Meridian Green Works, LLC

PLAYA DRAIN TRAIL - ADDENDUM #2

TO: Prospective Bidders **DATE:** November 21, 2017

FROM: H. Wayne Cooper, ASLA

This Addendum forms a part of and modifies the bid documents dated October 24, 2017 as indicated below:

BIDDER QUESTIONS / CLARIFICATIONS

1. Should bidders submit a bid amount with the Bid Alternate #1 for electrical conduit along the trail in the event that lighting is included in the project? If so, how will the lowest bid price be calculated, with or without the Bid Alternate #1?

   ANSWER: A bid amount for Bid Alternate #1 should be submitted with each bid. The PdNHF will evaluate bids with and without the bid amount for Bid Alternate #1 included.

2. We know that PDNHF is not using scoring criteria similar to how the City of El Paso scores best value solicitations. Other than checking reference, what criteria will the PDNHF base the final determination on for awarding the bid? What will be the determining factor(s)?

   ANSWER: The PdNHF has assembled a proposal evaluation team who will review the contents of the submitted proposals for compliance with the RFP requirements, as well as review proposers' submitted information. Review criteria will include a review of the proposer's price to complete the work, safety record, and demonstrated experience and key personnel who will work on the project, who have worked on similar construction projects with a value between $2 and $5 million, with responses to the 12 evaluation criteria identified under paragraph 6.10 on page 16 of 25 of the Request for Proposals. Proposers are encouraged to provide sufficient information about past project experiences, staffing and subcontractors, equipment and resources, approach to completing the work, and past project references as a means to illustrate availability, capacity, and ability to complete the project to the satisfaction of the PdNHF and TRAILS.

3. Please clarify Artistic Tiles to be installed.

   ANSWER: The Owner will supply Artistic Tiles that are approximate 12" x 12" nominal dimensions, which will be installed in recessed areas in the paving adjacent to the Distance Markers that occur along the trail. The Artistic Tiles will be installed in a thinset mortar bed and grouted with exterior grade grout.

4. Regarding the integral color concrete there is no color selection. The manufacturer specified is LM Scofield. Will the owner allow Increte Color Systems as an equal to Scofield?

ANSWER: The Owner will select colors from standard colors as part of the submittal process during construction. Increte Color Systems are acceptable as a substitute to Scofield integral color as long as they are applied in the same fashion.

5. Section 01 02 00 TPDES Requirements—1.1B says “Engineer has prepared plans..”. Para. 3.1A says, ”Contractor shall have a SW3P prepared.” Does this mean we have to have a PE prepare stamped drawings for the SW3P?

   ANSWER: The SW3P is included in a binder the Design team has prepared for the project. This binder will be provided to the winning Contractor. The binder includes signed and sealed SW3P Plans and all the guidelines/forms needed for permitting. The winning Contractor will utilize this binder for SW3P permitting and will not need to enlist the services of an engineer to prepare and seal SW3P plans.

6. The owner is providing the pedestrian bridge. Can you provide us the manufacturers installation guidelines?

   ANSWER: Final bridge plans and installation guidelines will be provided to the winning Contractor.

7. Please confirm that the owner is paying for all materials testing.

   ANSWER: The Owner will pay for materials testing.

PROJECT MANUAL

1. Section 7.02, PROPOSAL FORM – Delete the Proposal Form in its entirety and replace it with the amended Proposal Form attached to this Addendum.
2. Specification Section 02 20 00 – GEOTECHNICAL REPORT – insert complete geotechnical report for the project dated September 1, 2017, attached to this addendum.
3. Specification Section 32 12 16 – ASPHALT PAVING – insert complete specification section attached to this addendum.
4. Specification Section 32 90 00 – PLANTING
   A. Section 2.3 MULCH: Add Paragraph B. Crushed Rock Mulch, as follows:
      Crushed Rock Mulch: Locally available rock mulch.
      1. Type: Tumbled rock materials, 1/4 inch to 3/4 inch in size.
      2. Color: light brown to tan color.
5. Specification Section 32 90 00 – PLANTING
   A. Section 2.7 MISCELLANEOUS PRODUCTS: Add Paragraph B. Steel Edging, as follows:
      Steel Edging: 10 gage, 1/8" x 4" commercial steel edging fabricated in sections to receive stakes.
      1. Provide tapered steel stakes 16" long.
      2. Finish shall be manufacturer's standard dark brown or dark green paint.

DRAWINGS

1. Delete the following plan sheets in their entirety, and replace with new plan sheets attached to this addendum:
   A. Sheet L1.00 – Site Preparation Orientation Plan
   B. Sheet L1.01 – Site preparation Plan
   C. Sheet L3.01 – Landscape Plan
   D. Sheet L3.18 – Landscape Plan
   E. Sheet L5.06 – Hardscape Details
   F. Sheet L5.07 - Hardscape Details
   G. Sheet L5.10 - Hardscape Details
   H. Sheet C3.16 – Grading and Drainage Plan
2. Revise the name of Sheet L5.14 to LANDSCAPE DETAILS.
3. Revise the name of Sheet L5.15 to IRRIGATION DETAILS.
4. Insert Sheets 1 of 2 and 2 of 2, SAFETY END TREATMENT,, TXDOT standard detail sheets, after sheet C1.03 in the plan set.

End of Addendum #2

PROPOSAL FORM

Playa Drain Trail Construction Project

Name and Address of PdNHF: Paso del Norte Health Foundation
221 N. Kansas Street, Suite 1900
El Paso, Texas 79901

Name and Address of TRAILS: PDNHF Trails, LLC
221 N, Kansas Street, Suite 1900
El Paso, Texas 79901

1. The undersigned PROPOSER, proposes and agrees, if this Proposal is accepted, to enter into a Prime Subcontract with TRAILS in the form included in the Contract Documents to perform and furnish all work as specified or indicated in the Contract Documents for the contract price and within the contract time indicated in this Proposal and in accordance with the other terms and conditions of the Contract Documents.

2. PROPOSER accepts all of the terms and conditions of the Solicitation for Proposal (RFP) and Instructions to Proposers, including without limitation those dealing with the disposition of Proposal security. This Proposal will remain subject to acceptance for forty-five (45) days after the day of Proposal opening. PROPOSER will sign and submit the Prime Subcontract with the Bonds and other documents required by the RFP requirements within ten (10) days after the date of PdNHF's issuance of the Prime Contract to TRAILS, and TRAILS issuance of the Prime Subcontract to PROPOSER, if PROPOSER is the successful respondent to the RFP.

3. In submitting this Proposal, PROPOSER represents, as more fully set forth in the RFP, that:

   A. PROPOSER has examined copies of all the Proposal Documents, the RFP, the Contract Documents, and of the following Addenda **(receipt of all which is hereby acknowledged)**:

Date	Number
_____	
_____	
_____	
_____	
_____	

   B. PROPOSER has familiarized itself with the nature and extent of the Contract Documents, work, site, locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance, or furnishing of the work.

   C. PROPOSER has studied carefully all reports and drawings of subsurface conditions and

drawings of physical conditions which are identified in the Contract Documents and the RFP.

D. PROPOSER has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests and studies (in addition to or to supplement those referred to in "C." above) which pertain to the subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance or furnishing of the work under the Contract Documents as PROPOSER considers necessary or appropriate for the performance or furnishing of the work at the contract price, within the contract time and in accordance with the other terms and conditions of the Contract Documents.

E. PROPOSER has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing underground facilities at or contiguous to the site and assumes responsibility for the accurate location of said underground facilities.

F. PROPOSER has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents.

G. PROPOSER has given each of PdNHF and TRAILS written notice of all conflicts, errors, or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by PdNHF and TRAILS is acceptable to PROPOSER.

H. The Proposal is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; PROPOSER has not directly or indirectly induced or solicited any other Proposer to submit a false or sham Proposal; PROPOSER has not solicited or induced any person, firm or corporation to refrain from submitting a Proposal; and PROPOSER has not sought by collusion to obtain for itself any advantage over any other Proposer or over PdNHF or TRAILS.

I. All prices quotes by PROPOSER shall be entirely in United States Currency (U.S. Dollars).

4. PROPOSER will complete the Work in accordance with the Contract Documents for the following price(s):

BASE BID

PROPOSER agrees to perform all of the work described in the Specifications and shown on the plans and Contract Documents for the Guaranteed Maximum Price as set forth below. The cost of any work added or deducted from the following estimated quantities shall be computed at the unit prices provided, and as otherwise permitted in the Contract Documents.

Playa Drain Trail – Phase One

BASE BID CONTRACT PRICE of $_____.
Bid amount written in words:_____Dollars and ___Cents

ADD Alternate No. 1 – Electrical Conduit Installation, Complete In Place, including labor and materials required to install the conduit pre plans and specifications.

ADD Alternate No. 1- CONTRACT PRICE of $_____.
Bid amount written in words:_____Dollars and ___Cents

UNIT COST WORKSHEET – CONTRACTOR PROVIDED ITEMS

In the event changes in the Project Scope require additions to or deletions from the BASE BID CONTRACT PRICE, Proposer agrees to provide to the Owner or delete from the Contract the items listed in the Unit Prices worksheet below. The Unit Prices provided will be used only for additions to and deletions from the contract price which may have to be made as the performance under this contract proceeds. The Unit Prices are inclusive of any and all items and costs necessary to furnish, install, or complete the work, including, but not limited to, necessary superintendence, labor, equipment, tools, machinery, mobilization, insurance, profit and overhead. The Unit Prices are "Complete-In-Place" Costs.

Item No.	Unit	Description	Unit Bid Price
1	LF	10-foot Wide Recycled Asphalt Trail, from Delta Drive to Springfield Drive, incl. concrete curbs, complete-in-place.	$_____
2	LF	10-foot Wide Recycled Asphalt Trail, from Springfield Drive to South Carolina Drive, incl. concrete curbs, complete-in-place.	$_____
3	LF	10-foot Wide Recycled Asphalt Trail, from South Carolina Drive to Riverside High School, incl. concrete curbs, complete-in-place.	$_____
4	SF	Four (4)-inch thick Concrete Walk Paving, complete-in-place.	$_____
5	LF	Post and Cable Fence, incl. concrete footings, complete-in-place.	$_____
6	LF	Metal Fence, incl. fence posts, pickets and footings; complete-in-place.	$_____
7	LF	Five (5) foot high Chain Link Fence, incl. fence posts, top rails, fence fabric and ties; complete-in-place.	$_____
8	LF	Six (6) foot high Wood Privacy Fence, incl. fence posts, footings, fence pickets, complete-in-place.	$_____
9	EA	Trailhead, incl. plain and enhanced concrete paving, stone monument walls with dedication plaque, logo plaque, trail name and location name plaques, complete-in-place.	$_____
10	EA	Trail Overlook, incl. plain and enhanced concrete paving, and stone wall with interpretive sign framing and sign panel supplied by Owner, complete-in-place.	$_____
11	EA	Minor Stone Column, incl. footing, location name plaque, complete-in-place	$_____

Item No.	Unit	Description	Unit Bid Price
12	EA	Vehicular Gate, incl. footings, fixtures and equipment, complete-in-place.	$_____
13	EA	Fixed Bollards, per plans and details, complete-in-place.	$_____
14	EA	Wayfinding Signs, incl. sign post, placard provided by Owner, and concrete base, complete-in-place.	$_____
15	EA	Distance Marker, incl. sign post, placard and concrete base, and concrete paving to edge of trail, complete-in-place.	$_____
16	EA	Concrete pad and electrical equipment for the Large Shade Shelter, complete-in-place.	$_____
17	EA	Concrete pad for the Small Shade Covers, complete-in-place.	$_____
18	EA	Concrete pad for the Backless Park Bench, complete-in-place	$_____
19	EA	Concrete pad for the Standard Park Bench, complete-in-place	$_____
20	EA	Concrete pad for the Standard Picnic Table, complete-in-place	$_____
21	EA	Concrete pad for the Accessible Picnic Table, complete-in-place	$_____
22	EA	Concrete pad, water supply and drainage piping and drain sump, valves, water meter, backflow preventer, for the Drinking Fountain, complete-in-place	$_____
23	EA	Concrete pad and installation for the Solar Powered, compacting Trash Receptacle, complete-in-place	$_____
24	EA	Concrete pad and installation for the Pet Waste Bag Dispenser, complete-in-place	$_____
25	EA	Concrete curbing and resilient paving surface for the Exercise Equipment, complete-in-place	$_____
26	EA	Mounting post, foundation system, and concrete pad for the Little Library, supplied by Owner, complete-in-place	$_____
27	EA	Concrete pad for the Bicycle Rack with Repair Station, complete-in-place.	$_____
28	EA	Texas Madrone Tree, per plans & specs, complete-in-place.	$_____
29	EA	Pecan Tree, per plans & specs, complete-in-place.	$_____
30	EA	Redbud Tree, per plans & specs, complete-in-place.	$_____
31	EA	Deodar Cedar Tree, per plans & specs, complete-in-place.	$_____
32	EA	Desert Willow Tree, per plans & specs, complete-in-place.	$_____

Item No.	Unit	Description	Unit Bid Price
33	EA	Loquat Tree, per plans & specs, complete-in-place.	$_____
34	EA	Coolibah Tree, per plans & specs, complete-in-place.	$_____
35	EA	Common Fig Tree, per plans & specs, complete-in-place.	$_____
36	EA	Shademaster Honey Locust Tree, per plans & specs, complete-in-place.	$_____
37	EA	Arizona Walnut Tree, per plans & specs, complete-in-place.	$_____
38	EA	Golden Rain Tree, per plans & specs, complete-in-place.	$_____
39	EA	Palo Verde Tree, per plans & specs, complete-in-place.	$_____
40	EA	Pinyon Pine Tree, per plans & specs, complete-in-place.	$_____
41	EA	Apache Pine Tree, per plans & specs, complete-in-place.	$_____
42	EA	Aleppo Pine Tree, per plans & specs, complete-in-place.	$_____
43	EA	Mexican Plum Tree, per plans & specs, complete-in-place.	$_____
44	EA	Pomegranite Tree, per plans & specs, complete-in-place.	$_____
45	EA	Burr Oak Tree, per plans & specs, complete-in-place.	$_____
46	EA	Mexican White Oak Tree, per plans & specs, complete-in-place.	$_____
47	EA	Live Oak Tree, per plans & specs, complete-in-place.	$_____
48	EA	New Mexico Locust Tree, per plans & specs, complete-in-place.	$_____
49	EA	Black Locust Tree, per plans & specs, complete-in-place.	$_____
50	EA	Texas Mountain Laurel Tree, per plans & specs, complete-in-place.	$_____
51	EA	Cedar Elm Tree, per plans & specs, complete-in-place.	$_____
52	EA	Mexican Buckeye Tree, per plans & specs, complete-in-place.	$_____
53	EA	Chinese Date Tree, per plans & specs, complete-in-place.	$_____
54	EA	Parson’s Juniper Bush, per plans & specs, complete-in-place.	$_____
55	EA	Dwarf Fountain Grass Bush, per plans & specs, complete-in-place.	$_____
56	EA	Agarita Bush, per plans & specs, complete-in-place.	$_____
57	EA	4-inch Master Control Valve, per plans & specs, complete-in-place.	$_____
58	EA	1-inch Quick Coupler Valve, per plans & specs, complete-in-place.	$_____

Item No.	Unit	Description	Unit Bid Price
59	EA	1-inch Commercial Control Zone Kit, per plans & specs, complete-in-place.	$_____
60	EA	1-1/2-inch Commercial Control Zone Kit, per plans & specs, complete-in-place.	$_____
61	EA	2 inch SDR 21 PVC Pipe, incl. trenching and backfilling, per plans & specs, complete-in-place.	$_____
62	LF	1-1/2 inch SDR 21 PVC Pipe, incl. trenching and backfilling, per plans & specs, complete-in-place.	$_____
63	LF	1-1/4 inch SDR 21 PVC Pipe, incl. trenching and backfilling, per plans & specs, complete-in-place.	$_____
64	LF	1-inch SDR 21 PVC Pipe, incl. trenching and backfilling, per plans & specs, complete-in-place.	$_____
65	LF	3/4-inch SDR 21 PVC Pipe, incl. trenching and backfilling, per plans & specs, complete-in-place.	$_____
66	LF	1/2-inch SDR 21 PVC Pipe, incl. trenching and backfilling, per plans & specs, complete-in-place.	$_____
67	LF	3-inch SCH40 PVC Pipe, incl. trenching and backfilling, per plans & specs, complete-in-place.	$_____
68	LF	2-1/2-inch SCH40 PVC Pipe, incl. trenching and backfilling, per plans & specs, complete-in-place.	$_____
69	LF	2-inch SCH40 PVC Pipe, incl. trenching and backfilling, per plans & specs, complete-in-place.	$_____
70	LF	1-1/2-inch SCH 40 21 PVC Pipe, incl. trenching and backfilling, per plans & specs, complete-in-place.	$_____
71	LF	4-inch SCH 40 PVC Pipe, incl. trenching and backfilling, per plans & specs, complete-in-place.	$_____
72	LF	6-inch SCH 40 PVC Pipe, incl. trenching and backfilling, per plans & specs, complete-in-place.	$_____
73	LF	Directional Boring beneath pavement, per plans & specs, complete-in-place.	$_____

UNIT COST WORKSHEET – OWNER PROVIDED ITEMS

The following project items are provided by the OWNER for CONTRACTOR INSTALLATION, per the plans and specifications. Unit costs for these items include necessary superintendence, labor, equipment, tools, machinery, mobilization, insurance, profit and overhead, and the preparation of the project site, construction of necessary foundations, pavements, brackets, piping, electrical connections, water and/or utility connections, or any other items, equipment or preparation necessary to install the item in the project. The Unit Prices provided will be used only for additions to and deletions from the contract price which may have to be made as the performance under this contract proceeds. The Unit Prices are "Complete-In-Place" Costs.

Item No.	Unit	Description	Unit Bid Price
1	EA	Large Shade Shelter, including foundation system, and other items necessary to install the shelter, complete-in-place.	$_____
2	EA	Small Shade Cover for Picnic Table, including foundation system, and other items necessary to install the shelter, complete-in-place	$_____
3	LF	Suntan Lotion Dispenser, including mounting pole, and other items necessary to install the dispenser, complete-in-place	$_____
4	EA	Backless Park Bench, and other items necessary to install the bench, complete-in-place	$_____
5	EA	Standard Park Bench, and other items necessary to install the bench, complete-in-place	$_____
6	EA	Standard Picnic Table, and other items necessary to install the table, complete-in-place	$_____
7	EA	Accessible Picnic Table, and other items necessary to install the table, complete-in-place	$_____
8	EA	Drinking Fountain, including other items necessary to install the fountain, complete-in-place	$_____
9	EA	50-foot x 10-feet Pedestrian Bridge, incl. pre-cast concrete abutments, complete-in-place.	$_____
10	EA	Solar Powered, compacting Trash Receptacle, and other items necessary to install the receptacle, complete-in-place	$_____
11	EA	Pet Waste Bag Dispenser, and other items necessary to install the dispenser, complete-in-place	$_____
12	EA	Exercise Equipment, and other items necessary to install the equipment, complete-in-place	$_____

Item No.	Unit	Description	Unit Bid Price
13	LF	Little Library, complete-in-place	$_____
14	EA	Bicycle Rack with Repair Station, including items necessary to install the equipment, complete-in-place	$_____
15	EA	Removable Bollard, including items necessary to install the bollard, complete-in-place	$_____
16	EA	Standard Picnic Table, including foundation system, and other items necessary to install the table, complete-in-place	$_____
17	EA	Accessible Picnic Table, including foundation system, and other items necessary to install the table, complete-in-place	$_____
18	EA	50-foot x 10-feet Pedestrian Bridge, incl. pre-cast concrete abutments, complete-in-place.	$_____
19	EA	Wayfinding Sign placard, installed on metal plate on wayfinding sign post, complete-in-place.	$_____
20	EA	Trail Overlook Interpretive Sign, installed on overlook sign framing, per plans, complete-in-place	$_____
21	EA	Artistic Tile Paving Panels, installed in paving bands per plans & specs, complete-in-place	$_____

5. PROPOSER agrees that the Work will be Substantially completed within **180** Calendar Days from the date when the Contract Time commences and completed and ready for final payment within **210** calendar days. Final completion includes CONTRACTOR'S resolution of all punch list items and CONTRACTOR'S submission of required close-out documentation. Any failure of the CONTRACTOR to complete the project within the contract time will be considered a material breach of the contract.

PROPOSER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work on time.

In accordance with Section 151.311 of the Texas Tax Code (V.A.T.C.S.), regarding taxes on materials and services, and requiring a separated contract, the following is the breakdown of cost for materials and cost for labor for this bid:

MATERIALS TO BE INCORPORATED IN PROJECT NOT SUBJECT TO SALES TAX: **$_____**

LABOR TO BE INCORPORATED IN PROJECT NOT SUBJECT TO SALES TAX: **$_____**

RENTAL EQUIPMENT AND OTHER TAXABLE ITEMS: **$_____**

OTHER (I.E. BONDS, INSURANCE, CAPITAL EQUIPMENT, ETC.) **$_____**

***TOTAL CONTRACT:** **$_____**
***(TOTAL MUST EQUAL TOTAL BID PRICE)**

5. PROPOSER agrees that the work under the Contract Documents will be substantially completed within **180** Calendar Days from the date when the Contract Time commences to run as provided in the Contract Documents and the Notice to Proceed. The work under the Contract Documents shall be finally and completed and ready for final payment in accordance with the Contract Documents within **210** calendar days of the issuance of the Notice to Proceed. Final completion includes PROPOSER's resolution of all punch list items and PROPOSER's submission of required close-out documentation. Any failure of the Proposer to complete the Project within the contract time will be considered a material breach of the Prime Subcontract.

   PROPOSER accepts the provisions of the Contract Documents and the agreement as to liquidated damages in the event of failure to complete the work on time, as required in the Contract Documents.

6. The following documents are attached to and made a condition of this Proposal:

   A. Required Proposal Security in the form of cash deposit or bid bond.

   B. A tabulation of all Subcontractors who will provide labor at the site of the work or render services to the PROPOSER in or about the construction of the work and Suppliers and other persons and organizations is required to be identified in this Proposal, as set forth in the RFP.

7. Communications concerning this Proposal shall be addressed to the following named individual, address, telephone number, facsimile number, and e-mail address:

Name: _____

Address: _____

_____

Phone: _____ Fax: _____ E-mail: _____

8. The terms used in this Proposal which are defined in Contract Documents, have the meaning ascribed to such terms in the Contract Documents.

SUBMITTED on _____, 201___.

If PROPOSER is:

An Individual

By _____(SEAL)
(Name of Proposer)

_____
(Title) (Signature)

doing business as _____

Business Address: _____

_____

Phone No.: _____

A Partnership

By _____(SEAL)
(Firm Name)

_____
(Signature - general partner)

Business Address: _____

Phone No.: _____

Geotechnical Engineering Study

Proposed Paso Del Norte Health Foundation Trail
El Paso, El Paso County, Texas

Prepared for:
Paso Del Norte Health Foundation
221 N. Kansas, Ste. 1900
El Paso, Texas 79901

Prepared by:
LOI ENGINEERS
2101 E. Missouri Avenue, Suite B
El Paso, Texas 79903

September 1, 2017

ENGINEERS

File No. LOI17-134
September 1, 2017

Ms. Tracy J. Yellen
Paso Del Norte Health Foundation
221 N. Kansas, Ste. 1900
El Paso, Texas 79901

Re: Geotechnical Engineering Services
Proposed Paso Del Norte Health Foundation Trail
El Paso, El Paso County, Texas

Dear Ms. Yellen:

We thank you for the opportunity to present the enclosed geotechnical engineering report for the above referenced project. This engineering report was prepared in accordance with the scope of services as presented in our proposal No. LOIP16-002, dated April 14, 2017, and authorized on May 17, 2017. The information we are presenting herein describes the procedures utilized for field and laboratory investigation, along with the results of our study. This report include general site preparation recommendations, foundation design parameters, pavement recommendations, and general guidelines for foundation and pavement construction.

It was a pleasure to work with you on this phase of your project, and we look forward to assist you further during the subsequent construction activities. If you have any questions regarding the information we present herein, please call us.

Respectfully submitted,
LOI ENGINEERS

Oscar D. Gonzalez, E.I.T.
Project Professional

STATE OF TEXAS
BERNARDINO OLAGUE
81628
LICENSED
PROFESSIONAL ENGINEER

Bernardino Olague
Principal Engineer
9/11/17

Copies: Above (1)
Mr. H. Wayne Cooper (1)
File (1)

ENGINEERS

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APPENDIX A

Boring Location Map....A-1.1 to A-1.4
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APPENDIX B

Soil Terminology....B-1
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1.0 INTRODUCTION

We have completed the geotechnical engineering study for the Paso Del Norte Health Foundation Trail, which will be start at Ascarate Park and will finish at Riverside Park, adjacent to Riverside High School, in south-east El Paso, El Paso County, Texas. We were authorized to conduct this study by Ms. Tracy J. Yellen, CEO of Paso Del Norte Health Foundation (Client) on May 17, 2017. We received notice-to-proceed on May 26, 2017.

2.0 PROJECT DESCRIPTION AND OBJECTIVE

The project consists of the design and construction of a 10-foot to 12-foot wide asphalt trail and associated amenities for the Paso Del Norte Health Foundation Trail (the Trail). The Trail project includes benches, shade canopies, as well as a 30-foot by 40-foot shade canopy pavilion. The Trail will span over the Franklin irrigation canal using a pre-fabricated steel bride, which is 10-foot wide. The bridge structure will be subject to pedestrian and light maintenance vehicle traffic. The new Trail, which will have a length of about ±3 miles, will start at Ascarate Park and will end at Riverside Park, adjacent to Riverside High School, located in south-east El Paso, El Paso County, Texas.

We conducted our study in general accordance with the "Recommended Practice for the Design of Foundations" manual published by the American Society of Civil Engineers.

3.0 FIELD AND LABORATORY INVESTIGATION

3.1 Field Exploration

In our field exploration phase, we advanced ten (10) soil borings to depths ranging between 6½-feet and 16½-feet below ground surface (bgs) at representative locations throughout the proposed Paso Del Norte Trail footprint area. We drilled and sampled the soil borings in general accordance with ASTM D-6151 and D-1586 procedures, using hand-auger tools and a truck-mounted CME-75 drill rig. We located the borings in the field using property corners and street references included in the project plans provided by Paso Del Norte Health Foundation (Client).

The soil boring locations are shown in the Boring Plan included in the Appendix A of this report as Sheets A-1.1 through A-1.4. We also prepared a log of each soil boring to delineate the soil strata studied at site. The soil boring logs (B-1 through B-10) are included in the Appendix A of this report as Sheets A-2 through A-11. A key to the soil terminology used in the logs is included in the Appendix B of this report as Sheets B-1 and B-2.

We conducted Standard Penetration Tests (SPT) at each representative soil strata in the soil borings to determine the relative density or consistency of the resident soils. The SPT is a widely recognized procedure that provides a numerical value of the soil strata being tested, indicating the number of blows that it takes for a standard 140-pound weight hammer with a standard 30-inch free fall drop to penetrate 12 inches into the soil. The SPT values for the soil strata in the soil borings are included in the soil boring logs.

As part of our field exploration, we collected representative soil samples from the soil borings at regular depth intervals using a standard 2-inch diameter split spoon sampler. We identified and labeled the samples according to boring number and depth, visually classified them according to ASTM D-2488, and placed them in moisture-proof containers for transportation to the laboratory for further evaluation and testing.

Unless we receive prompt notification from the client, we will store the samples collected from the field investigation in our laboratory for a period of 90 days from the date of this report, after which time we will discard the samples.

3.2 Geotechnical Laboratory Testing

In the laboratory, we determined the moisture content, particle size analysis, percent passing the No. 200 sieve, and Atterberg Limits of selected samples. We conducted these tests to determine the physical and engineering properties of representative soils at the site. These tests also allowed us to properly classify the resident soils in accordance with the Unified Soil Classification System (USCS). The results of our tests are included in the soil boring logs, adjacent to the depth at which the sample was recovered.

Type of Test	Number of Tests
Moisture Content (ASTM D-2216)	25
Percent Passing No. 200 Sieve (ASTM D-6913)	8
Atterberg Limits (ASTM D-4318)	15
Grain Size Distribution Analysis (ASTM D-422)	7

4.0 GENERAL SITE CONDITIONS

4.1 Site Geology

The project site is located on the Rio Grande flood plain. According to the Soil Conservation Service of El Paso County, the soils in this area correspond to the Harkey-Glendale association, which is described as deep, nearly level soils that have loamy very fine sand to silty clay loam underlying material.

4.2 Site Topography and Site Conditions

The project site areas are relatively level, and slopes gently downward in a southeasterly direction.

4.3 Site Vegetation

At the time of our field phase, the site exhibited native vegetation consisting of weeds, brittlebush and perennial grasses.

4.4 Soil Stratigraphy

The soils we encountered in the borings can be divided into four (4) generalized soil strata as follows:

Stratum A, consisting of fine grained sands, intermixed with various amounts of silt, was encountered from ground surface elevation in soil borings B-1 through B-7, and extended to depths ranging from 2½ to the total explored depth of 16½ feet below ground surface (bgs). These soils were encountered at a loose to medium dense relative density, with SPT values results ranging from 7 to 17 blows per foot of penetration. These soils were encountered at a dry to moist condition, with moisture content values ranging from 1 to

9 percent, and percent finer than the No. 200 sieve test results ranging from 4 to 47 percent. Soils in this stratum can be classified as SM or SP in accordance with the USCS.

Stratum B, consisting of fine grained clayey sands, was encountered underlying the Stratum A soils in soil boring B-2, and extended to a depth of 6½ feet bgs. These soils were encountered at a dry to moist condition, with a moisture content value of 11 percent, and a percent finer than the No. 200 sieve test result of 76 percent. These soils exhibited a maximum liquid limit of 35 and yielded a plasticity index of 17. Soils in this stratum can be classified as SC in accordance with the USCS.

Stratum C, consisting of sandy lean silts, was encountered interbedded in Stratum A soils in soil boring B-6, and extended to a depth of 5 feet bgs. These soils were encountered at a moist condition, with a moisture content value of 17 percent, and a percent finer than the No. 200 sieve test result of 83 percent. The maximum tested liquid limit of these soils is 30, which yielded a plasticity index of 8. Soils in this stratum can be classified as ML in accordance with the USCS.

Stratum D, consisting of brown lean and fat clays, intermixed with various amounts of sand, was encountered from ground surface elevation in soil borings B-8 through B-10, and extended to depths ranging from 5 to 7½ bgs. These soils were encountered at a stiff to very stiff consistency, with SPT values results ranging from 10 to 21 blows per foot of penetration. These soils were encountered at a dry to moist condition, with moisture content values ranging from 10 to 21 percent, and percent finer than the No. 200 sieve test results ranging from 59 to 82 percent. The maximum tested liquid limit of these soils is 61, which yielded a plasticity index of 36. Soils in this stratum can be classified as CL or CH in accordance with the USCS.

4.5 Groundwater

Groundwater was not present in the borings drilled during the time of our field exploration. The groundwater table at the site is anticipated to be at depths below the planned depth of the foundation system and related excavations at the site.

It is our opinion that the depth to groundwater at the site may vary considerably after periods of significant rainfall or during irrigation seasons. Fluctuations in groundwater may also occur as a function of temperature, groundwater withdrawal and future construction activities that may alter the surface drainage and sub-drainage characteristics of this site.

5.0 ENGINEERING EVALUATION

5.1 Site Preparation

The surface soil and vegetation in the site should be removed prior to grading. Based on the SPTs performed at the site, the sandy soils in the upper 10 feet below ground surface were encountered at a medium dense relative density, while the clayey soils in the upper 10 feet in the soil borings were encountered at a stiff to very stiff consistency. It is our opinion that the soils encountered during our field exploration may provide adequate foundation support when properly processed, moisture-conditioned, and compacted as indicated in this report.

The clayey subgrade soils encountered in soil borings B-8, B-9 and B-10, are NOT adequate to be used as select fill to support the crushed aggregate base course. The resident subgrade soils may be excavated and utilized for non-structural support purposes. These soils may be stockpiled at a convenient location away from the planned foundation and pavement areas for later use as non-structural backfill material, but away from any excavation or slope. These soils should be compacted in accordance with the recommendations outlined in Section 5.6 of this report.

5.2 Vertical Movements

We calculated the Potential Vertical Rise (PVR) of a theoretically dry soil mass, in accordance with Texas Department of Transportation (TxDOT) method Tex 124-E. The PVR value under dry moisture conditions for soils obtained from the soil borings, are as follows:

Soil Boring No.	PVR Value
B-1 through B-7	1/10 in.
B-8	1¼ in.
B-9	1½ in.
B-10	9/10 in.

In order to reduce the PVR value to less than 1-inch, these soils should be over-excavated and replaced with suitable select fill material to a depth of 24 inches.

5.3 Foundation Recommendations

The new Paso Del Norte Trail may consist of continuous or individual spread footings for the steel bridge and shade canopies. This foundation system should be dimensioned using the parameters shown in the following table:

Steel Bridge Foundation Recommendations				
Type of Foundation	Allow. Bearing Capacity (lb/ft²)	Minimum Footing Width (in.)	Minimum Footing Depth (in.)	Minimum Select Fill Depth (in.)
Continuous	2,000	12	18	18
Individual Spread	2,250	18	18	24

Shade Canopies Foundation Recommendations				
Type of Foundation	Allow. Bearing Capacity (lb/ft²)	Minimum Footing Width (in.)	Minimum Footing Depth (in.)	Minimum Select Fill Depth (in.)
Continuous	1,500	12	18	18
Individual Spread	1,750	18	18	24

The horizontal limits of over excavation shall extend 12 inches beyond the footing line in every direction.

Foundation systems designed and constructed based on the above data and parameters should experience total settlement of less than one inch. It is very important to provide adequate drainage to eliminate water accumulation or infiltration near the proposed Trail. Based on our settlement calculations using Schmertmann's method total settlements were estimated at 1-inch for a time equal to 1 year (T=1yr.).

Although differential settlement is typically estimated to be about one-half the total settlement (Ds=½-inch), differential movements across foundations may approach the

total settlement if loose or soft soil deposits are left within the foundation footprints. The foundation system to be designed in accordance with the above criteria considers a safety factor of 3.

5.4 Site Drainage

The site grading shall be able to drain stormwater away from the proposed area. Positive surface drainage should be provided during and after construction by sloping the ground surface a minimum or 2 percent graded away from the trench pavement construction, or proposed area for a minimum distance of 5 feet.

5.5 Flexible Pavement Recommendations

Flexible pavements will be used in the construction of the Del Paso Norte Trail. According to the National Asphalt Pavement Association (IS 129), we assumed a medium loading condition, which is most often used for biking, rollerblading, scooters, etc. May carry light vehicles (e.g. golf carts) and infrequent heavier maintenance vehicles.

Based on the soil conditions along the proposed Trail alignment, we recommend that the flexible pavement sections consist of the following minimum thicknesses:

Section 1 (From Delta Drive through Sparrow Drive)

Layer	New Asphalt Minimum Thickness (in.)	Recycled Asphalt Minimum Thickness (in.)
Hot-Mix Asphaltic Concrete	2	4
Crushed Aggregate Base Course	4½	4½
Compacted Subgrade	8	8

Section 2 (From Sparrow Drive through Springfield Drive)

Layer	New Asphalt Minimum Thickness (in.)	Recycled Asphalt Minimum Thickness (in.)
Hot-Mix Asphaltic Concrete	2	4
Crushed Aggregate Base Course	4½	4½
Compacted Subgrade	8	8

Section 3 (From Springfield Drive through South Carolina Drive)

Layer	New Asphalt Minimum Thickness (in.)	Recycled Asphalt Minimum Thickness (in.)
Hot-Mix Asphaltic Concrete	2	5
Crushed Aggregate Base Course	4½	4½
Compacted Subgrade	8	8

Section 4 (From South Carolina Drive through Riverside High School)

Layer	New Asphalt Minimum Thickness (in.)	Recycled Asphalt Minimum Thickness (in.)
Hot-Mix Asphaltic Concrete	3	5
Crushed Aggregate Base Course	4½	4½
Compacted Select Fill	8	8
Compacted Subgrade	8	8

As a minimum, the HMAC material should conform to Type C, in accordance with the City of El Paso standards. The HMAC mix should have a minimum 1500 pounds of Marshall Stability when compacted at 75 blows in accordance with ASTM D-1559, and should have a flow between 8 and 16. The HMAC course should be placed at a target density of at least 98 percent. In addition, we recommend the installation of the hot-mix asphaltic concrete in two lifts, half-thick each lift.

The Crushed Stone Base Course (CSBC) should be Item 247, Type A, Grade 3 in accordance with the Texas Department of Transportation (TxDOT) Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges. CSBC materials should be placed in loose lifts not exceeding 6 inches in compacted thickness, and compacted to a minimum 95 percent of maximum dry density and a moisture content within plus or minus 2 percent, in accordance with ASTM D-1557.

5.6 Select Fill

Select fill material used for site grading should be granular, cohesion-less, and free of deleterious material and particles over 4 inches in greatest dimension. Soils proposed for use as fill materials should be classified in accordance with ASTM D-2487. The following soils classified in accordance with the Unified Soil Classification System (USCS) can be considered satisfactory for use as select fill.

> GM, GC, GW-GM, GW-GC, GP, GP-GM and GP-GC, SM, SC, SW-SM, SW-SC, SP-SM, SW-SC and SC-SM.

The following USCS-classified soils are not considered satisfactory for use as select fill.

CH, CL, MH, ML, OH, OL and PT, or soils that exceed a liquid limit of 40 and a plasticity index of 15.

The soils encountered in Stratum A and B are suitable for use as select fill, provided they meet the above criteria for acceptable fill materials. The Stratum C and Stratum D soils encountered in our borings are NOT suitable for use as select fill.

Select fill should be placed in uniform layers not exceeding 8 inches in compacted thickness, moisture-conditioned to add the amount of moisture required for optimum compaction and compacted to a minimum of 95 percent of maximum density in accordance with ASTM D-1557 (modified Proctor) procedures. The moisture content should be at plus or minus 3 percent of optimum moisture content in accordance with ASTM D-1557.

This compaction requirement also applies to the subgrade soils that will receive select fill. However, if the subgrade soils consist of cohesive soils such as CL or CH, or if the plasticity index exceeds 18, the subgrade soils should be compacted to a minimum of 90 percent of the above standard.

Compaction of the fill material and subgrade soils should be conducted with approved types of pneumatic, power or tamping equipment. Determination of density in the field should be conducted in accordance with ASTM D-2922 or D-1556.

5.0 ADDITIONAL CONSIDERATIONS

6.1 Construction Monitoring

We recommend that the client retain LOI ENGINEERS during the construction phase of this project to verify the findings of our study, and to provide supplemental data to this study in the event that site conditions vary from those described in this report.

The geotechnical engineer should also conduct testing of fill materials used for site grading at the rate of two field densities per each lift of fill or one per 5,000 square feet

of fill, whichever yields the larger number of tests, in accordance with ASTM D-2922 or D-1556. Additionally, one moisture-density curve should be obtained for each type of material used in accordance with ASTM D-1557, and one sieve analysis and one plasticity index for each type of material used, according to ASTM C-136, and D-4318.

6.2 Limitations

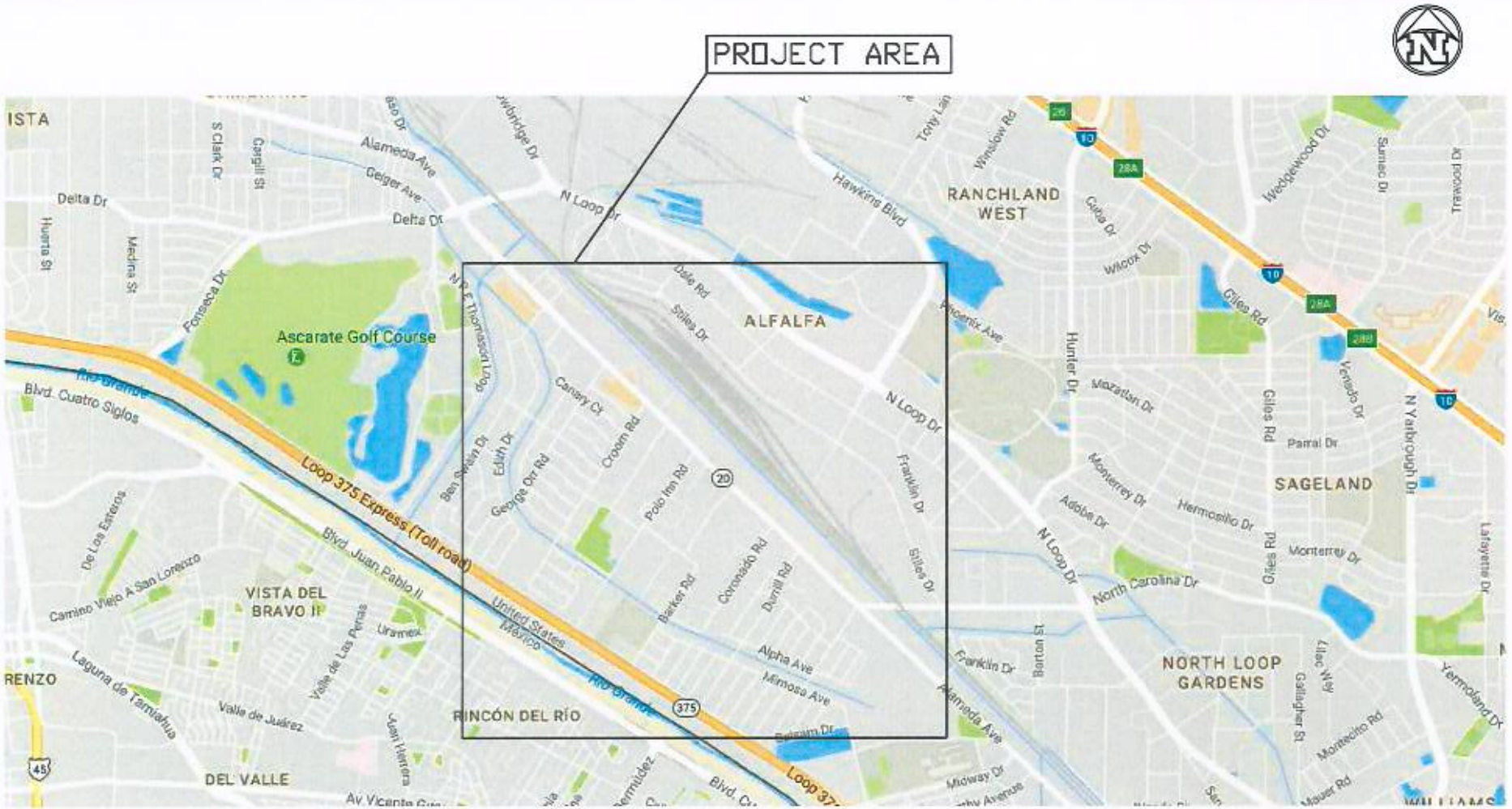
We have performed our professional services and have obtained the data presented in this report in accordance with generally accepted geotechnical engineering principles and practices. The information in this report is based on the data obtained from ten (10) representative test borings.

The data in this report reflects subsurface soil conditions only at the specific sampling location, time of sampling, and to the depths indicated in our report. This report is not intended to identify or address any potential environmental concerns associated with the project site.

We recommend that the Client notify LOI ENGINEERS of any changes to the project conditions considered in this report, so that we may provide pertinent modifications to our recommendations if deemed necessary. Additionally, once construction commences, we should be notified of any unusual site conditions that appear to vary from those reported herein, so that we may conduct further investigations and prepare supplemental recommendations if deemed necessary.

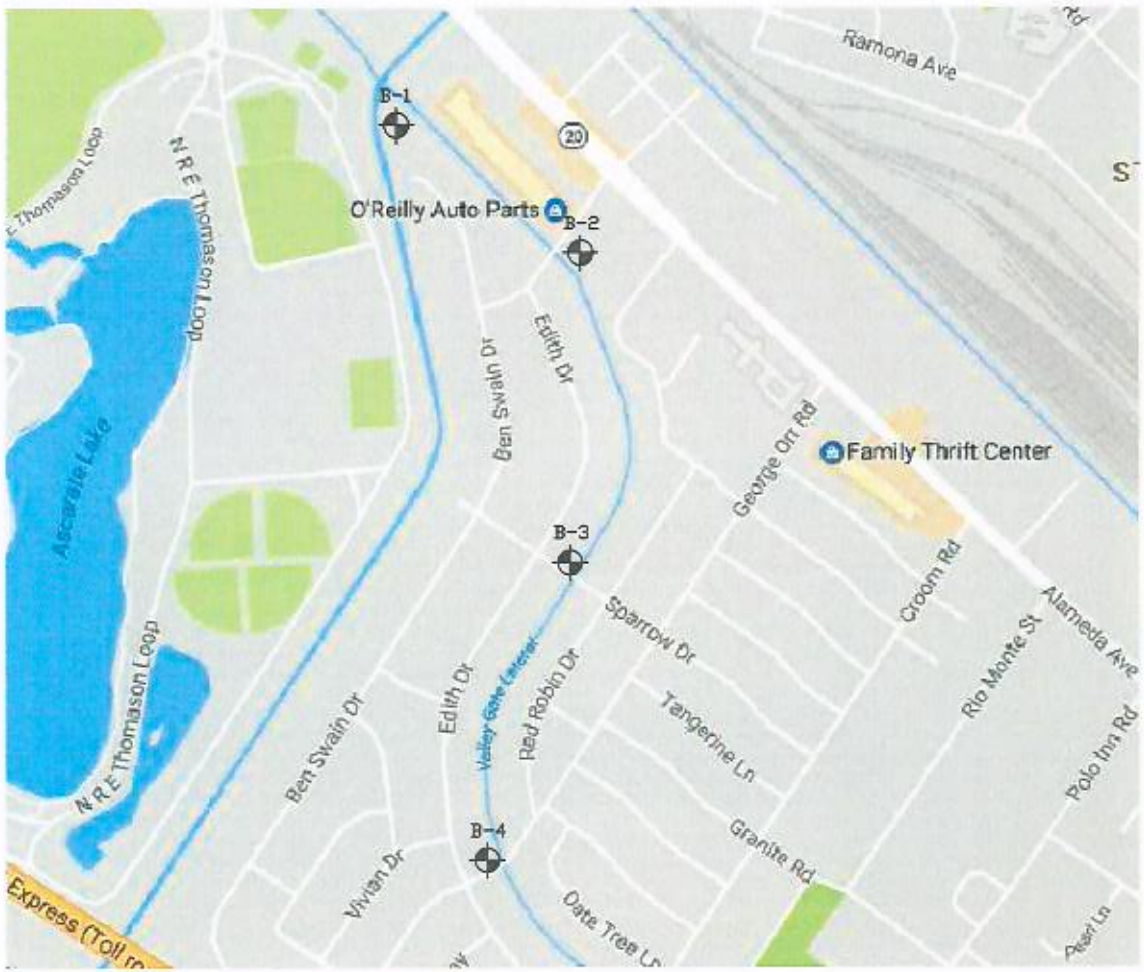
We conducted this investigation for the purpose of defining the subsurface soil conditions for the for the Paso Del Norte Trail, which will start at Ascarate Park and will continue to Riverside Park, adjacent to Riverside High School, in south-east El Paso, El Paso County, Texas. Use of this information for projects other than the one described herein will not be adequate.

APPENDIX A



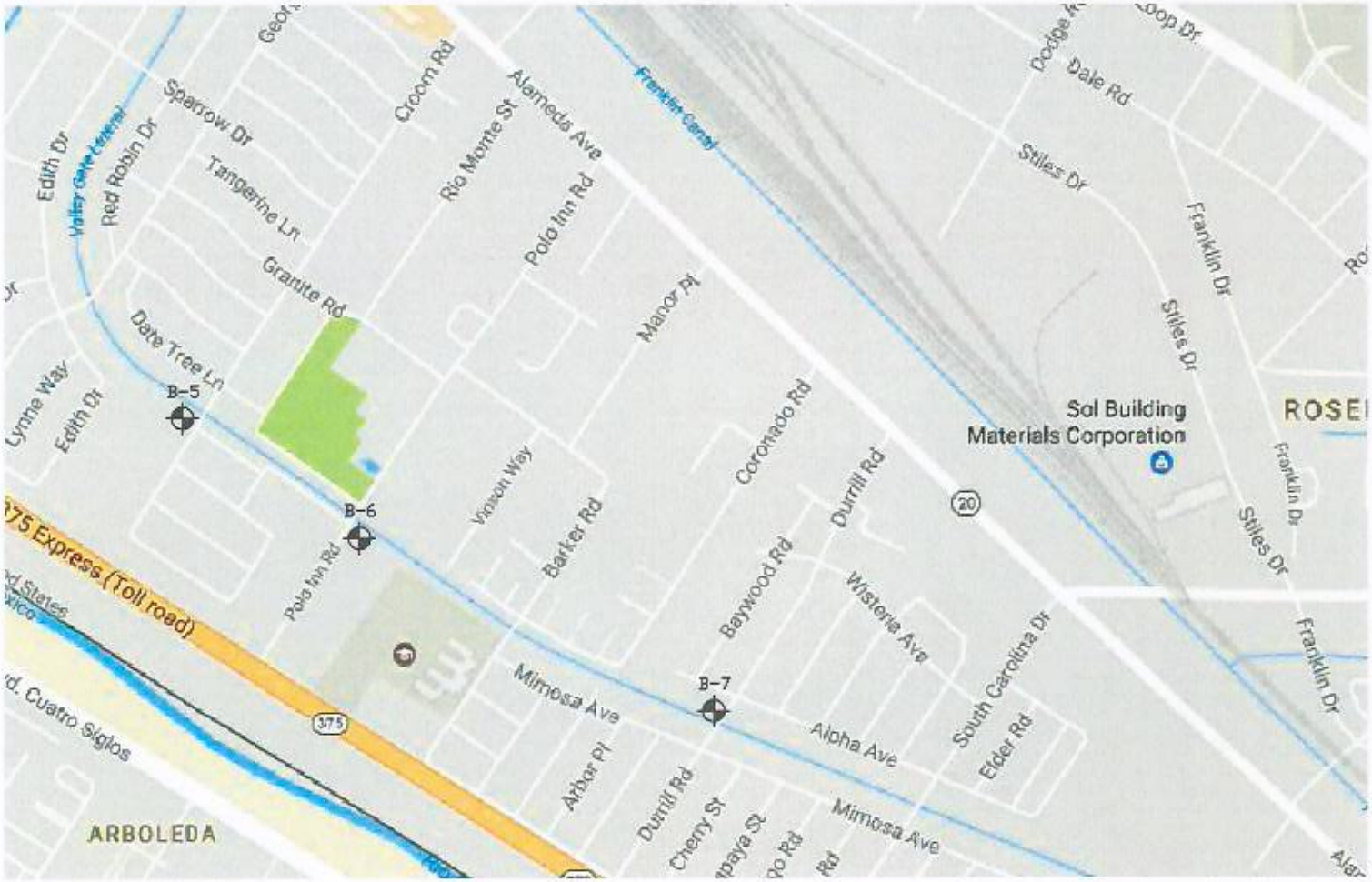
LEGEND	GEOTECHNICAL CONSULTANT	PROJECT CONSULTANT	DRAWING TITLE: GENERAL LOCATION MAP
B-1 ⌖ APPROXIMATE BORING NUMBER AND LOCATION	LOI ENGINEERS 915-781-1532 2101 E. MISSOURI AVE SUITE B EL PASO, TEXAS 79903	PASO DEL NORTE FOUNDATION	PROJECT NAME: PROPOSED PASO DEL NORTE TRAIL EL PASO, EL PASO COUNTY, TEXAS

DRAWN BY	REVIEWED BY	APPROVED BY	SCALE
D.O.	D.O.	D.O.	N.T.S
PROJECT No. LOI17-134	FILE NAME SITE PLAN	DATE 06/15/17	SHEET No. A-1.1



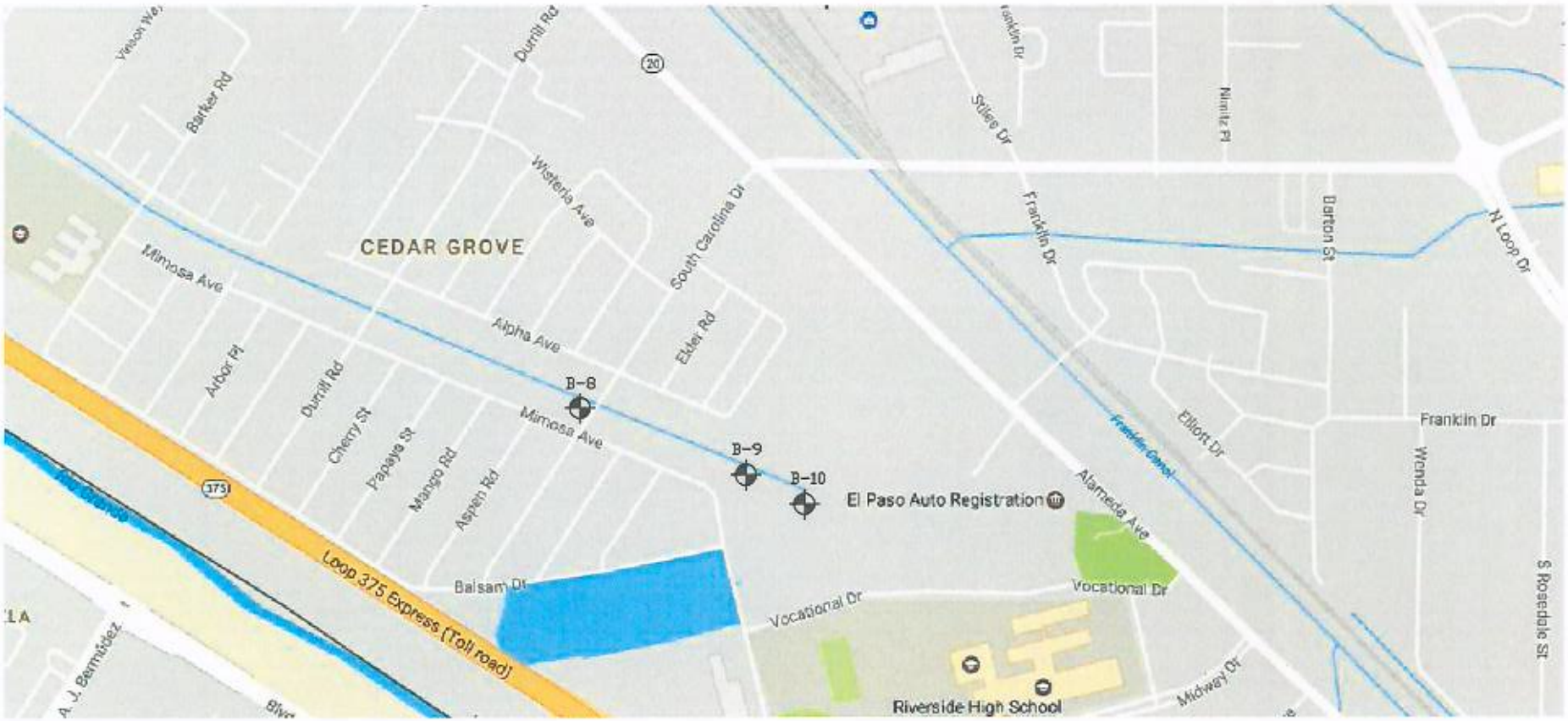
LEGEND	GEOTECHNICAL CONSULTANT	PROJECT CONSULTANT	DRAWING TITLE: SOIL BORING PLAN
B-1 APPROXIMATE BORING NUMBER AND LOCATION	LOI ENGINEERS 915-781-1532 2101 E. MISSOURI AVE SUITE B EL PASO, TEXAS 79903	PASO DEL NORTE FOUNDATION	PROJECT NAME: PROPOSED PASO DEL NORTE TRAIL EL PASO, EL PASO COUNTY, TEXAS

DRAWN BY	REVIEWED BY	APPROVED BY	SCALE
D.O.	D.O.	D.O.	N.T.S
PROJECT No. LOI17-134	FILE NAME SITE PLAN	DATE 06/15/17	SHEET No. A-1.2



LEGEND:	GEOTECHNICAL CONSULTANT	PROJECT CONSULTANT	DRAWING TITLE: SOIL BORING PLAN
B-1 ⊕ APPROXIMATE BORING NUMBER AND LOCATION	LOI ENGINEERS 915-781-1532 2101 E. MISSOURI AVE SUITE B EL PASO, TEXAS 79903	PASO DEL NORTE FOUNDATION	PROJECT NAME: PROPOSED PASO DEL NORTE TRAIL EL PASO, EL PASO COUNTY, TEXAS

DRAWN BY	REVIEWED BY	APPROVED BY	SCALE
D.G.	B.O.	B.O.	N.T.S
PROJECT No. LOI17-134	FILE NAME SITE PLAN	DATE 06/15/17	SHEET No. A-1.3



LEGEND:	GEOTECHNICAL CONSULTANT	PROJECT CONSULTANT	DRAWING TITLE: SOIL BORING PLAN
B-1 ⊕ APPROXIMATE BORING NUMBER AND LOCATION	LOI ENGINEERS 915-781-1532 2101 E. MISSOURI AVE SUITE B EL PASO, TEXAS 79903	PASO DEL NORTE FOUNDATION	PROJECT NAME: PROPOSED PASO DEL NORTE TRAIL EL PASO, EL PASO COUNTY, TEXAS

DRAWN BY	REVIEWED BY	APPROVED BY	SCALE
D.O.	B.O.	B.O.	N.T.S
PROJECT No. LOI17-134	FILE NAME SITE PLAN	DATE 06/15/17	SHEET No. A-1.4

LOG OF TEST BORING No. B-1

Project name: Proposed Paso Del Norte Trail
File No.: LOI17-134
Date drilled: June 20, 2017
Boring Location: See Sheet A-1
Elevation (ft.): N/A North: N/A West: N/A

Elevation and Depth (Ft.)	Samples	Soil symbols	Soil Description	USCS symbol	Moisture content,%	Minus #200 sieve, %	Liquid limit	Plastic limit	Plasticity index	SPT N-Value: Blows per foot (N)	SPT N-Value: CURVE (10 30 50)
0			SAND, fine grained, silty, brown, dry		1	47	NV	NV	NP		
					4						
				SM							
5					1	46	NV	NV	NP		
			Termination depth at 6.5 feet								
10											
15											
20											
25											
30											

Groundwater Table Data

Depth	Date	Time
N/A	N/A	N/A

Sample Type
- Auger cutting
- 2" O.D. split spoon
- 3" O.D. split tube
- Thin-walled Shelby tube

Rig type: Hand-Auger
Boring type: Hand-Auger
Drilled by: MM
Logger: RDP
Sheet No.: A-2

LOG OF TEST BORING No. B-2

Project name: Proposed Paso Del Norte Trail
File No.: LOI17-134
Date drilled: June 20, 2017
Boring Location: See Sheet A-1
Elevation (ft.): N/A North: N/A West: N/A

Elevation and Depth (Ft.)	Samples	Soil symbols	Soil Description	USCS symbol	Moisture content,%	Minus #200 sieve, %	Liquid limit	Plastic limit	Plasticity index	SPT N-Value: Blows per foot (N)	SPT N-Value: CURVE (10 30 50)
0			SAND, fine grained, silty, brown, dry	SM	3						
			- dry to moist		5						
5			SAND, fine grained, clayey, brown, dry to moist	SC	11	76	35	18	17		
			Termination depth at 6.5 feet								
10											
15											
20											
25											
30											

Groundwater Table Data

Depth	Date	Time
N/A	N/A	N/A

Sample Type
- Auger cutting
- 2" O.D. split spoon
- 3" O.D. split tube
- Thin-walled Shelby tube

Rig type: Hand-Auger
Boring type: Hand-Auger
Drilled by: MM
Logger: RDP
Sheet No.: A-3

LOG OF TEST BORING No. B-3

Project name: Proposed Paso Del Norte Trail
File No.: LOI17-134
Date drilled: June 20, 2017
Boring Location: See Sheet A-1
Elevation (ft.): N/A North: N/A West: N/A

Elevation and Depth (Ft.)	Samples	Soil symbols	Soil Description	USCS symbol	Moisture content,%	Minus #200 sieve, %	Liquid limit	Plastic limit	Plasticity index	SPT N-Value: Blows per foot (N)	SPT N-Value: CURVE (10 30 50)
0			SAND, fine grained, silty, brown, dry	SM	1						
5					1	39	NV	NV	NP		
			Termination depth at 6.5 feet								
10											
15											
20											
25											
30											

Groundwater Table Data

Depth	Date	Time
N/A	N/A	N/A

Sample Type
- Auger cutting
- 2" O.D. split spoon
- 3" O.D. split tube
- Thin-walled Shelby tube

Rig type: Hand-Auger
Boring type: Hand-Auger
Drilled by: MM
Logger: RDP
Sheet No.: A-4

LOG OF TEST BORING No. B-4

Project name: Proposed Paso Del Norte Trail
File No.: LOI17-134
Date drilled: June 20, 2017
Boring Location: See Sheet A-1
Elevation (ft.): N/A North: N/A West: N/A

ENGINEERS

Elevation and Depth (Ft.)	Samples	Soil symbols	Soil Description	USCS symbol	Moisture content,%	Minus #200 sieve, %	Liquid limit	Plastic limit	Plasticity index	SPT N-Value: Blows per foot (N)	SPT N-Value: CURVE (10 30 50)
0			SAND, fine grained, silty, brown, dry	SM	2	37	NV	NV	NP		
5					3						
			Termination depth at 6.5 feet								
10											
15											
20											
25											
30											

Groundwater Table Data

Depth	Date	Time
N/A	N/A	N/A

Sample Type
- Auger cutting
- 2" O.D. split spoon
- 3" O.D. split tube
- Thin-walled Shelby tube

Rig type: Hand-Auger
Boring type: Hand-Auger
Drilled by: MM
Logger: RDP
Sheet No.: A-5

LOG OF TEST BORING No. B-5

Project name: Proposed Paso Del Norte Trail
File No.: LOI17-134
Date drilled: June 20, 2017
Boring Location: See Sheet A-1
Elevation (ft.): N/A North: N/A West: N/A

ENGINEERS

Elevation and Depth (Ft.)	Samples	Soil symbols	Soil Description	USCS symbol	Moisture content, %	Minus #200 sieve, %	Liquid limit	Plastic limit	Plasticity index	SPT N-Value: Blows per foot (N)	SPT N-Value: CURVE (10 30 50)
0			SAND, fine grained, silty, brown, dry		1						
				SM	2	17	NV	NV	NP		
5			Termination depth at 6.5 feet								
10											
15											
20											
25											
30											

Groundwater Table Data

Depth	Date	Time
N/A	N/A	N/A

Sample Type
- Auger cutting
- 2" O.D. split spoon
- 3" O.D. split tube
- Thin-walled Shelby tube

Rig type: Hand-Auger
Boring type: Hand-Auger
Drilled by: MM
Logger: RDP
Sheet No.: **A-6**

LOG OF TEST BORING No. B-6

Project name: Proposed Paso Del Norte Trail
File No.: LOI17-134
Date drilled: June 20, 2017
Boring Location: See Sheet A-1
Elevation (ft.): N/A North: N/A West: N/A

Elevation and Depth (Ft.)	Samples	Soil symbols	Soil Description	USCS symbol	Moisture content,%	Minus #200 sieve, %	Liquid limit	Plastic limit	Plasticity index	SPT N-Value: Blows per foot (N)	SPT N-Value: CURVE (10 30 50)
0			SAND, fine grained, silty, brown, dry	SM	2	16	NV	NV	NP		
			SILT, lean, brown, moist	ML	17	83	30	22	8		
5			SAND, fine grained, silty, brown, dry to moist	SM	5	31	NV	NV	NP		
			Termination depth at 6.5 feet								
10											
15											
20											
25											
30											

Groundwater Table Data

Depth	Date	Time
N/A	N/A	N/A

Sample Type
- Auger cutting
- 2" O.D. split spoon
- 3" O.D. split tube
- Thin-walled Shelby tube

Rig type: Hand-Auger
Boring type: Hand-Auger
Drilled by: MM
Logger: RDP
Sheet No.: A-7

LOG OF TEST BORING No. B-7

Project name: Proposed Paso Del Norte Trail
File No.: LOI17-134
Date drilled: June 20, 2017
Boring Location: See Sheet A-1
Elevation (ft.): N/A North: N/A West: N/A

Elevation and Depth (Ft.)	Samples	Soil symbols	Soil Description	USCS symbol	Moisture content,%	Minus #200 sieve, %	Liquid limit	Plastic limit	Plasticity index	SPT N-Value: Blows per foot (N)	SPT N-Value: CURVE (10 30 50)
0			SAND, fine grained, silty, brown, dry		1						
				SM	1	24	NV	NV	NP		
5					2						
			Termination depth at 6.5 feet								
10											
15											
20											
25											
30											

Groundwater Table Data

Depth	Date	Time
N/A	N/A	N/A

Sample Type
- Auger cutting
- 2" O.D. split spoon
- 3" O.D. split tube
- Thin-walled Shelby tube

Rig type: Hand-Auger
Boring type: Hand-Auger
Drilled by: MM
Logger: RDP
Sheet No.: A-8

LOG OF TEST BORING No. B-8

Project name: Proposed Paso Del Norte Trail
File No.: LOI17-134
Date drilled: August 17, 2017
Boring Location: See Sheet A-1
Elevation (ft.): N/A North: N/A West: N/A

Elevation and Depth (Ft.)	Samples	Soil symbols	Soil Description	USCS symbol	Moisture content,%	Minus #200 sieve, %	Liquid limit	Plastic limit	Plasticity index	SPT N-Value: Blows per foot (N)	SPT N-Value CURVE (10 30 50)
0			CLAY, lean, brown, stiff, dry to moist	CL	12	59	49	22	27	11	
			CLAY, fat, brown, stiff, dry to moist	CH	10	82				10	
5										21	
			SAND, fine grained, poorly graded, light brown, medium dense, dry							15	
10			- loose at 10-ft.	SP	4	4				9	
15			- medium dense at 15-ft.							15	
			Termination depth at 16.5 feet								
20											
25											
30											

Groundwater Table Data

Depth	Date	Time
N/A	N/A	N/A

Sample Type
- Auger cutting
- 2" O.D. split spoon
- 3" O.D. split tube
- Thin-walled Shelby tube

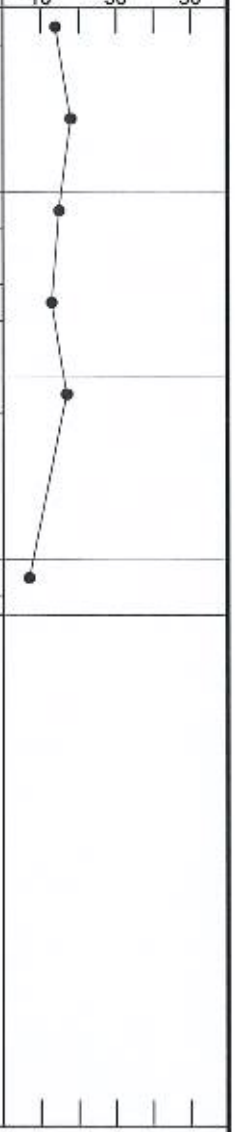
Rig type: CME-75
Boring type: HSA
Drilled by: SC
Logger: RDP/OGC
Sheet No.: **A-9**

LOG OF TEST BORING No. B-9

Project name: Proposed Paso Del Norte Trail
File No.: LOI17-134
Date drilled: August 17, 2017
Boring Location: See Sheet A-1
Elevation (ft.): N/A North: N/A West: N/A

ENGINEERS

Elevation and Depth (Ft.)	Samples	Soil symbols	Soil Description	USCS symbol	Moisture content,%	Minus #200 sieve, %	Liquid limit	Plastic limit	Plasticity index	SPT N-Value: Blows per foot (N)	SPT N-Value: CURVE (10 30 50)
0			CLAY, fat, brown, stiff, dry to moist	CH	11	78	61	25	36	14	
										18	
5			SAND, fine grained, poorly graded, light brown, medium dense, dry	SP	2	9				15	
					3					13	
10										17	
15			- loose at 15-ft.							7	
			Termination depth at 16.5 feet								
20											
25											
30											



Groundwater Table Data

Depth	Date	Time
N/A	N/A	N/A

Sample Type
- Auger cutting
- 2" O.D. split spoon
- 3" O.D. split tube
- Thin-walled Shelby tube

Rig type: CME-75
Boring type: HSA
Drilled by: SC
Logger: RDP/OGC
Sheet No.: **A-10**

LOG OF TEST BORING No. B-10

Project name: Proposed Paso Del Norte Trail
File No.: LOI17-134
Date drilled: August 17, 2017
Boring Location: See Sheet A-1
Elevation (ft.): N/A North: N/A West: N/A

ENGINEERS

Elevation and Depth (Ft.)	Samples	Soil symbols	Soil Description	USCS symbol	Moisture content, %	Minus #200 sieve, %	Liquid limit	Plastic limit	Plasticity index	SPT N-Value: Blows per foot (N)	SPT N-Value: CURVE (10 30 50)
0			CLAY, lean, brown, stiff, dry to moist							13	
					11	67	38	17	21	13	
				CL							
5			- very stiff at 5-ft.							18	
			SAND, fine grained, silty, brown, medium dense, dry to moist		9					13	
10					7	38				13	
				SM							
15										14	
			Termination depth at 16.5 feet								
20											
25											
30											

Groundwater Table Data

Depth	Date	Time
N/A	N/A	N/A

Sample Type
- Auger cutting
- 2" O.D. split spoon
- 3" O.D. split tube
- Thin-walled Shelby tube

Rig type: CME-75
Boring type: HSA
Drilled by: SC
Logger: RDP/OGC
Sheet No.: **A-11**

APPENDIX B

Soil Terminology

COARSE GRAINED SOILS: More than 50 percent retained on No. 200 sieve. Includes fine, medium, or coarse grained (depending on grain size) gravel and sand, and silty and/or clayey gravel and sand. Density is described according to relative density measured in the laboratory, or sampler resistance in the field as follows:

Penetration Resistance* (Blows per Foot)	Descriptive Term	Relative Density** (Percent)
0 - 10	Loose	0 - 40
10 - 30	Medium Dense	40 - 70
30 - 50	Dense	70 - 90
More than 50	Very Dense	90 - 100

* From Standard Penetration Test with 140-pound hammer, 30 inch drop.
** From relative density tests on undisturbed sand sample.

FINE GRAINED SOILS: More than 50 percent passing through the No. 200 sieve. Includes organic and inorganic silt and clay, gravelly and/or sandy silt and clay, silty clay, and clayey silt. Consistency is described according to shear strength, from unconfined compression tests in the laboratory, penetrometer tests in the field or laboratory, or sampler resistance in the field as follows:

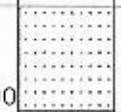
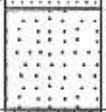
Compressive Strength* (Tons per Square Foot)	Descriptive Term	Penetration Resistance** (Blows per Foot)
Less than 0.25	Very Soft	Less than 2
0.25 - 0.50	Soft	2 - 4
0.50 - 1.00	Firm	5 - 8
1.00 - 2.00	Stiff	9 - 15
2.00 - 4.00	Very Stiff	16 - 50
4.00 and higher	Hard	50 and higher

* From unconfined compression strength test.
** From Standard Penetration Test with 140-pound hammer, 30 inch drop.

Slickensided: With inclined planes of weakness of slick and glassy appearance.
Fissured: With shrinkage cracks that are frequently filled with fine sand.
Laminated: With thin layers of varying colors and texture.
Interbedded: With alternate layers of different soil types.
Calcareous: With noticeable quantities of calcium carbonate.
Sensitive: Applies to cohesive soils that are subject to loss of strength when remolded.
Well graded: With wide range in grain sizes and good distribution of intermediate particle sizes.
Poorly graded: With one predominant grain size, or a poor distribution with intermediate sizes missing.

SOIL SYMBOLS

Identification of the major soil divisions used to distinguish the change of a different stratum. For their combinations and a more detailed description, see UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487-00)

MAJOR SOIL DIVISIONS			SOIL SYMBOL	USCS SYMBOL	TYPICAL NAME
Coarse-Grained Soils (< 50% pass No. 200 sieve)	GRAVELS (<50% pass No. 4 sieve)	Clean Gravels (< 5% pass No. 200 sieve)		**GW**	Well-Graded Gravels
				GP	Poorly-Graded Gravels
		Gravels with fines (> 12% pass No. 200 sieve)		**GM**	Silty Gravels
				GC	Clayey Gravels
	SANDS (> 50% pass No. 4 sieve)	Clean Sands (< 5% pass No. 200 sieve)		**SW**	Well-Graded Sands
				**SP**	Poorly-Graded Sands
		Sands with fines (> 12% pass No. 200 sieve)		**SM**	Silty Sands
				SC	Clayey Sands
Fine-Grained Soils (> 50% pass No. 200 sieve)	SILTS	Silts of Low Plasticity (*LL < 50)		**ML**	Inorganic Silts (slightly plastic)
		Silts of High Plasticity (*LL > 50)		**MH**	Inorganic Silts (elastic)
	CLAYS	Clays of Low Plasticity (*LL < 50)		**CL**	Inorganic Clays (lean clays)
		Clays of High Plasticity (*LL > 50)		**CH**	Inorganic Clays (Fat clays)

*Liquid Limit of the soil
NV: No value obtained; NP: Non-plastic

Sheet No. B-2

SECTION 32 12 16 – ASPHALT PAVING

PART1 - GENERAL

1.1 DESCRIPTION

A. Furnish materials, labor, transportation, services, and equipment necessary to perform all asphalt paving as indicated on the Construction Drawings. Complete work as specified herein.

1.2 SECTION INCLUDES

A. Asphalt materials specifications.

B. Flexible pavement section.

1.3 RELATED SECTIONS

A. Section 31 22 13 – Rough Grading.

B. Section 31 23 23 – Select Fill.

C. Section 32 11 23 – Aggregate Base Courses.

1.4 REFERENCES

A. American Society of Testing Materials International (ASTM):

1. ASTM D6373-15 – Standard Specification for Performance Graded Asphalt Binder.
2. ASTM D1559-89 – Test Method for Resistance of Plastic Flow of Bituminous Mixtures Using Marshall Apparatus.
3. ASTM D2922 – Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
4. ASTM D1557-12 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)).
5. ASTN C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
6. ASTM D4318 – Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

B. Texas Department of Transportation (TxDOT):

1. TEX-236-F – Determining Asphalt Content from Asphalt Paving Mixtures by the Ignition Method.
2. TEX-200-F – Sieve Analysis of Fine and Coarse Aggregates.
3. TEX-205-F – Laboratory Method of Mixing Bituminous Mixtures.
4. TEX-204-F – Design of Bituminous Mixtures.

5. TEX-222-F – Sampling Bituminous Mixtures.
6. TEX-221-F – Sampling Aggregate for Bituminous Mixtures, Surface Treatments, and Limestone Rock Asphalt.

1.5 SUBMITTALS

A. Refer to *Section 01 33 00 – Submittal Procedures*.

B. Product Data:

1. Submit proposed asphalt concrete mix design for each class of mix for review prior to beginning of work.
2. Submit proposed tack coat and seal coat compounds as specified.

C. Materials Source: Submit name of materials source.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with the City of El Paso Standards.

B. Testing laboratory shall conduct testing of fill materials at the rate of one field density per each lift of fill in accordance with ASTM D-2922 or D-1556. One moisture-density curve shall be obtained for each type of material used in accordance with ASTM D-1557, and one sieve analysis and one plasticity index for each type of imported material used, according to ASTM C-136, and D-4318.

C. Obtain materials from same source throughout.

1.7 REGULATORY REQUIREMENTS

A. Conform to the City of El Paso Standards for paving work on public property.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

B. Place bitumen mixture when temperature is not more than 15 degrees F below bitumen supplier's bill of lading and not more than maximum specified temperature.

PART 2 PRODUCTS

2.1 MATERIALS

A. Recycled Hot-Mix (RHM) shall conform to the gradation requirements of a surface course Type C as specified in accordance with TxDOT Standard Specification, Item 340.

B. The RHM shall meet Type C flow, stability and air voids specifications.

C. Reclaimed Asphalt Pavement (RAP) is to be used as an aggregate in hot recycling of asphalt paving mixture.

D. RAP is salvaged, milled, pulverized, broken, or crushed asphalt pavement.

E. Crushed or broken RAP shall have 100% of the particles pass the 2-in. sieve.

F. RAP decantation value cannot exceed 5% and the plasticity index cannot be greater than 8.

G. HMAC surface course shall have a minimum 1500 pounds of Marshall Stability when compacted at 75 blows in accordance with ASTM D 1559.

H. HMAC shall have a flow between 0.08 and 0.016 inches, with air voids between 3 to 5 percent, and should be placed at a target of 96% - 98% of the laboratory Marshall Value (ASTM D 1559-89).

I. The asphalt content for the mix shall be determined based on the Marshall Mix Design method.

J. The bitumen binder grade shall consist of a PG 72-22 material.

K. Tack Coat shall be a CSS-1H, SS-1H or a PG binder with a minimum high-temperature grade of PG 58 for tack coat binder in accordance to TxDOT Standard Specification 2014, Item 300 – Asphalts, Oils, and Emulsions.

L. Seal Coat shall be a AC-5, AC-10, AC-5 w/2% SBR, AC-10 w/2% SBR, AC-15P, AC-15-5TR, HFRS-2, MS-2, CRS-2, CRS-2H, HFRS-2P, or CRS-2P conforming to TxDOT Standard Specification 2014, Item 316 – Seal Coat or Item 300 – Asphalts, Oils and Emulsions.

M. Refer to *Section 32 11 23 – Aggregate Base Courses* for Prime Coat requirements.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that compacted subgrade, subbase and/or base foundation is dry and ready to support paving and imposed loads.

B. Verify gradients and elevations of subgrade, subbase and/or base foundation are correct.

C. Determine asphalt binder content and gradation of the RAP stockpiles for mixture design purposes in accordance with TEX-236-F.

D. Asphalt binder from RAP is designated as recycled asphalt binder.

E. Submit to Engineer the intended method to implement the reuse of the RAP to pave the Project.

F. Reduce the stiffening/brittleness by adding asphalt rejuvenators per manufacturer’s recommendations.

G. High Float Emulsion warm binder mix may be added to work the RAP.

3.2 PLACING ASPHALT PAVEMENT

A. Install Work in accordance with the City of El Paso Standards.

B. Place HMAC within 24 hours of applying prime coat. Refer to *Section 32 11 23 – Aggregate Base Courses.*

C. HMAC shall be placed at a target density of at least 98 percent per ASTM D1558.

D. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

E. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

F. A seal coat shall be placed on top of the HMAC Type C as specified.

3.3 PAVEMENT SEALER

A. Pavement sealer shall be applied in two coats over a period of two separate events. After each event, the sealant shall be allowed to cure properly per the manufacturer's recommended period.

B. In the event that there is a need to open the areas to traffic where the sealer has been applied and the sealing period is less than the manufacturer's recommended period (i.e. 24 hours), an additive may be added to the sealer based on the consultation with the manufacturer.

C. The areas where the sealer shall be applied and the closing off of specific pavement areas from traffic shall be appropriately coordinated with the owner to allow adequate curing time.

D. The manufacturer recommended application temperatures of the sealer mix and ambient temperature requirements shall be maintained.

E. The new sealer mix shall be prepared for each application and shall not be reused if not used within 24 hours. The mix shall be frequently agitated.

F. In case where graded sand is recommended by the sealer manufacturer, the use shall be maintained within the manufacturer's requirements and shall be demonstrated to the owner for observation of the finished surface, which typically results in a rough finish and exhibits improved skid resistance.

3.4 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation from True Elevation: Within 1/2 inch.

3.5 FIELD QUALITY CONTROL

A. Pavement specimens, which shall be either cores or sections of asphaltic pavement, will be tested according to Test Method TEX-207-F.

B. Request inspection prior to placing asphalt pavement structure.

C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

D. Testing on asphalt paving shall be performed to ensure conformance with specified requirements. Testing shall conform with the minimum frequency and in accordance to ASTM as described below:

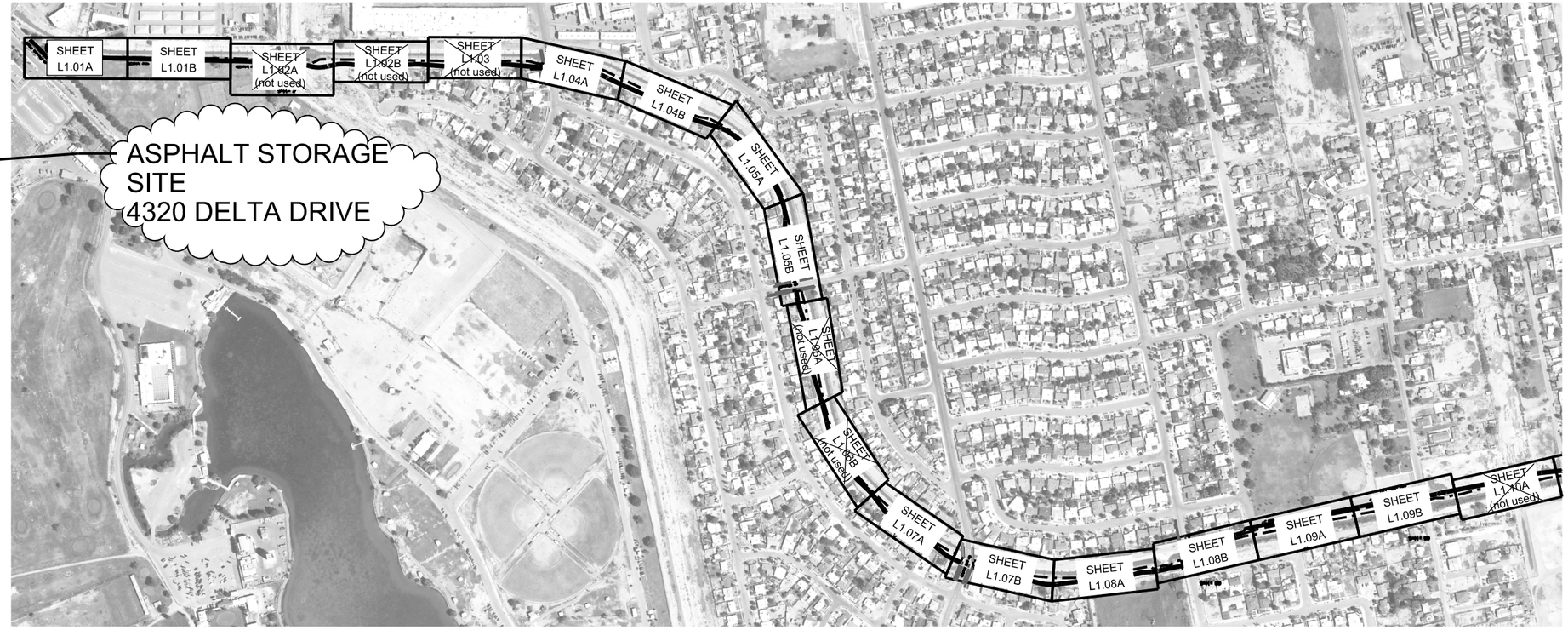
Table 3.5.1 – Quality Control for Select Fill soils

Test Type	Applicable Standard
Hot Mixed Asphalt Concrete (HMAC) shall be sampled for each day's production or every 20 tons of material produced and tested for compliance with the approved Marshall Mix Design and to determine laboratory density of the material.	Manufacturer's Recommendations
A minimum of three (3) density test every 50-linear feet.	ASTM D 1556 and/or ASTM D 6938

3.6 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury for 7 days.

END OF SECTION 32 12 16



LEGEND

SHEET L1.01A	WORK OCCURS ON THIS SHEET
SHEET L1.02A (not used)	NO WORK OCCURS ON THIS SHEET IN THIS SERIES

NOTES:

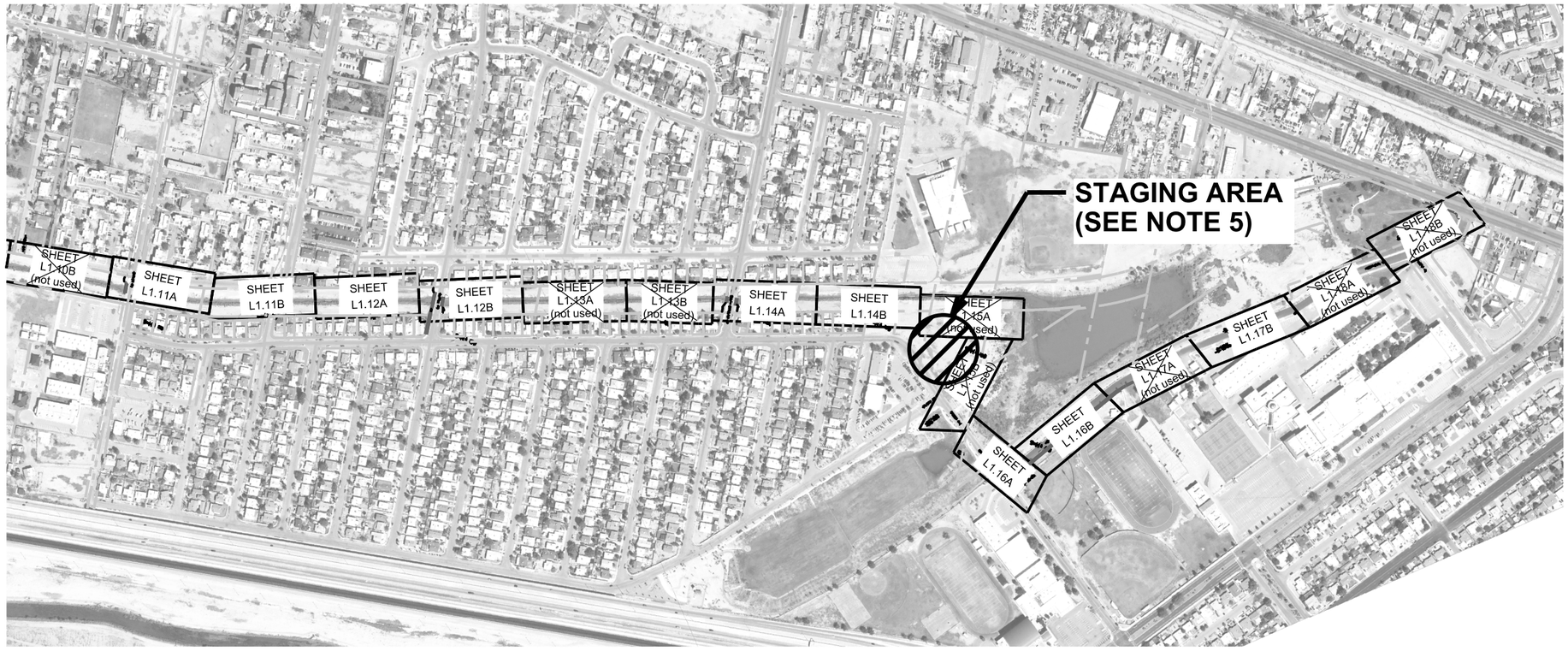
1. REFER TO SHEET L0.01 FOR GENERAL NOTES.

2. REFER TO SITE LAYOUT PLANS FOR LOCATIONS AND EXTENT OF IMPROVEMENTS AND THE EFFECTS ON DEMOLITION AND SITE PREPARATION.

3. SEE SHEET L0.01 FOR SITE PREPARATION NOTES.

4. DEMOLITION QUANTITIES ARE SHOWN AS A COURTESY ONLY. CONTRACTOR RESPONSIBILITIES FOR CALCULATING FINAL DEMOLITION QUANTITIES.

5. STAGING AREA: CONTRACTOR MAY STORE EQUIPMENT AND SUPPLIES AT THE NORTHEAST CORNER OF THE INTERSECTION OF MIMOSA AVE AND BALSAM DRIVE. THE RECYCLED ASPHALT WILL BE STORED IN THIS LOCATION. CONTRACTOR TO RETURN THE STAGING AREA TO ITS ORIGNAL CONDITION PRIOR TO IT'S USE AS A STAGING AREA



0 20 40

1" = 500'-0"

Construction Documents
Playa Drain Trail
Phase 1
El Paso, Texas

PASO DEL NORTE
HEALTH FOUNDATION

Meridian Green Works, LLC
221 N. Kansas Street Ste. 700
El Paso, Texas 79901
915.242.2285

Revision No.	Date	Description
1	11-21-17	STORAGE FACILITY LOCATION

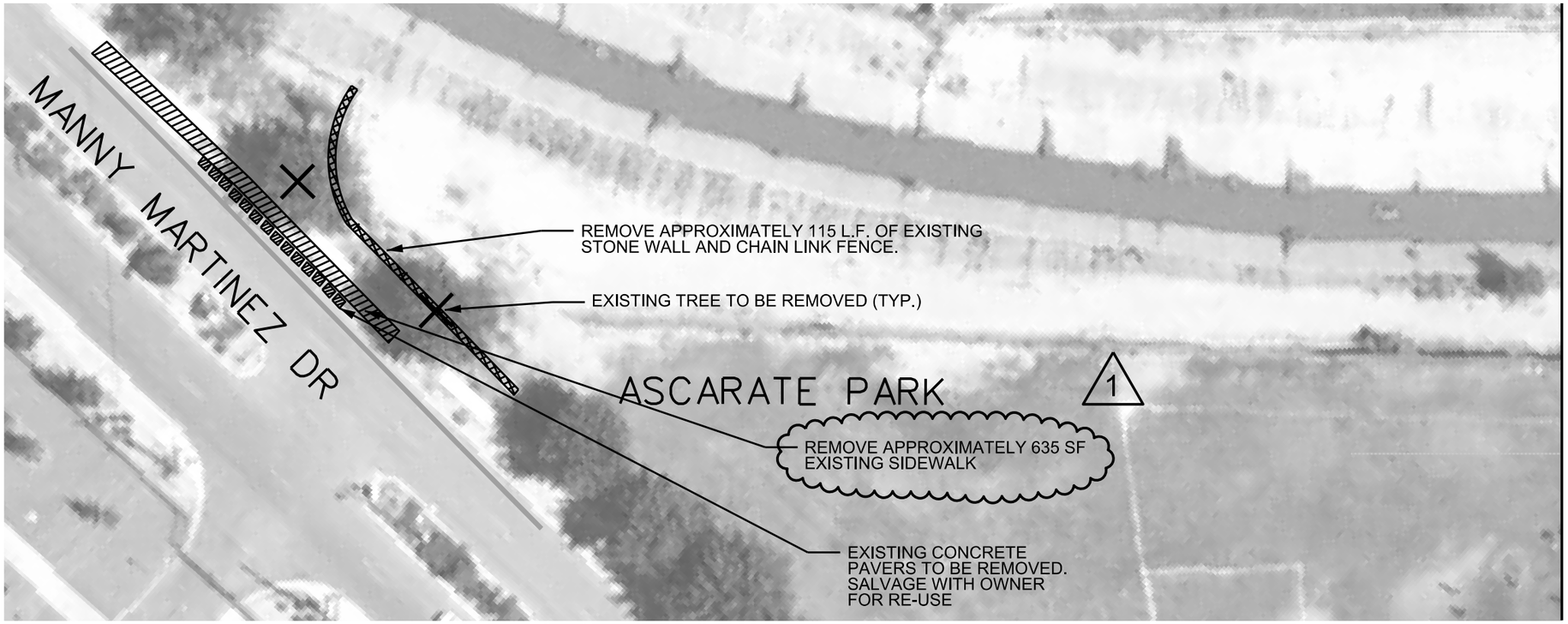
Project No.:	17-12
Issued:	10-24-2017
Drawn By:	
Checked By:	HWC
Scale:	

Sheet Title

SITE PREPARATION ORIENTATION PLAN

L1.00

Sheet Number



MATCHLINE SHEET L1.01B

LEGEND

- W — EXISTING WATER LINE
- S — EXISTING SEWER LINE
- EXISTING ITEM TO BE REMOVED
- EXISTING CONCRETE TO BE REMOVED
- EXISTING TREE TO BE REMOVED

NOTES:
1. SEE SHEET L0.01 FOR SITE PREPARATION NOTES.

2. DEMOLITION QUANTITIES ARE SHOWN AS A COURTESY ONLY. CONTRACTOR IS RESPONSIBLE FOR CALCULATING FINAL DEMOLITION QUANTITIES.

0 20 40
1" = 20'-0"

AREA A

MATCHLINE SHEET L1.01A

MATCHLINE SHEET L1.02A

0 20 40
1" = 20'-0"

AREA B

Construction Documents
Playa Drain Trail
Phase 1
El Paso, Texas

PASO DEL NORTE
HEALTH FOUNDATION

Meridian Green Works, LLC
221 N. Kansas Street Ste. 700
El Paso, Texas 79901
915.242.2265

Revision No.	Date	Description
1	11/21/17	ADDENDUM 2

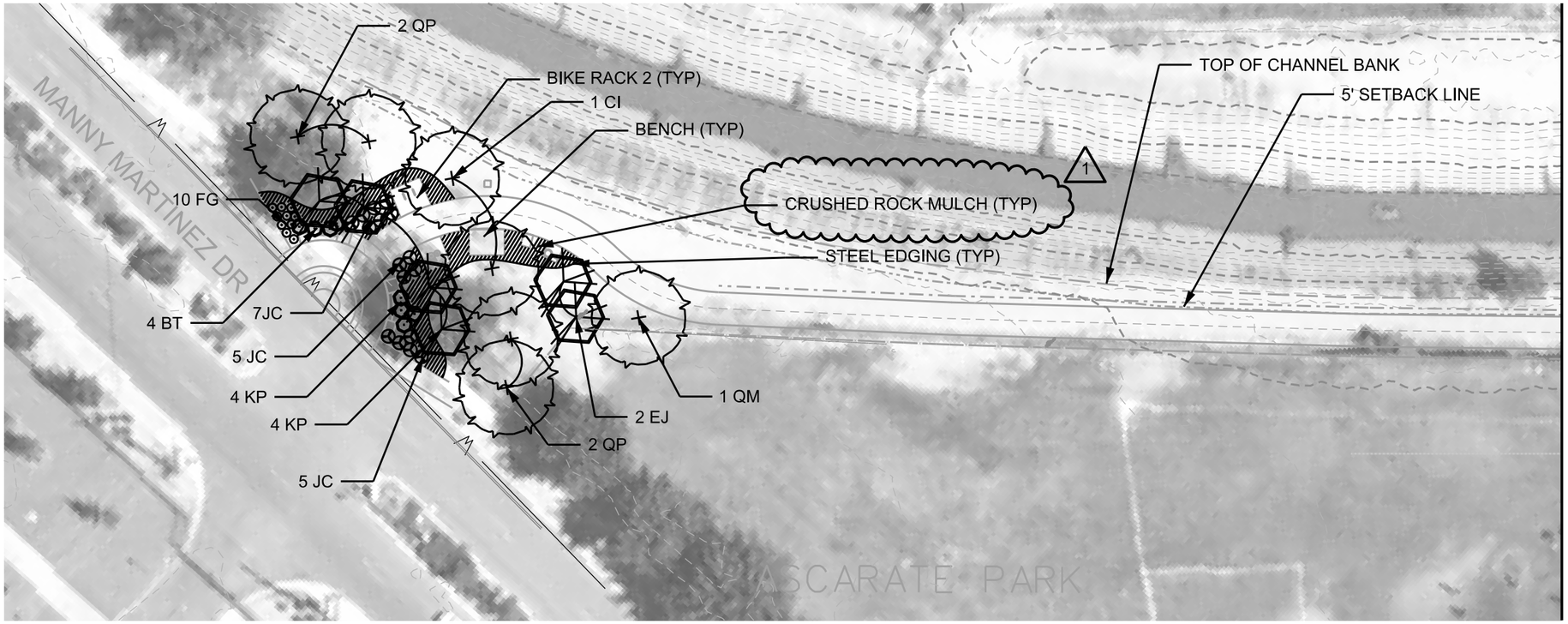
Project No.:	17-12
Issued:	10-24-2017
Drawn By:	
Checked By:	HWC
Scale:	

Sheet Title

SITE PREPARATION PLAN

L1.01

Sheet Number



MATCHLINE SHEET L3.01B

LEGEND

- W — EXISTING WATER LINE
- S — EXISTING SEWER LINE
- ORNAMENTAL TREE
- SHADE TREE

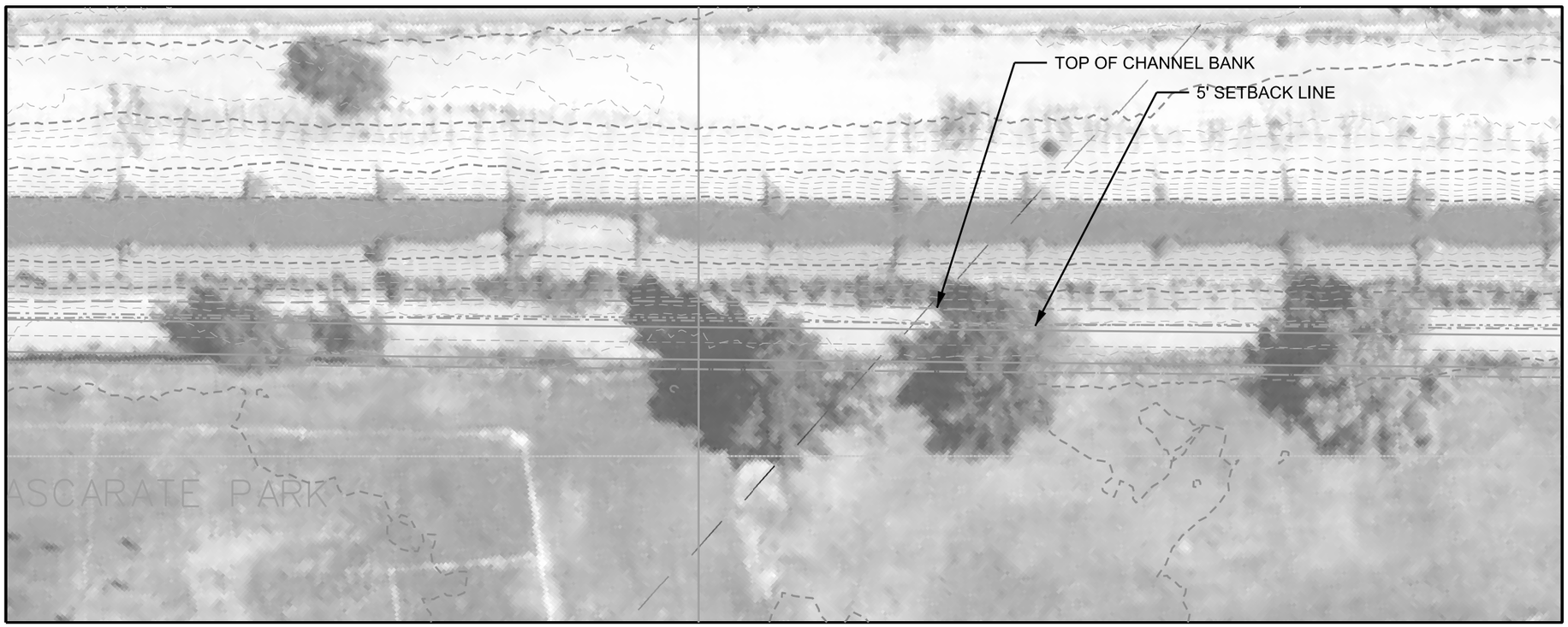
NOTES:
1. SEE SHEET L0.01 FOR LANDSCAPE PLANTING NOTES.

2. SEE SHEET L5.14 FOR LANDSCAPE DETAILS.

3. SEE PLANT MATERIALS LIST FOR SHADE AND ORNAMENTAL TREE SPECIES OPTIONS.

0 20 40
1" = 20'-0"

AREA A



MATCHLINE SHEET L3.01A

MATCHLINE SHEET L3.02A

PLANT MATERIAL LEGEND

AX	Texas Madrone
CI	Pecan
CC	Redbud
CD	Deodar Cedar
CL	Desert Willow
EJ	Loquat (Japanese Plum)
EM	Coolibah Tree
FC	Common Fig
GT	Shademaster Honey Locust
JA	Arizona Walnut
KP	GoldenRain Tree
PF	Palo Verde
PC	Pinyon Pine
PA	Apache Pine
PH	Aleppo Pine
PM	Mexican Plum
PG	Pomegranite
QM	Burr Oak
QP	Mexican White Oak
QV	Live Oak
RN	New Mexico Locust
SS	Texas Mountain Laurel
RS	Black Locust
UC	Cedar Elm
US	Mexican Buckeye
ZJ	Chinese Date
BT	Agarita
FG	Dwarf Fountain Grass
JC	Parson's Juniper

0 20 40
1" = 20'-0"

AREA B

Construction Documents
Playa Drain Trail
Phase 1
El Paso, Texas

PASO DEL NORTE
HEALTH FOUNDATION

Meridian Green Works, LLC
221 N. Kansas Street Ste. 700
El Paso, Texas 79901
915.242.2265

REGISTERED LANDSCAPE ARCHITECT
HOWARD W. COOPER
STATE OF TEXAS

Revision No.	Date	Description
1	11/17/17	ADDENDUM 2

Project No.:	17-12
Issued:	10-24-2017
Drawn By:	
Checked By:	HWC
Scale:	

Sheet Title

LANDSCAPE PLAN

L3.01

Sheet Number

LEGEND

- W — EXISTING WATER LINE
- S — EXISTING SEWER LINE
- ORNAMENTAL TREE
- SHADE TREE

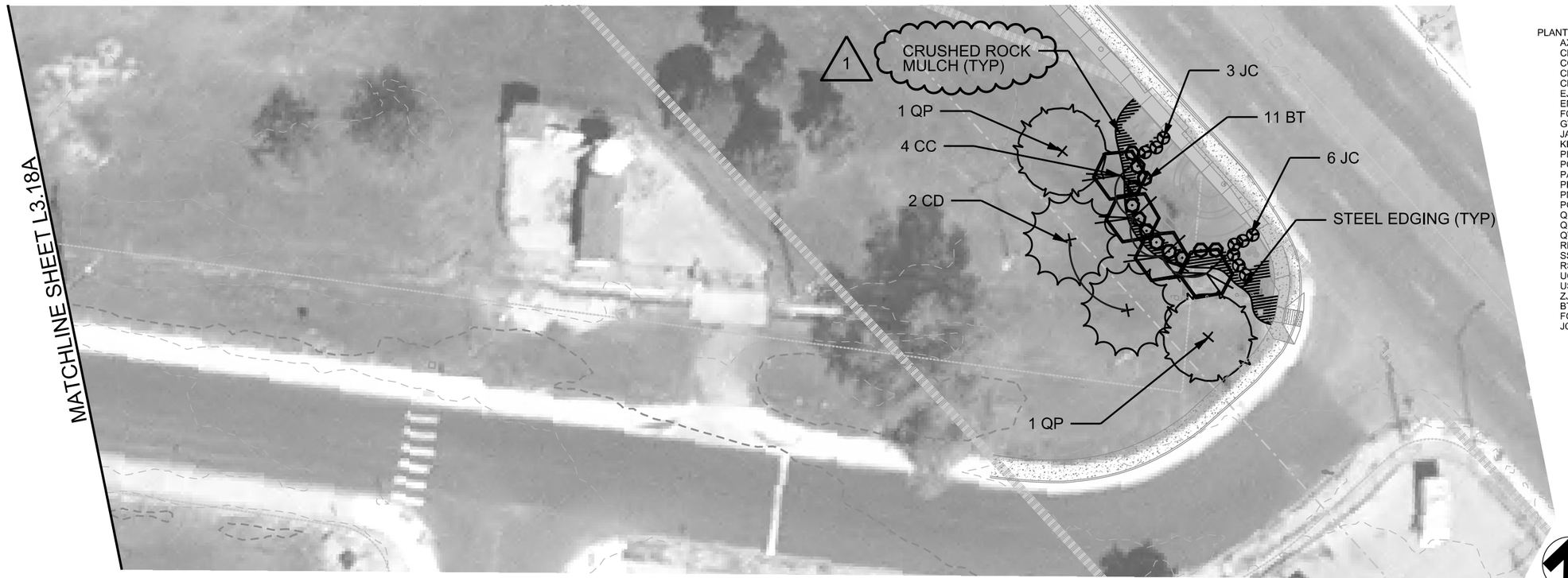
NOTES:
1. SEE SHEET L0.01 FOR LANDSCAPE PLANTING NOTES.

2. SEE SHEET L5.14 FOR LANDSCAPE DETAILS.

3. SEE PLANT MATERIALS LIST FOR SHADE AND ORNAMENTAL TREE SPECIES OPTIONS.

0 20 40
1" = 20'-0"

AREA A



PLANT MATERIAL LEGEND

AX	Texas Madrone
CI	Pecan
CC	Redbud
CD	Deodar Cedar
CL	Desert Willow
EJ	Loquat (Japanese Plum)
EM	Coolibah Tree
FC	Common Fig
GT	Shademaster Honey Locust
JA	Arizona Walnut
KP	GoldenRain Tree
PF	Palo Verde
PC	Pinyon Pine
PA	Apache Pine
PH	Aleppo Pine
PM	Mexican Plum
PG	Pomegranite
QM	Burr Oak
QP	Mexican White Oak
QV	Live Oak
RN	New Mexico Locust
SS	Texas Mountain Laurel
RS	Black Locust
UC	Cedar Elm
US	Mexican Buckeye
ZJ	Chinese Date
BT	Agarita
FG	Dwarf Fountain Grass
JC	Parson's Juniper

0 20 40
1" = 20'-0"

AREA B

Construction Documents
Playa Drain Trail
Phase 1
El Paso, Texas

PASO DEL NORTE
HEALTH FOUNDATION

Meridian Green Works, LLC
221 N. Kansas Street Ste. 709
El Paso, Texas 79901
915.242.2285

LANDSCAPE ARCHITECT
COOPER
STATE OF TEXAS
REGISTERED

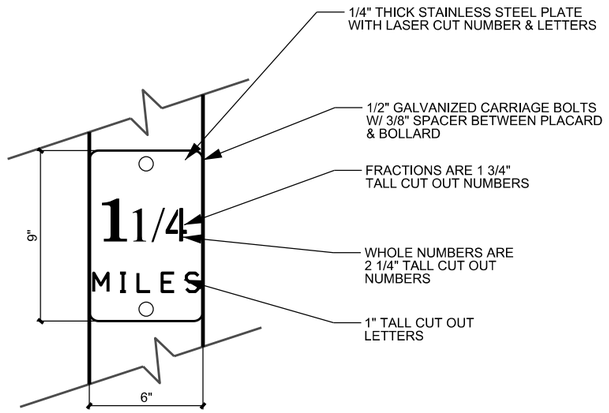
Revision No.	Date	Description
1	11/21/17	ADDENDUM 2

Project No.:	17-12
Issued:	10-24-2017
Drawn By:	
Checked By:	HWC
Scale:	

Sheet Title

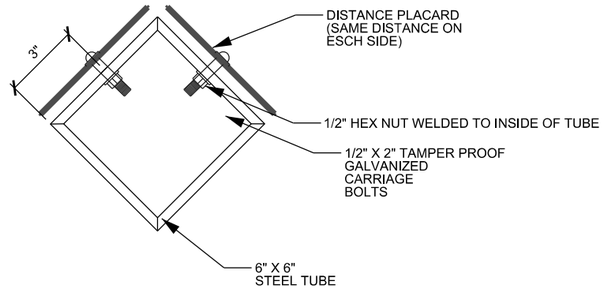
LANDSCAPE PLAN

L3.18
Sheet Number



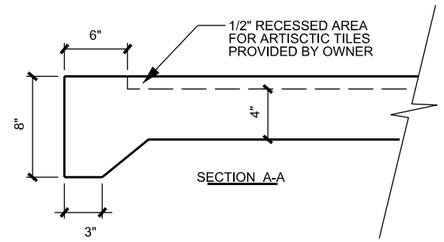
Distance Marker Placard Detail 4
Scale: NTS

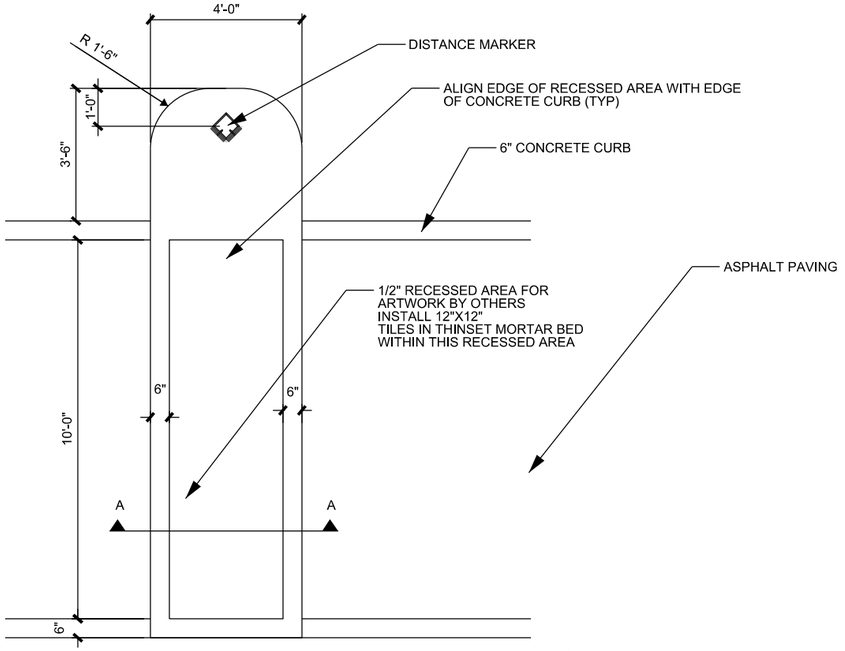
PLACARDS FACING TRAIL
WITH POST AT A
45 DEGREE ANGLE
TO TRAIL



PLAN VIEW
MILE MARKER

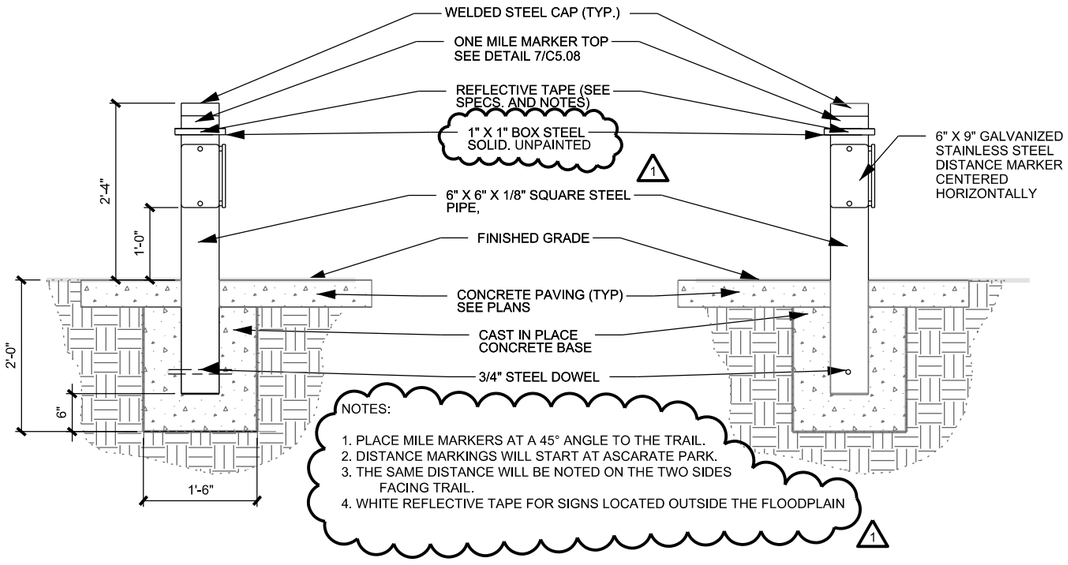
Distance Marker Detail 2
Scale: NTS





PLAN VIEW

Distance Marker Detail 3
Scale: NTS



Distance Marker Detail 1
Scale: NTS

Construction Documents
Playa Drain Trail
Phase 1
El Paso, Texas

PASO DEL NORTE
HEALTH FOUNDATION

Meridian Green Works, LLC
221 N. Kansas Street Ste. 700
El Paso, Texas 79901
915.242.2285

LANDSCAPE ARCHITECT
"COOPER"
HAROLD WAYNE
REGISTERED
No. 2497
STATE OF TEXAS

Revision No.	Date	Description
1	11/21/17	ADDENDUM 2

Project No.:	17-12
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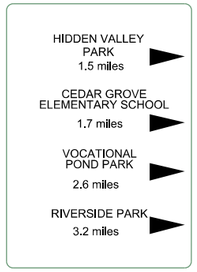
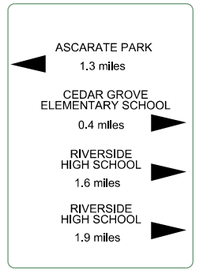
Scale:	

Sheet Title
HARDSCAPE DETAILS

L5.06
Sheet Number



SHEET L2.01
ASCARATE PARK



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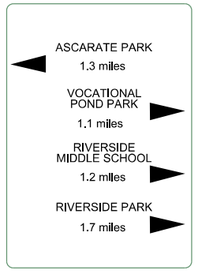
SPRINGFIELD DR



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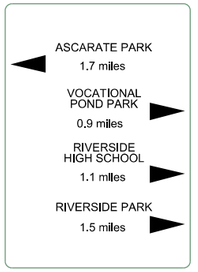
POLO INN RD



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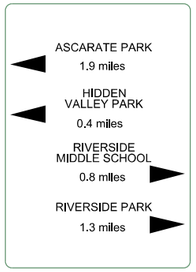
BARKER RD



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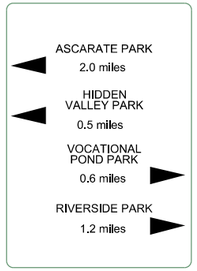
CORONADO RD



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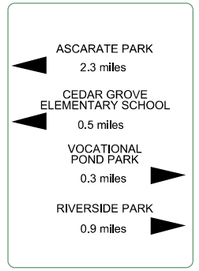
DURRILL RD



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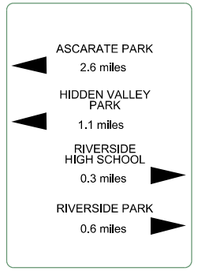
SOUTH CAROLINA DR



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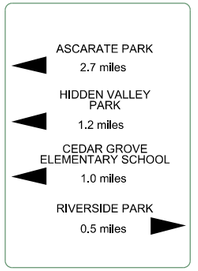
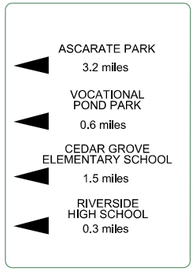
MIMOSA AVE



SHEET L2.16
RIVERSIDE HIGH SCHOOL



SHEET L2.18
RIVERSIDE PARK

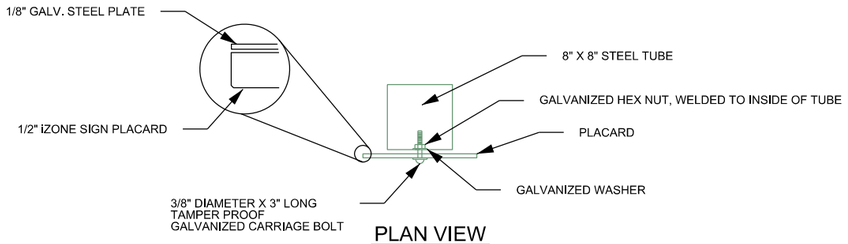
NOTES:

1. VERBIAGE AND ARTWORK ON EACH WAYFINDING SIGN WILL NEED TO BE APPROVED BY OWNER OR OWNER AGENT PRIOR TO MANUFACTURE AND INSTALLATION.

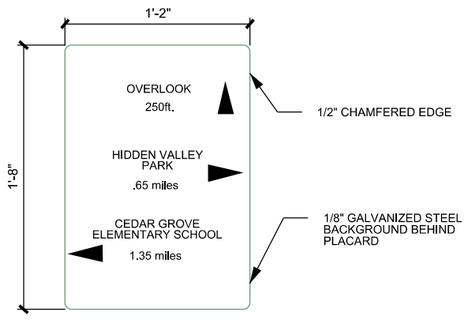
2. ATTACH PLACARD TO STEEL BACKING PLATE WITH RECOMMENDED FASTENERS AT 3" O.C. MAX

Wayfinding Placard Details 2

Scale: NTS



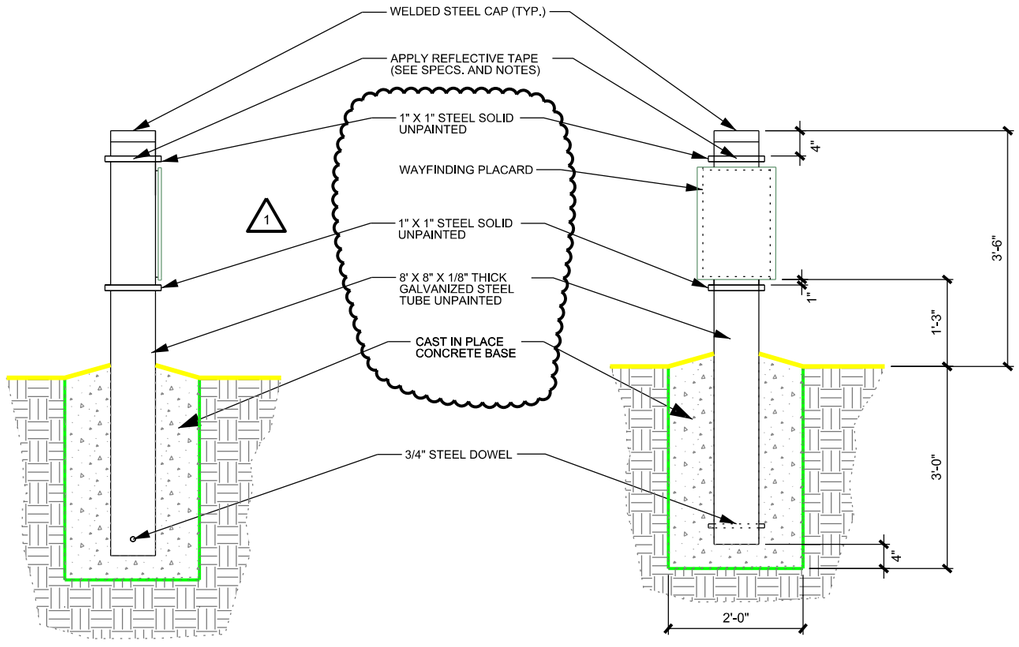
PLAN VIEW



Notes:

1. VERBIAGE AND ARTWORK ON EACH WAYFINDING SIGN WILL NEED TO BE APPROVED BY OWNER OR OWNER AGENT PRIOR TO MANUFACTURE AND INSTALLATION.

2. ATTACH PLACARD TO STEEL BACKING PLATE PER MANUFACTURES RECOMMENDATIONS AND STANDARDS



SIDE SECTION

FRONT/BACK SECTION

Wayfinding Sign Detail 1

Scale: NTS

Construction Documents
Playa Drain Trail
Phase 1
El Paso, Texas

PASO DEL NORTE HEALTH FOUNDATION

Meridian Green Works, LLC
221 N. Kansas Street Ste. 700
El Paso, Texas 79901
915.242.2265

Revision No.	Date	Description
1	11/21/17	ADDENDUM 2

Project No.:	17-12
Issued:	10-24-2017
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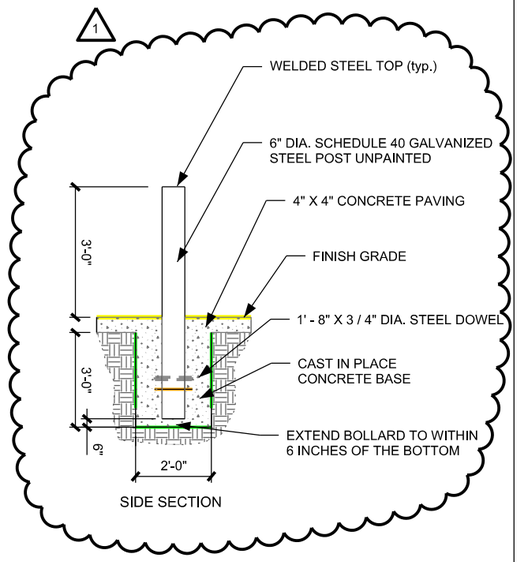
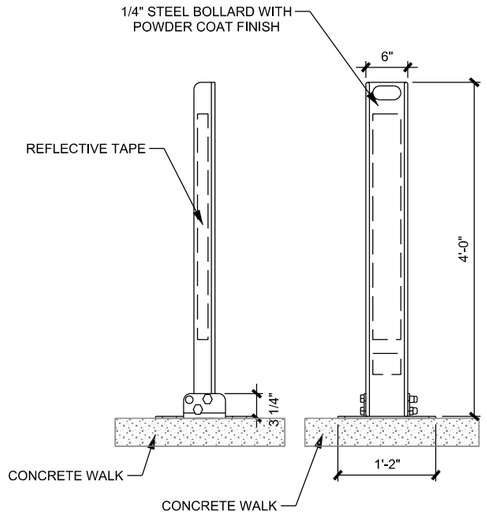
Checked By:	HWC
Scale:	
Sheet Title	HARDSCAPE DETAILS

L5.07
Sheet Number



Fixed Bollard 4
Scale: NTS



Removable Bollard 3
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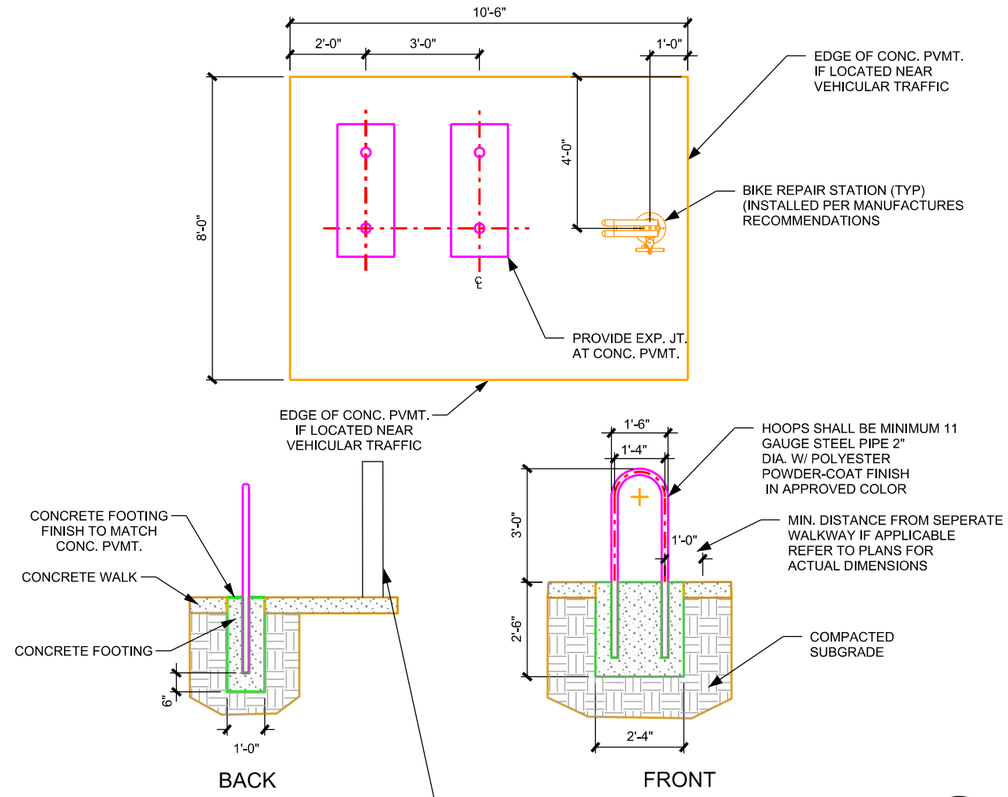
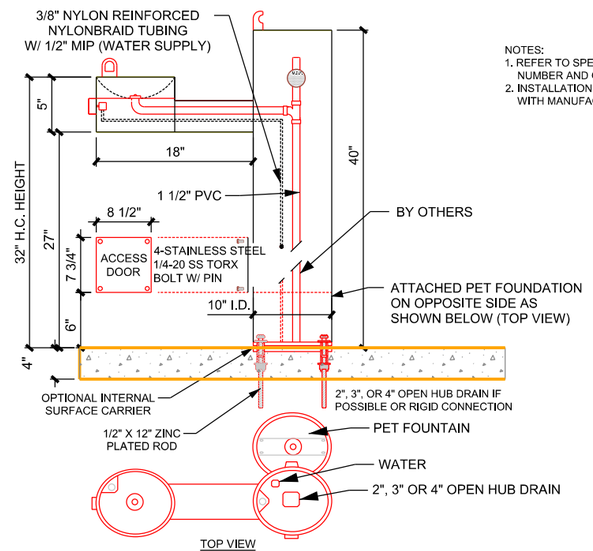
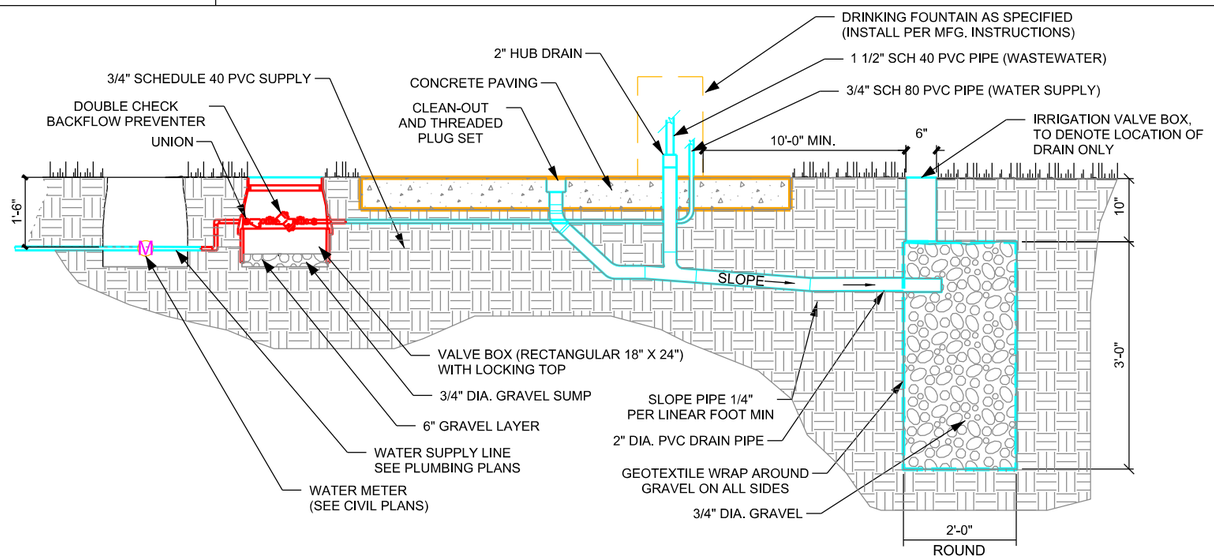


Bike Rack Detail 2
Scale: NTS



NOTES:
1. REFER TO SPECIFICATIONS FOR DESIRED MODEL NUMBER AND OTHER INFORMATION.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

Drinking Fountain 5
Scale: NTS



Drinking Fountain Detail 1
Scale: NTS

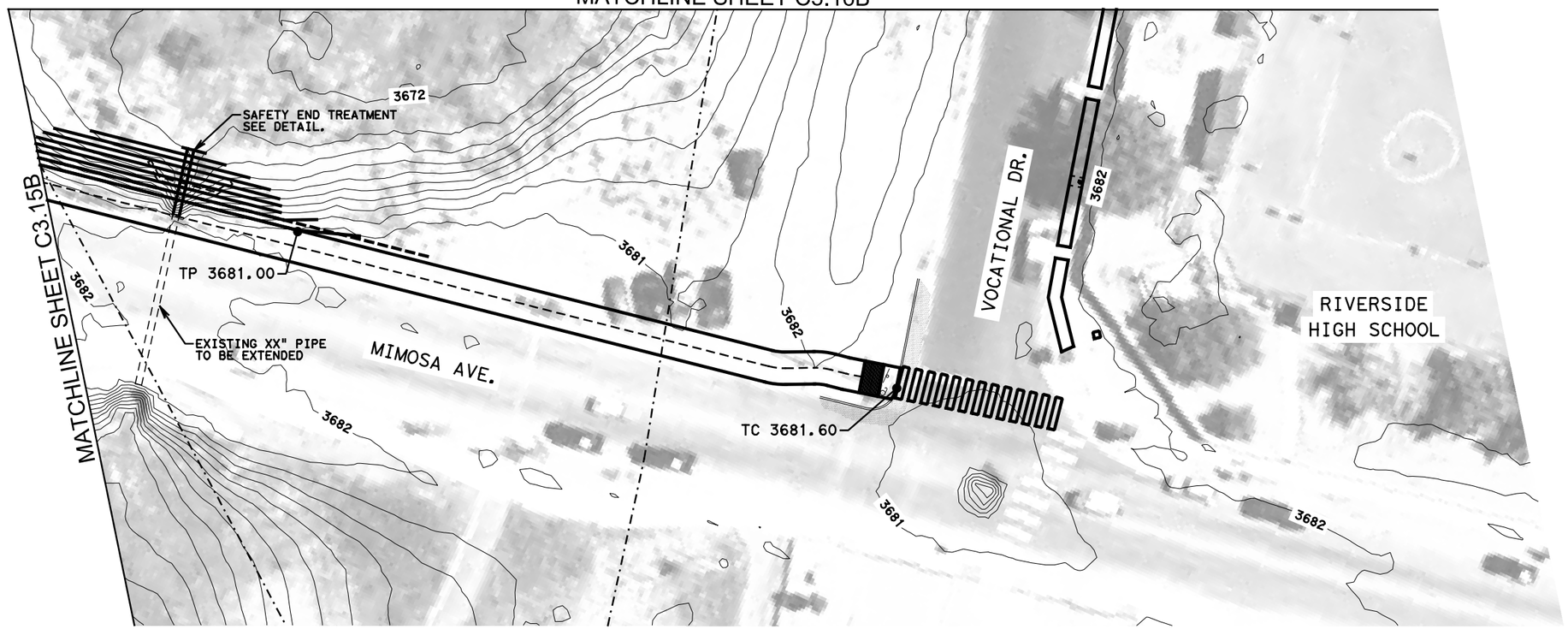
Construction Documents
Playa Drain Trail
Phase 1
El Paso, Texas

PASO DEL NORTE HEALTH FOUNDATION

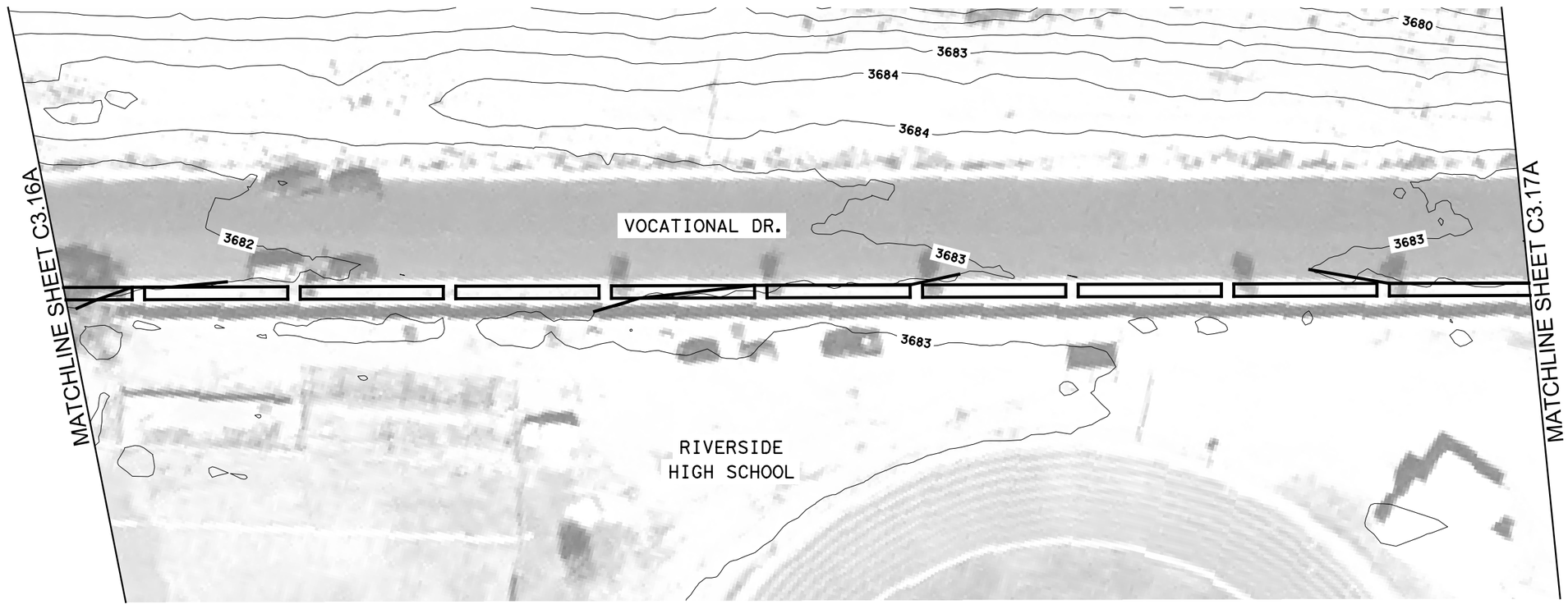
Meridian Green Works, LLC
221 N. Kansas Street Ste. 700
El Paso, Texas 79901
915.242.2285

Revision No.	Date	Description
1	11/21/17	ADDENDUM 2

Project No.:	17-12
Issued:	10-24-2017
Drawn By:	
Checked By:	HWC
Scale:	
Sheet Title	HARDSCAPE DETAILS
Sheet Number	L5.10



AREA A



AREA B

GRADING NOTES

1. VERIFY ALL DIMENSIONS AND GRADES BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THEIR CORRECTNESS.

LEGEND

- EXISTING DRAIN R.O.W.
- PLAYA DRAIN TRAIL
- TRAIL RAILING
- EXISTING CURB, SWDK
- EXISTING CONTOUR
- PROPOSED CONTOUR
- TP TOP OF TRAIL ELEVATION
- TSW TOP OF SDWK ELEVATION
- TC TOP OF CURB ELEVATION

0 20 40
1" = 20'-0"

Construction Documents
Playa Drain Trail
Phase 1
El Paso, Texas

PASO DEL NORTE HEALTH FOUNDATION

Meridian Green Works, LLC
221 N. Kansas Street Ste. 700
El Paso, Texas 79901
915.242.2285

Moreno Cardenas Inc.
Leaders in Project Delivery & Performance
TBPE Firm Registration No. F-000554

Revision No.	Date	Description

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY GUSTAVO SOSA, P.E. 108895, ON 10/24/2017

STATE OF TEXAS
GUSTAVO SOSA
108895
LICENSED PROFESSIONAL ENGINEER

Project No.:	16-110
Issued:	10-24-2017
Drawn By:	DA
Checked By:	GS
Scale:	1" = 20'-0"

Sheet Title
GRADING & DRAINAGE PLAN

C3.16
Sheet Number

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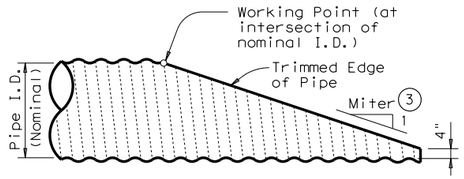
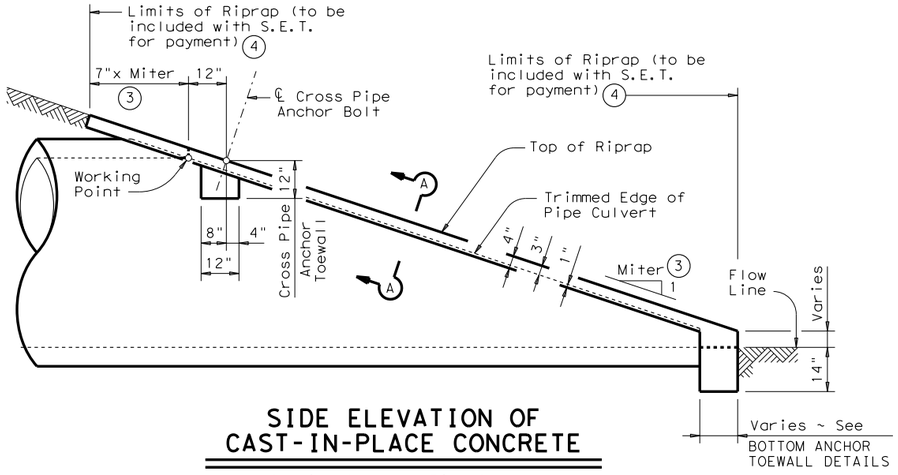
DATE:
FILE:



NOTE: All Pipe Runners, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

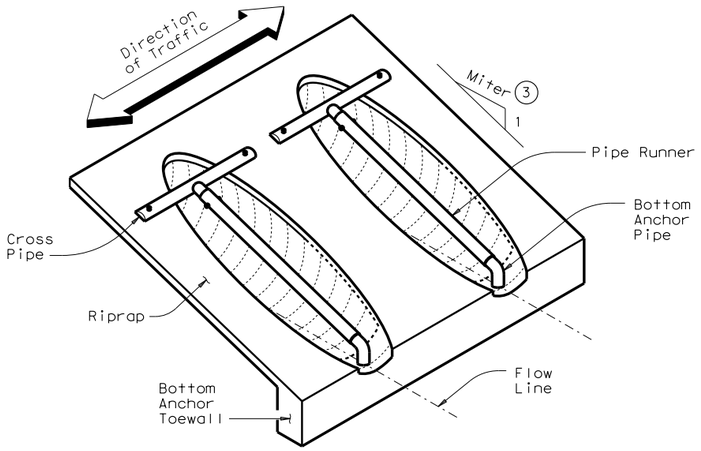
SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing Corrugated Metal Pipe Culvert.
Details of Concrete Pipe Culvert are similar.)



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing Concrete Pipe Culvert.
Details of Corrugated Metal Pipe Culvert are similar.
Pipe Runners not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing installation with no skew.)

CROSS PIPE LENGTHS & PIPE RUNNER LENGTHS (1)(2)

Nominal Culvert I.D.	Pipe Culvert Spa ~ G	Cross Pipe Length	Pipe Runner Length											
			3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
			0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
24"	1'- 7"	3'- 5"	N/A	N/A	N/A	5'-10"	N/A	N/A	N/A	8'- 1"	N/A	N/A	N/A	12'- 9"
27"	1'- 8"	3'- 8"	N/A	N/A	5'- 5"	6'-11"	N/A	N/A	7'- 7"	9'- 7"	N/A	N/A	11'-11"	14'-11"
30"	1'-10"	3'-11"	N/A	N/A	6'- 4"	8'- 0"	N/A	N/A	8'- 9"	11'- 0"	N/A	N/A	13'- 8"	17'- 0"
33"	1'-11"	4'- 2"	6'- 2"	6'- 5"	7'- 3"	9'- 1"	8'- 6"	8'-10"	10'- 0"	12'- 5"	13'- 3"	13'- 9"	15'- 5"	19'- 2"
36"	2'- 1"	4'- 5"	6'-11"	7'- 3"	8'- 2"	10'- 2"	9'- 6"	9'-11"	11'- 2"	13'-10"	14'- 9"	15'- 3"	17'- 2"	21'- 3"
42"	2'- 4"	4'-11"	8'- 6"	8'-10"	9'-11"	12'- 4"	11'- 7"	12'- 0"	13'- 6"	16'- 8"	17'- 9"	18'- 5"	20'- 8"	25'- 7"
48"	2'- 7"	5'- 5"	10'- 1"	10'- 5"	11'- 9"	N/A	13'- 7"	14'- 2"	15'-10"	N/A	20'- 9"	21'- 6"	24'- 2"	N/A
54"	3'- 0"	5'-11"	11'- 8"	12'- 1"	N/A	N/A	15'- 8"	16'- 3"	N/A	N/A	23'-10"	24'- 8"	N/A	N/A
60"	3'- 3"	6'- 5"	13'- 3"	N/A	N/A	N/A	17'- 9"	N/A	N/A	N/A	26'-10"	N/A	N/A	N/A

TYPICAL PIPE CULVERT MITERS (3)

Side Slope	0° Skew	15° Skew	30° Skew	45° Skew
3:1	3:1	3.106:1	3.464:1	4.243:1
4:1	4:1	4.141:1	4.619:1	5.657:1
6:1	6:1	6.212:1	6.928:1	8.485:1

CONDITIONS WHERE PIPE RUNNERS ARE NOT REQUIRED (2)

Nominal Culvert I.D.	Single Pipe Culvert	Multiple Pipe Culverts
12" thru 21"	Skews thru 45°	Skews thru 45°
24"	Skews thru 45°	Skews thru 30°
27"	Skews thru 30°	Skews thru 15°
30"	Skews thru 15°	Skews thru 15°
33"	Skews thru 15°	Always required
36"	Normal (No Skew)	Always required
42" to 60"	Always required	Always required

STANDARD PIPE SIZES & MAX PIPE RUNNER LENGTHS (1)

Pipe Size	Pipe O.D.	Pipe I.D.	Max Pipe Runner Length
2" STD	2.375"	2.067"	N/A
3" STD	3.500"	3.068"	10'- 0"
4" STD	4.500"	4.026"	19'- 8"
5" STD	5.563"	5.047"	34'- 2"

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) (5)

Nominal Culvert I.D.	3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
12"	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8
15"	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9
18"	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0
21"	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2
24"	0.6	0.7	0.7	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.1	1.3
27"	0.7	0.7	0.8	0.9	0.8	0.9	0.9	1.1	1.1	1.1	1.2	1.4
30"	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	1.6
33"	0.8	0.8	0.9	1.0	1.0	1.0	1.1	1.3	1.3	1.4	1.5	1.7
36"	0.9	0.9	0.9	1.1	1.1	1.1	1.2	1.4	1.4	1.5	1.6	1.8
42"	1.0	1.0	1.1	1.3	1.2	1.3	1.3	1.6	1.6	1.7	1.8	2.1
48"	1.1	1.1	1.2	N/A	1.4	1.4	1.5	N/A	1.9	1.9	2.1	N/A
54"	1.3	1.3	N/A	N/A	1.6	1.6	N/A	N/A	2.1	2.1	N/A	N/A
60"	1.4	N/A	N/A	N/A	1.7	N/A	N/A	N/A	2.3	N/A	N/A	N/A

(1) Size of Pipe Runner shall be as shown in the tables. Cross Pipe shall be the same size as the Pipe Runner. Cross Pipe Stub Out and Bottom Anchor Pipe shall be the next smaller size pipe as shown in the STANDARD PIPE SIZES table.

(2) This standard allows for the placement of only one pipe runner across each culvert pipe opening. In order to limit the clear opening to be traversed by an errant vehicle, the following conditions must be met:

For 60" culvert pipes, the skew must not exceed 0°.
For 54" culvert pipes, the skew must not exceed 15°.
For 48" culvert pipes, the skew must not exceed 30°.
For all culvert pipe sizes 42" and less, the skew must not exceed 45°.

If the above conditions cannot be met, the designer should consider using a safety end treatment with flared wings. For further information, refer to the TxDOT "Roadway Design Manual".

(3) Miter = Slope of Mitered Pipe Culvert End

(4) Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

(5) Quantities shown are for one end of one reinforced Concrete Pipe Culvert. For multiple Pipe Culverts or for Corrugated Metal Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

FILE: setpcdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.

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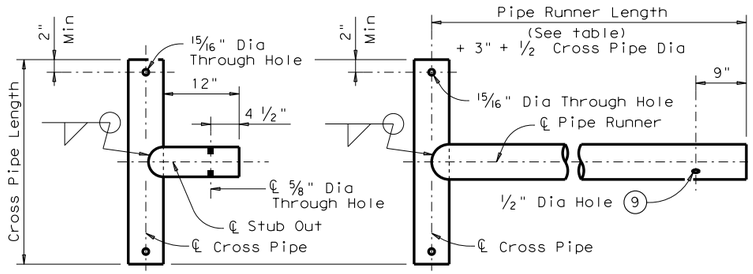
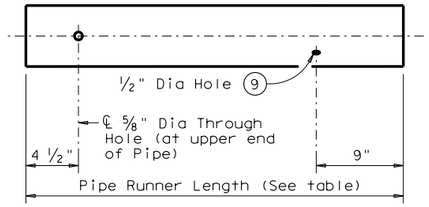
FILE:



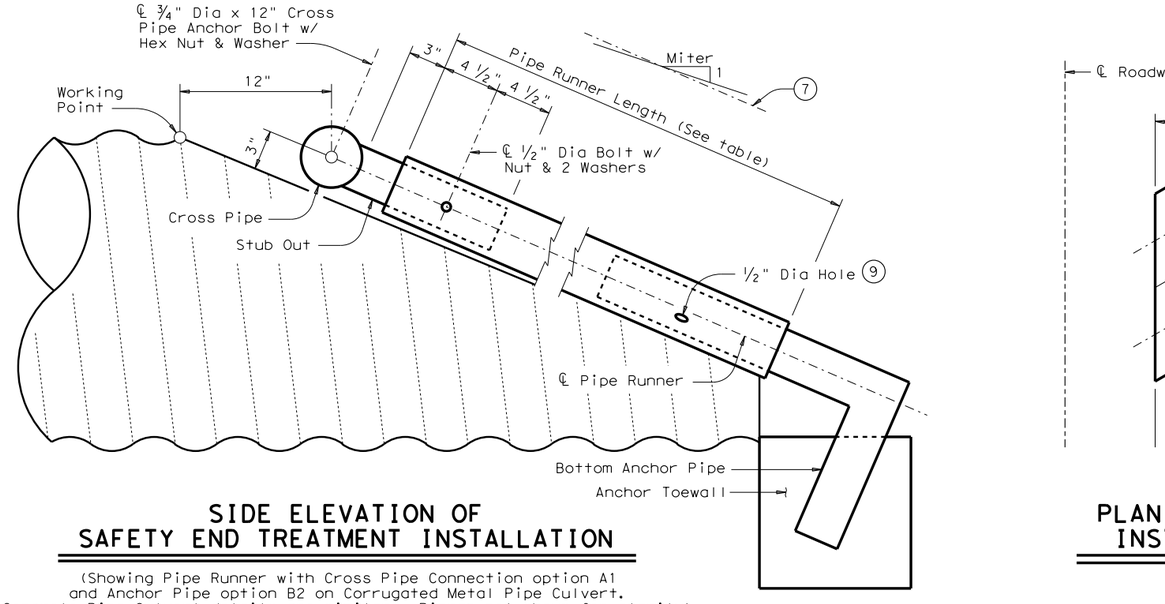
OPTION A1 OPTION A2

CROSS PIPE AND CONNECTIONS DETAILS



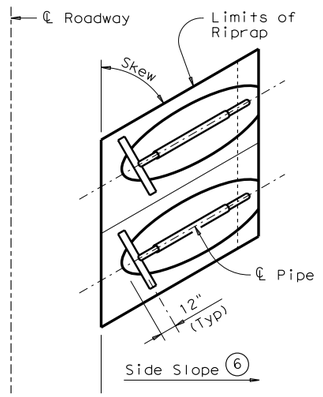
NOTE: The separate Pipe Runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS

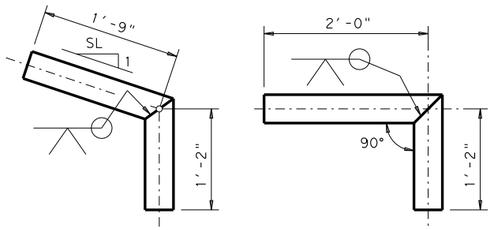


SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION

(Showing Pipe Runner with Cross Pipe Connection option A1 and Anchor Pipe option B2 on Corrugated Metal Pipe Culvert. Concrete Pipe Culvert details are similar. Riprap not shown for clarity)

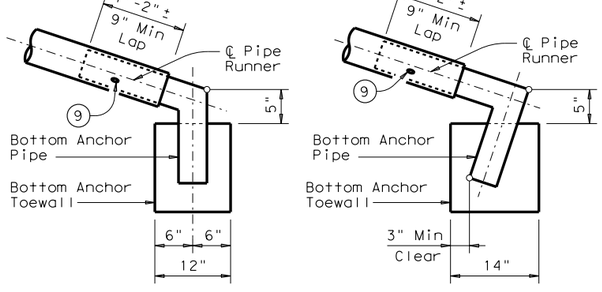


PLAN OF SKEWED INSTALLATION



OPTION B1 OPTION B2

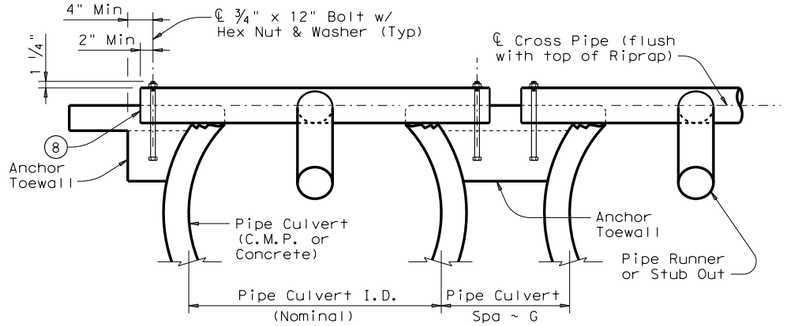
BOTTOM ANCHOR PIPE DETAILS (10)



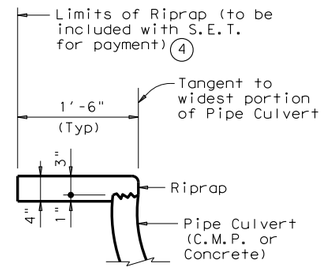
OPTION B1 OPTION B2

BOTTOM ANCHOR TOEWALL DETAILS

(Culvert & Riprap not shown for clarity)



SHOWING CROSS PIPE & ANCHOR TOEWALL



SHOWING TYPICAL PIPE CULVERT & RIPRAP

SECTION A-A

(4) Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

(6) Recommended values of side slope are 3:1, 4:1, & 6:1. All quantities, calculations, and dimensions shown herein are based on these recommended values. Slope of 3:1 or flatter is required for vehicle safety.

(7) Note that actual slope of Pipe Runner may vary slightly from Side Slope of Riprap and trimmed Culvert Pipe edge.

(8) Care shall be taken to ensure that Riprap concrete does not flow into the Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(9) After installation, the 1/2" hole shall be inspected to ensure that the lap of the Pipe Runner with the Bottom Anchor Pipe is adequate.

(10) At fabricator's option, a heat bend to a smooth 5" radius or a manufactured elbow (of the same material as the Runner) may be substituted for the mitered and welded joint in the Bottom Anchor Pipe.

GENERAL NOTES:

Pipe Runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

The Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Pipe Runners.

Riprap and all necessary inverts shall be Concrete Riprap conforming to the requirements of Item 432, "Riprap".

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Pipe Runners, Cross Pipes, and Anchor Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Bolts and nuts shall conform to ASTM A307.

All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

FILE: setpcdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.