



**SAN ANTONIO WATER SYSTEM**  
**WATER PRODUCTION FACILITIES DISINFECTION SYSTEM UPGRADES PROJECT**  
**SAWS Job No. 12-6004**  
**SAWS Solicitation No. B-14-042-DD**

**ADDENDUM NO. 2**  
**August 7, 2014**

**To Respondent of Record:**

This addendum, applicable to work referenced above, is an amendment to the bidding documents 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 in the space provided in submitted copies of the proposal.

**A. Modifications to the Specifications**

**1. Invitation for Competitive Sealed Proposals**

Add the following to Paragraph 3:

*“Answers to the questions received on August 4, 2014 will be posted to the website by 4:00 p.m. (C.T.) on August 14, 2014 as a separate document or included as part of an addendum.”*

**2. Section 01 14 16, Coordination with Owner’s Operations**

Add Paragraph 1.3.B.5:

- “5. *CONTRACTOR shall provide SAWS Operations Crews access to the Wurzbach Water Production Facility Entrance/Exit access roads throughout the site at all times during construction. Coordination with SAWS Operations Crews throughout the project will be required to ensure that SAWS staff has the ability to use the existing access roads, including during access road replacement activities.*”

Add Tie-In No. 6.1 to Table 01 14 16-A Schedule of Tie-Ins:

<i>Tie-In No.</i>	<i>New Line Size and Service</i>	<i>Existing (Connecting) Line Size &amp; Service</i>	<i>Tie-In Building / Location</i>	<i>Construction Stage</i>	<i>Remarks</i>
<i>Maltsberger</i>					
<i>6.1</i>	<i>1-inch PVC Fluoride replacement for new road construction</i>	<i>1-inch PVC Fluoride</i>	<i>Between existing chlorine building and fluoride facility</i>	<i>Phase III</i>	<i>Tap existing and place in 6" SCH 80 PVC sleeve under road</i>

**3. Section 26 13 16, Medium-Voltage Fusible Interrupter Switchgear**

Replace Paragraph 2.3.A.3 as follows:

- "3. Outdoor equipment shall be weatherproofed, NEMA 3R construction. After assembly, paint exterior surfaces with additional coat of ANSI 61 indoor light gray paint."

#### **4. Section 26 22 14, Dry-Type Low-Voltage Distribution Transformers**

Replace Paragraph 2.1.A.1 as follows:

- "1. Type: Dry type, air cooled, low temperature rise **with copper windings**. Transformers 15 kVA and larger shall be energy efficient, complying with NEMA TP-1 Class 1 efficiency levels. Transformers less than 15 kVA shall be general purpose."

#### **5. Section 32 01 91, Tree Protection and Trimming**

Replace Section 2.1.C as follows:

"C. Filter Fabric: Manufacturer's standard, nonwoven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers complying with City of San Antonio Standard Specification Item 540 Temporary Erosion, Sedimentation and Water Pollution Prevention and Control."

#### **6. Section 40 23 26, Valves and Appurtenances for Chemical Feed Systems**

Replace Paragraph 1.2.D.1 as follows:

"1. Retain factory trained manufacturer's representative with demonstrated ability and experience in the installation and operation of electric actuators, butterfly valves, check valves, surge relief valves, chemical injectors and static wafers to perform the services listed below:

- a. Supervise Installation.
- b. Test, calibrate and adjust all components for optimum performance.
- c. Assist in initial start-up and field testing.
- d. Inspect the completed installation and prepare an inspection and performance test report.
- e. Instruct OWNER's personnel in the operation and user maintenance of all components.
- f. Supervise the correction of any defective or faulty Work before and after acceptance by OWNER – certify in written report."

Add Section 2.5 as follows:

#### **"2.4 STATIC MIXERS**

- A. The static mixer shall be of a compact ring body design for mounting between two standard pipe flanges. The ring body shall be a minimum thickness of 0.875 inches and shall be fabricated from 316 SS.
- B. Ring type EPDM gaskets shall be furnished and adhered to both sides of the mixer body. The average variation in the process stream from the injection fluid shall be within  $\pm 1\%$  of the mean 10 pipe diameters downstream from the mixer. The mixing plate shall be no less than 0.125 inches thick and shall be type 316 Stainless Steel with Beta values as outlined in the table below. The mixer plate shall be mounted in a machined cavity on the upstream side of the ring body.
- C. Static mixer shall include injectors for chemicals shown in table below. Chemical injectors shall be located as shown on drawings. Chemical injectors shall conform to requirements in Section 2.3 below.

**Static Mixer Design Criteria**

<b>Static Mixer Maltsberger Primary Injection Point</b>	
<b>Location</b>	<i>Downstream of the chemical injection point before the Ground Storage Tank</i>
<b>Chemical Service</b>	<i>Sodium Hypochlorite</i>
<b>Line Size (inches)</b>	<i>48</i>
<b>Water Flow Range (MGD)</b>	<i>62.5</i>
<b>Beta Value</b>	<i>0.80</i>
<b>Maximum Headloss at Maximum Flow (ft)</b>	<i>5.45</i>

**Static Mixer Design Criteria**

<b>Static Mixer Marbach Primary Injection Point</b>	
<b>Location</b>	<i>Downstream of the chemical injection point on vertical piping before the Ground Storage Tank</i>
<b>Chemical Service</b>	<i>Sodium Hypochlorite</i>
<b>Line Size (inches)</b>	<i>36</i>
<b>Water Flow Range (MGD)</b>	<i>36.6</i>
<b>Beta Value</b>	<i>0.80</i>
<b>Maximum Headloss at Maximum Flow (ft)</b>	<i>5.88</i>

**Static Mixer Design Criteria**

<b>Static Mixer Wurzbach Well No. 6 Injection Point</b>	
<b>Location</b>	<i>Downstream of the chemical injection point before the Ground Storage Tank</i>
<b>Chemical Service</b>	<i>Sodium Hypochlorite</i>
<b>Line Size (inches)</b>	<i>30</i>
<b>Water Flow Range (MGD)</b>	<i>20.2</i>
<b>Beta Value</b>	<i>0.80</i>
<b>Maximum Headloss at Maximum Flow (ft)</b>	<i>3.75</i>

*D. The static mixer shall be a wafer type as manufactured by:*

- 1. Westfall manufacturing, Model No. 2800.*
- 2. Or Equal."*

**7. Section 40 61 13, Process Control Systems General Provisions**

Revise Paragraph 1.3.A.3 as follows:

*Replace "Approved Process Control System Integrators..." with "Recommended Process Control System Integrators..."*

Revise Paragraph 1.3.A.4 as follows:

*Replace "Approved Application Service Providers..." with "Recommended Application Service Providers..."*

**8. Section 46 31 11, On-Site Sodium Hypochlorite Generation System**

Revise Paragraph 2.11.D as follows:

"D.

Instrumentation:

1. *Where a primary element is designated for chemical service, all wetted components and appurtenances for that primary element shall be resistant to corrosion by that chemical. Chemicals referred to commonly as "sodium hypochlorite" shall mean 0.8 percent solution NaOCl with specific gravity of 1.03.*
2. *Provide compatible materials of construction for primary sensors and field instrument (wetted) parts that come in contact with the process fluids listed in the Section 40 70 05A, Instrument Index.*
3. *Refer to detailed technical requirements for the instrumentation, specified in Section 40 70 05 Primary Sensors and Field Instruments.*
4. *Flow Magnetic Meters/Transmitters*
  - a. *Magnetic flow meters/transmitters shall be by Endress-Hauser or Rosemount.*
  - b. *Signal interface shall be 4-20 ma, with HART capability.*
5. *Pressure Elements/Transmitters*
  - a. *Pressure elements/transmitters shall be by Endress-Hauser or Rosemount.*
  - b. *Signal interface shall be 4-20 ma, with HART capability.*
6. *Pressure Gauges/Switches*
  - a. *Pressure gauges/switches shall be by Ashcroft."*

**9. Section 46 33 44, Peristaltic Metering Pumps**

Revise Performance Criteria Table in Paragraph 2.1.B as follows:

<i>Service Conditions</i>	<i>Maltsberger</i>	<i>Marbach</i>	<i>Wurzbach</i>		
<i>Location</i>	<i>NaOCl Metering Pump Room</i>	<i>NaOCl Metering Pump Room</i>	<i>NaOCl Metering Pump Room</i>		
			<i>Injection Pt. 1</i>	<i>Injection Pt. 2</i>	<i>Injection Pt. 3 – well 6</i>
<i>Number Required</i>	<i>3 total (2 duty, 1 standby)</i>	<i>3 total (2 duty, 1 standby)</i>	<i>1 duty, 1 standby</i>	<i>1 duty, 1 standby</i>	<i>1 total (1 duty)</i>
<i>Chemical and % Solution</i>	<i>NaOCl, 0.8%</i>	<i>NaOCl, 0.8%</i>	<i>NaOCl, 0.8%</i>	<i>NaOCl, 0.8%</i>	<i>NaOCl, 0.8%</i>
<i>Specific Gravity</i>	<i>1.02</i>	<i>1.02</i>	<i>1.02</i>	<i>1.02</i>	<i>1.02</i>
<i>pH</i>	<i>7.5-9.5</i>	<i>7.5-9.5</i>	<i>7.5-9.5</i>	<i>7.5-9.5</i>	<i>7.5-9.5</i>
<i>Viscosity (centipoises)</i>	<i>~1.13</i>	<i>~1.13</i>	<i>~1.13</i>	<i>~1.13</i>	<i>~1.13</i>
<i>Temperature Range (degrees F)</i>	<i>55-85</i>	<i>55-85</i>	<i>55-85</i>	<i>55-85</i>	<i>55-85</i>
<i>Ambient Temperature (degrees F)</i>	<i>40-115</i>	<i>40-115</i>	<i>40-115</i>	<i>40-115</i>	<i>40-115</i>
<i>Maximum Flow Rate per Pump (gph)</i>	<i>320</i>	<i>187</i>	<i>327</i>	<i>383</i>	<i>207</i>
<i>Minimum Flow Rate per Pump (gph)</i>	<i>48</i>	<i>62</i>	<i>58</i>	<i>58</i>	<i>58</i>
<i>Maximum Discharge Pressure (psi)</i>	<i>7</i>	<i>4</i>	<i>4</i>	<i>5</i>	<i>5</i>



<i>Service Conditions</i>	<i>Maltsberger</i>	<i>Marbach</i>	<i>Wurzbach</i>		
<i>Pump Speed (rpm)</i>	<i>1800</i>	<i>1800</i>	<i>1800</i>	<i>1800</i>	<i>1800</i>
<i>Hose Material</i>	<i>Hypalon</i>	<i>Hypalon</i>	<i>Hypalon</i>	<i>Hypalon</i>	<i>Hypalon</i>
<i>Hose Connection</i>	<i>1-1/4" ANSI Flange</i>	<i>1-1/4" ANSI Flange</i>	<i>1-1/2" ANSI Flange</i>	<i>1-1/2" ANSI Flange</i>	<i>1-1/2" ANSI Flange</i>
<i>Drive Type</i>	<i>VFD</i>	<i>VFD</i>	<i>VFD</i>	<i>VFD</i>	<i>VFD</i>
<i>Motor Size (hp)</i>	<i>3/4</i>	<i>1</i>	<i>1.5</i>	<i>1.5</i>	<i>1.5</i>
<i>Motor Voltage/Phase/Hertz</i>	<i>460/3/60</i>	<i>460/3/60</i>	<i>460/3/60</i>	<i>460/3/60</i>	<i>460/3/60</i>
<i>Motor Inverter Duty Rated</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Motor RPM</i>	<i>1750</i>	<i>1750</i>	<i>1750</i>	<i>1750</i>	<i>1750</i>
<i>Motor Mounting</i>	<i>Horizontal</i>	<i>Horizontal</i>	<i>Horizontal</i>	<i>Horizontal</i>	<i>Horizontal</i>

**B. Modifications to the Drawings**

**1. Sheet G-02**

Replace the sheet with the attached.

- a. Updated sheet index

**2. Sheet C-02**

Replace the sheet with the attached.

- a. Add fluoride line replacement and 6" PVC Sleeve under access road
- b. Update Note 8
- c. Add tree size and type call out

**3. Sheet C-03**

Replace the sheet with the attached.

- a. Add fluoride line replacement and 6" PVC Sleeve under access road
- b. Update Note 3
- c. Added silt fence to site plan

**4. Sheet C-04**

Add Note 11 and 12:

- 11. CONTRACTOR shall use a professional firm to transplant existing 10" tree to an area designated by the OWNER within the site. Contractor shall ensure that the root system is undamaged during the moving process. Every inch of trunk diameter must equal one foot of root ball. Tree must be transplanted when it is dormant and be maintained by the CONTRACTOR throughout the construction phase.
- 12. CONTRACTOR shall phase the access road work in front of and surrounding the existing chlorination building to occur after demolition of the existing chlorination building in order to provide SAWS Operations staff road an alternate access in this location while access road work is occurring in this location.

**5. Sheet C-07**

Replace the sheets with the attached.

- a. Added silt fence to site plan

**6. Sheet C-10**

Replace the sheet with the attached.

- a. Remove south construction staging area
- b. Add Note 13 requiring that access to existing access roads and entrance/exits be provided to SAWS Operations staff at all times during construction.

**7. Sheet C-12**

Replace the sheets with the attached

- a. Added silt fence to site plan
- b. Add Note 2 requiring that access to existing access roads and entrance/exits be provided to SAWS Operations staff at all times during construction.

**8. Sheets C-16**

Replace the sheets with the attached.

- a. Add concrete pavement detail

**9. Sheets C-21 and C-22**

Add the attached sheets

- a. Add City of San Antonio Temporary Erosion Control Details

**10. Sheets M-01 and M-02**

Replace the sheets with the attached.

- a. Update blower layout

**11. Sheets M-03 and M-04**

Replace the sheets with the attached.

- a. Brine tank foundation callouts have been updated to match Structural sheets
- b. Update blower layout

**12. Sheet M-05**

Replace the attached sheet.

- a. Add blower drip leg callout and detail
- b. Add Note 3

**C. Questions and Answers**

Q1. Would you consider accepting an alternate to the chemical feed pumps? JCS Model 4100 Liquid Vacuum Feeder?

*A1. Vacuum feeders are not acceptable due to the hardness of the water and their potential scaling to occur with sodium hypochlorite.*

- Q2. A. Specification 26 13 16 Article 2.3.A.2 and 3 – This portion of the specification calls for the Lineup to be painted ANSI 61 and another coat to be ANSI 24, can the equipment be painted ANSI 61 in lieu of having different coats of paint?
- B. Specification 26 13 16 Article 2.5.A – This portion of the specification calls for Bus Metering and Auxiliaries. The one-line drawings do not show metering. Will metering be required on each MV Lineup?
- C. Specification 26 22 14 – No winding material is specified. Should windings be aluminum or copper?

*A2. A. It is acceptable to paint both coats in ANSI 61 paint. See Item A.3 in this Addendum.*

*B. Metering will be required in accordance with Section 26 13 16.*

*C. Windings shall be copper material. See Item A.4 in this Addendum.*

- Q3. System Controls & Instrumentation (SCI) respectfully requests to be added to the approved Process Control System Integrator (PCSI) list for the Water Production Facilities Disinfection System Upgrades project. Attached is our qualification statement, if you have any questions please don't hesitate to contact me.

*A3. See revised Section 40 61 13 in Item A.7 above.*

- Q4. I am looking over the MWBE requirements for this project, and I wanted to find out if SAWS keeps a list of qualified companies in a database that can be sent out?

*A4. SAWS does not pre-qualify subcontractors, however, the SMWB Program Manager has provided lists of firms that have been certified by the South Central Texas Regional Certification Agency as Small, Minority, and/or Woman-owned Business Enterprises. Prime contractors who will be competing for this contract may use the lists for their Good Faith Effort outreach purposes.*

- Q5. A. Is there going to be a sign in sheet from the pre-proposal meeting made available on the SAWS website?

B. Also, where does a Construction Materials Testing firm such as Arias fit in with this project. Will the winning Contractor be responsible for hiring an independent testing lab for quality control testing?

*A5. A. The sign-in sheets have been posted on the SAWS website.*

*B. The Contractor is responsible for hiring an independent testing lab in accordance with 01 45 29.13 (Testing Laboratory Services Furnished by Contractor).*

- Q6. One of the approved manufacturers of the OSHG's, offers a layout design in which the two redundant units are mounted on a common skid. Even mounted together, each system operates totally independent from the other. This skid also incorporates one control panel that is configured to operate each system independently with separate components and HMI's. The air cooled rectifiers are the piece of equipment that would be mounted separately. The advantage to this layout is the reduction in associated piping, conduit, ventilation, operation & maintenance cost, not to mention space savings. We are respectfully requesting that the single skid arrangement be accepted to bid and evaluated. Additional information can be provided upon request.

*A6. Section 46 31 11, Paragraph 1.1.A and the Contract Drawings requires two sodium hypochlorite generation skids for each site. Each skid shall have its own integral piping, valves, system control panels with PLC, blower, and other items described in*

*this specification. In addition, Section 46 33 11, Paragraph 2.11.B.5 states that one (1) control panel shall be furnished for each generator to control and monitor the operation of the system. The system described above does not fit these requirements. Further, it is unclear how two air cooled rectifiers mounted separately would result in savings. Therefore, a single skid arrangement will not be accepted.*

**Mandatory Pre-Proposal and Site Visit – Firms in Attendance**

Invitation for Competitive Sealed Proposals – Proposals will not be accepted from any company not represented at the mandatory pre-proposal meeting and site visits held on July 31, 2014 at 10:00 a.m. The following list is a record of represented firms:

- | <u>Firm Name</u>             | <u>Firm Name</u>     |
|------------------------------|----------------------|
| • Alterman Electric          | • Laughlin-Thyssen   |
| • Archer Western             | • Lamda Construction |
| • BRB Contractors            | • MGC Contractors    |
| • Cardinal Contractors, Inc. | • Pepper Lawson      |

Each respondent is requested to acknowledge receipt of this Addendum No. 2 by his/her signature affixed hereto and to file same as an attachment to his/her proposal.

Stephanie Sue  
Stephanie Sue, P.E.  
Project Manager  
ARCADIS U.S., Inc.  
TBPE Firm No. F-533



The undersigned acknowledges receipt of this Addendum No. 2 and the proposal submitted herewith is in accordance with the information and stipulation set forth.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Bidder

**END OF ADDENDUM**



## MEETING SIGN-IN SHEET

<b>Project:</b> Water Production Facilities Disinfection System Upgrades	<b>Meeting Date:</b> 7/31/14
<b>Subject:</b> Mandatory Pre-proposal Meeting	<b>Place/Room:</b> CR-C326

Name	Company	Phone	E-Mail
Jason Ford	Prime Controls	281-253-2126	J.ford@primecontrols.com
Jerry Krabe	HD Supply White Cap	512-574-0165	Jerry.Krabe@hdsupply.com
JASE BLOUNT	ALTERMAN	210-275-6849	jblount@soalterman.com
Mike Pawter	MGC Contractors	210-694-0565	txbids@mgccontractors.com
Stephanie Climer	MGC Contractors	210-694-0565	txbids@mgccontractors.com
John Zupar	Pepper Lawson	713-562-1724	jzupar@pepperlawson.com
Nelson Froboese	ALTERMAN	210-510-8150	NFroboese@goalterman.com
Jonathan Hawkins	Arias & Assos SBE/MBE/DBE	210-308-5884	jhawkins@ariasinc.com
Eric Maccek	Cardinal Contractors, Inc.	972-602-4361	emaccek@cardinalco.com
ZANE SHULLANBERGER	LAMBDA CONSTRUCTION	830-629-5808	Zane@satx.vr.com
KELLY COURTNEY	LAUGHLIN- THYSSEN	713-429-6500	TYLER@LAUGHLINT.COM
Dave Van Dyne	BRB Contractors	785-290-1119	davidvandyned@brbcontractors.com
THOR BENSON	ARCURE WESTERN	512-563-2669	thorbenson@walshcorp.com
RZO LUNKWITZ	ARCURE WESTERN	817-401-6278	r.lunkwitz@walshcorp.com
Vicente J Garza	SAWS	210-233-3596	vgarza@saws.org
JIM PEDRAZA	SAWS	210-233-3594	jpiedraza@saws.org
Diana W. Dwyer	SAWS	210-233-3372	diana.dwyer@saws.org
Stephanie Sue	ARCADIS US	512/527-6063	stephanie.sue@arcadis-us.com





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GENERAL

- 1 G-01 COVER
2 G-02 SHEET LIST AND GENERAL NOTES
3 G-03 SYMBOLS AND ABBREVIATIONS
4 G-04 OSHG SYSTEM PROCESS FLOW DIAGRAM

CIVIL

- 5 C-01 MALTSBERGER EXISTING SITE PLAN
6 C-02 MALTSBERGER PROPOSED SITE AND PIPING PLAN
7 C-03 MALTSBERGER PAVING AND GRADING PLAN
8 C-04 MALTSBERGER DEMOLITION PLAN
9 C-05 MARBACH EXISTING SITE PLAN
10 C-06 MARBACH PROPOSED SITE AND PIPING PLAN
11 C-07 MARBACH PAVING AND GRADING PLAN
12 C-08 MARBACH DEMOLITION PLAN
13 C-09 WURZBACH EXISTING SITE PLAN
14 C-10 WURZBACH PROPOSED SITE AND PIPING PLAN I
15 C-11 WURZBACH PROPOSED SITE AND PIPING PLAN II
16 C-12 WURZBACH PAVING AND GRADING PLAN
17 C-13 WURZBACH DEMOLITION PLAN
18 C-14 DETAILS I
19 C-15 DETAILS II
20 C-16 DETAILS III
21 C-17 DETAILS IV
22 C-18 DETAILS V
23 C-19 DETAILS VI

MECHANICAL

- 27 M-01 MARBACH AND MALTSBERGER OSHG SYSTEM FACILITY PLAN
28 M-02 WURZBACH OSHG SYSTEM FACILITY PLAN
29 M-03 OSHG SYSTEM FACILITY SECTIONS - MALTSBERGER & MARBACH SITES
30 M-04 OSHG SYSTEM FACILITY SECTIONS - WURZBACH SITE
31 M-05 OSHG SYSTEM FACILITY SECTION AND DETAILS
32 M-06 ISOMETRIC OF METERING PUMPS AND OSHG SYSTEM
33 M-07 DETAILS I
34 M-08 DETAILS II
35 M-09 DETAILS III
36 M-10 DETAILS IV

ARCHITECTURAL

- 37 A-01 ABBREVIATIONS, LEGENDS, SYMBOLS AND GENERAL NOTES
38 A-02 MISCELLANEOUS DETAILS I
39 A-03 MISCELLANEOUS DETAILS II
40 A-04 MARBACH, MALTSBERGER AND WURZBACH OSHG SYSTEM FACILITY - CODE COMPLIANCE PLANS
41 A-05 MARBACH AND MALTSBERGER OSHG SYSTEM FACILITY - FLOOR AND ROOF PLANS
42 A-06 MARBACH AND MALTSBERGER OSHG SYSTEM FACILITY - ELEVATIONS
43 A-07 MARBACH AND MALTSBERGER OSHG SYSTEM FACILITY - SECTIONS
44 A-08 WURZBACH OSHG SYSTEM FACILITY - FLOOR AND ROOF PLANS
45 A-09 WURZBACH OSHG SYSTEM FACILITY - ELEVATIONS
46 A-10 WURZBACH OSHG SYSTEM FACILITY - SECTIONS

STRUCTURAL

- 47 S-01 NOTES, SYMBOLS, ABBREVIATIONS AND TABLE
48 S-02 MARBACH AND MALTSBERGER OSHG SYSTEM FACILITY FOUNDATION PLAN
49 S-03 MARBACH AND MALTSBERGER OSHG SYSTEM FACILITY ROOFING PLAN AND REINFORCEMENT ELEVATIONS
50 S-04 MARBACH AND MALTSBERGER OSHG SYSTEM FACILITY SYSTEM SECTIONS
51 S-05 WURZBACH OSHG SYSTEM FACILITY FOUNDATION PLAN
52 S-06 WURZBACH OSHG SYSTEM FACILITY ROOFING PLAN AND REINFORCEMENT ELEVATIONS
53 S-07 WURZBACH OSHG SYSTEM FACILITY SECTIONS
54 S-08 DETAILS I
55 S-09 DETAILS II
56 S-10 DETAILS III
57 S-11 DETAILS IV

HVAC

- 58 H-01 SYMBOLS, LEGENDS & ABBREVIATIONS
59 H-02 AIRFLOW SCHEMATIC
60 H-03 MARBACH AND MALTSBERGER OSHG SYSTEM FACILITY FLOOR & ROOF PLANS
61 H-04 WURZBACH OSHG SYSTEM FACILITY FLOOR & ROOF PLANS
62 H-05 DETAILS
63 H-06 SCHEDULES I
64 H-07 SCHEDULES II

PLUMBING

- 65 P-01 MARBACH AND MALTSBERGER OSHG SYSTEM FACILITY UNDERFLOOR & FLOOR PLANS
66 P-02 MARBACH AND MALTSBERGER OSHG SYSTEM FACILITY ROOF PLAN
67 P-03 WURZBACH OSHG SYSTEM FACILITY UNDERFLOOR & FLOOR PLANS
68 P-04 WURZBACH OSHG SYSTEM FACILITY ROOF PLAN
69 P-05 WATER SCHEMATIC
70 P-06 DRAIN SCHEMATIC
71 P-07 DETAILS
72 P-08 SCHEDULES

ELECTRICAL

- 73 E-01 LEGEND
74 E-02 MALTSBERGER ELECTRICAL SITE PLAN
75 E-03 MALTSBERGER EXISTING SWITCHGEAR ONE LINE DIAGRAM
76 E-04 MALTSBERGER EXISTING SWITCHGEAR POWER, LIGHTING & GROUNDING PLAN
77 E-05 MALTSBERGER SWITCHBOARD - SH ONE LINE DIAGRAM
78 E-06 MALTSBERGER OSHG BUILDING POWER PLAN
79 E-07 MALTSBERGER OSHG BUILDING LIGHTING, GROUNDING & SECURITY PLAN
80 E-08 MALTSBERGER EQUIPMENT ELEVATIONS AND PANELBOARD SCHEDULE
81 E-09 MALTSBERGER BLOCK DIAGRAM
82 E-10 MALTSBERGER CONDUIT AND CABLE SCHEDULE I
83 E-11 MALTSBERGER CONDUIT AND CABLE SCHEDULE II
84 E-12 MARBACH CONDUIT AND CABLE SCHEDULE III
85 E-13 MARBACH ELECTRICAL SITE PLAN
86 E-14 MARBACH EXISTING SWITCHGEAR ONE LINE DIAGRAM
87 E-15 MARBACH EXISTING SWITCHGEAR POWER, LIGHTING & GROUNDING PLAN
88 E-16 MARBACH SWITCHBOARD - SH ONE LINE DIAGRAM
89 E-17 MARBACH OSHG BUILDING POWER PLAN
90 E-18 MARBACH OSHG BUILDING LIGHTING, GROUNDING & SECURITY PLAN
91 E-19 MARBACH EQUIPMENT ELEVATIONS AND PANELBOARD SCHEDULE
92 E-20 MARBACH BLOCK DIAGRAM
93 E-21 MARBACH CONDUIT AND CABLE SCHEDULE I

ELECTRICAL (CONTINUED)

- 94 E-22 MARBACH CONDUIT AND CABLE SCHEDULE II
95 E-23 WURZBACH ELECTRICAL SITE PLAN I
96 E-24 WURZBACH ELECTRICAL SITE PLAN II
97 E-25 WURZBACH EXISTING SWITCHGEAR ONE LINE DIAGRAM
98 E-26 WURZBACH EXISTING SWITCHGEAR POWER, LIGHTING AND GROUNDING PLAN
99 E-27 WURZBACH SWITCHBOARD - SH ONE LINE DIAGRAM
100 E-28 WURZBACH OSHG BUILDING POWER PLAN
101 E-29 WURZBACH OSHG BUILDING LIGHTING, GROUNDING & SECURITY PLAN
102 E-30 WURZBACH EQUIPMENT ELEVATIONS AND PANELBOARD SCHEDULE
103 E-31 WURZBACH BLOCK DIAGRAM
104 E-32 WURZBACH CONDUIT AND CABLE SCHEDULE I
105 E-33 WURZBACH CONDUIT AND CABLE SCHEDULE II
106 E-34 WURZBACH CONDUIT AND CABLE SCHEDULE III
107 E-35 CONTROL SCHEMATICS
108 E-36 ELECTRICAL DETAILS I
109 E-37 ELECTRICAL DETAILS II
110 E-38 ELECTRICAL DETAILS III
111 E-39 ELECTRICAL DETAILS IV
112 E-40 ELECTRICAL DETAILS V

INSTRUMENTATION

- 113 I-01 LEGENDS, SYMBOLS AND ABBREVIATIONS
114 I-02 MALTSBERGER SCADA AND SECURITY NETWORK ARCHITECTURE
115 I-03 MARBACH SCADA AND SECURITY NETWORK ARCHITECTURE
116 I-04 WURZBACH ACCESS CONTROL, SECURITY AND SCADA NETWORK ARCHITECTURE
117 I-05 MALTSBERGER, MARBACH & WURZBACH BRINE TANK AND SOFTENERS P&ID
118 I-06 MALTSBERGER, MARBACH & WURZBACH OSHG SYSTEM P&ID
119 I-07 MALTSBERGER, MARBACH & WURZBACH STORAGE TANKS P&ID
120 I-08 MALTSBERGER & MARBACH OSHG METERING PUMPS P&ID
121 I-09 WURZBACH OSHG METERING PUMPS P&ID
122 I-10 PANEL ELEVATIONS
123 I-11 PANEL POWER DISTRIBUTION SCHEMATIC DIAGRAM
124 I-12 INSTALLATION DETAILS I
125 I-13 INSTALLATION DETAILS II

GENERAL CONSTRUCTION NOTES

- 1. CONTRACTOR TO PROVIDE TEMPORARY CONTROLS DURING CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, NOISE CONTROL, DUST CONTROL, STORM WATER DRAINAGE, EROSION CONTROL. ANY DAMAGE TO EXISTING PAVEMENT OR IMPROVEMENTS ON PROPERTY ADJACENT TO THE CONSTRUCTION AREA SHALL BE RESTORED BY THE CONTRACTOR TO PRE-CONSTRUCTION CONDITION AND TO THE SATISFACTION OF THE OWNER(S).
2. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE STATE STATUTES AND U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS (O.S.H.A.) COPIES OF O.S.H.A. STANDARDS MAY BE PURCHASED FROM THE U.S. GOVERNMENT PRINTING OFFICE. INFORMATION AND RELATED MATERIALS MAY BE OBTAINED FROM O.S.H.A. AT SAN ANTONIO DISTRICT OFFICE WASHINGTON SQUARE BLVD. SUITE 203, 0 DOLOROSA ST. SAN ANTONIO, TX.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH OTHER CONTRACTORS AND UTILITIES IN THE VICINITY OF THIS PROJECT. IF THE CONTRACTOR BECOMES AWARE OF POSSIBLE CONFLICTS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNER, OWNER'S REPRESENTATIVE, AND THE PROJECT MANAGER WITHIN 24 HOURS.
4. CONTRACTOR WILL BE RESPONSIBLE FOR COSTS INCURRED AS A RESULT OF UTILITY RELOCATIONS PERFORMED FOR CONTRACTOR'S CONVENIENCE AND FOR UTILITIES DAMAGED BY THE CONTRACTOR. REPAIRS TO UTILITIES DAMAGED BY CONSTRUCTION AND CONSTRUCTION RELATED ACTIVITIES SHALL BE AT CONTRACTOR'S EXPENSE
5. ANY EXISTING SIDEWALKS, CURBS, OR DRIVEWAYS DAMAGED BY THE CONTRACTOR SHALL BE REMOVED AND RESTORED WITH MATERIALS EQUAL TO OR BETTER THAN THE ORIGINAL TO THE SATISFACTION OF THE OWNER AND SHALL BE AT THE CONTRACTOR'S EXPENSE UNLESS OTHERWISE NOTED.
6. ANY EXISTING SITE ELEMENTS DAMAGED BY THE CONTRACTOR SHALL BE REMOVED AND RESTORED WITH MATERIALS EQUAL TO OR BETTER THAN THE ORIGINAL TO THE SATISFACTION OF THE OWNER AND SHALL BE AT THE CONTRACTOR'S EXPENSE UNLESS OTHERWISE NOTED.
7. EQUIPMENT AND MATERIALS SHALL BE STORED AT LOCATIONS SHOWN ON PLANS AND APPROVED BY THE OWNER'S REPRESENTATIVE.
8. UTILITY SERVICES SHALL BE MAINTAINED TO RESIDENCES AND BUSINESSES AT ALL TIMES. BEFORE DISCONNECTING ANY WASTEWATER LINE, THE CONTRACTOR MUST NOTIFY THE OWNER IN WRITING REQUESTING APPROVAL AND PROVIDE A DETAILED PLAN AT LEAST 48 HOURS IN ADVANCE, DESCRIBING AN ALTERNATE MEANS OF WASTEWATER CONVEYANCE FOR THE INTERRUPTED SECTION.
9. ANY EXISTING IMPROVEMENTS, INCLUDING DRAINAGE FACILITIES, DISTURBED OR DAMAGED BY CONSTRUCTION SHALL BE RESTORED BY THE CONTRACTOR AT HIS / HER EXPENSE TO A CONDITION EQUAL TO OR BETTER THAN PRE-CONSTRUCTION CONDITION.
10. ANY PORTION OF THIS PROJECT WHICH IS IMPROPERLY PLACED SHALL BE REMOVED AND CORRECTLY PLACED. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL ASSOCIATED COSTS.
11. ALL ELEVATIONS ARE BASED ON USGS DATUM. HORIZONTAL DATUM IS TEXAS STATE PLANE COORDINATE SYSTEM. SEE PLANS FOR LOCATION OF BENCHMARKS.
12. THE CONTRACTOR SHALL CONTACT THE "ONE CALL" UTILITY LOCATOR SYSTEM AT 811 OR 1-800-DIG-TESS FOR EXISTING UTILITY LOCATIONS PRIOR TO ANY EXCAVATION IN ADVANCE OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES TO BE EXTENDED, TIED TO, OR ALTERED, OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS. BE AWARE THAT IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ALL UTILITIES, INCLUDING THOSE WHOSE ENTITIES MAY NOT BE ON THE DIG TESS PROGRAM.
SAN ANTONIO WATER SYSTEM
(WATER, SEWER & RECYCLED WATER ) 210-223-3589
COSA DRAINAGE 210-207-2800
CITY SIDEWALK AND TRENCHING DIVISION 210-821-3240
COSA TRAFFIC SIGNAL OPERATIONS 210-207-7765
TEXAS STATE WIDE ONE CALL LOCATOR 800-545-6005
CPS ENERGY 800-545-6005
AT&T 800-545-6005
TIME WARNER CABLE 800-545-6005
VALERO ENERGY CO 800-545-6005
13. NO OTHER UTILITY SERVICE/APPURTENANCES SHALL BE PLACED NEAR THE PROPERTY LINE, OR OTHER ASSIGNED LOCATION DESIGNATED FOR WATER AND WASTEWATER UTILITY SERVICE THAT WOULD INTERFERE WITH THE WATER AND WASTEWATER SERVICES.
14. THE CONTRACTOR SHALL VERIFY ALL VERTICAL AND HORIZONTAL LOCATIONS OF EXISTING UTILITIES PRIOR TO STARTING ON-SITE UTILITY WORK. CONTRACTOR SHALL NOTIFY ENGINEER AND OWNER OF DIFFERING SITE CONDITIONS AS DETERMINED DURING THE SITE INVESTIGATION AND SHALL INCORPORATE ANY NECESSARY MODIFICATIONS THROUGH THE SHOP DRAWING SUBMITTAL PROCESS. FAILURE TO PERFORM THE FIELD VERIFICATION AND INCORPORATE IN THE SHOP DRAWINGS PRIOR TO FABRICATION SHALL NOT BE CAUSE FOR ADDITIONAL COST TO THE OWNER OR SCHEDULE DELAY.
15. CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ALL APPLICABLE STATE, CITY, AND SAWS STANDARDS INCLUDING TCEQ DESIGN CRITERIA FOR PUBLIC DRINKING WATER, TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290, LATEST EDITION.

GENERAL CONSTRUCTION NOTES (CONTINUED)

- 16. CONTRACTOR SHALL NOTIFY THE CITY OF SAN ANTONIO (ALL SITES) AND THE CITY OF LEON VALLEY (WURZBACH SITE) AT LEAST 24-HOURS BEFORE STARTING WORK WITHIN ANY AREA OF THE CITY RIGHT OF WAY.
17. DUE TO FEDERAL REGULATION TITLE 49, PART 192.181, CPS MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
18. CONTRACTOR TO EXERCISE EXTREME CAUTION WHEN WORKING UNDER "HIGH VOLTAGE TRANSMISSION LINES." A WORKING HEIGHT OF 30' FROM GROUND ELEVATION WILL BE OBSERVED WHEN WORKING UNDER THE HIGH VOLTAGE LINE. COORDINATE ALL WORK WITH CPS ENERGY.
19. CONTRACTOR TO PROTECT ALL TREES WHEREVER POSSIBLE. CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE-INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN VICINITY OF TREES SHALL PROCEED WITH CAUTION. DAMAGE TO TREES IDENTIFIED TO BE PROTECTED WILL BE MITIGATED AT THE CONTRACTOR'S SOLE EXPENSE. THE CONTRACTOR SHALL CONTACT THE CITY ARBORIST AT 210-207-8053 AND THE SAWS CONSTRUCTION INSPECTOR FOR GUIDANCE. PROTECT EXISTING TREES SIX INCH (6") DIAMETER AND LARGER. ALL TREES TO BE PRESERVED AS PART OF THE PROJECT SHALL BE PROTECTED AGAINST INJURY OR DAMAGE, INCLUDING CUTTING, SOIL COMPACTION, BREAKING OR SKINNING OF ROOTS, TRUNKS, OR BRANCHES DURING CONSTRUCTION OPERATIONS BY FENCING AS DESCRIBED BELOW. THE TREE PROTECTION SHALL BE PLACED BEFORE ANY EXCAVATION OR GRADING IS BEGUN AND MAINTAINED FOR THE DURATION OF THE CONSTRUCTION WORK. PROTECTION WILL ENCOMPASS THE ROOT PROTECTION ZONE WHICH WILL BE AT A MINIMUM ONE FOOT (1.0') RADIUS PER INCH DIAMETER OF THE TREE TRUNK AT 4.5' ABOVE GROUND. NO MATERIAL SHALL BE STORED OR CONSTRUCTION OPERATION SHALL BE CARRIED ON WITHIN THE TREE PROTECTION FENCING, UNLESS BY THE OWNER. THE PROTECTION SHALL REMAIN UNTIL ALL WORK IS COMPLETED.
20. NECESSARY TRAFFIC CONTROL DETOUR ROUTING AROUND WORK ACTIVITIES, MAINTENANCE OF DETOUR SIGNS AND FLAGMEN ARE THE CONTRACTOR'S RESPONSIBILITY. CONTRACTOR WILL FURNISH AND MAINTAIN ALL REQUIRED TRAFFIC CONTROL DEVICES PER TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD), TO PROPERLY WARN, GUIDE AND CONTROL TRAFFIC AT ALL TIMES DURING CONSTRUCTION. NO SEPARATE PAYMENT SHALL BE MADE.
21. DO NOT DISTURB VEGETATED AREAS (GRASS, GROUND COVER, SHRUBS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR REVEGETATING ALL AREAS DISTURBED PER THE SPECIFICATIONS. NO ADDITIONAL PAY ITEM.
22. ALL AREAS OF THE WORK SHALL BE THOROUGHLY CLEANED AND DRESSED PRIOR TO FINAL INSPECTION. ALL GARBAGE OR SPOIL MATERIALS FROM THE WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR. NO ADDITIONAL PAY ITEM.
23. DISPOSAL AREAS, STOCKPILES, AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL THE AMOUNT OF WHICH MAY ENTER RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED ON ANY WETLANDS, FLOOD PLAINS, WATER BODY, OR STREAM BED. THE CONTRACTOR SHALL LOCATE AND CONSTRUCT STAGING AREAS AND VEHICLE MAINTENANCE AND PARKING AREAS IN A MANNER TO MINIMIZE POLLUTANT RUNOFF.
24. THE CONTRACTOR SHALL CLEAR ALL DRAINAGE DITCHES AND WATER WAYS, AS SOON AS PRACTICAL, OF ALL TEMPORARY EMBANKMENT, TEMPORARY BRIDGES, MATTING, FALSEWORK, PILING, DEBRIS OR OBSTRUCTIONS PLACED DURING CONSTRUCTION OPERATIONS WHICH ARE NOT PART OF THE FINISHED WORK.
25. AT THE END OF EACH WORK DAY, THE CONTRACTOR SHALL COVER TRENCHES WITH METAL PLATES.
26. THE CONTRACTOR SHALL PROVIDE A COURSE OF ACTION PLAN FROM THE OCCURRENCE OF AN ACCIDENTAL SPILL OF FUEL OR OTHER SUBSTANCES DURING CONSTRUCTION.
27. IF EXISTING FIBER OPTIC CONDUIT SYSTEMS ARE ENCOUNTERED DURING EXCAVATION, THEN EXCAVATION IN THE VICINITY OF THE FIBER OPTIC CABLE SHALL CEASE AND A FIBER OPTIC COMPANY REPRESENTATIVE MUST BE NOTIFIED IMMEDIATELY. THE REPRESENTATIVE IS REQUIRED TO BE ON-SITE DURING EXCAVATION AT NO EXPENSE TO THE CONTRACTOR. THE CONTRACTOR MUST PROVIDE SUITABLE SUPPORT AND/OR PROTECTION FOR THE CONDUIT AT ALL TIMES. DURING BACKFILLING, THE FIBER OPTIC REPRESENTATIVE MAY PLACE UNDERGROUND MARKING DEVICES AS REQUIRED. REPAIR OF ANY DAMAGES TO THE CONDUIT SYSTEM AND ASSOCIATED FACILITIES SHALL BE MADE BY THE FIBER OPTIC COMPANY PERSONNEL AND THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR REIMBURSING THE FIBER OPTIC COMPANY FOR ALL COSTS OF SUCH REPAIRS, IF REQUIRED.
28. ALL EXCAVATION SHALL BE UNCLASSIFIED REGARDLESS OF MATERIAL ENCOUNTERED. NO ADDITIONAL PAYMENT WILL BE MADE FOR WATER, SAND, GRAVEL, OR OTHER UNSTABLE CONDITIONS ENCOUNTERED IN THE EXCAVATION. NO ADDITIONAL PAYMENT WILL BE MADE FOR ROCK EXCAVATION.
29. THE CONTRACTOR SHALL AT ALL TIMES PROVIDE AND MAINTAIN SAFE ACCESS INTO THE SITE FOR INSPECTION PERSONNEL AND DELIVERY OF MATERIALS.
30. WHENEVER POWER POLES ARE ADJACENT TO THE PROPOSED EXCAVATION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE UTILITY PROVIDER AND PROVIDING PROPER SHORING OR OTHER SUITABLE SUPPORT DURING CONSTRUCTION EXCAVATION AND CONSTRUCTION. THE UTILITY COMPANY MAINTENANCE DEPARTMENT MUST APPROVE ANY SHORING.
31. CONTRACTOR SHALL CONTACT SAN ANTONIO WATER SYSTEMS INSPECTION DEPARTMENT AT 210-233-3589 AT LEAST TWO WEEKS PRIOR TO START OF CONSTRUCTION FOR SCHEDULING.

SITE SECURITY NOTES

- 1. CONTRACTOR AND ALL SUBCONTRACTOR PERSONNEL SHALL BE RESPONSIBLE FOR PAYING FOR AND FULFILLING ALL SAWS SECURITY REQUIREMENTS INCLUDING BUT NOT LIMITED TO OBTAINING REQUIRED SECURITY IDENTIFICATION BADGES.

CONSTRUCTION PHASING

- 1. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL SUBMIT A DETAILED PROJECT CONSTRUCTION SCHEDULE THAT DEMONSTRATES COMPLIANCE WITH THE PROPOSED CONSTRUCTION SEQUENCING.
2. CONSTRUCTION MAY OCCUR AT ALL SITES CONCURRENTLY. DECOMMISSIONING OF EXISTING SYSTEM AND START-UP OF THE NEW DISINFECTION FACILITIES MUST BE COMPLETED ONE SITE AT A TIME.
3. CONTRACTOR MUST PROVIDE OWNER AT LEAST 72-HOURS NOTICE PRIOR TO DECOMMISSIONING OF EXISTING CHLORINE FACILITIES AND TYING IN NEW. DECOMMISSIONING OF EXISTING CHLORINE FACILITIES MUST OCCUR DURING OFF-PEAK HOURS.
4. MAINTENANCE OF PUMP STATION OPERATIONS ARE CRITICAL DURING CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL COORDINATE WITH OWNER TO CONDUCT CRITICAL TIE-INS WITH PUMP STATION OPERATIONS. CONTRACTOR SHALL PROVIDE OWNER AT LEAST TWO WEEKS NOTICE PRIOR TO SCHEDULING WORK TO OCCUR WHILE ANY FACILITIES ARE TEMPORARILY TAKEN OFFLINE.
5. FOR A DETAILED PROJECT SEQUENCE, REFER TO THE SPECIFICATIONS. TYPICAL PROJECT SITE SEQUENCING SHALL FOLLOW THE ORDER BELOW:
A. CONSTRUCTION OF NEW DISINFECTION FACILITY.
B. TESTING AND APPROVAL OF INSTALLED EQUIPMENT IN THE NEW DISINFECTION FACILITY.
C. START UP AND COMMISSIONING OF NEW DISINFECTION FACILITY.
D. DECOMMISSION EXISTING CHLORINE FACILITY.
E. DEMOLISH EXISTING CHLORINE FACILITY.
F. RESTORE SITE TO ORIGINAL CONDITION OR AS INDICATED ON THE DRAWINGS.



SAN ANTONIO WATER SYSTEM



WATER PRODUCTION FACILITIES DISINFECTION SYSTEM UPGRADES PROJECT

Revision table with columns: NO., DATE, ISSUED FOR, BY. Row 1: 2, 08/07/14, ADDENDUM No. 2, SS

Metadata table with fields: DATE (JULY 2014), PROJECT NO. (12-6004), FILE NAME (02196020-G02), DESIGNED BY (M. GIARAMITA), DRAWN BY (J. ARNOLD), CHECKED BY (S. SUE)

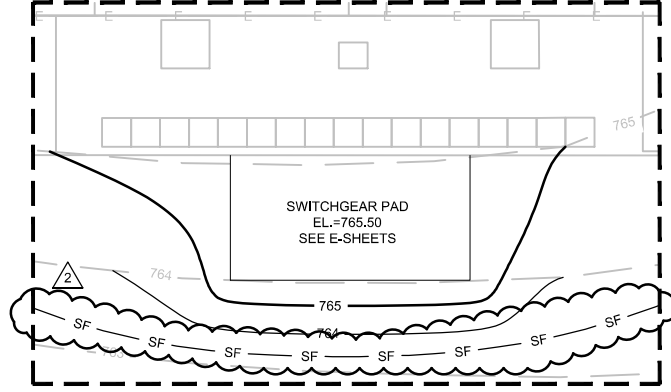
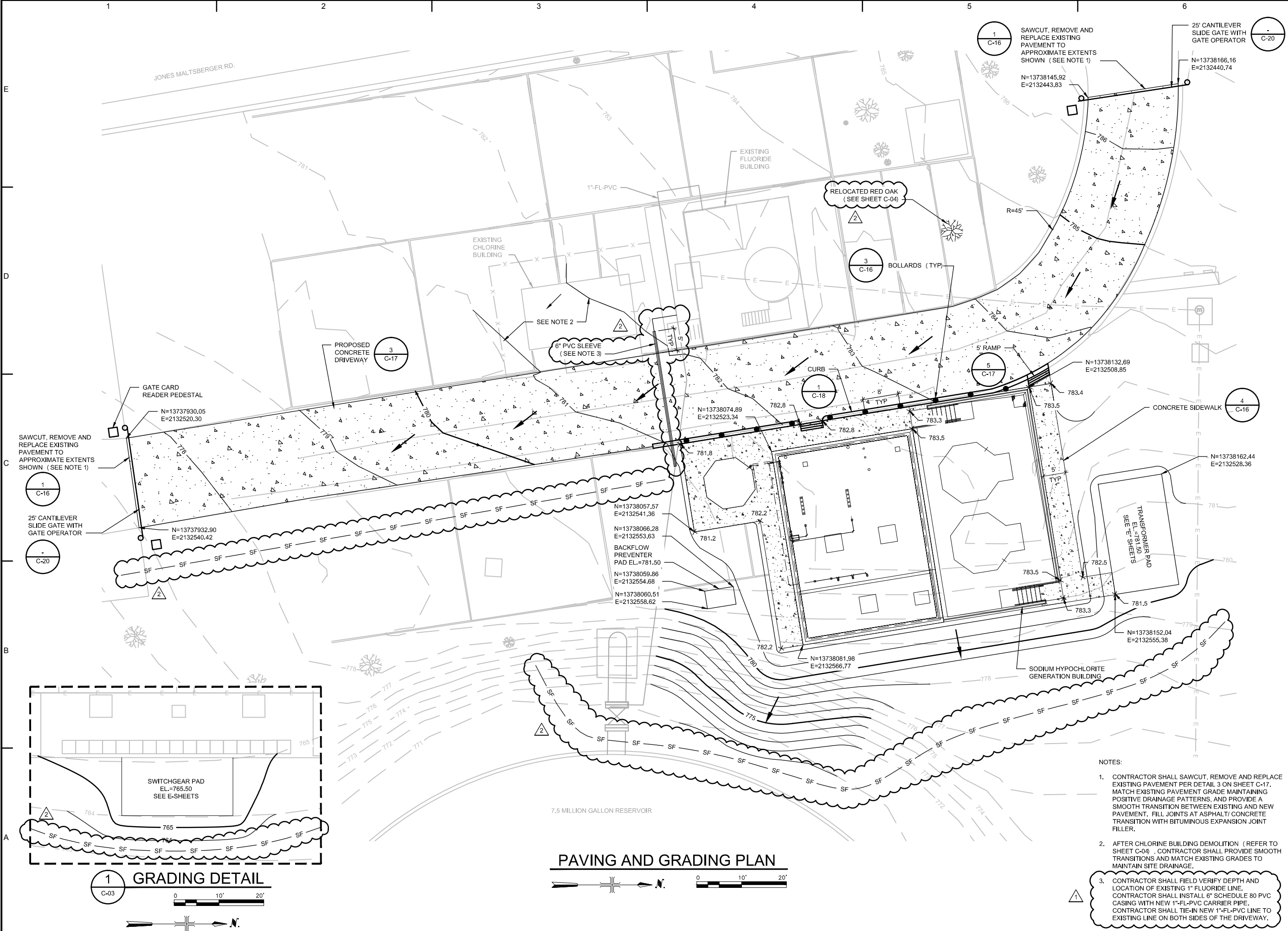
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**1 GRADING DETAIL**  
C-03

**PAVING AND GRADING PLAN**



- NOTES:
- CONTRACTOR SHALL SAWCUT, REMOVE AND REPLACE EXISTING PAVEMENT PER DETAIL 3 ON SHEET C-17. MATCH EXISTING PAVEMENT GRADE MAINTAINING POSITIVE DRAINAGE PATTERNS, AND PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW PAVEMENT. FILL JOINTS AT ASPHALT/ CONCRETE TRANSITION WITH BITUMINOUS EXPANSION JOINT FILLER.
  - AFTER CHLORINE BUILDING DEMOLITION (REFER TO SHEET C-04), CONTRACTOR SHALL PROVIDE SMOOTH TRANSITIONS AND MATCH EXISTING GRADES TO MAINTAIN SITE DRAINAGE.
  - CONTRACTOR SHALL FIELD VERIFY DEPTH AND LOCATION OF EXISTING 1" FLUORIDE LINE. CONTRACTOR SHALL INSTALL 6" SCHEDULE 80 PVC CASING WITH NEW 1"-FL-PVC CARRIER PIPE. CONTRACTOR SHALL TIE-IN NEW 1"-FL-PVC LINE TO EXISTING LINE ON BOTH SIDES OF THE DRIVEWAY.



SAN ANTONIO WATER SYSTEM



WATER PRODUCTION FACILITIES  
DISINFECTION SYSTEM  
UPGRADES PROJECT

NO.	DATE	ISSUED FOR	BY
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DATE: JULY 2014  
PROJECT NO.: 12-6004  
FILE NAME: 02196020-C03  
DESIGNED BY: M.GIARAMITA  
DRAWN BY: J. ARNOLD  
CHECKED BY: S. SUE

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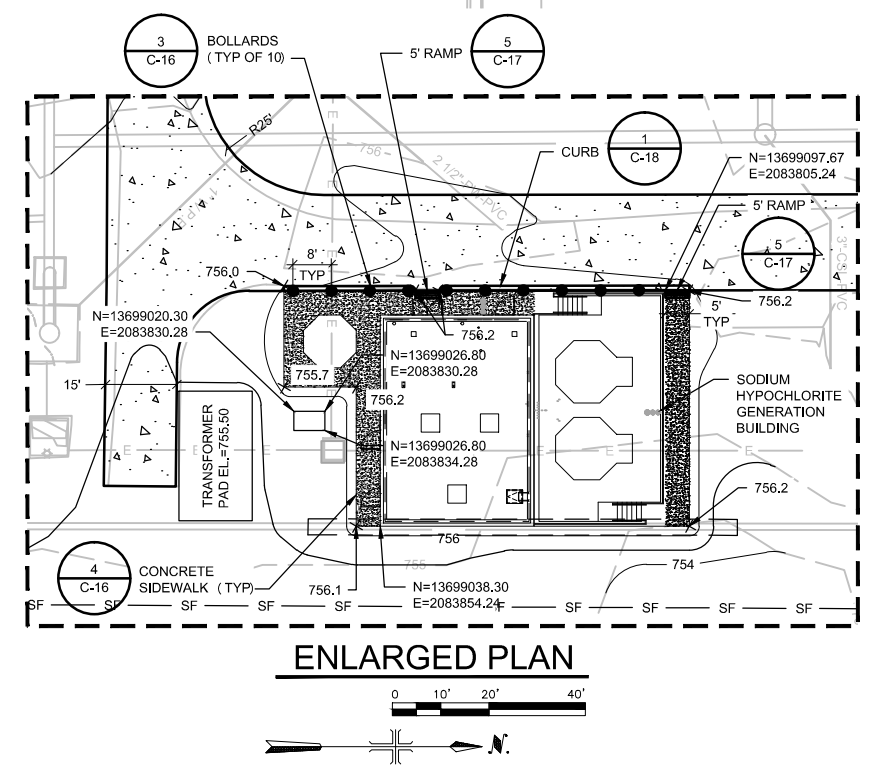
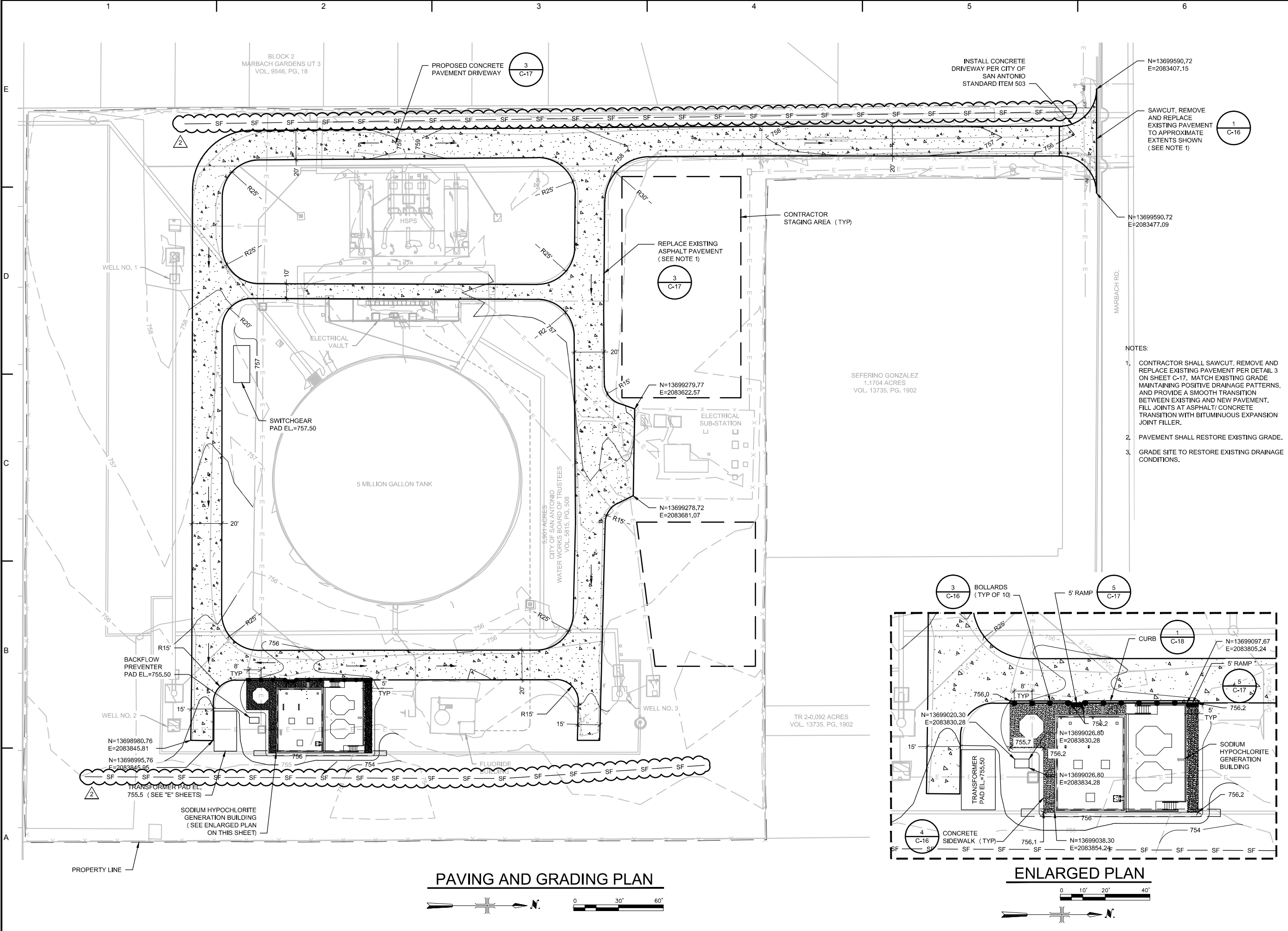
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**MALTZBERGER  
PAVING AND  
GRADING PLAN**

SCALE: 1" = 10'-0"

SHEET **C-03**  
7 OF 125

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**SAN ANTONIO WATER SYSTEM**



**WATER PRODUCTION FACILITIES  
DISINFECTION SYSTEM  
UPGRADES PROJECT**

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PROJECT NO.: 12-6004

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**SHEET TITLE**

CIVIL

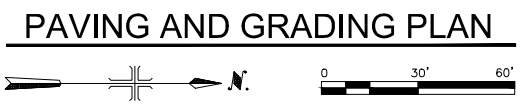
**MARBACH PAVING AND GRADING PLAN**

SCALE: AS SHOWN

SHEET **C-07**

11 OF 125

- NOTES:**
- CONTRACTOR SHALL SAWCUT, REMOVE AND REPLACE EXISTING PAVEMENT PER DETAIL 3 ON SHEET C-17. MATCH EXISTING GRADE MAINTAINING POSITIVE DRAINAGE PATTERNS, AND PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW PAVEMENT. FILL JOINTS AT ASPHALT/ CONCRETE TRANSITION WITH BITUMINOUS EXPANSION JOINT FILLER.
  - PAVEMENT SHALL RESTORE EXISTING GRADE.
  - GRADE SITE TO RESTORE EXISTING DRAINAGE CONDITIONS.







SAN ANTONIO  
WATER SYSTEM



WATER PRODUCTION FACILITIES  
DISINFECTION SYSTEM  
UPGRADES PROJECT

NO.	DATE	ISSUED FOR	BY
2	08/07/14	ADDENDUM No. 2	SS

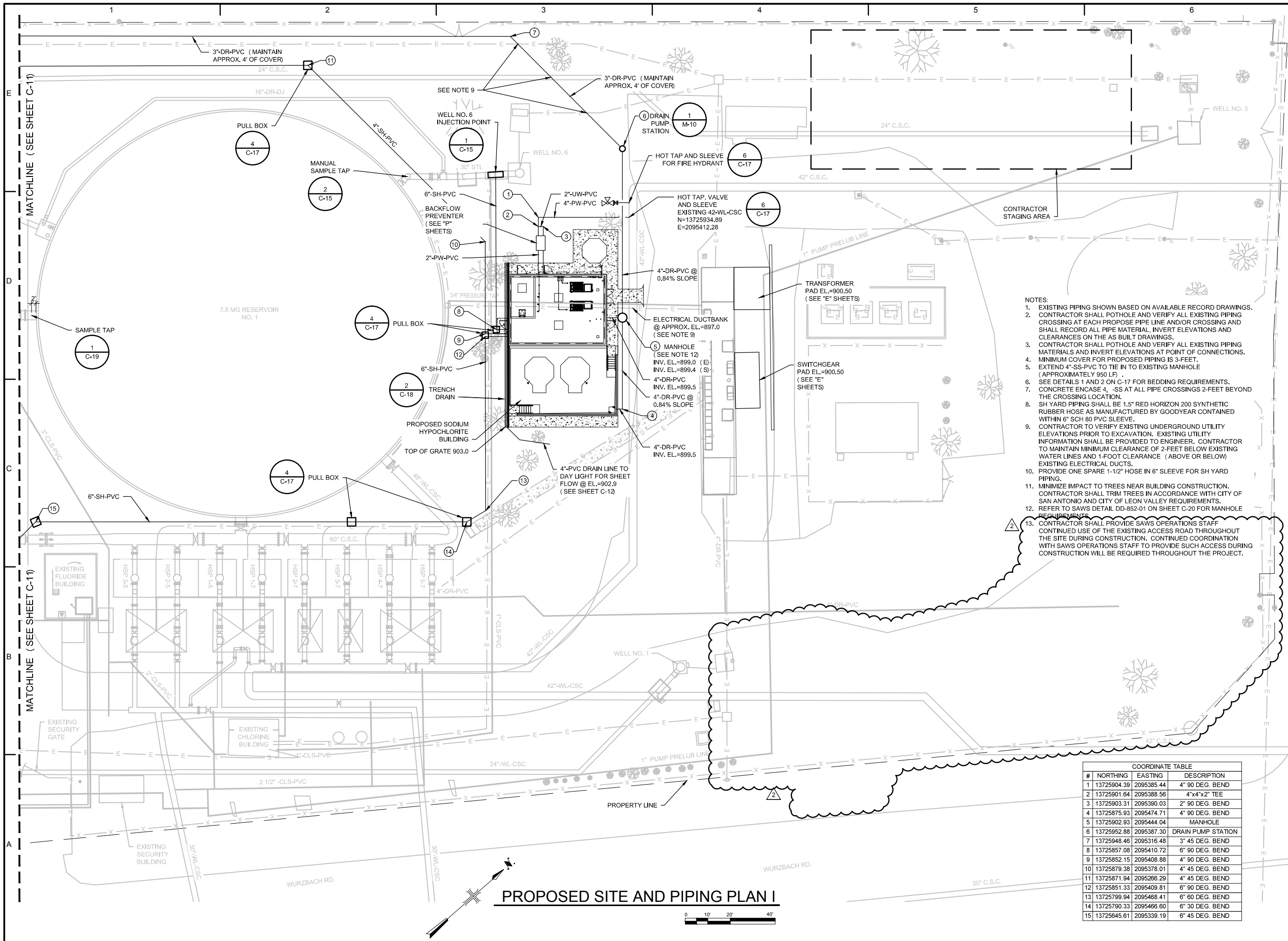
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CHECKED BY: S. SUE

SHEET TITLE  
**CIVIL**

**WURZBACH  
PROPOSED  
SITE AND  
PIPING PLAN I**

SCALE: 1" = 20'-0"

SHEET **C-10**  
14 OF 125



- NOTES:
- EXISTING PIPING SHOWN BASED ON AVAILABLE RECORD DRAWINGS.
  - CONTRACTOR SHALL POTHOLE AND VERIFY ALL EXISTING PIPING CROSSING AT EACH PROPOSE PIPE LINE AND/OR CROSSING AND SHALL RECORD ALL PIPE MATERIAL, INVERT ELEVATIONS AND CLEARANCES ON THE AS BUILT DRAWINGS.
  - CONTRACTOR SHALL POTHOLE AND VERIFY ALL EXISTING PIPING MATERIALS AND INVERT ELEVATIONS AT POINT OF CONNECTIONS.
  - MINIMUM COVER FOR PROPOSED PIPING IS 3-FEET.
  - EXTEND 4"-SS-PVC TO TIE IN TO EXISTING MANHOLE (APPROXIMATELY 950 LF).
  - SEE DETAILS 1 AND 2 ON C-17 FOR BEDDING REQUIREMENTS.
  - CONCRETE ENCASE 4" -SS AT ALL PIPE CROSSINGS 2-FEET BEYOND THE CROSSING LOCATION.
  - SH YARD PIPING SHALL BE 1.5" RED HORIZON 200 SYNTHETIC RUBBER HOSE AS MANUFACTURED BY GOODYEAR CONTAINED WITHIN 6" SCH 80 PVC SLEEVE.
  - CONTRACTOR TO VERIFY EXISTING UNDERGROUND UTILITY ELEVATIONS PRIOR TO EXCAVATION. EXISTING UTILITY INFORMATION SHALL BE PROVIDED TO ENGINEER. CONTRACTOR TO MAINTAIN MINIMUM CLEARANCE OF 2-FEET BELOW EXISTING WATER LINES AND 1-FOOT CLEARANCE (ABOVE OR BELOW) EXISTING ELECTRICAL DUCTS.
  - PROVIDE ONE SPARE 1-1/2" HOSE IN 6" SLEEVE FOR SH YARD PIPING.
  - MINIMIZE IMPACT TO TREES NEAR BUILDING CONSTRUCTION. CONTRACTOR SHALL TRIM TREES IN ACCORDANCE WITH CITY OF SAN ANTONIO AND CITY OF LEON VALLEY REQUIREMENTS.
  - REFER TO SAWS DETAIL DD-852-01 ON SHEET C-20 FOR MANHOLE REQUIREMENTS.
  - CONTRACTOR SHALL PROVIDE SAWS OPERATIONS STAFF CONTINUED USE OF THE EXISTING ACCESS ROAD THROUGHOUT THE SITE DURING CONSTRUCTION. CONTINUED COORDINATION WITH SAWS OPERATIONS STAFF TO PROVIDE SUCH ACCESS DURING CONSTRUCTION WILL BE REQUIRED THROUGHOUT THE PROJECT.

COORDINATE TABLE

#	NORTHING	EASTING	DESCRIPTION
1	13725904.39	2095385.44	4" 90 DEG. BEND
2	13725901.64	2095388.56	4"x4"x2" TEE
3	13725903.31	2095390.03	2" 90 DEG. BEND
4	13725875.93	2095474.71	4" 90 DEG. BEND
5	13725902.93	2095444.04	MANHOLE
6	13725952.88	2095387.30	DRAIN PUMP STATION
7	13725948.46	2095316.48	3" 45 DEG. BEND
8	13725857.08	2095410.72	6" 90 DEG. BEND
9	13725852.15	2095408.88	4" 90 DEG. BEND
10	13725879.38	2095378.01	4" 45 DEG. BEND
11	13725871.94	2095286.29	4" 45 DEG. BEND
12	13725851.33	2095409.81	6" 90 DEG. BEND
13	13725799.94	2095468.41	6" 60 DEG. BEND
14	13725790.33	2095466.60	6" 30 DEG. BEND
15	13725645.61	2095339.19	6" 45 DEG. BEND



SAN ANTONIO  
 WATER SYSTEM



WATER PRODUCTION FACILITIES  
 DISINFECTION SYSTEM  
 UPGRADES PROJECT

NO.	DATE	ISSUED FOR	BY
2	08/07/14	ADDENDUM No. 2	SS

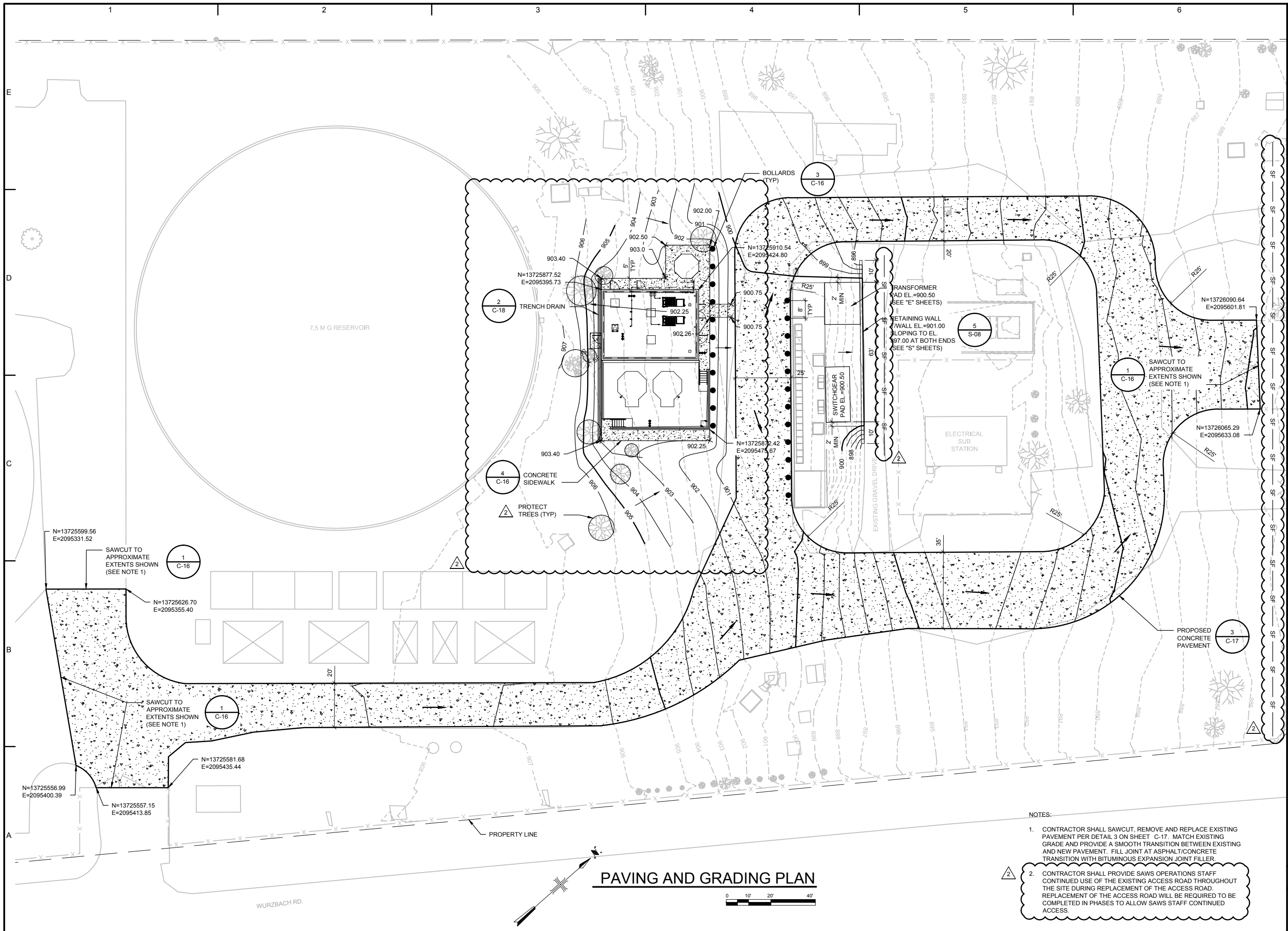
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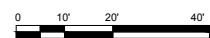
WURZBACH  
 PAVING AND  
 GRADING PLAN

SCALE: 1" = 20'-0"

SHEET **C-12**  
 16 OF 125

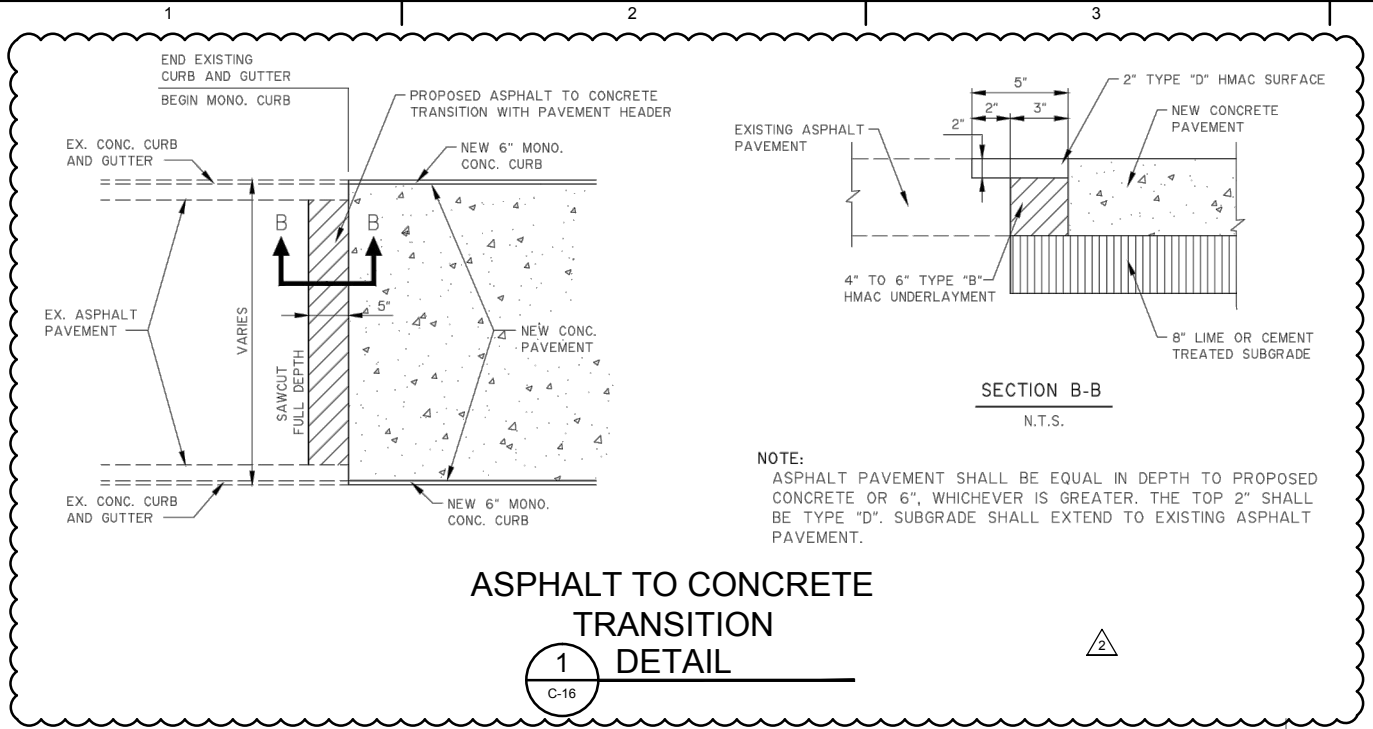


**PAVING AND GRADING PLAN**



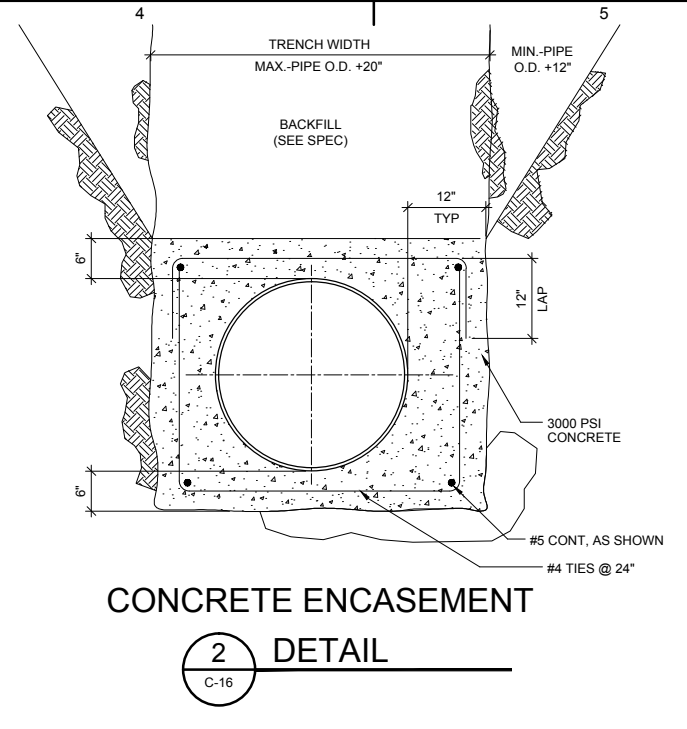
- NOTES:
- CONTRACTOR SHALL SAWCUT, REMOVE AND REPLACE EXISTING PAVEMENT PER DETAIL 3 ON SHEET C-17. MATCH EXISTING GRADE AND PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW PAVEMENT. FILL JOINT AT ASPHALT/CONCRETE TRANSITION WITH BITUMINOUS EXPANSION JOINT FILLER.
  - CONTRACTOR SHALL PROVIDE SAWS OPERATIONS STAFF CONTINUED USE OF THE EXISTING ACCESS ROAD THROUGHOUT THE SITE DURING REPLACEMENT OF THE ACCESS ROAD. REPLACEMENT OF THE ACCESS ROAD WILL BE REQUIRED TO BE COMPLETED IN PHASES TO ALLOW SAWS STAFF CONTINUED ACCESS.

User:Arnold, Spec:PIRNE, STANDARD File:K:\Acad\Proj\02196020-C11.DWG Scale:1:1 Date:04/14/2014 Time:07:14 Layout:C11

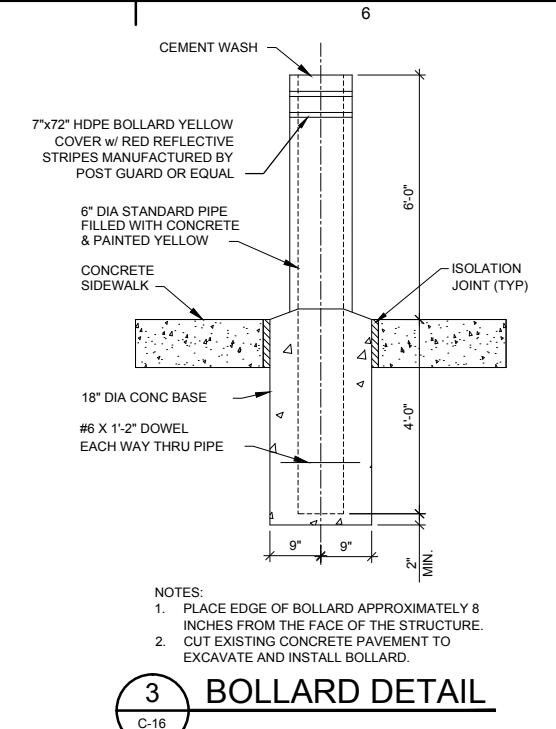


**ASPHALT TO CONCRETE TRANSITION DETAIL 1**  
C-16

NOTE:  
ASPHALT PAVEMENT SHALL BE EQUAL IN DEPTH TO PROPOSED CONCRETE OR 6", WHICHEVER IS GREATER. THE TOP 2" SHALL BE TYPE "D". SUBGRADE SHALL EXTEND TO EXISTING ASPHALT PAVEMENT.

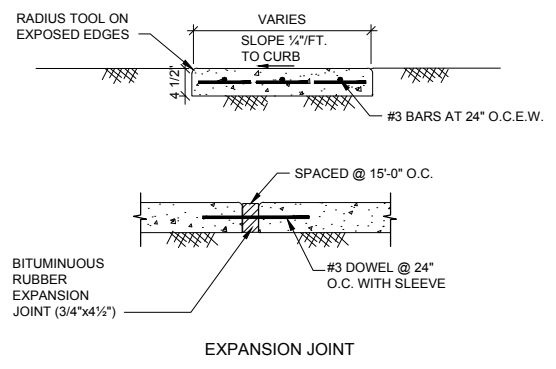


**CONCRETE ENCASEMENT DETAIL 2**  
C-16



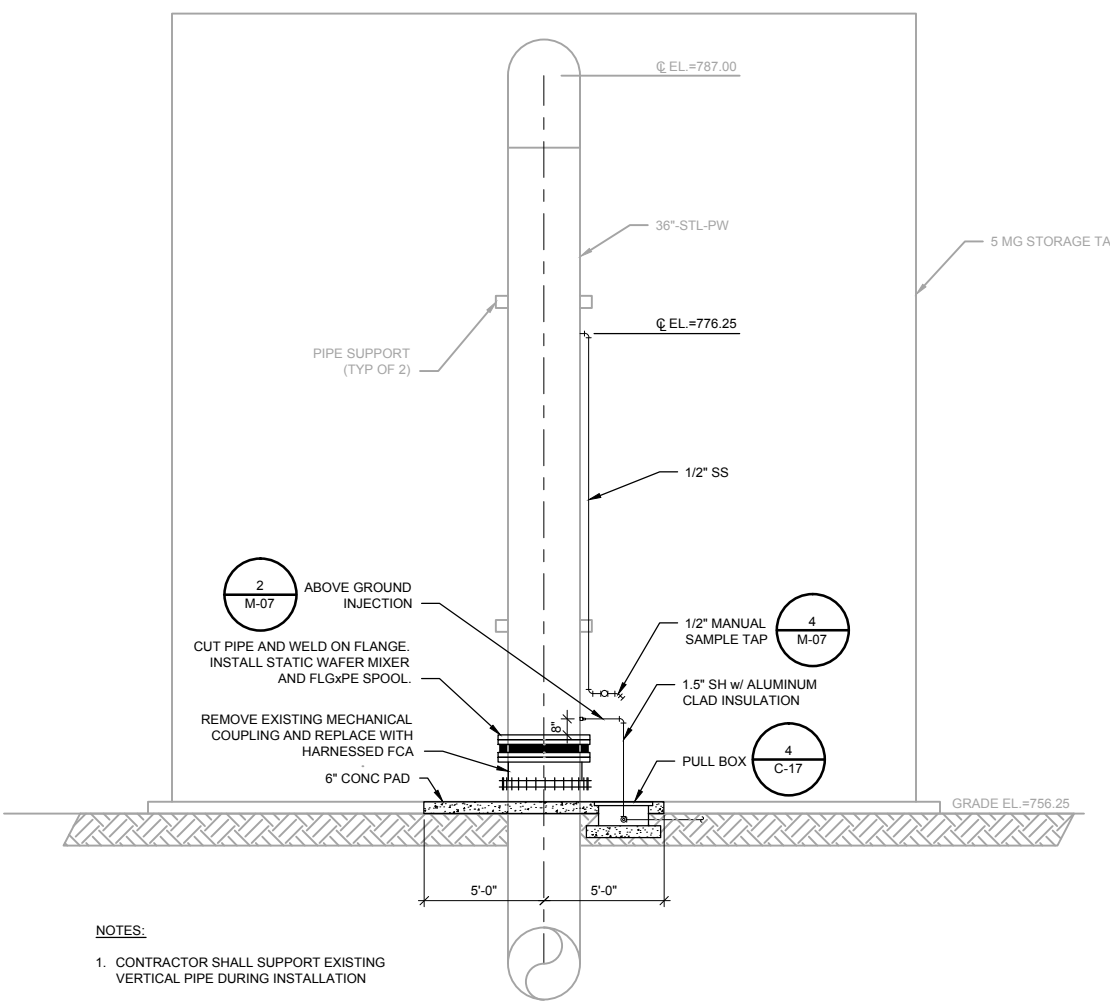
**BOLLARD DETAIL 3**  
C-16

NOTES:  
1. PLACE EDGE OF BOLLARD APPROXIMATELY 8 INCHES FROM THE FACE OF THE STRUCTURE.  
2. CUT EXISTING CONCRETE PAVEMENT TO EXCAVATE AND INSTALL BOLLARD.



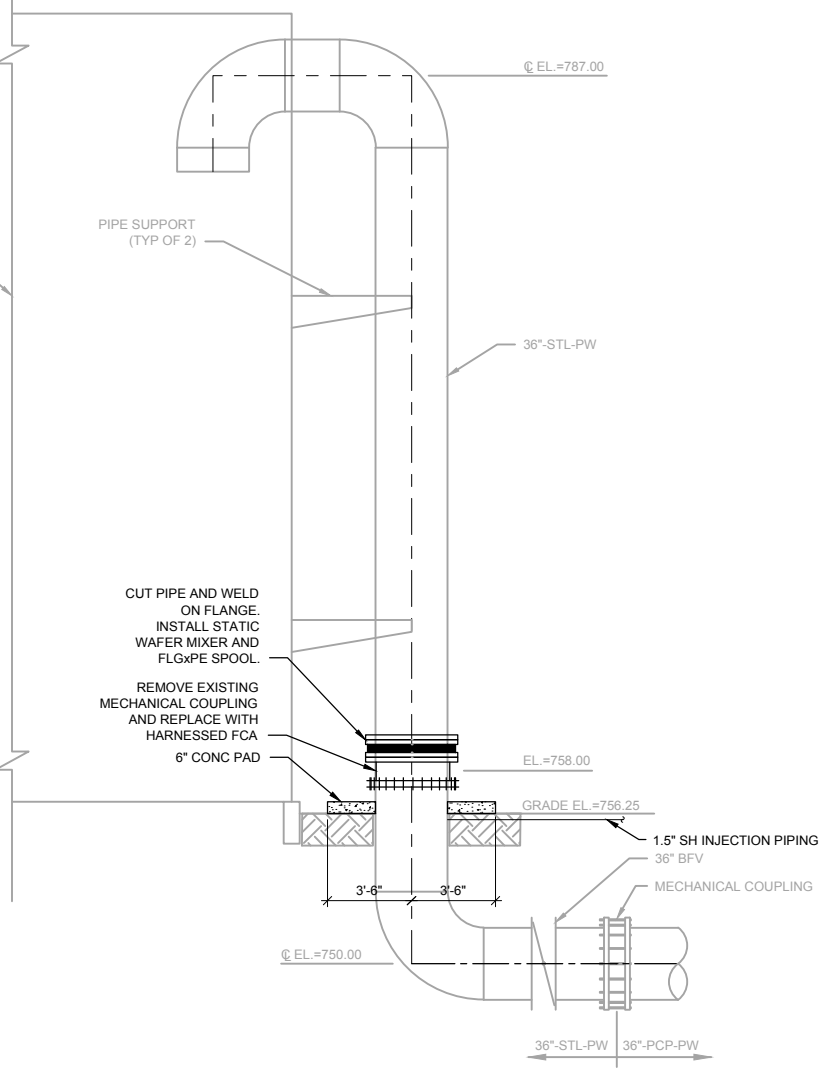
NOTES:  
1. CONCRETE SHALL CONTAIN A MINIMUM OF FIVE AND ONE HALF (5 1/2) SACKS OF CEMENT PER CUBIC YARD OF CONCRETE, 3500 P.S.I. @ 28 DAYS.  
2. TIE TO STEEL IN CONNECTION TO WALK.  
3. FINISH CONCRETE IN ACCORDANCE WITH CITY REQUIREMENTS.  
4. SCORED CONTRACTION JOINTS AT 4'-0" O.C.  
5. MAXIMUM SLOPE ALONG LENGTH OF SIDEWALK AT ANY LOCATION IS 5%. MAXIMUM SLOPE ACROSS SIDEWALK AT ANY LOCATION IS 2%.  
6. SIDEWALK THICKNESS AND REINFORCEMENT SHALL MATCH DRIVEWAY REQUIREMENTS WITHIN THE LIMITS OF A DRIVEWAY.

**CONCRETE SIDEWALK DETAIL 4**  
C-16



**MARBACH PRIMARY INJECTION SECTION 1**  
C-16

NOTES:  
1. CONTRACTOR SHALL SUPPORT EXISTING VERTICAL PIPE DURING INSTALLATION



**MARBACH PRIMARY INJECTION SECTION 2**  
C-16

CUT PIPE AND WELD ON FLANGE. INSTALL STATIC WAFER MIXER AND FLGxPE SPOOL.  
REMOVE EXISTING MECHANICAL COUPLING AND REPLACE WITH HARNESSSED FCA  
6\"/>



SAN ANTONIO WATER SYSTEM



WATER PRODUCTION FACILITIES  
DISINFECTION SYSTEM  
UPGRADES PROJECT

NO.	DATE	ISSUED FOR	BY
1	07/05/14	ADDENDUM #2	SS

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DATE: JULY 2014  
PROJECT NO.: 12-6004  
FILE NAME: 02196020-C16  
DESIGNED BY: M. GIARAMITA  
DRAWN BY: J. ARNOLD  
CHECKED BY: S. SUE

SHEET TITLE: CIVIL

DETAILS III

SCALE: NOT TO SCALE

SHEET: C-16  
20 OF 125

User:CADDD\_Spec:ACAD File:K:\Acad\Proj\02196020-M01.DWG Scale:1:1 Date:07/02/2014 Time:21:10 Layer:M-01









SAN ANTONIO  
WATER SYSTEM



WATER PRODUCTION FACILITIES  
DISINFECTION SYSTEM  
UPGRADES PROJECT

NO.	DATE	ISSUED FOR	BY
2	07/05/14	ADDENDUM #2	SS

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DATE: JULY 2014  
PROJECT NO.: 12-6004  
FILE NAME: 02196020-C22  
DESIGNED BY: M. GIARAMITA  
DRAWN BY: J. ARNOLD  
CHECKED BY: S. SUE

SHEET TITLE  
CIVIL

COSA TEMPORARY  
EROSION CONTROL  
DETAILS II

**ROCK FILTER DAM USAGE GUIDELINES**

ROCK FILTER DAMS SHOULD BE CONSTRUCTED DOWNSTREAM FROM DISTURBED AREAS TO INTERCEPT SEDIMENT FROM OVERLOAD RUNOFF AND /OR CONCENTRATED FLOW. THE DAMS SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 60 GPM /FT SQUARED OF CROSS SECTIONAL AREA. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE.

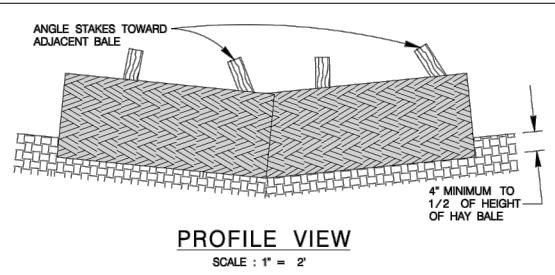
- TYPE 1 (18" HIGH WITH NO WIRE MESH):**  
TYPE 1 MAY BE USED AT THE TOE OF SLOPES, AROUND INLETS, IN SMALL DITCHES AND AT DIKE OR SWALE OUTLETS. THIS TYPE OF DAM IS RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA OF 5 ACRES OR LESS. TYPE 1 MAY NOT BE USED IN CONCENTRATED HIGH VELOCITY FLOWS (APPROXIMATELY 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 FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- TYPE 2 (18" HIGH WITH WIRE MESH):**  
TYPE 2 MAY BE USED IN DITCHES AND AT DIKE OR SWALE OUTLETS.
- TYPE 3 (36" 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**

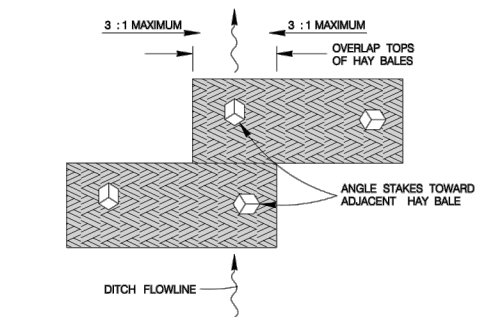
- IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, FILTER DAMS SHOULD BE PLACED NEAR THE TOE OF SLOPES WHERE EROSION IS ANTICIPATED, UPSTREAM AND /OR DOWNSTREAM AT DRAINAGE STRUCTURES, AND IN ROADWAY DITCHES AND CHANNELS TO COLLECT SEDIMENT.
- MATERIALS (AGGREGATE, WIRE MESH, SANDBAGS, ETC.) SHALL BE AS INDICATED BY THE SPECIFICATION FOR ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL.
- THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE STORM WATER POLLUTION PREVENTION PLANS.
- SIDE SLOPES SHOULD BE 2 : 1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDE SLOPES OF 6 : 1 OR FLATTER.
- MAINTAIN A MINIMUM OF 1' BETWEEN TOP OF ROCK FILTER DAM WEIR AND TOP OF EMBANKMENT FOR FILTER DAMS AT SEDIMENT TRAPS.
- FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4" INTO THE EXISTING GROUND.
- THE SEDIMENT TRAP FOR PONDING OF SEDIMENT LADEN RUNOFF SHALL BE OF THE DIMENSIONS SHOWN ON THE PLANS.
- ROCK FILTER DAM TYPES 2 & 3 SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HEXAGONAL 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 ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS. IN STREAM USE, THE MESH SHOULD BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.
- SACK GABIONS SHOULD BE STAKED DOWN WITH 3/4" DIA. REBAR STAKES.
- FLOW OUTLET SHOULD BE ONTO A STABILIZED AREA (VEGETATION, ROCK, ETC.).
- 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**

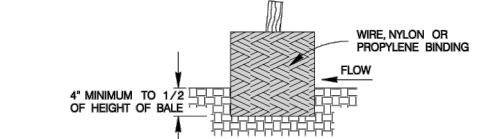
% SUBMITTAL	PROJECT NO.:	DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY:
		SHEET NO.: OF



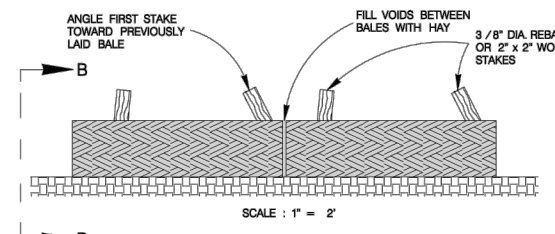
PROFILE VIEW  
SCALE : 1" = 2'



PLAN VIEW  
SCALE : 1" = 2'



SECTION B-B  
SCALE : 1" = 2'



BAILED HAY USAGE GUIDELINES

A BAILED 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 GPM /FT SQUARED OF CROSS SECTIONAL AREA. BAILED HAY MAY BE USED AT THE FOLLOWING LOCATIONS:

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

FOR BAILED HAY INSTALLATIONS IN SMALL DITCHES, THE FOLLOWING ADDITIONAL CONSIDERATIONS APPLY:

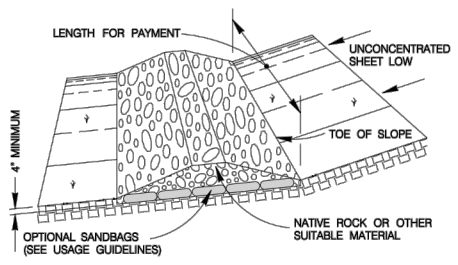
- THE DITCH SIDESLOPES SHOULD BE GRADED AS FLAT AS POSSIBLE TO MAXIMIZE THE DRAINAGE FLOW RATE THRU THE HAY.
- THE DITCH SHOULD BE GRADED LARGE ENOUGH TO CONTAIN THE OVERLAPPING DRAINAGE WHEN SEDIMENT HAS FILLED TO THE TOP OF THE BAILED HAY.

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

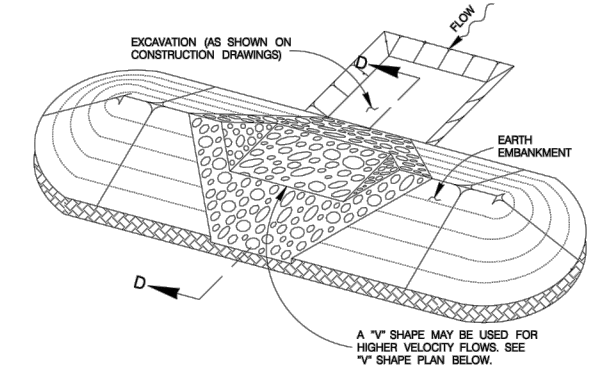
**GENERAL NOTES**

- HAY BALES SHALL BE A MINIMUM OF 30" IN LENGTH AND WEIGH A MINIMUM OF 50 LBS.
- HAY BALES SHALL BE BOUND BY EITHER WIRE OR NYLON OR POLYPROPYLENE STRING. THE BALES SHALL BE COMPOSED ENTIRELY OF VEGETABLE MATTER.
- HAY BALES SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4" AND, WHERE POSSIBLE, ONE-HALF THE HEIGHT OF THE BAILE.
- 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.
- HAY BALES SHALL BE SECURELY ANCHORED IN PLACE WITH 3/8" DIA. REBAR OR 2" x 2" WOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE SHALL BE ANGLED TOWARDS THE PREVIOUSLY LAID BAILE TO FORCE THE BALES TOGETHER.
- THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

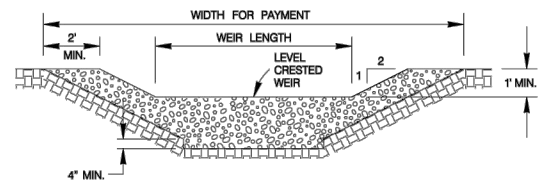
**BAILED HAY FOR EROSION CONTROL**



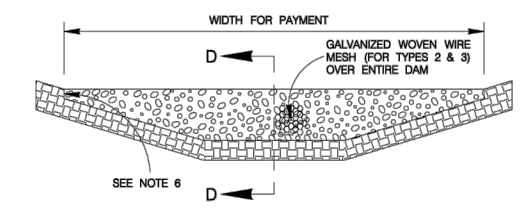
TYPE 1 FILTER DAM AT  
TOE OF SLOPE  
SCALE : 1" = 10'



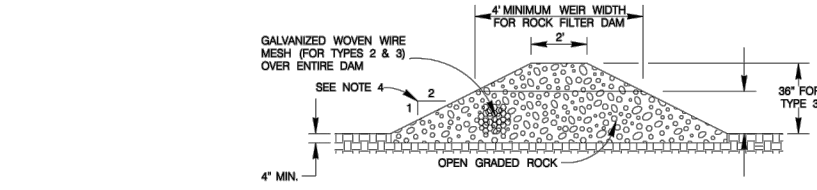
TYPE 1 & 2 FILTER DAM AT  
SEDIMENT TRAP  
SCALE : 1" = 10'



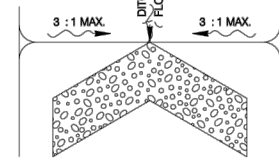
PROFILE OF TYPE 1 & 2 FILTER  
DAM AT SEDIMENT TRAP  
SCALE : 1" = 6'



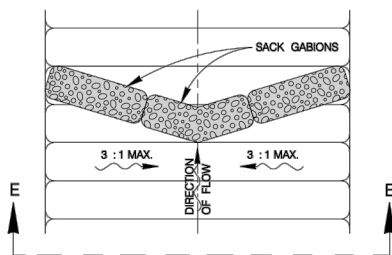
TYPE 1, 2 & 3 FILTER DAM  
AT CHANNEL SECTIONS  
SCALE : 1" = 6'



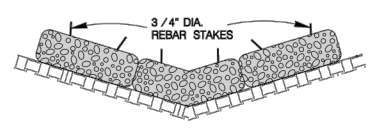
SECTION D-D  
SCALE : 1" = 6'



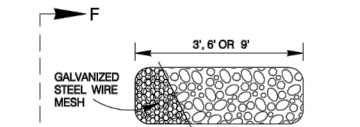
"V" SHAPE  
PLAN VIEW  
NOT TO SCALE



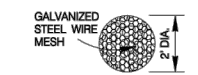
PLAN VIEW  
SCALE : 1" = 10'



SECTION E-E  
SCALE : 1" = 10'



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**

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SCALE: AS SHOWN

SHEET **C-22**  
26 OF 125



SAN ANTONIO  
WATER SYSTEM



WATER PRODUCTION FACILITIES  
DISINFECTION SYSTEM  
UPGRADES PROJECT

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2	08/07/14	ADDENDUM No. 2	SS

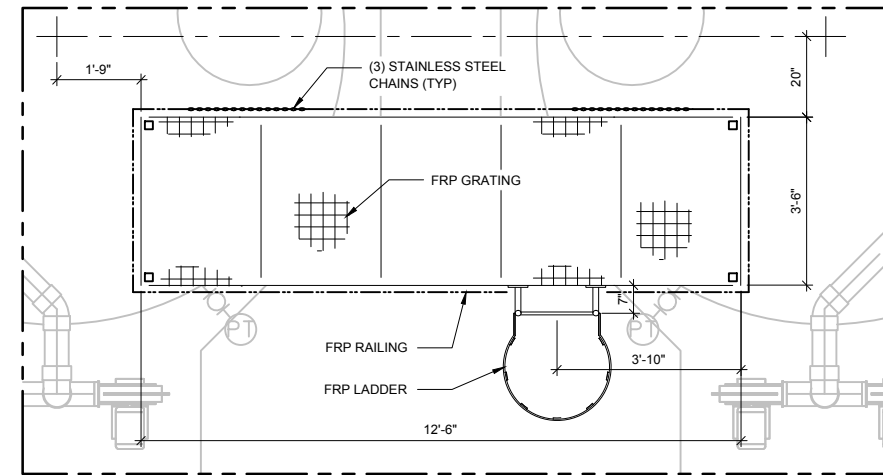
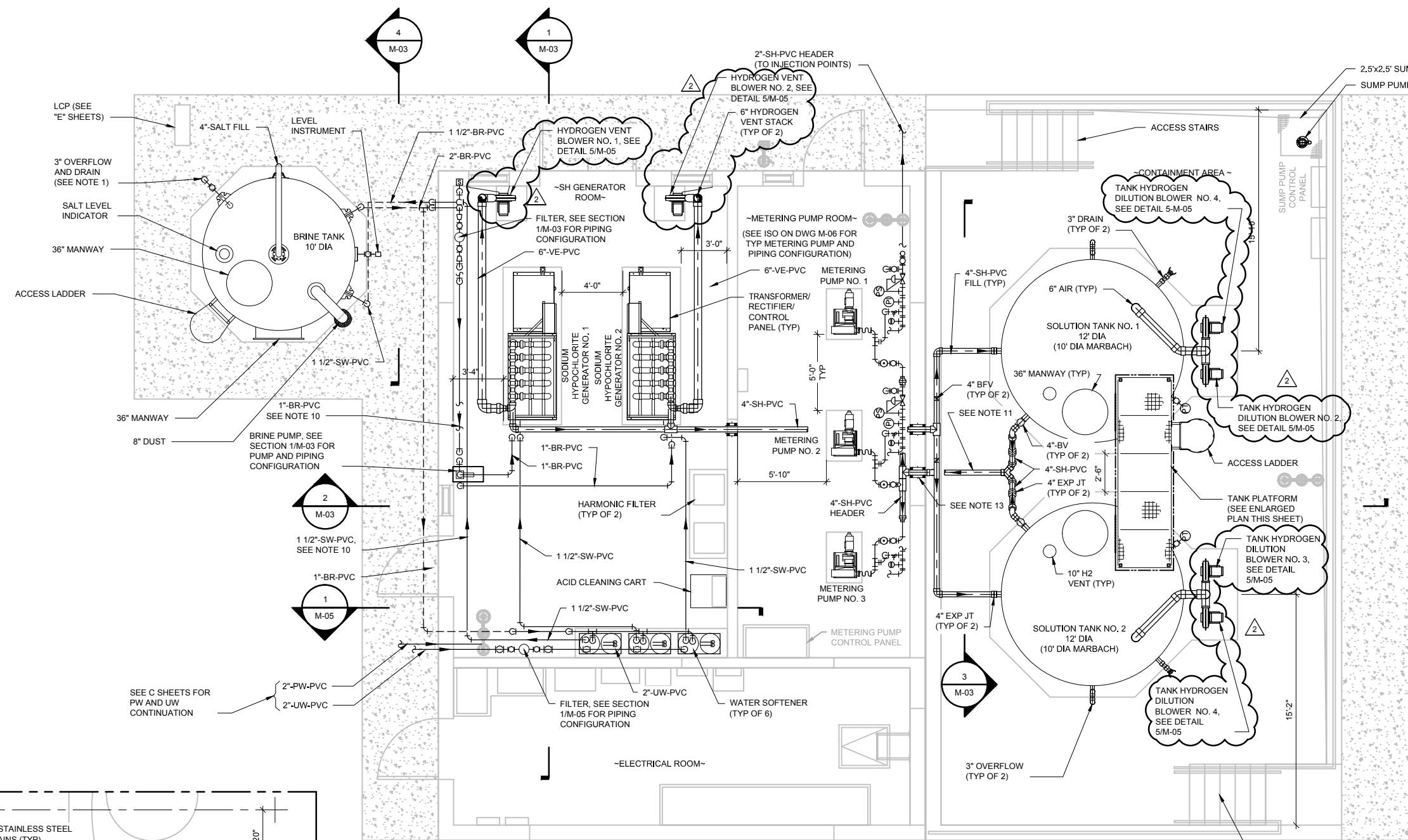
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DATE: JULY 2014  
PROJECT NO.: 12-6004  
FILE NAME: 02196020-M01  
DESIGNED BY: M. GIARAMITA  
DRAWN BY: J. ARNOLD  
CHECKED BY: S. SUE

SHEET TITLE  
**MECHANICAL**

**MARBACH AND  
MALTSBERGER  
OSHG SYSTEM  
FACILITY PLAN**

SCALE: 1/4" = 1'-0"

SHEET **M-01**  
27 OF 125



**TANK PLATFORM  
ENLARGED PLAN**



- NOTES:
- PROVIDE 3" DIAMETER OVERFLOW INTERNAL DOWNCOMER PIPE EXTENDING BELOW BRINE OUTLET ELEVATION. PROVIDE FRP PIPE SUPPORTS OFF VESSEL INSIDE WALL.
  - VERTICAL ELECTROLYTIC CELLS SHOWN. HOWEVER, HORIZONTAL ELECTROLYTIC CELL ARRANGEMENT IS ACCEPTABLE.
  - CONTRACTOR TO SUBMIT OSHG PACKAGE SYSTEM AS REQUIRED BY CONTRACT DOCUMENTS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
  - THE EQUIPMENT LAYOUT WILL VARY DEPENDING ON THE PACKAGE SYSTEM. CONTRACTOR SHALL SUBMIT A LAYOUT OF THE PROPOSED ARRANGEMENT FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
  - SIZES AND LOCATIONS OF FRP PLATFORM MEMBERS AND SUPPORTS SHALL BE PER TANK AND PLATFORM MANUFACTURER. ACCESS PLATFORM AND APPURTENANCES SHALL BE INTEGRATED INTO OVERALL TANK DESIGN AND ASSEMBLY BY TANK MANUFACTURER.
  - TANK MANUFACTURER SHALL PROVIDE DESIGN FOR THE PLATFORM. PLATFORM SHALL BE CONSTRUCTED OF FRP SHAPES PROPERLY SIZED TO RESIST ALL DESIGN LOADS. REFER TO SPECIFICATIONS FOR DESIGN AND FRP MATERIAL REQUIREMENTS. MINIMUM WALKWAY DESIGN LIVE LOAD SHALL BE 60 POUNDS PER SQUARE FOOT.
  - PLATFORM SHALL BE PROVIDED WITH FRP RAILINGS. STAINLESS STEEL CHAINS AND HOOKS SHALL BE PROVIDED AT MANWAY ACCESS OPENINGS IN THE RAILING, TO MATCH LOCATION OF HORIZONTAL RAILS.
  - INTERMEDIATE LADDER SUPPORT BRACKETS SHALL BE DESIGNED AND PROVIDED BY PLATFORM MANUFACTURER. INTERMEDIATE LADDER BRACKET SUPPORTS SHALL BE LOCATED AS TO PROVIDE A MINIMUM 7'-0" WALKING CLEARANCE BETWEEN THE TANKS.
  - ALL LADDERS SHALL BE PROVIDED WITH A FALL PREVENTION SYSTEM AS REQUIRED IN SPECIFICATION SECTION 06 82 53.
  - BRINE AND SW PIPING LOCATED AT SOUTH WALL SHALL BE MOUNTED ON WALL. SW PIPING IS SHOWN AWAY FROM WALL FOR CLARIFICATION.
  - PROVIDE FRP ABOVE GRADE CHANNEL RAMP FOR PROTECTION OF ABOVE GRADE PIPING. SEE PIPE CROSSOVER DETAIL 2 ON DWG M-05.
  - CONTRACTOR SHALL ATTACH/SUPPORT PIPING TO WALLS AND CEILING USING BRACKETS AND SUPPORTS DETAILED ON SHEETS M-09 AND M-10. ALL PIPE SUPPORTS SHALL BE CHEMICALLY COMPATIBLE AS SPECIFIED IN SECTION 40 23 26.
  - FOR WALL PENETRATION, SEE DETAIL 1/C-10 (TYP).

User:CADDD\_Spec:ARCADIS\Projects\12196020-M01.DWG Scale:1:1 Date:01/20/2014 Time:21:10 Layer:M-01





SAN ANTONIO  
WATER SYSTEM



WATER PRODUCTION FACILITIES  
DISINFECTION SYSTEM  
UPGRADES PROJECT

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DATE: JULY 2014

PROJECT NO.: 12-6004

FILE NAME: 02196020-M02

DESIGNED BY: M. GIARAMITA

DRAWN BY: J. ARNOLD

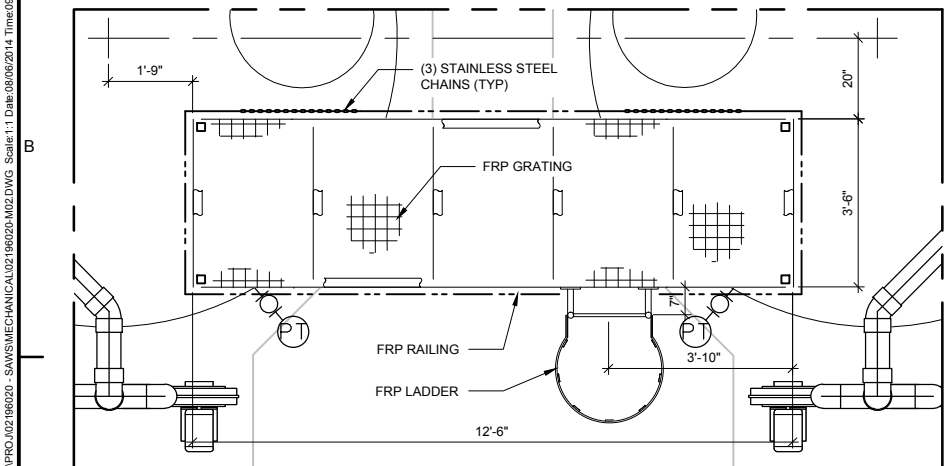
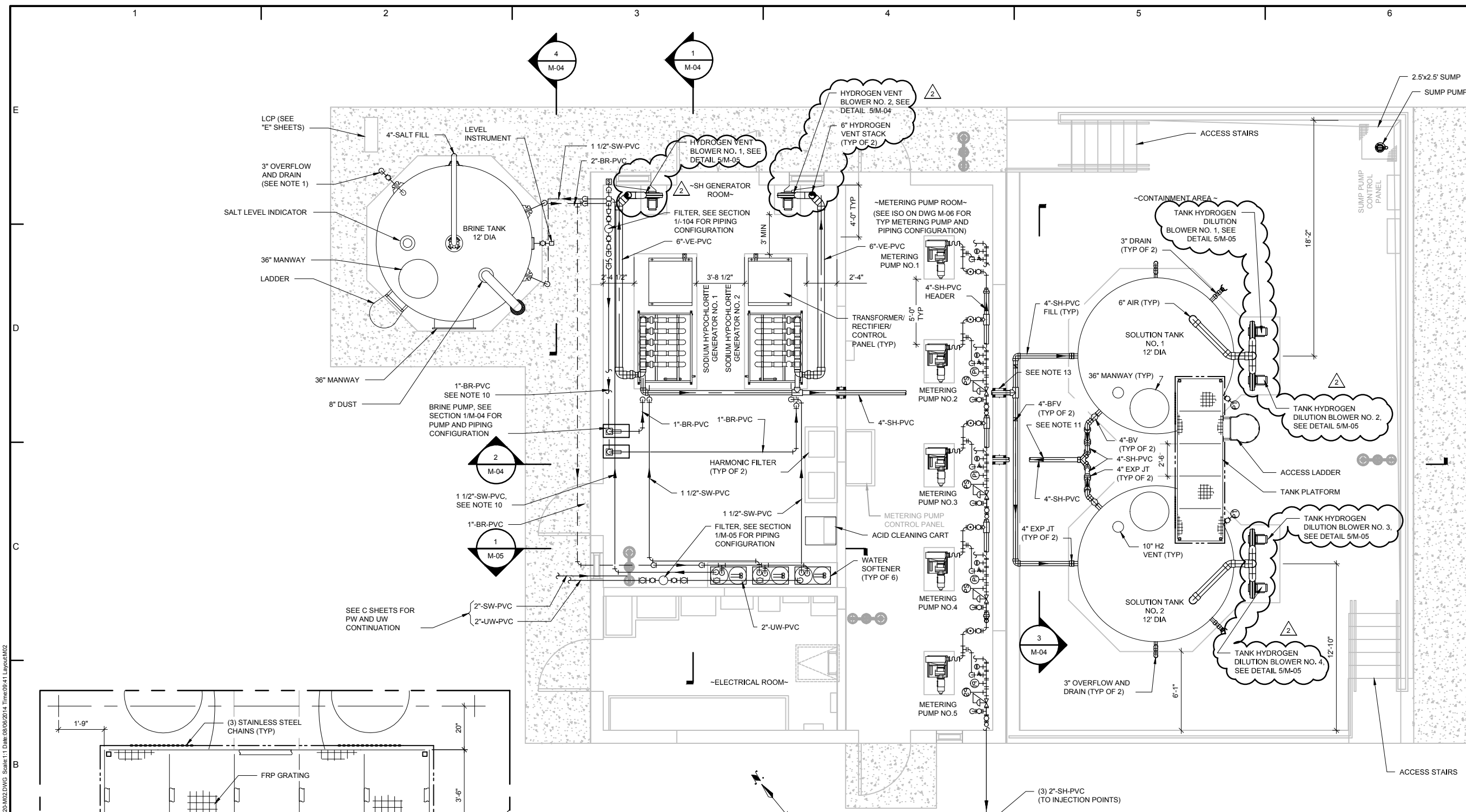
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SHEET TITLE  
**MECHANICAL**

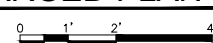
**WURZBACH OSHG  
SYSTEM FACILITY  
PLAN**

SCALE: 1/4" = 1'-0"

SHEET **M-02**  
28 OF 125



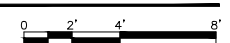
**TANK PLATFORM  
ENLARGED PLAN**



**NOTES:**

- PROVIDE 3" DIAMETER OVERFLOW INTERNAL DOWNCOMER PIPE EXTENDING BELOW BRINE OUTLET ELEVATION. PROVIDE FRP PIPE SUPPORTS OFF VESSEL INSIDE WALL.
- VERTICAL ELECTROLYTIC CELLS SHOWN. HOWEVER, HORIZONTAL ELECTROLYTIC CELL ARRANGEMENT IS ACCEPTABLE.
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- FOR WALL PENETRATION, SEE DETAIL 1/C-10 (TYP)

**PLAN**



User: gbulnera SpicPrinIE STANDARD File: C:\CADD\CAD\PROJ\02196020 - SAN ANTONIO WATER SYSTEM - WURZBACH OSHG SYSTEM FACILITY - M02.DWG Scale: 1/4" = 1'-0" Date: 08/06/2014 Time: 09:41 Layout: M02



SAN ANTONIO  
WATER SYSTEM



WATER PRODUCTION FACILITIES  
DISINFECTION SYSTEM  
UPGRADES PROJECT

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DATE: JULY 2014

PROJECT NO.: 12-6004

FILE NAME: 02196020-M03

DESIGNED BY: M. GIARAMITA

DRAWN BY: J. ARNOLD

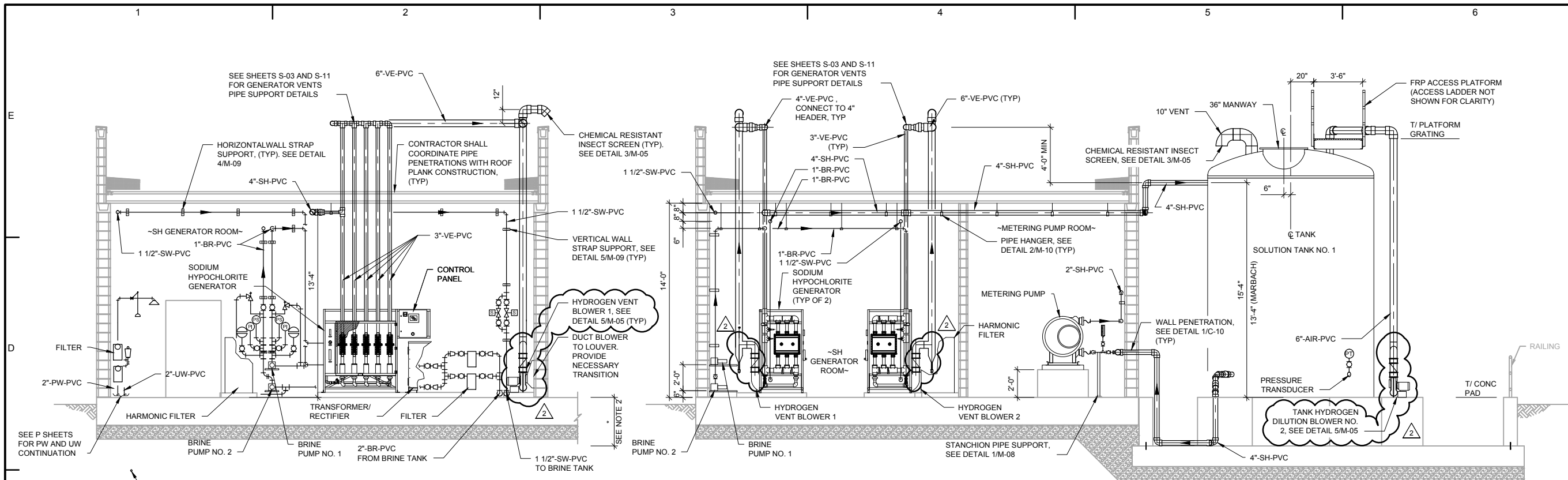
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SHEET TITLE  
**MECHANICAL**

**OSHG SYSTEM  
FACILITY SECTIONS -  
MALTSBERGER &  
MARBACH SITES**

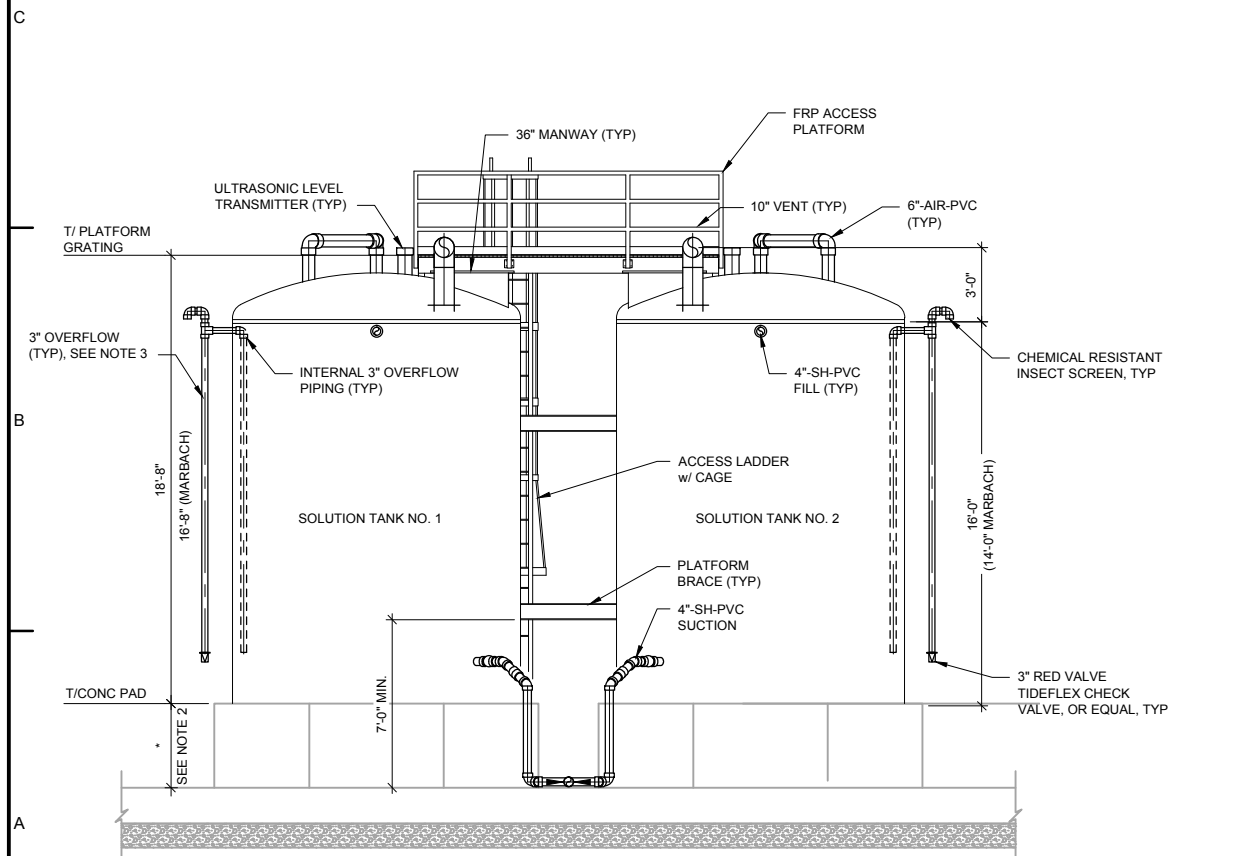
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SHEET **M-03**  
29 OF 125

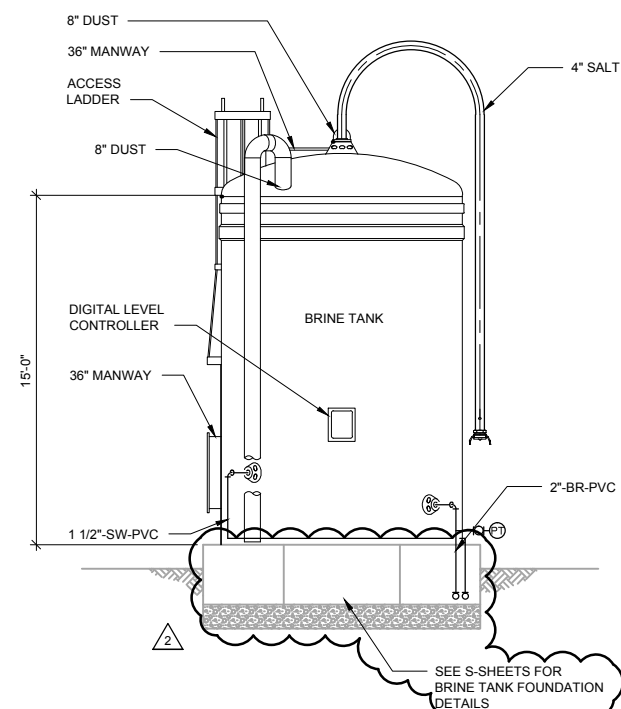


**1 SECTION**  
M-03  
0 2' 4' 8'

**2 SECTION**  
M-03  
0 2' 4' 8'



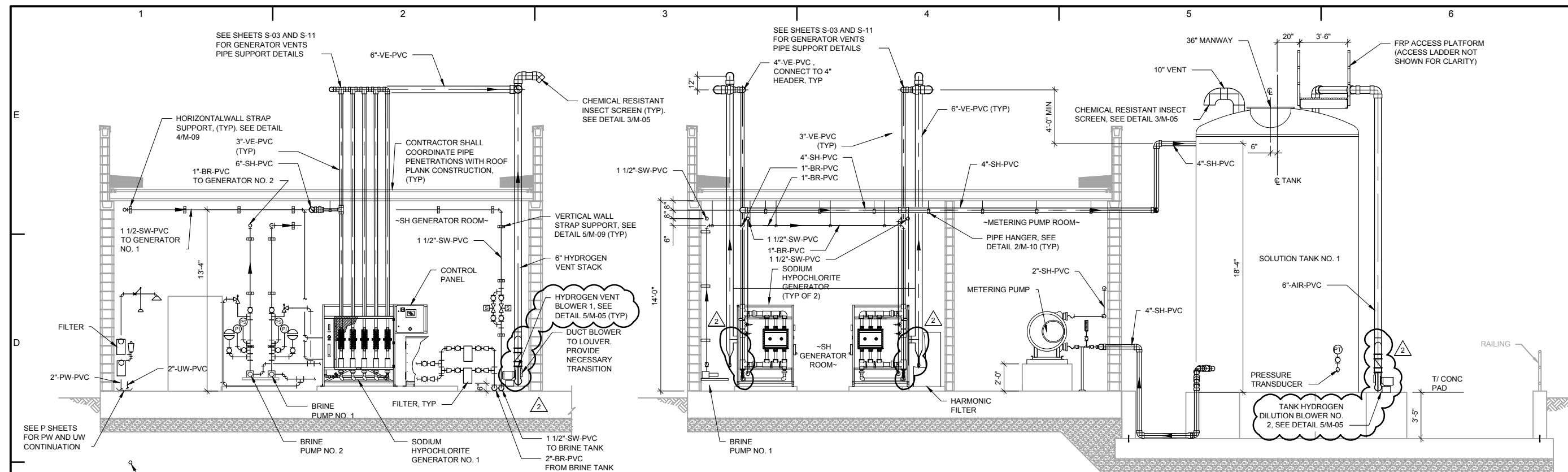
**3 SECTION**  
M-03  
0 2' 4' 8'



**4 SECTION**  
M-03  
0 2' 4' 8'

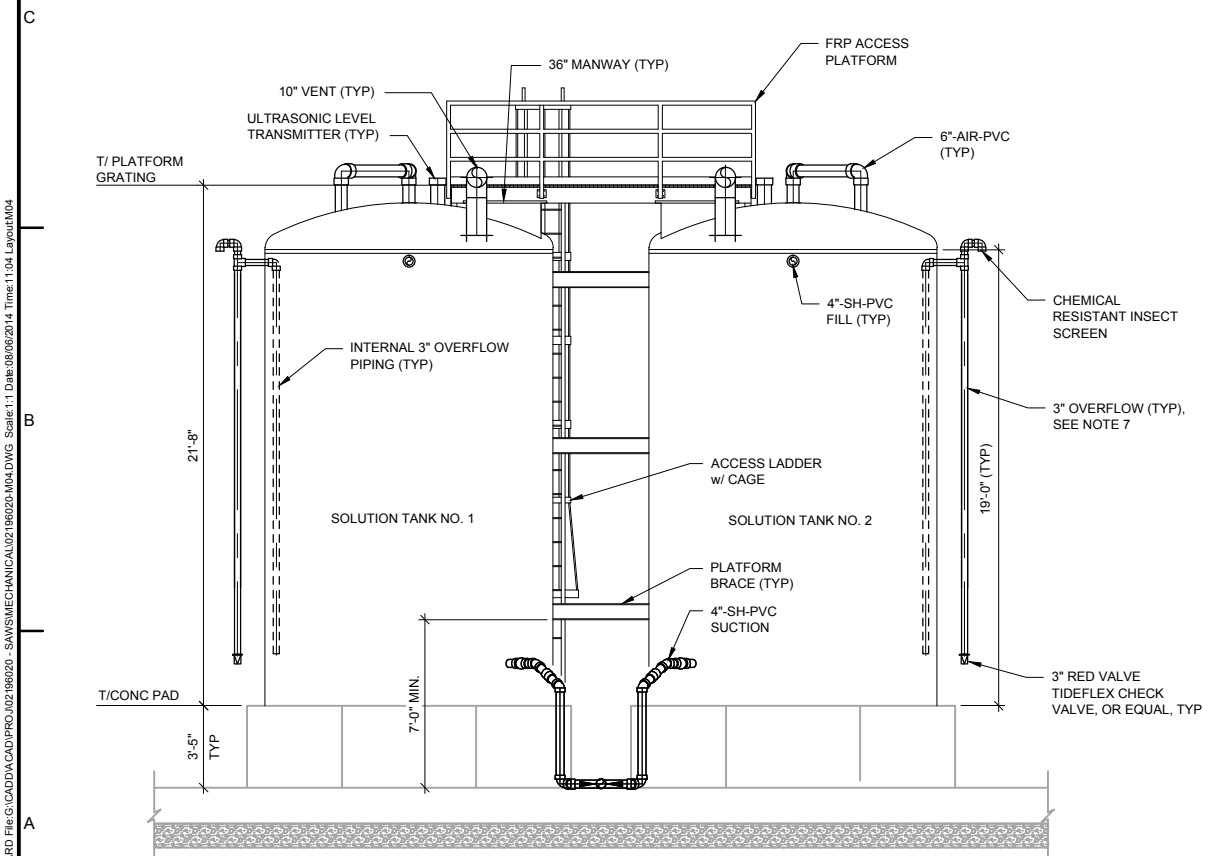
- NOTES:
- VERTICAL ELECTROLYTIC CELLS SHOWN. HOWEVER, HORIZONTAL ELECTROLYTIC CELLS ARRANGEMENT IS ACCEPTABLE.
  - \* CONTAINMENT AREA DEPTH VARIES BY SITE:
    - 2'-6" MARBACH
    - 3'-6" MALTSBERGER
    - SEE S-SHEETS
  - SIZES AND LOCATIONS OF FRP PLATFORM MEMBERS AND SUPPORTS SHALL BE PER TANK AND PLATFORM MANUFACTURER. ACCESS PLATFORM AND APPURTENANCES SHALL BE INTEGRATED INTO OVERALL TANK DESIGN AND ASSEMBLY BY TANK MANUFACTURER.
  - PLATFORM SHALL BE CONSTRUCTED OF FRP SHAPES PROPERLY SIZED TO RESIST ALL DESIGN LOADS. REFER TO SPECIFICATIONS FOR DESIGN AND FRP MATERIAL REQUIREMENTS. MINIMUM WALKWAY DESIGN LIVE LOAD SHALL BE 60 POUNDS PER SQUARE FOOT.
  - PLATFORM SHALL BE PROVIDED WITH FRP RAILINGS. STAINLESS STEEL CHAINS AND HOOKS SHALL BE PROVIDED AT MANWAY ACCESS OPENINGS IN THE RAILING, TO MATCH LOCATION OF HORIZONTAL RAILS.
  - INTERMEDIATE LADDER SUPPORT BRACKETS SHALL BE DESIGNED AND PROVIDED BY PLATFORM MANUFACTURER. INTERMEDIATE LADDER BRACKET SUPPORTS SHALL BE LOCATED AS TO PROVIDE A MINIMUM 7'-0" WALKING CLEARANCE BETWEEN THE TANKS.
  - LADDER SHALL BE PROVIDED WITH A FALL PREVENTION SYSTEM AS REQUIRED IN SPECIFICATION SECTION 06 82 53.
  - TANK MANUFACTURER SHALL INSTALL PRE-FORMED PIPE SUPPORTS FOR EXTERNAL TANK PIPING.
  - CONTRACTOR SHALL ATTACH/SUPPORT PIPING ALONG WALLS AND CEILING USING BRACKETS AND SUPPORTS DETAILED ON SHEETS M-09 AND M-10. ALL PIPING SUPPORTS SHALL BE CHEMICALLY COMPATIBLE AS SPECIFIED IN SPECIFICATION SECTION 40 23 26.

User: gajulena Spec: PIRNIE STANDARD File: C:\CADD\CAD\PROJ\02196020-M03.DWG Scale: 1/4" = 1'-0" Date: 08/06/2014 Time: 11:03 Layout: M03

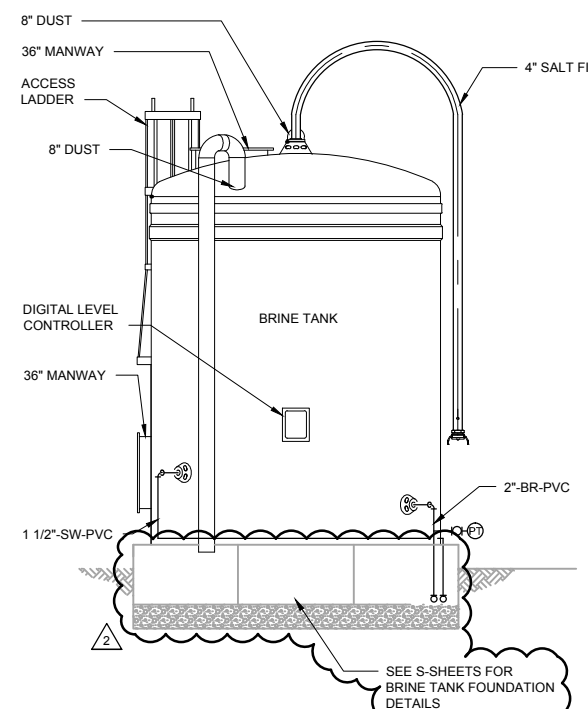


**1 SECTION**  
M-04  
0 2' 4' 8'

**2 SECTION**  
M-04  
0 2' 4' 8'



**3 SECTION**  
M-04  
0 2' 4' 8'



**4 SECTION**  
M-04  
0 2' 4' 8'

**NOTES:**

- VERTICAL ELECTROLYTIC CELLS SHOWN. HOWEVER, HORIZONTAL ELECTROLYTIC CELLS ARRANGEMENT IS ACCEPTABLE.
- SIZES AND LOCATIONS OF FRP PLATFORM MEMBERS AND SUPPORTS SHALL BE PER TANK AND PLATFORM MANUFACTURER. ACCESS PLATFORM AND APPURTENANCES SHALL BE INTEGRATED INTO OVERALL TANK DESIGN AND ASSEMBLY BY TANK MANUFACTURER.
- PLATFORM SHALL BE CONSTRUCTED OF FRP SHAPES PROPERLY SIZED TO RESIST ALL DESIGN LOADS. REFER TO SPECIFICATIONS FOR DESIGN AND FRP MATERIAL REQUIREMENTS. MINIMUM WALKWAY DESIGN LIVE LOAD SHALL BE 60 POUNDS PER SQUARE FOOT.
- PLATFORM SHALL BE PROVIDED WITH FRP RAILINGS. STAINLESS STEEL CHAINS AND HOOKS SHALL BE PROVIDED AT MANWAY ACCESS OPENINGS IN THE RAILING, TO MATCH LOCATION OF HORIZONTAL RAILS.
- INTERMEDIATE LADDER SUPPORT BRACKETS SHALL BE DESIGNED AND PROVIDED BY PLATFORM MANUFACTURER. INTERMEDIATE LADDER BRACKET SUPPORTS SHALL BE LOCATED AS TO PROVIDE A MINIMUM 7'-0" WALKING CLEARANCE BETWEEN THE TANKS.
- LADDER SHALL BE PROVIDED WITH A FALL PREVENTION SYSTEM AS REQUIRED IN SPECIFICATION SECTION 06 82 53.
- TANK MANUFACTURER SHALL INSTALL PRE-FORMED PIPE SUPPORTS FOR EXTERNAL TANK PIPING.
- CONTRACTOR SHALL ATTACH/SUPPORT PIPING ALONG WALLS AND CEILING USING BRACKETS AND SUPPORTS DETAILED ON SHEETS M-09 AND M-10. ALL PIPING SUPPORTS SHALL BE CHEMICALLY COMPATIBLE AS SPECIFIED IN SPECIFICATION SECTION 40 23 26.



SAN ANTONIO WATER SYSTEM



**WATER PRODUCTION FACILITIES  
DISINFECTION SYSTEM  
UPGRADES PROJECT**

NO.	DATE	ISSUED FOR	BY
2	08/07/14	ADDENDUM No. 2	SS

**COPYRIGHT:**

DATE: JULY 2014

PROJECT NO.: 12-6004

FILE NAME: 02196020-M04

DESIGNED BY: M. GIARAMITA

DRAWN BY: J. ARNOLD

CHECKED BY: S. SUE

**SHEET TITLE**

**MECHANICAL**

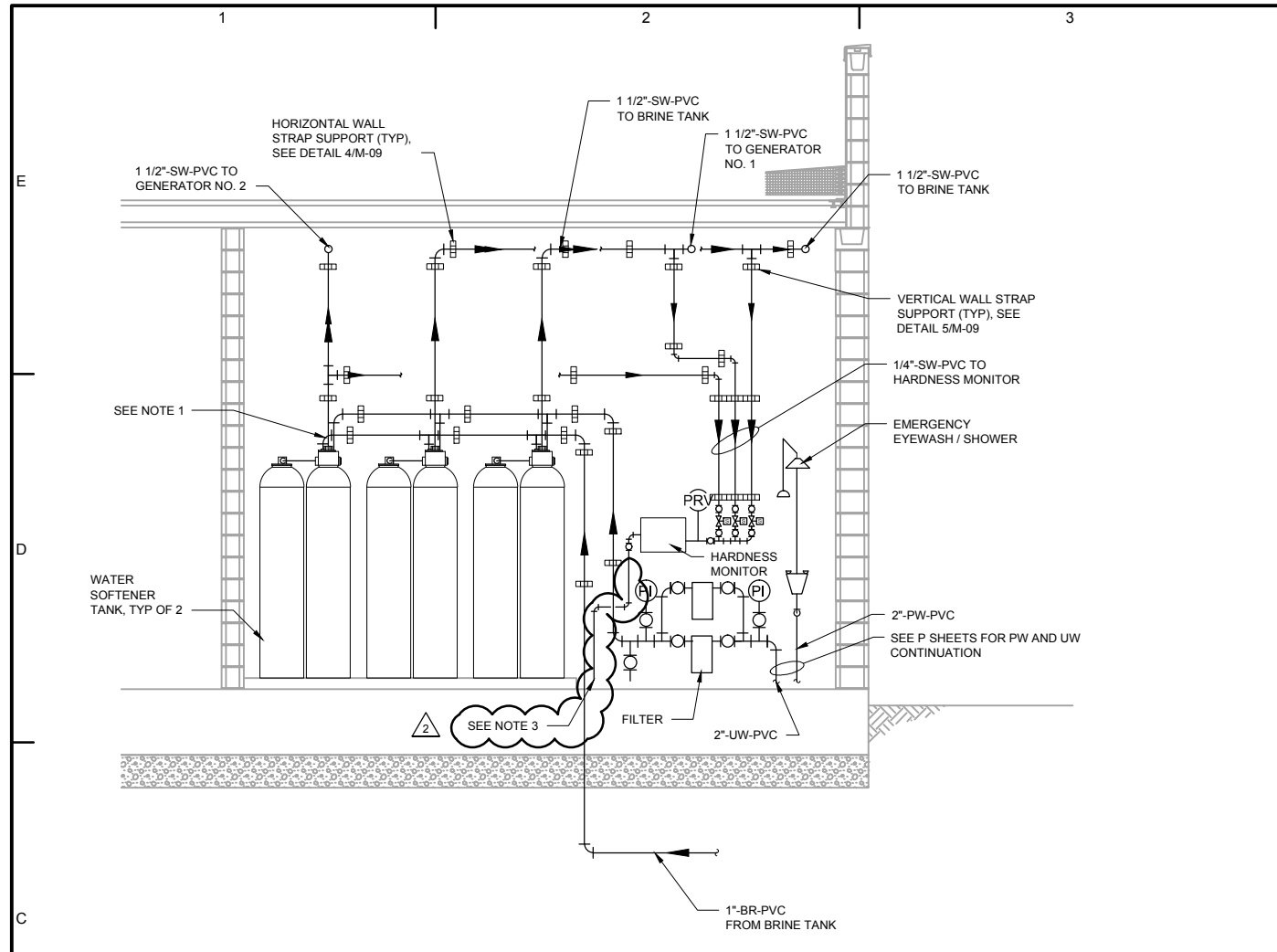
**OSHG SYSTEM  
FACILITY SECTIONS -  
WURZBACH SITE**

SCALE: 1/4" = 1'-0"

SHEET **M-04**  
30 OF 125

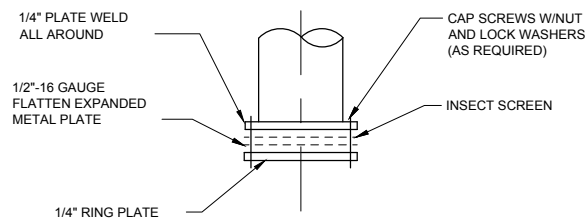
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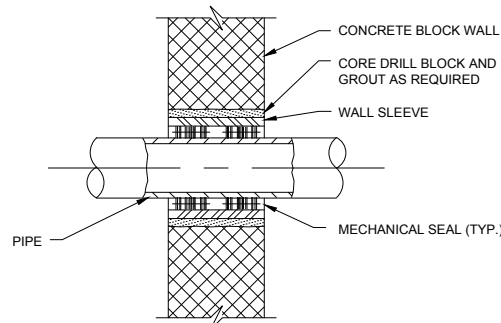


**1 SECTION (TYP)**  
M-05 NOT TO SCALE

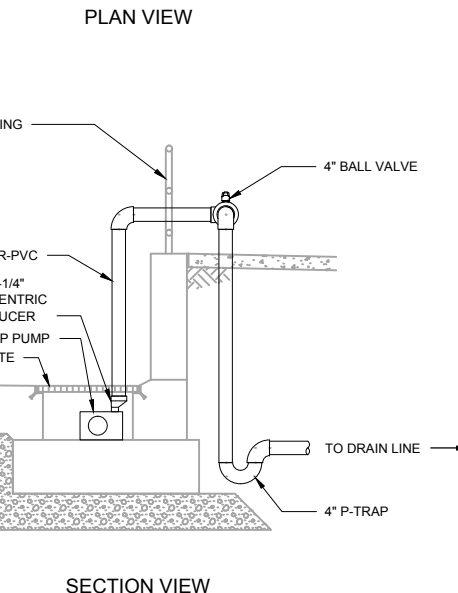
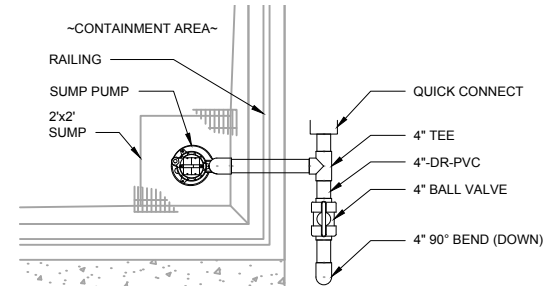
- NOTES:
- CONNECT PIPING TO WATER SOFTENERS WITH TRUE UNIONS TO ALLOW FOR EASY DISCONNECTIONS FOR INSTALLATION AND MAINTENANCE.
  - CONTRACTOR SHALL ATTACH/SUPPORT PIPING ON WALLS AND CEILING USING BRACKETS AND SUPPORTS DETAILED ON SHEETS M-09 AND M-10. ALL PIPE SUPPORTS SHALL BE CHEMICALLY COMPATIBLE AS SPECIFIED IN SPECIFICATION SECTION 40.23.26.
  - HARD PIPE HARDNESS MONITOR TO HUB DRAIN. REFER TO P-SHEETS FOR HUB DRAIN LOCATION AND DETAIL.



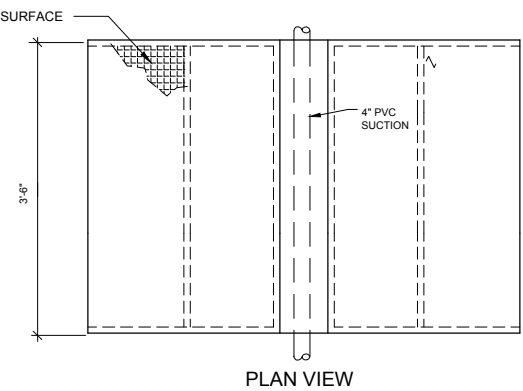
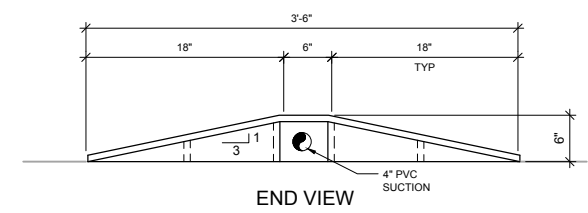
**TYPICAL INSECT SCREEN DETAIL**  
**3 DETAIL**  
M-05 NOT TO SCALE



TYPE 3 - MECHANICAL SEAL REQUIRED ON BOTH FACES  
TYPE 4 - MECHANICAL SEAL REQUIRED ON ONE FACE  
**WALL SLEEVE**  
**4 DETAIL**  
M-05

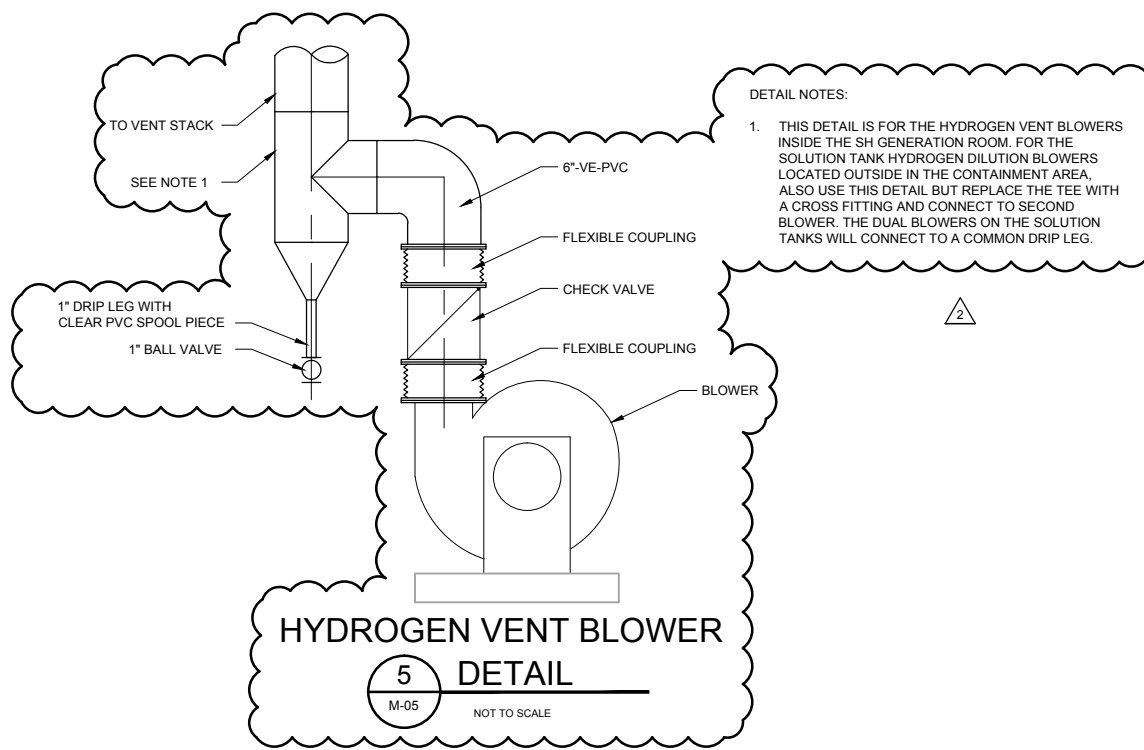


**SUMP PUMP**  
**1 DETAIL**  
M-05 NOT TO SCALE



**PIPE CROSSOVER**  
**2 DETAIL**  
M-05 NOT TO SCALE

- DETAIL NOTES:
- PIPE CROSSOVER PLATFORM SHALL BE FABRICATED FOR FRP SHAPES AND PLATES IN ACCORDANCE WITH THE REQUIREMENTS OF SPECIFICATIONS SECTION 06 82 53. DESIGN LL=100 PSF.
  - FIELD VERIFY ALL DIMENSIONS, INCLUDING CHANNEL DEPTH AND AVAILABLE RAMP WIDTH, WITH APPROVED PIPING SHOP DRAWINGS PRIOR TO FABRICATION.
  - COLOR SHALL BE SAFETY YELLOW. ADD IN BLACK LETTERS: "100 PSF CAPACITY"



**HYDROGEN VENT BLOWER**  
**5 DETAIL**  
M-05 NOT TO SCALE

- DETAIL NOTES:
- THIS DETAIL IS FOR THE HYDROGEN VENT BLOWERS INSIDE THE SH GENERATION ROOM. FOR THE SOLUTION TANK HYDROGEN DILUTION BLOWERS LOCATED OUTSIDE IN THE CONTAINMENT AREA, ALSO USE THIS DETAIL BUT REPLACE THE TEE WITH A CROSS FITTING AND CONNECT TO SECOND BLOWER. THE DUAL BLOWERS ON THE SOLUTION TANKS WILL CONNECT TO A COMMON DRIP LEG.



SAN ANTONIO WATER SYSTEM



WATER PRODUCTION FACILITIES  
DISINFECTION SYSTEM  
UPGRADES PROJECT

NO.	DATE	ISSUED FOR	BY
2	08/07/14	ADDENDUM No. 2	SS

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DATE: JULY 2014

PROJECT NO.: 12-6004

FILE NAME: 02196020-M05

DESIGNED BY: M. GIARAMITA

DRAWN BY: J. ARNOLD

CHECKED BY: S. SUE

SHEET TITLE  
**MECHANICAL**

**OSHG SYSTEM FACILITY SECTION AND DETAILS**

SCALE: 1/4" = 1'-0"

SHEET **M-05**  
31 OF 125

User: gbulnera Spec: PIRNIE STANDARD File: C:\CADD\CAD\PROJ\02196020 - SAN ANTONIO WATER SYSTEM - SAN ANTONIO WATER SYSTEM - SAN ANTONIO WATER SYSTEM Scale: 1:1 Date: 08/06/2014 Time: 11:03 Layout: M05