REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT

On this 1st day of November, 2016, Commissioners Court came on to be heard and reviewed the accompanying notice of Quadvest Construction L.P.
Job Location 6019 1/2 Nowlands Run Lane, Sugarland, TX 77479
Date 10/12/2016 Bond No. 61BSBHB0006, Permit No. 2016-9832 to make use of certain Fort Bend County property subject to, "A Revised Order Regulating the Laying, Construction, Maintenance, and Repair of Buried Cables, Conduits, and Pole Lines, In, Under, Across or Along Roads, Streets, Highways, and Drainage Ditches in Fort Bend County, Texas, Under the Jurisdiction of the Commissioners Court of Fort Bend County, Texas," as passed by the Commissioners Court of Fort Bend County, Texas the 3rd day of August, 1987, recorded in Volume _____ of the Minutes of the Commissioners Court of Fort Bend County, Texas, to the extent that such order is not inconsistent with Article 1436a, Vernon's Texas Civil Statutes. Upon Motion of Commissioner Meyers, seconded by Commissioner Morrison, duly put and carried, it is ORDERED, ADJUDGED AND DECREED that said notice of said above purpose is hereby acknowledged by the Commissioners Court of Fort Bend County, Texas, and that said notice be placed on record according to the regulation order thereof.

Notes:

1. Evidence of review by the Commissioners Court must be kept on the job site and failure to do so constitutes grounds for job shutdown.
2. Written notices are required:
   a. 48 hours in advance of construction start up, and
   b. when construction is completed and ready for final inspection

   Mail notices to: Permit Administrator
   Fort Bend County Engineering
   301 Jackson Street
   Richmond, Texas 77469
   281-633-7500
3. This permit expires one (1) year from date of permit if construction has not commenced.

By: for Charles O. Dy
County Engineer

By: N/A
Drainage District Engineer/Manager

Presented to Commissioners Court and approved.
Recorded in Volume
11/1/16 12E
Minutes of Commissioners Court

Clerk of Commissioners Court

By: _____
Deputy
RENEE MICHULKA

County of Fort Bend

Engineering Department

301 Jackson Street
Richmond, Texas 77469

Phone: (281) 633-7500

Permit Application Review Form For
Cable, Conduit, and Pole Line Activity
In Fort Bend County

Permit No. 2016-9832

The following "Notice of Proposed Cable, Conduit, and/or Pole Line activity in Fort Bend County" and accompanying attachments have been reviewed and the notice conforms to appropriate regulations set by Commissioner's Court of Fort Bend County, Texas.

X (1) Complete Application Form:

X a. Name of road, street, and/or drainage ditch affected.

X b. Vicinity map showing course of directions

X c. Plans and specifications

X (2) Bond:

District Attorney, approval when applicable.

Perpetual bond currently posted.

No:

Amount:

X Performance bond submitted.

No: 61BSBHB0006

Amount: $5,000.00

Cashier's Check

No:

Amount:

(3) Verbal permission given for emergencies, to start construction before approved in Commissioner's Court.

Precinct Engineer Acknowledgment — Date

Precinct Commissioner Acknowledgment — Date

(4)

Drainage District Approval when applicable

We have reviewed this project and agree it meets minimum requirements.

Charles O. Dy
Assistant County Engineer

10/25/16
Date

PERFORMANCE BOND COVERING ALL CABLE, CONDUIT AND/OR POLE LINE ACTIVITY IN, UNDER, ACROSS OR ALONG FORT BEND COUNTY ROAD AUTHORIZED

BOND NO 61BSBHB0006

THE STATE OF TEXAS §

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF FORT BEND §

THAT WE, Quadvest Construction L.P. **whose address is** 26926 FM 2978, Magnolia, Texas 77354 **Texas, hereinafter called the Principal, And** Hartford Casualty Insurance Company **, a Corporation existing under and by virtue of the laws of the state of** Connecticut **and authorized to do an indemnifying business in the state of Texas, and whose principal office is located at** 690 Asylum Ave., Hartford, CT 06115 **, whose officer residing in the State of Texas, authorized to accept service in all suits and actions brought whining said state is** Aaron Hawley **and Whose address is** 19450 State HWY 249, Ste. 400, Houston, TX 77070 **, hereinafter called the Surety, and held and firmly bound unto , Robert e. Hebert, County Judge of Fort Bend County, Texas, or his successors in office, in the full sum of** Five Thousand and No/100 **Dollars ($** 5,000.00 **) current, lawful money of the United Stated of America, to be paid to said Robert E. Hebert, County Judge of Fort Bend County, Texas, or his successors in office, to which payment well and truly to be made and done, we, the undersigned, bind ourselves and each of us, our heirs, executors, administrators, successors, assigns, and legal representatives, jointly and severally, by these presents.**

THE CONDITION OF THIS BOND IS SUCH THAT, WHEREAS, the above bounden principal contemplates laying, constructing, maintaining and/or repairing one or more cables, conduits, and/or pole lines in, under, across and/or along roads, streets and highways, commercial driveway and median openings or modifications in the County of Fort Bend, and the State of Texas, under the jurisdiction of the Commissioners' Court of Fort Bend County, Texas, pursuant to the Commissioners' Court order adopted on the 1st day of December, A.D. 1980, recorded in Volume 13, of the Commissioners' Court Minutes of Fort Bend County, Texas, regulating same, which Commissioners' Court order is hereby referred to and made a part hereof for all purposes as though fully set out herein;

AND WHEREAS, the principal desires to provide Fort Bend County with a performance bond covering all such cable, conduit and/or pole line activity, commercial driveway and median openings or modifications;

NOW, THEREFORE, if the above bounden principal shall faithfully perform all its cable, conduit and/or pole line activity (including, but not limited to the laying, construction, maintenance and/or repair of cables, conduits and/or pole lines) in, under, across and/or along roads, streets and highways, commercial driveway and median openings or modifications in the County of Fort Bend and State of Texas, under the jurisdiction of the Commissioners Court of Fort Bend County, Texas, pursuant to and in accordance with minimum requirements and conditions of the above mentioned Commissioners' Court order set forth and specified to be by said principal done and performed, at the time and in the manner therein specified, and shall pay over and make good and reimburse Fort Bend County, all loss and damages which Fort Bend County may sustain by reason of any failure or default on the part of said principal, then this obligation shall be null and void, otherwise to remain in full force and effect.

This bond is payable at the County Courthouse in the County of Fort Bend and State of Texas.

It is understood that at any time Fort Bend County deems itself insecure under this bond, it may require further and/or additional bonds of the principal.

EXECUTED this 12th **day of** October **, 20** 16 **.**

Quadvest Construction L.P.
PRINCIPAL

BY

Hartford Casualty Insurance Company
SURETY

BY Kenneth L. Meyer, Attorney in Fact

POWER OF ATTORNEY

Direct Inquiries/Claims to:
THE HARTFORD
BOND, T-4
P.O. BOX 2103, 690 ASYLUM AVENUE
HARTFORD, CONNECTICUT 06115
call: **888-266-3488** *or fax:* **860-757-5835**

KNOW ALL PERSONS BY THESE PRESENTS THAT: **Agency Code: 61-614981**

- [X] **Hartford Fire Insurance Company**, a corporation duly organized under the laws of the State of Connecticut
- [X] **Hartford Casualty Insurance Company**, a corporation duly organized under the laws of the State of Indiana
- [ ] **Hartford Accident and Indemnity Company**, a corporation duly organized under the laws of the State of Connecticut
- [ ] **Hartford Underwriters Insurance Company**, a corporation duly organized under the laws of the State of Connecticut
- [ ] **Twin City Fire Insurance Company**, a corporation duly organized under the laws of the State of Indiana
- [ ] **Hartford Insurance Company of Illinois**, a corporation duly organized under the laws of the State of Illinois
- [ ] **Hartford Insurance Company of the Midwest**, a corporation duly organized under the laws of the State of Indiana
- [ ] **Hartford Insurance Company of the Southeast**, a corporation duly organized under the laws of the State of Florida

having their home office in Hartford, Connecticut, (hereinafter collectively referred to as the "Companies") do hereby make, constitute and appoint, ***up to the amount of unlimited:***

Charles A. McClure, Kenneth L. Meyer, Kelly J. Brooks
of
Houston, TX

their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign its name as surety(ies) only as delineated above by ☒, and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof, on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

In Witness Whereof, and as authorized by a Resolution of the Board of Directors of the Companies on July 21, 2003 the Companies have caused these presents to be signed by its Assistant Vice President and its corporate seals to be hereto affixed, duly attested by its Assistant Secretary. Further, pursuant to Resolution of the Board of Directors of the Companies, the Companies hereby unambiguously affirm that they are and will be bound by any mechanically applied signatures applied to this Power of Attorney.

Paul A. Bergenholtz, Assistant Secretary

David T. Akers, Assistant Vice President

STATE OF CONNECTICUT }
COUNTY OF HARTFORD } ss. Hartford

On this 4th day of August, 2004, before me personally came David T. Akers, to me known, who being by me duly sworn, did depose and say: that he resides in the County of Hampden, Commonwealth of Massachusetts; that he is the Assistant Vice President of the Companies, the corporations described in and which executed the above instrument; that he knows the seals of the said corporations; that the seals affixed to the said instrument are such corporate seals; that they were so affixed by authority of the Boards of Directors of said corporations and that he signed his name thereto by like authority.

Scott E. Paseka
Notary Public
My Commission Expires October 31, 2007

CERTIFICATE

I, the undersigned, Assistant Vice President of the Companies, DO HEREBY CERTIFY that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is still in full force effective as of October 12, 2016

Signed and sealed at the City of Hartford.

Gary W. Stumper, Assistant Vice President

Claims Inquiries Notice

Hartford Fire Insurance Company
Hartford Casualty Insurance Company
Hartford Accident and Indemnity Company
Hartford Underwriters Insurance Company
Twin City Insurance Company
Hartford Insurance Company of Illinois
Hartford Insurance Company of the Midwest
Hartford Insurance Company of the Southwest

Please address inquiries regarding **Claims** for all surety and fidelity products issued by The Hartford's underwriting companies to the following:

Phone Number:	:	888-266-3488
Fax – Claims	:	860-757-5835 or 860-547-8265
E-mail	:	bond.claims@thehartford.com
Mailing Address	:	The Hartford BOND, T-4 690 Asylum Avenue Hartford, CT 06115

CONSTRUCTION PLANS

FOR

ALCORN BAYOU PUMP STATION

WITHIN

RIVERSTONE

FORT BEND COUNTY LID No. 15
FORT BEND COUNTY, TEXAS

VICINITY MAP
N.T.S.

CHAD E. HABLINSKI
85466
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
11/12/2015

APPROVAL BY THE CITY OF SUGAR LAND WILL BE DEEMED VOID IF CONSTRUCTION HAS NOT BEGUN WITHIN ONE YEAR OF APPROVAL DATE.

CONTRACTOR SHALL NOTIFY THE CITY OF SUGAR LAND AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF WORK.

NO CONSTRUCTION SHALL BEGIN UNTIL COVER SHEET IS SIGNED.

CITY OF SUGAR LAND
APPROVED ____________

DATE 11/19/15

FORT BEND COUNTY ENGINEER

ENGINEER: Rick J. Staigle, PE, PTOE
For RICHARD W. STOLLEIS, P.E.

DATE: 12/3/15

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN ONE (1) YEAR FROM THE DATE OF APPROVAL

APPROVED: ____________
DEVELOPMENT COORDINATOR

DATE: 12/07/15

811
Know what's below.
Call before you dig.

Costello

Engineering and Surveying
9990 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax

TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

JOB NO. 2014360-02

DATE: OCTOBER 2015

CONTACT NUMBERS

CITY OF SUGAR LAND - ENGINEERING DEPT	281-275-2780
F.B.C.L.I.D. No. 15 - OPERATION LNS	281-240-8454
F.B.C. M.U.D. No. 128 - OPERATOR - SI ENVIRONMENTAL	832-490-1500
F.B.C.L.I.D. No. 15 & F.B.C. M.U.D. No. 128 - ENGINEER - COSTELLO, Inc.	713-783-7788
FORT BEND COUNTY DRAINAGE DISTRICT	281-342-2863

SHEET NO.	DESCRIPTION
CIVIL DRAWINGS	
C1	COVER SHEET
C2	CONSTRUCTION NOTES
C3	PUMP STATION LAYOUT
C4	PUMP STATION GRADING LAYOUT
C5	DUAL 9'x5' RCB PLAN AND PROFILE
C6	84" WELDED STEEL PIPE PLAN AND PROFILE
C7	POLLUTION PREVENTION PLAN
C8	POLLUTION PREVENTION DETAILS
C9	CLEARING & ACCESS LAYOUT
C10	MISCELLANEOUS DETAILS
C11	STANDARD TxDOT PEDESTRIAN FACILITIES - PED-12A
STRUCTUAL DETAILS	
S1	FOUNDATION PLAN
S2	STORMWATER PUMP STATION PLAN @ ELV. 67.00
S3	STORMWATER PUMP STATION SECTION & DETAILS
S4	WALL & PIPE SUPPORT DETAIL
S5	PIPE RUNNER SUPPORT DETAIL
S6	LADDER AND STAIR DETAILS AND NOTES
S7	GENERATOR / MCC BUILDING FLOOR PLAN, NOTES AND SCHEDULES
S8	GENERATOR / MCC BUILDING FOUNDATION PLAN AND STRUCTURAL DETAILS
S9	GENERATOR / MCC BUILDING ELEVATIONS
S10	MCC BUILDING ROOF PLAN AND DETAILS
S11	MISCELLANEOUS DETAILS
S12	COLUMN AND FENCE STRUCTURE DETAILS
S13	GATE DETAILS
ELECTRICAL DETAILS	
E-000	ABBREVIATIONS, LEGENDS AND NOTES
E-100	SITE PLAN
E-110	PUMP STATION ENLARGED PLAN
E-111	ENLARGED PUMP STATION ELEVATION
E-112	ENLARGED BUILDING POWER PLAN
E-113	ENLARGED BUILDING LIGHTING PLAN
E-114	GENERATOR ELEVATION - NATURAL GAS
E-200	ONE-LINE DIAGRAM
E-300	SCHEDULES SHEET 1
E-301	SCHEDULES SHEET 2
E-400	MOTOR CONTROL CENTER
E-500	CONTROL DIAGRAMS SHEET 1
E-501	CONTROL DIAGRAMS SHEET 2
E-502	CONTROL DIAGRAMS SHEET 3
E-503	CONTROL DIAGRAMS SHEET 4
E-510	NETWORK DIAGRAM
E-511	SOLID STATE CONTROLLER DIAGRAM
E-600	DETAILS SHEET 1
E-601	DETAILS SHEET 2
E-602	DETAILS SHEET 3
E-603	DETAILS SHEET 4
E-604	DETAILS SHEET 5
E-605	DETAILS SHEET 6

CITY OF SUGAR LAND DETAILS

CAN BE FOUND AT
www.sugarlandtx.gov/DOCUMENTCENTER/VIEW/657

ALCORN BAYOU PUMP STATION JOB NO. 2014360-02

F.B.C. M.U.D. NO. 128

GENERAL NOTES

1. CONTRACTOR SHALL CONTACT THE CITY OF SUGAR LAND ENGINEERING DIVISION (281-275-2780), FORT BEND COUNTY ENGINEERING (281-342-3039), AND MR. CHAD HABLINSKI (713-783-7788), 48 HOURS PRIOR TO THE START OF ANY CONSTRUCTION.
2. CONTRACTOR SHALL GIVE COSTELLO, INC. (713-783-7788), THREE (3) WORKING DAYS NOTICE FOR CONSTRUCTION CONTROL STAKING, AND 48 HOURS NOTICE IN ADVANCE OF BEGINNING CONSTRUCTION.
3. OMIT.
4. ALL UNSATISFACTORY AND/OR WASTE MATERIALS INCLUDING STRIPPINGS, VEGETATION, ROOTS, CONCRETE, DEBRIS AND EXCESS EXCAVATION SHALL BE HAULED OFF SITE BY THE CONTRACTOR. INCLUDE COST OF THIS WORK, INCLUDING HAUL, IN OTHER ITEMS OF THIS PROJECT. ALL TREES ARE NOT INDICATED ON THE CONSTRUCTION PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE AND DETERMINE THE EXTENT OF TREE REMOVAL REQUIRED.
5. CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE AT ALL TIMES DURING CONSTRUCTION OF PROPOSED IMPROVEMENTS.
6. EXISTING UTILITIES ARE INDICATED IN AN APPROXIMATE MANNER ONLY. ALL EXISTING UTILITIES MAY NOT BE INDICATED. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENTS PRIOR TO CONSTRUCTION OF PROPOSED IMPROVEMENTS. CONTRACTOR SHALL NOTIFY UTILITIES 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONTACT 811.
7. ALL EXISTING LANDSCAPING IRRIGATION, SIDEWALKS, FENCES, UTILITIES AND OTHER EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION WILL BE REPLACED OR REPAIRED TO THEIR ORIGINAL CONDITION BY THE CONTRACTOR AT HIS EXPENSE.
8. ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE CITY OF SUGAR LAND, FORT BEND COUNTY, THE ENGINEER AND THE OWNER.
9. MANHOLE RIM ELEVATIONS SHOWN ON THE PLANS ARE APPROXIMATE. ALL FINAL MANHOLE RIM ELEVATIONS ARE TO BE SET AT 4-INCHES ABOVE FINISHED GRADE IN STREET R.O.W. AND 6" ABOVE NATURAL GROUND WITHIN EASEMENTS. ALL EXISTING MANHOLES WITHIN OR ADJACENT TO THE PROJECT ARE TO BE ADJUSTED TO 4-INCHES ABOVE FINISHED GRADE AFTER FINAL GRADING IS COMPLETE. THIS NOTE SHALL GOVERN SHOULD A CONFLICT ARISE WITH THE ELEVATIONS ON THE PLAN AND PROFILE SHEETS.
10. MAINTAIN A MINIMUM OF 6-INCHES OF CLEARANCE BETWEEN ALL UTILITIES EXCEPT WATER AND SANITARY. WATER AND SANITARY CLEARANCE SHALL BE A MINIMUM OF 12-INCHES.
11. INCLUDE PRICE OF ALL BEDDING AND BACKFILL REQUIRED FOR WATER LINES, SANITARY SEWERS AND STORM SEWERS IN PRICE BID PER LINEAR FOOT OF PIPE.
12. UPON PROJECT COMPLETION AND PRIOR TO FINAL RELEASE OF RETAINAGE, CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF SECTION 01710 "PROJECT RECORD DOCUMENTS" OF THE CONTRACT.
13. DELIVERY TICKETS FOR ALL MATERIALS (E.G., CONCRETE, CEMENT STABILIZED SAND, ETC.) SHALL BE MAINTAINED BY THE CONTRACTOR AND UPON WRITTEN REQUEST, BE MADE AVAILABLE FOR REVIEW BY THE ENGINEER.
14. PRIOR TO FINAL RELEASE OF RETAINAGE, THE CONTRACTOR SHALL PROVIDE A NOTARIZED CERTIFICATION THAT ALL MATERIALS INSTALLED IN THE PROJECT ARE COMPLETE IN PLACE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.
15. ALL WATER, SANITARY AND STORM SEWER STUBS ARE TO BE MARKED IN ACCORDANCE WITH THE CITY OF SUGAR LAND DESIGN STANDARD. (SEE DETAIL SHEETS) www.sugarlandtx.gov/DOCUMENTCENTER/VIEW/857
16. THE CONTRACTOR SHALL CONFINE ALL WORK EFFORTS WITHIN THE DESIGNATED PLAT AREA UNLESS SPECIFICALLY AUTHORIZED BY OWNER. EXTREME CARE SHOULD BE EXERCISED NEAR ADJACENT PROPERTY TO PROTECT ANY EXISTING TREES AND PROPERTY. ONLY THOSE TREES DIRECTLY IN THE PATH OF PAVING OR UTILITIES SHOULD BE CONSIDERED FOR REMOVAL. ONCE CONSTRUCTION STAKING IS COMPLETE, COORDINATE WITH THE OWNER AND THE INSPECTOR TO DETERMINE WHICH TREES, IF ANY, ARE TO BE SAVED. REFERENCE THE TECHNICAL SPECIFICATIONS FOR DAMAGES.
17. ANY CONSTRUCTION WHICH HINDERS TRAFFIC OR REQUIRES TRAFFIC DIVERSION SHALL BE IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. INCLUDE FLAGMEN AS REQUIRED TO CONTROL TRAFFIC FOR MATERIAL AND OR EQUIPMENT DELIVERIES. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING AND OBTAINING CITY OF SUGAR LAND APPROVAL FOR ALL TRAFFIC CONTROL PRIOR TO IMPLEMENTING SAME.
18. THE CONTRACTOR SHALL NOTIFY THE CITY SUGAR LAND ENGINEERING DEPARTMENT AND THE ENGINEER IMMEDIATELY IF UNSTABLE SOILS ARE ENCOUNTERED.
19. PRIOR TO EXCAVATION, THE CONTRACTOR SHALL STRIP THE VEGETATION IN ALL AREAS WHERE EXCAVATION IS TO BE PERFORMED, WHERE EXCAVATED MATERIAL IS TO BE PLACED, OR IN ANY LOCATION WHERE CONSTRUCTION MACHINES OR TRUCKS ARE TO BE OPERATING. ALL AREAS PROPOSED TO BE DISTURBED IN ANY FASHION ARE TO BE STRIPPED. STRIPPING IS DEFINED AS THE REMOVAL OF ALL GRASS AND THE ORGANIC ZONE.
20. ALL EXCESS EXCAVATION SHALL BE EVENLY SPREAD AND COMPACTED ON THE PROJECT ON PROPERLY STRIPPED GROUND BY THE CONTRACTOR. ALL SUCH EXCESS EXCAVATED MATERIAL SHALL BE GRADED SMOOTH. INCLUDE THE COSTS FOR THE WORK IN THE CLEARING AND GRUBBING BID ITEM. UPON COMPLETION OF UTILITIES, STRIPPINGS SHALL BE SPREAD AND GRADED SMOOTH, IF DIRECTED BY THE ENGINEER (NO SEPARATE PAY).
21. THE CONTRACTOR SHALL CONTACT THE DISTRICT OPERATOR TO ARRANGE FOR THE PURCHASE OF ANY WATER NEEDED FOR CONSTRUCTION. UNAUTHORIZED (UNMETERED) TAPS OF PUBLIC WATER LINE SHALL RESULT IN A DAILY FINE IN ACCORDANCE WITH THE DISTRICT RATE ORDER.
22. THERE WILL BE NO SEPARATE PAYMENT FOR WORK SHOWN ON THESE DRAWINGS UNLESS SPECIFICALLY ESTABLISHED IN THE CONTRACT BID DOCUMENTS.
23. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FROM THE CITY OF SUGAR LAND AND FORT BEND COUNTY.
24. THE CONTRACTOR SHALL EXECUTE THE REQUIRED POLLUTION PREVENTION PLAN (PPP) AND NOTICE OF INTENT FORM (NOI) FOR THIS PROJECT AND BE RESPONSIBLE FOR CONSTRUCTING AND MAINTAINING ITEMS IDENTIFIED IN THE PPP. AS THE FIRST ITEM OF WORK, THE CONTRACTOR SHALL ERECT ALL PERIMETER SILT FENCES INDICATED ON THE PPP. THE CONTRACTOR SHALL CONSTRUCT INLET PROTECTION BARRIERS AROUND ALL INLETS AS PER PPP AS INLETS ARE CONSTRUCTED.
25. REFERENCE IS MADE IN SUBSEQUENT NOTES AND DETAILS REGARDING THE PLACEMENT OF CEMENT STABILIZED SAND UNDER OR WITHIN 3 FEET OF EXISTING PAVEMENT. BY DEFINITION, THIS MEANS ALL AREAS BENEATH OR WITHIN 3 FEET OF PAVEMENT IN ADDITION TO A LINE STARTING AT 3 FEET FROM PAVEMENT AND EXTENDING AWAY FROM THE PAVEMENT ON A DOWNWARD SLOPE OF ONE FOOT HORIZONTAL TO ONE FOOT VERTICAL.
26. THESE PLANS, PREPARED BY COSTELLO, INC., DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE REGISTERED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THESE PLANS. THE CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS, INCLUDING THE PLANS AND SPECIFICATIONS REQUIRED BY THE HOUSE BILLS 652 AND 665 ENACTED BY THE TEXAS LEGISLATURE IN THE 70TH LEGISLATURE REGULAR SESSION AND CURRENT OSHA STANDARDS FOR TRENCH SAFETY. DESIGN OF TRENCH SAFETY SYSTEMS, SEALED BY A LICENSED PROFESSIONAL ENGINEER, SHALL BE ACQUIRED BY THE CONTRACTOR PRIOR TO EXECUTION OF THIS WORK.

Continuation of General notes

27. THE CONTRACTOR SHALL COORDINATE WITH THE SOILS LABORATORY AND DIG TEST HOLES TO OBTAIN PROCTOR PRIOR TO COMMENCING WORK (NO SEPARATE PAY).
28. CONTRACTOR SHALL UNCOVER EXISTING UTILITIES AT ALL POINTS OF CROSSING OR CONNECTION TO DETERMINE IF CONFLICTS EXIST BEFORE COMMENCING ANY CONSTRUCTION. NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICT.
29. ALL CONTRACTOR VEHICLES, INCLUDING EMPLOYEE'S VEHICLES, SHALL PARK WITHIN THE PROJECT SITE TO MINIMIZE TRAFFIC ON THE PUBLIC STREET(S) ADJACENT TO THE WORK SITE ENTRANCE. CONTRACTOR WILL PROVIDE SUFFICIENT PARKING AREAS TO ACCOMMODATE HIS VEHICLES. ANY AREAS DISTURBED OR DESTROYED BY VEHICULAR PARKING WILL BE REPAIRED TO ORIGINAL CONDITION PRIOR TO COMPLETION OF THE PROJECT. NO SEPARATE PAYMENT WILL BE MADE FOR THIS ITEM.
30. IF SITE CONDITIONS ARE MUDDY, THE CONTRACTOR SHALL MAINTAIN A VEHICLE WASHDOWN AREA OF SUFFICIENT SIZE AND IN A LOCATION TO FACILITATE CLEANING ALL CONSTRUCTION VEHICLES PRIOR TO LEAVING THE WORK SITE. CONTRACTOR SHALL PROVIDE THE NECESSARY EQUIPMENT, INCLUDING WATER AND DRAINAGE, TO WASH VEHICLES. VEHICLE WASHDOWN AREA WILL BE PROVIDED DURING RAINY OR MUDDY CONDITIONS FOR THE DURATION OF THE CONTRACT. ALL WASHDOWN WATER FROM SUCH AN OPERATION SHALL NOT ENTER THE STORM SEWER SYSTEM WITHOUT SUCH ENTRANCE LOCATION BEING PROTECTED BY AN APPROPRIATE SILT PROTECTION DEVICE. CONTRACTOR SHALL, ON A DAILY BASIS, CLEAN ALL STREETS IN THE VICINITY OF THE WORK SITE ENTRANCE TO ENSURE THAT NO DIRT FROM THE PROJECT ACCUMULATES IN THE EXISTING STREETS. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK. A PENALTY WILL BE ASSESSED IN ACCORDANCE WITH THE CONTRACT FOR EACH DAY STREETS ARE LEFT UNCLEANED. ALL WORK ASSOCIATED WITH THIS NOTE SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS WORK ITEMS.
31. OMIT.
32. OMIT.
33. ALL MATERIALS INSTALLED ON THIS PROJECT MUST COMPLY WITH THE CITY OF SUGAR LAND APPROVED PRODUCT LIST.
34. ALL EXISTING DITCHES PROPOSED FOR FILL (OR THOSE FILLED DURING THE COURSE OF THE PROJECT) SHALL BE COMPLETELY STRIPPED (A MINIMUM OF 6-INCHES) AND MUCKED OUT IN THE PRESENCE OF THE SOILS LABORATORY. REMOVED MATERIAL (STRIPPING AND MUCKING) SHALL BE TEMPORARILY STOCKPILED AND GRADED TO DRAIN. ALL SOIL TO FILL EXISTING DITCHES SHALL BE OBTAINED FROM EXCESS EXCAVATION. ALL FILL SHALL BE PLACED IN MAXIMUM 8-INCH LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR MAXIMUM DRY DENSITY AT +/- 2 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698. PAYMENT FOR ALL WORK ASSOCIATED WITH THE FILLING OF EXISTING DITCHES SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS BID ITEMS.
35. THE CONTRACTOR SHALL PROVIDE A WATERTIGHT JOB BOARD NEAR THE SITE ENTRANCE FOR POSTING NOI INFORMATION AND THE POLLUTION PREVENTION PLAN. THE RESPECTIVE CONTRACTOR SHALL ALSO PROVIDE THE REQUIRED SANITATION FACILITIES. ALL SUCH AFOREMENTIONED ITEMS MUST BE PROVIDED PRIOR TO BEGINNING WORK. FAILURE TO PROVIDE THE AFOREMENTIONED ITEMS WILL RESULT IN THE WITHHOLDING OF PAY REQUESTS. ALL SUCH ITEMS MUST BE REMOVED UPON PROJECT COMPLETION. (NO SEPARATE PAY).
36. IT IS THE CONTRACTOR'S RESPONSIBLITY TO CONTACT THE TESTING LABORATORY TO HAVE THE LAB PRESENT DURING ALL BACKFILL, PLACEMENT OF ANY FILL OR ANY OTHER REQUIRED LAB TESTING.
37. ALL DISTURBED AREAS (I.E. THE ENTIRE PROJECT) SHALL RECEIVE "TURF ESTABLISHMENTS " ING ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS. MEASUREMENTS AND PAYMENTS FOR THIS WORK SHALL BE IN ACCORDANCE WITH THE PROPOSAL AND UNIT PRICE SECTIONS OF THE CONTRACT. PRIOR TO COMMENCING WORK ON TURF ESTABLISHMENT, THE ENTIRE POND AREA SHALL RECEIVE A MINIMUM 3-INCH LAYER OF TOPSOIL. THE ELEVATIONS INDICATED ON THE PLANS ARE FINISHED ELEVATIONS (AFTER PLACEMENT OF TOPSOIL).
37. PRIOR TO PLACEMENT OF FILL ON FILL AREAS, THE AREA TO BE FILLED SHALL BE COMPLETELY STRIPPED. A MINIMUM OF 3 INCHES AND PROOF ROLLED IN THE PRESENCE OF THE TESTING LAB. ALL FILL SHALL BE PLACED IN MAXIMUM 8 INCH LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR MAXIMUM DRY DENSITY WITHIN +/-2 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698. AFTER COMPLETION OF FILL, ALL EXCESS STRIPPING (EXCLUDING HEAVY BRUSH AND TREES) SHALL BE EVENLY SPREAD OVER FILL AREAS AND GRADED TO DRAIN. THE ELEVATION SHOWN ON THE PLANS ARE ELEVATIONS AFTER CUT & FILL OPERATIONS ARE CONCLUDED AND THE STRIPPING'S ARE SPREAD OVER THE SITE. THE ELEVATIONS SHOULD BE FINISHED PRODUCT.

GENERAL NOTES - PUMP STATION

1. FURNISH AND INSTALL PUMP SYSTEM AS SHOWN ON THE PLANS AND PER THE SPECIFICATIONS.
2. CONTRACTOR TO USE PUMP MANUFACTURER'S APPROVED CERTIFIED SHOP DRAWINGS TO FINALIZE PUMP STATION PIPING ARRANGEMENT.
3. PUMP STATION PIPING AND ABOVE GROUND PIPING SHALL BE DUCTILE IRON, ANSI A21.51, CLASS 53, UNLESS OTHERWISE NOTED ON THE PLANS. ALL FITTINGS SHALL BE FLANGED AND CONFORM TO ANSI A21.10. PROVIDE BOLTS AND NUTS MADE OF TYPE 316 STAINLESS STEEL.
4. ALL HARDWARE (I.E., NUTS, BOLTS, CHAINS, ETC.) WITHIN PUMP STATION SHALL BE STAINLESS STEEL, SERIES 316.
5. OMITTED
6. ALL DUCTILE IRON PIPE AND FITTINGS TO BE LINED WITH POLYETHYLENE OR CERAMIC EPOXY HAVING A NOMINAL THICKNESS OF 40 MILS, MINIMUM 35 MILS.
7. ALL PIPING, FITTINGS, AND APPURTENANCES SHALL BE PAINTED/COATED IN ACCORDANCE WITH THE SPECIFICATIONS, UNLESS OTHERWISE NOTED.
8. OMITTED
9. CONTRACTOR TO CONFORM SIZE AND LOCATION OF ACCESS HATCH OPENINGS ACCORDING TO THE SELECTED HATCH AND PUMP MANUFACTURER'S REQUIREMENTS.
10. OMITTED
11. OMITTED
12. ALL BELOW GROUND PIPING SHALL HAVE A MINIMUM GROUND COVER OF 4-FEET, UNLESS OTHERWISE NOTED.
13. THERE WILL BE NO SEPARATE PAYMENT FOR PRESSURE PIPING LOCATED WITHIN 10-FEET OF THE LIFT STATION.
14. CONTRACTOR SHALL COORDINATE WITH POWER PROVIDER TO HAVE SERVICE TRANSFERRED TO FORT BEND COUNTY L.I.D. No. 15 FOLLOWING ACCEPTANCE.
15. CONTRACTOR SHALL COORDINATE WITH SIENERGY TO HAVE SERVICE TRANSFERRED TO FORT BEND COUNTY L.I.D. No. 15 FOLLOWING ACCEPTANCE.

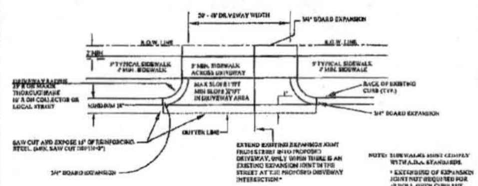
CONTRACTOR PROTOCOL WHEN ENCOUNTERING AREAS OF HYDROCARBON IMPACT

1. CONTRACTORS AND SUBCONTRACTORS ARE INFORMED THAT THEY COULD POTENTIALLY COME ACROSS AREAS OF HYDROCARBON IMPACT.
2. IF ANY SOILS WITH UNUSUAL ODORS, TEXTURES OR COLORS ARE ENCOUNTERED, THE AREA OF CONCERN WILL BE MARKED AND THE ENGINEER WILL BE NOTIFIED.
3. THE ENGINEER WILL NOTIFY THE ENVIRONMENTAL CONSULTANT WHO WILL EVALUATE THE MATERIAL AND, IF NECESSARY, TAKE SAMPLES TO CLASSIFY IT. IT IS ANTICIPATED THAT ONSITE EQUIPMENT WILL ASSIST IN THE DELINEATION OF THE AREA.
4. FOR MATERIAL DETERMINED TO BE INAPPROPRIATE FOR RESIDENTIAL DEVELOPMENT, THIS MATERIAL WILL BE REMOVED TO PREDETERMINED SITES ON THE DEVELOPMENT FOR:
   A) LAND FARMING
   B) USE AS BASE MATERIAL IN AREAS THAT WILL NOT HAVE RESIDENTIAL DEVELOPMENT SUCH AS COMMERCIAL AREAS THAT WILL BE COVERED WITH ROADS OR PARKING
5. HANDLING OF AFFECTED MATERIAL WILL BE LOGGED AND MANIFESTED. THIS INFORMATION WILL BE AVAILABLE TO THE RAILROAD COMMISSION FOR REVIEW UPON REQUEST. THE RAILROAD COMMISSION WILL BE CONTACTED FOR GUIDANCE ON ANY AREAS OF CONCERN BEYOND SMALL ISOLATED AREAS AS DETERMINED BY THE CONSULTANT.

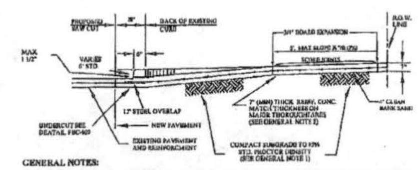
THE CONTRACTOR'S RESPONSIBILITY WITH REGARD TO THE ABOVE NOTES WILL BE LIMITED TO: NOTIFYING THE LAB IF SUSPECT MATERIAL IS ENCOUNTERED. HAULING THE SUSPECT MATERIAL TO AN AREA TO BE DETERMINED (NOT TO EXCEED 2,000 FEET) AND SPREADING.

WHEN A COMMERCIAL SIDEWALK, DRIVEWAY, CURB OR GUTTER IS CONSTRUCTED, RECONSTRUCTED, REPAIRED OR REGRADED ON COUNTY RIGHT-OF-WAY. FOR USE WITH CONCRETE OR ASPHALT CURB TYPE STREETS, USE SECTIONS APPLICABLE.

A. USE FOR ALL PROPOSED EXISTING CURB REMOVAL FOR DRIVEWAYS (PLAN VIEW NOT TO SCALE)



B. USE FOR ALL PROPOSED DRIVES ON CURBED TYPE STREETS



GENERAL NOTES:

1. COMPACT SUBGRADE FOR PROPOSED DRIVEWAY CONNECTION FROM PROPOSED SAW CUT AT EXISTING PAVEMENT TO R.O.W. LINE. COMPACT TO 95% OF STANDARD PROCTOR DENSITY(+/-2% OPT. MOISTURE). THE COUNTY ENGINEER RESERVES THE RIGHT TO REQUIRE LABORATORY TESTS TO BE CONDUCTED.
2. PROPOSED DRIVEWAY REINFORCING STEEL IS TO BE #4 DEFORMED REINFORCING BARS (ASTM A615, GRADE 60, UNLESS NOTED) SPACED AT 24" C.C., EACH WAY, WITH 12" MINIMUM LAP FROM PROPOSED SAW CUT TO R.O.W. LINE.
3. PROPOSED DRIVEWAY SHALL BE CONSTRUCTED WITH PORTLAND CEMENT (5 SACKS [3000 PSI]) OF CEMENT PER CUBIC YARD OF CONCRETE), CLASS "A" STRUCTURAL (REFER TO SPECIFICTION 03301), 7" THICK, FROM PROPOSED SAW CUT TO R.O.W. LINE.
4. PROPOSED SIDEWALK SHALL BE CONSTRUCTED WITH PORTLAND CEMENT (5 SACKS [3000 PSI]) OF CEMENT PER CUBIC YARD OF CONCRETE), CLASS "A" STRUCTURAL (REFER TO SPECIFICTION 03301), 4" THICK.
5. FOR TYPICAL SIDEWALK DEATAIL SEE FBC-024.

SIDEWALKS & DRIVEWAYS ON CURB TYPE STREETS COMMERCIAL AREA	DRAWN BY: L. BRDECKA DATE DRAWN: 2-1-94	REVISED BY: J. NETARDUS DATE REVISED: 4-7-09
	APPROVED BY: L. HOOD DATE: 2-1-94	DRAWING NO. FBC-025A

FORT BEND COUNTY ENGINEERING DEPARTMENT

FORT BEND COUNTY GENERAL NOTES

1. FORT BEND COUNTY MUST BE INVITED TO THE PRE-CONSTRUCTION MEETING.
2. CONTRACTOR SHALL NOTIFY FORT BEND COUNTY ENGINEERING DEPARTMENT 48 HOURS PRIOR TO COMMENCING CONSTRUCTION AND 24 HOURS PRIOR TO ANY PAVING OPERATIONS AT Construction@fortbendcountytx.gov
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FROM FORT BEND COUNTY PRIOR TO COMMENCING CONSTRUCTION OF ANY IMPROVEMENTS WITHIN COUNTY ROAD RIGHT OF WAYS.
4. ALL PAVING IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FORT BEND COUNTY "RULES, REGULATIONS AND REQUIREMENTS RELATING TO THE APPROVAL AND ACCEPTANCE OF IMPROVEMENTS IN SUBDIVISIONS" AS CURRENTLY AMENDED.
5. ALL ROAD WIDTHS, CURB RADII AND CURB ALIGNMENT SHOWN INDICATES BACK OF CURB.
6. A CONTINUOUS LONGITUDINAL REINFORCING BAR SHALL BE USED IN THE CURBS.
7. ALL CONCRETE PAVEMENT SHALL BE 5 1/2 SACK CEMENT WITH A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 60 FEET.
8. ALL WEATHER ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
9. 4"x12" REINFORCED CONCRETE CURB SHALL BE PLACED IN FRONT OF SINGLE FAMILY LOTS ONLY, ALL OTHER AREAS SHALL BE 6" REINFORCED CONCRETE CURB.
10. AT ALL INTERSECTION LOCATIONS, TYPE 7 RAMPS SHALL BE PLACED IN ACCORDANCE WITH TXDOT PED-12A STANDARD DETAIL SHEET. A.D.A. HANDICAP RAMPS SHALL BE INSTALLED WITH STREET PAVING AT ALL INTERSECTIONS AND COMPLY WITH CURRENT A.D.A. REGULATIONS.
11. CURB HEADERS ARE REQUIRED AT CURB CONNECTIONS TO HANDICAP RAMPS, WITH NO CONSTRUCTION JOINT WITHIN 5' OF RAMPS.
12. ALL INTERSECTIONS UTILIZING TRAFFIC CONTROL MEASURES SHALL HAVE A.D.A. WHEEL CHAIR RAMPS INSTALLED.
13. GUIDELINES ARE SET FORTH IN THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", AS CURRENTLY AMENDED, SHALL BE OBSERVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGMEN, SIGNING, STRIPING AND WARNING DEVICES, ETC., DURING CONSTRUCTION BOTH DAY AND NIGHT.
14. ALL R1-1 STOP SIGNS SHALL BE 30"x30" WITH DIAMOND GRADE SHEETING. STREET NAME SIGNS SHALL BE UPPER AND LOWER CASE LETTERS WITH DIAMOND GRADE SHEETING.
15. A BLUE DOUBLE REFLECTORIZED BUTTON SHALL BE PLACED AT ALL FIRE HYDRANT LOCATIONS. THE BUTTON SHALL BE PLACED 12 INCHES OFF OF THE CENTERLINE OF THE STREET ON THE SAME SIDE AS THE HYDRANT.

Fort Bend County notes supercede all conflicting notes.

GENERAL NOTES FOR SIDEWALKS AND DRIVEWAYS

1. SAW CUT EXISTING CURB AT EACH END AND KNOCK OUT CURB FROM BEGINNING TO END OF PROPOSED DRIVEWAY.
2. SAW CUT EXISTING PAVEMENT A MINIMUM OF 18" INCHES AWAY FROM BACK OF CURB (GUTTER LINE) AND BREAK OUT TO EXPOSE EXISTING REINFORCEMENT STEEL.
3. COMPACT SUBGRADE FOR PROPOSED DRIVEWAY CONNECTION FROM PROPOSED SAW CUT AT EXISTING PAVEMENT TO RIGHT-OF-WAY LINE, COMPACT TO 95% OF STANDARD PROCTER DENSITY (+/- 2% OPT. MOISTURE). THE COUNTY ENGINEER RESERVES THE RIGHT TO REQUIRE LABORATORY TESTS TO BE CONDUCTED.
4. PLACE AND COMPACT 4" CLEAN BANK SAND.
5. MAINTAIN GUTTER LINE WITH FACE OF EXISTING CURB.
6. PROPOSED DRIVEWAY REINFORCING STEEL IS TO BE TIED TO EXISTING ROADWAY REINFORCING STEEL WITH A MINIMUM LAP OF 12 INCHES.
7. PROPOSED DRIVEWAY REINFORCING STEEL IS TO BE #4 DEFORMED RE-INFORCING BARS (ASTM A615 GRADE 60, UNLESS NOTED) SPACED AT 24 INCHES C.C., EACH WAY, WITH 12 INCHES MINIMUM LAP (6" x 6" W6 x W6 AS ALTERNATE) FROM PROPOSED SAW CUT TO RIGHT-OF-WAY LINE.
8. PROPOSED DRIVEWAY, CURB, GUTTER LINE, AND GRADE SHALL MATCH EXISTING STREET.
9. PROPOSED DRIVEWAY SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE, CLASS "A" STRUCTURAL (REFER TO SPECIFICATION 03301), 7 INCHES THICK, FROM PROPOSED SAW CUT TO RIGHT-OF-WAY LINE (PROPERTY LINE).
10. PROPOSED SIDEWALK SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE, CLASS "A" STRUCTURAL (REFER TO SPECIFICATION 03301), 4 INCHES THICK AND 4 FEET MINIMUM WIDTH. SEE DRAWING NO. FBC 24A FOR ADDITIONAL INFORMATION AND DETAILS.

CONSTRUCTION NOTES FOR SIDEWALKS & DRIVEWAYS WITH CURB TYPE STREETS COMMERCIAL AREA	DRAWN BY: L. BRDECKA DATE DRAWN: 2-1-94	REVISED BY: L. BRDECKA DATE REVISED: 3-10-05
	APPROVED BY: L. HOOD DATE: 2-1-94	DRAWING NO. FBC-025B

FORT BEND COUNTY ENGINEERING DEPARTMENT

NO.	REVISION	DATE	BY
1.	Update to General Notes - Pump Station	11/23/15	GLH

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

Costello

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(713) 783-7788 (713) 783-3580, Fax
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

RIVERSTONE
ALCORN BAYOU PUMP STATION

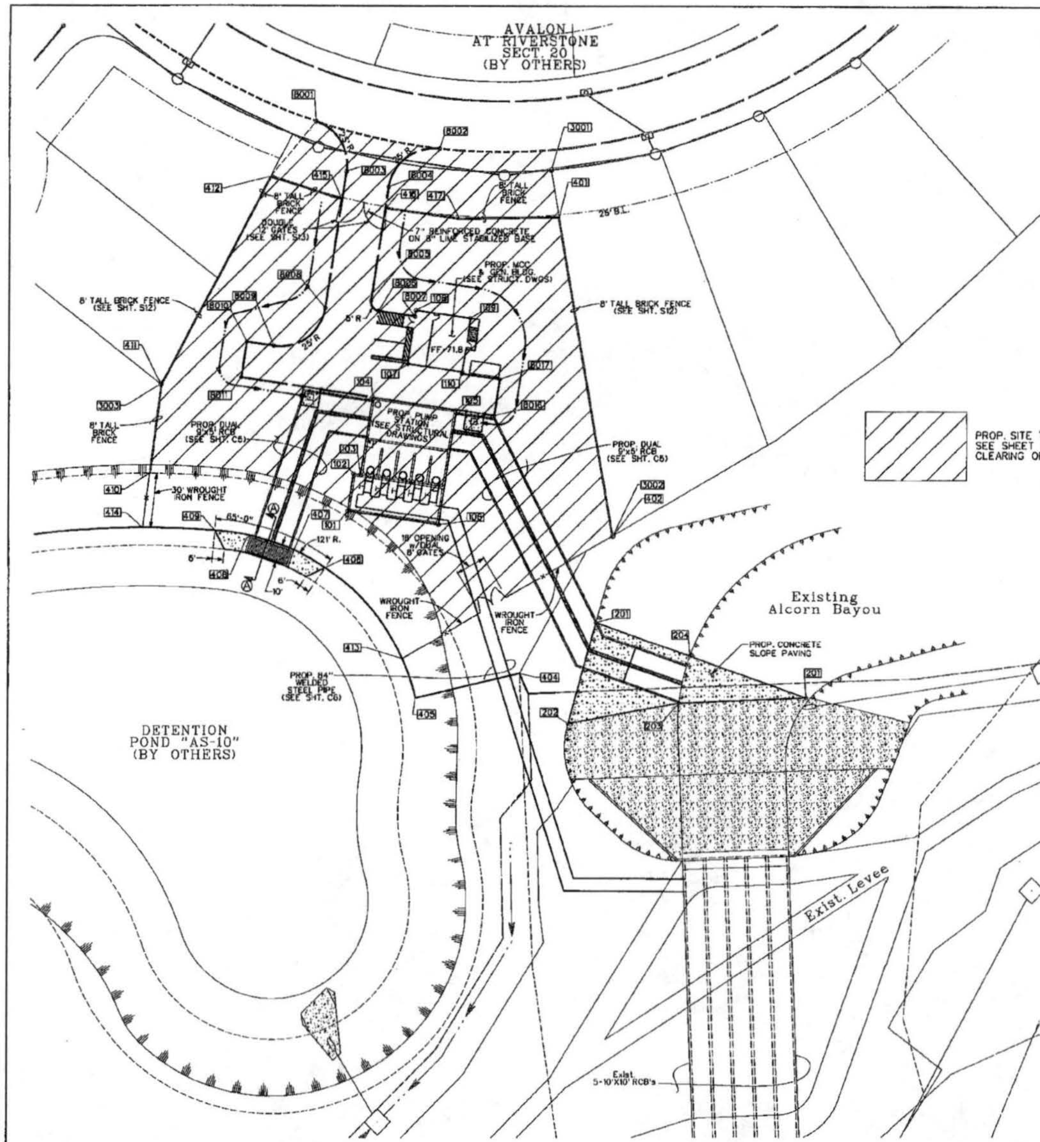
CONSTRUCTION NOTES

STATE OF TEXAS
CHAD E. HABLINSKI
85466
LICENSED
PROFESSIONAL ENGINEER
11/12/15

BAN 12/02/15

SHEET C2

JOB NO. 2014360-02



PROP. SITE TO BE CLEARED, SEE SHEET C9 FOR PROP. CLEARING OF ACCESS ROAD

N

SCALE: 1"=30'

CONTROL BENCHMARK

U.S.C. & G.S. MONUMENT "SUGARLAND 1942-1" ELEVATION = 71.82 N.G.V.D. (1929, 1973 ADJUSTMENT)

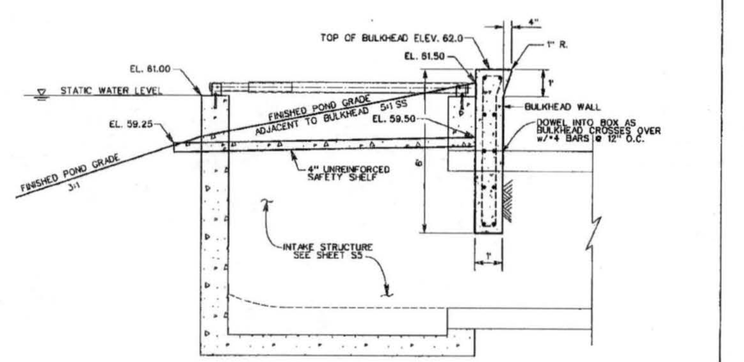
MISC. POINTS		
Point	North	East
401	634972.26	3079386.17
402	634796.60	3079416.12
404	634720.75	3079365.46
405	634707.32	3079308.87
406	634778.92	3079259.48
407	634788.74	3079242.08
408	634796.70	3079218.39
409	634799.51	3079198.60
410	634831.12	3079162.78
411	634879.89	3079168.85
412	634994.40	3079228.56
413	634728.82	3079301.56
414	634801.15	3079159.05
415	634982.23	3079267.61
416	634977.19	3079292.14
417	634971.24	3079331.69

CONTROL POINTS		
Point	North	East
301	634998.06	3079361.77
302	634796.60	3079416.12
303	634879.89	3079168.85

TOP OF CURB		
Point	North	East
8001	635024.52	3079253.67
8002	635009.72	3079320.75
8003	634997.12	3079270.37
8004	634988.59	3079293.35
8005	634926.19	3079283.94
8006	634920.50	3079288.13
8007	634917.51	3079307.91
8008	634922.25	3079259.07
8009	634901.26	3079230.62
8010	634903.50	3079215.79
8011	634883.72	3079212.81
8012	634878.57	3079246.97
8013	634877.08	3079256.86
8014	634865.15	3079335.91
8015	634863.66	3079345.80
8016	634862.84	3079351.24
8017	634882.61	3079354.22
8018	634885.75	3079333.46

BUILDING CORNERS		
Point	North	East
101	634810.14	3079271.49
102	634830.91	3079274.62
103	634830.31	3079278.57
104	634872.83	3079284.99
105	634865.97	3079330.47
106	634802.69	3079320.93
107	634891.21	3079303.94
108	634920.87	3079308.42
109	634916.40	3079338.08
110	634886.73	3079333.61

CONCRETE SLOPE PAVING		
Point	North	East
201	634748.50	3079407.09
202	634693.40	3079391.90
203	634704.55	3079452.58
204	634730.10	3079458.37
205	634707.25	3079522.06



BULKHEAD CROSS SECTION
SECTION "A-A"
N.T.S.

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
CODO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

Costello

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TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

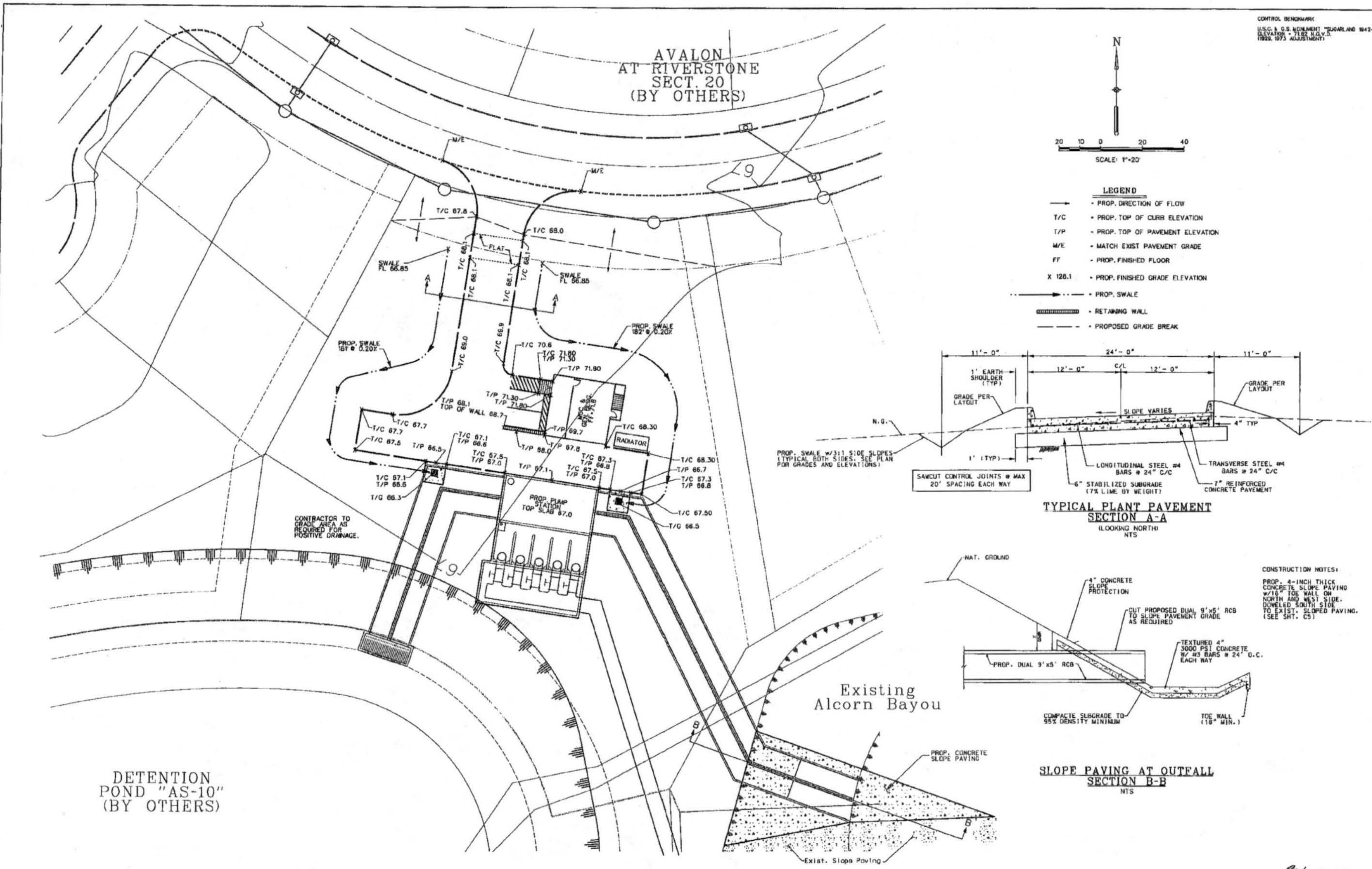
RIVERSTONE
ALCORN BAYOU PUMP STATION

PUMP STATION LAYOUT

STATE OF TEXAS
CHAD E. HABLINSKI
85486
LICENSED
PROFESSIONAL ENGINEER

SHEET C3

JOB NO. 2014360-02



NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
CODD CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE
QA/QC REVISIONS BY:

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TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

RIVERSTONE
ALCORN BAYOU PUMP STATION

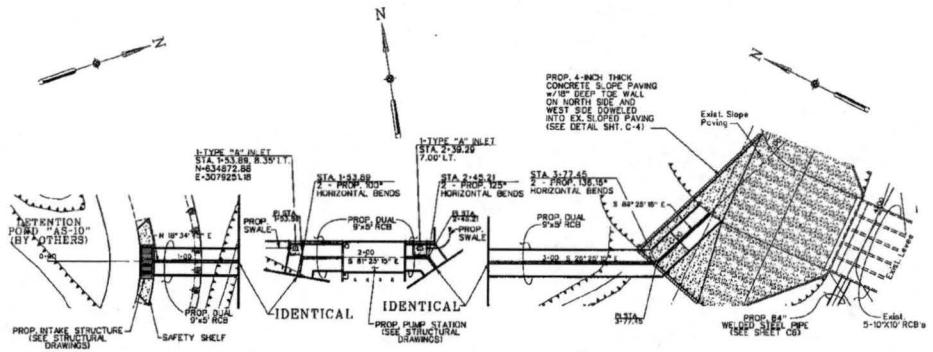
PUMP STATION GRADING LAYOUT

STATE OF TEXAS
CHAD E. HASLINGER
95406
LICENSED
PROFESSIONAL ENGINEER

SHEET C4

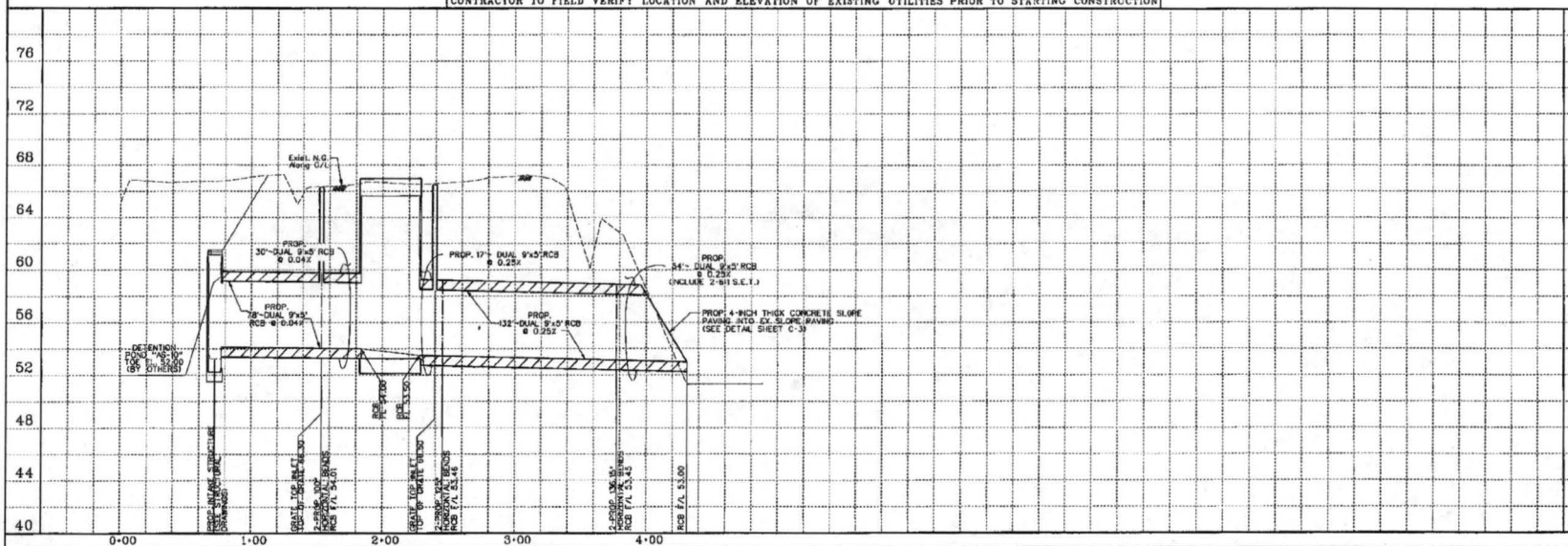
JOB NO. 2014360-02

CONTROL BENCHMARK
U.S.C. & G.S. MONUMENT "SUGARLAND 1942-1"
ELEVATION = 71.83 N.G.V.D.
(1929, 1973 ADJUSTMENT)



DUAL 9'x5' RCB

CONTRACTOR TO FIELD VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO STARTING CONSTRUCTION



40 20 0 40 80
SCALE: 1"=40'

SCALE: 1" = 40' HORIZ.
1" = 4' VERT.

CL CURVE DATA

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
CODD CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

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TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

RIVERSTONE
ALCORN BAYOU PUMP STATION
PLAN AND PROFILE
DUAL 9'x5' RCB

STATE OF TEXAS
CHAD E. HARLINGEN
85498
LICENSED
PROFESSIONAL ENGINEER
11/04/15

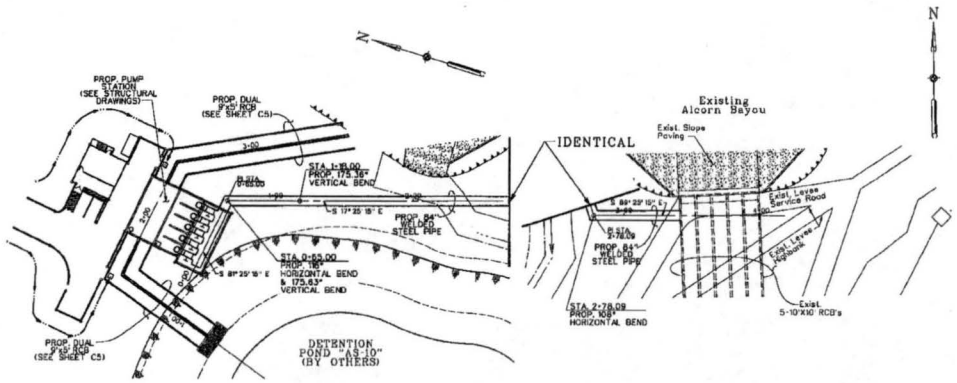
BFH 12/02/15

SHEET C5

JOB NO. 2014360-02

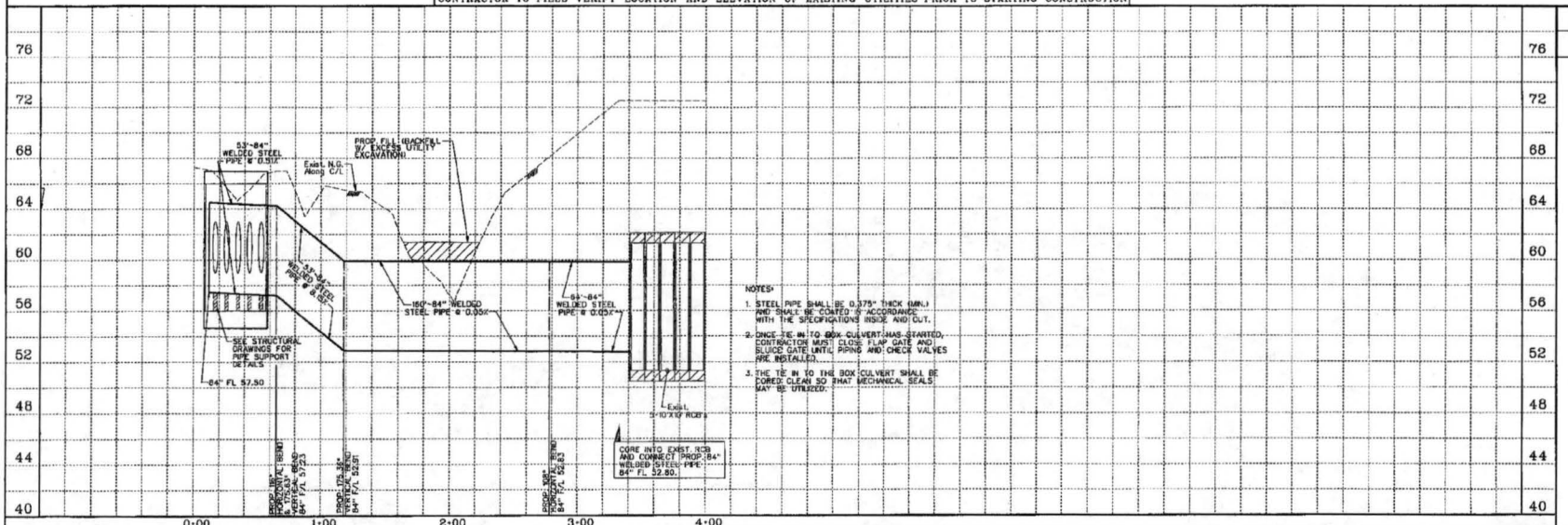
JOB NO. 2014360-02

CONTROL BENCHMARK
U.S.C. & G.S. MONUMENT "SUGARLAND 1942-1"
ELEVATION = 71.82 (N.G.V.D. 1929, 1973 ADJUSTMENT)



84" WELDED STEEL PIPE

CONTRACTOR TO FIELD VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO STARTING CONSTRUCTION



SCALE: 1" = 40' HORIZ.
1" = 4' VERT.

CL CURVE DATA

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
CODO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

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TBPLS FIRM REG. No. 100486

RIVERSTONE
ALCORN BAYOU PUMP STATION
PLAN AND PROFILE
84" WELDED STEEL PIPE

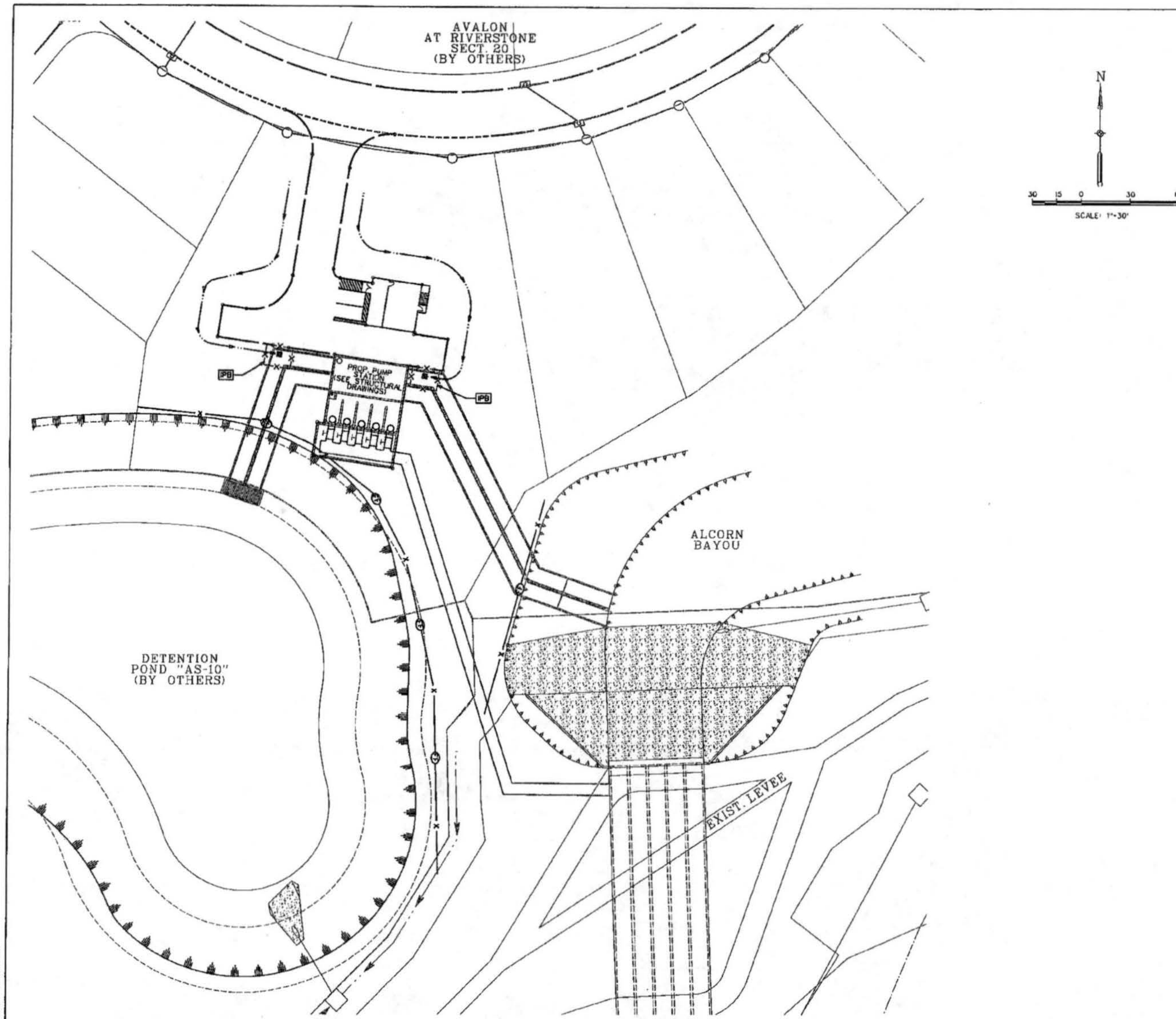
Brad 12/10/15

STATE OF TEXAS
CHAD E. HARLINSKI
86488
LICENSED PROFESSIONAL ENGINEER
12/10/15

SHEET C6

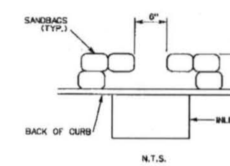
JOB NO. 3014360-02

JOB NO. 3014360-02



CONTROL BENCHMARK

U.S.C. & G.S. MONUMENT "SUGARLAND 1942-1"
ELEVATION = 71.82 N.G.V.D.
(1929, 1973 ADJUSTMENT)



LEGEND

IPB — INLET PROTECTION BARRIER (REQUIRED)

SF — SILT FENCE

NO.	REVISION	DATE	BY

DESIGNED BY: ____
DESIGN CHECKED BY: ____
DRAWN BY: ____
COGO CHECKED BY: ____
SURVEY CHECKED BY: ____
QA/QC BY: ____ DATE: ____
QA/QC REVISIONS BY: ____

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TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

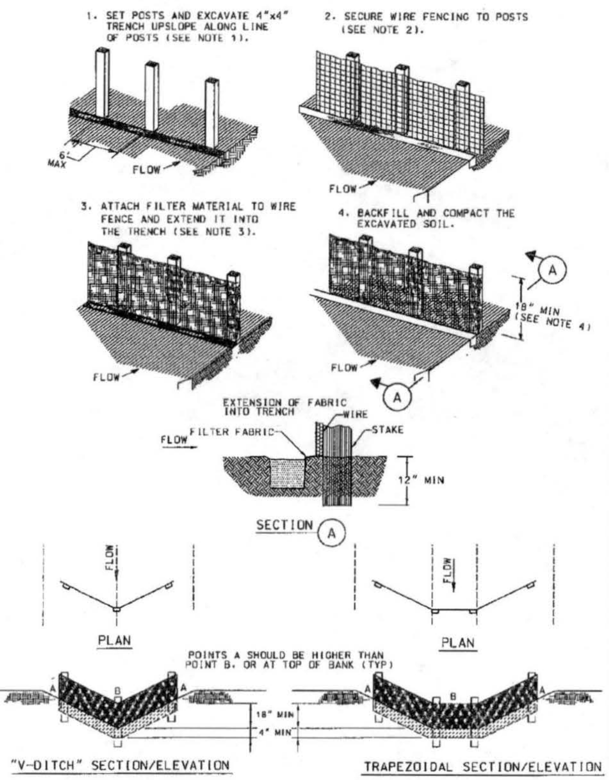
RIVERSTONE
ALCORN BAYOU PUMP STATION

POLLUTION PREVENTION PLAN

STATE OF TEXAS
CHAD E. HABUNDA
85460
LICENSED
PROFESSIONAL ENGINEER
11/16/2015

SHEET C7

JOB NO. 2014350-02

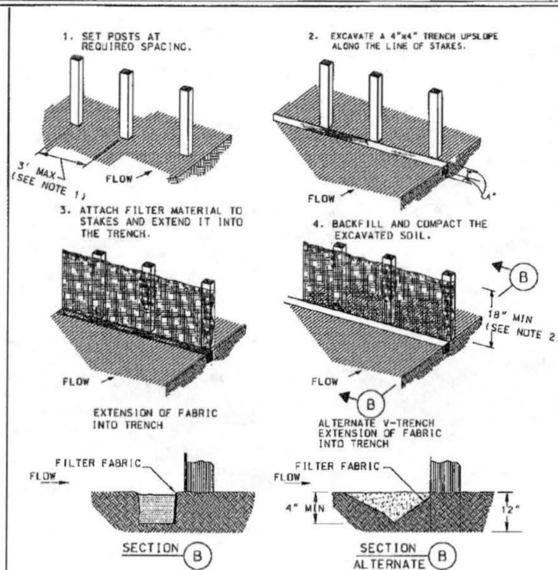


CONSTRUCTION NOTES:

1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
6. SEE SECTION 01568 - REINFORCED FILTER FABRIC BARRIER.

X—(RFB)—X
SYMBOL

REINFORCED FILTER FABRIC BARRIER

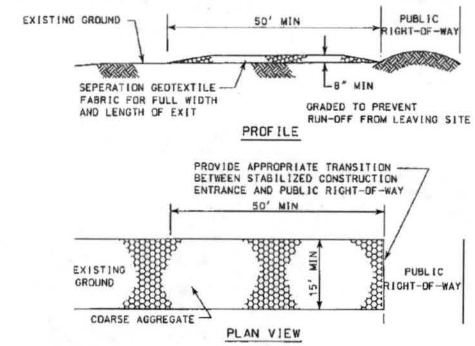


CONSTRUCTION NOTES:

X—(FF)—X
SYMBOL

1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC FENCE SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
4. SEE SECTION 01567 - FILTER FABRIC FENCE.

FILTER FABRIC FENCE

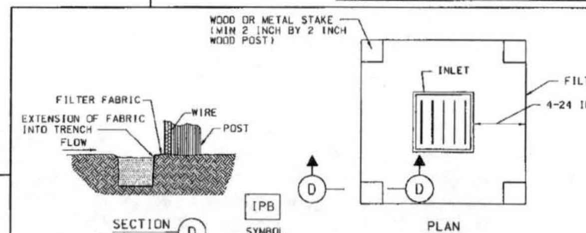


CONSTRUCTION NOTES:

1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT, UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
5. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A TRUCK WASHING AREA. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE TRUCK WASHING AREA.
6. SEE SECTION 01569 - STABILIZED CONSTRUCTION EXIT.
7. STABILIZED CONSTRUCTION EXIT SHALL BE MAINTAINED FREE OF SEDIMENT FOR THE DURATION OF THE PROJECT.

(SC)
SYMBOL

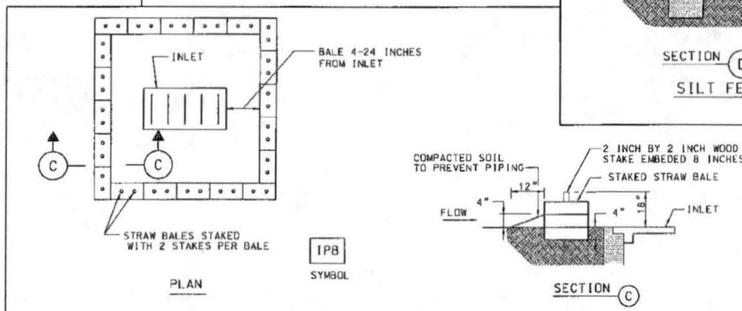
STABILIZED CONSTRUCTION EXIT



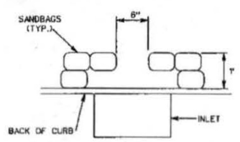
CONSTRUCTION NOTE:

1. SEE CONSTRUCTION NOTES FOR RFB.

SILT FENCE INLET PROTECTION BARRIER



STRAW BALE DROP INLET PROTECTION BARRIER



TYPICAL SANDBAG PLACEMENT FOR INLETS
N.T.S.

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

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Engineering and Surveying
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TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

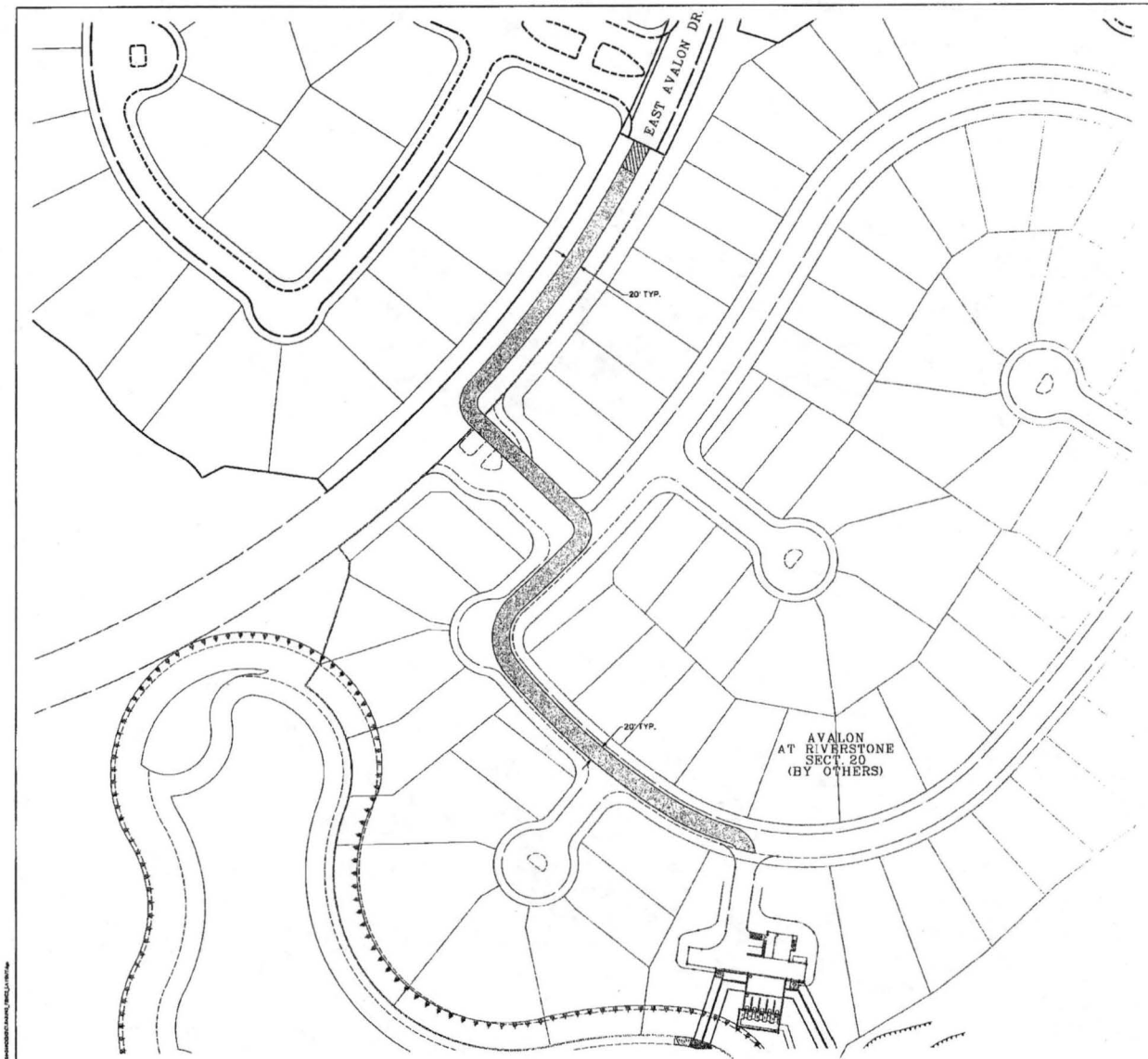
RIVERSTONE
ALCORN BAYOU PUMP STATION

POLLUTION PREVENTION DETAILS

STATE OF TEXAS
CHAD E. HASLEIGH
85468
LICENSED PROFESSIONAL ENGINEER

SHEET C8

JOB NO. 2014360 02



CONTROL BENCHMARK
U.S.C. & G.S. MONUMENT "SUGARLAND 1942-1"
ELEVATION = 71.83 N.G.V.D.
(1929, 1973 ADJUSTMENT)

N

60 30 0 60 120

SCALE: 1"=60'

LEGEND

PROP. ACCESS ROAD TO BE CLEARED

STABILIZED CONSTRUCTION ENTRANCE/EXIT

NO.	REVISION	DATE	BY

DESIGNED BY:
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SURVEY CHECKED BY:
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RIVERSTONE
ALCORN BAYOU PUMP STATION

CLEARING & ACCESS LAYOUT

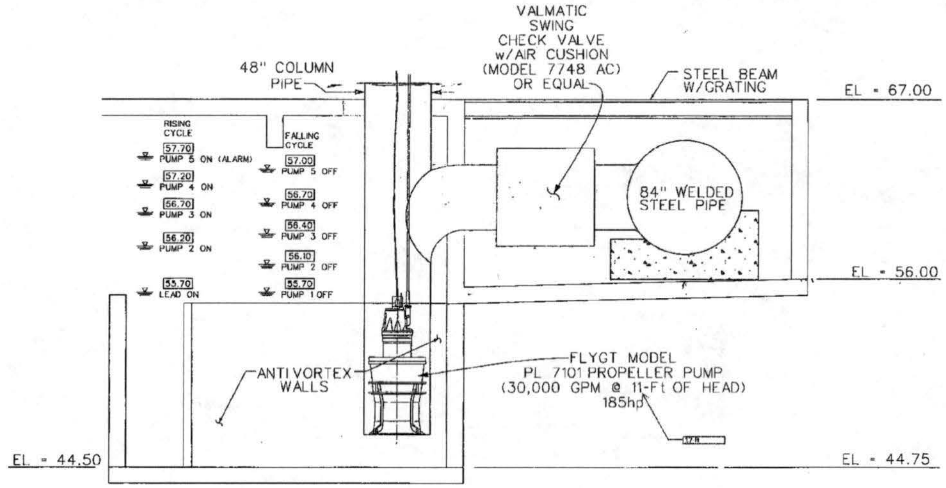
BFJ 12/2/15

STATE OF TEXAS
CHAD E. HASLINGER
86486
LICENSED
PROFESSIONAL ENGINEER
12/2/15

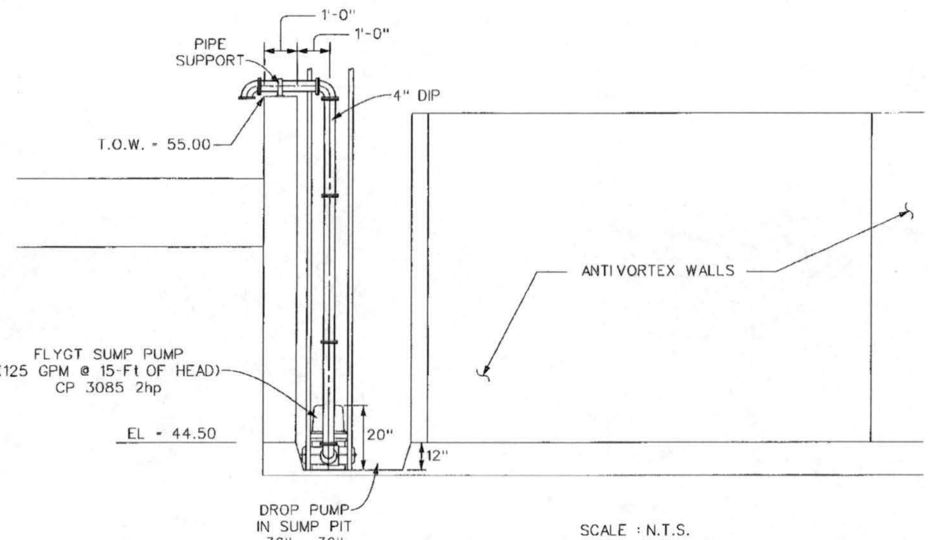
SHEET C9

JOB NO. 2014363-02

JOB NO. 2014363-02



SCALE : N.T.S.



SCALE : N.T.S.

NO.	REVISION	DATE	BY

DESIGNED BY: ______
DESIGN CHECKED BY: ______
DRAWN BY: ______
COGO CHECKED BY: ______
SURVEY CHECKED BY: ______
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QA/QC REVISIONS BY: ______

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RIVERSTONE
ALCORN BAYOU PUMP STATION

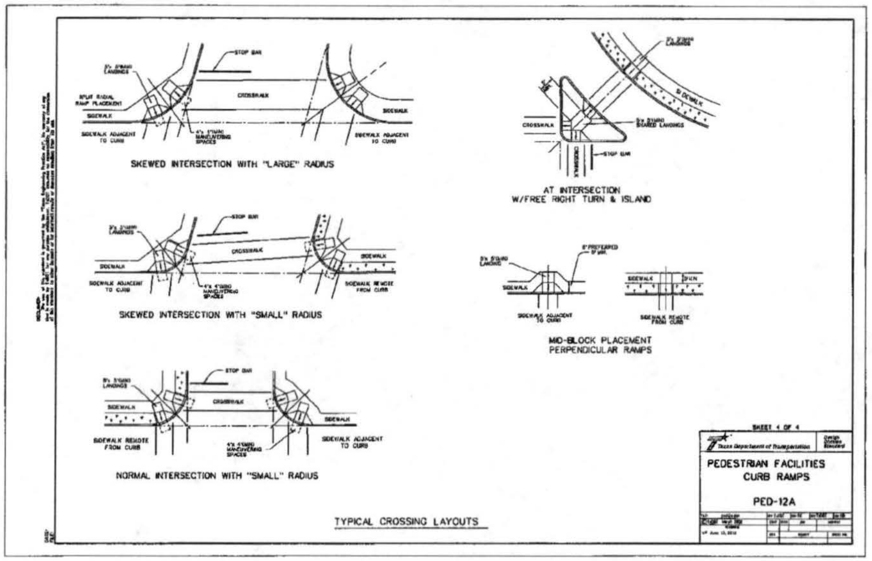
MISCELLANEOUS DETAILS

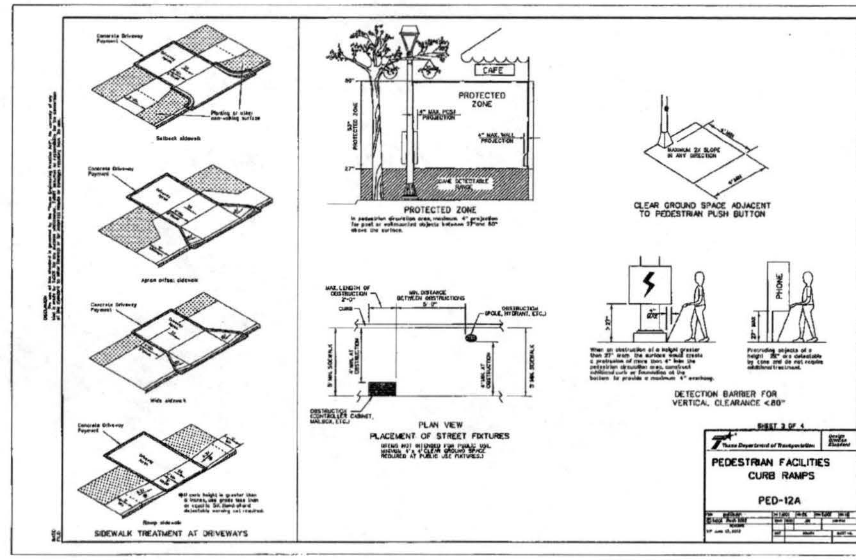
BEN 12/02/15

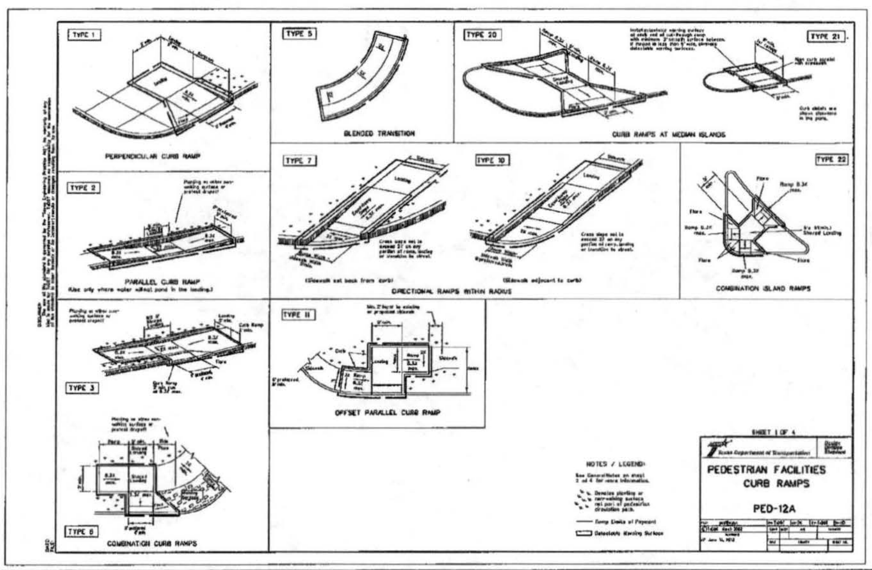
STATE OF TEXAS — CHAD E. HABLINSKI — 86460 — LICENSED PROFESSIONAL ENGINEER

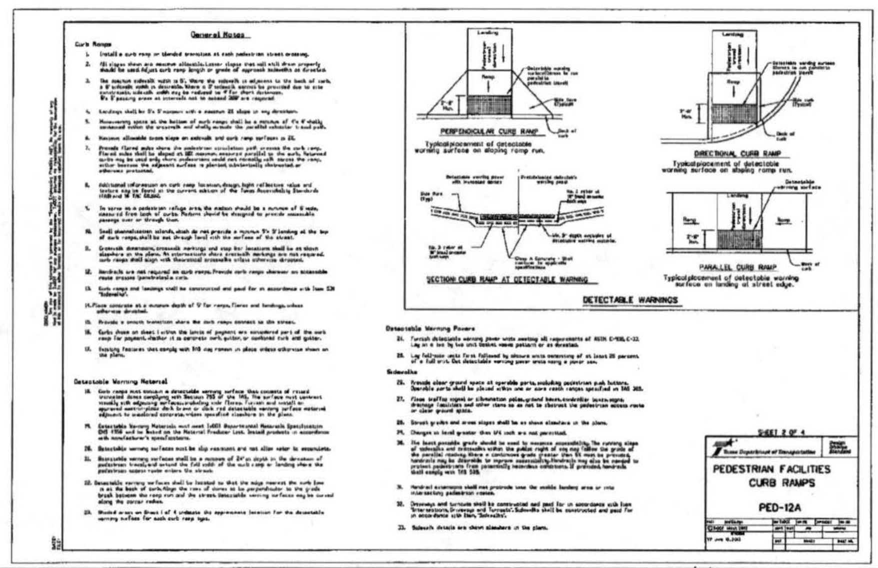
SHEET C10

JOB NO. 2014369-02









NO.	REVISION	DATE	BY

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DESIGN CHECKED BY:
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COGO CHECKED BY:
SURVEY CHECKED BY:
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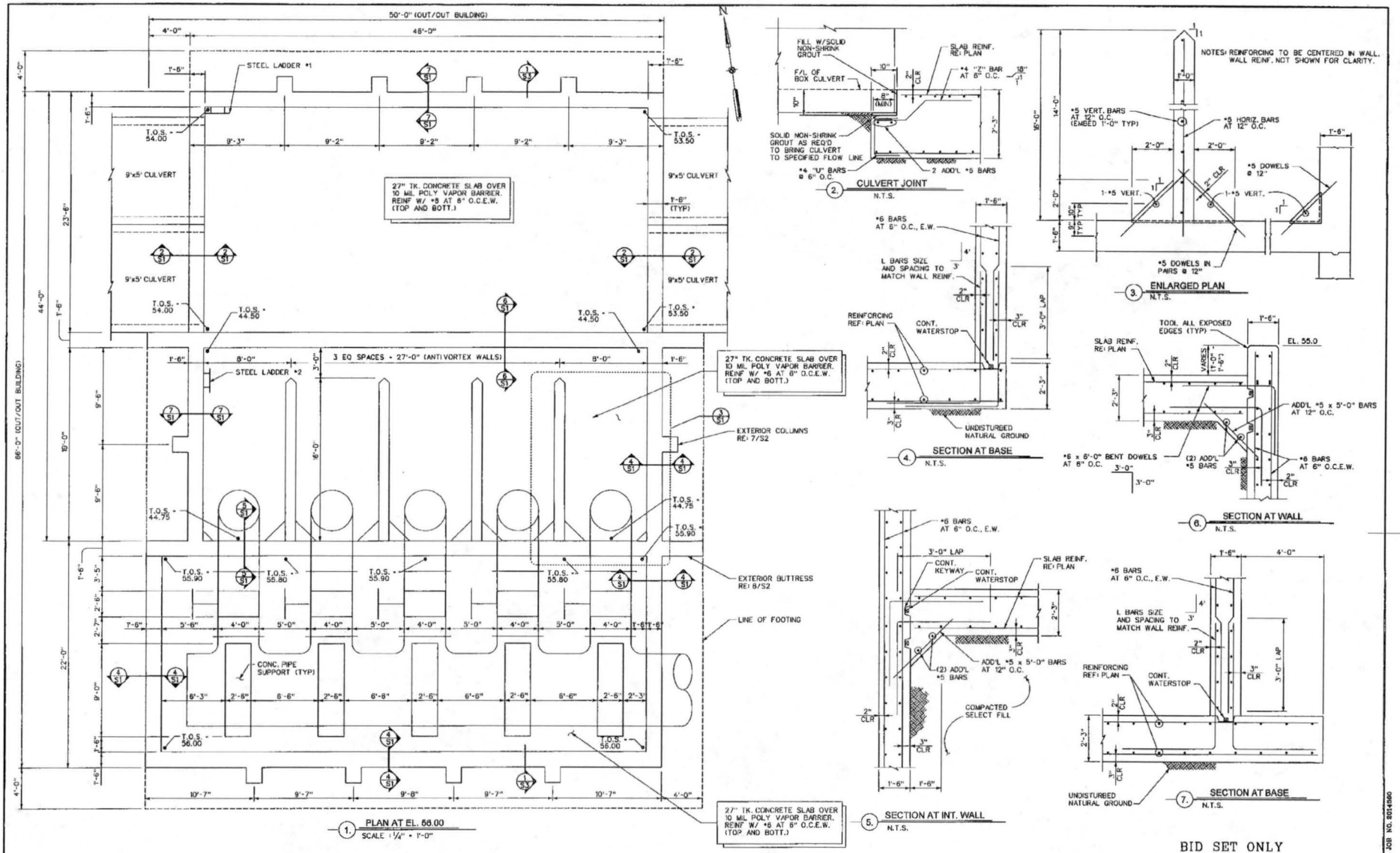
RIVERSTONE
ALCORN BAYOU PUMP STATION

STANDARD TxDOT PEDESTRIAN FACILITIES - PED 12A

STATE OF TEXAS
CHAD E. HABUNSIN
85480
LICENSED
PROFESSIONAL ENGINEER

SHEET C11

JOB NO. 2014360-02



NO.	REVISION	DATE	BY

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DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
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QA/QC REVISIONS BY:

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RIVERSTONE
ALCORN BAYOU PUMP STATION

FOUNDATION PLAN

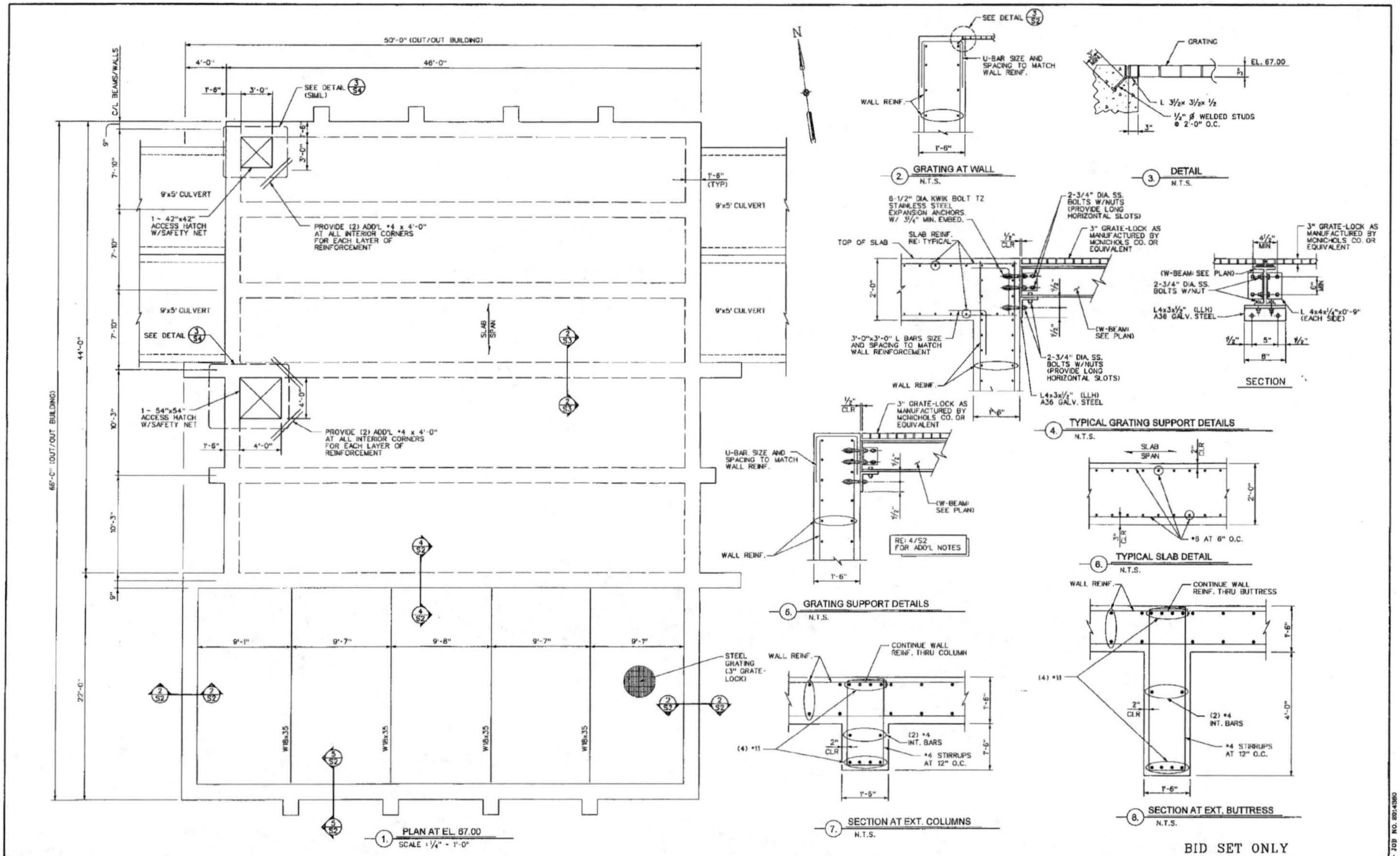
12/10/15

CORBETT L. FREEMAN 86913 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

SHEET S1

JOB NO. 2014060

L.I.D. 15 PUMP STATION - JOB NO. 2014060



BID SET ONLY

NO.	REVISION	DATE	BY

DESIGNED BY:
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COGO CHECKED BY:
SURVEY CHECKED BY:
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QA/QC REVISIONS BY:

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RIVERSTONE
ALCORN BAYOU PUMP STATION

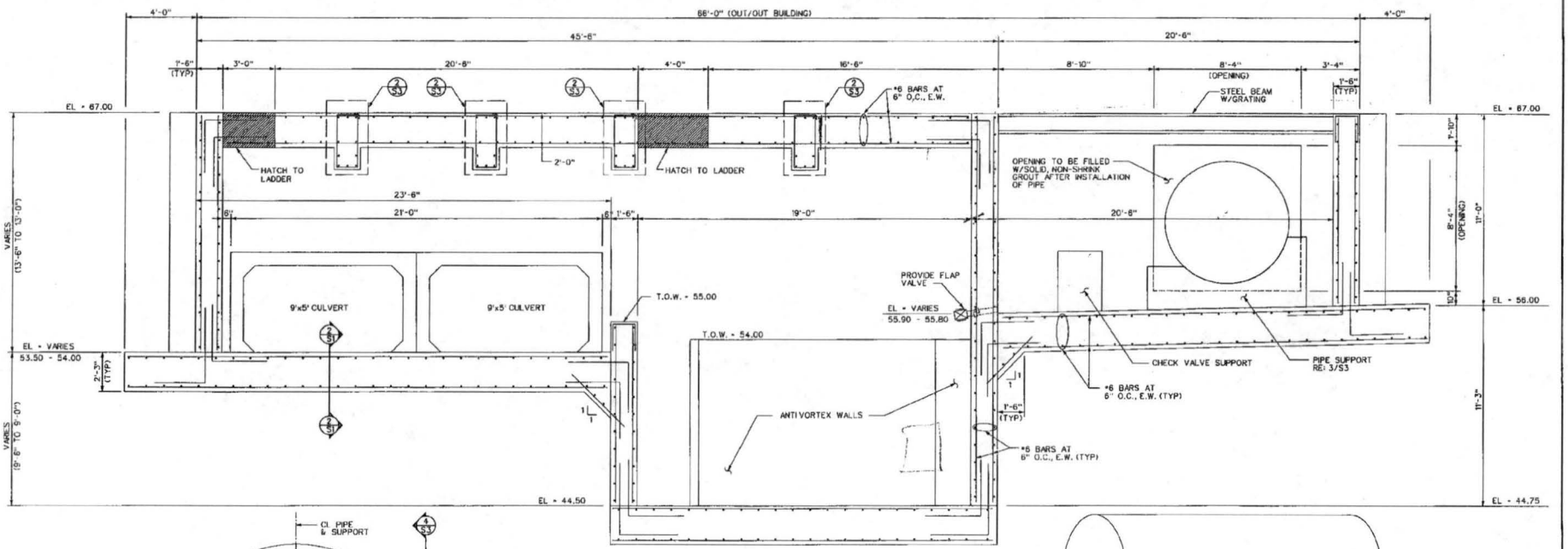
STORMWATER PUMP STATION
PLAN @ ELV. 67.00

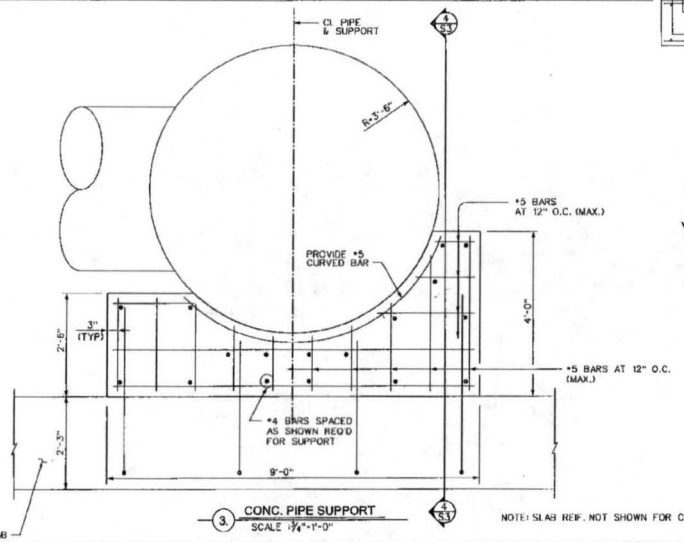
CORBETT L. FREEMAN

SHEET S2

JOB NO. 2014360

L.I.D 15 PUMP STATION - JOB NO. 2014360

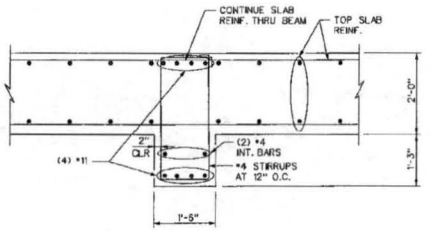




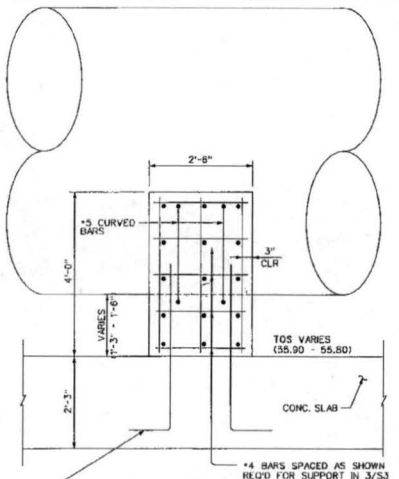
3. CONC. PIPE SUPPORT
SCALE: 3/4"=1'-0"

NOTE: SLAB REIF. NOT SHOWN FOR CLARITY.

1. OVERALL SECTION
SCALE: 1/8"=1'-0"



2. SECTION AT BEAM
SCALE: 3/4"=1'-0"



4. CONC. PIPE SUPPORT
SCALE: 3/4"=1'-0"

NOTE: SLAB REIF. NOT SHOWN FOR CLARITY.

BID SET ONLY

NO.	REVISION	DATE	BY

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RIVERSTONE
ALCORN BAYOU PUMP STATION

STORMWATER PUMP STATION SECTION & DETAILS

STATE OF TEXAS — CORBETT L. FREEMAN — 86913 — LICENSED PROFESSIONAL ENGINEER

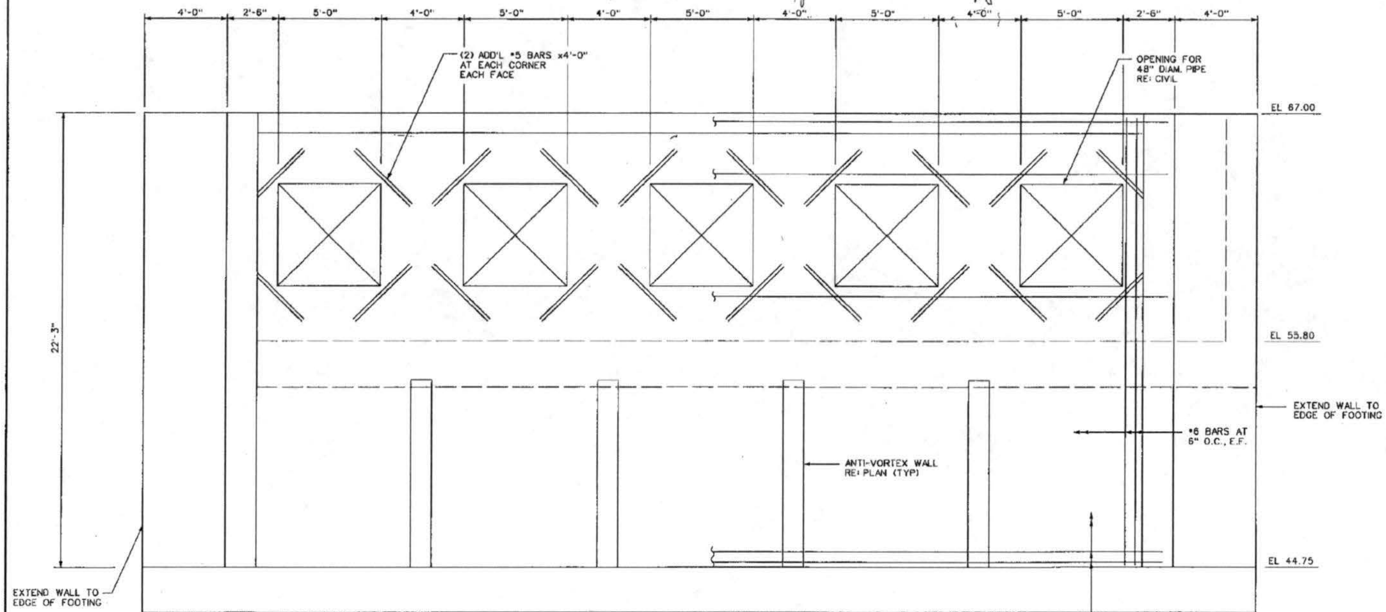
12/9/15

SHEET S3

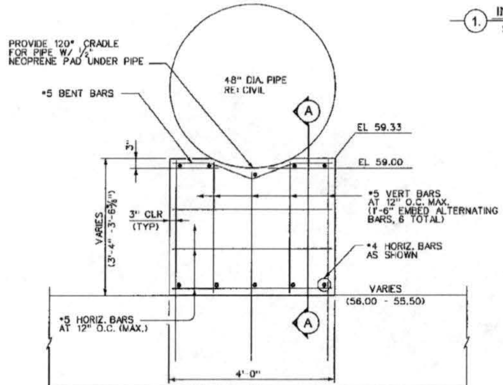
OF SHEETS

JOB NO. 2014380

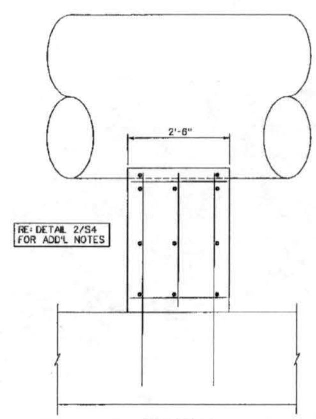
L:\13 PUMP STATION - JOB NO. 2014380



1. INTERIOR WALL ELEVATION
SCALE: 3/8"=1'-0"



2. PIPE SUPPORT DETAIL
SCALE: 3/4"=1'-0"



SECTION A-A

BID SET ONLY

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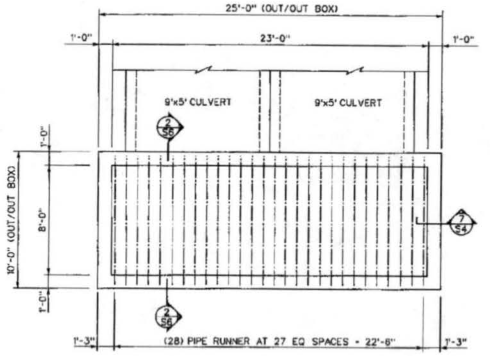
RIVERSTONE
ALCORN BAYOU PUMP STATION

WALL & PIPE SUPPORT DETAIL

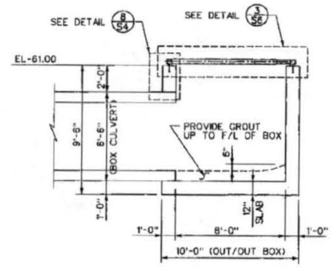
STATE OF TEXAS — CORNETT L. FREEMAN — 85913 — LICENSED PROFESSIONAL ENGINEER

SHEET S4
OF SHEETS
JOB NO. 2014360

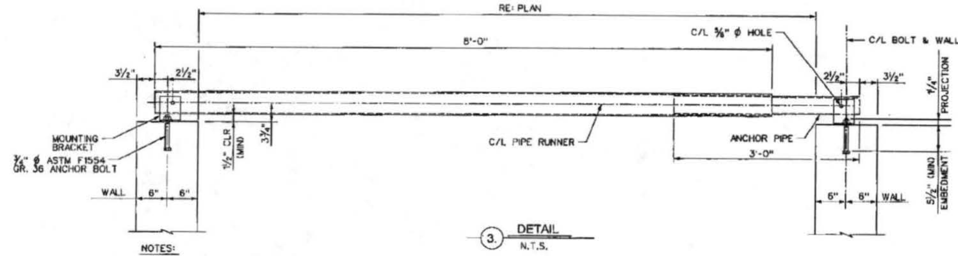
L.I.D 15 PUMP STATION - JOB NO. 2014360



1. PIPE RUNNER PLAN
SCALE : 1/4" = 1'-0"



2. OVERALL SECTION
SCALE : 1/4" = 1'-0"

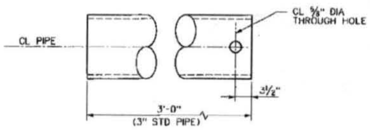


3. DETAIL
N.T.S.

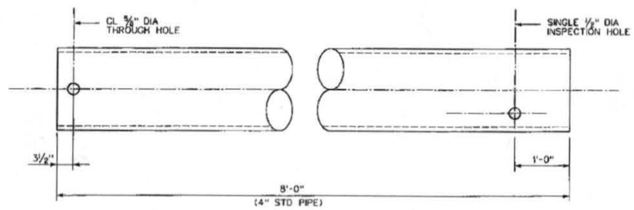
NOTES:

1. AFTER INSTALLATION OF PIPE RUNNER, THE 1/2" INSPECTION HOLE SHALL BE UTILIZED TO ENSURE THAT THE LAP OF THE ANCHOR PIPE WITH THE PIPE RUNNER IS ADEQUATE.

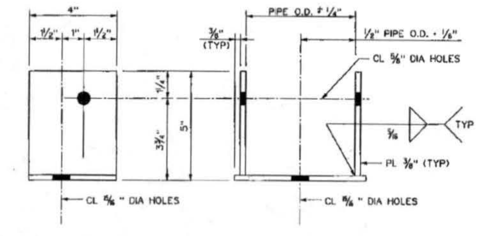
2. AT CONTRACTOR'S OPTION, AN EPOXY ANCHORAGE SYSTEM MAY BE USED. ANCHORAGE SYSTEM CHOSEN MUST BE ABLE TO ACHIEVE AN ULTIMATE TENSILE RESISTANCE OF 20 KIPS. ANCHOR DIAMETER SHALL BE 3/4". THE CONTRACTOR MUST PROVIDE EVIDENCE TO THE ENGINEER THAT THIS CAN BE ACHIEVED. EVIDENCE OF ADEQUATE TENSILE RESISTANCE CAN BE BASED ON THE MANUFACTURER'S PUBLISHED VALUES OF ULTIMATE TENSILE STRENGTH (ANCHOR SPACING AND EDGE DISTANCE MUST BE ACCOUNTED FOR). ANCHOR INSTALLATION, INCLUDING HOLE SIZE, DRILLING, AND CLEAN-OUT, MUST BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.



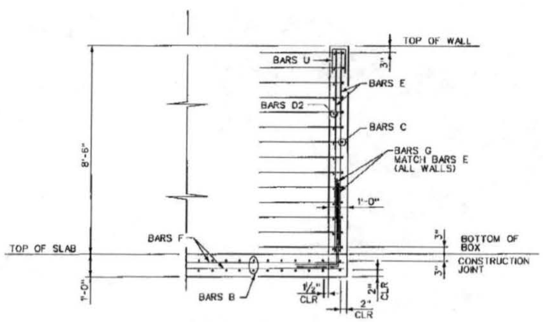
4. ANCHOR PIPE DETAILS
N.T.S.



5. PIPE RUNNER DETAILS
N.T.S.



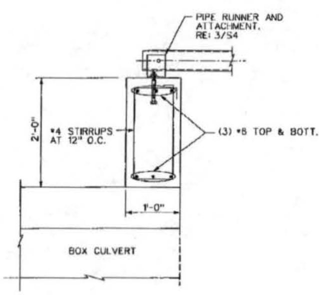
6. MOUNTING BRACKET DETAILS
N.T.S.



7. SECTION OF TYP. REINFORCING
N.T.S.

BAR TABLE

BARS	SIZE	SPACING
B	#5	6"
C	#5	6"
D_2	#5	6"
E	#5	6"
F	#5	6"
U	#5	6"



8. BEAM DETAIL
N.T.S.

BID SET ONLY

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
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COGO CHECKED BY:
SURVEY CHECKED BY:
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RIVERSTONE
ALCORN BAYOU PUMP STATION

PIPE RUNNER PLAN & DETAILS

STATE OF TEXAS
CORDELL L. FREEMAN
88013
LICENSED PROFESSIONAL ENGINEER

SHEET S5

JOB NO. 2014860

L.I.D 15 PUMP STATION - JOB NO. 2014360

FOUNDATION NOTES:

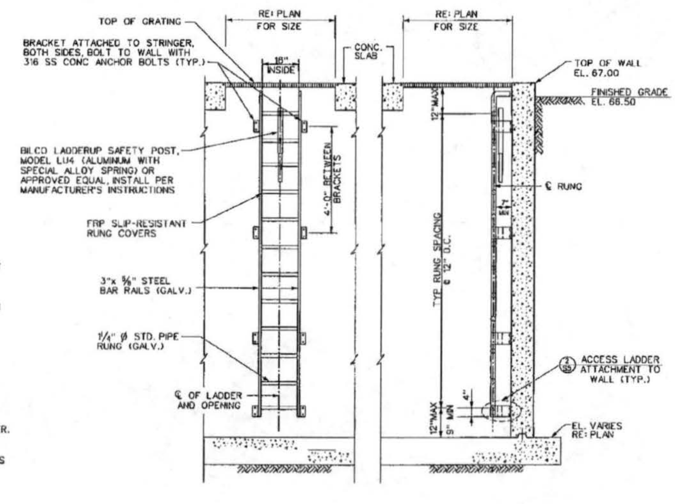
1. ALL EXCAVATIONS SHALL BE CONDUCTED IN THE DRY, AND PROVISIONS MADE TO PREVENT THE BOTTOM OF ALL EXCAVATIONS FROM FREEZING OR FLOODING.
2. SOIL PREPARATION AT THE BOTTOM OF THE WET WELL SHALL BE AS FOLLOWS: (1) AFTER EXCAVATION, THE SUBGRADE SHALL BE COMPACTED TO PROVIDE A UNIFORMLY STABLE AND COMPACTED BOTTOM, AND (2) A MINIMUM OF 3-INCH LEAN CONCRETE MUD SLAB SHALL THEN BE PLACED IMMEDIATELY TO PREVENT THE DISTURBANCE OF THE SUPPORTING SOIL CAUSED BY CONSTRUCTION.
3. GROUNDWATER CONTROL MAY BE REQUIRED FOR INSTALLATION OF THE LIFT STATION. CONTRACTOR SHALL PROVIDE POSITIVE METHODS OF GROUNDWATER MANAGEMENT PRIOR TO STARTING EXCAVATION OPERATIONS. IF REQUIRED, GROUNDWATER SHALL BE LOWERED AT LEAST 3 FEET BELOW THE BOTTOM OF THE EXCAVATION TO PROVIDE A FIRM WORKING SURFACE. IF REQUIRED, DEWATERING SHALL CONTINUE UNTIL THE UTILITY INSTALLATION HAS BEEN COMPLETED AND THAT THE DEWATERING SYSTEM BE TURNED OFF IN STAGES TO ALLOW GROUNDWATER TO RECOVER TO ITS ORIGINAL LEVEL GRADUALLY, OVER A PERIOD OF ABOUT 3 TO 5 DAYS.
4. BENEATH THE VAULT FLOOR OR PIPE SLAB FOUNDATION, CEMENT STABILIZED SAND, HAVING A MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 100 PSI IN 48-HOURS, SHALL BE USED TO A MINIMUM DEPTH OF 6 INCHES. ALSO, USE CEMENT STABILIZED SAND BACKFILL BENEATH AND OUTSIDE THE INFLUENT LINES FROM LIMITS OF LIFT STATION EXCAVATION. ANY OVER EXCAVATION BEYOND THE 6-INCH DEPTH FOR FOUNDATION SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND.
5. IF OPEN CUT IS USED, SELECT FILL BEHIND WALLS SHALL CONSIST OF A SANDY CLAY SOIL WITH A PLASTICITY INDEX BETWEEN 7 AND 15, AND COMPACTED IN 8-INCH LIFTS TO 95% ASTM D698 WITHIN -2% TO +2% OF OPTIMUM MOISTURE. BACKFILL PLACED WITHIN 5 FEET OF THE WALLS SHALL BE HAND COMPACTED.
6. IF CAISSON CONSTRUCTION IS USED, GROUTING OF VOID SPACE BETWEEN CAISSON STRUCTURE AND GROUND EXCAVATION SHALL BE PER SPECIFICATION SECTION ENTITLED, "GROUTING FOR CAISSON CONSTRUCTION."
7. THE AREA AROUND THE ENTIRE STRUCTURE SHALL BE WELL GRADED TO DRAIN AWAY FROM THE STRUCTURE WITHOUT DRAINING TO ADJACENT PROPERTIES.

CONCRETE NOTES:

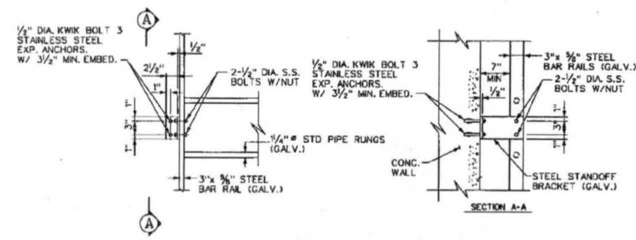
1. DETAILS OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.
2. CONCRETE CONSTRUCTION SHALL CONFORM TO THE PROJECT SPECIFICATIONS AND ACI 318 BUILDING CODE FOR REINFORCED CONCRETE. WHERE THE PROJECT SPECIFICATIONS CONFLICTS WITH ACI 318, THE STRICTER SPECIFICATION SHALL GOVERN.
3. CONCRETE PLACEMENT IN HOT OR COLD WEATHER SHALL CONFORM TO THE PROVISIONS OF ACI 305R OR 306R, RESPECTIVELY.
4. ALL REINFORCING STEEL SHALL BE GRADE 60 STEEL AS PER ASTM A615. ALL LAP SPLICES FOR CONTINUOUS REINFORCING STEEL SHALL BE 30 BAR DIAMETERS UNLESS OTHERWISE SPECIFIED. ALL REINFORCING SHOWN TO BE HOOKED SHALL HAVE STANDARD HOOKS AS PER ACI 315.
5. VAPOR BARRIER MEMBRANE FOR FOUNDATION CONSTRUCTION SHALL BE 10-MIL POLYETHYLENE. JOINTS ALONG SAID MEMBRANE SHALL BE LAPPED 6 INCHES AND SEALED WITH ADHESIVE TO PROVIDE A CONTINUOUS MOISTURE BARRIER UNDER THE ENTIRE SLAB. CARE SHALL BE TAKEN NOT TO PUNCTURE MEMBRANE.
6. ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH THE LATEST ACI CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL TERMINATE IN STANDARD HOOKS.
7. HORIZONTAL WALL REINFORCEMENT AND TEMPERATURE REINFORCEMENT SHALL LAP A MINIMUM OF 1.7Ld AT SPLICES. WALL DOWELS AND WALL BAR EXTENSIONS AND ALL STRESS SPLICES SHALL LAP A MINIMUM OF 1.7 Ld, UNLESS OTHERWISE NOTED.
8. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION PLANS, ALL CAST-IN-PLACE STRUCTURAL CONCRETE SHALL BE CLASS A CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI @ 28 DAYS.
9. UNLESS OTHERWISE SHOWN, CONCRETE COVER FOR REINFORCEMENT SHALL CONFORM TO THE SPECIFICATIONS SECTION ENTITLED, "CONCRETE REINFORCEMENT".
10. HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN OR NOTED ON THE PLANS ARE RECOMMENDED. ANY DEVIATION FROM THOSE SHOWN SHALL HAVE APPROVAL OF THE ENGINEER.
11. ANY STOP IN FRAMED CONCRETE WORK MUST BE MADE IN THE CENTER OF THE SPAN AND INCORPORATE AN APPROVED KEYWAY. REINFORCEMENT SHALL EXTEND THROUGH THESE JOINTS IF REQUIRED FOR CONTINUITY.
12. ALL EXPOSED EDGES OF BEAMS, COLUMNS, SLABS AND WALLS SHALL BE CHAMFERED ¾" UNLESS MASONRY OR OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.
13. REFER TO PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL SLEEVES, PIPES, CONDUITS AND MISCELLANEOUS ANCHORING DEVICES TO BE INCORPORATED IN THE CONSTRUCTION.

STRUCTURAL STEEL NOTES:

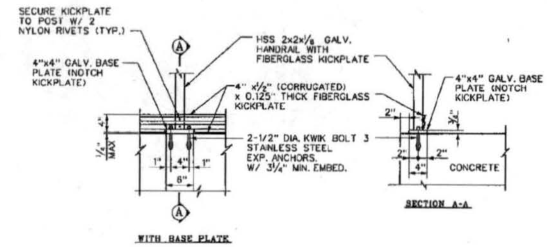
1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
2. ALL STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED AND CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS:
   - WIDE FLANGE SHAPES A992
   - ALL OTHER SHAPES A36
3. ALL BOLTED CONNECTIONS SHALL BE MADE WITH 3/4-INCH DIAMETER ASTM A-325 S.S. BOLTS EXCEPT AS OTHERWISE SHOWN OR NOTED.
4. FIELD CONNECTIONS SHALL BE BOLTED, EXCEPT AS OTHERWISE SHOWN OR NOTED.
5. ALL WELDING SHALL CONFORM TO THE LATEST SPECIFICATION OF THE AMERICAN WELDING SOCIETY. ALL WELDED CONNECTIONS SHALL BE MADE WITH AWS A5.1 OR A5.5 EXX 18 ELECTRODE.
6. ALL WELDING IS TO BE PERFORMED BY WELDERS CERTIFIED BY THE AMERICAN WELDING SOCIETY.
7. ALL ANCHOR BOLTS & MISC. EMBEDDED STEEL SHALL BE STAINLESS STEEL SS316.



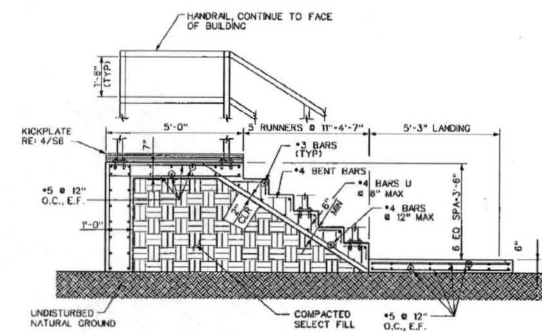
1. ENTRY ACCESS LADDER
SCALE: ½"=1'-0"



2. ACCESS LADDER ATTACHMENT TO WALL
SCALE: ½"=1'-0"



4. HANDRAIL POST FASTENING TO CONCRETE
N.T.S.



3. CONCRETE STEPS DETAIL
N.T.S.

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DESIGN CHECKED BY:
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COGO CHECKED BY:
SURVEY CHECKED BY:
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9990 Richmond Avenue, Suite 450 N
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RIVERSTONE
ALCORN BAYOU PUMP STATION

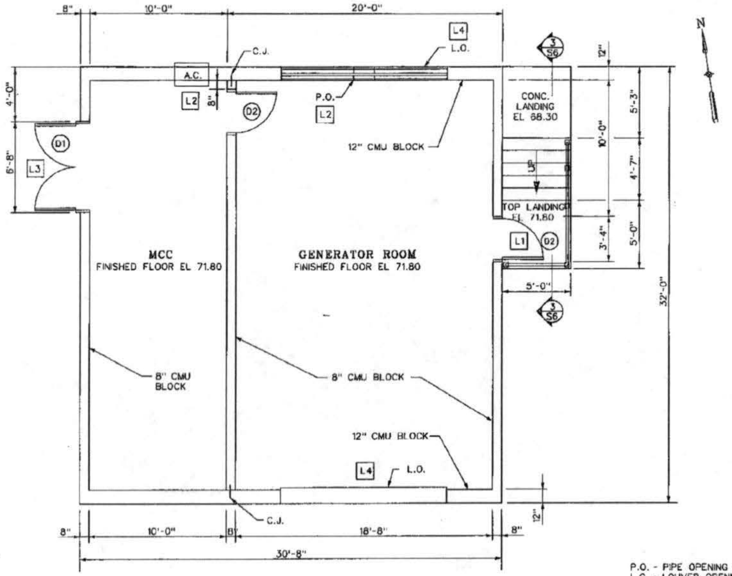
LADDER AND STAIR DETAILS AND NOTES

STATE OF TEXAS CORBETT L. FREEMAN 86913 LICENSED PROFESSIONAL ENGINEER

SHEET S6

JOB NO. 2014360

L.I.D 15 PUMP STATION- JOB NO. 2014360



1. WALL PLAN
SCALE : 1/4" = 1'-0"

P.O. - PIPE OPENING
L.O. - LOUVER OPENING
A.C. - AIR CONDITIONER UNIT OPENING
C.J. - CONTROL JOINT
(D1) - DOOR MARK (SEE DOOR SCHEDULE)
[L1] - LINTEL MARK (SEE LINTEL SCHEDULE)

LINTEL SCHEDULE

MARK	SIZE	SPAN	REMARKS
L1	8" x 8", 2-#5 AT BOTTOM, 1 1/2"	3'-4" (MAX. OPENING)	AT MCC INTERIOR DOOR, GENERATOR ROOM, EXTERIOR DOOR AND LOUVER OPENING
L2	12" x 8", 2-#5 AT BOTTOM, 1 1/2"	2'-8" (MAX. OPENING)	AT A.C. OPENING AND EXHAUST OPENING
L3	8" x 16", 2-#5 AT BOTTOM, 1 1/2"	6'-8" (MAX. OPENING)	AT MCC ROOM EXTERIOR DOUBLE DOOR OPENING
L4	12" x 16", 3-#5 AT BOTTOM, 1 1/2"	12'-0" (MAX. OPENING)	AT GENERATOR ROOM NORTH AND SOUTH WALL, LARGE LOUVER OPENING

DOOR SCHEDULE

MARK	SIZE	HARDWARE	REMARKS
D1	DOUBLE 3' X 7' DOOR	2- SET BUTT HINGES 2- DOOR STOPS AND HOLDERS 1- HIGH QUALITY HASP 2- FLUSH BOLTS 1- DUSTPROOF STRIKE 1- LATCH SET SCHLAGE C SERIES	STEEL HOLLOW METAL, FLUSH 18 GA. FACES, FLUSH TOP, POLYSTYRENE CORE INSUL. GAL. & SHOP PRIMED. THRESHOLD & WEATHER STRIPING TO BE PROVIDED.
D2	3' X 7' DOOR	1- SET BUTT HINGES 1- DOOR STOPS & HOLDER 1- FLUSH BOLTS 1- LATCH SET SCHLAGE C SERIES	

STRUCTURAL NOTES:

1. THE STRUCTURAL DRAWINGS AS PRESENTED HEREIN HAVE BEEN PREPARED TO CONFORM TO THE INTERNATIONAL BUILDING CODE AS ADOPTED BY THE CITY OF MISSOURI CITY.
2. THE DESIGN ROOF LIVE LOAD ASSUMED FOR THIS PROJECT IS 20 PSF; THE DESIGN FLOOR LOAD ASSUMED IS 335 PSF (DEAD AND LIVE LOAD). THE ULTIMATE WIND PRESSURE ON THE STRUCTURE WAS BASED ON A BASIC WIND VELOCITY OF 120 MPH.

PRECAST CONCRETE SLAB UNIT NOTES:

1. SUPERIMPOSED LOADS THAT SHALL BE CONSIDERED IN THE DESIGN AND FABRICATION OF THE HOLLOW-CORE PRESTRESSED CONCRETE PLANKS SHALL INCLUDE THE FOLLOWING:
   A. SELF-WEIGHT OF SLAB UNIT
   B. 25 PSF DEAD LOAD
   C. 20 PSF LIVE LOAD
   D. 800 LB CONCENTRATED EXHAUST SILENCER LOAD LOCATED AS SHOWN ON THE MEP PLANS.
2. SHOP DRAWING FOR EACH TYPE OF PRECAST SECTION SHALL BE SUBMITTED SHOWING SETTING PLAN, SECTION DIMENSIONS AND PROPERTIES, REINFORCING AND RELATED DETAILS. DESIGN CALCULATIONS FOR PRESTRESSED UNITS SHALL BE PREPARED AND SEALED BY A TEXAS LICENSED PROFESSIONAL ENGINEER AND SUBMITTED WITH THE SHOP DRAWINGS.

CONCRETE MASONRY UNIT NOTES:

1. MASONRY CONSTRUCTION SHALL CONFORM TO ACI 530, "BUILDING CODE REQUIREMENTS AND SPECIFICATION FOR MASONRY STRUCTURES". THE COMPRESSIVE STRENGTH OF MASONRY SHALL BE 1,500 PSI.
2. REINFORCED CMU WALL CONSTRUCTION SHALL CONSIST OF WALL BLOCKS CONFORMING TO ASTM C90 STANDARD SPECIFICATIONS FOR LOAD-BEARING CONCRETE MASONRY UNITS.
3. MORTAR FOR MASONRY WORK SHALL BE TYPE S MORTAR BY PROPORTION IN ACCORDANCE WITH ASTM C270 STANDARD SPECIFICATION FOR MORTAR FOR UNIT MASONRY. GROUT FOR MASONRY SHALL BE COARSE GROUT BY PROPORTION IN ACCORDANCE WITH ASTM C476 STANDARD SPECIFICATION FOR GROUT FOR MASONRY.
4. CONTINUOUS WIRE JOINT REINFORCEMENT CONFORMING TO ASTM A-82 SHALL BE USED WITH EVERY OTHER COURSE (16" MAXIMUM SPACING) OF CONCRETE BLOCKS. WITH THE FIRST LAYER OF SAID REINFORCEMENT BEING INSTALLED BETWEEN THE FIRST AND SECOND COURSE OF CONCRETE BLOCKS. MINIMUM 6" LAP SHALL BE PROVIDED AT THE JOINING OF WIRE JOINT REINFORCEMENT SECTIONS.
5. THE MASONRY WALLS SHALL BE PAINTED BOTH INSIDE AND OUTSIDE AS FOLLOWS. APPLY "DEVOE BLOXFIL 4000 INT./EXT. HEAVY DUTY ACRYLIC BLOCK FILLER," OR APPROVED EQUAL, AT THE RATE OF 50-75 SQ.FT. PER GALLON OR AS TO FILL AND SMOOTH THE SURFACE OF THE MASONRY AFTER MORTAR JOINTS HAVE CURED AT LEAST 30 DAYS. TWO COATS OF PAINT (DEVOE DEVFLEX 4206 INTERIOR/EXTERIOR WATERBORNE ACRYLIC SEMI-GLOSS ENAMEL OR APPROVED EQUAL) SHALL BE APPLIED AFTERWARDS AT THE RATE OF 330-430 SQ.FT. PER GALLON. ALL WORK SHALL BE PERFORMED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
6. FLOOR SHALL BE PAINT COATED USING COATING SYSTEM DC 11 PER DEVOE OR APPROVED EQUAL, WHICH SHALL CONSIST OF PRE-PRIME 167 PENETRATING SEALER WITH DEVRAN 124 CHEMICAL RESISTANT FLOOR COATING. PREPARATION OF SUBSTRATE AND MIL THICKNESS OF EACH COATING APPLICATION SHALL BE AS PER MANUFACTURER'S REQUIREMENTS.

TIMBER NOTES:

1. ALL TIMBER BOLTING SHALL BE DESIGNATED A307 USING HEX NUTS AND WASHERS (UNLESS OTHERWISE NOTED). BOLT HOLES SHALL BE 1/16 INCH LARGER THAN THE BOLT DIAMETER. NUTS SHOULD BE TIGHTENED SNUGLY, BUT NOT SO TIGHTLY AS TO CAUSE CRUSHING OF THE WOOD UNDER THE WASHER OR PLATE.
2. LUMBER USED FOR THE FASCIA NAILING BOARD SHALL BE PRESERVATIVELY PRESSURE TREATED IN ACCORDANCE WITH AWPA STANDARDS.

ROOF NOTES:

1. ROOFING SYSTEM SHALL BE AN ASPHALT GLASS-FIBER FELT 4-PLY ROOF MEMBRANE WITH AGGREGATE SURFACE AS PER SECTION ENTITLED, "BUILT-UP ROOFING".
2. ROOFING CONTRACTOR SHALL BE A CERTIFIED INSTALLER WITH MANUFACTURER OF ROOFING SYSTEM AND SHALL PRESENT EVIDENCE OF SUCH CERTIFICATION PRIOR TO THE ROOF SYSTEM'S PLACEMENT.
3. CONTRACTOR SHALL PRESENT A ROOF SYSTEM SAMPLE AND TECHNICAL DATA AND SPECIFICATIONS, ALONG WITH A COPY OF THE MANUFACTURER'S WARRANTY AGREEMENT FOR APPROVAL.
4. CONTRACTOR SHALL ADHERE TO THE ROOF SYSTEM AND RIGID INSULATION MANUFACTURER'S REQUIREMENTS FOR INSTALLATION. CONTRACTOR SHALL PROVIDE, FOR APPROVAL, TERMINATION AND FLASHING DETAILS THAT ARE ACCEPTABLE BY THE MANUFACTURER.
5. CONTRACTOR SHALL MAKE ARRANGEMENTS TO HAVE THE ROOF SYSTEM MANUFACTURER'S REPRESENTATIVE VISIT THE JOB SITE TO ASCERTAIN COMPLIANCE OF MANUFACTURER'S REQUIREMENTS FOR INSTALLATION.

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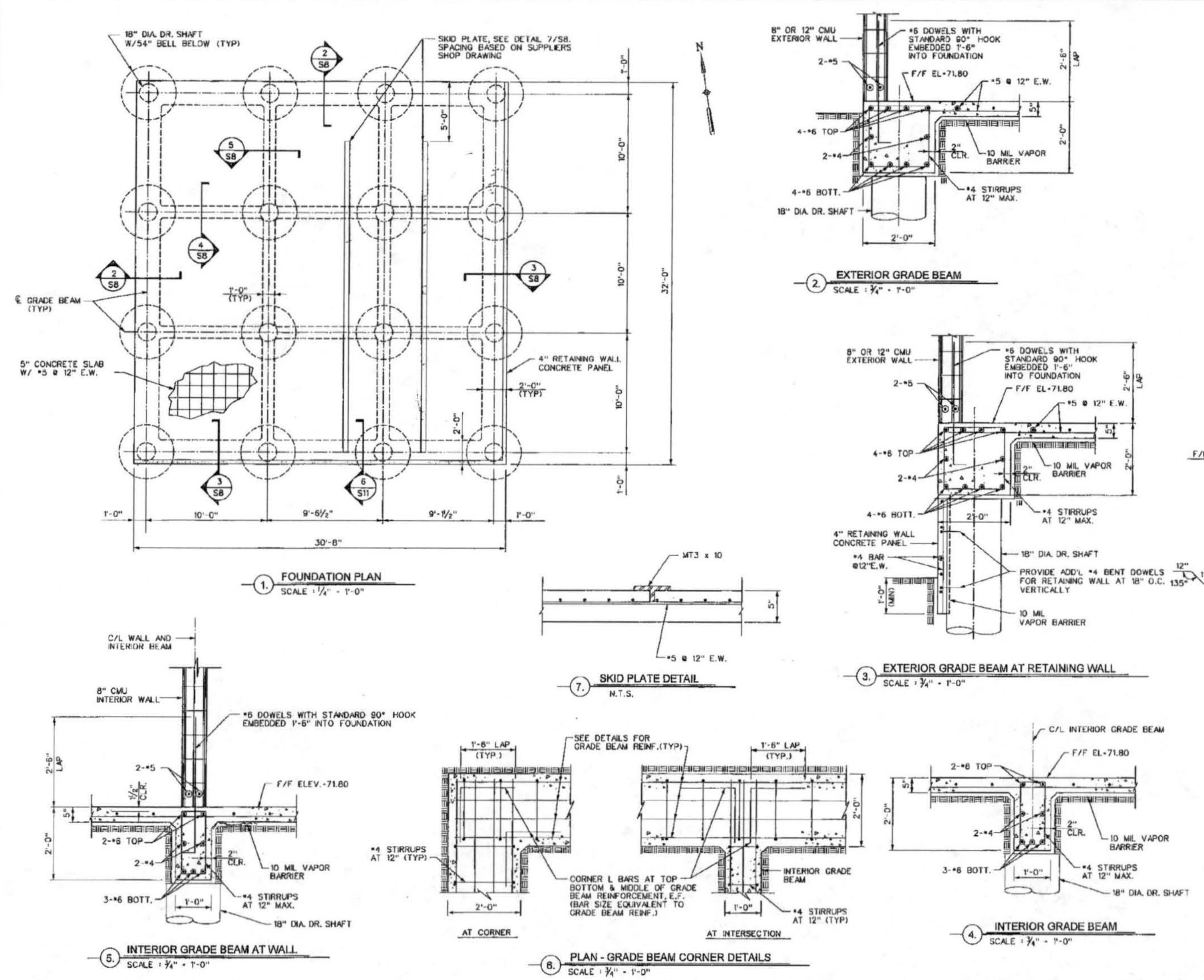
RIVERSTONE
ALCORN BAYOU PUMP STATION

GENERATOR/ MCC BUILDING
FLOOR PLAN, NOTES
AND SCHEDULES

STATE OF TEXAS — CORBETT L. FREEMAN — 86913 — LICENSED PROFESSIONAL ENGINEER
12/02/15

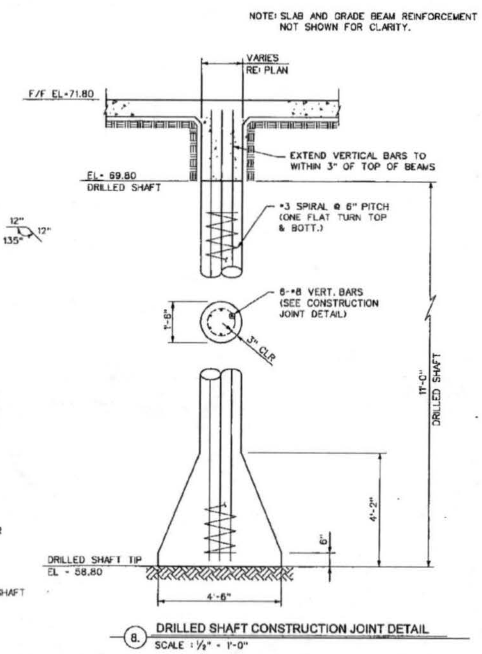
SHEET S7
JOB NO. 2014360

L.I.D 15 PUMP STATION - JOB NO. 2014360



BUILDING FOUNDATION NOTES:

1. FOR GENERATOR BUILDING SLAB-ON-GRADE FOUNDATION, EXCAVATE TO 4 FEET BELOW EXISTING GRADE. EXCAVATION LIMITS SHALL EXTEND AT LEAST 3 FEET BEYOND BUILDING LINE. COMPACT THE UPPER 8 INCHES AT THE BASE OF THE EXCAVATION CUT TO 97% ASTM D698 WITHIN PLUS OR MINUS 2% OF OPTIMUM MOISTURE. FILL WITH SELECT FILL TO FINAL PAD GRADE. THE UPPER 12 INCHES OF FILL IN UNPAVED AREAS ADJACENT TO THE BUILDING SHALL CONSIST OF ON-SITE CLAY COMPACTED IN 6-INCH LIFTS TO 95% ASTM D698. COMPACT SELECT FILL IN 8-INCH LIFTS TO 97% ASTM D698 WITHIN PLUS OR MINUS 2% OF OPTIMUM MOISTURE.
2. SELECT FILL SHALL BE OF LOW TO MODERATE SHRINK-SWELL POTENTIAL AS DEFINED BY THE TEX 124-E FOR DETERMINING POTENTIAL VERTICAL RISE. SAID SELECT FILL SHALL HAVE A PLASTICITY INDEX LESS THAN 30. THE PAD OF SELECT FILL SHALL SLOPE AWAY FROM THE STRUCTURE FOR PROPER DRAINAGE.



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RIVERSTONE
ALCORN BAYOU PUMP STATION

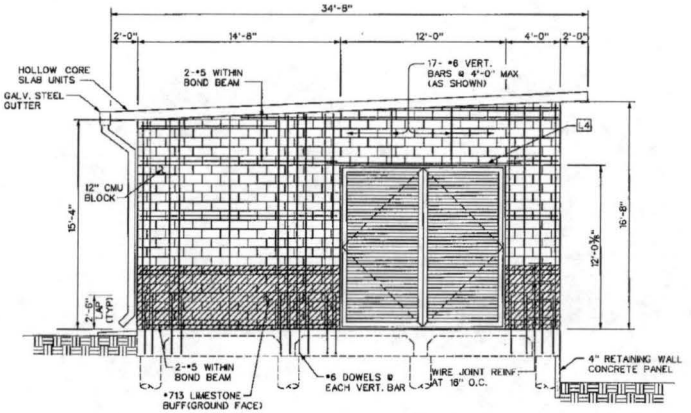
GENERATOR /MCC BUILDING FOUNDATION PLAN AND STRUCTURAL DETAILS

STATE OF TEXAS — CORBETT L. FREEMAN — 86913 — LICENSED PROFESSIONAL ENGINEER

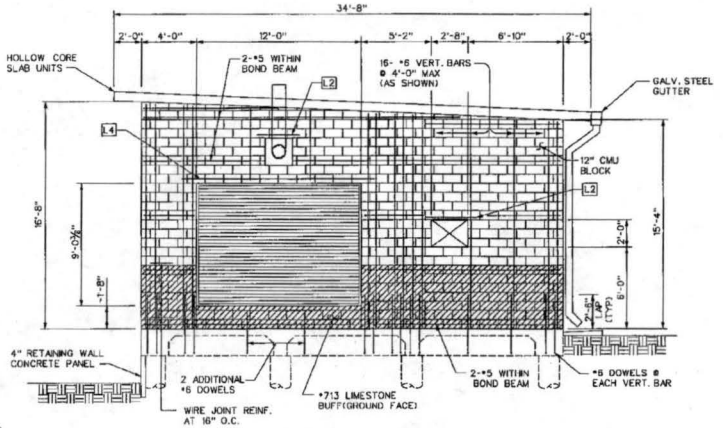
SHEET S8

JOB NO. 2014360

L.I.D 15 PUMP STATION - JOB NO. 2014360

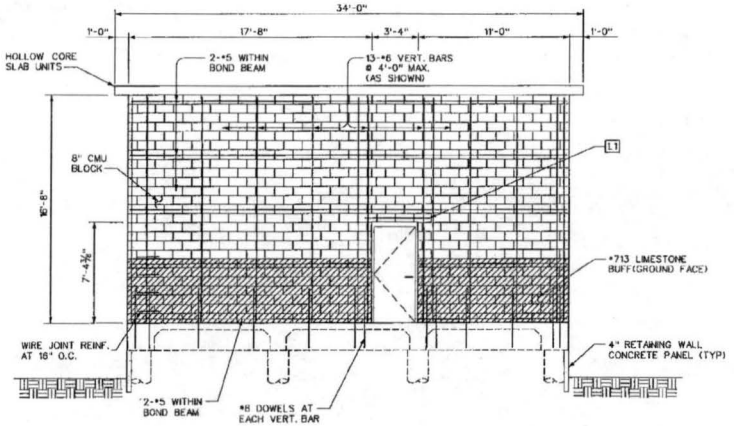


1. SOUTH BUILDING ELEVATION
SCALE : 1/4" = 1'-0"

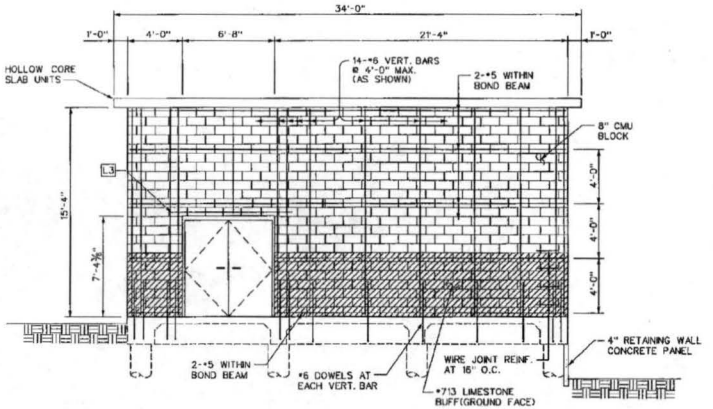


2. NORTH BUILDING ELEVATION
SCALE : 1/4" = 1'-0"

NOTE: SEE SHEET S13 FOR LINTEL SCHEDULE



3. EAST BUILDING ELEVATION
SCALE : 1/4" = 1'-0"



4. WEST BUILDING ELEVATION
SCALE : 1/4" = 1'-0"

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RIVERSTONE
ALCORN BAYOU PUMP STATION

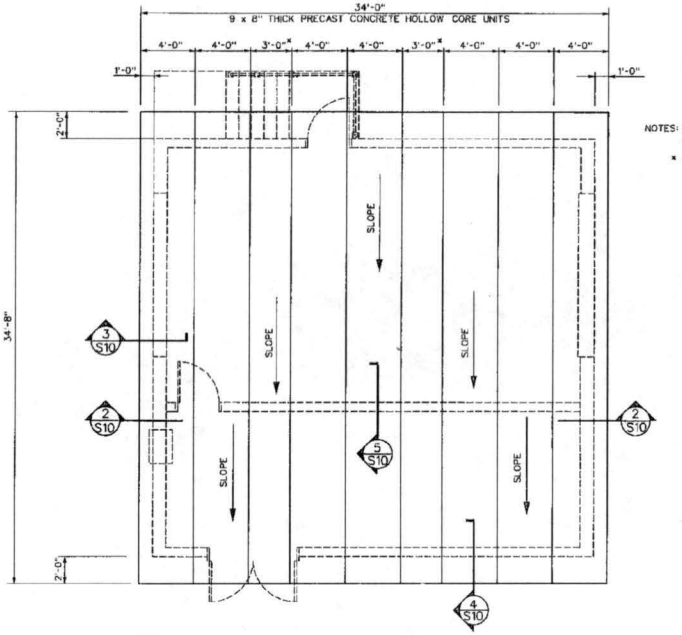
GENERATOR/ MCC BUILDING ELEVATIONS

11/6/15
STATE OF TEXAS
CORBETT L. FREEMAN
89913
REGISTERED
PROFESSIONAL ENGINEER

SHEET S9

JOB NO. 2014060

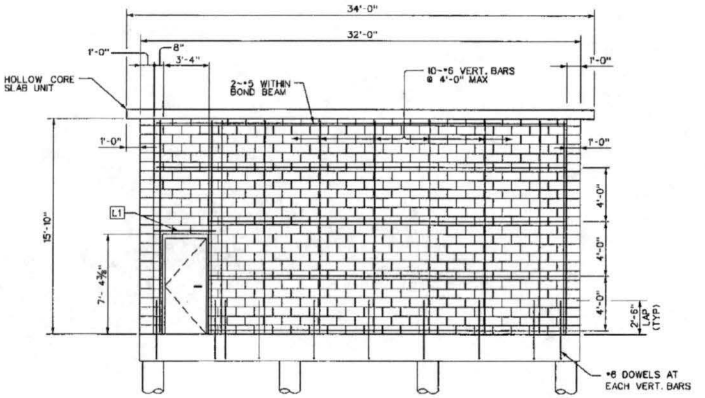
LJD 16 PUMP STATION JOB NO. 2014060



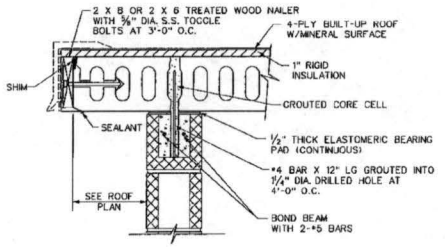
NOTES: ROOF PLAN ROTATED TO WALL AND FOUNDATION PLAN.

* BREAK 12" OFF OF TWO UNITS.

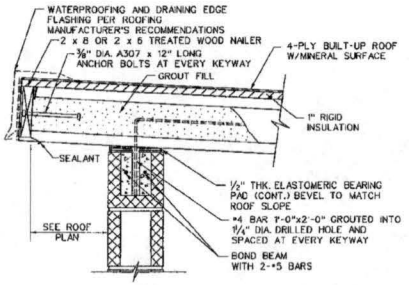
1 ROOF PLAN- GENERATOR BUILDING
SCALE : 1/4" = 1'-0"



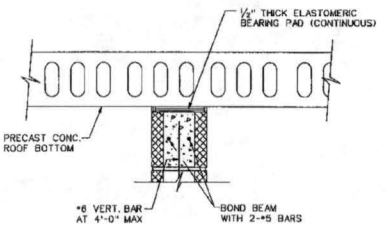
2 ELEVATION OF INTERIOR WALL
SCALE : 1/4" = 1'-0"



3 SECTION AT ROOF
SCALE : 1 1/2" = 1'-0"



4 SECTION AT ROOF
SCALE : 1 1/2" = 1'-0"



5 LATERAL BRACE FOR INT. WALL
SCALE : 3" = 1'-0"

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RIVERSTONE
ALCORN BAYOU PUMP STATION

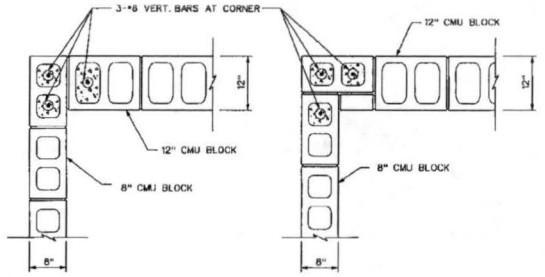
MCC BUILDING
ROOF PLAN AND DETAILS

CURRELL L. HUBBARD
83903
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

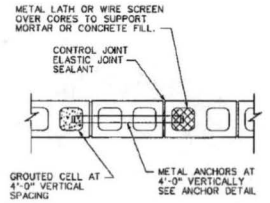
SHEET S10

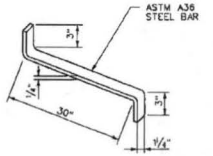
JOB NO. 2014360

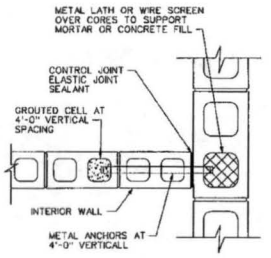
LID 16 PUMP STATION- JOB NO. 2014360



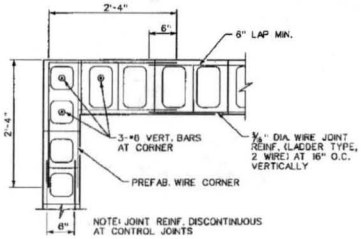
1. CORNER DETAILS - 8" TO 12" CMU WALL
SCALE : 1" = 1'-0"



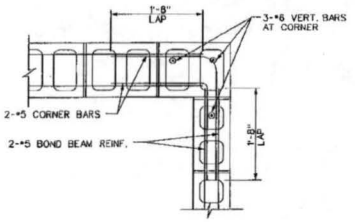




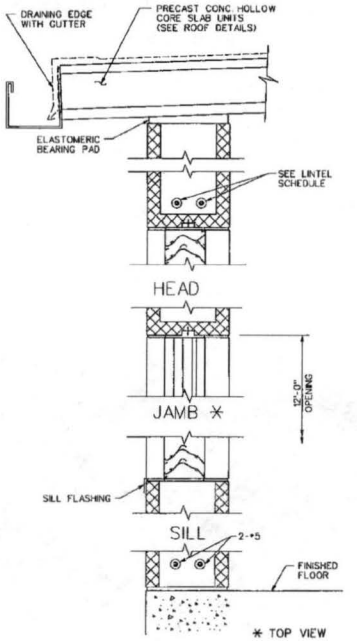
2. CONTROL JOINT DETAILS
SCALE : 1" = 1'-0"



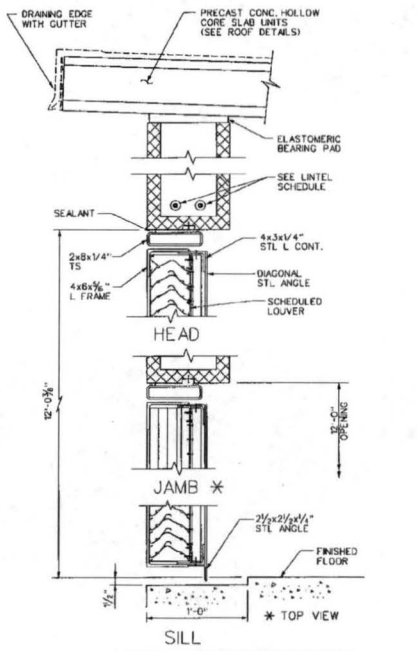
3. CORNER WIRE JOINT REINF.
SCALE : 1" = 1'-0"



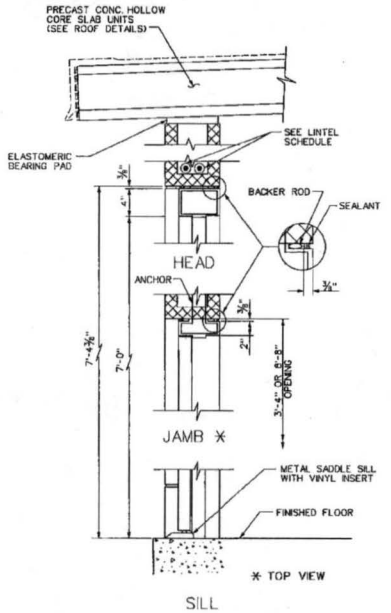
4. CORNER BOND BEAM REINF.
SCALE : 1" = 1'-0"



5. LARGE LOUVER FRAME SECTION
SCALE : 1½" = 1'-0"



6. LARGE LOUVER- DOOR FRAME SECTION
SCALE : 1½" = 1'-0"



7. DOOR FRAME SECTION
SCALE : 1½" = 1'-0"

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RIVERSTONE
ALCORN BAYOU PUMP STATION

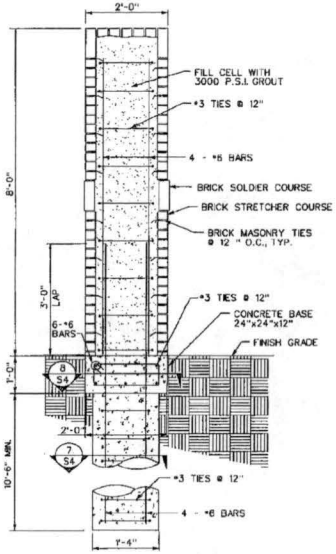
MISCELLANEOUS DETAILS

11/6/15
STATE OF TEXAS
CORBITT L. FRIEMAN
86913
LICENSED PROFESSIONAL ENGINEER

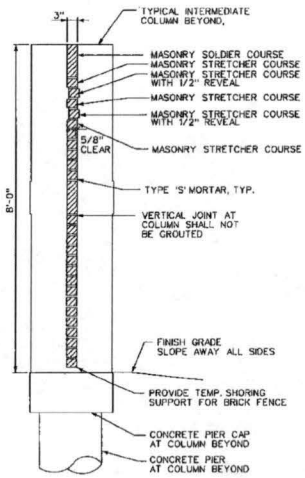
SHEET S11

JOB NO. 2014360

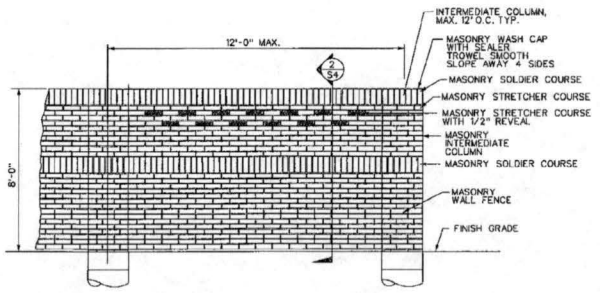
LLD 15 PUMP STATION - JOB NO. 2014360



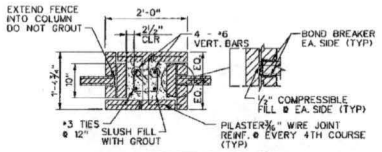
1. TYPICAL FENCE COLUMN
SCALE: 3/4"=1'-0"



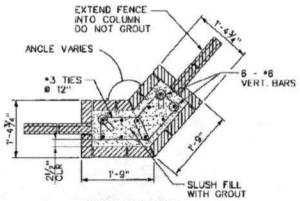
2. TYPICAL BRICK FENCE SECTION
SCALE: 3/4"=1'-0"



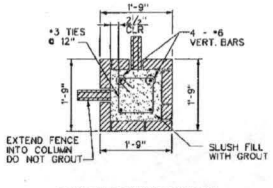
3. TYPICAL FENCE PANEL ELEVATION
SCALE: N.T.S



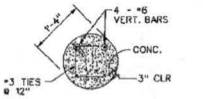
4. INTERMEDIATE COLUMN
SCALE: 3/4"=1'-0"



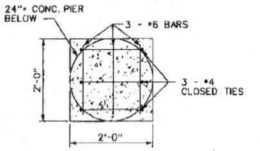
6. ANGLED COLUMN
SCALE: 3/4"=1'-0"



6. TYPICAL CORNER COLUMN
SCALE: 3/4"=1'-0"



7. SECTION @ PIER
SCALE: 3/4"=1'-0"



8. SECTION @ CONCRETE BASE
SCALE: 3/4"=1'-0"

GENERAL NOTES:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL EXISTING FACILITIES AND UNDERGROUND UTILITIES BEFORE PROCEEDING WITH PROPOSED WORK. THE CONTRACTOR SHALL HAND EXCAVATE WHEREVER NECESSARY AS TO AVOID DAMAGE THERETO. ANY DAMAGE CAUSED BY THE CONTRACTOR TO THESE FACILITIES SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE OWNER.
2. THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE-CALL (800-245-4545) AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION.
3. CONTRACTOR SHALL MAKE ALL OF THE PROVISIONS NECESSARY TO MAINTAIN EXISTING DRAINAGE PATTERNS IN THE WORK AREA. UNDER NO CIRCUMSTANCES SHALL THE PERFORMANCE OF WORK LEAD TO THE BLOCKAGE OF SURFACE DRAINAGE AND SUBSEQUENT FLOODING OF SURROUNDING AREAS.
4. THESE PLANS AS PREPARED DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE LICENSED PROFESSIONAL ENGINEER(S) ON THE CONSTRUCTION PLANS DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEM THAT MAY BE NECESSARY IN THE CONTRACTOR'S COMPLETION OF THE WORK. THE CONTRACTOR SHALL PROVIDE APPROPRIATE SAFETY SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL LAW, INCLUDING BUT NOT LIMITED TO, OSHA AND ALL PROPOSED OSHA RULES AND REGULATIONS PUBLISHED IN THE FEDERAL REGISTER IF SUCH RULES AND REGULATIONS ARE MORE STRINGENT THAN RULES AND REGULATIONS OF OFFICIAL RECORD.
5. CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAW CONCERNING EXCAVATION, TRENCHING, AND SHORING.
6. THIS DESIGN COMPLIES WITH THE INTERNATIONAL BUILDING CODE AS ADOPTED BY THE CITY OF MISSOURI CITY. LOADING CONDITIONS AS FOLLOWS:
   WIND: 110 MPH
   EXPOSURE "C"
7. DRILLED PIER LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED BY CONTRACTOR AS REQUIRED TO AVOID ANY CONFLICTS, HOWEVER, THE MAXIMUM PIER SPACING SHALL NOT BE GREATER THAN THAT SHOWN.

MASONRY CONSTRUCTION NOTES

1. MASONRY CONSTRUCTION SHALL CONFORM TO ACI 530, "SPECIFICATION FOR MASONRY STRUCTURES." THE COMPRESSIVE STRENGTH OF MASONRY SHALL BE 2,500 PSI.
2. MORTAR FOR MASONRY WORK SHALL BE TYPE "S" MORTAR IN ACCORDANCE WITH ASTM C270 FOR REINFORCED MASONRY. GROUT FOR MASONRY SHALL BE 2,500 PSI AT 28 DAYS AS PER ASTM C476 (EXCEPT WHERE NOTED).
3. CONTINUOUS WIRE JOINT REINFORCEMENT (LADDER TYPE) CONFORMING TO ASTM A-82 SHALL BE USED AT EVERY COURSE OF MASONRY UNITS, WITH THE FIRST LAYER OF SAID REINFORCEMENT BEING INSTALLED BETWEEN THE FIRST AND SECOND COURSE OF MASONRY UNITS. A MINIMUM 16" LAP SHALL BE PROVIDED AT THE JOINING OF WIRE JOINT REINFORCEMENT SECTIONS.
4. JOINT REINFORCEMENT SHALL HAVE MORTAR COVERAGE BOTH TOP AND BOTTOM. REINFORCEMENT SHALL NOT BE LAID DIRECTLY ON TOP OF BRICK.

CONCRETE NOTES

1. THE LATEST REVISIONS OF THE FOLLOWING AMERICAN SOCIETY FOR TESTING AND MATERIALS STANDARDS SHALL BE USED FOR REINFORCED CONCRETE MATERIALS:
   1.1 "SPECIFICATION FOR CONCRETE AGGREGATES" (ASTM C33)
   1.2 "SPECIFICATION FOR PORTLAND CEMENT" (ASTM C150)
   1.3 "SPECIFICATION FOR READY-MIXED CONCRETE" (ASTM C94)
   1.4 "SPECIFICATION FOR DEFORMED AND PLAIN CARBON STEEL BARS FOR CONCRETE REINFORCEMENT" (ASTM A615, GRADE 60)
2. CONCRETE PLACEMENT AND CURING SHALL CONFORM TO THE FOLLOWING ACI STANDARDS:
   2.1 ACI 318, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"
   2.2 CONCRETE PLACEMENT IN HOT OR COLD WEATHER SHALL CONFORM TO THE PROVISIONS OF ACI 305R OR 306R.
3. ALL CAST-IN-PLACE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.
4. EXPOSED CORNERS SHALL BE CHAMFERED ¾ INCH.

BID SET ONLY

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
CODD CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

Costello
Engineering and Surveying
9990 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-3680, Fax
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

RIVERSTONE
ALCORN BAYOU PUMP STATION

COLUMN AND FENCE
STRUCTURAL DETAILS

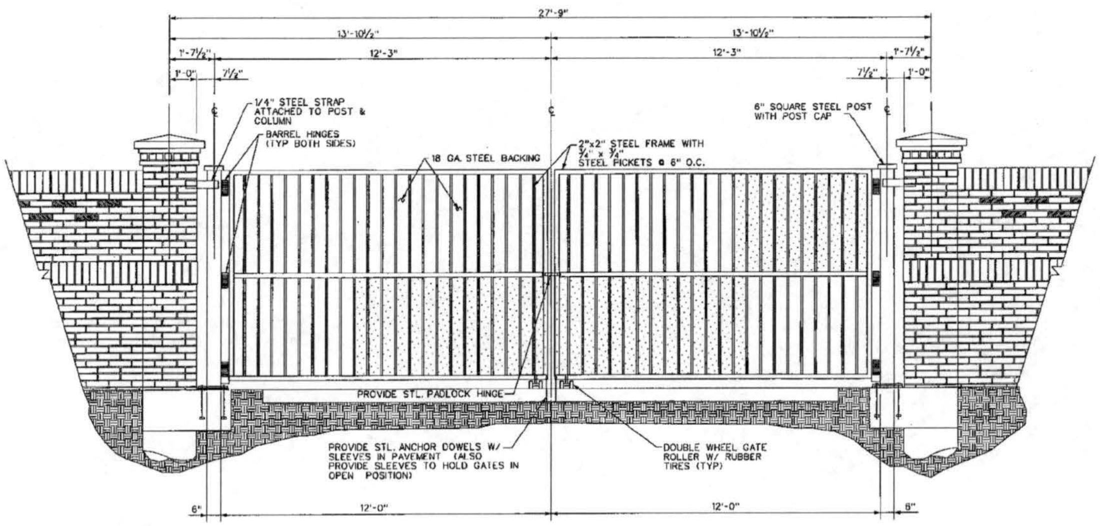
RGL 11/03/15

STATE OF TEXAS
CORBETT L. FREEMAN
86913
LICENSED PROFESSIONAL ENGINEER
11/6/15

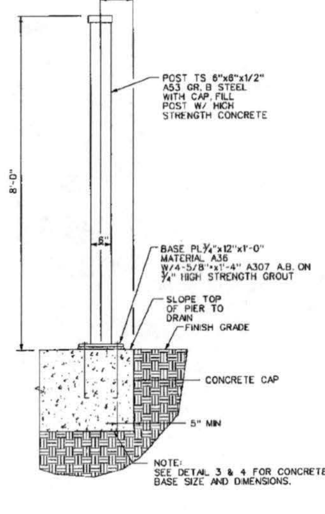
SHEET S12

JOB NO. 2014360

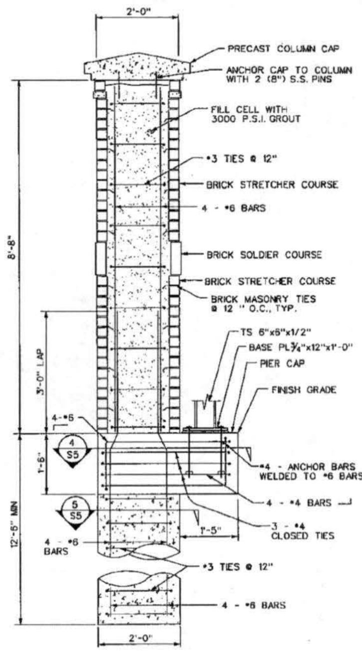
LID 16 PUMP STATION- JOB NO. 2014360



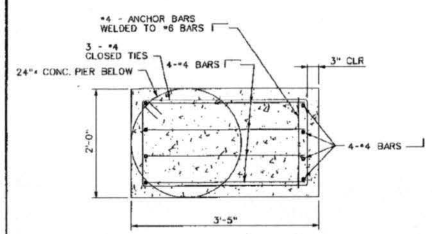
1. GATE ELEVATION
SCALE: ½"=1'-0"



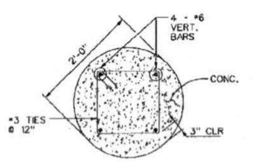
2. GATE POST DETAIL
SCALE: ½"=1'-0"



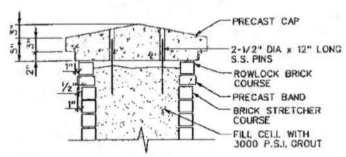
3. TYPICAL FENCE COLUMN @ GATE
SCALE: ¾"=1'-0"



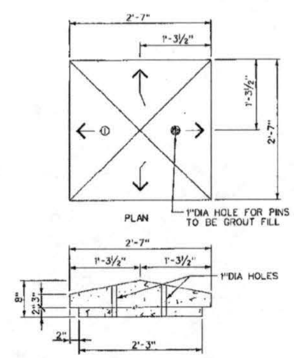
4. PLAN VIEW OF PIER CAP @ GATE
SCALE: 1"=1'-0"



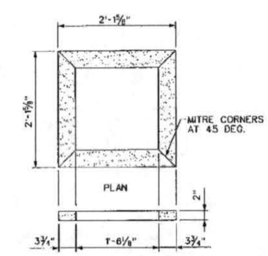
5. SECTION @ PIER
SCALE: 1"=1'-0"



6. SECTION @ PRECAST CAP
SCALE: 1"=1'-0"



7. PRECAST CAP
SCALE: 1"=1'-0"



8. PRECAST BAND
SCALE: 1"=1'-0"

NOTES:

1. STRUCTURAL MEMBERS AND CONNECTIONS SHOWN ARE THE MINIMUM SIZES THAT WILL BE ACCEPTABLE. CONTRACTOR TO PROVIDE SHOP DRAWINGS SIGNED AND SEALED BY AN ENGINEER LICENSED IN THE STATE OF TEXAS FOR ALL VEHICULAR GATE DETAILS.
2. ALL STEEL USED IN THE CONSTRUCTION OF THE GATE AND ACCESSORIES SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION. THE GATE AND ACCESSORIES SHALL BE PAINTED IN THE ACCORDANCE WITH THE SPECIFICATIONS.

BID SET ONLY

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

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RIVERSTONE
ALCORN BAYOU PUMP STATION

GATE DETAILS

SHEET S13

JOB NO. 2014360

L.I.D 15 PUMP STATION - JOB NO. 2014360

ABBREVIATIONS LEGEND

Abbreviation	Meaning
A	AMPERE
AC	ALTERNATING CURRENT
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AF	AMPERE FRAME
AH	AMPERE HOUR
AI	ANALOG INPUT
ALS	AUTOMATIC LUBE SYSTEM
ALT	ALTERNATOR
AMP or A	AMPERE
AM	AMMETER
AO	ANALOG OUTPUT
AS	AMMETER SWITCH
ASP	AUTOSENSORY PANEL
AT	AMPERE TRIP
AT	AUTO TRANSFORMER
ATD	AUTODIALER
ATS	AUTOMATIC TRANSFER SWITCH
AUX.	AUXILIARY
AWG	CONDUCTOR CROSS SECTIONAL AREA
BAT.	BATTERY
BKR.	BREAKER
BLDG.	BUILDING
BLR	BLOWER
BP	BOOSTER PUMP
BTUH	BRITISH THERMAL UNITS PER HOUR
C or CND	CONDUIT
CAT	CATALOG
CBP	CHLORINE BOOSTER PUMP
CHL	CHLORINE
CFH	CUBIC FEET PER HOUR
CKT. BKR.	CIRCUIT BREAKER
CKT.	CIRCUIT
CT	CURRENT TRANSFORMER
CL2	CHLORINE
Co.	COMPANY
COAX	COAXIAL
COH	CITY OF HOUSTON
COM	COMMUNICATIONS (DATA)
COMB.STR.	COMBINATION STARTER
CONC.	CONCRETE
CONT.	CONTINUE
CPT	CONTROL POWER TRANSFORMER
CPU	CENTRAL PROCESSING UNIT
CT	CURRENT TRANSFORMER
Cu.	COPPER
DB or db	DECIBELS
DC	DIRECT CURRENT
DET.	DETAIL
DI	DIGITAL INPUT
DIA. or Ø	DIAMETER
DIFF	DIFFERENTIAL
DIM	DIMENSION
DISC. SW.	DISCONNECT SWITCH
DO	DIGITAL OUTPUT
DPDT	DOUBLE POLE, DOUBLE THROW
DO	DISSOLVED OXYGEN
DWG	DRAWING
E	EMERGENCY
ELECT.	ELECTRICAL
ELEV.	ELEVATION
EMERG.	EMERGENCY
EPB	ELECTRIC PULL BOX
ETM	ELAPSE TIME METER
ES	ETHERNET SWITCH
ESP	ETHERNET SWITCH POWER
EXIST.	EXISTING
E/W	EACH WITH
F	FAHRENHEIT
FC	FOOTCANDLE
FDR	FEEDER
FIXT.	FIXTURE
FLEX.	FLEXIBLE
FLM	FLOW METER
FLD. LT.	FLOODLIGHT
FLUOR.	FLUORESCENT
FO	FIBER OPTIC
FPL	FLOOD PLAIN LEVEL
FT.	FEET
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
GALV	GALVANIZED
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPT
GFIC	GROUND FAULT INTERRUPT CIRCUIT
GND	GROUND
GPH	GALLONS PER HOUR
GST	GROUND STORAGE TANK
H	HEIGHT
HMI	HUMAN MACHINE INTERFACE
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HTR.	HEATER
HVP	HIGH VOLTAGE PANEL
HYD	HYDROTANK
HYP	HYPOCHLORITE
HZ	HERTZ
ILLUM.	ILLUMINATE
INC.	INCANDESCENT
INF	INFLUENT
IN.	INCH
INCAN	INCANDESCENT
I/O	INPUT/OUTPUT
ISP	INTRUSION SYSTEM PANEL
ISW	CURRENT SWITCH
J-BOX	JUNCTION BOX
JWH	JACKET WATER HEATER
KAIC	KILO-AMPERES INTERRUPTING CAPACITY
KCMIL	KILO-CIRCULAR MIL
KV	KILOVOLT
KVA	KILOVOLT-AMPERES
KVAR	KILOVAR (KILOVOLT-AMPERE-REACTIVE)
KW	KILOWATT
KWH	KILOWATT HOUR
L	LOAD
L	LENGTH
LAS	LIQUID AMMONIA SULFATE
LBS	POUNDS
LCP	LOCAL CONTROL PANEL
LFX	LIGHT FIXTURE
LO	LOW
L/R	LOCAL/REMOTE
LP or LVP	LIGHTING PANEL
LS	LIMIT SWITCH
LTG	LIGHTING
LV	LOW VOLTAGE
LVP	LOW VOLTAGE PANEL
M	MOTOR RUN CONTACT
M	METER
mA	MILLIAMPERE
MAX	MAXIMUM
Maux	MOTOR STARTER AUXILIARY CONTACT
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCM	CONDUCTOR CROSS SECTIONAL AREA
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANEL
MH	METAL HALIDE
MIN.	MINIMUM
MISC.	MISCELLANEOUS
MFG	MANUFACTURE
MFGR	MANUFACTURER
MLO	MAIN LUG ONLY
MOD	MODULE
MOV	MOTOR OPERATED VALVE
MSB	MAIN SERVICE BREAKER
MSP	MANUAL SPEED POT
MTR	MOTOR
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
N	NORMAL
NEC	NATIONAL ELECTRICAL CODE
NEU	NEUTRAL
N.I.C.	NOT IN CONTRACT
No.	NUMBER
NPT	NATIONAL PIPE THREAD
OAL	OUTSIDE AIR LOUVER
OC	ON CENTER
OCBW	ON CENTER BOTH WAYS
OHD	OVERHEAD DOOR
OUI	OPERATOR USER INTERFACE
OL	OVERLOAD
OT	OVERTEMP OR OVERTORQUE
P	POLE
PAC	PROGRAMMABLE AUTOMATION CONTROLLER
PCV	PRESSURE CONTROL VALVE
PE	PHOTOELECTRIC
PEC	PHOTO ELECTRIC CELL
PFCC	POWER FACTOR CORRECTION CAPACITOR
PFR	PHASE FAILURE RELAY
PH or Ø	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER MONITOR
PNL	PANEL
PP	POWER POLE
POS	POSITION
PR	PROBE RELAY
PROP.	PROPOSED
PS	POWER SUPPLY
PSI	POUNDS PER SQUARE INCH
PT	POTENTIAL TRANSFORMER
PTT	PUSH-TO-TEST
PVC	POLYVINYL CHLORIDE
PWR	POWER
QTY	QUANTITY
R	RELAY
RECPT.	RECEPTACLE
REQ'D	REQUIRED
RM	ROOM
RSC	RIGID STEEL CONDUIT
RTU	REMOTE TERMINAL UNIT
RVAT	REDUCED VOLTAGE AUTOTRANSFORMER
RVNR	REDUCED VOLTAGE NON-REVERSING
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SEC	SECONDS
SEL. SW.	SELECTOR SWITCH
SER	SERVICE
SHT	SHEET
SHLD.	SHIELDED
SM	SYSTEM MONITOR
SN	SOLID NEUTRAL
SV	SOLENOID VALVE
SP	SURGE PROTECTOR
SPD	SURGE PROTECTION DEVICE
SPST	SINGLE POLE SINGLE THROW
SOL.	SOLENOID
SS	STAINLESS STEEL
SSC	SOLID STATE CONTROLLER
SSRV	SOLID STATE REDUCED VOLTAGE
STA	STATION
STR	STARTER
SW.	SWITCH
SWBD	SWITCH BOARD
T	THERMOSTAT
TC	TIME CLOCK
TEL	TELEPHONE
TEMP	TEMPERATURE
TOC	TOP OF CONCRETE
T-STAT	THERMOSTAT
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLT
VA	VOLT-AMPERE
VAC	VOLTS ALTERNATING CURRENT
VFD	VARIABLE FREQUENCY DRIVE
VS	VOLTMETER SWITCH
VT	VOLTAGE TRANSMITTER
W	WIDTH
W	WATT
W/	WITH
WP	WATER PLANT
WP.	WEATHERPROOF
WT	WEIGHT
XDCR	TRANSDUCER
XMTR	TRANSMITTER
XFM	TRANSFORMER
XFMR	TRANSFORMER
YD	YARD
YDS	YARDS
ZS	LIMIT SWITCH
1PH or 1Ø	SINGLE PHASE
3PH or 3Ø	THREE PHASE

CONTROL DIAGRAM LEGEND

SYMBOL	DESCRIPTION
CR	CONTACT RELAY, 4 POLE UNIVERSAL - PLUG IN
	CIRCUIT BREAKER OR MCP
TD	TIME DELAY RELAY
R	INDICATING LIGHT A-AMBER; B-BLUE; G-GREEN; R-RED; Y-YELLOW; W-WHITE
M	MAGNETIC MOTOR STARTER
T	SSC TEST TERMINAL
M M	HOLDING COIL CONTACT (NORMALLY OPEN - NORMALLY CLOSED)
CR CR	CONTROL COIL CONTACT (NORMALLY OPEN - NORMALLY CLOSED)
ISW	CURRENT SWITCH
ETM	ELAPSE TIME METER
	FUSE
	HEATER
	LOCATED ON FACE OF MCC
	LOCATED ON FACE OF AUTOSENSORY
	TERMINAL BLOCK
SUP	SURGE SUPPRESSION DIODE
MB	MODBUS SIGNAL CONVERTER
F	FLASHER MODULE
ALARM	ALARM HORN
	RECEPTACLE
3OL'S OR 3OL'S	OVERLOAD, NORMALLY CLOSED
R	PRESS-TO-TEST INDICATION LIGHT
120V	CONTROL POWER TRANSFORMER
H1 H2	2 POSITION SELECTION SWITCH
H O A	HAND-OFF-AUTO SWITCH
TEST	PUSHBUTTON
ON OFF	ON-OFF SWITCH
SV	SOLENOID VALVE
F	FLOAT OPERATED SWITCH, OPENS ON RISE
F	FLOAT OPERATED SWITCH, CLOSES ON RISE
TD TOC	TIME DELAY RELAY CONTACT NORMALLY CLOSED, TIME DELAY CLOSING (I.O.T.O.C.)
TD TDO	TIME DELAY RELAY CONTACT NORMALLY CLOSED, TIME DELAY OPENING
TD TDO	TIME DELAY RELAY CONTACT NORMALLY OPEN, TIME DELAY OPENING (I.C.T.D.O.)
TD TDC	TIME DELAY RELAY CONTACT NORMALLY OPEN, TIME DELAY CLOSING
TD TDC	TIME DELAY RELAY CONTACT NORMALLY OPEN, TIME DELAY CLOSING
PS	PRESSURE SWITCH, OPENS ON RISING PRESSURE
PS	PRESSURE SWITCH, CLOSES ON RISING PRESSURE
TEMP	TEMPERATURE ACTUATED SWITCH, OPENS ON RISE
TEMP	TEMPERATURE ACTUATED SWITCH, CLOSES ON RISE
ZS	LIMIT SWITCH, NORMALLY OPEN
ZS	LIMIT SWITCH, NORMALLY OPEN, HELD CLOSED
ZS	LIMIT SWITCH, NORMALLY CLOSED
ZS	LIMIT SWITCH, NORMALLY CLOSED, HELD OPEN

ONE-LINE DIAGRAM LEGEND

SYMBOL	DESCRIPTION
	CONTACT POINT
GFI	GROUND FAULT INTERRUPTER
	CIRCUIT BREAKER
	STARTER CONTACT
	GROUND
	REDUCED VOLTAGE STARTER
SSRV	SOLID STATE REDUCED VOLTAGE
VFD	VARIABLE FREQUENCY DRIVE
OL'S	THERMAL OVERLOAD RELAY
10 3 PH / 5 1 PH	MOTOR, 3 PHASE AND 1 PHASE
G	GENERATOR
ETM	ELAPSE TIME METER
R	INDICATING LIGHT A-AMBER; B-BLUE; G-GREEN; R-RED; Y-YELLOW; W-WHITE
H O A	HAND-OFF-AUTO
R S	RUN-STOP
	HEATER
	FUSE
	POWER FACTOR CORRECTION
V	VOLTMETER
A	AMMETER
A	ANNUNCIATOR
AS	AMMETER SWITCH
CT	CURRENT TRANSFORMER
	TRANSFORMER
	LIGHTING TRANSFORMER
	POTENTIAL TRANSFORMER
	COMBINATION MOTOR STARTER
	FUSED DISCONNECT SWITCH
	CURRENT TRANSMITTER
VCP	VENDOR CONTROL PANEL
PM	POWER MONITOR
T	THERMOSTAT
SPD OR SP	SURGE PROTECTION
PFR	PHASE FAIL RELAY
AS	AIR SENSOR
BC	BATTERY CHARGER
GB	GROUND BUS BAR
NB	NEUTRAL BUS BAR
MS	MOISTURE SENSOR
TS	TEMPERATURE SENSOR
	LOCATED ON FACE OF MCC
	LOCATED ON FACE OF AUTOSENSORY
	LIGHT LINEWEIGHT (EXISTING)
	HEAVY LINEWEIGHT (PROPOSED)
	LIGHT DASHED LINEWEIGHT (FUTURE)
	TO BE REMOVED

PLAN LEGEND

SYMBOL	DESCRIPTION
E	BURIED CONDUIT
	EXPOSED CONDUIT
	HIDDEN CONDUIT
	LIGHT LINEWEIGHT (EXISTING)
	HEAVY LINEWEIGHT (PROPOSED)
TO XXX	HOMERUN TO PANEL OR MCC AS NOTED
	DUCTBANK/SECTION
ABC123	CONDUIT TAG
	DETAIL REFERENCE
	TO BE REMOVED
	CONDUIT END CAP
	GROUND ROD
	SINGLE CONVENIENCE RECEPTACLE
WP	DUPLEX CONVENIENCE RECEPTACLE (WP INDICATES CAST WEATHER PROOF OUTLET BOX AND COVER)
	QUAD RECEPTACLE
208V	208 VOLT, SINGLE SPECIAL PURPOSE RECEPTACLE
	240 VOLT, SINGLE SPECIAL PURPOSE RECEPTACLE
	SURFACE MOUNTED RECEPTACLE
\$ \$WP	SINGLE POLE TOGGLE SWITCH (WP INDICATES CAST WEATHER PROOF OUTLET BOX AND COVER)
\$3 \$4	3 WAY SWITCH - 4 WAY SWITCH
\$M	MOTOR SWITCH
S	SURFACE MOUNTED SWITCH
	TELEPHONE UTILITY SYSTEM OUTLET
DS	DOOR SWITCH
OHD	OVERHEAD DOOR SWITCH
AFS	AIR FLOW SWITCH
T	ELECTRIC THERMOSTAT
J	JUNCTION BOX (J-BOX)
PC	PHOTOELECTRIC CELL
SV	SOLENOID VALVE
S	SENSOR
	EXIT SIGN
C	CONDUIT TURN
	COMBINATION STARTER
SW	OPEN/CLOSED SWITCH

GENERAL NOTES:

1. INSTALLATION SHALL BE ACCORDING TO CURRENT NEC, INCLUDING ALL APPLICABLE LOCAL ORDINANCES. WIRING AND DETAILS COMMONLY DESCRIBED IN CODE MAY NOT BE SHOWN ON PLANS, BUT ARE APPLICABLE PER CODE REQUIREMENTS.
2. CONTRACTOR IS ADVISED TO READ ALL ELECTRICAL RELATED SPECIFICATION SECTIONS PRIOR TO BIDDING AND CONSTRUCTION. SEE SPECIFICATION 16012 FOR LIST OF PRE-QUALIFIED ELECTRICAL CONTRACTORS AND PANEL FABRICATORS.

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-327

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TBPLS FIRM REG. No. 100486

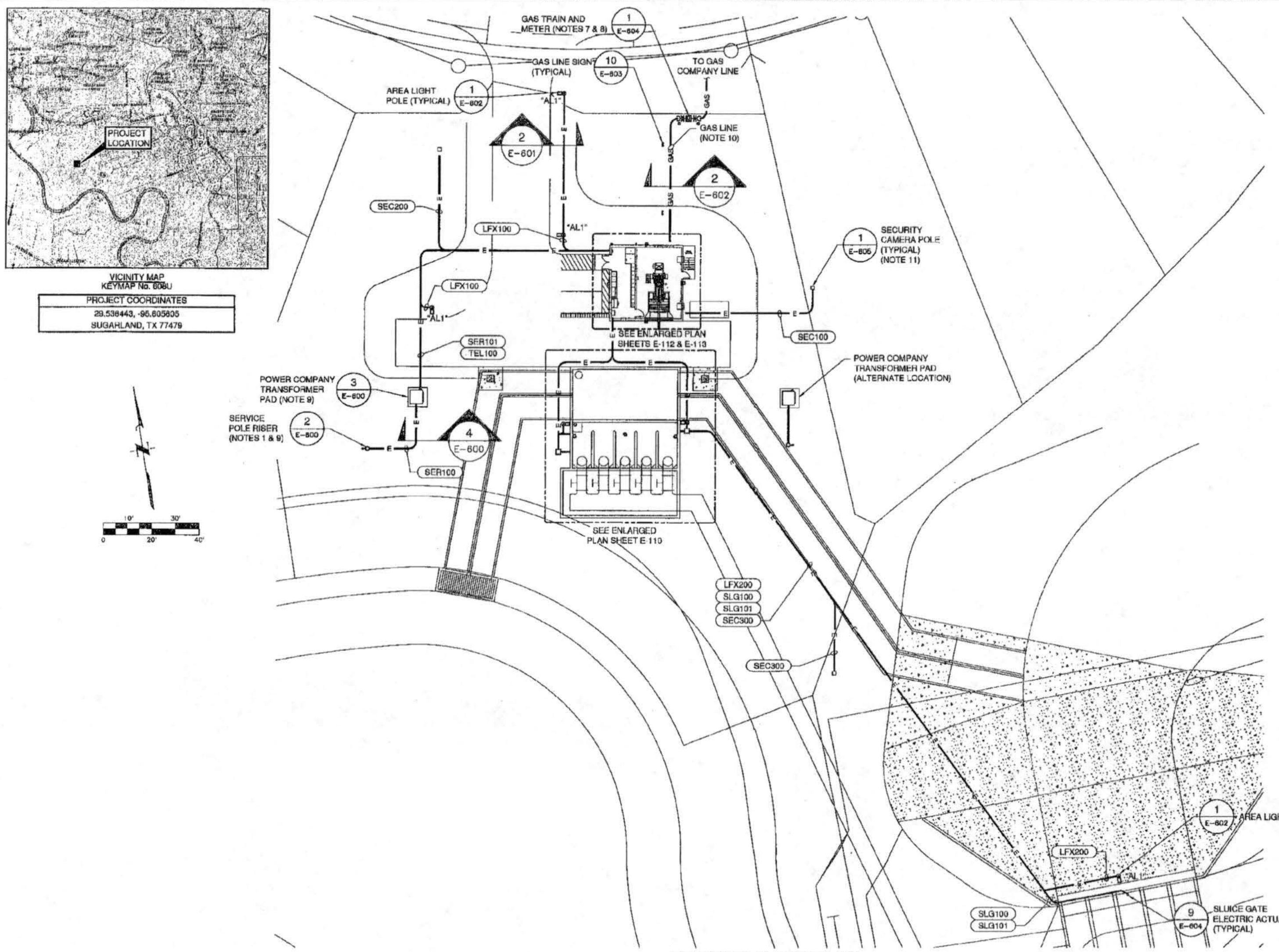
FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

ABBREVIATIONS, LEGENDS AND NOTES

SHEET E-000

JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4456-CEI



Electrical Site Plan

SCALE: 1 IN. = 20 FT.

NOTES:

1. SERVICE EQUIPMENT DETAILS ARE SHOWN DIAGRAMMATICALLY ON PLANS. INSTALLATION SHALL COMPLY STRICTLY WITH LOCAL POWER COMPANY STANDARDS IN EVERY RESPECT. CONSULT LOCAL POWER COMPANY FOR REQUIREMENTS FOR THIS SPECIFIC PROJECT BEFORE STARTING CONSTRUCTION. COORDINATE LOCATION OF SERVICE OUTLET. ALLOW FOR ALTERNATE LOCATION IN BID. VERIFY MAXIMUM AVAILABLE FAULT CURRENT AND PROVIDE EQUIPMENT TO WITHSTAND CURRENT RATING ACCORDINGLY. MAINTAIN MINIMUM CLEARANCE OF 6 FT. FROM EDGE OF DRIVEWAYS AND OTHER EQUIPMENT.
2. CONDUITS SHALL NOT BE ROUTED ACROSS WALKWAYS, PATHS OF ACCESS, TRAVEL OR EGRESS. ROUTE IN CONCRETE STRUCTURES OR AROUND EQUIPMENT. DO NOT ROUTE IN CONFLICT WITH OTHER PIPING, CONDUITS, EQUIPMENT OR STRUCTURES. ROUTE DUCTBANKS 24 IN. BELOW WATER LINES.
3. PROVIDE ADDITIONAL SPARE CONDUITS FROM MCC TO PULL BOXES, AND BETWEEN PULL BOXES, ABOVE THOSE QUANTITIES SHOWN ON PLANS: 2-1 INCH, 1-2 INCH.
4. DO NOT CONSTRUCT WITHIN ELECTRICAL EASEMENTS. WHERE OVERHEAD OR UNDERGROUND UTILITY LINES EXIST, CONTACT ENGINEER BEFORE STARTING ANY WORK, AND BEFORE ROUTING ANY CONDUITS OR PIPING TOWARD THE LOCATION OF EXISTING UTILITIES.
5. DO NOT COVER WATER LINES WITH CONCRETE FOUNDATIONS. FIELD LOCATE AND MARK ALL LINES NEAR CONSTRUCTION.
6. DO NOT SCALE ELECTRICAL EQUIPMENT, DEVICES AND FOUNDATIONS DIMENSIONS, SPACING OR LOCATION ON ELECTRICAL SITE PLAN. SEE ELECTRICAL PLAN SHEETS AND DETAIL SHEETS FOR EXACT INFORMATION. SEE CIVIL PLANS FOR SITE DIMENSIONS, WHERE INCLUDED IN DRAWING PACKAGE. SUBMIT DIMENSIONED LAYOUT PLANS FOR ALL WORK PER SUBMITTAL REQUIREMENTS OF SPECIFICATION 16012. DO NOT START INSTALLATION UNTIL SUBMITTALS ARE REVIEWED BY ENGINEER.
7. GAS TRAIN AND METER BY GAS COMPANY TO PROVIDE 10,560 CFH (10,560,000 BTUH) @ 10 PSI GAS PRESSURE. 130 FT. TOTAL EQUIVALENT LENGTH GAS LINE.
8. CONTRACTOR TO COORDINATE GAS LINE CONNECTION AND LOCATION WITH GAS COMPANY AND INSTALL PER THEIR STANDARDS AND PER LOCAL CODES. INSTALL PROTECTIVE BOLLARDS AROUND GAS METER WHERE EXPOSED TO VEHICULAR TRAFFIC. ALLOW FOR VARIATION OF METER LOCATION UP TO ONE HUNDRED FEET FROM WHERE SHOWN. INSTALL PROPERLY SIZED METER PER GAS COMPANY STANDARD.
9. ADJUST TRANSFORMER AND RISER CONDUIT LOCATIONS UP TO 40 FT. PER POWER COMPANY OUTLET LOCATION STATEMENT. REMAIN CLEAR OF DRIVEWAY.
10. 1 1/4 IN. SCHEDULE 40 TAR COATED BLACK STEEL GAS LINE BURIED 24 IN. BELOW GRADE.
11. SECURITY CONDUIT AND PULL STRING INFRASTRUCTURE TO BE INSTALLED BY ELECTRICAL CONTRACTOR.

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FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

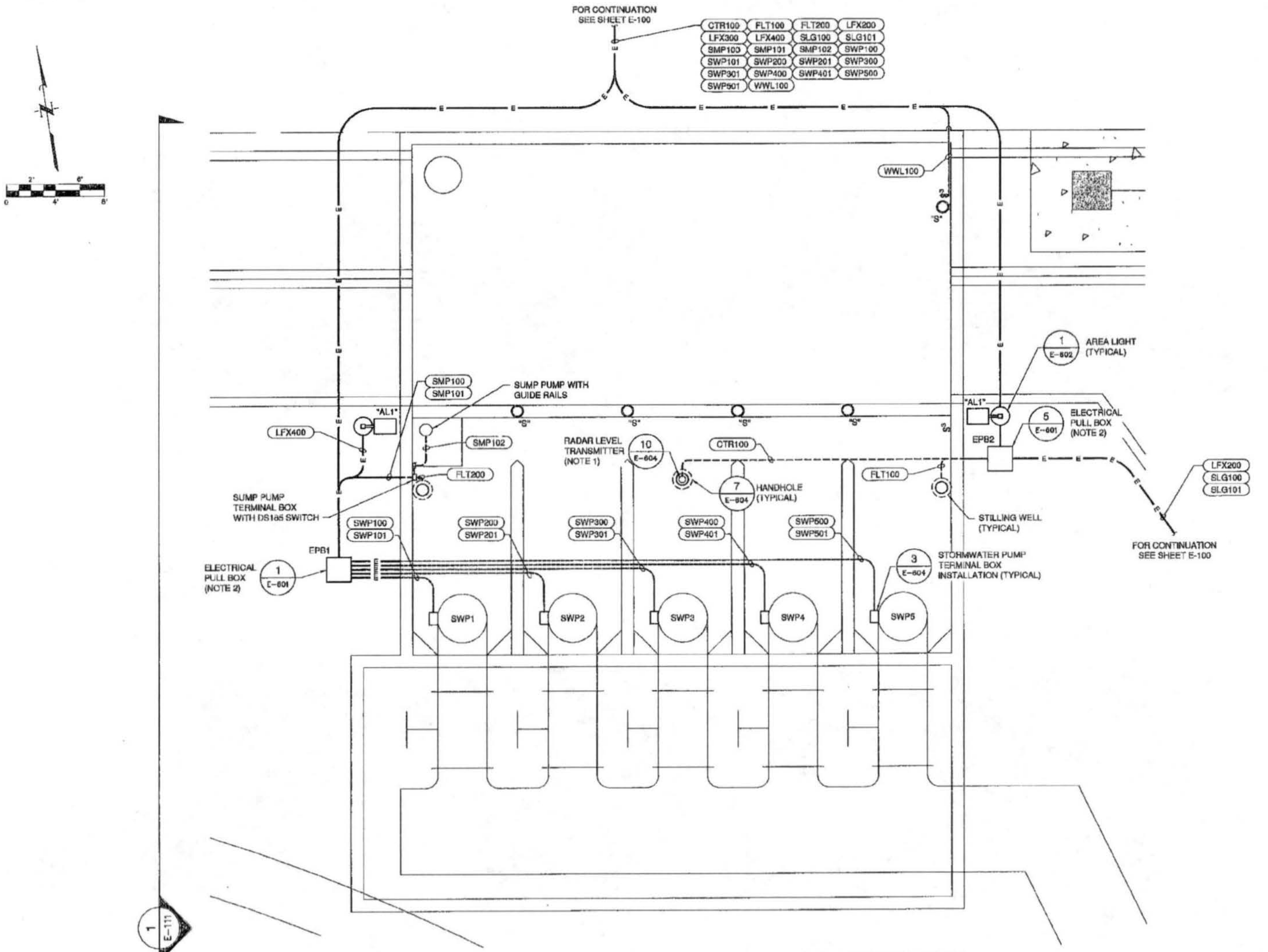
ELECTRICAL SITE PLAN

STATE OF TEXAS
ERIC W. BURRER
100158
LICENSED PROFESSIONAL ENGINEER
OCTOBER 16, 2015
SHRADER ENGINEERING, INC.

SHEET E-100

JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4496-CEI



ENLARGED PUMP STATION ELECTRICAL PLAN

SCALE: 1/4 IN. = 1 FT.

NOTES:

1. POSITION LEVEL TRANSMITTER SUCH THAT THE TRANSMITTER ANTENNA ONLY MEASURES THE LIQUID LEVEL AND DOES NOT INADVERTENTLY SENSE THE FLOATS OR STORMWATER PUMPS LOCATED NEARBY. SELECT APPROPRIATE ANTENNA BASED ON FINAL TRANSDUCER PLACEMENT.

2. PROVIDE ADDITIONAL SPARE CONDUITS FROM MCC TO PULL BOXES, AND BETWEEN PULL PULL BOXES, ABOVE THOSE QUANTITIES SHOWN ON PLANS: 2-1 INCH, 1-2 INCH.

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-527

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FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

PUMP STATION
ENLARGED PLAN

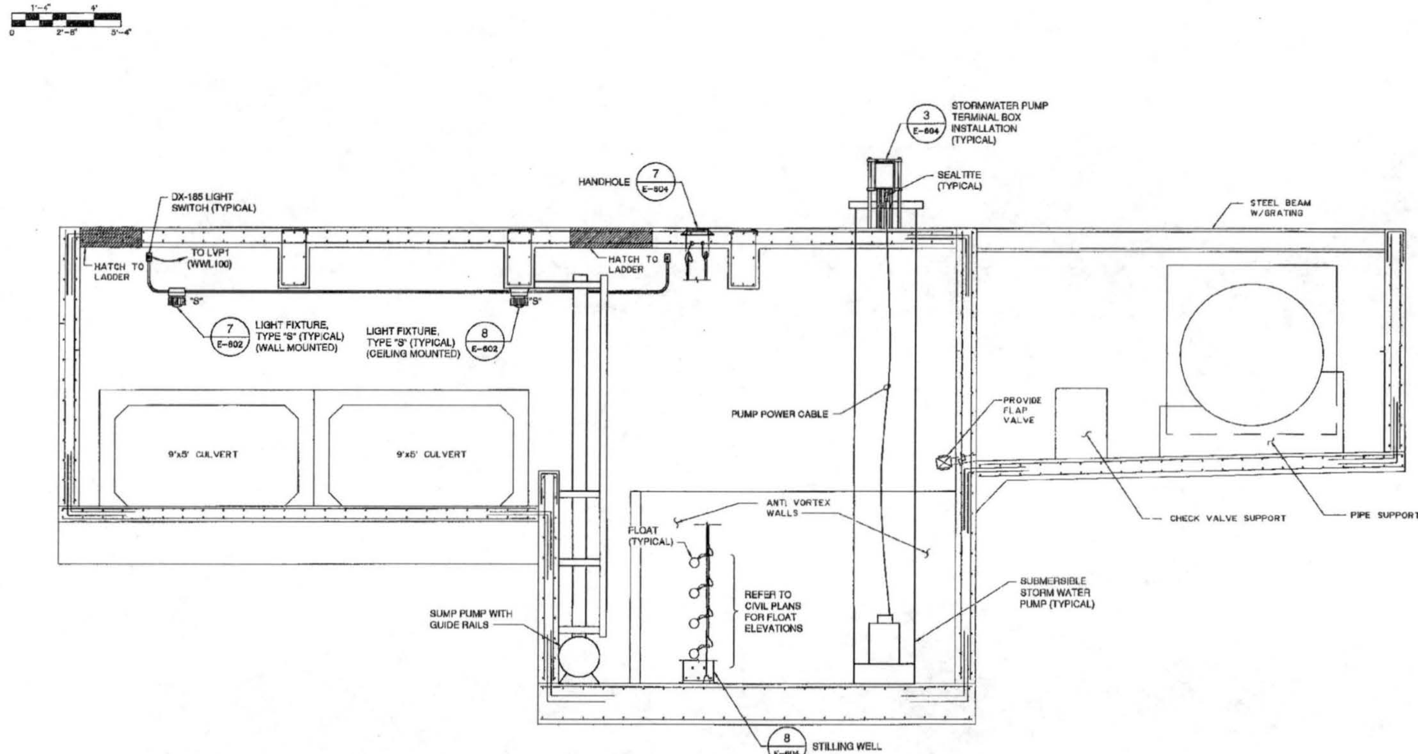
STATE OF TEXAS
ERIC W. BURRER
100168
LICENSED PROFESSIONAL ENGINEER
OCTOBER 19, 2015
SHRADER ENGINEERING, INC.

SHEET
E-110

JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4496-CEI

NOTES:
1. USE SCHEDULE 80 PVC CONDUIT IN WET AREAS.



1 — ENLARGED PUMP STATION ELEVATION VIEW

SCALE: 3/8 IN. = 1 FT.

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SHRADER ENGINEERING, INC. TBPE No. F-627

ENGINEER: CWS | DESIGNER: LT | CHECKED BY: CWS | DATE CHKD.: Oct. 19, 15 | DRAWN BY: JAA

FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

ENLARGED PUMP
STATION ELEVATION

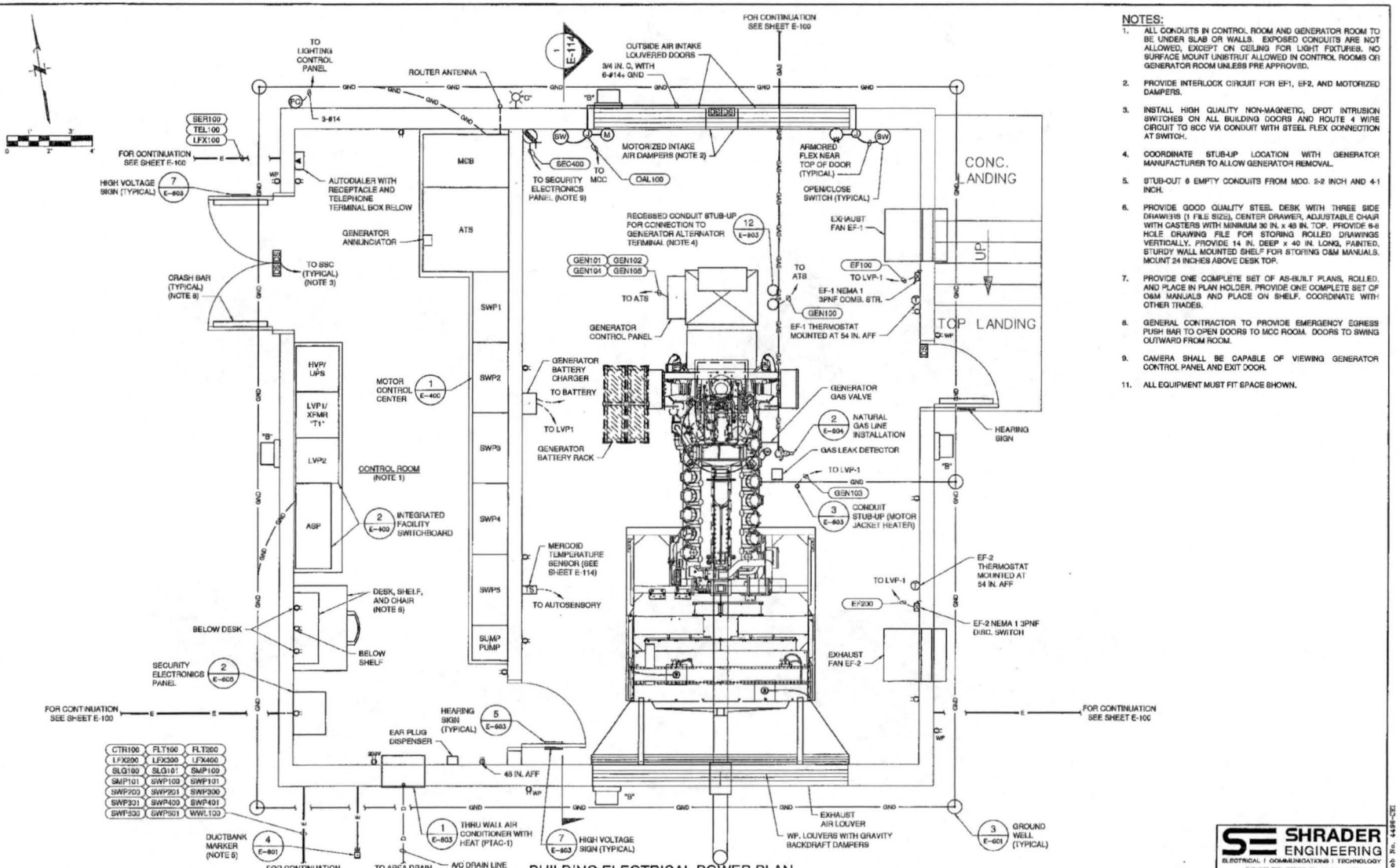
REV 12/03/15

STATE OF TEXAS
ERIC W. BURRER
100168
LICENSED PROFESSIONAL ENGINEER
OCTOBER 19, 2015
SHRADER ENGINEERING, INC.

SHEET
E-111

JOB NO. 2011160-02

CEI JOB No. 2011160-02 SEI Job No. 4498-CEI



BUILDING ELECTRICAL POWER PLAN

SCALE: 1/2 IN. = 1 FT.

NOTES:

1. ALL CONDUITS IN CONTROL ROOM AND GENERATOR ROOM TO BE UNDER SLAB OR WALLS. EXPOSED CONDUITS ARE NOT ALLOWED, EXCEPT ON CEILING FOR LIGHT FIXTURES. NO SURFACE MOUNT UNISTRUT ALLOWED IN CONTROL ROOMS OR GENERATOR ROOM UNLESS PRE APPROVED.
2. PROVIDE INTERLOCK CIRCUIT FOR EF1, EF2, AND MOTORIZED DAMPERS.
3. INSTALL HIGH QUALITY NON-MAGNETIC, DPDT INTRUSION SWITCHES ON ALL BUILDING DOORS AND ROUTE 4 WIRE CIRCUIT TO SCC VIA CONDUIT WITH STEEL FLEX CONNECTION AT SWITCH.
4. COORDINATE STUB-UP LOCATION WITH GENERATOR MANUFACTURER TO ALLOW GENERATOR REMOVAL.
5. STUB-OUT 8 EMPTY CONDUITS FROM MCC. 2-2 INCH AND 4-1 INCH.
6. PROVIDE GOOD QUALITY STEEL DESK WITH THREE SIDE DRAWERS (1 FILE SIZE), CENTER DRAWER, ADJUSTABLE CHAIR WITH CASTERS WITH MINIMUM 30 IN. x 48 IN. TOP. PROVIDE 6-8 HOLE DRAWING FILE FOR STORING ROLLED DRAWINGS VERTICALLY. PROVIDE 14 IN. DEEP x 40 IN. LONG, PAINTED, STURDY WALL MOUNTED SHELF FOR STORING O&M MANUALS. MOUNT 24 INCHES ABOVE DESK TOP.
7. PROVIDE ONE COMPLETE SET OF AS-BUILT PLANS, ROLLED, AND PLACE IN PLAN HOLDER. PROVIDE ONE COMPLETE SET OF O&M MANUALS AND PLACE ON SHELF. COORDINATE WITH OTHER TRADES.
8. GENERAL CONTRACTOR TO PROVIDE EMERGENCY EGRESS PUSH BAR TO OPEN DOORS TO MCC ROOM. DOORS TO SWING OUTWARD FROM ROOM.
9. CAMERA SHALL BE CAPABLE OF VIEWING GENERATOR CONTROL PANEL AND EXIT DOOR.
11. ALL EQUIPMENT MUST FIT SPACE SHOWN.

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TBPLS FIRM REG. No. 100466

FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

ENLARGED BUILDING POWER PLAN

BRW 8/4/15

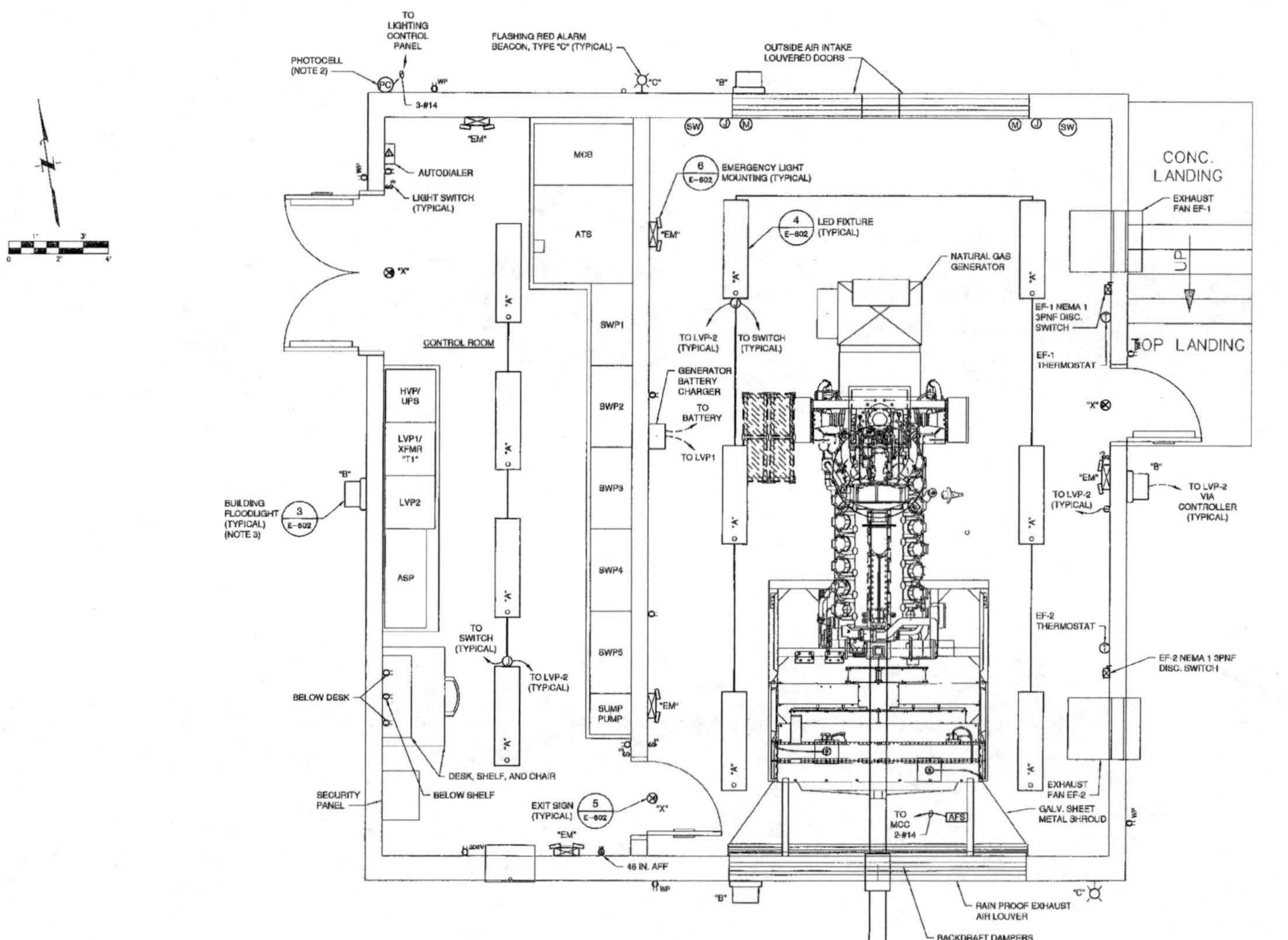
SHRADER ENGINEERING
ELECTRICAL / COMMUNICATIONS / TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-627

STATE OF TEXAS
BRENT WARNER
100108
LICENSED PROFESSIONAL ENGINEER
AUGUST 19, 2015
SHRADER ENGINEERING, INC.

SHEET
E-112

JOB NO. 2011160-02

CEI JOB No. 2011160-02 SEE Job No. 4486-CE



BUILDING ELECTRICAL LIGHTING PLAN

SCALE: 1/2 IN. = 1 FT. (NOTE 1)

NOTES:

1. COORDINATE FIXTURE LOCATIONS WITH COOLANT LINES AND EXHAUST EQUIPMENT. SEE MECHANICAL SHEETS FOR ADDITIONAL INFORMATION.
2. INSTALL PHOTOELECTRIC SWITCH AT EDGE OF BUILDING ROOF AND FACE DUE NORTH. 1/2 IN. CONDUIT WITH 3-#14 TO LIGHTING CONTROLS.
3. MOUNT BUILDING FLOODLIGHT 9 FEET ABOVE GRADE.

SHRADER ENGINEERING
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SHRADER ENGINEERING, INC. TBPE No. F-627

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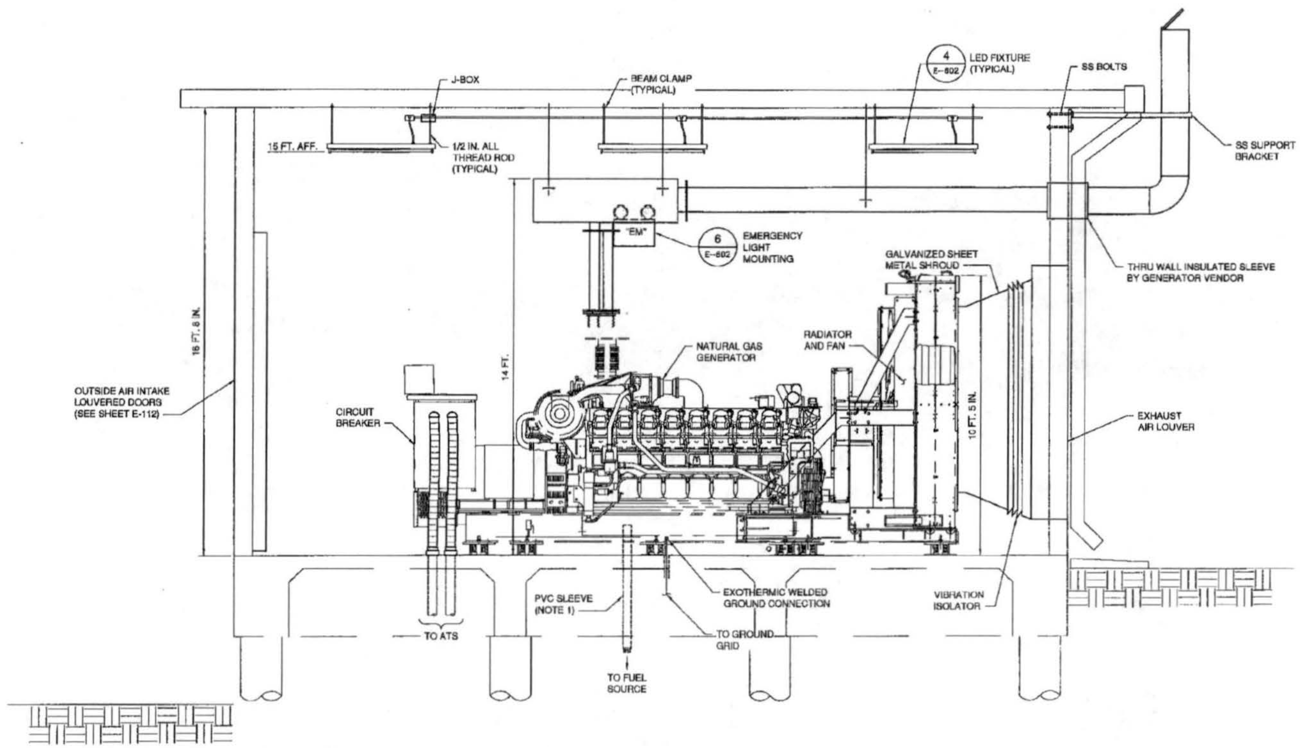
FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

ENLARGED BUILDING LIGHTING PLAN

SHEET E-113

JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4496-CEI



1 NATURAL GAS GENERATOR ELEVATION
SCALE: 1/2 IN. = 1 FT. (NOTE 1)

NOTES:

1. COORDINATE ALTERNATOR TERMINAL BOX ENCLOSURE WITH CONDUITS AND PROVIDE OPTIONAL J-BOX WHERE REQUIRED FOR TRANSITIONS. BOX SIZES MAY VARY FROM DETAIL PER GENERATOR MANUFACTURER. PROVIDE AS REQUIRED.
2. CHARGER MAY BE WALL MOUNTED OR MAY BE LOCATED ON GENERATOR BY GENERATOR MANUFACTURER.
3. GENERATOR MUFFLER, PIPING AND ALL OTHER APPURTENANCES FURNISHED BY GENERATOR MANUFACTURER AND INSTALLED BY CONTRACTOR.

GENERATOR DATA

ITEMS	DATA
GENERATOR*	1,000KW (MIN.), 1,250KVA, 1,505A FUEL CONSUMPTION RATE FULL LOAD - 10,550 CFH GENERATOR WT = 24,000 LBS.

* VERIFY EQUIPMENT PARAMETERS WITH THE SPECIFIC MANUFACTURER

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FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

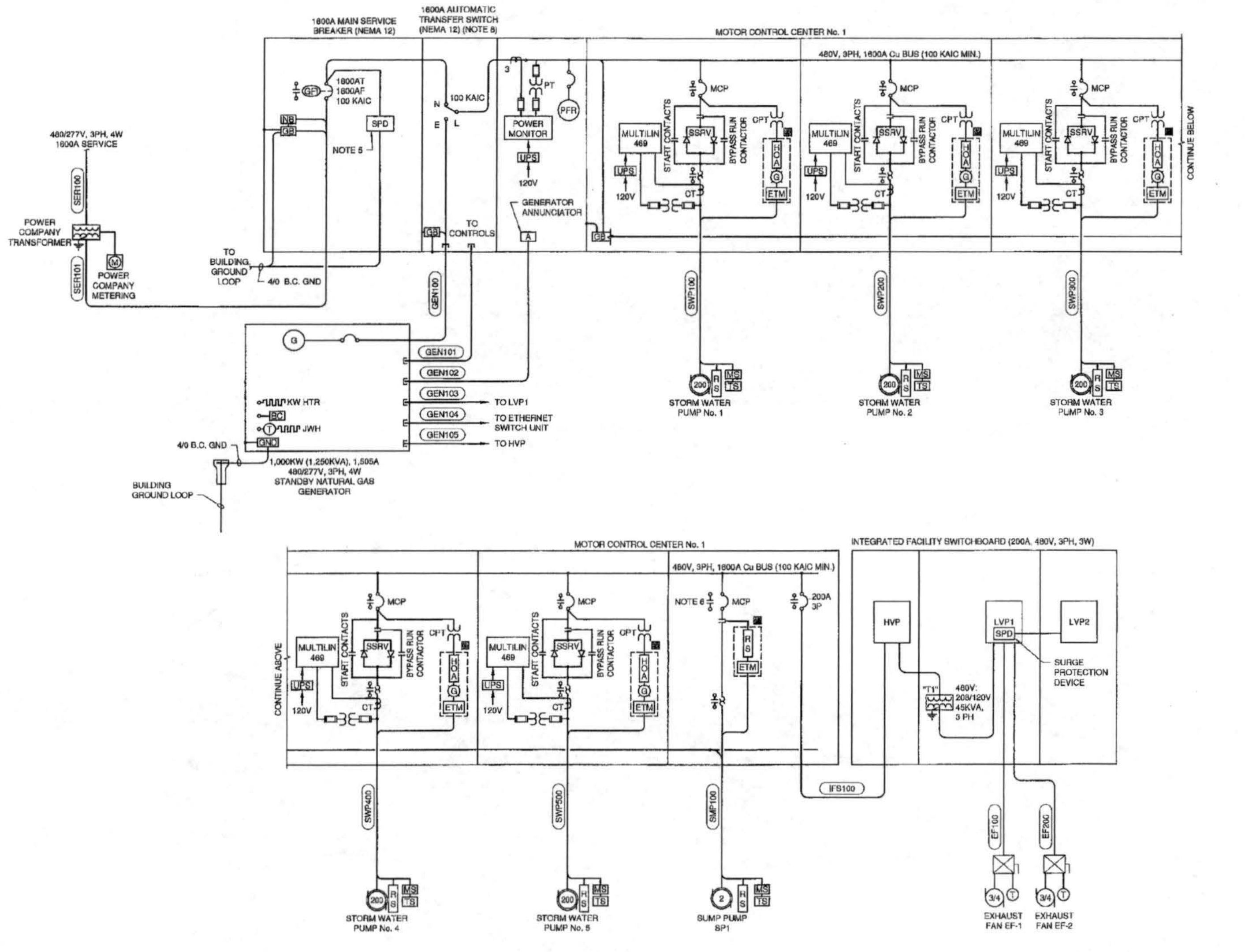
GENERATOR ELEVATION
- NATURAL GAS

BEW 12/9/15

SHEET
E-114

JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4496-CEI



NOTES:

1. ALL CONDUITS, CONDUCTORS AND DEVICES MAY NOT BE SHOWN ON THIS SHEET.
2. VERIFY PUMP MOTOR CURRENT WITH MOTOR MANUFACTURER AND WHERE GREATER THAN NEC VALUE, INCREASE CONDUCTORS AND CONDUIT SIZES ACCORDINGLY.
3. ALL HOA'S, ETM'S AND RUN LIGHTS TO BE MOUNTED ON FACE OF MCC.
4. SEE CONDUIT SCHEDULES ON SCHEDULE SHEET FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
5. INSTALL SURGE PROTECTOR ACCORDING TO MANUFACTURERS INSTRUCTIONS. SURGE PROTECTOR MUST CONFORM TO SPECIFICATION 16290. ROUTE FAIL ALARM TO SSC.
6. PROVIDE AUXILIARY CONTACT FOR MONITORING CIRCUIT BREAKER AND OVERLOAD STATUS. ROUTE TO SSC.
7. ALL STARTER BREAKERS TO HAVE LOCKOUT FEATURE.
8. PROVIDE TRANSFER SWITCH DATA TO POWER COMPANY.

ELECTRICAL LOAD ANALYSIS

LOAD		AMPS		
		PH A	PH B	PH C
STORM WATER PUMP NO. 1	200HP	240	240	240
STORM WATER PUMP NO. 2	200HP	240	240	240
STORM WATER PUMP NO. 3	200HP	240	240	240
STORM WATER PUMP NO. 4	200HP	240	240	240
STORM WATER PUMP NO. 5	200HP	240	240	240
SUMP PUMP	2HP	4	4	4
SLUICE GATE	1HP	2	2	2
"T1" TRANSFORMER	45KVA	54	54	54
25% OF LARGEST MOTOR		60	60	60
TOTAL LOAD		1299	1299	1299
SERVICE AMPACITY @ 480/277V, 3PH, 4W		1600	1600	1600
SPARE AMPACITY		301	301	301
GENERATOR LOAD		1299	1299	1299
GENERATOR AMPACITY		1505	1505	1505

CALCULATED MAXIMUM AVAILABLE FAULT CURRENT = 85,918 AMPS. USE 100 KAIC RATED DEVICES AND BRACING.

ONE-LINE DIAGRAM

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-627

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FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

ONE-LINE DIAGRAM

SHEET
E-200

JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4496-CEI

NOTES:
1. ALL SERVICE AND MOTOR FEEDER CONDUCTORS TO BE XHHW-2. LOW VOLTAGE CONDUCTORS IN FEEDER CONDUIT TO BE 600V RATED.

EXHAUST FAN SCHEDULE

UNIT NO.	SERVING	CFM	DRIVE TYPE	PD (IN/WG)	FAN MOTOR			MANUFACTURER MODEL NO.	ACCESSORIES
					HP	RPM	VOLT/PH/HZ		
EF-1	GENERATOR ROOM	1900	DIRECT	0.25	3/4	1160	120/1/60	JENCO DFE18-3/4	MAKE POWER CONNECTIONS TO LOW SPEED WINDINGS
EF-2	GENERATOR ROOM	1900	DIRECT	0.25	3/4	1160	120/1/60	JENCO DFE18-3/4	MAKE POWER CONNECTIONS TO LOW SPEED WINDINGS

CONDUIT SCHEDULE

CONDUIT TAG	CONDUIT QUANTITY	CONDUIT SIZE	FROM	TO	CONDUCTOR	NOTES
ATD100	1	3/4 IN.	MCC	AUTODIALER	20-#14+ GND	ALARMS
CTR100	1	1 IN.	ASP	LEVEL SENSOR NO. 1	RS-485 CABLE+ GND	RADAR TRANSMITTER
EF100	1	1 1/2 IN.	LVP1	EXHAUST FAN EF-1	2-#10+ GND	-
EF200	1	1 IN.	LVP1	EXHAUST FAN EF-2	2-#10+ GND	-
FLT100	1	1 IN.	ASP	FLOATS	14-#14+ GND	-
FLT200	1	1 IN.	ASP	FLOATS	14-#14+ GND	-
GEN100	2	6 IN.	GENERATOR	GENERATOR BREAKER	REFER TO CONDUCTOR TABLE	GENERATOR FEEDERS
GEN101	1	1 IN.	MCC	GENERATOR CONTROLS	18-#14+ GND	GENERATOR ALARMS
GEN102	1	1 IN.	GENERATOR	ANNUNCIATOR	ANNUNCIATOR CABLE	ANNUNCIATOR
GEN103	1	1 1/2 IN.	LVP1	GENERATOR CONTROL PANEL	3-#6+3-#12+ GND	GENERATOR CONTROL PANEL POWER
GEN104	1	1 IN.	GENERATOR INTERFACE BOX	ETHERNET SWITCH	DATA CABLE	ETHERNET CONNECTION TO SWITCH
GEN105	1	1 IN.	GENERATOR INTERFACE BOX	HVP	3-3/0+ GND	-
IFS100	1	2 1/2 IN.	MCC	IFS	3-#6+1-#6 GND	-
LFX100	1	1 IN.	ASP	AREA LIGHTS	2-#10+ GND	ROAD AREA LIGHT
LFX200	1	1 IN.	ASP	AREA LIGHTS	2-#10+ GND	SLUICE GATE AREA LIGHT
LFX300	1	1 IN.	ASP	AREA LIGHTS	2-#10+ GND	PUMP AREA LIGHT
LFX400	1	1 IN.	ASP	AREA LIGHTS	2-#10+ GND	PUMP AREA LIGHT
LVP100	1	1 1/2 IN.	TRANSFORMER "T1"	LVP1	3-#2/0+ GND	-
LVP200	1	1 1/2 IN.	LVP1	LVP-2	3-#2+ GND	-
OAL100	1	3/4 IN.	J-BOX	MCC	12-#14+ GND	OUTSIDE AIR INTAKE LOUVER
SEC100	1	1 1/2 IN.	SECURITY PANEL	SECURITY CAMERAS	2 - CAT 6 ETHERNET CABLES W/ POE	CAMERA POWER AND DATA
SEC200	1	1 1/2 IN.	SECURITY PANEL	SECURITY CAMERAS	3 - CAT 6 ETHERNET CABLES W/ POE	CAMERA POWER AND DATA
SEC300	1	4 1/2 IN.	SECURITY PANEL	SECURITY CAMERAS	2 - CAT 6 ETHERNET CABLE W/ POE	CAMERA POWER AND DATA
SEC400	1	1 1/2 IN.	SECURITY PANEL	GENERATOR CAMERAS	1 - CAT 6 ETHERNET CABLE W/ POE	
SER100	2	6 IN.	SERVICE POLE RISER	PAD MOUNTED TRANSFORMER	2 - POWER COMPANY APPROVED PULL STRING	-
SER101	*	*	PAD MOUNTED TRANSFORMER	MAIN BREAKER	REFER TO CONDUCTOR TABLE	-
SLG100	1	1 1/2 IN.	HVP/ ASP	SLUICE GATE	3-#8+6-#14+ GND	SLUICE GATE POWER AND ALARMS
SLG101	1	1 IN.	ETHERNET SWITCH	SLUICE GATE	RS-485 CABLE	SLUICE GATE ACTUATOR
SMP100	1	1 IN.	MCC	SUMP PUMP TERMINAL BOX	3-#10+ GND	SUMP PUMP POWER
SMP101	1	1 IN.	MCC	SUMP PUMP TERMINAL BOX	5-#14	SUMP PUMP CONTROLS
SMP102	1	2 IN.	SUMP PUMP TERMINAL BOX	SUMP PUMP	MANUFACTURER'S CABLE	-
SWP100	1	3 IN.	MCC	PUMP NO. 1 TERMINAL BOX	REFER TO CONDUCTOR TABLE	+4-#12 (MOTOR HEATER & RECEPTACLE) +6-#14 (SP, RUN STOP & SPARE)
SWP101	1	1 1/2 IN.	MCC	PUMP NO. 1 TERMINAL BOX	PULL STRING	
SWP200	1	3 IN.	MCC	PUMP NO. 2 TERMINAL BOX	REFER TO CONDUCTOR TABLE	+4-#12 (MOTOR HEATER & RECEPTACLE) +6-#14 (SP, RUN STOP & SPARE)
SWP201	1	1 1/2 IN.	MCC	PUMP NO. 2 TERMINAL BOX	PULL STRING	
SWP300	1	3 IN.	MCC	PUMP NO. 3 TERMINAL BOX	REFER TO CONDUCTOR TABLE	+4-#12 (MOTOR HEATER & RECEPTACLE) +6-#14 (SP, RUN STOP & SPARE)
SWP301	1	1 1/2 IN.	MCC	PUMP NO. 3 TERMINAL BOX	PULL STRING	
SWP400	1	3 IN.	MCC	PUMP NO. 4 TERMINAL BOX	REFER TO CONDUCTOR TABLE	+4-#12 (MOTOR HEATER & RECEPTACLE) +6-#14 (SP, RUN STOP & SPARE)
SWP401	1	1 1/2 IN.	MCC	PUMP NO. 4 TERMINAL BOX	PULL STRING	
SWP500	1	3 IN.	MCC	PUMP NO. 5 TERMINAL BOX	REFER TO CONDUCTOR TABLE	+4-#12 (MOTOR HEATER & RECEPTACLE) +6-#14 (SP, RUN STOP & SPARE)
SWP501	1	1 1/2 IN.	MCC	PUMP NO. 5 TERMINAL BOX	PULL STRING	
TEL100	1	2 IN.	TELEPHONE TERMINAL BOX	ATD	TELEPHONE CABLE	-
WWL100	1	1 IN.	LVP1	WET WELL	2-#10+ GND	LIGHTS VIA SWITCH

3 PHASE SERVICE FEEDER CONDUCTOR AND DEVICE TABLE

CURRENT RATING	CONDUIT		PHASE CONDUCTOR		NEUTRAL CONDUCTOR		GROUND ELECTRODE CONDUCTOR		EQUIP GND SERVICE SUPPLY SIDE		EQUIP GND SERVICE LOAD SIDE		MAXIMUM CONDUCTOR DISTANCE BASED ON MOTOR STARTING AT 2% VOLTAGE DROP AT 85% P.F.
	QTY	SIZE	QTY	SIZE	QTY	SIZE	QTY	SIZE	QTY	SIZE	QTY	SIZE	
100	1	2 IN.	3	#1	1	#8	1	#6	1	#6	1	#8	350 FT.
150	1	2 IN.	3	2/0	1	#6	1	#4	1	#4	1	#6	325 FT.
200	1	2-1/2 IN.	3	4/0	1	#6	1	#2	1	#2	1	#6	350 FT.
225	1	2-1/2 IN.	3	4/0	1	#4	1	#2	1	#2	1	#4	300 FT.
250	1	3 IN.	3	250KCMIL	1	#4	1	#2	1	#2	1	#4	300 FT.
300	1	3 IN.	3	350KCMIL	1	#4	1	#2	1	#2	1	#4	325 FT.
400	1	4 IN.	3	600KCMIL	1	#3	1	1/0	1	1/0	1	#3	325 FT.
600	2	3 IN.	3	350KCMIL	1	#1	1	2/0	1	#2	1	#1	325 FT.
800	2	4 IN.	3	600KCMIL	1	1/0	1	3/0	1	1/0	1	1/0	325 FT.
1000	3	3-1/2 IN.	3	500KCMIL	1	2/0	1	4/0	1	1/0	1	2/0	350 FT.
1200	3	4 IN.	3	600KCMIL	1	3/0	1	250	1	1/0	1	3/0	325 FT.
➡ 1600	4	3 1/2 IN.	3	600KCMIL	1	4/0	1	300	1	1/0	1	4/0	325 FT.
2000	5	4 IN.	3	600KCMIL	1	250	1	400	1	1/0	1	250	325 FT.

SERVICE FEEDER NOTES:
1. DROP NEUTRAL AFTER FIRST OVER CURRENT PROTECTION DEVICE UNLESS A STANDBY GENERATOR IS PROVIDED.
2. 1/0 MINIMUM FOR PARALLEL PHASE, NEUTRAL, OR GROUNDED CIRCUIT CONDUCTORS PER NEC.
3. SERVICE SUPPLY SIDE EQUIPMENT GROUNDING CONDUCTORS ARE BASED ON THE PHASE CONDUCTOR SIZE IN EACH PARALLEL CONDUIT PER NEC.

460V MOTOR DEVICE TABLE

HP	LOAD AMPS	LOAD +25%	*MTR OCPD TRIP	STARTER SIZE	CND QTY	CND SIZE	CONDUCTORS				MAXIMUM CONDUCTOR DISTANCE BASED ON MOTOR STARTING AT 10% VOLTAGE DROP AT 85% P.F.
							PHASE		GROUND		
							QTY	SIZE	QTY	SIZE	
1/2-5	1-5	2-10	15	FVNR 1	1	1 IN.	3	#12	1	#12	300 FT.
7-1/2	11	14	20	FVNR 1	1	1 IN.	3	#10	1	#12	375 FT.
10	14	18	30	FVNR 1	1	1 IN.	3	#10	1	#10	275 FT.
15	21	27	40	FVNR 2	1	1 IN.	3	#8	1	#10	275 FT.
20-25	27-34	34-43	50	FVNR 2	1	1 IN.	3	#8	1	#10	150 FT.
30	40	50	70	FVNR 3	1	1-1/2 IN.	3	#6	1	#8	225 FT.
40	52	65	100	FVNR 3	1	1-1/2 IN.	3	#4	1	#8	275 FT.
50	65	82	150	FVNR 3	1	1-1/2 IN.	3	#3	1	#6	250 FT.
60	77	97	200	FVNR 4	1	1-1/2 IN.	3	#2	1	#6	275 FT.
75	96	120	200	FVNR 4	1	2 IN.	3	#1	1	#6	275 FT.
100	124	155	200	RVAT 4	1	2 IN.	3	2/0	1	#6	300 FT.
125	156	195	250	SSRV 5	1	2-1/2 IN.	3	4/0	1	#4	350 FT.
150	180	225	300	SSRV 5	1	3 IN.	3	250	1	#4	350 FT.
➡ 200	240	300	350	SSRV 5	1	3 IN.	3	400	1	#3	350 FT.
250	302	378	450	SSRV 6	2	2-1/2 IN.	3	4/0	1	1/0	375 FT.
300	361	452	600	SSRV 6	2	3 IN.	3	350	1	1/0	425 FT.
350	414	518	700	SSRV 6	2	3 IN.	3	500	1	1/0	475 FT.
400	477	597	800	SSRV 6	2	3-1/2 IN.	3	600	1	1/0	425 FT.
450	515	644	800	SSRV 7	2	3-1/2 IN.	3	600	1	1/0	425 FT.
500	590	738	1000	SSRV 7	3	3 IN.	3	400	1	1/0	425 FT.

* COORDINATE SIZE WITH MOTOR MANUFACTURER. ADJUST GROUND CONDUCTOR SIZE ACCORDINGLY.
* WHERE ODD SIZE HP, GO TO NEXT GREATER HP.
* POWER FEEDER CONDUCTORS TO BE XHHW-2, 600V RATED.
* BRANCH CIRCUIT CONDUCTORS TO BE THHW, 600V RATED.

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-827

ENGINEER: CWS | DESIGNER: LT | CHECKED BY: CWS | DATE CHKD: Oct. 19, 15 | DRAWN BY: JAA

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

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TBPLS FIRM REG. No. 100486

FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

SCHEDULES SHEET 1

12/03/15 BEN

STATE OF TEXAS
ERIC W. BURRER
100158
LICENSED PROFESSIONAL ENGINEER
OCTOBER 19, 2015 SHRADER ENGINEERING, INC.

SHEET
E-300

JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4496-CEI

PANEL HVP

SERVICE VOLTAGE 480V
MAIN BREAKER SIZE 200A
PHASE BUS RATING 225A
NEUTRAL BUS RATING 225A
SHORT CIRCUIT RATING 42 KAIC
LOCATION IFS
WIRE SIZE 3/0
NEU WIRE SIZE N/A
PHASE 3
MOUNTING SURFACE
WITH: ■ SOLID NEUTRAL & GROUND ☐ ISOLATED GROUND BUS ☐ INTEGRAL SPD
NOTE: ADJ. CKTS. TO BAL. PNL.

CKT. DESCRIPTION	WIRE	BREAKER POLE	BREAKER AMP	VA/WATTS A	VA/WATTS B	VA/WATTS C	CKT NO.	CKT NO.	VA/WATTS A	VA/WATTS B	VA/WATTS C	BREAKER POLE	BREAKER AMP	WIRE	CKT. DESCRIPTION
SPARE		1	20	-			1	2	2500			2	20	10	GEN. JACKET HEATER No. 1
SPARE		1	20		-		3	4		2500					GEN. JACKET HEATER No. 1
SPARE		1	20			-	5	6			2500	2	20	10	GEN. JACKET HEATER No. 2
SLUICE GATE				2200			7	8	2500						GEN. JACKET HEATER No. 2
SLUICE GATE	3	3	20		2200		9	10		1500					TRANSFORMER "T1"
SLUICE GATE						2200	11	12			1500	3	60		TRANSFORMER "T1"
SPARE		1	20	-			13	14	1500						TRANSFORMER "T1"
SPARE		1	20		-		15	16		-		1	20		SPARE
SPARE		1	20			-	17	18			-	1	20		SPARE

TOTAL PHASE A: 8700 VOLT-AMPS
TOTAL PHASE B: 8200 VOLT-AMPS
TOTAL PHASE C: 9200 VOLT-AMPS

TOTAL PHASE A CURRENT: 73 AMPS
TOTAL PHASE B CURRENT: 52 AMPS
TOTAL PHASE C CURRENT: 52 AMPS

TOTAL CONNECTED LOAD: 21100 VA

LUMINAIRE FIXTURE SCHEDULE

MARK	FIXTURE DESCRIPTION	LAMP TYPE	WATTAGE	VOLTAGE	COMMENTS
A	LITHONIA # MSL 4L MVOLT LP840	LED	45	120	CEILING MOUNT WITH WIRE GUARD
AL1	LITHONIA # CSX1 LED 60C 700 40K T4M MVOLT SPA	LED	134	120	DARK BRONZE FINISH, SINGLE FUSE, WITH VANDAL GUARD (DARK-SKY COMPLIANT)
B	LITHONIA # WSG 2 10A700/40K SR2 MVOLT	LED	47	120	WALL MOUNT, DARK BRONZE FINISH WITH VANDAL GUARD (DARK-SKY COMPLIANT)
C	EDWARDS # 105STR-N5	LED	12	120	XENON STROBE 3 JOULE WITH RED LENS & WALL MOUNT BRACKET
EM	LITHONIA # EU2 LED M12	LED	3.6	120	EMERGENCY LIGHT WITH 90 MINUTE BATTERY AND TWO LAMP HEADS
S	CROUSE-HINDS, VMV5L-LED	LED	70	120	WALL OR CEILING MOUNT AS REQUIRED
V	LITHONIA #OLVTWN 4000K MVOLT	LED	15	120	WALL MOUNT WITH GLOBE AND GUARD, GASKETED & ENCLOSED FIXTURE
X	LITHONIA #EXR EL M6	LED	3.6	120	MOUNT 6 IN. ABOVE DOOR

PANEL LVP1

SERVICE VOLTAGE 120/208V
MAIN BREAKER SIZE 150A
PHASE BUS RATING 225A
NEUTRAL BUS RATING 225A
SHORT CIRCUIT RATING 22 KAIC
LOCATION IFS
WIRE SIZE 2/0
NEU WIRE SIZE 2/0
PHASE 3
MOUNTING SURFACE
WITH: ■ SOLID NEUTRAL & GROUND ☐ ISOLATED GROUND BUS ☐ INTEGRAL SPD
NOTE: ADJ. CKTS. TO BAL. PNL.

CKT. DESCRIPTION	WIRE	BREAKER POLE	BREAKER AMP	VA/WATTS A	VA/WATTS B	VA/WATTS C	CKT NO.	CKT NO.	VA/WATTS A	VA/WATTS B	VA/WATTS C	BREAKER POLE	BREAKER AMP	WIRE	CKT. DESCRIPTION
CONTROL ROOM PTAC-1	10	2	30	5000			1	2	-			1	20	12	SWP5 HEATER
					5000		3	4		-		1	20	12	SPARE
SWP1 RECEPTACLE	12	1	20			150	5	6			500	1	20	12	GEN RM QUAD
SWP2 RECEPTACLE	12	1	20	150			7	8	200			1	20	12	RECEPTACLES (OUTSIDE)
SWP3 RECEPTACLE	12	1	20		150		9	10		1620		1	20	12	ROOM RECPT (CONTROL RM)
SWP4 RECEPTACLE	12	1	20			150	11	12			1440	1	20	12	ROOM RECPT (GEN RM)
SWP5 RECEPTACLE	12	1	20	150			13	14	500			1	20	12	SSC-UPS
SECURITY ENCLOSURE	12	1	20		600		15	16		500		1	20	12	PUMP CONTROLS
ALARM CONTROLS	12	1	20			500	17	18			-	1	20	12	SPARE
SPARE	-	1	20	-			19	20	300			1	20	12	GENERATOR SPACE HEATERS
SPARE	-	1	20		-		21	22		1200		1	20	10	GENERATOR BATTERY CHARGER
MCC HEATERS	12	1	20			600	23	24			720	1	20	12	EXHAUST FAN EF-1
MULTILIN UPS No. 1	12	1	20	500			25	26	720			1	20	12	EXHAUST FAN EF-2
MULTILIN UPS No. 2	12	1	20		500		27	28		500		1	20	10	WET WELL LIGHTS
MULTILIN UPS No. 3	12	1	20			500	29	30			-	1	20	-	SPARE
MULTILIN UPS No. 4	12	1	20	500			31	32	-			1	20	-	SPARE
MULTILIN UPS No. 5	12	1	20		500		33	34		-		1	20	-	SPARE
SWP1 HEATER	-	1	20			-	35	36			-	1	20	-	SPARE
SWP2 HEATER	-	1	20	-			37	38	2280						LVP2
SWP3 HEATER	-	1	20		-		39	40		2850		3	100	1	LVP2
SWP4 HEATER	-	1	20			-	41	42			2300				LVP2

TOTAL PHASE A: 10300 VOLT-AMPS
TOTAL PHASE B: 13420 VOLT-AMPS
TOTAL PHASE C: 6980 VOLT-AMPS

TOTAL PHASE A CURRENT: 86 AMPS
TOTAL PHASE B CURRENT: 112 AMPS
TOTAL PHASE C CURRENT: 57 AMPS

TOTAL CONNECTED LOAD: 30580 VA

PANEL LVP2

SERVICE VOLTAGE 120/208V
MAIN BREAKER SIZE MLO
PHASE BUS RATING 150A
NEUTRAL BUS RATING 150A
SHORT CIRCUIT RATING 22 KAIC
LOCATION IFS
WIRE SIZE #2
NEU WIRE SIZE #2
PHASE 3
MOUNTING SURFACE
WITH: ■ SOLID NEUTRAL & GROUND ☐ ISOLATED GROUND BUS ☐ 200% NEUTRAL
NOTE: ADJ. CKTS. TO BAL. PNL.

CKT. DESCRIPTION	WIRE	BREAKER POLE	BREAKER AMP	VA/WATTS A	VA/WATTS B	VA/WATTS C	CKT NO.	CKT NO.	VA/WATTS A	VA/WATTS B	VA/WATTS C	BREAKER POLE	BREAKER AMP	WIRE	CKT. DESCRIPTION
BUILDING FLOODLIGHTS	10	1	20	680			1	2	500			1	20	12	LIGHTING CONTROL POWER
PLANT AREA LIGHTS (SOUTH)	10	1	20		750		3	4		500		1	20	12	CONTROL ROOM LIGHTS
PLANT AREA LIGHTS (NORTH)	10	1	20			500	5	6			1000	1	20	12	GENERATOR ROOM LIGHTS
CONTROLS (SUMP PUMP)	12	1	20	200			7	8	-			1	20	-	SPARE
CONTROLS (STORM WTR FLOAT)	12	1	20		200		9	10		200		1	20	12	CONTROLS (GEN STATUS)
CONTROLS	12	1	20			200	11	12			200	1	20	12	CONTROLS (PHASE FAIL)
CONTROLS	12	1	20	200			13	14	200			1	20	12	CONTROLS
CONTROLS	12	1	20		200		15	16		200		1	20	12	CONTROLS
CONTROLS	12	1	20			200	17	18			200	1	20	12	FOUNDATION LIGHTS
CONTROLS	12	1	20	200			19	20	-			1	20		SPARE
CONTROLS	12	1	20		200		21	22		-		1	20		SPARE
SPARE		1	20			-	23	24			-	1	20		SPARE
SPARE		1	20	-			25	26	-			1	20		SPARE
SPARE		1	20		-		27	28		-		1	20		SPARE
SPARE		1	20			-	29	30			-	1	20		SPARE
SPARE		1	20	-			31	32	-			1	20		SPARE
SPARE		1	20		-		33	34		-		1	20		SPARE
SPARE		1	20			-	35	36			-	1	20		SPARE
SPARE		1	20	-			37	38	-			1	20		SPARE
SPARE		1	20		-		39	40		-		1	20		SPARE
EMERGENCY LIGHT	12	1	20			100	41	42			100	1	20	12	EMERGENCY EXIT LIGHT

TOTAL PHASE A: 1980 VOLT-AMPS
TOTAL PHASE B: 2250 VOLT-AMPS
TOTAL PHASE C: 2500 VOLT-AMPS

TOTAL PHASE A CURRENT: 17 AMPS
TOTAL PHASE B CURRENT: 19 AMPS
TOTAL PHASE C CURRENT: 21 AMPS

TOTAL CONNECTED LOAD: 6730 VA

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-527

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
CDGD CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

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TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

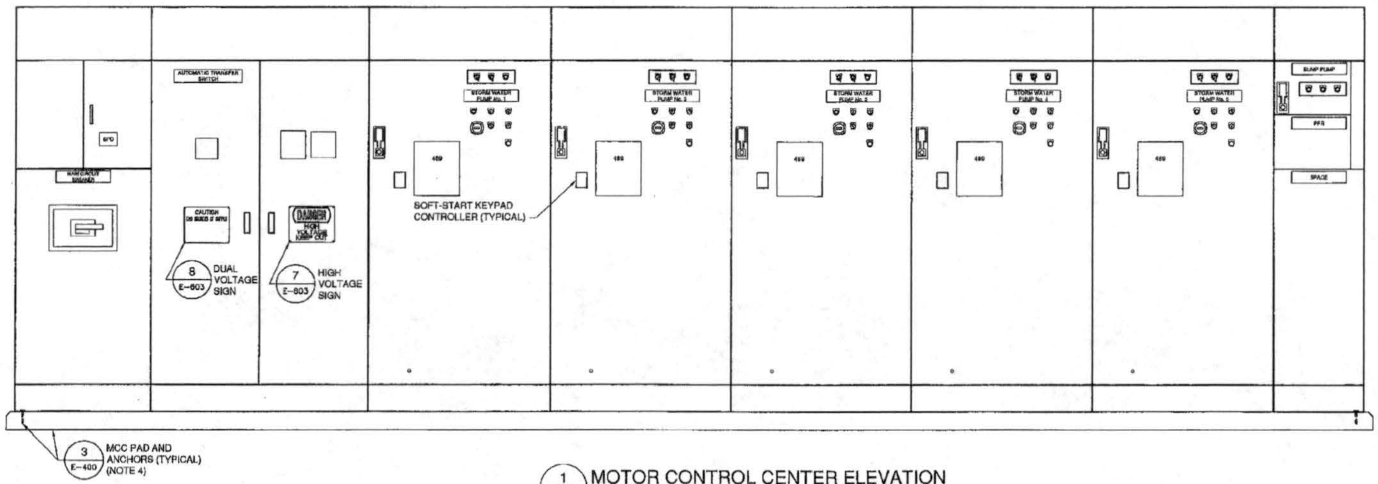
SCHEDULES SHEET 2

ERIC W. BURNER 116158 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS
ISSUED 10, 2015 SHRADER ENGINEERING, INC.

SHEET
E-301

JOB NO. 2011150-02

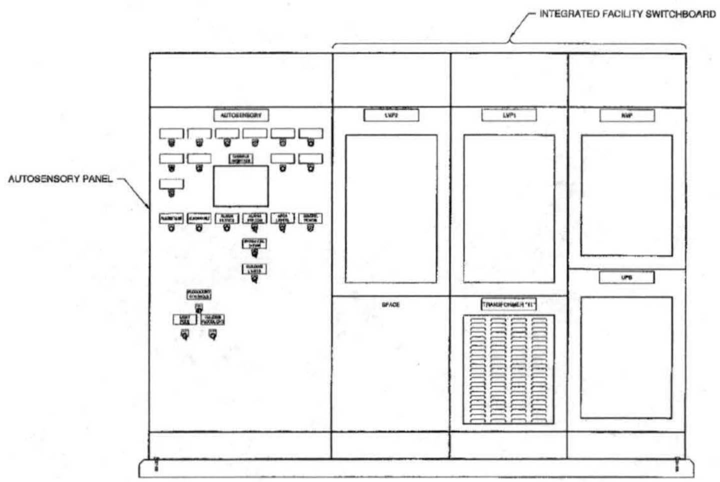
CEI JOB No. 2011150-02 SEI Job No. 4486-CEI



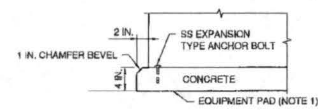
1 MOTOR CONTROL CENTER ELEVATION
N.T.S.

MCC NOTES:

1. SUBMIT LAYOUT OF MCC, SWITCHGEAR, TRANSFORMER AND OTHER ELECTRICAL EQUIPMENT TO ENGINEER FOR APPROVAL BEFORE INSTALLING CONDUIT.
2. INSTALL TOP OF SCREENS AT APPROXIMATELY 5 FT. AFF. ARRANGE ALL ALARMS HIGH ON PANEL. ARRANGE CONTROLS IN LIKE ORDER VERTICALLY. ALL DEVICES MAY NOT BE SHOWN. CONTACTOR SHALL PROVIDE FULL FUNCTIONALITY AS DEFINED IN THE PROJECT SPECIFICATIONS.
3. SEAL ALL UNDERGROUND CONDUITS STUB-UPS INTO MOTOR CONTROL CENTER AND SECTIONS WITH CSBE SEAL WHEN 1 1/2 IN. AND LARGER AND WITH RTV SILICON SEALANT WHEN SMALLER.
4. CONTRACTOR SHALL COORDINATE CONCRETE PAD SIZE REQUIREMENTS WITH ALL EQUIPMENT MANUFACTURERS. DIMENSIONS VARY WITH MANUFACTURERS. CONFIRM EQUIPMENT SIZE WITH SELECTED MANUFACTURER AND ADJUST AS NECESSARY TO FIT SPACE IN CONTROL ROOM. MCC LAYOUT IS TYPICAL AND MAY VARY PER MANUFACTURER ADDITIONAL SECTIONS MAY BE REQUIRED.
5. ONLY MANUFACTURERS LISTED IN APPLICABLE SPECIFICATIONS ARE ACCEPTABLE TO FURNISH MOTOR CONTROL CENTERS AND SWITCHGEAR FOR THIS PROJECT. NO EXCEPTIONS.
6. ALL CONTROL PANELS, CONTROLLERS, MOTOR CONTROL CENTERS AND AUTOSENSORY PANELS SHALL BE SHOP TESTED BEFORE DELIVERY TO JOB SITE. ANY PANELS INSTALLED BUT NOT SHOP TESTED SHALL BE REMOVED AT CONTRACTORS EXPENSE AND RETURNED TO SHOP FOR TESTING. NOTIFY ENGINEER IN WRITING WHEN SHOP TESTS HAVE BEEN COMPLETED AND, IF ANY PROBLEMS, EXPLAIN PROBLEM AND ACTION TAKEN TO REMEDY PROBLEM BEFORE SHIPPING. ALL PANELS REMOVED FOR TESTING SHALL BE IN NEW CONDITION WHEN RETURNED.
7. SHOW EXACT CIRCUIT DESCRIPTION ON PANEL LEGENDS AND INCLUDE IN O&M MANUALS AND AS-BUILTS.



2 INTEGRATED FACILITY SWITCHBOARD ELEVATION
N.T.S.



NOTE:
1. ALL HOUSE KEEPING PADS SHALL EXTEND 2 INCHES BEYOND EQUIPMENT. PROVIDE 1 INCH CHAMFER OR BEVEL ON ALL EXPOSED EDGES.

3 MCC PAD & ANCHOR DETAIL
N.T.S.

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-537

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
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COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

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TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

MOTOR CONTROL CENTER

STATE OF TEXAS — ERIC W. BURKER — 100158 — LICENSED PROFESSIONAL ENGINEER — OCTOBER 19, 2015

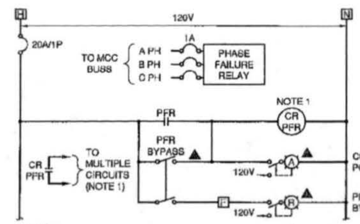
SHEET E-400

JOB NO. 2011150-02

CKI JOB No. 2011150-02 SEI Job No. 4495-CEI

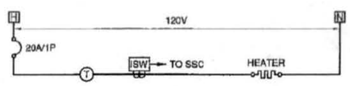
GENERAL NOTES:

1. VERIFY TOTAL QUANTITY DEVICES PER CONTROL DIAGRAMS.
2. COORDINATE ALL NORMALLY CLOSED (N.C.) AND NORMALLY OPEN (N.O.) CONTACTS.
3. CONTROL DIAGRAMS ARE TYPICAL AND MAY VARY PER EQUIPMENT MANUFACTURES STANDARDS.
4. USE MULTIPLE RELAYS WHERE ADDITIONAL CONTROLS ARE REQUIRED, AND WHERE SENDING SIGNAL TO MULTIPLE POINTS.

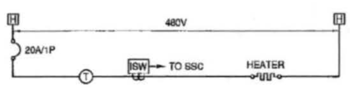


NOTE:
1. USE MULTIPLE RELAYS WHERE ADDITIONAL CONTROLS ARE REQUIRED.

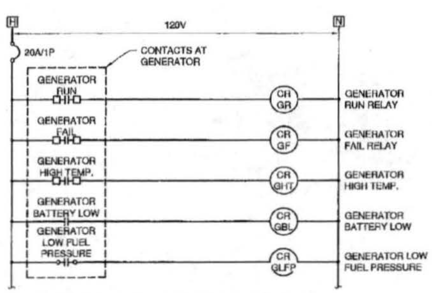
PHASE FAIL RELAY CONTROL DIAGRAM
(TYPICAL)



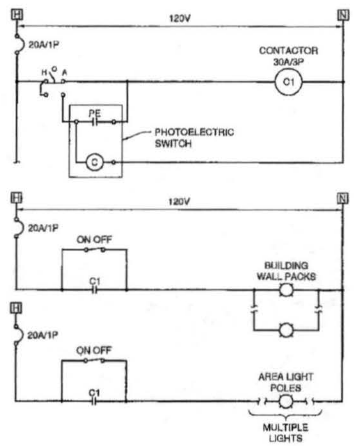
MCC HEATER CONTROL DIAGRAM
(TYPICAL - EACH SECTION)



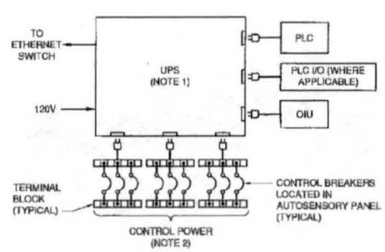
GENERATOR JACKET HEATER CONTROL DIAGRAM
(TYPICAL - EACH SECTION)



GENERATOR STATUS DIAGRAM

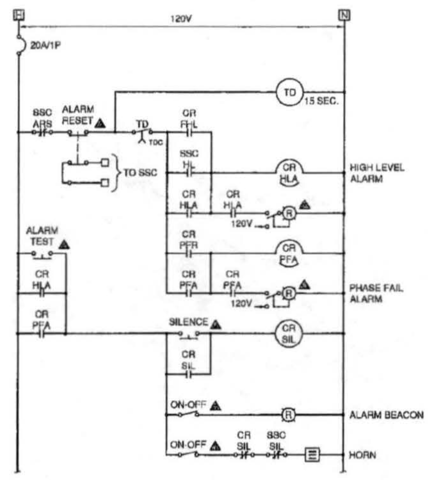


AREA LIGHTING CONTROL DIAGRAM

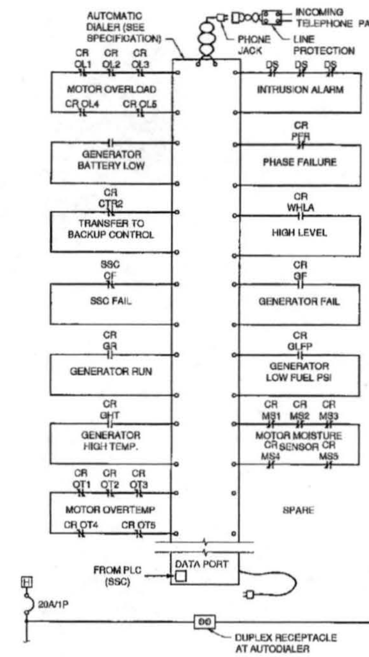


NOTES:
1. PROVIDE 3,000VA UPS PER SPECIFICATIONS.
2. REFER TO CONTROL DIAGRAMS FOR CONTROLS REQUIRING UPS BACKUP.

UNINTERRUPTIBLE POWER SUPPLY DIAGRAM



ALARM CONTROL DIAGRAM
(TYPICAL)



NOTE:
1. PROVIDE RELAY CONTACTS FOR LEVEL AND PRESSURE SIGNAL TO AUTODIALER, PLC AND OTHER CONTROLS.

AUTODIALER WIRING DIAGRAM
(NOTE 1)

CONTROL PANELS SHALL BE FABRICATED ONLY BY MANUFACTURERS LISTED IN SPECIFICATION 16012, 2.01, F. NO EXCEPTIONS.

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY

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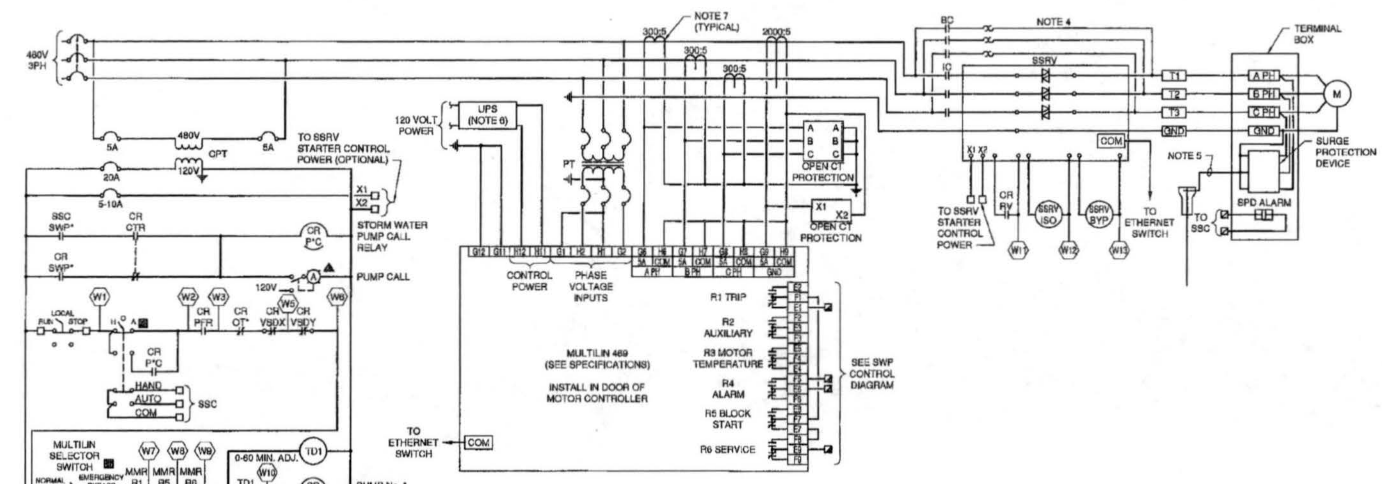
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

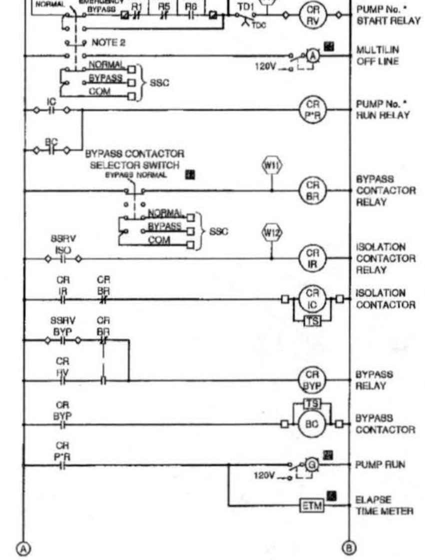
FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

CONTROL DIAGRAMS
SHEET 1

SHEET
E-500
JOB NO. 2011150-02

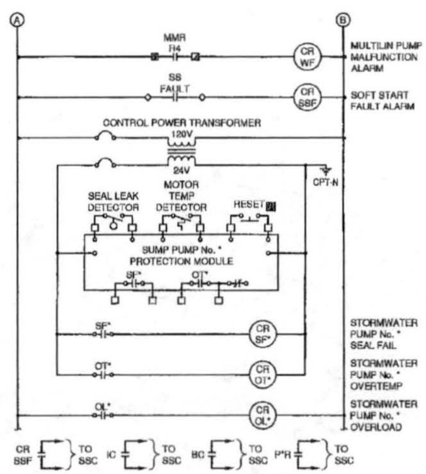
CEI JOB No. 2011150-02 SE Job No. 4496-CE





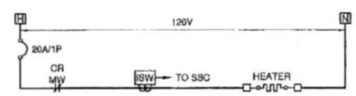
STORM WATER PUMP CONTROL DIAGRAM

(TYPICAL - 5 PUMPS) * (REPLACE * WITH PUMPS DESIGNATION)(NOTE 4)

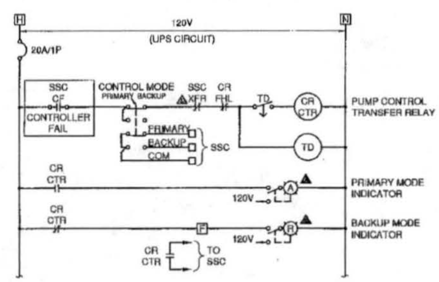


STORM WATER PUMP CONTROL DIAGRAM

(TYPICAL - 5 PUMPS) * (REPLACE * WITH PUMPS DESIGNATION)(NOTE 4)



PUMP MOTOR HEATER CONTROL DIAGRAM



PUMP CONTROL TRANSFER DIAGRAM

(NOTE 4)

NOTES:

1. ALL OVERCURRENT PROTECTION DEVICES FOR CONTROLS, PUMP CONTROLLERS, ETC, SHALL BE CIRCUIT BREAKERS ONLY. THIS APPLIES FOR ALL AMPACITY. FUSES ARE NOT ALLOWED FOR ANY AMPACITY, REGARDLESS HOW SMALL.
2. PROVIDE KEY OPERATED, NON-ILLUMINATED, 2 POSITION SELECTOR SWITCH FOR EMERGENCY BYPASS OF MULTILIN WHEN UNIT SERVICE IS REQUIRED. KEY WITHDRAWAL MUST BE PROVIDED IN EITHER POSITION. TURN SIX KEYS OVER TO OWNER UPON COMPLETION OF MULTILIN INSTALLATION.
3. WHERE ADDITIONAL CONTACTS ARE REQUIRED, PROVIDE ADDITIONAL CONTACT BLOCKS OR ADDITIONAL RELAYS WITH COILS WIRED IN PARALLEL.
4. PROVIDE ACROSS-THE-LINE CONDUCTORS AND ALL CONTROLS FOR STORM WATER PUMP 1 THROUGH STORM WATER PUMP 5. NOT SHOWN FOR CLARITY.
5. SIZE GROUND CONDUCTORS PER LIGHTNING ARRESTOR/SURGE PROTECTOR MANUFACTURER'S RECOMMENDATIONS.
6. PROVIDE UNINTERRUPTIBLE POWER SUPPLY RATED FOR 24 HOURS FOR MULTILIN 120 VOLT POWER. DO NOT CONNECT THE MULTILIN UNIT TO THE SYSTEM MONITOR UPS, NO EXCEPTIONS.
7. SIZE CT'S PER MANUFACTURERS RECOMMENDATIONS BASED ON MOTOR HORSEPOWER. PROVIDE CURRENT TRANSFORMER (C.T.) WITH BUILT-IN LOAD (BURDEN) RESISTOR, NO EXCEPTIONS. PROVIDE CONDUCTOR SIZE ACCORDINGLY.

SHRADER ENGINEERING

ELECTRICAL | COMMUNICATIONS | TECHNOLOGY

SHRADER ENGINEERING, INC. TBPE No. F-527

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CODO CHECKED BY:
SURVEY CHECKED BY:
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FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

CONTROL DIAGRAMS
SHEET 2

BEW 12/02/15

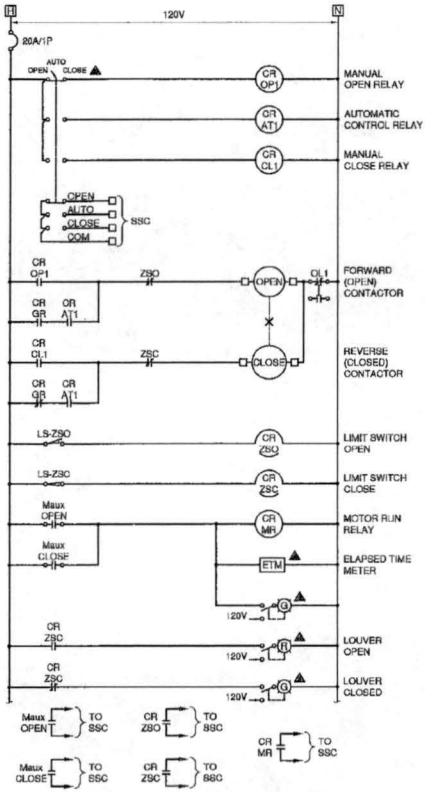
STATE OF TEXAS
ERIC W. BURRER
100150
LICENSED PROFESSIONAL ENGINEER
OCTOBER 19, 2015
SHRADER ENGINEERING, INC.

SHEET
E-501

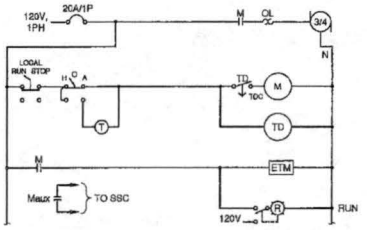
JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4495-CEI

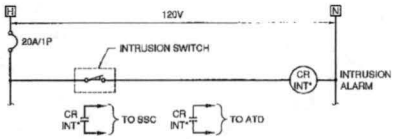
GENERAL NOTES:
1. ALL CONTROL RELAYS TO HAVE CONTACTS ROUTED TO SSC.



AIR LOUVER MOTOR CONTROL DIAGRAM



EXHAUST FAN CONTROL DIAGRAM
(COMBINATION STARTER) (TYPICAL)



NOTE:
1. REFER TO SSC I/O SCHEDULE FOR INTRUSION INPUTS.

INTRUSION SWITCH DIAGRAM
(TYPICAL EACH SWITCH) (NOTE 1)

NO.	REVISION	DATE	BY

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CQQC CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

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FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

CONTROL DIAGRAMS
SHEET 3

12/02/15 JFN

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-527

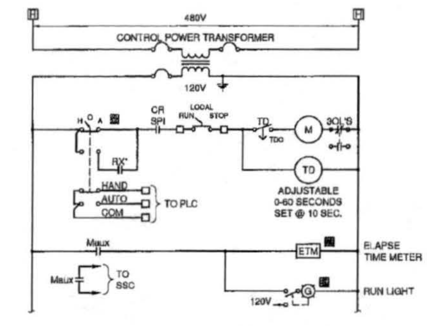
ERIC W. SHRADER
99058
LICENSED PROFESSIONAL ENGINEER
JUNE 15, 2015
SHRADER ENGINEERING, INC.

SHEET
E-502

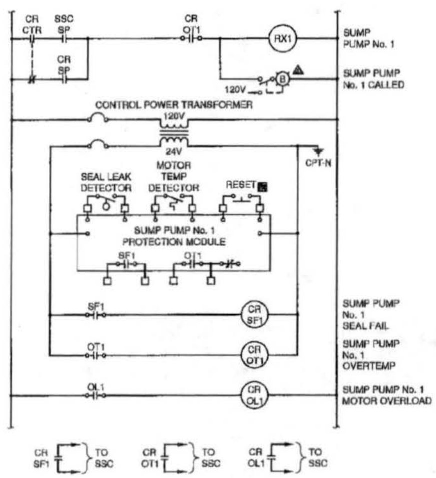
JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4498 CEI

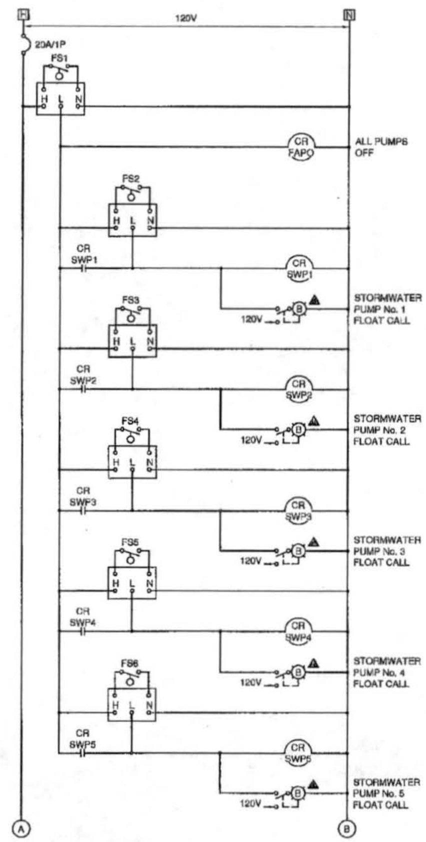
GENERAL NOTE:
1. ALL CONTROL RELAYS TO HAVE CONTACTS ROUTED TO SSC.



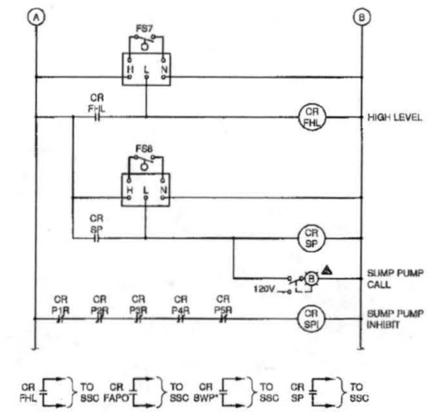
SUMP PUMP MOTOR STARTER DIAGRAM



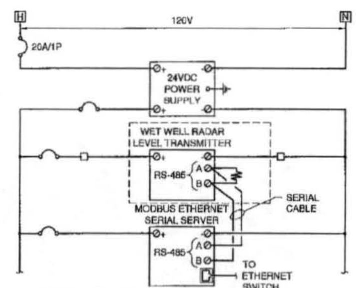
SUMP PUMP CONTROL DIAGRAM



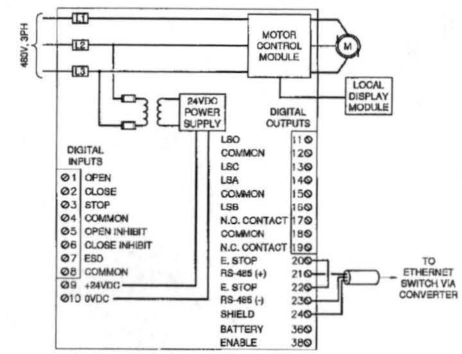
STORMWATER
FLOATS CONTROL DIAGRAM



STORMWATER
FLOATS CONTROL DIAGRAM (CONT.)



RADAR LEVEL
TRANSMITTER WIRING DIAGRAM



SLUICE GATE
ELECTRONIC ACTUATOR DIAGRAM
(SEE SPECIFICATIONS)

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY

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FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

CONTROL DIAGRAMS
SHEET 4

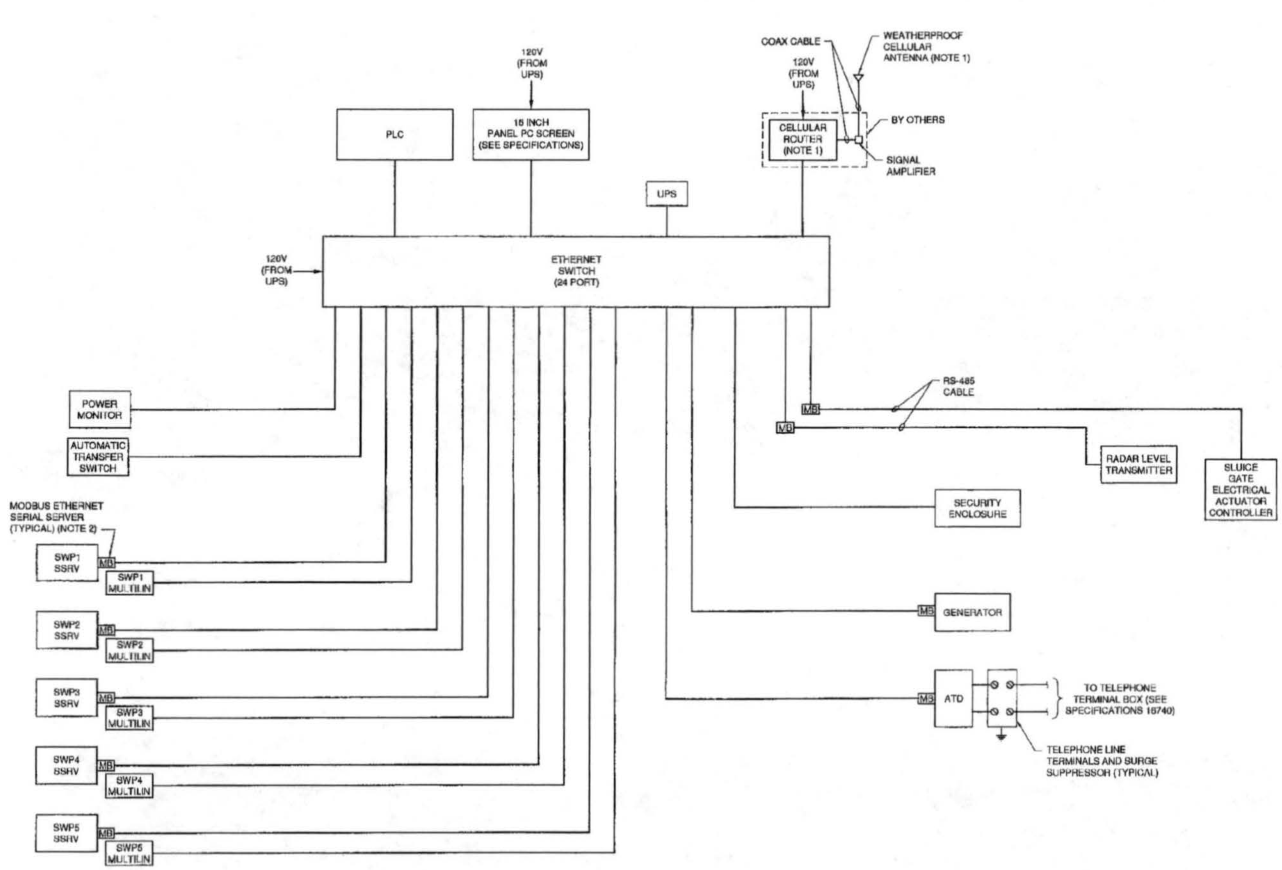
SHEET
E-503

JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4496-CEI

NOTES:

1. CELLULAR ROUTER AND AMPLIFIER WILL BE PROVIDED BY OTHERS. PROVIDE SPACE INSIDE CONTROL PANEL FOR MOUNTING OF DEVICES. CONTRACTOR TO INSTALL OUTDOOR ANTENNA AS SHOWN ON SHEET E5.
2. PROVIDE MANUFACTURERS SERIAL TO ETHERNET CONVERTER, SERVER, OR GATEWAY AS NEEDED TO COMMUNICATE WITH PLC AND HMI VIA MODBUS TCP/IP. WHERE MANUFACTURER DOES NOT PROVIDE THIS OPTION PROVIDE MODBUS ETHERNET SERIAL SERVER AS LISTED IN SPECIFICATION 16936.
3. ALL NETWORK CONNECTIONS SHOWN ARE ETHERNET UNLESS DESIGNATED OTHERWISE.
4. CONTROL POWER NOT SHOWN FOR ALL DEVICES. REFER TO CONTROL DIAGRAMS AND SPECIFICATIONS FOR POWER REQUIREMENTS AND PROVIDE ACCORDINGLY.



SEE SPECIFICATIONS FOR INDIVIDUAL DEVICE REQUIREMENTS

NETWORK COMMUNICATIONS BLOCK DIAGRAM
(NOTE 4)

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-527

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FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

NETWORK DIAGRAM

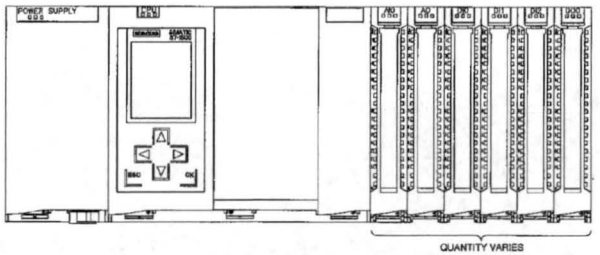
BFW 12/03/15

STATE OF TEXAS — ERIC W. BURRER — LICENSED PROFESSIONAL ENGINEER — OCTOBER 19, 2015 — SHRADER ENGINEERING, INC

SHEET E-510

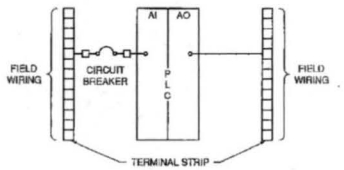
JOB NO. 2011160-02

CEI JOB No. 2011150-02 SEI Job No. 4496-CEI

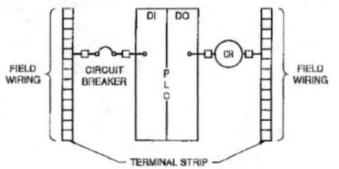


NOTES:
1. PLC IS SIEMENS. SEE SPECIFICATION 16904. NO SUBSTITUTION.
2. PROVIDE ADDITIONAL SPARE I/O'S OF EACH TYPE FOR UNDEFINED CONTROL FUNCTIONS PER SPECIFICATION 16904. COORDINATE WITH ENGINEER.
3. ALL I/O RELAYS, CONTACTS AND PLC TO BE POWERED BY 24 HOUR UPS.

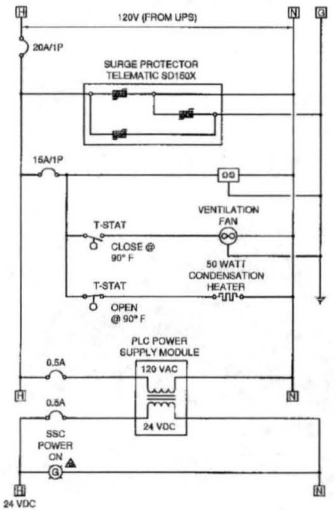
SOLID STATE CONTROLLER
(NOTE 2)



TYPICAL ANALOG I/O DIAGRAM



TYPICAL DISCRETE I/O DIAGRAM



PLC POWER DIAGRAM
(TYPICAL)

GENERAL NOTES:
1. PROVIDE ADDITIONAL CONTACTS FOR RELAYS, AS REQUIRED, BY ADDING ADDITIONAL RELAYS WITH THE COILS WIRED IN PARALLEL.
2. ALL I/O RELAYS, CONTACTS AND PLC TO BE POWERED BY 24 HOUR UPS.
3. SEE CONTROL DIAGRAMS FOR ADDITIONAL I/O REQUIREMENTS.

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SHRADER ENGINEERING, INC. TBPE No. F-627

NO.	REVISION	DATE	BY

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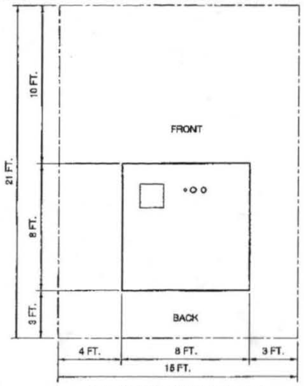
FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION
SOLID STATE CONTROLLER DIAGRAM

SHEET
E-511

JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4496-CST



MINIMUM EASEMENT REQUIREMENTS

REINFORCING SCHEDULE PER FOUNDATION

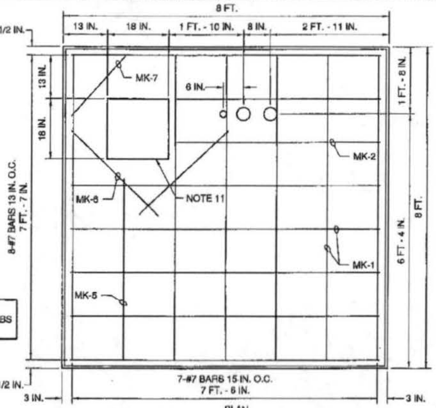
MARK	QTY.	SIZE	LENGTH	REMARKS
MK-1	12	#7	7 FT. 7 IN.	STRAIGHT
MK-2	2	#7	5 FT.	STRAIGHT
MK-3	0	#7	2 FT. 4 IN.	STRAIGHT
MK-4	0	#7	5 FT.	STRAIGHT
MK-5	1	#7	4 FT. 6 IN.	STRAIGHT
MK-6	2	#7	3 FT.	STRAIGHT
MK-7	1	#7	2 FT.	STRAIGHT

MATERIAL ESTIMATE PER FOUNDATION

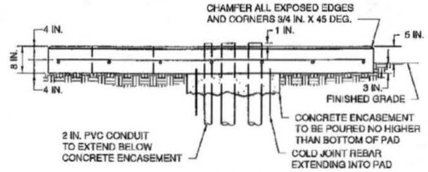
MARK	QTY.
REINFORCING STEEL #7	232 LBS.
CONCRETE (5 SACKS)	1 3/4 CU. YDS.
2 IN. PVC CONDUIT	5 FT.
TYPE EB OR BETTER PVC CONDUIT, 90 DEG, 60 IN. R	2

EQUIPMENT WEIGHT 20,000 LBS MAXIMUM

REFER TO POWER COMPANY STANDARDS FOR FOUNDATION REQUIREMENTS



PLAN



ELEVATION

150-1000 KVA, 3 PHASE PMT FOUNDATION, 12KV & 35KV (SPECIAL APPLICATION) BASED ON DISTRIBUTION STANDARD 60-390

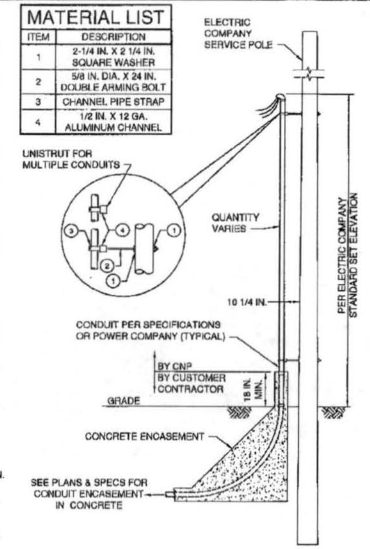
NOTES:

1. CONCRETE SHALL BE IN ACCORDANCE WITH LATEST REVISION OF POWER COMPANY STANDARDS (MINIMUM COMPRESSION IN 28 DAYS, 3000 PSI).
2. REINFORCING STEEL SHALL BE INTERMEDIATE GRADE DEFORMED BARS IN ACCORDANCE WITH POWER COMPANY STANDARDS AND A.S.T.M. SPECIFICATION A-615, GRADE 60, OR BETTER.
3. ALL SPLICES IN REINFORCING SHALL LAP A LENGTH EQUAL TO 24 BARS DIAMETERS.
4. ALL DIMENSION ON REINFORCING ARE TO THE CENTER OF BARS.
5. CONCRETE SHALL BE THOROUGHLY WORKED AROUND REINFORCING ANY EMBEDDED FIXTURES AND INTO ALL CORNERS OF FORMS.
6. IF REQUIRED, GROUT SHALL BE A MIXTURE OF 1 PART CEMENT TO 2 PARTS SAND WITH ENOUGH WATER TO PRODUCE A WORKABLE MIXTURE.
7. CONCRETE IS TO BE POURED ONLY WHEN THE ATMOSPHERIC TEMPERATURE IS A MINIMUM 40°F AND RISING.
8. STRIP BACK ALL VEGETATION AND APPROXIMATELY 3 IN. OF TOP SOIL. REMOVE ALL LOOSE CLODS AND STONES. BACKFILL AND THOROUGHLY COMPACT CONDUIT TRENCHES AND HOLES BEFORE CONCRETE IS PLACED.
9. REINFORCING SHALL HAVE A MINIMUM OF 2 1/2 IN. CONCRETE COVER.
10. SLOPE PAD 1 IN. FRONT TO BACK.
11. THE SQUARE OPENING IS FOR THE CUSTOMER'S SECONDARY CONDUITS AND FOR POWER COMPANY'S METERING CONDUIT.
12. POWER COMPANY WILL NOT ALLOW OTHER FACILITIES TO PASS BENEATH ITS EQUIPMENT PADS. A ONE FOOT MINIMUM HORIZONTAL CLEARANCE SHALL BE MAINTAINED BETWEEN POWER COMPANY PADS AND ALL OTHER FACILITIES.
13. THE SECONDARY OPENING IS TO BE BACKFILLED WITH SAND TO WITHIN 4 IN. OF THE TOP OF THE PAD.
14. POWER COMPANY MAY OPT TO PROVIDE POLE MOUNTED TRANSFORMERS, IN WHICH CASE PROVIDE CT CAN, METERING RACK AND ROUTE 1200AMP SERVICE CONDUCTORS DIRECT TO MAIN CIRCUIT BREAKER. CONSULT WITH POWER CO. BEFORE PLANNING INSTALLATION.

1 TRANSFORMER PAD DETAIL
N.T.S.

MATERIAL LIST

ITEM	DESCRIPTION
1	2-1/4 IN. X 2 1/4 IN. SQUARE WASHER
2	5/8 IN. DIA. X 24 IN. DOUBLE ARMING BOLT
3	CHANNEL PIPE STRAP
4	1/2 IN. X 12 GA. ALUMINUM CHANNEL



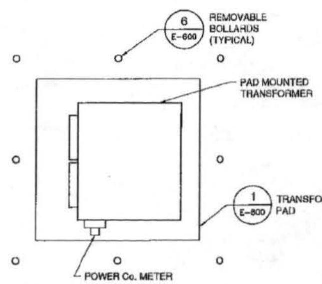
GENERAL NOTES:

1. VERIFY USE OF PAD MOUNTED TRANSFORMER VERSUS AERIAL SERVICE WITH POWER COMPANY AND PROVIDE AS REQUIRED. BID SHALL COVER MOST STRINGENT REQUIREMENTS.
2. CONTRACTOR TO PROVIDE PRIMARY CONDUITS AND CONCRETE PAD. POWER COMPANY WILL PROVIDE PRIMARY CONDUCTORS.

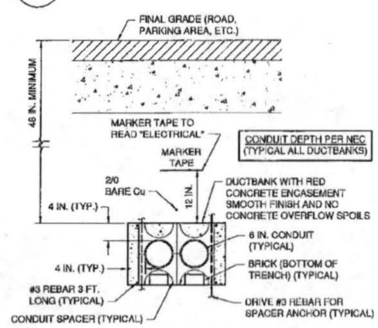
NOTES:

1. 1 IN. SPACE BETWEEN MULTIPLE CONDUITS.
2. 4 IN. MAX. CONDUIT SIZE.
3. MAX. QUANTITY:
   3.A. 3-4 IN. CONDUITS
   3.B. 4-3 IN. CONDUITS
   3.C. WHERE PRIMARY RISERS ARE ATTACHED TO POLE, NO OTHER CONDUITS ALLOWED.

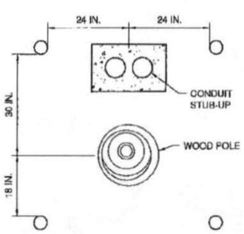
2 SERVICE POLE RISER DETAIL
N.T.S.



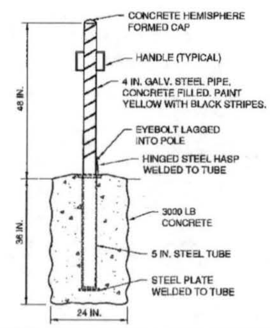
3 PAD MOUNTED TRANSFORMER PLAN DETAIL
N.T.S.



4 CENTERPOINT DUCTBANK DETAIL
N.T.S.



5 TERMINAL POLE PROTECTIVE BARRIER PLACEMENT DETAIL
N.T.S.



6 REMOVABLE BOLLARD DETAIL
N.T.S.

NO.	REVISION	DATE	BY

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DESIGN CHECKED BY: ____
DRAWN BY: ____
CDGO CHECKED BY: ____
SURVEY CHECKED BY: ____
QA/QC BY: ____ DATE: ____
QA/QC REVISIONS BY: ____

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FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

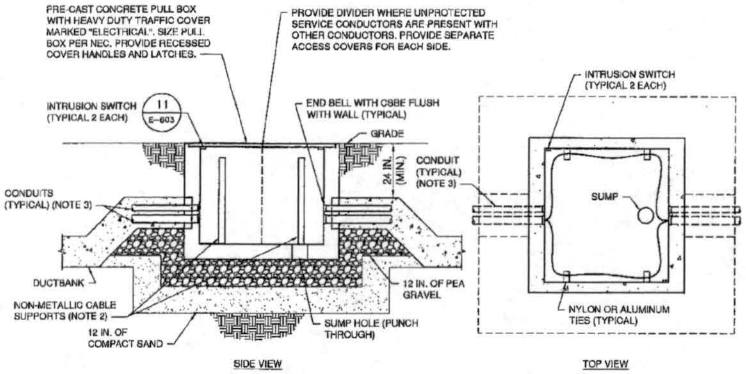
DETAILS SHEET 1

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-827

STATE OF TEXAS — ERIC W. BURRER — 100156 — LICENSED PROFESSIONAL ENGINEER — OCTOBER 19, 2015 SHRADER ENGINEERING, INC

SHEET
E-600
JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4496-CEI

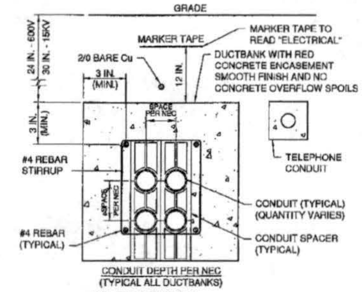


NOTES:

1. INSTALL TOP OF PULL BOX FLUSH WITH FINISH GRADE IN PAVED AREAS. INSTALL TOP 2 IN. ABOVE FINISHED UNPAVED AREAS WHERE NO FUTURE PAVING IS PLANNED. SEE CIVIL PLANS FOR FINISHED ELEVATIONS, WHERE APPLICABLE.
2. ROUTE CONDUCTORS AROUND PERIMETER OF PULL BOX AND RACK ON VERTICAL CABLE SUPPORTS. USE NYLON OR ALUMINUM TIES.
3. TAG ALL CONDUITS PER SPECIFICATION 16195.
4. INSTALL INTRUSION SWITCHES PER DETAIL 11 SHEET E-603. INSTALL SWITCHES IN ALL CONDUIT BODIES ACCESSIBLE AT SERVICE STRUCTURE.
5. INSTALL CSBE ON ALL CONDUIT ENTERING PULL BOX TO PREVENT WATER INTRUSION INTO CONDUIT SYSTEM.

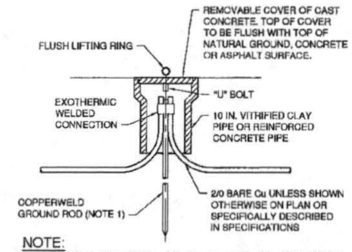
1 / – ELECTRICAL GRADE PULL BOX INSTALLATION

N.T.S.



2 / – DUCTBANK CONSTRUCTION DETAIL

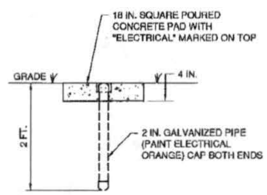
N.T.S.



NOTE:
1. GROUND ROD SHALL BE 3/4 IN. x 20 FT. FOR SURGE PROTECTION GROUND AND LIGHTNING PROTECTION SYSTEMS. ALL OTHER APPLICATIONS SHALL BE 3/4 IN. x 10 FT.

3 / – GROUND WELL DETAIL

N.T.S.



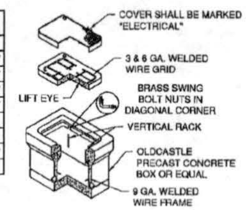
4 / – DUCTBANK MARKER DETAIL

N.T.S.

SIZE CHART

MODEL #	SIZE*
N09	10-1/4" x 16-3/4"
N16	11-3/4" x 22-1/4"
N30	13-1/4" x 24-1/4"
N36	17-1/8" x 30-1/4"
N40	24-1/2" x 36"
N44	20-1/4 x 42-1/4"
N48	30-1/4" X 48-1/4"
N52	30" x 60"

* INTERIOR DIMENSIONS

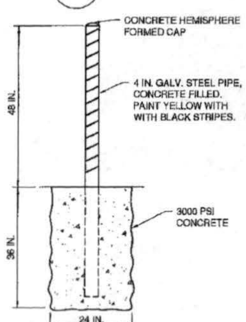


NOTES:

1. INSTALL TOP FLUSH WITH FINISH GRADE IN PAVED AREAS AND PROVIDE HEAVY DUTY TRAFFIC RATED COVER. INSTALL TOP 2 INCHES ABOVE FINISHED UNPAVED AREAS WHERE NO FUTURE PAVING IS PLANNED. SEE CIVIL PLANS FOR FINISHED ELEVATIONS, WHERE APPLICABLE.
2. ROUTE CONDUCTORS AROUND PERIMETER OF PULL BOX AND RACK ON VERTICAL CABLE SUPPORTS.

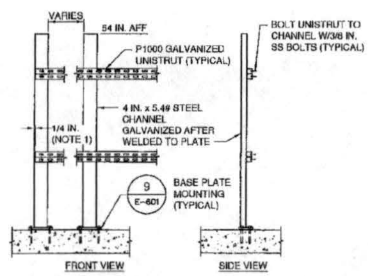
1 / – ELECTRICAL PULL BOX DETAIL

N.T.S.



6 / – BOLLARD DETAIL

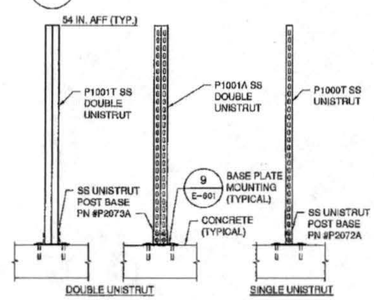
N.T.S.



NOTE:
1. TRIM AND CAP END OF UNISTRUT. DO NOT EXTEND PAST EDGE OF CHANNEL OR POST.

7 / – C-CHANNEL SUPPORT DETAIL

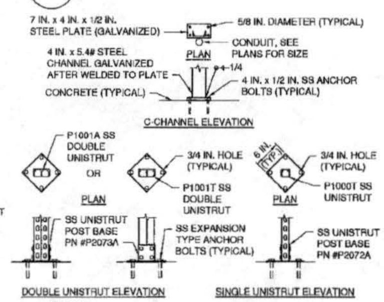
N.T.S.



NOTE:
1. REFER TO PLANS FOR APPROPRIATE APPLICATION.

8 / – UNISTRUT SUPPORT DETAIL

N.T.S.



NOTE:
1. REFER TO PLANS FOR APPROPRIATE APPLICATION.

9 / – BASE PLATE MOUNTING DETAIL

N.T.S.

NO	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

Costello
Engineering and Surveying
9990 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

DETAILS SHEET 2

REV 12/07/15

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-527

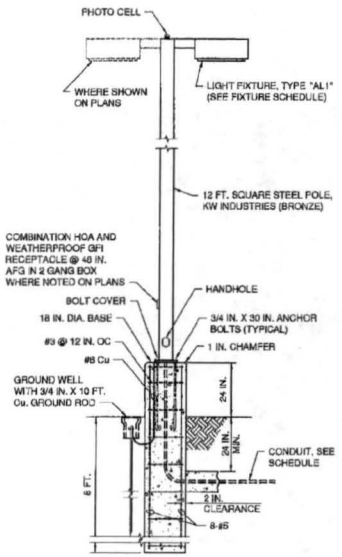
ENGINEER: CWS | DESIGNER: TLL | CHECKED BY: CWS | DATE CHK'D: Oct. 19, 15 | DRAWN BY: MAA

STATE OF TEXAS
ERIC W. BURRER
100186
LICENSED PROFESSIONAL ENGINEER
OCTOBER 19, 2015
SHRADER ENGINEERING, INC

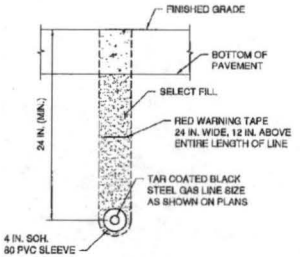
SHEET
E-601

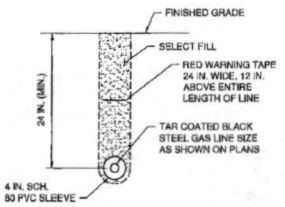
JOB NO. 2011160-08

CEI JOB No. 2011160-02 SEI Job No. 4496-CEI

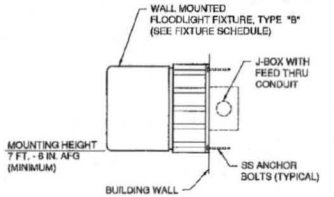


1 AREA LIGHT POLE DETAIL
N.T.S.

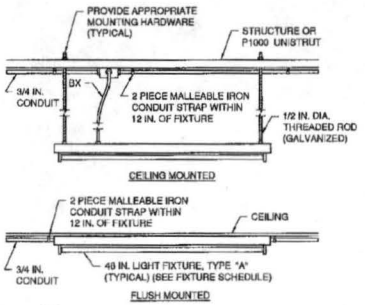




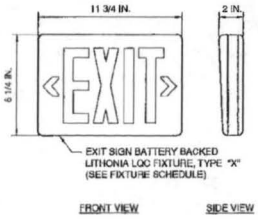
2 GAS LINE SECTION
N.T.S.



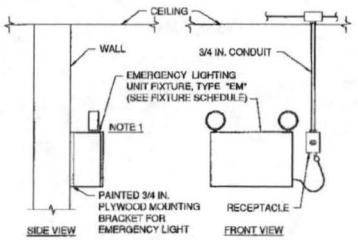
3 BUILDING FLOODLIGHT DETAIL
N.T.S.



4 LED STRIP FIXTURE DETAIL
N.T.S.

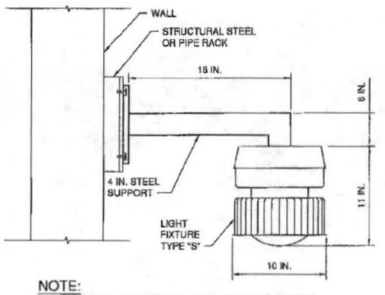


5 EXIT SIGN DETAIL
N.T.S.



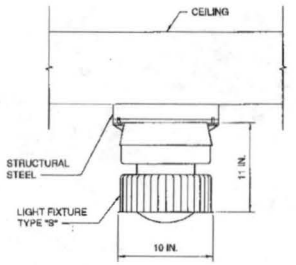
NOTE:
1. INSTALL TOP OF FIXTURE AT 10 FT. AFF FOR ROOM CEILING GREATER THAN 12 FEET, OR AT 24 INCHES BELOW CEILING FOR ROOMS LESS THAN 10 FEET.

EMERGENCY
6 LIGHT MOUNTING DETAIL
N.T.S.



NOTE:
1. REFLECTOR AND WIRE GUARD REMOVED FOR CLARITY.

7 WALL MOUNTED LIGHT DETAIL
N.T.S.



NOTE:
1. REFLECTOR AND WIRE GUARD REMOVED FOR CLARITY.

8 CEILING MOUNTED LIGHT DETAIL
N.T.S.

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
CQGC CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

Costello
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TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100488

FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

DETAILS SHEET 3

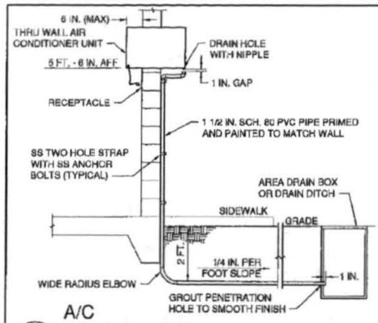
BFW 12/4/15

SHRADER ENGINEERING
ELECTRICAL / COMMUNICATIONS / TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-827

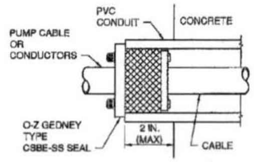
SHEET
E-602

JOB NO. 2011150-02

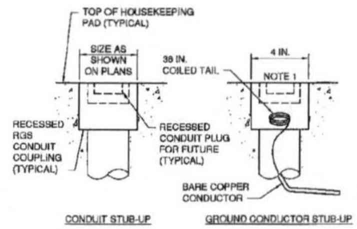
CE JOB No. 2011150-02 SEI Job No. 4496-CE



A/C
CONDENSATE DRAIN LINE DETAIL (1)
N.T.S.

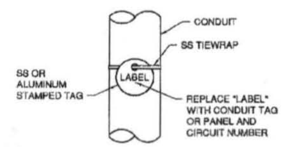


CONDUIT SEAL DETAIL (2)
N.T.S. (TYPICAL)



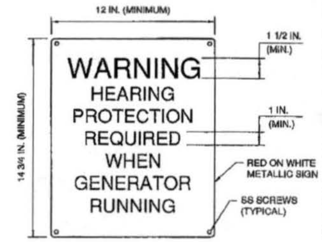
NOTE:
1. GROUT WHERE GROUND WIRE PULLED.

CONDUIT/GROUND
CONDUCTOR STUB-UP DETAIL (3)
N.T.S.

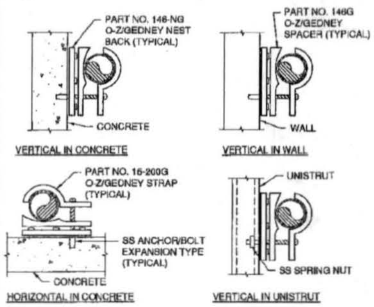


NOTE:
1. AS-BUILT DRAWINGS SHOULD CONTAIN RECORD OF ACTUAL INSTALLED CONDUITS AND CONDUCTORS THAT COORDINATE WITH FIELD LABELS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

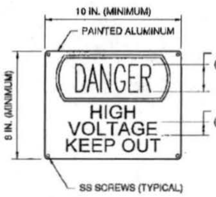
CONDUIT LABEL DETAIL (4)
N.T.S. (TYPICAL)



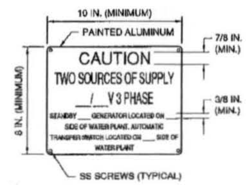
HEARING
WARNING SIGN DETAIL (5)
N.T.S.



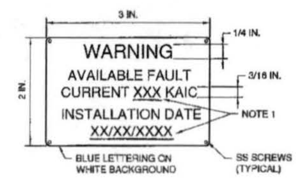
CONDUIT SUPPORT DETAIL (6)
N.T.S.



HIGH
VOLTAGE SIGN DETAIL (7)
N.T.S.

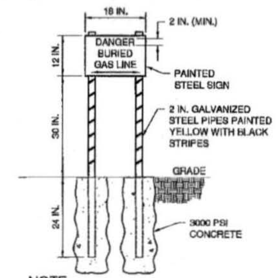


DUAL SOURCE SIGN DETAIL (8)
N.T.S.



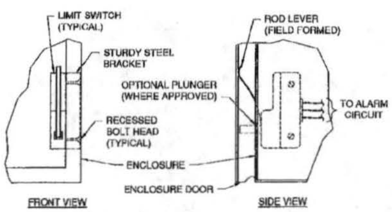
NOTE:
1. CONTRACTOR TO FILL AVAILABLE FAULT CURRENT KAIC BASED ON DATA OUTLET STATEMENT FROM ELECTRICAL PROVIDER.

FAULT CURRENT
WARNING SIGN DETAIL (9)
N.T.S.



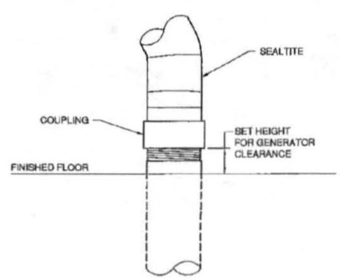
NOTE:
1. MAXIMUM 50 FT. SPACING BETWEEN SIGNS.

GAS LINE SIGN DETAIL (10)
N.T.S.



NOTES:
1. USE HEAVY DUTY, WATER TIGHT, DPDT LIMIT SWITCH.
2. INSTALL LIMIT SWITCH AT TOP AND BOTTOM OF ALL ENCLOSURE DOORS. INSTALL IN CONDUIT BODIES OF ALL TYPES WHERE #6 OR LARGER CONDUCTORS ARE PRESENT.
3. PROVIDE STEEL MOUNTING BRACKET AS REQUIRED.
4. ROUTE INTRUSION SWITCH CIRCUITS TO ALARM PANEL, AS SHOWN ON PLANS. WIRE SWITCHES IN SERIES OR PARALLEL AS SHOWN ON DIAGRAMS.

INTRUSION SWITCH DETAIL (11)
N.T.S.



GENERATOR CONDUIT DETAIL (12)
N.T.S.

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

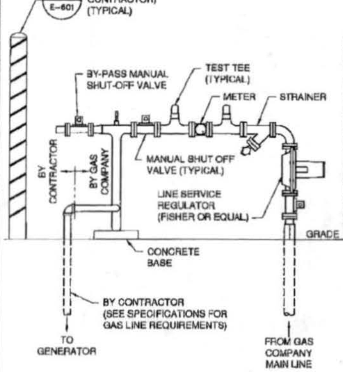
Costello
Engineering and Surveying
9990 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

DETAILS SHEET 4

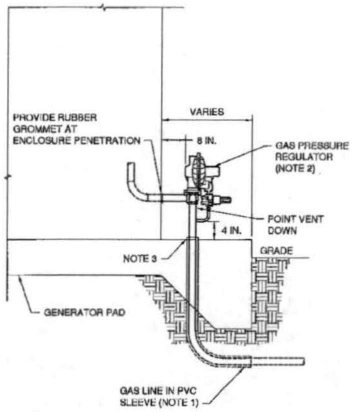
SHEET
E-603
JOB NO. 2011150-02

CE JOB No. 2011150-02 SEI Job No. 4486-CEI



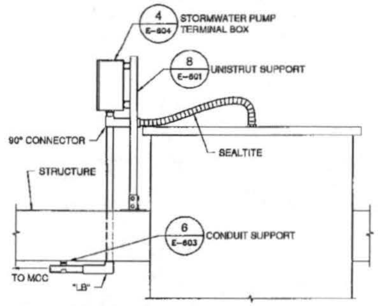
NOTES:
1. BY GAS COMPANY EXCEPT WHERE NOTED BY CONTRACTOR.
2. FIELD LOCATE PER COORDINATION WITH GAS COMPANY.

1 – NATURAL GAS FUEL SYSTEM DETAIL
N.T.S. (NOTE 2)

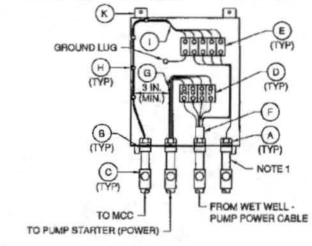


NOTES:
1. NO GAS PIPING SHALL BE INSTALLED IN THE GROUND UNDER ANY BUILDING OR STRUCTURE UNLESS INSTALLED IN GAS TIGHT CONDUIT. ALL EXPOSED GAS PIPING SHALL BE KEPT AT LEAST 6 INCHES ABOVE GRADE OR STRUCTURE.
2. GAS PRESSURE REGULATOR 5 PSI TO 14 INCHES RANGE. VERIFY WITH MANUFACTURER AND ADJUST PRESSURE RANGE IF REQUIRED. COORDINATE PRESSURE REGULATOR LOCATION WITH GENERATOR MANUFACTURER AND RELOCATE IF LOCATION INTERFERES WITH GENSET EXHAUST DISCHARGE.
3. USE DUCT SEAL TO SEAL AROUND GAS LINE TO PREVENT ENTRY OF MOISTURE AND FOREIGN MATTER INTO PVC SLEEVE.

2 – NATURAL GAS LINE INSTALLATION DETAIL
N.T.S.



3 – TERMINAL BOX DETAIL
N.T.S.

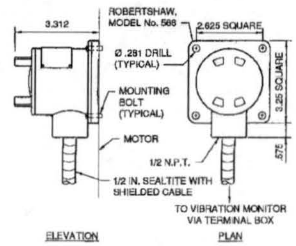


NOTE:
1. PROVIDE ADDITIONAL CONDUIT ONLY WHERE PUMP HAS 2 CABLES.

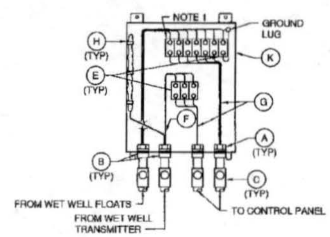
4 – STORMWATER PUMP TERMINAL BOX DETAIL
N.T.S.

TERMINAL BOX SCHEDULE

A. OZ GEDNEY CSBE SEAL.
B. WATERTIGHT CONDUIT HUB WITH INSULATED BUSHING.
C. CLASS I, DIV 1, EXPLOSION PROOF SEAL INSTALLED PE NEC DIV 501.
D. POWER TERMINAL BLOCK W/SCREW DOWN BOX LUGS.
E. CONTROL TERM BLOCK WITH SCREW DOWN BOX LUGS.
F. MULTI-CONDUCTOR CABLE, REMOVE OUTER JACKET AS SHOWN.
G. WIRING AS SCHEDULED.
H. WIRING HARNESS PERMANENTLY AFFIXED.
I. PUMP CONTROL WIRING.
J. CGB FITTING.
K. HOFFMAN NEMA 4X STAINLESS STEEL JUNCTION BOX WITH GASKETED FRONT COVER, CONTINUOUS HINGE, SCREW-DOWN CLAMPS, HASP AND PADLOCKING PROVISIONS. MINIMUM SIZE:: 12 IN. W x 16 IN. H x 6 IN. D.
L. MICARTA NAMEPLATE, 3/8 IN. HIGH LETTERS IN WHITE ON BLACK BACKGROUND (SEE NAMEPLATE SCHEDULE).
M. SURGE PROTECTION DEVICE: BLUE RIBBON CORP. No. BCP3000 SURGE PROTECTOR.

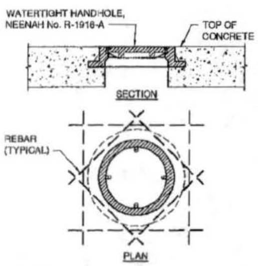


5 – VIBRATION SENSOR DETAIL
N.T.S.



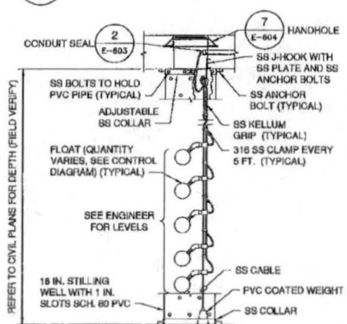
NOTE:
1. PROVIDE REQUIRED NUMBER OF TERMINAL BLOCKS RECOMMENDED BY LEVEL SENSOR PROBE MANUFACTURER.

6 – FLOATS/TRANSMITTER TERMINAL BOX DETAIL
N.T.S.

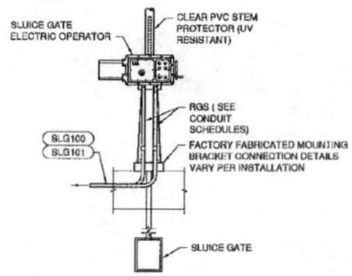


NOTE:
1. REBAR SIZING BY STRUCTURAL ENGINEER.

7 – HANDHOLE DETAIL
N.T.S.

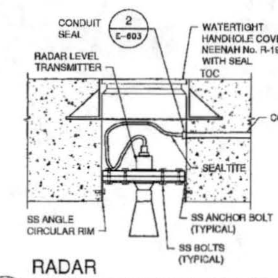


8 – STILLING WELL/FLOATS DETAIL
N.T.S.



NOTE:
1. PROVIDE ALL REQUIRED FABRICATION AND PARTS FOR SUPPORT OF VALVE OPERATOR.

9 – SLUICE GATE ACTUATOR DETAIL
N.T.S.



10 – RADAR LEVEL TRANSMITTER DETAIL
N.T.S.

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-527

NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
COGO CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

Costello
Engineering and Surveying
9990 Richmond Avenue, Suite 450 N
Houston, Texas 77042
(713) 783-7788 (713) 783-3580, Fax
TBPE FIRM REG. No. 280
TBPLS FIRM REG. No. 100486

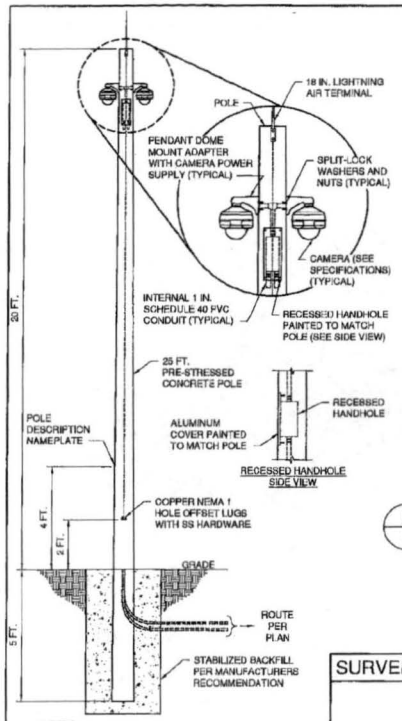
FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

DETAILS SHEET 5

SHEET E-604

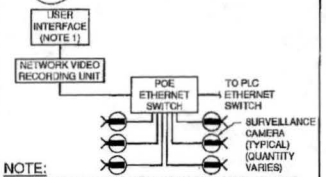
JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4406-CE



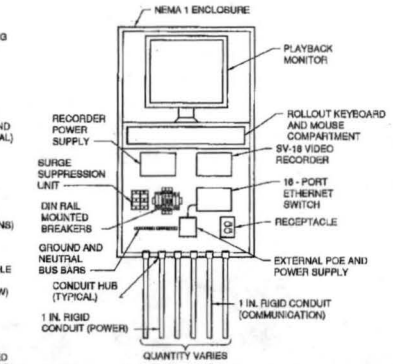
NOTE:
1. MOUNT CAMERAS WITHIN 3 FEET OF TOP OF POLE UNLESS NOTED OTHERWISE.

1 — SECURITY CAMERA POLE
N.T.S.



NOTE:
1. PROVIDE 17 INCH MONITOR WITH HDMI CONNECTION AND CABLE FOR VIDEO PLAYBACK. PROVIDE USB MOUSE AND KEYBOARD FOR NAVIGATION OF SECURITY SOFTWARE.
2. ETHERNET SWITCH SHALL HAVE MINIMUM 6 POE AND PORTS WITH EXTERNAL POWER SUPPLY.
3. ALL CAMERAS SHALL BE POE CAPABLE.

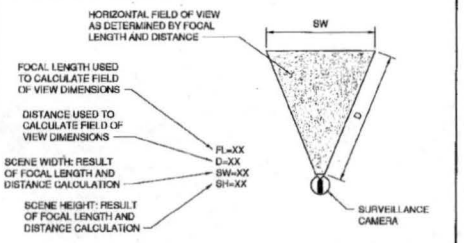
3 — SECURITY SYSTEM DATA WIRING DIAGRAM



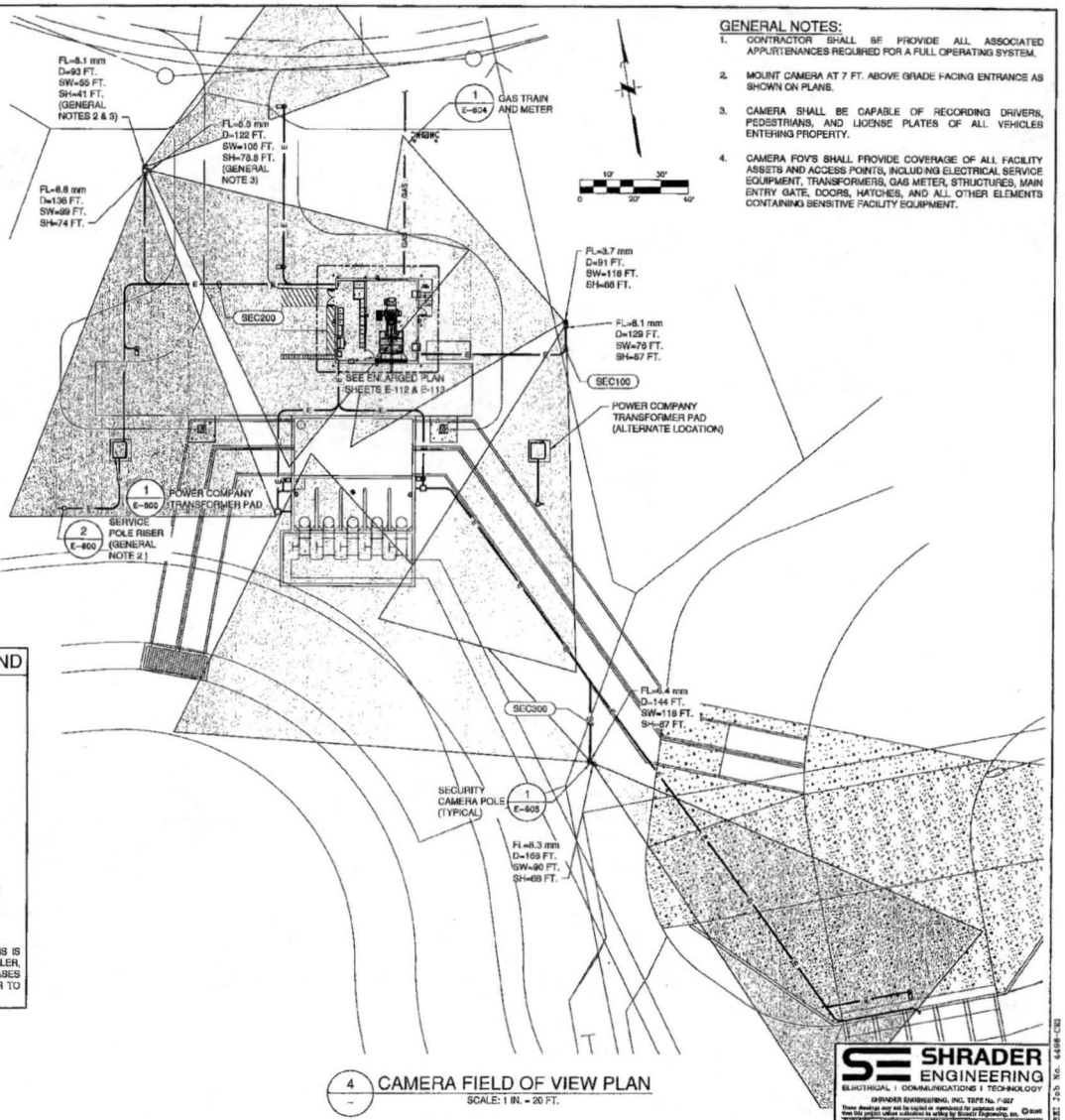
NOTE:
1. PROVIDE KEYED LOCK ON DOOR, WITH 4 SETS OF KEYS.
2. PROVIDE 17 INCH MONITOR WITH HDMI CONNECTION AND CABLE FOR VIDEO PLAYBACK. PROVIDE USB MOUSE AND KEYBOARD FOR NAVIGATION OF SECURITY SOFTWARE.

2 — SECURITY ELECTRONICS PANEL
N.T.S.

SURVEILLANCE CAMERA FIELD OF VIEW LEGEND



FOCAL LENGTH SUMMARY:
IN GENERAL, SHORT FOCAL LENGTHS (E.G. 4mm) PROVIDE A WIDE FIELD OF VIEW. THIS IS GOOD FOR CLOSE-UPS OR FOR VIEWING A LARGE AREA. OBJECTS APPEAR SMALLER, RAPIDLY, AS DISTANCE FROM THE CAMERA INCREASES. AS THE FOCAL LENGTH INCREASES (E.G. 16mm), THE FIELD OF VIEW NARROWS AND MORE DISTANT OBJECTS ARE EASIER TO DEFINE.



GENERAL NOTES:
1. CONTRACTOR SHALL BE PROVIDE ALL ASSOCIATED APPURTENANCES REQUIRED FOR A FULL OPERATING SYSTEM.
2. MOUNT CAMERA AT 7 FT. ABOVE GRADE FACING ENTRANCE AS SHOWN ON PLANS.
3. CAMERA SHALL BE CAPABLE OF RECORDING DRIVERS, PEDSSTRIANS, AND LICENSE PLATES OF ALL VEHICLES ENTERING PROPERTY.
4. CAMERA FOV'S SHALL PROVIDE COVERAGE OF ALL FACILITY ASSETS AND ACCESS POINTS, INCLUDING ELECTRICAL SERVICE EQUIPMENT, TRANSFORMERS, GAS METER, STRUCTURES, MAIN ENTRY GATE, DOORS, HATCHES, AND ALL OTHER ELEMENTS CONTAINING SENSITIVE FACILITY EQUIPMENT.

4 — CAMERA FIELD OF VIEW PLAN
SCALE: 1 IN. = 20 FT.

SHRADER ENGINEERING
ELECTRICAL | COMMUNICATIONS | TECHNOLOGY
SHRADER ENGINEERING, INC. TBPE No. F-687
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NO.	REVISION	DATE	BY

DESIGNED BY:
DESIGN CHECKED BY:
DRAWN BY:
CHKD CHECKED BY:
SURVEY CHECKED BY:
QA/QC BY: DATE:
QA/QC REVISIONS BY:

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TBPLS FIRM REG. No. 100186

FORT BEND COUNTY LID NO. 15
STORMWATER PUMP STATION

DETAILS SHEET 6

STATE OF TEXAS — ERIC W. SHRADER — 92018 — LICENSED PROFESSIONAL ENGINEER — OCTOBER 19, 2015 — SHRADER ENGINEERING, INC.

SHEET
E-605

JOB NO. 2011150-02

CEI JOB No. 2011150-02 SEI Job No. 4496-CSD