

# CONSTRUCTION PLANS FOR SOUTHEAST SECTOR PHASE 3 LIFT STATION, FORCE MAIN AND METERING VAULT (PWK SEW 2014-06)

FOR  
CITY OF CELINA

AUG 2015



142 NORTH OHIO  
CELINA, TEXAS 75009  
(972) 382-2682

MAYOR  
SEAN TERRY

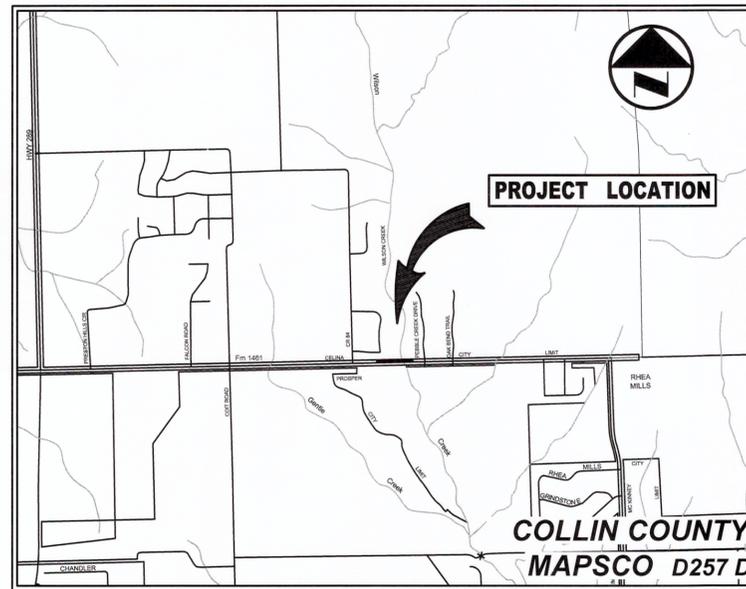
MAYOR PRO TEM  
CARMEN ROBERTS

CITY COUNCIL

ERIK GEIGER	CARMEN ROBERTS
WAYNE NABORS	LORI VADEN
ANDY HOPKINS	CHAD ANDERSON

CITY MANAGER  
MIKE FOREMAN

CITY ENGINEER  
GABE JOHNSON, P.E.



**VICINITY MAP**  
(NOT TO SCALE)

CITY OF CELINA  
ENGINEERING DEPARTMENT  
RELEASED FOR CONSTRUCTION

DATE 10/5/15 BY *[Signature]*

PRIOR TO CONSTRUCTION, THE OWNER OR THEIR REPRESENTATIVE SHALL NOTIFY THE CITY OF CELINA ENGINEERING DEPARTMENT AT 972-382-2682 x1081. CONSTRUCTION DRAWINGS STAMPED BY THE CITY OF CELINA SHALL BE ON THE PROJECT SITE AT ALL TIMES DURING CONSTRUCTION. THE CITY OF CELINA STANDARD SPECIFICATIONS FOR CONSTRUCTION SHALL TAKE PRECEDENCE OVER THESE PLANS WHENEVER IN CONFLICT THEREWITH. DISCLAIMER: ALL NECESSARY APPROVALS AND PERMITS SHALL BE ACQUIRED PRIOR TO CONSTRUCTION. EST. 1876

PREPARED BY:



7557 RAMBLER ROAD, SUITE 1400 PH. 972.235.3031  
DALLAS, TX 75231 FAX 972.235.9544  
TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY JAY C. LONDON, P.E. 97340 ON 07/31/2015. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

- ▲ 9/18/15 CONFORMED
- ▲ 8/14/15 ADDENDUM NO. 3
- ▲ 8/12/15 ADDENDUM NO. 2
- ▲ 8/11/15 ADDENDUM NO. 1

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**GENERAL PROJECT NOTES**

(REQUIREMENTS IN THESE GENERAL NOTES ARE INCIDENTAL TO CONSTRUCTION, NO SEPARATE PAY)

- ALL CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION BY THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 4TH EDITION AS AMENDED BY THE CITY OF CELINA. THE CONTRACTOR SHALL REFERENCE THE LATEST CITY OF CELINA STANDARD DETAILS PROVIDED IN THE CELINA PUBLIC WORKS DEPARTMENTS "STANDARDS OF DESIGN AND CONSTRUCTION" MANUAL FOR DETAILS NOT PROVIDED IN THESE PLANS. THE CONTRACTOR SHALL POSSESS ONE SET OF THE N.C.T.C.O.G. STANDARD SPECIFICATIONS AND DETAILS AND THE CITY OF CELINA'S "STANDARDS OF DESIGN AND CONSTRUCTION" MANUAL ON THE PROJECT SITE AT ALL TIMES. IN THE EVENT OF A CONFLICT WITH N.C.T.C.O.G., THE DESIGN ENGINEER SHALL BE NOTIFIED TO PROVIDE CLARIFICATION.
- PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL BE FAMILIAR WITH THE PLANS, ALL NOTES, THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION ISSUED BY THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, THE CITY STANDARDS FOR CONSTRUCTION, AND ANY OTHER APPLICABLE STANDARDS AND SPECIFICATIONS RELEVANT TO THE PROPER COMPLETION OF THE WORK SPECIFIED. FAILURE ON THE PART OF THE CONTRACTOR TO BE FAMILIAR WITH ALL STANDARDS AND SPECIFICATIONS PERTAINING TO THIS WORK SHALL IN NO WAY RELIEVE THE CONTRACTOR OF RESPONSIBILITY OF PERFORMING THE WORK IN ACCORDANCE WITH ALL SUCH APPLICABLE STANDARDS AND SPECIFICATIONS.
- THE HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING SUBSURFACE UTILITIES HAVE BEEN DETERMINED FROM DATA RECORDED BY OTHERS. CONTRACTOR SHALL VERIFY THAT NECESSARY CROSSING CLEARANCES BETWEEN EXISTING AND PROPOSED UTILITIES EXIST PRIOR TO CONSTRUCTION OF ANY SUCH CROSSINGS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL UTILITIES IN THE CONSTRUCTION OF THIS PROJECT. CONTRACTOR TO VERIFY SIZE AND LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
- IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL MANHOLES, CLEANOUTS, VALVE BOXES, AND FIRE HYDRANTS, ETC.. CONTRACTOR TO ADJUST TO PROPER LINE AND GRADE PRIOR TO AND AFTER THE PLACING OF PERMANENT PAVING AND GRADING. UTILITIES MUST BE MAINTAINED TO PROPER LINE AND GRADE DURING THE CONSTRUCTION OF THE PAVING FOR THIS PROJECT.
- PROTECT AND MAINTAIN ROADWAY TRAFFIC THROUGHOUT THE PROJECT, PROVIDING A MINIMUM OF ONE (1) LANE OPEN IN EACH DIRECTION. THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND REMOVE ALL NECESSARY TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- PROVIDE AND MAINTAIN INTERIM ACCESS FROM ROADWAYS CURRENTLY IN USE TO ALL DRIVEWAYS AND INTERSECTING STREETS OR ALLEYS. THE CONTRACTOR SHALL PROVIDE ACCESS AT ALL TIMES DURING CONSTRUCTION TO ALL LOCAL RESIDENTS, BUSINESSES, MAIL SERVICE, AND TRASH PICK UP.
- MAINTAIN NORMAL PROJECT DRAINAGE UNTIL NEW DRAINAGE FACILITIES ARE FUNCTIONAL, INCLUDING, WHERE NECESSARY, INTERIM REPLACEMENT OF EXISTING DRAINAGE STRUCTURES REMOVED FOR CONSTRUCTION OF NEW DRAINAGE FACILITIES.
- MAINTAIN ALL WORK AND MATERIAL STORAGE AREAS IN ORDERLY CONDITION, FREE OF DEBRIS AND WASTE. ON COMPLETION OF CONSTRUCTION, CLEAN UP THE PROJECT AND ADJACENT AFFECTED AREAS TO ACCEPTABLE CONDITION, ALL AS PROVIDED IN THE GENERAL CONDITIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS REGARDING TRENCH SAFETY. ENTRANCE LAYOUTS, RAMPS, LANDSCAPE, AND SIDEWALKS.
- EXACT SAWCUT PAVEMENT REMOVAL AND REPLACEMENT LIMITS WITHIN THE PUBLIC RIGHT-OF-WAY ARE TO BE APPROVED BY OWNER.
- A SITE SPECIFIC TRENCH SAFETY PLAN SHALL INCLUDE A PLAN FOR EACH BORE PIT.
- AT THE END OF EACH WORK DAY, THE CONTRACTOR SHALL ERECT A TEMPORARY SECURITY FENCE AT ALL EXCAVATIONS.
- FINISHED GROUND SHALL HAVE NO MORE ROCKS OVER 1 INCH THAN SURROUNDING UNDISTURBED GROUND. ALL ROCK LARGER THAN 1 INCH SHALL BE COLLECTED AND DISPOSED OF BY THE CONTRACTOR.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SERVICE LINES CROSSED OR EXPOSED BY HIS CONSTRUCTION OPERATIONS. WHERE EXISTING SERVICE LINES ARE CUT, BROKEN, OR DAMAGED, THE CONTRACTOR SHALL IMMEDIATELY REPLACE THE SERVICE LINES WITH THE SAME TYPE OF ORIGINAL CONSTRUCTION, OR BETTER TYPE OF ORIGINAL CONSTRUCTION, OR BETTER.
- UTILITY OWNERS SHALL DETERMINE IF, WHEN AND WHICH UTILITY OR LIGHT POLES (IN THE VICINITY OF PROPOSED CONSTRUCTION) HAVE A NEED FOR ADDITIONAL SUPPORT. ONCE THE UTILITY OWNER MAKES THE DECISION AS TO WHETHER OR NOT UTILITY POLES AND LIGHT STANDARDS/POLES (NEAR EXCAVATION) REQUIRE ADDITIONAL SUPPORT, THE CONTRACTOR SHALL PROVIDE FOR SUPPORT OF SAID POLE OR LIGHT. CONTRACTOR SHALL HAVE AND PAY FOR SUPPORT AND PROTECT ALL POWER, GUY WIRES, OR CABLE AND/OR LIGHT POLES IN THE WORK AREA.
- TEMPORARY FENCING SHALL BE REQUIRED WHERE THERE IS EVIDENCE OF LIVESTOCK AND WHERE DAMAGED OR REMOVED FENCES ARE NOT TO BE REPLACED BY THE END OF THE SAME WORK DAY.
- CONTRACTOR SHALL RESET ALL IRON RODS AND OTHER PROPERTY MARKERS DISTURBED BY CONSTRUCTION (NO SEPARATE PAY ITEM.)
- CONTRACTOR SHALL PROTECT EXISTING CONCRETE PAVEMENT FROM TRACKED EQUIPMENT.
- PAVEMENT REMOVAL AND REPLACEMENT SHOWN ON PLANS REFLECT ALLOWABLE TRENCH WIDTH. PAVEMENT REPLACEMENT SHALL BE PAID ON A SQUARE YARD BASIS AS PROVIDED FOR IN THE PROPOSAL AND BID SCHEDULE. ALL DRIVEWAYS ARE TO BE RETURNED TO ORIGINAL OR BETTER CONDITION.
- ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS THROUGHOUT THE CONSTRUCTION. ANY AND ALL EXCAVATIONS NEAR DRIVEWAYS OR MEDIAN OPENINGS SHALL BE COVERED WITH TRAFFIC-SUPPORTING METAL PLATES OR BACKFILLED AND TOPPED WITH TEMPORARY ASPHALT PAVEMENT UNTIL PERMANENT CONCRETE PAVEMENT IS REPLACED.
- ALL DISTURBED AREAS ALONG FORCE MAIN ROUTE CAUSED BY EXCAVATION OR TRAFFIC SHALL BE TILLED, SEEDED AND ESTABLISHED. COST FOR REESTABLISHING VEGETATION IS SUBSIDIARY TO THE PROJECT. ALL DISTURBED AREAS WITHIN THE LIFT STATION WORK AREA SHALL BE SODDED.
- DAMAGED IRRIGATION SYSTEMS SHALL BE REPAIRED OR REPLACED TO THE PROPERTY OWNER'S SATISFACTION (NO SEPARATE PAY ITEM). CONTRACTOR SHALL IMMEDIATELY REPAIR DAMAGE TO UNDERGROUND SPRINKLER SYSTEMS. ALL REPAIRS SHALL BE COMPLETED BY AN IRRIGATOR LICENSED IN THE STATE OF TEXAS. SIGNS ALONG ROUTE REMOVED FOR CONVENIENCE OF CONSTRUCTION SHALL BE REESTABLISHED AFTER COMPLETION OF BACKFILLING IN THAT AREA (NO SEPARATE PAY ITEM).
- BACKFILL FOR ALL BORE PITS SHALL BE PLACED IN 8-INCH LOOSE LIFTS (LOOSE MEASUREMENT) AND BE MECHANICALLY COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D698 AT OPTIMUM MOISTURE PLUS OR MINUS TWO POINTS.
- REASONABLE EFFORT HAS BEEN MADE TO SHOW THE LOCATION OF ALL KNOWN UNDERGROUND UTILITIES AND SERVICE LINES. HOWEVER, THE OWNER ASSUMES NO RESPONSIBILITY FOR FAILURE TO SHOW ANY OR ALL EXISTING SUBSURFACE UTILITIES OR UTILITY LINES, OR TO SHOW THEM IN THEIR EXACT LOCATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES, SERVICE LINES OR THE LIKE, WHICH ARE CROSSED OR EXPOSED BY THE CONSTRUCTION OPERATION.
- CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION SO THAT IF IT IS NECESSARY TO CHANGE OR MOVE UTILITY, THE PROGRESS OF THE WORK WILL NOT BE DELAYED.
- ANY FENCE REMOVED FOR CONVENIENCE OF CONSTRUCTION SHALL BE REPLACED OR RECONSTRUCTED. NEW MATERIALS SHALL MATCH EXISTING FENCES. WOOD FENCES SHALL BE REPLACED WITH NEW CEDAR WITH THE POSTS MATCHING THE EXISTING POSTS.
- THE CONTRACTOR SHALL REPLACE ALL SHRUBS, PLANTS, TREES, ETC. THAT ARE REMOVED FOR CONVENIENCE OF CONSTRUCTION AT HIS EXPENSE. NEW SHRUBS, PLANTS, TREES, ETC. SHALL BE EQUAL TO OR BETTER THAN THE EXISTING ONES OR MEET THE NEEDS AND APPROVAL OF THE PROPERTY OWNER AND THE CITY.
- THE CONTRACTOR SHALL NOT DISPOSE OF WASTE OR ANY MATERIALS INTO STREAMS OR WATERWAYS. THE CONTRACTOR SHALL SECURE ALL EXCAVATION AT THE END OF EACH DAY AND DISPOSE OF ALL EXCESS MATERIALS. DISPOSAL SITE SHALL BE DOCUMENTED AND PROVIDED TO THE CITY.
- THE CONTRACTOR SHALL OBTAIN TPDES STORM WATER PERMIT, POST ALL PERMITS ON THE CONSTRUCTION SITE, SUBMIT A NOTICE OF INTENT (NOI) AND SUBMIT A NOTICE OF TERMINATION (NOT). THE CONTRACTOR AND HIS SUB-CONTRACTORS SHALL BE THE SOLE OPERATOR AND PERMITTEES OF THE CONSTRUCTION SITE.
- CONTRACTOR SHALL GRADE GROUND AND DITCHES DISTURBED BY CONSTRUCTION TO PREVENT PONDING OF STORM WATER RUNOFF. GRADING SHALL BE SUBSIDIARY TO THE PROJECT BID ITEMS. TOPSOIL SHALL BE STOCKPILED AND REPLACED TO A MINIMUM DEPTH OF 6-INCHES AND DISC HARROWED TO A MINIMUM DEPTH OF 4-INCHES. CONTRACTOR SHALL REPLACE GRASS AREAS DISTURBED BY CONSTRUCTION ACTIVITIES WITHIN THE LIFT STATION WORK AREA WITH SOLID SOD. SODDED AREAS SHALL BE WATERED AND MAINTAINED UNTIL ESTABLISHMENT. DISTURBED AREAS ALONG FORCE MAIN ROUTE (AREAS OF PROJECT OUTSIDE THE DEFINED LIFT STATION WORK AREA) SHALL BE SEEDED.

**GENERAL NOTES**

(REQUIREMENTS IN THESE GENERAL NOTES ARE INCIDENTAL TO CONSTRUCTION, NO SEPARATE PAY)

- THE CONTRACTOR SHALL HAVE IN HIS POSSESSION PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ALL NECESSARY PERMITS, LICENSES, ETC.
- PRIOR TO ANY CONSTRUCTION THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE CONTRACT DOCUMENTS, SPECIFICATIONS, AND PLANS INCLUDING ALL NOTES. FAILURE ON THE PART OF THE CONTRACTOR TO FAMILIARIZE HIMSELF WITH THE DESIGNATED STANDARDS AND SPECIFICATIONS PERTAINING TO THIS WORK SHALL IN NO WAY RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR PERFORMING THE WORK IN ACCORDANCE WITH ALL SUCH STANDARDS AND SPECIFICATIONS.
- IT WILL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO PROTECT ALL EXISTING PUBLIC AND PRIVATE UTILITIES THROUGHOUT THE CONSTRUCTION OF THIS PROJECT. CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES FOR LINE LOCATIONS AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION AND SHALL ASSUME FULL LIABILITY TO THOSE COMPANIES FOR ANY DAMAGES CAUSED TO THEIR FACILITIES.

CITY OF CELINA, GENERAL INFORMATION (972) 382-2682  
 COSERV (800) 274-4014  
 UPPER TRINITY REGIONAL WATER DISTRICT (972) 219-1228  
 GTE TELECOMMUNICATIONS (800) 344-8377  
 TXU ELECTRIC (817) 992-6204  
 ATMOS ENERGY (FIELD ENGINEER ROBIN RICHARDSON) (972) 485-6204

- CONTRACTOR MUST CONFINE ACTIVITIES TO THE WORK AREA. NO ENCROACHMENTS ONTO ADJACENT DEVELOPED OR UNDEVELOPED PROPERTY AREAS WILL BE ALLOWED UNLESS SPECIFIED IN THE PLANS. ANY DAMAGE RESULTING THEREFROM SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR.
- OTHER CONSTRUCTION IS UNDERWAY AT THE SAME TIME AND IN THE GENERAL AREA OF THE SUBJECT PROJECT. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY AND COORDINATE WITH OTHER CONTRACTORS TO DETERMINE A CONSTRUCTION SCHEDULE THAT WILL OFFER THE LEAST HINDRANCE TO ALL INVOLVED. THE OWNER'S ENGINEER SHALL BE NOTIFIED OF ALL COORDINATION. IN THE EVENT OF A SCHEDULING CONFLICT THE OWNER'S ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
- CONSTRUCTION INSPECTION WILL BE PERFORMED BY REPRESENTATIVES OF THE OWNER, ENGINEER, GEOTECHNICAL ENGINEER, AND REVIEWING AUTHORITIES AND AGENCIES. UNRESTRICTED ACCESS SHALL BE PROVIDED TO THEM AT ALL TIMES. CONTRACTOR IS RESPONSIBLE FOR UNDERSTANDING AND SCHEDULING REQUIRED INSPECTIONS.
- THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE AND MAINTAIN ALL NECESSARY WARNING AND SAFETY DEVICES (FLASHING LIGHTS, BARRICADES, SIGNS, ETC., IN CONFORMANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL, LATEST EDITION) TO PROTECT PUBLIC SAFETY AND HEALTH UNTIL THE WORK HAS BEEN COMPLETED AND ACCEPTED BY THE CITY.
- ALL PIPING BENDS ARE TO BE BLOCKED PER THRUST BLOCKING DETAIL UNLESS OTHERWISE NOTED. WHERE RESTRAINED JOINTS ARE INDICATED, OR WHERE BLOCKING IS NOT ACHIEVABLE, JOINTS SHALL BE RESTRAINED WITH MEGA-LUGS BY EBAA IRON OR APPROVED EQUAL.

**GENERAL NOTES FOR WASTEWATER MANHOLE CONSTRUCTION**

(REQUIREMENTS IN THESE GENERAL NOTES ARE INCIDENTAL TO CONSTRUCTION, NO SEPARATE PAY)

- ALL NON-PRESSURE TYPE MANHOLES ARE TO BE CONSTRUCTED WITH A MINIMUM OF 2 - PRECAST CONCRETE GRADE RINGS AND WITH AN INTERNAL CHIMNEY SEAL. THE MAXIMUM ALLOWABLE EXTENSION OF MANHOLE NECKS USING GRADE RINGS IS LIMITED TO 30".
- ALL MANHOLES ARE TO HAVE INVERTS CONSTRUCTED AS PER THE DETAILS.
- ALL SANITARY SEWER MAIN STUBOUTS FROM MANHOLES SHALL BE A MINIMUM OF 5 FEET IN LENGTH AND TERMINATED WITH A WATER TIGHT STOPPER OR CAP.
- FOR ALL MANHOLES WITH CAST IN PLACE BASES, THE FIRST PIPE JOINT MUST EXTEND A MINIMUM OF 5 FEET PAST THE EDGE OF MANHOLE, WITH A CONCRETE CRADLE POURED INTEGRALLY WITH THE BASE, AND UNDER THE ENTIRE PIPE JOINT LENGTH.
- ALL CAST IN PLACE MANHOLES ARE TO BE CONSTRUCTED WITH PIPE TO MANHOLE CONNECTORS AS PER THE DETAIL.
- MINIMUM MANHOLE WALL THICKNESS ARE PER ASTM C76-08g AS FOLLOWS: THE STANDARD THICKNESSES ARE: 48" MANHOLE-5" WALL; 60" MANHOLE-6" WALL; 72" MANHOLE-7" WALL.

**LEGEND**

B.	BOLLARD
EM ⊕	ELECTRIC METER
PP •	POWER POLE
LS	LIGHT STANDARD
WM ⊕	WATER METER
WV ⊕	WATER VALVE
ICV ⊕	IRRIGATION CONTROL VALVE
FH ⊕	FIRE HYDRANT
CQ	CLEANOUT
MH ⊕	MANHOLE
TSC □	TRAFFIC SIGNAL CONTROL
TSP •	TRAFFIC SIGNAL POLE
TELE ⊕	TELEPHONE BOX
FL ⊕	FLOOD LIGHT
FP •	FLAG POLE
SIGN ⊕	TRAFFIC SIGN
IRS	1/2-INCH IRON ROD W/"PACHECO KOCH" CAP SET
(C.M.)	CONTROLLING MONUMENT
---	RIGHT-OF-WAY/PROPERTY LINE
---	PROPERTY LINE (ADJACENT PROPERTIES)
-X-	FENCE
OH-	OVERHEAD UTILITY LINE
-S-	SANITARY SEWER LINE
-W-	WATER LINE
---	STORM SEWER LINE
-G-	GAS LINE
-674-	EXISTING CONTOUR
■ ■ ■ ■	TEMPORARY SEDIMENT CONTROL FENCE
⊕	ROCK FILTER DAM
⊕	STABILIZED CONSTRUCTION EXIT
EL 674.50	PROPOSED CONTOUR
EL 674.50	PROPOSED GROUND/PVMT SPOT ELEVATION
M.G.	MATCH EXISTING GRADE
20	SECTION NUMBER SHEET NUMBER
24	DETAIL NUMBER SHEET NUMBER
■ ■ ■ ■	FEMA 100 YR FLOOD PLAIN LIMITS
←	FLOW/SLOPE DIRECTION
⊗	TREE REMOVAL
□	PROPOSED PRECAST WALL
CONC	CONCRETE
DISCH	DISCHARGE
EOP	EDGE OF PAVEMENT
EX	EXISTING
FM	FORCE MAIN
PL	PROPERTY LINE
PROP	PROPOSED
PVMT	PAVEMENT
REINF	REINFORCED
ROW	RIGHT-OF-WAY
SET	SAFETY END TREATMENT
SS	SANITARY SEWER
ST	STORM

▲	9/18/15	CONFORMED
NO.	DATE	REVISION

**Pacheco Koch**  
 7557 RAMBLER ROAD, SUITE 1400  
 DALLAS, TX 75231 972.235.3031  
 TX REG. ENGINEERING FIRM F-14439  
 TX REG. SURVEYING FIRM LS-101938-05



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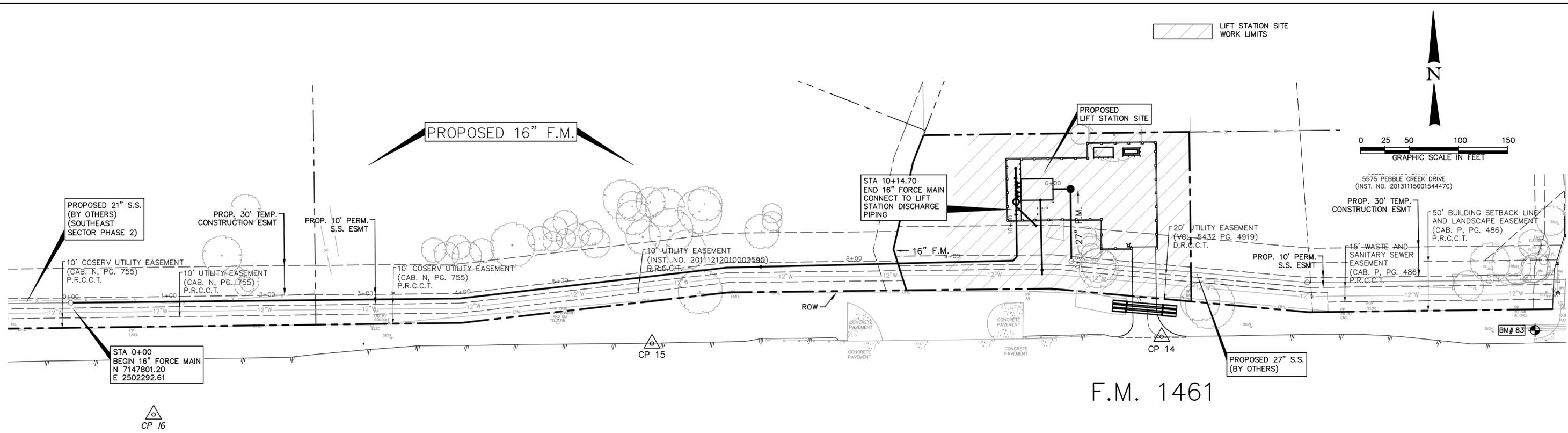
**GENERAL NOTES AND LEGEND**

**SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT**

CITY OF CELINA, COLLIN COUNTY, TEXAS

DESIGN	DRAWN	DATE	JOB NO.	SHEET
JCL	ASR	AUG 2015	3551-14.141	G2R

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



**PROPOSED LIFT STATION AND FORCEMAIN**

F.M. 1461

**BENCH MARK LIST**

**BM# 83** "X" CUT ON THE NORTH SIDE OF A CONCRETE HEADWALL ON THE NORTH SIDE FM 1461 (FRONTIER PKWY) AND THE WEST SIDE OF PEBBLE CREEK DRIVE, ±22' NORTH OF THE CENTERLINE OF FM 1461 AND ±53' WEST OF THE CENTERLINE OF PEBBLE CREEK DRIVE.  
ELEV=678.21

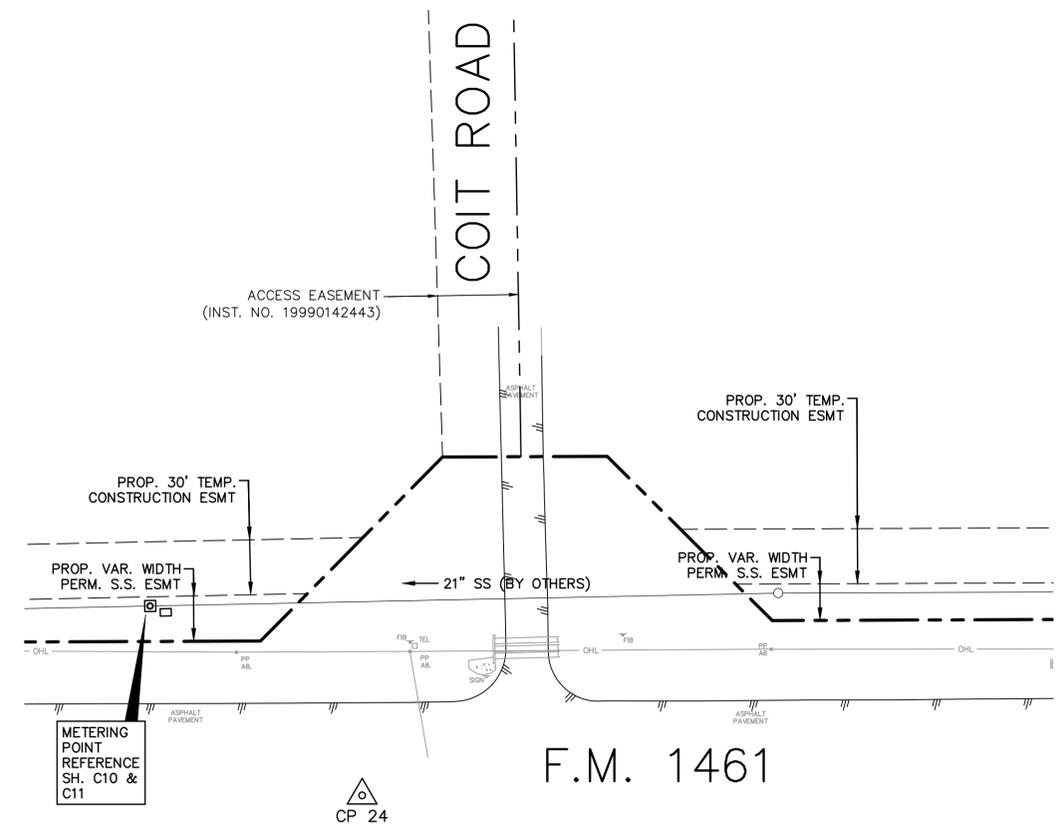
**BM# 82** "X" CUT ON THE NORTH SIDE OF A CONCRETE HEADWALL ON THE NORTH SIDE FM 1461 (FRONTIER PKWY) AND THE WEST SIDE OF OAK BEND TRAIL, ±27' NORTH OF THE CENTERLINE OF FM 1461 AND ±54' WEST OF THE CENTERLINE OF OAK BEND TRAIL.  
ELEV=692.31

**CONTROL POINT TABLE**

POINT NO.	NORTHING	EASTING	ELEV	DESCRIPTION
13	7,147,782.62	2,503,872.16	680.61	1/2-IRON ROD SET WITH RED CAP
14	7,147,766.66	2,503,404.16	678.25	PK NAIL SET
15	7,147,759.76	2,502,884.81	689.93	PK NAIL SET
16	7,147,687.74	2,502,376.98	718.47	1/2-IRON ROD SET WITH RED CAP
17	7,147,766.07	2,501,842.38	728.11	1/2-IRON ROD SET WITH RED CAP
18	7,147,750.51	2,501,370.75	720.00	1/2-IRON ROD SET WITH RED CAP
19	7,147,687.70	2,500,771.99	715.77	X-CUT SET IN BOX
20	7,147,695.38	2,500,392.63	714.63	1/2-IRON ROD SET WITH RED CAP
21	7,147,674.21	2,499,899.38	713.63	1/2-IRON ROD SET WITH RED CAP
22	7,147,695.46	2,499,402.20	714.00	1/2-IRON ROD SET WITH RED CAP
23	7,147,660.77	2,498,899.88	714.55	1/2-IRON ROD SET WITH RED CAP
24	7,147,671.49	2,498,378.62	718.06	1/2-IRON ROD SET WITH RED CAP
25	7,147,659.10	2,497,910.34	724.24	1/2-IRON ROD SET WITH RED CAP
26	7,147,653.17	2,497,432.26	725.72	1/2-IRON ROD SET WITH RED CAP
27	7,147,738.28	2,496,912.48	721.31	1/2-IRON ROD SET WITH RED CAP
35	7,147,788.05	2,504,654.08	695.63	1/2-IRON ROD SET WITH RED CAP
36	7,147,720.26	2,504,364.47	689.28	1/2-IRON ROD SET WITH RED CAP

**NOTES**

- Horizontal control point values are based on the State Plane Coordinate System, North American Datum of 1983 (2011), Texas North Central, Zone 4202. Coordinates shown have been adjusted to surface by applying the Collin County TxDOT combination factor of 1.000152710. To adjust the coordinates to grid values, simply divide the surface coordinate values (northing and easting) by 1.000152710.
- Vertical control point values are based on North American Vertical Datum 1988 (GEOID12A).



**PROPOSED METERING MANHOLE**

NO.	DATE	REVISION
△	9/18/15	CONFORMED

**Pacheco Koch**  
7557 RAMBLER ROAD, SUITE 1400  
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TX REG. ENGINEERING FIRM F-14439  
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**PROJECT LAYOUT**  
**SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT**  
CITY OF CELINA, COLLIN COUNTY, TEXAS

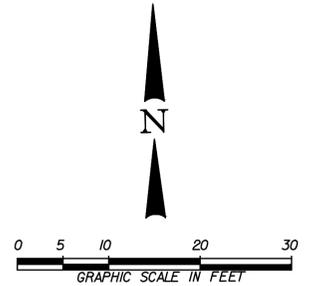
DESIGN	DRAWN	DATE	JOB NO.	SHEET
JCL	ASR	AUG 2015	3551-14.141	C1R

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



LOT 1, BLOCK C  
TWELVE OAKS  
PHASE II  
(CAB. P, PG. 486)

WELLS FARGO BANK NA.  
5575 PEBBLE CREEK DRIVE  
(INST. NO. 20131115001544470)



**PAVING GENERAL NOTES**

- ALL CONCRETE SHALL CONFORM TO NCTCOG ITEM 303.3.4, CLASS "A" (3000 PSI) UNLESS OTHERWISE SHOWN ON THESE PLANS OR STATED IN STANDARD CITY SPECIFICATIONS.
- ALL FILL PLACED UNDER PAVING SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY IN 6 INCH LIFTS, UNLESS OTHERWISE NOTED. REFER TO STRUCTURAL SPECIFICATIONS FOR FILL PLACED BENEATH BUILDING AREAS. ALL OTHER FILL AREAS TO BE COMPACTED TO 90% STANDARD PROCTOR.
- THE CONTRACTOR SHALL SUBMIT A JOINT SPACING PLAN TO THE ENGINEER FOR APPROVAL. EXPANSION JOINT SPACING SHALL BE 90' MAXIMUM EACH WAY WITH NO KEYWAYS AND SAWED DUMMY JOINTS SHALL BE 15' EACH WAY, UNLESS OTHERWISE NOTED. DUMMY JOINTS SHALL BE SAWED WITHIN 24 HOURS OF CONCRETE PLACEMENT.
- TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED AT THE END OF EACH DAY'S PAVING AND WHERE INTERRUPTIONS SUSPEND OPERATIONS FOR 30 MINUTES OR MORE.
- ALL PAVEMENTS TO BE REMOVED SHALL BE SAWCUT TO A NEAT LINE, MINIMUM 1-1/2" DEEP, AND THE PAVEMENT REMOVED IN SUCH A MANNER AS TO PRESERVE THE EXISTING TRANSVERSE REINFORCING STEEL TO THE MAXIMUM EXTENT POSSIBLE.
- ALL CURB AND GUTTER SHALL BE INTEGRAL WITH THE PAVEMENT AND HAVE THE SAME COMPRESSIVE STRENGTH.
- BAR LAPS SHALL BE 30 DIAMETERS IN LENGTH.
- ALL STRIPES, IF REQUIRED, SHALL BE 4 INCHES WIDE, UNLESS OTHERWISE NOTED.
- INSTALLATION AND PLACEMENT OF UTILITY CONDUITS SHALL BE IN ACCORDANCE WITH MECHANICAL AND ELECTRICAL PLANS.
- SIDEWALKS AND ACCESSIBLE ROUTES SHALL HAVE A RUNNING SLOPE NO GREATER THAN 5% (UNLESS OTHERWISE NOTED) AND A CROSS SLOPE NO GREATER THAN 2%.
- CONTRACTOR SHALL NOT COMMENCE WORK WITHIN TxDOT RIGHT-OF-WAY PRIOR TO RECEIVING TxDOT DRIVEWAY PERMIT.

**PRECAST WALL NOTES:**

- PRECAST CONCRETE WALL SHALL BE AS MANUFACTURED BY VERTICRETE, OR APPROVED EQUAL.
- THE SIZE, NUMBER, AND LOCATIONS OF WALL COLUMNS SHOWN ON THE DRAWING ARE APPROXIMATE. ACTUAL COLUMN LAYOUT SHALL BE AS DESIGNED BY THE WALL INSTALLER/PROVIDER.
- WALL FOUNDATIONS ARE TO BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN TEXAS.
- CONTRACTOR IS RESPONSIBLE FOR COORDINATING PIER CAP ELEVATIONS TO MATCH THE SURROUNDING PAVEMENT.
- CONTRACTOR IS RESPONSIBLE FOR COORDINATING ANY POSSIBLE CONFLICTS BETWEEN PIERS AND UNDERGROUND UTILITIES.
- SEAL ALL JOINTS MADE BETWEEN PAVEMENT AND PIER CAPS.
- SUBMITTALS:
  - ACTION SUBMITTALS:
    - ERECTION DRAWINGS, INCLUDING PIER LOCATIONS.
    - COLOR PALATE AND PATTERNS FOR OWNER SELECTION.
    - MATERIAL SAMPLES FOR OWNER SELECTION.
  - INFORMATIONAL SUBMITTALS:
    - SIGNED AND SEALED FOUNDATION DRAWINGS.



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NO.	DATE	REVISION
△	9/18/15	CONFORMED
△	8/14/15	ADDENDUM NO. 3

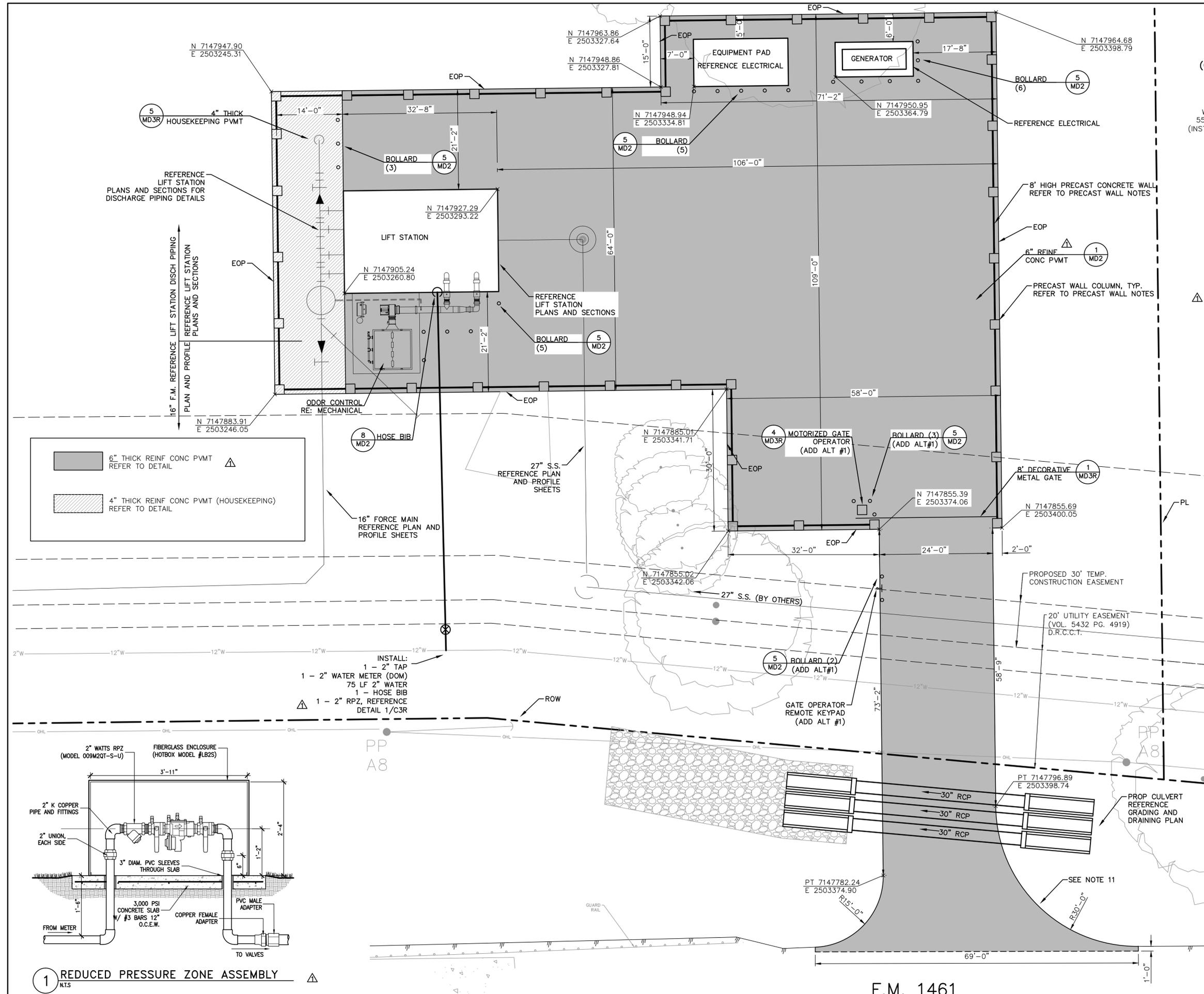
7557 RAMBLER ROAD, SUITE 1400  
DALLAS, TX 75231 972.235.3031  
TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05

**DETAILED SITE PLAN**

**SOUTHEAST SECTOR  
LIFT STATION, FORCE MAIN AND  
METERING VAULT**

CITY OF CELINA, COLLIN COUNTY, TEXAS

DESIGN	DRAWN	DATE	JOB NO.	SHEET
JCL	ASR	JULY 2015	3551-14.141	C3R



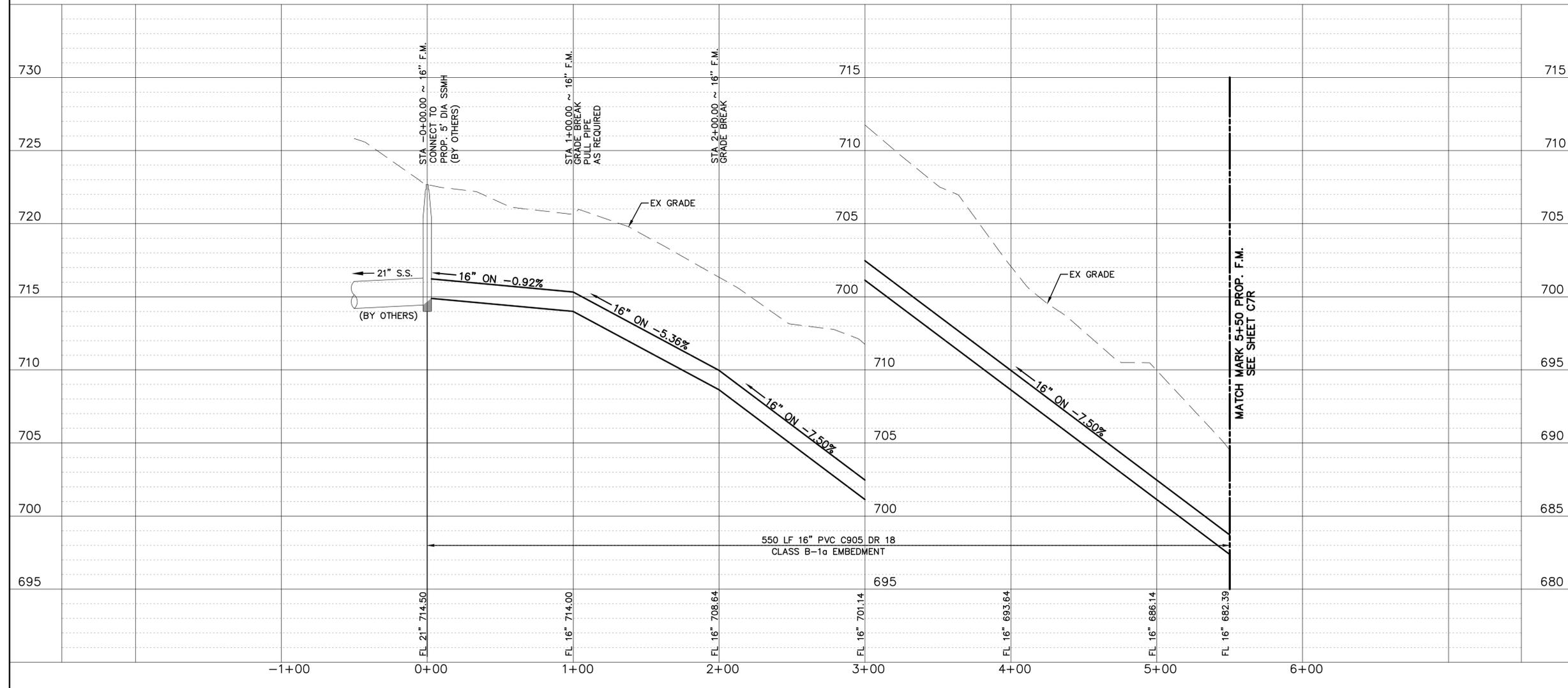
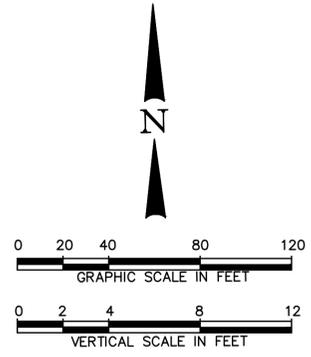
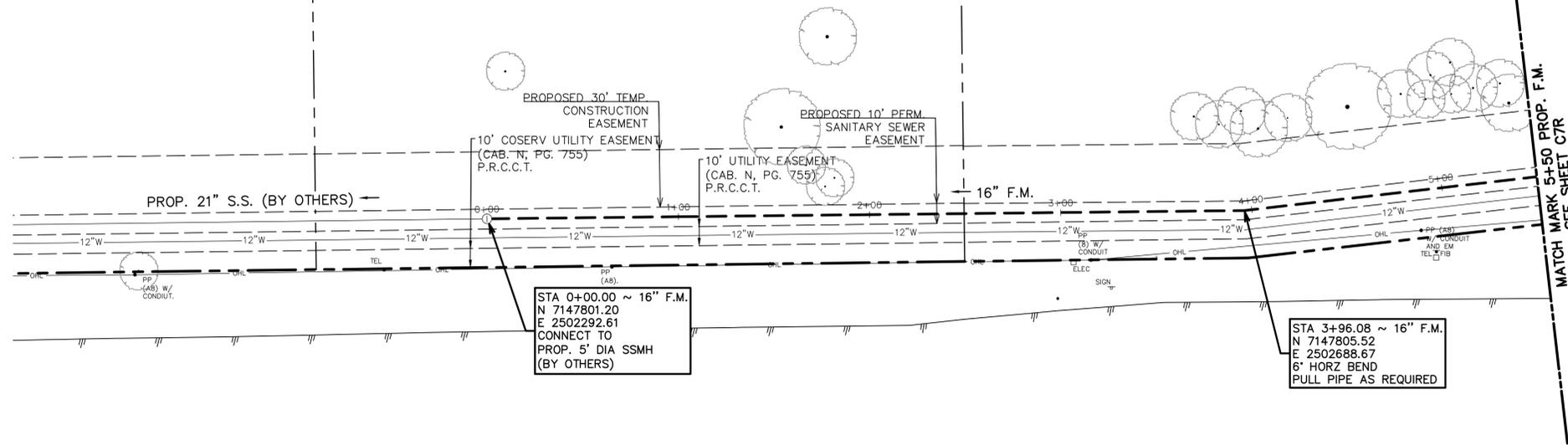




LOT 13, BLOCK B  
TWELVE OAKS  
(CAB. N, PG. 755)  
JEFFREY AND CARA SORENSEN  
2601 TWELVE OAKS LANE  
(INST. NO. 20071031001485900)

LOT 12, BLOCK B  
TWELVE OAKS  
(CAB. N, PG. 755)  
PAUL AND STARLING REID  
2615 TWELVE OAKS LANE  
(INST. NO. 20090202000099380)

LOT 11R, BLOCK B  
TWELVE OAKS  
(INST. NO. 20111212010002590)  
BRIAN B. AND  
APRIL L. KOOLMAN  
2627 TWELVE OAKS LANE  
(INST. NO. 20140722000761870)



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		9/18/15		CONFORMED	
7557 RAMBLER ROAD, SUITE 1400 DALLAS, TX 75231 972.235.3031 TX REG. ENGINEERING FIRM F-14439 TX REG. SURVEYING FIRM LS-101938-05					
<b>PLAN &amp; PROFILE</b> <b>16" FORCE MAIN STA 0+00 TO 5+50</b> <b>SOUTHEAST SECTOR</b> <b>LIFT STATION, FORCE MAIN AND</b> <b>METERING VAULT</b> CITY OF CELINA, COLLIN COUNTY, TEXAS					
DESIGN	DRAWN	DATE	JOB NO.	SHEET	
JCL	ASR	AUG 2015	3551-14.141	C6R	

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT

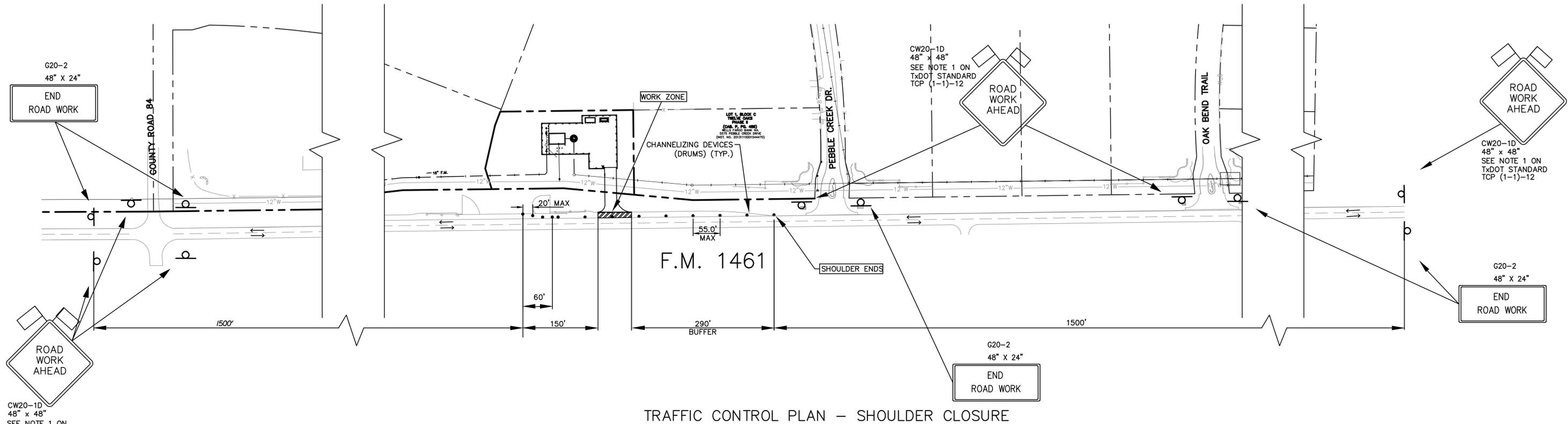
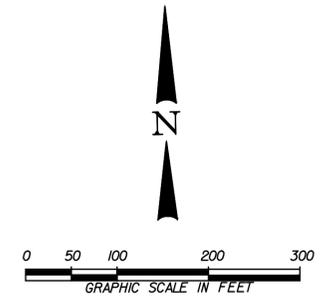


Posted Speed	Formula	Minimum Desirable Taper Lengths "L"			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
45	L = WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

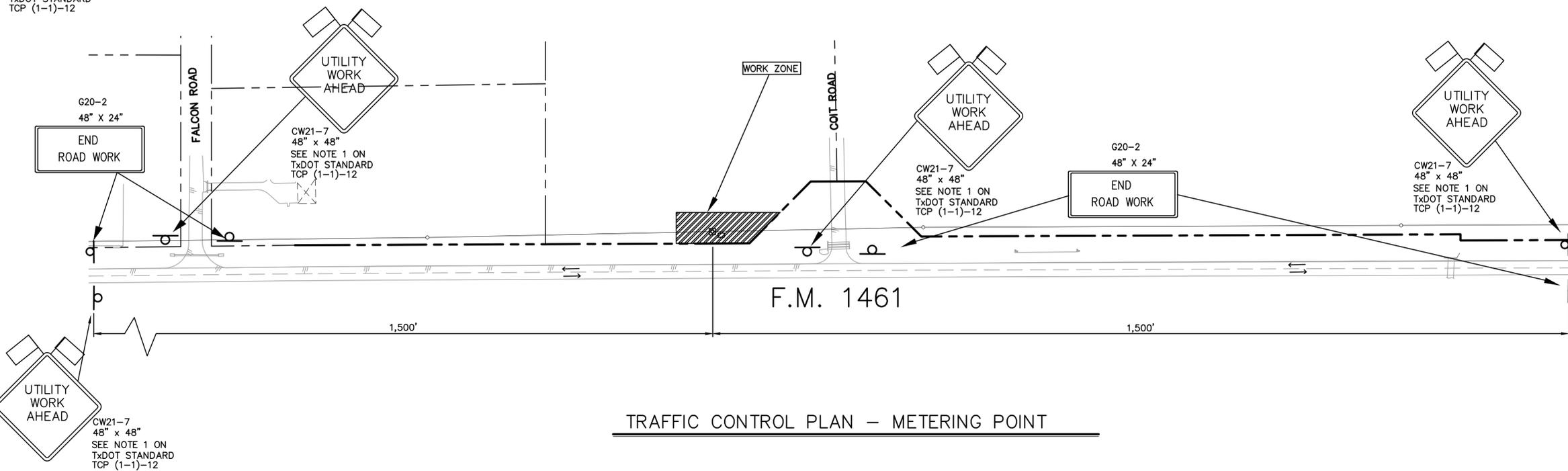
\*\* \* Taper lengths have been rounded off.  
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

**NOTES:**

1. POSTED SPEED: 55 MPH
2. BARRICADING AND PROJECT SIGNS SHALL CONFORM TO TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICE, (TMUTCD), LATEST UPDATES, AND TxDOT STANDARDS SUCH AS TCP, WZ AND BC.



**TRAFFIC CONTROL PLAN – SHOULDER CLOSURE**



**TRAFFIC CONTROL PLAN – METERING POINT**

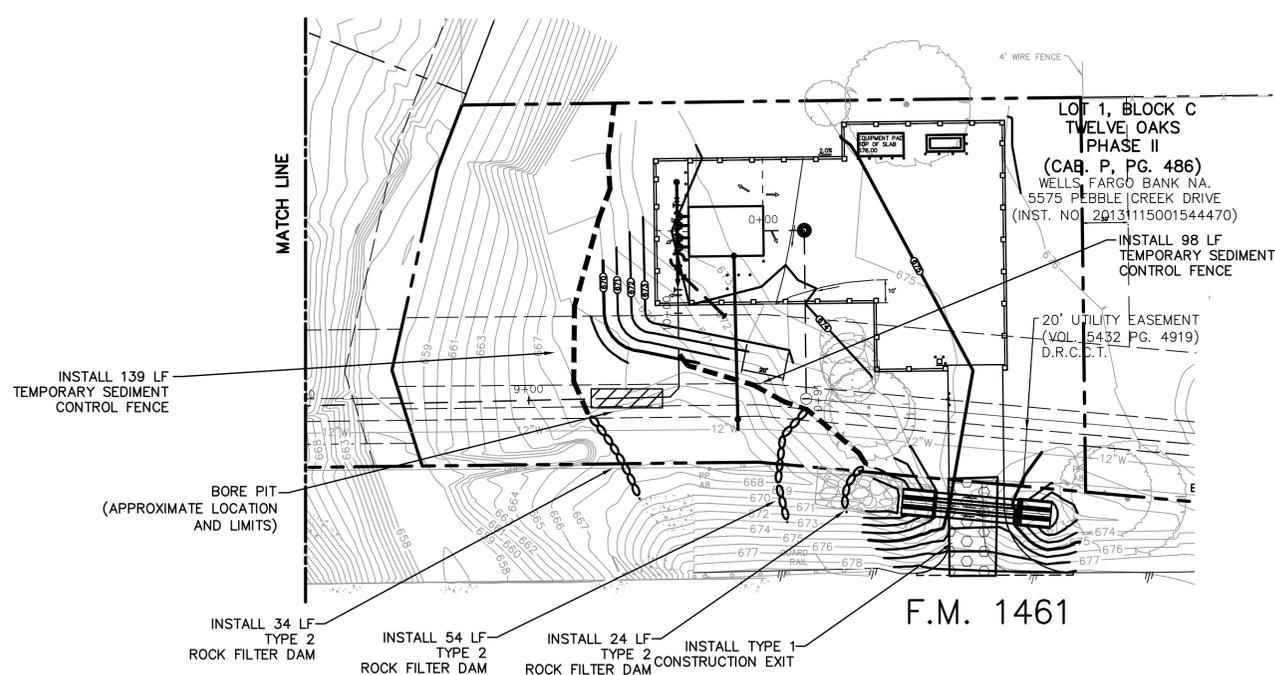
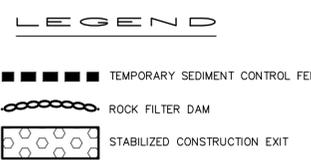
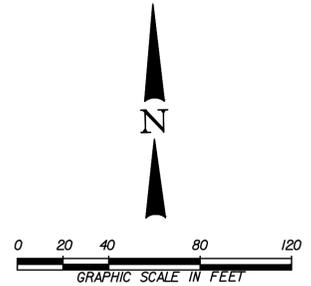
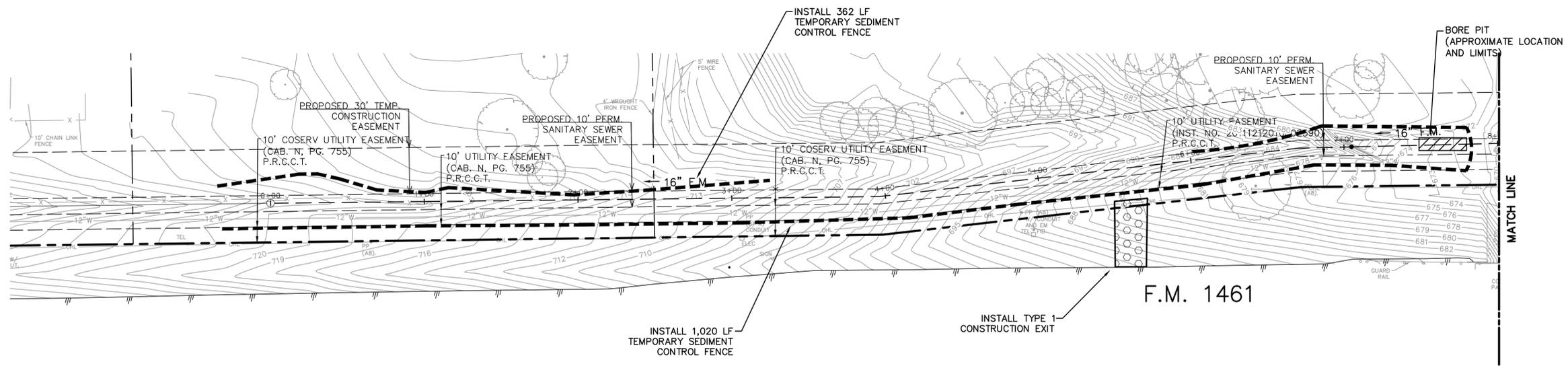


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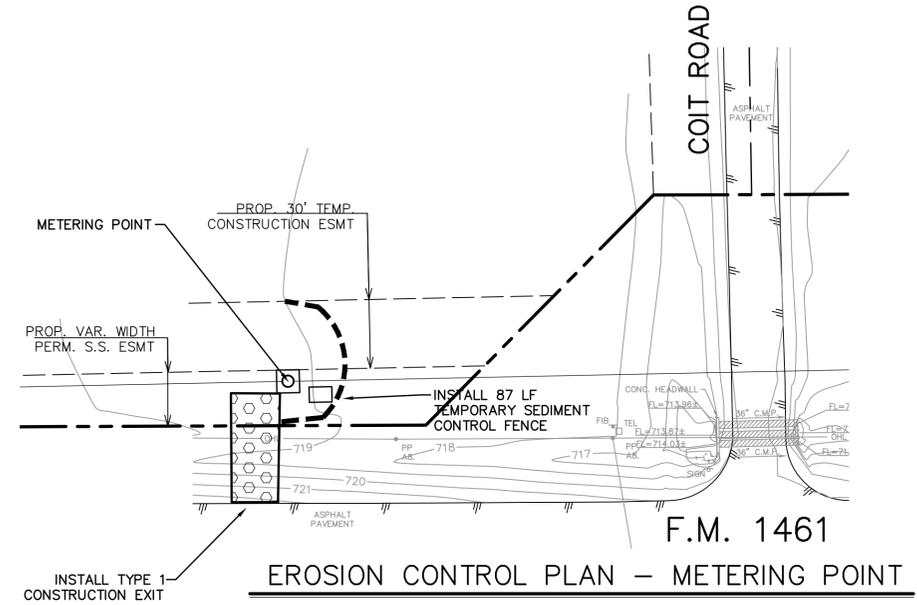
NO.	DATE	CONFORMED	REVISION
<b>Pacheco Koch</b> 7557 RAMBLER ROAD, SUITE 1400 DALLAS, TX 75231 972.235.3031 TX REG. ENGINEERING FIRM F-14439 TX REG. SURVEYING FIRM LS-101938-05			

TRAFFIC CONTROL PLAN				
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT				
CITY OF CELINA, COLLIN COUNTY, TEXAS				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
JCL	ASR	AUG 2015	3551-14.141	C8R

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



EROSION CONTROL PLAN – LIFT STATION & FORCE MAIN



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**POLLUTION CONTROL GENERAL NOTES**

- THIS PLAN HAS BEEN PREPARED TO PROVIDE MEANS TO PREVENT OR MINIMIZE POLLUTION OF STORM WATER.
- THE CONSTRUCTION ACTIVITY INCLUDED IN THIS PLAN WILL INCLUDE:
  - CLEARING AND GRUBBING
  - ROUGH GRADING
  - FINAL GRADING
  - UTILITY INSTALLATION
  - PAVEMENT INSTALLATION
  - BUILDING CONSTRUCTION
- THE TOTAL ESTIMATED LAND AREA TO BE DISTURBED IS 1.7 ACRES.
- THE ESTIMATED RUNOFF COEFFICIENT UPON COMPLETION OF THE PROJECT IS 0.4.
- THE STORM WATER EXITING THE SITE IS COLLECTED IN AN EXISTING DRAINAGE SYSTEM MAINTAINED BY THE CITY OF CELINA, TEXAS.
- THE SOILS ON THE SITE ARE GENERALLY EXPANSIVE CLAYS.
- THE CONTRACTOR SHALL PROVIDE AND MAINTAIN EROSION PROTECTION AROUND THE WORK AREA PERIMETER AND AT ALL INLET MOUTHS PRIOR TO COMMENCING WORK AND UNTIL THE WORK AREA HAS BEEN STABILIZED.
- THE CONTRACTOR WILL REMOVE ALL EXCESS SOIL FROM CONSTRUCTION VEHICLES PRIOR TO EXITING THE SITE.
- ALL DISTURBED AREAS WHICH WILL NOT BE RE-DISTURBED MUST BEGIN BEING STABILIZED IMMEDIATELY BY THE CONTRACTOR TO CONTROL EROSION. THE CONTRACTOR HAS 14 DAYS TO HAVE ALL STABILIZATION AND EROSION CONTROL DEVICES IN PLACE.
- THE CONTRACTOR SHALL UNDERTAKE PROPER METHODS TO REDUCE DUST GENERATION FROM THE SITE.
- THE CONTRACTOR MUST COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS REGARDING SEDIMENT AND EROSION CONTROL.
- A COPY OF THIS PLAN, AS PART OF THE SWPPP, MUST BE KEPT AT THE CONSTRUCTION FACILITY DURING THE ENTIRE CONSTRUCTION PERIOD.
- CONSTRUCTION SEQUENCING MUST PROVIDE FOR THE EXCAVATION OF AN ON-SITE BASIN AS A SEDIMENT COLLECTION BASIN PRIOR TO THE DISTURBANCE OF GREATER THAN 10 ACRES OF LAND.
- ALL FINISHED GRADES ARE TO BE HYDROMULCHED, SPOT SODDED OR SEEDED AND WATERED UNTIL GROWTH IS ESTABLISHED ON AND OFF-SITE.
- A PIT OR WASH OUT BASIN SHALL BE CONSTRUCTED ON-SITE BY THE CONTRACTOR FOR THE WASH OUT OF CONCRETE TRUCKS.
- A BERM OR OTHER SPILL PROTECTION MEASURE SHALL BE USED FOR ANY TEMPORARY FUEL STORAGE TANK ON-SITE.

- IF SUMP PUMPS ARE USED TO REMOVE WATER FROM EXCAVATED AREAS, FILTER THE DISCHARGE TO REMOVE SEDIMENT AND OTHER POLLUTANTS BEFORE THE WATER LEAVES THE SITE.
- TO PREVENT DAMAGE TO VEGETATION IN DOWNSTREAM WATER COURSES, LIMIT ANY PROPOSED LIME STABILIZATION OPERATIONS TO THAT WHICH CAN BE MIXED AND COMPACTED BY THE END OF EACH WORK DAY. GEOTEXTILE FABRIC IS NOT EFFECTIVE IN FILTERING LIME SINCE THE GRAIN SIZE IS SMALLER THAN THE OPENING IN THE FABRIC.
- VEHICLE PARKING AREAS, STAGING AREAS, STOCKPILES, SPOILS, ETC. SHALL BE LOCATED SUCH THAT THEY WILL NOT ADVERSELY AFFECT STORM WATER QUALITY. OTHERWISE, COVERING OR ENCIRCLING THE AREAS WITH PROTECTIVE MEASURES SHALL BE NECESSARY.
- STORE ALL TRASH AND BUILDING MATERIALS WASTE IN AN ENCLOSURE UNTIL IT CAN BE PROPERLY DISPOSED OF AT THE APPROPRIATE OFF-SITE FACILITIES.
- TRACKING OF SEDIMENT OFF-SITE BY TRUCK TRAFFIC SHALL BE HANDLED THROUGH REGULAR CLEANING.
- INSPECTIONS SHALL BE CONDUCTED BY THE PERMITEE ONCE EVERY TWO WEEKS AND WITHIN 24 HOURS AFTER STORM EVENT OF 0.5 INCHES OR MORE OR ONCE PER WEEK ON A SPECIFIC PRE-DEFINED DAY. THE INSPECTIONS WILL INCLUDE:
  - DISTURBED AREAS OF THE SITE THAT HAVE NOT BEEN STABILIZED.
  - AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
  - STRUCTURAL CONTROL MEASURES.
  - LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.
- CONTRACTOR SHALL MINIMIZE THE EXPOSURE OF BUILDING MATERIALS, BUILDING PRODUCTS, CONSTRUCTION WASTES, TRASH, LANDSCAPE MATERIALS, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS PRESENT ON THE SITE TO PRECIPITATION AND TO STORMWATER.
- PERMANENTLY STABILIZE EXPOSED SOIL, WITHIN AND ADJACENT TO THE SITE, THAT IS DISTURBED BY VEHICLES, GRADING AND OTHER CONSTRUCTION ACTIVITIES.
- CONTAIN ALL RUNOFF FROM MATERIAL USED IN SUBGRADE STABILIZATION.
- MATERIAL STOCKPILES SHALL BE COVERED BY PLASTIC OR SURROUNDED BY EROSION CONTROL STRUCTURES TO CONTROL SEDIMENT RELEASES.
- CONTRACTOR SHALL PROTECT SLOPES IN EXCESS OF 15% IN ORDER TO MINIMIZE EROSION OF SOILS AND THE DISTURBANCE OF SLOPES.
- VEGETATION TO BE PRESERVED WHERE EVER POSSIBLE TO HELP REDUCE EROSION. WHERE VEGETATION MUST BE REMOVED, PRESERVE NATIVE TOPSOIL IN ALL AREAS POSSIBLE.
- MINIMIZE SOIL COMPACTION IN AREAS INTENDED FOR POST CONSTRUCTION PERVIOUS SURFACE.

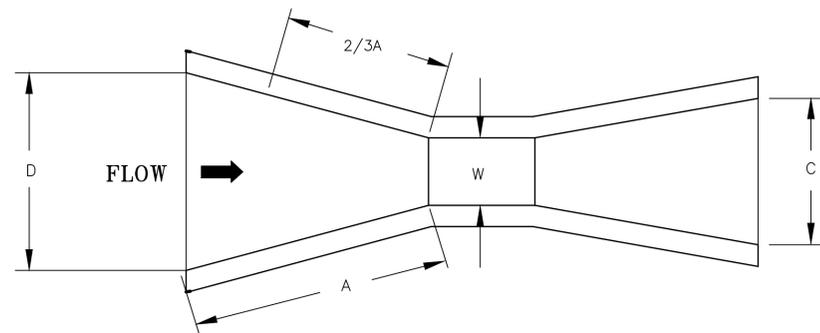
NO.	DATE	REVISION
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<b>Pacheco Koch</b>		
7557 RAMBLER ROAD, SUITE 1400 DALLAS, TX 75231 972.235.3031 TX REG. ENGINEERING FIRM F-14439 TX REG. SURVEYING FIRM LS-101939-05		
<b>EROSION CONTROL PLAN</b>		
<b>SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT</b>		
<i>CITY OF CELINA, COLLIN COUNTY, TEXAS</i>		
DESIGN	DRAWN	DATE
JCL	ASR	AUG 2015
JOB NO.	SHEET	
3551-14.141	C9R	

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT

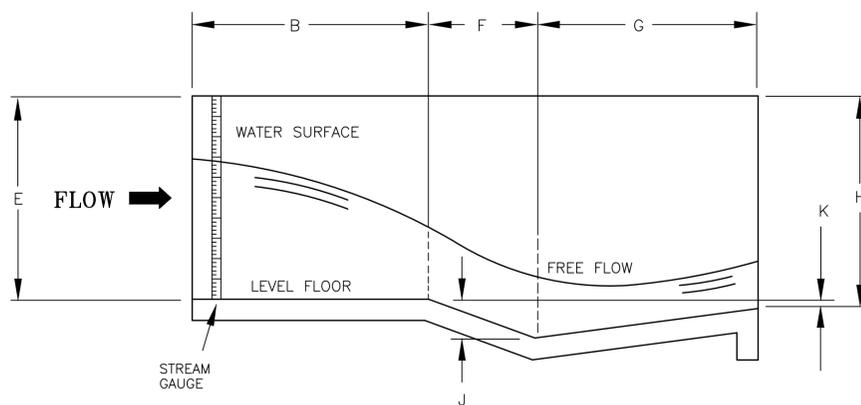


PARSHALL FLUME TABLE OF DIMENSIONS

LOCATION		Configuration	W	A	2/3A	B	C	D	E	F	G	H	J	K	FLUME FLOW RANGE			
INTERCEPTOR	STATION														MIN.		MAX.	
															MGD.	GPM	MGD.	GPM
CELINA SOUTHEAST SECTOR PHASE 2	INTEGRAL	158+50	1'-0"	4'-6"	3'-0"	4'-4 7/8"	2'-0"	2'-9 1/4"	3'-0"	2'-0"	3'-0"	3'-3"	0'-9"	0'-3"	0.09	60	5	3472



PLAN VIEW



PROFILE VIEW

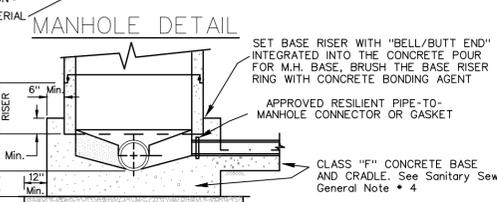
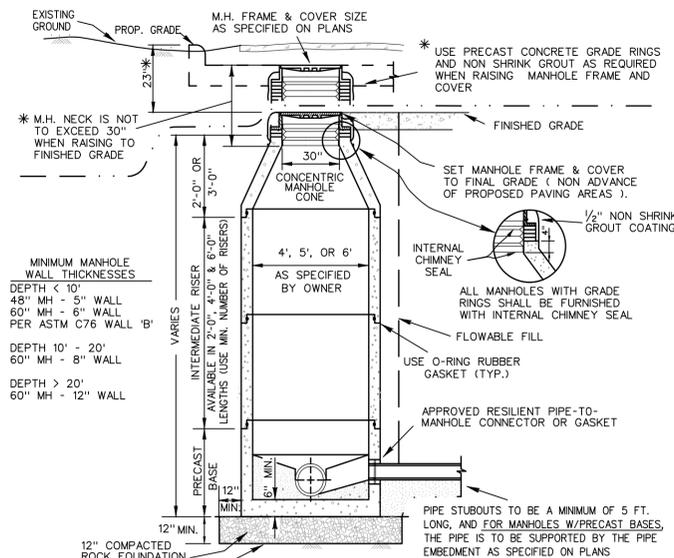
PARSHALL FLUME DIMENSION DETAILS

N.T.S.

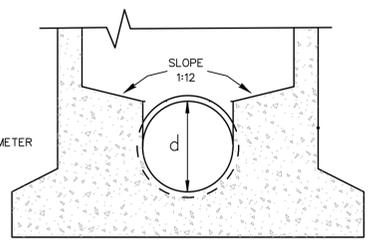


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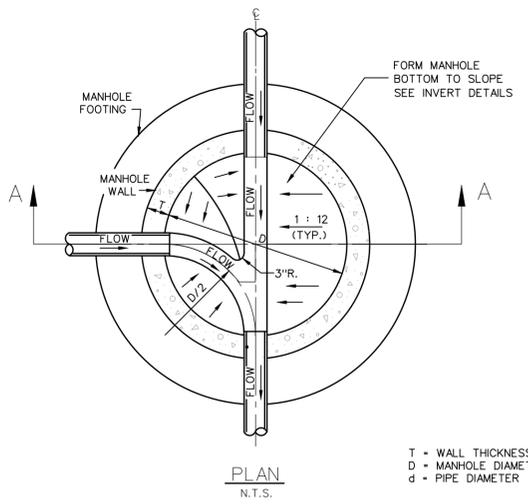
NO.	DATE	REVISION		
1	9/18/15	CONFORMED		
<b>Pacheco Koch</b> 7557 RAMBLER ROAD, SUITE 1400 DALLAS, TX 75231 972.235.3031 TX REG. ENGINEERING FIRM F-14439 TX REG. SURVEYING FIRM LS-101938-05				
<b>METERING POINT - PARSHALL FLUME DETAILS</b> <b>SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT</b> CITY OF CELINA, COLLIN COUNTY, TEXAS				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
JCL	ASR	AUG 2015	3551-14.141	C11



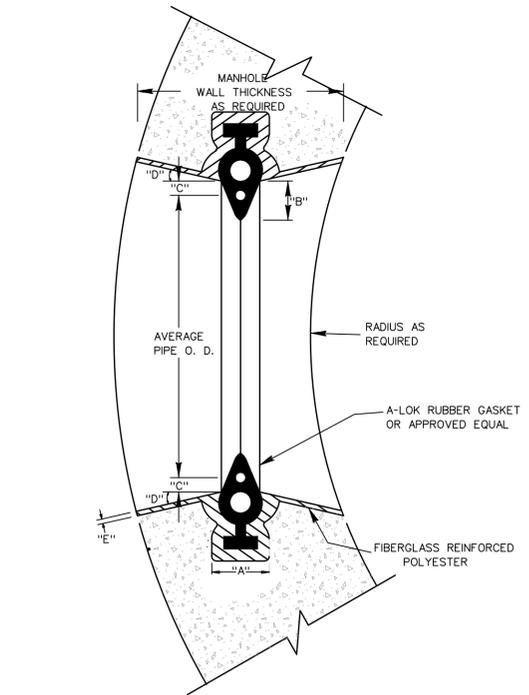
**1** SANITARY SEWER MANHOLE PRECAST  
SCALE: N.T.S.



**4** SANITARY SEWER MANHOLE INVERT BENCH DETAIL  
SCALE: N.T.S.



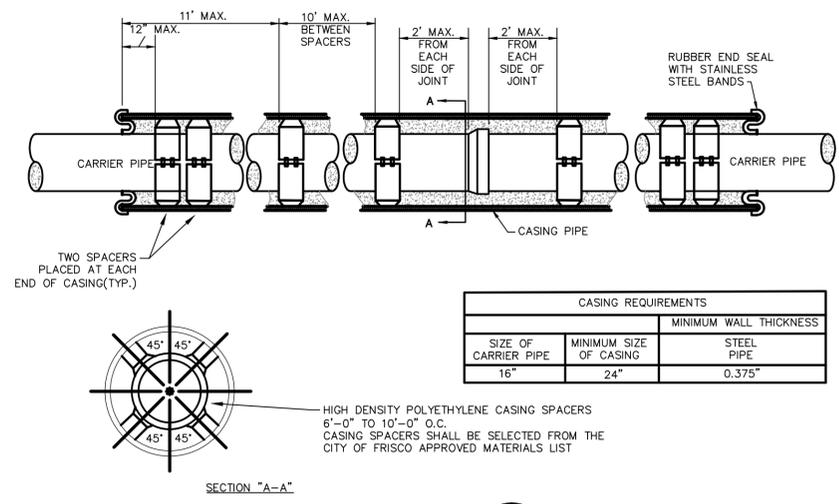
**2** SANITARY SEWER MANHOLE INVERT INTERSECTION DETAIL  
SCALE: N.T.S.



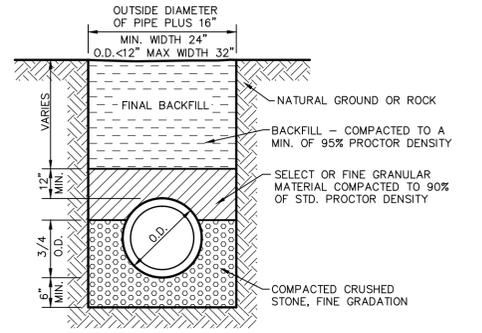
DIMENSION FOR MANHOLE PIPE CONNECTOR A.S.T.M. C-923

PIPE SIZE	A	B	C	D	E
4" - 6"	1 1/2"	7/8"	3/8"	10"	3/4"-3/8"
8" - 21"	2 1/8"	1 3/8"	5/8"	10"	1/4"-3/8"
24" - 60"	2 3/8"	1 3/4"	3/4"	10"	1/4"-3/8"

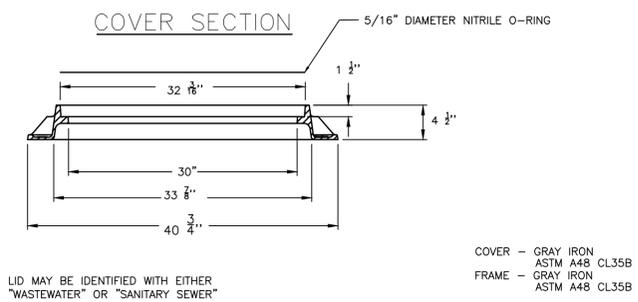
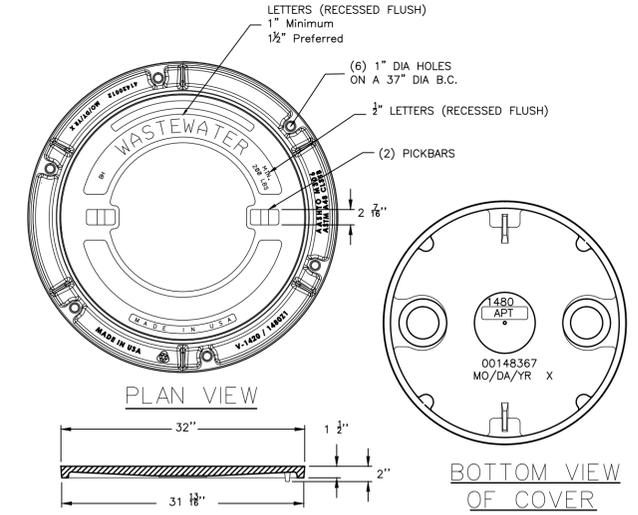
**5** MANHOLE PIPE CONNECTOR (FOR CAST-IN-PLACE MANHOLES)  
SCALE: N.T.S.



**3** PIPE CASING DETAIL  
SCALE: N.T.S.



**7** CLASS "B-2" EMBEDMENT  
SCALE: N.T.S.



**6** WATERTIGHT 32" C.I. M.H. FRAME & COVER  
SCALE: N.T.S.

- PIPE CASING GENERAL NOTES:
1. SPACERS SHOULD BE SIZED TO SECURELY FASTEN ONTO THE CARRIER PIPE BARREL O.D. AND A CASING SPACER SHOULD BE USED WITH A MINIMUM RUNNER HEIGHT TO KEEP THE PIPE FROM RESTING OR SLIDING ON ITS JOINT DURING INSTALLATION.
  2. SPACERS SHOULD BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. SPECIAL CARE SHOULD BE TAKEN TO ENSURE THAT ALL COMPONENT PARTS ARE CORRECTLY ASSEMBLED AND EVENLY TIGHTENED, AND THAT NO DAMAGE OCCURS DURING TIGHTENING OF THE SPACERS OR THE CARRIER PIPE INSERTION. THE ANNULUS BETWEEN THE CARRIER PIPE AND THE CASING SHOULD BE SEALED AT EACH END OF THE CASING TO PREVENT WATER FROM ENTERING.
  3. THERE MUST BE NO INADVERTENT METALLIC CONTACT BETWEEN THE CASING AND THE CARRIER PIPE. THE POSITIONING OF SPACERS SHOULD ENSURE THAT THE CARRIER PIPE IS ADEQUATELY SUPPORTED THROUGHOUT ITS LENGTH, PARTICULARLY AT THE ENDS, TO OFFSET SETTLING AND POSSIBLE ELECTRICAL SHORTING.
  4. CASING SHALL BE PLACED AT SUFFICIENT DEPTH TO ENSURE THE CARRIER PIPE HAS A MINIMUM OF THREE (3) FEET OF COVER ON EITHER END OF THE CASING.
  5. STEEL CASING PIPE TO BE INTERNALLY/EXTERNALLY EPOXY LINED. DRY FILM THICKNESS = 10 MIL.
  6. BORE PITS SHALL BE BACKFILLED AND COMPACTED TO 95% STANDARD PROCTOR PRIOR TO INSTALLATION OF THE PORTIONS OF THE PIPE THAT LAY WITHIN THE BORE PIT LIMITS. NO SEPARATE PAY FOR COMPACTED BACKFILL.
  7. ANNULAR SPACE TO BE GROUTED. REFER TO TUNNEL GROUT SPECIFICATION. NO SEPARATE PAY FOR GROUTING.



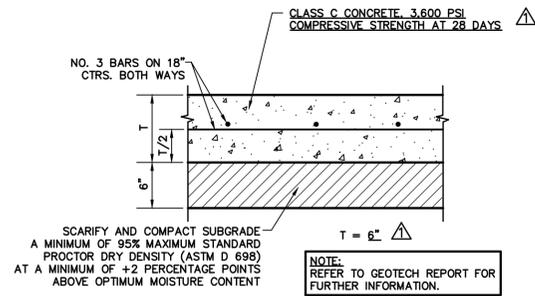
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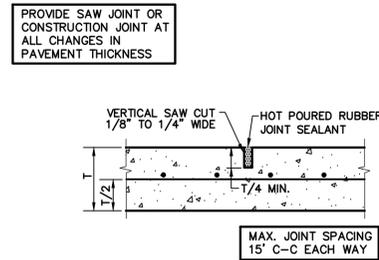
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MISCELLANEOUS CIVIL DETAILS 1				
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT				
CITY OF CELINA, COLLIN COUNTY, TEXAS				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
JCL	ASR	AUG 2015	3551-14.141	MD1R

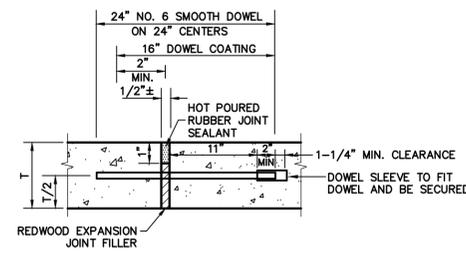
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



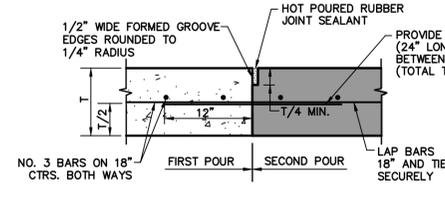
**1 CONCRETE PAVEMENT SECTION**  
NOT TO SCALE



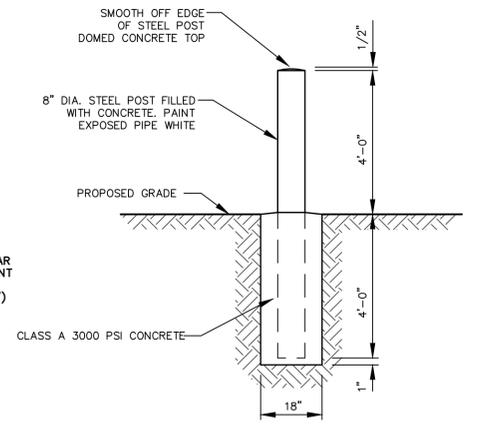
**2 SAWED DUMMY JOINT**  
NOT TO SCALE



**3 EXPANSION JOINT**  
NOT TO SCALE



**4 CONSTRUCTION JOINT**  
NOT TO SCALE



**5 BOLLARD DETAIL**  
NOT TO SCALE

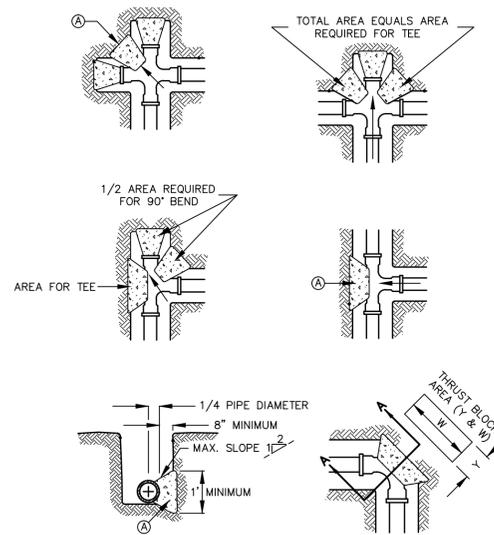
**GENERAL NOTES:**

- TABLE IS BASED ON 2000#/SQ. FT. SOIL. IF CONDITIONS ARE FOUND TO INDICATE SOIL BEARING IS LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
- AREAS FOR PIPE LARGER THAN 18" SHALL BE CALCULATED.
- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI.
- THRUST BLOCK IS TO EXTEND TO UNDISTURBED SOIL.
- SIZE MAY BE DECREASED FOR LESSER DEGREE BENDS AS DETERMINED BY ENGINEER.
- KEEP CONCRETE CLEAR OF M.J. OR BELL AND SPIGOT JOINTS.
- BLOCK IN A SIMILAR MANNER AT TEES, HYDRANTS, PLUG OR OTHER LOCATIONS AS REQUIRED.
- IF CONCRETE BLOCKS CANNOT BE POURED, THEN USE TIE-RODS OR OTHER APPROVED METHOD TO RESTRAIN THRUST.

**CONSTRUCTION KEY NOTES:**

- LENGTH "Y" & "W" AS REQUIRED TO OBTAIN BEARING AREA AGAINST UNDISTURBED SOIL.
- ADDITIONAL EXCAVATION IF NECESSARY TO OBTAIN REQUIRED BEARING AREA.
- MINIMUM THRUST BLOCK AREA REQUIREMENTS FOR (Y & W) AS FOLLOWS:

PIPE SIZE	TEE, DEAD END 90° BEND	45° AND 22 1/2° BENDS
16"	36 SQ. FEET	21 SQ. FEET
24"	66 SQ. FEET	36 SQ. FEET



**6 THRUST BLOCKING**  
NOT TO SCALE

**7 TYPICAL SERVICE CONNECTION**  
NOT TO SCALE

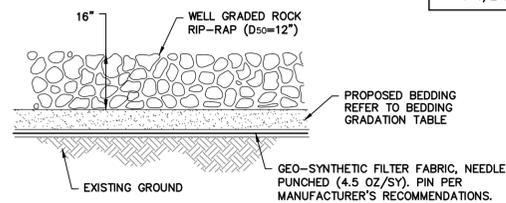
**8 HOSE BIB**  
NOT TO SCALE

**DRY STONE RIP-RAP SPECIFICATIONS & GRADING**  
THE FOLLOWING SPECIFICATIONS AND GRADATIONS ARE MINIMUMS TO BE USED IN CONSTRUCTION.

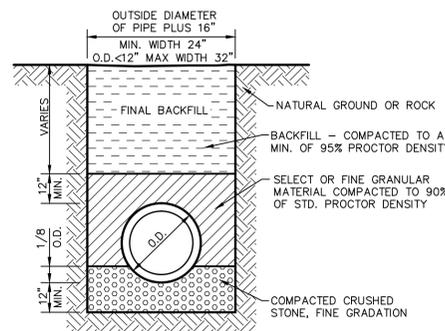
- USE FILED OR QUARRY DRY STONE RIP-RAP.
- MINIMUM BED DEPTH OF RIP-RAP SHALL BE 16".
- STONES SHALL BE PLACED IN A SINGLE LAYER WITH CLOSED JOINTS. THE UPRIGHT AXIS OF THE SONTES SHALL BE NEARLY PERPENDICULAR TO THE EMBANKMENT SLOPE. THE COURSES SHALL BE PLACED FROM THE BOTTOM OF THE EMBANKMENT UPWARDLY, WITH LARGER STONES BEING PLACED IN THE LOWER COURSES. OPEN JOINTS SHALL BE FILLED WITH SPALLS. STONES THAT PROJECT MORE THAN THE ALLOWABLE AMOUNT IN THE FINISHED WORK SHALL BE REPLACED, EMBEDDED DEEPER, OR CHIPPED.
- RIP RAP SHALL BE STOCKPILED AND APPROVED PRIOR TO INSTALLATION.

RIP-RAP GRADATIONS	
12" THICKNESS OF RIP-RAP	
SIEVE SIZE SQUARE MESH	PERCENT PASSING
15 INCH	100
12 INCH	70 - 100
8 INCH	45 - 75
6 INCH	30 - 55
3 INCH	10 - 30
1-1/2 INCH	0 - 10

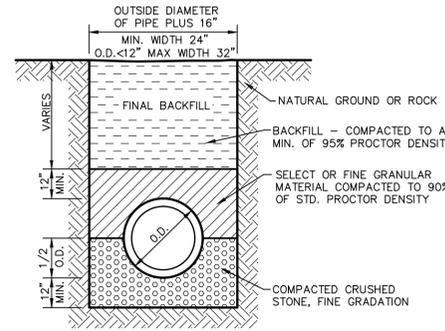
BEDDING GRADATIONS	
6" THICKNESS OF BEDDING	
SIEVE SIZE SQUARE MESH	PERCENT PASSING
3 INCH	100
1-1/2 INCH	55 - 100
3/4 INCH	25 - 60
3/8 INCH	5 - 30
No. 4	0 - 10



**11 RIP-RAP DETAIL**  
NOT TO SCALE



**9 CLASS "B-1a" EMBEDMENT**  
NOT TO SCALE



**10 CLASS "B-2a" EMBEDMENT**  
NOT TO SCALE



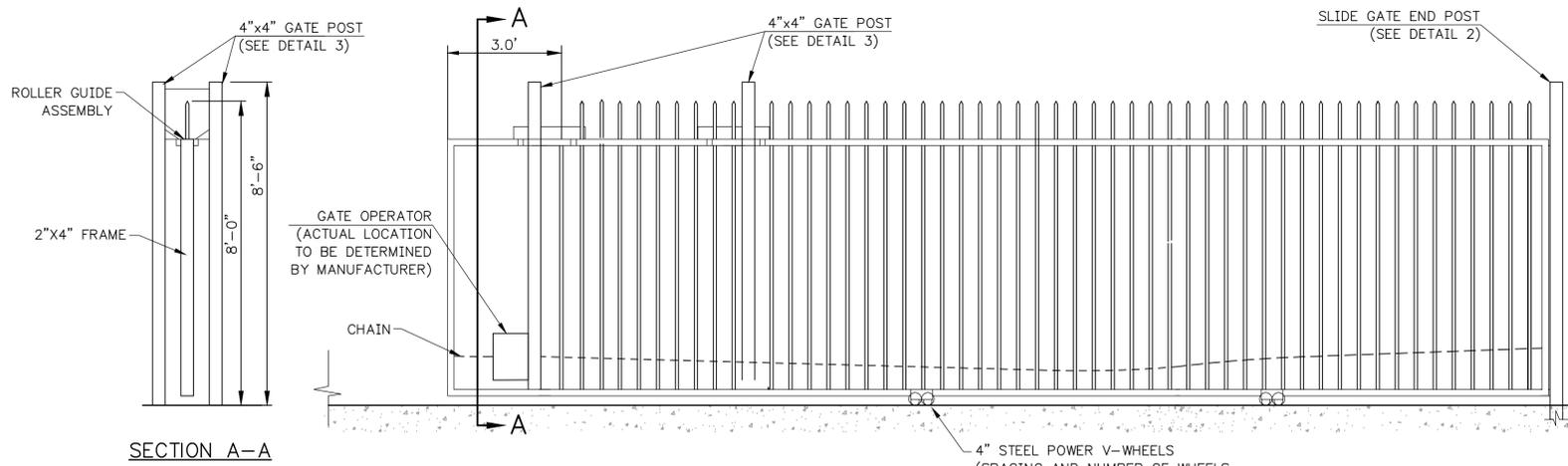
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY JAY C. LONDON, P.E. 97340 ON 07/31/2015. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

NO.	DATE	REVISION
9/18/15	CONFORMED	
8/14/15	ADDENDUM NO. 3	

**Pacheco Koch**  
7557 RAMBLER ROAD, SUITE 1400  
DALLAS, TX 75231 972.235.3031  
TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05

MISCELLANEOUS CIVIL DETAILS 2				
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT				
CITY OF CELINA, COLLIN COUNTY, TEXAS				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
JCL	ASR	AUG 2015	3551-14.141	MD2

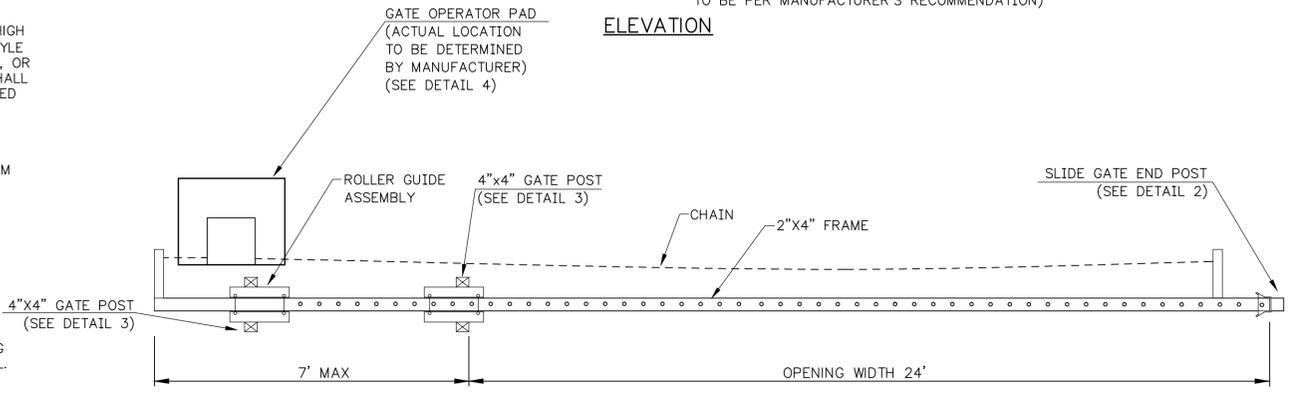
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



SECTION A-A

NOTES:

- GATE SHALL BE PASSPORT II, 8' HIGH 2 RAIL ROLL GATES, "CLASSIC" STYLE AS MANUFACTURED BY AMERISTAR, OR APPROVED EQUAL. THE SYSTEM SHALL INCLUDE ALL COMPONENTS REQUIRED FOR COMPLETE INSTALLATION AND OPERATION.
- GATE COMPONENTS SHALL BE COMMERCIAL STEEL WITH A MINIMUM YIELD STRENGTH OF 45,000 PSI.
- COMPONENTS:  
PICKETS: 1" SQUARE, 14 GA.  
TOP RAILS: 2" SQUARE, 11 GA.  
UPRIGHTS: 2" SQUARE, 11 GA.  
DIAGONALS: 2" SQUARE, 11 GA.  
BOTTOM RAIL: 2" X 4", 11 GA.  
POSTS: 4" SQUARE, 11 GA.
- GATE MOTOR SHALL BE DOOR KING MODEL 9150, OR APPROVED EQUAL.

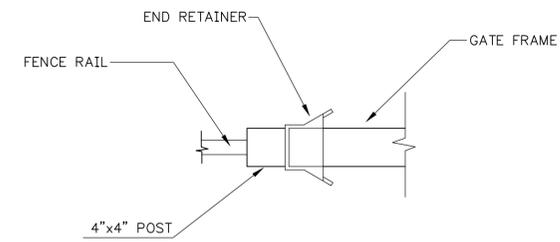


ELEVATION

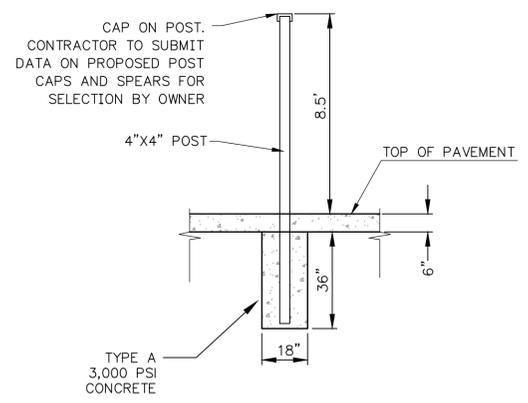
PLAN

1 SLIDING SECURITY GATE  
SCALE: N.T.S.

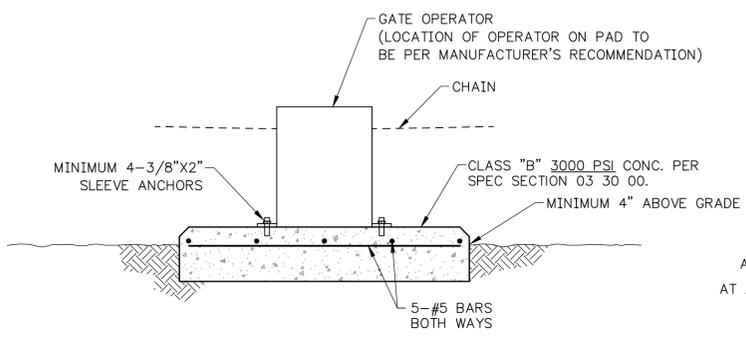
NOTE:  
BASE BID: MANUAL ROLLING GATE  
ADD ALT NO. 1: AUTOMATED GATE



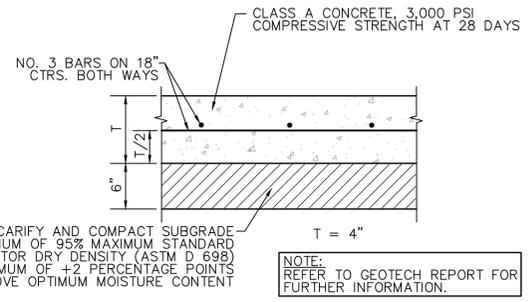
2 SLIDING GATE END POST (CLOSED POSITION)  
SCALE: N.T.S.



3 4"x4" GATE POST  
SCALE: N.T.S.



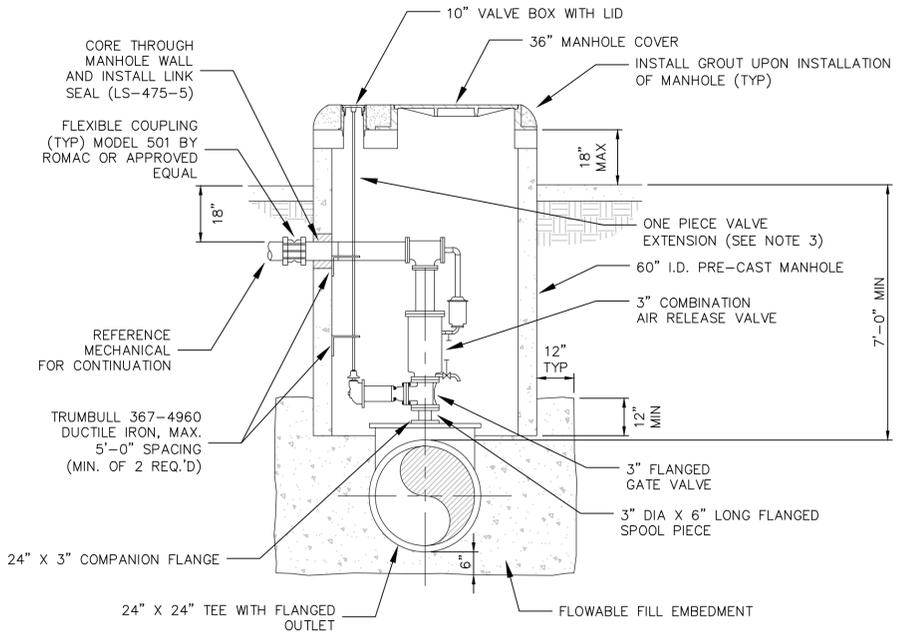
4 GATE OPERATOR PAD  
SCALE: N.T.S.



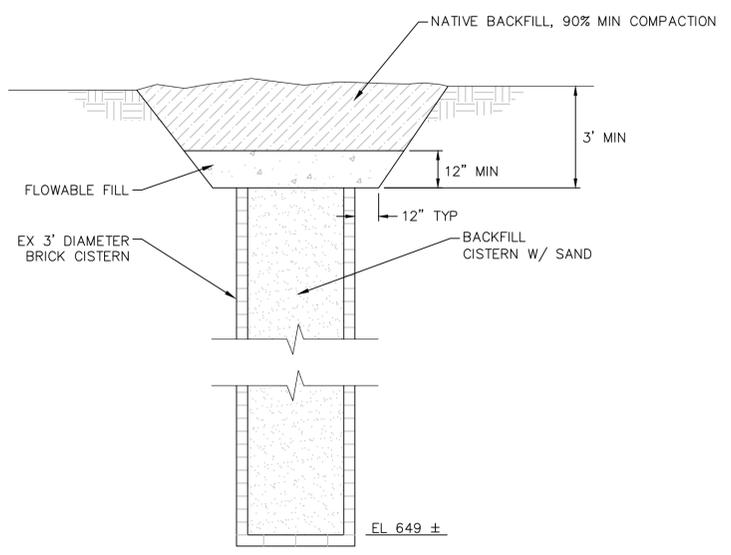
5 HOUSEKEEPING PAVEMENT  
SCALE: N.T.S.

NOTES:

- CONTRACTOR SHALL INSTALL INSULATING FLANGE KITS FOR ALL DISSIMILAR METAL CONNECTIONS.
- EXTEND FLOWABLE FILL A MINIMUM OF 4'-0" UPSTREAM AND DOWNSTREAM OF THE TEE CENTERLINE.
- THE VALVE EXTENSION SHALL BE ONE PIECE AND POSITIONED INSIDE THE MANHOLE SUCH THAT THE VALVE CAN BE OPERATED FROM GROUND LEVEL THROUGH THE MANHOLE TOP. THE VALVE EXTENSION SHALL EXTEND TO WITHIN 4 INCHES OF THE MANHOLE TOP. ACCESS TO VALVE EXTENSION SHALL NOT BE THROUGH MANHOLE COVER.
- ALL METAL SURFACES INSIDE OF MANHOLES SHALL RECEIVE A MINIMUM OF 2 COATS BITUMASTIC COATING (KOPPERS 50 OR APPROVED EQUAL). CARE SHALL BE TAKEN TO APPLY THE COATING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- ALL AIR VALVE PIPING SHALL BE CLASS 53 DUCTILE IRON PIPE WITH FLANGED JOINTS. BURIED PIPE SHOWN AND PIPING INSIDE MANHOLE HAVE FACTORY APPLIED STANDARD COATINGS.
- INSTALL VALVE OPERATOR STEM GUIDES USING EPOXY-COATED ANCHOR BOLTS. DO NOT TIE STEM GUIDE INTO MANHOLE REINFORCEMENT.



6 VALVE VAULT DETAIL FOR AIR RELEASE VALVE  
SCALE: N.T.S.



7 CISTERN ABANDONMENT  
SCALE: N.T.S.



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY JAY C. LONDON, P.E. 97340 ON 08/12/2015. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

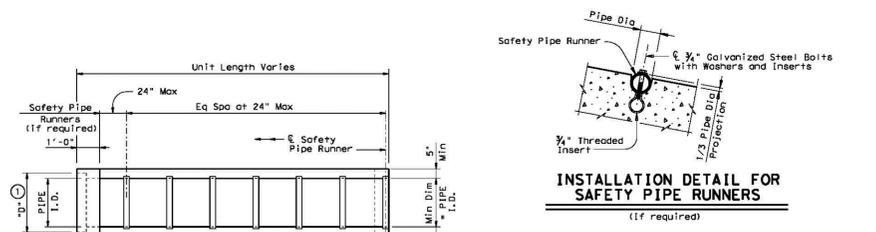
NO.	DATE	CONFORMED	REVISION
	9/18/15	CONFORMED	

**Pacheco Koch**  
7557 RAMBLER ROAD, SUITE 1400  
DALLAS, TX 75231 972.235.3031  
TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05

**MISCELLANEOUS CIVIL DETAILS 3**  
**SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT**  
CITY OF CELINA, COLLIN COUNTY, TEXAS

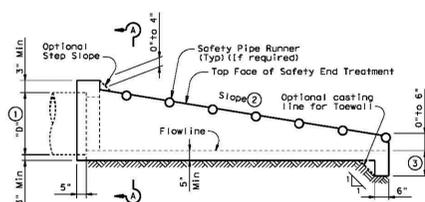
DESIGN	DRAWN	DATE	JOB NO.	SHEET
JCL	ASR	AUG 2015	3551-14.141	MD3R

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT

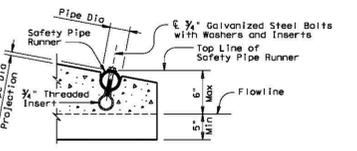


**INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS**  
(If required)

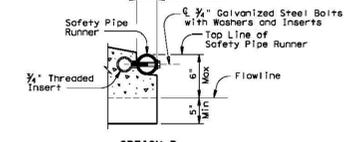
**PLAN**



**LONGITUDINAL ELEVATION**

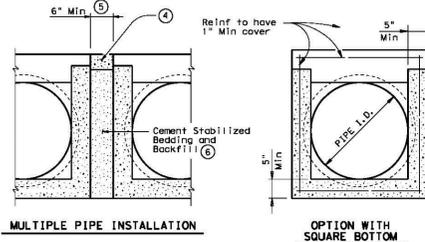


**OPTION A**

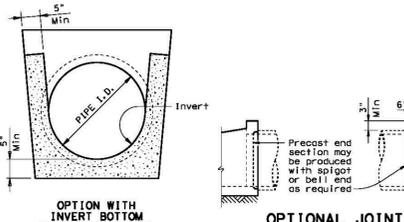


**OPTION B**

**END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS**  
(If required)



**SECTION A-A**



**OPTIONAL JOINT**  
(Showing joint between RCP and Precast Safety End Treatment)

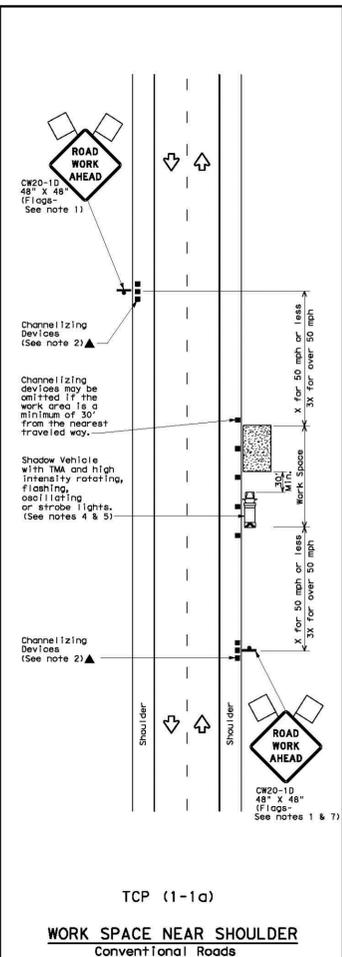
PIPE I. D.	PIPE WALL THICKNESS	"D"	MAXIMUM SLOPE	MINIMUM LENGTH OF UNIT	PIPE RUNNERS REQUIRED		REQUIRED PIPE RUNNER SIZES		
					SINGLE PIPE	MULTIPLE PIPE	NOMINAL DIA.	O. D.	I. D.
12"	2"	17"	6:1	4'-9"	No	Yes, for >2 Pipes	3" STD	3,500"	3,068"
15"	2 1/4"	20 1/2"	6:1	6'-5"	No	Yes, for >2 Pipes	3" STD	3,500"	3,068"
18"	2 1/2"	24"	6:1	8'-0"	No	Yes, for >2 Pipes	3" STD	3,500"	3,068"
24"	3"	31"	6:1	11'-3"	No	Yes, for >2 Pipes	3" STD	3,500"	3,068"
30"	3 1/2"	38 1/2"	6:1	14'-8"	No	Yes, for >2 Pipes	4" STD	4,500"	4,026"
36"	4"	45 1/2"	6:1	17'-11"	Yes	Yes	4" STD	4,500"	4,026"
42"	4 1/2"	52 1/2"	6:1	21'-2"	Yes	Yes	4" STD	4,500"	4,026"

- Dimension "D" is based on ASTM C-76, Class III, Wall "B" thickness. If any other wall thickness is used, dimension "D" must be adjusted accordingly.
- Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
- Toewall to be used only when dimension is shown elsewhere in the plans.
- The top 4" of void between Precast End Treatments shall be filled with concrete Riprap and shall be considered subsidiary to Safety End Treatment.
- Clear distance between pipes shall be adjusted to provide for the minimum distance between safety end treatments.
- Cement stabilized bedding and backfill shall be in accordance with the Item, "Excavation and Backfill" for Structures. Bedding and backfill shall be considered subsidiary to the Item "Safety End Treatment". When concrete Riprap is specified around the safety end treatment, backfill shall be as directed by Engineer.

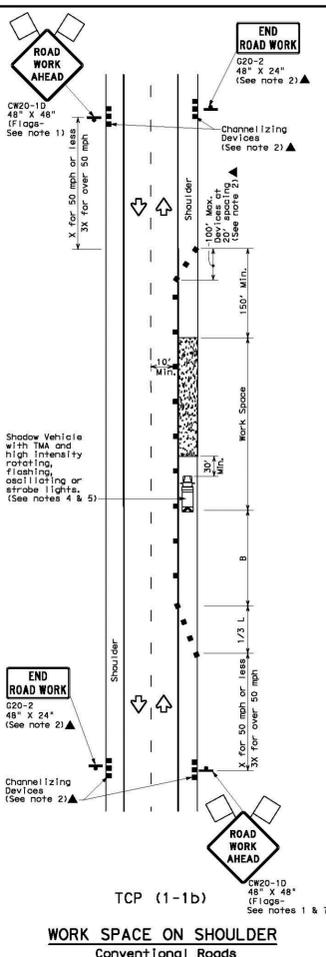
**GENERAL NOTES:**  
 Precast safety end treatment for reinforced concrete pipe may be used for TYPE II end treatment as specified in Item "Safety End Treatment". When Precast Safety End Treatment is used as a Contractor's alternate to mitered RCP, Riprap will not be required unless noted otherwise on the plans.  
 Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in Riprap concrete unless noted otherwise.  
 Manufacture of this product shall conform to requirements of Item "Safety End Treatment" except as noted below:  
 A. Minimum reinforcing shall be #4 at 6" (Grade 40) or #4 at 8" (Grade 60) each way or 6 x 6 - #12 x #12 or 5 x 5 - #10 x #10 welded wire fabric.  
 B. Concrete for precast (steel formed) sections shall be Class "C" with a minimum compressive strength of 3600 psi.  
 At the option and expense of the Contractor the next larger size of Safety End Treatment may be furnished, as long as the "D" dimension cast is that of the required size of pipe.  
 Pipe Runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.  
 Pipe Runners shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.  
 All steel components except reinforcing, shall be galvanized after fabrication. Galvanizing done during transport or construction shall be repaired in accordance with the specifications.

**Texas Department of Transportation** Bridge Division Standard  
**PRECAST SAFETY END TREATMENT**  
 TYPE II - PARALLEL DRAINAGE  
**PSET-SP**

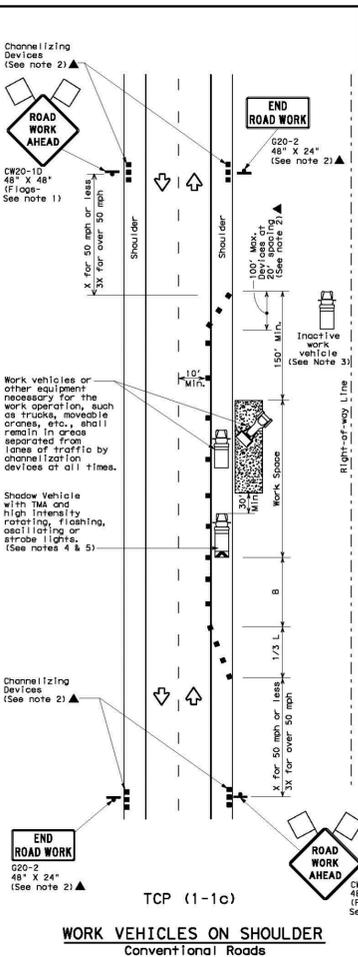
REV	DATE	BY	CHK	APP	REASON
01	February 2010	CAF	REY	JAR	ADDITION
02	Revisions				
03	11-10: Add size for synthetic fibers.				



**TCP (1-1a)**  
**WORK SPACE NEAR SHOULDER**  
Conventional Roads



**TCP (1-1b)**  
**WORK SPACE ON SHOULDER**  
Conventional Roads



**TCP (1-1c)**  
**WORK VEHICLES ON SHOULDER**  
Conventional Roads

**LEGEND**

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

**TYPICAL USAGE**

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY

**GENERAL NOTES**

- Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMA may be positioned off the paved surface, near to those shown in order to protect wider work areas.
- See TCP15-11 for shoulder work on divided highways, expressways and freeways.
- CP21-5 "SHOULDER WORK" signs may be used in place of CP20-10 "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

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

**Texas Department of Transportation** Traffic Operations Division  
**TRAFFIC CONTROL PLAN**  
 CONVENTIONAL ROAD  
 SHOULDER WORK  
**TCP (1-1)-12**

REV	DATE	BY	CHK	APP	REASON
01	2-12				
02	8-25				
03	8-27				
04	4-28				

NO.	DATE	CONFORMED	REVISION
	9/18/15		

7557 RAMBLER ROAD, SUITE 1400  
 DALLAS, TX 75231 972.235.3031  
 TX REG. ENGINEERING FIRM F-14439  
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**Pacheco Koch**

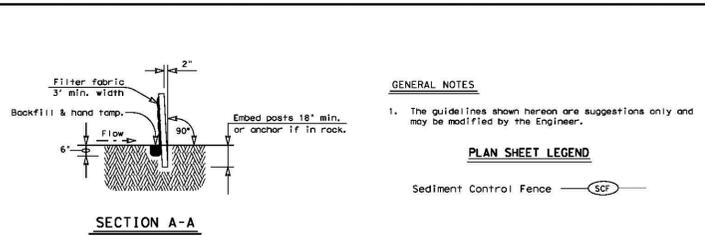
**TXDOT DETAILS 1**

**SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT**

CITY OF CELINA, COLLIN COUNTY, TEXAS

DESIGN	DRAWN	DATE	JOB NO.	SHEET
JCL	ASR	AUG 2015	3551-14.141	TX1

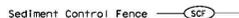
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



**GENERAL NOTES**

1. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

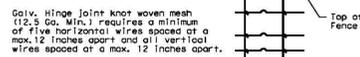
**PLAN SHEET LEGEND**



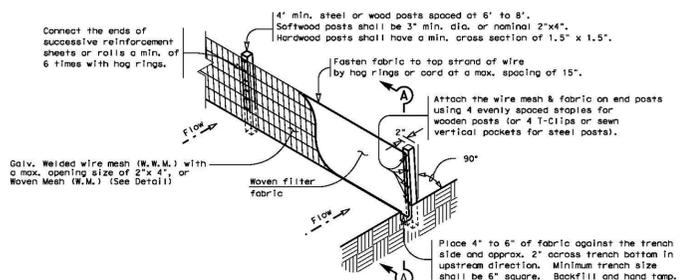
**SEDIMENT CONTROL FENCE USAGE GUIDELINES**

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

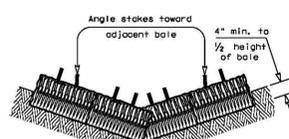
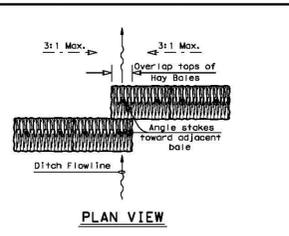
Sediment control fence should be sized to filter a maximum flow through rate of 100 gpm/ft. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.



**Hinge Joint Knot Woven Mesh (Option)**



**TEMPORARY SEDIMENT CONTROL FENCE**



**PLANS SHEET LEGEND**



**BALED HAY USAGE GUIDELINES**

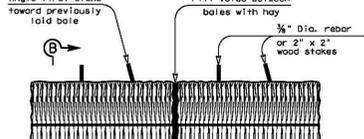
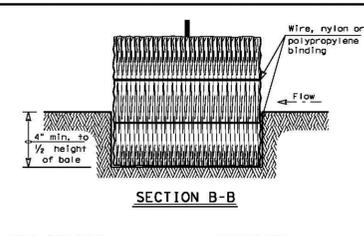
A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate of 5 gpm/ft of cross sectional area. Baled hay may be used at the following locations:

- Where the runoff approaching the baled hay flows over disturbed soil for less than 100'. If the slope of the disturbed soil exceeds 10%, the length of slope upstream the baled 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 Baled Hay installations in small ditches, the additional following considerations apply:

- The ditch sideslopes should be graded as flat as possible to maximize the drainage flowrate thru the hay.
- The ditch should be graded large enough to contain the overtopping drainage when sediment has filled to the top of the baled hay.

Bales should be replaced usually every 2 months or more often during wet weather when loss of structural integrity is accelerated.



**GENERAL NOTES**

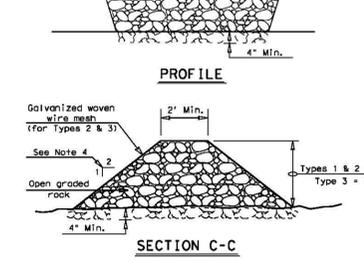
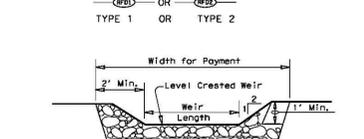
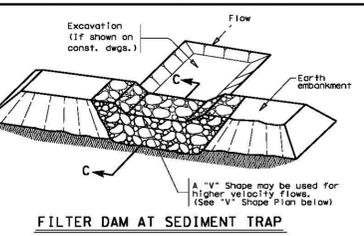
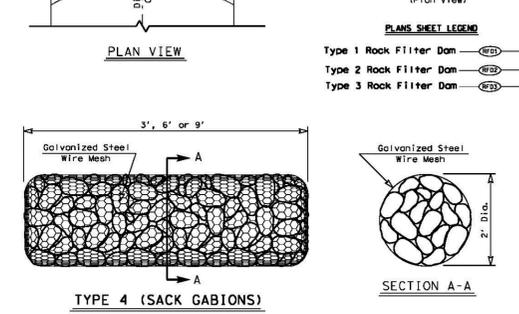
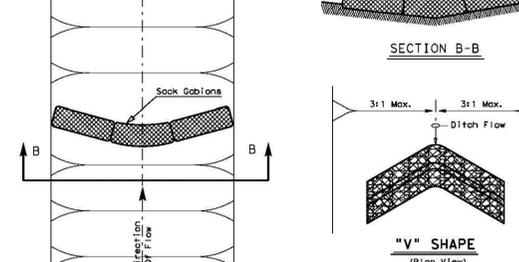
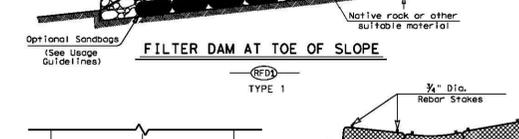
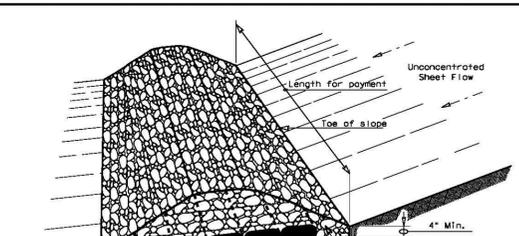
- Hay bales shall be a minimum of 30" in length and weigh a minimum of 50 lbs.
- Hay bales shall be bound by either wire or nylon or polypropylene string. The bales shall be composed entirely of vegetative matter.
- Hay bales shall be embedded in the soil a minimum of 4" and where possible 1/2 the height of the bale.
- 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 bale to force the bales together.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation  
Design Division Standard

**TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE & BALED HAY**

**EC (1) -09**

FILE#	ec109.dgn	DATE	06/15/07	BY	JM/TY	CHK	BD
DATE	June 1993	CON	SECT	JOB	ROADWAY		
REVISIONS							
		SHEET		COUNTY		SHEET NO.	



**ROCK FILTER DAM USAGE GUIDELINES**

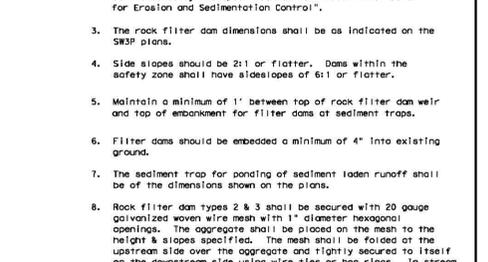
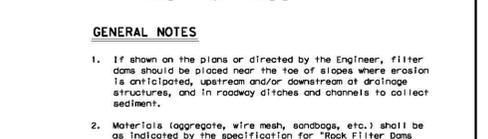
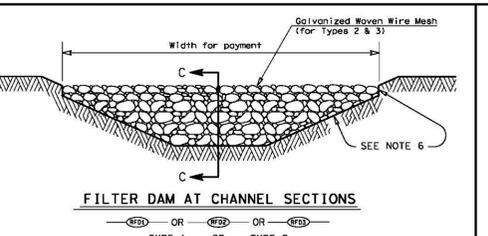
Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 gpm/ft of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

**Type 1 (18" high with no wire mesh):** Type 1 may be used at the toe of slopes, ground 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 (approx. 8 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 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.

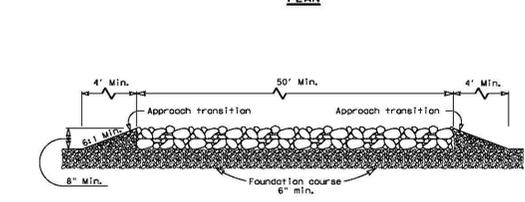
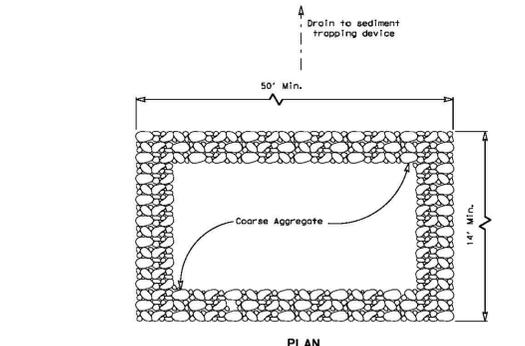


Texas Department of Transportation  
Design Division Standard

**TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES ROCK FILTER DAMS**

**EC (2) -93**

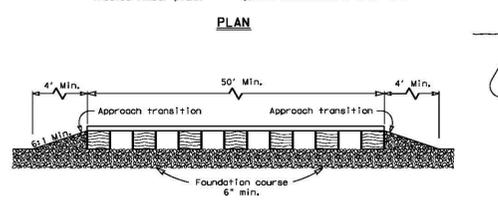
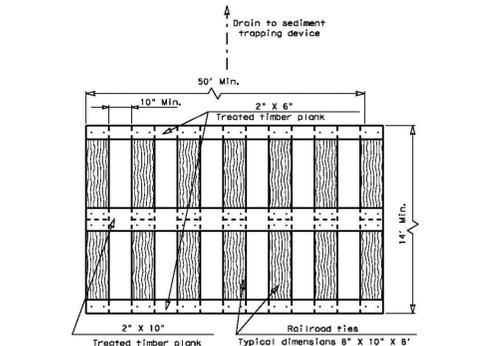
FILE#	ec293.dgn	DATE	06/15/07	BY	JM/TY	CHK	BD
DATE	June 1993	CON	SECT	JOB	ROADWAY		
REVISIONS							
		SHEET		COUNTY		SHEET NO.	



**CONSTRUCTION EXIT (TYPE 1)**

**GENERAL NOTES**

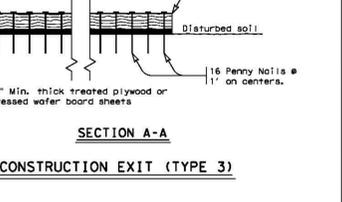
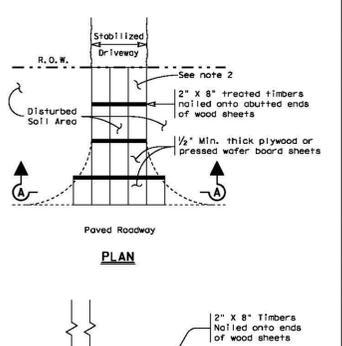
- The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
- The coarse aggregate should be open graded with a size of 4" to 8".
- The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
- The construction exit shall be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.



**CONSTRUCTION EXIT (TYPE 2)**

**GENERAL NOTES**

- The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
- The treated timber planks shall be attached to the railroad ties with 1/2" x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
- The construction exit shall be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.



**CONSTRUCTION EXIT (TYPE 3)**

**GENERAL NOTES**

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

Texas Department of Transportation  
Design Division Standard

**TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES CONSTRUCTION EXITS**

**EC (3) -93**

FILE#	ec393.dgn	DATE	06/15/07	BY	JM/TY	CHK	BD
DATE	June 1993	CON	SECT	JOB	ROADWAY		
REVISIONS							
		SHEET		COUNTY		SHEET NO.	

NO.	DATE	CONFORMED
	9/18/15	CONFORMED
		REVISION

**Pacheco Koch**  
7557 RAMBLER ROAD, SUITE 1400  
DALLAS, TX 75231 972.235.3031  
TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05

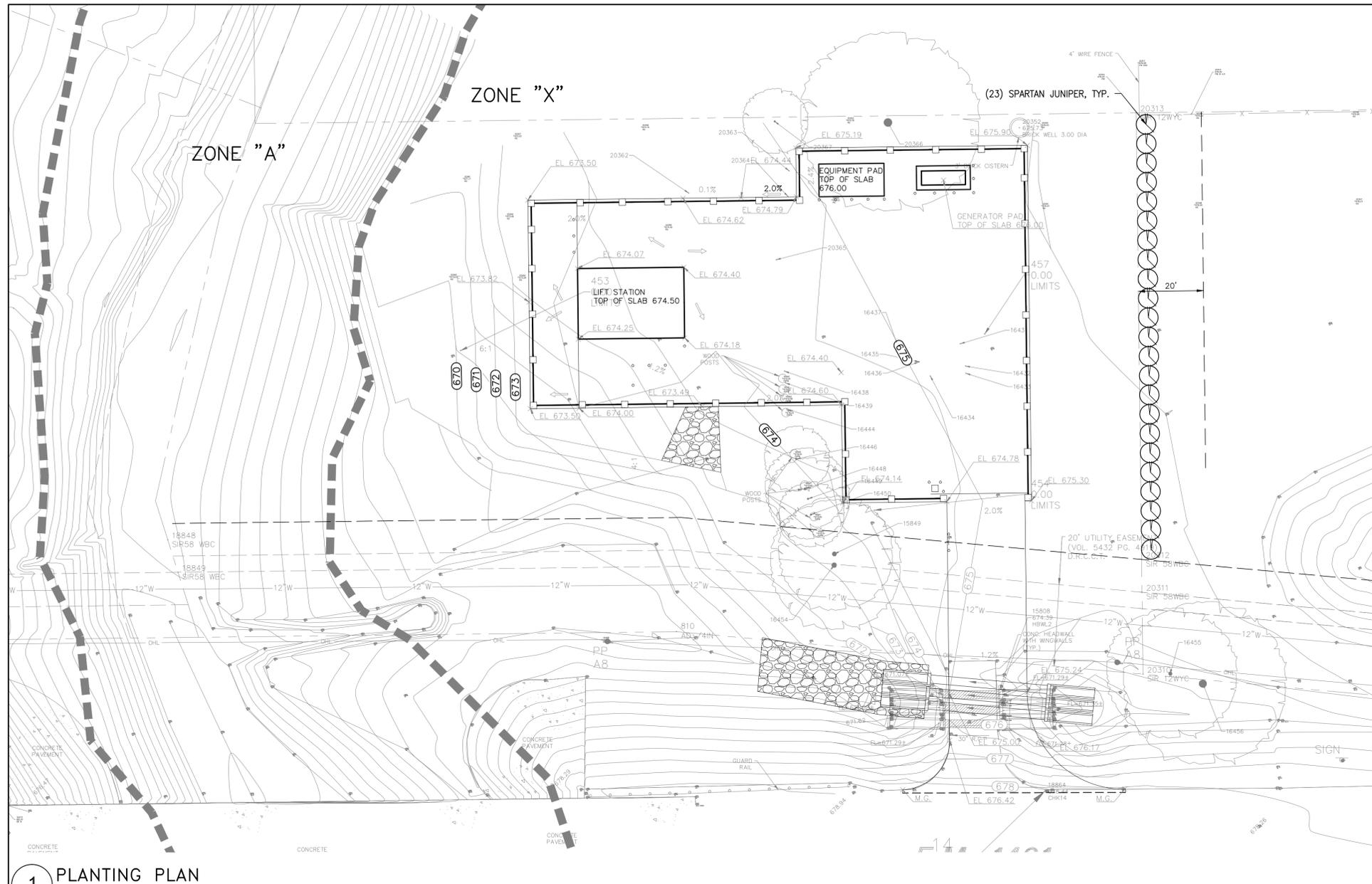
**TXDOT DETAILS 2**

**SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT**

CITY OF CELINA, COLLIN COUNTY, TEXAS

DESIGN	DRAWN	DATE	JOB NO.	SHEET
JCL	ASR	AUG 2015	3551-14.141	TX2

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



**PLANTING GENERAL NOTES**

1. ALL PLANTS SHALL BE SET OUT FOR APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
2. FINE GRADING SHALL BE PERFORMED IN ALL AREAS TO BE LANDSCAPED. FINE GRADING SHALL INCLUDE THE REMOVAL OF DEBRIS, ROCKS, ETC. FROM THE SITE AND INSURE POSITIVE DRAINAGE IN ALL AREAS.
3. THE CONTRACTOR SHALL LOCATE ALL UTILITIES AND EASEMENTS IN THE FIELD PRIOR TO COMMENCEMENT OF WORK. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO UTILITIES DURING THE COURSE OF CONSTRUCTION.
4. WRITTEN DIMENSIONS SHALL GOVERN OVER SCALED DIMENSIONS.
5. IT IS PREFERABLE THAT NO TREE BE STAKED. HOWEVER, CONDITIONS AND PLANT MATERIAL SIZE MAY NECESSITATE STAKING. THE OWNER'S REP SHALL DETERMINE IF SUPPORT IS NEEDED AND SHALL DIRECT THE CONTRACTOR ACCORDINGLY.
6. THE CONTRACTOR SHALL REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS ASSOCIATED WITH THE LANDSCAPE AND ACCESSORIES.
7. ALL PLANT MATERIALS SHALL MEET ANSI Z60.1 STANDARDS FOR CALIPER, HEIGHT AND ROOT BALL SIZE. ANY MATERIALS THAT DO NOT MEET OR EXCEED SUCH STANDARDS SHALL BE REJECTED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
8. BALLED AND BURLAPPED TREES SHALL HAVE THE TOP HALF OF THE WIRE BASKET REMOVED. THE BURLAP SHALL BE REMOVED TO THE GREATEST EXTENT POSSIBLE, USING A KNIFE TO CUT AND REMOVE THE BOTTOM HALF UNDER THE WIRE BASKET THAT REMAINS.

**PLANTING LEGEND**

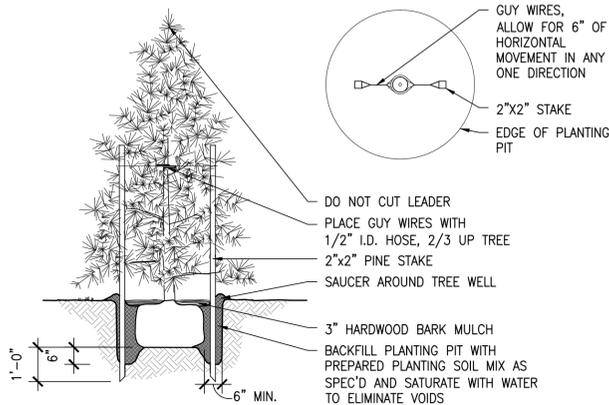


**PLANTING SCHEDULE**

EVERGREEN TREE						
QTY.	UNIT	COMMON NAME	BOTANICAL NAME	ROOT BALL	SPACING	REMARKS
23	EA	SPARTAN JUNIPER	JUNIPERUS CHINENSIS 'SPARTAN'	30 GAL CONT.	6'-0" O.C.	8'-10" HEIGHT, 2'-3" WIDE

**1 PLANTING PLAN**  
1" = 20'-0"

- NOTES:**
- TEMPORARY TREE WELL, STAKES AND GUYING TO BE REMOVED AFTER ONE FULL GROWING SEASON.
  - STAIN PINE STAKES WITH DARK BROWN SOLID STAIN (2 COATS).
  - STAKE TREES UNDER 10' IN HEIGHT WITH TWO STAKES PER TREE.
  - STAKE TREES 10' IN HEIGHT AND OVER WITH THREE STAKES PER TREE.



**2 EVERGREEN TREE**  
3/8" = 1'-0"



07/31/2015

NO.	DATE	REVISION
▲	9/18/15	CONFORMED

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TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05

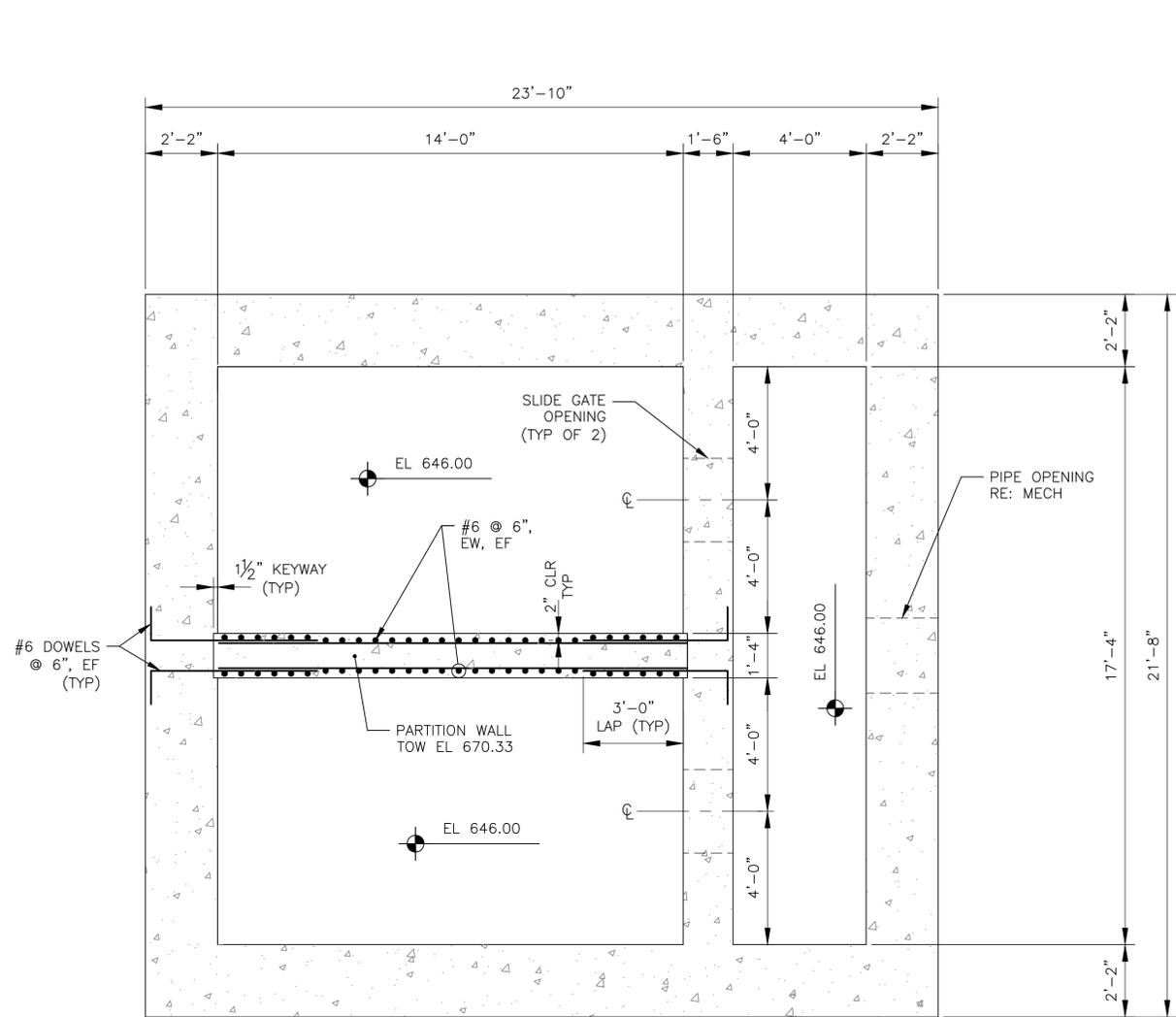
**PLANTING PLAN**

**SOUTHEAST SECTOR  
LIFT STATION, FORCE MAIN AND  
METERING VAULT**

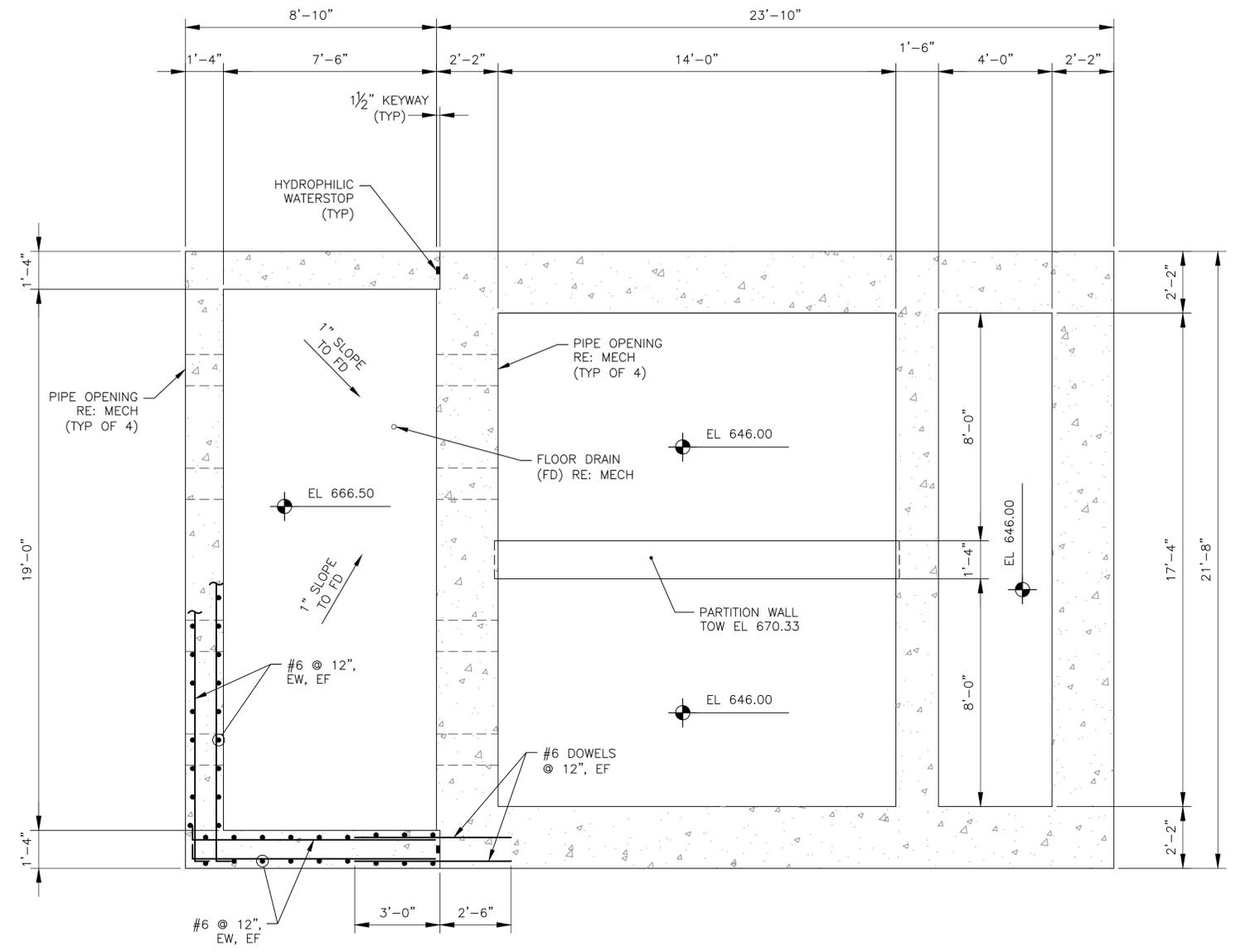
*CITY OF CELINA, COLLIN COUNTY, TEXAS*

DESIGN	DRAWN	DATE	JOB NO.	SHEET
JJ	CM	JULY 2015	3551-14.141	<b>L1</b>

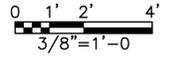
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



SECTIONAL PLAN  
 @ EL 662.00  
 SCALE: 3/8"=1'-0"



SECTIONAL PLAN  
 @ EL 672.00  
 SCALE: 3/8"=1'-0"



- NOTES:
1. REFER TO THE SITE PLAN FOR STRUCTURE LOCATION COORDINATES AND GRADES.
  2. REFER TO MECHANICAL, ODOR CONTROL AND ELECTRICAL DRAWINGS FOR PIPE AND CONDUIT PENETRATION LOCATIONS AND ITEMS NOT SHOWN.

RE-ISSUE ENTIRE SHEET



**ALAN PLUMMER ASSOCIATES, INC.**  
 ENVIRONMENTAL ENGINEERS AND SCIENTISTS  
 1320 S. UNIVERSITY DRIVE, SUITE 300  
 FORT WORTH, TEXAS 76107-5764  
 PHONE: 817-806-1700 FAX: 817-870-2536  
 TBPE NO. F-13

NO.	DATE	REVISION
△	9/18/15	CONFORMED
△	8/14/15	ADDENDUM NO. 3

**Pacheco Koch**  
 7557 RAMBLER ROAD, SUITE 1400  
 DALLAS, TX 75231 972.235.3031  
 TX REG. ENGINEERING FIRM F-14439  
 TX REG. SURVEYING FIRM LS-101938-05

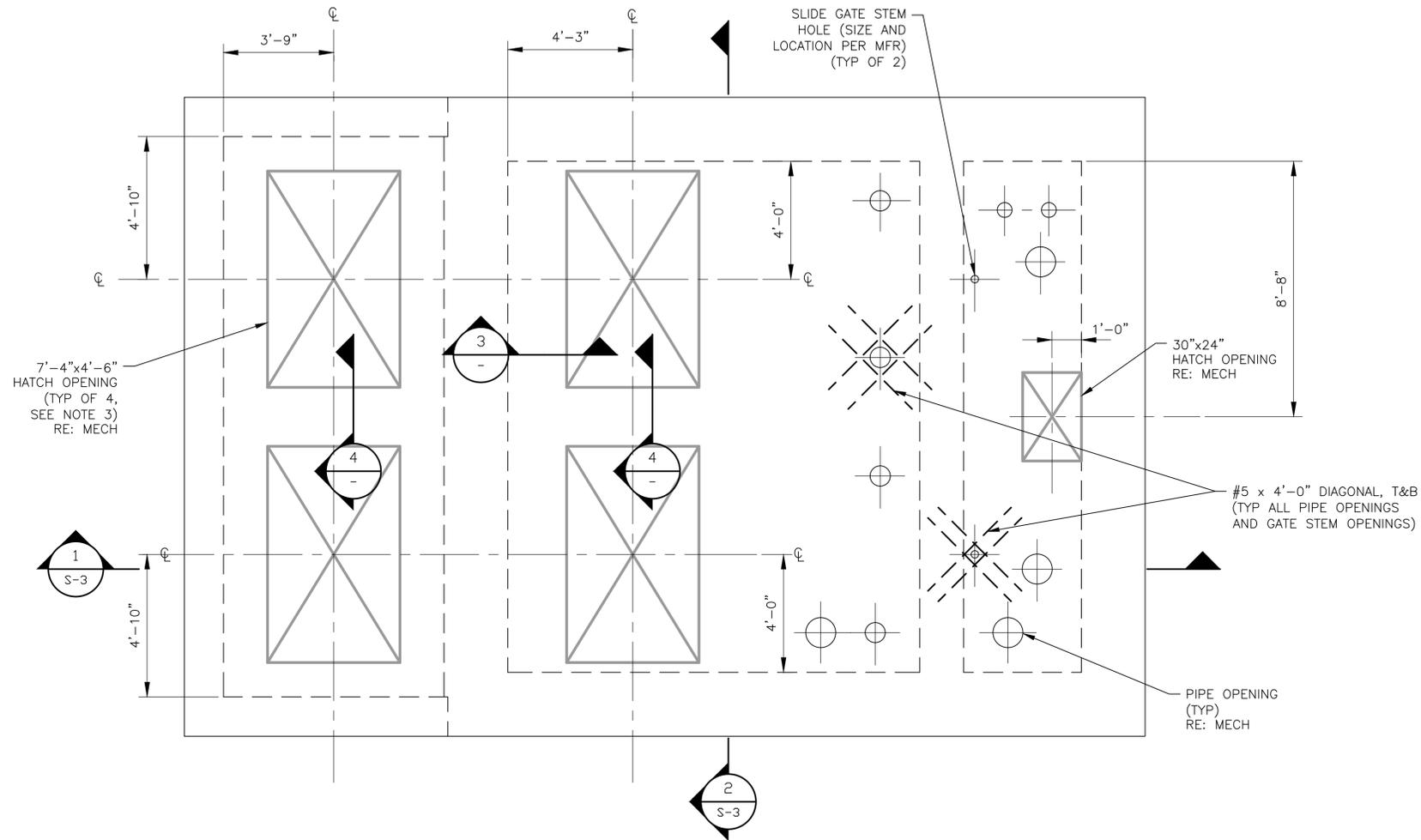
**LIFT STATION STRUCTURAL SECTIONAL PLANS**  
**SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT**  
 CITY OF CELINA, COLLIN COUNTY, TEXAS

DESIGN	DRAWN	DATE	JOB NO.	SHEET
XXX	XXX	XXX 2015	3551-14.141	S-1

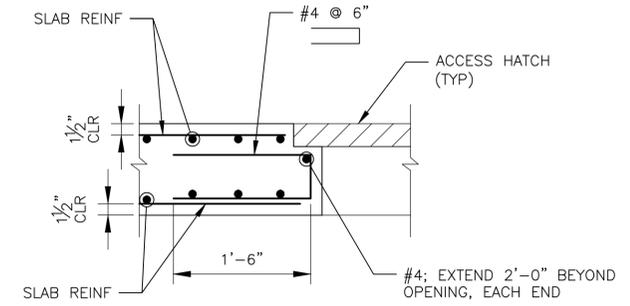
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT

**NOTES:**

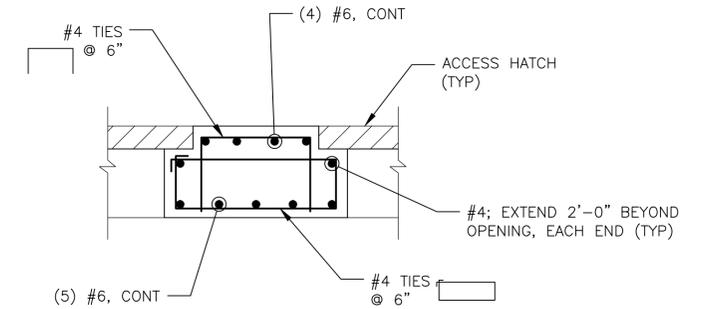
1. REFER TO THE SITE PLAN FOR STRUCTURE LOCATION COORDINATES AND GRADES.
2. REFER TO MECHANICAL, ODOR CONTROL AND ELECTRICAL DRAWINGS FOR PIPE AND CONDUIT PENETRATION LOCATIONS AND ITEMS NOT SHOWN.
3. VERIFY/COORDINATE 7'-4"x4'-6" ACCESS HATCH LOCATIONS SHOWN ON THE PLAN WITH PUMP MANUFACTURER.



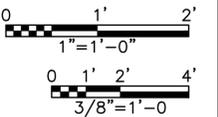
**TOP PLAN**  
SCALE: 3/8"=1'-0"



TYPICAL REINFORCEMENT AROUND HATCH OPENING  
**SECTION 3**  
SCALE: 1"=1'-0"



**SECTION 4**  
SCALE: 1"=1'-0"



RE-ISSUE ENTIRE SHEET



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1320 S. UNIVERSITY DRIVE, SUITE 300  
FORT WORTH, TEXAS 76107-5764  
PHONE: 817-806-1700 FAX: 817-870-2536  
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1	9/18/15	CONFORMED
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7557 RAMBLER ROAD, SUITE 1400  
DALLAS, TX 75231 972.235.3031  
TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05

**Pacheco Koch**

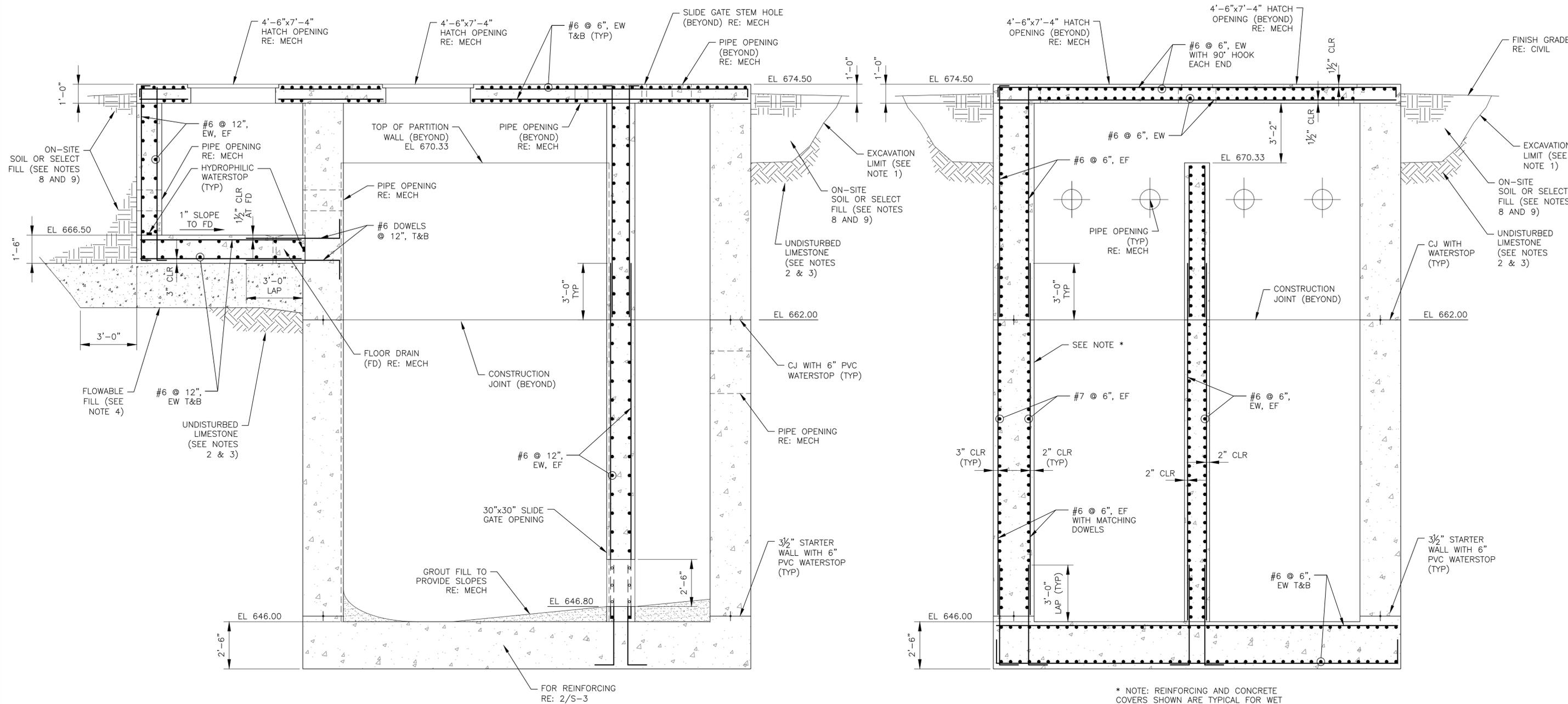
**LIFT STATION  
STRUCTURAL TOP PLAN AND DETAILS**

**SOUTHEAST SECTOR  
LIFT STATION, FORCE MAIN AND  
METERING VAULT**

*CITY OF CELINA, COLLIN COUNTY, TEXAS*

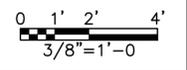
DESIGN	DRAWN	DATE	JOB NO.	SHEET
BJL	RJE	JULY 2015	3551-14.141	S-2

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



**SECTION 1**  
SCALE: 3/8"=1'-0"  
S-1

**SECTION 2**  
SCALE: 3/8"=1'-0"  
S-1



\* NOTE: REINFORCING AND CONCRETE COVERS SHOWN ARE TYPICAL FOR WET WELL EXTERIOR WALLS.

**EXCAVATION AND BACKFILL NOTES:**

- EXCAVATION LIMITS SHOWN ON PLANS ARE FOR REFERENCE ONLY AND NOT SHOWN TO ANY SCALE OR SLOPE. EXCAVATION SHALL CONFORM TO SPECIFICATIONS AND OSHA TRENCH SAFETY REQUIREMENTS.
- EXCAVATION IN THE LIMESTONE SHALL BE OBSERVED BY A QUALIFIED GEOTECHNICAL ENGINEER FOR ADVERSE FEATURES REQUIRING ADDITIONAL SUPPORT AND CONFIRMATION THAT ALL UNSUITABLE MATERIALS ARE REMOVED AND SUBGRADE ARE PREPARED ACCORDING TO PLANS AND SPECIFICATIONS.
- ACCORDING TO THE BORING LOG NO. B-6 OF THE GEOTECHNICAL ENGINEERING REPORT, A WEATHERED TAN LIMESTONE STRATUM IS LOCATED APPROXIMATELY 4 FEET BELOW GROUND SURFACE. WITH VERIFICATION OF GEOTECHNICAL ENGINEER, CONTRACTOR MAY VERTICALLY CUT THROUGH ON-SITE LIMESTONE, AND CAST FOUNDATION SLAB AND WET WELL WALLS AGAINST LIMESTONE CUT FACE. CONTRACTOR SHALL VERIFY THE LIMESTONE STRATUM LOCATION AND TAKE WHATEVER MEANS TO ENSURE CONSTRUCTION QUALITY AND SAFETY.
- THE VALVE VAULT SLAB SHALL BE PLACED ON UNDISTURBED LIMESTONE OR FLOWABLE FILL.
- IN CASE THAT THE EXCAVATION IS EXECUTED WITH DEEP VERTICAL CUTS AND THE WET WELL IS PLACED WITH TWO SIDE FORMS, FLOWABLE FILL SHALL BE USED AS FILL MATERIAL TO FILL THE SPACE BETWEEN THE WET WELL AND THE CUT FACE OF THE LIMESTONE.
- DEEP VERTICAL CUTS AT WET WELL SHALL CONFORM TO OSHA SAFETY AND HEALTH STANDARDS. CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN AND FURNISH THE SHORING SYSTEM. THE SHORING SYSTEM SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER RETAINED BY CONTRACTOR. GEOTECHNICAL INFORMATION IS AVAILABLE FOR REFERENCE; HOWEVER, IT IS CONTRACTOR'S RESPONSIBILITY TO OBTAIN SUFFICIENT GEOTECHNICAL INFORMATION FOR HIS PROTECTION DEVICE DESIGN.

- FLOWABLE FILL SHALL BE PLACED IN SEPARATE LIFTS WITH EACH LIFT NOT EXCEEDING 8 FEET. MAINTAIN A MINIMUM OF 8 HOURS BETWEEN CONSECUTIVE PLACEMENTS OF LIFTS.
- UNLESS OTHERWISE NOTED ON THE PLAN, ON-SITE SOILS, FREE OF VEGETATION, DEBRIS, AND ROCKS GREATER THAN 4 INCHES IN MAXIMUM DIMENSION OR SELECT FILL MAY BE USED AS BACKFILL MATERIAL ABOVE ELEV. 665.00. THE BACKFILLED ON-SITE SOIL SHALL BE COMPACTED AT A MINIMUM OF 98% MAXIMUM STANDARD PROCTOR DRY DENSITY (ASTM D 698) AT A MINIMUM OF +2 PERCENTAGE POINTS ABOVE OPTIMUM MOISTURE CONTENT.
- SELECT FILL SHALL CONSIST OF A CRUSHED LIMESTONE BASE MATERIAL MEETING THE REQUIREMENTS OUTLINED IN TXDOT ITEM 247, TYPE A, GRADES 1 OR 2. ALL SELECT FILL SHALL HAVE SULFATE CONCENTRATIONS LESS THAN 500 PPM. SELECT FILL SHALL BE PLACED WITHIN THE EXCAVATION IN LOOSE LIFTS WITH A MAXIMUM 8-INCH THICKNESS. EACH LIFT SHALL BE COMPACTED TO AT LEAST 98% OF THE MAXIMUM DRY DENSITY DETERMINED BY ASTM D 698 AT MOISTURE CONTENTS BETWEEN -2 AND +3 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT.
- BACKFILL AGAINST STRUCTURAL WALLS SHALL BE CONTINUOUS ALONG PERIMETERS OF THE STRUCTURES. BACKFILL SHALL NOT CAUSE IMBALANCED LATERAL LOADS ON STRUCTURAL WALLS.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO DESIGN AND IMPLEMENT DEWATERING SYSTEMS THAT MAINTAIN A DRY, UNDISTURBED, AND STABLE SUBGRADE. THE GROUNDWATER LEVEL INSIDE THE EXCAVATIONS SHALL BE MAINTAINED AT LEAST TWO (2) FEET BELOW THE LOWEST EXCAVATION LEVEL AT ALL TIMES.
- SUBGRADE PREPARATIONS FOR EXTERIOR EQUIPMENT PADS: REMOVE AND REPLACE ON-SITE CLAYEY SOILS ABOVE LIMESTONE WITH FLOWABLE FILL OR SELECT FILL. SELECT FILL SHALL BE COMPACTED TO THE DENSITY SPECIFIED ABOVE.

RE-ISSUE ENTIRE SHEET



**ALAN PLUMMER ASSOCIATES, INC.**  
ENVIRONMENTAL ENGINEERS AND SCIENTISTS  
1320 S. UNIVERSITY DRIVE, SUITE 300  
FORT WORTH, TEXAS 76107-5764  
PHONE: 817-806-1700 FAX: 817-870-2536  
TBPE NO. F-13

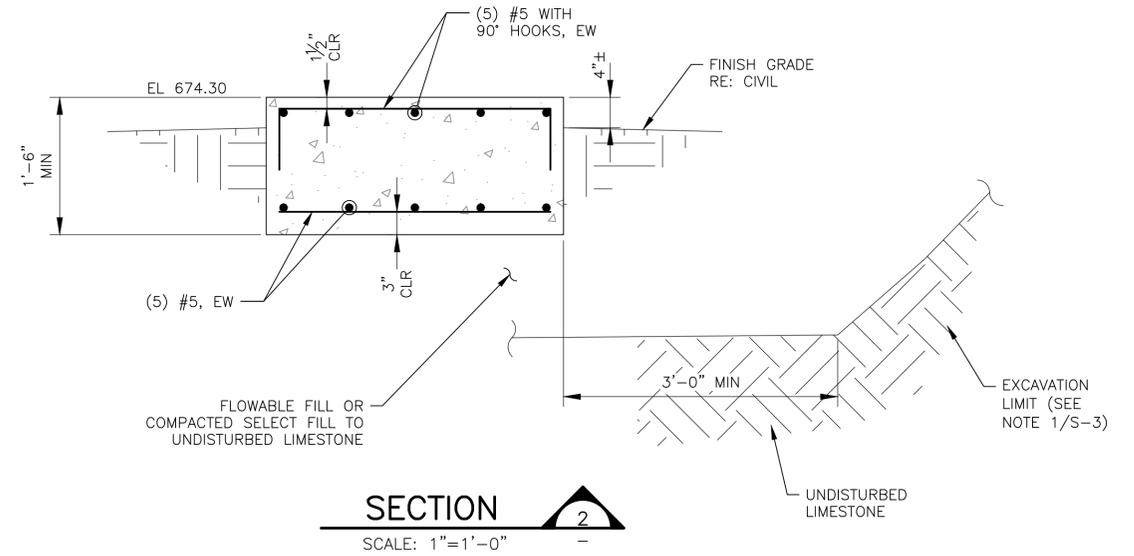
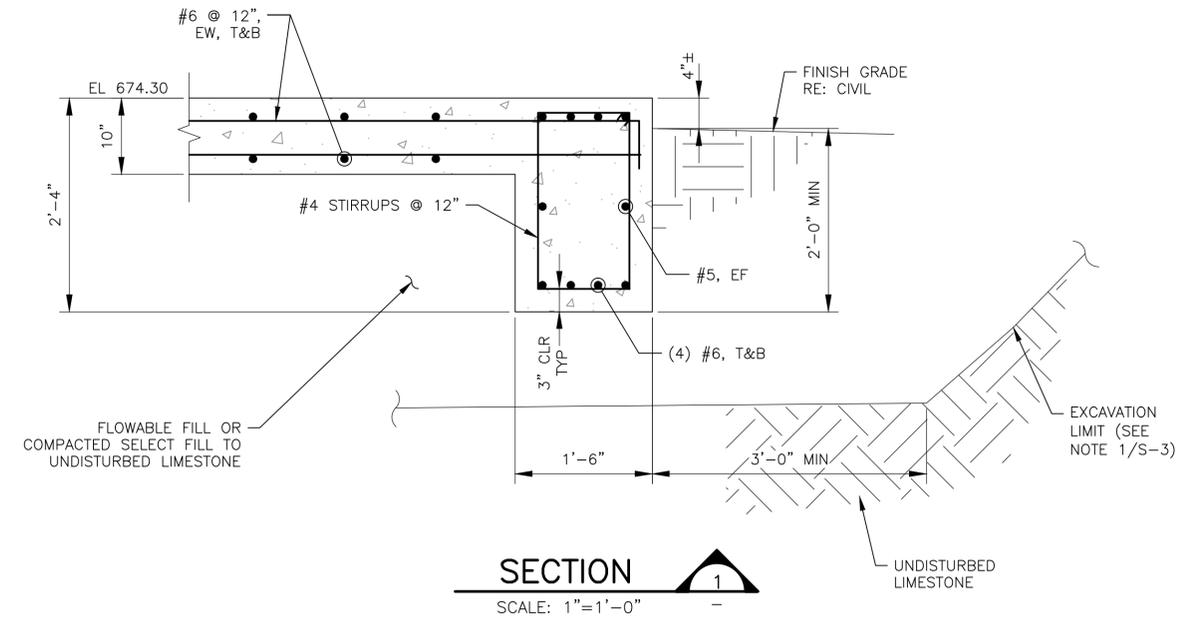
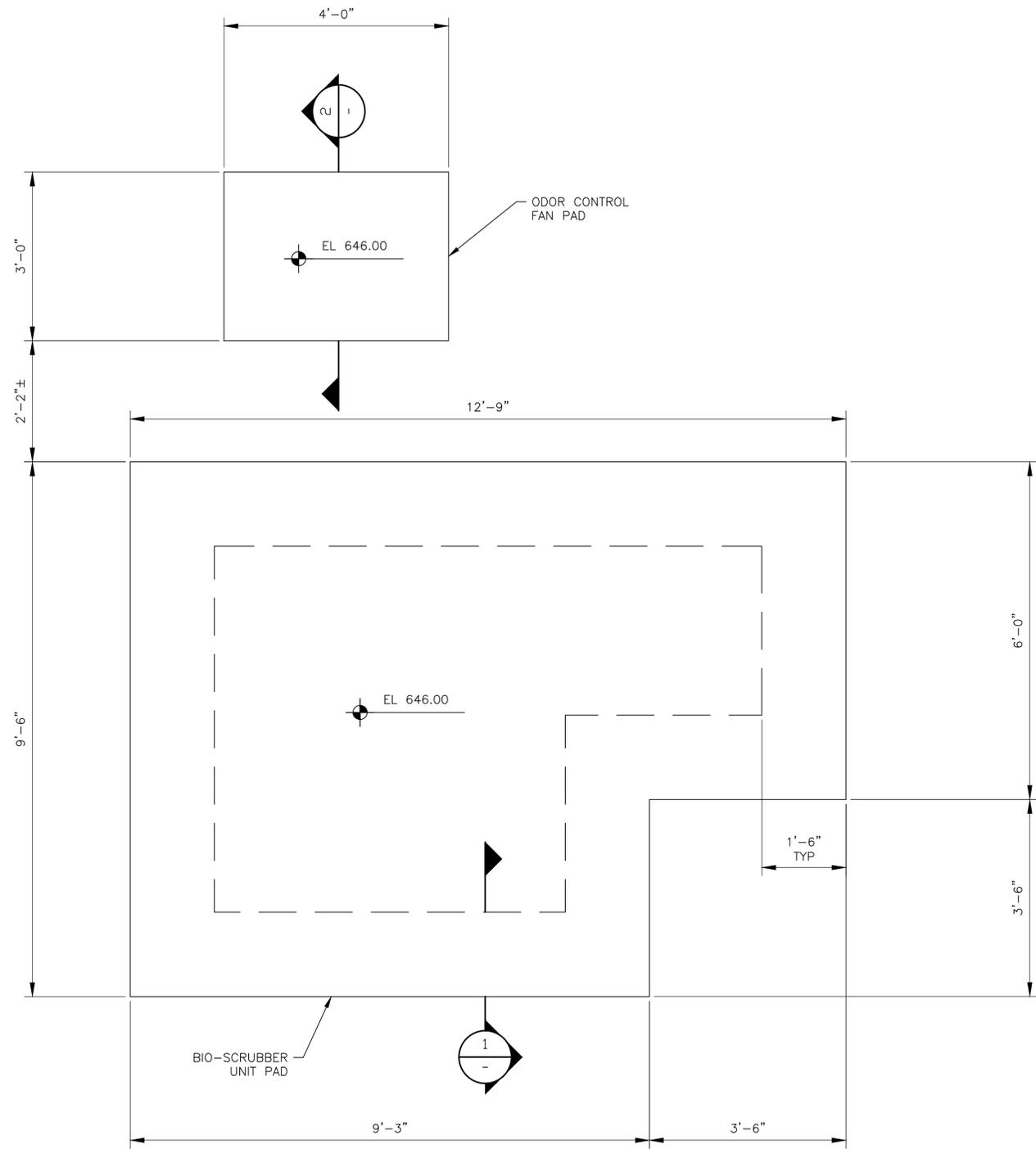
NO.	DATE	REVISION
9/18/15	CONFORMED	
8/14/15	ADDENDUM NO. 3	

**Pacheco Koch**  
7557 RAMBLER ROAD, SUITE 1400  
DALLAS, TX 75231 972.235.3031  
TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05

**LIFT STATION STRUCTURAL SECTIONS**  
**SOUTHEAST SECTOR**  
**LIFT STATION, FORCE MAIN AND METERING VAULT**  
*CITY OF CELINA, COLLIN COUNTY, TEXAS*

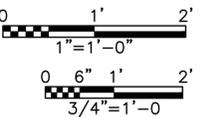
DESIGN	DRAWN	DATE	JOB NO.	SHEET
BJL	RJE	JULY 2015	3551-14.141	S-3

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



NOTES:

- REFER TO MECHANICAL, ODOR CONTROL AND ELECTRICAL DRAWINGS FOR PIPE AND CONDUIT PENETRATION LOCATIONS AND ITEMS NOT SHOWN.



ODOR CONTROL PLAN  
SCALE: 3/4"=1'-0"



**ALAN PLUMMER ASSOCIATES, INC.**  
ENVIRONMENTAL ENGINEERS AND SCIENTISTS  
1320 S. UNIVERSITY DRIVE, SUITE 300  
FORT WORTH, TEXAS 76107-5764  
PHONE: 817-806-1700 FAX: 817-870-2536  
TBPE NO. F-13

NO.	DATE	REVISION
1	9/18/15	CONFORMED
<p><b>Pacheco Koch</b> 7557 RAMBLER ROAD, SUITE 1400 DALLAS, TX 75231 972.235.3031 TX REG. ENGINEERING FIRM F-14439 TX REG. SURVEYING FIRM LS-101938-05</p>		
<p><b>ODOR CONTROL PADS STRUCTURAL PLAN AND SECTIONS</b></p>		
<p><b>SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT</b></p>		
<p>CITY OF CELINA, COLLIN COUNTY, TEXAS</p>		
DESIGN	DRAWN	DATE
DATE	JULY 2015	
JOB NO.	3551-14.141	
SHEET	S-4	

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT

**GENERAL NOTES**

- CONSTRUCTION SHALL BE IN ACCORDANCE WITH 2009 INTERNATIONAL BUILDING CODE, INCLUDING AMENDMENTS, EXCEPT WHERE APPLICABLE CODES OR THE CONTRACT DOCUMENTS ARE MORE RESTRICTIVE.
- DESIGN LOADS AND DATA:
  - A. DEAD LOADS: ACTUAL WEIGHT OF MATERIALS AND PRODUCTS.
  - B. LIVE LOAD:
    - (1) ELEVATED FLOORS: 100 PSF
    - (2) EQUIPMENT AREAS: 250 PSF OR 100 PSF PLUS ACTUAL EQUIPMENT WEIGHT, WHICHEVER IS HIGHER
    - (3) SLAB ON GRADE: 250 PSF
  - C. WIND LOAD:
    - (1) BASIC WIND SPEED: 90.0 MPH
    - (2) IMPORTANCE FACTOR: 1.15
    - (3) WIND EXPOSURE: C
    - (4) TOPOGRAPHICAL FACTOR Kzt: 1.00
  - D. SNOW LOAD:
    - (1) GROUND SNOW LOAD: 5 PSF
    - (2) IMPORTANCE FACTOR: 1.1
    - (3) EXPOSURE FACTOR Ce: 1.0
    - (4) THERMAL FACTOR Ct: 1.2
  - E. SEISMIC LOAD:
    - (1) SEISMIC OCCUPANCY CATEGORY: III
    - (2) IMPORTANCE FACTOR: I=1.25
    - (3) SPECTRAL RESPONSE COEFFICIENTS: SDS=0.067g, SD1=0.054g
    - (4) SITE CLASS: B AND C
    - (5) SEISMIC DESIGN CATEGORY: A
    - (6) DESIGN BASE SHEAR: V= 0.01W
    - (7) ANALYSIS PROCEDURE: MINIMUM LATERAL FORCE PROCEDURE
- STRUCTURAL DIMENSIONS AND OPENINGS CONTROLLED BY OR RELATED TO MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. STRUCTURAL DIMENSIONS RELATED TO OR CONTROLLED BY EXISTING STRUCTURES SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION WORK.
- CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS, INCLUDING LOCATION AND DIMENSIONS OF ALL EXISTING CONSTRUCTION AND UTILITIES. CONTRACTOR SHALL NOTIFY ENGINEER IF THERE ARE CONFLICTS BETWEEN THE CONTRACT DOCUMENTS AND EXISTING CONSTRUCTION BEFORE PROCEEDING WITH WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF EXCAVATION SHORING TO PROTECT AND SUPPORT FOUNDATION SOILS UNDER EXISTING STRUCTURES.
- CONTRACTOR SHALL VERIFY LOCATION AND DIMENSIONS SHOWN ON DRAWINGS OF ALL PLUMBING, MECHANICAL, ELECTRICAL AND ARCHITECTURAL ITEMS BEFORE PLACING ANY STRUCTURAL STEEL OR CONCRETE.
- SAFETY AND STRUCTURE STABILITY DURING CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. STRUCTURES HAVE BEEN DESIGNED TO RESIST THE DESIGN LIVE LOADS ONLY AS A COMPLETED STRUCTURE.
- PLANS, SECTIONS AND DETAILS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS OR FIT OF MATERIALS. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED SIZES.
- SEE OTHER DISCIPLINE DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS, DEPRESSIONS, OFFSETS, SLEEVES, CURBS, PADS, INSERTS, ETC. NOT SHOWN ON STRUCTURAL DRAWINGS. BEFORE FABRICATION OF MATERIALS OR CONCRETE PLACEMENT, COORDINATE WITH MECHANICAL AND ELECTRICAL EQUIPMENT REQUIREMENTS.
- SUPPLY ALL ITEMS FOR ATTACHING MECHANICAL AND ELECTRICAL EQUIPMENT TO THE STRUCTURE TO RESIST ALL LOADS INCLUDING SEISMIC FORCES. ATTACHMENT SHALL BE MADE SO AS NOT TO OVERSTRESS STRUCTURAL MEMBERS. COORDINATE THE ATTACHMENTS AND LOCATIONS OF THE EQUIPMENT WITH THE STRUCTURAL DRAWINGS.
- THE GENERAL NOTES AND TYPICAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.
- IN STRUCTURAL TYPICAL DETAILS, ORIENTATION OF SLAB OR WALL BARS IN EACH MAT OF REINFORCEMENT IS GENERALLY ARBITRARY. SEE DRAWINGS OF EACH STRUCTURE FOR ORIENTATION REQUIRED AT THAT STRUCTURE.
- SEE OTHER DISCIPLINE DRAWINGS FOR DETAILS OF PIPES, CONDUITS AND OTHER PENETRATIONS AT STRUCTURES. ALL BELOW-GRADE PIPES INSTALLED BELOW SLABS SHALL BE CONCRETE ENCASED UNLESS OTHERWISE NOTED. REFER TO DRAWING BY OTHER DISCIPLINES FOR CONCRETE EQUIPMENT PADS AND PIPE SUPPORTS NOT SHOWN ON THE STRUCTURAL DRAWINGS.
- SEE GRADING PLANS FOR STRUCTURE LOCATION COORDINATES AND GRADES. SEE CIVIL DRAWINGS FOR ALL EXTERIOR PAVING AND FLATWORK.
- UNLESS OTHERWISE SHOWN ON THE PLANS, TYPICAL DETAILS SHOWN ON THE STANDARD DETAIL SHEETS SHALL BE USED AT LOCATIONS WHERE APPLICABLE EVEN WHEN NOT SPECIFICALLY REFERENCED ON THE DRAWINGS. IF ANY QUESTION ON APPLICABILITY CONTACT THE ENGINEER BEFORE ORDERING ITEMS OR START OF CONSTRUCTION OF DETAILS.

**TYPICAL STRUCTURAL MATERIALS**

- SEE PROJECT SPECIFICATIONS AND NOTES ON DRAWINGS FOR INDIVIDUAL STRUCTURES FOR DETAILED OR SPECIAL REQUIREMENTS.
- CAST-IN-PLACE CONCRETE: MINIMUM 28-DAY COMPRESSIVE STRENGTH AS SPECIFIED, UNLESS OTHERWISE NOTED.
- REINFORCING STEEL:
  - A. DEFORMED BARS: ASTM A615, GRADE 60
  - B. WELDED WIRE FABRIC: ASTM A185
  - C. MASONRY HORIZONTAL JOINT REINFORCEMENT: TRUSS TYPE GALVANIZED 3/8" DIAMETER LONGITUDINAL WIRES WITH 9 GAGE DIAGONAL WIRES

**CAST IN PLACE CONCRETE**

- CONCRETE CONSTRUCTION SHALL CONFORM TO ACI 301, ACI 318 FOR BUILDINGS AND ACI 350 FOR ENVIRONMENTAL PROCESS STRUCTURES.
- ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS NOTED OTHERWISE, SHALL BE IN ACCORDANCE WITH MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 315).
- UNLESS NOTED OTHERWISE, MINIMUM CONCRETE CLEAR COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS:
  - A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH - 3"
  - B. FORMED CONCRETE SURFACES EXPOSED TO EARTH, SEWAGE, WEATHER OR BEARING ON WORK MAT OR SLABS SUPPORTING EARTH COVER:
    - (1) SLABS AND JOISTS - 2"
    - (2) BEAMS AND COLUMNS
      - a) STIRRUPS, SPIRALS AND TIES - 2"
      - b) PRIMARY REINFORCEMENT - 2 1/2"
    - (3) WALLS - 2"
    - (4) FORMED SURFACES, TOP OF FOOTINGS AND BASE SLABS - 2"
  - C. CONDITIONS NOT COVERED IN A AND B:
    - (1) SLABS AND JOISTS - 1" FOR #11 BARS AND SMALLER
    - (2) BEAMS AND COLUMNS - 2" TO PRIMARY REINFORCEMENT; 1 1/2" TO SPIRALS, TIES, AND STIRRUPS
    - (3) WALLS - 1 1/2" FOR #11 BARS AND SMALLER
    - (4) TOP OF FOOTINGS AND BASE SLABS - 2"
- ALL CONSTRUCTION JOINTS IN STRUCTURAL SLABS, BEAMS OR GIRDERS SHALL BE MADE AT MID-SPAN UNLESS SHOWN OTHERWISE ON THE DRAWINGS. ADDITIONAL CONSTRUCTION JOINTS SHALL HAVE PRIOR APPROVAL OF ENGINEER.
- UNLESS OTHERWISE INDICATED ON THE PLANS, CONTRACTOR MAY LOCATE THE CONSTRUCTION JOINTS AT HIS CONVENIENCE, HOWEVER THE CONTRACTOR'S PROPOSED CONSTRUCTION JOINT LOCATIONS MUST BE APPROVED BY ENGINEER PRIOR TO THE CONCRETE PLACEMENT.
- A MINIMUM 48 HOURS SHALL ELAPSE BETWEEN PLACEMENTS OF ADJACENT CONCRETE CONSTRUCTION AT JOINTS WHERE PLACEMENT IS INTERRUPTED.
- CONTRACTOR SHALL SUBMIT A CONCRETE PLACEMENT PLAN IDENTIFYING JOINT TYPES, JOINT LOCATIONS AND CONCRETE PLACEMENT SEQUENCE.
- UNLESS OTHERWISE NOTED, PROVIDE WATERSTOPS IN JOINTS AS SHOWN ON THE DRAWINGS AND AS FOLLOWS:
  - A. BETWEEN ANY LIQUID CONTAINMENT AREA AND AN ADJACENT DRY AREA OF A STRUCTURE.
  - B. IN ALL EXTERIOR BELOW GRADE WALLS AND SLABS.
- WATERSTOP SHALL BE PLACED CONTINUOUSLY IN CONSTRUCTION, CONTRACTION, AND EXPANSION JOINTS IN WATER BEARING SLABS AND WALLS UNLESS OTHERWISE INDICATED ON THE DRAWINGS AND IN WALLS AND SLABS SUBJECTED TO GROUNDWATER. WATERSTOP IN THE WALLS SHALL BE CARRIED INTO SLABS AND SHALL BE SPLICED WITH THE WATERSTOP IN THE SLABS.
- PENETRATIONS OTHER THAN SHOWN AND SUCH PENETRATIONS WOULD RESULT IN RELOCATION OR TERMINATION OF REINFORCING SHALL NOT BE ALLOWED WITHOUT ENGINEER'S APPROVAL.
- BARS ENDING IN RIGHT ANGLE BENDS OR HOOKS SHALL CONFORM TO THE REQUIREMENTS OF PAR. 7.1, ACI 318.
- EXCEPT AS OTHERWISE REQUIRED, EXPOSED CONCRETE CORNERS AND EDGES SHALL HAVE 3/4" CHAMFERS.
- UNLESS OTHERWISE INDICATED ON THE PLANS, BOTTOM BARS MAY BE SPLICED AT SUPPORTS ONLY WITH A MINIMUM 12" LAP; TOP BARS MAY BE SPLICED AT CENTER OF SPAN ONLY. AT CANTILEVERS, PROVIDE CONTINUOUS TOP BARS AT SUPPORT.
- UNLESS NOTED OTHERWISE, ALL REINFORCING SHALL BE CONTINUOUS. CONTINUOUS BARS SHALL LAP IN ACCORDANCE WITH THE REBAR LAP SPLICE LENGTHS TABLE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL FORMING, TEMPORARY BRACING, AND SHORING.
- REFER TO OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION FOR EMBEDDED ITEMS AND PENETRATIONS NOT SHOWN ON STRUCTURAL DRAWINGS AS REQUIRED TO ACCOMMODATE ALL WORK SHOWN OR SPECIFIED IN THE CONTRACT DOCUMENTS AND OTHERWISE REQUIRED FOR THE FURNISHING OF A FUNCTIONALLY COMPLETE PROJECT. REINFORCE AROUND OPENINGS PER STANDARD STRUCTURAL DETAILS UNLESS OTHERWISE SHOWN.
- WITH ENGINEER'S APPROVAL, CONDUITS AND PIPING EMBEDDED IN CONCRETE MAY BE INSTALLED WITH A MINIMUM SPACING OF FOUR DIAMETERS OF THE LARGEST CONDUITS OR PIPING. THE OUTSIDE DIAMETER OF THE CONDUITS AND PIPING PLACED BETWEEN LAYERS OF REINFORCING SHALL BE LESS THAN 25% OF THE MEMBER THICKNESS.

**CAST IN PLACE CONCRETE (CONT.)**

- REBAR MINIMUM TENSION SPLICE LENGTHS AND TENSION DEVELOPMENT LENGTHS SHALL BE AS SHOWN ON THE FOLLOWING TABLES. UNLESS OTHERWISE NOTED ON THE DRAWINGS, LAP SPLICE LENGTHS AND DEVELOPMENT LENGTHS FOR WHICH THE TABLES ARE NOT APPLICABLE SHALL BE AS SHOWN ON THE DRAWINGS OR SHALL BE REFERRED TO THE ENGINEER FOR DETERMINATION OF REQUIRED LENGTH.

4000 PSI CONCRETE FOR BARS SPACING >= 2db, MIN. 3" MINIMUM CONCRETE COVER >= db, MIN. 1" db=NOMINAL DIAMETER OF BAR				
BAR SIZE	DEVELOPMENT LENGTH (INCHES)		LAP SPLICE LENGTH (INCHES)	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#3	16	12	20	16
#4	21	16	27	21
#5	25	19	32	25
#6	30	23	39	30
#7	55	42	71	55
#8	62	48	81	62

NOTES:

- BARS SPACING IS THE SMALLEST SPACING (FACE TO FACE) BETWEEN TWO REBARS, REBAR AND SPLICED BAR OR TWO SPLICED BARS WITHIN THE SPLICE LENGTH.
- THE SPLICE AND DEVELOPMENT LENGTHS SHALL BE SELECTED ONLY WHEN BOTH REQUIREMENTS OF THE CONCRETE COVER AND BARS SPACING ARE SATISFIED.
- FOR 3,000 PSI COMPRESSIVE STRENGTH (F'C) OF CONCRETE, MULTIPLY THE LENGTHS LISTED IN THE TABLE BY 1.20.
- THE SPLICE AND DEVELOPMENT LENGTHS APPLY ONLY FOR UNCOATED REBAR IN NORMAL WEIGHT CONCRETE. FOR LIGHT WEIGHT CONCRETE AND UNCOATED REBARS, MULTIPLY THE LENGTHS LISTED IN THE TABLE BY 1.3. FOR NORMAL WEIGHT CONCRETE WITH EPOXY COATED REBARS, MULTIPLY THE LENGTHS LISTED IN THE TABLE BY 1.7 FOR TOP BARS AND 1.5 FOR OTHER BARS.
- UNLESS NOTED OTHERWISE, "TOP BARS" ARE HORIZONTAL REINFORCEMENT PLACED SO THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BARS (INCLUDING WALLS). "OTHER BARS" ARE ALL BARS OTHER THAN "TOP BARS".
- IN CASES WHERE THE EMBEDMENT (DEVELOPMENT) LENGTH OF THE BARS CANNOT BE ACHIEVED DUE TO INSUFFICIENT CONCRETE THICKNESS, THE BARS SHALL EXTEND AS FAR AS POSSIBLE AND END IN STANDARD HOOKS.
- UNLESS OTHERWISE INDICATED ON THE PLANS, BARS WITH END HOOK SHOWN ON THE PLANS SHALL EXTEND AS FAR AS POSSIBLE AND END AT LOCATION WHERE THE INDICATED CONCRETE COVER TO THE END HOOK CAN BE PROVIDED.
- ALL BARS SHALL BE DOWELED TO ADJACENT CONCRETE UNLESS NOTED OTHERWISE. DOWELS SHALL MATCH AND LAP REINFORCING SHOWN ON THE STRUCTURAL DRAWINGS. DOWEL ALL VERTICAL REINFORCING INTO THE FOUNDATION UNLESS NOTED OTHERWISE.
- WELDING OF REINFORCING STEEL IS NOT ACCEPTABLE UNLESS OTHERWISE SHOWN ON THE STRUCTURAL DRAWINGS. ONLY ASTM A706 REINFORCING BARS ARE PERMITTED TO BE WELDED WHERE NOTED ON THE STRUCTURAL DRAWINGS. SUBMIT ALL WELDING PROCEDURES TO THE STRUCTURAL ENGINEER FOR REVIEW.
- ABSOLUTELY NO TORCHING TO BEND REINFORCING BARS SHALL BE ALLOWED WITHOUT SPECIFIC APPROVAL FROM THE STRUCTURAL ENGINEER.
- CONFORM TO ACI 117 AND CRSI STANDARDS FOR REINFORCEMENT PLACING TOLERANCES. IN NO INSTANCE SHALL PLACEMENT TOLERANCES EXCEED 1".
- MECHANICAL COUPLERS SHALL NOT BE USED UNLESS OTHERWISE INDICATED ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER. ALL MECHANICAL COUPLERS SHALL HAVE CODE COMPLIANT TESTING AND APPROVAL AND SHALL EXCEED THE REINFORCING YIELD STRENGTH (FY) BY MINIMUM 25%. ALL COUPLERS SHALL MEET MINIMUM COVER AND SPACING REQUIREMENTS WHEN INSTALLED.

RE-ISSUE ENTIRE SHEET



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▲	9/18/15	CONFORMED
▲	8/14/15	ADDENDUM NO. 3
NO.	DATE	REVISION

**Pacheco Koch**  
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 DALLAS, TX 75231 972.235.3031  
 TX REG. ENGINEERING FIRM F-14439  
 TX REG. SURVEYING FIRM LS-101938-05

<b>LIFT STATION GENERAL STRUCTURAL NOTES I</b>				
<b>SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT</b>				
<i>CITY OF CELINA, COLLIN COUNTY, TEXAS</i>				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
BJL	RJE	JULY 2015	3551-14.141	S-5

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT

**ALUMINUM**

1. ALUMINUM CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE ALUMINUM CONSTRUCTION MANUAL OF THE ALUMINUM ASSOCIATION.
2. ALUMINUM IN CONTACT WITH OR EMBEDDED IN CONCRETE OR MASONRY SURFACES SHALL BE COATED WITH EITHER A ZINC MOLYBDATE PRIMER (CONFORMING TO FEDERAL SPECIFICATION TT-P-645B OR EQUIVALENT) OR A HEAVY COATING OF ALKALI RESISTANCE BITUMINOUS PAINT.
3. ALL BOLTS USED IN CONNECTION WITH ALUMINUM MEMBERS SHALL BE STAINLESS STEEL AISI 316, UNLESS NOTED OTHERWISE.
4. ALL WELDING OF ALUMINUM STRUCTURES SHALL CONFORM TO "STRUCTURAL WELDING CODE - ALUMINUM", AWS D1.2, LATEST EDITION.
5. WHEN FILLET WELD SIZE IS NOT INDICATED, PROVIDE MAXIMUM WELD SIZE FOR THE MATERIAL THICKNESS IN ACCORDANCE WITH THE LATEST EDITION OF THE "ALUMINUM DESIGN MANUAL" BY THE ALUMINUM ASSOCIATION.

**MANUFACTURER PRODUCTS**

1. SEE PROJECT SPECIFICATIONS AND NOTES ON DRAWINGS FOR OTHER PRODUCTS NOT LISTED. PRODUCTS SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTION.
2. HYDROPHILIC WATERSTOP: UNLESS OTHERWISE INDICATED ON THE PLANS, KBA-1510 FP ULTRA SEAL W/ P201 MANUFACTURED BY ASAHI DENKA CO., LTD OR APPROVED EQUAL.

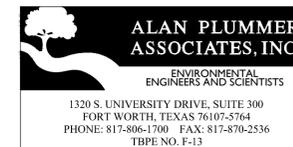
**POST INSTALLED ANCHOR SYSTEM**

1. ANCHOR BOLTS NOT SPECIFIED BY ENGINEER SHALL BE DESIGNED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER, RETAINED BY THE CONTRACTOR, IN ACCORDANCE WITH APPLICABLE PROJECT AND CODE REQUIREMENTS. SUBMIT AS A SHOP DRAWING FOR REVIEW AND APPROVAL BY THE ENGINEER. COORDINATE LOCATION, SIZE AND EMBEDMENT PRIOR TO CASTING CONCRETE.
2. ALL CAST IN PLACE AND POST-INSTALLED ANCHORS INDICATED IN THE STRUCTURAL DOCUMENTS SHALL COMPLY WITH APPENDIX D OF ACI 318 AND CHAPTER 19 OF THE IBC. ALL EXPANSION AND ADHESIVE ANCHORS SHALL HAVE THE ICC REPORT SHOWING EQUIVALENT LOAD CAPACITY. SUBMIT AND NSTALL PER THE ICC EVALUATION REPORT.
3. EXPANSION BOLTS OR CONCRETE ANCHORS: MINIMUM 5/8" DIAMETER , HILTI "KWIK BOLT TZ" AISI 316 STAINLESS STEEL ANCHORS OR APPROVED EQUAL.
4. REINFORCING BARS, DOWELS OR THREADED RODS INDICATED TO BE ADHESIVE ANCHORED OR DOWELED INTO CONCRETE OR SOLID MASONRY SHALL BE INSTALLED USING ONE OF THE FOLLOWING OR AN APPROVED EQUAL: ENSURE THAT THESE MATCH THE STANDARD SPECS.
  - A. SET EPOXY BY SIMPSON STRONG-TIE CO., INC.
  - B. HIT RE 500 EPOXY BY HILTI, INC.
5. THREADED RODS INDICATED TO BE ANCHORED IN HOLLOW MASONRY SHALL BE INSTALLED USING ONE OF THE FOLLOWING OR AN APPROVED EQUAL:
  - A. ACRYLIC-TIE ADHESIVE BY SIMPSON STRONG-TIE CO., INC.
  - B. HIT HY 70 ADHESIVE BY HILTI, INC.
6. DEFORMED REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60. THREADED RODS SHALL MEET THE REQUIREMENTS OF AISI 316 STAINLESS STEEL. PRIOR TO INSTALLATION, ALL DEFORMED BARS AND THREADED RODS SHALL BE CLEAN, FREE OF OIL, GREASE OR OTHER RESIDUE, IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. HOLES SHALL BE DRILLED USING ROTARY HAMMER DRILLS WITH ANSI MATCHED TOLERANCE CARBIDE-TIPPED DRILL BITS. DRILL BIT DIAMETER SHALL MATCH DIAMETER RECOMMENDED BY MANUFACTURER. INSTALLATION OF ALL ANCHORS SHALL CONFORM TO THE MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS, THE REQUIREMENTS OF THE RESPECTIVE ICC-ES REPORT, AND ALL APPLICABLE BUILDING CODES.
8. WHEN BASE MATERIAL TEMPERATURE FALLS BELOW 40 DEGREES F, ONLY ACRYLIC BASED ADHESIVES SHALL BE USED.
9. PRIOR TO INSTALLING POST INSTALL ANCHORS INTO CONCRETE, THE CONTRACTOR SHALL LOCATE REINFORCING. DO NOT DAMAGE CONCRETE REINFORCING.
10. DRILLED HOLES SHALL BE CLEANED WITH WIRE BRUSH AND COMPRESSED AIR.
11. UNLESS NOTED OTHERWISE ON PLANS, MINIMUM ANCHOR SIZE SHALL BE 5/8" IN DIAMETER AND MINIMUM EMBEDMENT LENGTH FOR ADHESIVE ANCHORS SHALL BE 4-1/2".

**SPECIAL INSPECTION**

1. SPECIAL INSPECTIONS ARE REQUIRED IN ACCORDANCE WITH CHAPTER 1 AND CHAPTER 17 OF THE IBC. PAYMENT FOR THESE INSPECTIONS IS NOT THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE FOR FULL ACCESS TO THE WORK BY THE SPECIAL INSPECTOR AND SHALL PROVIDE FOR THESE INSPECTIONS IN HIS CONSTRUCTION SCHEDULE IN ACCORDANCE WITH THE SPECIFICATIONS. A SPECIAL INSPECTION PLAN WILL BE SUBMITTED UNDER SEPARATE COVER WITH THE PERMIT APPLICATION.
2. THE FOLLOWING IS A LIST OF INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH CHAPTER 17 OF THE IBC.
  - PIERS: 1704.9
  - SOILS: 1704.7
  - CONCRETE CONSTRUCTION: 1704.4
  - MASONRY (LEVEL 1): 1704.5
  - STEEL CONSTRUCTION: 1704.3
  - POST INSTALLED ANCHORS 1704.13.3

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**Pacheco Koch** 7557 RAMBLER ROAD, SUITE 1400  
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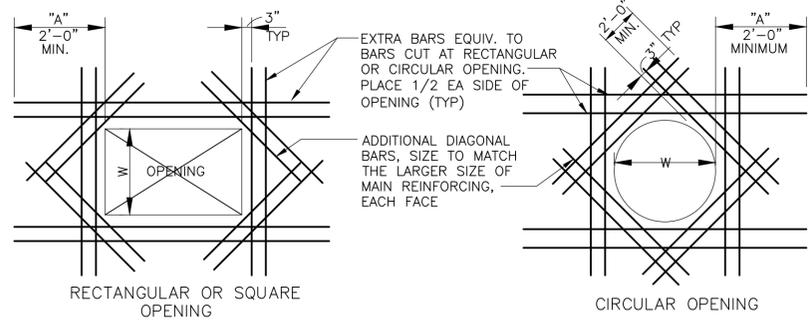
**LIFT STATION  
GENERAL STRUCTURAL NOTES II**

**SOUTHEAST SECTOR  
LIFT STATION, FORCE MAIN AND  
METERING VAULT**

CITY OF CELINA, COLLIN COUNTY, TEXAS

DESIGN	DRAWN	DATE	JOB NO.	SHEET
BJL	RJE	JULY 2015	3551-14.141	S-6

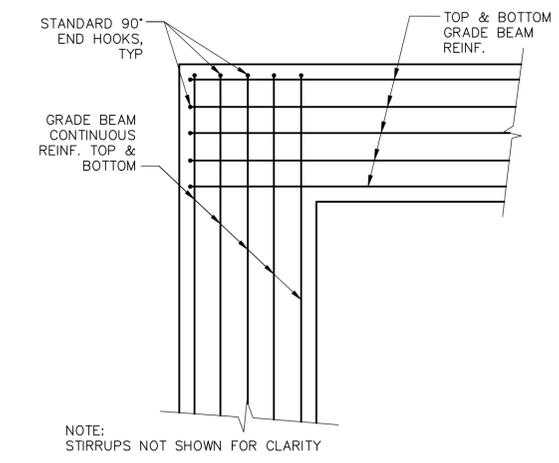




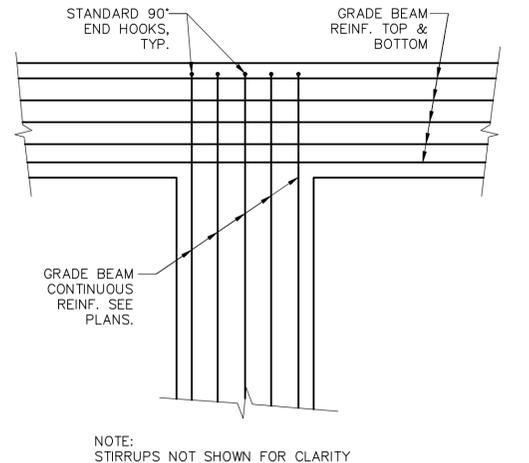
**NOTES:**

1. THE ADDITIONAL REINFORCING INDICATED ON THIS DETAIL SHALL BE APPLIED TO ALL OPENINGS IN SLABS AND WALLS UNLESS OTHER DETAILS ARE INDICATED ON THE PLANS.
2. DISCONTINUE TYPICAL REINFORCING AT OPENING.
3. PLACE ADDITIONAL BARS IN SAME ORIENTATION AND POSITION AS BARS CUT BY OPENING. PROVIDE ONE SET OF BARS FOR EACH LAYER OF REINFORCING CUT.
4. "A" = TOP BAR EMBEDMENT LENGTH (24" MINIMUM). PROVIDE STANDARD HOOK IF FULL EMBEDMENT LENGTH IS NOT POSSIBLE.
5. REINFORCING STEEL IS TO BE CARRIED ACROSS ALL CONSTRUCTION JOINTS.
6. SEE MECHANICAL, ELECTRICAL, PLUMBING AND ARCHITECTURAL DRAWINGS FOR SLAB AND WALL OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS.
7. ADDITIONAL REINFORCING MAY BE OMITTED ONLY WHERE OPENING IS FRAMED BY BEAMS OR WALLS.
8. ADDITIONAL REINFORCING NOT REQUIRED WHEN SPECIFIED REINFORCING IS NOT CUT.
9. ALL REINFORCING SPACING SHALL BE GREATER THAN 3" CENTER TO CENTER.

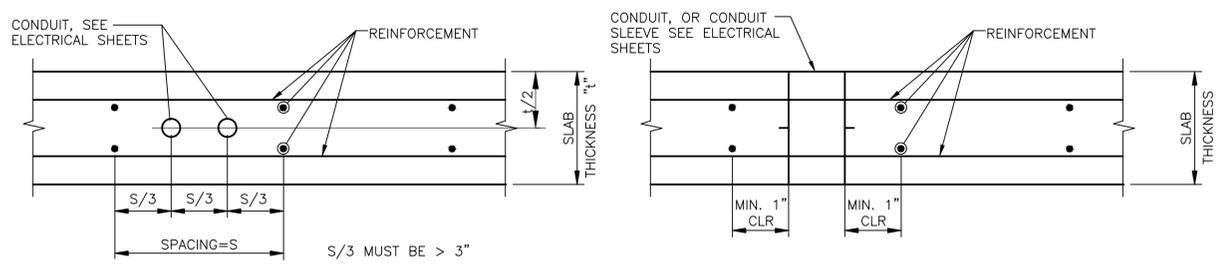
**ADDITIONAL REINFORCING AROUND OPENINGS** (612)  
NOT TO SCALE



**GRADE BEAM CORNER REINFORCEMENT** (675)  
NOT TO SCALE



**GRADE BEAM INTERSECTION REINFORCEMENT** (676)  
NOT TO SCALE



**NOTES:**

1. CONDUIT TO BE PLACED IN SLABS SHALL BE EVENLY SPACED BETWEEN REINF.
2. ALL CONDUITS SHALL BE PLACED PARALLEL OR NORMAL TO REINF.
3. CONDUITS SHALL NOT PENETRATE THROUGH BEAMS.
4. NO REBARS SHALL BE RELOCATED, CUT, OR BENT DUE TO CONDUIT PLACEMENT.
5. NO CONDUITS GREATER THAN 1/4 SHALL BE ALLOWED TO BE EMBEDDED IN THE CONCRETE SLAB.

**EMBEDDED CONDUITS** (622)  
NOT TO SCALE

RE-ISSUE ENTIRE SHEET



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**Pacheco Koch**

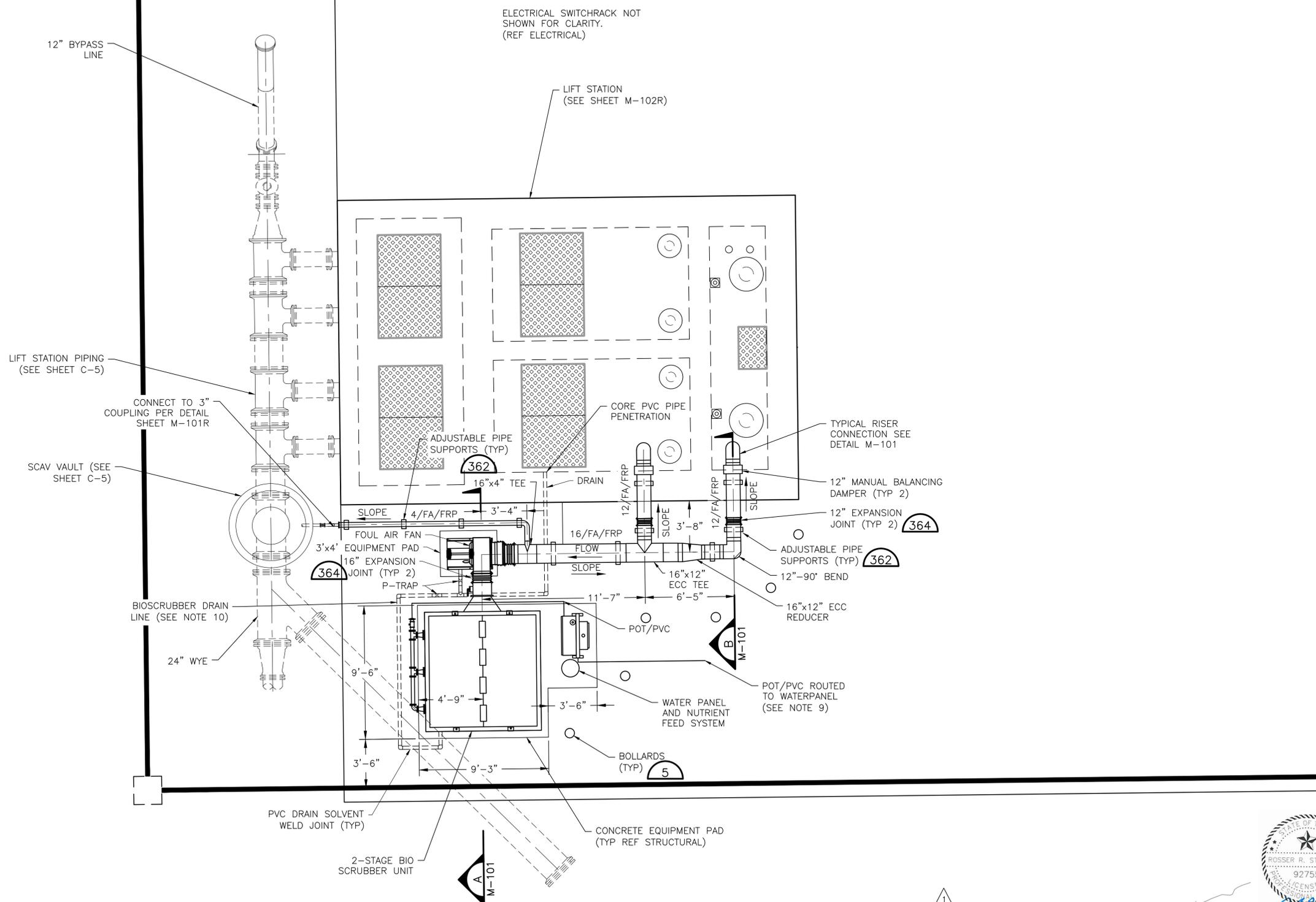
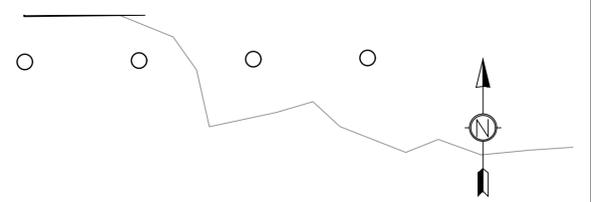
**LIFT STATION STRUCTURAL STANDARD DETAILS II**

**SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT**

CITY OF CELINA, COLLIN COUNTY, TEXAS

DESIGN	DRAWN	DATE	JOB NO.	SHEET
B.J.L.	R.J.E.	JULY 2015	3551-14.141	S-8

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



ELECTRICAL SWITCHRACK NOT SHOWN FOR CLARITY. (REF ELECTRICAL)

LIFT STATION (SEE SHEET M-102R)

12" BYPASS LINE

LIFT STATION PIPING (SEE SHEET C-5)

CONNECT TO 3" COUPLING PER DETAIL SHEET M-101R

SCAV VAULT (SEE SHEET C-5)

BIO SCRUBBER DRAIN LINE (SEE NOTE 10)

24" WYE

PVC DRAIN SOLVENT WELD JOINT (TYP)

2-STAGE BIO SCRUBBER UNIT

CONCRETE EQUIPMENT PAD (TYP REF STRUCTURAL)

ADJUSTABLE PIPE SUPPORTS (TYP)

16"x4" TEE

4"/FA/FRP

3'-4"

16"/FA/FRP

16"x12" ECC TEE

11'-7"

6'-5"

12"/FA/FRP

3'-8"

12"/FA/FRP

12"-90° BEND

16"x12" ECC REDUCER

12" EXPANSION JOINT (TYP 2)

12" MANUAL BALANCING DAMPER (TYP 2)

TYPICAL RISER CONNECTION SEE DETAIL M-101

ADJUSTABLE PIPE SUPPORTS (TYP)

16"x12" ECC TEE

12" EXPANSION JOINT (TYP 2)

12" MANUAL BALANCING DAMPER (TYP 2)

TYPICAL RISER CONNECTION SEE DETAIL M-101

ADJUSTABLE PIPE SUPPORTS (TYP)

16"x12" ECC REDUCER

12" EXPANSION JOINT (TYP 2)

12" MANUAL BALANCING DAMPER (TYP 2)

PLAN

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

REISSUE IN ITS ENTIRETY

NOTES:

- REFER TO SHEETS M-101 AND M-102 FOR ADDITIONAL INFORMATION.
- PROVIDE FLANGED CONNECTIONS AT ALL DAMPERS, EQUIPMENT EXPANSION JOINTS, AND WETWELL CONNECTIONS. CONTRACTOR MAY USE ADDITIONAL FLANGED CONNECTIONS AS NEEDED FOR INSTALLATION.
- PROVIDE MINIMUM 1/8" SLOPE PER FOOT ALONG FOUL AIR PIPE FOR CONDENSATION DRAINAGE TO WET WELL. USE ECCENTRIC FITTINGS TO ASSIST WITH DRAINAGE OF CONDENSATE IN THE DIRECTION OF THE SLOPE AS NECESSARY, AND WHERE SPECIFICALLY INDICATED.
- CONTRACTOR SHALL PROVIDE UP TO FOUR (4) 1/4"-INCH DRILLED SAMPLE TAPS ALONG THE FOUL AIR PIPING. TAPS SHALL BE FIELD-LOCATED AND COORDINATED WITH THE OWNER, OR AS SHOWN ON THE DRAWINGS. PROVIDE A REMOVABLE PLUG FOR EACH TAP.
- CONTRACTOR SHALL PROVIDE FRP PIPE FOR EXPOSED FOUL AIR DUCT PER SECTION 40 05 36.13
- REFER TO STRUCTURAL SHEET S-2 FOR DAMPER AND FOUL AIR CONNECTION LOCATIONS.
- EQUIPMENT DIMENSIONS SHOWN ARE MAXIMUM FOOT PRINT RESTRICTIONS. CONTRACTOR SHALL COORDINATE WITH EQUIPMENT MANUFACTURER FOR ACTUAL SYSTEM DIMENSIONS.
- PIPE SUPPORT LOCATIONS FOR ILLUSTRATION PURPOSES ONLY. FURNISH PIPE SUPPORTS IN ACCORDANCE WITH THE SPECIFICATIONS. CLAMP SUPPORTS LOOSELY TO PIPES TO ALLOW FOR THERMAL EXPANSION AND CONTRACTION.
- CONTRACTOR SHALL INSTALL AND ROUTE PVC POTABLE WATERLINE TO WATER PANEL ON BIOSCRUBBER. PIPE SIZE SHALL BE DETERMINED BY THE BIOSCRUBBER MANUFACTURER. INSTALL A TEE AND CONNECT TO PROPOSED 2" LINE SHOWN ON SHEET C3R
- PROVIDE DRAIN FOR BIOSCRUBBER AND BLOWER. ROUTE DRAIN TO LIFT STATION WETWELL. SIZE DETERMINED BY BIOSCRUBBER MANUFACTURER. DRAIN PIPE SHALL BE CONCRETE ENCASED.
- INSTALL P-TRAP ON BIOSCRUBBER DRAIN AND BLOWER DRAIN PER DETAIL 225 ON M-103R
- ALL EXPOSED PVC AIR PIPING SHALL BE PAINTED PER SECTION 09 91 00.
- ALL ABOVE GROUND WATER PIPING SHALL BE PAINTED STEEL THAT IS INSULATED AND HEAT TRACED PER SPECIFICATIONS.

ALAN PLUMMER ASSOCIATES, INC.  
 ENVIRONMENTAL ENGINEERS AND SCIENTISTS  
 1320 S. UNIVERSITY DRIVE, SUITE 300  
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 TBPE NO. F-13

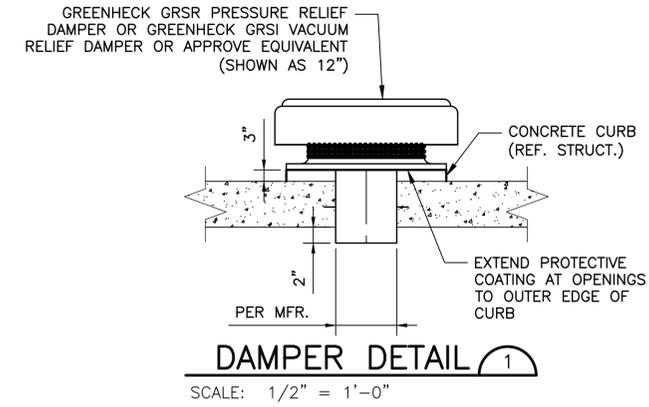
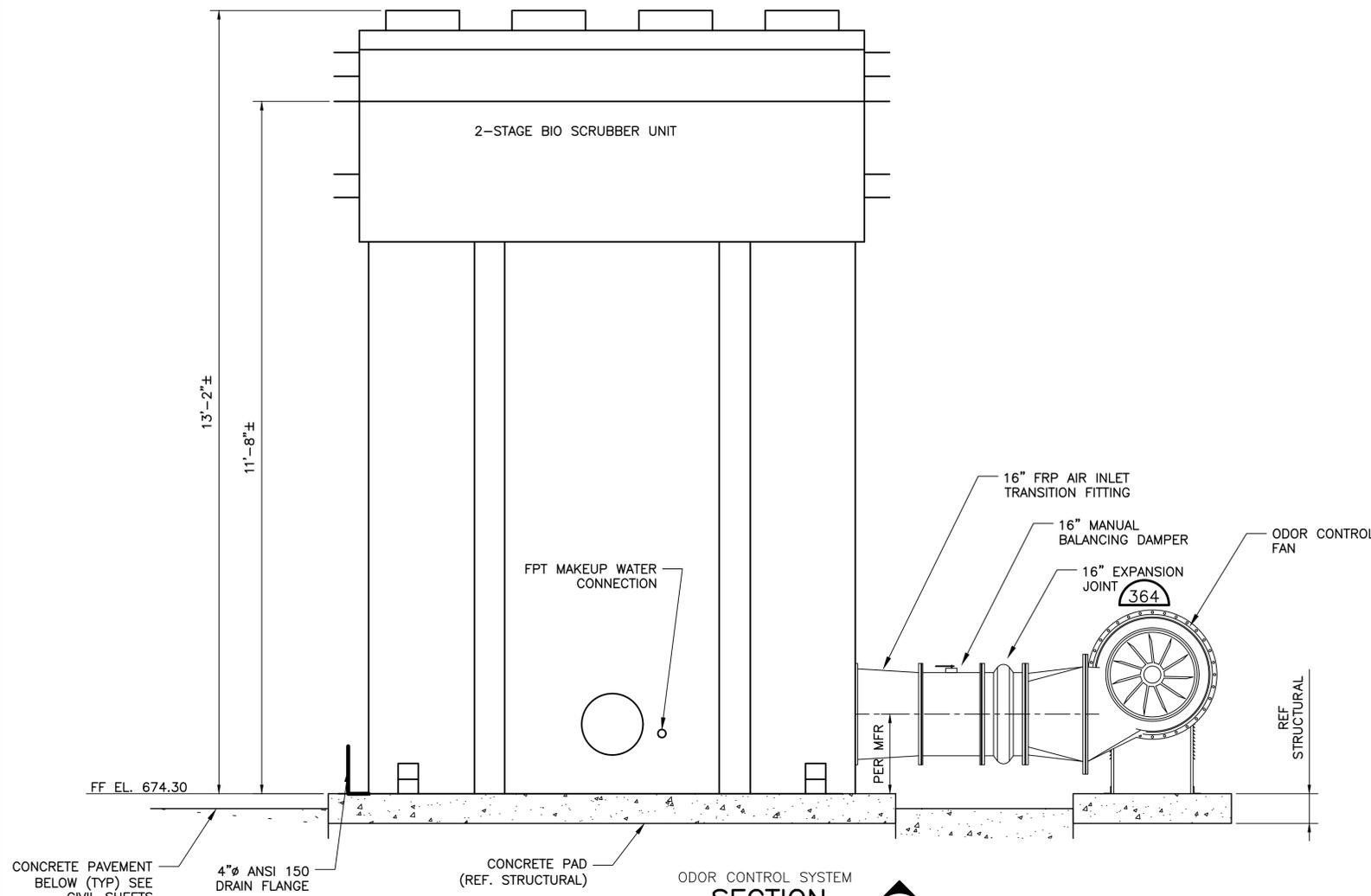
NO.	DATE	REVISION
1	9/18/15	CONFORMED
2	8/14/15	ADDENDUM 3

**Pacheco Koch**  
 7557 RAMBLER ROAD, SUITE 1400  
 DALLAS, TX 75231 972.235.3031  
 TX REG. ENGINEERING FIRM F-14439  
 TX REG. SURVEYING FIRM LS-101938-05

**FOUL AIR PIPING PLAN**  
**SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT**  
 CITY OF CELINA, COLLIN COUNTY, TEXAS

DESIGN	DRAWN	DATE	JOB NO.	SHEET
CWH	FJC	AUG 2015	3551-14.141	M-100R

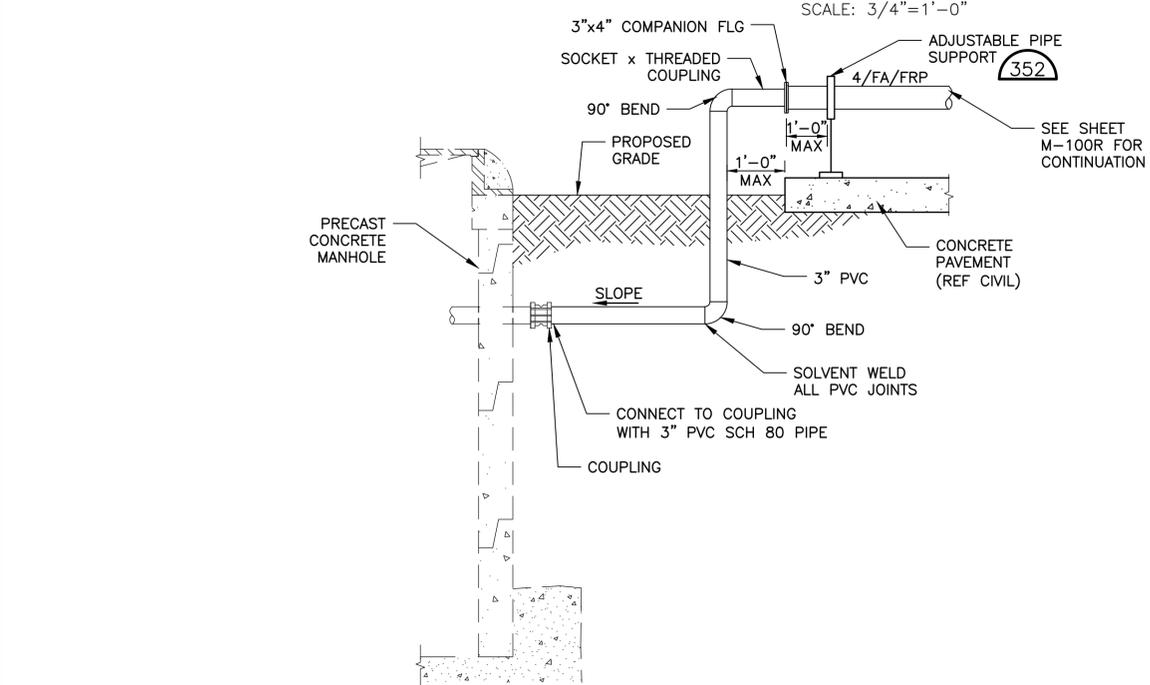
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



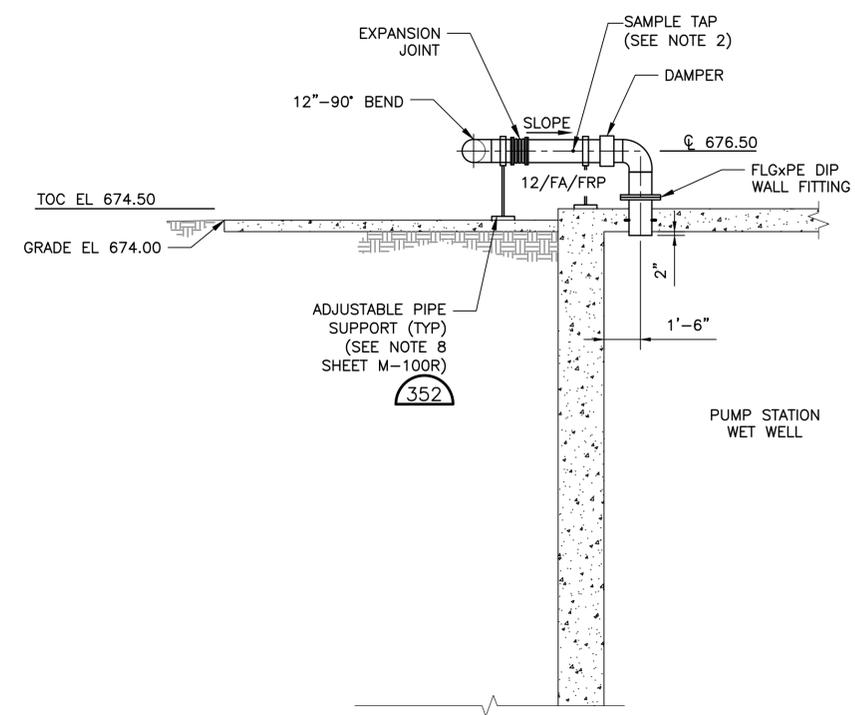
NOTES:

1. REFER TO SHEET M-100R FOR ADDITIONAL INFORMATION.
2. CONTRACTOR SHALL ROUTE AND SLOPE THE DRAIN PIPE TO THE LIFT STATION WET WELL.
3. CONTRACTOR SHALL PROVIDE 1/4 INCH SAMPLE TAP AS SHOWN. PROVIDE A REMOVABLE PLUG FOR EACH TAP.
4. CONTRACTOR SHALL COORDINATE W/ EQUIPMENT MANUFACTURER FOR DRAIN CONNECTION LOCATION AND ORIENTATION PRIOR TO POURING EQUIPMENT PAD.
5. ALL EXPOSED PVC AIR PIPING SHALL BE PAINTED PER SECTION 09 91 00.
6. ALL ABOVE GROUND WATER PIPING SHALL BE PAINTED STEEL THAT IS INSULATED AND HEAT TRACED PER SPECIFICATIONS.

ODOR CONTROL SYSTEM SECTION A  
SCALE: 3/4" = 1'-0"



ARV CONNECTION DETAIL 2  
SCALE: 3/4" = 1'-0"



TYPICAL RISER SECTION B  
SCALE: 1/4" = 1'-0"

REISSUE IN ITS ENTIRETY



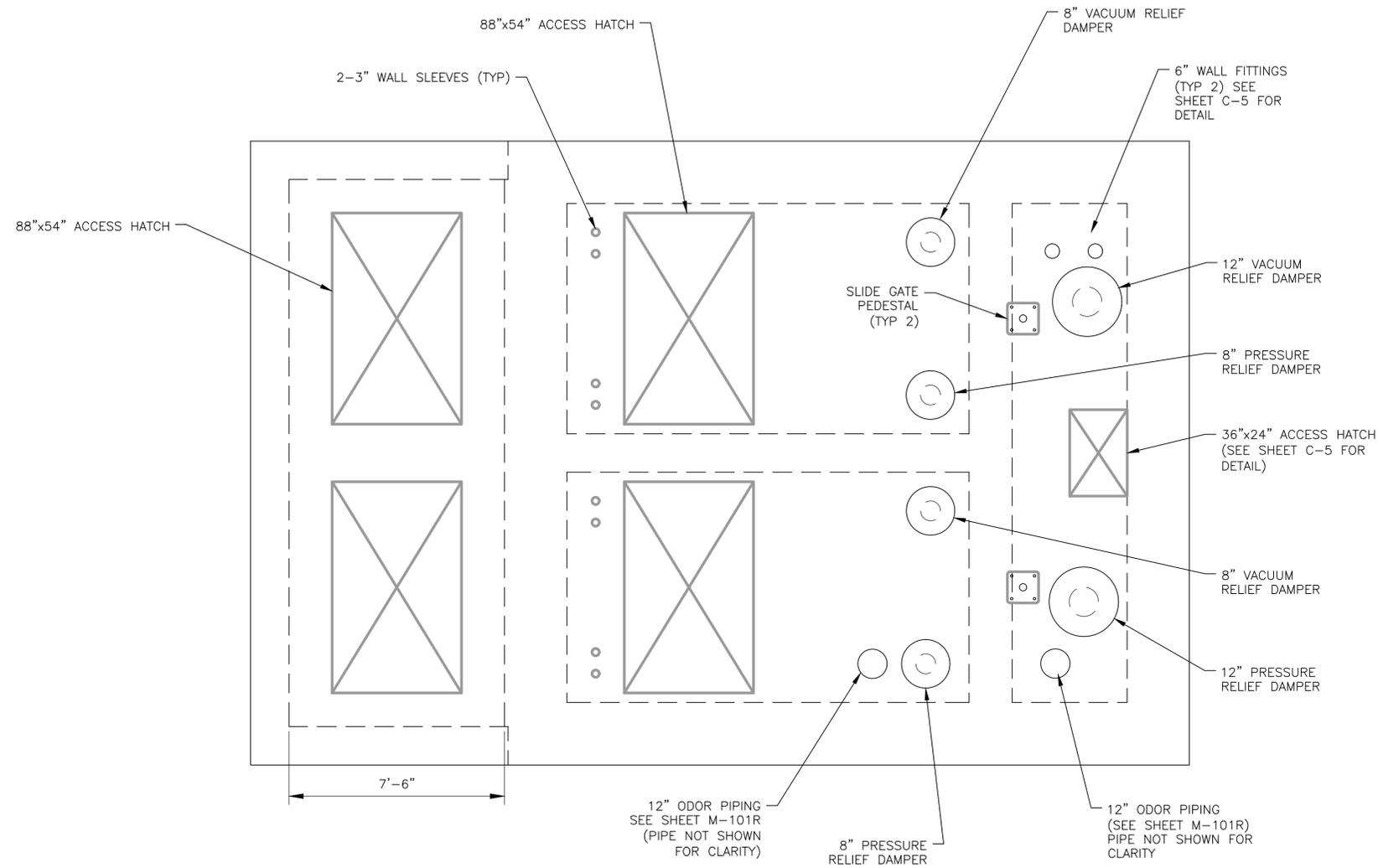
**ALAN PLUMMER ASSOCIATES, INC.**  
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1320 S. UNIVERSITY DRIVE, SUITE 300  
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TBPE NO. F-13

NO.	DATE	REVISION
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FOUL AIR PIPING SECTIONS				
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT				
CITY OF CELINA, COLLIN COUNTY, TEXAS				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
CWH	FJC	AUG 2015	3551-14.141	M-101R

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



**NOTE:**

1. PRESSURE RELIEF DAMPER SHALL BE MODEL GRSR BY GREENHECK. REF DAMPER DETAIL 1, SHEET M-101R
2. VACUUM RELIEF DAMPER SHALL BE MODEL GRSI BY GREENHECK.
3. REFER TO STRUCTURAL FOR SLAB PENETRATION LOCATIONS.



**TOP PLAN**  
SCALE: 3/8"=1'-0"



REISSUE IN ITS ENTIRETY



**ALAN PLUMMER ASSOCIATES, INC.**  
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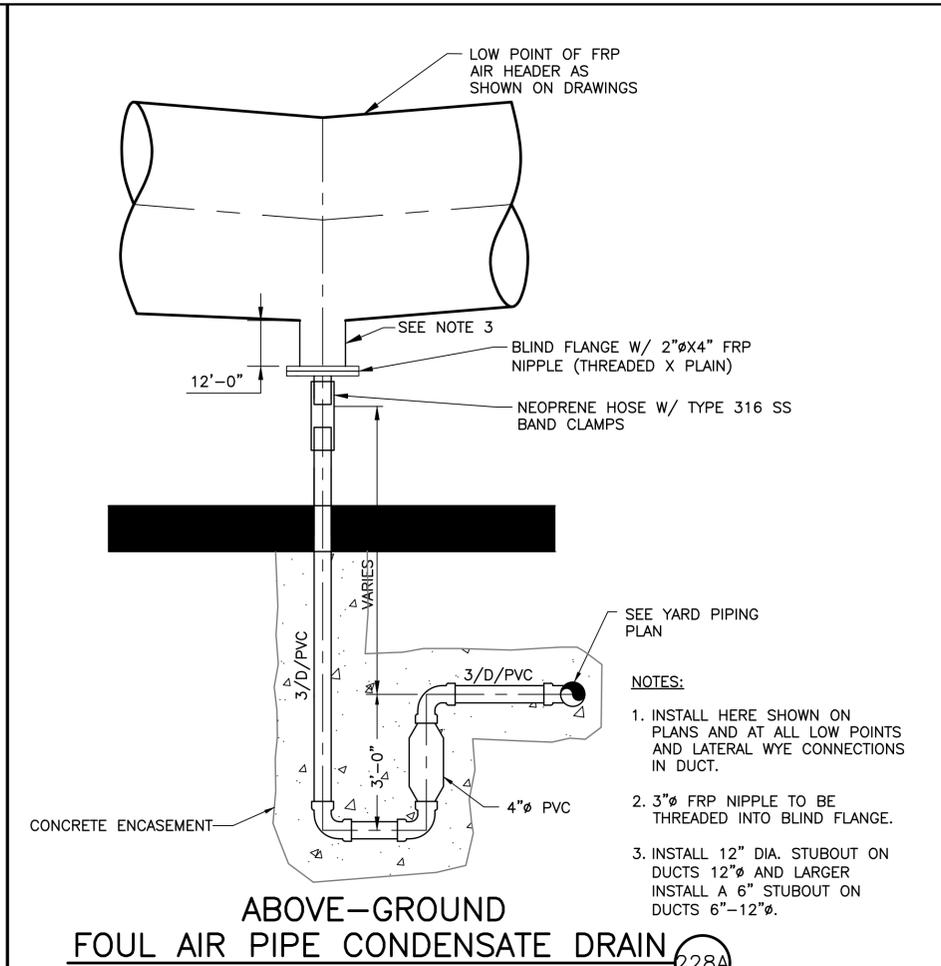
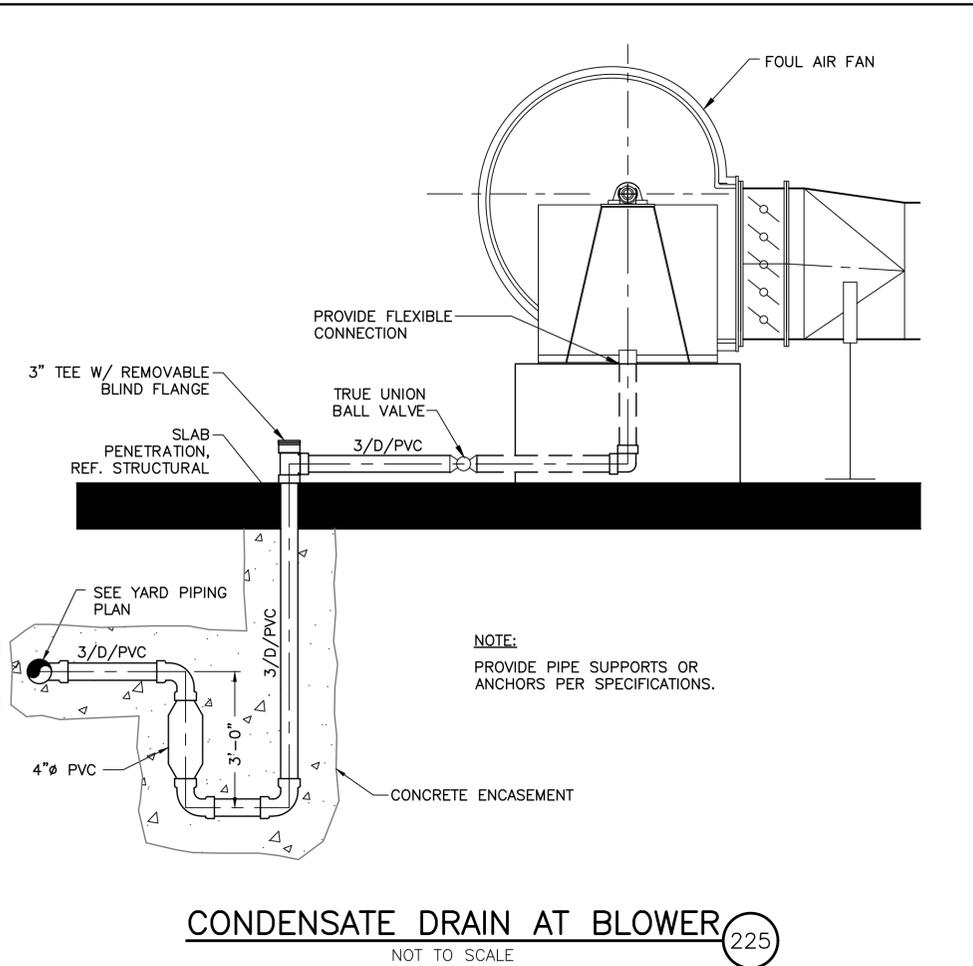
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TX REG. ENGINEERING FIRM F-14439  
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**ODOR CONTROL SYSTEM PLAN**

**SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT**

CITY OF CELINA, COLLIN COUNTY, TEXAS

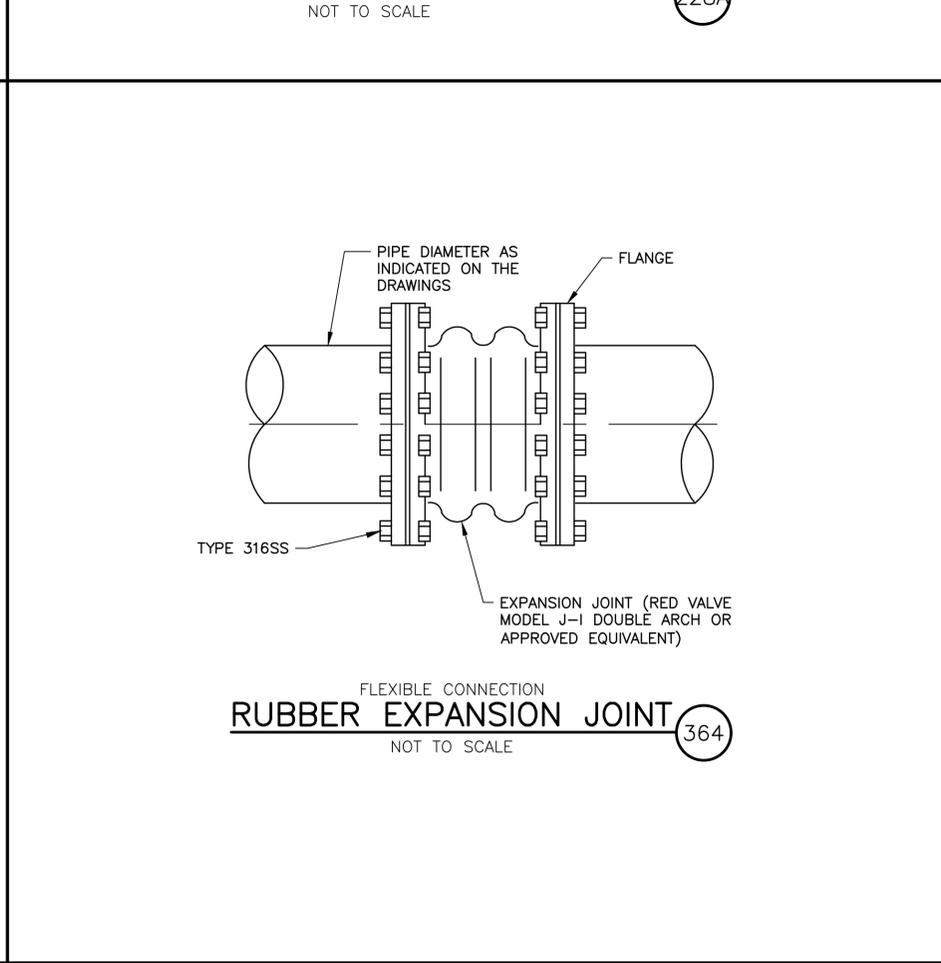
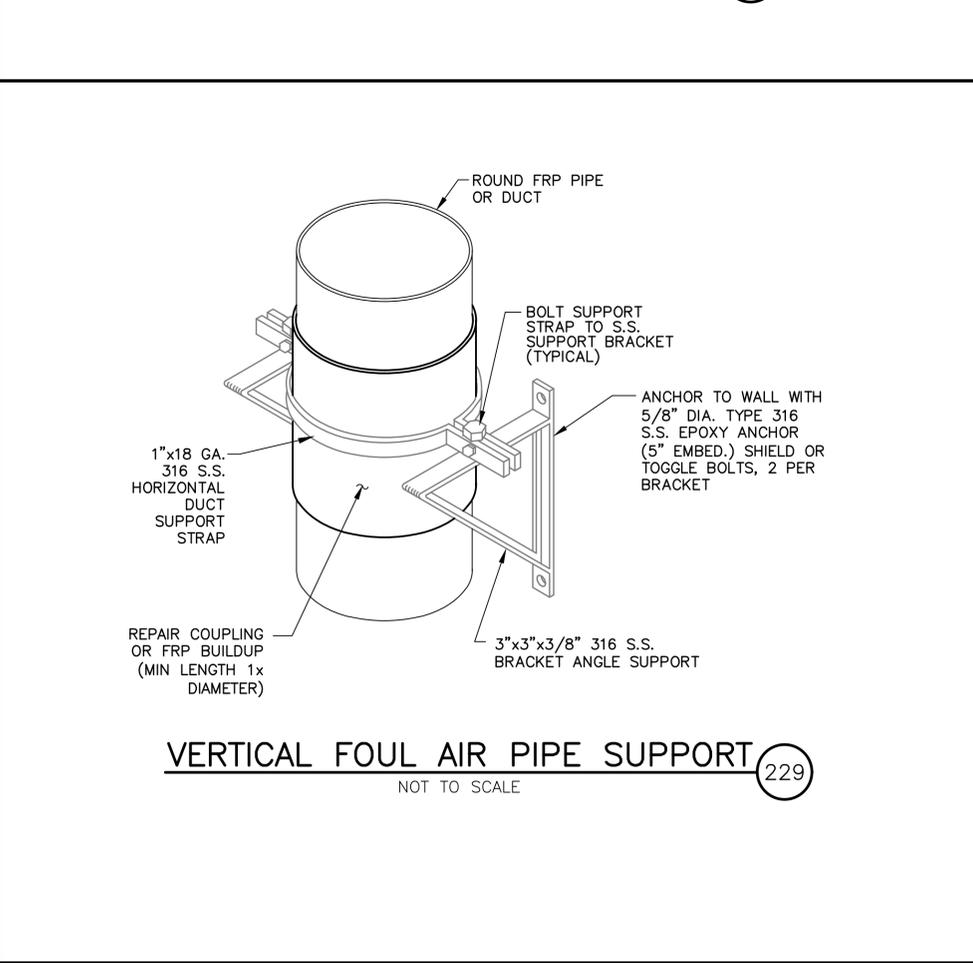
DESIGN	DRAWN	DATE	JOB NO.	SHEET
BJL	RJE	JULY 2015	3551-14.141	M-102R



ADJUSTABLE PIPE SADDLE SUPPORT SCHEDULE					
DIMENSIONS IN INCHES					
SIZE OF SUPPORTED PIPE	PIPE SIZE "A"	PIPE SIZE "B"	"C"	"D"	
				MINIMUM	MAXIMUM
* 2 1/2	2 1/2	1 1/2	9	8	13
3	2 1/2	1 1/2	9	8 1/2	13 1/2
3 1/2	2 1/2	1 1/2	9	8 1/2	13 1/2
4	3	2 1/2	9	9 1/2	14
6	3	2 1/2	9	10 1/2	15 1/2
8	3	2 1/2	9	11 1/2	16 1/2
10	3	2 1/2	9	13 1/2	18 1/2
12	3	2 1/2	9	15	19 1/2
14	4	3	11	16 1/2	20 1/2
16	4	3	11	17 1/2	22 1/2
18	6	3 1/2	13 1/2	19 1/2	24
20	6	3 1/2	13 1/2	21	25 1/2
24	6	4	13 1/2	23 1/2	28 1/2
30	6	4	13 1/2	27	31 1/2
32	6	4	13 1/2	28 1/2	32 1/2
36	6	4	13 1/2	30 1/2	34 1/2

\* USE 2 1/2" SUPPORTS FOR PIPES LESS THAN 2 1/2"

ADJUSTABLE STANCHION PIPE SUPPORT (352)  
NOT TO SCALE



REISSUE IN ITS ENTIRETY

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**ODOR CONTROL SYSTEM DETAILS I**  
**SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT**  
CITY OF CELINA, COLLIN COUNTY, TEXAS

DESIGN	DRAWN	DATE	JOB NO.	SHEET
CWH	FJC	AUG 2015	3551-14.141	M-103

**ALAN PLUMMER ASSOCIATES, INC.**  
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PHONE: 817-806-1700 FAX: 817-870-2536  
TBPE NO. F-13

STATE OF TEXAS  
ROSSER R. STANDIFER  
92755  
LICENSED PROFESSIONAL ENGINEER  
8-14-2015

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT

SS-201411-03

ONE-LINE DIAGRAM SYMBOLS

	ELECTRIC SERVICE METER
	WEATHERHEAD
	FUSE, RATING AS SHOWN
	TRANSFER SWITCH, SIZE AND NUMBER OF POLES AS SHOWN, ATS-AUTOMATIC, MTS-MANUAL, SATS-SERVICE ENTRANCE AUTO
	INSTRUMENT CLASS CURRENT TRANSFORMER, NUMBER AS SHOWN
	VOLTAGE TRANSFORMER, INSTRUMENT CLASS, FUSED PRIMARY AND SECONDARY, NUMBER AS INDICATED
	ZERO SEQUENCE INSTRUMENT CLASS CURRENT TRANSFORMER, NUMBER AS SHOWN
	LOW VOLTAGE THERMAL MAGNETIC CIRCUIT BREAKER, SIZE AND NUMBER OF POLES AS INDICATED
	FULL VOLTAGE, NON-REVERSING MOTOR STARTER, SIZE AS INDICATED
	FULL VOLTAGE, NON-REVERSING COMBINATION MOTOR STARTER, SIZE AS INDICATED
	FULL VOLTAGE, TWO SPEED MOTOR STARTER, SIZE AS INDICATED
	FULL VOLTAGE, REVERSING MOTOR STARTER, SIZE AS INDICATED

	MOTOR, HORSEPOWER AS INDICATED
	MOTOR WINDING HEATER
	MOTOR OR STARTER ENCLOSURE SPACE HEATER
	MOISTURE/LEAKAGE SENSOR
	THERMISTORS
	RESISTANCE TEMPERATURE DETECTORS ( RTD'S ) AND THERMISTORS
	RESISTANCE TEMPERATURE DETECTORS ( RTD'S)
	FUSED DISCONNECT SWITCH, SIZE AS INDICATED, SWITCH/FUSE
	NONFUSED DISCONNECT SWITCH, SIZE AS INDICATED
	VIBRATION SWITCH
	LEVEL SWITCH
	PRESSURE SWITCH
	FLOW SWITCH
	THERMOSTAT
	ELECTRICAL CONNECTION

	PUSH BUTTON CONTROL STATION, FUNCTION AS INDICATED ON SCHEMATIC
	SELECTOR SWITCH CONTROL STATION, FUNCTION AS INDICATED ON SCHEMATIC
	SOLENOID OPERATED VALVE
	TRANSFORMER, SIZE AS INDICATED, PRIMARY AND SECONDARY VOLTAGE AS INDICATED
	DRAWOUT TYPE VACUUM BREAKER, SIZE AS INDICATED
	DRAWOUT TYPE VACUUM BREAKER, SIZE AS INDICATED, MEDIUM VOLTAGE FUSED MOTOR CONTROLLER
	DRAWOUT TYPE EQUIPMENT OF DEVICE
	MEDIUM VOLTAGE CABLE TERMINATION
	MEDIUM VOLTAGE AIR INTERRUPTER SWITCH
	MEDIUM VOLTAGE FUSED AIR INTERRUPTER SWITCH
	MECHANICAL KEY INTERLOCK "K1" DENOTES SEQUENCE K1
	LIGHTING ARRESTER
	JUNCTION BOX
	HAZARDOUS AREA SELL OFF

	SPECIAL CAPACITOR SC - SURGE CAPACITOR PF - POWER FACTOR CORRECTION CAPACITOR
	THREE PHASE DELTA CONNECTION
	THREE PHASE GROUNDED WYE CONNECTION
	THREE PHASE UNGROUNDED WYE CONNECTION
	CONDUIT SEALOFF
	CIRCUIT BREAKER - THERMAL MAGNETIC 3 POLE UNLESS INDICATED OTHERWISE CONTINUOUS AMP TRIP SETTING INDICATED
	CIRCUIT BREAKER WITH CURRENT LIMITING FUSES - TRIP AND FUSE RATING INDICATED. 3 POLE UNLESS INDICATED OTHERWISE.
	FUSED SWITCH - SWITCH AND FUSE CURRENT RATING INDICATED. 3 POLE UNLESS INDICATED OTHERWISE.
	SWITCH - CURRENT RATING INDICATED. 3 POLE UNLESS INDICATED OTHERWISE
	DRAWOUT AIR CIRCUIT BREAKER LOW VOLTAGE. FRAME SIZE AND TRIP SETTING INDICATED.

	PLC POWER WIRE CALLOUT
	PLC CONTROL WIRE CALLOUT
	POWER PANEL WIRE CALLOUT
	LIGHTING PANEL WIRE CALLOUT
	MCC WIRE CALLOUT
	EQUIPMENT CALLOUT
	EQUIPMENT CALLOUT
	DOUBLE CALLOUT
	TRIPLE WIRE CALLOUT
	ELECTRICAL EQUIPMENT
	SYMBOL
	SYMBOL

1.	ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND LOCAL ELECTRICAL CODES.
2.	ALL JUNCTION BOXES SHALL BE NEMA 4X, 316 STAINLESS STEEL WITH 316 STAINLESS STEEL MOUNTING HARWARD.

ELECTRICAL SYMBOLS

	GROUND ROD
	GROUND TEST WELL
	EXOTHERMIC WELD
	TELEPHONE OUTLET
	COMMUNICATIONS OUTLET
	STRUCTURED WIRE OUTLET
	CONVENIENCE RECEPTACLE, 120V.
	RECEPTACLE, 240V, 1PH OR 208V, 1PH
	WELDING RECEPTACLE
	MOTOR
	FIELD INSTRUMENT OR DEVICE
	PUSH BUTTON CONTROL STATION IN FIELD, LOCATION AND FUNCTION AS INDICATED
	NEMA 4X STAINLESS STEEL JUNCTION BOX
	GROUND
	POWER OR SERVICE POLE
	CONDUIT MARKER
	CONDUIT EXPANSION JOINT

	CEILING MOUNTED FIXTURE α = DENOTES SWITCH A = DENOTES FIXTURE TYPE LP-2 = DENOTES POWER CIRCUIT SEE FIXTURE SCHEDULE
	WALL MOUNTED LIGHT, TYPE AS NOTED
	POLE MOUNTED LIGHT, TYPE AS NOTED
	FLUORESCENT STRIP LIGHT α = DENOTES SWITCH A = DENOTES FIXTURE TYPE LP-2 = DENOTES POWER CIRCUIT
	UNSWITCHED LIGHT, TYPE AS NOTED
	EMERGENCY EXIT SIGN SEE FIXTURE SCHEDULE
	EMERGENCY FIXTURE SEE FIXTURE SCHEDULE
	EMERGENCY REMOTE LAMP HEADS SEE FIXTURE SCHEDULE
	WALL PACK SEE FIXTURE SCHEDULE
	3-POLE LIGHT SWITCH α = DENOTES SWITCH
	SINGLE LIGHT SWITCH α = DENOTES SWITCH

	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	CONDUIT END
	UNDERGROUND CONDUIT
	UNDERGROUND DUCTBANK
	EXPOSED CONDUIT
	CONCEALED CONDUIT, AS NOTED ON PLANS
	GROUND WIRE
	CONDUIT HOME RUN
	FLEXIBLE CONDUIT OR CABLE
	DETECTOR
	SOLID STATE DEVICE SUCH AS RECTIFIER OR SCR DRIVE.
	ALARM INDICATING DEVICE: BZ = BUZZER CH = CHIME

A	AMP
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AL	ALUMINUM
AUTO	AUTOMATIC
AUX	AXIAL
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BKR	BREAKER
BLDG	BUILDING
C	CONDUCTORS, CONDUIT
C/C	CENTER TO CENTER
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CM	CONDUIT MARKER
CMH	COMMUNICATION MANHOLE
COND	CONDUIT
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
DISC	DISCONNECT
DWG	DRAWING
EHU	ELECTRIC UNIT HEATER
EL	ELEVATION
ELEV	ELEVATION
EMH	ELECTRICAL MANHOLE
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EP	EXPLOSION PROOF
ETM	ELAPSED TIME METER
EX	EXISTING
EXIST	EXISTING
FDR	FEEDER
FLEX	FLEXIBLE CONDUIT
FLR	FLOOR
FO	FIBER OPTIC
FT	FEET
FUT	FUTURE
FWD	FORWARD
G	GROUND
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GRD	GROUND
HH	HANDHOLE
HP	HORSEPOWER
HZ	HERTZ
I/O	INPUT OUTPUT
INST	INSTANTANEOUS
INSTR	INSTRUMENT
JB	JUNCTION BOX
J-BOX	JUNCTION BOX
kCMIL	1,000 CIRCULAR MILS
KVA	KILO VOLTS AMPERES
KW	KILOWATTS
KWH	KILOWATT HOUR
LO	LOCKOUT

LOC	LOCAL
LOS	LOCKOUT STOP
LTC	LIGHTING
LTS	LIGHTS
M	MOTOR
MA	MILLIAMPER
MAN	MANUAL
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR	MANUFACTURER
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTR	MOTOR
N	NEUTRAL
NC	NORMALLY CLOSED
NEU	NEUTRAL
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OH	OVERHEAD
PB	PULL BOX, PUSHBUTTON
PC	PHOTO CELL
PF	POWER FACTOR
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
POT	POTENTIOMETER
PP	POWER POLE
PQM	POWER QUALITY METER
PR	PAIR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST
PVC	POLYVINYL CHLORIDE
REC	RECEPTACLE
RECPTS	RECEPTACLE
REQ'D	REQUIRED
REV	REVERSE
RGS	RIGID GALVANIZED STEEL
RTD	RESISTANCE TEMPERATURE DETECTORS
RTU	REMOTE TERMINAL UNIT
SCH	SCHEDULE
SEC	SECOND, SECONDARY
SH	SHIELD
SHLD	SHIELDED
SHT	SHEET
SOV	SOLENOID VALVE
SP	SPARE
SS	STAINLESS STEEL
SSTR	SOLID STATE STARTER
STA	STATION
STD	STANDARD
STR	STARTER
SW	SWITCH
TB	TERMINAL BLOCK
TDD	TIME DELAY DE-ENERGIZED

TDE	TIME DELAY ENERGIZED
TERM	TERMINAL
TP	TWISTED PAIR
TSP	TWISTED SHIELDED PAIR
T'STAT	THERMOSTAT
TYP	TYPICAL
UG	UNDERGROUND
V	VOLTAGE
VAC	VOLTAGE ALTERNATING CURRENT
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS, WIRE
WHD	WATTHOUR DEMAND METER
WHM	WATTHOUR METER
WP	WEATHERPROOF
XFRM	TRANSFORMER
XMTR	TRANSMITTER

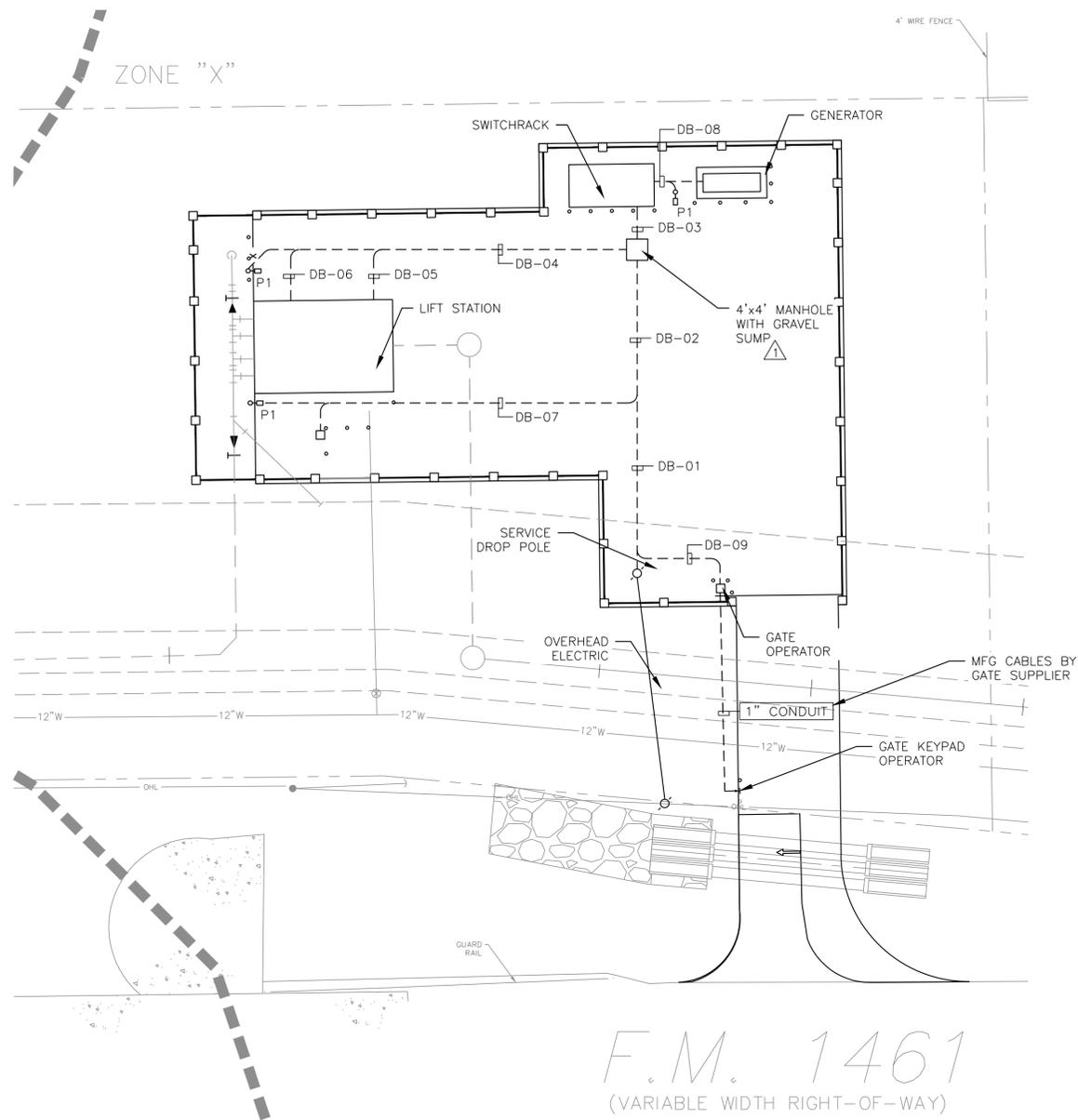
**ALAN PLUMMER ASSOCIATES, INC.**  
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PHONE: 214-631-6100 FAX: 214-631-6109  
TBP NO. F-13

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1	9/18/15	CONFORMED

**Pacheco Koch**  
7557 RAMBLER ROAD, SUITE 1400  
DALLAS, TX 75231 972.235.3031  
TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05

<b>ELECTRICAL LEGEND</b>				
<b>SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT</b>				
<i>CITY OF CELINA, COLLIN COUNTY, TEXAS</i>				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
PMM	APAI	7/31/15		E-001

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



**PLAN**

SCALE: 1"=20'-0"

W-1001 MPC-7  
4" SPARE MPC-11

**DUCTBANK SECTION DB-01**

MPC-9 W-1001 MPC-7  
PP-19,21,23A 4" SPARE MPC-11

**DUCTBANK SECTION DB-02**

MPC-7 MPC-9 MPC-11  
1 1/2" COND W-1011 W-1012 PP-19,21,23 W-1001  
PP-8,10,12A PP-7,9,11A PP-2,4,6A PP-1,3,5A 4" SPARE

**DUCTBANK SECTION DB-03**

W-1011 W-1012 MPC-9  
PP-1,3,5A PP-2,4,6A PP-7,9,11A PP-8,10,12A

**DUCTBANK SECTION DB-04**

W-1011 W-1012

**DUCTBANK SECTION DB-05**

PP-1,3,5A  
PP-2,4,6A  
PP-7,9,11A  
PP-8,10,12A

**DUCTBANK SECTION DB-06**

PP-19,21,23 MPC-9

**DUCTBANK SECTION DB-07**

W-1002 MPC-9 W-1005  
W-1004 1" CONDUIT

**DUCTBANK SECTION DB-08**

MPC-7 MPC-11

**DUCTBANK SECTION DB-09**

**GENERAL NOTES:**

1. MAINTAIN MAXIMUM PRACTICAL OPEN FLOOR SPACE AND WORKING SPACE AROUND EQUIPMENT. ROUTE CONDUITS SO NOT TO CREATE A TRIPPING HAZARD OR INTERFERE WITH OPERATING EQUIPMENT.
2. CONDUITS SHALL BE CONCEALED TO GREATEST EXTEND POSSIBLE, UNLESS OTHERWISE APPROVED BY OWNER.
3. COORDINATE EXACT EQUIPMENT STUB-UP LOCATIONS WITH EQUIPMENT MANUFACTURER, PRIOR TO ROUGH-IN.
4. CONDUITS TURNING UP OUT OF CONCRETE SHALL BE PVC-ALUMINUM. REFER TO SPECIFICATIONS.

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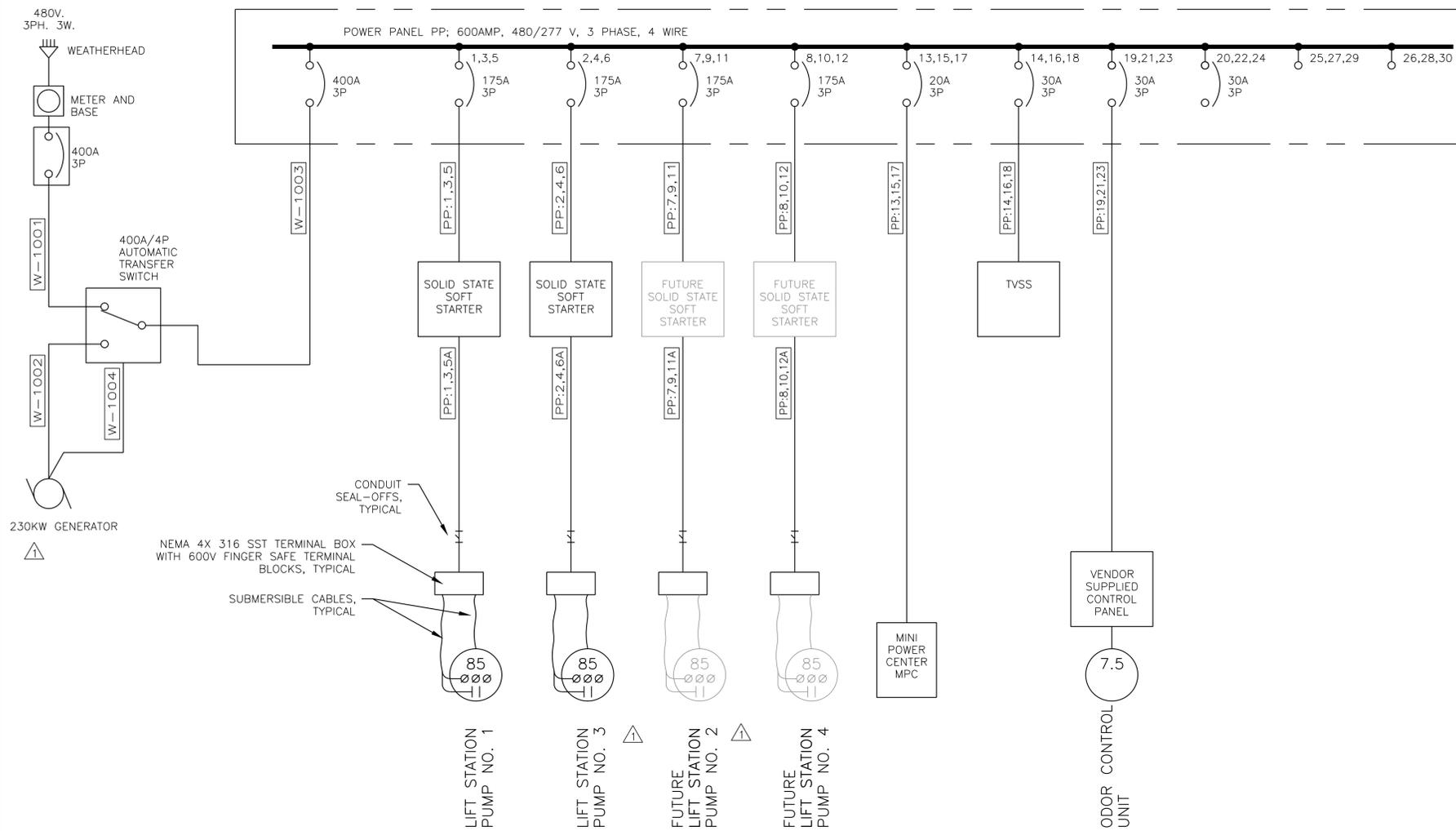


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1	8/14/15	ADDENDUM NO. 3

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TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05

ELECTRICAL SITE PLAN				
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT				
CITY OF CELINA, COLLIN COUNTY, TEXAS				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
PWM	APAI	7/31/15		E-002R

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



ONE-LINE DIAGRAM

NTS

CONDUIT AND WIRE SCHEDULE

CIRCUIT ID	CONDUIT	WIRE	TO	FROM
W-1001	4	4#5000MCM, #2/OG.	WEATHERHEAD	ATS
W-1002	4	4#5000MCM, #2/OG.	GENERATOR	ATS
W-1003	4	4#5000MCM, #2/OG.	ATS	POWER PANEL PP
W-1004	1	1-12/C#12	GENERATOR	ATS
W-1005	1	1-12/C#12	GENERATOR	REMOTE TERMINAL UNIT RTU
W-1006	1	1-12/C#12	ATS	REMOTE TERMINAL UNIT RTU
W-1007	1	1-2PR#16TSP	LIT-100	REMOTE TERMINAL UNIT RTU
W-1008	1	1-2/C#12+G	LIT-100	REMOTE TERMINAL UNIT RTU
W-1009	1	1-9/C#12	LSL, LSH, LSHH-100	REMOTE TERMINAL UNIT RTU
W-1010	1	1-12/C#12	PUMP NO. 1 SOFT STARTER	REMOTE TERMINAL UNIT RTU
W-1011	1	1-12/C#12	PUMP NO. 2 SOFT STARTER	REMOTE TERMINAL UNIT RTU
W-1012	1	-	FUTURE PUMP NO. 3 SOFT STARTER	REMOTE TERMINAL UNIT RTU
W-1013	1	-	FUTURE PUMP NO. 4 SOFT STARTER	REMOTE TERMINAL UNIT RTU
PP:1,3,5	2	3#2/0, #2G.	POWER PANEL PP	PUMP NO. 1 SOFT STARTER
PP:1,3,5A	3	3#2/0, #2G., 1-9/C#14.	PUMP NO. 1 SOFT STARTER	PUMP NO. 1 TERMINAL BOX
PP:2,4,6	2	3#2/0, #2G.	POWER PANEL PP	PUMP NO. 2 SOFT STARTER
PP:2,4,6A	3	3#2/0, #2G., 1-9/C#14.	PUMP NO. 2 SOFT STARTER	PUMP NO. 2 TERMINAL BOX
PP:7,9,11	2	-	POWER PANEL PP	FUTURE PUMP NO. 3 SOFT STARTER
PP:7,9,11A	3	-	FUTURE PUMP NO. 3 SOFT STARTER	PUMP NO. 3 TERMINAL BOX
PP:8,10,12	2	-	POWER PANEL PP	FUTURE PUMP NO. 4 SOFT STARTER
PP:8,10,12A	3	-	FUTURE PUMP NO. 4 SOFT STARTER	PUMP NO. 4 TERMINAL BOX
PP:13,15,17	1	1-3/C#10+G	POWER PANEL PP	MINI POWER CENTER MPC
PP:19,21,23	1	1-3/C#10+G	POWER PANEL PP	ODOR CONTROL UNIT

GENERAL NOTES:

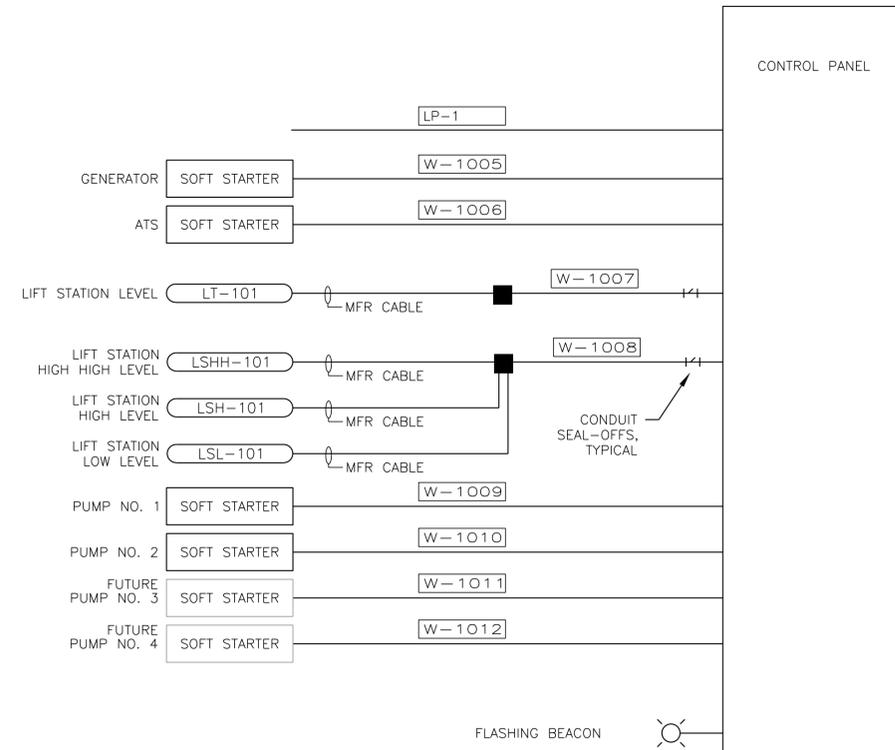
1. MAINTAIN MAXIMUM PRACTICAL OPEN FLOOR SPACE AND WORKING SPACE AROUND EQUIPMENT. ROUTE CONDUITS SO NOT TO CREATE A TRIPPING HAZARD OR INTERFERE WITH OPERATING EQUIPMENT.
2. COORDINATE EXACT EQUIPMENT STUB-UP LOCATIONS WITH EQUIPMENT MANUFACTURER, PRIOR TO ROUGH-IN.
3. EXPOSE CONDUIT SHALL BE ALUMINUM. CONCEALED CONDUIT SHALL BE PVC-40. CONDUITS TURNING UP OUT OF CONCRETE OR PENETRATING WALLS/SLAB SHALL BE PVC COATED ALUMINUM. REFER TO SPECIFICATIONS.

MINI POWER CENTER MPC

WIRE	COND	DESCRIPTION	BKR	CKT	15 KVA NEMA 3R	DESCRIPTION	COND	WIRE
12	3/4	REMOTE TERMINAL UNIT	20/1	1	2	20/1	GENERATOR BATTERY CHARGER	1 12
12	3/4	RECEPTACLES	20/1	3	4	20/1	GENERATOR UNIT	1 12
12	3/4	LIGHTING	20/1	5	6	20/1	SPARE	- -
12	1	ENTRANCE GATE	20/1	7	8	20/3	SPARE	- -
12	1	LIGHT POLE	20/1	9	10	-	-	- -
-	-	SPACE	20/1	11	12	-	-	- -
-	-	SPACE	20/1	13	-	-	-	- -
-	-	SPACE	20/1	15	16	-	-	- -
-	-	SPACE	20/1	17	18	-	-	- -

LIGHT FIXTURE SCHEDULE

ID	TYPE	MANUFACTURE	MODEL	DESCRIPTION
P1	POLE MOUNT, ONE FIXTURE	HOLOPHANE (FIXTURE)	AUL-105-4K-AS-B-L5-S	DECORATIVE OUTDOOR ARLINGTON SERIES LUMINARY, 105W, 4K, AUTO SENSING (120-277V), SYMMETRIC FULL CUTOFF, BLACK, 120-277V PHOTOCONTROL., MATCHING CAST ALUMINUM 12" POLE
A	4' ENCLOSED AND GASKETED	HOLOPHANE	EMS4 LED 3L IMAFD DPMB	EMS LED SERIES 4; (EMS4LED): EMS4 LED, 3000 LUMENS, ACRYLIC, CLEAR DEEP FROSTED LENS, DUAL PENDANT MOUNTING BRACKET
A	DECORATIVE MINI-TRAPEZIOD	LITHONIA LIGHTING	WSTM LED-2A-40K-120-PE-DBLXD	MINI-TRAPEZIOD LED, TWO ENGINES, 4000k, 120v, PHOTOCELL, DIFFUSING GLASS LENS, BLACK



TERMINATION DIAGRAM

**ALAN PLUMMER ASSOCIATES, INC.**  
 ENVIRONMENTAL ENGINEERS AND SCIENTISTS  
 1349 EMPIRE CENTRAL DRIVE, SUITE 1000  
 DALLAS, TEXAS 75247-4066  
 PHONE: 214-631-6100 FAX: 214-631-6109  
 TBPE NO. F-13



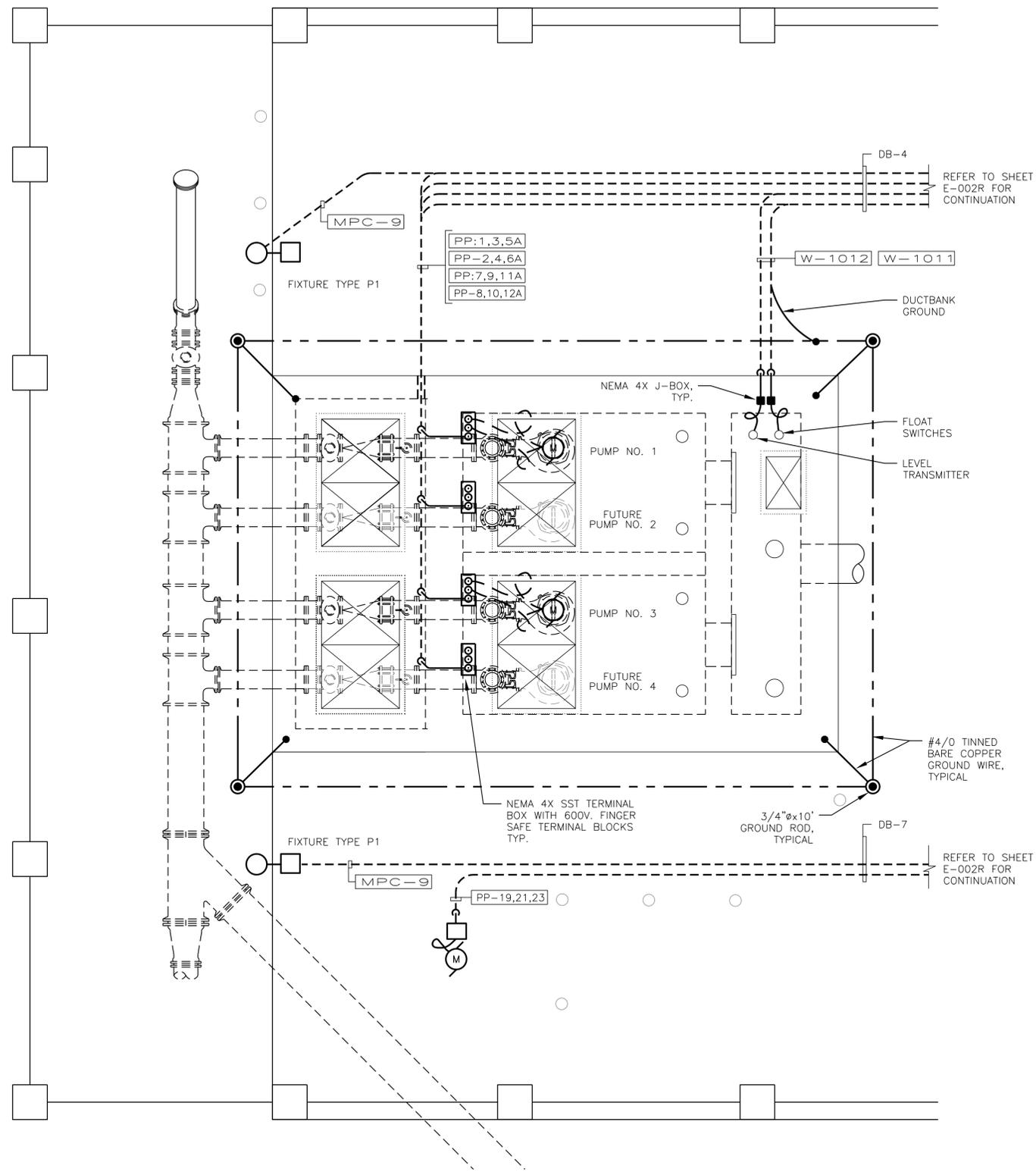
NO.	DATE	REVISION
2	9/18/15	CONFORMED
1	8/14/15	ADDENDUM NO. 3

**Pacheco Koch** 7557 RAMBLER ROAD, SUITE 1400  
 DALLAS, TX 75231 972.235.3031  
 TX REG. ENGINEERING FIRM F-14439  
 TX REG. SURVEYING FIRM LS-101938-05

**ELECTRICAL ONE-LINE DIAGRAM**  
**SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT**  
 CITY OF CELINA, COLLIN COUNTY, TEXAS

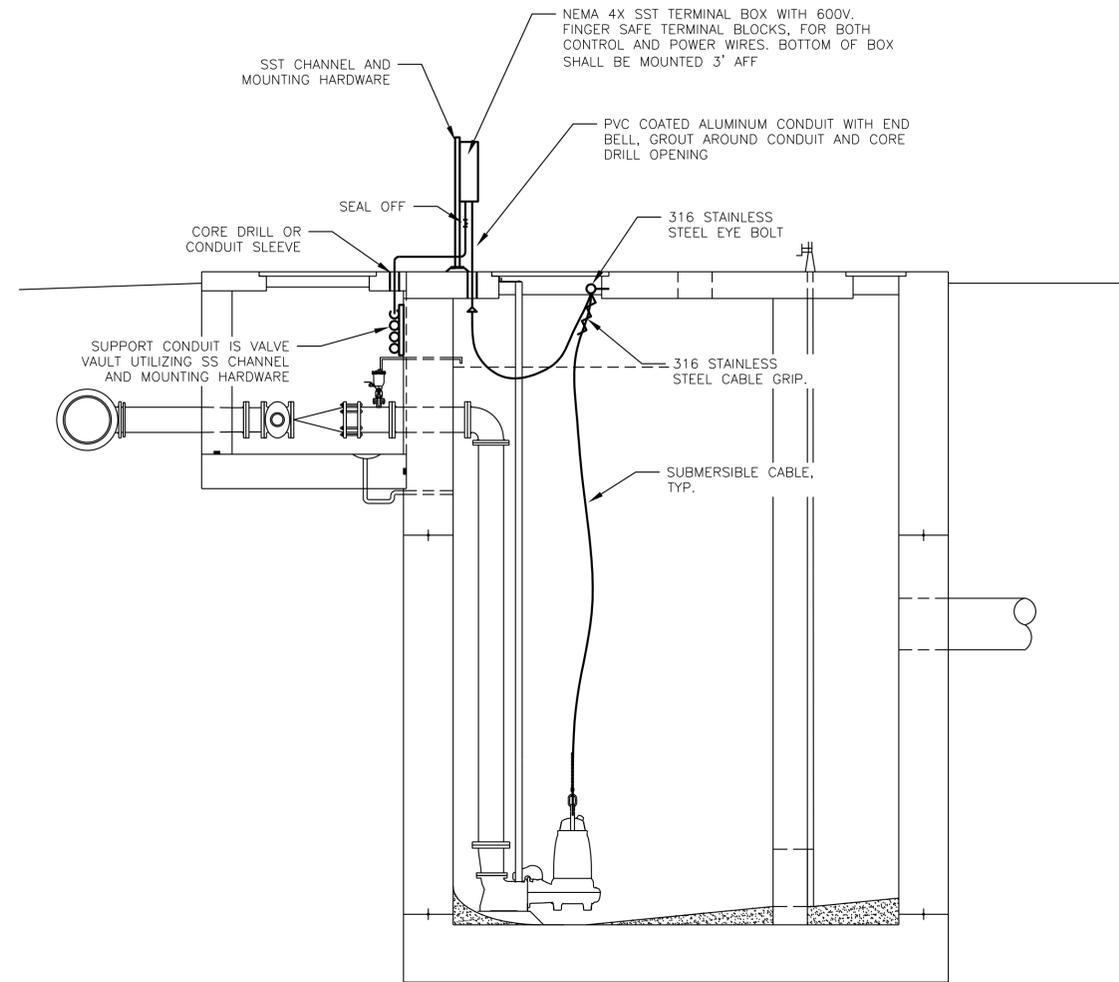
DESIGN	DRAWN	DATE	JOB NO.	SHEET
PMM	APAI	7/31/15		E-003R

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



**PLAN**

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



**SECTION**

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

GENERAL NOTES:

1. CONTRACTOR SHALL INSTALL CONDUITS AND TERMINAL BOX FOR FUTURE PUMPS 2 AND 3.
2. MAINTAIN MAXIMUM PRACTICAL OPEN FLOOR SPACE AND WORKING SPACE AROUND EQUIPMENT. ROUTE CONDUITS SO NOT TO CREATE A TRIPPING HAZARD OR INTERFERE WITH OPERATING EQUIPMENT.
3. CONDUITS SHALL BE CONCEALED TO GREATEST EXTEND POSSIBLE, UNLESS OTHERWISE APPROVED BY OWNER.
4. COORDINATE EXACT EQUIPMENT STUB-UP LOCATIONS WITH EQUIPMENT MANUFACTURER, PRIOR TO ROUGH-IN.
5. CONDUITS TURNING UP OUT OF CONCRETE SHALL BE PVC-ALUMINUM. REFER TO SPECIFICATIONS.
6. PROVIDE FOUR (4) TYPE "A" FIXTURES UNDER SWITCHRACK.

**ALAN PLUMMER ASSOCIATES, INC.**  
 ENVIRONMENTAL ENGINEERS AND SCIENTISTS  
 1349 EMPIRE CENTRAL DRIVE, SUITE 1000  
 DALLAS, TEXAS 75247-4066  
 PHONE: 214-631-6100 FAX: 214-631-6109  
 TBPE NO. F-13

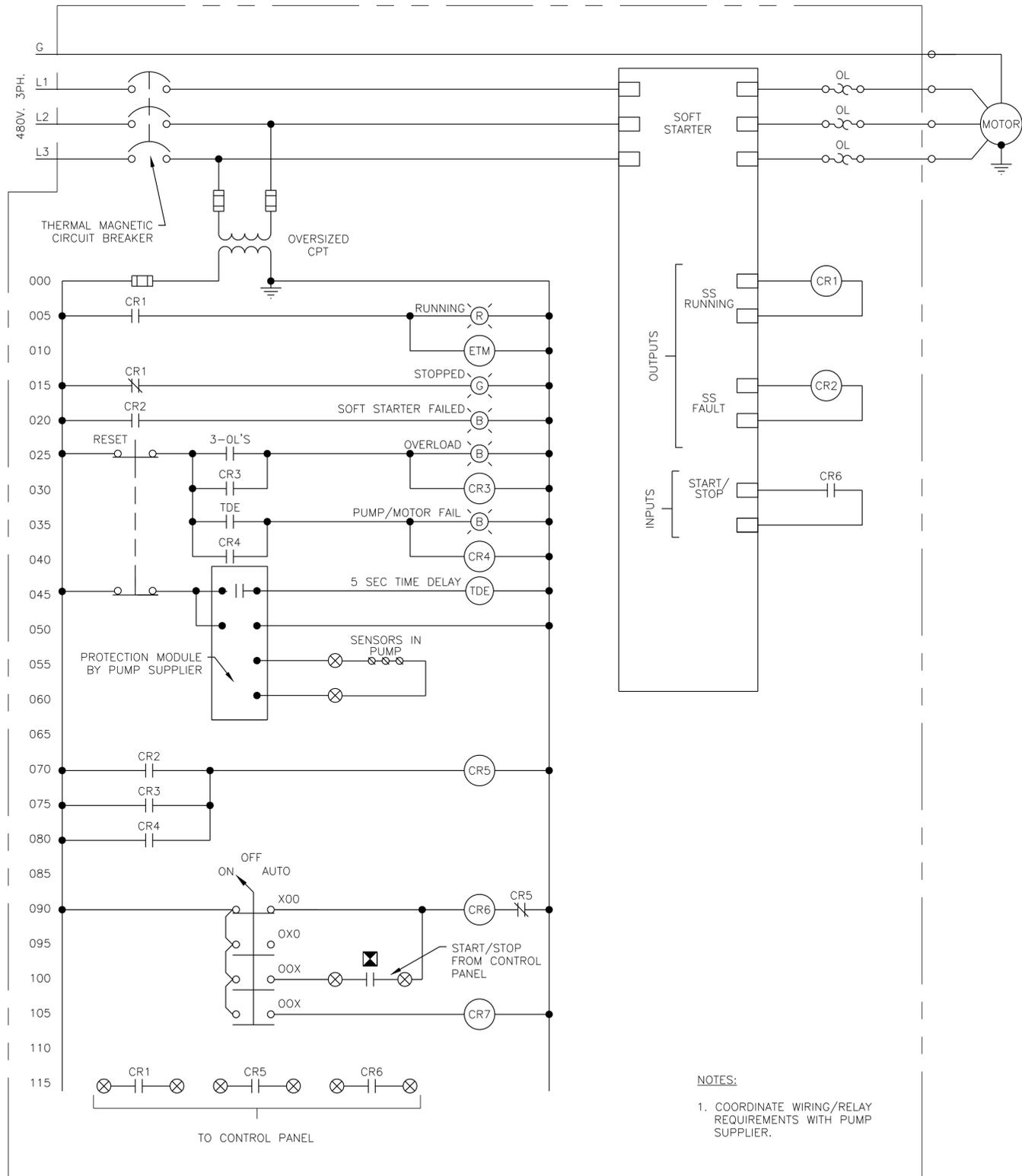


NO.	DATE	CONFORMED	REVISION
9/18/15			

**Pacheco Koch**  
 7557 RAMBLER ROAD, SUITE 1400  
 DALLAS, TX 75231 972.235.3031  
 TX REG. ENGINEERING FIRM F-14439  
 TX REG. SURVEYING FIRM LS-101938-05

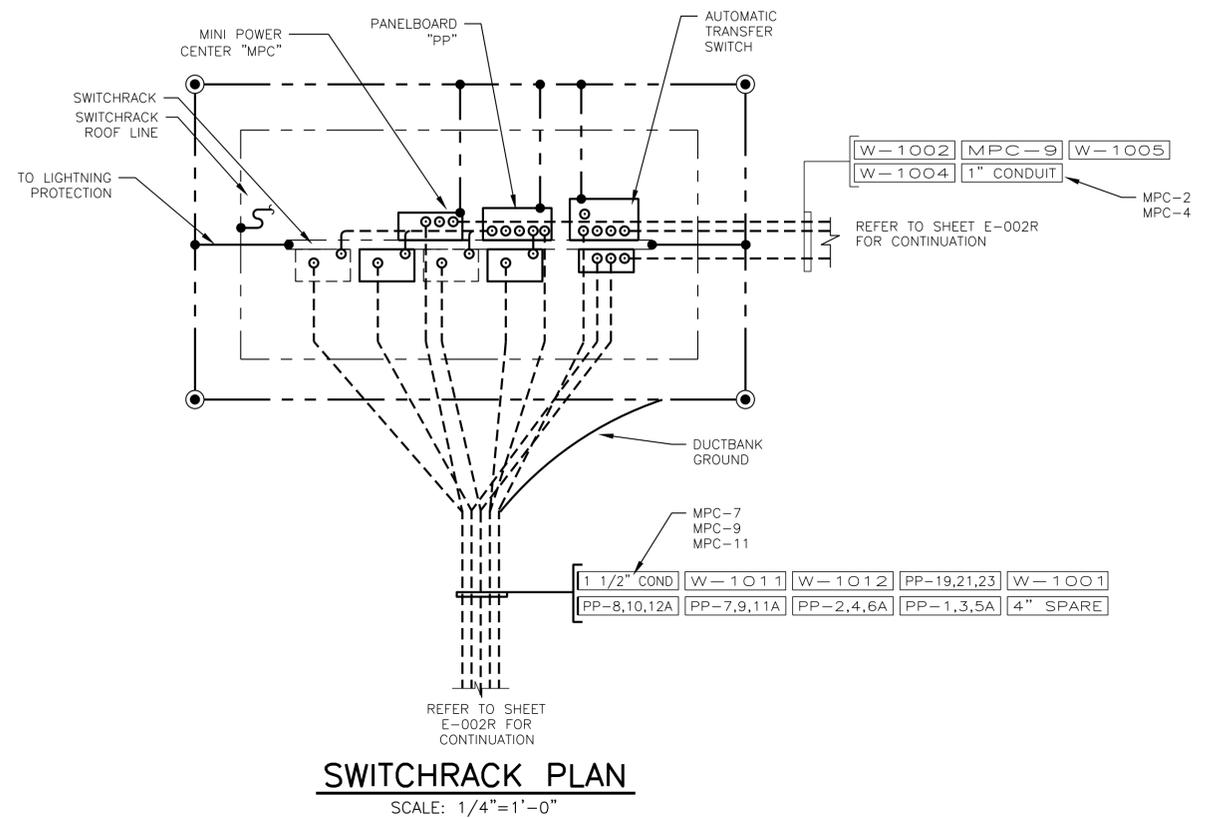
<b>ELECTRICAL LIFT STATION PLAN</b>				
<b>SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT</b>				
<i>CITY OF CELINA, COLLIN COUNTY, TEXAS</i>				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
PWM	APAI	7/31/15		E-004R

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



**PUMP STARTER** 1  
FOR: PUMPS 1, 2, AND 3

**NOTES:**  
1. COORDINATE WIRING/RELAY REQUIREMENTS WITH PUMP SUPPLIER.



**SWITCHRACK PLAN**  
SCALE: 1/4"=1'-0"

**GENERAL NOTES:**

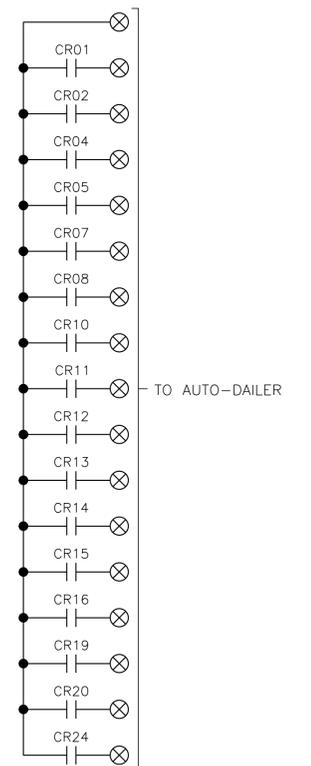
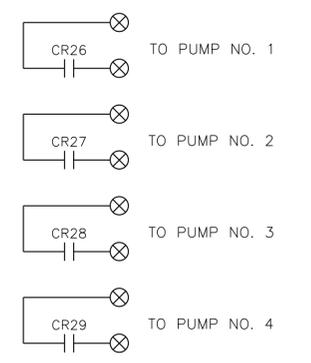
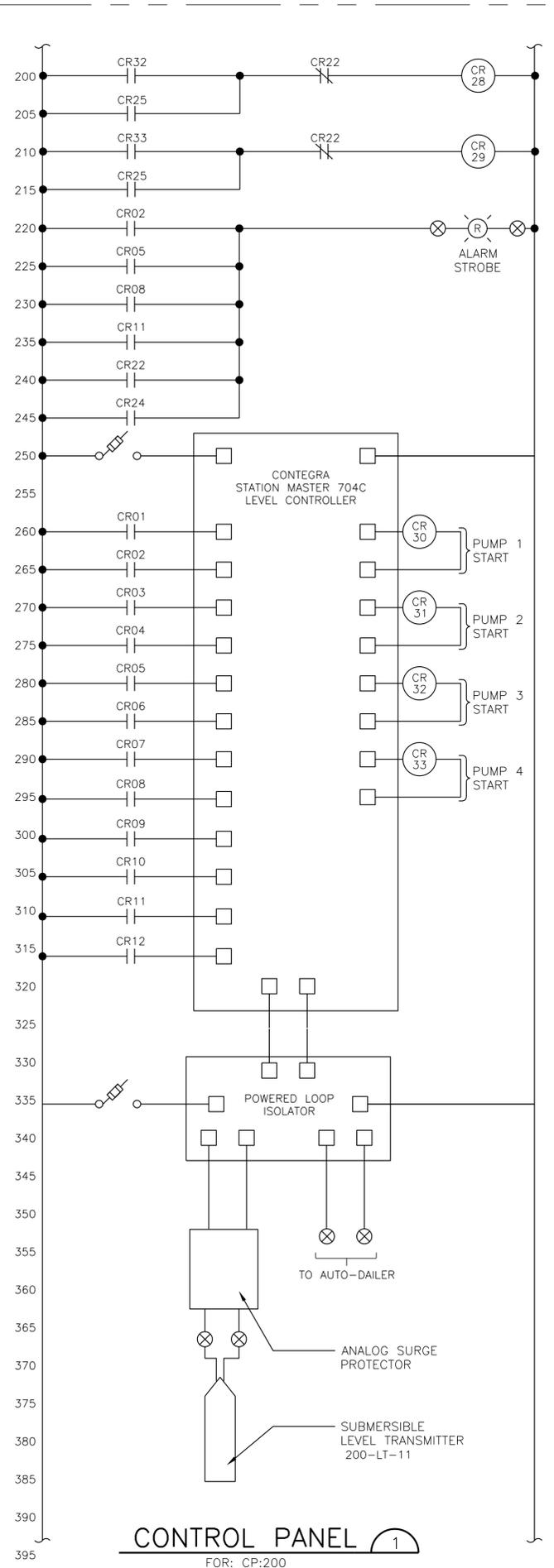
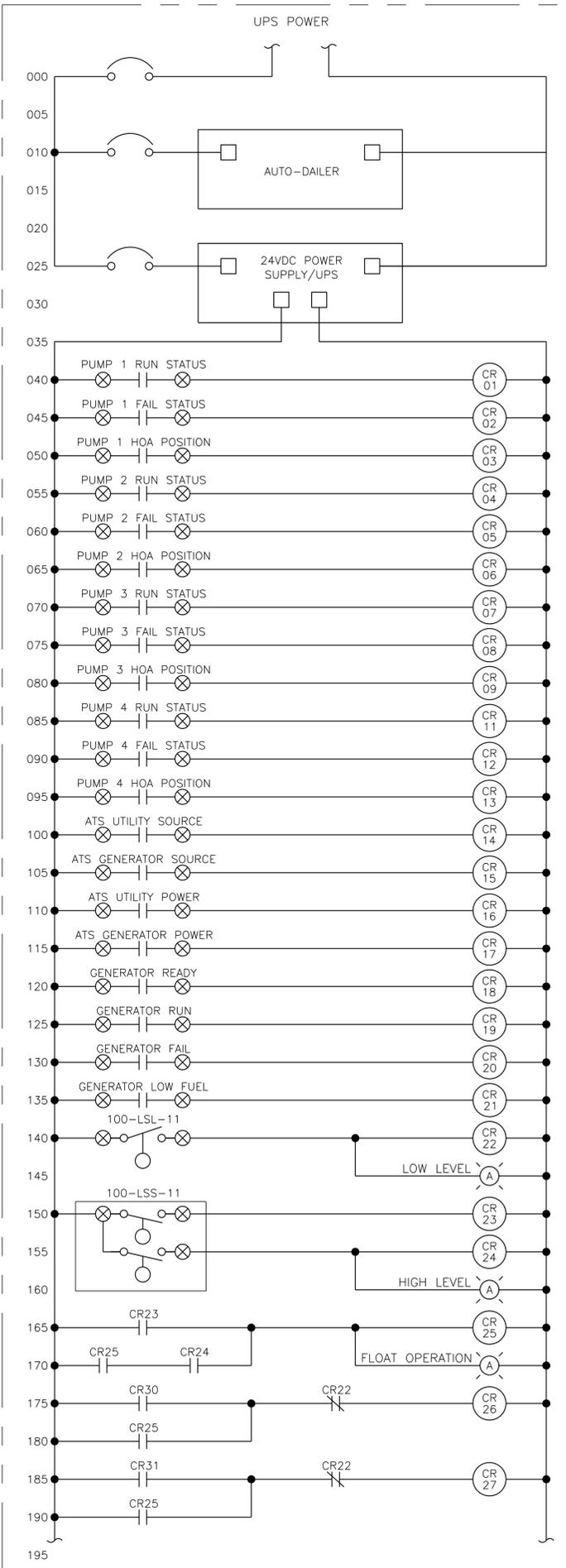
- CONTRACTOR SHALL INSTALL CONDUITS AND TERMINAL BOX FOR FUTURE PUMPS 2 AND 3.
- MAINTAIN MAXIMUM PRACTICAL OPEN FLOOR SPACE AND WORKING SPACE AROUND EQUIPMENT. ROUTE CONDUITS SO NOT TO CREATE A TRIPPING HAZARD OR INTERFERE WITH OPERATING EQUIPMENT.
- CONDUITS SHALL BE CONCEALED TO GREATEST EXTEND POSSIBLE, UNLESS OTHERWISE APPROVED BY OWNER.
- COORDINATE EXACT EQUIPMENT STUB-UP LOCATIONS WITH EQUIPMENT MANUFACTURER, PRIOR TO ROUGH-IN.
- CONDUITS TURNING UP OUT OF CONCRETE SHALL BE PVC-ALUMINUM. REFER TO SPECIFICATIONS.
- PROVIDE FOUR (4) TYPE "A" FIXTURES UNDER SWITCHRACK.

**ALAN PLUMMER ASSOCIATES, INC.**  
ENVIRONMENTAL ENGINEERS AND SCIENTISTS  
1349 EMPIRE CENTRAL DRIVE, SUITE 1000  
DALLAS, TEXAS 75247-4066  
PHONE: 214-631-6100 FAX: 214-631-6109  
TBP NO. F-13



NO.	DATE	REVISION
9/18/15	CONFORMED	
<b>Pacheco Koch</b>		
7557 RAMBLER ROAD, SUITE 1400 DALLAS, TX 75231 972.235.3031 TX REG. ENGINEERING FIRM F-14439 TX REG. SURVEYING FIRM LS-101938-05		
ELECTRICAL CONTROL SCHEMATICS I		
<b>SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT</b>		
CITY OF CELINA, COLLIN COUNTY, TEXAS		
DESIGN	DRAWN	DATE
PWM	APAI	7/31/15
JOB NO.	SHEET	
	E-005R	

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



**CONTROL PANEL** 1  
FOR: CP:200

NEMA 4X 304 SST ENCLOSURE

**ALAN PLUMMER ASSOCIATES, INC.**  
ENVIRONMENTAL ENGINEERS AND SCIENTISTS  
1349 EMPIRE CENTRAL DRIVE, SUITE 1000  
DALLAS, TEXAS 75247-4066  
PHONE: 214-631-6100 FAX: 214-631-6109  
TBP NO. F-13

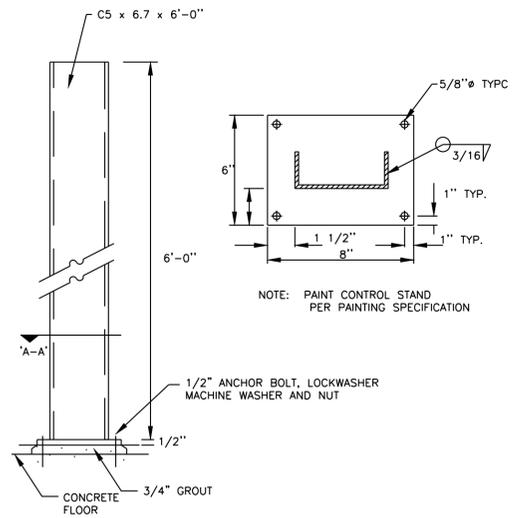


NO.	DATE	REVISION
1	9/18/15	CONFORMED

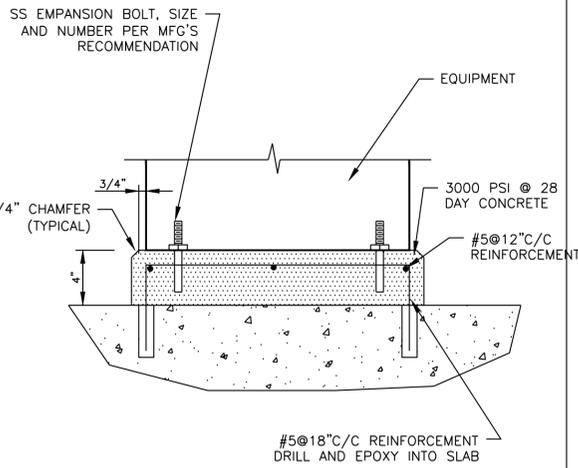
**Pacheco Koch**  
7557 RAMBLER ROAD, SUITE 1400  
DALLAS, TX 75231 972.235.3031  
TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05

ELECTRICAL CONTROL SCHEMATICS II				
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT				
CITY OF CELINA, COLLIN COUNTY, TEXAS				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
PWM	APAI	7/31/15		E-006

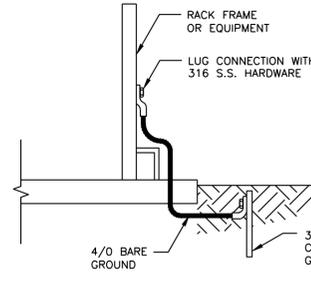
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



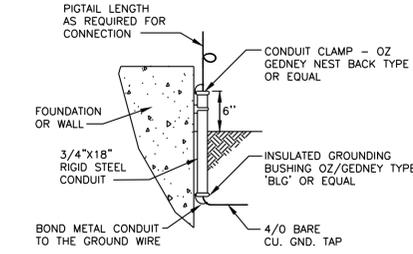
**E01** CONTROL STAND DETAIL  
SCALE: N.T.S.



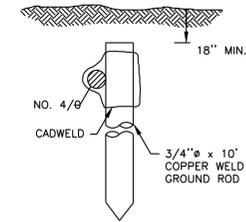
**E02** CONCRETE EQUIPMENT PAD  
SCALE: N.T.S.



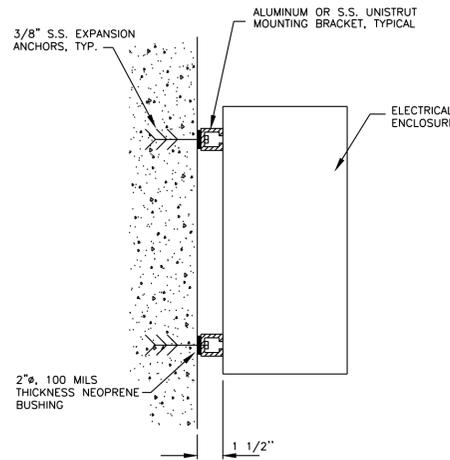
**E03** EQUIPMENT GROUNDING  
SCALE: N.T.S.



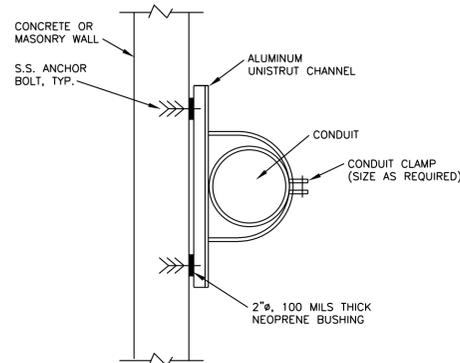
**E04** GROUNDING STUB AT WALL  
SCALE: N.T.S.



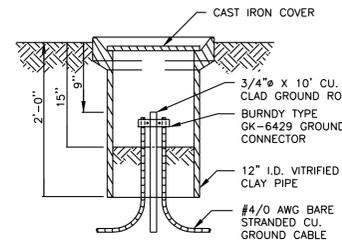
**E05** GROUND ROD  
SCALE: N.T.S.



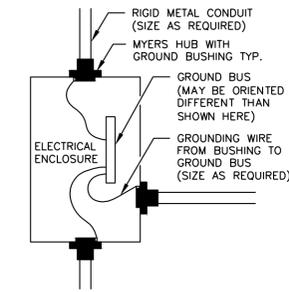
**E06** EQUIPMENT PANEL WALL MOUNTING  
SCALE: N.T.S.



**E07** CONDUIT WALL SUPPORT  
SCALE: N.T.S.

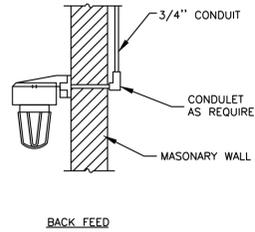


**E08** GROUND ROD TEST WELL  
SCALE: N.T.S.

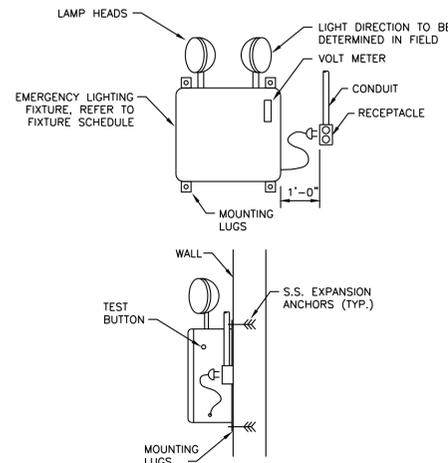


**E09** CONDUIT GROUNDING AT ENCLOSURE  
SCALE: N.T.S.

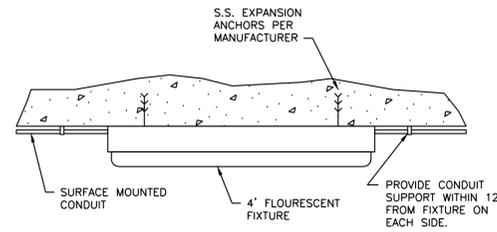
**E10** NOT USED  
SCALE: N.T.S.



**E11** LIGHT FIXTURE MOUNTING DETAIL  
SCALE: N.T.S.



**E12** LIGHT FIXTURE MOUNTING DETAIL  
SCALE: N.T.S.



**E13** LIGHT FIXTURE MOUNTING DETAIL  
SCALE: N.T.S.

**E14** NOT USED  
SCALE: N.T.S.

**ALAN PLUMMER ASSOCIATES, INC.**  
ENVIRONMENTAL ENGINEERS AND SCIENTISTS  
1349 EMPIRE CENTRAL DRIVE, SUITE 1000  
DALLAS, TEXAS 75247-4066  
PHONE: 214-631-6100 FAX: 214-631-6109  
TBP NO. F-13

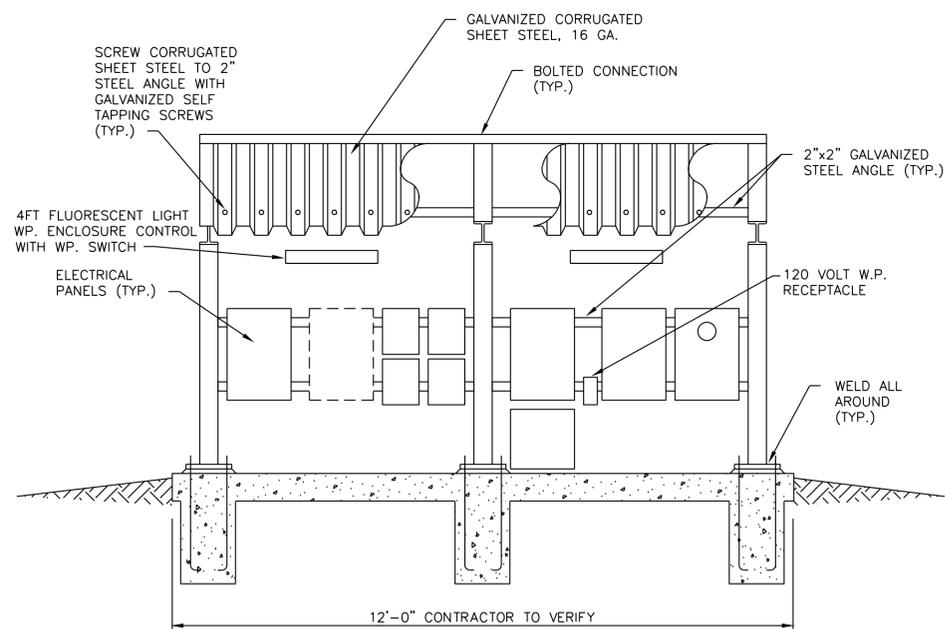
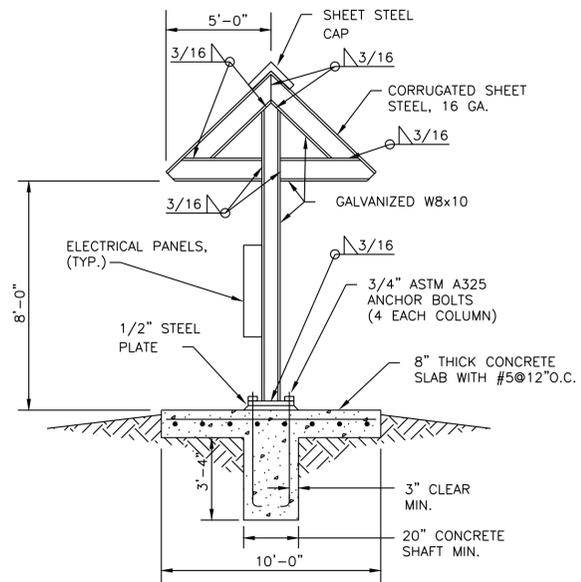


NO.	DATE	CONFORMED	REVISION

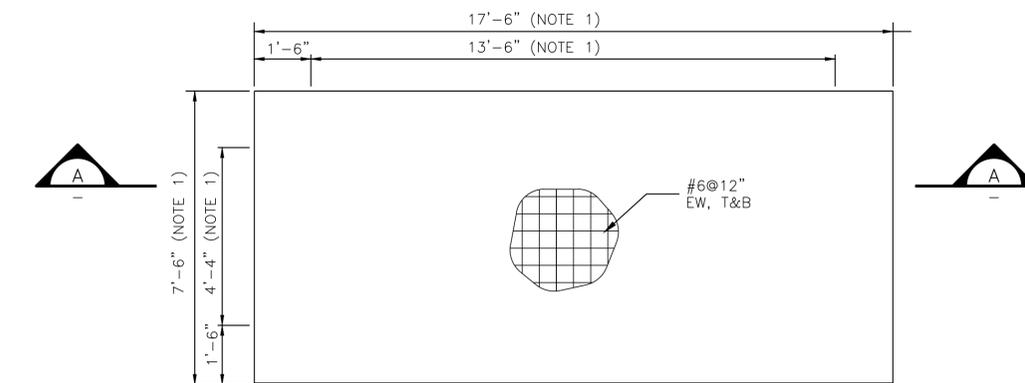
**Pacheco Koch** 7557 RAMBLER ROAD, SUITE 1400  
DALLAS, TX 75231 972.235.3031  
TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05

ELECTRICAL STANDARD DETAILS I				
<b>SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT</b>				
CITY OF CELINA, COLLIN COUNTY, TEXAS				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
PMM	APAI	7/31/15		E-007

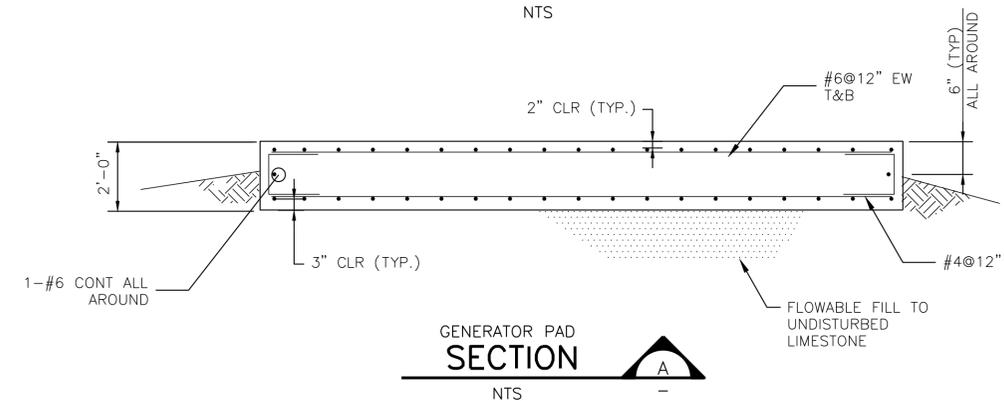
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



**EQUIPMENT RACK DETAIL**  
SCALE: N.T.S.



**GENERATOR PAD FOUNDATION PLAN**  
NTS



**GENERATOR PAD SECTION**  
NTS

**GENERATOR PAD NOTES:**

1. VERIFY PAD DIMENSIONS WITH THE GENERATOR MANUFACTURER. DIMENSIONS BASED UPON GENERATOR FOOT PRINT OF 4'-4" x 13'-6".

**ALAN PLUMMER ASSOCIATES, INC.**  
ENVIRONMENTAL ENGINEERS AND SCIENTISTS  
1349 EMPIRE CENTRAL DRIVE, SUITE 1000  
DALLAS, TEXAS 75247-4066  
PHONE: 214-631-6100 FAX: 214-631-6109  
TBP NO. F-13

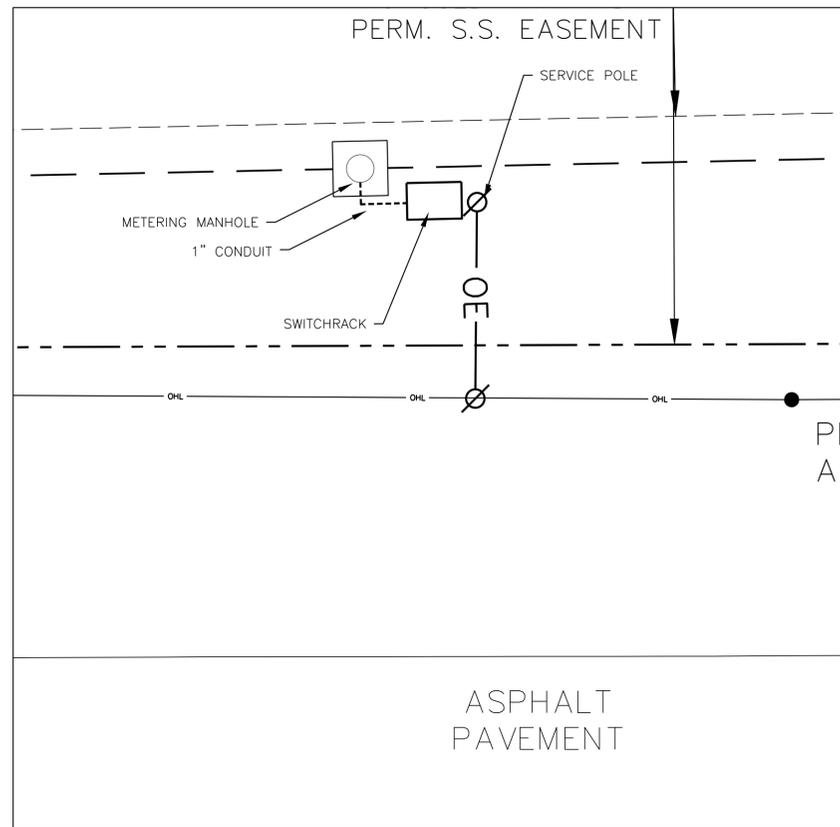


NO.	DATE	REVISION
1	9/18/15	CONFORMED

**Pacheco Koch**  
7557 RAMBLER ROAD, SUITE 1400  
DALLAS, TX 75231 972.235.3031  
TX REG. ENGINEERING FIRM F-14439  
TX REG. SURVEYING FIRM LS-101938-05

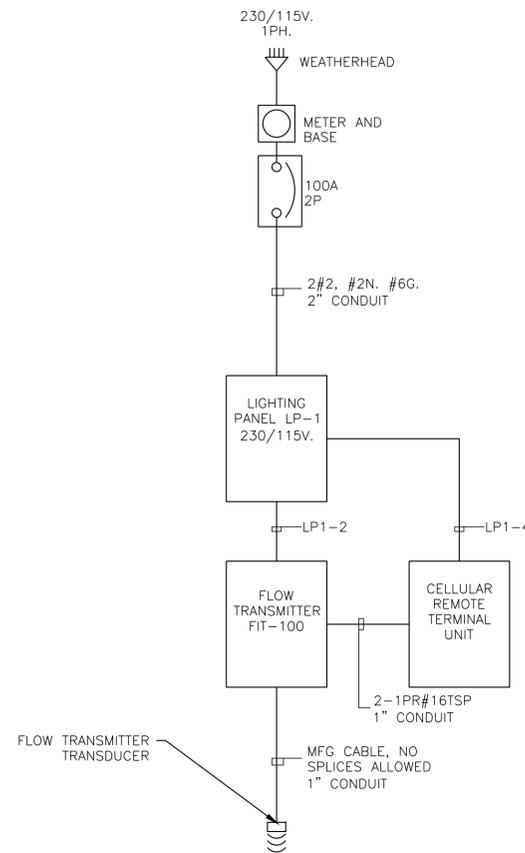
ELECTRICAL STANDARD DETAILS II				
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT				
CITY OF CELINA, COLLIN COUNTY, TEXAS				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
PMM	APAI	7/31/15		E-008

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT



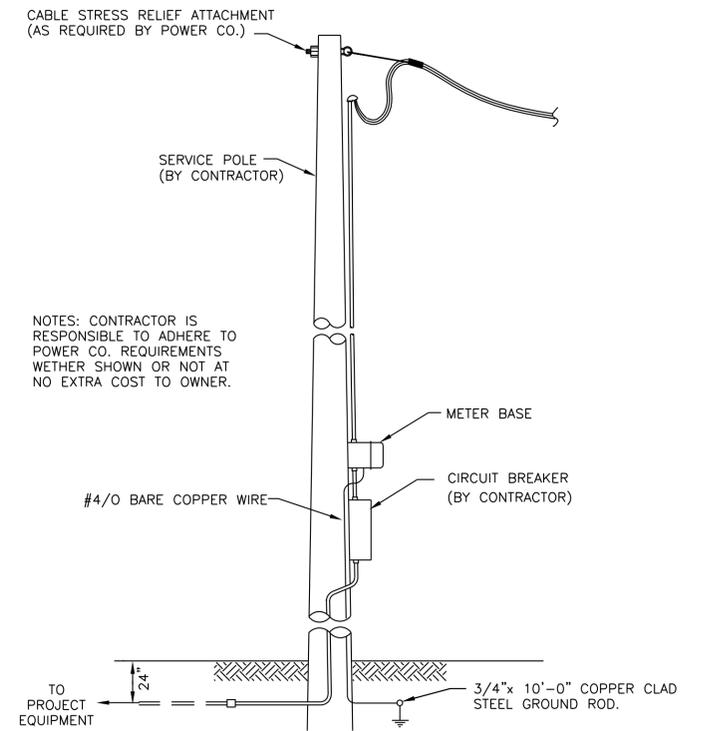
**SITE PLAN**

SCALE: 1"=10'-0"



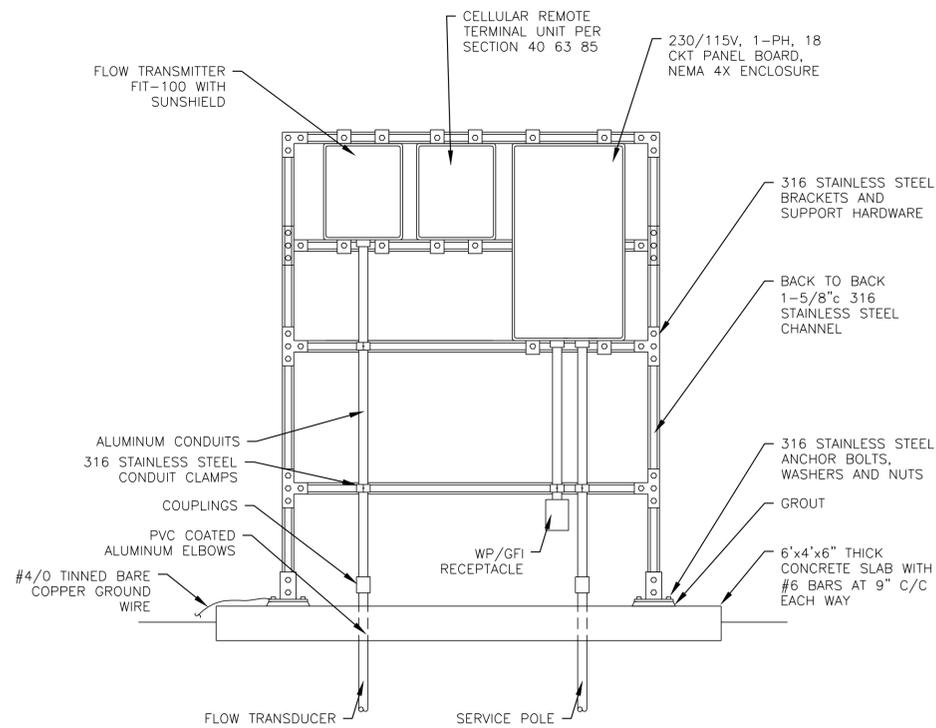
**ONE-LINE DIAGRAM**

NTS



**E01 SERVICE POLE DETAIL**

SCALE: N.T.S.



**TYPICAL SWITCHRACK**

NTS

**GENERAL NOTES:**

1. MAINTAIN MAXIMUM PRACTICAL OPEN FLOOR SPACE AND WORKING SPACE AROUND EQUIPMENT. ROUTE CONDUITS SO NOT TO CREATE A TRIPPING HAZARD OR INTERFERE WITH OPERATING EQUIPMENT.
2. COORDINATE EXACT EQUIPMENT STUB-UP LOCATIONS WITH EQUIPMENT MANUFACTURER, PRIOR TO ROUGH-IN.
3. EXPOSE CONDUIT SHALL BE ALUMINUM. CONCEALED CONDUIT SHALL BE PVC-40. CONDUITS TURNING UP OUT OF CONCRETE OR PENETRATING WALLS/SLAB SHALL BE PVC COATED ALUMINUM. REFER TO SPECIFICATIONS.

LIGHTING PANEL LP-1					100/2P NEMA 4X				
230/115V 1PH. 3W.									
WIRE	COND	DESCRIPTION	BKR	CKT	CKT	BKR	DESCRIPTION	COND	WIRE
12	3/4	FLOW METER	20/1	1	2	20/1	SPARE	-	-
12	3/4	CELLULAR RTU	20/1	3	4	20/1	SPARE	-	-
12	3/4	RECEPTACLE	20/1	5	6	20/1	SPARE	-	-
-	-	SPACE	-/1	7	8	-/3	SPACE	-	-
-	-	SPACE	-/1	9	10	-/3	SPACE	-	-
-	-	SPACE	-/1	11	12	-/3	SPACE	-	-
-	-	SPACE	-/1	13	14	-/3	SPACE	-	-
-	-	SPACE	-/1	15	16	-/3	SPACE	-	-
-	-	SPACE	-/1	17	18	-/3	SPACE	-	-

**ALAN PLUMMER ASSOCIATES, INC.**  
 ENVIRONMENTAL ENGINEERS AND SCIENTISTS  
 1349 EMPIRE CENTRAL DRIVE, SUITE 1000  
 DALLAS, TEXAS 75247-4066  
 PHONE: 214-631-6100 FAX: 214-631-6109  
 TBPE NO. F-13



NO.	DATE	REVISION
9/18/15	CONFORMED	

**Pacheco Koch**  
 7557 RAMBLER ROAD, SUITE 1400  
 DALLAS, TX 75231 972.235.3031  
 TX REG. ENGINEERING FIRM F-14439  
 TX REG. SURVEYING FIRM LS-101938-05

ELECTRICAL METERING MANHOLE				
SOUTHEAST SECTOR LIFT STATION, FORCE MAIN AND METERING VAULT				
CITY OF CELINA, COLLIN COUNTY, TEXAS				
DESIGN	DRAWN	DATE	JOB NO.	SHEET
PMM	APAI	7/31/15		E-009

SOUTHEAST SECTOR LIFT STATION, FORCE MAIN & METERING VAULT