



SAN ANTONIO WATER SYSTEM
San Antonio River Outfall Pipeline Project No. 2A
SAWS Job No. 14-4508 (Sewer)
Solicitation No. CD-B-14-064-MR

ADDENDUM NO. 1
October 24, 2014

TO BIDDER OF RECORD:

The following changes, additions, and/or deletions are hereby made a part of the Contract Documents for the construction of the San Antonio River Outfall Pipeline Project No. 2A, for the San Antonio Water System, San Antonio, Texas, dated September 2014, as fully and completely as if the same were set forth therein.

IMPORTANT NOTICE: Existing CCTV sewer videos may be obtained by contacting SAWS' Contract Administrator, Marc Ripley, by email at Marc.Ripley@saws.org.

PART 1 - BIDDING AND CONTRACT DOCUMENTS

1. TABLE OF CONTENTS: REPLACE this section in its entirety with the attached section.
2. BID PROPOSAL: REPLACE this section in its entirety with the attached section.
3. WAGE DECISIONS: DELETE wage decision for Construction Type: Heavy Pipeline – On-Shore Pipeline Construction in its entirety.

PART 2 - TECHNICAL SPECIFICATIONS

1. ITEM NO. 854 – SANITARY SEWER LATERALS: ADD this section in its entirety.
2. SECTION 901 – RECONSTRUCTION OF SANITARY SEWER BY CURED-IN-PLACE PIPE:

REPLACE the second sentence in paragraph 901.5 Measurement and Payment with the following:

“Said price shall be full compensation for furnishing all materials, submittals, pre-cleaning and pre-television inspection of pipe, **removal and replacement of manhole ring and cover, removal and replacement of manhole ring encasement**, sealing materials at manholes/structures and annulus (if required), launching pits, receiving pits, post testing, shoring, bedding, backfilling, curing, site restoration, and all necessary, corresponding, and related work to complete the project. **Installation of new manholes may be installed at Contractor’s option, at no additional cost to SAWS.**”

3. SECTION 02725 – RECONSTRUCTION OF SANITARY SEWER BY UV CURED-IN-PLACE PIPE:

REPLACE this section in its entirety with the attached section.

4. SUPPLEMENTARY SPECIFICATION, SECTION SS854 – SANITARY SEWER LATERALS:

ADD the attached section in its entirety.

5. SUPPLEMENTARY SPECIFICATION, SECTION SS1103 – POINT REPAIRS AND OBSTRUCTION REMOVALS:

ADD the attached section in its entirety.

6. SUPPLEMENTARY SPECIFICATION, SECTION SS1109 – SANITARY SEWER LATERAL STUB OUTS OR RECONNECTIONS.

ADD the attached section in its entirety.

PART 3 - DRAWINGS

1. SHEET G1 – TABLE OF CONTENTS, LEGEND & QUANTITIES: REPLACE this sheet in its entirety with the attached sheet.

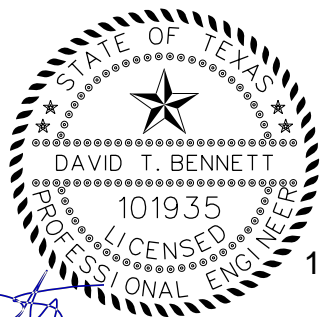
2. SHEET G2 – GENERAL NOTES: REPLACE this sheet in its entirety with the attached sheet.

3. SHEET PL2 – SANITARY SEWER PLAN STA. 126+00 TO STA. 145+23.17: REPLACE this sheet in its entirety with the attached sheet.

4. SHEET DT1 – TRENCHING, COMPACTION AND SS CLEANOUT DETAILS: REPLACE this sheet in its entirety with the attached sheet.

5. SHEET DT2 – MANHOLE DETAILS: ADD this sheet in its entirety with the attached sheet.

ALL BIDDERS SHALL ACKNOWLEDGE RECEIPT OF ADDENDUM NO. 1 IN THE BID FORM AND BY HIS/HER SIGNATURE AFFIXED HERETO AND TO FILE SAME AS AN ATTACHMENT TO HIS/HER BID. BID FORMS SUBMITTED WITHOUT THIS ACKNOWLEDGEMENT WILL BE CONSIDERED INFORMAL.



10-24-14

David T. Bennett, P.E.
Freese and Nichols, Inc.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED
ENGINEERING FIRM
F-2144

ACKNOWLEDGEMENT BY BIDDER

THE UNDERSIGNED ACKNOWLEDGES RECEIPT OF THIS ADDENDUM NO. 1 AND THE BID SUBMITTED HERewith IS IN ACCORDANCE WITH THE INFORMATION AND STIPULATION SET FORTH.

Date

Signature of bidder

Appended hereto and part of Addendum No. 1 are:

1. TABLE OF CONTENTS
2. PRICE PROPOSAL
3. SECTION 02725 – RECONSTRUCTION OF SANITARY SEWER BY UV CURED-IN-PLACE PIPE
4. SUPPLEMENTARY SPECIFICATION, SECTION SS854 – SANITARY SEWER LATERALS
5. SUPPLEMENTARY SPECIFICATION, SECTION SS1103 – POINT REPAIRS AND OBSTRUCTION REMOVALS
6. SUPPLEMENTARY SPECIFICATION, SECTION SS1109 – SANITARY SEWER LATERAL STUB OUTS OR RECONNECTIONS
7. PLAN SHEET G1
8. PLAN SHEET G2
9. PLAN SHEET PL2
10. PLAN SHEET DT1
11. PLAN SHEET DT2

END OF ADDENDUM NO. 1

TABLE OF CONTENTS
SAN ANTONIO RIVER OUTFALL PIPELINE
PROJECT NO. 2A
SAWS JOB NO. 14-4508 (SEWER)
SAWS SOLICITATION NO. CD-B-14-064-MR

CONTRACT DOCUMENTS

<u>BIDDING AND CONTRACT REQUIREMENTS</u>	<u>PAGE</u>
Invitation to Bidders.....	IV-1
Instructions to Bidders.....	IB-1
Workers’ Compensation Insurance Coverage Requirements	WC-1
Contractor’s Bid Packet Checklist.....	BC-1
Bid Proposal.....	BP-1
Proposal Certification	PC-1
Good Faith Effort Plan.....	GFEP-1
Conflict of Interest.....	Form CIQ
Wage Decisions.....	WR-1
Asbestos Workers Memo.....	AAWR-1
General Conditions of the Contract (<i>rev. 03/14</i>)	GC-1
Contract Agreement.....	CA-1
Performance and Payment Bond.....	PB-1
Worker’s Compensation Exhibit “A”	WA-1
Contractor Suspension Policy Exhibit “B”	SP-1
Contractor Security Procedures Exhibit “C”	SP-10
Request for Taxpayer Identification Number and Certification Form.....	W-9
Instructions for Completing the ACORD Certificate of Liability Insurance.....	ICS
Supplemental Conditions.....	SS-1
Special Conditions.....	SC-1

TECHNICAL SPECIFICATIONS

SAWS Standard Specifications for Water and Sanitary Sewer Construction*

100	Mobilization
101	Preparation of Right of Way
550	Trench Excavation Safety Protection
804	Excavation, Trenching and Backfill
854	Sanitary Sewer Laterals
864	Bypass Pumping
866	Sewer Main Television Inspection
868	Sanitary Sewer System Cleaning
869	Project Signs
901	Reconstruction of Sanitary Sewer by Cured-In-Place Pipe

902	Safety and Health Program
903	Construction QC/QA Program
904	Construction Phase Procedures
910	Manhole Rehabilitation
1103	Point Repairs and Obstruction Removal
1109	Sanitary Service Lateral Stub Outs or Reconnections
1110	Progress Schedule
1112	Project Record Documents
1114	Pre-Construction Video

* SAWS Standard Specifications are not included in these specifications, with the exception of Sections 901 and 910. Current versions of the standard specifications can be obtained at:

http://www.saws.org/business_center/specs/constspecs/

Supplementary Specifications

SS854	Sanitary Sewer Laterals
SS1103	Point Repairs and Obstruction Removal
SS1109	Sanitary Service Lateral Stub Outs or Reconnections

City of San Antonio Standard Specifications for Public Works Construction*

511	Cutting and Replacing Pavements (Trench Repair)
530	Barricades, Signs, and Traffic Handling
540	Temporary Erosion, Sedimentation and Water Pollution Prevention and Control

* COSA Standard Specifications are not included in these specifications - current versions can be obtained at:

<http://www.sanantonio.gov/Portals/0/Files/CIMS/StandardSpecifications/CIMSConstructionSpecifications062008.pdf>

Project Technical Specifications

02725	Reconstruction of Sanitary Sewer by UV Cured-In-Place Pipe
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Separate Referenced Documents

- City of San Antonio Right-of-Way Ordinance and Underground Utility Excavation Manual available at:
<http://www.sanantonio.gov/TCI/Services/RightofWayandPermits.aspx>
- SAWS Standard Specifications for Water and Sanitary Sewer Construction available at:
http://www.saws.org/business_center/specs/constspecs/
- SAWS Standard Material Specifications available at:
http://www.saws.org/business_center/specs/matspecs/
- City of San Antonio Standard Specifications for Public Works Construction are available at:
<http://www.sanantonio.gov/Portals/0/Files/CIMS/StandardSpecifications/CIMSConstructionSpecifications062008.pdf>
- Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges available at:
<http://ftp.dot.state.tx.us/pub/txdot-info/des/specs/specbook.pdf>

If there is a conflict between these specifications and the requirements of the above references the most stringent requirement shall apply.

BID PROPOSAL

PROPOSAL OF _____,
 a corporation _____
 a partnership consisting of _____
 an individual doing business as _____

THE SAN ANTONIO WATER SYSTEM:

Pursuant to Instructions and Invitations to Bidders, the undersigned proposes to furnish all labor and materials as specified and perform the work required for the construction of the **SAN ANTONIO RIVER OUTFALL PIPELINE PROJECT NO. 2A**, San Antonio Water System Job Number **14-4508** in accordance with the Plans and Specifications for the following prices, to wit:

BID ITEMS

ITEM NO.	ITEM DESCRIPTION (Price to be written in words)	UNIT	ESTIMATED QUANTITY	UNIT PRICE (FIGURES)	TOTAL PRICE (FIGURES)
A	SANITARY SEWER BASE BID ITEMS				
530	BARRICADES, SIGNS AND TRAFFIC HANDLING _____ Dollars and _____ Cents	LS	1	\$ _____	\$ _____
540	TEMPORARY EROSION, SEDIMENTATION AND WATER POLLUTION PREVENTION AND CONTROL _____ Dollars and _____ Cents	LS	1	\$ _____	\$ _____
550	TRENCH EXCAVATION SAFETY PROTECTION _____ Dollars and _____ Cents	LF	100	\$ _____	\$ _____
854	SANITARY SEWER TWO-WAY CLEANOUT _____ Dollars and _____ Cents	EA	13	\$ _____	\$ _____
864	BYPASS PUMPING _____ Dollars and _____ Cents	LS	1	\$ _____	\$ _____
866	48" SEWER MAIN TELEVISION INSPECTION (POST CIPP) _____ Dollars and _____ Cents	LF	4,000	\$ _____	\$ _____
901	48" RECONSTRUCTION OF SANITARY SEWER BY CIPP (ALL DEPTHS) _____ Dollars and _____ Cents	LF	4,000	\$ _____	\$ _____
910	MANHOLE REHABILITATION (ALL MH SIZES) _____ Dollars and _____ Cents	VF	140	\$ _____	\$ _____

ITEM NO.	ITEM DESCRIPTION (Price to be written in words)	UNIT	ESTIMATED QUANTITY	UNIT PRICE (FIGURES)	TOTAL PRICE (FIGURES)
1109	SANITARY SERVICE LATERAL RECONNECTIONS (BY REMOTE OR PERSON ENTRY, ALL DEPTHS) _____ Dollars and _____ Cents	EA	13	\$ _____	\$ _____
1103.1	OBSTRUCTION REMOVAL BY REMOTE DEVICE (ALL DEPTHS) _____ Dollars and _____ Cents	EA	3	\$ _____	\$ _____
1103.2	OBSTRUCTION REMOVAL BY PERSON ENTRY (ALL DEPTHS) _____ Dollars and _____ Cents	EA	2	\$ _____	\$ _____
1103.3	POINT REPAIRS UP TO 9-FEET IN LENGTH (ALL DEPTHS) _____ Dollars and _____ Cents	EA	3	\$ _____	\$ _____
1103.4	EXTRA LENGTH POINT REPAIRS (ALL DEPTHS) _____ Dollars and _____ Cents	LF	20	\$ _____	\$ _____
BID SUMMARY					
<u>LINE ITEM "A"</u>					
SUBTOTAL BASE BID				\$ _____	
100	Mobilization and Demobilization: This item includes project move-in and move-out of personnel and equipment, for work shall include furnishing all labor, materials, tools, equipment and incidentals required to mobilize, demobilize, bond and insure the Work for the <i>SAN ANTONIO RIVER OUTFALL PIPELINE PROJECT NO. 2A</i> , in accordance with the contract documents, complete in place. Percent of the <u>Line Item "A"</u> , Subtotal Base Bid written in words _____ Percent (Maximum of 10% of <u>Line Item "A" Subtotal Base Bid Amount</u>)	LS	1	\$ _____	\$ _____
101-2	Preparing Right-of-Way: This item includes removing and disposing of all obstructions from the right-of-way and from designated easements where removal of such obstructions is not otherwise provided for in the Drawings and Specifications. Work shall include furnishing all labor, materials, tools, equipment, incidentals required, complete in place. Percent of the <u>Line Item "A"</u> , Subtotal Base Bid written in words _____ Percent (Maximum of 5% of <u>Line Item "A" Subtotal Base Bid Amount</u>)	LS	1	\$ _____	\$ _____
MOBILIZATION, DEMOBILIZATION, AND PREPARING RIGHT-OF-WAY SUBTOTAL				\$ _____	

Mobilization lump sum bid shall be limited to a maximum 10% of the Line Item "A" Sub-total Base Bid amount. Preparing Right-of-Way lump sum bid shall be limited to a maximum of 5% of the Line Item "A" Sub-total Base Bid amount. The Line Item "A" Sub-total base bid is defined as all bid items **EXCLUDING** Item 100, Mobilization and Item 101, Preparing Right-of-Way. **In the event of a discrepancy between the written percentage and dollar amount shown for Mobilization and Preparation of ROW bid items the written percentage will govern. If the percentage written exceeds the allowable maximum stated for mobilization and or preparation of ROW, SAWS reserves the right to cap the amount at the percentages shown and adjust the extensions of the bid items accordingly.**

TOTAL BID AMOUNT (LINE ITEM "A", MOBILIZATION, DEMOBILIZATION & PREPARING RIGHT-OF-WAY)

\$ _____

_____ DOLLARS

AND _____ CENTS

BIDDER'S SIGNATURE & TITLE

FIRM'S NAME (TYPE OR PRINT)

FIRM'S ADDRESS

FIRM'S PHONE NO./FAX NO.

FIRM'S PHONE EMAIL ADDRESS

The Contractor herein acknowledges receipt of the following:
Addendum Nos. _____

OWNER RESERVES THE RIGHT TO ACCEPT THE OVERALL MOST RESPONSIBLE BID.

The Work included in this Bid Proposal shall be complete, as defined in the General Conditions, within **150** calendar days. **The Bidder understands and accepts the provisions of the Contract Documents relating to liquidated damages of the Project if not completed on time.** Complete the additional requirements of the Proposal which are included on the following pages.

The Contractor herein acknowledges receipt of the following:
Addendum Nos. _____

OWNER RESERVES THE RIGHT TO ACCEPT THE OVERALL MOST RESPONSIBLE BID.

The Work included in this Bid Proposal shall be complete, as defined in the General Conditions, within **150** calendar days. **The Bidder understands and accepts the provisions of the Contract Documents relating to liquidated damages of the Project if not completed on time.** Complete the additional requirements of the Proposal which are included on the following pages.

SECTION 02725

RECONSTRUCTION OF SANITARY SEWER BY UV CURED-IN-PLACE PIPE

1.00 GENERAL

1.01 WORK INCLUDED

This specification includes requirements to rehabilitate existing sanitary sewers by the installation of a resin-impregnated flexible liner, which is formed to the original conduit and cured using ultraviolet (UV) light. This Cured-In-Place Pipe (CIPP), when cured, will be continuous and tight fitting and shall conform to the following American Society for Testing and Materials Standards, in addition to any other applicable standards:

- ASTM D790 – Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- ASTM F1216 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Rein- Impregnated Tube
- ASTM F1743 – Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-In-Place Installation of Cured-In-Place Thermosetting Resin Pipe
- ASTM F2019 – Standard Practice for Rehabilitation of existing Pipelines and Conduits by the Pulled-in-Place Installation of Glass Reinforced Plastic (GRP) Cured-in-Place Thermosetting Resin Pipe (CIPP)

1.02 PRODUCT MANUFACTURER QUALIFICATION REQUIREMENTS

The Owner has approved the following products and Contractors for this project:

- Blue-Tek UV Cured CIPP System by Reline America, installed by Fuquay.
- StreamLiner UV CIPP System by LightStream, LP, installed by Pronto Sandblasting.

1.03 SUBMITTALS

Drawings and data to be submitted at least 15 calendar days prior to commencement of work:

- A. Signed and sealed design submittals as stated in 2.01.C of this specification

- B. Specifications for the resin catalyst system, sealing materials, and liner.
- C. Location of pull area and proposed pulling equipment.
- D. Hydraulic flow capacity calculations with a copy of certification verifying Manning’s roughness “n” value for the liner.
- E. Certified copies of test results for structural properties of all critical components.
- F. Proof of chemical resistance in accordance with ASTM standards and this specification.
- G. Video recordings and logs in accordance with Specification Item No. 866 – Sewer Main Television Inspection.
- H. Schedule of operation in accordance with SAWS Specification Item No. 1110 – Progress Schedule.
- I. Traffic Maintenance Plan showing the staging area, barricades, traffic cones, etc. in accordance with COSA Specification Item No. 530 - Barricades, Signs and Traffic Handling.
- J. Bypass pumping plan including pump locations and sizes, discharge pipe sizes, and backup plan arrangements in accordance with SAWS Specification Item No. 864 - Bypass Pumping

2.00 PRODUCTS

2.01 MATERIALS

Neither the CIPP product, nor its installation shall cause adverse effects to any of the Owner’s processes or facilities. The use of the product shall not result in the formation or production of any detrimental compounds or by-products at the wastewater treatment plant. The Contractor shall immediately notify the Owner and Engineer if any of these components are identified as a result of the operations. The Contractor shall then test and monitor the levels of these components and shall comply with any and all local waste discharge requirements.

- A. Liner:
 - ① 1. The liner shall be glass fiber and conform to the structural requirements included in this Section. The liner ~~be~~ shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular pipe sections.
 - 2. The liner shall be manufactured to a size that, when installed, will tightly fit the internal circumference and the length of the original pipe.
 - 3. The liner shall be able to stretch to fit irregular pipe sections and negotiate bends in the existing pipe to be rehabilitated.

① Denotes Addendum No. 1 modifications. ~~Strikethrough~~ denotes specific text deleted/modified in Addendum No. 1.

4. The wall color of the interior pipe surface after CIPP installation shall be a light reflective color so that a clear detailed examination with CCTV may be made.

B. Resin:

1. Resin shall UV-cured resin and resistant to abrasion caused by solids, grit, and/or sand. The resin/liner system shall also be resistant to corrosion due to acids and gases such as sulfuric acid, carbonic acid hydrogen sulfide, methane and carbon monoxide.
2. When cured, the resin/liner system shall meet the structural and chemical resistance requirements of ASTM F2019 and shall withstand the corrosive effect of the existing residential, commercial and industrial effluents, liquids and gases.
3. When properly cured, the composite shall meet the requirements of ASTM F1216 and ASTM F1743, the physical properties described in this specification, and those that are to be utilized in the design of the CIPP for this project.

C. Structural Requirements:

①

1. The thickness of the liner shall be determined using calculation methods that are consistent with applicable ASTM standardss. The Contractor shall submit a signed and sealed design prior to the installation of the liner. The design shall include step-by-step calculations that show all equations, defines all variables, lists all assumptions and clearly indicates all values used for the design.
The listed design criteria should be as follows:
 - a. Fully deteriorated "host pipe"
 - b. ground water table elevation (if unknown, assume within 2 feet of ground surface elevation)
 - c. depth of cover at deepest manhole
 - d. unit weight of soil
 - e. modulus of soil stiffness
 - f. long-term modulus of elasticity
 - g. H-20 Live Load, unless indicated otherwise in project plans or specifications
 - h. 2.0 Factor of Safety against buckling
 - a-i. 2% pipe ovality
2. The liner shall be designed for a minimum 50-year service life under continuous loading conditions.
3. The CIPP shall maintain a smooth surface and not display any wrinkling along the pipe length once fully cured.

① Denotes Addendum No. 1 modifications. ~~Strikethrough~~ denotes specific text deleted/modified in Addendum No. 1.

4. The CIPP pipe material must have been long-term tested for flexural creep. Such testing results are to be used to determine the long-term, time dependent flexural modulus to be utilized in the product design. This is a performance test of the materials and general workmanship of the installation and curing. A percentage of the instantaneous flexural modulus value (as measured by ASTM D790 testing) will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. Values in excess of 50% will not be applied unless substantiated by qualified third party test data. The materials utilized for the contracted project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in design.
5. The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If separation of the layers occurs during testing of field samples, new samples will be cut from the work. Any recurrence may cause rejection of the work.
6. The CIPP shall be classified as conforming to the following structural properties:

MINIMUM PHYSICAL PROPERTIES		
Property	Test Method	Cured Composite
Modulus of Elasticity	ASTM D790 (short term)	250,000 psi
Flexural Strength	ASTM D790	4,500 psi
Compressive Strength	ASTM D695	6,500 psi
Tensile Strength (for pressure pipe only)	ASTM D638	3,500 psi

7. Chemical Resistance - The cured liner shall meet the chemical resistance requirements of ASTM F1216, Appendix X2 except as modified herein. Table X2.1 of ASTM F1216 shall be modified as follows. It is required that CIPP samples with and without plastic coating meet these chemical testing requirements. Proof of chemical resistance test shall be provided to the Engineer at least 15 days prior to commencement of work.

<u>Chemical Solution</u>	<u>Concentration %</u>
Tap water	pH of 5 to 11
Acids	pH not less than 5.0

Gasoline	Total BETX limit of 100 mg/L
Oil & Grease	50 mg/L
Total Phosphorous	40 mg/L
Sodium Hydroxide and Other Strong bases	pH not higher than 11.0
Ferric Chloride	3 mg/L
Sodium Hypochlorite	3 mg/L

8. Hydraulic Capacity - The Contractor shall submit design calculations verifying that the CIPP shall have flow capacity equal to at least 100 percent of the existing pipe. Flow capacity calculation shall be based on Manning's formula using n (Manning's roughness coefficient) of 0.013 for existing sewer. The "n" value for CIPP used shall have been verified by an independent testing laboratory (third party testing) and results submitted to the Owner and Engineer 15 days prior to construction.

3.00 EXECUTION

3.01 PUBLIC NOTIFICATION:

The Contractor shall make every effort to maintain service usage throughout the duration of the project. In the event that service is unavailable due to the Contractor's activities, that duration shall be no longer than 8 hours for any property served by the sewer. A public notification program shall be implemented and shall, as a minimum, require the Contractor to be responsible for contacting each home or business connected to the sanitary sewer and informing them of the work to be conducted, when the sewer will be off-line, and any alternative method of service that may be provided. The Contractor shall also provide the following:

- A. Written notice to be delivered to each home or business the day prior to the beginning of work being conducted on the section, and a local telephone number of the Contractor they can call to discuss the project or any problems which could arise.
- B. Personal contact with any home or business which cannot be reconnected within the time stated in the written notice.
- C. Inform the Owner's Inspector 48 hours before any activities take place.

3.02 ACCESS/PIT LOCATION

- A. Location and number of insertion pits will be chosen by the Contractor and approved by the Owner and Engineer, and will typically be located at or near existing or proposed manholes or junction boxes, P.I.'s in the line, at logical breaks in the construction phasing, or at locations to comply with access or maintenance requirements.

- B. The ends of the insertion excavation pit shall be sloped 2:1 or flatter, or proper shoring devices shall be used. Pits shall be placed and located to minimize the total number of pulls and maximize the length of CIPP, within the constraints of maintaining service and access and other requirements.
- C. When excess ground water is encountered, it shall be removed by the Contractor, and will be considered incidental to the project.

3.03 BYPASS PUMPING

- A. The Contractor shall provide for the flow of sewage around the section, sections or individual sewer services of pipe designated for repair or replacement.
- B. The bypass shall be made by plugging the line at an existing upstream manhole or junction box and pumping or diverting the flow into a downstream manhole or junction box or adjacent system.
- C. If required, the installation of cleanouts as a point for pumping for individual sewer services shall be included in the bypass pumping plan as a method to prevent backups for individual services if service is to be cut off for an extended period of time.
- D. It is the Contractor's responsibility to maintain the flows and any back-ups or spills are at the Contractor's cost. The pump(s) and bypass lines shall be of adequate capacity and size to handle the flows.
- E. A detailed bypass pumping plan shall be submitted by contractor and approved by Engineer and Owner prior to starting work on an individual work order. The bypass pumping requirements and plan shall be developed in accordance with Specification Item No. 864 – Bypass Pumping.

3.04 CLEANING AND PRE-TELEVISION INSPECTION

- A. Prior to installation of the liner, the sewer lines shall be cleaned and inspected. Lines shall be cleaned of any debris that will interfere with the CIPP installation.
- B. Inspection of sewer mains shall be performed by experienced personnel trained in locating breaks, obstacles and service connections by CCTV.
 - 1. The interior of the existing sewer main shall be carefully inspected to determine the location of any conditions which may prevent proper installation of CIPP.
 - 2. Any conditions that may prevent proper installation of CIPP shall be noted so that the conditions can be corrected.
- C. A pre-television video and suitable log shall be submitted to the Owner and Engineer.

1. The Contractor shall be responsible for confirming the locations of all branch service connections prior to installing and curing the CIPP and shall inform the Owner of these connections.
2. All work shall be done in accordance with Specification Item No. 866 – Sewer Main Television Inspection and Specification Item No. 868 – Sanitary Sewer System Cleaning.

3.05 POINT REPAIRS AND OBSTRUCTION REMOVAL

- A. To the extent required to facilitate the pipe rehabilitation process when normal cleaning of the line will not work, the contractor may have to make point repairs or remove obstructions on sanitary sewer lines and service lines.
- B. The Contractor shall make a point repair excavation only after the SAWS Field Inspector has been informed and given approval to uncover and remove or repair the obstruction that the pre-installation inspection reveals. The Owner shall be notified and shall approve any point repair or obstruction removal before it is constructed.
- C. Point repairs may be needed for conditions such as a protruding service connection, dropped joint, or a collapse that will ~~prevent the inversion process.~~ impact the lining or curing process, or otherwise cause an issue with the fit of the liner.
- D. Completing point repairs will be required before rehabilitating the sanitary sewer line between adjacent manholes.
- E. All excavating, trenching and backfilling shall conform to SAWS Standard Specification Item Nos. 804 – Excavation, Trenching and Backfill and Item No. 550 - Trench Excavation Safety Protection.
- F. Pipe used to complete this process shall conform to SAWS and ASTM standards and shall be approved by the Owner and Engineer prior to installation.
- G. If a point repair is located at a service connection, a full bodied fitting shall be used for the service connection.
- H. Point Repairs and Obstruction Removals shall conform to Specification Item No. 1103 – Point Repairs and Obstruction Removal.

3.06 INSTALLATION:

CIPP installation shall be in accordance with ASTM F1216, ASTM F1743 and the following requirements.

- A. Liner installation shall meet manufacturer’s requirements and following:

① Denotes Addendum No. 1 modifications. Strikethrough denotes specific text deleted/modified in Addendum No. 1.

1. Liner Protection: Prior to inserting the liner, a plastic sheet 10 mil thick shall be pulled into the host pipe to protect the liner from damage as it is pulled in.
 2. Liner Insertion: The liner shall be pulled-in through an existing manhole or approved access point and shall fully extend to the next designated manhole or termination point. The pulling speed shall not exceed 15 feet/minute. Care shall be exercised not to damage the liner during the pulling phase.
 3. Liner Inflation: Once the liner is inserted into the pipe, it shall be inflated with sufficient air pressure to hold the liner tight to the host pipe wall. Contractor shall follow ^① manufacturer's recommendations.
 4. The Contractor will video record the liner prior to commencement of the curing process in order to ensure it has been properly inflated and any problems can be identified before curing begins.
- B. CIPP curing shall be in accordance with applicable ASTM F2019, manufacturer's requirements, and the following:
1. The UV curing lamps shall operate in a sufficient frequency range to ensure complete curing of the resin.
 - ^① 2. The Contractor shall submit a documented record of time, rate of travel of the UV light assembly and internal temperatures and pressures during the curing process to the Owner.
 3. The finished pipe shall be continuous over the entire length of an installation run and be free of dry spots, lifts, and delaminations. If these conditions are present, the contractor shall remove and replace the CIPP in these areas at no cost to SAWS.
 4. The cured lining shall be impervious and free of any leakage from the pipe to the surrounding ground or from the ground to inside the pipe.
- C. Any defect which will or could affect the structural integrity, strength, capacity or future maintenance of the installed liner shall be repaired at the Contractor's expense, in a manner approved by the Engineer.
- D. ^① Unless otherwise directed or approved by the owner or his authorized representative, all laterals will be reconnected in accordance with the following:
1. Branch connections or service reconnections shall be internally reinstated without excavation, by utilizing a remote controlled cutting device monitored by a video TV camera.

^① Denotes Addendum No. 1 modifications. Strikethrough denotes specific text deleted/modified in Addendum No. 1.

2. The Contractor shall certify a minimum of 2 complete working cutters plus spare key components are available on the site.
 3. Internal reconnections of laterals shall be performed by a qualified individual with experience in successful internal lateral cuttings.
 4. The cutting device shall produce a neat clean and smooth opening of at least 95% of the existing side sewer lateral circumference.
 5. Open cut excavation for service reconnections will only be allowed if it has been approved in writing from SAWS Field Inspector. Service reconnections shall be in accordance with Specification Item No. 1109 – Sanitary Service Lateral Sub Outs or Reconnections.
 - ① 6. All debris created by the reconnection of laterals shall be removed and the pipe cleaned in accordance with Specification Item No. 866 – Sewer Main Television Inspection.
- B. Upon acceptance of the installation work and testing, the Contractor shall restore the project area affected by the operations to a condition at least equal to that existing prior to the work.
- C. The Contractor shall provide for the general safety of workers, pedestrians and traveling public throughout the project. Existing surface improvements and underground facilities and utilities shall also be protected. Damage caused by the Contractor shall be repaired at his own expense. Protection to be provided shall include but not be limited to:
1. Barricades, warning lights and signs for excavations created by point repairs and/or excavation pits. Conform to requirements of TxDOT, City of San Antonio, and of contract documents.
 2. The Contractor will install all pulleys, rollers, bumpers, alignment control devices and other equipment required to protect existing manholes/structures, and to protect the pipe from damage during installation. Lubrication may be used as recommended by the manufacturer. Under no circumstances will the liners be stressed beyond their elastic limit.
 3. Prevention of any sand, debris, or runoff from entering sewer system.
 4. Verify location of all underground utilities and facilities potentially impacted by rehabilitation or other related project activities and take necessary precautions to provide protection from damage. Damage caused by the Contractor

① Denotes Addendum No. 1 modifications. ~~Strikethrough~~ denotes specific text deleted/modified in Addendum No. 1.

shall be his responsibility and repaired at no additional cost to the Owner.

5. Protection of the liner and components during all phases of work including, but not limited to hauling, installation, entry into the entry pit, and prevention of scarring or gouging of the liner, pipe or components.

3.07 TESTING AND WARRANTY

- A. Specifications, drawings, test results, and other data showing details of the fabrication and installation of the CIPP liner shall be submitted to the Owner for review and approval.
- B. For each CIPP liner section installed, the Contractor shall obtain CIPP samples large enough to provide a minimum of three specimens and a recommended five specimens for flexural testing. CIPP samples shall be prepared and physical properties tested in accordance with ASTM F1216 or ASTM F1743, using either method proposed. The properties must meet or exceed the values listed in this Specification. If test results do not meet these properties, Contractor shall remove and replace CIPP at no cost to the Owner.
- C. The Contractor shall perform a CCTV Inspection in accordance with Specification No. 866 – Sewer Main Television Inspection after installation of the CIPP and reconnections of the laterals. The Contractor shall submit to the Engineer and Owner, for acceptance and approval, 2 copies of unedited post-installation videos and associated curing reports for each sewer main segment within 10 working days of the installation.
- D. All work performed or repaired under this Contract will be warranted to be free from defects in material and workmanship for a period of two years from the date of acceptance. If the Engineer or Owner determines that the process has failed during the warranty period, the Contractor will perform any and all repairs at no additional cost to SAWS.

4.00 MEASUREMENT AND PAYMENT

4.01 Drawings and data to be submitted prior to approval of each pay application shall include, but not be limited to, the following for each linear foot of CIPP being invoiced:

- A. Hydraulic flow capacity calculation with a copy of certification verifying Manning's roughness "n" value for the liner.
- B. Certified copies of structural properties test results from installation.
- C. Pulling forces.

- D. Pre and Post Video recordings and logs in accordance with Specification Item No. 866 – Sewer Main Television Inspection.
- E. Schedule of Operation in accordance with SAWS Specification Item No. 1110 – Progress Schedule.

4.02 Measurement and payment for the work included in this specification shall be made in accordance with Paragraph 901.5 Measurement and Payment of Item No. 901 - Reconstruction of Sanitary Sewer by Cured-in-Place Pipe.

~~Measurement and payment for the work included in this specification shall be made at the contracted bid price per linear foot of pipe installed using the CIPP method, complete in place for the type and size constructed as part of Pay Item 901—Reconstruction of Sanitary Sewer by Cured in Place Pipe. Said price shall be full compensation for furnishing all materials, submittals, pre-cleaning and pre-television inspection of pipe, sealing materials at manholes/structures and annulus (if required), launching pits, receiving pits, post testing, shoring, bedding, backfilling, curing, site restoration, and all necessary, corresponding, and related work to complete the project. Site restoration for all CIPP work (including but not limited to replacement of pavement, sidewalks, driveways, curbing, landscaping, sodding, etc.) will not be paid for separately and shall be considered subsidiary to the CIPP rehabilitation bid items. Work included in this item shall include furnishing and placement of all materials, labor, tools, equipment, testing, preparation, repairs, inspection, phasing, protection, execution and any other work necessary to complete the project.~~

END OF SECTION

① Denotes Addendum No. 1 modifications. ~~Strikethrough~~ denotes specific text deleted/modified in Addendum No. 1.

SECTION SS854

SANITARY SEWER LATERALS

854.1 DESCRIPTION

This section is a supplement to Item No. 854 – Sanitary Sewer Laterals of the San Antonio Water System Standard Specifications for Construction.

854.2 SUBMITTALS

No change

854.3 MATERIALS

No change

854.4 CONSTRUCTION

No change

854.5 MEASUREMENT

ADD after Paragraph 1 as follows:

“Two-way cleanouts shall be measured per each installed at various locations as included on the plans and details.”

854.6 PAYMENT

ADD to the end of Paragraph 3 (the last paragraph) as follows:

“Price for payment for two-way cleanouts shall be full compensation for furnishing all materials, including two-way cleanout, fittings, stack, sewer cap, bedding, trenching or boring, trench protection, encasement, backfilling, tamping, sodding, cutting and replacing pavement and surface structures of whatever type encountered and replacement with whatever type specified and other incidentals required to complete the work.”

END OF SECTION

SECTION SS1103

POINT REPAIRS AND OBSTRUCTION REMOVALS

1103.1 DESCRIPTION

This section is a supplement to Item No. 1103 – Point Repairs and Obstruction Removals of the San Antonio Water System Standard Specifications for Construction.

1103.2 MATERIALS

No change

1103.3 CONSTRUCTION

No change

1103.4 MEASUREMENT AND PAYMENT

1. Unit Prices – Point Repair: ADD to Paragraph h:

“(8) All necessary work to cut and remove pavement, restore subgrade, and restore base and pavement to original condition or better.”

2. Unit Prices – Obstruction Removal: ADD to Paragraph c:

“(7) All necessary work to cut and remove pavement, restore subgrade, and restore base and pavement to original condition or better.”

END OF SECTION

SECTION SS1109

SANITARY SEWER LATERAL STUB OUTS OR RECONNECTIONS

1109.1 DESCRIPTION

This section is a supplement to Item No. 1109 – Sanitary Sewer Lateral Stub Outs or Reconnections of the San Antonio Water System Standard Specifications for Construction.

1109.2 SUBMITTALS
No change

1109.3 CONSTRUCTION

ADD:

“5. Reconnection by Person Entry:

- a. Make service reconnections by entering pipeline and using cutting tools on cure-in-place liners at all depths.
- b. Use all required safety precautions for confined space entry and/or other safety scenarios, as required.
- c. Employ method and equipment that restores service connection capacity to not less than 90 percent of original capacity.
- d. Immediately open any missed lateral connections and repair any holes drilled in error using a method approved by the Inspector.”

1109.4 MEASUREMENT AND PAYMENT

1. Unit Prices:

ADD “k. All work under this pay item shall include associated cutting and removal of pavement, restoration of subgrade, and restoration of base and pavement to original condition or better.”

END OF SECTION

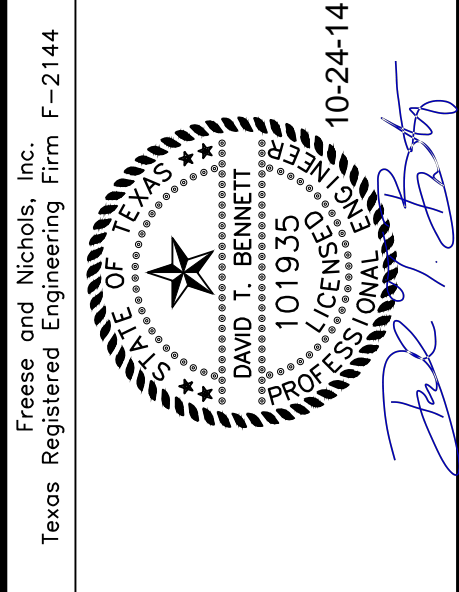


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STANDARD ABBREVIATIONS

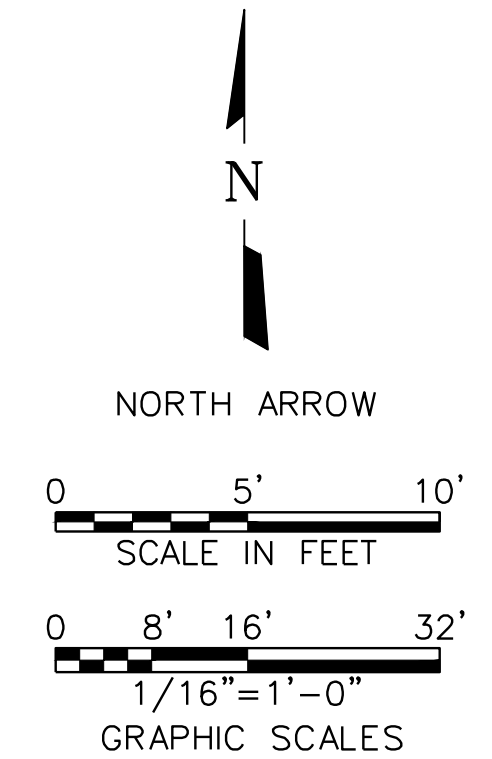
AC	ASBESTOS CONCRETE	NA	NOT APPLICABLE
AH	AHEAD	NSPI	NO SEPARATE PAY ITEM
ASPH	ASPHALT	NTS	NOT TO SCALE
B-B	BACK TO BACK	OC	ON CENTER
BC	BACK OF CURB	OD	OUTER DIAMETER
BK	BACK	OHE	OVERHEAD ELECTRIC
BSL	BUILDING SETBACK LINE	OHT	OVERHEAD TELEPHONE
CI	CAST IRON	PVMT	PAVEMENT
CIPP	CURRED-IN-PLACE PIPE	+/-	PLUS OR MINUS
CL	CENTERLINE	PC	POINT OF CURVATURE
CONC	CONCRETE	PE	PLAIN END
CP	CONTROL PANEL	PI	POINT OF INTERSECTION
CORP	CORPORATION	PT	POINT OF TANGENCY
CMP	CORRUGATED METAL PIPE	PVC	POLYVINYL CHLORIDE PIPE
CPL	COUPLING	PSI	POUNDS PER SQUARE INCH
DWG	DRAWING	PP	POWER POLE
DI	DUCTILE IRON	PVI	POINT OF VERTICAL INTERSECTION
E	EAST	PL	PROPERTY LINE
ELEV	ELEVATION	R	RADIUS
EX / EL	EXISTING	RR	RAILROAD
EW	EACH WAY	RCP	REINFORCED CONCRETE PIPE
EWEF	EACH WAY EACH FACE	REQ'D	REQUIRED
FC	FACE OF CURB	RT	RIGHT
FO	FIBER OPTIC	ROW	RIGHT OF WAY
FH	FIRE HYDRANT	RWL	RECYCLE WATER LINE
FL	FLOWLINE	S	SLOPE
FM	FORCE MAIN	SS	SANITARY SEWER
FRP	FIBER-REINFORCED PLASTIC PIPE	SE	SOUTHEAST
FND	FOUND	SW	SOUTHWEST
GA	GAUGE	STA	STATION
GI	GALVANIZED IRON	STD	STANDARD
GPS	GLOBAL POSITION STATION	ST	STORM SEWER
GRND	GROUND	T	TANGENT
HORZ	HORIZONTAL	T/P	TOP OF PIPE
HMAC	HOT MIX ASPHALTIC CONCRETE	T/G	TOP OF GROUND
HRS	HOURS	TEL	TELEPHONE
IAW	IN ACCORDANCE WITH	TBM	TEMPORARY BENCH MARK
I.D.	INNER DIAMETER	THD	THREADED
IP	IRON PIN	TYP	TYPICAL
LF	LINEAR FEET	UG	UNDERGROUND
LT	LEFT	UN	UNLESS NOTED
L	LENGTH	UNK	UNKNOWN
LP	LIGHT POLE	UPRR	UNION PACIFIC RAILROAD
MH	MANHOLE	VERT	VERTICAL
MAX	MAXIMUM	VPI	VERTICAL POINT OF INFLECTION
MIN	MINIMUM	VPC	VERTICAL POINT OF CURVATURE
N	NORTH	VPT	VERTICAL POINT OF TANGENCY
NE	NORTHEAST	WWF	WELDED WIRE FABRIC
NW	NORTHWEST		

LEGEND (EXISTING ITEMS)

	BENCHMARK		EARTH OR GRADE (SECTION OR PROFILE)
	SIGN		ASPHALT PAVEMENT (SECTION OR PROFILE)
	POWER POLE		BARBED WIRE FENCE
	TRANSFORMER BOX (ON GROUND)		CHAIN-LINK FENCE
	ELECTRIC MANHOLE		NET WIRE FENCE
	ELECTRIC METER		EXISTING RAILROAD
	TELEPHONE MANHOLE		EXISTING GRADING CONTOUR
	COMMUNICATION MANHOLE		PROPOSED GRADING CONTOUR
	TELEPHONE PEDESTAL		PROPERTY LINE
	CABLE T.V. PEDESTAL		EASEMENT LINE
	LIGHT POLE		OVERHEAD ELECTRIC
	LIGHT		UNDERGROUND ELECTRIC
	GUY WIRE		OVERHEAD TELEPHONE
	UTILITY BOX		UNDERGROUND TELEPHONE
	GAS VALVE		UNDERGROUND CABLE
	GAS METER		FIBER OPTIC
	WATER VALVE		GAS
	WATER METER		WATERLINE
	FIRE HYDRANT		STORM SEWER
	SPRINKLER CONTROL VALVE		SANITARY SEWER LINE
	SPRINKLER HEADS		STREAM/WATER
	SANITARY SEWER MANHOLE		TREE
	STORM DRAIN MANHOLE		100 YR FLOOD ZONE

LEGEND (PROPOSED ITEMS)

	PROPOSED SAN. SEWER REHABILITATION
	PROPOSED SAN. SEWER CENTERLINE STATION
	PROPOSED SAN. SEWER (BY OTHERS)
	EXISTING SAN. SEWER
	TEMPORARY CONSTRUCTION EASEMENT
	PROPOSED MANHOLE REHABILITATION
	PROPOSED MANHOLE (BY OTHERS)
	PROJECT CONTROL POINT
	PROPOSED TWO-WAY SS CLEANOUT



ESTIMATED PROJECT QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
530	BARRICADES, SIGNS AND TRAFFIC HANDLING	1	LS
540	TEMPORARY EROSION, SEDIMENTATION AND WATER POLLUTION PREVENTION AND CONTROL	1	LS
550	TRENCH EXCAVATION SAFETY PROTECTION	100	LF
854	SANITARY SEWER TWO-WAY CLEANOUT	13	EA
864	BYPASS PUMPING	1	LS
866	48" SEWER MAIN TELEVISION INSPECTION (POST CIPP)	4000	LF
901	48" RECONSTRUCTION OF SANITARY SEWER BY CIPP (ALL DEPTHS)	4000	LF
910	MANHOLE REHABILITATION (ALL MH SIZES)	140	VF
100	MOBILIZATION	1	LS
101	PREPARATION OF ROW	1	LS
1109	SANITARY SERVICE LATERAL RECONNECTIONS (BY REMOTE METHOD, OR PERSON ENTRY, ALL DEPTHS)	13	EA
1103.1	OBSTRUCTION REMOVAL BY REMOTE DEVICE (ALL DEPTHS)	3	EA
1103.2	OBSTRUCTION REMOVAL BY PERSON ENTRY (ALL DEPTHS)	2	EA
1103.3	POINT REPAIR UP TO 9 FEET LENGTH (ALL DEPTHS)	3	EA
1103.4	EXTRA LENGTH POINT REPAIR (ALL DEPTHS)	20	LF



SAWS JOB NO. 14-4508 (SS)
SAN ANTONIO RIVER OUTFALL PIPELINE,
PROJECT NO. 2A
TABLE OF CONTENTS, LEGEND & QUANTITIES

GENERAL CONSTRUCTION

- CONTRACTOR SHALL ABIDE BY ALL APPLICABLE GOVERNMENTAL AND REGULATORY STANDARDS AND REQUIREMENTS AND OBTAIN ALL NECESSARY PERMITS AND APPROVALS FOR CONSTRUCTION OF THE PIPELINE FACILITIES SHOWN IN THE PLANS.
- CONSTRUCTION SURVEYING IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR INCLUDING BUT NOT LIMITED TO LIMITS OF PERMANENT EASEMENT AND TEMPORARY EASEMENTS, PIPE ALIGNMENT, APPURTENANCE LOCATION AND ROAD CROSSINGS. THE CONTRACTOR SHALL VERIFY ALL CONTROL MONUMENTATION PRIOR TO BEGINNING CONSTRUCTION.
- CONTRACTOR SHALL MAKE CONNECTIONS TO EXISTING PIPE, STRUCTURES, EQUIPMENT, ETC. AS REQUIRED AND SHALL PROVIDE ALL FITTINGS, ADAPTERS AND APPURTENANCES REQUIRED TO MAKE THE CONNECTIONS. PROVIDE ALL SUPPORTS REQUIRED FOR A RIGID INSTALLATION AND TO HAVE A COMPLETE AND WORKING SYSTEM.
- CONTRACTOR SHALL COORDINATE HIS PROPOSED CONSTRUCTION WITH OTHER CONTRACTORS IN THE EVENT THE OTHER CONTRACTORS ARE DOING WORK IN THE SAME AREA SIMULTANEOUSLY WITH HIS PROJECT. THIS INCLUDES, BUT IS NOT LIMITED TO, ALL CONNECTION POINTS OR OTHER SPECIAL ITEMS AS REQUIRED FOR TESTING.
- CONTRACTOR SHALL DISPOSE OF ALL EXCESS MATERIAL, CONSTRUCTION, RUBBLE, AND TRASH. ALL TRASH SHALL BE PICKED-UP AND REMOVED AT THE END OF EACH DAY. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT AS REQUIRED FROM THE U.S. CORPS OF ENGINEERS.
- NO BURNING OR BLASTING IS ALLOWED.
- THE PERMANENT EASEMENTS ARE SHOWN ON THE DRAWINGS. THE CONTRACTOR MAY ACQUIRE ADDITIONAL TEMPORARY CONSTRUCTION EASEMENTS AT HIS OWN COST, IF HE SO CHOOSES. IF THE CONTRACTOR ACQUIRES ADDITIONAL TEMPORARY EASEMENTS, HE SHALL PROVIDE COPIES OF THE WRITTEN AGREEMENT TO SAWS. THE CONTRACTOR SHALL BE COMPLETELY RESPONSIBLE FOR ANY DAMAGES AS A RESULT OF USE OF EASEMENTS.
- ALL WORK IN THE CITY/COUNTY RIGHT OF WAYS SHALL PROCEED DURING WORKING HOURS AGREED UPON BY CITY/COUNTY INSPECTORS.
- CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OF TRAFFIC ON THE COUNTY/CITY ROADS AT ALL TIMES, AND BOTH LANES OF TRAFFIC AFTER CONSTRUCTION DUTIES ARE COMPLETE EACH DAY.
- CONTRACTOR SHALL PROVIDE APPROPRIATE SIGNAGE, BARRICADES, FLAGMEN, ETC. REQUIRED TO MAINTAIN SAFE TRAFFIC FLOW AT ALL TIMES. ALL TRAFFIC CONTROL MEASURES SHALL BE IN ACCORDANCE WITH TxDOT'S MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO SAWS AND THE RIGHT-OF-WAY OWNER FOR THE ROADWAY FOR APPROVAL NO LESS THAN 14 DAYS IN ADVANCE OF THE PROPOSED ROADWAY CLOSURE. ANY COMMENTS RECEIVED ON THE PLAN BY SAWS OR RIGHT-OF-WAY OWNER SHALL BE INCORPORATED INTO THE PLAN. THE PLAN SHALL BE PREPARED SPECIFICALLY FOR THIS PROJECT AND SHALL BE SEALED AND SIGNED BY AN ENGINEER LICENSED IN THE STATE OF TEXAS. NO SEPARATE PAY ITEM.
- CONTRACTOR SHALL NOTIFY ALL CIVIC AUTHORITIES, EMERGENCY UNITS AND SCHOOL DISTRICTS OPERATING WITHIN THE AREA OF THE PROPOSED WORK OF LINE CLOSURES, ROAD CONSTRUCTION AND INSTALLATION SCHEDULES.
- THE CONTRACTOR MAY NOT USE PRIVATELY OWNED ROADS, UNLESS HE OBTAINS PERMISSION FROM THE LANDOWNERS. CONTRACTOR SHALL REPAIR ANY DAMAGE TO PRIVATE ROADS. THE CONTRACTOR SHALL RESTORE TEMPORARY ROADS AND CONSTRUCTION WORK AREAS TO PRE-CONSTRUCTION CONDITIONS. NO SEPARATE PAY ITEM.
- CONTRACTOR SHALL NOTIFY ALL PROPERTY OWNERS AT LEAST 48 HOURS PRIOR TO PERFORMING ANY WORK ON THEIR PROPERTY. CONTRACTOR SHALL ALSO DISTRIBUTE A LETTER TO ALL AFFECTED PROPERTY OWNERS THAT INCLUDES NAMES AND TELEPHONE NUMBERS OF CONTRACTOR'S CONTACTS, A DESCRIPTION OF WORK TO BE DONE, AND THE TIME FRAME FOR DOING THE WORK. A COPY OF THE NOTICE LETTERS SHALL BE FORWARDED TO SAWS'S REPRESENTATIVE.
- CONTRACTOR SHALL NOTIFY THE FOLLOWING AT LEAST TWO (2) WORKING DAYS PRIOR TO ANY CONSTRUCTION:

SAWS UTILITY LOCATES	1-210-233-2010
SAWS PRODUCTION CONTROL CENTER	1-210-233-2016
CITY OF SAN ANTONIO (COSA STORMWATER) (CONTACT): GABRIEL J. VILLARREAL	1-210-207-6026
CITY OF SAN ANTONIO (TRAFFIC OPERATIONS DIVISION)	1-210-207-7765
BEXAR COUNTY (CONTACT): JAMES BRANNON	1-210-335-6700
TEXAS ONE-CALL	1-800-545-6005 OR 811
- IF EXISTING FIBER OPTIC CONDUIT SYSTEMS ARE LOCATED DURING EXCAVATION, A FIBER-OPTIC REPRESENTATIVE IS REQUIRED TO BE ON SITE, THE CONTRACTOR MUST PROVIDE SUPPORT AND/OR PROTECTION FOR THE CONDUIT AT ALL TIMES DURING BACKFILLING, WHICH IS SUITABLE TO THE FIBER-OPTIC REPRESENTATIVE. THE FIBER-OPTIC REPRESENTATIVE MAY PLACE UNDERGROUND MARKING DEVICES AS REQUIRED. REPAIR OF ANY DAMAGES TO THE CONDUIT SYSTEM AND ASSOCIATED FACILITIES SHALL BE MADE BY THE FIBER-OPTIC COMPANY PERSONNEL; AND THE CONTRACTOR SHALL REIMBURSE THEM FOR ALL COSTS OF SUCH REPAIRS, IF REQUIRED. THE CONTRACTOR SHALL CONTACT THE FIBER-OPTIC COMPANY 48 HOURS PRIOR TO THE START OF EXCAVATION. LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE ONLY AND NOT GUARANTEED TO BE ACCURATE.

VERIZON	1-800-624-9675
AT&T	1-800-344-8377
TIME WARNER CABLE	1-800-344-8877
- CONTRACTOR SHALL NOTIFY THE APPROPRIATE CONTACTS LISTED BELOW AT LEAST TWO (2) WORKING DAYS BUT NOT MORE THAN FOURTEEN (14) CALENDAR DAYS PRIOR TO CROSSING ANY MARKED OR SHOWN UTILITIES.

CITY PUBLIC SERVICE (CPS) (CONTACT): RICHARD RODRIGUEZ	1-210-353-2226
ROBIN MCFARLANE	1-210-353-2967
- THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS AND DEPTHS OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES 48 HOURS PRIOR TO CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES WHETHER SHOWN ON THE PLANS OR NOT, AND TO PROTECT ALL UTILITIES DURING CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SERVICE LINES, CULVERTS OR UTILITIES CROSSED OR EXPOSED BY HIS CONSTRUCTION OPERATIONS. WHERE EXISTING SERVICE LINES ARE CUT, BROKEN OR DAMAGED THE CONTRACTOR SHALL IMMEDIATELY REPLACE THE SERVICE LINES WITH LIKE OR BETTER MATERIALS. NO SEPARATE PAY ITEM.
- CONTRACTOR SHALL PROTECT ALL UNDERGROUND IRRIGATION SYSTEMS ENCOUNTERED WITHIN THE CONSTRUCTION AREA. ALL DAMAGE SHALL BE REPAIRED BY IRRIGATOR LICENSED IN THE STATE OF TEXAS. NO SEPARATE PAY ITEM.
- CONTRACTOR IS RESPONSIBLE FOR LOCATING AND REPAIRING ANY UTILITIES DAMAGED DURING CONSTRUCTION. NO SEPARATE PAY ITEM.
- NO MATERIAL OR EQUIPMENT SHALL BE STORED OVER ANY EXISTING UTILITY.
- DUE TO FEDERAL REGULATION TITLE 49, PART 192.181, UTILITY COMPANIES MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT THE WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL OVERHEAD AND UNDERGROUND ELECTRIC UTILITIES WITHIN OR ADJACENT TO WORK AREAS.
- CONTRACTOR SHALL PROTECT OR REMOVE AND REPLACE ROAD SIGNS AND OTHER SIGNS. ANY DAMAGE TO SIGNS SHALL BE REPAIRED TO ORIGINAL OR BETTER CONDITION BY THE CONTRACTOR. NO SEPARATE PAY ITEM.
- CONTRACTOR SHALL DOCUMENT AND PROVIDE TO OWNER UPON REQUEST ANY VERBAL OR WRITTEN AGREEMENTS WITH PROPERTY OWNERS.

- WHERE IT IS NECESSARY FOR LANDOWNERS TO MOVE TRAILERS, SHEDS, OR OTHER FACILITIES OR IMPROVEMENTS, THE CONTRACTOR SHALL NOTIFY THE PROPERTY OWNER AND SAWS NO LESS THAN 30 DAYS PRIOR TO THE NEED FOR MOVING THE FACILITIES OR IMPROVEMENTS.
- CONTRACTOR SHALL FLAG THE EASEMENT AND SHALL STAY WITHIN THE FLAGGED AREA.
- CONTRACTOR SHALL MAINTAIN ACCESS FOR ALL PROPERTY OWNERS AT ALL TIMES DURING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SAFE ACCESS FOR THE DELIVERY OF MAIL BY THE U.S. POSTAL SERVICE. NO SEPARATE PAY ITEM.
- THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SAFE ACCESS TO RESIDENCES AND BUSINESSES. NO SEPARATE PAY ITEM.
- WHEREVER POWER POLES ARE WITHIN 15' OF THE PROPOSED SEWER LINE OR OTHERWISE NOTED ON THE PLANS, THE CONTRACTOR SHALL PROVIDE PROPER SHORING AND OTHER SUITABLE SUPPORT DURING CONSTRUCTION OF THE SEWER LINES. THE UTILITY COMPANY MAINTENANCE DEPARTMENT MUST APPROVE SHORING PRIOR TO INSTALLATION. NO SEPARATE PAY ITEM.
- CONTRACTOR SHALL COORDINATE UPSTREAM AND DOWNSTREAM PROJECT START AND END POINTS WITH SAWS INSPECTOR AND PROJECT 2B CONTRACTOR FOR SEQUENCING AND SCHEDULING OF ALL WORK.

ENVIRONMENTAL

- THE CONTRACTOR SHALL CONTROL EROSION AND SEDIMENTATION PER THE APPLICABLE LAWS AND REGULATIONS. REFER TO COSA STANDARD SPECIFICATION ITEM 540, AND COSA STANDARD SWPPP DETAILS FOR ALL SWPPP REQUIREMENTS.
- THE CONTRACTOR IS REQUIRED TO RE-SEED DISTURBED AREAS WITH NATIVE VEGETATION SEED (NSPI), IN ADDITION THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL DAMAGES TO PROPERTY OUTSIDE OF THE EASEMENT LIMITS, INCLUDING REVEGETATION COST.
- ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION THAN AT THE START OF CONSTRUCTION INCLUDING ALL REMOVED OR DAMAGED FENCES, IMPROVEMENTS, LANDSCAPING, ETC. NO SEPARATE PAY ITEM.
- CONTRACTOR TO ESTABLISH SILT FENCING AND/OR ROCK BERM IN ALL AREAS TO BE IMPACTED BY CONSTRUCTION AND MAINTAIN UNTIL SUITABLE GROUND COVER/VEGETATION IS ACCEPTED.
- IF A THREATENED OR ENDANGERED PLANT OR ANIMAL SPECIES AND/OR CULTURAL/ARCHAEOLOGICAL RESOURCES ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL STOP WORK IMMEDIATELY AND NOTIFY SAWS.
- DISPOSAL AREAS, STOCKPILES, AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL THE AMOUNT OF SEDIMENT WHICH MAY ENTER RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED ON ANY WETLANDS, WATER BODY, OR STREAM BED. THE CONTRACTOR SHALL LOCATE AND CONSTRUCT CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AND PARKING AREAS IN A MANNER TO MINIMIZE POLLUTANT RUNOFF.
- THE CONTRACTOR SHALL CLEAR ALL WATER WAYS AS SOON AS PRACTICABLE OF ALL TEMPORARY EMBANKMENT, TEMPORARY BRIDGES, MATTING, FALSEWORK, PILING, DEBRIS, AND OBSTRUCTIONS PLACED DURING CONSTRUCTION OPERATIONS WHICH ARE NOT PART OF THE FINISHED WORK.
- CONTRACTOR SHALL PROVIDE A STORM WATER POLLUTION PREVENTION PLAN PRIOR TO CONSTRUCTION AND PROVIDE ALL APPURTENANCES TO COMPLY WITH THE LATEST TCEQ STORM WATER POLLUTION PREVENTION REGULATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR FILING A NOTICE OF INTENT (NOI) AT THE START OF CONSTRUCTION WITH THE TCEQ AND A NOTICE OF TERMINATION (NOT) AT THE END, ALSO WITH THE TCEQ.
- CONTRACTOR IS RESPONSIBLE FOR KEEPING ROADWAYS AND SIDEWALKS ADJACENT TO THE PROJECT FREE OF MUD, TRASH, AND CONSTRUCTION DEBRIS. NO SEPARATE PAY ITEM.
- TRIMMING OF TREES SHALL BE ACCOMPLISHED USING A SAW OR PRUNING SHEARS. ALL CUT LIMBS OVER 1 INCH IN DIAMETER SHALL BE PAINTED WITH TREE WOUND PAINT IMMEDIATELY AFTER TREE TRIMMING.
- ALL NEW TREES SHALL BE PLANTED BY A NURSERYMAN LICENSED IN THE STATE OF TEXAS. DOCUMENTATION OF TYPE, SIZE, AND LOCATION STATION SHALL BE PROVIDED TO SAWS WITH RECORD DRAWINGS AND PRIOR TO FINAL PAYMENT.

FLOOD PLAIN GENERAL CONSTRUCTION NOTES:

- CONTRACTOR IS TO MAINTAIN UNRESTRICTED DRAINAGE OF THE PROJECT SITE AND ADJACENT AREAS DURING CONSTRUCTION.
- NO WASTE MATERIAL SHALL BE PLACED IN EXISTING LOWS THAT WILL BLOCK OR ALTER FLOW LIMITS OF THE EXISTING NATURAL DRAINAGE OR PLACED WITHIN THE LIMITS OF THE EXISTING FLOOD PLAIN.
- CONSTRUCTION MATERIALS SHALL NOT BE STORED IN EXISTING LOWS THAT WILL BLOCK OR ALTER FLOW LIMITS OF THE EXISTING NATURAL DRAINAGE OR PLACED WITHIN THE LIMITS OF THE EXISTING FLOOD PLAIN.

WASTEWATER NOTES:

- ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY THE SAN ANTONIO WATER SYSTEM (SAWS) AND COMPLY WITH THE FOLLOWING:
 - CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEMS [TAC 217]".
 - CURRENT "SAN ANTONIO WATER SYSTEM STANDARD SPECIFICATIONS FOR CONSTRUCTION".
 - CURRENT "SAN ANTONIO WATER SYSTEM STANDARD MATERIALS SPECIFICATIONS".
 - CURRENT CITY OF SAN ANTONIO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION."
 - CURRENT CITY OF SAN ANTONIO "RIGHT-OF-WAY ORDINANCE AND UNDERGROUND UTILITY EXCAVATION MANUAL".
 - CURRENT TxDOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES".
- CONTRACTOR SHALL COMPLY WITH ALL SAWS GENERAL NOTES AND SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION (WWW.SAWS.ORG).
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL SEWAGE FLOW DURING ALL PHASES OF CONSTRUCTION. A FLOW MANAGEMENT PLAN SHALL BE SUBMITTED TO THE ENGINEER AND SAWS FOR APPROVAL PRIOR TO CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT NO OVERFLOWS OR SPILLAGE OF SEWER OCCURS. SHOULD THIS OCCUR, THE CONTRACTOR SHALL:
 - IDENTIFY THE SOURCE OF THE SPILL AND ATTEMPT TO ELIMINATE ANY ADDITIONAL SPILLAGE.
 - CONTAIN THE SPILL IN PLACE AND PREVENT CONTAMINATION OF STREAMS.
 - CLEAN UP THE SPILL AND DISPOSE OF CONTAMINATED MATERIALS.
 - DISINFECT THE AREA OF THE SPILL WITH A MIXTURE OF HTH CHLORINE AND WATER.
 - IDENTIFY AND TRAIN PERSONNEL RESPONSIBLE FOR SPILLAGE PREVENTION AND CONTROL.

CPS ENERGY NOTE:

- CALL THE TEXAS STATE WIDE ONE CALL NUMBER 1-800-245-4545, 48 HOURS BEFORE BEGINNING ANY EXCAVATION. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CPS ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA. THE PROJECT MUST BE GAS LEAK SURVEYED PRIOR TO THE FINAL OVERLAY. ALLOW 10 WORKING DAYS FOR THE LEAK SURVEY AND ALLOW AN ADDITIONAL 10 WORKING DAYS FOR VALVE ADJUSTMENTS. THE CONTRACTOR MUST COORDINATE THE SURVEY AND THE ADJUSTMENTS THROUGH THE PROJECT INSPECTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING CPS ENERGY OVERHEAD AND UNDERGROUND ELECTRIC FACILITIES IF ADJACENT TO WORK AREAS.

AT&T NOTE:

- THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR TO CONTACT THE TELEPHONE COMPANY CABLE LOCATOR 48 HOURS PRIOR TO EXCAVATION AT 1-800-242-8511. CONTRACTOR IS TO PROTECT AND SUPPORT TELEPHONE COMPANY POLES DURING CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION NOTES:

- CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK ZONE IN ORDER TO DEVELOP THE CONTRACTOR'S PLANS TO IMPLEMENT THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S PLANS SHALL PROVIDE FOR ADEQUATE TRENCH SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS AND THE PROTECTION OF ADJACENT STRUCTURES AND FACILITIES. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION. CONTRACTOR IS RESPONSIBLE FOR A TRENCH SAFETY PLAN PREPARED BY A PROFESSIONAL ENGINEER FOR THIS PROJECT. THIS TRENCH SAFETY PLAN SHALL BE SUBMITTED TO SAWS PRIOR TO ANY WORK ACTIVITIES.
- CONTRACTOR SHALL INCORPORATE THE USE OF A TRENCH BOX OR OTHER ACCEPTABLE SAFETY SYSTEM IN ANY TRENCH THAT EXCEEDS FIVE (5) FEET IN DEPTH. THE CONTRACTOR SHALL PROTECT ALL OPEN EXCAVATION AND EQUIPMENT FROM CHILDREN, PEDESTRIANS, AND VEHICLES IN THE AREA BY PROVIDING, INSTALLING AND MAINTAINING FENCING, BARRICADES, OR OTHER PROTECTIVE SYSTEMS. NO OPEN TRENCHES ALLOWED OVERNIGHT.

COSA FLOOD PLAIN AND R.O.W. NOTES:

- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN ALL REQUIRED STORM WATER PERMITS, FEES, AND APPROVALS. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PERMITS REQUIRED FOR CONSTRUCTION IN DRAINAGE EASEMENTS, RIGHT-OF-WAYS, AND FLOODPLAINS.
- THE CONTRACTOR SHALL NOTIFY STORM WATER ENGINEERING AT LEAST 24 HOURS PRIOR TO THE INSTALLATION OF ANY DRAINAGE FACILITY WITHIN A DRAINAGE EASEMENT OR STREET RIGHT-OF-WAY NOT INDICATED ON THE CONSTRUCTION PLANS.
- THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING DRAINAGE FACILITIES FROM DAMAGE. ANY DAMAGE TO EXISTING DRAINAGE SYSTEMS, WHETHER OR NOT SHOWN ON THE PLANS, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT HIS EXPENSE. THE CONTRACTOR SHALL NOTIFY STORM WATER ENGINEERING AT 210-207-8052 AS SOON AS CONFLICTS WITH UTILITIES ARE ENCOUNTERED OR ANY DRAINAGE SYSTEM IS DAMAGED DURING CONSTRUCTION.
- CONSTRUCTION SPOILS WILL NOT BE ALLOWED TO BE DEPOSITED ANYWHERE WITHIN A DRAINAGE EASEMENT, RIGHT-OF-WAY OR FLOODPLAIN WITHIN THE LIMITS OF THE PROJECT AND SHALL BE DISPOSED OFFSITE IN COMPLIANCE WITH CURRENT APPLICABLE REGULATIONS.
- NO STRUCTURE, FENCES, WALLS, LANDSCAPING, OR OTHER OBSTRUCTIONS THAT IMPEDE DRAINAGE SHALL BE PLACED WITHIN THE LIMITS OF THE DRAINAGE EASEMENTS SHOWN ON THE CONSTRUCTION DOCUMENTS.
- UPON COMPLETION OF TRENCHING, THE AREA WILL BE BACKFILLED AND COMPACTED TO ITS ORIGINAL CONDITION. TRENCHES/BORE PITS OPEN AND UNATTENDED LONGER THAN 24 HOURS SHALL BE PROTECTED TO WITHSTAND ALL HYDRODYNAMIC AND HYDROSTATIC FORCES AND PREVENT DOWNSTREAM IMPACTS. TRENCHES/BORE PITS TO BE OPEN LONGER THAN 30 DAYS AFTER STARTING EXCAVATION SHALL BE BACKFILLED WITH A SEMI-PERMANENT REPAIR BACKFILL.
- IMPROVED SECTIONS OF EARTHEN CHANNELS AND/OR WATERWAYS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT THE CHANNEL FOR MAINTENANCE.

App.		DTB			Freese And Nichols, Inc. Job No.
Revisions		ADDENDUM NO. 1			SWB11467
Date		10/24			10-24-14
No.					10-24-14

Date:	10/23/2014	DTB	DH	BC
Designed by:	DTB	Drawn by:	DDH	Checked by:
				N.T.S.

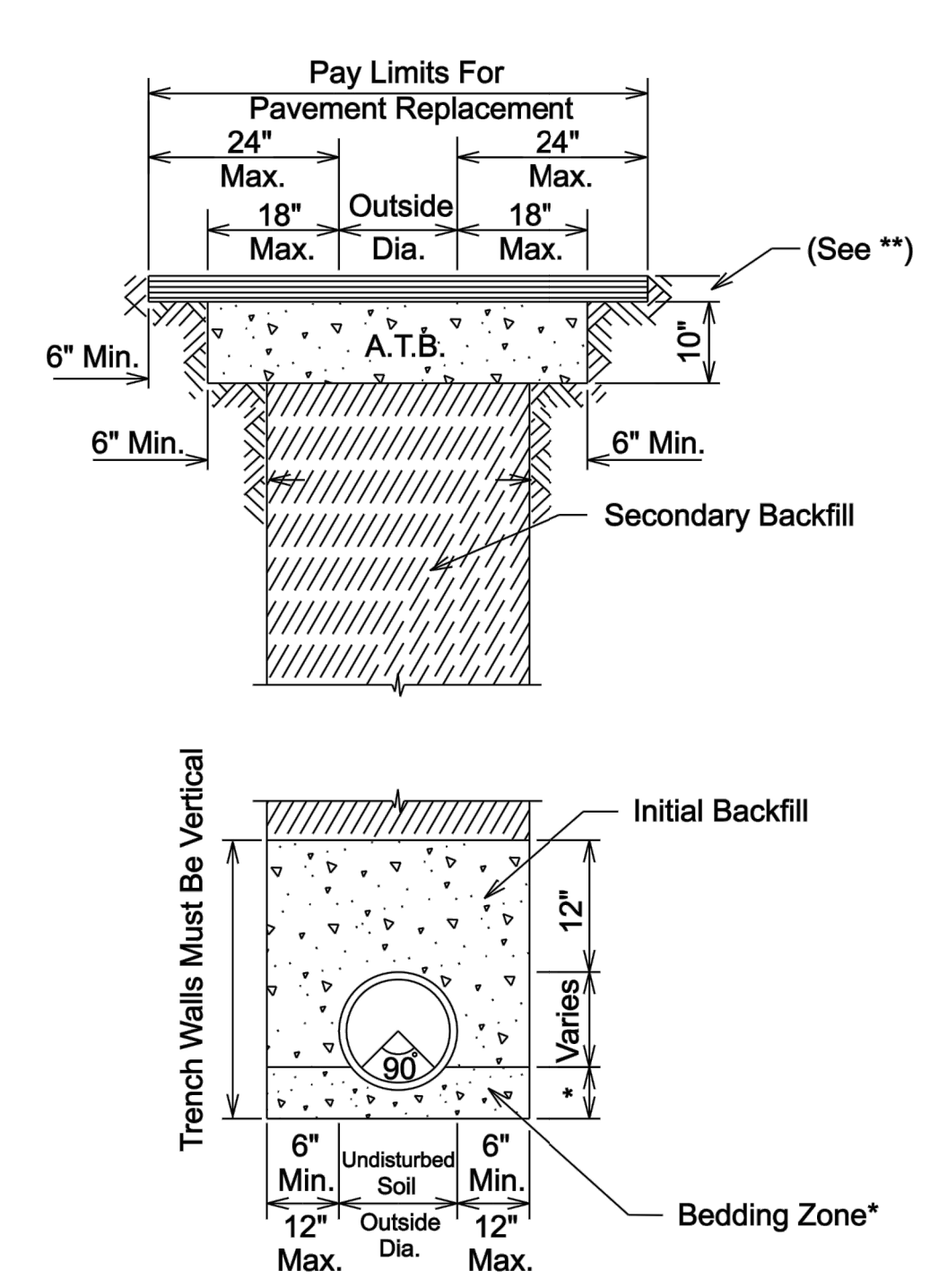
4040 Broadway Street, Suite 600
San Antonio, Texas 78209-6350
Phone - (210) 298-3800
Fax - (210) 298-3801

SAN ANTONIO
WATER SYSTEM

SAWS JOB NO. 14-4508 (SS)
SAN ANTONIO RIVER OUTFALL PIPELINE,
PROJECT NO. 2A

GENERAL NOTES

SWB11467 / San Antonio Server / ACAD CIVIL 3D_2014



* Sewer Gravel 6" Min. or 1/8 O.D. of the pipe, whichever is greater.

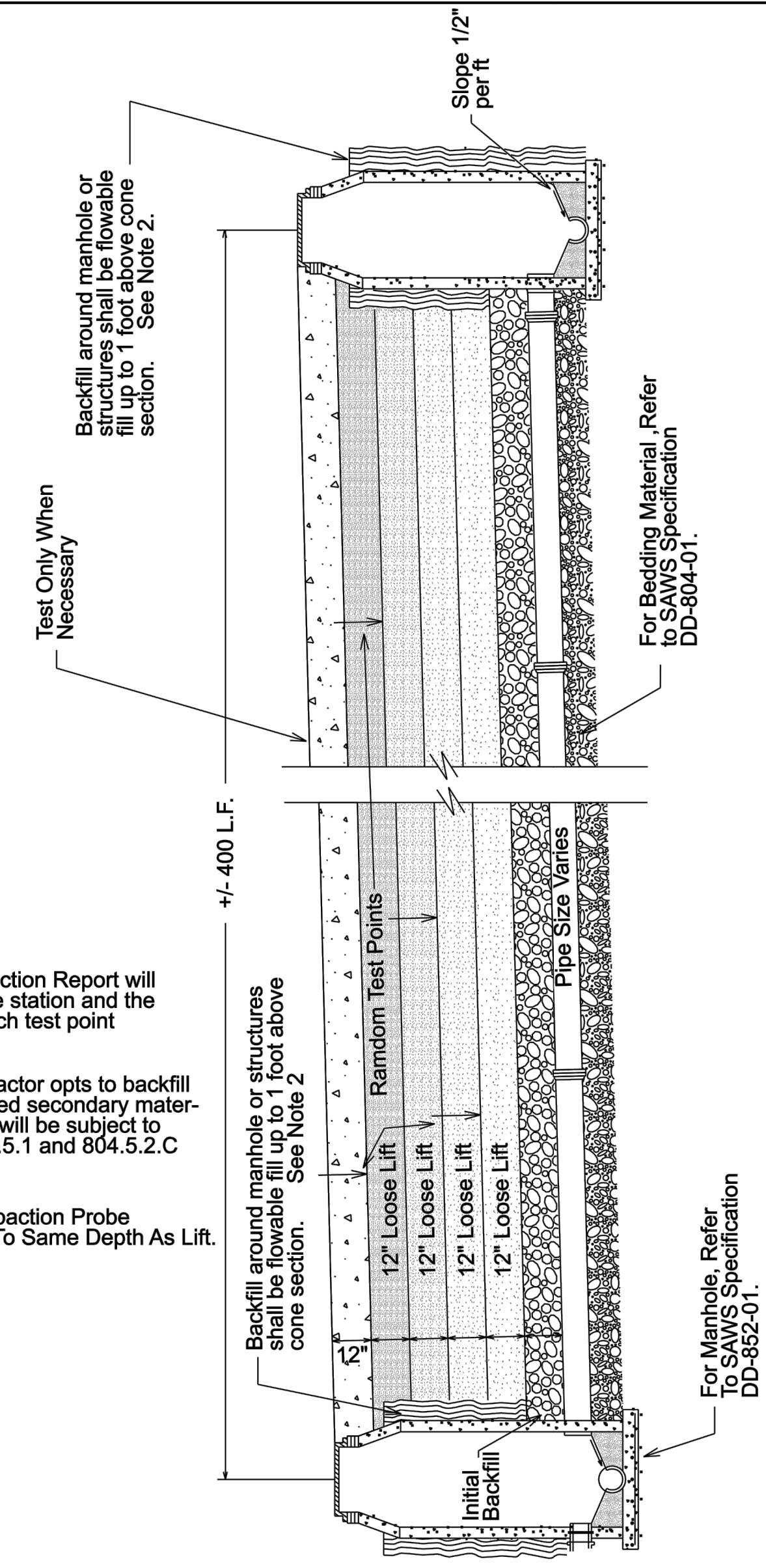
In areas of over excavation, encasement shall extend from trench wall to trench wall. Pay Limits shall not exceed 12" max. as shown on detail. Additional encasement shall be incidental.

** Min 2" HMAC Type "D" for trench repair in Local / Residential streets.

** Min 3" HMAC Type "C" for trench repair in Collector / Arterial streets.

PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	SANITARY SEWER PIPE LAID IN TRENCH	APPROVED MARCH 2008	REVISED APRIL 2014
DD-804-01		SHEET 1 OF 1	

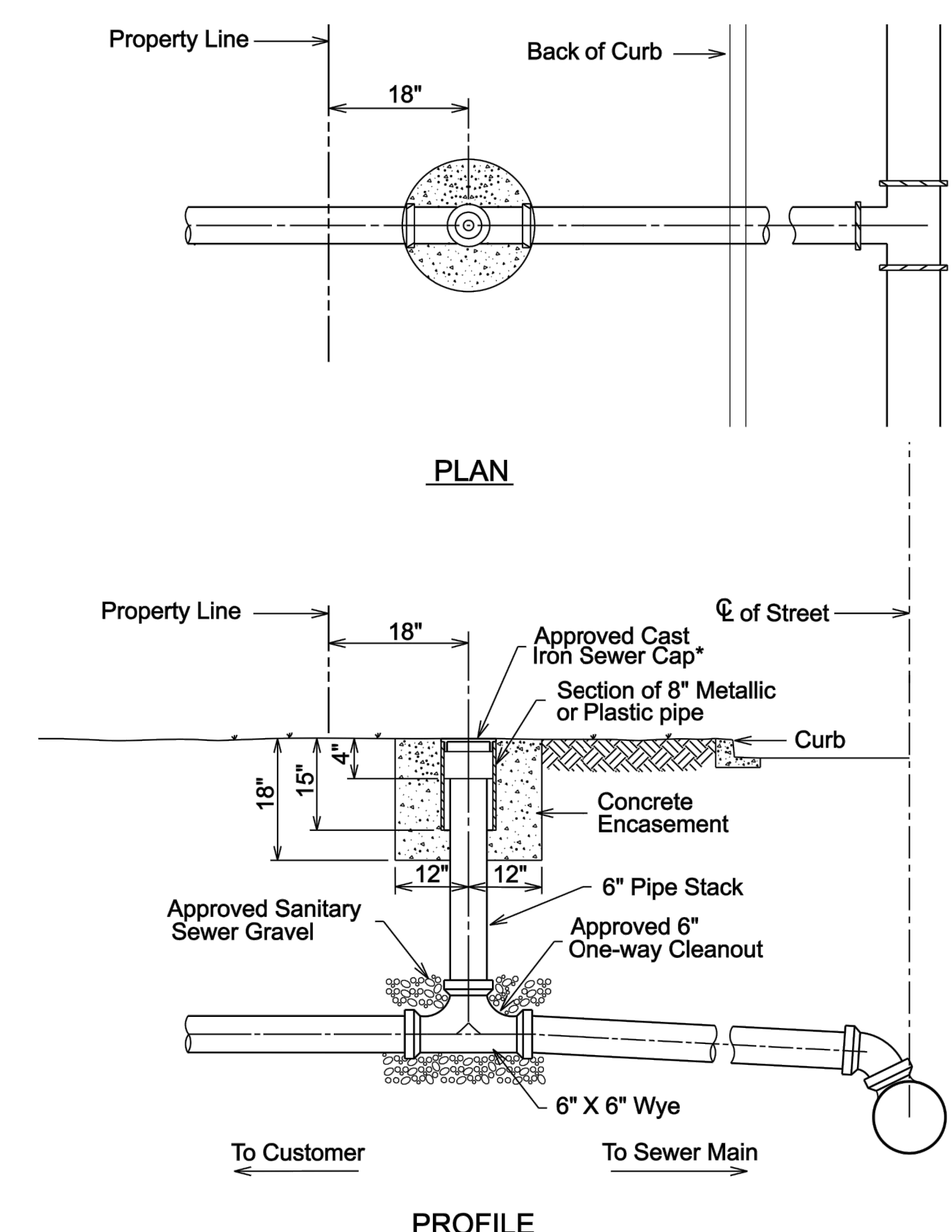
1
-
SANITARY SEWER PIPE LAID IN TRENCH & PAVEMENT REPAIR (FOR POINT REPAIRS)
NOT TO SCALE



NOTES:
1. The Compaction Report will indicate the station and the depth of each test point
2. When Contractor opts to backfill with approved secondary material, all work will be subject to section 804.5.1 and 804.5.2.C & 2.D.
3. Insure Compaction Probe Penetrates To Same Depth As Lift.

PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	TRENCH COMPACTION DETAIL	APPROVED MARCH 2008	REVISED APRIL 2014
DD-804-02		SHEET 1 OF 1	

2
-
TRENCH COMPACTION DETAIL (FOR POINT REPAIRS)
NOT TO SCALE



PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	TYPICAL CLEANOUT DETAIL	APPROVED MARCH 2008	REVISED APRIL 2014
DD-854-02		SHEET 2 OF 2	

3
-
TYPICAL CLEANOUT DETAIL
NOT TO SCALE

Date: 10/23/2014
Designed by: DTB
Drawn by: DDH
Checked by: BCJ
Scale: N.T.S.

FREES & NICHOLS
4040 Broadway Street, Suite 600
San Antonio, Texas 78209-6350
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Fax - (210) 298-3801

SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 14-4508 (SS)
SAN ANTONIO RIVER OUTFALL PIPELINE,
PROJECT NO. 2A
TRENCHING, COMPACTION
& SS CLEANOUT DETAILS

No.	Date	Revisions	App.	DTB
10/24	10/24	ADDENDUM NO. 1 - NEW SHEET		

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

DAVID T. BENNETT
101935
PROFESSIONAL ENGINEER
10-24-14

Freese And Nichols, Inc.
Job No. SWB11467

Date:	10/23/2014
Designed by:	DTB
Drawn by:	MKV
Checked by:	
Scale:	N.T.S.

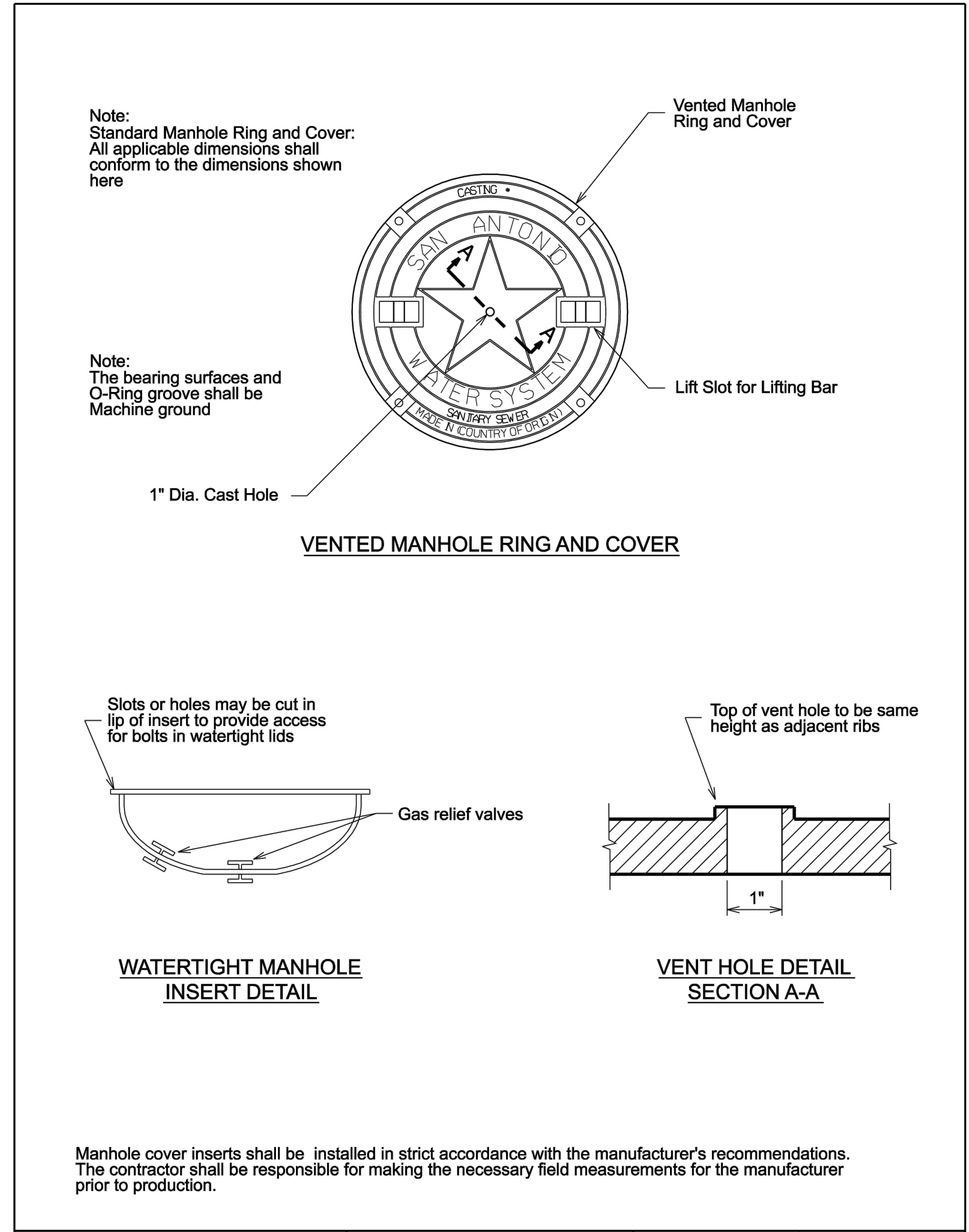
FREES & NICHOLS
4040 Broadway Street, Suite 600
San Antonio, Texas 78209-6350
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Fax - (210) 298-3801

SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 14-4508 (SS)
SAN ANTONIO RIVER OUTFALL PIPELINE,
PROJECT NO. 2A
MANHOLE DETAILS

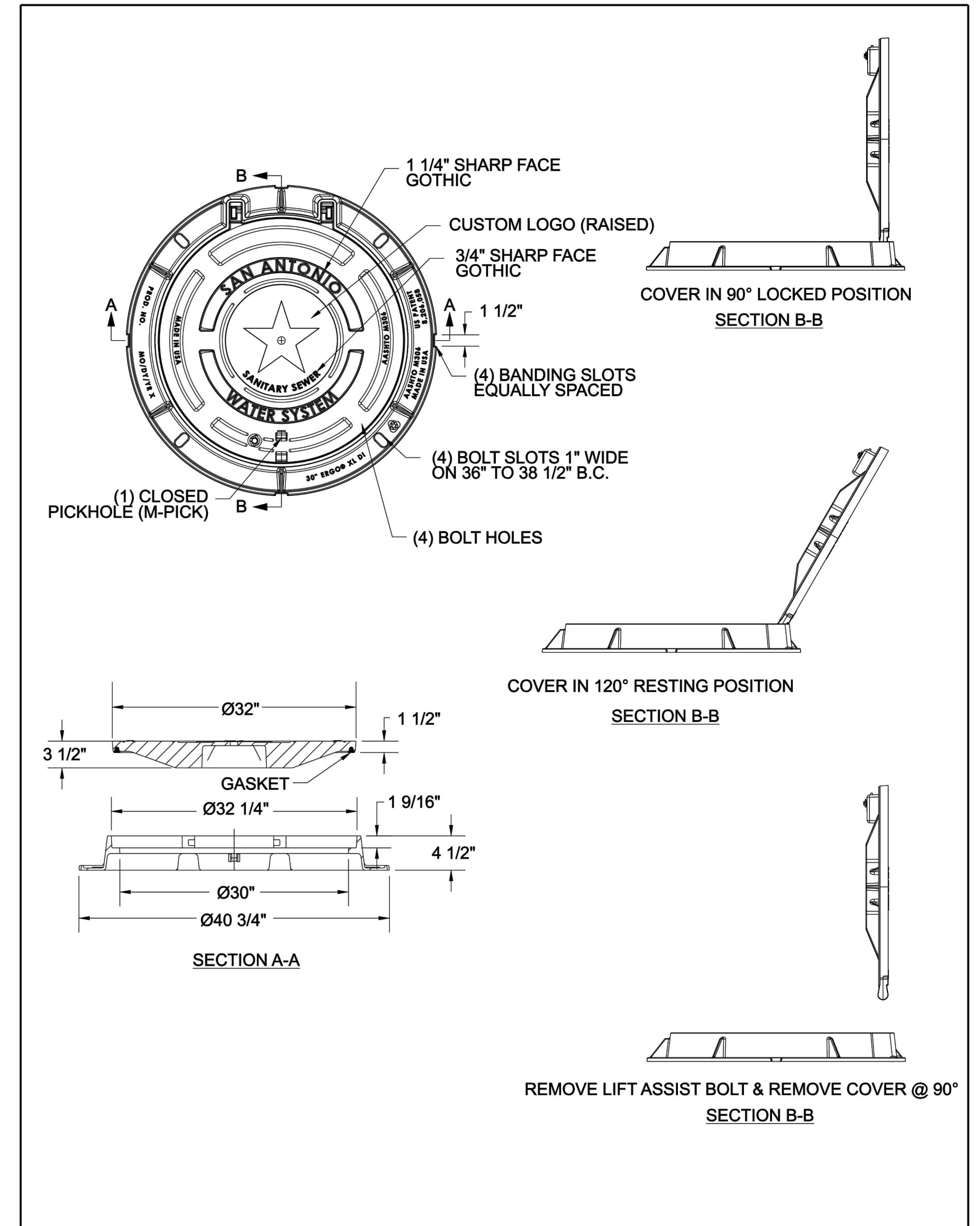
NOTES:

- VENTED MH RING AND COVER (PER DETAIL 1 - THIS SHEET) INSTALLED AT THE FOLLOWING MH LOCATIONS:
 - STA. 112+06.54
 - STA. 132+35.26
 - STA. 141+45.45
- WATER TIGHT MANHOLE RING & COVER (PER DETAIL 2 - THIS SHEET) SHALL BE INSTALLED IN ALL PAVED AREAS AND WITHIN 100-YR FLOODPLAIN.



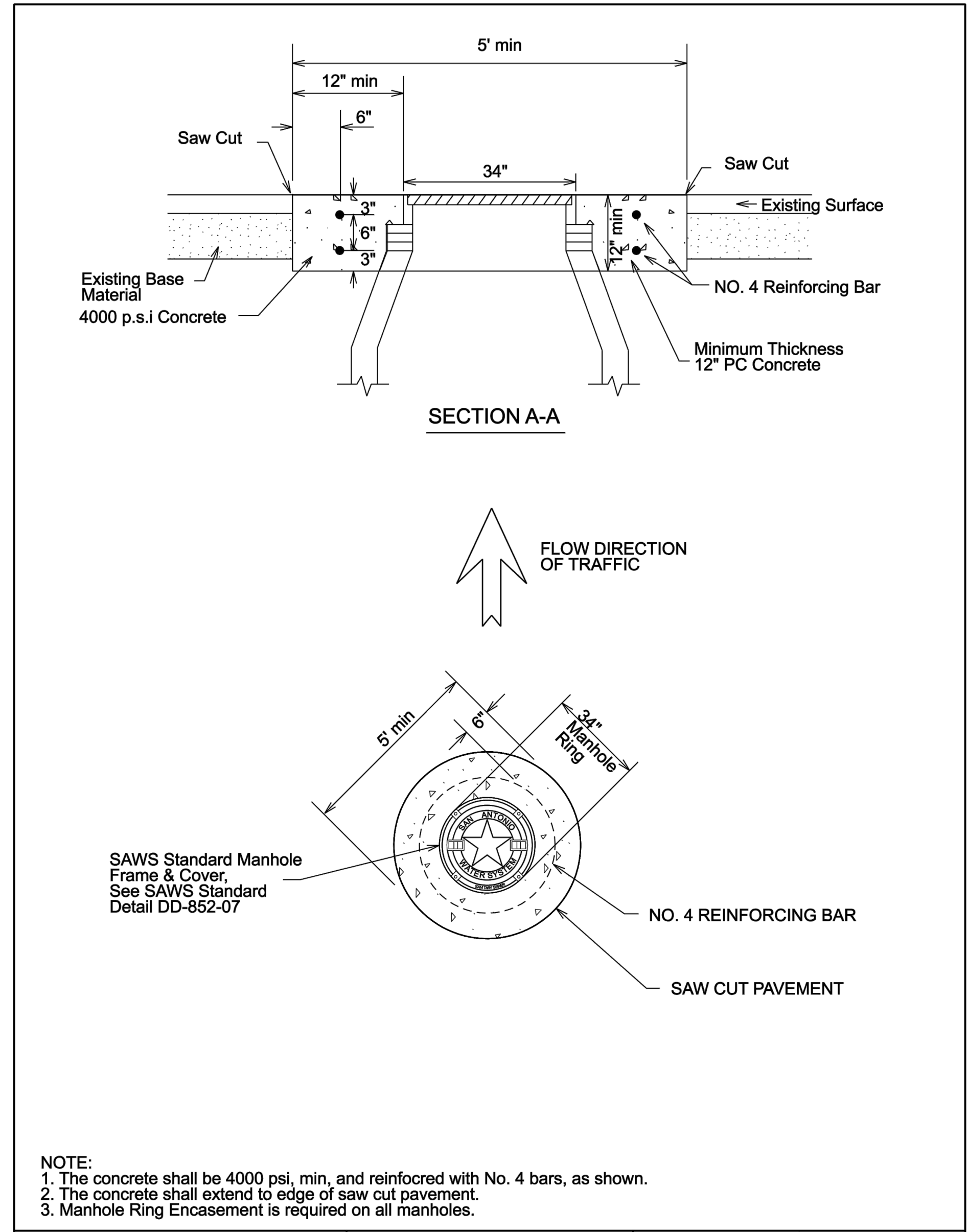
PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	VENTED MANHOLE RING AND COVER DETAIL (WHEN SPECIFIED)	APPROVED JANUARY 2005	REVISED APRIL 2014	DD-852-02	SHEET 1 OF 1
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1 VENTED MANHOLE RING AND COVER DETAIL
NOT TO SCALE



PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	WATER TIGHT MANHOLE RING & COVER DETAIL	APPROVED APRIL 2014	REVISED	DD-852-07	SHEET 2 OF 2
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2 WATER TIGHT MANHOLE RING & COVER DETAIL
NOT TO SCALE



PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	MANHOLE RING ENCASEMENT DETAIL	APPROVED AUGUST 2009	REVISED APRIL 2014	DD-852-03	SHEET 1 OF 2
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3 MANHOLE RING ENCASEMENT DETAIL
NOT TO SCALE