

## Construction Advertisement and Invitation for Bids

The City of Kingsville will receive bids for (GLO SS PROJECT 5 (E. LOTT AVE.) SANITARY SEWER IMPROVEMENTS (CDBG-MIT GLO CONTRACT NO. 22-082-016-D218)) until (2:00 p.m.) on (Monday, January 29, 2024) at (400 W. King Ave, Kingsville, Tx 78363). Bids must be addressed to: (Rutilio "Rudy" Mora, Jr., P.E.). The bids will be publicly opened and read aloud at (2:00 p.m.) on (Monday, January 29, 2024) at (400 W. King Ave, Kingsville, Tx 78363).

A pre-bid site meeting is scheduled for Monday, January 22, 2024 at (10:00 a.m.) at the City of Kingsville, 400 W. King Ave, Kingsville, TX 78363.

Bids are invited for several items and quantities of work as follows:

### 1. Base Bid

ITEM	DESCRIPTION	UNIT	QTY.	UNIT COST	TOTAL
A1	Mobilization / Bonds / Insurance	LS	1	\$	\$
A2	Traffic Control	LS	1	\$	\$
A3	SWPP (Erosion Control Logs)	LF	144	\$	\$
A4	Remove Existing 15"Ø Sanitary Sewer RCP	LF	30	\$	\$
A5	Remove Existing Sanitary Sewer Manhole	EA	1	\$	\$
A6	15"Ø Sanitary Sewer RCP	LF	30	\$	\$
A7	CIPP Lining Existing 15"Ø Sanitary Sewer Line	LF	1,409	\$	\$
A8	Stainless Steel Flow Inhibitor	EA	3	\$	\$
A9	48" Fiberglass Sanitary Sewer Manhole	EA	1	\$	\$
A10	Remove Existing Concrete Pavement	SY	110	\$	\$
A11	Tie-In Connection to Existing Pipe	EA	2	\$	\$

TOTAL BID \$ \_\_\_\_\_

### 2. Additive Alternate Bid No. 1

ITEM	DESCRIPTION	UNIT	QTY.	UNIT COST	TOTAL
B1	CIP Manhole Liner	SY	60	\$	\$
B2	Point Repairs	EA	3	\$	\$
B3	Concrete Pavement Repairs	SY	52	\$	\$
B4	15"Ø Sanitary Sewer RCP	LF	60	\$	\$

TOTAL BID \$ \_\_\_\_\_

**3. Additive Alternate Bid No. 2**

ITEM	DESCRIPTION	UNIT	QTY.	UNIT COST	TOTAL
C1	Remove Existing Storm Water Manhole	EA	2	\$	\$
C2	Remove Existing 18"Ø Storm Water RCP	LF	28	\$	\$
C3	Remove Existing 24"Ø Storm Water HDPE	LF	20	\$	\$
C4	48" Storm Water Manhole	EA	1	\$	\$
C5	18"Ø Storm Water RCP	LF	28	\$	\$
C6	24"Ø Storm Water HDPE	LF	20	\$	\$
C7	Concrete Pavement Repairs	SY	110	\$	\$

TOTAL BID \$ \_\_\_\_\_

Bid/Contract Documents, including Drawings and Technical Specifications are on file at (400 W. King Ave, Kingsville, Tx 78363).

Copies of the Bid/Contract Documents may be downloaded for the City of Kingsville website at [www.cityofkingsville.com/departments/purchasing/rfpbid-opening-fy-2024](http://www.cityofkingsville.com/departments/purchasing/rfpbid-opening-fy-2024) for each set of documents obtained.

A bid bond in the amount of 5 percent of the bid issued by an acceptable surety shall be submitted with each bid [for those contracts that exceed \$100,000]. A certified check or bank draft payable to the (City of Kingsville) or negotiable U.S. Government Bonds (as par value) may be submitted in lieu of the Bid Bond.

The project to be constructed will be financed with assistance from the General Land Office (GLO) under the U.S. Department of Housing and Urban Development Community Development Block Grant - Mitigation (CDBG-MIT) program and is subject to all applicable Federal and State laws and regulations. Attention is called to the fact that not less than, the federally determined prevailing Davis-Bacon and Related Acts wage rate, as issued by the Department of Labor and contained in the contract documents, must be paid on this project. In addition, the successful bidder must ensure that employees and applicants for employment are not discriminated against because of race, color, religion, sex, sexual orientation, gender identity, or national origin. Adherence to the (City of Kingsville) Section 3 Policy is required for all contracts.

All contractors and subcontractors must be cleared (not suspended or debarred) prior to any formal action authorizing the award of a contract to the contractor. Minority Business Enterprises, Small Business Enterprises, Women Business Enterprises, and labor surplus area firms are encouraged to submit bids.

The (City of Kingsville) reserves the right to reject any or all bids or to waive any informalities in the bidding. Bids may be held by (City of Kingsville) for a period not to exceed 60 days from the date of the bid opening for the purpose of reviewing the bids and investigating the bidder's qualifications prior to the contract award.

City of Kingsville

Rutilio P. Mora Jr., PE

City Engineer

## Engineer's Estimate (Addendum No. 2)

City of Kingsville  
 GLO SS Project 5  
 E. Lott Ave. Sanitary Sewer Improvements  
 CDBG-MIT GLO Contract No. 22-082-016-D218  
 City of Kingsville Bid No. 24-02

Bids are invited for several items and quantities of work as follows:

### 1. Base Bid

ITEM	DESCRIPTION	UNIT	QTY.	UNIT COST	TOTAL
A1	Mobilization / Bonds / Insurance	LS	1	\$	\$
A2	Traffic Control	LS	1	\$	\$
A3	SWPP (Erosion Control Logs)	LF	144	\$	\$
A4	Remove Existing 15"Ø Sanitary Sewer RCP	LF	30	\$	\$
A5	Remove Existing Sanitary Sewer Manhole	EA	1	\$	\$
A6	15"Ø Sanitary Sewer RCP	LF	30	\$	\$
A7	CIPP Lining Existing 15"Ø Sanitary Sewer Line	LF	1,409	\$	\$
A8	Stainless Steel Flow Inhibitor	EA	3	\$	\$
A9	48" Fiberglass Sanitary Sewer Manhole	EA	1	\$	\$
A10	Remove Existing Concrete Pavement	SY	110	\$	\$
A11	Tie-In Connection to Existing Pipe	EA	2	\$	\$

TOTAL BID \$ \_\_\_\_\_  
 ENGINEER'S ESTIMATE \$ 208,811

### 2. Additive Alternate Bid No. 1

ITEM	DESCRIPTION	UNIT	QTY.	UNIT COST	TOTAL
B1	CIP Manhole Liner	SY	60	\$	\$
B2	Point Repairs	EA	3	\$	\$
B3	Concrete Pavement Repairs	SY	52	\$	\$
B4	15"Ø Sanitary Sewer RCP	LF	60	\$	\$

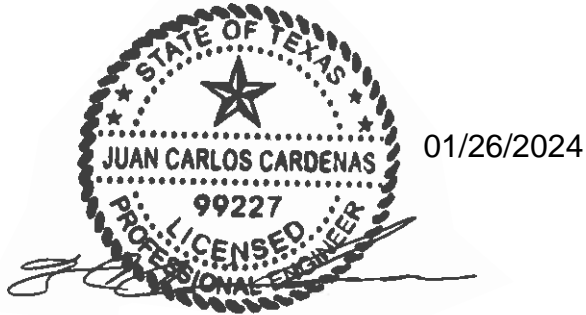
TOTAL BID \$ \_\_\_\_\_  
 ENGINEER'S ESTIMATE \$ 117,700

**3. Additive Alternate Bid No. 2**

ITEM	DESCRIPTION	UNIT	QTY.	UNIT COST	TOTAL
C1	Remove Existing Storm Water Manhole	EA	2	\$	\$
C2	Remove Existing 18"Ø Storm Water RCP	LF	28	\$	\$
C3	Remove Existing 24"Ø Storm Water HDPE	LF	20	\$	\$
C4	48" Storm Water Manhole	EA	1	\$	\$
C5	18"Ø Storm Water RCP	LF	28	\$	\$
C6	24"Ø Storm Water HDPE	LF	20	\$	\$
C7	Concrete Pavement Repair	SY	110	\$	\$

TOTAL BID \$ \_\_\_\_\_

ENGINEER'S ESTIMATE \$ \_\_\_\_\_ 57,290



Juan Carlos "Charlie" Cardenas, P.E.  
Senior Engineer

improvement or appurtenance. Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any law permitting such persons to look to funds due the Contractor. The provisions of this paragraph shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

#### 28. Warranty of Workmanship and Materials

Neither the final certificate of payment nor any provision in the Contract nor partial or entire use of the improvements included in this Contract by the City or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of 12 months from the date of final acceptance of the work.

#### 29. Job Offices

- (a) The Contractor and its subcontractors may maintain such office and storage facilities on the site as are necessary for the proper conduct of the work. These shall be located so as to cause no interference to any work to be performed on the site. The City shall be consulted with regard to locations.
- (b) Upon completion of the improvements, or as directed by the City, the Contractor shall remove all such temporary structures and facilities from the site, and leave the site of the work in the condition required by the Contract.

#### 30. Partial Use of Site Improvements

The City may give notice to the Contractor and place in use those sections of the improvements which have been completed, inspected and can be accepted as complying with the technical specifications and if in its opinion, each such section is reasonably safe, fit, and convenient for the use and accommodation for which it was intended, provided:

- (a) The use of such sections of the Improvements shall in no way impede the completion of the remainder of the work by the Contractor.
- (b) The Contractor shall not be responsible for any damages or maintenance costs due directly to the use of such sections.

#### 31. Contract Documents and Drawings

The City will furnish the Contractor without charge 3 copies of the Contract Documents, including Technical Specifications and Drawings. Additional copies requested by the Contractor will be furnished at cost.

#### 32. Contract Period

The work to be performed under this contract shall commence within the time stipulated by the City in the Notice to Proceed, and shall be fully completed within 120 calendar days thereafter.

#### 33. Liquidated Damages

Since the actual damages for any delay in completion of the work under this contract are impossible to determine, the Contractor and his Sureties shall be liable for and shall pay to the City the sum of Two Hundred Dollars

# **CONSTRUCTION CONTRACT**

**THIS AGREEMENT** made this the \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by and between \_\_\_\_\_ (a corporation organized and existing under the laws of the State of \_\_\_\_\_) (a partnership consisting of \_\_\_\_\_) (an individual trading as \_\_\_\_\_) hereinafter called the "Contractor", and City of Kingsville hereinafter called the "City"

**WITNESSETH**, that the Contractor and the City for the considerations stated herein mutually agree as follows:

**ARTICLE 1. Statement of Work.** The Contractor shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment and services, including utility and transportation services, and perform and complete all work required for the construction of the Improvements embraced in the Project; namely, (GLO SS PROJECT 5 (E. LOTT AVE.) SANITARY SEWER IMPROVEMENTS (CDBG-MIT GLO CONTRACT NO. 22-082-016-D218) for the Community Development Block Grant – Mitigation (CDBG-MIT) project, all in strict accordance with the contract documents including all addenda thereto, numbered \_\_\_\_\_, dated \_\_\_\_\_ and \_\_\_\_\_, all as prepared by International Consulting Engineers (ICE) acting and in these contract documents preparation, referred to as the "Engineer".

**ARTICLE 2. The Contract Price.** The City will pay the Contractor for the performance of the Contract in current funds, for the total quantities of work performed at the *unit prices* stipulated in the Bid for the several respective items of work completed subject to additions and deductions as provided in \_\_\_\_\_ hereof.

**ARTICLE 3. The Contract.** The executed contract documents shall consist of the following components:

- |                              |  |
|------------------------------|--|
| a. This Agreement (pgs. 1-3) | f. General Conditions, Part I                                |
| b. Addenda                   | g. Special Conditions  |
| c. Invitation for Bids       | h. Technical Specifications                                  |
| d. Instructions to Bidders   | i. Drawings ( <i>as listed in the Schedule of Drawings</i> ) |
| e. Signed Copy of Bid        | j. [Add any applicable documents]                            |

**ARTICLE 4. Performance.** Work, in accordance with the Contract dated \_\_\_\_\_, \_\_\_\_\_, shall commence on or before \_\_\_\_\_, \_\_\_\_\_, and Contractor shall complete the WORK within 120 consecutive calendar days thereafter. The date of completion of all WORK is therefore \_\_\_\_\_, \_\_\_\_\_.

This Agreement, together with other documents enumerated in this ARTICLE 3, which said other documents are as fully a part of the Contract as if hereto attached or herein repeated, forms the Contract between the parties hereto. In the event that any provision in any component part of this Contract conflicts with any provision of any other component part, the provision of the component part first enumerated in this ARTICLE 3 shall govern, except as otherwise specifically stated.

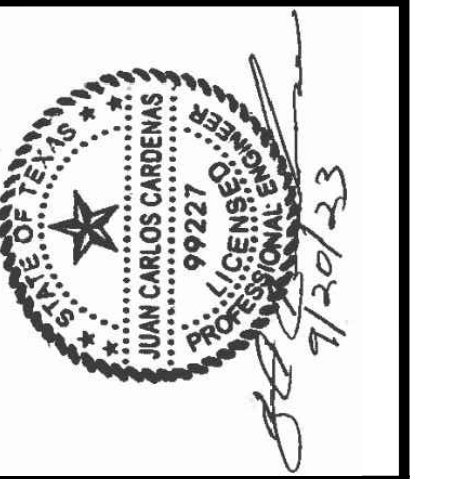
**IN WITNESS WHEREOF**, the parties hereto have caused this Agreement to be executed in triplicate original copies on the day and year first above written.

FILE NAME: I:\Projects\2021\City of Kingsville\GLO-10005 WW LOTT ST GIPP\1- Drawings\2 - Civil\C1 SHEET INDEX.dwg LAYOUT NAME: SHEET INDEX PLOTTED: Friday, January 26, 2024 - 4:44pm USER: lzapata

## SHEET INDEX

SHEET	DWG. NO.	TITLE
1	T1	TITLE SHEET
2	C1	SHEET INDEX
3	C2	GENERAL NOTES
4	C3	LEGENDS & TESTING SCHEDULE
5	C4	ESTIMATED QUANTITIES
6	C5	PROJECT ALIGNMENT PLAN STA. 0+00 (B.O.P.) TO STA. 15+94 (E.O.P.)
7	C6	PROJECT CONTROL POINT DATA LAYOUTS 1 & 2
8	C7	PROJECT CONTROL POINT DATA LAYOUT 3
9	C8	EXISTING TOPOGRAPHY PLAN STA. 0+00 (B.O.P.) TO STA. 15+94 (E.O.P.)
10	C9	STORM WATER POLLUTION PREVENTION PLAN STA. 0+00 (B.O.P.) TO STA. 15+94 (E.O.P.)
11	C10	DEMOLITION PLAN STA. 0+00 (B.O.P.) TO STA. 15+94 (E.O.P.)
12	C11	SANITARY SEWER PLAN AND PROFILE STA. 0+00 (B.O.P.) TO STA. 5+00
13	C12	SANITARY SEWER PLAN AND PROFILE STA. 5+00 TO STA. 10+00
14	C13	SANITARY SEWER PLAN AND PROFILE STA. 10+00 TO STA. 14+00
15	C14	SANITARY SEWER PLAN AND PROFILE STA. 14+00 TO STA. 15+94 (E.O.P.)
16	C15	CROSS SECTION
17	C16	SANITARY SEWER STANDARD DETAILS I
18	C17	SANITARY SEWER STANDARD DETAILS II
19	C18	SANITARY SEWER STANDARD DETAILS III
20	C19	TRAFFIC CONTROL PLAN - PHASE 1
21	C20	TRAFFIC CONTROL PLAN - PHASE 2
22	C21	TRAFFIC CONTROL PLAN - PHASE 3
23	C22	TxDOT - TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK TCP (2-1)-18
24	C23	TxDOT - BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS - BC(1)-21
25	C24	TxDOT - BARRICADE AND CONSTRUCTION PROJECT LIMIT - BC(2)-21
26	C25	TxDOT - BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT - BC(3)-21
27	C26	TxDOT - BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES - BC(4)-21
28	C27	TxDOT - BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT - BC(5)-21
29	C28	TxDOT - BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN PCMS - BC(6)-21
30	C29	TxDOT - BARRICADE AND CONSTRUCTION ARROW PANEL REFLECTORS, WARNING LIGHTS & ATTENUATOR - BC(7)-21
31	C30	TxDOT - BARRICADE AND CONSTRUCTION CHANNELIZING DEVICE - BC(8)-21
32	C31	TxDOT - BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES - BC(9)-21
33	C32	TxDOT - BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES - BC(10)-21
34	C33	TxDOT - TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURE FENCE & VERTICAL TRACKING - EC(1)-16.
35	C34	TxDOT- TEMPORARY EROSION CONTROL LOG - EC(9)-16

CONSULTANT'S SHEET  
PROJECT NO. 21107-01A



**CITY OF KINGSVILLE GLO SS PROJECT 5  
(E. LOTT AVE.) SANITARY SEWER IMPROVEMENTS**  
KINGSVILLE, KLEBERG COUNTY, TEXAS

SHEET INDEX

REVISION NO.	DATE	J.C.C.	BY	ADDENDUM NO.	DESCRIPTION	REVISION NO.	DATE	BY	DESCRIPTION
1	1/25/24								

DRAWING NO.  
**C1**

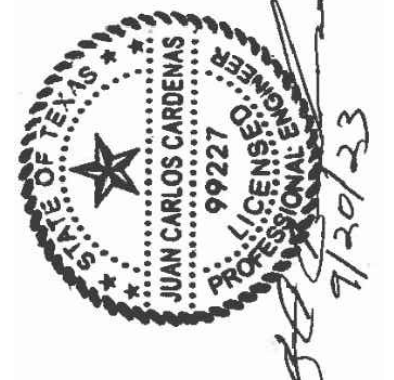


SHEET 2 of 35

ESTIMATED QUANTITIES SUMMARY – TOTALS (BASE BID)			
CITY OF KINGSVILLE SANITARY SEWER IMPROVEMENTS			
ITEM	DESCRIPTION	UNIT	QUANTITY
A1	MOBILIZATION / BONDS / INSURANCE	LS	1
A2	TRAFFIC CONTROL	LS	1
A3	SWPP (EROSION CONTROL LOGS)	LF	144
A4	REMOVE EXISTING 15"Ø SANITARY SEWER RCP	LF	30
A5	REMOVE EXISTING SANITARY SEWER MANHOLE	EA	1
A6	15"Ø SANITARY SEWER RCP	LF	30
A7	CIPP LINING EXISTING 15"Ø SANITARY SEWER LINE	LF	1,409
A8	STAINLESS STEEL FLOW INHIBITOR	EA	3
A9	48" FIBERGLASS SANITARY SEWER MANHOLE	EA	1
A10	REMOVE EXISTING CONCRETE PAVEMENT	SY	110
A11	TIE-IN CONNECTION TO EXISTING PIPE	EA	2

ESTIMATED QUANTITIES SUMMARY – TOTALS ADDITIVE ALTERNATE BID NO.1			
CITY OF KINGSVILLE SANITARY SEWER IMPROVEMENTS			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	MANHOLE LINER	SY	60
B2	POINT REPAIRS	EA	3
B3	CONCRETE PAVEMENT REPAIR	SY	52
B4	15"Ø SANITARY SEWER RCP	LF	60

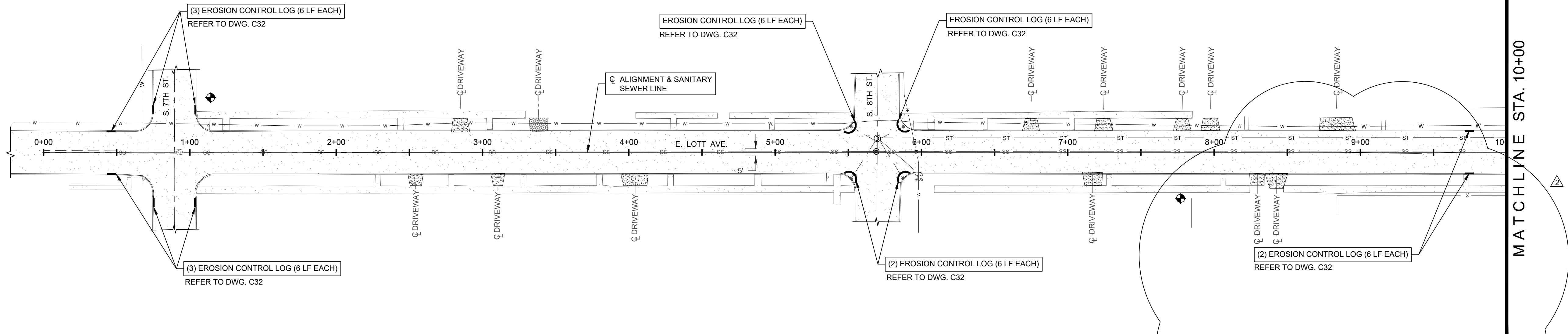
ESTIMATED QUANTITIES SUMMARY – TOTALS ADDITIVE ALTERNATE BID NO.2			
CITY OF KINGSVILLE SANITARY SEWER IMPROVEMENTS			
ITEM	DESCRIPTION	UNIT	QUANTITY
C1	REMOVE EXISTING STORM WATER MANHOLE	EA	2
C2	REMOVE EXISTING 18"Ø STORM WATER RCP	LF	28
C3	REMOVE EXISTING 24"Ø STORM WATER HDPE	LF	20
C4	48" STORM WATER MANHOLE	EA	1
C5	18"Ø STORM WATER RCP	LF	28
C6	24"Ø STORM WATER HDPE	LF	20
C7	CONCRETE PAVEMENT REPAIR	SY	110

- NOTE:
- THE ESTIMATED QUANTITIES LISTED ARE FOR INFORMATIONAL PURPOSES AND FOR CONTRACTOR REFERENCE. THE CONTRACTOR IS RESPONSIBLE FOR DELIVERING A FINISHED PROJECT AS DETAILED ON THE PLANS AND SPECIFICATIONS.
  - TRENCH EXCAVATION, BACKFILL, AND COMPACTION ARE ALL SUBSIDIARY TO POINT REPAIRS.
  - TIE-IN CONNECTIONS ARE SUBSIDIARY TO MANHOLES.
  - SANITARY SEWER SERVICE CONNECTIONS ARE ALL SUBSIDIARY TO SEWER PIPE.
  - CLEANING AND CCTV OF EXISTING LINE ARE SUBSIDIARY TO CIPP LINING.
  - TRENCH EXCAVATION, BACKFILL AND COMPACTION ARE ALL SUBSIDIARY TO PIPE AND OR MANHOLE.
  - STAINLESS STEEL FLOW INHIBITOR SHALL BE SUBSIDIARY TO MANHOLE REPLACEMENT.

CONSULTANT'S SHEET PROJECT NO. 21107-01A	
	
	
	
<b>CITY OF KINGSVILLE GLO SS PROJECT 5</b> <b>(E. LOTT AVE.) SANITARY SEWER IMPROVEMENTS</b> KINGSVILLE, KLEBERG COUNTY, TEXAS	
<b>ESTIMATED QUANTITIES</b>	
ADDENDUM NO. 2 DESCRIPTION	REVISION NO. _____ DATE _____ BY _____
1/25/24 DATE	J.C.C. BY
REVISION NO. <b>C4</b>	DRAWING NO.
SHEET <b>5</b> of <b>35</b>	SHEET



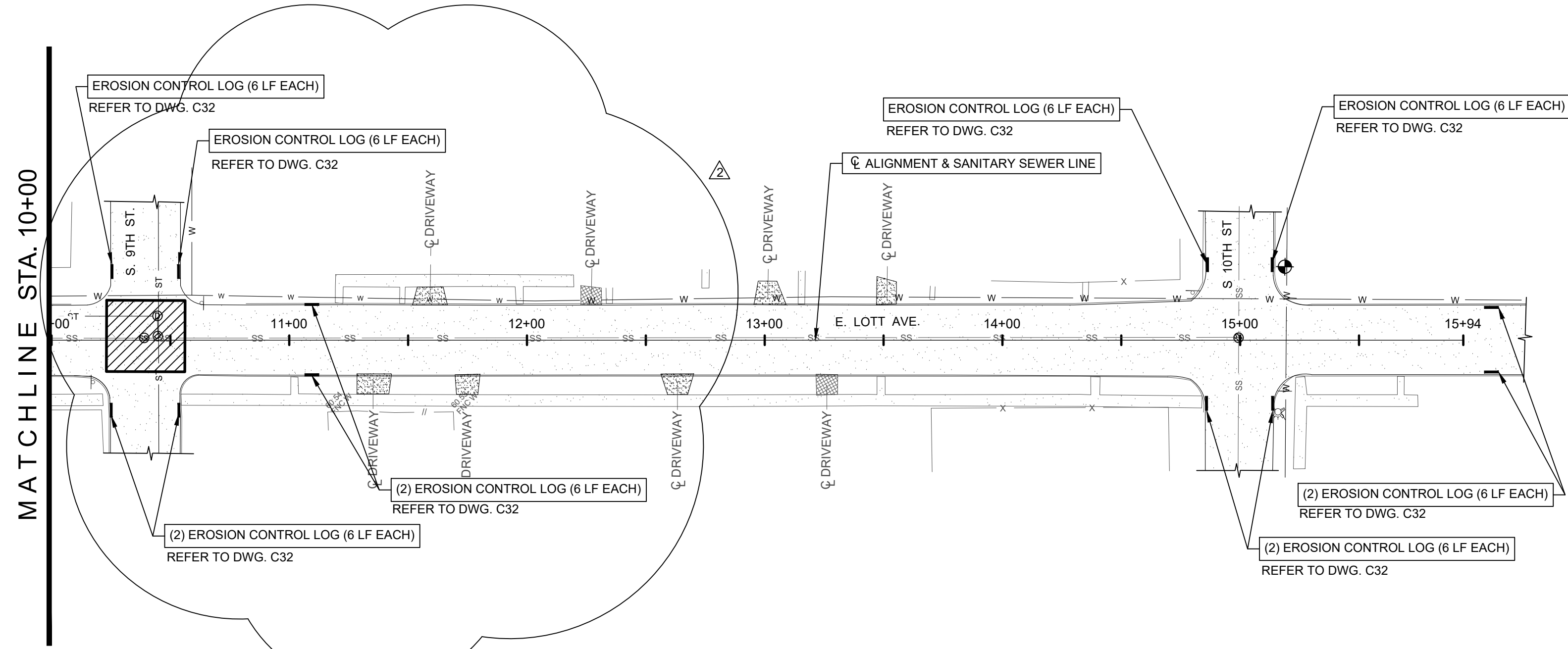
FILE NAME: I:\Projects\2021\City of Kingsville\GLO-10005 MW LOTT ST OPP\1 - Drawings\2 - Civil\C9 STORM WATER POLLUTION PREVENTION PLAN.dwg LAYOUT NAME: C9 STORM WATER POLLUTION PREVENTION PLAN PLOTTED: Friday, January 26, 2024 - 4:46pm USER: lpezeta



**1**  
C9 C9  
SCALE: 1"=40'

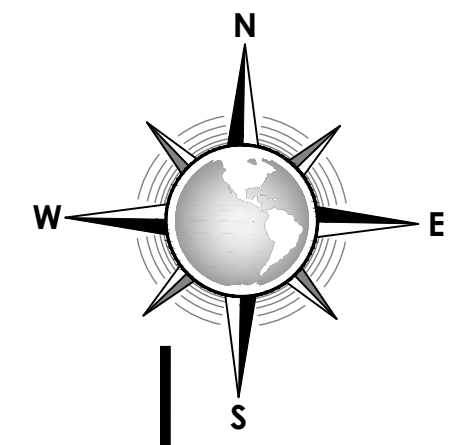
**STORM WATER POLLUTION PREVENTION PLAN**  
STA. 0+00 (B.O.P.) TO STA. 10+00

SHEET QUANTITIES SUMMARY			
ITEM	DESCRIPTION	UNIT	QUANTITY
A3	SWPP (EROSION CONTROL LOGS)	LF	144

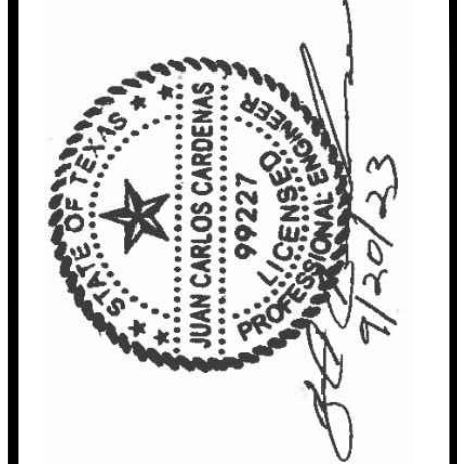


**2**  
C9 C9  
SCALE: 1"=40'

**STORM WATER POLLUTION PREVENTION PLAN**  
STA. 10+00 TO STA. 15+94 (E.O.P.)



CONSULTANT'S SHEET  
PROJECT NO. 21107-01A



**IOE**  
INTERNATIONAL CONSULTING ENGINEERS  
261 SARATOGA BLVD.  
CORPUS CHRISTI, TX 78417  
PHONE: 361.926.5805  
FAX: 361.926.5806  
I.B.P.E. FIRM REGISTRATION #F-10837



**CITY OF KINGSVILLE GLO SS PROJECT 5**  
**(E. LOTT AVE.) SANITARY SEWER IMPROVEMENTS**  
KINGSVILLE, KLEBERG COUNTY, TEXAS

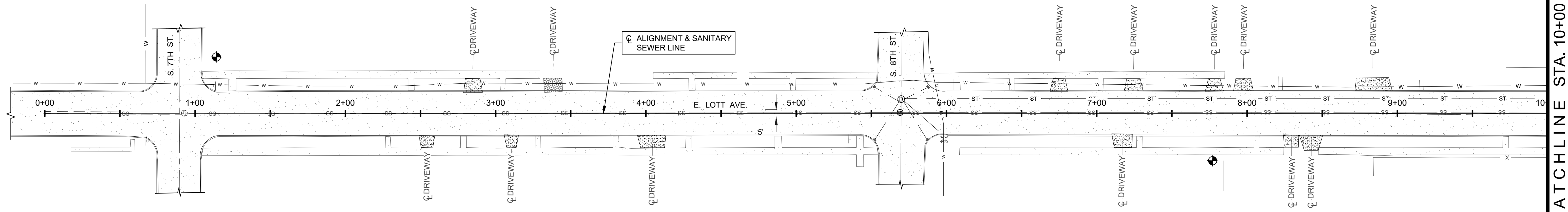
**STORM WATER POLLUTION PREVENTION PLAN**  
STA. 0+00 (B.O.P.) TO STA. 15+94 (E.O.P.)

REVISION NO.	DATE	BY	DESCRIPTION
1	1/25/24	J.C.C.	ADDENDUM NO. 2

DRAWING NO.  
**C9**

SHEET 10 of 35

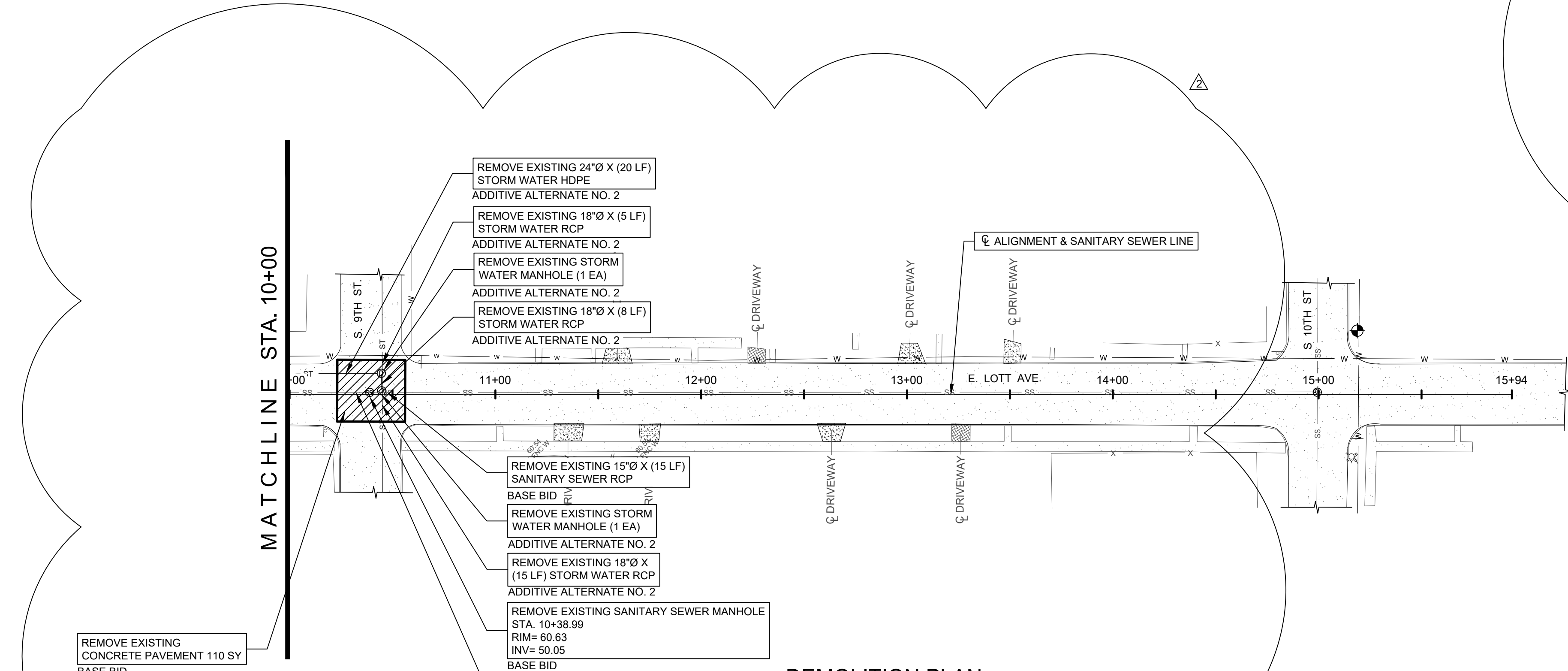
FILE NAME: I:\Projects\2021\City of Kingsville\GLO-10005\_WW\_LOTT\_ST\_CIPPA\1-Drawings\2 - Civi\CS STORM WATER POLLUTION PREVENTION PLAN.dwg - LAYOUT NAME: CS DEMOLITION PLAN - PLOTTED: Friday, January 26, 2024 - 4:46pm USER: izepkca



**1**  
C10 C10 SCALE: 1"=40'  
DEMOLITION PLAN  
STA. 0+00 (B.O.P.) TO STA. 10+00

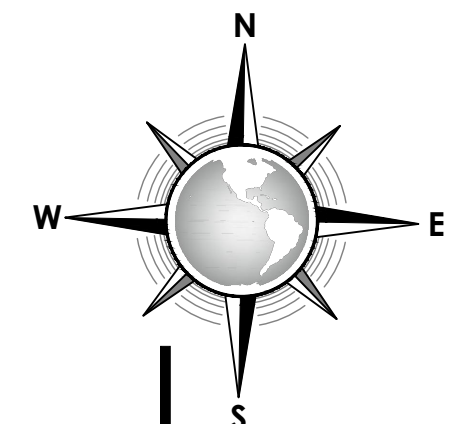
SHEET QUANTITIES SUMMARY (BASE BID)			
ITEM	DESCRIPTION	UNIT	QUANTITY
A4	REMOVE EXISTING 15"Ø SANITARY SEWER LINE	LF	30
A5	REMOVE EXISTING SANITARY SEWER MANHOLE	EA	1
A10	REMOVE EXISTING CONCRETE PAVEMENT	SY	110

SHEET QUANTITIES SUMMARY ADDITIVE ALTERNATE BID NO. 2			
ITEM	DESCRIPTION	UNIT	QUANTITY
C1	REMOVE EXISTING STORM WATER MANHOLE	EA	2
C2	REMOVE EXISTING 18"Ø STORM WATER RCP	LF	28
C3	REMOVE EXISTING 24"Ø STORM WATER HDPE	LF	20

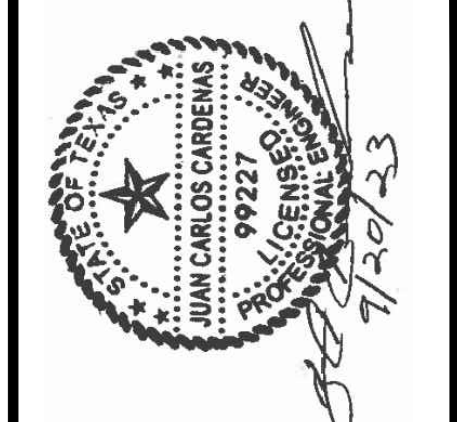


**2**  
C10 C10 SCALE: 1"=40'  
DEMOLITION PLAN  
STA. 10+00 TO STA. 15+94 (E.O.P.)

- REMOVE EXISTING 24"Ø X (20 LF) STORM WATER HDPE  
ADDITIVE ALTERNATE NO. 2
- REMOVE EXISTING 18"Ø X (5 LF) STORM WATER RCP  
ADDITIVE ALTERNATE NO. 2
- REMOVE EXISTING STORM WATER MANHOLE (1 EA)  
ADDITIVE ALTERNATE NO. 2
- REMOVE EXISTING 18"Ø X (8 LF) STORM WATER RCP  
ADDITIVE ALTERNATE NO. 2
- REMOVE EXISTING 15"Ø X (15 LF) SANITARY SEWER RCP  
BASE BID
- REMOVE EXISTING STORM WATER MANHOLE (1 EA)  
ADDITIVE ALTERNATE NO. 2
- REMOVE EXISTING 18"Ø X (15 LF) STORM WATER RCP  
ADDITIVE ALTERNATE NO. 2
- REMOVE EXISTING SANITARY SEWER MANHOLE STA. 10+38.99  
RIM= 60.63  
INV= 50.05  
BASE BID
- REMOVE EXISTING 15"Ø X (15 LF) SANITARY SEWER RCP  
BASE BID
- REMOVE EXISTING CONCRETE PAVEMENT 110 SY  
BASE BID



CONSULTANT'S SHEET  
PROJECT NO. 21107-01A



**IOE**  
INTERNATIONAL CONSULTING ENGINEERS  
261 SARATOGA BLVD.  
CORPUS CHRISTI, TX 78417  
PHONE: 361.926.5805  
FAX: 361.926.5806  
I.B.P.E. FIRM REGISTRATION #F-10837



**CITY OF KINGSVILLE GLO SS PROJECT 5  
(E. LOTT AVE.) SANITARY SEWER IMPROVEMENTS**  
KINGSVILLE, KLEBERG COUNTY, TEXAS

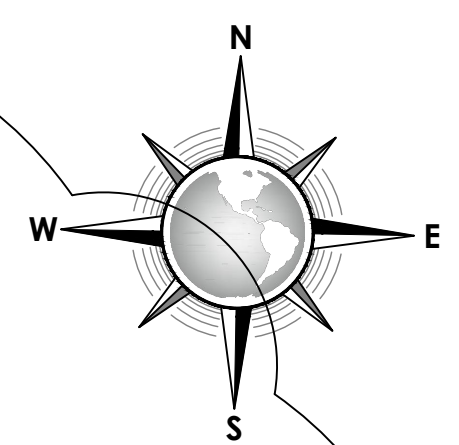
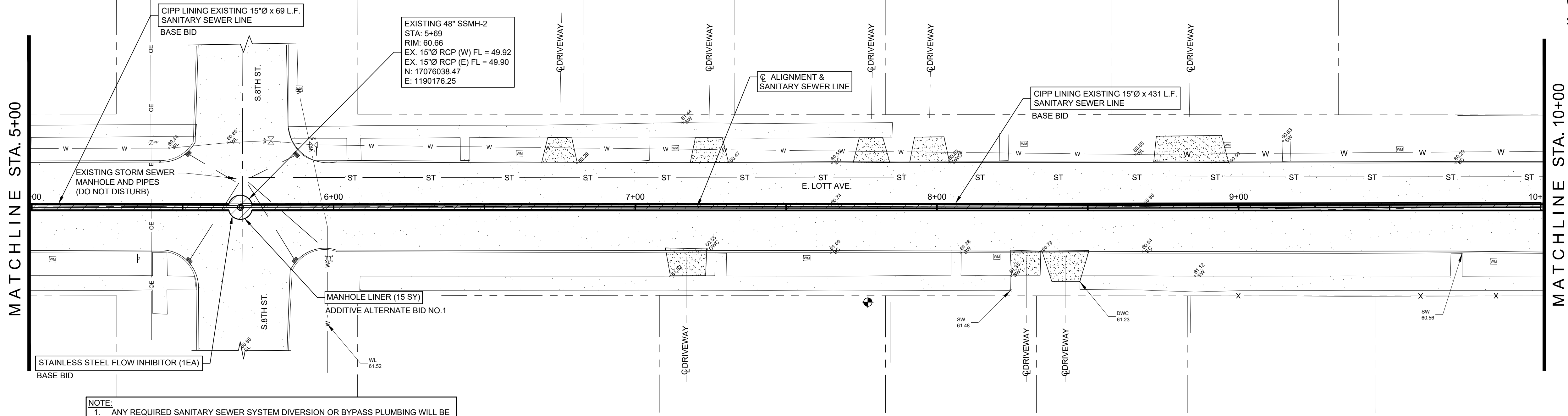
**DEMOLITION PLAN  
STA. 0+00(B.O.P.) TO STA. 15+94 (E.O.P.)**

REVISION NO.	DATE	DESCRIPTION	BY
1	1/25/24	ADDENDUM NO. 2	J.C.C.

DRAWING NO.  
**C10**  
SHEET 11 of 35



FILE NAME: I:\Projects\2021\Cty of Kingsville\GLO-LOC05 WW LOTT ST CIPPA\1- Drawings\2 - Civi\C11 SANITARY SEWER PLAN AND PROFILE STA. 0+00 (B.O.P.) TO STA. 5+00.dwg LAYOUT NAME: C11 SANITARY SEWER PLAN AND PROFILE STA. 5+00 TO STA. 10+00 PLOTTED: Friday, January 26, 2024 - 4:47pm USER: zzepeid



**NOTE:**

1. ANY REQUIRED SANITARY SEWER SYSTEM DIVERSION OR BYPASS PLUMBING WILL BE GOVERNED BY SPECIFICATION SECTION 027200 TO INCLUDE SUBMITTAL AND APPROVAL OF THE REQUIRED BYPASS PUMPING PLAN FORM PRIOR TO COMMENCEMENT OF ANY PLUGGING, DIVERSION, OR BYPASS PUMPING.
2. SURCHARGED MANHOLES WILL HAVE TO BE PLUGGED AND VACUUMED OUT BY MEANS OF VACUUM TRUCK PRIOR TO THE COMMENCEMENT OF ANY WORK ON THE MANHOLE, SUBSIDIARY TO LINE ITEM.
3. IF WORK ON A MANHOLE OUTSIDE OF THE ROADWAY REQUIRES IT TO REMAIN OPEN OVERNIGHT IT IS RESPONSIBILITY OF CONTRACTOR ADEQUATELY PROTECT THE OPENING AND PROVIDED SAFETY WARNING SIGNS, SAFETY FENCE AND BARRICADES NEEDED TO PROTECT THE OPEN STRUCTURE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUITY OF SANITARY SEWER SERVICE TO EACH FACILITY CONNECTING TO THE SECTION OF SEWER LINE DURING THE EXECUTION OF THE WORK. IF SEWAGE BACKUP OCCURS AND ENTERS PRIVATE PROPERTIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, REPAIR, PROPERTY DAMAGE COST AND ANY CLAIMS
5. CLEANING AND CCTV ARE SUBSIDIARY TO CIPP LINING.
6. THE CONTRACTOR SHALL PROVIDE PROTECTIVE COATING ON ALL EXPOSED CONCRETE SURFACES, INCLUDING CORBEL AREA, MANHOLE WALLS AND MANHOLE BENCH. REFER TO C14 FOR APPROVED COATINGS LIST

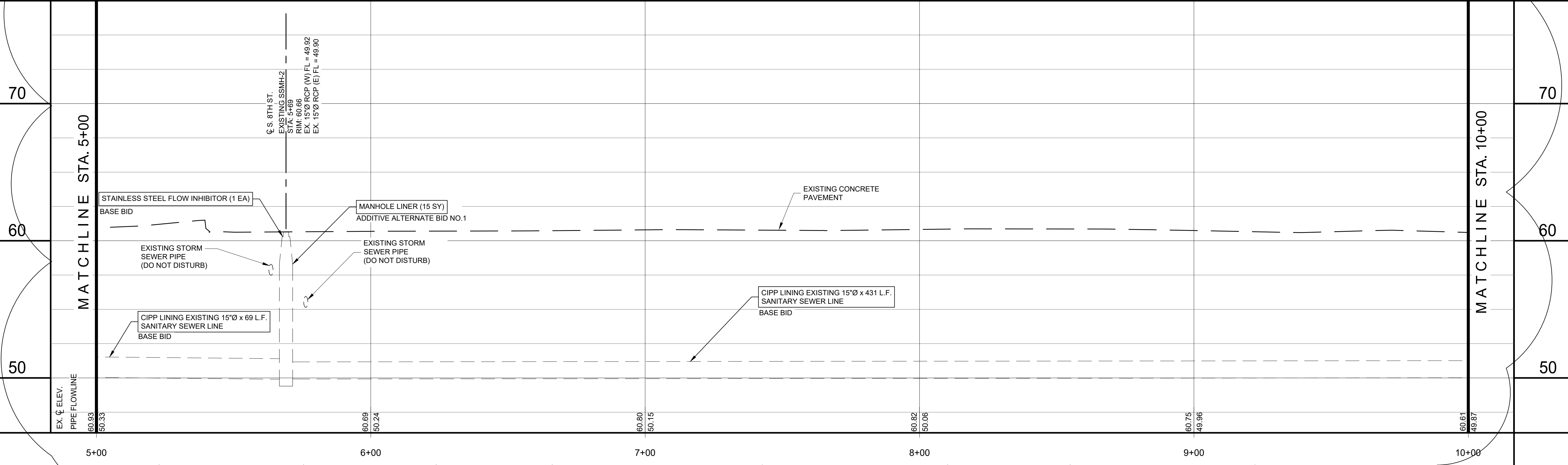
**SANITARY SEWER PLAN & PROFILE  
STA. 5+00 TO STA. 10+00**



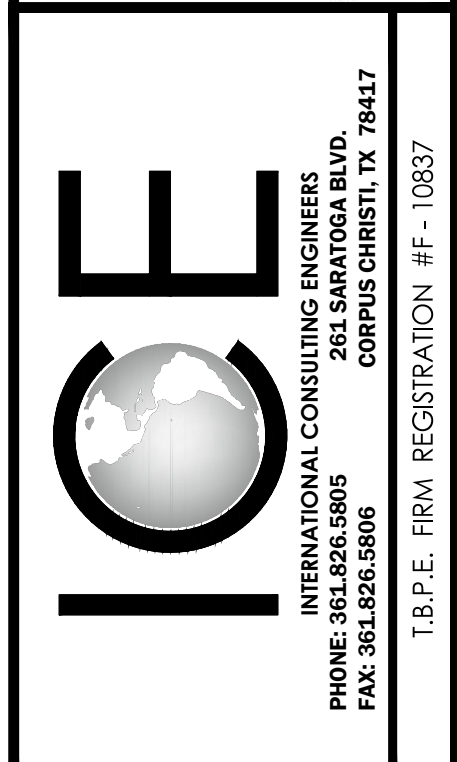
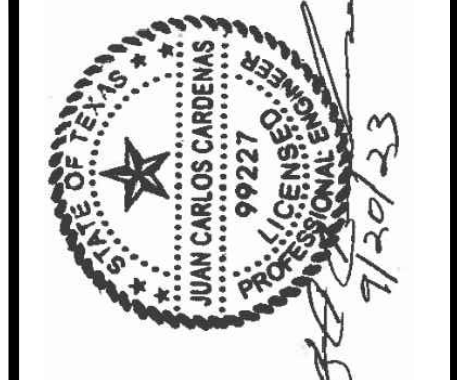
SCALE: HORIZ: 1"=20', VERT: 1"=4' (FULL SIZE SHEETS)  
SCALE: HORIZ: 1"=40', VERT: 1"=8' (HALF SIZE SHEETS)

SHEET QUANTITIES SUMMARY (BASE BID)			
ITEM	DESCRIPTION	UNIT	QUANTITY
A7	CIPP LINING EXISTING 15'Ø SANITARY SEWER LINE	LF	500
A8	STAINLESS STEEL FLOW INHIBITOR	EA	1

SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 1)			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	MANHOLE LINER	SY	15



CONSULTANT'S SHEET  
PROJECT NO. 21107-01A



**CITY OF KINGSVILLE GLO SS PROJECT 5  
(E. LOTT AVE.) SANITARY SEWER IMPROVEMENTS**  
KINGSVILLE, KLEBERG COUNTY, TEXAS

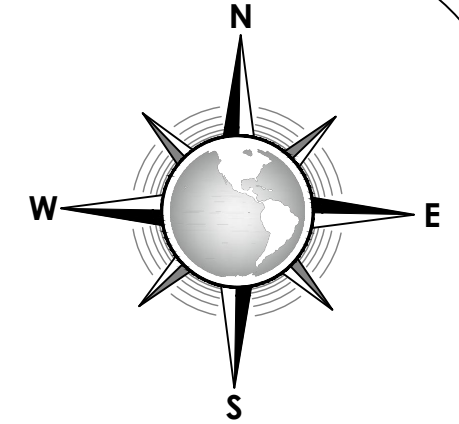
**SANITARY SEWER PLAN AND PROFILE  
STA. 5+00 TO STA. 10+00**

REVISION NO.	DATE	BY	DESCRIPTION

DRAWING NO.  
**C12**

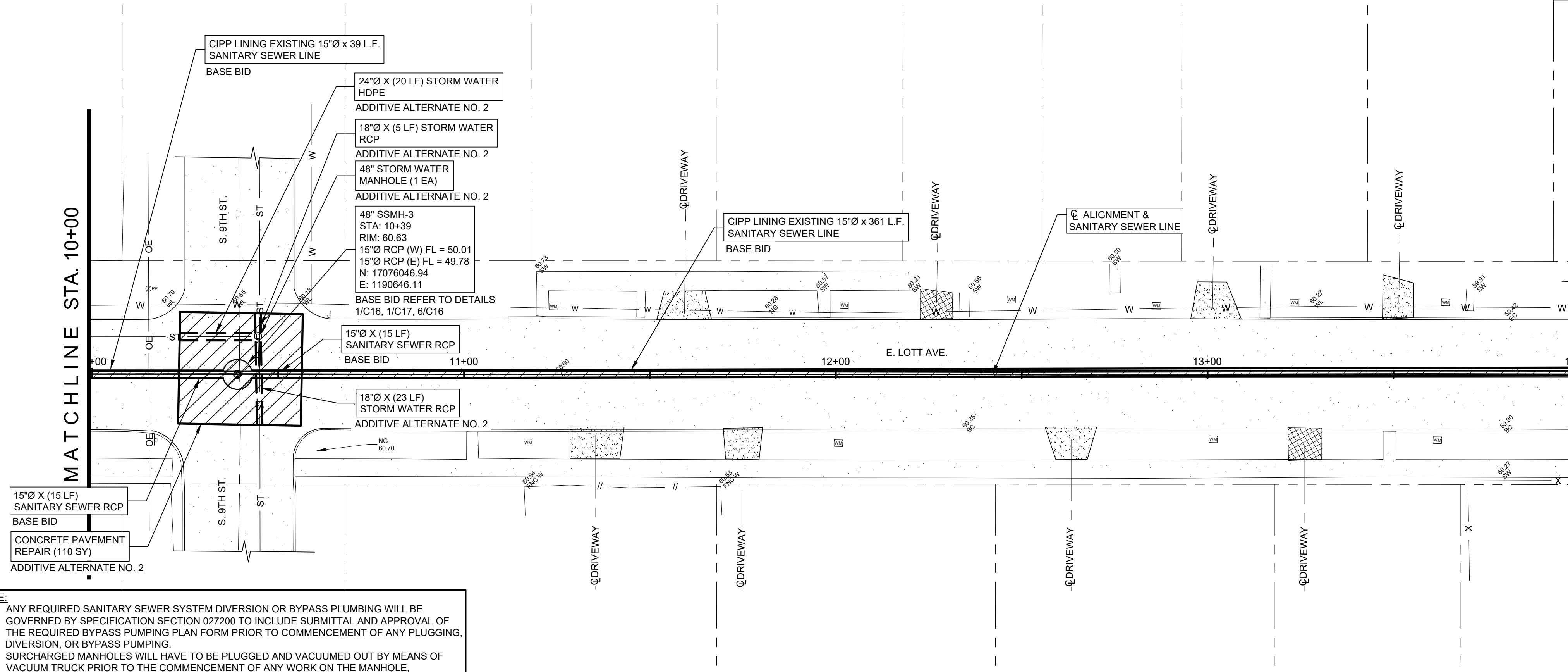
SHEET 13 of 35

FILE NAME: I:\Projects\2021\City of Kingsville\GLO-LOC05.WW.LOTT.ST.CIPR\1-Drawings\Civil\C11 - SANITARY SEWER PLAN AND PROFILE STA. 0+00 (B.O.P.) TO STA. 14+00.dwg LAYOUT NAME: C12 - SANITARY SEWER PLAN AND PROFILE STA. 10+00 TO STA. 14+00 PLOTTED: Friday, January 26, 2024 - 4:47pm USER: jzpepe



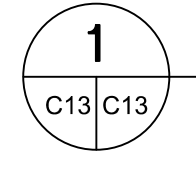
MATCHLINE STA. 10+00

MATCHLINE STA. 14+00



ADDITIVE ALTERNATE NO. 2

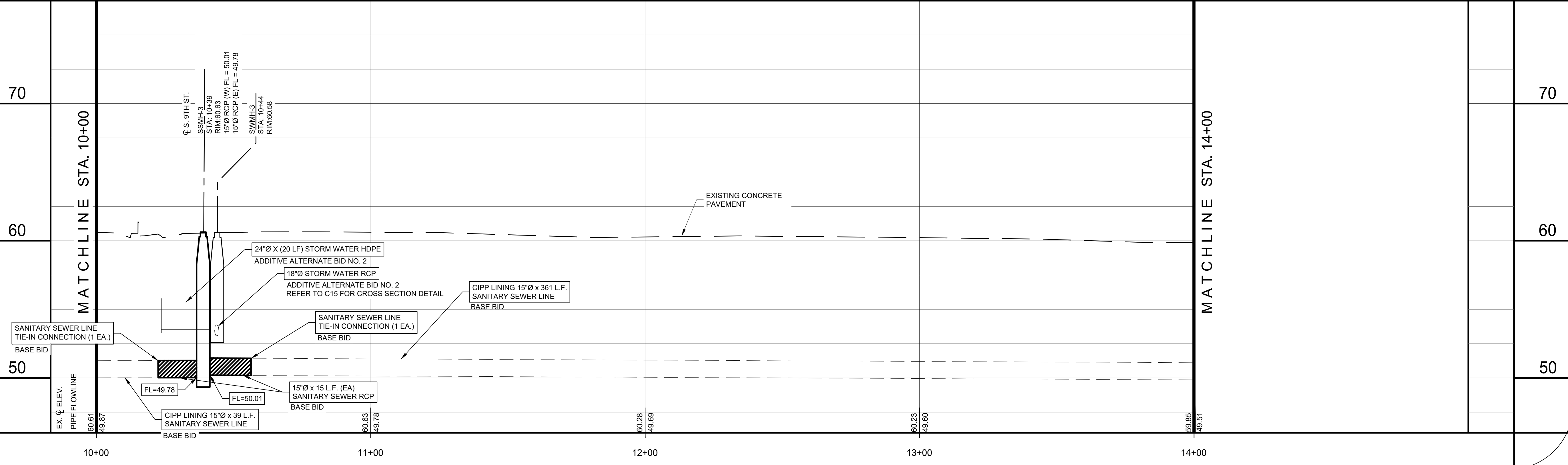
- NOTE:**
- ANY REQUIRED SANITARY SEWER SYSTEM DIVERSION OR BYPASS PLUMBING WILL BE GOVERNED BY SPECIFICATION SECTION 027200 TO INCLUDE SUBMITTAL AND APPROVAL OF THE REQUIRED BYPASS PUMPING PLAN FORM PRIOR TO COMMENCEMENT OF ANY PLUGGING, DIVERSION, OR BYPASS PUMPING.
  - SURCHARGED MANHOLES WILL HAVE TO BE PLUGGED AND VACUUMED OUT BY MEANS OF VACUUM TRUCK PRIOR TO THE COMMENCEMENT OF ANY WORK ON THE MANHOLE. SUBSIDIARY TO LINE ITEM.
  - IF WORK ON A MANHOLE OUTSIDE OF THE ROADWAY REQUIRES IT TO REMAIN OPEN OVERNIGHT IT IS RESPONSIBILITY OF CONTRACTOR ADEQUATELY PROTECT THE OPENING AND PROVIDED SAFETY WARNING SIGNS, SAFETY FENCE AND BARRICADES NEEDED TO PROTECT THE OPEN STRUCTURE.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUITY OF SANITARY SEWER SERVICE TO EACH FACILITY CONNECTING TO THE SECTION OF SEWER LINE DURING THE EXECUTION OF THE WORK. IF SEWAGE BACKUP OCCURS AND ENTERS PRIVATE PROPERTIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, REPAIR, PROPERTY DAMAGE COST AND ANY CLAIMS
  - CLEANING AND CCTV ARE SUBSIDIARY TO CIPP LINING.
  - THE CONTRACTOR SHALL PROVIDE PROTECTIVE COATING ON ALL EXPOSED CONCRETE SURFACES, INCLUDING CORBEL AREA, MANHOLE WALLS AND MANHOLE BENCH. REFER TO C14 FOR APPROVED COATINGS LIST
  - CONTRACTOR SHALL VERIFY AND MAINTAIN STORM WATER AND SANITARY SEWER PIPE FLOWLINE ELEVATIONS.



**SANITARY SEWER PLAN & PROFILE**  
**STA. 10+00 TO STA. 14+00**  
 SCALE: HORIZ: 1"=20', VERT: 1"=4' (FULL SIZE SHEETS)  
 SCALE: HORIZ: 1"=40', VERT: 1"=8' (HALF SIZE SHEETS)

SHEET QUANTITIES SUMMARY BASE BID			
ITEM	DESCRIPTION	UNIT	QUANTITY
A6	15"Ø SANITARY SEWER RCP	LF	30
A7	CIPP LINING EXISTING 15"Ø SANITARY SEWER LINE	LF	400
A9	48" SANITARY SEWER FIBERGLASS MANHOLE	EA	1
A11	TIE-IN CONNECTION TO EXISTING PIPE	EA	2

SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 2)			
ITEM	DESCRIPTION	UNIT	QUANTITY
C4	48" STORM WATER MANHOLE	EA	1
C5	18"Ø STORM WATER RCP	LF	28
C6	24"Ø STORM WATER HDPE	LF	20
C7	CONCRETE PAVEMENT REPAIR	SY	110



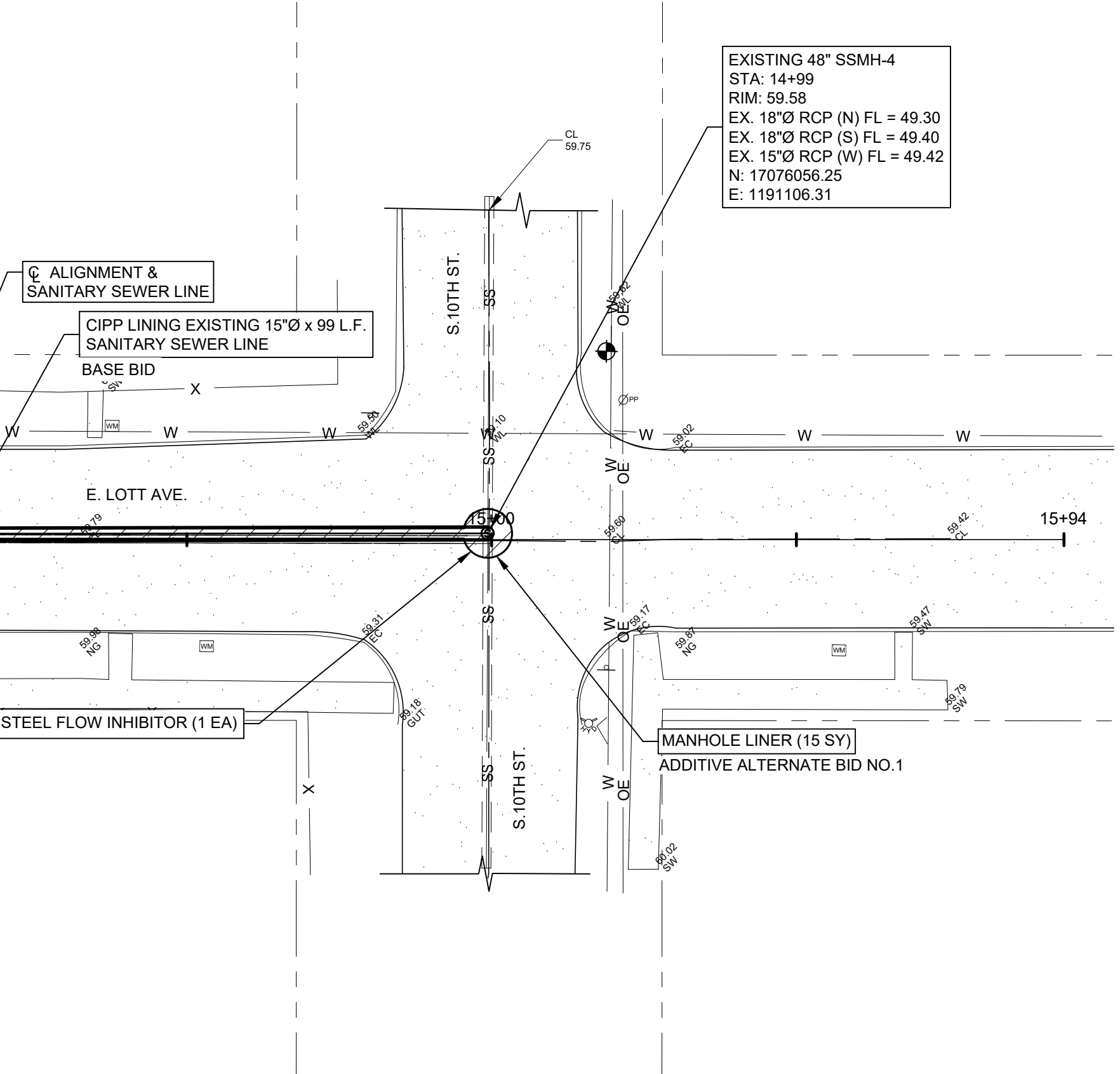
REVISION NO. DATE BY J.C.C.	REVISION NO. DATE BY	ADDENDUM NO. 2	DESCRIPTION
<b>CITY OF KINGSVILLE GLO SS PROJECT 5</b> <b>(E. LOTT AVE.) SANITARY SEWER IMPROVEMENTS</b> KINGSVILLE, KLEBERG COUNTY, TEXAS			
<b>SANITARY SEWER PLAN AND PROFILE</b> <b>STA. 10+00 TO STA. 14+00</b>			
<b>DRAWING NO.</b> <span style="font-size: 2em; font-weight: bold;">C13</span>			
SHEET 14 of 35			

CONSULTANT'S SHEET  
PROJECT NO. 21107-01A

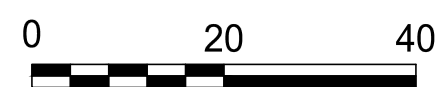
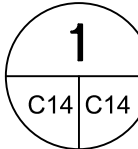
INTERNATIONAL CONSULTING ENGINEERS  
261 SARATOGA BLVD.  
CORPUS CHRISTI, TX 78417  
PHONE: 361.926.5805  
FAX: 361.926.5806  
I.B.P.E. FIRM REGISTRATION #F-10837

FILE NAME: I:\Projects\2021\Cty of Kingsville\GIS\LOC05\DWG\LOT ST CIPR\1 - Drawings\1 - Civi\C11 - SANITARY SEWER PLAN AND PROFILE STA. 0+00 (E.O.P.) TO STA. 5+00.dwg LAYOUT NAME: C13 - SANITARY SEWER PLAN AND PROFILE - PLOTTED: Friday, January 26, 2024 - 4:27pm USER: rpepeta

MATCHLINE STA. 14+00



**SANITARY SEWER PLAN & PROFILE  
STA. 14+00 TO STA. 15+94 (E.O.P.)**



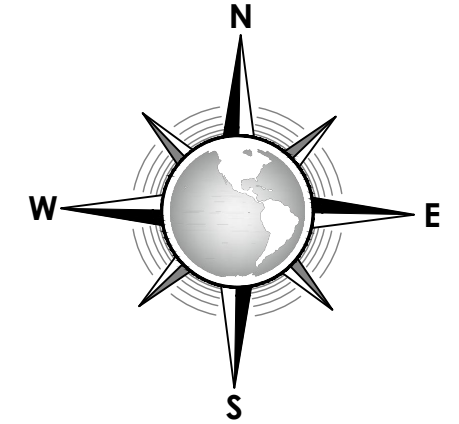
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SCALE: HORIZ: 1"=40', VERT: 1"=8' (HALF SIZE SHEETS)

SHEET QUANTITIES SUMMARY (BASE BID)			
ITEM	DESCRIPTION	UNIT	QUANTITY
A7	CIPP LINING EXISTING 15"Ø SANITARY SEWER LINE	LF	99
A8	STAINLESS STEEL FLOW INHIBITOR	EA	1

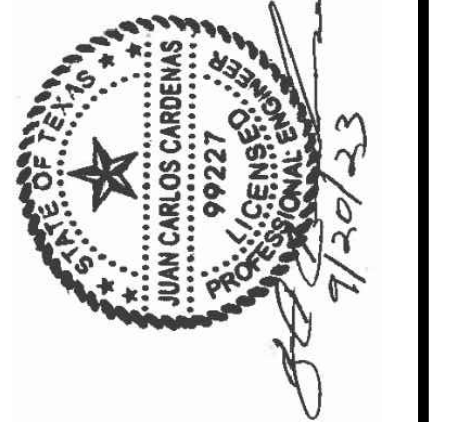
SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 1)			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	MANHOLE LINER	SY	15

**NOTE:**

- ANY REQUIRED SANITARY SEWER SYSTEM DIVERSION OR BYPASS PLUMBING WILL BE GOVERNED BY SPECIFICATION SECTION 027200 TO INCLUDE SUBMITTAL AND APPROVAL OF THE REQUIRED BYPASS PUMPING PLAN FORM PRIOR TO COMMENCEMENT OF ANY PLUGGING, DIVERSION, OR BYPASS PUMPING.
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CONSULTANT'S SHEET  
PROJECT NO. 21107-01A



**CITY OF KINGSVILLE GLO SS PROJECT 5  
(E. LOTT AVE.) SANITARY SEWER IMPROVEMENTS**  
KINGSVILLE, KLEBERG COUNTY, TEXAS

**SANITARY SEWER PLAN AND PROFILE  
STA. 14+00 TO STA. 15+94 (E.O.P.)**

REVISION NO.	DATE	J.C.C.	BY	DESCRIPTION
70				
60				
50	1/25/24	J.C.C.		

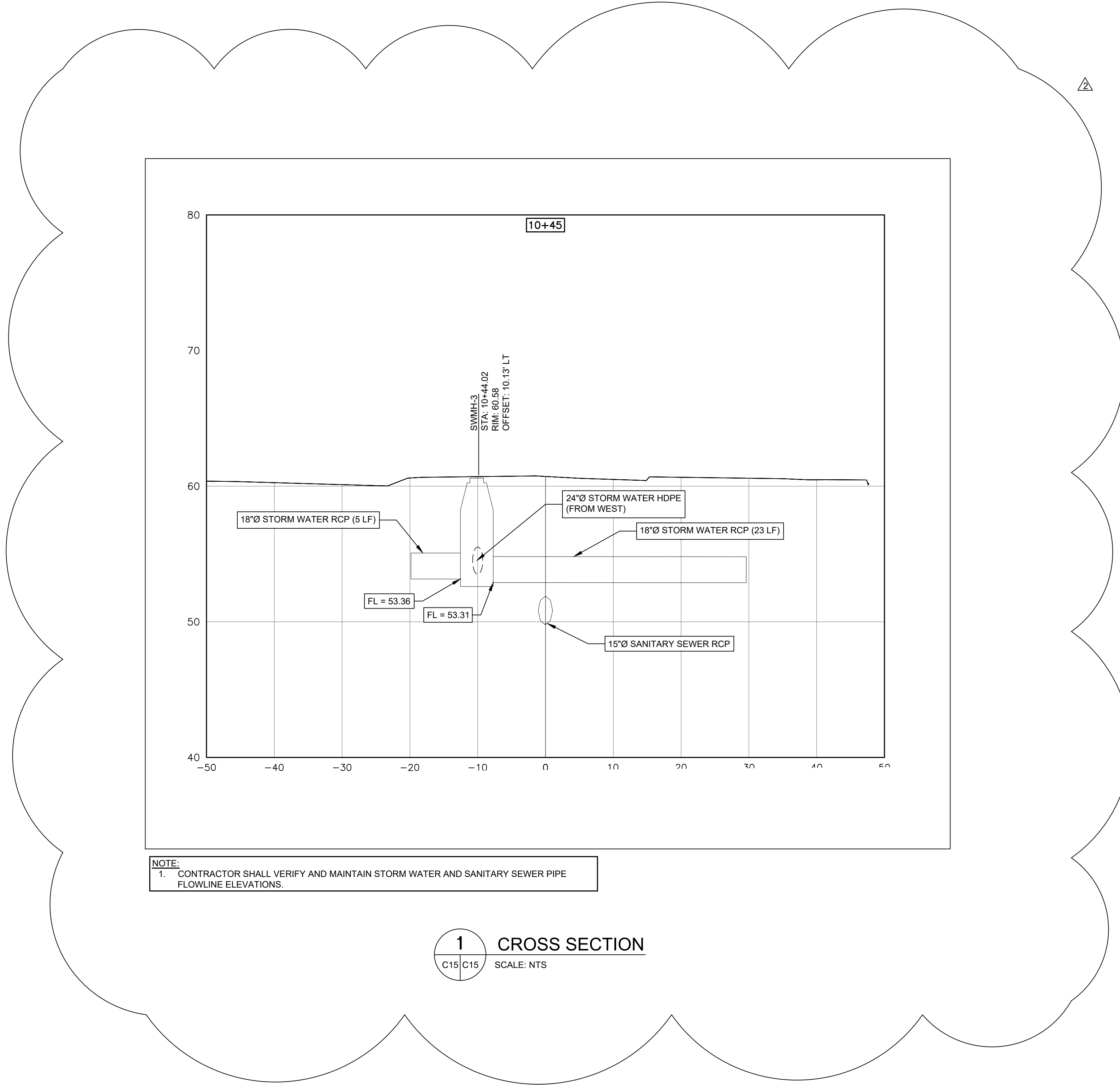
  

REVISION NO.	DATE	J.C.C.	BY	DESCRIPTION
70				
60				
50	1/25/24	J.C.C.		

DRAWING NO.  
**C14**

SHEET 15 of 35

FILE NAME: I:\Projects\2021\Cty of Kingsville\GLO-LOC05 WW LOTT ST OPPA\1- Drawings\2 - Civi\C11 SANITARY SEWER PLAN AND PROFILE STA. 0+00 (B.O.P.) TO STA. 5+00.dwg LAYOUT NAME: CROSS SECTION PLOTTED: Friday, January 26, 2024 - 4:48pm USER: lrepeda



**NOTE:**  
 1. CONTRACTOR SHALL VERIFY AND MAINTAIN STORM WATER AND SANITARY SEWER PIPE FLOWLINE ELEVATIONS.

**1** CROSS SECTION  
 C15 C15 SCALE: NTS

CONSULTANT'S SHEET PROJECT NO. 21107-01A	
<b>CITY OF KINGSVILLE GLO SS PROJECT 5                  (E. LOTT AVE.) SANITARY SEWER IMPROVEMENTS</b> KINGSVILLE, KLEBERG COUNTY, TEXAS	
CROSS SECTION	
REVISION NO.	DESCRIPTION
1/25/24	J.C.C. BY
DATE	DATE
ADDENDUM NO. 2	BY
DRAWING NO.	
<h1>C15</h1>	
SHEET 16 of 35	


FILE NAME: I:\Projects\2021\Cty of Kingsville\GLO-LOC06 WW-10TH-ST-12-PVC-REPLACEMENT\1-Drawings\2 - Civi\C4 - ESTIMATED QUANTITIES.dwg LAYOUT NAME: C4 - ESTIMATED QUANTITIES - PLOTTED: Friday, January 26, 2024 - 4:29pm USER: lzejepda

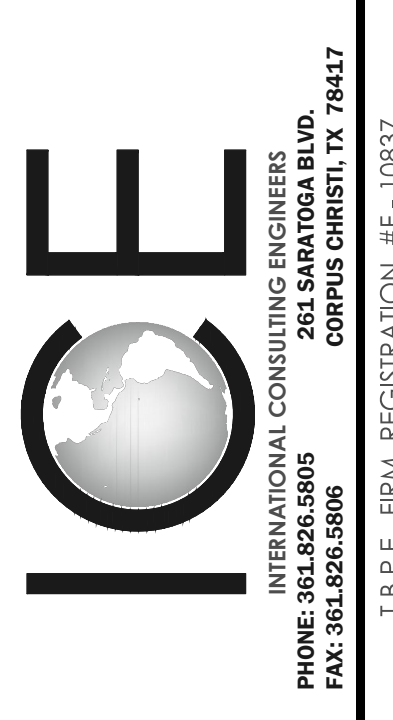
ESTIMATED QUANTITIES SUMMARY - TOTALS			
CITY OF KINGSVILLE SANITARY SEWER IMPROVEMENTS			
ITEM	DESCRIPTION	UNIT	QUANTITY
A1	MOBILIZATION / BONDS / INSURANCE	LS	1
A2	TRAFFIC CONTROL	LS	1
A3	SWPP (EROSION CONTROL LOGS)	LF	531
A4	CIPP LINING EXISTING 12"Ø SANITARY SEWER LINE (C-1-P)	LF	5478
A5	STAINLESS STEEL FLOW INHIBITOR	EA	18


ESTIMATED QUANTITIES SUMMARY - TOTALS ADDITIVE ALTERNATE BID NO.1			
CITY OF KINGSVILLE SANITARY SEWER IMPROVEMENTS			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	EXISTING MANHOLE PROTECTIVE COATING (60 MIL)	SY	314
B2	POINT REPAIRS	EA	10
B3	CONCRETE PAVEMENT REPAIR	SY	100
B4	ASPHALT PAVEMENT REPAIR	SY	100

- NOTES:
1. THE ESTIMATED QUANTITIES LISTED ARE FOR INFORMATIONAL PURPOSES AND FOR CONTRACTOR REFERENCE. THE CONTRACTOR IS RESPONSIBLE FOR DELIVERING A FINISHED PROJECT AS DETAILED ON THE PLANS AND SPECIFICATIONS.
  2. TRENCH EXCAVATION, BACKFILL, AND COMPACTION ARE ALL SUBSIDIARY TO SEWER PIPE AND OR POINT REPAIRS.
  3. TIE-IN CONNECTIONS ARE SUBSIDIARY TO SS MANHOLES.
  4. SANITARY SEWER SERVICE CONNECTIONS ARE ALL SUBSIDIARY TO SEWER PIPE / MANHOLE.
  5. CLEANING AND CCTV OF EXISTING LINE & MANHOLES ARE SUBSIDIARY TO CIPP LINING.

REVISION NO. A	DATE 1/25/24	J.C.C. BY	REVISION NO. 2	DATE BY	ADDENDUM NO. 2 DESCRIPTION <b>CITY OF KINGSVILLE GLO SS PROJECT 6</b> <b>(10TH STREET) SANITARY SEWER IMPROVEMENTS</b> KINGSVILLE, KLEBERG COUNTY, TEXAS  <b>ESTIMATED QUANTITIES</b>
DRAWING NO. <span style="font-size: 2em; font-weight: bold;">C4</span>					
SHEET <b>5</b> of <b>43</b>					

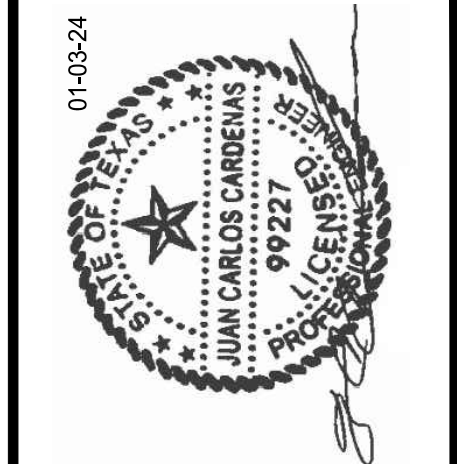








FILE NAME: I:\Projects\2021\City of Kingsville\GLO-LOC06 MW 10TH ST 12 PVC REPLACEMENT\Drawings\2 - Civi\C15=C26=SANI SEWER P&P STA 0+00 TO 5+00 END.dwg LAYOUT NAME: SS P&P STA 0+00 TO 5+00 PLOTTED: Friday, January 26, 2024 - 4:35pm USER: lzpreeda

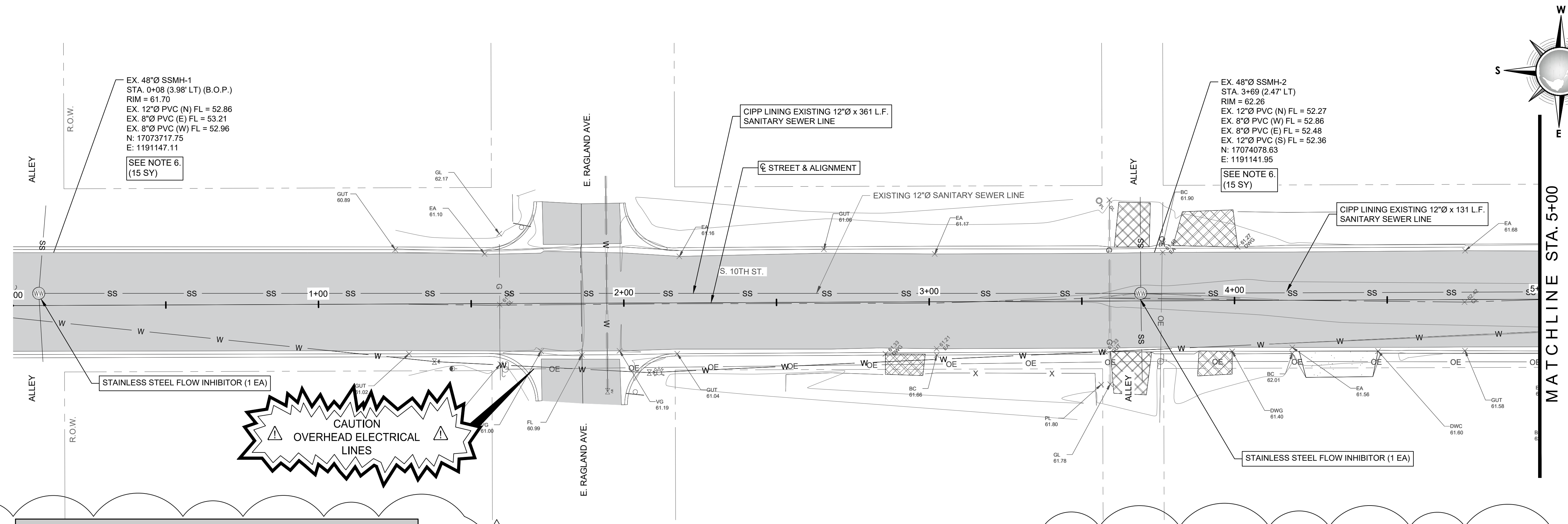
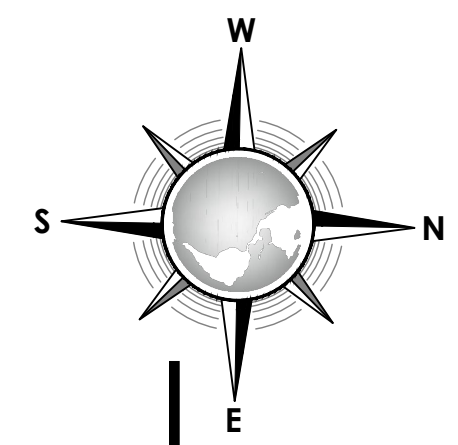


**IOE**  
INTERNATIONAL CONSULTING ENGINEERS  
261 SARATOGA BLVD.  
CORPUS CHRISTI, TX 78417  
PHONE: 361.926.5805  
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I.C.E. FIRM REGISTRATION #F-10837



**CITY OF KINGSVILLE GLO SS PROJECT 6  
(10TH STREET) SANITARY SEWER IMPROVEMENTS**  
KINGSVILLE, KLEBERG COUNTY, TEXAS

**SANITARY SEWER PLAN AND PROFILE  
STA. 0+00 (B.O.P.) TO STA. 5+00**



**SHEET QUANTITIES SUMMARY**

ITEM	DESCRIPTION	UNIT	QUANTITY
A4	CIPP LINING EXISTING 12"Ø SANITARY SEWER LINE	LF	492
A5	STAINLESS STEEL FLOW INHIBITOR	EA	2

**SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 1)**

ITEM	DESCRIPTION	UNIT	QUANTITY
B1	EXISTING MANHOLE PROTECTIVE COATING (60MIL)	SY	30

**1**  
C16 C16

**SANITARY SEWER PLAN AND PROFILE  
STA. 0+00 (B.O.P.) TO STA. 5+00**

0 20 40

SCALE: HORIZ: 1"=20', VERT: 1"=4' (FULL SIZE SHEETS)  
SCALE: HORIZ: 1"=40', VERT: 1"=8' (HALF SIZE SHEETS)

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- CLEANING AND CCTV ARE SUBSIDIARY TO CIPP LINING.
- THE CONTRACTOR SHALL PROVIDE 2 PROTECTIVE COATS (60 MIL) OR APPROVED EQUAL ON ALL EXPOSED CONCRETE SURFACES, INCLUDING CORBEL AREA, MANHOLE WALLS AND MANHOLE BENCH. (ADDITIVE ALTERNATE BID NO. 1)

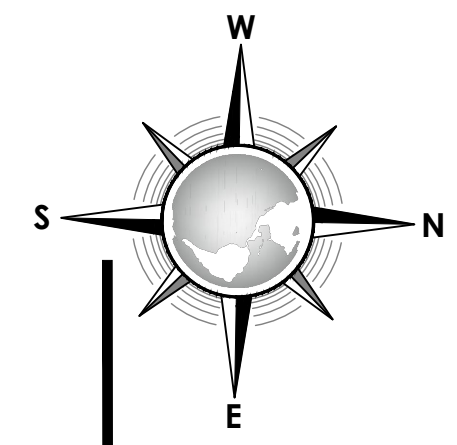
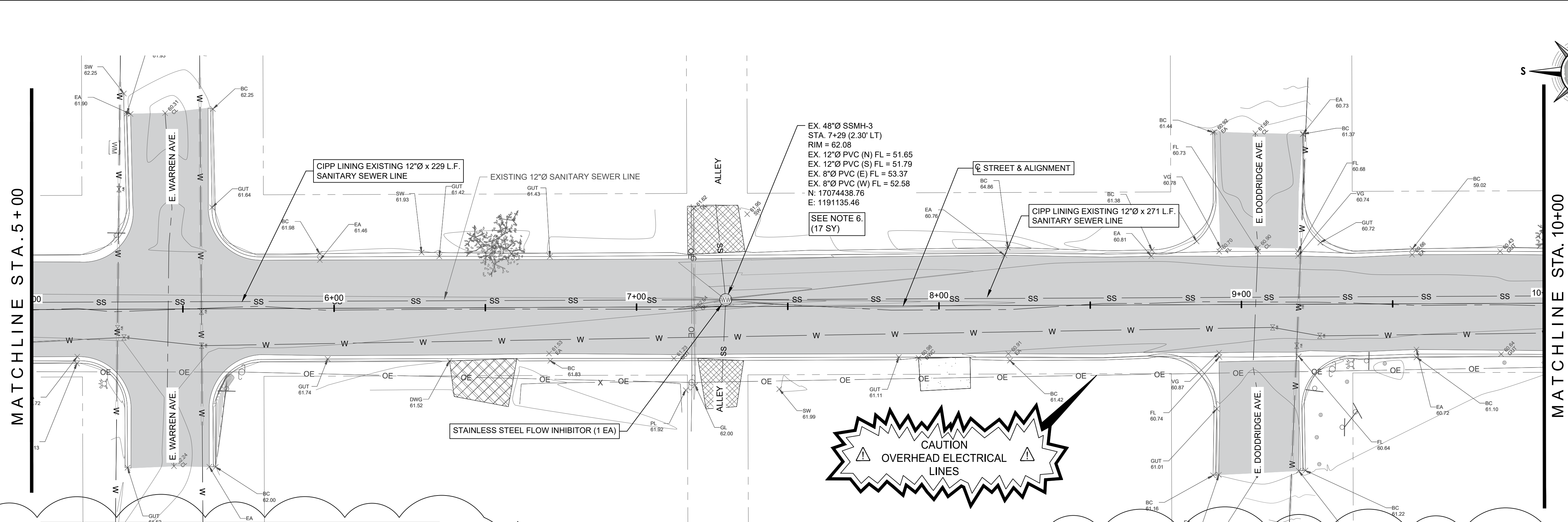
EX & ELEV. NEW & ELEV.	0+00	1+00	2+00	3+00	4+00	5+00
70						
60						
50						
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ADDENDUM NO. 2

REVISION NO. DATE BY DESCRIPTION

1/25/24 J.C.C. BY

FILE NAME: I:\Projects\2021\City of Kingsville\GLO-LOC06 MW 10TH ST 12 PVC REPLACEMENT\Drawings\2 - Drawings\2 - CIP Lining\15-026-SAN SEWER P&P STA. 0+00 TO 10+00 - PLOTTED: Friday, January 26, 2024 - 4:35pm USER: jzpetec



SHEET QUANTITIES SUMMARY			
ITEM	DESCRIPTION	UNIT	QUANTITY
A4	CIPP LINING EXISTING 12"Ø SANITARY SEWER LINE	LF	500
A5	STAINLESS STEEL FLOW INHIBITOR	EA	1

SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 1)			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	EXISTING MANHOLE PROTECTIVE COATING (60MIL)	SY	17

**1**  
C17 C17

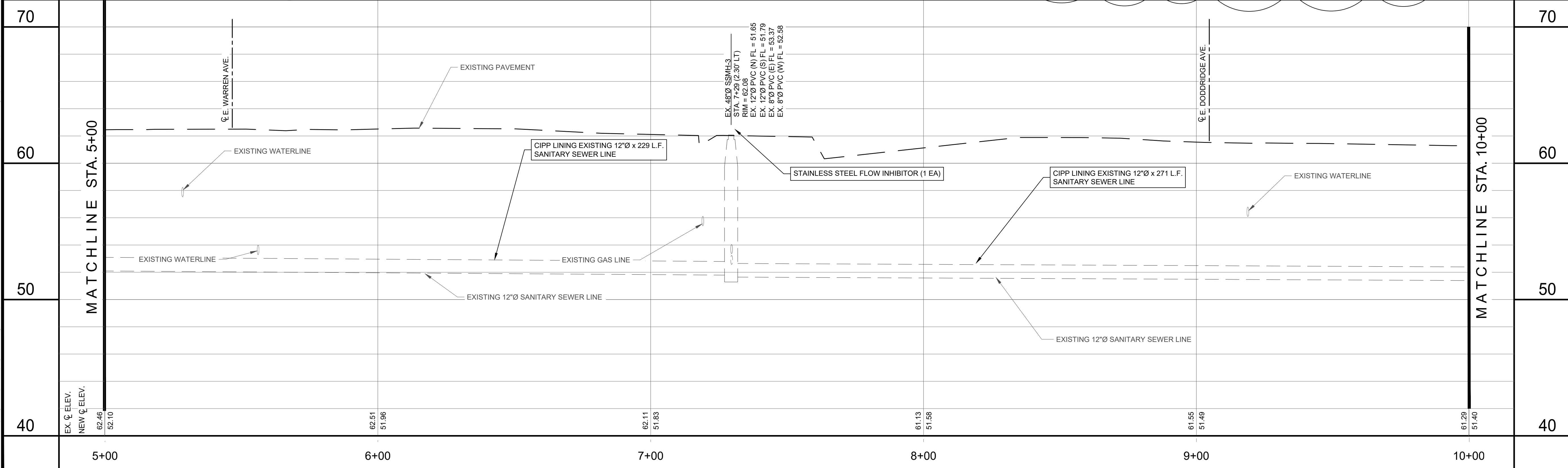
**SANITARY SEWER PLAN AND PROFILE**  
STA. 5+00 TO STA. 10+00

0 20 40

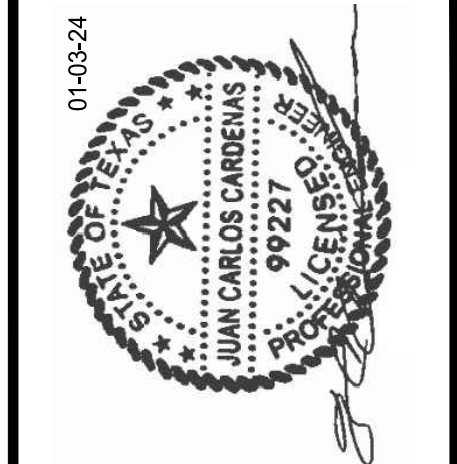
SCALE: HORIZ: 1"=20', VERT: 1"=4' (FULL SIZE SHEETS)  
SCALE: HORIZ: 1"=40', VERT: 1"=8' (HALF SIZE SHEETS)

**NOTE:**

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6. THE CONTRACTOR SHALL PROVIDE 2 PROTECTIVE COATS (60 MIL) OR APPROVED EQUAL ON ALL EXPOSED CONCRETE SURFACES, INCLUDING CORBEL AREA, MANHOLE WALLS AND MANHOLE BENCH. (ADDITIVE ALTERNATE BID NO. 1)



CONSULTANT'S SHEET  
PROJECT NO. 21107-01B



**IOE**  
INTERNATIONAL CONSULTING ENGINEERS  
261 SARATOGA BLVD.  
CORPUS CHRISTI, TX 78417  
PHONE: 361.926.5805  
FAX: 361.926.5806  
I.C.E. FIRM REGISTRATION #F-10837



**CITY OF KINGSVILLE GLO SS PROJECT 6**  
**(10TH STREET) SANITARY SEWER IMPROVEMENTS**  
KINGSVILLE, KLEBERG COUNTY, TEXAS

**SANITARY SEWER PLAN AND PROFILE**  
STA. 5+00 TO STA. 10+00

REVISION NO.	DATE	BY	DESCRIPTION
1	1/25/24	J.C.C.	

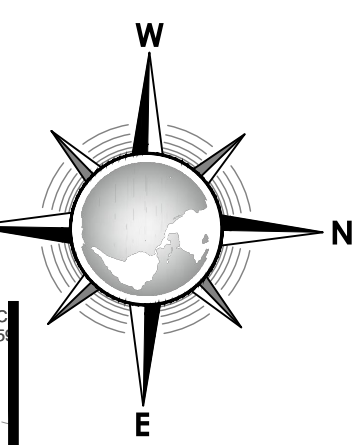
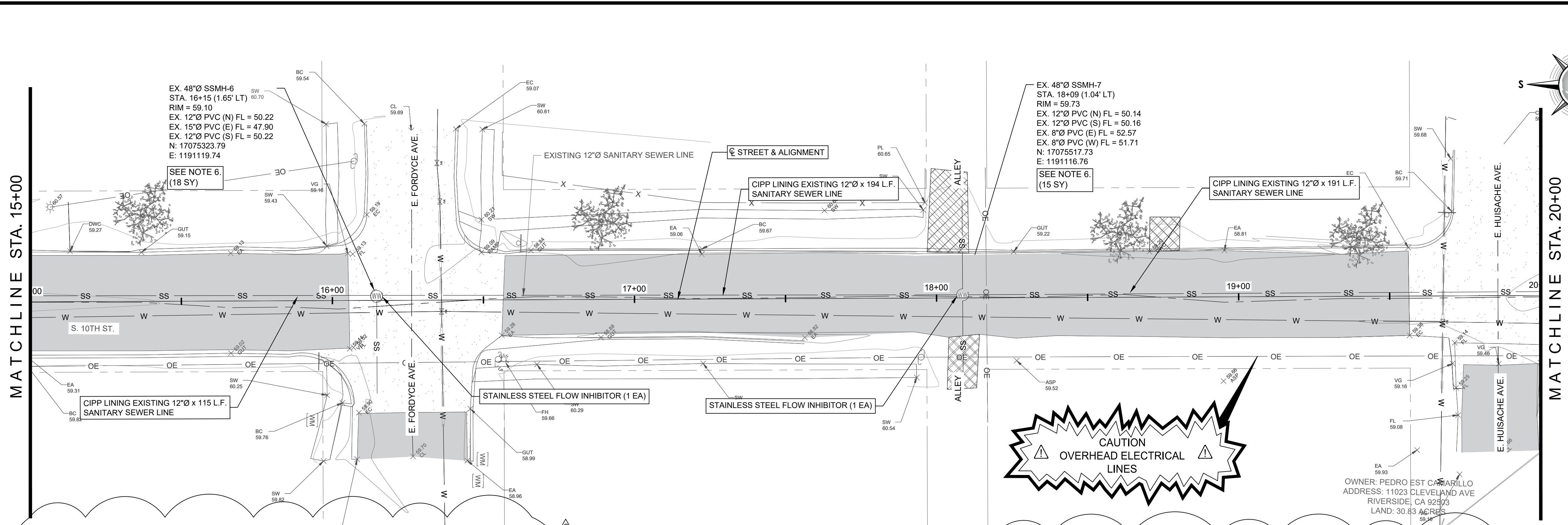
ADDENDUM NO.	DESCRIPTION
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DRAWING NO.  
**C17**

SHEET 18 of 43



FILE NAME: I:\Projects\2021\City of Kingsville\GLO-LOC06 MW 10TH ST 12 PVC REPLACEMENT\Drawings\2 - Civi\15-00-026-SAN SEWER P&P STA. 0+00 TO 20+00 END.dwg LAYOUT NAME: SS P&P STA. 15+00 TO 20+00 PLOTTED: Friday, January 26, 2024 4:35pm USER: tzprezco

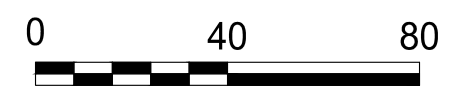


SHEET QUANTITIES SUMMARY (BASE BID)			
ITEM	DESCRIPTION	UNIT	QUANTITY
A4	CIPP LINING EXISTING 12"Ø SANITARY SEWER LINE	LF	500
A5	STAINLESS STEEL FLOW INHIBITOR	EA	2

SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 1)			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	EXISTING MANHOLE PROTECTIVE COATING (60MIL)	SY	33

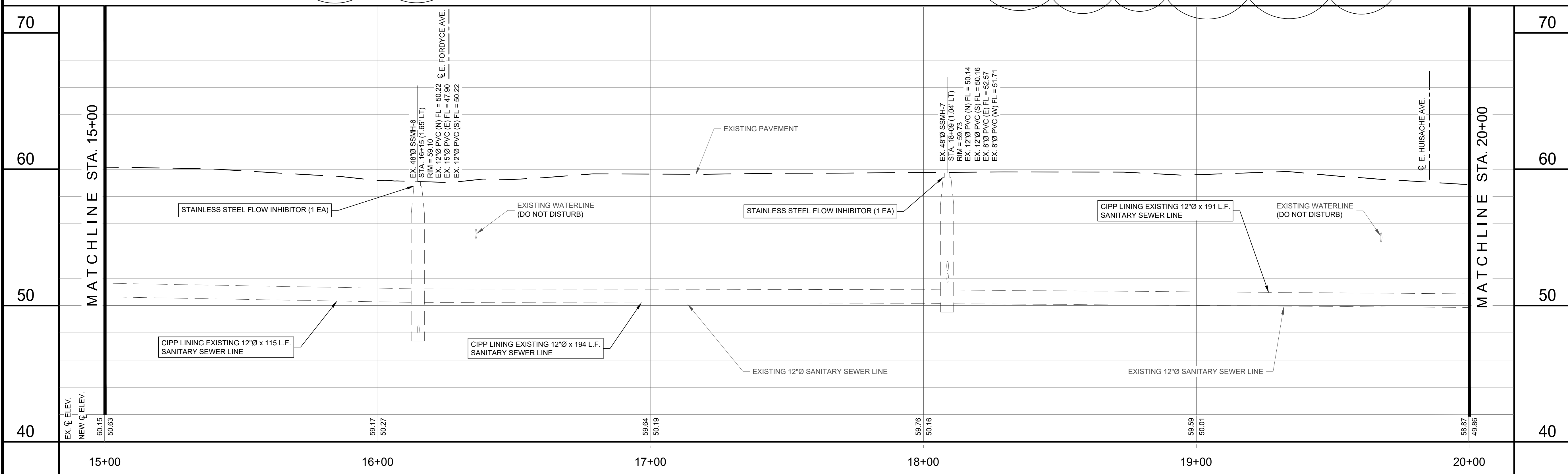
**SANITARY SEWER PLAN AND PROFILE  
STA. 15+00 TO STA. 20+00**



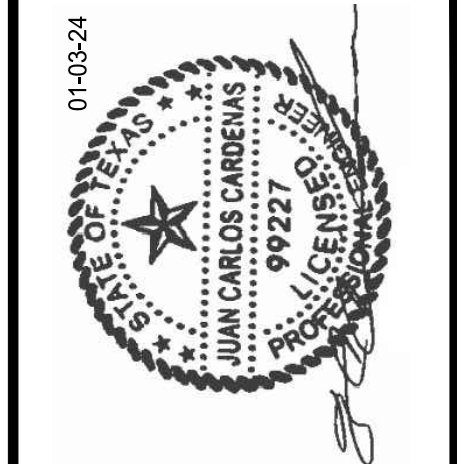
SCALE: HORIZ: 1"=40', VERT: 1"=4' (FULL SIZE SHEETS)  
SCALE: HORIZ: 1"=80', VERT: 1"=8' (HALF SIZE SHEETS)

**NOTE:**

- ANY REQUIRED SANITARY SEWER SYSTEM DIVERSION OR BYPASS PLUMBING WILL BE GOVERNED BY SPECIFICATION SECTION 027200 TO INCLUDE SUBMITTAL AND APPROVAL OF THE REQUIRED BYPASS PUMPING PLAN FORM PRIOR TO COMMENCEMENT OF ANY PLUGGING, DIVERSION, OR BYPASS PUMPING.
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CONSULTANT'S SHEET  
PROJECT NO. 21107-01B



**IOE**  
INTERNATIONAL CONSULTING ENGINEERS  
261 SARATOGA BLVD.  
CORPUS CHRISTI, TX 78417  
PHONE: 361.926.5805  
FAX: 361.926.5806  
I.C.E. FIRM REGISTRATION #F-10837



**CITY OF KINGSVILLE GLO SS PROJECT 6  
(10TH STREET) SANITARY SEWER IMPROVEMENTS**  
KINGSVILLE, KLEBERG COUNTY, TEXAS

**SANITARY SEWER PLAN AND PROFILE  
STA. 15+00 TO STA. 20+00**

DRAWING NO.  
**C19**

SHEET 20 of 43

REVISION NO.	DATE	BY	DESCRIPTION
1	1/25/24	J.C.C.	
ADDENDUM NO. 2			

FILE NAME: I:\Projects\2021\City of Kingsville\GLO-10006 MW 10TH ST 12 PVC REPLACEMENT\Drawings\2 - Civi\C15=C26=SAN SEWER P&P STA. 0+00 TO END.dwg LAYOUT NAME: SS P&P STA. 20+00 TO 25+00 PLOTTED: Friday, January 26, 2024 4:37pm USER: lzpedra

MATCHLINE STA. 20+00

MATCHLINE STA. 20+00

20+00

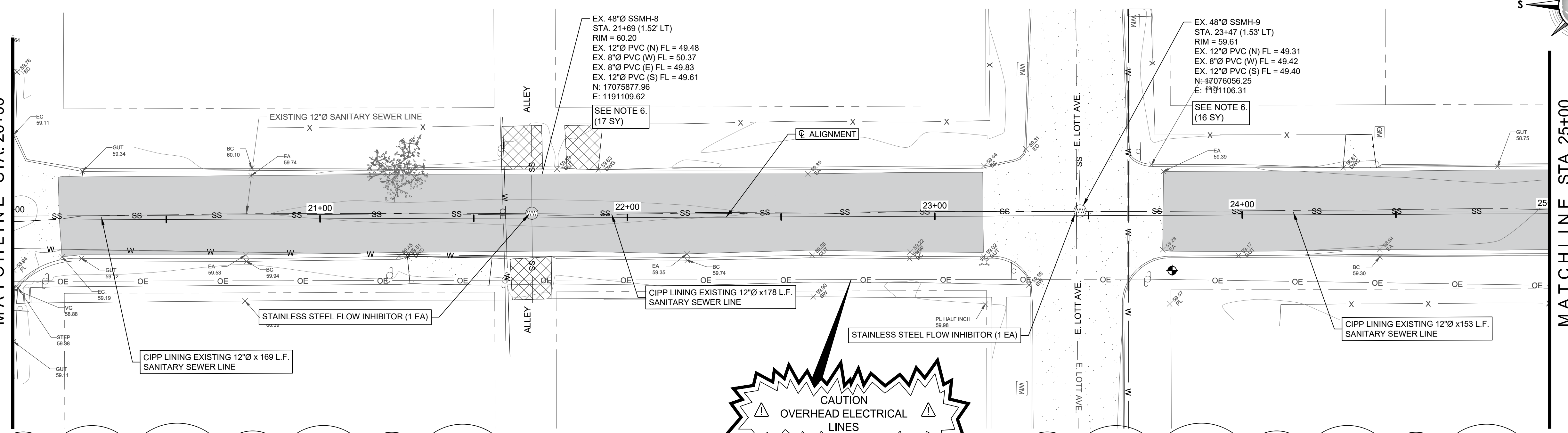
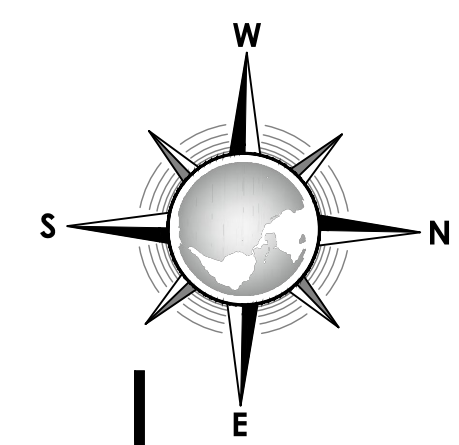
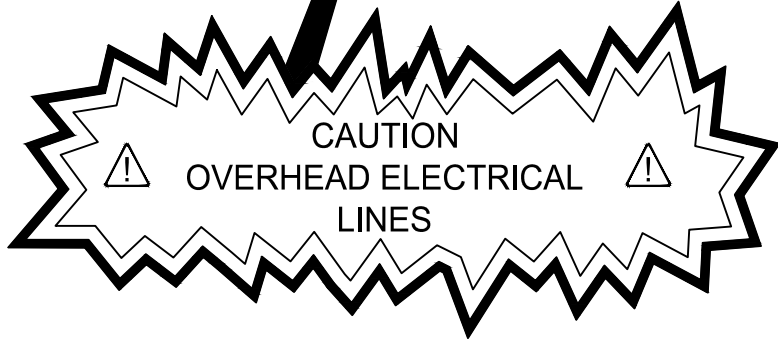
SHEET QUANTITIES SUMMARY (BASE BID)			
ITEM	DESCRIPTION	UNIT	QUANTITY
A4	CIPP LINING EXISTING 12"Ø SANITARY SEWER LINE	LF	500
A5	STAINLESS STEEL FLOW INHIBITOR	EA	2

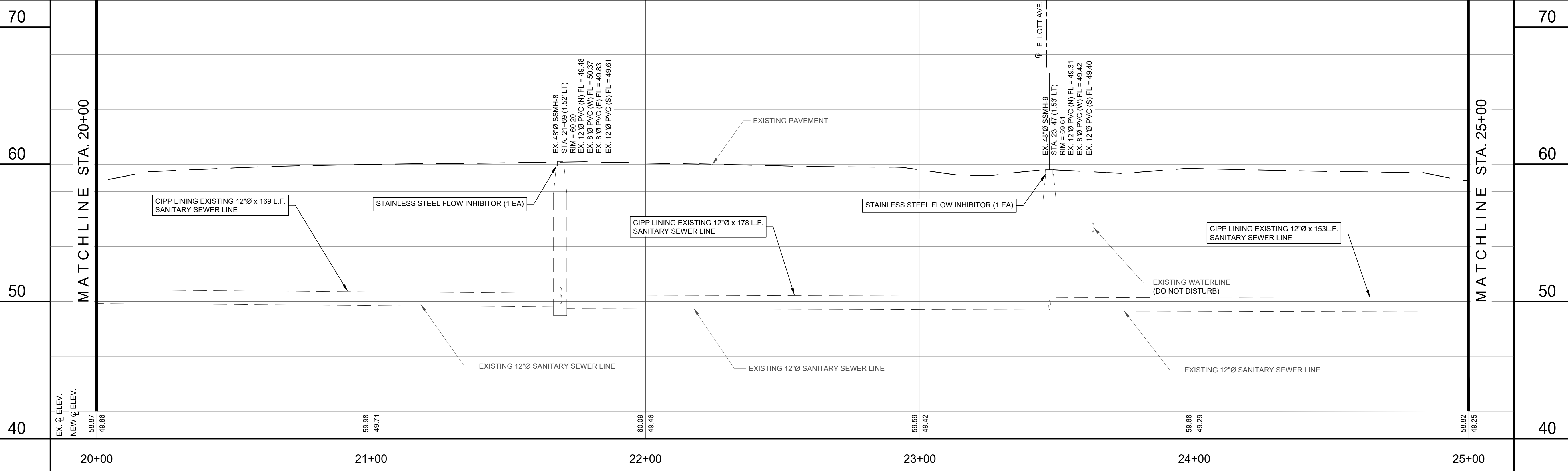
SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 1)			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	EXISTING MANHOLE PROTECTIVE COATING (60MIL)	SY	33

**SANITARY SEWER PLAN AND PROFILE  
STA. 20+00 TO STA. 25+00**

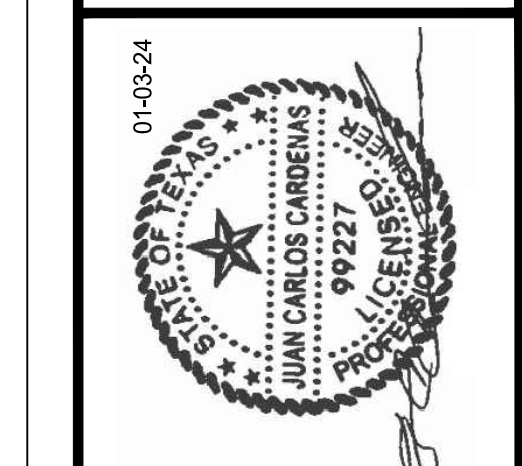
SCALE: HORIZ: 1"=20', VERT: 1"=4' (FULL SIZE SHEETS)  
SCALE: HORIZ: 1"=40', VERT: 1"=8' (HALF SIZE SHEETS)



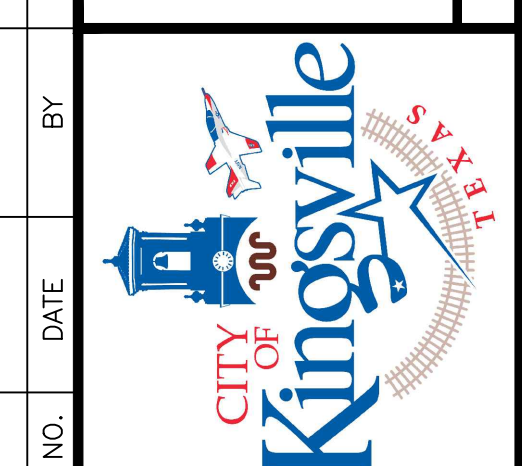
- NOTE:**
- ANY REQUIRED SANITARY SEWER SYSTEM DIVERSION OR BYPASS PLUMBING WILL BE GOVERNED BY SPECIFICATION SECTION 027200 TO INCLUDE SUBMITTAL AND APPROVAL OF THE REQUIRED BYPASS PUMPING PLAN FORM PRIOR TO COMMENCEMENT OF ANY PLUGGING, DIVERSION, OR BYPASS PUMPING.
  - SURCHARGED MANHOLES WILL HAVE TO BE PLUGGED AND VACUUMED OUT BY MEANS OF VACUUM TRUCK PRIOR TO THE COMMENCEMENT OF ANY WORK ON THE MANHOLE, SUBSIDIARY TO LINE ITEM.
  - IF WORK ON A MANHOLE OUTSIDE OF THE ROADWAY REQUIRES IT TO REMAIN OPEN OVERNIGHT IT IS RESPONSIBILITY OF CONTRACTOR ADEQUATELY PROTECT THE OPENING AND PROVIDED SAFETY WARNING SIGNS, SAFETY FENCE AND BARRICADES NEEDED TO PROTECT THE OPEN STRUCTURE.
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CONSULTANT'S SHEET  
PROJECT NO. 21107-01B



**IOE**  
INTERNATIONAL CONSULTING ENGINEERS  
261 SARATOGA BLVD.  
CORPUS CHRISTI, TX 78417  
PHONE: 361.926.5805  
FAX: 361.926.5806  
I.C.E. FIRM REGISTRATION #F-10837



REVISION NO. DATE BY

ADDENDUM NO. 2

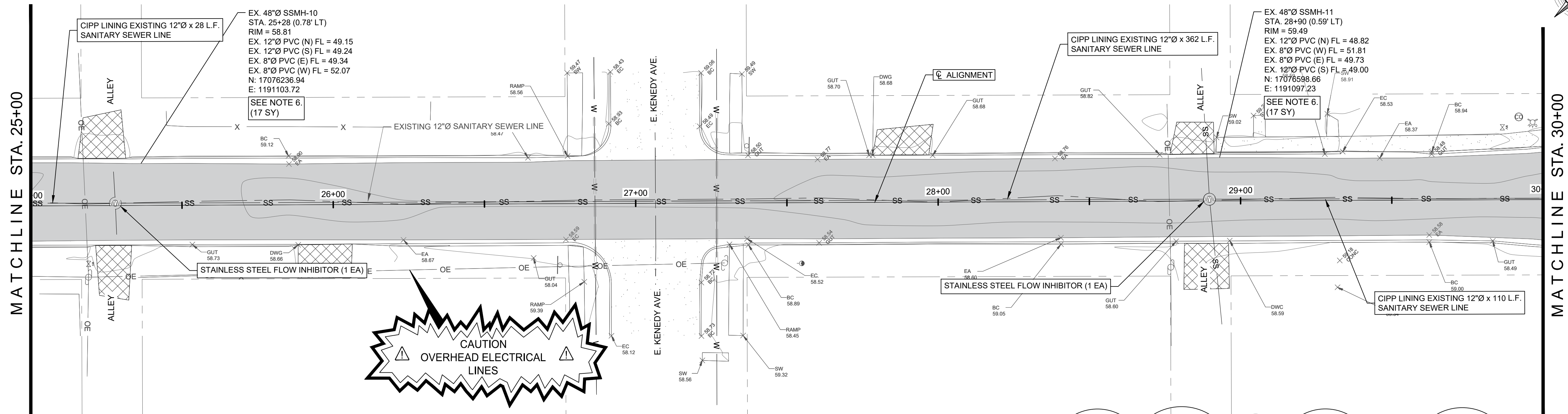
**CITY OF KINGSVILLE GLO SS PROJECT 6  
(10TH STREET) SANITARY SEWER IMPROVEMENTS**  
KINGSVILLE, KLEBERG COUNTY, TEXAS

**SANITARY SEWER PLAN AND PROFILE  
STA. 20+00 TO STA. 25+00**

DRAWING NO. **C20**

SHEET 21 of 43

FILE NAME: I:\Projects\2021\City of Kingsville\GLO-10006 MW 10TH ST 12 PVC REPLACEMENT\1 - Drawings\2 - Civi\C15=C26=SAN SEWER P&P STA. 0+00 TO END.dwg LAYOUT NAME: SS P&P STA. 25+00 TO 30+00 PLOTTED: Friday, January 26, 2024 4:37pm USER: lzpedra



SHEET QUANTITIES SUMMARY (BASE BID)			
ITEM	DESCRIPTION	UNIT	QUANTITY
A4	CIPP LINING EXISTING 12"Ø SANITARY SEWER LINE	LF	500
A5	STAINLESS STEEL FLOW INHIBITOR	EA	2

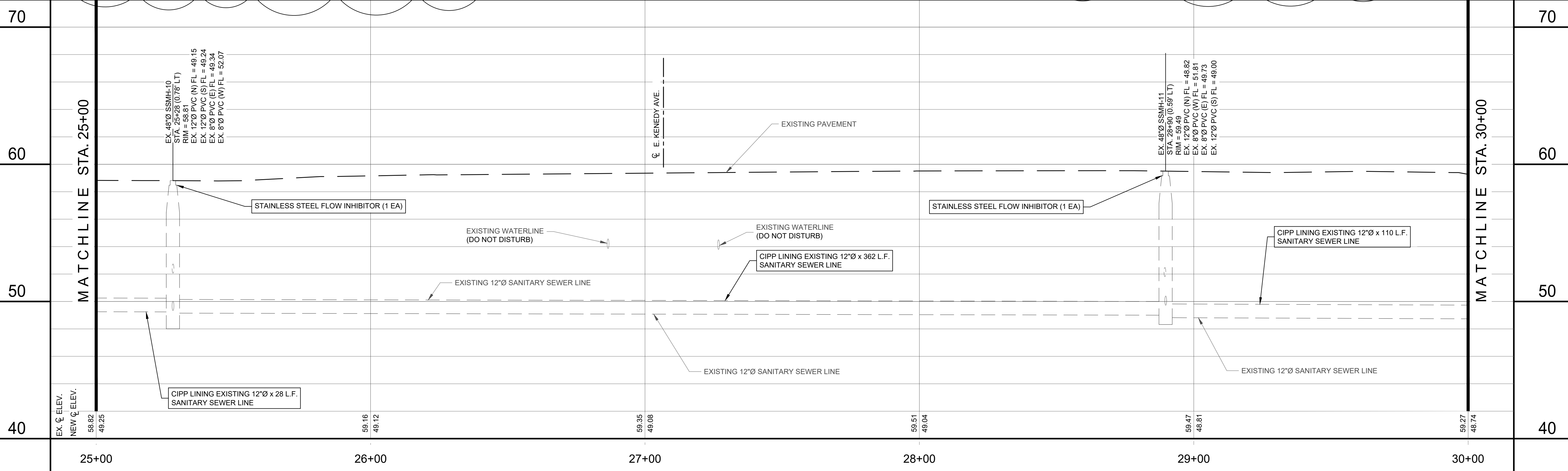
SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 1)			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	EXISTING MANHOLE PROTECTIVE COATING (60MIL)	SY	34

**SANITARY SEWER PLAN AND PROFILE**  
**STA. 25+00 TO STA. 30+00**

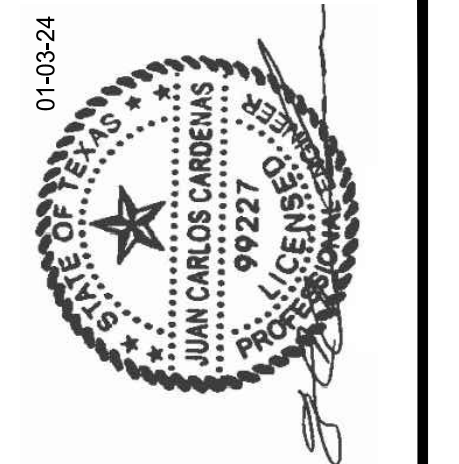
SCALE: HORIZ: 1"=20', VERT: 1"=4' (FULL SIZE SHEETS)  
 SCALE: HORIZ: 1"=40', VERT: 1"=8' (HALF SIZE SHEETS)

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CONSULTANT'S SHEET  
 PROJECT NO. 21107-01B



**IOE**  
 INTERNATIONAL CONSULTING ENGINEERS  
 261 SARATOGA BLVD.  
 CORPUS CHRISTI, TX 78417  
 PHONE: 361.926.5805  
 FAX: 361.926.5806  
 I.C.E. FIRM REGISTRATION #F-10837



**CITY OF KINGSVILLE GLO SS PROJECT 6**  
**(10TH STREET) SANITARY SEWER IMPROVEMENTS**  
 KINGSVILLE, KLEBERG COUNTY, TEXAS

**SANITARY SEWER PLAN AND PROFILE**  
 STA. 25+00 TO STA. 30+00

DRAWING NO.  
**C21**

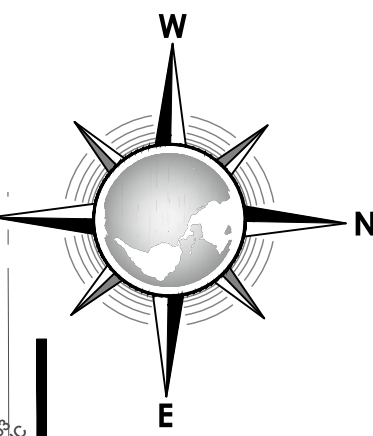
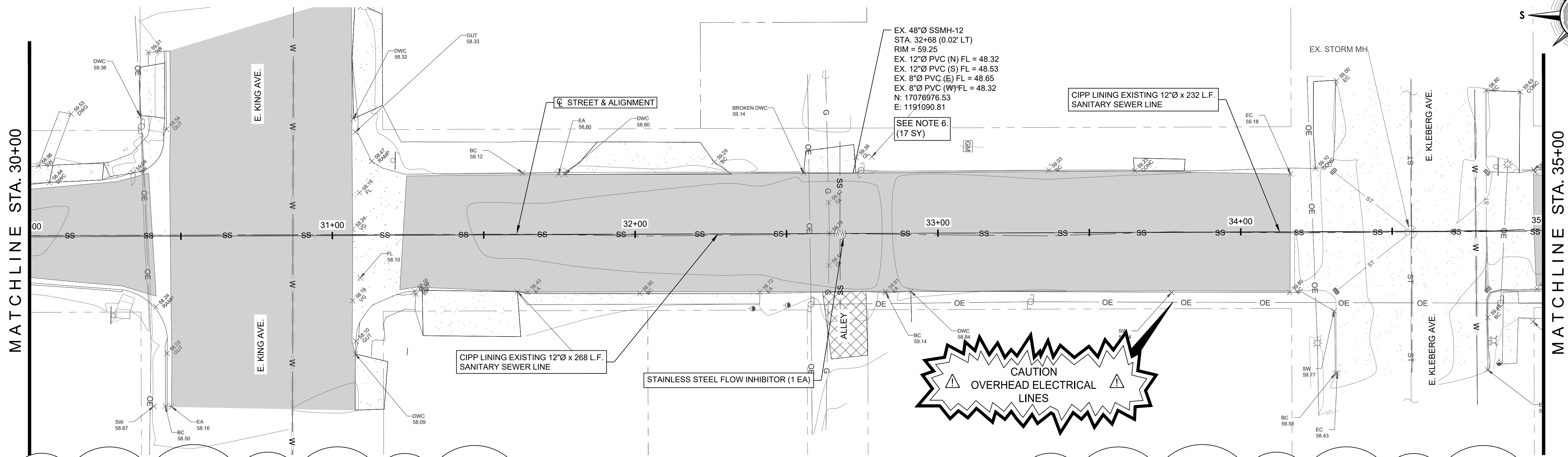
SHEET 22 of 43

REVISION NO.	DATE	BY	DESCRIPTION
1	1/25/24	J.C.C.	

REVISION NO.	DATE	BY	DESCRIPTION
ADDENDUM NO. 2			

FILE NAME: I:\Projects\2021\City of Kingsville\GLO-LOC06 MW 10TH ST 12 PVC REPLACEMENT\Drawings\2 - Civi\C15=C26=SAN SEWER P&P STA. 0+00 TO END.dwg LAYOUT NAME: SS P&P STA. 30+00 TO 35+00 PLOTTED: Friday, January 26, 2024 4:35pm USER: lzprelec



SHEET QUANTITIES SUMMARY (BASE BID)			
ITEM	DESCRIPTION	UNIT	QUANTITY
A4	CIPP LINING EXISTING 12"Ø SANITARY SEWER LINE	LF	500
A5	STAINLESS STEEL FLOW INHIBITOR	EA	1

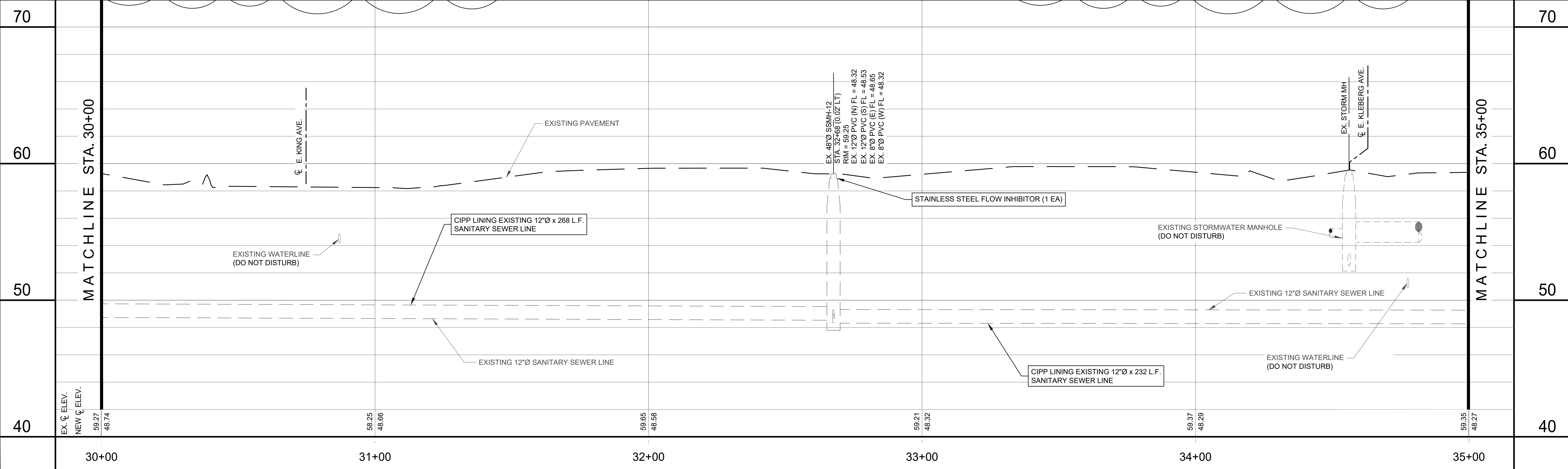
SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 1)			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	EXISTING MANHOLE PROTECTIVE COATING (60MIL)	SY	17

**1**  
 SANITARY SEWER PLAN AND PROFILE  
 STA. 30+00 TO STA. 35+00

SCALE: HORIZ: 1"=20', VERT: 1"=4' (FULL SIZE SHEETS)  
 SCALE: HORIZ: 1"=40', VERT: 1"=8' (HALF SIZE SHEETS)

**NOTE:**

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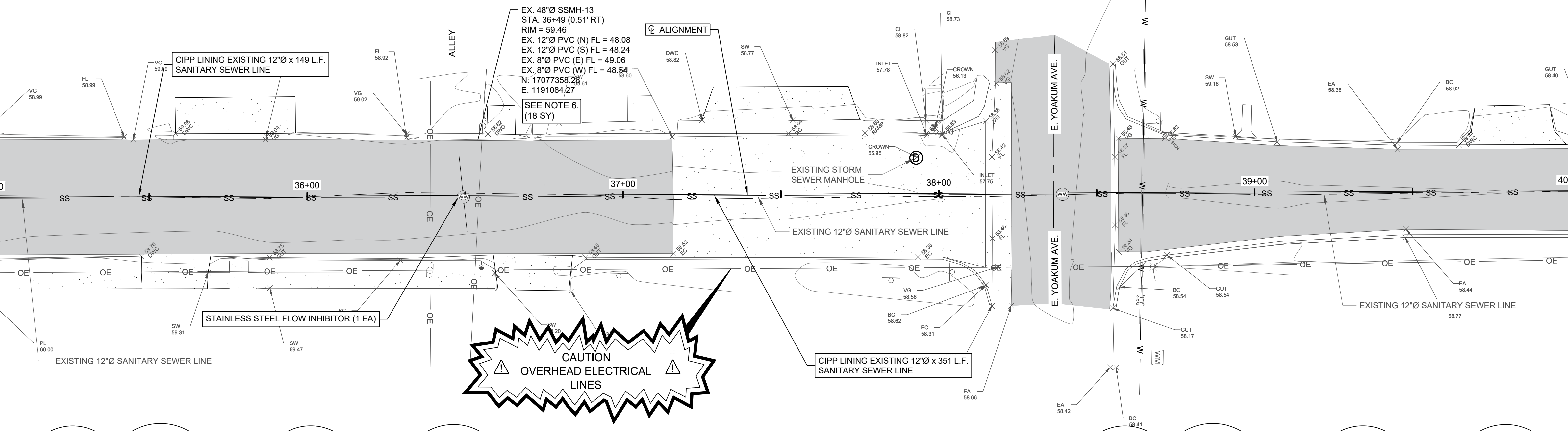
CONSULTANT'S SHEET PROJECT NO. 21107-01B	01-09-24 JUAN CARLOS CARDENAS PROF. LICENSE NO. 99227
IOE INTERNATIONAL CONSULTING ENGINEERS PHONE: 361.926.5805 FAX: 361.926.5806 261 SARATOGA BLVD. CORPUS CHRISTI, TX 78417 I.C.E. FIRM REGISTRATION #F-10837	CITY OF Kingsville KINGSBURG COUNTY, TEXAS
CITY OF Kingsville KINGSBURG COUNTY, TEXAS SANITARY SEWER PLAN AND PROFILE STA. 30+00 TO STA. 35+00	ADDENDUM NO. 2
REVISION NO.	DESCRIPTION
DATE	BY
1/25/24	J.C.C.
DRAWING NO. <b>C22</b>	SHEET 23 of 43

FILE NAME: I:\Projects\2021\City of Kingsville\GLO-LOC06 MW 10TH ST 12 PVC REPLACEMENT\1-Drawings\2 - CIP\15-C26-SANI SEWER P&P STA. 0+00 TO 40+00 PLOTTED: Friday, January 26, 2024 4:35pm USER: lzprelec

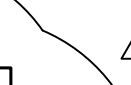
MATCHLINE STA. 35+00

MATCHLINE STA. 35+00

EX & ELEV.  
NEW & ELEV.  
59.95  
48.27



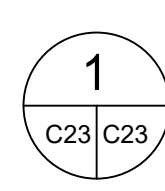
MATCHLINE STA. 40+00



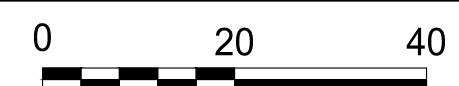
SHEET QUANTITIES SUMMARY (BASE BID)			
ITEM	DESCRIPTION	UNIT	QUANTITY
A4	CIPP LINING EXISTING 12"Ø SANITARY SEWER LINE	LF	500
A5	STAINLESS STEEL FLOW INHIBITOR	EA	1

SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 1)			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	EXISTING MANHOLE PROTECTIVE COATING (60MIL)	SY	18

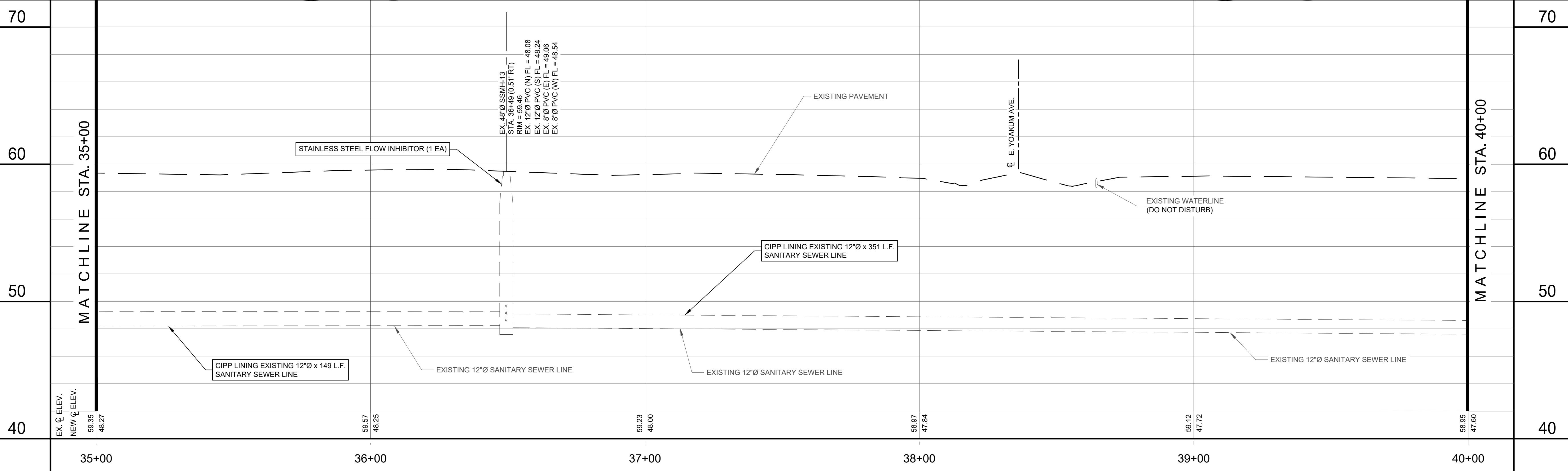


**SANITARY SEWER PLAN AND PROFILE  
STA. 35+00 TO STA. 40+00**



SCALE: HORIZ: 1"=20', VERT: 1"=4' (FULL SIZE SHEETS)  
SCALE: HORIZ: 1"=40', VERT: 1"=8' (HALF SIZE SHEETS)

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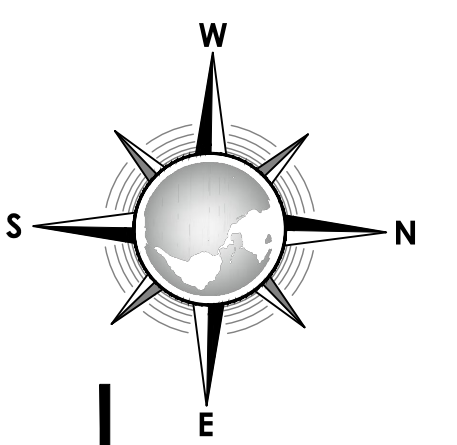
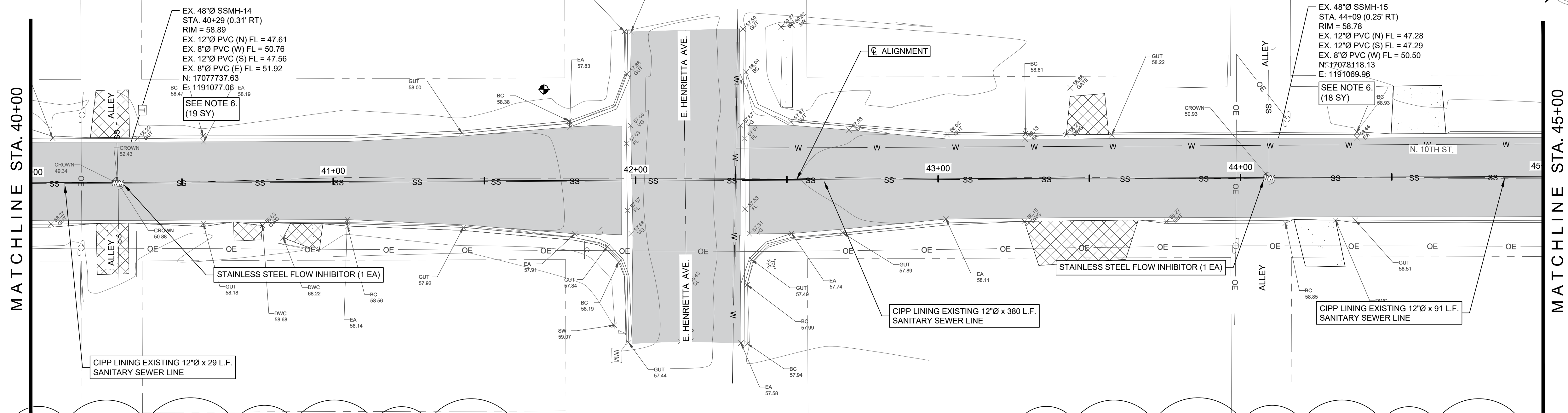


MATCHLINE STA. 40+00

CONSULTANT'S SHEET PROJECT NO. 21107-01B	
<p>INTERNATIONAL CONSULTING ENGINEERS 261 SARATOGA BLVD. CORPUS CHRISTI, TX 78417 PHONE: 361.926.5805 FAX: 361.926.5806 I.C.E. FIRM REGISTRATION #F-10837</p>	
<p>CITY OF Kingsville TEXAS</p>	
<p><b>CITY OF KINGSVILLE GLO SS PROJECT 6 (10TH STREET) SANITARY SEWER IMPROVEMENTS</b> KINGSVILLE, KLEBERG COUNTY, TEXAS</p> <p><b>SANITARY SEWER PLAN AND PROFILE STA. 35+00 TO STA. 40+00</b></p>	
REVISION NO.	DESCRIPTION
1	ADDENDUM NO. 2
DATE	BY
1/25/24	J.C.C.
DRAWING NO.	
C23	
SHEET 24 of 43	



FILE NAME: I:\Projects\2021\City of Kingsville\GLO-10006 MW-10TH ST. 12. PVC REPLACEMENT\1 - Drawings\2 - CIVA\C15=C26=SAN SEWER P&P STA. 40+00 TO 45+00 TO END.dwg LAYOUT NAME: SS P&P STA. 40+00 TO 45+00 TO END.dwg PLOTTED: Friday, January 26, 2024 4:35pm USER: izpedro



SHEET QUANTITIES SUMMARY (BASE BID)			
ITEM	DESCRIPTION	UNIT	QUANTITY
A4	CIPP LINING EXISTING 12"Ø SANITARY SEWER LINE	LF	500
A5	STAINLESS STEEL FLOW INHIBITOR	EA	2

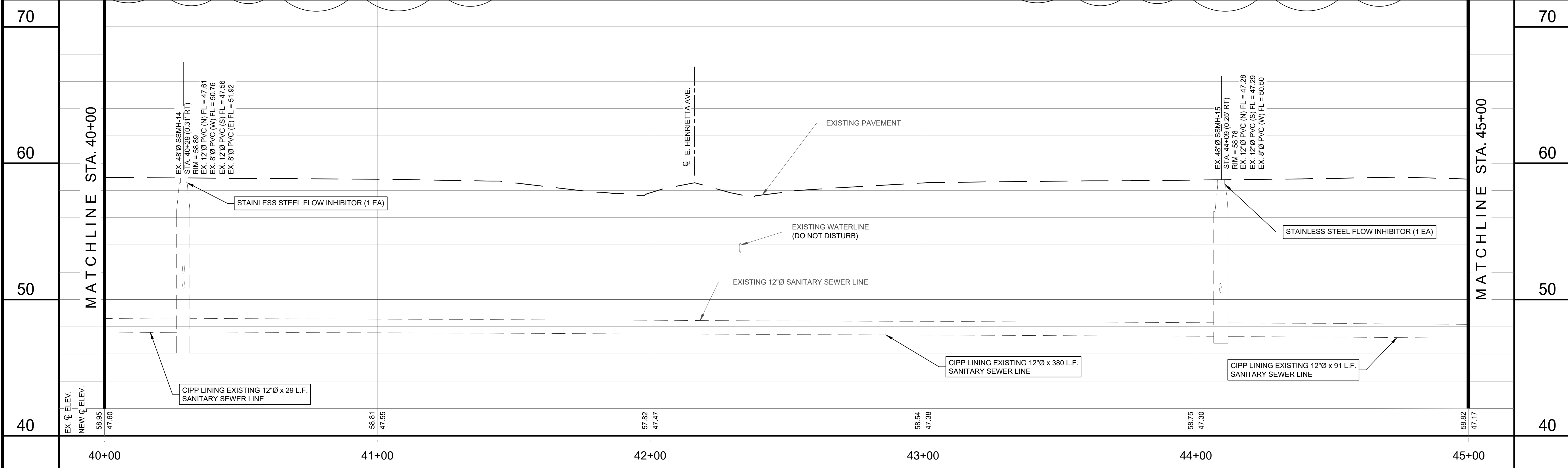
SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 1)			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	EXISTING MANHOLE PROTECTIVE COATING (60MIL)	SY	37

**1** SANITARY SEWER PLAN AND PROFILE  
STA. 40+00 TO STA. 45+00

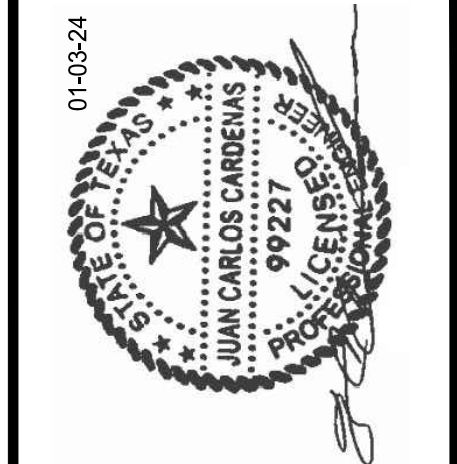
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SCALE: HORIZ: 1"=40', VERT: 1"=8' (HALF SIZE SHEETS)

**NOTE:**

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- THE CONTRACTOR SHALL PROVIDE 2 PROTECTIVE COATS (60 MIL) OR APPROVED EQUAL ON ALL EXPOSED CONCRETE SURFACES, INCLUDING CORBEL AREA, MANHOLE WALLS AND MANHOLE BENCH. (ADDITIVE ALTERNATE BID NO. 1)



CONSULTANT'S SHEET  
PROJECT NO. 21107-01B



**IOE**  
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I.C.E. FIRM REGISTRATION #F-10837



**CITY OF KINGSVILLE GLO SS PROJECT 6  
(10TH STREET) SANITARY SEWER IMPROVEMENTS**  
KINGSVILLE, KLEBERG COUNTY, TEXAS

**SANITARY SEWER PLAN AND PROFILE  
STA. 40+00 TO STA. 45+00**

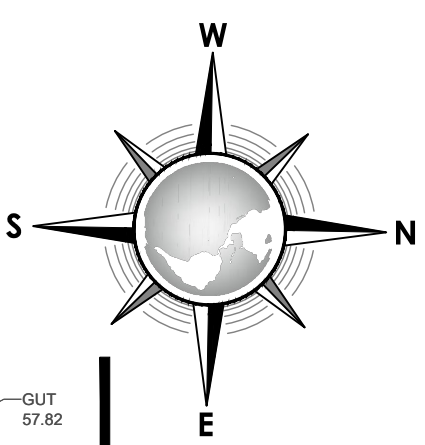
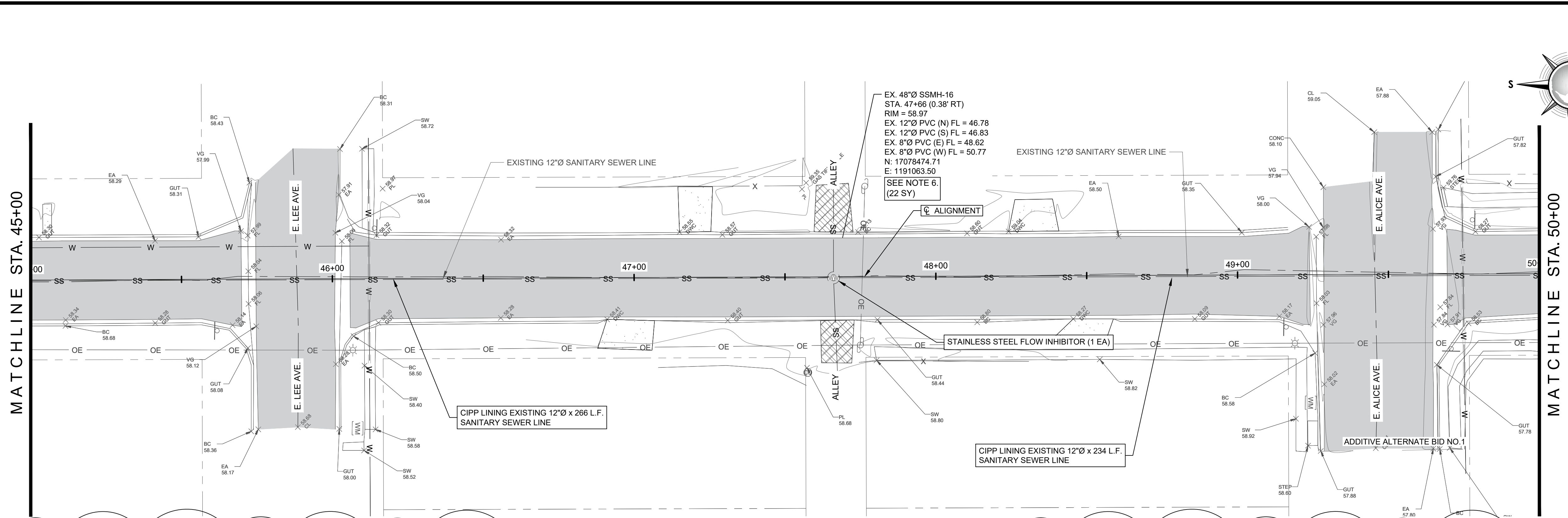
ADDENDUM NO. 2  
DESCRIPTION

DATE: 1/25/24 BY: J.C.C.

DRAWING NO. **C24**

SHEET 25 of 43

FILE NAME: I:\Projects\2021\City of Kingsville\GLO-LOC06 MW 10TH ST 12 PVC REPLACEMENT\1-Drawings\2 - Civi\C15=C26=SANI SEWER P&P STA. 0+00 TO 50+00 PLOTTED: Friday, January 26, 2024 - 4:39pm USER: tzpreeds



SHEET QUANTITIES SUMMARY (BASE BID)			
ITEM	DESCRIPTION	UNIT	QUANTITY
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A5	STAINLESS STEEL FLOW INHIBITOR	EA	1

SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 1)			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	EXISTING MANHOLE PROTECTIVE COATING (60MIL)	SY	22

**1**  
C25 C25

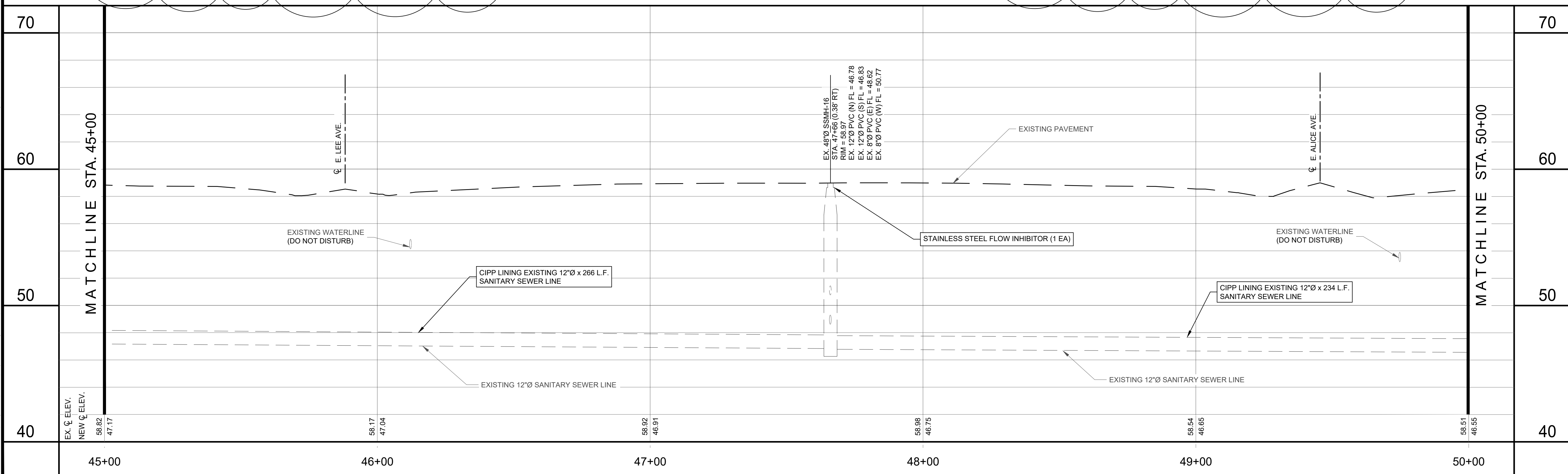
**SANITARY SEWER PLAN AND PROFILE**  
**STA. 45+00 TO STA. 50+00**

0 20 40

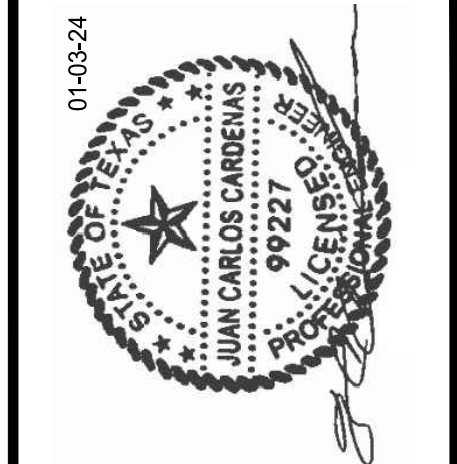
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SCALE: HORIZ: 1"=40', VERT: 1"=8' (HALF SIZE SHEETS)

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CONSULTANT'S SHEET  
PROJECT NO. 21107-01B



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**CITY OF KINGSVILLE GLO SS PROJECT 6**  
**(10TH STREET) SANITARY SEWER IMPROVEMENTS**  
KINGSVILLE, KLEBERG COUNTY, TEXAS

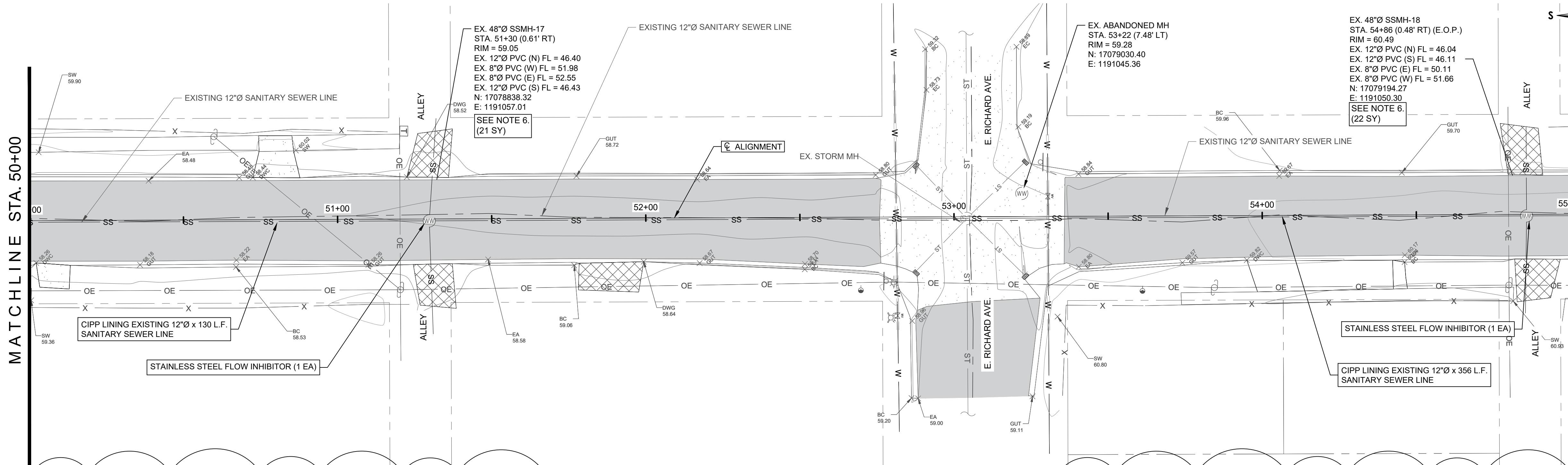
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**STA. 45+00 TO STA. 50+00**

REVISION NO.	DATE	BY	DESCRIPTION
1	1/25/24	J.C.C.	ADDENDUM NO. 2

DRAWING NO.  
**C25**

SHEET 26 of 43

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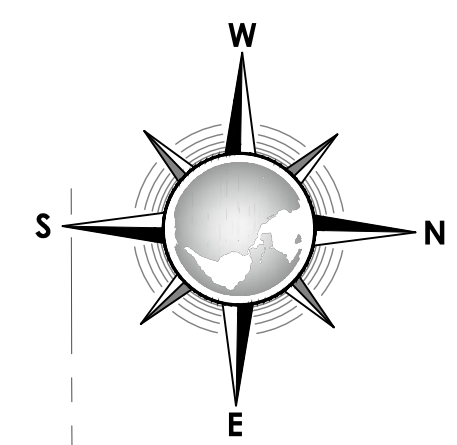
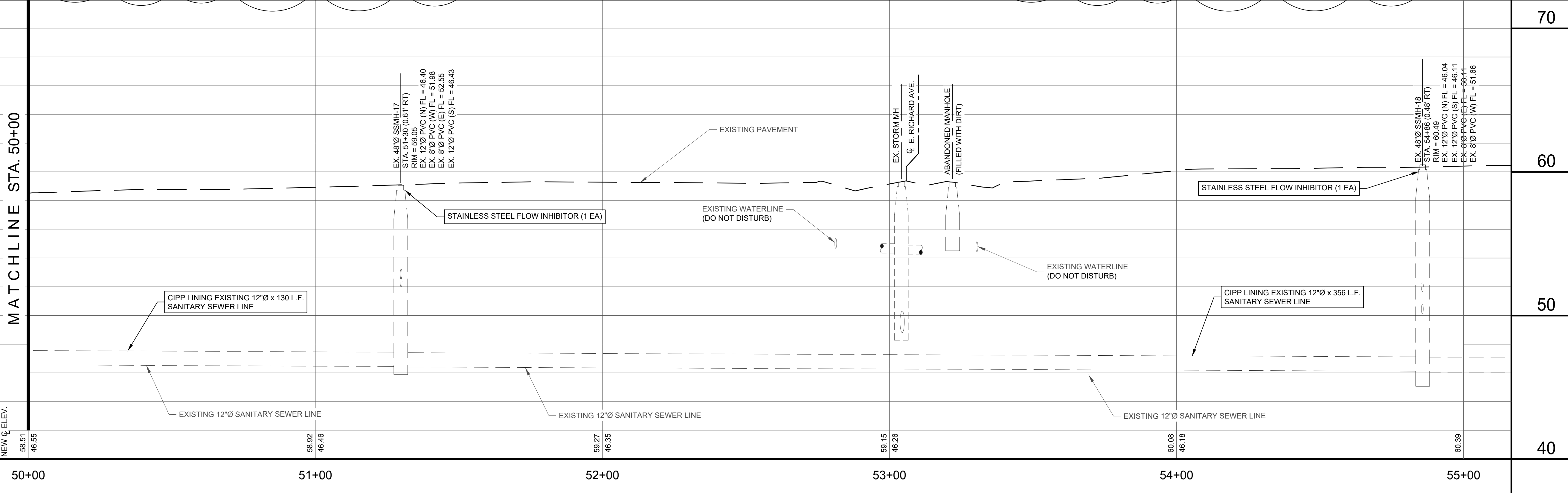
SHEET QUANTITIES SUMMARY (ADDITIVE ALTERNATE BID NO. 1)			
ITEM	DESCRIPTION	UNIT	QUANTITY
B1	EXISTING MANHOLE PROTECTIVE COATING (60MIL)	SY	65

**SANITARY SEWER PLAN AND PROFILE  
STA. 50+00 TO STA. 55+00 (E.O.P.)**

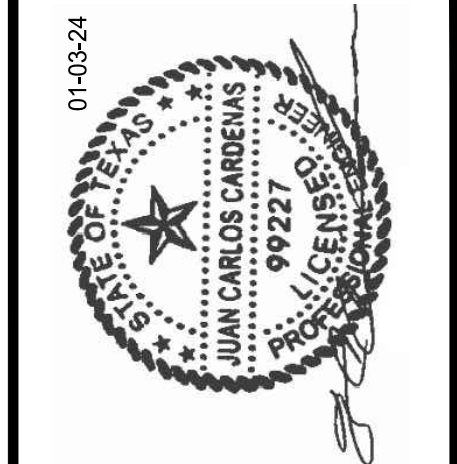
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SCALE: HORIZ: 1"=40', VERT: 1"=8' (HALF SIZE SHEETS)

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CONSULTANT'S SHEET  
PROJECT NO. 21107-01B



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**CITY OF KINGSVILLE GLO SS PROJECT 6  
(10TH STREET) SANITARY SEWER IMPROVEMENTS**  
KINGSVILLE, KLEBERG COUNTY, TEXAS

**SANITARY SEWER PLAN AND PROFILE  
STA. 50+00 TO STA. 55+00 (E.O.P.)**

REVISION NO.	DATE	BY	DESCRIPTION
1	1/25/24	J.C.C.	

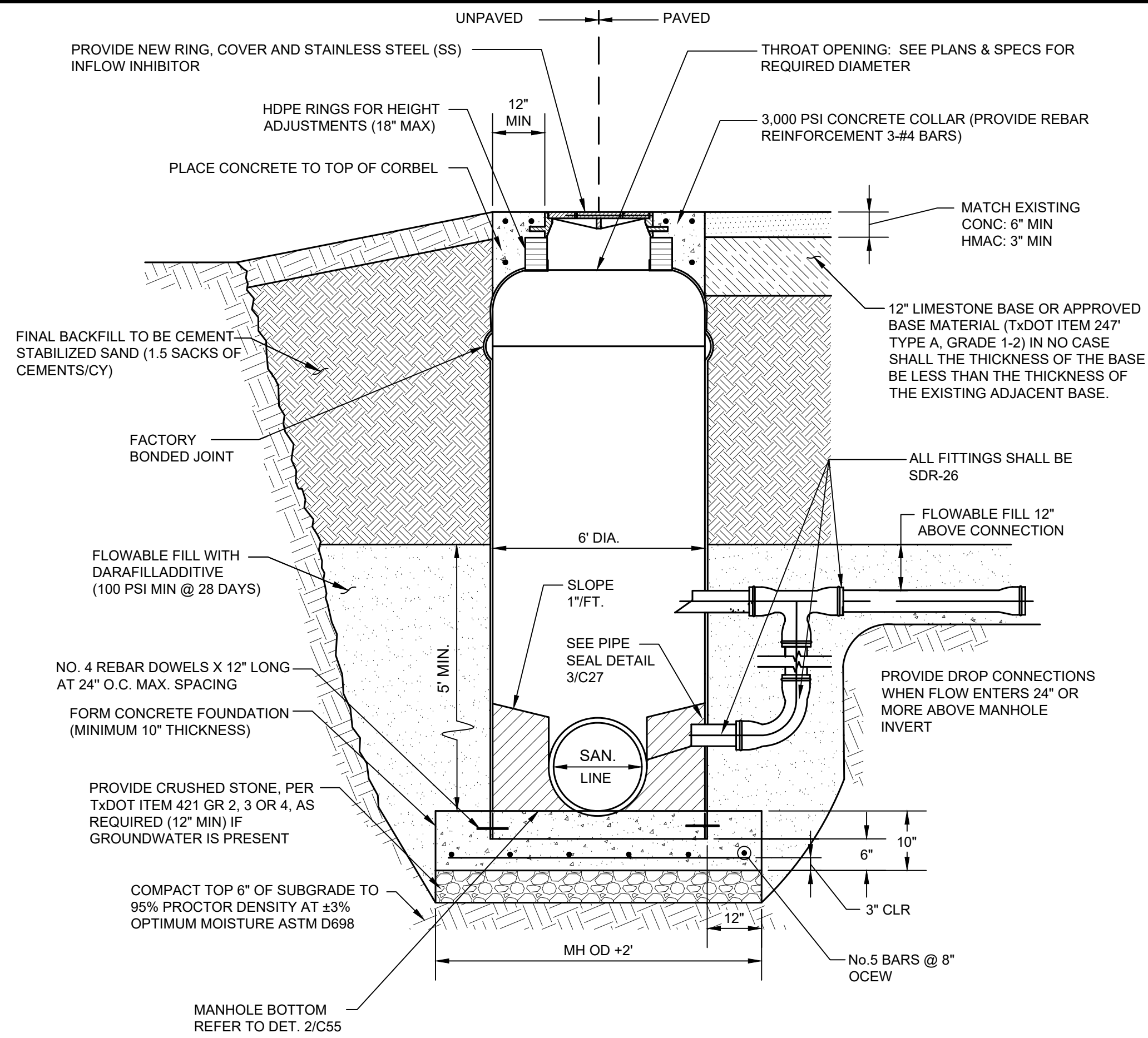
  

REVISION NO.	DATE	BY	DESCRIPTION
ADDENDUM NO. 2			

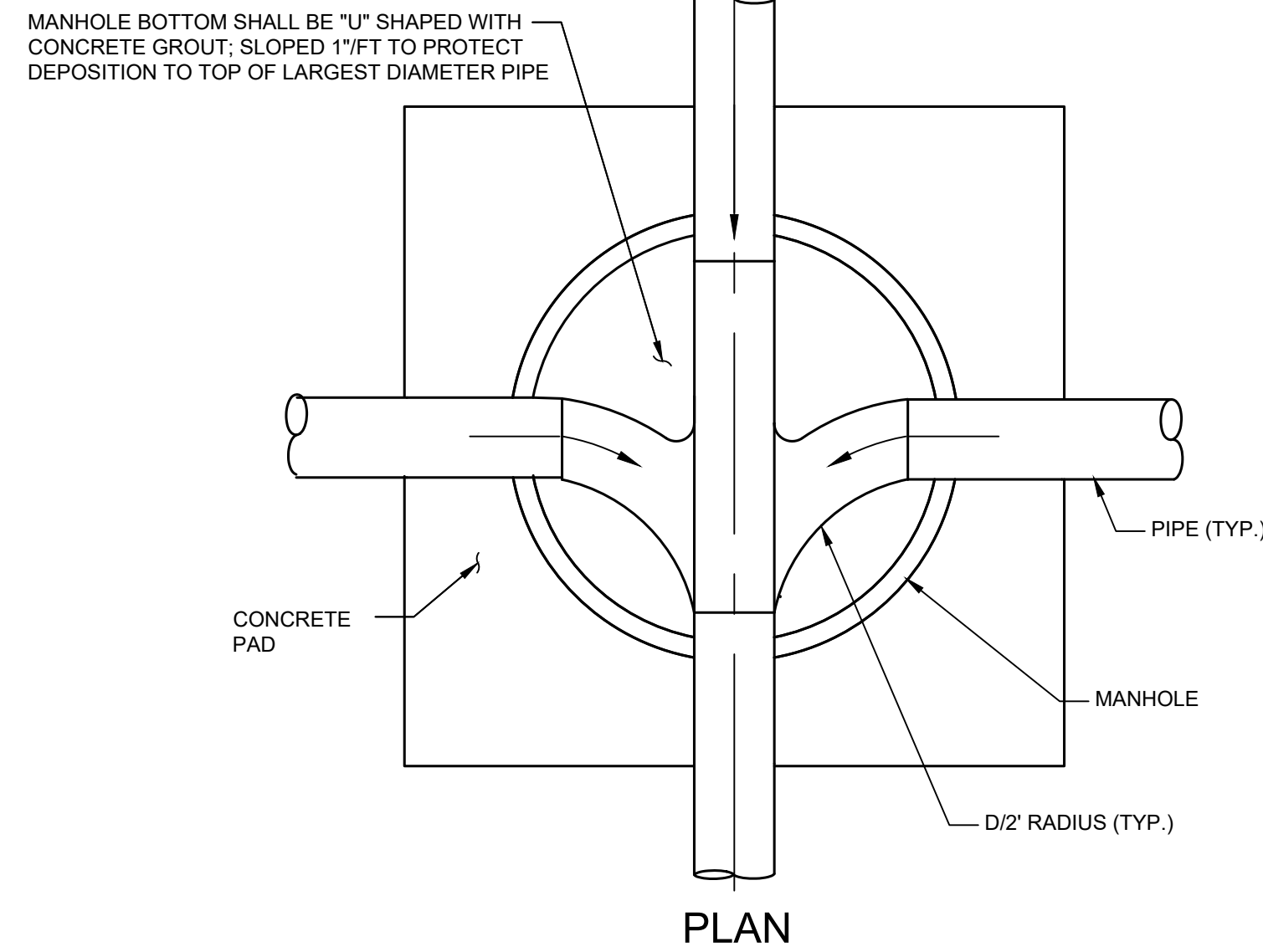
DRAWING NO.  
**C26**

SHEET 27 of 43

FILE NAME: I:\Projects\2021\City of Kingsville\GLO-LOC06 MW 10TH ST 12 PVC REPLACEMENT\Drawings\2 - Civi\C27=C25 COCC Wastewater Std Details 4 sheets (2016=11-09).dwg LAYOUT NAME: C27 SANITARY SEWER STANDARD DETAILS 1 PLOTTED: Friday, January 26, 2024 - 4:39pm USER: jreppnd

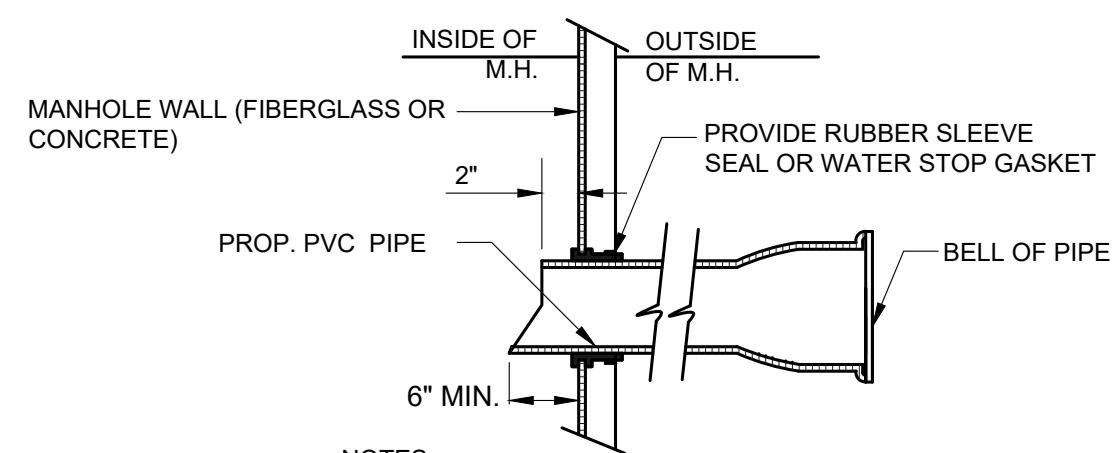


NOTE:  
REFER TO DWGS. C33-C40  
FOR FLOWLINE ELEVATIONS



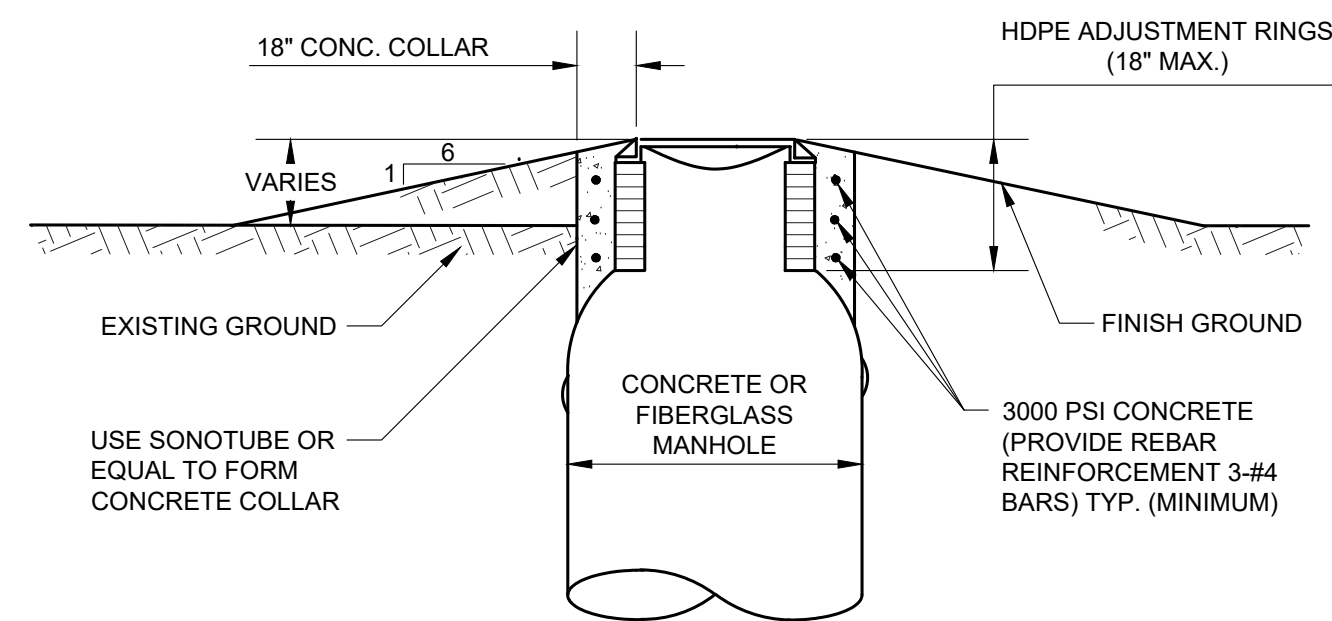
**2** SANITARY SEWER MANHOLE (BOTTOM)  
C27 C27 SCALE: N.T.S.

NOTE:  
COAT ALL CONCRETE SURFACES INCLUDING BENCH & WALLS.



- NOTES:  
1. INSTALL SEAL IN ACCORDANCE WITH MFGS. SPECS.  
2. USE RUBBER SEAL ASSEMBLY APPROVED BY UTILITY DEPARTMENT. (TPSMHA OR PIPECONX OR INSERT A TEE)

**3** PIPE SEAL DETAIL  
C27 C27 SCALE: N.T.S.



**4** MANHOLE PROTECTION IN UNPAVED AREAS  
C27 C27 SCALE: N.T.S.

**GENERAL WASTEWATER CONSTRUCTION NOTES:**

1. THE CONTRACTOR SHALL VISIT THE SITE OF THE WORK AND EXAMINE LOCAL CONDITIONS TO BE ENCOUNTERED, IMPROVEMENTS TO BE PROTECTED, AND PERMITS AND FEES TO BE REQUIRED, ALONG WITH OTHER RESEARCH THAT IS NECESSARY TO ENSURE THAT THE CONTRACTOR THOROUGHLY UNDERSTANDS THE PROJECT AND IS FULLY AWARE OF ALL THE CONDITIONS AND CONSTRAINTS THAT MAY BE ENCOUNTERED DURING THE COURSE OF CONSTRUCTION.
2. THE CONTRACTOR SHALL ADHERE TO ALL TCEQ REGULATIONS PER 30 TAC CHAPTER 217 AND TRENCH SAFETY FOR EXCAVATIONS.
3. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL AND MUST ADHERE TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
4. ALL FIBERGLASS MANHOLES SHALL BE MONOLITHIC WITH 0.50\"/>

CONSULTANT'S SHEET PROJECT NO. 21107-01B	
<p>INTERNATIONAL CONSULTING ENGINEERS 261 SARATOGA BLVD. CORPUS CHRISTI, TX 78417 PHONE: 361.926.5805 FAX: 361.926.5806 I.C.E. FIRM REGISTRATION #F-10837</p>	
<p>CITY OF Kingsville TEXAS</p>	
<p><b>CITY OF KINGSVILLE GLO SS PROJECT 6 (10TH STREET) SANITARY SEWER IMPROVEMENTS</b> KINGSVILLE, KLEBERG COUNTY, TEXAS</p> <p><b>SANITARY SEWER STANDARD DETAILS I</b></p>	
ADDENDUM NO. 2	DESCRIPTION
REVISION NO.	DATE
BY	
U.C.C.	BY
DATE	
REVISION NO.	DESCRIPTION
1/25/24	
DRAWING NO. <b>C27</b>	
SHEET 28 of 43	

**SECTION 027200**  
**CONTROL OF WASTEWATER FLOWS**  
**(TEMPORARY BYPASS PUMPING SYSTEMS)**

**1. GENERAL**

1.1 DESCRIPTION

A. This specification shall govern all work necessary for designing, installing, implementing, operating, and maintaining a temporary bypass pumping and flow control system, as provided by the Contractor for the purpose of diverting wastewater flow around the work area for the duration necessary to complete the work (i.e., control of wastewater flows). The Contractor shall furnish all materials, labor, equipment, power, maintenance, and incidentals required to maintain continuous and reliable wastewater service in all lines for the duration of the project.

1.2 SUBMITTALS

A. Bypass Pumping Plan Form: It shall be the Contractor's responsibility to legibly and thoroughly complete, in its entirety, the attached Bypass Pumping Plan Form and submit it to the Engineer and/or the appropriate City staff for review and approval, prior to the installation of any pumping system proposed for use.

Unless the bypass pumping is associated with an emergency work order, the standard approval protocol is as follows: The Contractor prepares and submits the plan to the Engineer a minimum of 7 days prior to mobilizing to site. The Engineer reviews the bypass plan and coordinates approval with Engineering Services and the Operating Department. Engineer and City will put forth a reasonable level of effort to expedite the review and approval process. No deviation from the procedure shall be allowed.

B. Bypass Pumping Plan Schematic: In addition to the above referenced form, the Contractor shall also furnish a sufficiently detailed schematic drawing identifying the approximate location of all bypass pumping system components. The schematic drawing shall clearly label parallel/crossing streets, identify landmark structures, and depict the locations of all pumps and piping.

At a minimum, the bypass pumping plan schematic drawing and associated attachments should include the following items:

- 1) Pump curves showing designed operation point for this specific project
- 2) Approximate location of bypass system pumping components
- 3) Location of manhole or access point for suction and discharge
- 4) Configuration, routing, location and depth of the suction and discharge piping
- 5) General arrangement/type of additional support equipment.
- 6) Temporary pipe supports, anchoring and thrust restraint blocks, if required
- 7) Traffic Control Plan and Traffic Department permit if the bypass is within the right-of-way.

8) Description of the method for removing pressure and all wastewater from existing force mains being taken out of service, if necessary.

9) All other City-department and Regulatory requirements.

10) Sewer plugging locations, method, and types of plugs

11) Method of protecting discharge manholes or structures from erosion and damage.

### 1.3 RESPONSIBILITY / AUTHORITY

A. It is essential to the operation of the existing wastewater system that there is no interruption in the flow of wastewater throughout the duration of the project. The Contractor shall be completely responsible for designing, scheduling, providing, installing, operating, fueling and maintaining the temporary bypass pumping system in a manner that does not cause or contribute to overflows, releases, or spills of wastewater from the wastewater or bypass system. The Contractor shall neither anticipate nor expect any assistance from the City of Kingsville departments for any of the bypass operation.

B. Contractor shall provide a responsible employee to man the bypass system 24 hours per day, 7 days per week during operation. The monitoring employee shall be properly trained, experienced, and mechanically qualified such that they can quickly and effectively address any potential emergency and non-emergency situations associated with the bypass system which must remain in operation. The wastewater and bypass systems should be inspected at least once every 2 hours. The Contractor shall be responsible for ensuring that the wastewater collection system is not compromised during bypass installation or operation, and contractor shall ensure that the system operates properly during this period.

C. The Contractor shall consider and be responsible for the impacts on the collection system area, both upstream and downstream of the bypass and shall maintain the system in a manner that will protect public and private property from damage and flooding. Upstream impacts may include, but are not limited to backups and overflows. Downstream impacts may include, but are not limited to surcharges and overflows.

D. Contractor shall make all effort to minimize spills of raw wastewater during the improvements and bypassing. All spills and sanitary sewer overflows shall immediately be reported to the City at 361-595-8040 and the Contractor shall be solely responsible for wash down, clean-up and disinfection of said spillages or overflows to the satisfaction of the owner at no additional cost to the City of Kingsville.

E. The City is permitted through the Texas Commission on Environmental Quality to operate the wastewater system. The final authority comes from the City as to the operation of the wastewater system and as such it reserves the right to halt the bypassing operation at any time in order to maintain public health and safety.

## **2. PRODUCTS**

### 2.1 MATERIALS

A. Bypass Pumps

1) Pumps shall be fully automatic self-priming pumps that do not require the use of foot-valves or vacuum pumps in the priming system. The pumps may be electric or diesel powered. Pre-approved manufacturers are Godwin or Rain-for-Rent. Approved equals may be considered by the Engineer if they meet all requirements in this specification but Contractor shall provide submittal package for Engineer's review and approval prior to installation. Pumps shall be equipped with critically silenced, sound attenuated enclosures with a maximum 65 dB (10-feet from pump), a diesel day tank with a minimum 24-hour runtime without refuel, and automatic start/stop controls for each pump.

2) Pumping capacity of the bypass pump shall be capable of handling the flow conditions at all times and shall provide a minimum of 1.5 times the existing capacity of whatever line or lift station is being bypassed.

3) The Contractor shall have adequate standby equipment available and ready for immediate operation and use in the event of an emergency or breakdown. In critical installations, as determined by the Engineer, one standby pump for each size pump utilized shall be installed at the mainline flow bypassing locations, ready for use in the event of primary pump failure.

B. Suction and Discharge Piping: Determined according to pump size, flow calculations, system operating conditions, manhole depth, and length of suction piping in accordance with the pump manufacturers specifications and recommendations. In order to prevent the accidental spillage of flows, all discharge systems shall be temporarily constructed of heavy-duty pipe with positive restrained joints.

#### 1) High Density Polyethylene (HDPE)

i. Homogeneous throughout, free of visible cracks, discoloration, pitting, varying wall thickness, holes, foreign material, blisters, or other deleterious faults. Defective areas shall be cut out and butt-fusion welded as per manufacturer's recommendations.

ii. Assembled and joined at site using couplings, flanges, or butt-fusion method to provide leak proof joint, as per manufacturer's recommendations and ASTM D2657.

iii. Fusing must be performed by personnel certified as fusion technicians by manufacturer of HDPE pipe and/or fusing equipment. Fused joints shall be watertight and have tensile strength equal to that of pipe.

iv. HDPE is required to be used in or adjacent to environmentally sensitive areas.

#### 2) Polyethylene Plastic Pipe (PE)

i. High density solid wall and following ASTM F714 Polyethylene (PE) Plastic Pipe (SDR-DR) based on outside diameter, ASTM D1248 and ASTM D3550

ii. Homogeneous throughout, free of visible cracks, discoloration, pitting, varying wall thickness, holes, foreign material, blisters, or other deleterious faults.

#### 3) Quick-Disconnect Steel Galvanized Pipe and Heavy-Duty Flexible Hoses

i. Must consist of heavy-duty steel with high tensile strength, x-ray welded, abrasion resistant and suitable for intended service with a maximum pressure rating of at least 174 PSI

ii. Bauer quick-disconnect fittings/joints shall be restrained and watertight. Joints shall consist of vacuum sealing O-rings to help pumps prime faster and perform at their designed flow rates with no leaks, even at high pressure ratings

iii. Joints shall provide 30-degree articulation at every coupling and shall not require perfect alignment to make each connection.

iv. The galvanized couplings shall not be hindered by sand, mud, and grit.

#### d. Valves and Fittings

i. Contractor shall provide valves and fittings as necessary and in accordance with the approved pipe materials shown above.

#### e. Plugs

i. Selected and installed according to size of line to be plugged, pipe, manhole configurations, and based on specific application.

ii. Prior to use, Engineer may inspect plugs for defects which may lead to failure.

iii. Contractor shall provide additional plugs in the case of failure

#### f. Miscellaneous

i. When temporary piping crosses local streets/roadways and private driveways, Contractor shall provide traffic ramps or covers designed, installed, and maintained for H-20 loading requirements while in use.

### **3. EXECUTION**

#### 3.1 SCHEDULING & COORDINATION

A. Unless the bypass pumping is associated with an emergency work order, the Contractor shall provide a minimum of 48 hour notice to the Engineer and Wastewater Department for the startup of bypass operations once the completed bypass plan has been approved by the design engineer. Unless needed otherwise for emergency work, no bypassing shall be initiated on Friday, Saturday or Sunday, or the day immediately preceding a City holiday.

B. Inclement Weather: The Contractor shall not be allowed to commence bypass operation should inclement weather be forecast for the period of the scheduled improvements.

C. Under special circumstances, as identified by the Engineer, where critical lines with large service areas are being bypassed, the Contractor is responsible for setting up a meeting between the Engineer/City/Operating Department to affirm and coordinate the approved bypass plan and to verify the intended site installation conforms to the approved plan. Engineer may also require the bypass system to be in service for at least 24-hours prior to taking existing gravity lines or force mains out of service to demonstrate reliability.

D. Before beginning bypass operations, the Engineer/City Operating Department must be notified for field verification of pumps, piping, and equipment, et3), to ensure the site installation conforms to the approved plan.



E. Before beginning bypass operations, the Contractor shall confirm appropriate emergency contact information has been provided to the City and Engineer on the Bypass Pumping Plan Form including emergency cell phone number of bypass operators/monitors responsibly manning the bypass system 24 hours per day along with the project superintendent and pump supplier.

F. The Contractor can work extended hours, if approved by the Engineer, to perform the improvements during the bypass operation. Work during extended hours cannot create a nuisance for the neighbors.

G. Once a lift station is taken out of service and bypass operations begun, work shall be continuous on the lift station improvements until all improvements are completed and the lift station is returned to normal service.

H. The Contractor shall cease bypass pumping operations and return flows to the new and/or existing wastewater system when directed by the Owner. This may be expected if the bypass system is not in accordance with this specification or if inclement weather is in the forecast.

### 3.2 INSTALLATION & OPERATIONS

#### A. Installation of Temporary Force Mains

1) Force mains may be placed along shoulder of road, medians, and/or outside of pavement. Do not place in streets or sidewalks without Engineers approval.

2) When temporary piping crosses local streets/roadways and/or private driveways, Contractor shall provide traffic ramps or covers designed, installed, and maintained for H-20 loading requirements while in use.

3) When traffic ramps cannot be used, install temporary piping in trenches and cover with temporary pavement, as approved by the Engineer.

B. Discharge piping to gravity lines or manholes shall be designed in such a manner as to prevent discharge from contacting manhole walls or benching with as minimal turbulence as possible.

C. Plugging or blocking of wastewater flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance of work, it is to be removed in a manner that permits the wastewater flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

D. The Contractor shall not cut existing force mains or gravity lines until it is determined that the containment area in place is sufficient for handling any wastewater within the pipe.

E. Some locations may require multiple bypass systems. If bypass system is provided with air release valves, then the valve drains shall be piped to a manhole for discharge.

F. Upon completion of the bypass pumping operations, remove piping, restore property to pre-construction condition and restore pavement.

### 4. MEASUREMENT AND PAYMENT

Unless otherwise specified in the Bid Form, Control of Wastewater Flows (Temporary Bypass Pumping Systems) shall not be measured for pay but will be considered subsidiary to the applicable pay item, to

include all material, labor, equipment and supervision necessary to complete the bypass design, planning, coordination, installation, operation, maintenance and removal.

**END OF SECTION**

**SECTION 027402**  
**REINFORCED CONCRETE PIPE CULVERTS**

**1. DESCRIPTION**

This specification shall govern the furnishing and placing of reinforced concrete pipe culverts and the material and incidental construction requirements for reinforced concrete pipe sewers. The culvert pipe shall be installed in accordance with the requirements of these specifications to the lines and grades shown on the plans, and shall be of the classes, sizes and dimensions shown thereon. The installation of pipe shall include all joints or connections to new or existing pipe, headwalls, etc., as may be required to complete the work.

**2. MATERIALS**

**2.1 GENERAL**

Except as modified herein, materials, manufacture and design of pipe shall conform to ASTM C-76 for Circular Pipe. All pipe shall be machine made or cast by a process which will provide for uniform placement of the concrete in the form and compaction by mechanical devices which will assure a dense concrete. Concrete shall be mixed in a central batch plant or other approved batching facility from which the quality and uniformity of the concrete can be assured. Transit mixed concrete will not be acceptable for use in precast concrete pipe.

**2.2 DESIGN**

All pipe shall be Class III (Wall "B") unless otherwise specified on the plans. The shell thickness, the amount of circumferential reinforcement and the strength of the pipe shall conform to the specified class as summarized in ASTM C-76 for Circular Pipe.

**2.3 SIZES AND PERMISSIBLE VARIATIONS**

- a. Variations in diameter, size, shape, wall thickness, reinforcement, placement of reinforcement, laying length and the permissible underrun of length shall be in accordance with the applicable ASTM Specification for each type of pipe as referred to previously.
- b. Where rubber gasket pipe joints are to be used, the design of the Joints and Permissible Variations in Dimensions shall be in accordance with ASTM C-443.

**2.4 WORKMANSHIP AND FINISH**

Pipe shall be substantially free from fractures, large or deep cracks and surface roughness. The ends of the pipe shall be normal to the walls and centerline of the pipe within the limits of variations allowed under the applicable ASTM specification.

**2.5 CURING**

Pipe shall be cured in accordance with the applicable ASTM Specification for each type of pipe as referred to above.

## 2.6 MARKING

The following information shall be clearly marked on each section of pipe:

- a. The class of pipe.
- b. The date of manufacture.
- c. The name or trademark of the manufacturer.
- d. Marking shall be indented on the pipe section or painted thereon with waterproof paint.

## 2.7 MINIMUM AGE FOR SHIPMENT

Pipe shall be considered ready for shipment when it conforms to the requirements of the tests specified herein.

## 2.8 INSPECTION

The quality of materials, the process of manufacture, and the finished pipe shall be subject to inspection and approval by the Engineer at the pipe manufacturing plant. In addition, the finished pipe shall be subject to further inspection by the Engineer at the project site prior to and during installation.

## 2.9 CAUSES FOR REJECTION

Pipe shall be subject to rejection on account of failure to conform to any of the specification requirements. Individual sections of pipe may be rejected because of any of the following:

- a. Fractures or cracks passing through the shell, except for a single end crack that does not exceed the depth of the joint.
- b. Defects that indicate imperfect proportioning, mixing and molding.
- c. Surface defects indicating honeycombed or open texture.
- d. Damaged ends, where such damage would prevent making a satisfactory joint.

## 2.10 REPAIRS

Pipe may be repaired if necessary, because of occasional imperfections in manufacture or accidental injury during the handling, and will be acceptable if, in the opinion of the Engineer, the repairs are sound and properly finished and cured and the repaired pipe conforms to the requirements of the specifications.

## 2.11 REJECTIONS

All rejected pipe shall be plainly marked by the Engineer and shall be replaced by the Contractor with pipe that meets the requirements of these specifications. Such rejected pipe shall be removed immediately from the worksite.

## 2.12 JOINTING MATERIALS

Unless otherwise specified on the plans, the Contractor shall have the option of making the joints by any of the following methods:

a. Ram-Nek, a pre-formed plastic base joint material manufactured by K. T. Knyder Company, Houston, Texas, or an approved equal. Use of Talcote as joint material will not be permitted. Ram-Nek joint material and primer shall be supplied for use on pipe in the following sizes, which is the minimum that will be required.

Additional Ram-Nek may be required if, in the opinion of the Engineer, a proper joint is not secured.

<u>Pipe Size</u>	<u>Primer Per 100 Jts.</u>	<u>Cut Lengths Per Joint</u>
12"	1.5 gals.	½ pcs 1" x 2'-5"
15"	1.9 gals.	2 pcs 1" x 2'-5"
18"	2.7 gals.	1½ pcs 1½" x 3'-5"
21"	3.8 gals.	2 pcs 1½" x 3'-5"
24"	6.2 gals.	2 pcs 1½" x 3'-5"
30"	8.5 gals.	2½ pcs 1½" x 3'-5"
36"	9.5 gals.	3 pcs 1¾" x 3'-5"
42"	12.0 gals.	3½ pcs 1¾" x 3'-5"
48"	15.0 gals.	4 pcs 1¾" x 3'-5"
54"	20.0 gals.	4½ pcs 1¾" x 3'-5"
60"	25.0 gals.	5 pcs 1¾" x 3'-5"
66"	30.0 gals.	5½ pcs 1¾" x 3'-5"
72"	32.0 gals.	6 pcs 2" x 3'-5"
84"	35.0 gals.	7 pcs 2" x 3'-5"

b. TYLOX Types "C", "C-P" or "CR" rubber gaskets, as applicable, as manufactured by Hamilton Kent Manufacturing Company, Kent, Ohio, or approved equal. All gaskets, lubricants, adhesives, etc., shall be manufactured, constructed, installed, etc., as recommended by the manufacturer of the rubber gasket material and conform to ASTM Designation: C-443. In addition, the Contractor shall furnish to the City, for approval, manufacturer's brochures detailing the complete use, installation, and specifications of concrete pipe and rubber gaskets before any rubber gasket material is used on the project. All rubber gaskets shall be fabricated from synthetic rubber.

c. Cement Mortar is prohibited from jointing pipe except at manholes, pipe junctions, etc., or where specifically approved by the Engineer.

d. Geotextile for wrapping pipe joints shall be Class "A" subsurface drainage type in accordance with AASHTO M288.

## 3. CONSTRUCTION METHODS

Reinforced concrete pipe culverts shall be constructed from the specified materials in accordance with the following methods and procedures:

### 3.1 EXCAVATION

All excavation shall be in accordance with the requirements of Specification Section 022020 "Excavation and Backfill for Utilities," except where tunneling or jacking methods are shown on the plans or permitted by the Engineer.

When pipe is laid in a trench, the trench, when completed and shaped to receive the pipe, shall be of sufficient width to provide free working space for satisfactory bedding and jointing and thorough tamping of the backfill and bedding material under and around the pipe. The Contractor shall make such temporary provisions as may be necessary to insure adequate drainage of the trench and bedding during the construction operation. Pipe shall be placed such that the identification markings are visible at the top prior to backfill.

### 3.2 BEDDING

The pipe shall be bedded in accordance with the bedding details shown on the drawings. Bedding shall not be measured for pay, but shall be subsidiary to other work. If the subgrade of the trench is unstable, even if this condition occurs at relatively shallow depths, full encasement of the pipe with crushed stone shall be required.

### 3.3 LAYING PIPE

Unless otherwise authorized by the Engineer, the laying of pipe on the prepared foundation shall be started at the outlet (downstream) end with the spigot or tongue end pointing downstream, and shall proceed toward the inlet (upstream) end with the abutting sections properly matched, true to the established lines and grades. Where bell and spigot pipe are used, cross trenches shall be cut in the foundation to allow the barrel of the pipe to rest firmly upon the prepared bed. These cross trenches shall be not more than two inches larger than the bell ends of the pipe. Proper facilities shall be provided for hoisting and lowering the sections of pipe into the trench without disturbing the prepared foundation and the sides of the trench. The ends of the pipe shall be carefully cleaned before the pipe is placed. As each length of pipe is laid, the mouth of the pipe shall be protected to prevent the entrance of earth or bedding material. The pipe shall be fitted and matched so that when laid in the bed, it shall form a smooth, uniform conduit. When elliptical pipe with circular reinforcing or circular pipe with elliptical reinforcing is used, the pipe shall be laid in the trench in such position that the markings "TOP" or "BOTTOM" shall not be more than 5 degrees from the vertical plane through the longitudinal axis of the pipe.

For pipe over 42 inches in diameter, the Contractor may drill two holes not larger than 2 inches in diameter, in the top of each section of the pipe, to aid in lifting and placing.

The holes shall be neatly drilled, without spalling of the concrete, and shall be done without the cutting of any reinforcement. After the pipe is laid, the holes shall be filled with mortar and properly cured, and placed such that they are visible from the top for inspection prior to backfill.

Multiple installations of reinforced concrete pipe shall be laid with the center lines of individual barrels parallel. When not otherwise indicated on plans, the following clear distances between outer surfaces of adjacent pipe shall be used.

Diameter of Pipe	18"	24"	30"	36"	42"	48"	54"	60" to 84"
Clear Distance Between Pipes	0'-9"	0'-11"	1'-1"	1'-3"	1'-5"	1'-7"	1'-11"	2'-0"

1. Jointing.

a. If the use of Portland cement mortar joints is allowed, all pipe shall be jointed tight and sealed with stiff mortar, composed of one part Portland cement and two parts sand, so placed as to form a durable water-tight joint. The installation shall be as required by the Engineer.

b. Joints using Rubber Gaskets: Where rubber gasket pipe joints are required by the plans, the joint assembly shall be made according to the recommendations of the gasket manufacturer. Water-tight joints will be required when using rubber gaskets.

c. Joints using Cold-Applied Preformed Plastic Gaskets shall be made as follows:

A suitable prime of the type recommended by the manufacturer of the gasket joint sealer shall be brush-applied to the tongue and groove joint surfaces and the end surfaces and allowed to dry and harden. No primer shall be applied over mud, sand or dirt or sharp cement protrusions. The surface to be primed must be clean and dry when primer is applied.

Before laying the pipe in the trench, the plastic gasket sealer shall be attached around the tapered tongue or tapered groove near the shoulder or hub of each pipe joint. The paper wrapper shall be removed from one side only of the two-piece wrapper on the gasket and pressed firmly to the clean, dry pipe joint surface. The outside wrapper shall not be removed until immediately before pushing the pipe into its final position.

When the tongue is correctly aligned with the flare of the groove, the outside wrapper on the gasket shall be removed and the pipe shall be pulled or pushed home with sufficient force and power (backhoe shovel, chain hoist, ratchet hoist or winch) to cause the evidence of squeeze-out of the gasket material on the inside or outside around the complete pipe joint circumference. The extruded gasket material shall be smoothed out over the joint on the exterior and interior of the pipe. Any joint material pushed out into the interior of the pipe that would tend to obstruct the flow shall be removed. (Pipe shall be pulled home in a straight line with all parts of the pipe on line and grade at all times.) Backfilling of pipe laid with plastic gasket joints may proceed as soon as the joint has been inspected and approved by the Engineer. Special precautions shall be taken in placing and compacting backfill to avoid damage to the joints.

When the atmospheric temperature is below 60 degrees F, plastic joint seal gaskets shall either be stored in an area warmed to above 70 degrees F, or artificially warmed to this temperature in a manner satisfactory to the Engineer. Gaskets shall then be applied to pipe joints immediately prior to placing pipe in the trench, followed by connection to previously laid pipe.

d. Pipe Joints for storm sewers shall be wrapped with geotextile material. The geotextile wrap shall be at least 2 feet wide and shall be centered on each joint.

2. After the pipe has been placed, bedded and jointed as specified, filling and/or backfilling shall be done in accordance with the applicable requirements of Specification Section 022020 "Excavation and Backfill for Utilities." If unstable conditions are encountered, fully encase the pipe with crushed stone as described above. When mortar joints are allowed, no fill or backfill shall be placed until the jointing material has been cured for at least six (6) hours.

Special precautions shall be taken in placing and compacting the backfill to avoid any movement of the pipe or damage to the joints. For side drain culverts and all other culverts where joints consist of materials other than mortar, immediate backfilling will be permitted.

3. Unless otherwise shown on the plans or permitted in writing by the Engineer, no heavy earth moving equipment will be permitted to haul over the structure until a minimum of 4 feet of permanent or temporary compacted fill has been placed thereon. Pipe damaged by the Contractor's equipment shall be removed and replaced by the Contractor at no additional cost.
4. Cleaning and Television Inspection. All enclosed reinforced concrete pipe and manholes installed on this project shall be cleaned and televised in accordance with Specification Section 027611 "Cleaning and Televised Inspection of Conduits."

#### **4. MEASUREMENT**

Unless otherwise specified on the Bid Form, reinforced concrete pipe will be measured by the linear foot. Such measurement will be made between the ends of the pipe barrel along its central axis. Where spurs or branches, or connections to existing pipe lines are involved, measurement of the spur or new connecting pipe will be made from the intersection of its center axis with the outside surfaces of the pipe into which it connects. Where inlets, headwalls, catch basins, manholes, junction chambers, or other structures are included in lines of pipe, that length of pipe tying into the structure wall will be included for measurement but no other portion of the structure length or width will be so included.

For multiple pipes, the measured length will be the sum of the lengths of the barrels measured as prescribed above.

#### **5. PAYMENT**

Payment for reinforced concrete pipe measured as prescribed above will be made at the contract unit price bid per linear foot for the various sizes of "Reinforced Concrete Pipe" of the class specified.

Payment shall be full compensation for furnishing and transporting the pipe; hauling and placing of earth cushion material where required for bedding pipe; for the preparation and shaping of beds; for hauling, placing and jointing of pipes; for furnishing and installing geotextile pipe joint wrapping; for end finish; for all connections to existing and new structures; for cleaning and television inspection; and for all other items of materials, labor, equipment, tools, excavation, backfill and incidentals necessary to complete the culvert or storm sewer in accordance with the plans and these specifications.

This project is a lump sum bid. The work governed by this specification shall not be measured for pay, but shall be subsidiary to the project.

**END OF SECTION**



Composed entirely of calcium aluminates, **SEWPERCOAT® PG** is a pre-packaged ready to use , fiber reinforced, high strength wet shotcrete material.

**SEWPERCOAT® PG** is a mortar that is designed to coat both new and existing municipal wastewater structures including manholes, lift stations, wet wells, etc. It is designed specifically to provide an abrasion and corrosion-resistant, protective lining that can withstand severe biogenic corrosion caused by the hydrogen sulfide (H<sub>2</sub>S) found in wastewater environments.

The unique properties of **SEWPERCOAT® PG** result from the chemical and mineral phases formed during the hydration process. SewperCoat is unique when compared to other materials such as ordinary Portland cement (OPC) concrete, epoxies, poly-vinyl chloride (PVC) or polyethylene because of its ability to inhibit bacterial activity which drastically reduces the production of sulfuric acid.

**SEWPERCOAT® PG** is an adhesive mortar that possesses thin section toughness as well as high compressive and flexural strengths. Additional features include high early strength, freeze-thaw resistance as well as high temperature resistance (1,800°F/1,000°C).

**SEWPERCOAT® PG** is also resistant to many other types of corrosion including sulfates, seawater, oils, gases, and dilute acids (pH range 3.5 – 11).

**SEWPERCOAT® PG** enhances the structural integrity of existing systems and reduces infiltration due to its high-density and low-porosity characteristics.

**SEWPERCOAT® PG** does not release calcium hydroxide as a hydration product. This imparts good chemical resistance and eliminates the major cause of efflorescence.

TYPICAL MATERIAL PROPERTIES* (PERFORMED BY AN INDEPENDENT TESTING LABORATORY @ 14-16% water)				
SEWPERCOAT® PG		24 HRS	7 DAYS	28 DAYS
ASTM C 109	Compressive Strength, psi	> 8,000	> 10,000	> 12,000
ASTM C 348	Flexural Strength, psi	> 900	> 1,100	> 1,300
ASTM C 157	Shrinkage after 28d immersion, %	< 0.04	< 0.05	< 0.07
ASTM C 496	Splitting Tensile Strength, psi	> 550	> 600	> 700
ASTM C 882	Bond Strength by Slant Shear, psi		> 2500	> 2500
ASTM C 666	Freeze-Thaw – 300 cyc, Rel. Dyn. Modulus		102	
ASTM C 642	Volume of Permeable Voids (40 days), %		15	
ASTM C 642	Apparent Density (40 days)		2.74	
ASTM C 469	Modulus of Elasticity (28 days), ksi		> 5,000	

\* The test results above were obtained under standard laboratory conditions and are presented as typical material properties only. Those properties presented above are not warranted or guaranteed by IMERYS. Properties obtained from field cast specimens may result in values different than those listed above. The warranted material properties are presented in section two of this Product Data Sheet

**Notice:** the characteristics listed are indicative only and shall be understood as example. IMERYS does not warrant the accuracy, fitness for purpose or update of any information disclosed herein. The purchaser is solely responsible for the verification of the suitability of indicated products for his specific purposes and needs. Any warranties of any kind on the suitability and fitness of the products are excluded.

**SEWPERCOAT® PG** is a very dark gray color.  
**SEWPERCOAT® PG** does not contain crystalline silica.

## Specifications

**SEWPERCOAT® PG** sold and distributed by IMERYS adheres to the following specifications :

Dry Sieve Analysis	Min (% retained)	Max (% retained)
# 8 (2.36 mm)	0	0
# 16 (1.18 mm)	1.5	9.5
# 30 (600 µm)	22	32
# 50 (300 µm)	38	52
# 100 (150 µm)	48	62
Pan (passing #200)	32	52
Alpine #170 (90 µm)	50	63

## Mortar Properties (using 14.5% water)

- Vibration flow
  - 0 min : 85% - 150%
  - 30 min : 55% - 130%
- Time to Peak Temp. : 8 - 15 hours

For detailed test procedures, please contact an IMERYS Technical or Quality Manager.

Compressive strength (psi)		
Age	Usual value	Specification limit
24h	7500 psi	≥ 5500 psi
7d	8500 psi	
28d	9500 psi	

## Technical properties

*Biogenic Corrosion Resistance :*

**SEWPERCOAT® PG** withstands corrosive environments containing H<sub>2</sub>S gas, which show strong Thiobacillus bacterial activity. Due to its high neutralization capacity, **SEWPERCOAT® PG** has been shown to locally raise the surface pH found on the surface of wastewater structures and prevents the successful colonization of the most aggressive strains of bacteria.

*Abrasion Resistance :*

U.S. Army Corps of Engineers test CRD-C-63-80, Test Method for Abrasion-Erosion Resistance of Concrete, resulted in 0.5% weight loss after 12 hours of testing and 2.0% weight loss after 72 hours of testing. Typical 5,000-psi high-performance OPC concrete experienced a 3.6% weight loss after only 12 hours of testing. **SEWPERCOAT® PG** is approximately seven times more resistant to this type of abrasion than high-performance OPC concrete.

*Aggregate Size :* #14 mesh and finer (0 – 1.4 mm)

*Working Time at 68°F :* 2 hours

*Wet Density at 68°F :* 148-155 lb./ft<sup>3</sup> (2.4 – 2.5 g/cc)

*Coefficient of Thermal Expansion :* 5 x 10<sup>-6</sup> in/in/°F (68° F to 1832°F)

## Chemical Composition

**SEWPERCOAT® PG** contains no calcium sulfate, calcium chloride, tricalcium aluminate, lime hydrates or aggressive agents that attack reinforcing steel. The high performance properties of **SEWPERCOAT® PG** are achieved through a blend of mineral elements.

Chemical analysis main constituents			
Al <sub>2</sub> O <sub>3</sub>	CaO	FeO+Fe <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>
39% - 44%	34% - 38%	9% - 15%	6% - 8%

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## Installation

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Clean, potable water should be used for mixing. The water requirement is provided on each individual bag and is critical to obtain the specified performance properties. Always stay within the recommended specifications for mixing water.

**SEWPERCOAT® PG** products are not designed to be handapplied. **SEWPERCOAT® PG** is designed to be applied with low-pressure, wet-spray equipment.

Preparation of the surface to be coated should be performed in accordance with applicable industry standards and specific project specification requirements. Sandblasting and/or hydro-demolition with high-pressure water may be used to remove existing deterioration and debris. The immediate bonding surface should be rough, damp and free of any existing coatings, sewer residue and running water. The structure itself should be fully saturated prior to a **SEWPERCOAT® PG** installation. Please see our suggested **SEWPERCOAT® PG** specification language for detailed surface preparation recommendations.

**SEWPERCOAT® PG** products are to be used as packaged. Under no circumstances should any substance other than water be added to **SEWPERCOAT® PG** products.

**SEWPERCOAT® PG** should not be used as a “build-out” mix or underlayment for any other product.

**SEWPERCOAT® PG** should not be used in conjunction with or adjacent to any inert or organic coatings, including but not limited to epoxy, polyurethane, polyurea, and fiberglass. Curing should be implemented as soon as the surface begins to harden and dry (as early as one hour after application). Several layers of ASTM C309 liquid membrane curing compound or a 100%-humid moisture cure may be used.

Equipment used must always be clean and free of Portland cement build-up to avoid accelerated set.

Generally accepted concreting practices (water ratio per bag, compaction, curing, etc.) should be employed to obtain the best quality installation with respect to mechanical strength and corrosion resistance.

## Availability

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**SEWPERCOAT® PG** is available in North America directly through IMERYS main office and warehouses. **SEWPERCOAT® PG** is packaged in various bag sizes depending upon application and installation methods.

For more information about **SEWPERCOAT® PG**, including a list of installers, please contact IMERYS at 1-757-284-3278.

## Technical Assistance

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A licensed Professional Engineer is responsible for the determination of suitability, overall design, specifications and follow up for each project.

IMERYS has a technical assistance department with on-site laboratory facilities available to provide customer support.

IMERYS assistance in technical planning and installation of a project does not warrant the success of any application and is not a substitute for professional engineering judgment.

## Packaging & Shelf Life

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**SEWPERCOAT® PG** is available palletized in 65-lb bags.

**SEWPERCOAT® PG** packaging is designed to protect it from humidity. However, as with all prepackaged concretes, **SEWPERCOAT® PG** should not be placed outdoors or in direct contact with the ground. When correctly stored in dry conditions, the properties of **SEWPERCOAT® PG** should remain within specification limit for at least 6 months. In most cases, its properties will be retained for over a year.

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## SEWPERCOAT® 10 YEAR LIMITED WARRANTY (OWNER)

This warranty extends to the OWNER of the structure to which **SEWPERCOAT® PG** is applied, effective as of the OWNER's acceptance of the work : IMERYS warrants to the OWNER that **SEWPERCOAT® PG**, when installed in compliance with the recommended installation guidelines published by IMERYS, will protect sanitary wastewater structures from biogenic corrosion caused by exposure to sanitary sewerage environment. To be honored, claims must be filed by the OWNER within 10 years of acceptance of the work by OWNER. IMERYS' obligations hereunder extend only to providing labor and material to replace the defective material.

This warranty excludes consequential and incidental damages (including, without limitation, damage to equipment and peripheral facilities, service interruption, and loss of use). This warranty applies to sanitary sewage exposure only. Exposure to effluent, chemicals, or contaminants from industrial discharge will void this limited warranty.

## SEWPERCOAT® LIMITED WARRANTY (BUYER)

IMERYS warrants to the BUYER of this product that, at the time of shipment, the product conforms to the Specifications set forth in Section 2 of the applicable Product Data Sheet.

To be honored, claims under this warranty must be filed by the BUYER within 30 days of use of the product or 6 months of delivery to its BUYER, whichever comes first. IMERYS' sole obligation and the sole and exclusive remedy of BUYER under this warranty shall be the replacement of any nonconforming product or, at IMERYS' option, the refund of the purchase price paid by its BUYER.

## DISCLAIMER OF OTHER WARRANTIES

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, TO OWNER OR BUYER EXCEPT AS PROVIDED IN THIS LIMITED WARRANTY. ALL OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED. NO WARRANTY IS GIVEN FOR, OR MAY BE IMPLIED FROM, ANY TECHNICAL ADVICE OR RECOMMENDATIONS PROVIDED BY IMERYS.

## WARRANTY CLAIM PROCEDURE

IMERYS reserves the right to inspect and determine whether any claim is the result of a breach of a warranty set forth herein or is related to another cause (all other causes are expressly excluded from coverage by the warranties contained herein).

Any claim under this limited warranty requiring an investigation by IMERYS may require extensive laboratory testing. It is the responsibility of any party making a claim to make any product or structure requiring testing accessible and available to IMERYS within a reasonable period of time after a claim arises. Inspection, including thickness verification and the gathering of specimens for testing may require the removal of a portion of the SewperCoat® lining in question or, if a structure requiring investigation cannot be made readily accessible, the removal of any frames, covers, or obstructions. At IMERYS' option, technical investigations and testing may be performed by either IMERYS internal facilities or by an independent agency.

It is the responsibility of the buyer (applicator) to maintain and document product installation and job acceptance reports in accordance with all applicable instructions including, without limitation, the location and date, the quantities installed, the mixing methods, surface preparation procedures used, installation personnel, and existing conditions of the structure including H<sub>2</sub>S concentrations and initial surface pH. IMERYS will provide installation report forms upon request.

**Notice:** the characteristics listed are indicative only and shall be understood as example. IMERYS does not warrant the accuracy, fitness for purpose or update of any information disclosed herein. The purchaser is solely responsible for the verification of the suitability of indicated products for his specific purposes and needs. Any warranties of any kind on the suitability and fitness of the products are excluded.

### 1 Introduction

SewperCoat is a ready-to-use, spray-applied mortar specifically designed to provide a structural, abrasion and corrosion-resistant, protective lining against biogenic corrosion relative to hydrogen sulfide (H<sub>2</sub>S) found in municipal wastewater environments. SewperCoat is a 100% pure fused calcium aluminate mortar premix. Its unique properties result from the mineral phases formed during the hydration process.

The components of SewperCoat (all 100% calcium aluminate) are manufactured by a fusion process. The raw materials for this process are calcium and alumina. The calcium source is limestone and the alumina source is bauxite (also a raw material for the primary manufacture of aluminum). The limestone and bauxite are proportionately fed into a reveratory furnace where they are melted into a liquid phase. The purity of the finished calcium aluminate is dependent upon the purity and proportions of the raw materials. SewperCoat mortars are composed of both calcium aluminate cement and manufactured calcium aluminate aggregates. The unique mineralogy of the cement and aggregates are the key to SewperCoat's ultimate performance. Both the calcium aluminate cement binder and aggregate system of SewperCoat are of the same chemical and mineralogical nature. Upon hydration, a strong physical and chemical bond can be achieved between the cement and aggregates in SewperCoat.

SewperCoat can be used for the rehabilitation of existing wastewater structures, as well as in new construction. SewperCoat is formulated for a spray-applied installation in wastewater structures. SewperCoat can be applied with low-pressure, wet process, or with the traditional high-velocity, dry-gunite or shotcrete process. Typical applications

for SewperCoat include the lining of manholes, wet wells, lift/pump stations, piping systems, and treatment plant structures.

### 2 Experience

Calcium aluminates have been used for more than 65 years in extreme wastewater applications worldwide. The first U.S. application was in 1959 located at the Hyperion Treatment Plant in Southern California.

Kerneos Inc. is a business unit Kerneos Aluminate Technologies and is the world leader in the manufacture of calcium aluminate cements. Calcium aluminates cements were developed and first manufactured by this group in 1908 (J. Bied patent). Headquartered in Paris, France, the Aluminates business unit operates eight ISO 9000 certified manufacturing plants worldwide, with the U.S. facility being Kerneos Inc. located in Chesapeake, Virginia.

### 3 Products

There are two versions of SewperCoat, each designed for new and old structures with different installation processes.

SewperCoat PG is the "pumpable grade" version. It is designed to be applied with low-pressure, wet spray equipment. The material is mixed with water and conveyed through a hose with a progressive cavity (rotor-stator) or piston type (swing



tube) pump system. There is an air nozzle on the hose that atomizes the wet material, spraying it onto the surface at a low velocity.

SewperCoat 2000 HS Regular is the “dry-gunite” version. It is designed to be applied with high-velocity, dry-gunite/shotcrete equipment. The material is blown dry through a hose with very high air pressure. There is a nozzle on the hose that contains a special water ring, which injects a precise amount of water into the dry material as it passes through. The SewperCoat is mixed as it hits the sub-surface. The nozzleman uses a circular application pattern that shears the material and mixes it through displacement.

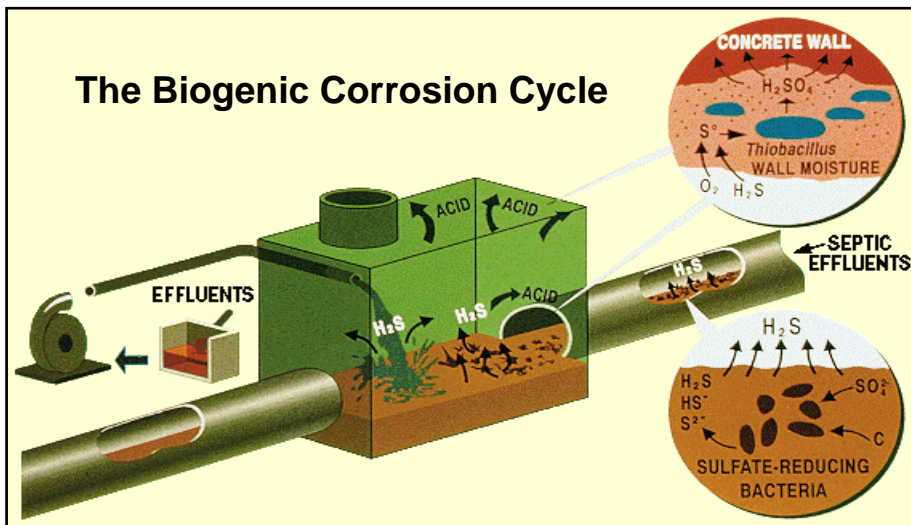


Regardless of application method, careful attention should be given to surface preparation to ensure proper bond strength development. The typical sub-surface for structural wastewater applications is generally composed of portland cement concrete.

#### 4 Biogenic corrosion

The hydrogen sulfide ( $H_2S$ ) corrosion mechanism is a well-known phenomenon. Surprisingly, wastewater itself is rarely corrosive. The corrosion begins with  $H_2S$  created by the decomposition of the organic materials within the wastewater. This  $H_2S$  builds in concentration in the areas of laminar flow. The  $H_2S$  is then released into the sewerage network in areas of turbulent flow (outfall and force main type situations). Turbulent flow can occur in piping systems, manholes, pumping situations, and treatment plants. This turbulent flow causes the dissolved  $H_2S$  to become an airborne  $H_2S$  gas. The  $H_2S$  gas is heavier than air and initially exists above the effluent level, dissolving in the moisture on the concrete surfaces above the flow level. As water is formed by the oxidation of the hydrogen,

the  $H_2S$  gas deposits elemental sulfur onto these surfaces. In some instances, a pronounced yellowish build up can actually be seen on the interior surfaces of manholes. This elemental sulfur is a food source for naturally occurring bacteria present in the sewerage system. These bacteria, present in the slime layer, actually “eat” the elemental sulfur (as a source of oxygen). The byproduct of the bacteria’s digestion process is sulfuric acid. It is this sulfuric acid that is corrosive to wastewater



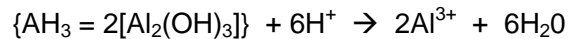
structures, not the H<sub>2</sub>S gas. Factors that can enhance this biogenic corrosion cycle include long retention times, high ambient temperatures, flat terrain, and low flow values. With the current growth of outlying suburban areas, feeding into the existing infrastructure of larger metropolitan areas, these factors are becoming increasingly prevalent throughout the United States.

## 5 How SewperCoat works

Wastewater structures are typically constructed with portland cement concrete. Portland cement is a calcium silicate and its hydration inescapably liberates calcium hydroxide (portlandite), Ca(OH)<sub>2</sub>. The sulfuric acid (H<sub>2</sub>SO<sub>4</sub>) excreted by the sewer bacterium will react with the calcium hydroxide liberated from the portland cement. The reaction is as follows: Ca(OH)<sub>2</sub> + H<sub>2</sub>SO<sub>4</sub> → CaSO<sub>4</sub> + 2H<sub>2</sub>O. This reaction produces gypsum and water. Gypsum is water-soluble. In a humid sewerage environment, gypsum is dissolved. This ongoing disruptive phenomenon continually leaves a fresh layer of portland cement for attack. Contrary to this, the hydration process of calcium aluminate cement does not produce portlandite but liberates only CA hydrates and AH<sub>3</sub> (“alumina gel” /

gibbsite). The alumina gel liberated from calcium aluminate cement hydration is not susceptible to an attack of this nature.

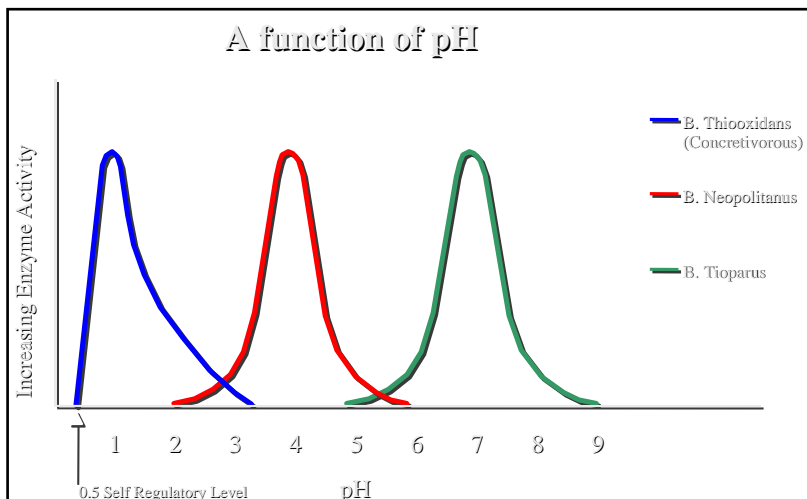
At pH levels above 3.5 “alumina gel” is insoluble and blocks the pores of the concrete, protecting it from the ingress of acid. Below a pH of 3.5 the “alumina gel” contributes to neutralizing the acid at the surface by the consumption of hydrogen ions:



By removing hydrogen ions from solution, the surface pH is locally raised. In this way it acts as a Protective - Reactive Barrier, greatly reducing the corrosion of the concrete.

## 6 The Hamburg study

The University of Hamburg (Germany) has conducted accelerated tests using an artificial sewer chamber that duplicates the highly corrosive environments found in sewer systems. The Department of Microbiology identified the existence of three separate bacteria responsible for the microbiologically induced corrosion (MIC) cycle described above. The interaction of bacterial activity for these three strains versus pH is displayed in the graph below.



A new sewerage system will generally start at a neutral pH of 7.0. The Tioparus strain of bacteria will start the MIC cycle in this range. The bacterial activity of Tioparus is at its highest level when the pH is near 7.0. The Tioparus strain will go through the cycle of sulfur digestion, excreting sulfuric acid through the process. The excretion of sulfuric acid continues to lower the pH of the system. The Tioparus strain is effectively killing itself off by going through its life cycle by creating an

environment not conducive to its own existence. As the pH level reaches 6.0, the second identified strain of bacteria (Neopolitanus) begin to thrive. When the pH reaches 5.0, the Tioparus strain has created such an acidic environment that it can no longer survive. The Neopolitanus strain then begins to thrive. This strain will go through the MIC cycle, effectively lowering the system pH to approximately 2.0. At a pH of 2.0, the Neopolitanus strain has created such an acidic environment that it cannot survive. When the pH reached approximately 3.5 during the Neopolitanus life cycle, the Thiooxidans strain's life cycle begins. Under certain conditions, these bacteria can bring the pH level down to 0.5. This 0.5 pH is referred to as the self-regulatory level because it is the lowest pH level attainable biologically through the MIC cycle. It is this third strain of bacteria (Thiooxidans) that is thought to be the key to the ultimate performance of SewperCoat. The "alumina gel" liberated during the hydration process of SewperCoat creates a surface environment that inhibits the activity of the Thiooxidans strain. By inhibiting the activity of Thiooxidans, SewperCoat can locally raise the pH level of a wastewater structure. This pH increase further inhibits the bacterial activity and the continued creation of sulfuric acid. This inhibiting effect on the Thiooxidans strain is referred to as the Protective - Reactive Barrier Effect of SewperCoat.

In November of 1991, a connection chamber at a wastewater treatment plant in Virginia was rehabilitated with SewperCoat. The original portland cement concrete structure had corroded a depth of 3" after only 7 years of service. The surface pH measured was 1.5 at that time. The SewperCoat was installed using the high-velocity, dry gunite process. Annual inspections have been conducted since the installation of SewperCoat in

this structure. The lowest surface pH level recorded since the SewperCoat installation has been 2.8. The recent 10-½ year evaluation exhibited a surface pH of 4.0.

This reference, as well as others, confirms the Protective - Reactive Barrier Effect of SewperCoat. The key to the Protective - Reactive Barrier Effect is the formation of the mineral phase gibbsite ( $AlH_3$ ) during the hydration process. Both the cement and aggregates in SewperCoat are calcium aluminate and hydraulic, creating not only a physical bond between cement and aggregates, but a chemical bond as well. The combination of product composition and its mineral phases are the key to SewperCoat's ultimate performance as a structural, abrasion and corrosion-resistant protective lining relative to hydrogen sulfide (MIC) based corrosion found in wastewater environments.

## 7 For more info

For additional information about SewperCoat, please visit the Kerneos Inc. web site at <http://www.Kerneosinc.com> or contact us directly at:

**1-800-524-8463**

**SEWPERCOAT®**



### **SEWPERCOAT® 10 YEAR LIMITED WARRANTY (OWNER)**

This warranty extends to the OWNER of the structure to which SewperCoat® is applied, effective as of the OWNER's acceptance of the work: Kerneos warrants to the OWNER that SewperCoat® PG and SewperCoat® 2000HS products, when installed in compliance with the recommended installation guidelines published by Kerneos, will protect sanitary wastewater structures from biogenic corrosion caused by exposure to sanitary sewerage environment.

To be honored, claims must be filed by the OWNER within 10 years of acceptance of the work by OWNER. Kerneos' obligations hereunder extend only to providing labor and material to replace the defective material.

This warranty excludes consequential and incidental damages (including, without limitation, damage to equipment and peripheral facilities, service interruption, and loss of use). This warranty applies to sanitary sewage exposure only. Exposure to effluent, chemicals, or contaminants from industrial discharge will void this limited warranty.

### **SEWPERCOAT® LIMITED WARRANTY (BUYER)**

Kerneos warrants to the BUYER of this product that, at the time of shipment, the product conforms to the Specifications set forth in Section 2 of the applicable Product Data Sheet. To be honored, claims under this warranty must be filed by the BUYER within 30 days of use of the product or 6 months of delivery to its BUYER, whichever comes first. Kerneos' sole obligation and the sole and exclusive remedy of BUYER under this warranty shall be the replacement of any nonconforming product or, at Kerneos' option, the refund of the purchase price paid by its BUYER.

### **DISCLAIMER OF OTHER WARRANTIES**

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, TO OWNER OR BUYER EXCEPT AS PROVIDED IN THIS LIMITED WARRANTY. ALL OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED. NO WARRANTY IS GIVEN FOR, OR MAY BE IMPLIED FROM, ANY TECHNICAL ADVICE OR RECOMMENDATIONS PROVIDED BY KERNEOS.

## **WARRANTY CLAIM PROCEDURE**

Kerneos reserves the right to inspect and determine whether any claim is the result of a breach of a warranty set forth herein or is related to another cause (all other causes are expressly excluded from coverage by the warranties contained herein).

Any claim under this limited warranty requiring an investigation by Kerneos may require extensive laboratory testing. It is the responsibility of any party making a claim to make any product or structure requiring testing accessible and available to Kerneos within a reasonable period of time after a claim arises. Inspection, including thickness verification and the gathering of specimens for testing may require the removal of a portion of the SewperCoat® lining in question or, if a structure requiring investigation cannot be made readily accessible, the removal of any frames, covers, or obstructions. At Kerneos' option, technical investigations and testing may be performed by either Kerneos internal facilities or by an independent agency.

It is the responsibility of the buyer to maintain and document product installation and job acceptance reports in accordance with all applicable instructions including, without limitation, the location and date, the quantities installed, the mixing methods, surface preparation procedures used, installation personnel, and existing conditions of the structure including H<sub>2</sub>S concentrations and initial surface pH. Kerneos will provide installation report forms upon request.

# certificate of registration



This is to certify that the management systems of

## Imerys

have been formally assessed by International Certifications and found to comply with the requirements of

## ISO 9001:2015

*Quality Management Systems - Requirements*

22 Jan 2021

Issue Date

22 Nov 2023

Expiry Date

A handwritten signature in black ink, appearing to read 'O. L. Evans'.

**Oliver. L. Evans**  
Chief Executive Officer  
International Certifications

**Scope of Registration:**

Manufacturer of Calcium Aluminate Cements for the refractory and construction industries.

**Registered Site(s):**

1316 Priority Lane, Chesapeake, VA, 23324, United States



This certificate of registration is issued by International Certifications Limited, 138 Harris Road, East Tamaki, Auckland, New Zealand, 2013 ([www.intlcert.com](http://www.intlcert.com)). This certificate remains the property of International Certifications Limited and must be returned upon request. It must not be altered or defaced in any way and deliberate misuse of the certificate will result in cancellation without notification.



# NATIONAL WORKS, INC.

## UNDERGROUND UTILITY SERVICES

SINCE 1992

### PRIMARY UNDERGROUND SERVICES

#### TV INSPECTION

- PIPELINE ASSESSMENT USING THE LATEST CCTV EQUIPMENT TO DIGITALLY INSPECT SEWER SYSTEMS AND EVALUATE PIPE CONDITION

#### SEWER SYSTEM CLEANING

- HYDROJET AND VACUUM CLEANING OF SEWER LINES, LIFT STATIONS AND WASTEWATER PLANTS

#### SEWPERCOAT<sup>®</sup> MANHOLE COATING AND REHABILITATION

- 100% FUSED CALCIUM-ALUMINATE COATING FOR NEW AND EXISTING STRUCTURES

#### HYDRO-EXCAVATION

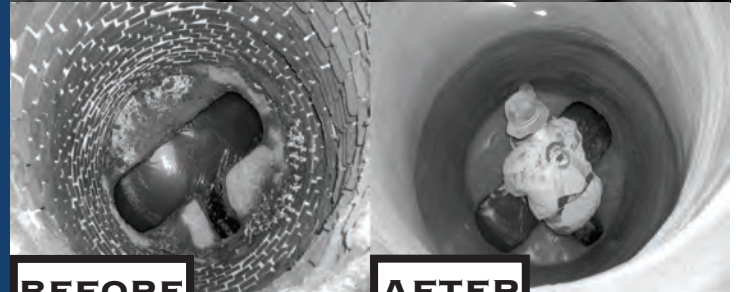
- NON-DISRUPTIVE LOCATION AND EXCAVATION OF UNDERGROUND UTILITIES

#### INTERNAL POINT REPAIRS

- NO-DIG SOLUTIONS TO REPAIR HOLES, VOIDS AND CRACKS IN PIPE

#### SEWER TESTING SERVICES

- MANDREL TESTING, AIR TESTING AND MANHOLE VACUUM TESTING



### ADDITIONAL SERVICES PROVIDED

- MANHOLE PRESSURE GROUTING
- SEWER LEAK LOCATION VIA SMOKE TESTING
- WATER PRESSURE TESTING

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