West Sewershed Package 1
Solicitation Number: CO-00196
Job No.: 17-4546

ADDENDUM 4

September 19, 2018

To Bidder of Record:

This addendum, applicable to work referenced above, is an amendment to the bid proposal, plans and specifications and as such will be a part of and included in the Contract Documents. Acknowledge receipt of this addendum by entering the Addendum number and issue date on the space provided in submitted copies of the bid proposal.

RESPONSES TO QUESTIONS

1. **Question: The Owner currently has a large project, Multiple Sewer shed Package 5 due 9/17/18. The bidders (prime & subcontractor) for this project, West Sewer shed Package 1, will most likely be the same as those working on Package 5. To allow all bidders (prime & subcontractor) the adequate time to review the documents, conduct site visits, and generate the most competitive pricing possible, will the Owner please consider moving the bid due date for Package 1 to September 28th?**

   Response: Deadline for Bids has been extended. Please refer to Addendum 3.

2. **Question: Will the Owner/Engineer please confirm the budget for this project?**

   Response: See Clarification No. 1 in this Addendum. The Engineer's opinion of probable construction cost for the project is $6,520,765.

3. **Question: Will the Owner/Engineer please provide any previous itemized bid tabulations for projects of similar scope?**

   Response: Bid tabulations of previous SAWS project of similar scope can be found on the SAWS website at the following link. https://www.saws.org/business_center/ContractSol/archive.cfm

4. **Question: Will the Owner/Engineer please provide the anticipated NTP date for this project?**

   Response: It is anticipated that the SAWS Board of Trustees will consider the award of a contract for this project at their regular scheduled meeting on November 6, 2018. If a contract is awarded, notice to proceed would follow the execution of contract and conducting a preconstruction meeting with the successful Contractor. The NTP date could occur near January 2, 2019.

5. **Question: Can you confirm if there are any prevailing wage requirements for this job?**

   Response: Yes, prevailing wage requirements are required for this project. Bidders should reference the wage decisions within the specifications.

6. **Question: Due to the magnitude of the projects, I would like to formally request an extension of the bid date for the Multiple Sewershed Package 2A. An addendum came out the day before a holiday weekend.**

   West Sewershed package 1 & also Multiple Sewershed package 5 should be extended if possible too.

   Response: See response to Question No. 1 above.

7. **Question: Can the deadline for questions be extended?**

   Response: The deadline for Contractor questions will not be extended.

8. **Question: Can the Bid date be postponed?**

   Response: See response to Question No. 1 above.

9. **Question: Can SAWs provide pipe slope/grade of the existing lines?**

   Response: As shown on the project drawings for the 54" and 66" sewer lines, the invert elevations of the existing manholes and structures and slopes of the existing lines are as follows:

54" Sewer Line	*Invert Elevation*	*Slope*
MH 948069	*Out: 581.24'*	
		0.26%
MH 47165	*In: 577.76'* *Out: 577.76'*	
		0.18%
MH 33943	*In: 576.27'* *Out: 576.27'*	
		0.28%
MH 4587	*In: 572.21'*	

66" Sewer Line	*Invert Elevation*	*Slope*
MH 31664	*Out: 580.59'*	
		0.29%
MH 1520	*In: 579.11'* *Out: 578.91'*	
		0.19%
MH 47166	*In: 575.65'* *Out: 575.54'*	
		0.17%
MH34239	*In: 574.27'* *Out: 574.17'*	
		0.24%
MH 4587	*In: 572.50'*	

10. **Question: Please clarify sewer section note 28 on page 2 of the plans regarding flow protection during a flood event. There is not detail, procedure, etc. identifying the exact intent.**

    Response: The intent and/or expectation of note 28 on page 2 and note 3 on page 14 is that the Contractor is to determine the means and methods for providing temporary protection of open manholes and structures during construction activities to prevent storm waters from entering the sanitary sewer structures or manholes for a 100-year flood event. For example, the Contractor could build a berm to the base elevation of the 100-year flood plain around the sanitary sewer structures or manholes to provide the intended temporary protection. Clarification is also provided on revised Plan Sheets 2 and 14 included with this addendum.

11. **Question: The project bid date is in conflict with Multiple Pkg. 5. This conflict will hinder what may otherwise be responsible bidding. Will you postpone the bid date for this project allowing for a reasonable time gap from the Multiple Pkg. 5 bid date?**

    Response: See response to Question No. 1 above.

12. **Question: Will the contractor be allowed to diverted flow to the parallel sewer during dry weather flow conditions?**

    Response: Yes, the Contractor will be allowed to divert to the parallel sewer line during dry and wet weather flow conditions. See revised plan sheet 16, included in this addendum, for limitations.

13. **Question: Structures in the flood plain. What is the expectation of remedy to prevent flood water from entering a sewer structure where the top has been removed?**

    Response: See response to Question No. 10 above.

14. **Question: Are there video inspections available of the pipelines? If so, please make them available to the bidders for review as soon as possible.**

    Response: See Clarification No. 2 in this Addendum.

15. **Question: Since the individual 54" & 66" pipe segments on this project are quite long, which will require CIPP installations in excess of 1,000 LF, we recommend that the bidder be required to show experience with CIPP installs in excess of 1,000 LF in 54" diameter or larger pipe on the Statement of Bidder's Experience form, similar to what is currently required on the upcoming bid for Multiple Sewershed Package 2A.**

    Response: The statement of Bidding Experience form will not be changed.

16. **If the contract duration for performing the project is 300 calendar days, then why are all the ROE agreements only good for 90 days, especially give that all the work and all the access to the work is located in those private properties?**

    Response: SAWS will extend the ROE agreements with the property owners associated with the project as necessary.

17. **Question: Note 4 on drawing sheet 6 says that the removal, protection & reinstallation of the cone on MH 31664 is to be done as No Separate Pay Item (NSPI). Similarly, Note 9 on drawing sheet 15 says that the removal, protection & reinstallation of the lid on the siphon inlet box (MH 4587) is to be done as NSPI. However, both MH 31664 and MH 4587 are called out to be reconstructed, which would be paid under items 19 & 20 (spec 855). Please clarify.**

    Response: Note 4 on drawing sheet 6 has been modified by this addendum to delete reference to MH 31664. Also, note 9 on drawing sheet 15 has been modified by this addendum to delete reference to the siphon inlet box (MH4587).

18. **Question: Where manholes are shown to be reconstructed on drawing sheets 6 – 14, they reference the details on drawing sheets 33 & 34, but per the detail on drawing sheet 35, it appears that most of these manholes will also require a vent to be installed. Should the detail on drawing sheet 35 also be referenced on the Engineering Plan pages at the manholes where a vent is being installed?**

    Response: Concerning manholes to be reconstructed, the sheet drawings have been modified by this addendum to include reference to the vent details on drawing sheet 35.

19. **Question: For the manholes & siphon inlet structure being reconstructed under bid items 19 & 20 (spec 855), please clarify what portions of the manholes and the structure are required to be removed & replaced.**

    What portions of the manholes and the structure are required to be removed & replaced by SAWS as a necessary permanent improvement to the structure, regardless of the access needs for CIPP?

    From the details and notes on drawing sheets 34 & 35, it appears that only the flat top lids and all portions above the lids are required to be removed and replaced for all the reconstructed manholes and the siphon inlet structure, but not the entire structure. However, in the mandatory pre-bid meeting, it was mentioned that if CIPP did not require expanded access to a MH, then no portions of that MH would need to be removed and replaced, but this instruction seems to be in direct conflict with the specs and drawings.

    The Special Provisions for section 855.1 indicate that it includes the MH rings & covers, the cones, the MH and siphon inlet structure section(s), and concrete / reinforced concrete lids, but since all parts of a manhole or structure can be considered to be a section, the Special Provisions could be interpreted to require the entire manhole or structure to be replaced.

    Response: First, concerning the 54" and 66" manholes being rehabilitated under bid item 19, and regardless of the access needs for CIPP, the portions of the manhole above the flat top lid are required to be removed and replaced. Removal and replacement of the flat top lid is only anticipated to be required if needed for CIPP access and accomplished in accordance with the details provided on sheets 34 and 35.

    Second, concerning the siphon inlet structure (MH 4587) being rehabilitated under bid item 20, it is intended that the inlet structure's reinforced concrete lid be removed and replaced in accordance with the details provided on drawing sheets 34 and 35.

    Oral statements made at the pre-bid meeting are not binding and Bidders should refer to the plans and specifications when preparing their bid for this project.

    It is not the intent of the Special Provisions to Specification 855 to require the replacement of the entire manhole or siphon inlet structure.

20. **Question: For the reconstruction of the siphon inlet structure (MH 4587), will the floor of the structure be required to be coated as part of the rehabilitation?**

    Response: No, the floor of the siphon inlet structure (MH 4587) will not require coating as part of the reconstruction.

21. **Question: Please confirm that the reconstructed siphon inlet structure (MH 4587) will not be required to be leakage tested.**

    Response: SAWS will not require leakage testing of the reconstructed siphon inlet structure (MH 4587). The siphon inlet structure will be visually inspected by SAWS representative(s) and/or other practical means employed by SAWS to ensure that the structure does not leak.

22. **Question: There are two areas on the project where blading and base course are called out to be performed and placed to establish access roads. One location is called a temporary access road on the drawings, while the other is referred to as an upgrade to an existing road. Will both of these access roads be required to be removed at the completion of the project, or will one or both of them remain as permanent improvements? Please clarify.**

    Response: The improvements made to the existing gravel road (south of Loop 410) will remain as permanent improvements. Concerning the temporary access road (north side of Loop 410) it is the intent that this temporary access road be removed at the completion of the project. Clarification is also provided on revised Plan Sheet 4 included with this addendum.

23. **Question: Drawing sheet 24 shows proposed weir walls that it appears were originally planned to be built in the siphon inlet box (MH 4587), but from our site survey, we were not able to see any evidence of these weir walls existing. In the pre-bid meeting, it was mentioned that they were indeed constructed in the structure. Is there any information on their current condition - are they still viable? If the weir walls do still exist, do they need to be removed? The bypass plans reference building temporary flow diversion walls within this structure. Will these temporary walls be required to be removed at the end of the project? Will any permanent walls be required to be built in this structure for this project?**

    Response: We agree that no evidence can be seen to indicate that weir walls currently exist in the siphon inlet box (MH 4587). If weir walls or portions of weir walls exist, they shall be removed by the Contractor. Temporary flow diversion within the structure will be required to be removed at the end of the project by the Contractor. No permanent walls are required to be built within the siphon inlet box for this project. Plan sheet 24 has been revised to provide additional clarification and is provided with this addendum.

24. **Question: The details of the siphon inlet box (MH 4587) on drawing sheet 24 show a 4th pipe exiting that structure that is called out as a gravity 54" pipe, but this pipe is not shown exiting this structure on the Engineering Plans. Does this gravity 54" pipe exist in this structure, and if so, what is its alignment after leaving the structure?**

    Response: There is not an existing fourth (4^{th}) 54" pipe exiting the siphon inlet box (MH4587). The 54" pipe called out on the detail is the 54" gravity line entering the structure. Refer to revised plan sheet 24 that is provided with this addendum for further clarification.

25. **Question: There is a manhole detail shown on page 48 of the pre-bid presentation document that is not provided in the drawings. If this detail is applicable to the manhole reconstruction work, please provide it as part of the bid documents.**

    Response: The manhole detail is based on record drawings associated with the 66" sanitary sewer line. Refer to plan sheets 38 and 39 provided with this addendum for the record drawing associated with the manhole detail associated with the 54" and 66" sanitary sewer lines. The manhole detail in the pre-bid presentation is not part of the contract documents and Bidders should only reference plan sheet 38 and 39 with this Addendum to assist in preparing a bid.

CHANGES TO THE SPECIFICATIONS

1. Remove the General Wage Decision for Building Type: Number TX180280 08/03/2018 TX280 in its entirety and replace with the revised version TX180280 09/14/2018 TX280. Provided in this addendum.

CHANGES TO THE PLANS

1. Remove Sheets 1 through 37 in their entirety and replace with Sheets 1 through 37 provided in this addendum.
2. Add Sheets 38 and 39 provided in this addendum to the plans.

CLARIFICATIONS

1. The Engineer's Opinion of Probable Construction Cost for this project has been revised. The current Opinion of Probable Construction Cost is $6,520,765.
2. *Video inspections of the pipelines are available for download. To access the videos the bidder must complete and submit the attached release form; the password required to view the videos will be provided on receipt of this form. Please submit the form to Stella Manzello, Contract Administrator, via email to: Stella.Manzello@saws.org or by fax to (210) 233-4466. NOTE: These videos are provided for information purposes only, and are not included in the bid documents. The deterioration is an ongoing process, so the condition at the time of construction may be substantially different from that shown in the videos.*

END OF ADDENDUM

This Addendum, including these six (6) pages, is fifty-three (53) pages with attachments in its entirety.
Attachments:

- General Wage Decision for Build Type
- SAWS Disclaimer
- Plans – Sheets 1 through 39

David Weikel
Trihydro Corporation

General Decision Number: TX180280 09/14/2018 TX280

Superseded General Decision Number: TX20170280

State: Texas

Construction Type: Building

County: Bexar County in Texas.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018
1	01/12/2018
2	03/23/2018
3	04/20/2018
4	07/06/2018
5	08/03/2018
6	09/14/2018

ASBE0087-014 01/01/2018

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR (Duct, Pipe and Mechanical System Insulation)	$ 22.72	10.02

BOIL0074-003 01/01/2017

	Rates	Fringes
BOILERMAKER	$ 28.00	22.35

ELEC0060-003 06/01/2016

	Rates	Fringes
ELECTRICIAN (Communication Technician Only)	$ 21.57	9%+4.65

ELEC0060-004 06/01/2018

	Rates	Fringes
ELECTRICIAN (Excludes Low Voltage Wiring)	$ 28.30	13%+5.05

ELEV0081-001 01/01/2018

	Rates	Fringes
ELEVATOR MECHANIC	$ 39.32	32.645+a+b

FOOTNOTES:

A. 6% under 5 years based on regular hourly rate for all hours worked. 8% over 5 years based on regular hourly rate for all hours worked.

B. Holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Friday after Thanksgiving Day; Christmas Day; and Veterans Day.

ENGI0450-002 04/01/2014

	Rates	Fringes
POWER EQUIPMENT OPERATOR Cranes	$ 34.85	9.85

* IRON0066-013 09/01/2018

	Rates	Fringes
IRONWORKER, STRUCTURAL	$ 22.05	6.73

* IRON0084-011 06/01/2018

	Rates	Fringes
IRONWORKER, ORNAMENTAL	$ 23.77	7.12

PLUM0142-009 07/01/2017

	Rates	Fringes
HVAC MECHANIC (HVAC Electrical Temperature Control Installation Only)	$ 30.25	11.80
HVAC MECHANIC (HVAC Unit Installation Only)	$ 30.25	11.80
PIPEFITTER (Including HVAC		

Pipe Installation)	$ 30.25	11.80
PLUMBER (Excludes HVAC Pipe Installation)	$ 30.25	11.80

SFTX0669-002 04/01/2017

	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers)	$ 29.03	15.84

SHEE0067-004 04/01/2018

	Rates	Fringes
Sheet metal worker		
Excludes HVAC Duct Installation	$ 26.35	15.29
HVAC Duct Installation Only	$ 26.10	15.25

SUTX2014-006 07/21/2014

	Rates	Fringes
BRICKLAYER	$ 22.15	0.00
CARPENTER (Acoustical Ceiling Installation Only)	$ 17.83	0.00
CARPENTER (Form Work Only)	$ 13.63	0.00
CARPENTER, Excludes Acoustical Ceiling Installation, Drywall Hanging, Form Work, and Metal Stud Installation	$ 16.86	4.17
CAULKER	$ 15.00	0.00
CEMENT MASON/CONCRETE FINISHER	$ 22.27	5.30
DRYWALL FINISHER/TAPER	$ 13.81	0.00
DRYWALL HANGER AND METAL STUD INSTALLER	$ 15.18	0.00
ELECTRICIAN (Low Voltage Wiring Only)	$ 20.39	3.04
IRONWORKER, REINFORCING	$ 12.27	0.00
LABORER: Common or General	$ 10.75	0.00
LABORER: Mason Tender - Brick	$ 11.88	0.00
LABORER: Mason Tender - Cement/Concrete	$ 12.00	0.00

LABORER: Pipelayer	$ 11.00	0.00
LABORER: Roof Tearoff	$ 11.28	0.00
LABORER: Landscape and Irrigation	$ 8.00	0.00
OPERATOR: Backhoe/Excavator/Trackhoe	$ 15.98	0.00
OPERATOR: Bobcat/Skid Steer/Skid Loader	$ 14.00	0.00
OPERATOR: Bulldozer	$ 14.00	0.00
OPERATOR: Drill	$ 14.50	0.00
OPERATOR: Forklift	$ 12.50	0.00
OPERATOR: Grader/Blade	$ 23.00	5.07
OPERATOR: Loader	$ 12.79	0.00
OPERATOR: Mechanic	$ 18.75	5.12
OPERATOR: Paver (Asphalt, Aggregate, and Concrete)	$ 16.03	0.00
OPERATOR: Roller	$ 12.00	0.00
PAINTER (Brush, Roller and Spray), Excludes Drywall Finishing/Taping	$ 13.07	0.00
ROOFER	$ 12.00	0.00
TILE FINISHER	$ 11.32	0.00
TILE SETTER	$ 14.94	0.00
TRUCK DRIVER: Dump Truck	$ 12.39	1.18
TRUCK DRIVER: Flatbed Truck	$ 19.65	8.57
TRUCK DRIVER: Semi-Trailer Truck	$ 12.50	0.00
TRUCK DRIVER: Water Truck	$ 12.00	4.11

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave

for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

DISCLAIMER

The video clips being provided through the FTP site are for the West Sewershed Package 1 project. Since these videos have been compiled over a period of time, many of the images may be outdated and no longer accurate. The video clips are being made available for the sole purpose of providing historical background information that may assist Respondents in preparing their response to this solicitation. As planning for any project evolves, important aspects often change. This project is no exception. SAWS makes no representations about the accuracy of this information and disclaims any responsibility for its use.

The FTP details will be provided upon return of this form.

AGREED TO:

_____

Printed Name

_____

Signature

_____

Typed/Printed Firm Name

Date: _____

SAN ANTONIO WATER SYSTEM

JOB NO: 17-4546

WEST SEWERSHED PACKAGE 1

SANITARY SEWER

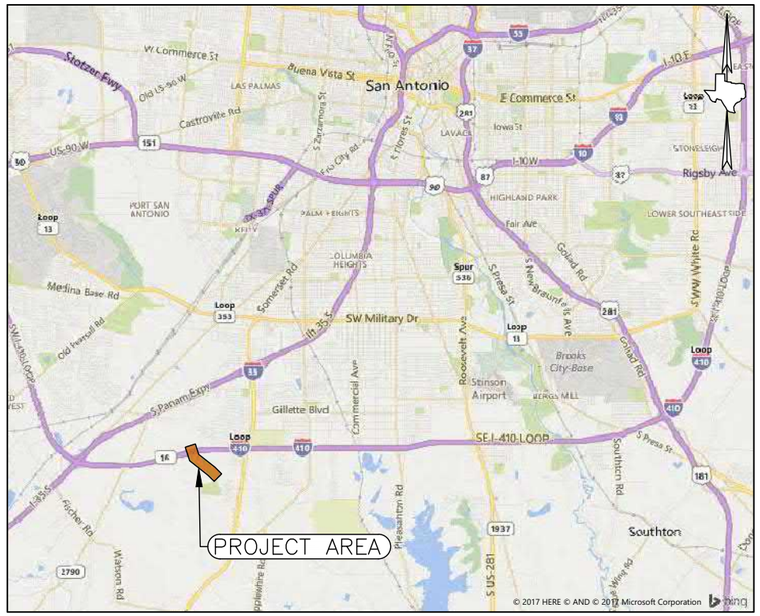
100% DESIGN SET

ADDENDUM 4

WEST SEWERSHED PACKAGE 1 INDEX OF SHEETS	
SHEET NUMBER	**SHEET TITLE**
1	COVER
2	NOTES
3	EXPLANATION
4	QUANTITY SUMMARY
5	OVERALL PROJECT MAP
6	SANITARY SEWER ENGINEERING PLAN 1 OF 9
7	SANITARY SEWER ENGINEERING PLAN 2 OF 9
8	SANITARY SEWER ENGINEERING PLAN 3 OF 9
9	SANITARY SEWER ENGINEERING PLAN 4 OF 9
10	SANITARY SEWER ENGINEERING PLAN 5 OF 9
11	SANITARY SEWER ENGINEERING PLAN 6 OF 9
12	SANITARY SEWER ENGINEERING PLAN 7 OF 9
13	SANITARY SEWER ENGINEERING PLAN 8 OF 9
14	SANITARY SEWER ENGINEERING PLAN 9 OF 9
15	SUGGESTED BY-PASS PUMPING PLAN
16	SUGGESTED BY-PASS PUMPING PLAN NOTES
17	ACCESS ROAD IMPROVEMENT PLAN
18	TRAFFIC CONTROL PLAN
19	TRAFFIC CONTROL AREA DETAILS
20	TRAFFIC CONTROL CONVENTIONAL ROAD SHOULDER WORK DETAILS
21	TREE PRESERVATION PLAN
22	TREE PRESERVATION DETAILS
23	MH948069 (EXISTING JUNCTION BOX 1) DETAILS
24	MH4587 (EXISTING SIPHON INLET ~~AND OUTLET~~ BOX) DETAILS
25	MH948067 (EXISTING JUNCTION BOX 2) LID DETAILS
26	MH948067 (EXISTING JUNCTION BOX 2) BEAM DETAIL
27	GATE DETAILS
28	FENCE DETAILS
29	CONSTRUCTION EXIT DETAILS
30	SWPPP DETAILS (1 OF 2)
31	SWPPP DETAILS (2 OF 2)
32	SWPPP NOTES
33	SANITARY SEWER STRUCTURE RECONSTRUCTION DETAILS
34	SANITARY SEWER STRUCTURE RECONSTRUCTION NOTES
35	SANITARY SEWER STRUCTURE VENT INSTALLATION DETAIL
36	TRENCH BACKFILL DETAILS (NON PAVEMENT)
37	TRENCH BACKFILL DETAILS (PAVEMENT)
38	EXISTING 54-INCH MANHOLE STANDARD DETAILS
39	EXISTING 66-INCH MANHOLE STANDARD DETAILS

4

4



1 PROJECT LOCATION MAP
SCALE: NONE

Trihydro CORPORATION
Texas Engineering Firm F-131
Texas Survey Firm 10194320
1011 West County Line Road
New Braunfels, Texas 78130
(P) 210/298.5030 (F) 830/626.3544
www.trihydro.com

TRIHYDRO PROJECT NO. 702-557-E00

STATE OF TEXAS
ATLAN DAVID WEIKEL
57027
REGISTERED
PROFESSIONAL ENGINEER
9/17/18

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ATLAN DAVID WEIKEL, REGISTERED P.E. NO. 57027, September 18, 2018. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

SITE DIAGRAM FOR JOB No.: 17-4546

JOB TITLE: 2017 PIPELINE ENGINEERING SERVICES PACKAGE VI
WEST SEWERSHED PACKAGE 1

4

M:\STO\V_SAWS_CADD_17--4546_WESTSEWERSHEDP1_PLANSETS\702--WSP1_COVER SHEET

SAWS GENERAL CONSTRUCTION NOTES:

GENERAL SECTION

1. 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 Plans, Specifications, General Conditions and with the following as applicable:

   A. Current Texas Commission on Environmental Quality (TCEQ) "Design Criteria for Domestic Wastewater System", Texas Administrative Code (TAC) Title 30 Part 1 Chapter 217 and "Public Drinking Water", TAC Title 30 Part 1 Chapter 290.
   B. Current TXDOT "Standard Specifications for Construction of Highways, Streets and Drainage."
   C. Current "San Antonio Water System Standard Specifications for Water and Sanitary Sewer Construction."
   D. Current City of San Antonio "Standard Specifications for Construction."
   E. Current City of San Antonio "Utility Excavation Criteria Manual" (UECM).

2. The Contractor shall obtain SAWS Standard Details from SAWS website, http://www.saws.org/business_center/specs. Unless otherwise noted within design plans.

3. The Contractor is to notify and make arrangements with the SAWS Construction Inspection Division at 210-233-3500, and provide notification procedures the contractor will use to notify affected home residents and/or property owners 72 hours prior to excavation.

4. Locations and depths of existing utilities and service laterals shown on the plans are understood to be approximate. Actual locations and depths must be field verified by the Contractor at least 1 week prior to construction. It shall be the Contractor's responsibility to locate utility service lines as required for construction and to protect them during construction at no cost to SAWS.

5. The Contractor shall verify the exact location of underground utilities and drainage structures at least 1-2 weeks prior to construction whether shown on plans or not. Please allow up to 7 business days for locates requesting pipe location markers on SAWS facilities. The following contact information are supplied for verification purposes:

   San Antonio Water System:
   SAWS Utility Locates: http://www.saws.org/Service/Locates
   COSA Drainage 210-207-8052
   COSA Traffic Signal Operations 210-207-7720
   Texas State Wide One Call Locator 1-800-545-6005 or 811

6. The Contractor shall be responsible for restoring existing fences, curbs, streets, driveways, sidewalks, landscaping and structures to its original or better condition as a result of damages done by the project's construction.

7. All work in Texas Highway Department and Bexar County right-of-way shall be done in accordance with respective construction specifications and permit.

8. The Contractor shall comply with City of San Antonio or other governing Municipality's tree ordinances when excavating near trees.

9. The Contractor shall not place any waste materials in the 100-year Flood Plain without first obtaining an approved Flood Plain Permit.

10. 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, rights-of-way, and floodplains.

11. The Contractor shall notify Storm Water Engineering at 210-207-8052 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.

12. 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 as soon as conflicts with utilities are encountered or any drainage system is damaged during construction.

13. 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.

14. 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.

15. Upon completion of trenching, the area will be backfilled and compacted to its original condition. Trenches/bore pits to be 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.

16. Any work completed without prior written authorization which is not included in these plans and specifications will not be compensated by the San Antonio Water System.

17. Holiday Work: Contractors will not be allowed to perform SAWS work on SAWS recognized holidays. Request should be sent to constworkreq@saws.org.

    Weekend Work: Contractors are required to notify the SAWS Inspection Construction department 48 hours in advance to request weekend work. Request should be sent to constworkreq@saws.org.

    Any and all SAWS utility work installed without holiday/weekend approval will be subject to be uncovered for proper inspection.

GENERAL SECTION (CONTINUED)

18. PRE CON SITE VIDEO: Before the start of any construction. The site must be video recorded by the contractor with one copy submitted to SAWS Inspections. A pre-site video will provide accurate documentation of the existing conditions (NSPI).

19. POWER POLE BRACING: Contractors should be advised that there are existing overhead utility poles along the project corridor. Contractors should further be advised that if the distance from the outside face of a utility trench to the face of a utility pole is less than 5 feet, said utility pole is subject to bracing, based on a determination made by utility pole owner. Costs incurred by contractor for bracing of these utility poles is subsidiary to that respective utility company's work. It is advisable for the contractor to review the construction documents, and visit the construction site to determine potential impacts.

20. CONSTRUCTION SEQUENCING: It is the contractor's sole responsibility to schedule sequencing for removal and installation of existing and proposed SAWS utilities in conjunction with general project construction. Sequence of construction activities shall be considered in order to minimize the extent and duration of disturbances.

SEWER SECTION:

21. The Contractor is responsible for ensuring that no sanitary sewer overflow (SSO) occurs as a result of their work. All contractor personnel responsible for SSO prevention and control shall be trained on proper response. Should an SSO occur, the contractor shall:

    A. Identify the source of the SSO and notify SAWS Emergency Operations Center (EOC) immediately at 210-704-SAWS (210-704-7297). Provide the address of the spill and an estimated volume or flow.
    B. Attempt to eliminate the source of the SSO.
    C. Contain sewage from the SSO to the extent of preventing a possible contamination of waterways.
    D. Clean up spill site (return contained sewage to the collection system if possible) and properly dispose of contaminated soil/materials.
    E. Clean the affected sewer mains and remove any debris.
    F. Meet all post-SSO requirements as per the EPA Consent Decree, including line cleaning and televising the affected sewer mains (at SAWS direction) within 24 hours.

    Should the Contractor fail to address an SSO immediately and to SAWS satisfaction, they will be responsible for all costs incurred by SAWS, including any fines from EPA.

    No separate measurement or payment shall be made for this work. All work shall be done according to guidelines set by the TCEQ and SAWS.

22. The Contractor shall provide bypass pumping of sewage around each segment of pipe to be replaced, in accordance with SAWS Special Specification Item No. 864-S1, "Bypass Pumping Small Diameter Sanitary Sewers" and Item No. 864-S2, "Bypass Pumping Large Diameter Sanitary Sewers". Payment for such work will be made under the bid item "Sanitary Sewer (Bypass Pumping)" (Lump Sum) as per SAWS Special Specification.

23. Prior to tie-ins, any shutdowns of existing force mains of any size must be coordinated with the SAWS Construction Inspection Division at 210-233-3500 and/or SAWS Production groups at least one week or more in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins; this is at no additional cost to SAWS or the project and it is the responsibility of the Contractor to sequence the work accordingly.

24. ELEVATIONS POSTED FOR TOP OF MANHOLES ARE FOR REFERENCE ONLY: It shall be the responsibility of the Contractor to make allowances and adjustments for top of manholes to match the finished grade of the project's improvements (NSPI).

25. SMART MANHOLE COVERS: The Contractor shall notify Juan C. Ramirez at 210-233-3558 and SAWS EOC at 210-704-SAWS (210-233-7297) a minimum of 72 hours, not counting weekends or SAWS holidays, before working on the pipe or manhole, in order to have SAWS remove the Smart Cover. Any damage done to the Smart Cover will be charged to the Contractor through a change order.

26. The contractor will be allowed to use the existing 36-inch and 42-inch recycled water line to provide construction water necessary for installation of the CIPP liner, from existing recycled water line appurtenances. the contractor will not be allowed to pressure tap the existing 36-inch or 42-inch recycled water lines. The contractor shall coordinate use of the recycled water line with the SAWS Dos Rios team and shall follow established coordination procedures for said use. The contractor shall provide a minimum of 24 hours advanced notice to the SAWS Dos Rios team when scheduling use of the recycled water line

27. Contractor shall use caution when working near or using recycled water line. Recycled water line is currently supplying water to Toyota plant.

SEWER SECTION (CONTINUED):

28. During the time of construction, rehabilitation, or by-pass pumping, when a lid or portions of the sanitary sewer structure or manhole has been removed, the Contractor shall provide temporary flow protection to prevent flood water from entering the sanitary sewer structure or manhole for a 100 year flood event. Approximate base flood elevations for the 100-year flood plain are listed below for the sanitary sewer structures and manholes involved in the project, NSPI.

    - MH 948067 (Junction Box 2) ≈ 597.0
    - MH 948070 & MH 948071 ≈ 596.5
    - MH 31664 ≈ 596.0
    - MH 948069 (Junction Box 1) ≈ 596.0
    - MH 1520 ≈ 592.0
    - MH 47165 ≈ 590.0
    - MH 47166 & MH 33943 ≈ 585.0
    - MH 34239 ≈ 585.0
    - MH 4587 (Siphon Inlet): ≈ 586.5'

4

CPS ENERGY NOTES:

1. Consider overhead line clearances and locations where large equipment may be used.

2. Consider location of existing overhead lines for construction and design purposes. Sleeving of overhead primary lines will be a cost to the Contractor. The shielding/sleeving of lines is for reference, not for protection from electrical shock.

3. De-energizing of primary lines or transmission lines for construction purposes will be a cost to the Contractor. De-energizing may not be possible in all instances.

4. Consider possible need for temporary relocation of poles during construction. Associated costs will be the responsibility of the party making the request.

5. Consider locations of both existing guy wires and proposed new guy wires. These could cause unforeseen construction interference. Any temporary bracing needed will be a cost to the Contractor.

6. Width, depth, and location of trenching or excavation must be considered around utility poles. This could necessitate bracing/shoring during construction at a cost to the Contractor.

7. Contractors are responsible for requesting a gas leak survey. Allow 10 working days to survey and 10 working days to adjust gas valves. All requests need to be coordinated through the agency Inspectors.

8. Gas subcontractors are responsible for adjusting gas valves that are within the project area. Agency Inspectors must notify their Utility Coordinators to request adjustments needed for valves that are inside the project area but not part of the joint bid.

9. The Right-of-way width must be considered for placement of relocated utilities.

10. Include utility inspections and time needed where necessary in schedules.

11. Call for locates before excavating.

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Texas Survey Firm 10194320
1011 West County Line Road
New Braunfels, Texas 78130
(P) 210/298.5030 (F) 830/626.3544
www.trihydro.com
TRIHYDRO PROJECT NO. 702-557-E00

No.	Revision	Drawn	Approved	Date
1	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
NOTES

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ | CK. ADW | JOB No. 17-4546
SHEET 2 OF 39

4

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EXPLANATION

EXISTING

- SANITARY SEWER MANHOLE
- RECYCLED WATER COMBINATION AIR RELEASE VALVE
- RECYCLED WATER VALVE
- RECYCLED WATER BLOW OFF VALVE
- UTILITY POLE
- SQUARE ON BRASS CAP — CONTROL POINT AND DESIGNATION
- 410 — INTERSTATE HIGHWAY BUSINESS ROUTE
- GATE
- SIGNIFICANT TREE
- NON-SIGNIFICANT TREE
- SS — SANITARY SEWER LINE
- RW — RECYCLED WATER LINE
- OE — OVERHEAD ELECTRICAL LINE
- UGTV — UNDERGROUND TELEVISION LINE
- ST — CONCRETE BOX CULVERT
- 100 YEAR FLOODPLAIN BOUNDARY
- 590 / 591 — SURFACE CONTOURS (1 FOOT INTERVAL)
- FENCE
- PARCEL BOUNDARY
- ESMT — EASEMENT BOUNDARY
- CITY OF SAN ANTONIO CORPORATE LIMITS
- CONCRETE

PROPOSED

- REHABILITATED SANITARY SEWER LINE WITH FLOW DIRECTION
- ACCESS ROAD CENTERLINE
- TEMPORARY SEDIMENT-CONTROL FENCE
- TEMPORARY CONSTRUCTION FENCE
- SUGGESTED BY-PASS ROUTE
- CHANNELIZING DEVICE
- TRAFFIC CONTROL SIGN
- TYPE III BARRICADE
- TRAFFIC DIRECTION
- JERSEY BARRIER
- BH–6 — COMPLETED BOREHOLE AND DESIGNATION
- WORK AREA AND/OR SITE RESTORATION AREA
- CONSTRUCTION EXIT - TYPE 1
- TEMPORARY ACCESS/HAUL ROAD SURFACING
- WORK AREA
- SECONDARY BACKFILL

ABBREVIATIONS

@	AT
Ø	DIAMETER
℄	CENTERLINE
BLK.	BLOCK
BP	BY-PASS
CIPP	CURED IN PLACE PIPE
CONC.	CONCRETE
CONST.	CONSTRUCTION
COSA	CITY OF SAN ANTONIO
CP	CONTROL POINT
DI	DUCTILE IRON
E	EAST
EA	EACH
EL.	ELEVATION
ESMT.	EASEMENT
FRP	FIBERGLASS REINFORCED PIPE
FT	FEET
HMAC	HOT MIX ASPHALTIC CONCRETE
IH	INTERSTATE HIGHWAY
INV.	INVERT
LF	LINEAR FEET
LS	LUMP SUM
LTD.	LIMITED
MGD	MILLIONS OF GALLONS PER DAY
MH	MANHOLE
MIL.	THOUSANDTH OF AN INCH
MIN.	MINIMUM
N	NORTH
NAD	NORTH AMERICAN DATUM
NCB	NEW CITY BLOCK
NO.	NUMBER
NSPI	NO SEPARATE PAY ITEM
OH	OVERHEAD
PG.	PAGE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RECYC.	RECYCLED
REHABB	REHABILITATE
REV.	REVISION
PROP.	PROPOSED
ROW	RIGHT-OF-WAY
S	SOUTH
SAWS	SAN ANTONIO WATER SYSTEM
S-C	SEDIMENT-CONTROL
SS	SANITARY SEWER
STA.	STATION
SY	SQUARE YARDS
SW3P	STORMWATER POLLUTION PREVENTION PLAN
TCP	TRAFFIC CONTROL PLAN
TCEQ	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
TEMP.	TEMPORARY
TY	TYPE
TYP.	TYPICAL
TXDOT	TEXAS DEPARTMENT OF TRANSPORTATION
UG	UNDERGROUND
U.S.	UNITED STATES
VOL.	VOLUME
W	WEST

DETAIL CALLOUT EXPLANATION

- 2 / 17 — VIEW DESIGNATION / SHEET NUMBER
- 29 — SINGLE VIEW SHEET / SHEET NUMBER

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TRIHYDRO PROJECT NO. 702-557-E00

No.	Revision	Drawn	Approved	Date
1	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
EXPLANATION

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 3 OF 39
SECT. No.
DR. RJ | CK. ADW | JOB No. 17-4546

4

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ESTIMATED QUANTITY SUMMARY

ITEM	DESCRIPTION	UNIT	BY THE SHEET										TOTAL
			PROJECT	SHEET 6	SHEET 7	SHEET 8	SHEET 9	SHEET 10	SHEET 11	SHEET 12	SHEET 13	SHEET 14	SHEET 17	
100	MOBILIZATION	LS	1											1
100	INTERMEDIATE DEMOB/REMOB	LS	1											1
101	PREPARING RIGHT-OF-WAY	LS	1											1
169	SOIL RETENTION BLANKET (CLASS 1, TYPE A)	SY	276											276
200	BASE COURSE (6-INCHES COMPACTED DEPTH)	SY		174									2276	2450
220	BLADING	LF		130									1707	1837
413	FLOWABLE FILL (LOW STRENGTH)	CY	50	16			9							75
502	BARRICADES, SIGNS, AND TRAFFIC HANDLING	LS	1											1
506	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY		97	97								122	316
506	CONSTRUCTION EXITS (REMOVE)	SY		97	97								122	316
515	TOPSOIL	CY	25											25
516	BERMUDA SODDING	SY	150											150
520	HYDROMULCHING	SY		45	45		45		96		45			276
540	TEMPORARY EROSION, SEDIMENTATION, AND WATER POLLUTION PREVENTION AND CONTROL	LS	1											1
540	TEMPORARY SEDIMENT-CONTROL FENCE	LF		99	105		98		109		103	38		552
550	TRENCH EXCAVATION SAFETY PROTECTION	LF		80	80		80		126		80			446
552	WIRE FENCE (TY C)	LF							286	512	511	426		1735
552	18' GATE (TY 3)	EA			1		1		3				2	7
855	RECONSTRUCTION OF EXISTING MANHOLES	EA		1	1		1		2		1			6
855	RECONSTRUCTION OF EXISTING SIPHON INLET STRUCTURE (MH 4587)	EA										1		1
864-S2	BYPASS PUMPING LARGE DIAMETER SANITARY SEWER	LS	1											1
866	SEWER MAIN TELEVISION INSPECTION (30" AND LARGER)	LF		477	800	800	810	1000	1000	1000	998	407		7292
901	CIPP 54" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF		177	400	400	410	500	500	500	498	198		3583
901	CIPP 66" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF		300	400	400	400	500	500	500	500	209		3709
1103	POINT REPAIRS FOR 54" DIAMETER, INCLUDING 9 LF OF PIPING, ALL DEPTHS	EA	3											3
1103	POINT REPAIRS FOR 66" DIAMETER, INCLUDING 9 LF OF PIPING, ALL DEPTHS	EA	3											3
1103	OBSTRUCTION REMOVAL BY REMOTE DEVICE FOR 54" DIAMETER, ALL DEPTHS	EA	5											5
1103	OBSTRUCTION REMOVAL BY REMOTE DEVICE FOR 66" DIAMETER, ALL DEPTHS	EA	5											5

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1	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1

QUANTITY SUMMARY

DEVELOPER: SAN ANTONIO WATER SYSTEM

CONT. | BUDGET PROJ.

SUBMITTED

APPROVED

MAP No. | SHEET 4 OF 39

SECT. No.

DR. RJ | CK. ADW | JOB No. 17-4546

4

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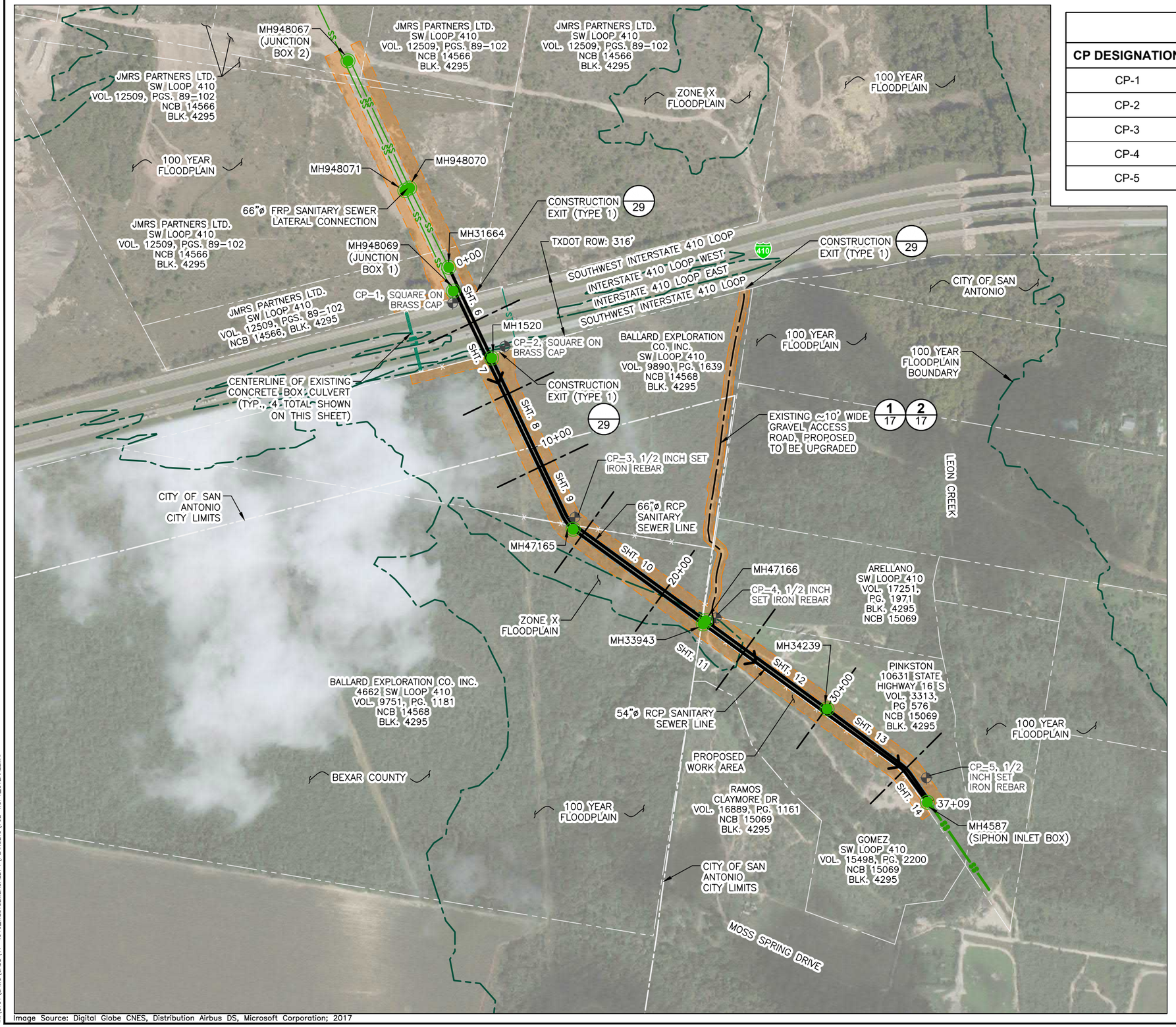

Image Source: Digital Globe CNES, Distribution Airbus DS, Microsoft Corporation; 2017

CONTROL POINT TABLE				
CP DESIGNATION	CP DESCRIPTION	NORTHING	EASTING	ELEVATION
CP-1	SQUARE ON BRASS CAP	13663641.28	2103433.74	594.14
CP-2	SQUARE ON BRASS CAP	13663423.71	2103695.05	593.44
CP-3	1/2 INCH SET IRON REBAR	13662566.70	2104046.41	586.24
CP-4	1/2 INCH SET IRON REBAR	13662062.86	2104753.64	585.94
CP-5	1/2 INCH SET IRON REBAR	13661261.40	2105807.22	579.57

SURVEY NOTES:

1. COORDINATE ARE NAD83, TEXAS STATE PLANE, SOUTH CENTRAL ZONE WITH UNITS OF U.S. SURVEY FEET.
2. ANY ALIGNMENT CONFLICTS SHOULD BE BROUGHT TO THE OWNER AND ENGINEER'S ATTENTION.
3. SURVEY CONTROL POINTS ARE SHOWN ON THE ABOVE TABLE.

NOTES:

1. PROPERTY LINES SHOWN ON THIS SHEET AND THROUGHOUT THIS PLAN SET ARE DERIVED FROM EXISTING DEED DOCUMENTS AND SHOULD BE CONSIDERED APPROXIMATE. THEY ARE SHOWN FOR REFERENCE ONLY.
2. THE STATIONING SHOWN ON THIS SHEET REFERENCES THE 66-INCH SANITARY SEWER LINE.
3. BOTH THE 54"Ø SANITARY SEWER LINE AND THE 66"Ø SEWER LINE OUTFALL INTO MH4587.
4. FOR DISTANCES FROM EXISTING MANHOLES TO TXDOT ROW SEE SHEETS 6 AND 7.

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SCALE: 1" = 400'
0 200 400

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LEGEND

- PROP. CIPP REHAB
- PROP. ACCESS ROAD
- PROP. WORK AREA
- SS STRUCTURE
- CP / DESCRIPTION (1/2 INCH SET IRON REBAR)
- IH BUSINESS ROUTE (410)
- SANITARY SEWER (SS)
- CONC. BOX CULVERT (ST)
- FLOODPLAIN
- PARCEL LINE
- COSA CITY LIMITS

No.	Revision	Drawn	Approved	Date
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0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
OVERALL PROJECT MAP

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
JOB No. 17-4546
DR. RJ CK. ADW
SHEET 5 OF 39

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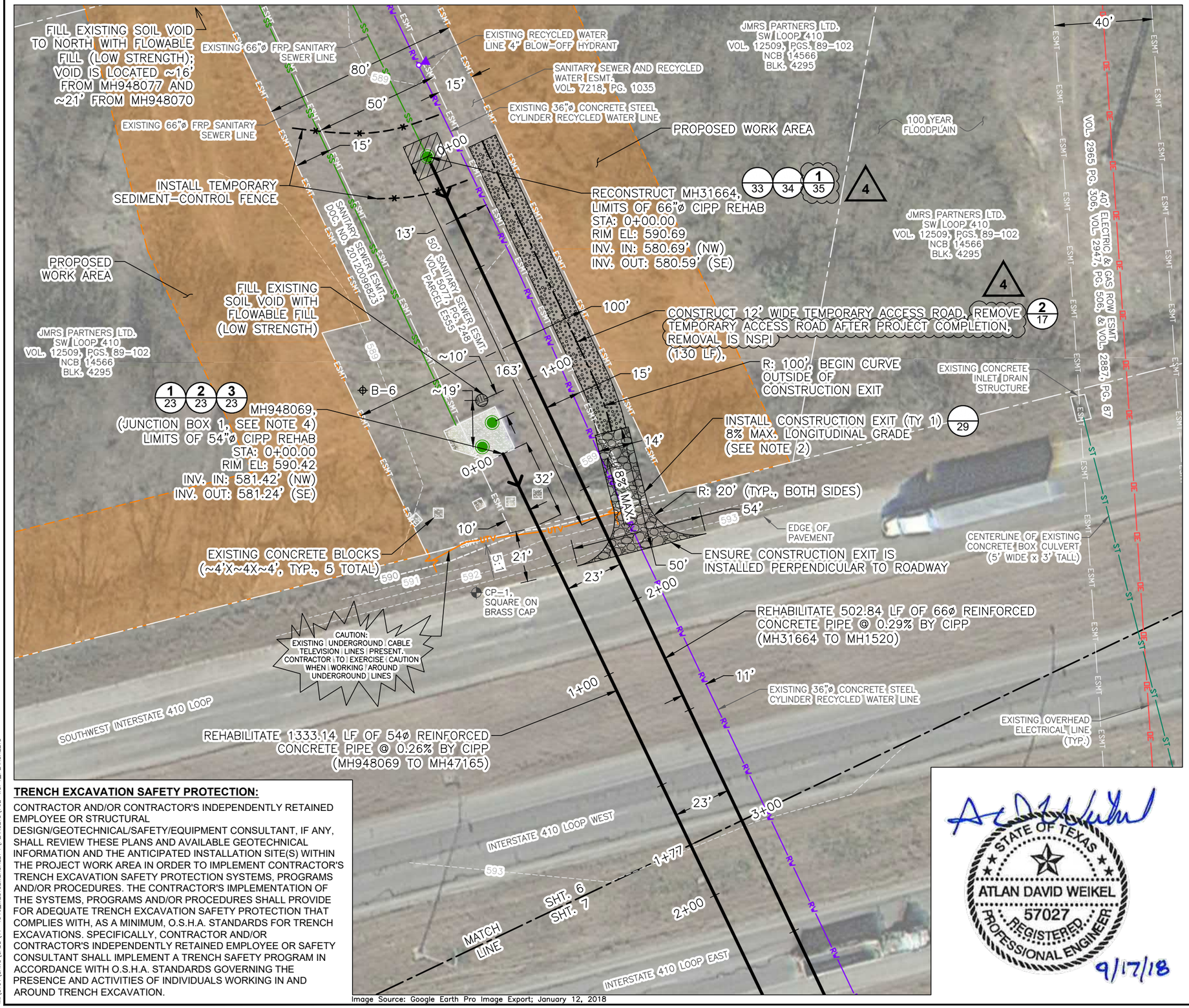

Image Source: Google Earth Pro Image Export; January 12, 2018

ESTIMATED QUANTITIES				
ITEM	DESCRIPTION	UNIT	EST.	FINAL
200	BASE COURSE (6-INCHES COMPACTED DEPTH)	SY	174	
220	BLADING	LF	130	
413	FLOWABLE FILL (LOW STRENGTH)	CY	16	
506	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	97	
506	CONSTRUCTION EXITS (REMOVE)	SY	97	
520	HYDROMULCHING	SY	45	
540	TEMPORARY SEDIMENT-CONTROL FENCE	LF	99	
550	TRENCH EXCAVATION SAFETY PROTECTION	LF	80	
855	RECONSTRUCTION OF EXISTING MANHOLES	EA	1	
866	SEWER MAIN TELEVISION INSPECTION (30" AND LARGER)	LF	477	
901	CIPP 54" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	177	
901	CIPP 66" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	300	

NOTES:

1. QUANTITIES ARE ESTIMATED FROM MATCH LINE TO MATCH LINE.
2. EMBANKMENT MATERIAL MAY BE REQUIRED TO CONSTRUCT CONSTRUCTION EXIT (TY 1) AT LOCATION AND GRADE SHOWN. EMBANKMENT PLACEMENT AND REMOVAL SHALL BE CONSIDERED SUBSIDIARY TO BID ITEMS 506 6020 AND 506 6024; CONSTRUCTION EXITS (INSTALL) (TY 1), CONSTRUCTION EXITS (REMOVE).
3. CONTRACTOR SHALL FIELD LOCATE AND PROTECT EXISTING UTILITIES DURING CONSTRUCTION ACTIVITIES. DAMAGE COSTS INCURRED RESULTING FROM THEIR ACTIVITIES SHALL BE BORNE BY THE CONTRACTOR.
4. IF NEEDED FOR ACCESS, CONTRACTOR SHALL REMOVE, PROTECT, AND REINSTALL JUNCTION BOX 1 LID ~~AND MH31664 CONE~~ (NSPI).
5. IF USING RECYCLED WATER LINE FOR CONSTRUCTION ACTIVITIES CONTRACTOR SHALL COORDINATE WITH SAWS PRIOR TO USE AND SHALL USE EXISTING APPURTENANCES.

4

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SCALE: 1" = 40'
0 20 40

Trihydro CORPORATION
Texas Engineering Firm F-131
Texas Survey Firm 10194320
1011 West County Line Road
New Braunfels, Texas 78130
(P) 210/298.5030 (F) 830/626.3544
www.trihydro.com
TRIHYDRO PROJECT NO. 702-557-E00

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH, AS A MINIMUM, O.S.H.A. STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH O.S.H.A. STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

STATE OF TEXAS
ATLAN DAVID WEIKEL
57027
REGISTERED
PROFESSIONAL ENGINEER
9/17/18

LEGEND

- PROP. CIPP REHAB
- PROP. S-C FENCE
- PROP. CONST. EXIT
- PROP. ACCESS ROAD
- PROP. WORK AREA
- SANITARY SEWER — SS
- OH ELECTRICAL LINE — OE
- RECYC. WATER LINE — RW
- CONC. BOX CULVERT — ST
- UG TELEVISION LINE — UTV
- FLOODPLAIN
- FENCE — x — x
- PARCEL LINE
- EASEMENT LINE — ESMT
- SURFACE CONTOURS — 590 / 591

No.	Revision	Drawn	Approved	Date
4	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
1	ISSUE FOR ADDENDUM 1	FZ	ADW	8/28/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
SANITARY SEWER ENGINEERING PLAN 1 OF 9

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 6
SECT. No. | JOB No. 17-4546 | OF 39
DR. RJ | CK. ADW

4

M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_PLANSHEETS

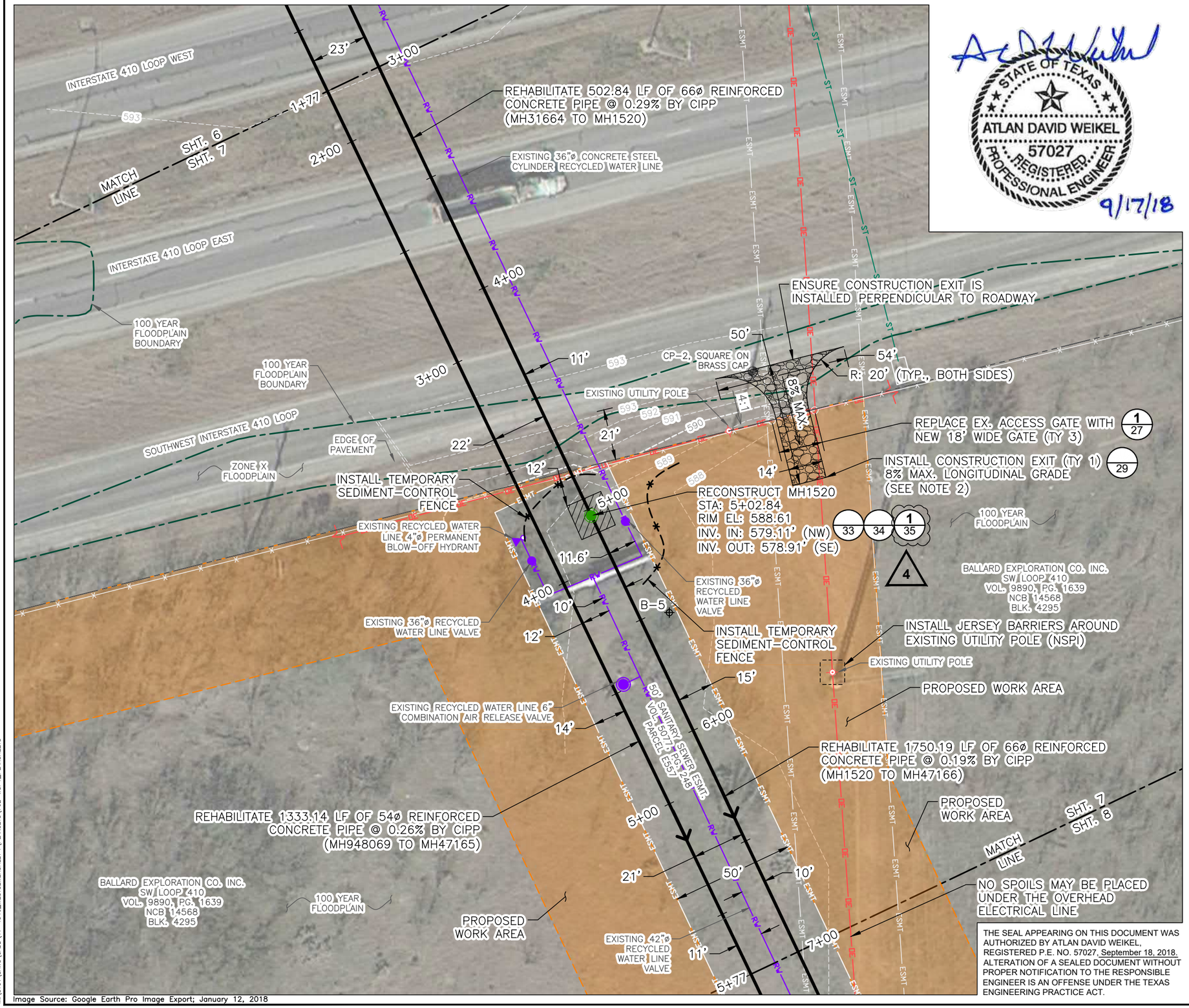

Image Source: Google Earth Pro Image Export; January 12, 2018

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STATE OF TEXAS
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ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	EST.	FINAL
506	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	97	
506	CONSTRUCTION EXITS (REMOVE)	SY	97	
520	HYDROMULCHING	SY	45	
540	TEMPORARY SEDIMENT-CONTROL FENCE	LF	105	
550	TRENCH EXCAVATION SAFETY PROTECTION	LF	80	
552	18' GATE (TY 3)	EA	1	
855	RECONSTRUCTION OF EXISTING MANHOLES	EA	1	
866	SEWER MAIN TELEVISION INSPECTION (30" AND LARGER)	LF	800	
901	CIPP 54" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	400	
901	CIPP 66" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	400	

NOTES:

1. QUANTITIES ARE ESTIMATED FROM MATCH LINE TO MATCH LINE.
2. EMBANKMENT MATERIAL MAY BE REQUIRED TO CONSTRUCT CONSTRUCTION EXIT (TY 1) AT LOCATION AND GRADE SHOWN. EMBANKMENT PLACEMENT AND REMOVAL SHALL BE CONSIDERED SUBSIDIARY TO BID ITEMS 506 6020 AND 506 6024; CONSTRUCTION EXITS (INSTALL) (TY 1), CONSTRUCTION EXITS (REMOVE).
3. CONTRACTOR SHALL FIELD LOCATE AND PROTECT EXISTING UTILITIES DURING CONSTRUCTION ACTIVITIES. DAMAGE COSTS INCURRED RESULTING FROM THEIR ACTIVITIES SHALL BE BORNE BY THE CONTRACTOR.
4. IF USING RECYCLED WATER LINE FOR CONSTRUCTION ACTIVITIES CONTRACTOR SHALL COORDINATE WITH SAWS PRIOR TO USE AND SHALL USE EXISTING APPURTENANCES.

SCALE: 1" = 40'
0 20 40

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LEGEND

PROP. CIPP REHAB
PROP. S-C FENCE
PROP. CONST. EXIT
SITE RESTORATION
PROP. WORK AREA
OH ELECTRICAL LINE — DE
RECYC. WATER LINE — RW
CONC. BOX CULVERT — ST
FLOODPLAIN
FENCE
PARCEL LINE
EASEMENT LINE — ESMT
SURFACE CONTOURS — 590 / 591

No.	Revision	Drawn	Approved	Date
4	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
1	ISSUE FOR ADDENDUM 1	FZ	ADW	8/28/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
SANITARY SEWER ENGINEERING PLAN 2 OF 9

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 7
SECT. No. | JOB No. 17-4546 | OF 39
DR. RJ | CK. ADW

4

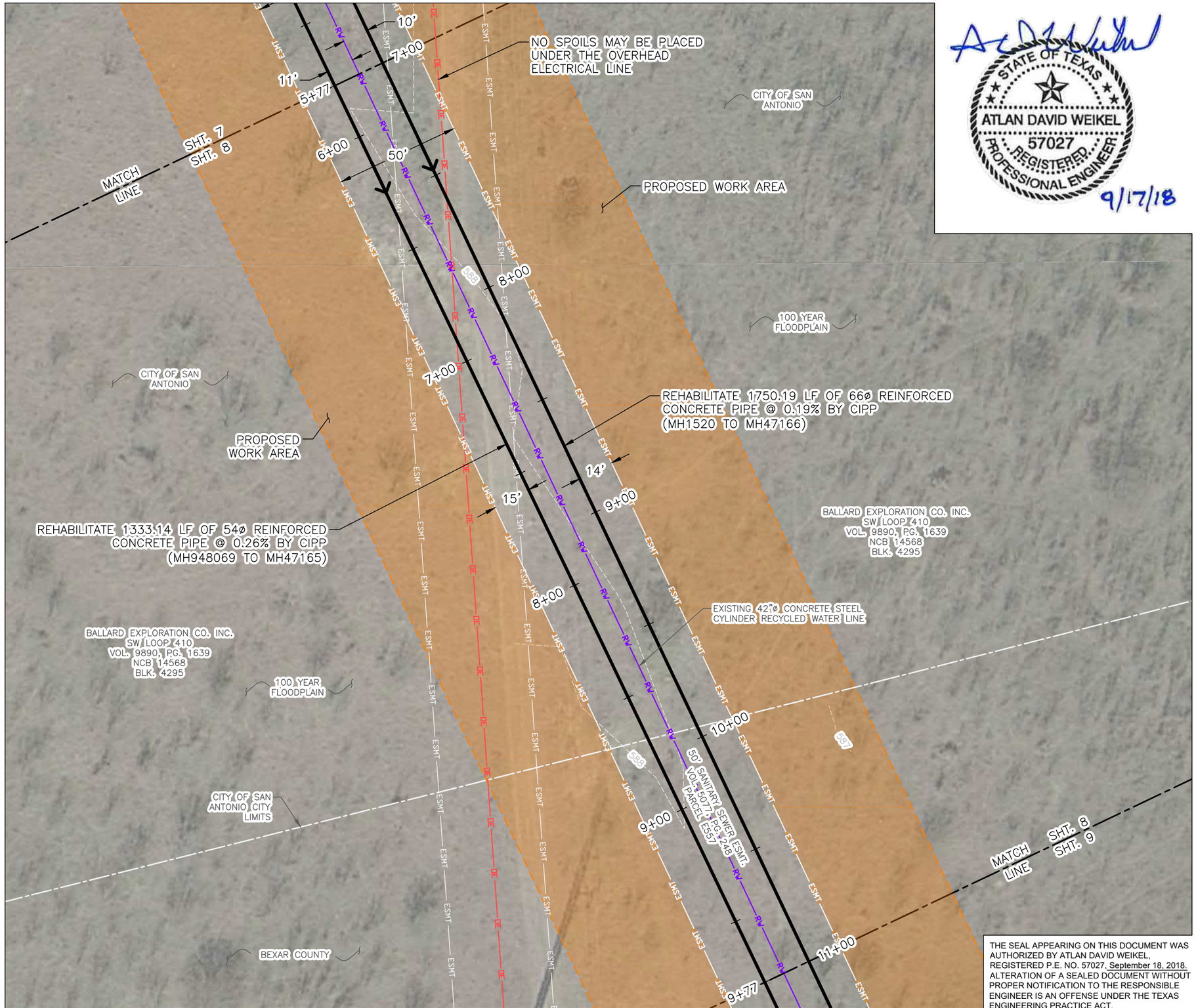

Image Source: Google Earth Pro Image Export; January 12, 2018

STATE OF TEXAS
ATLAN DAVID WEIKEL
57027
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9/17/18

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ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	EST.	FINAL
866	SEWER MAIN TELEVISION INSPECTION (30" AND LARGER)	LF	800	
901	CIPP 54" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	400	
901	CIPP 66" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	400	

NOTES:

1. QUANTITIES ARE ESTIMATED FROM MATCH LINE TO MATCH LINE.
2. CONTRACTOR SHALL FIELD LOCATE AND PROTECT EXISTING UTILITIES DURING CONSTRUCTION ACTIVITIES. DAMAGE COSTS INCURRED RESULTING FROM THEIR ACTIVITIES SHALL BE BORNE BY THE CONTRACTOR.

LEGEND

- PROP. CIPP REHAB
- PROP. S-C FENCE
- PROP. CONST. EXIT
- PROP. WORK AREA
- OH ELECTRICAL LINE — DE
- RECYC. WATER LINE — RW
- FLOODPLAIN
- EASEMENT LINE — ESMT
- COSA CITY LIMITS
- SURFACE CONTOURS 590 591

SCALE: 1" = 40'
0 20 40

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TRIHYDRO PROJECT NO. 702-557-E00

No.	Revision	Drawn	Approved	Date
4	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
1	ISSUE FOR ADDENDUM 1	FZ	ADW	8/28/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
SANITARY SEWER ENGINEERING PLAN 3 OF 9

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
JOB No. 17-4546
DR. RJ | CK. ADW
SHEET 8 OF 39

4

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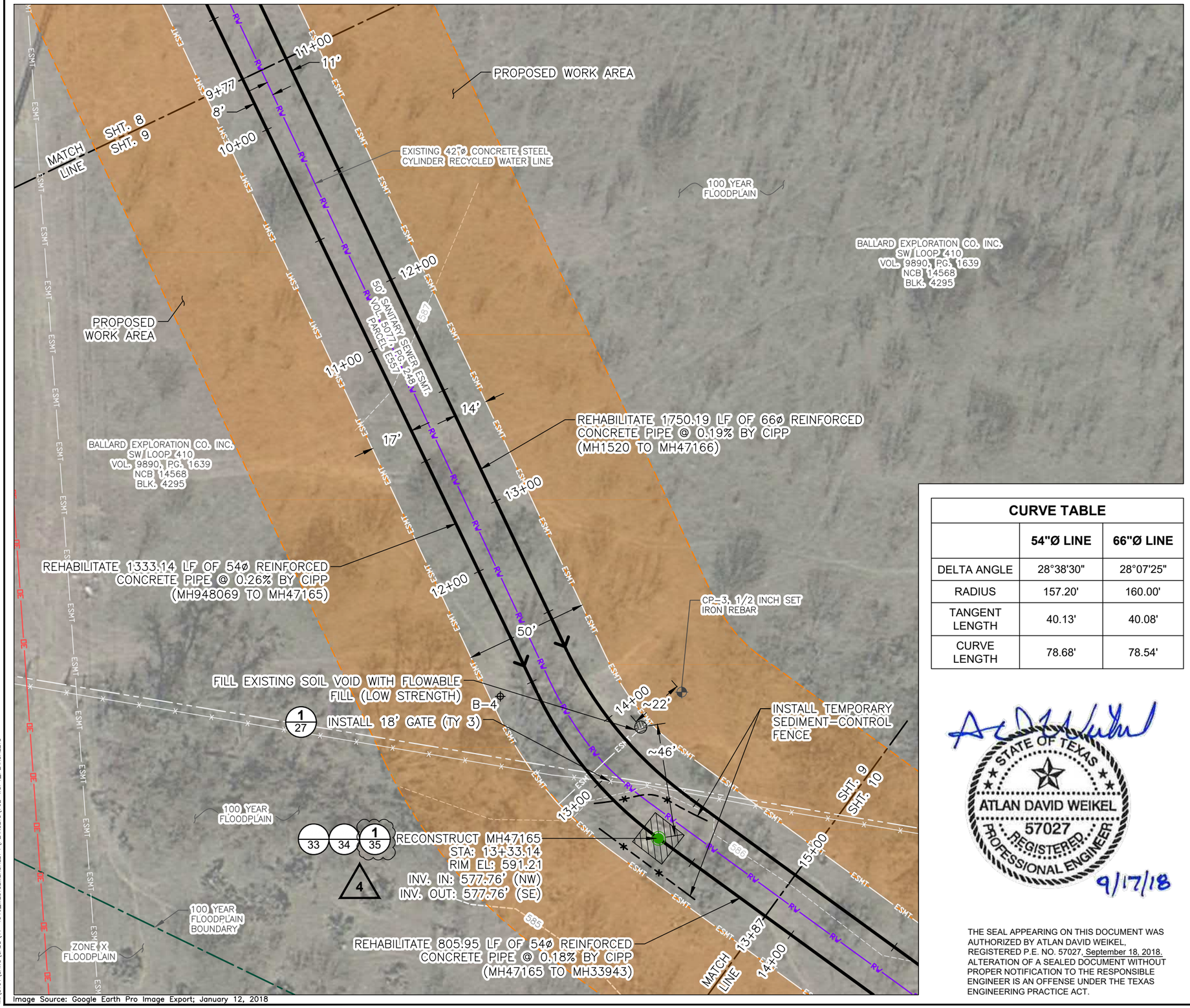

Image Source: Google Earth Pro Image Export; January 12, 2018

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ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	EST.	FINAL
413	FLOWABLE FILL (LOW STRENGTH)	CY	9	
520	HYDROMULCHING	SY	45	
540	TEMPORARY SEDIMENT-CONTROL FENCE	LF	98	
550	TRENCH EXCAVATION SAFETY PROTECTION	LF	80	
552	18' GATE (TY 3)	EA	1	
855	RECONSTRUCTION OF EXISTING MANHOLES	EA	1	
866	SEWER MAIN TELEVISION INSPECTION (30" AND LARGER)	LF	810	
901	CIPP 54" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	410	
901	CIPP 66" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	400	

NOTES:

1. QUANTITIES ARE ESTIMATED FROM MATCH LINE TO MATCH LINE.
2. DATA SHOWN ON CURVE TABLE IS TAKEN FROM AS-BUILT DRAWINGS, CIRCA 1965. THE DATA IS SHOWN FOR REFERENCE DURING CURVE REHABILITATION AND MAY NOT MATCH EXACTLY WITH LENGTHS SHOWN ON SHEETS, WHICH WERE DERIVED FROM A COMBINATION OF FIELD SURVEY DATA AND AS-BUILT DRAWINGS.
3. CONTRACTOR SHALL FIELD LOCATE AND PROTECT EXISTING UTILITIES DURING CONSTRUCTION ACTIVITIES. DAMAGE COSTS INCURRED RESULTING FROM THEIR ACTIVITIES SHALL BE BORNE BY THE CONTRACTOR.
4. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNER PRIOR TO, AND DURING, GATE INSTALLATION.

CURVE TABLE

	54"Ø LINE	66"Ø LINE
DELTA ANGLE	28°38'30"	28°07'25"
RADIUS	157.20'	160.00'
TANGENT LENGTH	40.13'	40.08'
CURVE LENGTH	78.68'	78.54'

STATE OF TEXAS
ATLAN DAVID WEIKEL
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TRIHYDRO PROJECT NO. 702-557-E00

LEGEND

PROP. CIPP REHAB
PROP. S-C FENCE
SITE RESTORATION
PROP. WORK AREA
PROP. BACKFILL
OH ELECTRICAL LINE — DE
RECYC. WATER LINE — RW
FLOODPLAIN
FENCE
PARCEL LINE
EASEMENT LINE — ESMT
SURFACE CONTOURS — 590 / 591

No.	Revision	Drawn	Approved	Date
4	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
1	ISSUE FOR ADDENDUM 1	FZ	ADW	8/28/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
SANITARY SEWER ENGINEERING PLAN 4 OF 9

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 9
SECT. No. | JOB No. 17-4546 | OF 39
DR. RJ | CK. ADW

4

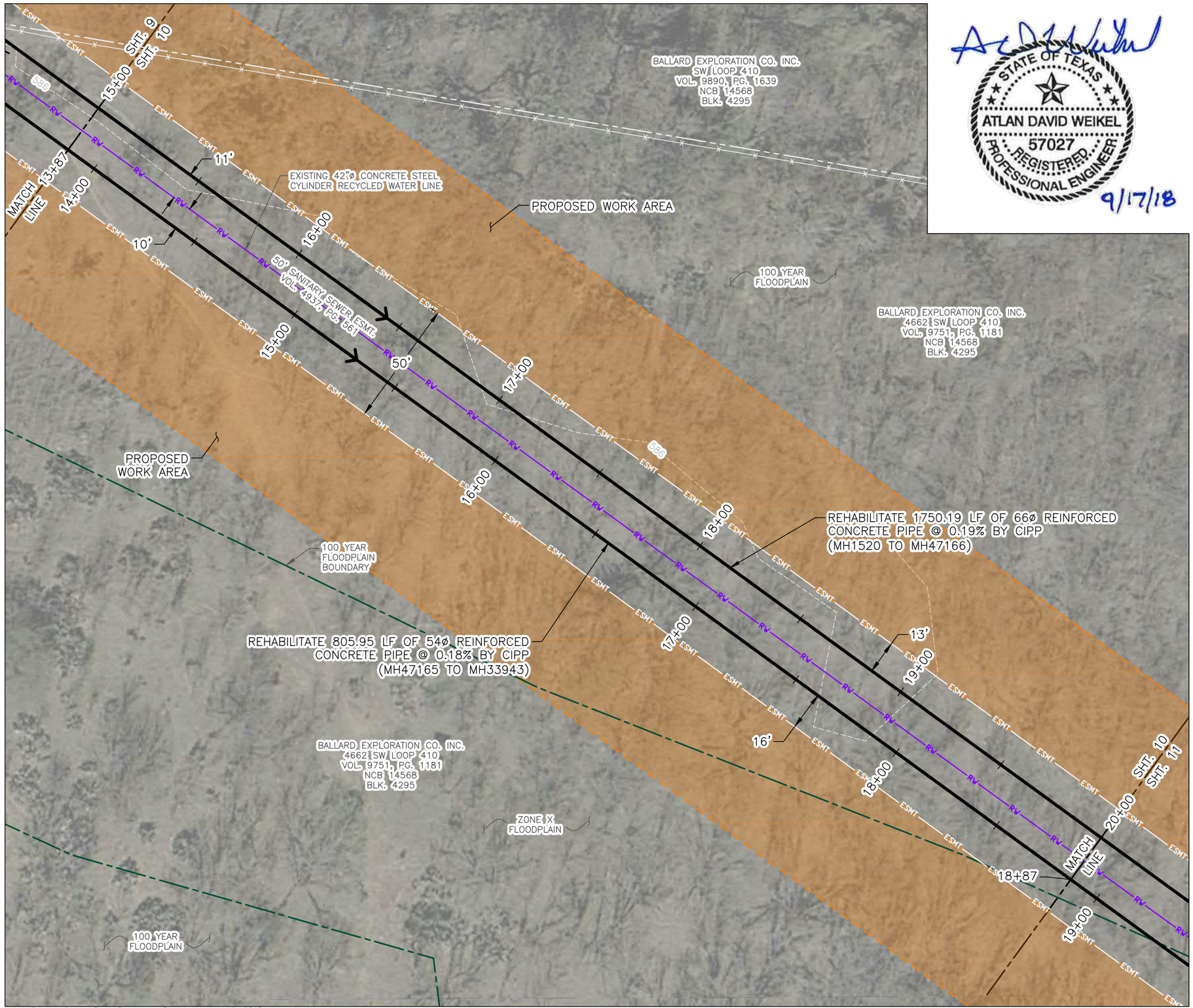

Image Source: Google Earth Pro Image Export; January 12, 2018

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ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	EST.	FINAL
866	SEWER MAIN TELEVISION INSPECTION (30" AND LARGER)	LF	1000	
901	CIPP 54" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	500	
901	CIPP 66" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	500	

NOTES:

1. QUANTITIES ARE ESTIMATED FROM MATCH LINE TO MATCH LINE.
2. CONTRACTOR SHALL FIELD LOCATE AND PROTECT EXISTING UTILITIES DURING CONSTRUCTION ACTIVITIES. DAMAGE COSTS INCURRED RESULTING FROM THEIR ACTIVITIES SHALL BE BORNE BY THE CONTRACTOR.

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LEGEND

- PROP. CIPP REHAB
- PROP. WORK AREA
- RECYC. WATER LINE (RW)
- FLOODPLAIN
- FENCE (X X)
- PARCEL LINE
- EASEMENT LINE (ESMT)
- SURFACE CONTOURS (590, 591)

SCALE: 1" = 40'
0 20 40

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REVISIONS

WEST SEWERSHED PACKAGE 1
SANITARY SEWER ENGINEERING PLAN 5 OF 9

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ | CK. ADW
JOB No. 17-4546
SHEET 10 OF 39

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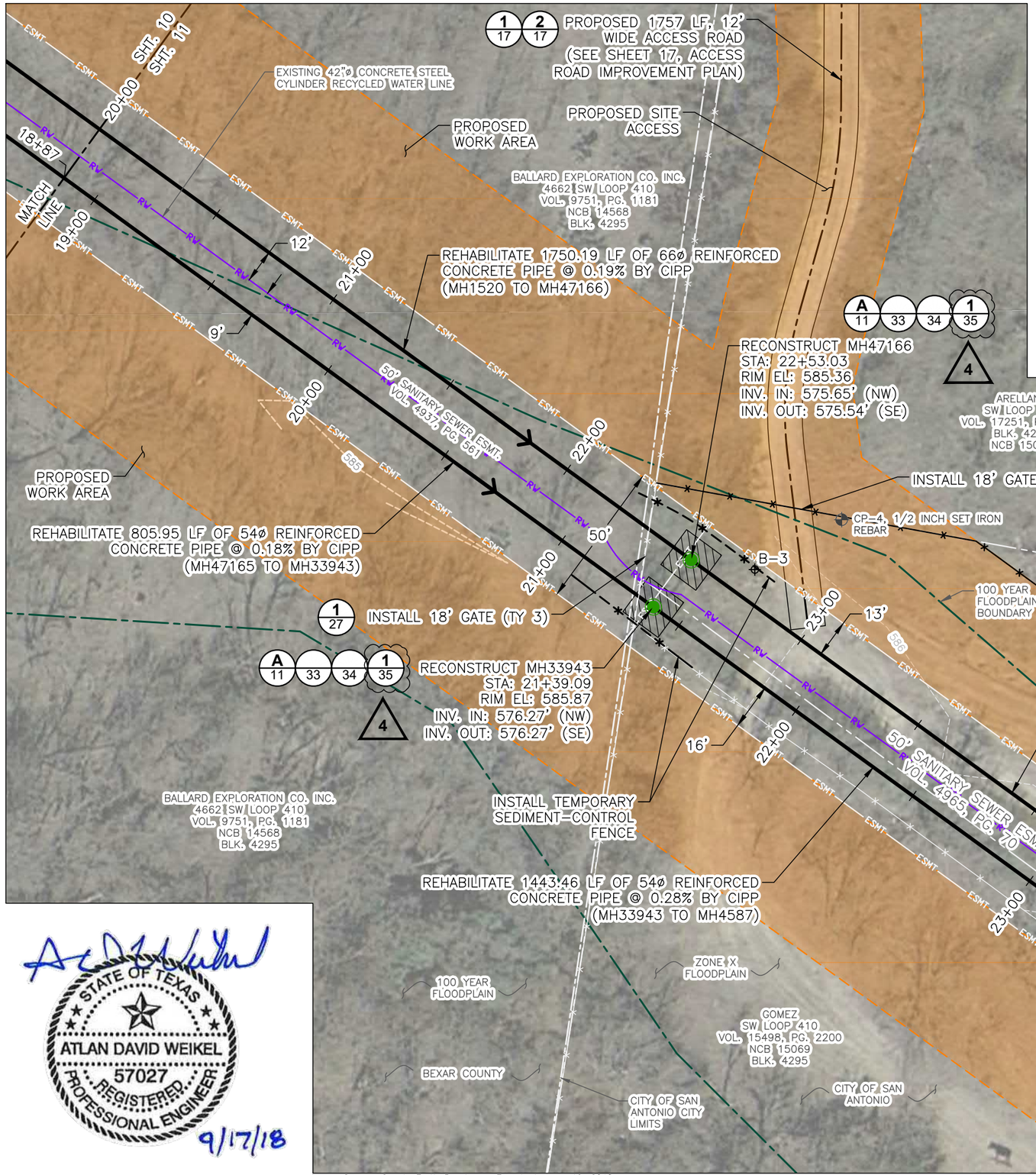

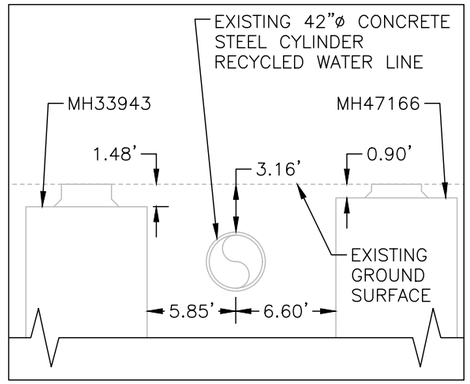

A **POTHOLING DATA DETAIL**
SCALE: NONE

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ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	EST.	FINAL
520	HYDROMULCHING	SY	96	
540	TEMPORARY SEDIMENT-CONTROL FENCE	LF	109	
550	TRENCH EXCAVATION SAFETY PROTECTION	LF	126	
552	WIRE FENCE (TY C)	LF	286	
552	18' GATE (TY 3)	EA	3	
855	RECONSTRUCTION OF EXISTING MANHOLES	EA	2	
866	SEWER MAIN TELEVISION INSPECTION (30" AND LARGER)	LF	1000	
901	CIPP 54" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	500	
901	CIPP 66" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	500	

NOTES:

1. ALL QUANTITIES EXCEPT FOR THE GATES ARE ESTIMATED FROM MATCH LINE TO MATCH LINE. GATE QUANTITIES MATCH WHAT IS SHOWN ON THIS SHEET.
2. CONTRACTOR SHALL REMOVE TEMPORARY CONSTRUCTION FENCE AT PROJECT COMPLETION, AS DIRECTED BY THE ENGINEER. FENCE REMOVAL AND DISPOSAL SHALL BE CONSIDERED SUBSIDIARY TO BID ITEM 552 6003, WIRE FENCE (TY C).
3. CONTRACTOR SHALL FIELD LOCATE AND PROTECT EXISTING UTILITIES DURING CONSTRUCTION ACTIVITIES. DAMAGE COSTS INCURRED RESULTING FROM THEIR ACTIVITIES SHALL BE BORNE BY THE CONTRACTOR.
4. POTHOLING DATA SHOWN ON VIEW A OF THIS SHEET WAS FIELD COLLECTED ON MAY 22, 2018.
5. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNER PRIOR TO, AND DURING, GATE INSTALLATION.

SCALE: 1" = 40'
0 20 40

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LEGEND

- PROP. CIPP REHAB
- PROP. S-C FENCE
- PROP. TEMP. FENCE
- PROP. ACCESS ROAD
- SITE RESTORATION
- PROP. WORK AREA
- RECYC. WATER LINE (RW)
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4	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
1	ISSUE FOR ADDENDUM 1	FZ	ADW	8/28/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
SANITARY SEWER ENGINEERING PLAN 6 OF 9

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 11
SECT. No. | JOB No. 17-4546 | OF 39
DR. RJ | CK. ADW

Image Source: Google Earth Pro Image Export; January 12, 2018

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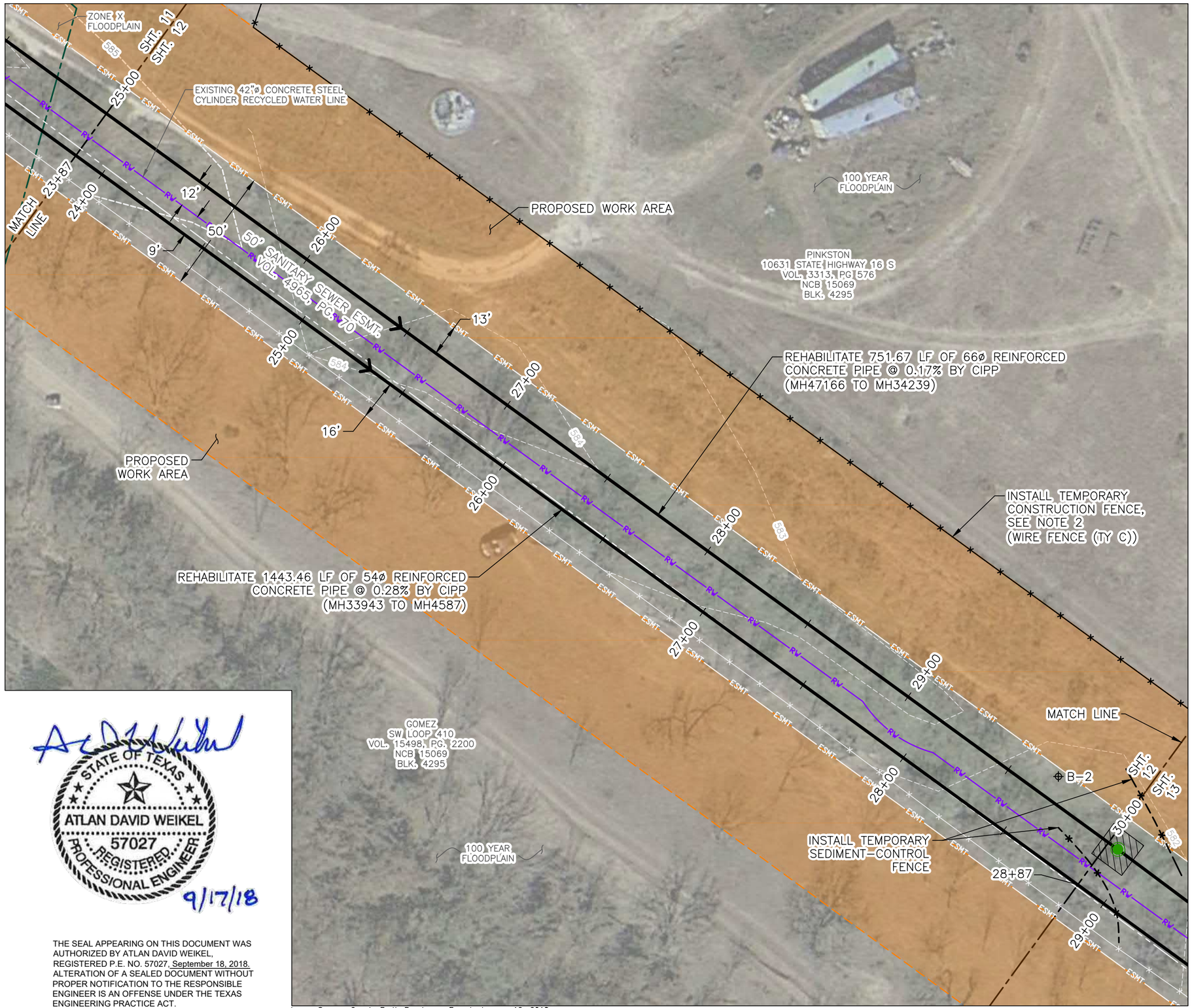

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TRENCH EXCAVATION SAFETY PROTECTION:

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ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	EST.	FINAL
552	WIRE FENCE (TY C)	LF	512	
866	SEWER MAIN TELEVISION INSPECTION (30" AND LARGER)	LF	1000	
901	CIPP 54" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	500	
901	CIPP 66" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	500	

NOTES:

1. QUANTITIES ARE ESTIMATED FROM MATCH LINE TO MATCH LINE.
2. CONTRACTOR SHALL REMOVE TEMPORARY CONSTRUCTION FENCE AT PROJECT COMPLETION, AS DIRECTED BY THE ENGINEER. FENCE REMOVAL AND DISPOSAL SHALL BE CONSIDERED SUBSIDIARY TO BID ITEM 552 6003, WIRE FENCE (TY C).
3. CONTRACTOR SHALL FIELD LOCATE AND PROTECT EXISTING UTILITIES DURING CONSTRUCTION ACTIVITIES. DAMAGE COSTS INCURRED RESULTING FROM THEIR ACTIVITIES SHALL BE BORNE BY THE CONTRACTOR.

SCALE: 1" = 40'
0 20 40

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Texas Survey Firm 10194320
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New Braunfels, Texas 78130
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1	ISSUE FOR ADDENDUM 1	FZ	ADW	8/28/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

LEGEND

- PROP. CIPP REHAB
- PROP. S-C FENCE
- PROP. TEMP. FENCE
- PROP. WORK AREA
- RECYC. WATER LINE (RW)
- FLOODPLAIN
- FENCE
- PARCEL LINE
- EASEMENT LINE (ESMT)
- SURFACE CONTOURS (590, 591)

WEST SEWERSHED PACKAGE 1

SANITARY SEWER ENGINEERING PLAN 7 OF 9

DEVELOPER: SAN ANTONIO WATER SYSTEM

CONT. | BUDGET PROJ.

SUBMITTED

APPROVED

MAP No. | SHEET 12 OF 39

SECT. No.

DR. RJ | CK. ADW | JOB No. 17-4546

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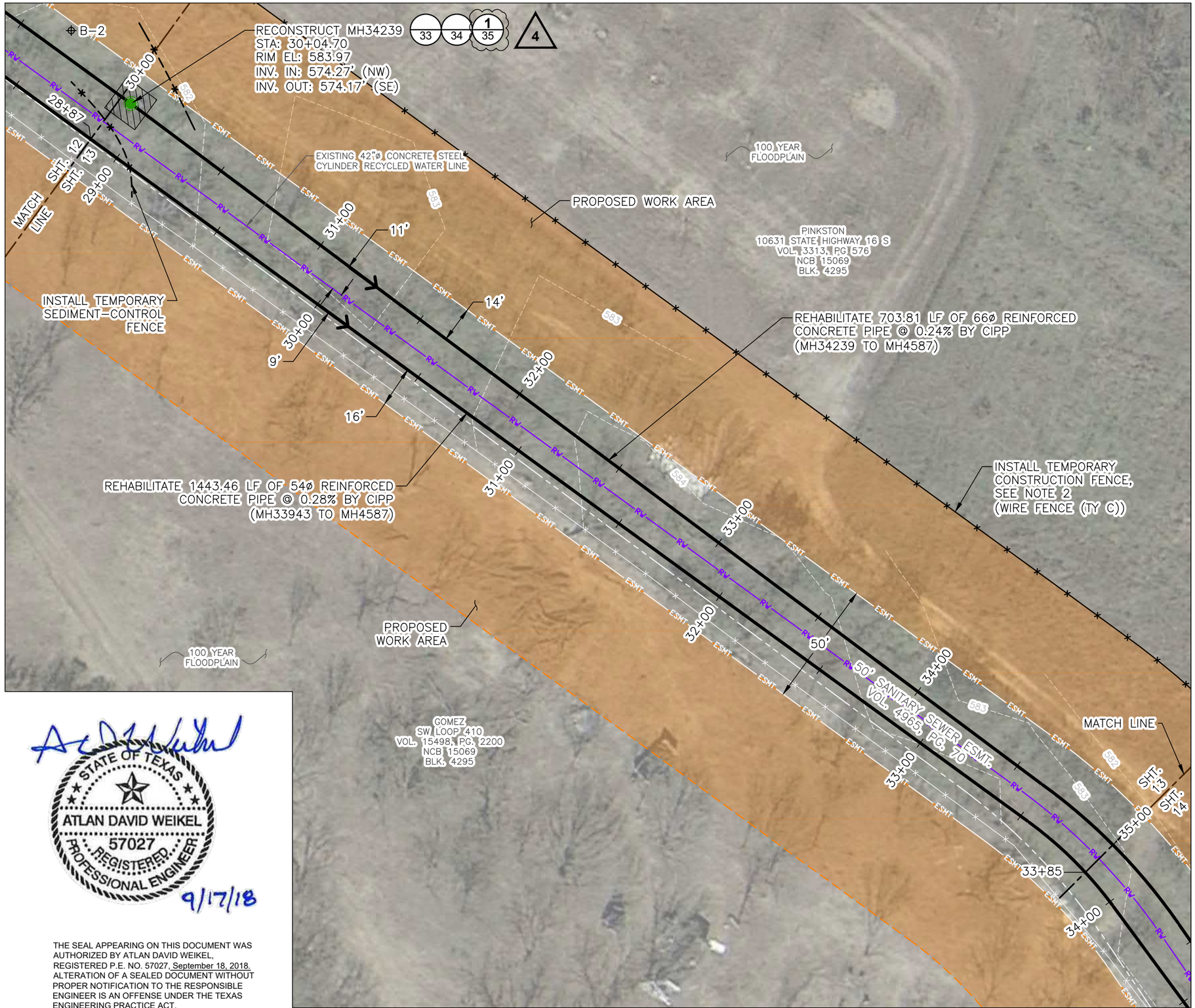

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ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	EST.	FINAL
520	HYDROMULCHING	SY	45	
540	TEMPORARY SEDIMENT-CONTROL FENCE	LF	103	
550	TRENCH EXCAVATION SAFETY PROTECTION	LF	80	
552	WIRE FENCE (TY C)	LF	511	
855	RECONSTRUCTION OF EXISTING MANHOLES	EA	1	
866	SEWER MAIN TELEVISION INSPECTION (30" AND LARGER)	LF	998	
901	CIPP 54" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	498	
901	CIPP 66" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	500	

NOTES:

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2. CONTRACTOR SHALL REMOVE TEMPORARY CONSTRUCTION FENCE AT PROJECT COMPLETION, AS DIRECTED BY THE ENGINEER. FENCE REMOVAL AND DISPOSAL SHALL BE CONSIDERED SUBSIDIARY TO BID ITEM 552 6003, WIRE FENCE (TY C).
3. CONTRACTOR SHALL FIELD LOCATE AND PROTECT EXISTING UTILITIES DURING CONSTRUCTION ACTIVITIES. DAMAGE COSTS INCURRED RESULTING FROM THEIR ACTIVITIES SHALL BE BORNE BY THE CONTRACTOR.

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LEGEND

- PROP. CIPP REHAB
- PROP. S-C FENCE
- PROP. TEMP. FENCE
- SITE RESTORATION
- PROP. WORK AREA
- RECYC. WATER LINE (RW)
- FENCE
- PARCEL LINE
- EASEMENT LINE (ESMT)
- SURFACE CONTOURS (590, 591)

SCALE: 1" = 40'
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1	ISSUE FOR ADDENDUM 1	FZ	ADW	8/28/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
SANITARY SEWER ENGINEERING PLAN 8 OF 9

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 13 OF 39
SECT. No. | JOB No. 17-4546
DR. RJ | CK. ADW

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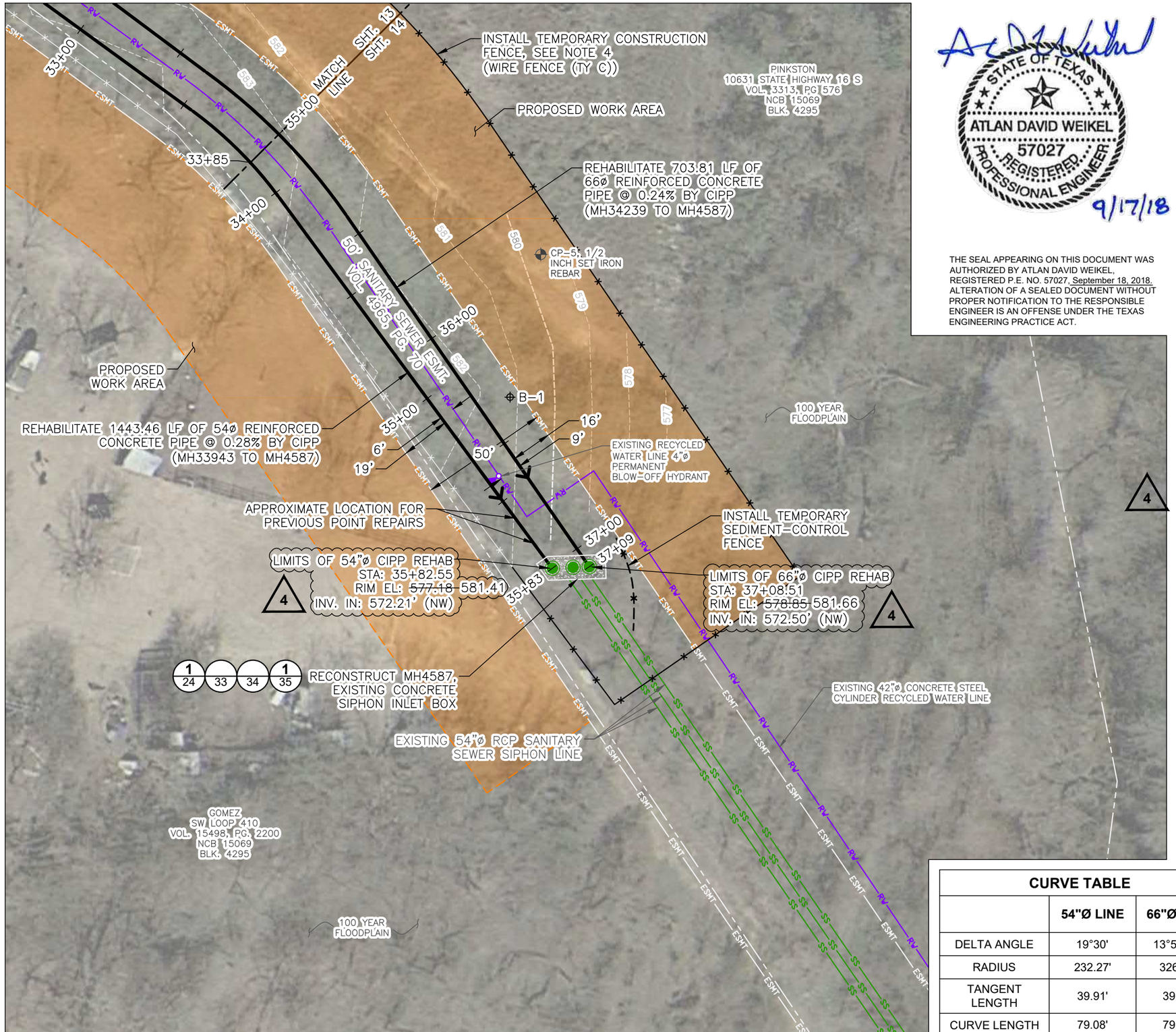

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ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	EST.	FINAL
540	TEMPORARY SEDIMENT-CONTROL FENCE	LF	38	
552	WIRE FENCE (TY C)	LF	426	
855	RECONSTRUCTION OF EXISTING SIPHON INLET STRUCTURE (MH 4587)	EA	1	
866	SEWER MAIN TELEVISION INSPECTION (30" AND LARGER)	LF	407	
901	CIPP 54" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	198	
901	CIPP 66" SANITARY SEWER PIPE (HOT WATER CURED), ALL DEPTHS	LF	209	

NOTES:

1. QUANTITIES ARE ESTIMATED FROM MATCH LINE TO MATCH LINE.
2. DATA SHOWN ON CURVE TABLE IS TAKEN FROM AS-BUILT DRAWINGS, CIRCA 1982. THE DATA IS SHOWN FOR REFERENCE DURING CURVE REHABILITATION AND MAY NOT MATCH EXACTLY WITH LENGTHS SHOWN ON SHEETS, WHICH WERE DERIVED FROM A COMBINATION OF FIELD SURVEY DATA AND AS-BUILT DRAWINGS.
3. DURING THE CONSTRUCTION, REHABILITATION, OR BYPASS PUMPING, WHEN THE TOP SLAB OF THE SIPHON INLET BOX HAS BEEN REMOVED, ALL OR PART, THE CONTRACTOR SHALL PROVIDE TEMPORARY FLOOD PROTECTION TO PREVENT FLOOD WATER FROM ENTERING THE SIPHON INLET BOX FOR A 100 YEAR FLOOD EVENT. THE BASE ELEVATION FOR THE 100 YEAR FLOODPLAIN IS ~586.5', NSPI.
4. CONTRACTOR SHALL REMOVE TEMPORARY CONSTRUCTION FENCE AT PROJECT COMPLETION, AS DIRECTED BY THE ENGINEER. FENCE REMOVAL AND DISPOSAL SHALL BE CONSIDERED SUBSIDIARY TO BID ITEM 552 6003, WIRE FENCE (TY C).
5. CONTRACTOR SHALL FIELD LOCATE AND PROTECT EXISTING UTILITIES DURING CONSTRUCTION ACTIVITIES. DAMAGE COSTS INCURRED RESULTING FROM THEIR ACTIVITIES SHALL BE BORNE BY THE CONTRACTOR.
6. IF USING RECYCLED WATER LINE FOR CONSTRUCTION ACTIVITIES CONTRACTOR SHALL COORDINATE WITH SAWS PRIOR TO USE AND SHALL USE EXISTING APPURTENANCES.
7. INTERIOR RECONSTRUCTION OF THE EXISTING SIPHON INLET BOX (MH 4587) SHALL ONLY BE ALLOWED DURING DRY WEATHER FLOW CONDITIONS.

SCALE: 1" = 40'
0 20 40

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CURVE TABLE

	54"Ø LINE	66"Ø LINE
DELTA ANGLE	19°30'	13°55'48"
RADIUS	232.27'	326.99'
TANGENT LENGTH	39.91'	39.95'
CURVE LENGTH	79.08'	79.50'

LEGEND

PROP. CIPP REHAB
PROP. S-C FENCE
PROP. TEMP. FENCE
PROP. WORK AREA
SANITARY SEWER — SS
RECYC. WATER LINE — RW
FENCE
PARCEL LINE
EASEMENT LINE — ESMT
SURFACE CONTOURS — 590 / 591

No.	Revision	Drawn	Approved	Date
2	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
1	ISSUE FOR ADDENDUM 1	FZ	ADW	8/28/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
SANITARY SEWER ENGINEERING PLAN 9 OF 9

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ | CK. ADW
JOB No. 17-4546
SHEET 14 OF 39

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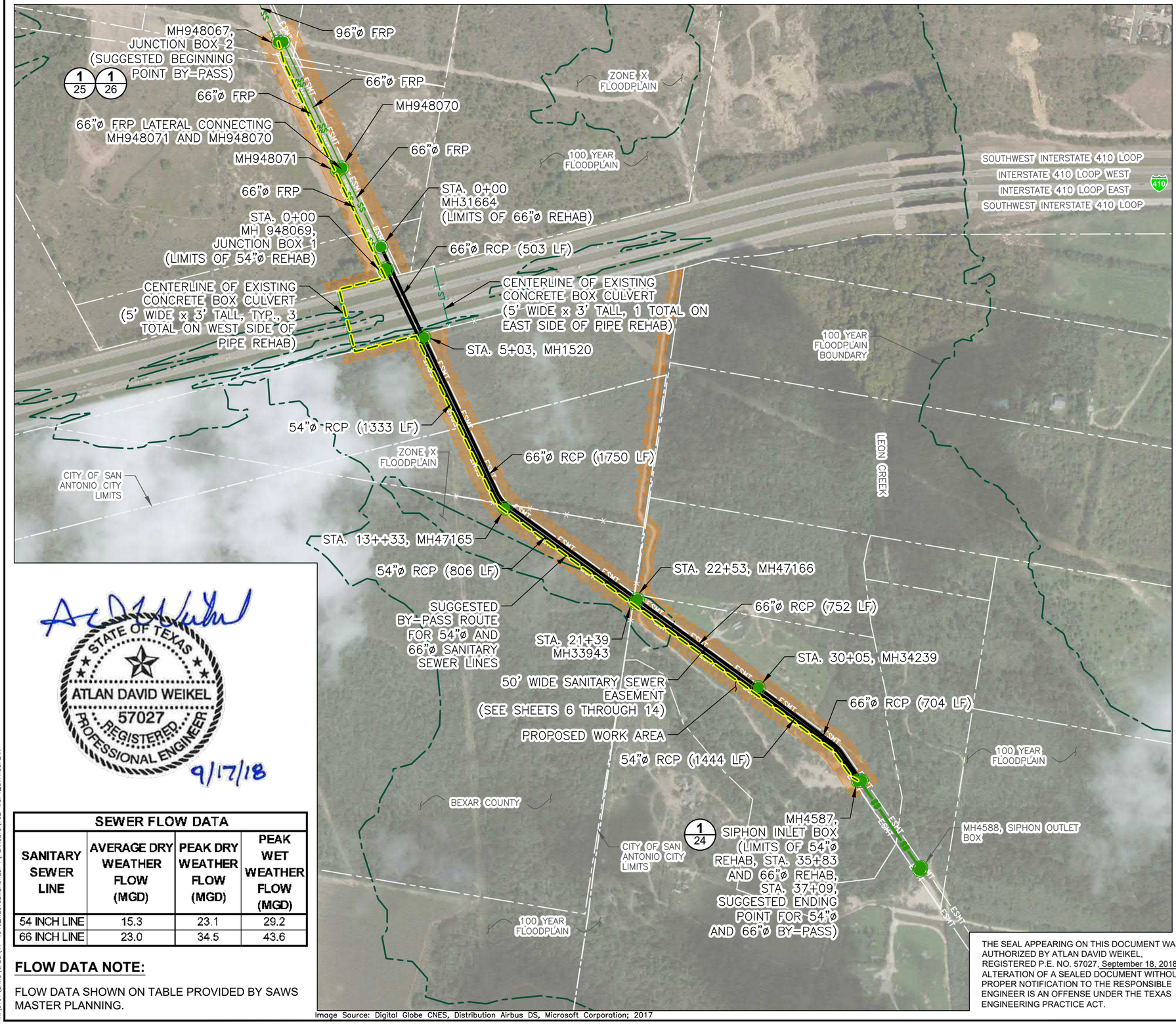

BY-PASS PUMPING NOTES:

1. The Contractor is responsible for ensuring that no Sanitary Sewer Overflow (SSO) occurs as a result of their work. All Contractor personnel responsible for SSO prevention and control shall be trained on proper response. Should an SSO occur, the Contractor shall:
   A. Identify the source of the SSO and notify SAWS Emergency Operations Center immediately at 210-233-2015. Provide the address of the spill and an estimated volume or flow.
   B. Attempt to eliminate the source of the SSO.
   C. Contain sewage from the SSO to the extent possible to prevent contamination of waterways.
   D. Clean up the spill site (return contained sewage to the collection system if possible) and dispose of contaminated soil / materials.
   E. Clean the affected sewer mains and remove any debris.
   F. Meet all post-SSO requirements per the EPA consent decree, including line cleaning and televising the affected sewer mains (at SAWS direction) within 24 hours.

   Should the Contractor fail to address an SSO immediately, and to SAWS satisfaction, they will be responsible for all additional costs incurred by SAWS, including any fines from the EPA.
2. Contractor shall provide BY-PASS pumping and flow management as necessary of sewage around each segment of pipe to be replaced, in accordance with standard specification "864-S2 BY-PASS Pumping (Large Diameter Sanitary Sewers)".
3. Contractor shall submit BY-PASS and phasing plans to SAWS for review and approval prior to commencement of the construction.
4. Bypass pumping across Leon Creek is prohibited. (4)
5. Sewer work and clean up shall be in accordance with guidelines set forth by TCEQ and SAWS. Contractor shall identify and train personnel responsible for spillage prevention and control. Contractor shall also document and educate employees in advance of work about the work environment including what to do when there are sewer leaks and how to work safely around raw sewage.
6. Contractor shall coordinate with all responsible regulatory authorities and obtain all required permits necessary for the BY-PASS pumping. Contractor shall obtain all necessary discharge permits and temporary row easements from governing authorities. Contractor shall provide to SAWS the hard copies of the obtained permits. Copies of the permits obtained are required to be located at the project site at all times. Contractor shall notify SAWS two weeks prior to the scheduled BY-PASS pumping. Refer to the general notes provided in these contract documents for contact information.
7. This Suggested By-pass Pumping Plan is for information purposes only and the Contractor is required to develop an independent BY-PASS pumping plan for bidding and construction purposes.
8. Contractor shall stay within all existing Sanitary Sewer Easements and/or within public right-of-ways.
9. See Sheet 16 for additional By-pass pumping plan notes.
10. If needed for access, contractor shall remove, protect, and reinstall Junction Box 2 ~~and Siphon Inlet Box~~ lids (nspi).

(4)

SCALE: 1" = 500'
0 250 500

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(4)

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SEWER FLOW DATA			
SANITARY SEWER LINE	AVERAGE DRY WEATHER FLOW (MGD)	PEAK DRY WEATHER FLOW (MGD)	PEAK WET WEATHER FLOW (MGD)
54 INCH LINE	15.3	23.1	29.2
66 INCH LINE	23.0	34.5	43.6

FLOW DATA NOTE:

FLOW DATA SHOWN ON TABLE PROVIDED BY SAWS MASTER PLANNING.

LEGEND

- PROP. CIPP REHAB
- SUGGESTED BY-PASS ROUTE
- PROP. WORK AREA
- SS STRUCTURE
- IH BUSINESS ROUTE 410
- SANITARY SEWER SS
- CONC. BOX CULVERT ST
- FLOODPLAIN
- PARCEL LINE
- EASEMENT LINE ESMT
- COSA CITY LIMITS

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0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

WEST SEWERSHED PACKAGE 1
SUGGESTED BY-PASS PUMPING PLAN

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ CK. ADW
JOB No. 17-4546
SHEET 15 OF 39

(4)

SUGGESTED BYPASS PUMPING / FLOW MANAGEMENT PLAN NOTES:

SUGGESTED CONSTRUCTION AND BYPASS / PUMPING FLOW MANAGEMENT SEQUENCE PLAN

1. THE SUGGESTED CONSTRUCTION AND BYPASS PUMPING PLAN ASSUMES REHABILITATING THE EXISTING 66-INCH SANITARY SEWER MAIN IN PHASE I AND THE EXISTING 54-INCH SANITARY SEWER MAIN IN PHASE II.
2. CONTRACTOR SHALL VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF THE EXISTING 54-INCH AND 66-INCH SANITARY SEWER MAINS AND STRUCTURES AND THE 36-INCH AND 42-INCH RECYCLED WATER MAIN THROUGHOUT THE PROJECT AREA. ACTUAL LOCATIONS AND DEPTHS OF ALL SHALL SHALL BE FIELD VERIFIED BY THE CONTRACTOR AS REQUIRED FOR CONSTRUCTION AND TO PROTECT THEM DURING CONSTRUCTION AS OUTLINED IN THE GENERAL NOTES ON SHEET 2.
3. CONTRACTOR SHALL REMOVE THE NECESSARY PORTIONS OF THE EXISTING TOP SLAB AT EXISTING JUNCTION BOX 2 (MH 948067), LOCATED APPROXIMATELY 1,400 LF NORTHWEST OF EXISTING JUNCTION BOX 1 (MH 948069) TO ALLOW TEMPORARY MAN-ENTRY AND TEMPORARY BYPASS PUMPING EQUIPMENT. ALL LIDS OR PORTIONS OF THE SANITARY SEWER STRUCTURES OR MANHOLES REMOVED FOR BYPASS PUMPING OR REHABILITATION PURPOSES SHALL BE RESTORED PER SAWS STANDARDS TO MATCH PRE-CONSTRUCTION CONDITIONS OR BETTER.
4. CONTRACTOR SHALL CUT OUT EXISTING TOP SLAB AT EXISTING SIPHON INLET BOX (MH 4587) AT APPROXIMATE STA. 35+83 TO ALLOW TEMPORARY MAN-ENTRY AND TEMPORARY BYPASS PUMPING EQUIPMENT.

4

PHASE I - 66-INCH SANITARY SEWER BYPASS:

1. CONTRACTOR SHALL INSTALL FLOW MANAGEMENT MEASURES INCLUDING BYPASS PUMPING TO COMPLETE THE REHABILITATION OF THE EXISTING 66-INCH SANITARY SEWER MAIN BY CIPP FROM STA. 0+00 TO STA. 30+05. AT A MINIMUM BYPASS IS REQUIRED FOR THE DIFFERENCE BETWEEN 50 MGD AND PEAK WET WEATHER FLOW. MAXIMUM FLOW INTO THE EXISTING 54-INCH MAIN SHALL BE LIMITED TO 50 MGD. THE SUGGESTED INSTALLATION SEQUENCE FOLLOWS:
   - A. FLOW BYPASS SHALL BEGIN AT JUNCTION BOX 2 (MH 948067). UP TO 50 MGD FROM THE INCOMING 96-INCH MAIN MAY BE DIVERTED TO THE WESTERN 66-INCH DISCHARGE MAIN (WHICH BECOMES AN EXISTING 54-INCH MAIN FURTHER DOWNSTREAM AT JUNCTION BOX 1 (MH 948069)). AT A MINIMUM BYPASS IS REQUIRED FOR THE DIFFERENCE BETWEEN 50 MGD AND PEAK WET WEATHER FLOW.
   - B. INSTALL AN INFLATABLE PLUG OR OTHER APPROVED TEMPORARY PLUGGING DEVICE ON THE DOWNSTREAM SIDE OF THE EASTERN 66-INCH DISCHARGE LINE AT JUNCTION BOX 2 (MH 948067).
   - C. INSTALL AN INFLATABLE PLUG OR OTHER APPROVED TEMPORARY PLUGGING DEVICE ON THE EXISTING 66-INCH FRP LATERAL BETWEEN MH 948070 AND MH 948071 TO ISOLATE FLOW BETWEEN THE PARALLEL SANITARY SEWER MAINS.
   - D. DIVERT FLOW BY GRAVITY FROM THE INCOMING 96-INCH MAIN INTO THE WESTERN 66-INCH DISCHARGE MAIN AT JUNCTION BOX 2 (MH 948067).

4

   - E. FLOWS EXCEEDING 50 MGD SHALL BE BYPASSED FROM JUNCTION BOX 2 (MH 948067) DOWNSTREAM TO THE EXISTING SIPHON INLET BOX (MH 4587) NEAR STA. 37+09 VIA TEMPORARY BYPASS LINES. AT A MINIMUM BYPASS IS REQUIRED FOR THE DIFFERENCE BETWEEN 50 MGD AND PEAK WET WEATHER FLOW. THE TEMPORARY BYPASS LINES MAY BE ROUTED AS FOLLOWS:
     - a. THE TEMPORARY BYPASS LINES SHOULD GENERALLY FOLLOW THE EXISTING 54-INCH SANITARY SEWER MAIN ALIGNMENT EXCEPT FOR CROSSING BENEATH IH-410 LOOP. TO CROSS IH-410 LOOP, THE TEMPORARY BYPASS LINES SHOULD BE ROUTED THROUGH THE EXISTING 5' WIDE BY 3' TALL BOX CULVERTS LOCATED WEST OF THE 54-INCH SANITARY SEWER ALIGNMENT AS SHOWN ON THE SUGGESTED BYPASS PUMPING PLAN.
     - b. SHOULD THE TEMPORARY BYPASS LINES NEED TO CROSS AN EXISTING PRIVATE PROPERTY OWNER'S ACCESS ROAD, THE CONTRACTOR SHALL EITHER BURY THE BYPASS LINES OR PROVIDE A RAMP WITH BASE MATERIAL ABOVE THE PIPING TO ALLOW VEHICULAR AND CONSTRUCTION TRAFFIC PASSAGE WITHOUT DAMAGING THE BYPASS PIPING.
     - c. THE CONTRACTOR SHALL ENSURE THAT ANY BYPASS PUMPING DISCHARGED DOES NOT CAUSE A SURCHARGE AT THE DOWNSTREAM SIPHON STRUCTURE.
     - d. TOTAL TEMPORARY BYPASS LINE LENGTH IS APPROXIMATELY 5,500 LF.

4

2. TO COMPLETE THE REHABILITATION OF THE EXISTING 66-INCH SANITARY SEWER MAIN BY CIPP FROM STA. 30+05 TO 37+09. THE CONTRACTOR SHALL PROVIDE TEMPORARY FLOW DIVERSION WITHIN THE EXISTING SIPHON INLET BOX (MH 4587) NEAR STA. 37+09 TO ISOLATE DISCHARGE FLOW INTO THE 54-INCH SIDE OF THE STRUCTURE. TWO OF THE THREE EXISTING SIPHON BARRELS MUST REMAIN OPERATIONAL FOR DIVERTED AND BYPASS PUMPING FLOWS. THE CONTRACTOR SHALL PLUG THE OFF-LINE SIPHON BARREL TO PREVENT BACKFLOW FROM THE SIPHON OUTLET BOX INTO THE PORTION OF THE SIPHON INLET BOX BEING USED FOR REHABILITATION.

PHASE II - 54-INCH SANITARY SEWER BYPASS:

1. UPON COMPLETION AND APPROVAL OF PHASE I, THE CONTRACTOR SHALL INSTALL FLOW MANAGEMENT MEASURES AS FOLLOWS TO COMPLETE THE REHABILITATION OF THE EXISTING 54-INCH SANITARY SEWER MAIN BY CIPP FROM STA. 0+00 TO STA. 21+39:

4

   - A. FLOW BYPASS SHALL BEGIN AT JUNCTION BOX 2 (MH 948067). 100% OF THE FLOW FROM THE INCOMING 96-INCH MAIN MAY BE DIVERTED TO THE EASTERN 66-INCH DISCHARGE MAIN (WHICH BECOMES THE NEWLY REHABILITATED 66-INCH MAIN FURTHER DOWNSTREAM AT MH 31664).
   - B. REMOVE THE TEMPORARY FLOW DIVERSION WALL WITHIN THE EXISTING SIPHON INLET BOX (MH 4587) NEAR STA. 35+83.
   - C. REMOVE THE INFLATABLE PLUG OR OTHER APPROVED TEMPORARY PLUGGING DEVICE ON THE DOWNSTREAM SIDE OF THE EASTERN 66-INCH DISCHARGE MAIN AT JUNCTION BOX 2 (MH 948067) AND INSTALL IT ON THE DOWNSTREAM SIDE OF THE WESTERN 66-INCH DISCHARGE MAIN.
   - D. MAINTAIN THE INFLATABLE PLUG OR OTHER APPROVED TEMPORARY PLUGGING DEVICE ON THE EXISTING 66-INCH FRP LATERAL BETWEEN MH 948070 AND MH 948071 TO ISOLATE FLOW BETWEEN THE PARALLEL SANITARY SEWER MAINS.
   - E. DIVERT FLOW BY GRAVITY FROM THE INCOMING 66-INCH MAIN INTO THE EASTERN 66-INCH DISCHARGE MAIN AT JUNCTION BOX 2 (MH 948067).
   - F. BYPASS FLOW PUMPING IS NOT REQUIRED.

2. TO COMPLETE THE REHABILITATION OF THE EXISTING 54-INCH RCP MAIN FROM STA. 21+39 TO STA. 35+83. THE CONTRACTOR SHALL PROVIDE A TEMPORARY FLOW DIVERSION WITHIN THE EXISTING SIPHON INLET BOX (MH 4587) NEAR STA. 35+83 TO ISOLATE DISCHARGE FLOW INTO THE 66-INCH SIDE OF THE STRUCTURE. TWO OF THE THREE EXISTING SIPHON BARRELS MUST REMAIN OPERATIONAL FOR DIVERTED FLOWS. THE CONTRACTOR SHALL PLUG THE OFF-LINE SIPHON BARREL TO PREVENT BACKFLOW FROM THE SIPHON OUTLET BOX INTO THE PORTION OF THE SIPHON INLET BOX BEING USED FOR REHABILITATION.

PHASE III - SIPHON INLET BOX (MH 4587) FLOW MANAGEMENT:

4

1. UPON COMPLETION AND APPROVAL OF THE REHABILITATION OF THE EXISTING 54-INCH SANITARY SEWER MAIN BY CIPP FROM STA. 0+00 TO STA. 35+83, THE CONTRACTOR SHALL INSTALL FLOW MANAGEMENT MEASURES TO COMPLETE REHABILITATION OF THE EXISTING SIPHON INLET BOX (4587) NEAR STA. 35+83. SEE SHEET 24 OF 39 FOR DETAIL OF EXISTING SIPHON INLET BOX (MH4587) AND SUGGESTED FLOW MANAGEMENT AND REHABILITATION/RECONSTRUCTION SEQUENCE PLAN.
2. UPON COMPLETION AND APPROVAL OF THE RECONSTRUCTION OF THE EXISTING SIPHON INLET BOX (MH 4587), THE CONTRACTOR SHALL:
   - A. REMOVE THE INFLATABLE PLUG OR OTHER APPROVED TEMPORARY PLUGGING DEVICE AT JUNCTION BOX 2 (MH 948067) TO ALLOW FLOW THROUGH BOTH DISCHARGE PIPES.
   - B. REMOVE THE INFLATABLE PLUG OR OTHER APPROVED TEMPORARY PLUGGING DEVICE ON THE EXISTING 66-INCH FRP LATERAL BETWEEN MH 948070 AND MH 948071 TO ALLOW FLOW BETWEEN THE PARALLEL SANITARY SEWER MAINS.

NOTES

1. THE SUGGESTED CONSTRUCTION AND BYPASS PUMPING SEQUENCE PLAN PRESENTED ON THESE SHEETS IS PROPOSED ONLY FOR CONTRACTOR CONSIDERATION. THE CONTRACTOR SHALL SUBMIT A BYPASS PUMPING PLAN TO THE OWNER FOR FINAL APPROVAL PER SPECIFICATION 864-S2.

4

2. DURING CIPP INSTALLATION, THE CONTRACTOR IS ALLOWED TO DIVERT FLOW, TO THE LIMITATIONS IDENTIFIED ABOVE, INTO THE PARALLEL SEWER LINE; HOWEVER, THE CONTRACTOR IS CAUTIONED THAT THE CONDITION OF THE EXISTING SEWER LINES ARE NOT FULLY KNOWN AND THAT THE CONTRACTOR SHALL ASSUME THE RISK ASSOCIATED WITH USING THESE EXISTING LINES FOR FLOW DIVERSION PURPOSES.
3. THE CONTRACTOR SHALL EXERCISE CAUTION WHILE WORKING IN THE VICINITY OF THE RECYCLED WATER MAIN WITHIN THE PROJECT LIMITS.
4. THE CONTRACTOR WILL BE ALLOWED TO USE THE EXISTING 36-INCH AND 42-INCH RECYCLED WATER LINE TO PROVIDE CONSTRUCTION WATER NECESSARY FOR INSTALLATION OF THE CIPP LINER, FROM EXISTING RECYCLED WATER LINE APPURTENANCES. THE CONTRACTOR WILL NOT BE ALLOWED TO PRESSURE TAP THE EXISTING 36-INCH OR 42-INCH RECYCLED WATER LINES. THE CONTRACTOR SHALL COORDINATE USE OF THE RECYCLED WATER LINE WITH THE SAWS DOS RIOS TEAM AND SHALL FOLLOW ESTABLISHED COORDINATION PROCEDURES FOR SAID USE. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 24 HOURS ADVANCED NOTICE TO THE SAWS DOS RIOS TEAM WHEN SCHEDULING USE OF THE RECYCLED WATER LINE.

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57027
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Texas Engineering Firm F-131
Texas Survey Firm 10194320
1011 West County Line Road
New Braunfels, Texas 78130
(P) 210/298.5030 (F) 830/626.3544
www.trihydro.com
TRIHYDRO PROJECT NO. 702-557-E00

No.	Revision	Drawn	Approved	Date
4	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1

SUGGESTED BY-PASS PUMPING PLAN NOTES

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 16
SECT. No. | JOB No. 17-4546 | OF 39
DR. RJ | CK. ADW

4

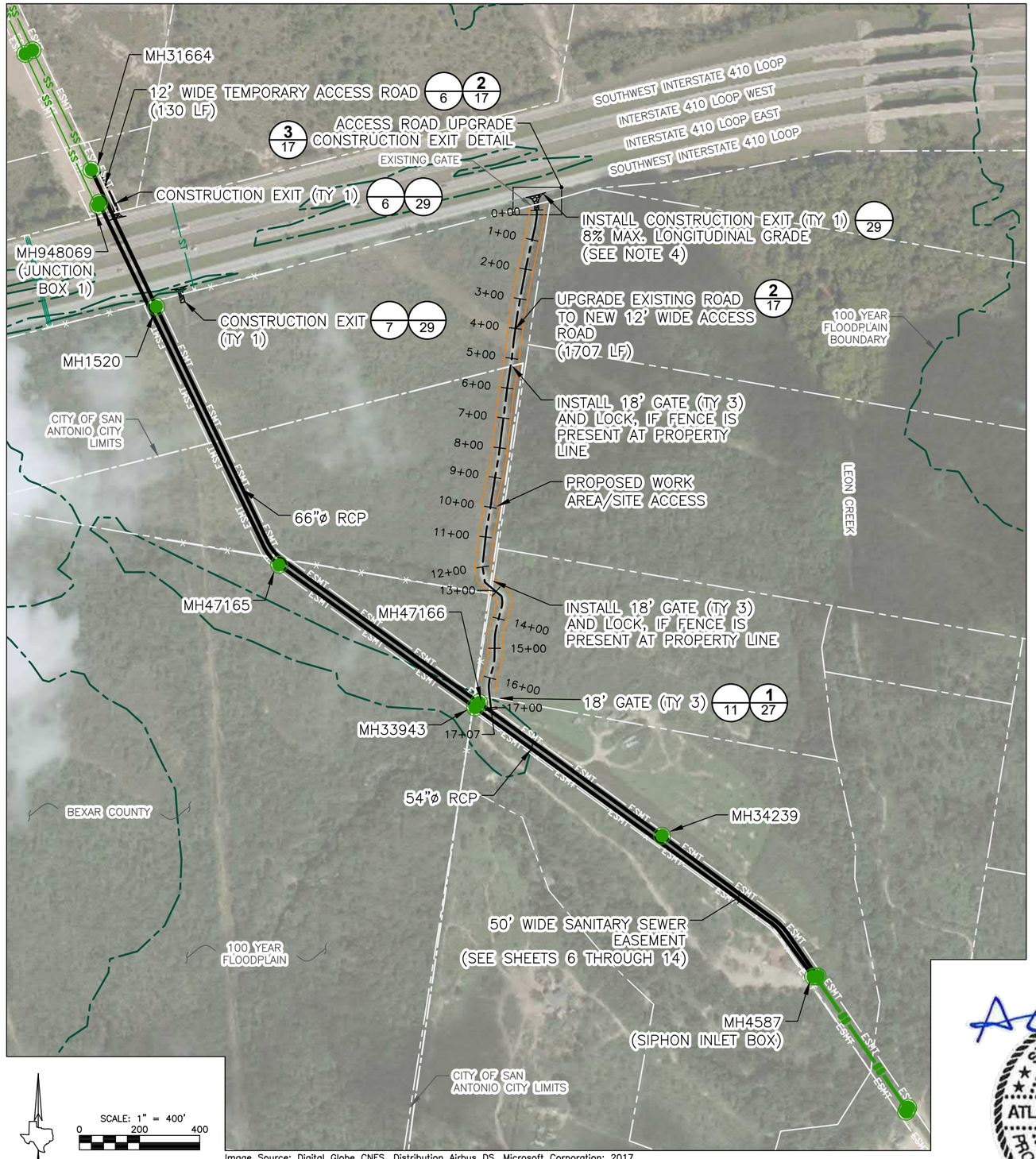
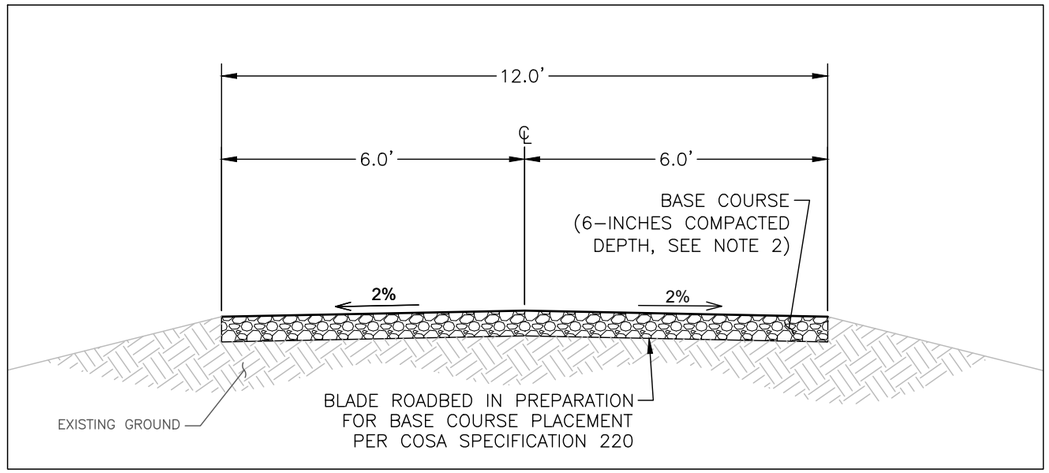
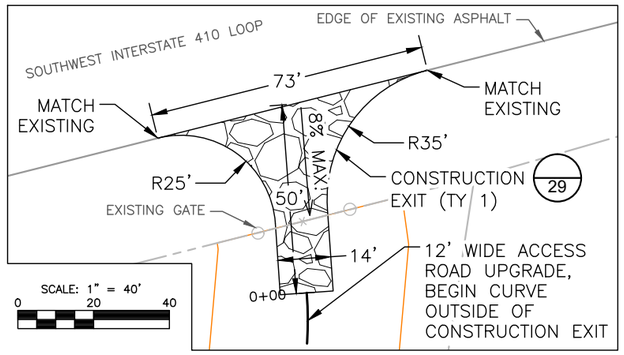


Image Source: Digital Globe CNES, Distribution Airbus DS, Microsoft Corporation; 2017

1 ACCESS ROAD IMPROVEMENT PLAN
SCALE: 1" = 400'



2 TYPICAL ROADWAY SECTION - ACCESS ROAD
SCALE: NONE



3 ACCESS ROAD UPGRADE CONSTRUCTION EXIT DETAIL
SCALE: 1" = 40'

NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE GATES WILL REMAIN CLOSED AND LOCKED WHILE NOT IN USE.
2. BASE COURSE SHALL BE TYPE C GRADE 1 AGGREGATE (COSA SPECIFICATION 200).
3. THE TYPICAL ROADWAY SECTION, SHOWN ON DETAIL 2 OF THIS SHEET SHALL BE USED TO CONSTRUCT BOTH ACCESS ROADS.
4. EMBANKMENT MATERIAL MAY BE REQUIRED TO CONSTRUCT CONSTRUCTION EXIT (TY 1) AT LOCATION AND GRADE SHOWN. EMBANKMENT PLACEMENT AND REMOVAL SHALL BE CONSIDERED SUBSIDIARY TO BID ITEMS 506 6020 AND 506 6024; CONSTRUCTION EXITS (INSTALL) (TY 1), CONSTRUCTION EXITS (REMOVE).

ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	EST.	FINAL
200	BASE COURSE (6-INCHES COMPACTED DEPTH)	SY	2276	
220	BLADING	LF	1707	
506	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	122	
506	CONSTRUCTION EXITS (REMOVE)	SY	122	
552	18' GATE (TY 3)	EA	2	

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LEGEND

PROP. CIPP REHAB
PROP. ACCESS ROAD
PROP. CONST. EXIT
SS STRUCTURE
IH BUSINESS ROUTE
SANITARY SEWER — SS
CONC. BOX CULVERT — ST
FLOODPLAIN
PARCEL LINE
EASEMENT LINE — ESMT
COSA CITY LIMITS

No.	Revision	Drawn	Approved	Date
1	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
ACCESS ROAD IMPROVEMENT PLAN

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 17 OF 39
SECT. No.
DR. RJ | CK. ADW | JOB No. 17-4546

M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_ACCESSROADPLAN

4

TRAFFIC CONTROL PLAN NOTES

GENERAL TCP NOTES

1. THE CONTRACTOR SHALL NOT HAVE EXCLUSIVE USE OF THE RIGHT OF WAY BUT SHALL COOPERATE IN THE USE OF THE RIGHT OF WAY WITH THE CITY OF SAN ANTONIO, TXDOT, AS WELL AS VARIOUS PUBLIC UTILITY COMPANIES AS MAY BE REQUIRED. IN THE EVENT OF UNFORESEEN UTILITY ADJUSTMENTS, THE CONTRACTOR SHALL EXECUTE WORK IN SUCH A MANNER AND SEQUENCE AS TO ALLOW THE ADJUSTMENTS TO BE MADE WITH MINIMAL DISRUPTION TO TRAFFIC.

2. TRAFFIC MUST BE HANDLED APPROPRIATELY THROUGH THE PROJECT DURING CONSTRUCTION AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE FOR THE SAFETY AND COMFORT OF THE TRAVELING PUBLIC AT ALL TIMES. THE CONTRACTOR SHALL BE REQUIRED TO GIVE AT LEAST 48 HOURS ADVANCE NOTICE OF ANY LANE CLOSURES OF CHANGE IN TRAFFIC FLOW DIRECTION.

3. THE CONTRACTOR'S ATTENTION IS CALLED TO THE NECESSITY OF ERECTING AND MAINTAINING BARRICADES, WARNING SIGNS, AND DIRECTIONAL SIGNS AT ALL APPROACH STREET INTERSECTIONS IN ORDER TO PROPERLY DIRECT TRAFFIC WITHIN THE LIMITS OF THIS PROJECT. ALL SUCH BARRICADES, WARNING SIGNS, AND DIRECTIONAL SIGNS SHALL COMPLY WITH THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES(TMUTCD).

4. WHILE WORKING NEAR TXDOT ROADWAY SHOULDERS CONTRACTOR SHALL PROVIDE A SHADOW VEHICLE WITH A TRUCK MOUNTED ATTENUATOR DEVICE AND HIGH INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS, AS DESCRIBED IN GENERAL NOTES 4 AND 5 ON SHEET 20.

5. CONTRACTOR SHALL PROVIDE VEHICULAR INGRESS AND EGRESS ACCESS TO AT LEAST ONE DRIVEWAY PER PROPERTY AT ALL TIMES UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

6. CONTRACTOR SHALL PROVIDE FOR THE SAFE MOVEMENT OF ALL PEDESTRIAN TRAFFIC AND BICYCLE TRAFFIC IN AND AROUND THE CONSTRUCTION AREA DURING THE CONSTRUCTION PHASING. ALL SUCH\ BARRICADES, WARNING SIGNS, AND DIRECTIONAL SIGNS SHALL COMPLY WITH THE LATEST EDITION OF THE TMUTCD.

7. ACCESS TO PROPERTIES AND BUSINESSES ADJACENT TO THE RIGHT OF WAY MUST BE PROVIDED AND MAINTAINED AT ALL TIMES UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE CONTRACTOR WILL PERSONALLY CONTACT THE BUSINESS OR PROPERTY OWNER AT LEAST 5 DAYS IN ADVANCE OF ANY DRIVEWAY CLOSURE. IF THE PROPERTY HAS MORE THAN ONE DRIVEWAY, THEY SHALL BE CLOSED ONE AT A TIME. IF THE PROPERTY ONLY HAS ONE ACCESS, THE DRIVEWAY SHALL BE BUILT IN HALF SECTIONS. IF CLOSURES OF A SINGLE ACCESS TO ANY BUSINESS IS REQUIRED FOR DRAINAGE OR UTILITY WORK, THIS ACTIVITY SHALL BE PERFORMED DURING OFF-PEAK HOURS OR AS DIRECTED BY THE ENGINEER.

8. METAL PLATES WILL BE ALLOWED TO COVER TRENCHES LEFT OVERNIGHT AND/OR DURING THE DAY THAT HAVE NOT HAD FLOWABLE BACKFILL PLACED BUT SHALL NOT BE USED ON ON ANY SPECIFIC TRENCH FOR MORE THAN 3 CALENDAR DAYS. A HMAC (TY D) MIX OR APPROVED EQUAL BY THE ENGINEER SHALL BE USED AROUND THE EDGES OF ALL METAL PLATES PLACED IN THE PAVEMENT TO PROVIDE A SMOOTH TRANSITION OVER THE PLATES. IF CONTRACTOR CHOOSES NOT TO UTILIZE METAL PLATES, ALL OPEN TRENCHES MUST BE BACKFILLED AT THE END OF EACH WORKING DAY TO ALLOW FOR NON-INTERUPPED, FREE-FLOW TRAFFIC.

9. THE CONTRACTOR WILL PROVIDE A SMOOTH TRANSITION AND REMOVE AND CLEAN ANY MATERIALS AND EQUIPMENT THAT ENDANGERS THE PUBLIC. A MAX DROP OFF SLOPE OF 6:1 SHALL BE IMPLEMENTED FOR ALL EDGE DROP OFFS NOT PROTECTED BY PORTABLE CONCRETE TRAFFIC BARRIER. REFER TO "WORKSHEET FOR EDGE CONDITION TREATMENT TYPES" FOR ALL EDGE OF PAVEMENT SLOPE RATES.

10. SEE GENERAL NOTES ON SHEET 20 FOR ADDITIONAL TRAFFIC CONTROL INFORMATION.

11. UNLESS AUTHORIZED BY ENGINEER, CONTRACTOR MAY NOT SHUT DOWN ANY LANES DURING PEAK HOURS. ALL EXISTING TRAFFIC LANES ARE TO BE OPENED TO TRAFFIC DURING PEAK HOURS AND AT THE END OF EACH WORK DAY.

12. PEAK HOURS ARE DEFINED AS FOLLOWS:
    MONDAY THROUGH FRIDAY

    7:00 A.M. TO 9:00 A.M. AND

    4:00 P.M. TO 6:00 P.M.

13. ADVANCE WARNING LANE CLOSURE SIGNS SHALL BE COVERED WHEN ALL EXISTING LANES ARE OPEN TO TRAFFIC.

SEQUENCE OF CONSTRUCTION

1. PLACE PROJECT ADVANCE WARNING SIGNS AND BARRICADES. SIGNS TO REMAIN FOR DURATION OF PROJECT. USE TXDOT STANDARD TCP (1-2)-12.
2. ESTABLISH EROSION AND SEDIMENTATION CONTROLS AS NECESSARY AND PER STANDARDS.
3. IMPLEMENT TCP SETUP ACCORDING TO TCP LAYOUTS, TMUTCD, AND TXDOT STANDARDS.
4. INSTALL BYPASS PUMPING OPERATION AND REHABILITATE SANITARY SEWER STRUCTURES AND MAINS.
5. REMOVE ALL SW3P DEVICES AS DIRECTED.
6. PERFORM FINAL CLEANUP.

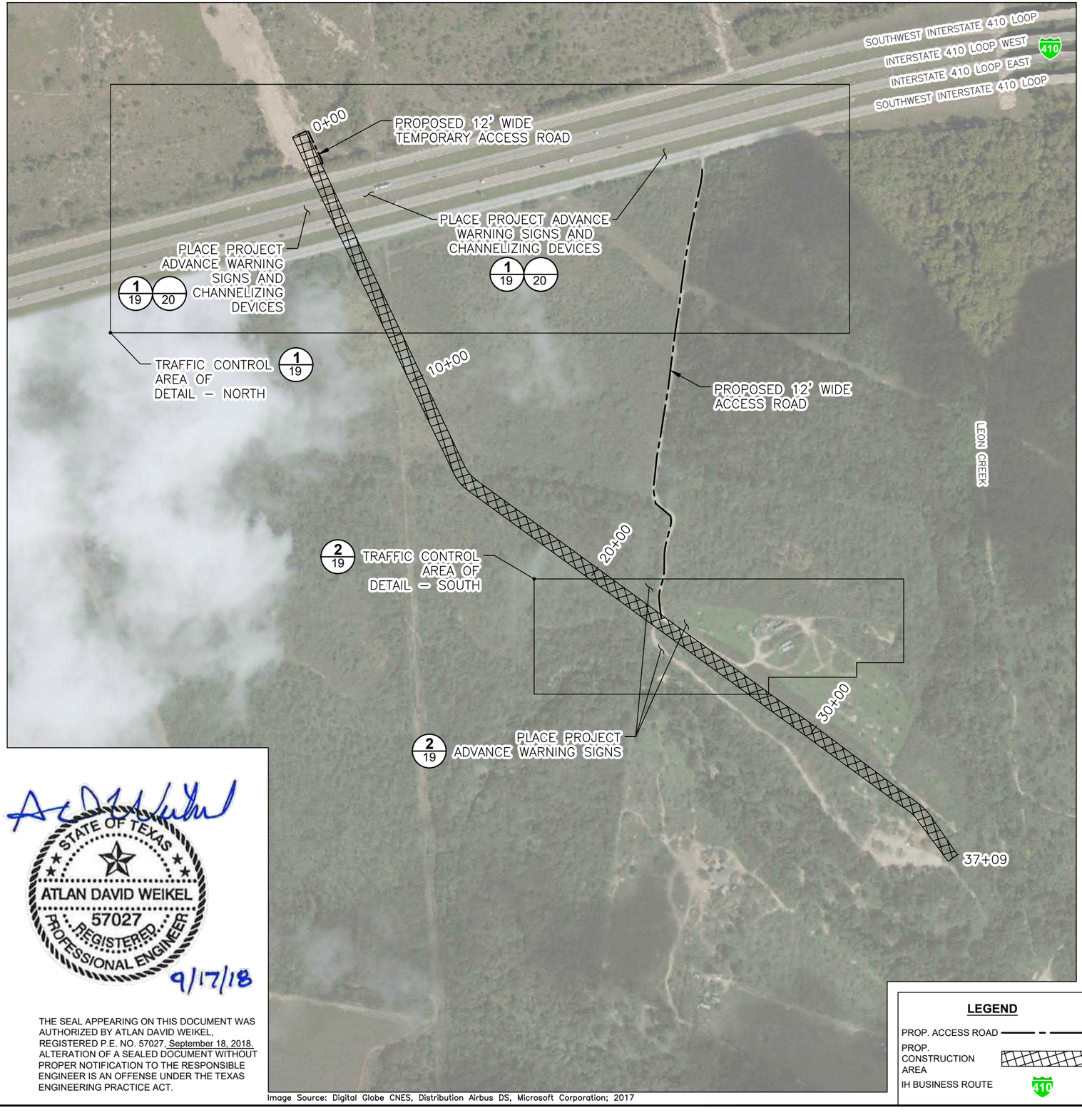

Image Source: Digital Globe CNES, Distribution Airbus DS, Microsoft Corporation; 2017

NOTE:

THE STATIONING SHOWN ON THIS SHEET REFERENCES THE 66-INCH SANITARY SEWER LINE.

SCALE: 1" = 400'
0 200 400

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LEGEND

PROP. ACCESS ROAD
PROP. CONSTRUCTION AREA
IH BUSINESS ROUTE 410

Trihydro CORPORATION
Texas Engineering Firm F-131
Texas Survey Firm 10194320
1011 West County Line Road
New Braunfels, Texas 78130
(P) 210/298.5030 (F) 830/626.3544
www.trihydro.com
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1	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
TRAFFIC CONTROL PLAN

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 18
SECT. No. | JOB No. 17-4546 | OF 39
DR. RJ | CK. ADW

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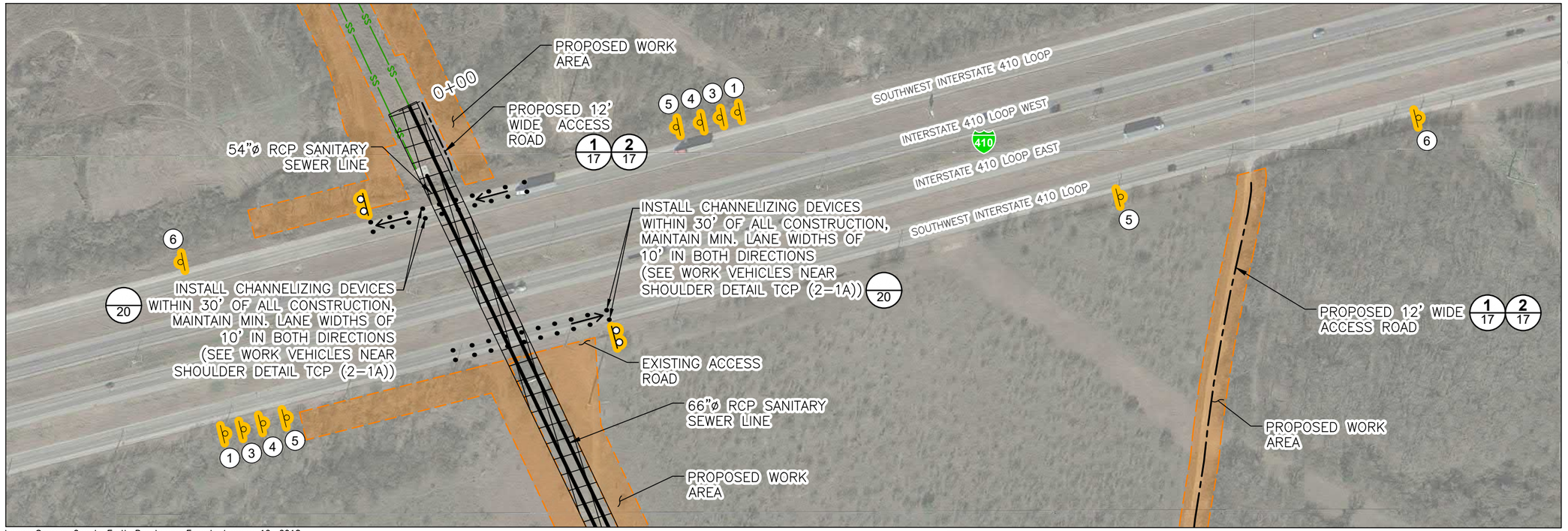

Image Source: Google Earth Pro Image Export; January 12, 2018

1 TRAFFIC CONTROL AREA OF DETAIL - NORTH

SCALE: 1" = 200'

SCALE: 1" = 200'
0 100 200

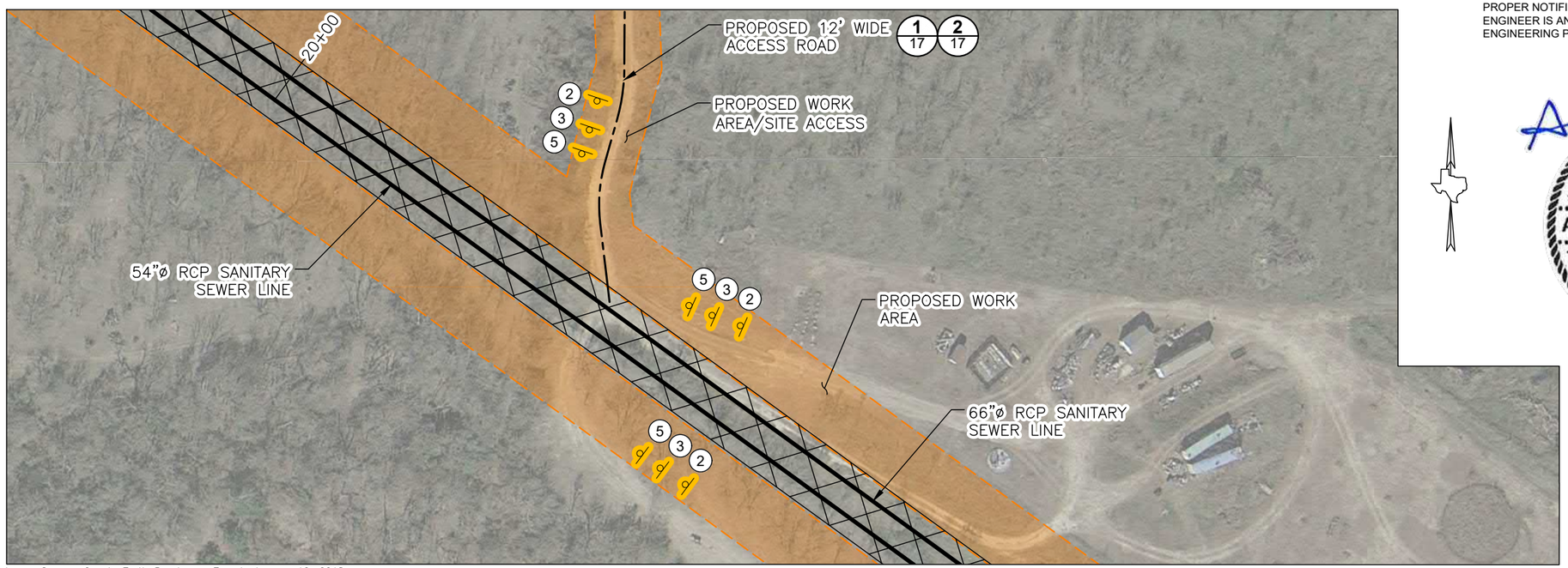

Image Source: Google Earth Pro Image Export; January 12, 2018

2 TRAFFIC CONTROL AREA OF DETAIL - SOUTH

SCALE: 1" = 100'

SCALE: 1" = 100'
0 100 200

1. SHOULDER WORK — CW21-5, 36"x36"
2. UTILITY WORK AHEAD — CW21-7D, 36"x36"
3. XXX FT — CW16-2aP, 30"x12"
4. NARROW LANES AHEAD — CW20-8T, 36"x36"
5. TRUCKS ENTERING ROADWAY — CW27-1T, 48"x48"
6. END ROAD WORK — G20-2, 36"x18"

NOTES:

1. THE STATIONING SHOWN ON THIS SHEET REFERENCES THE 66-INCH SANITARY SEWER LINE.
2. CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN TO TXDOT INSPECTOR PRIOR TO CONSTRUCTION FOR APPROVAL.

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(P) 210/298.5030 (F) 830/626.3544
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LEGEND

- PROP. SIGN
- PROP. TYPE III BARRICADE
- PROP. TRAFFIC DIRECTION
- PROP. CHANNELIZING DEVICES
- PROP. CIPP REHAB
- PROP. ACCESS ROAD
- PROP. CONSTRUCTION AREA
- IH BUSINESS ROUTE
- SANITARY SEWER

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2	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
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REVISIONS

WEST SEWERSHED PACKAGE 1

TRAFFIC CONTROL AREA DETAILS

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ CK. ADW
JOB No. 17-4546
SHEET 19 OF 39

4

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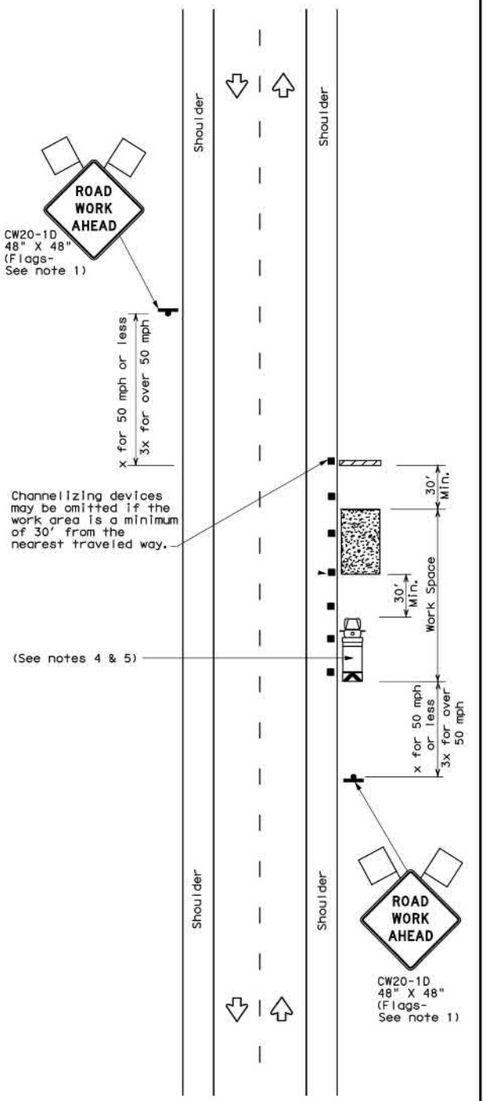
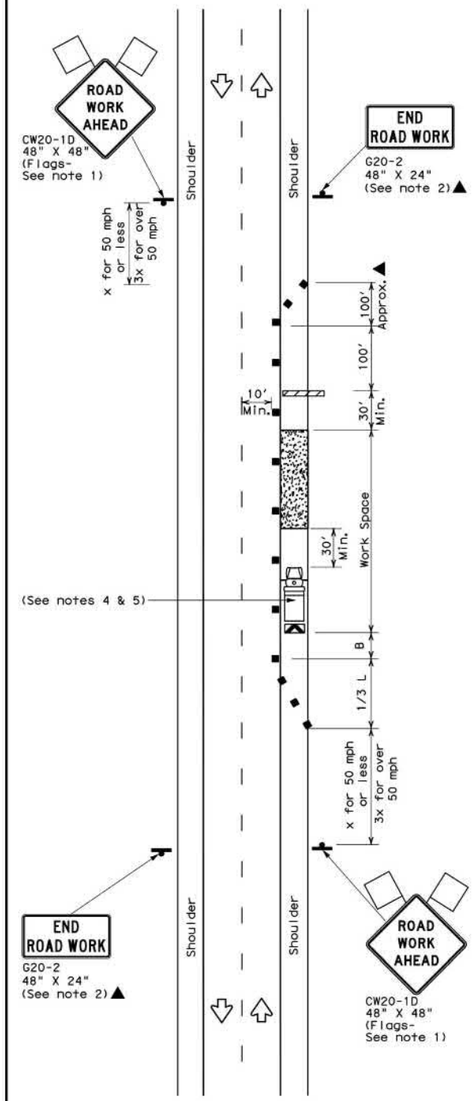


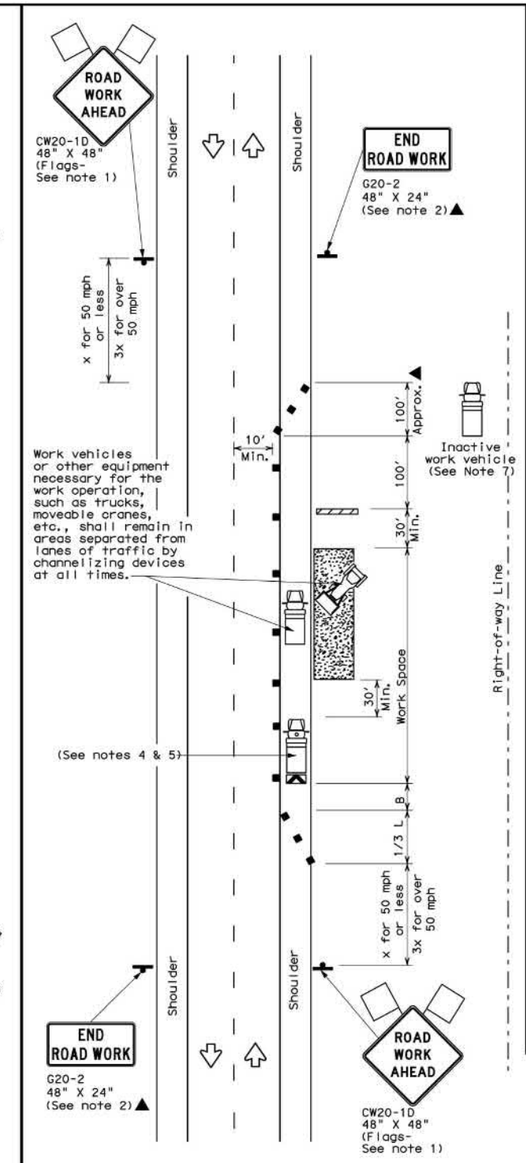
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-12

DW: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
DIST	COUNTY		SHEET NO.

REVISIONS
2-94 2-12
8-95
1-97
4-98

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REVISIONS

WEST SEWERSHED PACKAGE 1

TRAFFIC CONTROL CONVENTIONAL ROAD SHOULDER WORK DETAILS

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ CK. ADW
JOB No. 17-4546
SHEET 20 OF 39

4

M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_TRAFFICCONTROLDETAIL

STATE OF TEXAS
ATLAN DAVID WEIKEL
57027
REGISTERED
PROFESSIONAL ENGINEER
9/17/18

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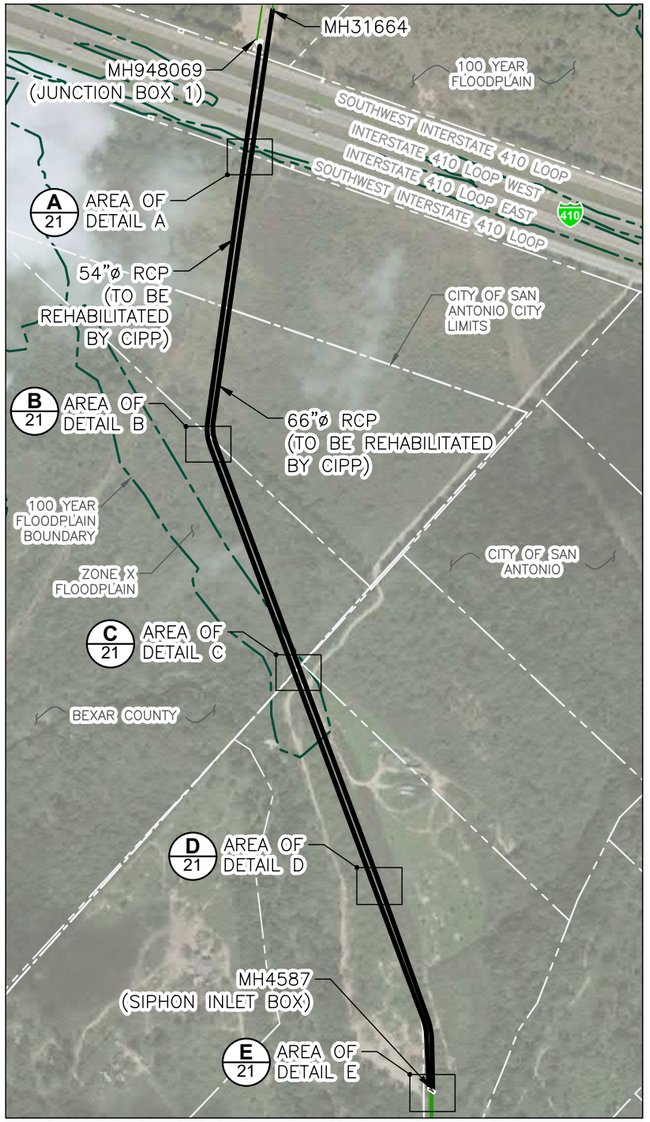
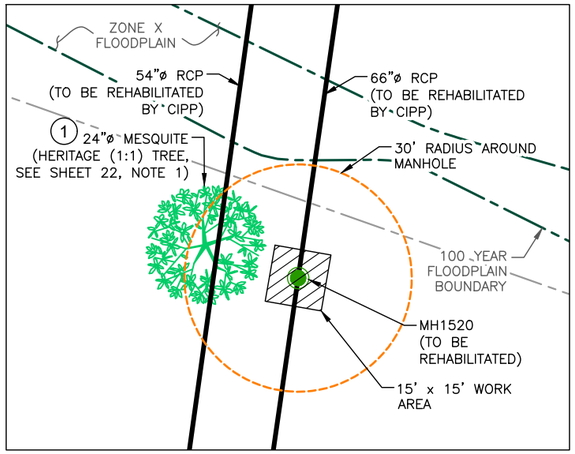


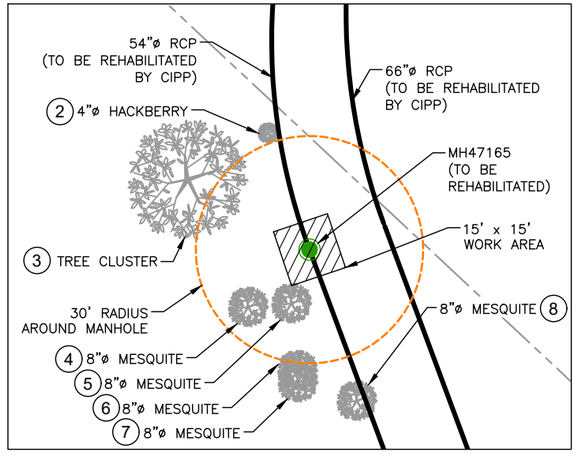
Image Source: Digital Globe CNES, Distribution Airbus DS, Microsoft Corporation; 2017

1 TREE PRESERVATION VICINITY MAP
SCALE: 1" = 500'

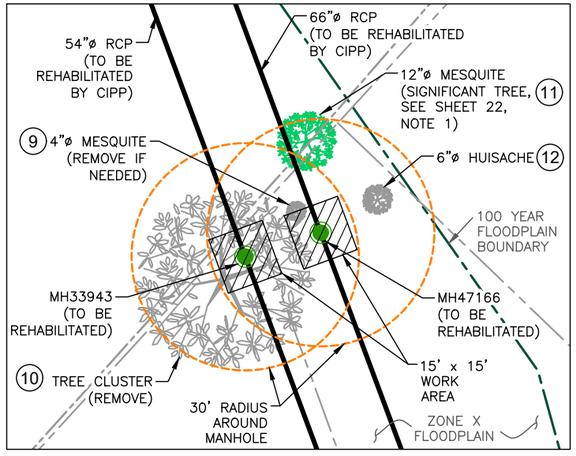
SCALE: 1" = 40'
0 20 40



A AREA OF DETAIL A
SCALE: 1" = 40'



B AREA OF DETAIL B
SCALE: 1" = 40'



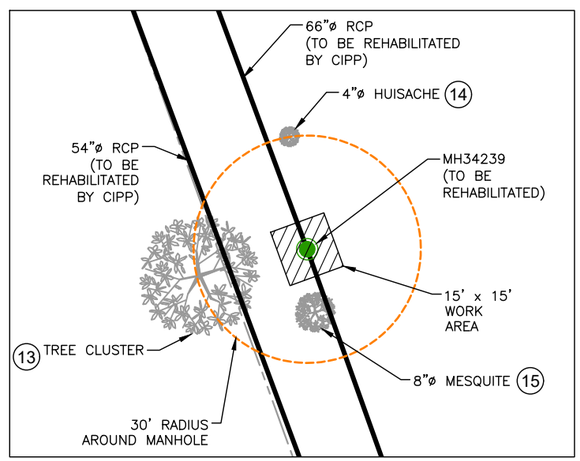
C AREA OF DETAIL C
SCALE: 1" = 40'

TREE INVENTORY TABLE

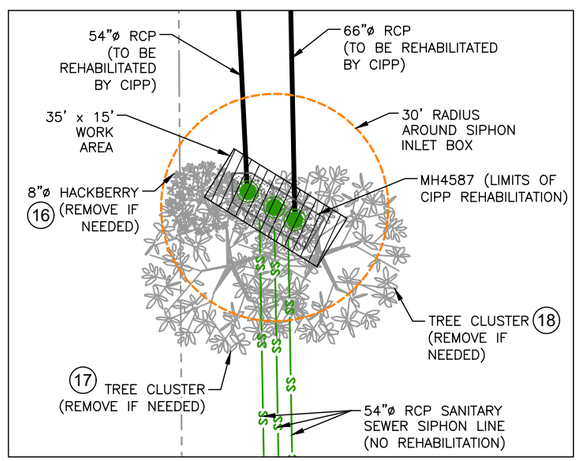
TREE NO.	SPECIES	SIZE (INCHES)	NON-NATIVE	SIGNIFICANT	HERITAGE (3:1)	HERITAGE (1:1)	FLOODPLAIN	PROTECTION LEVEL	SMALL DIAMETER / CLUSTER TREE (INCHES)		SIGNIFICANT TREE (INCHES)		HERITAGE TREE (3:1) (INCHES)		HERITAGE TREE (1:1) (INCHES)	
									REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED
1	MESQUITE	24				X	YES	1 & FENCE								24
2	HACKBERRY	4					YES	II B		4						
3	CLUSTER	6					YES	II B		6						
4	MESQUITE	8					YES	II B		8						
5	MESQUITE	8					YES	II B		8						
6	MESQUITE	8					YES	II B		8						
7	MESQUITE	8					YES	II B		8						
8	MESQUITE	8					YES	II B		8						
9	MESQUITE	4					NO	REMOVE	4							
10	CLUSTER	6					NO	REMOVE	6							
11	MESQUITE	12		X			NO	1 & FENCE				12				
12	HUISACHE	6					NO	II B		6						
13	CLUSTER	6					YES	II B		6						
14	HUISACHE	4					YES	II B		4						
15	MESQUITE	8					YES	II B		8						
16	HACKBERRY	8					YES	REMOVE	8							
17	CLUSTER	6					YES	REMOVE	6							
18	CLUSTER	6					YES	REMOVE	6							

NOTE:

TREES SHOWN AS "CLUSTER" SPECIES WERE FOUND TO BE MESQUITE SPECIES DURING TREE SURVEY. NO TREES IN THE CLUSTERS WERE OVER 6"Ø, AND AS SUCH THE CLUSTERS ARE NOT DEEMED TO BE SIGNIFICANT, PER COSA ORDINANCE 35-523.



D AREA OF DETAIL D
SCALE: 1" = 40'



E AREA OF DETAIL E
SCALE: 1" = 40'

SCALE: 1" = 40'
0 20 40

LEGEND

- PROP. CIPP REHAB
- PROP. WORK AREA
- SIGNIFICANT TREE
- NON-SIGNIFICANT TREE
- SANITARY SEWER LINE (SS)
- COSA CITY LIMITS
- PARCEL BOUNDARY

Trihydro CORPORATION
Texas Engineering Firm F-131
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1011 West County Line Road
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www.trihydro.com
TRIHYDRO PROJECT NO. 702-557-E00

No.	Revision	Drawn	Approved	Date
1	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

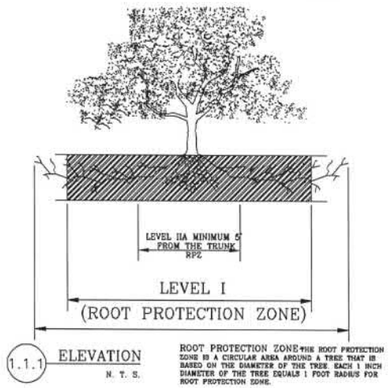
REVISIONS

WEST SEWERSHED PACKAGE 1
TREE PRESERVATION PLAN

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 21 OF 39
SECT. No.
DR. RJ | CK. ADW | JOB No. 17-4546

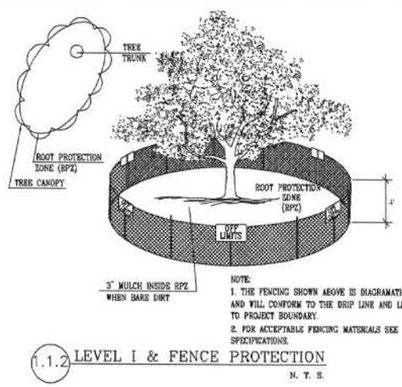
4

M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_TREEPRESERVATION



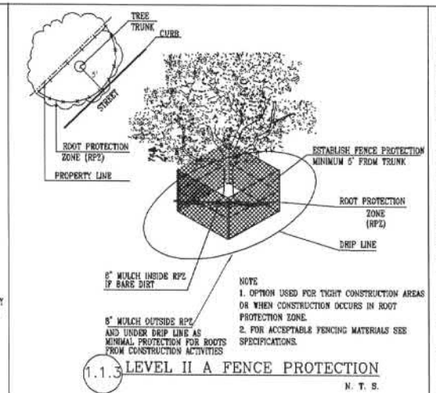
1.1.1 ELEVATION
N. T. S.

ROOT PROTECTION ZONE=THE ROOT PROTECTION ZONE IS A CIRCULAR AREA AROUND A TREE THAT IS BASED ON THE DIAMETER OF THE TREE. EACH 1 INCH DIAMETER OF THE TREE EQUALS 1 FOOT RADIUS FOR ROOT PROTECTION ZONE.



NOTE:
1. THE FENCING SHOWN ABOVE IS DIAGRAMATIC ONLY AND WILL CONFORM TO THE DRIP LINE AND LIMITED TO PROJECT BOUNDARY.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.

1.1.2 LEVEL I & FENCE PROTECTION
N. T. S.



NOTE
1. OPTION USED FOR TIGHT CONSTRUCTION AREAS OR WHEN CONSTRUCTION OCCURS IN ROOT PROTECTION ZONE.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.

1.1.3 LEVEL II A FENCE PROTECTION
N. T. S.

GENERAL NOTES

1. ALL THE TREES WITH A DIAMETER GREATER THAN 3 INCHES AFFECTED BY CONSTRUCTION SHALL HAVE THE LIMBS AND ROOTS TRIMMED AND PRUNED ACCORDING TO ITEM No. 602. TREE PRUNING, SOIL AMENDING AND FERTILIZATION, UNLESS SPECIFIED TREES SHALL RECEIVE LEVEL 2 PROTECTION AS PER ITEM No. 602. TREES TO RECEIVE LEVEL 1 PROTECTION AS PER ITEM No. 602 ARE SHOWN ON TREE PROTECTION TABLE ON THIS SHEET.

2. ALL TREES SHALL REMAIN UNLESS NOTED ON THE PLANS.

3. NO SITE PREPARATION WORK SHALL BEGIN IN AREAS WHERE TREE PRESERVATION AND TREATMENT MEASURES HAVE NOT BEEN COMPLETED AND APPROVED.

4. TREE PROTECTION FENCING SHALL BE REQUIRED. TREE PROTECTION FENCING SHALL BE INSTALLED, MAINTAINED AND REPAIRED BY THE CONTRACTOR DURING SITE CONSTRUCTION.

5. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN THREE INCHES IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN THE VICINITY OF TREES SHALL PROCEED WITH CAUTION. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR.

6. THE ROOT PROTECTION ZONE IS THAT AREA SURROUNDING A TREE, AS MEASURED BY A RADIUS FROM THE TREE TRUNK, IN WHICH NO EQUIPMENT, VEHICLES OR MATERIALS MAY OPERATE OR BE STORED. THE REQUIRED RADIUS LENGTH IS 1 FOOT PER DIAMETER INCH OF THE TREE. FOR EXAMPLE, A 10-INCH DIAMETER TREE WOULD HAVE A 5-FOOT RADIUS ROOT PROTECTION ZONE AROUND THE TREE. ROOTS OR BRANCHES THAT ARE IN CONFLICT WITH THE CONSTRUCTION SHALL BE CUT CLEANLY ACCORDING TO PROPER PRUNING METHODS. LIVE OAK WOUNDS SHALL BE PAINTED OVER, WITHIN 20 MINUTES TO PREVENT OAK WILT.

7. ACCESS TO FENCED AREAS WILL BE PERMITTED ONLY WITH THE APPROVAL OF THE ENGINEER OR CITY INSPECTOR.

8. GRADING, IF REQUIRED, SHALL BE LIMITED TO A 3 INCH CUT OR FILL WITHIN THE FENCED ROOT ZONE AREAS.

9. TREES, SHRUBS OR BUSHES TO BE CLEARED FROM PROTECTED ROOT ZONE AREAS SHALL BE REMOVED BY HAND AS DIRECTED BY THE PROJECT MANAGER OR CITY INSPECTOR.

10. TREES DAMAGED OR LOST DUE TO CONTRACTOR'S NEGLIGENCE DURING CONSTRUCTION SHALL BE MITIGATED TO THE ENGINEER'S SATISFACTION.

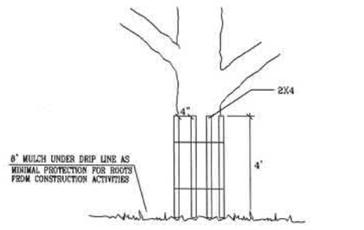
11. EXPOSED ROOTS SHALL BE COVERED AT THE END OF EACH DAY USING TECHNIQUES SUCH AS COVERING WITH SOIL, MULCH OR WET BURLAP.

12. ANY TREE REMOVAL SHALL BE APPROVED BY THE CITY ARBORIST PRIOR TO ITS REMOVAL.

1.3 GENERAL NOTES

SEE SHEET 21 FOR TREE INVENTORY TABLE

21

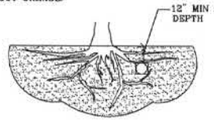


NOTE
WRAP TREE TRUNK WITH 2"X4" STUDS AND ROPE OR BAND IN PLACE AS NEEDED TO PROTECT TREES IN WORK AREAS.

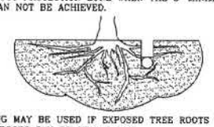
1.1.4 LEVEL II B FENCE PROTECTION
N. T. S.

TREES THAT ARE MARKED TO BE PRESERVED ON A SITE PLAN AND FOR WHICH UTILITIES MUST PASS THROUGH THEIR ROOT PROTECTION ZONES MAY REQUIRE TUNNELING AS OPPOSED TO OPEN TRENCHES. THE DECISION TO TUNNEL WILL BE DETERMINED ON A CASE BY CASE BASIS BY THE ENGINEER.

TUNNELS SHALL BE DUG THROUGH THE ROOT PROTECTION ZONE IN ORDER TO MINIMIZE ROOT DAMAGE.

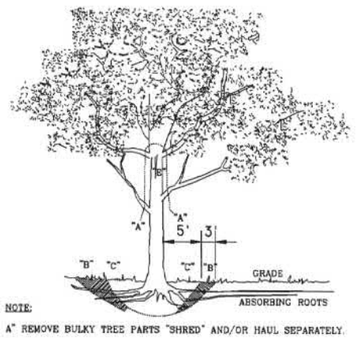


TUNNEL TO MINIMIZE ROOT DAMAGE (TOP) AS OPPOSED TO SURFACE-DUG TRENCHES IN ROOT PROTECTION ZONE WHEN THE 5' MINIMUM DISTANCE FROM TRUNK CAN NOT BE ACHIEVED.



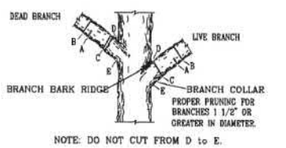
OPEN TRENCHING MAY BE USED IF EXPOSED TREE ROOTS DO NOT EXCEED 3" OR ROOTS CAN BE BENT BACK.

1.2 BORING THRU TREE ROOT ZONE
N. T. S.



NOTE:
"A" REMOVE BULKY TREE PARTS "SHRED" AND/OR HAUL SEPARATELY.
"B" BEGIN EXCAVATION APPROX. 6' FROM THE TRUNK - CUT THRU ANCHOR ROOTS AT AN ANGLE - 3' TO 4' DEEP
"C" USING TREE TRUNK AS A LEVER PUSH AT POINT "E" TO REMOVE TREE BOLE AND LARGE FEEDER ROOTS (4" TO 10" IN DIAM.)
"D" BACKFILL HOLE AND CLEAN UP.

1.3 TREE REMOVAL DIAGRAM
N. T. S.



NOTE: DO NOT CUT FROM D to E.

A. FIRST CUT - TO PREVENT THE BARK FROM BEING PEELED WHEN THE BRANCH FALLS.
B. SECOND CUT - TO REDUCE THE WEIGHT OF BRANCH.
C. FINAL CUT - ALLOW FOR HEALING COLLAR BUT NO STUBS
D. BRANCH RIDGES - INDENT PROPERLY BRANCH RIDGES WHICH ARE SITE FOR DECAY.

FOR OAKS ONLY: PAINT ALL WOUNDS OR CUTS WITH PRUNING PAINT WITH 20 MIN TO PREVENT THE SPREAD OF OAK WILT.

1.4 BRANCH PRUNING DETAIL
N. T. S.

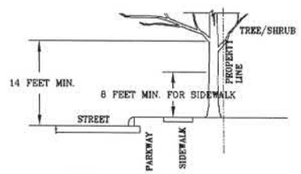
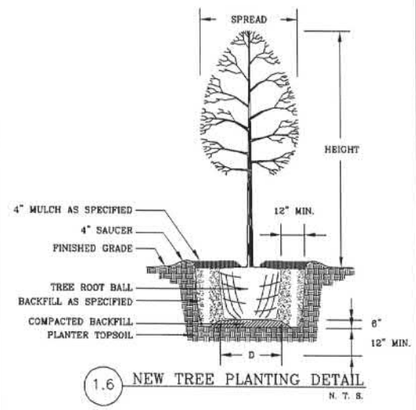


FIGURE No.2:

A MINIMUM BRANCH CLEARANCE OF 14 FEET ABOVE STREET ELEVATION MUST BE MAINTAINED FROM THE PROPERTY LINE TO THE CURB LINE AS PRESCRIBED BY PROJECT MANAGER.

1.5 BRANCH CLEARANCE DETAIL
N. T. S.



1.6 NEW TREE PLANTING DETAIL
N. T. S.

SIGNIFICANT AND HERITAGE TREE INVENTORY SUMMARY

TOTAL DIAMETER (INCHES)	36
TOTAL DIAMETER REMOVED (INCHES)	0
TOTAL DIAMETER PRESERVED (INCHES)	36
TOTAL DIAMETER PRESERVED (%)	100
TOTAL DIAMETER TO BE MITIGATED (INCHES)	0

NOTES:

1. WHEN WORKING IN THE AREA OF SIGNIFICANT AND/OR HERITAGE TREES AVOID CUTTING BRANCHES OR ROOTS GREATER THAN 3"Ø. APPLY TREE WOUND DRESSING WITHIN 20 MINUTES OF ANY PRUNING CUTS AND/OR DAMAGE TO BRANCHES OR ROOTS.
2. ALL TREES WITHIN A 30' RADIUS OF ANY PLANNED WORK AREAS WERE SURVEYED AND ARE DETAILED ON SHEET 21.
3. THE SMALL DIAMETER TREES AND THE CLUSTER TREES ARE NEITHER SIGNIFICANT TREES NOR HERITAGE TREES AND AS SUCH THEY HAVE BEEN OMITTED FROM THE TREE INVENTORY SUMMARY.

SHEET 23 OF 26

PREPARED BY: FERNANDEZ FRAZIER WHITE & ASSOC. INC. & C. F. ZAVALA GROUP

CITY OF SAN ANTONIO

DEPARTMENT OF PUBLIC WORKS

CITY OF SAN ANTONIO
TREE PROTECTION DETAILS
TREE PRESERVATION

DESIGNED:	FED. RD. DIV. NO.	STATE		SHT. NO.
CHECKED:		TEXAS		1 OF 4
DRAWN:	STATE DIST. NO.	COUNTY	CONTROL NO. / SECT. NO. / JOB NO.	HIGHWAY NO.
CHECKED:		DESCR.		

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STATE OF TEXAS
ATLAN DAVID WEIKEL
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9/17/18

NOTE:

TRIHYDRO ADDITIONS ARE SHOWN IN BLUE COLOR.

Trihydro CORPORATION
Texas Engineering Firm F-131
Texas Survey Firm 10194320
1011 West County Line Road
New Braunfels, Texas 78130
(P) 210/298.5030 (F) 830/626.3544
www.trihydro.com
TRIHYDRO PROJECT NO. 702-557-E00

No.	Revision	Drawn	Approved	Date
2	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

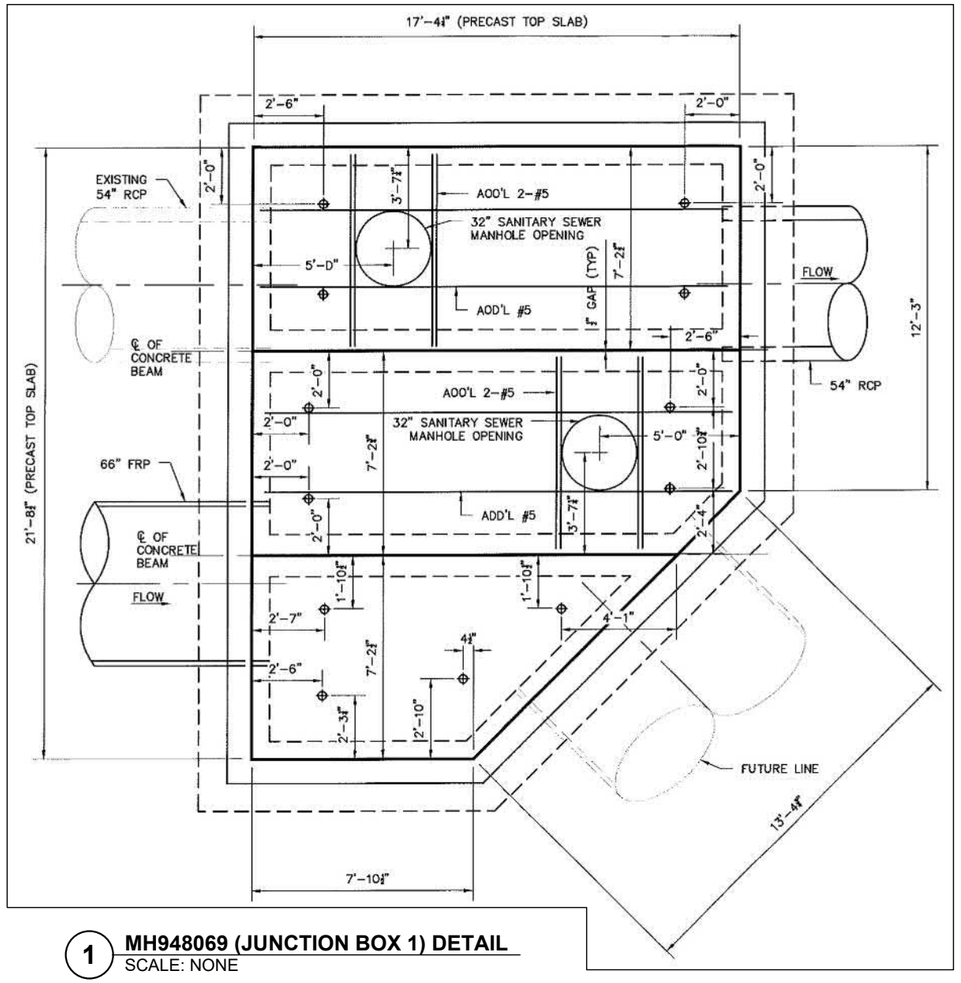
REVISIONS

WEST SEWERSHED PACKAGE 1
TREE PRESERVATION DETAILS

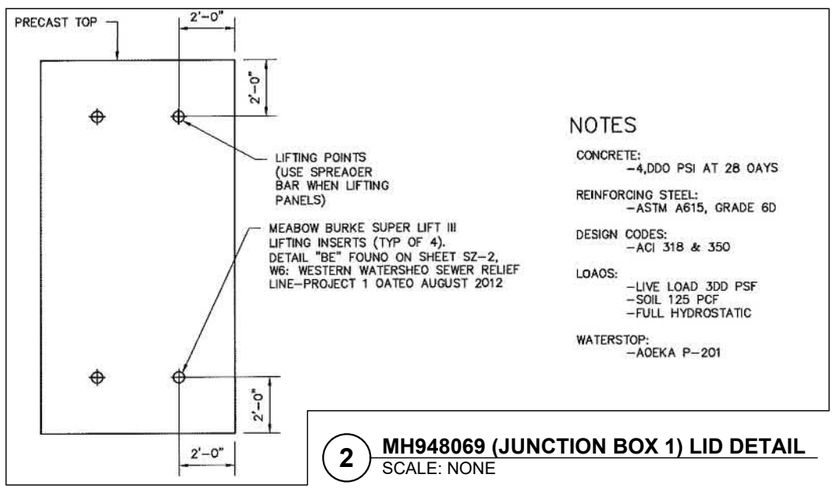
DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ CK. ADW
JOB No. 17-4546
SHEET 22 OF 39

4

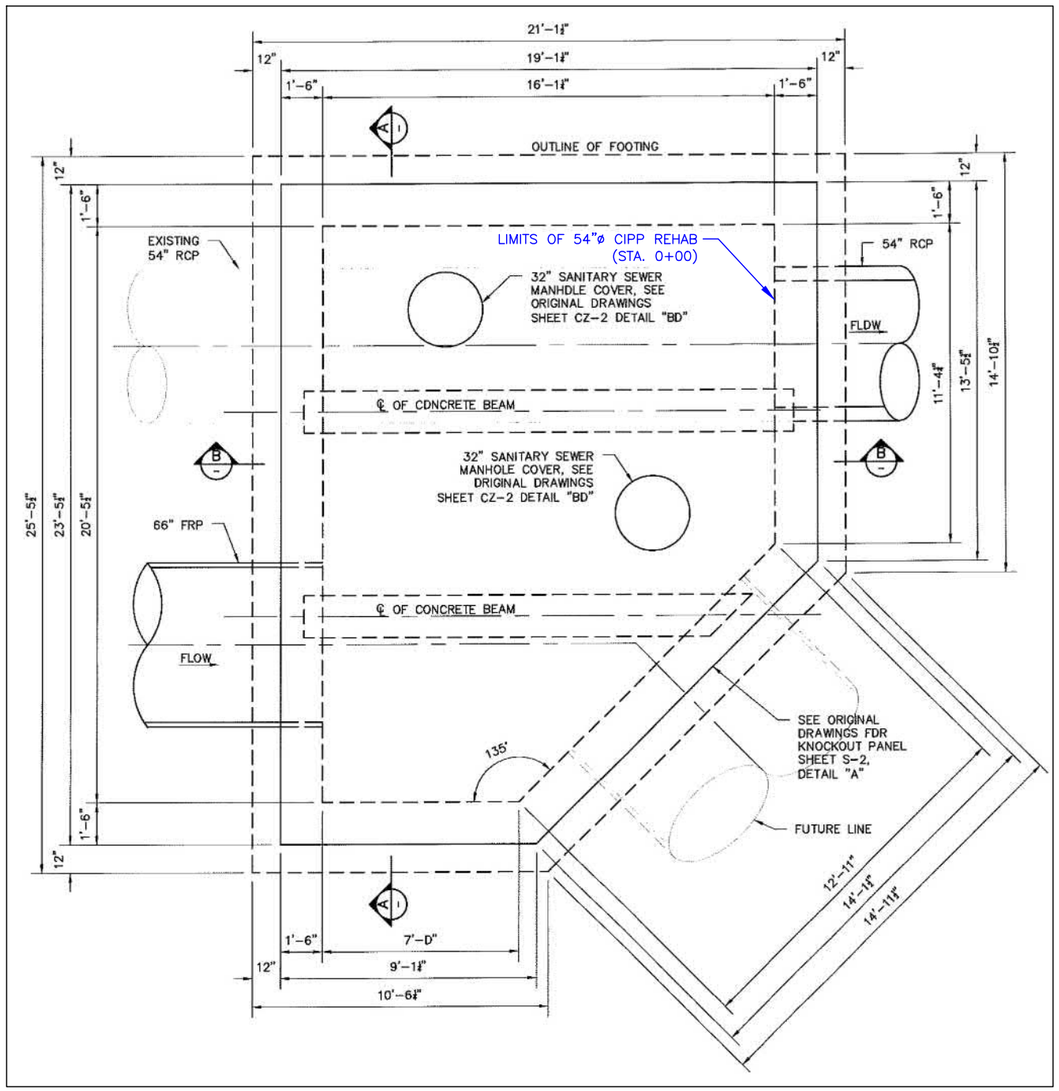
M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_TREEPRESERVATION



1 MH948069 (JUNCTION BOX 1) DETAIL
SCALE: NONE



2 MH948069 (JUNCTION BOX 1) LID DETAIL
SCALE: NONE



3 MH948069 (JUNCTION BOX 1) BEAM DETAIL
SCALE: NONE

NOTES:

1. SOURCE OF CONCRETE VAULT DETAILS: SEI Stiver Engineering , INC; September 18, 2013
2. EXISTING CONCRETE VAULT DETAILS ARE PROVIDED FOR REFERENCE ONLY.
3. TRIHYDRO ADDITIONS ARE SHOWN IN BLUE COLOR.

STATE OF TEXAS
ATLAN DAVID WEIKEL
57027
REGISTERED PROFESSIONAL ENGINEER
9/17/18

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0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1

MH948069 (EXISTING JUNCTION BOX 1) DETAILS

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
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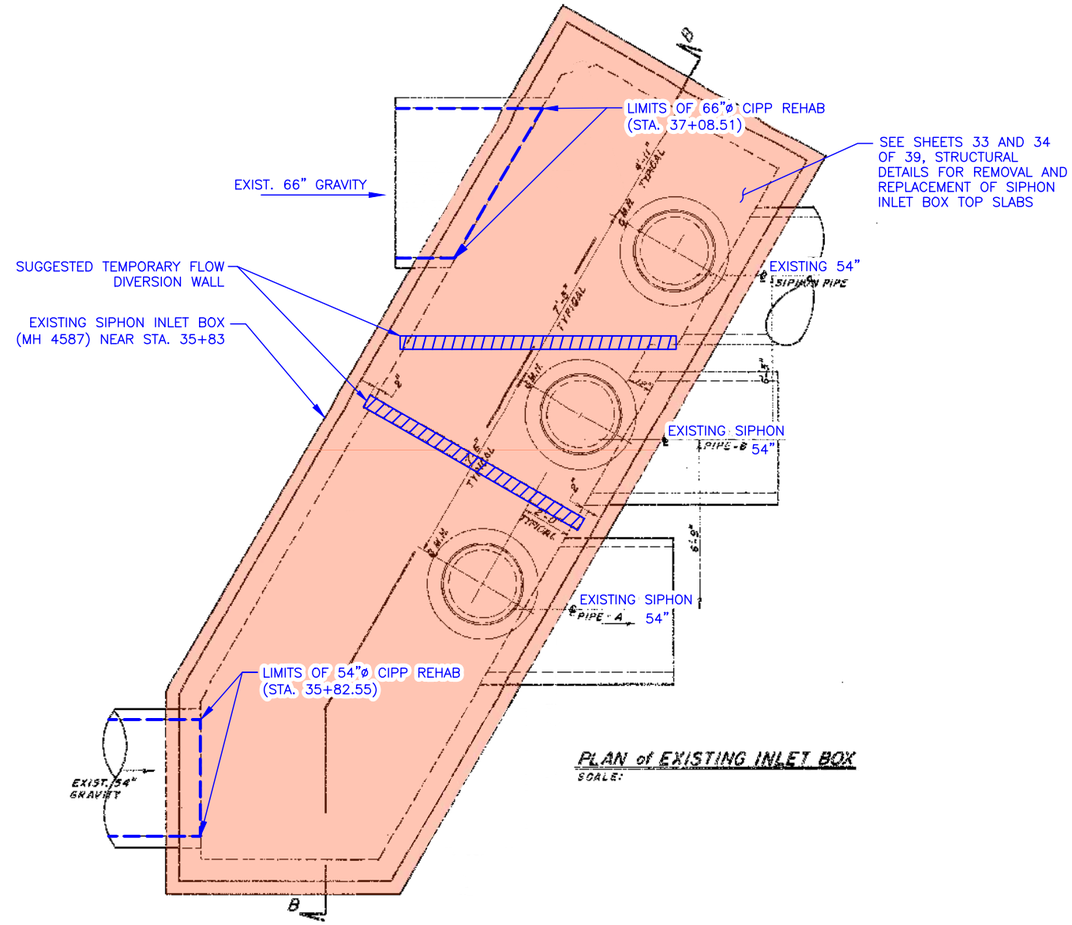
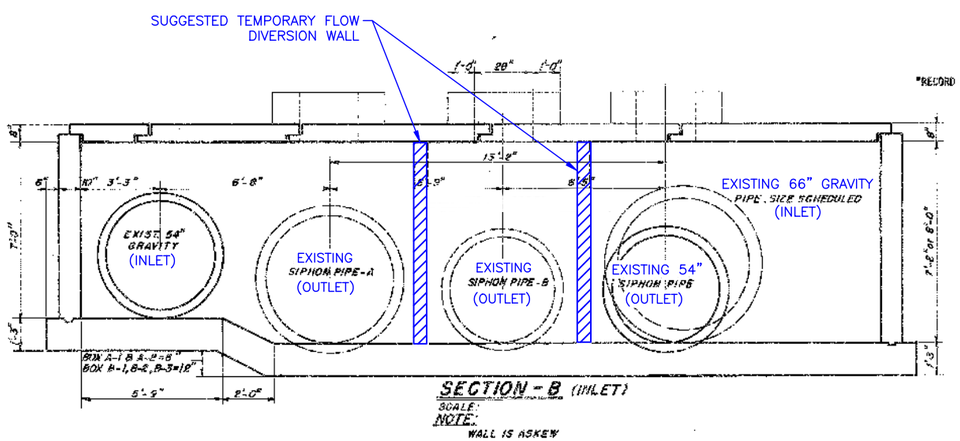
M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_DETAILS



PLAN of EXISTING INLET BOX
SCALE:



SECTION - B (INLET)
SCALE:
NOTE:
WALL IS ASKEW

PLAN OF RECORD
JUNE, 1986
"RECORD DRAWINGS BASED ON INFORMATION FURNISHED BY CONTRACTOR".

SUGGESTED FLOW MANAGEMENT AND RECONSTRUCTION SEQUENCE PLAN - EXISTING SIPHON INLET BOX (MH 4587):

A. TWO (2) OF THE THREE (3) EXISTING SIPHON BARRELS MUST REMAIN OPERATIONAL FOR DIVERSION OF FLOWS DURING INTERIOR RECONSTRUCTION OF THE SIPHON INLET BOX (MH 4587).

B. CONTRACTOR SHALL PROVIDE TEMPORARY FLOW DIVERSION WITHIN THE SIPHON INLET BOX (MH 4587) TO DIVIDE THE SIPHON INLET BOX AND ISOLATE INCOMING FLOWS FROM THE SECTION OF THE SIPHON INLET BOX BEING RECONSTRUCTED. THE CONTRACTOR SHALL PLUG THE OFF-LINE SIPHON BARREL TO PREVENT BACKFLOW FROM THE SIPHON OUTLET BOX INTO THE PORTION OF THE SIPHON INLET BOX BEING RECONSTRUCTED.

C. CONTRACTOR SHALL INSTALL AN INFLATABLE PLUG OR OTHER APPROVED TEMPORARY PLUGGING DEVICE IN JUNCTION BOX 2 (MH 948067) TO DIVERT FLOWS TO THE 66-INCH OR 54-INCH SEWER MAINS AS NECESSARY TO FACILITATE RECONSTRUCTION OF THE DIVIDED SECTIONS OF THE SIPHON INLET BOX (MH 4587).

D. CONTRACTOR SHALL REMOVE THE TEMPORARY FLOW DIVERSION FROM THE EXISTING SIPHON INLET BOX (MH 4587) AS APPROPRIATE TO FACILITATE SIPHON INLET BOX INTERIOR RECONSTRUCTION. TEMPORARY FLOW DIVERSION SHALL BE REMOVED UPON COMPLETION OF THE SIPHON INLET BOX INTERIOR RECONSTRUCTION.

E. CONTRACTOR SHALL COMPLETE THE INTERIOR RECONSTRUCTION OF THE SIPHON INLET BOX (MH 4587) INCLUDING REPLACEMENT OF THE TOP SLAB OF THE EXISTING SIPHON INLET BOX. SEE SHEETS 33 AND 34 OF 37 FOR STRUCTURAL RECONSTRUCTION DETAILS FOR REPLACEMENT OF THE TOP SLAB OF THE SIPHON INLET BOX (MH 4587).

4

NOTES:

1. SOURCE OF CONCRETE INVERTED SIPHON BOX DETAILS: Howard W. Gaddis Consulting Engineer Inc.; September 1982
2. EXISTING CONCRETE INVERTED SIPHON INLET DETAILS ARE PROVIDED FOR REFERENCE ONLY. CONTRACTOR SHALL FIELD VERIFY CONDITION,CONFIGURATION, AND DIMENSIONS OF THE EXISTING SIPHON INLET BOX (MH 4587).
3. TRIHYDRO ADDITIONS ARE SHOWN IN BLUE AND ORANGE COLOR.
4. THE SUGGESTED FLOW MANAGEMENT AND CONSTRUCTION SEQUENCE PLAN PRESENTED ON THIS SHEET IS PROPOSED ONLY FOR CONTRACTOR CONSIDERATION. THE CONTRACTOR SHALL SUBMIT A DETAILED FLOW MANAGEMENT AND CONSTRUCTION SEQUENCE PLAN TO OWNER FOR APPROVAL.
5. NSPI FOR INSTALLATION/REMOVAL OF TEMPORARY FLOW DIVERSION WALL OR PLUGGING DEVICES FOR FLOW DIVISION ASSOCIATED WITH THE RECONSTRUCTION OF THE EXISTING SIPHON INLET BOX (MH 4587)

STATE OF TEXAS
ATLAN DAVID WEIKEL
57027
REGISTERED PROFESSIONAL ENGINEER
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1011 West County Line Road
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(P) 210/298.5030 (F) 830/626.3544
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TRIHYDRO PROJECT NO. 702-557-E00

No.	Revision	Drawn	Approved	Date
4	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

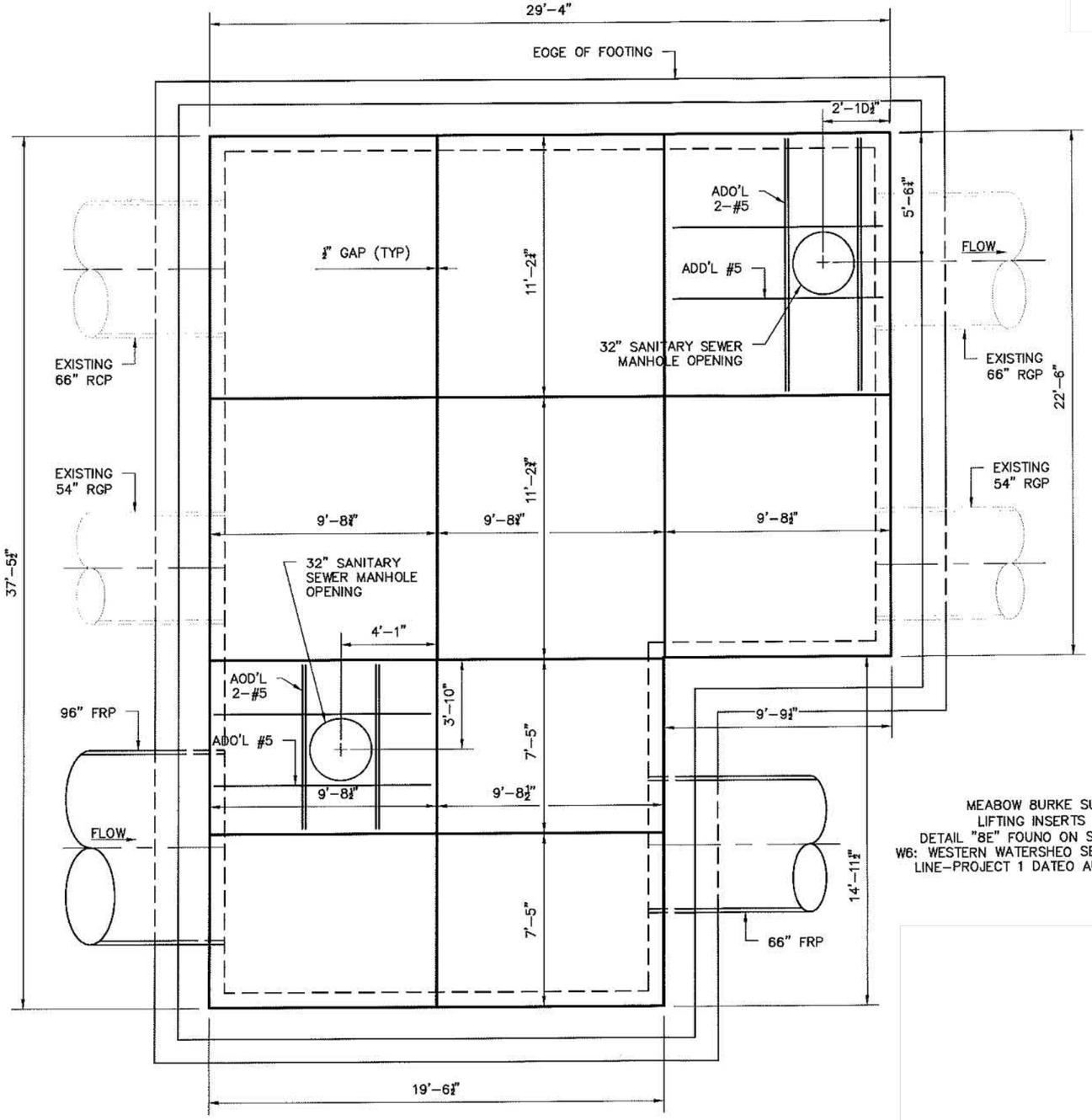
WEST SEWERSHED PACKAGE 1
MH4587 (EXISTING SIPHON INLET BOX) DETAILS AND SUGGUSTED FLOW MANAGEMENT AND RECONSTRUCTION SEQUENCE PLAN

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 24 OF 39
SECT. No. | JOB No. 17-4546
DR. RJ | CK. ADW

4

1 MH4587 (SIPHON INLET-OUTLET BOXES) DETAILS
SCALE: NONE

M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_DETAILS



1 **MH948067 (JUNCTION BOX 2) LID DETAIL**
SCALE: NONE

NOTES

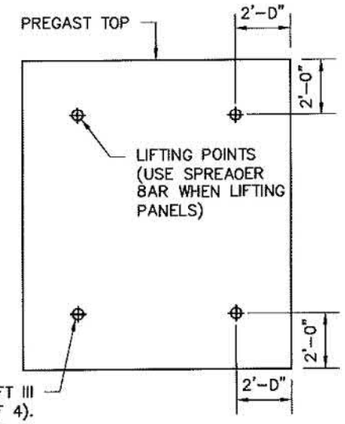
GONGRETE:
-4,DDD PSI AT 28 OAYS

REINFORGING STEEL:
-ASTM A615, GRADE 60

OESIGN CODES:
-AGI 318 & 350

LOAOS:
-LIVE LOAD 3DD PSF
-SOIL 125 PCF
-FULL HYOROSTATIC

WATERSTOP:
-ADEKA P-2D1



MEABOW 8URKE SUPER LIFT III
LIFTING INSERTS (TYP OF 4).
DETAIL "8E" FOUNO ON SHEET SZ-2,
W6: WESTERN WATERSHEO SEWER RELIEF
LINE-PROJECT 1 DATEO AUGUST 2012

LIFTING DIAGRAM

NOTES:

1. SOURCE OF CONCRETE VAULT DETAILS: SEI Stiver Engineering , INC; September 18, 2013
2. EXISTING CONCRETE VAULT DETAILS ARE PROVIDED FOR REFERENCE ONLY.

STATE OF TEXAS
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57027
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TRIHYDRO PROJECT NO. 702-557-E00

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1	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

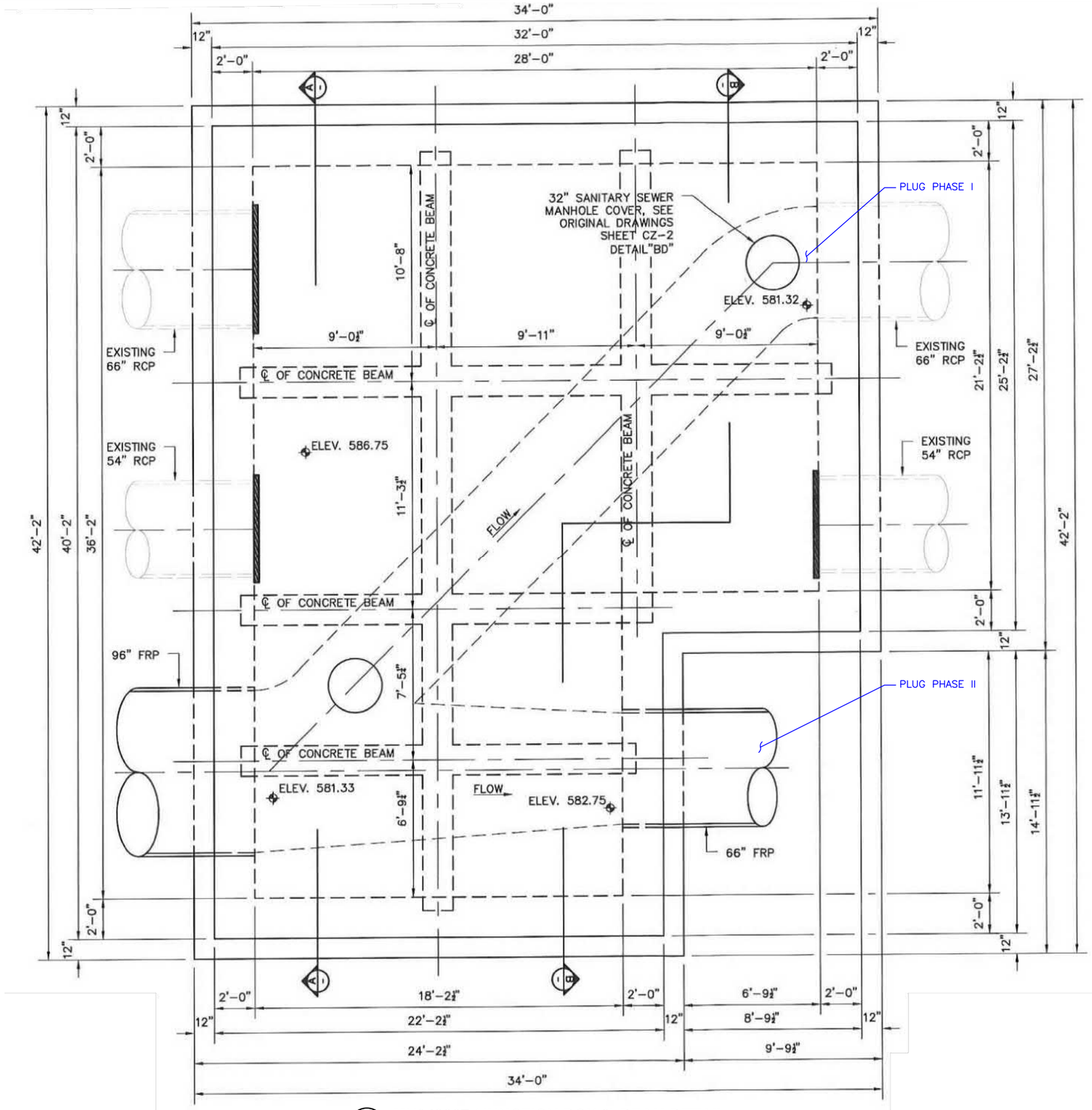
REVISIONS

WEST SEWERSHED PACKAGE 1
MH948067 (EXISTING JUNCTION BOX 2) LID DETAILS

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ | CK. ADW
JOB No. 17-4546
SHEET 25 OF 39

4

M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_DETAILS



1 **MH948067 (JUNCTION BOX 2) BEAM DETAIL**
SCALE: NONE

NOTES:

1. SOURCE OF CONCRETE VAULT DETAILS: SEI Stiver Engineering , INC; September 18, 2013
2. EXISTING CONCRETE VAULT DETAILS ARE PROVIDED FOR REFERENCE ONLY.
3. TRIHYDRO ADDITIONS ARE SHOWN IN BLUE COLOR.

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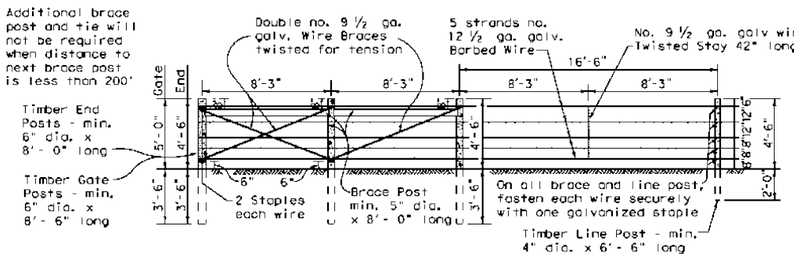
REVISIONS

WEST SEWERSHED PACKAGE 1
MH948067 (EXISTING JUNCTION BOX 2) BEAM DETAIL

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ | CK. ADW
JOB No. 17-4546
SHEET 26 OF 39

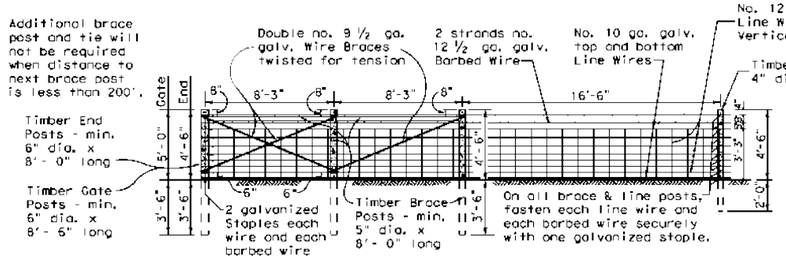
4

M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_DETAILS



SECTION GALVANIZED BARBED WIRE FENCE WITH WOOD POSTS
Bracing Detail Used at Ends and Gates

TYPE "A" FENCE
(See General Note 6)



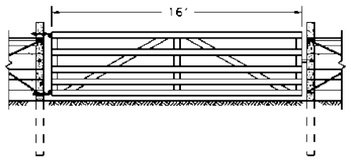
SECTION GALVANIZED WOVEN WIRE FENCE WITH WOOD POSTS
Bracing Detail Used at Ends and Gates

TYPE "B" FENCE
(See General Note 6)

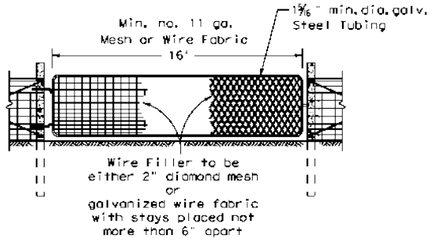
TABLE OF EQUIVALENT SIZES FOR OPTIONAL SHAPE

Minimum Diameter of Round Post (Inches)	Minimum Equivalent Dimension for Each Side of Square Post (Inches)
4	3 ½
5	4 ½
6	5 ¼

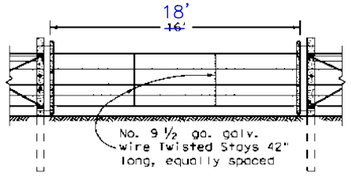
Metal gate shall consist of 5 panels not less than 4' - 4" high and shall be aluminum or galvanized metal and of good quality. Gate and hardware shall meet the approval of the Engineer.



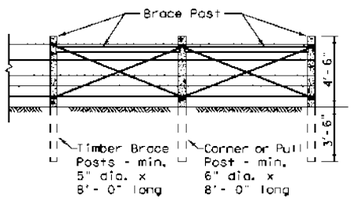
DETAIL TYPE 1 GATE



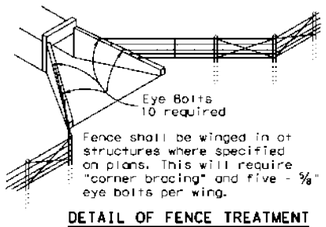
DETAIL TYPE 2 GATE



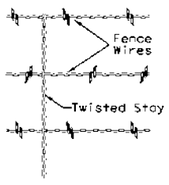
DETAIL TYPE 3 GATE



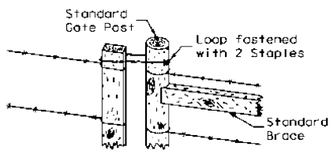
CORNER OR PULL POST ASSEMBLY



DETAIL OF FENCE TREATMENT AT STRUCTURES

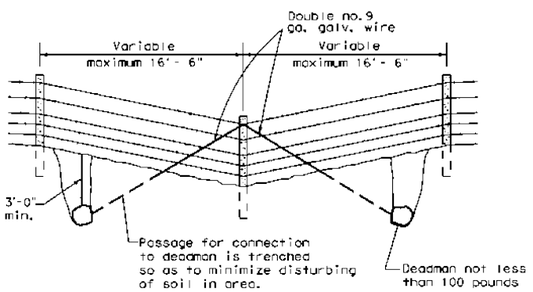


DETAIL OF STAY
(Barbed wire fence)

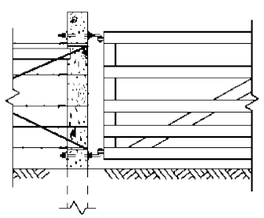


Loop to be made from two strands twisted no. 9 ½ ga. galv. smooth wire, and to be securely fastened to gate post with two galv. staples.

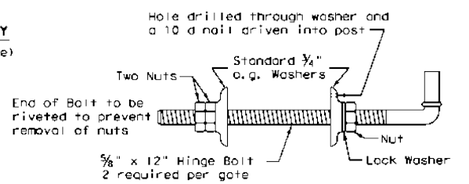
DETAIL FASTENER TYPE 3 GATE



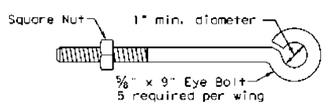
DETAIL OF FENCE SAG
(Single Line Connection)



DETAIL SHOWING INSTALLATION OF HINGES OF TYPE 1 & 2 GATE



DETAIL OF GATE HINGE BOLT ASSEMBLY



DETAIL OF EYE BOLT

GENERAL NOTES

1. Any high point which interferes with the placing of wire mesh shall be excavated to provide 2" clearance.
2. Latches for Type 1 and Type 2 gates shall be good commercial quality and design latches of the spring, fork or chain type. All latches shall be suitable for the gate and shall be approved by the Engineer.
3. Hinges for Type 2 gates shall be commercial design approved by the Engineer suitable for post and gate.
4. Concrete shall be of the design and consistency approved by the Engineer and shall contain not less than 4 sacks of cement per cubic yard. Concrete footings are to be crowned at the top to shed water.
5. If rock is encountered at a depth less than the embedded depth required, a 15" or larger diameter hole shall be drilled for the post and the post shall be set in concrete. If rock is encountered at a depth of 1' - 6" or more below the ground surface, the hole shall be drilled to the required depth. If rock is encountered at a depth less than 1' - 6" below the ground surface, the holes shall be drilled a minimum of 2' - 0" into the rock or to the depth whichever is the lesser depth.
6. Barbed Wire shall be in accordance with ASTM A 121 (Class 1) Design designation 12-2-4-1 4R or 12-2-5-1 4R, or as approved by the Engineer.

   Woven Wire Fence (Type B) shall be in accordance with ASTM A 116 (Class 1) No. 12-1/2 Grade 60 (See Table 1 ASTM A 116) to the height and design shown on the plans, or as approved by the Engineer.
7. The location of gates and corner posts will be as indicated elsewhere on these plans.
8. Square wood posts may be used in lieu of round posts provided minimum equivalent size requirements, as shown are met. All wood posts shall be in accordance with Item 552, "Wire Fence."

Texas Department of Transportation — Design Division Standard

BARBED WIRE AND WOVEN WIRE FENCE
(WOOD POSTS)
WF(1)-10

FILE: wf1-10.dgn	DN: TxDOT	CK: ADW	DW: RJ	CK:
©TxDOT 1994	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

NOTES:

1. GATE TYPE 3 IS SPECIFIED FOR INSTALLATION ON SHEETS 9 AND 11. CONTRACTOR SHALL USE ALL APPLICABLE DETAILS FROM THIS SHEET FOR INSTALLATION.
2. TRIHYDRO REVISIONS ARE SHOWN IN BLUE COLOR.

STATE OF TEXAS
ATLAN DAVID WEIKEL
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REGISTERED PROFESSIONAL ENGINEER
9/17/18

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TRIHYDRO PROJECT NO. 702-557-E00

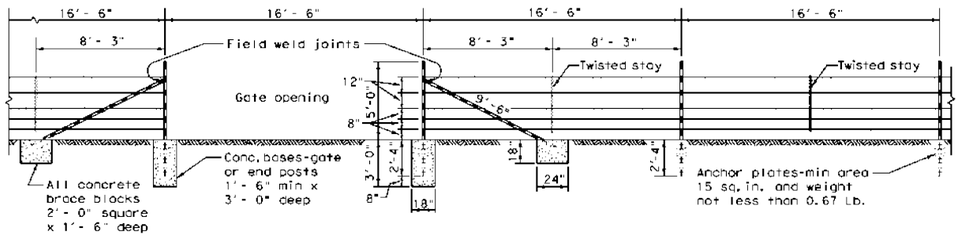
No.	Revision	Drawn	Approved	Date
2	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

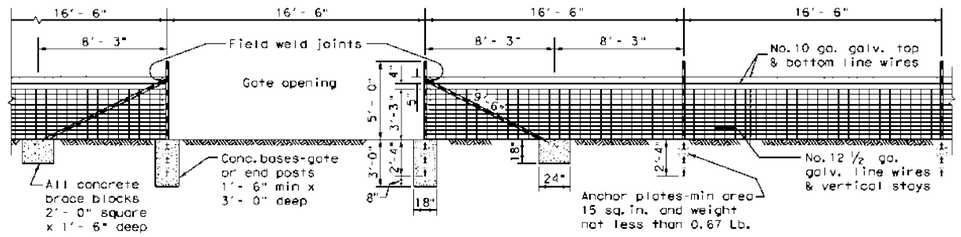
WEST SEWERSHED PACKAGE 1
GATE DETAILS

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ | CK. ADW | JOB No. 17-4546
SHEET 27 OF 39

1 **BARBED WIRE AND WOVEN WIRE FENCE (WOOD POSTS) DETAILS**
SCALE: NONE



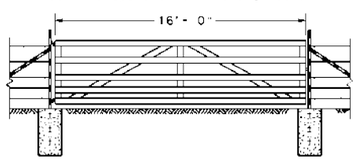
SECTION GALVANIZED BARBED WIRE FENCE WITH METAL POSTS
BRACING DETAIL USED AT ENDS AND GATES
TYPE "C" FENCE
(See General Note 8)



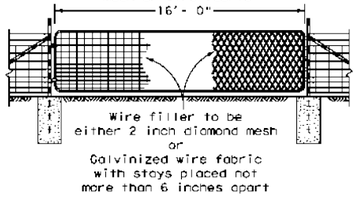
SECTION GALVANIZED WOVEN WIRE FENCE WITH METAL POSTS
BRACING DETAIL USED AT ENDS AND GATES
TYPE "D" FENCE
(See General Note 8)

Note:
For Steel pipe and T-Post requirements. (See General Notes 6 & 7)

Metal gate shall consist of 5 panels not less than 4'- 4" high and shall be aluminum or galvanized metal and of good quality. Gate and hardware shall meet the approval of the engineer.

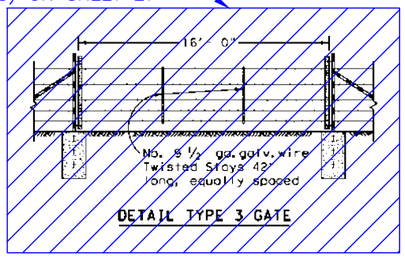


DETAIL TYPE 1 GATE

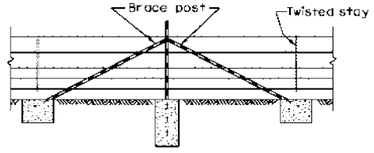


DETAIL TYPE 2 GATE

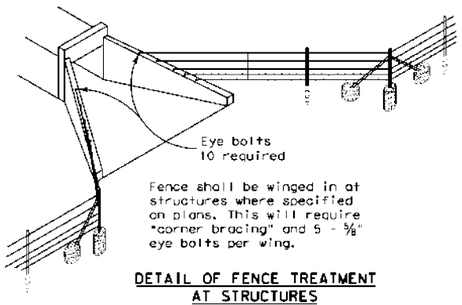
REFER TO TYPE 3 GATE DETAIL (WOODEN POSTS) ON SHEET 27



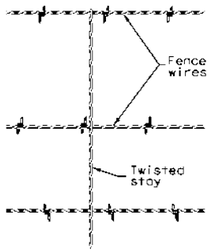
DETAIL TYPE 3 GATE



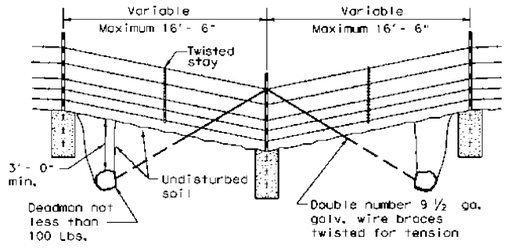
CORNER OR PULL POST ASSEMBLY



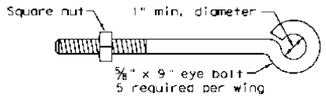
DETAIL OF FENCE TREATMENT AT STRUCTURES



DETAIL OF STAY
(Barbed Wire Fence)



DETAIL OF FENCE SAG



DETAIL OF EYE BOLT

GENERAL NOTES

1. Any high point which interferes with the placing of wire mesh shall be excavated to provide a 2 inch clearance.
2. Latches for Type 1 and Type 2 gates shall be good commercial quality and design latch of the spring, fork or chain type. All latches shall be suitable to the gate and shall be approved by the Engineer.
3. Hinges for Type 2 gates shall be a commercial design approved by the Engineer suitable for post and gate.
4. Concrete shall be of the design and consistency approved by the Engineer and shall contain not less than 4 sacks of cement per cubic yard. Concrete footings are to be crowned at the top to shed water.
5. Steel anchor plates shall be of a design and thickness sufficient to prevent turning of the post in firm soil.
6. Steel pipe end posts, corner and pull posts shall be a minimum of 2" Std. pipe (2.375" O.D., 0.154" wall thickness) with a 1¼" Std. pipe brace (1.660" O.D., 0.140" wall thickness), with a 2"x2"x1/4" angle, or other as approved by the Engineer. Fasteners for securing barbed wire or woven wire fence to metal posts shall be a minimum of 11 gauge galvanized steel wire. Tubular posts shall be fitted with water malleable iron caps.
7. If Steel pipe is used for posts and braces, use standard pipe in accordance with ASTM A 53, Class B or A 501. For T-Posts use steel that meets ASTM A 702. Metal line posts shall be not less than 6'-6" in length and shall weigh not less than (1.33 lbs./lin.ft.). These items shall be in accordance with Item 552, "Wire Fence."
8. Barbed Wire shall be in accordance with ASTM A 121, Class 1 Design designation 12-2-4-1 4R or 12-2-5-1 4R, or as approved by the Engineer.

   Woven Wire Fence (Type D) shall be in accordance with ASTM A 116, Class 1 No. 12-1/2 Grade 60 (See Table 1 ASTM A 116) to the height and design shown on the plans, or as approved by the Engineer.
9. The location of gates and corner posts will be as indicated elsewhere in these plans.

Texas Department of Transportation — Design Division Standard

BARBED WIRE AND WOVEN WIRE FENCE (STEEL POSTS)

WF(2)-10

FILE: wf210.dgn	DN: TxDOT	CK: RJ	DW: KT	CK:
©TxDOT 1996	CONT	SECT	JOB	HIGHWAY
8-15-2005	DIST	COUNTY		SHEET NO.

NOTE:

TRIHYDRO REVISIONS ARE SHOWN IN BLUE COLOR.

STATE OF TEXAS
ATLAN DAVID WEIKEL
57027
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9/17/18

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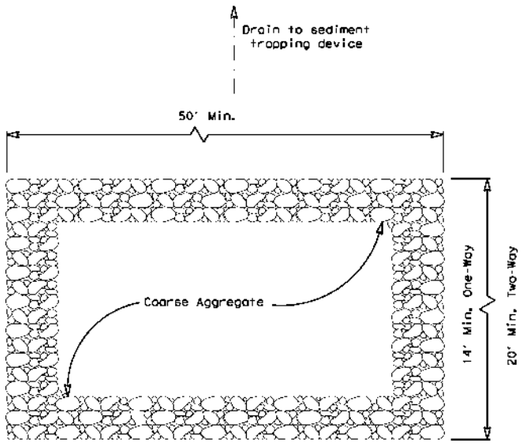
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

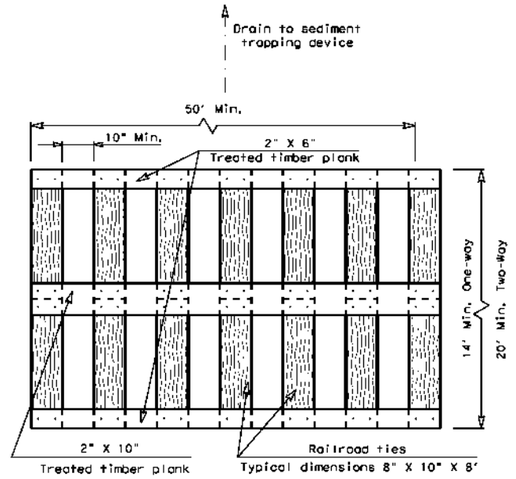
WEST SEWERSHED PACKAGE 1
FENCE DETAILS

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ | CK. ADW
JOB No. 17-4546
SHEET 28 OF 39

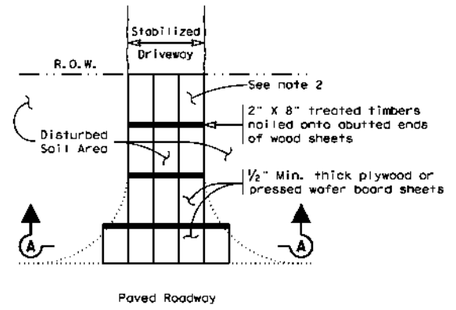
1 **BARBED WIRE AND WOVEN WIRE FENCE (STEEL POST) DETAILS**
SCALE: NONE



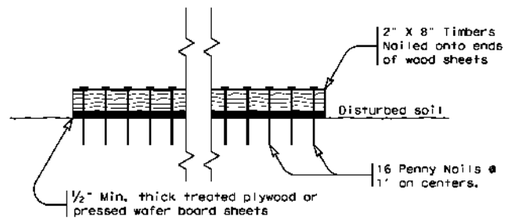
PLAN VIEW



PLAN VIEW



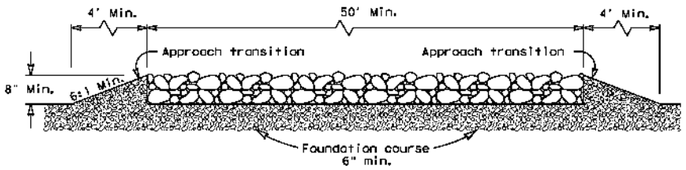
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

SHORT TERM



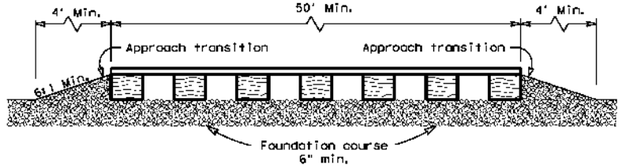
ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec3-16 | DN: XXX | CK: XX | DW: XX | CK: XX

©TXDOT JULY 2016 | CONT | SECT | JOB | HIGHWAY

REVISIONS | $CS | $SE | $JO | $HWYS

DIST | COUNTY | SHEET NO.

$DIST | $CTYS | $EC(3A-16)$

NOTE:

FOUNDATION COURSE SHALL BE TYPE C GRADE 1 AGGREGATE (COSA SPECIFICATION 200).

STATE OF TEXAS
ATLAN DAVID WEIKEL
57027
REGISTERED PROFESSIONAL ENGINEER
9/17/18

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Trihydro CORPORATION
Texas Engineering Firm F-131
Texas Survey Firm 10194320
1011 West County Line Road
New Braunfels, Texas 78130
(P) 210/298.5030 (F) 830/626.3544
www.trihydro.com
TRIHYDRO PROJECT NO. 702-557-E00

No.	Revision	Drawn	Approved	Date
4	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1

CONSTRUCTION EXIT DETAILS

DEVELOPER: SAN ANTONIO WATER SYSTEM

CONT. | BUDGET PROJ.

SUBMITTED

APPROVED

MAP No.

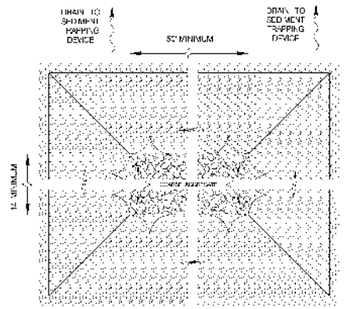
SECT. No.

DR. RJ | CK. ADW

JOB No. 17-4546

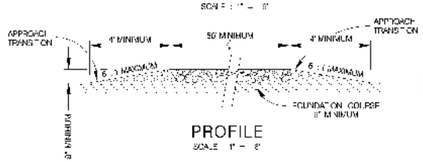
SHEET 29 OF 39

4



PLAN

SCALE : 1" = 8'



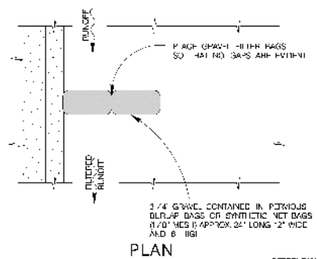
PROFILE

SCALE : 1" = 8'

GENERAL NOTES

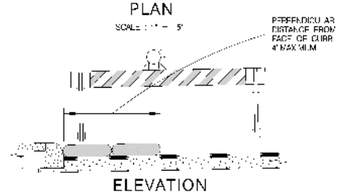
1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 2" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT – TYPE 1



PLAN

SCALE : 1" = 5'

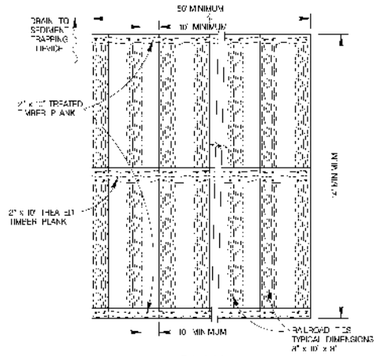


ELEVATION

SCALE : 1" = 5'

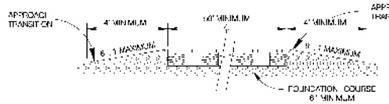
NOTE:
STRADDLE GRAVEL FILTER BAGS WITH TYPE 1 BARRICADES MOUNTED WITH TYPE A FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION SIGN DETAILS. PLACE FLASHING LIGHTS AWAY FROM GUTTER FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

GRAVEL FILTER BAGS



PLAN

SCALE : 1" = 8'



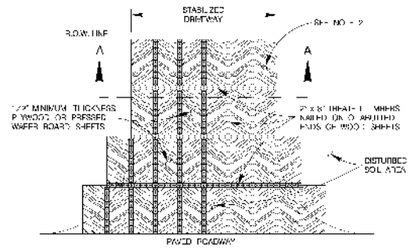
PROFILE

SCALE : 1" = 8'

GENERAL NOTES

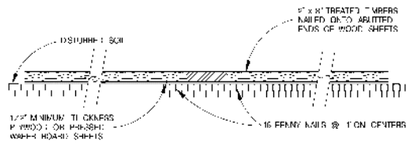
1. THE LENGTH OF THE TYPE 2 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS BUT NOT LESS THAN 50'.
2. THE TREATED TIMBER PLANKS SHALL BE ATTACHED TO THE RAILROAD TIES WITH 1/2" x 6" MINIMUM LAG BOLTS. OTHER FASTENERS MAY BE USED AS APPROVED BY THE ENGINEER.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN., AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
6. THE CONSTRUCTION EXIT SHOULD BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
7. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

CONSTRUCTION EXIT – TYPE 2



PLAN

SCALE : 1" = 20'



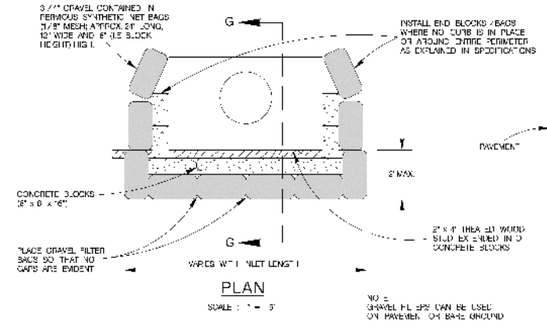
SECTION A–A

SCALE : 1" = 2'

GENERAL NOTES

1. THE LENGTH OF THE TYPE 3 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. THE TYPE 3 CONSTRUCTION EXIT MAY BE CONSTRUCTED FROM OPEN GRADED CRUSHED STONE WITH A SIZE OF 2 TO 7 INCHES SPREAD A MINIMUM OF 4 INCHES THICK TO THE LIMITS SHOWN ON THE PLANS.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN., AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

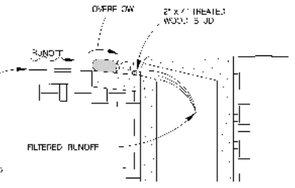
CONSTRUCTION EXIT – TYPE 3



PLAN

SCALE : 1" = 5'

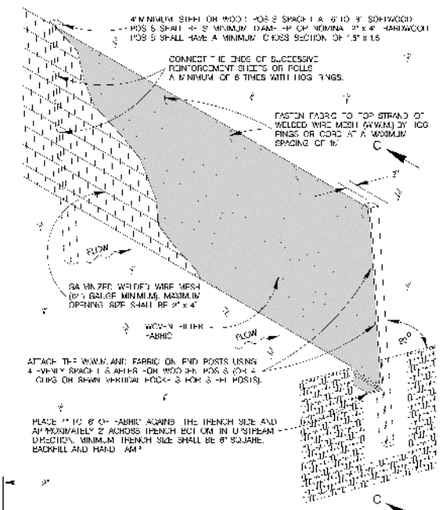
NOTE:
GRAVEL FILTER BAGS CAN BE USED ON PAVEMENT OR BARE GROUND



SECTION G G

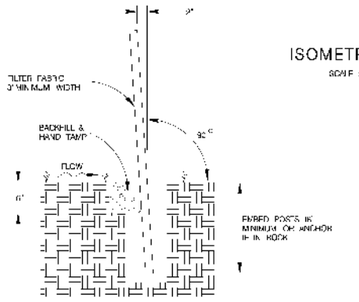
SCALE : 1" = 5'

CURB INLET GRAVEL FILTER



ISOMETRIC VIEW

SCALE : 1" = 2'



SECTION C–C

SCALE : 1" = 2'

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUN OFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.

SEDIMENT CONTROL FENCE SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 100 GPM PER SQUARED SEDIMENT CONTROL FENCE IS NOT RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA LARGER THAN 2 ACRES.

GENERAL NOTES

1. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

TEMPORARY SEDIMENT CONTROL FENCE

JANUARY 2005

CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1

___% SUBMITTAL	PROJECT NO.:		DATE:
DRWN. BY: V. VASQUEZ	DSGN BY:	CHKD. BY:	SHEET NO. ___OF___

ATLAN DAVID WEIKEL
57027
REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS
9/17/18

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Trihydro CORPORATION
Texas Engineering Firm F-131
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1011 West County Line Road
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TRIHYDRO PROJECT NO. 702-557-E00

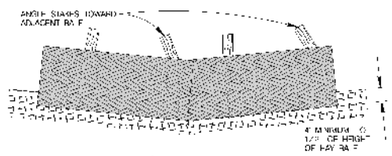
No.	Revision	Drawn	Approved	Date
4	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1

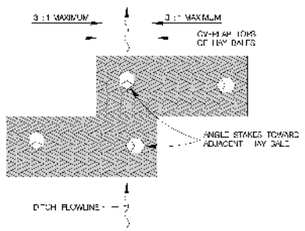
SWPPP DETAILS (1 OF 2)

DEVELOPER:	SAN ANTONIO WATER SYSTEM
CONT.	BUDGET PROJ.
SUBMITTED	
APPROVED	
MAP No.	SHEET 30
SECT. No.	JOB No. 17-4546
DR. RJ / CK. ADW	OF 39



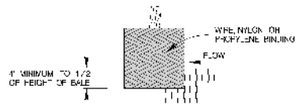
PROFILE VIEW

SCALE : 1" = 2'



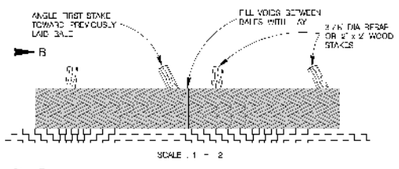
PLAN VIEW

SCALE : 1" = 2'



SECTION B-B

SCALE : 1 = 2'



BALED HAY USAGE GUIDELINES

A BALED HAY INSTALLATION MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF. A TWO YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED. THE INSTALLATION SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 5 CFM PER SQUARE OF CROSS SECTIONAL AREA. BALED HAY MAY BE USED AT THE FOLLOWING LOCATIONS

1. WHERE THE RUNOFF APPROACHING THE BALED HAY FLOWS OVER DISTURBED SOIL FOR LESS THAN 100'. IF THE SLOPE OF THE DISTURBED SOIL EXCEEDS 10 %, THE LENGTH OF RUNOFF UPSTREAM OF THE BARRIER MAY SHOULD BE LESS THAN 50'
2. WHERE THE INSTALLATION WILL BE REQUIRED FOR LESS THAN 3 MONTHS
3. WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 1/2 ACRE

FOR BALED HAY INSTALLATIONS IN SMALL DITCHES, THE FOLLOWING ADDITIONAL CONDITIONAL CONSIDERATIONS APPLY

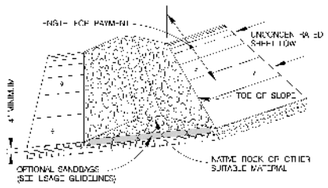
1. THE DITCH SIDESLOPES SHOULD BE GRADED AS FLAT AS POSSIBLE TO MAXIMIZE THE DRAINAGE FLOW RATE THRU THE HAY
2. THE DITCH SHOULD BE GRADED LARGE ENOUGH TO CONTAIN THE OVERLAPPING DRAINAGE WHEN SEDIMENT HAS FILLED TO THE TOP OF THE BALED HAY

BALES SHOULD BE REPLACED USUALLY EVERY 2 MONTHS OR MORE OFTEN DURING WET WEATHER WHEN LOSS OF STRUCTURAL INTEGRITY IS ACCELERATED.

GENERAL NOTES

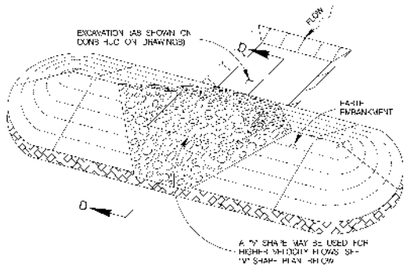
1. HAY BALES SHALL BE A MINIMUM OF 30" IN LENGTH AND WEIGH A MINIMUM OF 50 LBS
2. HAY BALES SHALL BE BOUND BY EITHER WIRE OR NYLON OR POLYPROPYLENE STRING. THE BALES SHALL BE COMPOSED ENTIRELY OF VEGETABLE MATTER
3. HAY BALES SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4", AND WHERE POSSIBLE ONE-HALF THE HEIGHT OF THE BALE
4. HAY BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES. THE BALES SHALL BE PLACED WITH BINDINGS PARALLEL TO THE GROUND.
5. HAY BALES SHALL BE SECURELY ANCHORED IN PLACE WITH 2"x2" DIA REBAR OR 1" x 1" WOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE SHALL BE ANGLED TOWARDS THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

BALED HAY FOR EROSION CONTROL



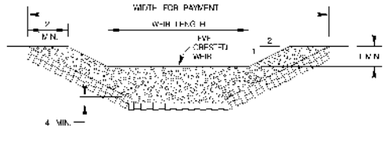
TYPE 1 FILTER DAM AT TOE OF SLOPE

SCALE : 1" = 10'



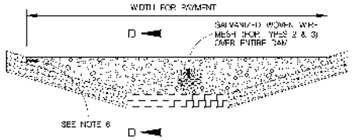
TYPE 1 & 2 FILTER DAM AT SEDIMENT TRAP

SCALE : 1" = 10'



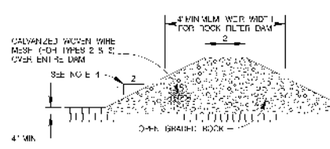
PROFILE OF TYPE 1 & 2 FILTER DAM AT SEDIMENT TRAP

SCALE : 1" = 6'



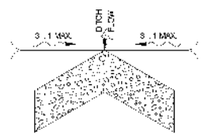
TYPE 1, 2 & 3 FILTER DAM AT CHANNEL SECTIONS

SCALE : 1" = 6'



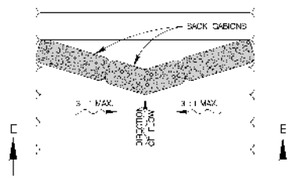
SECTION D-D

SCALE : 1" = 6'



"V" SHAPE PLAN VIEW

NOT TO SCALE

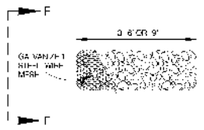


PLAN VIEW

SCALE : 1" = 10'

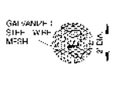
SECTION E-E

SCALE : 1" = 6'



TYPE 4 SACK GABION DETAIL

SCALE : 1" = 6'



SECTION F-F

SCALE : 1" = 6'

TYPE 4 FILTER DAM AT DITCHES & SMALLER CHANNELS PLAN VIEW

ROCK FILTER DAMS

ROCK FILTER DAM USAGE GUIDELINES

ROCK FILTER DAMS SHOULD BE CONSTRUCTED DOWNSTREAM FROM DISTURBED AREAS TO INTERCEPT SEDIMENT FROM OVERLOAD RUNOFF AND FOR CONCENTRATED FLOW. THE DAMS SHOULD BE SIZED TO HOLD A MAXIMUM FLOW THRU RATE OF 50 CFM PER SQUARED OF CROSS SECTIONAL AREA. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE.

TYPE 1 (60" HIGH WITH NO WIRE MESH)

TYPE 1 MAY BE USED AT THE TOE OF SLOPES AROUND INLETS, IN SMALL DITCHES AND AT DIKE OR SWALE OUTLETS. THIS TYPE OF DAM IS RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA OF 5 ACRES OR LESS. TYPE 1 MAY NOT BE USED IN CONCENTRATED HIGH VELOCITY FLOWS (APPROXIMATELY 6 FT/SEC OR MORE) IN WHICH AGGREGATE WASH OUT MAY OCCUR. SANDBAGS MAY BE USED AT THE EMBEDDED FOUNDATION (4" DEEP MIN) FOR BETTER FILTERING EFFICIENCY OF LOW FLOWS IF CALLED OUT ON THE PLANS OR AS DIRECTED BY THE ENGINEER

TYPE 2 (60" HIGH WITH WIRE MESH)

TYPE 2 MAY BE USED IN DITCHES AND AT DIKE OR SWALE OUTLETS

TYPE 3 (30" HIGH WITH WIRE MESH)

TYPE 3 MAY BE USED IN STREAM FLOW AND SHOULD BE SECURED TO THE STREAM BED.

TYPE 4 (SACK GABIONS)

TYPE 4 MAY BE USED IN DITCHES AND SMALLER CHANNELS TO FORM AN EROSION CONTROL DAM.

GENERAL NOTES

1. IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, FILTER DAMS SHOULD BE PLACED NEAR THE TOE OF SLOPES WHERE EROSION IS ANTICIPATED UPSTREAM AND / OR DOWNSTREAM AT DRAINAGE STRUCTURES, AND IN ROADWAY DITCHES AND CHANNELS TO COLLECT SEDIMENT.
2. MATERIALS (AGGREGATE, WIRE MESH, SANDBAGS, ETC.) SHALL BE AS INDICATED BY THE SPECIFICATION FOR ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL
3. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE STORM WATER POLLUTION PREVENTION PLANS.
4. SIDE SLOPES SHOULD BE 2 : 1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDE SLOPES OF 6 : 1 OR FLATTER.
5. MAINTAIN A MINIMUM OF 1 BETWEEN TOP OF ROCK FILTER DAM WEIR AND TOP OF EMBANKMENT FOR FILTER DAMS AT SEDIMENT TRAPS
6. FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4" IN TO THE EXISTING GROUND.
7. THE SEDIMENT TRAP FOR PONDING OF SEDIMENT LADEN RUNOFF SHALL BE OF THE DIMENSIONS SHOWN ON THE PLANS.
8. ROCK FILLER DAM TYPE 2 & 3 SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HORIZONAL OPENINGS. THE AGGREGATE SHALL BE PLACED ON THE MESH TO THE HEIGHT AND SLOPES SPECIFIED. THE MESH SHALL BE FOLDED AT THE UPSTREAM SIDE OVER THE AGGREGATE AND TIGHTLY SECURED TO THE TOP OF THE DOWNSTREAM SIDE USING 6" OR MORE OVERLAP IN STREAM USE. THE MESH SHOULD BE ANCHORED OR STAKED TO THE STREAM BED WITH 2" DIA. REBAR STAKES
9. SACK GABIONS SHALL BE STACKED DOWN WITH 3/4" DIA REBAR STAKES
10. FLOW OUTLET SHOULD BE LINED A STABLE ARMOR (VEGETATION, ROCK, ETC.).
11. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

JANUARY 2005

CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 2

PROJECT NO. DATE

DRAWN BY: Y.VASQUEZ DESIGN BY: CHKD BY: SHEET NO. OF

STATE OF TEXAS
ATLAN DAVID WEIKEL
57027
REGISTERED
PROFESSIONAL ENGINEER
9/17/18

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Trihydro CORPORATION
Texas Engineering Firm F-131
Texas Survey Firm 10194320
1011 West County Line Road
New Braunfels, Texas 78130
(P) 210/298.5030 (F) 830/626.3544
www.trihydro.com
TRIHYDRO PROJECT NO. 702-557-E00

No.	Revision	Drawn	Approved	Date
1	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1

SWPPP DETAILS (2 OF 2)

DEVELOPER: SAN ANTONIO WATER SYSTEM

CONT. BUDGET PROJ.

SUBMITTED

APPROVED

MAP No. SHEET 31

SECT. No. JOB No. 17-4546 OF 39

DR. RJ CK. ADW

M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_SWPPP

4

SITE DESCRIPTION

PROJECT NAME AND LOCATION: WEST SEWER SHED PACKAGE 1
LOCATED NORTH & SOUTH OF I-410 WEST OF SH16 (PALO ALTO RD.) WITHIN 50-FT EASEMENT, NEAR LEON CREEK

CONTACT AND PHONE NO.: ALLA KOROSTYSHEVSKY, P.E., PMP (210) 233-3447

PROJECT DESCRIPTION: REHABILITATION OF APPROX. 7,340 LF OF SEWER MAINS THAT RANGE FROM 54 TO 66 INCHES IN DIAMETER

MAJOR SOIL DISTURBING ACTIVITIES: EXCAVATION AND CLEARING

TOTAL PROJECT AREA (ACRES): 4.23 ACRES

TOTAL AREA TO BE DISTURBED: 0.06 ACRES

WEIGHTED RUNOFF COEFFICIENT (AFTER CONSTRUCTION): N/A, PROJECT IS REMEDIATION OF EXIST. SEWER ONLY. EXIST. DRAINAGE CONDITIONS WILL NOT CHANGE

EXISTING CONDITION OF SOIL,VEGETATIVE COVER AND % OF VEGETATIVE COVER: 95% VEGETATIVE COVER

DESCRIPTION OF WATER DISCHARGED NOT ASSOCIATED WITH CONSTRUCTION: STORM WATER

NAME OF RECEIVING WATERS: LEON CREEK

IDENTIFY STORMWATER DISCHARGE POINTS: EXISTING CULVERTS LOCATED ALONG I-410

A DESCRIPTION AND TIME FRAME FOR INSTALLATION OF STABILIZATION PRACTICES IN CONJUNCTION WITH CONSTRUCTION:
COMPLETE INSTALLATION OF EROSION CONTROL PRIOR TO REMEDIATION WORK (INCLUDES EXCAVATION AND CLEARING).

EROSION AND SEDIMENTATION CONTROLS

SOIL STABILIZATION PRACTICES:

- ___ HYDROMULCHING
- ___ TEMPORARY SEEDING
- [x] PERMANENT PLANTING, SODDING OR SEEDING
- ___ MULCHING
- ___ SOIL RETENTION BLANKET
- ___ BUFFER ZONES
- ___ PRESERVATION OF NATURAL RESOURSES

OTHER:

DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITY HAS CEASED TEMPORARILY OR PERMANENTLY SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITIES ARE SCHEDULED TO RESUME AND DONE WITHIN 21 DAYS.

STRUCTURAL PRACTICES:

- [x] SILT FENCES
- ___ HAY BALES
- ___ GRAVEL FILTRATION BAGS
- ___ ROCK BERMS
- ___ DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- ___ DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- ___ DIVERSION, DIKE AND SWALE COMBINATIONS
- ___ PAVED FLUMES
- [x] ROCK BEDDING AT CONSTRUCTION EXIT (STABILIZED ENTRANCE)
- ___ TIMBER MATTING AT CONSTRUCTION EXIT (STABILIZED ENTRANCE)
- ___ CHANNEL LINERS
- ___ SEDIMENT TRAPS
- ___ SEDIMENT BASINS
- ___ STORM INLET SEDIMENT TRAP
- ___ STONE OUTLET SEDIMENT STRUCTURES
- ___ CURBS AND GUTTERS
- ___ STORM SEWERS
- ___ VELOCITY CONTROL STRUCTURES
- ___ GEOTEXTILES

OTHER:

NARRATIVE – SEQUENCE OF CONSTRUCTION (STORMWATER MANAGEMENT) ACTIVITIES:
THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:

1. INSTALLATION OF TEMP. EROSION CONTROL
2. REHABILITATION OF EXIST. SANITARY SEWER LINES
3. REMOVAL OF TEMP. EROSION CONTROL

A DESCRIPTION OF MAINTENANCE PROCEDURES FOR CONTROL MEASURES USED:

STORMWATER MANAGEMENT: N/A

A DESCRIPTION OF PERMANENT STORM WATER MANAGEMENT CONTROLS: N/A

OTHER EROSION AND SEDIMENTATION CONTROLS

MAINTENANCE:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY, IT WILL BE DONE AT THE EARLIEST DATE POSSIBLE BUT NO LATER THAN 7 CALENDAR DAYS AFTER THE SURROUNDING EXPOSED GROUND HAS DRIED SUFFICIENTLY TO PREVENT FURTHER DAMAGE FROM HEAVY EQUIPMENT. THE AREAS ADJACENT TO CREEKS AND DRAINAGEWAYS SHALL HAVE PRIORITY, FOLLOWED BY DEVICES PROTECTING STORM SEWER INLETS.

INSPECTION:

AN INSPECTION WILL BE PERFORMED BY THE CONTRACTOR EVERY 14 DAYS AS WELL AS AFTER EVERY 1/2" OR MORE OF RAIN, RECORDED ON A NON-FREEZING RAIN GAUGE TO BE LOCATED AT THE PROJECT SITE). AN INSPECTION AND MAINTENANCE REPORT WILL BE MADE PER INSPECTION. BASED ON THE INSPECTION RESULTS, THE CONTROLS SHALL BE CORRECTED BEFORE THE NEXT SCHEDULED INSPECTION.

WASTE MATERIALS:

ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL MEET ALL STATE AND LOCAL CITY SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED AS NECESSARY OR AS REQUIRED BY LOCAL REGULATION AND THE TRASH WILL BE HAULED TO A LOCAL DUMP. NO CONSTRUCTION MATERIALS WILL BE BURIED ON SITE.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING):

AT A MINIMUM, ANY PRODUCTS IN THE FOLLOWING CATEGORIES ARE CONSIDERED TO BE HAZARDOUS: PAINTS, ACIDS FOR CLEANING MASONRY SURFACES, GASOLINE, MOTOR OIL, CLEANING SOLVENTS, ASPHALT PRODUCTS, CHEMICAL ADDITIVES FOR SOIL STABILIZATION OR CONCRETE CURING COMPOUNDS AND ADDITIVES. IN THE EVENT OF A SPILL WHICH MAY BE HAZARDOUS AND MEETS REPORTING REQUIREMENTS, THE NATIONAL RESPONSE CENTER SHOULD BE CONTACTED AT 800-424-8802 AND ANY REQUIRED CHANGES MADE TO THE SWPPP. IN THE EVENT OF A LIFE THREATENING SPILL, THE SAN ANTONIO FIRE DEPARTMENT SHOULD BE NOTIFIED AS WELL AS THE APPROPRIATE CITY INSPECTORS.

SANITARY WASTE: ___

OFFSITE EXCAVATION SOURCE LOCATION: ___

OFFSITE FILL SOURCE LOCATION: ___

OFFSITE VEHICLE TRACKING: ___

- ___ HAUL ROADS DAMPENED FOR DUST CONTROL
- ___ LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
- ___ EXCESS DIRT ON ROAD TO BE REMOVED DAILY
- ___ STABILIZED CONSTRUCTION ENTRANCE

OTHER:

CERTIFICATION THAT SITE DISTURBANCE AND / OR DISCHARGES WILL NOT EFFECT LISTED ENDANGERED SPECIES AND THEIR HABITAT: ___
WHAT METHOD IS USED TO SATISFY THE ENDANGERED SPECIES REQUIREMENTS? ___

REMARKS:

DISPOSAL AREAS, STOCKPILES AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL THE AMOUNT OF SEDIMENT THAT ENTERS RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WETLAND, BODY OF WATER, STREAMBED OR FLOODPLAIN. CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AREAS SHALL BE CONSTRUCTED BY THE CONTRACTOR IN A MANNER TO MINIMIZE THE RUNOFF OF POLLUTANTS. ALL WATERWAYS SHALL BE CLEARED AS SOON AS POSSIBLE OF TEMPORARY EMBANKMENT, TEMPORARY BRIDGES, MATTING, KALSWORK, PILING, DEBRIS OR OTHER OBSTRUCTION PLACED DURING CONSTRUCTION OPERATIONS THAT ARE NOT PART OF THE FINISHED WORK.

JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

STORM WATER POLLUTION PREVENTION PLAN (SWP3) NARRATIVE

___ % SUBMITTAL | PROJECT NO.: ___ | DATE: ___
DRWN. BY: V. VASQUEZ | DSGN. BY: ___ | CHKD. BY: ___ | SHEET NO.: ___ OF ___

STATE OF TEXAS
ATLAN DAVID WEIKEL
57027
REGISTERED
PROFESSIONAL ENGINEER
9/17/18

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TRIHYDRO PROJECT NO. 702-557-E00

No.	Revision	Drawn	Approved	Date
4	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
SWPPP NOTES

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED ___
APPROVED ___
MAP No. | SHEET
SECT. No. | JOB No. 17-4546 | 32 OF 39
DR. RJ | CK. ADW

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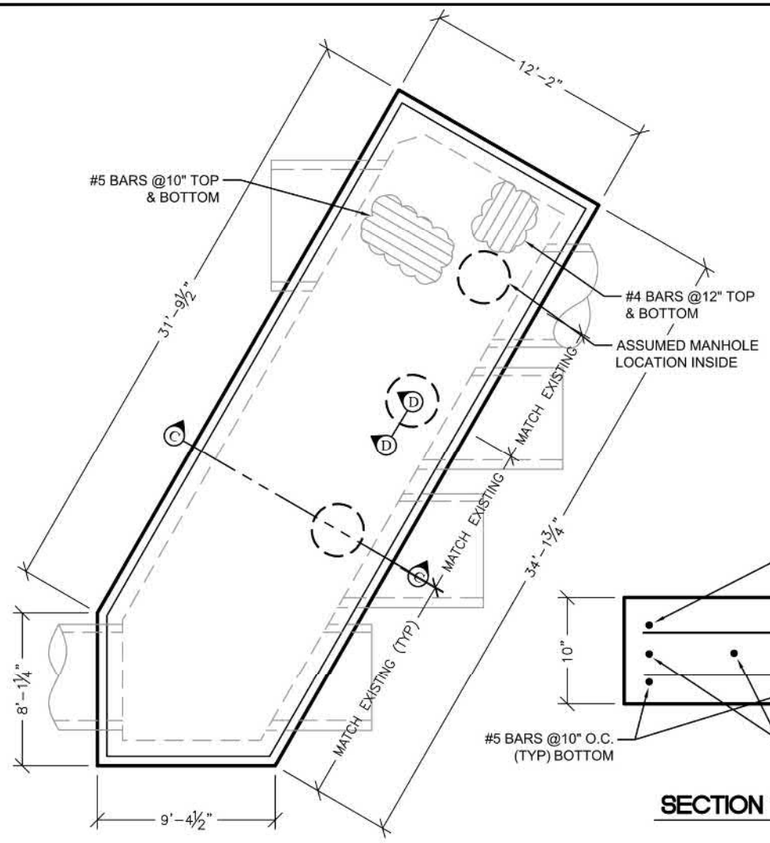
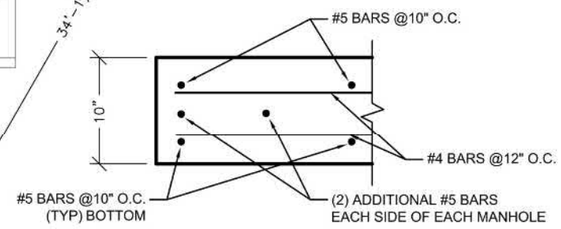


PLAN VIEW OF SIPHON STRUCTURE

INLET & OUTLET SIMILAR
SCALE: NTS



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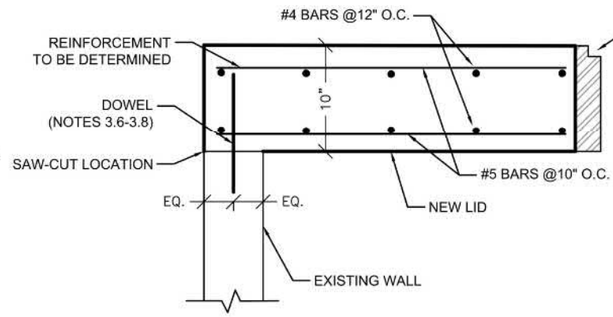

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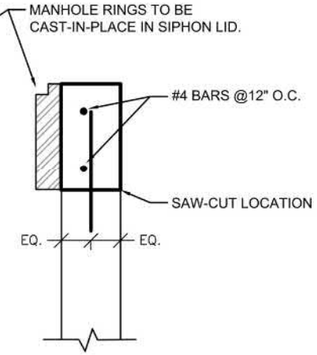
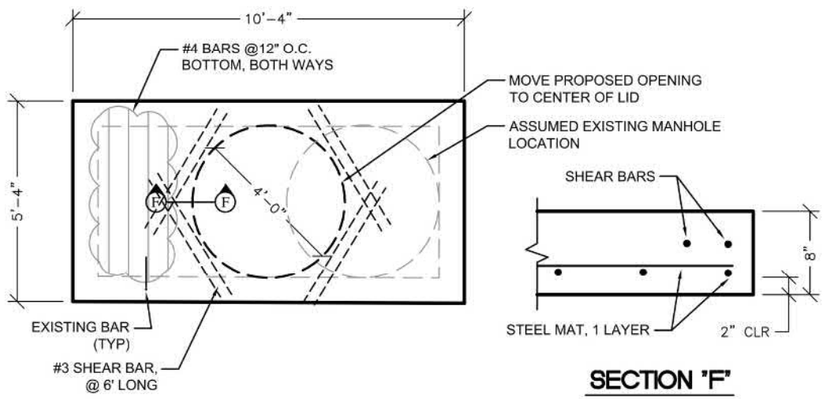
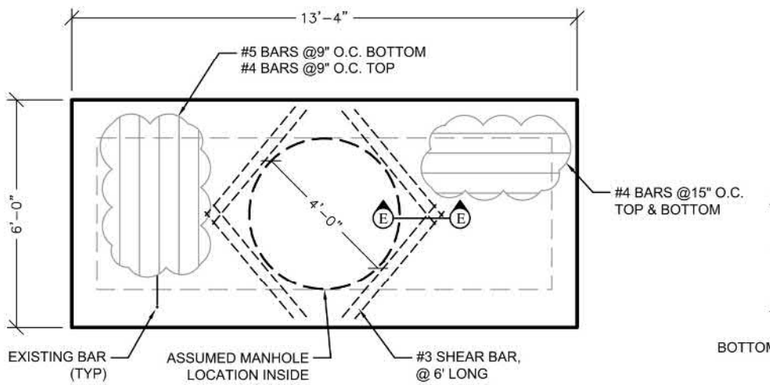




SECTION "F"

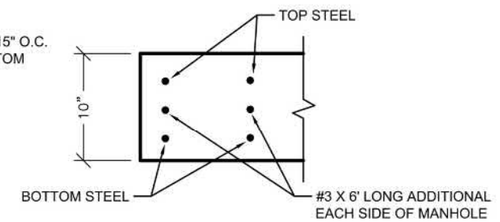
PLAN VIEW FOR TYP. 54" LID

SCALE: NTS



PLAN VIEW FOR TYP. 66" MANHOLE

SCALE: NTS



SECTION "E"

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PROFESSIONAL ENGINEER

A M Stone
04/09/2018

Trihydro CORPORATION
Texas Engineering Firm F-131
Texas Survey Firm 10194320
1011 West County Line Road
New Braunfels, Texas 78130
(P) 210/298.5030 (F) 830/626.3544
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1	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1
SANITARY SEWER STRUCTURE RECONSTRUCTION DETAILS

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ | CK. ADW
JOB No. 17-4546
SHEET 33 OF 39

M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_DETAILS

4

1.0 RECOMMENDED CONSTRUCTION SEQUENCE FOR MANHOLE LID:

1.1 EXPOSE COLD JOINT BETWEEN LID OF STRUCTURE AND WALLS ON ALL SIDES OF STRUCTURE.

1.2 REMOVE VERTICAL MANHOLE FROM TOP OF LID.

1.3 SAWCUT ALL 4 SIDES APPROXIMATELY 1" BELOW LID.

1.4 CUT APPROXIMATELY 1" DEEP.

1.5 EXISTING BARS THAT EXTEND FROM SIDES INTO LID MUST BE MAINTAINED. TAKE CARE TO AVOID CUTTING OR EXCESSIVE BENDING OF EXISTING BARS.

1.6 DEMOLISH AND REMOVE LID.

1.7 ANY DAMAGE NOTED INSIDE THE STRUCTURE SHALL BE REPAIRED PRIOR TO COATING THE STRUCTURE WITH A SAWS APPROVED SEWER COATING IN ACCORDANCE WITH SAWS STANDARD SPECIFICATION 855- RECONSTRUCTION OF EXISTING MANHOLES

1.8 FORM NEW LID INCORPORATING EXISTING BARS INTO TOP MAT OF NEW STEEL.

1.9 CAST ON NEW LID.

1.10 INSTALL PRECAST REINFORCED CONCRETE MANHOLE SECTIONS AND THROAT RINGS AS REQUIRED TO REACH FINISHED GRAD IN ACCORDANCE WITH SAWS STANDARD DETAIL DD-852-01. MANHOLE RINGS AND COVERS SHALL BE WATERTIGHT WITH 30IN CLEAR OPENING IN ACCORDANCE WITH SAWS STANDARD SPECIFICATION 855- RECONSTRUCTION OF EXISTING MANHOLES.

1.11 REINSTALL BACKFILL AS REQUIRED BY SAWS STANDARD SPECIFICATIONS.

2.0 GENERAL NOTES:

2.1 NO GEOTECH PROVIDED.

2.2 DESIGN, MATERIAL, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE FOLLOWING STANDARDS:
ACI 318 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
SP66 ACI DETAILING MANUAL.
ACI 301 SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.
CRSI RECOMMENDED PRACTICE FOR PLACING REINFORCING STEEL.
SAWS STANDARD SPECIFICATION 307 "CONCRETE STRUCTURES"
SAWS STANDARD SPECIFICATION 850 "SANITARY SEWER STRUCTURES"
SAWS STANDARD SPECIFICATION 855 "RECONSTRUCTION OF EXISTING MANHOLES"

2.3 CONCRETE SHALL DEVELOP 4000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS, EXCEPT AS NOTED ON DRAWINGS. FLY ASH PERMITTED.

2.4 CLASS G CONCRETE SAWS STANDARD SPECIFICATION 300 "CONCRETE (NATURAL AGGREGATE).

2.5 REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615 GRADE 60. SAWS STANDARD SPECIFICATION 301 "REINFORCING STEEL".

2.6 WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185,
(FLAT SHEETS ONLY).

2.7 UNLESS NOTED, CONCRETE COVER OVER REINFORCING SHALL BE:
3" WHEN THE CONCRETE IS PLACED DIRECTLY AGAINST THE GROUND.
2" FOR BARS LARGER THAN NO. 5, AND 11/2" FOR NO. 5 AND SMALLER, IF AFTER REMOVAL OF FORMS THE CONCRETE IS EXPOSED DIRECTLY TO WEATHER OR GROUND.
1" IN SLABS AND WALLS, AND 11/2" FOR BEAMS AND COLUMNS NOT EXPOSED DIRECTLY TO WEATHER OR GROUND.

2.8 ALL REINFORCING HOOKS SHALL BE STANDARD HOOKS AS DEFINED BY ACI, UNLESS NOTED OTHERWISE.

2.9 ALL EXPOSED EDGES OF CONCRETE SHALL HAVE A 1 INCH, 45 DEGREE CHAMFER.

2.10 CONTRACTOR SHALL SUBMIT COMPLETE SHOP AND PLACING DRAWINGS AND OBTAIN APPROVAL PRIOR TO FABRICATION.

2.11 MAXIMUM AGGREGATE SHALL BE AS FOLLOWS:
WALLS, STRUCTURAL SLABS, BEAMS..... 3/4"
FOOTING, SLABS ON GRADE..... 11/2"

2.12 GRIND ALL CONSTRUCTION JOINTS IN SLAB SO AS TO PRODUCE A SMOOTH AND LEVEL SURFACE

2.13 LID SURFACE SHALL HAVE TROWELED FINISH.

2.14 SLOPE SLAB TO DRAIN AWAY FROM LIFT STATION SITE.

2.15 DIMENSIONS OF EXISTING STRUCTURES COPIED FROM AS BUILT DRAWINGS PROVIDED. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CORRESPONDING QUANTITIES.

2.16 FOR REMOVAL AND REPLACEMENT REQUIREMENTS UNDER THE SURFACE SLABS, FOLLOW THE RECOMMENDATIONS FOR REDUCING PVR TO AN ESTIMATED 1.25 INCHES. RECOMMENDATIONS MAY BE FOUND IN REPORT XXX DATED XX-XX-XXXX.

2.17 SITE CLASS "X"
SS = X
S1 = XG

3.0 RECOMMENDED CONSTRUCTION SEQUENCE FOR SIPHON LID:

3.1 EXPOSE COLD JOINT BETWEEN LID OF STRUCTURE AND WALLS ON ALL SIDES OF STRUCTURE.

3.2 REMOVE MANHOLE FROM TOP OF LID.

3.3 SAWCUT ALL 4 SIDES APPROXIMATELY 1" BELOW LID. CUT ALL THE WAY THROUGH CURRENT CONSTRUCTION JOINT

3.4 DEMOLISH AND REMOVE LID.

3.5 ANY DAMAGE NOTED INSIDE THE STRUCTURE SHALL BE REPAIRED PRIOR TO COATING THE STRUCTURE WITH A SAWS APPROVED SEWER COATING IN ACCORDANCE WITH SAWS STANDARD SPECIFICATION 855- RECONSTRUCTION OF EXISTING MANHOLES

3.6 INSTALL DOWELS IN TOP OF REMAINING WALL. CENTER IN WALL THICKNESS

3.7 DOWELS SHALL BE ½" DIAMETER BY 12" LONG DEFORMED REINFORCEMENT EMBEDDED 5" MINIMUM INTO SOUND CONCRETE. USE HILTI HY200 EPOXY.

3.8 DOWELS SHALL BE INSTALLED AT 24" ON CENTER USUAL AND MAXIMUM. 2 DOWELS MINIMUM PER SIDE.

3.9 CAST ON NEW LID.

3.10 MANHOLE RINGS SHALL BE CAST INTO THE SIPHON LID. MANHOLE RINGS AND COVERS SHALL BE WATERTIGHT WITH A 30IN CLEAR OPENING COVER IN ACCORDANCE WITH SAWS STANDARD SPECIFICATION 850- SANITARY SEWER STRUCTURES.

3.11 REINSTALL BACKFILL AS REQUIRED BY SAWS STANDARD SPECIFICATIONS.

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REVISIONS

WEST SEWERSHED PACKAGE 1

SANITARY SEWER STRUCTURE RECONSTRUCTION NOTES

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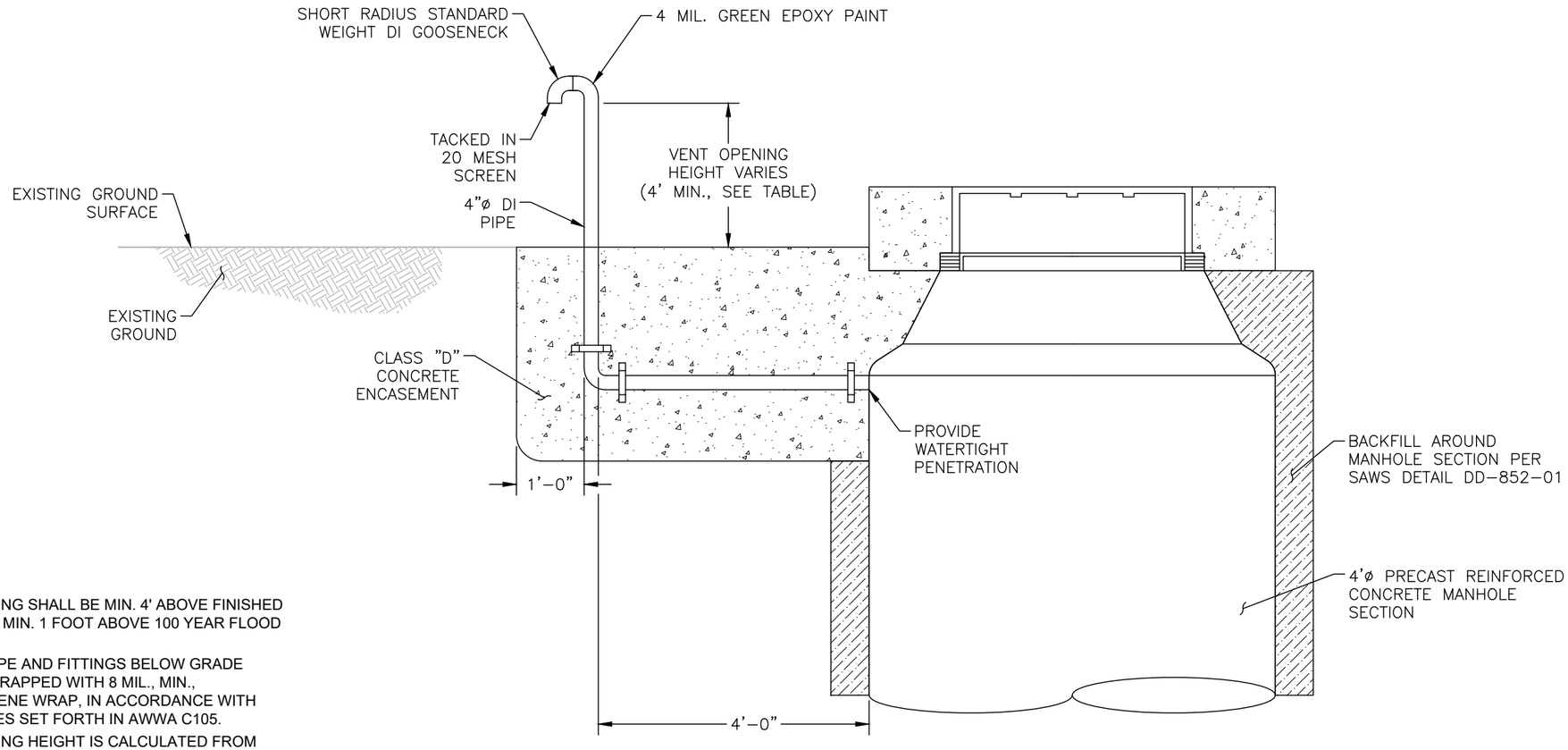
M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_DETAILS



NOTES:

1. VENT OPENING SHALL BE MIN. 4' ABOVE FINISHED GRADE AND MIN. 1 FOOT ABOVE 100 YEAR FLOOD ELEVATION.
2. ALL IRON PIPE AND FITTINGS BELOW GRADE SHALL BE WRAPPED WITH 8 MIL., MIN., POLYETHYLENE WRAP, IN ACCORDANCE WITH PROCEDURES SET FORTH IN AWWA C105.
3. VENT OPENING HEIGHT IS CALCULATED FROM THE RIM ELEVATION OF THE STRUCTURE TO 1 FOOT ABOVE THE 100 YEAR BASE FLOOD ELEVATION.

VENT OPENING HEIGHTS

STRUCTURE	RIM ELEVATION	100 YEAR BASE FLOOD ELEVATION	VENT HEIGHT (FT)
MH1520	588.6	592	5
MH47165	591.2	590	4
MH33943	585.9	585	4
MH47166	585.4	585	4
MH34239	584.0	586	4
MH4587	581.4	587	7

4

1 SANITARY SEWER STRUCTURE VENT INSTALLATION DETAIL
SCALE: NONE

STATE OF TEXAS
ATLAN DAVID WEIKEL
57027
REGISTERED PROFESSIONAL ENGINEER
9/17/18

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Texas Engineering Firm F-131
Texas Survey Firm 10194320
1011 West County Line Road
New Braunfels, Texas 78130
(P) 210/298.5030 (F) 830/626.3544
www.trihydro.com
TRIHYDRO PROJECT NO. 702-557-E00

No.	Revision	Drawn	Approved	Date
4	ISSUE FOR ADDENDUM 4	RJ	ADW	9/17/2018
0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

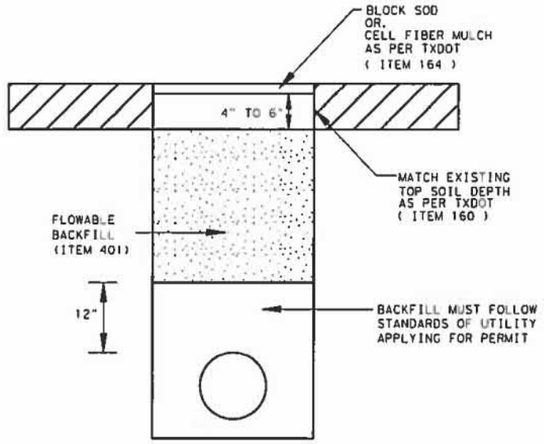
REVISIONS

WEST SEWERSHED PACKAGE 1
SANITARY SEWER STRUCTURE VENT INSTALLATION DETAIL

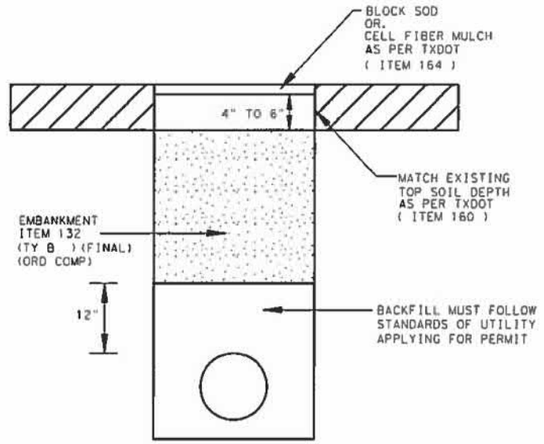
DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 35
SECT. No. | JOB No. 17-4546 | OF 39
DR. RJ | CK. ADW

4

M:\STOV\SAWS\CADD\17-4546_WESTSEWERSHEDP1\PLANSETS\702-WSP1_DETAILS



TRENCH DETAIL (NON PAVEMENT)
< 10' FROM CURB/OR EDGE OF PAVEMENT



TRENCH DETAIL (NON PAVEMENT)
>10' FROM CURB/OR EDGE OF PAVEMENT

NOTES:

- PIPE 24" OR LESS USE 1' FROM O/D OF PIPE TO EXCAVATED WALLS
- PIPE 24" OR GREATER USE 2' FROM O/D OF PIPE TO EXCAVATED WALLS

REVISED: JUNE 28, 2016

Texas Department of Transportation
SAN ANTONIO DISTRICT

TRENCH BACKFILL DETAIL
NON PAVEMENT

STATE OF TEXAS
ATLAN DAVID WEIKEL
57027
REGISTERED
PROFESSIONAL ENGINEER
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0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED
PACKAGE 1
TRENCH BACKFILL DETAILS
(NON PAVEMENT)

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No.
SECT. No.
DR. RJ | CK. ADW
JOB No. 17-4546
SHEET 36 OF 39

4

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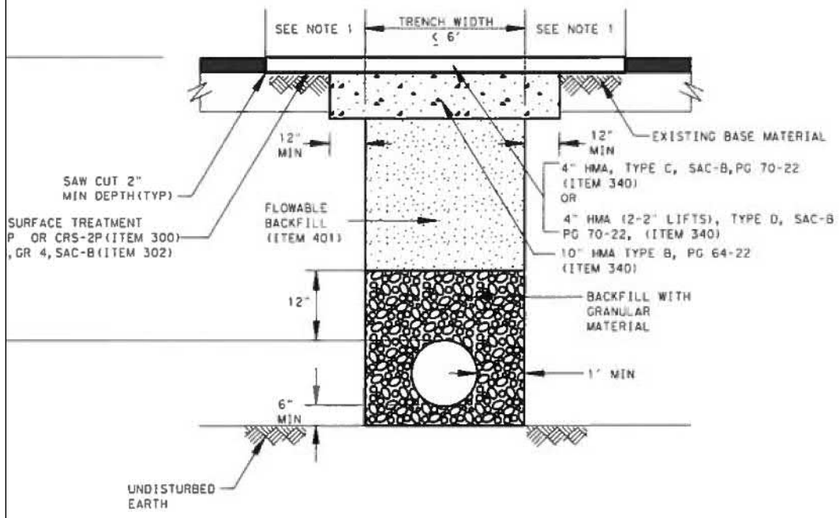
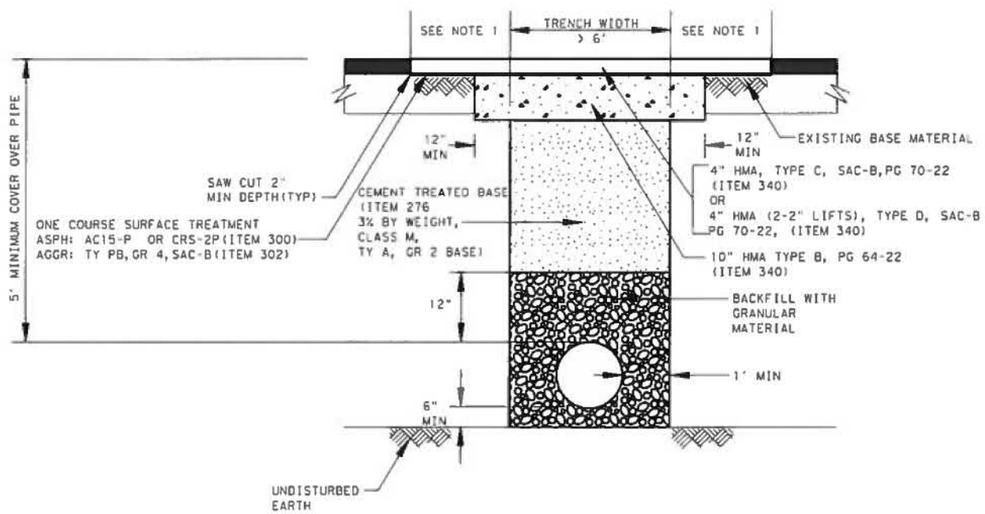


TRENCH BACKFILL WITH PAVED SURFACE DETAIL
(FOR TRENCHES EQUAL OR LESS THAN 6' WIDE)



TRENCH BACKFILL WITH PAVED SURFACE DETAIL
(FOR TRENCHES WIDER THAN 6')

NOTES:

1 -DISTANCE OF HMA TYPE C OVERLAY SHALL BE AS SHOWN ON PLANS BUT NOT LESS THAN 2 ' MIN.

REVISED: JUNE 28, 2016

Texas Department of Transportation
SAN ANTONIO DISTRICT

TRENCH BACKFILL DETAIL WHEN OPEN-CUTTING OF PAVEMENT IS ALLOWED

STATE OF TEXAS
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REVISIONS

WEST SEWERSHED PACKAGE 1

TRENCH BACKFILL DETAILS (PAVEMENT)

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 37 OF 39
SECT. No.
DR. RJ | CK. ADW | JOB No. 17-4546

4

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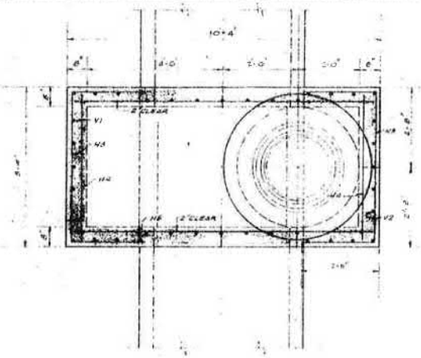
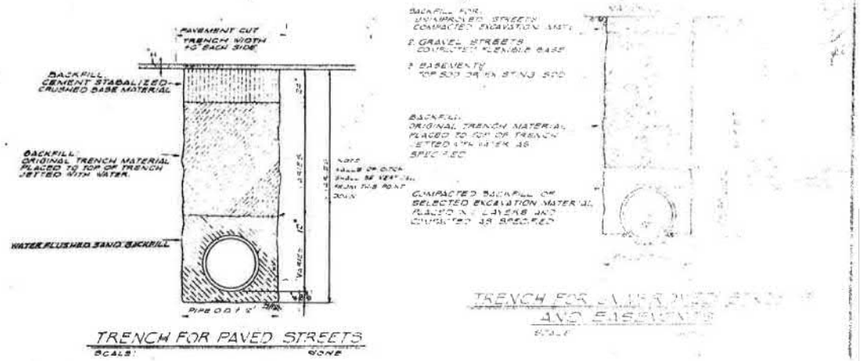


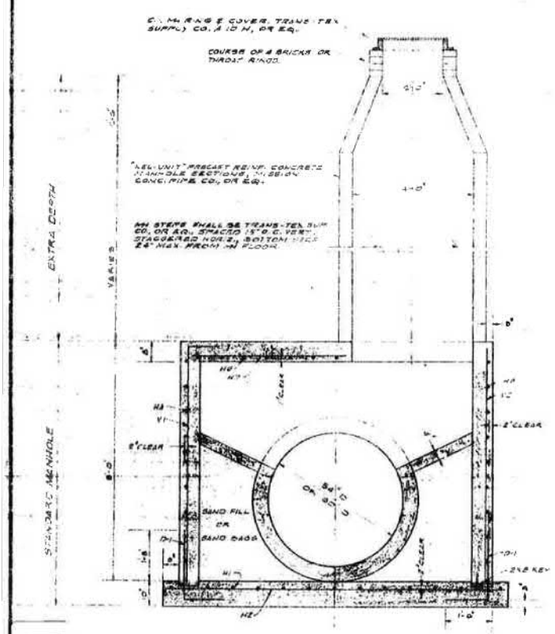
PLAN - TYPE A MANHOLE

M.H. REINFORCING SCHEDULE		
	SIZE AND SPACING	
BAR MARK	0' TO 10'-0" COVER	11'-0" TO 20'-0" COVER
D1	20 #5 @ 10"	20 #5 @ 10"
H1	36 #5 @ 10"	72 #5 @ 5"
H2	88 #5 @ 10"	88 #5 @ 10"
H3	18 #5 @ 10"	36 #5 @ 5"
H4	18 #5 @ 10"	18 #5 @ 10"
H5	14 #5 @ 5"	28 #5 @ 5"
H6	7 #5 @ 9"	14 #5 @ 4½"
H7	7 #5 @ 10"	7 #5 @ 10"
V1	10 #5 @ 10"	10 #5 @ 10"
V2	10 #5 @ 10"	10 #5 @ 10"
V3	8 #5 @ 10"	8 #5 @ 10"



TRENCH FOR PAVED STREETS

TRENCH FOR UNPAVED ROADS AND EASEMENTS



GENERAL STRUCTURAL NOTES FOR CROSSINGS

DESIGN CRITERIA:
LATERAL LOADS: 900 PLF - 3 CROSSINGS
CONCRETE: f'c = 3000 psi ; fc = 1350 psi
f'ci = 2500 psi ; fci = 1125 psi
PRESTRESS STEEL: fs = 270,000 psi ; fpi = 145,000 psi
STRUCTURAL STEEL: fs = 20,000 psi, OTHER STRESSES IN ACCORDANCE W/ A.I.S.C. SPECS.

REINFORCED CONCRETE PIPE:
PIPE SHALL BE REINFORCED CONCRETE, TONGUE & GROVE, PIPE OF STANDARD STRENGTH TYPE III, WITH THIN WALL THICKNESS, AS SHOWN ON THE PLANS.
PIPE JOINT SURFACES SHALL BE CLEANED & PRIMED BY THE CONTRACTOR & ALLOWED TO DRY BEFORE A PLASTIC SEALANT IS APPLIED. THE CONTRACTOR & ALLOWED TO DAY PIPE. SHOULDER IN EACH END OF THE PIPE. AFTER THE PLASTIC SEALER HAS BEEN APPLIED & THE PROTECTIVE COVER REMOVED, THE PIPE SHALL BE SHOVED HOME BY A MECHANICAL FORCE USED TO PUSH OR PULL THE PIPE TIGHTLY TOGETHER FORMING A MAX. JOINT OPENING OF ½" EACH. SECTION OF PIPE SHALL BE SUPPORTED AT THE JOINTS UNTIL THE PRESTRESSING HAS BEEN COMPLETED.

PRESTRESSING:
TENSIONING SHALL NOT START UNTIL CYLINDER TESTS INDICATE THAT THE CONCRETE IN THE SPUN UNITS HAS REACHED A COMPRESSIVE STRENGTH OF 2500 PSI. TENSIONING SHALL BE DONE BY JACKING, UNDER THE IMMEDIATE CONTROL OF A PERSON EXPERIENCED IN THIS TYPE OF WORK.
RECORDS OF ELONGATION & TENSION SHALL BE KEPT BY THE CONTRACTOR & SUBMITTED TO THE ENGINEER.

STRUCTURAL STEEL:
FABRICATION & CONSTRUCTION SHALL BE IN ACCORDANCE W/LATEST A.I.S.C. SPECS. ALL WELDING OR GAS CUTTING SHALL BE IN ACCORDANCE W/THE LATEST STANDARDS OF THE AMERICAN WELDING SOCIETY.
NEW AND UNPOLICED MATERIALS SHALL BE USED THROUGHOUT.

SCHEDULE FOR CROSSING NO. 1

SLOPE 0.20% — INV. 586.93 — STA. 173+12.5 — LENGTH 475.0'
SLOPE 0.20% — INV. 585.98 — STA 177+87.5

STATION	A-FRAME MARK	ELEV. TOP OF PIER	W_p (FT.)
173 + 12.5	ABUT. #1	586.43	SEE DET. SH. 6
173 + 26	A	586.01	2.34
173 + 42	A	585.96	2.34
173 + 58	A	585.88	2.34
173 + 74	A	585.81	2.34
173 + 90	A	585.68	2.34
174 + 06	A	585.55	2.34
174 + 22	A	585.86	2.34
174 + 38	B	585.79	3.21
174 + 54	B	585.79	3.21
174 + 70	B	585.72	3.21
174 + 86	B	585.69	3.21
175 + 02	C	580.68	4.07
175 + 18	C	580.68	4.07
175 + 34	D	578.59	3.98
175 + 50	D	578.68	4.15
175 + 66	D	578.53	4.98
175 + 83	E	578.50	6.22
175 + 98	E	578.47	6.22
176 + 14	E	578.48	6.22
176 + 30	F	578.40	7.09
176 + 46	F	578.37	7.09
176 + 62	F	578.34	7.09
176 + 78	F	578.31	7.09
176 + 94	H	868.77	9.20
177 + 10	F	578.24	7.09
177 + 26	F	578.21	7.09
177 + 42	E	578.18	6.22
177 + 58	D	578.15	4.98
177 + 74	B	582.12	3.21
177 + 82.5	ABUT. #2	583.48	SEE DET. SH. 6

SCHEDULE FOR CROSSING NO. 2

SLOPE 0.20% — INV. 579.90 — STA 237+78.5
SLOPE 0.20% — INV. 577.08 — STA 2[illegible]

STATION	A-FRAME MARK	ELEV. TOP OF PIER
237 + 78.5	ABUT #1	579.47
237 + 92	A	579.46
238 + 08	B	579.95
238 + 24	C	579.72
238 + 40	D	579.88
238 + 56	E	579.85
238 + 72	F	579.81
238 + 88	G	579.78
239 + 04	H	579.76
239 + 20	I	579.75
239 + 36	J	579.69
239 + 52	K	579.66
239 + 68	L	579.63
239 + 84	M	579.60
240 + 00	N	579.58
240 + 16	O	579.53
240 + 32	P	579.50
240 + 48	Q	579.47
240 + 64	R	579.44
240 + 80	S	579.40
240 + 96	T	579.37
241 + 12	U	579.34
241 + 28	V	579.31
241 + 44	W	579.28
241 + 60	X	579.26
241 + 76	Y	579.21
241 + 87.5	ABUT # 2	579.35

SCHEDULE FOR CROSSING NO. 3

SLOPE 0.20% — INV. 568.32 — STA. 257+70.5
SLOPE 0.20% — INV. 567.64 — STA 2[illegible]

STATION	A-FRAME MARK	ELEV. TOP OF PIER	W_p (FT.)
257 + 70.5	ABUT #1	569.26	SEE DET. SH. 6
257 + 86	B	569.00	4.98
258 + 00	C	568.97	4.07
258 + 16	D	568.94	3.98
258 + 32	E	568.90	3.98
258 + 48	D	568.87	3.98
258 + 64	D	568.84	3.98
258 + 80	D	568.81	3.98
258 + 96	B	568.78	3.98
259 + 09.5	ABUT # 2	568.76	SEE DET. SH. 6

AS BUILT JUNE, 1965

225/ 75

Segment B

ATLAN DAVID WEIKEL
57027
REGISTERED
PROFESSIONAL ENGINEER
STATE OF TEXAS

9/17/18

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0	ISSUE FOR 100% PLANS	RJ	ADW	8/23/2018

REVISIONS

WEST SEWERSHED PACKAGE 1

EXISTING 54-INCH MANHOLE STANDARD DETAILS

DEVELOPER: SAN ANTONIO WATER SYSTEM
CONT. | BUDGET PROJ.
SUBMITTED
APPROVED
MAP No. | SHEET 38
SECT. No. | JOB No. 17-4546 | OF 39
DR. RJ | CK. ADW

REVISIONS

DESIGNED BY WFF DEC 60
DRAWN BY AM DEC 60
CHECKED BY WFF DEC 60
APPROVED BY
RELEASED BY

DRAWING No
JOB No. 57-0[illegible]

FRANK T. DROUGHT
CONSULTING ENGINEER
SAN ANTONIO, TEXAS

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

LEON CREEK OUTFALL [illegible]

4

4

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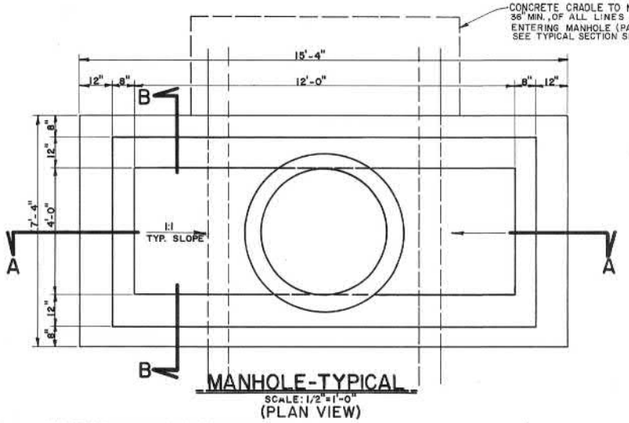
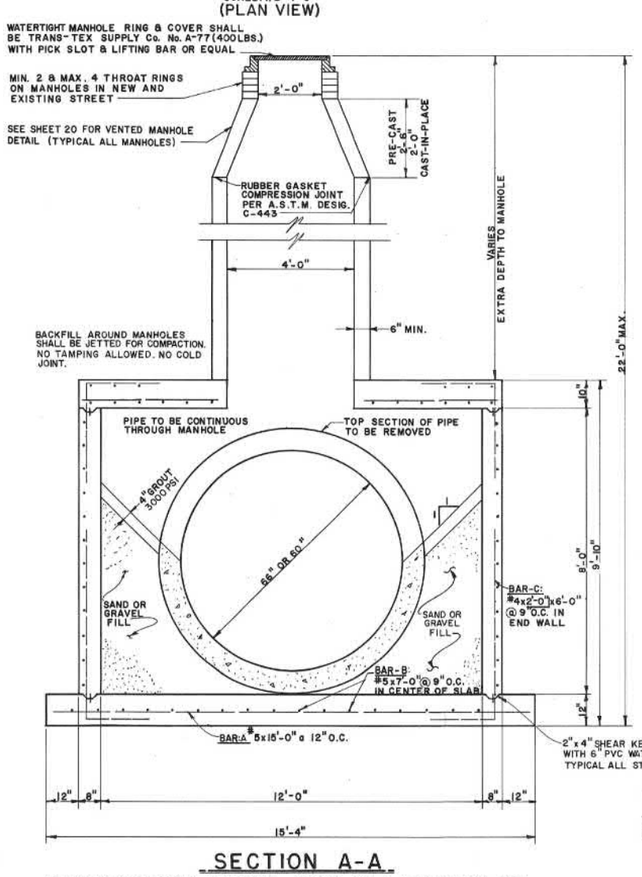


MANHOLE-TYPICAL

SCALE: 1/2"=1'-0"

(PLAN VIEW)



SECTION A-A

SHOWING TYP. STEEL FOR ALL MANHOLES

NO SCALE

SANITARY SEWER STRUCTURE: STANDARD MANHOLE						TOTAL WEIGHT
SHAPE	BAR	No.	SIZE	SPACING	LENGTHS	
STRAIGHT	A	8	#5	12" O.C.	15'-0"	125.16
STRAIGHT	B	18	#5	9" O.C.	7'-0"	131.42
L	C	8	#4	9"	8'-0"	42.75
L	D	48	#7	6"	VARIES	453.02
STRAIGHT	E	36	#6	8"	VARIES	423.56
L	F	14	#4	12"	VARIES	190.94
L	G	40	#4	9"	4'-6"	120.24
STRAIGHT	H	12	#4	12"	12'-8"	101.54
STRAIGHT	I	17	#4	9"	5'-9"	65.30

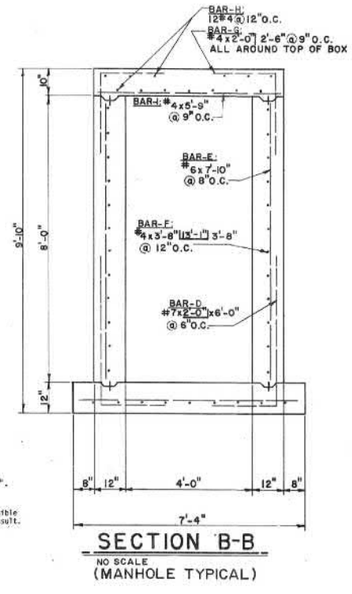
TOTAL CONC. 11.39 C.Y. TOTAL STEEL 1,683.93

MANHOLE SCHEDULE		
WATERTIGHT	VENTED	VENTED W/ INSERT
ALL STANDARD MANHOLES	M.H. # 14	M.H. # 15
JUNCT. BOX # 3A		JUNCTION BOX # 1
		M.H. # 16
		JUNCTION BOX # 2
		JUNCTION BOX # 3
		JUNCTION BOX # 4
		M.H. # 17
		JUNCTION BOX # 5
		JUNCTION BOX # 6
		M.H. # 18

PLAN OF RECORD
JUNE, 1986

"RECORD DRAWINGS BASED ON INFORMATION FURNISHED BY CONTRACTOR".

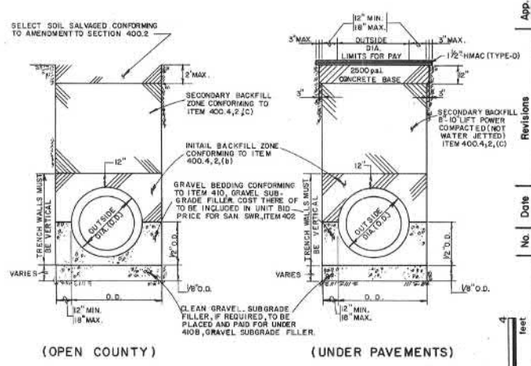
These plan of record drawings have been prepared, in part, on the basis of information compiled and furnished by others. The Engineer will not be responsible for errors or omissions which have been incorporated into this document as a result.



SECTION B-B

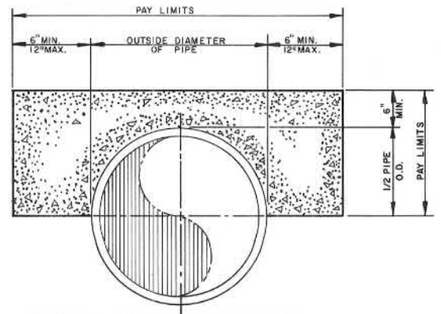
NO SCALE

(MANHOLE TYPICAL)



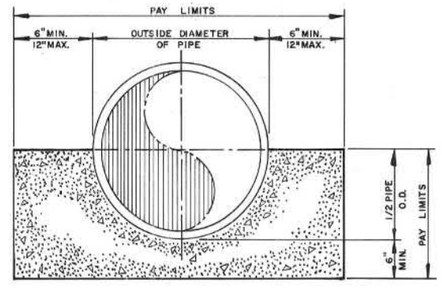
(OPEN COUNTY) (UNDER PAVEMENTS)

PIPE LAID IN TRENCH DETAILS



TYPICAL CONCRETE SADDLE

PAY ITEM 407C



TYPICAL CONCRETE CRADLE

PAY ITEM 407B

4 feet 2 0 2 scale

Job No. 54-RU-01

No.	Date	Revisions	App.

HOWARD W. GADDIS
CONSULTING ENGINEER INC.
SAN ANTONIO TEXAS

Date: SEPT. 1982
Designed by: H.W.G. Jr.
Drawn by: M.A.V.
Checked by: H.W.G. Jr.
Scale: AS NOTED

WASTEWATER FACILITIES IMPROVEMENTS
SAN ANTONIO

LEON CREEK OUTFALL
MANHOLE DETAIL
PHASE II
LR-101 PART B
CATEGORY 4, PACKAGE "C"

Sheet 17 of 26

STATE OF TEXAS
ATLAN DAVID WEIKEL
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REVISIONS

WEST SEWERSHED PACKAGE 1

EXISTING 66-INCH MANHOLE STANDARD DETAILS

DEVELOPER: SAN ANTONIO WATER SYSTEM

CONT. BUDGET PROJ.

SUBMITTED

APPROVED

MAP No. SHEET 39

SECT. No. OF 39

DR. RJ CK. ADW JOB No. 17-4546

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