

CITY OF DENTON, TEXAS  
**PECAN CREEK WATER RECLAMATION PLANT**  
RAW SEWAGE PUMP STATION NO. 2 HYDRAULIC IMPROVEMENTS

JANUARY 2017

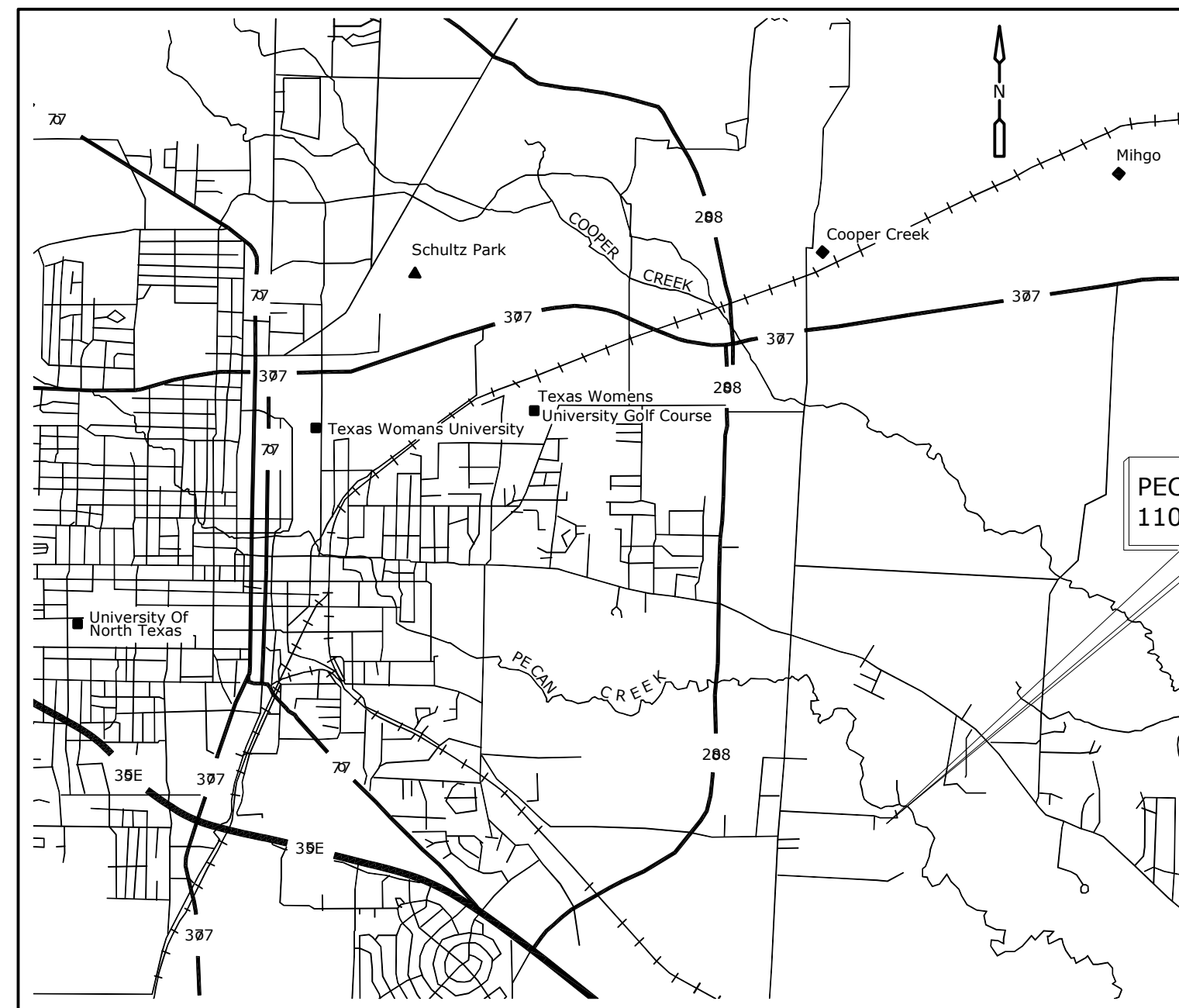
CITY COUNCIL  
CHRIS WATTS - MAYOR

COUNCIL MEMBERS  
KEVIN RODEN - DISTRICT 1  
KEELY BRIGGS - DISTRICT 2  
KATHLEEN WAZNY - DISTRICT 3  
JOEY HAWKINS - DISTRICT 4  
DALTON GREGORY  
GREG JOHNSON

PUBLIC UTILITIES BOARD  
LILIA CHAVEZ BYNUM  
BRENDAN CARROLL  
PHIL GALLIVAN  
RANDY ROBINSON  
SUSAN PARKER  
BARBARA RUSSELL  
CHARLES JACKSON

ASSISTANT CITY MANAGER OF UTILITIES  
HOWARD MARTIN

GENERAL MANAGER OF WASTEWATER UTILITIES  
P.S. ARORA



LOCATION MAP  
NOT TO SCALE

SHEET LIST:

- G-1 COVER SHEET
- C-1 YARD PIPING
- S-1 STRUCTURAL NOTES
- S-2 RSPS2 DEMOLITION PLANS AND SECTIONS
- S-3 RSPS2 PLANS AND SECTIONS
- S-4 RSPS2 DETAILS I
- S-5 RSPS2 DETAILS II
- M-1 RSPS2 EXISTING PLAN AND DEMOLITION
- M-2 RSPS2 UPPER AND LOWER PLANS
- M-3 RSPS2 SECTIONS
- M-4 TYPICAL DETAILS

\* RECORD DRAWINGS FOR REFERENCE USE ONLY

PREPARED BY:

**Hazen**

HAZEN AND SAWYER  
8350 N. CENTRAL EXPRESSWAY, SUITE 775  
DALLAS, TEXAS 75206  
TBPE FIRM RE. NO. F-13618



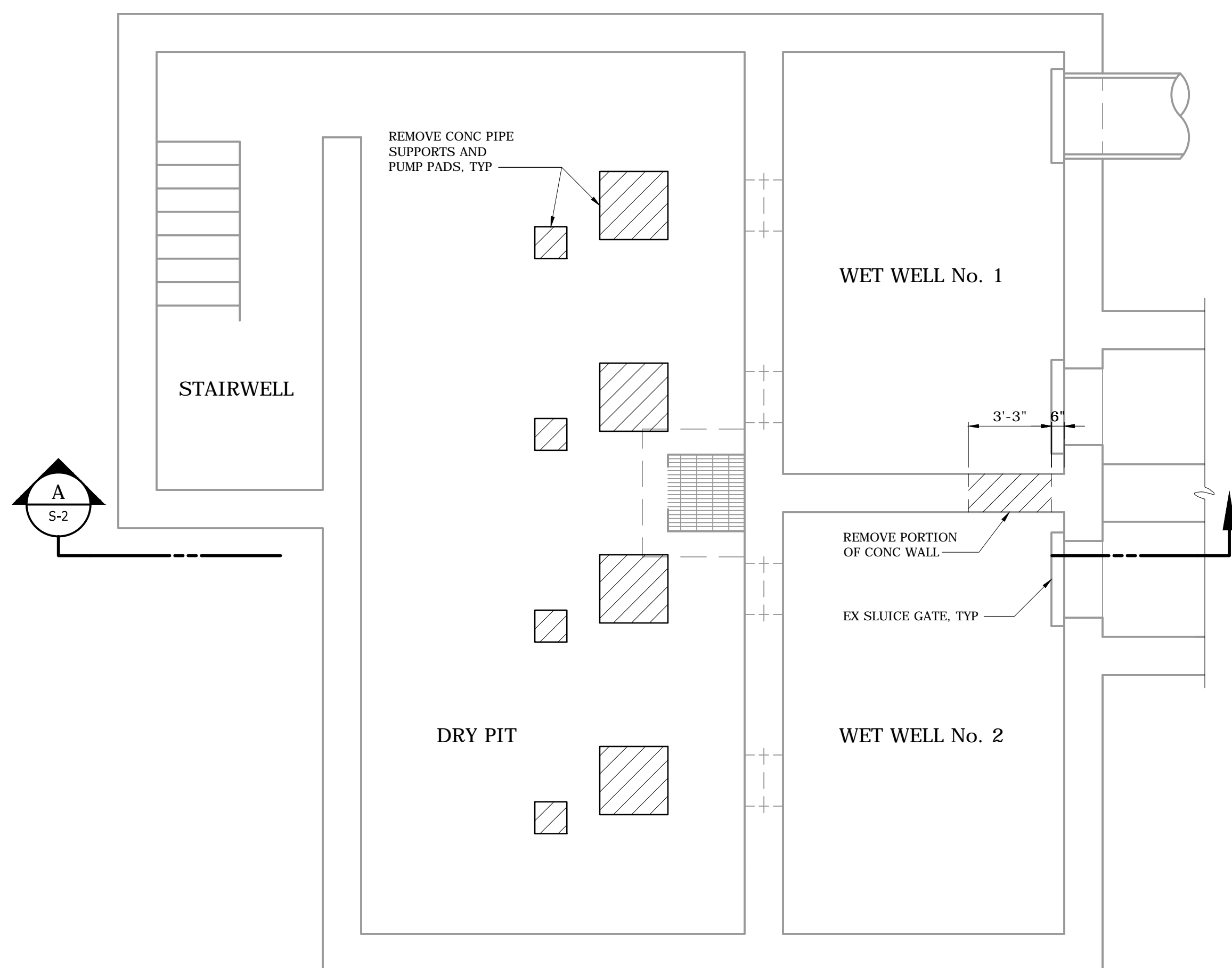




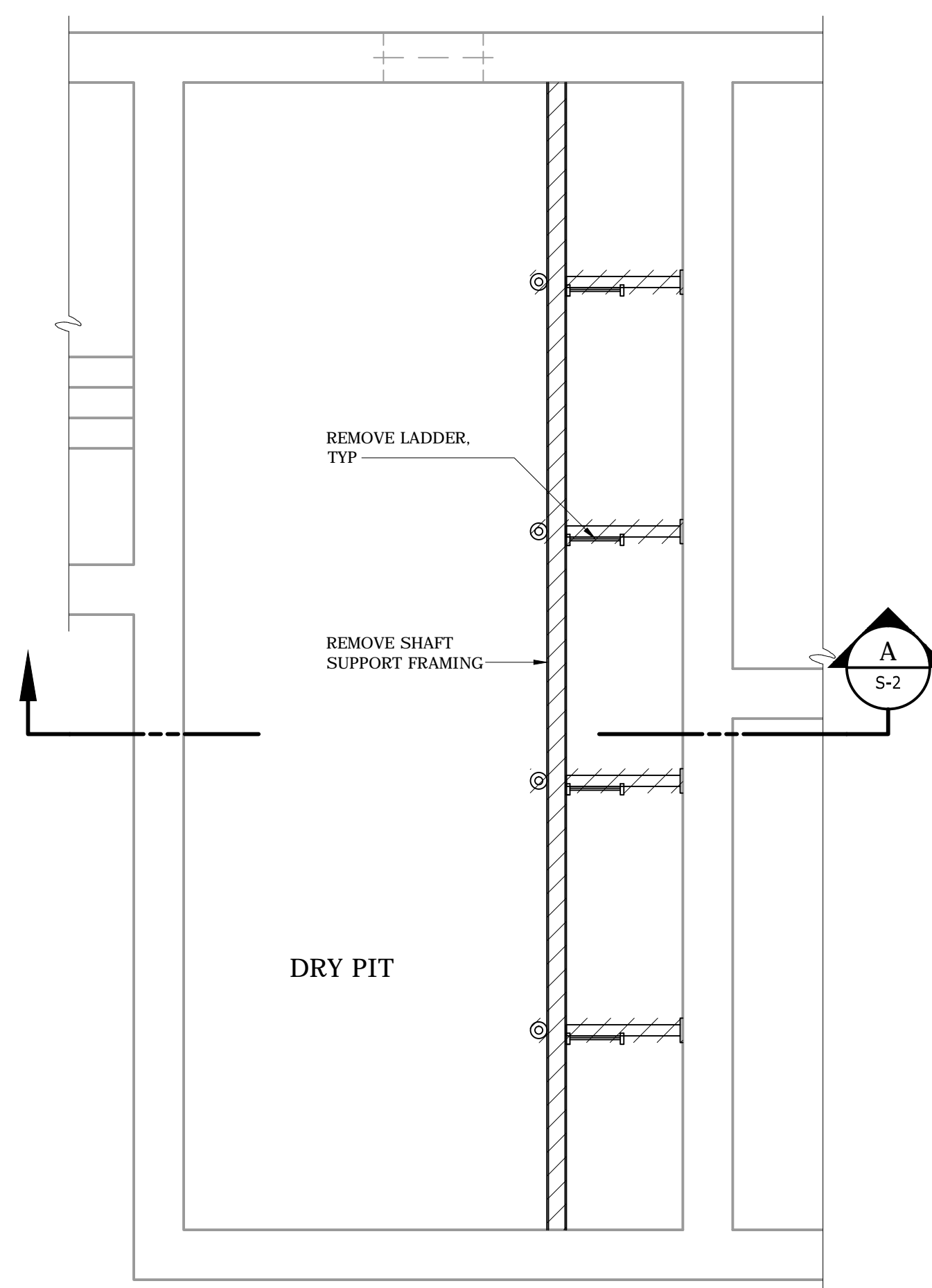


**NOTES:**

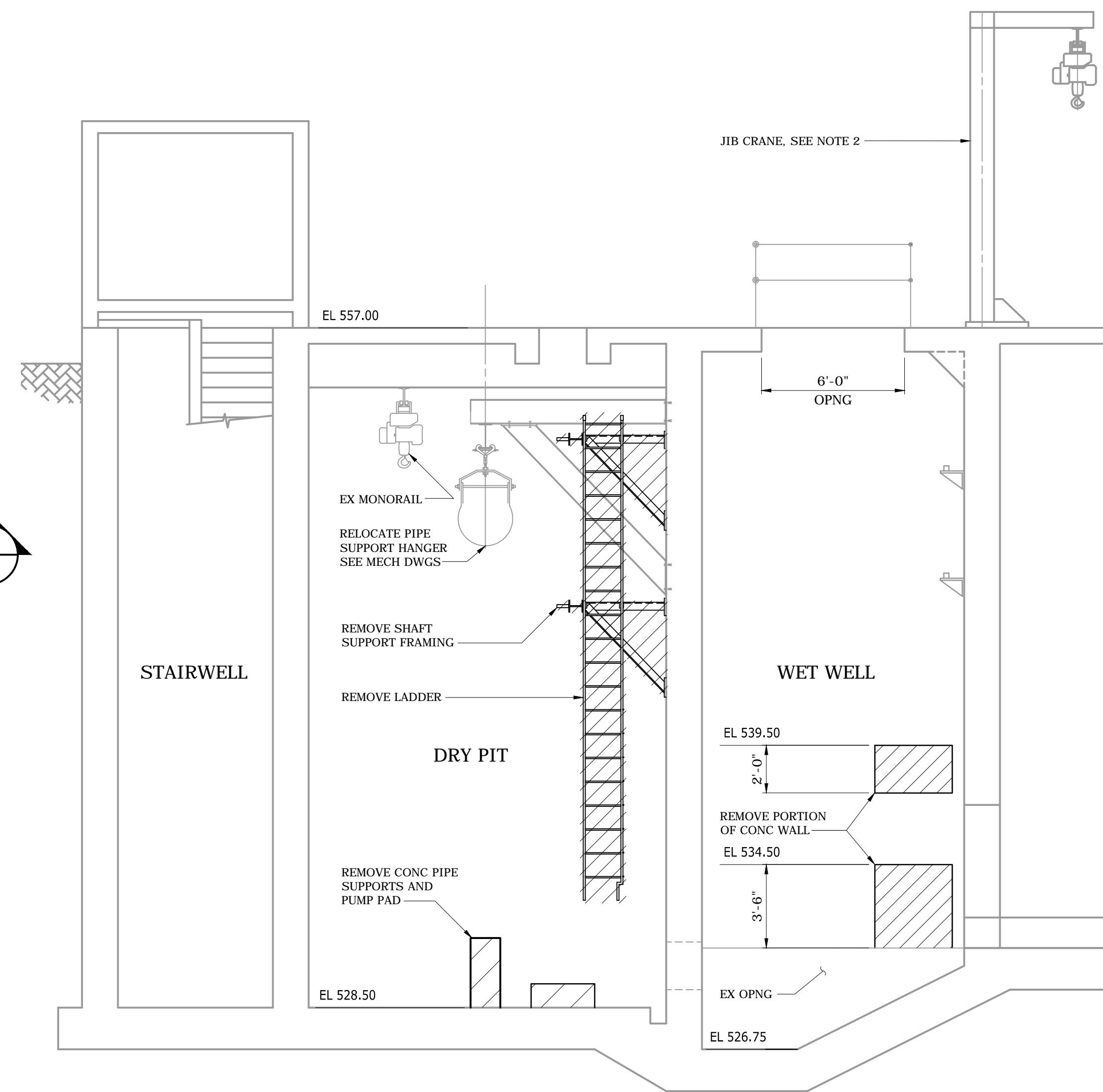
1. SEE DEMOLITION NOTES ON DRAWING S-1.
2. CONTRACTOR SHALL NOT USE EXISTING JIB CRANE.
3. CONTRACTOR IS RESPONSIBLE FOR THE STRUCTURAL INTEGRITY OF THE EXISTING RSPS2 PUMP STATION. HEAVY EQUIPMENT AND CRANES SHALL BE KEPT A MINIMUM OF 10 FEET AWAY FROM THE PUMP STATION'S EXTERIOR WALLS.



**DEMOLITION BOTTOM PLAN**  
1/4" = 1'-0"



**DEMOLITION INTERMEDIATE PLAN**  
1/4" = 1'-0"

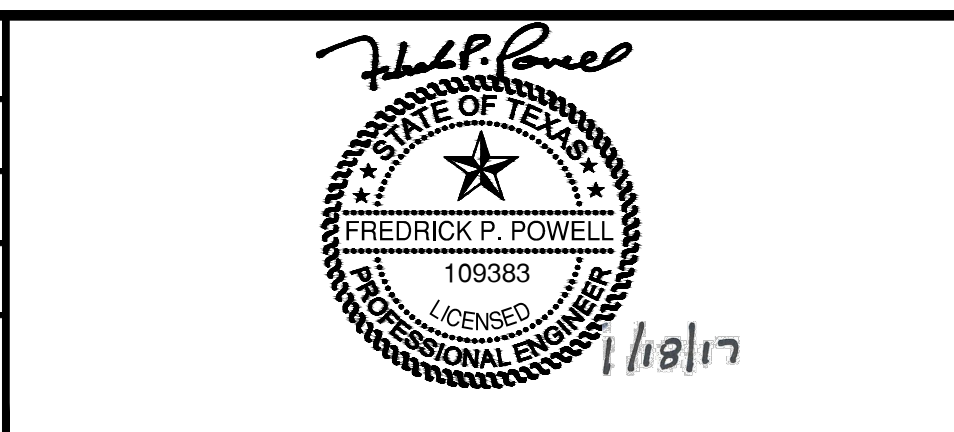


**SECTION A**  
1/4" = 1'-0"

PLOT DATE: 2017/01/19 10:58:27 AM  
 FILE: S:\2017\60702\RAW\DWG\S-2.dwg  
 User: GJOHNSON  
 Plotted By: GJOHNSON  
 Scale Date: 2017/01/19 8:42 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. MILLER
DESIGNED BY:	F. POWELL
DRAWN BY:	F. POWELL
CHECKED BY:	C. PHILLIPS
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 	



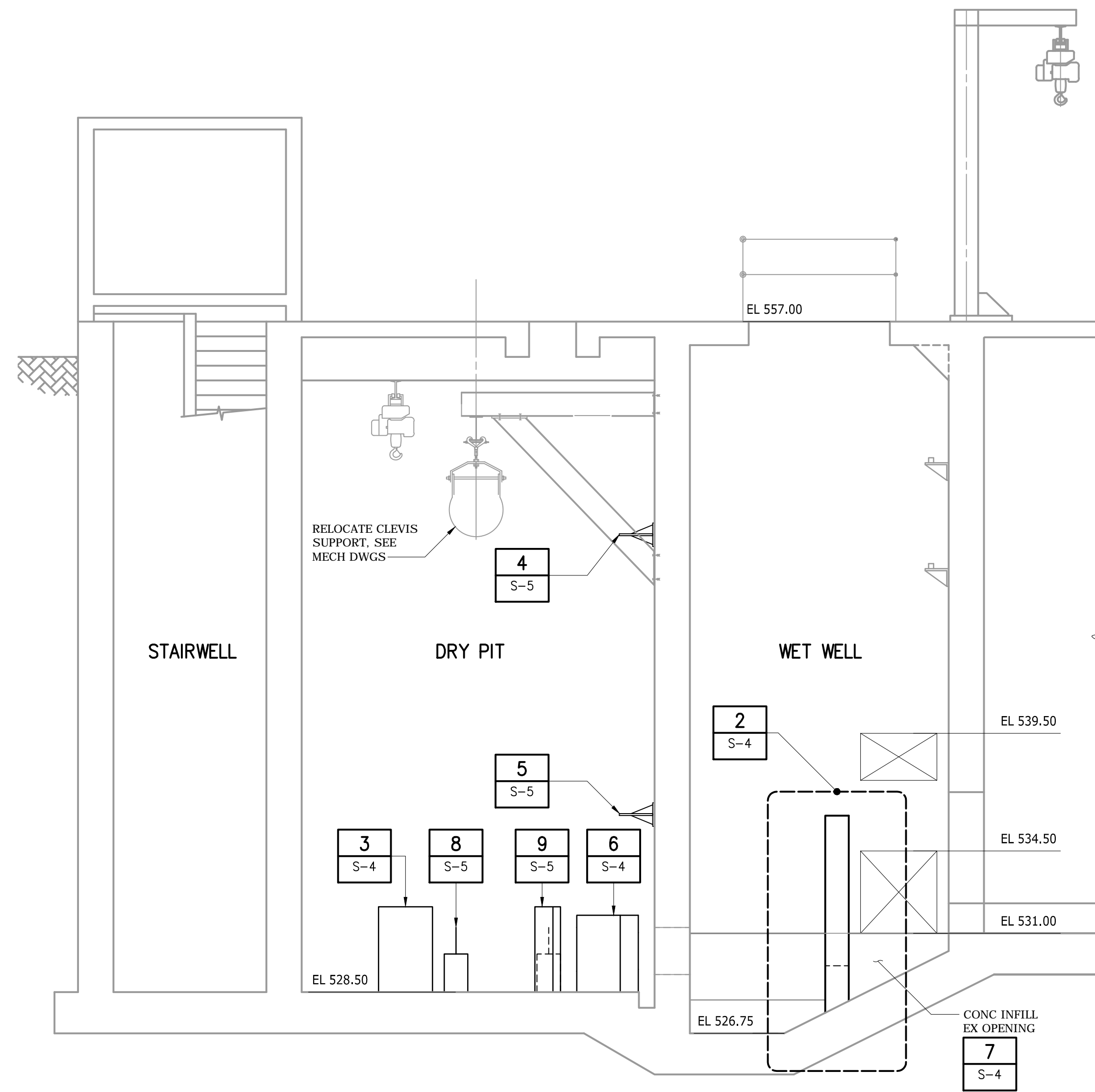
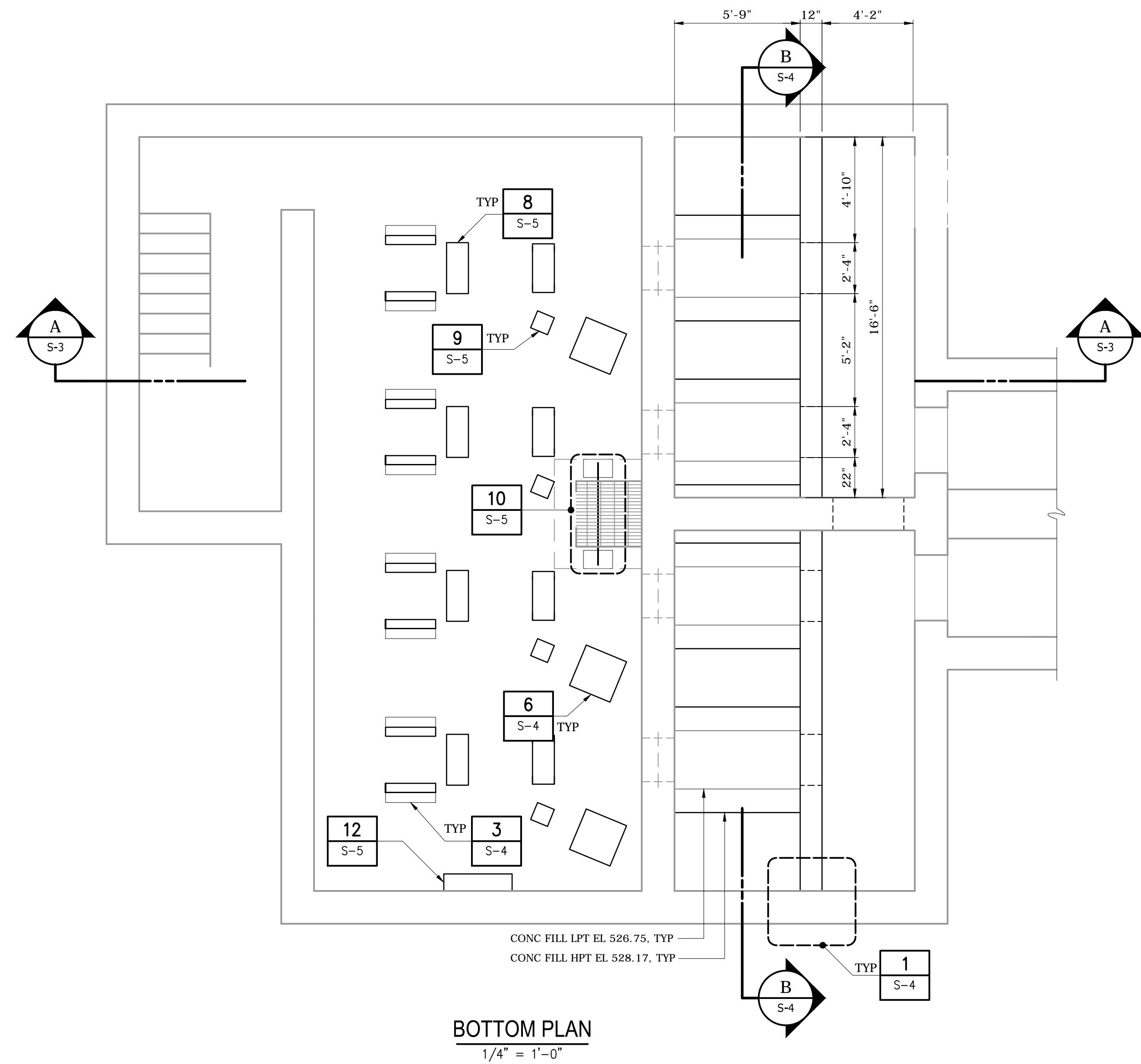
**Hazen**  
 HAZEN AND SAWYER  
 8350 N. CENTRAL EXPRESSWAY, SUITE 775  
 DALLAS, TEXAS 75206  
 TBPE FIRM REG. NO. F-13618

CITY OF DENTON, TEXAS  
 PECAN CREEK WATER RECLAMATION PLANT  
 RAW SEWAGE PUMP STATION NO. 2  
 HYDRAULIC IMPROVEMENTS

STRUCTURAL  
 RSPS2 DEMOLITION  
 PLANS AND SECTIONS

DATE:	JANUARY 2017
HAZEN NO.:	60702-000
CONTRACT NO.:	5718
DRAWING NUMBER:	S-2



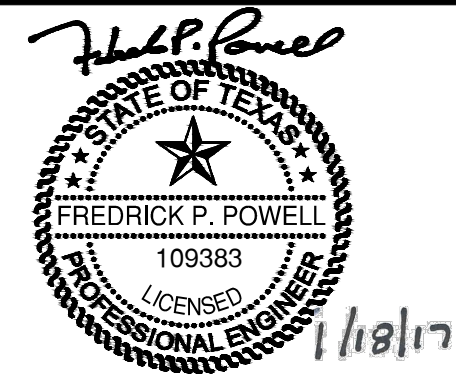
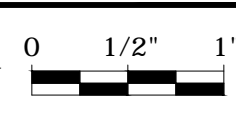


SECTION A  
1/4" = 1'-0"

PLOT DATE: 2017/01/19 10:56:36 AM  
 FILE: S:\Projects\60702-000\Drawings\Structural\SPS2\SPS2\_S-3.dwg  
 User: CPhillips  
 Plotted By: CPhillips  
 Date: 2017/01/19 8:45 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: B. MILLER  
 DESIGNED BY: F. POWELL  
 DRAWN BY: F. POWELL  
 CHECKED BY: C. PHILLIPS  
 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE



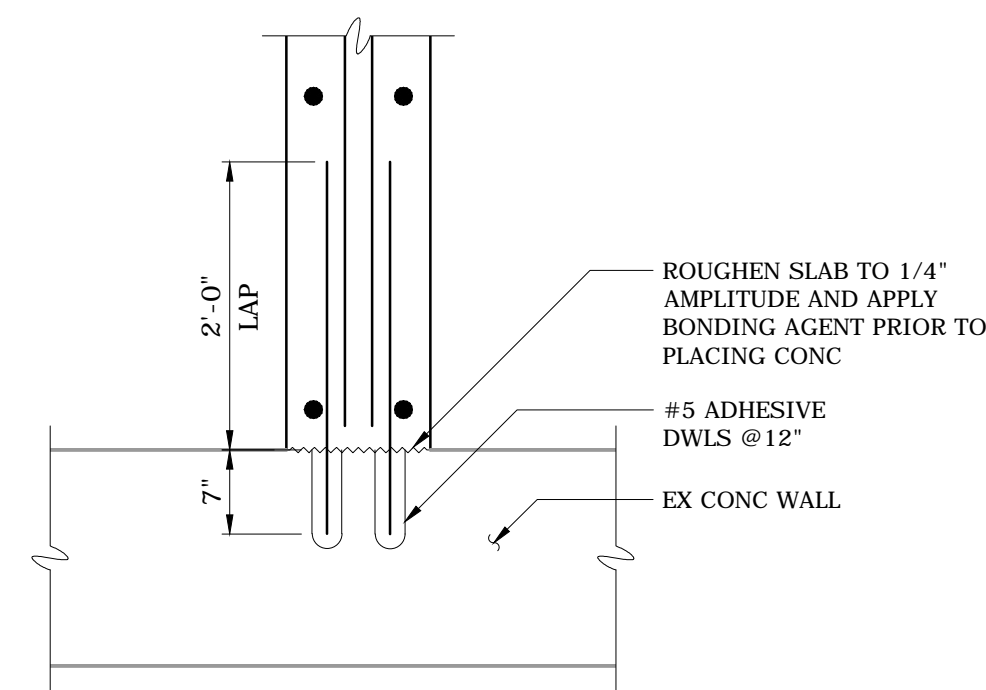
**Hazen**  
 HAZEN AND SAWYER  
 8350 N. CENTRAL EXPRESSWAY, SUITE 775  
 DALLAS, TEXAS 75206  
 TBPE FIRM REG. NO. F-13618

CITY OF DENTON, TEXAS  
 PECAN CREEK WATER RECLAMATION PLANT  
 RAW SEWAGE PUMP STATION NO. 2  
 HYDRAULIC IMPROVEMENTS

STRUCTURAL  
 RSPS2  
 PLANS AND SECTIONS

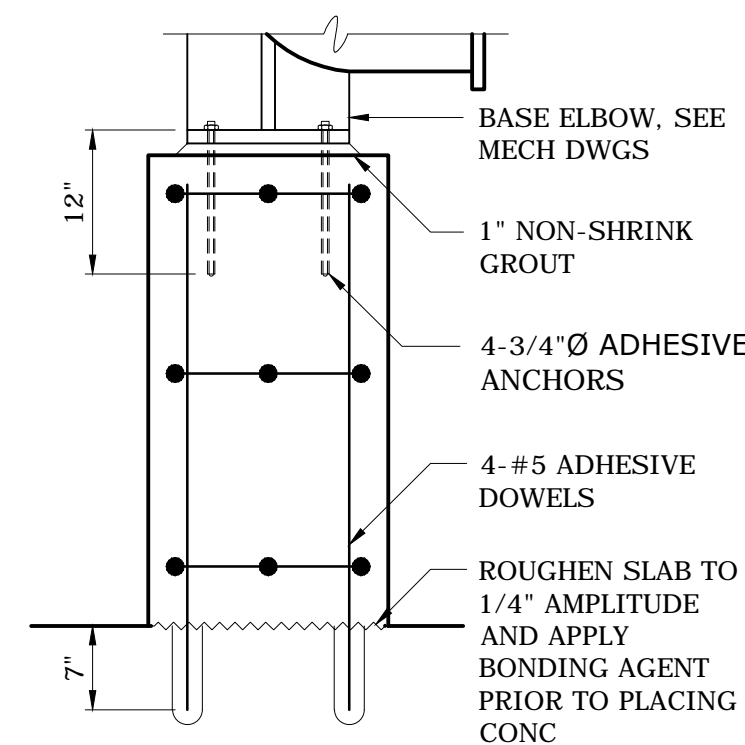
DATE:	JANUARY 2017
HAZEN NO.:	60702-000
CONTRACT NO.:	5718
DRAWING NUMBER:	S-3

**NOTES:**  
 1. PRIOR TO FABRICATION OF THE SPLITTER VANE, FIELD MEASURE THE VERTICAL CLEARANCE BETWEEN THE SUCTION ELBOW AND THE FLOOR. PROVIDE ENGINEER THE FIELD MEASUREMENTS WITH THE SPLITTER VANE SHOP DRAWING SUBMITTAL.

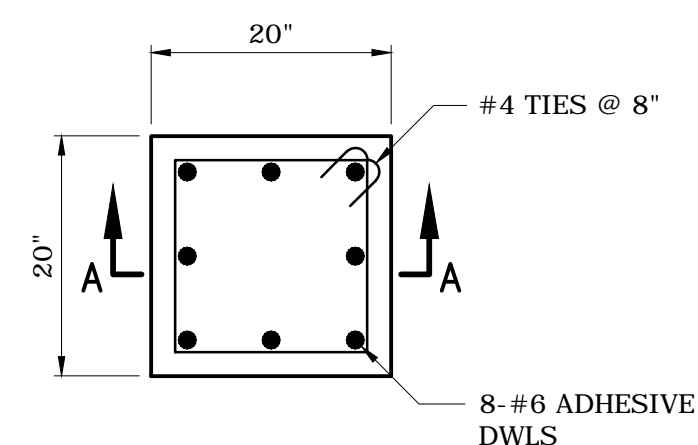


BAFFLE WALL END

DETAIL	1
3/4" = 1'-0"	S-3

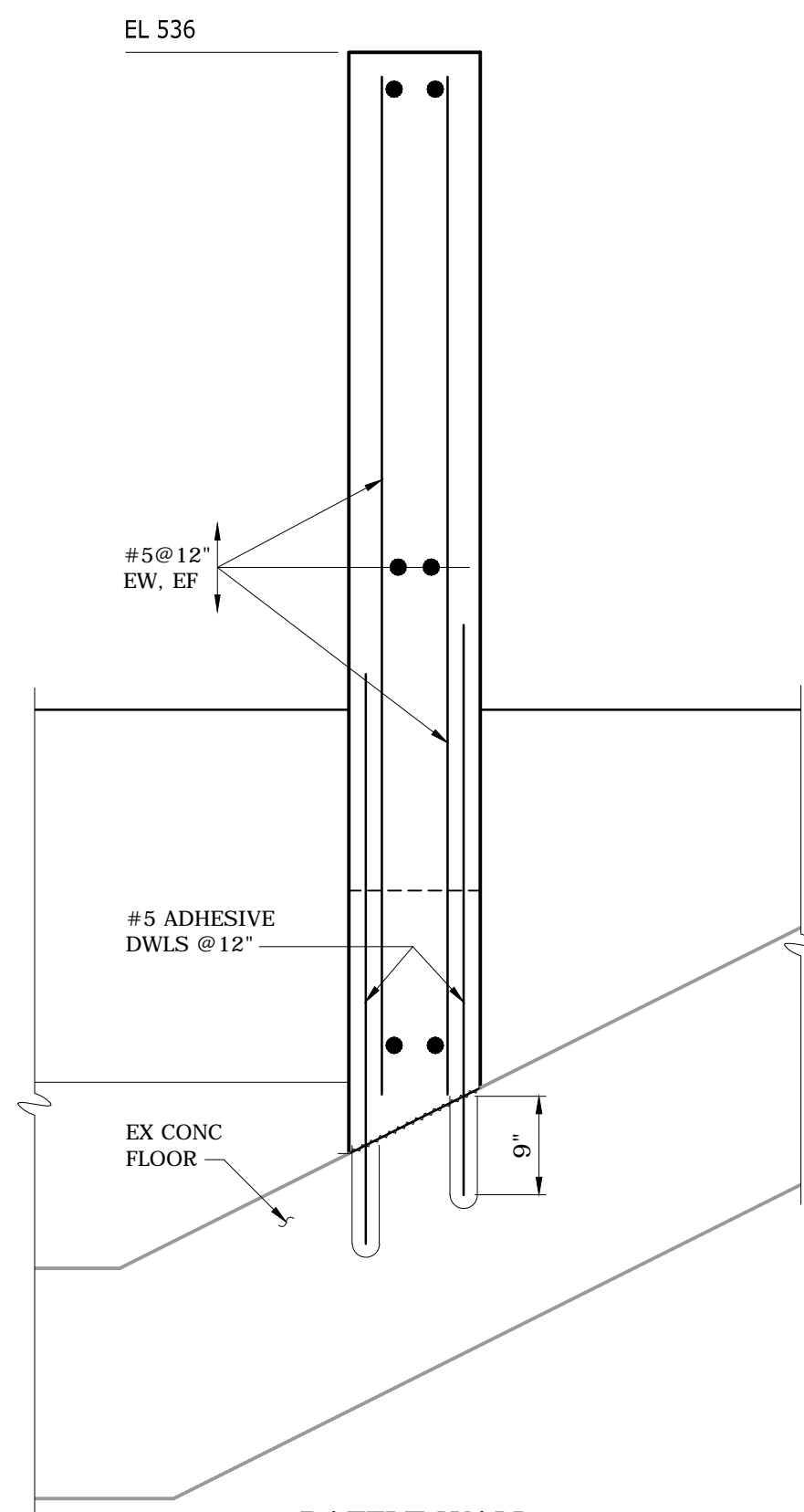


SECTION A-A



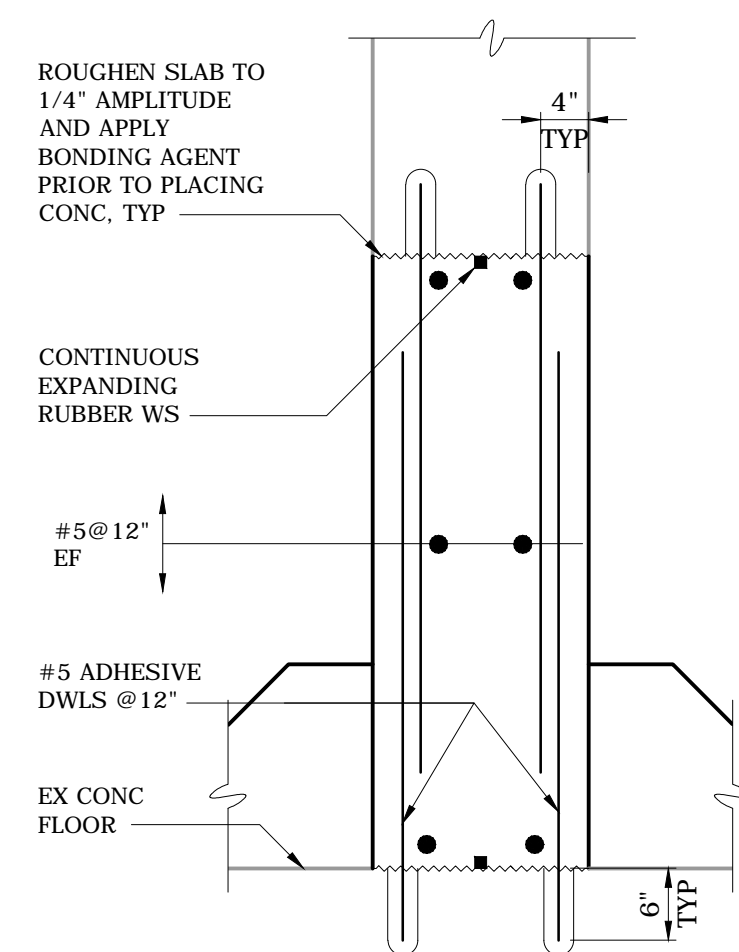
PIPE BASE ELBOW SUPPORT

DETAIL	6
3/4" = 1'-0"	S-3



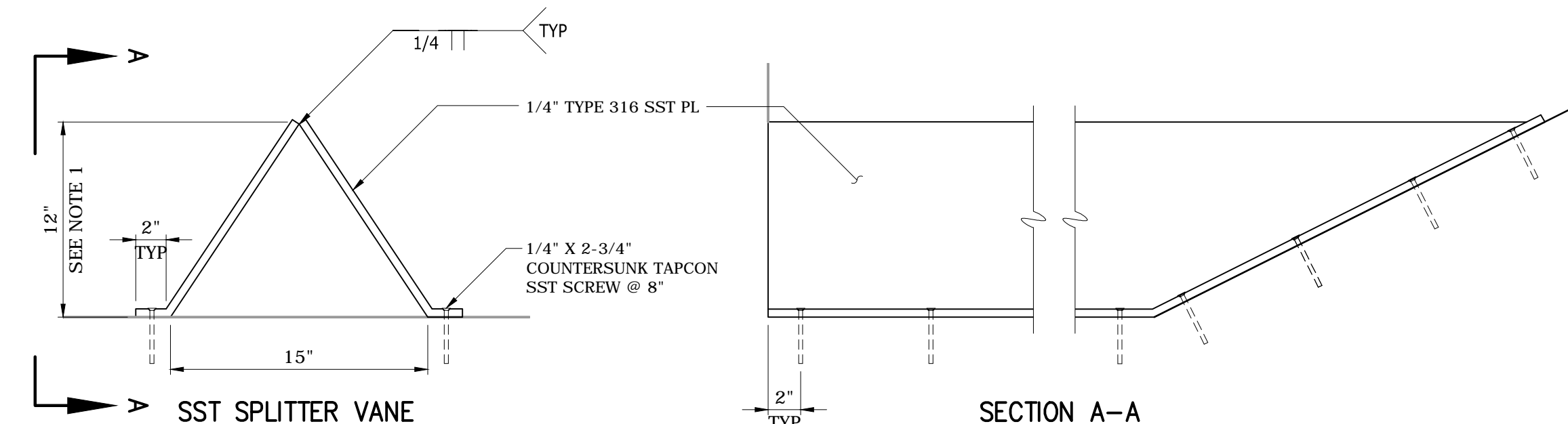
BAFFLE WALL

DETAIL	2
3/4" = 1'-0"	S-3



DIVISION WALL INFILL

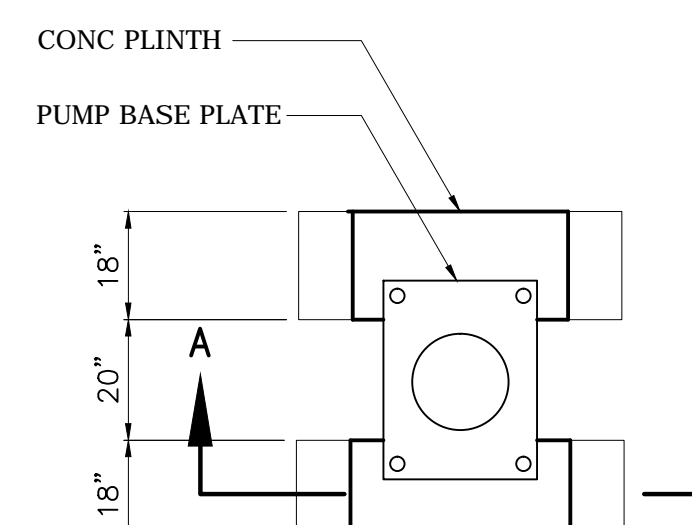
DETAIL	7
3/4" = 1'-0"	S-3



SST SPLITTER VANE

SECTION A-A

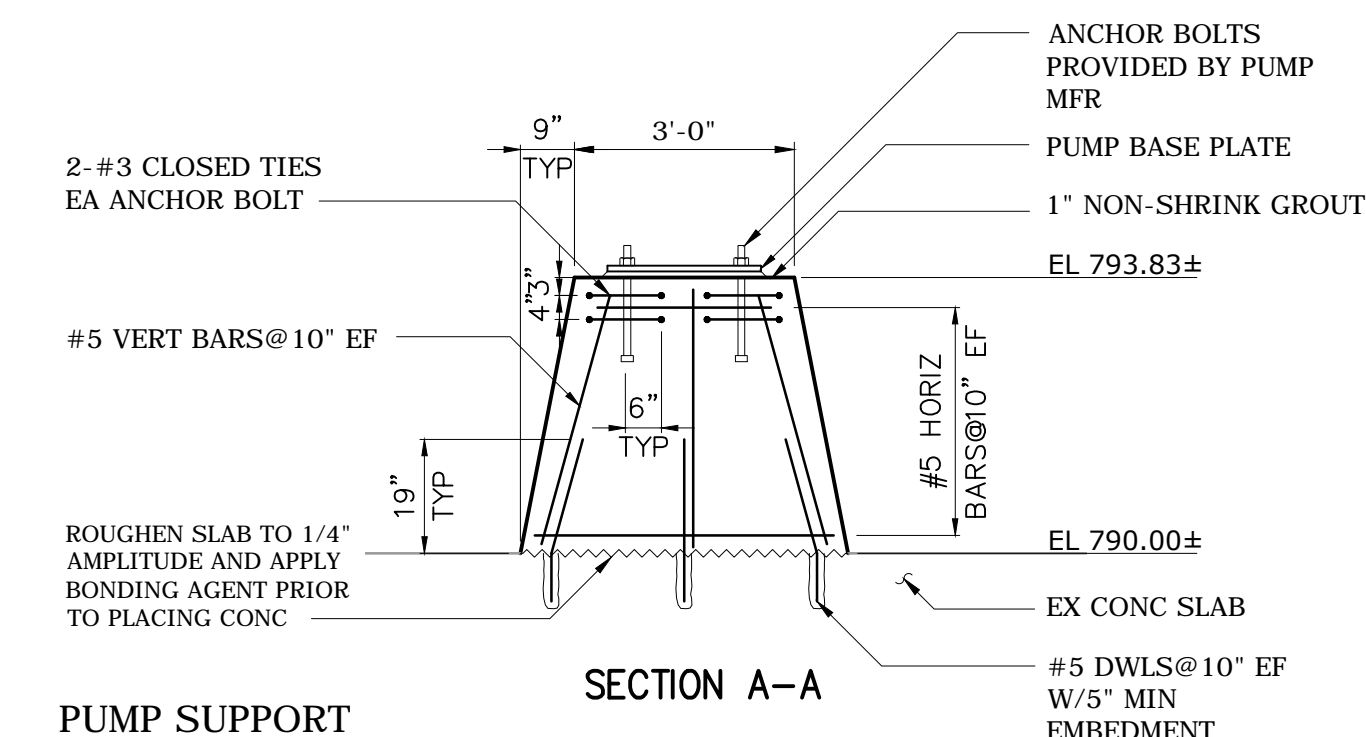
DETAIL	11
1 1/2" = 1'-0"	S-4



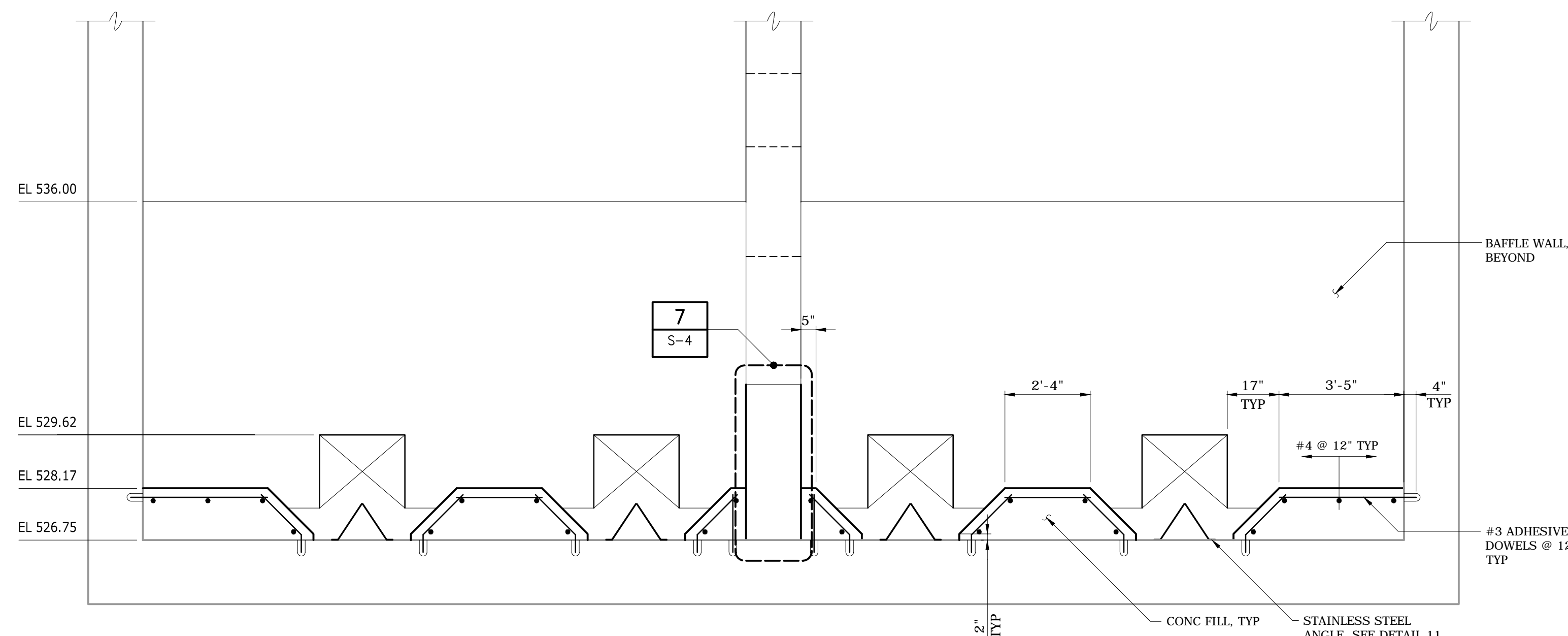
TOP PLAN

PUMP SUPPORT

DETAIL	3
3/8" = 1'-0"	S-3



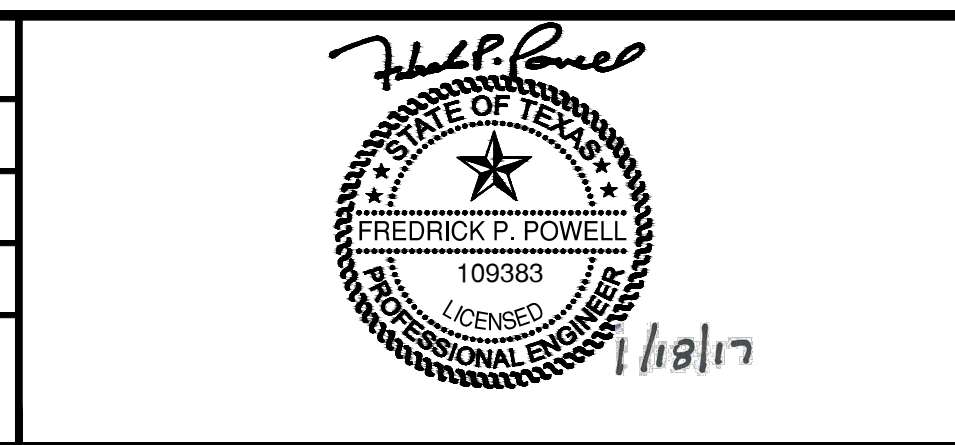
SECTION A-A



SECTION B  
3/8" = 1'-0"

PLOT DATE: 2017/01/19 10:50:11 AM  
 FILE: S:\Projects\2017\2017-01-19\2017-01-19\DWG\SS\Struct\SS-Struct\SS-Struct.dwg  
 User: fphillips  
 Plot Date: 2017/01/19 10:50:11 AM  
 Plot Name: S:\Projects\2017\2017-01-19\2017-01-19\DWG\SS\Struct\SS-Struct\SS-Struct.dwg  
 Plot Date: 2017/01/19 10:50:11 AM  
 Plot Name: S:\Projects\2017\2017-01-19\2017-01-19\DWG\SS\Struct\SS-Struct\SS-Struct.dwg

REV	ISSUED FOR	DATE	BY	PROJECT ENGINEER: B. MILLER
				DESIGNED BY: F. POWELL
				DRAWN BY: F. POWELL
				CHECKED BY: C. PHILLIPS
				IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE



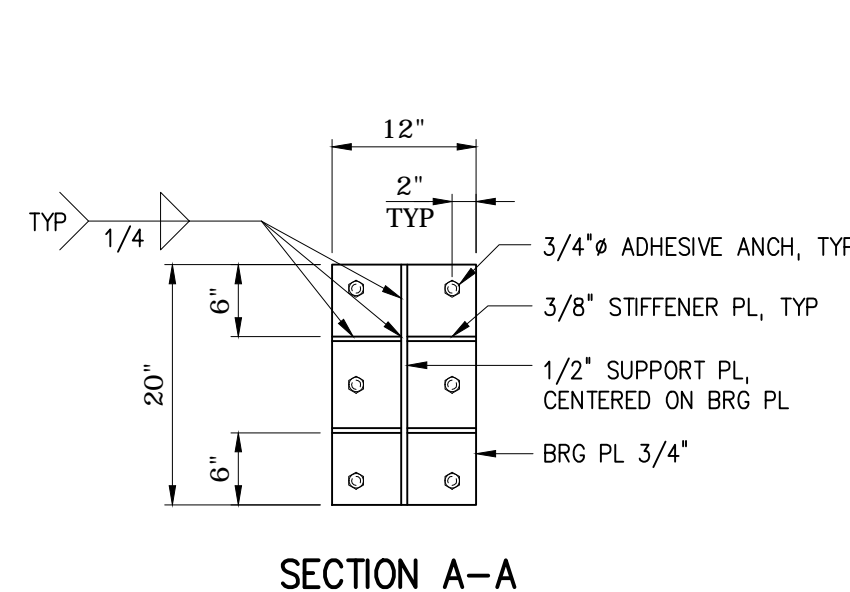
**Hazen**  
 HAZEN AND SAWYER  
 8350 N. CENTRAL EXPRESSWAY, SUITE 775  
 DALLAS, TEXAS 75206  
 TBPE FIRM REG. NO. F-13618

CITY OF DENTON, TEXAS  
 PECAN CREEK WATER RECLAMATION PLANT  
 RAW SEWAGE PUMP STATION NO. 2  
 HYDRAULIC IMPROVEMENTS

STRUCTURAL  
 RSPS2  
 DETAILS I

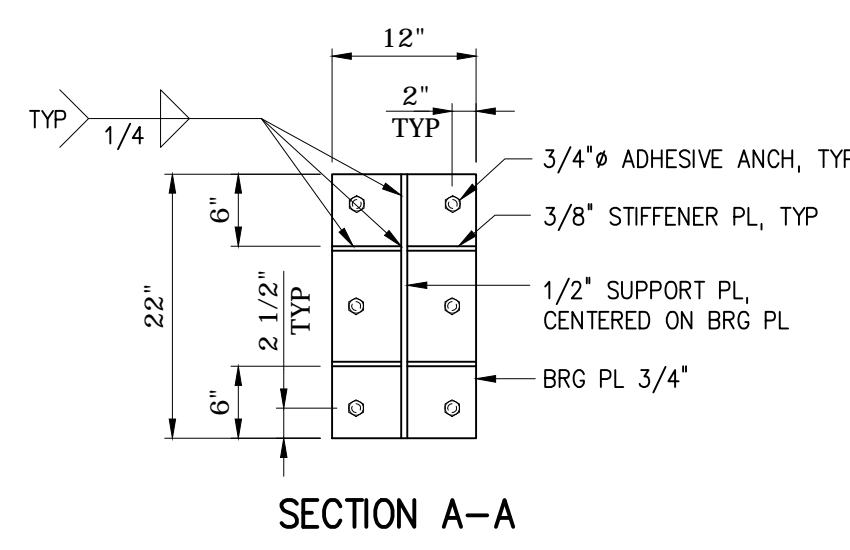
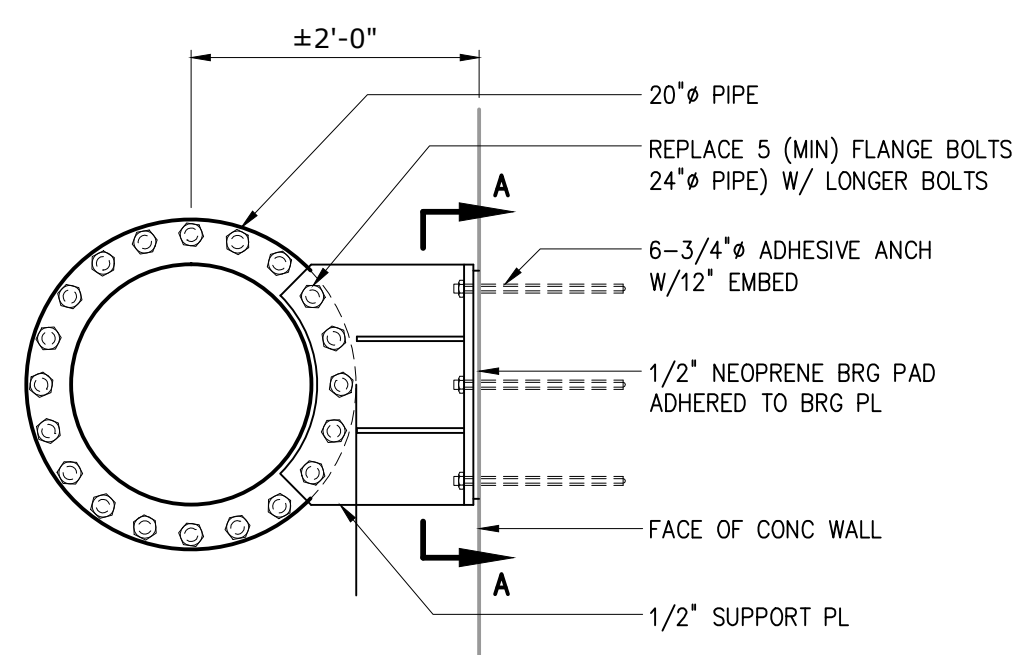
DATE:	JANUARY 2017
HAZEN NO.:	60702-000
CONTRACT NO.:	5718
DRAWING NUMBER:	S-4

NOTES:  
 1. PIPE SUPPORT, FASTENERS, AND ANCHOR RODS SHALL BE HOT DIPPED GALVANIZED. SEE SPECIFICATION SECTION 05035



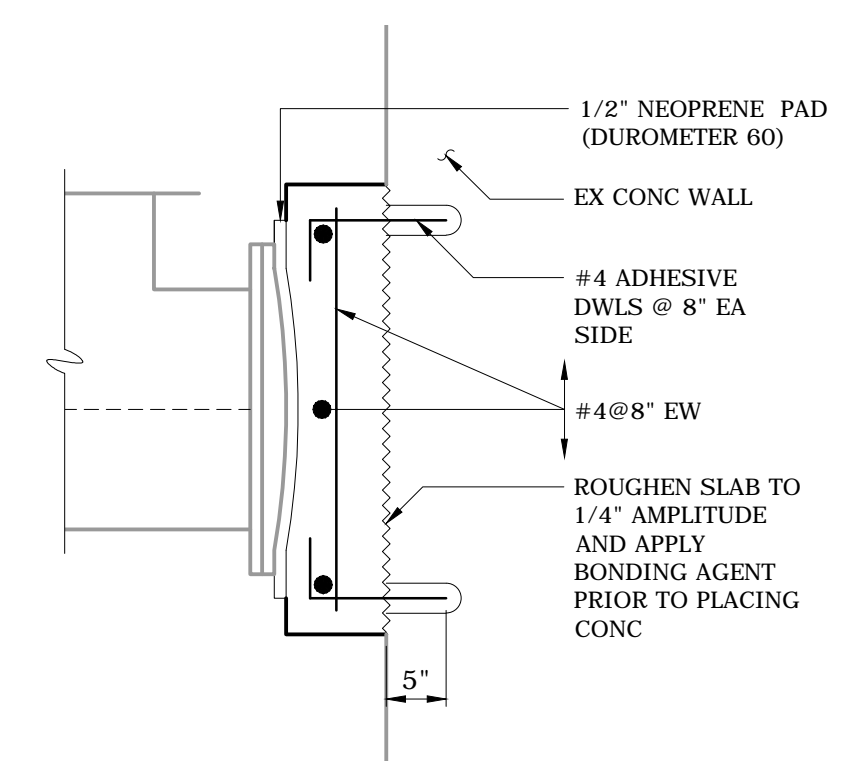
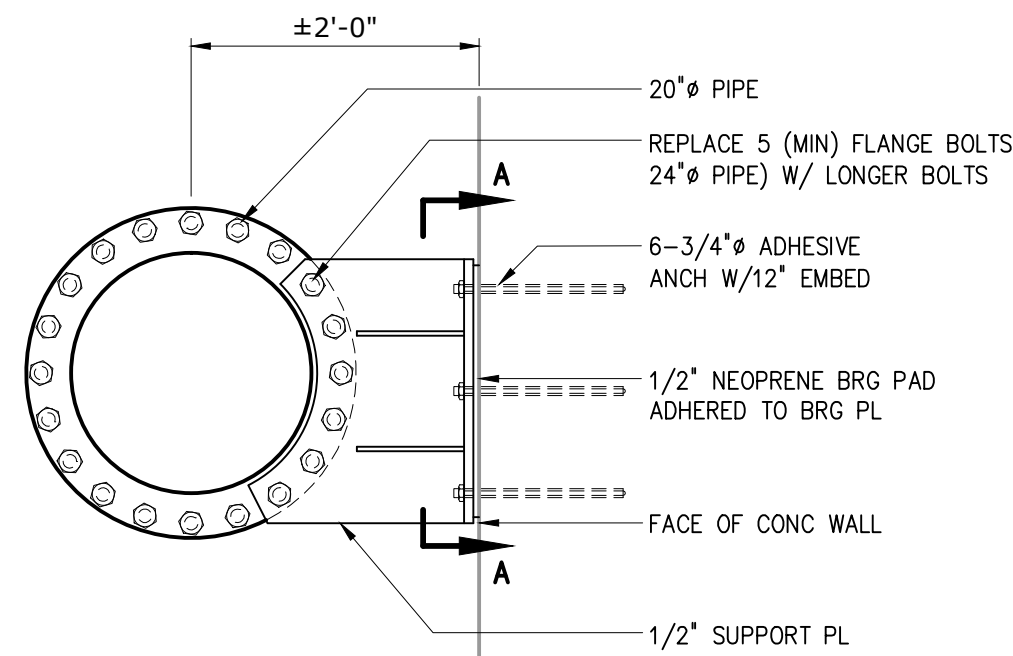
SECTION A-A

DETAIL 4  
 3/4" = 1'-0"

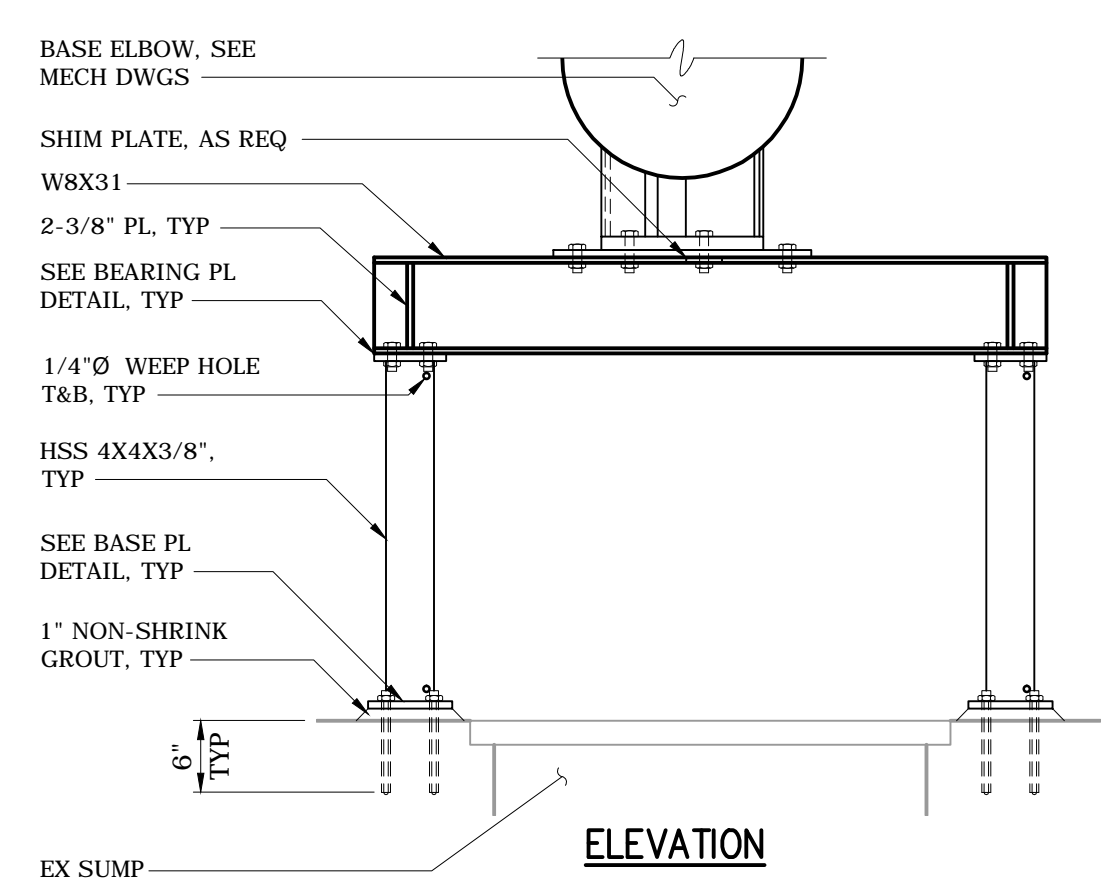


SECTION A-A

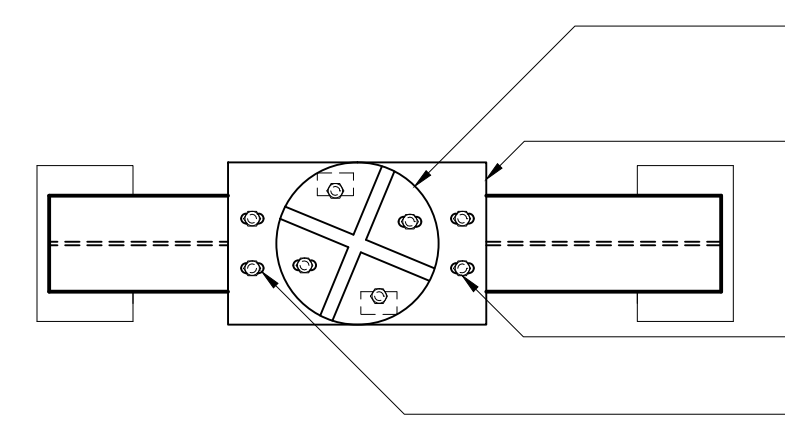
DETAIL 5  
 3/4" = 1'-0"



DETAIL 12  
 3/4" = 1'-0"

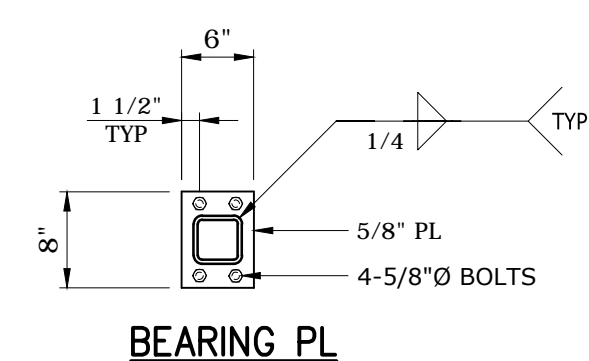


ELEVATION

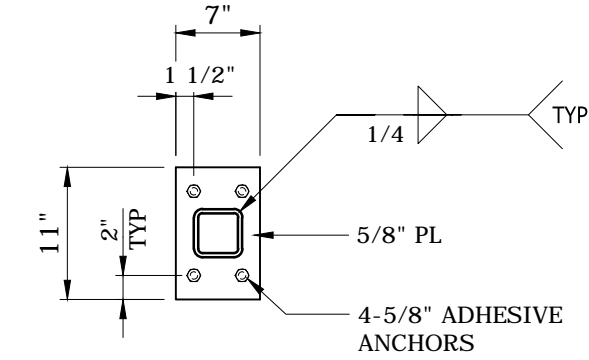


SUPPORT ABOVE SUMP

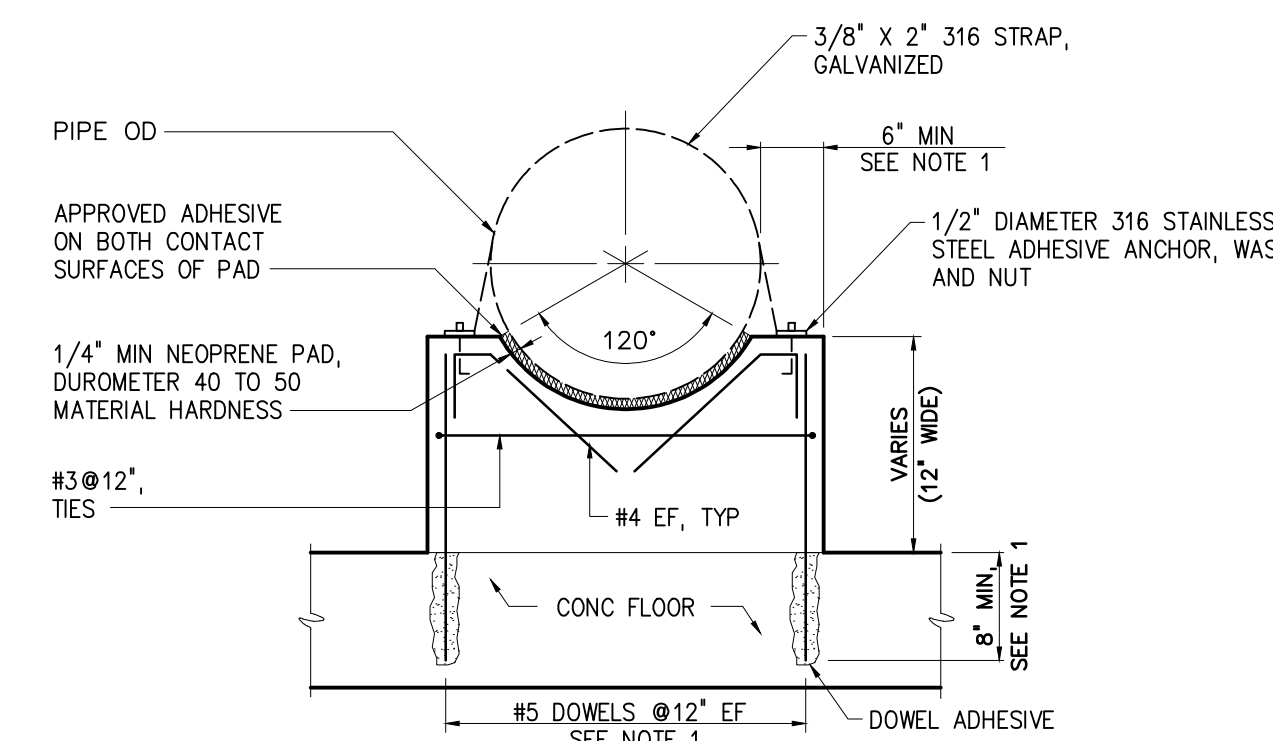
DETAIL 10  
 3/4" = 1'-0"



BEARING PL



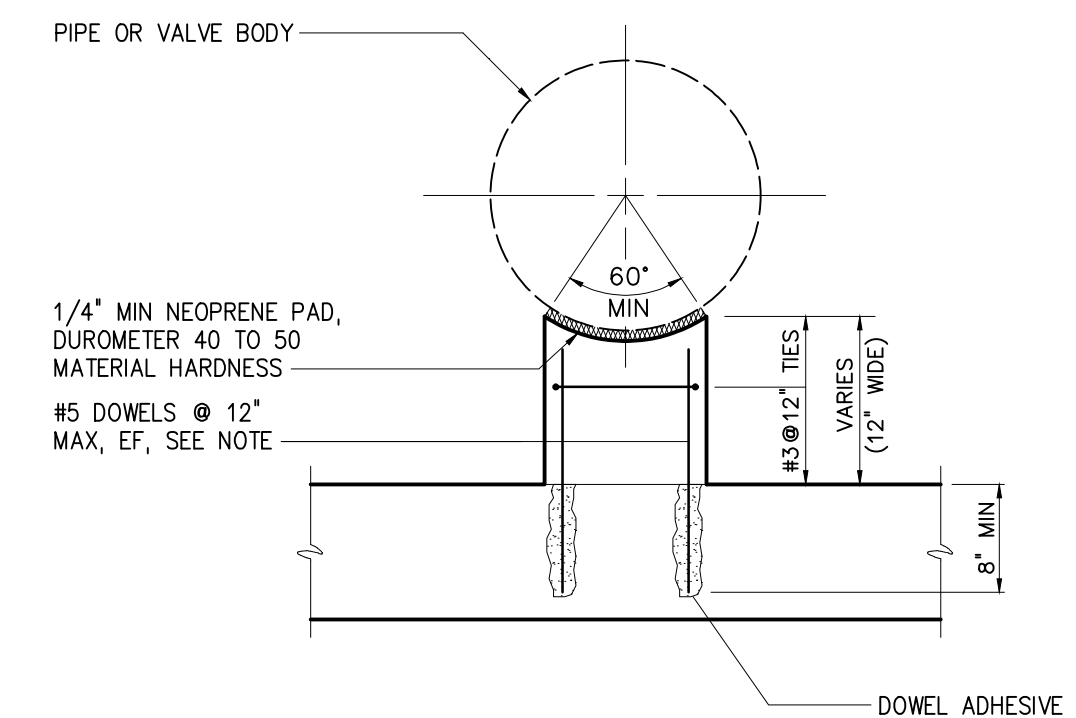
BASE PL



NOTES:  
 1. COORDINATE SUPPORT WIDTH WITH PIPE STRAP ANCHORAGE REQUIREMENTS. PROVIDE 6" MINIMUM, FROM CENTER OF PIPE STRAP ANCHOR ROD TO EDGE OF CONCRETE.

CRADLE PIPE/VALVE SUPPORT

DETAIL 8  
 NTS S-3



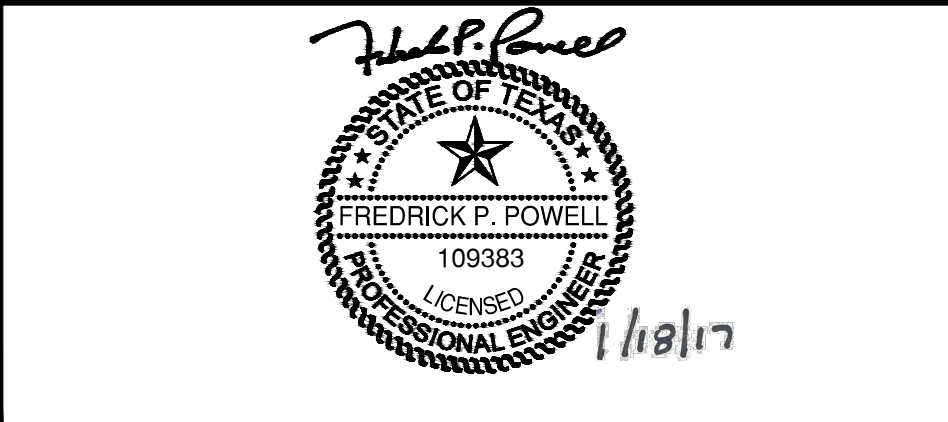
NOTES:  
 1. PIER SHALL BE MINIMUM 12" THICK EACH WAY HORIZONTALLY, AND SHALL BE SQUARE UNDER LARGE VALVE BODIES SUCH AS CHECK VALVES

PIER PIPE SUPPORT

DETAIL 9  
 NTS S-3

PLOT DATE: 2017/01/19 10:50:35 AM  
 FILE: S:\PROJECTS\2017\60702-000\STRUCT\DETAILS\DETAILS.dwg  
 User: GADJINDON  
 Scale: 1:1  
 Date: 2017/01/19 10:48 AM  
 Plotted by: GADJINDON

PROJECT ENGINEER:	B. MILLER		
DESIGNED BY:	F. POWELL		
DRAWN BY:	F. POWELL		
CHECKED BY:	C. PHILLIPS		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
REV	ISSUED FOR	DATE	BY



**Hazen**  
 HAZEN AND SAWYER  
 8350 N. CENTRAL EXPRESSWAY, SUITE 775  
 DALLAS, TEXAS 75206  
 TBPE FIRM REG. NO. F-13618

CITY OF DENTON, TEXAS  
 PECAN CREEK WATER RECLAMATION PLANT  
 RAW SEWAGE PUMP STATION NO. 2  
 HYDRAULIC IMPROVEMENTS

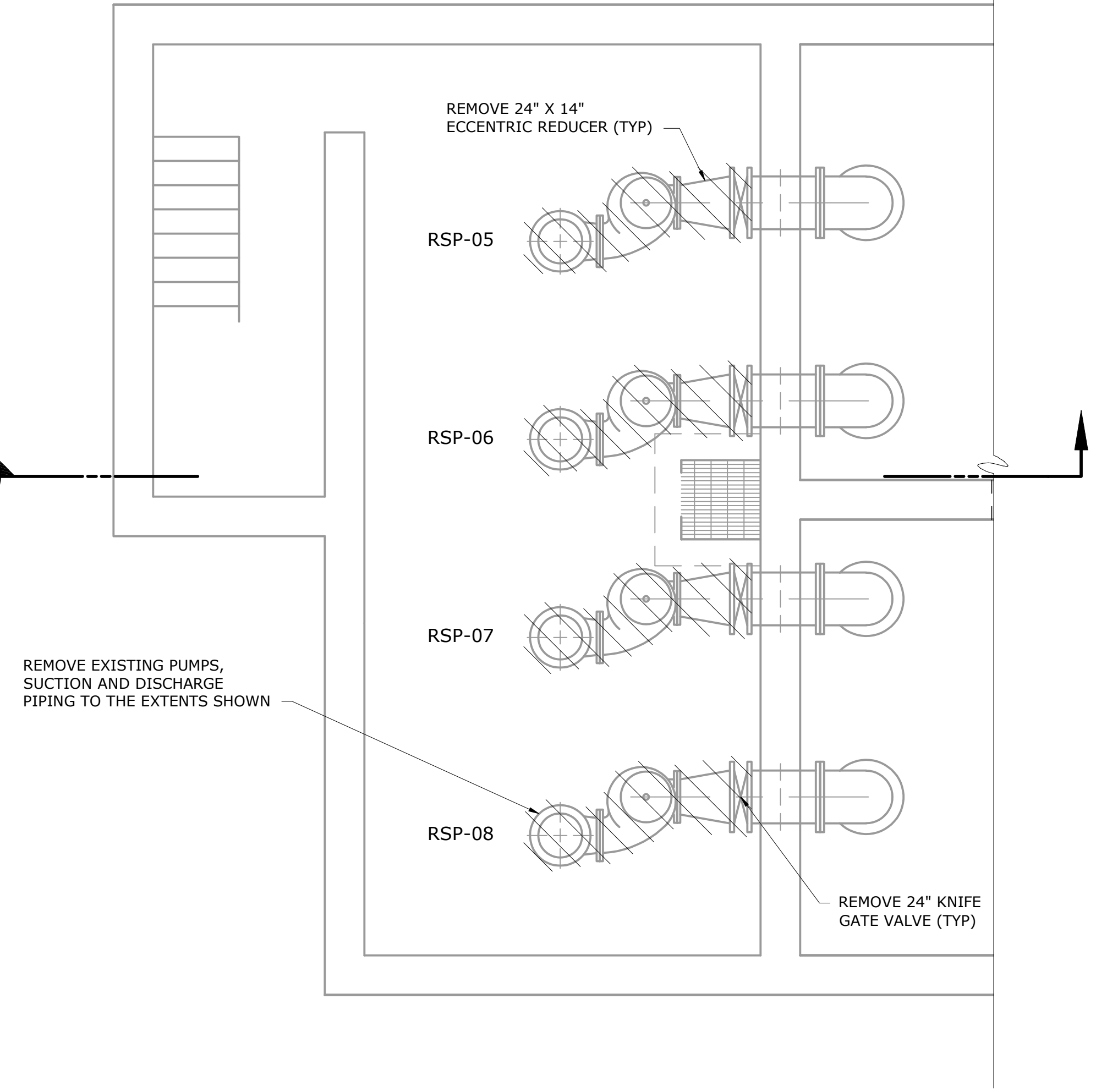
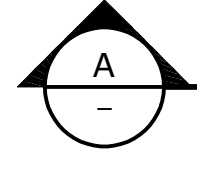
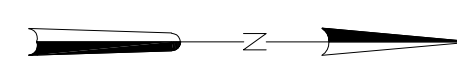
STRUCTURAL  
 RSPS2  
 DETAILS II

DATE:	JANUARY 2017
HAZEN NO.:	60702-000
CONTRACT NO.:	5718
DRAWING NUMBER:	S-5

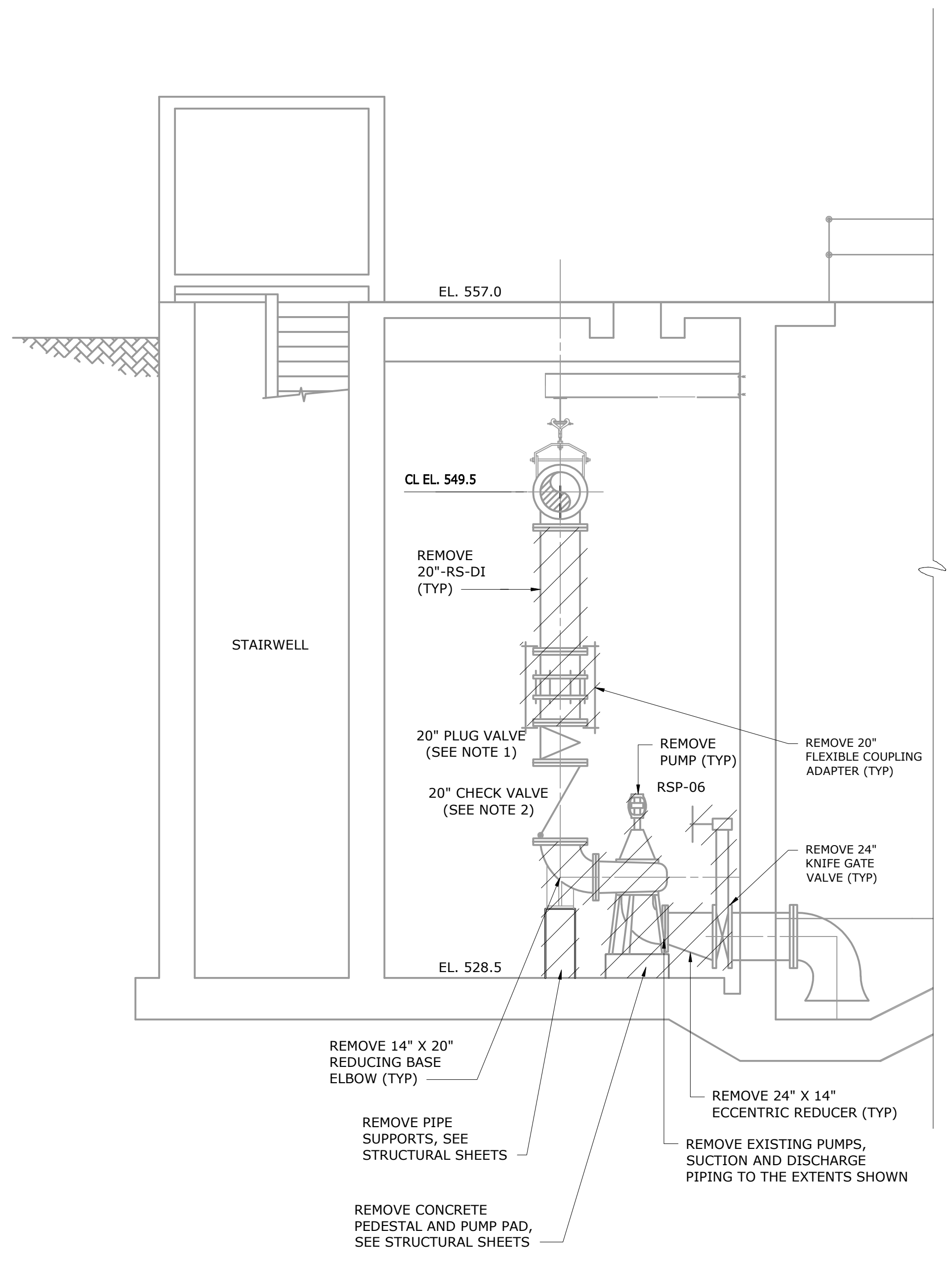


**NOTES:**

1. EXISTING DISCHARGE PLUG VALVES FROM PUMPS RSP-06, 07 AND 08 SHALL BE REUSED. SEE SHEET M-3. CONTRACTOR SHALL FURNISH AND INSTALL NEW PLUG VALVE FOR PUMP RSP-05.
2. EXISTING DISCHARGE CHECK VALVES FROM PUMPS RSP-05, 07 AND 08 SHALL BE REUSED. SEE SHEET M-2. CONTRACTOR SHALL FURNISH AND INSTALL NEW CHECK VALVE FOR PUMP RSP-06.



**PLAN**  
1/4" = 1'-0"



**SECTION** A-A  
1/4" = 1'-0"

PLOT DATE: 2017/01/15 10:53:03 AM BY: MPM/MLT  
 FILE: C:\PROJECTS\60702-000\DWG\M-1.dwg Saved By: DWIT Date: 2016/10/13 8:57 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. MILLER
DESIGNED BY:	B. MILLER
DRAWN BY:	C. WITT
CHECKED BY:	C. DASSANAYAKE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	



**Hazen**  
 HAZEN AND SAWYER  
 8350 N. CENTRAL EXPRESSWAY, SUITE 775  
 DALLAS, TEXAS 75206  
 TBPE FIRM REG. NO. F-13618

CITY OF DENTON, TEXAS  
 PECAN CREEK WATER RECLAMATION PLANT  
 RAW SEWAGE PUMP STATION NO. 2  
 HYDRAULIC IMPROVEMENTS

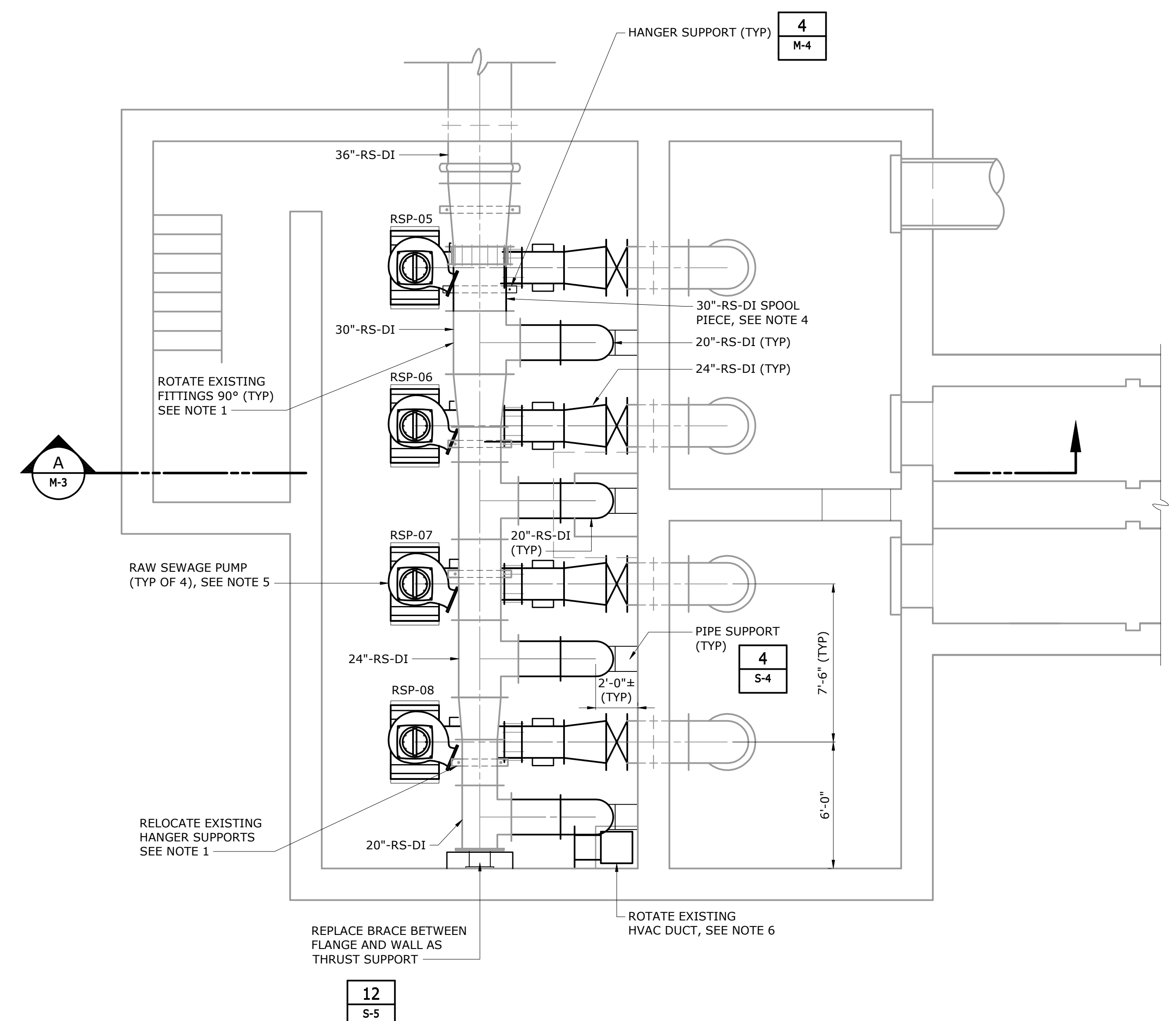
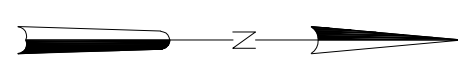
**MECHANICAL**  
**RSPS2 EXISTING PLAN**  
**AND DEMOLITION**

DATE:	JANUARY 2017
HAZEN NO.:	60702-000
CONTRACT NO.:	5718
DRAWING NUMBER:	<b>M-1</b>

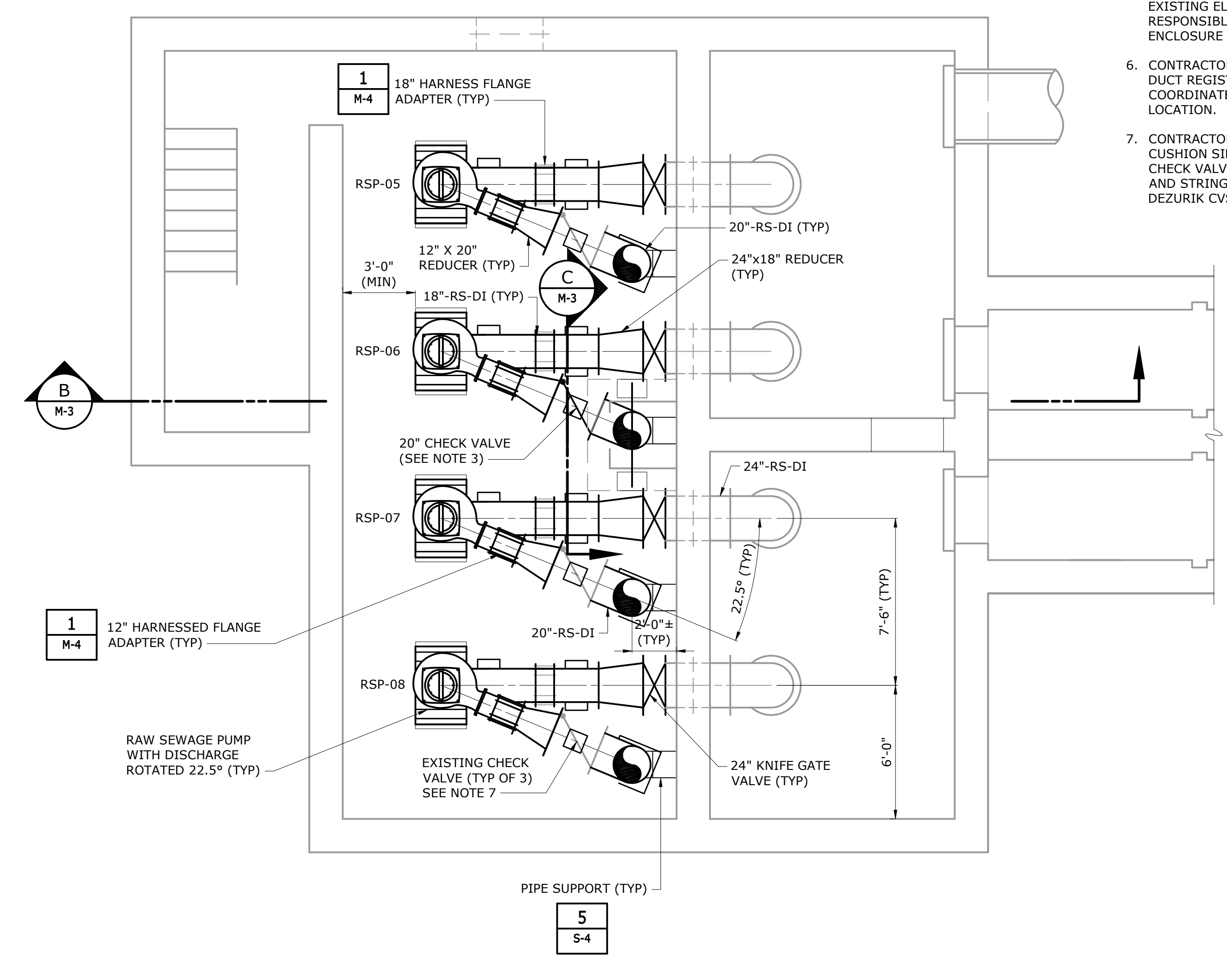


NOTES:

1. CONTRACTOR SHALL RELOCATE EXISTING HANGER SUPPORTS FOR THE DISCHARGE HEADER TO ALIGN WITH THE INDIVIDUAL PUMP DISCHARGE PIPING. HEADER FITTING SHALL BE ROTATED 90°.
2. EXISTING DISCHARGE PLUG VALVES FROM PUMPS RSP-06, 07 AND 08 SHALL BE REUSED. CONTRACTOR SHALL FURNISH AND INSTALL NEW PLUG VALVE FOR PUMP RSP-05.
3. EXISTING DISCHARGE CHECK VALVES FROM PUMPS RSP-05, 07 AND 08 SHALL BE REUSED. SEE NOTE 7. CONTRACTOR SHALL FURNISH AND INSTALL NEW CHECK VALVE FOR PUMP RSP-06.
4. CONTRACTOR SHALL FIELD VERIFY THE LENGTH OF THE SPOOL REQUIRED TO COORDINATE WITH THE INDIVIDUAL PUMP DISCHARGE LOCATIONS.
5. OWNER WILL FURNISH RAW SEWAGE PUMPS WITH SUCTION ELBOW FOR THE CONTRACTOR TO INSTALL, ALIGN AND TEST. CONTRACTOR SHALL REUSE EXISTING ELECTRICAL CABLE HANGERS. OWNER IS RESPONSIBLE FOR ELECTRICAL CONNECTION AND ENCLOSURE MODIFICATIONS.
6. CONTRACTOR SHALL ROTATE THE EXISTING HVAC DUCT REGISTERS 90° COUNTER CLOCKWISE AND COORDINATE WITH THE NEW DISCHARGE HEADER LOCATION.
7. CONTRACTOR SHALL FURNISH AND INSTALL AIR CUSHION SIDE MOUNTED CYLINDERS ON ALL THREE CHECK VALVES TO BE REUSED REPLACING THE LEVER AND STRING. THE EXISTING CHECK VALVES ARE DEZURIK CVS-6000.



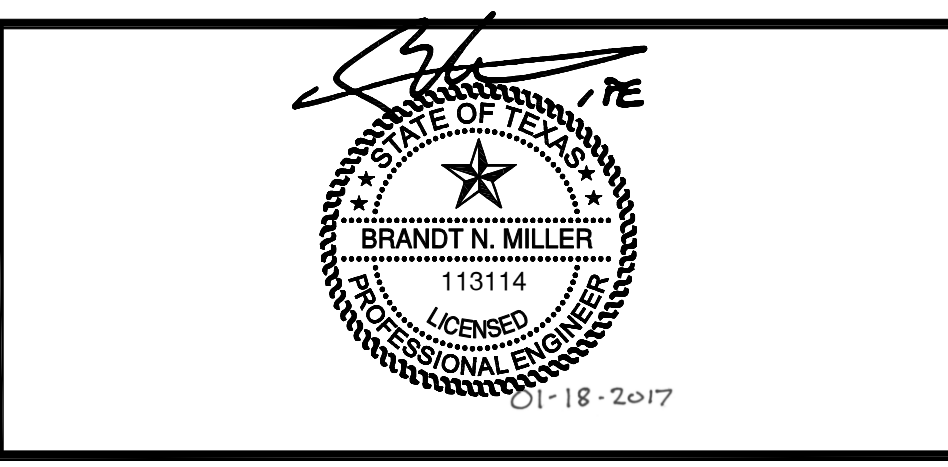
UPPER PLAN (EL. 552.0)  
1/4" = 1'-0"



LOWER PLAN (EL. 540.0)  
1/4" = 1'-0"

PLOT DATE: 2017/01/05 9:35:46 AM BY: WPM/MS  
 FILE: C:\PROJECTS\60702-000\DWG\MECHANICAL\RSRSP2 UPPER AND LOWER PLANS.dwg Saved By: WPM/MS Date: 2017/01/05 9:38 AM

PROJECT ENGINEER:	B. MILLER		
DESIGNED BY:	B. MILLER		
DRAWN BY:	C. WITT		
CHECKED BY:	C. DASSANAYAKE		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
REV	ISSUED FOR	DATE	BY



**Hazen**  
 HAZEN AND SAWYER  
 8350 N. CENTRAL EXPRESSWAY, SUITE 775  
 DALLAS, TEXAS 75206  
 TBPE FIRM REG. NO. F-13618

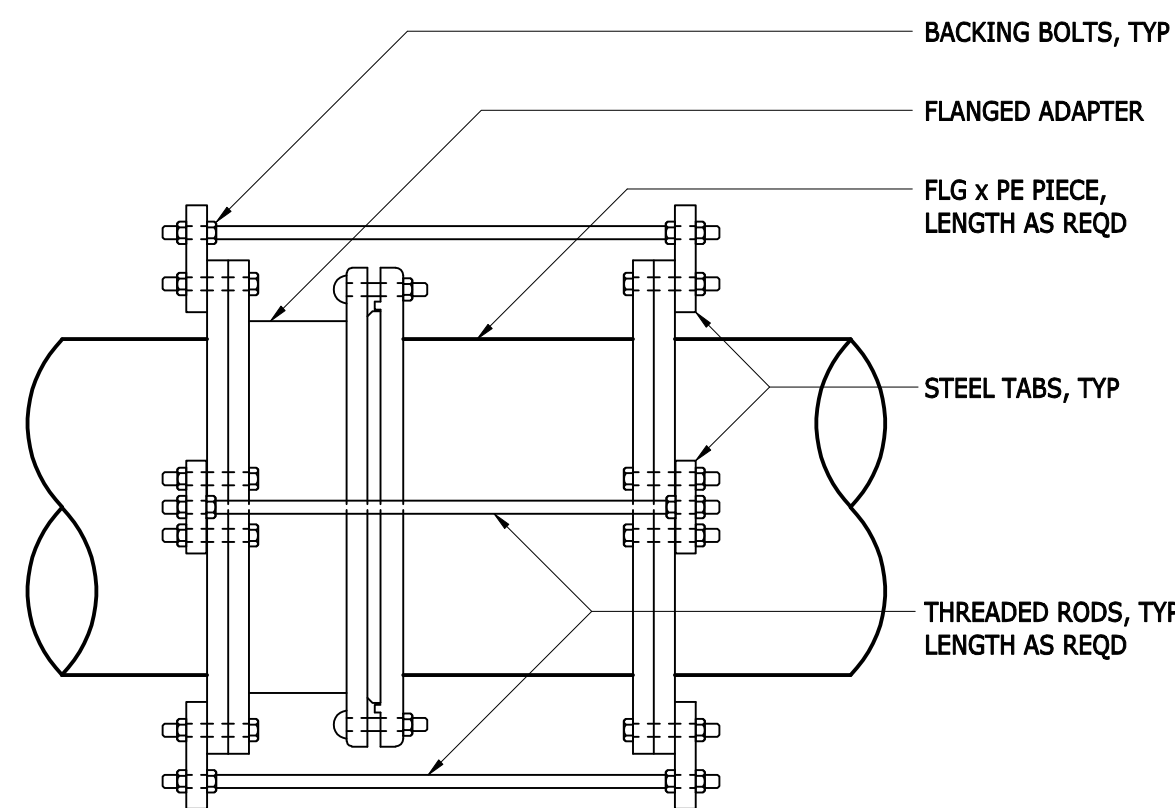
CITY OF DENTON, TEXAS  
 PECAN CREEK WATER RECLAMATION PLANT  
 RAW SEWAGE PUMP STATION NO. 2  
 HYDRAULIC IMPROVEMENTS

MECHANICAL  
 RSPS2 UPPER AND LOWER PLANS

DATE:	JANUARY 2017
HAZEN NO.:	60702-000
CONTRACT NO.:	5718
DRAWING NUMBER:	M-2







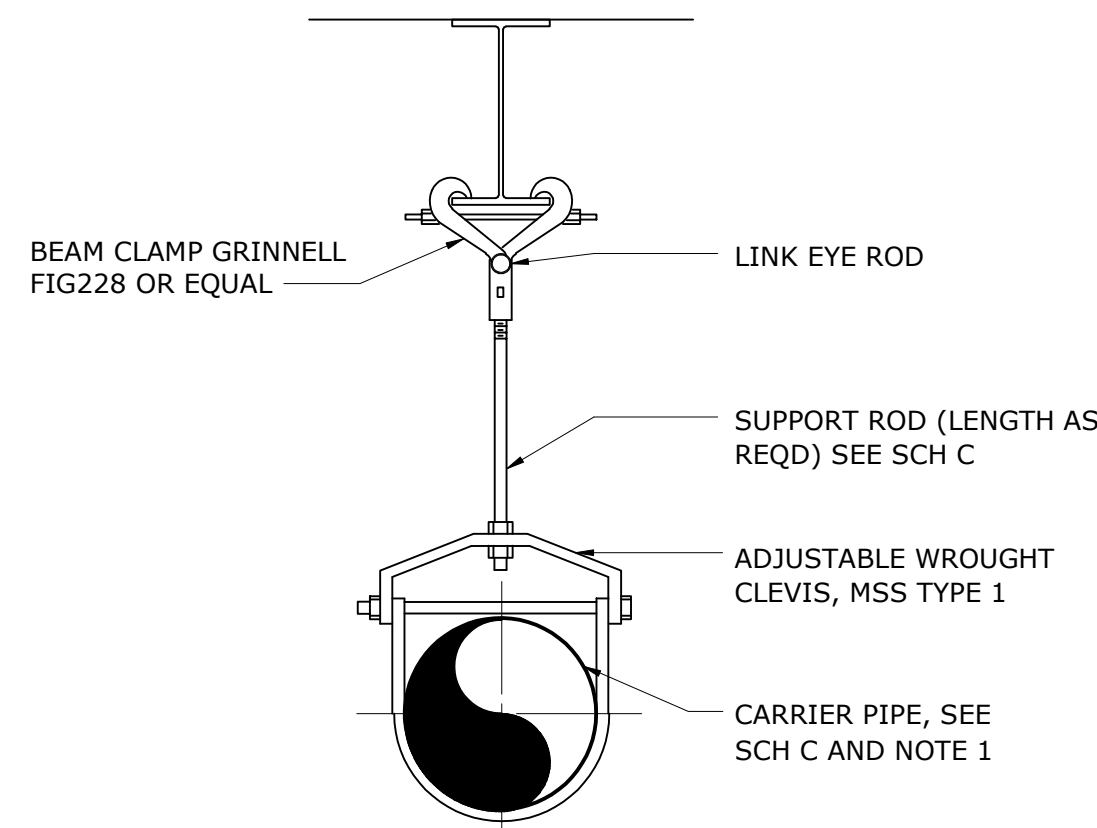
NOTE:  
ALL FLANGED ADAPTERS SHALL BE HARNESSED AND BACK BOLTED TO PREVENT MOVEMENT IN EITHER DIRECTION. SEE THREADED ROD SCHEDULE FOR ROD DIAMETER, MATERIAL AND STEEL TAB THICKNESS.

HARNESSED FLANGED ADAPTER (NTS)

DETAIL	1
NTS	XX

THREADED ROD SCHEDULE											
DESIGN PRESSURE (DIMENSIONS IN INCHES)											
PIPE SIZE	50 PSI		100 PSI		150 PSI		200 PSI		250 PSI		
	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	
12	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	6-3/4	1 1/4	
14	2-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	6-3/4	1 1/2	
16	2-3/4	1 1/2	4-3/4	1 1/2	6-3/4	1 1/2	6-3/4	1 1/2	6-3/4	1 1/2	
18	2-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	
20	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	

1. THREADED RODS FOR ALL PIPE DIAMETERS IN THE SHADED AREA SHALL BE ASTM A193 (GRADE B7).
2. ALL OTHER THREADED RODS SHALL BE ASTM A36. ALL TABS SHALL BE ASTM A572 GR50. ASTM A193 (GRADE B7) RODS SHALL BE LABELED AND BUNDLED SEPARATELY.
3. THIS SCHEDULE SHALL APPLY FOR HARNESSED FLANGED ADAPTERS, HARNESSED FLEXIBLE COUPLINGS
4. AND ALL MECHANICAL JOINT COUPLINGS, SLEEVES ETC. THAT ARE REQUIRED TO BE HARNESSED. RODS THREADED AT ENDS (INCLUDING NUTS) SHALL BE EQUALLY SPACED AROUND PIPE BETWEEN
5. ALL MECHANICAL JOINT FITTINGS (TEE, VALVES, BEND, PLUG, ETC.) OR AS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS. THREADED RODS SHALL BE AS SHOWN IN THE THREADED ROD SCHEDULE. SEE NOTE 6. RODS, NUTS, ETC., IN CONTACT WITH SOIL SHALL BE PAINTED WITH TWO COATS COAL TAR
6. (MIN 26 DRY MIL THICKNESS) TNEMEC 46-465 HI-BUILD OR EQUAL.



PIPE SUPPORT BRACKET (NTS)

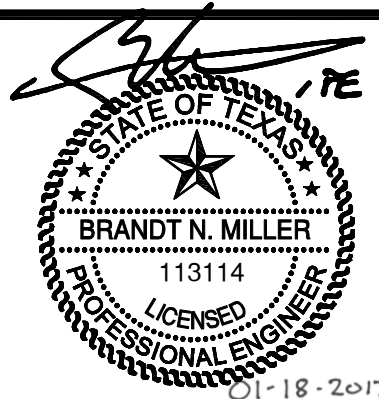
SCHEDULE C			
SUPPORT RODS AND BRACKET SPACING (FOR STANDARD WEIGHT PIPE)			
PIPE SIZE (INCHES)	BACK PLATE (INCHES)	MINIMUM ROD Ø (INCHES)	MAX SPAN IN FEET (SEE NOTE 3)
		PROCESS PIPING	DIP (SEE NOTE 2)
8-12	SEE NOTE 4	3/4	9
14-16	"	7/8	9
18	"	1	10
20-24	"	1 1/4	10
30	"	1 1/2	10

- NOTES:
1. PIPE HANGERS, SUPPORTS AND BRACKETS ARE SHOWN HERE IN VARIOUS COMBINATIONS AS GENERAL DETAILS. THE CONTRACTOR SHALL DESIGN THE SUPPORT SYSTEM BASED ON ACTUAL WEIGHTS AND CONDITIONS AS SPECIFIED OR AS SHOWN ON THE CONTRACT DRAWINGS. THE PIPE SUPPORTS SHOWN AND REFERENCED UNDER SCHEDULE C IS DESIGNED AND DETAILED FOR GRAVITY LOADING ONLY. RESULTING LATERAL LOADS FROM CONSTRUCTION CONDITIONS, DESIGN SEISMIC EVENT OR OTHER RELATED CONDITIONS SHALL BE APPLIED TO THE PIPE AND OTHER NON STRUCTURAL COMPONENTS IN ACCORDANCE WITH THE GOVERNING BUILDING CODE. SUPPLEMENTAL LATERAL STIFFNESS, RESISTANCE AND MEMBERS (WHEN NECESSARY) SHALL BE PROVIDED ALONG PIPE OR AT GRAVITY SUPPORTS AND CONNECTIONS WHEN WE REQUIRED BY CALCULATIONS. THE CONTRACTOR SHALL INCLUDE DESIGN CALCULATIONS AND DETAILS WITH ALL PIPE HANGER AND SUPPORT SUBMISSIONS FOR REVIEW BY THE ENGINEER. THE MAIN STRUCTURE AND MAIN STRUCTURAL COMPONENTS THAT WILL SUPPORT THE PIPE HANGERS AND OTHER APPURTENANT COMPONENTS OF THE FACILITY HAVE BEEN DESIGNED TO RESIST ALL RESULTING SECONDARY LATERAL LOADING FROM NONSTRUCTURAL MEMBERS FOR GRAVITY AND LATERAL LOADS.
  2. MINIMUM OF ONE HANGER PER PIPE SECTION, CLOSE TO JOINT, ON THE BARREL, ALSO AT CHANGE IN DIRECTION AND AT BRANCH CONNECTIONS.
  3. ROOS AND SPACING ARE BASED ON STANDARD WEIGHT MATERIALS ACCORDING TO MSS SP-69. NR FOR REFERENCE ONLY. THE CONTRACTOR SHALL SPACE THEIR HANGERS BASED ON ACTUAL CONDITIONS.
  4. BACK PLATES SHALL BE DESIGNED BY THE CONTRACTOR ACCORDING TO WALL TYPES AND THE WEIGHTS INVOLVED. BACK PLATES TO BE SUPPLIED BY BRACKET MANUFACTURER.

DETAIL	2
NTS	XX

PLOT DATE: 2017/01/15 2:25:14 PM BY: WPM/2  
 FILE: C:\PROJECTS\60702-000\DWG\M-4.DWG Saved By: DWIT Date: 2016/10/12 10:02 AM

PROJECT ENGINEER:	B. MILLER
DESIGNED BY:	B. MILLER
DRAWN BY:	C. WITT
CHECKED BY:	C. DASSANAYAKE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	
REV	ISSUED FOR
	DATE
	BY



**Hazen**

HAZEN AND SAWYER  
8350 N. CENTRAL EXPRESSWAY, SUITE 575  
DALLAS, TEXAS 75206  
TBPE FIRM REG. NO. F-13618

CITY OF DENTON, TEXAS  
PECAN CREEK WATER RECLAMATION PLANT  
RAW SEWAGE PUMP STATION NO. 2  
HYDRAULIC IMPROVEMENTS

MECHANICAL  
TYPICAL DETAILS

DATE:	JANUARY 2017
HAZEN NO.:	60702-000
CONTRACT NO.:	5718
DRAWING NUMBER:	M-4