

ADDENDUM NO. 01
Bean Tract Wetlands Creation Project

Owner: Calhoun Port Authority

Date: August 22, 2022

The following changes or alterations to the subject Specifications and Drawings shall be made and, insofar as such Specifications and Drawings are inconsistent with the following, this Addendum shall govern.

1. New Bid Date

Sealed Bids shall be received, until **9:00 A.M., WEDNESDAY, September 28, 2022.**

Said Sealed Proposals shall be submitted on blank forms provided, shall be sealed in separate envelopes per Instructions to Bidders, and shall be clearly marked "Bean Tract Wetlands Creation Project, Calhoun Port Authority – Bid Opening: 9:00 a.m., Wednesday, September 28, 2022.

2. Days to complete the Project

The Contractor shall commence the work no later than 15 calendar days after the date of the written Notice to Proceed and shall work diligently to complete the work within **270 calendar days**.

3. Adjustment and clarifications on access roadway

Temporary Access Road location on drawings is approximate. Temporary driveway (2 driveways expected) tie-in from the roadway to the levee are to be determined by the contractor. Required to be restored to Pre-Construction conditions.

See Addendum 1, Bid Document Drawings for layout and elevations, "PROPOSED LEVEE - BEAN TRACT MITIGATION SITE, ISSUED FOR BIDDING, SEPTEMBER 2022".

4. "Proposal Evaluation Criteria and Weight" clarification

The "Proposal Evaluation Criteria and Weight" will be determined by a panel within 5 days of opening the bids on September 9, 2022. The scores and recommendations will be presented to the Board at the next scheduled Board Meeting, which is at this

time, scheduled for September 14, 2022. No questions or concerns were voiced about the scoring process in the pre-bid meeting.

5. High Marsh and Low Marsh Areas

Tidal Marsh Areas (10 acres)

- Low Marsh Planting Areas (8.7 acres), +0.5 ft to +1.6 ft NAVD 88
- High Marsh Planting Areas (1.3 acres), +2.0 to +3.0 ft NAVD 88

Drawings to be provided for approximate locations.

6. Clarification of what should be included in the warranty.

“ONE (1) FULL YEAR FOR LABOR AND FIVE (5) FULL YEARS FOR PARTS AND MATERIALS”

- Labor – finish elevations
- Parts and Materials – concrete mat system

7. Max Amount Total

Not-to-Exceed/TOTAL BID price, or Max Amount, is from the contractor proposed quantities.

Comparable “Lowest Eligible Price” will be determined by equivalent quantities to determine a comparable “Price Score”. Though these are the expected quantities for the Project, it is not restricted or limited to listed quantities.

(See attached Bid Proposal document)

8. Determining Soil Volume

The borrow site will be surveyed prior to work, and monthly thereafter, to determine the volume of soil removed for progress determination and monthly billing purposes.

9. Temporary 10' Levee

Temporary 10' levee for containment is an optional method for wetland construction, but not require for project. Only the final elevations need to be met.

See Addendum 1, Bid Document Drawings for layout and elevations, “PROPOSED LEVEE - BEAN TRACT MITIGATION SITE, ISSUED FOR BIDDING, SEPTEMBER 2022”.

10. Determination of Top Soil depth

Minimum of 6 inches (approx. 6-9 inches) of the final elevation will be of soil from the Western portion of the borrow area. Reference green shaded area on "Borrow Area Site Layout" sheet in bid document drawings.

11. Planting of Wetlands

The wetland planting is not part of this contract. Execution of the planting will be conducted after the wetland construction and a settlement period is determined appropriate.

12. Do we need to address the possible "mud wave"

All material used for wetland creation at the Bean Tract must be contained within the ring-levee system (with the exception of the temporary construction access route(s) from land to the levee). No material is to be placed into Lavaca Bay outside of the levees (as noted prior), or displaced in such a way as to act as fill (potential mud wave effect).

13. TxDOT Driveway Access Permit

Contractor must meet requirements of the TxDOT Driveway Permit (See attached TxDOT Permit).

14. Transport between borrow area and wetlands

TxDOT roads are to be used as transportation between the Calhoun Port Authority properties; expected to be State Hwy 35 and FM 1593. Development of traffic schedule will be coordinated with the Formosa safety representative (to be determined after award of contract).

Addendum Attachments:

- Bid Proposal
- TxDOT Permit to Construct Access Driveway

Reference Drawings:

- PROPOSED LEVEE - BEAN TRACT MITIGATION SITE, ISSUED FOR BIDDING, SEPTEMBER 2022 (<http://www.calhounport.com/port-business/bid-notices/>)

End of Addendum No. 01

Please make copies of this Addendum as required to satisfy the following:

1. Email acknowledgement of Addendum to the OWNER to recognize its receipt.
 2. Attach one signed copy of this Addendum to each of the duplicate Bid Proposal sets to be submitted to the OWNER.
-

Receipt of Addendum No. 1 is acknowledged:

Company Name: _____

Signature: _____

Print Name: _____

Title: _____

Date: _____

Bid Proposal

The bidder shall fill in all blanks with the required information and acknowledge receipt of all addenda in the indicated place.

TO: Luis De La Garza, Chairman
Calhoun Port Authority
2313 F.M. 1593 South
P.O. Box 397
Point Comfort, Texas 77978

The undersigned, as Bidder, declares that the only person or parties interested in this Proposal, as principals, are those named herein; that this Proposal is made without collusion with any other person, firm, or corporation; that I/We have examined the Notice to Bidders, Instructions to Bidders, Agreement between Owner and Contractor, Addenda (if any), the Specifications, and the Drawings; that I/We have examined all of the conditions pertaining to the proposed Work, and hereby offer to and will furnish all necessary materials, supplies, equipment, appliances, tools, labor, supervision, insurance, and other accessories and services required by said documents for the following work:

“BEAN TRACT WETLANDS CREATION PROJECT”

I/We, the undersigned, propose to complete the Work as described in the Contract Documents and Specifications, for the prices listed herein which bear our signature for identification.

I/We, the undersigned, agree to enter into the Agreement between Owner and Contractor with the Calhoun Port Authority of Calhoun County, Texas for furnishing all required supplies/services for the prices listed herein which bear our signature for identification.

I/We agree to start prosecuting the Work within 15 calendar days of the issuance of a Notice to Proceed and complete the Work described in this Project within Sixty (60) Calendar Days thereafter.

The Work described in this Project will be commenced at a date no later than **15** calendar days after the date of the written Notice to Proceed, and will be pursued with all reasonable diligence (excepting acts of God, civil disturbance, or other situations agreed to by the Owner as being beyond the responsibility of the Contractor) and to be deemed by the Owner as Substantially Complete within, **270 calendar days** of the date of the written Notice to or as directed and ordered by the Owner.

I/We agree that time is of the essence and that for each day of delay beyond the number of days specified for Substantial Completion of the Work, after due allowances for extensions of time as may be provided, the Owner may withhold permanently from the Contractor's total compensation the sum of **\$500.00 per calendar day** as stipulated Liquidated Damages.

The Calhoun Port Authority is exempt from the payment of Texas State sales tax. The undersigned agrees that the prices proposed do not include such Texas State sales tax.

I/We shall comply with all applicable local, State, and Federal laws, codes, ordinances, and regulations.

I/We will obtain all necessary operating permits and licenses, except those permits as may already be obtained by the Calhoun Port Authority if enumerated herein.

The total amount of this Proposal includes all costs, insurance, commissions, overhead, permits, licenses, and payments required and necessary to complete the Work as specified.

I/We acknowledge receipt of the addenda listed below and the total amount of this Proposal has been adjusted accordingly.

ADDENDA RECEIVED DATE

- 1. _____
- 2. _____
- 3. _____

Enclosed herewith is a Cashier's Check, Certified Check, or Bidder's Bond in the sum of \$ _____, which represents five percent (5%) of the greatest total amount of this Proposal.

I/We propose to utilize the following subcontractors to augment our forces for this Project:

_____	_____
_____	_____
_____	_____
_____	_____

If I/We are notified of the acceptance of this proposal, I/We will furnish Performance and Payment Bonds in accordance with approved forms, to be paid by me/us for the proper completion of the Work as specified and, in the time, allotted, the said bonds to be issued for one hundred percent (100%) of the amount of the total contract sum. Said bonds shall conform to the laws of the State of Texas.

It is agreed that, in the event the undersigned fails to enter into a Contract and furnish such bonds within the time and the manner required, the Bidder will pay to the Calhoun Port Authority of Calhoun County, Texas as liquidated damages for failure to enter into formal written Contract, and to perform the Work as proposed and accepted, an amount equal to five percent (5%) of the Proposal made by the Undersigned and duly accepted by the Calhoun Port Authority.

It is further agreed that if the Bidder's Bond or Certified or Cashier's Check deposited for Bid Security is in an amount greater than five percent (5%) of such Proposal made and accepted, that such fact shall not operate to prevent the Calhoun Port Authority from appropriating and holding from the proceeds of such Bond or Certified Cashier's Check, the same certain determinable amount as liquidated damages, refunding the rest.

I/We agree that a period of 60 calendar days from the date of the opening of Proposals is a reasonable time for inspection, analysis, and consideration of this Proposal by the Calhoun Port Authority, and this Proposal cannot, and will not, be withdrawn by me/us prior to 60 calendar days after the opening of Proposals, and that the Calhoun Port Authority may accept this Proposal at any time prior to 60 calendar days after the opening of Proposals.

I/We agree and understand that the Calhoun Port Authority reserves the right to accept or reject any or all Proposals, as stated in the Instructions to Bidders.

In submitting this Proposal, I/We do so with the understanding that all Contract Documents, Drawings, Specifications, and Addenda are completely understood, and that there is no doubt as to the intent and the scope of the Work to be accomplished.

I/We propose to perform all the Work in accordance with the requirements of the Contract Documents and Specifications for the following Unit Prices. The Unit Bid Price will include all costs for labor, material, equipment, supplies, appliances, insurance, overhead, profit and services require indicated in the Scope of Work for a **Not-to-Exceed** price.

Bid Item No.	Bid Item Description	Quantity	Units	Unit Price	Max Amount
1	Mobilization/Demobilization	1	Lump Sum	\$	\$
2	Construction of 2,605-ft Road at Tank area	2,605	LF	\$	\$
3	Soil Borrow, transport, placement (DMSA to Bean Tract)	1	Lump Sum	\$	\$
	Volume to be removed from borrow area		CY	\$	
4	Shoreline Protection Material Installation		LF	\$	\$
				Total	\$

TOTAL BID: _____ Dollars
(words)

Signed:

(Company Name)

By: _____
(Signature)

(Company Address)

(Company Phone Number)

(Printed/Typed Name)

Date: _____

(Seal if bidder is a corporation)



Permit to Construct Access Driveway Facilities on Highway Right of Way

Form 1058
(Rev. 8/20)
Page 1 of 2

PERMIT NUMBER: TxDOT ENTER PERMIT NUMBER HERE			
REQUESTOR		GPS*	ROADWAY
		LATITUDE, LONGITUDE	HWY NAME SH 35
		30.25540701, -97.74494290	FOR TxDOT'S USE
NAME Calhoun Port Authority		CONTROL	4-DIGIT
MAILING ADDRESS P.O. Box 397		SECTION	2-DIGIT EX. 01
CITY, STATE, ZIP Point Comfort, TX 77978			
PHONE NUMBER (361-987-2813) Agent: Laura Fox, AnchorQEA 361-319-3119			
*GLOBAL POSITIONING SYSTEM COORDINATES AT INTERSECTION OF DRIVEWAY CENTERLINE WITH ABUTTING ROADWAY			

Is this parcel in current litigation with the State of Texas? YES NO

The Texas Department of Transportation, hereinafter called the State, hereby authorizes Calhoun Port Authority, hereinafter called the Permittee, to construct / reconstruct a property access (residential, convenience store, retail mall, farm, etc.) access driveway on the highway right of way abutting highway number 35 in Point Comfort County, located Calhoun County

USE ADDITIONAL SHEETS AS NEEDED

This permit is subject to the Access Driveway Policy described on page 2 and the following:

- The undersigned hereby agrees to comply with the terms and conditions set forth in this permit for construction and maintenance of an access driveway on the state highway right of way.
- The Permittee represents that the design of the facilities, as shown in the attached sketch, is in accordance with the Roadway Design Manual, Hydraulic Design Manual and the access management standards set forth in the Access Management Manual (except as otherwise permitted by an approved variance).
- Construction of the driveway shall be in accordance with the attached design sketch, and is subject to inspection and approval by the State.
- Maintenance of facilities constructed hereunder shall be the responsibility of the Permittee, and the State reserves the right to require any changes, maintenance or repairs as may be necessary to provide protection of life or property on or adjacent to the highway. Changes in design will be made only with prior written approval of the State.
- The Permittee shall hold harmless the State and its duly appointed agents and employees against any action for personal injury or property damage related to the driveway permitted hereunder.
- Except for regulatory and guide signs at county roads and city streets, the Permittee shall not erect any sign on or extending over any portion of the highway right of way. The Permittee shall ensure that any vehicle service fixtures such as fuel pumps, vendor stands, or tanks shall be located at least 12 feet from the right of way line to ensure that any vehicle services from these fixtures will be off the highway right of way.
- The State reserves the right to require a new access driveway permit in the event of: (i) a material change in land use, driveway traffic volume or vehicle types using the driveway, or (ii) reconstruction or other modification of the highway facility by the State.
- The State may revoke this permit upon violation of any provision of this permit by the Permittee.
- This permit will become null and void if the above-referenced driveway facilities are not constructed within six (6) months from the issuance date of this permit.
- The Permittee will contact the State's representative Jon Adame telephone, (361) 552-6131, at least twenty-four (24) hours prior to beginning the work authorized by this permit.
- The requesting Permittee will be provided instructions on the appeal process if this permit request is denied by the State.

The undersigned hereby agrees to comply with the terms and conditions set forth in this permit for construction and maintenance of an access driveway on the highway right of way.

Date: 8/5/22

Signed: 
DocuSigned by: (Property owner or owner's representative)

8/26/2022	<u>Clayton N. Harris P.E.</u>
Date of Issuance	5E5D284B598247C... District Engineer, or designee Approval
Date of Issuance as per Variance to AMM	District Engineer, or designee Approval
Date of Denial	District Engineer Denial (No Delegation)

Access Driveway Policy

Title 43 Texas Administrative Code (Transportation), Chapter 11 (Design), Subchapter C (Access Connections To State Highways) and the "Access Management Manual" establish policy for the granting of access and the design, materials, and construction of driveways connecting to state highways. All driveway facilities must follow this policy. To the extent there is any conflict between this permit and the policy, the policy shall control. If a proposed driveway does not comply with the access management standards, the owner may seek a variance to a requirement contained in the access management standards by contacting the local TxDOT office.

TxDOT Driveway Permit Request Contact

For a local contact for your TxDOT Driveway Permit Request or variance request, visit: <http://www.txdot.gov/inside-txdot/district.html>. You can click on the section of the map closest to your location to find the local TxDOT office. You can also click on the drop down box below the map to find the district for your county.

Other Conditions

In addition to Items 1 thru 11 on page 1 of this permit, the facility shall also be in accordance with the attached sketch and subject to the following additional conditions stated below:

Variance Documentation Justification

For a Variance request, please indicate which of the below are applicable, as required by TAC §11.52(e):

- a significant negative impact to the owner's real property or its use will likely result from the denial of its request for the variance, including the loss of reasonable access to the property or undue hardship on a business located on the property.
- an unusual condition affecting the property exists that was not caused by the property owner and justifies the request for the variance.

For the conditions selected above, provide written justification below. (Attach additional sheets, if needed)

For TXDOT use below:

For Variance denials, please indicate which of the below conditions, as provided in TAC §11.52(e), were determined:

- adversely affect the safety, design, construction, mobility, efficient operation, or maintenance of the highway; or
- likely impair the ability of the state or the department to receive funds for highway construction or maintenance from the federal government.

Attachments:

Sketch of Installation

All Variance Documentation

Commercial and Industrial Driveway Access Request Form

Date: 08-20-2022

District:

County: Calhoun

Highway: SH 35

Limits:

1. Purpose of Request: *Explain the need for access driveway*

The road will provide ingress and egress to vehicles and equipment for access to a new road at the property from SH 35.

2. Proposed use of the property: *Operations, facilities, frequency of access use, types and sizes of vehicles for each individual year of the next three year period*

The property will be used in the near-future (anticipated schedule may begin within 45-days to 18 months to accommodate construction activities associated with construction of a nearby wetland creation area. Vehicles may include small to large trucks, dirt hauling trucks, and/or excavator/dozer-type machinery. Upon completion of construction, the road and driveways are anticipated to have minimal traffic by primarily smaller vehicles (cars and trucks).

3. Background: *Dated chronology of previous correspondence, meetings, or discussions about driveway access, identification of property zoning or approved platting, if applicable*

The property on which the road is proposed to be constructed is owned by the Calhoun Port Authority (Calhoun Navigation District). Laura Fox and Felicia Herral met with Michael Walsh and Michael Brzozowski at TxDOT office in Victoria on July 30, 2021, to coordinate TxDOT's recommendations regarding the proposed road design and plans.

4. Participant(s) in the request process: *Including as applicable city, county, developers, consultants, legal counsel, etc.*

Calhoun Port Authority (Applicant): Felicia Herral, P.E.
Lloyd Engineering, Inc. (Engineer): Owen Parker
Anchor QEA (Environmental Consultant): Laura Fox

5. Highway layout showing the requested access site and upstream/downstream roadway system and other associated access: *Attach vicinity map (surrounding area), project location map (adjacent highway/ramps and local streets), location of access breaks (in relationship to property boundaries)*

See Attached drawings by Lloyd Engineering, Inc.

Commercial and Industrial Driveway Access Request Form

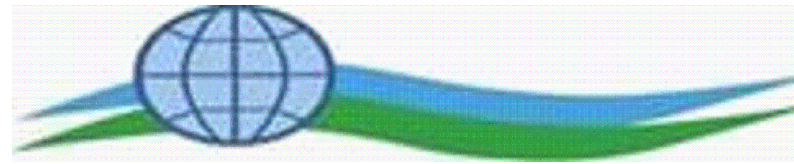
6. Existing roadway characteristics:

ADT, number/width of lanes/shoulders, posted speed, bridge structures, utility overhead and underground (location/relocation), geometrics at proposed access (Sight distance, grades, vertical/horizontal curves), pavement (structure, width, and material)

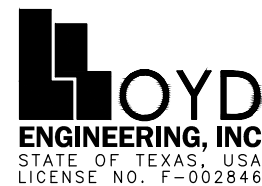
See enclosed plans.

7. Proposed driveway: *Proposed radii, throat width and length, entry/exit width*

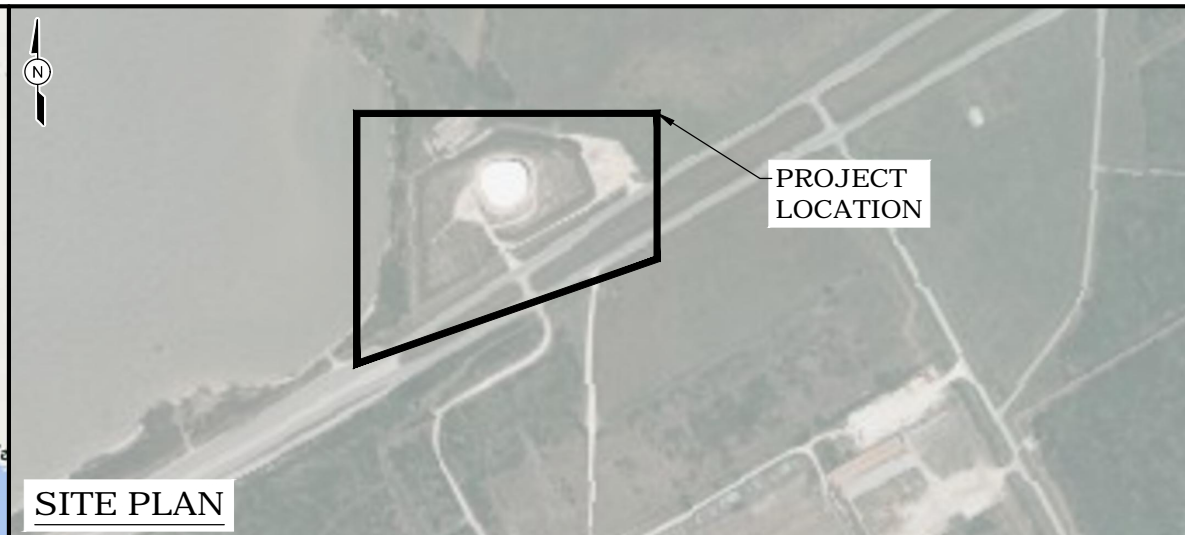
See enclosed plans.



PORT COMFORT, TEXAS
CALHOUN PORT AUTHORITY
ROADWAY ADDITION
ISSUED FOR APPROVAL
NOVEMBER 2021



FILE NAME: L:\LEI Projects\Calhoun Port Authority\Ben Trost\6.0 Drawings\FA\COVER.dwg PLOTTED: 11/17/2021 2:30:56 PM USER: EDWARD MORENO



INDEX OF DRAWINGS	
SHEET NUMBER	DRAWING NAMES
0	COVER
G1.0	GENERAL NOTES
C1.0	EXISTING SITE/CLEARING & GRUBBING
C2.0	PROPOSED LAYOUT
C3.0	ROADWAY/DRIVEWAY DETAILS
C4.0	STORM WATER PPP
C5.0	SWPPP DETAILS
C6.0	TRAFFIC CONTROL PLAN

NOTES:

- CONTRACTOR SHALL FIELD CHECK AND VERIFY ALL ELEVATIONS, COORDINATES, DIMENSIONS, EXISTING CONDITIONS, AND INFORMATION INDICATED ON THE CONTRACT DOCUMENTS PRIOR TO COMMENCEMENT OF SITE WORK. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES FOUND ON THE CONTRACT DOCUMENTS OR FOUND TO EXIST BETWEEN THE FIELD CONDITIONS AND THE CONTRACT DOCUMENTS.
- THE LOCATION AND DEPTH OF UTILITIES AND PIPELINES SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE WORK COMMENCES. PRIOR TO BEGINNING ANY EXCAVATION WORK IN THE AREA OF EXISTING UTILITIES OR PIPELINES, THE CONTRACTOR SHALL CONTACT THE UTILITY OR PIPELINE COMPANIES OWNER FOR EXACT LOCATIONS AND DEPTHS TO PREVENT ANY DAMAGE OR INTERFERENCE WITH PRESENT FACILITIES.
- THE TEXAS ONE CALL SYSTEM SHALL BE NOTIFIED 48-HOURS PRIOR TO EXCAVATING. THIS ACTION HOWEVER, SHALL IN NO WAY BE INTERPRETED AS RELIEVING THE CONTRACTOR OF THE RESPONSIBILITY UNDER THE TERMS OF THE CONTRACT AS SET OUT IN THE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY HIS OPERATIONS AT HIS OWN EXPENSE AND TO THE SATISFACTION OF THE UTILITY OR PIPELINE COMPANY INVOLVED.
- ALL EXISTING ROADWAYS AND OTHER FEATURES WHICH ARE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- WORKER SAFETY IN EXCAVATIONS AND TRENCHES SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS, 29 CFR 1926, SUBPART P - EXCAVATIONS, TRENCHING, AND SHORING. COMPLY WITH USACE-EM-385 FOR ALL ASPECTS OF CONSTRUCTION.

HORIZONTAL AND VERTICAL CONTROL:

- (PENDING)

FILL MATERIAL:

- DO NOT CONDUCT PLACEMENT OPERATIONS DURING INCLEMENT WEATHER OR WHEN EXISTING GROUND OR FILL MATERIALS EXCEED 3 PERCENT OF OPTIMUM MOISTURE CONTENT. CONTRACTOR MAY MANIPULATE WET MATERIAL TO FACILITATE DRYING, BY DISKING OR WINDROWING. EACH LAYER SHALL BE HOMOGENEOUS AND CONTAIN UNIFORM MOISTURE CONTENT BEFORE COMPACTION. MIX DISSIMILAR ABUTTING MATERIALS TO PREVENT ABRUPT CHANGES IN COMPOSITION OF FILL. LAYERS SHALL NOT EXCEED 12 INCHES OF COMPACTED THICKNESS. COMPACT TO MINIMUM DENSITY OF 90 PERCENT OF MAXIMUM DRY DENSITY AT MOISTURE CONTENT OF OPTIMUM TO 3 PERCENT ABOVE OPTIMUM AS DETERMINED BY ASTM D 698.
- UNSUITABLE MATERIAL: UNSUITABLE SOIL MATERIALS ARE THE FOLLOWING:
 - MATERIALS CLASSIFIED AS ML, CL-ML, MH, PT, OH, AND OL ACCORDING TO ASTM D 2487.
 - MATERIALS THAT CANNOT BE COMPACTED TO REQUIRED DENSITY DUE TO GRADATION, PLASTICITY, OR MOISTURE CONTENT.
 - MATERIALS THAT CONTAIN LARGE CLOUDS, AGGREGATES, STONES GREATER THAN 4 INCHES IN ANY DIMENSION, DEBRIS, VEGETATION, WASTE OR ANY OTHER DELETERIOUS MATERIALS.
 - MATERIALS THAT ARE CONTAMINATED WITH HYDROCARBONS OR OTHER CHEMICAL CONTAMINANTS.
- SUITABLE MATERIAL: INORGANIC FAT CLAYS (CH) MAY BE USED AS INORGANIC EMBANKMENT MATERIAL. WHEN REQUIRED DENSITY IS NOT ACHIEVED, REWORK, DRY OUT, USE LIME STABILIZATION OR OTHER APPROVED METHODS TO ACHIEVE COMPACTION REQUIREMENTS, OR USE DIFFERENT SUITABLE MATERIAL. MAXIMUM 9-INCH COMPACTED LIFT THICKNESS FOR CLAYEY SOILS AND MAXIMUM 12-INCH LIFT THICKNESS FOR GRANULAR SOILS. COMPACT TO MINIMUM OF 90 PERCENT OF MAXIMUM DRY DENSITY DETERMINED ACCORDING TO ASTM 698. THE LIQUID LIMIT SHALL BE 50 OR GREATER. GRADATION SHALL INCLUDE 50% OR GREATER PASSING SLEEVE 200.

CEMENT STABILIZED SAND:

- PLACE SAND-CEMENT MIXTURE IN MAXIMUM 12-INCH-THICK LOOSE LIFTS AND COMPACT TO 95% OF MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D558. TARGET MOISTURE CONTENT DURING COMPACTION IS ±3% OF OPTIMUM.
- DO NOT PLACE OR COMPACT SAND-CEMENT MIXTURE IN STANDING OR FREE WATER.
- USE SAND-CEMENT MIXTURE PRODUCING MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 150 POUND PER SQUARE INCH IN 48 HOURS.
- PROVIDE 1.5 SACK OF CEMENT PER TON OF DRY SAND. CEMENT SHALL BE TYPE 1 PORTLAND CEMENT CONFORMING TO ASTM C150.
- SAND SHALL BE CLEAN AND FREE OF ORGANICS WITH A PLASTICITY INDEX OF 4 OR LESS WHEN TESTED IN ACCORDANCE WITH ASTM D4318.

ROADWAY PREPARATION

- FOLLOWING GRUBBING AND REMOVAL OF DELETERIOUS MATTER FROM THE EXISTING SURFACE AND AFTER CUT GRADES HAVE BEEN ESTABLISHED, THE EXPOSED SOIL SHOULD BE EXCAVATED TO AT LEAST TWO FEET BELOW DESIGN TOP-OF-SUBGRADE ELEVATION OR EXISTING GRADE, WHICHEVER IS DEEPER. THE OVER-EXCAVATION SHOULD EXTEND AT LEAST 3, AND PREFERABLY 5, FEET BEYOND THE LIMITS OF THE AREA TO RECEIVE SURFACE TREATMENT. IF POOR OR DELETERIOUS MATERIAL IS ENCOUNTERED AT THE BASE OF THE 2-FOOT OVER-EXCAVATION, ADDITIONAL OVER-EXCAVATION MAY BE REQUIRED AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. THE OVER-EXCAVATION MAY BE TERMINATED IF COMPETENT NATURAL SOILS (I.E., MEDIUM DENSE SANDS OR STIFF COHESIVE SOILS) ARE ENCOUNTERED.
- OVER-EXCAVATED AREAS SHOULD BE BACKFILLED WITH PROPERLY PLACED AND COMPACTED STRUCTURAL (SELECT) FILL TO ATTAIN DESIGN TOP-OF-SUBGRADE ELEVATION. STRUCTURAL FILL MAY CONSIST OF LOW PLASTICITY COHESIVE SOILS OR SANDY SOILS. COHESIVE SOILS SHOULD HAVE A LIQUID LIMIT OF LESS THAN 40, A PLASTICITY INDEX BETWEEN 12 AND 30, AND A FINES CONTENT (I.E., PASSING THE NO. 200 SIEVE) BETWEEN 60 AND 85 PERCENT. STRUCTURAL FILL SHOULD BE FREE OF DELETERIOUS MATTER AND SHOULD HAVE AN EFFECTIVE CLOD DIAMETER LESS THAN 3 INCHES. STRUCTURAL FILL SHOULD BE PLACED IN MAXIMUM 8-INCH-THICK LOOSE LIFTS AND UNIFORMLY COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY. COHESIVE SOILS SHOULD BE PLACED AT A MOISTURE CONTENT OF 1 PERCENT "DRY" TO 3 PERCENT "WET" OF OPTIMUM AS DETERMINED BY ASTM D698 (STANDARD PROCTOR); THE MOISTURE CONTENT OF SANDY SOILS MAY BE WITHIN 3 PERCENT OF OPTIMUM. OVEREXCAVATED ONSITE SOILS MEETING THE REQUIREMENTS OF STRUCTURAL FILL MAY BE RE-USED.
- THE SUBGRADE PREPARATION SHOULD EXTEND Laterally AT LEAST 3, AND PREFERABLY 5, FEET BEYOND THE EDGES OF THE AREAS TO RECEIVE SURFACE COVER. PRIOR TO PLACEMENT OF STRUCTURAL FILL TO BRING OVER-EXCAVATED AREAS TO DESIGN TOP-OF-SUBGRADE, THE EXPOSED SOILS SHOULD BE PROOFROLLED TO IDENTIFY AREAS OF UNSUITABLE SOILS AS DISCUSSED BELOW.

PROOF-ROLLING

- FOR LARGE AND EXPOSED AREAS, PROOF-ROLLING OF THE SUBGRADE SHOULD BE PERFORMED. WE RECOMMEND THAT PROOF-ROLLING BE PERFORMED USING A FULLY-LOADED DUMP TRUCK OR WATER TRUCK WITH A WEIGHT OF AT LEAST 20 TONS AND A TIRE PRESSURE OF AT LEAST 70 PSI. DO NOT RECOMMEND USE OF OFF-ROAD EARTH MOVING EQUIPMENT, COMPACTORS, OR TRACK-MOUNTED VEHICLES FOR PROOF-ROLLING. PROOF-ROLLING SHOULD EXTEND AT LEAST 3 FEET AND PREFERABLY 5 FEET (RIGHT-OF-WAY PERMITTING) BEYOND THE FOOTPRINT OF THE STUDY SITE.
- PROOF-ROLLING SPECIFICATIONS SHOULD PROVIDE FOR RUT DEPTHS LESS THAN 1 INCH AND NO VISUAL EVIDENCE OF PUMPING. AREAS OF SUBGRADE SOILS WHERE RUTTING IN EXCESS OF 1 INCH OR PUMPING ARE OBSERVED SHOULD BE REMOVED TO EXPOSE COMPETENT SOILS AND REPLACED WITH PROPERLY COMPACTED STRUCTURAL FILL.
- SCHEDULE PROOF-ROLLING ACTIVITIES DURING A RELATIVELY DRY PERIOD. DO NOT ALLOW PROOF-ROLLING ACTIVITIES TO BEGIN DURING OR IMMEDIATELY AFTER A SIGNIFICANT RAIN EVENT. THE GEOTECHNICAL ENGINEER-OF-RECORD (GER) SHOULD BE CONTACTED TO EVALUATE THE SITE CONDITIONS IF A LARGE RAINFALL EVENT OCCURS DURING SUBGRADE PREPARATION.

SUBGRADE TREATMENT

- FOR SUBGRADE IMPROVEMENT, COHESIVE SOILS AND STRUCTURAL FILL SHOULD BE TREATED WITH LIME, WHILE COHESIONLESS (SANDY TO SILTY SOILS) SHOULD BE TREATED WITH LIME.

AGGREGATE-SURFACED AREA

- THE AGGREGATE-SURFACED PARKING/STORAGE/LAYOUT AREA SHOULD BE DESIGNED IN ACCORDANCE WITH AASHTO GUIDE FOR DESIGN OF PAVEMENT STRUCTURE (1993 EDITION), AND FEDERAL HIGHWAY ADMINISTRATION (FHWA) GRAVEL ROADS CONSTRUCTION AND MAINTENANCE GUIDE MANUAL (AUGUST 2015).

Sieve	Base Aggregate Layer	Surface Aggregate Layer
	Percent Passing	Percent Passing
1"	100	
3/4"	80 - 100	100
1/2"	68 - 91	
No. 4	46 - 70	50 - 78
No. 8	34 - 54	37 - 67
No. 40	13 - 35	13 - 35
No. 200	3 - 12	4 - 15**
Plasticity Index	0 - 6	4 - 12

LIME

- THE OPTIMUM LIME CONTENT IS THE AMOUNT OF LIME NECESSARY TO ACHIEVE A PH OF 12.0, WHILE TRYING TO ACHIEVE PLASTICITY (PI) OF LESS THAN 2.0. FOR ESTIMATION PURPOSES, ABOUT 6-8% LIME, BY DRY WEIGHT MAY BE REQUIRED.
- TYPE A - HYDRATED LIME: DRY MATERIAL CONSISTING ESSENTIALLY OF CALCIUM HYDROXIDE OR MIXTURE OF CALCIUM HYDROXIDE AND AN ALLOWABLE PERCENTAGE OF CALCIUM OXIDE AS LISTED IN CHEMICAL COMPOSITION CHART.
- TYPE B - COMMERCIAL LIME SLURRY: LIQUID MIXTURE CONSISTING ESSENTIALLY OF LIME SOLIDS AND WATER IN SLURRY FORM. WATER OR LIQUID PORTION SHALL NOT CONTAIN DISSOLVED MATERIAL IN SUFFICIENT QUANTITY TO BE INJURIOUS OR OBJECTIONABLE FOR PURPOSE INTENDED.
- TYPE C - QUICKLIME: DRY MATERIAL CONSISTING ESSENTIALLY OF CALCIUM OXIDE. MATERIALS SHALL BE FINELY-GRADED QUICKLIME FOR USE IN PREPARATION OF SLURRY FOR WET PLACING.
- CONFORM TO THE FOLLOWING REQUIREMENTS:

CHEMICAL COMPOSITION	TYPE		
	A	B	C
Active lime content, % by weight Ca(OH) ₂ +CaO	90.0 min ¹	87.0 min ²	-
Unhydrated lime content, % by weight CaO	5.0 max	-	87.0 min
Free water content, % by weight H ₂ O :	5.0 max	-	-
SIZING			
Wet Sieve, as % by weight residue retained:			
No. 6	0.2 max	0.2 max ²	8.0 max ³
No. 30	4.0 max	4.0 max ²	-
Dry sieve, as % by weight residue retained:			
1-inch	-	-	0.0
1/2-inch	-	-	10.0 max
Notes:			
1. Maximum 5.0% by weight CaO shall be allowed in determining total active lime content.			
2. Maximum solids content of slurry.			
3. Total active lime content, as CaO, in material retained on No. 6 sieve shall not exceed 2.0% by weight of original Type C lime.			

- LIME CONTAINING MAGNESIUM HYDROXIDE IS PROHIBITED.

LIME SLURRY APPLICATION

- MINIMUM LIME CONTENT SHALL BE 5 PERCENT OF DRY WEIGHT OF SUBGRADE AS DETERMINED BY ASTM D 698.
- CURE SOIL LIME MATERIAL FOR 24 TO 72 HOURS OR AS REQUIRED TO OBTAIN OPTIMUM HYDRATION. KEEP SUBGRADE MOIST DURING CURE.
- MIX AND PULVERIZE UNTIL ALL MATERIAL PASSES 13/4-INCH SIEVE; MINIMUM OF 85 PERCENT, EXCLUDING NON-SLACKING FRACTIONS, PASSES 3/4-INCH SIEVE; AND MINIMUM OF 60 PERCENT EXCLUDING NON-SLACKING FRACTIONS PASSES NO. 4 SIEVE. TEST ACCORDING TO TXDOT TEX-101-E, PART III USING DRY METHOD.
- DO NOT EXPOSE HYDRATED LIME TO OPEN AIR FOR 6 HOURS OR MORE DURING INTERVAL BETWEEN APPLICATION AND MIXING. AVOID EXCESSIVE HYDRATED LIME LOSS DUE TO WASHING OR BLOWING.

COMPACTION

- AERATE OR SPRINKLE TO ATTAIN OPTIMUM MOISTURE CONTENT TO 3 PERCENT ABOVE OPTIMUM, AS DETERMINED BY ASTM D 698 ON MATERIAL SAMPLE FROM ROADWAY AFTER FINAL MIX WITH LIME.
- START COMPACTION IMMEDIATELY AFTER FINAL MIXING.
- DO NOT ALLOW STABILIZED SUBGRADE TO MIX WITH UNDERLYING MATERIAL. CORRECT IRREGULARITIES OR WEAK SPOTS IMMEDIATELY BY REPLACING MATERIAL AND RECOMPACTING.
- COMPACT SUBGRADE TO MINIMUM DENSITY OF 95 PERCENT OF MAXIMUM DRY DENSITY, ACCORDING TO ASTM D 698, AT MOISTURE CONTENT OF OPTIMUM TO 3 PERCENT ABOVE OPTIMUM, UNLESS OTHERWISE INDICATED ON DRAWINGS.
- SEAL WITH APPROVED LIGHT PNEUMATIC TIRED ROLLERS. PREVENT SURFACE HAIR LINE CRACKING. REWORK AND RECOMPACT AT AREAS WHERE HAIRLINE CRACKING DEVELOP.

CURING

- MOIST CURE FOR MINIMUM OF 3 DAYS BEFORE PLACING BASE OR SURFACE COURSE, OR OPENING TO TRAFFIC. SUBGRADE MAY BE OPENED TO TRAFFIC AFTER 2 DAYS WHEN ADEQUATE STRENGTH HAS BEEN ATTAINED TO PREVENT DAMAGE. RESTRICT TRAFFIC TO LIGHT PNEUMATIC ROLLERS OR VEHICLES WEIGHING LESS THAN 10 TONS.
- PLACE BASE OR SURFACE WITHIN 14 DAYS AFTER FINAL MIXING AND COMPACTION. RESTART COMPACTION AND MOISTURE CONTENT OF BASE MATERIAL WHEN TIME IS EXCEEDED.

FILE NAME: L:\LEI Projects\Calhoun Port Authority\Beam Trac\G1.0 GENERAL NOTES.dwg PLOTTED: 11/17/2021 2:56:48 PM USER: EDWARD MORENO

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ISSUED FOR APPROVAL				11/02/2021
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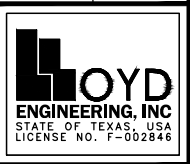
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PRELIMINARY



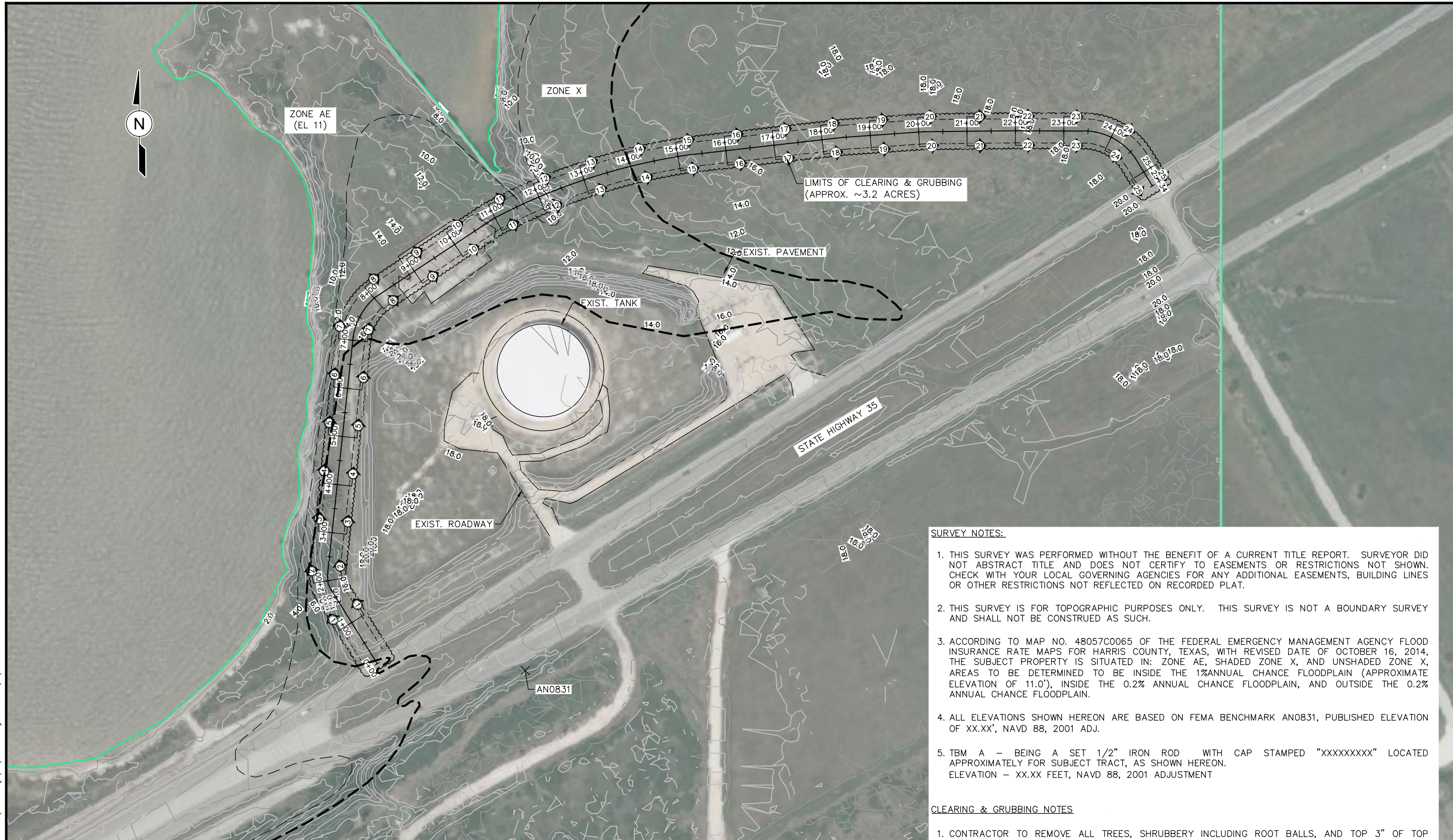
CALHOUN PORT AUTHORITY
POINT COMFORT, TEXAS

GENERAL NOTES



DESIGN BY:	CJE
DRAWN BY:	CJE
DATE:	10/29/2021
SCALE:	AS NOTED @ 22"x34"
SHEET:	G1.0 OF -
DRAWING NO:	G1.0
REV. A	

FILE NAME: L:\EI Projects\Calhoun Port Authority\Beam Trac\10 Drawings\FA\C1.0 C&G.dwg PLOTTED: 11/17/2021 2:35:03 PM USER: EDWARD MORENO



SURVEY NOTES:

1. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. SURVEYOR DID NOT ABSTRACT TITLE AND DOES NOT CERTIFY TO EASEMENTS OR RESTRICTIONS NOT SHOWN. CHECK WITH YOUR LOCAL GOVERNING AGENCIES FOR ANY ADDITIONAL EASEMENTS, BUILDING LINES OR OTHER RESTRICTIONS NOT REFLECTED ON RECORDED PLAT.
2. THIS SURVEY IS FOR TOPOGRAPHIC PURPOSES ONLY. THIS SURVEY IS NOT A BOUNDARY SURVEY AND SHALL NOT BE CONSTRUED AS SUCH.
3. ACCORDING TO MAP NO. 48057C0065 OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS FOR HARRIS COUNTY, TEXAS, WITH REVISED DATE OF OCTOBER 16, 2014, THE SUBJECT PROPERTY IS SITUATED IN: ZONE AE, SHADED ZONE X, AND UNSHADED ZONE X, AREAS TO BE DETERMINED TO BE INSIDE THE 1% ANNUAL CHANCE FLOODPLAIN (APPROXIMATE ELEVATION OF 11.0'), INSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, AND OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
4. ALL ELEVATIONS SHOWN HEREON ARE BASED ON FEMA BENCHMARK AN0831, PUBLISHED ELEVATION OF XX.XX', NAVD 88, 2001 ADJ.
5. TBM A - BEING A SET 1/2" IRON ROD WITH CAP STAMPED "XXXXXXXX" LOCATED APPROXIMATELY FOR SUBJECT TRACT, AS SHOWN HEREON. ELEVATION - XX.XX FEET, NAVD 88, 2001 ADJUSTMENT

CLEARING & GRUBBING NOTES

1. CONTRACTOR TO REMOVE ALL TREES, SHRUBBERY INCLUDING ROOT BALLS, AND TOP 3" OF TOP SOIL FROM DESIGNATED AREA.
2. THE CONTRACTOR IS REQUIRED TO REMOVE FROM THE JOB SITE AND DISPOSE OF ALL TRASH, EXCESS MATERIALS, ETC., ACCUMULATED AS A RESULT OF AND DURING THIS WORK IN COMPLIANCE WITH CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.
3. AT SUCH TIME AS DIRECTED BY THE OWNER, THE CONTRACTOR SHALL REMOVE ANY DEBRIS, TRASH OR EXCESS MATERIAL OFF THE SITE. HE SHALL MAKE EVERY EFFORT TO KEEP THE SITE IN A NEAT, PRESENTABLE CONDITION, AT ALL TIMES. AFTER THE CONSTRUCTION WORK HAS BEEN COMPLETED, THE CONTRACTOR SHALL REMOVE ALL DEBRIS, TRASH, EXCESS MATERIALS, FORMS, STAKES, EMPTY SACKS ETC. FROM THE SITE AND LEAVE THE SITE WITH A NEAT APPEARANCE. ALL EXCESS EXCAVATED MATERIAL SHALL BE HAULED OFF THE SITE.

○ EXISTING SITE
SCALE= 1:100

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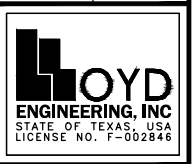
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PRELIMINARY



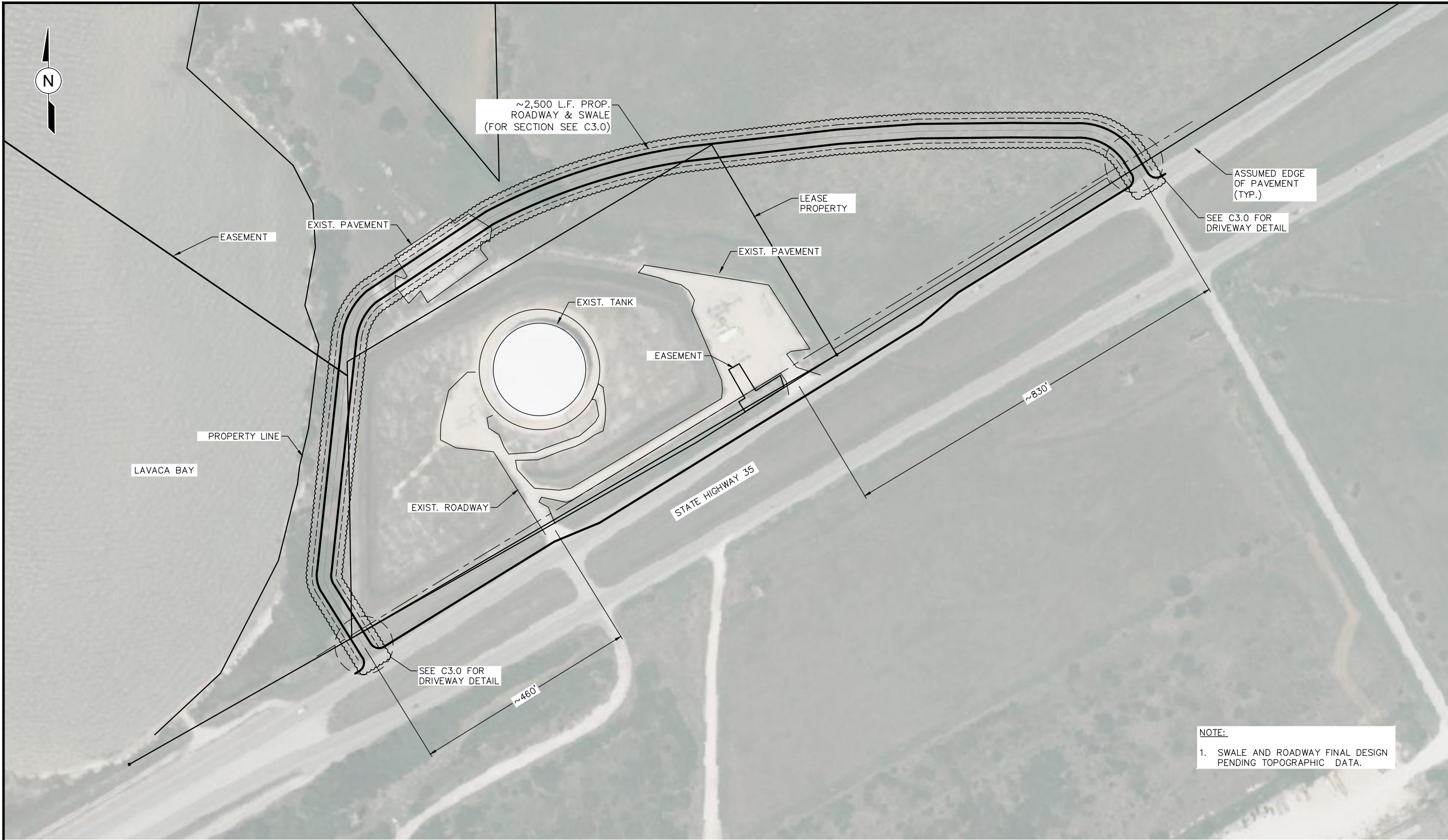
**CALHOON PORT AUTHORITY
POINT COMFORT, TEXAS**

CLEARING AND GRUBBING PLAN



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DRAWN BY:	ELM
DATE:	10/26/2021
SCALE:	AS NOTED @ 22"X34" C1.0 OF -
SHEET:	C1.0 OF -
DRAWING NO:	C1.0
REV. A	

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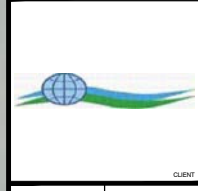


○ OVERALL PLAN
SCALE= 1:100

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A	ISSUED FOR APPROVAL	11/02/2021	-

ISSUED FOR APPROVAL

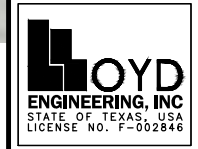
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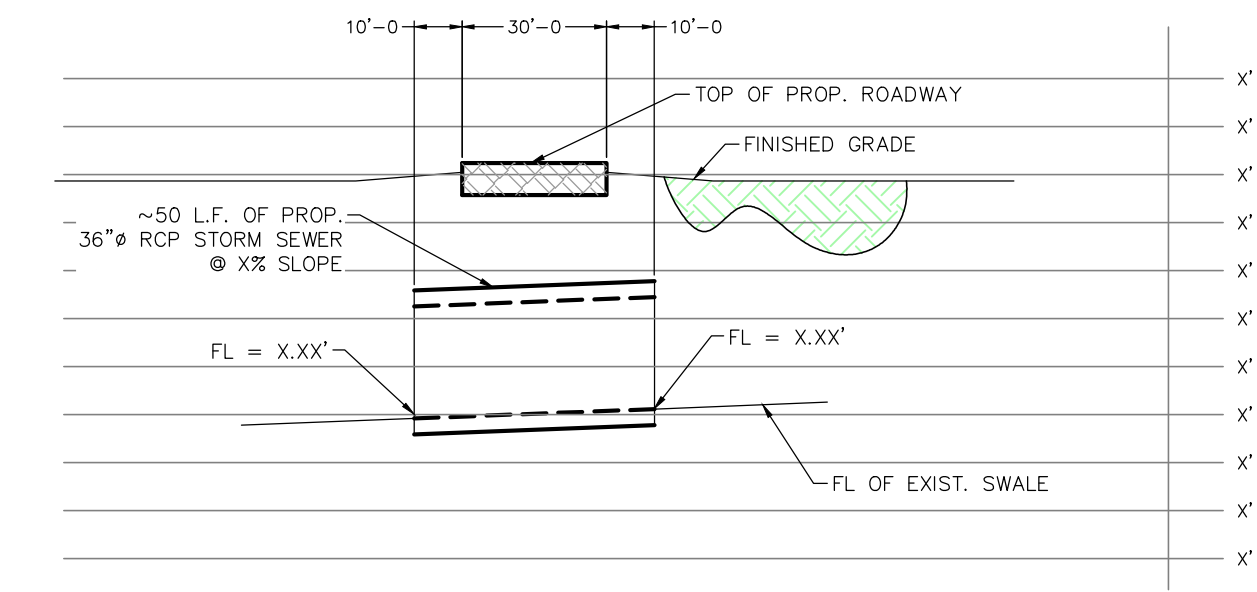
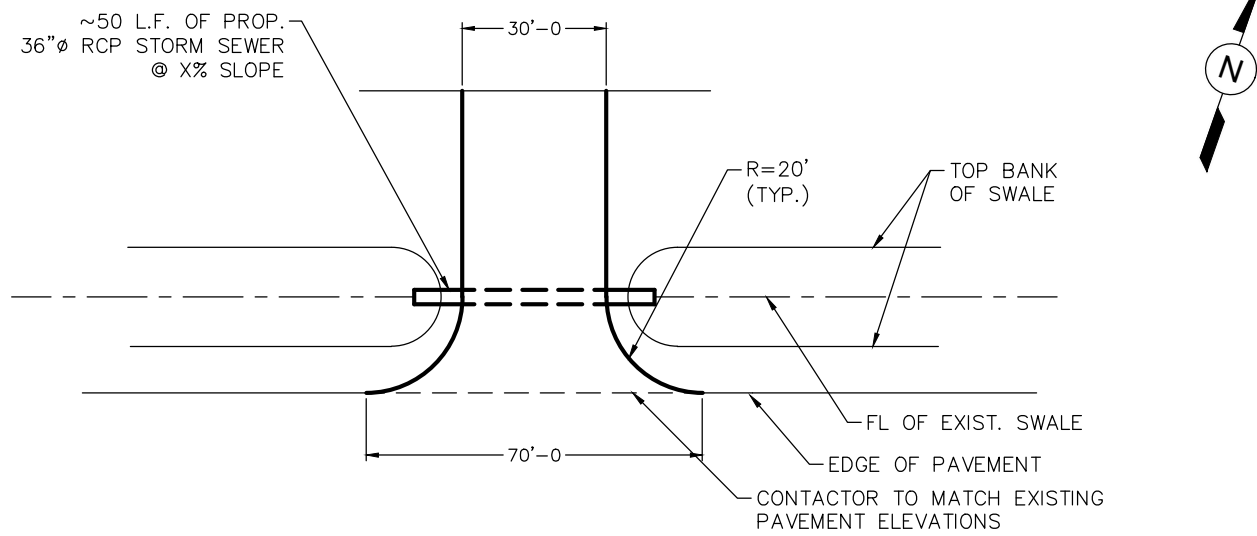
CLIENT

**CALHOUN PORT AUTHORITY
POINT COMFORT, TEXAS**

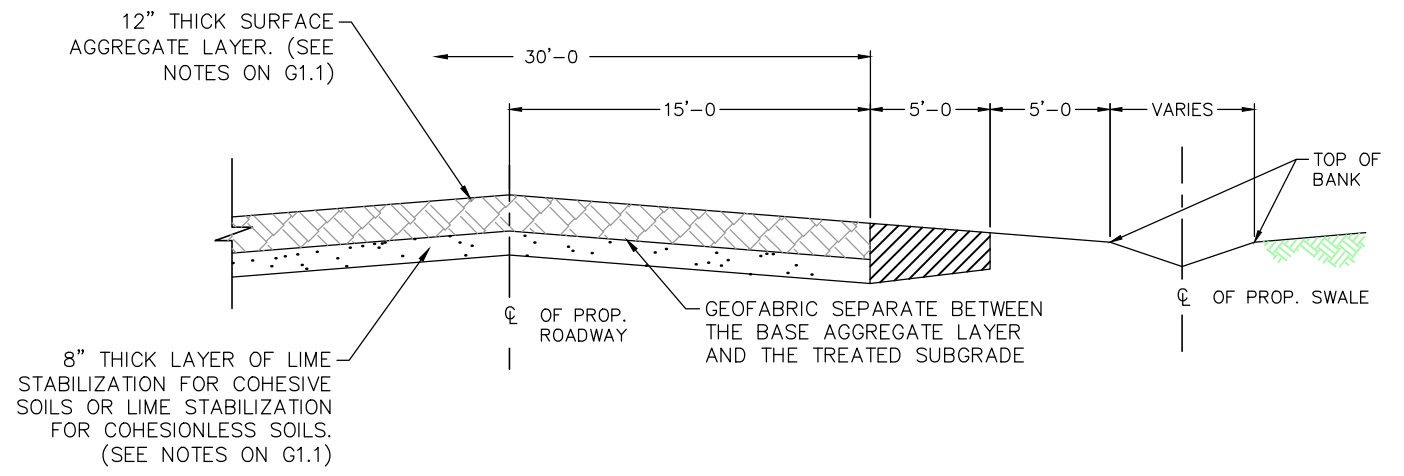
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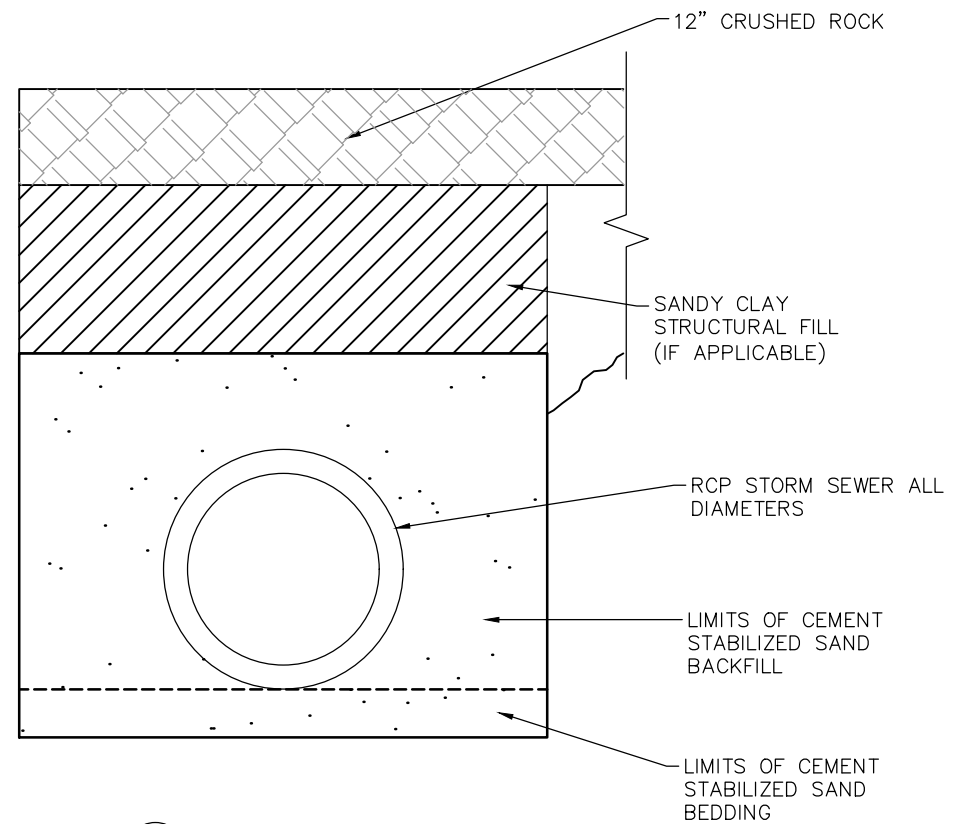
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DATE:	10/26/2021
SCALE:	AS NOTED @ 22"X34"
SHEET:	C2.0 OF -
DRAWING NO:	C2.0
REV. A	



C2.0 TYPICAL DRIVEWAY PLAN & PROFILE
SCALE= HORZ 1:20; VERT 1:2



C2.0 TYPICAL ROADWAY SECTION
N.T.S.



C3.0 BEDDING & BACKFILL DETAIL
N.T.S.

NO.	DESCRIPTION	DATE	APPR.
1	ISSUED FOR APPROVAL	11/02/2021	

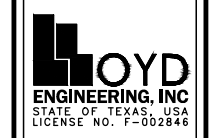
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PRELIMINARY



**CALHOUN PORT AUTHORITY
POINT COMFORT, TEXAS**

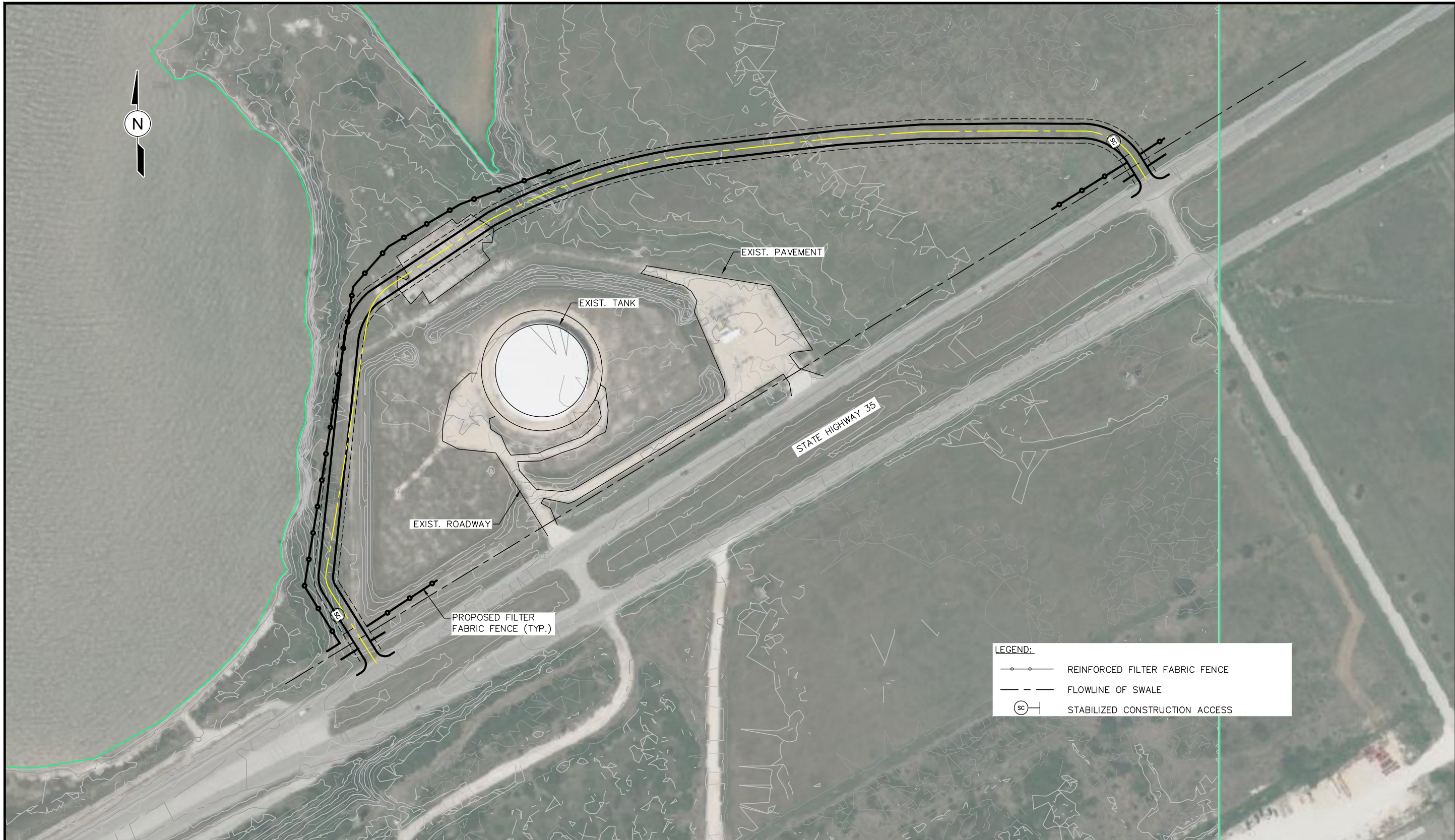
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LEGEND:

	REINFORCED FILTER FABRIC FENCE
	FLOWLINE OF SWALE
	STABILIZED CONSTRUCTION ACCESS

○ OVERALL SWPPP PLAN
SCALE= 1:100

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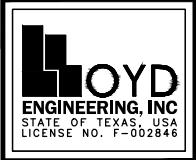
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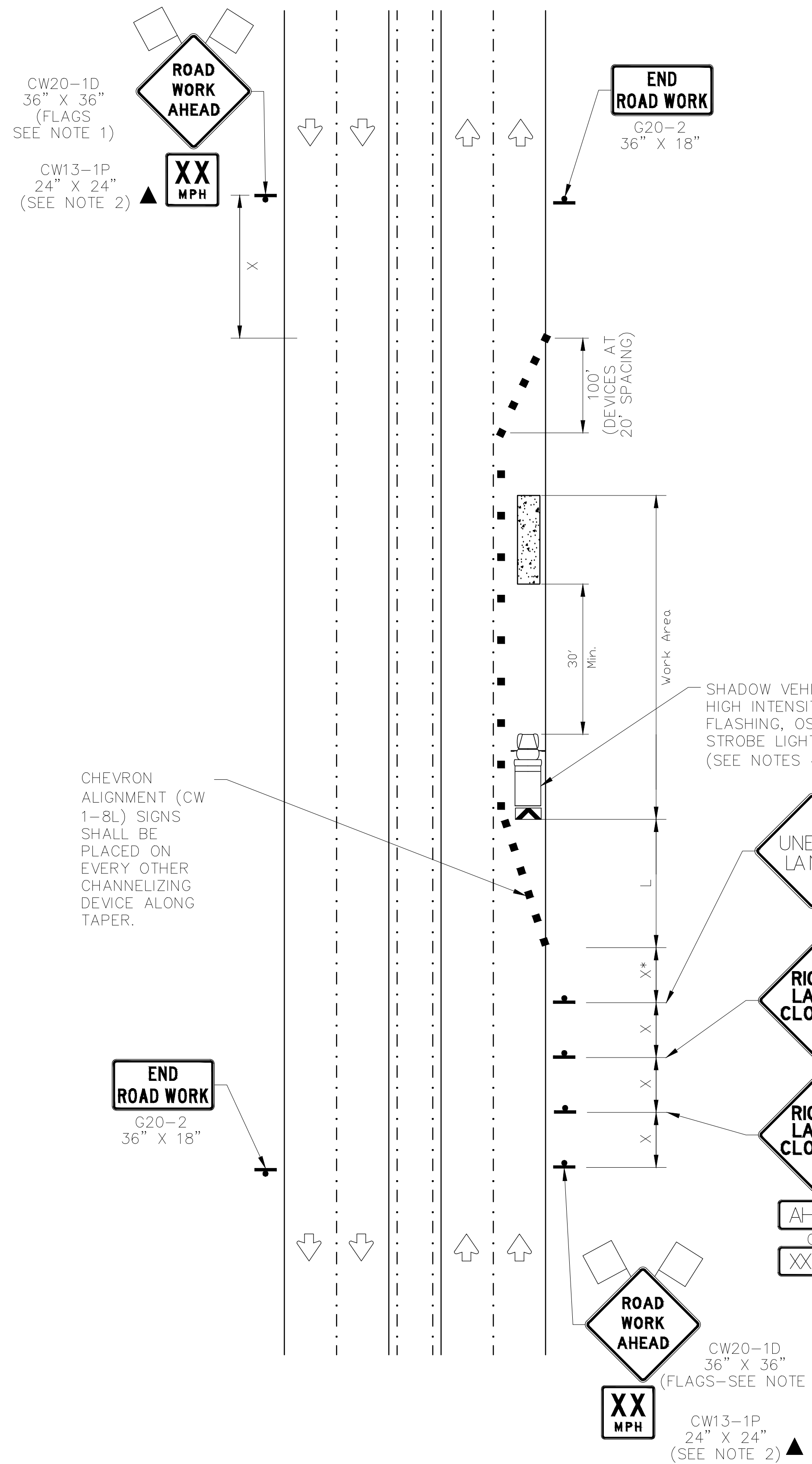
**CALHOUN PORT AUTHORITY
POINT COMFORT, TEXAS**

STORM WATER POLLUTION PREVENTION PLAN

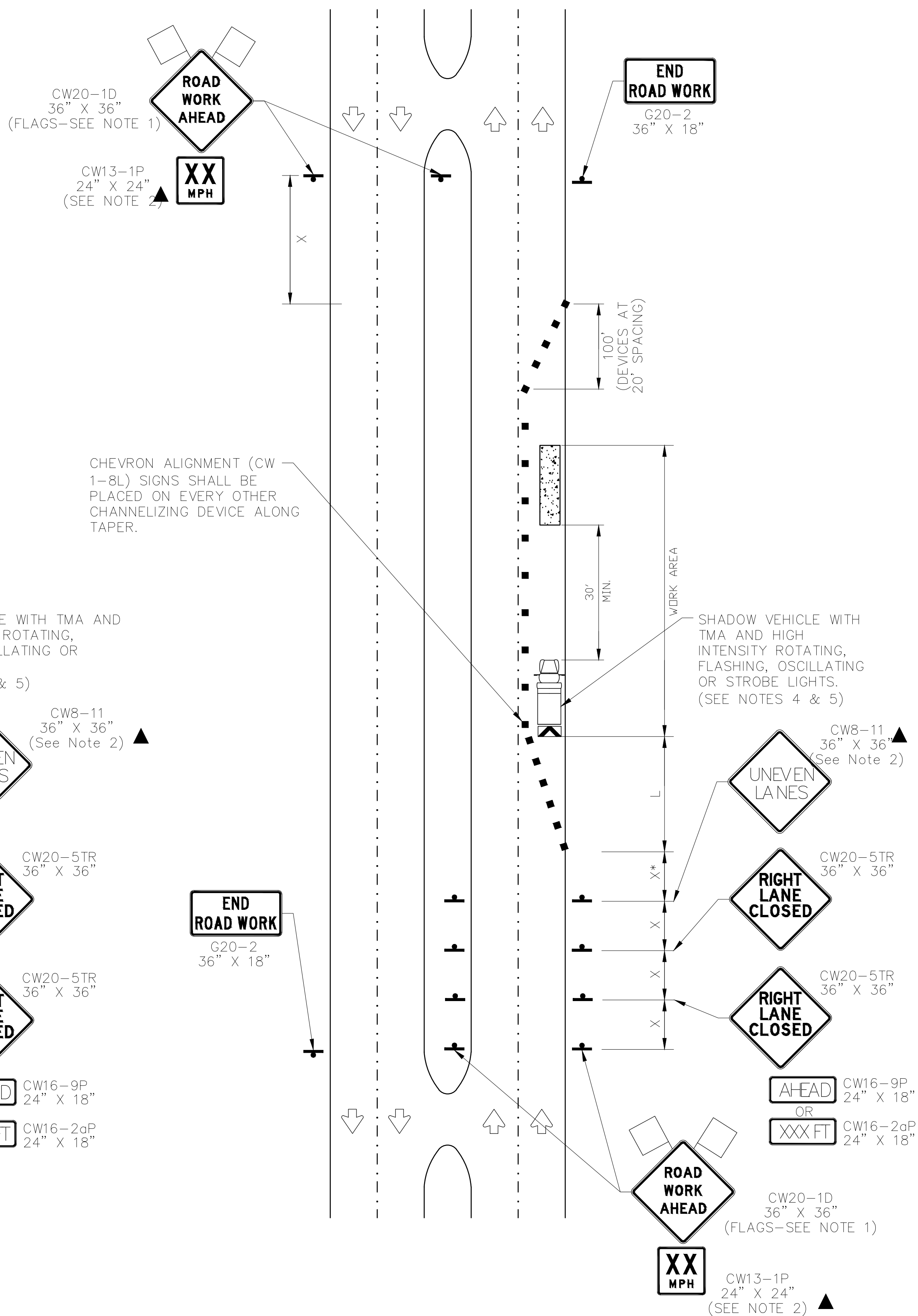


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DATE:	10/27/2021
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DRAWING NO:	C4.0
REV. A	

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RIGHT LANE CLOSURE (5 LANE ROAD)



RIGHT LANE CLOSURE (4 LANE BOULEVARD ROAD)

LEGEND			
	BARRICADE		CHANNELIZING DEVICES
	HEAVY WORK VEHICLE		TRUCK MOUNTED ATTENUATOR (TMA)
	TRAILER MOUNTED FLASHING ARROW BOARD		PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)
	SIGN		TRAFFIC FLOW
	FLAG		FLAGGER

POSTED SPEED *	FORMULA	MINIMUM DESIRABLE TAPER LENGTHS *L			SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES		MINIMUM SIGN SPACING *X* DISTANCE	SUGGESTED LONGITUDINAL BUFFER SPACE *B*
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40	L=WS	265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50	L=WS	500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60	L=WS	600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70	L=WS	700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

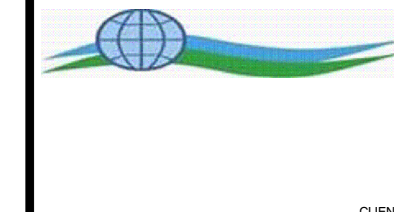
* CONVENTIONAL ROADS ONLY
 ** TAPER LENGTHS HAVE BEEN ROUNDED OFF.
 L=LENGTH OF TAPER(FT) W=WIDTH OF OFFSET(FT) S=POSTED SPEED(MPH)

GENERAL NOTES

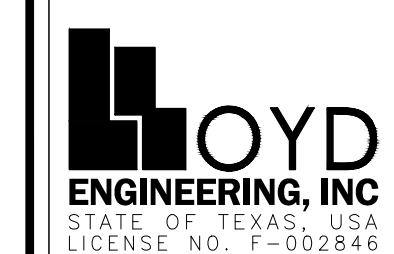
1. FLAGS ATTACHED TO SIGNS WHERE SHOWN ARE OPTIONAL.
2. ALL TRAFFIC CONTROL DEVICES ILLUSTRATED ARE REQUIRED, EXCEPT THOSE DENOTED WITH THE TRIANGLE SYMBOL ARE OPTIONAL.
3. A SHADOW VEHICLE WITH A TMA SHOULD BE USED ANYTIME IT CAN BE POSITIONED 30 TO 100 FEET IN ADVANCE OF THE AREA OF CREW EXPOSURE WITHOUT ADVERSELY AFFECTING THE PERFORMANCE OR QUALITY OF THE WORK. IF WORKERS ARE NO LONGER PRESENT BUT ROAD OR WORK CONDITIONS REQUIRE THE TRAFFIC CONTROL TO REMAIN IN PLACE, BARRICADES OR OTHER CHANNELIZING DEVICES MAY BE SUBSTITUTED FOR THE SHADOW VEHICLE AND TMA.
4. ADDITIONAL SHADOW VEHICLES WITH TMAS MAY BE POSITIONED OFF THE PAVED SURFACE, NEXT TO THOSE SHOWN IN ORDER TO PROTECT WIDER WORK SPACES.
5. CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD - LATEST EDITION WITH REVISIONS) DURING CONSTRUCTION.
6. OFF DUTY POLICE OFFICERS/FLAGGERS ARE REQUIRED TO DIRECT TRAFFIC WHEN APPLICABLE.

ISSUED FOR APPROVAL

PRELIMINARY

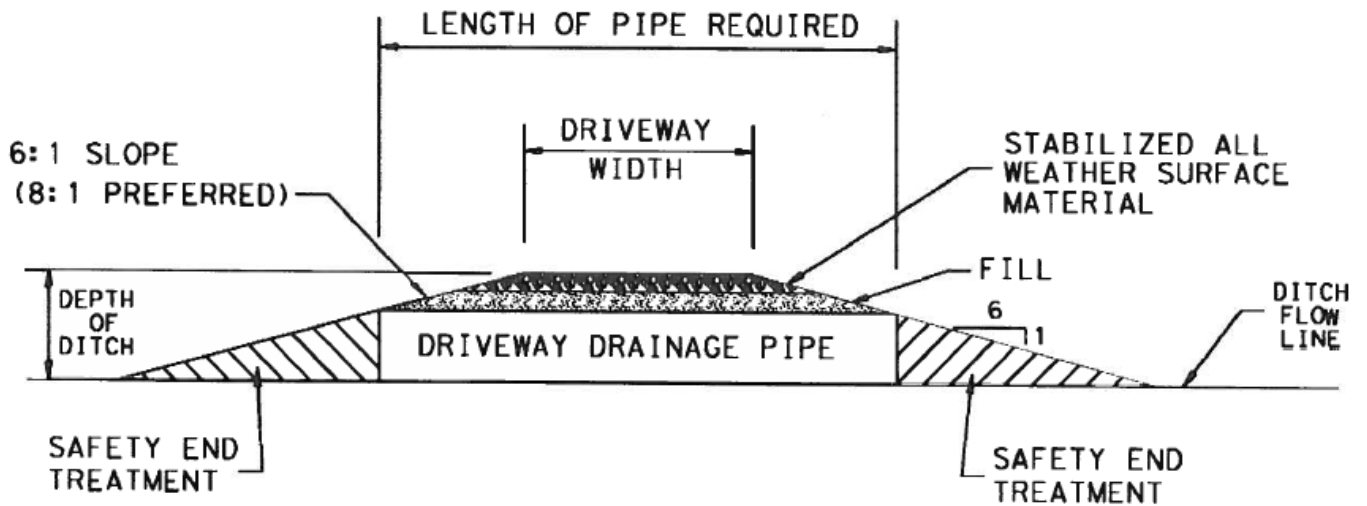


CALHOON PORT AUTHORITY
 POINT COMFORT, TEXAS
 TRAFFIC CONTROL PLAN



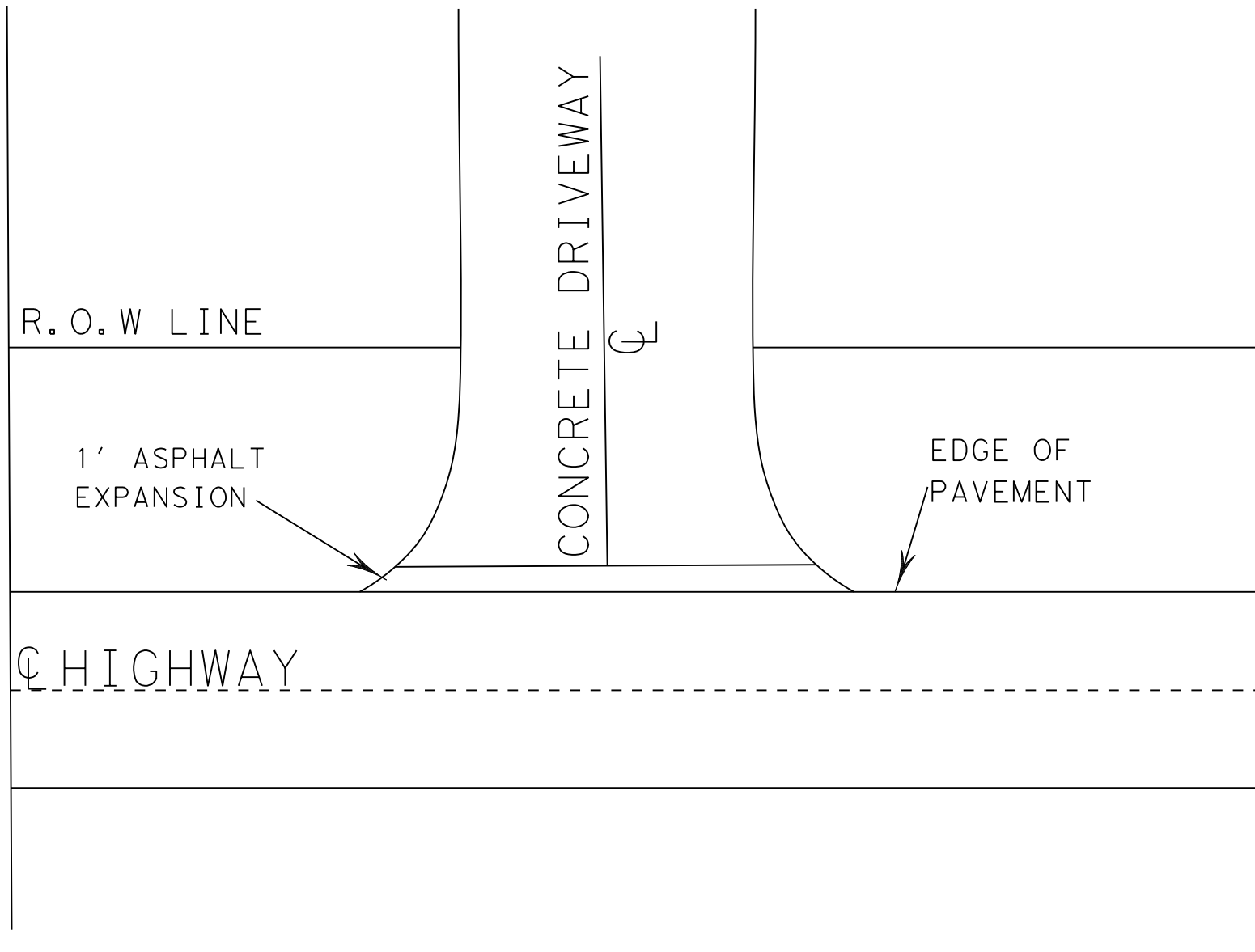
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DRAWN BY:	ELM
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DRAWING NO:	C5.0

TYPICAL DRIVEWAY CROSS SECTION (WITH PIPE CULVERT)

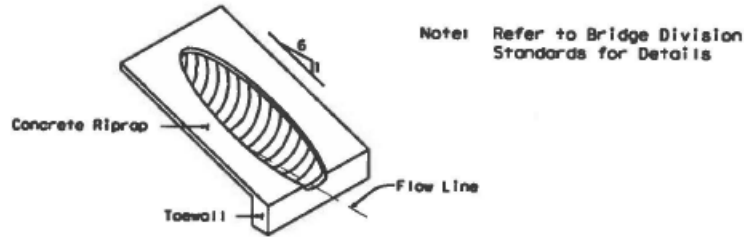


The sloped ends shall be installed the same day as the driveway pipe.

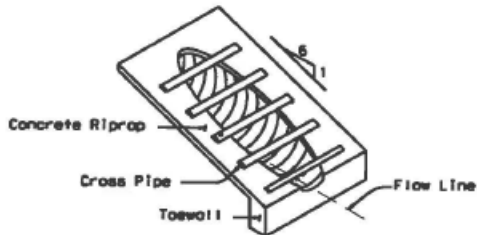
YOAKUM DISTRICT
DRIVEWAY DETAIL



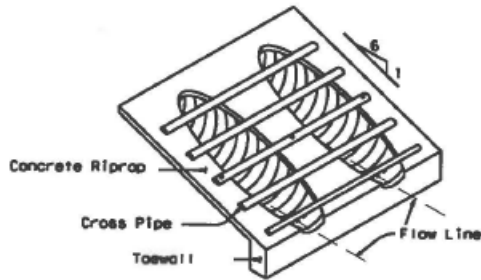
TYPICAL ACCESS DRIVEWAY
W/EXPANSION JOINT



ONE PIPE INSTALLATION WITH DIAMETER LESS THAN 30"

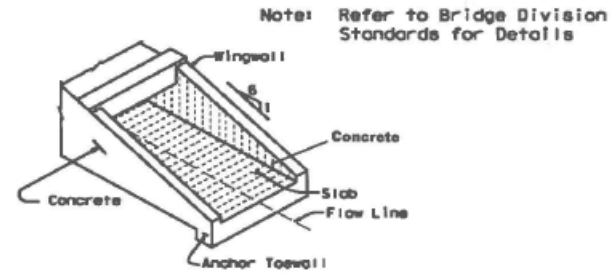


ONE PIPE INSTALLATION WITH DIAMETER 30" OR GREATER

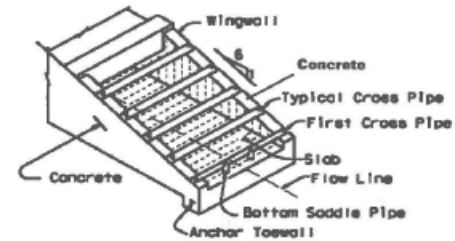


TWO PIPE INSTALLATION

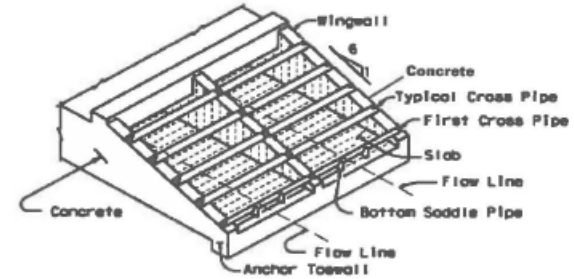
TYPICAL SAFETY END TREATMENTS FOR DRIVEWAY CULVERTS



SINGLE BOX CULVERT INSTALLATION LESS THAN 30" WIDE



SINGLE BOX CULVERT INSTALLATION 30" AND GREATER IN WIDTH

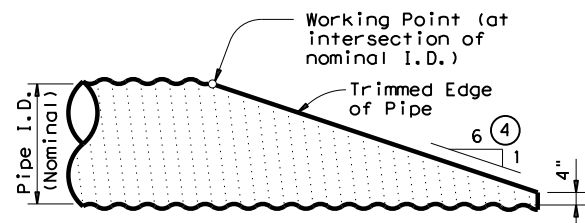


MULTIPLE BOX CULVERT INSTALLATION

TYPICAL SAFETY END TREATMENTS FOR DRIVEWAY CULVERTS

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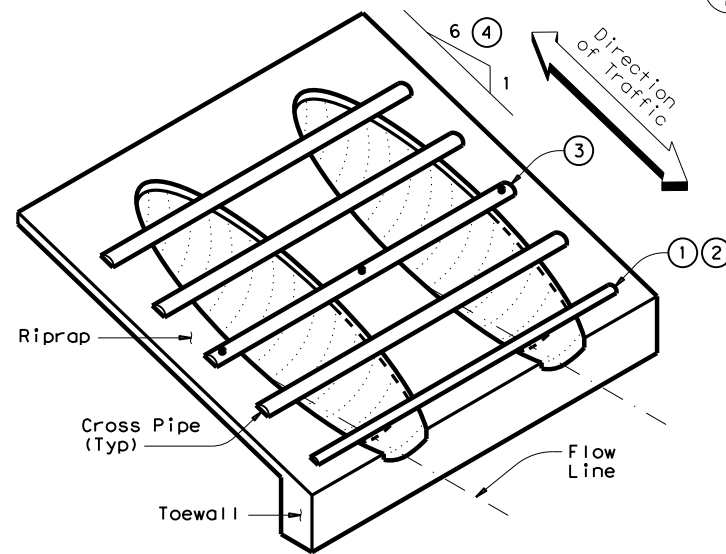
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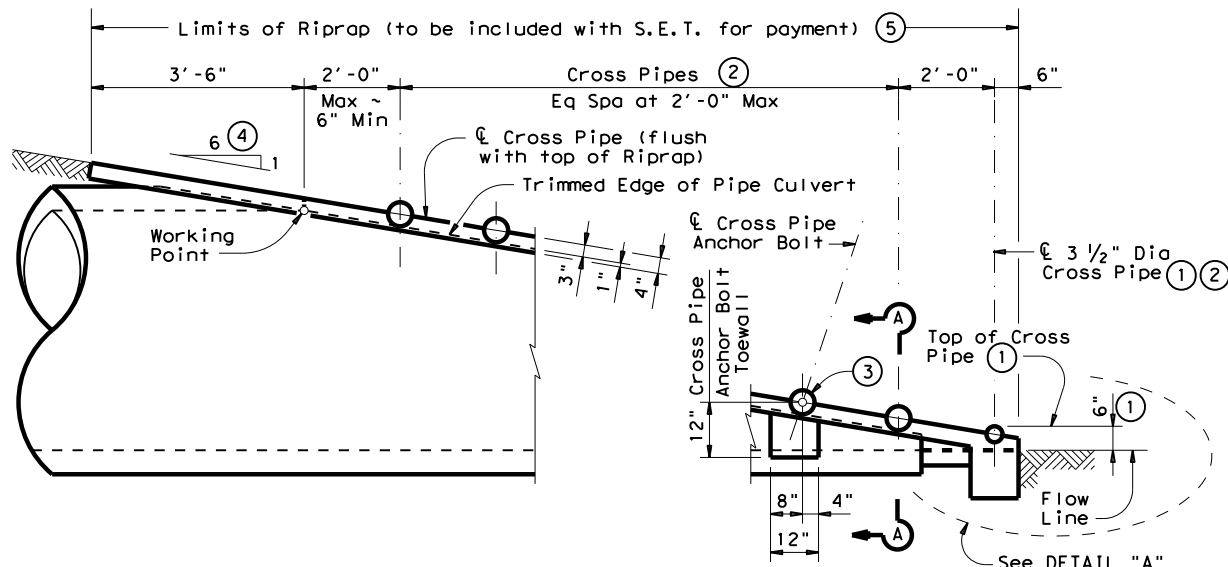
NOTE: All Cross Pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

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

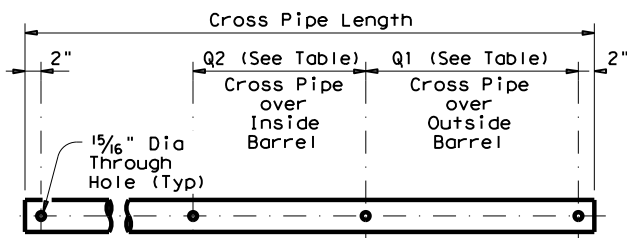


ISOMETRIC VIEW OF TYPICAL INSTALLATION

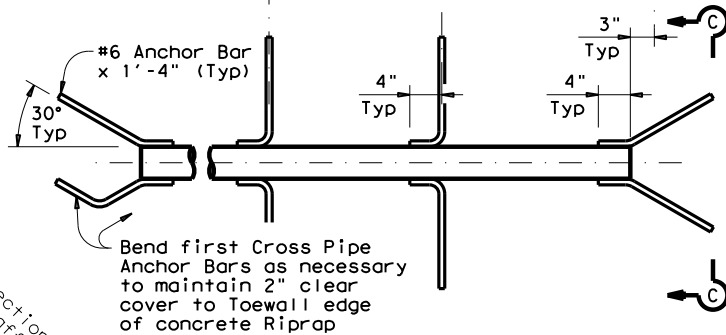


SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

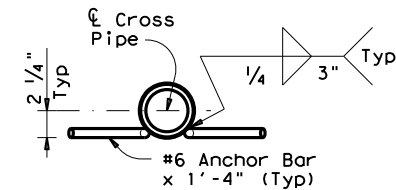
(Showing Concrete Pipe Culvert.)
(Details at Corrugated Metal Pipe Culvert are similar.)



PIPE W/ BOLTED ANCHOR

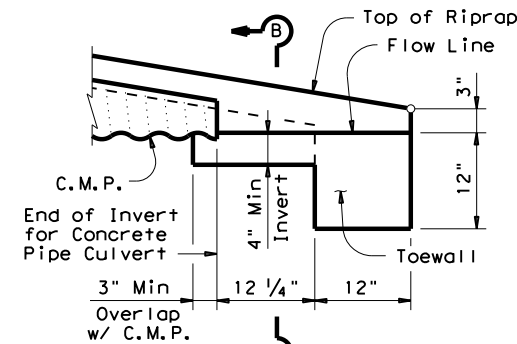


PIPE W/ ANCHOR BARS



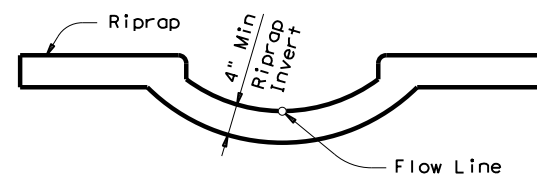
SECTION C-C

CROSS PIPE DETAILS



DETAIL "A"

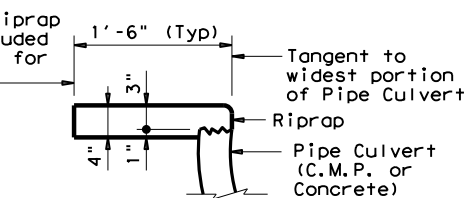
(Showing Invert with Corrugated Metal Pipe Culvert. Concrete Pipe Culvert details are similar. Cross Pipes not shown for clarity.)



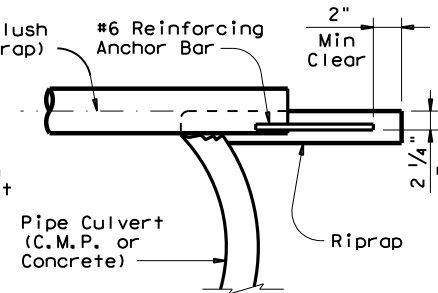
SECTION B-B

(Cross Pipes not shown for clarity.)

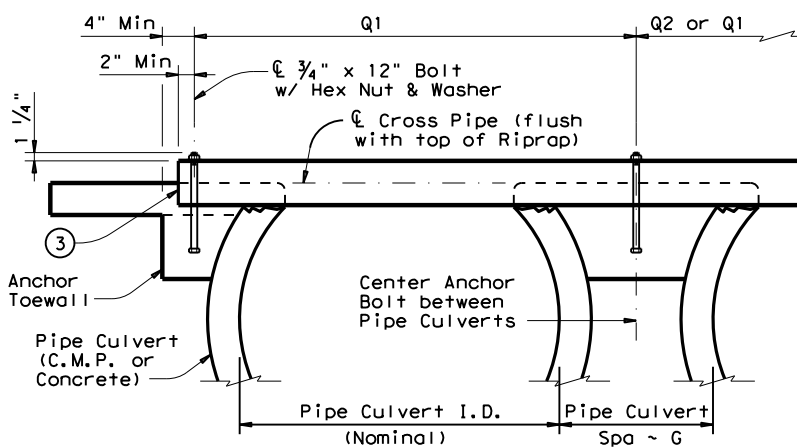
Limits of Riprap (to be included with S.E.T. for payment) ⑤



SHOWING TYPICAL PIPE CULVERT & RIPRAP



SHOWING CROSS PIPE WITH ANCHOR BAR



SHOWING CROSS PIPE WITH BOLTED ANCHOR

SECTION A-A

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, & RIPRAP QUANTITIES ②

Nominal Culvert I.D.	Conc Riprap (CY) ⑥	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for use of Cross Pipes	Cross Pipe Size
12"	0.6	9"	N/A	2'-1"	1'-9"	3 or more Pipe Culverts	3" Std (3.500" O.D.)
15"	0.7	11"	N/A	2'-5"	2'-2"		
18"	0.8	1'-2"	N/A	2'-10"	2'-8"		
21"	0.9	1'-4"	N/A	3'-2"	3'-1"		
24"	0.9	1'-7"	N/A	3'-6"	3'-7"	3 or more Pipe Culverts	3 1/2" Std (4.000" O.D.)
27"	1.0	1'-8"	N/A	3'-10"	3'-11"		
30"	1.1	1'-10"	N/A	4'-2"	4'-4"	2 or more Pipe Culverts	3 1/2" Std (4.000" O.D.)
33"	1.2	1'-11"	4'-2"	4'-5"	4'-8"	All Pipe Culverts	
36"	1.3	2'-1"	4'-5"	4'-9"	5'-1"	All Pipe Culverts	4" Std (4.500" O.D.)
42"	1.5	2'-4"	4'-11"	5'-5"	5'-10"		
48"	1.7	2'-7"	5'-5"	6'-0"	6'-7"	All Pipe Culverts	5" Std (5.563" O.D.)
54"	2.0	3'-0"	5'-11"	6'-9"	7'-6"		
60"	2.2	3'-3"	6'-5"	7'-4"	8'-3"		
66"	2.4	3'-3"	6'-11"	7'-10"	8'-9"		
72"	2.7	3'-4"	7'-5"	8'-5"	9'-4"		

- ① The proper installation of the first Cross Pipe is critical for vehicle safety. The top of the first Cross Pipe must be placed at no more than 6" above the flow line.
- ② Size of Cross Pipes, except the first bottom pipe, shall be as shown in the PIPE SIZE table. The first bottom pipe shall be 3 1/2" Standard Pipe (4" O.D.).
- ③ The third Cross Pipe from the bottom of the Culvert shall always be installed using a bolted connection. 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. At the Contractor's option, all other Cross Pipes may also be installed using the bolted connection details.
- ④ Match Cross Slope as shown elsewhere in the plans. Cross Slope of 6:1 or flatter is required for vehicle safety.
- ⑤ Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".
- ⑥ 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.

GENERAL NOTES:

Cross Pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

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 Cross Pipes.

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.

Cross 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.

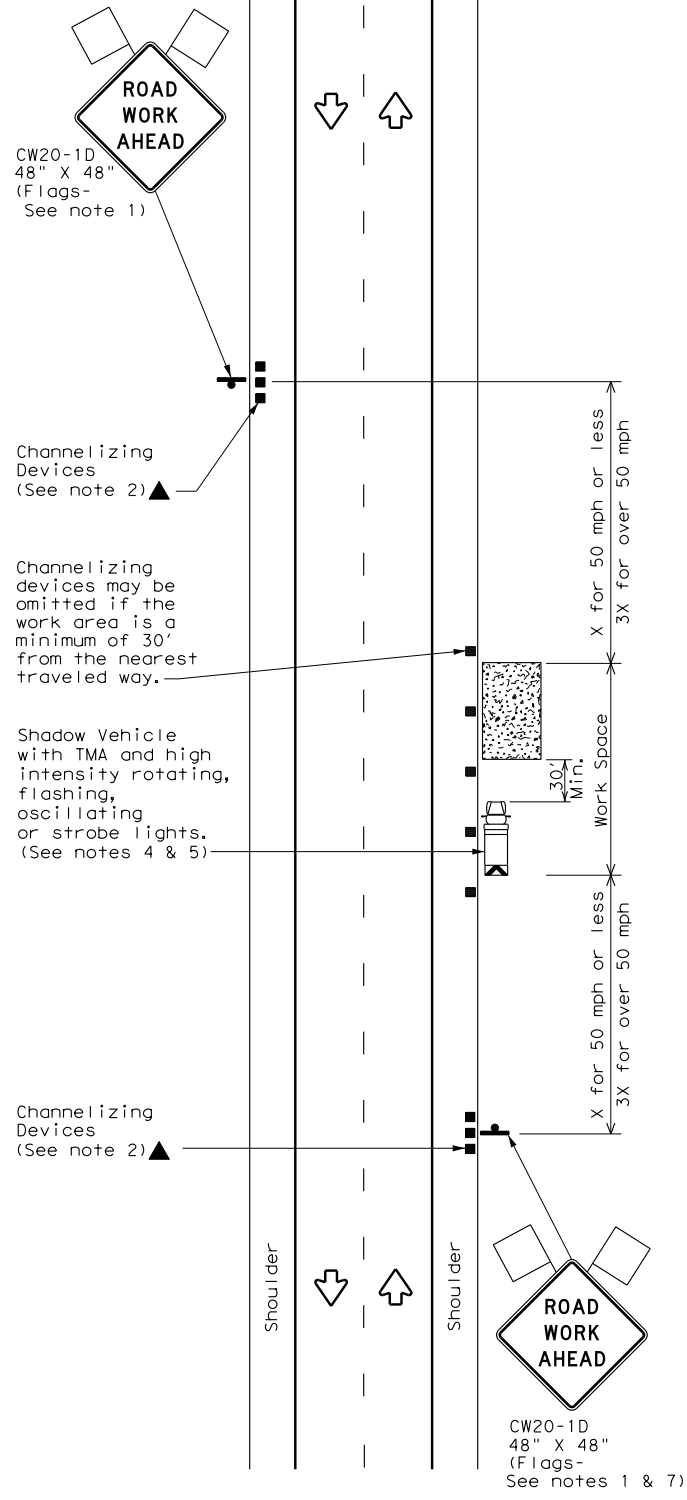
Bridge Division Standard

SAFETY END TREATMENT
FOR 12" DIA TO 72" DIA
PIPE CULVERTS
TYPE II ~ PARALLEL DRAINAGE

SETP-PD

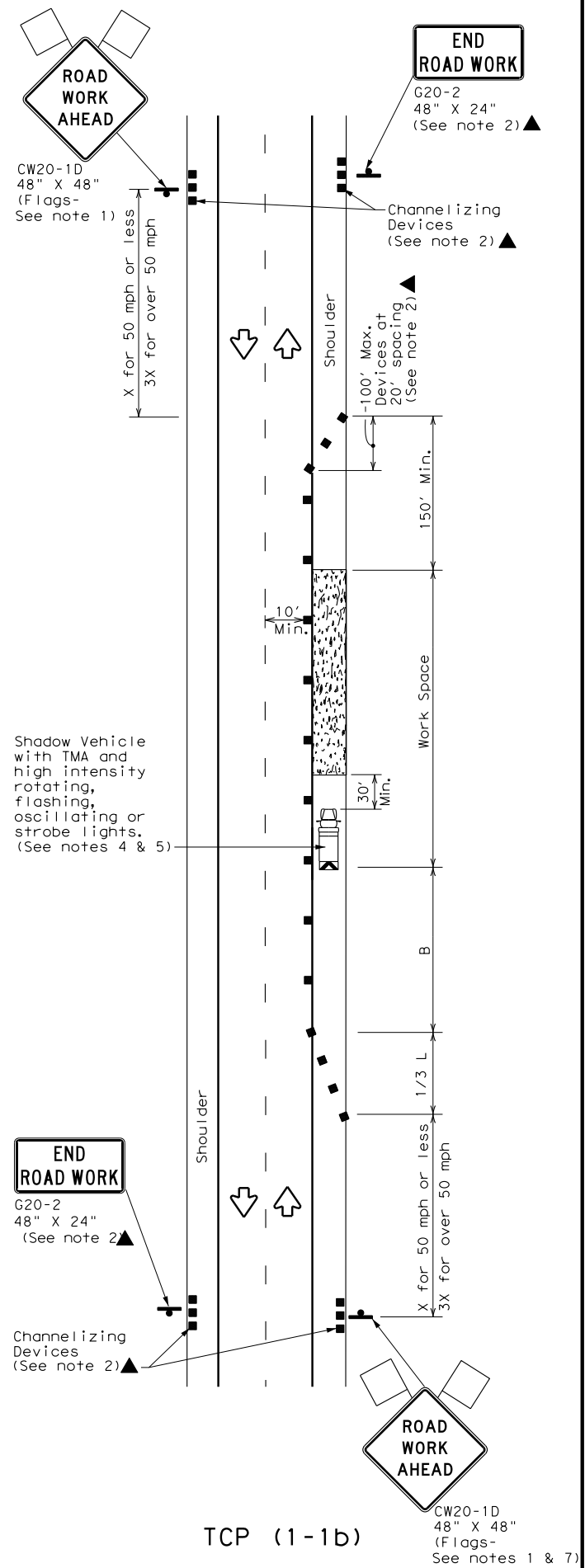
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©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY	SHEET NO.	

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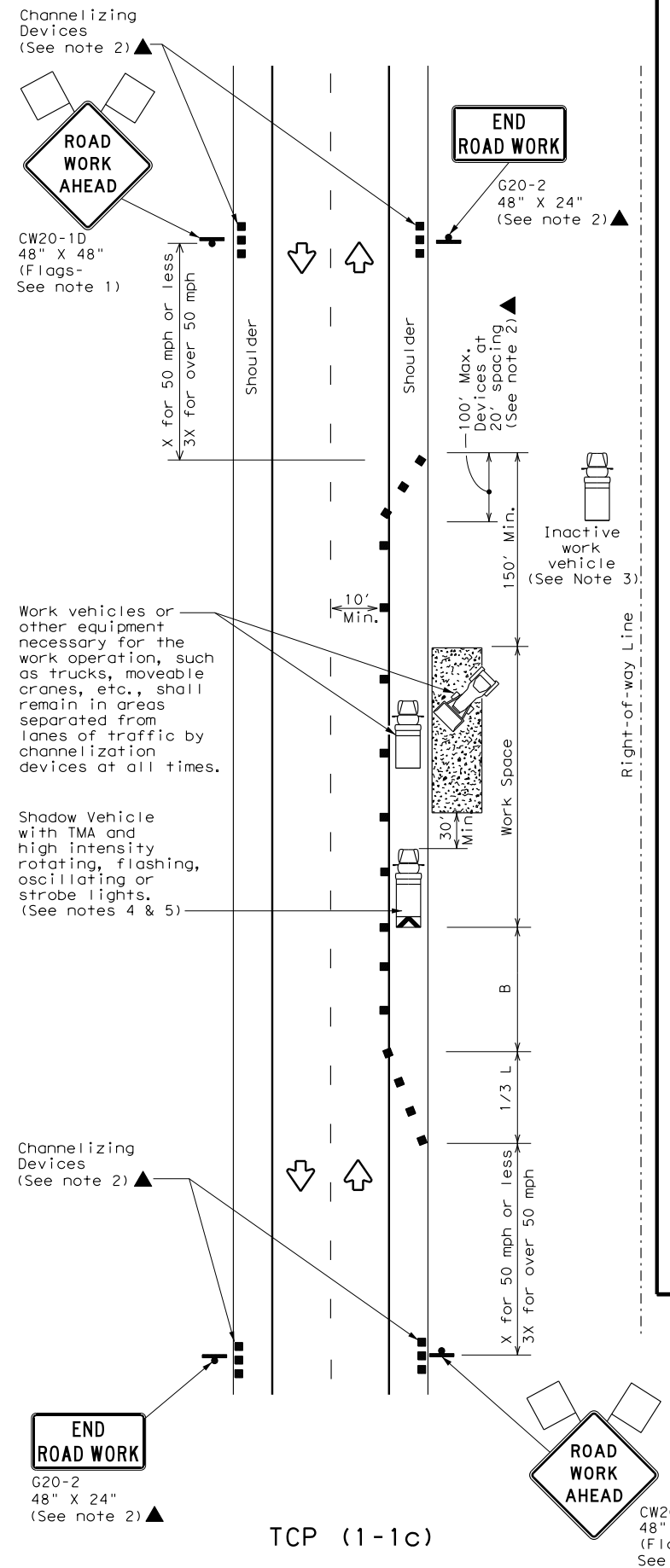
TCP (1-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (1-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only
 ** Taper lengths have been rounded off.
 L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

- GENERAL NOTES**
- Flags attached to signs where shown are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
 - See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
 - CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.



TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD
SHOULDER WORK

TCP (1-1) - 18

FILE: tcp1-1-18.dgn	DN:	CK:	DW:	CK:
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REVISIONS				
2-94 4-98				
8-95 2-12				
1-97 2-18				
DIST	COUNTY	SHEET NO.		

DATE:
FILE: