome such inability with all reasonable dispatch.

SAMPLE

The term Force Majeure as employed herein, will mean acts of God, strikes, lockouts, or other industrial disturbances, acts of public enemies, orders of any kind of government of the United States or the State of Texas or any civil or military authority, insurrections, riots, epidemics, landslides, lightning, earthquake, fires, hurricanes, storms, floods, washouts, droughts, arrests, restraint of government and people, civil disturbances, explosions, breakage or accidents to machinery, pipelines, or canals. It is understood and agreed that the settlement of strikes and lockouts will be entirely within the discretion of the party having the difficulty, and that the above requirement that any Force Majeure will be remedied with all reasonable dispatch will not require the settlement of strikes and lockouts by acceding to the demands of the opposing party or Parties when such settlement is unfavorable in the judgment of the party having the difficulty. If a party is unable to comply with the provisions of this Agreement by reason of Force Majeure for a period beyond thirty days after the event or cause relied upon, then upon written notice after the thirty (30) days, the affected Party shall be excused from further performance under this contract.

14.14 Entire Agreement. This Agreement and accompanying Exhibits is intended by the Parties as a final expression of their agreement and is intended also as a complete and exclusive statement of the terms of their Agreement. No course of prior dealings between the parties and no usage of the trade will be relevant to supplement or explain any term used in this Agreement. Acceptance or acquiescence in a course of performance rendered under this Agreement will not be relevant to determine the meaning of this Agreement even though the accepting or acquiescing party has knowledge of the performance and opportunity for objection.

IN WITNESS WHEREOF, intending to be bound, the Parties have entered into this Agreement as of the Effective Date.

CONTRACTOR:	OWNER:
_____	**EL PASO WATER UTILITIES – PUBLIC SERVICE BOARD**
By: _____ _____ _____	By: _____ **JOHN E. BALLIEW** **PRESIDENT / CEO**

SAMPLE

Texas Water Development Board

Supplemental Contract Conditions and Instructions

For Construction Services for

Projects Funded through State Programs

Table of Contents

I. INSTRUCTIONS TO APPLICANT 5
1. Applicability 5
2. Use of Conditions 5
3. Modifications to Provisions 6
4. Good Business Practices 7
5. Other Requirements 7
6. Advertisements for Bids 7
7. Bid Proposal 8
8. Bidding Process 8
9. Release of Funds 8
II. INSTRUCTIONS TO BIDDERS 10
1. Contingent Award of Contract 10
2. U.S. Iron and Steel (Does not apply to SWIFT Projects funded prior to May 1, 2019) 10
3. Bid Guarantee 10
4. Award of Contract to Nonresident Bidder 10
III. SUPPLEMENTAL CONTRACT CONDITIONS 11
1. Supersession 11
2. Privity of Contract 11
3. Definitions 11
4. Laws to be Observed 11
5. Review by Owner and TWDB 11
6. Performance and Payment Bonds 12
7. Payments Schedule and Cost Breakdown 12
8. Workers' Compensation Insurance Coverage (as applicable, consistent with Texas Labor Code § 406.096) 12
9. U.S. Iron and Steel (Does not apply to SWIFT Projects funded prior to May 1, 2019) 13
10. Prevailing Wage Rates 14
11. Employment of Local Labor (only applicable to projects funded by EDAP) 15
12. Payments 15
13. Archaeological Discoveries and Cultural Resources 17
14. Endangered Species 17
15. Hazardous Materials 18
16. Changes 18

17. Operation and Maintenance Manuals and Training 19
18. As-built Dimensions and Drawings 19
19. Close-Out Procedures 20
IV. FORMS AND GUIDANCE LIST 20

Forms and Guidance:

The Texas Water Development Board (TWDB) forms and guidance documents noted in this instruction document may be accessed through the TWDB's Financial Assistance web site at: http://www.twdb.texas.gov/financial/instructions/index.asp

Search by either the document number or name.

I. INSTRUCTIONS TO APPLICANT

1. Applicability

These Supplemental Conditions contain provisions that are worded to comply with certain statutes and regulations which specifically relate to projects receiving state funds only. Except as noted, these supplemental conditions apply to projects funded by the following financial assistance programs:

- ✓ Agricultural Water Conservation Fund (AWCF)
- ✓ Economically Distressed Areas Program (EDAP)
- ✓ Rural Water Assistance Fund (RWAF)
- ✓ State Participation (SP)
- ✓ State Water Implementation Fund for Texas (SWIFT)
- ✓ Texas Water Development Fund II (WDF)

Provisions that are applicable to the project's funding source or dollar value of the contract are so noted within these provisions.

NOTES:

- Per Section 17.183(c)(4), Texas Water Code (TWC), U.S. Iron and Steel requirements do not apply to SWIFT projects funded prior to May 1, 2019.

- Effective September 1, 2017, TWC §17.183 eliminated the requirement for *Manufactured Goods*. Thus, projects approved for funding after September 1, 2013 and which are not currently under construction, will only need to meet the requirements of TWC §17.183 as amended by S.B. 1289, 85th Legislative Session, and as outlined in these Contract Conditions.

- Texas Water Code § 17.183 does not apply to the Agricultural Water Conservation Fund; however, the US I&S provisions in Texas Government Code, Chapter 2252, Subchapter F may apply to certain conservation projects funded through the Agricultural Water Conservation Fund. See Attachment 1 for supplemental guidance regarding Agricultural Water Conservation Fund projects.

2. Use of Conditions

The language and conditions listed under ***Section II: Instructions to Bidders*** are to be included in the instructions to bidders for construction services. The provisions listed under ***Section III: Supplemental Contract Conditions*** shall be included in their entirety with the other general and special conditions that are typically included in the construction contract documents by the design engineer.

3. Modifications to Provisions

These provisions shall be included as a stand-alone section in the contract documents. The Applicant and the consulting engineer (Engineer) should carefully study these provisions before incorporating them into the construction contract documents. In particular, Water Districts and other types of districts should be aware of statutes relating to their creation and operation which may affect the application of these conditions. **The TWDB Project Engineer/Reviewer should be consulted if the Applicant thinks there is a need to modify parts of these provisions.**

Supplemental Condition #13 (Archeological Discoveries and Cultural Resources) and #14 (Endangered Species) may be superseded or modified by project specific conditions established during the environmental review process.

These documents may confer certain duties and responsibilities on the Engineer that are beyond, or short of, what the Applicant intends to delegate. The Applicant should ensure that the contractual agreement with the Engineer provides for the appropriate services. Otherwise the Applicant should revise the wording in these special conditions to agree with actually delegated functions.

4. Good Business Practices

There are other contract provisions that the Applicant (Owner) and Engineer should include as a matter of good business practices. It is recommended that provisions addressing the following matters be included in the construction contract.

(a) Specifying the time frame for accomplishing the construction of the project, and the consequences of not completing on time, including liquidation damages.
(b) Specifying the type, dollar value, and documentation of insurance the contractor is to carry. At a minimum the contractor should carry worker's compensation, liability and builder's risk insurance.
(c) Identifying the responsibility of the contractor – Responsibility and Warranty of Work.
(d) Price reduction for defective pricing of negotiated costs.
(e) Differing site conditions - notice and claims regarding site conditions differing from indicated conditions.
(f) Covenants against contingent fees - prohibit contingent fees for securing business.
(g) Gratuities - prohibitions against offering and accepting gratuities.
(h) Audit and access to records.
(i) Suspension of work - conditions under which the Owner may suspend work.
(j) Termination - conditions under which the Owner may terminate the contract.
(k) Remedies - procedures for resolving disputes.

5. Other Requirements

There may be other local government requirements and applicable Federal and State statutes and regulations that are not accommodated by these conditions. It is the Applicant's responsibility to ensure that the project and all contract provisions are consistent with the relevant statutes and regulations.

6. Advertisements for Bids

State procurement statutes require advertising a contract for bids for at least two (2) consecutive weeks. By not following this requirement, the project may need to be re-advertised. The official advertisement for bids that is published in newspapers shall include certain information such as, but not limited to, the following:

(a) A clear description of what is being procured.
(b) How to obtain plans and specifications (P&S) and necessary forms and information.
(c) The date and time by which bids are to be submitted (deadline).
(d) The address where bids are to be provided.
(e) This contract is contingent upon release of funds from the Texas Water Development Board (TWDB).
(f) Any contract(s) awarded under this Invitation for Bids is/are subject to the United States Iron and Steel (US I&S) requirements of Texas Water Code §17.183 and/or Texas Government Code, Chapter 2252, Subchapter F, as amended by SB 1289, 85th Legislative Session, as applicable. (NOTE: does not apply to SWIFT projects funded prior to May 1, 2019).
(g) Acknowledgement of any special requirements such as mandatory pre-bid conference.
(h) Right to reject any and all bids.
(i) General bond requirements.

Bid Proposal

The Bid Proposal form should account for the following:

(a) If lump sum bid, include a list of the materials used and associated costs.
(b) Distinguish eligible and ineligible items.
(c) Accommodate trench safety requirements with separate per unit pay item for trench excavation safety protection, Health and Safety Code Chapter 756, Subchapter C.
(d) Include space for the Contractor to acknowledge receipt of each Addendum issued during the bidding process.

7. Bidding Process

The Plans and Specifications (P&S) should include an explanation of how the bids will be processed. The explanation should include the following components:

(a) Whether a pre-bid conference will be held, whether it is optional or mandatory, where and when it will be held.
(b) Specify the criteria and process for determining responsiveness and responsibility of the bidder.
(c) Specify the method of determining the successful bidder and award (e.g., award to the lowest responsive, responsible bidder, accounting for any multiple parts to bids) and accounting for non-resident bidder reciprocity requirements.
(d) Allow for withdrawal of a bid due to a material mistake.
(e) Identify the time frame that the bids may be held by the Applicant before awarding a contract (e.g., typically for 60 or 90 days).
(f) Acknowledge right of the Applicant to reject any and all bids.

8. Release of Funds

(a) Submittal of Bid Documents to TWDB Project Engineer/Reviewer to allow contingent award of contract:

    (1) Advertisement and affidavit of advertisement.
    (2) Bid tabulation.
    (3) All addenda submitted and approved for the contract.
    (4) Bid proposal of apparent low bidder (or chosen bidder, with explanation) with bid bond.
    (5) Site certificate (ED-101).
    (6) Consulting engineer's recommendation to award letter.
    (7) A description of any bidding irregularities.
    (8) Construction inspection proposal.
    (9) Vendor Compliance with Reciprocity of Non-Resident Bidders Form (TWDB-0459).

(b) Following contingent award of the contract, TWDB Project Engineer/Reviewer should receive a bound copy of the executed contract documents (including specifications). This document should include:

(1) Executed agreement.
(2) Contractor's act of assurance (ED-103).
(3) Contractor's act of assurance resolution (ED-104).
(4) Payment and Performance bond (must be executed on or after the date of execution of the contract).
(5) Contractor's Certificate of Insurance.
(6) Sufficiency of funds letter (if the project is not 100% funded with TWDB funds).

After reviewing and approving the executed bid documents, the TWDB will issue an authorization for the Applicant to issue a notice to proceed. At this time, TWDB staff can begin releasing construction funds, in accordance with program specific requirements.

For any questions or proposed modifications to these conditions, please contact your TWDB Project Engineer/Reviewer.

II. INSTRUCTIONS TO BIDDERS

The language and conditions listed in this section shall be included in the "Instructions to Bidders" section of the construction contract document.

1. Contingent Award of Contract

This contract is contingent upon release of funds from the Texas Water Development Board. Any contract or contracts awarded under this Invitation for Bids is/are expected to be funded in part by a loan or grant from the Texas Water Development Board. Neither the state of Texas, nor any of its departments, agencies, or employees are or will be a party to this Invitation for Bids or any resulting contract.

2. U.S. Iron and Steel (Does not apply to SWIFT Projects funded prior to May 1, 2019)

Any contract(s) awarded under this Invitation for Bids is/are subject to the United States Iron and Steel requirements of Texas Water Code §17.183 and/or Texas Government Code, Chapter 2252, Subchapter F, as amended by SB 1289, 85th Legislative Session. The contractor must complete the statement of understanding regarding this requirement, found in the Supplemental Contract Conditions, Item No. 9. Refer to TWDB-1105 – United States Iron and Steel (US I&S) Guidance.

3. Bid Guarantee

Each bidder shall furnish a bid guarantee equivalent to five percent of the bid price (Water Code §17.183). If a bid bond is provided, the Contractor shall utilize a surety company which is authorized to do business in Texas in accordance with Surety Bonds and Related Instruments, Chapter 3503 of the Insurance Code.

4. Award of Contract to Nonresident Bidder

A governmental entity may not award a governmental contract to a nonresident bidder unless the nonresident underbids the lowest bid submitted by a responsible resident bidder by an amount that is not less than the amount by which a resident bidder would be required to underbid the nonresident bidder to obtain a comparable contract in the state in which the nonresident's principal place of business is located. A non-resident bidder is a Contractor whose corporate offices or principal place of business is outside of the state of Texas (Source: Texas Government Code, Chapter 2252, Subchapter A, Nonresident Bidders, §2252.002).

The bidder will complete form TWDB-0459, Vendor Compliance with Reciprocity on Non-Resident Bidders, **which must be submitted with the bid.**

III. SUPPLEMENTAL CONTRACT CONDITIONS

1. Supersession

The Owner and the Contractor agree that the TWDB Supplemental Conditions apply to the work eligible for Texas Water Development Board assistance to be performed under this contract and these clauses supersede any conflicting provisions of this contract.

2. Privity of Contract

Funding for this project is expected to be provided in part by a loan or grant from the Texas Water Development Board. Neither the state of Texas, nor any of its departments, agencies or employees is, or will be, a party to this contract or any lower tier contract. This contract is subject to applicable provisions in 31 TAC Chapter 363 in effect on the date of the assistance award for this project.

3. Definitions

(a) The term "Owner" means the local entity contracting for the construction services.
(b) The term "TWDB" means the Executive Administrator of the Texas Water Development Board, or other person who may be at the time acting in the capacity or authorized to perform the functions of such Executive Administrator, or the authorized representative thereof.
(c) The term "Engineer" means the Owner's authorized consulting engineer for the project.

4. Laws to be Observed

In the execution of the contract, the Contractor must comply with all applicable local, state and federal laws, including but not limited to laws concerned with labor, safety, minimum wages, and the environment. The Contractor shall be familiar with and at all times shall observe and comply with all federal, state, and local laws, ordinances and regulations which in any manner affect the conduct of the work, and shall indemnify and save harmless the Owner, Texas Water Development Board, and their representatives against any claim arising from violation of any such law, ordinance or regulation by the Contractor, their Subcontractor or their employees.

5. Review by Owner and TWDB

(a) The Owner, authorized representatives and agents of the Owner, and the TWDB shall, at all times have access to and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, and other relevant data and records pertaining to this contract, provided, however that all instructions and approval with respect to the work will be given to the Contractor only by the Owner through authorized representatives or agents.

(b) Any such inspection or review by the TWDB shall not subject the state of Texas, or its representatives, to any action for damages.

6. Performance and Payment Bonds

Each Contractor awarded a construction contract must furnish performance and payment bonds:

(a) the performance bond shall include without limitation guarantees that work done under the contract will be completed and performed according to approved plans and specifications and in accordance with sound construction principles and practices;

(b) the performance and payment bonds shall be in a penal sum of not less than 100 percent of the contract price and remain in effect for one year beyond the date of approval by the Engineer of the political subdivision; and

(c) the Contractor shall utilize a surety company that is authorized to do business in Texas in accordance with Surety Bonds and Related Instruments, Chapter 3503 of the Insurance Code.

7. Payments Schedule and Cost Breakdown

(a) The Contractor shall submit for approval immediately after execution of the Agreement, a carefully prepared Progress Schedule, showing the proposed dates of starting and completing each of the various sections of the work, the anticipated monthly payments to become due to the Contractor, and the accumulated percent of progress each month.

(b) The following paragraph applies only to contracts awarded on a lump sum contract price:

COST BREAKDOWN - The Contractor shall submit to the Owner a detailed breakdown of the estimated cost of all work to be accomplished under the contract, so arranged and itemized as to meet the approval of the Owner or funding agencies. This breakdown shall be submitted promptly after execution of the agreement and before any payment is made to the Contractor for the work performed under the contract. After approval by the Owner the unit prices established in the breakdown shall be used in estimating the amount of partial payments to be made to the Contractor.

8. Workers' Compensation Insurance Coverage (as applicable, consistent with Texas Labor Code § 406.096)

(a) The Contractor shall certify in writing that they provide workers' compensation insurance coverage for each employee of the Contractor employed on the public project.
(b) Each Subcontractor on the public project shall provide such a certificate relating to coverage of the Subcontractor's employees to the general Contractor, who shall provide the Subcontractor's certificate to the governmental entity.
(c) A Contractor who has a contract that requires workers' compensation insurance coverage may provide the coverage through a group plan or other method satisfactory to the governing body of the governmental entity.
(d) The employment of a maintenance employee by an employer who is not engaging in building or construction as the employer's primary business does not constitute engaging in building or construction.

(e) In this section:

(1) "Building or construction" includes:

i. erecting or preparing to erect a structure, including a building, bridge, roadway, public utility facility, or related appurtenance;

ii. remodeling, extending, repairing, or demolishing a structure; or

iii. otherwise improving real property or an appurtenance to real property through similar activities.

(2) "Governmental entity" means this state or a political subdivision of this state. The term includes a municipality.

9. U.S. Iron and Steel (Does not apply to SWIFT Projects funded prior to May 1, 2019)

The following statement must be completed by the Contractor and made a part of the agreement between the Owner and the Contractor.

The Contractor acknowledges to and for the benefit of the Applicant ("Purchaser") and the Texas Water Development Board ("TWDB") that it understands the goods and services under this Agreement are being funded with monies made available by the Water Development Fund, Rural Water Assistance Fund, Economically Distressed Areas, State Participation Fund and/or Agricultural Water Conservation Fund. That these funds have statutory requirements commonly known as "United States Iron and Steel" that requires all of the iron and steel products used in the project to be produced in the United States ("United States Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the TWDB that (a) the Contractor has reviewed and understands the United States Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the United States Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the United States Iron and Steel Requirement, as may be requested by the Purchaser or the TWDB. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser to enforce this Agreement and recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the TWDB or any damages owed to the TWDB by the Purchaser). Neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the TWDB.

In the execution of the Contract, the Contractor shall be familiar with and at all times shall observe and comply with all applicable federal, state, and local laws, ordinances and regulations concerned with the use of iron and steel made in the United States which in any manner affect the conduct of the work, and shall indemnify and save harmless the Texas Water Development Board against any claim arising from violation of any such law, ordinance or regulation by the Contractor or by their Subcontractor or their employees.

Additional information on the United States Iron and Steel (US I&S) and its applicability to this contract can be found in the TWDB-11005 guidance.

It is recommended the Owner receive and maintain files documenting the Contractor's use of US I&S. Compliance with US I&S will be verified by the Owner through the submittal of the TWDB form TWDB-1105-A.

10. Prevailing Wage Rates

This contract is subject to Government Code Chapter 2258 concerning payment of Prevailing Wage Rates. The Owner will determine what the general prevailing rates are in accordance with the statute. The applicable provisions include, but are not limited to the following:

§2258.021. Right to be Paid Prevailing Wage Rates

(a) A worker employed on a public work by or on behalf of the state or a political subdivision of the state shall be paid:
   (1) not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the work is performed; and
   (2) not less than the general prevailing rate of per diem wages for legal holiday and overtime work.

(b) Subsection (a) does not apply to maintenance work.

(c) A worker is employed on a public work for the purposes of this section if the worker is employed by a Contractor or Subcontractor in the execution of a contract for the public work with the state, a political subdivision of the state, or any officer or public body of the state or a political subdivision of the state.

§2258.023. Prevailing Wage Rates to be Paid by Contractor and Subcontractor; Penalty

(a) The Contractor who is awarded a contract by a public body or a Subcontractor of the Contractor shall pay not less than the rates determined under Section 2258.022 to a worker employed by it in the execution of the contract.

(b) A Contractor or Subcontractor who violates this section shall pay to the state or a political subdivision of the state on whose behalf the contract is made, $60 for each worker employed for each calendar day or part of the day that the worker is paid less than the wage rates stipulated in the contract. A public body awarding a contract shall specify this penalty in the contract.

(c) A Contractor or Subcontractor does not violate this section if a public body awarding a contract does not determine the prevailing wage rates and specify the rates in the contract as provided by Section 2258.022.

(d) The public body shall use any money collected under this section to offset the costs incurred in the administration of this chapter.

(e) A municipality is entitled to collect a penalty under this section only if the municipality has a population of more than 10,000.

§2258. 024. Records

(a) A Contractor and Subcontractor shall keep a record showing:
  (1) the name and occupation of each worker employed by the Contractor or Subcontractor in the construction of the public work; and
  (2) the actual per diem wages paid to each worker.

(b) The record shall be open at all reasonable hours to inspection by the officers and agents of the public body.

§2258. 025. Payment Greater Than Prevailing Rate Not Prohibited

This chapter does not prohibit the payment to a worker employed on a public work an amount greater than the general prevailing rate of per diem wages.

11. Employment of Local Labor (only applicable to projects funded by EDAP)

The Contractor shall, to the maximum feasible extent, employ local labor for construction of the project. The Contractor and every Subcontractor undertaking to do work on the project which is, or reasonably may be done as on-site work, shall employ qualified persons who regularly reside within the political subdivision boundary of the Owner and the economically distressed area where the project is located (Texas Water Code, Section 17.183).

12. Payments

(a) Progress Payments:
  (1) The Contractor shall prepare their requisition for progress payment as of the last day of the month and submit it, with the required number of copies, to the Engineer for review. Except as provided in paragraph (3) of this subsection, the amount of the payment due the Contractor shall be determined by adding to the total value of work completed to date, the value of materials properly stored on the site and deducting: (1) five percent (5%) minimum of the total amount, as a retainage and (2) the amount of all previous payments. The total value of work completed to date shall be based on the actual or estimated quantities of work completed and on the unit prices contained in the agreement (or cost breakdown approved pursuant to section 7b relating to lump sum bids) and adjusted by approved change orders. The value of materials properly stored on the site shall be based upon the estimated quantities of such materials and the invoice prices. Copies of all invoices shall be available for inspection by the Engineer.

  (2) The Contractor shall be responsible for the care and protection of all materials and work upon which payments have been made until final acceptance of such work and materials by the Owner. Such payments shall not constitute a waiver of the right of the Owner to require the fulfillment of all terms of the Contract and the delivery of all improvements embraced in this contract complete and satisfactory to the Owner in all details.

(3) This clause applies to contracts when the Owner is a District or Authority. The retainage shall be ten percent of the amount otherwise due until at least fifty percent of the work has been completed. After the project is fifty percent completed, and if the District or Authority's Board finds that satisfactory progress is being made, then the District may authorize any of the remaining progress payments to be made in full. The District is not obligated to pay interest earned on the first 50% of work completed (Texas Water Code Sec. 49.276(d)).

(4) The five percent (5%) retainage of the progress payments due to the Contractor may not be reduced until the building of the project is substantially complete and a reduction in the retainage has been authorized by the TWDB.

(b) Withholding Payments. The Owner may withhold from any payment otherwise due the Contractor so much as may be necessary to protect the Owner and if so elects may also withhold any amounts due from the Contractor to any Subcontractors or material dealers, for work performed or material furnished by them. The foregoing provisions shall be construed solely for the benefit of the Owner and will not require the Owner to determine or adjust any claims or disputes between the Contractor and their Subcontractors or Material dealers, or to withhold any monies for their protection unless the Owner elects to do so. The failure or refusal of the Owner to withhold any monies from the Contractor shall in no way impair the obligations of any surety or sureties under any bond or bonds furnished under this contract.

(c) Payments Subject to Submission of Certificates. Each payment to the Contractor by the Owner shall be made subject to submission by the Contractor of all written certifications required of the Contractor, their Subcontractors and other general and special conditions elsewhere in this contract.

(d) Final Payment.

(1) Upon satisfactory completion of the work performed under this contract, as a condition before final payment under this contract or as a termination settlement under this contract the Contractor shall execute and deliver to the Owner a release of all claims against the Owner arising under, or by virtue of, this contract, except claims which are specifically exempted by the Contractor to be set forth therein. Unless otherwise provided in this contract, by state law or otherwise expressly agreed to by the parties to this contract, final payment under this contract or settlement upon termination of this contract shall not constitute a waiver of the Owner' s claims against the Contractor or their sureties under this contract or applicable performance and payment bonds.

(2) After final inspection and acceptance by the Owner of all work under the Contract, the Contractor shall prepare their requisition for final payment which shall be based upon the carefully measured or computed quantity of each item of work at the applicable unit prices stipulated in the Agreement or cost breakdown (if lump sum), as adjusted by approved change orders. The total amount of the final payment due to the Contractor under this contract shall be the amount computed as described above less all previous payments.

(3) The retainage and its interest earnings, if any, shall not be paid to the Contractor until the TWDB has authorized a reduction in, or release of, retainage on the contract work.

(4) Withholding of any amount due to the Owner, under general and/or special conditions regarding "Liquidated Damages" shall be deducted from the final payment due the Contractor.

13. Archaeological Discoveries and Cultural Resources

No activity which may affect properties listed or properties eligible for listing in the National Register of Historic Places or eligible for designation as a State Archeological Landmark is authorized until the Owner has complied with the provisions of the National Historic Preservation Act and the Antiquities Code of Texas. The Owner has previously coordinated with the appropriate agencies and impacts to known cultural or archeological deposits have been avoided or mitigated. However, the Contractor may encounter unanticipated cultural or archeological deposits during construction.

If archeological sites or historic structures which may qualify for designation as a State Archeological Landmark according to the criteria in 13 TAC Chapter 26, or that may be eligible for listing on the National Register of Historic Places in accordance with 36 CFR Part 800, are discovered after construction operations are begun, the Contractor shall immediately cease operations in that particular area and notify the Owner, the TWDB, and the Texas Historical Commission, 1511 N. Colorado St. , P. O. Box 12276, Capitol Station, Austin, Texas 78711-2276. The Contractor shall take reasonable steps to protect and preserve the discoveries until they have been inspected by the Owner's representative and the TWDB. The Owner will promptly coordinate with the State Historic Preservation Officer and any other appropriate agencies to obtain any necessary approvals or permits to enable the work to continue. The Contractor shall not resume work in the area of the discovery until authorized to do so by the Owner.

14. Endangered Species

No activity is authorized that is likely to jeopardize the continued existence of a threatened or endangered species as listed or proposed for listing under the Federal Endangered Species Act (ESA), and/or the State of Texas Parks and Wildlife Code on Endangered Species, or to destroy or adversely modify the habitat of such species.

If a threatened or endangered species is encountered during construction, the Contractor shall immediately cease work in the area of the encounter and notify the Owner, who will immediately implement actions in accordance with the ESA and applicable State statutes. These actions shall include reporting the encounter to the TWDB, the U.S. Fish and Wildlife Service, and the Texas Parks and Wildlife Department, obtaining any necessary approvals or permits to enable the work to continue, or implement other mitigation actions. The Contractor shall not resume construction in the area of the encounter until authorized to do so by the Owner.

15. Hazardous Materials

Materials utilized in the project shall be free of any hazardous materials, except as may be specifically provided for in the specifications.

If the Contractor encounters existing material on sites owned or controlled by the Owner or in material sources that are suspected by visual observation or smell to contain hazardous materials, the Contractor shall immediately notify the Engineer and the Owner. The Owner will be responsible for the testing and removal or disposal of hazardous materials on sites owned or controlled by the Owner. The Owner may suspend the work, wholly or in part during the testing, removal or disposal of hazardous materials on sites owned or controlled by the Owner.

16. Changes

*Provisions identified with an asterisk below are consistent with Local Government Code 271.060. Counties and Municipalities may modify the identified provisions, when applicable, to conform to Local Government Code 262.031 (Counties) or 252.048 (Municipalities).

(a) The Owner may at any time, without notice to any surety, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract, including but not limited to changes:
  (1) In the specifications (including drawings and designs);
  (2) In the time, method or manner of performance of the work;
  (3) To decrease or increase the quantity of work to be performed or materials, equipment or supplies to be furnished;

(b) *The total price of a contract may not be increased by a change order unless provision has been made for the payment of the added cost by the appropriation of current funds or bond funds for that purpose, by the authorization of the issuance of certificates, or by a combination of those procedures.

(c) *A contract with an original contract price of $1 million or more may not be increased by more than 25 percent. If a change order for a contract, with an original contract price of less than $1 million, increases the contract amount to $1 million or more, subsequent change orders may not increase the revised contract amount by more than 25 percent.

(d) *A governing body may grant authority to an official or employee responsible for purchasing or for administering a contract to approve a change order that involves an increase or decrease of $50,000 or less.

(e) Changes that involve an increase in price will be supported by documentation of the cost components. For projects funded through the EDAP program, or with grant proceeds, TWDB staff may request this information to be provided in a format equivalent to the Cost and Pricing Information form (No. WRD-277).

(f) Any change orders involving a change in the project requiring a relocation of project components, sizing, or process may require additional environmental approval. A map and description of the proposed changes should be sent to the TWDB Environmental

Reviewer for coordination and approval as soon as possible to avoid any delay.

17. Operation and Maintenance Manuals and Training

(a) The Contractor shall obtain installation, operation, and maintenance manuals from manufacturers and suppliers for equipment furnished under the contract. The Contractor shall submit three copies of each complete manual to the Engineer within 90 days after approval of shop drawings, product data, and samples, and not later than the date of shipment of each item of equipment to the project site or storage location.

(b) The Owner shall require the Engineer to promptly review each manual submitted, noting necessary corrections and revisions. If the Engineer rejects the manual, the Contractor shall correct and resubmit the manual until it is acceptable to the Engineer as being in conformance with the design concept of the project and for compliance with information given in the contract documents. Owner may assess Contractor a charge for reviews of same items in excess of three (3) times. Such procedure shall not be considered cause for delay.

(c) Acceptance of manuals by Engineer does not relieve Contractor of any requirements of terms of Contract.

(d) The Contractor shall provide the services of trained, qualified technicians to check final equipment installation, to assist as required in placing same in operation, and to instruct operating personnel in the proper manner of performing routine operation and maintenance of the equipment.

(e) Operations and maintenance manuals specified hereinafter are in addition to any operation, maintenance, or installation instructions required by the Contractor to install, test, and start-up the equipment.

(f) Each manual is to be bound in a folder and labeled to identify the contents and project to which it applies. The manual shall contain the following applicable items:
   (1) A listing of the manufacturer's identification, including order number, model, serial number, and location of parts and service centers.
   (2) A list of recommended stock of parts, including part number and quantity.
   (3) Complete replacement parts list.
   (4) Performance data and rating tables.
   (5) Specific instructions for installation, operation, adjustment, and maintenance.
   (6) Exploded view drawings for major equipment items.
   (7) Lubrication requirements.
   (8) Complete equipment wiring diagrams and control schematics with terminal identification.

18. As-built Dimensions and Drawings

(a) Contractor shall make appropriate daily measurements of facilities constructed and keep accurate records of location (horizontal and vertical) of all facilities.

(b) Upon completion of each facility, the Contractor shall furnish the Owner with one set of direct prints, marked with red pencil, to show as-built dimensions and locations of all work constructed. As a minimum, the final drawings shall include the following:
   (1) Horizontal and vertical locations of work.
   (2) Changes in equipment and dimensions due to substitutions.
   (3) "Nameplate" data on all installed equipment.
   (4) Deletions, additions, and changes to scope of work.
   (5) Any other changes made.

19. Close-Out Procedures

To close-out the contract and release final retainage, the following steps must be completed:

(a) TWDB Staff must conduct a construction contract final inspection (CCFI).

(b) The following submittals must be received, reviewed, and accepted by TWDB:
   (1) The final change order, adjustment of quantities, or a statement that all change orders have previously been submitted and there will be no more change orders;
   (2) The final pay request from the Contractor;
   (3) An affidavit by the Contractor that all bills have been paid;
   (4) Certification by the consulting Engineer that the work has been completed and was constructed in accordance with the approved plans and specifications and sound engineering principles and construction practices;
   (5) Acceptance of the project by the Owner in the form of a written resolution or other formal action;
   (6) Notification of the beginning date of the warranty period for the contract; and
   (7) Confirmation that the Owner has received as-built drawings from the Contractor.
   (8) Certificate of Compliance with U.S. Iron and Steel Requirements (TWDB-1105A)

(c) TWDB will issue a Certificate of Approval allowing the release of retainage.

IV. FORMS AND GUIDANCE LIST

The following documents, mentioned throughout this guidance are available on the TWDB website at: http://www.twdb.texas.gov/financial/instructions/index.asp

Forms:

The following forms must be included in the bid documents:

- Contractor' s Act of Assurance (ED-103)
- Contractor' s Act of Assurance Resolution (ED-104)
- Certificate of Compliance with U.S. Iron and Steel Requirements (TWDB-1105A)
- Site Certificate (ED-101)
- Vendor Compliance with Reciprocity of Non-Resident Bidders (TWDB-0459).

Guidance Document:

- United States Iron and Steel Guidance (TWDB-1105)