

**CITY OF CORPUS CHRISTI
ENGINEERING SERVICES
CHANGE ORDER**



CHANGE ORDER NO: 8 - COUNCIL	CHANGE ORDER DATE: 6/15/2020
PROJECT: Rodd Field Rd. - Yorktown Blvd. to Saratoga Blvd. (Bond 2014)	PROJECT NUMBER: E15112
CONTRACTOR: Haas-Anderson Construction, Ltd.	ORIGINAL CONTRACT TIME: 810 CD's
ENGINEER: LJA Engineering	

Make the following additions, modifications or deletions to the work described in the Contract Documents:

ADDITIONS	Quantity	Unit	Unit Price	Total
Master Channel 31 Changes				
E - New 8 Master Channel 31 Changes - Culvert Rehab & Replacement	1	FPP	\$ 1,436,822.00	\$ 1,436,822.00
H1 Gas Line Trench Excavation, Bedding, & Backfill	200	LF	\$ 19.00	\$ 3,800.00
H2 Pipe Trench Safety	200	LF	\$ 1.10	\$ 220.00
			Additions Total: \$	1,440,842.00
DELETIONS				
Reconciliation				
E53 Concrete Headwall	-1	EA	\$ 18,800.00	\$ (18,800.00)
E54 Concrete Wingwall	-2	EA	\$ 10,300.00	\$ (20,600.00)
E56 42" RCP Outfall Penetration Repair	-0.25	EA	\$ 3,020.00	\$ (755.00)
E58 54" RCP Outfall Penetration Repair	-0.25	EA	\$ 3,020.00	\$ (755.00)
			Deletions Total: \$	(40,910.00)
NET TOTAL OF THIS CHANGE ORDER: \$				1,399,932.00

Additional Calendar Days requested 122

Why was this Change necessary:

During construction Master Channel 31 (MC31) was inspected by the Engineer of Record, LJA, to determine the condition of the structure and what repairs, if any, would be required. It was determined that the MC31 required numerous repairs, was undersized and near the end of its useful life. LJA recommended that MC31 be removed and enlarged to accommodate future development. The Engineering and Utility Departments have reviewed the recommendation and agree.

The compensation agreed upon in this Change Order is full, complete and final payment for all costs the Contractor may incur as a result of or relating to this change whether said costs are known, unknown, foreseen or unforeseen at this time, including without limitation, any cost for delay, extended overhead, ripple or impact cost, or any other effect on changed or unchanged work as a result of this Change Order.

Original Contract Amount	\$ 15,236,240.05
Total Change Order Contingency Amount (25%)	\$ 3,809,060.01
Remaining Available Contingency Amount (including this CO)	\$ 1,767,946.30
Previously Approved Change Order Amount	\$ 641,181.71
Proposed Change Order Amount	\$ 1,399,932.00
Revised Contract Amount	\$ 17,277,353.76
Percent of Total Change Orders (including this CO)	13.40%
Original Contract Time for Substantial Completion	810 CD's
Notice to Proceed Date	11/26/2018
Original Substantial Completion Date	2/13/2021
Previously Approved Change Order Time	0 CD's
Additional Time on This Change Order	122 CD's
Revised Contract Time for Substantial Completion	932 CD's
Revised Substantial Completion Date	6/15/2021

REVIEWED BY: LJA Engineering

REQUESTED BY: Haas-Anderson Construction, Ltd.

n/a
Engineer Date

Scott Kelley Date
Project Manager

CITY OF CORPUS CHRISTI

RECOMMENDED BY: INFORMATION ONLY n/a
n/a
n/a
n/a

RECOMMENDED BY: Jeff H. Edmonds Date Michael Rodriguez Date

INFORMATION ONLY

RECOMMENDED BY: Eddie Houlihan Date Kent McIlyar Date



June 3, 2020

City of Corpus Christi
4917 Holly Rd
Corpus Christi, TX 78411
Attn: Brett Van Hazel

Re: Proposal for Master Channel 31 Changes Rev1

The price below consists of all changes at Master Channel 31 from the revised Rodd Field Road Improvements plans dated 4/30/20. This price includes all labor, equipment, and materials for the demo and install of box culverts and all other work incorporated in the plan changes.

LUMP SUM for MASTER CHANNEL 31 CHANGES **\$1,399,932.00**

In addition to the cost proposed, we request 122 calendar days be added to the Rodd Field Road Improvements contract for this additional work. I have included a breakdown of the bid items we established and a breakdown specifically of the mobilization item as requested. As requested in the meeting yesterday, 6/2/20, we have agreed to perform the bypass pumping via force account utilizing the allowance specified on this breakdown. Should you have any questions, please feel free to contact me at 361-877-2559 or via e-mail at skelley@haas-anderson.com.

Sincerely,

Scott Kelley
Project Manager

BID PROPOSAL

Biditem	Description	Quantity	Units	Unit Price	Bid Total
100	TRAFFIC CONTROL	1.000	LS	12,500.00	12,500.00
200	MOBILIZATION	1.000	LS	134,180.00	134,180.00
300	EXPLORATORY	5.000	DAY	2,900.00	14,500.00
310	12" CASED WATERLINE ADJUSTMENT IN TWO PHASES	1.000	LS	50,760.00	50,760.00
1200	REMOVE 54IN RCP	15.000	LF	92.50	1,387.50
1300	REMOVE 42IN RCP	18.000	LF	90.00	1,620.00
1400	8FTX4FT RCB DEMO AND REMOVAL	1.000	LS	86,475.00	86,475.00
1500	CONCRETE RUBBLE REMOVAL FROM SITE	275.000	CY	4.25	1,168.75
1600	ADDITIONAL SPOIL REMOVAL FROM SITE	2,550.000	CY	3.20	8,160.00
1700	WELL POINTS/ DEWATERING	300.000	LF	129.00	38,700.00
1800	MASTER CHANNEL 31 BYPASS PUMPING ALLOWANCE	1.000	LS	50,000.00	50,000.00
1900	INSTALL 8FTX5FT RCB	733.000	LF	857.00	628,181.00
2000	ROCK BEDDING DELIVERED AND PLACED	816.200	TN	72.40	59,092.88
2100	CEMENT STABILIZED SAND	785.000	CY	83.90	65,861.50
2200	MODIFICATIONS TO JB-8	1.000	LS	10,275.00	10,275.00
2300	JB-8 CONNECTION TO 8FTX5FT RCB	1.000	LS	7,275.00	7,275.00
2400	MODIFICATIONS TO JB-12	1.000	LS	9,625.00	9,625.00
2500	JB-12 CONNECTION TO 8FTX5FT RCB	1.000	LS	7,175.00	7,175.00
2600	REMOVE AND REPLACE 36IN TO PI-12	63.000	LF	157.25	9,906.75
2700	HEADWALLS (PW-1) HW=8	2.000	EA	81,310.00	162,620.00
2800	SET (TY I)(S= 7 FT)(HW= 4 FT)(2.5:1) (C)	1.000	EA	22,469.00	22,469.00
2900	CONCRETE ARTICULATED MATTING	3,177.000	SF	14.00	44,478.00
3000	PEDESTRIAN RAIL	76.000	LF	137.00	10,412.00
	Bid Total				\$1,436,822.38

Bid Items for Master Channel 31

	Unique Change Order Items	LS	1.00	\$ 1,436,822.00	\$ 1,436,822.00
	Over/Under of Existing Contract Items				
1E53	Concrete Headwall	EA	(1.00)	\$ 18,800.00	\$ (18,800.00)
1E54	Concrete Wingwall	EA	(2.00)	\$ 10,300.00	\$ (20,600.00)
1E56	42" RCP Outfall Penetration Repair	EA	(0.25)	\$ 3,020.00	\$ (755.00)
1E58	54" RCP Outfall Penetration Repair	EA	(0.25)	\$ 3,020.00	\$ (755.00)
1H1	Gas Line Trench Excavation, Bedding & Backfill	LF	200.00	\$ 19.00	\$ 3,800.00
1H2	Pipe Trench Safety	LF	200.00	\$ 1.10	\$ 220.00
	TOTAL BID				\$ 1,399,932.00
	Additional Calendar Days Requested (4 mos)	DAYS	122.00		

Cost for Item 200

Activity Resource	Desc	Pcs	Quantity Unit	MH/Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 200											
Description = MOBILIZATION			Unit =	LS	Takeoff Quan:	1.000	Engr Quan:	1.000			
100	MOBILIZATION		Quan:	1.00 LS	Hrs/Shft:	9.00	Cal:	STD WC: TX0001			
4STORM	Storm Sewer - Sub	1.00	1.00 LS		33,000.000				33,000		33,000
**Unreviewed											
9999	GENERAL CONDITIONS		Quan:	1.00 LS	Hrs/Shft:	8.00	Cal:	SAL WC: TX0001			
**Unreviewed											
3ZCONSUMABL	Misc Consumables	1.00	4.00 MO		2,000.000			8,000			8,000
3ZDUMPSTER	Dumpster	1.00	4.00 MO		750.000			3,000			3,000
3ZFIELD	Field Office and Utilities	1.00	4.00 MO		1,500.000			6,000			6,000
3ZPOPICE	POP/Ice	1.00	4.00 MO		75.000			300			300
3ZSKID	Skid-O-Can	1.00	4.00 MO		250.000			1,000			1,000
3ZWATER	Construction Water	1.00	4.00 MO		600.000			2,400			2,400
8TRHAUL	==> Equipment Haul Truck	1.00	30.00 HR		95.510				2,865		2,865
8TRPUS	==> Superintendent Pickup	1.00	4.00 MO		955.130				3,821		3,821
TLB	==> Truck Driver Lowboy	1.00	30.00 MH		24.780	1,152					1,152
ZGS	==> General Superintendent	1.00	4.00 MO		1,000.000	4,000					4,000
ZPM	==> Project Manager	1.00	4.00 MO		2,500.000	10,000					10,000
ZSUPT	==> Superintendent	1.00	4.00 MO		6,500.000	26,000					26,000
ZSURVEY	==> Survey Crew	1.00	15.00 DAY		1,200.000	18,000					18,000
\$86,538.08	30.0000 MH/LS		30.00 MH		[58743.4]	59,152		20,700	6,686		86,538
====> Item Totals: 200 - MOBILIZATION											
\$119,538.08	30.0000 MH/LS		30.00 MH		[58743.4]	59,152		20,700	6,686	33,000	119,538
119,538.080	1 LS					59,152.27		20,700.00	6,685.81	33,000.00	119,538.08
\$119,538.08	*** Report Totals ***		30.00 MH			59,152		20,700	6,686	33,000	119,538

CITY OF CORPUS CHRISTI
CAPITAL TRANSFER OF FUNDS/ NEW CIP BUDGET

NOTE/COMMENT

STANDARD/DETAIL BUDGET

TRANSFER FROM

Accounting Unit (Fund-Org-ME)	FUND	ACTIVITY	ACCOUNT CATEGORY	Account	Amount
4532-043	StrmWtr 2020	500030	Budget (Reserve Appropriation)	550030	\$ (700,000.00)
Total Transfer From:					\$ (700,000.00)

TRANSFER TO

Accounting Unit (Fund-Org-ME)	FUND	ACTIVITY	ACCOUNT CATEGORY	Account	Amount
4532-043	StrmWtr 2020	E15112	50910 Construction	550910	\$ 700,000.00
Total Transfer To:					\$700,000.00

Reason for Transfer:

For culvert rehab and replacement associated with project E15112 Rodd Field Rd Expansion

Prepared by: RG
 Department Head: [Signature] Date: 24 JAN 2020

OMB Use Only
Entered By:
Date:

Index:	Account Category
Design (Outside Consultants)	50950
Testing	50920
Inspection	90925
Construction	50910
Professional Services	30000
Engineering Allocation	48130
Administrative Svcs Charges	48520
Contingency (Incidental Expense)	50970
Miscellaneous Charges (print, ads, etc)	40250
Land - Capital Outlay	50050
Buildings - Capital Outlay	50060

Please make sure all other departments are copied on transfers and any attached documentation as may be necessary.

CITY OF CORPUS CHRISTI
CAPITAL TRANSFER OF FUNDS/ NEW CIP BUDGET

NOTE/COMMENT

STANDARD/DETAIL BUDGET					
TRANSFER FROM					
Accounting Unit (Fund-Org-ME)	FUND	ACTIVITY	ACCOUNT CATEGORY	Account	Amount
4532-043	StrmWtr 2020	500030	Budget (Reserve Appropriation)	550030	\$ (700,000.00)
Total Transfer From:					\$ (700,000.00)

TRANSFER TO					
Accounting Unit (Fund-Org-ME)	FUND	ACTIVITY	ACCOUNT CATEGORY	Account	Amount
4532-043	StrmWtr 2020	E15112	50910 Construction	550910	\$ 700,000.00
Total Transfer To:					\$700,000.00

Reason for Transfer:

2nd Tsfr: Quote for work from Haas-Anderson (\$1,399,932) for culvert rehab and replacement associated with project E15112 Rodd Field Rd Expansion

Prepared by: RG
 Department Head: [Signature] Date: 6/9/2020
 OMB Use Only
 Entered By:
 Date:

Index:	Account Category
Design (Outside Consultants)	50950
Testing	50920
Inspection	90925
Construction	50910
Professional Services	30000
Engineering Allocation	48130
Administrative Svcs Charges	48520
Contingency (Incidental Expense)	50970
Miscellaneous Charges (print, ads, etc)	40250
Land - Capital Outlay	50050
Buildings - Capital Outlay	50060

Please make sure all other departments are copied on transfers and any attached documentation as may be necessary.

CULVERT INSPECTION REPORT – MASTER CHANNEL 31-RODD FIELD ROAD CROSSING

FOR:

RODD FIELD ROAD
IMPROVEMENTS
YORKTOWN BOULEVARD TO
SARATOGA BOULEVARD
(BOND 2014)
CITY PROJECT NO. E15112

PREPARED BY:



LJA Engineering, Inc.

TBPE F-1386/TBPLS 10104001
5350 S. STAPLES STREET, SUITE 425
CORPUS CHRISTI, TEXAS 78411
PHONE: 361.991.8550
WWW.LJA.COM



Jeffrey C. Coym 1/13/2020

JANUARY 13, 2020

Culvert Inspection Report
Rodd Field Road Expansion – Saratoga to Yorktown, Project No. E15112

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Exhibit 1: Opinion of Probable Construction Costs of All Three Options

Culvert Inspection Report

Rodd Field Road Expansion – Saratoga to Yorktown, Project No. E15112

1. INTRODUCTION

A. PROJECT BACKGROUND & PURPOSE

LJA Engineering was engaged by the City to perform an onsite inspection of the existing five, 4'x8' reinforced concrete box structure crossing under Rodd Field Road at the Master Channel 31 crossing. The purpose of this inspection was twofold. First to determine if the existing structure could be repaired to a serviceable condition and determine the associated cost to do so. Second was to determine the new load rating on the structure given the change in conditions due to on-going Rodd Field Road improvements. Two inspections were performed, one on December 13, 2019 and a subsequent one on December 18, 2019.

2. INSPECTIONS

A. DISCUSSION AND OBSERVATIONS OF FIRST INSPECTION ON DECEMBER 13, 2019

LJA personnel arrived on site at 2 pm and met Greg Mayer. Previously, we discussed proposed City plans for road over this culvert. The project is lowering the elevation of the existing road at that location by 2-3 feet. The culvert will be left with approximately 2 feet of cover plus 11 inches of base and 8 inches of hot-mix. The channel running through the structure always has water present. It empties into nearby Oso Bay. Normally, the channel conveys fresh water but at times the tide will bring in salt water. The contractor attempted to de-water the structure so we could inspect thoroughly. They were not quite successful because there was still about 9 inches of water present making it difficult to maneuver through each box to sound the walls and visually inspect. There was no visibility for the floor and bottom 9 inches of the walls. We were able to sound about 15 feet into the middle and two adjacent boxes (not the outer boxes) on the upstream and downstream sides. The bottom side walls emitted a hollow ring indicating delamination at a height of 2 feet. The downstream headwall has a spall on the sidewall of the middle box with severe steel deterioration as shown in the photo below.



The two outer boxes had silt mounds blocking the outflow of water (downstream). Based on what was visible and that LJA personnel could verify, the overall score of this structure would be a 6. The headwall spall and delamination inside the walls is repairable but at an extensive cost. The repair assumption was made based on what could be seen and verified during the first inspection.

Culvert Inspection Report
Rodd Field Road Expansion – Saratoga to Yorktown, Project No. E15112

We understand the spall damage on the side walls has turned out to be extensive at another similar site and this could happen at this site. Therefore, complete dewatering, removal of interior debris and complete re-inspection was deemed necessary.

B. DISCUSSION AND OBSERVATIONS OF SECOND INSPECTION ON DECEMBER 18, 2019

During this subsequent visit the middle box was completely de-watered and cleaned out. Greg and LJA personnel were able to crawl through the box visually inspecting (sounding) the walls, floor and ceiling. Overall this box is in good shape. We did, however, notice small new spalls and repaired spall that were coming loose. No exposed re-bar was seen inside the box. There was some honey combing mostly where the floor meets the wall. This was due to construction techniques (poor consolidation). The floor does not have a clean slope from beginning to end. There were a few high spots noticed. Not a big issue.



We also noticed small transverse cracks on the ceiling in the section that current construction is going on overhead.

Salt water backflows into the channel and through the structure at high tide. The flowline elevation of the culvert is 5.5 ft. and 100 ft. downstream in the channel, elevation is 8 ft. Due to this obstruction, the structure constantly ponds water, worsening the situation.

Culvert Inspection Report
Rodd Field Road Expansion – Saratoga to Yorktown, Project No. E15112

3. RESEARCH INFORMATION

A. LIFE CYCLE ANALYSIS OF EXISTING STRUCTURE

New NHI software titled Life 365® (FHWA Service Life & Life Cycle Analysis program), which predicts effects of salt/chlorides on the lifespan of concrete structures was used to evaluate this structure. Given that the existing structure was constructed in 1987 with normal concrete and rebars. The software indicated a shortened lifespan of 8.6 years from today before future repairs would be necessary due to the continued deterioration of the concrete and steel (Base Case, shown below). The concrete materials used to construct these culverts back in 1987 were lacking Flyash and Rust Inhibitor Admixtures used in today's concrete mixes. This is causing the deterioration as mentioned. If this structure would have used today's concrete mixes, the program indicated that it would still have a service life of approximately 21.4 years (Alternative 1, shown below).

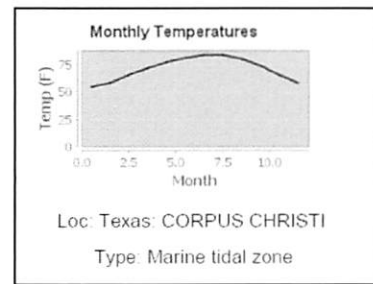
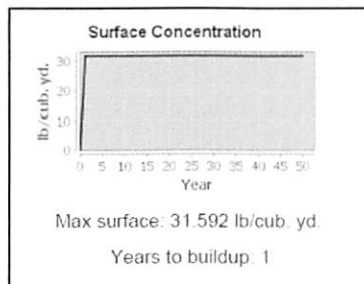
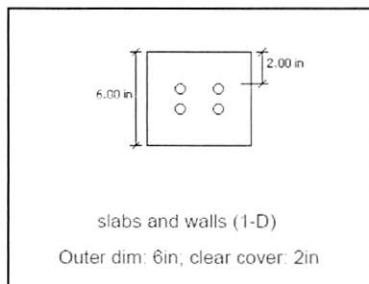
Life-365 v2.2 - Concrete Mixes and Service Lives

Project: Rodd Field Rd

Description: Bridge Class Culvert (5 - 8' x 4' x 100')

Analyst: Lewis Gamboa, P.E.

Date: 12/31/2019



Concrete Mixes

Alt name	User?	w/cm	SCMs	Inhib.	Barrier	Reinf.
Base case		0.42				Black Steel
Alternative 1		0.42	Class F Fly Ash (30%);	Ca Nitrite - 2 gal/cub. yd		Black Steel

"n/a" indicates that, since the user is specifying the diffusion properties of this mix, this value is not specified

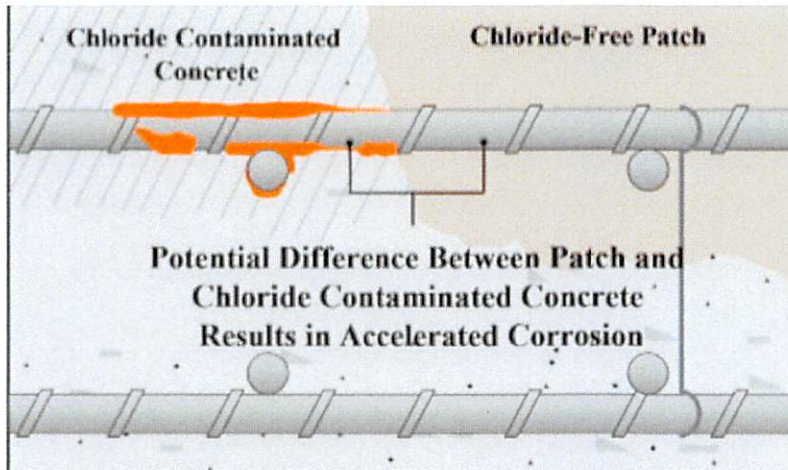
Diffusion Properties and Service Lives

Alt name	D28	m	Ct	Init.	Prop.	Service life
Base case	1.38E-8 in ² /in/sec	0.2	1.97 lb/cub. yd.	2.6 yrs	6 yrs	8.6 yrs
Alternative 1	1.38E-8 in ² /in/sec	0.44	5.92 lb/cub. yd.	15.4 yrs	6 yrs	21.4 yrs

"->" indicates that the user has directly specified this value. "+" indicates the service life exceeds the study period.

Culvert Inspection Report Rodd Field Road Expansion – Saratoga to Yorktown, Project No. E15112

The take away from this is that even if the existing deficiencies obvious today are repaired, the adjacent areas may be compromised and in need of additional repairs of the same magnitude in less than a decade. The following schematic illustrates this condition.



B. LOAD RATING

The load rating from previous inspection reports (June 9th, 2017) reflects an Inventory Rating of HS 15; and Operating Rating of HS 20 based on; *TxDOT Bridge Inspection Manual, Chapter 5 Ratings and Load Posting, Section 3 Load Ratings.*

Rating Concrete Bridges with No Plans

A concrete bridge with unknown reinforcing details (no plans) can be rated for the State Legal Load (HS-20) at the Operating Level, which is currently defined for load rating purposes as an HS-20 design load, provided that the following two considerations are met:

- *It has been carrying unrestricted traffic for many years*
- *There are no signs of significant distress*

During the inspection, the culvert boxes exhibited some noted distresses that include concrete cracking, spalling, and delamination. Even though these can be repaired, the Load Rating in our professional opinion should be reduced by 20% of the assumed values mentioned in the June 9, 2017 of IR:=HS 15, OR: HS20.

This culvert was designed using a 4' – 6' Fill material where the Live Load (L_L) and Impact load (I_L) is resisted by the earth material. Due to the pending Rodd Field Roadway construction the fill material will be reduced to only approximately 2' which increases the (L_L) and (I_L) reducing the Load Rating by 2 – 5 Tons. Therefore, the load rating should be reduced by 20% if the culverts are left in place and repaired.

(IR:=HS 15, OR: HS20) x 80% = **(IR: HS 12, OR: HS16).**

Culvert Inspection Report
Rodd Field Road Expansion – Saratoga to Yorktown, Project No. E15112

C. HYDRAULIC CAPACITY

The structure as it exists consists of five (5) 4'x8' RCB's. The 2009 City of Corpus Christi Draft Storm Water Master Plan Map No. G16 shows this culvert structure to be upsized to 3-9'x9' RCB's to meet future capacity needs for the area. Since the current roadway design restricts the height of any proposed structures beyond 5' vertical, the replacement RCB's in our opinion should be six (6) 5'x8' RCB's or seven (7) 5'x7' RCB's to satisfy the additional capacity need. Adding capacity to this structure should be given consideration due to the pending Del Mar College campus construction along with adjacent development in the area that will most likely follow to support the college.

4. ANALYSIS AND OPTIONS

A. OPTION 1: REPAIR EXISTING CULVERTS

Given that the rating of this structure is a 6 (Satisfactory Condition-minor deterioration of structural elements) the existing culverts can be protected by repairing existing spalling and rehabilitating existing interior walls where delamination was encountered. The estimated cost to perform this work is \$343,200. Below are some pros and cons of this Option:

Pros:

- Road construction can continue.
- Repairs can be done concurrently or a later date.

Cons:

- Life of structure not extended.
- Cost of repairs is high.
- Possibility of unknown extensive damage.
- Additional repairs needed in the near future (8.6 years as previously discussed)
- Hydraulic capacity is not increased.

B. OPTION 2: REPLACE EXISTING STRUCTURE IN KIND

The section option would be completely replace the existing culverts with new Class IV RCB's of the same size and number, 5-4'x8'. The estimated cost to perform this work is \$XXX,XXX. Below are some pros and cons of this Option:

Pros:

- New structure will be sulfate and chloride resistant.
- New structure will have a 50 year plus lifespan.
- Load rating will not have to be reduced.
- No effect on new roadway centerline elevation.

Cons:

- Current road work over the structure must be stopped in the area while structure is designed.
- Cost to replace is higher than cost to repair.
- Hydraulic capacity not increased.

Culvert Inspection Report
Rodd Field Road Expansion – Saratoga to Yorktown, Project No. E15112

C. OPTION 3: REPLACE AND UPSIZE EXISTING STRUCTURE (RECOMMENDED)

This option would be to completely replace the existing culverts with new Class IV RCB's. For estimating purposes, six (6) 5'x8' RCB's were selected. The estimated cost to perform this work is \$XXX,XXX. Below are some pros and cons of this Option:

Pros:

- New structure will be sulfate and chloride resistant.
- Structure will have increased hydraulic capacity.
- New structure will have a 50 year plus lifespan.
- Load rating will not have to be reduced.
- No effect on new roadway centerline elevation.

Cons:

- Current road work over the structure must be stopped in the area while structure is designed.
- Highest cost of all the Options.

5. RECOMMENDATIONS

LJA Engineering recommends the City selects **Option 3: Replace and Upsize Existing Structure**. Given the abundance of vacant land in the adjacent area and the catalyst of the Del Mar College development that will most likely spark additional developments in the area, it only makes sense to increase the capacity of the culvert structure. We realize that the budget is a constraint but feel that this Option, in the long run is in the best interest of the City.

Additionally, as mentioned earlier in the report, the elevation downstream of this structure is around 8' while the flowline at the structure is around 5.5'. Regardless of which Option is chosen, the City should embark on a method to level this area and restore the flow to this channel so that standing water around the culvert is eliminated. We recommend this be completed as soon as possible.

APPENDIX

Exhibit 1: Opinion of Probable Construction Costs of All Three Options

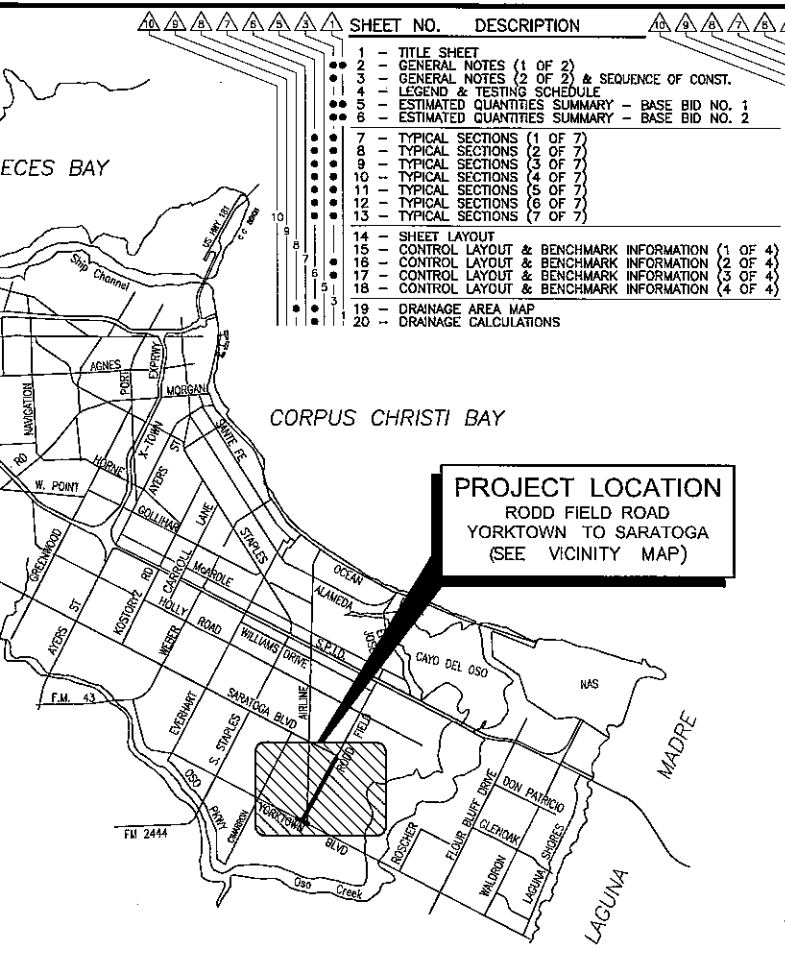
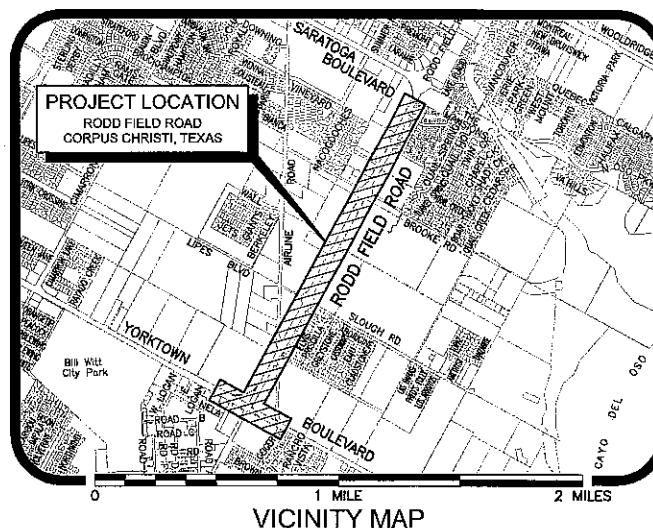
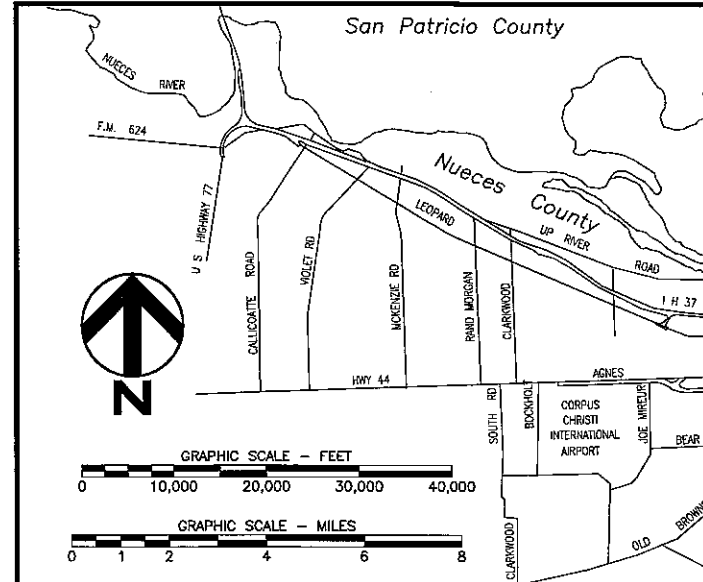
EXHIBIT 1
 CULVERT INSPECTION REPORT
 RODD FIELD ROAD EXPANSION - SARATOGA TO YORKTOWN, PROJECT NO. E15112
 OPINION OF PROBABLE COST



OPTION 1 - REPAIR EXISTING CULVERTS					
ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT
429-6009	Concrete Structure Repair (Standard)	SF	1,200	\$185.00	\$222,000.00
	Dewatering & Sheet Piling	LF	180	\$500.00	\$90,000.00
Subtotal					\$312,000.00
Contingencies (10%)					\$31,200.00
TOTAL OPTION 1					\$343,200.00

OPTION 2 - REPLACE EXISTING STRUCTURE IN KIND					
ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT
496-6001	Remove Structure (Box Culvert)	EA	1	\$30,000.00	\$30,000.00
496-6006	Remove Structure (Headwall)	EA	2	\$15,000.00	\$30,000.00
462-6019	Concrete Box Culvert (8 ft x 4 ft)	LF	600	\$580.00	\$348,000.00
466-6234	Headwall	EA	2	\$20,000.00	\$40,000.00
	Dewatering & Sheet Piling	LF	180	\$500.00	\$90,000.00
Subtotal					\$538,000.00
Contingencies (10%)					\$53,800.00
TOTAL OPTION 2					\$591,800.00

OPTION 3 - REPLACE AND UPSIZE EXISTING STRUCTURE					
ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT
496-6001	Remove Structure (Box Culvert)	EA	1	\$30,000.00	\$30,000.00
496-6006	Remove Structure (Headwall)	EA	2	\$15,000.00	\$30,000.00
462-6020	Concrete Box Culvert (8 ft x 5 ft)	LF	720	\$620.00	\$446,400.00
466-6234	Headwall	EA	2	\$20,000.00	\$40,000.00
	Dewatering & Sheet Piling	LF	180	\$500.00	\$90,000.00
Subtotal					\$636,400.00
Contingencies (10%)					\$63,640.00
TOTAL OPTION 3					\$700,040.00



PLANS FOR
(STREET, STORM WATER, GAS, WATER, WASTEWATER)
RODD FIELD ROAD IMPROVEMENTS
YORKTOWN BOULEVARD
TO
SARATOGA BOULEVARD
(BOND 2014)

PROJECT No. E15112

PREPARED BY

SEE SHEETS 141-187 FOR TRAFFIC SIGNAL DESIGN AUTHORIZATION (HDR ENGINEER'S SEALS)



SEE SHEETS 275-304 FOR LIGHTING DESIGN AUTHORIZATION (MBTS ENGINEER'S SEALS)



LJA ENGINEERING
TEXAS ENGINEERING FIRM F-1386
5350 S. Staples Street, Suite 425
Corpus Christi, Texas 78411
phone.361.991.8550
www.LJA.com

CALL BEFORE YOU DIG!
PARTICIPANTS REQUEST
48 HOURS NOTICE BEFORE YOU DIG,
DRILL, OR BLAST - STOP AND CALL
811
Know what's below.
Call before you dig.
THE LONE STAR NOTIFICATION COMPANY
AT 1-800-669-8344

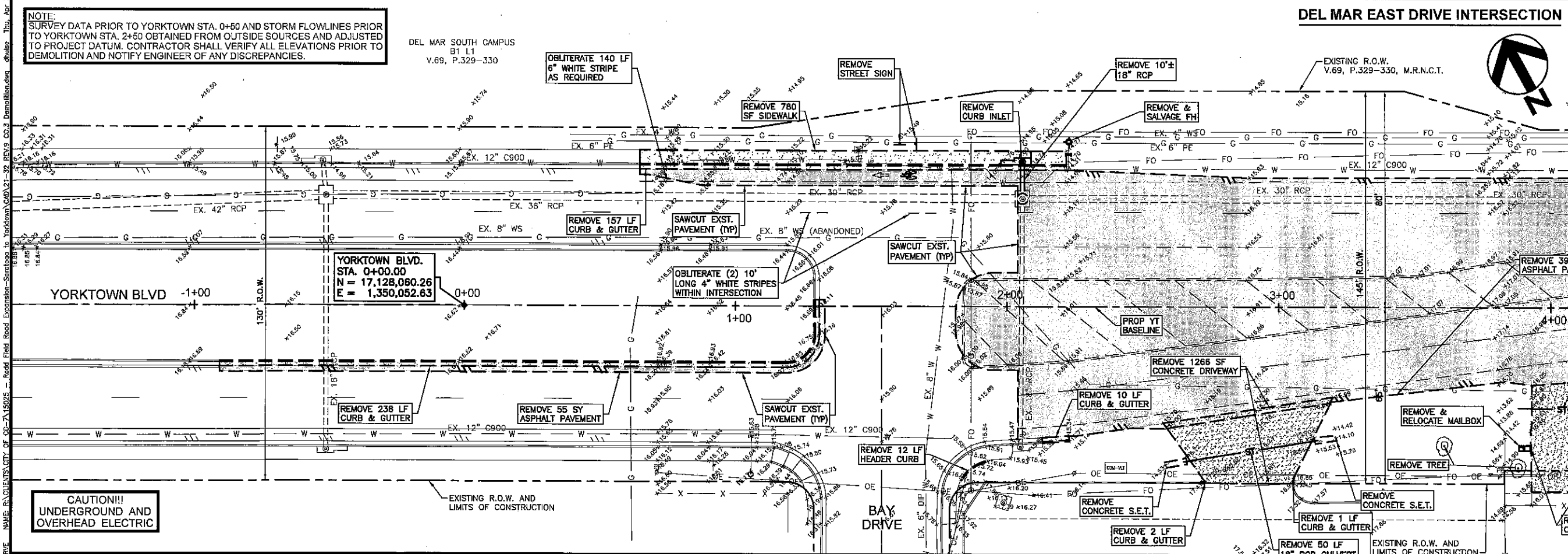
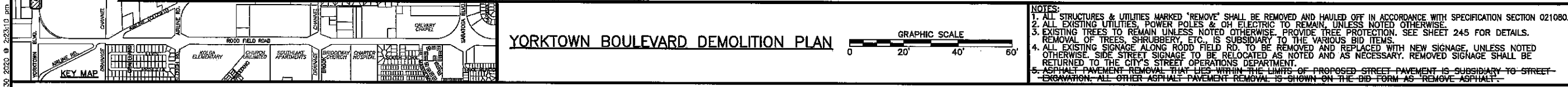
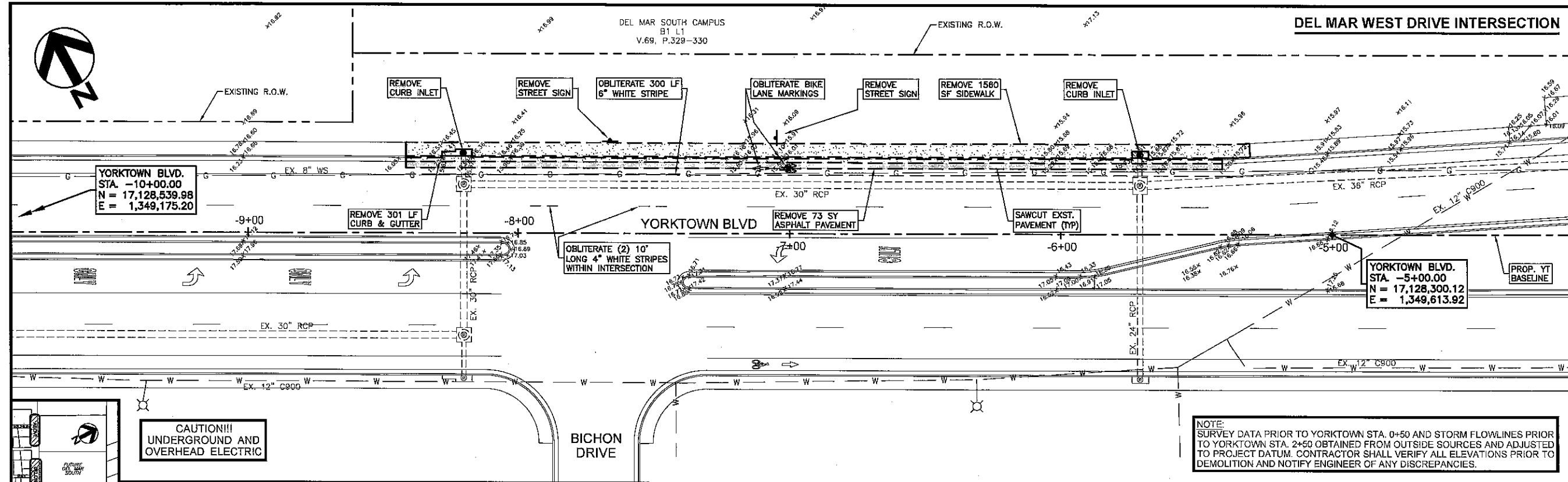
RELEASED FOR CONSTRUCTION
DIRECTOR OF ENGINEERING SERVICES SIGNATURE AS OF FINAL SUBMITTAL
[Signature]
Director of Engineering Services
4/22/18
Date

TDLR EAB NO. EABPRJ B 8817975

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL NOTES (1 OF 2) & SEQUENCE OF CONST.
3	GENERAL NOTES (2 OF 2) & TESTING SCHEDULE
4	LEGEND & TESTING SCHEDULE
5	ESTIMATED QUANTITIES SUMMARY - BASE BID NO. 1
6	ESTIMATED QUANTITIES SUMMARY - BASE BID NO. 2
7	TYPICAL SECTIONS (1 OF 7)
8	TYPICAL SECTIONS (2 OF 7)
9	TYPICAL SECTIONS (3 OF 7)
10	TYPICAL SECTIONS (4 OF 7)
11	TYPICAL SECTIONS (5 OF 7)
12	TYPICAL SECTIONS (6 OF 7)
13	TYPICAL SECTIONS (7 OF 7)
14	SHEET LAYOUT
15	CONTROL LAYOUT & BENCHMARK INFORMATION (1 OF 4)
16	CONTROL LAYOUT & BENCHMARK INFORMATION (2 OF 4)
17	CONTROL LAYOUT & BENCHMARK INFORMATION (3 OF 4)
18	CONTROL LAYOUT & BENCHMARK INFORMATION (4 OF 4)
19	DRAINAGE AREA MAP
20	DRAINAGE CALCULATIONS

SHEET NO.	DESCRIPTION
21	DEMOLITION PLAN RF STA. 0+00 TO 3+50
22	DEMOLITION PLAN RF STA. 3+50 TO 11+25
23	DEMOLITION PLAN RF STA. 11+25 TO 19+50
24	DEMOLITION PLAN RF STA. 19+50 TO 28+25
25	DEMOLITION PLAN RF STA. 28+25 TO 37+25
26	DEMOLITION PLAN RF STA. 37+25 TO 46+25
27	DEMOLITION PLAN RF STA. 46+25 TO 54+75
28	DEMOLITION PLAN RF STA. 54+75 TO 63+75
29	DEMOLITION PLAN RF STA. 63+75 TO 72+50
30	DEMOLITION PLAN RF STA. 72+50 TO 11+50
30A	DEMOLITION PLAN DEL MAR DRIVEWAYS
31	DEMOLITION PLAN BEGIN TO YT STA. 11+50
32	DEMOLITION PLAN YT STA. 11+50 TO END
33	STORM BASEMAP
34	WATER BASEMAP
35	WASTEWATER BASEMAP
36	GAS BASEMAP

37	STREET & STORM WATER P&P RF STA. 0+00 TO 3+50
38	STREET & STORM WATER P&P RF STA. 3+50 TO 7+50
39	STREET & STORM WATER P&P RF STA. 7+50 TO 11+25
40	STREET & STORM WATER P&P RF STA. 11+25 TO 19+50
41	STREET & STORM WATER P&P RF STA. 19+50 TO 28+25
42	STREET & STORM WATER P&P RF STA. 28+25 TO 37+25
43	STREET & STORM WATER P&P RF STA. 37+25 TO 46+25
44	STREET & STORM WATER P&P RF STA. 46+25 TO 54+75
45	STREET & STORM WATER P&P RF STA. 54+75 TO 63+75
46	STREET & STORM WATER P&P RF STA. 63+75 TO 72+50
47	STREET & STORM WATER P&P RF STA. 72+50 TO 11+50
48	STREET & STORM WATER P&P RF STA. 11+50 TO 15+50
49	STREET & STORM WATER P&P RF STA. 15+50 TO 19+50
50	STREET & STORM WATER P&P RF STA. 19+50 TO 24+25
51	STREET & STORM WATER P&P RF STA. 24+25 TO 28+25
52	STREET & STORM WATER P&P RF STA. 28+25 TO 32+75
53	STREET & STORM WATER P&P RF STA. 32+75 TO 37+25
54	STREET & STORM WATER P&P RF STA. 37+25 TO 41+75
55	STREET & STORM WATER P&P RF STA. 41+75 TO 46+25
56	STREET & STORM WATER P&P RF STA. 46+25 TO 50+50
57	STREET & STORM WATER P&P RF STA. 50+50 TO 54+75
58	STREET & STORM WATER P&P RF STA. 54+75 TO 58+25
59	STREET & STORM WATER P&P RF STA. 58+25 TO 63+75
60	STREET & STORM WATER P&P RF STA. 63+75 TO 68+25
61	STREET & STORM WATER P&P RF STA. 68+25 TO 72+50
62	STREET & STORM WATER P&P RF STA. 72+50 TO 76+50
63	STREET & STORM WATER P&P RF STA. 76+50 TO 80+50
64	STREET & STORM WATER P&P RF STA. 80+50 TO 84+75
65	STREET & STORM WATER P&P RF STA. 84+75 TO 88+25
66	STREET & STORM WATER P&P RF STA. 88+25 TO 92+50
67	STREET & STORM WATER P&P RF STA. 92+50 TO 96+50
68	STREET & STORM WATER P&P RF STA. 96+50 TO 100+50
69	STREET & STORM WATER P&P RF STA. 100+50 TO 104+75
70	STREET & STORM WATER P&P RF STA. 104+75 TO 108+25
71	STREET & STORM WATER P&P RF STA. 108+25 TO 112+50
72	STREET & STORM WATER P&P RF STA. 112+50 TO 116+50
73	STREET & STORM WATER P&P RF STA. 116+50 TO 120+50
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75	STREET & STORM WATER P&P RF STA. 124+50 TO 128+50
76	STREET & STORM WATER P&P RF STA. 128+50 TO 132+50
77	STREET & STORM WATER P&P RF STA. 132+50 TO 136+50
78	STREET & STORM WATER P&P RF STA. 136+50 TO 140+50
79	STREET & STORM WATER P&P RF STA. 140+50 TO 144+50
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81	STREET & STORM WATER P&P RF STA. 148+50 TO 152+50
82	STREET & STORM WATER P&P RF STA. 152+50 TO 156+50
83	STREET & STORM WATER P&P RF STA. 156+50 TO 160+50
84	STREET & STORM WATER P&P RF STA. 160+50 TO 164+50
85	STREET & STORM WATER P&P RF STA. 164+50 TO 168+50
86	STREET & STORM WATER P&P RF STA. 168+50 TO 172+50
87	STREET & STORM WATER P&P RF STA. 172+50 TO 176+50
88	STREET & STORM WATER P&P RF STA. 176+50 TO 180+50
89	STREET & STORM WATER P&P RF STA. 180+50 TO 184+50
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91	STREET & STORM WATER P&P RF STA. 188+50 TO 192+50
92	STREET & STORM WATER P&P RF STA. 192+50 TO 196+50
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97	STREET & STORM WATER P&P RF STA. 212+50 TO 216+50
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105	STREET & STORM WATER P&P RF STA. 244+50 TO 248+50
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110	STREET & STORM WATER P&P RF STA. 264+50 TO 268+50
111	STREET & STORM WATER P&P RF STA. 268+50 TO 272+50
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150	STREET & STORM WATER P&P RF STA. 424+50 TO 428+50
151	STREET & STORM WATER P&P RF STA. 428+50 TO 432+50
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186	STREET & STORM WATER P&P RF STA. 568+50 TO 572+50
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188	STREET & STORM WATER P&P RF STA. 576+50 TO 580+50
189	STREET & STORM WATER P&P RF STA. 580+50 TO 584+50
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215	STREET & STORM WATER P&P RF STA. 684+50 TO 688+50
216	STREET & STORM WATER P&P RF STA. 688+50 TO 692+50
217	STREET & STORM WATER P&P RF STA. 692+50 TO 696+50
218	STREET & STORM WATER P&P RF STA. 696+50 TO 700+50
219	STREET & STORM WATER P&P RF STA. 700+50 TO 704+50
220	STREET & STORM WATER P&P RF STA. 704+50 TO 708+50
221	STREET & STORM WATER P&P RF STA. 708+50 TO 712+50
222	STREET & STORM WATER P&P RF STA. 712+50 TO 716+50
223	STREET & STORM WATER P&P RF STA. 716+50 TO 720+50
224	STREET & STORM WATER P&P RF STA. 720+50 TO 724+50
225	STREET & STORM WATER P&P RF STA. 724+50 TO 728+50
226	STREET & STORM WATER P&P RF STA. 728+50 TO 732+50
227	STREET & STORM WATER P&P RF STA. 732+50 TO 736+50
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229	STREET & STORM WATER P&P RF STA. 740+50 TO 744+50
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232	STREET & STORM WATER P&P RF STA. 752+50 TO 756+50
233	STREET & STORM WATER P&P RF STA. 756+50 TO 760+50
234	STREET & STORM WATER P&P RF STA. 760+50 TO 764+50
235	STREET & STORM WATER P&P RF STA. 764+50 TO 768+50
236	STREET & STORM WATER P&P RF STA. 768+50 TO 772+50
237	STREET & STORM WATER P&P RF STA. 772+50 TO 776+50
238	STREET & STORM WATER P&P RF STA. 776+50 TO 780+50
239	STREET & STORM WATER P&P RF STA. 780+50 TO 784+50
240	STREET & STORM WATER P&P RF STA. 784+50 TO 788+50
241	STREET & STORM WATER P&P RF STA. 788+50 TO 792+50
242	STREET & STORM WATER P&P RF STA. 792+50 TO 796+50
243	STREET & STORM WATER P&P RF STA. 796+50 TO 800+50
244	STREET & STORM WATER P&P RF STA. 800+50 TO 804+50
245	STREET & STORM WATER P&P RF STA. 804+50 TO 808+50
246	STREET & STORM WATER P&P



DEL MAR WEST DRIVE INTERSECTION

DEL MAR EAST DRIVE INTERSECTION

CONSULTANT'S SHEET 30A
PROJECT NO. 15025

APRIL 30, 2020

LJA ENGINEERING
TEXAS ENGINEERING FIRM F-1386

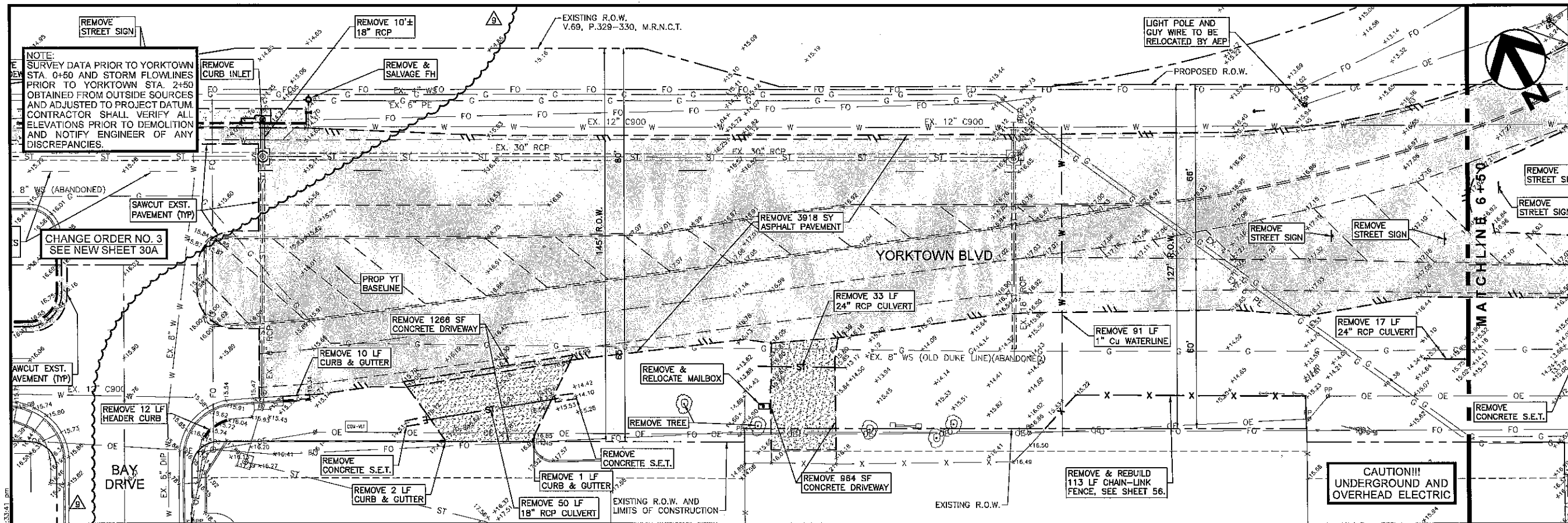
Corpus Christi Engineering

REVISION NO.	DATE	BY	DESCRIPTION

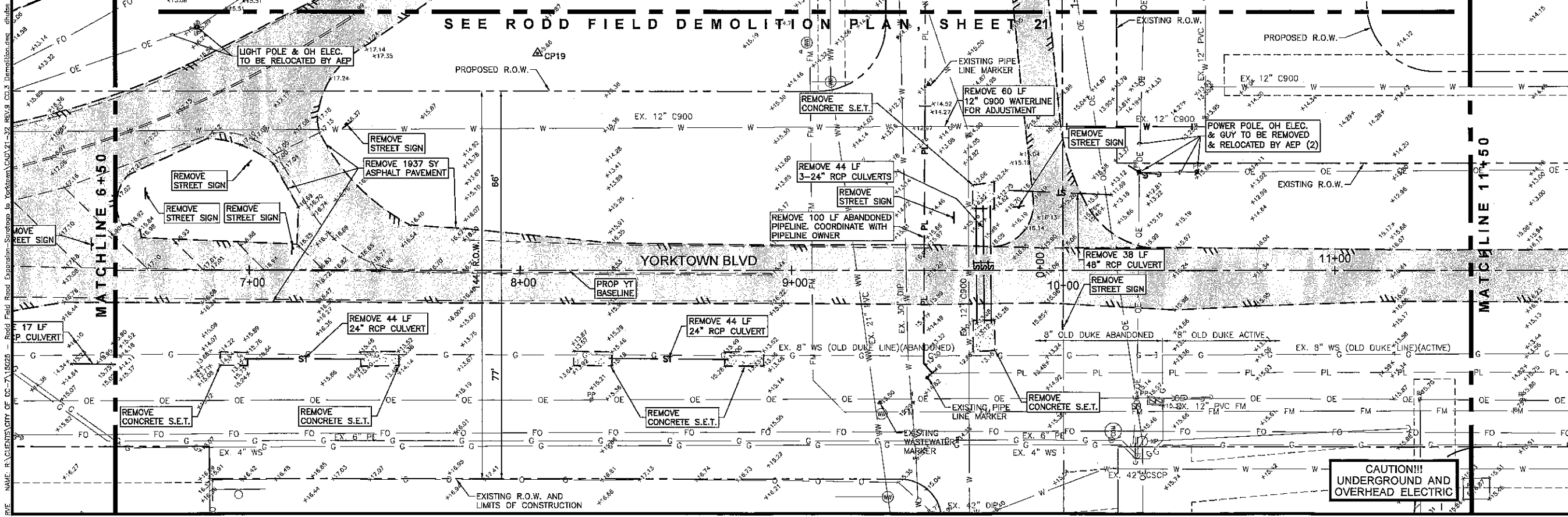
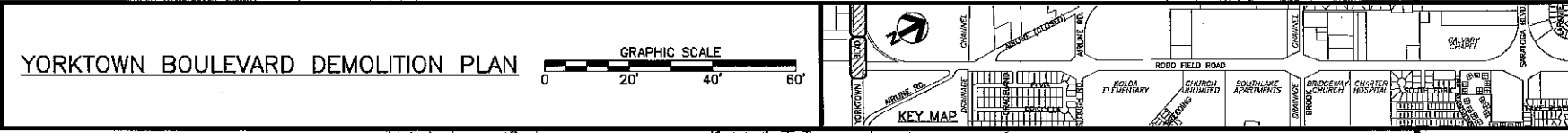
DEMOLITION PLAN
RODD FIELD ROAD IMPROVEMENTS
YORKTOWN BOULEVARD TO SARATOGA BOULEVARD
(BOND 2014)

CHANGE ORDER NO. 3
SHEET 30A of 304
RECORD DRAWING NO.
STR 943
CITY PROJECT # E15112

REV. NAME: RAQUEL/ENR/CITY OF DEL MAR/15025 - Road Field Road Expansion-Saratoga to Yorktown (CD) 12-22 REV. 03-23 Demolition/Drawn: dhlshir Thu, Apr 30 2020 @ 2:20:10 pm



NOTES:
 1. ALL STRUCTURES & UTILITIES MARKED "REMOVE" SHALL BE REMOVED AND HAUL OFF IN ACCORDANCE WITH SPECIFICATION SECTION 021080.
 2. ALL EXISTING UTILITIES, POWER POLES & OH ELECTRIC TO REMAIN, UNLESS NOTED OTHERWISE.
 3. EXISTING TREES TO REMAIN UNLESS NOTED OTHERWISE. PROVIDE TREE PROTECTION. SEE SHEET 245 FOR DETAILS.
 4. REMOVAL OF TREES, SHRUBBERY, ETC. IS SUBSIDIARY TO THE VARIOUS BID ITEMS.
 5. ALL EXISTING SIGNAGE ALONG RODD FIELD ROAD TO BE REMOVED AND REPLACED WITH NEW SIGNAGE, UNLESS NOTED OTHERWISE. SIDE STREET SIGNAGE TO BE RELOCATED AS NOTED AND AS NECESSARY. REMOVED SIGNAGE SHALL BE RETURNED TO THE CITY'S STREET OPERATIONS DEPARTMENT.
 6. ASPHALT PAVEMENT REMOVAL THAT LIES WITHIN THE LIMITS OF PROPOSED STREET PAVEMENT IS SUBSIDIARY TO STREET EXCAVATION. ALL OTHER ASPHALT PAVEMENT REMOVAL IS SHOWN ON THE BID FORM AS "REMOVE ASPHALT".



CONSULTANT'S SHEET 31
 PROJECT NO. 15025

 APRIL 30, 2020

LJA ENGINEERING
 TEXAS ENGINEERING FIRM F-1386

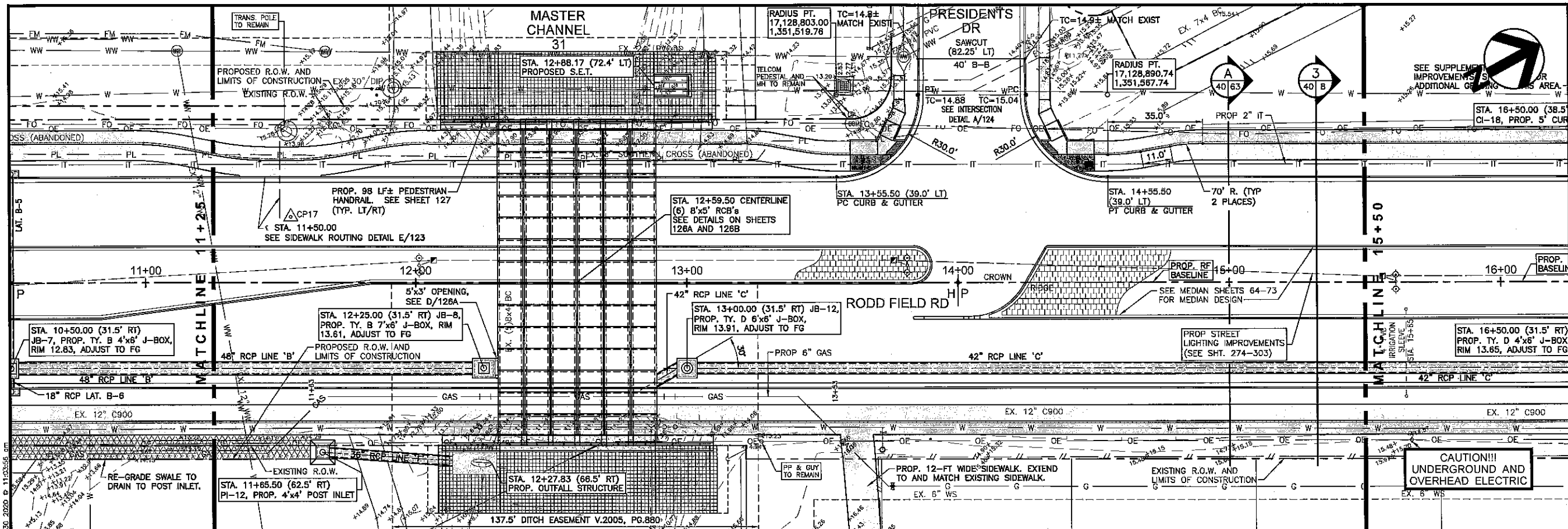
Corpus Christi Engineering

REVISION NO.	DATE	DESCRIPTION
1	3/19/2020	CHANGE ORDER NO. 3 (DEL. MAR. DRIVES)

RODD FIELD ROAD IMPROVEMENTS
 YORKTOWN BOULEVARD TO SARATOGA BOULEVARD
 (BOND 2014)

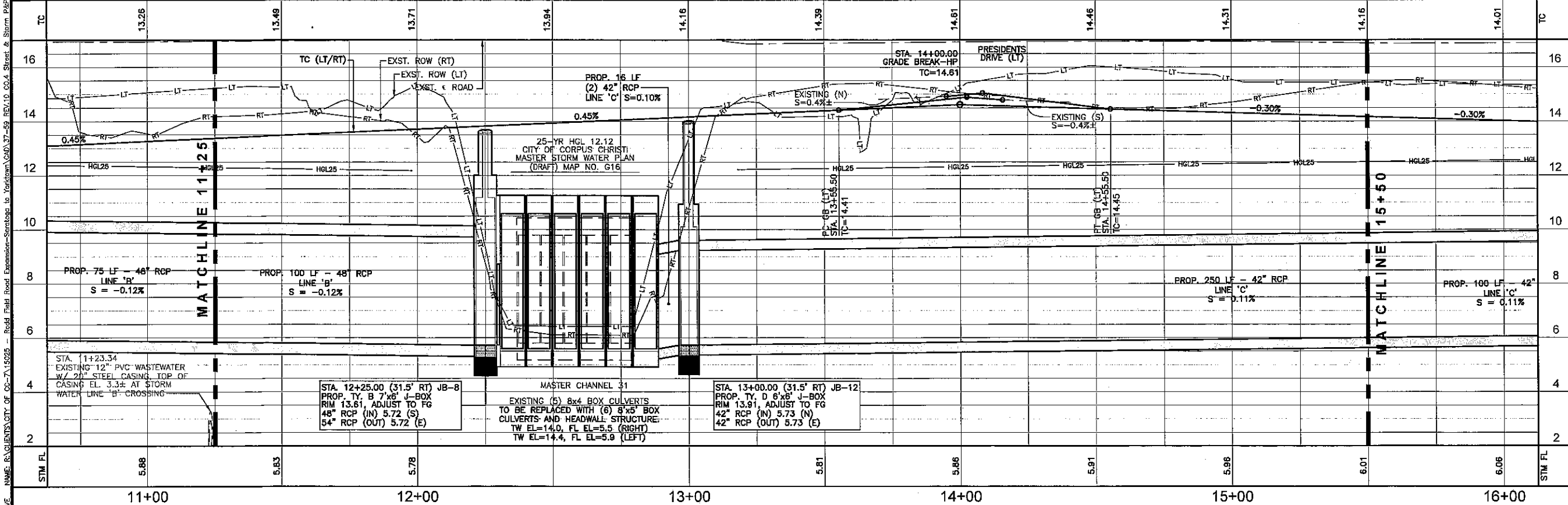
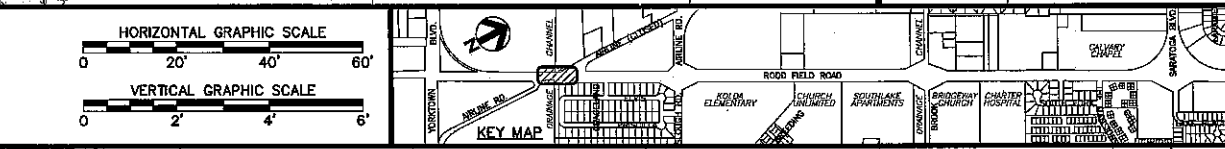
DEMOLITION PLAN
 BEGIN TO YT STA. 11+50

CHANGE ORDER NO. 3
 SHEET 31 of 304
 RECORD DRAWING NO. STR 943
 CITY PROJECT # E15112



- NOTES:**
1. ALL DIMENSIONS ARE TO BACK OF CURB, UNLESS NOTED OTHERWISE.
 2. FOR STREET SECTIONS SEE SHEETS 7-13.
 3. FOR STREET MEDIAN GRADING PLANS SEE SHEETS 64-75.
 4. FOR CURB RAMP PLANS SEE SHEETS 98-110 & 256-259.
 5. FOR DRIVEWAY DETAILS, INCL. SIDEWALK TRANSITIONS AT DRIVES, SEE SHEETS 111-121 & 253-255.
 6. FOR STORM WATER LATERAL PROFILES SEE SHEETS 88-97.
 7. FOR WATER, WASTEWATER, GAS, AND LT. PLANS SEE SHEETS 128-139.
 8. ALL VALVE BOXES & MANHOLE COVERS WITHIN LIMITS OF CONSTRUCTION SHALL BE ADJUSTED TO FINISH GRADE.
 9. SEE SUPPLEMENTARY GRADING, SHEETS 60-63. AREAS NOT SPECIFICALLY SHOWN SHALL BE FILLED & GRADED PER SITE PLAN NOTES, SHEET 80, AS REQUIRED TO ENSURE POSITIVE DRAINAGE TO BACK OF CURB.

**RODD FIELD ROAD
PROPOSED STREET & STORM IMPROVEMENTS**



CONSULTANT'S SHEET 40
PROJECT NO. 15025

APRIL 30, 2020

LJA ENGINEERING
TEXAS ENGINEERING FIRM F-1386

Corpus Christi Engineering

REVISION NO. DATE BY DESCRIPTION

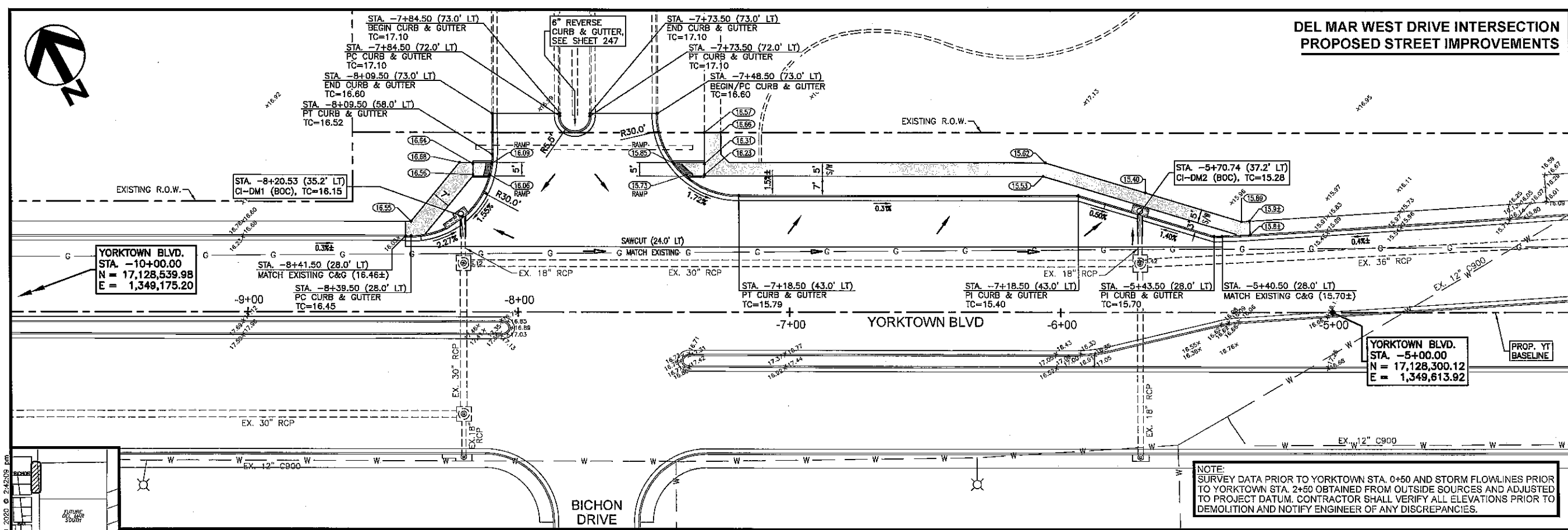
1	4/19/2020	JCC	REVISION ORDER NO. 4 (MASTER CHANNEL 31)
2	6/28/2018	JCC	ADDENDUM NO. 1 (ADDED PT/PC TC)

REVISION NO. 1
SHEET 40 of 304
RECORD DRAWING NO. STR 943
CITY PROJECT # E15112

CHANGE ORDER NO. 4

RODD FIELD ROAD IMPROVEMENTS
YORKTOWN BOULEVARD TO SARATOGA BOULEVARD
(BOND 2014)

STREET & STORM WATER PLAN & PROFILE
RF STA. 11+25 TO 15+50



**DEL MAR WEST DRIVE INTERSECTION
PROPOSED STREET IMPROVEMENTS**

CONSULTANT'S SHEET 55A
PROJECT NO. 15025

Jeffrey C. Coym
JEFFREY C. COYM
101983
LICENSED PROFESSIONAL ENGINEER

APRIL 30, 2020

LJA ENGINEERING
TEXAS ENGINEERING FIRM F-1386

Corpus Christi Engineering

REVISION NO.	DATE	DESCRIPTION
1	3/19/2020	CHANGE ORDER NO. 3 (DEL MAR DRIVES; ADDED SHEET)
2		BY
3		JCC
4		DATE
5		REVISION NO.
6		DESCRIPTION
7		BY
8		JCC
9		DATE
10		REVISION NO.
11		DESCRIPTION
12		BY
13		JCC
14		DATE
15		REVISION NO.
16		DESCRIPTION
17		BY
18		JCC
19		DATE
20		REVISION NO.
21		DESCRIPTION
22		BY
23		JCC
24		DATE
25		REVISION NO.
26		DESCRIPTION
27		BY
28		JCC
29		DATE
30		REVISION NO.
31		DESCRIPTION
32		BY
33		JCC
34		DATE
35		REVISION NO.
36		DESCRIPTION
37		BY
38		JCC
39		DATE
40		REVISION NO.
41		DESCRIPTION
42		BY
43		JCC
44		DATE
45		REVISION NO.
46		DESCRIPTION
47		BY
48		JCC
49		DATE
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51		DESCRIPTION
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53		JCC
54		DATE
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56		DESCRIPTION
57		BY
58		JCC
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63		JCC
64		DATE
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67		BY
68		JCC
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71		DESCRIPTION
72		BY
73		JCC
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77		BY
78		JCC
79		DATE
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81		DESCRIPTION
82		BY
83		JCC
84		DATE
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86		DESCRIPTION
87		BY
88		JCC
89		DATE
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91		DESCRIPTION
92		BY
93		JCC
94		DATE
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96		DESCRIPTION
97		BY
98		JCC
99		DATE
100		REVISION NO.
101		DESCRIPTION
102		BY
103		JCC
104		DATE
105		REVISION NO.
106		DESCRIPTION
107		BY
108		JCC
109		DATE
110		REVISION NO.
111		DESCRIPTION
112		BY
113		JCC
114		DATE
115		REVISION NO.
116		DESCRIPTION
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131		DESCRIPTION
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137		BY
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139		DATE
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173		JCC
174		DATE
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178		JCC
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183		JCC
184		DATE
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244		DATE
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248		JCC
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294		DATE
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296		DESCRIPTION
297		BY
298		JCC
299		DATE
300		REVISION NO.
301		DESCRIPTION
302		BY
303		JCC
304		DATE

**YORKTOWN BOULEVARD
PROPOSED STREET & STORM IMPROVEMENTS**

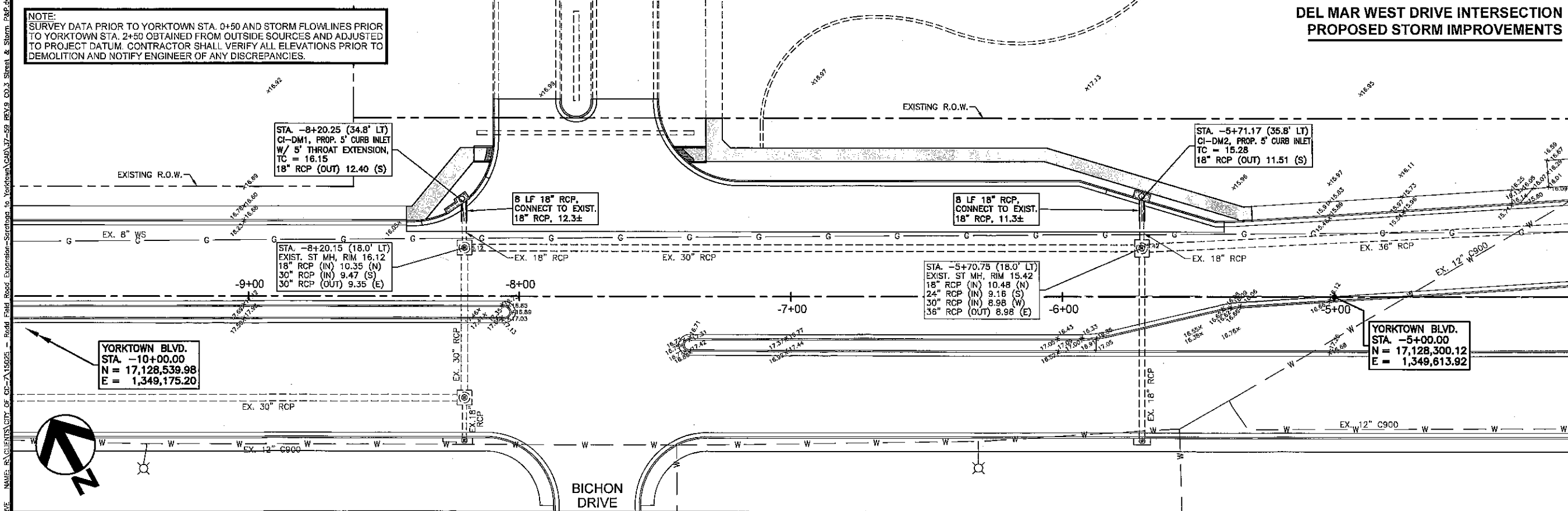


NOTE:
SURVEY DATA PRIOR TO YORKTOWN STA. 0+50 AND STORM FLOWLINES PRIOR TO YORKTOWN STA. 2+50 OBTAINED FROM OUTSIDE SOURCES AND ADJUSTED TO PROJECT DATUM. CONTRACTOR SHALL VERIFY ALL ELEVATIONS PRIOR TO DEMOLITION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

- NOTES:**
1. ALL DIMENSIONS ARE TO BACK OF CURB, UNLESS NOTED OTHERWISE.
 2. FOR STREET SECTIONS SEE SHEETS 7-13.
 3. FOR STREET MEDIAN GRADING PLANS SEE SHEETS 64-75.
 4. FOR CURB RAMP PLANS SEE SHEETS 98-110 & 256-259.
 5. FOR DRIVEWAY DETAILS, INCL. SIDEWALK TRANSITIONS AT DRIVES, SEE SHEETS 111-121 & 253-255.
 6. FOR STORM WATER LATERAL PROFILES SEE SHEETS 88-97.
 7. FOR WATER, WASTEWATER, GAS, AND I.T. PLANS SEE SHEETS 128-139.
 8. ALL VALVE BOXES & MANHOLE COVERS WITHIN LIMITS OF CONSTRUCTION SHALL BE ADJUSTED TO FINISH GRADE.
 9. SEE SUPPLEMENTARY GRADING SHEETS 60-63. AREAS NOT SPECIFICALLY SHOWN SHALL BE FILLED & GRADED PER SITE FILL NOTES, SHEET 60, AS REQUIRED TO ENSURE POSITIVE DRAINAGE TO BACK OF CURB.

NOTE:
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**DEL MAR WEST DRIVE INTERSECTION
PROPOSED STORM IMPROVEMENTS**



**RODD FIELD ROAD IMPROVEMENTS
YORKTOWN BOULEVARD TO SARATOGA BOULEVARD
(BOND 2014)**

**STREET & STORM WATER PLANS
DEL MAR DRIVE INTERSECTIONS (WEST)**

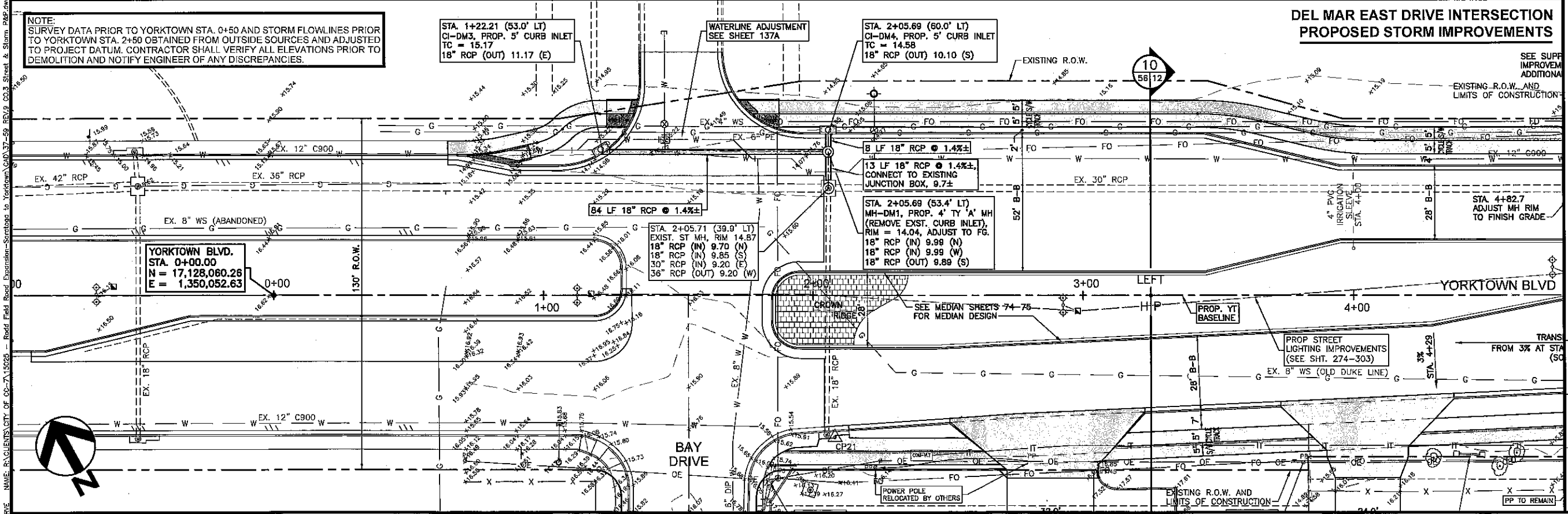
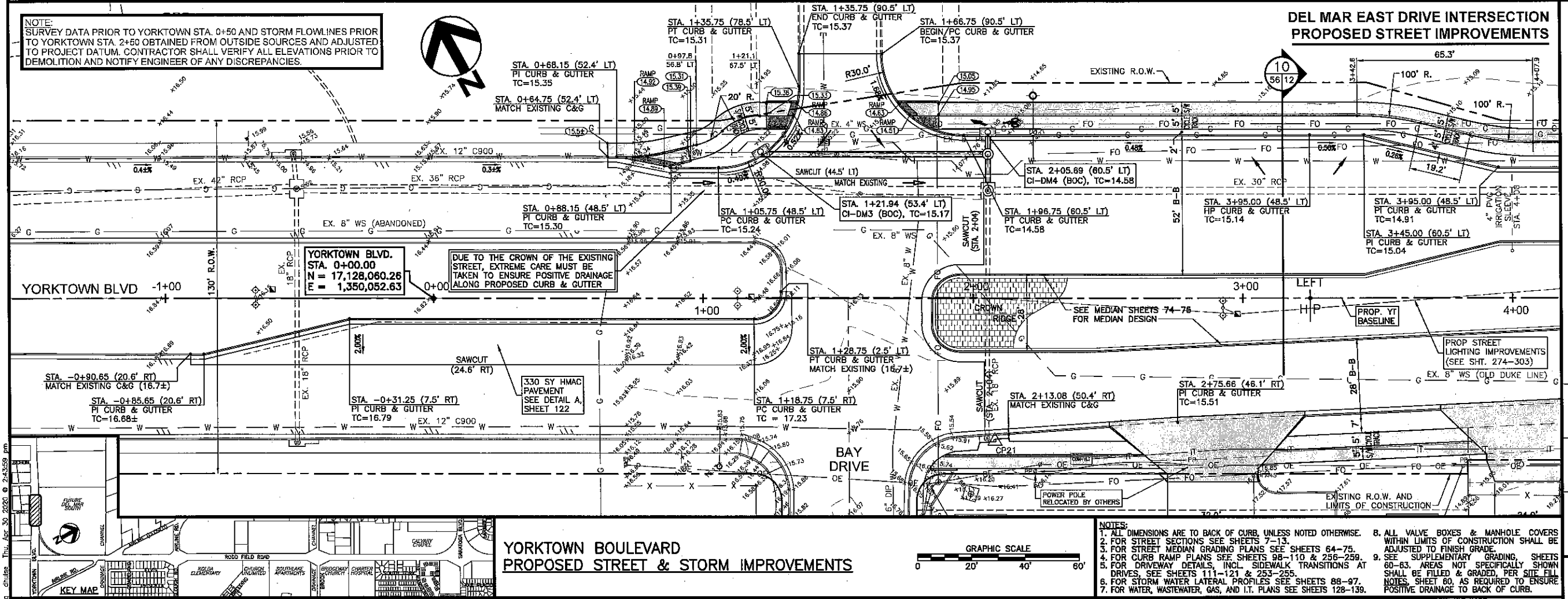
CHANGE ORDER NO. 3

SHEET 55A of 304

RECORD DRAWING NO.
STR 943

CITY PROJECT # E15112

FILE NAME: R:\CLIENTS\CITY OF CD-715025 - Rodd Field Road Expansion - Stratford to Yorktown\CAD\37-59_REV.9_CD.3_Street & Storm Water.dwg
 Thu Apr 30 2020 @ 2:42:05 PM



NOTE: SURVEY DATA PRIOR TO YORKTOWN STA. 0+50 AND STORM FLOWLINES PRIOR TO YORKTOWN STA. 2+50 OBTAINED FROM OUTSIDE SOURCES AND ADJUSTED TO PROJECT DATUM. CONTRACTOR SHALL VERIFY ALL ELEVATIONS PRIOR TO DEMOLITION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

NOTE: SURVEY DATA PRIOR TO YORKTOWN STA. 0+50 AND STORM FLOWLINES PRIOR TO YORKTOWN STA. 2+50 OBTAINED FROM OUTSIDE SOURCES AND ADJUSTED TO PROJECT DATUM. CONTRACTOR SHALL VERIFY ALL ELEVATIONS PRIOR TO DEMOLITION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

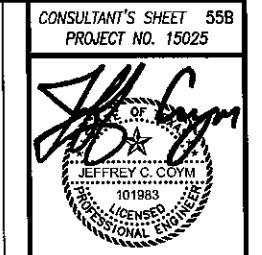
**DEL MAR EAST DRIVE INTERSECTION
PROPOSED STREET IMPROVEMENTS**

**DEL MAR EAST DRIVE INTERSECTION
PROPOSED STORM IMPROVEMENTS**

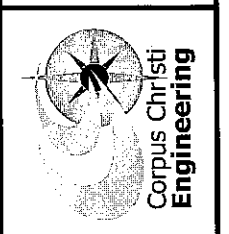
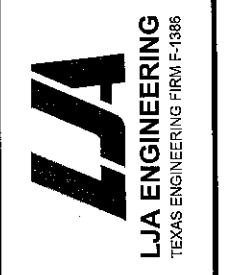
YORKTOWN BLVD.
STA. 0+00.00
N = 17,128,060.26
E = 1,350,052.63

YORKTOWN BLVD.
STA. 0+00.00
N = 17,128,060.26
E = 1,350,052.63

- NOTES:
1. ALL DIMENSIONS ARE TO BACK OF CURB, UNLESS NOTED OTHERWISE.
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APRIL 30, 2020

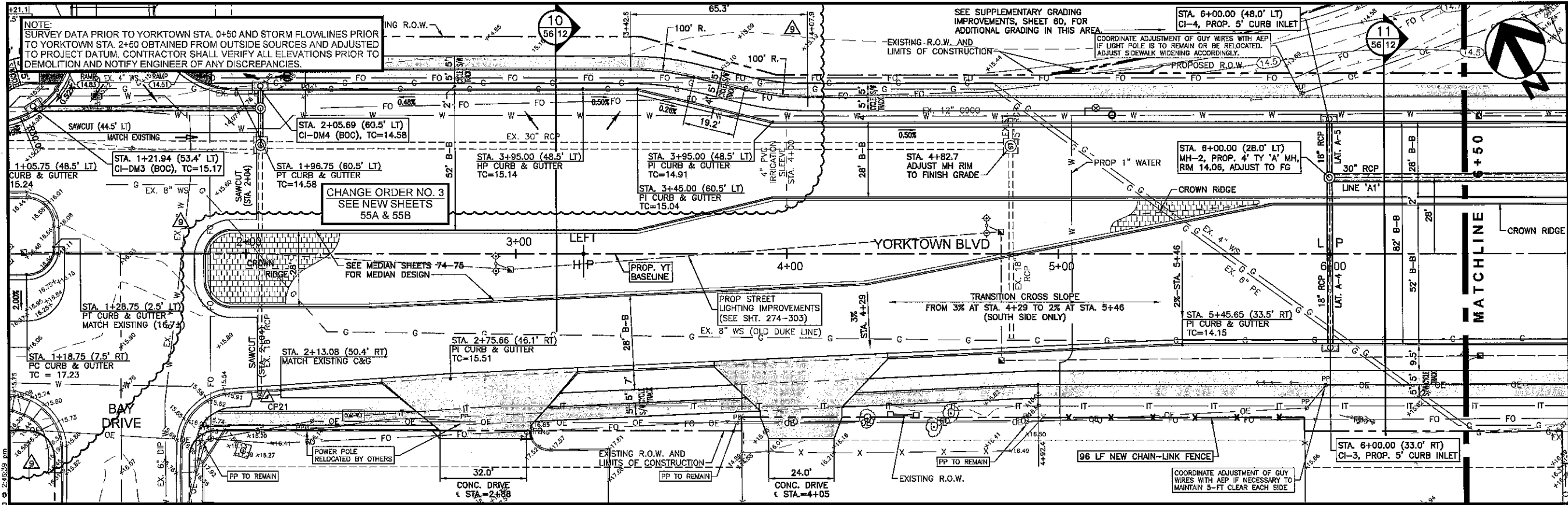


REVISION NO.	DATE	DESCRIPTION
1	3/19/2020	CHANGE ORDER NO. 3 (DEL MAR DRIVES; ADDED SHEET)
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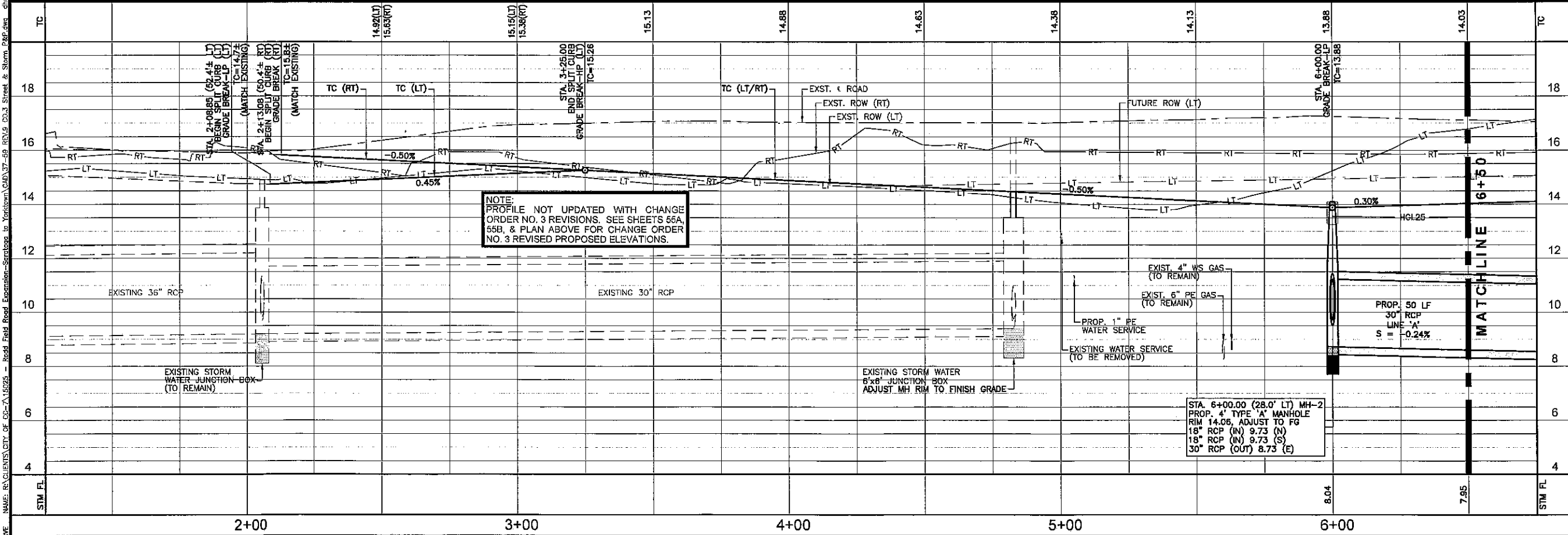
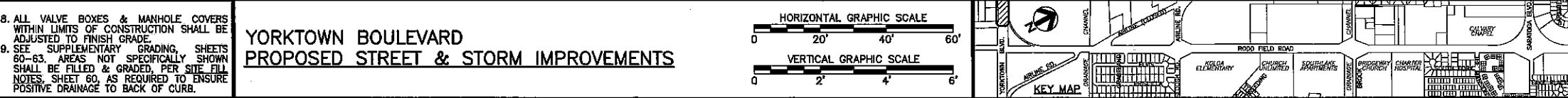
RODD FIELD ROAD IMPROVEMENTS
YORKTOWN BOULEVARD TO SARATOGA BOULEVARD
(BOND 2014)

STREET & STORM WATER PLANS
DEL MAR DRIVE INTERSECTIONS (EAST)

CHANGE ORDER NO. 3
SHEET 55B of 304
RECORD DRAWING NO.
STR 943
CITY PROJECT # E15112

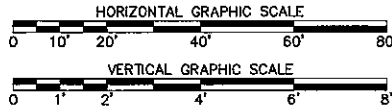
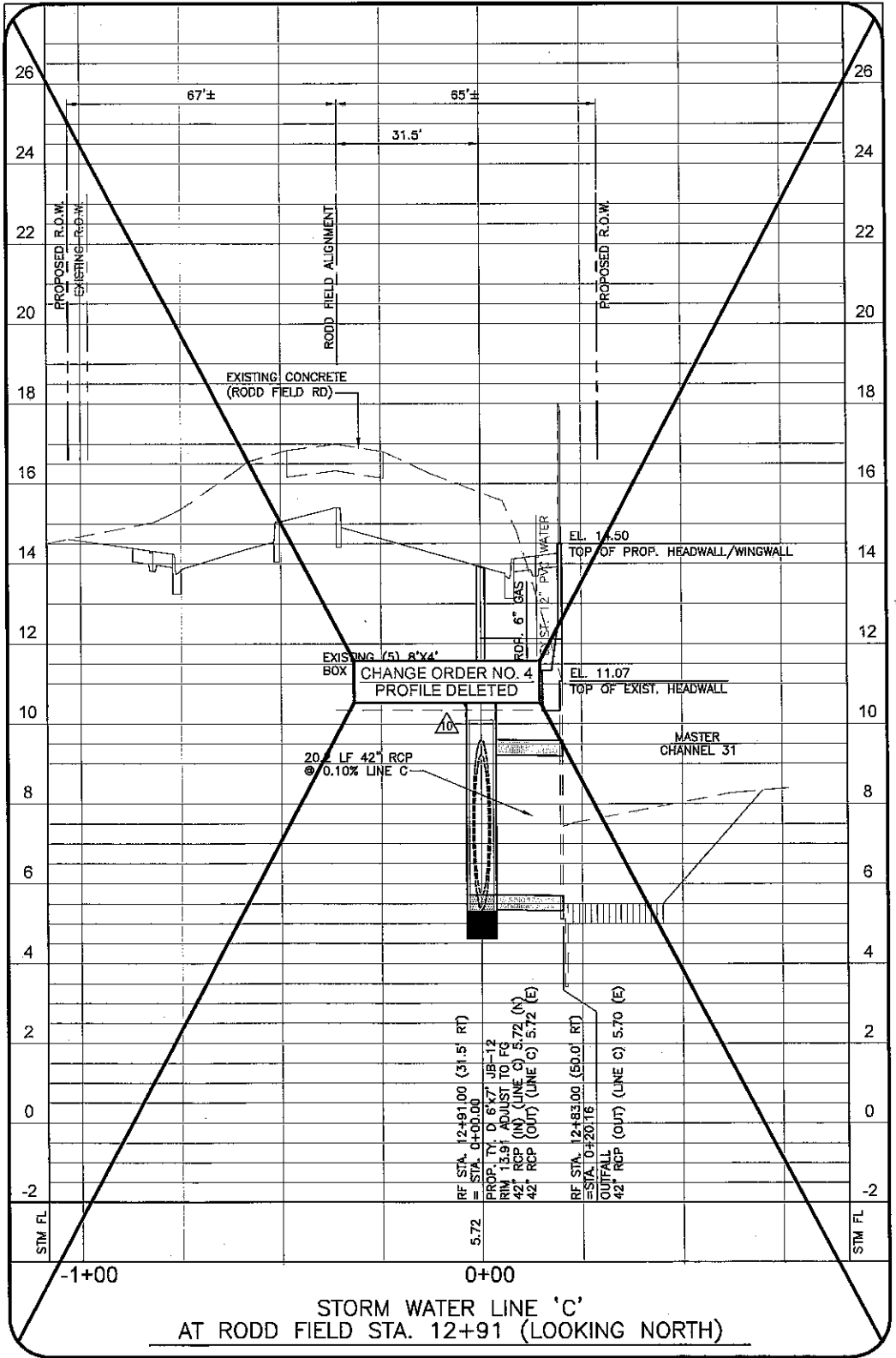
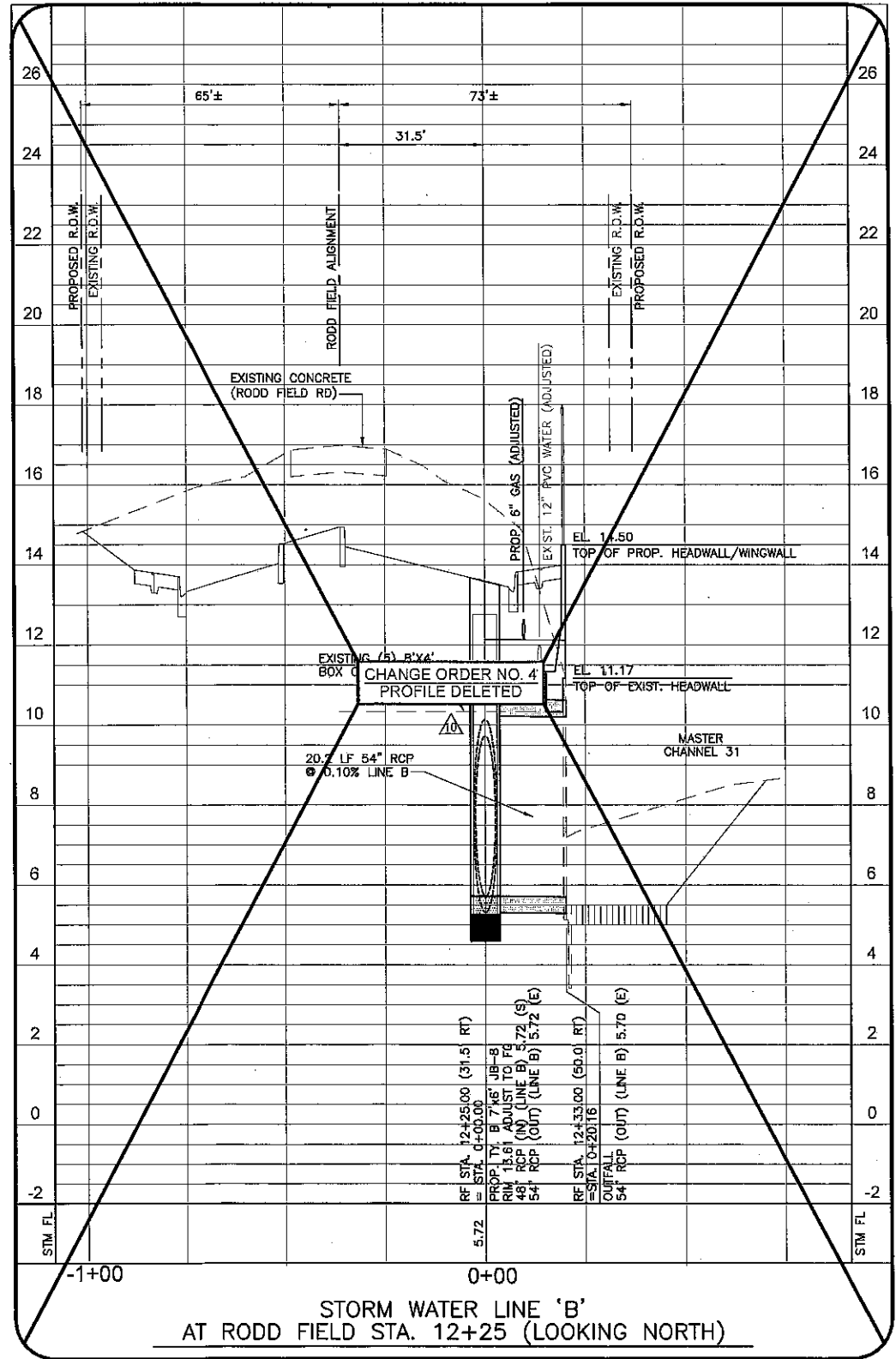


- NOTES:**
1. ALL DIMENSIONS ARE TO BACK OF CURB, UNLESS NOTED OTHERWISE.
 2. FOR STREET SECTIONS SEE SHEETS 7-13.
 3. FOR STREET MEDIAN GRADING PLANS SEE SHEETS 64-75.
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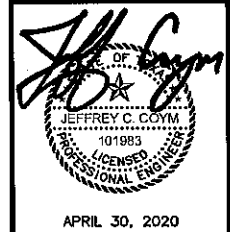


CONSULTANT'S SHEET 56 PROJECT NO. 15025	
APRIL 30, 2020	
LJA ENGINEERING TEXAS ENGINEERING FIRM F-1386	
Corpus Christi Engineering	
CHANGE ORDER NO. 3 (DEL MAR DRIVES) JCC BY DATE 3/19/2020 REVISION NO.	RODD FIELD ROAD IMPROVEMENTS YORKTOWN BOULEVARD TO SARATOGA BOULEVARD (BOND 2014) STREET & STORM WATER PLAN & PROFILE BEGIN TO YT STA. 6+50
CHANGE ORDER NO. 3 SHEET 56 of 304 RECORD DRAWING NO. STR 943 CITY PROJECT # E15112	

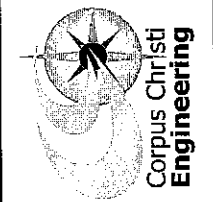
FILE NAME: H:\CLIENTS\CITY OF CORPUS CHRISTI\Road Field Road Extension-Saratoga to Yorktown\ROAD_88-97_REV.10_CD.4_Storm_Profile.dwg - Thu, Apr 30 2020 @ 11:10:48 am



CONSULTANT'S SHEET 89 PROJECT NO. 15025	
APRIL 30, 2020	
 LJA ENGINEERING TEXAS ENGINEERING FIRM F-1386	
 Corpus Christi Engineering	
REVISION NO.	DESCRIPTION
1	CHANGE ORDER NO. 4 (MASTER CHANNEL 31)
2	REVISION NO. 1 (STORM TRUNK RELOCATED)
DATE	BY
4/10/2020	JCC
11/9/2018	JCC
RODD FIELD ROAD IMPROVEMENTS YORKTOWN BOULEVARD TO SARATOGA BOULEVARD (BOND 2014)	
STORM WATER PROFILES (2 OF 10)	
CHANGE ORDER NO. 4	
REVISION NO. 1	
SHEET 89 of 304	
RECORD DRAWING NO.	
STR 943	
CITY PROJECT # E15112	



APRIL 30, 2020

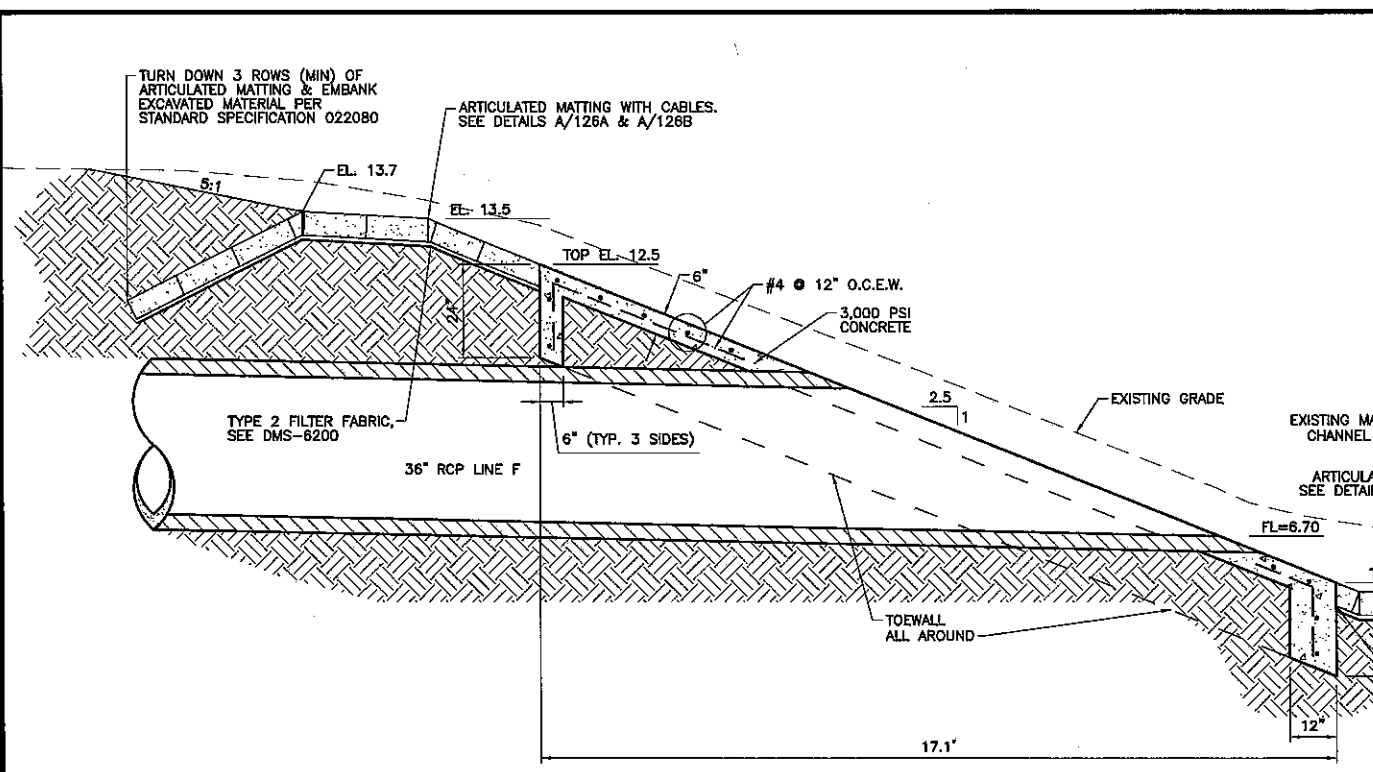


RODD FIELD ROAD IMPROVEMENTS
YORKTOWN BOULEVARD TO SARATOGA BOULEVARD
(BOND 2014)

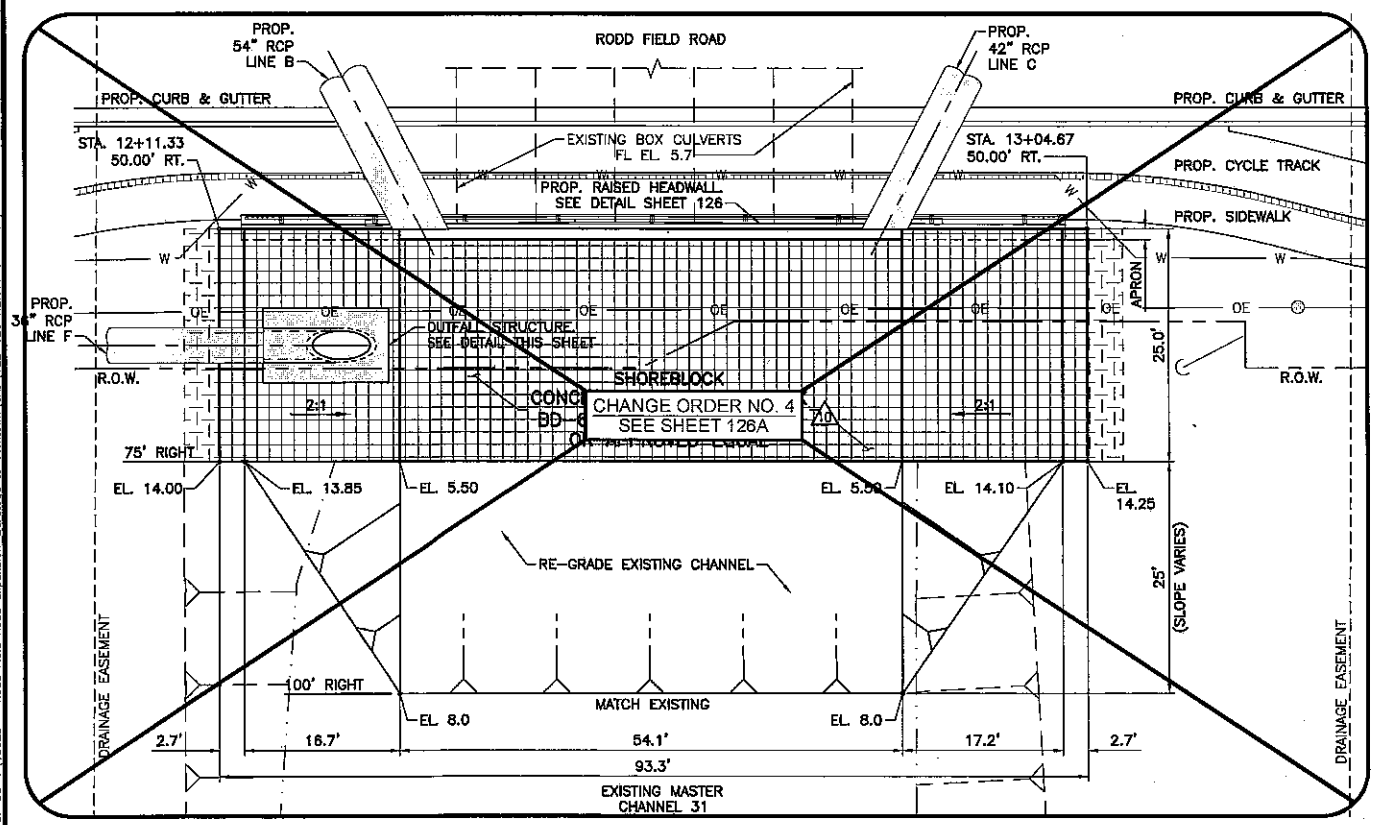
CONSTRUCTION DETAILS
(4 OF 5)

REVISION NO.	DATE	DESCRIPTION
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2	11/19/2018	JCC BY

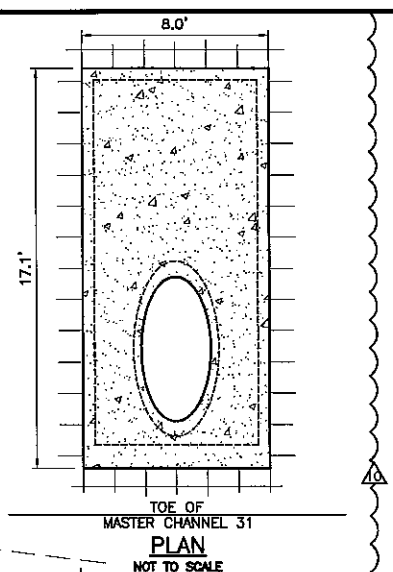
CHANGE ORDER NO. 4
REVISION NO. 1
SHEET 125 of 304
RECORD DRAWING NO.
STR 943
CITY PROJECT # E15112



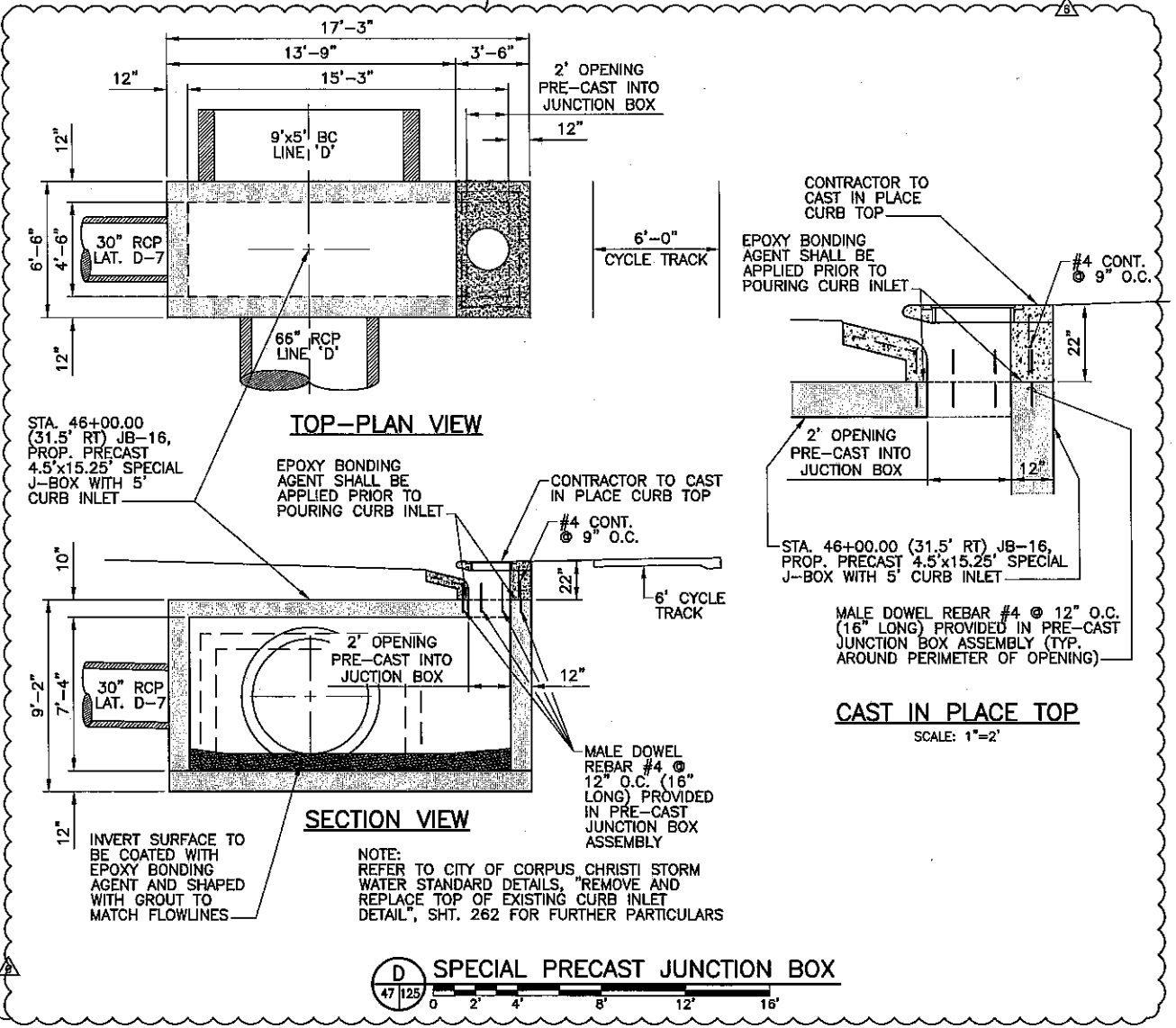
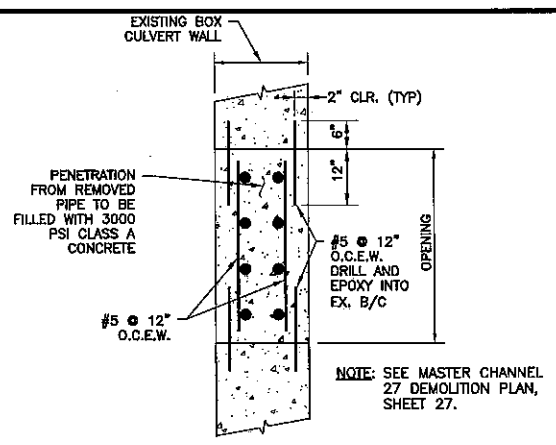
A SYSTEM 'F' OUTFALL STRUCTURE



C ARTICULATED MATTING



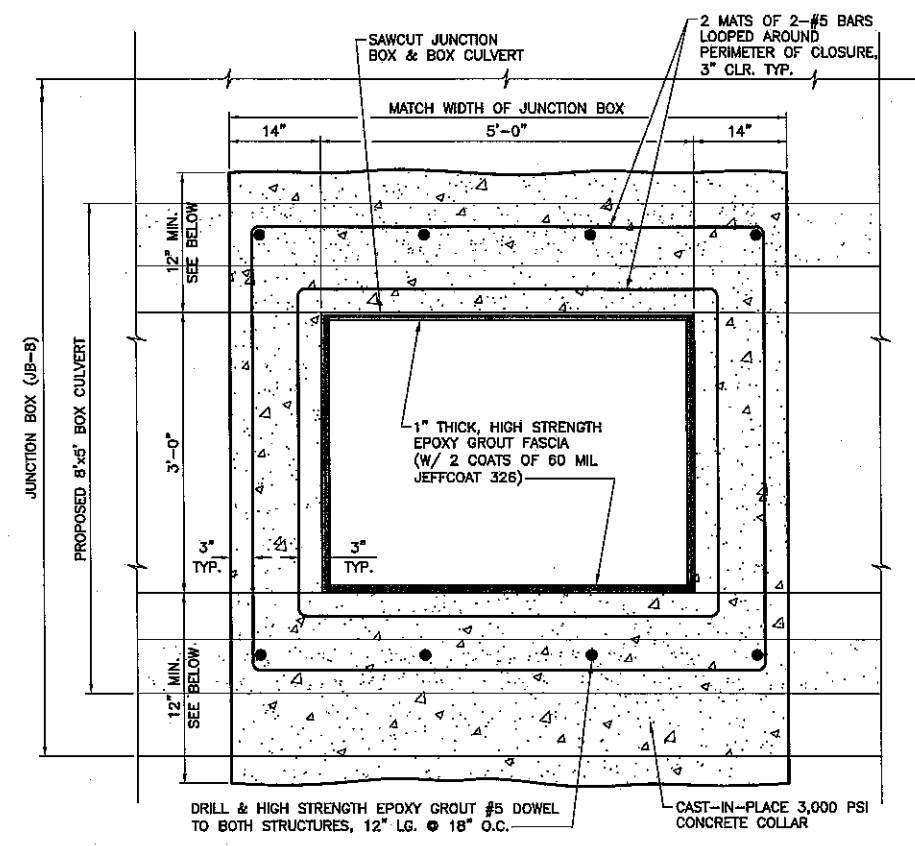
B BOX CULVERT WALL REPAIR
NOT TO SCALE



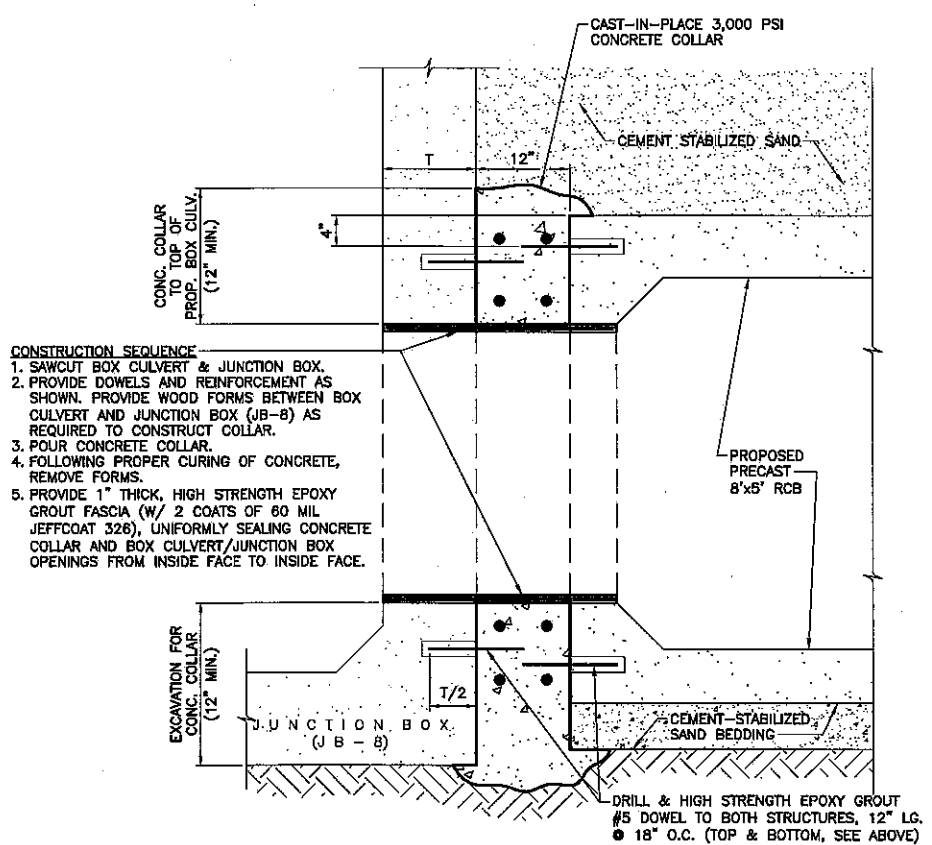
D SPECIAL PRECAST JUNCTION BOX

PVE NAME: R. CUERENS; CITY OF CORPUS CHRISTI; PROJECT: Rodd Field Road Expansion - Saratoga to Yorktown; SHEET: 125; REV: 1.0; DATE: 11/19/2018; TIME: 11:15:58 AM

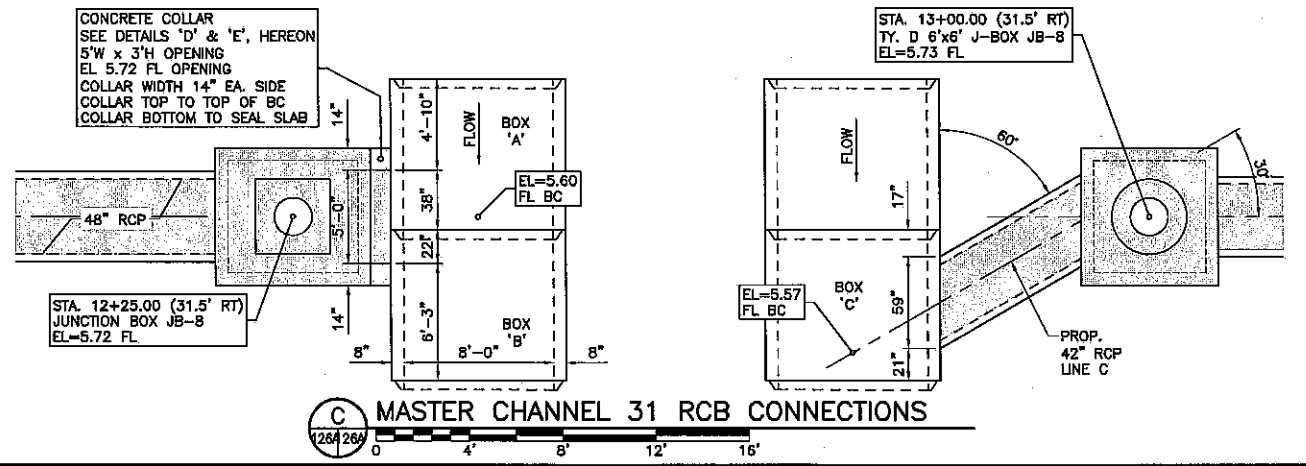
REV. NAME: R. CLEMENTS/CITY OF CHICAGO - Yorktown VAD 1266B REV.10 CO.4 Project Details S&B.dwg Chicago, Thu, Apr 30, 2020 @ 12:00:24 PM



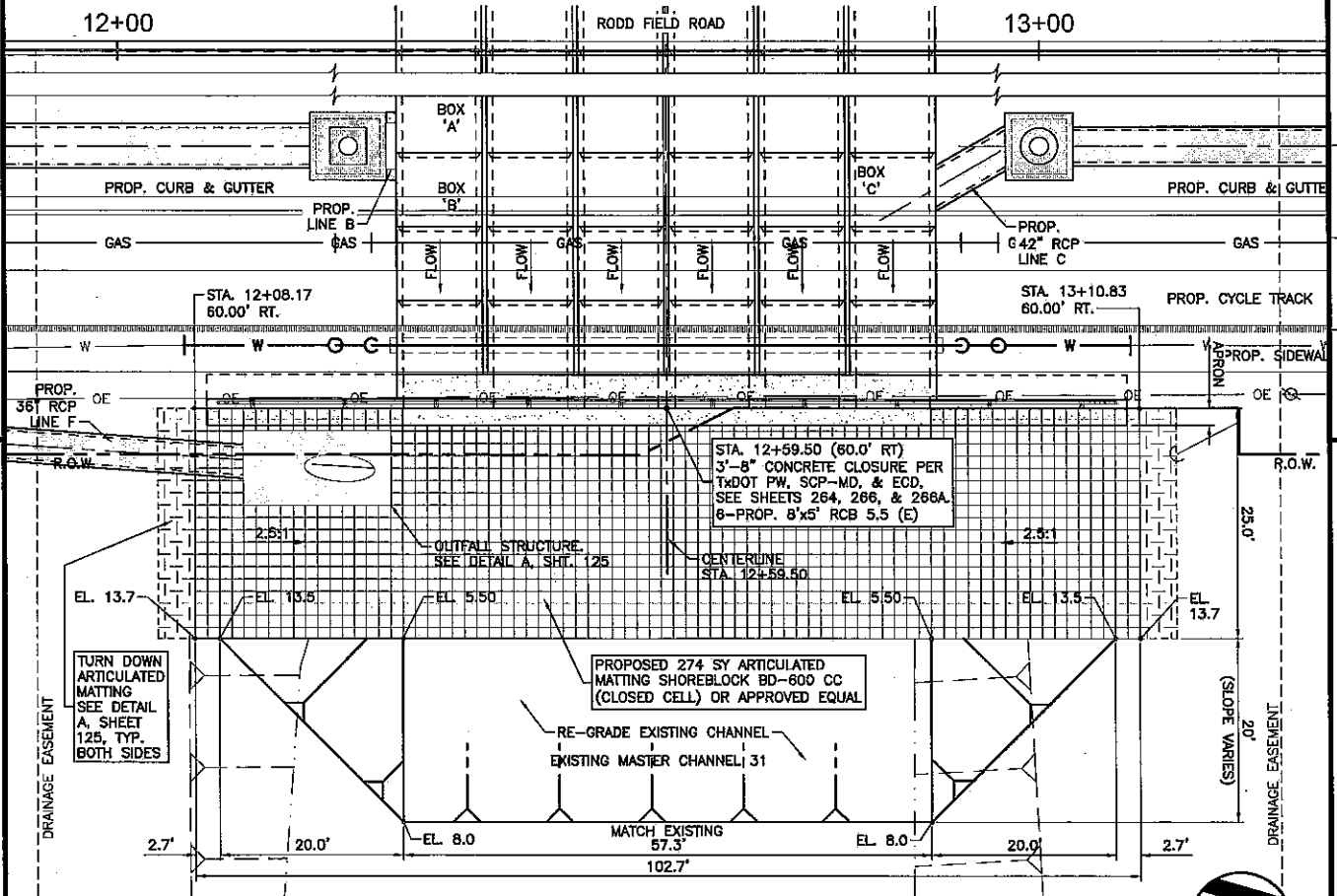
E BOX CULVERT CONNECTION SECTION



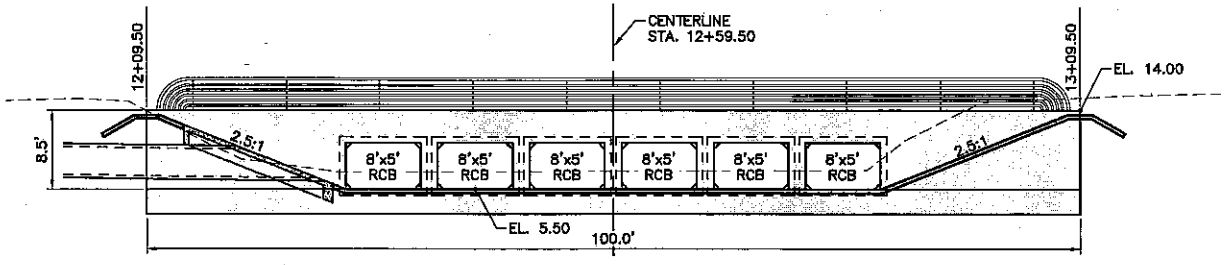
D BOX CULVERT CONNECTION DETAIL



C MASTER CHANNEL 31 RCB CONNECTIONS



A MASTER CHANNEL 31 BOX CULVERT PLAN EAST



B MASTER CHANNEL 31 HEADWALL ELEVATION EAST SIDE - LOOKING WEST

CONSULTANT'S SHEET 126A
 PROJECT NO. 15025

 APRIL 30, 2020

LJA ENGINEERING
 TEXAS ENGINEERING FIRM F-1386

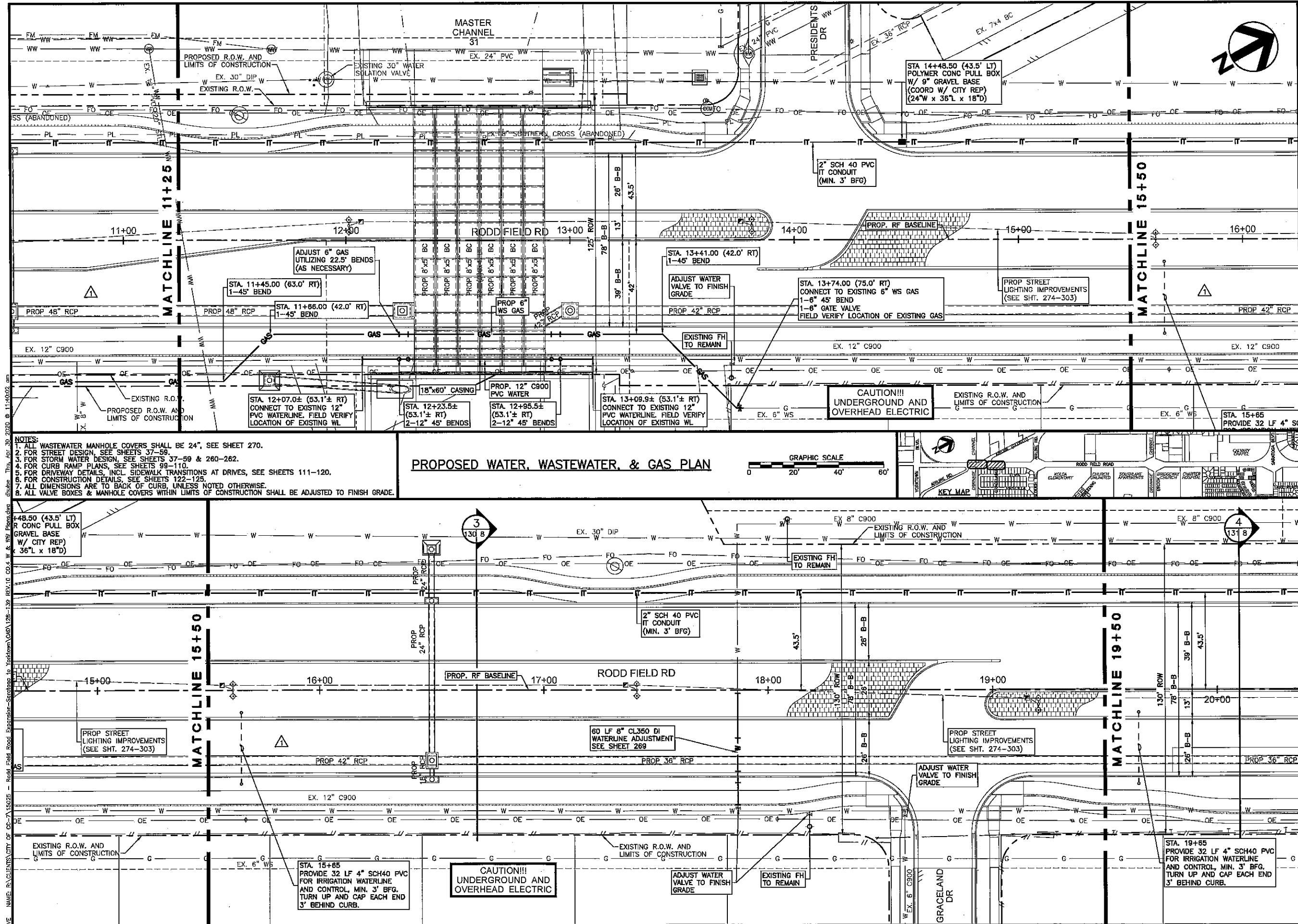
Corpus Christi
 Engineering

REVISION NO.	DATE	BY	DESCRIPTION
1	4/10/2020	JCC	CHANGE ORDER NO. 4 (REVISED LINE 'E' & PENETRATION)

RODD FIELD ROAD IMPROVEMENTS
YORKTOWN BOULEVARD TO SARATOGA BOULEVARD
 (BOND 2014)

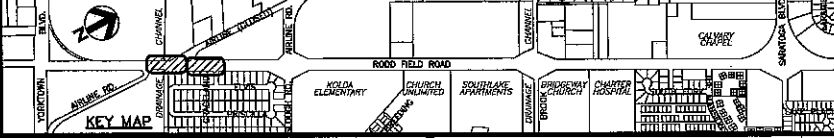
CONSTRUCTION DETAILS
 (5A OF 5A)

CHANGE ORDER NO. 4
 SHEET 126A of 304
 RECORD DRAWING NO.
STR 943
 CITY PROJECT # E15112



- NOTES:**
1. ALL WASTEWATER MANHOLE COVERS SHALL BE 24", SEE SHEET 270.
 2. FOR STREET DESIGN, SEE SHEETS 37-59.
 3. FOR STORM WATER DESIGN, SEE SHEETS 37-59 & 260-262.
 4. FOR CURB RAMP PLANS, SEE SHEETS 99-110.
 5. FOR DRIVEWAY DETAILS, INCL SIDEWALK TRANSITIONS AT DRIVES, SEE SHEETS 111-120.
 6. FOR CONSTRUCTION DETAILS, SEE SHEETS 122-125.
 7. ALL DIMENSIONS ARE TO BACK OF CURB, UNLESS NOTED OTHERWISE.
 8. ALL VALVE BOXES & MANHOLE COVERS WITHIN LIMITS OF CONSTRUCTION SHALL BE ADJUSTED TO FINISH GRADE.

PROPOSED WATER, WASTEWATER, & GAS PLAN

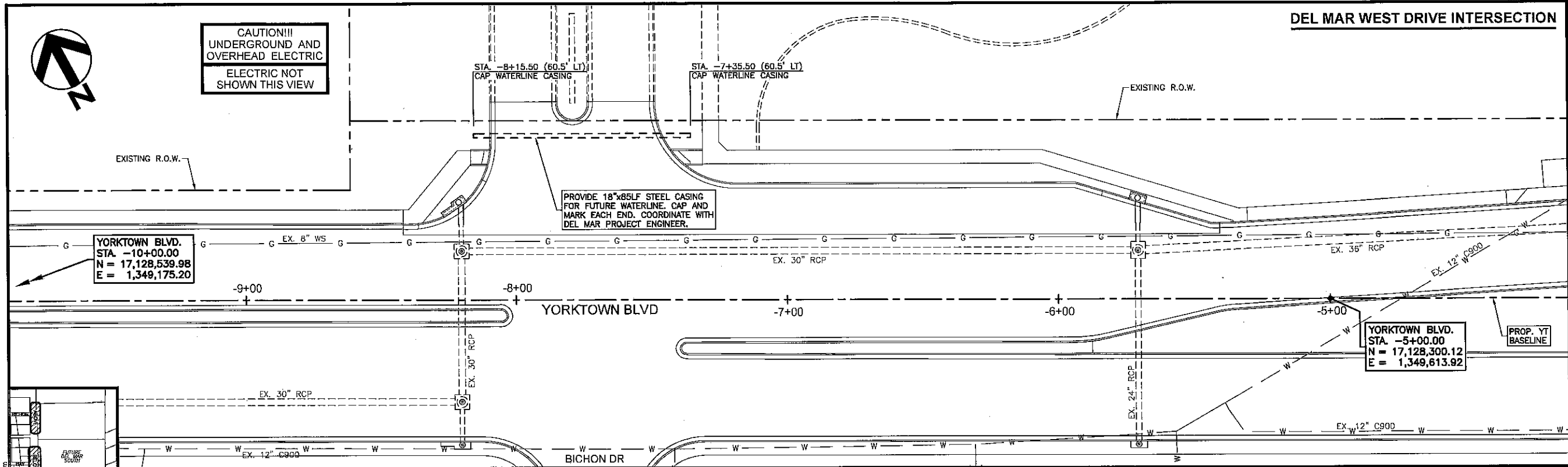


CONSULTANT'S SHEET 130 PROJECT NO. 15025	
APRIL 30, 2020	
 LJA ENGINEERING TEXAS ENGINEERING FIRM F-1386	
 Corpus Christi Engineering	
REVISION NO.	DESCRIPTION
1	REVISION ORDER NO. 4 (MASTER CHANNEL 31)
2	ADDENDUM NO. 1
DATE	DATE
4/19/2020	6/28/2018
RODD FIELD ROAD IMPROVEMENTS YORKTOWN BOULEVARD TO SARATOGA BOULEVARD (BOND 2014) WATER, WASTEWATER, & GAS PLAN RF STA. 11+25 TO 19+50	
CHANGE ORDER NO. 4	
REVISION NO. 1	
SHEET 130 of 304	
RECORD DRAWING NO. STR 943	
CITY PROJECT # E15112	



CAUTION!!!
UNDERGROUND AND
OVERHEAD ELECTRIC
ELECTRIC NOT
SHOWN THIS VIEW

DEL MAR WEST DRIVE INTERSECTION



YORKTOWN BLVD.
STA. -10+00.00
N = 17,128,539.98
E = 1,349,175.20

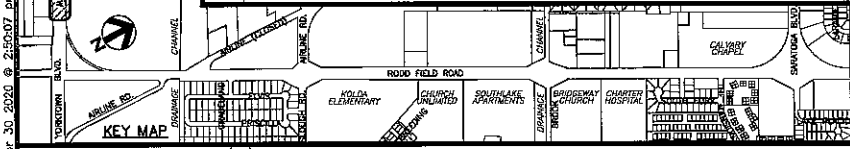
YORKTOWN BLVD.
STA. -5+00.00
N = 17,128,300.12
E = 1,349,613.92

PROVIDE 18"x85LF STEEL CASING
FOR FUTURE WATERLINE. CAP AND
MARK EACH END. COORDINATE WITH
DEL MAR PROJECT ENGINEER.

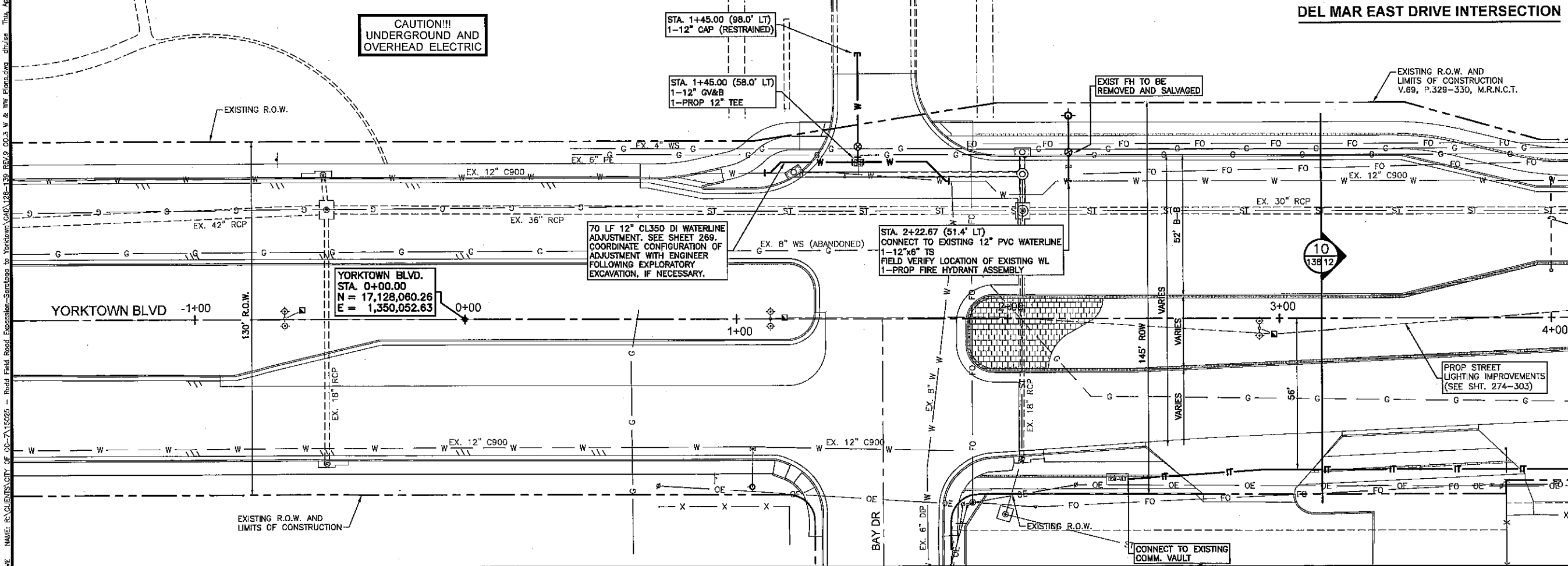
- NOTES:**
1. ALL WASTEWATER MANHOLE COVERS SHALL BE 24", SEE SHEET 270.
 2. FOR STREET DESIGN, SEE SHEETS 37-59.
 3. FOR STORM WATER DESIGN, SEE SHEETS 37-59 & 260-262.
 4. FOR CURB RAMP PLANS, SEE SHEETS 99-110.
 5. FOR DRIVEWAY DETAILS, INCL. SIDEWALK TRANSITIONS AT DRIVES, SEE SHEETS 111-120.
 6. FOR CONSTRUCTION DETAILS, SEE SHEETS 122-125.
 7. ALL DIMENSIONS ARE TO BACK OF CURB, UNLESS NOTED OTHERWISE.
 8. ALL VALVE BOXES & MANHOLE COVERS WITHIN LIMITS OF CONSTRUCTION SHALL BE ADJUSTED TO FINISH GRADE.



**YORKTOWN BOULEVARD
PROPOSED WATER, WASTEWATER, & GAS PLAN**



DEL MAR EAST DRIVE INTERSECTION



CAUTION!!!
UNDERGROUND AND
OVERHEAD ELECTRIC

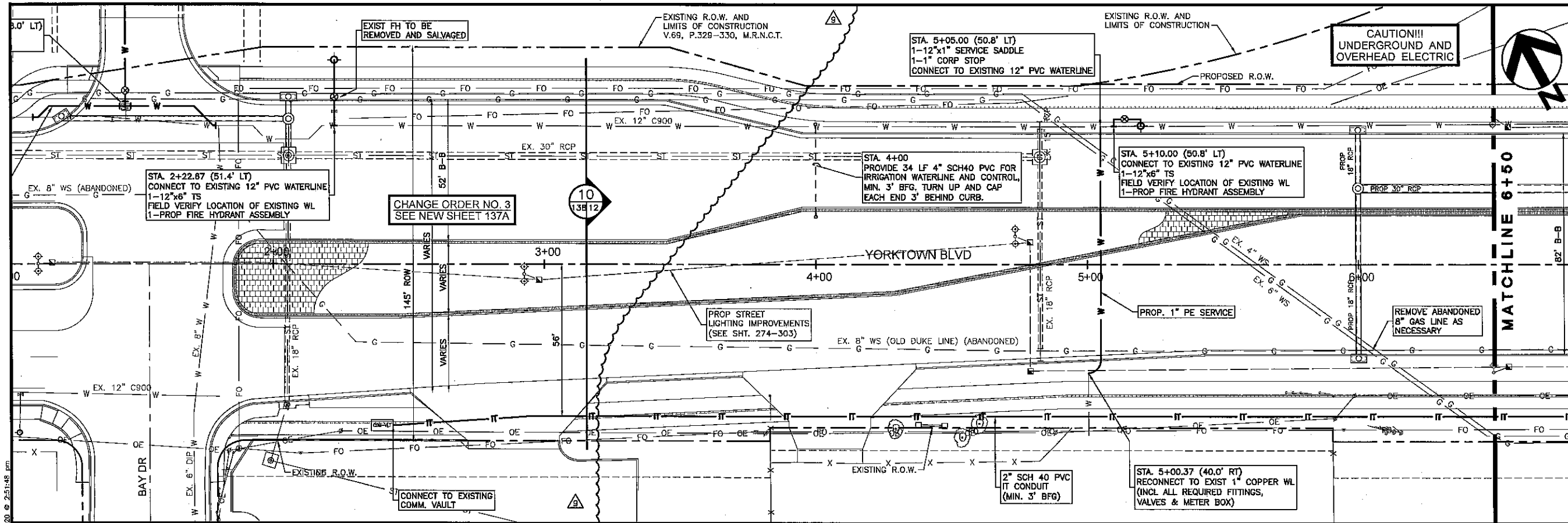
YORKTOWN BLVD.
STA. 0+00.00
N = 17,128,080.26
E = 1,350,052.63

70 LF 12" CL350 DI WATERLINE
ADJUSTMENT. SEE SHEET 269.
COORDINATE CONFIGURATION OF
ADJUSTMENT WITH ENGINEER
FOLLOWING EXPLORATORY
EXCAVATION, IF NECESSARY.

STA. 2+22.67 (51.4' LT)
CONNECT TO EXISTING 12" PVC WATERLINE
1-12"x8" TS
FIELD VERIFY LOCATION OF EXISTING WL
1-PROP FIRE HYDRANT ASSEMBLY

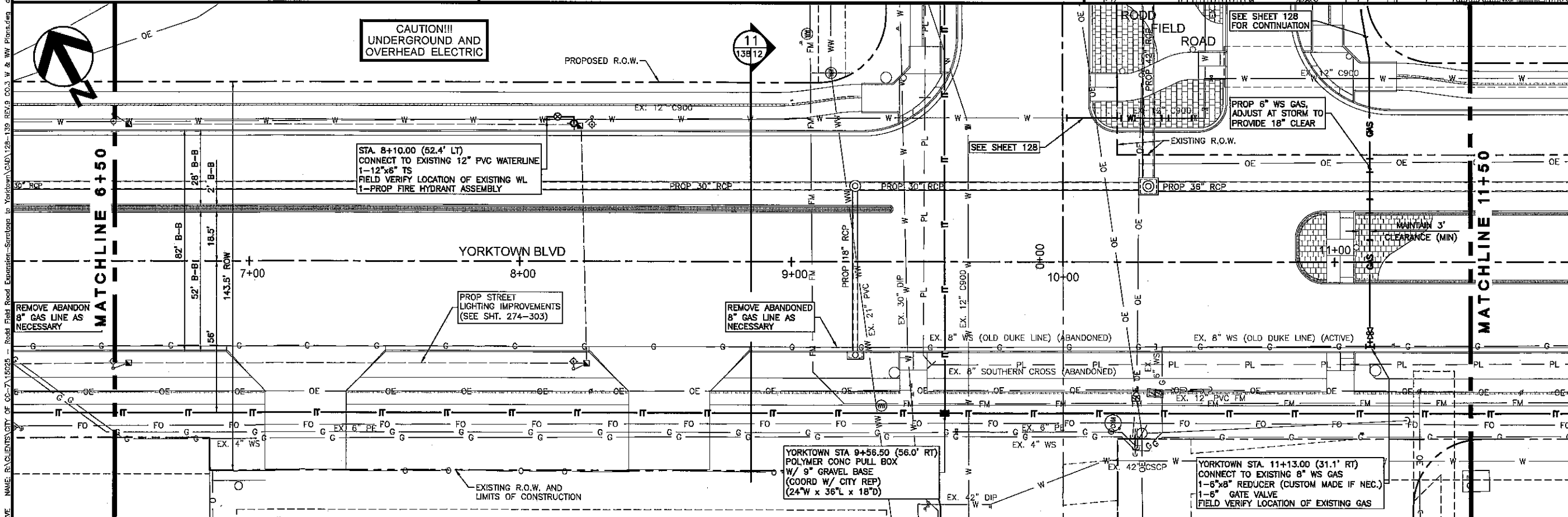
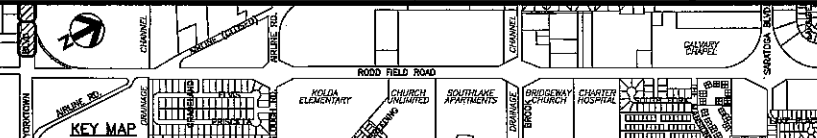
PROP STREET
LIGHTING IMPROVEMENTS
(SEE SHT. 274-303)

CONSULTANT'S SHEET 137A PROJECT NO. 15025	
APRIL 30, 2020	
LJA ENGINEERING TEXAS ENGINEERING FIRM F-1386	
DESCRIPTION	RODD FIELD ROAD IMPROVEMENTS YORKTOWN BOULEVARD TO SARATOGA BOULEVARD (BOND 2014)
BY	Corpus Christi Engineering
DATE	
REVISION NO.	
CHANGE ORDER NO. 3 (DEL MAR DRIVES; ADDED SHEET)	
JCC	
BY	
DATE	3/19/2020
REVISION NO.	
CHANGE ORDER NO. 3	
SHEET 137A of 304	
RECORD DRAWING NO.	STR 943
CITY PROJECT #	E15112



- NOTES:**
1. ALL WASTEWATER MANHOLE COVERS SHALL BE 24". SEE SHEET 270.
 2. FOR STREET DESIGN, SEE SHEETS 37-59.
 3. FOR STORM WATER DESIGN, SEE SHEETS 37-59 & 260-262.
 4. FOR CURB RAMP PLANS, SEE SHEETS 99-110.
 5. FOR DRIVEWAY DETAILS, INCL. SIDEWALK TRANSITIONS AT DRIVES, SEE SHEETS 111-120.
 6. FOR CONSTRUCTION DETAILS, SEE SHEETS 122-125.
 7. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
 8. ALL VALVE BOXES & MANHOLE COVERS WITHIN LIMITS OF CONSTRUCTION SHALL BE ADJUSTED TO FINISH GRADE.

**YORKTOWN BOULEVARD
PROPOSED WATER, WASTEWATER, & GAS PLAN**



CONSULTANT'S SHEET 138
PROJECT NO. 15025

APRIL 30, 2020

LJA ENGINEERING
TEXAS ENGINEERING FIRM F-1386

Corpus Christi
Engineering

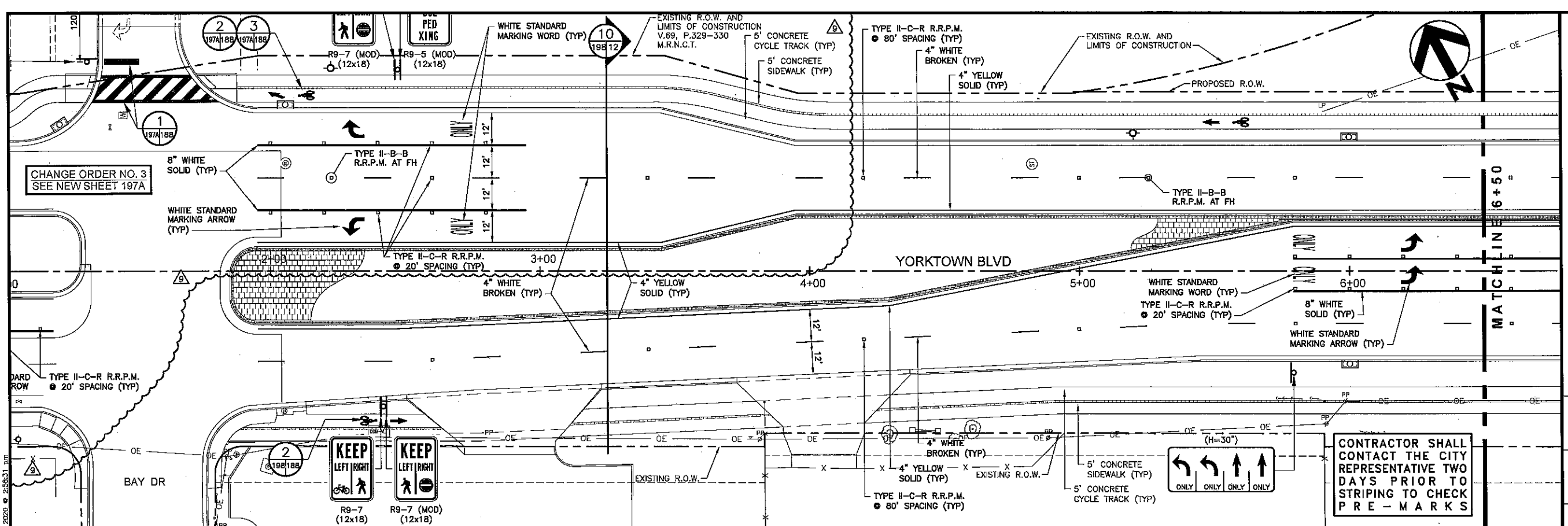
REVISION NO.	DATE	DESCRIPTION
1	3/19/2020	JCC
2	11/9/2018	JCC

CHANGE ORDER NO. 3 (DEL MAR DRIVES)
REVISION NO. 1

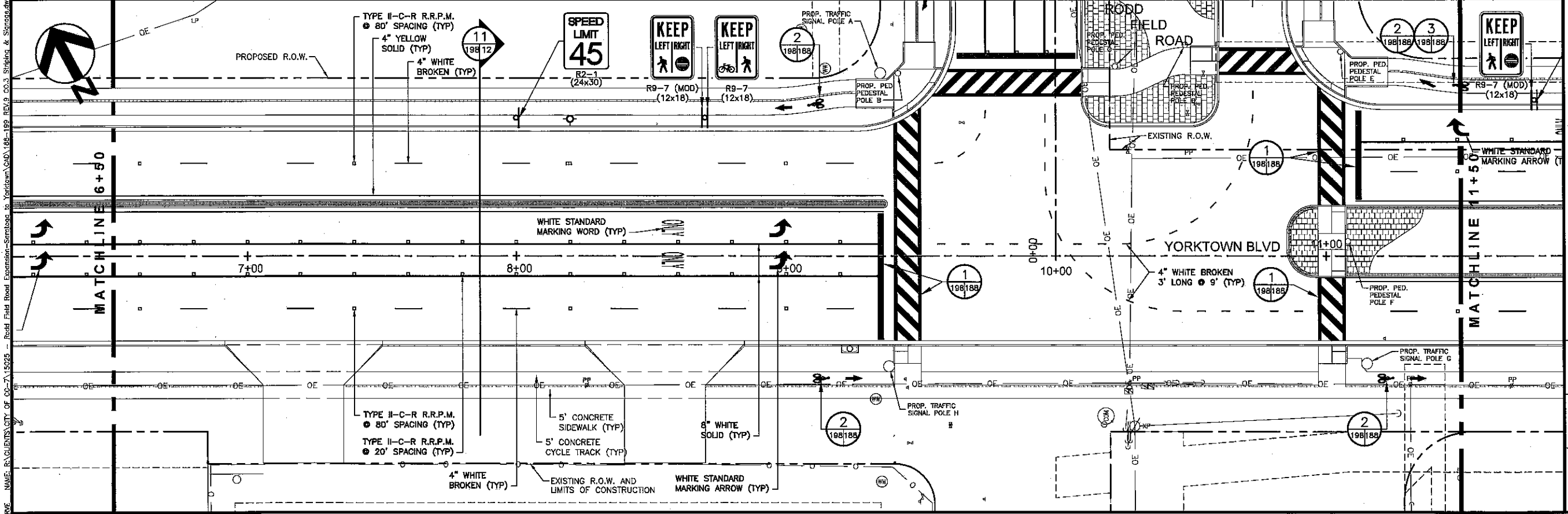
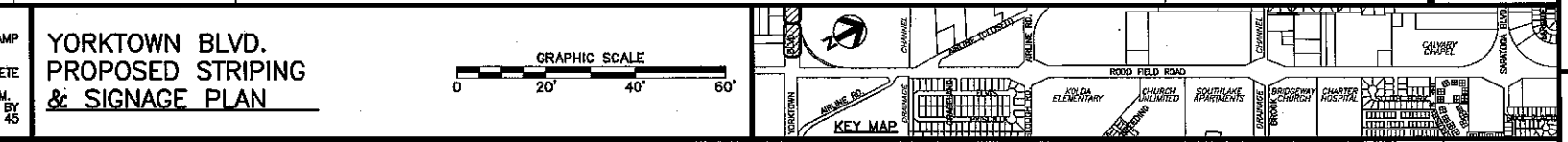
DESCRIPTION:
RODD FIELD ROAD IMPROVEMENTS
YORKTOWN BOULEVARD TO SARATOGA BOULEVARD
(BOND 2014)

WATER, WASTEWATER, & GAS PLAN
BEGIN TO YT STA. 11+50

CHANGE ORDER NO. 3
SHEET 138 of 304
RECORD DRAWING NO.
STR 943
CITY PROJECT # E15112



- NOTES:**
- CONTRACTOR SHALL CONTACT THE CITY REPRESENTATIVE TWO (2) DAYS PRIOR TO STRIPING TO CHECK PRE-MARKS.
 - ALL EXISTING STREET SIGNS TO BE REPLACED WITH NEW SIGNS UNLESS NOTED OTHERWISE.
 - PROPOSED STOP SIGNS SHALL BE LOCATED ADJACENT TO STOP BAR.
 - SIGNS SHALL COMPLY WITH MUTCD (2011). BOTTOM OF ALL SIGNS PROPOSED IN SIDEWALK/CYCLE TRACK, INCLUDING SUPPLEMENTAL PLAQUES, SHALL BE 8" AFG (MIN) AND IN ACCORDANCE WITH TEXAS MUTCD 2A.16 (R) STA. 27+00± (RT), 28+50± (RT), & 29+75± (RT).
 - EXISTING SIDE STREET SIGNS SHALL BE REUSED & RELOCATED WITH NEW FOUNDATION.
 - ALL RTA BUS STOP SIGNS SHALL BE PROVIDED BY OTHERS.
 - SEE CYCLE TRACK STANDARDS, SHEETS 249-252, AND CURB RAMP DETAILS, SHEETS 98-110 & 258-259.
 - PROVIDE ANTI-GRAFFITI COATING BOTH FACES OF ALL SIGNS.
 - BASE BID NO. 2: PROVIDE PRIMER FOR MARKINGS ON CONCRETE PAVEMENT.
 - ALL SIGNS SHALL BE INSTALLED WITH A TRIANGULAR SURPASS SYSTEM.
 - VERIFY SPEED LIMITS WITH GAR PRIOR TO INSTALLATION. CURRENTLY, BY CITY ORDINANCE, THE SPEED LIMIT FROM YORKTOWN TO AIRLINE IS 45 MPH, AND FROM AIRLINE TO SARATOGA IS 50 MPH.



CHANGE ORDER NO. 3
SEE NEW SHEET 197A

CONTRACTOR SHALL CONTACT THE CITY REPRESENTATIVE TWO (2) DAYS PRIOR TO STRIPING TO CHECK PRE-MARKS

**YORKTOWN BLVD.
PROPOSED STRIPING
& SIGNAGE PLAN**

CONTRACTOR SHALL CONTACT THE CITY REPRESENTATIVE TWO (2) DAYS PRIOR TO STRIPING TO CHECK PRE-MARKS

CONSULTANT'S SHEET 198
PROJECT NO. 15025

JEFFREY C. COYM
101893
LICENSED PROFESSIONAL ENGINEER

APRIL 20, 2020

LJA ENGINEERING
TEXAS ENGINEERING FIRM F-1386

Corpus Christi Engineering

REVISION NO.	DATE	DESCRIPTION
1	3/19/2020	CHANGE ORDER NO. 3 (DEL. MAR. DRIVES)

JCC BY

RODD FIELD ROAD IMPROVEMENTS
YORKTOWN BOULEVARD TO SARATOGA BOULEVARD
(BOND 2014)

STRIPING & SIGNAGE PLAN
BEGIN TO YT STA. 11+50

CHANGE ORDER NO. 3
SHEET 198 of 304
RECORD DRAWING NO.
STR 943
CITY PROJECT # E15112

ACC: _____

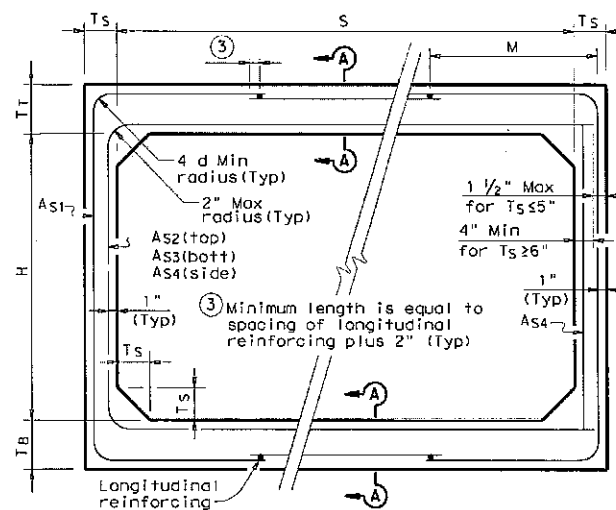
LEVELS DISPLAYED _____

BOX DATA

SECTION DIMENSIONS					Fill Height (ft)	M (in)	REINFORCING (in ² /ft) ②								Lift Weight (Tons) ①	Governing ASTM Standard
S (ft)	H (ft)	T _T (in)	T _B (in)	T _S (in)			A _{S1}	A _{S2}	A _{S3}	A _{S4}	A _{S7}	A _{S8}	A _{S5}	A _{S6}		
8	4	8	8	8	< 2	-	0.37	0.51	0.27	0.19	0.19	0.19	0.19	11.2	C 850	
8	4	8	8	8	2	34	0.37	0.40	0.29	0.19	-	-	-	11.2	C 789	
8	4	8	8	8	3	31	0.27	0.28	0.24	0.19	-	-	-	11.2	C 789	
8	4	8	8	8	4	28	0.25	0.25	0.24	0.19	-	-	-	11.2	C 789	
8	4	8	8	8	5	28	0.26	0.25	0.26	0.19	-	-	-	11.2	C 789	
8	4	8	8	8	6	28	0.26	0.26	0.26	0.19	-	-	-	11.2	C 789	
8	4	8	8	8	8	27	0.28	0.28	0.29	0.19	-	-	-	11.2	C 789	
8	4	8	8	8	10	27	0.32	0.32	0.33	0.19	-	-	-	11.2	C 789	
8	4	8	8	8	12	27	0.36	0.36	0.37	0.19	-	-	-	11.2	C 789	
8	4	8	8	8	14	27	0.40	0.41	0.42	0.19	-	-	-	11.2	C 789	
8	5	8	8	8	< 2	-	0.34	0.53	0.30	0.19	0.19	0.20	0.19	12.0	C 850	
8	5	8	8	8	2	35	0.34	0.43	0.32	0.19	-	-	-	12.0	C 789	
8	5	8	8	8	3	31	0.25	0.31	0.27	0.19	-	-	-	12.0	C 789	
8	5	8	8	8	4	28	0.23	0.27	0.27	0.19	-	-	-	12.0	C 789	
8	5	8	8	8	5	28	0.24	0.27	0.29	0.19	-	-	-	12.0	C 789	
8	5	8	8	8	6	27	0.24	0.28	0.29	0.19	-	-	-	12.0	C 789	
8	5	8	8	8	8	27	0.26	0.30	0.32	0.19	-	-	-	12.0	C 789	
8	5	8	8	8	10	27	0.29	0.35	0.36	0.19	-	-	-	12.0	C 789	
8	5	8	8	8	12	27	0.32	0.39	0.41	0.19	-	-	-	12.0	C 789	
8	6	8	8	8	< 2	-	0.32	0.56	0.33	0.19	0.25	0.19	0.21	12.8	C 850	
8	6	8	8	8	2	36	0.31	0.46	0.35	0.19	-	-	-	12.8	C 789	
8	6	8	8	8	3	31	0.23	0.33	0.29	0.19	-	-	-	12.8	C 789	
8	6	8	8	8	4	30	0.22	0.29	0.29	0.19	-	-	-	12.8	C 789	
8	6	8	8	8	5	29	0.23	0.29	0.31	0.19	-	-	-	12.8	C 789	
8	6	8	8	8	6	28	0.22	0.30	0.31	0.19	-	-	-	12.8	C 789	
8	6	8	8	8	8	27	0.24	0.32	0.34	0.19	-	-	-	12.8	C 789	
8	6	8	8	8	10	27	0.27	0.37	0.39	0.19	-	-	-	12.8	C 789	
8	6	8	8	8	12	27	0.30	0.42	0.43	0.19	-	-	-	12.8	C 789	
8	7	8	8	8	< 2	-	0.30	0.58	0.35	0.19	0.27	0.22	0.22	0.19	13.6	C 850
8	7	8	8	8	2	41	0.28	0.49	0.38	0.19	-	-	-	13.6	C 789	
8	7	8	8	8	3	35	0.22	0.35	0.32	0.19	-	-	-	13.6	C 789	
8	7	8	8	8	4	32	0.20	0.31	0.31	0.19	-	-	-	13.6	C 789	
8	7	8	8	8	5	31	0.21	0.31	0.33	0.19	-	-	-	13.6	C 789	
8	7	8	8	8	6	30	0.21	0.31	0.34	0.19	-	-	-	13.6	C 789	
8	7	8	8	8	8	29	0.22	0.34	0.36	0.19	-	-	-	13.6	C 789	
8	7	8	8	8	10	28	0.25	0.38	0.41	0.19	-	-	-	13.6	C 789	
8	7	8	8	8	12	28	0.28	0.43	0.46	0.19	-	-	-	13.6	C 789	
8	8	8	8	8	< 2	-	0.28	0.60	0.38	0.23	0.29	0.26	0.22	0.19	14.4	C 850
8	8	8	8	8	2	61	0.26	0.51	0.40	0.19	-	-	-	14.4	C 789	
8	8	8	8	8	3	41	0.20	0.37	0.34	0.19	-	-	-	14.4	C 789	
8	8	8	8	8	4	36	0.19	0.32	0.33	0.19	-	-	-	14.4	C 789	
8	8	8	8	8	5	34	0.20	0.32	0.35	0.19	-	-	-	14.4	C 789	
8	8	8	8	8	6	32	0.20	0.33	0.36	0.19	-	-	-	14.4	C 789	
8	8	8	8	8	8	31	0.21	0.35	0.38	0.19	-	-	-	14.4	C 789	
8	8	8	8	8	10	30	0.23	0.40	0.43	0.19	-	-	-	14.4	C 789	
8	8	8	8	8	12	29	0.26	0.44	0.48	0.19	-	-	-	14.4	C 789	

① For Box Length = 8'-0"

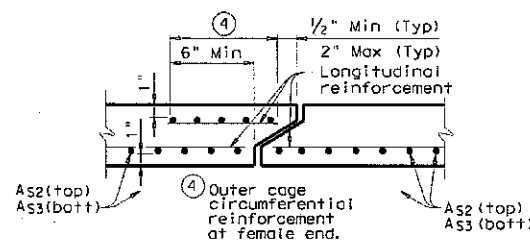
② A_{S1} thru A_{S4}, A_{S7} and A_{S8} are minimum required areas of reinforcement per linear foot of box length. A_{S6} and A_{S5} are minimum required areas of reinforcement per linear foot of box width.



C789 CORNER OPTION "A"

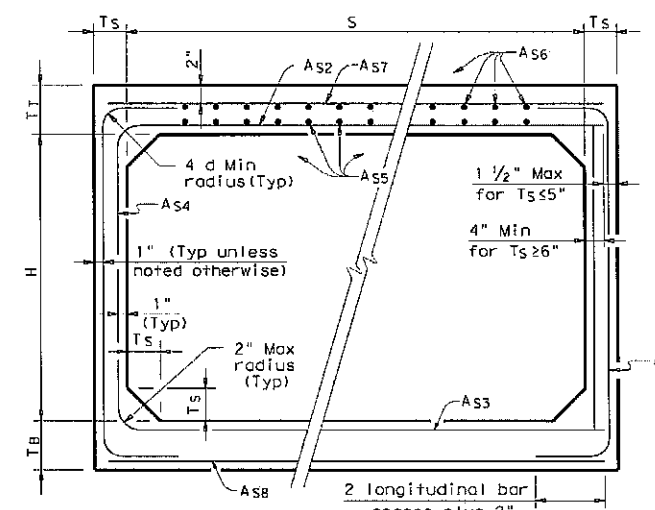
C789 CORNER OPTION "B"

ASTM C789 STANDARD



SECTION A-A

(TOP AND BOTTOM SLAB JOINT REINFORCEMENT)



C850 CORNER OPTION "A"

C850 CORNER OPTION "B"

ASTM C850 STANDARD

GENERAL NOTES:

Designs shown conform to ASTM C789 or ASTM C850. Refer to ASTM C789 or ASTM C850 for information or details not shown. For ASTM C789 designs, all reinforcing steel shall have a minimum specified yield stress of 65 ksi. For ASTM C850 designs, all reinforcing steel shall have a minimum specified yield stress of 60 ksi. All concrete shall be Class "H" Concrete with a minimum compressive strength of 5,000 psi. See SCP-MD standard sheet for miscellaneous details and notes not shown. Designed to the maximum fill height shown. In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Shop plans for alternate designs shall be submitted in accordance with Item "Precast Concrete Structures".

HS20 LOADING

Texas Department of Transportation
Bridge Division

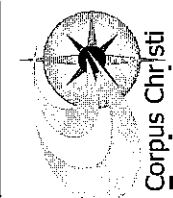
**SINGLE BOX CULVERTS
PRECAST
8'-0" SPAN**

SCP-8

FILE: scp08s1e.dgn	DR: GAF	CHK: LWJ	REV: BWA/TKDOT	PK: GAF
©TKDOT December 2003	DISTRICT	FEDERAL AID PROJECT	SHEET	
REVISIONS				
COUNTY	CONTROL	SECT	JOB	HIGHWAY



APRIL 30, 2020



REVISION NO. _____
DATE _____
BY _____

RODD FIELD ROAD IMPROVEMENTS
YORKTOWN BOULEVARD TO SARATOGA BOULEVARD
(BOND 2014)

CITY OF CORPUS CHRISTI
**SCP-8 SINGLE BOX CULVERTS PRECAST
8'-0 SPAN**

CHANGE ORDER NO. 4

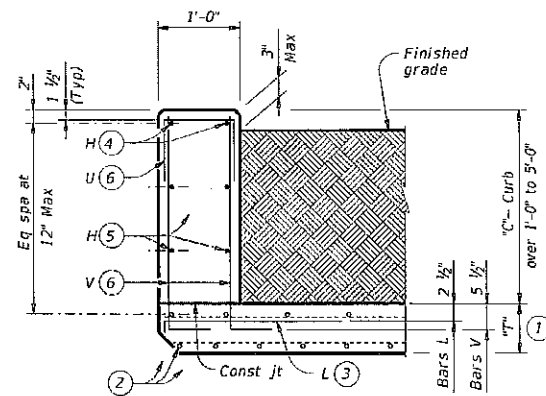
SHEET 264A of 304

RECORD DRAWING NO.
STR 943

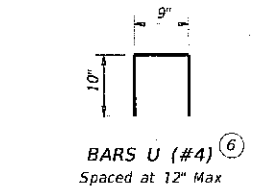
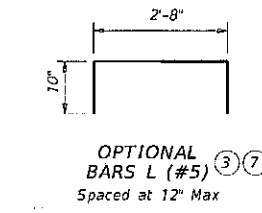
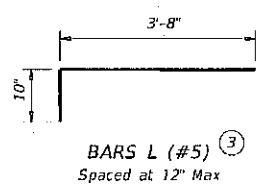
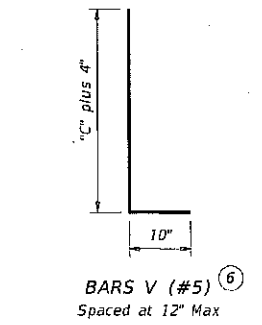
CITY PROJECT # E15112

DISCLAIMER:
The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



TYPICAL SECTION
Used for curbs over 1'-0" to 5'-0"



- ① "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 8" thick, see SCP-MD standard for additional details.
- ② Adjust normal culvert slab bars as necessary to clear obstructions.
- ③ Place bars L as shown. Tilt hook as necessary to maintain cover.
- ④ Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.
- ⑤ Additional bars H(#4) as required to maintain 12" Max spacing.
- ⑥ Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.
- ⑦ Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.
- ⑧ Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

TABLE OF ESTIMATED CURB QUANTITIES (8)		
Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'-0"	0.037	10.4
1'-6"	0.056	14.5
2'-0"	0.074	15.6
2'-6"	0.093	18.0
3'-0"	0.111	19.0
3'-6"	0.130	21.3
4'-0"	0.148	22.4
4'-6"	0.167	24.8
5'-0"	0.185	25.9

CONSTRUCTION NOTES:
Adjust reinforcing steel as necessary to provide 1 1/4" cover.
For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class "C" concrete (f'c = 3,600 psi) minimum for curbs.
Provide bar laps, where required, as follows:
• Uncoated or galvanized ~ #4 = 1'-8" Min

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR11, PR22 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.
This Curb is considered as part of the Box Culvert for payment.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation Bridge Division Standard

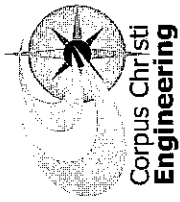
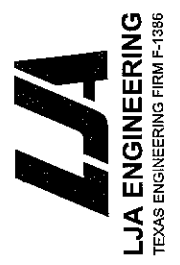
EXTENDED CURB DETAILS
FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL

ECD

FILE: ecdstdel-20.dgn	DR: GAF	CR: TxDOT	EW: TxDOT	CK: GAF
TxDOT February 2020	CONF	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY	SHEET NO.	



APRIL 30, 2020



REVISION NO. DATE BY DESCRIPTION

CHANGE ORDER NO. 4 (ADDED SHEET 266A-SETB-CD 1 OF 2)

4/10/2020

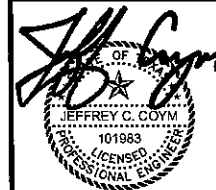
RODD FIELD ROAD IMPROVEMENTS
YORKTOWN BOULEVARD TO SARATOGA BOULEVARD
(BOND 2014)

ECD EXTENDED CURB DETAILS

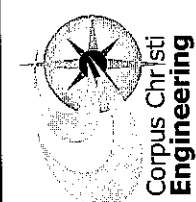
CHANGE ORDER NO. 4
SHEET 266A of 304

RECORD DRAWING NO.
STR 943

CITY PROJECT # E15112



APRIL 30, 2020



RODD FIELD ROAD IMPROVEMENTS
YORKTOWN BOULEVARD TO SARATOGA BOULEVARD
(BOND 2014)

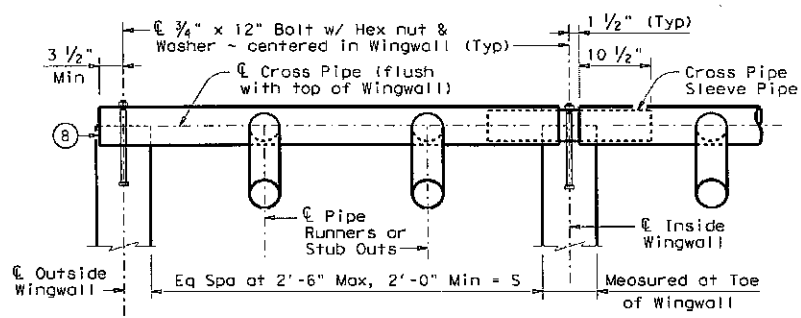
SET B-CD SAFETY END TREATMENT
(2 OF 2)

REVISION NO. DATE BY DESCRIPTION

- ⑥ Cross Pipe shall be the same size as the Pipe Runner. Cross Pipe Stub Out shall be the same size as the Anchor Pipe.
- ⑦ Note that actual slope of Safety Pipe Runner may vary slightly from Side Slope.
- 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 Safety 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.

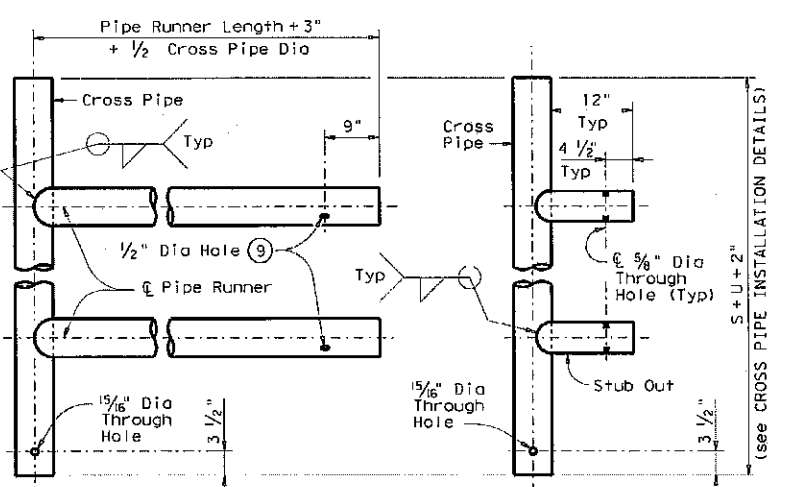
MAXIMUM PIPE RUNNER LENGTHS & REQUIRED PIPE RUNNER AND ANCHOR PIPE SIZES ⑥

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

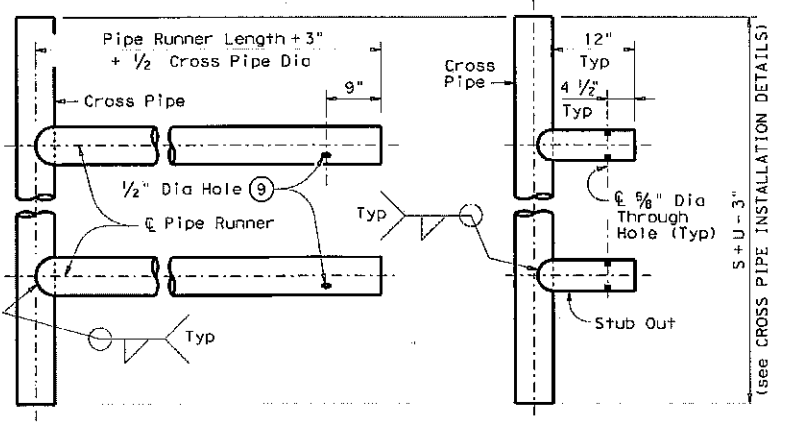


NOTE: At Contractor's option, the Cross Pipe may be made continuous across the Inside Wingwalls. If such option is selected, the Sleeve Pipe shall be omitted and a 1/8" diameter through hole be made in the Cross Pipe to accept the anchor bolt at the centerline of each Inside Wingwall.

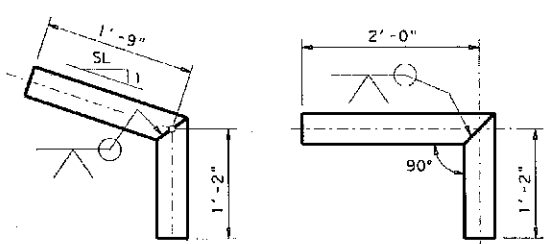
CROSS PIPE INSTALLATION DETAILS



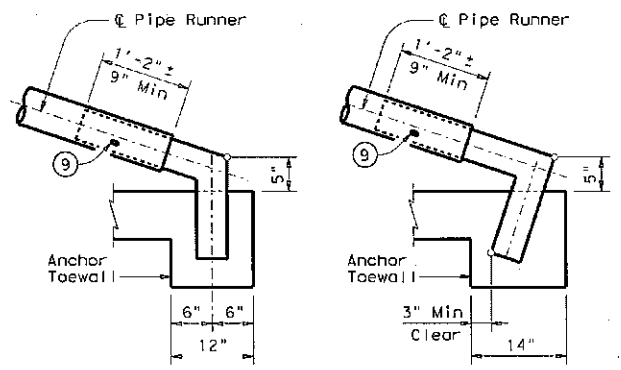
OPTION A2 OPTION A1 FOR USE IN OUTSIDE CULVERT BAY



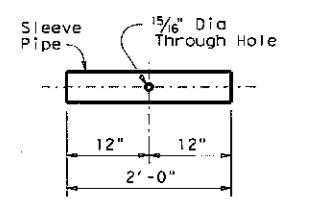
OPTION A2 OPTION A1 FOR USE IN INSIDE CULVERT BAY CROSS PIPE AND CONNECTIONS DETAILS



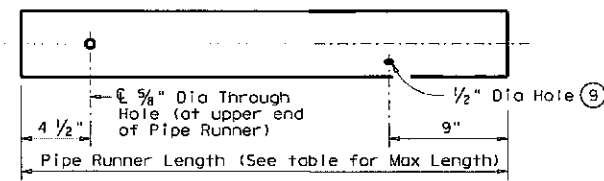
OPTION A OPTION B BOTTOM ANCHOR PIPE DETAILS ⑩



OPTION B1 OPTION B2 BOTTOM ANCHOR TOEWALL DETAILS
(Wingwall not shown for clarity)

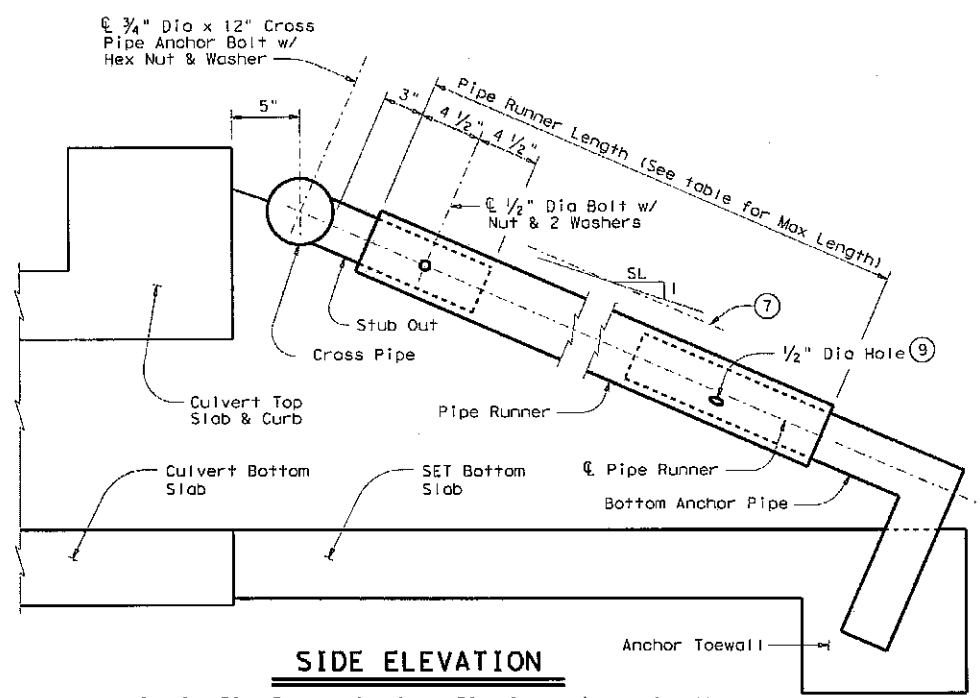


CROSS PIPE SLEEVE PIPE DETAILS



PIPE RUNNER DETAILS

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



SIDE ELEVATION

(Showing Pipe Runner with Cross Pipe Connection option A1 and anchor Pipe option B2. Wingwall not shown for clarity)

SHEET 2 OF 2

Texas Department of Transportation
Bridge Division Standard

SAFETY END TREATMENT
FOR 0° SKEW BOX CULVERTS
(MAXIMUM HW = 7'-0")
TYPE I - CROSS DRAINAGE

SETB-CD

FILE: setbcase.dgn	DN: GAF	CK: CAT	DN: JRP	CK: GAF
©TxDOT February 2010	COV: SECT	JOB: HIGHWAY		
REVISIONS	DIST	COUNTY	SHEET NO.	

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DATE: FILE:

P/E: NAME: R. CLEMENTS, CITY OF: CC-7-15025 - Road Field Road Expansion - Saratoga to Yorktown, 266B HW Concrete Wingwall, d:\user_jcc\p\15025\266B HW Concrete Wingwall.dwg, Thu, Apr 30, 2020 @ 11:47:26 am

CHANGE ORDER NO. 4
SHEET 266C of 304
RECORD DRAWING NO. STR 943
CITY PROJECT # E15112