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WASTEWATER TREATMENT PLANT (WWTP)

FOR

KIAWAH RIVER PLANTATION

CHARLESTON COUNTY, SOUTH CAROLINA

PREPARED FOR:

KIAWAH RIVER PLANTATION HOLDINGS, LP
OCEAN BOULEVARD PROPERTIES
A SOUTH CAROLINA LIMITED PARTNERSHIP

DECEMBER 18, 2015
ISSUED FOR BID JANUARY 29, 2016
TM# 212-00-00-001

J-25328.0000
PREPARED BY:

MARK F. YODICE
No. 13293
1-29-2016

THOMAS & HUTTON ENGINEERING CO.
No. C00285

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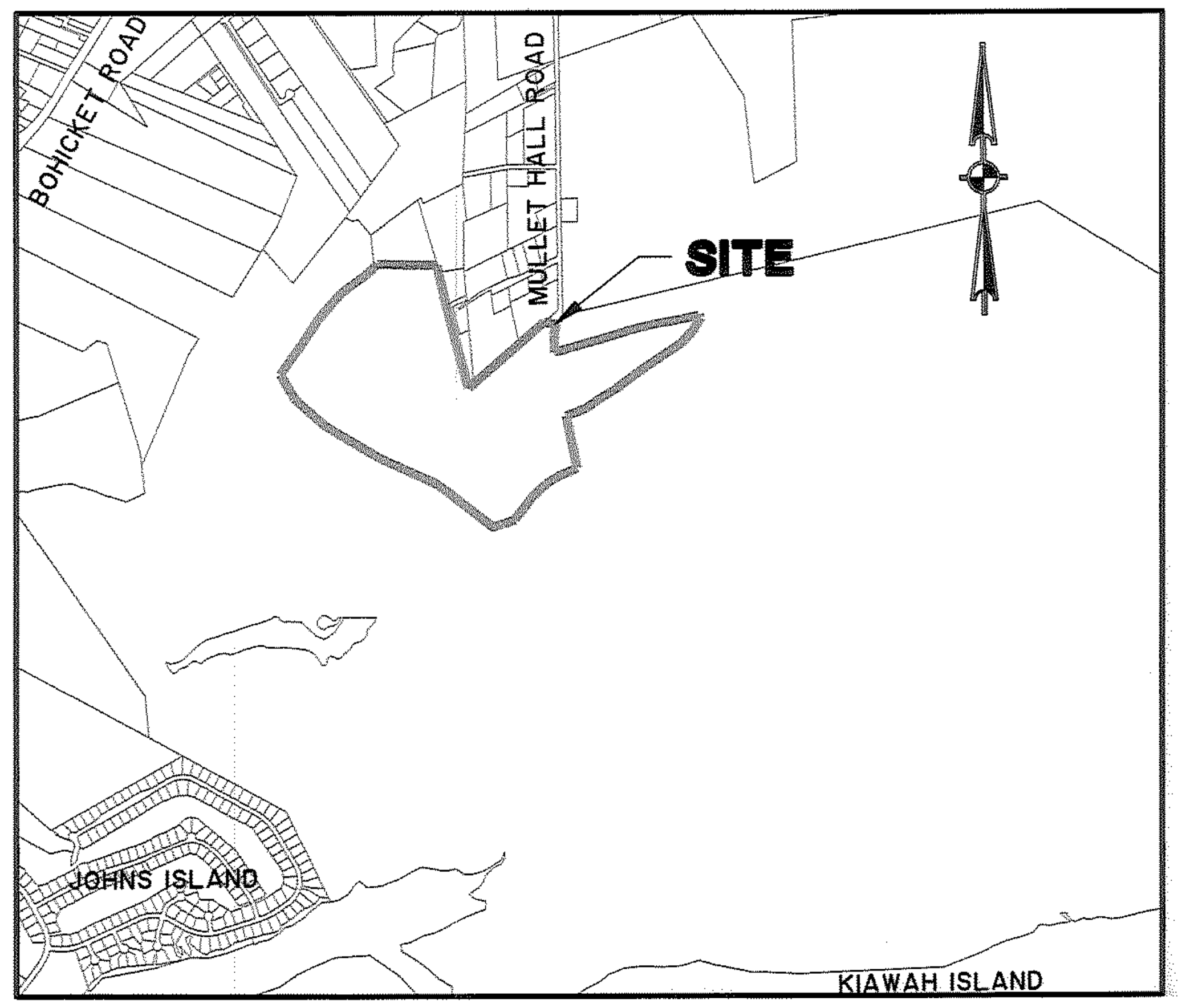

VICINITY MAP
SCALE: 1" = 2000'

KIAWAH RIVER PLANTATION WWTP
J-25328.0000
12/18/15

REVISION HISTORY

REV. NO.	REVISION	BY	DATE

SUBMITTAL HISTORY

SUBMITTED TO	DATE
ISSUED FOR BID	1/29/16
ISSUED TO AGENCY FOR PERMITTING	9/16/15

811
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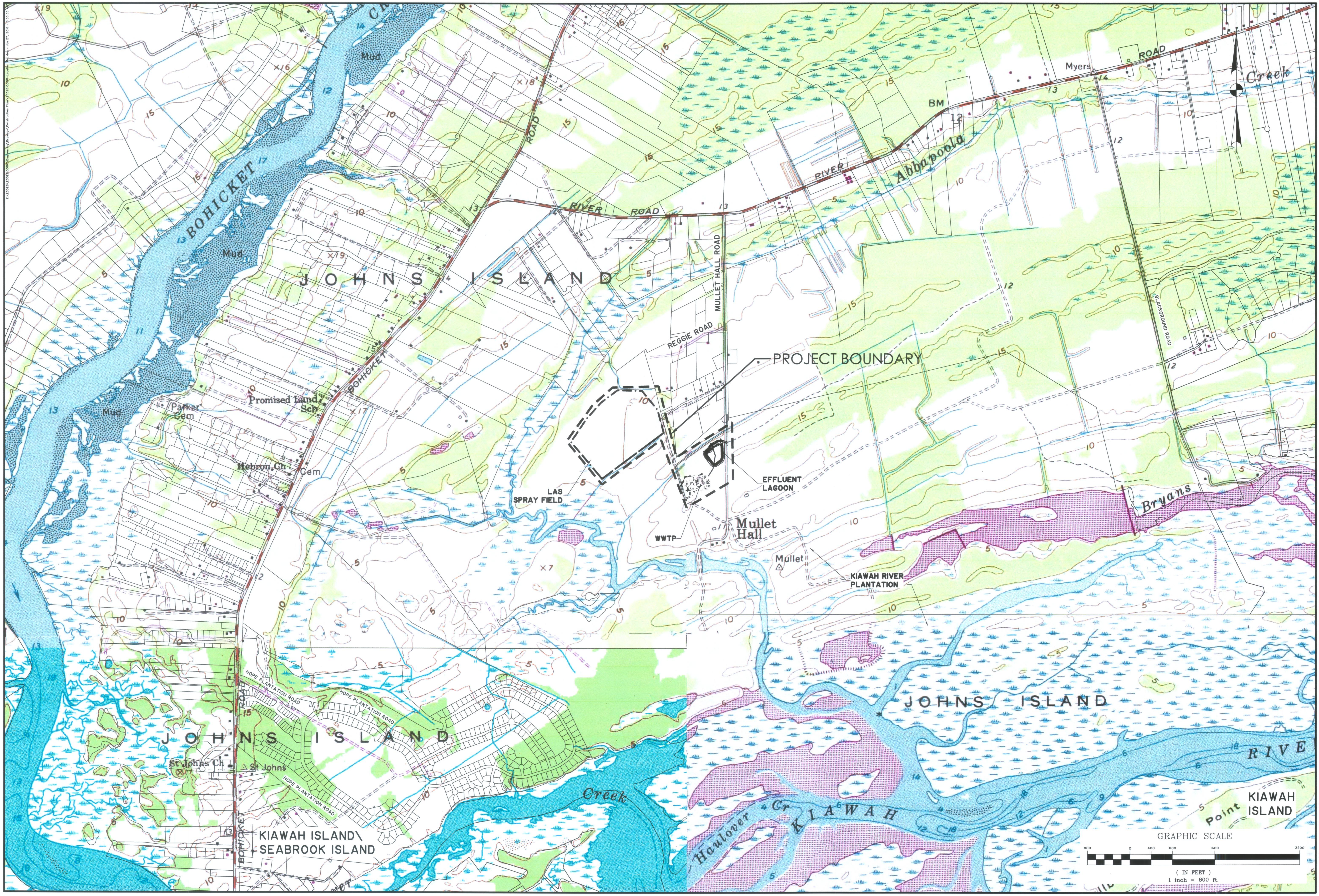

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE No. 13293

Mark F. Yodice 1-29-2016

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

LOCATION MAP

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

01-G-01

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SCHEDULE OF DRAWINGS

SHEET NO.	DESCRIPTION	BY
	01 - GENERAL	
01-G-00	COVER SHEET	T&H
01-G-01	LOCATION MAP	T&H
01-G-02	INDEX OF DRAWINGS	T&H
01-G-03	GENERAL CIVIL NOTES	T&H
01-G-04	GENERAL CIVIL NOTES	T&H
01-G-05	GENERAL CIVIL NOTES & LEGENDS	T&H
01-G-06	OVERALL PROCESS FLOW DIAGRAM	T&H
01-G-07	HYDRAULIC PROFILE	T&H
01-V-01	SURVEY CONTROL SHEET	T&H
01-S-01	STRUCTURAL NOTES & DETAILS	T&H
01-S-02	STRUCTURAL DETAILS	T&H
01-S-03	STRUCTURAL DETAILS	T&H
01-S-04	STRUCTURAL DETAILS	T&H
01-M-01	HVAC SCHEDULE, DETAILS AND SPECS	CHATM
01-P-01	PLUMBING NOTES, FIXTURES AND DETAILS	CHATM
	02 - WATER MAIN LINE	
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02-C-02	WATER MAIN - PLAN AND PROFILE	T&H
02-C-03	WATER MAIN - PLAN AND PROFILE	T&H
02-C-04	WATER MAIN - PLAN AND PROFILE	T&H
02-C-05	WATER MAIN - PLAN AND PROFILE	T&H
02-C-06	WATER MAIN - PLAN AND PROFILE	T&H
02-C-07	WATER MAIN - PLAN AND PROFILE	T&H
02-C-08	WATER MAIN - DETAILS	T&H
02-C-09	WATER MAIN - DETAILS	T&H
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05-C-04	LAS SITE PLAN (PHASE 1)	T&H
05-C-05	EROSION & SEDIMENT CONTROL - INITIAL PHASE	T&H
05-C-05A	EROSION & SEDIMENT CONTROL - FINAL PHASE	T&H
05-C-06	SWPPP - NOTES	T&H
05-C-07	SWPPP - CHARTS	T&H
05-C-08	SWPPP - DETAILS	T&H
05-C-09	SWPPP - DETAILS	T&H
05-C-10	SITE PIPING PLAN - OVERALL SITE	T&H
05-C-11	CIVIL DETAILS	T&H
05-C-12	CIVIL DETAILS	T&H
05-C-13	CIVIL DETAILS	T&H
05-C-14	CIVIL DETAILS	T&H
05-E-01	ELECTRICAL PLAN - OVERALL SITE	CH
05-L-01	LANDSCAPE PLAN	T&H
05-L-02	LANDSCAPE DETAILS & NOTES	T&H
05-L-03	LANDSCAPE SPECIFICATION	T&H
05-L-04	GRASSING SPECIFICATION	T&H
	06- WWTP SITE	
06-C-01	SITE LAYOUT PLAN	T&H
06-C-01A	TREE PROTECTION AND REMOVAL PLAN - WWTP	
06-C-02	PIPING PLAN - WWTP	T&H
06-C-03	PAVING, GRADING & DRAINAGE PLAN - WWTP	T&H
	07- TREATED EFFLUENT LAGOON	
07-C-01	PAVING, GRADING AND DRAINAGE PLAN - EFFLUENT LAGOON	T&H
07-C-02	PIPING PLAN - EFFLUENT LAGOON	T&H
07-C-03	DETAILS AND SECTIONS - EFFLUENT LAGOON	T&H
07-C-04	DETAILS AND SECTIONS - EFFLUENT LAGOON	T&H
	08 - SPRAYFIELD IRRIGATION PUMP STATION	
08-C-01	EFFLUENT PUMP STATION - PLAN AND SECTION	T&H
08-C-02	EFFLUENT PUMP STATION - SECTION AND DETAILS	T&H
08-E-01	EFFLUENT ELECTRICAL PLAN AND DETAILS	CHATM

SCHEDULE OF DRAWINGS

SHEET NO.	DESCRIPTION	BY
	09 - LAND APPLICATION SPRAYFIELD (LAS)	
09-C-01	STAKING PLAN - LAS	T&H
09-C-02	SITE PIPING PLAN - LAS	T&H
09-C-03	DETAILS AND SECTIONS - LAS	T&H
09-C-04	DETAILS AND SECTIONS - LAS	T&H
09-C-05	INDIVIDUAL SPRINKLER COORDINATES AND NOZZLE SIZE	T&H
09-C-06	INDIVIDUAL SPRINKLER COORDINATES AND NOZZLE SIZE	T&H
	-	
	10 - INFLUENT SCREEN S- WWTP	
10-S-01	STRUCTURAL PLANS	T&H
10-S-02	SECTION & DETAILS	T&H
10-D-01	PIPING PLANS	T&H
10-D-02	PIPING SECTIONS	T&H
	15 - PLANT DRAIN PUMP STATION (WWTP)	
15-D-01	PIPING PLAN & SECTIONS	T&H
	30 - ODOROUS AIR TREATMENT	
30-D-01	GENERAL ARRANGEMENT	T&H
	35 - ANOXIC/AEROBIC/MBR/ARCH/MP	
35-A-01	LIFE SAFETY ANALYSIS	
35-A-02	LIFE SAFETY ANALYSIS	SWTAIL
35-A-03	LOWER FLOOR PLAN	SWTAIL
35-A-04	UPPER FLOOR PLAN	SWTAIL
35-A-05	ROOF PLAN	SWTAIL
35-A-06	SCHEDULES	SWTAIL
35-A-07	DETAILS & SCHEDULES	SWTAIL
35-A-08	REFLECTED CEILING PLAN	SWTAIL
35-A-09	NORTH ELEVATION	SWTAIL
35-A-10	WEST ELEVATION	SWTAIL
35-A-11	SOUTH ELEVATION	SWTAIL
35-A-12	EAST ELEVATION	SWTAIL
35-A-13	BUILDING SECTION	SWTAIL
35-A-14	BUILDING SECTION	SWTAIL
35-A-15	WALL SECTIONS	SWTAIL
35-A-16	WALL SECTIONS	SWTAIL
35-A-17	DETAILS	SWTAIL
35-A-18	DETAILS	SWTAIL
35-A-19	DETAILS & SCHEDULES	SWTAIL
35-S-01	FOUNDATION PLAN	T&H
35-S-02	LOWER PLAN	T&H
35-S-03	2ND FLOOR FRAMING PLAN	T&H
35-S-04	UPPER LEVEL OVERVIEW	T&H
35-S-05	ROOF FRAMING PLAN	T&H
35-S-06	BASINS & BUILDING SECTION	T&H
35-S-07	SECTIONS & DETAILS	T&H
35-S-08	SECTIONS & DETAILS	T&H
35-S-09	BUILDING DETAILS	T&H
35-S-10	BUILDING DETAILS	T&H
35-M-01	HVAC LOWER LEVEL PLAN AND DETAILS	CHATM
35-M-01	HVAC UPPER LEVEL PLAN AND DETAILS	CHATM
35-P-01	PLUMBING PLAN LOWER LEVEL	CHATM
35-P-02	PLUMBING PLAN UPPER LEVEL	CHATM
35-D-01	TREATMENT BASINS - LOWER LEVEL - PLAN	T&H
35-D-02	TREATMENT BASINS - UPPER LEVEL - PLAN	T&H
	36- CHLORINE CONTACT CHAMBER	
36-S-01	PLAN VIEW	T&H
36-S-02	SECTIONS & DETAILS	T&H
36-D-01	PIPING PLAN & SECTIONS	T&H
	40 - SLUDGE DEWATERING (CENTRIFUGE)	
40-A-01	LIFE SAFETY ANALYSIS	SWTAIL
40-A-02	BUILDING PLAN & ROOF PLAN	SWTAIL
40-A-03	BUILDING ELEVATIONS	SWTAIL
40-A-04	SCHEDULES	SWTAIL
40-S-01	SLAB PLAN	T&H
40-S-02	ROOF PLAN	T&H
40-S-03	SECTIONS	T&H
40-M-01	HVAC PLAN	CHATM
40-P-01	PLUMBING PLAN	CHATM
40-D-01	PIPING PLAN	T&H
40-D-02	MISCELLANEOUS DETAILS	T&H

SCHEDULE OF DRAWINGS

SHEET NO.	DESCRIPTION	BY
	45 - OPERATION BUILDING	
45-D-01	CHEMICAL ROOM - PROCESS PIPING	T&H
45-D-02	CHEMICAL ROOM - MISCELLANEOUS DETAILS	T&H
45-D-03	LOWER LEVEL - PLAN	T&H
	50 - ELECTRICAL	
50-E-01	LEGEND, ABBREVIATIONS & GENERAL NOTES	CHATM
50-E-02	ELECTRICAL DETAILS & FIXTURE SCHEDULE	CHATM
50-E-03	ELECTRICAL DETAILS	CHATM
50-E-04	OVERALL PROJECT PLAN - ELECTRICAL	CHATM
50-E-05	TREATMENT PLANT SITE - ELECTRICAL	CHATM
50-E-06	TREATMENT PLANT SITE - PHOTOMETRY	CHATM
50-E-07	WWTP BUILDING - GROUND FLOOR - POWER	CHATM
50-E-08	WWTP BUILDING - UPPER FLOOR - POWER	CHATM
50-E-09	WWTP BUILDING - GROUND FLOOR - LIGHTING	CHATM
00-E-10	WWTP BUILDING - UPPER FLOOR - LIGHTING	CHATM
50-E-11	CENTRIFUGE BUILDING - LIGHTING & POWER	CHATM
50-E-12	ONE-LINE DIAGRAM	CHATM
50-E-13	EFFLUENT PUMP STATION PLAN - ELECTRICAL	CHATM
50-E-14	SPRAYFIELD PLAN - ELECTRICAL	CHATM
50-E-15	MCC ELEVATIONS	CHATM
50-E-16	ONE-LINE DIAGRAM AND SCHEDULES	CHATM
50-E-17	MCC ELEVATIONS AND SCHEDULES	CHATM
50-E-18	OVIVO FIELD INSTRUMENT CONNECTIONS	CHATM
50-E-19	IN-PLANT SCADA FIELD INSTRUMENT CONN.	CHATM
50-E-20	IN-PLANT SCADA RISER DIAGRAM	CHATM

SCHEDULE OF DRAWINGS

SHEET NO.	DESCRIPTION	BY
60-I-01	PROCESS & INSTRUMENTATION DIAGRAM	T&H
	60 - INSTRUMENTATION AND CONTROL BY OVIVO	
I-1.00	COVER SHEET	OVIVO
I-1.01	EQUALIZATION BASIN	OVIVO
I-1.02	EQUALIZATION PUMPS	OVIVO
I-1.03	FINE SCREENS	OVIVO
I-1.04	ANOXIC BASIN	OVIVO
I-1.05	PRE-AERATION BASIN 01	OVIVO
I-1.06	PRE-AERATION/MEMBRANE THICKENING BASIN 02	OVIVO
I-1.07	FEED CHANNEL	OVIVO
I-1.08	MEMBRANE BIOREACTOR BASIN 01	OVIVO
I-1.09	MEMBRANE BIOREACTOR BASIN 02	OVIVO
I-1.10	RAS WET WELL	OVIVO
I-1.11	PERMEATE PUMPS	OVIVO
I-1.12	MBT PERMEATE PUMP	OVIVO
I-1.13	PRE-AERATION BLOWERS	OVIVO
I-1.14	MBR/ PRE-AIR BLOWERS	OVIVO
I-1.15	CHEMICAL CLEANING	OVIVO
I-1.16	CHEMICAL ADDITION	OVIVO
I-1.17	EMERGENCY STANDBY GENERATOR	OVIVO
I-1.18	ODOR CONTROL SYSTEM #2	OVIVO
I-1.19	CODES LEGEND	OVIVO
I-1.20	SYMBOLS LEGEND	OVIVO
1	MBR PLANT LAYOUT - PERSPECTIVE VIEW	OVIVO
2	MBR PLANT LAYOUT - PLAN	OVIVO
3	MBR PLANT LAYOUT - SECTIONS	OVIVO
4	MBR PLANT LAYOUT - SECTION	OVIVO
5	MBR PLANT LAYOUT - SECTION	OVIVO
6	MBR PLANT LAYOUT - SECTIONS	OVIVO

THE DRAWING NUMBERS FOR THIS PROJECT FOLLOW THE FOLLOWING GUIDELINE:

XX - N - # #

FACILITY NUMBER (2 DIGITS)

DISCIPLINE DESIGNATOR

SEQUENTIAL NUMBERING (2 DIGITS)

FACILITY NUMBER	DISCIPLINE DESIGNATOR	SEQUENTIAL NUMBERING
01 - GENERAL 02 - WATER SUPPLY LINE 05 - OVERALL SITE 06 - WASTEWATER TREATMENT PLANT SITE 07 - TREATED EFFLUENT LAGOON 08 - SPRAYFIELD IRRIGATION PUMP STA. 09 - LAND APPLICATION SYSTEM (LAS) 10 - PRIMARY INFLUENT SCREEN (WWTP) 15 - PLANT DRAIN PUMP STATION (WWTP) 30 - ODOROUS AIR TREATMENT 35 - ANOXIC/AEROBIC/MBR/ARCH/MP 36 - CHLORINE CONTACT CHAMBER 40 - SLUDGE DEWATERING 45 - OPERATION BUILDING/TREATMENT PROCESS 50 - ELECTRICAL 60 - INSTRUMENTATION & CONTROL	C CIVIL A ARCHITECTURAL S STRUCTURAL E ELECTRICAL G GENERAL D PROCESS MECHANICAL M MECHANICAL HVAC P PLUMBING R INSTRUMENTATION & CONTROL L LANDSCAPE Y YARD PIPING V SURVEYING I INSTRUMENTATION	01 02 03 ETC.

PROJECT INFORMATION

OWNER:
KIAWAH RIVER PLANTATION
HOLDINGS, LP AND OCEAN
BOULEVARD PROPERTIES LIMITED
PARTERSHIP
211 KING STREET, SUITE 300
CHARLESTON, SC 29401
(843) 722-2615

SITE/STRUCTURAL:
THOMAS & HUTTON
682 JOHNNIE DODDS BLVD.
SUITE 100
MT. PLEASANT SC, 29464
(843) 849-0200

ARCHITECTURAL:
SWALLOWTAIL ARCHITECTURE, LLC
814 N. CEDAR STREET
SUMMERVILLE SC, 29483
(843) 885-9400

MEP ENGINEERING:
CHATHAM ENGINEERING
109 PARK OF COMMERCE DRIVE
SAVANNAH, GA 31405
912-238-2400

WATER:
ST. JOHN'S WATER COMPANY
3362 MAYBANK HWY
JOHN'S ISLAND, SC 29455
(843) 768-0641

POWER:
BERKELEY ELECTRIC
ST. JOHNS DISTRICT
3351 MAYBANK HIGHWAY
P.O. BOX 1285
ST. JOHNS, SC 29455
(843)559-2458

TELEPHONE:
AT&T
975 SAVANNAH HWY, SUITE 301
CHARLESTON, SC 29407
(843)556-7611

THOMAS & HUTTON
No. C00285

MARK F. YODICE
No. 13293
1-29-2016

NO.	GENERAL REVISIONS REVISIONS	BY	DATE
1	GENERAL REVISIONS	MFY	12/2/15

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

INDEX OF DRAWINGS

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: NTS

01-G-02

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GENERAL NOTES

1. ALL ELEVATIONS SHOWN ARE BASED ON (NAVD) 88 VERTICAL DATUM.

2. THE EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE BASED UPON AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES PRIOR TO BEGINNING DIGGING OPERATIONS. IF UTILITIES OTHER THAN THOSE SHOWN ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AND TAKE STEPS TO PROTECT THE LINE(S) AND ENSURE CONTINUED SERVICE. DAMAGE CAUSED TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR. ADDITIONALLY, THE CONTRACTOR SHALL CONFIRM THE CONNECTION POINTS OF NEW UTILITIES PRIOR TO BEGINNING NEW CONSTRUCTION.

3. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UNDERGROUND UTILITIES AND SHALL COORDINATE ALL WORK WITH THE OWNER AND UTILITY COMPANIES. CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF ALL EXISTING UTILITIES. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

4. RESPONSIBILITY REGARDING EXISTING UTILITIES AND STRUCTURES: EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES WILL BE INVESTIGATED AND VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE STARTING WORK. THE LOCATION OF ALL KNOWN INTERFERENCES BASED ON THE BEST INFORMATION AVAILABLE HAS BEEN SHOWN ON THE DRAWINGS, BUT THIS INFORMATION MAY NOT BE COMPLETE. EXCAVATION IN THE VICINITY OF EXISTING STRUCTURES AND UTILITIES SHALL BE CAREFULLY DONE BY HAND. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE TO AND FOR COORDINATING PROTECTION OF EXISTING UTILITIES AND STRUCTURES. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE UTILITY COMPANIES ANY RELOCATIONS, ADJUSTMENT, REPLACEMENT, OR PROTECTION OF UTILITY FACILITIES.

5. CONTRACTOR SHALL GRADE ALL AREAS TO DRAIN FOR POSITIVE FLOW PRIOR TO FINAL APPROVAL.

6. CONTRACTOR SHALL MATCH ELEVATIONS WHEN CONNECTING TO EXISTING PAVEMENT.

7. FIGURE DIMENSIONS ON PLANS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS. DETAIL PLANS SHALL TAKE PRECEDENCE OVER GENERAL PLANS. THE DEPTH AND LENGTH OF THE PIPE SHOWN ON THE PLANS IS THE MINIMUM REQUIRED. ADDITIONAL LENGTH REQUIRED FOR INCREASED DEPTH OR BENDING RADIUS TO ACCOMMODATE THE PIPE INSTALLATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. NO INCREASE IN PIPE LENGTH WILL BE ACCEPTED.

8. OWNER & ENGINEER HAVE THE RIGHT TO REJECT DEFECTIVE MATERIALS.

9. CONTRACTOR AND SUBCONTRACTORS MUST HAVE NECESSARY CHARLESTON COUNTY LICENSES.

10. REFER TO THE STORMWATER POLLUTION PREVENTION PLAN SHEETS FOR INFORMATION ASSOCIATED WITH THE CONSTRUCTION GENERAL PERMIT REQUIREMENTS (STORMWATER).

11. DISTURBED AREAS NOT SODDED SHALL BE HYDROSEEDED. CONTRACTOR SHALL RESEED AREAS AS NECESSARY TO ACHIEVE COMPLETE GRASS COVER IN DISTURBED AREAS. FINAL PROJECT ACCEPTANCE BY OWNER WILL NOT OCCUR UNTIL DISTURBED AREAS ARE COMPLETELY STABILIZED.

12. CONTRACTOR TO DISPOSE OF EXCESS MATERIAL OFFSITE OR AT A LOCATION APPROVED BY THE OWNER BUT AT NO COST TO THE OWNER.

13. OMITTED.

14. THE CONTRACTOR SHALL PROVIDE TEMPORARY DIRVEWAY AND PARKING ACCESS FOR ALL ADJACENT PROPERTY OWNERS DURING PERIODS WHEN THE CONSTRUCTION IN THE AREA IS NOT IN PROGRESS.

15. LOCATION OF PIPELINES ARE APPROXIMATE AND FIELD ADJUSTMENTS (HORIZONTALLY OR VERTICALLY) MAY BE REQUIRED TO ACCOMMODATE THE INSTALLATION AT NO ADDITIONAL COST TO THE OWNER.

16. ANY CONFLICTS BETWEEN DIVISIONS SHALL BE RESOLVED IN FAVOR OF THE MORE STRINGENT OR AS DETERMINED BY THE OWNER.

17. THE CONTRACT DOCUMENTS COMPRISE THE ENTIRE AGREEMENT BETWEEN OWNER AND CONTRACTOR CONCERNING THE WORK. THE DRAWINGS AND CONTRACT DOCUMENTS ARE COMPLIMENTARY; WHAT IS CALLED FOR BY ONE IS AS BINDING AS IF CALLED FOR BY ALL.

18. CONTRACTOR SHALL ERECT, AS NECESSARY, TEMPORARY FENCE TO MAINTAIN SECURITY AT ALL TIMES DURING CONSTRUCTION.

19. ACCESS TO THE SITE SHALL BE MAINTAINED AT ALL TIMES. DISRUPTIONS TO ACCESS SHALL BE COORDINATED WITH OWNER.

20. SECURITY OF THE SITE SHALL BE THE CONTRACTOR'S RESPONSIBILITY DURING THE LIFE OF THE CONTRACT. COORDINATE SECURITY MEASURES WITH OWNER.

21. CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL REQUIRED BUILDING PERMITS AND PAYING ALL ASSOCIATED FEES.

22. THE TREE BARRICADES IN THE AREAS OF WORK SHALL BE INSTALLED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.

23. RECONSTRUCT ALL DITCHES AND CULVERTS TO ORIGINAL UNDISTURBED CONDITIONS. REPLACE BROKEN CULVERTS AND REALIGN AS REQUIRED TO AVOID CONFLICT WITH NEW PIPELINE.

24. TAKE CAUTION TO AVOID ANY IRRIGATION SYSTEM WHERE LOCATED ON PRIVATE PROPERTY OR IN PUBLIC R/W. DAMAGE DUE TO THE ACTION OF THE CONTRACTOR SHALL BE REPAIRED/ REPLACED BY CONTRACTOR.

25. SODDED AREAS SHALL BE RESTORED WITH SIMILAR SOD IN DISTURBED AREAS.

26. CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO SECURE POWER POLES DURING CONSTRUCTION AT NO COST TO THE OWNER.

27. SEWER LATERALS EXIST IN SOME OF THE PROJECT AREA. CONTRACTOR SHALL USE CAUTION IN AREAS WITH EXISTING SEWER. ANY DAMAGE TO SEWER SHALL BE REPAIRED AT NO COST TO THE OWNER. CHARLESTON COUNTY WILL VIDEO TAPE EXISTING SEWER LINE AND APPROXIMATE SERVICE LATERAL LOCATIONS PRIOR TO CONTRACTOR COMMENCING.

28. CONTRACTOR SHALL RESTORE ALL LAY DOWN AREAS TO PRE-CONSTRUCTION CONDITION AT NO COST TO THE OWNER. RESTORATION TO INCLUDE RAKE/REMOVAL OF AGGREGATE, PLACEMENT OF TOPSOIL (MINIMUM OF 4" DEPTH), REGRADING AND RESEEDING.

29. CONTRACTOR SHALL DE-WATER THE TRENCH IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS AT NO ADDITIONAL COST TO THE OWNER.

30. CONNECTION TO EXISTING WATER MAINS AND FORCE MAINS SHALL NOT COMMENCE UNTIL VERIFICATION OF LOCATIONS, DIAMETER ELEVATION AND MATERIAL AS APPLICABLE HAS BEEN PERFORMED BY THE CONTRACTOR. THE ENGINEER'S APPROVAL AND FIELD VERIFICATION SHALL BE MANDATORY PRIOR TO COMMENCING CONNECTION TO EXISTING WATER AND WASTEWATER FACILITIES.

31. THE CONTRACTOR SHALL BE REQUIRED TO VIDEO TAPE RECORD AND PHOTOGRAPH THE ENTIRE LIMITS OF CONSTRUCTION TO THOROUGHLY DOCUMENT PRE-CONSTRUCTION CONDITIONS OF ALL EXISTING FACILITIES, STRUCTURES, ABOVEGROUND UTILITIES, LANDSCAPING, HARDSCAPE AND APPURTENANCES WHICH ARE EITHER TO BE PROTECTED-IN-PLACE, REMOVED AND RESET, OR DEMOLISHED AND RECONSTRUCTED WITH NEW MATERIALS AND/OR FIXTURES. THE VIDEO TAPE SHALL BE PROVIDED TO THE ENGINEER PRIOR TO CONSTRUCTION AS SPECIFIED ELSEWHERE.

32. WHERE UNAUTHORIZED TREE REMOVAL OR DAMAGE OCCURS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR TREE REPLACEMENT, REPLANTING, MITIGATION AND/OR PENALTY PAYMENT, WHEREVER TREE REMOVAL OR DAMAGE EXCEEDS THAT INDICATED AND/OR AUTHORIZED DURING CONSTRUCTION.

33. CONTRACTOR IS RESPONSIBLE FOR RESETTING ANY PROPERTY CORNERS DISTURBED DURING CONSTRUCTION.

34. RECONSTRUCTION OF EXISTING LANDSCAPE/HARDSCAPE:
    - IRRIGATION AND LIGHTING SYSTEMS, LANDSCAPE, HARDSCAPE AND SIGNAGE - WHERE PRACTICAL AND/OR COST EFFECTIVE, THE CONTRACTOR SHALL RECORD THE EXISTING LOCATION OF MAJOR HARDSCAPE COMPONENTS INCLUDING SIGNAGE, LIGHT FIXTURES, ETC., AND REMOVE THEM FOR SAFE STORAGE UNTIL REINSTALLATION CAN OCCUR.
    - LARGE SIGNS SHALL BE CAREFULLY REMOVED INTACT FOR REINSTALLATION OR DUPLICATED BY THE ORIGINAL SIGN MANUFACTURER AT THE CONTRACTOR'S EXPENSE, SIGN PYLONS, MARQUEES AND/OR MASONRY, WOODEN OR METAL FOUNDATIONS AND MOUNTING FRAMES SHALL MATCH PRE-CONSTRUCTION CONDITIONS WHERE INDICATED ON THE PLAN VIEW DRAWINGS, TEMPORARY SIGNAGE SHALL BE FURNISHED AS SPECIFIED AND/OR DIRECTED BY THE ENGINEER.
    - WHERE LIGHTING CONDUIT, IRRIGATION LINES AND PLANT MATERIALS ARE NOT REMOVED FOR SUBSEQUENT POST-CONSTRUCTION REINSTALLATION AND REPLANTING, THE EXISTING MATERIALS SHALL BE MATCHED TO SIZE, QUALITY OF MATERIAL AND WORKMANSHIP UPON REPLACEMENT.
    - ALL LOCAL BUILDING/SIGN PERMITS OR EXISTING AGENCY OFF-SITE SIGN VARIANCE AND/OR ENCROACHMENT PERMIT CONDITIONS SHALL BE APPLICABLE TO REQUIRED CONSTRUCTION ACTIVITIES. ADDITIONAL LOCAL AGENCY PERMITS REQUIRED FOR RECONSTRUCTION SHALL BE OBTAINED BY THE CONTRACTOR AS NECESSARY TO RECONSTRUCT ALL EXISTING ANCILLARY UTILITIES AND SIGNAGE.
    - POST-CONSTRUCTION CONDITIONS SHALL MATCH PRE-CONSTRUCTION CONDITIONS TO THE GREATEST EXTENT PRACTICAL: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL LABOR, MATERIALS AND WORKMANSHIP REQUIRED TO RECONSTRUCT ALL LANDSCAPE AND HARDSCAPE REMOVED AND/OR DAMAGED BY CONSTRUCTION ACTIVITIES.

GENERAL NOTES CONTINUED

35. THE EXHAUST SYSTEM OF ALL GASOLINE AND DIESEL ENGINES SHALL BE EQUIPPED WITH MUFFLERS THAT MEET THE EQUIPMENT MANUFACTURER'S REQUIREMENTS FOR NOISE SUPPRESSION. THE CONTRACTOR SHALL, AT THE DIRECTION OF THE ENGINEER DUE TO RESIDENTIAL COMPLAINTS, INSTALL NOISE ABATEMENT BAFFLES POSITIONED LINE-OF-SITE FROM THE NOISE SOURCE TO AFFECTED RESIDENTS, AS APPROVED BY THE ENGINEER.

36. THE CONTRACTOR IS TO CONTROL ALL FUGITIVE DUST ORIGINATING ON THIS PROJECT BY WATERING OR OTHER METHOD AS REQUIRED.

37. ALL PENETRATION OF EXISTING STRUCTURES SHALL BE BY THE MECHANICAL ROTARY CORE BORING METHOD.

38. ALL CONCRETE PENETRATED OR DISTURBED SHALL BE COATED WITH (2) TWO COATS OF EPOXY.

39. FIELD CONDITIONS MAY NECESSITATE MINOR ALIGNMENT AND GRADE DEVIATION OF THE PROPOSED UTILITIES TO AVOID OBSTACLES AS AGREED TO WITH THE OWNER AND THE ENGINEER.

40. FOR EXTERIOR CONTROL PANELS, ELECTRICAL EQUIPMENT RACKS AND EQUIPMENT, CONTRACTOR SHALL FABRICATE AND INSTALL A SUN/RAIN HOOD OVER THE EQUIPMENT.

a. CONTRACTOR SHALL SUBMIT LAYOUT OF EQUIPMENT. MAINTAIN 12" ABOVE THE TOP OF THE EQUIPMENT, AND SLOPE THE SUN/RAIN SHIELD 5 DEGREES. MAINTAIN MINIMUM 8" CLEARANCE ON SIDES AND EXTEND SUN/RAIN HOOD THE DEPTH OF THE DEEPEST PANEL PLUS 18".
b. ALL MOUNTING HARDWARE TO BE STAINLESS STEEL.
c. PROVIDE WEATHERPROOF CORROSION RESISTANT FLUORESCENT FIXTURE MOUNTED UNDERNEATH SUN/RAIN HOOD, LIGHT SWITCH AND GFC RECEPTACLE.
d. ALL MATERIAL SHALL BE UV AND CORROSION RESISTANT.

TRAFFIC CONTROL NOTES

1. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL (11" X 17" SIZE FORMAT) FOR APPROVAL PRIOR TO STARTING WORK. THE PLAN SHALL BE SUBMITTED TO THE ENGINEER AND APPLICABLE REGULATORY AGENCY A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO NEEDING TO OBTAIN A TRAFFIC CONTROL PERMIT / APPROVAL.

2. PRIOR TO THE SCHEDULING OF A PRE-CONSTRUCTION CONFERENCE, THE CONTRACTOR SHALL SUBMIT A PRELIMINARY DETAILED TRAFFIC CONTROL PLAN FOR REVIEW BY THE ENGINEER. THE TRAFFIC CONTROL PLAN AS WELL AS ALL TRAFFIC CONTROL DEVICES UTILIZED ON THE PROJECT MUST COMPLY WITH THE "FEDERAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" FOR STREETS AND HIGHWAYS, FOLLOWING APPROVAL OF THE PLAN, A REPRODUCIBLE DRAWING SHALL BE SUBMITTED TO SCDOT.

3. NOTIFY SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION A MINIMUM OF THREE (3) FULL WORKING DAYS BEFORE COMMENCING WORK. OBTAIN AND KEEP A COPY OF THE SCDOT PERMIT ON SITE AT ALL TIMES. NO WORK CAN BE STARTED UNTIL ALL NECESSARY PERMITS ARE ONSITE.

4. FOR ALL WORK IN SCDOT ROW, CONTRACTOR SHALL MAINTAIN TRAFFIC IN ACCORDANCE WITH SCDOT GUIDELINES. SCDOT ENCROACHMENT PERMIT MUST BE ISSUED BEFORE BEGINNING ANY WORK WITHIN SCDOT ROW.

5. CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL, MESSAGE BOARDS, JERSEY BARRICADES WITH CRASH ATTENUATORS ON ONE SIDE, ETC., PER SCDOT REQUIREMENTS, AT NO ADDITIONAL COST.

6. ALL WORK TO BE PERFORMED IN THE SCDOT ROW WILL BE IN ACCORDANCE WITH SCDOT SPECIFICATIONS (A POLICY FOR ACCOMMODATING UTILITIES ON HIGHWAY RIGHT OF WAY), LATEST EDITION.

7. ALL WORK INDICATED IN THE SCDOT ROW ARE TO BE COMPLETED WITHIN ONE (1) YEAR OF THE APPROVAL DATE ON THE SCDOT PERMIT. ALL DRIVEWAY CONSTRUCTION IS TO INCLUDE THE SURFACE TREATMENT AND ALL SHOULDER STABILIZATION REQUIRED.

8. ALL WORK ON HEAVILY TRAVELED ROADWAYS THAT WILL INTERRUPT TRAFFIC FLOW WILL BE DONE BETWEEN THE HOURS OF 9:00 A.M. AND 4:00 P.M. UNLESS PERMISSION FROM THE SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION IS OBTAINED. ADDITIONAL PROVISIONS MAY BE REQUIRED IN AREAS WHERE A SCHOOL OR HEAVY PEDESTRIAN TRAFFIC IS PRESENT.

9. ANY WORK THAT IS REQUIRED ON SATURDAY MUST BE APPROVED BY THE SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION PRIOR TO COMPLETION OF WORK. NO SUNDAY WORK WILL BE PERMITTED UNLESS AN EMERGENCY ARISES DURING THE CONSTRUCTION OF THE PROJECT.

10. ALL WORK PERFORMED UNDER THE PERMIT SHALL CARRY A TWO (2) YEAR WARRANTY PERIOD BY THE CONTRACTOR. THIS PERIOD WILL BEGIN AS OF THE DATE OF THE FINAL INSPECTION AND/OR SCDOT ACCEPTANCE LETTER.

11. ANY CONSTRUCTION MATERIALS OR EQUIPMENT TO BE STORED OR PARKED ALONGSIDE OF ROADWAY OR IN THE RIGHT-OF-WAY, WILL BE PLACED A MINIMUM OF 30 FEET FROM THE EDGE OF PAVEMENT, OR HAVE WARNING DEVICES AS REQUIRED AND APPROVED BY SCDOT.

12. NO OPEN CUTS IN EXISTING PAVEMENT ARE TO BE MADE ON FRIDAYS OR WEEKENDS.

13. THERE SHALL BE NO EXCAVATION OF SOIL CLOSER THAN TWO (2) FEET FROM ANY PUBLIC UTILITY POLE OR APPURTENANT FACILITY WITHOUT THE WRITTEN CONSENT OF THE OWNER THEREOF. SPECIAL PERMISSION OF THE SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION AFTER AN OPPORTUNITY TO BE HEARD IS GIVEN THE OWNER OF SUCH POLE OR APPURTENANT FACILITY MAY BE GIVEN.

14. CONTRACTOR IS BOUND BY THE REQUIREMENTS OF THE SCDOT ENCROACHMENT PERMIT. CONTRACTOR SHALL ABIDE BY ALL SCDOT REQUIREMENTS AT NO EXTRA COST TO THE OWNER.

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE No. 13293
9-10-15

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

GENERAL CIVIL NOTES

JOB NO: J-25328.0000
DATE: 7/31/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: NTS

01-G-03

WATER NOTES

1. THE CONTRACTOR IS REQUIRED TO "POT HOLE" EXISTING UTILITIES WELL AHEAD OF THE TRENCHING OPERATION TO VERIFY LOCATION, DEPTH AND POTENTIAL CONFLICTS. ABRUPT CHANGES IN THE PIPELINE GRADE/ALIGNMENT WILL NOT BE ALLOWED WITHOUT PRIOR OWNER APPROVAL.
2. CONTRACTOR SHALL VISIT SITE PRIOR TO SUBMITTING BID.
3. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE; ANY DAMAGE DONE TO THE UTILITIES SHALL BE IMMEDIATELY REPAIRED AT CONTRACTOR'S EXPENSE.
4. THE CONTRACTOR SHALL VERIFY TYPE OF MATERIAL, OUTSIDE DIAMETER AND LOCATION OF ALL PIPES BEING CONNECTED TO, IN ORDER TO INSURE PROPER FITTINGS ARE AVAILABLE AND TO MINIMIZE OUT OF SERVICE TIME FOR CONNECTIONS.
5. ALL TEES, BENDS, PLUGS AND VALVES SHALL BE PROVIDED WITH MECHANICAL THRUST RESTRAINT AND RESTRAINED TO PROPER LENGTH. PLUGS INSTALLED ON ACTIVE WATER MAINS SHALL BE RESTRAINED. ENDS OF EXISTING LINES TO BE ABANDONED SHALL BE CAPPED WATER-TIGHT.
6. VALVE BOXES SHALL BE SET TO MATCH FINISHED GRADES AND SHALL NOT BE LOCATED IN CURB.
7. ALL DUCTILE IRON PIPE, VALVES, AND FITTINGS ARE TO BE POLYWRAPPED.
8. ALL MATERIALS AND WORKMANSHIP THAT RELATES TO THE WATER DISTRIBUTION SYSTEM SHALL BE IN ACCORDANCE WITH ST JOHNS WATER COMPANY STANDARDS.
9. FIELD ADJUST PIPE DEPTH AND LOCATION TO AVOID EXISTING CONFLICTS WITH OTHER UTILITIES.
10. AT A MINIMUM, THE FOLLOWING SYSTEM COMPONENTS SHALL NOT BE COVERED UP UNTIL THE COMPLETED PRODUCT IS REVIEWED BY THE IOPWSC, THE ENGINEER, OR ONE OF THEIR REPRESENTATIVES: VALVES, STUBOUTS, THRUST RESTRAINT FITTINGS, EXISTING UTILITY CROSSINGS, AND/OR CONNECTIONS TO EXISTING UTILITIES.
11. SHOULD PIPE AND FITTINGS BE NEEDED IN ADDITION TO THAT SHOWN ON THE DRAWINGS BECAUSE PIPELINE WAS NOT INSTALLED ACCORDING TO THE ALIGNMENT AND PROFILE SHOWN, THEN THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THOSE NECESSARY MATERIALS AND PROVIDING THE EQUIPMENT AND LABOR TO INSTALL THEM TO MEET THE DESIGN INTENT AT NO ADDITIONAL COST TO THE OWNER. THIS INCLUDES CONNECTION TO EXISTING WATER MAINS.
12. IF UNSUITABLE MATERIAL IS ENCOUNTERED, CONTRACTOR SHALL WRAP DUCTILE IRON FITTINGS AND/OR PIPE WITH POLYWRAP AT NO ADDITIONAL COST TO THE OWNER.
13. SEPARATION OF WATER MAINS AND SANITARY SEWERS AS WELL AS WATER MAINS AND STORM DRAINAGE LINES MUST MEET REQUIREMENTS OF THE "TEN STATE STANDARDS". ELEVATIONS FOR THE SCDOT PROPOSED IMPROVEMENTS ARE SHOWN FOR REFERENCE. CONTRACTOR SHALL LAY NEW WATER LINE TO PROVIDE A MIN. OF 18" OF VERTICAL SEPARATION BETWEEN WATER LINE AND SEWER LINE.
14. ALL WET TAPS ON EXISTING LINES SHALL BE DONE PRIOR TO INSTALLING NEW LINE.
15. MINIMUM COVER ON ALL PIPELINES SHALL BE 3'-0", UNLESS OTHERWISE INDICATED OR DIRECTED BY THE ENGINEER. ALL PIPE SHALL BE PVC UNLESS OTHERWISE NOTED ON THE PLANS. EXCEPTIONS ARE WHEN CROSSING UNDER EXISTING STORM PIPE, WHERE THERE IS NOT 3 FEET OF COVER, OR WHERE CROSSING SEWER LINES REQUIRE DUCTILE IRON, AT THESE EXCEPTIONS DIP SHALL BE PROVIDED.
16. ALL LONG WATER SERVICE LATERALS SHALL BE BORED ACROSS THE STREET. THE COST OF THE BORE SHALL BE INCLUDED IN THE UNIT PRICE FOR THE SERVICE CONNECTION.
17. JOINT RESTRAINTS FOR MJ FITTINGS SHALL BE EBAA SERIES 2000 PV (UNLESS NOTED OTHERWISE) OR EQUAL APPROVED BY ENGINEER AND OWNER.
18. ALL BOLTS AND ALL THREADED RODS SHALL BE TYPE 316 STAINLESS STEEL. ALL NUTS SHALL BE TYPE 304 STAINLESS STEEL. ALL THREADS SHALL BE COATED WITH "NEVER SEEZE" OR EQUAL APPROVED BY ENGINEER AND OWNER.
19. ALL FITTINGS TO BE MEGALUG.
20. NO FIRE HYDRANT SHALL BE CLOSER THAN 4 FEET TO LIGHT POLE OR OTHER VERTICAL OBSTRUCTION.
21. FIRE HYDRANTS SHALL BE SET A MINIMUM OF 5' AND MAXIMUM OF 10' FROM THE EDGE OF PAVING OR THE TRAVEL LANE. PUMPER CONNECTION SHALL FACE THE STREET. HOSE CONNECTIONS SHALL BE FREE FROM OBSTRUCTION. DO NOT BLOCK NUTS OR BOLTS WITH ANY ITEMS. SET HYDRANT BREAK AWAY 1" ABOVE FINISHED GRADE.
22. CONFIRM LOCATION OF FIRE HYDRANTS WITH OWNER BEFORE FINAL PLACEMENT.
23. THE PRICE OF FIRE HYDRANTS SHALL INCLUDE ALL WORK NECESSARY TO COMPLETE ITS INSTALLATION ACCORDING TO THE PLANS & SPECIFICATIONS INCLUDING HYDRANT EXTENSION.
24. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SIZE OF ALL EXISTING METER(S) PRIOR TO ORDERING AND INSTALLING A CURB STOP SIZED FOR THE METER CONNECTION. NO ADDITIONAL FITTINGS (e.g. REDUCERS) WILL BE ALLOWED.
25. SET METER BOXES TO MATCH EXISTING GRADES. IF RESIDENTIAL SERVICE NEEDS TO BE RAISED, CONTRACTOR SHALL COMPLETE AT NO COST TO THE OWNER.
26. ALL NEW MAINS SHALL BE SWABBED WITH A PIPE LINE PIG A MINIMUM OF THREE TIMES PRIOR TO TESTING FOR BAC-TS. CONTRACTOR SHALL SANITIZE LINES PRIOR TO BAC-T SAMPLING PER SPECIFICATIONS.
27. CONTRACTOR SHALL SUBMIT BAC-T SAMPLES TO TRIDENT LABORATORY OR DHEC CERTIFIED LAB.
28. THE OWNER RESERVES THE RIGHT TO EFFECT ANY REQUIRED REPAIRS AND WARRANT FOR THE COLLECTION FOR ALL ASSOCIATED COSTS FROM THE CONTRACTOR WHERE NECESSITATED BY EMERGENCY CONDITIONS OR BY THE CONTRACTOR.
29. CONTRACTOR SHALL COORDINATE THE PROPOSED TIE-INS AND CUT-INS WITH THE OWNER AND THE ENGINEER. TWO WEEKS' NOTICE MUST BE GIVEN BY THE CONTRACTOR BEFORE STARTING THIS WORK (THIS WORK MAY NEED TO BE DONE AT NIGHT OR DURING PERIODS OF LOW FLOW).
30. ANY TIE-INS TO EXISTING LINES THAT WILL RESULT IN INTERRUPTION OF SERVICE TO ANY CUSTOMER MUST BE COORDINATED WITH THE OWNER AS TO ACCEPTABLE TIME AND DURATION OF INTERRUPTION. SCHEDULED INTERRUPTIONS OF SERVICE (TIE-INS, ABANDONMENTS, ETC.) REQUIRE 3 DAYS ADVANCE NOTICE.

SEWER NOTES:

1. LOCATE SEWER SERVICE CONNECTIONS OUT OF DRIVEWAYS AND A MINIMUM OF TEN FEET FROM TREES. THE SEWER CONNECTION SHALL BE A MINIMUM OF 5 FEET DOWNSTREAM FROM THE WATER SERVICE.
2. ALL HORIZONTAL SEPARATION DIMENSIONS SHOWN BETWEEN WATER AND SEWER MAINS SHALL BE MEASURED FROM THE NEAREST EDGE OF EACH PIPELINE. MINIMUM SEPARATION BETWEEN WATER AND SEWER MAINS SHALL BE 10 FOOT HORIZONTAL AND 1.5 FOOT VERTICAL.
3. PRIOR TO CONNECTING TO ANY EXISTING SEWER LATERAL OR MAIN, IT SHALL BE CLOSED CIRCUIT TELEVISION INSPECTED BY A LICENSED CONTRACTOR TO VERIFY THE LINE IS IN GOOD WORKING CONDITION AND FREE OF ALL DEBRIS.
4. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS, ORDINANCES, CODES, ORDERS, AND REGULATIONS WHICH IN ANY MANNER AFFECT THE CONDUCT OF THE WORK, SPECIFICALLY AS IT RELATES TO SEWAGE SPILLS. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR PREVENTING SEWAGE SPILLS, FOR CONTAINING SEWAGE SPILLS, AND FOR RECOVERY AND LEGAL DISPOSAL OF ANY SPILLED SEWAGE, AND FOR ANY FINES, PENALTIES, CLAIMS AND LIABILITY ARISING FROM CAUSING A SEWAGE SPILL, AND FOR ANY VIOLATION OF ANY LAW, ORDINANCE, CODE, ORDER, OR REGULATION AS A RESULT OF THE SPILL(S).
5. FOR WORK INVOLVING CONNECTION TO EXISTING FACILITIES: PRIOR TO THE START OF CONSTRUCTION WHICH INVOLVES ANY EXISTING WASTEWATER FACILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING AND SUBMITTING TO THE ENGINEER FOR REVIEW AND APPROVAL, A WASTEWATER FLOW DIVERSION PLAN IN COMPLIANCE WITH THE UTILITIES' POLICY OF ZERO SPILLS AT LEAST FIFETEEN DAYS WORKING DAYS PRIOR TO IMPLEMENTATION OF THE PLAN. THE DIVERSION PLAN SHALL INCLUDE AN EMERGENCY RESPONSE PLAN INDICATING THE PROCEDURES, EQUIPMENT, AND ACTIVITIES THAT WILL BE IMPLEMENTED IN THE EVENT OF AN EMERGENCY SHUTDOWN OF FAILURE OF THE FLOW DIVERSION EQUIPMENT USED FOR CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION OF THE EMERGENCY PLAN.
6. FOR WORK WHERE BYPASS PUMPING MAY BE INVOLVED ADD: AT LEAST 15 WORKING DAYS PRIOR TO THE IMPLEMENTATION OF ANY FLOW DIVERSION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING AND SUBMITTING TO THE ENGINEER, FOR REVIEW AND APPROVAL, A WASTEWATER FLOW DIVERSION PLAN. THE CONTRACTOR'S WASTEWATER FLOW DIVERSION PLAN SHALL BE APPROVED BY THE UTILITY, BEFORE ANY FLOW CAN BE DIVERTED. THE DIVERSION PLAN SHALL INDICATE THE SEQUENCE OF DIVERSION OPERATIONS AND ALL OTHER OPERATIONS THE CONTRACTOR WILL ESTABLISH TO MAINTAIN WASTEWATER SERVICE DURING THE CONSTRUCTION PERIOD. THE DIVERSION PLAN SHALL INCLUDE A COMPREHENSIVE EMERGENCY RESPONSE PLAN, INCLUDING STANDBY REDUNDANT BY-PASS EQUIPMENT, IN THE EVENT OF AN EMERGENCY SHUTDOWN OF FAILURE OF THE FLOW DIVERSION EQUIPMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION OFTHE EMERGENCY PLAN.

DHEC NOTES:

1. EXPOSED POTABLE WATER PIPING AND PROCESS WATER PIPING SHALL BE LABELED AND COLR CODED WITHIN THE WASTEWATER TREATMENT PLANT AREA. LIKEWISE ALL PIPING SHALL BE LABELED WITH USE, FLUID AND FLOW DIRECTION.
2. A 2 HOUR PRESSURE LEAKAGE TEST AT A MINIMUM OF 100 PSI IS REQUIRED FOR ALL FORCE MAINS.
3. ALL TESTABLE BACKFLOW PREVENTORS MUST BE TESTED AND SATISFACTORY RESULTS PROVIDED TO THE LOCAL DHEC OFFICE PRIOR TO ISSUANCE OF FINAL OPERATIONAL APPROVAL.

THOMAS & HUTTON ENGINEERING CO.
No. C00285

MARK F. YODICE
No. 13293
1-29-2016

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
GENERAL CIVIL NOTES

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	NTS

01-G-04

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UTILITY SYMBOLS

DESCRIPTION	EXISTING	PROPOSED
POWER LINE OVERHEAD	—— OHU ——	
UNDERGROUND FIBER OPTIC CABLE	— F — F —	
TELEPHONE LINE	— T — T — T —	
POWER LINE UNDERGROUND	N/A	—— UGP ——
POWER POLE	⊙	⊙
LIGHT POLE	☼	☼

PAVEMENT SYMBOLS

DESCRIPTION	EXISTING	PROPOSED
ASPHALT PAVEMENT	▨	▩
CONCRETE PAVEMENT	░	▒
GRAVEL SURFACING	▦	▦

WATER SYMBOLS

DESCRIPTION	EXISTING	PROPOSED
WATER LINE	—— 10"W ——	—— 14"W ——
WATER SERVICE W/ METER BOX	—— W ——☒	—— 1-1/2"W —— — ——☒
RECLAIMED WATER LINE	N/A	—— RM ——
BACKFLOW PREVENTER	▭	▭
TAPPING SLEEVE AND VALVE	N/A	⊗
WATER LINE BEND	N/A	∧
FIRE HYDRANT W/ 6" VALVE & BOX	⊗●	⊗●
YARD HYDRANT	N/A	●
GATE VALVE AND BOX	⊗	⊗
TEE JOINT AND PLUG	N/A	⊥

SANITARY SEWER & FORCE MAIN SYMBOLS

DESCRIPTION	EXISTING	PROPOSED
SANITARY SEWER FORCE MAIN	– – – – – 14"FM —	– – – – FM – – – –
SANITARY MANHOLE	◎	●
GRAVITY SANITARY SEWER PIPE	—— 12"SS ——	━━━━

LINE TYPES

DESCRIPTION	EXISTING	PROPOSED
RIGHT-OF-WAY (ROW)	—-·-—-·-—	—-·-—-·-—
℄ ROAD	—— – —— – ——	—— – —— – ——
EASEMENT	— — — — — — —	- - - - - - - - - - - - -
CLEARING LIMITS	N/A	—CL—CL—CL—
FENCE LINE	—— X ——	—— X ——
WETLANDS LINE	— · · — · · —	N/A

DRAINAGE & TOPOGRAPHY SYMBOLS

DESCRIPTION	EXISTING	PROPOSED
CURB INLET	N/A	N/A
CULVERT	⊓	◄·—·—·►
GRATE INLET	▤	▤
STORM MANHOLE (JUNCTION BOX)	N/A	◉
STORM PIPE	═ ═ ═ ═	-·-·-·-·-
DITCH OR SWALE (UNPAVED)	—— ——	——► · · · ——
CONTOUR	— — — ·II· — — —	— — — ·II· — — —
SPOT ELEVATION	17.28 X SSMH	17.28 X SSMH
COORDINATE LOCATION POINT	N 1000.00 E 1000.00	N 1000.00 E 1000.00

CIVIL LEGEND:

1. EXISTING TOPOGRAPHY AND OTHER EXISTING SITE FEATURES ARE SHOWN SCREENED. SEE THE BOUNDARY & TOPOGRAPHIC SURVEY BY THOMAS & HUTTON FOR THE SURVEY LEGEND.
2. SEE EROSION & SEDIMENT CONTROL PLANS FOR THEIR CORRESPONDING LEGEND AND NOTES.

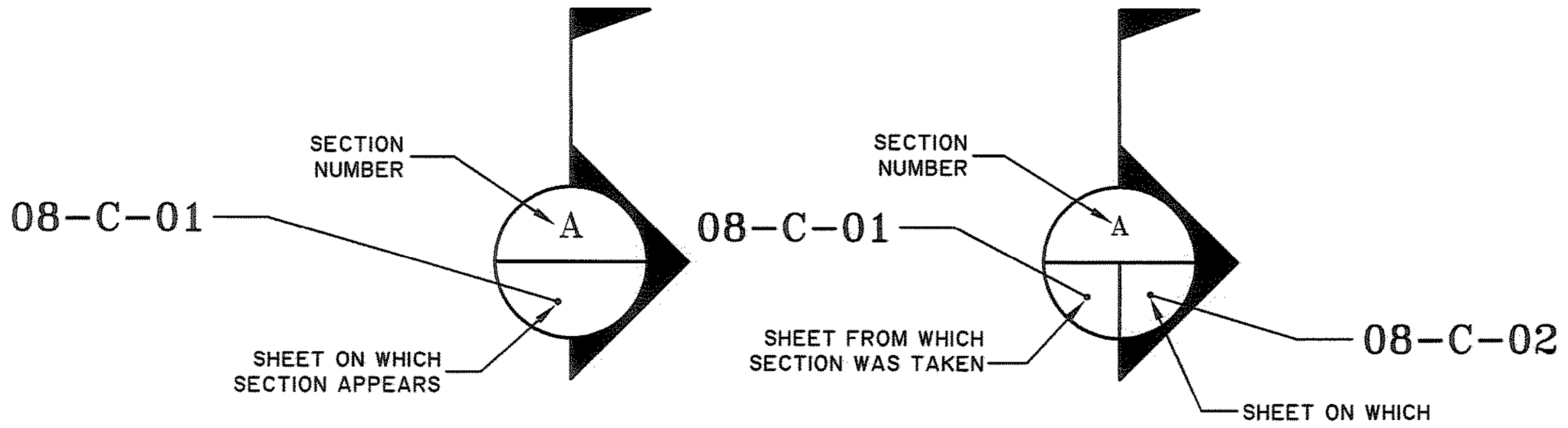
ABBREVIATIONS

BOC	BACK OF CURB
BM	BENCHMARK
BTTM	BOTTOM
BV	BALL VALVE
CI	CAST IRON
℄	CENTER LINE
CL	CLEARING LIMITS
CMPA	CORRUGATED METAL PIPE ARCH
CMP	CORRUGATED METAL PIPE
CPP	CORRUGATED PLASTIC PIPE
DIA	DIAMETER
DOT	DEPARTMENT OF TRANSPORTATION
DI / DIP	DUCTILE IRON / DUCTILE IRON PIPE
EL	ELEVATION
EJ	EXPANSION JOINT
EOP	EDGE OF PAVEMENT
EW	EACH WAY
EXIST	EXISTING
FFE	FINISHED FLOOR ELEVATION
FIN	FINISHED
FLG	FLANGED
FM	FORCE MAIN (SANITARY SEWER)
FR	FRAME
FG	FINISHED GRADE
FE	FINISHED ELEVATION
GI	GRATE INLET
HWY	HIGHWAY
HDPE	HIGH DENSITY POLYETHYLENE
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
LF	LINEAR FEET
IRRG	IRRIGATION
MAX.	MAXIMUM
MJ	MECHANICAL JOINT
MIN.	MINIMUM
NTS	NOT TO SCALE
NIC	NOT IN CONTRACT
OC	ON CENTER
OD	OUTSIDE DIAMETER
PA	PRE AERATION
PEJ	PREMOLDED EXPANSION JOINT
PVC	POLYVINYL CHLORIDE
RAPP	RECYCLED ASPHALT
RCP	REINFORCED CONCRETE PIPE
RJ	RESTRAINED JOINT
RM	RECLAIMED WATER
ROW / R/W	RIGHT-OF-WAY
SHC	
SF	SQUARE FEET
SS	SANITARY SEWER
SGD	SUBGRADE DRAIN
TOC	TOP OF CURB
TC	TOP OF CONCRETE
TG	TOP OF GRAVEL
TP	TOP OF PAVEMENT
TR	TOP OF ROCK
TS	TOP OF SIDEWALK
TW	TOP OF WALL
TOW	TOP OF WATER
TYP	TYPICAL
W	WATER
W/	WITH
WV	WATER VALVE
ø	DIAMETER

	CURVE DATA
PC	POINT OF CURVE
PT	POINT OF TANGENCY
BVC	BEGINNING OF VERTICAL CURVE
EVC	ENDING OF VERTICAL CURVE
e	EXTERNAL DISTANCE
Δ	DELTA
T	TANGENT LENGTH
L	LENGTH OF CURVE
R	RADIUS

NOTES:

1. CONTACT THE ENGINEER FOR ABBREVIATIONS NOT LISTED
2. THIS IS A STANDARD ABBREVIATION LIST, THEREFORE, SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS LIST AND NOT ON THE PLANS.


SECTION NUMBER
08-C-01
A
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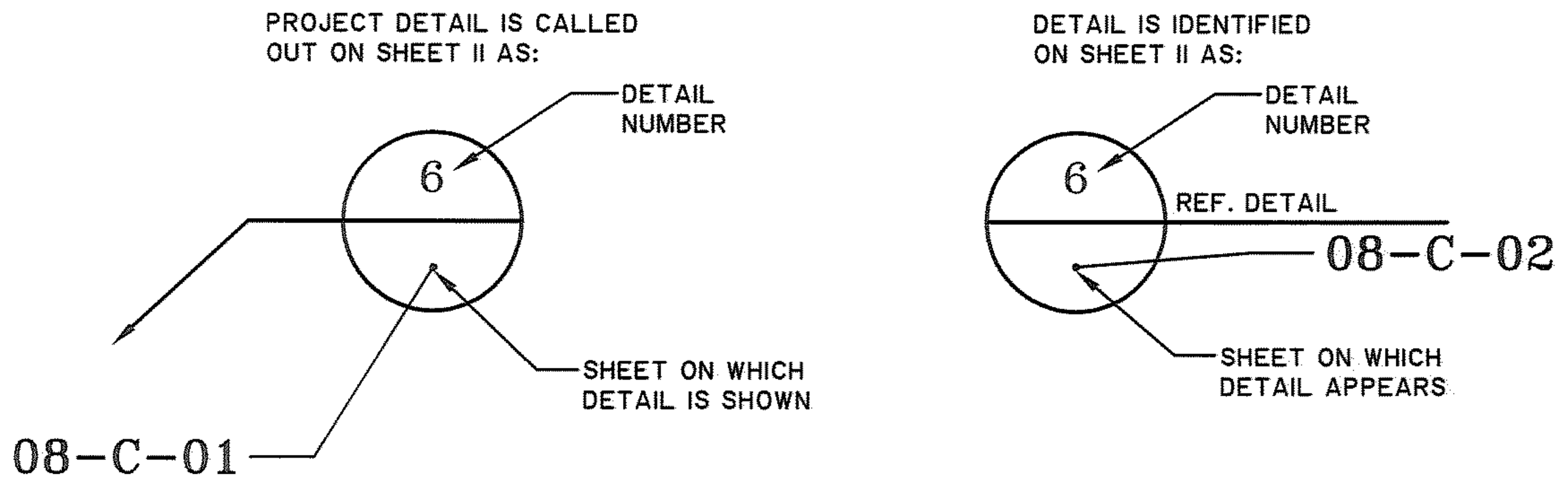
SHEET ON WHICH SECTION APPEARS

SECTION CUT ON DRAWING


PROJECT DETAIL IS CALLED OUT ON SHEET 11 AS:
DETAIL NUMBER
6
SHEET ON WHICH DETAIL IS SHOWN
08-C-01
DETAIL IS IDENTIFIED ON SHEET 11 AS:
DETAIL NUMBER
6
REF. DETAIL
08-C-02
SHEET ON WHICH DETAIL APPEARS

DETAIL CALL OUT

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
THOMAS & HUTTON ENGINEERING CO.
No. C00285

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
No. 13293
MARK F. YODICE
Mark F. Yodice
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CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

GENERAL CIVIL NOTES & LEGENDS

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	NTS

01-G-05

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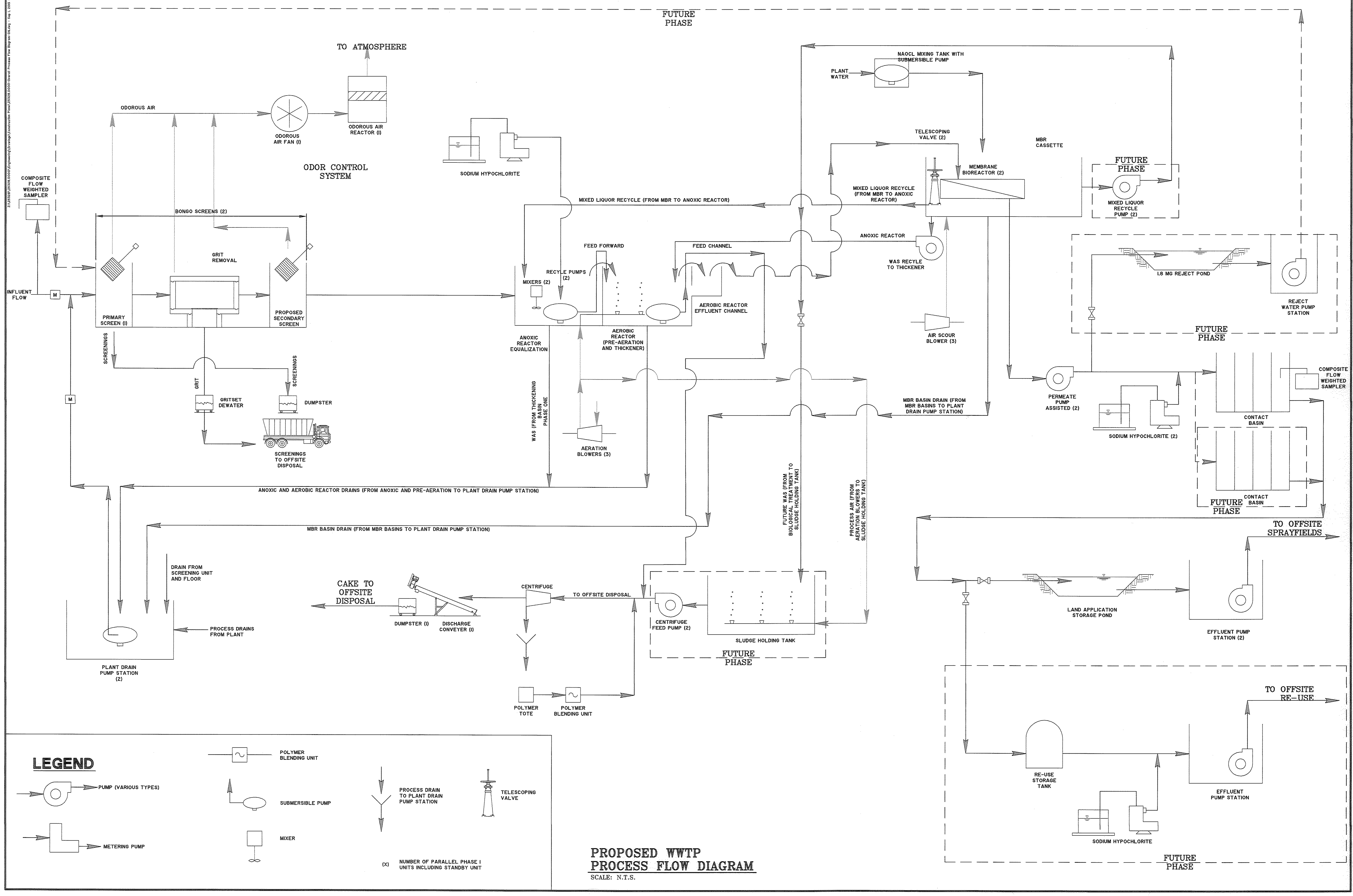
FUTURE PHASE
TO ATMOSPHERE
ODOROUS AIR
ODOROUS AIR FAN (1)
ODOROUS AIR REACTOR (1)
ODOR CONTROL SYSTEM
SODIUM HYPOCHLORITE
COMPOSITE FLOW WEIGHTED SAMPLER
BONGO SCREENS (2)
GRIT REMOVAL
INFLUENT FLOW
M
PRIMARY SCREEN (1)
PROPOSED SECONDARY SCREEN
SCREENINGS
GRIT
SCREENINGS
GRITSET DEWATER
DUMPSTER
SCREENINGS TO OFFSITE DISPOSAL
M
MIXED LIQUOR RECYCLE (FROM MBR TO ANOXIC REACTOR)
FEED FORWARD
FEED CHANNEL
RECYLE PUMPS (2)
MIXERS (2)
AEROBIC REACTOR EFFLUENT CHANNEL
ANOXIC REACTOR EQUALIZATION
AEROBIC REACTOR (PRE-AERATION AND THICKENER)
WAS (FROM THICKENING BASIN PHASE ONE
AERATION BLOWERS (3)
ANOXIC AND AEROBIC REACTOR DRAINS (FROM ANOXIC AND PRE-AERATION TO PLANT DRAIN PUMP STATION)
MBR BASIN DRAIN (FROM MBR BASINS TO PLANT DRAIN PUMP STATION)
DRAIN FROM SCREENING UNIT AND FLOOR
PROCESS DRAINS FROM PLANT
PLANT DRAIN PUMP STATION (2)
NAOCL MIXING TANK WITH SUBMERSIBLE PUMP
PLANT WATER
TELESCOPING VALVE (2)
MBR CASSETTE
MEMBRANE BIOREACTOR (2)
MIXED LIQUOR RECYCLE (FROM MBR TO ANOXIC REACTOR)
ANOXIC REACTOR
WAS RECYLE TO THICKENER
AIR SCOUR BLOWER (3)
FUTURE PHASE
MIXED LIQUOR RECYCLE PUMP (2)
1.8 MG REJECT POND
REJECT WATER PUMP STATION
FUTURE PHASE
MBR BASIN DRAIN (FROM MBR BASINS TO PLANT DRAIN PUMP STATION)
PERMEATE PUMP ASSISTED (2)
SODIUM HYPOCHLORITE (2)
CONTACT BASIN
COMPOSITE FLOW WEIGHTED SAMPLER
CONTACT BASIN
FUTURE PHASE
FUTURE WAS (FROM BIOLOGICAL TREATMENT TO SLUDGE HOLDING TANK)
PROCESS AIR (FROM AERATION BLOWERS TO SLUDGE HOLDING TANK)
TO OFFSITE SPRAYFIELDS
CAKE TO OFFSITE DISPOSAL
DUMPSTER (1)
DISCHARGE CONVEYER (1)
CENTRIFUGE
TO OFFSITE DISPOSAL
CENTRIFUGE FEED PUMP (2)
SLUDGE HOLDING TANK
FUTURE PHASE
POLYMER TOTE
POLYMER BLENDING UNIT
LAND APPLICATION STORAGE POND
EFFLUENT PUMP STATION (2)
TO OFFSITE RE-USE
RE-USE STORAGE TANK
EFFLUENT PUMP STATION
SODIUM HYPOCHLORITE
FUTURE PHASE
LEGEND
PUMP (VARIOUS TYPES)
METERING PUMP
POLYMER BLENDING UNIT
SUBMERSIBLE PUMP
MIXER
PROCESS DRAIN TO PLANT DRAIN PUMP STATION
TELESCOPING VALVE
(X) NUMBER OF PARALLEL PHASE I UNITS INCLUDING STANDBY UNIT

PROPOSED WWTP PROCESS FLOW DIAGRAM

SCALE: N.T.S.

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE
12-2-2015

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
682 Johnnie Dodds Boulevard • Suite 100
Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

OVERALL PROCESS FLOW DIAGRAM

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	MFY
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

01-G-06

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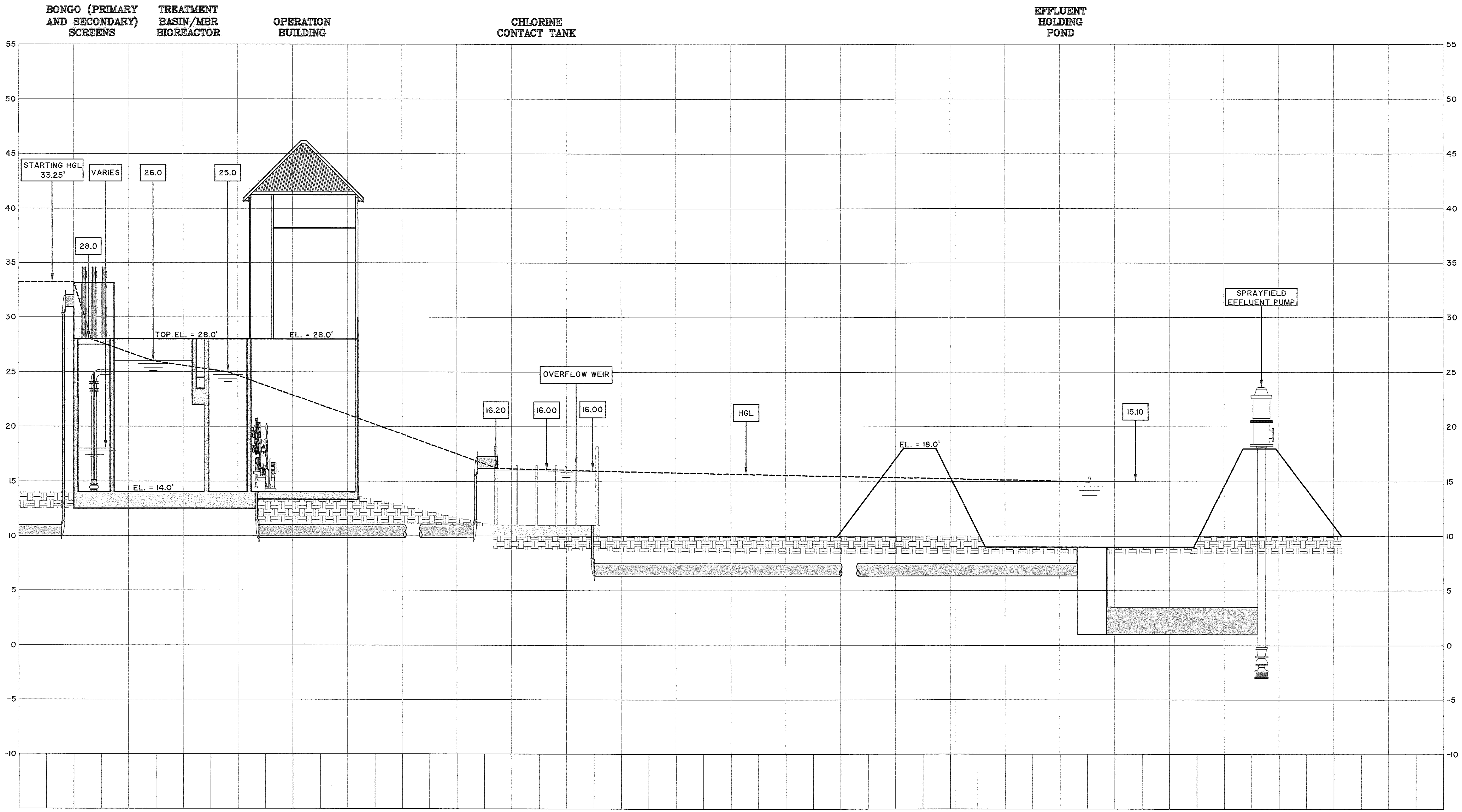

HYDRAULIC PROFILE

SCALE (H): NONE
SCALE (V): 1" = 5'

No. C00285

No. 13293
9-10-2015
MARK F. YODICE

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

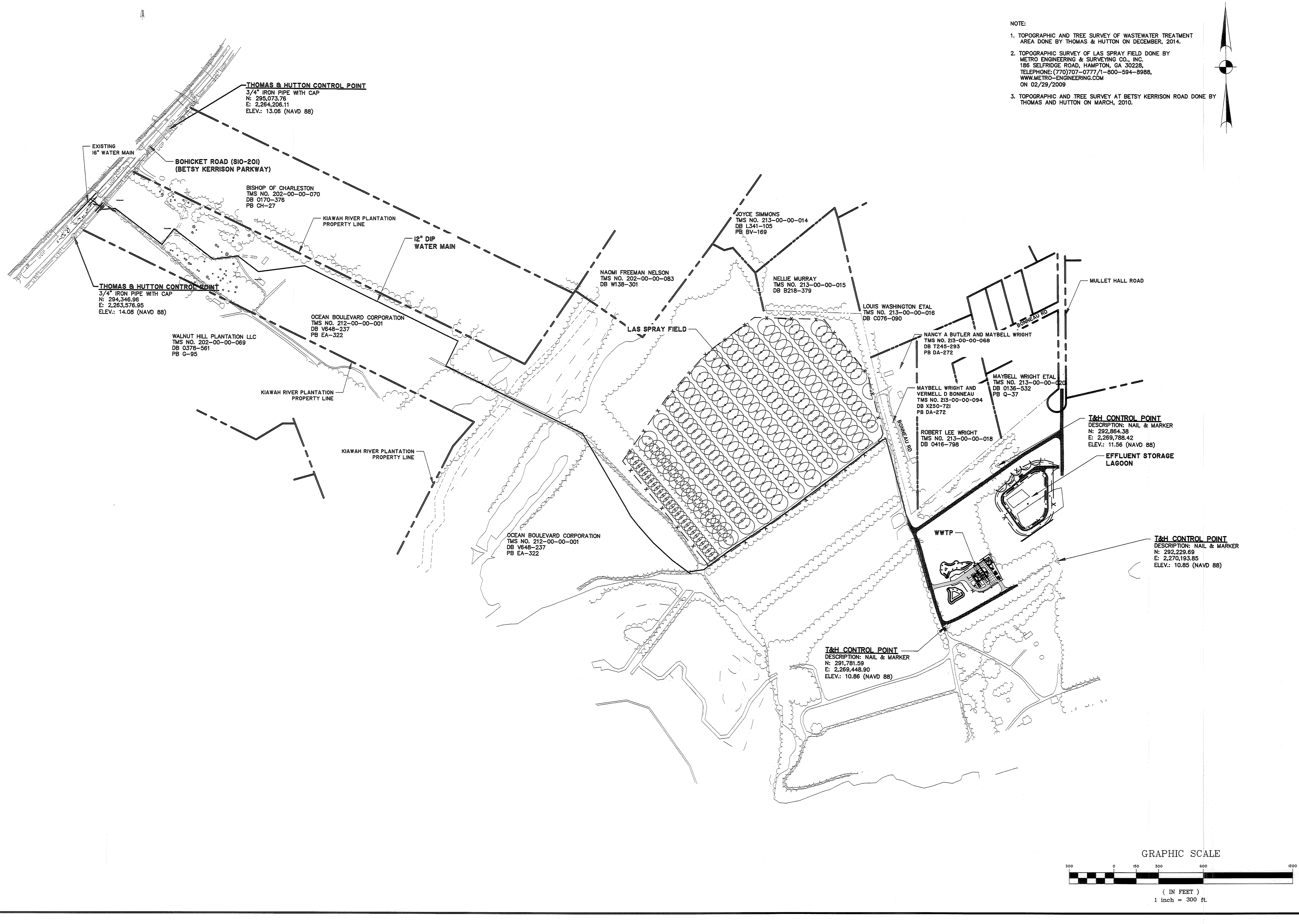
HYDRAULIC PROFILE

JOB NO: J-25328.0000
DATE: 7/31/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: AS NOTED

01-G-07

NOTE:

1. TOPOGRAPHIC AND TREE SURVEY OF WASTEWATER TREATMENT AREA DONE BY THOMAS & HUTTON ON DECEMBER, 2014.
2. TOPOGRAPHIC SURVEY OF LAS SPRAY FIELD DONE BY METRO ENGINEERING & SURVEYING CO., INC.
   186 SELFRIDGE ROAD, HAMPTON, GA 30228,
   TELEPHONE: (770)707–0777/1–800–594–8988,
   WWW.METRO–ENGINEERING.COM
   ON 02/29/2009
3. TOPOGRAPHIC AND TREE SURVEY AT BETSY KERRISON ROAD DONE BY THOMAS AND HUTTON ON MARCH, 2010.



SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING CO.
No. C00285
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 13293
MARK F. YODICE

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

SURVEY CONTROL SHEET

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	MFY
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	1" = 300'

01-V-01

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GENERAL NOTES

1. THE GENERAL STRUCTURAL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS AND SPECIFICATIONS. SHOULD CONFLICTS EXIST BETWEEN THE DRAWINGS, SPECIFICATIONS, AND GENERAL STRUCTURAL NOTES, THE STRICTEST PROVISION SHALL GOVERN.

2. CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, PROCEDURES AND SAFETY ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR IS RESPONSIBLE FOR SHORING AND BRACING OF ALL ELEMENTS UNTIL THE STRUCTURE IS COMPLETE.

3. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH, AND COORDINATED WITH CIVIL, ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION AND OTHER CONTRACT DOCUMENTS.

4. THE CONTRACTOR SHALL COORDINATE THE LOCATION AND SIZES OF ALL OPENINGS AND PENETRATIONS IN THE STRUCTURAL MEMBERS WITH THE APPLICABLE DISCIPLINES.

5. CONTRACTOR SHALL REVIEW AND CHECK SHOP DRAWINGS BEFORE SUBMITTAL TO ENGINEER. CONTRACTOR REMAINS SOLELY RESPONSIBLE FOR ERRORS AND OMISSIONS ASSOCIATED WITH THE PREPARATION OF SHOP DRAWINGS AS THEY PERTAIN TO MEMBER SIZES, DETAILS, AND DIMENSIONS SPECIFIED IN THE CONTRACT DOCUMENTS.

DESIGN INFORMATION

1. STRUCTURAL DESIGN CONFORMS TO THE REQUIREMENTS OF THE SOUTH CAROLINA STATE BUILDING CODE (IBC 2012 W/ MODIFICATIONS).

2. DESIGN LOADS AND PARAMETERS ARE AS FOLLOWS:

A. DEAD LOADS: ACTUAL WEIGHT OF MATERIALS AND EQUIPMENT

B. LIVE LOADS:

SECOND FLOOR LOAD	80 PSF
EXTERIOR ELEVATED WALKWAYS	80 PSF
ELECTRICAL EQUIPMENT ON 2ND FLR	275 PSF
ROOF	20 PSF
ALUMINUM COVERS OVER BASINS	50 PSF
GRATING OVER BASINS	50 PSF

C. WIND LOAD:

BASIC WIND SPEED (3 SEC GUST)	157 MPH
WIND EXPOSURE CATEGORY	C
INTERNAL PRESSURE COEFFICIENT (Gcpi)	±0.18

D. SEISMIC DESIGN DATA:

OCCUPANCY CATEGORY	III
SEISMIC IMPORTANCE FACTOR	1.25
SPECTRAL RESPONSE COEFFICIENT Sds	0.765 g
SPECTRAL RESPONSE COEFFICIENT Sdl	0.391 g
SITE CLASS	D
BASIC STRUCTURAL SYSTEM	BEARING WALL SYSTEM
SEISMIC DESIGN CATEGORY	D
SEISMIC RESISTING SYSTEM	SPECIAL R/F MASONRY SHEARWALLS, SPECIAL REINFORCED R/F CONCRETE SHEARWALLS AND ORDINARY STEEL MOMENT FRAMES
SEISMIC BASE SHEAR	0.174*W
ANALYSIS PROCEDURE	ELFA

3. COMPONENTS & CLADDING AND MECHANICAL ATTACHMENT LOADS SHALL BE CALCULATED USING ASCE 7-10 AND INCORPORATED BY APPLICABLE TRADES. ENGINEER SHALL BE CONTACTED IF MANUFACTURER HAS QUESTIONS ABOUT ATTACHING TO THE STRUCTURAL BUILDING ELEMENTS.

EXCAVATION FOR STRUCTURAL ITEMS

1. THE CONTRACTOR SHALL PROVIDE ALL WORK NECESSARY TO PROTECT EXISTING STRUCTURES AND UTILITIES. ANY DAMAGE TO EXISTING STRUCTURES OR UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR, TO THE SATISFACTION OF THE OWNER, AT NO COST TO THE OWNER.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL BRACING & SUPPORTS NECESSARY FOR EXCAVATION AND CONSTRUCTION AND ALL EXCAVATIONS SHALL COMPLY WITH APPLICABLE OSHA REGULATIONS.

FOUNDATIONS

1. FOUNDATION DESIGN IS BASED ON A SUBSURFACE INVESTIGATION BY TERRACON, DATED FEBRUARY 6, 2015, PROJECT NUMBER EN145129.

2. CONTRACTOR SHALL READ GEOTECHNICAL REPORT AND ADDENDUMS PRIOR TO COMMENCEMENT OF WORK AND SHALL FOLLOW RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER FOR PREPARATION OF THE SUBGRADE AND EXCAVATIONS.

3. GEOTECHNICAL ENGINEER REGISTERED IN THE STATE OF SOUTH CAROLINA SHALL BE ENGAGED BY CONTRACTOR TO CONDUCT PILE TESTING PROGRAM, AS DETAILED HEREIN.

4. PILE DESIGN IS BASED UPON PILE LOAD CAPACITY INFORMATION PROVIDED IN THE GEOTECHNICAL REPORT. CAPACITY REQUIREMENTS FOR PILE TESTING ARE OUTLINED IN THE PILE SPECIFICATION.

5. WHERE APPLICABLE, ALL EXCAVATIONS, COMPACTED FILL, AND SUBGRADES SHALL BE OBSERVED AND TESTED BY Ap GEOTECHNICAL ENGINEER REGISTERED IN THE STATE OF SOUTH CAROLINA TO VERIFY SPECIFIED GEOTECHNICAL CONFORMANCE REQUIREMENTS.

6. WHERE APPLICABLE, COMPACT SOIL MATERIALS TO NOT LESS THAN 98% OF MODIFIED PROCTOR DENSITY OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D 1557.

7. DO NOT PLACE BACKFILL OR FILL SOIL MATERIAL ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAIN FROST OR ICE.

METAL DECK

1. UNLESS NOTED OTHERWISE, THE METAL DECK SHALL BE GALVANIZED, CONFORMING TO THE STEEL DECK INSTITUTE (SDI) SPECIFICATIONS, LATEST EDITION.

2. FLOOR DECK AT SECOND LEVEL SHALL BE 2", 20 GAUGE, COMPOSITE METAL DECK WITH 6x6 W2.1xW2.1 WWR, AND SHALL BE GALVANIZED. FLOOR DECK SHALL HAVE THE FOLLOWING MIN SECTION PROPERTIES: Sp = 0.341 IN^3/FT AND Ip = 0.409 IN^4/FT.

3. SHORE ALL SINGLE SPAN FLOOR METAL DECK (AND ANY OTHER DECK SPAN LOCATIONS NOTED ON THE DRAWINGS AS REQUIRING SHORING) UNTIL CONCRETE HAS BEEN POURED AND HAS REACHED 75 PERCENT OF THE REQUIRED 28 DAY COMPRESSIVE STRENGTH.

4. DECKING SHALL BE CONTINUOUS OVER 3 SPANS MINIMUM WHERE SUPPORTING STRUCTURE PERMITS.

5. DECKING SHALL BE ERECTED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. MANUFACTURER SHALL BE A MEMBER OF THE STEEL DECK INSTITUTE.

6. SUBMIT PRODUCT DATA, INCLUDING SPAN TABLES, FOR REVIEW.

7. TOUCH UP AREAS DAMAGED IN HANDLING AND ERECTION WITH GALVANIZING REPAIR PAINT.

8. CHALKLINES OR OTHER METHODS SHALL BE USED TO ENSURE THAT DECK WELDS ARE ALIGNED WITH AND WILL OCCUR OVER THE TOP CHORD OF JOISTS OR TOP FLANGE OF BEAMS. EXCESSIVE BLOWTHROUGH IN THE DECK DUE TO MISALIGNMENT OR EXCESSIVE HEAT WILL NOT BE TOLERATED. IF, IN THE OPINION OF THE ARCHITECT OR HIS APPROVED REPRESENTATIVE, EXCESSIVE BLOWTHROUGH IN THE DECK HAS OCCURRED, THE CONTRACTOR SHALL REPLACE THE DAMAGED DECK AT HIS EXPENSE

MASONRY

1. CONCRETE MASONRY DESIGN AND CONSTRUCTION SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING: BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES, ACI 530 /ASTM 5/ TMS 402 AND SPECIFICATIONS FOR MASONRY STRUCTURES, ACI 530.1 / ASTM 6 / TMS 602.

2. UNLESS NOTED OTHERWISE, PROVIDE HOLLOW, LIGHTWEIGHT, LOAD BEARING CONCRETE MASONRY UNITS (CMU) CONFORMING TO ASTM C90, TYPE I, WITH A DENSITY LESS THAN 105 PCF.

3. PROVIDE CONCRETE MASONRY WITH A MINIMUM COMPRESSIVE STRENGTH, f'm = 1,500 PSI.

4. PROVIDE TYPE "S" MORTAR IN ACCORDANCE WITH ASTM C270 WITH A COMPRESSIVE STRENGTH OF 2,000 PSI, UNLESS NOTED OTHERWISE.

5. PROVIDE GROUT FOR REINFORCED MASONRY IN ACCORDANCE WITH ASTM C476 WITH A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI UNLESS NOTED OTHERWISE. GROUT SOLID ALL CELLS CONTAINING REINFORCING.

6. LAP SPLICES SHALL BE AS SHOWN IN THE TABLE PROVIDED IN THESE NOTES AND SHALL CONFORM TO ACI 530. SHOULD CONFLICTS EXIST, THE STRICTEST PROVISION SHALL APPLY:

CMU R/F LAP SPLICE, HOOK DEVELOPMENT & LENGTH

BAR Ø	BAR SIZE	SPLICE/LAP LENGTH	HOOK DEVELOPMENT	HOOK LENGTH
.500 in.	#4	17 in.	7 in.	6 in.
.625 in.	#5	27 in.	9 in.	8 in.
.750 in.	#6	50 in.	10 in.	9 in.
.875 in.	#7	67 in.	12 in.	11 in.
1.000 in.	#8	88 in.	13 in.	12 in.

7. PROVIDE TRUSS OR LADDER TYPE HORIZONTAL JOINT REINFORCEMENT COMPLYING WITH ASTM A82 AND ZINC COATED, AS SPECIFIED HEREIN.

8. LAY MASONRY UNITS IN RUNNING BOND PATTERN UNLESS NOTED OTHERWISE.

9. BOND BEAMS, CMU LINTELS, MASONRY BENEATH STEEL BEAM AND JOIST BEARINGS, AND OTHER STRUCTURAL ELEMENTS SHALL EXTEND UNINTERRUPTED ACROSS CONTROL JOINTS. PROVIDE RAKED JOINTS IN THESE ELEMENTS TO MATCH THE CONTROL JOINT.

10. INSTALL MASONRY WALLS W/ 4'-0" MAXIMUM LIFTS.

REINFORCED CONCRETE

1. UNLESS NOTED OTHERWISE, ALL CONCRETE WORK, DETAILING, FABRICATION, AND PLACING, INCLUDING MIN COVER REQUIREMENTS OF REINFORCING BARS (EXCEPT AS NOTED HEREIN) AND CONCRETE SHALL BE GOVERNED BY THE LATEST REVISIONS OF:

   A. ACI 301, ACI 315, AND ACI 318
   B. CRSI RECOMMENDED PRACTICE OF PLACING REINFORCING BARS
   C. ACI 306 AND ACI 305 FOR COLD AND HOT WEATHER CONCRETING, RESPECTIVELY

2. ALL CONCRETE SHALL BE NORMAL WEIGHT (N.W.) WITH A MAXIMUM UNIT WEIGHT OF 150 PCF, AND SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI.

3. CONCRETE MIX DESIGNS, IN ACCORDANCE WITH ACI 318 SECTION 5.3, SHALL BE SUBMITTED TO THE ENGINEER AND TESTING AGENCY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THE REQUIRED CONCRETE DESIGN STRENGTH.

4. USE OF CALCIUM CHLORIDE, CHLORIDE IONS, OR OTHER SALTS IN CONCRETE IS NOT PERMITTED.

5. THE AIR CONTENT IN ALL CONCRETE EXPOSED TO WEATHER SHALL BE BETWEEN 3% AND 6%.

6. THE TESTING AGENCY SHALL SAMPLE AND TEST EACH 50 CU. YARDS OR FRACTION THEREOF OF EACH CLASS OF CONCRETE PLACED EACH DAY. SAMPLE CONCRETE IN ACCORDANCE WITH ASTM C172. PERFORM THE FOLLOWING TESTS IN ACCORDANCE WITH THE INDICATED STANDARD:

   A. SLUMP: ASTM C143
   B. AIR CONTENT: ASTM C173
   C. COMPRESSIVE STRENGTH: ASTM C39, WITH ONE CYLINDER AT 7 DAYS, 2
   D. CYLINDERS AT 28 DAYS, AND ONE SPECIMEN HELD IN RESERVE.

7. DETAIL CONCRETE REINFORCEMENT AND ACCESSORIES IN ACCORDANCE WITH ACI 315 "DETAILING MANUAL". SUBMIT SHOP DRAWINGS FOR ACCEPTANCE SHOWING ALL FABRICATION DIMENSIONS AND LOCATIONS FOR PLACING REINFORCING STEEL AND ACCESSORIES. DO NOT BEGIN FABRICATION UNTIL SHOP DRAWINGS ARE COMPLETED AND ACCEPTED.

8. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, AND SHALL BE GRADE 60 UNLESS OTHERWISE NOTED.

9. LAP SPLICES SHALL BE AS SHOWN IN THE TABLE PROVIDED IN THESE NOTES AND SHALL CONFORM TO ACI 318. SHOULD CONFLICTS EXIST, THE STRICTEST PROVISION SHALL APPLY.

10. REINFORCEMENT SHALL BE CONTINUOUS ACROSS CONSTRUCTION JOINTS.

11. WELDING OF REINFORCING STEEL IS NOT PERMITTED.

12. REINFORCING STEEL SHALL HAVE THE FOLLOWING CONCRETE COVER UNLESS NOTED OTHERWISE:

A.	CONCRETE CAST AGAINST EARTH (NOT FORMED)	3"
B.	CONCRETE EXPOSED TO EARTH OR WEATHER #5 & SMALLER	1½"
C.	CONCRETE EXPOSED TO EARTH OR WEATHER #6-18	2"
D.	CONCRETE NOT EXPOSED TO EARTH OR WEATHER, SLABS & WALLS <=#11	1"
E.	CONCRETE NOT EXPOSED TO EARTH OR WEATHER, BEAMS & COLUMNS	1½"

17. CONCRETE SHALL BE DISCHARGED AT THE SITE WITHIN 90 MINUTES AFTER WATER HAS BEEN ADDED TO THE CEMENT AND AGGREGATES. ADDITION OF WATER TO THE MIX AT THE PROJECT SITE WILL NOT BE ALLOWED. ALL WATER MUST BE ADDED AT THE BATCH PLANT.

18. REINFORCEMENT SPLICE/LAP LENGTH, HOOK DEVELOPMENT AND HOOK LENGTH TABLE SHOWN BELOW IS BASED UPON A MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4,000 PSI AND 60,000 PSI REINFORCEMENT (WITH NO EPOXY COATING).

19. THE MINIMUM SPLICE/LAP LENGTH IS BASED UPON A 6" CENTER TO CENTER BAR SPACING AND A 2" BAR COVER. IF THE SPLICE/LAP CONDITION DOES NOT CONFORM TO THESE PARAMETERS, THE REQUIREMENTS OF ACI 318 SHALL BE CALCULATED (BY REINFORCING DESIGNER) FOR THE SPECIFIC CONDITION. THE STRICTER OF THE TWO (VALUES IN TABLE OR THOSE CALCULATED) SHALL CONTROL.

20. ALL LAP SPLICES SHALL BE CLASS B. IF SPLICES ARE INDICATED BETWEEN BARS OF DIFFERENT SIZES, THE SPLICE LENGTH SHALL BE BASED UPON THE SMALLER BAR SIZE. INCREASE BY 1.3 FOR TOP BARS WITH MORE THAN 12" OF CONCRETE BELOW.

REINFORCEMENT LAP SPLICE, HOOK DEVELOPMENT & LENGTH FOR REINFORCED CONCRETE

BAR Ø	BAR SIZE	SPLICE/LAP LENGTH	HOOK DEVELOPMENT	HOOK LENGTH
.375 in.	#3	19 in.	8 in.	5 in.
.500 in.	#4	25 in.	10 in.	6 in.
.625 in.	#5	31 in.	12 in.	8 in.
.750 in.	#6	37 in.	15 in.	9 in.
.875 in.	#7	54 in.	17 in.	11 in.
1.000 in.	#8	62 in.	19 in.	12 in.
1.128 in.	#9	70 in.	22 in.	14 in.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL CONSTRUCTION SHALL CONFORM TO AISC 360-10 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", AND AISC 303-10 THE CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES.

2. SHOP DRAWINGS PREPARED IN ACCORDANCE WITH THE LATEST "STRUCTURAL STEEL DETAILING MANUAL" OF THE AISC SHALL BE SUBMITTED FOR APPROVAL. NO FABRICATION SHALL BEGIN UNTIL SHOP DRAWINGS ARE COMPLETED AND APPROVED.

3. UNLESS NOTED OTHERWISE, STRUCTURAL STEEL SHALL CONFORM TO ASTM A992, GRADE 50. HP SHAPES MAY BE A572, GRADE 50. CHANNELS, ANGLES AND PLATES MAY BE ASTM A36 UNLESS NOTED OTHERWISE. SQUARE AND RECTANGULAR TUBES SHALL CONFORM TO ASTM A500, GRADE B. ALL TUBE STEEL AND PIPE STEEL SHALL BE CAPPED WITH A $\frac{1}{4}$" PLATE MINIMUM.

4. STEEL FRAMING CONNECTIONS SHALL BE BOLTED OR WELDED:

   A. BOLTED JOINTS SHALL CONFORM TO AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS". BOLTS SHALL CONFORM TO ASTM A325, AND SHALL BE MINIMUM 3/4" DIAMETER, UNLESS NOTED OTHERWISE PROVIDE DIRECT TENSION INDICATORS (LOAD INDICATING WASHERS OR SNAP OFF BOLTS) IN ACCORDANCE WITH ASTM F959 AT ALL HIGH STRENGTH BOLTS.

   B. WELDS SHALL CONFORM TO THE "STRUCTURAL WELDING CODE" OF THE AMERICAN WELDING SOCIETY, AWS D1.1. USE E70XX ELECTRODES. WELDING PROCESSES AND OPERATORS SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATIONS PROCEDURES". WELDERS SHALL CARRY PROOF OF QUALIFICATIONS ON THEIR PERSONS.

5. ANCHOR BOLTS SHALL CONFORM TO ASTM F 1554 GRADE 36 UNLESS NOTED OTHERWISE.

6. DO NOT USE GAS CUTTING TORCHES FOR CORRECTING FABRICATION ERRORS IN THE STRUCTURAL FRAMING.

7. ALL STEEL SHALL BE HOT DIP GALVANIZED.

8. PACK UNDER BASE PLATES WITH NON-SHRINK, HI-STRENGTH GROUT (MINIMUM 6,000 PSI) AFTER SETTING AND LEVELING.

9. CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY BRACING, SHORING, AND GUYING OF STEEL FRAMING AGAINST WIND LOADS, CONSTRUCTION LOADS, AND OTHER TEMPORARY FORCES UNTIL SUCH PROTECTION IS NO LONGER REQUIRED FOR THE SAFE SUPPORT OF THE FRAME.

COLD FORMED METAL FRAMING (CFMF)

1. UNLESS NOTED OTHERWISE, ALL DESIGN, DETAILING, FABRICATION AND ERECTION OF PREFABRICATED CFMF SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF AISI'S "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS".

2. ALL CFMF MEMBERS SHALL BE GALVANIZED.

3. CFMF TRUSSES SHALL BE DESIGNED FOR THE FOLLOWING LOADS:

A.	LIVE LOAD	20 PSF
B.	DEAD LOAD TOP CHORD	10 PSF
C.	DEAD LOAD BOTTOM CHORD	15 PSF
D.	WIND LOADS	SHOWN ON DRAWINGS

4. CFMF TRUSS SHOP DRAWINGS, SIGNED & SEALED BY A SOUTH CAROLINA PROFESSIONAL ENGINEER, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW, PRIOR TO FABRICATION OF THE CFMF TRUSSES.

5. CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY BRACING AND SHORING OF CFMF TRUSSES AGAINST WIND LOADS, CONSTRUCTION LOADS, AND OTHER TEMPORARY FORCES UNTIL STRUCTURE IS COMPLETE.

6. SEE SPECIFICATION FOR INTERIOR WALL STUD REQUIREMENTS.

PRE-CAST PRESTRESSED PILES

1. PRE-CAST PRE-STRESSED CONCRETE (PSC) PILES SHALL BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER. PILES SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE GENERAL NOTES, SCDOT SPECIFICATIONS SECTION 704, "PRESTRESSED CONCRETE", ACI 543R-74 "RECOMMENDATIONS FOR DESIGN, MANUFACTURE, AND INSTALLATION OF CONCRETE PILES", PCI JR-382 "RECOMMENDED PRACTICE FOR DESIGN, MANUFACTURE, AND INSTALLATION OF PRE-STRESSED CONCRETE PILING", AND THE FOLLOWING).

2. PSC PILES SHALL BE MANUFACTURED BY A PLANT CERTIFIED BY THE PCI PLANT CERTIFICATION PROGRAM.

3. AT LEAST 30 DAYS PRIOR TO DRIVING FIRST PILE, CONTRACTOR SHALL SUBMIT A PILE INSTALLATION PLAN TO ENGINEER FOR ACCEPTANCE. THE PLAN SHALL INCLUDE THE FOLLOWING INFORMATION:

   A. LIST OF PROPOSED EQUIPMENT INCLUDING CRANES, DRIVING EQUIPMENT, JETTING EQUIPMENT, COMPRESSORS, HAMMERS AND PRE-DRILLING EQUIPMENT. INCLUDE MANUFACTURER'S DATA SHEETS WITH LIST.

   B. METHODS TO DETERMINE HAMMER ENERGY OR STROKE IN THE FIELD FOR DETERMINATION OF PILE CAPACITY. THE SUBMITTAL SHALL INCLUDE NECESSARY CHARTS AND RECENT CALIBRATIONS FOR ANY PRESSURE MEASURING EQUIPMENT. SUBMITTAL SHALL ALSO INCLUDE THE METHOD FOR MONITORING PILE ADVANCEMENT.

   C. DRAWINGS OF ANY TEMPLATES AND PROPOSED FOLLOWERS.

   D. DETAILS OF PROPOSED LOAD TEST EQUIPMENT AND PROCEDURES INCLUDING RECENT CALIBRATIONS OF JACKS AND REQUIRED LOAD CELLS. SEE PILE LOAD TEST SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

   E. SEQUENCE OF DRIVING PILES.

   F. REQUIRED SHOP DRAWINGS FOR PILES.

   G. METHODS AND EQUIPMENT PROPOSED TO PREVENT DISPLACEMENT OF PILES DURING PLACEMENT AND COMPACTION OF FILL WITHIN 20 FEET OF PILES.

3. SUBMIT A PILE DRIVING RECORD FOR EACH PILE, AS INSTRUCTED IN THE PILE SPECIFICATION, WITHIN THREE DAYS OF DRIVING.

4. NO PILE SHALL BE DRIVEN WITHIN 20 FEET OF CONCRETE THAT IS LESS THAN 4 DAYS OLD.

5. PILES SHALL BE CAREFULLY LOCATED TO THE LINES AND SPACING INDICATED ON THE DRAWINGS. PILE BUTTS SHALL NO BE PULLED INTO REQUIRED LOCATION MORE THAN 2 INCHES. EXTREME CARE SHALL BE EXERCISED IN THE LOCATING AND DRIVING OF PILES SO THAT NO OTHER PILES, UTILITIES OR EXISTING STRUCTURES ARE DAMAGED IN THE PROCESS.

6. THE CONTRACTOR IS RESPONSIBLE FOR ALL FIELD ENGINEERING REQUIRED FOR CONSTRUCTION, FURNISHING ALL LINES, GRADES AND CONTROL POINTS.

7. A STEEL DRIVING HEAD SUITABLE FOR THE TYPE AND SIZE OF PILE BEING DRIVEN SHALL BE USED. IT SHALL HOLD PILE IN POSITION, PREVENT DAMAGE TO THE PILE AND TRANSMIT THE HAMMER ENERGY ALONG THE PILE AXIS. THE DRIVING HEAD SHALL FIT LOOSELY ENOUGH AROUND THE PILE HAD TO ENABLE THE PILE TO ROTATE SLIGHTLY WITHOUT BINDING.

8. SUITABLE CUSHION BLOCKS SHALL BE PROVIDED ABOVE THE DRIVING HEAD AS NECESSARY TO PREVENT DAMAGE TO THE PILE. IT SHALL BE MADE OF A MATERIAL WHICH WILL NOT COMPRESS TO THE EXTENT THAT CUSHION EFFECT IS LOST.

9. PILES ARE TO BE DRIVEN CONTINUOUSLY TO THE MINIMUM TIP ELEVATION AND DESIGN BEARING CAPACITY WITHOUT INTERRUPTION.

10. SPECIFIED PILE LENGTH IS AN ESTIMATE BASED UPON GEOTECHNICAL RECOMMENDATIONS. FIRST PRODUCTION PILE SHALL BE TESTED AND PILE CAPACITY VERIFIED PRIOR TO REMAINING PILE INSTALLATIONS.

11. PRACTICAL REFUSAL SHALL BE DEFINED AS 2.5 TIMES THE DESIGN BEARING CAPACITY WITH A MINIMUM PENETRATION OF 40'-0" BELOW EXISTING GRADE.

12. IN THE EVENT THAT HEAVE OF A PREVIOUSLY DRIVEN PILE OCCURS, THE PILE SHALL BE REDRIVEN TO ITS ORIGINAL LOCATION WITH A DRIVING RESISTANCE AT LEAST AS GREAT AS THE ORIGINAL DRIVING RESISTANCE.

13. THE ALLOWABLE DEVIATION FROM THE INDICATED LOCATIONS SHALL BE 3 INCHES FOR ANY ONE PILE. THE SUM OF DEVIATIONS FOR ANY TWO PILES SHALL NOT EXCEED 6 INCHES. THE ALLOWABLE DEVIATION FROM THE INDICATED PILE CUTOFF ELEVATION SHALL BE 4 INCHES. ALLOWABLE DEVIATION FROM VERTICAL PLUMB IS 1 IN 48.

14. IF A PILE IS INSTALLED THAT EXCEEDS THE ALLOWABLE TOLERANCES SPECIFIED HEREIN, ENGINEER SHALL BE CONTACTED IMMEDIATELY. IF IT IS DETERMINED THAT THE OUT OF TOLERANCE IS CAUSED BY CONTRACTOR'S INSTALLATION, CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REDESIGN EFFORTS THAT RESULT.

15. ALL PILES SHALL BE CUT OFF AT THE REQUIRED ELEVATION AT A RIGHT ANGLE TO THE AXIS OF THE PILE. CUTTING SHALL BE PERFORMED IN A MANNER TO AVOID DAMAGE TO THE PILE BELOW THE CUTOFF ELEVATION.

PILE TESTING PROGRAM

1. ONE PILE SHALL UNDERGO DYNAMIC PILE ANALYSIS DURING INSTALLATION. THIS PILE SHALL BE THE FIRST OF THE PRODUCTION PILES AND SHALL BE DRIVEN AT A LOCATION SELECTED BY THE CONTRACTOR.

2. METHODS AND EQUIPMENT USED FOR INSTALLATION OF TEST PILE SHALL BE SAME METHODS AND EQUIPMENT USED FOR INSTALLATION OF PRODUCTION PILES.

3. ADDITIONAL PILE LOAD TEST REQUIREMENTS ARE PROVIDED IN THE PROJECT SPECIFICATIONS.

SPECIAL INSPECTIONS

1. THE OWNER SHALL EMPLOY SPECIAL INSPECTORS TO PROVIDE INSPECTIONS DURING CONSTRUCTION AS NOTED HEREIN.

2. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO DEMONSTRATES COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR THE INSPECTION OF THE ASSIGNED TYPE OF CONSTRUCTION OR OPERATION.

3. SPECIAL INSPECTION PROCEDURES SHALL BE COMPLETED IN ACCORDANCE WITH IBC 2012, CHAPTER 17. AT A MINIMUM, SPECIAL INSPECTIONS SHALL INCLUDE THE ITEMS LISTED BELOW. IF CONFLICTS EXIST BETWEEN THE CODE AND THE REQUIREMENTS STATED BELOW, THE STRICTEST PROVISION SHALL GOVERN.

STEEL:

WELDING - PERIODIC (FILET), CONTINUOUS (PARTIAL PEN, MOMENT FRAMES)
FRAMING - PERIODIC
BOLT MATERIALS - PERIODIC
BEARING-TYPE BOLTED CONNECTIONS - PERIODIC
REINFORCING STEEL FOR SPECIAL R/F SHEAR WALLS - CONTINUOUS
REINFORCING STEEL OTHER - PERIODIC

CONCRETE:

USE OF REQUIRED MIX - PERIODIC
SAMPLING FOR TESTING - CONTINUOUS
PLACEMENT - CONTINUOUS
CURING - PERIODIC
FORMWORK - PERIODIC

MASONRY:

MORTAR & CONSTRUCTION OF MORTAR JOINTS - PERIODIC
LOCATION & PLACEMENT OF R/F, CONNECTORS & ANCHORAGE - CONTINUOUS
SIZE & LOCATION OF STRUCTURAL ELEMENTS - PERIODIC
TYPE, SIZE & LOCATION OF ANCHORS - PERIODIC
SIZE, GRADE & TYPE OF REINFORCEMENT - CONTINUOUS
PROTECTION OF UNITS DURING COLD/HOT WEATHER - PERIODIC
PREPARATION OF GROUT SPACE - PERIODIC
GROUT PLACEMENT - CONTINUOUS
PREPARATION OF GROUT & MORTAR SPECIMENS - CONTINUOUS
VERIFICATION OF MASONRY & GROUT PROPERTIES PRIOR TO CONSTRUCTION - CONTINUOUS

SOIL: ALL AS NOTED IN TABLE 1704.7

PILES:

MATERIALS, SIZES, LENGTHS - CONTINUOUS
RESULTS OF TEST PILES - CONTINUOUS
DRIVING OPERATIONS & MAINTAIN RECORDS FOR EACH PILE - CONTINUOUS

GENERAL:

COMPLIANCE WITH REQ'D INSPECTION PROVISIONS OF CONSTRUCTION DOCUMENTS AND THE APPROVED SUBMITTALS - PERIODIC

VISUAL STRUCTURAL OBSERVATION OF STRUCTURAL SYSTEM(S) FOR CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS AT SIGNIFICANT CONSTRUCTION STAGES AND AT COMPLETION OF STRUCTURAL SYSTEM(S) - PERIODIC

THOMAS & HUTTON ENGINEERING CO. No. C00285

JENNIFER A. HAYES

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
STRUCTURAL NOTES & DETAILS

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	JAH
DESIGNED:	JAH/SHG
REVIEWED:	JAH/SHG
APPROVED:	MFY
SCALE:	AS NOTED

01-S-01

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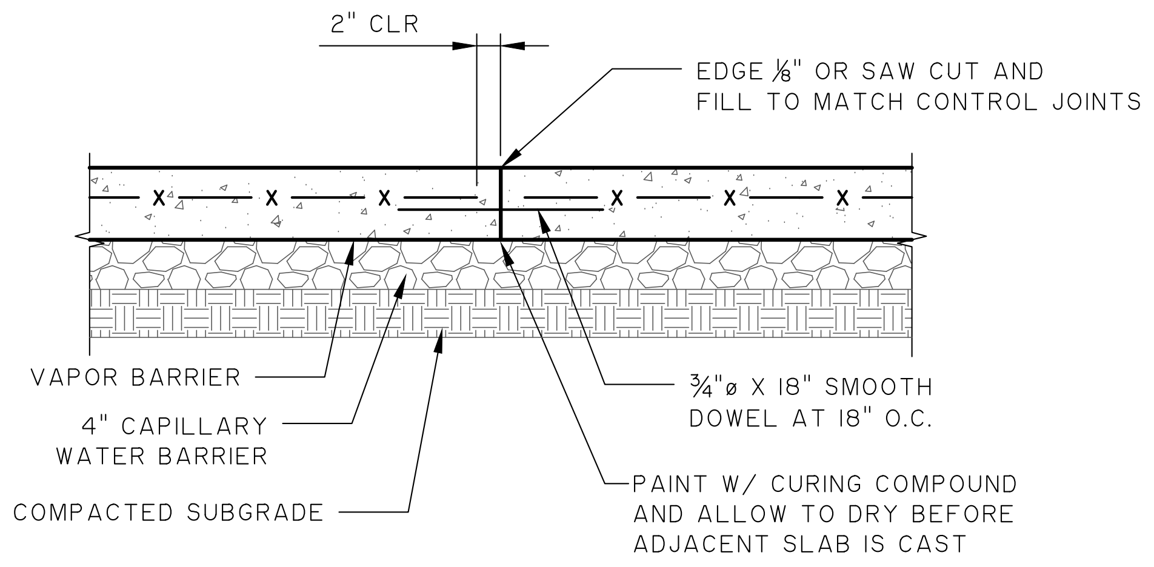
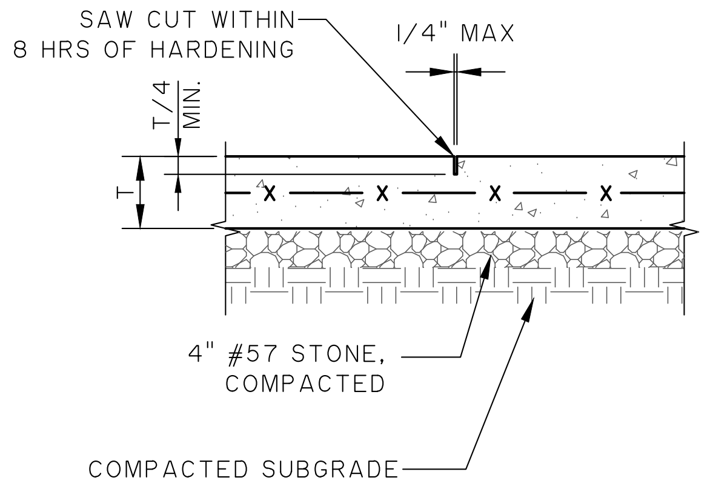

2" CLR
EDGE ⅛" OR SAW CUT AND FILL TO MATCH CONTROL JOINTS
VAPOR BARRIER
4" CAPILLARY WATER BARRIER
COMPACTED SUBGRADE
¾"ø X 18" SMOOTH DOWEL AT 18" O.C.
PAINT W/ CURING COMPOUND AND ALLOW TO DRY BEFORE ADJACENT SLAB IS CAST

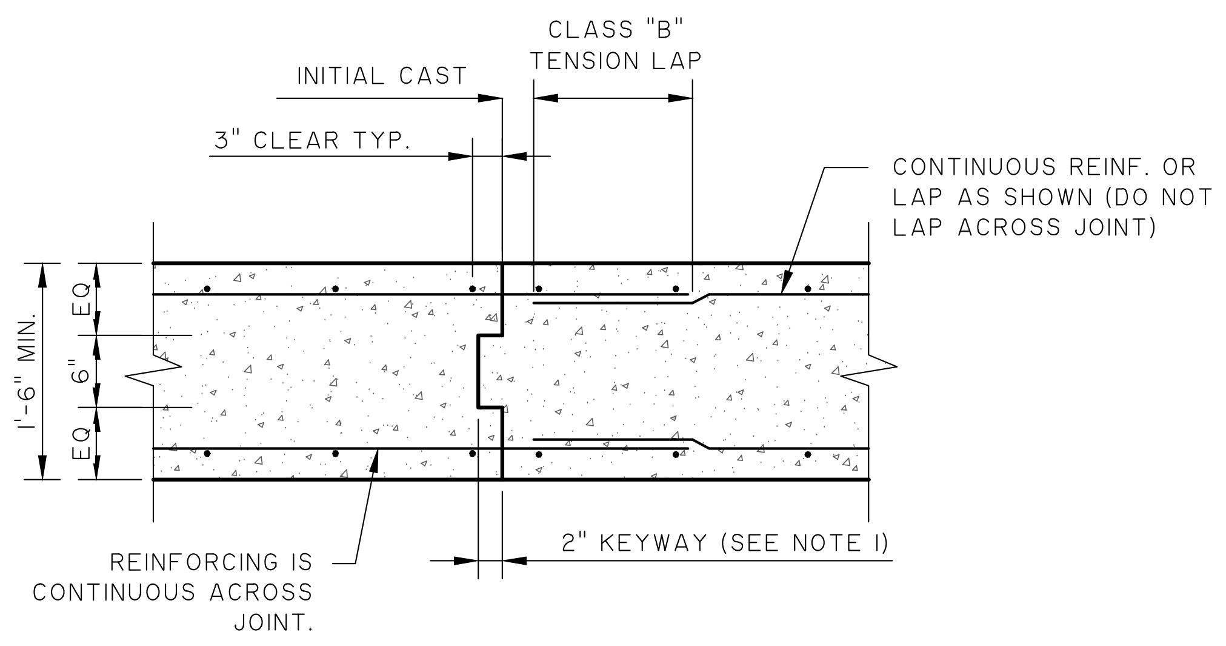
1 TYPICAL SLAB ON GRADE CONSTRUCTION JOINT DETAIL

01-S-02
3/4" = 1'-0"



2 TYPICAL CONTROL JOINT DETAIL

01-S-02
3/4" = 1'-0"

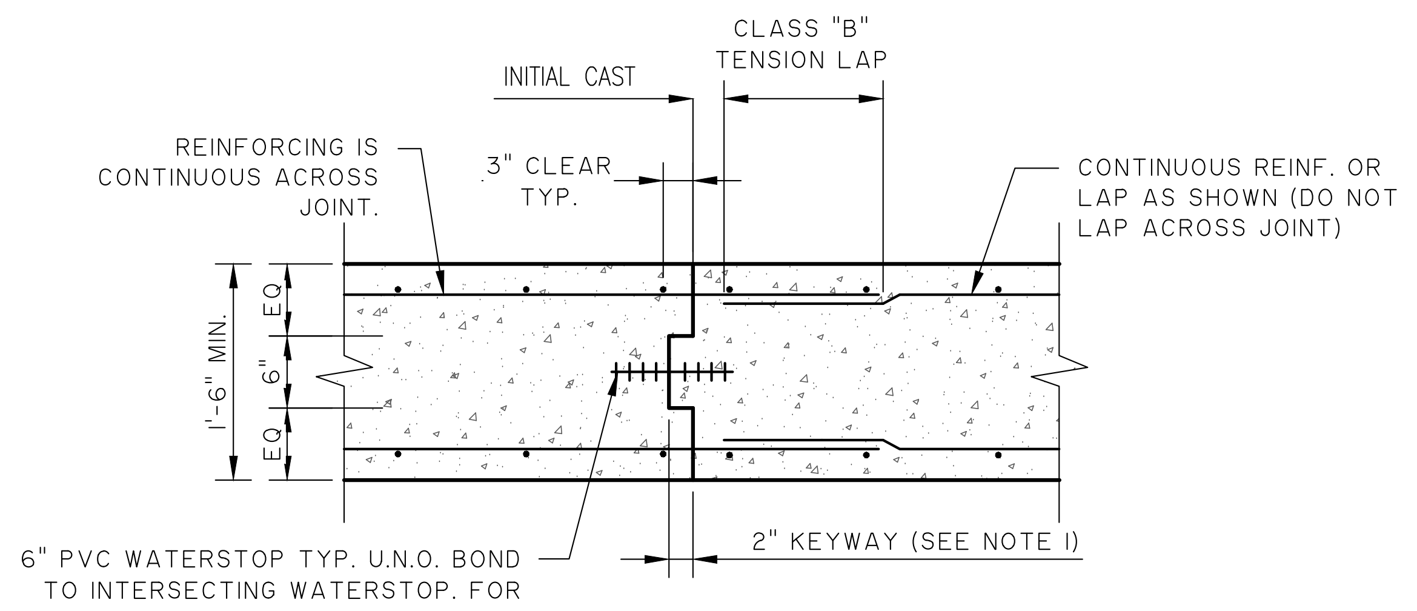

INITIAL CAST
CLASS "B" TENSION LAP
3" CLEAR TYP.
CONTINUOUS REINF. OR LAP AS SHOWN (DO NOT LAP ACROSS JOINT)
1'-6" MIN.
EQ
6"
EQ
REINFORCING IS CONTINUOUS ACROSS JOINT.
2" KEYWAY (SEE NOTE 1)

3 CONSTRUCTION JOINT DETAIL W/O WATER STOP

01-S-02
3/4" = 1'-0"

NOTES:

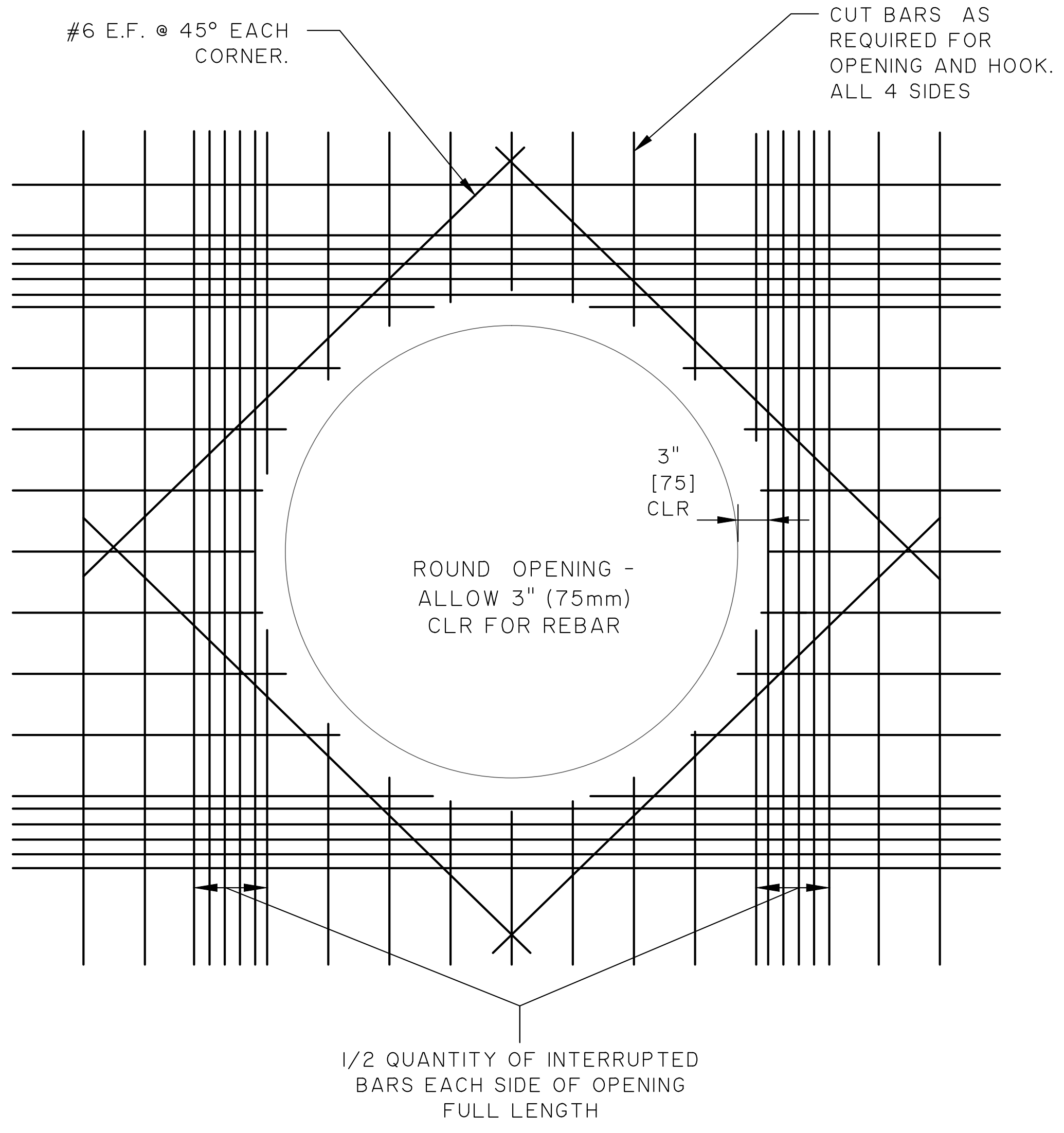
1. NO KEYWAY IN WALLS/SLABS LESS THAN 1'-6" THICK
2. THIS DETAIL APPLIES WHERE WATER IS ALWAYS PRESENT ON BOTH SIDES OF THE WALL (NO WATER STOP NEEDED).
3. THIS DETAIL APPLIES VERTICALLY AND HORIZONTALLY.


INITIAL CAST
CLASS "B" TENSION LAP
REINFORCING IS CONTINUOUS ACROSS JOINT.
3" CLEAR TYP.
CONTINUOUS REINF. OR LAP AS SHOWN (DO NOT LAP ACROSS JOINT)
1'-6" MIN.
EQ
6"
EQ
6" PVC WATERSTOP TYP. U.N.O. BOND TO INTERSECTING WATERSTOP. FOR VERTICAL JOINT, TERMINATE WATERSTOP 8" BELOW TOP OF WALL. CENTER WATERSTOP IN WALL/SLAB, U.N.O.
2" KEYWAY (SEE NOTE 1)

1. NO KEYWAY IN WALLS/SLABS LESS THAN 1'-6" THICK
2. THIS DETAIL APPLIES WHEN WATER STOP IS PRESENT.
3. THIS DETAIL APPLIES VERTICALLY AND HORIZONTALLY.

4 CONSTRUCTION JOINT DETAIL W/ WATER STOP

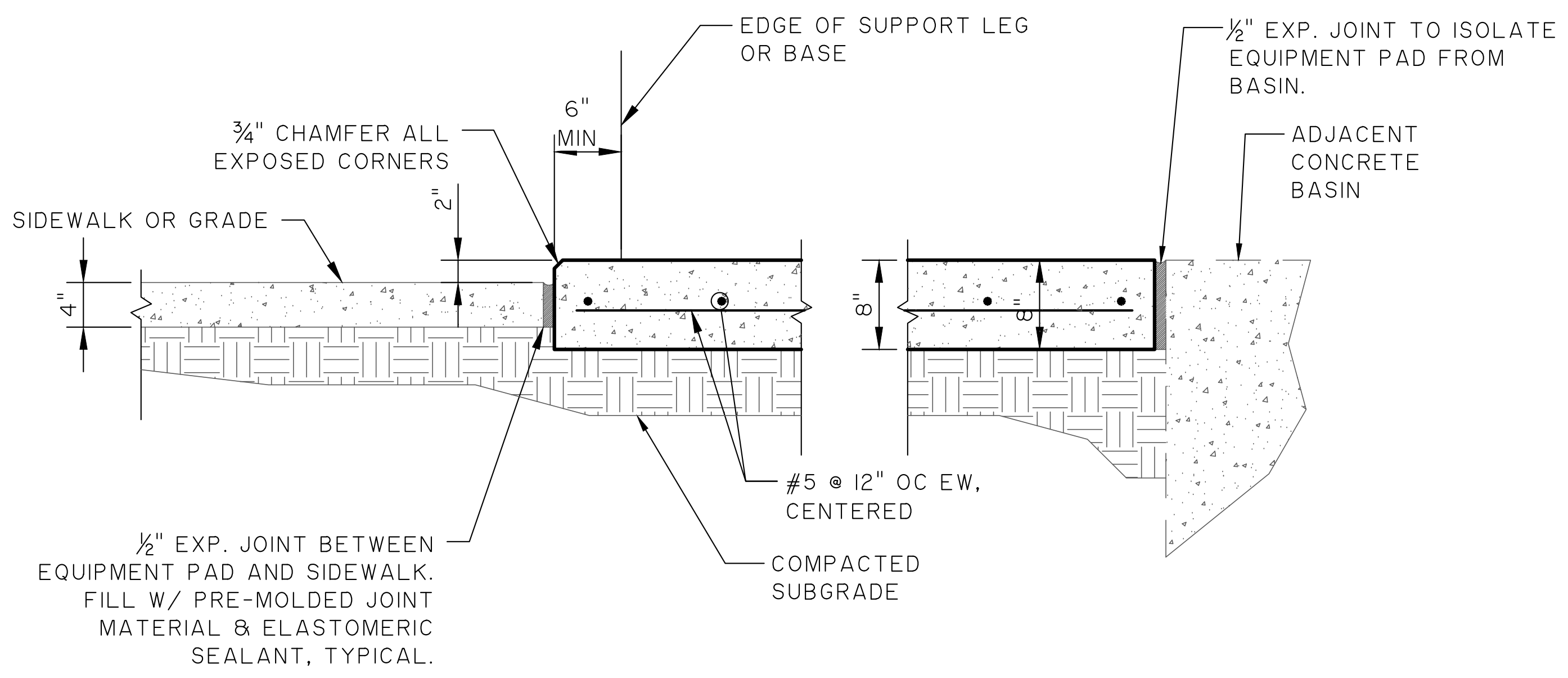
01-S-02
3/4" = 1'-0"


#6 E.F. @ 45° EACH CORNER.
CUT BARS AS REQUIRED FOR OPENING AND HOOK. ALL 4 SIDES
3" [75] CLR
ROUND OPENING - ALLOW 3" (75mm) CLR FOR REBAR
1/2 QUANTITY OF INTERRUPTED BARS EACH SIDE OF OPENING FULL LENGTH

NOTE: THIS DETAIL APPLIES TO ROUND OPENINGS UP TO 30" DIAMETER MAXIMUM

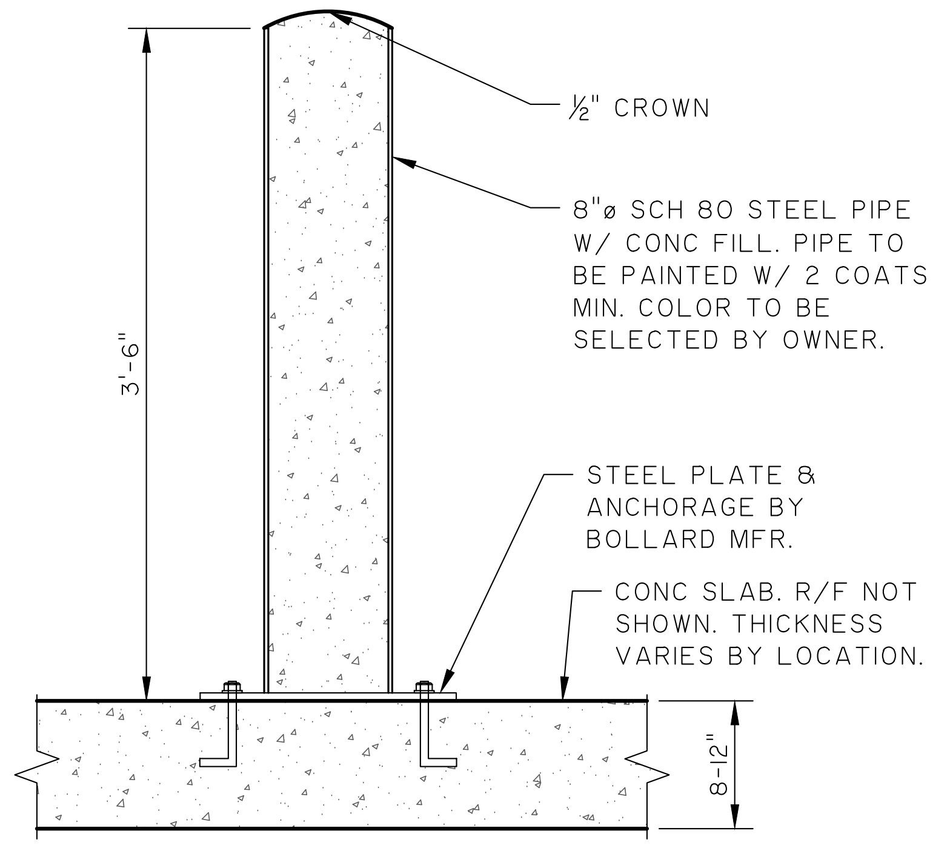
5 R/F AT OPENINGS IN CONCRETE WALLS

01-S-02
3/4" = 1'-0"


EDGE OF SUPPORT LEG OR BASE
½" EXP. JOINT TO ISOLATE EQUIPMENT PAD FROM BASIN.
¾" CHAMFER ALL EXPOSED CORNERS
6" MIN
ADJACENT CONCRETE BASIN
SIDEWALK OR GRADE
2"
4"
8"
8"
½" EXP. JOINT BETWEEN EQUIPMENT PAD AND SIDEWALK. FILL W/ PRE-MOLDED JOINT MATERIAL & ELASTOMERIC SEALANT, TYPICAL.
#5 @ 12" OC EW, CENTERED
COMPACTED SUBGRADE

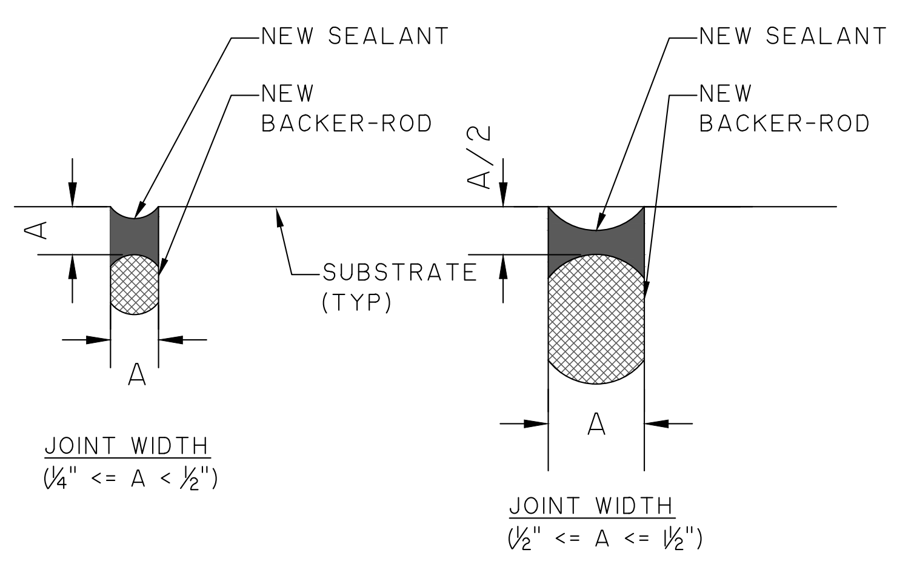
6 SECTION AT EQUIPMENT PAD

01-S-02
3/4" = 1'-0"


½" CROWN
8"ø SCH 80 STEEL PIPE W/ CONC FILL. PIPE TO BE PAINTED W/ 2 COATS MIN. COLOR TO BE SELECTED BY OWNER.
3'-6"
STEEL PLATE & ANCHORAGE BY BOLLARD MFR.
CONC SLAB. R/F NOT SHOWN. THICKNESS VARIES BY LOCATION.
8-12"

7 TYP BOLLARD ON STRUCTURAL SLAB

01-S-02
1" = 1'-0"



BACKER-ROD/JOINT FILLER AND SEALANT PRODUCTS AS DEFINED IN CONCRETE SPECIFICATION.

BACKER-ROD SIZE TO JOINT WIDTH TABLE

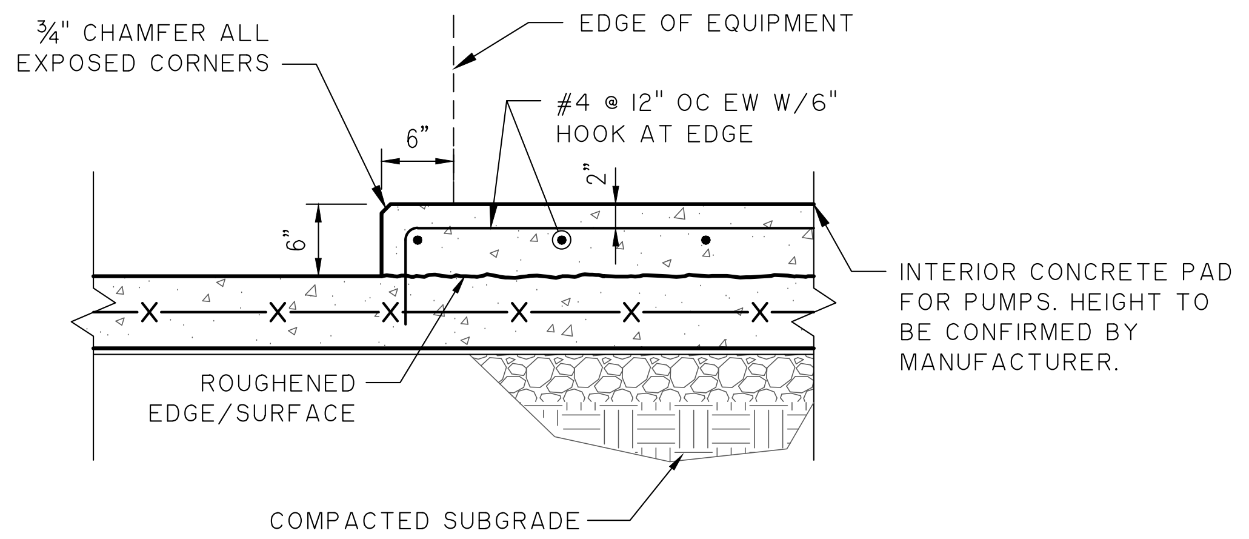
JOINT WIDTH	BACKER-ROD SIZE
¼"	⅜"
⅜"	½"
½"	⅝"
⅝"	¾"
¾"	⅞"
⅞"	1"
1"	1¼"
1½"	2"

JOINT SEALANT REQUIREMENTS:

1. NO JOINT SEALANTS SMALLER THAN ¼".
2. NO JOINT SEALANTS LARGER THAN 1½".
3. SEALANT THICKNESS NO LESS THAN ¼".
4. SEALANT THICKNESS NO GREATER THAN ½".
5. BACKER-ROD = CLOSED-CELL PRE-FORMED JOINT FILLER. SIZE SEE TABLE.
6. JOINTS OVER ½" CAN BE PREFORMED WITH CLOSED CELL RIGID FOAM ISULATION.

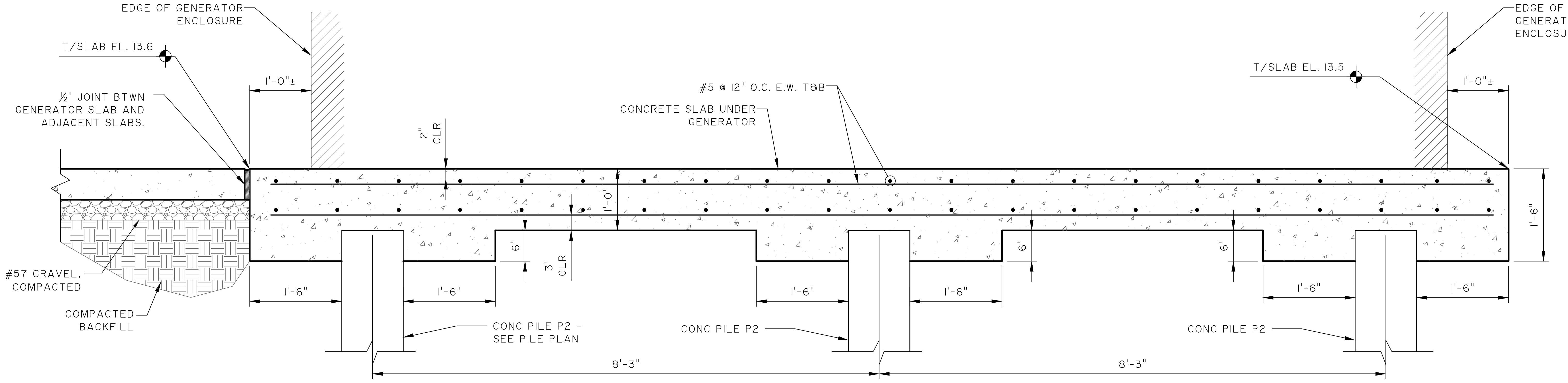
8 TYPICAL JOINT DETAIL

01-S-02
6" = 1'-0"


¾" CHAMFER ALL EXPOSED CORNERS
EDGE OF EQUIPMENT
#4 @ 12" OC EW W/6" HOOK AT EDGE
6"
2"
6"
INTERIOR CONCRETE PAD FOR PUMPS. HEIGHT TO BE CONFIRMED BY MANUFACTURER.
ROUGHENED EDGE/SURFACE
COMPACTED SUBGRADE

10 CONC PAD UNDER PUMP

01-S-02
3/4" = 1'-0"

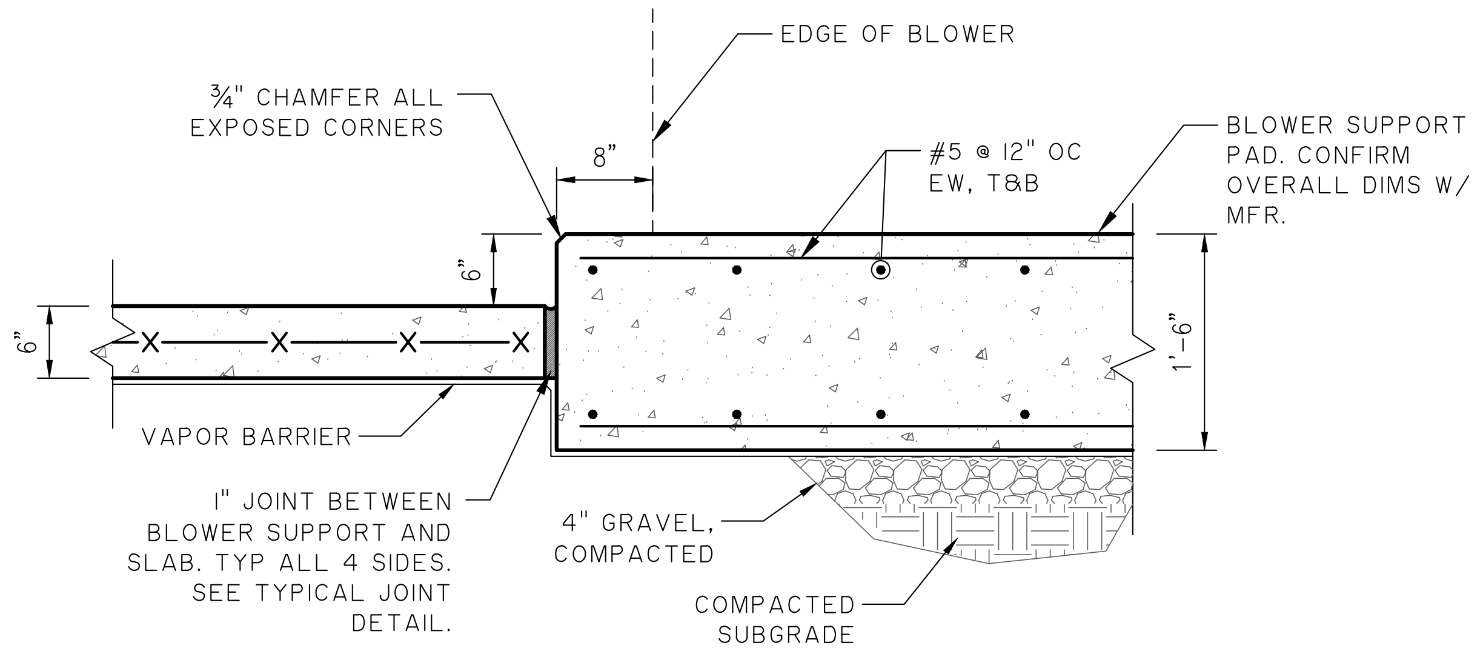


9 SECTION AT GENERATOR PAD

01-S-02
3/4" = 1'-0"

NOTES:

1. GENERATOR ANCHORAGE TO BE PROVIDED BY MFR. APPROX. DIMENSIONS OF PAD PROVIDED HEREIN TO BE CONFIRMED BY ENGINEER FOLLOWING RECEIPT OF GENERATOR SUBMITTAL.
2. SEE 35-S-01 FOR LOCATION AND ADD'L INFORMATION.


EDGE OF BLOWER
¾" CHAMFER ALL EXPOSED CORNERS
8"
#5 @ 12" OC EW, T&B
BLOWER SUPPORT PAD. CONFIRM OVERALL DIMS W/ MFR.
6"
6"
1'-6"
VAPOR BARRIER
1" JOINT BETWEEN BLOWER SUPPORT AND SLAB. TYP ALL 4 SIDES. SEE TYPICAL JOINT DETAIL.
4" GRAVEL, COMPACTED
COMPACTED SUBGRADE

11 CONC PAD UNDER BLOWER

01-S-02
3/4" = 1'-0"

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
STRUCTURAL DETAILS

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	JAH
DESIGNED:	JAH
REVIEWED:	JAH/SHG
APPROVED:	MFY
SCALE:	

01-S-02

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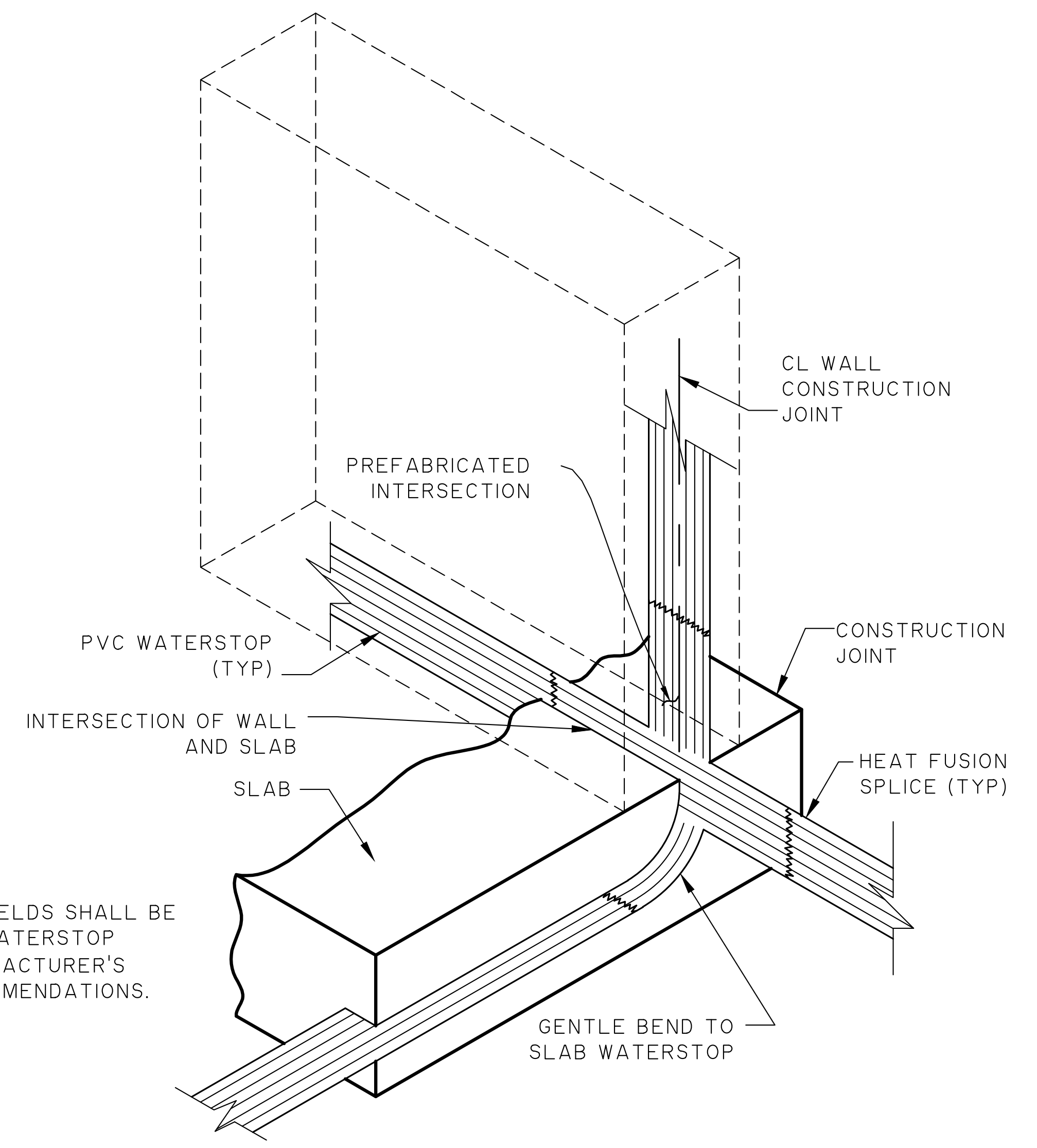
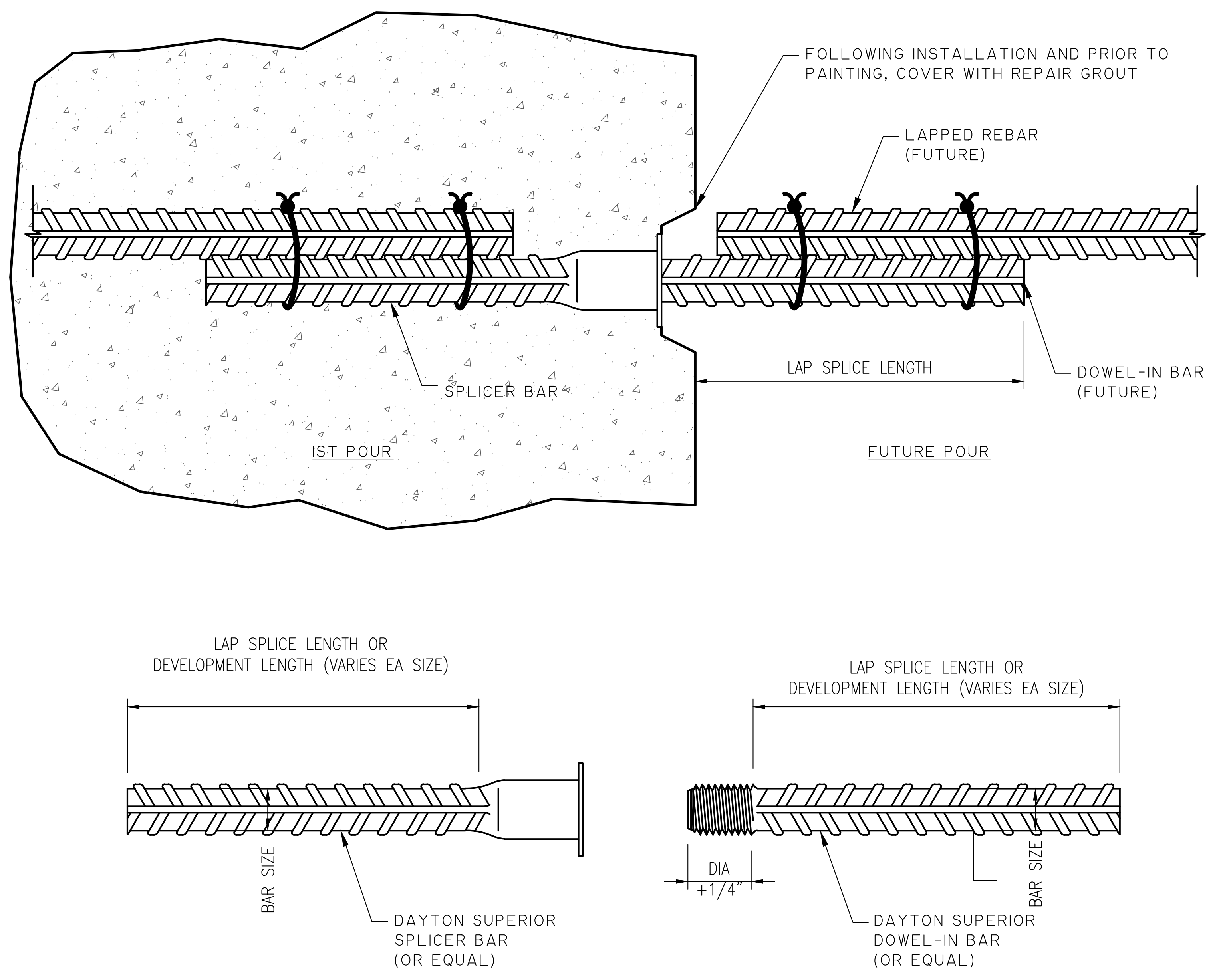


NOTE
ALL WELDS SHALL BE PER WATERSTOP MANUFACTURER'S RECOMMENDATIONS.

1 WATERSTOP INTERSECTION

01-S-03

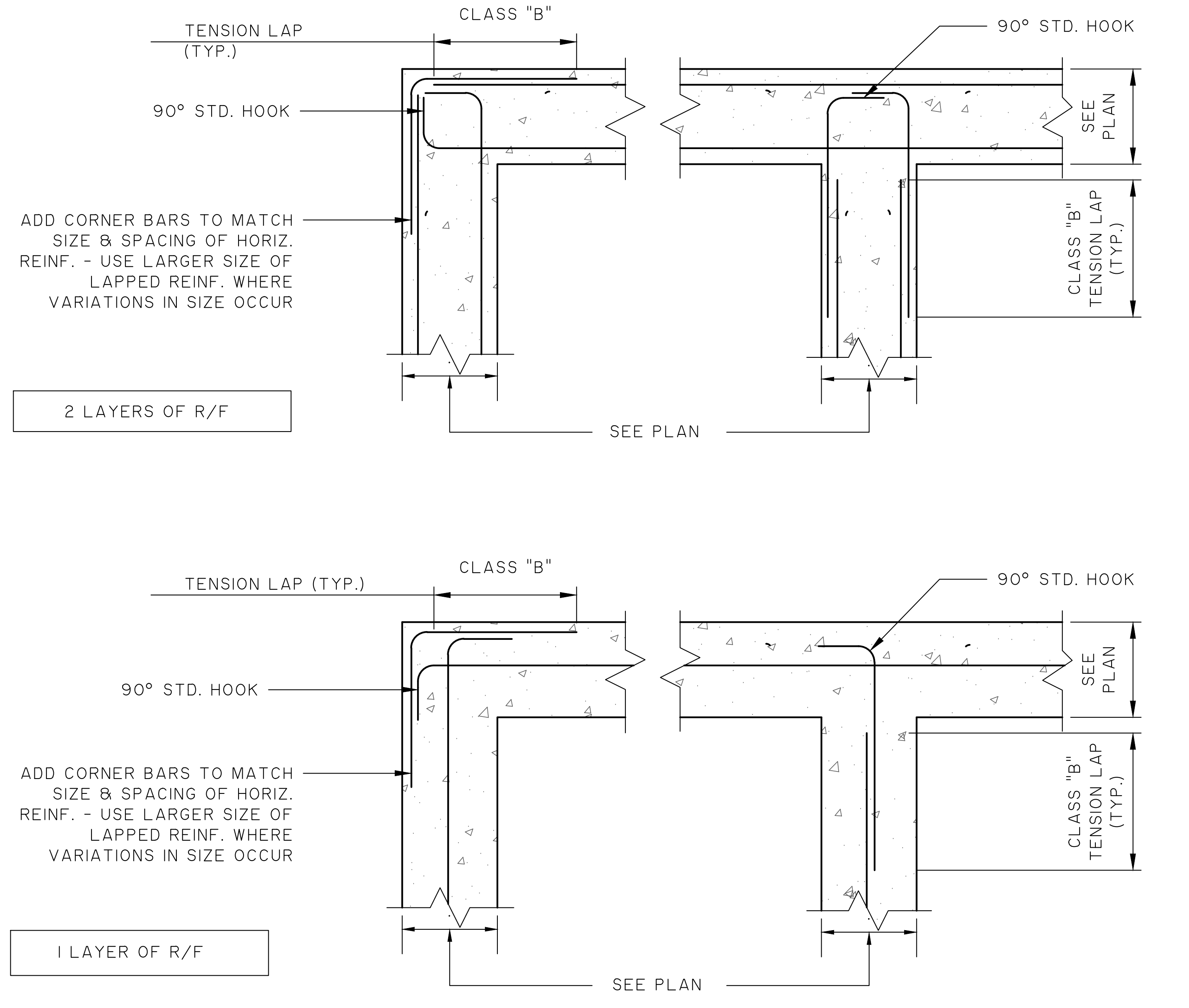
3/4" = 1'-0"



2 DOWEL SPLICER FOR FUTURE

01-S-03

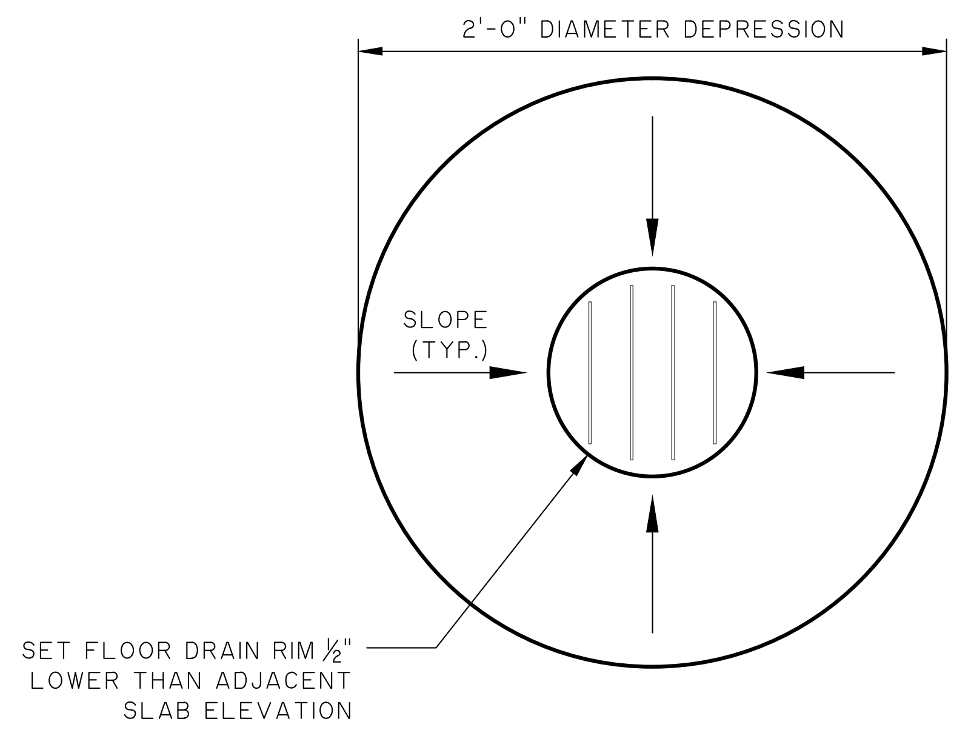
NTS



3 CONCRETE R/F AT CORNERS & INTERSECTIONS

01-S-03

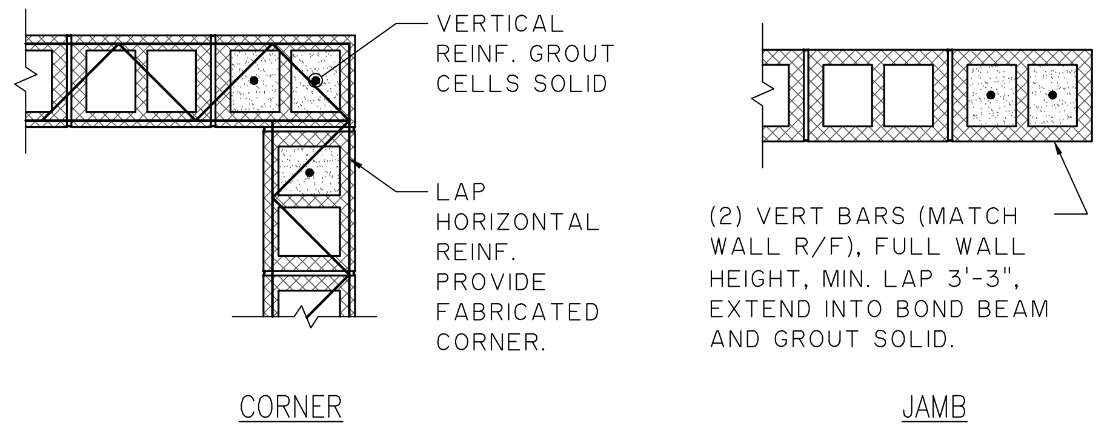
NTS



4 TYP INTERIOR FLOOR DRAIN

01-S-03

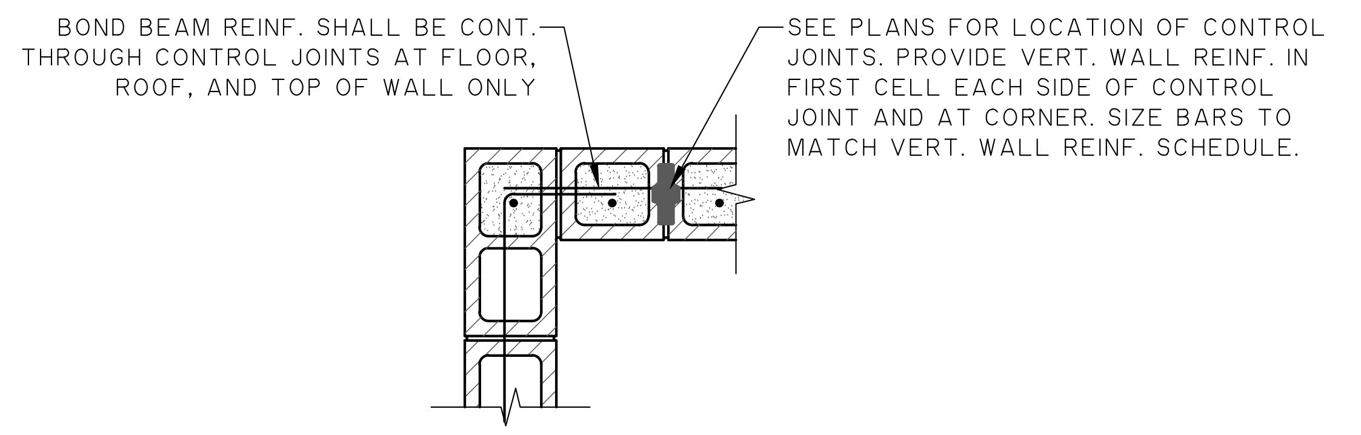
NTS



5 CMU CORNER & JOINT R/F

01-S-03

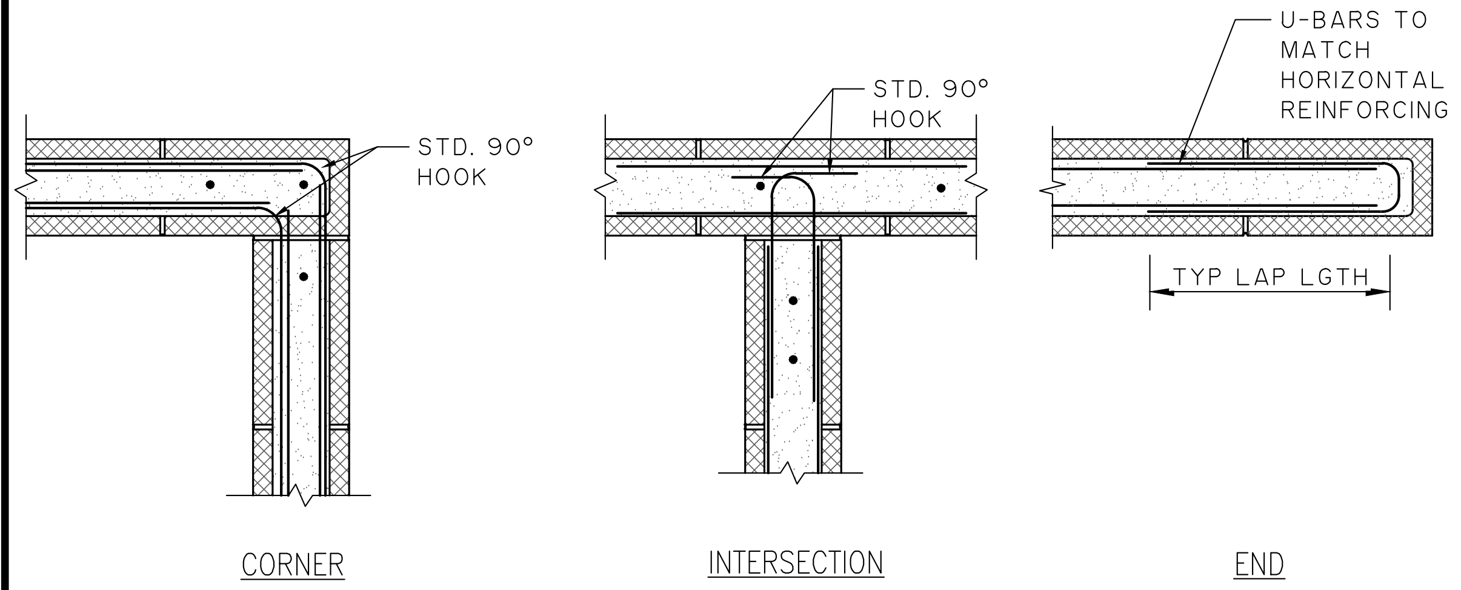
NTS


BOND BEAM REINF. SHALL BE CONT.
THROUGH CONTROL JOINTS AT FLOOR,
ROOF, AND TOP OF WALL ONLY
SEE PLANS FOR LOCATION OF CONTROL
JOINTS. PROVIDE VERT. WALL REINF. IN
FIRST CELL EACH SIDE OF CONTROL
JOINT AND AT CORNER. SIZE BARS TO
MATCH VERT. WALL REINF. SCHEDULE.

6 CMU CONTROL JOINT – CORNER

01-S-03

NTS



7 CMU BOND BEAM TYP R/F

01-S-03

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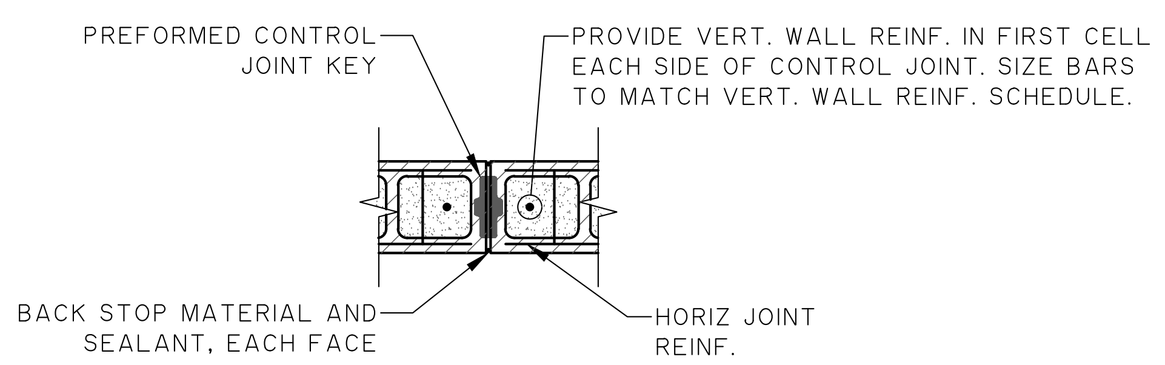
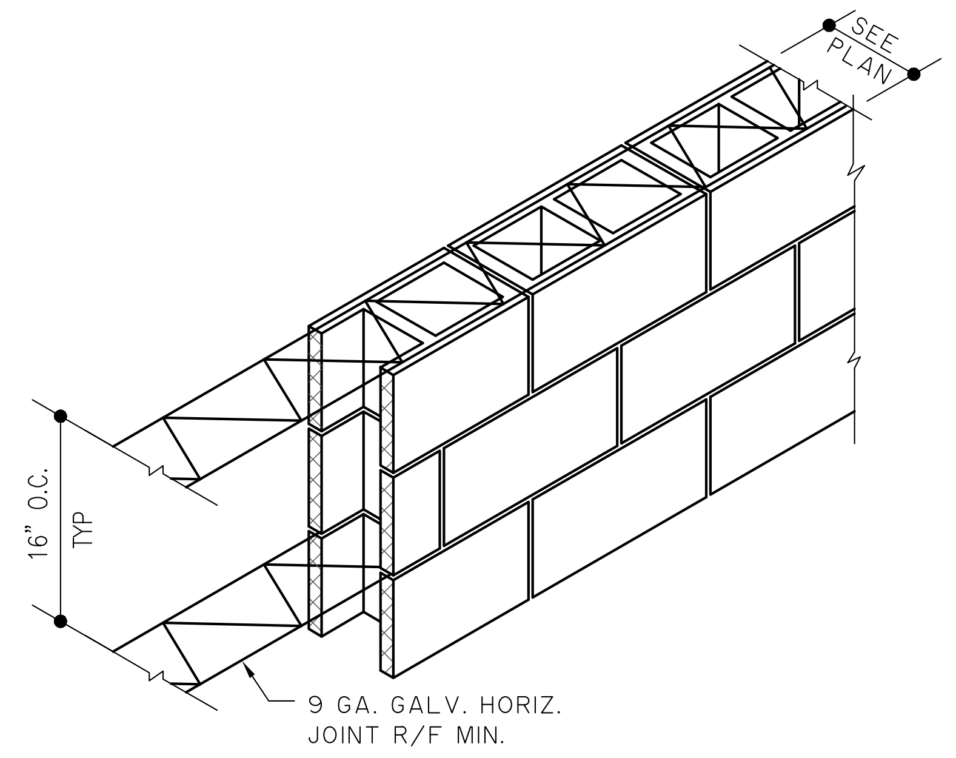

PREFORMED CONTROL
JOINT KEY
PROVIDE VERT. WALL REINF. IN FIRST CELL
EACH SIDE OF CONTROL JOINT. SIZE BARS
TO MATCH VERT. WALL REINF. SCHEDULE.
BACK STOP MATERIAL AND
SEALANT, EACH FACE
HORIZ JOINT
REINF.

8 CMU CONTROL JOINT

01-S-03

NTS



9 CMU HORIZ JOINT R/F

01-S-03

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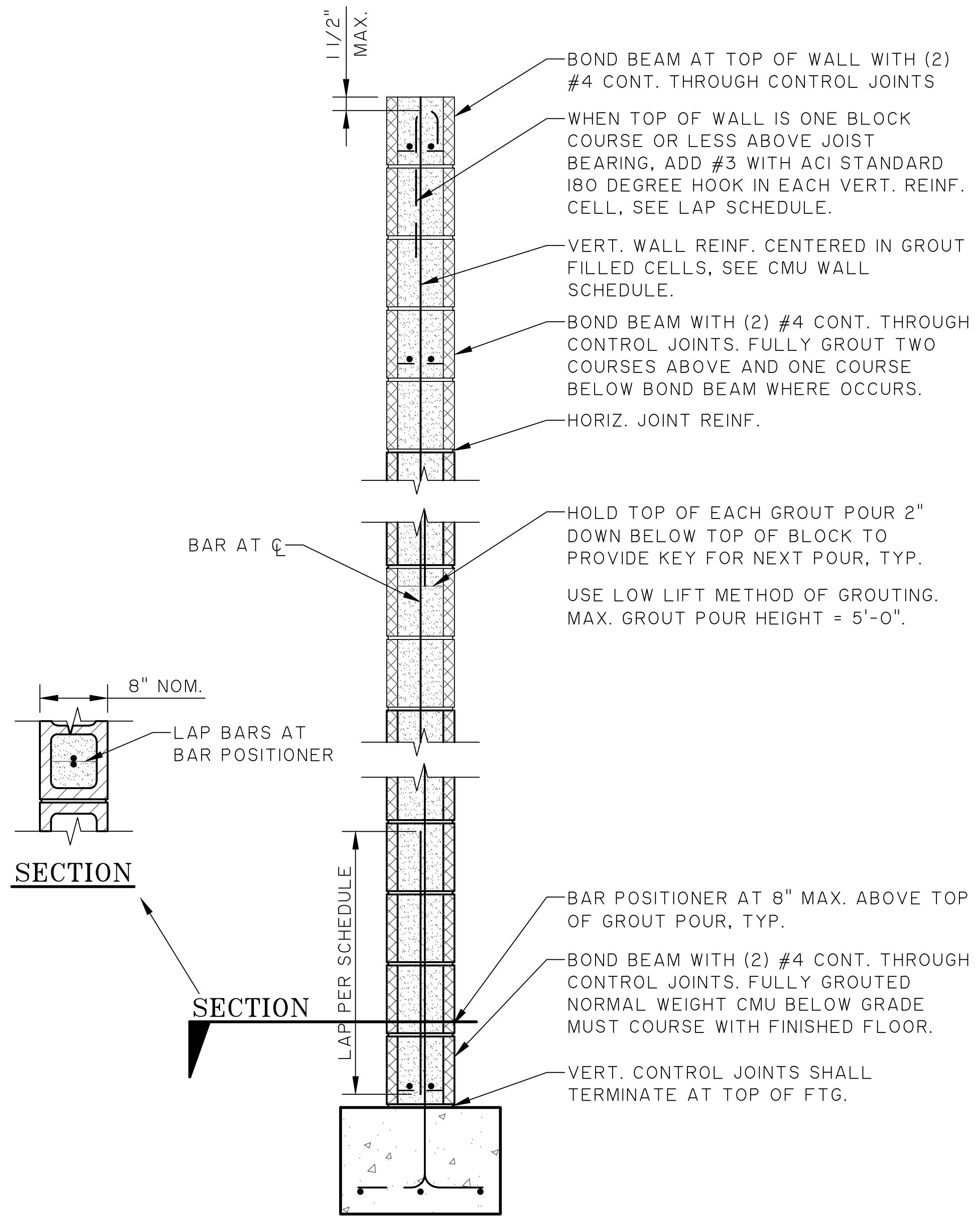
1 1/2"
MAX.
BOND BEAM AT TOP OF WALL WITH (2)
#4 CONT. THROUGH CONTROL JOINTS
WHEN TOP OF WALL IS ONE BLOCK
COURSE OR LESS ABOVE JOIST
BEARING, ADD #3 WITH ACI STANDARD
180 DEGREE HOOK IN EACH VERT. REINF.
CELL, SEE LAP SCHEDULE.
VERT. WALL REINF. CENTERED IN GROUT
FILLED CELLS, SEE CMU WALL
SCHEDULE.
BOND BEAM WITH (2) #4 CONT. THROUGH
CONTROL JOINTS. FULLY GROUT TWO
COURSES ABOVE AND ONE COURSE
BELOW BOND BEAM WHERE OCCURS.
HORIZ. JOINT REINF.
BAR AT ℄
HOLD TOP OF EACH GROUT POUR 2"
DOWN BELOW TOP OF BLOCK TO
PROVIDE KEY FOR NEXT POUR, TYP.
USE LOW LIFT METHOD OF GROUTING.
MAX. GROUT POUR HEIGHT = 5'-0".
8" NOM.
LAP BARS AT
BAR POSITIONER
SECTION
SECTION
LAP PER SCHEDULE
BAR POSITIONER AT 8" MAX. ABOVE TOP
OF GROUT POUR, TYP.
BOND BEAM WITH (2) #4 CONT. THROUGH
CONTROL JOINTS. FULLY GROUTED
NORMAL WEIGHT CMU BELOW GRADE
MUST COURSE WITH FINISHED FLOOR.
VERT. CONTROL JOINTS SHALL
TERMINATE AT TOP OF FTG.

10 CMU TYP WALL CONSTRUCTION

01-S-03

NTS

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01-S-03

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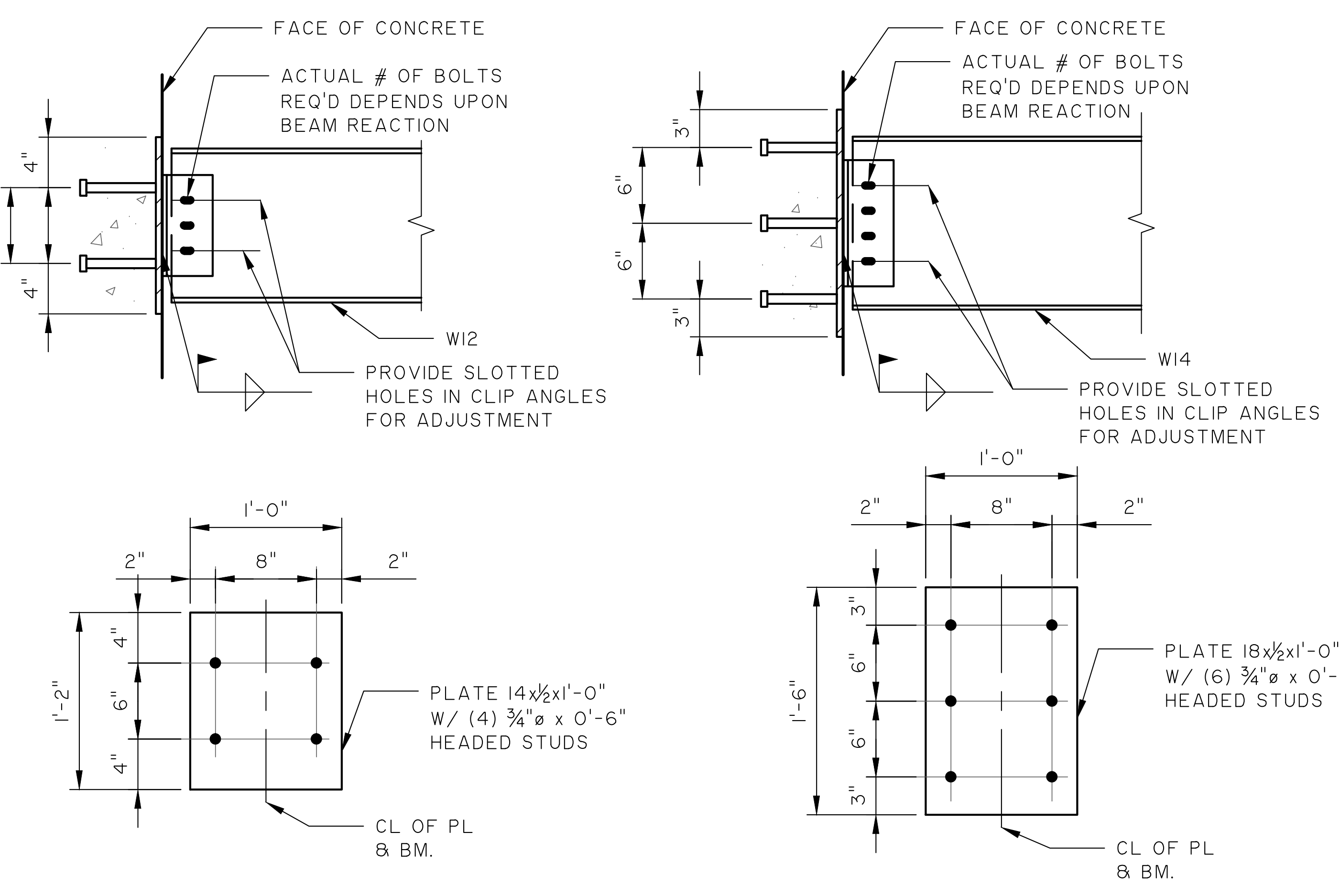
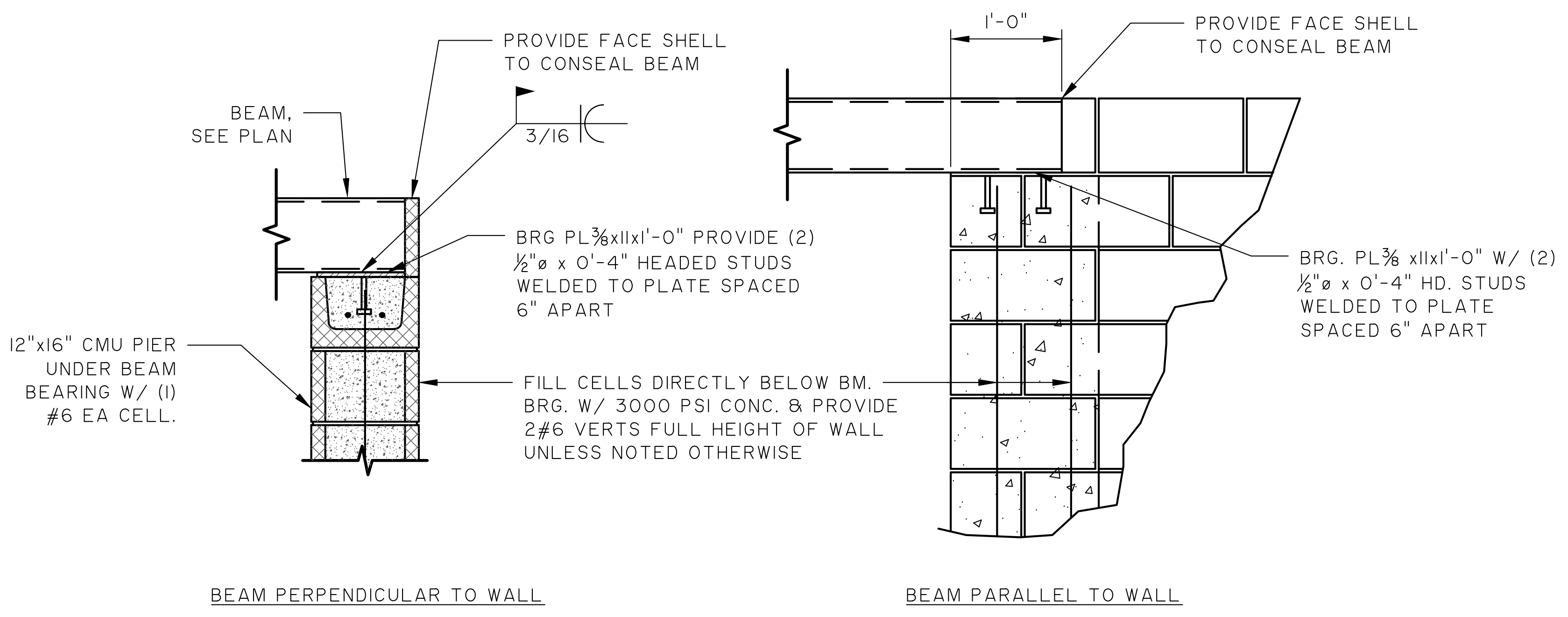
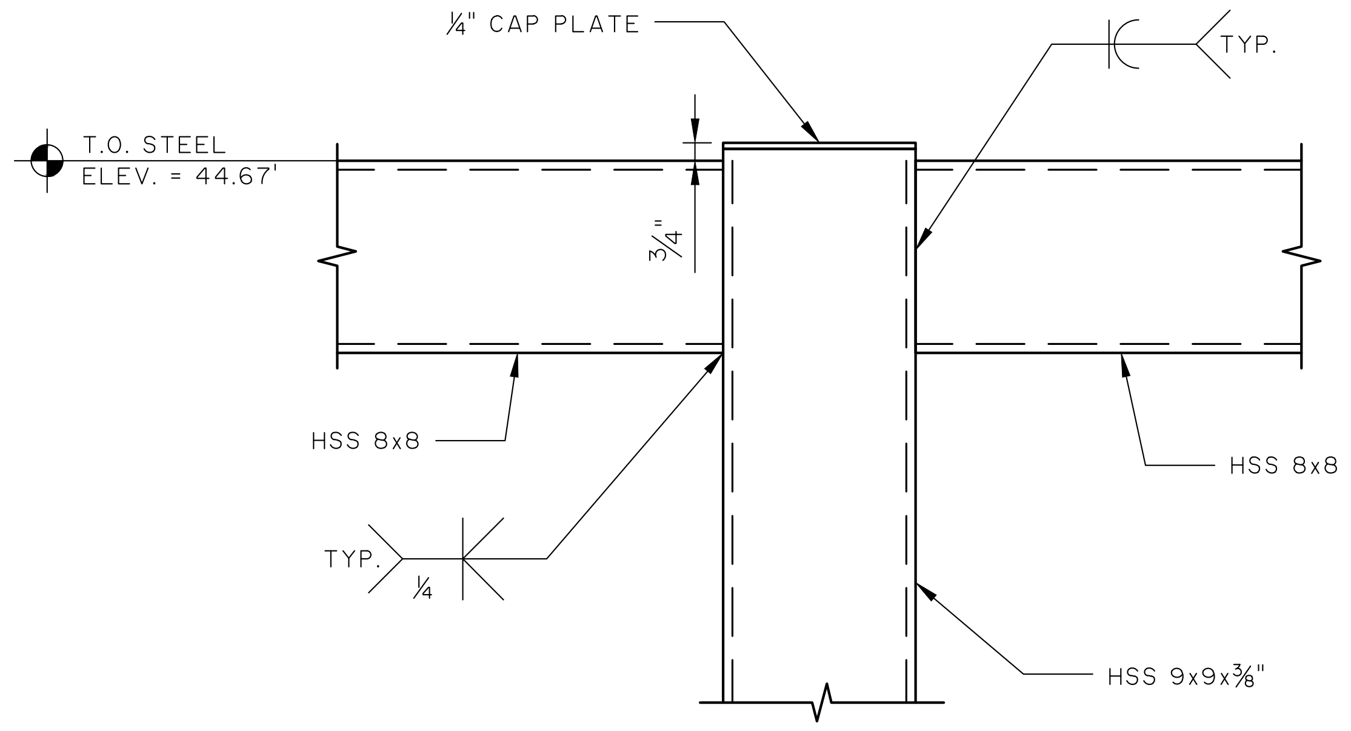

FACE OF CONCRETE
ACTUAL # OF BOLTS REQ'D DEPENDS UPON BEAM REACTION
4"
6"
4"
W12
PROVIDE SLOTTED HOLES IN CLIP ANGLES FOR ADJUSTMENT
FACE OF CONCRETE
ACTUAL # OF BOLTS REQ'D DEPENDS UPON BEAM REACTION
3"
6"
6"
3"
W14
PROVIDE SLOTTED HOLES IN CLIP ANGLES FOR ADJUSTMENT
1'-0"
2"
8"
2"
1'-2"
4"
6"
4"
PLATE 14x½x1'-0" W/ (4) ¾"ø x 0'-6" HEADED STUDS
CL OF PL & BM.
1'-0"
2"
8"
2"
1'-6"
3"
6"
6"
3"
PLATE 18x½x1'-0" W/ (6) ¾"ø x 0'-6" HEADED STUDS
CL OF PL & BM.

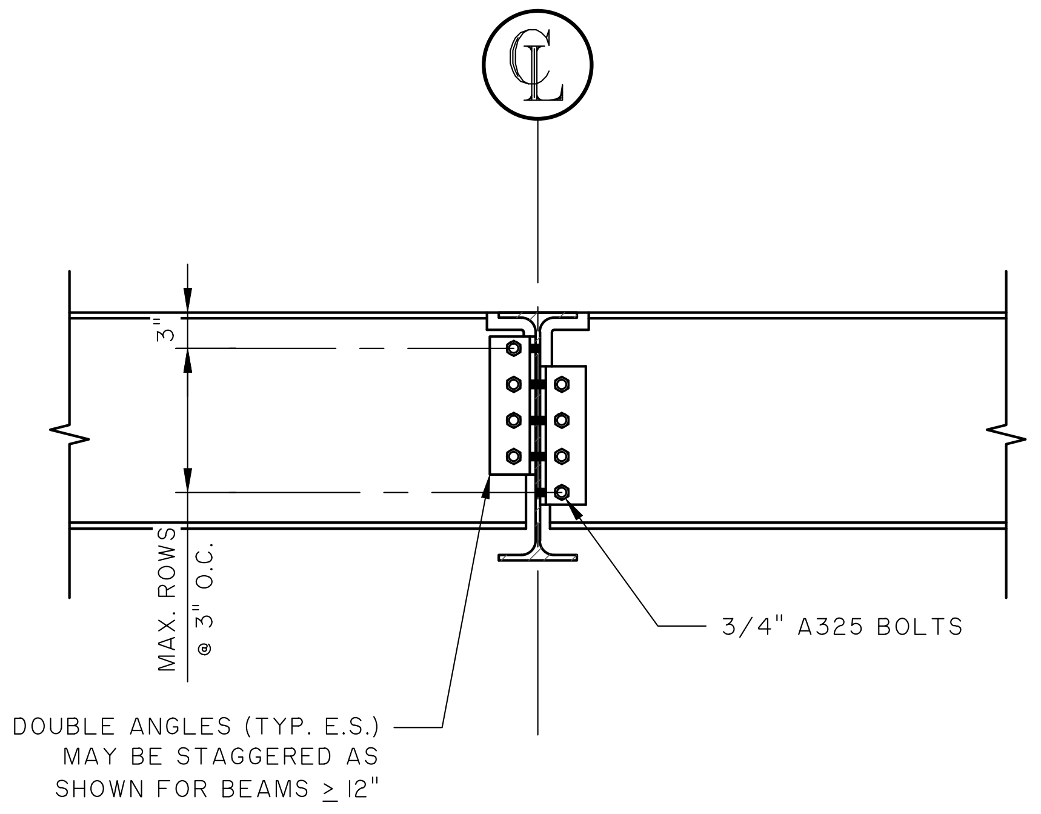
1 TYPICAL EMBED PLATE
01-S-04
1" = 1'-0"


BEAM, SEE PLAN
PROVIDE FACE SHELL TO CONSEAL BEAM
3/16
BRG PL⅜x11x1'-0" PROVIDE (2) ½"ø x 0'-4" HEADED STUDS WELDED TO PLATE SPACED 6" APART
12"x16" CMU PIER UNDER BEAM BEARING W/ (1) #6 EA CELL.
FILL CELLS DIRECTLY BELOW BM. BRG. W/ 3000 PSI CONC. & PROVIDE 2#6 VERTS FULL HEIGHT OF WALL UNLESS NOTED OTHERWISE
1'-0"
PROVIDE FACE SHELL TO CONSEAL BEAM
BRG. PL⅜ x11x1'-0" W/ (2) ½"ø x 0'-4" HD. STUDS WELDED TO PLATE SPACED 6" APART
BEAM PERPENDICULAR TO WALL
BEAM PARALLEL TO WALL

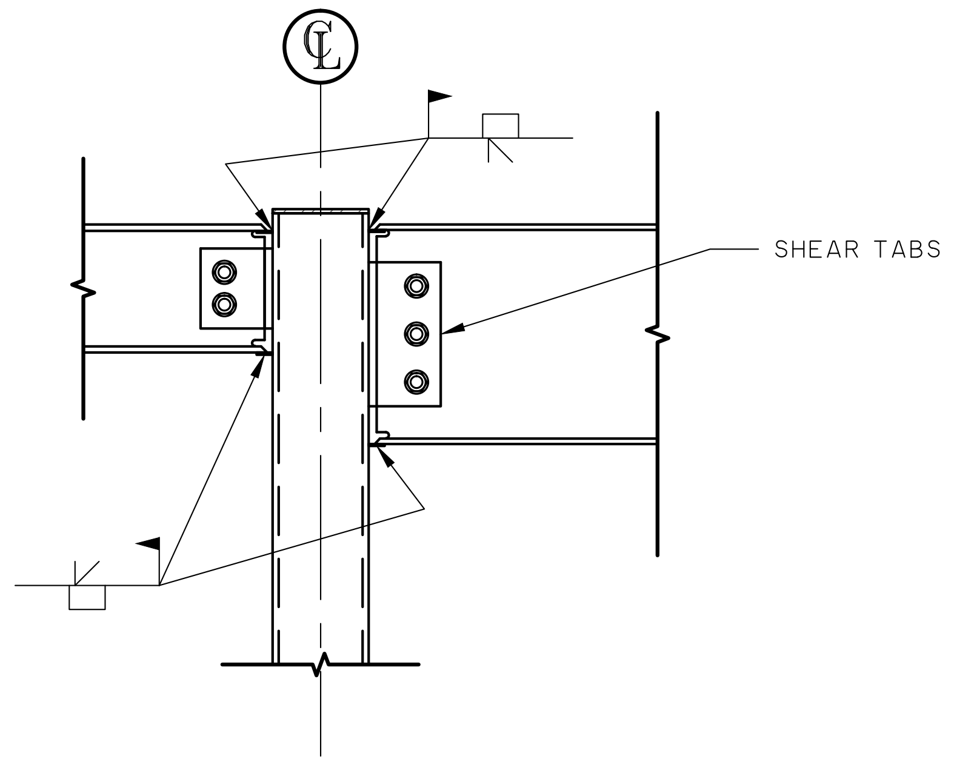
2 BEAM BEARING ON CMU
01-S-04
3/4" = 1'-0"



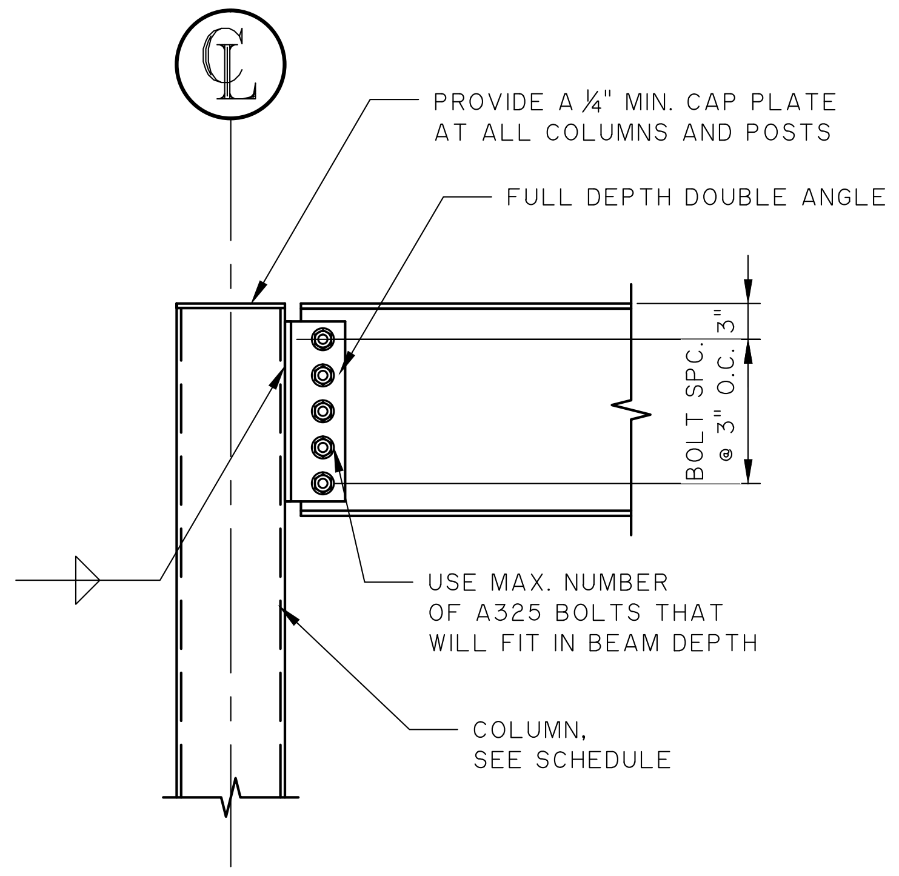
3 TYPICAL HSS BEAM TO COL
01-S-04
1-1/2" = 1'-0"


CL
3"
MAX. ROWS @ 3" O.C.
3/4" A325 BOLTS
DOUBLE ANGLES (TYP. E.S.) MAY BE STAGGERED AS SHOWN FOR BEAMS ≥ 12"

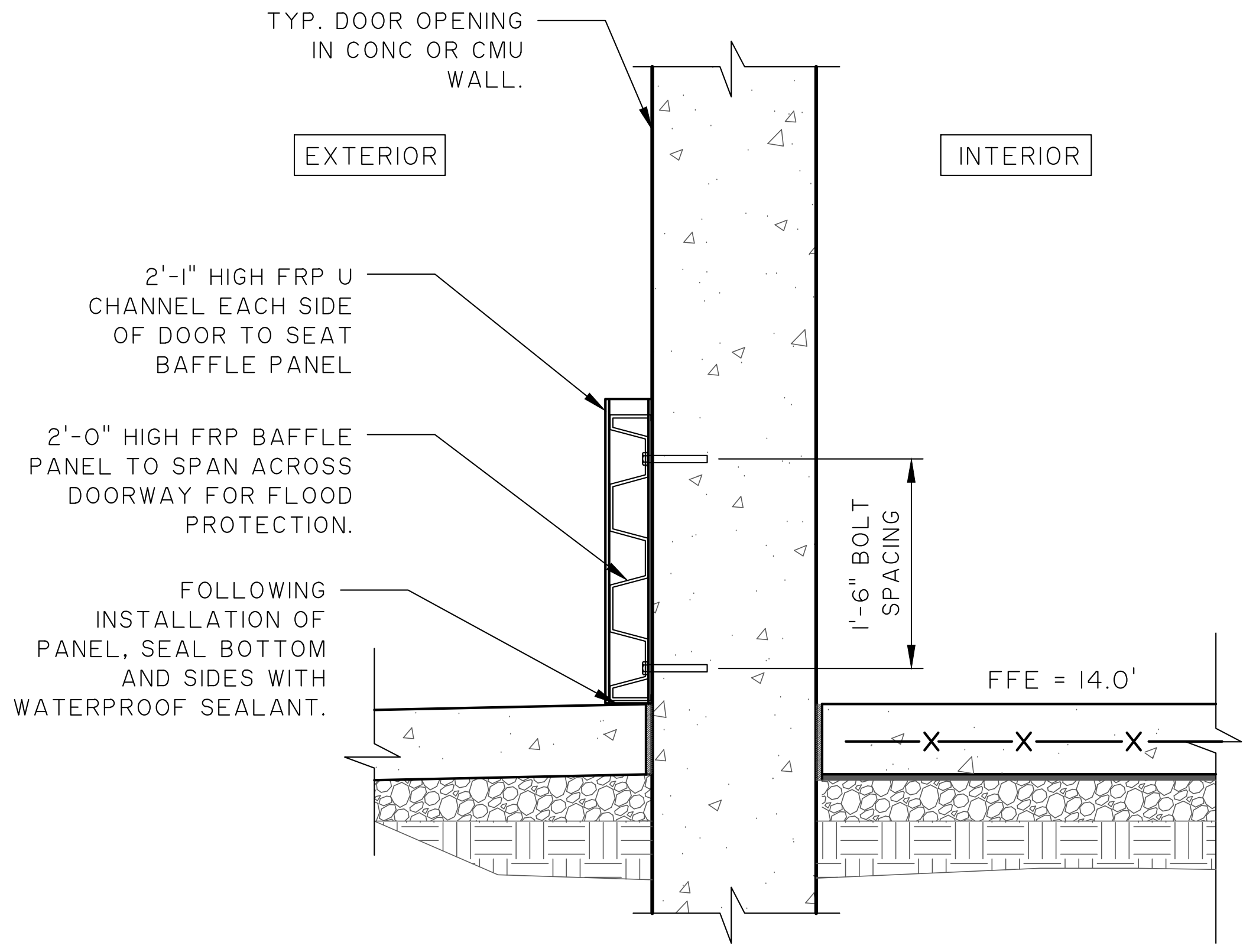
4 TYPICAL BEAM TO BEAM SHEAR CONNECTION
01-S-04
3/4" = 1'-0"



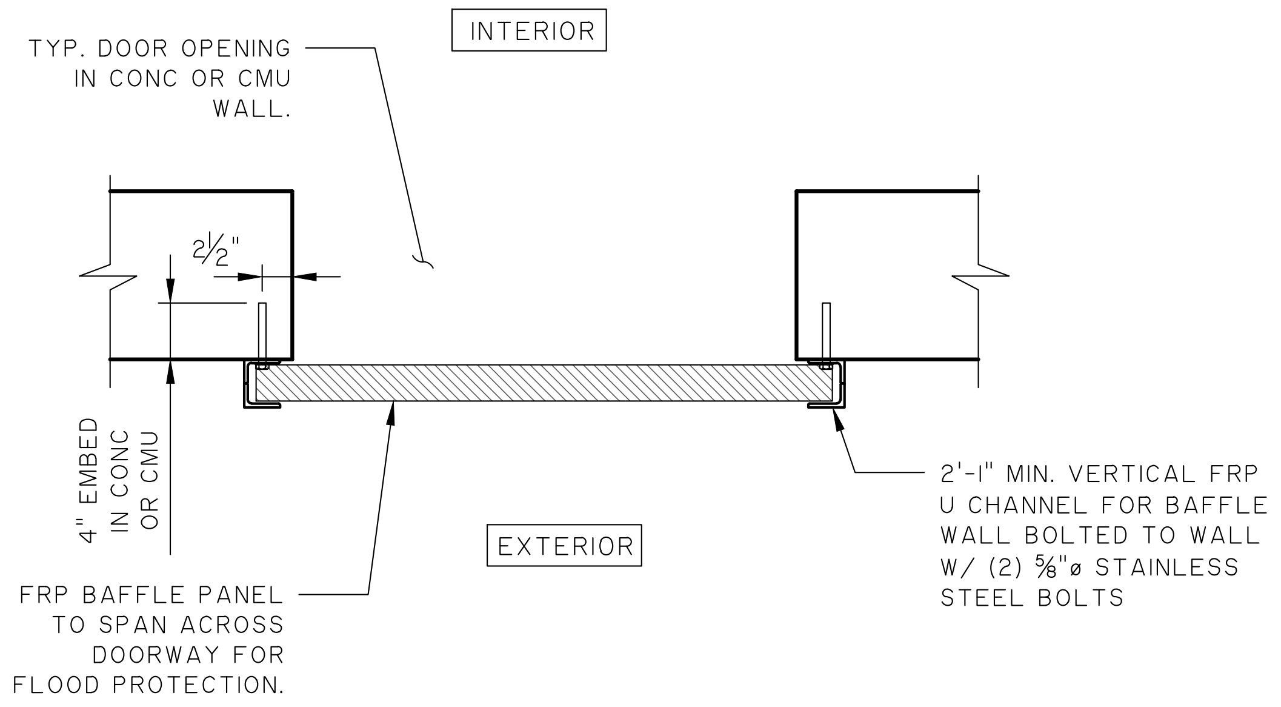
5 TYPICAL W-SHAPE BEAM TO TO COLUMN MOMENT CONNECTION
01-S-04
1" = 1'-0"


CL
PROVIDE A ¼" MIN. CAP PLATE AT ALL COLUMNS AND POSTS
FULL DEPTH DOUBLE ANGLE
3"
BOLT SPC. @ 3" O.C.
USE MAX. NUMBER OF A325 BOLTS THAT WILL FIT IN BEAM DEPTH
COLUMN, SEE SCHEDULE

6 TYPICAL W-SHAPE BEAM TO TO COLUMN SHEAR CONNECTON
01-S-04
3/4" = 1'-0"


TYP. DOOR OPENING IN CONC OR CMU WALL.
EXTERIOR
INTERIOR
2'-1" HIGH FRP U CHANNEL EACH SIDE OF DOOR TO SEAT BAFFLE PANEL
2'-0" HIGH FRP BAFFLE PANEL TO SPAN ACROSS DOORWAY FOR FLOOD PROTECTION.
FOLLOWING INSTALLATION OF PANEL, SEAL BOTTOM AND SIDES WITH WATERPROOF SEALANT.
1'-6" BOLT SPACING
FFE = 14.0'

7 FLOOD PANEL SECTION - SIDE
01-S-04
3/4" = 1'-0"


TYP. DOOR OPENING IN CONC OR CMU WALL.
INTERIOR
2½"
4" EMBED IN CONC OR CMU
FRP BAFFLE PANEL TO SPAN ACROSS DOORWAY FOR FLOOD PROTECTION.
EXTERIOR
2'-1" MIN. VERTICAL FRP U CHANNEL FOR BAFFLE WALL BOLTED TO WALL W/ (2) ⅝"ø STAINLESS STEEL BOLTS

8 FLOOD PANEL SECTION - TOP
01-S-04
3/4" = 1'-0"

FRP FLOOD PANEL NOTES:

1. THE FRP BAFFLE PANELS AND CHANNELS ARE TO BE DESIGNED BY FRP MANUFACTURER TO WITHHOLD 12" OF WATER ON THE EXTERIOR SIDE OF BUILDING.
2. FRP PANELS SHALL BE INSTALLED ACROSS THE BOTTOMS OF ALL OPENINGS THAT ARE BELOW ELEVATION 15.0. CONTRACTOR SHALL EXAMINE PLANS TO DETERMINE QUANTITY AND SIZES OF THE OPENINGS AND SHALL COORDINATE WITH FRP MANUFACTURER TO COMMUNICATE PERITINENT DESIGN INFORMATION.
3. CONTRACTOR SHALL SUBMIT TO ENGINEER FRP SHOP DRAWINGS FOR THE PANELS AND CHANNELS FOR REVIEW AND APPROVAL.
4. FRP U CHANNELS ARE TO BE INSTALLED DURING CONSTRUCTION AND ARE TO REMAIN IN PLACE (PERMANENT INSTALLATION).
5. WHEN FRP BAFFLE PANELS ARE INSTALLED FOR THE PURPOSE OF FLOOD PROTECTION, THE PERIMETER OF THE ENTIRE ASSEMBLY SHALL BE SEALED WITH WATERPROOF SEALANT WHICH SHALL BE REMOVED AT THE SAME TIME AS THE PANELS.
6. COLOR OF ALL FRP ELEMENTS SHALL BE GREY.
7. FRP PANELS SHALL BE LABELED WITH A DOOR IDENTIFIER SO IT IS CLEAR WHICH PANEL IS TO BE INSTALLED ACROSS WHICH OPENING.

No. C00285

JENNIFER A. HAYES

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
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Savannah, GA 31405 Å 912.234.5300
www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
STRUCTURAL DETAILS

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	EAC
DESIGNED:	EAC/SHG
REVIEWED:	JAH/SHG
APPROVED:	MFY
SCALE:	AS NOTED

01-S-04

LEGEND & ABBREVIATIONS

ABBREVIATION	SYMBOL	DESCRIPTION
	Ⓢ	SWITCH
GV	—⋈—	GATE VALVE
CV	—⊣⧵⊢—	CHECK VALVE
	—⊣|⊢—	UNION
	– –[M]	MOTOR OPERATED LOUVER
	ϕ	ROUND
	——►	DIRECTION OF FLOW
T'STAT	Ⓣ	THERMOSTAT
	———	SINGLE LINE DUCT

ABBREVIATION	DESCRIPTION
AB	ABOVE
A/C	ABOVE CEILING
AFF	ABOVE FINISHED FLOOR
B/F	BELOW FLOOR
DN	DOWN
DWGS	DRAWINGS
ELEC	ELECTRICAL
LV	LOUVER
TYP	TYPICAL
U/G	UNDERGROUND
ETR	EXISTING TO REMAIN
A/S	AT STRUCTURE
BTUH	BRITISH THERMAL UNITS PER HOUR
CFM	CUBIC FEET PER MINUTE
EF	EXHAUST FAN
HVAC	HEATING VENTILATING & AIR CONDITIONING
EXH	EXHAUST
UH	ELECTRIC UNIT HEATER
AHU	AIR HANDLER UNIT
HP	HEAT PUMP

GENERAL NOTES:

1. COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION.
2. UNLESS OTHERWISE INDICATED, INSTALL ALL SPACE THERMOSTATS AND CONTROLLERS 48 INCHES ABOVE FINISHED FLOOR.
3. ALL UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. VERIFY EXACT LOCATION AND INVERT ELEVATION IN FIELD BEFORE BEGINNING WORK.

GENERAL HVAC:

A. THE MECHANICAL EQUIPMENT AND INSTALLATION SHALL CONFORM TO THE FOLLOWING CODES:
   1. THE INTERNATIONAL BUILDING CODE 2012 EDITION WITH SOUTH CAROLINA AMENDMENTS.
   2. THE INTERNATIONAL MECHANICAL CODE 2012 EDITION WITH SOUTH CAROLINA AMENDMENTS.
   3. THE INTERNATIONAL ENERGY CONSERVATION CODE 2009 EDITION WITH SOUTH CAROLINA AMENDMENTS.
   4. THE INTERNATIONAL PLUMBING CODE, 2012 EDITION WITH SOUTH CAROLINA AMENDMENTS.

B. THE MECHANICAL EQUIPMENT AND INSTALLATION SHALL CONFORM TO THE FOLLOWING STANDARDS:
   1. NFPA STANDARD 70, NATIONAL ELECTRIC CODE
   2. NFPA STANDARD 90A, INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS.
   3. NFPA STANDARD 101, CODE FOR SAFETY OF LIFE FROM FIRE IN BUILDINGS AND STRUCTURES.

TESTING PIPE SYSTEMS:

A. GENERAL, CONCEALED PIPING AND INSULATED PIPING SHALL BE TESTED IN PLACE BEFORE CONCEALING OR COVERING. TEST SHALL BE CONDUCTED IN THE PRESENCE OF THE ARCHITECT OR HIS DESIGNATED REPRESENTATIVE. PIPING LOCATED UNDERGROUND SHALL BE TESTED BEFORE BACKFILLING. EQUIPMENT, MATERIALS, AND INSTRUMENTS FOR TESTING SHALL BE FURNISHED BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER.

TEST AND BALANCE:

THE CONTRACTOR SHALL PERFORM TEST AND BALANCE ON THE AIR AND WATER DISTRIBUTION SYSTEMS.

A. INSTRUMENTS USED FOR BALANCING SHALL HAVE BEEN CALIBRATED WITHIN 6 MONTHS PRIOR TO THE BALANCING OF THE SYSTEMS.
B. ALL INSTRUMENTS REQUIRED TO BALANCE THE SYSTEM SHALL BE PROVIDED AT THE CONTRACTOR'S EXPENSE.
C. FINAL READINGS SHALL BE SET WITH -5% TO +10% OF DESIGN CONDITIONS.
D. ANY DEVIATIONS FROM DESIGN DATA SHALL BE EXPLAINED IN THE REPORT - POSSIBLE REASONS FOR AND SOLUTIONS TO.
E. REPORT SHALL BE SIGNED AND DATED BY BALANCE ENGINEER.
F. TEST AND BALANCE SHALL NOT BE PERFORMED UNTIL SYSTEM INSTALLATION IS COMPLETE.

INSULATION FOR HVAC SYSTEMS:

A. FIBERGLASS BLANKET INSULATION ON SUPPLY, RETURN, AND OUTSIDE AIR DUCTS SHALL BE FIBROUS GLASS BLANKET TYPE DESIGNED FOR USE ON SURFACES UP TO 250 F WITH A FACTORY APPLIED ALUMINUM FOIL AND KRAFT VAPOR BARRIER JACKET. INSULATION SHALL HAVE A MINIMUM DENSITY OF 1.0 LB/CU. FT. AND A MAXIMUM CONDUCTIVITY OF 0.26 BTU/IN. PER SQ.FT. PER DEGREE F PER HOUR AT 75°F MEAN TEMPERATURE. INSULATION SHALL BE KNAUF DUCTWRAP OR APPROVED EQUAL. INSULATION THICKNESS SHALL BE 2".

B. INSULATION FOR REFRIGERANT LINES AND CONDENSATE DRAINS SHALL BE SELF SEALING, FLEXIBLE CELLULAR, ELASTOMERIC TYPE CONFORMING TO ASTM C534, DESIGNED FOR USE ON PIPES FROM -40°F TO 220°F (-40°C TO 105°C). INSULATION SHALL HAVE A MINIMUM DENSITY OF 6 LB/CU FT AND A MAXIMUM CONDUCTIVITY OF 0.28 BTU/IN/SQ FT/°F/HR AT 75°F MEAN TEMPERATURE, AND A MAXIMUM PERMANENCE OF 0.17 LB/SQ FT. ADHESIVES USED FOR CONNECTIONS SHALL BE MANUFACTURER'S STANDARD UV-PROTECTION. INSULATION SHALL BE ARMACELL AP/SS ARMAFLEX.

AIR DISTRIBUTION:

A. GENERAL
   1. DUCTWORK SHALL BE CONSTRUCTED OF LOCK FORMING QUALITY GALVANIZED STEEL SHEETS. GALVANIZED COATING SHALL BE NOT LESS THAN 1.25 OUNCES (TOTAL FOR BOTH SIDES) PER SQUARE FOOT OF SHEET.
   2. DUCTWORK SHALL BE SQUARE, RECTANGULAR, ROUND, OR FLAT OVAL, AS INDICATED ON THE DRAWINGS.
   3. TURNING VANES SHALL BE INSTALLED IN ALL 90 DEGREE SQUARE AND RECTANGULAR ELBOWS AND AT OTHER LOCATIONS SHOWN ON THE DRAWINGS. IN ANY SUPPLY, RETURN OR EXHAUST AIR DUCTWORK WITH VELOCITIES OF 1800 FPM OR HIGHER, THE TURNING VANES SHALL BE THE DOUBLE THICKNESS TYPE, WITH VANES WELDED TO THE RUNNERS AND RUNNERS WELDED TO THE DUCT.
   4. DUCTWORK SHALL BE CLASSIFIED AND CONSTRUCTED IN THE FOLLOWING SMACNA PRESSURE CLASSES, OR 150% OF THE SCHEDULED FAN S.P., WHICHEVER IS GREATER:

SYSTEM OR ZONE	PRESSURE CLASS
SUPPLY AIR DUCTWORK (GENERAL BUILDING)	+ 2
RETURN DUCTWORK (GENERAL BUILDING)	- 2
EXHAUST DUCTWORK (GENERAL BUILDING)	- 2

B. GALVANIZED STEEL DUCTWORK
   1. EXCEPT WHERE INDICATED OTHERWISE DUCT CONSTRUCTION SHALL CONFORM TO THE RECOMMENDATIONS OF THE SMACNA HVAC DUCT CONSTRUCTION MANUAL FOR PRESSURE CLASSES SPECIFIED HEREIN BEFORE.

C. FLEXIBLE DUCTWORK
   1. INSULATED FLEXIBLE DUCT SHALL BE CLASS 1 AIR DUCT IN ACCORDANCE WITH UL 181 AND SHALL COMPLY WITH NFPA 90A AND 90B. INSULATED FLEXIBLE DUCT SHALL CONSIST OF AN INNER FILM LAYER FOR MINIMUM WORKING PRESSURE OF 6" WG. BONDED TO A STEEL OR ALUMINUM SPRING WIRE HELIX, FIBERGLASS INSULATION, AND A VAPOR BARRIER JACKET. INSULATION SHALL HAVE A MAXIMUM C-VALUE OF 0.23 BTU/HR/SQ. FT./DEGREE F. AT 75 DEGREES F. MEAN TEMPERATURE. VAPOR BARRIER JACKET SHALL HAVE A MAXIMUM VAPOR TRANSMISSION RATE OF 0.1 GRAINS/SQ. FT./HR/INCH HG (PERM). THE ASSEMBLY SHALL HAVE A MAXIMUM FLAME AND SMOKE RATING OF 25/50 PER ASTM E84 AND NFPA 255. MINIMUM WORKING PRESSURE FOR DUCT PRESSURE CLASS 4" AND BELOW SHALL BE 6" WG. INSULATED FLEXIBLE DUCT SHALL BE THERMOFLEX OR APPROVED EQUAL.

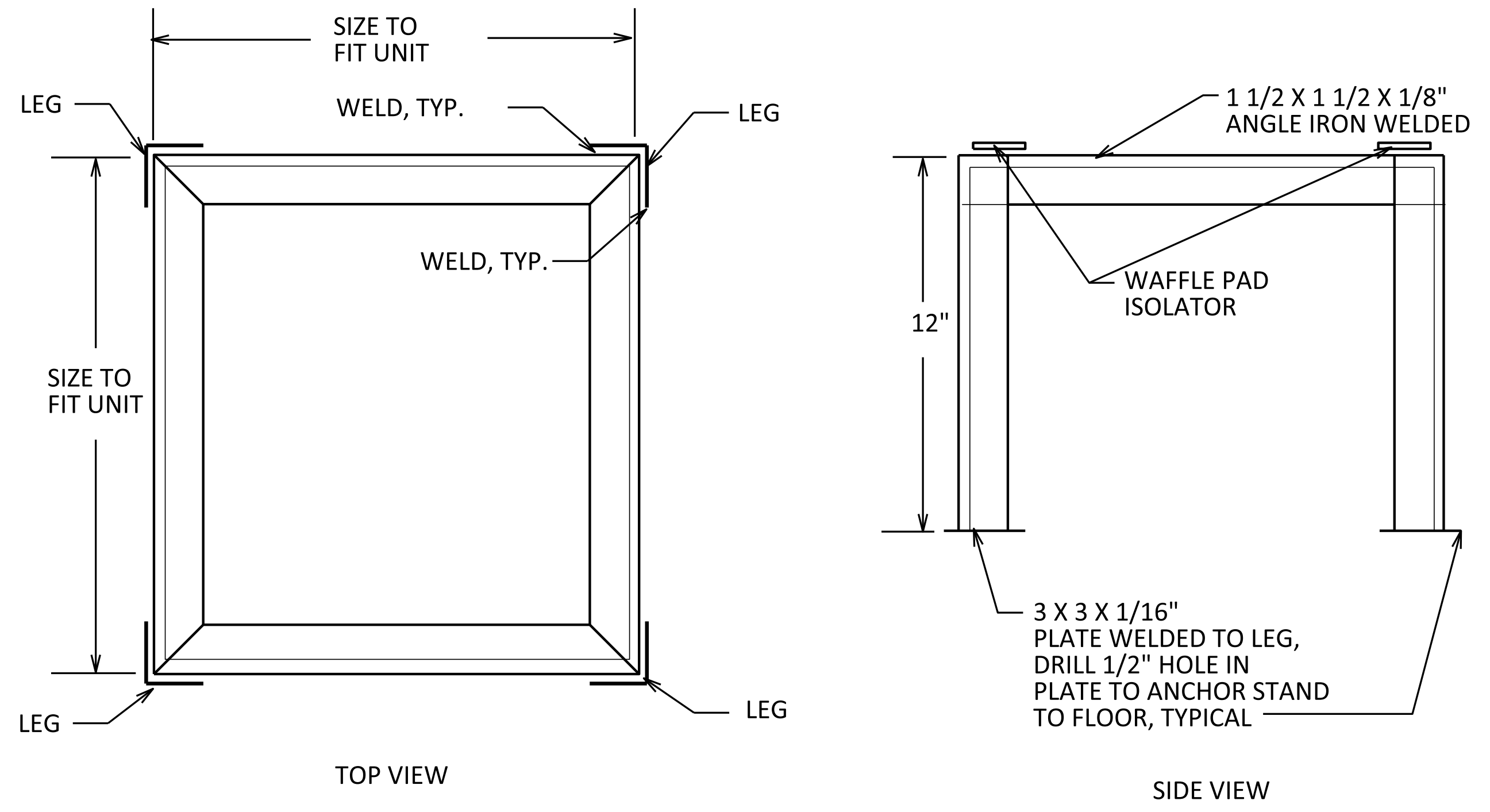
D. STAINLESS STEEL DUCTWORK
   EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF 18 GAUGE (1.3MM), TYPE 316 STAINLESS STEEL WITH NO. 4 FINISH ON EXPOSED SURFACES. ALL FASTENERS SHALL BE TYLE 316 STAINLESS STEEL.

AIR DEVICES:

A. TYPE 'A' SUPPLY AIR DIFFUSER SHALL BE TITUS OMNI-AA OR APPROVED EQUAL. PROVIDE WITH OPPOSED BLADE DAMPER.
B. TYPE 'B' RETURN AIR REGISTER SHALL BE TITUS PAR-AA OR APPROVED EQUAL. PROVIDE WITH OPPOSED BLADE DAMPER.
C. TYPE 'C' RETURN AIR GRILLE SHALL BE TITUS 350FL OR APPROVED EQUAL. PROVIDE WITH OPPOSED BLADE DAMPER.
D. TYPE 'D' SUPPLY AIR DIFFUSER SHALL BE TITUS 300FL OR APPROVED EQUAL. PROVIDE WITH OPPOSED BLADE DAMPER.

DESIGN CONDITIONS

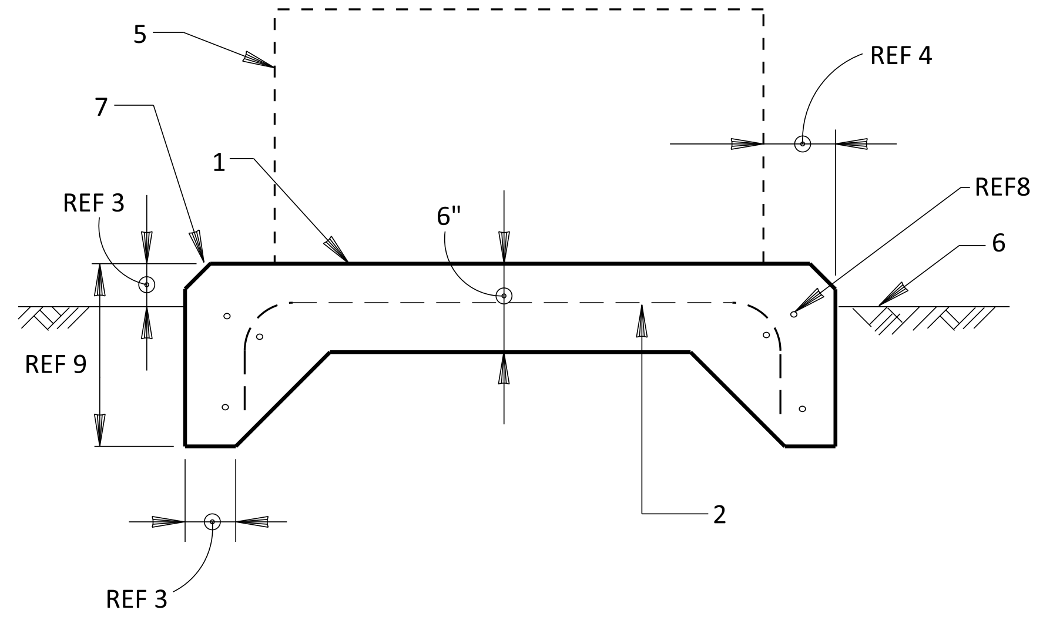
UNIT	AREA SERVED	INSIDE			OUTSIDE		
		HEATING	COOLING		HEATING	COOLING	
		DB °F	DB °F	WB °F	DB °F	DB °F	WB °F
AHU-1,2 UH-9	MAIN BUILDING UPPER LEVEL	70.0	75.0	63.0	24.0	97.0	79.0
UH-1,2,3	MAIN BUILDING LOWER LEVEL	50.0	---	---	24.0	---	---
UH-4,5	CENTRIFUGE ROOM	60.0	---	---	24.0	---	---
UH-6,7,8	CENTRFUGE DUMPSTER	50.0	---	---	24.0	---	---



SIZE TO FIT UNIT
WELD, TYP.
LEG
LEG
WELD, TYP.
SIZE TO FIT UNIT
LEG
LEG
TOP VIEW
1 1/2 X 1 1/2 X 1/8" ANGLE IRON WELDED
WAFFLE PAD ISOLATOR
12"
3 X 3 X 1/16" PLATE WELDED TO LEG, DRILL 1/2" HOLE IN PLATE TO ANCHOR STAND TO FLOOR, TYPICAL
SIDE VIEW

1 / 01-M-01 EQUIPMENT STAND

SCALE: NOT TO SCALE



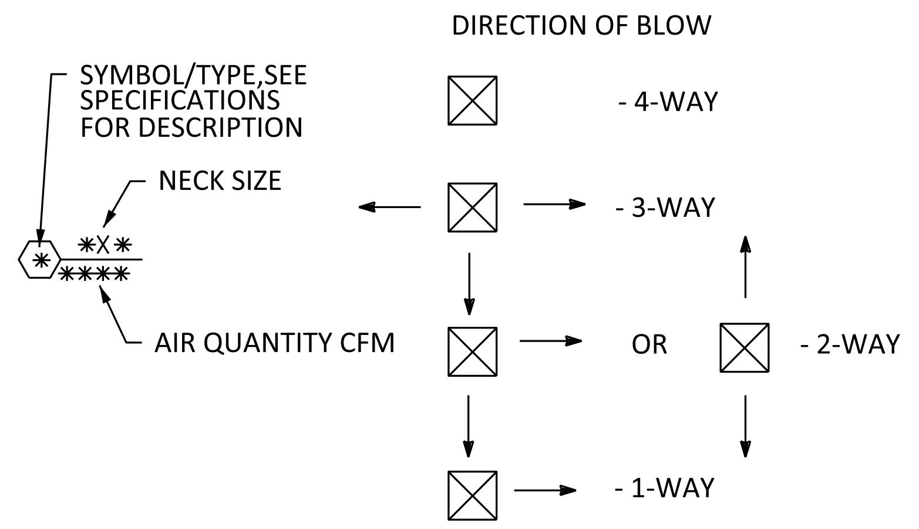
1. CONCRETE BASE
2. 6/6 X W2.9 X W2.9 WWF WITH 2" COVER
3. 6" - ALL SIDES
4. 4"(MINIMUM) ALL SIDES
5. EQUIPMENT
6. GROUND
7. 3/4" CHAMFER-ALL AROUND
8. #4 REINFORCING ALL AROUND
9. 12" MINIMUM

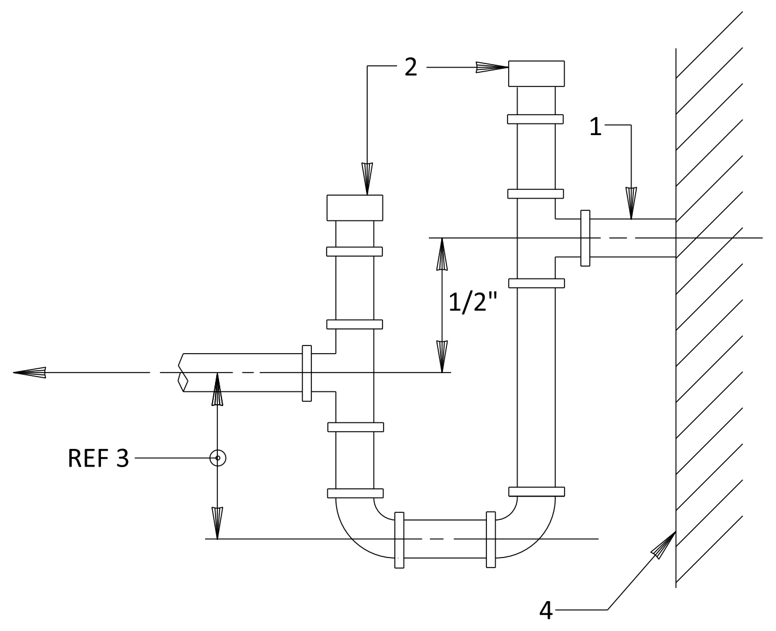
2 / 01-M-01 EXTERIOR CONCRETE BASE

SCALE: NOT TO SCALE

AIR DISTRIBUTION DEVICES

SYMBOL	LOCATION	FUNCTION	TYPE	SURFACE TYPE
⬡A	CEILING	SUPPLY	PLAQUE FACE	LAY-IN
⬡B	CEILING	RETURN/ EXHAUST	PERFORATED REGISTER	LAY-IN
⬡C	CEILING/ WALL	RETURN/ EXHAUST	LOUVERED FACE	SURFACE MOUNT
⬡D	CEILING	SUPPLY	LOUVERED FACE	SURFACE MOUNT





1. PIPE FULL SIZE OF AIR UNIT DRAIN CONNECTION.
2. CAPS
3. HEIGHT SHALL BE EQUAL TO FAN PLENUM POSITIVE PRESSURE PLUS 0.5 INCHES
4. AIR UNIT CASING

3 / 01-M-01 P-TRAP - DRAW THROUGH

SCALE: NOT TO SCALE

EXHAUST FANS

SYMBOL	EF-1	EF-2	EF-3	EF-4	EF-5	EF-6	EF-7
TYPE	IN-LINE	IN-LINE	CENTRIFUGAL SIDEWALL	CENTRIFUGAL	IN-LINE	CENTRIFUGAL	IN-LINE
CFM	1,470	860	1,525	70	920	100	1,800
EXTERNAL STATIC PRESSURE, IN. H2O	0.375	0.375	0.250	0.375	0.375	0.375	0.375
MAXIMUM SONES	4.9	3.4	---	1.0	3.4	0.3	6.3
MAXIMUM FAN SPEED, RPM	775	700	1,725	750	700	935	850
MAXIMUM MOTOR HORSEPOWER	3/4	3/4	1/2	171 ①	3/4	128 ①	1/2
DRIVE	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT	DIRECT
LOCATION	EQUIPMENT SUPPORT RM.	EQUIPMENT SUPPORT RM.	CHEMICAL ROOM	BATHROOM AND SHOWER	CENTRIFUGE ROOM	MECHANICAL ROOM	CENTRIFUGE DUMPSTER
ELECTRICAL CHARACTERISTICS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS
REMARKS	②⑦	②⑦	③⑦	④⑥⑦	②⑦	⑤⑥⑦	⑧⑦

① POWER RATED IN WATTS.

② EXHAUST FAN SHALL BE GREENHECK MODEL: SQ OR APPROVED EQUAL. PROVIDE FAN WITH BACKDRAFT DAMPER AND THERMOSTAT. INTERLOCK WITH INTAKE LOUVER AS NOTED ON FLOOR PLANS.

③ EXHAUST FAN SHALL BE SWARTWOUT MODEL: 14SA3 OR APPROVED CORROSIVE RESISTANT FIBERGLASS FAN. FAN SHALL BE CONTROLLED PER ELECTRICAL DRAWINGS. SEE 1/50-E-07 FOR MORE DETAIL.

④ EXHAUST FAN SHALL BE GREENHECK MODEL: SP OR APPROVED EQUAL. PROVIDE FAN WITH INTEGRAL GRILLE AND WALL CAP. FAN SHALL INTERLOCK WITH BATHROOM LIGHTS AND HAVE A 5-MINUTE SHUT-OFF DELAY.

⑤ EXHAUST FAN SHALL BE GREENHECK MODEL: SP OR APPROVED EQUAL. PROVIDE FAN WITH INTEGRAL GRILLE AND WALL CAP. FAN SHALL INTERLOCK WITH FAN ON AHU-1.

⑥ WALL CAPS SHALL BE PAINTED AND FINISHED TO MATCH LOUVERS ON LOWER FLOOR.

⑦ ALL FANS TO BE PROVIDED WITH DISCONNECTS.

⑧ EXHAUST FAN SHALL BE GREENHECK MODEL: SQ OR APPROVED EQUAL. PROVIDE FAN WITH BACKDRAFT DAMPER. FAN SHALL RUN CONTINUOUSLY.

SPLIT SYSTEM UNITS

	SYMBOL	AHU-1/HP-1	AHU-2/HP-2
	TYPE	VERTICAL	HORIZONTAL
	TOTAL CFM	1,215	245
	MINIMUM OUTSIDE AIR, CFM	100	20
	EXTERNAL STATIC PRESSURE, IN. H2O	0.500	0.200
COOLING	TOTAL CAPACITY BTU/HR	30,900	6,600
	SENSIBLE CAPACITY BTU/HR	27,100	5,700
	ENT. AIR DB. °F	76.5	76.3
	ENT. AIR WB. °F	64.0	63.9
	COND. AMBIENT TEMP., °F	97.0	97.0
	MINIMUM (SEASONAL) EER	14.0	14.0
HEATING	TOTAL CAPACITY BTU/HR	24,700	5,000
	ENT. AIR DB. °F	66.2	66.2
	LVG. AIR DB. °F	85.0	85.1
	AMBIENT AIR TEMP., °F	24.0	24.0
	MINIMUM COP	2.5	2.5
AUX. HEAT	CAPACITY kW	3.0	---
	NO. OF STAGES	1	---
	LOCATION	MECH ROOM	MECH ROOM
	ELECTRICAL CHARACTERISTICS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS
	REMARKS	①	②

① UNITS SHALL BE TRANE MODEL: 4TWB4/GAM5 OR APPROVED EQUAL. PROVIDE UNIT WITH 7-DAY AUTO-CHANGEOVER PROGRAMMABLE THERMOSTAT. SIZE UNIT PER SENSIBLE CAPACITY.

② UNIT SHALL BE MITSUBISHI MODEL: SEZ/SUZ OR APPROVED EQUAL. PROVIDE UNIT WITH 7-DAY AUTO-CHANGEOVER THERMOSTAT.

ELECTRIC HEATER

SYMBOL	UH-1	UH-2	UH-3	UH-4	UH-5	UH-6	UH-7	UH-8	UH-9
TYPE	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL
CAPACITY, KW	5.0	3.0	7.5	10.0	7.5	7.5	7.5	3.0	3.0
MOUNTING HEIGHT TO BOTTOM, FT.	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
LOCATION	EQUIPMENT ROOM	EQUIPMENT SUPPORT RM.	CHEMICAL ROOM	CENTRIFUGE ROOM	CENTRIFUGE ROOM	ROLL-OFF CONTAINER	ROLL-OFF CONTAINER	ROLL-OFF CONTAINER	UPPER FLOOR MECHANICAL
ELECTRICAL CHARACTERISTICS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS	SEE ELEC DRAWINGS
REMARKS	①	①	①	①	①	①	①	①	①

① ELECTRIC UNIT HEATERS SHALL BE RUSKIN MODEL: MUH OR APPROVED EQUAL. PROVIDE HEATERS WITH INTERNAL THERMOSTAT.

LOUVER

SYMBOL	LV-1	LV-2	LV-3	LV-4	LV-5	LV-6	LV-7	LV-8
TYPE	INTAKE	INTAKE	INTAKE	EXHAUST	EXHAUST	INTAKE	INTAKE	EXHAUST
AIRFLOW, CFM	1,470	860	1,920	2,330	920	1,525	1,800	1,800
FREE AREA, SQ FT	1.76	1.03	2.50	2.90	2.26	1.98	2.26	2.26
APPROXIMATE SIZE, WIDTH X HEIGHT, INCH	36 X 21	24 X 20	34 X 23	39 X 23	27 X 25	39 X 23	27 X 25	27 X 25
PRESSURE DROP, IN. H2O	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
MOUNTING HEIGHT AFF TO BOTTOM OF LOUVER	8'-0"	2'-6"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
LOCATION	EQUIPMENT ROOM	ELECTRONIC SUPPORT RM.	CENTRIFUGE ROOM	ELECTRONIC SUPPORT RM.	CENTRIFUGE ROOM	CHEMICAL ROOM	DUMPSTER ROOM	DUMPSTER ROOM
REMARKS	①	①	②	②	②	②	②	②

① ALUMINUM COMBINATION LOUVER SHALL BE GREENHECK MODEL: EACN-601 OR APPROVED EQUAL. PROVIDE LOUVER WITH 24-VOLT MOTORIZED DAMPER TO BE INTERLOCKED WITH ASSOCIATED EXHAUST FAN. PROVIDE LOUVER WITH BIRD SCREEN. FINISH SHALL BE 3-COAT 70% KYNAR. COORDINATE LOUVER COLOR WITH ARCHITECT.

② ALUMINUM STATIONARY LOUVER SHALL BE GREENHECK MODEL: EDJ-601 OR APPROVED EQUAL. PROVIDE LOUVER WITH BIRD SCREEN. FINISH SHALL BE 3-COAT 70% KYNAR. COORDINATE LOUVER COLOR WITH ARCHITECT.

CHATHAM ENGINEERING COMPANY LLC
C04812

No. 30827
1-28-16

NO	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

HVAC SCHEDULE, DETAILS, AND SPECS

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	JM
DESIGNED:	JM
REVIEWED:	MP
APPROVED:	MP
SCALE:	1/4" = 1'

01-M-01

LEGEND & ABBREVIATIONS

ABBREVIATION	SYMBOL	DESCRIPTION
W, S, D	——— S ———	SANITARY WASTE, SOIL & DRAIN
V	- - - - - - - - -	VENT - SANITARY
CW	——— — ———	DOMESTIC COLD WATER
HW	——— — — ———	DOMESTIC HOT WATER
GV	——⋈——	GATE VALVE
WHA	——△——	WATER HAMMER ARRESTOR 'SIZE'
FCO	———⊙	FLOOR CLEANOUT
WCO	———‖	WALL CLEANOUT
FD	⊡	FLOOR DRAIN 'TYPE'

ABBREVIATION	DESCRIPTION
A/C	ABOVE CEILING
AFF	ABOVE FINISHED FLOOR
B/F	BELOW FLOOR
CONT	CONTINUATION
DN	DOWN
DWGS	DRAWINGS
ELEC	ELECTRICAL
ETR	EXISTING TO REMAIN
EXIST	EXISTING
HVAC	HEATING, VENTILATION & AIR CONDITIONING
SAN	SANITARY
TYP	TYPICAL
U/G	UNDERGROUND
VTR	VENT THRU ROOF
W	WASTE
NFWH	NON FREEZE WALL HYDRANT
NFPH	NON FREEZE POST HYDRANT
WHA	WATER HAMMER ARRESTOR
RP	REDUCED PRESSURE

GENERAL NOTES: PLUMBING

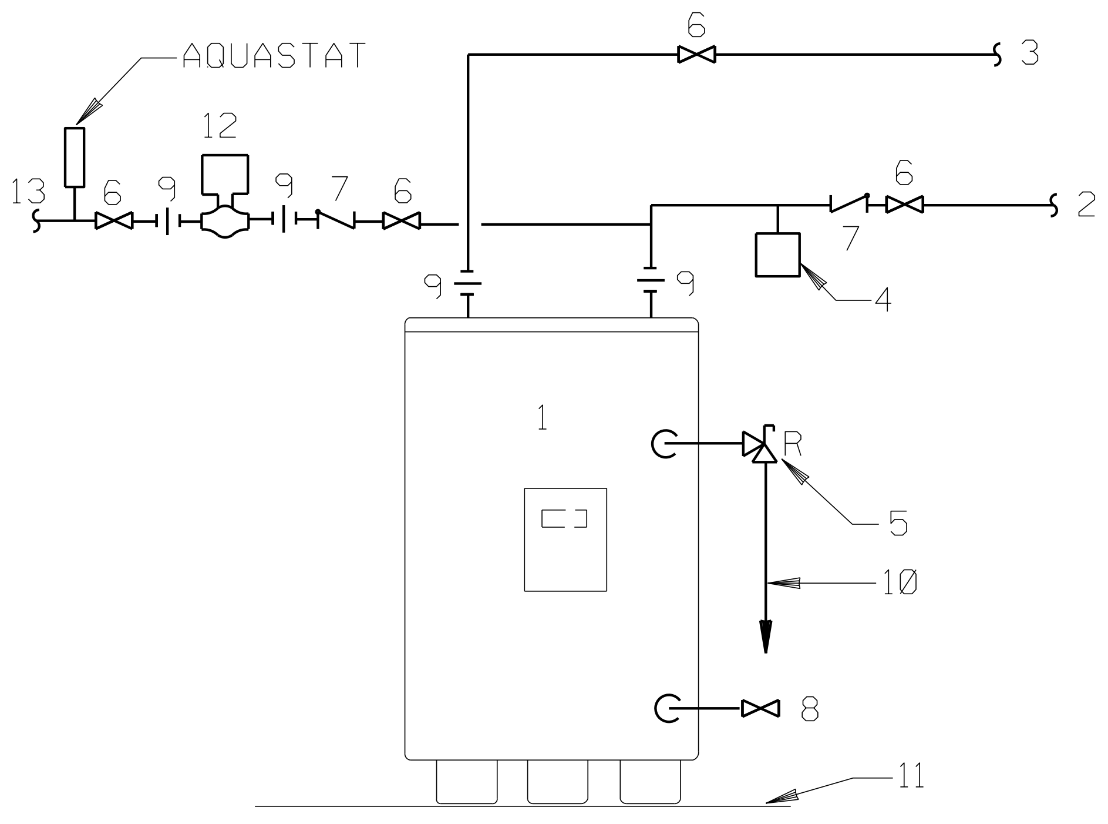
1. ALL UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. VERIFY EXACT LOCATIONS IN FIELD BEFORE BEGINNING WORK.
2. COORDINATE ALL SHUT DOWNS OF SERVICES WITH OWNER.
3. COORDINATE ALL WORK WITH OTHER TRADES.

PLUMBING FIXTURES

SPEC. TYPE	FIXTURE	MINIMUM INDIVIDUAL CONNECTION				REMARKS
		COLD	HOT	VENT	WASTE	
P-1	WATER CLOSET	1/2"	---	---	4"	18" TO RIM ①
P-3	LAVATORY	1/2"	1/2"	---	1¼"	34" TO RIM ①
P-4	MOP BASIN	1/2"	1/2"	---	1½"	COUNTER TOP
P-5	WATER COOLER	1/2"	1/2"	---	1½"	WALL MOUNT ①
P-6	SINK	1/2"	1/2"	---	1½"	FLOOR MOUNT
P-7	SHOWER	1/2"	1/2"	---	1½"	HAND HELD SHOWER ①
P-8	EMERGENCY SHOWER	1½"	1"	---	②	FREE STANDING

① FIXTURE, TRIM AND INSTALLATION SHALL COMPLY TO ADA REQUIREMENTS.

② PROVIDE 4" FD 'A' FLOOR DRAIN



1. WATER HEATER
2. COLD WATER SUPPLY
3. HOT WATER TO SYSTEM
4. THERMAL EXPANSION TANK
5. PRESSURE & TEMPERATURE RELIEF VALVE
6. SHUT-OFF VALVE
7. CHECK VALVE
8. 3/4" DRAIN VALVE
9. UNION
10. PIPE RELIEF VALVE DISCHARGE FULL SIZE TO FLOOR DRAIN
11. FINISHED FLOOR
12. HOT WATER RETURN PUMP
13. HOT WATER RETURN

1 WATER HEATER DETAIL
01-P-01

SCALE: NOT TO SCALE

PUMPS

PUMP NUMBER	HWC-1
SPEC. TYPE	---
SERVICE	DOM. HW
LOCATION	SEE DWGS.
CAPACITY, GPM	2.0
DISCHARGE HEAD, FT.	14.0
SUCTION PRESS., FT.	---
FLUID TEMP., F°	120.0
RPM	---
HP	1/25
CONTROLLER	AQUASTAT/TIMER
ELECTRICAL CHARACTERISTICS	SEE ELEC. DWGS.
REMARKS	

PLUMBING SPECIFICATIONS

CODES

A. THE PLUMBING INSTALLATION AND EQUIPMENT SHALL CONFORM TO THE FOLLOWING:
   1. INTERNATIONAL PLUMBING CODE, 2012 EDITION, WITH SOUTH CAROLINA AMENDMENTS.

TESTING PIPE SYSTEMS

A. GENERAL, CONCEALED PIPING AND INSULATED PIPING SHALL BE TESTED IN PLACE BEFORE CONCEALING OR COVERING. TEST SHALL BE CONDUCTED IN THE PRESENCE OF THE ARCHITECT OR HIS DESIGNATED REPRESENTATIVE. PIPING LOCATED UNDERGROUND SHALL BE TESTED BEFORE BACKFILLING. EQUIPMENT, MATERIALS AND INSTRUMENTS FOR TESTING SHALL BE FURNISHED BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER.

B. PLUMBING SYSTEMS
   1. SANITARY WASTE AND VENT PIPING. THE PIPING SHALL BE TESTED WITH WATER BEFORE INSTALLING FIXTURES. WATER TESTS SHALL BE APPLIED TO THE SYSTEM EITHER IN ITS ENTIRETY OR IN SECTIONS. IF THE TEST IS APPLIED TO THE ENTIRE SYSTEM, ALL OPENINGS IN THE PIPING SHALL BE CLOSED EXCEPT THE HIGHEST OPENING, AND THE SYSTEM SHALL BE FILLED WITH WATER AND TESTED WITH AT LEAST A 10 FT. HEAD OF WATER. IN TESTING SUCCESSIVE SECTIONS, AT LEAST THE UPPER 10 FT. OF THE NEXT PRECEDING SECTION SHALL BE TESTED SO THAT EACH JOINT OR PIPE IN THE BUILDING EXCEPT THE UPPERMOST 10 FT. OF THE SYSTEM HAS BEEN SUBMITTED TO A TEST OF AT LEAST 10 FT. HEAD OF WATER. THE WATER SHALL BE KEPT IN THE SYSTEM, OR IN THE PORTION UNDER TEST FOR AT LEAST 2 HOURS BEFORE THE INSPECTION STARTS. THE SYSTEM SHALL BE TIGHT AT ALL JOINTS.
   2. WATER PIPING. UPON COMPLETION OF THE ROUGH-IN AND BEFORE SETTING FIXTURES, THE ENTIRE DOMESTIC COLD WATER, HOT WATER, AND HOT WATER CIRCULATION PIPING SYSTEMS SHALL BE TESTED AT HYDROSTATIC PRESSURE OF 100 PSIG AND PROVED TIGHT AT THIS PRESSURE FOR A PERIOD OF NOT LESS THAN 2 HOURS IN ORDER TO PERMIT INSPECTION OF ALL JOINTS. WHERE A PORTION OF THE WATER PIPING SYSTEM IS TO BE CONCEALED BEFORE COMPLETION, THIS PORTION SHALL BE TESTED SEPARATELY IN A MANNER DESCRIBED FOR THE ENTIRE SYSTEM.

DOMESTIC WATER SYSTEM

A. PROVIDE COMPLETE SYSTEMS OF COLD AND HOT WATER PIPING AND ACCESSORIES SO THAT EVERY FIXTURE AND PIECE OF WATER USING EQUIPMENT IN THIS AREA OF THE BUILDING WILL BE FURNISHED WITH A WATER SUPPLY.

B. EXTEND THE DOMESTIC COLD AND HOT WATER PIPING AND CONNECT TO THE PIPING, AS SHOWN ON THE DRAWINGS.

C. PIPING FITTINGS AND JOINTS
   1. PIPE AND FITTINGS SHALL BE AS LISTED HEREIN AND SHALL BE USED ON THE SERVICES INDICATED.
   2. TYPE "L" HARD COPPER TUBING, FED. SPEC. NO. WW-T-799, WITH SOLDERED JOINTS AND WROUGHT COPPER SOCKET FITTINGS FOR ALL WATER PIPING.
   3. SOLDER JOINTS (FOR TYPE 'L' COPPER TUBING) SHALL BE MADE USING A 95-5 TIN-ANTIMONY SOLDER WITH A COMPATIBLE FLUX.

D. DISINFECTION
   1. ALL DOMESTIC WATER SERVICE AND SUPPLY PIPING INSTALLED UNDER THIS DIVISION SHALL BE DISINFECTED WITH CHLORINE BEFORE IT IS PLACED INTO OPERATION. THE CHLORINATING MATERIAL SHALL BE LIQUID CHLORINE CONFORMING TO FEDERAL SPECIFICATION BB-C-120 AND SHALL BE INTRODUCED TO THE SYSTEM BY EXPERIENCED OPERATORS ONLY. THE CHLORINE SOLUTION APPLIED TO THE PIPING SECTIONS OR SYSTEM SHALL CONTAIN AT LEAST FIFTY PARTS PER MILLION OF AVAILABLE CHLORINE AND SHALL REMAIN IN THE SECTIONS OR SYSTEM FOR A PERIOD OF NOT LESS THAN SIXTEEN (16) HOURS. DURING THE DISINFECTION PERIOD ALL VALVES SHALL BE OPENED AND CLOSED AT LEAST FOUR TIMES. AFTER THE DISINFECTION PERIOD THE CHLORINATED WATER SHALL BE FLUSHED FROM THE SYSTEM WITH CLEAR WATER UNTIL THE RESIDUAL CHLORINE CONTENT IS NOT GREATER THAN TWO-TENTHS - (0.2) - PARTS PER MILLION. THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT CERTIFICATION THAT THE SYSTEM WAS DISINFECTED.

INSULATION

A. ALL WATER PIPING SHALL BE INSULATED WITH FIBERGLASS JACKETED PIPE INSULATION. THICKNESS SHALL COMPLY TO THE ENERGY CODE.

SANITARY, WASTE, VENT AND STORM DRAINAGE SYSTEM

A. PROVIDE A COMPLETE SYSTEM OF SANITARY, WASTE, VENT AND STORM DRAINAGE PIPING AS SHOWN ON THE DRAWINGS.

B. PIPE FITTINGS AND JOINTS
   1. PIPE FITTINGS SHALL BE AS LISTED HEREIN AND SHALL BE USED FOR THE SERVICES INDICATED.
   2. SCHEDULE 40 PVC PIPE WITH SOLVENT GLUED DWV JOINTS FOR ALL SANITARY WASTE AND VENT PIPING.

C. INSTALLATION
   1. HORIZONTAL SOIL AND WASTE PIPING 2-1/2 INCHES IN SIZE AND SMALLER SHALL BE SLOPED AT A MINIMUM OF 1/4 INCH PER FOOT. HORIZONTAL SOIL AND WASTE PIPING 3 INCHES IN SIZE AND LARGER SHALL BE SLOPED AT A MINIMUM OF 1/8 INCH PER FOOT.
   2. HORIZONTAL VENT BRANCHES SHALL BE KEPT ABOVE THE HIGHEST FIXTURE SERVED BY THE VENT BRANCH IN ORDER TO PRECLUDE THE POSSIBILITY OF VENTS BEING USED AS WASTE PIPES. HORIZONTAL VENT BRANCHES SHALL BE SLOPED TO PREVENT THE ACCUMULATION OF WATER OR SCALE THEREIN.
   3. ON SOIL, WASTE AND VENT PIPING CHANGES IN PIPE SIZE SHALL BE MADE WITH REDUCING FITTINGS AND CHANGES IN PIPE DIRECTION SHALL BE MADE WITH FITTINGS. NO BUSHINGS WILL BE ALLOWED.
   4. DURING CONSTRUCTION ALL PIPE OPENINGS, NOT BEING WORKED ON, SHALL BE PLUGGED OR CAPPED TO PREVENT FOREIGN OBJECTS FROM ENTERING SYSTEM.

PLUMBING FIXTURES

1.	WATER CLOSET	P-1	
	FIXTURE	KOHLER	K-3658
	SEAT	BEMIS	B1655SSC000
	SUPPLIES	BRASSCRAFT	
2.	LAVATORY	P-3	
	FIXTURE	KOHLER	K-2032
	FAUCET	KOHLER	K-15592 W/ 0.5 GPM AERATOR
	DRAIN	KOHLER	ADA OFFSET
	P-TRAP	MCGUIRE	
	SUPPLIES	BRASSCRAFT	
	CARRIER	J R SMITH	
	P-TRAP INSULATION	TRUEBRO	W105, W102
3.	MOP BASIN	P-4	
	FIXTURE	FIAT TSB-100	
	FAUCET	FIAT 830AA	
	HOSE AND BRACKET	FIAT 832AA	
4.	ELECTRIC WATER COOLER	P-5	
	FIXTURE	ELKAY	EZ8LF
	P-TRAP	PROFLO	
	SUPPLY VALVES AND RISERS	BRASSCRAFT	
	CHAIR CARRIER	J.R. SMITH	
5.	SINK	P-6	
	FIXTURE	ELKAY	MLRAD 2922-(316 STAINLESS STEEL)
	FAUCET	ELKAY	LK1501CR
	DRAIN	ELKAY	LK99 - 316 STAINLESS STEEL
	P-TRAP	ACID WASTE	P-TRAP
	SUPPLIES	BRASSCRAFT	
6.	SHOWER	P-7	
	FIXTURE	CLARION	MP3940BF34CD
	GRAB BARS	CLARION	503218TS
	SEAT	CLARION	400-33.5-SDL
	MIXING VALVE	CLARION	CH-SSMV-1
	HAND HELD SHOWER	CLARION	ZHGB-24
	CURTAIN ROD	CLARION	
	CURTAIN	CLARION	
	DRAIN	CLARION	
7.	FLOOR DRAINS	FD' '	
	TYPE 'A'	J R SMITH 2233	
	TYPE 'B'	J R SMITH 2010	

8. WATER HEATER WH-1
   RHEEM E120-18-G
   120 GALLON STORAGE
   18KW.

9. EMERGENCY SHOWER P-8
   GUARDIAN SHOWER MODEL GFR3200
   WITH TMV MIXING VALVE

10. HWC-1
   TACO 008 WITH TIMER
   AND AQUASTAT

11. ACID NEUTRILIZATION TANK
   ENFIELD EZ005

12. HOSE BIBB
   J.R. SMITH 5670-H INSTALL WITH VACUUM BREAKER

13. NON FREEZE WALL/POST HYDRANT
   J.R. SMITH 5609QT INSTALL WITH VACUUM BREAKER

14. WATER HAMMER ARRESTORS
   WHA ' ' WATER HAMMER ARRESTORS
   J.R. SMITH 5000 SERIES

SOUTH CAROLINA
CHATHAM ENGINEERING COMPANY LLC
C04812
CERTIFICATE OF AUTHORIZATION

No. 30827
S. MICHELLE PEAVLER
1-28-16

NO.	REVISIONS	BY	DATE

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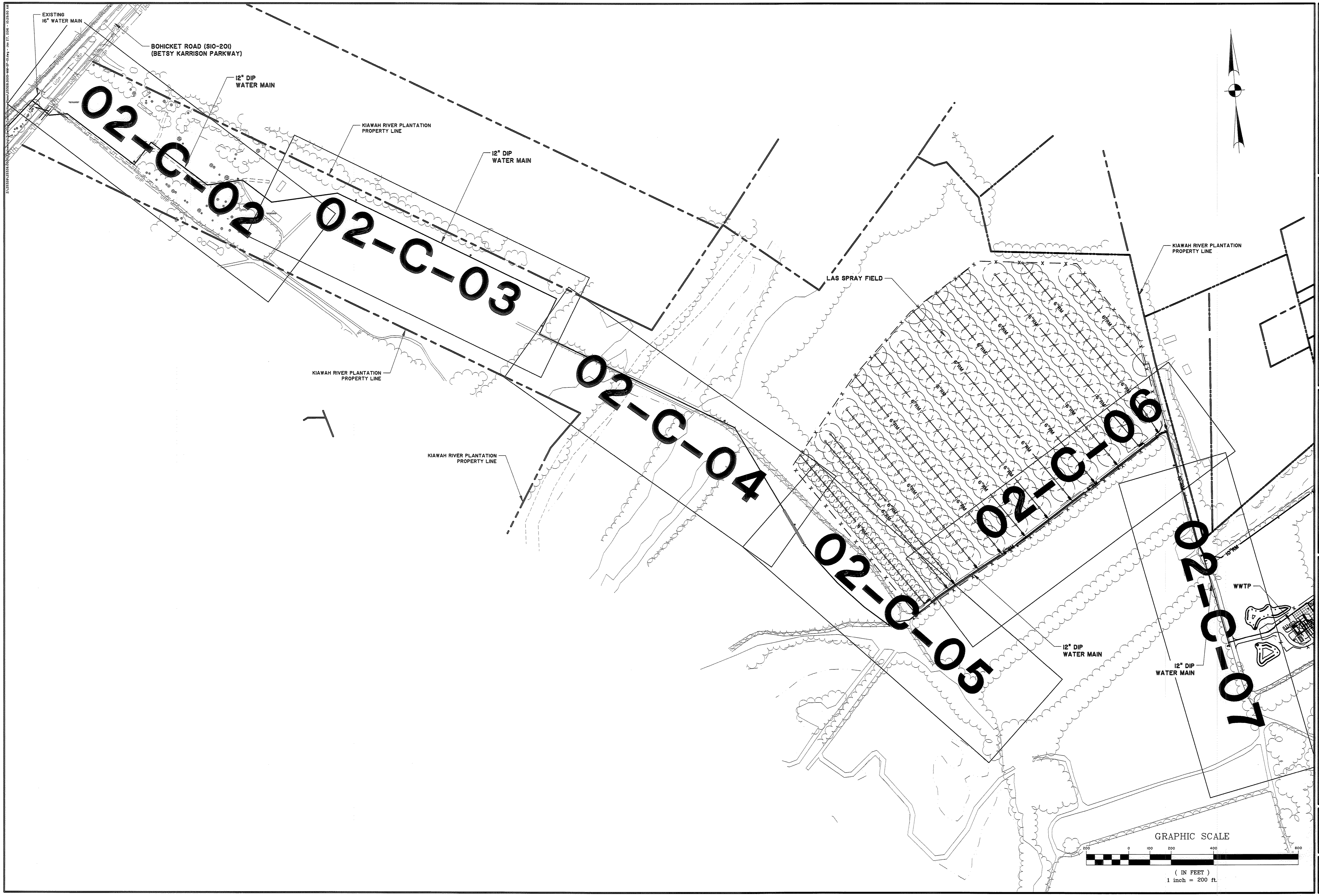
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
PLUMBING - LEGEND, SPECIFICATIONS, SCHEDULES AND ABBREVIATIONS

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	SNS
DESIGNED:	SNS
REVIEWED:	MP
APPROVED:	MP
SCALE:	1" = 10'

01-P-01

CADD PLOT
28-JAN-2016
18:04
JMITCHELL



THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE No. 13293

1-20-16

NO.	REVISIONS	BY	DATE

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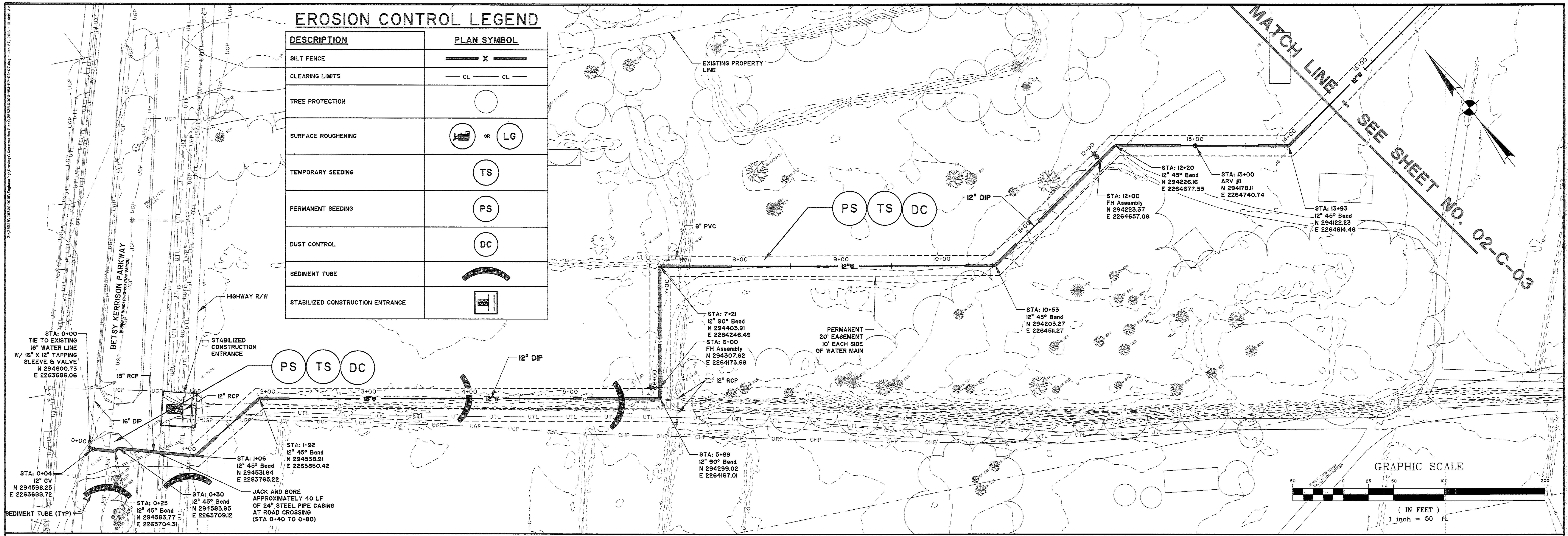
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WATER MAIN - SHEET INDEX

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	MFY
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	1" = 200'

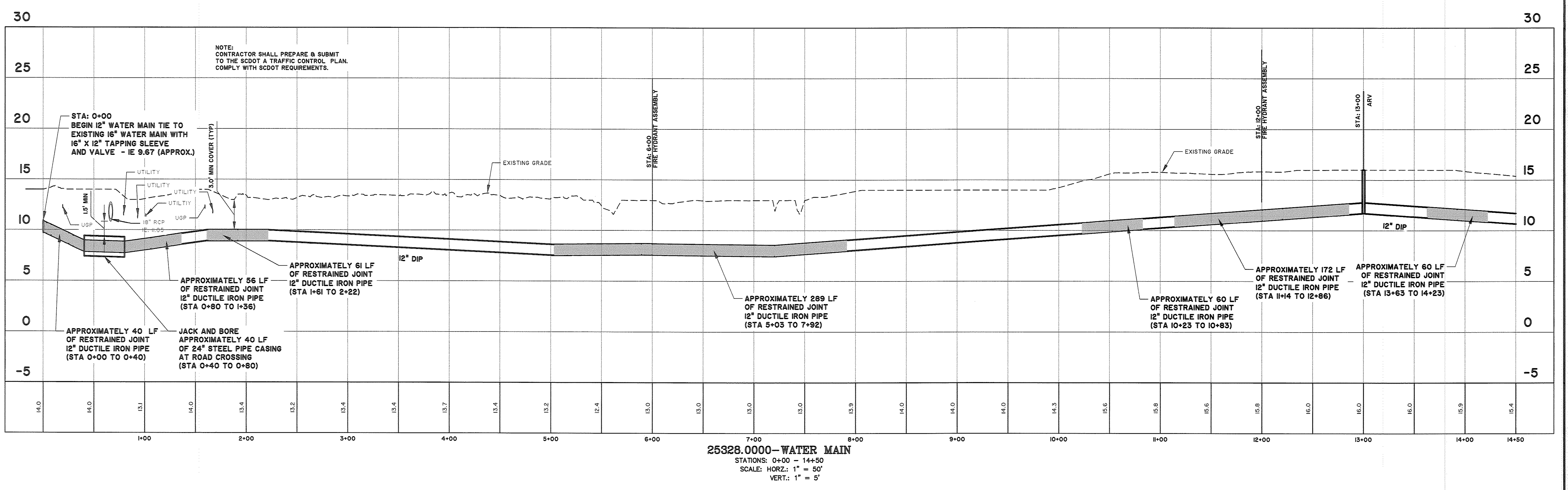
02-C-01



EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
SILT FENCE	——x——
CLEARING LIMITS	— CL — CL —
TREE PROTECTION	○
SURFACE ROUGHENING	▨ OR LG
TEMPORARY SEEDING	TS
PERMANENT SEEDING	PS
DUST CONTROL	DC
SEDIMENT TUBE	◠
STABILIZED CONSTRUCTION ENTRANCE	▨

NOTE:
CONTRACTOR SHALL PREPARE & SUBMIT TO THE SCDOT A TRAFFIC CONTROL PLAN. COMPLY WITH SCDOT REQUIREMENTS.



25328.0000—WATER MAIN
STATIONS: 0+00 – 14+50
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE No. 13293
1-29-2016

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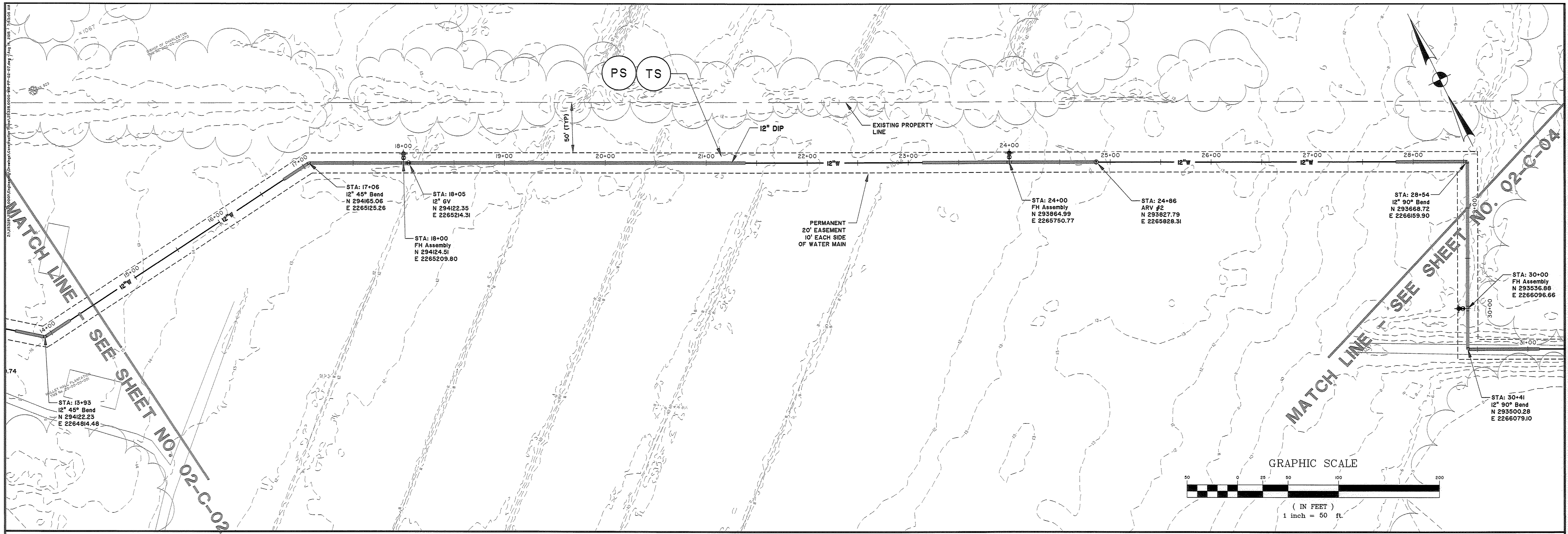
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

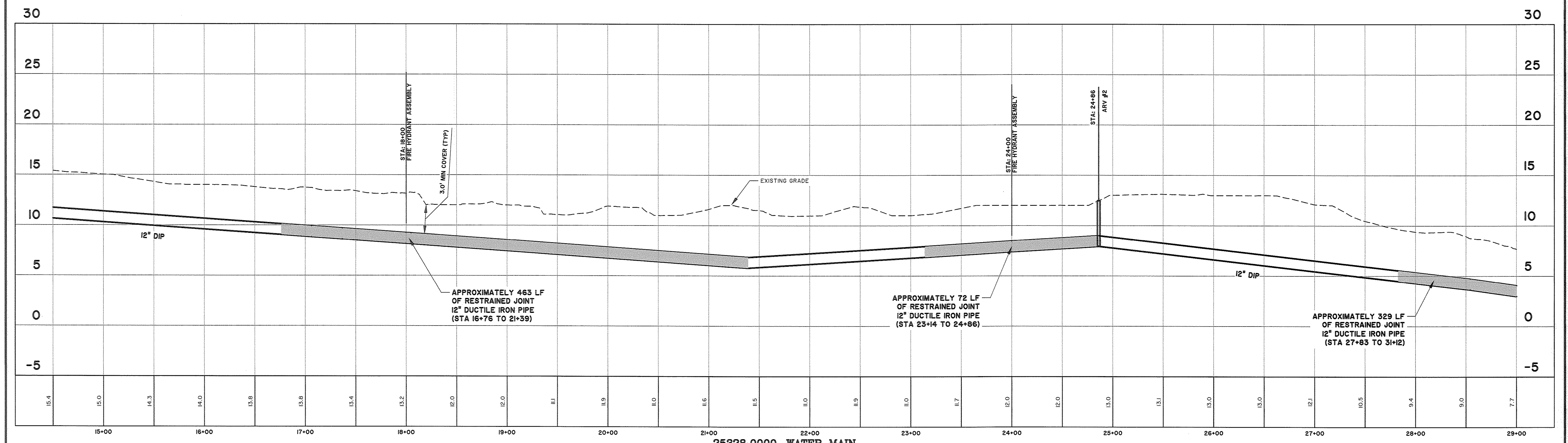
KIAWAH RIVER PLANTATION WWTP

WATER MAIN - PLAN AND PROFILE

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	DNF
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

02-C-02





25328.0000-WATER MAIN
STATIONS: 14+50 - 29+00
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'

SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING CO.
No. C00285

SOUTH CAROLINA
No. 13293
MARK F. YODICE
9-10-15

NO.	REVISIONS	BY	DATE

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WATER MAIN - PLAN AND PROFILE

JOB NO:	J-25328.0000
DATE:	7/31/15
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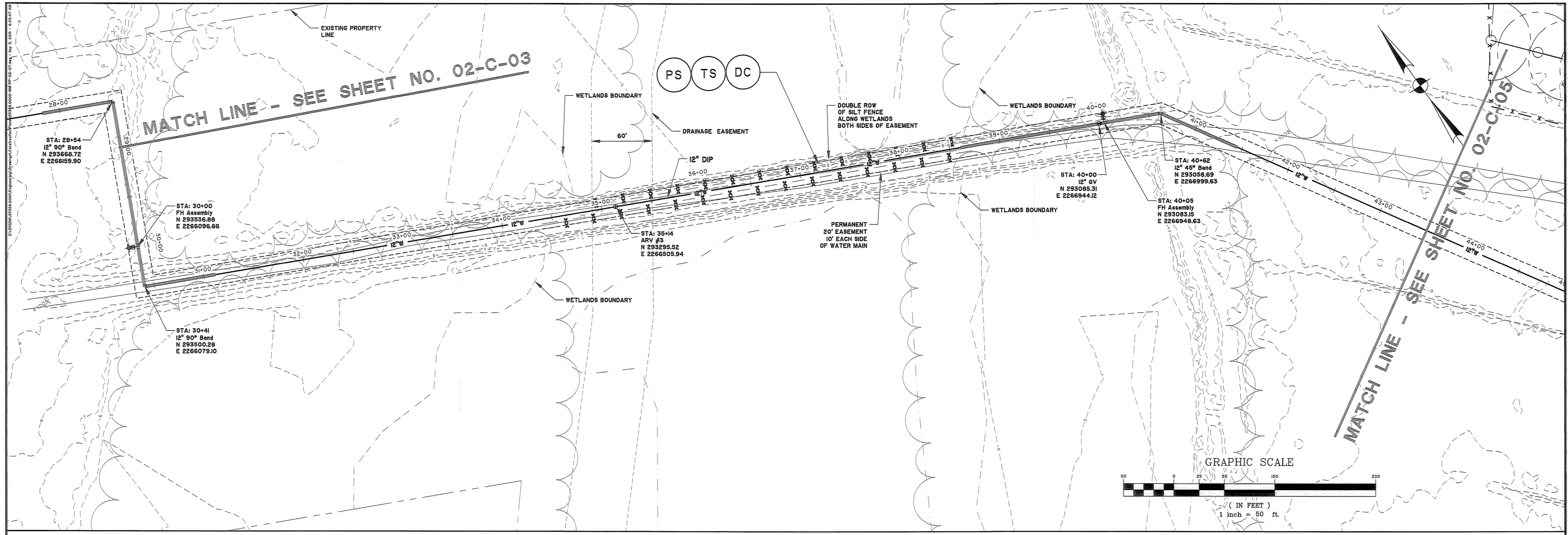
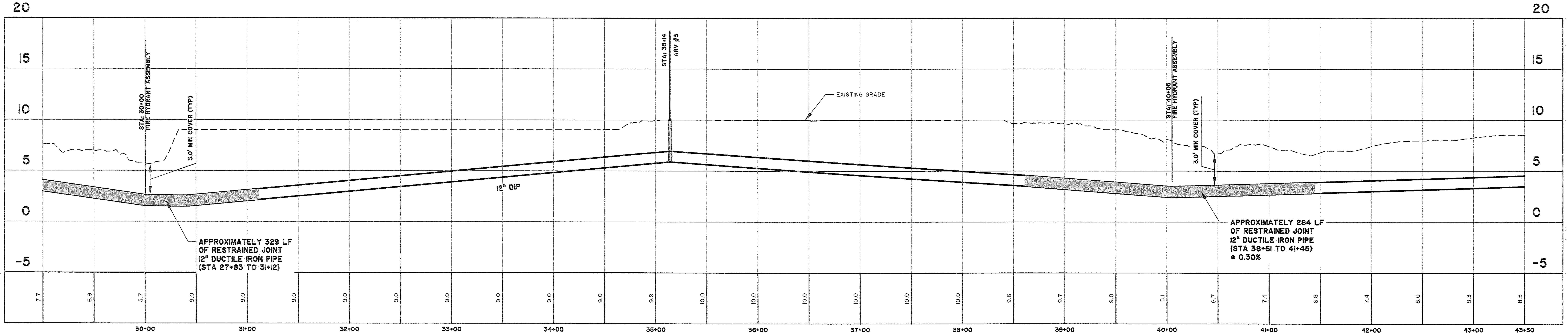
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

02-C-03





25328.0000–WATER MAIN
STATIONS: 29+00 – 43+50
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'

SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING CO.
No. C00285
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 13293
MARK F. YODICE
9-10-15

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION WWTP

WATER MAIN - PLAN AND PROFILE

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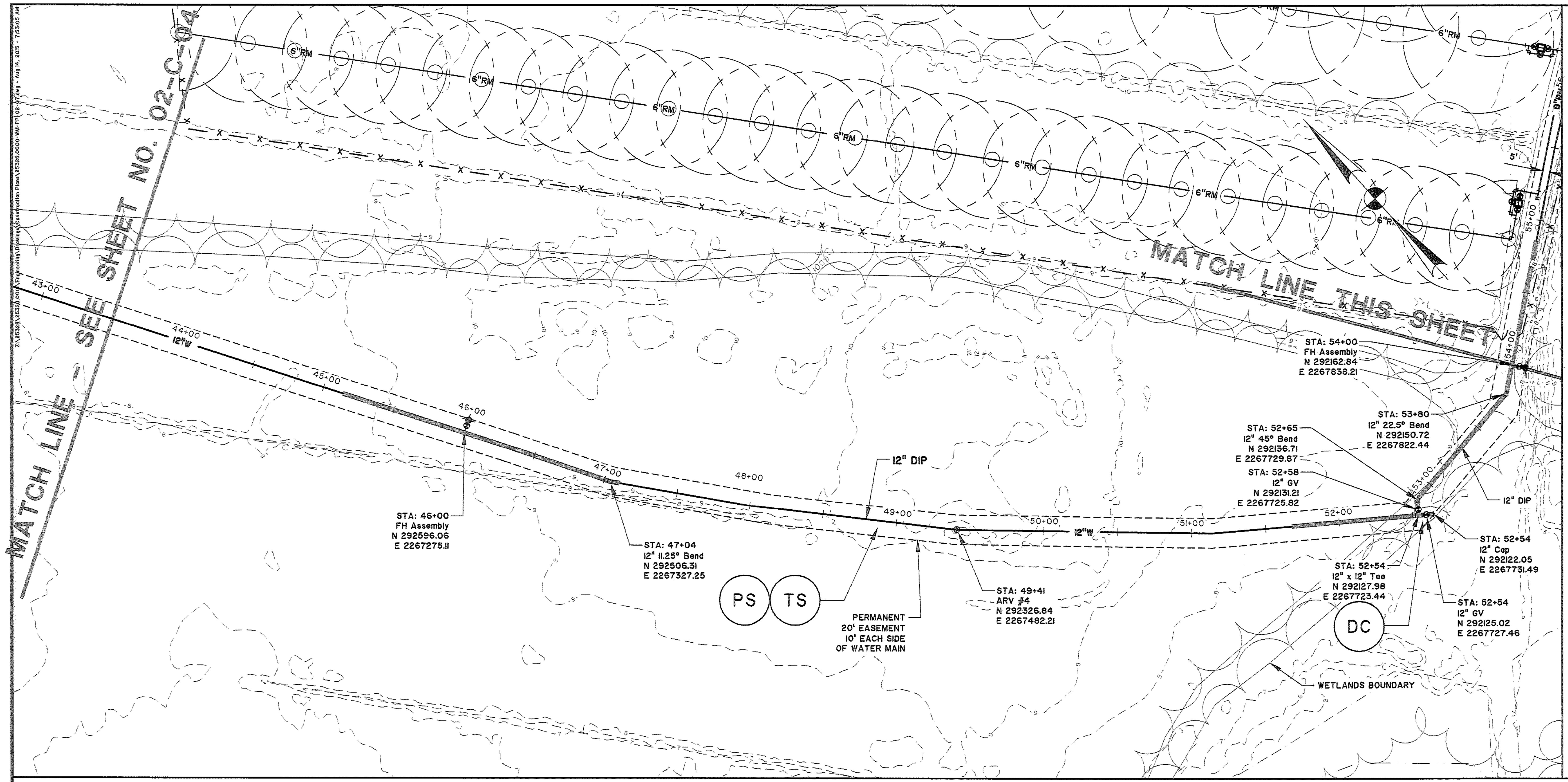
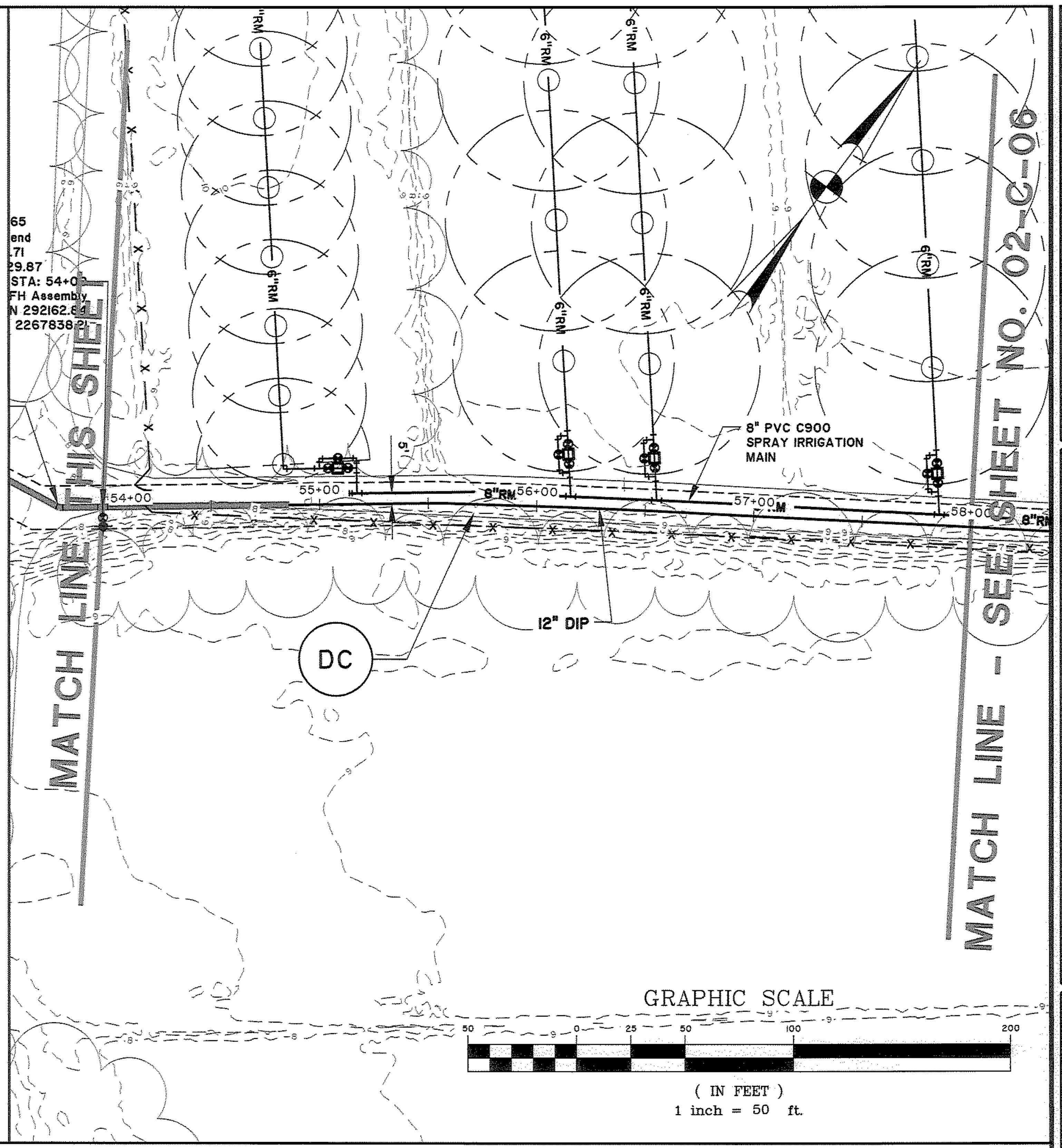
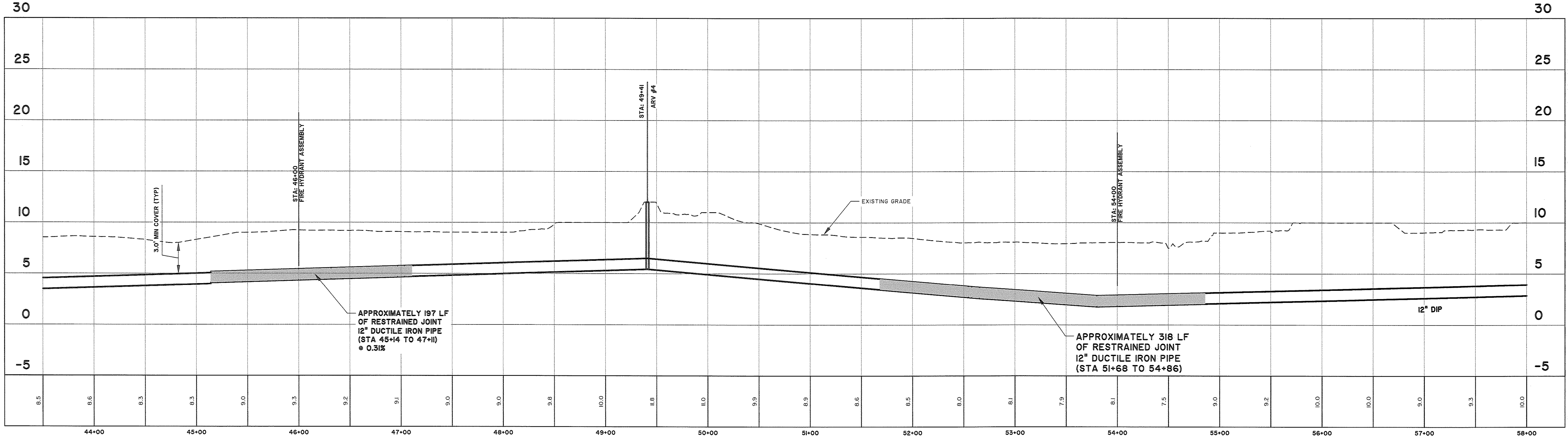
APPROVED:	MFY
SCALE:	AS NOTED

02-C-04







25328.0000–WATER MAIN

STATIONS: 43+50 – 58+00
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'

SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING CO.
No. C00285
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 13283
MARK F. YODICE
9-10-15

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION WWTP

WATER MAIN - PLAN AND PROFILE

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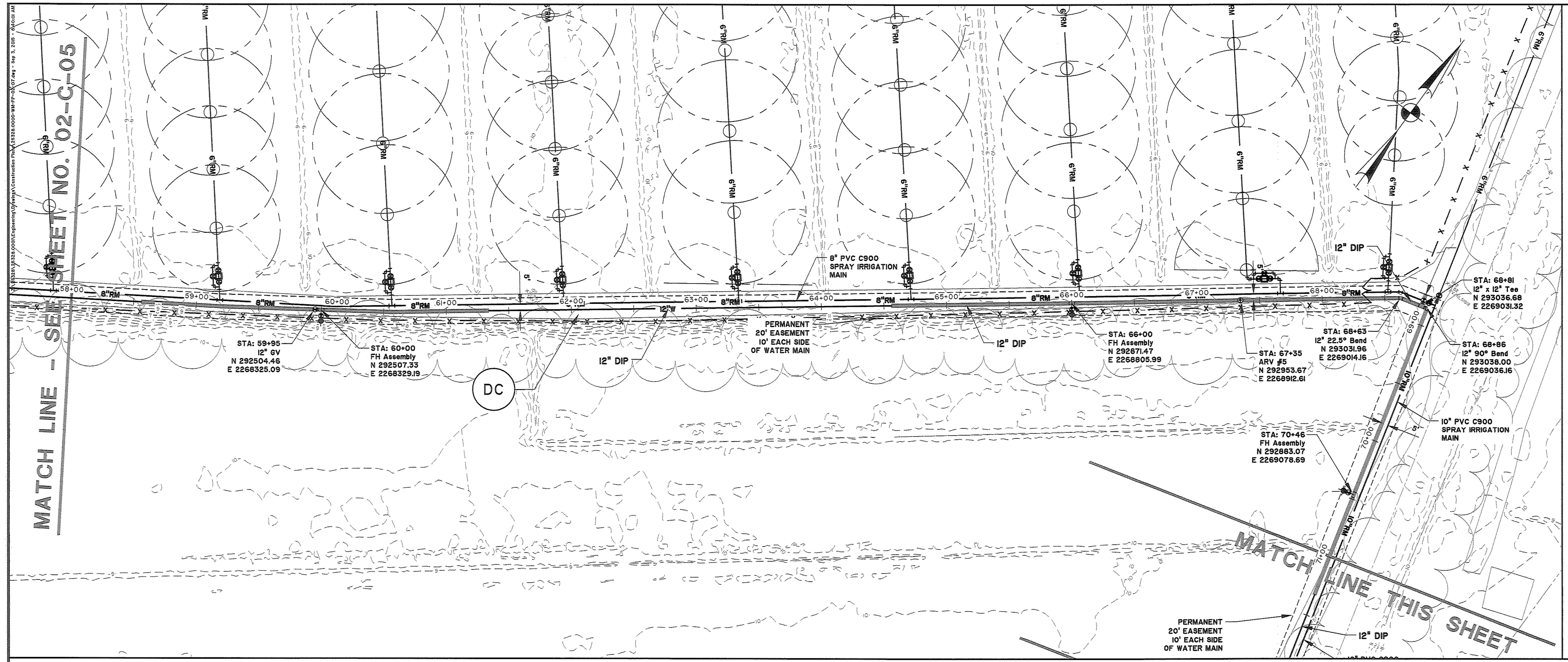
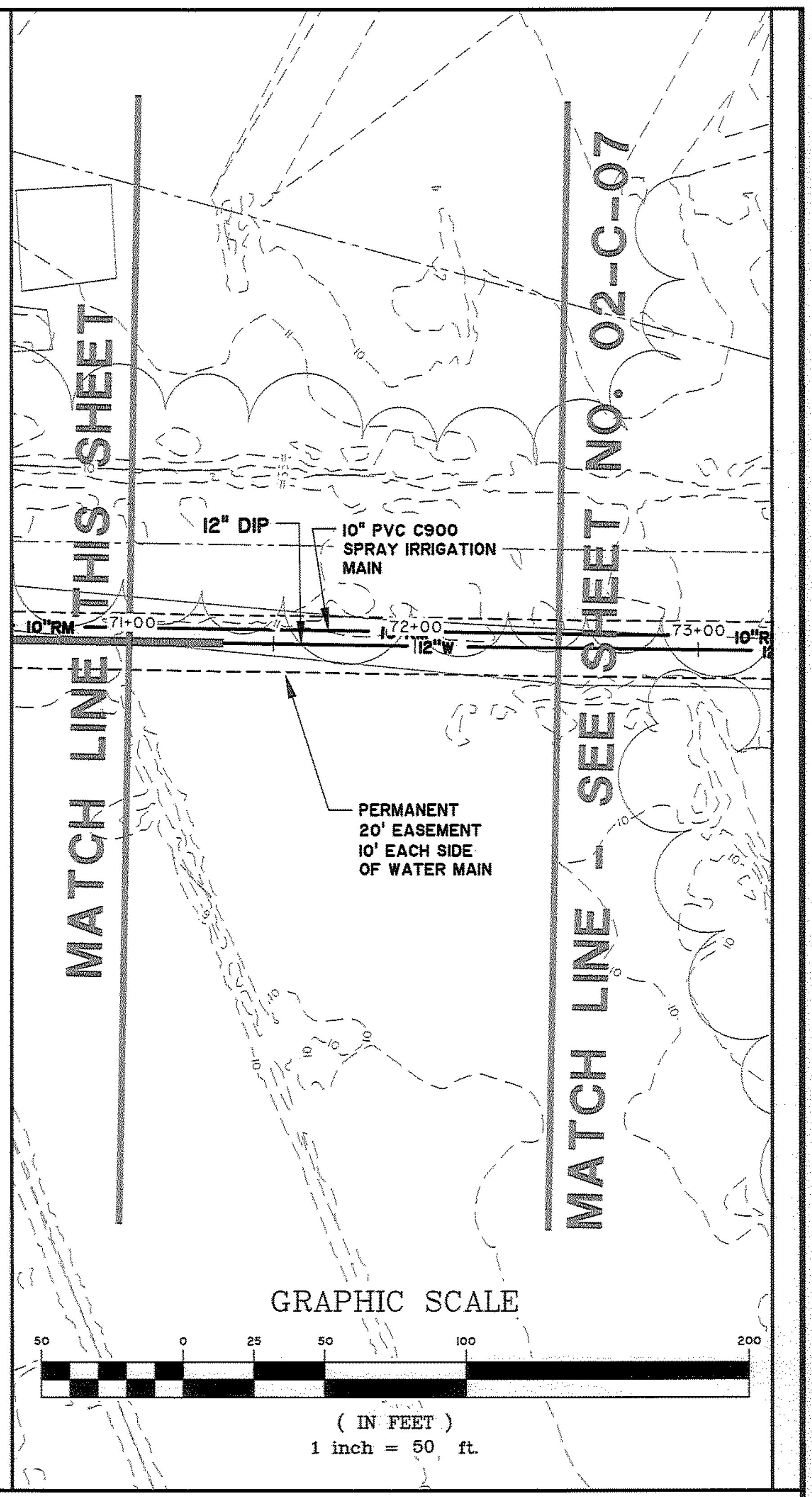
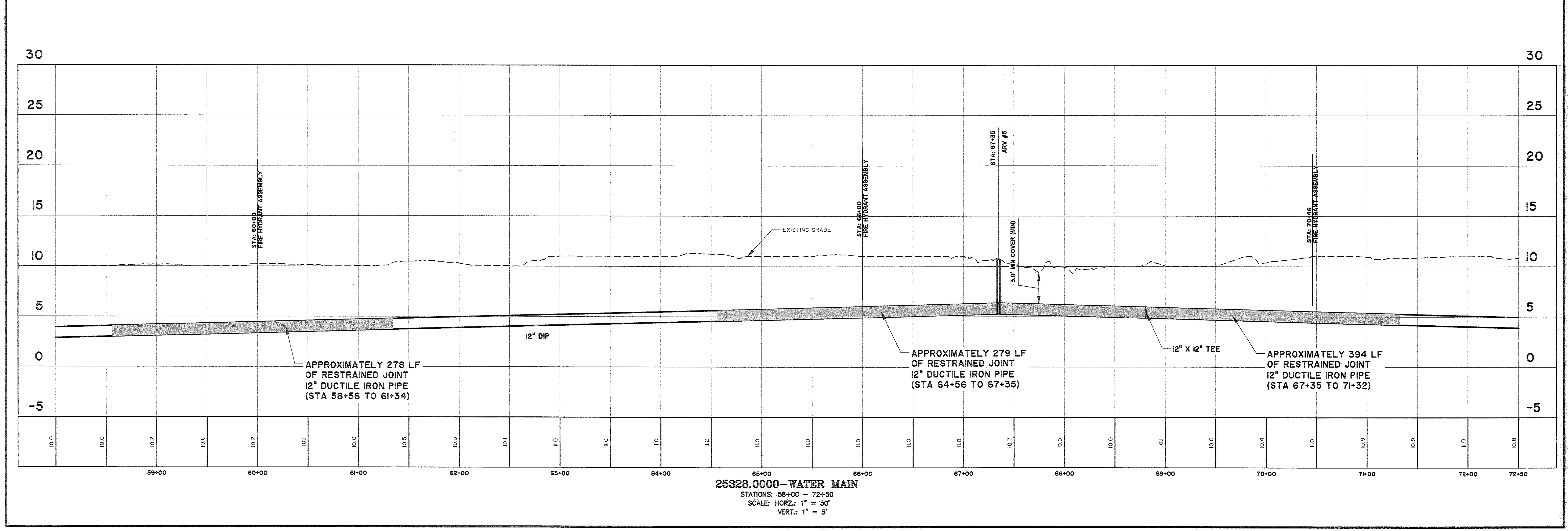
APPROVED:	MFY
SCALE:	AS NOTED

02-C-05







25328.0000–WATER MAIN
STATIONS: 58+00 – 72+50
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'

THOMAS & HUTTON CO. No. C00285

MARK F. YODICE

NO.	REVISIONS	BY	DATE

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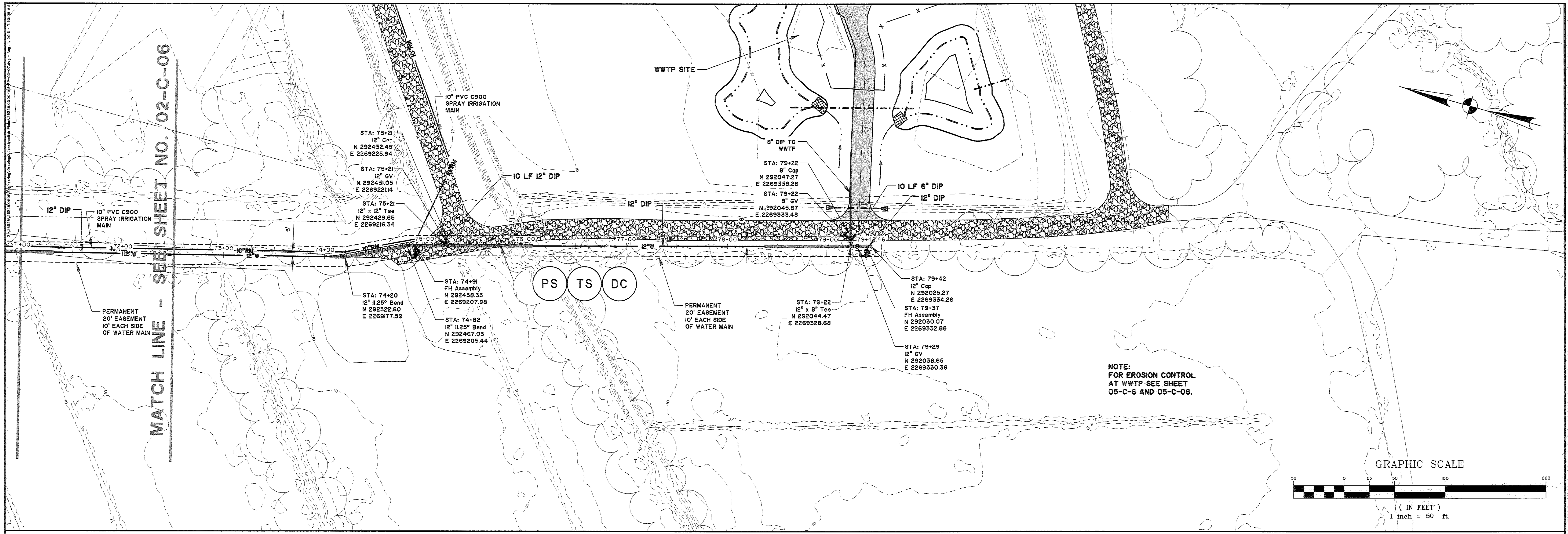
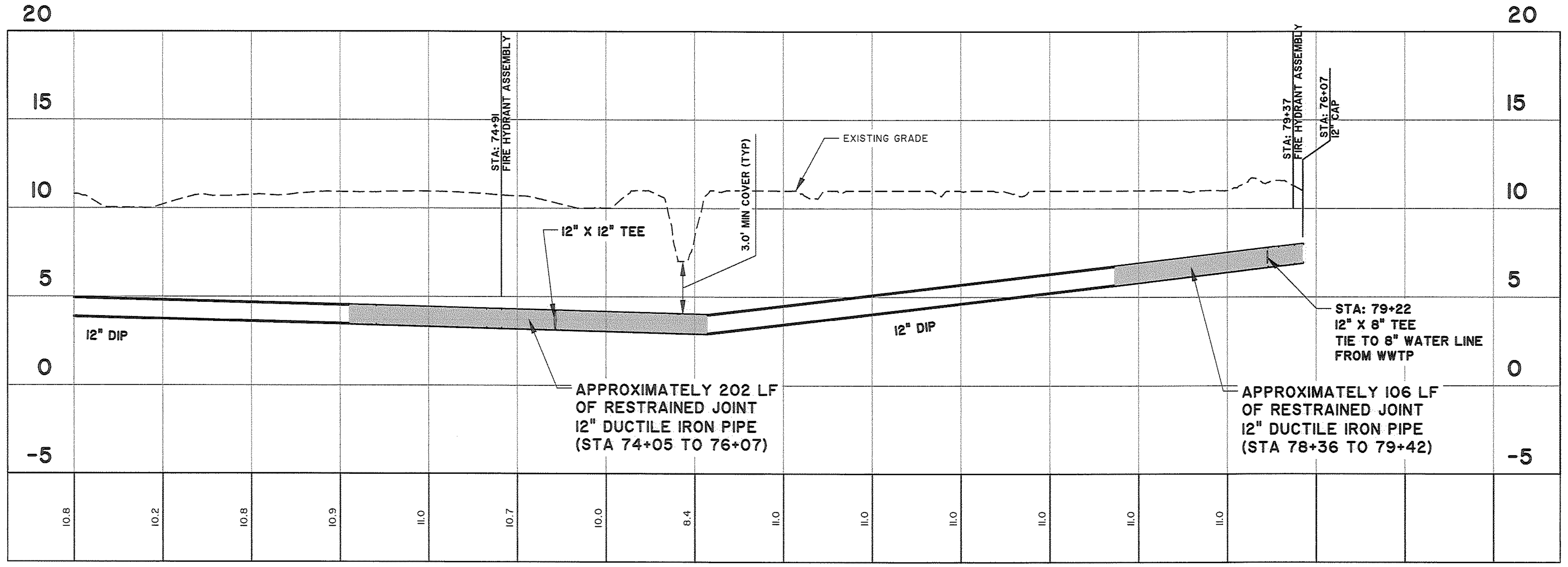
APPROVED:	MFY
SCALE:	AS NOTED

02-C-06



NOTE:
FOR EROSION CONTROL
AT WWTP SEE SHEET
05-C-6 AND 05-C-06.



25328.0000-WATER MAIN
STATIONS: 72+50 - 80+50
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'

THOMAS & HUTTON ENGINEERING CO. No. C00285
MARK F. YODICE No. 13293
9-10

NO.	REVISIONS	BY	DATE

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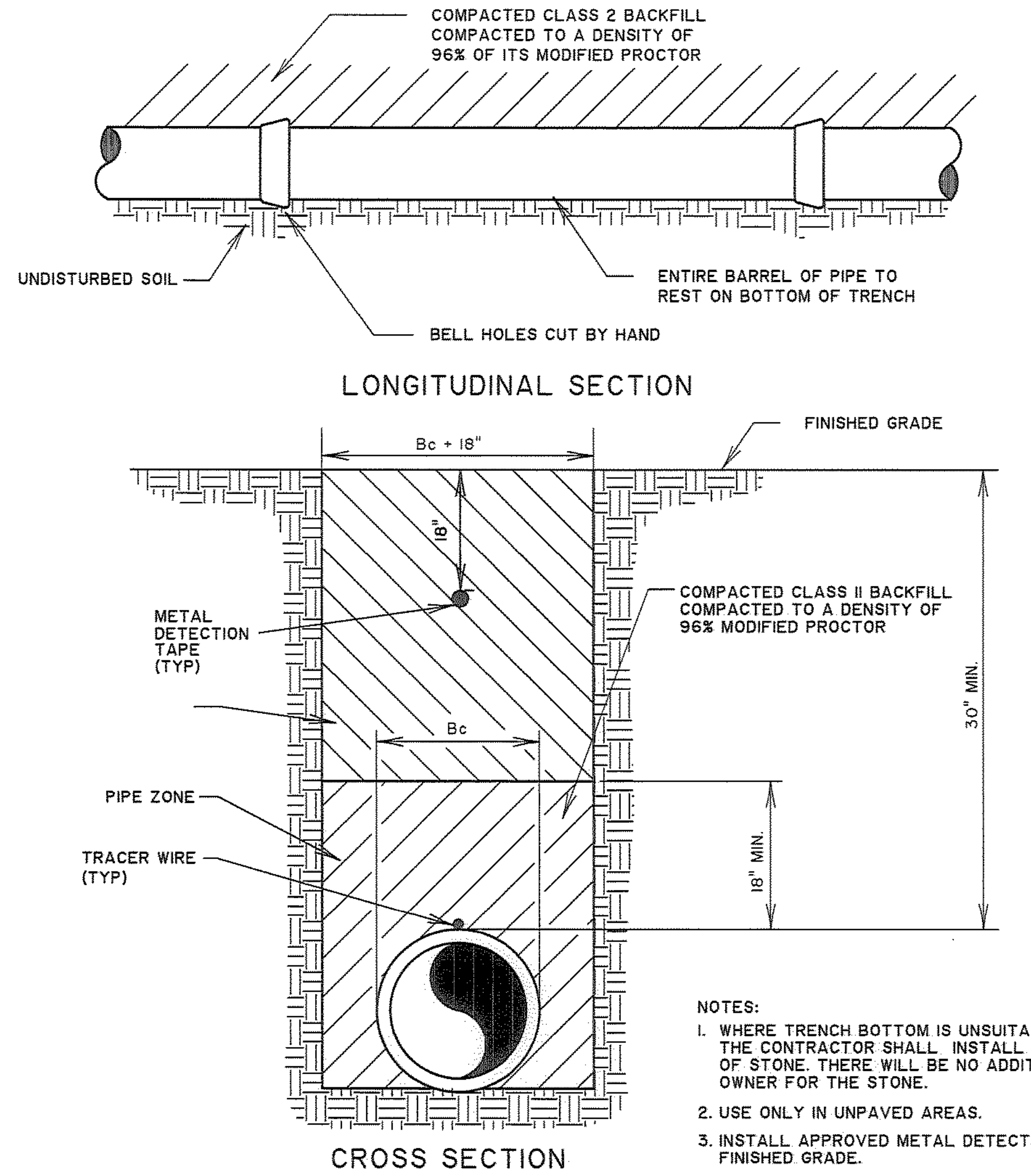
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
WATER MAIN - PLAN AND PROFILE

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	DNF
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

02-C-07


COMPACTED CLASS 2 BACKFILL COMPACTED TO A DENSITY OF 96% OF ITS MODIFIED PROCTOR
UNDISTURBED SOIL
ENTIRE BARREL OF PIPE TO REST ON BOTTOM OF TRENCH
BELL HOLES CUT BY HAND
LONGITUDINAL SECTION
FINISHED GRADE
Bc + 18"
18"
METAL DETECTION TAPE (TYP)
COMPACTED CLASS II BACKFILL COMPACTED TO A DENSITY OF 96% MODIFIED PROCTOR
Bc
30" MIN.
18" MIN.
PIPE ZONE
TRACER WIRE (TYP)
CROSS SECTION

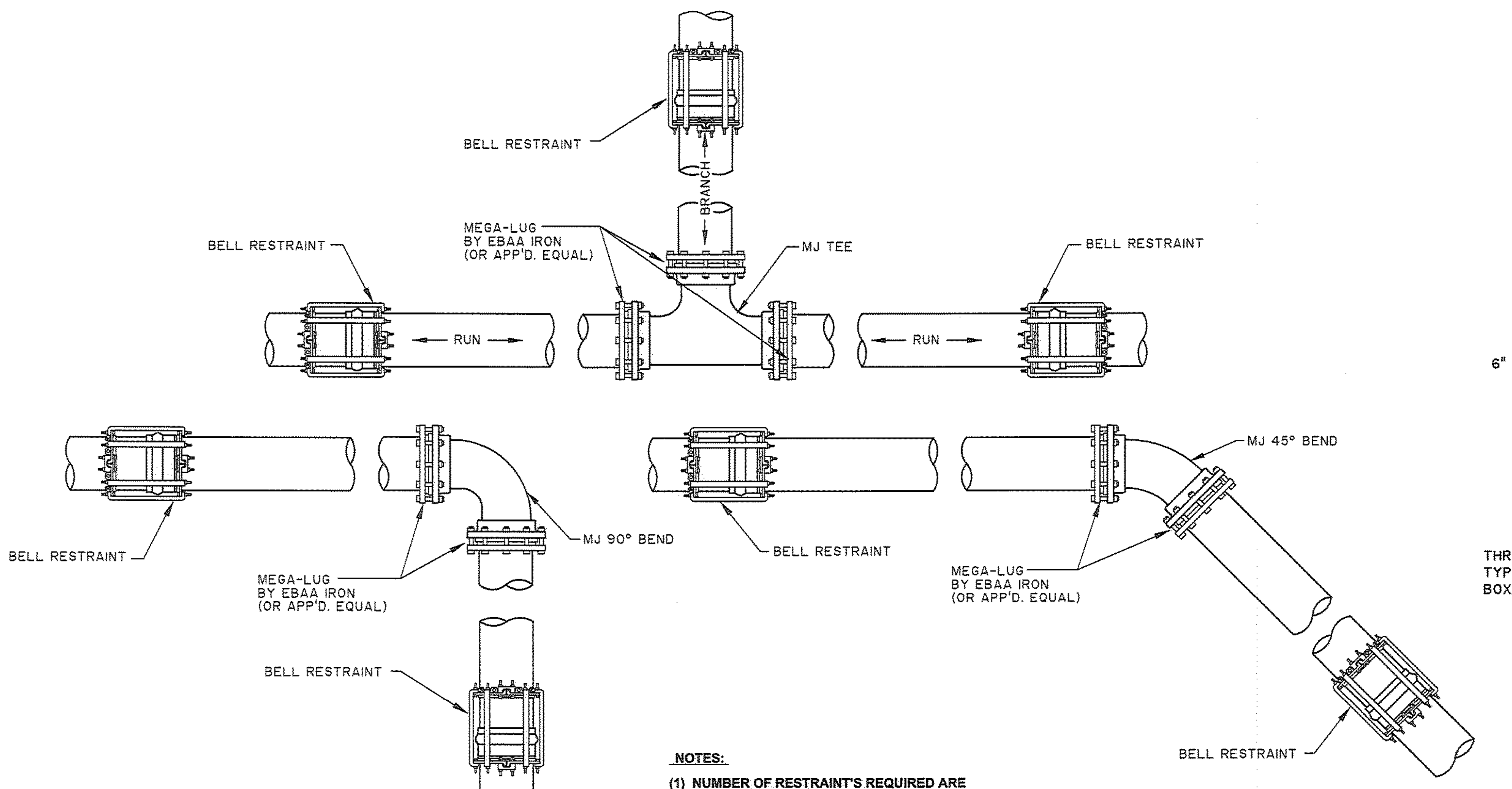
MAXIMUM TRENCH WIDTHS	
Bc - PIPE SIZE	WIDTH
2"	20"
2 1/2"	22"
3"	24"
4"	28"
6"	30"
8"	30"
10"	32"
12"	34"
14"	34"
16"	36"

NOTES:

1. WHERE TRENCH BOTTOM IS UNSUITABLE TO SUPPORT PIPE, THE CONTRACTOR SHALL INSTALL PIPE ON A MIN. 4" BED OF STONE. THERE WILL BE NO ADDITIONAL COST TO THE OWNER FOR THE STONE.
2. USE ONLY IN UNPAVED AREAS.
3. INSTALL APPROVED METAL DETECTION TAPE 18" FROM FINISHED GRADE.
4. FOR INFORMATION ON BACKFILL MATERIAL SEE DESCRIPTION OF BACKFILL MATERIAL CLASSIFICATION THIS SHEET.
5. DURING BACKFILL OF PIPE TRENCHES, CONTRACTOR SHALL ADHERE TO ALL SCDOT REQUIREMENTS FOR LIFT THICKNESS AND COMPACTION STANDARDS PER THE SCDOT 2007 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

1 TYPICAL WATER LINE BEDDING DETAIL

02-C-08 NOT TO SCALE

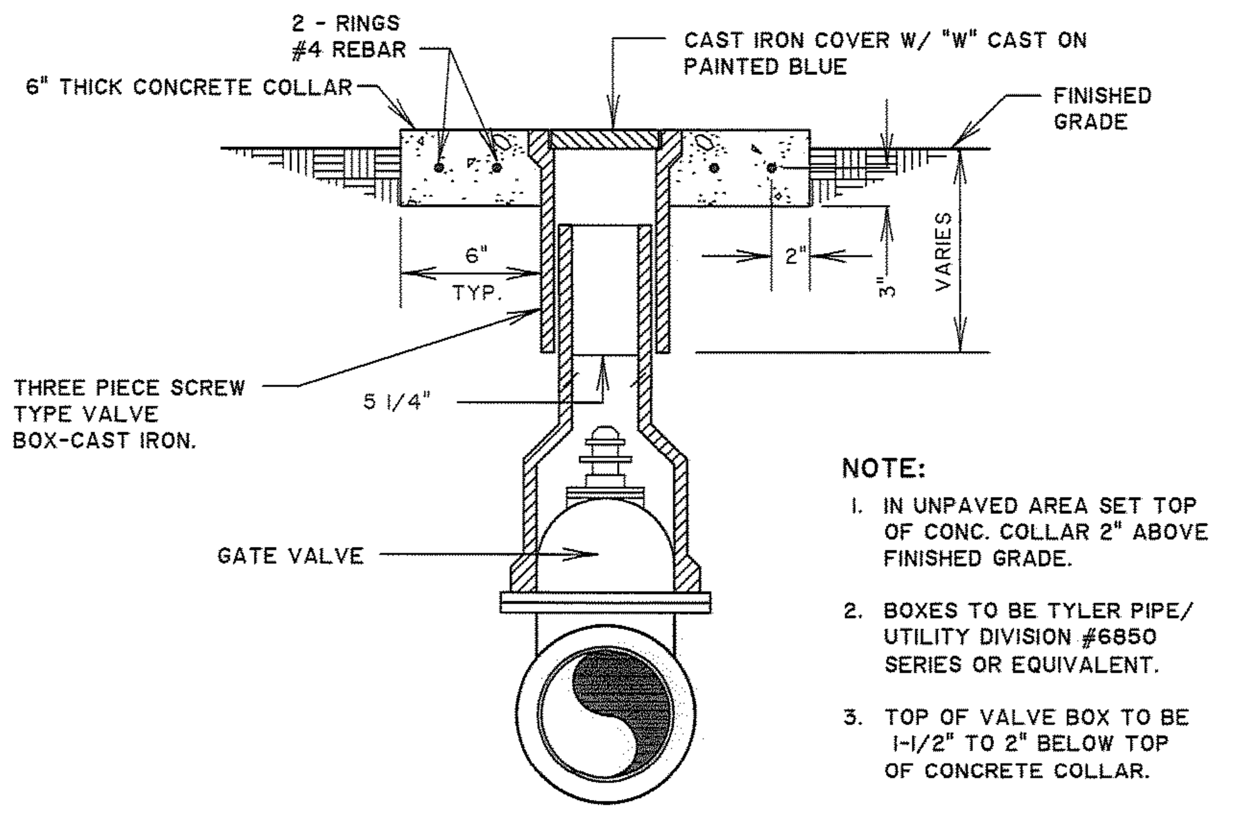


NOTES:

(1) NUMBER OF RESTRAINT'S REQUIRED ARE TO BE DETERMINED BY ENGINEER.
(2) MATERIAL APPROVAL THRU THE SUBMITTAL PROCESS ARE REQUIRED PRIOR TO ANY INSTALLATIONS.

2 TYPICAL FITTING AND JOINT RESTRAINT

02-C-08 NOT TO SCALE



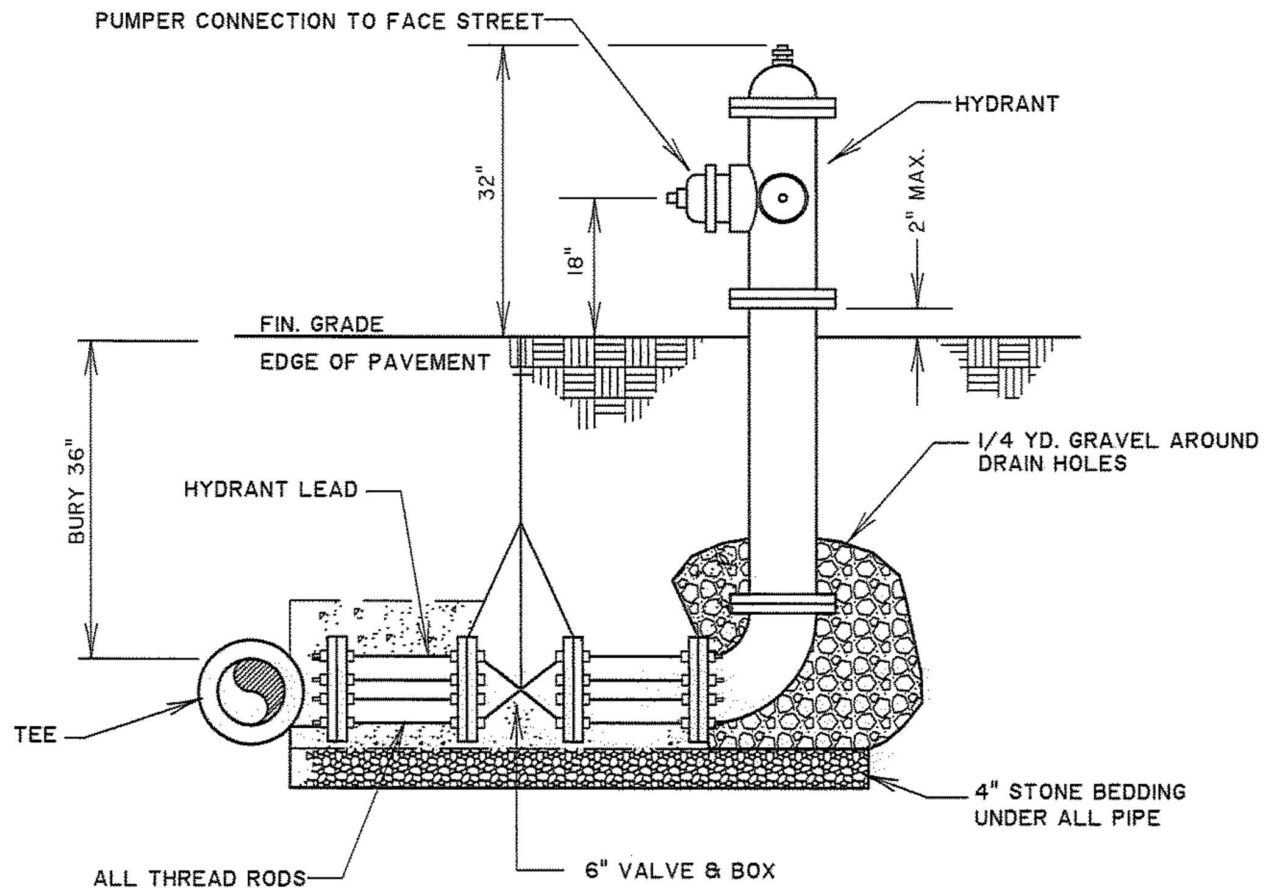
NOTE:

1. IN UNPAVED AREA SET TOP OF CONC. COLLAR 2" ABOVE FINISHED GRADE.
2. BOXES TO BE TYLER PIPE/ UTILITY DIVISION #6850 SERIES OR EQUIVALENT.
3. TOP OF VALVE BOX TO BE 1-1/2" TO 2" BELOW TOP OF CONCRETE COLLAR.

NOTE: VALVE BOXES SHALL BE SET TO MATCH FINISHED GRADES.

3 VALVE BOX DETAIL

02-C-08 NOT TO SCALE



NOTES:

1. FIRE HYDRANT TO BE PLACED A MIN. OF 5' AND A MAXIMUM OF 10' FROM EDGE OF PAVING.
2. PUMPER CONNECTION TO FACE STREET AND HOSE CONNECTIONS SHALL BE FREE OF OBSTRUCTIONS.
3. TOP OF VALVE BOXES TO BE 1" ABOVE FINISHED GRADE IN UNPAVED AREAS AND FLUSH IN PAVED AREAS. (BOXES TO BE TYLER PIPE/UTILITY DIVISION #6850 SERIES OR EQUIVALENT.)
4. HYDRANT DRAIN HOLES TO BE FREE FROM OBSTRUCTIONS.
5. RETAINER GLANDS SHALL BE USED ON ALL MECHANICAL JOINTS.
6. DIMENSIONS SHALL BE STRICTLY FOLLOWED.
7. RESTRAINED JOINTS SHALL BE USED.
8. BREAK AWAY ON HYDRANT SHALL BE PLACED 1" ABOVE FINISHED GRADE.
9. HYDRANT TO BE PAINTED A COLOR SELECTED BY THE OWNER.
10. WRAP HYDRANT WITH PLASTIC UNTIL AFTER HYDROSEEDING IS COMPLETE AND THE LINE PLACED INTO OPERATION.
11. IF HYDRANT IS NOT DIRECTLY ADJACENT TO ELBOW, PROVIDE THREAD RODS BETWEEN ELBOW AND GATE VALVE.
12. MJ GLANDS "MEGA-LUG" RESTRAINTS ARE ACCEPTABLE FOR CONSTRUCTION USE.
13. HYDRANT DRAIN SHALL NOT BE CONNECTED TO OR LOCATED WITHIN 10 FEET OF A SANITARY SEWER SYSTEM.

4 FIRE HYDRANT DETAIL

02-C-08 NOT TO SCALE

NOTES:

1. THE FOLLOWING CONDITIONS WERE USED TO CALCULATE THE RESTRAINED LENGTHS:
   LAYING CONDITION IS TYPE 3;
   SOIL DESIGNATED AS SAND (SW);
   DEPTH IS 3 FT.;
   DESIGN PRESSURE (TEST) IS 150 PSI;
   SAFETY FACTOR IS 2.0.

2. FOR THE TEE (EACH LEG) AND REDUCER, LENGTHS ARE BASED ON BRANCHING AND REDUCING FROM THE NEXT LARGER SIZE IN THE TABLE. DEVIATIONS FROM THESE CONDITIONS MUST BE BASED ON THE ABOVE PARAMETERS.

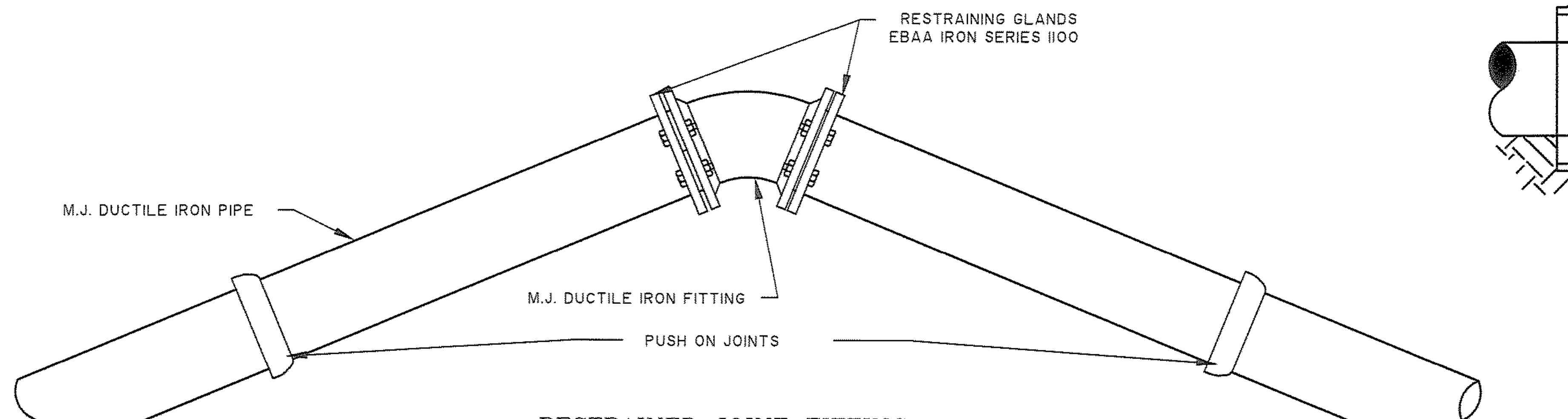
3. FOR DUCTILE IRON PIPE PUSH ON JOINTS, GRIP RING TYPE PIPE MAY BE USED. FOR PVC PUSH ON JOINT HARNESS RESTRAINT (EBAA SERIES 1500 OR APPROVED EQUAL) SHALL

BELOW. THE SUPPLY AND INSTALLATION OF THE HARNESS RESTRAINTS SHALL BE CONSIDERED INCIDENTAL TO THE PIPE INSTALLATION AND NO SEPARATE PAYMENT WILL BE MADE FOR THE HARNESS RESTRAINTS.

RESTRAINED JOINT TABLE

LENGTH OF RESTRAINED JOINT REQUIRED (IN L.F. EACH SIDE OF THE BEND OR FITTING)

SIZE	11 1/4°	22 1/2°	45°	90°	TEE (EACH LEG)	DEAD END	REDUCER	VALVE
8"	6	11	22	51	55	98	50	50
10"	6	13	26	61	78	118	50	118
12"	7	15	30	71	86	139	50	139
16"	10	20	32	76	110	143	106	143


RESTRAINING GLANDS EBAA IRON SERIES 1100
M.J. DUCTILE IRON PIPE
M.J. DUCTILE IRON FITTING
PUSH ON JOINTS

RESTRAINED JOINT FITTING
(HORIZONTAL PIPE ONLY)
NOT TO SCALE

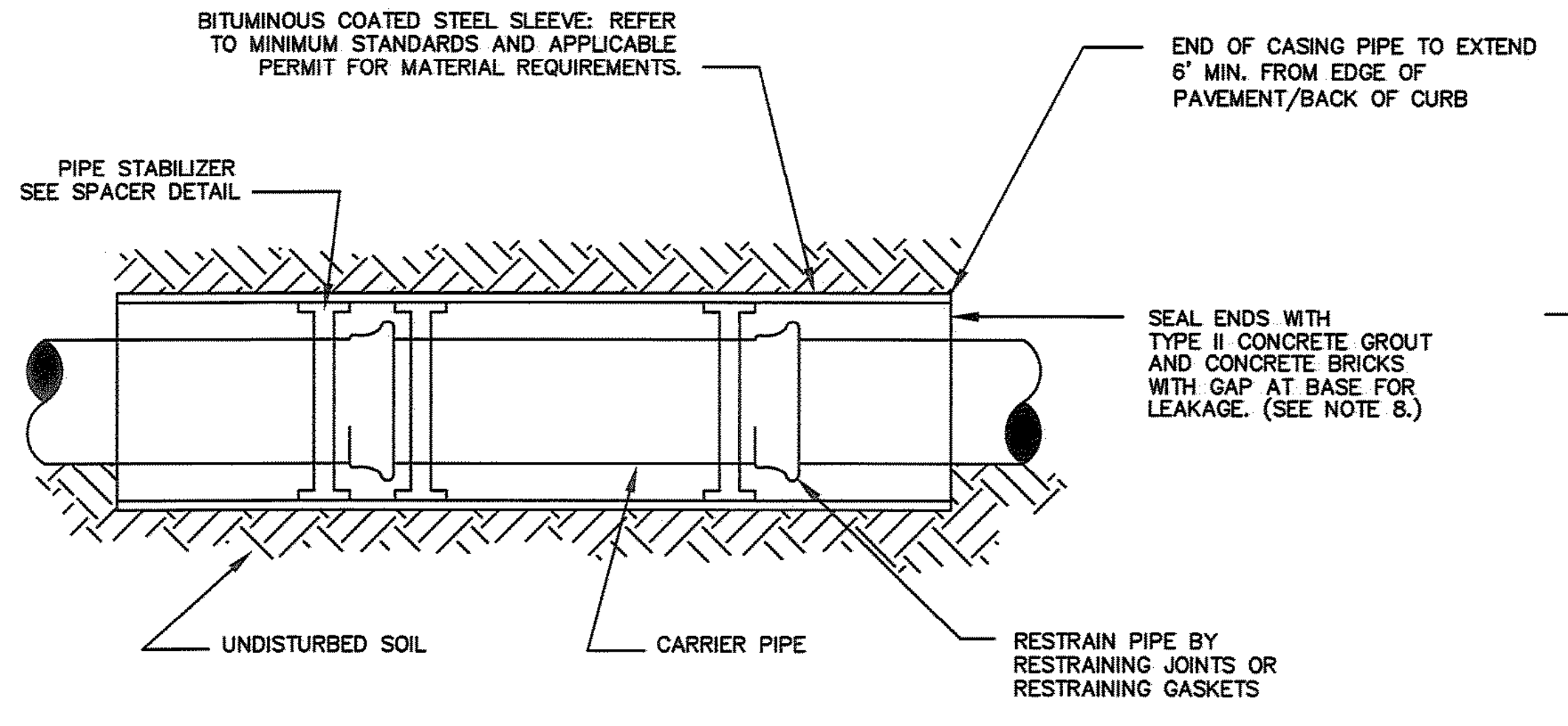
5 RESTRAINED JOINT FITTING DETAIL

02-C-08 NOT TO SCALE

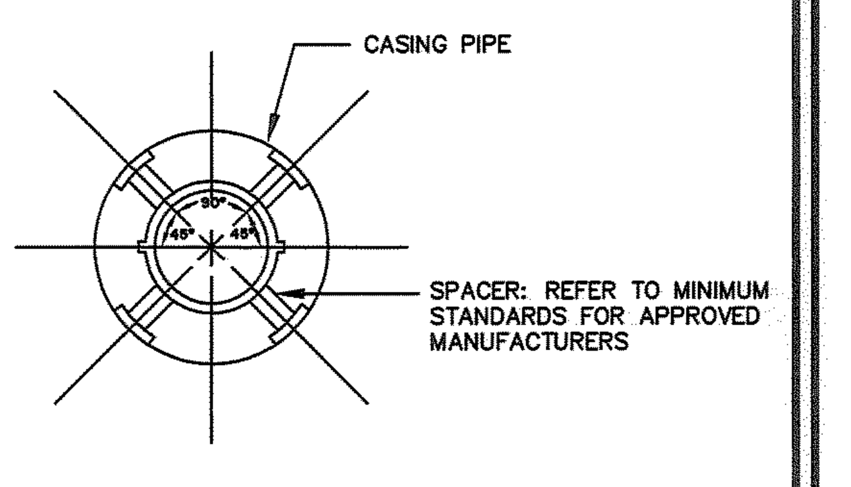
NOTES:

1. REFER TO APPLICABLE PERMIT FOR MINIMUM REQUIREMENTS GOVERNING HIGHWAY OR RAILROAD UNDERCROSSINGS.
2. THE DIAMETER AND THICKNESS OF THE CASING PIPE SHALL BE AS LISTED IN THE TABLE SHOWN IN THIS DETAIL.
3. SEE MINIMUM STANDARDS AND AGENCY PERMIT FOR LENGTH AND DEPTH REQUIREMENTS.
4. USE CASING SPACERS (SEE DETAIL) TO MOVE CARRIER PIPE INTO CASING PIPE. SPACING OF SPACERS WILL BE DICTATED BY THE LENGTH OF CASING PIPE AND NUMBER OF JOINTS OF CARRIER PIPE.
5. USE A MINIMUM OF 2 SPACERS PER JOINT OF PIPE.
6. THERE SHALL BE NO WELDING OF CASING UNDER PAVEMENT.
7. IN CASE OF A CONFLICT BETWEEN THIS DETAIL, THE GOVERNING UTILITIES MINIMUM STANDARDS, AND A PERMIT, THE STRICTEST REQUIREMENT SHALL GOVERN.
8. SEAL CASING ENDS WITH TYPE II CONCRETE GROUT AND CONCRETE BRICKS, SO AS TO PREVENT THE ENTRANCE OF SOIL. LEAVE A GAP TO ALLOW LEAKAGE TO PASS IN CASE OF A MAIN BREAK.
9. FOR FURTHER REQUIREMENTS AND CLARIFICATIONS, SEE THE MINIMUM STANDARDS AND TECHNICAL SPECIFICATIONS.

RESTRAINED JOINT DIP CARRIER PIPE SIZE (INCHES)	MINIMUM CASING SIZE (INCHES)	MINIMUM CASING THICKNESS (INCHES)
4	14	0.250
6	16	0.281
8	18	0.312
10	20	0.375
12	24	0.375
14	26	0.438
16	30	0.469
18	32	0.500
20	36	0.532
24	42	0.625
30	48	0.688
36	54	0.781


BITUMINOUS COATED STEEL SLEEVE: REFER TO MINIMUM STANDARDS AND APPLICABLE PERMIT FOR MATERIAL REQUIREMENTS.
END OF CASING PIPE TO EXTEND 6' MIN. FROM EDGE OF PAVEMENT/BACK OF CURB
PIPE STABILIZER SEE SPACER DETAIL
SEAL ENDS WITH TYPE II CONCRETE GROUT AND CONCRETE BRICKS WITH GAP AT BASE FOR LEAKAGE. (SEE NOTE 8.)
UNDISTURBED SOIL
CARRIER PIPE
RESTRAIN PIPE BY RESTRAINING JOINTS OR RESTRAINING GASKETS

JACK AND BORE PROFILE


CASING PIPE
SPACER: REFER TO MINIMUM STANDARDS FOR APPROVED MANUFACTURERS

SPACER DETAIL

6 BORE AND JACK DETAIL

02-C-08 NOT TO SCALE

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MARK F. YODER

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WATER MAIN DETAILS

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	----
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

02-C-08

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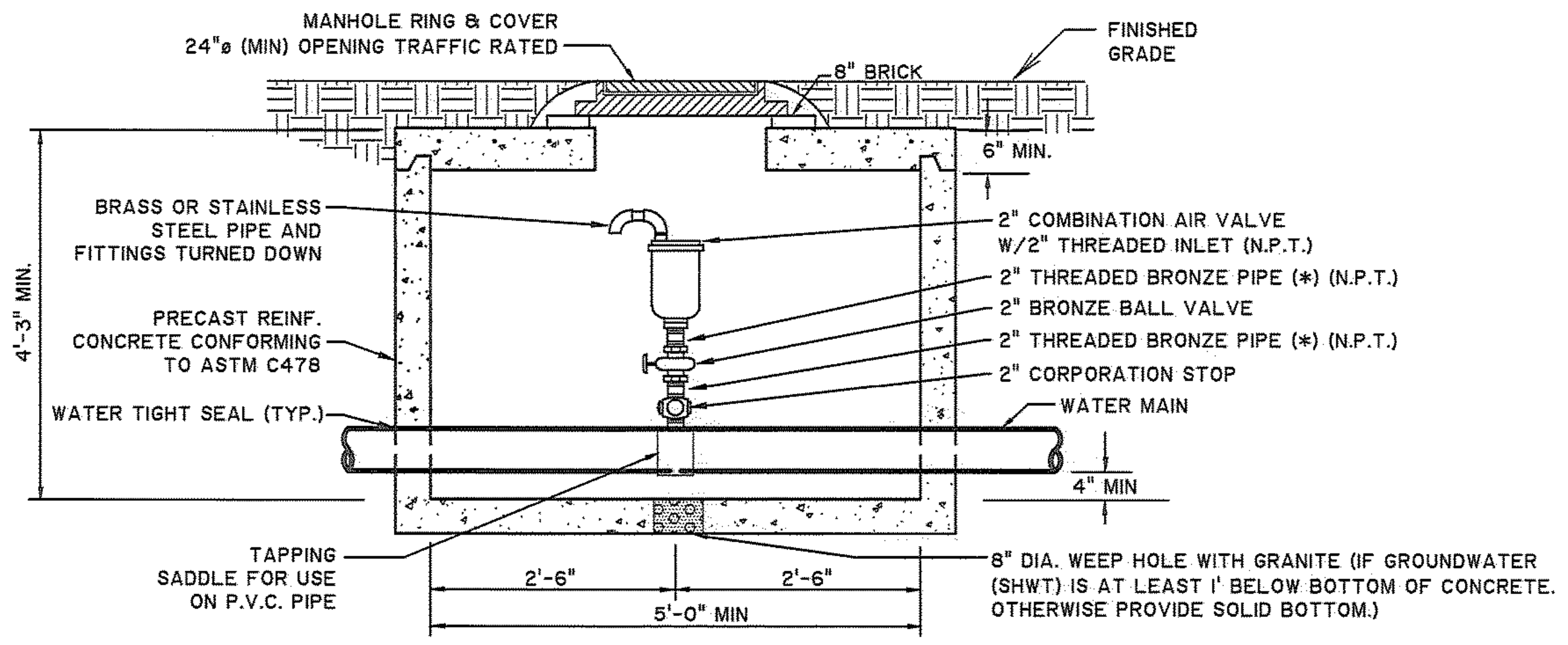
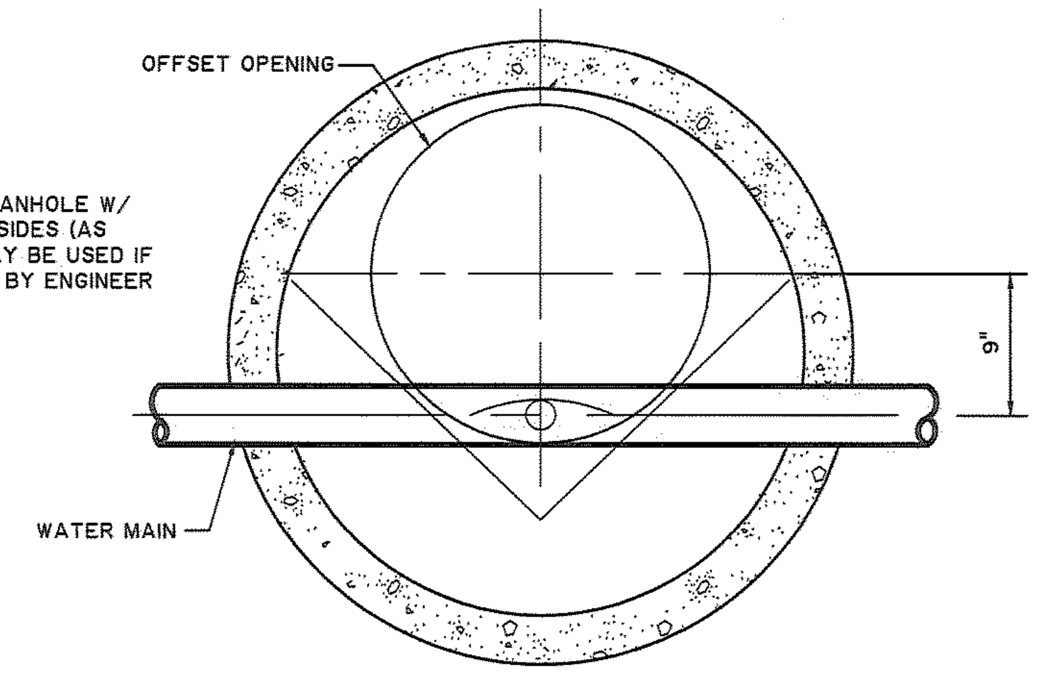
NOTE:
1. ALL HARDWARE SHALL BE STAINLESS STEEL UNLESS OTHERWISE NOTED.
2. VALVE SUPPLIER SHALL PROVIDE SIZING CALCULATIONS TO CONFIRM PROPER SIZE OF VALVE.
3. COAT MANHOLE WITH RAVEN 405 COATING (120 MILS THICKNESS) OR APPROVED EQUIVALENT.


MANHOLE RING & COVER
24"ø (MIN) OPENING TRAFFIC RATED
8" BRICK
FINISHED GRADE
6" MIN.
BRASS OR STAINLESS STEEL PIPE AND FITTINGS TURNED DOWN
4'-3" MIN.
PRECAST REINF. CONCRETE CONFORMING TO ASTM C478
WATER TIGHT SEAL (TYP.)
2" COMBINATION AIR VALVE W/2" THREADED INLET (N.P.T.)
2" THREADED BRONZE PIPE (*) (N.P.T.)
2" BRONZE BALL VALVE
2" THREADED BRONZE PIPE (*) (N.P.T.)
2" CORPORATION STOP
WATER MAIN
4" MIN
TAPPING SADDLE FOR USE ON P.V.C. PIPE
2'-6"
2'-6"
5'-0" MIN
8" DIA. WEEP HOLE WITH GRANITE (IF GROUNDWATER (SHWT) IS AT LEAST 1' BELOW BOTTOM OF CONCRETE. OTHERWISE PROVIDE SOLID BOTTOM.)

SECTION

(*) NOTE:
TYPE 304 S.STL. PIPE AND FITTINGS
MAY BE SUBSTITUTED FOR BRONZE



NOTE:
8" BRICK MANHOLE W/
VERTICAL SIDES (AS
SHOWN) MAY BE USED IF
APPROVED BY ENGINEER

PLAN

1 AIR RELEASE VALVE
02-C-09 NOT TO SCALE

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE No. 13293

9-10-15

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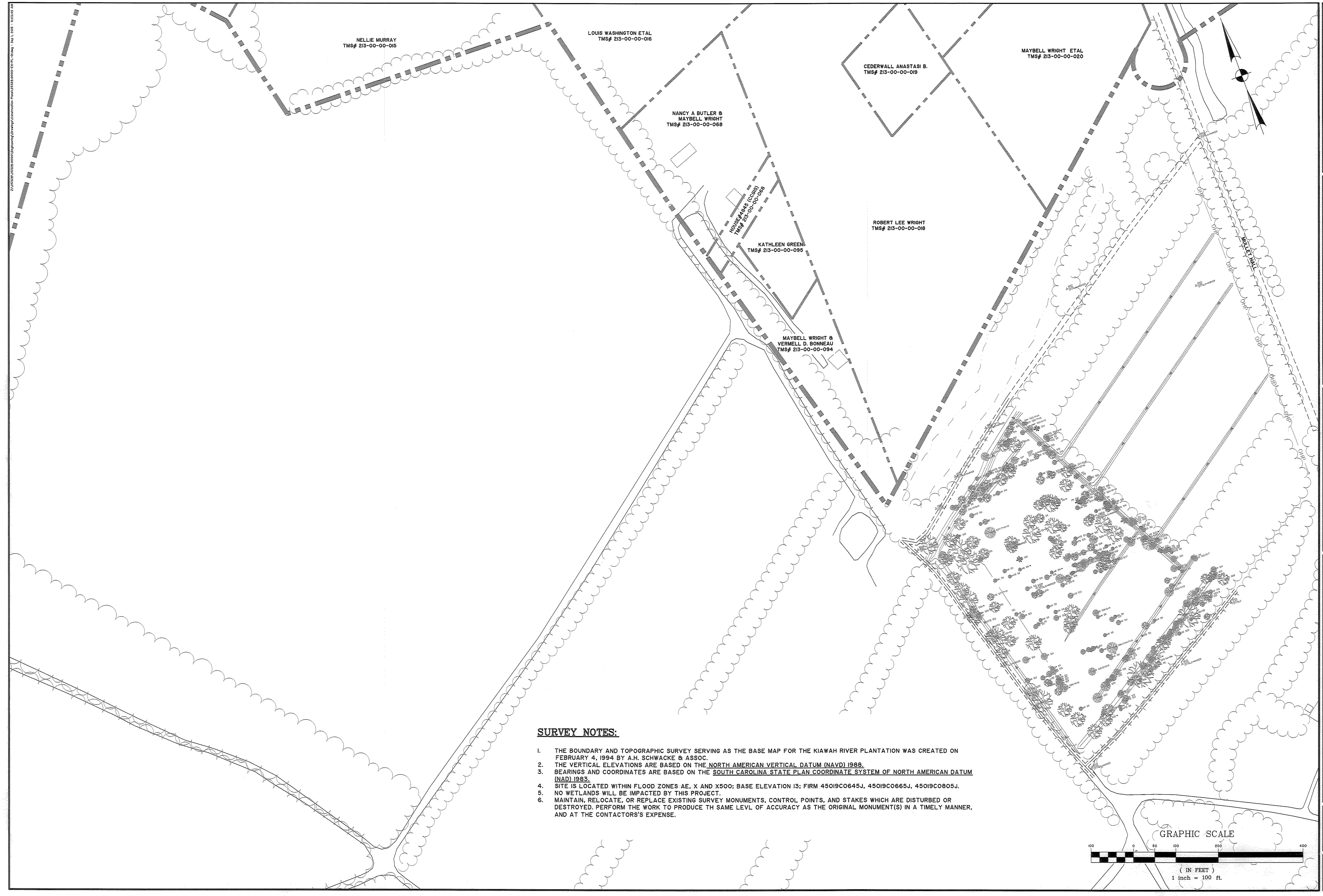
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WATER MAIN DETAILS

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	MFY
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

02-C-09



SURVEY NOTES:

1. THE BOUNDARY AND TOPOGRAPHIC SURVEY SERVING AS THE BASE MAP FOR THE KIAWAH RIVER PLANTATION WAS CREATED ON FEBRUARY 4, 1994 BY A.H. SCHWACKE & ASSOC.
2. THE VERTICAL ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.
3. BEARINGS AND COORDINATES ARE BASED ON THE SOUTH CAROLINA STATE PLAN COORDINATE SYSTEM OF NORTH AMERICAN DATUM (NAD) 1983.
4. SITE IS LOCATED WITHIN FLOOD ZONES AE, X AND X500; BASE ELEVATION 13; FIRM 45019C0645J, 45019C0665J, 45019C0805J.
5. NO WETLANDS WILL BE IMPACTED BY THIS PROJECT.
6. MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED. PERFORM THE WORK TO PRODUCE TH SAME LEVL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTACTORS'S EXPENSE.

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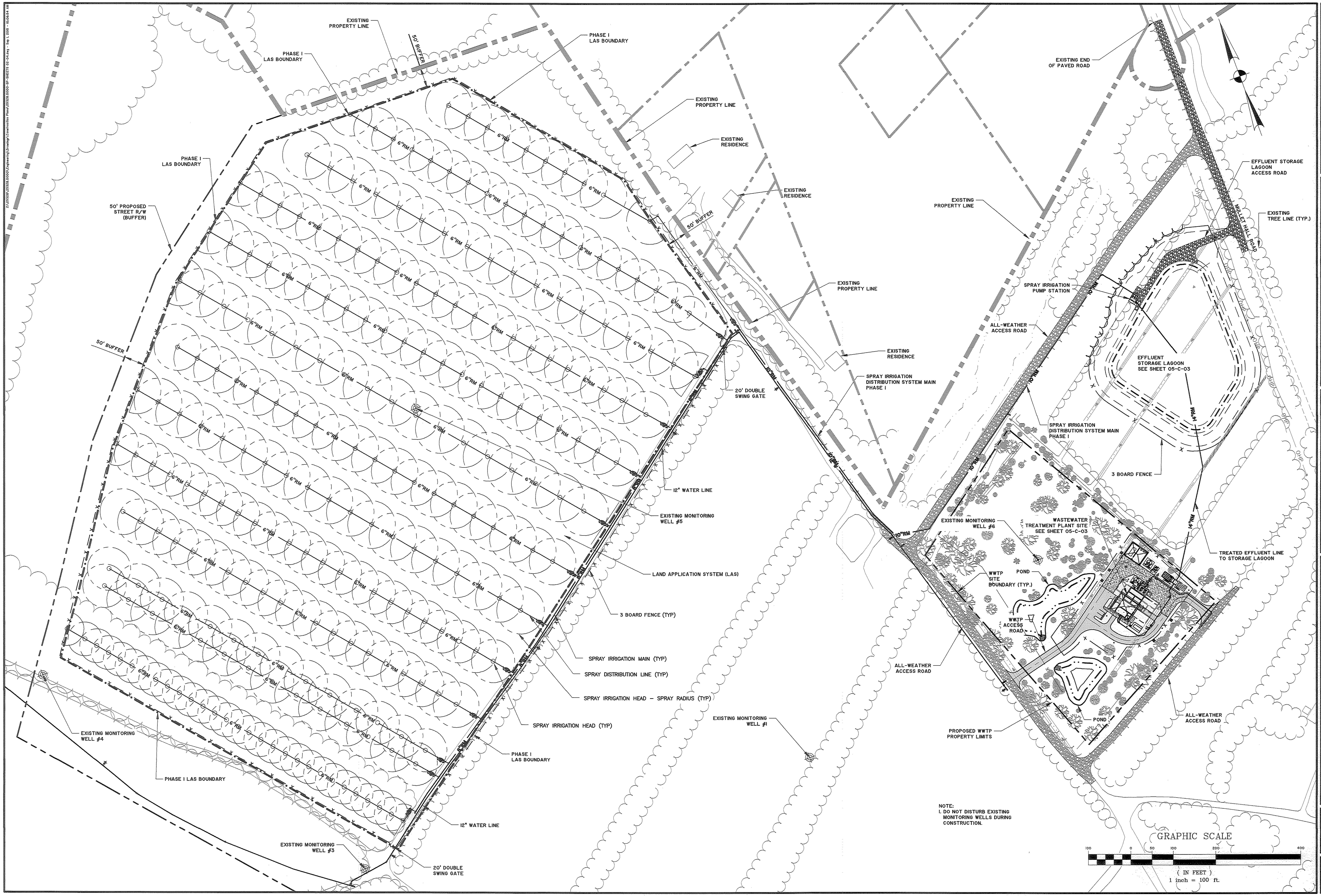
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

EXISTING SITE CONDITIONS

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	1" = 100'

05-C-01


EXISTING PROPERTY LINE
50' BUFFER
PHASE I LAS BOUNDARY
PHASE I LAS BOUNDARY
PHASE I LAS BOUNDARY
50' PROPOSED STREET R/W (BUFFER)
50' BUFFER
6"RM
EXISTING PROPERTY LINE
EXISTING RESIDENCE
EXISTING RESIDENCE
50' BUFFER
EXISTING PROPERTY LINE
EXISTING RESIDENCE
SPRAY IRRIGATION DISTRIBUTION SYSTEM MAIN PHASE I
20' DOUBLE SWING GATE
10"RM
12" WATER LINE
EXISTING MONITORING WELL #5
LAND APPLICATION SYSTEM (LAS)
3 BOARD FENCE (TYP)
SPRAY IRRIGATION MAIN (TYP)
SPRAY DISTRIBUTION LINE (TYP)
SPRAY IRRIGATION HEAD - SPRAY RADIUS (TYP)
SPRAY IRRIGATION HEAD (TYP)
PHASE I LAS BOUNDARY
EXISTING MONITORING WELL #4
PHASE I LAS BOUNDARY
12" WATER LINE
EXISTING MONITORING WELL #3
20' DOUBLE SWING GATE
EXISTING MONITORING WELL #1
EXISTING END OF PAVED ROAD
EXISTING PROPERTY LINE
EFFLUENT STORAGE LAGOON ACCESS ROAD
MULLET HALL ROAD
EXISTING TREE LINE (TYP.)
SPRAY IRRIGATION PUMP STATION
ALL-WEATHER ACCESS ROAD
EFFLUENT STORAGE LAGOON SEE SHEET 05-C-03
14"RM
SPRAY IRRIGATION DISTRIBUTION SYSTEM MAIN PHASE I
3 BOARD FENCE
OHP
EXISTING MONITORING WELL #6
WASTEWATER TREATMENT PLANT SITE SEE SHEET 05-C-03
TREATED EFFLUENT LINE TO STORAGE LAGOON
POND
WWTP SITE BOUNDARY (TYP.)
WWTP ACCESS ROAD
ALL-WEATHER ACCESS ROAD
POND
ALL-WEATHER ACCESS ROAD
PROPOSED WWTP PROPERTY LIMITS
GRAPHIC SCALE
100
0
50
100
200
400
(IN FEET)
1 inch = 100 ft.

NOTE:
1. DO NOT DISTURB EXISTING MONITORING WELLS DURING CONSTRUCTION.

SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING CO.
No. C00285
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 13293
MARK F. YODICE
12-2-15

NO.	REVISIONS	BY	DATE
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	MFY		

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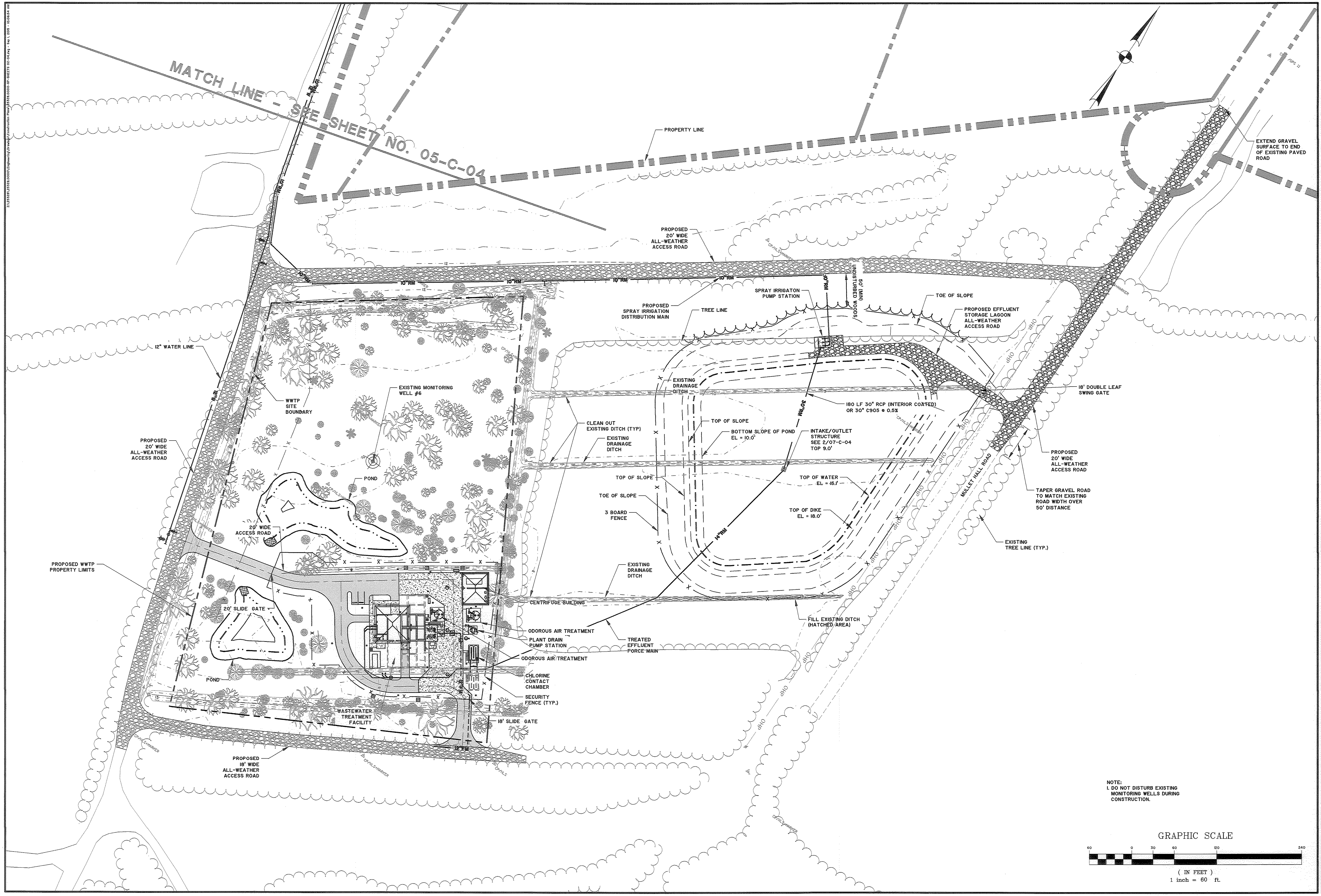
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

OVERALL SITE PLAN

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: 1" = 100'

05-C-02


MATCH LINE - SEE SHEET NO. 05-C-04
PROPERTY LINE
EXTEND GRAVEL SURFACE TO END OF EXISTING PAVED ROAD
PROPOSED 20' WIDE ALL-WEATHER ACCESS ROAD
10"RM
50' (MIN) UNDISTURBED WOODS
SPRAY IRRIGATON PUMP STATION
PROPOSED SPRAY IRRIGATION DISTRIBUTION MAIN
TREE LINE
TOE OF SLOPE
PROPOSED EFFLUENT STORAGE LAGOON ALL-WEATHER ACCESS ROAD
12" WATER LINE
WWTP SITE BOUNDARY
EXISTING MONITORING WELL #6
EXISTING DRAINAGE DITCH
18' DOUBLE LEAF SWING GATE
180 LF 30" RCP (INTERIOR COATED) OR 30" C905 @ 0.5%
30"RM
CLEAN OUT EXISTING DITCH (TYP)
TOP OF SLOPE
BOTTOM SLOPE OF POND EL = 10.0'
INTAKE/OUTLET STRUCTURE SEE 2/07-C-04 TOP 9.0'
PROPOSED 20' WIDE ALL-WEATHER ACCESS ROAD
MULLET HALL ROAD
POND
TOP OF WATER EL = 15.1'
TOE OF SLOPE
TAPER GRAVEL ROAD TO MATCH EXISTING ROAD WIDTH OVER 50' DISTANCE
3 BOARD FENCE
TOP OF DIKE EL = 18.0'
14"RM
20' WIDE ACCESS ROAD
EXISTING TREE LINE (TYP.)
PROPOSED WWTP PROPERTY LIMITS
CENTRIFUGE BUILDING
20' SLIDE GATE
ODOROUS AIR TREATMENT
TREATED EFFLUENT FORCE MAIN
PLANT DRAIN PUMP STATION
FILL EXISTING DITCH (HATCHED AREA)
ODOROUS AIR TREATMENT
CHLORINE CONTACT CHAMBER
POND
SECURITY FENCE (TYP.)
WASTEWATER TREATMENT FACILITY
18' SLIDE GATE
12"FM
PROPOSED 18' WIDE ALL-WEATHER ACCESS ROAD
OHP
CP/NLS+MARKER
GRAPHIC SCALE
60
0
30
60
120
240
(IN FEET)
1 inch = 60 ft.

NOTE:
1. DO NOT DISTURB EXISTING MONITORING WELLS DURING CONSTRUCTION.

SOUTH CAROLINA
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No. C00285
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
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No. 13293
MARK F. YODICE
12-2-15

NO.	REVISIONS	BY	DATE
1	GENERAL REVISIONS	MFY	12/2/15

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WWTP & EFFLUENT LAGOON SITE PLAN

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: 1"=60'

05-C-03

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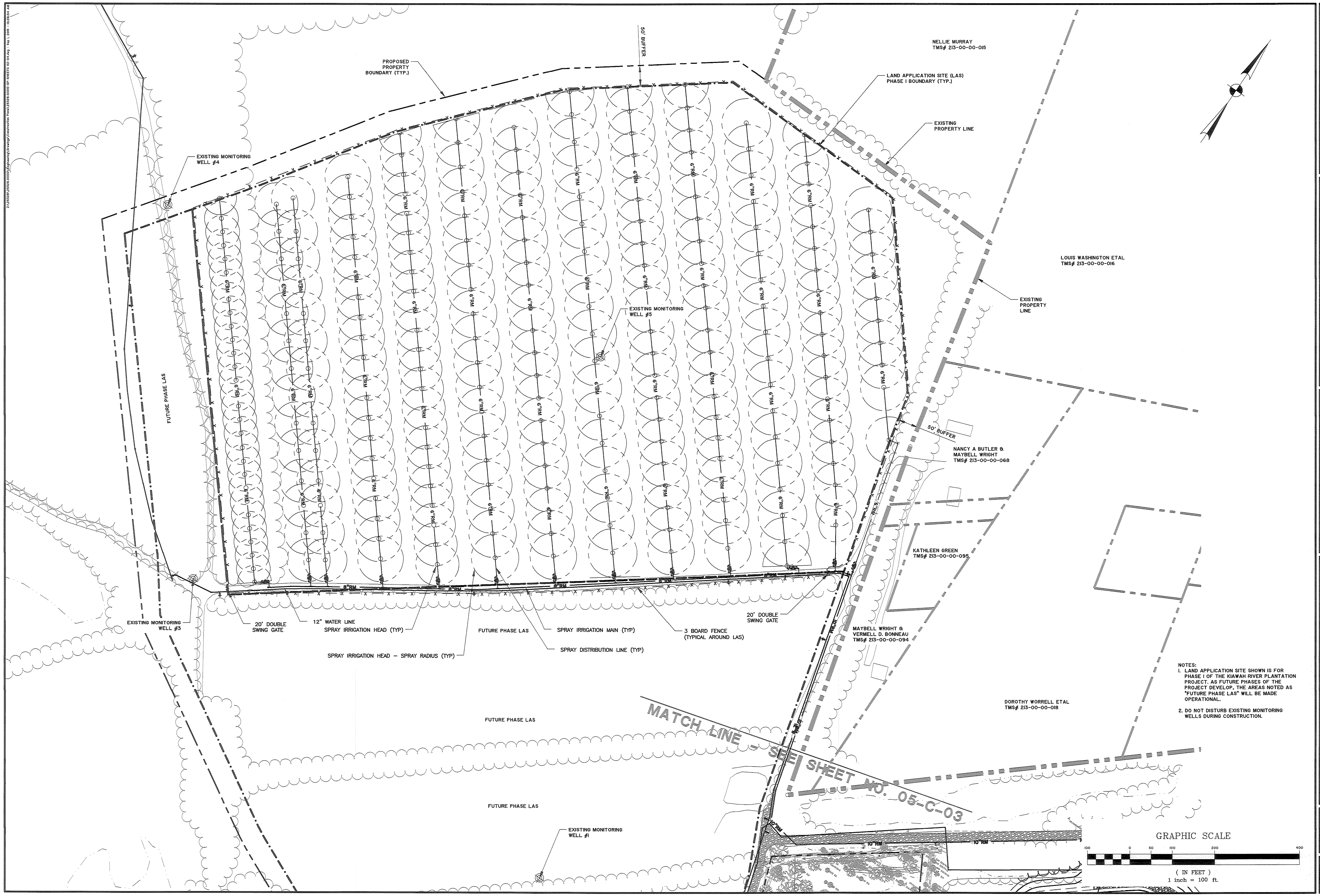
50' BUFFER
PROPOSED PROPERTY BOUNDARY (TYP.)
NELLIE MURRAY TMS# 213-00-00-015
LAND APPLICATION SITE (LAS) PHASE I BOUNDARY (TYP.)
EXISTING PROPERTY LINE
EXISTING MONITORING WELL #4
EXISTING MONITORING WELL #5
LOUIS WASHINGTON ETAL TMS# 213-00-00-016
EXISTING PROPERTY LINE
FUTURE PHASE LAS
6"RM
8"RM
10"RM
50' BUFFER
NANCY A BUTLER & MAYBELL WRIGHT TMS# 213-00-00-068
KATHLEEN GREEN TMS# 213-00-00-095
EXISTING MONITORING WELL #3
20' DOUBLE SWING GATE
12" WATER LINE
SPRAY IRRIGATION HEAD (TYP)
FUTURE PHASE LAS
SPRAY IRRIGATION MAIN (TYP)
3 BOARD FENCE (TYPICAL AROUND LAS)
20' DOUBLE SWING GATE
MAYBELL WRIGHT & VERMELL D. BONNEAU TMS# 213-00-00-094
SPRAY IRRIGATION HEAD – SPRAY RADIUS (TYP)
SPRAY DISTRIBUTION LINE (TYP)
DOROTHY WORRELL ETAL TMS# 213-00-00-018
FUTURE PHASE LAS
MATCH LINE – SEE SHEET NO. 05-C-03
FUTURE PHASE LAS
EXISTING MONITORING WELL #1
GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

NOTES:

1. LAND APPLICATION SITE SHOWN IS FOR PHASE I OF THE KIAWAH RIVER PLANTATION PROJECT. AS FUTURE PHASES OF THE PROJECT DEVELOP, THE AREAS NOTED AS "FUTURE PHASE LAS" WILL BE MADE OPERATIONAL.
2. DO NOT DISTURB EXISTING MONITORING WELLS DURING CONSTRUCTION.

SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING CO.
No. C00285

No. 13293
12-2-2015
MARK F. YODICE

NO.	GENERAL REVISIONS REVISIONS	BY	DATE
1	GENERAL REVISIONS	MFY	12/2/15

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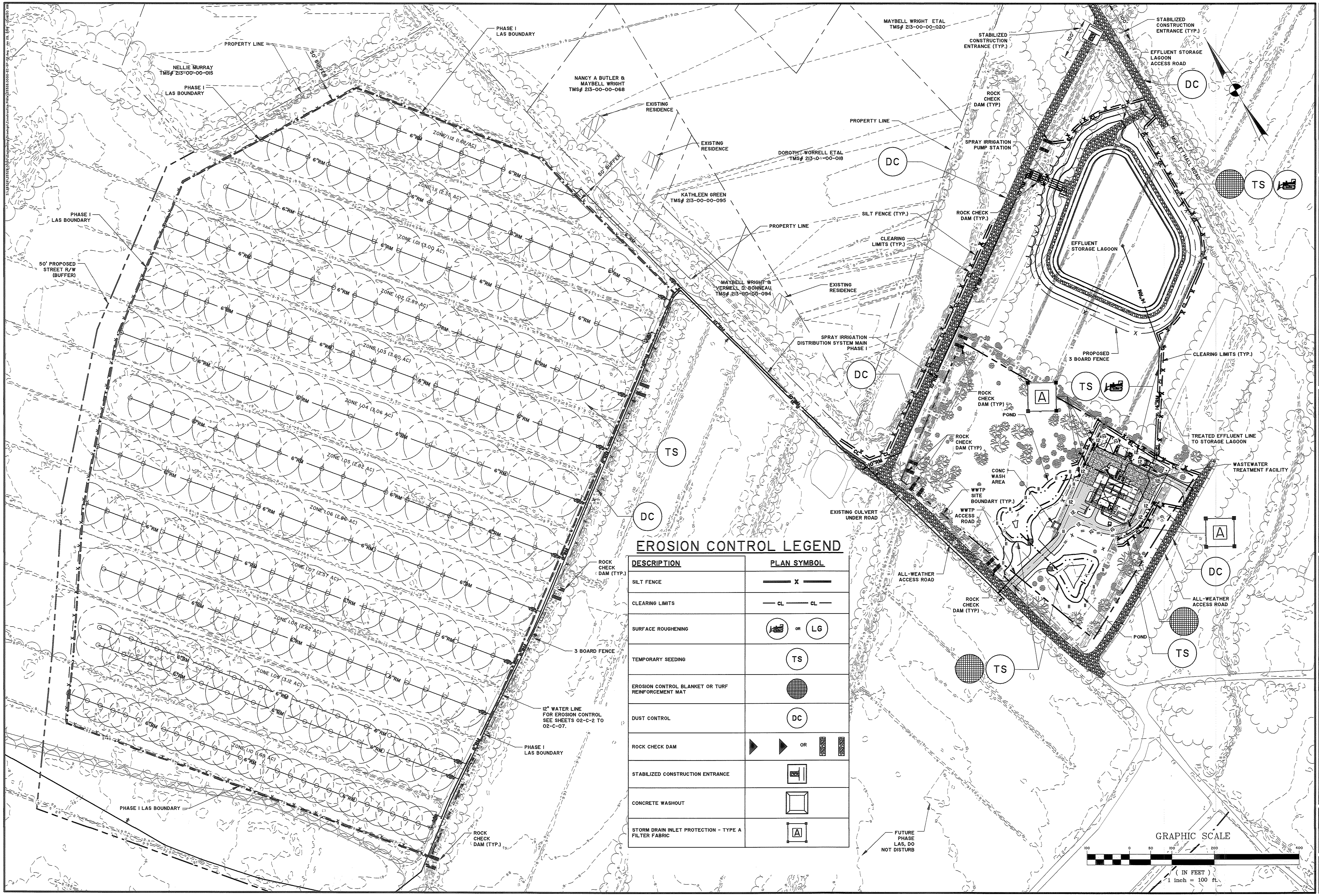
682 Johnnie Dodds Boulevard • Suite 100
Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
LAS SITE PLAN - PHASE I

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	1" = 100'

05-C-04



EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
SILT FENCE	—— X ——
CLEARING LIMITS	— CL —— CL —
SURFACE ROUGHENING	⛟ OR LG
TEMPORARY SEEDING	TS
EROSION CONTROL BLANKET OR TURF REINFORCEMENT MAT	▦
DUST CONTROL	DC
ROCK CHECK DAM	▶ ▶ OR ▮ ▮
STABILIZED CONSTRUCTION ENTRANCE	▣
CONCRETE WASHOUT	▢
STORM DRAIN INLET PROTECTION - TYPE A FILTER FABRIC	A

THOMAS & HUTTON ENGINEERING CO. No. C00285

No. 13295
MARK F. YODICE
1-29-2016

NO.	REVISIONS	BY	DATE

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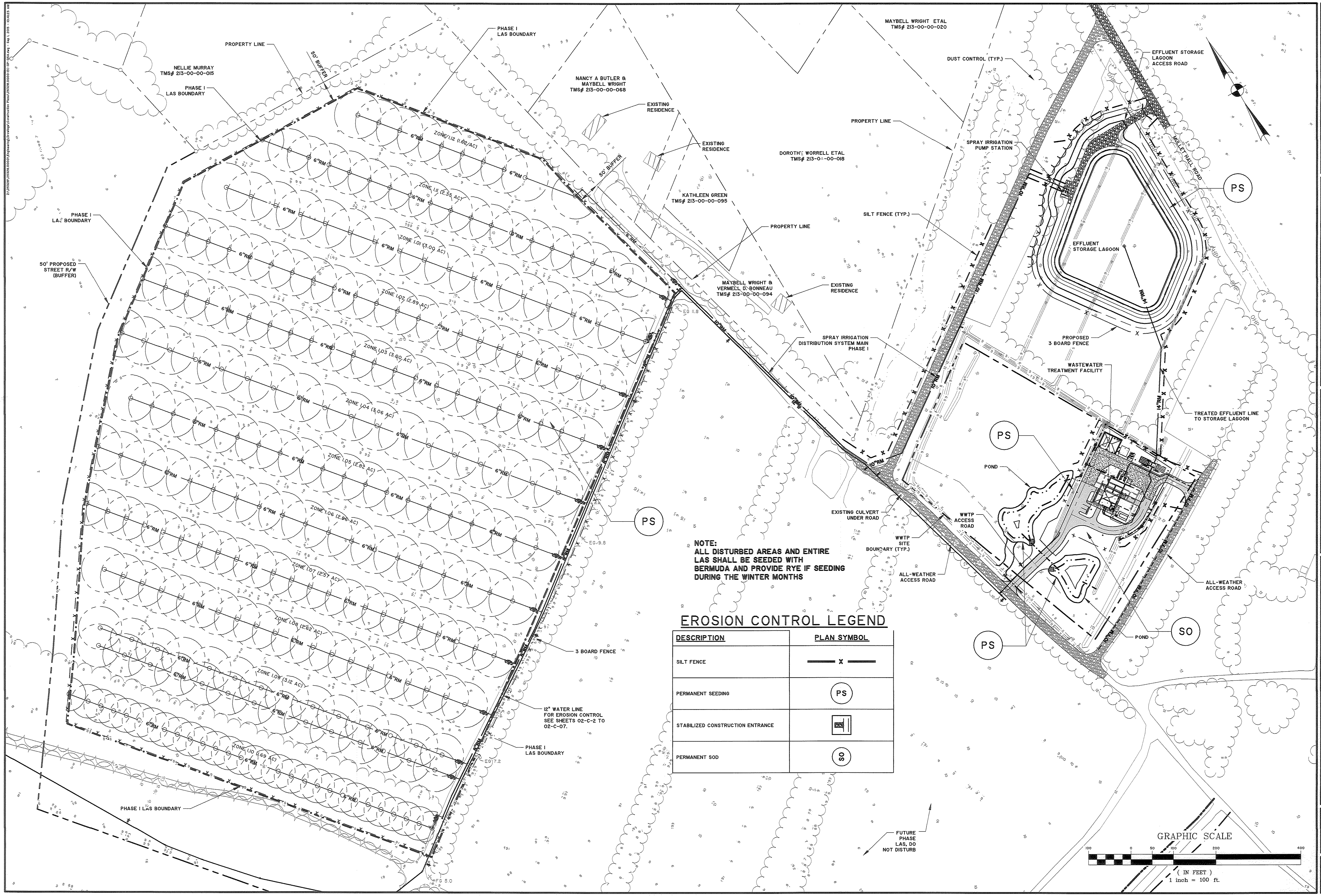
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

EROSION & SEDIMENT CONTROL PLAN - INITIAL PHASE

JOB NO: J-25328.0000
DATE: 7/31/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: 1"=100'

05-C-05



NOTE:
ALL DISTURBED AREAS AND ENTIRE LAS SHALL BE SEEDED WITH BERMUDA AND PROVIDE RYE IF SEEDING DURING THE WINTER MONTHS

EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
SILT FENCE	—— X ——
PERMANENT SEEDING	PS
STABILIZED CONSTRUCTION ENTRANCE	▨
PERMANENT SOD	SO

SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING CO.
No. C00285
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
PROFESSIONAL ENGINEER
REGISTERED
No. 13293
MARK F. YODICE
12-2-15

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

EROSION & SEDIMENT CONTROL PLAN - FINAL PHASE

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	1"=100'

05-C-05A

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I. SITE DESCRIPTION

A. PROJECT DESCRIPTION

A.1. PROJECT AREA	58 ACRES	
A.2. AREA DISTURBED	9 ACRES	
A.3. PERCENT IMPERVIOUS AREA BEFORE CONSTRUCTION		0 %
A.4. RUNOFF COEFFICIENT BEFORE CONSTRUCTION		77 CN
A.5. PERCENT IMPERVIOUS AREA AFTER CONSTRUCTION		1.2 %
A.6. RUNOFF COEFFICIENT AFTER CONSTRUCTION	79 CN	

B. DESCRIPTION OF CONSTRUCTION ACTIVITY

WORK CONSISTS OF CLEARING, GRADING, SITE WORK AND UTILITY INSTALLATIONS

C. RUNOFF DATA

C.1 SOIL CLASSIFICATIONS:	HYDROLOGIC SOIL GROUP A/D - (Ka) Kiawah
C.2 LAND USE(S):	AGRICULTURAL

D. RECEIVING WATERS

D.1. CLOSEST RECEIVING WATERS:	KIAWAH RIVER
D.2 ULTIMATE RECEIVING WATERS:	ATLANTIC OCEAN

E. FLOOD

E.1. FEMA FLOOD ZONE(S):	AE, X AND X500
E.2. FEMA INSURANCE MAPS(S):	45019C0645J, 45019C0665J, 45019C0805J

II. CONTROL MEASURES

1. EROSION AND SEDIMENT CONTROLS

PRIOR TO START OF CONSTRUCTION, ALL EXTERIOR SILT FENCE WILL BE INSTALLED AS SHOWN ON THE PLANS.

1.1. CLEARING

1.1.1. AS CLEARING IS COMPLETED, ADDITIONAL SILT FENCE WILL BE INSTALLED WHERE NECESSARY, SUCH AS POINTS WHERE FLOWS BECOME CHANNELIZED, AND OTHER POINTS WHERE EXCESSIVE RUNOFF VELOCITIES MAY OCCUR.
1.1.2. INSTALL CONSTRUCTION ENTRANCES / EXITS BEFORE BEGINNING CLEARING
1.1.3. CONSTRUCTION DELAYS IN ANY ONE AREA GREATER THAN 14 DAYS PRIOR TO START OF ROUGH GRADING WILL MANDATE STABILIZATION PROCEDURES. ACCEPTABLE METHODS OF STABILIZATION INCLUDE MULCHING AND TEMPORARY SEEDING.
1.1.4. MAINTAIN EXISTING VEGETATION WHENEVER POSSIBLE AND MINIMIZE THE AREA OF DISTURBANCE. RETAIN AND PROTECT TREES TO ENHANCE FUTURE LANDSCAPING EFFORTS AND REDUCE RAINDROP IMPACT.
1.1.5. INSTALL ALL SEDIMENT CONTROL PRACTICES PRIOR TO ANY UP-SLOPE SOIL DISTURBING ACTIVITIES.
1.1.6. PHASE CONSTRUCTION ACTIVITIES TO MINIMIZE THE AREAS DISTURBED AT ONE TIME. THIS WILL ALSO ALLOW COMPLETED AREAS TO BE STABILIZED AND RE-VEGETATED BEFORE DISTURBING ADJACENT SITES. THE NEED FOR TEMPORARY EROSION CONTROL MEASURES MAY BE AVOIDED BY COMPLETING A PHASE AND INSTALLING PERMANENT EROSION CONTROL MEASURES WHEN THE FINAL GRADE IS ATTAINED.
1.1.7. MAINTAIN AND PROTECT ALL NATURAL WATERWAYS. RETAIN AT LEAST A 35-FOOT UNDISTURBED BUFFER OF NATURAL VEGETATION ALONG ALL WATERWAYS TO FILTER OUT SEDIMENT AND OTHER POLLUTANTS. MAINTAIN A 45-FOOT UNDISTURBED BUFFER AROUND SENSITIVE WATERS.
1.1.8. INSTALL SILT FENCE (OR BIO ROLLS/ROCK SOCK PRODUCTS) ON THE DOWN-SLOPE PERIMETER OF ALL DISTURBED AREAS PRIOR TO ANY SOIL DISTURBING ACTIVITIES (INCLUDING CLEARING AND GRUBBING). SILT FENCE CAN TREAT A MAXIMUM OF 100 SQUARE FEET PER LINEAL FOOT OF FENCE. INSTALL SILT FENCE IN SHORTER REACHES ON THE CONTOUR WITH EACH END TURNED UP-SLOPE . SWALES AND SHORELAND AREAS SHOULD ALSO BE PROTECTED WITH SILT FENCE, BIO ROLLS, OR ROCK SOCKS.
1.1.9. IN AREAS OF CONCENTRATED FLOW INSTALL STRAW BALE CHECKS, ROCK CHECK DAMS, TRIANGULAR DIKES, BIO ROLL BLANKETS, OR ROCK SOCKS TO SLOW RUNOFF AND TRAP SEDIMENT.

1.1.10. USE TEMPORARY SLOPE DRAINS OR ROCK CHUTES TO MOVE WATER DOWN STEEP SLOPES.

1.1.11. CONSTRUCT SEDIMENT BASINS FOR DRAINAGE AREAS GREATER THAN 10 ACRES

1.2. ROUGH GRADING

1.2.1. ALL EXISTING CONTROLS WILL BE MAINTAINED DURING ROUGH GRADING, DELAYS OF GREATER THAN 14 DAYS PRIOR TO START OF NEXT ACTIVITY WILL MANDATE STABILIZATION PROCEDURES. ACCEPTABLE METHODS OF STABILIZATION INCLUDE MULCHING AND TEMPORARY SEEDING.
1.2.2. ALL AREAS NOT SUBJECT TO FURTHER CONSTRUCTION (DRAINAGE, SANITARY SEWER, ROADS, WATER DISTRIBUTION SYSTEMS, OR STORM WATER FACILITIES) SHALL BE GRASSED WITH A PERMANENT COVER.
1.2.3. COVER ANY STOCK PILED TOPSOIL WITH PLASTIC (OR OTHER IMPERVIOUS COVERING) OR USE A TEMPORARY SEED MIX. USE STOCKPILED TOPSOIL AS EARTHEN BERMS TO SERVE AS TEMPORARY SEDIMENT BASINS.

1.3. DRAINAGE

1.3.1. ALL EXISTING CONTROLS WILL BE MAINTAINED DURING DRAINAGE INSTALLATION.
1.3.2. CONSTRUCTION DRAINAGE WILL BE ROUTED THROUGH LAKES, WHICH WILL ACT AS SEDIMENT BASINS OR OTHER ACCEPTABLE SEDIMENT BASINS/TRAPS.
1.3.3. STORM DRAIN INLET PROTECTION AS SHOWN ON DETAIL SHEET SHALL BE INSTALLED ON ALL CURB INLETS, STORM DRAIN MANHOLES, JUNCTION BOXES, AND GRATE INLETS.
1.3.4. DELAYS OF GREATER THAN 14 DAYS PRIOR TO START OF THE NEXT CONSTRUCTION SEQUENCE WILL MANDATE STABILIZATION PROCEDURES. ACCEPTABLE METHODS OF STABILIZATION INCLUDE MULCHING AND TEMPORARY SEEDING.
1.3.5. ALL STORM LINES NOT IN STREETS OR OTHER PAVED AREAS ARE TO BE MULCHED AND SEEDED WITHIN 5 DAYS AFTER BACKFILL.

1.4. WASTE DISTRIBUTION SYSTEM INSTALLATION

1.4.1. ALL EXISTING CONTROLS WILL BE MAINTAINED DURING INSTALLATION OF THE WATER DISTRIBUTION SYSTEM.
1.4.2. DELAYS OF GREATER THAN 14 DAYS PRIOR TO START OF NEXT ACTIVITY WILL MANDATE STABILIZATION PROCEDURES. ACCEPTABLE METHODS OF STABILIZATION INCLUDE MULCHING AND TEMPORARY SEEDING.

1.5. WASTEWATER COLLECTION SYSTEM INSTALLATION

1.5.1. ALL EXISTING CONTROLS WILL BE MAINTAINED DURING INSTALLATION OF THE WASTEWATER SYSTEM.
1.5.2. DELAYS OF GREATER THAN 14 DAYS PRIOR TO START OF NEXT ACTIVITY WILL MANDATE STABILIZATION PROCEDURES. ACCEPTABLE METHODS OF STABILIZATION INCLUDE MULCHING AND TEMPORARY SEEDING.

1.6. CONSTRUCTION OF ROADS

1.6.1. ALL EXISTING CONTROLS WILL BE MAINTAINED DURING ROAD CONSTRUCTION.
1.6.2. DELAYS OF GREATER THAN 14 DAYS PRIOR TO START OF NEXT ACTIVITY WILL MANDATE STABILIZATION PROCEDURES. ACCEPTABLE METHODS OF STABILIZATION INCLUDE MULCHING AND TEMPORARY SEEDING.

1.7. GRASSING

1.7.1. ALL EXISTING CONTROLS WILL BE MAINTAINED UNTIL GRASSING IS ESTABLISHED
1.7.2. ANY AREAS THAT ERODE OR WHERE GRASS DOES NOT ESTABLISH ITSELF SHALL BE RE-GRADED AND RE-GRASSED.

2. STORM WATER MANAGEMENT

RUNOFF FROM THIS PROJECT WILL DISCHARGE INTO A STORM WATER MANAGEMENT SYSTEM. TREATMENT WILL OCCUR IN STORM WATER DETENTION PONDS.

3. OTHER CONTROLS

3.1. WASTE DISPOSAL

3.1.1. NO SOLID MATERIALS, INCLUDING BUILDING MATERIALS, SHALL BE DISCHARGED TO ANY RECEIVING WATERS.
3.1.2. OFFSITE VEHICLE TRACKING OF SEDIMENTS AND THE GENERATION OF DUST SHALL BE MINIMIZED.
3.1.3. THIS PLAN SHALL COMPLY WITH STATE AND/OR LOCAL WASTE DISPOSAL, SANITARY SEWER OR SEPTIC SYSTEM REGULATIONS.
3.1.4. DUST CONTROL ON DISTURBED AREAS - CONTROLLING SURFACE AND AIR MOVEMENT OF DUST ON CONSTRUCTION SITE AND HAUL ROUTES. THE PURPOSE OF THE MEASURE IS TO REDUCE THE PRESENCE OF AIRBORNE SUBSTANCES, WHICH MAY BE HARMFUL OR INJURIOUS TO HUMAN HEALTH, WELFARE OR SAFETY, OR TO ANIMALS OR PLANT LIFE.

III. MAINTENANCE

1. MAINTENANCE PROGRAM

1.1. THE SITE SUPERINTENDENT, OR HIS/HER REPRESENTATIVE, SHALL MAKE VISUAL INSPECTIONS OF ALL MECHANICAL CONTROLS AND NEWLY STABILIZED AREAS (I.E. SEEDED AND MULCHED AND/OR SODDED AREAS) ON A DAILY BASIS; ESPECIALLY AFTER HEAVY RAINFALL EVENT TO INSURE THAT ALL CONTROLS ARE MAINTAINED AND PROPERLY FUNCTIONING. ANY DAMAGED CONTROLS SHALL BE REPAIRED PRIOR TO THE END OF THE WORK DAY INCLUDING RE-SEEDING AND MULCHING OR RE-SODDING IF NECESSARY.

1.2. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE. ALL DRAINAGE SWALES, POCKETS, DEPRESSION, LOW LINES, AND OUTLET DITCHES SHALL DRAIN EFFECTIVELY AT ALL TIMES. SETTLEMENT OR WASHING THAT MAY OCCUR SHALL BE REPAIRED BY THE CONTRACTOR. SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN AN EFFECTIVE BARRIER. MAINTAIN THE CONSTRUCTION EXIT IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE SITE. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TACKED ONTO PUBLIC ROADWAYS. RESEED AND MULCH AREA WHERE SEEDING EMERGENCE IS POOR, OR WHERE EROSION OCCURS. PROTECT FROM TRAFFIC AS MUCH AS POSSIBLE. INSPECT ALL MULCHES PERIODICALLY, AND AFTER RAINSTORMS TO CHECK FOR EROSION, DISLOCATION OR FAILURE. IF WASHOUT OCCURS, REPAIR THE SLOPE GRADE, RESEED AND REINSTALL MULCH. FOLLOW THE CONSTRUCTION SEQUENCE THROUGHOUT THE PROJECT DEVELOPMENT. WHEN CHANGES IN CONSTRUCTION ACTIVITIES ARE NEEDED, AMEND THE SEQUENCE SCHEDULE IN ADVANCE TO MAINTAIN MANAGEMENT CONTROL. IF MAJOR CHANGES ARE NECESSARY, SEND A COPY OF THE MODIFIED SCHEDULE TO THE ENGINEER, SEDIMENT AND EROSION CONTROL MEASURES WILL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE DISTURBED AREAS ARE STABILIZED.

2. SILT FENCE

SILT FENCES WILL BE MONITORED DURING CONSTRUCTION. ANY SILT FENCE WHICH IS NOT FUNCTIONING PROPERLY WILL BE PROMPTLY REPAIRED. CLEAN OUT THE SILT FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE OR REPLACE WITH FUNCTIONAL SILT FENCE WITHIN 24 HOURS. USE OF HOSES AND WATER TO FLUSH THE SEDIMENT INTO THE STORM INLETS IS UNACCEPTABLE.

3. SEDIMENTATION BASINS

SEDIMENTATION BASINS WHICH ARE AT 50% USED CAPACITY OR APPROACHING SUCH CAPACITY SHALL BE RE-EXCAVATED TO ORIGINAL DIMENSIONS AND THE SILT PROPERLY DISPOSED OF.

4. SEDIMENT LOGS/ROLLS

SEDIMENT LOGS/ROLLS OR OTHER CONTROL MEASURES WHICH BEGIN TO DISINTEGRATE OR FUNCTION INEFFECTIVELY SHALL BE PROMPTLY REPLACED.

5. VEGETATION COVER

ANY VEGETATION COVER SERVING TO STABILIZE DISTURBED SOILS WHICH IS ITSELF DISTURBED SHALL IMMEDIATELY BE REPLACED.

6. CONSTRUCTION ENTRANCE

MAINTAIN ROCK CONSTRUCTION ENTRANCE AND CLEAN ADJACENT ROADS OF ANY MUD TRACKED ONTO THEM.

IV. INSPECTIONS

1. QUALIFIED PERSONNEL WILL INSPECT DISTURBED AREAS OF THE CONSTRUCTION SITE, AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION THAT HAVE NOT BEEN FINALLY STABILIZED, STRUCTURAL CONTROL MEASURES, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE AT LEAST ONCE EVERY SEVEN CALENDAR DAYS. WHERE SITES HAVE BEEN FINALLY STABILIZED SUCH INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH DURING THE WARRANTY PERIOD.

2. DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATERS. LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFFSITE SEDIMENT TRACKING.

3. A WRITTEN REPORT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, WEATHER INFORMATION FOR THE PERIOD SINCE THE LAST INSPECTION (OR SINCE COMMENCEMENT OF CONSTRUCTION ACTIVITY) INCLUDING A BEST ESTIMATE OF THE BEGINNING OF EACH STORM EVENT, DURATION OF EACH STORM EVENT, APPROXIMATE AMOUNT OF RAINFALL FOR EACH STORM EVENT (IN INCHES) AND WHETHER ANY DISCHARGES OCCURRED, LOCATION(S) OF DISCHARGES OF SEDIMENT OR OTHER POLLUTANTS FROM THE SITE, LOCATION(S) OF BMP'S THAT NEED MAINTENANCE, LOCATION(S) OF BMP'S THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, LOCATION(S) WHERE ADDITIONAL BMP'S ARE NEEDED THAT DID NOT EXIST AT THE TIME OF INSPECTION AND ANY CORRECTIVE ACTION REQUIRED INCLUDING ANY CHANGES TO SWPPP NECESSARY AND IMPLEMENTATION DATES.

4. THE REPORT SHALL BE MAINTAINED AT LEAST THREE YEARS FROM THE DATE THE SITE IS FINALLY STABILIZED. THE REPORT MUST BE SIGNED AND SHALL CONTAIN A CERTIFICATION THAT THE FACILITY IS IN COMPLIANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN AND THE NPDES PERMIT REFERENCED ABOVE. THE CONTRACTOR SHALL MAINTAIN THIS REPORT. THE REPORT SHALL BE SUBMITTED TO THE ENGINEER AND OWNER.

V. LONG TERM MAINTENANCE OF DRAINAGE AND STORM WATER MANAGEMENT SYSTEM

THE ROADS AND DRAINAGE SYSTEM WILL BE OWNED AND MAINTAINED BY _______________ AFTER CONSTRUCTION IS COMPLETE.

VI. SC DHEC STANDARD NOTES

1. IF NECESSARY, SLOPES WHICH EXCEED EIGHT (8) VERTICAL FEET SHOULD BE STABILIZED WITH SYNTHETIC OR VEGETATIVE MATS, IN ADDITION TO GRASSING / HYDROSEEDING. IT MAY BE NECESSARY TO INSTALL TEMPORARY SLOPE DRAINS DURING CONSTRUCTION. TEMPORARY BERMS MAY BE NEEDED UNTIL THE SLOPE IS BROUGHT TO GRADE.

2. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED, EXCEPT AS STATED BELOW:

   2.1. WHERE STABILIZATION BY THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICABLE.
   2.2. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.

3. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED ONCE EVERY CALENDAR WEEK. IF SITE INSPECTIONS IDENTIFY BMP'S THAT ARE DAMAGED OR ARE NOT OPERATING EFFECTIVELY, MAINTENANCE MUST BE PERFORMED AS SOON AS PRACTICAL OR AS REASONABLY POSSIBLE BEFORE THE NEXT STORM EVENT WHENEVER PRACTICAL.

4. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE UTILITY INSTALLATION. FILL, COVER, AND TEMPORARY SEEDING AT THE END OF EACH DAY ARE RECOMMENDED. IF WATER IS ENCOUNTERED WHILE TRENCHING, THE WATER SHOULD BE FILTERED TO REMOVE ANY SEDIMENTS BEFORE BEING PUMPED INTO ANY WATERS OF THE STATE.

5. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.

6. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO THE PAVED ROADWAY FROM CONSTRUCTION AREAS AND THE GENERATION OF DUST. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT AS MAY BE REQUIRED.

7. RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURE AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS SHALL FOLLOW THESE PLANS DURING CONSTRUCTION OR OBTAIN APPROVAL OF AN INDIVIDUAL PLAN IN ACCORDANCE WITH S.C. REG. 72-300 AND SCR100000.

8. TEMPORARY DIVERSION BERMS AND/OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.

9. ALL WATERS OF THE STATE (WOS), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE IS TO BE INSTALLED IN ALL AREAS WHERE A 50-FOOT BUFFER CAN NOT BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL WOS. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WOS

10. LITTER, CONSTRUCTION DEBRIS, OILS, FUELS, AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORM WATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE IN STORM WATER DISCHARGES.

11. A COPY OF THE SWPPP, INSPECTION RECORDS AND RAINFALL DATA MUST BE RETAINED AT THE CONSTRUCTION SITE OR A NEARBY LOCATION EASILY ACCESSIBLE DURING NORMAL BUSINESS HOURS, FROM THE DATE OF COMMENCEMENT OF CONSTRUCTION ACTIVITIES TO THE DATE THAT FINAL STABILIZATION IS REACHED.

12. INITIATE STABILIZATION MEASURES ON ANY EXPOSED STEEP SLOPE (3H:1V OR GREATER) WHERE LAND DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED, AND WILL NOT RESUME FOR A PERIOD OF 7 CALENDAR DAYS.

13. MINIMIZE SOIL COMPACTION IN AREAS NOT UNDER PAVEMENTS AND /OR STRUCTURES AND, UNLESS INFEASIBLE, PRESERVE TOPSOIL.

14. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER AND OTHER WASH WATERS. WASH WATERS MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUAL OR BETTER TREATMENT PRIOR TO DISCHARGE.

15. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM DEWATERING OF TRENCHES AND EXCAVATED AREAS. THESE DISCHARGES ARE TO BE ROUTED THROUGH APPROPRIATE BMPS (SEDIMENT BASIN, FILTER BAG, ETC.).

16. THE FOLLOWING DISCHARGES ARE PROHIBITED:

    16.1. WASTEWATER FROM WASHOUT OF CONCRETE, UNLESS MANAGED BY AN APPROPRIATE CONTROL;
    16.2. WASTEWATER FROM WASHOUT AND CLEANOUT OF OF STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS;
    16.3. FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE; AND
    16.4. SOAPS OR SOLVENTS USED IN VEHICLE AND EQUIPMENT WASHING.

17. AFTER CONSTRUCTION ACTIVITIES BEGIN, INSPECTIONS MUST BE CONDUCTED AT A MINIMUM OF AT LEAST ONCE EVERY CALENDAR WEEK AND MUST BE CONDUCTED UNTIL FINAL STABILIZATION IS REACHED ON ALL AREAS OF THE CONSTRUCTION SITE.

18. IF EXISTING BMPS NEED TO BE MODIFIED OR IF ADDITIONAL BMPS ARE NECESSARY TO COMPLY WITH THE REQUIREMENTS OF PERMIT SCR100000 AND/OR SC'S WATER QUALITY STANDARDS, IMPLEMENTATION MUST BE COMPLETED BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICABLE, THE SITUATION MUST BE DOCUMENTED IN THE SWPPP AND ALTERNATIVE BMPS MUST BE IMPLEMENTED AS SOON AS REASONABLY POSSIBLE.

19. A PRE-CONSTRUCTION CONFERENCE MUST BE HELD FOR EACH CONSTRUCTION SITE WITH AN APPROVED ON-SITE SWPPP PRIOR TO THE IMPLEMENTATION OF CONSTRUCTION ACTIVITIES. FOR NON-LINEAR PROJECTS THAT DISTURB 10 ACRES OR MORE, THIS CONFERENCE MUST BE HELD ON-SITE UNLESS THE DEPARTMENT HAS APPROVED OTHERWISE.

VII. EROSION, SEDIMENTATION & POLLUTION CONTROL NOTES

1. THE IMPLEMENTATION OF THESE EROSION SEDIMENT CONTROL (ESC) PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.

2. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.

3. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT LEAVE THE SITE.

4. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.

5. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A MAJOR STORM EVENT.

6. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING AND PRIOR TO FINAL INSPECTION. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LADEN WATER INTO THE DOWNSTREAM SYSTEM.

7. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.

8. BEFORE COMMENCING ANY LAND DISTURBING ACTIVITY, THE EXISTING STORM WATER INLET(S) THAT RECEIVING RUNOFF FROM THE PROPOSED WORK AREA SHALL BE PROTECTED. THE TEMPORARY INLET PROTECTION MUST REMAIN IN PLACE UNTIL THE CONSTRUCTION ACTIVITY IS COMPLETED, THE STREET HAS BEEN SWEPT AND ANY EXPOSED SOILS ARE STABILIZED. THE CONTRACTOR IS ALSO RESPONSIBLE FOR REMOVING ANY TEMPORARY INLET PROTECTION INSTALLED; AFTER ALL DISTURBED AREAS ARE STABILIZED. TEMPORARY PROTECTION OF THE INLETS MAY BE ACCOMPLISHED BY ONE OR MORE OF THE FOLLOWING:

   8.1. USE OF GRAVEL BAGS TO FILTER THE SEDIMENT FROM ANY RUNOFF. TO MAKE A GRAVEL BAG, USE A BAG MADE OF GEOTEXTILE FABRIC (NOT BURLAP) AND FILL WITH EITHER 3/4 INCH ROCK OR 1/4 INCH PEA GRAVEL.
   8.2. USE OF SEDIMENT LOGS TO FILTER THE SEDIMENT FROM ANY RUNOFF (AVAILABLE THROUGH LOCAL EROSION CONTROL SUPPLIERS).
   8.3. USE OF ABOVE OR UNDER-GRATE FILTER BAGS OR DEVICES TO FILTER THE SEDIMENT FROM ANY RUNOFF (AVAILABLE THROUGH EROSION CONTROL SUPPLIERS).

9. WATER MAY NOT BE DISCHARGED IN A MANNER THAT CAUSES EROSION, SEDIMENTATION, OR FLOODING ON THE SITE, ON DOWNSTREAM PROPERTIES, IN THE RECEIVING CHANNELS, OR IN ANY STORM WATER INLET. WHEN SITE DEWATERING, WATER PUMPED FROM THE SITE, INCLUDING TRENCHES, SHALL BE TREATED BY ONE OF THE FOLLOWING:

   9.1. TEMPORARY SEDIMENTATION BASINS
   9.2. SEDIMENT FILTERING BAGS

10. THE CONTRACTOR SHALL VERIFY THE SIZE AND LOCATION OF ALL EXISTING UTILITIES. EXISTING UTILITIES ARE ALL UTILITIES THAT EXIST ON THE PROJECT IN AN ORIGINAL, RELOCATED OR NEWLY INSTALLED POSITION. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE COST OF REPAIRS TO DAMAGED UNDERGROUND OR OVERHEAD FACILITIES, EVEN IF THE UTILITY IS NOT SHOWN ON THE SITE DEVELOPMENT PLANS. THE CONTRACTOR SHALL CONTACT THE LOCAL UTILITIES PROTECTION CENTER TO COORDINATE THE MARKING OF EXISTING UTILITY LINES A MINIMUM OF 96 HOURS PRIOR TO COMMENCEMENT OF ANY WORK.

11. THE CONTRACTOR SHALL FLUSH ALL INLETS AND PIPE AT THE COMPLETION OF CONSTRUCTION TO REMOVE SILT AND DEBRIS. THE CLEANING AND FLUSHING OF INLETS AND PIPE (EXISTING AND PROPOSED) SHALL BE CONSIDERED PART OF THE COST FOR THE PROJECT.

12. EGRESS FROM THE SITE SHALL BE CONTROLLED SUCH THAT VEHICLES LEAVING THE SITE MUST TRAVERSE CONSTRUCTION EXITS TO REMOVE MUD FROM TIRES.

13. SCHEDULE CONSTRUCTION ACTIVITIES TO MINIMIZE THE EXPOSED AREA AND DURATION OF EXPOSURE. IN SCHEDULING, TAKE INTO ACCOUNT THE SEASON AND THE WEATHER FORECAST.

14. EROSION CONTROL MEASURES ARE THE MINIMUM REQUIRED. THE CONTRACTOR SHALL PROVIDE ADDITIONAL CONTROL MEASURES AS DICTATED BY ACTUAL FIELD CONDITIONS AT THE TIME OF CONSTRUCTION IN ORDER TO PREVENT EROSION AND CONTROL SEDIMENT. EROSION AND SEDIMENT CONTROL MEASURES WILL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE ENTIRE PROJECT IS TERMINATED OR SUSPENDED FOR AND INDEFINITE LENGTH OF TIME, ALL DISTURBED AREAS SHALL BE PLANTED WITH PERMANENT VEGETATION.

15. THE DATA, TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS, OR IN ANY WAY INDICATED THEREBY, WHETHER BY DRAWINGS OR NOTES, OR IN ANY OTHER MANNER, IS BASED UPON FIELD INVESTIGATIONS AND IS BELIEVED TO BE INDICATIVE OF ACTUAL CONDITIONS. HOWEVER, THE SAME IS SHOWN AS INFORMATION ONLY, IS NOT GUARANTEED AND DOES NOT BIND THOMAS & HUTTON, OR THE OWNER IN ANY WAY.

16. CONTRACTOR SHALL MAINTAIN SITE ON A DAILY BASIS TO PROVIDE FOR POSITIVE DRAINAGE. CONTRACTOR, AT HIS COST, SHALL GRADE SITE AND PROVIDE NECESSARY TEMPORARY DRAINAGE SWALES TO INSURE STORM WATER DOES NOT POND ON SITE.

17. SITE DRAINAGE SHALL BE ESTABLISHED TO PREVENT ANY PONDED WATER CONDITIONS WITHIN THE CONSTRUCTION AREA AND TO FACILITATE STORM WATER DISCHARGE.

18. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO, OR CONCURRENT WITH, LAND DISTURBING ACTIVITIES.

19. LIME RATES AND ANALYSIS:

    19.1. AGRICULTURAL LIME SHALL BE APPLIED AT THE RATE SHOWN IN THE SEEDING SECTION UNLESS SOIL TESTS INDICATE OTHERWISE. GRADED AREAS REQUIRE LIME APPLICATION. IF LIME IS APPLIED WITHIN SIX MONTHS OF PLANTING PERMANENT PERENNIAL VEGETATION, ADDITIONAL LIME IS NOT REQUIRED. AGRICULTURAL LIME APPLICATION SHALL BE WITHIN THE SPECIFICATIONS OF THE SOUTH CAROLINA DEPARTMENT OF AGRICULTURE.

20. MULCHING:

    MULCHING IS REQUIRED FOR ALL PERMANENT VEGETATION APPLICATIONS. MULCH APPLIED TO SEEDED AREAS SHALL ACHIEVE 75% SOIL COVER. SELECT THE MULCHING MATERIAL FROM THE FOLLOWING AND APPLY AS INDICATED:

    20.1. DRY STRAW OR DRY HAY OF GOOD QUALITY AND FREE OF WEED SEEDS CAN BE USED. DRY STRAW SHALL BE APPLIED AT THE RATE OF TWO TONS PER ACRE. DRY HAY SHALL BE APPLIED AT THE RATE OF 2 1/2 TONS PER ACRE.
    20.2. WOOD CELLULOSE MULCH OR WOOD PULP FIBER SHALL BE USED WITH HYDRAULIC SEEDING. IT SHALL BE APPLIED AT A RATE OF 500 POUNDS PER ACRE. DRY STRAW OR DRY HAY SHALL BE APPLIED (AT THE RATE INDICATED ABOVE) AFTER HYDRAULIC SEEDING.
    20.3. ONE THOUSAND POUNDS OF WOOD CELLULOSE OR WOOD PULP FIBER, WHICH INCLUDES A TACKIFIER, SHALL BE USED WITH HYDRAULIC SEEDING ON SLOPES 3/4:1 OR STEEPER.
    20.4. SERICEA LESPEDEZA HAY CONTAINING MATURE SEED SHALL BE APPLIED AT A RATE OF 3 TONS PER ACRE.
    20.5. PINE STRAW OR PINE BARK SHALL BE APPLIED AT A THICKNESS OF 3 INCHES FOR BEDDING PURPOSES. OTHER SUITABLE MATERIALS IN SUFFICIENT QUANTITY MAY BE USED WHERE ORNAMENTALS OR OTHER GROUND COVERS ARE PLANTED. THIS IS NOT APPROPRIATE FOR SEEDED AREAS.
    20.6. WHEN USING TEMPORARY EROSION CONTROL BLANKETS OR BLACK SOD, MULCH IS NOT REQUIRED.
    20.7. ON SLOPES GREATER THAN 10 FEET IN LENGTH AND 4:1 OR STEEPER, USE THE FOLLOWING EROSION CONTROL BLANKETS THAT HAVE BEEN PROPERLY ANCHORED TO THE SLOPE ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS:

    - 2:1 SLOPES OR STEEPER: - STRAW/COCONUT BLANKET OR HIGH VELOCITY WOOD BLANKET
    - 3:1 SLOPES OR STEEPER: - WOOD OR STRAW BLANKET WITH NET ON BOTH SIDES
    - 4:1 SLOPES OR FLATTER: - WOOD OR STRAW MULCH BLANKET WITH NET ON ONE SIDE

VIII. HOUSEKEEPING

THESE PERFORMANCE STANDARDS APPLY TO ALL SITES.

1. PETROLEUM PRODUCTS: INCLUDING OIL, GASOLINE, LUBRICANTS AND ASPHALTIC SUBSTANCES.

   1.1. HAVE EQUIPMENT TO CONTAIN AND CLEAN UP PETROLEUM SPILLS IN FUEL STORAGE AREAS OR ON MAINTENANCE AND FUELING VEHICLES
   1.2. STORE IN COVERED AREAS PROTECTED WITH DIKES

2. SPILLS: PREVENTION AND RESPONSE.

   2.1. STORE AND HANDLE MATERIALS TO PREVENT SPILLS
   2.2. TIGHTLY SEALED CONTAINERS, NEAT AND SECURE STACKING, ETC.
   2.3. REDUCE STORM WATER CONTACT IF SPILL OCCURS
      2.3.1. CLEANUP PROCEDURES SHOULD BE CLEARLY POSTED.
      2.3.2. CLEANUP MATERIALS SHOULD BE READILY AVAILABLE
      2.3.3. STOP THE SOURCE
      2.3.4. CONTAIN THE SPILL

3. NON-STORM WATER DISCHARGES

   THE FOLLOWING NON-STORMWATER DISCHARGES MUST BE PROTECTED FROM CAUSING POLLUTION OR EROSION:

   3.1. DISCHARGES FROM FIRE-FIGHTING ACTIVITIES
   3.2. FIRE HYDRANT FLUSHINGS
   3.3. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED
   3.4. WATER USED TO CONTROL DUST
   3.5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHINGS
   3.6. ROUTINE EXTERNAL BUILDING WASH DOWN THAT DOES NOT USE DETERGENTS
   3.7. PAVEMENT WASH WATERS WHERE SPILLS OR LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED (UNLESS ALL SPILLED MATERIAL HAS BEEN REMOVED) AND WHERE DETERGENTS ARE NOT USED
   3.8. UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE
   3.9. UNCONTAMINATED GROUND WATER OR SPRING WATER
   3.10. FOUNDATION OR FOOTING DRAINS WHERE FLOWS ARE NOT CONTAMINATED WITH PROCESS MATERIALS SUCH AS SOLVENTS
   3.11. UNCONTAMINATED EXCAVATION DEWATERING
   3.12. LANDSCAPE IRRIGATION
   3.13. DECHLORINATED SWIMMING POOL DISCHARGES.

4. CONSTRUCTION WASTES: DEMOLITION RUBBLE, PACKAGING MATERIALS, SCRAP BUILDING SUPPLIES, ETC.

   4.1. SELECT A DESIGNATED WASTE COLLECTION AREA
   4.2. PROVIDE LIDS FOR WASTE CONTAINERS
   4.3. WHEN POSSIBLE LOCATE CONTAINERS IN COVERED AREA
   4.4. MAINTAIN CONSISTENT REMOVAL SCHEDULE FOR WASTE

5. PESTICIDES: REDUCE THE AMOUNT OF PESTICIDES AVAILABLE FOR CONTACT WITH STORM WATER.

   5.1. STORE IN A DRY COVERED AREA
   5.2. INSTALL CURBS OR DIKES AROUND STORAGE AREA TO PROTECT AGAINST SPILLS
   5.3. STRICTLY FOLLOW RECOMMENDED APPLICATION RATES

6. FERTILIZERS AND DETERGENTS: REDUCE THE AMOUNT OF FERTILIZERS AND DETERGENTS AVAILABLE FOR CONTACT WITH STORM WATER.

   6.1. LIMIT APPLICATION OF FERTILIZERS TO THE MINIMUM NEEDED
   6.2. APPLY MORE FREQUENTLY BUT AT LOWER APPLICATION RATES
   6.3. LIMIT USE OF DETERGENTS ON-SITE
   6.4. DO NOT DISCHARGE WASH WATER INTO STORM WATER SYSTEM
   6.5. MAINTAIN STRUCTURAL AND VEGETATIVE BMP'S
   6.6. APPLY ACCORDING TO SOIL TEST RECOMMENDATIONS PRIOR TO SEEDING

IX. GRASSING NOTES

1. SOD:

   ALL SOD SHALL BE NURSERY GROWN AS CLASSIFIED IN THE ASPS GSS. MACHINE CUT SOD AT A UNIFORM THICKENS OF 3/4" WITHIN A TOLERANCE OF 1/4", EXCLUDING TOP GROWTH AND THATCH. EACH INDIVIDUAL SOD PIECE SHALL BE STRONG ENOUGH TO SUPPORT ITS OWN WEIGHT WHEN LIFTED BY THE ENDS. BROKEN PODS, IRREGULARLY SHAPED PIECES, AND TORN OR UNEVEN ENDS WILL BE REJECTED. WOOD PEGS AND / OR WIRE STAPLES SHALL REPLACE SOD WITH AN EQUAL SOD COMPOSITION AS THAT WHICH IS EXISTING. IF NO SOD TYPE EXIST. THEN THE FOLLOWING SOD COMPOSITION SHALL BE USED.

2. SODDING SCHEDULE:

   LAY SOD FROM MAY 1 TO SEPTEMBER 15 FOR SPRING PLANTING AND FROM SEPTEMBER 15 TO NOVEMBER 1 FOR FALL PLANTING.

3. SEED:

   ALL SEED SHALL CONFORM TO ALL STATE LAWS AND TO ALL REQUIREMENTS AND REGULATIONS OF THE SOUTH CAROLINA DEPARTMENT OF AGRICULTURE. THE SEVERAL VARIETIES OF SEED SHALL BE INDIVIDUALLY PACKAGED OR BAGGED, AND TAGGED TO SHOW NAME OF SEED, NET WEIGHT, ORIGIN, GERMINATION, LOT NUMBER, AND OTHER INFORMATION REQUIRED BY THE DEPARTMENT OF AGRICULTURE.

   3.1. PENNISETUM GLAUCIUM (BROWNTOP MILLET): TESTING 98 PERCENT PURITY AND 85 PERCENT GERMINATION.
   3.2. BERMUDA COMMON: TESTING 98 PERCENT PURITY AND 85 PERCENT GERMINATION.
   3.3. DOMESTIC ITALIAN RYE: TESTING 98 PERCENT PURITY AND 90 PERCENT GERMINATION.

4. MISCELLANEOUS:

   4.1. PERMANENT SEEDING SHALL COVER ALL DISTURBED AREA NOT TO BE COVERED BY LANDSCAPE PLANTING BEDS, STRUCTURE, OR PAVEMENT.
   4.2. SEED ALL DISTURBED AREAS WITHIN SEVEN DAYS OF FINAL GRADING AND TEMPORARY SEED/MULCH ALL AREAS THAT WILL BE LEFT INACTIVE FOR MORE THAN FOURTEEN (14) DAYS.
   4.3. ALL PERMANENT GRASS PLANTINGS SHALL BE MULCHED
   4.4. CENTIPEDE SOD CAN BE USED AS PERMANENT COVER ANYTIME EXCEPT JUNE THRU OCTOBER
   4.5. IF GRASSING OCCURS DURING A MONTH REQUIRING TEMPORARY COVER, THE CONTRACTOR SHALL APPLY PERMANENT COVER (IN ADDITION TO THE TEMPORARY COVER) AT THE APPROPRIATE TIME AT NO NO ADDITIONAL COST. THE CONTRACTOR MUST ACHIEVE A STRAND OF PERMANENT GRASS WITH AT LEAST 95% COVER. BARE SPOTS CAN NOT BE MORE THAN 1 INCH SQUARE IN ANY 10 SF

X. PERMANENT STABILIZATION

NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC,EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL ESTABLISHED. IF NECESSARY, AREAS MUST BE RE-WORKED AND RE-STABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY ,OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO THE SITE.

4.1. SEEDED AREAS

FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS A 90% COVER OF THE DISTURBED AREA WITH MATURE, HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.

4.2. SODDED AREAS

FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THE COMPLETE BINDING OF THE SOD ROOTS INTO THE APPROVED MULCH MATERIAL.

4.3. PERMANENT MULCH

FOR MULCHED AREAS, PERMANENT MULCHING MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL.

4.4. RIPRAP

FOR AREAS STABILIZED WITH RIPRAP, PERMANENT STABILIZATION MEANS THAT SLOPES STABILIZED WITH RIPRAP HAVE AN APPROPRIATE BACKING OF AN APPROVED GEOTEXTILE TO PREVENT SOIL MOVEMENT FROM BEHIND THE RIPRAP.

4.5. DITCHES, CHANNELS, AND SWALES

FOR OPEN CHANNELS, PERMANENT STABILIZATION MEANS THE CHANNEL IS STABILIZED WITH MATURE VEGETATION AT LEAST THREE INCHES IN HEIGHT, WITH WELL-GRADED RIPRAP LINING, OR WITH ANOTHER NON-EROSIVE LINING CAPABLE OF WITHSTANDING THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHOUT RELIANCE ON CHECK DAMS TO SLOW FLOW. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE LINING, UNDERCUTTING OF THE BANKS, OR DOWN CUTTING OF THE CHANNEL.

XI. FERTILIZER REQUIREMENTS

1. TEMPORARY SEEDING FERTILIZER

APPLY A MINIMUM OF 500 LBS PER ACRE OF A COMPLETE 10-10-10 FERTILIZER (11.5 POUNDS PER 1000 SQUARE FEET) OR EQUIVALENT DURING TEMPORARY SEEDING OF GRASSES UNLESS A SOIL TEST INDICATES A DIFFERENT REQUIREMENT. INCORPORATE FERTILIZER AND LIME (IF USED) INTO THE TOP 4-6 INCHES OF THE SOIL BY DISKING OR OTHER MEANS WHERE CONDITIONS ALLOW. LIME IS NOT REQUIRED FOR TEMPORARY SEEDING UNLESS A SOIL TEST SHOWS THAT THE SOIL PH IS BELOW 5.0. IT IS DESIRABLE TO APPLY LIME DURING THE TEMPORARY SEEDING OPERATION TO BENEFIT THE LONG-TERM PERMANENT SEEDING. APPLY A MINIMUM OF 1.5 TONS OF LIME / ACRE (70LBS. / 1000 SQ. FT.).

2. PERMANENT SEEDING FERTILIZER

APPLY A MINIMUM OF 1000 LBS PER ACRE OF A COMPLETE 10-10-10 FERTILIZER (23 POUNDS PER 1000 SQUARE FEET) OR EQUIVALENT DURING PERMANENT SEEDING OF GRADES UNLESS A SOIL TEST INDICATES A DIFFERENT REQUIREMENT. INCORPORATE FERTILIZER AND LIME (IF USED) INTO THE TOP 4-6 INCHES OF THE SOIL BY DISKING OR OTHER MEANS WHERE CONDITIONS ALLOW. DO NOT MIX THE LIME AND THE FERTILIZER PRIOR TO THE FIELD APPLICATION. UNLESS A SPECIFIC SOIL TEST INDICATES OTHERWISE, APPLY 1 & 1/2 TONS OF GROUND COARSE TEXTURED AGRICULTURAL LIMESTONE PER ACRE (70 LBS. / 1000 SQ.FT.).

XII. SWPP PREPARER CERTIFICATION

I HAVE PLACED MY SIGNATURE AND SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 48, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.

THOMAS & HUTTON ENGINEERING CO. No. C00285

No. 13295
MARK F. YODICE
9-10-2015

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

SWPPP NOTES

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	NTS

05-C-06

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STORMWATER POLLUTION PREVENTION PLAN

TEMPORARY SEEDING - COASTAL

SPECIES	LABS/AC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SANDY, DROUGHTY SITES													
BROWNTOP MILLET	40			▬	▬	▬	▬	▬	▬				
RYE, GRAIN	56	▬	▬	▬						▬	▬	▬	▬
RYEGRASS	50	▬	▬	▬	▬					▬	▬	▬	▬
WELL DRAINED, CLAYEY/LOAMEY SITES													
BROWNTOP MILLET	40			▬	▬	▬	▬	▬	▬				
JAPANESE MILLET	40												
RYE, GRAIN	56	▬	▬	▬						▬	▬	▬	▬
OATS	75												
RYEGRASS	50	▬	▬	▬	▬					▬	▬	▬	▬

PERMANENT SEEDING - COASTAL

SPECIES	LABS/AC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SANDY, DROUGHTY SITES													
BROWNTOP MILLET	10			▬	▬	▬	▬	▬	▬				
BAHIAGRASS	40												
BROWNTOP MILLET	10			▬	▬	▬	▬	▬	▬				
BAHIAGRASS	30												
SERICEA LESPEDEZA	40												
BROWNTOP MILLET	10			▬	▬	▬	▬						
ATLANTIC COASTAL	15												
PANICGRASS	PLS												
BROWNTOP MILLET	10			▬	▬	▬	▬						
SWITCHGRASS	8												
(ALAMO)	PLS												
LITTLE BLUESTEM	4												
SERICEA LESPEDEZA	20												
BROWNTOP MILLET	10			▬	▬	▬	▬						
WEEPING LOVEGRASS	8												
WELL DRAINED, CLAYEY/LOAMEY SITES													
BROWNTOP MILLET	10			▬	▬	▬	▬	▬	▬				
BAHIAGRASS	40												
RYE, GRAIN	10									▬	▬	▬	
BAHIAGRASS	40												
CLOVER, CRIMSON (ANNUAL)	5												
BROWNTOP MILLET	10			▬	▬	▬	▬	▬	▬				
BAHIAGRASS	30												
SERICEA LESPEDEZA	40												
BROWNTOP MILLET	10			▬	▬	▬	▬	▬	▬				
BERMUDA, COMMON	10												
SERICEA LESPEDEZA	40												
BROWNTOP MILLET	10			▬	▬	▬	▬	▬	▬				
BERMUDA, COMMON	12												
KOBE LESPEDEZA (ANNUAL)	10												
BROWNTOP MILLET	10			▬	▬	▬	▬	▬	▬				
BAHIAGRASS	20												
BERMUDA, COMMON	6												
SERICEA LESPEDEZA	40												
BROWNTOP MILLET	10			▬	▬	▬	▬	▬	▬				
SWITCHGRASS	8												
LITTLE BLUESTEM	PLS												
INDIANGRASS	3												

EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
SILT FENCE	▬▬ x ▬▬
CLEARING LIMITS	— CL — CL —
DIVERSION DIKE	⇒DD⇒
DIVERSION BERM	⇒DB⇒
PERMANENT DIVERSION	→PD→
SUBSURFACE DRAIN	SSD
VEGETATED CHANNEL	▨▭▨
RIP RAP LINED CHANNEL	▨▭▨
ECB OR TRM LINED CHANNEL	▦▭▦
PAVED CHANNEL	PC ➡
TREE PROTECTION	○
SURFACE ROUGHENING	◉ OR LG
TOP SOILING	◉
TEMPORARY SEEDING	TS
PERMANENT SEEDING	PS
MULCHING	M
EROSION CONTROL BLANKET OR TURF REINFORCEMENT MAT	●

EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
FLEXIBLE GROWTH MATRIX	FGM
BONDED FIBER MATRIX	BFM
RIPRAP	❂
OUTLET PROTECTION - RIP RAP	▣
OUTLET PROTECTION - ECB OR TRM	▣
DUST CONTROL	DC
POLYACRYLAMIDE (PAM)	PAM
SEDIMENT BASIN	◓
SEDIMENT TUBE	⌒
ROCK CHECK DAM	▶ ▶ OR ▮ ▮
STABILIZED CONSTRUCTION ENTRANCE	▣
CONCRETE WASHOUT	▢
STORM DRAIN INLET PROTECTION - TYPE A FILTER FABRIC	A
STORM DRAIN INLET PROTECTION - TYPE A SEDIMENT TUBE	A
STORM DRAIN INLET PROTECTION - TYPE B HARDWARE FABRIC AND STONE	B
PIPE SLOPE DRAINS	○▬
TEMPORARY STREAM CROSSING	T

EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
LEVEL SPREADER	▣

LIST OF ACRONYMS FOR SEDIMENT AND EROSION CONTROL

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
AMD	ACRYLAMIDE POLYMER
BFM	BONDED FIBER MATRIX
BMP(S)	BEST MANAGEMENT PRACTICE(S)
CFS	CUBIC FEET PER SECOND
CMP	CORRUGATED METAL PIPE
DHEC	DEPARTMENT OF HEATH AND ENVIRONMENTAL CONTROL
ECB	EROSION CONTROL BLANKET
EPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
EPSC	EROSION PREVENTION AND SEDIMENTATION CONTROL
FDA	UNITED STATES FOOD AND DRUG ADMINISTRATION
FGM	FLEXIBLE GROWTH MATRIX
HDPE	HIGH DENSITY POLYETHYLENE
MS4	MUNICIPAL SEPARATE STORM SEWER SYSTEM
MSDS	MATERIAL SAFETY DATA SHEETS
NPDES	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
PAM	POLYACRYLAMIDE OR POLYMER
RCP	REINFORCED CONCRETE PIPE
SCS	SOIL CONSERVATION SERVICE
SWPPP	STORMWATER POLLUTION PREVENTION PROGRAM
TRM	TURF REINFORCEMENT MAT
VFS	VEGETATED FILTER STRIP

CONSTRUCTION SEQUENCE

	CONSTRUCTION ACTIVITY	SCHEDULE CONSIDERATION
1	OBTAIN COPIES OF ALL PLAN APPROVALS AND OTHER APPLICABLE PERMITS.	CONTRACTOR TO HAVE ONSITE AT ALL TIMES DURING CONSTRUCTION.
2	FLAG THE WORK LIMITS AND BARRICADE TREES AND MARK BUFFER AREAS FOR PROTECTION.	HAVE LOCAL REGULATORY AGENCY INSPECT TREE BARRICADES.
3	HOLD PRE CONSTRUCTION CONFERENCE AT LEAST ONE WEEK PRIOR TO STARTING CONSTRUCTION.	REVIEW TREE PROTECTION (BARRICADE) WITH OWNER AND LOCAL REGULATORY AGENCY. TAKE PICTURES OF ALL PROTECTED TREES AND LOCATIONS WHERE SITE WORK TIES INTO EXISTING TO DOCUMENT PREDEVELOPMENT PROCEDURES.
4	INSTALL CONSTRUCTION ACCESS AND LAY DOWN AREAS	STABILIZE BARE AREAS IMMEDIATELY AND INSTALL CONSTRUCTION EXITS / ENTRANCES.
5	CONSTRUCT SEDIMENT TRAPS AND BARRIERS - BASIN TRAPS, SEDIMENT FENCES, AND OUTLET PROTECTION.	INSTALL PRINCIPAL BASINS AFTER CONSTRUCTION SITE IS ACCESSED. INSTALL ADDITIONAL TRAPS AND BARRIERS AS NEEDED DURING GRADING.
6	ESTABLISH RUNOFF CONTROL - DIVERSIONS, PERIMETER DIKES, WATER BARS, AND OUTLET PROTECTION.	INSTALL KEY PRACTICES AFTER PRINCIPAL SEDIMENT TRAPS AND BEFORE LAND GRADING. INSTALL ADDITIONAL RUNOFF-CONTROL MEASURES DURING GRADING.
7	LAND CLEARING AND GRADING-SITE PREPARATION CUTTING, FILLING AND GRADING, SEDIMENTATION TRAPS, BARRIERS, DIVERSIONS, DRAINS, SURFACE ROUGHENING.	BEGIN MAJOR CLEARING AND GRADING AFTER PRINCIPAL SEDIMENT AND KEY RUNOFF-CONTROL MEASURES ARE INSTALLED. CLEAR BORROW AND DISPOSAL AREAS ONLY AS NEEDED. INSTALL ADDITIONAL CONTROL MEASURES AS GRADING PROGRESSES. MARK TREES AND BUFFER AREAS FOR PRESERVATION.
8	RUNOFF CONVEYANCE SYSTEM- INSTALL STORM DRAINS, STABILIZE BANKS, CHANNELS, INSTALL INLET AND OUTLET PROTECTION, SLOPE DRAINS.	WHERE NECESSARY, STABILIZE BANKS AS EARLY AS POSSIBLE. INSTALL PRINCIPAL RUNOFF CONVEYANCE SYSTEM WITH RUNOFF- CONTROL MEASURES. INSTALL REMAINDER OF SYSTEM AFTER GRADING.
9	INSTALL WASTEWATER COLLECTION, WATER DISTRIBUTION, AND STORM DRAINAGE SYSTEMS	APPLY TEMPORARY OR PERMANENT STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS WHERE WORK IS DELAYED OR COMPLETE.
10	SURFACE STABILIZATION-TEMPORARY AND PERMANENT SEEDING, MULCHING, SODDING, RIP RAP.	APPLY TEMPORARY OR PERMANENT STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS WHERE WORK IS DELAYED OR COMPLETE.
11	BUILDING CONSTRUCTION- BUILDINGS UTILITIES, ROADS, ETC.	INSTALL NECESSARY EROSION AND SEDIMENTATION CONTROL PRACTICES AS WORK TAKES PLACE.
12	LANDSCAPING AND FINAL STABILIZATION - TOPSOILING, TREES AND SHRUBS, PERMANENT SEEDING, MULCHING, SODDING, RIP RAP.	LAST CONSTRUCTION PHASE--STABILIZE ALL OPEN AREAS, INCLUDING BORROW AND SPOIL AREAS. REMOVE AND STABILIZE ALL TEMPORARY CONTROL MEASURES.

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE No. 13293

9-10-2015

NO.	REVISIONS	BY	DATE

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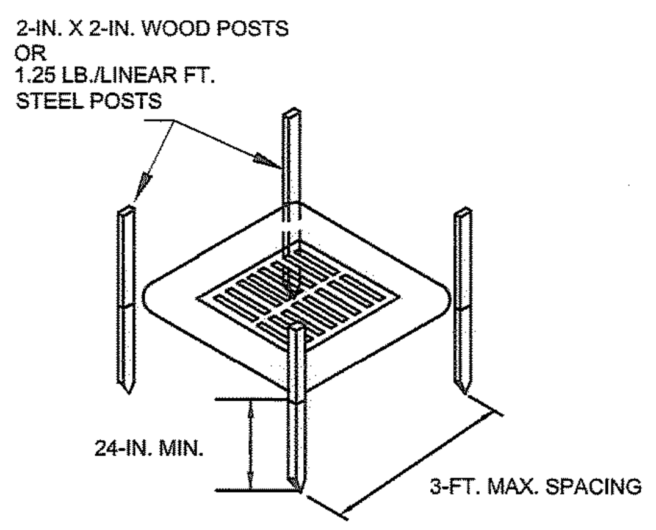
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
SWPPP - CHARTS

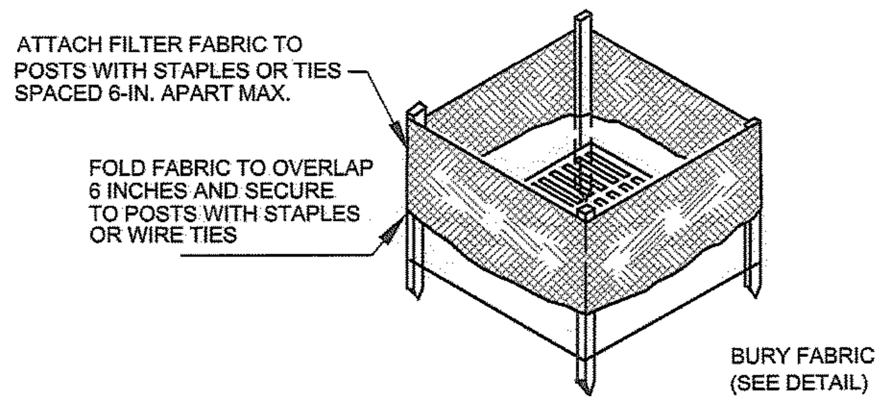
JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	NTS

05-C-07

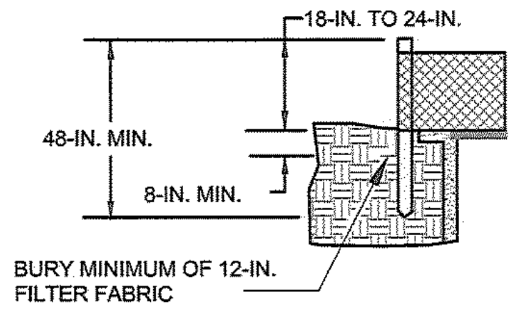
STORMWATER POLLUTION PREVENTION PLAN



POST INSTALLATION DETAIL



FILTER FABRIC INSTALLATION DETAIL



FILTER FABRIC BURIAL DETAIL

MATERIALS:
USE FILTER FABRIC THAT CONFORMS TO SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (LATEST EDITION).

USE STEEL POSTS THAT MEET THE FOLLOWING MINIMUM PHYSICAL REQUIREMENTS:
BE COMPOSED OF HIGH STRENGTH STEEL WITH MINIMUM YIELD STRENGTH OF 50,000 PSI.
HAVE A STANDARD "T" SECTION WITH A NOMINAL FACE WIDTH OF 1.38-INCHES AND NOMINAL "T" LENGTH OF 1.48-INCHES.
WEIGH 1.25 POUNDS PER FOOT (± 8%).
BE PAINTED WITH A WATER BASED BAKED ENAMEL PAINT.

INSTALLATION:
EXCAVATE A TRENCH 6-INCHES WIDE AND 6-INCHES DEEP AROUND THE OUTSIDE PERIMETER OF THE INLET UNLESS THE FABRIC IS PNEUMATICALLY INSTALLED.

EXTEND THE FILTER FABRIC A MINIMUM OF 12-INCHES INTO THE TRENCH. BACKFILL THE TRENCH WITH SOIL OR CRUSHED STONE AND COMPACT OVER THE FILTER FABRIC UNLESS THE FABRIC IS PNEUMATICALLY INSTALLED.

USE STEEL POSTS WITH A MINIMUM POST LENGTH OF 60-INCHES CONSISTING OF STANDARD "T" SECTIONS WITH A WEIGHT OF 1.25 POUNDS PER FOOT (±8%). INSTALL THE FILTER FABRIC TO A MINIMUM HEIGHT OF 24-INCHES ABOVE GRADE. SPACE THE STEEL POSTS AROUND THE PERIMETER OF THE INLET A MAXIMUM OF 3-FEET APART AND DRIVE THEM INTO THE GROUND A MINIMUM OF 24-INCHES. CUT THE FILTER FABRIC FROM A CONTINUOUS ROLL TO THE LENGTH OF THE PROTECTED AREA TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE NECESSARY, WRAP FILTER FABRIC TOGETHER ONLY AT A SUPPORT POST WITH BOTH ENDS SECURELY FASTENED TO THE POST, WITH A MINIMUM 6-INCH OVERLAP.

ATTACH FABRIC TO STEEL POSTS WITH HEAVY-DUTY PLASTIC TIES.

ATTACH AT LEAST FOUR (4) EVENLY SPACED TIES IN A MANNER TO PREVENT SAGGING OR TEARING OF THE FABRIC. IN ALL CASES, AFFIX TIES IN NO LESS THAN FOUR (4) PLACES.

INSPECTION AND MAINTENANCE:

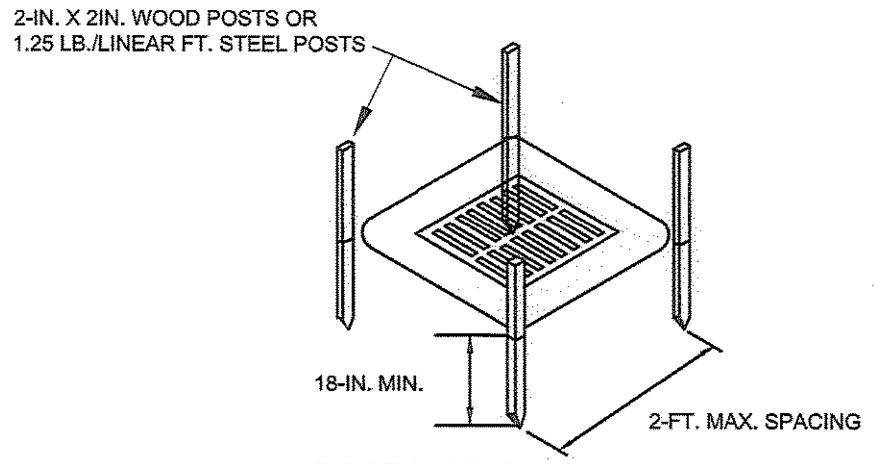
SEDIMENT SHOULD BE REMOVED WHEN IT REACHES APPROXIMATELY 1/3 THE HEIGHT OF THE FENCE. TAKE CARE NOT TO DAMAGE OR UNDERCUT FABRIC WHEN REMOVING SEDIMENT. IF A SUMP IS USED, SEDIMENT SHOULD BE REMOVED WHEN IT FILLS APPROXIMATELY 1/3 THE DEPTH OF THE HOLE. MAINTAIN THE POOL AREA, ALWAYS PROVIDING ADEQUATE SEDIMENT STORAGE VOLUME FOR THE NEXT STORM.

STORM DRAIN INLET PROTECTION STRUCTURES SHOULD BE REMOVED ONLY AFTER THE DISTURBED AREAS ARE PERMANENTLY STABILIZED. REMOVE ALL CONSTRUCTION MATERIAL AND SEDIMENT, AND DISPOSE OF THEM PROPERLY. GRADE THE DISTURBED AREA TO THE ELEVATION OF THE DROP INLET STRUCTURE CREST. USE APPROPRIATE PERMANENT STABILIZATION METHODS TO STABILIZE BARE AREAS AROUND THE INLET.

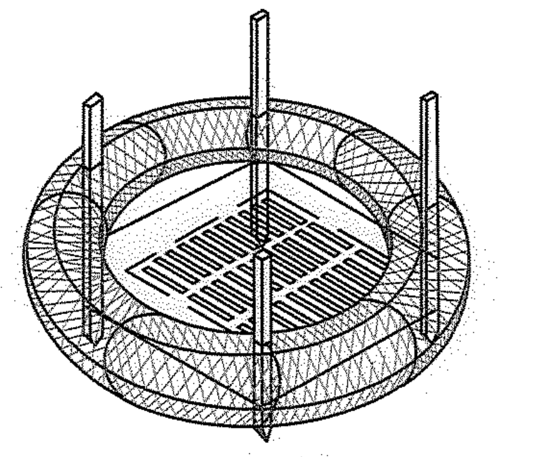
A

FILTER FABRIC INLET PROTECTION (TYPE A)

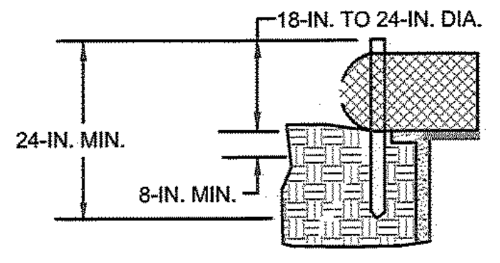
NOT TO SCALE



POST INSTALLATION DETAIL



SEDIMENT TUBE INSTALLATION DETAIL



SEDIMENT TUBE BURIAL DETAIL

MATERIALS:
SEDIMENT TUBES FOR TYPE A INLET STRUCTURE FILTERS EXHIBIT THE FOLLOWING PROPERTIES:
PRODUCED BY A MANUFACTURER EXPERIENCED IN SEDIMENT TUBE MANUFACTURING.
COMPOSED OF COMPACTED GEOTEXTILES, CURLED EXCELSIOR WOOD, NATURAL COCONUT FIBERS, HARDWOOD MULCH OR A MIX OF THESE MATERIALS ENCLOSED BY A FLEXIBLE NETTING MATERIAL.
STRAW, STRAW FIBER, STRAW BALES, PINE NEEDLES, AND LEAF MULCH ARE NOT ALLOWED UNDER THIS SPECIFICATION.
UTILIZES OUTER NETTING THAT CONSISTS OF SEAMLESS, HIGH-DENSITY POLYETHYLENE PHOTODEGRADABLE MATERIALS TREATED WITH ULTRAVIOLET STABILIZERS OR A SEAMLESS, HIGH-DENSITY POLYETHYLENE NON-DEGRADABLE MATERIALS.
DIAMETER RANGING FROM 18-INCHES TO 24-INCHES.
CURLED EXCELSIOR WOOD, OR NATURAL COCONUT ROLLED EROSION CONTROL PRODUCTS (RECPS) THAT ARE ROLLED UP TO CREATE A SEDIMENT TUBE ARE NOT ALLOWED UNDER THIS SPECIFICATION. SELECT APPLICABLE SEDIMENT TUBES FROM THE SCDOT APPROVED PRODUCTS LIST.

USE 48-INCH LONG WOOD POSTS THAT MEET THE FOLLOWING REQUIREMENTS:
2-INCH BY 2-INCH SIZE.
HEAVY-DUTY WIRE STAPLES AT LEAST 1½-INCH LONG, SPACED A MAXIMUM OF 6-INCHES APART TO ATTACH THE FILTER FABRIC TO WOODEN STAKES.

USE 48-INCH LONG STEEL POSTS THAT MEET THE FOLLOWING MINIMUM PHYSICAL REQUIREMENTS:
BE COMPOSED OF HIGH STRENGTH STEEL WITH MINIMUM YIELD STRENGTH OF 50,000 PSI.
HAVE A STANDARD "T" SECTION WITH A NOMINAL FACE WIDTH OF 1.38-INCHES AND NOMINAL "T" LENGTH OF 1.48-INCHES.
WEIGH 1.25 POUNDS PER FOOT (± 8%).
BE PAINTED WITH A WATER BASED BAKED ENAMEL PAINT.

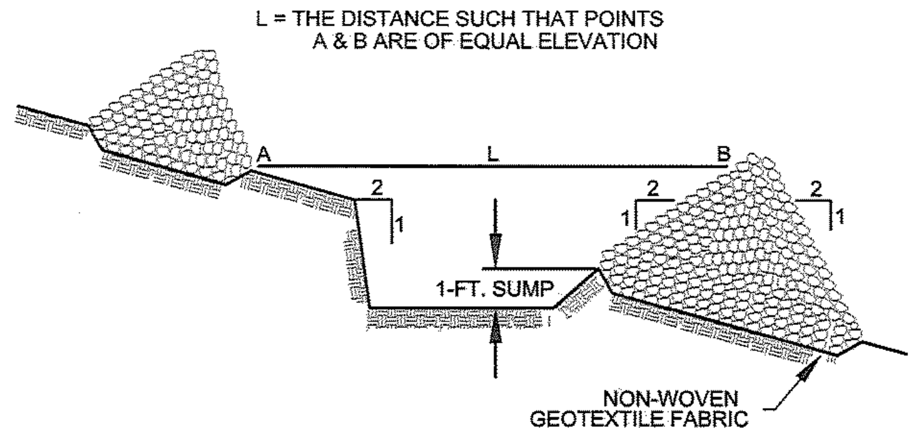
INSTALLATION:
REMOVE ALL ROCKS, CLODS, VEGETATION OR OTHER OBSTRUCTIONS SO INSTALLED SEDIMENT TUBES HAVE DIRECT CONTACT WITH THE UNDERLYING SOIL OR SURFACE. INSTALL SEDIMENT TUBES BY LAYING THEM FLAT ON THE GROUND. CONSTRUCT A SMALL TRENCH TO A DEPTH THAT IS 20% OF THE SEDIMENT TUBE DIAMETER. LAY THE SEDIMENT TUBE IN THE TRENCH AND COMPACT THE UPSTREAM SEDIMENT TUBE SOIL INTERFACE. DO NOT COMPLETELY BURY SEDIMENT TUBES DURING INSTALLATION. LAP THE ENDS OF ADJACENT SEDIMENT TUBES A MINIMUM OF 6-INCHES TO PREVENT FLOW AND SEDIMENT FROM PASSING THROUGH THE FIELD JOINT. NEVER STACK SEDIMENT TUBES ON TOP OF ONE ANOTHER. SEDIMENT TUBES USING WOODEN STAKES (2-INCH X 2-INCH) OR STEEL POSTS (STANDARD "U" OR "T" SECTIONS WITH A MINIMUM WEIGHT OF 1.25 POUNDS PER FOOT) A MINIMUM OF 48-INCHES IN LENGTH PLACED ON 2-FOOT CENTERS. INTERTWINE THE STAKES WITH THE OUTER MESH ON THE DOWNSTREAM SIDE, AND DRIVE THE STAKES IN THE GROUND TO A MINIMUM DEPTH OF 24-INCHES LEAVING LESS THAN 12-INCHES OF STAKE ABOVE THE EXPOSED SEDIMENT TUBE.

INSPECTION AND MAINTENANCE:
INSPECT EVERY SEVEN CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH RAINFALL EVENT THAT PRODUCES ½-INCHES OR MORE OF PRECIPITATION. INSPECT SEDIMENT TUBES AFTER INSTALLATION FOR GAPS UNDER THE TUBES AND FOR GAPS BETWEEN JOINTS OF ADJACENT ENDS OF SEDIMENT TUBES. REPAIR RILLS, GULLIES, AND ALL UNDERCUTTING NEAR SEDIMENT TUBES. REMOVE AND/OR REPLACE INSTALLED SEDIMENT TUBES AS REQUIRED TO ADAPT TO CHANGING CONSTRUCTION SITE CONDITIONS. REMOVE ALL SEDIMENT TUBES FROM THE SITE WHEN THE FUNCTIONAL LONGEVITY IS EXCEEDED AS DETERMINED BY THE ENGINEER, OR MANUFACTURER'S REPRESENTATIVE. DISPOSE OF SEDIMENT TUBES IN REGULAR MEANS AS NON-HAZARDOUS, INERT MATERIAL.

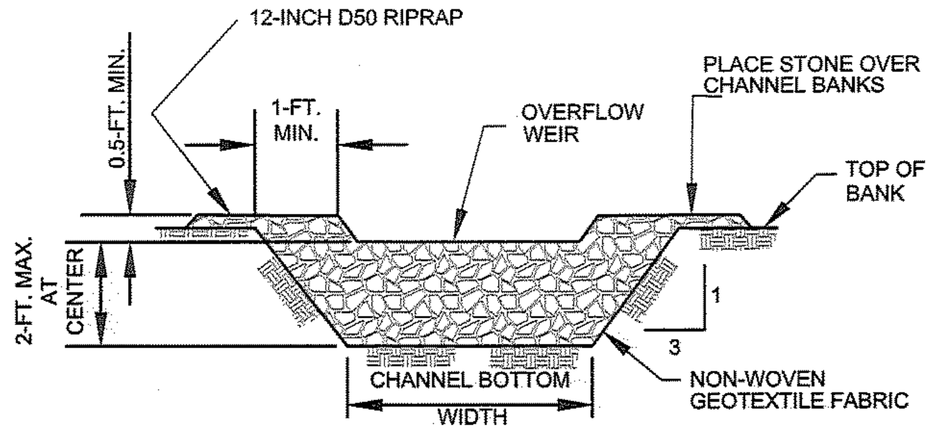
(A)

SEDIMENT TUBE INLET PROTECTION (TYPE A)

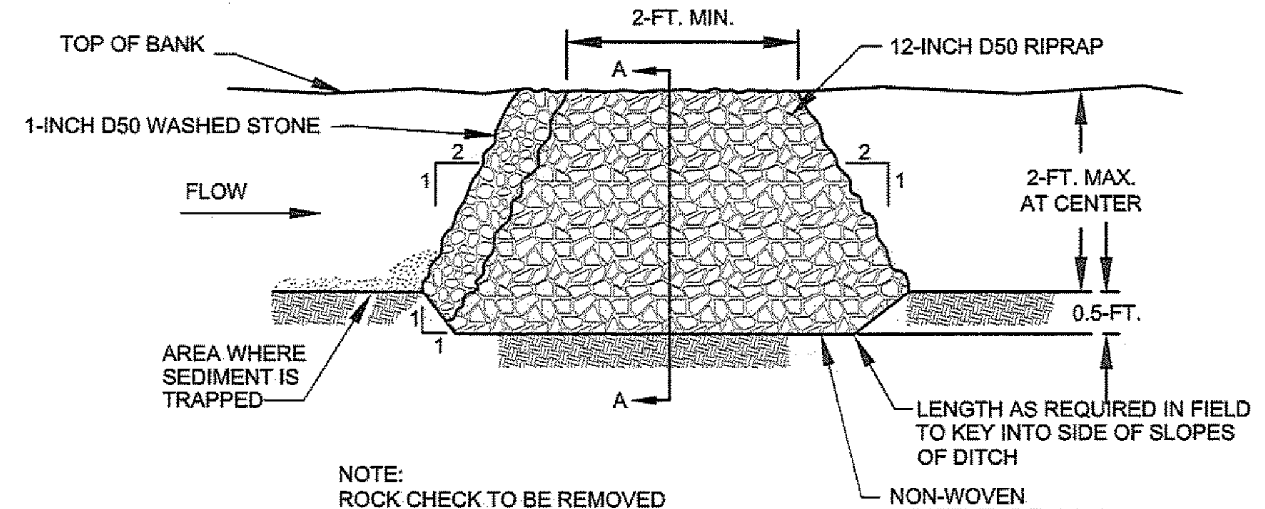
NOT TO SCALE


L = THE DISTANCE SUCH THAT POINTS
A & B ARE OF EQUAL ELEVATION
A
L
B
2
1
1-FT. SUMP
NON-WOVEN
GEOTEXTILE FABRIC

SPACING BETWEEN DITCH CHECK



CROSS SECTION A-A THRU STONE DITCH CHECK



NOTE:
ROCK CHECK TO BE REMOVED
BY GRADING CONTRACTOR AFTER
CONSTRUCTION IS COMPLETE AND
GRASSING IS ESTABLISHED

TYPICAL DITCH CHECK SECTION

WHEN AND WHERE TO USE IT:
A ROCK DITCH CHECK SHOULD BE INSTALLED IN STEEPLY SLOPED SWALES, OR IN SWALES WHERE ADEQUATE VEGETATION CANNOT BE ESTABLISHED. ROCK DITCH CHECKS SHOULD BE USED ONLY IN SMALL OPEN CHANNELS. ROCK DITCH CHECKS SHOULD NOT BE PLACED IN WATERS OF THE COMMONWEALTH OR USGS BLUE-LINE STREAMS.

INSTALLATION:
A NON-WOVEN GEOTEXTILE FABRIC SHALL BE INSTALLED OVER THE SOIL SURFACE WHERE THE ROCK DITCH CHECK IS TO BE PLACED.

THE BODY OF THE ROCK DITCH CHECK SHALL BE COMPOSED OF 12-INCH D50 RIPRAP.

THE UPSTREAM FACE OF THE ROCK DITCH CHECK MAY BE COMPOSED OF 1-INCH D50 WASHED STONE.

ROCK DITCH CHECKS SHOULD NOT EXCEED A HEIGHT OF 2-FEET AT THE CENTERLINE OF THE CHANNEL.

ROCK DITCH CHECKS SHOULD HAVE A MINIMUM TOP FLOW LENGTH OF 2-FEET.

STONE SHOULD BE PLACED OVER THE CHANNEL BANKS TO PREVENT WATER FROM CUTTING AROUND THE DITCH CHECK.

THE ROCK MUST BE PLACED BY HAND OR MECHANICAL PLACEMENT (NO DUMPING OF ROCK TO FORM DAM) TO ACHIEVE COMPLETE COVERAGE OF THE DITCH OR SWALE AND TO ENSURE THAT THE CENTER OF THE CHECK IS LOWER THAN THE EDGES.

THE MAXIMUM SPACING BETWEEN THE DAMS SHOULD BE SUCH THAT THE TOE OF THE UPSTREAM CHECK IS AT THE SAME ELEVATION AS THE TOP OF THE DOWNSTREAM CHECK.

INSPECTION AND MAINTENANCE:
INSPECT FOR SEDIMENT AND DEBRIS ACCUMULATION. INSPECT DITCH CHECK EDGES FOR EROSION AND REPAIR PROMPTLY AS REQUIRED.

SEDIMENT SHOULD BE REMOVED WHEN IT REACHES 1/3 THE ORIGINAL CHECK HEIGHT.

IN THE CASE OF GRASS-LINED DITCHES AND SWALES, ROCK DITCH CHECKS SHOULD BE REMOVED WHEN THE GRASS HAS MATURED SUFFICIENTLY TO PROTECT THE DITCH OR SWALE UNLESS THE SLOPE OF THE SWALE IS GREATER THAN 4%.

AFTER CONSTRUCTION IS COMPLETE, ALL STONE SHOULD BE REMOVED BY THE GRADING CONTRACTOR IF VEGETATION WILL BE USED FOR PERMANENT EROSION CONTROL MEASURES.

THE AREA BENEATH THE ROCK DITCH CHECKS SHOULD BE SEEDED AND MULCHED IMMEDIATELY AFTER ROCK CHECK DAM REMOVAL.

▶ ▶ OR ▨ ▨

ROCK DITCH CHECK

NOT TO SCALE

THOMAS & HUTTON ENGINEERING CO. No. C00285
MARK F. YODICE No. 13293
9-10-15

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
SWPPP DETAILS

JOB NO: J-25328.0000
DATE: 7/31/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: AS NOTED

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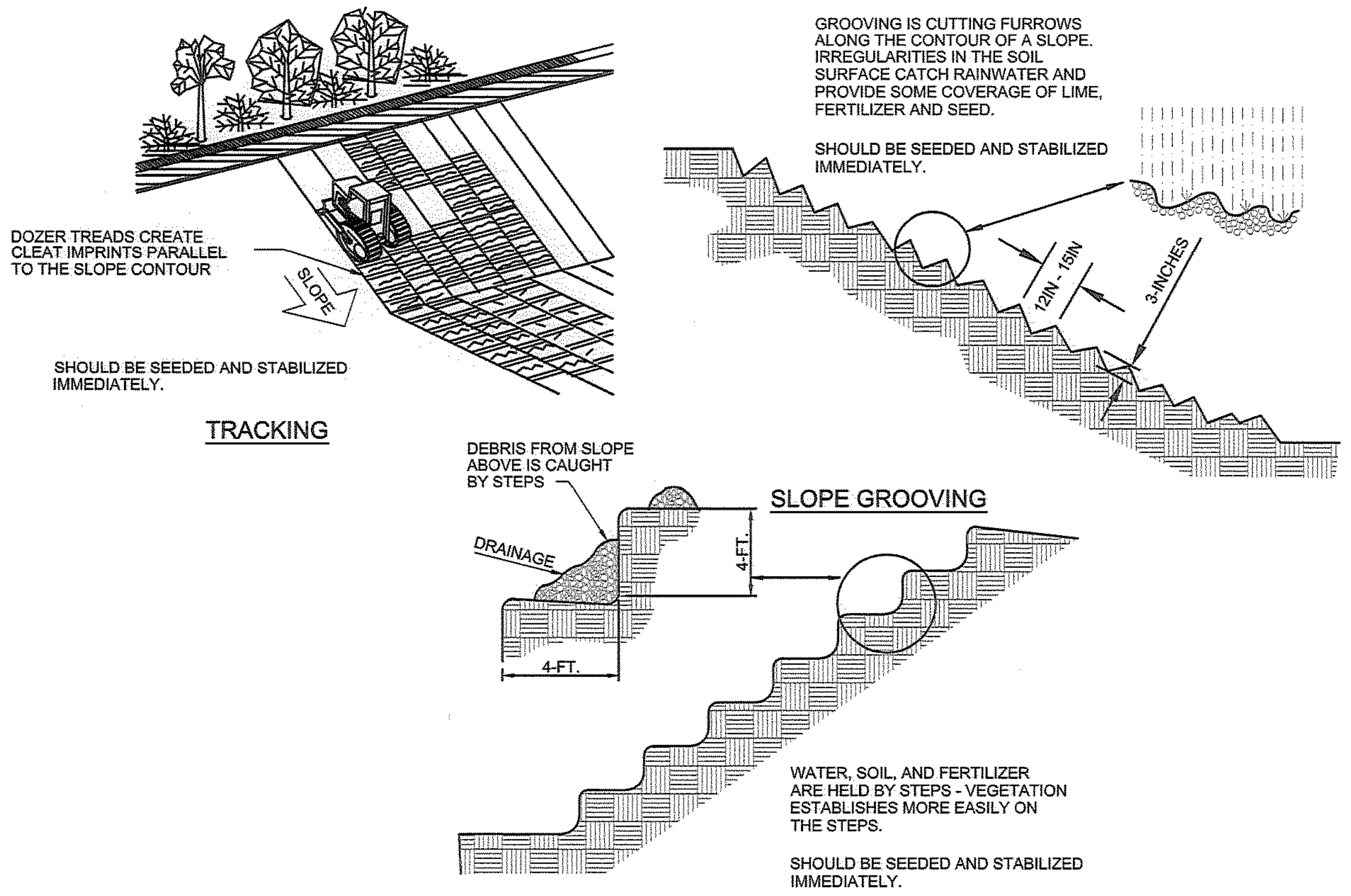
STORMWATER POLLUTION PREVENTION PLAN


DOZER TREADS CREATE CLEAT IMPRINTS PARALLEL TO THE SLOPE CONTOUR
SLOPE
SHOULD BE SEEDED AND STABILIZED IMMEDIATELY.
GROOVING IS CUTTING FURROWS ALONG THE CONTOUR OF A SLOPE. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER AND PROVIDE SOME COVERAGE OF LIME, FERTILIZER AND SEED.
SHOULD BE SEEDED AND STABILIZED IMMEDIATELY.
12IN - 15IN
3-INCHES
DEBRIS FROM SLOPE ABOVE IS CAUGHT BY STEPS
DRAINAGE
4-FT.
4-FT.
WATER, SOIL, AND FERTILIZER ARE HELD BY STEPS - VEGETATION ESTABLISHES MORE EASILY ON THE STEPS.
SHOULD BE SEEDED AND STABILIZED IMMEDIATELY.

TRACKING

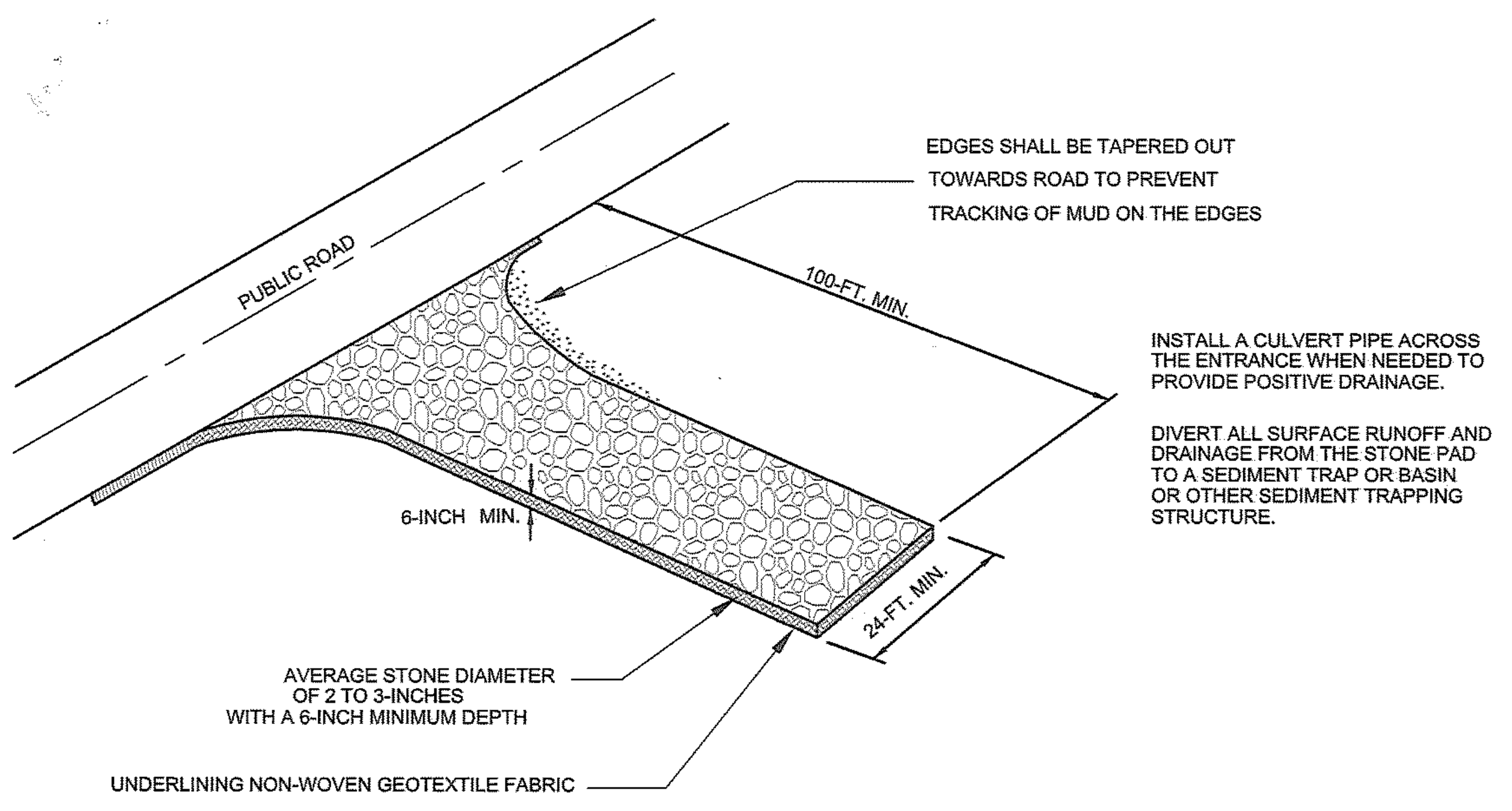
SLOPE GROOVING

STAIR-STEP GRADING

OR LG

LAND GRADING TECHNIQUES

NOT TO SCALE


PUBLIC ROAD
EDGES SHALL BE TAPERED OUT TOWARDS ROAD TO PREVENT TRACKING OF MUD ON THE EDGES
100-FT. MIN.
INSTALL A CULVERT PIPE ACROSS THE ENTRANCE WHEN NEEDED TO PROVIDE POSITIVE DRAINAGE.
DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN OR OTHER SEDIMENT TRAPPING STRUCTURE.
6-INCH MIN.
24-FT. MIN.
AVERAGE STONE DIAMETER OF 2 TO 3-INCHES WITH A 6-INCH MINIMUM DEPTH
UNDERLINING NON-WOVEN GEOTEXTILE FABRIC

WHEN AND WHERE TO USE IT:
STABILIZED CONSTRUCTION ENTRANCES SHOULD BE USED AT ALL POINTS WHERE TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE AND MOVING DIRECTLY ONTO A PUBLIC ROAD.

IMPORTANT CONSIDERATIONS:
IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFFSITE. WASHDOWN FACILITIES SHALL BE REQUIRED AS DIRECTED BY SCDHEC AS NEEDED. WASHDOWN AREAS IN GENERAL MUST BE ESTABLISHED WITH CRUSHED GRAVEL AND DRAIN INTO A SEDIMENT TRAP OR SEDIMENT BASIN.

CONSTRUCTION ENTRANCES SHOULD BE USED IN CONJUNCTION WITH THE STABILIZATION OF CONSTRUCTION ROADS TO REDUCE THE AMOUNT OF MUD PICKED UP BY VEHICLES.

INSTALLATION:
REMOVE ALL VEGETATION AND ANY OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA.

DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM STONES TO A SEDIMENT TRAP OR BASIN.

INSTALL A NON-WOVEN GEOTEXTILE FABRIC PRIOR TO PLACING ANY STONE.

INSTALL A CULVERT PIPE ACROSS THE ENTRANCE WHEN NEEDED TO PROVIDE POSITIVE DRAINAGE.

THE ENTRANCE SHALL CONSIST OF 1-INCH TO 3-INCH D50 STONE PLACED AT A MINIMUM DEPTH OF 6-INCHES.

MINIMUM DIMENSIONS OF THE ENTRANCE SHALL BE 24-FEET WIDE BY 100-FEET LONG, AND MAY BE MODIFIED AS NECESSARY TO ACCOMMODATE SITE CONSTRAINTS.

THE EDGES OF THE ENTRANCE SHALL BE TAPERED OUT TOWARDS THE ROAD TO PREVENT TRACKING OF MUD AT THE EDGE OF THE ENTRANCE.

INSPECTION AND MAINTENANCE:
CHECK FOR MUD AND SEDIMENT BUILDUP AND PAD INTEGRITY. MAKE DAILY INSPECTIONS DURING PERIODS OF WET WEATHER. MAINTENANCE IS REQUIRED MORE FREQUENTLY IN WET WEATHER CONDITIONS. RESHAPE THE STONE PAD AS NEEDED FOR DRAINAGE AND RUNOFF CONTROL.

WASH OR REPLACE STONES AS NEEDED. THE STONE IN THE ENTRANCE SHOULD BE WASHED OR REPLACED WHENEVER THE ENTRANCE FAILS TO REDUCE MUD BEING CARRIED OFF-SITE BY VEHICLES.

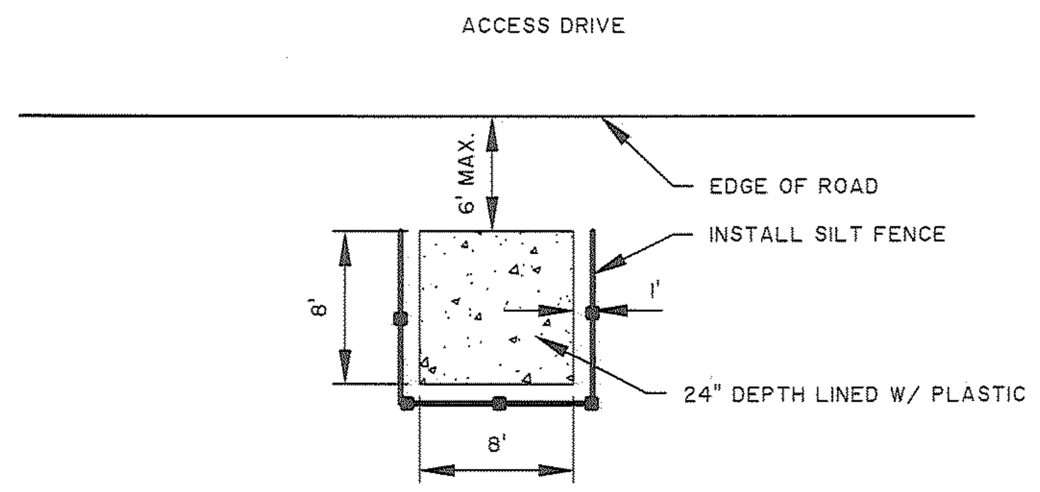
FREQUENT WASHING WILL EXTEND THE USEFUL LIFE OF STONE.

IMMEDIATELY REMOVE MUD AND SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADS BY BRUSHING OR SWEEPING. FLUSHING SHOULD ONLY BE USED WHEN THE WATER CAN BE DISCHARGED TO A SEDIMENT TRAP OR BASIN.

REPAIR ANY BROKEN PAVEMENT IMMEDIATELY.

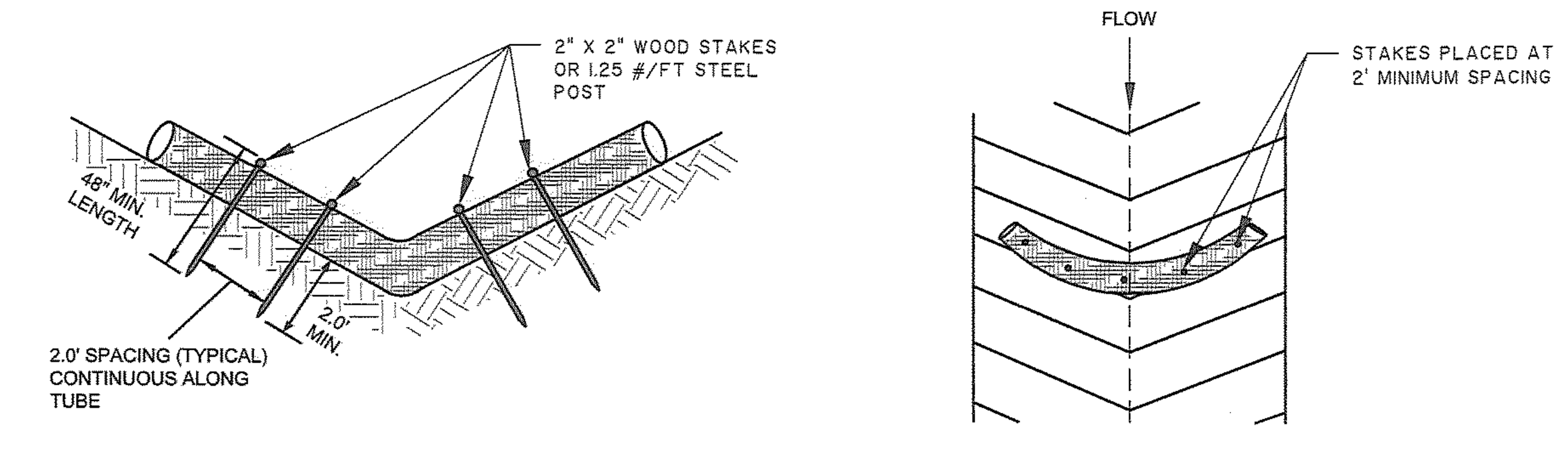
STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



CONCRETE WASHOUT DETAIL

NOT TO SCALE


2" X 2" WOOD STAKES OR 1.25 #/FT STEEL POST
48" MIN. LENGTH
2.0' MIN.
2.0' SPACING (TYPICAL) CONTINUOUS ALONG TUBE
FLOW
STAKES PLACED AT 2' MINIMUM SPACING

END VIEW OF DITCH

TOP VIEW OF DITCH

DESCRIPTION:
SEDIMENT TUBES ARE ELONGATED TUBES OF COMPACTED GEOTEXTILES, CURLED EXCELSIOR WOOD, NATURAL COCONUT FIBER OR HARDWOOD MULCH. STRAW,
PINE NEEDLE AND LEAF MULCH-FILLED SEDIMENT TUBES ARE NOT PERMITTED UNDER THIS SPECIFICATION.

WHEN AND WHERE TO USE IT:
INSTALL SEDIMENT TUBES ALONG CONTOURS, IN DRAINAGE CONVEYANCE SWALES, AND AROUND INLETS TO HELP REDUCE THE EFFECTS OF SOIL EROSION BY ENERGY DISSIPATION AND RETAIN SEDIMENT.

MATERIALS:
SEDIMENT TUBES FOR DITCH CHECKS AND TYPE A INLET STRUCTURE FILTERS EXHIBIT THE FOLLOWING PROPERTIES:
PRODUCED BY A MANUFACTURER EXPERIENCED IN SEDIMENT TUBE MANUFACTURING.
COMPOSED OF COMPACTED GEOTEXTILES, CURLED EXCELSIOR WOOD, NATURAL COCONUT FIBERS, HARDWOOD MULCH OR A MIX OF THESE MATERIALS ENCLOSED BY A FLEXIBLE NETTING MATERIAL.
STRAW, STRAW FIBER, STRAW BALES, PINE NEEDLES AND LEAF MULCH ARE NOT ALLOWED UNDER THIS SPECIFICATION.
UTILIZES OUTER NETTING THAT CONSISTS OF SEAMLESS, HIGH-DENSITY POLYETHYLENE PHOTODEGRADABLE MATERIALS TREATED WITH ULTRAVIOLET STABILIZERS OR A SEAMLESS, HIGH-DENSITY POLYETHYLENE NON-DEGRADABLE MATERIALS. DIAMETER RANGING FROM 18-INCHES TO 24-INCHES.
CURLED EXCELSIOR WOOD, OR NATURAL COCONUT ROLLED EROSION CONTROL PRODUCTS (RECPS) THAT ARE ROLLED UP TO CREATE A SEDIMENT TUBE ARE NOT ALLOWED UNDER THIS SPECIFICATION.

INSTALLATION:
INSTALL OVER BARE SOIL, MULCHED AREAS OR EROSION CONTROL BLANKETS.
BE COMPOSED OF GEOTEXTILES, CURLED EXCELSIOR WOOD, NATURAL COCONUT FIBER OR HARDWOOD MULCH ENCLOSED BY A FLEXIBLE NETTING MATERIAL.
STRAW, STRAW FIBER, STRAW BALES, PINE NEEDLES AND LEAF MULCH ARE NOT ALLOWED.

THE MINIMUM DIAMETER SHOULD BE 18 INCHES.
SEDIMENT TUBES SHOULD BE STAKED USING WOODEN STAKES (2-INCH X 2-INCH) OR STEEL POSTS (STANDARD "U" OR "T" SECTIONS WITH A MINIMUM WEIGHT OF 1.25 POUNDS PER FOOT) A MINIMUM OF 48-INCHES IN LENGTH PLACED ON 2-FOOT CENTERS.

STAKES SHOULD BE INTERTWINED WITH THE OUTER MESH ON THE DOWNSTREAM SIDE AND DRIVEN IN THE GROUND TO A MINIMUM DEPTH OF 1.5 FEET LEAVING LESS THAN 1 FOOT OF STAKE EXPOSED ABOVE THE SEDIMENT TUBE. ALWAYS REFER TO THE MANUFACTURER'S RECOMMENDATIONS FOR THE STAKING DETAIL, INSTALL ALL SEDIMENT TUBES INSURING THAT NO GAPS EXIST BETWEEN THE SOIL AND THE BOTTOM OF THE SEDIMENT TUBE.
THE ENDS OF ADJACENT SEDIMENT TUBES SHOULD BE LAPPED 6-INCH TO PREVENT FLOW AND SEDIMENT FROM PASSING THROUGH THE FIELD JOINT.
IN NO SITUATIONS SHOULD SEDIMENT TUBES BE STACKED ON TOP OF ONE ANOTHER.

CONSTRUCT A TRENCH THAT IS 20% OF THE TUBE DIAMETER TO INSTALL THE TUBE IN.
AVOID DAMAGE TO SEDIMENT TUBES WHILE INSTALLING THEM. IF THE SEDIMENT TUBE BECOMES DAMAGED DURING INSTALLATION, A STAKE SHOULD BE PLACED ON BOTH SIDES OF THE DAMAGED AREA TERMINATING THE TUBE SEGMENT AND A NEW TUBE SEGMENT SHOULD BE INSTALLED.
SHOULD BE INSTALLED IN SWALES OR DRAINAGE DITCHES PERPENDICULAR TO THE FLOW OF WATER. SEDIMENT TUBES SHOULD CONTINUE UP THE SIDE SLOPES A MINIMUM OF 1 FOOT ABOVE THE DESIGN FLOW DEPTH. SEDIMENT TUBES SHOULD BE SPACED ACCORDING TO THE FOLLOWING TABLE.

SEDIMENT TUBE SPACING

SLOPE	MAXIMUM SEDIMENT TUBE SPACING
LESS THAN 2%	150-FEET
2%	100-FEET
3%	75-FEET
4%	50-FEET
5%	40-FEET
6%	30-FEET
GREATER THAN 6%	25-FEET

SEDIMENT TUBE LENGTH SELECTED SHOULD MINIMIZE THE NUMBER OF SEDIMENT TUBES NEEDED TO SPAN THE WIDTH OF THE DRAINAGE CONVEYANCE. IF THE DITCH CHECK LENGTH (PERPENDICULAR TO THE WATER FLOW) IS 15 FEET, THEN ONE 15 FOOT SEDIMENT TUBE IS PREFERRED COMPARED TO TWO OVERLAPPING 10 FOOT SEDIMENT TUBES.

SEDIMENT TUBES FOR DITCH CHECKS SHOULD REMAIN IN PLACE UNTIL FULLY ESTABLISHED VEGETATION AND ROOT SYSTEMS HAVE COMPLETELY DEVELOPED AND CAN SURVIVE ON THEIR OWN.

INSPECTION AND MAINTENANCE:
LARGE DEBRIS, TRASH, AND LEAVES SHOULD BE REMOVED.

IF EROSION CAUSES THE EDGES TO FALL TO A HEIGHT EQUAL TO OR BELOW THE HEIGHT OF THE CENTER, REPAIRS SHOULD BE MADE IMMEDIATELY.

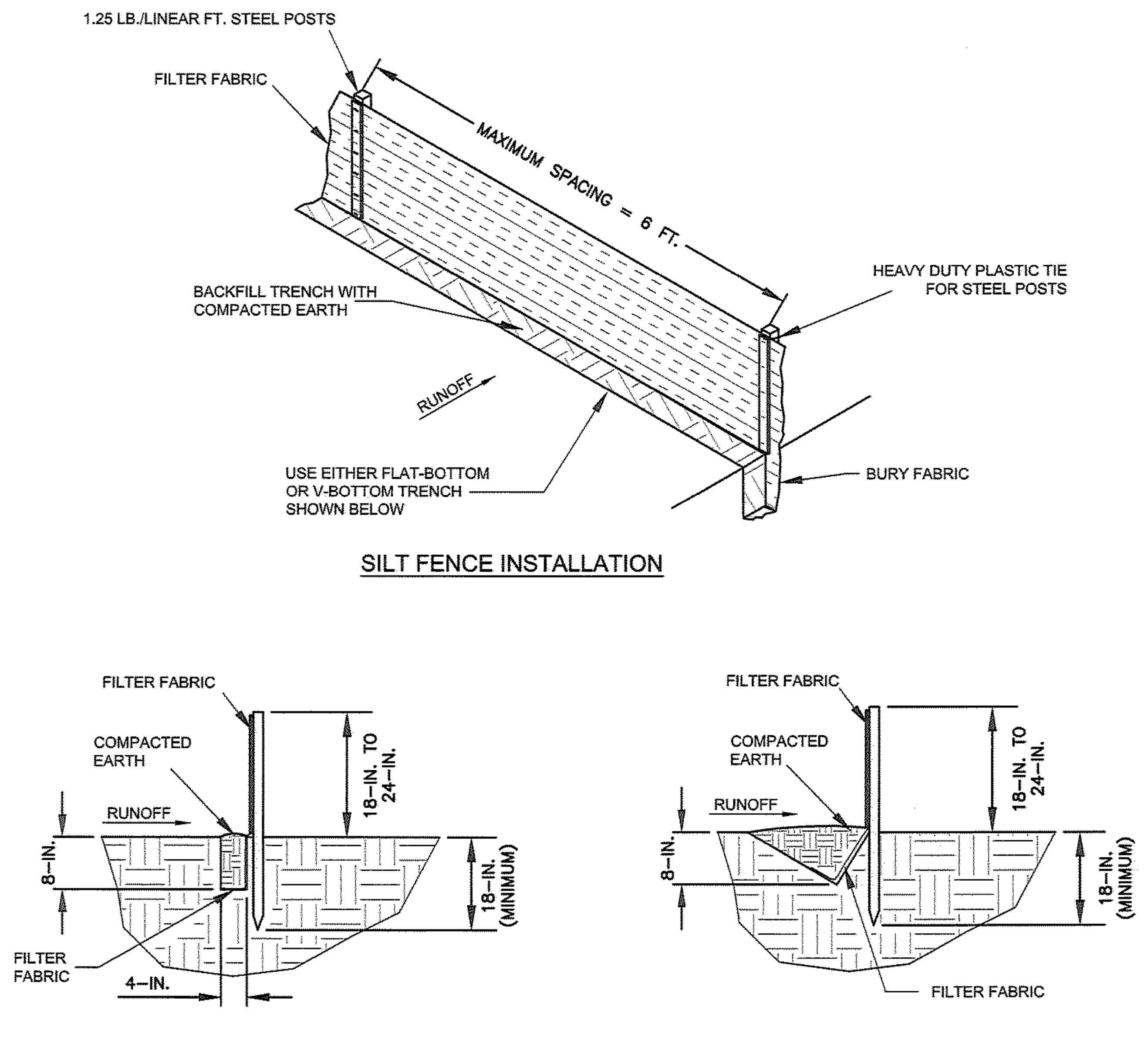
REMOVE ACCUMULATED SEDIMENT FROM THE UPSTREAM SIDE OF THE SEDIMENT TUBE WHEN THE SEDIMENT HAS REACHED A HEIGHT OF APPROXIMATELY ONE-THIRD OF THE EXPOSED HEIGHT OF THE TUBE (MEASURED AT THE CENTER).

ACCUMULATED SEDIMENT SHOULD BE REMOVED PRIOR TO REMOVING SEDIMENT TUBES.

SEDIMENT TUBE REMOVAL SHOULD BE COMPLETED ONLY AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN COMPLETELY STABILIZED. PERMANENT VEGETATION SHOULD REPLACE AREAS FROM WHICH GRAVEL, STONE, SEDIMENT TUBES, OR OTHER MATERIALS HAVE BEEN REMOVED.

SEDIMENT TUBES

NOT TO SCALE



SILT FENCE INSTALLATION

FLAT-BOTTOM TRENCH DETAIL

V-SHAPED TRENCH DETAIL

WHEN AND WHERE TO USE IT:
SILT FENCE IS APPLICABLE IN AREAS:

WHERE THE MAXIMUM SHEET OR OVERLAND FLOW PATH LENGTH TO THE FENCE IS 100-FEET.
WHERE THE MAXIMUM SLOPE STEEPNESS (NORMAL [PERPENDICULAR] TO FENCE LINE) IS 2H:1V.
THAT DO NOT RECEIVE CONCENTRATED FLOWS GREATER THAN 0.5 CFS.

DO NOT PLACE SILT FENCE ACROSS CHANNELS OR USE IT AS A VELOCITY CONTROL BMP.

MATERIALS:
STEEL POSTS
USE 48-INCH LONG STEEL POSTS THAT MEET THE FOLLOWING MINIMUM PHYSICAL REQUIREMENTS:
COMPOSED OF HIGH STRENGTH STEEL WITH MINIMUM YIELD STRENGTH OF 50,000 PSI.
HAVE A STANDARD "T" SECTION WITH A NOMINAL FACE WIDTH OF 1.38-INCHES AND NOMINAL "T" LENGTH OF 1.48-INCHES.
WEIGH 1.25 POUNDS PER FOOT (± 8%).
HAVE A SOIL STABILIZATION PLATE WITH A MINIMUM CROSS SECTION AREA OF 17-SQUARE INCHES ATTACHED TO THE STEEL POSTS.
PAINTED WITH A WATER BASED BAKED ENAMEL PAINT.

USE STEEL POSTS WITH A MINIMUM LENGTH OF 4-FEET, WEIGHING 1.25 POUNDS PER LINEAR FOOT (± 8%) WITH PROJECTIONS TO AID IN FASTENING THE FABRIC. EXCEPT WHEN HEAVY CLAY SOILS ARE PRESENT ON SITE, STEEL POSTS WILL HAVE A METAL SOIL STABILIZATION PLATE WELDED NEAR THE BOTTOM SUCH THAT WHEN THE POST IS DRIVEN TO THE PROPER DEPTH, THE PLATE WILL BE BELOW THE GROUND LEVEL FOR ADDED STABILITY.
THE SOIL PLATES SHOULD HAVE THE FOLLOWING CHARACTERISTICS:
BE COMPOSED OF MINIMUM 15 GAUGE STEEL.
HAVE A MINIMUM CROSS SECTION AREA OF 17-SQUARE INCHES.

GEOTEXTILE FILTER FABRIC:
FILTER FABRIC IS:
COMPOSED OF FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS COMPOSED OF AT LEAST 85% BY WEIGHT OF POLYOLEFINS, POLYESTERS, OR POLYAMIDES.
FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER.
FREE OF ANY TREATMENT OR COATING WHICH MIGHT ADVERSELY ALTER ITS PHYSICAL PROPERTIES AFTER INSTALLATION.
FREE OF DEFECTS OR FLAWS THAT SIGNIFICANTLY AFFECT ITS PHYSICAL AND/OR FILTERING PROPERTIES.
CUT TO A MINIMUM WIDTH OF 36 INCHES.

USE ONLY FABRIC APPEARING ON SCDOT APPROVAL SHEET #34 MEETING THE REQUIREMENTS OF THE MOST CURRENT EDITION OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

INSTALLATION:
EXCAVATE A TRENCH APPROXIMATELY 6-INCHES WIDE AND 6-INCHES DEEP WHEN PLACING FABRIC BY HAND. PLACE 12-INCHES OF GEOTEXTILE FABRIC INTO THE 6-INCH DEEP TRENCH, EXTENDING THE REMAINING 6-INCHES TOWARDS THE UPSLOPE SIDE OF THE TRENCH. BACKFILL THE TRENCH WITH SOIL OR GRAVEL AND COMPACT. BURY 12-INCHES OF FABRIC INTO THE GROUND WHEN PNEUMATICALLY INSTALLING SILT FENCE WITH A SLICING METHOD. PURCHASE FABRIC IN CONTINUOUS ROLLS AND CUT TO THE LENGTH OF THE BARRIER TO AVOID JOINTS. WHEN JOINTS ARE NECESSARY, WRAPPED THE FABRIC TOGETHER AT A SUPPORT POST WITH BOTH ENDS FASTENED TO THE POST, WITH A 6-INCH MINIMUM OVERLAP. INSTALL POSTS TO A MINIMUM DEPTH OF 24-INCHES. INSTALL POSTS A MINIMUM OF 1- TO 2- INCHES ABOVE THE FABRIC, WITH NO MORE THAN 3-FEET OF THE POST ABOVE THE GROUND. SPACE POSTS TO MAXIMUM 6-FEET CENTERS. ATTACH FABRIC TO WOOD POSTS USING STAPLES MADE OF HEAVY-DUTY WIRE AT LEAST 1-1/2-INCH LONG, SPACED A MAXIMUM OF 6-INCHES APART. STAPLE A 2-INCH WIDE LATHE OVER THE FILTER FABRIC TO SECURELY FASTEN IT TO THE UPSLOPE SIDE OF WOODEN POSTS. ATTACH FABRIC TO THE STEEL POSTS USING HEAVY-DUTY PLASTIC TIES THAT ARE EVENLY SPACED AND PLACED IN A MANNER TO PREVENT SAGGING OR TEARING OF THE FABRIC. IN CALL CASES, TIES SHOULD BE AFFIXED IN NO LESS THAN 4 PLACES. INSTALL THE FABRIC A MINIMUM OF 24-INCHES ABOVE THE GROUND. WHEN NECESSARY, THE HEIGHT OF THE FENCE ABOVE GROUND MAY BE GREATER THAN 24-INCHES. IN TIDAL AREAS, EXTRA SILT FENCE HEIGHT MAY BE REQUIRED. THE POST HEIGHT WILL BE TWICE THE EXPOSED POST HEIGHT. POST SPACING WILL REMAIN THE SAME AND EXTRA HEIGHT FABRIC WILL BE 4-, 5-, OR 6-FEET TALL. LOCATE SILT FENCE CHECKS EVERY 100 FEET MAXIMUM AND AT LOW POINTS. INSTALL THE FENCE PERPENDICULAR TO THE DIRECTION OF FLOW AND PLACE THE FENCE THE PROPER DISTANCE FROM THE TOE OF STEEP SLOPES TO PROVIDE SEDIMENT STORAGE AND ACCESS FOR MAINTENANCE AND CLEANOUT.

INSPECTION AND MAINTENANCE:
CHECK FOR SEDIMENT BUILDUP AND FENCE INTEGRITY. CHECK WHERE RUNOFF HAS ERODED A CHANNEL BENEATH THE FENCE, OR WHERE THE FENCE HAS SAGGED OR COLLAPSED BY FENCE OVERTOPPING. IF THE FENCE FABRIC TEARS, BEGINS TO DECOMPOSE, OR IN ANY WAY BECOMES INEFFECTIVE, REPLACE THE SECTION OF FENCE IMMEDIATELY. REMOVE SEDIMENT ACCUMULATED ALONG THE FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE, ESPECIALLY IF HEAVY RAINS ARE EXPECTED. REMOVE TRAPPED SEDIMENT FROM THE SITE OR STABILIZE IT ON SITE. REMOVE SILT FENCE WITHIN 30 DAYS AFTER FINAL STABILIZATION IS ACHIEVED OR

AFTER TEMPORARY BEST MANAGEMENT PRACTICES (BMPS) ARE NO LONGER NEEDED. PERMANENTLY STABILIZE DISTURBED AREAS RESULTING FROM FENCE REMOVAL.

SILT FENCE

NOT TO SCALE

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE No. 13293

9-1-2015

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
682 Johnnie Dodds Boulevard • Suite 100
Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

SWPPP DETAILS

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

05-C-09

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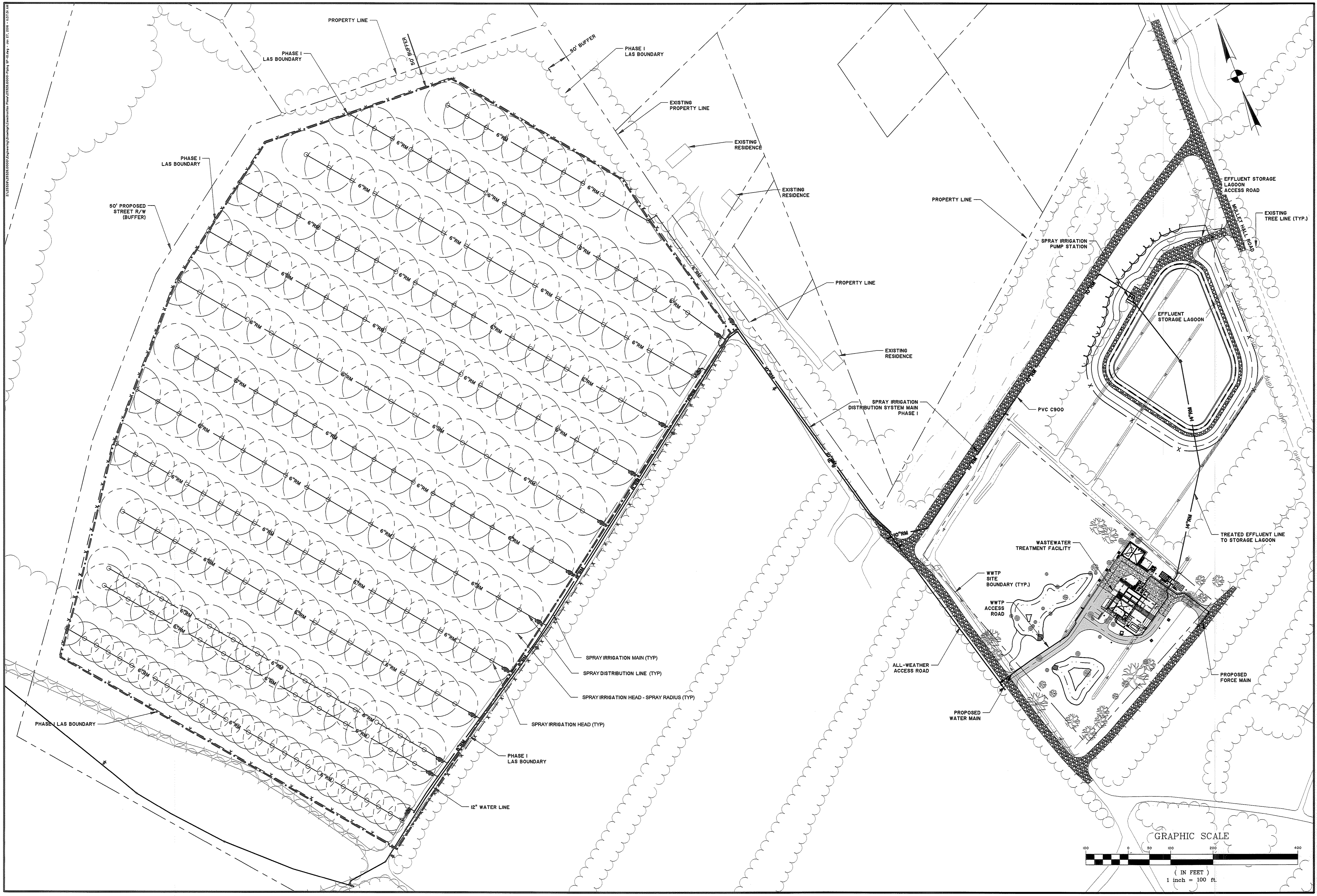

SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING CO.
No. C00285
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
No. 13293
MARK F. YODICE

Mark F. Yodice
1-29-2016

NO.	REVISIONS	BY	DATE

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682 Johnnie Dodds Boulevard • Suite 100
Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

SITE PIPING PLAN OVERALL SITE

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	1" = 100'

05-C-10

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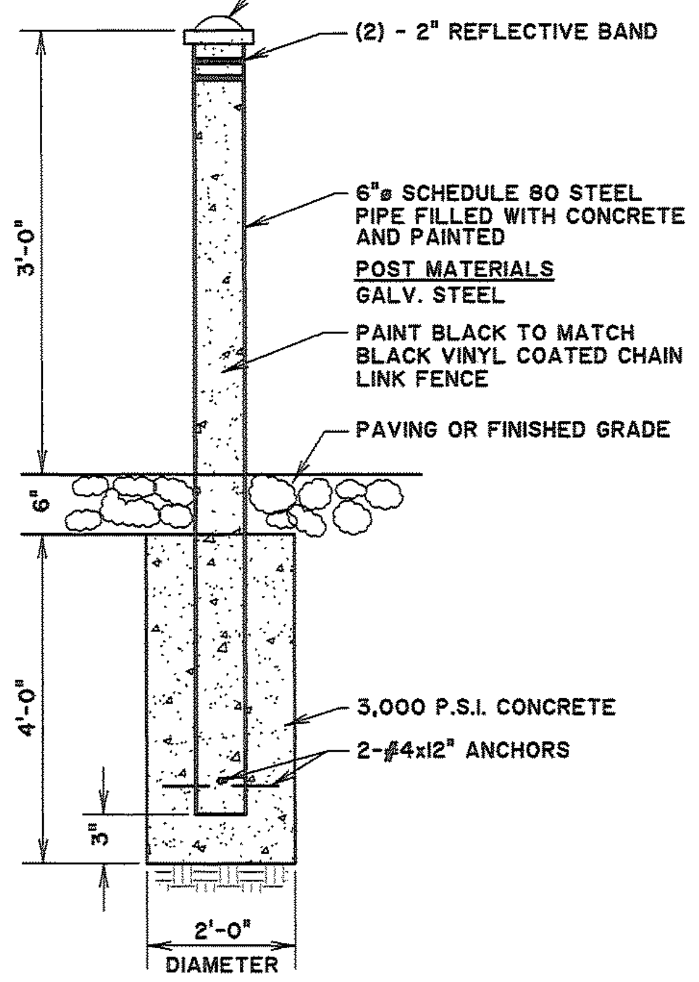
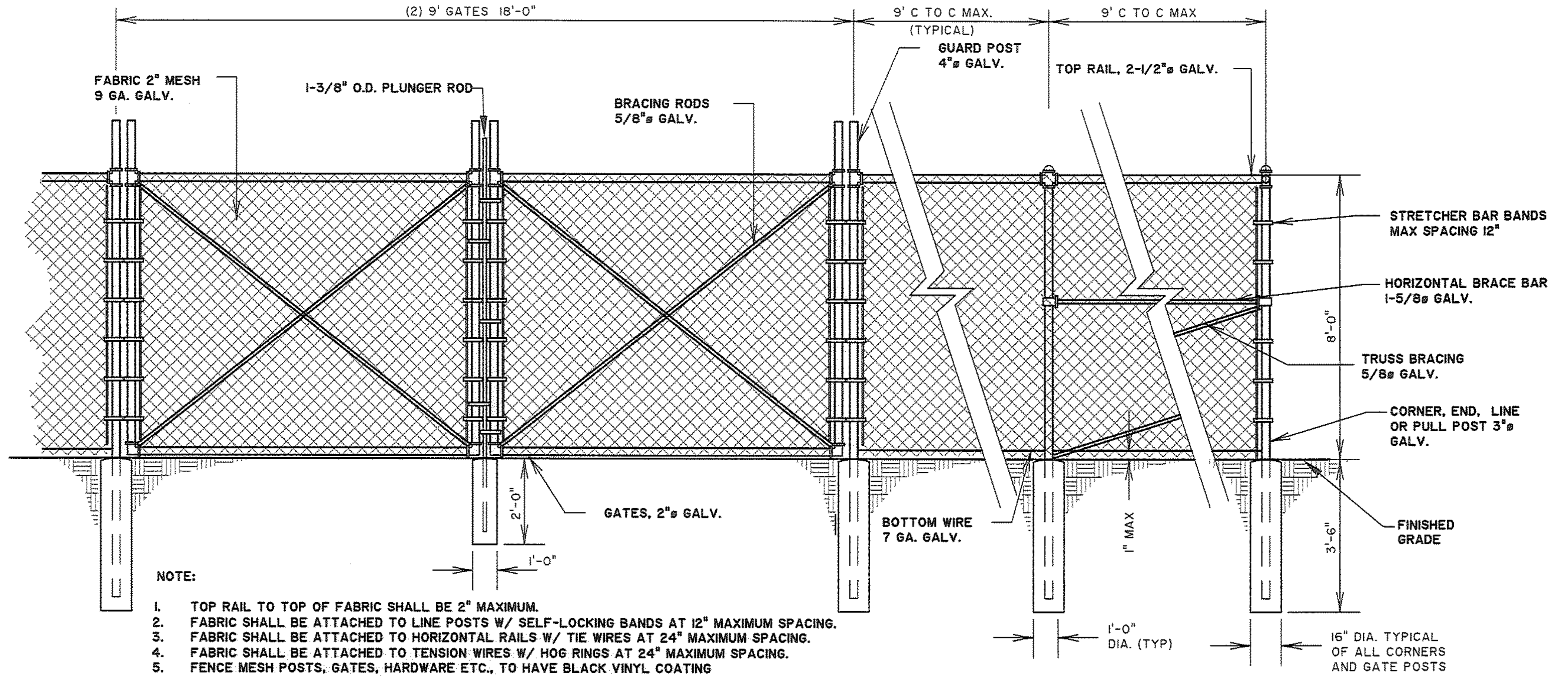


1 BOLLARD DETAIL
05-C-11 SCALE: N.T.S.



NOTE:

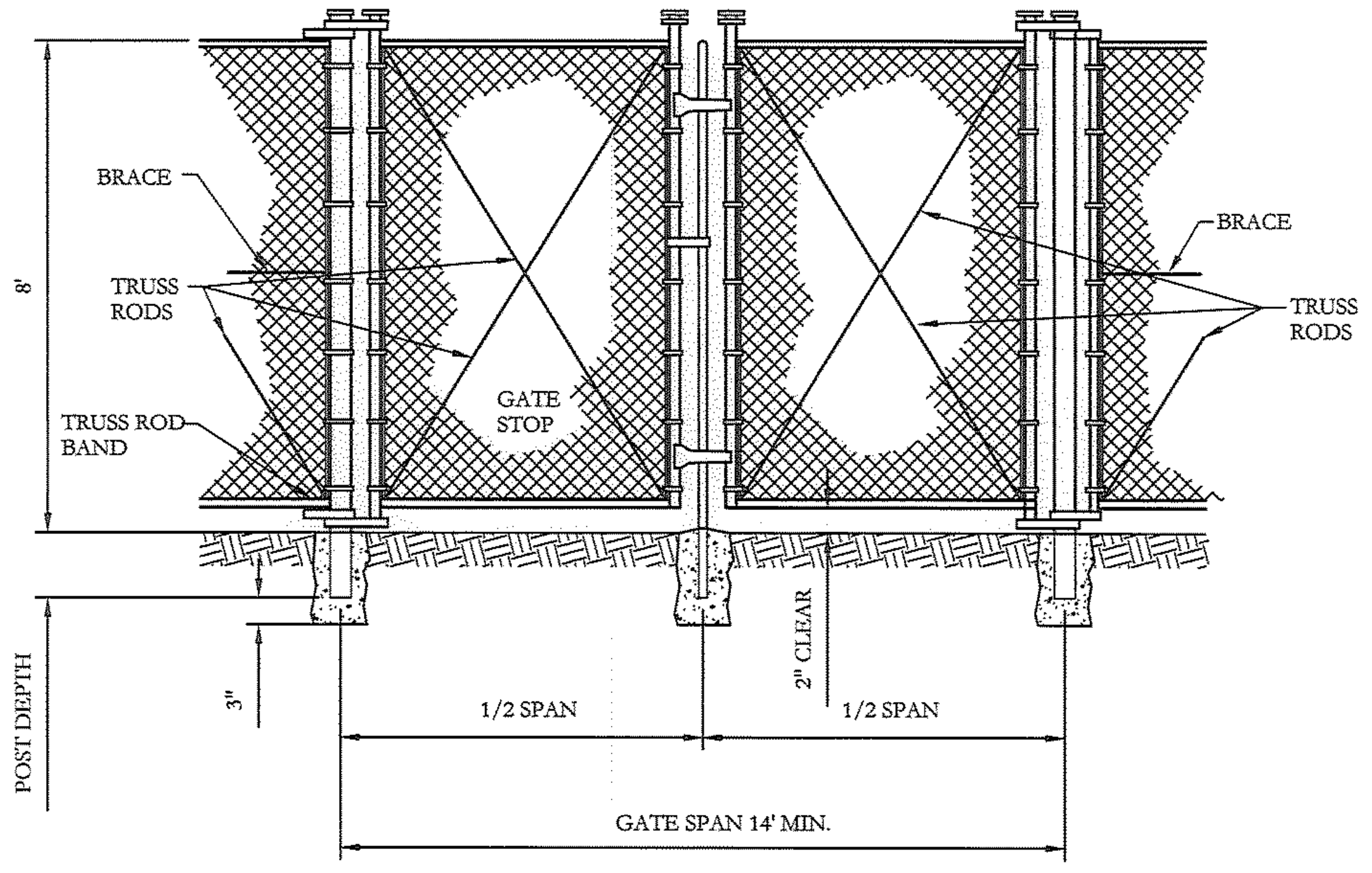
1. TOP RAIL TO TOP OF FABRIC SHALL BE 2" MAXIMUM.
2. FABRIC SHALL BE ATTACHED TO LINE POSTS W/ SELF-LOCKING BANDS AT 12" MAXIMUM SPACING.
3. FABRIC SHALL BE ATTACHED TO HORIZONTAL RAILS W/ TIE WIRES AT 24" MAXIMUM SPACING.
4. FABRIC SHALL BE ATTACHED TO TENSION WIRES W/ HOG RINGS AT 24" MAXIMUM SPACING.
5. FENCE MESH POSTS, GATES, HARDWARE ETC., TO HAVE BLACK VINYL COATING
6. SET ALL POSTS IN CONCRETE -CLASS C CONCRETE - 1' - 0" DIAMETER FOR LINE POSTS AND 1' - 6" DIAMETER FOR CORNER AND PULL POST

2 FENCE DETAILS
05-C-11 SCALE: N.T.S.

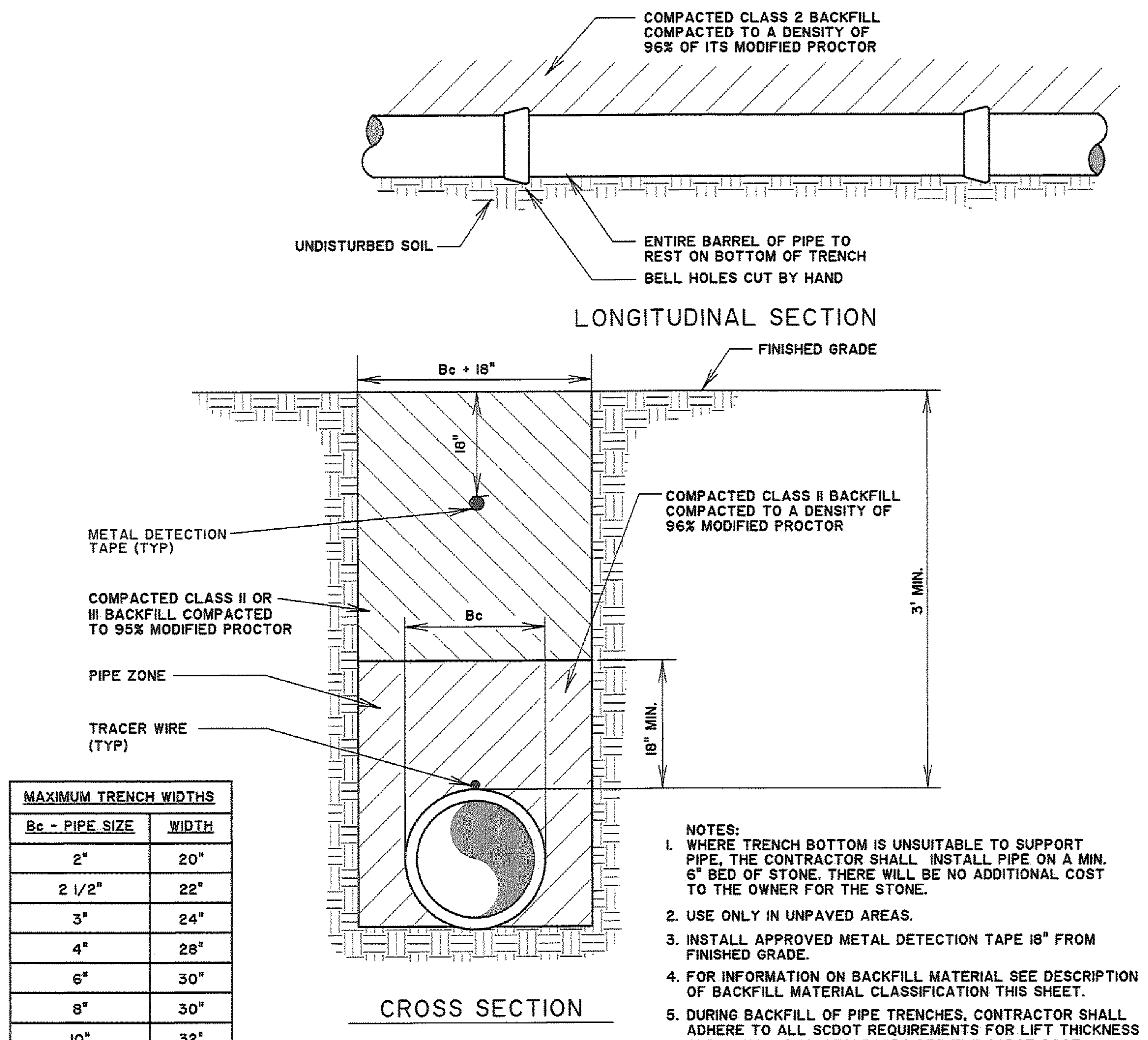
DESCRIPTION OF BACKFILL MATERIAL CLASSIFICATION
UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

SOIL CLASS	SOIL TYPE (USCS)	DESCRIPTION OF MATERIAL CLASSIFICATION
CLASS I SOILS*	—	MANUFACTURED ANGULAR, GRANULAR MATERIAL, 1/4 TO 1-1/2 INCHES (6 TO 40 mm) SIZE, INCLUDING MATERIALS HAVING REGIONAL SIGNIFICANCE SUCH AS CRUSHED STONE OR ROCK, BROKEN CORAL, CRUSHED SLAG, CINDERS, OF CRUSHED SHELLS.
CLASS II SOILS**	GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES. 50% OR MORE RETAINED ON NO. 4 SIEVE. MORE THAN 95% RETAINED ON NO. 200 SIEVE. CLEAN.
	GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES. 50% OR MORE RETAINED ON NO. 4 SIEVE. MORE THAN 95% RETAINED ON NO. 200 SIEVE. CLEAN.
	SW	WELL-GRADES SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES. MORE THAN 50% PASSES NO. 4 SIEVE. MORE THAN 95% RETAINED ON NO. 200 SIEVE. CLEAN.
	SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES. MORE THAN 50% PASSES NO. 4 SIEVE. MORE THAN 95% RETAINED ON NO. 200 SIEVE. CLEAN.
CLASS III SOILS***	GM	SILTY GRAVELS, GRAVEL-SAND MIXTURES. 50% OR MORE RETAINED ON NO. 4 SIEVE. MORE THAN 50% RETAINED ON NO. 200 SIEVE.
	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES. 50% OR MORE RETAINED ON NO. 4 SIEVE. MORE THAN 50% RETAINED ON NO. 200 SIEVE.
	SM	SILTY SANDS, SAND-SILT MIXTURES. MORE THAN 50% PASSES NO. 4 SIEVE. MORE THAN 50% RETAINED ON NO. 200 SIEVE.
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES. MORE THAN 50% PASSES NO. 4 SIEVE. MORE THAN 50% RETIANED ON NO. 200 SIEVE.
CLASS IV SOILS	ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS. LIQUID LIMIT 50% OR LESS. 50% OR MORE PASSES NO. 200 SIEVE.
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS. LIQUID LIMIT 50% OR LESS. 50% OR MORE PASSES NO. 200 SIEVE.
	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS. LIQUID LIMIT GREATER THAN 50%. 50% OR MORE PASSES NO. 200 SIEVE.
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS. LIQUID LIMIT GREATER THAN 50%. 50% OR MORE PASSES NO. 200 SIEVE.
CLASS V SOILS	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY. LIQUID LIMIT 50% OR LESS. 50% OR MORE PASSES NO. 200 SIEVE.
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY. LIQUID LIMIT GREATER THAN 50%. 50% OR MORE PASSES NO. 200 SIEVE.
	PT	PEAT, MUCK AND OTHER HIGHLY ORGANIC SOILS.

*SOILS DEFINED AS CLASS I MATERIALS ARE NOT DEFINED IN ASTM D2487.
**IN ACCORDANCE WITH ASTM D2487, LESS THAN 5% PAS NO. 200 SIEVE.
***IN ACCORDANCE WITH ASTM D2487, MORE THAN 12% PASS NO. 200 SIEVE. SOILS WITH 5% TO 12% NO. 200 SIEVE FALL IN BORDERLINE CLASSIFICATION, E.G., GP-GC.



3 DOUBLE SWING DRIVE GATE
05-C-11 SCALE: N.T.S.


COMPACTED CLASS 2 BACKFILL COMPACTED TO A DENSITY OF 96% OF ITS MODIFIED PROCTOR
UNDISTURBED SOIL
ENTIRE BARREL OF PIPE TO REST ON BOTTOM OF TRENCH
BELL HOLES CUT BY HAND
LONGITUDINAL SECTION
Bc + 18"
FINISHED GRADE
18"
METAL DETECTION TAPE (TYP)
COMPACTED CLASS II BACKFILL COMPACTED TO A DENSITY OF 96% MODIFIED PROCTOR
COMPACTED CLASS II OR III BACKFILL COMPACTED TO 95% MODIFIED PROCTOR
Bc
3' MIN.
PIPE ZONE
18" MIN.
TRACER WIRE (TYP)
CROSS SECTION

MAXIMUM TRENCH WIDTHS	
Bc - PIPE SIZE	WIDTH
2"	20"
2 1/2"	22"
3"	24"
4"	28"
6"	30"
8"	30"
10"	32"
12"	34"
14"	34"
16"	36"

NOTES:
1. WHERE TRENCH BOTTOM IS UNSUITABLE TO SUPPORT PIPE, THE CONTRACTOR SHALL INSTALL PIPE ON A MIN. 6" BED OF STONE. THERE WILL BE NO ADDITIONAL COST TO THE OWNER FOR THE STONE.
2. USE ONLY IN UNPAVED AREAS.
3. INSTALL APPROVED METAL DETECTION TAPE 18" FROM FINISHED GRADE.
4. FOR INFORMATION ON BACKFILL MATERIAL SEE DESCRIPTION OF BACKFILL MATERIAL CLASSIFICATION THIS SHEET.
5. DURING BACKFILL OF PIPE TRENCHES, CONTRACTOR SHALL ADHERE TO ALL SCDOT REQUIREMENTS FOR LIFT THICKNESS AND COMPACTION STANDARDS PER THE SCDOT 2007 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

4 TYPICAL STORM DRAIN BEDDING DETAIL
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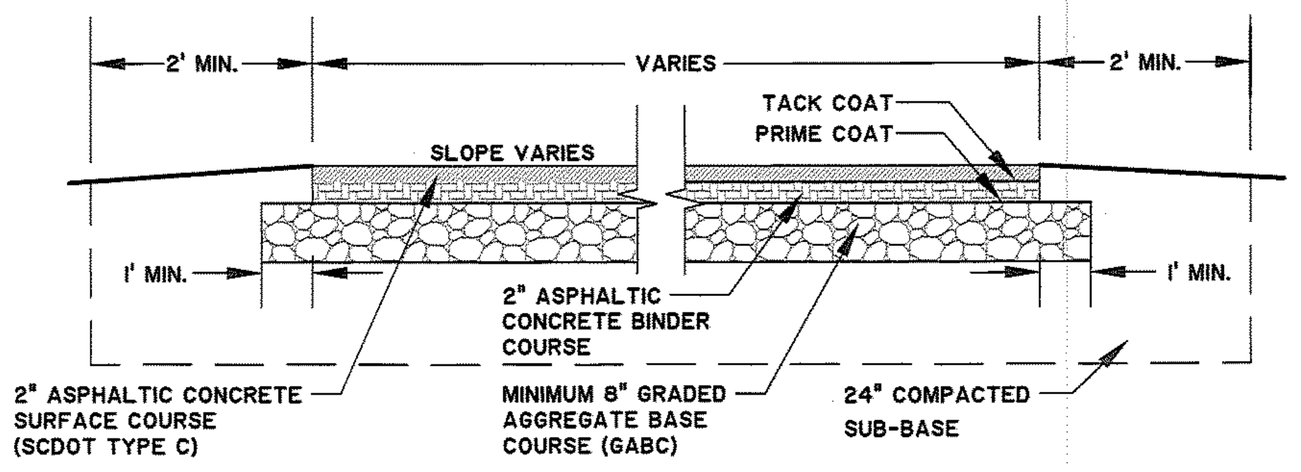
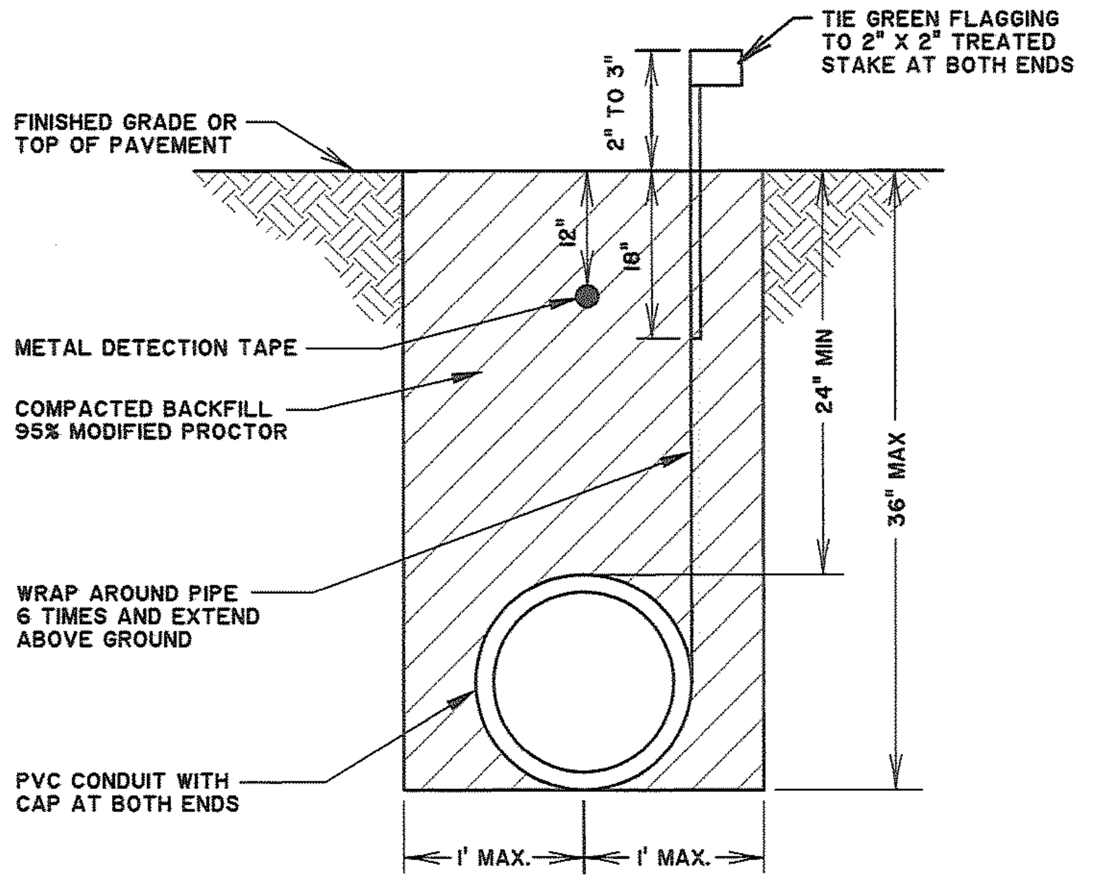

2' MIN.
VARIES
2' MIN.
TACK COAT
PRIME COAT
SLOPE VARIES
1' MIN.
1' MIN.
2" ASPHALTIC CONCRETE BINDER COURSE
2" ASPHALTIC CONCRETE SURFACE COURSE (SCDOT TYPE C)
MINIMUM 8" GRADED AGGREGATE BASE COURSE (GABC)
24" COMPACTED SUB-BASE

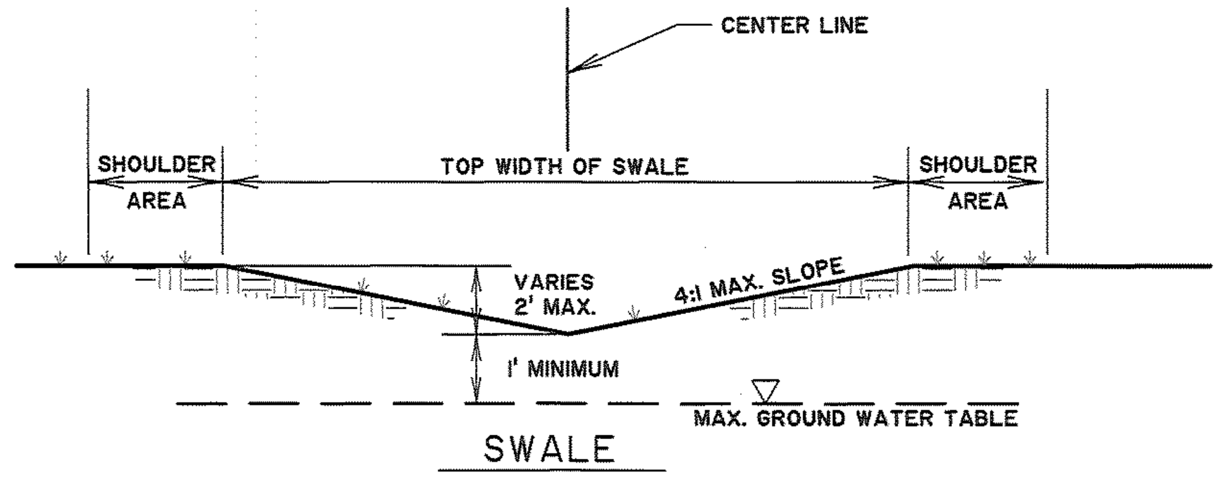
NOTES:
1. GRADED AGGREGATE BASE COURSE (G.A.B.C.) SHALL MEET SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION (SCDOT) STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
2. THE SURFACE COURSE SHALL MEET THE REQUIREMENTS OF SCDOT STANDARD SPECIFICATIONS, SECTIONS 401 & 403.
3. THE SUBGRADE SHALL BE COMPACTED TO 98% MAXIMUM DENSITY AND SHALL BE PREPARED ACCORDING TO SEXTION 208 OF THE SCDOT STANDARD SPECIFICATIONS.
4. THE BASE COURSE SHALL BE COMPACTED TO 98% MAXIMUM LABORATORY DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR COMPACTION TEST (ASTM D-1557).
5. THE SURFACE COURSE SHALL BE COMPACTED TO 98% LABORATORY COMPACTED DENSITY.
6. COMPACTION TESTS SHALL BE PERFORMED ON THE SUBGRADE, BASE AND WEARING SURFACE AND SUPPLIED TO THE ENGINEER.
7. IF SUBGRADE DOES NOT MEET CRITERIA FOR CONTROL FILL, CONTRACTOR SHALL REMOVE AND REPLACE 12 INCHES MIN. OF EXISTING SOIL WITH CONTROL FILL AT NO ADDITIONAL COST.

5 PLANT PAVEMENT SECTION
05-C-11 SCALE: N.T.S.


TIE GREEN FLAGGING TO 2" X 2" TREATED STAKE AT BOTH ENDS
FINISHED GRADE OR TOP OF PAVEMENT
2" TO 3"
12"
18"
METAL DETECTION TAPE
COMPACTED BACKFILL 95% MODIFIED PROCTOR
24" MIN
36" MAX
WRAP AROUND PIPE 6 TIMES AND EXTEND ABOVE GROUND
PVC CONDUIT WITH CAP AT BOTH ENDS
1' MAX.
1' MAX.

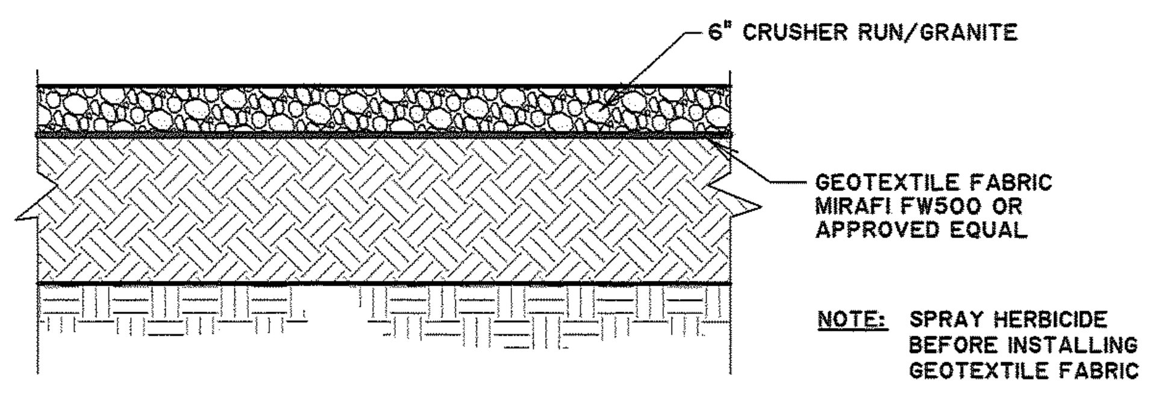
NOTES:
1. ALL CONDUIT TO BE PVC SCHEDULE 80 UNLESS OTHERWISE SPECIFIED.
2. PLUG ALL ENDS OF CONDUIT.
3. TERMINATE CONDUIT AS FOLLOWS:
   - 2 FEET BEHIND ALL WALKS
   - 3 FEET BEHIND ALL CURBS
   - 2 FEET BEHIND ALL PAVEMENT
4. COORDINATE DEPTH WITH OTHER CONDUITS AND UTILITIES.

6 CONDUIT DETAIL
05-C-11 SCALE: N.T.S.



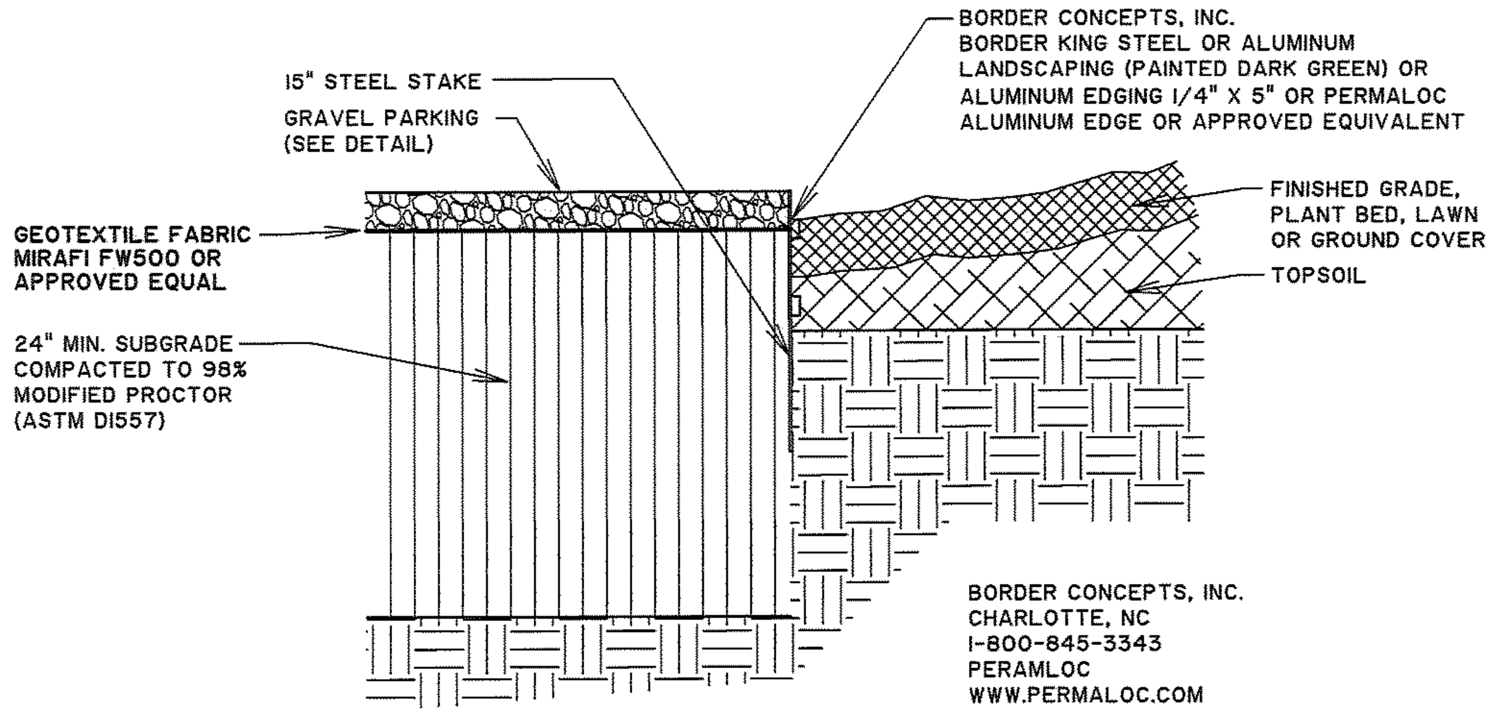
NOTE: 1. SWALES TO BE GRASSED IMMEDIATELY AFTER INSTALLATION.
2. FINAL LOCATION TO BE FIELD LOCATED W/ OWNER TO AVOID TREES, ETC.

7 GRASSED SWALE DETAIL
05-C-15 SCALE: N.T.S.



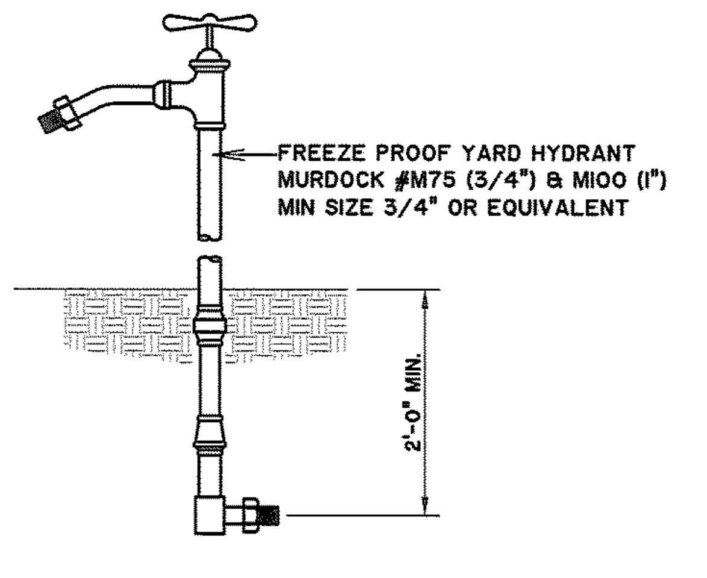
NOTE: SPRAY HERBICIDE BEFORE INSTALLING GEOTEXTILE FABRIC

8 GRAVEL SECTION
05-C-11 SCALE: N.T.S.

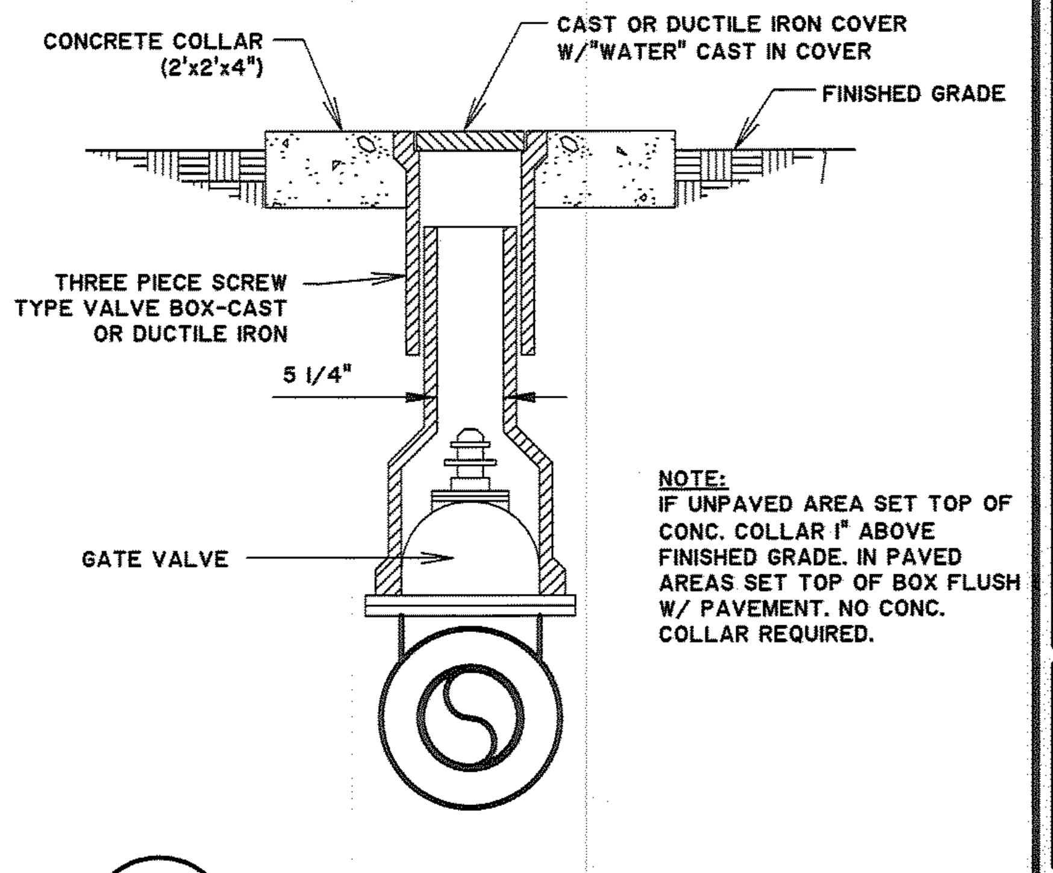

15" STEEL STAKE
GRAVEL PARKING (SEE DETAIL)
BORDER CONCEPTS, INC. BORDER KING STEEL OR ALUMINUM LANDSCAPING (PAINTED DARK GREEN) OR ALUMINUM EDGING 1/4" X 5" OR PERMALOC ALUMINUM EDGE OR APPROVED EQUIVALENT
GEOTEXTILE FABRIC MIRAFI FW500 OR APPROVED EQUAL
FINISHED GRADE, PLANT BED, LAWN OR GROUND COVER
TOPSOIL
24" MIN. SUBGRADE COMPACTED TO 98% MODIFIED PROCTOR (ASTM D1557)

BORDER CONCEPTS, INC.
CHARLOTTE, NC
1-800-845-3343
PERAMLOC
WWW.PERMALOC.COM

9 EDGING GRAVEL
05-C-11 SCALE: N.T.S.


FREEZE PROOF YARD HYDRANT MURDOCK #M75 (3/4") & M100 (1") MIN SIZE 3/4" OR EQUIVALENT
2'-0" MIN.

10 YARD HYDRANT DETAIL
05-C-11 SCALE: N.T.S.


CONCRETE COLLAR (2'x2'x4")
CAST OR DUCTILE IRON COVER W/"WATER" CAST IN COVER
FINISHED GRADE
THREE PIECE SCREW TYPE VALVE BOX-CAST OR DUCTILE IRON
5 1/4"
GATE VALVE

NOTE:
IF UNPAVED AREA SET TOP OF CONC. COLLAR 1" ABOVE FINISHED GRADE. IN PAVED AREAS SET TOP OF BOX FLUSH W/ PAVEMENT. NO CONC. COLLAR REQUIRED.

11 VALVE BOX DETAILS
05-C-11 SCALE: N.T.S.

THOMAS & HUTTON ENGINEERING CO. No. C00285
MARK F. YODICE No. 13293
1/29/2016

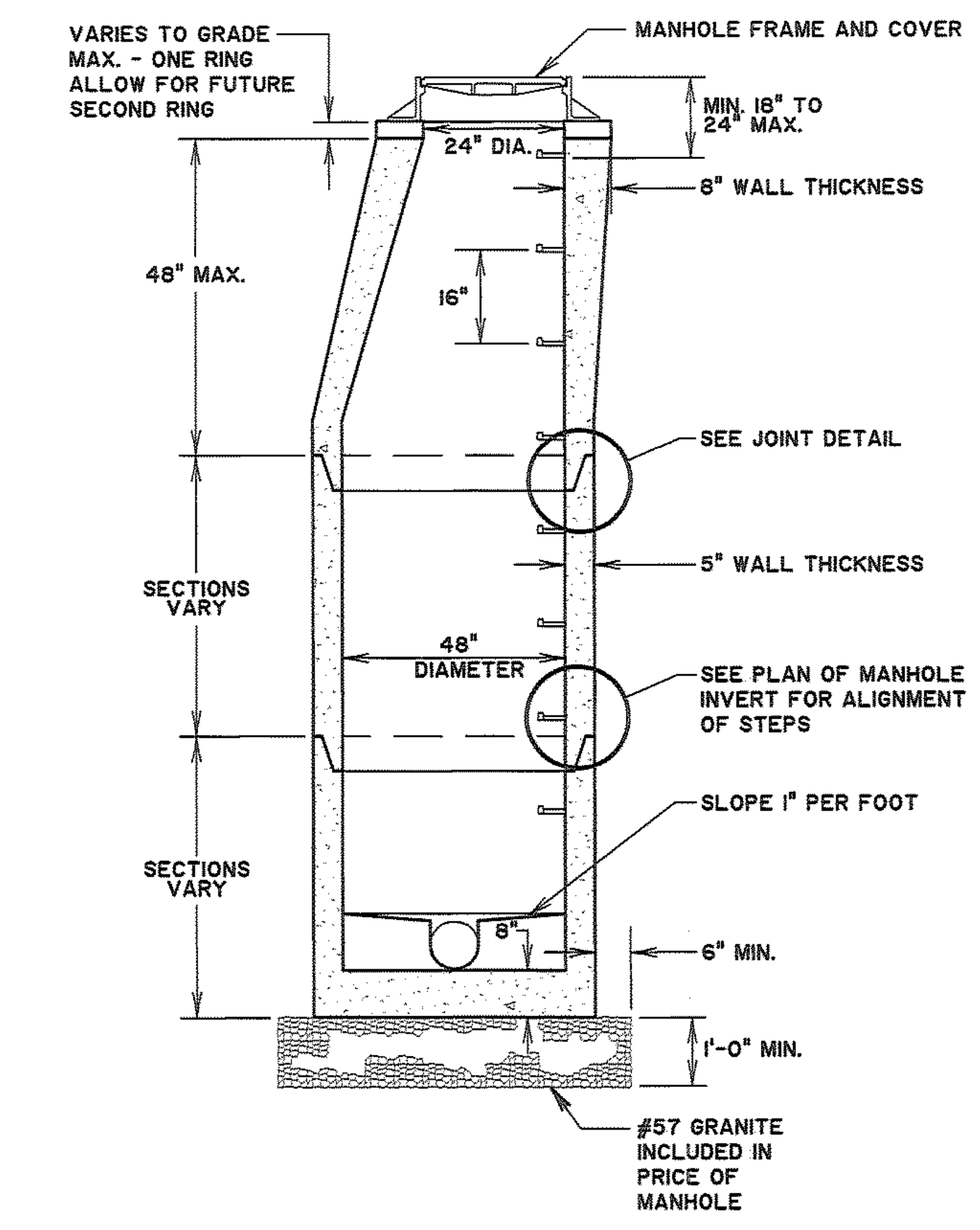
NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
682 Johnnie Dodds Boulevard • Suite 100
Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
CIVIL DETAILS

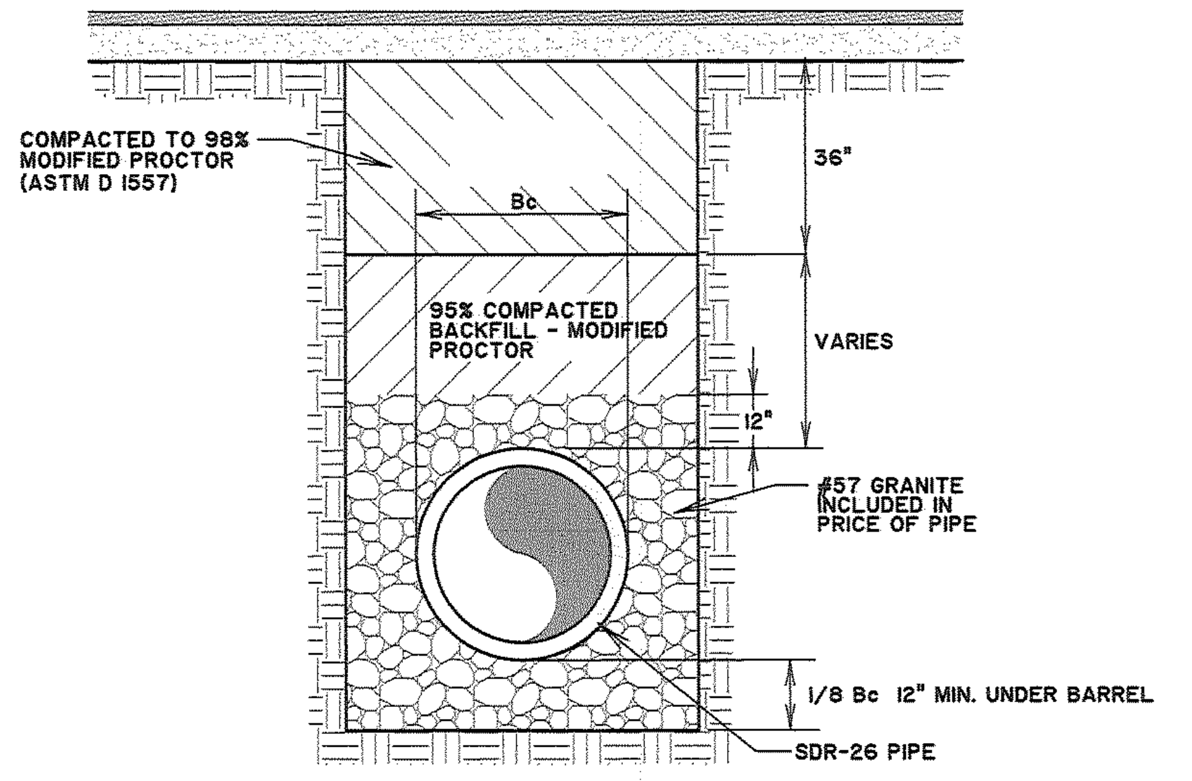
JOB NO: J-25328.0000
DATE: 12/16/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: AS NOTED

05-C-11



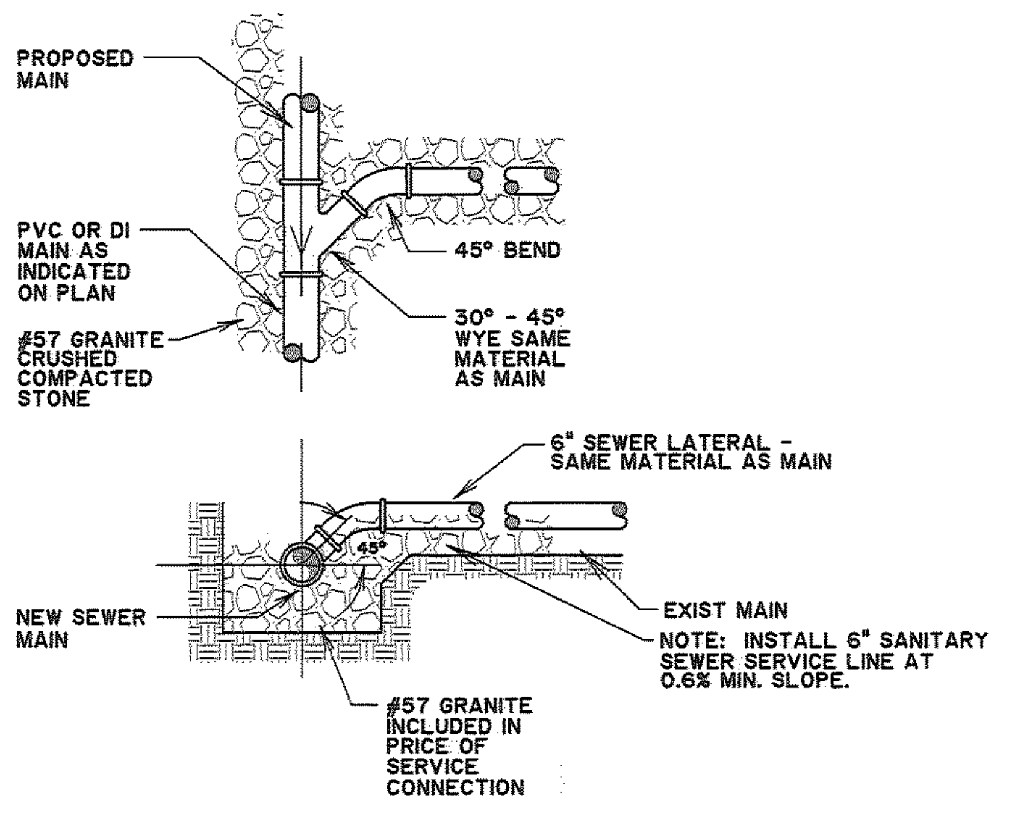
1 STANDARD PRECAST MANHOLE

05-C-12 SCALE: N.T.S.


COMPACTED TO 98% MODIFIED PROCTOR (ASTM D 1557)
Bc
36"
95% COMPACTED BACKFILL - MODIFIED PROCTOR
VARIES
12"
#57 GRANITE INCLUDED IN PRICE OF PIPE
1/8 Bc 12" MIN. UNDER BARREL
SDR-26 PIPE

4 TYPICAL SEWER MAIN LINE BEDDING UNDER EXISTING PAVEMENT

05-C-12 SCALE: N.T.S.


PROPOSED MAIN
PVC OR DI MAIN AS INDICATED ON PLAN
45° BEND
#57 GRANITE CRUSHED COMPACTED STONE
30° - 45° WYE SAME MATERIAL AS MAIN
6" SEWER LATERAL - SAME MATERIAL AS MAIN
45°
NEW SEWER MAIN
EXIST MAIN
NOTE: INSTALL 6" SANITARY SEWER SERVICE LINE AT 0.6% MIN. SLOPE.
#57 GRANITE INCLUDED IN PRICE OF SERVICE CONNECTION

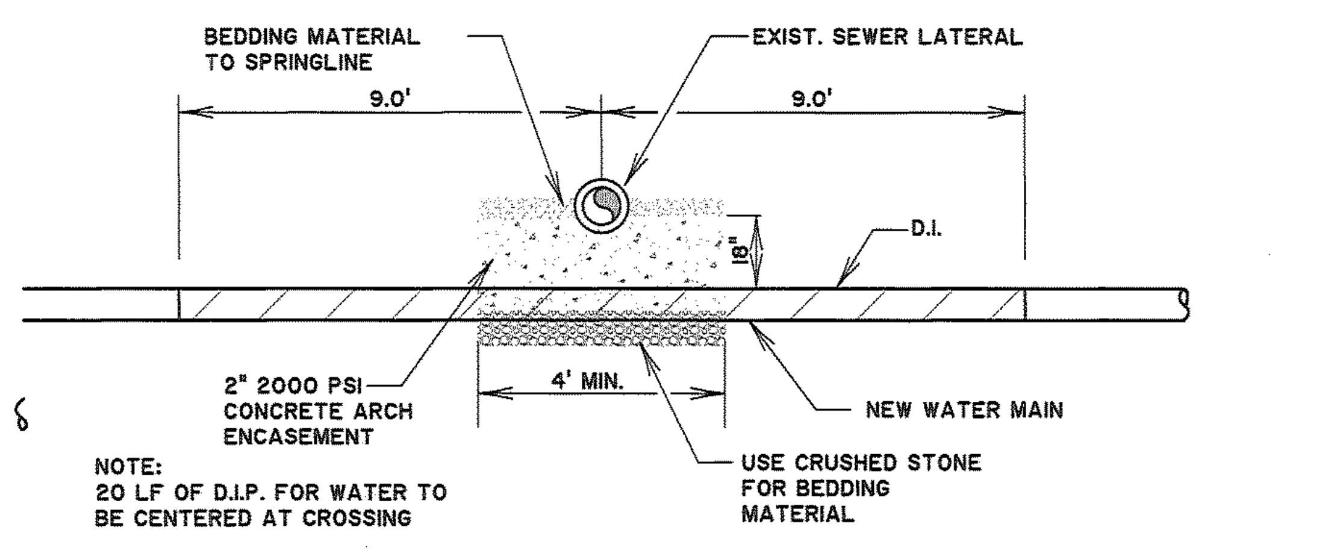
5 SANITARY SEWER LATERAL

05-C-12 SCALE: N.T.S.

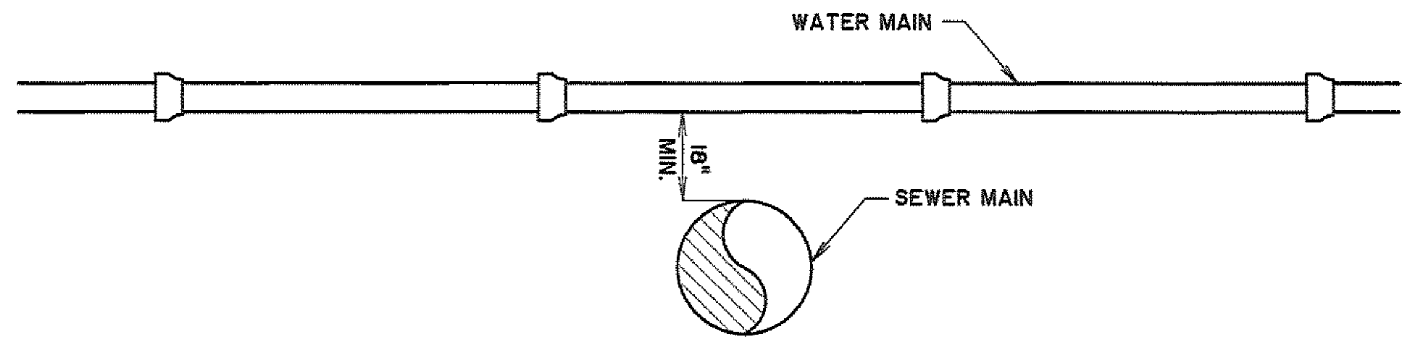
SEWER LINES IN RELATION TO WATER MAINS

A. SEWERS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. INSTALLATION OF THE SEWER CLOSER TO A WATER MAIN IS ALLOWED PROVIDED THAT THE WATER MAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND AT AN ELEVATION SO THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER.

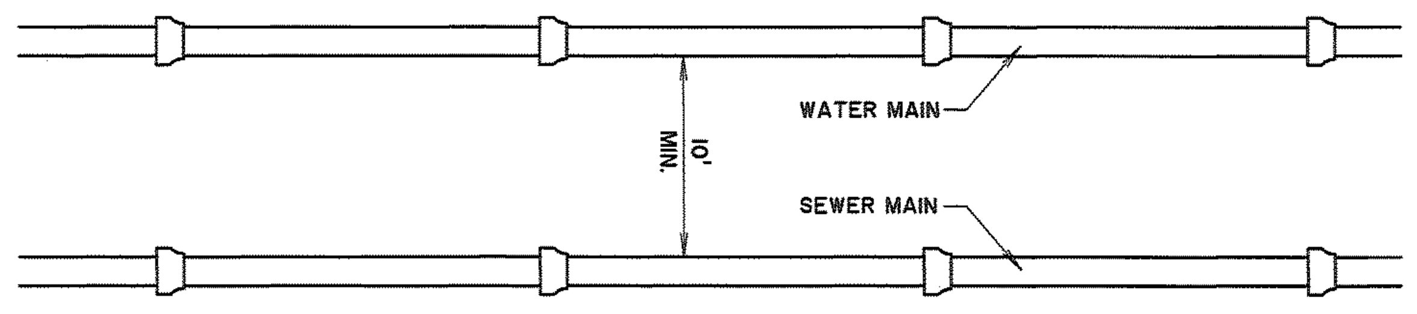
B. SEWERS CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHERE THE WATER MAIN IS EITHER ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS. WHERE A WATER MAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT DAMAGE TO THE WATER MAIN. WATER MAIN PIPE WHICH CROSSES LIVE EXISTING SEWER LATERALS SHALL BE DUCTILE IRON WITH JOINTS SPACED AS OUTLINED ABOVE. CROSSING SHALL BE ENCASED IN CONCRETE.


BEDDING MATERIAL TO SPRINGLINE
EXIST. SEWER LATERAL
9.0'
9.0'
18"
D.I.
2" 2000 PSI CONCRETE ARCH ENCASEMENT
4' MIN.
NEW WATER MAIN
USE CRUSHED STONE FOR BEDDING MATERIAL

NOTE:
20 LF OF D.I.P. FOR WATER TO BE CENTERED AT CROSSING



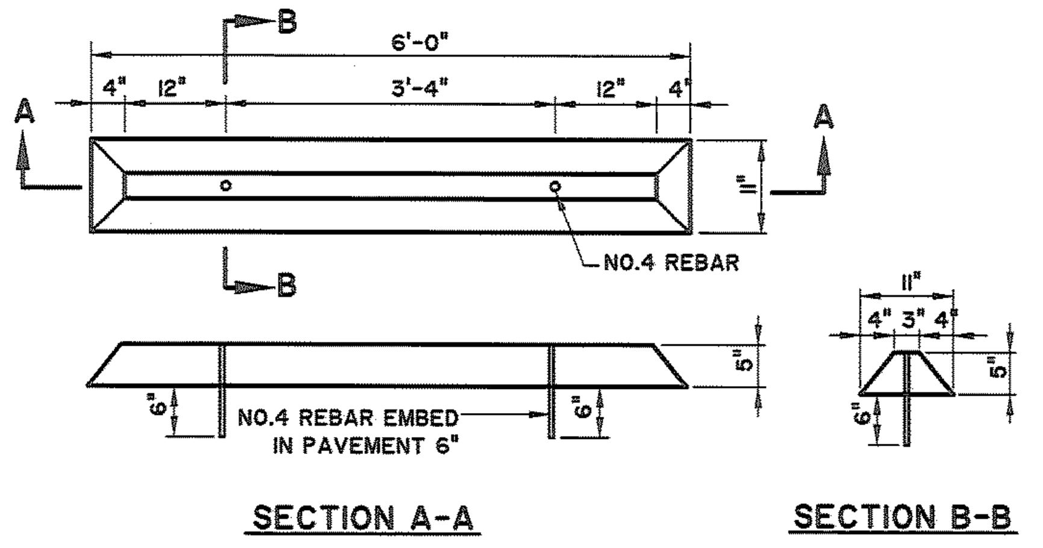
VERTICAL SEPARATION - WATER CROSSING



HORIZONTAL SEPARATION

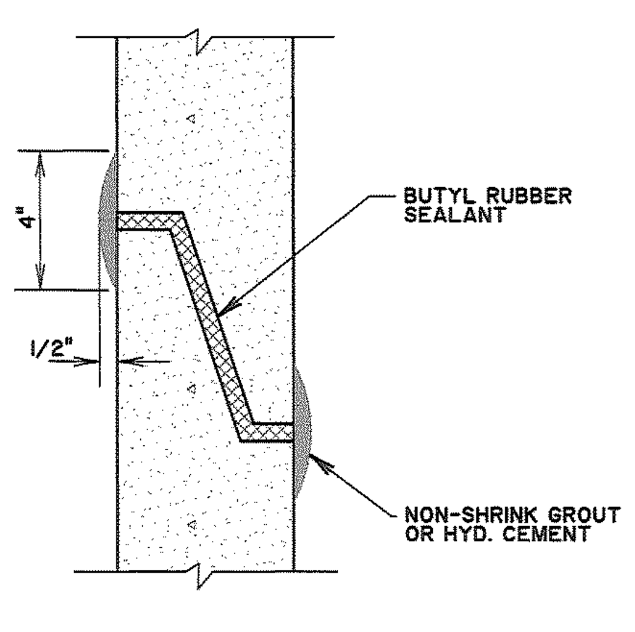
2 WATER & SEWER CROSSING W/ D.I. PIPE & CONCRETE ENCASEMENT

05-C-12 SCALE: N.T.S.



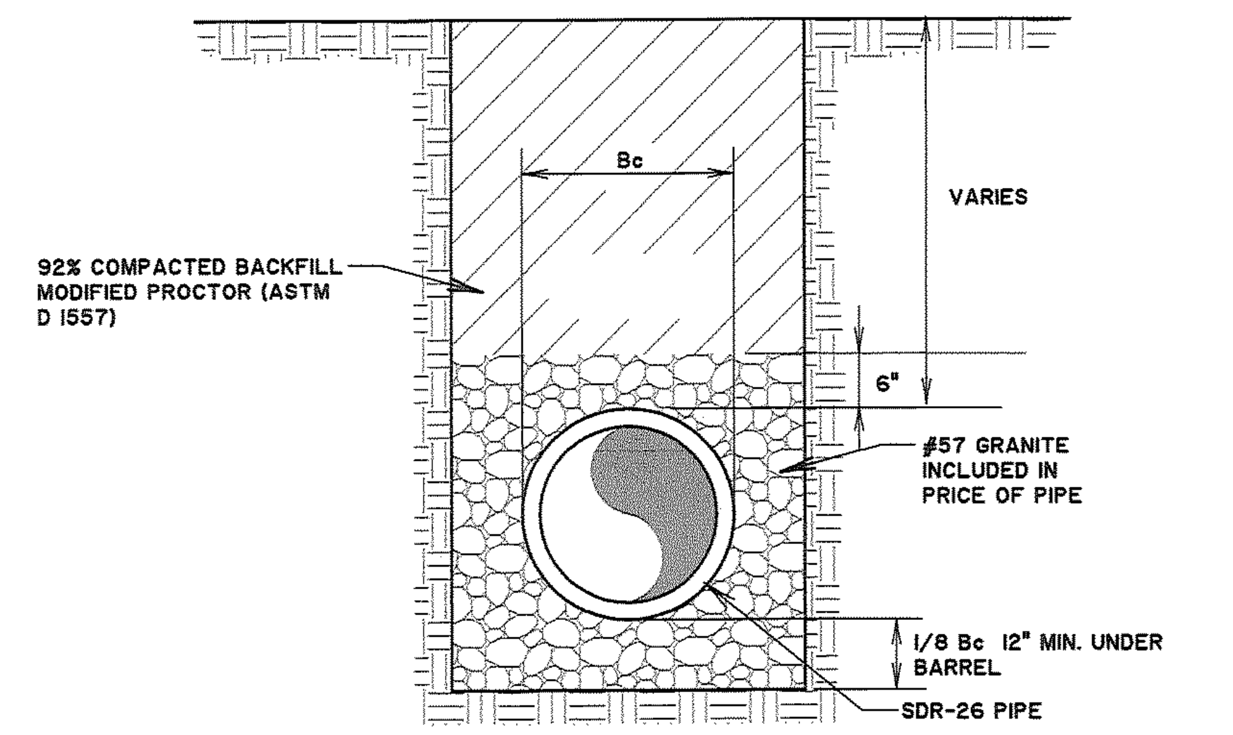
9 CONCRETE WHEEL STOP DETAIL

05-C-12 N.T.S.



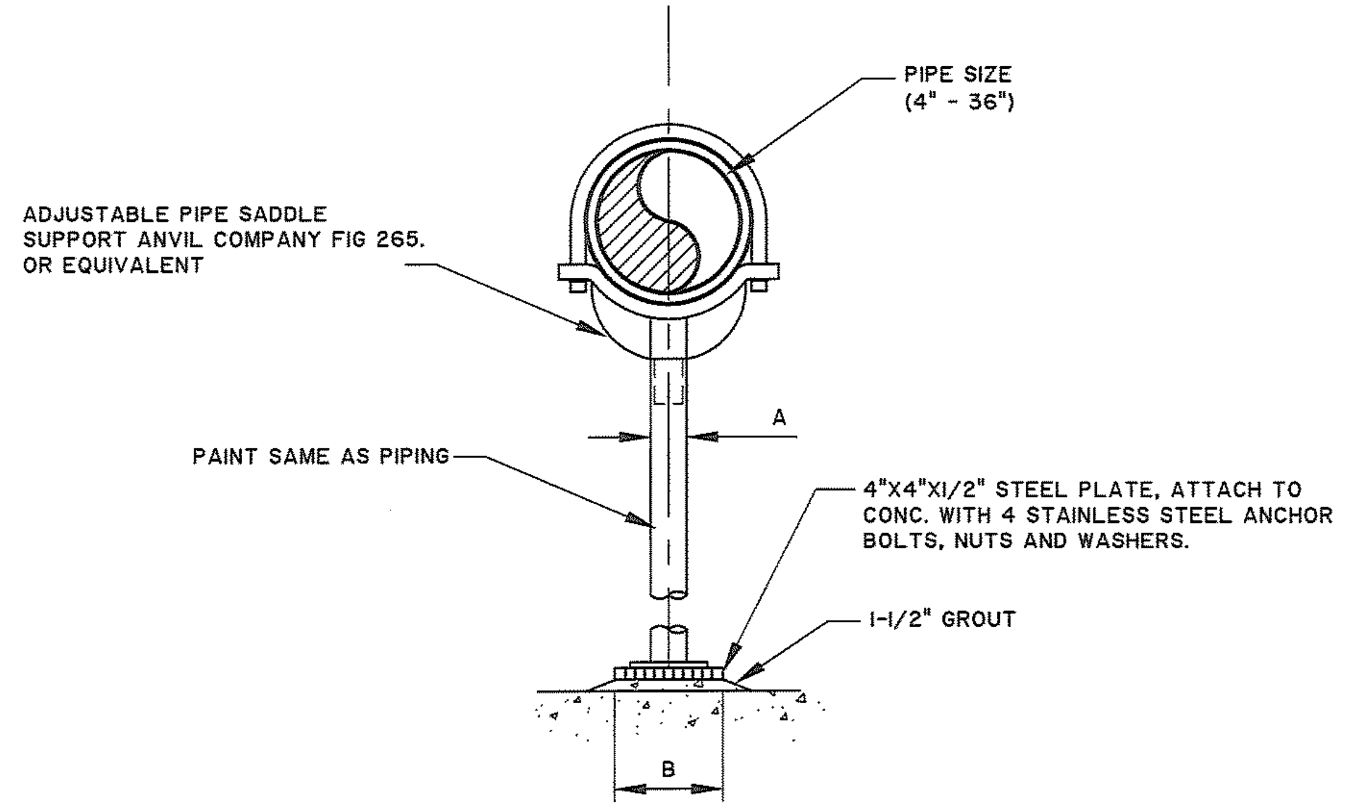
8 PRECAST MANHOLE JOINT DETAIL

05-C-12 SCALE: N.T.S.


Bc
VARIES
92% COMPACTED BACKFILL MODIFIED PROCTOR (ASTM D 1557)
6"
#57 GRANITE INCLUDED IN PRICE OF PIPE
1/8 Bc 12" MIN. UNDER BARREL
SDR-26 PIPE

3 TYPICAL SEWER MAIN LINE BEDDING NOT UNDER PAVEMENT

05-C-12 SCALE: N.T.S.


PIPE SIZE (4" - 36")
ADJUSTABLE PIPE SADDLE SUPPORT ANVIL COMPANY FIG 265. OR EQUIVALENT
A
PAINT SAME AS PIPING
4"X4"X1/2" STEEL PLATE, ATTACH TO CONC. WITH 4 STAINLESS STEEL ANCHOR BOLTS, NUTS AND WASHERS.
1-1/2" GROUT
B

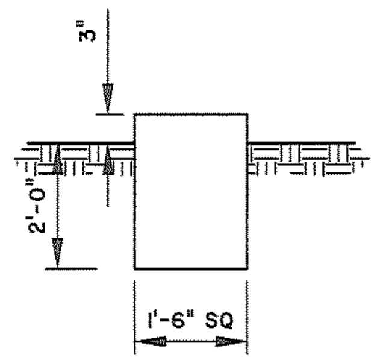
NOTES:

1. PROVIDE HALF ROUND RIGID INSULATION AND INSULATION PROTECTION WHERE PIPING IS INSULATED.

2. PROVIDE NEOPRENE WAFFLE ISOLATION PAD, SIMILAR TO MASON TYPE "W" UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS NEAR TO MECHANICAL EQUIPMENT.

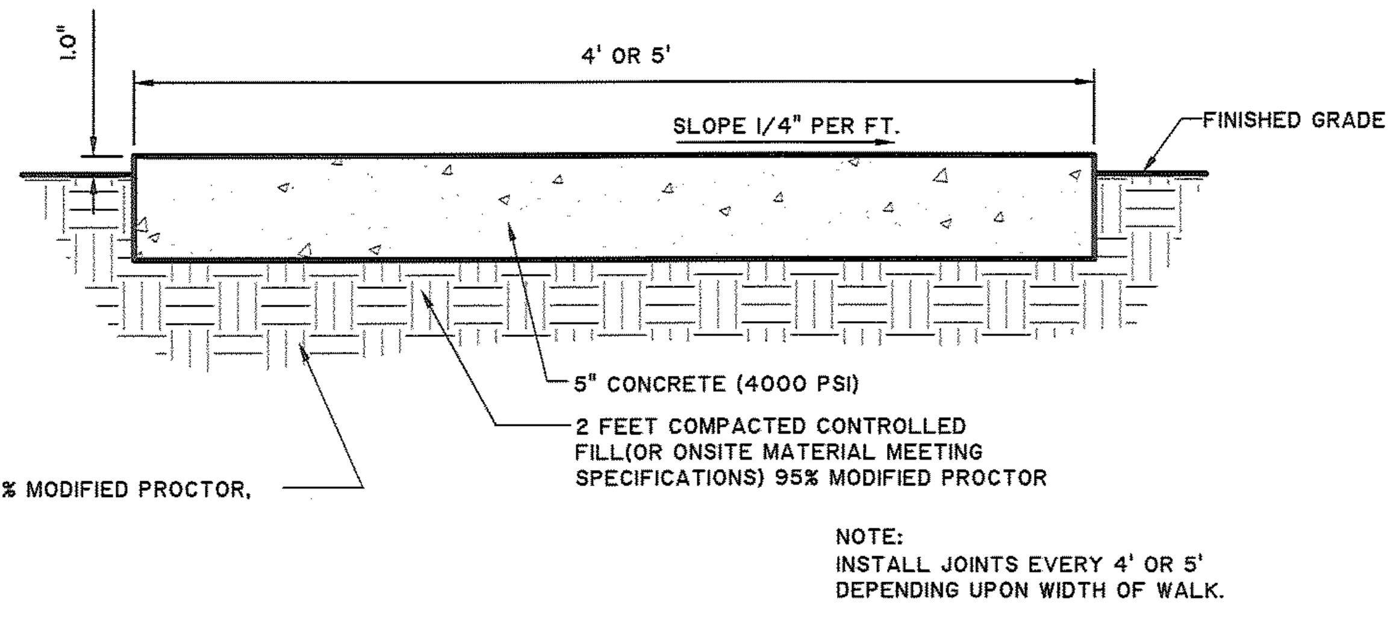
3. FOR PIPE SUPPORT IN NON-CONCRETED AREAS PROVIDE PIPE SUPPORT BASE AS SHOWN BELOW.

DIMENSION TABLE		
PIPE SIZE	A	B
4"	4"	9"
6"	4"	9"
6"	4"	9"
8"	4"	9"
10"	4"	9"
12"	4"	9"
14"	4"	11"
16"	4"	11"
18"	6"	11"
20"	6"	13-1/2"
22"	6"	13-1/2"
24"	6"	13-1/2"
26"	6"	13-1/2"
30"	6"	13-1/2"
32"	6"	13-1/2"
36"	6"	16"



6 PIPE SUPPORT AT INFLUENT SCREENS

05-C-12 SCALE: N.T.S.


1.0'
4' OR 5'
SLOPE 1/4" PER FT.
FINISHED GRADE
5" CONCRETE (4000 PSI)
2 FEET COMPACTED CONTROLLED FILL(OR ONSITE MATERIAL MEETING SPECIFICATIONS) 95% MODIFIED PROCTOR
SUBGRADE (95% MODIFIED PROCTOR, ASTM D-1557)

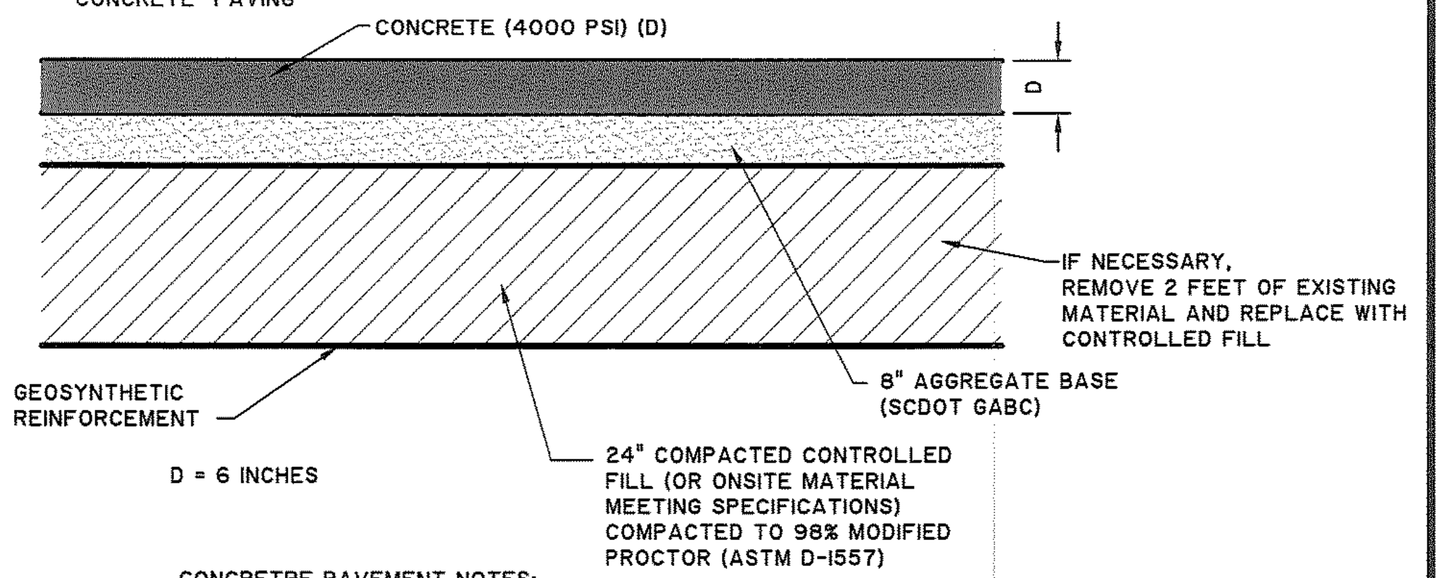
NOTE:
INSTALL JOINTS EVERY 4' OR 5' DEPENDING UPON WIDTH OF WALK.

SIDEWALK SECTION

8 SIDEWALK DETAILS

05-C-12 N.T.S.

NOTE:
THIS SECTION APPLIES TO THE FOLLOWING PAVING:
CONCRETE DRIVES
CONCRETE PAVING


CONCRETE (4000 PSI) (D)
D
IF NECESSARY, REMOVE 2 FEET OF EXISTING MATERIAL AND REPLACE WITH CONTROLLED FILL
8" AGGREGATE BASE (SCDOT GABC)
GEOSYNTHETIC REINFORCEMENT
D = 6 INCHES
24" COMPACTED CONTROLLED FILL (OR ONSITE MATERIAL MEETING SPECIFICATIONS) COMPACTED TO 98% MODIFIED PROCTOR (ASTM D-1557)

CONCRETRE PAVEMENT NOTES:

1. AREAS TO BE PAVED SHALL BE STRIPPED OF TOPSOIL SUBGRADE SHALL BE PROOFROLLED. PROOFROLLING SHALL BE MONITORED BY A GEOTECHNICAL ENGINEER TO BE SECURED BY THE CONTRACTOR. ALL COSTS ASSOCIATED WITH PROOFROLLING, INCLUDING MONITORING, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. UNACCEPTABLE AREAS SHALL BE UNDERCUT AND REPLACED WITH ACCEPTABLE MATERIAL.

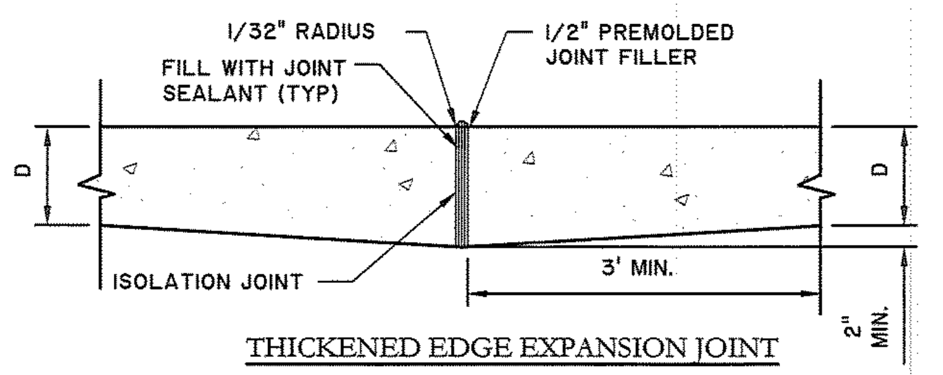
2. THICKEN CONCRETE BY 1" AT EDGES AND CORNERS.

3. ALL SOFT AND YIELDING MATERIAL AND OTHER PORTIONS OF THE SUBGRADE WHICH WILL NOT COMPACT READILY WHEN ROLLED OR TAMPED SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL PLACED AND COMPACTED AS DIRECTED IN THE SPECIFICATIONS. THE SUBGRADE SHALL HAVE THE DEGREE OF COMPACTION AND DEPTH AS DIRECTED IN THE SPECIFICATIONS.

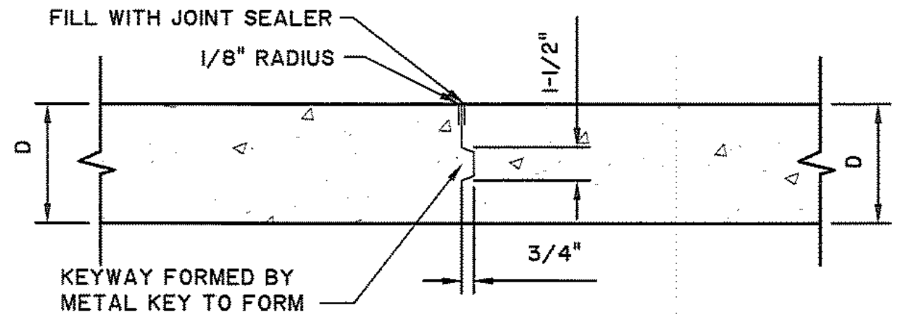
4. CONCRETE PAVEMENT SECTION PROVIDED BY GEOTECHNICAL REPORT.

MAX. SIZE OF COARSE AGGREGATE (INCHES)	AIR CONTENT (PERCENT BY VOLUME)
1-1/2, 2	5 ±1
3/4, 1	6 ±1
3/8, 1/2	7-1/2 ±1

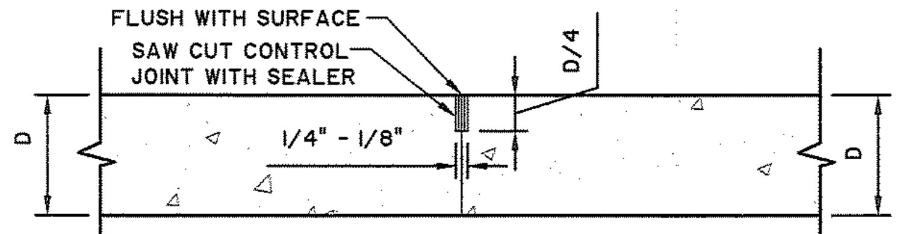
CONTRACTOR MAY UTILIZE A STANDARD SCDOT MIX AS APPROVED BY THE DESIGN ENGINEER.



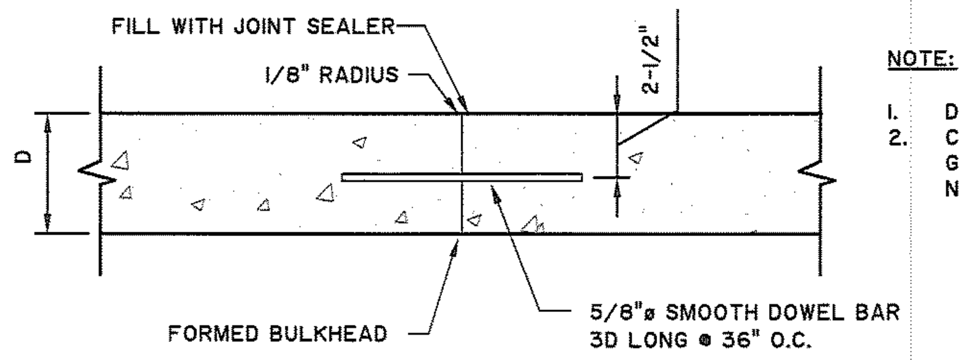
THICKENED EDGE EXPANSION JOINT



LONGITUDINAL CONSTRUCTION JOINT

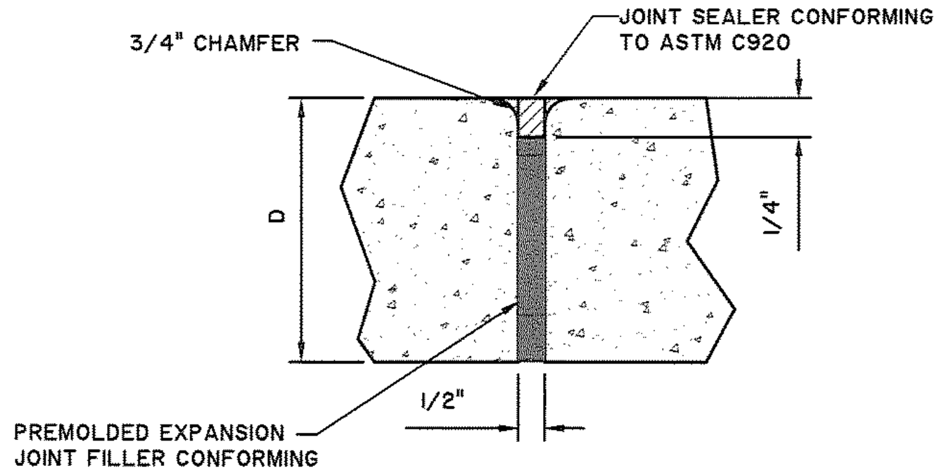


CONSTRUCTION JOINT (CJ)



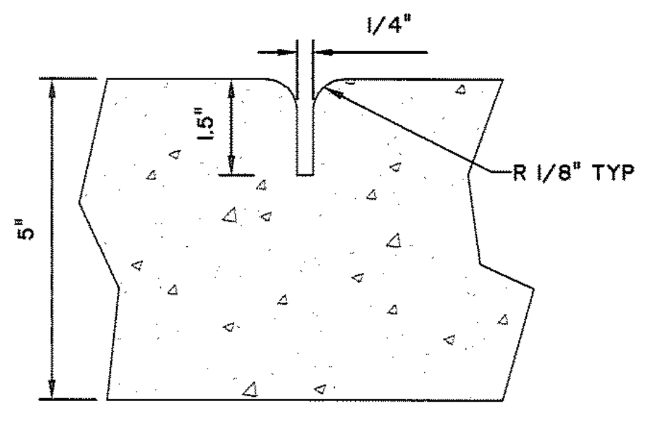
TIED CONSTRUCTION JOINT (TCJ)

NOTE:
1. D = 6"
2. CONTROLLED FILL AND GEOSYNTHETICS REINFORCEMENT NOT SHOWN FOR CLARITY.

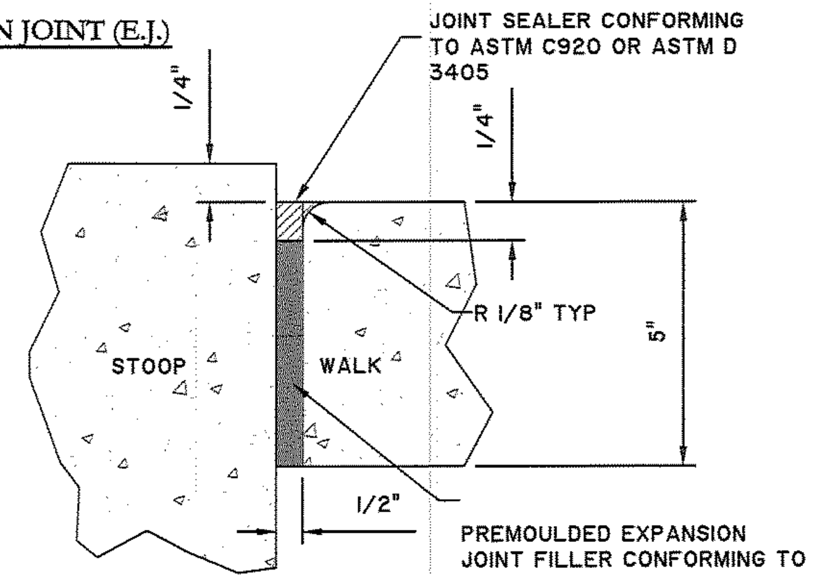

3/4" CHAMFER
JOINT SEALER CONFORMING TO ASTM C920
D
1/4"
1/2"
PREMOLDED EXPANSION JOINT FILLER CONFORMING TO ASTM D1751 OR 1752

EXPANSION JOINT (E.J.)

NOTE:
1. D = 6"
2. CONTROLLED FILL AND GEOSYNTHETICS REINFORCEMENT NOT SHOWN FOR CLARITY.



CONTRACTION JOINT


JOINT SEALER CONFORMING TO ASTM C920 OR ASTM D 3405
1/4"
1/4"
R 1/8" TYP
5"
STOOP
WALK
1/2"
PREMOULDED EXPANSION JOINT FILLER CONFORMING TO ASTM D1751 OR 1752

WALK-STOOP INTERFACE

7 CONCRETE PAVEMENT DETAILS

05-C-12 N.T.S.

THOMAS & HUTTON ENGINEERING CO. No. C00285 CERTIFICATE OF AUTHORIZATION

No. 13293 MARK F. YODICE

NO.	REVISIONS	BY	DATE

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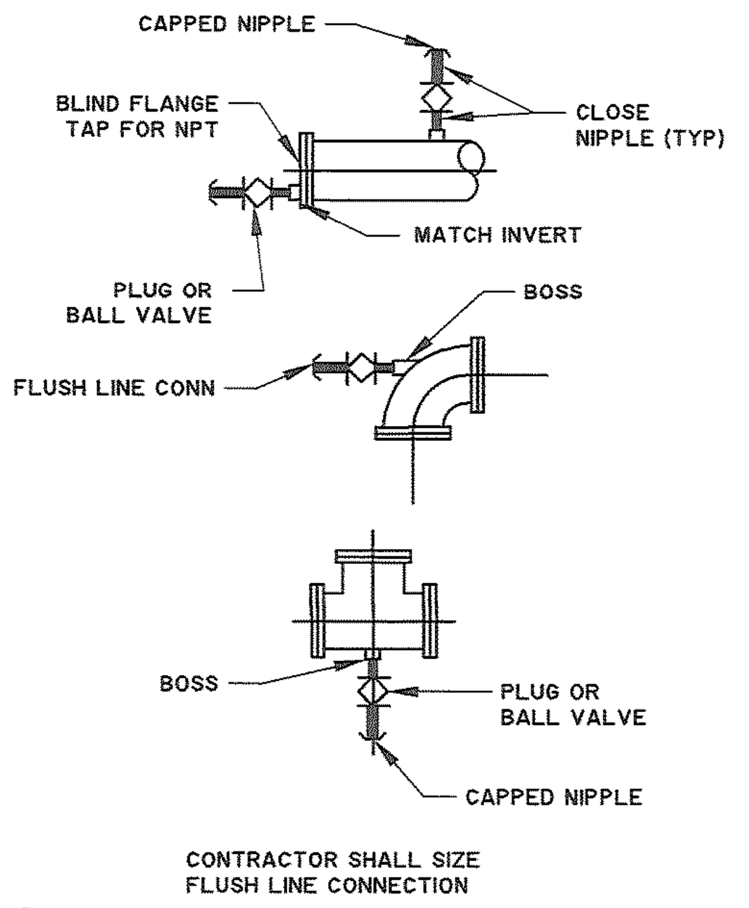
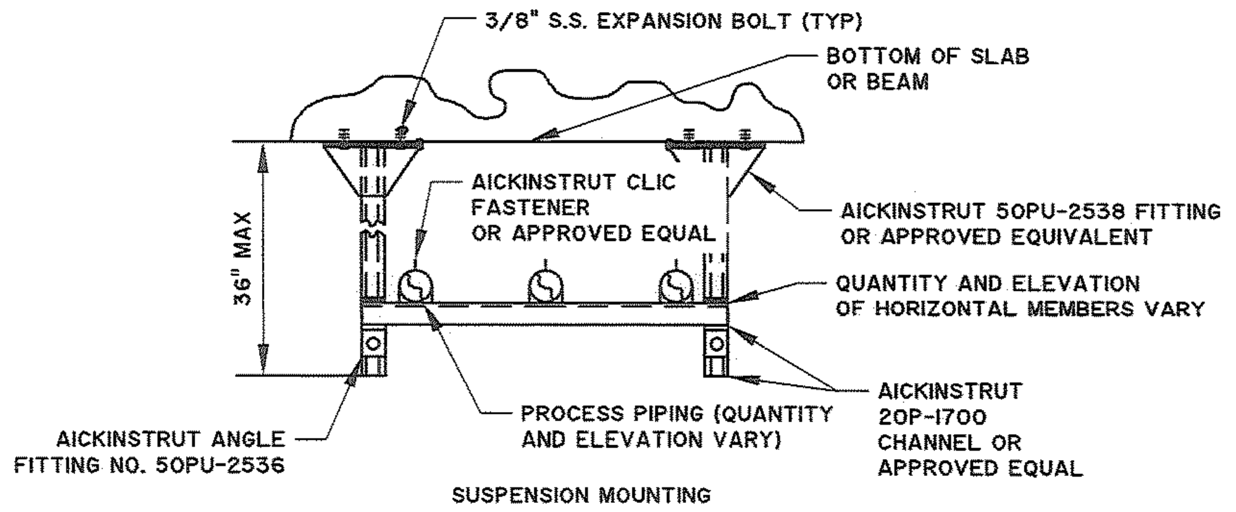
APPROVED:	MFY
SCALE:	AS NOTED

05-C-12

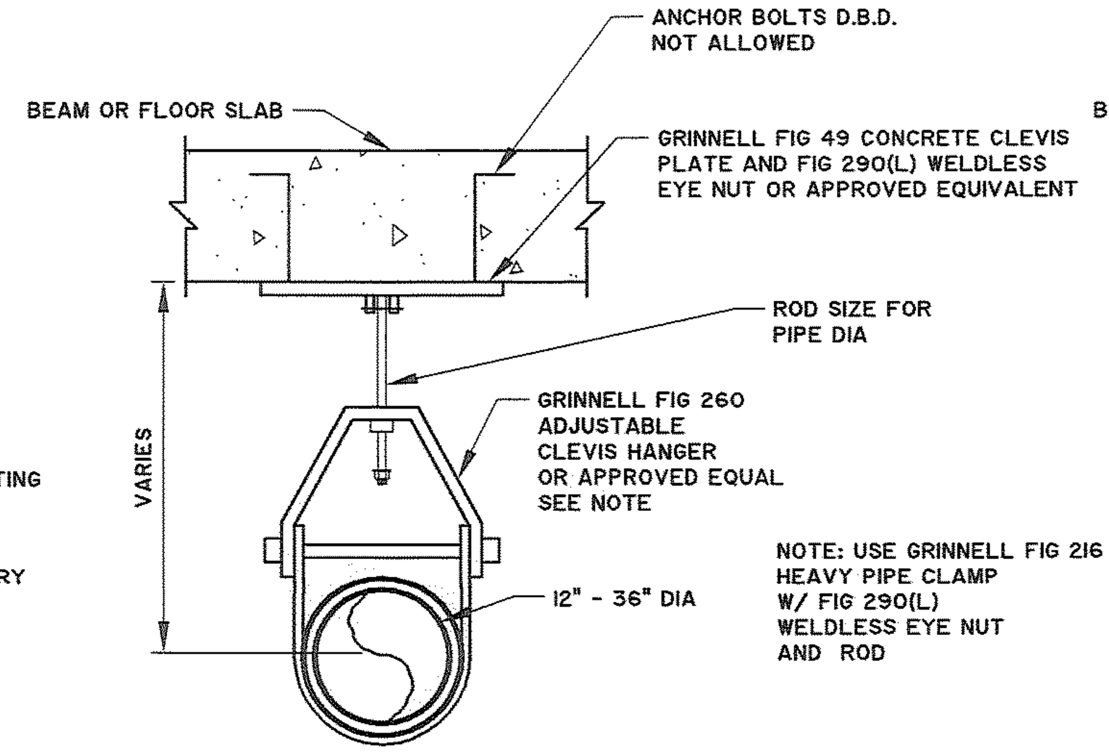


1 TYP FLUSHING CONNECTION DETAILS
05-C-13 NOT TO SCALE

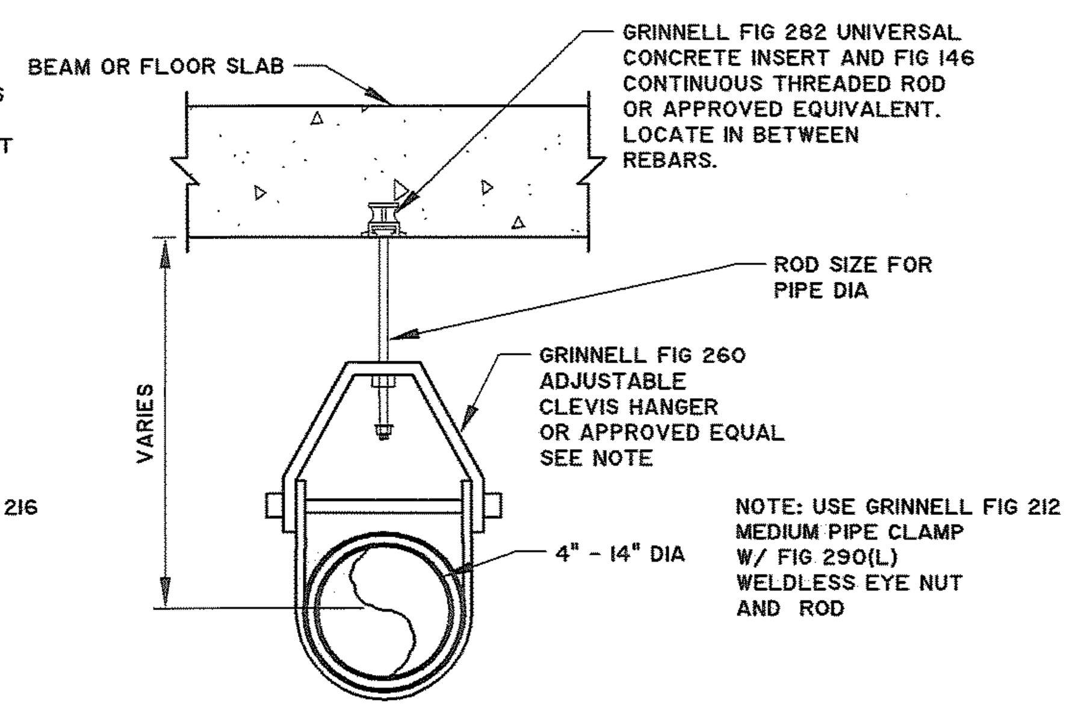

3/8" S.S. EXPANSION BOLT (TYP)
BOTTOM OF SLAB OR BEAM
36" MAX
AICKINSTRUT CLIC FASTENER OR APPROVED EQUAL
AICKINSTRUT 50PU-2538 FITTING OR APPROVED EQUIVALENT
QUANTITY AND ELEVATION OF HORIZONTAL MEMBERS VARY
PROCESS PIPING (QUANTITY AND ELEVATION VARY)
AICKINSTRUT 20P-1700 CHANNEL OR APPROVED EQUAL
AICKINSTRUT ANGLE FITTING NO. 50PU-2536
SUSPENSION MOUNTING

NOTE:
1. SUPPORTS SHALL BE PROVIDED AT SPACES IN ACCORDANCE WITH SPECIFICATIONS AND/OR AS RECOMMENDED BY MANUFACTURER TAKING LOAD CRITERIA INTO ACCOUNT

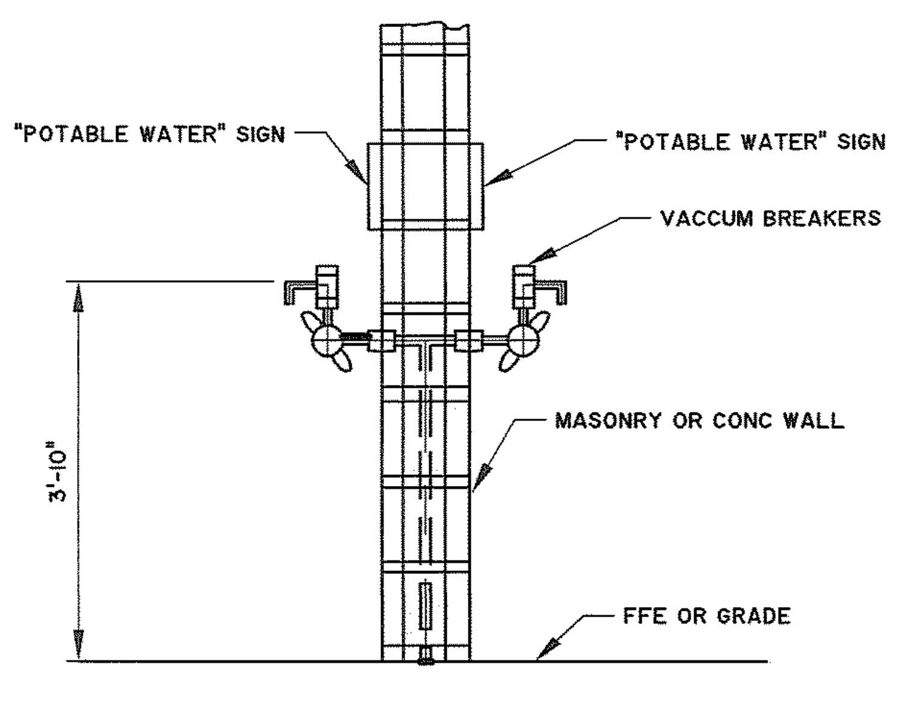
2 PIPE SUPPORT
05-C-13 NOT TO SCALE


ANCHOR BOLTS D.B.D. NOT ALLOWED
BEAM OR FLOOR SLAB
GRINNELL FIG 49 CONCRETE CLEVIS PLATE AND FIG 290(L) WELDLESS EYE NUT OR APPROVED EQUIVALENT
ROD SIZE FOR PIPE DIA
GRINNELL FIG 260 ADJUSTABLE CLEVIS HANGER OR APPROVED EQUAL SEE NOTE
VARIES
12" - 36" DIA
NOTE: USE GRINNELL FIG 216 HEAVY PIPE CLAMP W/ FIG 290(L) WELDLESS EYE NUT AND ROD

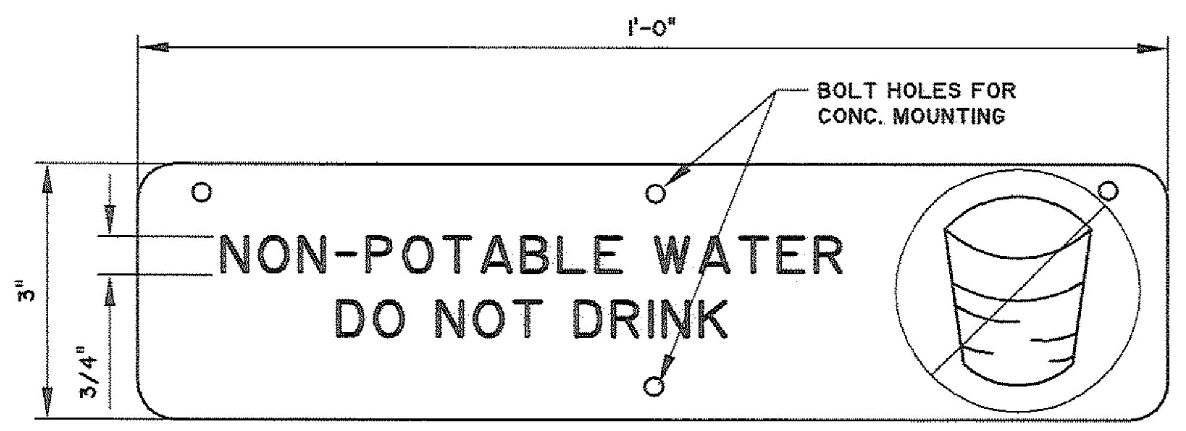
3 HEAVY-DUTY PIPE HANGER DETAIL
05-C-13 NOT TO SCALE


BEAM OR FLOOR SLAB
GRINNELL FIG 282 UNIVERSAL CONCRETE INSERT AND FIG 146 CONTINUOUS THREADED ROD OR APPROVED EQUIVALENT. LOCATE IN BETWEEN REBARS.
ROD SIZE FOR PIPE DIA
GRINNELL FIG 260 ADJUSTABLE CLEVIS HANGER OR APPROVED EQUAL SEE NOTE
VARIES
4" - 14" DIA
NOTE: USE GRINNELL FIG 212 MEDIUM PIPE CLAMP W/ FIG 290(L) WELDLESS EYE NUT AND ROD

4 PIPE HANGER DETAIL FOR FRP PIPE
05-C-13 NOT TO SCALE



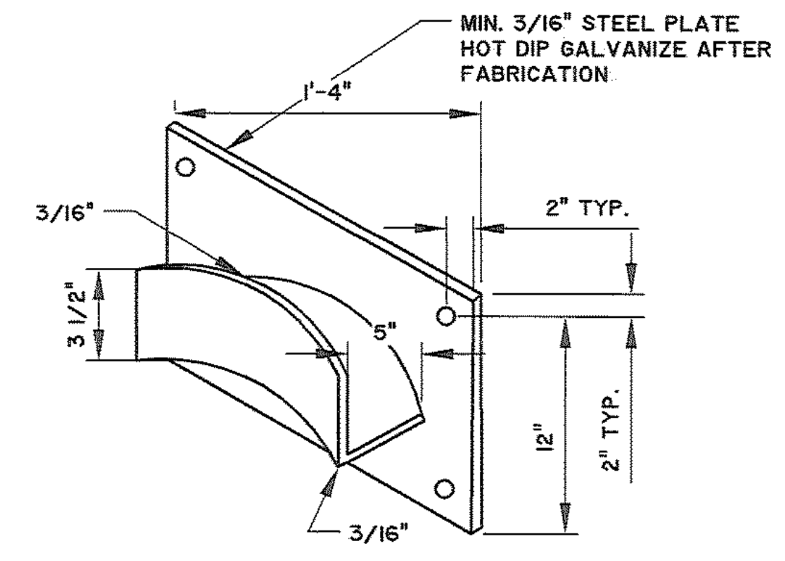
5 POTABLE WATER HOSE BIBB
05-C-13 NOT TO SCALE



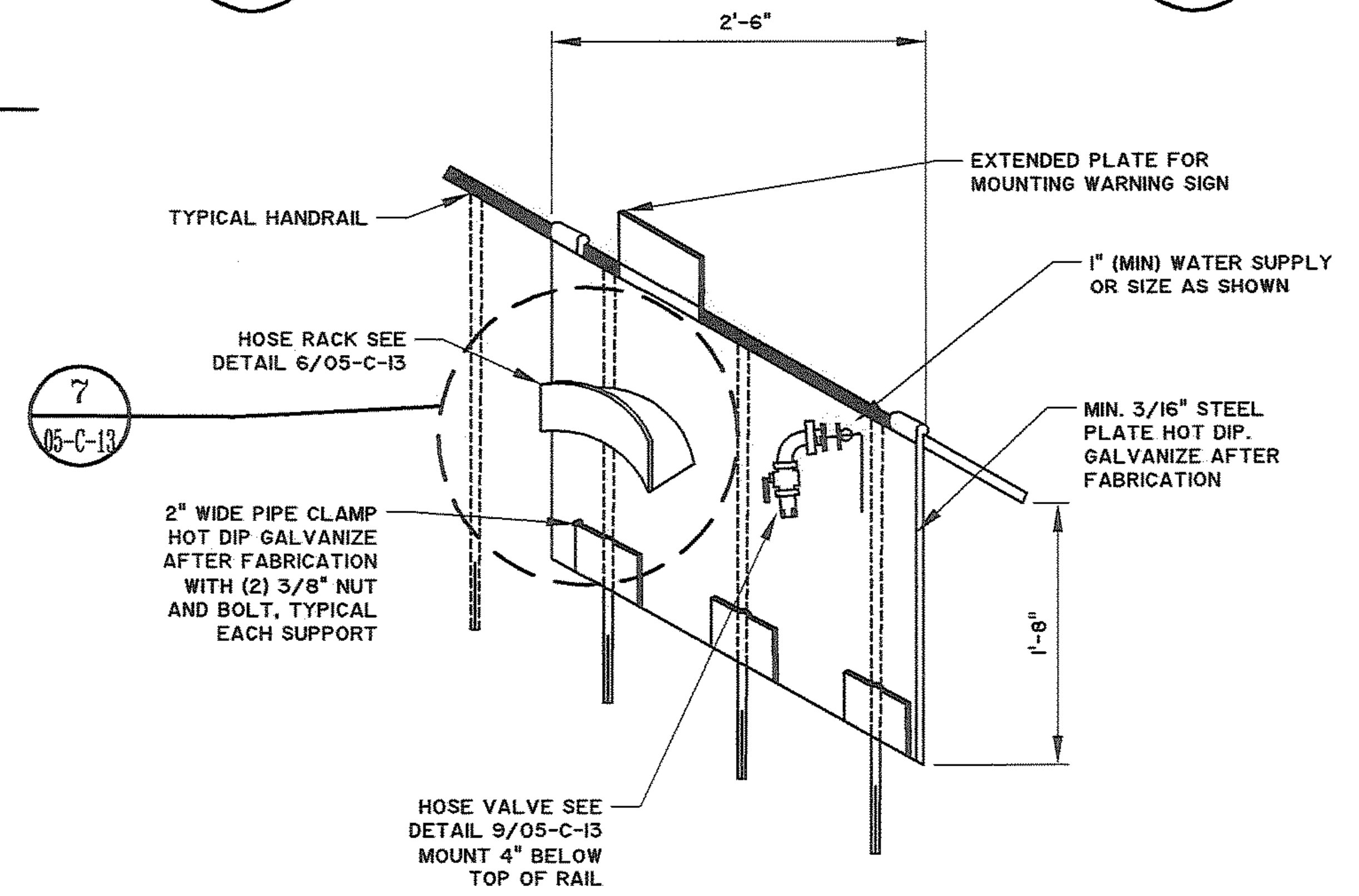
COLORS: BACKGROUND SHALL BE OSHA SAFETY YELLOW LETTERS SHALL BE RECESSED BLACK

NOTE: ONE SIGN REQUIRED AT EACH EFFLUENT WATER HOSE RACK AND BIBB AND ALL OTHER LOCATIONS WHERE ACCESS TO THE RECLAIMED WATER SUPPLY MAY BE MADE BY VALVE, FAUCET, OR OTHER FIXTURES. SECURE THROUGH HANDRAILS W/ (2) SS SASH CHAINS SECURE TO CONCRETE W (2) 3/16" SS EXP BOLTS

6 NON-POTABLE WATER SIGN
05-C-13 NOT TO SCALE



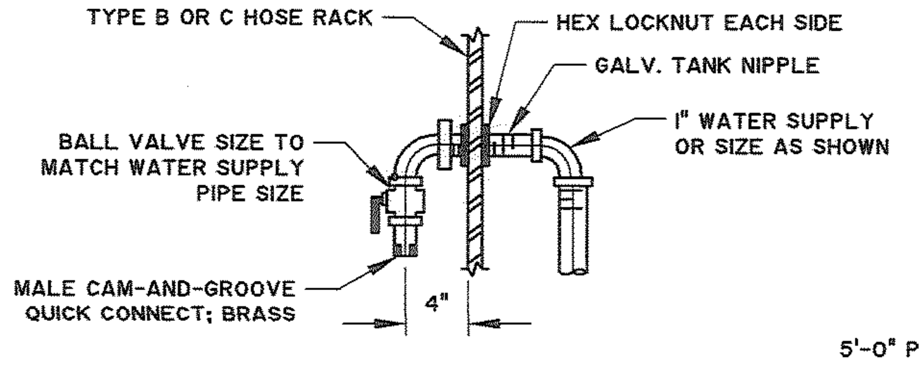
7 HOSE RACK
05-C-13 NOT TO SCALE


2'-6"
EXTENDED PLATE FOR MOUNTING WARNING SIGN
TYPICAL HANDRAIL
1" (MIN) WATER SUPPLY OR SIZE AS SHOWN
HOSE RACK SEE DETAIL 6/05-C-13
7
05-C-13
MIN. 3/16" STEEL PLATE HOT DIP. GALVANIZE AFTER FABRICATION
2" WIDE PIPE CLAMP HOT DIP GALVANIZE AFTER FABRICATION WITH (2) 3/8" NUT AND BOLT. TYPICAL EACH SUPPORT
1'-8"
HOSE VALVE SEE DETAIL 9/05-C-13 MOUNT 4" BELOW TOP OF RAIL

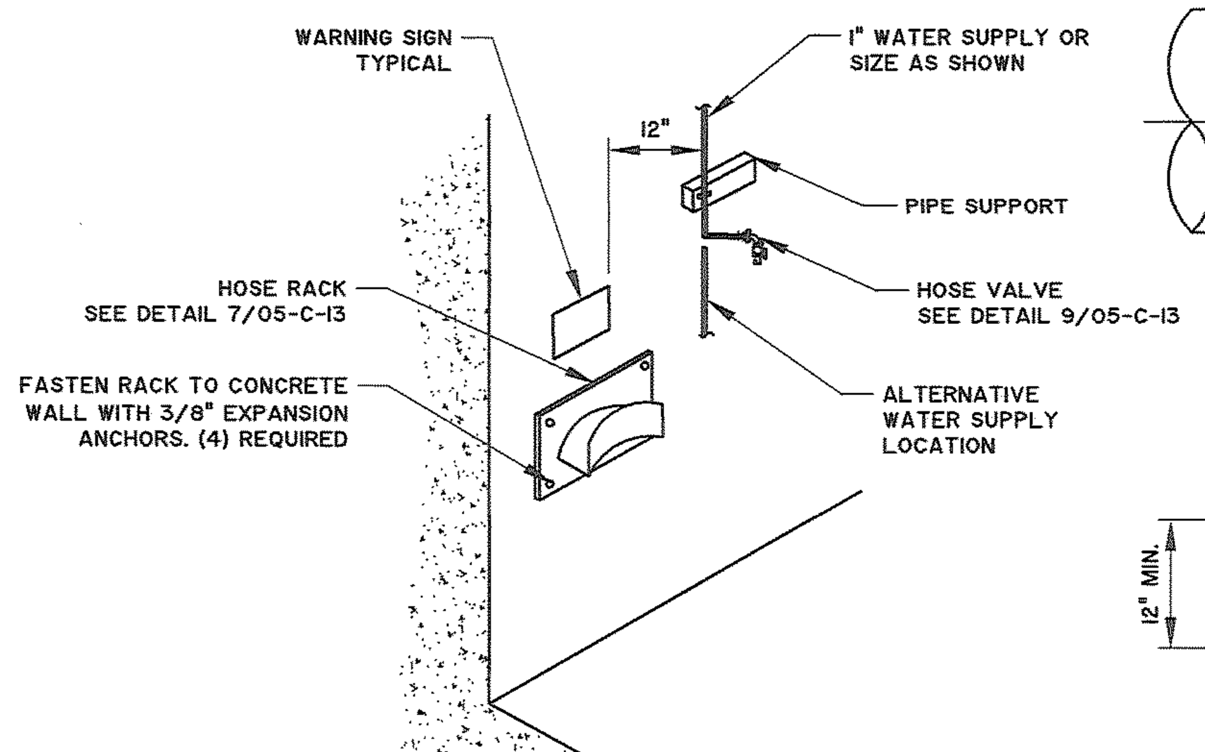
8 RAIL MOUNT UTILITY STATION
05-C-13 NOT TO SCALE

GENERAL NOTES:

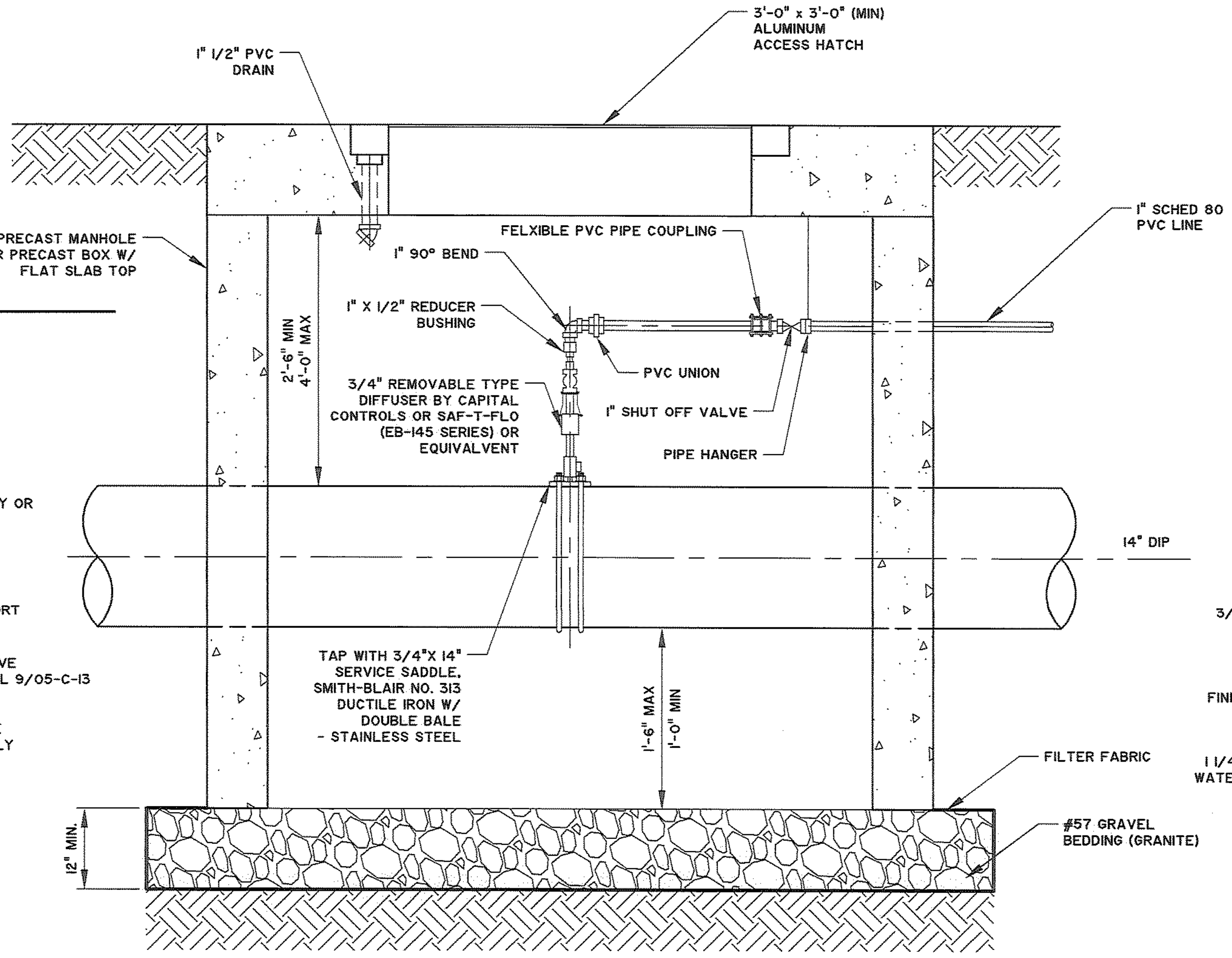
1. UNLESS OTHERWISE SPECIFIED, HANGERS AND SUPPORTS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. NUTS, BOLTS, AND WASHERS MUST ALSO BE HOT DIP GALVANIZED. EXCEPT THOSE SUBJECT TO MOISTURE OR CORROSIVE ATMOSPHERE SHALL BE TYPE 316 STAINLESS STEEL.
2. UNLESS OTHERWISE SPECIFIED, TRAPEZE AND PIPE RACK COMPONENTS SHALL HAVE A MINIMUM STEEL THICKNESS OF 12-GAGE WITH A MAXIMUM DEFLECTION OF 1/240 OF THE SPAN. MINIMUM CHANNEL COMPONENT SIZE SHALL BE 1 5/8" SQUARE AS MANUFACTURED BY SUPER STRUT, UNISTRUT, ELCEN OR EQUAL.
3. UTILITY STATION (TYPE A OR B) LOCATED OUTDOORS OR SUSCEPTIBLE TO WEATHER CONDITIONS OF 35° F AND BELOW SHALL BE PROTECTED FROM FREEZING BY HEAT TRACING. PIPE AND VALVES FOR EXPOSED LOCATIONS SHALL BE HEAT TRACED CONTINUOUSLY FROM THE HOSE CONNECTION POINT TO AN AREA OF TEMPERATURES ABOVE 35° F YEAR ROUND. FOR BELOW GROUND INSTALLATIONS HEAT TRACING SHALL EXTEND TO A MINIMUM DEPTH OF 2 FOOT OR THE FROST LINE, WHICH EVER IS GREATER. THE CONTRACTOR IS INSTRUCTED TO INSURE THAT HEAT TRACING SHALL BE ROUTED AS SPECIFIED ABOVE, WEATHER SHOWN ON THE PLANS OR NOT.
4. FOR EACH HOSE STATION INSTALLED UNDER THIS CONTRACT, PROVIDE A 50-FOOT COUPLED HOSE ASSEMBLY, UL-LISTED BRASS HEAVY DUTY SPRAY/STREAM NOZZLE (McMASTER CARR 6470T12 OR EQUAL), AND AN ADAPTERS NECESSARY TO CONNECT TO THE NOZZLE AND HOSE VALVE. HOSE ASSEMBLIES AND NOZZLES SHALL BE SIZED TO MATCH THE HOSE VALVE, AND PROVIDED WITH BRASS CAM-AND-GROOVE QUICK CONNECT FOR ATTACHMENT TO THE HOSE VALVE. HOSE ASSEMBLIES SHALL BE POLYESTER REINFORCED BUNA-N/SBR WITH 125 PSI MINIMUM WORKING PRESSURE (McMASTER CARR 5268K68 FOR 1.5", 5268K61 FOR 1", OR EQUAL). PROVIDE 6 ADDITIONAL HOSE ASSEMBLIES, ADAPTERS, AND NOZZLES EACH IN 1" AND 1.5" SIZE


TYPE B OR C HOSE RACK
HEX LOCKNUT EACH SIDE
GALV. TANK NIPPLE
BALL VALVE SIZE TO MATCH WATER SUPPLY PIPE SIZE
1" WATER SUPPLY OR SIZE AS SHOWN
MALE CAM-AND-GROOVE QUICK CONNECT; BRASS
4"

9 HOSE VALVE
05-C-13 NOT TO SCALE

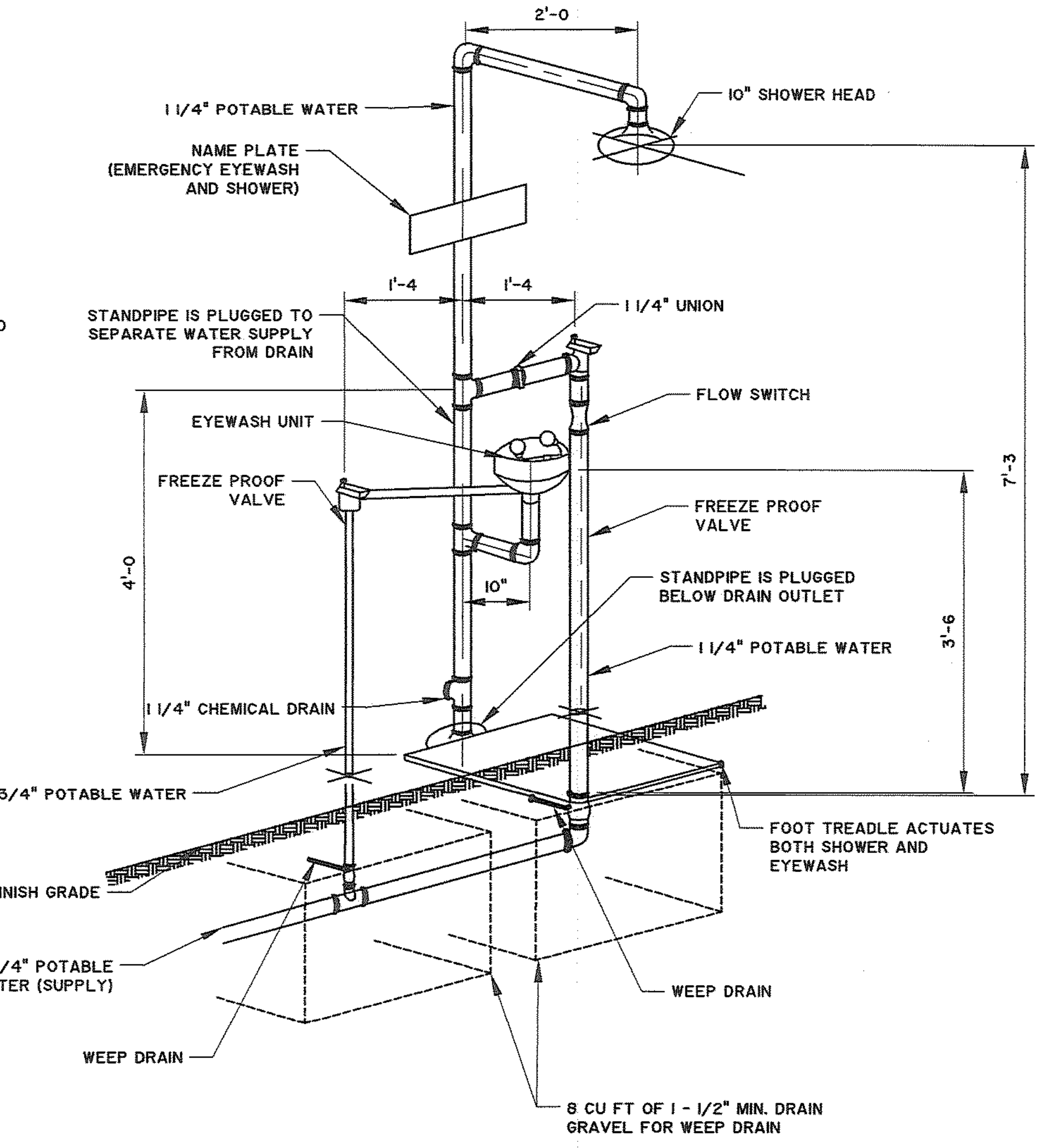

WARNING SIGN TYPICAL
1" WATER SUPPLY OR SIZE AS SHOWN
12"
PIPE SUPPORT
HOSE RACK SEE DETAIL 7/05-C-13
HOSE VALVE SEE DETAIL 9/05-C-13
FASTEN RACK TO CONCRETE WALL WITH 3/8" EXPANSION ANCHORS. (4) REQUIRED
ALTERNATIVE WATER SUPPLY LOCATION

10 WALL MOUNT UTILITY STATION
05-C-13 NOT TO SCALE


3'-0" x 3'-0" (MIN) ALUMINUM ACCESS HATCH
1" 1/2" PVC DRAIN
5'-0" PRECAST MANHOLE OR PRECAST BOX W/ FLAT SLAB TOP
FELXIBLE PVC PIPE COUPLING
1" SCHED 80 PVC LINE
1" 90° BEND
1" X 1/2" REDUCER BUSHING
2'-6" MIN 4'-0" MAX
PVC UNION
3/4" REMOVABLE TYPE DIFFUSER BY CAPITAL CONTROLS OR SAF-T-FLO (EB-145 SERIES) OR EQUIVALVENT
1" SHUT OFF VALVE
PIPE HANGER
14" DIP
TAP WITH 3/4"X 14" SERVICE SADDLE, SMITH-BLAIR NO. 313 DUCTILE IRON W/ DOUBLE BALE - STAINLESS STEEL
1'-6" MAX 1'-0" MIN
FILTER FABRIC
12" MIN.
#57 GRAVEL BEDDING (GRANITE)

NOTES:
1. COAT MANHOLE WITH A MINIMUM OF 120 MIL RAVEN 405 COATING.
2. IF MANHOLE BOTTOM IS NOT 2' ABOVE SEASONAL HIGH WATER TABLE INSTALL BOX IN STRUCTURE

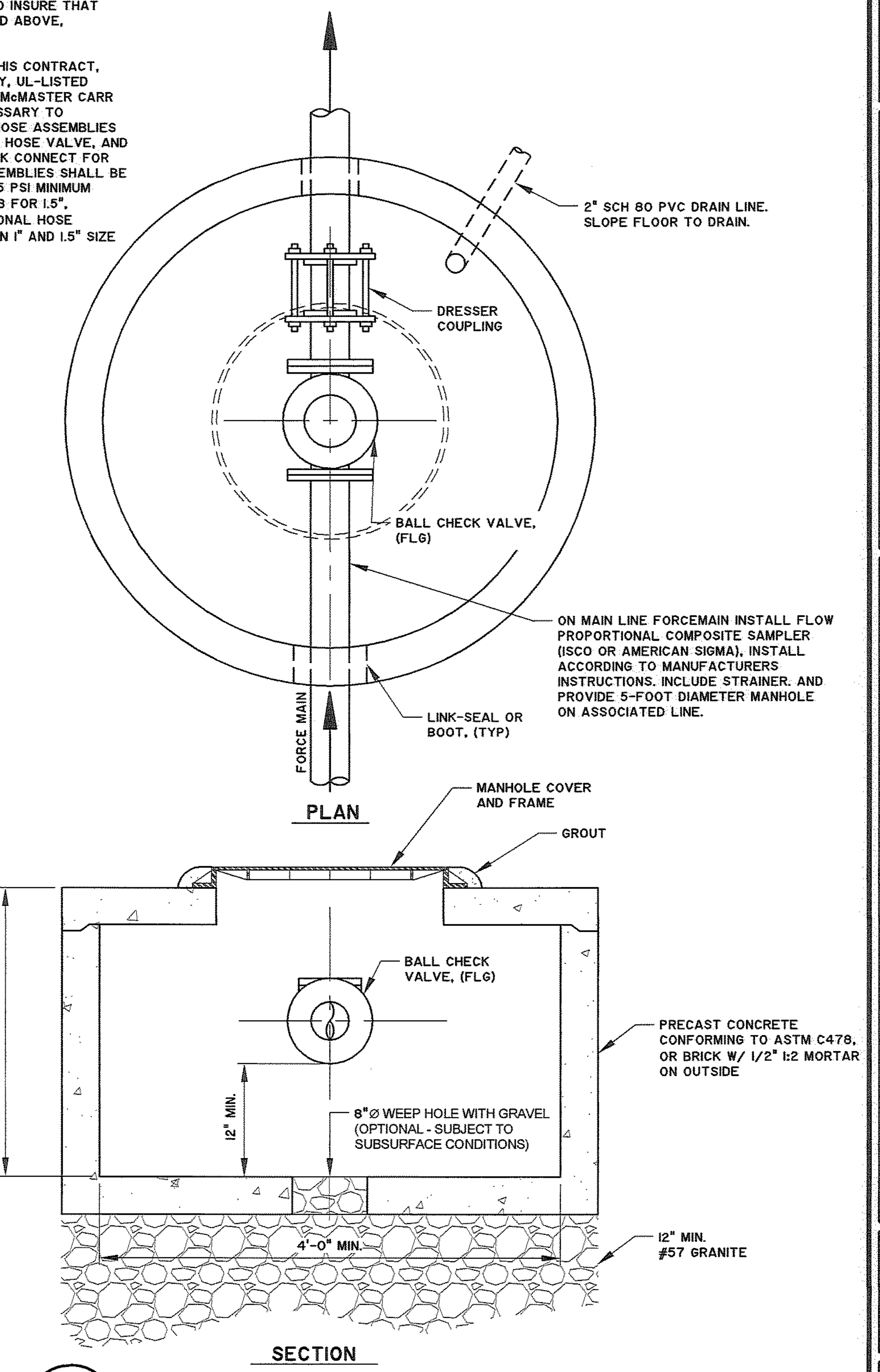
11 SODIUM HYPOCHLORITE INJECTION MANHOLE
05-C-13 1"=1'-0"


2'-0
1 1/4" POTABLE WATER
10" SHOWER HEAD
NAME PLATE (EMERGENCY EYEWASH AND SHOWER)
1'-4
1'-4
STANDPIPE IS PLUGGED TO SEPARATE WATER SUPPLY FROM DRAIN
1 1/4" UNION
FLOW SWITCH
EYEWASH UNIT
FREEZE PROOF VALVE
FREEZE PROOF VALVE
7'-3
10"
STANDPIPE IS PLUGGED BELOW DRAIN OUTLET
4'-0
3'-6
1 1/4" POTABLE WATER
1 1/4" CHEMICAL DRAIN
3/4" POTABLE WATER
FOOT TREADLE ACTUATES BOTH SHOWER AND EYEWASH
FINISH GRADE
1 1/4" POTABLE WATER (SUPPLY)
WEEP DRAIN
WEEP DRAIN
8 CU FT OF 1 - 1/2" MIN. DRAIN GRAVEL FOR WEEP DRAIN

NOTE:

WHEN LOCATED INSIDE A STRUCTURE, THE WATER SUPPLY IS ABOVE GRADE AND THE SHOWER AND EYEWASH VALVES ARE NOT FREEZE-PROOF. THE SUPPLY IS FED TO THE BACK OF THE STANDPIPE ABOVE EYEWASH DRAIN AND IS PLUGGED SIMILAR TO THE ABOVE DETAIL TO SEPARATE THE SUPPLY FROM THE DRAIN.

12 EMERGENCY EYEWASH AND SHOWER
05-C-13 NOT TO SCALE


2" SCH 80 PVC DRAIN LINE. SLOPE FLOOR TO DRAIN.
DRESSER COUPLING
BALL CHECK VALVE. (FLG)
ON MAIN LINE FORCEMAIN INSTALL FLOW PROPORTIONAL COMPOSITE SAMPLER (ISCO OR AMERICAN SIGMA), INSTALL ACCORDING TO MANUFACTURERS INSTRUCTIONS. INCLUDE STRAINER. AND PROVIDE 5-FOOT DIAMETER MANHOLE ON ASSOCIATED LINE.
LINK-SEAL OR BOOT. (TYP)
FORCE MAIN
PLAN
MANHOLE COVER AND FRAME
GROUT
BALL CHECK VALVE, (FLG)
VARIES
PRECAST CONCRETE CONFORMING TO ASTM C478, OR BRICK W/ 1/2" 1:2 MORTAR ON OUTSIDE
12" MIN.
8"Ø WEEP HOLE WITH GRAVEL (OPTIONAL - SUBJECT TO SUBSURFACE CONDITIONS)
4'-0" MIN.
12" MIN. #57 GRANITE
SECTION

13 CHECK VALVE IN MANHOLE
05-C-13 1"=1'-0"

THOMAS & HUTTON ENGINEERING CO. No. C00285
MARK F. YODICE No. 13260

REVISIONS		
NO.	BY	DATE

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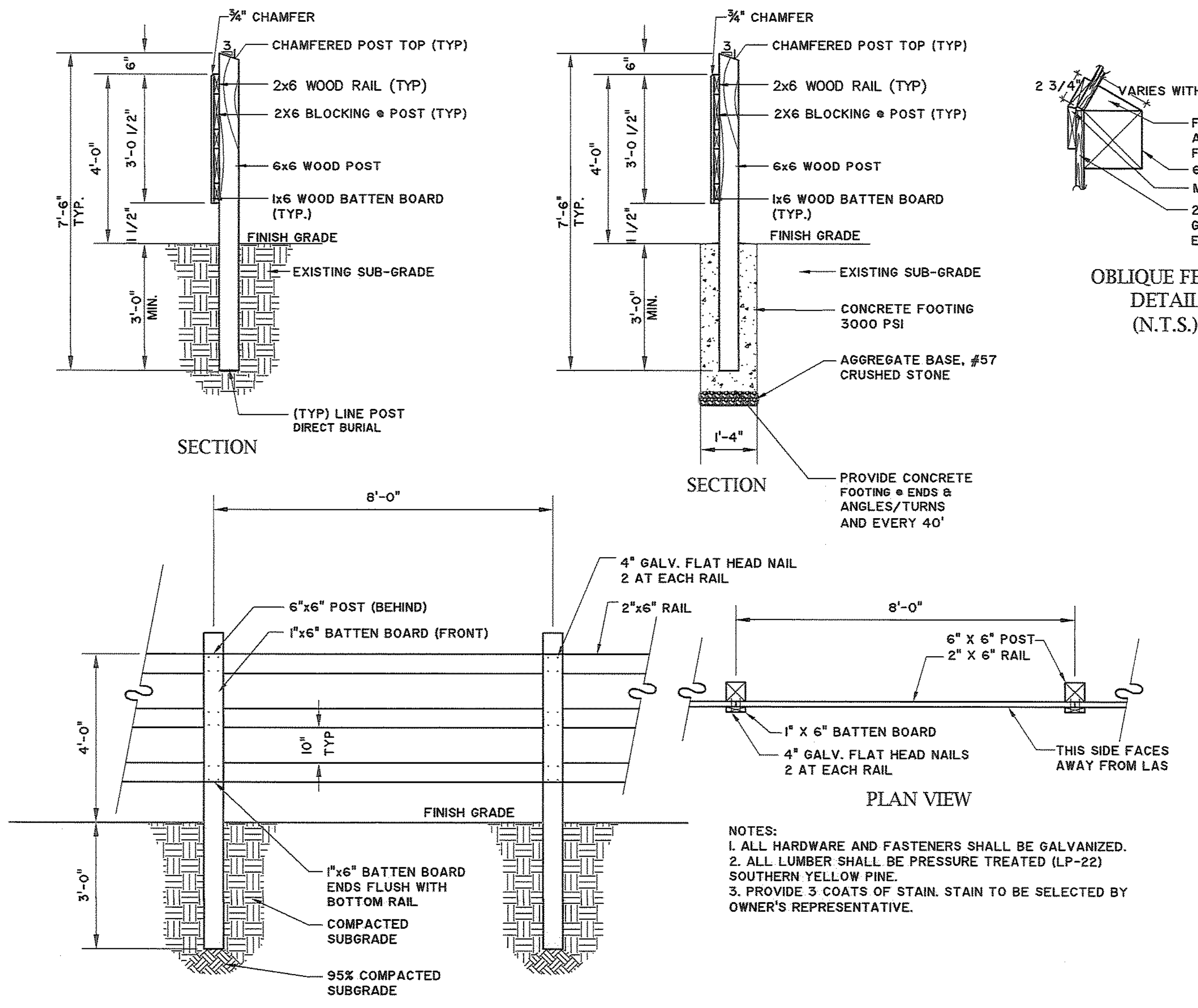
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
CIVIL DETAILS

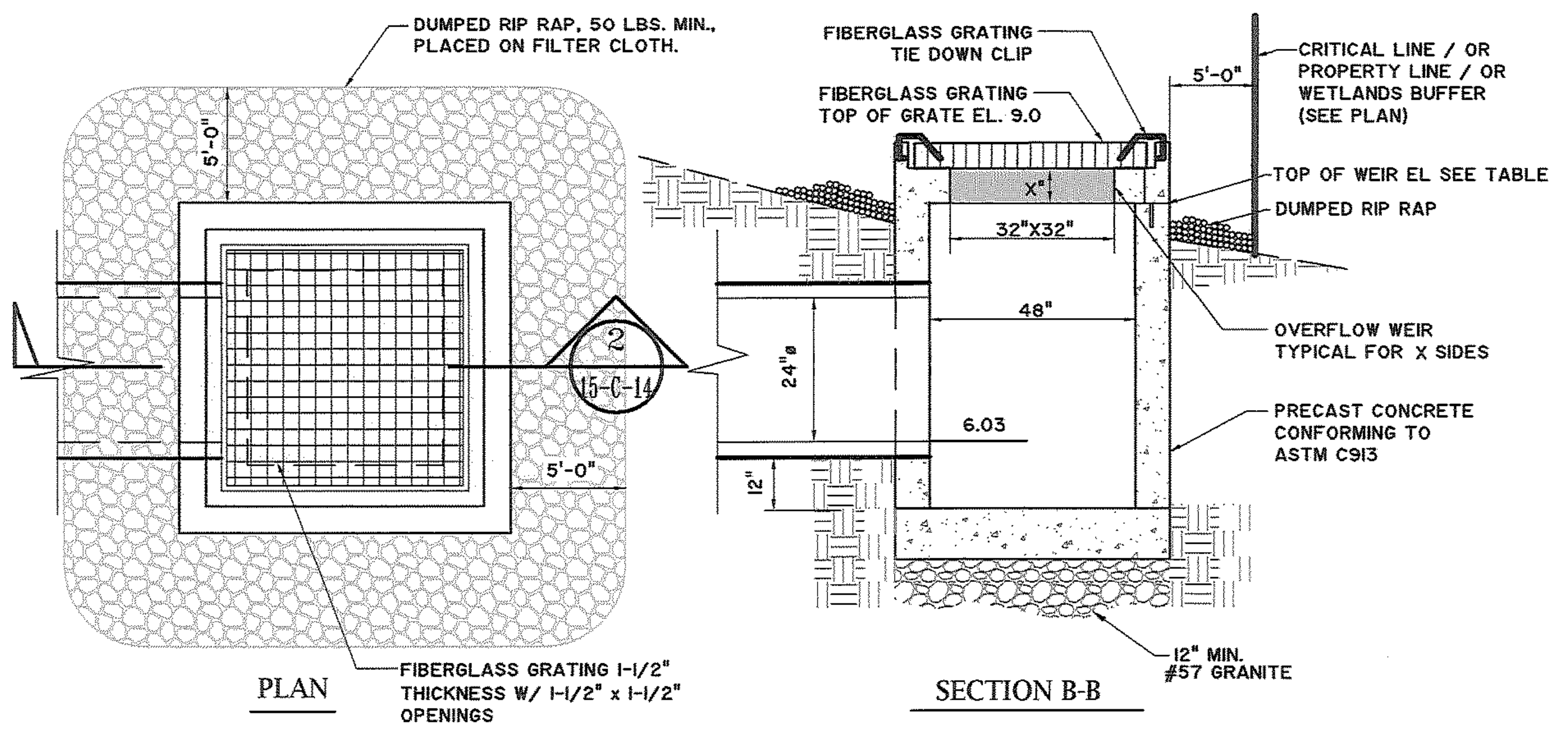
JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

05-C-13


¾" CHAMFER
CHAMFERED POST TOP (TYP)
2x6 WOOD RAIL (TYP)
2X6 BLOCKING @ POST (TYP)
6x6 WOOD POST
1x6 WOOD BATTEN BOARD (TYP.)
FINISH GRADE
EXISTING SUB-GRADE
(TYP) LINE POST DIRECT BURIAL
7'-6" TYP.
4'-0"
3'-0 1/2"
6"
1 1/2"
3'-0" MIN.
SECTION
CONCRETE FOOTING 3000 PSI
AGGREGATE BASE, #57 CRUSHED STONE
1'-4"
PROVIDE CONCRETE FOOTING @ ENDS & ANGLES/TURNS AND EVERY 40'
SECTION
2 3/4"
VARIES WITH OBLIQUE ANGLE
FENCE RAIL NAILER ATTACHED TO POST (CUT FROM 6x6)
6x6 POST
MITERED BATTEN BOARD
2x6 WOOD RAIL (TYP) 4" GALV. FLAT HEAD NAIL 2 AT EACH RAIL
OBLIQUE FENCE DETAIL (N.T.S.)
8'-0"
6"x6" POST (BEHIND)
1"x6" BATTEN BOARD (FRONT)
4" GALV. FLAT HEAD NAIL 2 AT EACH RAIL
2"x6" RAIL
10" TYP
4'-0"
3'-0"
FINISH GRADE
1"x6" BATTEN BOARD ENDS FLUSH WITH BOTTOM RAIL
COMPACTED SUBGRADE
95% COMPACTED SUBGRADE
8'-0"
6" X 6" POST
2" X 6" RAIL
1" X 6" BATTEN BOARD
4" GALV. FLAT HEAD NAILS 2 AT EACH RAIL
THIS SIDE FACES AWAY FROM LAS
PLAN VIEW

NOTES:
1. ALL HARDWARE AND FASTENERS SHALL BE GALVANIZED.
2. ALL LUMBER SHALL BE PRESSURE TREATED (LP-22) SOUTHERN YELLOW PINE.
3. PROVIDE 3 COATS OF STAIN. STAIN TO BE SELECTED BY OWNER'S REPRESENTATIVE.

1
05-C-14
THREE BOARD FENCE DETAIL
SCALE: N.T.S.

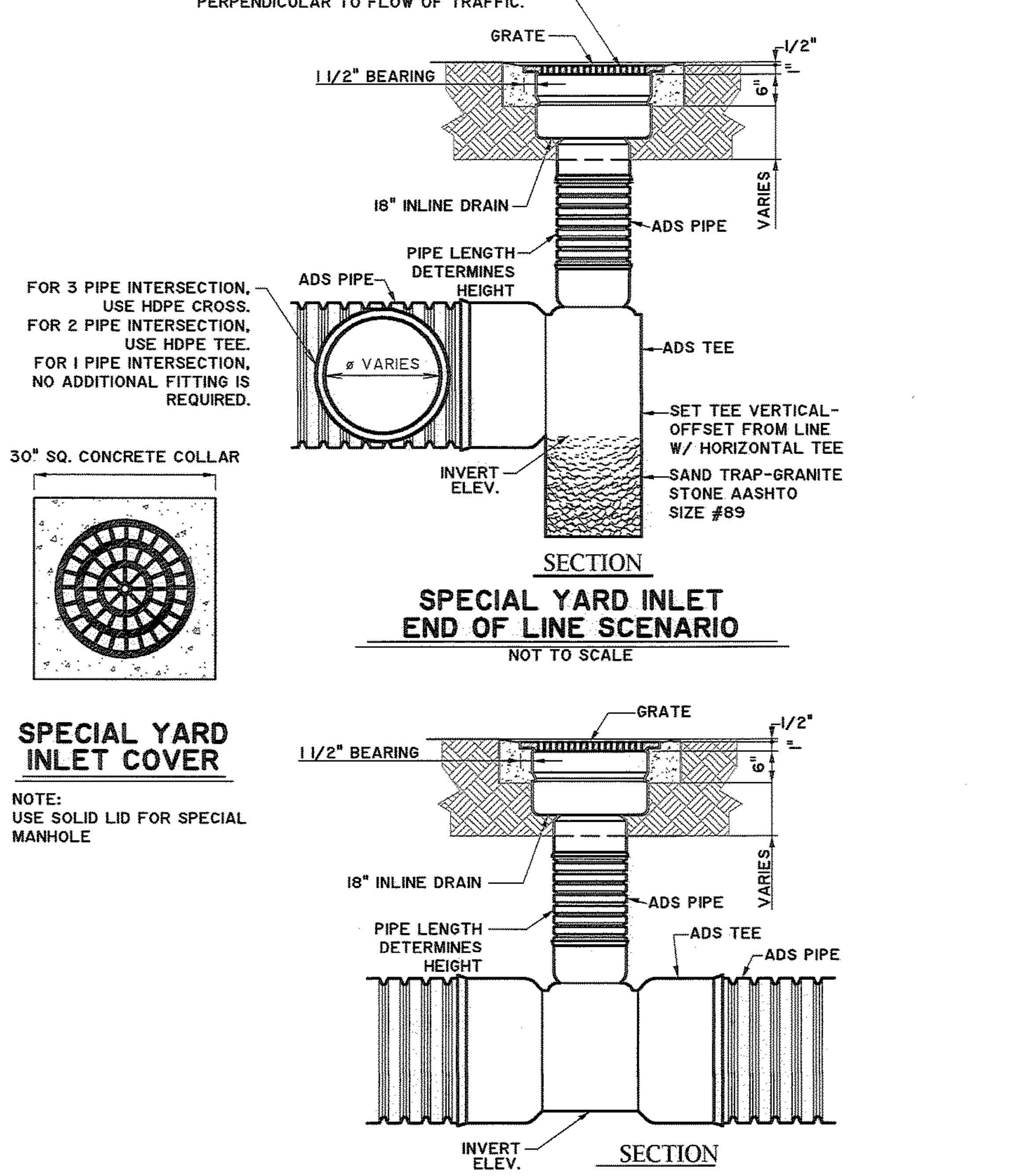

DUMPED RIP RAP, 50 LBS. MIN., PLACED ON FILTER CLOTH.
5'-0"
5'-0"
2
15-C-14
FIBERGLASS GRATING 1-1/2" THICKNESS W/ 1-1/2" x 1-1/2" OPENINGS
PLAN
FIBERGLASS GRATING TIE DOWN CLIP
FIBERGLASS GRATING TOP OF GRATE EL. 9.0
5'-0"
CRITICAL LINE / OR PROPERTY LINE / OR WETLANDS BUFFER (SEE PLAN)
X"
32"X32"
TOP OF WEIR EL SEE TABLE
DUMPED RIP RAP
48"
24"ø
6.03
12"
OVERFLOW WEIR TYPICAL FOR X SIDES
PRECAST CONCRETE CONFORMING TO ASTM C913
12" MIN. #57 GRANITE
SECTION B-B

NOTES:
1. STRUCTURE, GRATE, & FRAME SHALL BE APPROVED BY ENGINEER PRIOR TO ORDERING.

WEIR TABLE

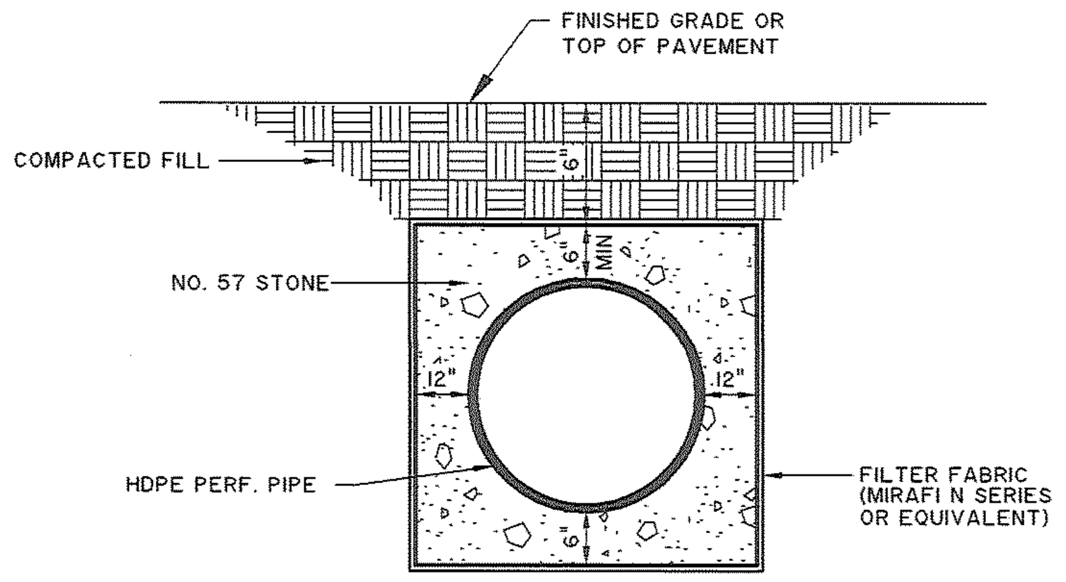
VERT WEIR 1 = EL 7.5'
SPAN = 24"
RISE = 6"
VERT WEIR 2 = EL 8.0'
SPAN = 48"
RISE = 12"

2
05-C-14
BUBBLER SYSTEM
NOT TO SCALE

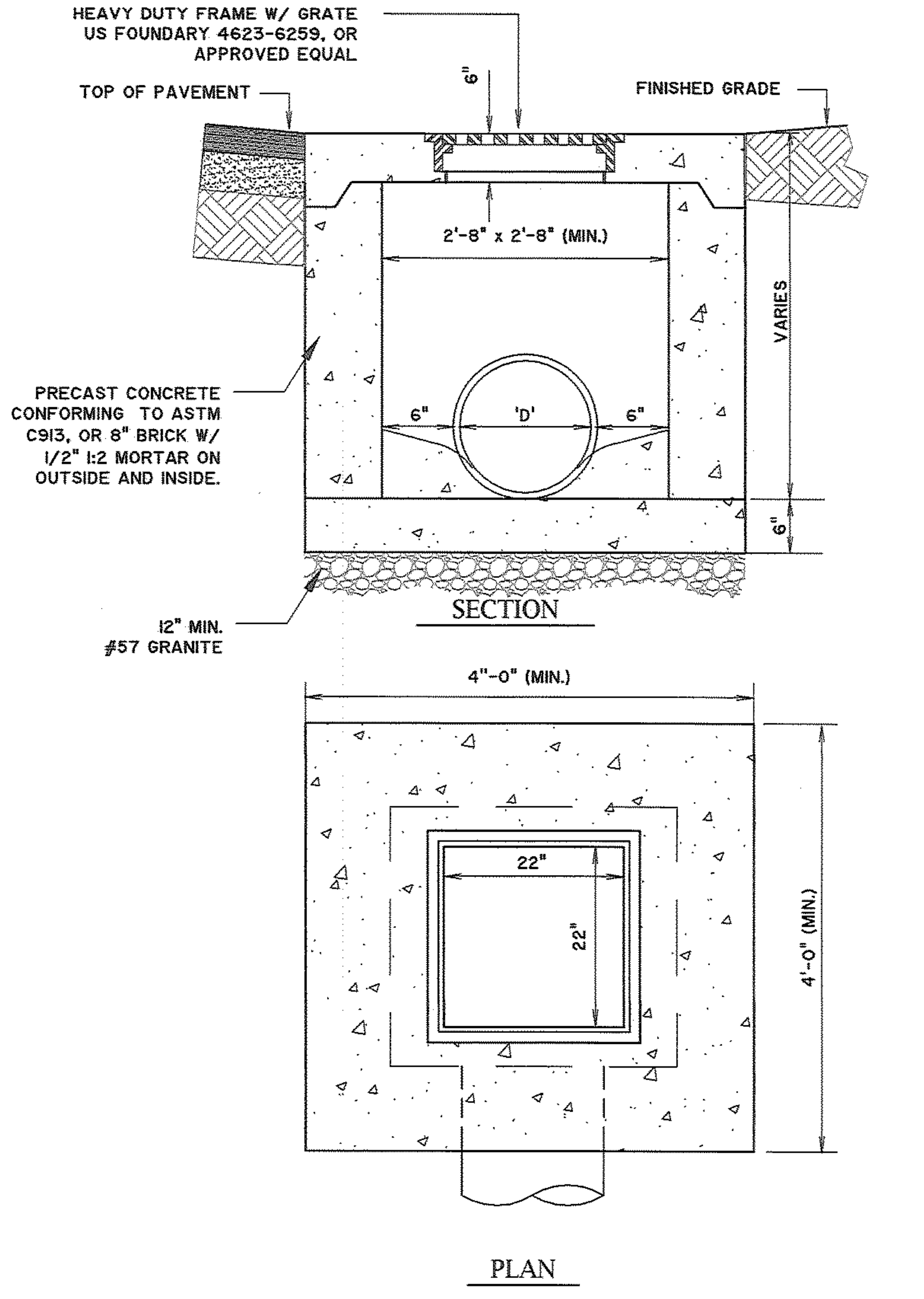

GRATES IN PAVED AREAS SHALL BE BICYCLE SAFE. OPENINGS SHALL BE PERPENDICULAR TO FLOW OF TRAFFIC.
GRATE
1 1/2" BEARING
1/2"
6"
VARIES
18" INLINE DRAIN
ADS PIPE
PIPE LENGTH DETERMINES HEIGHT
ADS PIPE
FOR 3 PIPE INTERSECTION, USE HDPE CROSS.
FOR 2 PIPE INTERSECTION, USE HDPE TEE.
FOR 1 PIPE INTERSECTION, NO ADDITIONAL FITTING IS REQUIRED.
ø VARIES
ADS TEE
SET TEE VERTICAL-OFFSET FROM LINE W/ HORIZONTAL TEE
INVERT ELEV.
SAND TRAP-GRANITE STONE AASHTO SIZE #89
SECTION
SPECIAL YARD INLET END OF LINE SCENARIO
NOT TO SCALE
30" SQ. CONCRETE COLLAR
SPECIAL YARD INLET COVER
GRATE
1 1/2" BEARING
1/2"
6"
VARIES
18" INLINE DRAIN
ADS PIPE
PIPE LENGTH DETERMINES HEIGHT
ADS TEE
ADS PIPE
INVERT ELEV.
SECTION

NOTE:
USE SOLID LID FOR SPECIAL MANHOLE

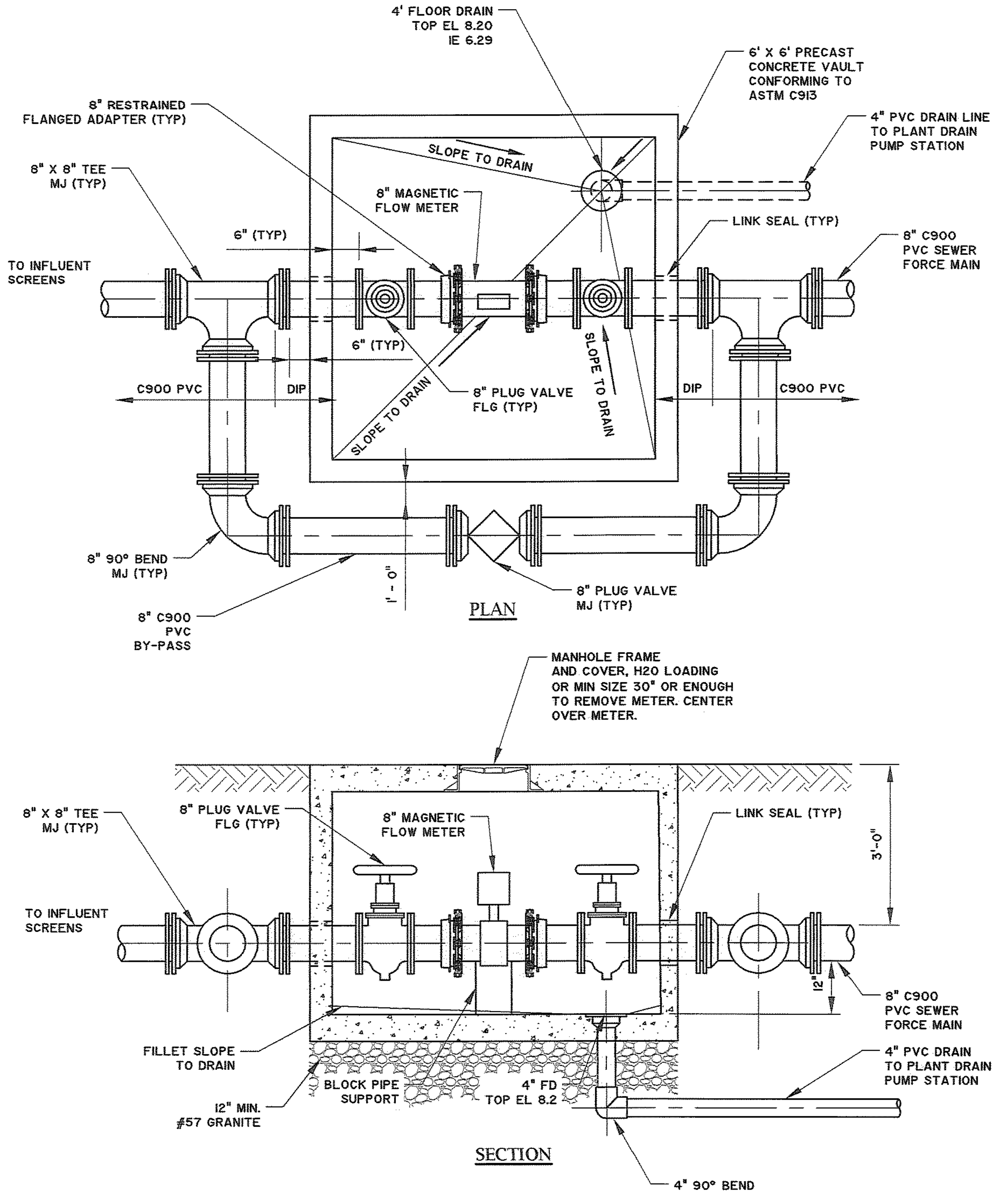
3
05-C-14
SPECIAL YARD INLET DETAIL
NOT TO SCALE


FINISHED GRADE OR TOP OF PAVEMENT
COMPACTED FILL
6"
6" MIN
NO. 57 STONE
12"
12"
HDPE PERF. PIPE
FILTER FABRIC (MIRAFI N SERIES OR EQUIVALENT)
6"

4
05-C-14
PERFORATED PIPE DETAIL
NOT TO SCALE

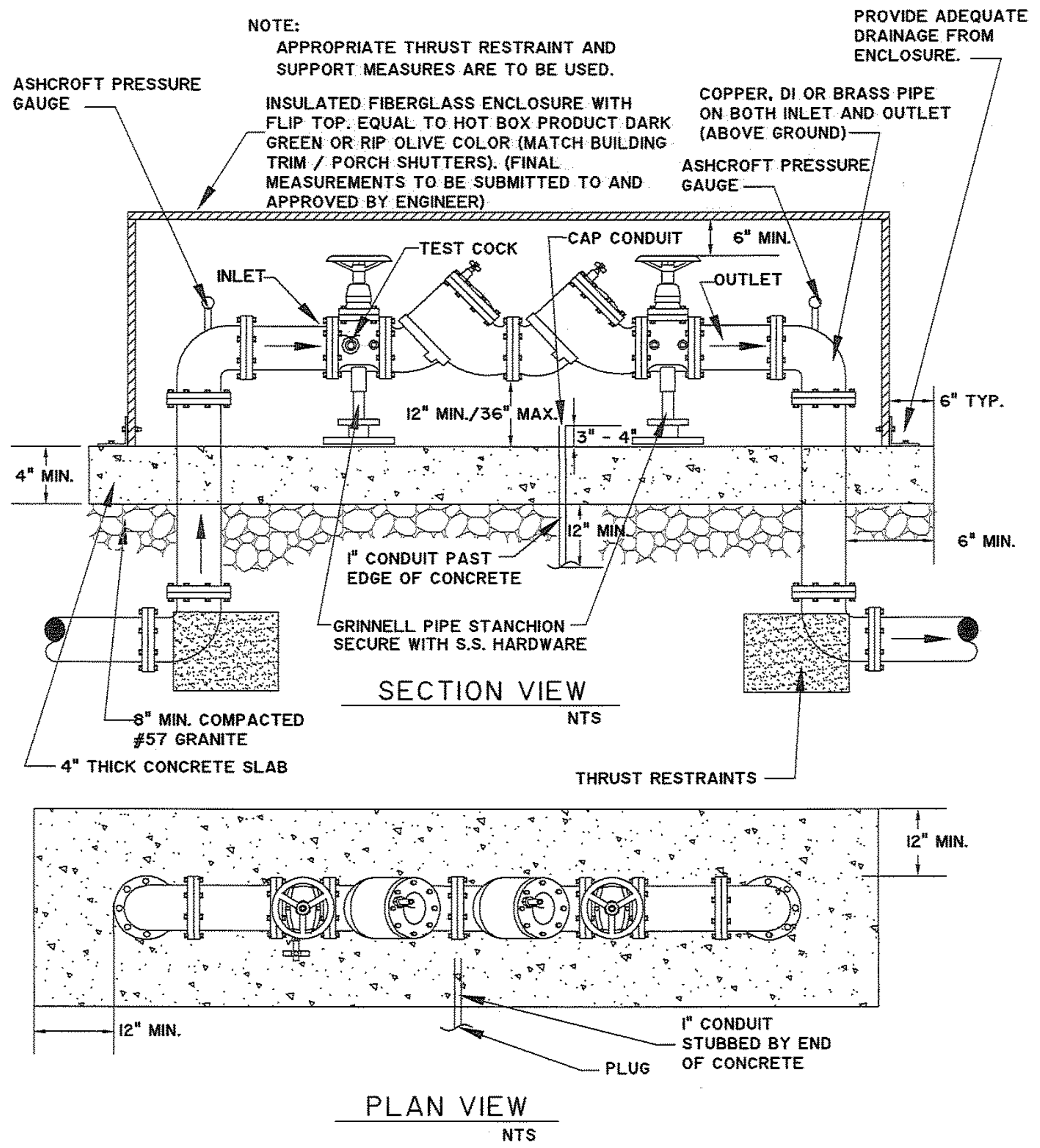

HEAVY DUTY FRAME W/ GRATE US FOUNDARY 4623-6259, OR APPROVED EQUAL
6"
TOP OF PAVEMENT
FINISHED GRADE
2'-8" x 2'-8" (MIN.)
VARIES
PRECAST CONCRETE CONFORMING TO ASTM C913, OR 8" BRICK W/ 1/2" 1:2 MORTAR ON OUTSIDE AND INSIDE.
6"
'D'
6"
6"
12" MIN. #57 GRANITE
SECTION
4"-0" (MIN.)
22"
22"
4'-0" (MIN.)
PLAN

5
05-C-14
STANDARD INLET – GRATE TYPE
NOT TO SCALE



6
05-C-14
FLOW METER AND CONCRETE VAULT DETAIL
1/2"=1'-0"

NOTE:
APPROPRIATE THRUST RESTRAINT AND SUPPORT MEASURES ARE TO BE USED.


ASHCROFT PRESSURE GAUGE
INSULATED FIBERGLASS ENCLOSURE WITH FLIP TOP. EQUAL TO HOT BOX PRODUCT DARK GREEN OR RIP OLIVE COLOR (MATCH BUILDING TRIM / PORCH SHUTTERS). (FINAL MEASUREMENTS TO BE SUBMITTED TO AND APPROVED BY ENGINEER)
PROVIDE ADEQUATE DRAINAGE FROM ENCLOSURE.
COPPER, DI OR BRASS PIPE ON BOTH INLET AND OUTLET (ABOVE GROUND)
ASHCROFT PRESSURE GAUGE
TEST COCK
CAP CONDUIT
6" MIN.
INLET
OUTLET
6" TYP.
12" MIN./36" MAX.
3" - 4"
4" MIN.
12" MIN.
6" MIN.
1" CONDUIT PAST EDGE OF CONCRETE
GRINNELL PIPE STANCHION SECURE WITH S.S. HARDWARE
SECTION VIEW
NTS
8" MIN. COMPACTED #57 GRANITE
4" THICK CONCRETE SLAB
THRUST RESTRAINTS
12" MIN.
12" MIN.
1" CONDUIT STUBBED BY END OF CONCRETE
PLUG
PLAN VIEW
NTS

NOTES:
1. ASSEMBLY EQUIVALENT TO BEECO-HERSEY, FEBCO, OR WATTS. ALL REDUCED PRESSURE DEVICES MUST BE INSTALLED ABOVE GROUND.
2. BOX MUST BE SIZED TO ALLOW ADEQUATE ROOM FOR TESTING AND MAINTENANCE. TYPICALLY THIS DIMENSION SHOULD BE A MIN. OF 12" ALL AROUND, (SIDES AND BOTTOM).
3. CONTRACTOR SHALL SUBMIT "TO SCALE" SHOP DRAWINGS OF PROPOSED INSTALLATION TO ENGINEER FOR APPROVAL PRIOR TO ORDERING ANY MATERIAL
4. A CERTIFIED TESTER SHALL TEST ASSEMBLY ACCORDING TO SCDHEC AND LOCAL REQUIREMENTS. SUBMIT RESULTS TO ENGINEER.
5. INSTALL ACCORDING TO MANUFACTURES RECOMMENDATIONS.
6. ALL ASSEMBLIES MUST BE ON SCDHEC LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES FOR SC.

7
05-C-14
BACKFLOW PREVENTER
NOT TO SCALE

THOMAS & HUTTON ENGINEERING CO. No. C00285
No. 13299
12-2-15
MARK F. YODICE

NO.	REVISIONS	BY	DATE

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www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
CIVIL DETAILS

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

05-C-14

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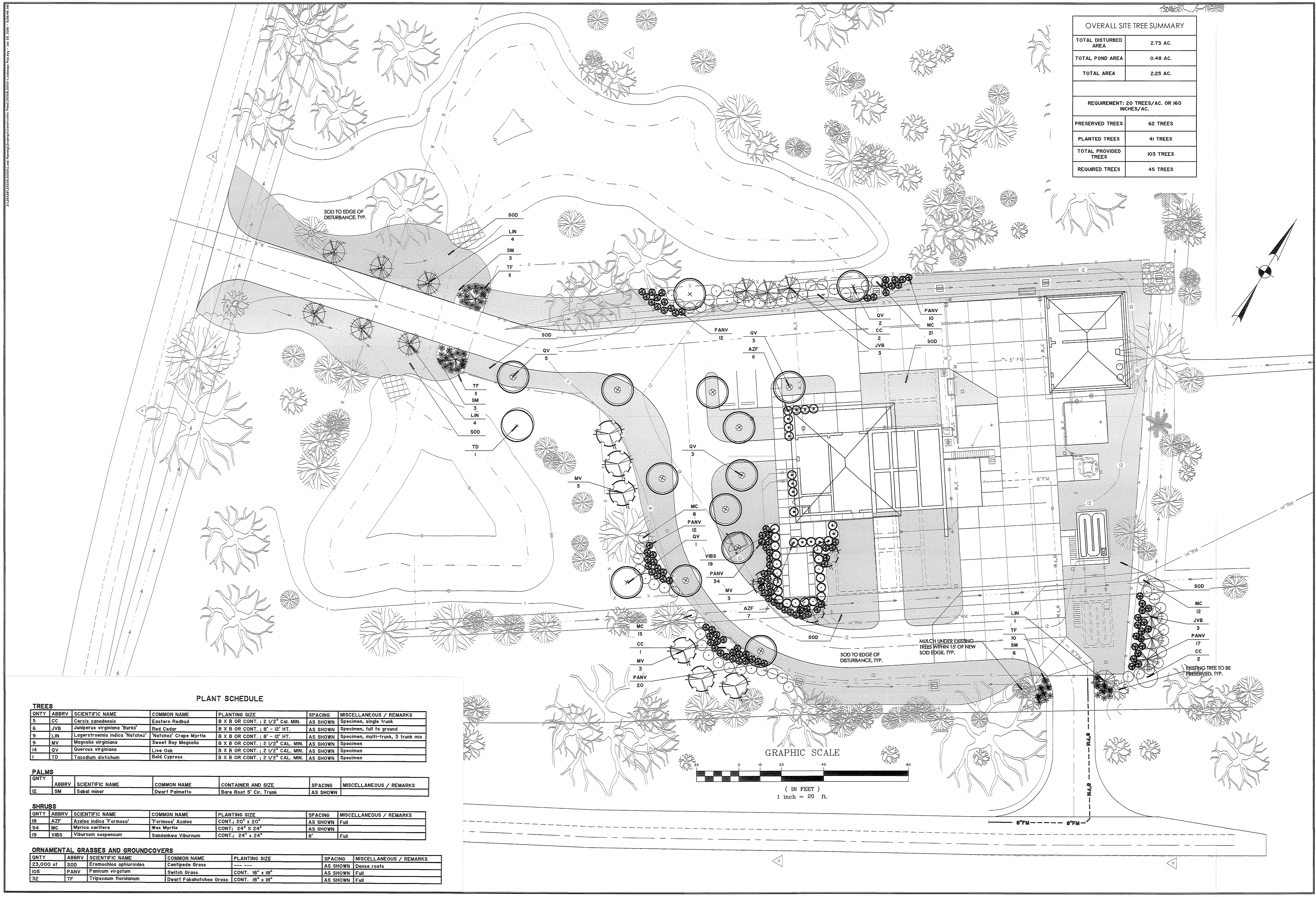

OVERALL SITE TREE SUMMARY

TOTAL DISTURBED AREA	2.73 AC.
TOTAL POND AREA	0.48 AC.
TOTAL AREA	2.25 AC.
REQUIREMENT: 20 TREES/AC. OR 160 INCHES/AC.	
PRESERVED TREES	62 TREES
PLANTED TREES	41 TREES
TOTAL PROVIDED TREES	103 TREES
REQUIRED TREES	45 TREES

PLANT SCHEDULE

TREES

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
5	CC	Cercis canadensis	Eastern Redbud	B X B OR CONT. ; 2 1/2" Cal. MIN.	AS SHOWN	Specimen, single trunk
6	JVB	Juniperus virginiana 'Burkii'	Red Cedar	B X B OR CONT. ; 8' - 12' HT.	AS SHOWN	Specimen, full to ground
9	LIN	Lagerstroemia indica 'Natchez'	'Natchez' Crape Myrtle	B X B OR CONT. ; 8' - 12' HT.	AS SHOWN	Specimen, multi-trunk, 3 trunk min
9	MV	Magnolia virginiana	Sweet Bay Magnolia	B X B OR CONT. ; 2 1/2" CAL. MIN.	AS SHOWN	Specimen
14	QV	Quercus virginiana	Live Oak	B X B OR CONT. ; 2 1/2" CAL. MIN.	AS SHOWN	Specimen
1	TD	Taxodium distichum	Bald Cypress	B X B OR CONT. ; 2 1/2" CAL. MIN.	AS SHOWN	Specimen

PALMS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	CONTAINER AND SIZE	SPACING	MISCELLANEOUS / REMARKS
12	SM	Sabal minor	Dwarf Palmetto	Bare Root 5' Cir. Trunk	AS SHOWN	

SHRUBS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
18	AZF	Azalea indica 'Formosa'	'Formosa' Azalea	CONT.; 20" x 20"	AS SHOWN	Full
54	MC	Myrica cerifera	Wax Myrtle	CONT; 24" X 24"	AS SHOWN	
19	VIBS	Viburnum suspensum	Sandankwa Viburnum	CONT.; 24" x 24"	8'	Full

ORNAMENTAL GRASSES AND GROUNDCOVERS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
23,000 sf	SOD	Eremochloa ophiuroides	Centipede Grass	--- ---	AS SHOWN	Dense roots
105	PANV	Panicum virgatum	Switch Grass	CONT. 18" x 18"	AS SHOWN	Full
32	TF	Tripscaum floridanum	Dwarf Fakahatchee Grass	CONT. 18" x 18"	AS SHOWN	Full

202-C
THOMAS & HUTTON ENGINEERING CO.

No. 901
RYAN P. THOMPSON

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
LANDSCAPE PLAN

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	MEM
DESIGNED:	MEM
REVIEWED:	RPT
APPROVED:	RPT
SCALE:	1" = 20'

05-L-01

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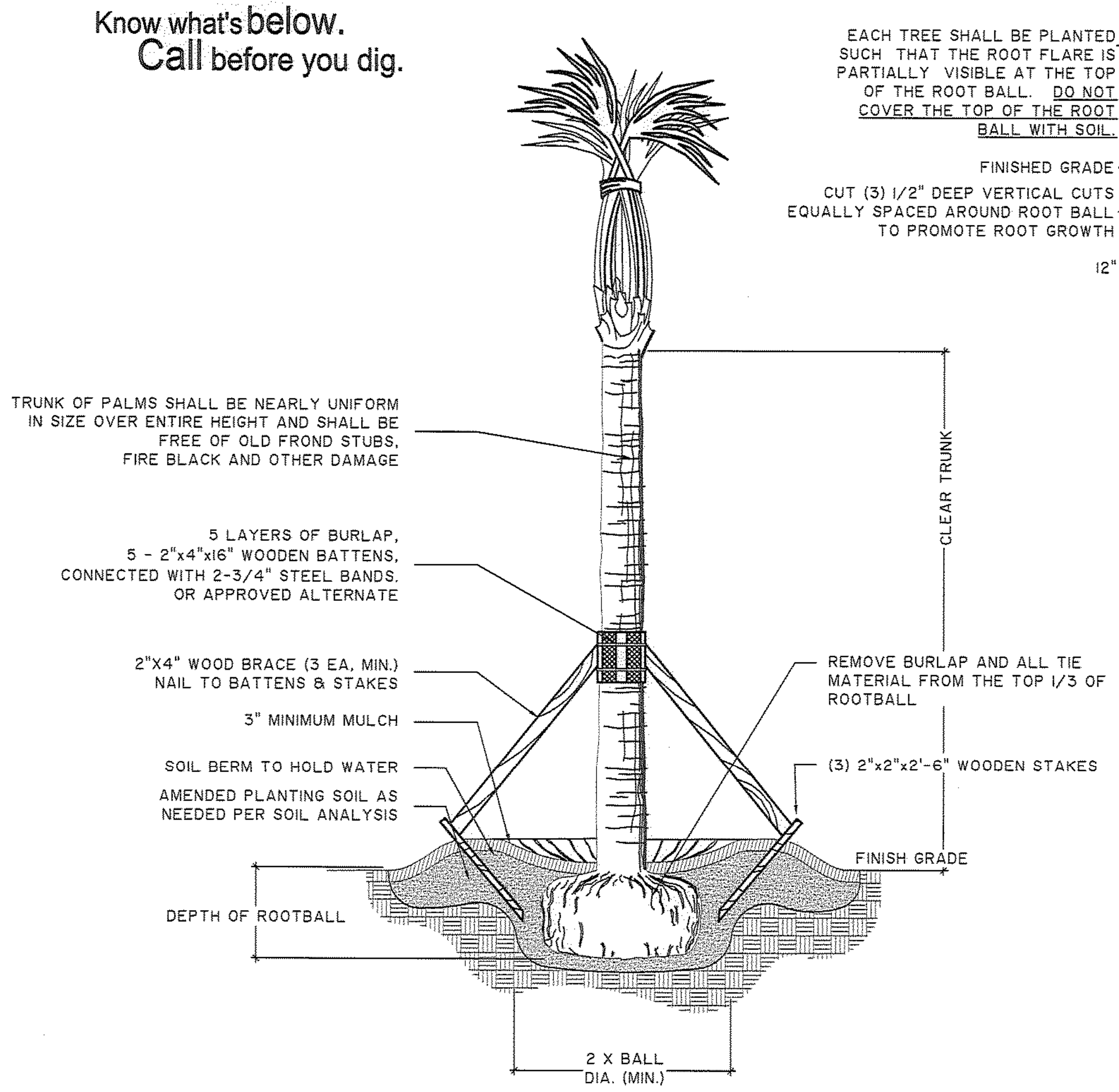
Know what's below.
Call before you dig.

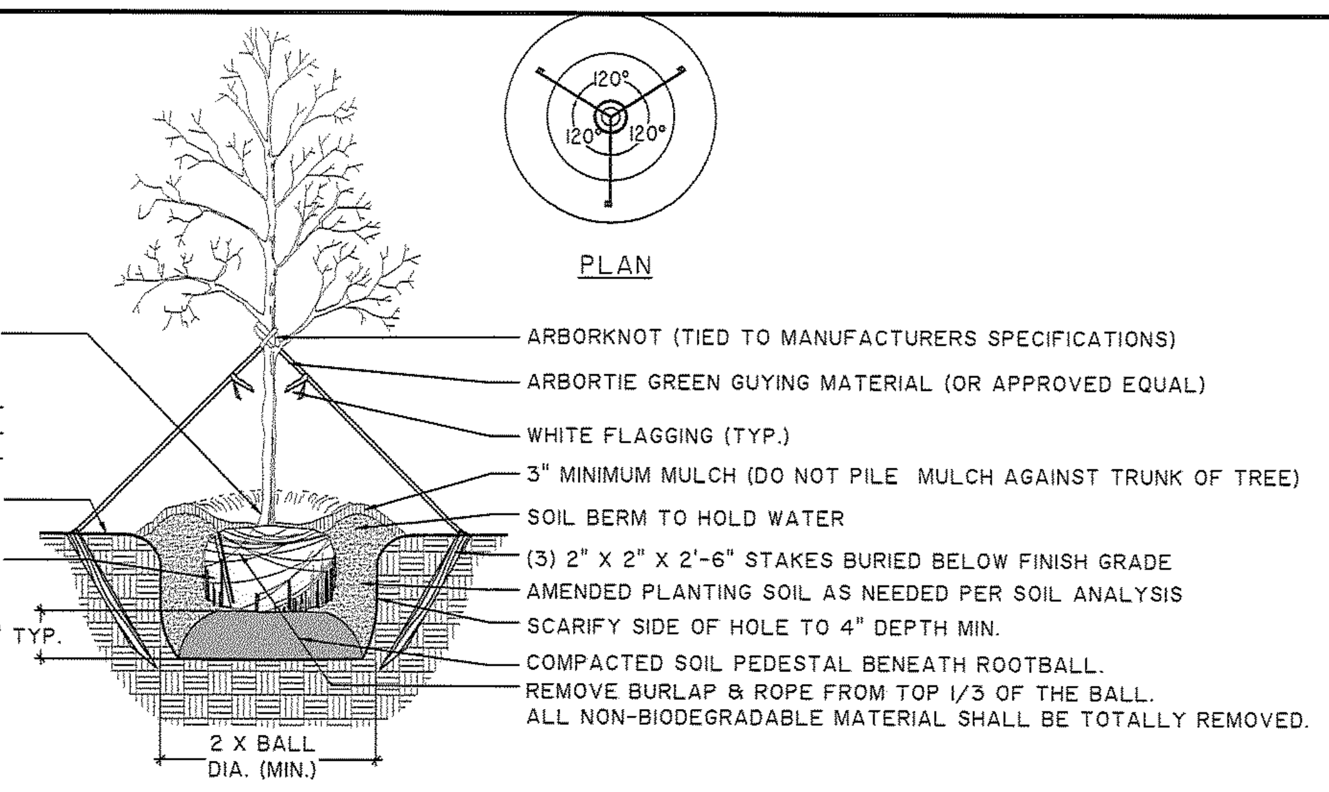

TRUNK OF PALMS SHALL BE NEARLY UNIFORM IN SIZE OVER ENTIRE HEIGHT AND SHALL BE FREE OF OLD FROND STUBS, FIRE BLACK AND OTHER DAMAGE
5 LAYERS OF BURLAP, 5 - 2"x4"x16" WOODEN BATTENS, CONNECTED WITH 2-3/4" STEEL BANDS, OR APPROVED ALTERNATE
2"X4" WOOD BRACE (3 EA. MIN.) NAIL TO BATTENS & STAKES
3" MINIMUM MULCH
SOIL BERM TO HOLD WATER
AMENDED PLANTING SOIL AS NEEDED PER SOIL ANALYSIS
DEPTH OF ROOTBALL
CLEAR TRUNK
REMOVE BURLAP AND ALL TIE MATERIAL FROM THE TOP 1/3 OF ROOTBALL
(3) 2"x2"x2'-6" WOODEN STAKES
FINISH GRADE
2 X BALL DIA. (MIN.)

NOTES:

1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) PLANT ROOT BALL FLUSH WITH FINISHED GRADE UNLESS AREA HAS POOR DRAINAGE, IN WHICH CASE PLANT ROOTBALL 2" ABOVE GRADE.
3) SABAL PALMETTOS SHALL BE DEFOLIATED, PROTECT CABBAGE HEAD FROM DAMAGE. ALL OTHER PALM SPECIES MUST HAVE FRONDS TIED W/BIODEGRADABLE STRAP OR TWINE.
4) FINAL TREE STAKING AND PLACEMENT TO BE APPROVED BY OWNER'S REP.
5) CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.

PALM TREE PLANTING

NOT TO SCALE

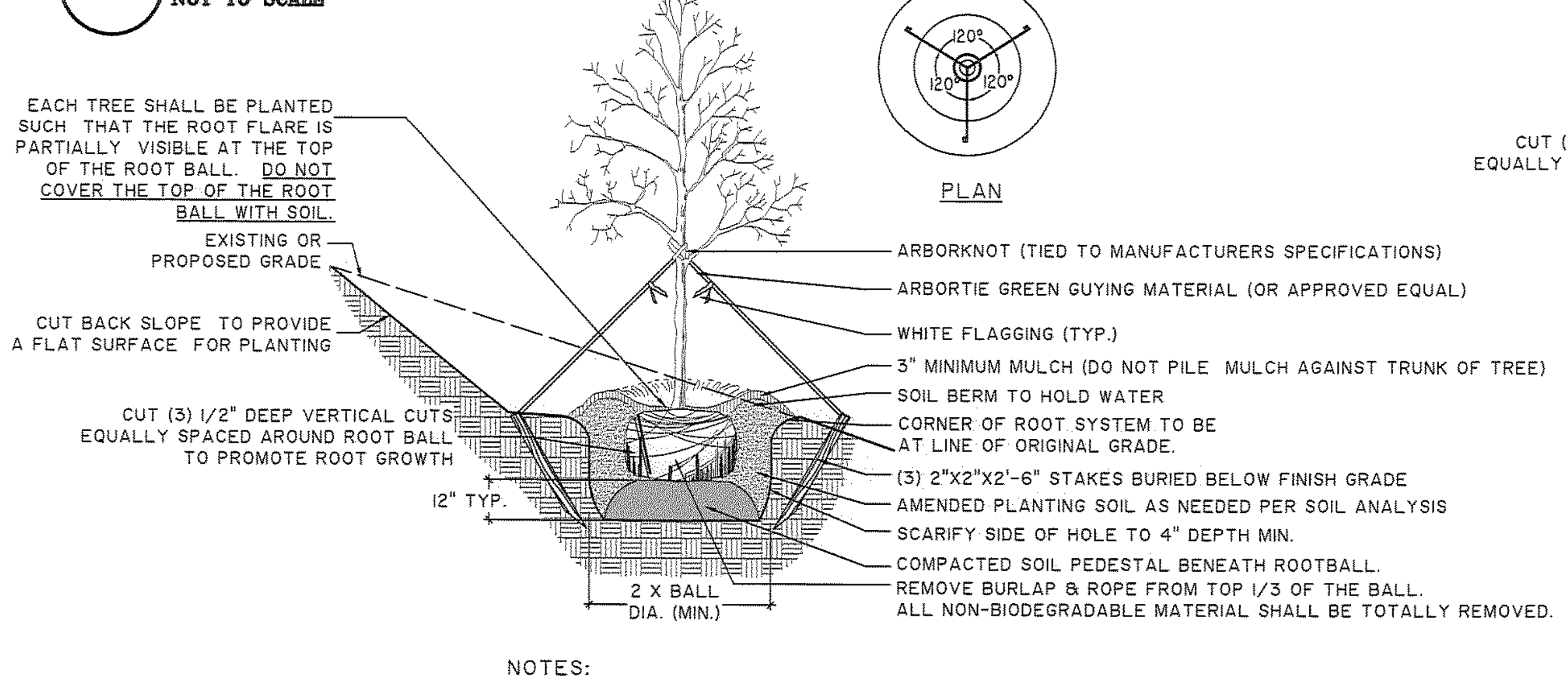

PLAN
120°
120°
120°
EACH TREE SHALL BE PLANTED SUCH THAT THE ROOT FLARE IS PARTIALLY VISIBLE AT THE TOP OF THE ROOT BALL. DO NOT COVER THE TOP OF THE ROOT BALL WITH SOIL.
FINISHED GRADE
CUT (3) 1/2" DEEP VERTICAL CUTS EQUALLY SPACED AROUND ROOT BALL TO PROMOTE ROOT GROWTH
12" TYP.
ARBORKNOT (TIED TO MANUFACTURERS SPECIFICATIONS)
ARBORTIE GREEN GUYING MATERIAL (OR APPROVED EQUAL)
WHITE FLAGGING (TYP.)
3" MINIMUM MULCH (DO NOT PILE MULCH AGAINST TRUNK OF TREE)
SOIL BERM TO HOLD WATER
(3) 2" X 2" X 2'-6" STAKES BURIED BELOW FINISH GRADE
AMENDED PLANTING SOIL AS NEEDED PER SOIL ANALYSIS
SCARIFY SIDE OF HOLE TO 4" DEPTH MIN.
COMPACTED SOIL PEDESTAL BENEATH ROOTBALL.
REMOVE BURLAP & ROPE FROM TOP 1/3 OF THE BALL. ALL NON-BIODEGRADABLE MATERIAL SHALL BE TOTALLY REMOVED.
2 X BALL DIA. (MIN.)

NOTES:

1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) ONLY GUY TREES WHEN SITE CONDITIONS REQUIRE IT.
3) PLANT ROOT BALL FLUSH WITH FINISHED GRADE UNLESS AREA HAS POOR DRAINAGE, IN WHICH CASE PLANT ROOTBALL 2" ABOVE GRADE.
4) REMOVE ALL BRANCHES THAT ARE DAMAGED, RUBBING, OR CROSSING OTHER BRANCHES.
5) NEVER CUT A CENTRAL LEADER.
6) FINAL TREE STAKING AND PLACEMENT TO BE APPROVED BY OWNER'S REP.
7) CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.

TREE PLANTING

NOT TO SCALE

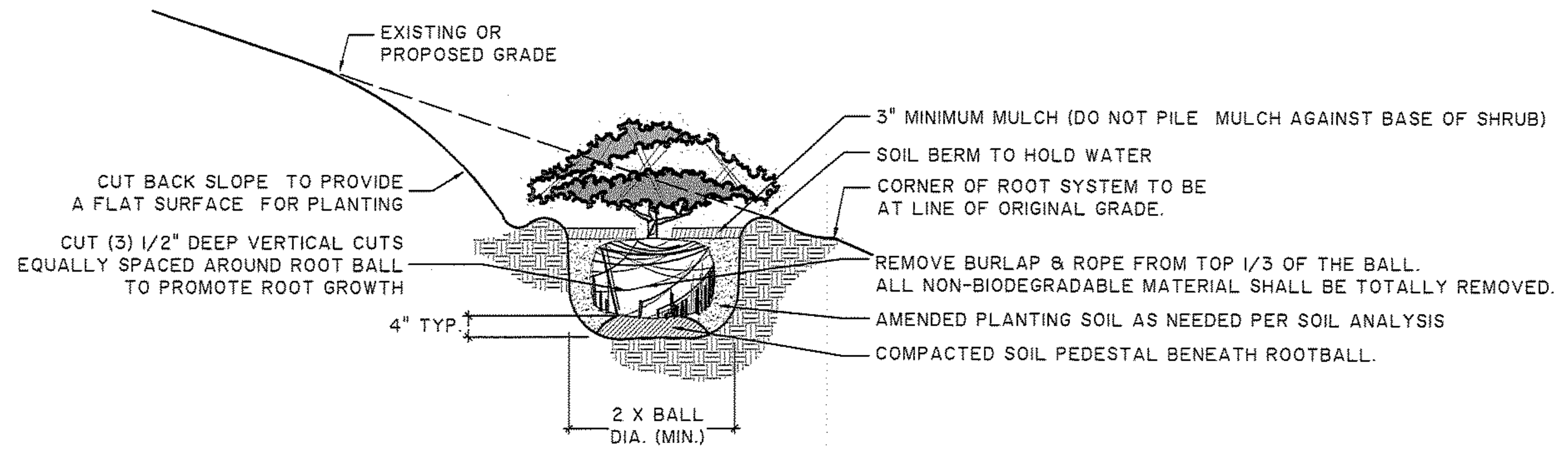

PLAN
120°
120°
120°
EACH TREE SHALL BE PLANTED SUCH THAT THE ROOT FLARE IS PARTIALLY VISIBLE AT THE TOP OF THE ROOT BALL. DO NOT COVER THE TOP OF THE ROOT BALL WITH SOIL.
EXISTING OR PROPOSED GRADE
CUT BACK SLOPE TO PROVIDE A FLAT SURFACE FOR PLANTING
CUT (3) 1/2" DEEP VERTICAL CUTS EQUALLY SPACED AROUND ROOT BALL TO PROMOTE ROOT GROWTH
12" TYP.
ARBORKNOT (TIED TO MANUFACTURERS SPECIFICATIONS)
ARBORTIE GREEN GUYING MATERIAL (OR APPROVED EQUAL)
WHITE FLAGGING (TYP.)
3" MINIMUM MULCH (DO NOT PILE MULCH AGAINST TRUNK OF TREE)
SOIL BERM TO HOLD WATER
CORNER OF ROOT SYSTEM TO BE AT LINE OF ORIGINAL GRADE.
(3) 2"X2"X2'-6" STAKES BURIED BELOW FINISH GRADE
AMENDED PLANTING SOIL AS NEEDED PER SOIL ANALYSIS
SCARIFY SIDE OF HOLE TO 4" DEPTH MIN.
COMPACTED SOIL PEDESTAL BENEATH ROOTBALL.
REMOVE BURLAP & ROPE FROM TOP 1/3 OF THE BALL. ALL NON-BIODEGRADABLE MATERIAL SHALL BE TOTALLY REMOVED.
2 X BALL DIA. (MIN.)

NOTES:

1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) ONLY GUY TREES WHEN SITE CONDITIONS REQUIRE IT.
3) PLANT ROOT BALL FLUSH WITH FINISHED GRADE UNLESS AREA HAS POOR DRAINAGE, IN WHICH CASE PLANT ROOTBALL 2" ABOVE GRADE.
4) REMOVE ALL BRANCHES THAT ARE DAMAGED, RUBBING, OR CROSSING OTHER BRANCHES.
5) NEVER CUT A CENTRAL LEADER.
6) FINAL TREE STAKING AND PLACEMENT TO BE APPROVED BY OWNER'S REP.
7) CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.

TREE PLANTING ON A SLOPE

NOT TO SCALE

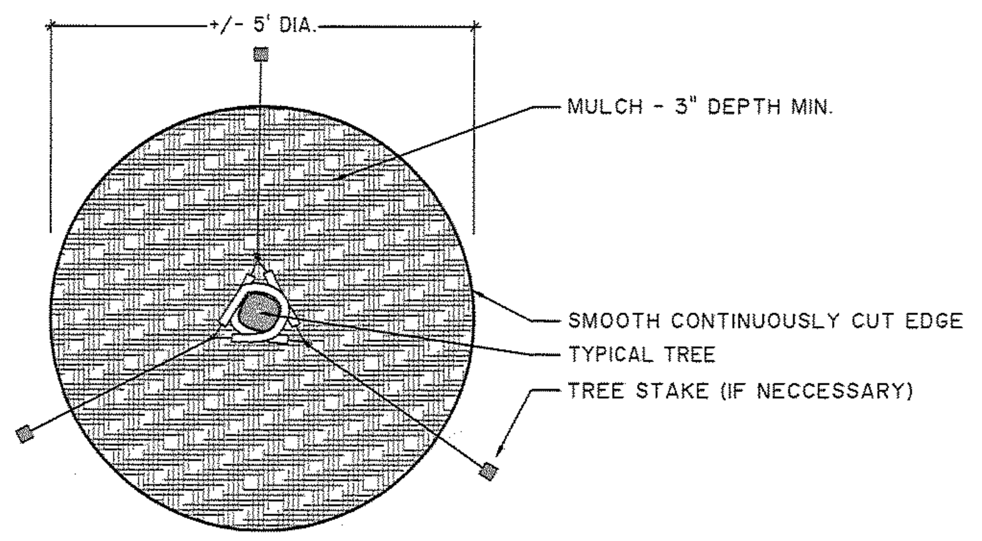

EXISTING OR PROPOSED GRADE
CUT BACK SLOPE TO PROVIDE A FLAT SURFACE FOR PLANTING
CUT (3) 1/2" DEEP VERTICAL CUTS EQUALLY SPACED AROUND ROOT BALL TO PROMOTE ROOT GROWTH
4" TYP.
3" MINIMUM MULCH (DO NOT PILE MULCH AGAINST BASE OF SHRUB)
SOIL BERM TO HOLD WATER
CORNER OF ROOT SYSTEM TO BE AT LINE OF ORIGINAL GRADE.
REMOVE BURLAP & ROPE FROM TOP 1/3 OF THE BALL. ALL NON-BIODEGRADABLE MATERIAL SHALL BE TOTALLY REMOVED.
AMENDED PLANTING SOIL AS NEEDED PER SOIL ANALYSIS
COMPACTED SOIL PEDESTAL BENEATH ROOTBALL.
2 X BALL DIA. (MIN.)

NOTES:

1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) WHEN GROUNDCOVER AND SHRUBS ARE USED IN MASSES, DO NOT FORM SOIL BERMS ON INDIVIDUAL PLANTS AND ENTIRE PLANTING BED SHALL BE EXCAVATED TO RECEIVE PLANTING SOIL AND PLANT MATERIAL.
3) PLANT ROOT BALL FLUSH WITH FINISHED GRADE UNLESS AREA HAS POOR DRAINAGE, IN WHICH CASE PLANT ROOTBALL 2" ABOVE GRADE. COORDINATE WITH OWNER'S REP. PRIOR TO SETTING ROOTBALL ELEVATIONS.
4) CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.

SHRUB PLANTING ON A SLOPE

NOT TO SCALE

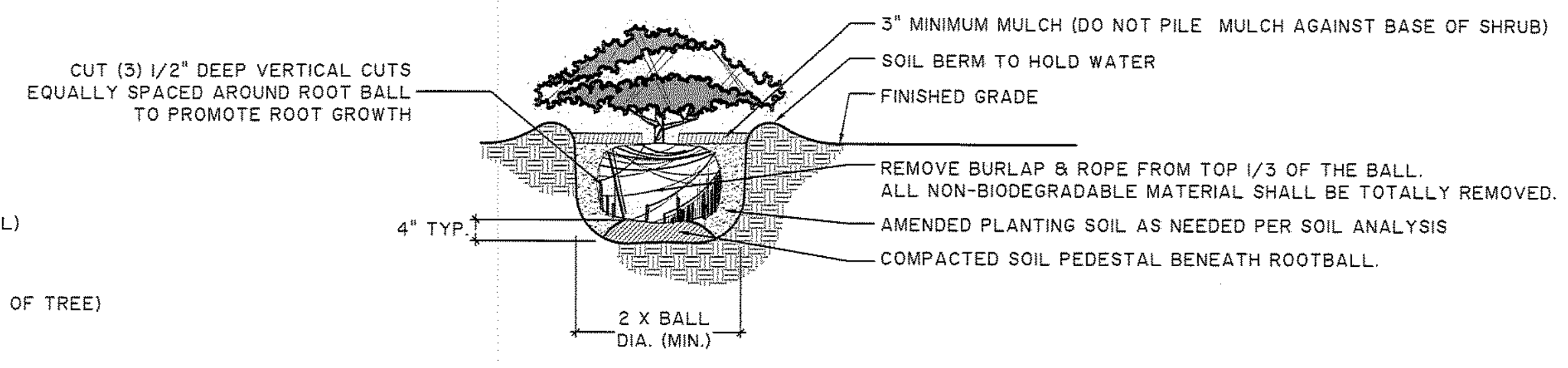


NOTES:

1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) APPLY MULCH IN A +/- 5' DIAMETER WHERE PROPOSED TREE PLANTINGS OCCUR IN SOD OR SEEDED AREA.

TREE RING

NOT TO SCALE

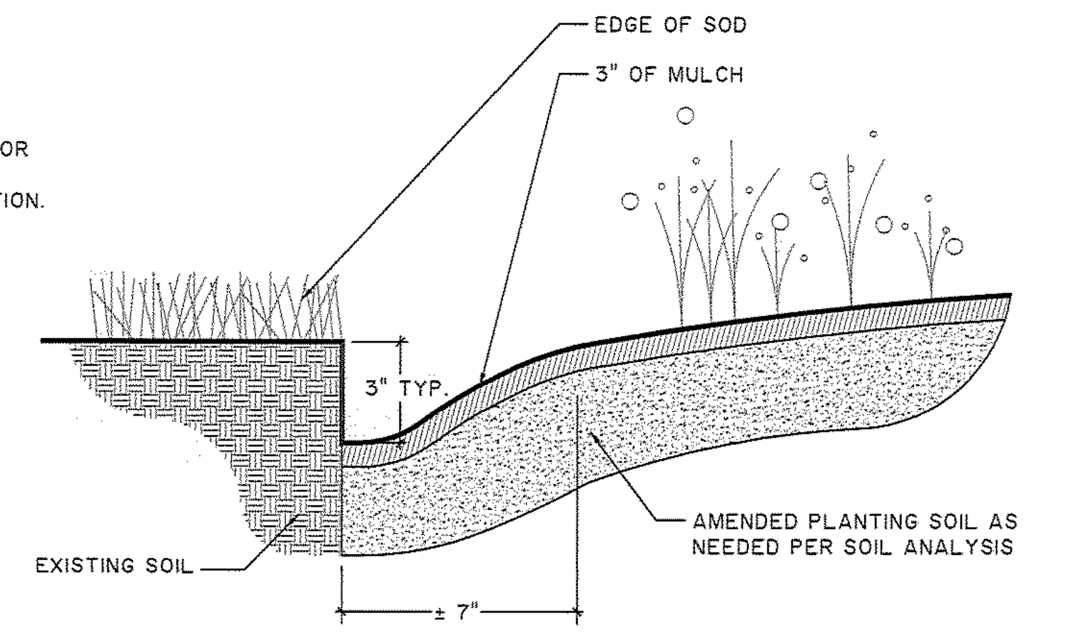

CUT (3) 1/2" DEEP VERTICAL CUTS EQUALLY SPACED AROUND ROOT BALL TO PROMOTE ROOT GROWTH
4" TYP.
3" MINIMUM MULCH (DO NOT PILE MULCH AGAINST BASE OF SHRUB)
SOIL BERM TO HOLD WATER
FINISHED GRADE
REMOVE BURLAP & ROPE FROM TOP 1/3 OF THE BALL. ALL NON-BIODEGRADABLE MATERIAL SHALL BE TOTALLY REMOVED.
AMENDED PLANTING SOIL AS NEEDED PER SOIL ANALYSIS
COMPACTED SOIL PEDESTAL BENEATH ROOTBALL.
2 X BALL DIA. (MIN.)

NOTES:

1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) WHEN GROUNDCOVER AND SHRUBS ARE USED IN MASSES, DO NOT FORM SOIL BERMS ON INDIVIDUAL PLANTS AND ENTIRE PLANTING BED SHALL BE EXCAVATED TO RECEIVE PLANTING SOIL AND PLANT MATERIAL.
3) PLANT ROOT BALL FLUSH WITH FINISHED GRADE UNLESS AREA HAS POOR DRAINAGE, IN WHICH CASE PLANT ROOTBALL 2" ABOVE GRADE. COORDINATE WITH OWNER'S REP. PRIOR TO SETTING ROOTBALL ELEVATIONS.
4) CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.

SHRUB PLANTING

NOT TO SCALE



NOTES:

1) TRENCH EDGE TO BE LOCATED BETWEEN PLANTING BEDS AND ALL LAWN AREAS.

SOD TO PLANT BED EDGE

NOT TO SCALE

GENERAL PLANTING / IRRIGATION NOTES:

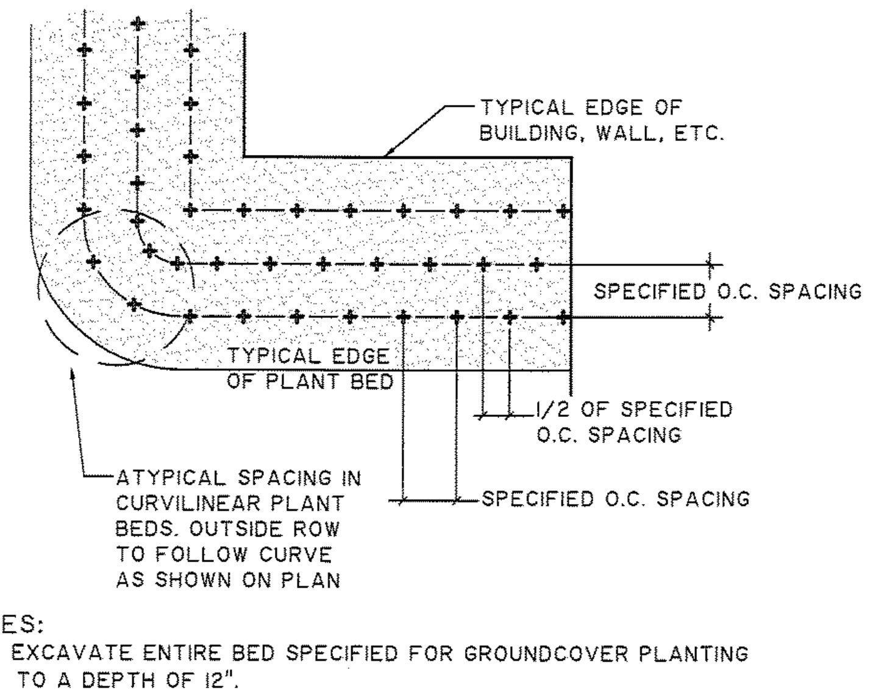
1. REQUIREMENTS FOR THE MEASUREMENTS, BRANCHING, GRADING, QUALITY, BALLING AND BURLAPPING OF PLANTS IN THE PLANT LIST SHOULD FOLLOW OR EXCEED THE STANDARDS CURRENTLY RECOMMENDED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. IN THE AMERICAN STANDARD FOR NURSERY STOCKS (ASNS). UNLESS OTHERWISE SPECIFIED, ANY SIZE SPECIFIED SHALL BE CONSIDERED MINIMUM. MINIMUMS FOR HEIGHT, SPREAD, CALIPER, ETC. SHALL TAKE PRECEDENT OVER A SPECIFIED CONTAINER SIZE. (I.E. - IF 7 GALLON IS REQUIRED, TO PROVIDE A SPECIFIED HEIGHT OR SPREAD THAT IS SPECIFIED AS A 3 GALLON, THEN THE 7 GALLON SHALL BE SHALL BE REQUIRED AND INCLUDED IN THE BASE BID AND SHALL NOT BE CONSIDERED A CHANGE ORDER.
2. ALL PLANTS SHALL HAVE A WELL FORMED HEAD WITH MINIMUM CALIPER, HEIGHT AND SPREAD OF THE SIDE BRANCHES AS SHOWN ON THE PLANT LIST. TRUNKS SHALL BE UNDAMAGED AND SHAPE SHALL BE TYPICAL OF THE SPECIES.
3. MEASUREMENT OF CONIFER HEIGHT SHALL INCLUDE NOT MORE THAN FIFTY (50) PER CENT OF THIS YEARS' VERTICAL GROWTH (TOP CANDLE).
4. THE LANDSCAPE CONTRACTOR IS HEREBY NOTIFIED OF THE EXISTENCE OF UNDERGROUND UTILITIES WITHIN THE LIMITS OF THE PROJECT AREA. THE CONTRACTOR SHOULD VERIFY THE EXACT LOCATION OF ALL UTILITY LINES PRIOR TO COMMENCEMENT OF DIGGING OPERATIONS. CONTRACTOR RESPONSIBLE FOR LOCATING, PROTECTING, AND REPAIRING ALL DAMAGE TO BUILDINGS, UTILITIES, PAVEMENT, AND CURB & GUTTER. ANY REPAIRS SHALL BE DONE PROMPTLY AT CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR WILL BE RESPONSIBLE FOR STAKING AND LAYOUT OF PLANTINGS ON THIS PROJECT. THE LANDSCAPE ARCHITECT OR OWNER SHALL BE ADVISED WHEN STAKES ARE READY FOR INSPECTION ON VARIOUS PLANTING AREAS. ALL LAYOUT WORK SHALL BE INSPECTED AND APPROVED BY THE LANDSCAPE ARCHITECT AND OWNER PRIOR TO OPENING ANY PLANTING PITS.
6. IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR TO VERIFY THAT EACH EXCAVATED TREE OR SHRUB PIT WILL PERCOLATE (DRAIN) PRIOR TO ADDING TOPSOIL AND INSTALLING TREES OR SHRUBS. THE CONTRACTOR SHALL FILL THE BOTTOM OF HOLES WITH SIX (6) INCHES OF WATER. THIS WATER SHOULD PERCOLATE WITHIN A TWENTY-FOUR (24) HOUR PERIOD. IF WATER DOESN'T PERC, CONTRACTOR SHALL NOTIFY THE OWNER'S REP PRIOR TO INSTALLING PLANTS.
7. SHOULD THE LANDSCAPE CONTRACTOR ENCOUNTER UNSATISFACTORY SURFACE OR SUBSURFACE DRAINAGE CONDITIONS, SOIL DEPTH, LATENT SOILS, HARD PANS, STEAM OR OTHER UTILITY LINES OR OTHER CONDITIONS THAT WILL JEOPARDIZE THE HEALTH AND VIGOR OF THE PLANTS, HE MUST ADVISE THE LANDSCAPE ARCHITECT IN WRITING OF THE CONDITIONS PRIOR TO INSTALLING THE PLANTS. OTHERWISE, THE LANDSCAPE CONTRACTOR WARRANTS THAT THE PLANTING AREAS ARE SUITABLE FOR PROPER GROWTH AND DEVELOPMENT OF THE PLANTS TO BE INSTALLED.
8. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING UP THE SITE AT THE COMPLETION OF THE PROJECT AND SHALL MAINTAIN THE SITE IN A REASONABLY NEAT AND CLEAN STATE THROUGHOUT THE INSTALLATION PROCESS. STREETS AND PAVED AREAS SHALL BE CLEANED REGULARLY TO REMOVE CONSTRUCTION MATERIALS AND OTHER DEBRIS RESULTING FROM WORK OF THE PROJECT.
9. REPLACEMENTS OF DEAD OR UNSATISFACTORY MATERIAL SHALL BE MADE AS SPECIFIED IN THE PLANT LIST. THE OWNER OR LANDSCAPE ARCHITECT SHALL INSPECT REPLACED PLANTS WHEN ALL REPLACEMENTS HAVE BEEN MADE. REPLACEMENTS ARE TO BE ALIVE AND IN A HEALTHY CONDITION WHEN THE REPLACEMENTS ARE COMPLETE. REPLACEMENTS ARE NOT SUBJECT TO AN ADDITIONAL GUARANTEE, BUT THE LANDSCAPE CONTRACTOR SHALL CONSULT WITH THE LANDSCAPE ARCHITECT ON REASON FOR PLANT DECLINE/DEATH AND HOW TO AVOID FUTURE INSTANCES.
10. SHOULD THE CONTRACTOR NOT MAKE REPLACEMENTS IN A SATISFACTORY AND TIMELY FASHION IN ACCORD WITH THE PLANTING NOTES, THE OWNER, AFTER PROPER NOTIFICATION TO THE CONTRACTOR MAY UTILIZE THE FUNDS OF THE RETAINAGE TO HAVE THE REPLACEMENTS MADE IN ACCORDANCE WITH THE SPECIFICATIONS BY ANOTHER CONTRACTOR.
11. NO EXCAVATION OR PLANTING PIT SHALL BE LEFT UNATTENDED OVERNIGHT.
12. PLANT MATERIAL QUANTITIES PROVIDED IN THE PLANT LIST ARE FOR REFERENCE ONLY AND THE CONTRACTOR IS RESPONSIBLE FOR THE ACTUAL PLANT MATERIAL COUNTS. DISCREPANCIES BETWEEN QUANTITIES SHOWN ON THE PLANTING PLAN AND THOSE IN THE PLANT LIST SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION. IF CLARIFICATION OF DISCREPANCIES FROM THE LANDSCAPE ARCHITECT IS NOT POSSIBLE, THEN QUANTITIES SHOWN ON THE PLANTING PLAN SHALL TAKE PRECEDENCE.
13. REMOVE BURLAP/STRAPPING AND WIRE BASKET FROM TOP 1/3 OF ROOT BALL ON TREES.
14. REMOVE PAPER, PLASTIC OR METAL AROUND ROOT BALLS OF SHRUBS.
15. DO NOT WRAP TREES.
16. WATER ALL PLANT MATERIAL IMMEDIATELY AFTER PLANTING.
17. TREE GUYING MATERIAL SHALL BE 'ARBOR-TIE' OR EQUIVALENT.
18. ALL PLANT BEDS TO BE MULCHED WITH 3" OF DOUBLE SHREADED HARDWOOD MULCH.
19. ALL AREAS OF PLANTING, INCLUDING AREAS OF GRASS SEEDING AND SOD, SHALL BE GRADED TO PROVIDE POSITIVE DRAINAGE AND SHALL BE PROVIDED APPROPRIATE SOIL FOR THE PROPOSED PLANTINGS. THE LANDSCAPE CONTRACTOR SHALL ADJUST PH AND / OR SOIL FERTILITY BY UNIFORMLY INCORPORATING REQUIRED SOIL CONDITIONING MATERIALS AT THE RATE AND DEPTH DETERMINED BY THE ANALYSIS OF THE SOIL TEST (AS REQUIRED IN 3.02 AND 3.13 OF THE LANDSCAPING SPECIFICATIONS). EACH SOIL TEST SHALL BE SPECIFIC TO THE PROPOSED PLANT MATERIAL TO BE INSTALLED IN A GIVEN AREA.
20. ALL EXISTING VEGETATION WITHIN AREAS TO BE PLANTED / SODDED / SEEDED SHALL BE REMOVED PRIOR TO PLANTING / SODDING / SEEDING. ALL AREAS INDICATED TO BE GRASS SEED SHALL BE SEEDED PER GRASSING SPECIFICATIONS FOR PERMANENT STABILIZATION.
21. CONTRACTOR TO SUPPLY AUTOMATIC IRRIGATION SYSTEMS, COMPLETE AND INSTALLED. SYSTEM TO INCLUDE ALL VALVES, PIPES, HEADS, FITTINGS, RAIN SENSOR, AND CLOCK AND TO PROVIDE 100% COVERAGE OF ALL NEW SODDED AND IMPROVED EXISTING GRASS AREAS, TREES, SHRUBS AND PLANTING BEDS. COORDINATE IRRIGATION WITH OWNER'S REPRESENTATIVE. (CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF PROPOSED IRRIGATION SYSTEM FOR OWNER ACCEPTANCE)
22. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR AUTOMATIC IRRIGATION SYSTEMS. CONTRACTOR SHALL PROVIDE ELECTRIC METER AND SERVICE IN ACCORDANCE WITH STATE AND LOCAL CODES FOR IRRIGATION SYSTEM. LOCATION OF METERS AND CONTROL PANELS FOR IRRIGATION SHALL BE APPROVED BY OWNER'S REP. PRIOR TO INSTALLATION.
23. ALL TREES SHALL BE INSTALLED PER THE REQUIREMENTS OF THE CHARLESTON COUNTY, SOUTH CAROLINA APPLICABLE ORDINANCES.
24. ALL PLANT BEDS TO RECEIVE WEED INHIBITOR OF PREEN OR ACCEPTED ALTERNATE.
25. FOR SUMMERTIME PLANTINGS, CONTRACTOR TO USE EITHER CONTAINERIZED OR PRE-DUG B & B PLANT MATERIAL.
26. AS AN ADD ALTERNATE BID, THE CONTRACTOR SHALL PROVIDE "SOIL MOIST TRANSPLANT" (OR ACCEPTED EQUIVALENT) AT THE APPLICATION RATES SHOWN BELOW FOR ALL NEWLY INSTALLED PLANTINGS.

Container Size/Amount
1 Gallon/.75 oz.
2 Gallon/1.5 oz.
3 Gallon/1.5 oz.
5 Gallon/2.0 oz.
7 Gallon/3.0 oz.
10 Gallon/3.0 oz.
15 Gallon/5.0 oz.
20 Gallon/7.0 oz.

Caliper Size/Amount
1"/3.0 oz.
2"/6.0 oz.
3"/9.0 oz.
4"/12.0 oz.
5"/15.0 oz
6"/18.0 oz
7"/21.0 oz
8"/24.0 oz

Plant Height/Amount
2'/1.5 oz.
3'/2.0 oz.
4'/3.0 oz.
5'/4.0 oz.
6'/5.0 oz.
7'/6.0 oz.

Box Size/Amount
16"/5.0 oz.
20"/6.0 oz.
24"/9.0 oz.
30"/12.0 oz.
36"/18.0 oz
42"/27.0 oz
60"/30.0 oz.


TYPICAL EDGE OF BUILDING, WALL, ETC.
SPECIFIED O.C. SPACING
TYPICAL EDGE OF PLANT BED
1/2 OF SPECIFIED O.C. SPACING
ATYPICAL SPACING IN CURVILINEAR PLANT BEDS. OUTSIDE ROW TO FOLLOW CURVE AS SHOWN ON PLAN
SPECIFIED O.C. SPACING

NOTES:

1) EXCAVATE ENTIRE BED SPECIFIED FOR GROUNDCOVER PLANTING TO A DEPTH OF 12".

PLANT SPACING DETAIL

NOT TO SCALE

SOUTH CAROLINA REGISTERED LANDSCAPE ARCHITECTURAL CORP. 202-C THOMAS & HUTTON ENGINEERING CO.

State of South Carolina REGISTERED LANDSCAPE ARCHITECT No. 901 RYAN P. THOMPSON

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
682 Johnnie Dodds Boulevard • Suite 100
Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

LANDSCAPE DETAILS & NOTES

JOB NO: J-25328.0000
DATE: 7/31/15
DRAWN: MEM
DESIGNED: MEM
REVIEWED: RPT
APPROVED: RPT
SCALE: NTS

05-L-02

LANDSCAPING SPECIFICATION

LANDSCAPING

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work covered in this section consists of soil preparation, fine grading, lawns, trees, shrubs and ground cover plantings, their protection and maintenance of planted areas until acceptance.

1.2 RELATED WORK

A. See Civil and Landscape plans and specifications.

1.3 QUALITY ASSURANCE

A. Qualifications of Workmen: Contractor shall provide at least one person present at all times during execution of work that is thoroughly familiar with the type of materials being installed and proper equipment and methods for their installation and who shall direct all work performed under this section.

B. Standards: All seed, sod, trees, shrubs, and ground covers shall meet or exceed the specifications of Federal, State, County and / or Municipality laws requiring inspection for disease and insect control.

1. Plants and planting methods shall conform to the latest edition of American Standard for Nursery Stock, American Nursery & Landscape Association, 1000 Vermont Avenue, NW, Suite 300, Washington, DC 20005
2. Plants shall be true and representative of their genus, species, cultivar, or variety. Nursery stock shipped in accordance with the required specifications shall be deemed to be acceptable within the terms of this section if it is typical in size and habit for the species in the region of the country in which it is grown unless the specifications include additional details.
3. One of each bundle or lot shall be tagged with name and size of the plant in accordance with American Nursery & Landscape Association standards. In all cases, botanical names shall take precedence over common names. Landscape Architect should be consulted in the event questions arise about nomenclature of plants to be used and their availability.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed in original containers showing analysis of seed mixture, percentage of pure seed, year of production, net weight, date of packaging and location of packaging. Damaged packages are not acceptable.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

C. Deliver sod on pallets.

D. Handling of plants shall be by lifting the root mass or container and not by lifting plant by trunk or branches. Handling of plants in an improper fashion shall be cause for rejection of plant materials. Care must be taken during all phases of the location and planting procedures not to damage root system, trunk or branches. All plant materials shall be planted as soon after arrival at the site as possible. Contractor is responsible for keeping plants safe from injury by the construction activity and watered to prevent drying out before planting. Balled and burlapped plants shall be "Healed-in" and protected with burlap or other accepted material if they cannot be planted upon delivery. Plants with broken major branches, badly bruised or damaged bark are not acceptable and will be rejected.

1.5 PLANTING DATES

A. The planting season for trees, shrubs and groundcovers is between October 1st and June 1st of the following year. Do not plant if temperature is below freezing or above 90 degrees. Planting at any other time other than the planting season is the Contractor's option and full responsibility and without additional compensation. Planting may, at the option of the Contractor, be postponed into the following planting season but without additional compensation provided the Owner and local governing jurisdiction have approved.

C. Planting dates for sod, sprigging or seeding shall be per the grassing specification.

1.6 MEASUREMENT AND PAYMENT

A. Measurement - The items listed in the proposal shall be considered as sufficient to complete the work in accordance with the plans and specifications. Any portion of the work not listed in bid form, but required to complete the work, shall be deemed to be a part of the item with which it is associated and shall be included in the cost of the unit shown on the bid form.

B. Payment - Payment for the unit shown on the bid form shall be considered to cover the cost of all labor, material, equipment, and performing all operations necessary to complete the work in place. No payment will be made for any material wasted, used for the convenience of the Contractor, unused or rejected.

1. Trees, Shrubs, and Groundcovers - Will be paid for at the contract unit price for planted/installed and accepted trees, shrubs, and groundcovers.
2. Payment for grassing will be made per the grassing specification.
3. Clearing - Will be paid for at the lump sum price for clearing.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Contractor shall, at time of delivery, furnish Owner and / or Landscape Architect with invoices of all materials received; in order the quality and source of materials may be reviewed.

2.2 TOPSOIL

A. See Earthwork specification for topsoil / rootzone soil specification.

2.3 SEED

A. See grassing specification.

2.4 SPRIG

A. See grassing specification.

2.5 SOD

A. See grassing specification.

2.6 PLANT MATERIALS

A. Provide all plant materials as indicated on the plans. In the event of any discrepancies between quantities of plants indicated on the plant schedule and those indicated on the plan, plan quantities shall govern.

B. Plants shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae, and shall have healthy, well developed root systems. Plants shall be from a nursery within 300 miles north or south of the project location and shall have been grown under climate conditions similar to those in the locality of project. Trees for planting in rows shall be uniform in size and shape.

B. Plants shall possess a normal balance between height and width. Plants shall be measured when branches are in their normal position. Height and spread dimensions specified refer to the main body of plant and not from branch tip to tip. Plants larger in size than specified may be used with no change in contract price.

C. Plants shall be dug with firm natural balls of earth, of diameter not less than recommended by American Standard for Nursery Stock and of sufficient depth to include fibrous and feeding roots. Plants will not be accepted if ball is cracked or broken before or during planting operations.

D. Trees specified for Street Tree Grade shall conform to standards of the A.N.L.A.:

1. Suitable for planting as street trees.
2. Free of branches to approximately 50% of height from ground.
3. Crown of tree shall be in good balance with the trunk.

2.7 FERTILIZER

A. Commercial fertilizer shall be slow release 5-10-10 or 6-12-12 (or as recommended by soil test), uniform in composition, free flowing, and suitable for application with appropriate equipment. Deliver to site unopened in manufacturer's standard containers showing weight, analysis and name of manufacturer. If stored on site, protect from the elements.

2.8 PEAT MOSS

A. Peat moss shall be finely shredded, 90% organic moss peat, brown in color and suitable for horticultural purposes. Peat shall be measured in air dry condition, containing not more than 35% moisture by weight. Ash content shall not exceed 10%.

2.9 MULCH FOR TREES, SHRUBS, AND GROUND COVERS

A. Mulch for non bio-retention areas shall be as shown on plans.

B. Mulch for bio-retention areas shall be shredded hardwood.

2.10 STAKING EQUIPMENT

A. Trees and palms shall be staked as shown in landscape plans.

2.11 WATER

A. Contractor shall provide water to the project via connection to potable water system.

PART 3 - EXECUTION

3.1 FINE GRADING

A. All areas within limits of construction shall be fine graded to the desired grades. All areas within limits of construction are to be fine graded, free of roots, debris and/or other objectionable material, before planting or grassing commence. Any additional fill material needed to fill low or uneven areas shall be provided by the Contractor. Positive drainage away from structures shall be provided in all plant beds so standing water does not occur. Planting beds shall be raised above adjacent lawn areas to provide good drainage conditions.

B. Planting and grassed areas, if not loose, shall be loosened to a minimum depth of 3-inches before fertilizer, seed or sod is applied.

3.2 FERTILIZER AND SOIL AMENDMENTS

A. Contractor shall provide Topsoil Analysis Tests that has been performed by a State Agricultural Experiment Station, Soil and Water Conservation District, State University, or other qualified private testing laboratory, as approved by Landscape Architect.

B. Apply fertilizer and soil amendments after fine grading and mix thoroughly into upper 2 inches of soil.

C. Fertilizer and other necessary soil amendments shall be applied at the rate recommended by Topsoil Analysis Test.

3.3 SODDING

A. See grassing specification.

3.4 SPRIGGING

A. See grassing specification.

3.5 SEEDING

A. See grassing specification.

3.6 SEED PROTECTION

A. See grassing specification.

3.7 LAYOUT OF TREES, SHRUBS, AND GROUND COVERS

A. All plants shall be placed in the proper location as shown on construction plans, allowing Landscape Architect to review all plant locations prior to actual planting. Landscape Architect may make minor adjustments which shall not be cause for changes to the contract price.

3.8 OBSTRUCTIONS BELOW GROUND

A. Prior to excavating planting holes, Contractor shall determine the exact location of electrical, phone, or television cables or conduits, water, drainage or sewer lines, and any other subsurface structures and take precautions to protect them. Any damage to underground utilities shall be repaired immediately at the Contractor's expense.

B. In the event rock, underground construction work, or other obstructions are encountered in any plant hole excavation under this contract, alternate locations may be selected. Where locations cannot be changed, the obstructions shall be removed to a depth of not less than three (3) feet below grade and not less than six (6) inches below bottom of ball or roots when plant is properly set at the required grade. The Contractor shall be responsible for the removal of such rock or other underground obstructions encountered.

3.9 PLANTING HOLES

A. For trees, shrubs and ground covers the planting hole shall be as shown on planting details in the plans. Do not leave planting holes open overnight. In the event that plant holes are dug and not planted in a timely manner, install four (4) foot high orange safety fencing around all excavated areas.

3.10 PLANTING TREES AND SHRUBS

A. Shall be same as grown in the nursery and/or container soil level. Adjust bottom soil mix to insure proper planting level with the proposed surrounding grades. Check plants to insure proper vertical alignment.

B. Fill holes to proper height to receive plant, and thoroughly tamp before setting the plant. Set plant in upright position in the center of the hole, and compact the backfill mixture around the ball or roots. Add soil amendments as required to improve fertility of existing soil and plant growing conditions.

1. When balled or burlapped plants are set, compact topsoil around base of ball to fill all voids. All bindings shall be removed and the top half of burlap removed from around root ball. If burlap is made of natural fibers it can be laid back from the root mass or can be cut away. Remove all burlap if it is made of non-degradable material/fabric. All weeds growing on the root mass shall be removed prior to planting.
2. Containerized plants shall have the container removed prior to planting. Care shall be taken to protect root mass from injury and the root mass intact. If root mass shows evidence of being bound or matted, three vertical 1/2" deep cuts shall be made on alternate sides of the root mass and roots pulled away slightly. This is to untangle roots which have begun to "circle" the root mass and to encourage new root growth. All weeds growing in the root mass shall be removed prior to planting.
3. Roots of bare root plants shall be spread out and topsoil carefully worked in among them. Remove with a clean cut, any broken or frayed roots.

3.11 PLANTING GROUND COVERS

A. Planting beds shall be thoroughly worked to a depth of twelve (12) inches incorporating fertilizer and other soil improvements at the recommended rate suggest by the soils test. Rake prepared planting bed until level, smooth and free from all soil, lumps, rocks, sticks and other deleterious materials. Bed area should be neatly outlined. Space the plants evenly as indicated on the drawings. Plant only in soil that is moist and friable, and not wet or soggy. In the case of planting in the open on hot days, shorten the time between planting and watering.

3.12 WATERING

A. Thoroughly water each plant when the hole is 1/3 full, again at 2/3 full and then complete backfilling. Once backfilling is complete, water again, then tamp the soil in place until the surface of the backfill is level with the surrounding area and the plant bears the same relation of finished grade as it bore to existing grade before being dug.

B. Earth saucers shall be constructed around the perimeter of planting holes of all trees and all single planted shrubs. Earth saucers shall be minimum 3" high and compacted to retain water. Earth saucers shall not be installed in areas where the subsoil is very poorly drained or around mass shrub / groundcover plantings.

C. All trees and shrubs to be hand watered on a regular basis as necessary during the warranty period.

3.13 SOIL MIX

A. Shall be per Earthwork and other applicable civil/landscape specifications and recommended amendments from soils test.

3.14 STAKING OF TALL PLANTS

A. Shall be done only if site / environment conditions make if required. If required, trees and palms shall be staked as indicated on the plans.

3.15 MULCHING

A. All plants shall be mulched with an evenly thick layer of clean mulch immediately after planting. Mass plant beds shall be completely mulched to the limits of the bed as shown on the plans. Limit of mulching for individual trees and shrubs shall be slightly beyond the saucer berm. The areas mulched shall be tidy and clean in appearance.

3.16 PRUNING

A. Remove dead, broken or bruised branches after planting using clean, sharp tools.

3.17 WEEDING

A. All planted areas shall be kept free from weeds and undesirable grasses until final acceptance by the Owner. See General notes on plans for additional information.

3.18 INSECT AND DISEASE CONTROL

A. All plant materials shall be disease or insect free upon arrival to the site, however, should any plants show signs of insect or disease infestations, Contractor shall identify nature of infestation and submit to Landscape Architect a proposed method of control. Contractor shall treat all infested plants at its expense. Should the infestation be wide spread and uncontrollable, plants affected shall be removed from site, fresh plants brought in and all other plants treated to prevent infestation of remaining plants at Contractor's expense.

3.19 CLEAN UP

A. Contractor is responsible for removing all trash, debris, rubbish and all other materials associated with the construction from site on a daily basis. All tags, flags, and labels will be removed from plants and trees. The site shall be left broom clean and tidy. Clean up of the site is a prerequisite to final acceptance by the Owner.

3.20 IRRIGATION

A. Contractor shall provide an irrigation system for all landscape and sodded areas. The water source shall be the plants treated effluent. Contractor shall submit irrigation design and layout for approval. All components shall comply with reuse effluent requirements.

PART 4 - MAINTENANCE AND WARRANTY

4.1 MAINTENANCE

A. Protect all plantings (grass, plants and trees) until accepted by Owner. All damage, regardless of cause, shall be immediately repaired and plants replaced if necessary. Erect temporary fences, barricades, signs and other protection as needed to prevent trampling. Contractor is not responsible for replacement of damaged or missing plants and plant materials due to vandalism or other acts beyond the control of the Contractor if proper barriers or other safeguards have been maintained.

B. Maintenance shall include but is not limited to watering, weeding, cultivating, removal of dead material, mulch reapplication, resetting plants to proper grades or upright position, lawn mowing, fertilizing, and other necessary operations.

C. The Contractor shall repair immediately any areas damaged as a result of construction operations or erosion.

E. The Contractor shall maintain all proposed plantings until final acceptance is issued by the Owner.

F. At the end of the maintenance period, all plants shall be in a healthy growing condition. During the maintenance period, should the appearance of any plant indicate weakness and probability of dying, immediately replace without additional cost to the Owner. Replacements required because of vandalism or other causes beyond the control of the Contractor are not part of this contract.

4.2 WARRANTY

A. All shrubs, ground cover, and trees shall be guaranteed by the Contractor to be alive and healthy for a one year period after substantial completion is issued by the Owner. A final inspection with the Owner shall be conducted at the end of the warranty period to determine if any plants will be required to be replaced.

B. Any lawn, plant, or tree which is dead or not showing satisfactory growth shall be replaced at Contractor's expense at the end of warranty period. All replacements shall be of original quality and of a size equal to adjacent plants or trees of the same kind.

END OF SECTION

THOMAS & HUTTON ENGINEERING CO.
202-C

RYAN P. THOMPSON
No. 901

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
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Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
LANDSCAPE SPECIFICATION

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	MEM
DESIGNED:	MEM
REVIEWED:	RPT
APPROVED:	RPT
SCALE:	NTS

05-L-03

GRASSING SPECIFICATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Seeding, planting grass, and fertilizing graded areas around buildings, structures, soccer fields and sidewalk shoulders and other disturbed areas.

B. Seed protection.

C. Maintaining grassed areas until final acceptance.

1.2 RELATED WORK

A. Civil and Landscape plans and specifications.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed in original containers showing analysis of seed mixture, percentage of pure seed, year of production, net weight, date of packaging, and location of packaging. Damaged packages are not acceptable. Store in cool, dry locations away from contaminants.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer. Damaged bags are not acceptable. Store in cool, dry locations away from contaminants.

C. Deliver sod on pallets.

D. All material shall be acceptable to Engineer prior to use.

1.4 PLANTING DATES

A. This specification provides for establishment of a permanent grass cover between the dates of March 1 and September 30. If finished earth grades are not completed in time to permit planting and establishment of permanent grass during the favorable season between dates specified above unless otherwise accepted, Contractor will be required to plant a temporary cover to protect new graded areas from erosion and to keep windborne dust to a minimum. The temporary cover shall be planted between October 1 and February 28 unless otherwise permitted.

1.5 MEASUREMENT AND PAYMENT

A. When the season or stage of project is such results of grassing work cannot be determined, conditional acceptance will be made on work completed. When conditional acceptance is made for items of work covered, Contractor shall be entitled to 50% of bid price for the actual work placed and shall receive remaining 50% of bid price when final acceptance is made. Conditional acceptance shall not apply to the remaining items of work, and full bid price payment shall be made when work is acceptably placed and completed in accordance with specifications.

B. Payment for grassing will be made at contract unit price for the item "Grassing" and such payment shall constitute full compensation for furnishing and placing seed and fertilizer or sod where directed and protecting and maintaining seed and sod in all graded and disturbed areas.

PART 2 - PRODUCTS

Contractor shall submit source and species certification documents to Engineer and Owner's Representative for review prior to installation. Supply complete information on all analysis / test methodologies and results; laboratory certifications, manufacturer's specifications, and agency approvals to the Landscape Architect prior to placement of soil mixtures. In addition, provide the Landscape Architect with thoroughly mixed sample of soil mixes for approval prior to placement. Landscape Contractor shall make modifications and improvements to soil mixes deemed necessary by the soil analysis to meet requirements specified here in before, and to ensure proper growing medium for plant material.

2.1 SEED

A. All seed shall conform to all State Laws and to all requirements and regulations of the State Department of Agriculture.

B. The varieties of seed, as specified in Section 2.2, shall be individually packaged or bagged, and tagged to show name of seed, net weight, origin, germination, lot number, and other information required by the State Department of Agriculture.

C. The Engineer reserves the right to test, reject, or accept all seed before seeding.

2.2 SEEDING SCHEDULE

A.

SEED	RATE	PLANTING DATES
'Princess 77' Bermuda	75 lbs/ acre	March 1 - September 30
Annual Rye (Temp only)	75 lbs/acre	October 1 - February 28

2.3 FERTILIZER

A. Commercial fertilizer of approved type, conforming to state fertilizer laws at the rate as recommended by soils test.

2.4 LIME

A. Agricultural grade, ground limestone at the rate as recommended by soils test.

2.5 SPRIG

A. Healthy living stems, stolons, or rhizomes and attached roots of locally adapted grass without adhering soil, including two to three nodes and from 4 to 6 inches long. Obtain from heavy, dense certified sod. Provide sprigs which have been grown under climatic conditions similar to those in the locality of the project. Coordinate harvesting and planting operations to prevent exposure of sprigs to the sun for more than 30 minutes before covering and moistening. Sprigs showing signs of wilt, mold, containing weeds or other detrimental material or that are heat damaged will be rejected.

B. The varieties of sprig, as specified in section 2.6, shall be individually packaged or bagged, and tagged to show name of sprig, net weight, origin and other information required by the State Department of Agriculture.

C. Sprigs shall be pure to variety specified and shall be free of other grass species, weeds or foreign matter.

D. Sprigs shall be harvested by digging (not collected above soil level) shredding sod, by rototilling sod and raking, by vericutting or by a sprig harvester. Sprigs shall consist of mostly rhizomes and crowns with only a few green leaves.

2.6 SPRIGGING SCHEDULE

A.

SPRIG	RATE	PLANTING DATES
'Tifway 419' Bermuda (or approved equal)	1,000 bushels / ac. (Coverage in 3 months)	April 1 - August 31
Stabilize site with temporary grass seed (See section 2.2)		September 1 - March 31

B. In areas where existing grass is to be matched, Contractor shall sprig at the rate and dates recommended by sprig distributor.

2.7 SOD

A. Sod shall be premium grade, densely rooted, good quality grass of the species and certified variety as shown on the plans, free from noxious weeds with no surface soil being visible. The sod shall be obtained from areas where the soil is reasonably fertile. Sod of specified species with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed. The sod shall be machine cut to a uniform soil thickness that shall contain practically all of the dense root system and not be less than 1-inch thick.

B. Before cutting, sod shall be mowed to a height of not less that 1-1/2" or more than 2". Sod shall be cut in uniform widths min. 12" and in lengths min. 24 inches.

C. Sod shall be delivered to site in a fresh, moist condition with healthy green foliage. It shall be unloaded from delivery trucks on pallets or rolls and placed in final position within 24 hours of delivery. Sod shall be protected from wind and sun and shall not be allowed to dry out before planting.

D. Sod shall be strong enough to support its own weight and retain its size and shape when suspended vertically from a firm grasp on the upper 10 percent of the section.

2.8 ACCESSORIES

A. Straw Mulch: Oat or wheat straw, reasonably free from weeds, foreign matter detrimental to plant life, and in dry condition.

B. Excelsior Mulch: Excelsior mulch shall consist of wood fibers cut from sound, green timber. The average length of fibers shall be 4 to 6 inches. Cut shall be made in such a manner as to provide maximum strength of fiber, but at a slight angle to natural grain of the wood to cause splintering of fibers when weathering in order to provide adherence to each other and to soil.

C. Wood cellulose fiber shall be made from wood chip particles manufactured particularly for discharging uniformly on the ground surface when dispersed by a hydraulic water sprayer. It shall remain in uniform suspension in water under agitation and blend with grass seed and fertilizer to form a homogenous slurry. Mulch fibers shall intertwine physically to form a strong moisture holding mat on the ground surface and allow rainfall to percolate into underlying soil. The mulch shall be heat processed to contain no germination or growth-inhibiting factors. It shall be dyed (non-toxic) an appropriate color to facilitate metering of material.

2.9 PRODUCT REVIEW

A. Contractor shall provide the Engineer with a complete description of all products before ordering. The Engineer will review all products before they are ordered.

PART 3 - EXECUTION

3.1 PREPARATION

A. Areas to be seeded or sprigged shall be made smooth and uniform and shall conform to the finished grade indicated on plans.

B. Remove foreign materials, plants, roots, stones, and debris from surfaces to be seeded.

C. Grassing areas, if not loose, shall be loosened to a minimum depth of 3 inches before fertilizer, seed, sprig or sod is applied.

D. Amendments to soils shall be incorporated into loosened 3 inch top soil layer as recommended by soils test.

3.2 STAND OF GRASS

A. Before acceptance of seeding or sprigging is performed for the establishment of permanent vegetation, Contractor will be required to produce a satisfactory stand of perennial grass whose root system shall be developed sufficiently to survive dry periods and winter weather and be capable of re-establishment in spring.

B. Before acceptance of seeding performed for the establishment of temporary vegetation, Contractor will be required to produce a stand of grass sufficient to control erosion for a given area and length of time before the next phase of construction or establishment of permanent vegetation is to commence.

3.3 SEEDING AND SPRIGGING DATES

A. Seeding and sprigging shall be performed during periods and at rates specified in their respective schedules. Seeding and sprigging work may, at discretion of Contractor, be performed throughout the year using schedule prescribed for given period. Seeding and sprigging work shall not be conducted when the ground is frozen or excessively wet. Contractor will be required to produce a satisfactory stand of grass regardless of the period of year work is performed.

3.4 APPLYING LIME AND FERTILIZER

A. Following advance preparation and placing selected material for shoulders and slopes, lime and fertilizer, if called for based on soil tests, shall be spread uniformly over the designated areas, and shall be thoroughly mixed with the soil to a depth of approximately 2 inches. Fertilizer and lime shall be applied at the rate at the rate recommended by required soils test. Unless otherwise provided, lime will not be applied for temporary seeding. In all cases where practicable, acceptable mechanical spreaders shall be used for spreading fertilizer. On steep slopes subject to slides and inaccessible to power equipment, the slopes shall be adequately scarified. Fertilizer may be applied on steep slopes by hydraulic methods as a mixture of fertilizer and seed. When fertilizer is applied with combination seed and fertilizer drills, no further incorporation will be necessary. The fertilizer and seed shall be applied together when Wood Cellulose Fiber Mulch is used. Any stones larger than 2 ½ inches in any dimension, larger clods, roots, or other debris brought to the surface shall be removed.

3.5 SEEDING

A. Seed shall be sown within 24 hours following application of fertilizer and lime and preparation of the seedbed as specified in Section 3.4. Seed shall be uniformly sown at rate specified by the use of acceptable mechanical seed drills. Rotary hand seeders, power sprayers or other satisfactory equipment may be used on steep slopes or on other areas inaccessible to seed drills.

B. Seeds shall be covered and lightly compacted by means of cultipacker or light roller if the drill does not perform this operation. On slopes inaccessible to compaction equipment, the seed shall be covered by dragging spiked chains, by light harrowing or by other satisfactory methods.

C. Apply water with fine spray immediately after each area has been sown.

D. Do not sow seed when ground is too dry, during windy periods or immediately following a rain.

E. If permitted by the special provisions, wood cellulose fiber mulch or excelsior fiber mulch may be used.

3.6 SEED PROTECTION (STRAW MULCH)

A. All seeded areas seeded with permanent grasses shall be uniformly mulched in a continuous blanket immediately following seeding and compacting operations, using at least 2 tons of straw per acre.

3.7 SEED PROTECTION (EXCELSIOR MULCH)

A. Seed shall be sown as specified in Section 3.5. Within 24 hours after covering of seed, excelsior mulch shall be uniformly applied at the rate of 2 tons per acre. The mulch may be applied hydraulically or by other acceptable methods. Should the mulch be placed in a dry condition, it shall be thoroughly wetted immediately after placing. Engineer may require light rolling of the mulch to form a tight mat.

3.8 SEED PROTECTION (WOOD CELLULOSE FIBER MULCH)

A. After the lime has been applied and ground prepared as specified in Section 3.4, wood cellulose fiber mulch shall be applied at a rate of 1,500 pounds per acre in a mixture of seed and fertilizer. Hydraulic equipment shall be used for application of fertilizer, seed, and slurry of the prepared wood pulp. This equipment shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry of the specified amount of fiber, fertilizer, seed, and water. The slurry distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with a set of hydraulic spray nozzles which will provide an even distribution of slurry on various areas to be seeded. The slurry tank shall have a minimum capacity of 1,000 gallons.

Seed, fertilizer, wood pulp mulch, and water shall all be combined into the slurry tank for distribution of all ingredients in one operation by hydraulic seeding method specified herein. Materials shall be combined in a manner recommended by the manufacturer. The slurry mixture shall be regulated so amounts and rates of application shall result in a uniform application of all materials at rates not less than amount specified. Using the color of wood pulp as a guide, equipment operator shall spray prepared seedbed with a uniform visible coat. The slurry shall be applied in a sweeping motion, in an arched stream to fall like rain, allowing wood fibers to build upon each other until an even coat is achieved.

3.9 SPRIGGING

A. Sprigs shall be placed at the date and rates as shown in section 2.6. The sprigging method shall be by broadcast sprigging, hydroplanting or row planter. Sprigging procedure shall ensure even coverage.

B. Sprigs applied by broadcast over the site with a distributor or hydroseeder shall be planted at the rates listed in section 2.6. Cover broadcast sprigs with straw mulch immediately after broadcast and water in immediately (within 2 hours).

C. Sprigs installed by row planter creating a narrow furrow that covers 50 to 80% of the sprig with soil may use less sprig material. Rate shall be as recommended by sprig supplier to provide a solid stand of turf within the time required in Section 2.6. Water in immediately (within 1 hour).

3.10 SODDING

A. Sod shall be placed between March 1st and December 1st. However, if sod is to be placed during periods of temperatures over 90 degrees F., the contractor shall take extra care for quick placement of sod with adequate, consistent watering necessary to ensure sod thrives as planted.

B. Sod shall be placed within 24 hours of cutting.

C. Place top elevation of sod 1/2 inch below adjoining paving or curbs.

D. All areas to be sodded shall be brought to the proper line grade or cross section as was existing prior to construction. Sod shall be placed so that, upon completion, the edges of the sodded areas will be smooth and will conform to the proposed finished grade. Sod shall be laid smooth, edge to edge, with staggered joints. Sod shall be immediately pressed firmly into contact with the sod bed by tamping or rolling, to eliminate any air pockets. A true and even surface shall be provided, to insure knitting without displacement of the sod or deformation of the surfaces of the sodded areas. Do not stretch or overlap sod pieces. Following compaction, screened soil of good quality shall be used to fill all cracks, and excess soil shall be worked into the grass with rakes or other suitable equipment. On slopes steeper than 3 to 1, the sod shall be fastened in place with suitable wood or metal pins to hold the sod in place. Any damage by erosion or other causes that may have occurred after completion of grading operations shall be repaired, before commencing with the sodding operations.

E. Immediately before sodding, moisten topsoil with a fine spray to a minimum 1" depth. Sod shall not be laid on soil that is dry and powdery.

F. Sod shall be moist when laid and placed on moist ground. The sod shall be carefully placed by hand, beginning at the toe of slopes and working upwards. The length of the strips shall be at right angles to the flow of surface water. All joints shall be tightly butted and end joints shall be staggered at least 12 inches. The sod shall be immediately pressed firmly into the ground by tamping or rolling. Fill all joints between strips with fine screened soil. Sod on slopes shall be pegged with sod pegs to prevent movement. The sod shall be watered, mowed, weeded, repaired, or otherwise maintained, to insure the establishment of a uniform healthy stand of grass until acceptance.

G. Within 2 hours after sod has been placed, thoroughly water to a minimum depth of 4". After sod and soil have dried, roll sodded areas to ensure good bond between sod and soil and to remove depressions and irregularities. Roll sodded areas with a roller not exceeding 150 lbs. per foot of roller width. Top dress and roll again as necessary to create a smooth even surface.

PART 4 - MAINTENANCE, WARRANTY AND ACCEPTANCE

4.1 MAINTENANCE

A. Maintenance shall consist of providing protection against traffic, watering to ensure uniform seed germination and to keep surface of soil damp, and repairing any areas damaged as a result of construction operations or erosion. Maintenance shall also include, but is not limited to, watering, weeding, cultivating, removal of dead material, lawn mowing, fertilizing, and other necessary operations.

B. The Contractor shall maintain all proposed plantings until the date of final acceptance by the Owner.

4.2 WARRANTY

A. All grassed areas shall be guaranteed by the Contractor to be alive and healthy for a one year period from the date of substantial completion issued by the Owner. A final inspection with the Owner shall be conducted at the end of the warranty period to determine if any areas require replanting. At the end of the warranty period, the sod shall show evidence of rooting to the underlying soil and shall have no competitive weed growth from either the sod or from between the sod joints.

B. Any grassed area which is dead or not showing satisfactory growth shall be replaced at Contractor's expense at the end of warranty period. All replacements shall be of original quality and of a size equal to adjacent plants or trees of the same kind. Replacements required because of vandalism, excessive use or other causes beyond the control of the Contractor are not part of this contract.

4.3 ACCEPTANCE

A. Before acceptance of seeding performed for the establishment of permanent vegetation, Contractor will be required to produce a satisfactory stand of perennial grass whose root system shall be developed sufficiently to survive dry periods and winter weather and be capable of reestablishment in spring.

B. A minimum coverage of 80% density over 100% of the disturbed area is required for seeded areas before project acceptance. Sprig and sod areas shall have 95 % coverage over 100% of the disturbed area prior project acceptance.

END OF SECTION

SOUTH CAROLINA REGISTERED LANDSCAPE ARCHITECTURAL CORP
202-C
THOMAS & HUTTON ENGINEERING CO.

No. 901
RYAN P. THOMPSON

NO.	REVISIONS	BY	DATE

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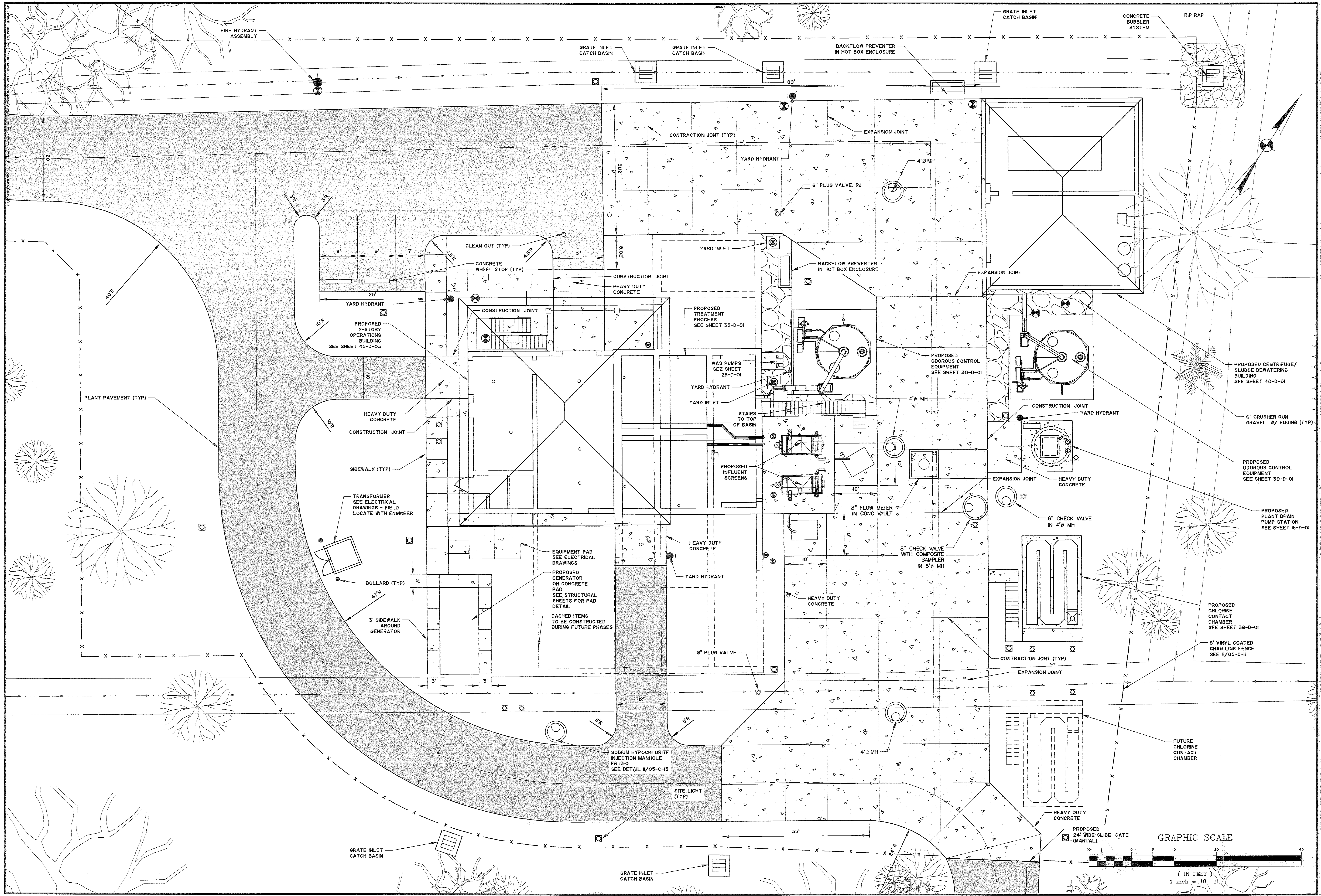
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

GRASSING SPECIFICATION

JOB NO: J-25328.0000
DATE: 7/31/15
DRAWN: MEM
DESIGNED: MEM
REVIEWED: RPT
APPROVED: RPT
SCALE: NTS

05-L-04


FIRE HYDRANT ASSEMBLY
GRATE INLET CATCH BASIN
GRATE INLET CATCH BASIN
BACKFLOW PREVENTER IN HOT BOX ENCLOSURE
GRATE INLET CATCH BASIN
CONCRETE BUBBLER SYSTEM
RIP RAP
89'
CONTRACTION JOINT (TYP)
EXPANSION JOINT
YARD HYDRANT
4'Ø MH
6" PLUG VALVE, RJ
20'
31.12'
3'R
3'R
9'
9'
7'
25'
4.5'R
4.5'R
12'
8.02'
CLEAN OUT (TYP)
CONCRETE WHEEL STOP (TYP)
YARD INLET
CONSTRUCTION JOINT
HEAVY DUTY CONCRETE
BACKFLOW PREVENTER IN HOT BOX ENCLOSURE
EXPANSION JOINT
40'R
10'R
YARD HYDRANT
CONSTRUCTION JOINT
PROPOSED TREATMENT PROCESS SEE SHEET 35-D-01
PROPOSED 2-STORY OPERATIONS BUILDING SEE SHEET 45-D-03
PROPOSED ODOROUS CONTROL EQUIPMENT SEE SHEET 30-D-01
PROPOSED CENTRIFUGE/ SLUDGE DEWATERING BUILDING SEE SHEET 40-D-01
WAS PUMPS SEE SHEET 25-D-01
YARD HYDRANT
YARD INLET
10'
4'Ø MH
6" CRUSHER RUN GRAVEL W/ EDGING (TYP)
CONSTRUCTION JOINT
YARD HYDRANT
PLANT PAVEMENT (TYP)
HEAVY DUTY CONCRETE
CONSTRUCTION JOINT
10'R
STAIRS TO TOP OF BASIN
PROPOSED ODOROUS CONTROL EQUIPMENT SEE SHEET 30-D-01
SIDEWALK (TYP)
PROPOSED INFLUENT SCREENS
10'
EXPANSION JOINT
HEAVY DUTY CONCRETE
10'
8" FLOW METER IN CONC VAULT
6" CHECK VALVE IN 4'Ø MH
PROPOSED PLANT DRAIN PUMP STATION SEE SHEET 15-D-01
TRANSFORMER SEE ELECTRICAL DRAWINGS - FIELD LOCATE WITH ENGINEER
10'
8" CHECK VALVE WITH COMPOSITE SAMPLER IN 5'Ø MH
EQUIPMENT PAD SEE ELECTRICAL DRAWINGS
HEAVY DUTY CONCRETE
10'
PROPOSED GENERATOR ON CONCRETE PAD SEE STRUCTURAL SHEETS FOR PAD DETAIL
YARD HYDRANT
BOLLARD (TYP)
3'
67'R
HEAVY DUTY CONCRETE
PROPOSED CHLORINE CONTACT CHAMBER SEE SHEET 36-D-01
3' SIDEWALK AROUND GENERATOR
DASHED ITEMS TO BE CONSTRUCTED DURING FUTURE PHASES
8' VINYL COATED CHAN LINK FENCE SEE 2/05-C-11
6" PLUG VALVE
CONTRACTION JOINT (TYP)
EXPANSION JOINT
3'
3'
12'
5'R
5'R
81'
SODIUM HYPOCHLORITE INJECTION MANHOLE FR 13.0 SEE DETAIL 11/05-C-13
4'Ø MH
FUTURE CHLORINE CONTACT CHAMBER
SITE LIGHT (TYP)
HEAVY DUTY CONCRETE
35'
24'R
PROPOSED 24' WIDE SLIDE GATE (MANUAL)
GRATE INLET CATCH BASIN
GRATE INLET CATCH BASIN
GRAPHIC SCALE
0
5
10
20
40
(IN FEET)
1 inch = 10 ft.

SOUTH CAROLINA THOMAS & HUTTON ENGINEERING CO. No. C00285 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 13293 MARK F. YODICE REGISTERED

1-29-2016

NO.	REVISIONS	BY	DATE
1	GENERAL REVISIONS	MFY	12/2/15

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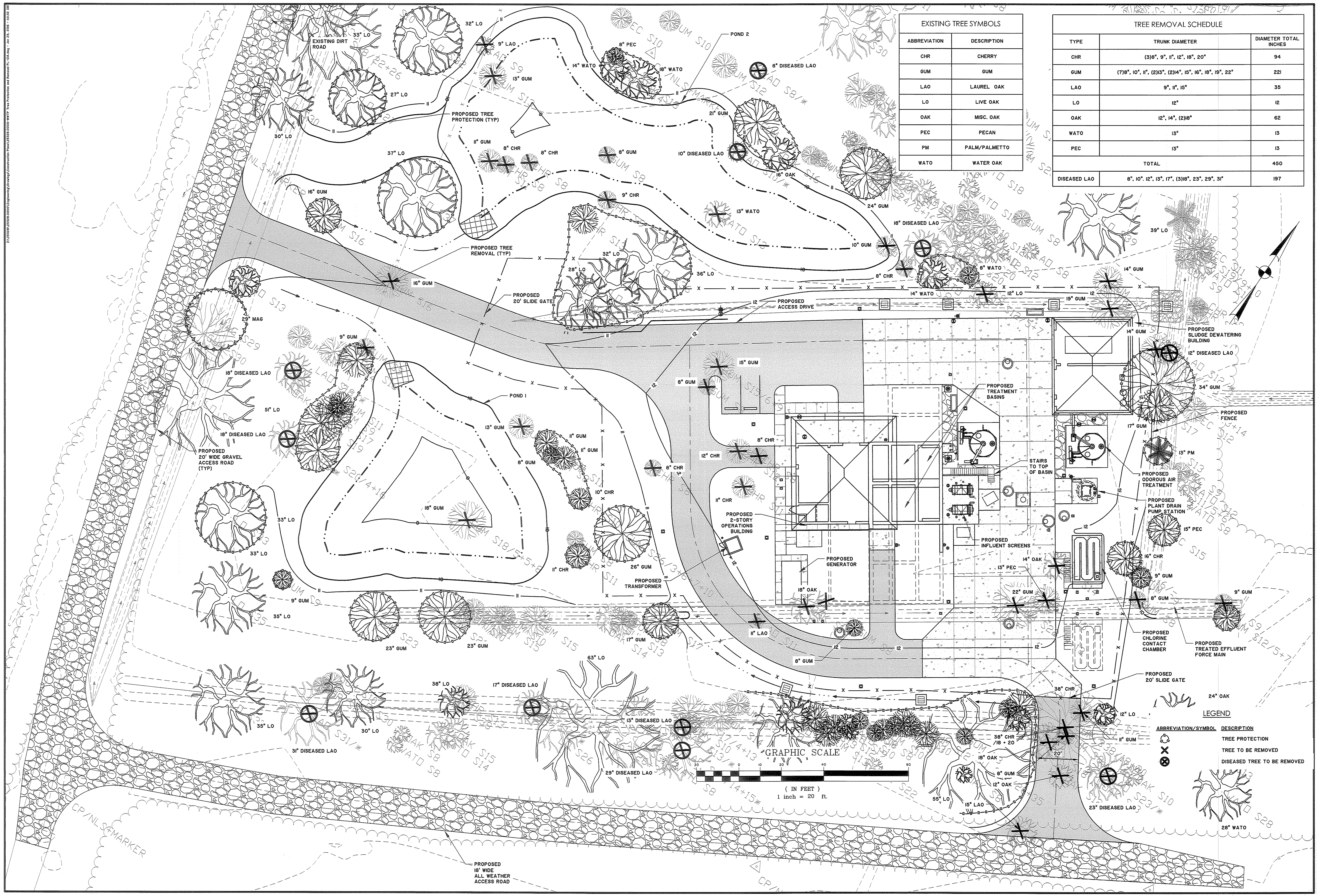
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

SITE LAYOUT - WWTP

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	1" = 10'

06-C-01



EXISTING TREE SYMBOLS

ABBREVIATION	DESCRIPTION
CHR	CHERRY
GUM	GUM
LAO	LAUREL OAK
LO	LIVE OAK
OAK	MISC. OAK
PEC	PECAN
PM	PALM/PALMETTO
WATO	WATER OAK

TREE REMOVAL SCHEDULE

TYPE	TRUNK DIAMETER	DIAMETER TOTAL INCHES
CHR	(3)8", 9", 11", 12", 18", 20"	94
GUM	(7)8", 10", 11", (2)13", (2)14", 15", 16", 18", 19", 22"	221
LAO	9", 11", 15"	35
LO	12"	12
OAK	12", 14", (2)18"	62
WATO	13"	13
PEC	13"	13
TOTAL		450
DISEASED LAO	8", 10". 12", 13", 17", (3)18", 23", 29", 31"	197

THOMAS & HUTTON ENGINEERING CO. No. C00285

No. 13293
MARK F. YODICE

1-29-2016

NO.	REVISIONS	BY	DATE

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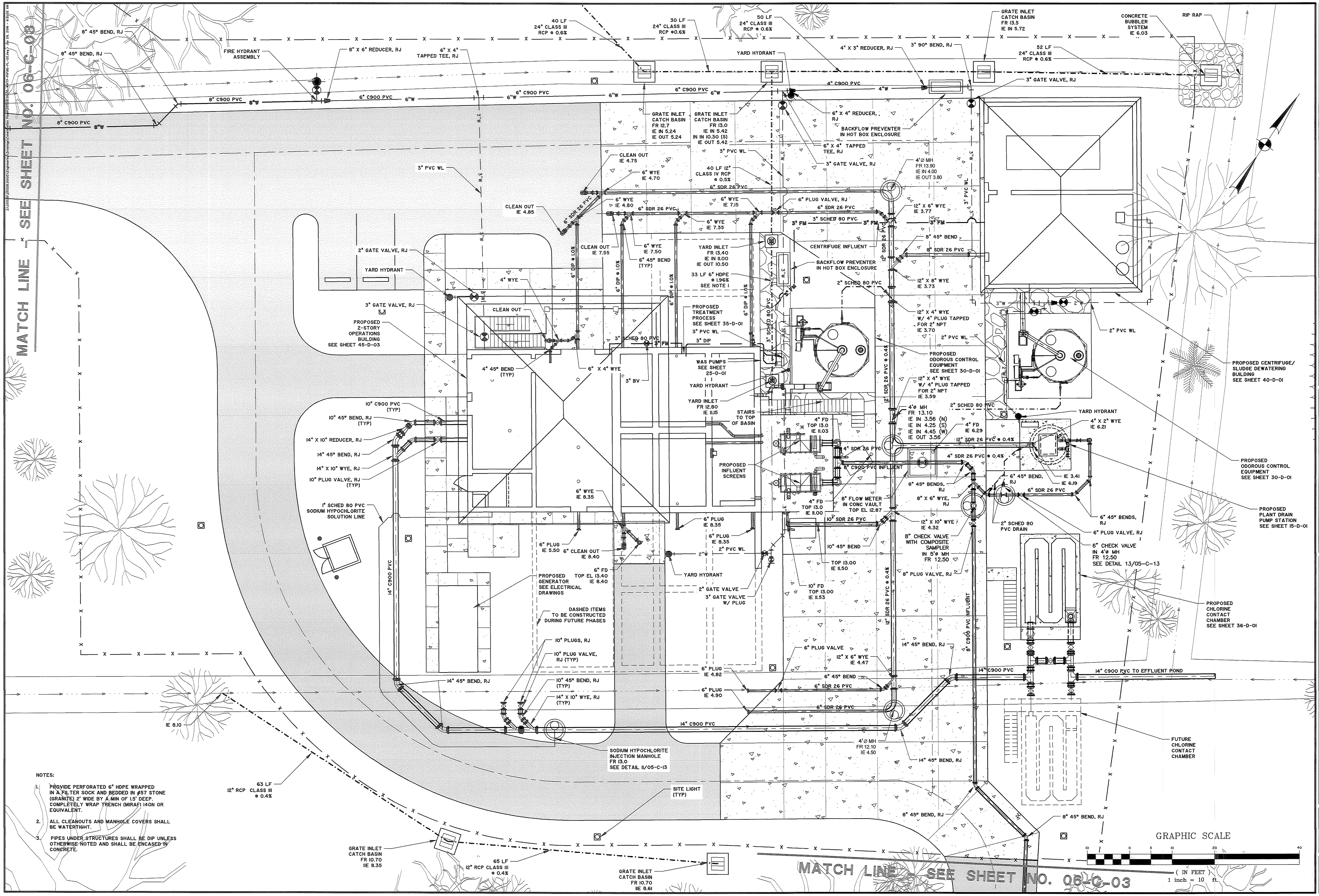
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

TREE PROTECTION AND REMOVAL PLAN - WWTP

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: DNF
DESIGNED: MFY
REVIEWED: MFY
APPROVED: MFY
SCALE: 1" = 20'

06-C-01A



NOTES:

1. PROVIDE PERFORATED 6" HDPE WRAPPED IN A FILTER SOCK AND BEDDED IN #57 STONE (GRANITE) 2' WIDE BY A MIN OF 1.5' DEEP. COMPLETELY WRAP TRENCH (MIRAFI 140N OR EQUIVALENT.

2. ALL CLEANOUTS AND MANHOLE COVERS SHALL BE WATERTIGHT.

3. PIPES UNDER STRUCTURES SHALL BE DIP UNLESS OTHERWISE NOTED AND SHALL BE ENCASED IN CONCRETE.

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE No. 13293

1-26-2016

NO.	REVISIONS	BY	DATE
1	GENERAL REVISIONS	MFY	12/2/15

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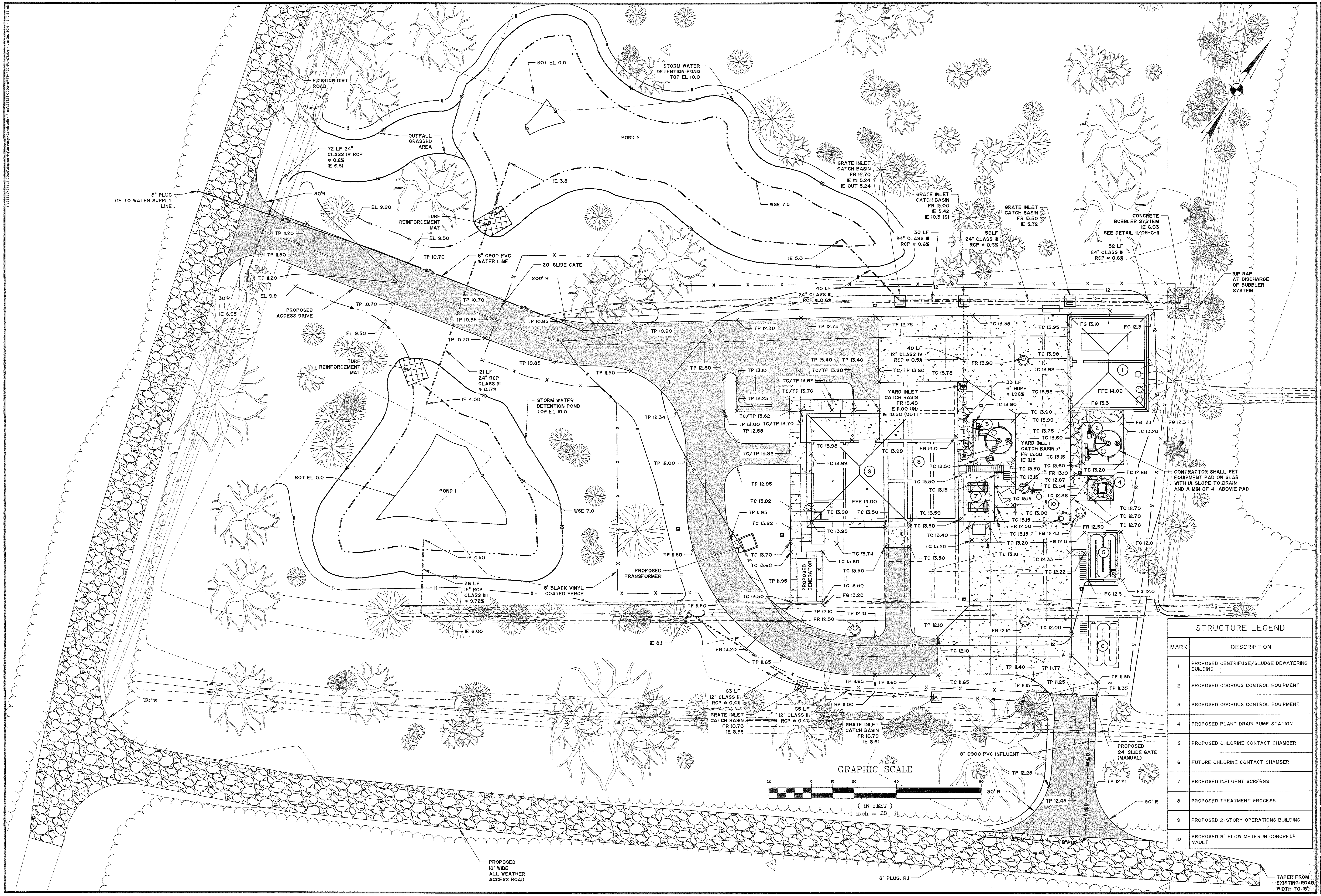
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

PIPING PLAN - WWTP

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	1" = 10'

06-C-02


EXISTING DIRT ROAD
STORM WATER DETENTION POND TOP EL 10.0
BOT EL 0.0
POND 2
OUTFALL GRASSED AREA
72 LF 24" CLASS IV RCP @ 0.2% IE 6.51
8" PLUG TIE TO WATER SUPPLY LINE
30'R
EL 9.80
TURF REINFORCEMENT MAT
EL 9.50
IE 3.8
WSE 7.5
IE 5.0
TP 11.20
TP 11.50
TP 10.70
8" C900 PVC WATER LINE
20' SLIDE GATE
200' R
TP 10.85
TP 10.90
EL 9.8
IE 6.65
PROPOSED ACCESS DRIVE
121 LF 24" RCP CLASS III @ 0.17%
IE 4.00
STORM WATER DETENTION POND TOP EL 10.0
POND 1
WSE 7.0
IE 4.50
36 LF 15" RCP CLASS IIII @ 9.72%
8' BLACK VINYL COATED FENCE
IE 8.00
IE 8.1
PROPOSED TRANSFORMER
PROPOSED GENERATOR
GRATE INLET CATCH BASIN FR 12.70 IE IN 5.24 IE OUT 5.24
GRATE INLET CATCH BASIN FR 13.00 IE 5.42 IE 10.3 (S)
GRATE INLET CATCH BASIN FR 13.50 IE 5.72
30 LF 24" CLASS III RCP @ 0.6%
50LF 24" CLASS III RCP @ 0.6%
52 LF 24" CLASS III RCP @ 0.6%
40 LF 24" CLASS III RCP @ 0.6%
CONCRETE BUBBLER SYSTEM IE 6.03 SEE DETAIL 11/05-C-11
RIP RAP AT DISCHARGE OF BUBBLER SYSTEM
40 LF 12" CLASS IV RCP @ 0.5%
33 LF 8" HDPE @ 1.96%
YARD INLET CATCH BASIN FR 13.40 IE 11.00 (IN) IE 10.50 (OUT)
YARD INLET CATCH BASIN FR 13.00 IE 11.15
FFE 14.00
CONTRACTOR SHALL SET EQUIPMENT PAD ON SLAB WITH 1% SLOPE TO DRAIN AND A MIN OF 4" ABOVIE PAD
63 LF 12" CLASS III RCP @ 0.4%
GRATE INLET CATCH BASIN FR 10.70 IE 8.35
65 LF 12" CLASS III RCP @ 0.4%
GRATE INLET CATCH BASIN FR 10.70 IE 8.61
HP 11.00
8" C900 PVC INFLUENT
PROPOSED 24' SLIDE GATE (MANUAL)
8" PLUG, RJ
PROPOSED 18' WIDE ALL WEATHER ACCESS ROAD
30' R
TAPER FROM EXISTING ROAD WIDTH TO 18'
GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft

STRUCTURE LEGEND

MARK	DESCRIPTION
1	PROPOSED CENTRIFUGE/SLUDGE DEWATERING BUILDING
2	PROPOSED ODOROUS CONTROL EQUIPMENT
3	PROPOSED ODOROUS CONTROL EQUIPMENT
4	PROPOSED PLANT DRAIN PUMP STATION
5	PROPOSED CHLORINE CONTACT CHAMBER
6	FUTURE CHLORINE CONTACT CHAMBER
7	PROPOSED INFLUENT SCREENS
8	PROPOSED TREATMENT PROCESS
9	PROPOSED 2-STORY OPERATIONS BUILDING
10	PROPOSED 8" FLOW METER IN CONCRETE VAULT

No. C00285

No. 13293
MARK F. YODICE
1-29-2016

NO.	REVISIONS	BY	DATE
1	GENERAL REVISIONS	MFY	12/2/15

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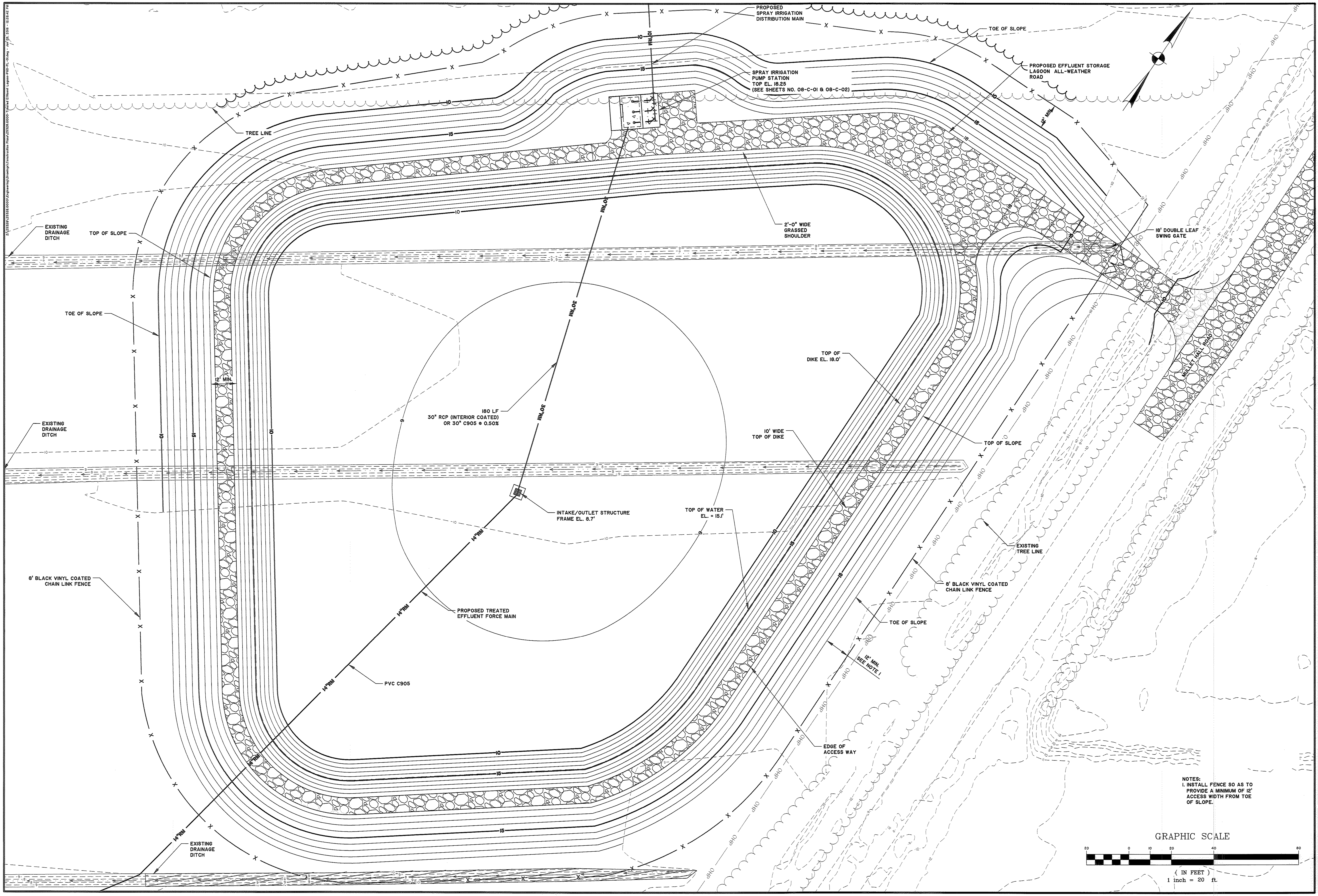
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

PAVING GRADING & DRAINAGE PLAN - WWTP

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	1" = 20'

06-C-03


PROPOSED SPRAY IRRIGATION DISTRIBUTION MAIN
SPRAY IRRIGATION PUMP STATION TOP EL. 18.25 (SEE SHEETS NO. 08-C-01 & 08-C-02)
TOE OF SLOPE
PROPOSED EFFLUENT STORAGE LAGOON ALL-WEATHER ROAD
TREE LINE
EXISTING DRAINAGE DITCH
TOP OF SLOPE
2'-0" WIDE GRASSED SHOULDER
16' DOUBLE LEAF SWING GATE
TOE OF SLOPE
12' MIN.
TOP OF DIKE EL. 18.0'
160 LF 30" RCP (INTERIOR COATED) OR 30" C905 @ 0.50%
MULLET HALL ROAD
EXISTING DRAINAGE DITCH
10' WIDE TOP OF DIKE
TOP OF SLOPE
INTAKE/OUTLET STRUCTURE FRAME EL. 8.7'
TOP OF WATER EL. = 15.1'
EXISTING TREE LINE
8' BLACK VINYL COATED CHAIN LINK FENCE
8' BLACK VINYL COATED CHAIN LINK FENCE
PROPOSED TREATED EFFLUENT FORCE MAIN
TOE OF SLOPE
12' MIN. SEE NOTE 1
PVC C905
EDGE OF ACCESS WAY
EXISTING DRAINAGE DITCH
10"RM
30"RM
14"RM
10
15
18
GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

NOTES:
1. INSTALL FENCE SO AS TO PROVIDE A MINIMUM OF 12' ACCESS WIDTH FROM TOE OF SLOPE.

SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING CO.
No. C00285
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 13298
MARK F. YODICE
1-26-2016

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

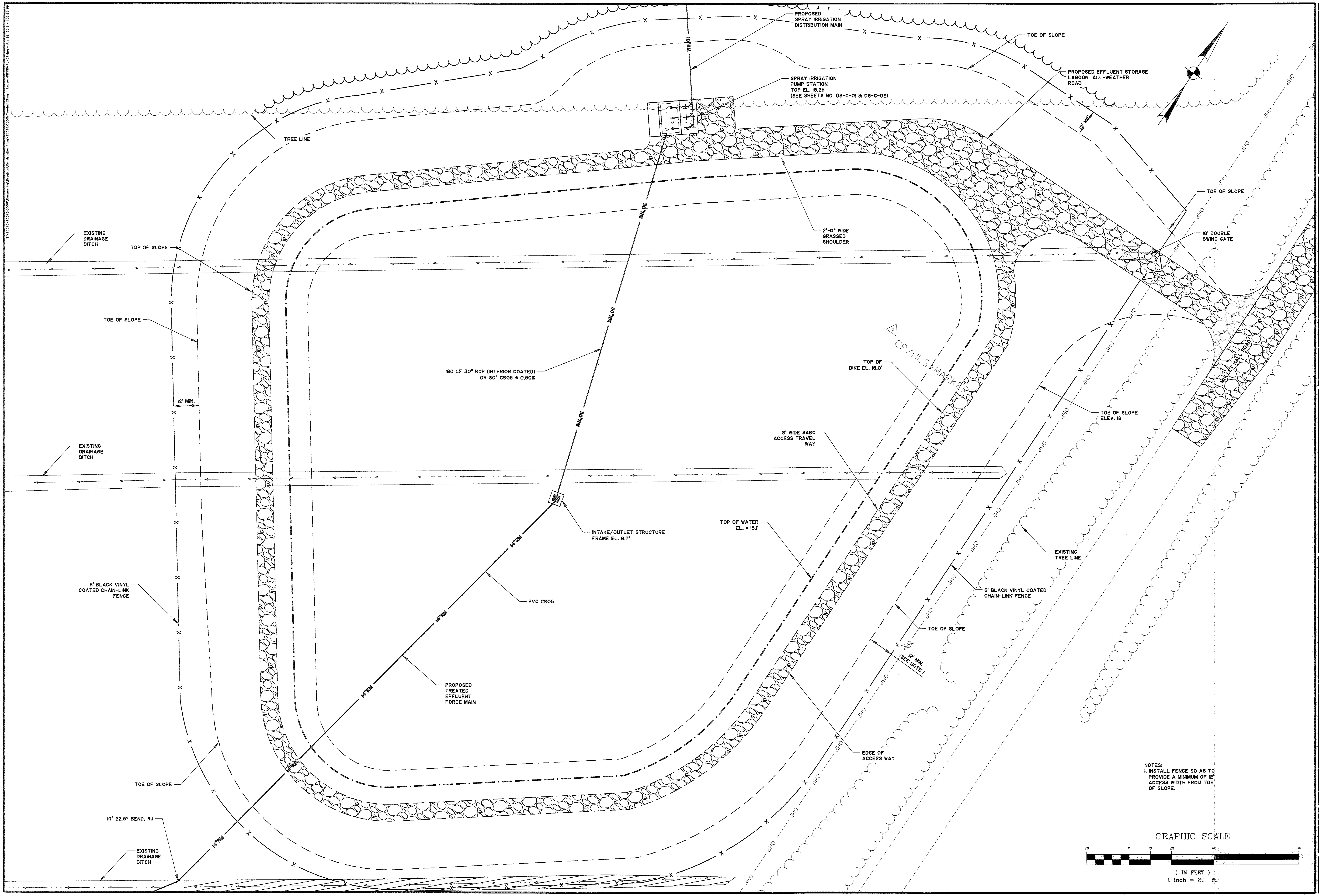
KIAWAH RIVER PLANTATION WWTP

PAVING GRADING AND DRAINAGE PLAN - EFFLUENT LAGOON

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	1" = 20'

07-C-01

Z:\25328\25328.0000\Engineering\Drawings\Construction Plans\25328.0000-Treated Effluent Lagoon-PIPING-PL-02.dwg - Jan 28, 2016 - 1:02:36 PM



NOTES:
1. INSTALL FENCE SO AS TO PROVIDE A MINIMUM OF 12' ACCESS WIDTH FROM TOE OF SLOPE.

No. C00285

No. 13293
MARK F. YODICE
9-27-16

NO.	REVISIONS	BY	DATE

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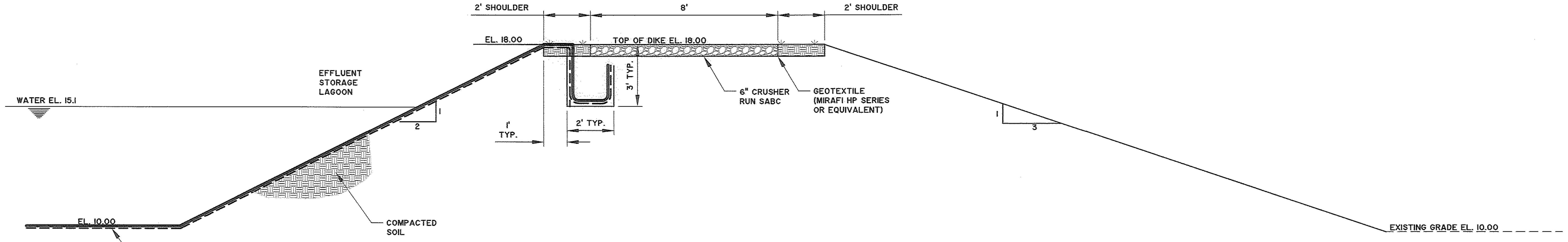
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

PIPING PLAN - EFFLUENT LAGOON

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: 1" = 20'

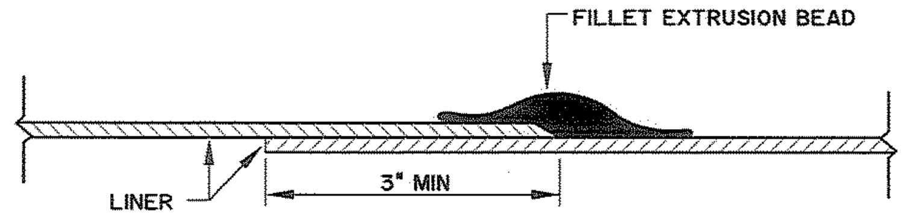
07-C-02



1 TREATED EFFLUENT LAGOON LINER ANCHOR SECTION

07-C-03

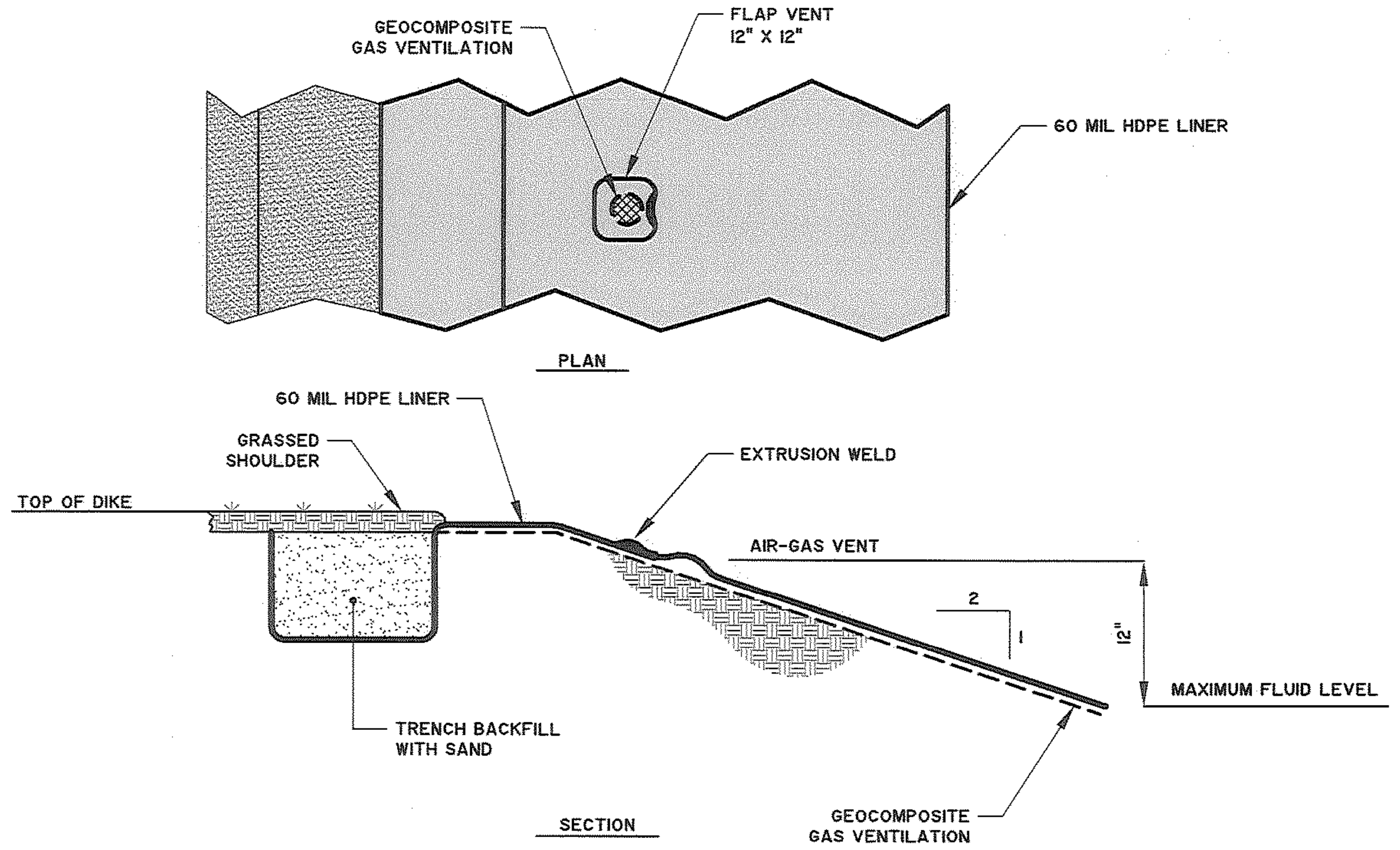
SCALE: 1"=3'



2 FILLET EXTRUSION SEAM PROFILE

07-C-03

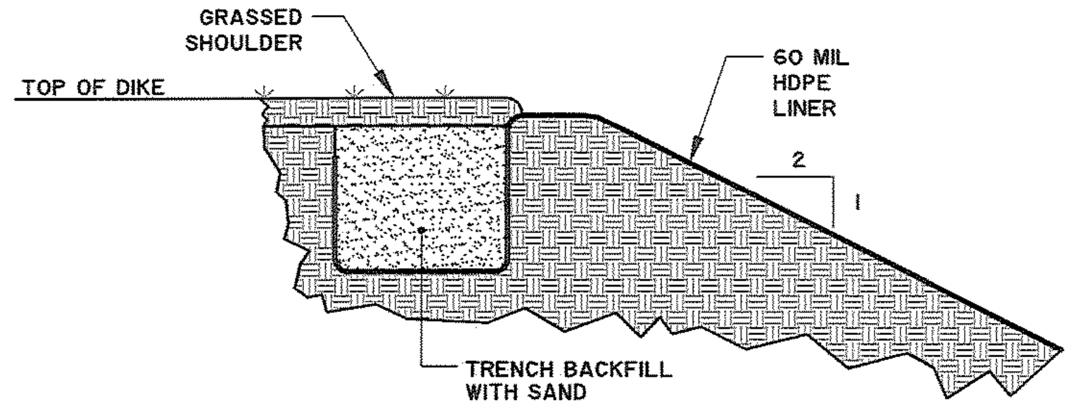
SCALE: NOT TO SCALE



3 AIR-GAS FLAP TYPE VENT DETAIL

07-C-03

SCALE: NOT TO SCALE

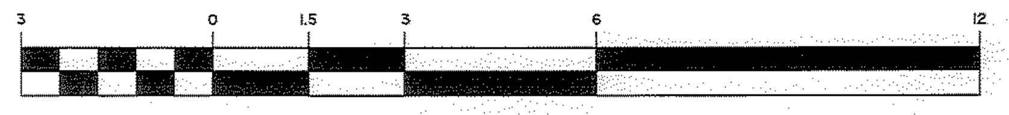


4 LINER ANCHOR TRENCH DETAIL

07-C-03

SCALE: NOT TO SCALE

GRAPHIC SCALE



(IN FEET)
1 inch = 3 ft.

SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING CO.
No. C00285
CERTIFICATE OF AUTHORIZATION

No. 13293
MARK F. YODICE
12-22-15

NO.	REVISIONS	BY	DATE

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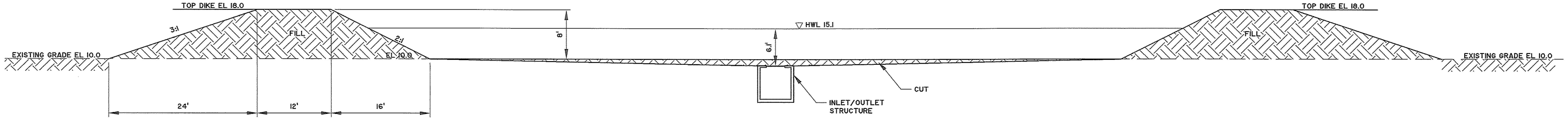
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

DETAILS AND SECTIONS - EFFLLUENT LAGOON

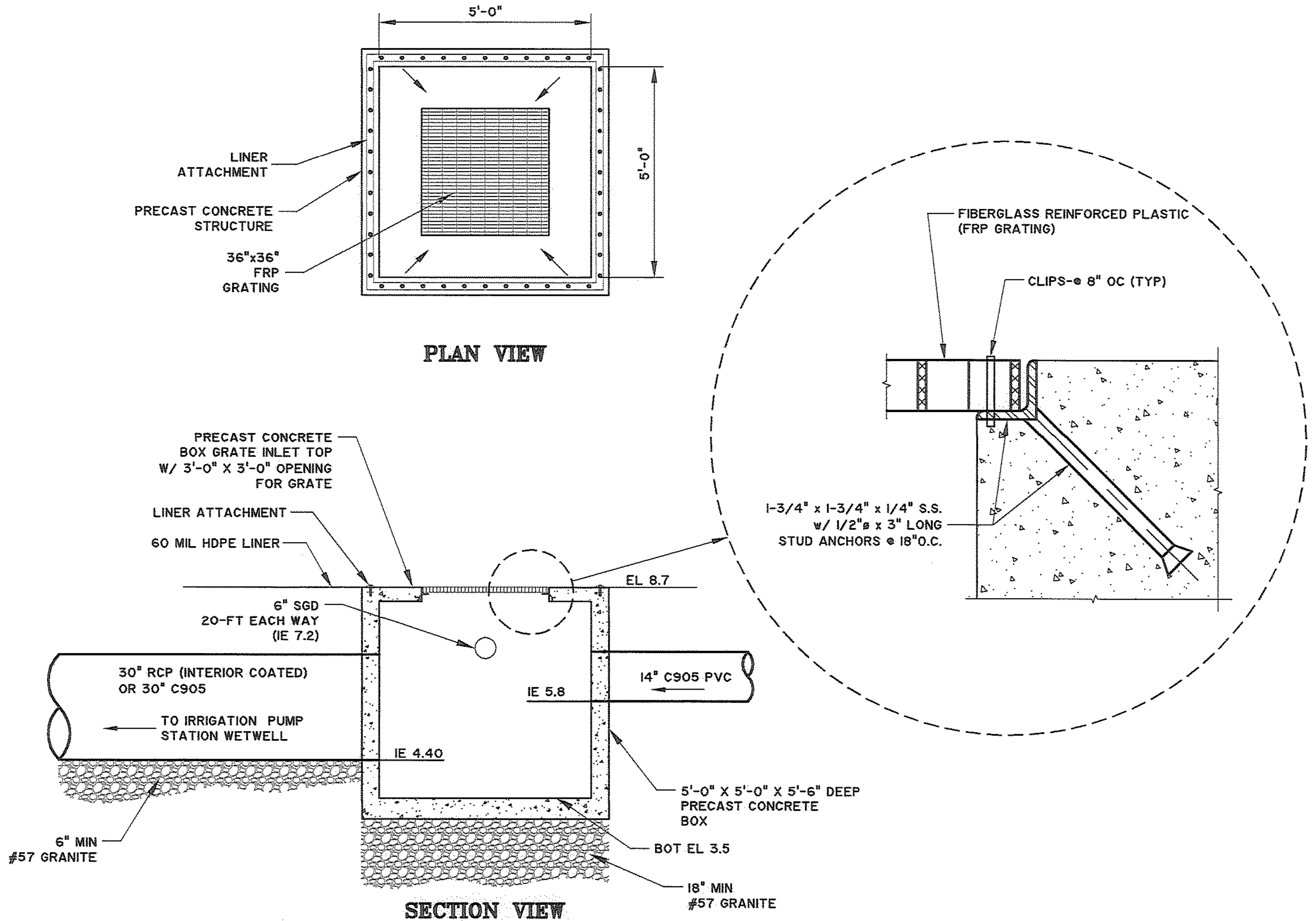
JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: AS NOTED

07-C-03



1 / 07-C-04 **TYPICAL LAGOON CROSS SECTION**

SCALE: 1"=10'

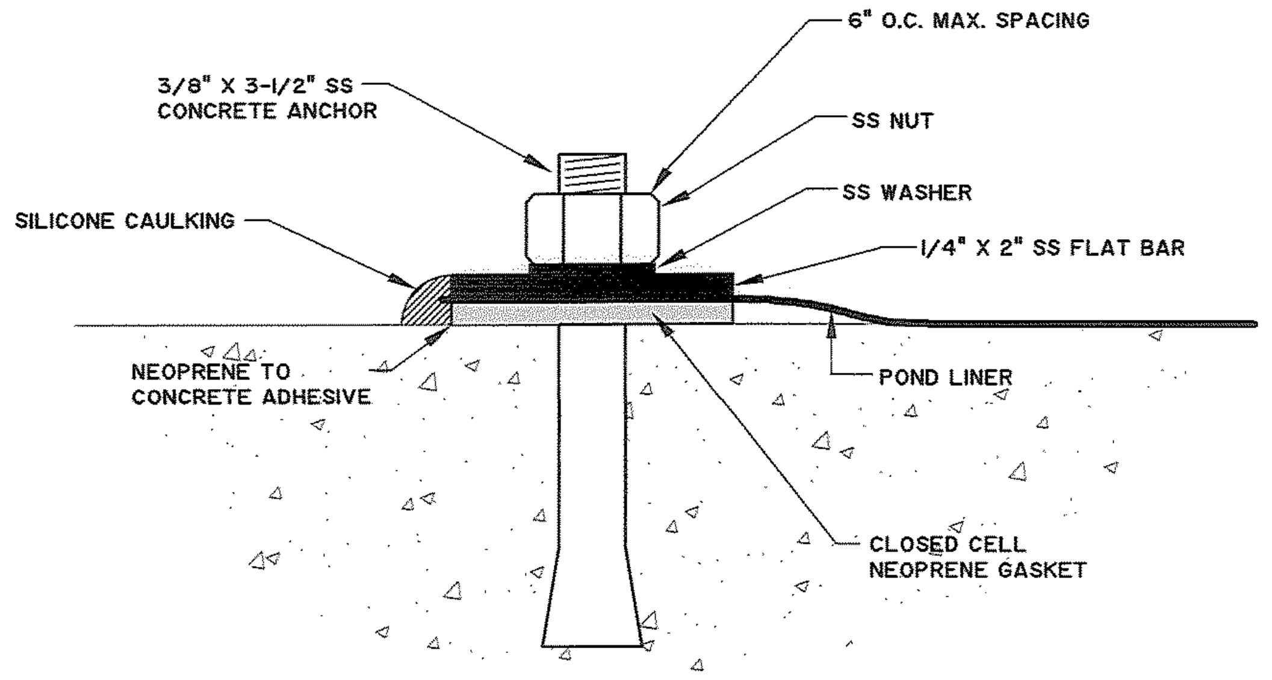

5'-0"
5'-0"
LINER ATTACHMENT
PRECAST CONCRETE STRUCTURE
36"x36" FRP GRATING
PRECAST CONCRETE BOX GRATE INLET TOP W/ 3'-0" X 3'-0" OPENING FOR GRATE
LINER ATTACHMENT
60 MIL HDPE LINER
EL 8.7
6" SGD 20-FT EACH WAY (IE 7.2)
30" RCP (INTERIOR COATED) OR 30" C905
TO IRRIGATION PUMP STATION WETWELL
14" C905 PVC
IE 5.8
IE 4.40
5'-0" X 5'-0" X 5'-6" DEEP PRECAST CONCRETE BOX
BOT EL 3.5
18" MIN #57 GRANITE
6" MIN #57 GRANITE
FIBERGLASS REINFORCED PLASTIC (FRP GRATING)
CLIPS-@ 8" OC (TYP)
1-3/4" x 1-3/4" x 1/4" S.S. w/ 1/2"ø x 3" LONG STUD ANCHORS @ 18"O.C.

PLAN VIEW

SECTION VIEW

2 / 07-C-04 **INTAKE/OUTLET STRUCTURE AT TREATED EFFLUENT LAGOON**

3/8" = 1'-0"


6" O.C. MAX. SPACING
3/8" X 3-1/2" SS CONCRETE ANCHOR
SS NUT
SS WASHER
1/4" X 2" SS FLAT BAR
SILICONE CAULKING
NEOPRENE TO CONCRETE ADHESIVE
POND LINER
CLOSED CELL NEOPRENE GASKET

3 / 07-C-04 **LINER ATTACHMENT TO CONCRETE**

SCALE: NOT TO SCALE

THOMAS & HUTTON CO. No. C00285

MARK F. YODICE

NO.	REVISIONS	BY	DATE

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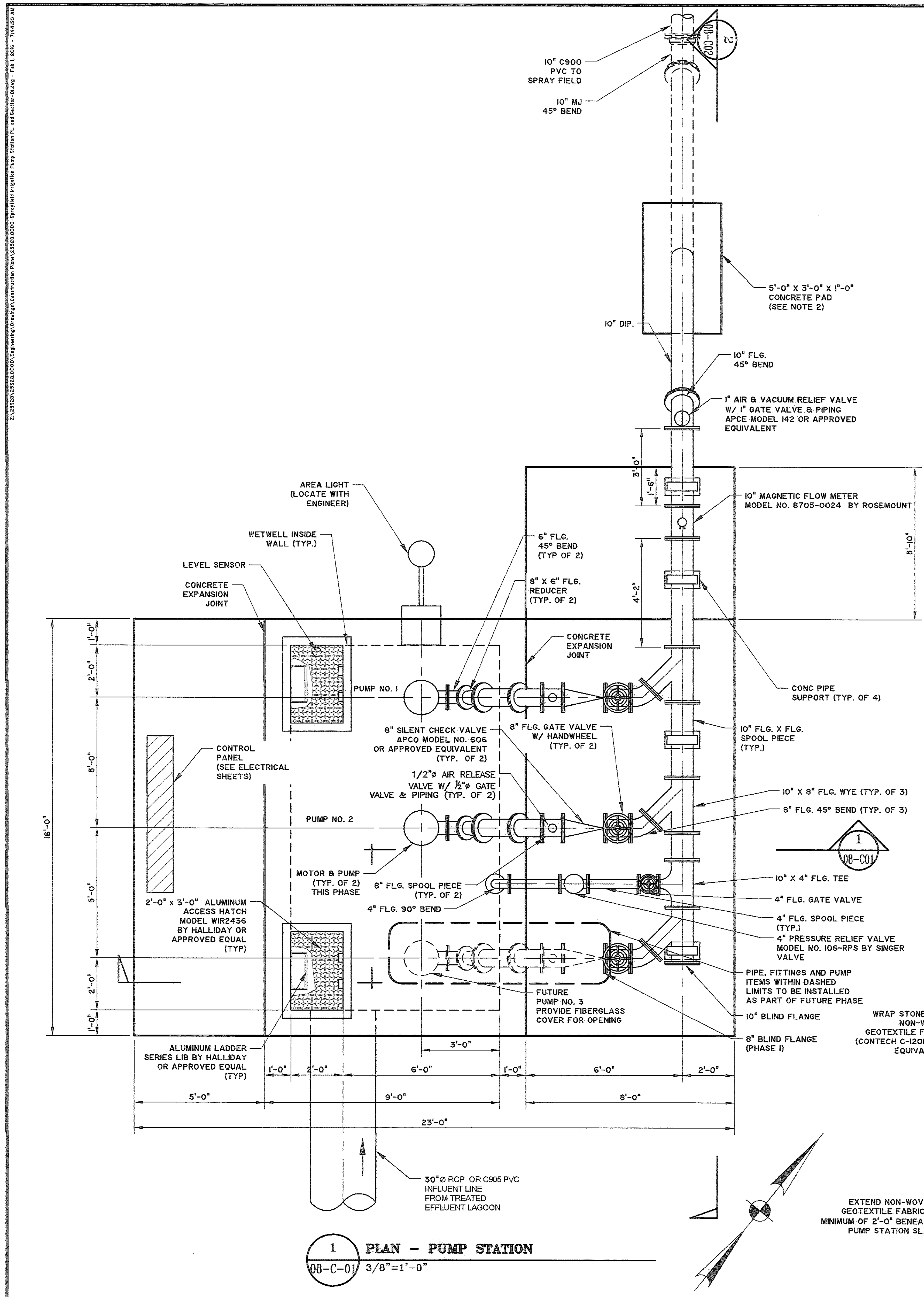
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

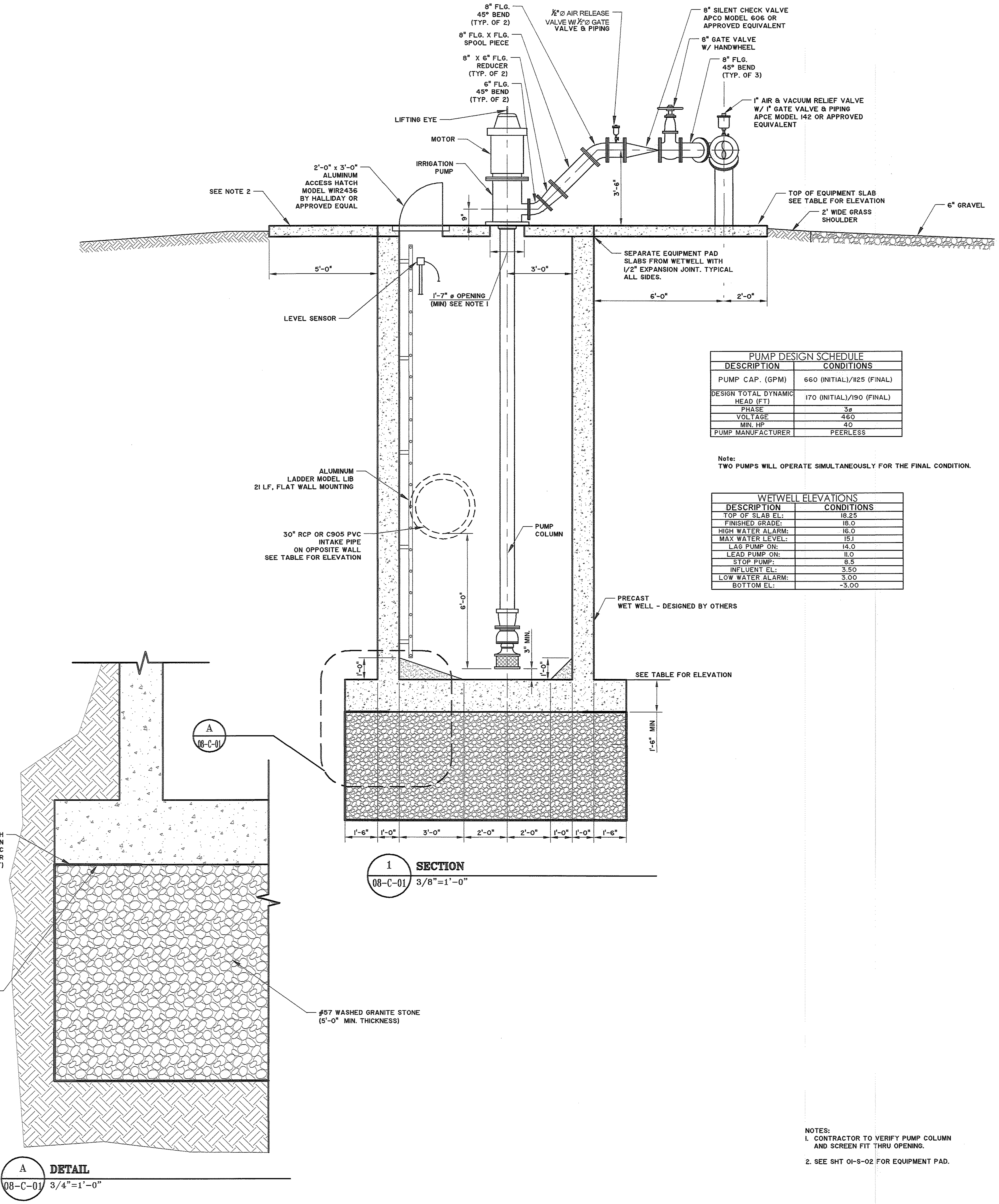
DETAILS AND SECTIONS - EFFLUENT LAGOON

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

07-C-04



1
08-C-01
PLAN - PUMP STATION
3/8"=1'-0"



1
08-C-01
SECTION
3/8"=1'-0"

A
08-C-01
DETAIL
3/4"=1'-0"

PUMP DESIGN SCHEDULE

DESCRIPTION	CONDITIONS
PUMP CAP. (GPM)	660 (INITIAL)/1125 (FINAL)
DESIGN TOTAL DYNAMIC HEAD (FT)	170 (INITIAL)/190 (FINAL)
PHASE	3ø
VOLTAGE	460
MIN. HP	40
PUMP MANUFACTURER	PEERLESS

Note:
TWO PUMPS WILL OPERATE SIMULTANEOUSLY FOR THE FINAL CONDITION.

WETWELL ELEVATIONS

DESCRIPTION	CONDITIONS
TOP OF SLAB EL:	18.25
FINISHED GRADE:	18.0
HIGH WATER ALARM:	16.0
MAX WATER LEVEL:	15.1
LAG PUMP ON:	14.0
LEAD PUMP ON:	11.0
STOP PUMP:	8.5
INFLUENT EL:	3.50
LOW WATER ALARM:	3.00
BOTTOM EL:	-3.00

NOTES:
1. CONTRACTOR TO VERIFY PUMP COLUMN AND SCREEN FIT THRU OPENING.
2. SEE SHT 01-S-02 FOR EQUIPMENT PAD.

THOMAS & HUTTON ENGINEERING CO. No. C00285
MARK F. YODICE No. 13293
1-29-2016

NO.	GENERAL REVISIONS	BY	DATE
1		MFY	12/2/15

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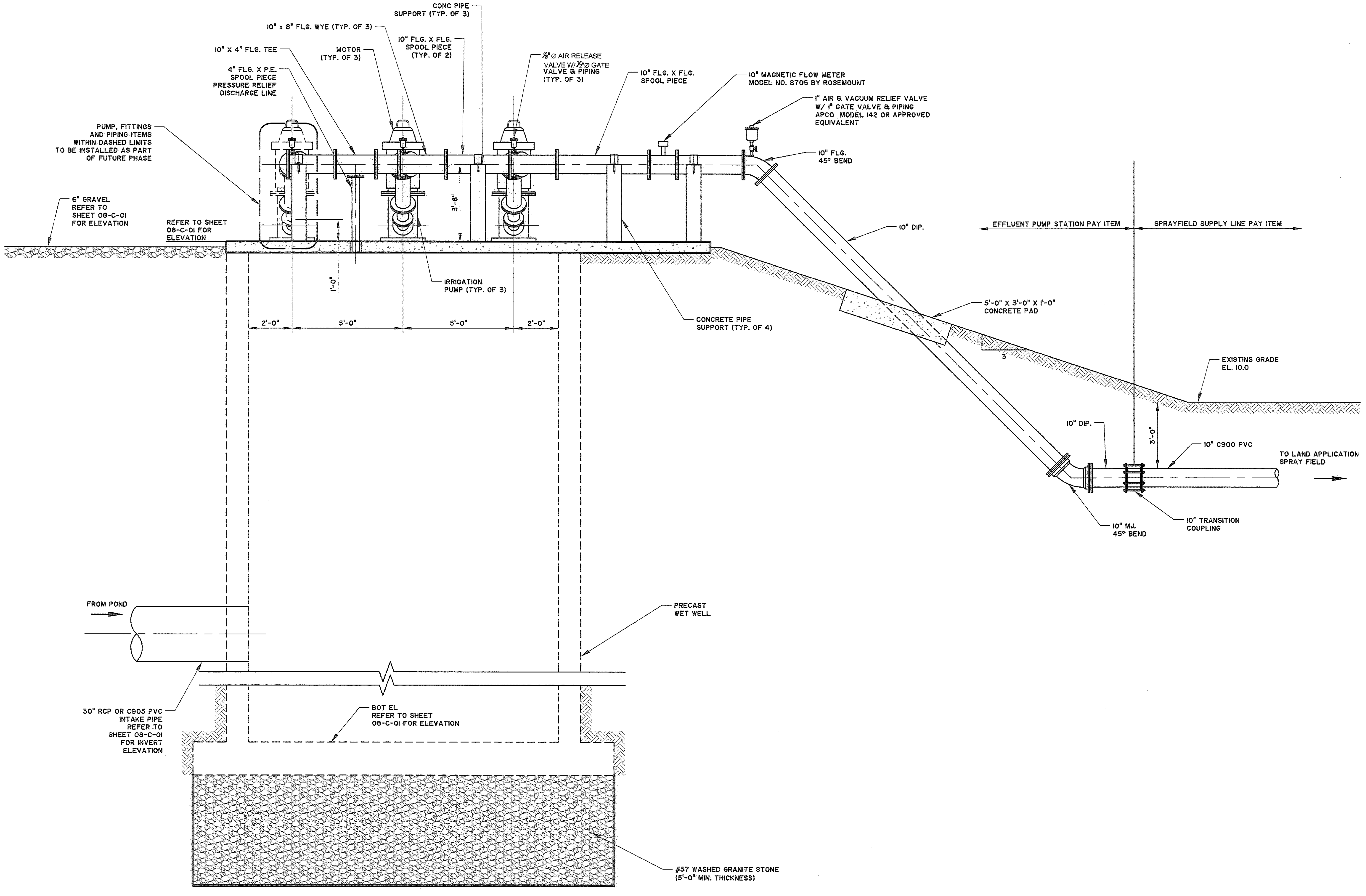
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
EFFLUENT PUMP STATION - PLAN AND SECTION

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: AS NOTED

08-C-01


CONC PIPE SUPPORT (TYP. OF 3)
10" x 8" FLG. WYE (TYP. OF 3)
10" X 4" FLG. TEE
MOTOR (TYP. OF 3)
10" FLG. X FLG. SPOOL PIECE (TYP. OF 2)
½"Ø AIR RELEASE VALVE W/½"Ø GATE VALVE & PIPING (TYP. OF 3)
10" FLG. X FLG. SPOOL PIECE
10" MAGNETIC FLOW METER MODEL NO. 8705 BY ROSEMOUNT
1" AIR & VACUUM RELIEF VALVE W/ 1" GATE VALVE & PIPING APCO MODEL 142 OR APPROVED EQUIVALENT
4" FLG. X P.E. SPOOL PIECE PRESSURE RELIEF DISCHARGE LINE
PUMP, FITTINGS AND PIPING ITEMS WITHIN DASHED LIMITS TO BE INSTALLED AS PART OF FUTURE PHASE
10" FLG. 45° BEND
6" GRAVEL REFER TO SHEET 08-C-01 FOR ELEVATION
REFER TO SHEET 08-C-01 FOR ELEVATION
3'-6"
10" DIP.
EFFLUENT PUMP STATION PAY ITEM
SPRAYFIELD SUPPLY LINE PAY ITEM
1'-0"
IRRIGATION PUMP (TYP. OF 3)
5'-0" X 3'-0" X 1'-0" CONCRETE PAD
2'-0"
5'-0"
5'-0"
2'-0"
CONCRETE PIPE SUPPORT (TYP. OF 4)
1
3
EXISTING GRADE EL. 10.0
10" DIP.
3'-0"
10" C900 PVC
TO LAND APPLICATION SPRAY FIELD
10" TRANSITION COUPLING
10" MJ. 45° BEND
FROM POND
PRECAST WET WELL
30" RCP OR C905 PVC INTAKE PIPE REFER TO SHEET 08-C-01 FOR INVERT ELEVATION
BOT EL REFER TO SHEET 08-C-01 FOR ELEVATION
#57 WASHED GRANITE STONE (5'-0" MIN. THICKNESS)

2
08-C-02
SECTION
SCALE: 3/8"=1'-0"

SERIES L1B and L1D LADDERS

HALLIDAY PRODUCTS
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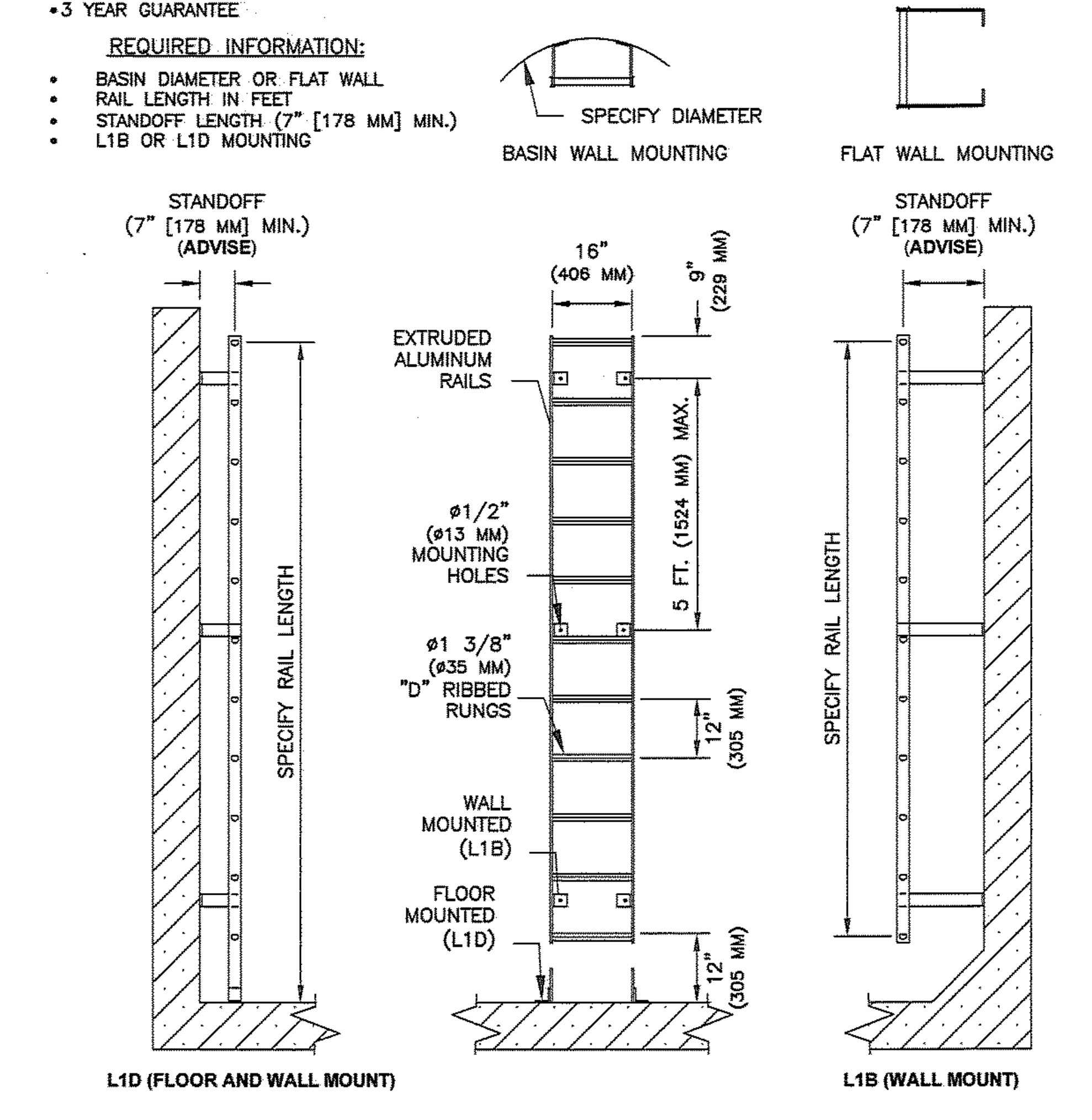
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com

STANDARD FEATURES:

- ALL ALUMINUM WELDED CONSTRUCTION
- 1 3/8 DIA. TYPE "D" RUNG WITH FLATE SLIP RESISTANT RIBBED RUNG DESIGN
- CUSTOM FIT WALL MOUNTED STANDOFFS
- FLOOR AND WALL OR WALL-ONLY MOUNTING (SPECIFY)
- FLAT OR ROUND WALL MOUNTING (SPECIFY)
- AVAILABLE IN WELDED STAINLESS STEEL CONSTRUCTION
- 3 YEAR GUARANTEE

REQUIRED INFORMATION:

- BASIN DIAMETER OR FLAT WALL
- RAIL LENGTH IN FEET
- STANDOFF LENGTH (7" [178 MM] MIN.)
- L1B OR L1D MOUNTING



SERIES W1S ACCESS DOOR

HALLIDAY PRODUCTS
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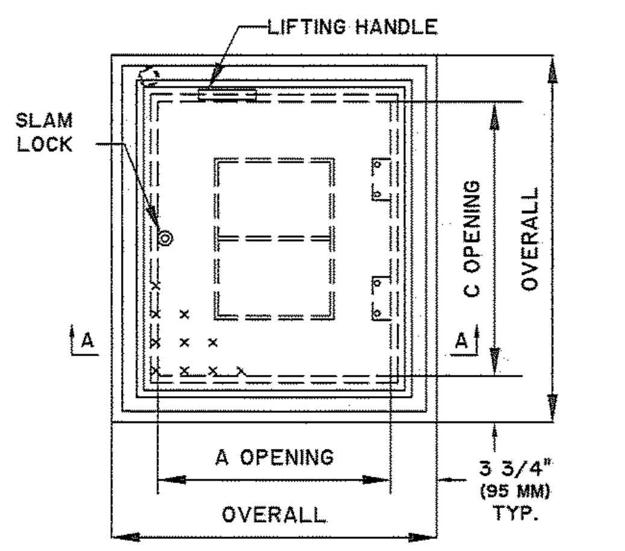
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com

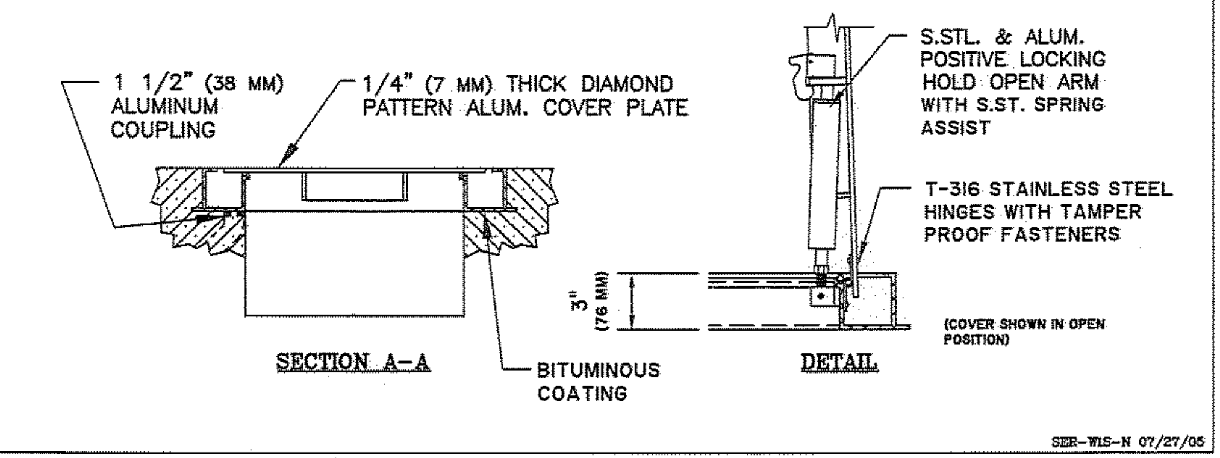
STANDARD FEATURES:

- AUTO-LOCK T-316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- T-316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- T-316 STAINLESS STEEL SLAM LOCK WITH REMOVABLE KEY
- STAINLESS STEEL COMPRESSION SPRING ASSIST
- BUILT-IN NEOPRENE GASKET TO LIMIT THE TRANSMISSION OF ODORS
- NON-OZONE DEPLETING BITUMINOUS COATING
- SINGLE LEAF CONSTRUCTION
- 300 LBS. PER SQ. FT. LOAD RATING (1464 KG. PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM CHANNEL FRAME
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

STANDARD SIZES

QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG.)
	WIS2424	24 (610)	24 (610)	46 (20)
	WIS2430	24 (610)	30 (762)	51 (23)
	WIS2436	24 (610)	36 (914)	61 (28)
	WIS2442	24 (610)	42 (1067)	77 (35)
	WIS2448	24 (610)	48 (1219)	85 (39)
	WIS3030	30 (762)	30 (762)	62 (28)
	WIS3036	30 (762)	36 (914)	69 (31)
	WIS3042	30 (762)	42 (1067)	77 (35)
	WIS3048	30 (762)	48 (1219)	85 (39)
	WIS3054	30 (762)	54 (1372)	99 (45)
	WIS3060	30 (762)	60 (1524)	102 (46)
	WIS3636	36 (914)	36 (914)	78 (35)
	WIS3642	36 (914)	42 (1067)	89 (40)
	WIS3648	36 (914)	48 (1219)	97 (44)
	WIS3654	36 (914)	54 (1372)	107 (49)
	WIS3660	36 (914)	60 (1524)	116 (53)
	WIS3666	36 (914)	66 (1676)	126 (57)
	WIS3672	36 (914)	72 (1829)	135 (61)
	WIS4242	42 (1067)	42 (1067)	108 (49)




1 1/2" (38 MM) ALUMINUM COUPLING
1/4" (7 MM) THICK DIAMOND PATTERN ALUM. COVER PLATE
S.STL. & ALUM. POSITIVE LOCKING HOLD OPEN ARM WITH S.ST. SPRING ASSIST
T-316 STAINLESS STEEL HINGES WITH TAMPER PROOF FASTENERS
3" (76 MM)
(COVER SHOWN IN OPEN POSITION)
BITUMINOUS COATING

SECTION A-A

DETAIL

SER-WIS-N 07/27/05

No. C00285

No. 13293
MARK F. YODICE
12-22-15

NO.	REVISIONS	BY	DATE
1	GENERAL REVISIONS	MFY	12/2/15

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

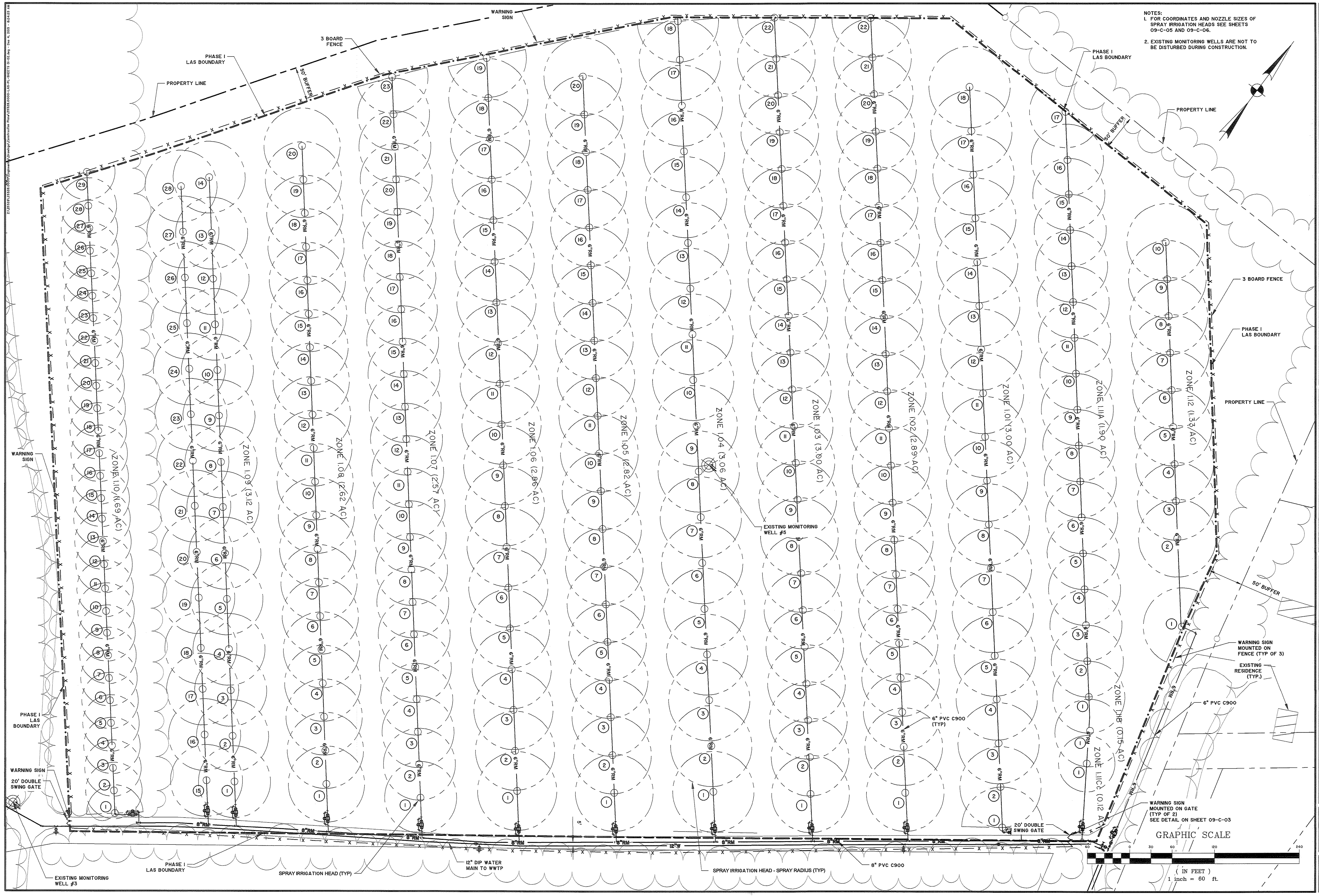
KIAWAH RIVER PLANTATION WWTP

EFFLUENT PUMP STATION SECTION AND DETAILS

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: AS NOTED

08-C-02

NOTES:
1. FOR COORDINATES AND NOZZLE SIZES OF SPRAY IRRIGATION HEADS SEE SHEETS 09-C-05 AND 09-C-06.
2. EXISTING MONITORING WELLS ARE NOT TO BE DISTURBED DURING CONSTRUCTION.



SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING CO.
No. C00285
CERTIFICATE OF AUTHORIZATION

MARK F. YODICE
No. 13293
12-2-15

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
682 Johnnie Dodds Boulevard • Suite 100
Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

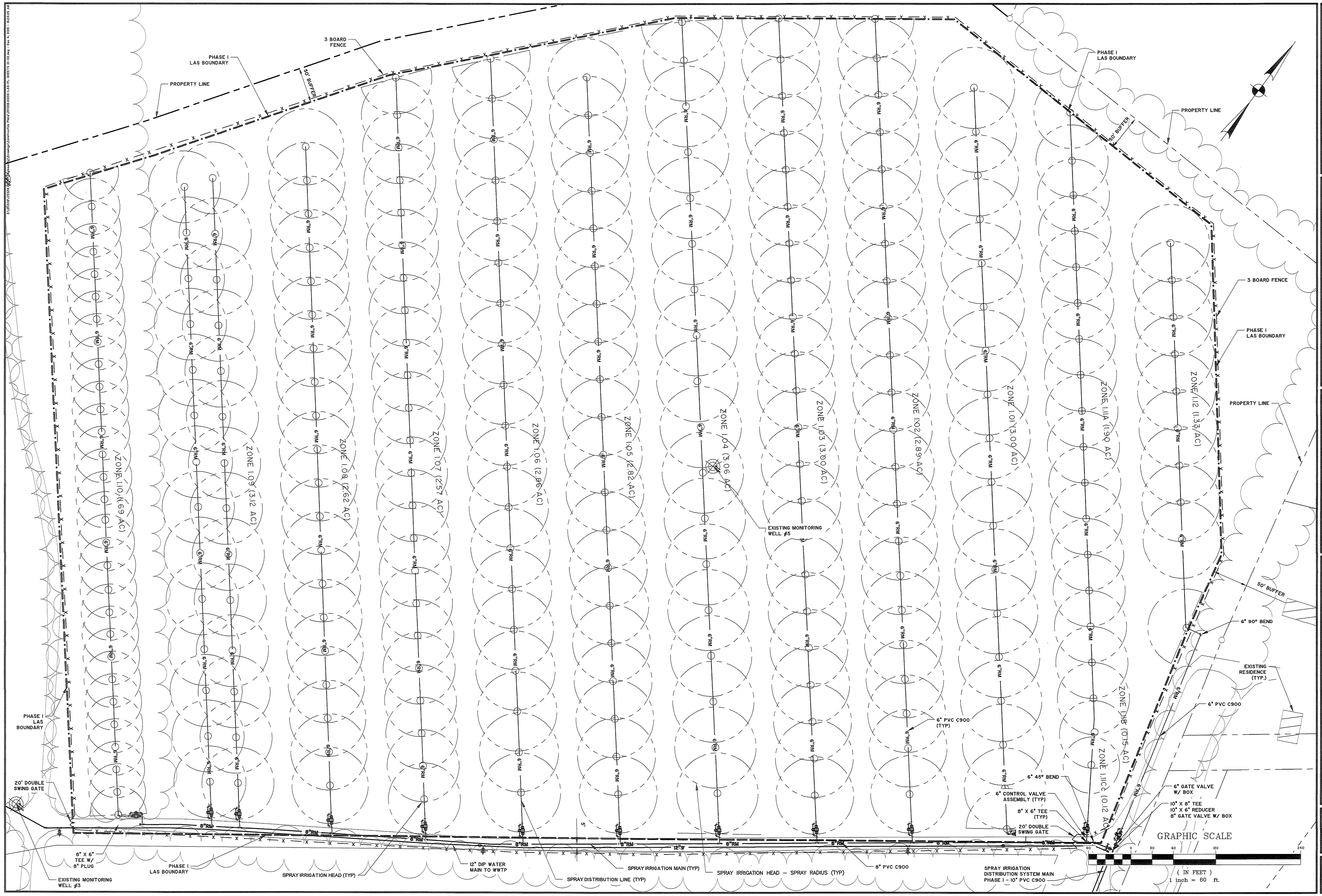
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

STAKING PLAN - LAS

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	1"=60'

09-C-01



SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING CO.
No. C00285
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 13293
MARK F. YODICE
12-2-2015

NO.	REVISIONS	BY	DATE

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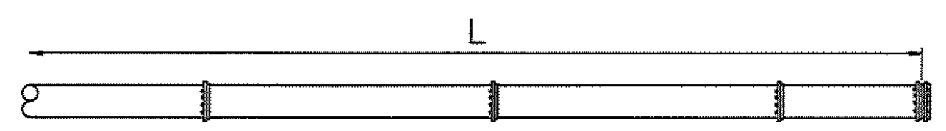
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

SITE PIPING PLAN - LAS

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	1"=60'

09-C-02



DUCTILE IRON LINE

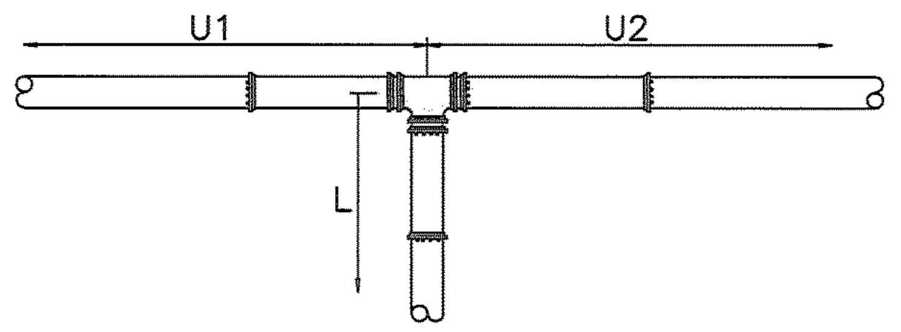
PIPE DIA.	L
4	28
6	40
8	52
10	62
12	73
16	94
20	114
24	132

PVC LINE

PIPE DIA.	L
4	52
6	74
8	96
10	115
12	136

NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

DEAD END RESTRAINT



NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.
3. UI AND U2 = UNINTERRUPTED STRAIGHT RUNS OF PIPE IN EACH DIRECTION.
4. Ur = THE SMALLER OF UI OR U2.
5. L = MINIMUM RESTRAINED LENGTH ALONG THE BRANCH.
6. WHERE Ur IS LESS THAN 5', RESTRAIN TEE AS A 90°. HORIZONTAL BEND.

DUCTILE IRON LINE

TEE \ Ur	5'–10'	11'–20'	21'–35'	36'–50'	50'–75'	75'–100'
4X4	23	15	2	*	*	*
6X4	21	9	*	*	*	*
6X6	35	27	14	*	*	*
8X4	18	3	*	*	*	*
8X6	33	23	5	*	*	*
8X8	47	39	26	6	*	*
10X4	16	*	*	*	*	*
10X6	31	18	*	*	*	*
10X8	46	36	19	*	*	*
10X10	57	49	36	17	*	*
12X4	13	*	*	*	*	*
12X6	30	14	*	*	*	*
12X8	44	32	13	*	*	*
12X10	56	47	31	7	*	*
12X12	68	60	47	28	*	*
16X6	26	4	*	*	*	*
16X8	41	25	*	*	*	*

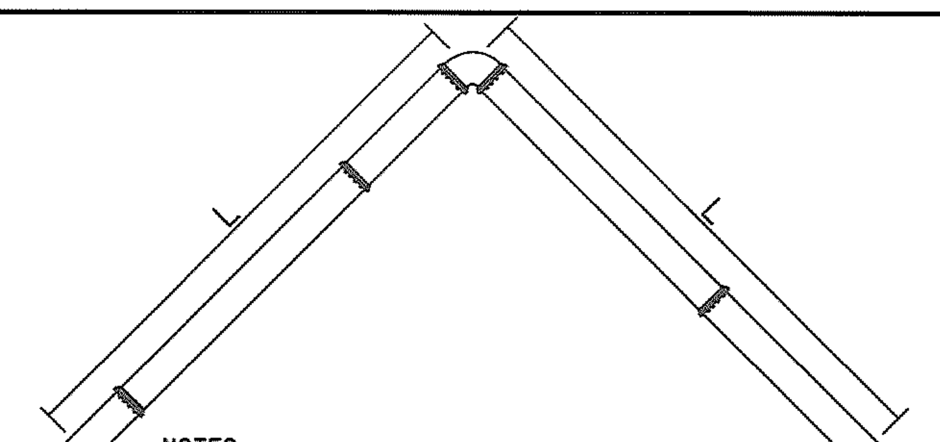
DUCTILE IRON LINE

TEE \ Ur	5'–10'	11'–20'	21'–35'	36'–50'	50'–75'	75'–100'
16X10	54	41	20	*	*	*
16X12	66	56	38	*	*	*
16X16	89	81	38	*	*	*
20X6	22	*	*	*	*	*
20X8	38	18	*	*	*	*
20X10	51	35	8	*	*	*
20X12	64	51	28	*	*	*
20X16	87	77	60	35	10	*
20X20	108	100	87	67	48	*
24X6	18	*	*	*	*	*
24X8	35	10	*	*	*	*
24X10	49	29	*	*	*	*
24X12	62	45	17	*	*	*
24X16	86	73	53	22	*	*
24X20	107	97	81	57	33	*
24X24	127	119	106	86	66	33

MINIMUM RESTRAINED LENGTH (L)

*RESTRAIN AT TEE ONLY.

TEE RESTRAINT (DUCTILE IRON LINE)



NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

PVC LINE

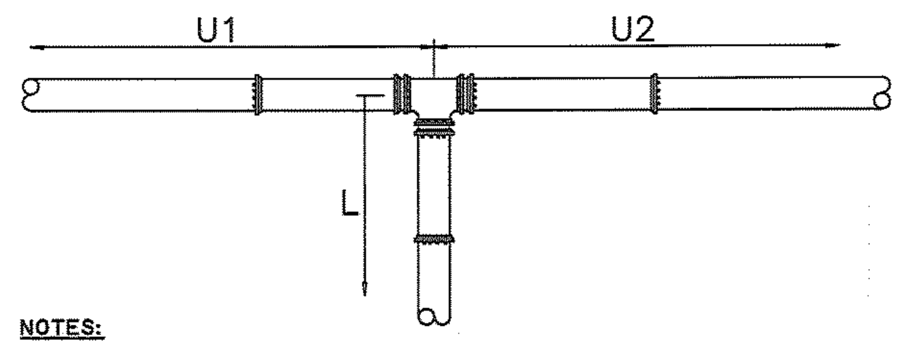
PIPE DIA.	BEND ANGLE 11 ¼°	22 ½°	45°	90°
4	3	6	12	29
6	4	8	17	41
8	5	11	22	53
10	6	13	26	64
12	7	15	31	75

DUCTILE IRON LINE

PIPE DIA.	BEND ANGLE 11 ¼°	22 ½°	45°	90°
4	2	4	8	20
6	3	6	12	28
8	4	7	15	36
10	4	9	18	43
12	5	10	21	51
16	6	13	27	65
20	8	16	33	79
24	9	18	38	92

MINIMUM RESTRAINED LENGTH (L)

HORIZONTAL BEND RESTRAINT



NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.
3. UI AND U2 = UNINTERRUPTED STRAIGHT RUNS OF PIPE IN EACH DIRECTION.
4. Ur = THE SMALLER OF UI OR U2.
5. L = MINIMUM RESTRAINED LENGTH ALONG THE BRANCH.
6. WHERE Ur IS LESS THAN 5', RESTRAIN TEE AS A 90°. HORIZONTAL BEND.

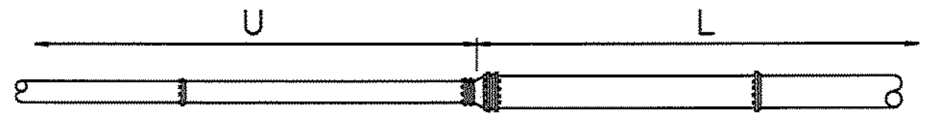
PVC LINE

TEE \ Ur	5'–10'	11'–20'	21'–35'	> 35'
4X4	43	28	4	*
6X4	38	17	*	*
6X6	64	49	25	*
8X4	34	6	*	*
8X6	61	42	10	*
8X8	87	72	48	12
10X4	29	*	*	*
10X6	58	34	*	*
10X8	84	66	35	*
10X10	106	91	67	31
12X4	24	*	*	*
12X6	54	26	*	*
12X8	82	60	23	*
12X10	104	86	57	13
12X12	126	112	87	51

MINIMUM RESTRAINED LENGTH (L)

*RESTRAIN AT TEE ONLY.

TEE RESTRAINT (PVC LINE)



DUCTILE IRON LINE

REDUCER	U	L
6X4	30	21
8X4	72	38
8X6	29	22
10X4	123	51
10X6	63	38
10X8	26	21
12X4	186	64
12X6	106	53
12X8	59	39
12X10	26	21
16X6	214	79
16X8	141	68
16X10	91	56
16X12	54	40
20X10	174	84
20X12	123	71
20X16	51	40
24X12	207	97
24X16	113	72
24X20	48	39

PVC LINE

REDUCER	U	L
6X4	56	38
8X4	134	69
8X6	53	40
10X4	227	94
10X6	117	71
10X8	49	39
12X4	343	118
12X6	196	99
12X8	109	72
12X10	48	40

U = MINIMUM UNINTERRUPTED STRAIGHT RUN OF PIPE ON SMALL SIDE OF REDUCER.

L = MINIMUM RESTRAINED LENGTH.

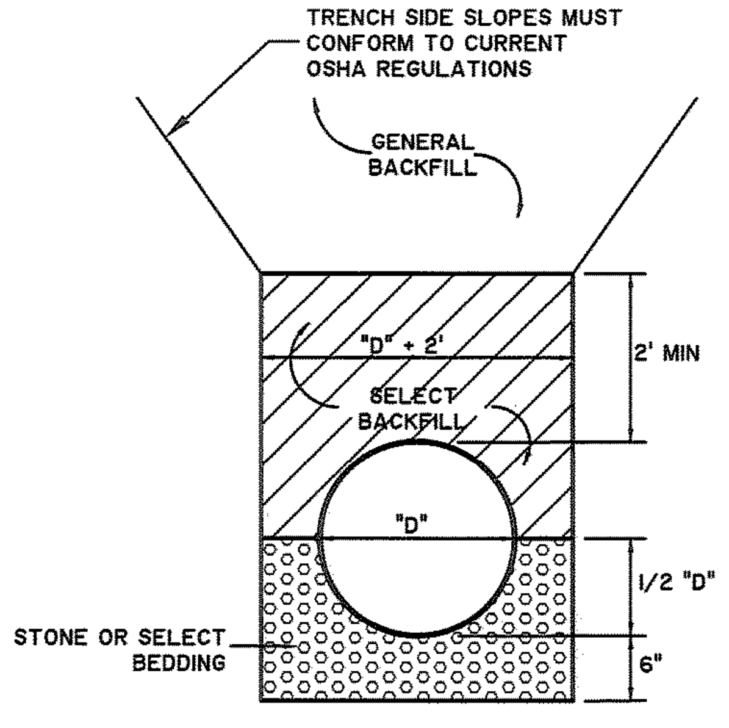
* WHERE MINIMUM "U" IS NOT MET, PIPE ON LARGE SIDE OF REDUCER SHALL BE RESTRAINED FOR A MINIMUM OF "L" FEET.

NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

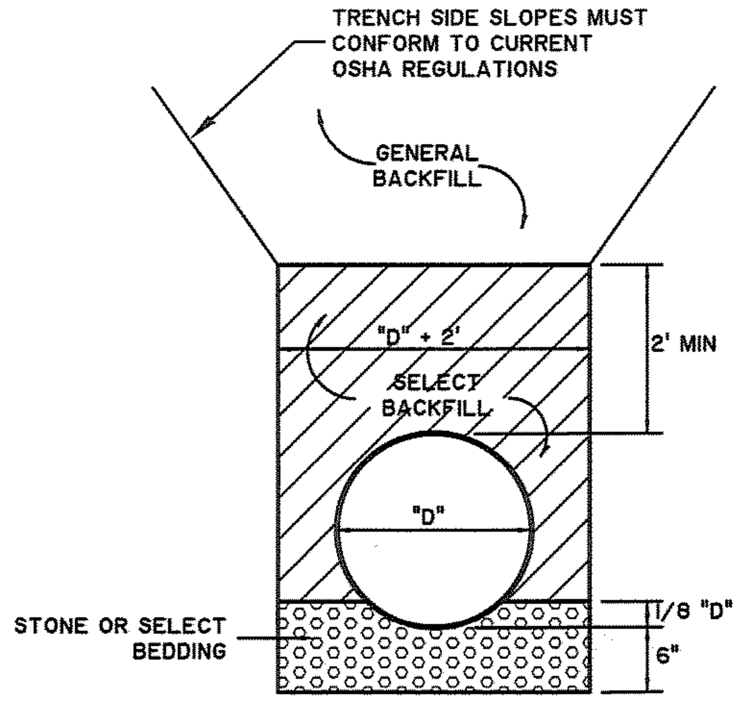
REDUCER RESTRAINT

RESTRAINED JOINTS DETAILS

NOT TO SCALE



PVC PIPE

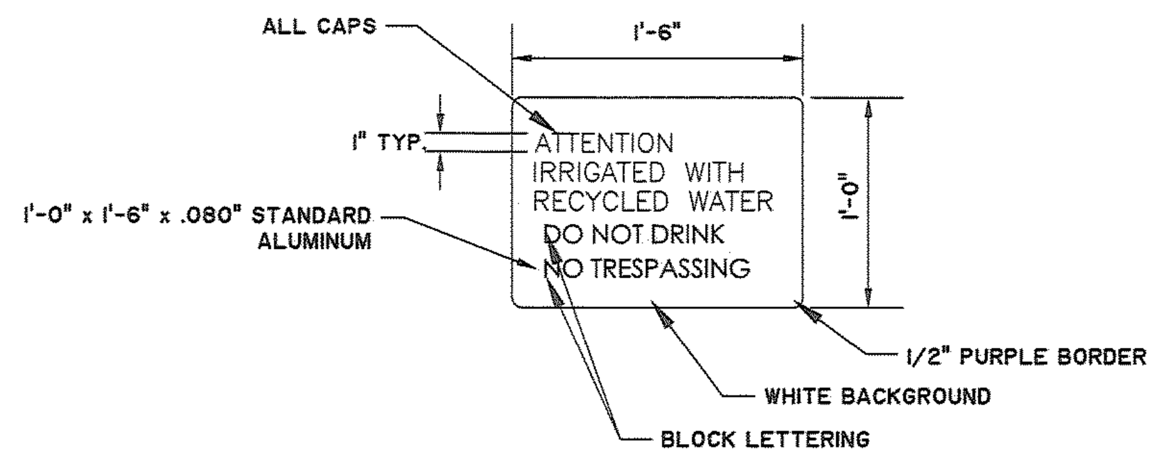


DUCTILE IRON PIPE

NOTES:
1. NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE FOR THE MINIMUM STONE AND SAND BEDDING AS SHOWN ON THE DETAILS. PAYMENT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR INSTALLING THE PIPING ASSOCIATED WITH THE BEDDING.
2. WHERE THE ENGINEER DETERMINES ADDITIONAL UNDERCUTTING AND STONE BACKFILL IS REQUIRED TO PROVIDE A STABLE SUBGRADE, IT SHALL BE PAID FOR AT THE COST OF REMOVING THE ADDITIONAL UNSUITABLE MATERIAL, BEYOND THAT SHOWN ON THE DETAILS, AND FURNISHING AND INSTALLING ADDITIONAL STONE BACKFILL.
3. BECAUSE THE AMOUNT OF ADDITIONAL UNDERCUTTING STONE BEDDING REQUIRED IN AREAS OF WEAK AND UNSTABLE SUBGRADEIS UNKNOWN, THE BID FORM INCLUDES 200 CUBIC YARDS (CY) OF STONE BEDDING, AND 200 CUBIC YARDS OF SAND BACKFILL IN ORDER TO ESTABLISH A UNIT PRICE FOR THESE ITEMS. NO PAYMENT FOR ADDITIONAL STONE OR SAND BACKFILL BEYOND THE QUANTITY SHOWN ON THE DETAILS SHALL BE PAID WITHOUT PRIOR WRITTEN APPROVAL OF LOCATION, QUANTITY, AND OVERALL PRICE BY ENGINEER.
4. NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR THE EXCAVATION, REMOVAL, AND DISPOSAL OF MATERIAL DEEMED UNSUITABLE FOR GENERAL BACKFILL, AND SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR INSTALLING THE PIPING ASSOCIATED WITH THE BACKFILL OPERATION.

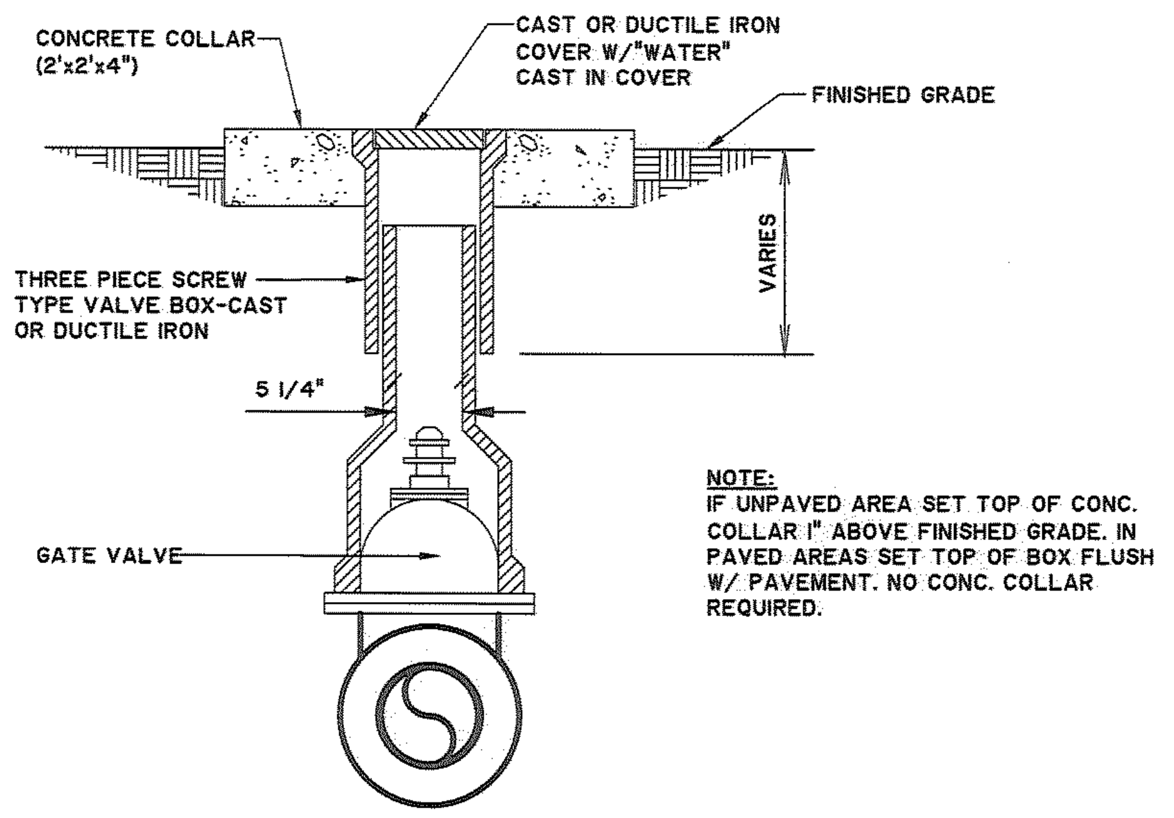
PIPE BEDDING DETAILS

SCALE: NONE



WARNING SIGN DETAIL

SCALE: NONE


CONCRETE COLLAR (2'x2'x4")
CAST OR DUCTILE IRON COVER W/"WATER" CAST IN COVER
FINISHED GRADE
VARIES
THREE PIECE SCREW TYPE VALVE BOX-CAST OR DUCTILE IRON
5 1/4"
GATE VALVE

NOTE:
IF UNPAVED AREA SET TOP OF CONC. COLLAR I" ABOVE FINISHED GRADE. IN PAVED AREAS SET TOP OF BOX FLUSH W/ PAVEMENT. NO CONC. COLLAR REQUIRED.

VALVE BOX DETAIL

SCALE: NONE

SOUTH CAROLINA THOMAS & HUTTON ENGINEERING CO. No. C00285 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 13293 MARK F. YODICE

9-10-2015

NO.	REVISIONS	BY	DATE

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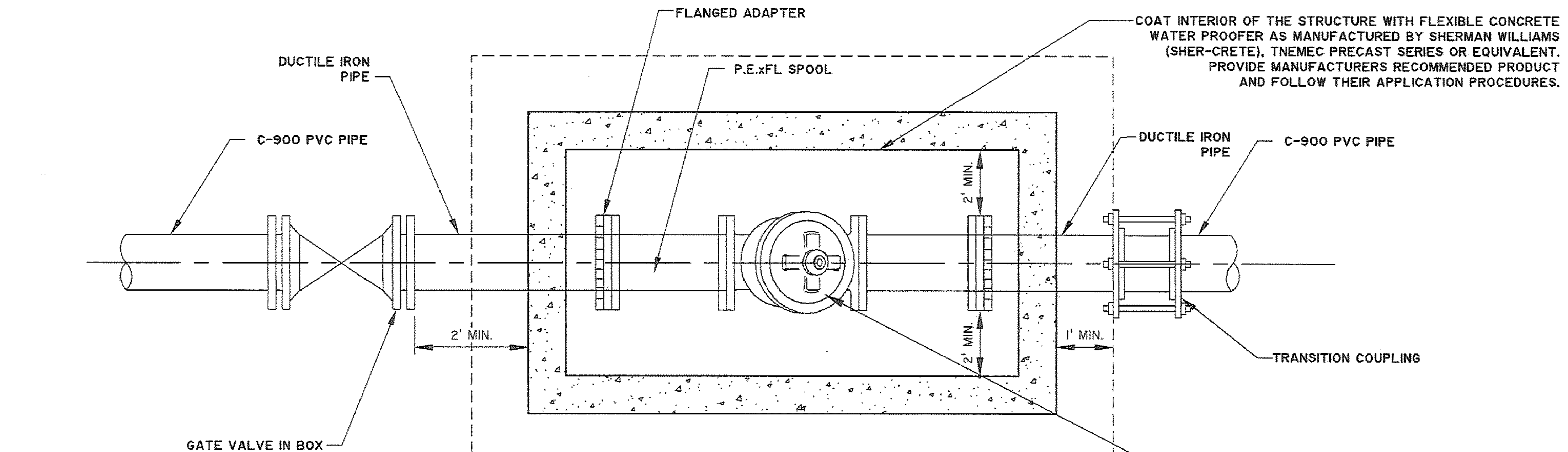
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
DETAILS AND SECTIONS

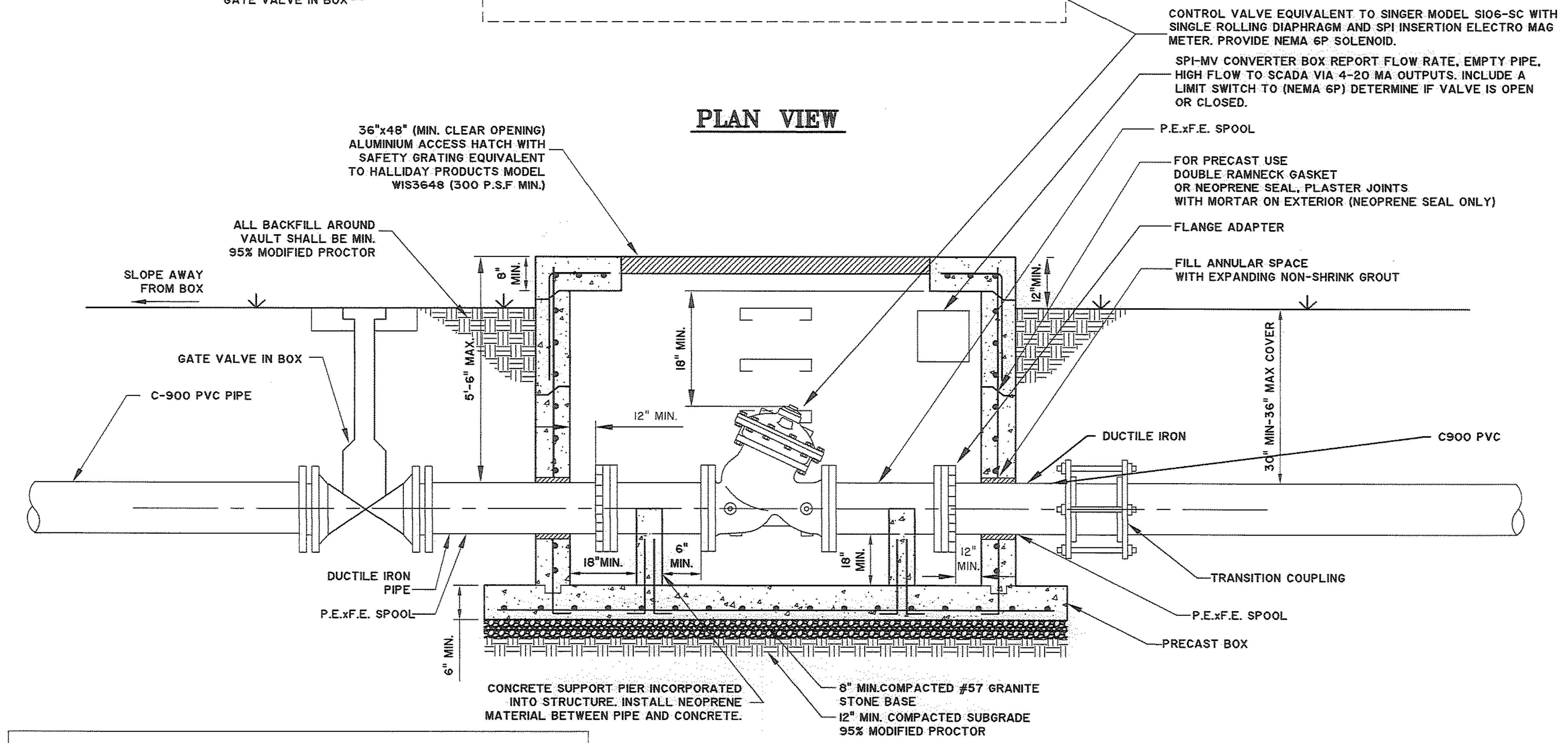
JOB NO: J-25328.0000
DATE: 7/31/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: AS NOTED

09-C-03

Z:\25328\25328.0000\Engineering\Drawings\Construction Plans\25328.0000-LAS-DT & Sections-SHEETS 03-04.dwg - Sep 2, 2015 - 8:41:55 AM


FLANGED ADAPTER
DUCTILE IRON PIPE
P.E.xFL SPOOL
C-900 PVC PIPE
COAT INTERIOR OF THE STRUCTURE WITH FLEXIBLE CONCRETE WATER PROOFER AS MANUFACTURED BY SHERMAN WILLIAMS (SHER-CRETE), TNEMEC PRECAST SERIES OR EQUIVALENT. PROVIDE MANUFACTURERS RECOMMENDED PRODUCT AND FOLLOW THEIR APPLICATION PROCEDURES.
DUCTILE IRON PIPE
C-900 PVC PIPE
2' MIN.
2' MIN.
2' MIN.
1' MIN.
TRANSITION COUPLING
GATE VALVE IN BOX

PLAN VIEW


CONTROL VALVE EQUIVALENT TO SINGER MODEL S106-SC WITH SINGLE ROLLING DIAPHRAGM AND SPI INSERTION ELECTRO MAG METER. PROVIDE NEMA 6P SOLENOID.
SPI-MV CONVERTER BOX REPORT FLOW RATE, EMPTY PIPE, HIGH FLOW TO SCADA VIA 4-20 MA OUTPUTS. INCLUDE A LIMIT SWITCH TO (NEMA 6P) DETERMINE IF VALVE IS OPEN OR CLOSED.
36"x48" (MIN. CLEAR OPENING) ALUMINIUM ACCESS HATCH WITH SAFETY GRATING EQUIVALENT TO HALLIDAY PRODUCTS MODEL WIS3648 (300 P.S.F MIN.)
P.E.xF.E. SPOOL
FOR PRECAST USE DOUBLE RAMNECK GASKET OR NEOPRENE SEAL, PLASTER JOINTS WITH MORTAR ON EXTERIOR (NEOPRENE SEAL ONLY)
ALL BACKFILL AROUND VAULT SHALL BE MIN. 95% MODIFIED PROCTOR
FLANGE ADAPTER
SLOPE AWAY FROM BOX
8" MIN.
12"MIN.
FILL ANNULAR SPACE WITH EXPANDING NON-SHRINK GROUT
GATE VALVE IN BOX
18" MIN.
5'-6" MAX.
30" MIN-36" MAX COVER
C-900 PVC PIPE
12" MIN.
DUCTILE IRON
C900 PVC
18"MIN.
6" MIN.
18" MIN.
12" MIN.
DUCTILE IRON PIPE
TRANSITION COUPLING
P.E.xF.E. SPOOL
P.E.xF.E. SPOOL
PRECAST BOX
6" MIN.
CONCRETE SUPPORT PIER INCORPORATED INTO STRUCTURE. INSTALL NEOPRENE MATERIAL BETWEEN PIPE AND CONCRETE.
8" MIN.COMPACTED #57 GRANITE STONE BASE
12" MIN. COMPACTED SUBGRADE 95% MODIFIED PROCTOR

ELEVATION

NOTE:

LAS SYSTEM SUPPLIER SHALL PROVIDE SHOP DRAWINGS CONTAINING AT LEAST:
1. SYSTEM LAYOUT
2. PRODUCTS
3. IRRIGATION SPRAY COVERAGE
4. FLOW, HEAD LOSS, AND PRESSURE CALCULATIONS

LAS CONTROL VALVE ASSEMBLY

SCALE: NTS

STRUCTURE NOTES:

1.00 PRECAST CONCRETE

1.01 PRECAST CONCRETE DESIGN, MANUFACTURE AND ERECTION SHALL CONFORM TO THE FOLLOWING:
- A. ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", LATEST EDITION.
- B. PCI MNL-117 "MANUAL FOR QUALITY CONTROL FOR PLANTS AND PRODUCTION OF PRECAST CONCRETE PRODUCTS", LATEST EDITION.
- C. PCI DESIGN HANDBOOK, LATEST EDITION.

1.02 PRE-CAST CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.

1.03 REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60 UNLESS NOTED OTHERWISE.

1.04 PRECAST MANUFACTURER IS RESPONSIBLE FOR THE STRUCTURAL DESIGN OF PRECAST ELEMENTS AND THEIR CONNECTIONS. DESIGN SHALL BE PERFORMED BY A STRUCTURAL ENGINEER REGISTERED IN THE PROJECT STATE. SHOP DRAWINGS AND CALCULATIONS SEALED BY THE ENGINEER SHALL BE SUBMITTED. REVIEW OF CALCULATIONS AND SHOP DRAWINGS SHALL BE FOR GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS AND SHALL NOT RELIEVE CONTRACTOR AND ITS ENGINEER OF THE FULL RESPONSIBILITY FOR DESIGN OF PRECAST AND CONNECTIONS. DO NOT BEGIN FABRICATION UNTIL SHOP DRAWINGS ARE COMPLETED AND REVIEWED.

1.05 DESIGN OF PRECAST MEMBERS AND CONNECTIONS SHALL INCLUDE BUT NOT LIMITED TO THE FOLLOWING:
DEAD LOAD = ACTUAL WEIGHT OF STRUCTURE + EQUIPMENT
LIVE LOAD = 300 PSF MIN.
WIND LOAD = NOT APPLICABLE
LATERAL EARTH PRESSURE = 200 PSF MIN.
SIESMIC LOADS = 0.086 * W (DETERMINE "W" IN ACCORDANCE WITH ASCE 7-10)

1.06 UNLESS NOTED OTHERWISE ALL EXPOSED STEEL ANCHORS AND PLATES SHALL BE 316 STAINLESS STEEL.

1.07 REPRODUCED COPIES OF ASTM C1433 "STANDARD SPECIFICATION FOR PRECAST REINFORCED CONCRETE MONOLITHIC BOX SECTIONS FOR CULVERTS, STORM DRAINS AND SEWERS" WILL NOT BE ACCEPTED AS A SUBSTITUTE.

1.08 DURING HANDLING, STORAGE, AND TRANSPORTING, LIFT AND SUPPORT MEMBERS ONLY AT THE LIFTING AND SUPPORT POINTS SHOWN ON THE SHOP DRAWINGS. USE PROPER EQUIPMENT AND METHODS OF BRACING DURING TRANSPORTATION TO INSURE MEMBERS WILL ARRIVE AT THE JOB SITE UNDAMAGED. PROVIDE PADDING TO PREVENT CHIPPING OF THE CONCRETE.

1.09 IF CAST-IN LIFTING LOOPS OR INSERTS ARE USED, CUT OFF LOOPS OR INSERTS A MINIMUM OF 1/2" BELOW SURFACE AND FILL RECESS WITH AN EPOXY GROUT ACCEPTED BY THE ENGINEER.

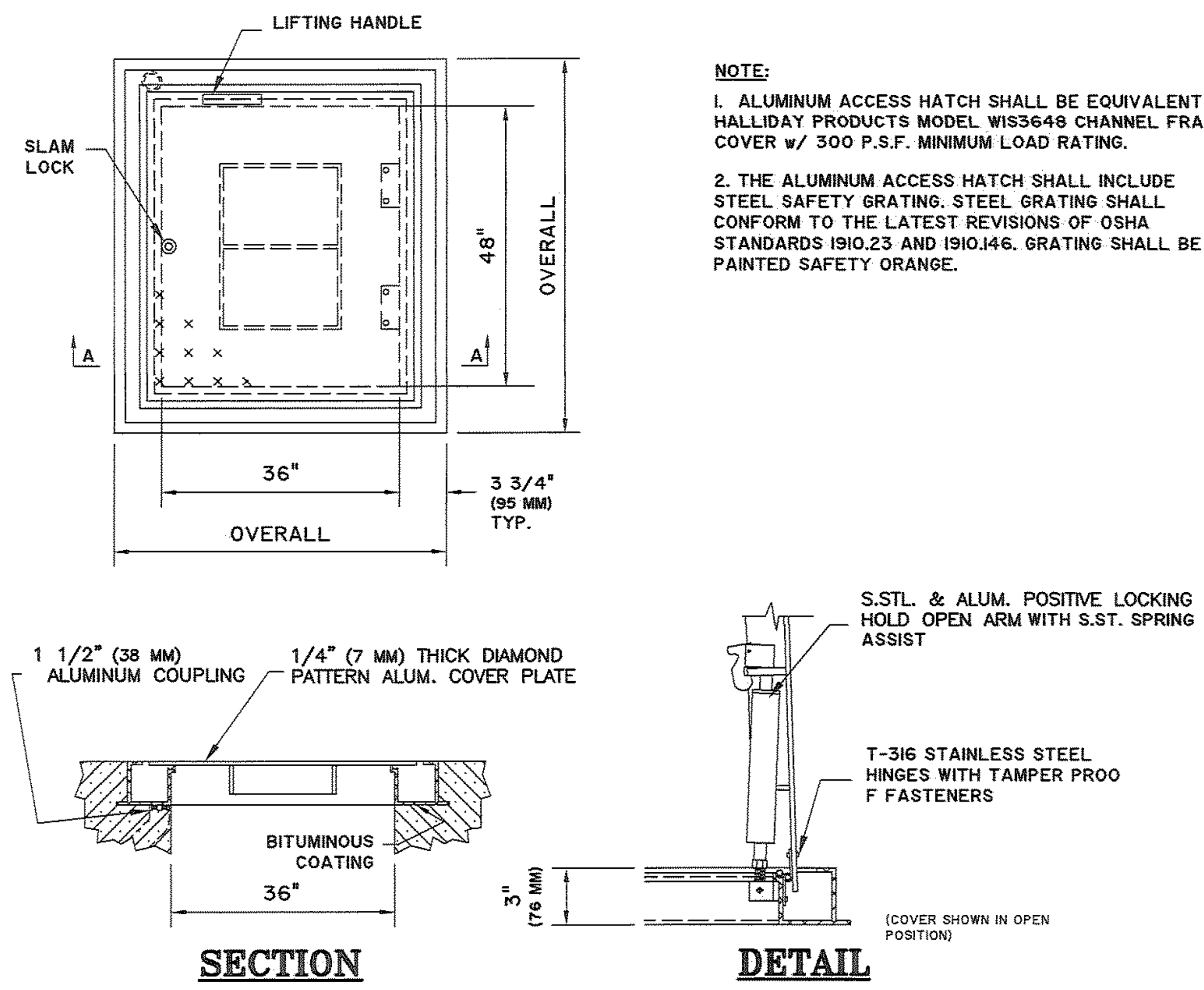
2.00 STRUCTURAL FILL AND COMPACTION

2.01 THE SOILS TO BE USED AS STRUCTURAL FILL SHALL BE FREE OF ORGANICS, ROOTS, OR OTHER DELETERIOUS MATERIALS. IT SHALL BE NON-PLASTIC GRANULAR MATERIAL CONTAINING LESS THAN 25 PERCENT FINES PASSING THE NO. 200 SIEVE.

2.02 ALL STRUCTURAL FILLS SHALL BE PLACED IN THIN (EIGHT TO TEN INCHES LOOSE) LIFTS AND COMPACTED TO A MINIMUM OF 95% OF THE SOIL'S MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D-1557).

2.03 FILL BROUGHT TO THE SITE SHALL BE WITHIN THREE PERCENT (WET OR DRY) OF THE OPTIMUM MOISTURE CONTENT. SOME MANIPULATION OF THE MOISTURE CONTENT (SUCH AS WETTING, DRYING) WILL BE REQUIRED DURING THE FILLING OPERATION TO OBTAIN THE REQUIRED DEGREE OF COMPACTION.

2.04 CONTRACTOR SHALL PROVIDE COMPACTION TEST RESULTS FOR ALL FILL MATERIAL WITHIN AREA OF THE STRUCTURE. A MINIMUM OF ONE (1) TEST SHALL BE PERFORMED AND RESULTS SUBMITTED TO ENGINEER PRIOR TO ACCEPTANCE OF THE STRUCTURE.


LIFTING HANDLE
SLAM LOCK
A
A
48"
OVERALL
36"
OVERALL
3 3/4" (95 MM) TYP.
1 1/2" (38 MM) ALUMINUM COUPLING
1/4" (7 MM) THICK DIAMOND PATTERN ALUM. COVER PLATE
BITUMINOUS COATING
36"
S.STL. & ALUM. POSITIVE LOCKING HOLD OPEN ARM WITH S.ST. SPRING ASSIST
T-316 STAINLESS STEEL HINGES WITH TAMPER PROOF FASTENERS
3" (76 MM)
(COVER SHOWN IN OPEN POSITION)

SECTION A-A

DETAIL

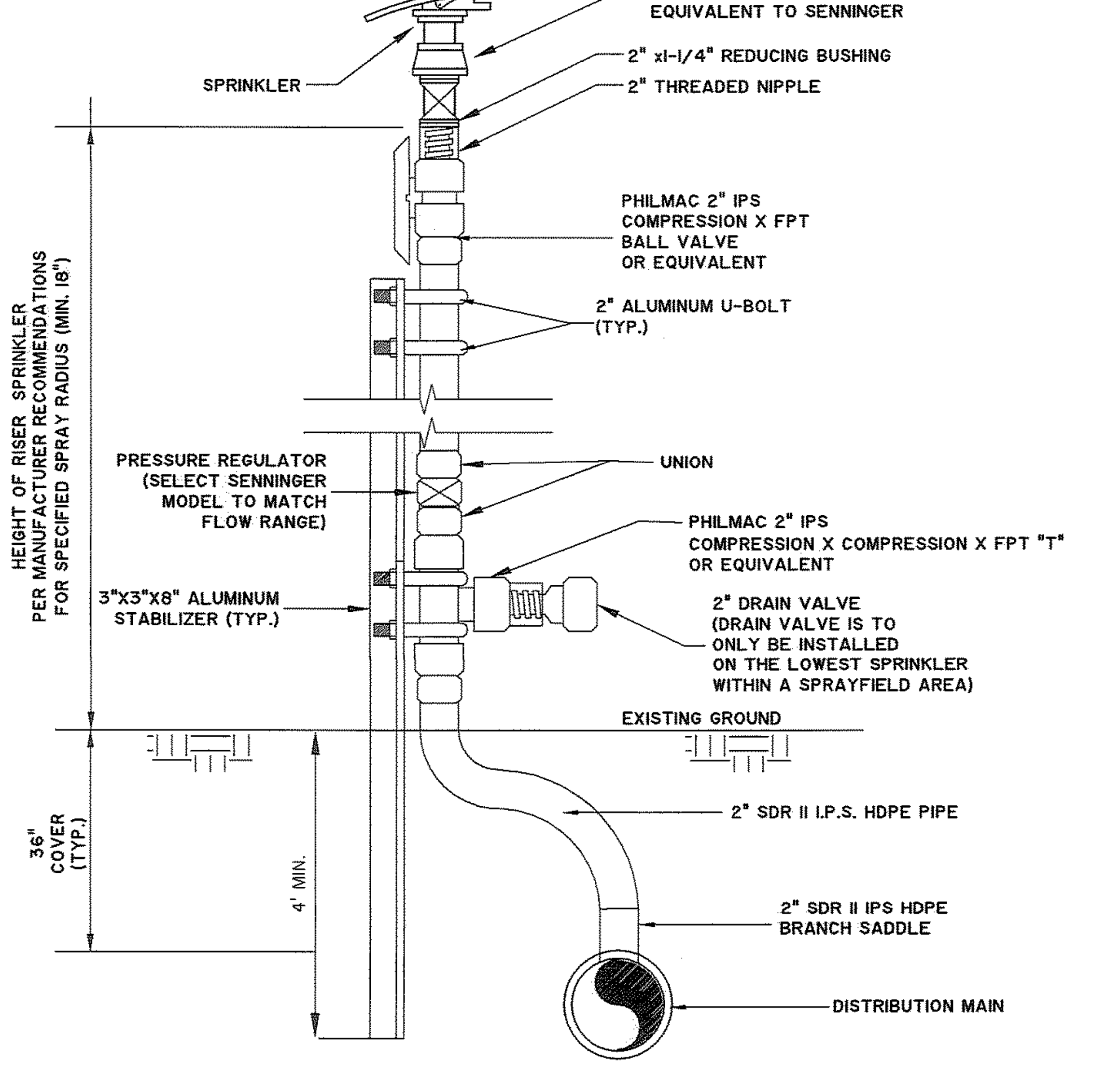
NOTE:

1. ALUMINUM ACCESS HATCH SHALL BE EQUIVALENT TO HALLIDAY PRODUCTS MODEL WIS3648 CHANNEL FRAME COVER w/ 300 P.S.F. MINIMUM LOAD RATING.

2. THE ALUMINUM ACCESS HATCH SHALL INCLUDE STEEL SAFETY GRATING. STEEL GRATING SHALL CONFORM TO THE LATEST REVISIONS OF OSHA STANDARDS 1910.23 AND 1910.146. GRATING SHALL BE PAINTED SAFETY ORANGE.

ACCESS DOOR DETAIL

SCALE: NONE


SPRINKLER EQUIVALENT TO SENNINGER
SPRINKLER
2" x1-1/4" REDUCING BUSHING
2" THREADED NIPPLE
PHILMAC 2" IPS COMPRESSION X FPT BALL VALVE OR EQUIVALENT
2" ALUMINUM U-BOLT (TYP.)
HEIGHT OF RISER SPRINKLER PER MANUFACTURER RECOMMENDATIONS FOR SPECIFIED SPRAY RADIUS (MIN. 18")
PRESSURE REGULATOR (SELECT SENNINGER MODEL TO MATCH FLOW RANGE)
UNION
PHILMAC 2" IPS COMPRESSION X COMPRESSION X FPT "T" OR EQUIVALENT
3"X3"X8" ALUMINUM STABILIZER (TYP.)
2" DRAIN VALVE (DRAIN VALVE IS TO ONLY BE INSTALLED ON THE LOWEST SPRINKLER WITHIN A SPRAYFIELD AREA)
EXISTING GROUND
36" COVER (TYP.)
4' MIN.
2" SDR 11 I.P.S. HDPE PIPE
2" SDR 11 IPS HDPE BRANCH SADDLE
DISTRIBUTION MAIN

SPRAY RISER DETAIL w/ DRAIN

SCALE: NONE

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE No. 13293

12-2-15

NO.	REVISIONS	BY	DATE

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CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

DETAILS AND SECTIONS

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DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

09-C-04

ZONE 1.01

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	292,976.05	2,268,902.09	5023-2, 18X8
2	293,020.14	2,268,865.18	5023-2, 18X8
3	293,067.77	2,268,825.31	5023-2, 18X8
4	293,115.41	2,268,785.43	5023-2, 18X8
5	293,210.69	2,268,705.67	5023-2, 18X8
6	293,210.69	2,268,705.67	5023-2, 18X8
7	293,258.33	2,268,665.79	5023-2, 18X8
8	293,305.97	2,268,625.91	5023-2, 18X8
9	293,353.61	2,268,586.03	5023-2, 18X8
10	293,401.25	2,268,546.15	5023-2, 18X8
11	293,448.90	2,268,506.27	5023-2, 18X8
12	293,496.54	2,268,466.39	5023-2, 18X8
13	293,544.18	2,268,426.51	5023-2, 18X8
14	293,591.82	2,268,386.62	5023-2, 18X8
15	293,639.46	2,268,346.74	5023-2, 18X8
16	293,687.10	2,268,306.86	5023-2, 18X8
17	293,734.74	2,268,266.98	5023-2, 18X8
18	293,782.38	2,268,227.10	5023-2, 18X8

ZONE 1.02

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	292,931.48	2,268,763.21	5023-2, 17X8
2	292,982.19	2,268,721.75	5023-2, 17X8
3	293,019.68	2,268,690.31	5023-2, 17X8
4	293,057.16	2,268,658.87	5023-2, 17X8
5	293,094.65	2,268,627.43	5023-2, 17X8
6	293,132.14	2,268,595.99	5023-2, 17X8
7	293,169.63	2,268,564.54	5023-2, 17X8
8	293,207.12	2,268,533.10	5023-2, 17X8
9	293,247.54	2,268,499.20	5023-2, 17X8
10	293,287.97	2,268,465.29	5023-2, 17X8
11	293,328.00	2,268,430.92	5023-2, 17X8
12	293,368.46	2,268,397.06	5023-2, 17X8
13	293,408.93	2,268,363.21	5023-2, 17X8
14	293,449.39	2,268,329.35	5023-2, 17X8
15	293,489.85	2,268,295.49	5023-2, 17X8
16	293,530.32	2,268,261.63	5023-2, 17X8
17	293,570.78	2,268,227.78	5023-2, 17X8
18	293,611.24	2,268,193.92	5023-2, 17X8
19	293,651.71	2,268,160.06	5023-2, 17X8
20	293,692.17	2,268,126.20	5023-2, 17X8
21	293,732.63	2,268,092.35	5023-2, 17X8
22	293,774.77	2,268,057.00	5023-2, 17X8

ZONE 1.03

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	292,848.77	2,268,657.87	5023-2, 17X8
2	292,889.82	2,268,625.54	5023-2, 17X8
3	292,929.75	2,268,591.85	5023-2, 17X8
4	292,969.69	2,268,558.16	5023-2, 17X8
5	293,009.63	2,268,524.47	5023-2, 17X8
6	293,049.56	2,268,490.78	5023-2, 17X8
7	293,089.50	2,268,457.09	5023-2, 17X8
8	293,129.44	2,268,423.39	5023-2, 17X8
9	293,169.37	2,268,389.70	5023-2, 17X8
10	293,209.31	2,268,356.01	5023-2, 17X8
11	293,249.25	2,268,322.32	5023-2, 17X8
12	293,289.18	2,268,288.63	5023-2, 17X8
13	293,329.12	2,268,254.94	5023-2, 17X8
14	293,369.06	2,268,221.24	5023-2, 17X8
15	293,408.99	2,268,187.55	5023-2, 17X8
16	293,448.93	2,268,153.86	5023-2, 17X8
17	293,488.87	2,268,120.17	5023-2, 17X8
18	293,528.80	2,268,086.48	5023-2, 17X8
19	293,568.74	2,268,052.79	5023-2, 17X8
20	293,608.74	2,268,019.16	5023-2, 17X8
21	293,648.67	2,267,985.47	5023-2, 17X8
22	293,692.78	2,267,948.39	5023-2, 17X8

ZONE 1.04

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	292,768.03	2,268,546.55	5023-2, 18X8
2	292,817.82	2,268,504.77	5023-2, 18X8
3	292,867.61	2,268,462.98	5023-2, 18X8
4	292,917.39	2,268,421.19	5023-2, 18X8
5	292,966.64	2,268,378.76	5023-2, 18X8
6	293,016.29	2,268,336.82	5023-2, 18X8
7	293,066.75	2,268,295.82	5023-2, 18X8
8	293,116.54	2,268,254.03	5023-2, 18X8
9	293,166.32	2,268,212.24	5023-2, 18X8
10	293,214.91	2,268,169.03	5023-2, 18X8
11	293,265.90	2,268,128.66	5023-2, 18X8
12	293,315.68	2,268,086.87	5023-2, 18X8
13	293,365.32	2,268,044.92	5023-2, 18X8
14	293,415.04	2,268,003.30	5023-2, 18X8
15	293,465.04	2,267,961.51	5023-2, 18X8
16	293,514.83	2,267,919.72	5023-2, 18X8
17	293,564.62	2,267,877.93	5023-2, 18X8
18	293,606.15	2,267,842.77	5023-2, 18X8

NOTE:
SEE SHEET 09-C-06
FOR DESIGN TABLE
OF SPRINKLER HEADS.

ZONE 1.05

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	292,681.73	2,268,436.17	5023-2, 17X8
2	292,722.72	2,268,401.58	5023-2, 17X8
3	292,763.80	2,268,367.24	5023-2, 17X8
4	292,804.88	2,268,332.91	5023-2, 17X8
5	292,845.96	2,268,298.57	5023-2, 17X8
6	292,887.04	2,268,264.24	5023-2, 17X8
7	292,928.13	2,268,229.90	5023-2, 17X8
8	292,969.21	2,268,195.57	5023-2, 17X8
9	293,010.29	2,268,161.23	5023-2, 17X8
10	293,051.37	2,268,126.90	5023-2, 17X8
11	293,092.45	2,268,092.56	5023-2, 17X8
12	293,133.53	2,268,058.23	5023-2, 17X8
13	293,174.61	2,268,023.89	5023-2, 17X8
14	293,215.69	2,267,989.56	5023-2, 17X8
15	293,256.77	2,267,955.22	5023-2, 17X8
16	293,297.85	2,267,886.55	5023-2, 17X8
17	293,338.93	2,267,886.55	5023-2, 17X8
18	293,380.01	2,267,852.22	5023-2, 17X8
19	293,421.10	2,267,817.88	5023-2, 17X8
20	293,462.18	2,267,783.55	5023-2, 17X8

ZONE 1.06

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	292,599.99	2,268,325.71	5023-2, 17X8
2	292,643.56	2,268,288.68	5023-2, 17X8
3	292,688.09	2,268,251.63	5023-2, 17X8
4	292,732.61	2,268,214.59	5023-2, 17X8
5	292,777.13	2,268,177.54	5023-2, 17X8
6	292,821.65	2,268,140.49	5023-2, 17X8
7	292,866.17	2,268,103.45	5023-2, 17X8
8	292,910.70	2,268,066.40	5023-2, 17X8
9	292,955.22	2,268,029.35	5023-2, 17X8
10	292,999.74	2,267,992.31	5023-2, 17X8
11	293,044.26	2,267,955.26	5023-2, 17X8
12	293,088.79	2,267,918.21	5023-2, 17X8
13	293,133.31	2,267,881.16	5023-2, 17X8
14	293,177.83	2,267,844.12	5023-2, 17X8
15	293,223.28	2,267,807.07	5023-2, 17X8
16	293,267.80	2,267,770.02	5023-2, 17X8
17	293,312.32	2,267,732.98	5023-2, 17X8
18	293,356.85	2,267,695.93	5023-2, 17X8
19	293,400.55	2,267,659.56	5023-2, 17X8

ZONE 1.07

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	292,509.16	2,268,223.03	5023-2, 16X8
2	292,545.96	2,268,192.83	5023-2, 16X8
3	292,580.97	2,268,163.37	5023-2, 16X8
4	292,616.60	2,268,133.90	5023-2, 16X8
5	292,651.92	2,268,104.43	5023-2, 16X8
6	292,687.55	2,268,074.96	5023-2, 16X8
7	292,722.87	2,268,045.50	5023-2, 16X8
8	292,758.51	2,268,016.03	5023-2, 16X8
9	292,797.14	2,267,986.56	5023-2, 16X8
10	292,829.78	2,267,957.09	5023-2, 16X8
11	292,865.41	2,267,927.63	5023-2, 16X8
12	292,901.04	2,267,898.16	5023-2, 16X8
13	292,936.68	2,267,868.69	5023-2, 16X8
14	292,972.31	2,267,839.22	5023-2, 16X8
15	293,007.95	2,267,809.76	5023-2, 16X8
16	293,043.27	2,267,780.29	5023-2, 16X8
17	293,078.59	2,267,750.82	5023-2, 16X8
18	293,114.22	2,267,721.36	5023-2, 16X8
19	293,149.85	2,267,691.89	5023-2, 16X8
20	293,185.49	2,267,662.42	5023-2, 16X8
21	293,221.12	2,267,632.95	5023-2, 16X8
22	293,257.07	2,267,603.49	5023-2, 16X8
23	293,297.39	2,267,569.81	5023-2, 16X8

ZONE 1.08

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	292,443.47	2,268,105.47	5023-2, 16X8
2	292,480.37	2,268,075.32	5023-2, 16X8
3	292,517.15	2,268,044.93	5023-2, 16X8
4	292,553.93	2,268,014.54	5023-2, 16X8
5	292,590.70	2,267,984.14	5023-2, 16X8
6	292,627.48	2,267,953.75	5023-2, 16X8
7	292,664.26	2,267,923.36	5023-2, 16X8
8	292,701.04	2,267,892.97	5023-2, 16X8
9	292,737.81	2,267,862.57	5023-2, 16X8
10	292,774.59	2,267,832.18	5023-2, 16X8
11	292,811.37	2,267,801.79	5023-2, 16X8
12	292,848.15	226,771.40	5023-2, 16X8
13	292,884.93	2,267,741.00	5023-2, 16X8
14	292,921.70	2,267,710.61	5023-2, 16X8
15	292,958.48	2,267,680.22	5023-2, 16X8
16	292,995.26	2,267,649.83	5023-2, 16X8
17	293,032.04	2,267,619.44	5023-2, 16X8
18	293,068.82	2,267,589.04	5023-2, 16X8
19	293,105.42	2,267,558.45	5023-2, 16X8
20	293,142.20	2,267,528.05	5023-2, 16X8

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE
9-10-15

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

INDIVIDUAL SPRINKLER COORDINATES AND NOZZLE SIZE

JOB NO: J-25328.0000
DATE: 7/31/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: NOT TO SCALE

09-C-05

ZONE 1.09

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	292,366.95	2,268,000.11	5023-2, 16X8
2	292,416.91	2,267,958.83	5023-2, 16X8
3	292,466.63	2,267,917.13	5023-2, 16X8
4	292,511.56	2,267,879.74	5023-2, 16X8
5	292,566.55	2,267,833.96	5023-2, 16X8
6	292,616.47	2,267,792.33	5023-2, 16X8
7	292,666.61	2,267,750.50	5023-2, 16X8
8	292,715.89	2,267,709.39	5023-2, 16X8
9	292,766.53	2,267,667.15	5023-2, 16X8
10	292,816.49	2,267,626.22	5023-2, 16X8
11	292,866.03	2,267,587.14	5023-2, 16X8
12	292,915.95	2,267,542.51	5023-2, 16X8
13	292,966.37	2,267,501.48	5023-2, 16X8
14	293,027.19	2,267,450.57	5023-2, 16X8

ZONE 1.09

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
15	292,344.28	2,267,967.61	5023-2, 16X8
16	292,394.24	2,267,926.03	5023-2, 16X8
17	292,443.93	2,267,884.58	5023-2, 16X8
18	292,488.76	2,267,847.09	5023-2, 16X8
19	292,543.75	2,267,801.31	5023-2, 16X8
20	292,593.67	2,267,759.67	5023-2, 16X8
21	292,643.81	2,267,717.84	5023-2, 16X8
22	292,693.09	2,267,676.73	5023-2, 16X8
23	292,743.73	2,267,634.49	5023-2, 16X8
24	292,793.69	2,267,593.56	5023-2, 16X8
25	292,843.23	2,267,551.48	5023-2, 16X8
26	292,893.14	2,267,509.83	5023-2, 16X8
27	292,943.05	2,267,468.20	5023-2, 16X8
28	292,992.97	2,267,426.57	5023-2, 16X8

ZONE 1.10

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	292,228.63	2,267,892.97	4012-1, 13/64
2	292,253.14	2,267,872.40	4012-1, 13/64
3	292,277.70	2,267,851.88	4012-1, 13/64
4	292,302.25	2,267,831.36	4012-1, 13/64
5	292,326.81	2,267,810.85	4012-1, 13/64
6	292,351.37	2,267,790.33	4012-1, 13/64
7	292,375.93	2,267,769.82	4012-1, 13/64
8	292,400.49	2,267,749.30	4012-1, 13/64
9	292,425.04	2,267,728.78	4012-1, 13/64
10	292,449.00	2,267,708.77	4012-1, 13/64
11	292,473.55	2,267,688.26	4012-1, 13/64
12	292,499.77	2,267,666.36	4012-1, 13/64
13	292,524.98	2,267,645.29	4012-1, 13/64
14	292,549.54	2,267,624.78	4012-1, 13/64
15	292,571.79	2,267,606.19	4012-1, 13/64
16	292,596.34	2,267,585.68	4012-1, 13/64
17	292,620.90	2,267,565.16	4012-1, 13/64
18	292,645.46	2,267,544.64	4012-1, 13/64
19	292,670.02	2,267,524.13	4012-1, 13/64
20	292,694.57	2,267,503.61	4012-1, 13/64
21	292,719.13	2,267,483.10	4012-1, 13/64
22	292,743.69	2,267,462.58	4012-1, 13/64
23	292,768.25	2,267,442.06	4012-1, 13/64
24	292,792.80	2,267,421.55	4012-1, 13/64
25	292,817.67	2,267,401.03	4012-1, 13/64
26	292,841.67	2,267,380.22	4012-1, 13/64
27	292,866.48	2,267,360.00	4012-1, 13/64
28	292,891.03	2,267,339.48	4012-1, 13/64
29	292,927.88	2,267,308.71	4012-1, 13/64

ZONE 1.11 A

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	293,197.49	2,268,886.75	5023-2, 16X8
21	293,236.74	2,268,854.18	5023-2, 16X8
3	293,275.97	2,268,821.60	5023-2, 16X8
4	293,315.24	2,268,789.06	5023-2, 16X8
5	293,354.49	2,268,756.49	5023-2, 16X8
6	293,393.74	2,268,723.93	5023-2, 16X8
7	293,432.99	2,268,691.36	5023-2, 16X8
8	293,472.24	2,268,658.80	5023-2, 16X8
9	293,511.49	2,268,626.23	5023-2, 16X8
10	293,550.75	2,268,593.67	5023-2, 16X8
11	293,590.00	226,856.11	5023-2, 16X8
12	293,629.25	2,268,528.54	5023-2, 16X8
13	293,668.50	2,268,495.98	5023-2, 16X8
14	293,707.75	2,268,463.41	5023-2, 16X8
15	293,747.00	2,268,430.85	5023-2, 16X8
16	293,784.47	2,268,399.76	5023-2, 16X8
17	293,837.07	2,268,356.12	5023-2, 16X8

ZONE 1.11 B

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	293,160.42	2,268,917.20	4012-1, 7/32

ZONE 1.11 C

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	293,120.67	2,268,941.81	4012-1, 5/32

ZONE 1.12

STRUCTURE TABLE

STRUCTURE	NORTHING	EASTING	NOZZLE SIZE
1	293,356.00	2,268,930.53	5023-2, 17X8
2	293,452.52	2,268,849.36	5023-2, 17X8
3	293,493.14	2,268,816.07	5023-2, 17X8
4	293,533.60	2,268,782.51	5023-2, 17X8
5	293,574.05	2,268,748.95	5023-2, 17X8
6	293,614.50	2,268,715.39	5023-2, 17X8
7	293,654.95	2,268,681.83	5023-2, 17X8
8	293,695.40	2,268,648.27	5023-2, 17X8
9	293,735.56	2,268,614.72	5023-2, 17X8
10	293,776.31	2,268,581.16	5023-2, 17X8

Kiawah River Plantation
Phase 1 LAS Design

Zone	Area (ac)	Impact 50 Series	Flow/head (gpm)	Diam. (ft)	Press. (psi)	Spacing (ft)	Equivalent # Heads	Actual # Heads	Frequency (min)	Capacity (gpd)
1.01	3.00	5023-2, 18x8	19.3	115	60	60	17.5	18.0	68.84	23,250.00
1.02	2.89	5023-2, 17x8	15.3	110	45	50	21.5	22.0	68.09	22,397.50
1.03	3.00	5023-2, 17x8	15.3	110	45	52	21.5	22.0	70.68	23,250.00
1.04	3.06	5023-2, 18x8	19.3	115	60	65	17.5	18.0	70.21	23,715.00
1.05	2.82	5023-2, 17x8	15.3	110	45	52	20.0	20.0	71.42	21,855.00
1.06	2.86	5023-2, 17x8	16.9	112	55	58	18.5	19.0	70.89	22,165.00
1.07	2.57	5023-2, 16x8	12.4	102	35	45	22.5	23.0	71.39	19,917.50
1.08	2.62	5023-2, 16x8	14.1	108	45	48	20.0	20.0	72.00	20,305.00
1.09	3.12	5023-2, 16x8	12.4	102	35	58	28.0	28.0	69.64	24,180.00
1.10	1.69	4012-1, 13/64	6.5	80	30	32	28.0	29.0	71.96	13,097.50
1.11A	1.90	5023-2, 16x8	12.4	102	35	50	16.5	17.0	71.97	14,725.00
1.11B	0.15	4012-1, 7/32	9.66	96	50	0	1.0	1.0	72.00	695.52
1.11C	0.12	4012-1, 5/32	4.41	80	40	0	1.0	1.0	72.00	317.52
1.12	1.33	5023-2, 17x8	15.3	110	45	52	9.5	10.0	70.92	10,307.50

Notes:

1 Model number refers to sprinkler head manufactured by Sennniger or approved equal.
2 "Frequency" is the allowable run time per zone per day which provides a minimum spray : rest ratio of 1:20
3 "Capacity" of each zone is calculated based upon 2"/acre/week (7,750 gpd/acre) with all heads running allowable run time
4 Diameter of spray head coverage area is based upon a 1.5 foot mounting height above ground surface
5 Provide purple or lavender caps to denote non-potable or treated effluent water.

No. C00285

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
INDIVIDUAL SPRINKLER COORDINATES AND NOZZLE SIZE

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: DNF
DESIGNED: KEN
REVIEWED: MFY
APPROVED: MFY
SCALE: NOT TO SCALE

09-C-06

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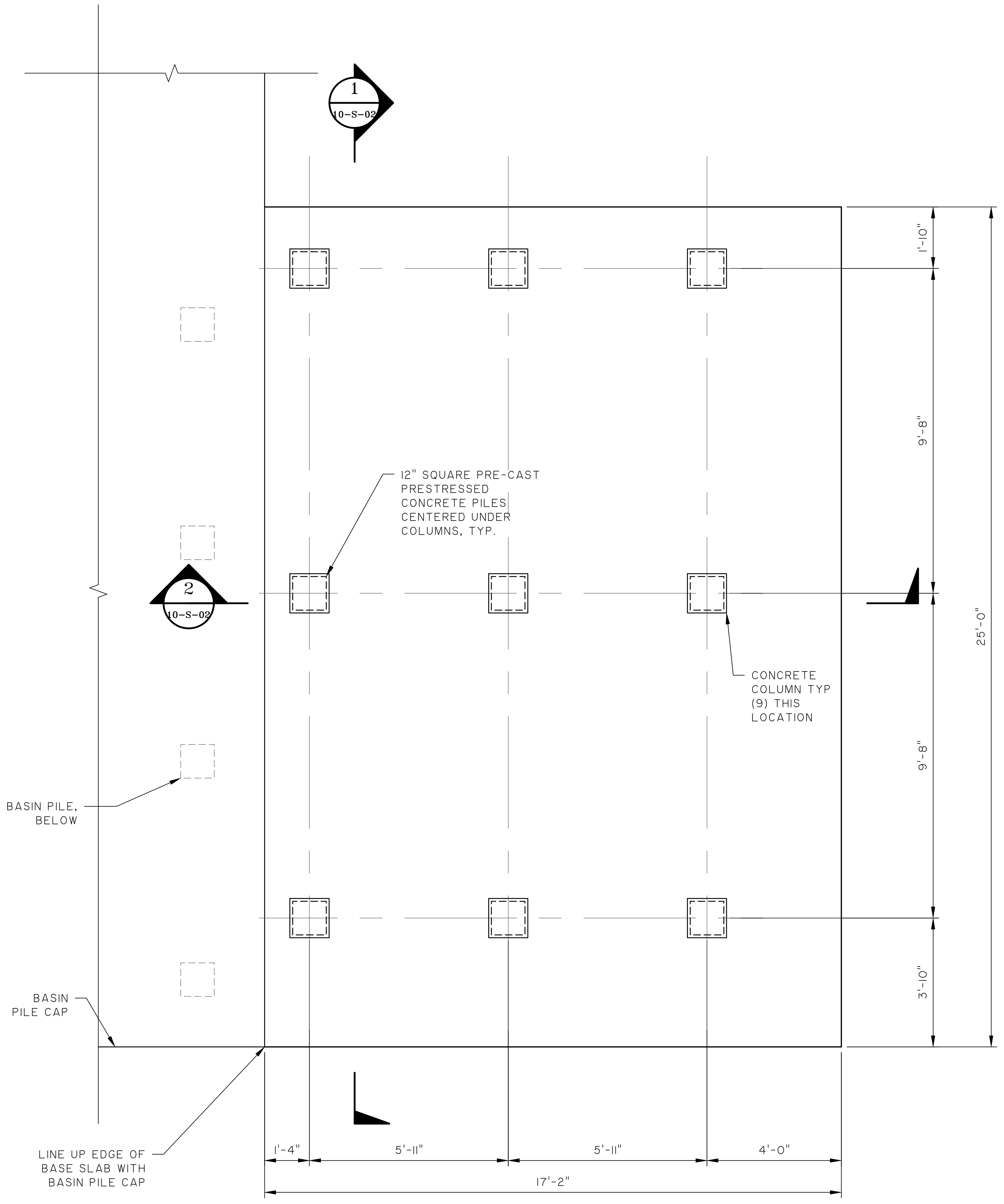

1
10-S-02
2
10-S-02
1'-10"
9'-8"
9'-8"
3'-10"
25'-0"
12" SQUARE PRE-CAST PRESTRESSED CONCRETE PILES CENTERED UNDER COLUMNS, TYP.
CONCRETE COLUMN TYP (9) THIS LOCATION
BASIN PILE, BELOW
BASIN PILE CAP
LINE UP EDGE OF BASE SLAB WITH BASIN PILE CAP
1'-4"
5'-11"
5'-11"
4'-0"
17'-2"

PRIMARY SCREEN FOUNDATION PLAN

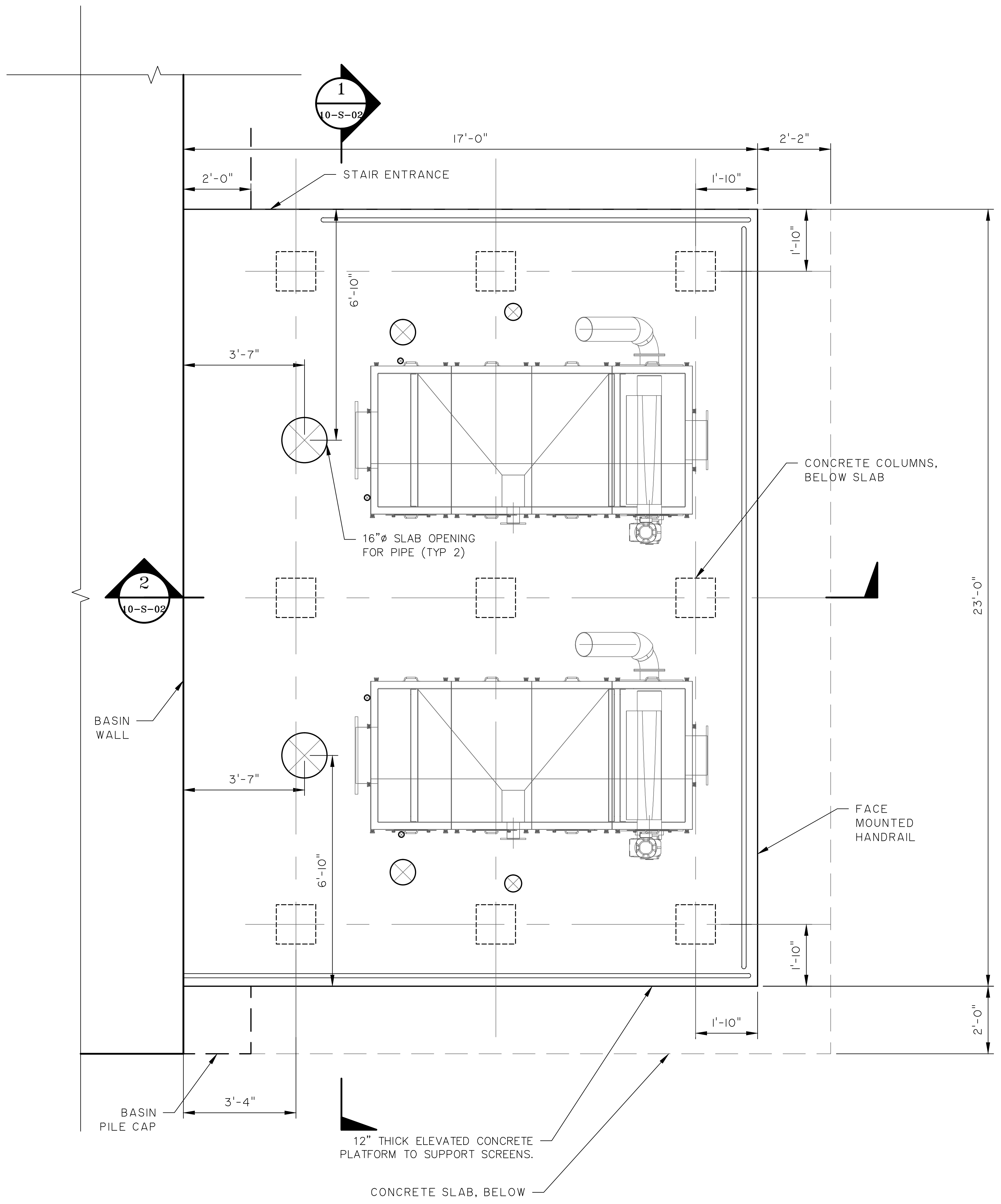
1
10-S-01

3/8" = 1'-0"

FIN. FLR. ELEV. = 14.0'

NOTES:

1. SEE 35-S-01 FOR PILE LENGTH.



PRIMARY SCREEN ELEVATED SLAB PLAN

2
10-S-01

3/8" = 1'-0"

NOTES:

1. EQUIPMENT ANCHORAGE REQUIREMENTS SHALL BE COORDINATED WITH MANUFACTURER PRIOR TO CONSTRUCTION TO ENSURE ADEQUATE AND ACCURATE ANCHORAGE ELEMENTS ARE CAST INTO THE CONCRETE SLAB.
2. OPENING SIZES AND LOCATIONS ARE APPROXIMATE AND SHALL BE VERIFIED AND CONFIRMED BY MANUFACTURER PRIOR TO CONSTRUCTION.
3. TOP OF SLAB ELEVATION SHALL MATCH THAT OF ADJACENT BASIN TOP OF WALL ELEVATION.

THOMAS & HUTTON ENGINEERING CO. No. C00285

JENNIFER A. HAYES No. 24727

2.1.16

NO.	REVISIONS	BY	DATE

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Engineering | Surveying | Planning | GIS | Consulting
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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
PRIMARY SCREEN STRUCTURAL PLANS

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	JAH/SHG
DESIGNED:	JAH/SHG
REVIEWED:	JAH/SHG
APPROVED:	MFY
SCALE:	AS NOTED

10-S-01

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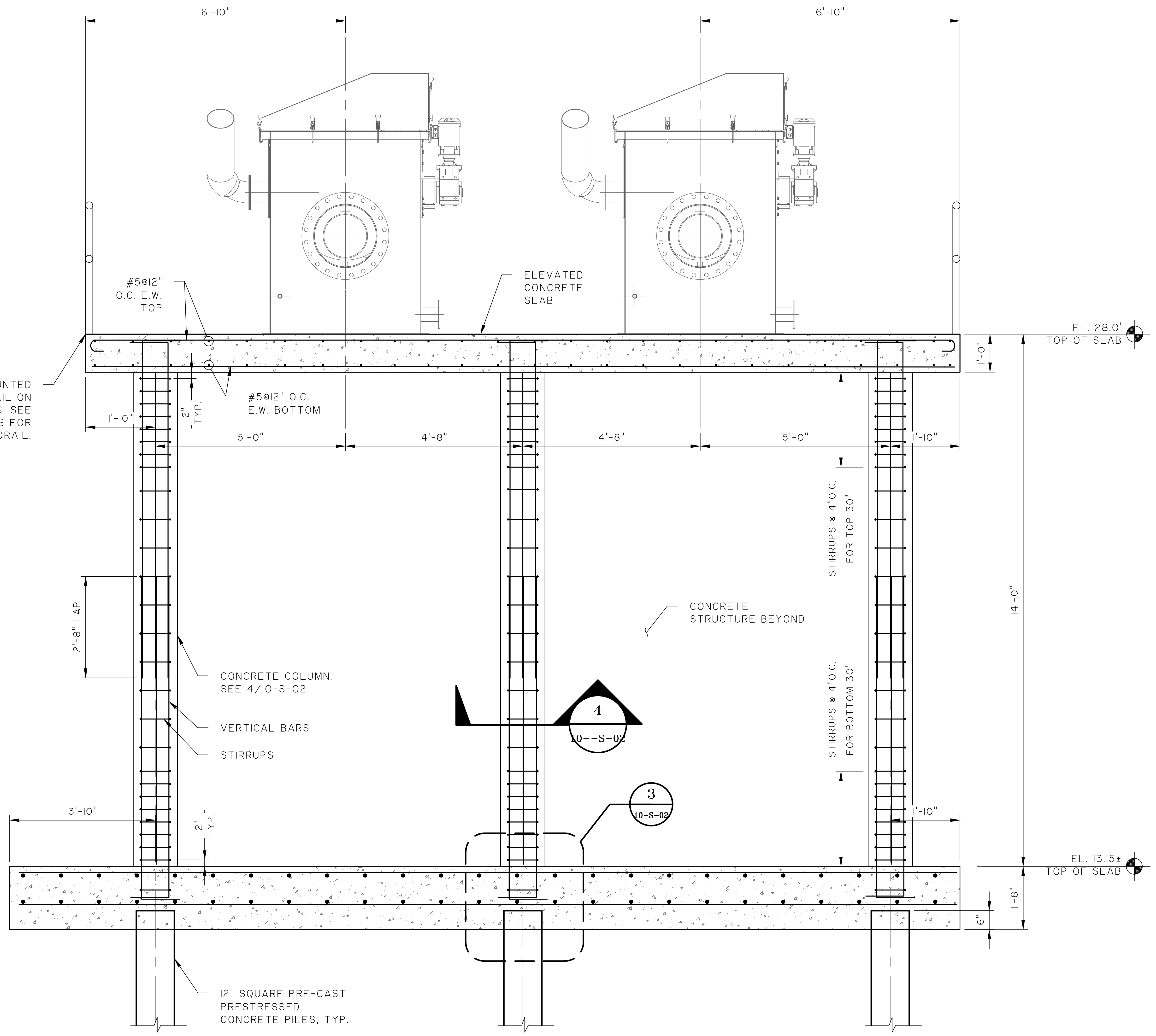
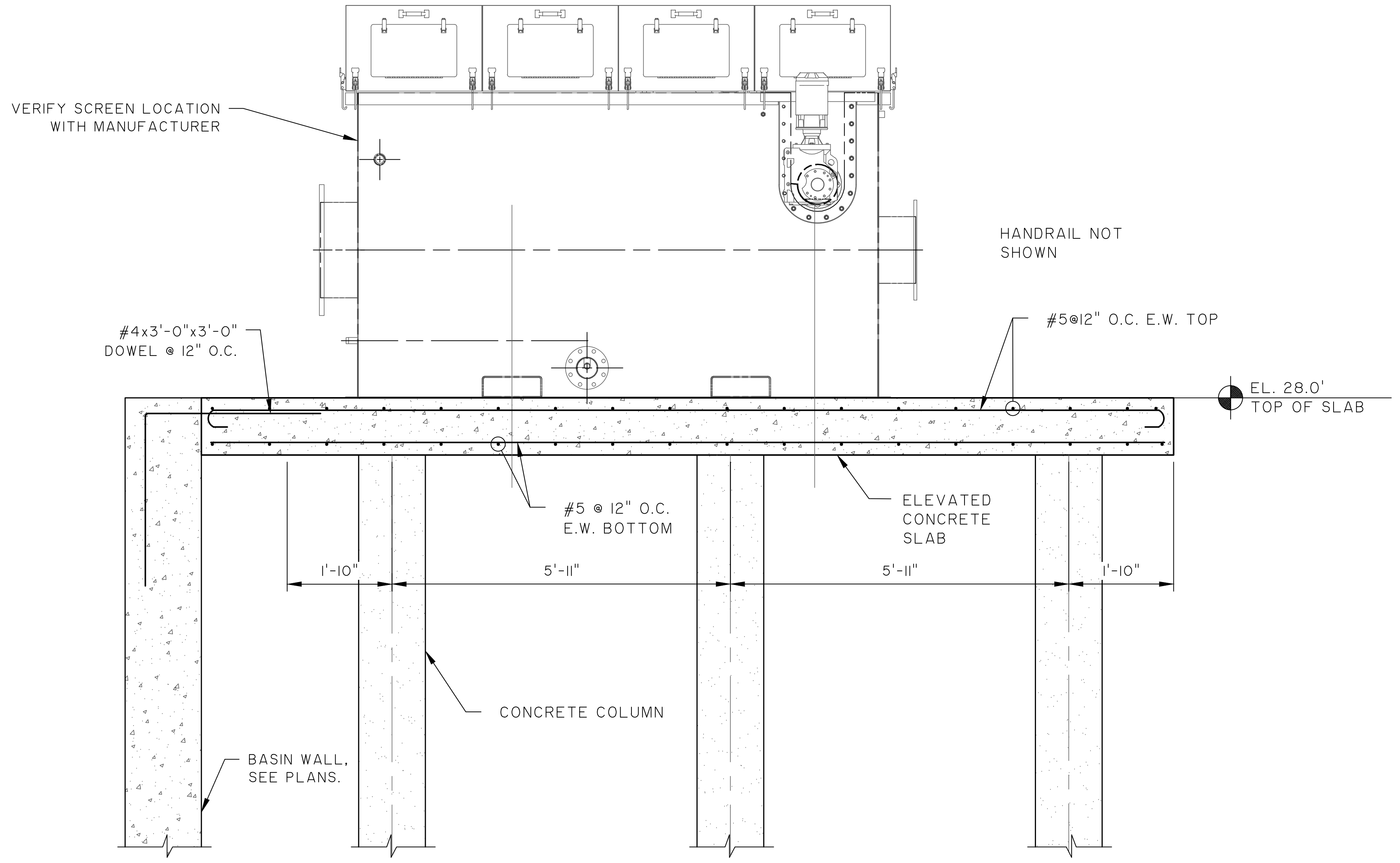
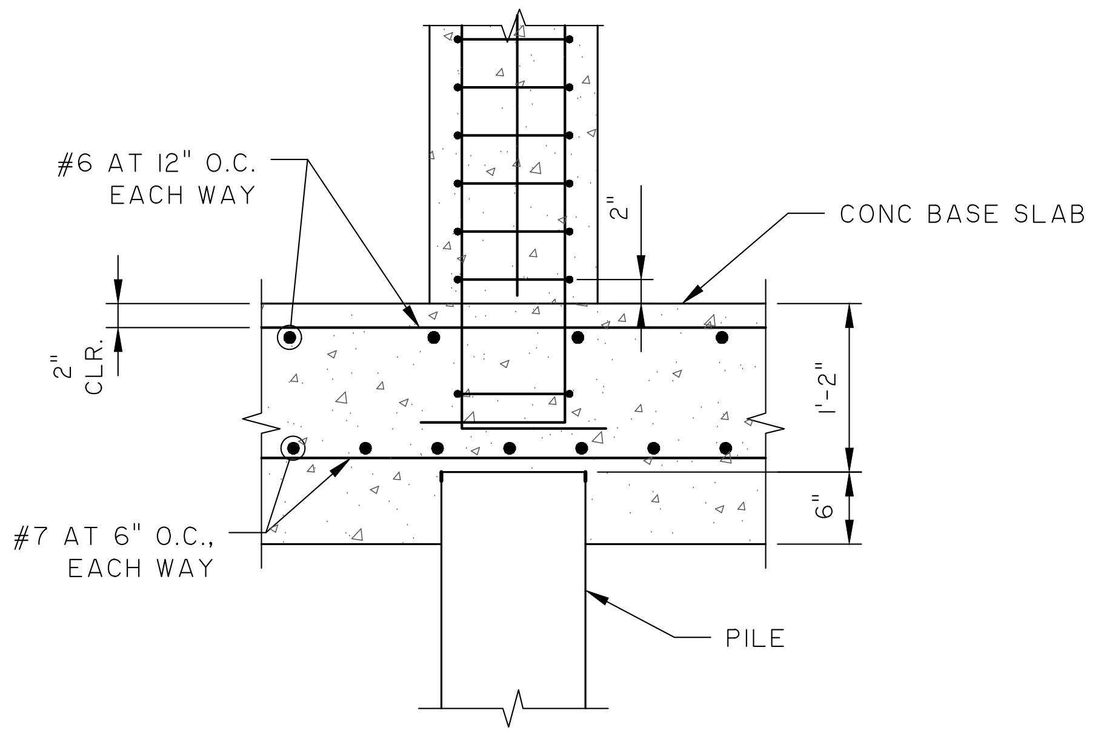


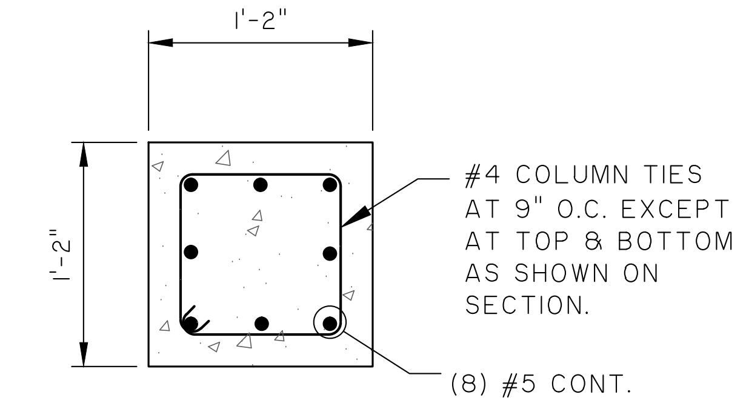
1 SECTION AT PRIMARY SCREEN
10-S-02 1/2" = 1'-0"



2 SECTION AT PRIMARY SCREEN
10-S-02 1/2" = 1'-0"



3 BASE SLAB DETAIL
10-S-02 3/4" = 1'-0"


1'-2"
1'-2"
#4 COLUMN TIES AT 9" O.C. EXCEPT AT TOP & BOTTOM AS SHOWN ON SECTION.
(8) #5 CONT.

4 COLUMN SECTION
10-S-02 1" = 1'-0"

No. C00285
JENNIFER A. HAYES
1.16

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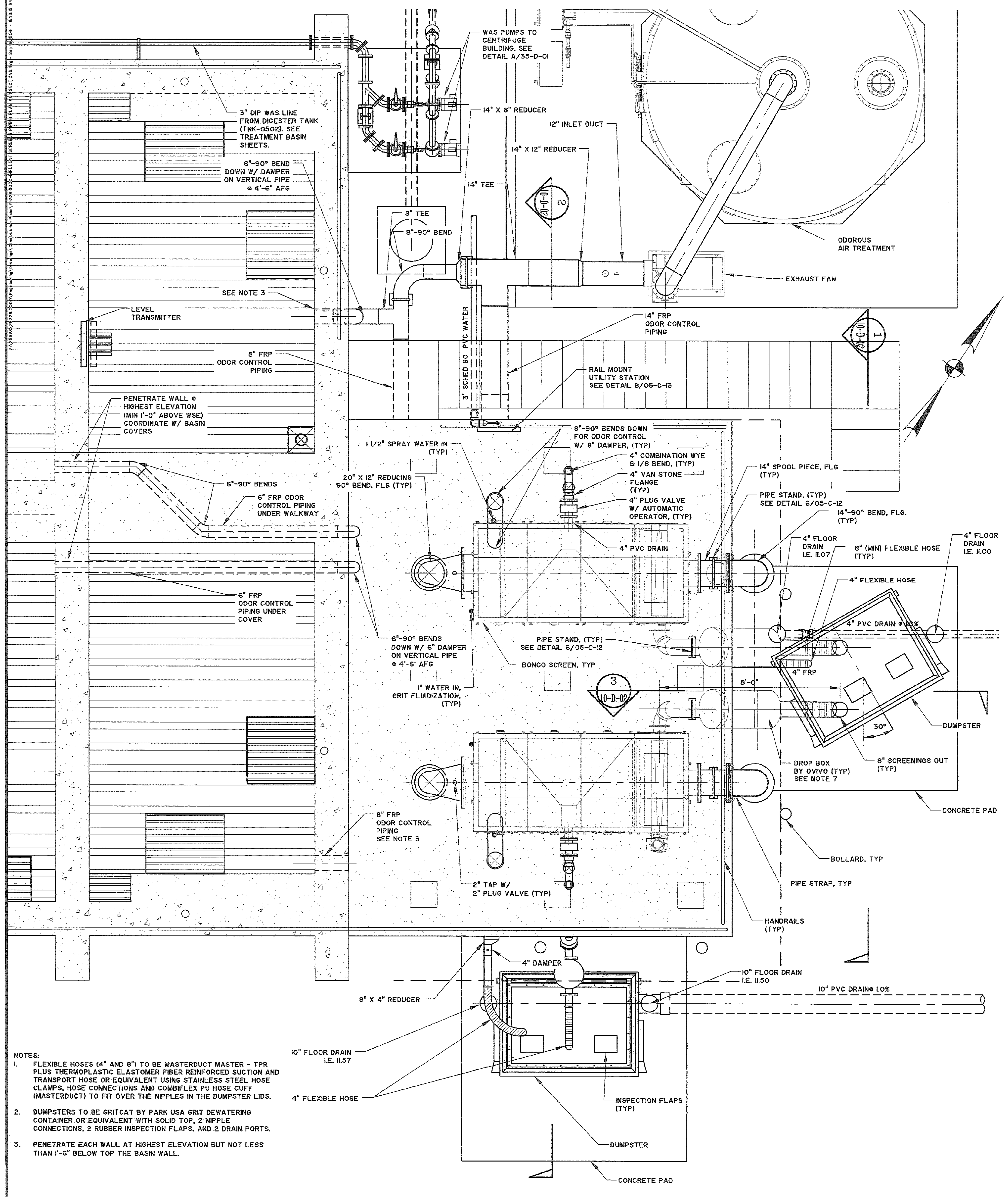
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
PRIMARY SCREEN SECTION & DETAILS

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: JAH/SHG
DESIGNED: JAH/SHG
REVIEWED: JAH/SHG
APPROVED: MFY
SCALE: AS NOTED

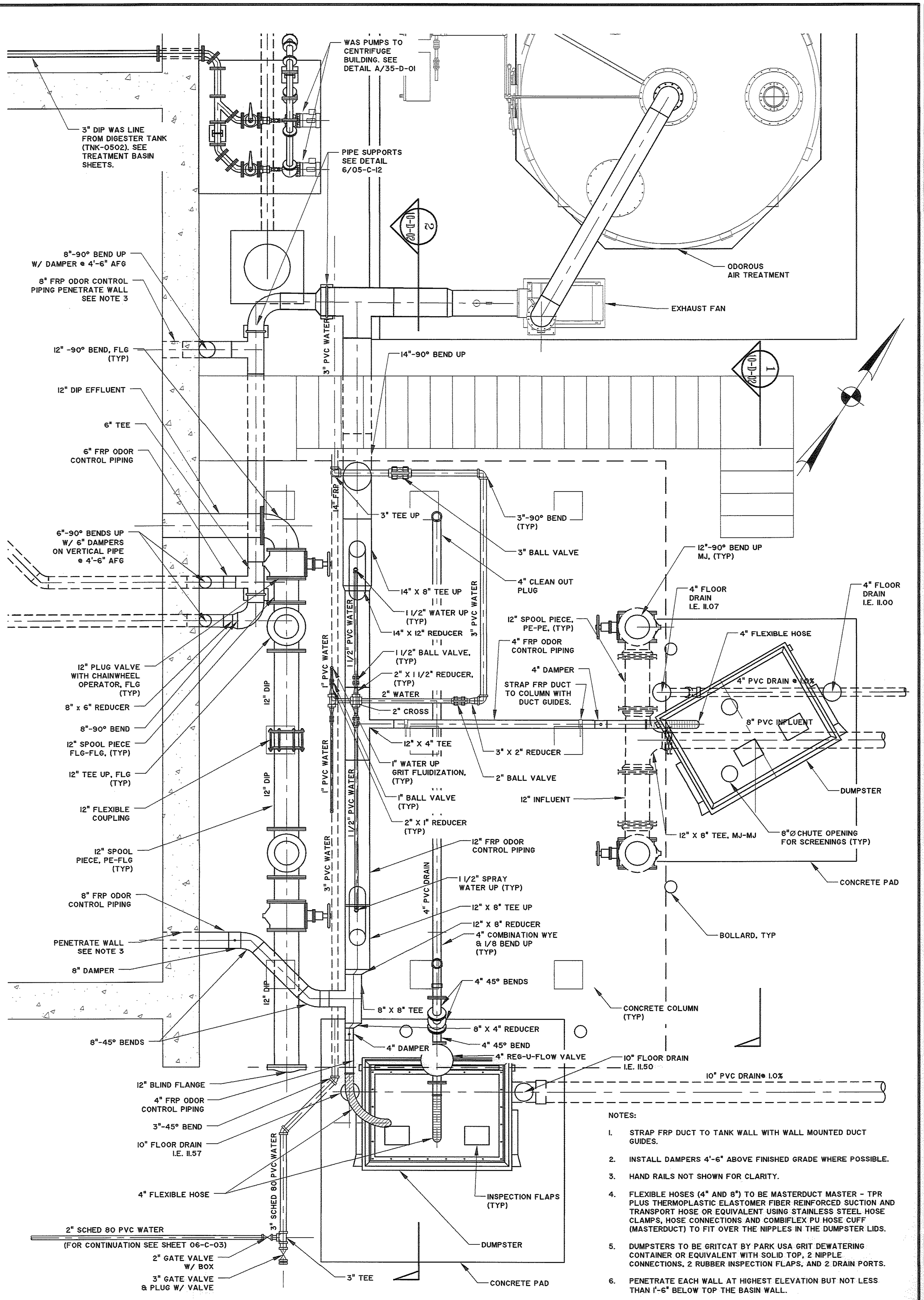
10-S-02


WAS PUMPS TO CENTRIFUGE BUILDING. SEE DETAIL A/35-D-01
3" DIP WAS LINE FROM DIGESTER TANK (TNK-0502). SEE TREATMENT BASIN SHEETS.
14" X 8" REDUCER
12" INLET DUCT
14" X 12" REDUCER
14" TEE
8"-90° BEND DOWN W/ DAMPER ON VERTICAL PIPE @ 4'-6" AFG
8" TEE
8"-90° BEND
ODOROUS AIR TREATMENT
EXHAUST FAN
SEE NOTE 3
LEVEL TRANSMITTER
14" FRP ODOR CONTROL PIPING
8" FRP ODOR CONTROL PIPING
3" SCHED 80 PVC WATER
RAIL MOUNT UTILITY STATION SEE DETAIL 8/05-C-13
PENETRATE WALL @ HIGHEST ELEVATION (MIN 1'-0" ABOVE WSE) COORDINATE W/ BASIN COVERS
1 1/2" SPRAY WATER IN (TYP)
8"-90° BENDS DOWN FOR ODOR CONTROL W/ 8" DAMPER, (TYP)
4" COMBINATION WYE & 1/8 BEND, (TYP)
4" VAN STONE FLANGE (TYP)
4" PLUG VALVE W/ AUTOMATIC OPERATOR, (TYP)
20" X 12" REDUCING 90° BEND, FLG (TYP)
6"-90° BENDS
6" FRP ODOR CONTROL PIPING UNDER WALKWAY
14" SPOOL PIECE, FLG. (TYP)
PIPE STAND, (TYP) SEE DETAIL 6/05-C-12
14"-90° BEND, FLG. (TYP)
4" PVC DRAIN
4" FLOOR DRAIN I.E. 11.07
8" (MIN) FLEXIBLE HOSE (TYP)
4" FLOOR DRAIN I.E. 11.00
4" FLEXIBLE HOSE
4" PVC DRAIN @ 1.0%
6" FRP ODOR CONTROL PIPING UNDER COVER
6"-90° BENDS DOWN W/ 6" DAMPER ON VERTICAL PIPE @ 4'-6" AFG
PIPE STAND, (TYP) SEE DETAIL 6/05-C-12
BONGO SCREEN, TYP
1" WATER IN, GRIT FLUIDIZATION, (TYP)
3
10-D-02
2
10-D-02
1
10-D-02
8'-0"
4" FRP
30°
DUMPSTER
DROP BOX BY OVIVO (TYP) SEE NOTE 7
8" SCREENINGS OUT (TYP)
CONCRETE PAD
8" FRP ODOR CONTROL PIPING SEE NOTE 3
2" TAP W/ 2" PLUG VALVE (TYP)
BOLLARD, TYP
PIPE STRAP, TYP
HANDRAILS (TYP)
4" DAMPER
8" X 4" REDUCER
10" FLOOR DRAIN I.E. 11.50
10" PVC DRAIN@ 1.0%
10" FLOOR DRAIN I.E. 11.57
4" FLEXIBLE HOSE
INSPECTION FLAPS (TYP)
DUMPSTER
CONCRETE PAD

NOTES:

1. FLEXIBLE HOSES (4" AND 8") TO BE MASTERDUCT MASTER - TPR PLUS THERMOPLASTIC ELASTOMER FIBER REINFORCED SUCTION AND TRANSPORT HOSE OR EQUIVALENT USING STAINLESS STEEL HOSE CLAMPS, HOSE CONNECTIONS AND COMBIFLEX PU HOSE CUFF (MASTERDUCT) TO FIT OVER THE NIPPLES IN THE DUMPSTER LIDS.
2. DUMPSTERS TO BE GRITCAT BY PARK USA GRIT DEWATERING CONTAINER OR EQUIVALENT WITH SOLID TOP, 2 NIPPLE CONNECTIONS, 2 RUBBER INSPECTION FLAPS, AND 2 DRAIN PORTS.
3. PENETRATE EACH WALL AT HIGHEST ELEVATION BUT NOT LESS THAN 1'-6" BELOW TOP THE BASIN WALL.

A
10-D-01
TOP PLAN - INFLUENT SCREENS (PRIMARY/SECONDARY/GRIT/ODOR CONTROL) EL. 28.0
3/8"=1'-0"


WAS PUMPS TO CENTRIFUGE BUILDING. SEE DETAIL A/35-D-01
3" DIP WAS LINE FROM DIGESTER TANK (TNK-0502). SEE TREATMENT BASIN SHEETS.
PIPE SUPPORTS SEE DETAIL 6/05-C-12
ODOROUS AIR TREATMENT
EXHAUST FAN
8"-90° BEND UP W/ DAMPER @ 4'-6" AFG
8" FRP ODOR CONTROL PIPING PENETRATE WALL SEE NOTE 3
12" -90° BEND, FLG (TYP)
12" DIP EFFLUENT
6" TEE
6" FRP ODOR CONTROL PIPING
6"-90° BENDS UP W/ 6" DAMPERS ON VERTICAL PIPE @ 4'-6" AFG
3" PVC WATER
14"-90° BEND UP
14" FRP
3" TEE UP
3"-90° BEND (TYP)
3" BALL VALVE
4" CLEAN OUT PLUG
14" X 8" TEE UP
1 1/2" WATER UP (TYP)
14" X 12" REDUCER
1 1/2" BALL VALVE, (TYP)
2" X 1 1/2" REDUCER, (TYP)
2" WATER
2" CROSS
12" X 4" TEE
1" WATER UP GRIT FLUIDIZATION, (TYP)
1" BALL VALVE
2" X 1" REDUCER (TYP)
12"-90° BEND UP MJ, (TYP)
4" FLOOR DRAIN I.E. 11.07
4" FLOOR DRAIN I.E. 11.00
12" SPOOL PIECE, PE-PE, (TYP)
4" FRP ODOR CONTROL PIPING
4" FLEXIBLE HOSE
4" DAMPER
STRAP FRP DUCT TO COLUMN WITH DUCT GUIDES.
4" PVC DRAIN @ 1.0%
8" PVC INFLUENT
3" X 2" REDUCER
2" BALL VALVE
12" INFLUENT
DUMPSTER
12" X 8" TEE, MJ-MJ
8"Ø CHUTE OPENING FOR SCREENINGS (TYP)
CONCRETE PAD
12" PLUG VALVE WITH CHAINWHEEL OPERATOR, FLG (TYP)
8" x 6" REDUCER
8"-90° BEND
12" SPOOL PIECE FLG-FLG, (TYP)
12" TEE UP, FLG (TYP)
12" FLEXIBLE COUPLING
12" SPOOL PIECE, PE-FLG (TYP)
12" DIP
1" PVC WATER
1 1/2" PVC WATER
4" PVC DRAIN
12" FRP ODOR CONTROL PIPING
1 1/2" SPRAY WATER UP (TYP)
12" X 8" TEE UP
12" X 8" REDUCER
4" COMBINATION WYE & 1/8 BEND UP (TYP)
4" 45° BENDS
8" FRP ODOR CONTROL PIPING
PENETRATE WALL SEE NOTE 3
8" DAMPER
BOLLARD, TYP
CONCRETE COLUMN (TYP)
8"-45° BENDS
8" X 8" TEE
8" X 4" REDUCER
4" 45° BEND
4" DAMPER
4" REG-U-FLOW VALVE
12" BLIND FLANGE
4" FRP ODOR CONTROL PIPING
3"-45° BEND
10" FLOOR DRAIN I.E. 11.57
10" FLOOR DRAIN I.E. 11.50
10" PVC DRAIN@ 1.0%
4" FLEXIBLE HOSE
3" SCHED 80 PVC WATER
2" SCHED 80 PVC WATER
(FOR CONTINUATION SEE SHEET 06-C-03)
2" GATE VALVE W/ BOX
3" GATE VALVE & PLUG W/ VALVE
3" TEE
INSPECTION FLAPS (TYP)
DUMPSTER
CONCRETE PAD
2
10-D-02
1
10-D-02

NOTES:

1. STRAP FRP DUCT TO TANK WALL WITH WALL MOUNTED DUCT GUIDES.
2. INSTALL DAMPERS 4'-6" ABOVE FINISHED GRADE WHERE POSSIBLE.
3. HAND RAILS NOT SHOWN FOR CLARITY.
4. FLEXIBLE HOSES (4" AND 8") TO BE MASTERDUCT MASTER - TPR PLUS THERMOPLASTIC ELASTOMER FIBER REINFORCED SUCTION AND TRANSPORT HOSE OR EQUIVALENT USING STAINLESS STEEL HOSE CLAMPS, HOSE CONNECTIONS AND COMBIFLEX PU HOSE CUFF (MASTERDUCT) TO FIT OVER THE NIPPLES IN THE DUMPSTER LIDS.
5. DUMPSTERS TO BE GRITCAT BY PARK USA GRIT DEWATERING CONTAINER OR EQUIVALENT WITH SOLID TOP, 2 NIPPLE CONNECTIONS, 2 RUBBER INSPECTION FLAPS, AND 2 DRAIN PORTS.
6. PENETRATE EACH WALL AT HIGHEST ELEVATION BUT NOT LESS THAN 1'-6" BELOW TOP THE BASIN WALL.
7. DROP BOX TO BE FABRICATED BY OVIVO FOR CLEANOUT. POSITION SUCH THAT CLEAN OUT CAN REACHED FROM PLATFORM OR ACCESS AREA. SUBMIT SHOP DRAWINGS OF FINAL LAYOUT.

B
10-D-01
PLAN - INFLUENT SCREENS - EL. 27.0
3/8"=1'-0"

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE No. 13293

9-10-15

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
INFLUENT SCREENS - PIPING PLANS

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	MFY
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	3/8"=1'-0"

10-D-01

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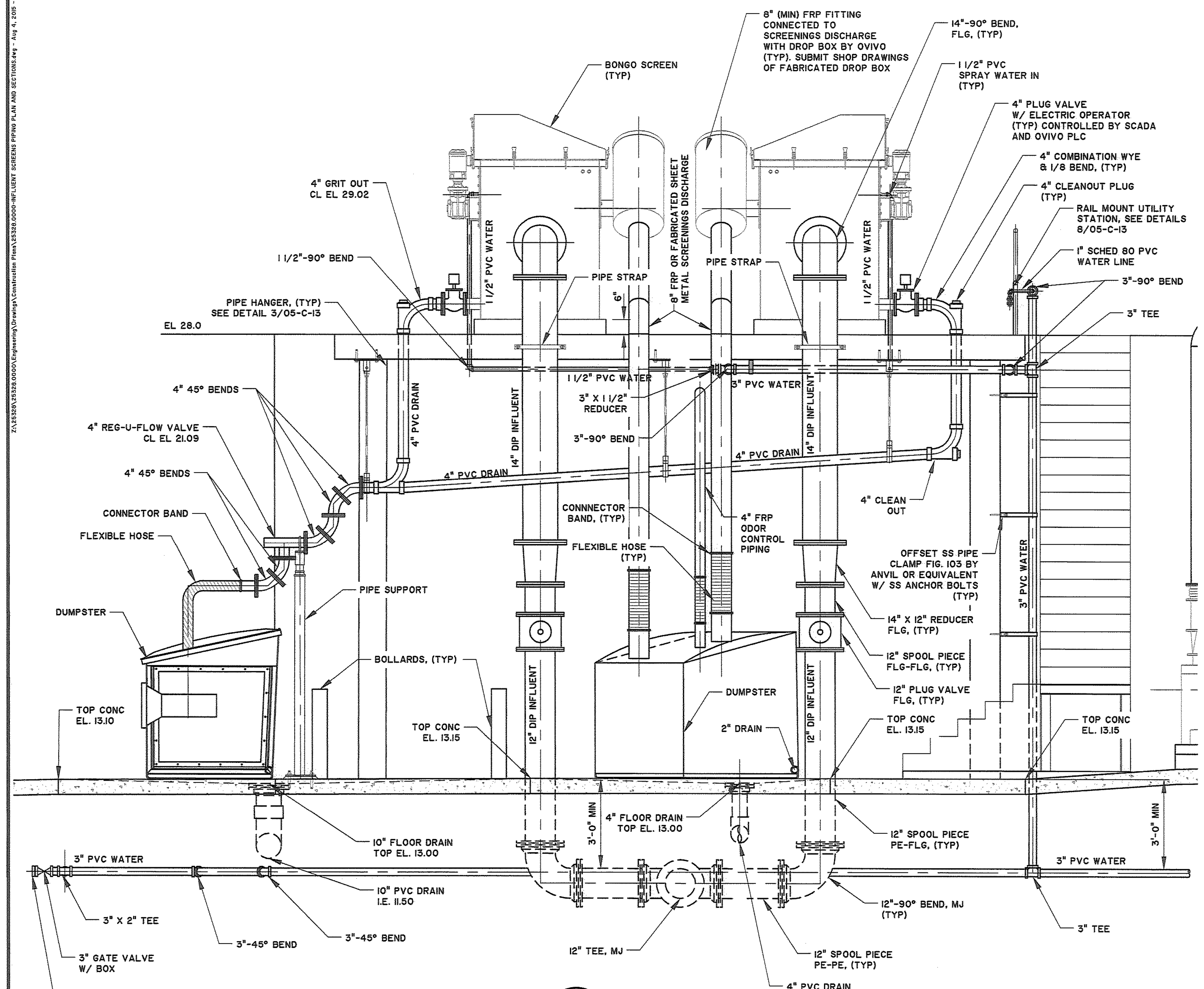
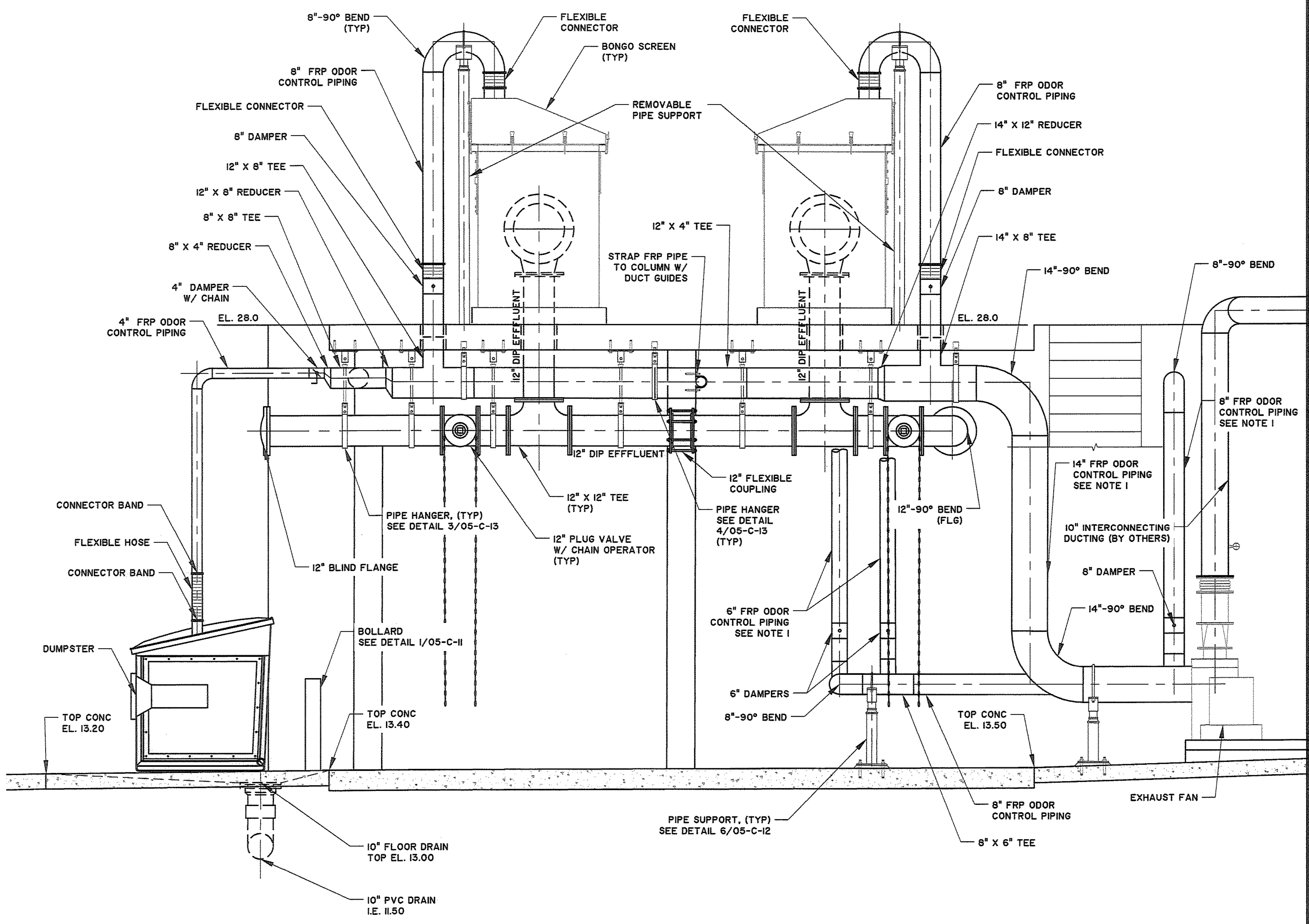
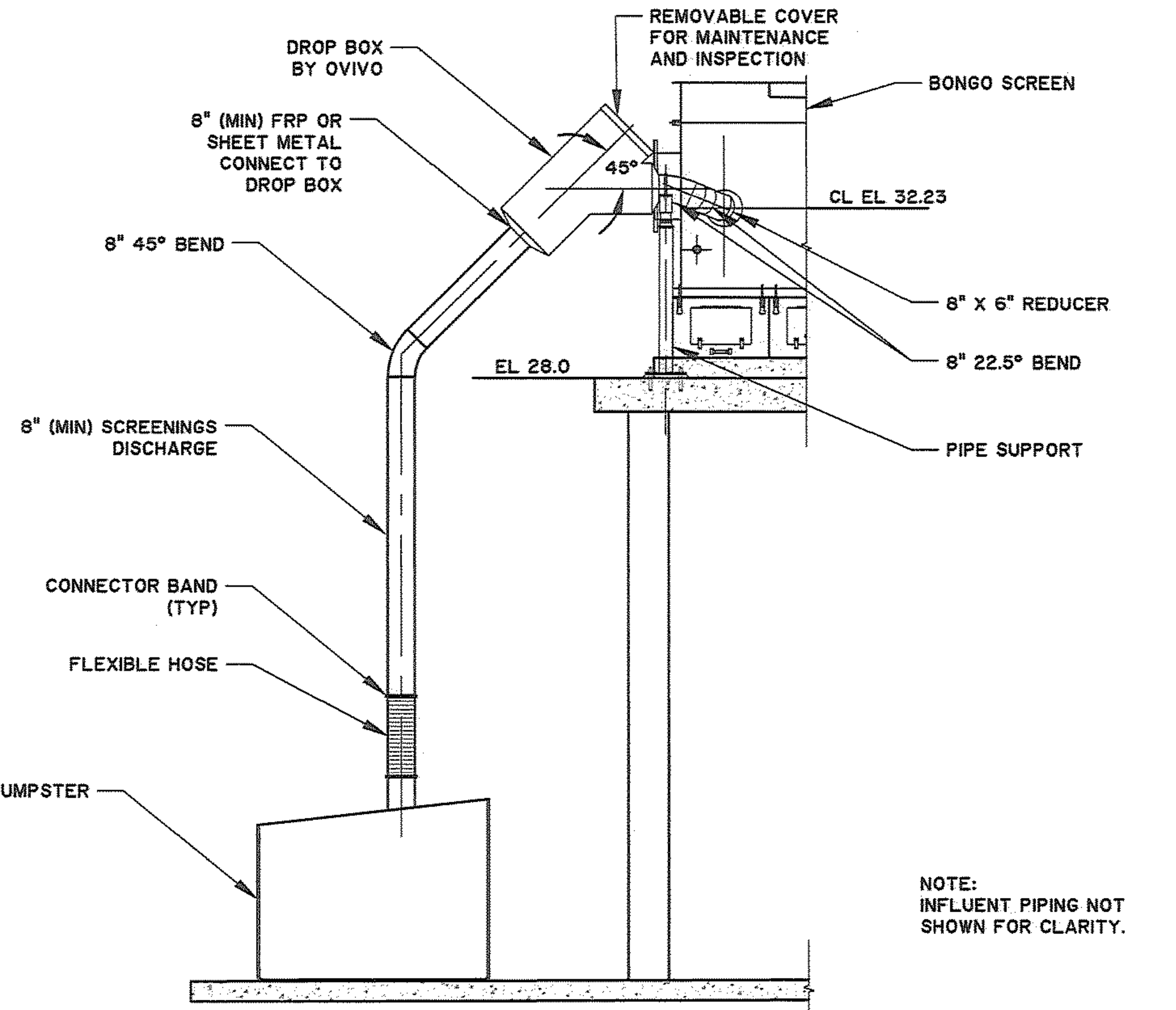

BONGO SCREEN (TYP)
8" (MIN) FRP FITTING CONNECTED TO SCREENINGS DISCHARGE WITH DROP BOX BY OVIVO (TYP). SUBMIT SHOP DRAWINGS OF FABRICATED DROP BOX
14"-90° BEND, FLG, (TYP)
1 1/2" PVC SPRAY WATER IN (TYP)
4" PLUG VALVE W/ ELECTRIC OPERATOR (TYP) CONTROLLED BY SCADA AND OVIVO PLC
4" COMBINATION WYE & 1/8 BEND, (TYP)
4" CLEANOUT PLUG (TYP)
RAIL MOUNT UTILITY STATION, SEE DETAILS 8/05-C-13
1" SCHED 80 PVC WATER LINE
3"-90° BEND
3" TEE
4" GRIT OUT CL EL 29.02
1 1/2" PVC WATER
8" FRP OR FABRICATED SHEET METAL SCREENINGS DISCHARGE
1 1/2"-90° BEND
PIPE STRAP
6"
PIPE HANGER, (TYP) SEE DETAIL 3/05-C-13
EL 28.0
1 1/2" PVC WATER
3" X 1 1/2" REDUCER
3" PVC WATER
3"-90° BEND
4" 45° BENDS
4" PVC DRAIN
14" DIP INFLUENT
4" REG-U-FLOW VALVE CL EL 21.09
4" PVC DRAIN
4" 45° BENDS
CONNECTOR BAND
FLEXIBLE HOSE
CONNNECTOR BAND, (TYP)
FLEXIBLE HOSE (TYP)
4" FRP ODOR CONTROL PIPING
4" CLEAN OUT
OFFSET SS PIPE CLAMP FIG. 103 BY ANVIL OR EQUIVALENT W/ SS ANCHOR BOLTS (TYP)
3" PVC WATER
PIPE SUPPORT
14" X 12" REDUCER FLG, (TYP)
12" SPOOL PIECE FLG-FLG, (TYP)
12" PLUG VALVE FLG, (TYP)
DUMPSTER
BOLLARDS, (TYP)
DUMPSTER
2" DRAIN
12" DIP INFLUENT
TOP CONC EL. 13.10
TOP CONC EL. 13.15
TOP CONC EL. 13.15
TOP CONC EL. 13.15
3'-0" MIN
4" FLOOR DRAIN TOP EL. 13.00
10" FLOOR DRAIN TOP EL. 13.00
12" SPOOL PIECE PE-FLG, (TYP)
3'-0" MIN
3" PVC WATER
10" PVC DRAIN I.E. 11.50
3" PVC WATER
12"-90° BEND, MJ (TYP)
3" X 2" TEE
3"-45° BEND
3"-45° BEND
3" TEE
3" GATE VALVE W/ BOX
12" TEE, MJ
12" SPOOL PIECE PE-PE, (TYP)
3" PLUG
4" PVC DRAIN I.E. 11.00

1 SECTION
10-D-01 3/8"=1'-0"



2 SECTION
10-D-01 3/8"=1'-0"



NOTE:
INFLUENT PIPING NOT SHOWN FOR CLARITY.

3 SECTION
10-D-01 3/8"=1'-0"

NOTES:

1. STRAP FRP DUCT TO TANK WALL WITH WALL MOUNTED DUCT GUIDES.
2. INSTALL DAMPERS 4'-6" ABOVE FINISHED GRADE WHERE POSSIBLE.
3. HAND RAILS NOT SHOWN FOR CLARITY.
4. FLEXIBLE HOSES (4" AND 8") TO BE MASTERDUCT MASTER - TPR PLUS THERMOPLASTIC ELASTOMER FIBER REINFORCED SUCTION AND TRANSPORT HOSE OR EQUIVALENT USING STAINLESS STEEL HOSE CLAMPS, HOSE CONNECTIONS AND COMBIFLEX PU HOSE CUFF (MASTERDUCT) TO FIT OVER THE NIPPLES IN THE DUMPSTER LIDS.
5. DUMPSTERS TO BE GRITCAT BY PARK USA GRIT DEWATERING CONTAINER OR EQUIVALENT WITH SOLID TOP, 2 NIPPLE CONNECTIONS, 2 RUBBER INSPECTION FLAPS, AND 2 DRAIN PORTS.
6. PENETRATE EACH WALL AT HIGHEST ELEVATION BUT NOT LESS THAN 1'-6" BELOW TOP THE BASIN WALL.

THOMAS & HUTTON ENGINEERING CO. No. C00285
MARK F. YODICE

NO.	REVISIONS	BY	DATE

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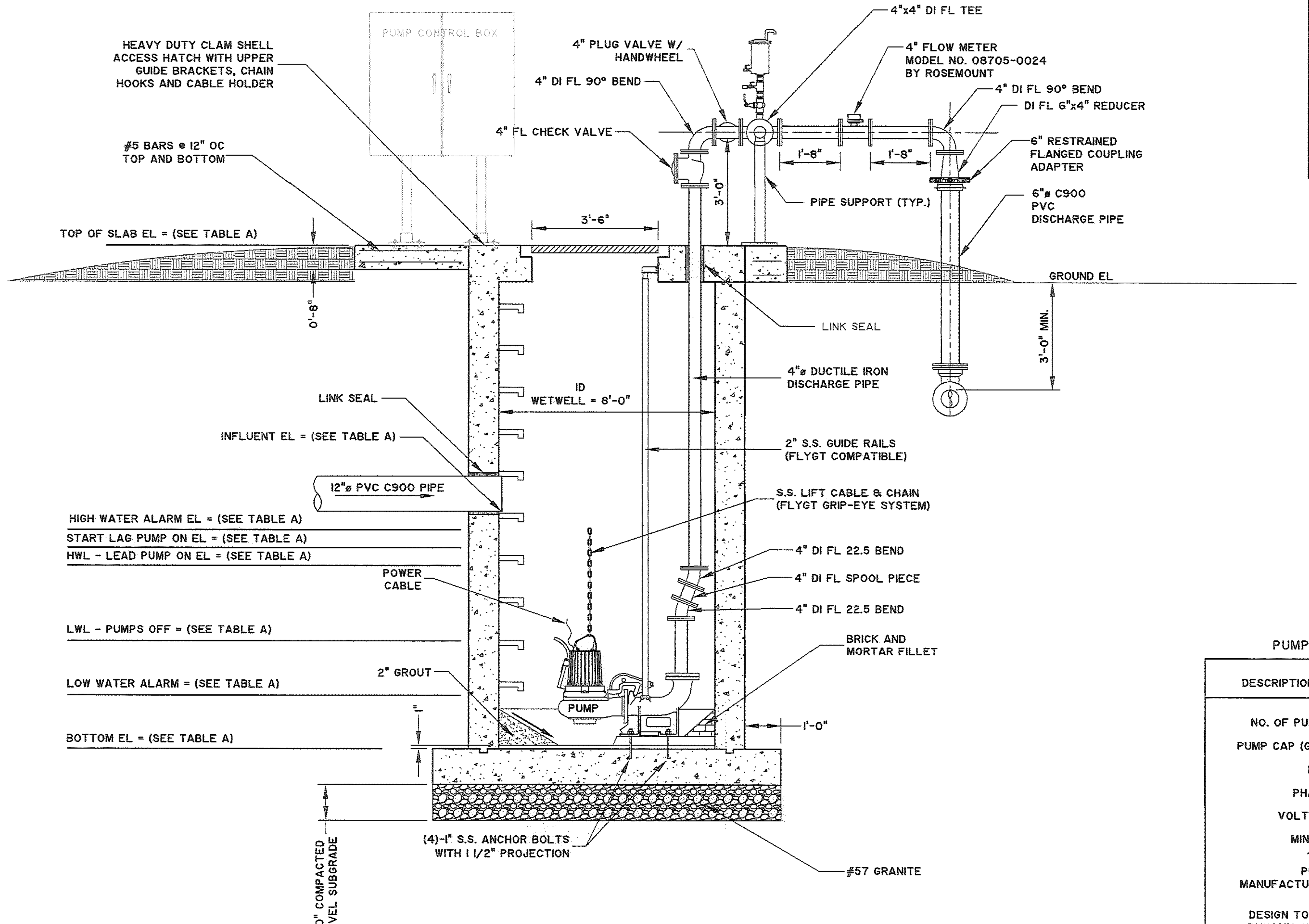
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
INFLUENT SCREENS - PIPING SECTIONS

JOB NO:	J-25328.0000
DATE:	7/31/15
DRAWN:	DNF
DESIGNED:	MFY
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	3/8"=1'-0"

10-D-02

Z:\25328\25328.0000\Engineering\Drawings\Construction Plans\25328.0000-PLANT DRAIN PUMP STATION PIPING PLAN.dwg - Dec 8, 2015 - 10:56:56 AM

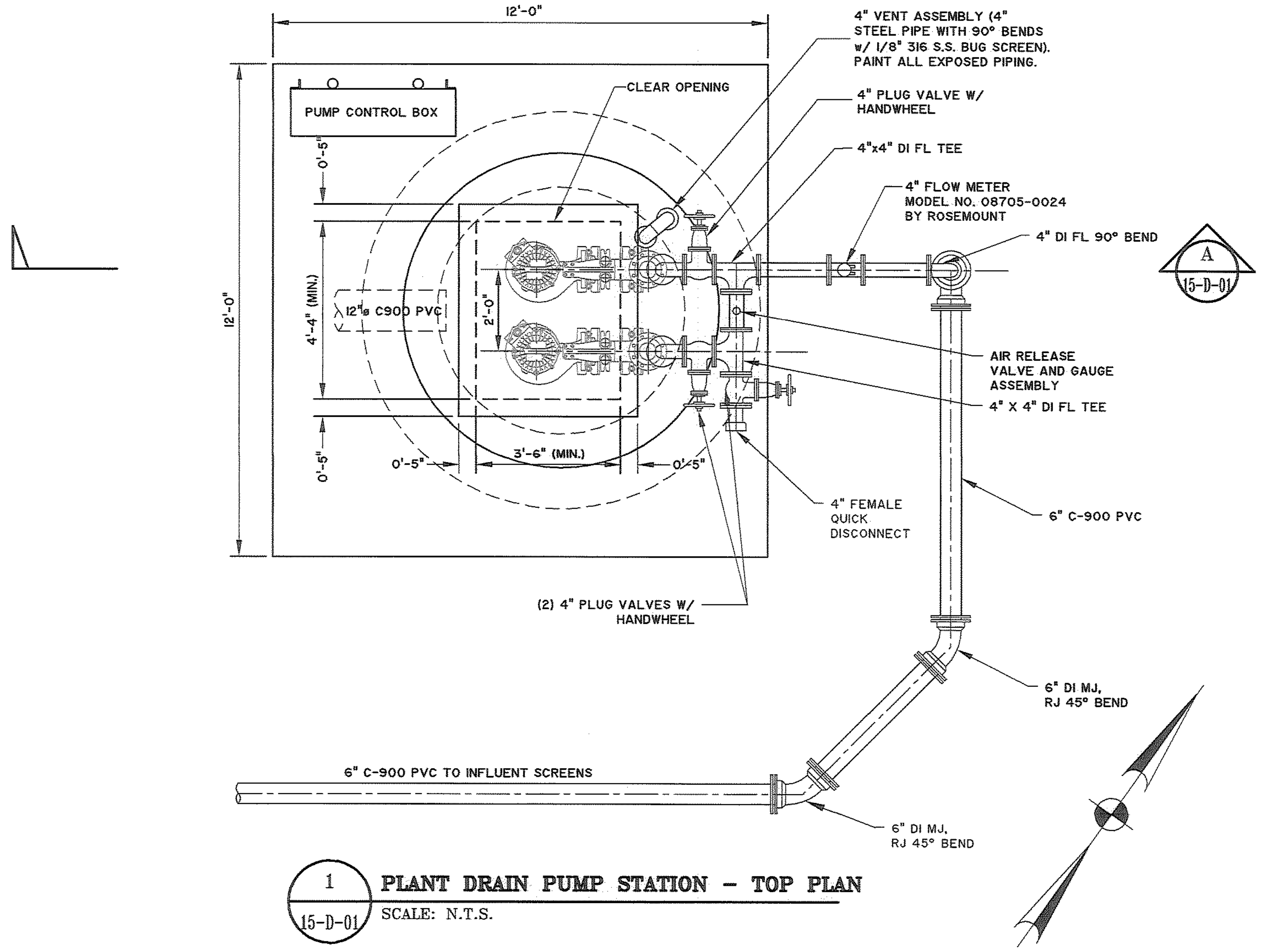
NOTE:
ALL WETWELL PIPING SHALL BE FLANGED DIP. UNIFLANGE FITTINGS OR DRESSER COUPLINGS SHALL NOT BE ALLOWED.


PUMP CONTROL BOX
HEAVY DUTY CLAM SHELL ACCESS HATCH WITH UPPER GUIDE BRACKETS, CHAIN HOOKS AND CABLE HOLDER
#5 BARS @ 12" OC TOP AND BOTTOM
TOP OF SLAB EL = (SEE TABLE A)
0'-8"
3'-6"
4" PLUG VALVE W/ HANDWHEEL
4" DI FL 90° BEND
4" FL CHECK VALVE
3'-0"
4"x4" DI FL TEE
4" FLOW METER MODEL NO. 08705-0024 BY ROSEMOUNT
4" DI FL 90° BEND
DI FL 6"x4" REDUCER
1'-8"
1'-8"
6" RESTRAINED FLANGED COUPLING ADAPTER
PIPE SUPPORT (TYP.)
6"ø C900 PVC DISCHARGE PIPE
GROUND EL
3'-0" MIN.
LINK SEAL
ID WETWELL = 8'-0"
4"ø DUCTILE IRON DISCHARGE PIPE
LINK SEAL
INFLUENT EL = (SEE TABLE A)
12"ø PVC C900 PIPE
2" S.S. GUIDE RAILS (FLYGT COMPATIBLE)
S.S. LIFT CABLE & CHAIN (FLYGT GRIP-EYE SYSTEM)
HIGH WATER ALARM EL = (SEE TABLE A)
START LAG PUMP ON EL = (SEE TABLE A)
HWL - LEAD PUMP ON EL = (SEE TABLE A)
POWER CABLE
4" DI FL 22.5 BEND
4" DI FL SPOOL PIECE
4" DI FL 22.5 BEND
BRICK AND MORTAR FILLET
LWL - PUMPS OFF = (SEE TABLE A)
LOW WATER ALARM = (SEE TABLE A)
2" GROUT
PUMP
1'-0"
BOTTOM EL = (SEE TABLE A)
(4)-1" S.S. ANCHOR BOLTS WITH 1 1/2" PROJECTION
#57 GRANITE
5'-0" COMPACTED GRAVEL SUBGRADE

A
15-D-01

PLANT DRAIN PUMP STATION – SECTION

SCALE: N.T.S.


12'-0"
12'-0"
PUMP CONTROL BOX
0'-5"
0'-5"
4'-4" (MIN.)
12"ø C900 PVC
2'-0"
0'-5"
3'-6" (MIN.)
0'-5"
CLEAR OPENING
4" VENT ASSEMBLY (4" STEEL PIPE WITH 90° BENDS w/ 1/8" 316 S.S. BUG SCREEN). PAINT ALL EXPOSED PIPING.
4" PLUG VALVE W/ HANDWHEEL
4"x4" DI FL TEE
4" FLOW METER MODEL NO. 08705-0024 BY ROSEMOUNT
4" DI FL 90° BEND
A
15-D-01
AIR RELEASE VALVE AND GAUGE ASSEMBLY
4" X 4" DI FL TEE
4" FEMALE QUICK DISCONNECT
6" C-900 PVC
(2) 4" PLUG VALVES W/ HANDWHEEL
6" DI MJ, RJ 45° BEND
6" C-900 PVC TO INFLUENT SCREENS
6" DI MJ, RJ 45° BEND

1
15-D-01

PLANT DRAIN PUMP STATION – TOP PLAN

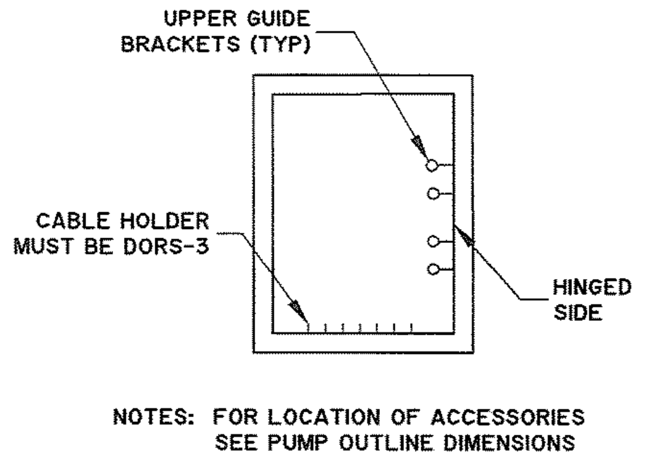
SCALE: N.T.S.

WET WELL DESIGN SCHEDULE (TABLE A)

DESCRIPTION	ELEVATION
FIN. GRADE EL	12.88'
INFLUENT EL	3.41'
HIGH WATER ALARM EL	2.91'
START LAG PUMP	1.91'
H.W.L. - START LEAD PUMP	0.91'
L.W.L. - STOP PUMPS	-2.90'
LOW WATER ALARM	-3.90'
BOTTOM EL	-5.90'

PUMP DESIGN SCHEDULE

DESCRIPTION	CONDITIONS
NO. OF PUMPS	2
PUMP CAP (GPM)	250
RPM	1740
PHASE	3
VOLTAGE	460
MIN. HP	12
PUMP MANUFACTURER	FLYGT MODEL NP3153HT w/ 466 IMPELLER (4" VOLUTE)
DESIGN TOTAL DYNAMIC HEAD	67.0'

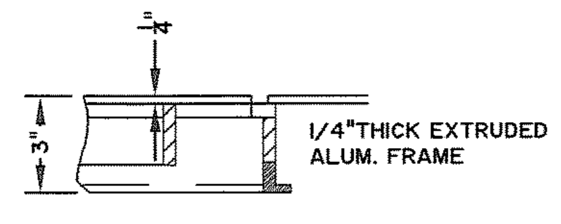


NOTES: FOR LOCATION OF ACCESSORIES SEE PUMP OUTLINE DIMENSIONS

2
15-D-01

WETWELL ACCESS HATCH

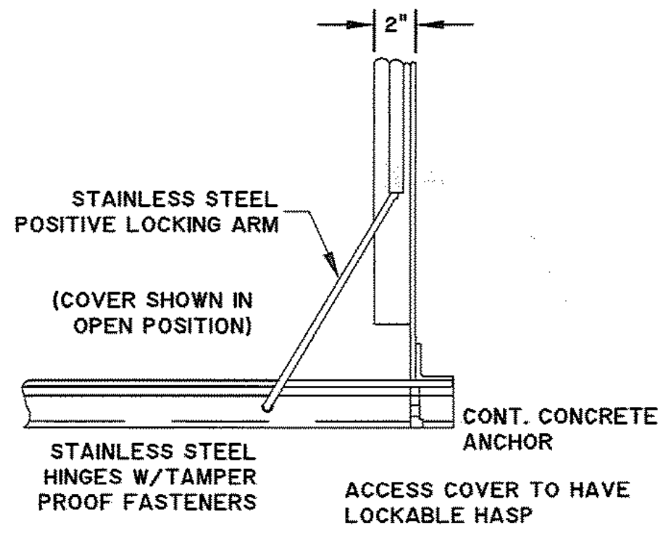
SCALE: N.T.S.



C
15-D-01

SECTION

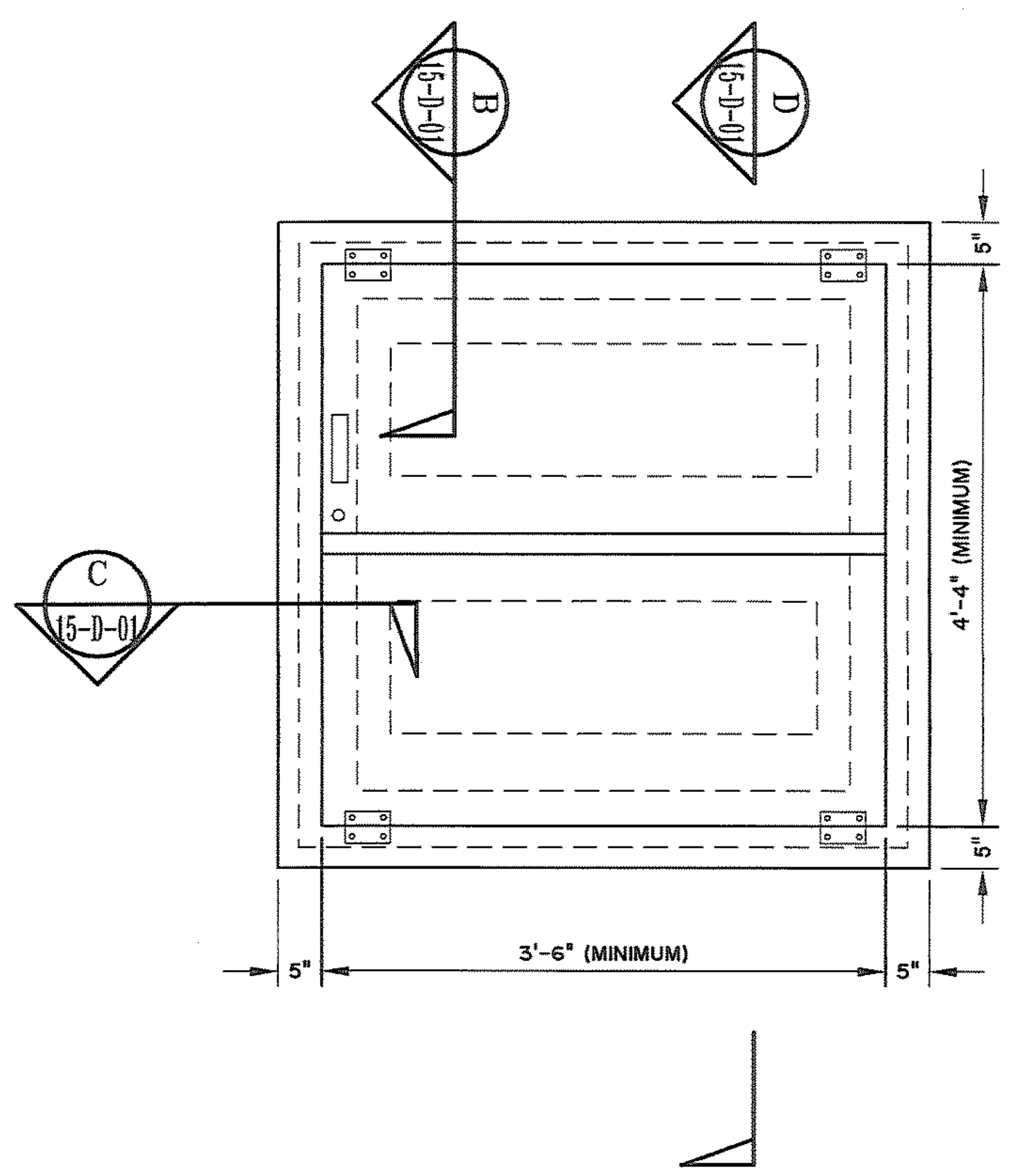
SCALE: N.T.S.


2"
STAINLESS STEEL POSITIVE LOCKING ARM
(COVER SHOWN IN OPEN POSITION)
CONT. CONCRETE ANCHOR
STAINLESS STEEL HINGES W/TAMPER PROOF FASTENERS
ACCESS COVER TO HAVE LOCKABLE HASP

B
15-D-01

SECTION

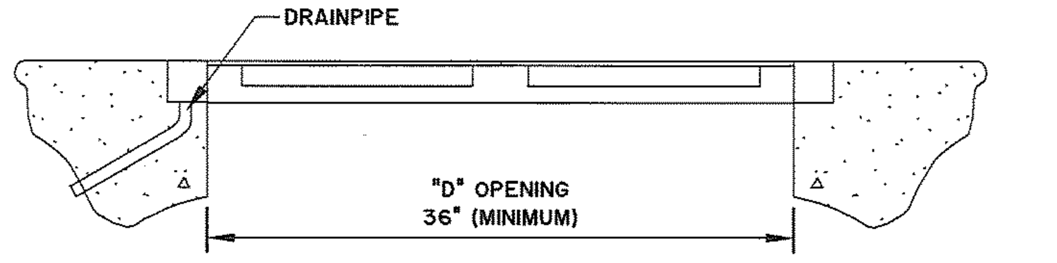
SCALE: N.T.S.



3
15-D-01

WETWELL ACCESS HATCH – PLAN VIEW

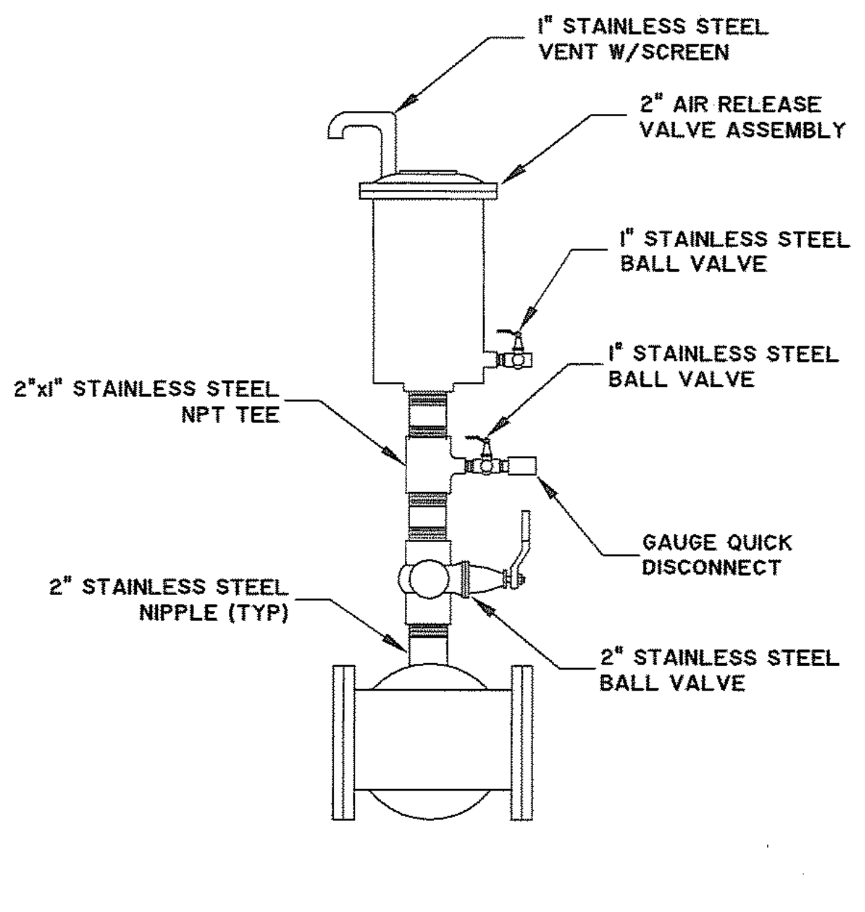
SCALE: N.T.S.



D
15-D-01

SECTION

SCALE: N.T.S.


1" STAINLESS STEEL VENT W/SCREEN
2" AIR RELEASE VALVE ASSEMBLY
1" STAINLESS STEEL BALL VALVE
1" STAINLESS STEEL BALL VALVE
2"x1" STAINLESS STEEL NPT TEE
GAUGE QUICK DISCONNECT
2" STAINLESS STEEL NIPPLE (TYP)
2" STAINLESS STEEL BALL VALVE

AIR RELEASE VALVE/ GAUGE ASSEMBLY

SCALE: NONE

NOTES:

1. LIQUID LEVEL SENSOR SYSTEM
   - A. MERCURY FLOAT
   - B. LIQUID LEVEL CONTROL SYSTEM SHALL BE A HYDRORANGER UNIT.
2. INTERIOR OF WET WELL & NEW & EXISTING MANHOLES (INCLUDING ALL DISCHARGE PIPING) SHALL BE LINED ENTIRELY (EXCEPT THE BOTTOM) WITH 125 MILS OF APPLIED EPOXY OR POLYURETHANE.
3. PRE CAST WET WELL MANUFACTURER IS TO PREPARE AND SUBMIT TO THE ENGINEER DESIGN DETAILS & CALCULATIONS FOR THE STRUCTURES SHOWN BASED ON THE DESIGN OF PRE CAST CONCRETE. THE DESIGN SHALL INCLUDE PROVISIONS FOR HANDLING STRESSES AND CONSTRUCTION LOADS. REPRODUCED COPIES OF ASTM C789 "STANDARD SPECIFICATION FOR PRE CAST REINFORCED CONCRETE BOX SECTIONS FOR CULVERTS, STORM DRAINS, AND SEWERS" WILL NOT BE ACCEPTED AS A SUBSTITUTE FOR DESIGN.
4. ALL OPENINGS TO WETWELL SHALL BE EQUIPPED WITH FACTORY INSTALLED BOOTS (AS MANUFACTURED BY NPC SYSTEMS, INC.).
5. PROVIDE SLEEVES FOR ELECTRICAL CONDUITS 24" BELOW TOP OF WETWELL.
6. ALL PRECAST CONCRETE, WETWELL, VALVE BOXES, MANHOLES, ETC. SHALL BE OF 5000 PSI CONCRETE TYPE II CEMENT. JOINT SEALANT SHALL BE RAM-NEK AS MANUFACTURED BY HENRY CO.
7. ALL MANHOLES, VALVE BOXES SHALL BE WATER-TIGHT. USE NON-SHRINK GROUT TO SEAL ALL OPENINGS AROUND, IN, AND OUT OF FORCE MAIN.
8. FLYGT SAFETY HATCHES OR APPROVED EQUIVALENT SHALL BE INSTALLED ON WET WELL TOP OPENINGS.
9. ALL D.I. MECHANICAL JOINT FITTINGS SHALL BE RESTRAINED WITH MEGALUGS.

THOMAS & HUTTON ENGINEERING CO.
No. C00285

MARK F. YODICE
No. 13283

GENERAL REVISIONS

NO.	REVISIONS	BY	DATE
		MFY	12/2/15

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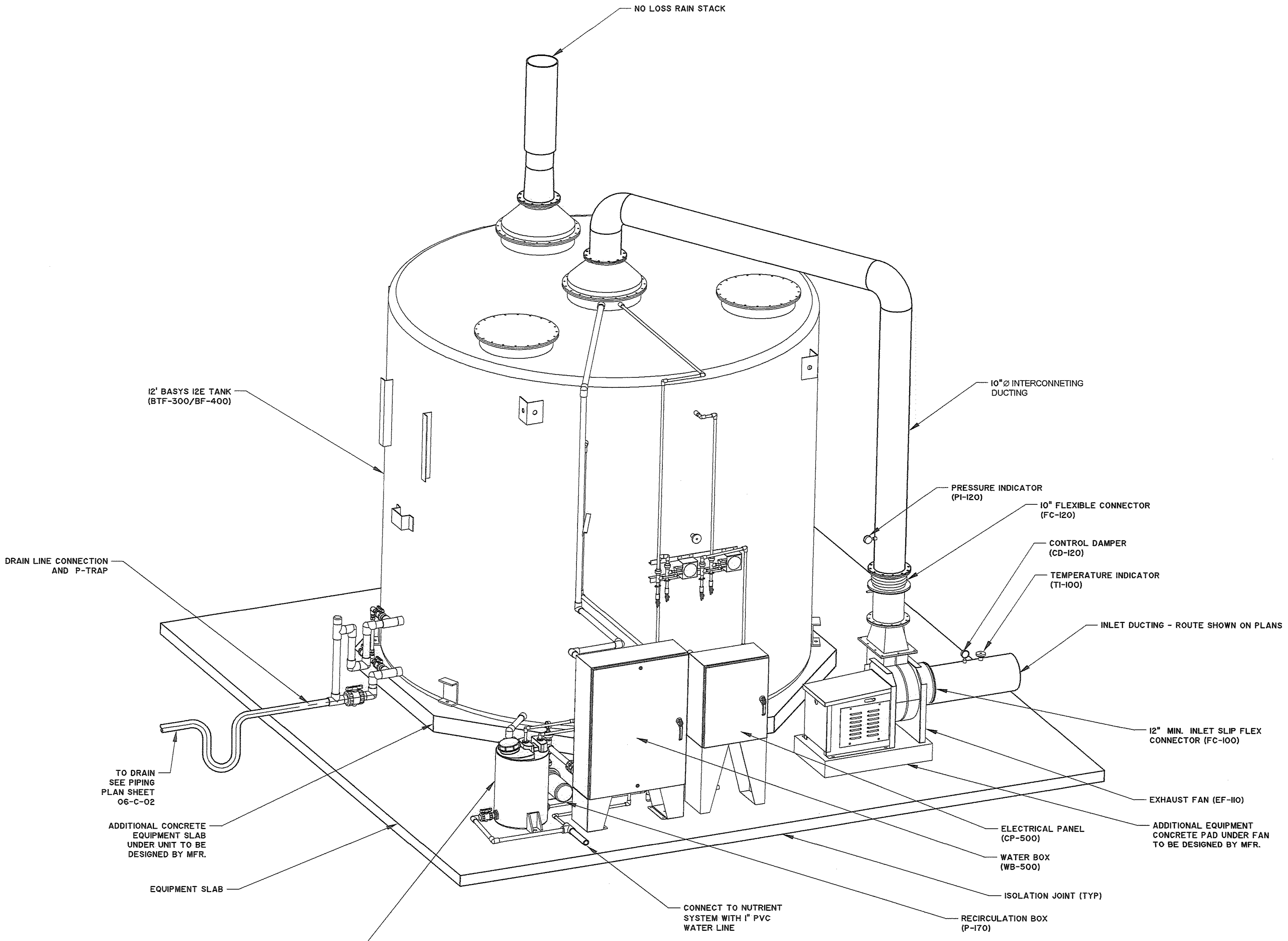
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

PLANT DRAIN PUMP STATION - PIPING PLAN AND SECTIONS

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	KEN
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

15-D-01


NO LOSS RAIN STACK
12' BASYS 12E TANK (BTF-300/BF-400)
10"Ø INTERCONNETING DUCTING
PRESSURE INDICATOR (PI-120)
10" FLEXIBLE CONNECTOR (FC-120)
CONTROL DAMPER (CD-120)
TEMPERATURE INDICATOR (TI-100)
INLET DUCTING - ROUTE SHOWN ON PLANS
DRAIN LINE CONNECTION AND P-TRAP
12" MIN. INLET SLIP FLEX CONNECTOR (FC-100)
EXHAUST FAN (EF-110)
TO DRAIN SEE PIPING PLAN SHEET 06-C-02
ADDITIONAL EQUIPMENT CONCRETE PAD UNDER FAN TO BE DESIGNED BY MFR.
ELECTRICAL PANEL (CP-500)
ADDITIONAL CONCRETE EQUIPMENT SLAB UNDER UNIT TO BE DESIGNED BY MFR.
WATER BOX (WB-500)
EQUIPMENT SLAB
ISOLATION JOINT (TYP)
CONNECT TO NUTRIENT SYSTEM WITH 1" PVC WATER LINE
RECIRCULATION BOX (P-170)
NUTRIENT SYSTEM (NUT-600)

1
30-D-01

ODOROUS AIR TREATMENT - GENERAL ARRANGEMENT

NOT TO SCALE

NOTES:

1. TYPICAL ARRANGEMENT FOR TWO ODOROUS AIR TREATMENT LAYOUTS. SEE SITE PLAN FOR LOCATION AND FUTHER LAYOUT OF EQUIPMENT.
2. SUBMIT LAYOUT PLAN WITH SHOP DRAWINGS FOR EACH UNIT.
3. CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, PIPING AND RELATED ACCESSORIES TO MAKE A COMPLETE AND FUNCTIONAL SYSTEM.
4. SECURE EQUIPMENT AND RELATED TO WITHSTAND 147 MPH WIND.
5. PROVIDE SUN AND WEATHER SHIELD OVER WATER BOX AND ELECTRICAL PANEL. (MIN. 12" EXTENDED OVER TOP OF EQUIPMENT USING SIMILAR MATERIALS AS HOUSING ENCLOSURE.
6. COMPONENTS FOR ODOR CONTROL UNIT WILL NOT ALL BE PLACED ON A SKID. CONTRACTOR SHALL MAKE PROVISIONS TO INSTALL THE COMPONENTS (MAINLY WATER BOX AND CONTROL PANEL) WHERE INDICATED ON THESE DRAWINGS. CONTRACTOR SHALL SUBMIT LAYOUT OF FINAL PIPING AND ANY LOCATION ADJUSTMENTS WHICH MAY BE BENEFICIAL BUT NOT IMPEDE ACCESS.
7. FLEXIBLE CONNECTORS, DAMPERS, ADJUSTABLE VENTS AND DUCT SUPPORTS ARE NOT SHOWN FOR CLARITY. EACH DUCT BRANCH SHALL INCLUDE THESE COMPONENTS AND NECESSARY BRACING TO SECURE FROM AT LEAST 147 MPH WIND.
8. ALL ABOVE GROUND PIPING CARRYING WATER OR RE-USE SHALL BE INSULATED.
9. CONTRACTOR IS RESPONSIBLE FOR FINAL DESIGN OF ODOR CONTROL DUCT WORK. PIPING SHALL BE DESIGNED BY QUALIFIED DESIGNER REGISTERED IN SC. SUBMIT SHOP DRAWINGS.

THOMAS & HUTTON ENGINEERING CO.
No. C00285

MARK F. YODICE
No. 13293
12-22-2015

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

ODOROUS AIR TREATMENT - GENERAL ARRANGEMENT

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	MFY
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

30-D-01

BUILDING CODE REVIEW

OCCUPANCY GROUP F2
CONSTRUCTION TYPE IIB

BUILDING HEIGHT: 2 STORIES
BUILDING AREA:
ENCLOSED LOWER LEVEL: 2682 SQ FT
ENCLOSED UPPER LEVEL: 1019 SQ FT

OCCUPANT LOAD: 12

EXTERIOR:	CIP CONCRETE & CMU
FOUNDATION	CONT REINFORCED CONC
FLOOR:	CONC SLAB
ROOF	METAL ROOF ON ENGINEERED METAL TRUSS

JURISDICTION: CHARLESTON COUNTY
FLOOD ZONE: AE13

THE CODE ANALYSIS IS CONDUCTED UNDER THE 2012 INTERNATIONAL BUILDING CODE (IBC). NOTE: THIS REVIEW IS INTENDED PRIMARILY TO DETERMINE THE ACTUAL DESIGN REQUIREMENTS FOR THIS PROJECT AND IS SUBJECT TO REVIEW BY THE LOCAL BUILDING/CODE OFFICIAL.

NOTE: REFERING TO AN ORDINANCE AMENDING CHAPTER 9 OF THE CODE OF ORDINANCES, CHARLESTON COUNTY, ENTITLED "FLOOD DAMAGE PREVENTION AND PROTECTION.
1) top of slab is not 2' above BFE, as per 9-40 b
2) The building is floodproofed below DFE so structure is watertight, as per 9-41 b
3) Registered Engineer designed and certified floodproofing

IBC 2012 CODE SUMMARY FOR KIAWA RIVER PLANTATION WASTE WATER TREATMENT PLANT, CHARLESTON COUNTY, SOUTH CAROLINA

THE CODE ANALYSIS IS CONDUCTED UNDER THE 2012 INTERNATIONAL BUILDING CODE (IBC). NOTE: This analysis does not include a review of other applicable codes including the International Plumbing Code, International Mechanical Code, International Electrical Code and International Fire Code. Note: this review is intended primarily to determine the actual design requirements for this project and is subject to review by the Local Building/Code Official.

NEW CONSTRUCTION
The new & construction is a 2 story wastewater treatment facility. There are 2 parts to the wastewater treatment facility, with one end comprisingng the treatment basins, and the other end comprising a 2 story operation building.
The total area of the lower level is 2682 sq ft, with the treatment basins at 1364 sq ft and the operations building at 1318 sq ft.
The total enclosed area of the operations building on the upper floor is 1019 sq ft

The entire structure is 2 stories high.

The building will be a Use Group F-2 (low hazard processing plant) of type IIB Construction with control room space, incidental storage, electrical, equipment. The wastewater treatment facility will be basins of poured conc construction. There is an accessory use with High Hazard Group H, that comprises a 14'x8' Chemical Room

CODE REVIEW

CHAPTER 3
SECTION 306.3- The occupancy for the part of the facility that comprises the operations building is FACTORY/INDUSTRIAL Group F-2 (low hazard processing plant) with an accessory use room that is a Group H-3 (Chemical Room)

CHAPTER 4
NOT REQUIRED

SECTION 503 GENERAL HEIGHT AND AREA LIMITATIONS
TABLE 503 ALLOWABLE HEIGHT & BUILDING AREAS
Per this table, the area and height of Group F-2 buildings of type IIB construction are limited to 3 stories and 23,000sf.
BUILDING COMPLIES.

SECTION 504 HEIGHT MODIFICATIONS
There is no need for height modifications.

SECTION 508.2 ACCESSORY OCCUPANCY. The accessory area is less than 10% of the floor area in which it is located. A 3 hour rating as per per Table 508.4 is required between F-2 and H-3. BUILDING COMPLIES

CHAPTER 6
TABLE 601- FIRE RESISTIVE RATING REQUIREMENTS- Type IIB
Table 601 - Fire Resistance rating requirements for building elements (hours). BUILDING IS COMPLIANT.

Structural Frame	0 hours
Bearing walls Exterior	0 hours
Bearing walls Interior	0 hours
Non Bearing Interior Walls	0 hours
Floor construction	0 hours
Roof construction	0 hours

TABLE 602- EXTERIOR WALL RATING REQUIREMENTS BASED ON FIRE SEPARATION DISTANCE- Fire separation distance between 10<x<30' Type IIB construction, Occupancy Group F2- EXTERIOR WALLS ARE REQUIRED TO HAVE A RATING OF 0. BUILDING IS COMPLIANT.

SECTION 602.5- CONSTRUCTION TYPE-. Type IIB construction are those types of construction in which the building elements listed in table 601 are of non combustible material except as permitted in Section 603 and elsewhere in the Code. BUILDING IS COMPLIANT.

CHAPTER 7
SECTION 705 EXTERIOR WALLS. With a fire separation distance of greater than 5', projections of up to 40" is permitted. BUILDING COMPLIANT FOR ROOF OVERHANGS.

SECTION 705.3 BUILDINGS ON THE SAME LOT. Buildings on the same lot shall be assumed to have an imaginary line between them. BUILDING COMPLIANT FOR OPENING PROTECTION AND ROOF OVERHANGS.

SECTION 705.8 The maximum area of openings on three sides in the new exterior walls all have fire separation of 30' or greater, so are not required to limit the area of openings. The maximum area of openings on Front, where fire separation distance is more than 25' and less than 30' is 70% opening. BUILDING IS COMPLIANT.

CHAPTER 8
SECTION 803.1 WALL AND CEILING FINISHES
CLASS A: FLAME SPREAD 0-25; SMOKE-DEVELOPED 0-450 MIN.
CLASS B: FLAME-SPREAD 26-75; SMOKE-DEVELOPED 0-450 MIN.
CLASS C: FLAME-SPREAD 76-200; SMOKE-DEVELOPED 0-450 MIN.

TABLE 803.9- INTERIOR WALL & CEILING FINISH REQUIREMENTS
BASED ON F-2 LOW HAZARD, UNSPRINKLERED:
Exit Corridors & other Exitways not to exceed: Class B
Corridors: Class C
Rooms & Enclosed Spaces not to exceed: Class C

BUILDING IS COMPLIANT.

CHAPTER 9
SECTION 903.- AUTOMATIC SPRINKLER SYSTEMS is not required for F-2 Occupancy.
BUILDING IS COMPLIANT

SECTION 906 PORTABLE FIRE EXTINGUISHERS. Portable fire extinguishers shall be provided and selected and installed as per NFPA 10 and NFPA 820.

SECTION 907 FIRE ALARM AND DETECTION SYSTEMS. An approved fire alarm system does not need to be installed in accordance with provisions of IBC 2012 and NFPA 72 and NFPA 820

SECTION 907.2.4 GROUP F2. A manual fire alarm system that activates the occupant notification system is not required as Building meets exceptions for height and occupant load, and is not required under NFPA 820. BUILDING IS COMPLIANT

CHAPTER 10
SECTION 1004- DESIGN OCCUPANT LOAD- Per table 1004.1.1 occupant load is calculated as follows:

LOWER FLOOR TOTAL OCCUPANT = 5
UPPER FLOOR TOTAL OCCUPANTS = 7
BUILDING TOTAL = 12 OCCUPANTS

SECTION 1005.3.2- EGRESS WIDTH REQ.- 1.2" of egress width is required for other components in the building. Lower Level provides 2-36" doors and 1-42" door . Upper floor provides 3-36" doors.
Stairways - 0.3 inch per occupant (req. 2.1", 39" provided at stairs) Other - 0.2 inch per occupant (req. 2.4", 36" provided at doors) BUILDING IS IN COMPLIANCE.

SECTION 1006- EGRESS ILLUMINATION- Section requires means of egress, including the exit discharge shall be illuminated at all times when building is occupied. EMERGENCY LIGHTING UNITS SHALL BE PROVIDED, SEE LIFE SAFETY PLAN AND ELECTRICAL DESIGN. BUILDING WILL BE IN COMPLIANCE WITH REQUIREMENTS OF THIS SECTION.

SECTION 1008.1.1- SIZE OF DOORS- Section requires minimum width of each door opening to provide clear width of 32". ALL DOOR ARE 36" MIN WIDE. BUILDING IS IN COMPLIANCE.

SECTION 1008.1.6 Section requires thresholds shall not exceed .5", and shall be beveled if over 1/4". BUILDING IN COMPLIANCE

SECTION 1008.1.8.1- HARDWARE. Door handles, pulls and latches, locks and other operating devices on doors required to be accessible shall not requires tight grasping, tight pinching or twisting to operate. ALL DOORS MEET ACCESSIBILITY REQUIREMENT.

SECTION 1009 STAIRWAYS. Floor openings between only 2 stories do not have to be enclosed in other than Group I2 and I3 for open to the atmosphere stairs. BUILDING COMPLIES

SECTION 1009.4 WIDTH Stair width shall not be less than 44", unless serving an occupant load of less than 50, when min stair width shall not be less than 36". BUILDING COMPLIES.

SECTION 1009.5 HEADROOM. Stairways shall have min head room of 80" from line connecting nosing for full width of stair and landing. BUILDING COMPLIES

SECTION 1009.7 STAIR TREADS AND RISERS. Stair riser heigh shall be maximum 7" and minimum 4". Stair tread depths shall be min 11". BUILDING COMPLIES

SECTION 1009.10 VERTICAL RISE. Stairs shall not have a vertical rise of more than 12' without a landing. Landing provided. BUILDING COMPLIES

SECTION 1011.1- EXIT SIGNS- Section requires illuminated exit signs marking exits and exit paths. BUILDING SHALL BE IN COMPLIANCE WITH REQUIREMENTS OF THIS SECTION, SEE LIFE SAFETY PLAN AND ELECTRICAL DRAWINGS.

SECTION 1014.2(2)- EGRESS THROUGH INTERVENING SPACES- Egress shall not pass through kitchens, storage rooms, closets or spaces used for similar purposes. Exception allows means of egress through adjoining rooms in 'F' occupancy where rooms are of same or lesser hazard occupancy. BUILDING IS COMPLIANT.

SECTION 1014.3- COMMON PATH OF EGRESS TRAVEL- The common path of egress travel for Groups U, B, F2 shall not exceed 75 feet. With 2 exits, common path of travel is less than 75' for upper floor. BUILDING IS COMPLIANT.

SECTION 1015.1- NUMBER OF EXITS REQUIRED- 2 exits are required from upper floor. On lower level, doors provide exist for each room. BUILDING IS COMPLIANT.

TABLE 1016.1 EXIT ACCESS TRAVEL DISTANCE
Per this table, exit access travel distance shall not exceed 300' in a non-sprinklered, Group F2 building.All points of the building are within 200' of an approved exit, see life safety plan.
BUILDING IS COMPLIANT.

SECTION 1024.1 EXIT DISCHARGE. Exits shall discharge directly to the exterior of the building. The exit discharge shall be at grade. BUILDING IS COMPLIANT.

CHAPTER 12
SECTION 1203- VENTILATION. Ventilation meeting the requirements of this section shall be provided

SECTION 1204- TEMPERATURE CONTROL. Temperature control meeting the requirements of this section shall be provided

SECTION 1205- LIGHTING- Artificial lighting meeting the requirements of this section shall be provided

SECTION 1208.2- MINIMUM CEILING HEIGHT- Spaces shall have a ceiling height of not less than 7'-6". BUILDING IS COMPLIANT.

CHAPTER 29
TABLE 2901.2- MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES- Per this table, this space is required to have the following number of fixtures:

water closet	1 shared as occulant load is less than 15
water closet	1 shared as occulant load is less than 15
drinking fountain	1 per 100 total
service sink	1 required

BUILDING IS COMPLIANT.

SECTION 2902.2.2- SEPARATE FACILITIES. - Separate facilities are not required for total occupant load of less than 15. BUILDING IS COMPLIANT.

NOTE:
FOR BUILDING CODE LIFE SAFETY DIAGRAMS SEE 35-A-02

NFPA 820 REVIEW

NFPA 820 SUMMARY FOR KIAWA RIVER PLANTATION WASTE WATER TREATMENT PLANT, CHARLESTON COUNTY, SOUTH CAROLINA

THE ANALYSIS IS CONDUCTED UNDER THE NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities -

From Table 5.2 the following are included in this project:

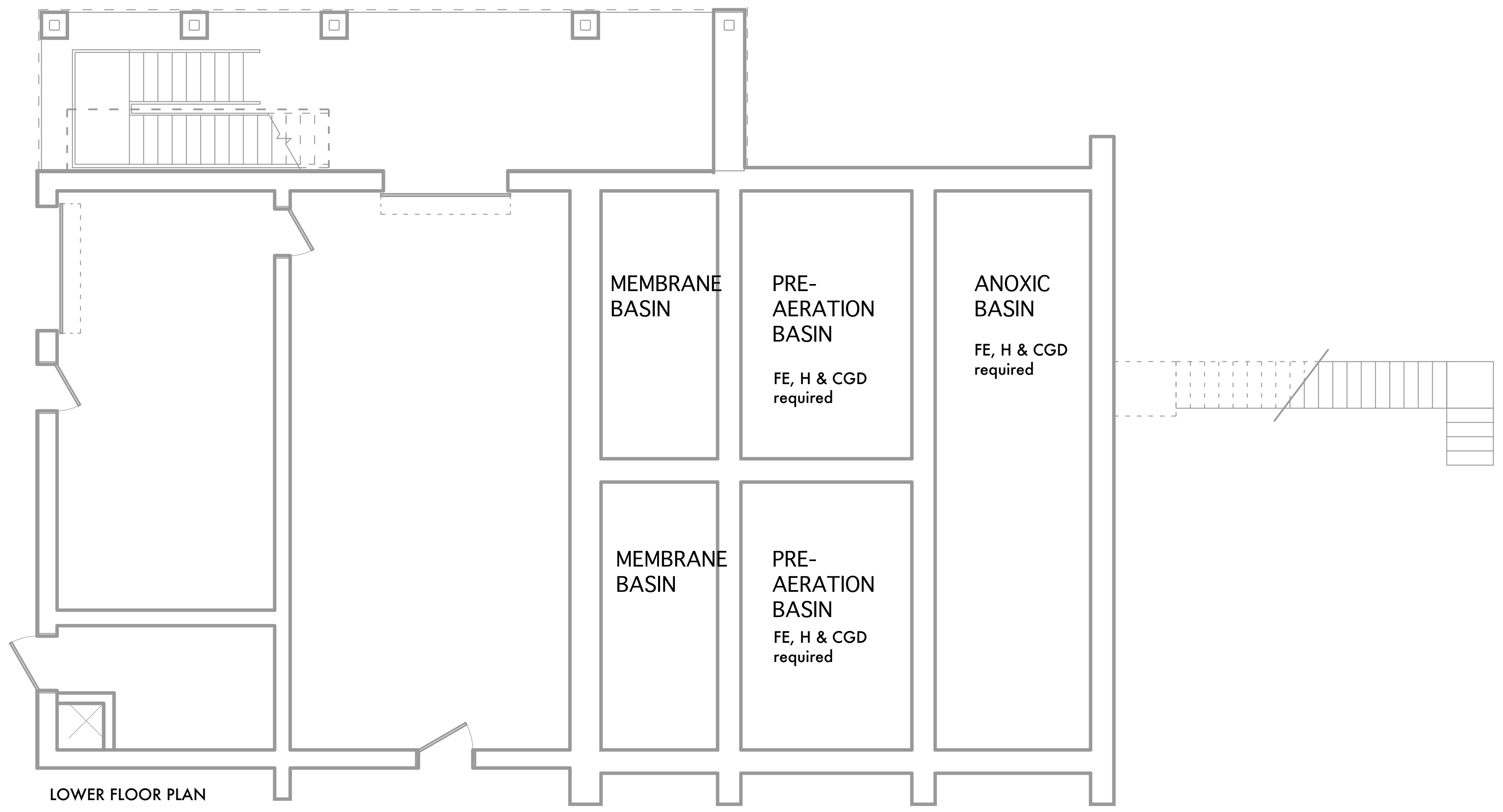
- Row 1, line c (this is located on the Coarse and Fine Screen slab attached to the basins) – noncombustible materials used, not enclosed, FE & H required
- Row 2, (located away from the buildings next to the lagoon)
- Row 3, line a (Anoxic Basin) - noncombustible materials used, FE, H & CGD required
- Row 4, line a (this is located on the Coarse and Fine Screen slab attached to the basins) – noncombustible materials used, not enclosed, FE & H required
- Row 5, line a (this is the Pre-Aeration basins) - noncombustible materials used, FE, H & CGD required

From Table 6.2a the following are included in this project:

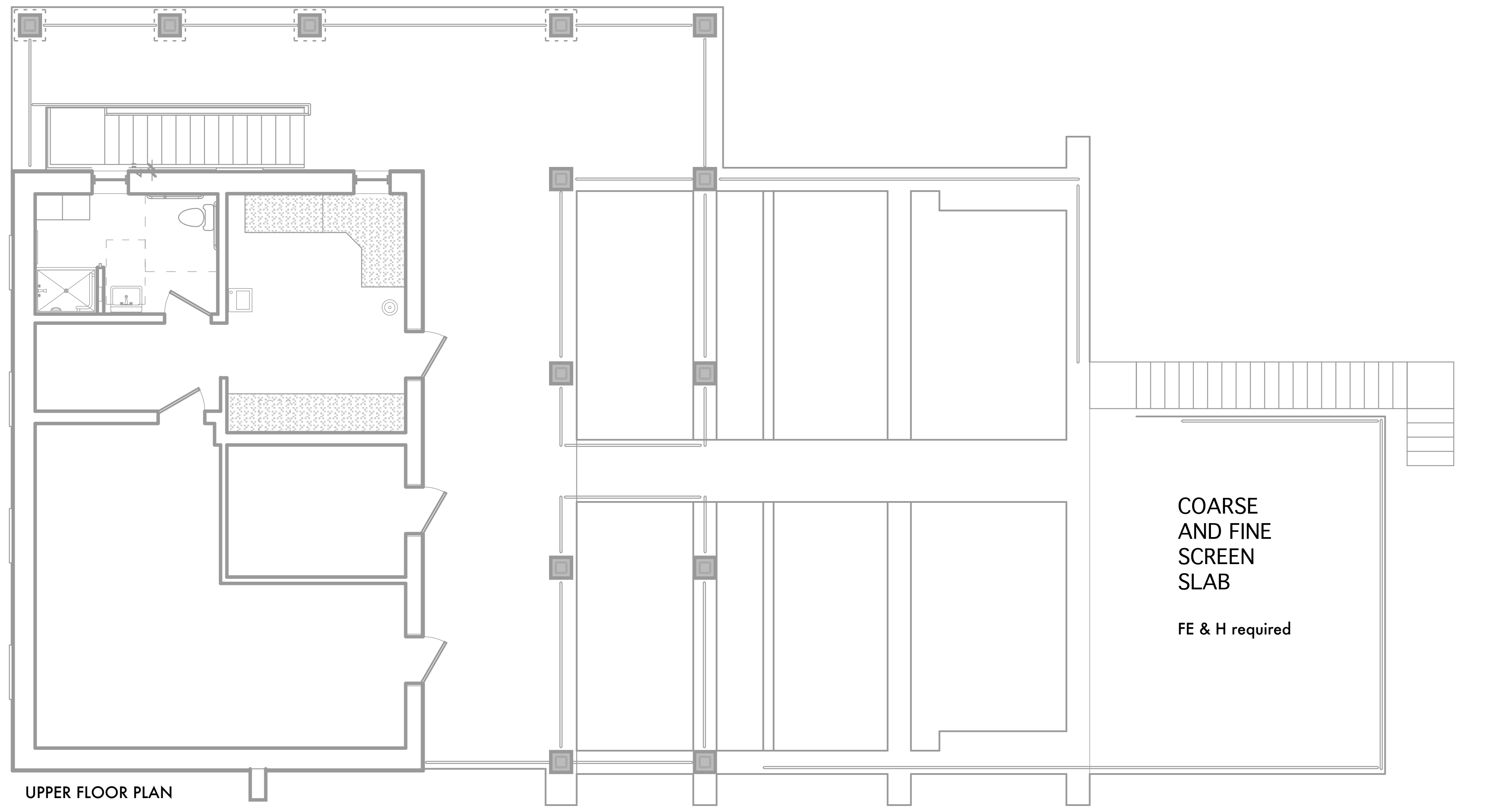
- Row 8, line a (this is Pre-Aeration basins), FE, H & CGD required
- Row 16, line c (this is Pre-Aeration basins), CGD required

Nothing from Table 6.2b is included in this project.

H = hydrant
FE = fire extinguisher
CGD = combustible gas detection system
FAS = fire alarm system



LOWER FLOOR PLAN



UPPER FLOOR PLAN

No.	Issued For	Date
1	Issued For Bid	Jan. 29, 2016
2		
3		

Stamps

SWALLOWTAIL ARCHITECTURE LLC
Summerville, SC
No. 100760

RACHEL BEVERLEY BURTON
Summerville, SC
No. 8440

January 29 2016

SWALLOWTAIL ARCHITECTURE, LLC
ARCHITECTURE AND INTERIOR DESIGN
843-885-9400 • SwallowtailArchitecture.com
814 N Cedar Street, Summerville, SC, 29483

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
WASTE WATER TREATMENT FACILITY LIFE SAFETY ANALYSIS

Plot Date 1/29/16
Checked RB
Drawn RB
Drawing Title Waste Water Treatment Facility - Life Safety Analysis
Drawing No. **35-A-01**

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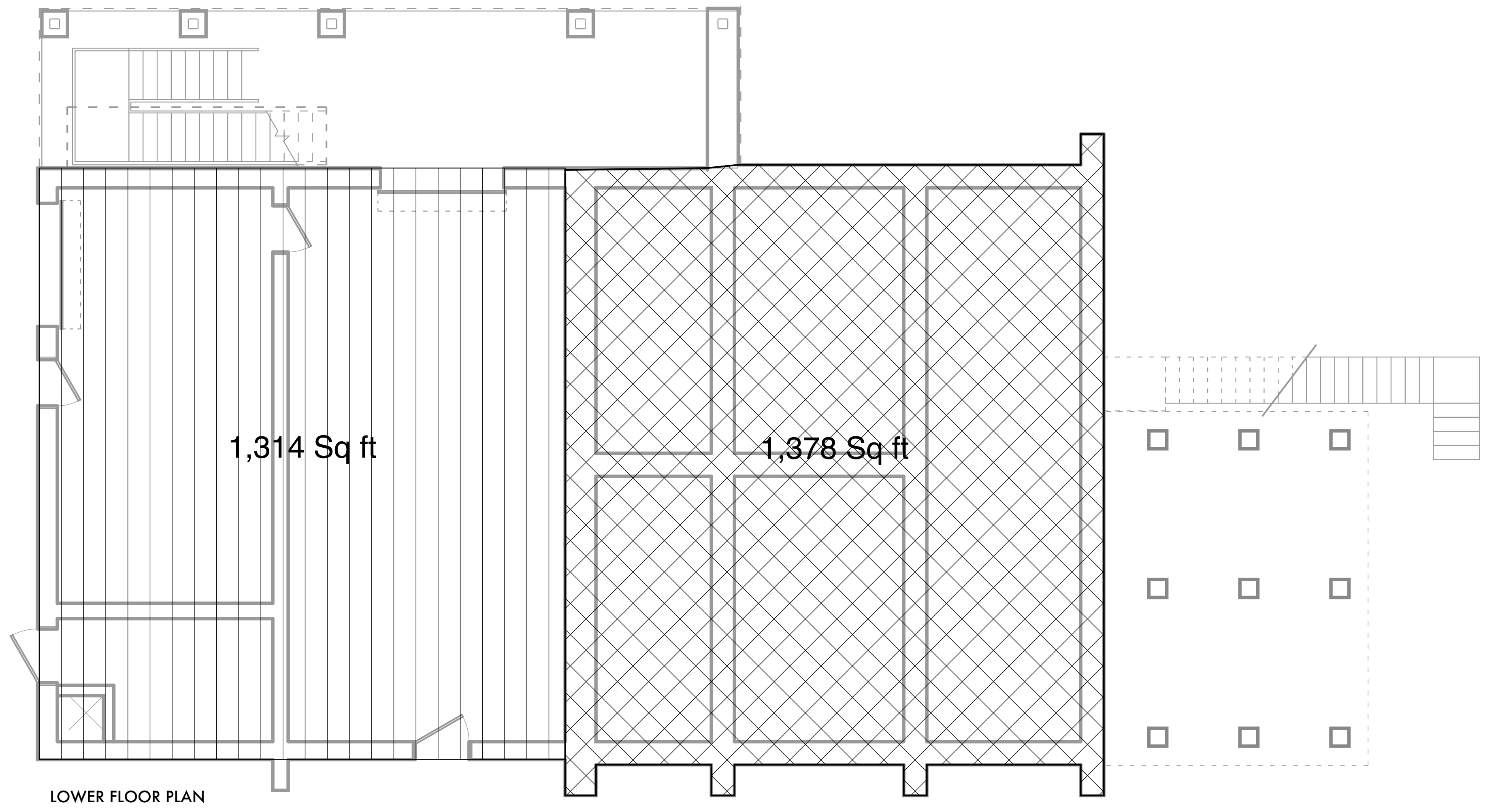
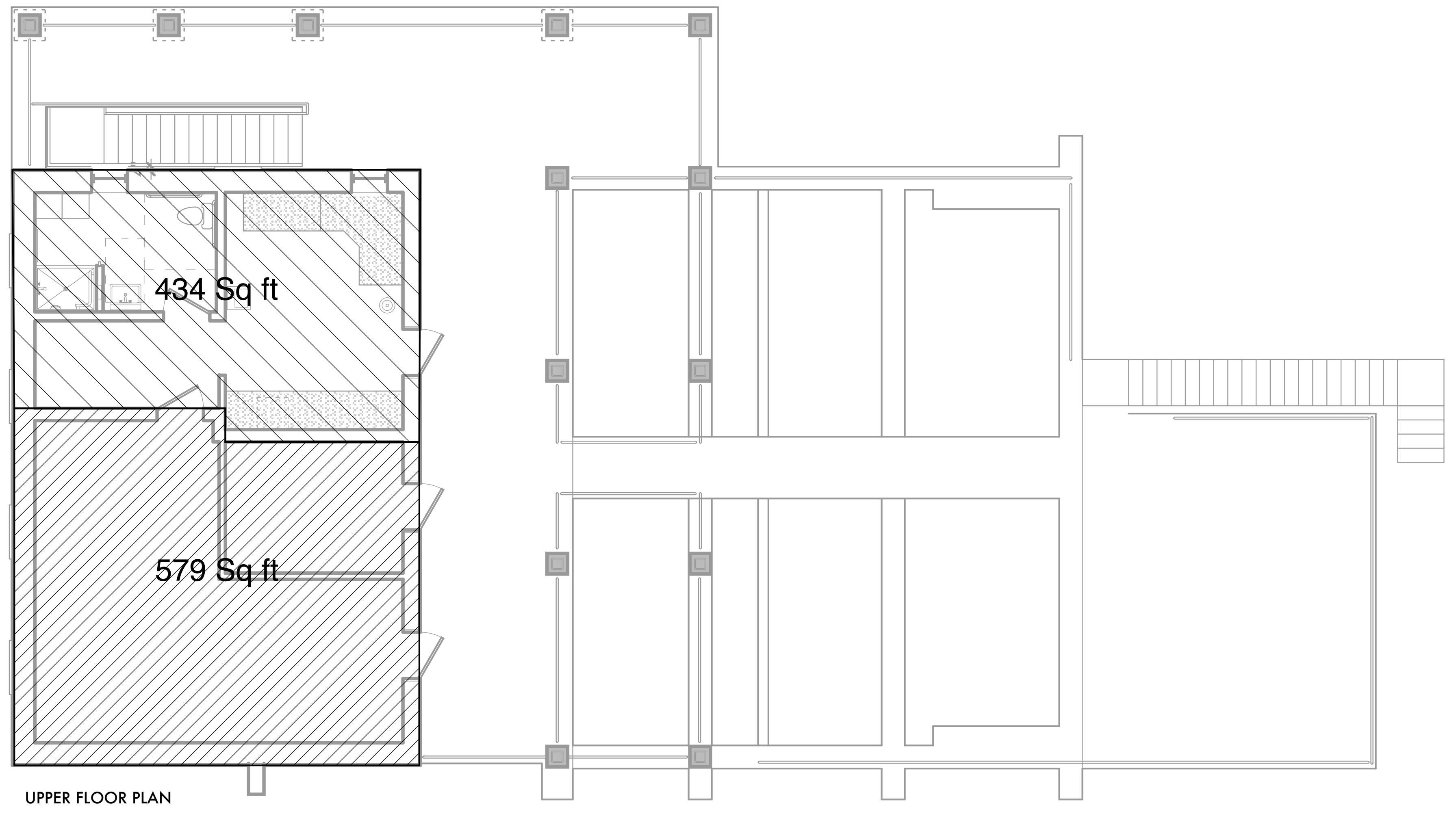




▨	ACCESSORY STORAGE , MECHANICAL EQUIPMENT AREA @ 300 SF GROSS PER OCCUPANT 579 SF GROSS = 2 OCCUPANTS
▨	BUSINESS AREAS @ 100 SF GROSS PER OCCUPANT 434 SF GROSS = 5 OCCUPANTS
▩	GROUP U- NO OCCUPANCY @ 1378 SF =0 OCCUPANTS
▥	ACCESSORY STORAGE , MECHANICAL EQUIPMENT AREA @ 300 SF GROSS PER OCCUPANT 1314 SF GROSS = 5 OCCUPANTS

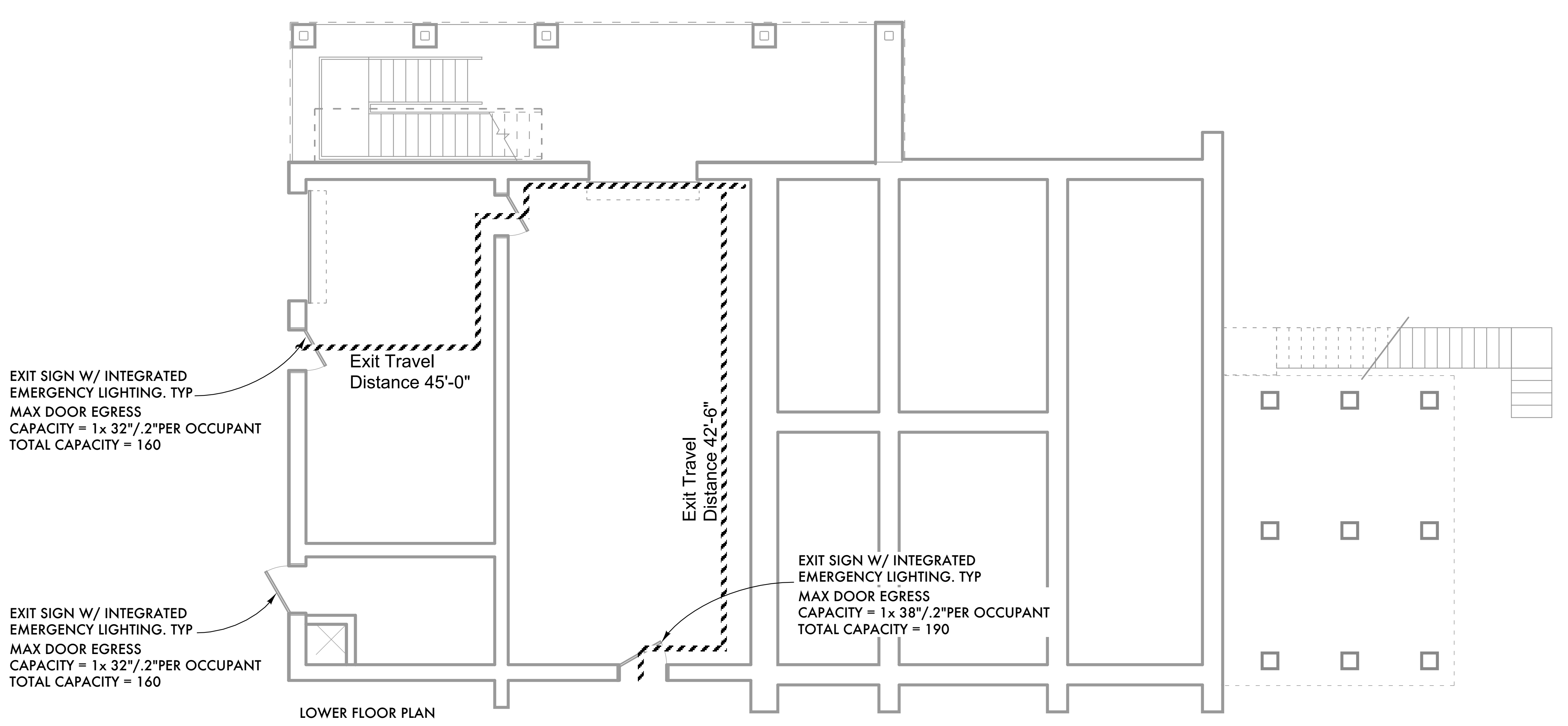
LOWER FLOOR TOTAL OCCUPANT = 5
UPPER FLOOR TOTAL OCCUPANTS = 7
BUILDING TOTAL = 12 OCCUPANTS

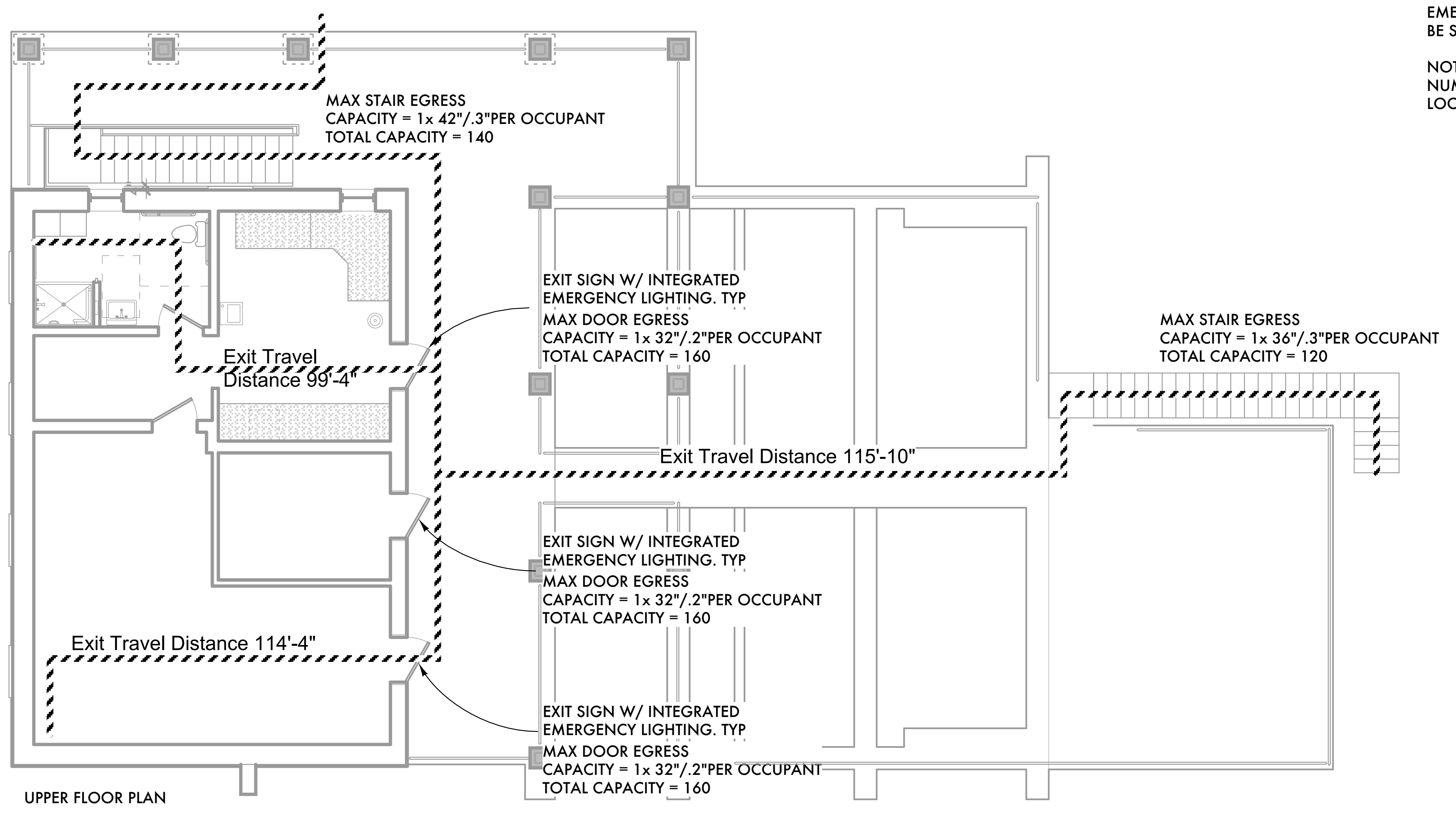
OCCUPANCY CALCULATIONS

SCALE: NTS

NOTE: NUMBER AND LOCATION OF ALL EMERGENCY EGRESS LIGHTING FIXTURES TO BE SPECIFIED ON LIGHTING PLAN

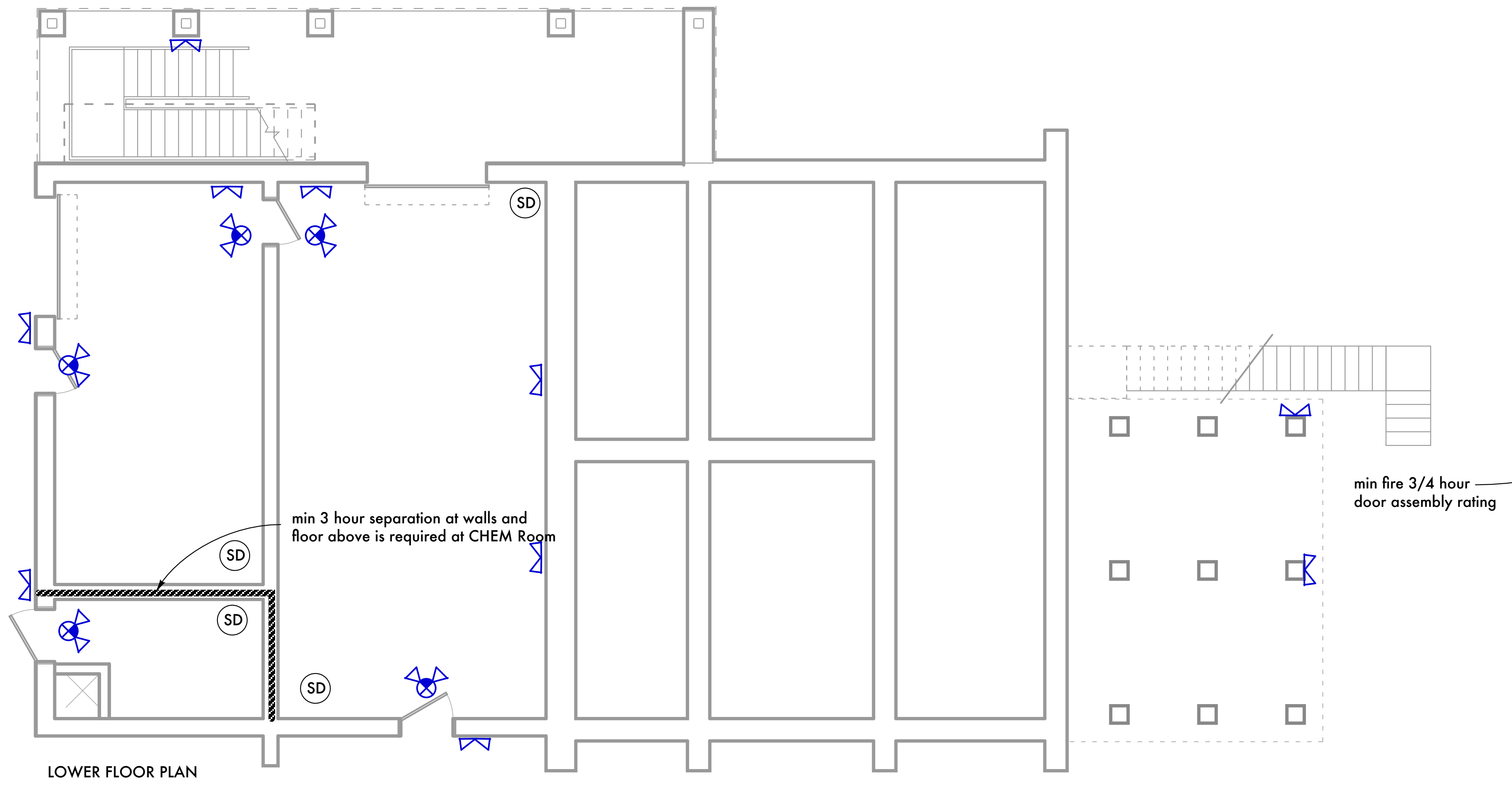
NOTE: PROVIDE FIRE EXTINGUISHERS IN A NUMBER AND LOCATION AS REQUIRED BY LOCAL FIRE OFFICIAL HAVING JURISDICTION

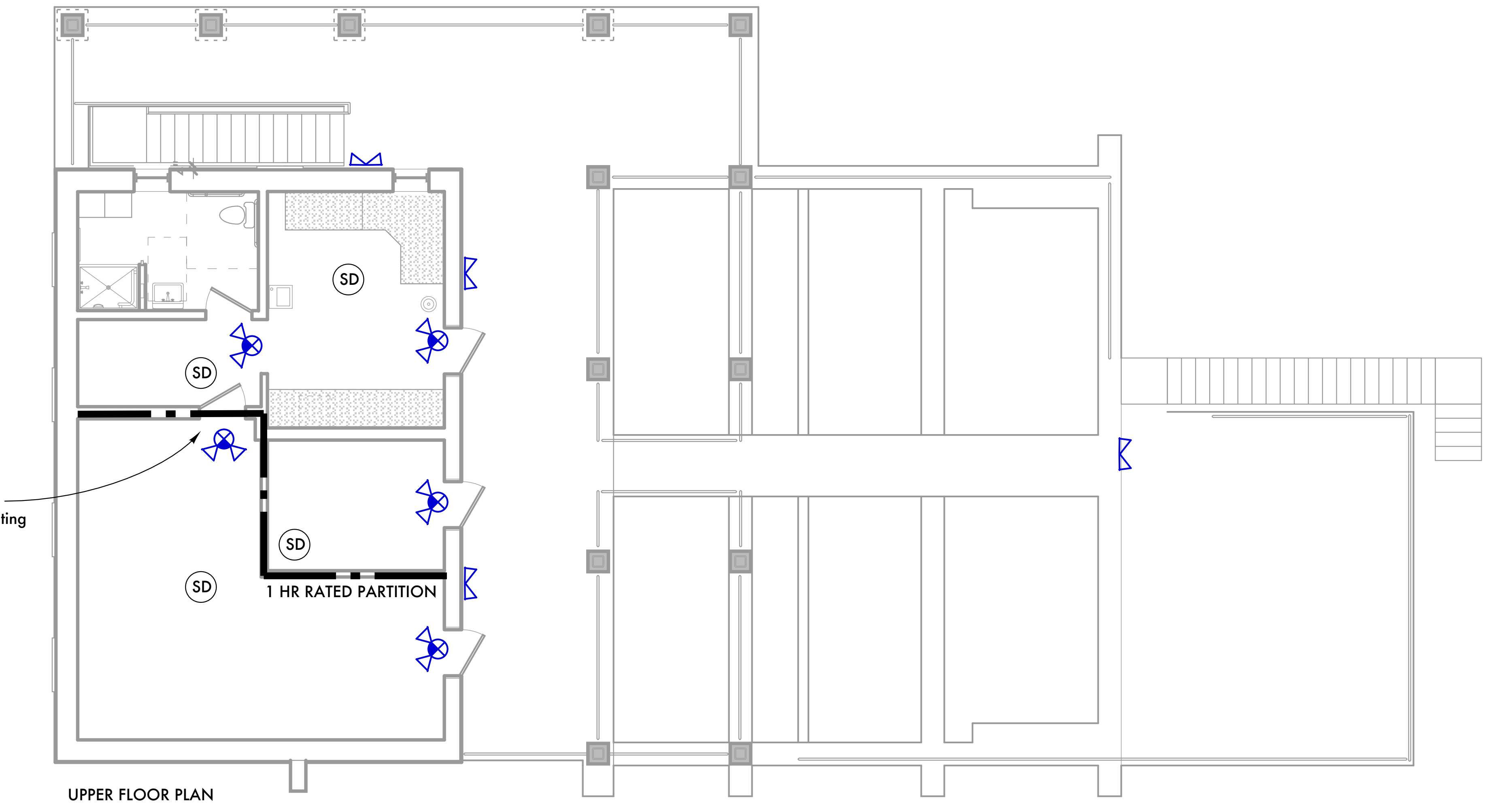

EXIT SIGN W/ INTEGRATED EMERGENCY LIGHTING. TYP
MAX DOOR EGRESS
CAPACITY = 1x 32"/.2"PER OCCUPANT
TOTAL CAPACITY = 160
Exit Travel Distance 45'-0"
Exit Travel Distance 42'-6"
EXIT SIGN W/ INTEGRATED EMERGENCY LIGHTING. TYP
MAX DOOR EGRESS
CAPACITY = 1x 32"/.2"PER OCCUPANT
TOTAL CAPACITY = 160
EXIT SIGN W/ INTEGRATED EMERGENCY LIGHTING. TYP
MAX DOOR EGRESS
CAPACITY = 1x 38"/.2"PER OCCUPANT
TOTAL CAPACITY = 190
LOWER FLOOR PLAN


MAX STAIR EGRESS
CAPACITY = 1x 42"/.3"PER OCCUPANT
TOTAL CAPACITY = 140
Exit Travel Distance 99'-4"
EXIT SIGN W/ INTEGRATED EMERGENCY LIGHTING. TYP
MAX DOOR EGRESS
CAPACITY = 1x 32"/.2"PER OCCUPANT
TOTAL CAPACITY = 160
MAX STAIR EGRESS
CAPACITY = 1x 36"/.3"PER OCCUPANT
TOTAL CAPACITY = 120
Exit Travel Distance 115'-10"
EXIT SIGN W/ INTEGRATED EMERGENCY LIGHTING. TYP
MAX DOOR EGRESS
CAPACITY = 1x 32"/.2"PER OCCUPANT
TOTAL CAPACITY = 160
Exit Travel Distance 114'-4"
EXIT SIGN W/ INTEGRATED EMERGENCY LIGHTING. TYP
MAX DOOR EGRESS
CAPACITY = 1x 32"/.2"PER OCCUPANT
TOTAL CAPACITY = 160
UPPER FLOOR PLAN

EGRESS

SCALE: NTS


SD
min 3 hour separation at walls and floor above is required at CHEM Room
min fire 3/4 hour door assembly rating
LOWER FLOOR PLAN



⧖	REMOTE EGREES LIGHTING UNIT
⊗	EXIT LIGHT
(SD)	SMOKE DETECTOR
▬ ▪ ▪ ▬	RATED PARTITION WALL IBC Section 708.4 CONTINUITY: 1 hour rated partition shal extend from conc slab to the u/s of the roof sheathing

WALL TYPES & EMERGENCY LIGHTING

SCALE: NTS

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1	Issued For Bid	Jan. 29, 2016
2		
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Summerville, SC
No. 100760

RACHEL BEVERLEY BURTON
Summerville, SC
No. 8440
January 29 2016

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
WASTE WATER TREATMENT FACILITY LIFE SAFETY ANALYSIS

Plot Date 1/29/16
Checked RB
Drawn RB
Drawing Title
Waste Water Treatment Facility - Life Safety Analysis
Drawing No.
35-A-02

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NOTE:
1) Design height of riser is 7". Stair riser heigh shall be maximum 7" and minimum 4" as defined in IBC. If actual site conditions mean riser is greater than 7" contact Architect for calculation of alternate stair configuration.
2) Design tread depth is 11'. Stair tread depths shall be min 11" as defined in IBC. If actual site conditions mean tread is less than 11" contact Architect for calculation of alternate stair configuration.
3) provide fire extinguishers in a number and location as required by local fire official having jurisdiction

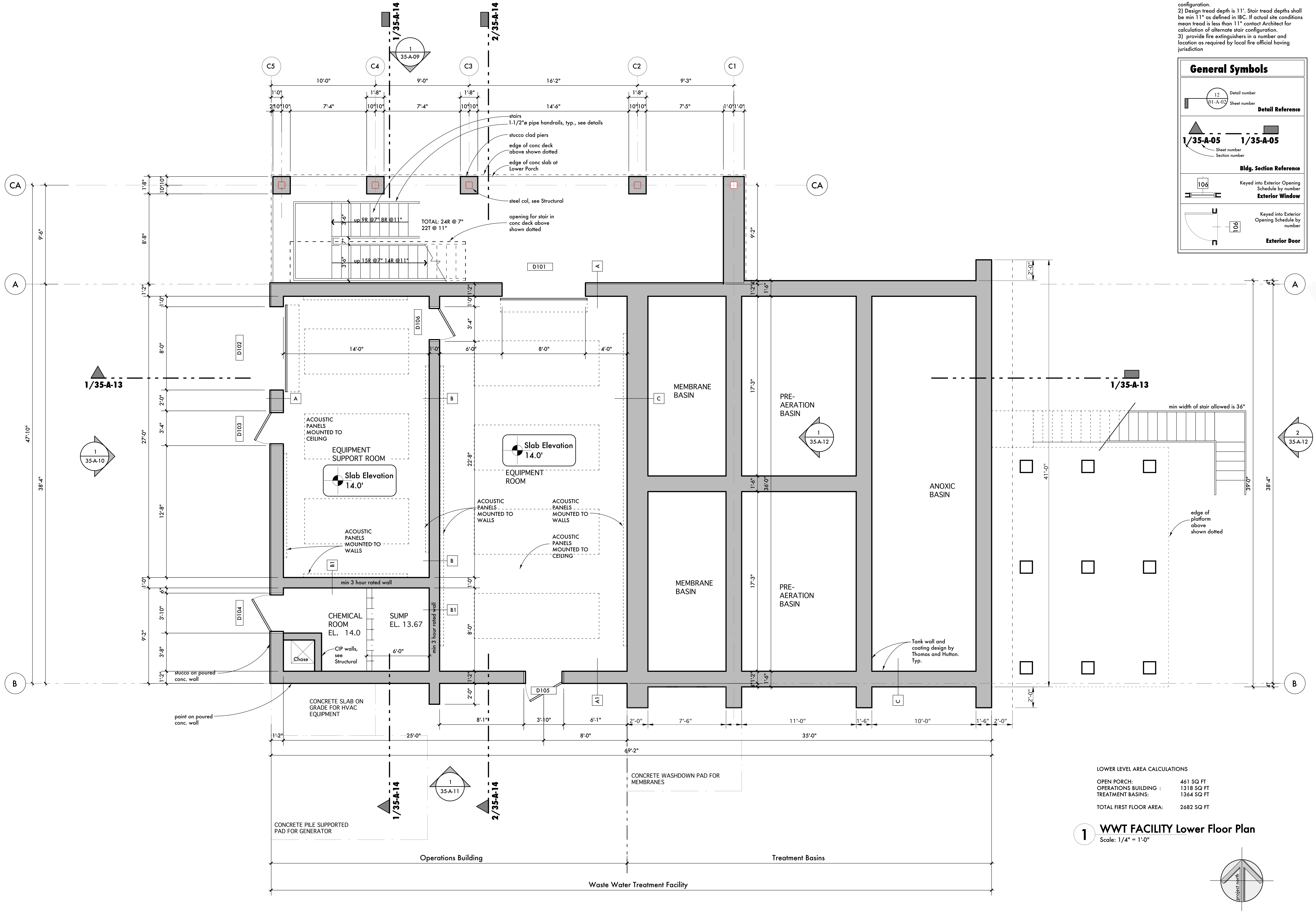
General Symbols

12
01-A-02
Detail number
Sheet number
Detail Reference

1/35-A-05 **1/35-A-05**
Sheet number
Section number
Bldg. Section Reference

106
Keyed into Exterior Opening Schedule by number
Exterior Window

106
Keyed into Exterior Opening Schedule by number
Exterior Door



LOWER LEVEL AREA CALCULATIONS

OPEN PORCH:	461 SQ FT
OPERATIONS BUILDING :	1318 SQ FT
TREATMENT BASINS:	1364 SQ FT
TOTAL FIRST FLOOR AREA:	2682 SQ FT

1 WWT FACILITY Lower Floor Plan

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

No.	Issued For	Date
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3		

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REGISTERED ARCHITECT
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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
WASTE WATER TREATMENT FACILITY LOWER FLOOR PLAN

Plot Date 1/29/16
Checked RB
Drawn RB

Drawing Title
Waste Water Treatment Facility Lower Floor Plan

Drawing No.
35-A-03

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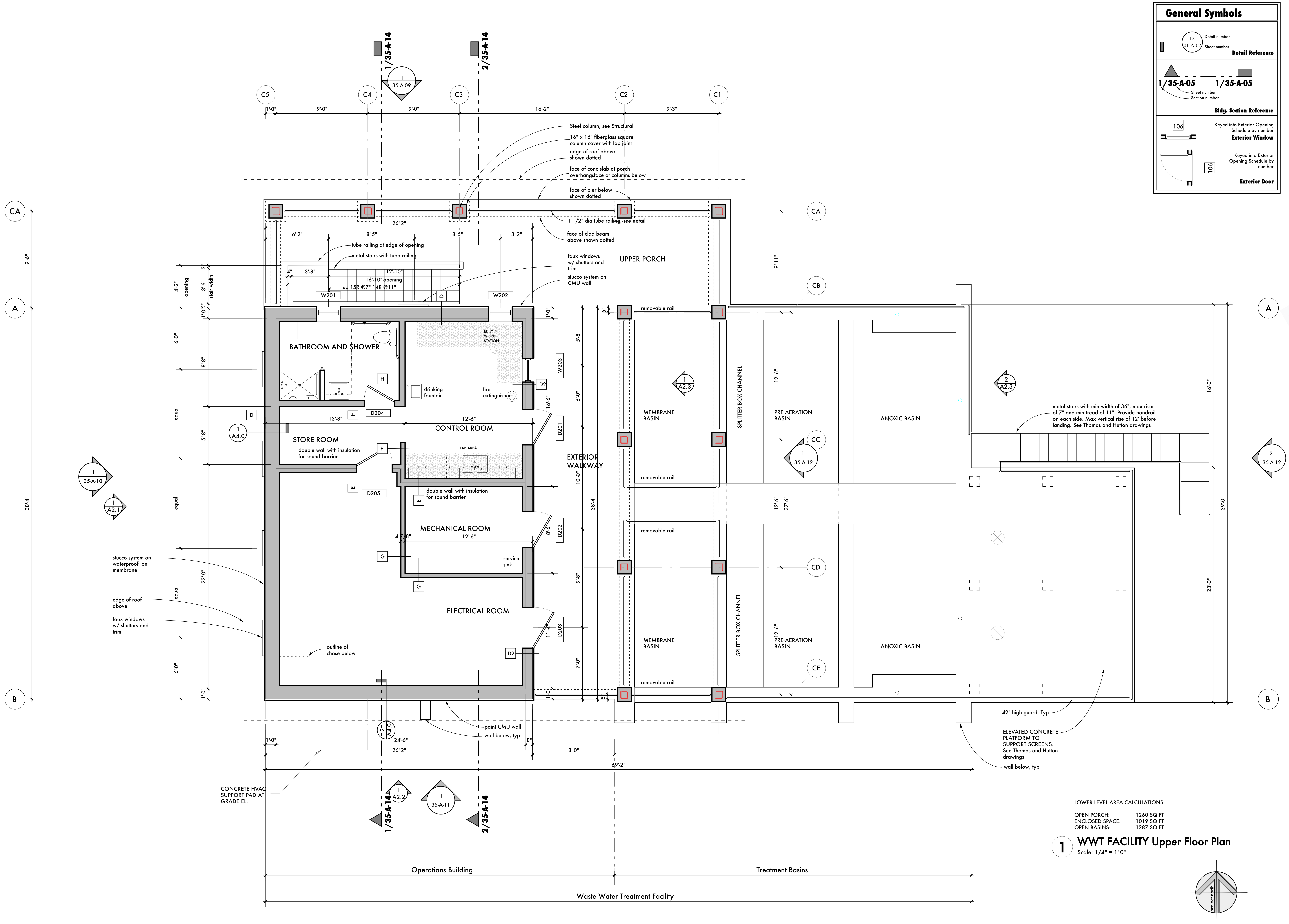

LOWER LEVEL AREA CALCULATIONS

OPEN PORCH:	1260 SQ FT
ENCLOSED SPACE:	1019 SQ FT
OPEN BASINS:	1287 SQ FT

1 WWT FACILITY Upper Floor Plan

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

No.	Issued For	Date
1	Issued For Bid	Jan. 29, 2016
2		
3		

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
WASTE WATER TREATMENT FACILITY UPPER FLOOR PLAN

Plot Date
1/29/16

Checked
RB

Drawn
RB

Drawing Title
Waste Water Treatment Facility Upper Floor Plan

Drawing No.
35-A-04

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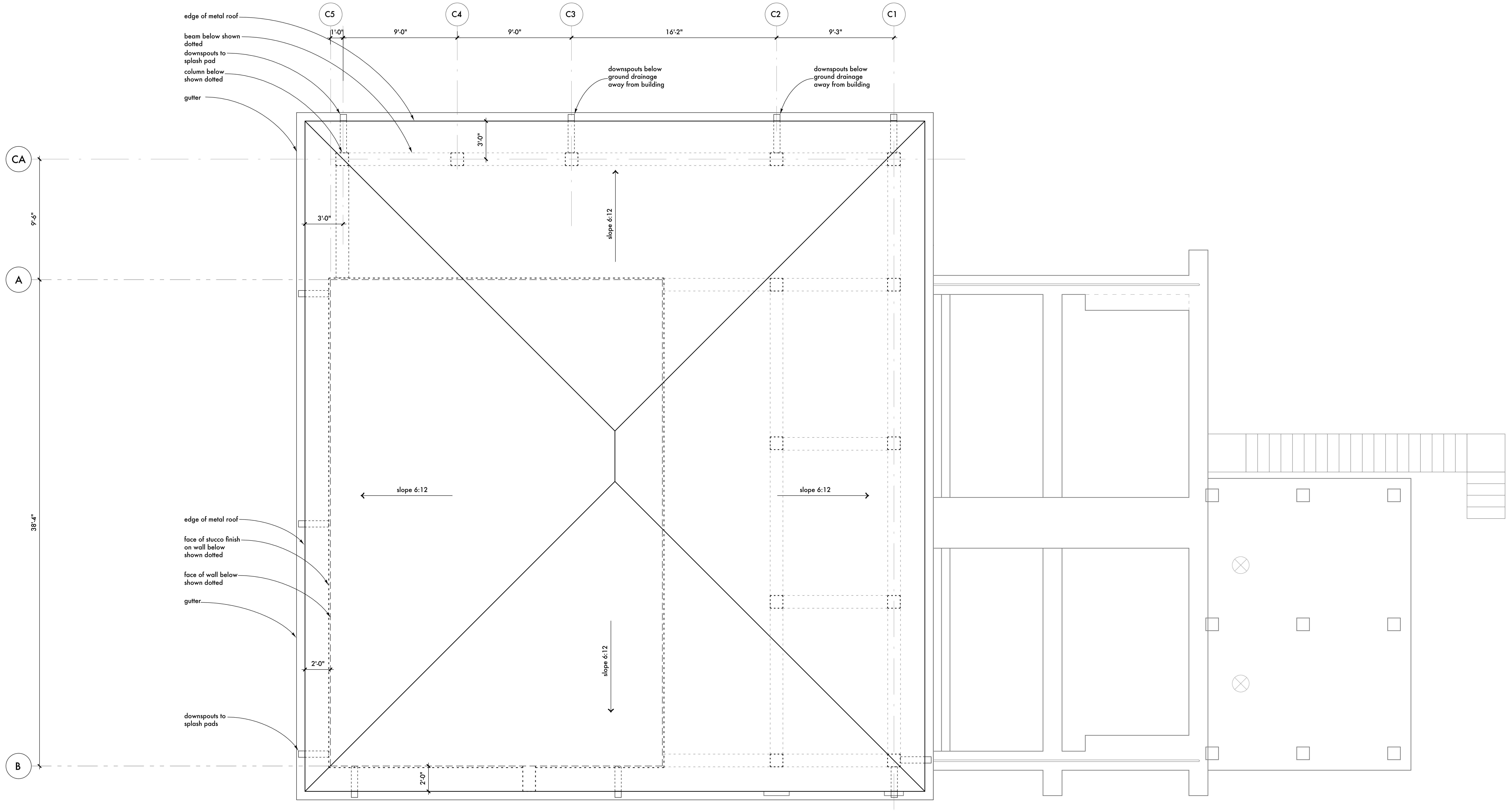
C5
C4
C3
C2
C1
1'-0"
9'-0"
9'-0"
16'-2"
9'-3"
edge of metal roof
beam below shown dotted
downspouts to splash pad
column below shown dotted
gutter
downspouts below ground drainage away from building
downspouts below ground drainage away from building
3'-0"
CA
A
B
9'-6"
38'-4"
3'-0"
slope 6:12
slope 6:12
slope 6:12
slope 6:12
edge of metal roof
face of stucco finish on wall below shown dotted
face of wall below shown dotted
gutter
2'-0"
downspouts to splash pads
2'-0"

1 **WWT FACILITY Roof Plan**
Scale: 1/4" = 1'-0"

No.	Issued For	Date
1	Issued For Bid	Jan. 29, 2016
2		
3		

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WASTE WATER TREATMENT FACILITY ROOF PLAN

Plot Date
1/29/16

Checked
RB

Drawn
RB

Drawing Title
Waste Water Treatment Facility Roof Plan

Drawing No.
35-A-05

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EXTERIOR PAINT SCHEDULE

Number	Location	Brand	Name
1	Porch Ceilings	Sherwin Williams	Wool Skein SW 6148
2	Inset Wall Color	Sherwin Williams	Intellectual Gray SW 7045
3	Wall Color	Sherwin Williams	Favorite Tan SW 6157
4	Columns, Trim, Fascia	Sherwin Williams	Retreat SW 6207
5	Porch Shutters	Sherwin Williams	Ripe Olive SW 6209
6	Shutters, Doors	Sherwin Williams	Cassique DCR 024

INTERIOR PAINT SCHEDULE

Number	Location	Brand	Name
1-Int Paint, flat	Ceiling	Sherwin Williams	TBD
2-Int Paint, semi gloss	Walls	Sherwin Williams	TBD
3-Int Paint, gloss	Interior Doors	Sherwin Williams	TBD
4-Int Paint, gloss	Interior Door Trim	Sherwin Williams	TBD

DOOR SCHEDULE - WWTP BUILDING

Mark	Elevation	Unit Size	Thickness	Fire Rated	Door Type/ Size	Header Height	req. DP rating	Opening Protection see legend at right	Glazing	Type: Man Door	Type: Dbl. French	Type: Coil Door	Type: Screened door	Remarks
Lower Level														
D101		8'-0" x 10'-0"		no	4	10'-0"						●		
D102		8'-0" x 10'-0"		no	4	10'-0"						●		
D103		3'-0" x 7'-0"	1 3/4"	no	1	7'-0"	50	IG	2'-0" x 2'-0"	●				Exterior insulated, see spec
D104		3'-6" x 7'-0"	1 3/4"	no	3	7'-0"	50	IG	2'-0" x 2'-0"	●				Exterior insulated, see spec
D105		3'-6" x 7'-0"	1 3/4"	no	3	7'-0"	50	IG	2'-0" x 2'-0"	●				Exterior insulated, see spec
D106		3'-0" x 7'-0"	1 3/4"	no	2	7'-0"			2'-0" x 2'-0"	●				interior door, see spec
Upper Floor														
D201		3'-6" x 7'-0"	1 3/4"	no	3	7'-0"	50	IG	2'-0" x 2'-0"	●				Exterior insulated, see spec
D202		3'-6" x 7-0"	1 3/4"	no	3	7'-0"	50	IG	2'-0" x 2'-0"	●				Exterior insulated, see spec
D203		4'-0" x 7-0"	1 3/4"	no	3	7'-0"	50	IG	2'-0" x 2'-0"	●				Exterior insulated, see spec
D204		3'-0" x 7-0"	1 3/4"	no	2	7'-0"				●				Interior insulated for sound, see spec
D205		3'-6" x 7-0"	1 3/4"	45 min	2	7'-0"				●				Interior insulated for sound, see spec

Door Notes:

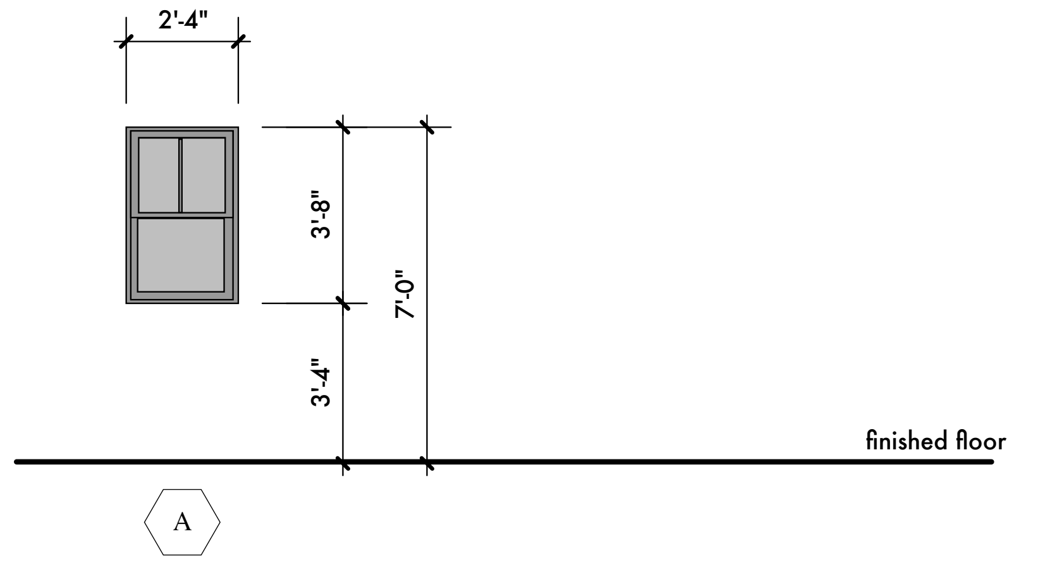
1. All exterior doors must meet current International Building Code 2012 (IBC 2012) requirements for Design Pressure (DP) and Impact Protection . Verify compliance of all doors.

EXTERIOR WINDOW SCHEDULE

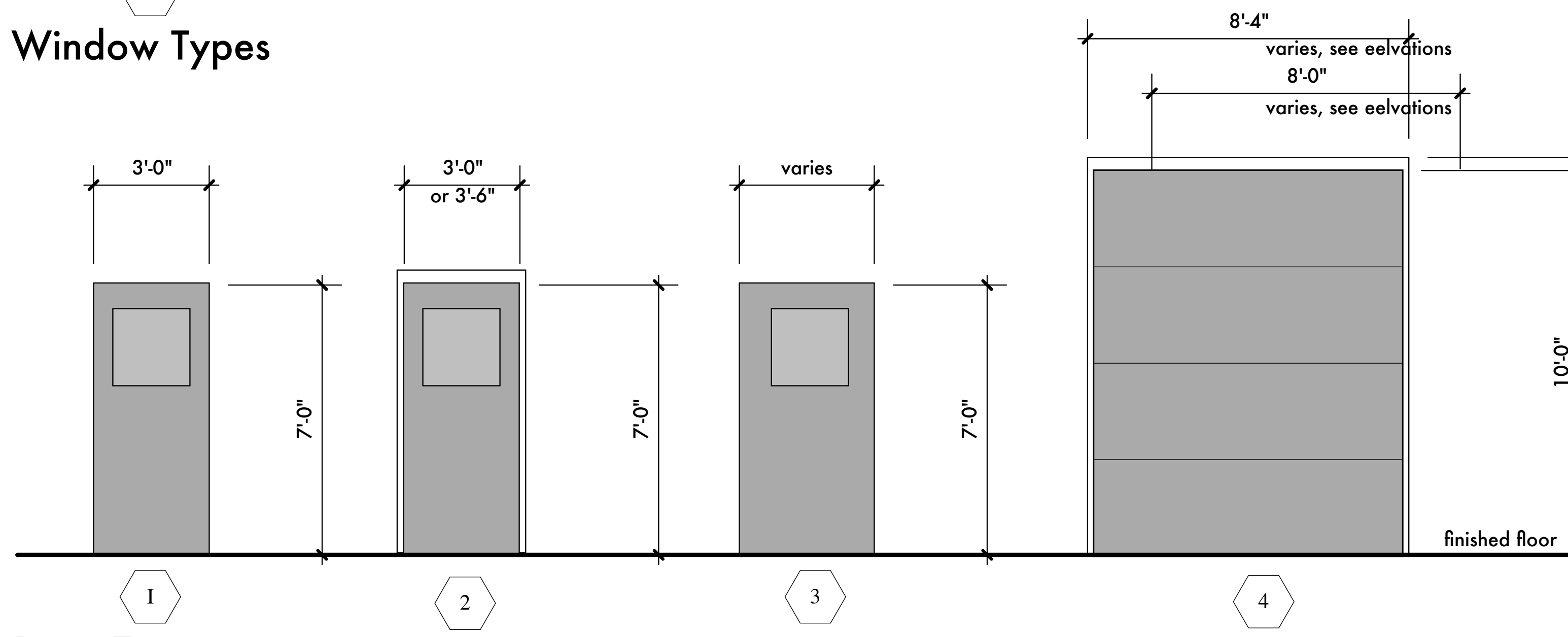
Mark	Unit Size	Window Type/ Size	req. DP rating	Opening Protection	Egress	Header Height	Type: Andersen A series Fixed	Type: Fixed Casement	Type: Casement	Type: Picture Unit	Grid Pattern	Remarks
Lower Level												
Upper Level												
W201	2'-4" x 3'-8"	A	50	IG	no	9'-0"	●				2/1	
W202	2'-4" x 3'-8"	A	50	IG	no	9'-0"	●				2/1	
W203	2'-4" x 3'-8"	A	50	IG	no	9'-0"	●				2/1	
W204												
W205												
W206												
W207												

Window Notes:

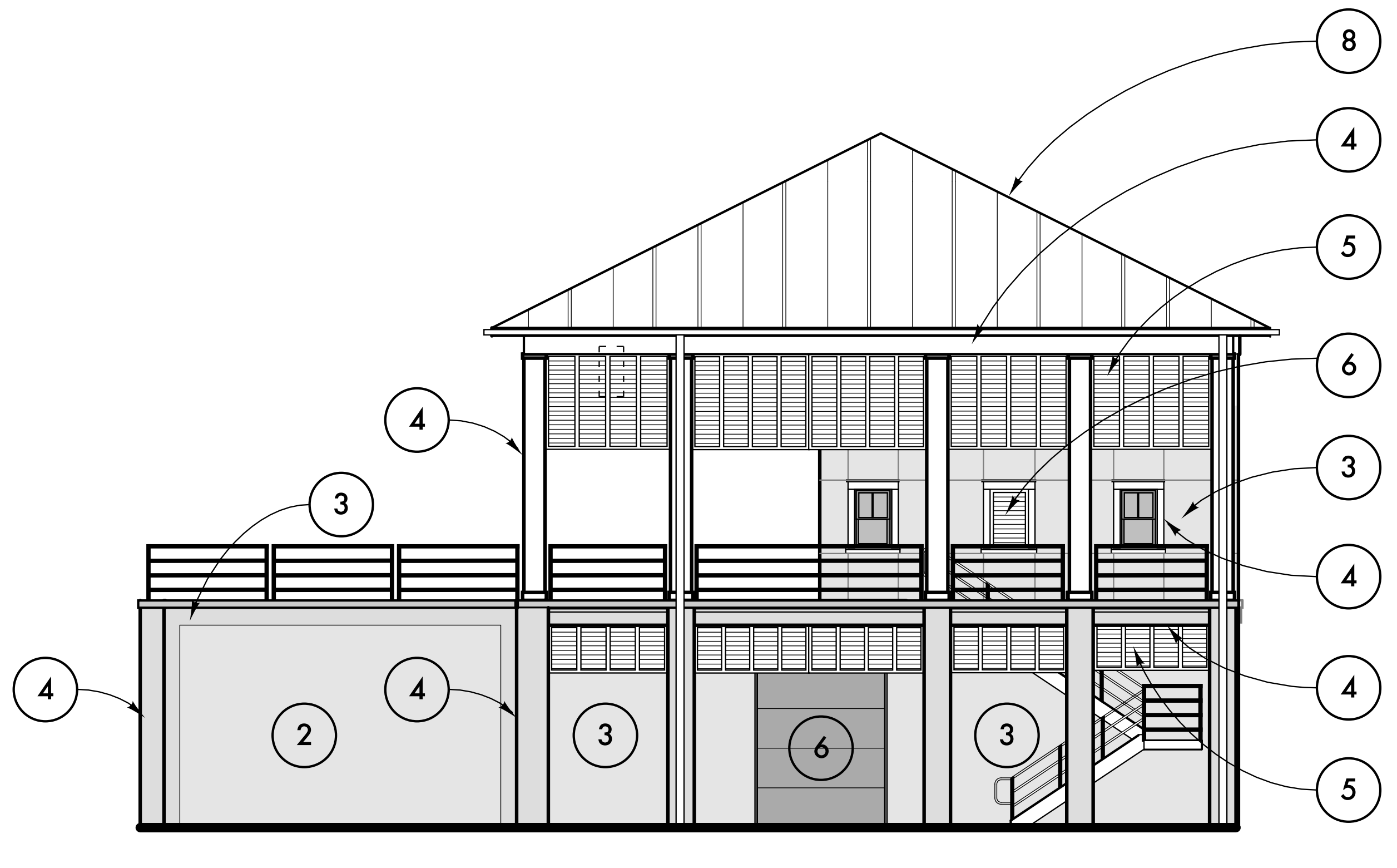
1. Exterior windows to be fixed Andersen A series windows, simulated divided light, insulated, impact rated glass.
2. If any window size varies in any one direction 2" or greater from the scheduled size, Architect's approval is required for the selection of that window.
3. All windows and doors must meet current International Building Code 2012 (IBC 2012) requirements for Design Pressure (DP) and Impact Protection. Verify Compliance of selected units.
4. Contractor is responsible for aligning window heads with adjacent door heads unless otherwise indicated on elevations.
5. Doors and windows to be tempered as per code.
6. Refer to Specifications



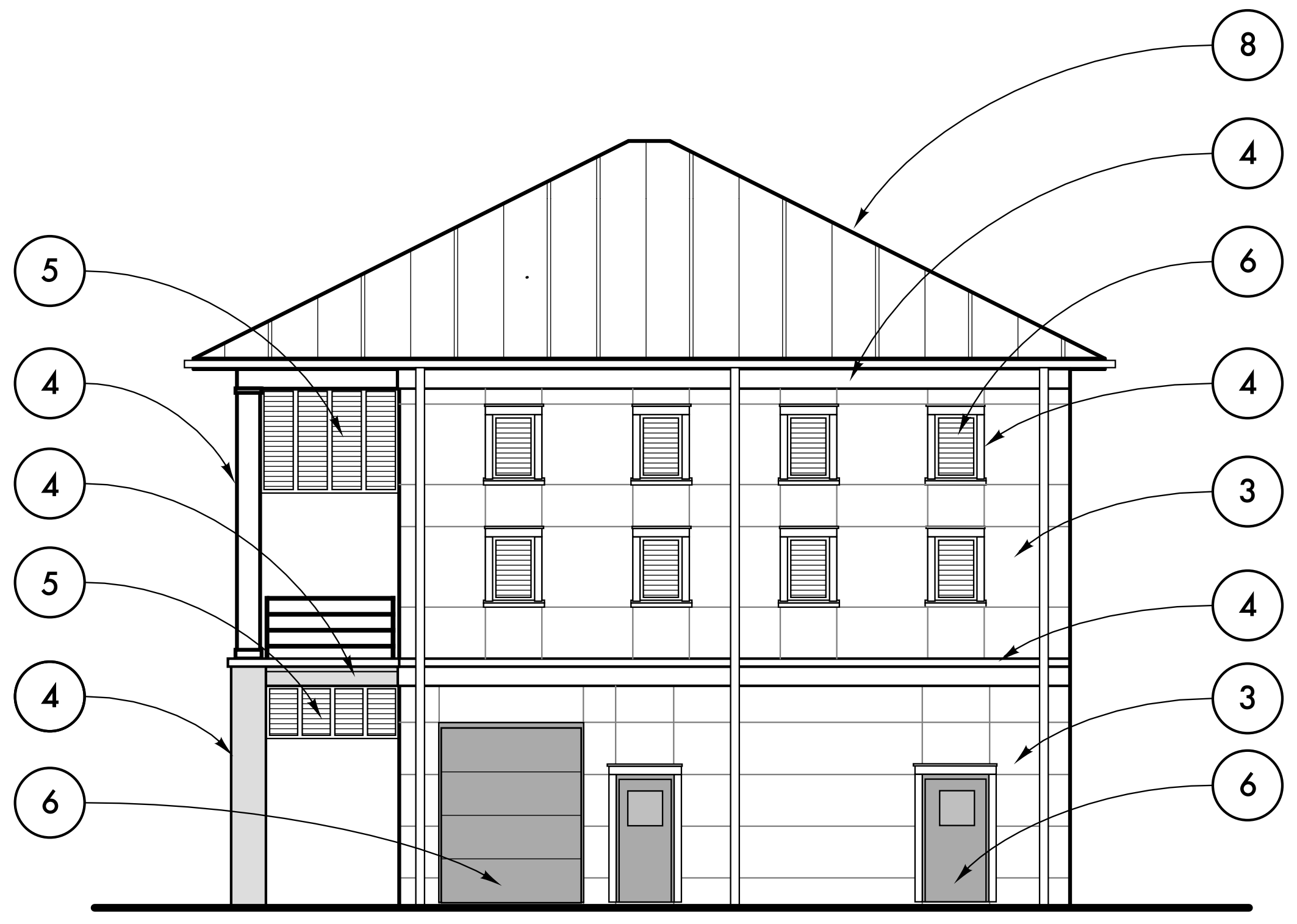
Window Types



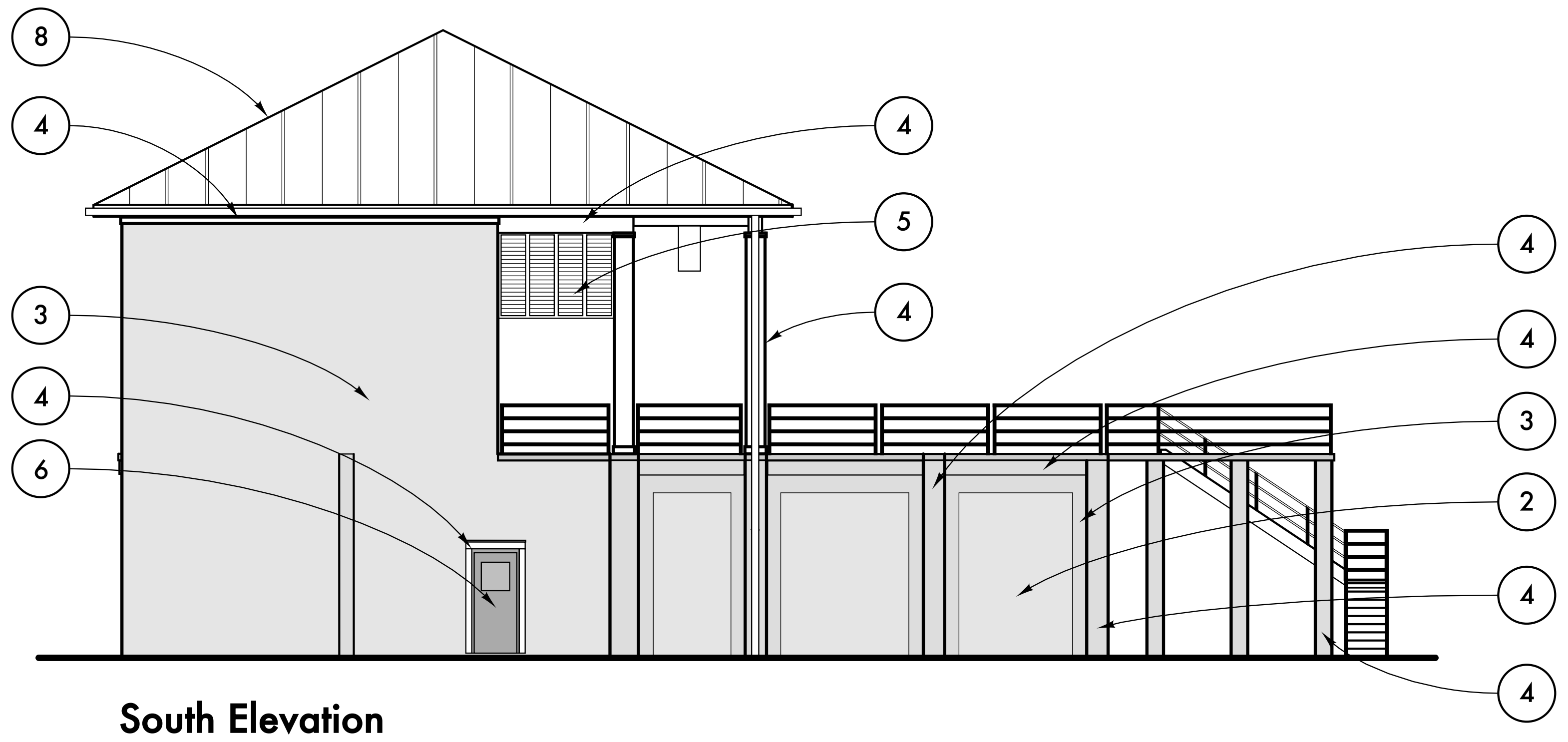
Door Types



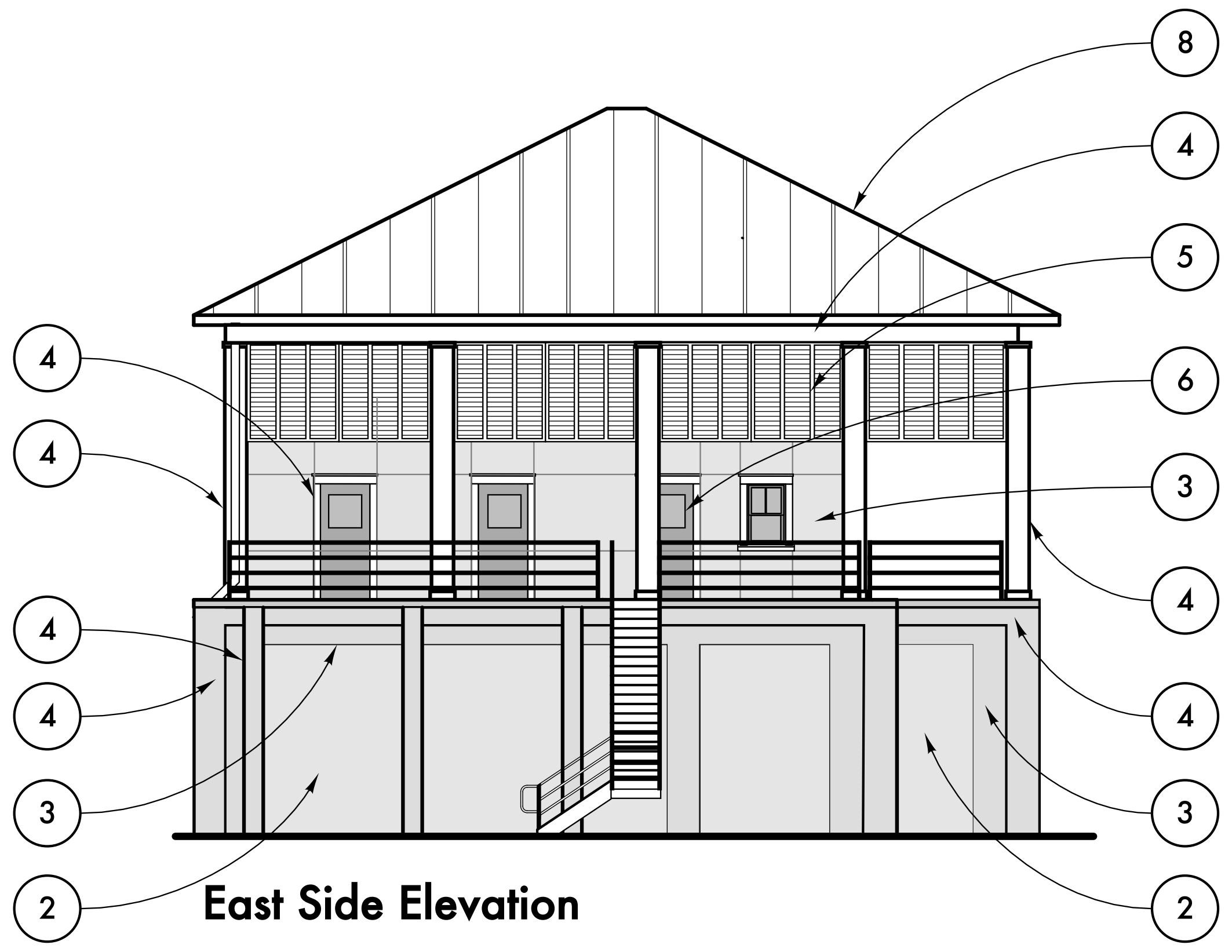
North Elevation



West Side Elevation



South Elevation



East Side Elevation

EXTERIOR FINISH SCHEDULE

Item Name	Material	Finish
Roof	Standing Seam Metal Roof	Standard factory color finish, medium bronze color
Windows	Andersen A Series	Standard factory color finish, dark bronze color
Exterior Trim	Cementitious board	Primed, paint finish
Porch Ceilings	T111	Primed, paint finish
Soffit	Aluminum	Standard factory color finish
Upper Columns	Fiberglass column cover	Standard factory finish, color to match trim
Lower piers	Sto Stucco System	color as per schedule
Upper Porch Floor	StoneTec	Standard factory color finish, color TBD
Handrails	Standing Seam Metal Roof	Standard factory color finish
Bahama Shutters	Aluminum	Standard factory color finish, color as per schedule
Mech Vents	Standing Seam Metal Roof	Standard factory color finish
Overhead Door	Metal	Standard factory finish, color as per schedule
Man Door		color as per schedule
Wall 1	Sto Stucco System	color as per schedule
Wall 2	conc or CMU	color as per schedule

INTERIOR FINISH SCHEDULE

Room Name	Floor	Ceiling	Walls	Interior Door	Interior Door Frame
Equipment Room	StonChem	1-Int Paint, flat	2-Int Paint, semi gloss	3-Int Paint, gloss	4-Int Paint, gloss
Equipment Support Room	StonChem	1-Int Paint, flat	2-Int Paint, semi gloss	3-Int Paint, gloss	4-Int Paint, gloss
Chemical Room	StonChem	1-Int Paint, flat	2-Int Paint, semi gloss		
Electrical Room	Stonetec	1-Int Paint, flat	2-Int Paint, semi gloss	3-Int Paint, gloss	4-Int Paint, gloss
Mechanical Room	Stonetec	1-Int Paint, flat	2-Int Paint, semi gloss		
Store Room	Stonetec	acoustic tile	2-Int Paint, semi gloss	3-Int Paint, gloss	4-Int Paint, gloss
Contol Room	Stonetec	acoustic tile	2-Int Paint, semi gloss		
Bathroom	Stonetec	1- Int. Paint, flat	2-Int Paint, semi gloss	3-Int Paint, gloss	4-Int Paint, gloss
Upper Porch	Stonetec 2				

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1	Issued For Bid	Jan. 29, 2016
2		
3		

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January 29 2016

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
WASTE WATER TREATMENT FACILITY SCHEDULES

Plot Date 1/29/16
Checked RB
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Drawing Title
Waste Water Treatment Facility Schedules
Drawing No.
35-A-06

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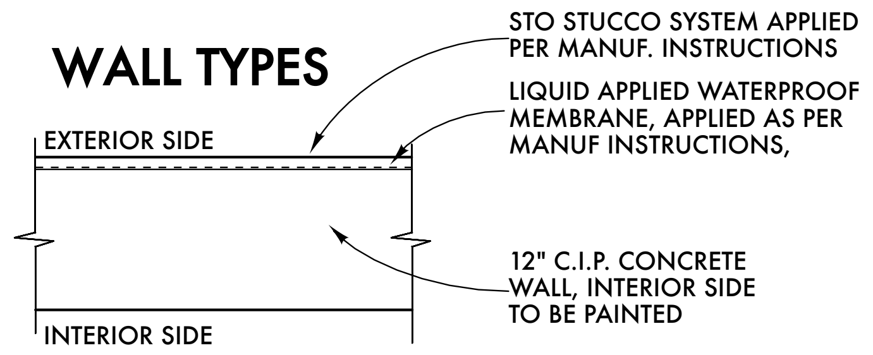
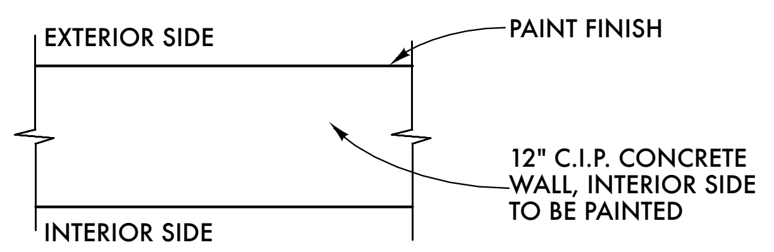
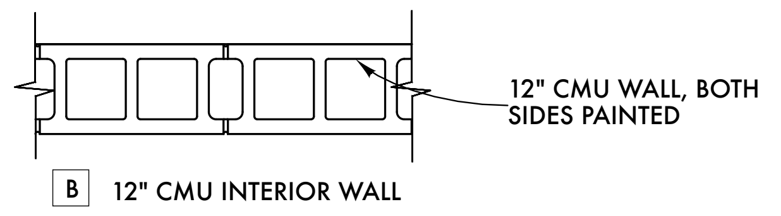
WALL TYPES


STO STUCCO SYSTEM APPLIED PER MANUF. INSTRUCTIONS
LIQUID APPLIED WATERPROOF MEMBRANE, APPLIED AS PER MANUF INSTRUCTIONS,
EXTERIOR SIDE
12" C.I.P. CONCRETE WALL, INTERIOR SIDE TO BE PAINTED
INTERIOR SIDE

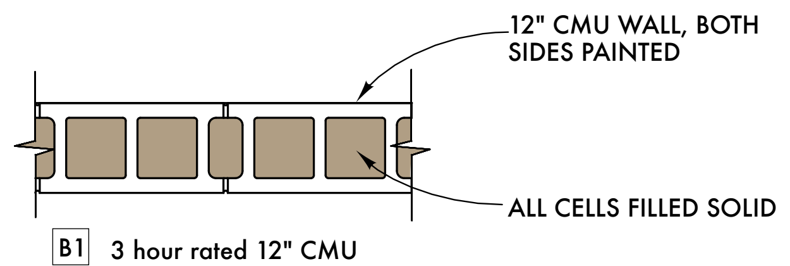
A 14" C.I.P. EXTERIOR CONCRETE WALL



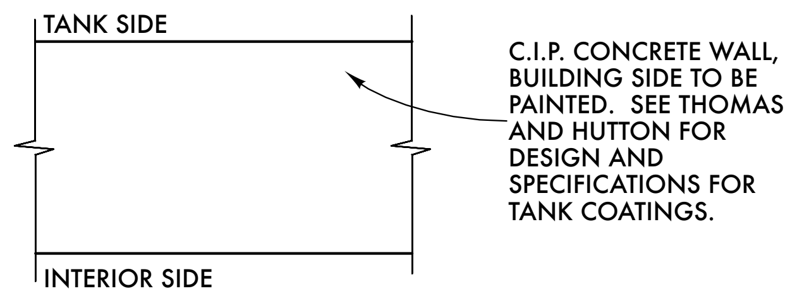
A1 14" C.I.P. EXTERIOR CONCRETE WALL



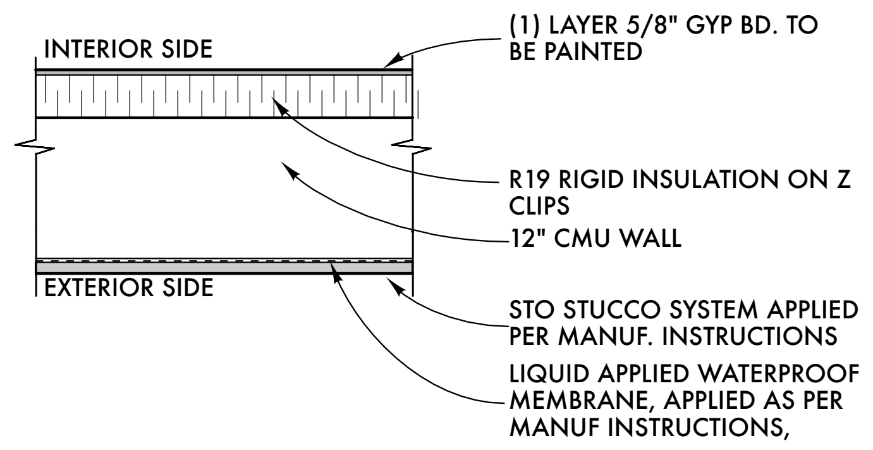
B 12" CMU INTERIOR WALL



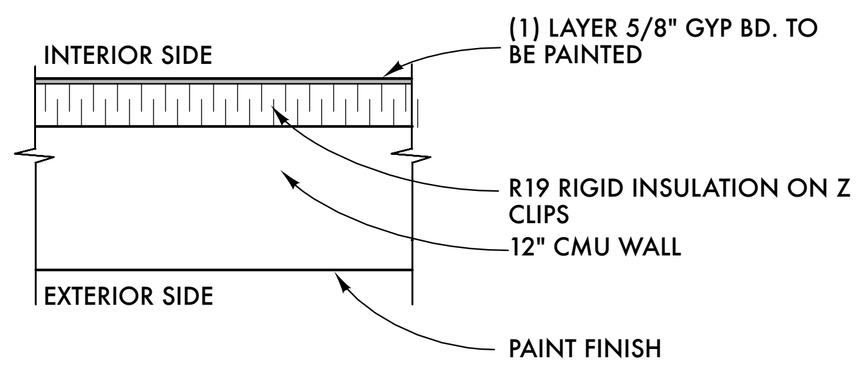
B1 3 hour rated 12" CMU INTERIOR WALL


TANK SIDE
C.I.P. CONCRETE WALL, BUILDING SIDE TO BE PAINTED. SEE THOMAS AND HUTTON FOR DESIGN AND SPECIFICATIONS FOR TANK COATINGS.
INTERIOR SIDE

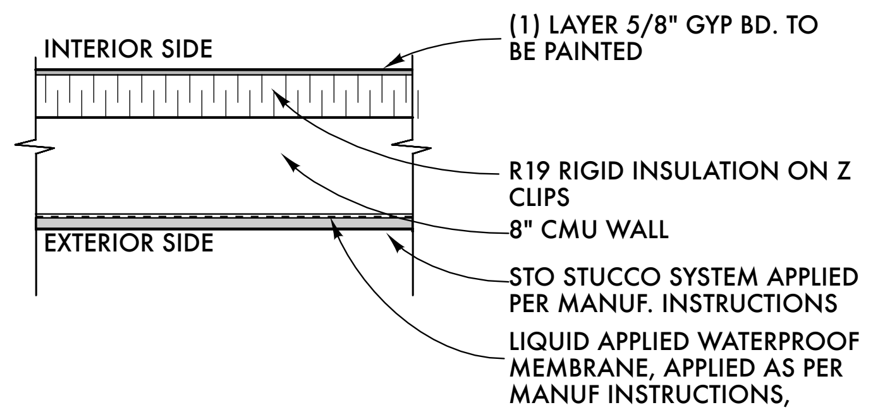
C C.I.P. CONCRETE WALL


INTERIOR SIDE
(1) LAYER 5/8" GYP BD. TO BE PAINTED
R19 RIGID INSULATION ON Z CLIPS
12" CMU WALL
EXTERIOR SIDE
STO STUCCO SYSTEM APPLIED PER MANUF. INSTRUCTIONS
LIQUID APPLIED WATERPROOF MEMBRANE, APPLIED AS PER MANUF INSTRUCTIONS,

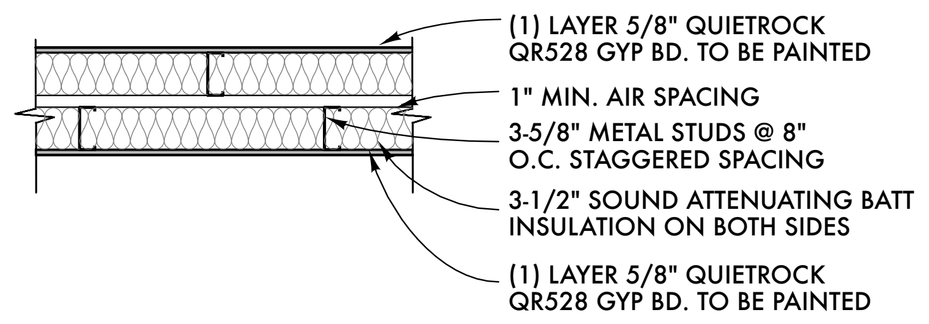
D 12" CMU EXTERIOR WALL, FURRED AND FINISHED ON INTERIOR SIDE


INTERIOR SIDE
(1) LAYER 5/8" GYP BD. TO BE PAINTED
R19 RIGID INSULATION ON Z CLIPS
12" CMU WALL
EXTERIOR SIDE
PAINT FINISH

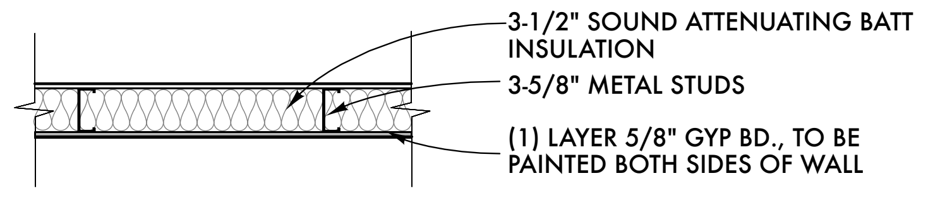
D1 12" CMU EXTERIOR WALL, FURRED AND FINISHED ON INTERIOR SIDE


INTERIOR SIDE
(1) LAYER 5/8" GYP BD. TO BE PAINTED
R19 RIGID INSULATION ON Z CLIPS
8" CMU WALL
EXTERIOR SIDE
STO STUCCO SYSTEM APPLIED PER MANUF. INSTRUCTIONS
LIQUID APPLIED WATERPROOF MEMBRANE, APPLIED AS PER MANUF INSTRUCTIONS,

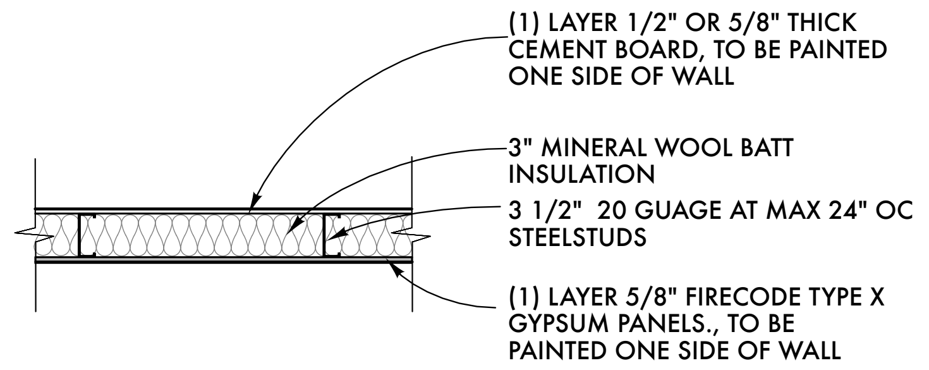
D2 8" CMU EXTERIOR WALL, FURRED AND FINISHED ON INTERIOR SIDE


(1) LAYER 5/8" QUIETROCK QR528 GYP BD. TO BE PAINTED
1" MIN. AIR SPACING
3-5/8" METAL STUDS @ 8" O.C. STAGGERED SPACING
3-1/2" SOUND ATTENUATING BATT INSULATION ON BOTH SIDES
(1) LAYER 5/8" QUIETROCK QR528 GYP BD. TO BE PAINTED

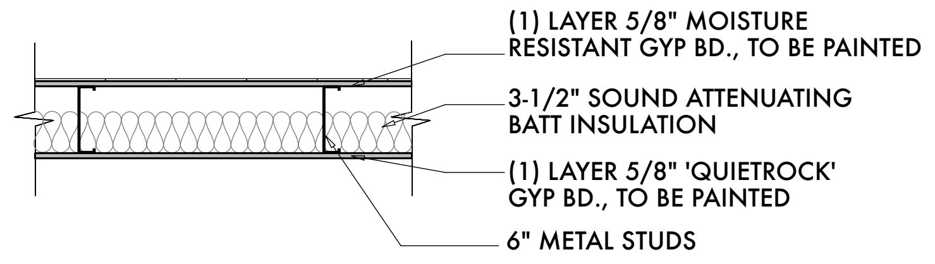
E V463 FIRE BARRIER, FROM FLOOR SLAB TO UNDERSIDE OF ROOF DECK


3-1/2" SOUND ATTENUATING BATT INSULATION
3-5/8" METAL STUDS
(1) LAYER 5/8" GYP BD., TO BE PAINTED BOTH SIDES OF WALL

F 3-5/8" METAL STUD PARTITION WALL WITH PAINTED GYP BD BOTH SIDES


(1) LAYER 1/2" OR 5/8" THICK CEMENT BOARD, TO BE PAINTED ONE SIDE OF WALL
3" MINERAL WOOL BATT INSULATION
3 1/2" 20 GUAGE AT MAX 24" OC STEELSTUDS
(1) LAYER 5/8" FIRECODE TYPE X GYPSUM PANELS., TO BE PAINTED ONE SIDE OF WALL

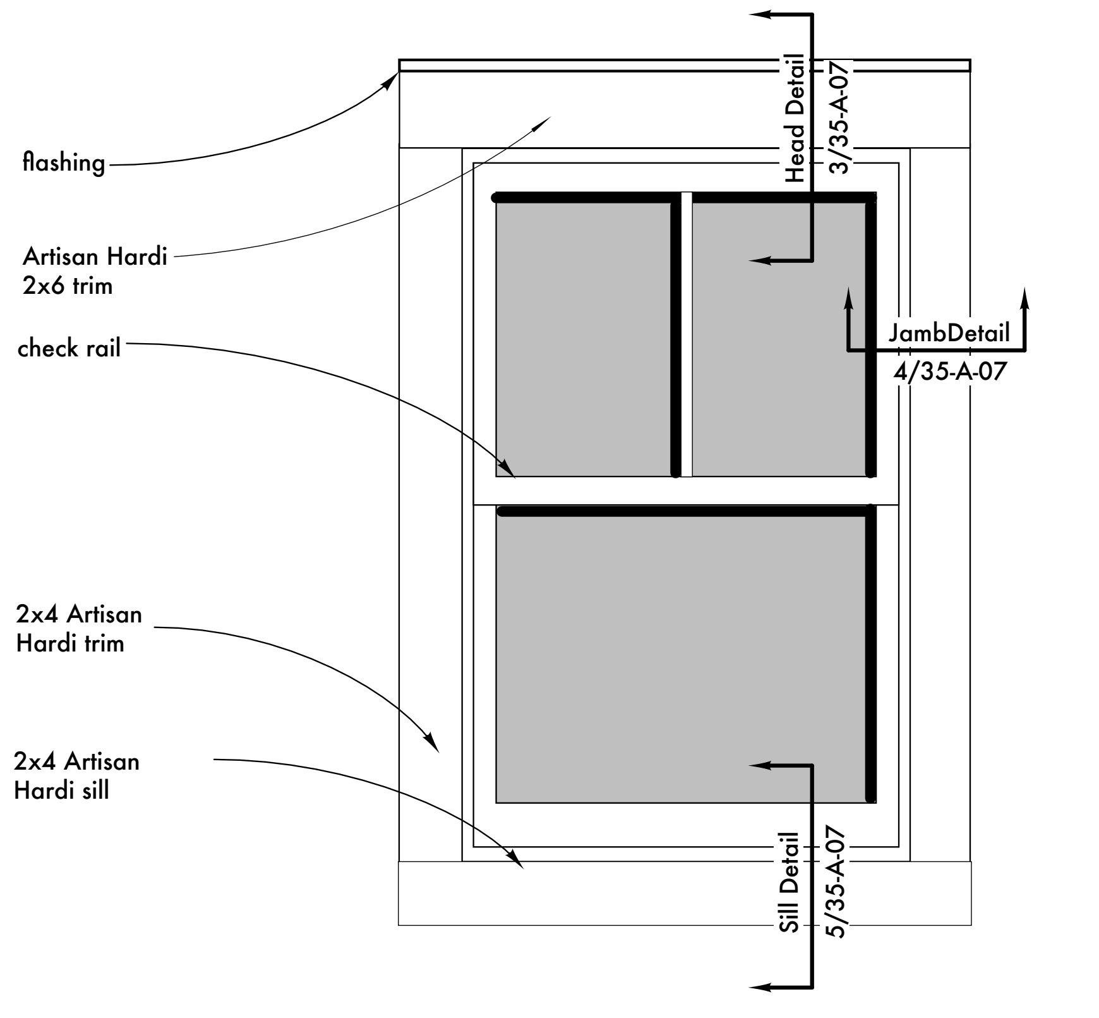
G UL U404 1 HR RATED INTERIOR PARTITION FROM SLAB TO U/S ROOF DECK


(1) LAYER 5/8" MOISTURE RESISTANT GYP BD., TO BE PAINTED
3-1/2" SOUND ATTENUATING BATT INSULATION
(1) LAYER 5/8" 'QUIETROCK' GYP BD., TO BE PAINTED
6" METAL STUDS

H 6" METAL STUD PARTITION WALL W/ MOISTURE RESISTANT GYP. BD. AND CERAMIC TILE ON BATHROOM SIDE & 5/8" 'QUIETROCK' GYP. BD. ON CONTROL ROOM SIDE

1 Wall Type Schedule

Scale: NTS



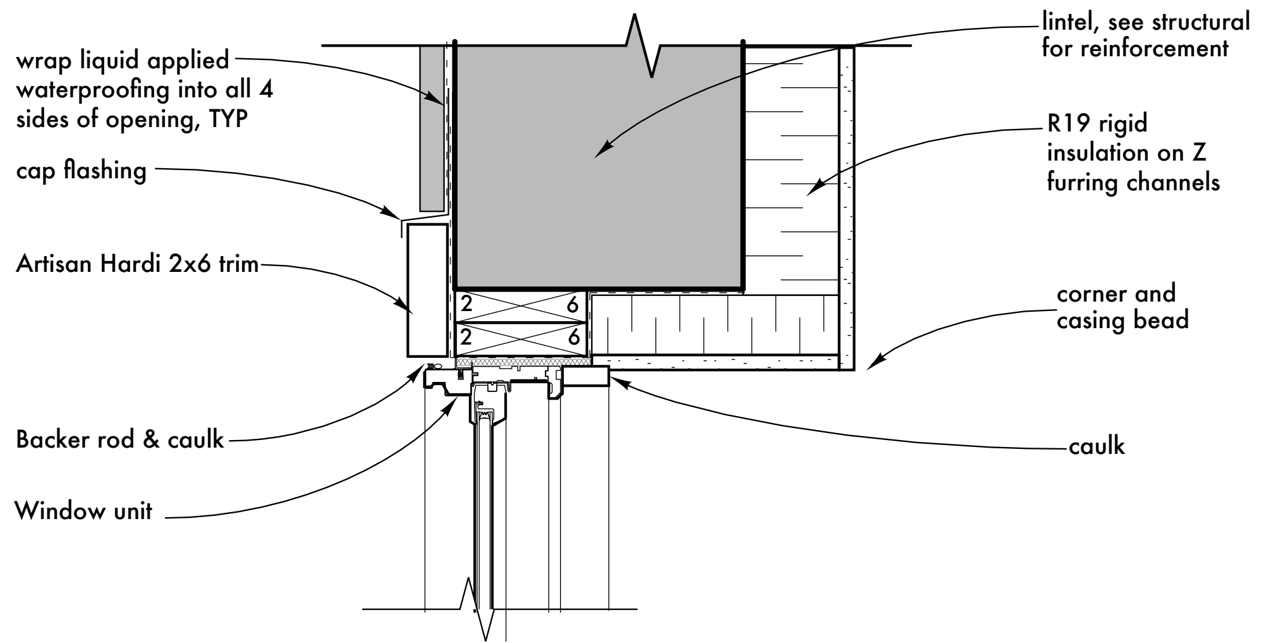
2 Double-Hung Ext. Window Trim

Scale: 1" = 1'-0"

Window installation to follow FMA/WDMA 250-10 Standard Practice for the Installation of Non-Frontal Flange windows with Mounting Flanges for Surface Barrier Masonry Construction for Extreme Wind/Water Conditions

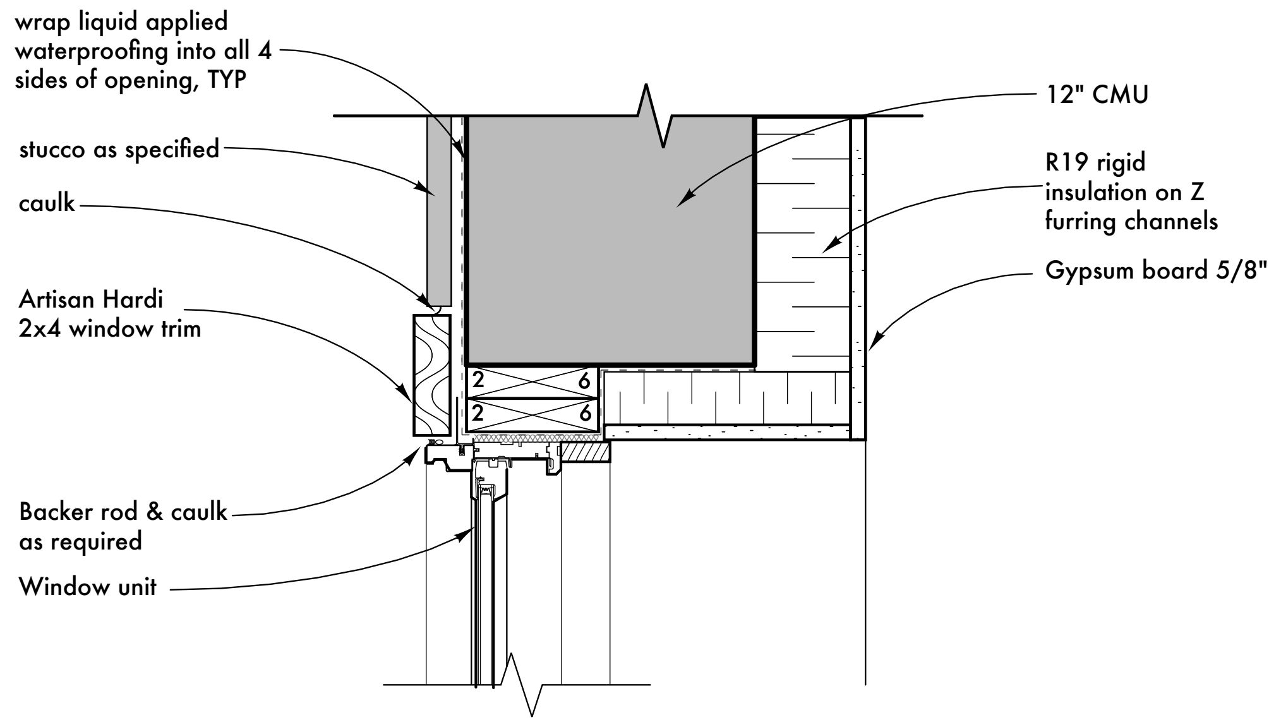
Exterior openings to have impact protection

NOTE: full flexible flashing at sill prior to installation of window, flashing at head and sides as per standard window instalation requirements


wrap liquid applied waterproofing into all 4 sides of opening, TYP
cap flashing
Artisan Hardi 2x6 trim
Backer rod & caulk
Window unit
lintel, see structural for reinforcement
R19 rigid insulation on Z furring channels
corner and casing bead
caulk
2 6
2 6

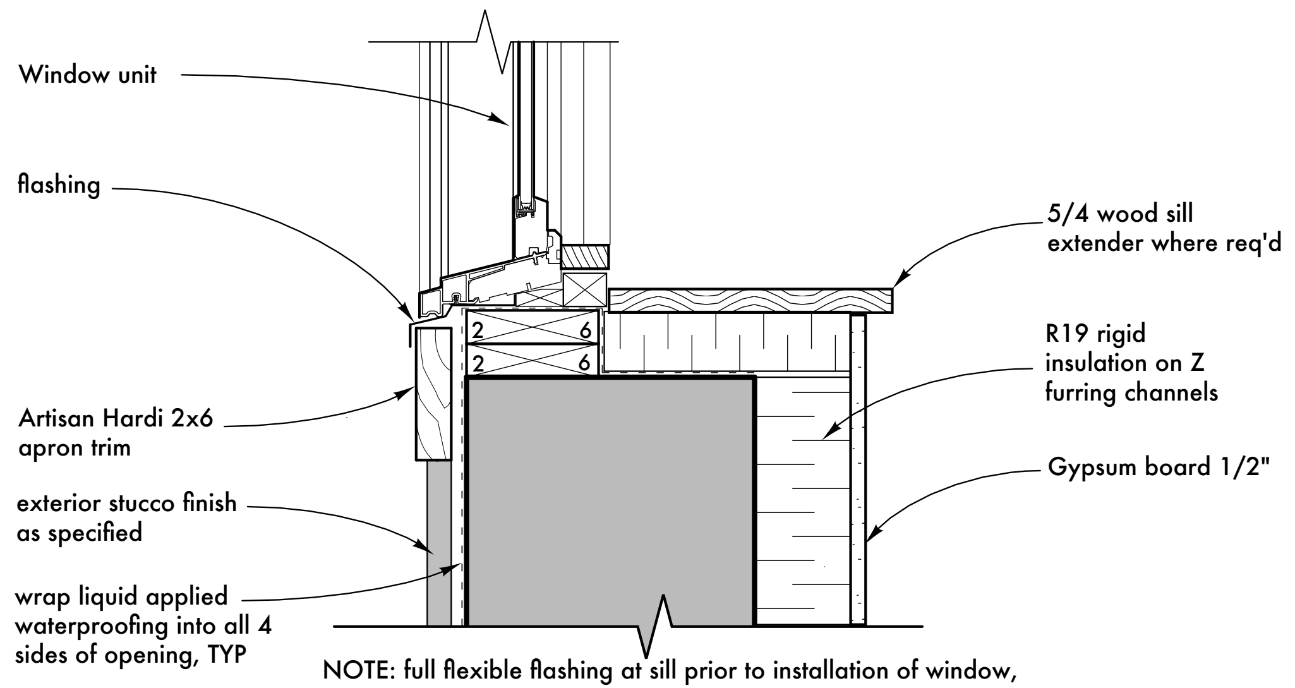
3 Double-Hung Window Head

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


wrap liquid applied waterproofing into all 4 sides of opening, TYP
stucco as specified
caulk
Artisan Hardi 2x4 window trim
Backer rod & caulk as required
Window unit
12" CMU
R19 rigid insulation on Z furring channels
Gypsum board 5/8"
2 6
2 6

4 Double-Hung Window Jamb

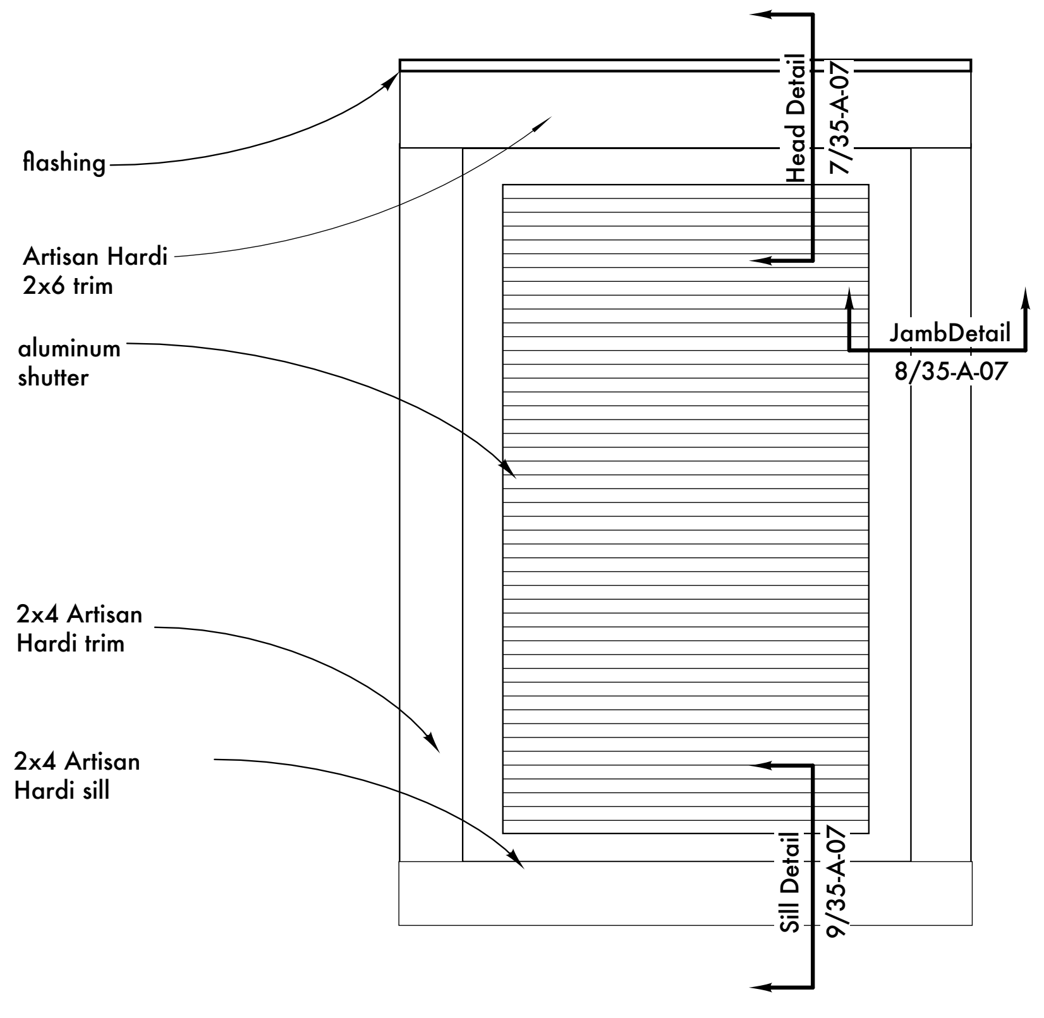
Scale: 1 1/2" = 1'-0"


Window unit
flashing
Artisan Hardi 2x6 apron trim
exterior stucco finish as specified
wrap liquid applied waterproofing into all 4 sides of opening, TYP
5/4 wood sill extender where req'd
R19 rigid insulation on Z furring channels
Gypsum board 1/2"
2 6
2 6

NOTE: full flexible flashing at sill prior to installation of window, flashing at head and sides as per standard window instalation requirements

5 Double-Hung Window Sill

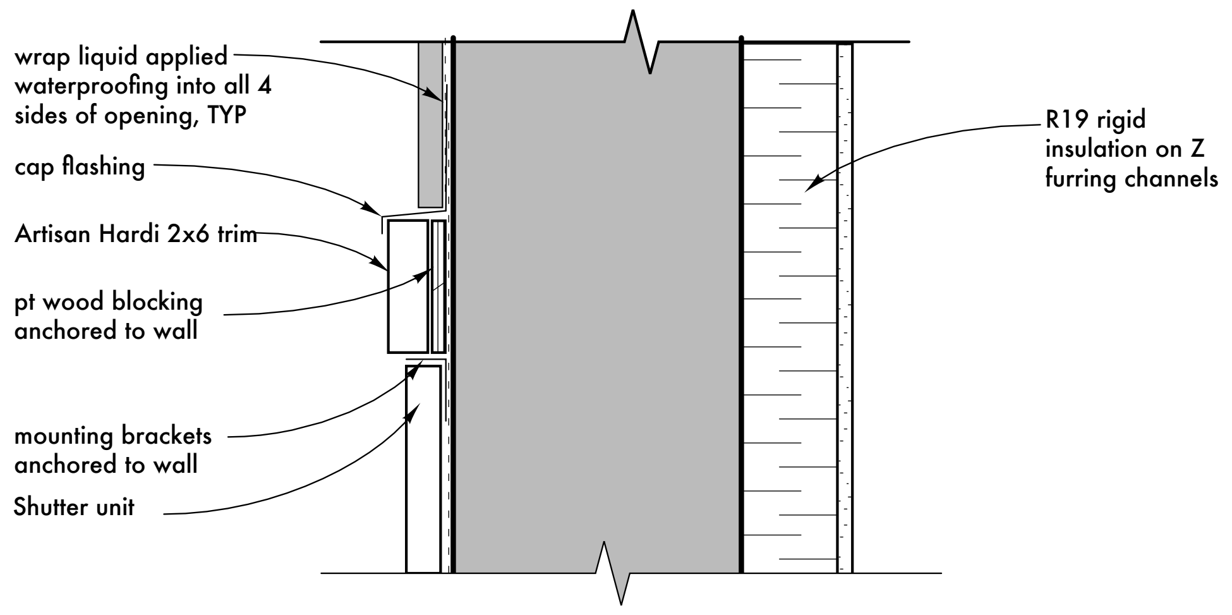
Scale: 1 1/2" = 1'-0"



6 Faux Window Trim

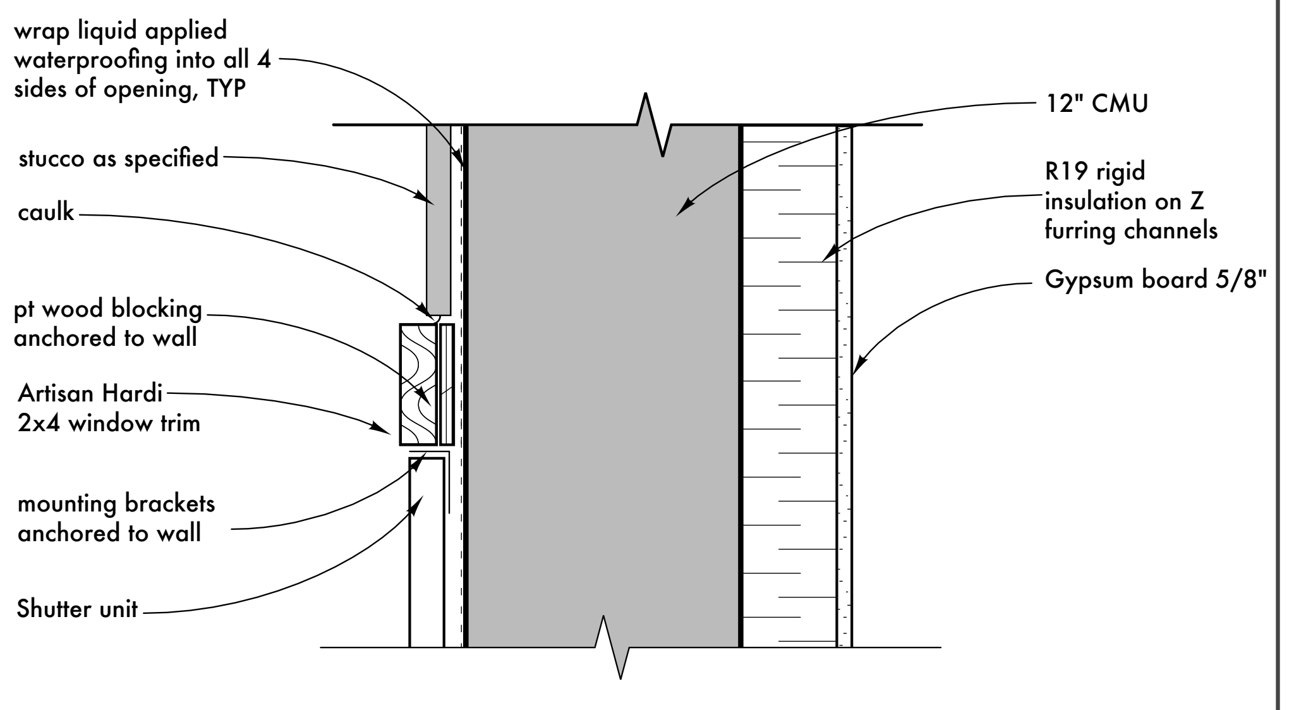
Scale: 1" = 1'-0"

Trim application to follow Installation Guides issued by manufacturer, like Hardi Artisan Trim application guide for windows, doors ansd other openings.


wrap liquid applied waterproofing into all 4 sides of opening, TYP
cap flashing
Artisan Hardi 2x6 trim
pt wood blocking anchored to wall
mounting brackets anchored to wall
Shutter unit
R19 rigid insulation on Z furring channels

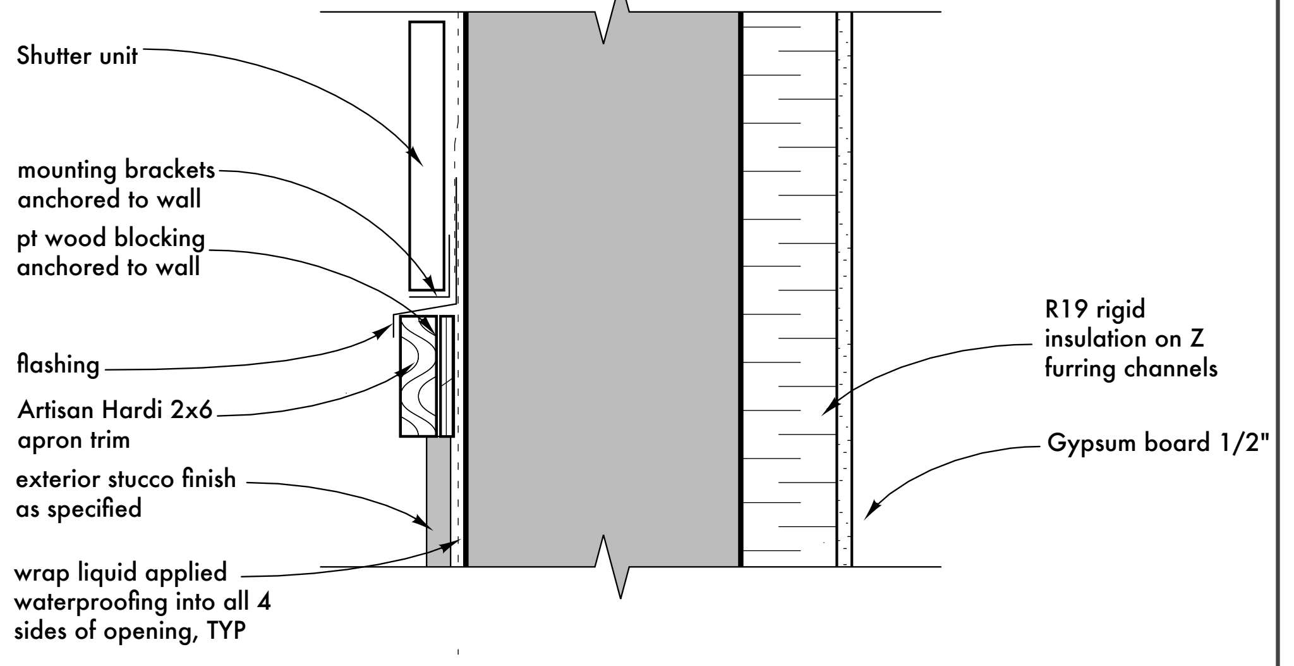
7 Faux Window Head

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


wrap liquid applied waterproofing into all 4 sides of opening, TYP
stucco as specified
caulk
pt wood blocking anchored to wall
Artisan Hardi 2x4 window trim
mounting brackets anchored to wall
Shutter unit
12" CMU
R19 rigid insulation on Z furring channels
Gypsum board 5/8"

8 Faux Window Jamb

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


Shutter unit
mounting brackets anchored to wall
pt wood blocking anchored to wall
flashing
Artisan Hardi 2x6 apron trim
exterior stucco finish as specified
wrap liquid applied waterproofing into all 4 sides of opening, TYP
R19 rigid insulation on Z furring channels
Gypsum board 1/2"

9 Faux Window Sill

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

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No. 100760

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Summerville, SC
No. 8440
January 29 2016

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
WASTE WATER TREATMENT FACILITY DETAILS + SCHEDULES

Plot Date 1/29/16
Checked RB
Drawn RB

Drawing Title
Waste Water Treatment Facility Details + Schedules

Drawing No.
35-A-07

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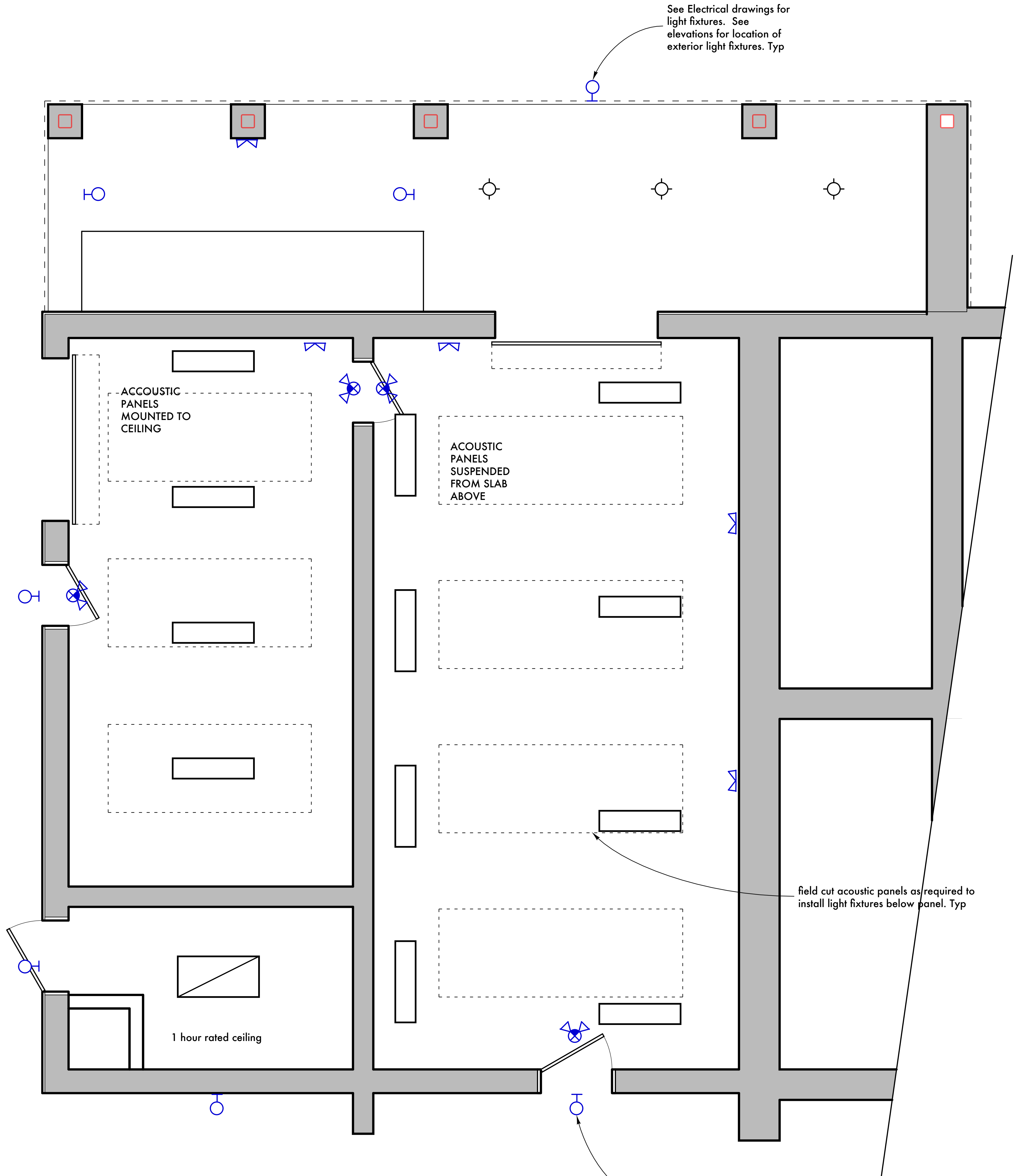
LEGEND

(SD)	smoke detector	⊡	2x2 suppply	▭	2x4 lighting fixture	□	2x2 lighting fixture
▦	2x2 suspended acoustic tile ceiling	☒	supply	◪	2x4 lighting fixture w/ emergency battery	⧄	2x2 lighting fixture w/ emergency battery
▨	gypsum board ceiling	◉	ceiling mounted exhaust fan	⌖	surface mounted clg. light fixture	▭	1x4 lighting fixture
		○	recessed can light fixture			⊢○	wall mounted light fixture

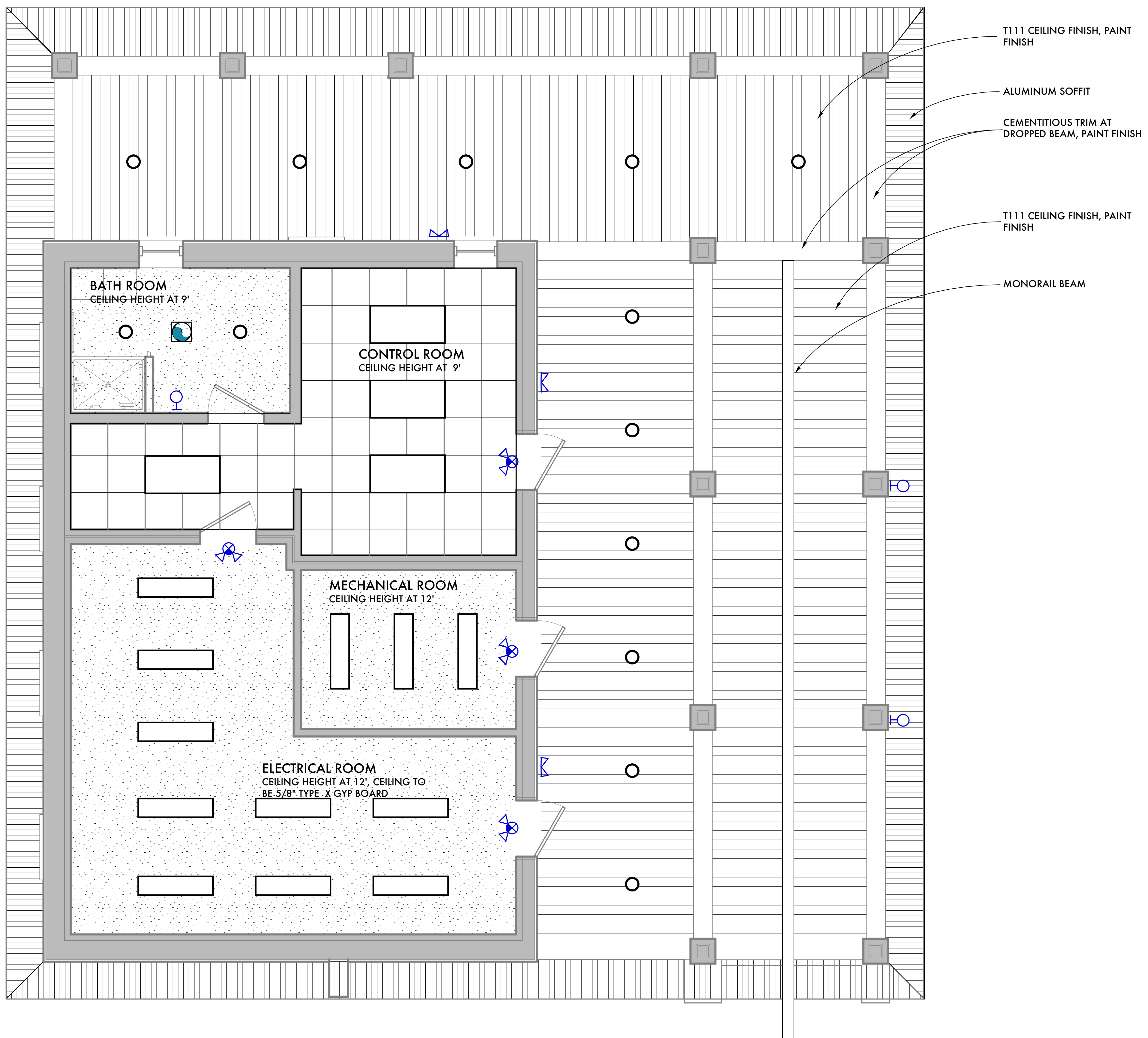
GENERAL NOTES

1. VERIFY ELECTRICAL FIXTURE COUNT AND LOCATION WITH ELECTRICAL PLANS.

2. VERIFY MECHANICAL FIXTURE LOCATIONS WITH MECHANICAL PLANS.


See Electrical drawings for light fixtures. See elevations for location of exterior light fixtures. Typ
ACCOUSTIC PANELS MOUNTED TO CEILING
ACOUSTIC PANELS SUSPENDED FROM SLAB ABOVE
1 hour rated ceiling
field cut acoustic panels as required to install light fixtures below panel. Typ

① **First Floor Reflected Ceiling Plan**
Scale: 1/4" = 1'-0"


T111 CEILING FINISH, PAINT FINISH
ALUMINUM SOFFIT
CEMENTITIOUS TRIM AT DROPPED BEAM, PAINT FINISH
T111 CEILING FINISH, PAINT FINISH
MONORAIL BEAM
BATH ROOM
CEILING HEIGHT AT 9'
CONTROL ROOM
CEILING HEIGHT AT 9'
MECHANICAL ROOM
CEILING HEIGHT AT 12'
ELECTRICAL ROOM
CEILING HEIGHT AT 12', CEILING TO BE 5/8" TYPE X GYP BOARD

② **Second Floor Reflected Ceiling Plan**
Scale: 1/4" = 1'-0"

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WASTE WATER TREATMENT FACILITY REFLECTED CEILING PLANS

Plot Date
1/29/16

Checked
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Drawn
RB

Drawing Title
WW Treatment Facility Reflected Ceiling Plans

Drawing No.
35-A-08

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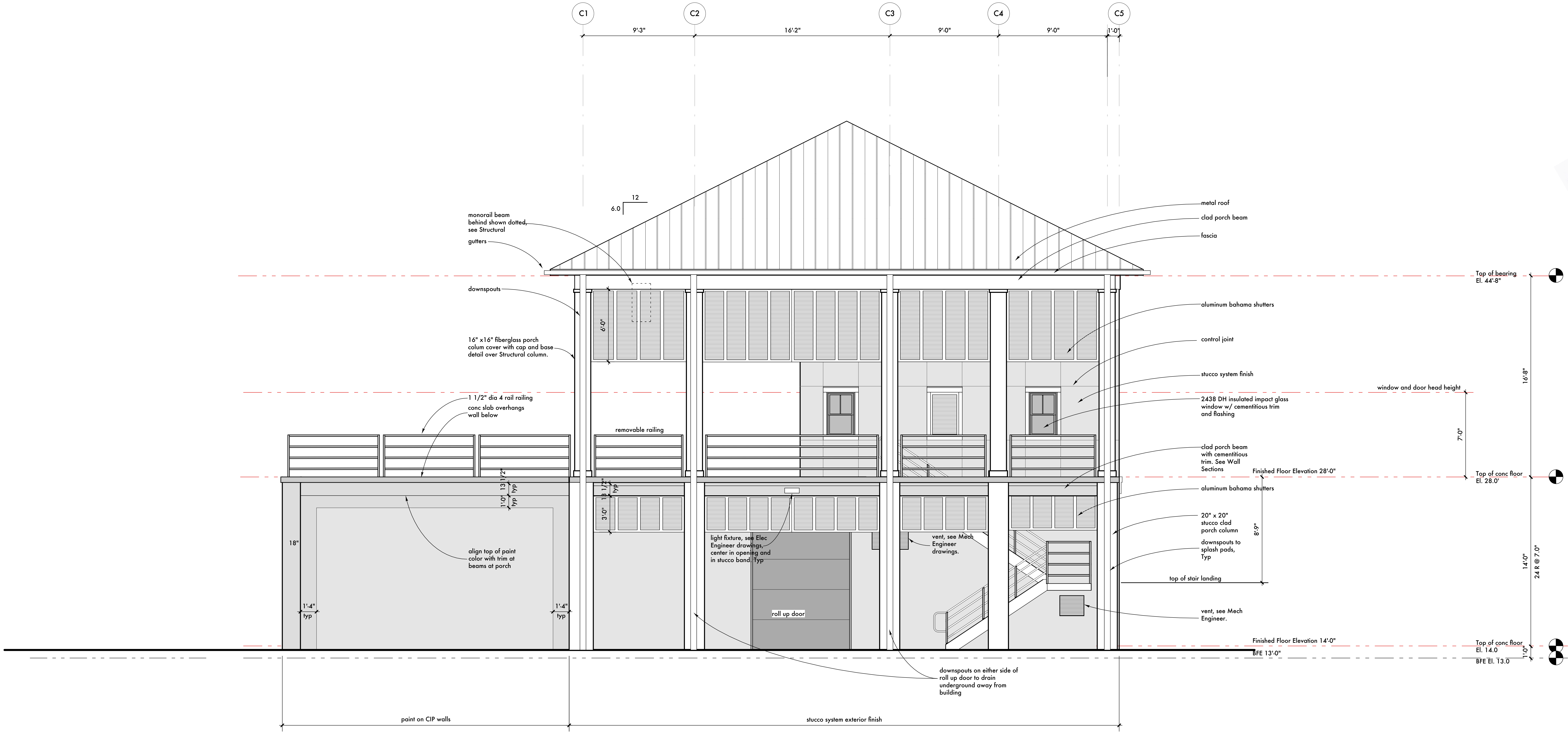
C1
C2
C3
C4
C5
9'-3"
16'-2"
9'-0"
9'-0"
1'-0"
12
6.0
monorail beam behind shown dotted, see Structural
gutters
downspouts
16" x16" fiberglass porch colum cover with cap and base detail over Structural column.
1 1/2" dia 4 rail railing
conc slab overhangs wall below
removable railing
6'-0"
13 1/2" typ
1'-0" typ
3'-0"
18"
align top of paint color with trim at beams at porch
1'-4" typ
1'-4" typ
light fixture, see Elec Engineer drawings, center in opening and in stucco band. Typ
roll up door
vent, see Mech Engineer drawings.
downspouts on either side of roll up door to drain underground away from building
paint on CIP walls
stucco system exterior finish
metal roof
clad porch beam
fascia
aluminum bahama shutters
control joint
stucco system finish
2438 DH insulated impact glass window w/ cementitious trim and flashing
clad porch beam with cementitious trim. See Wall Sections
Finished Floor Elevation 28'-0"
aluminum bahama shutters
20" x 20" stucco clad porch column
downspouts to splash pads, Typ
8'-9"
top of stair landing
vent, see Mech Engineer.
Finished Floor Elevation 14'-0"
BFE 13'-0"
Top of bearing El. 44'-8"
window and door head height
7'-0"
16'-8"
Top of conc floor El. 28.0'
14'-0"
24 R @ 7.0"
Top of conc floor El. 14.0
1'-0"
BFE El. 13.0

1 North Elevation

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

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WASTE WATER TREATMENT FACILITY NORTH ELEVATION

Plot Date
1/29/16

Checked
RB

Drawn
RB

Drawing Title
Waste Water Treatment Facility - North Elevation

Drawing No.
35-A-09

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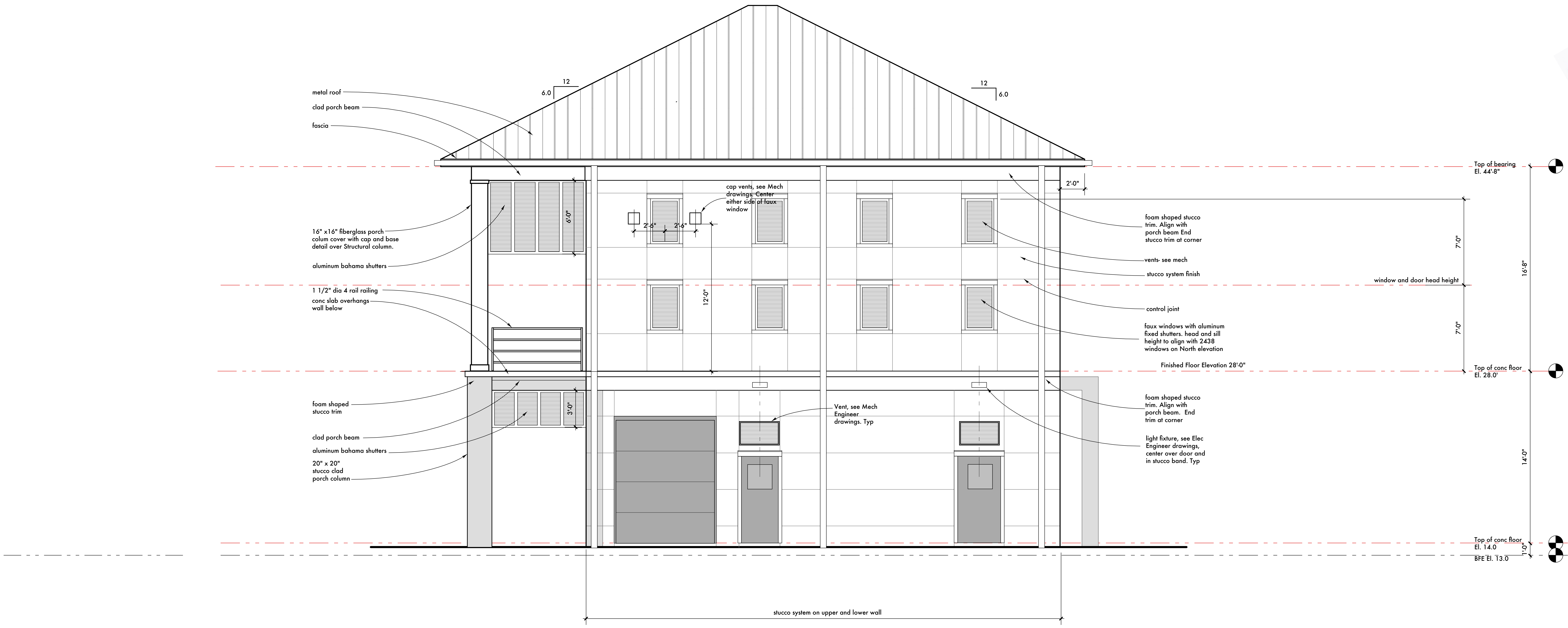
metal roof
clad porch beam
fascia
12
6.0
12
6.0
16" x16" fiberglass porch colum cover with cap and base detail over Structural column.
aluminum bahama shutters
6'-0"
1 1/2" dia 4 rail railing
conc slab overhangs wall below
foam shaped stucco trim
clad porch beam
aluminum bahama shutters
3'-0"
20" x 20" stucco clad porch column
cap vents, see Mech drawings. Center either side of faux window
2'-6"
2'-6"
12'-0"
Vent, see Mech Engineer drawings. Typ
2'-0"
foam shaped stucco trim. Align with porch beam End stucco trim at corner
vents- see mech
stucco system finish
control joint
faux windows with aluminum fixed shutters. head and sill height to align with 2438 windows on North elevation
Finished Floor Elevation 28'-0"
foam shaped stucco trim. Align with porch beam. End trim at corner
light fixture, see Elec Engineer drawings, center over door and in stucco band. Typ
window and door head height
7'-0"
7'-0"
16'-8"
14'-0"
1'-0"
Top of bearing El. 44'-8"
Top of conc floor El. 28.0'
Top of conc floor El. 14.0
BFE El. 13.0
stucco system on upper and lower wall

1 **West Side Elevation**
Scale: 1/4" = 1'-0"

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KIAWAH RIVER PLANTATION
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WASTE WATER TREATMENT FACILITY WEST ELEVATION

Plot Date 1/29/16

Checked RB

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Drawing Title
Waste Water Treatment Facility - West Elevation

Drawing No.
35-A-10

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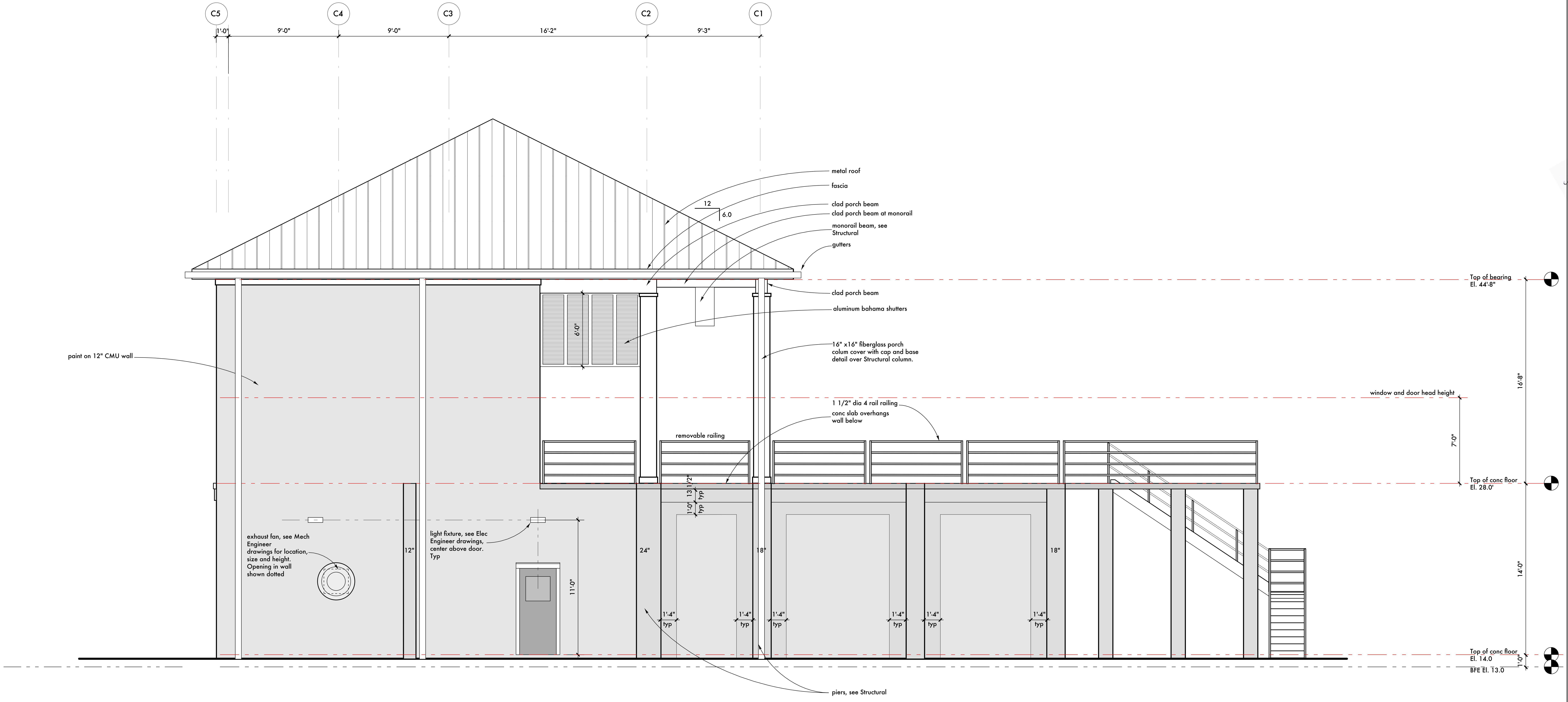
C5
C4
C3
C2
C1
1'-0"
9'-0"
9'-0"
16'-2"
9'-3"
metal roof
fascia
12
6.0
clad porch beam
clad porch beam at monorail
monorail beam, see Structural
gutters
clad porch beam
aluminum bahama shutters
6'-0"
16" x16" fiberglass porch colum cover with cap and base detail over Structural column.
paint on 12" CMU wall
1 1/2" dia 4 rail railing
conc slab overhangs wall below
removable railing
window and door head height
7'-0"
16'-8"
Top of bearing El. 44'-8"
Top of conc floor El. 28.0'
14'-0"
Top of conc floor El. 14.0
1'-0"
BFE El. 13.0
1'-0" typ
13 1/2" typ
exhaust fan, see Mech Engineer drawings for location, size and height. Opening in wall shown dotted
light fixture, see Elec Engineer drawings, center above door. Typ
12"
24"
18"
18"
11'-0"
1'-4" typ
1'-4" typ
1'-4" typ
1'-4" typ
1'-4" typ
1'-4" typ
piers, see Structural

1 South Elevation

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

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2		
3		

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CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WASTE WATER TREATMENT FACILITY SOUTH ELEVATION

Plot Date 1/29/16

Checked RB

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Drawing Title
Waste Water Treatment Facility - South Elevation

Drawing No.
35-A-11

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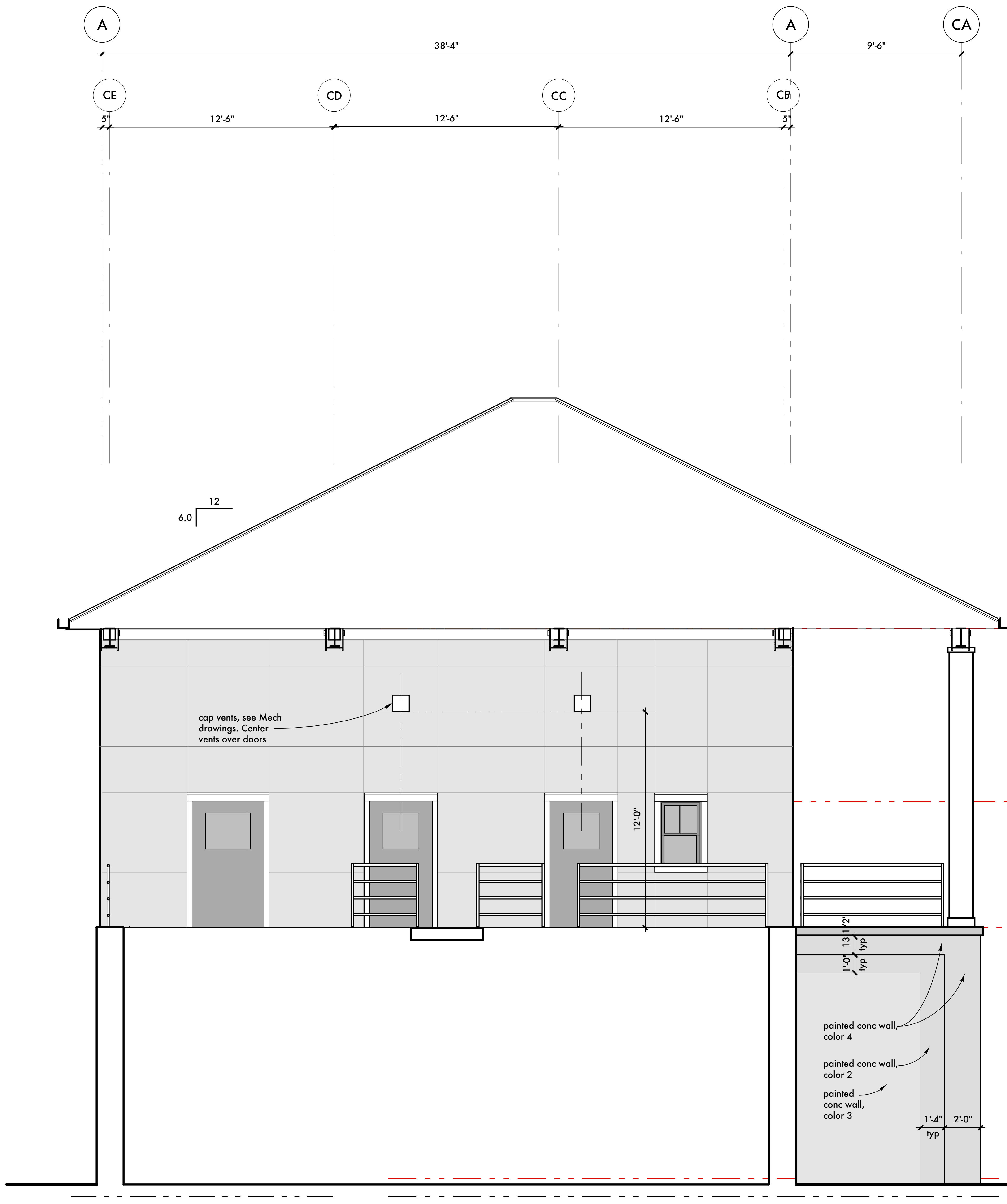
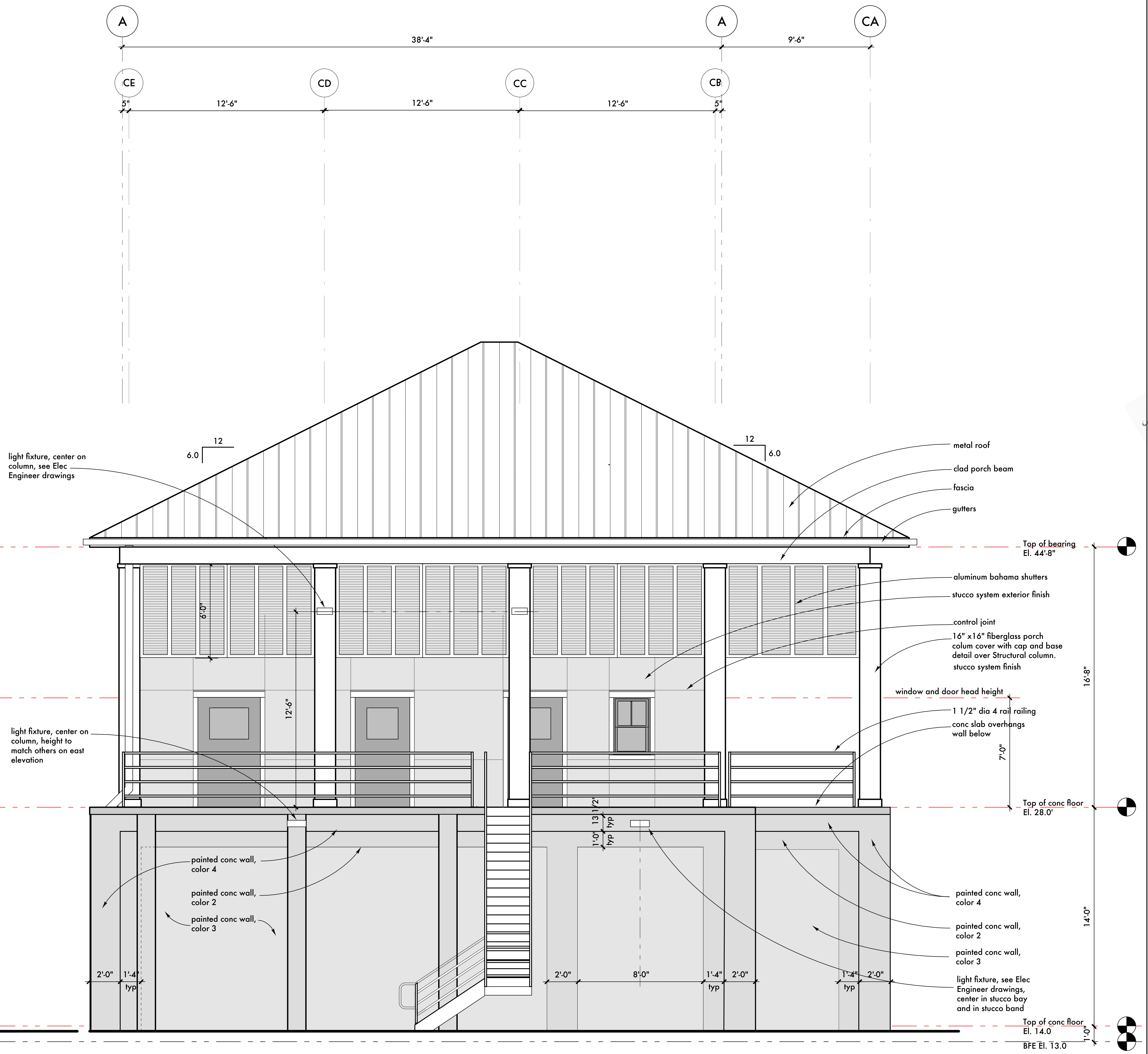

A
A
CA
38'-4"
9'-6"
CE
CD
CC
CB
5"
12'-6"
12'-6"
12'-6"
5"
12
6.0
cap vents, see Mech drawings. Center vents over doors
12'-0"
1 1/2"
13
typ
1'-0"
typ
painted conc wall, color 4
painted conc wall, color 2
painted conc wall, color 3
1'-4"
typ
2'-0"

1 **East Section / Elevation**
Scale: 1/4" = 1'-0"


A
A
CA
38'-4"
9'-6"
CE
CD
CC
CB
5"
12'-6"
12'-6"
12'-6"
5"
12
6.0
12
6.0
light fixture, center on column, see Elec Engineer drawings
6'-0"
12'-6"
light fixture, center on column, height to match others on east elevation
painted conc wall, color 4
painted conc wall, color 2
painted conc wall, color 3
1'-0"
13 1/2"
typ
2'-0"
1'-4"
typ
2'-0"
8'-0"
1'-4"
typ
2'-0"
1'-4"
typ
2'-0"
metal roof
clad porch beam
fascia
gutters
Top of bearing El. 44'-8"
aluminum bahama shutters
stucco system exterior finish
control joint
16" x16" fiberglass porch colum cover with cap and base detail over Structural column.
stucco system finish
window and door head height
1 1/2" dia 4 rail railing
conc slab overhangs wall below
7'-0"
16'-8"
Top of conc floor El. 28.0'
painted conc wall, color 4
painted conc wall, color 2
painted conc wall, color 3
light fixture, see Elec Engineer drawings, center in stucco bay and in stucco band
14'-0"
Top of conc floor El. 14.0
1'-0"
BFE El. 13.0

2 **East Side Elevation**
Scale: 1/4" = 1'-0"

No.	Issued For	Date
1	Issued For Bid	Jan. 29, 2016
2		
3		

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WASTE WATER TREATMENT FACILITY EAST ELEVATION

Plot Date
1/29/16

Checked
RB

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Drawing Title
Waste Water Treatment Facility - East Elevation

Drawing No.
35-A-12

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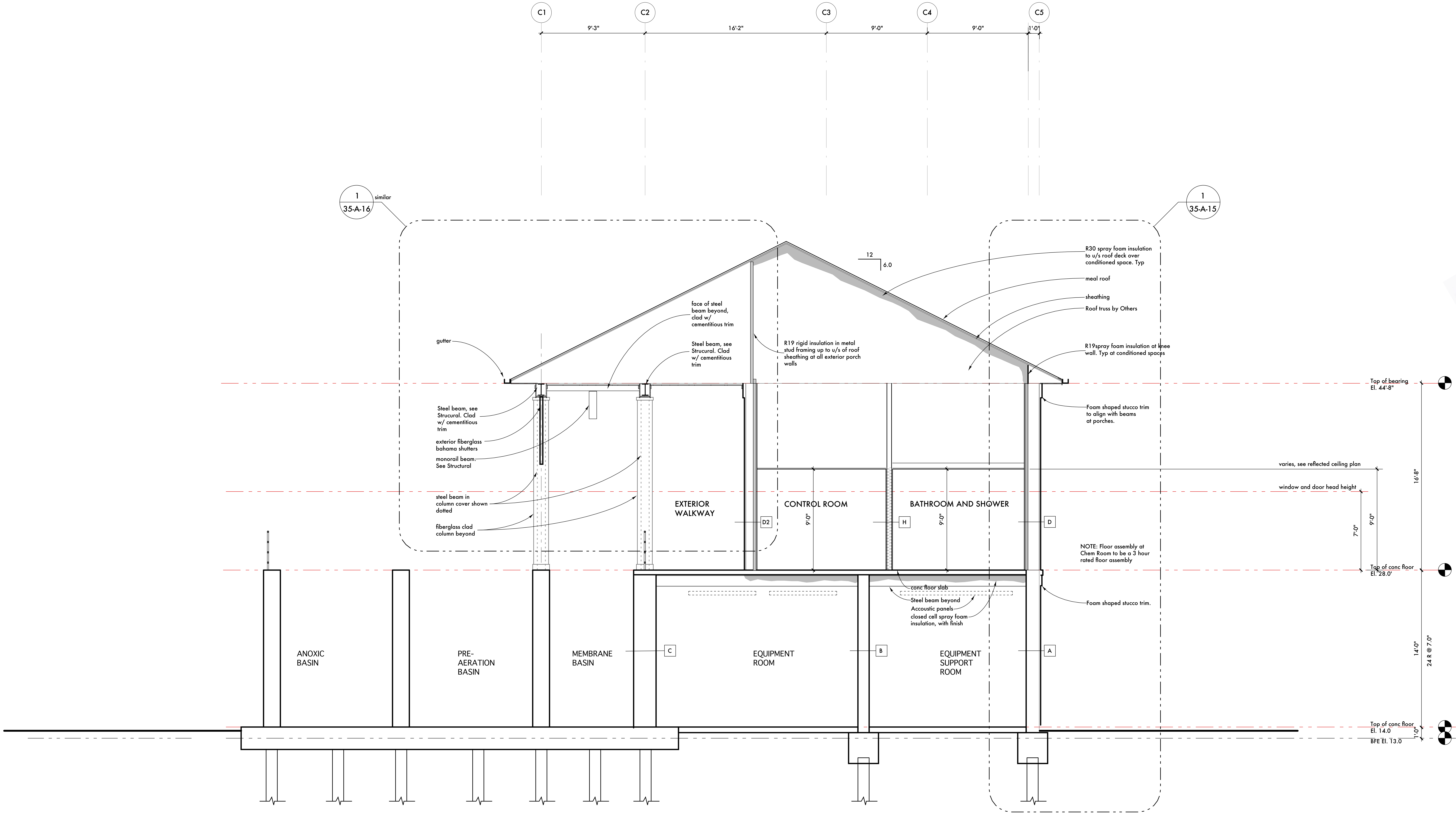
C1
C2
C3
C4
C5
9'-3"
16'-2"
9'-0"
9'-0"
1'-0"
1
35-A-16
similar
1
35-A-15
12
6.0
gutter
face of steel beam beyond, clad w/ cementitious trim
Steel beam, see Strucural. Clad w/ cementitious trim
R19 rigid insulation in metal stud framing up to u/s of roof sheathing at all exterior porch walls
R30 spray foam insulation to u/s roof deck over conditioned space. Typ
meal roof
sheathing
Roof truss by Others
R19spray foam insulation at knee wall. Typ at conditioned spaces
Steel beam, see Strucural. Clad w/ cementitious trim
exterior fiberglass bahama shutters
monorail beam. See Structural
steel beam in column cover shown dotted
fiberglass clad column beyond
Foam shaped stucco trim to align with beams at porches.
Top of bearing El. 44'-8"
varies, see reflected ceiling plan
window and door head height
EXTERIOR WALKWAY
CONTROL ROOM
BATHROOM AND SHOWER
D2
H
D
9'-0"
9'-0"
7'-0"
9'-0"
16'-8"
NOTE: Floor assembly at Chem Room to be a 3 hour rated floor assembly
Top of conc floor El. 28.0'
conc floor slab
Steel beam beyond
Accoustic panels
closed cell spray foam insulation, with finish
Foam shaped stucco trim.
ANOXIC BASIN
PRE-AERATION BASIN
MEMBRANE BASIN
C
EQUIPMENT ROOM
B
EQUIPMENT SUPPORT ROOM
A
14'-0"
24 R @ 7.0"
Top of conc floor El. 14.0
1'-0"
BFE El. 13.0

1 **Longitudinal Building Section**
Scale: 1/4" = 1'-0"

No.	Issued For	Date
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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP
WASTE WATER TREATMENT FACILITY BUILDING SECTION

Plot Date
1/29/16

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RB

Drawing Title
Waste Water Treatment Facility - Building Section

Drawing No.
35-A-13

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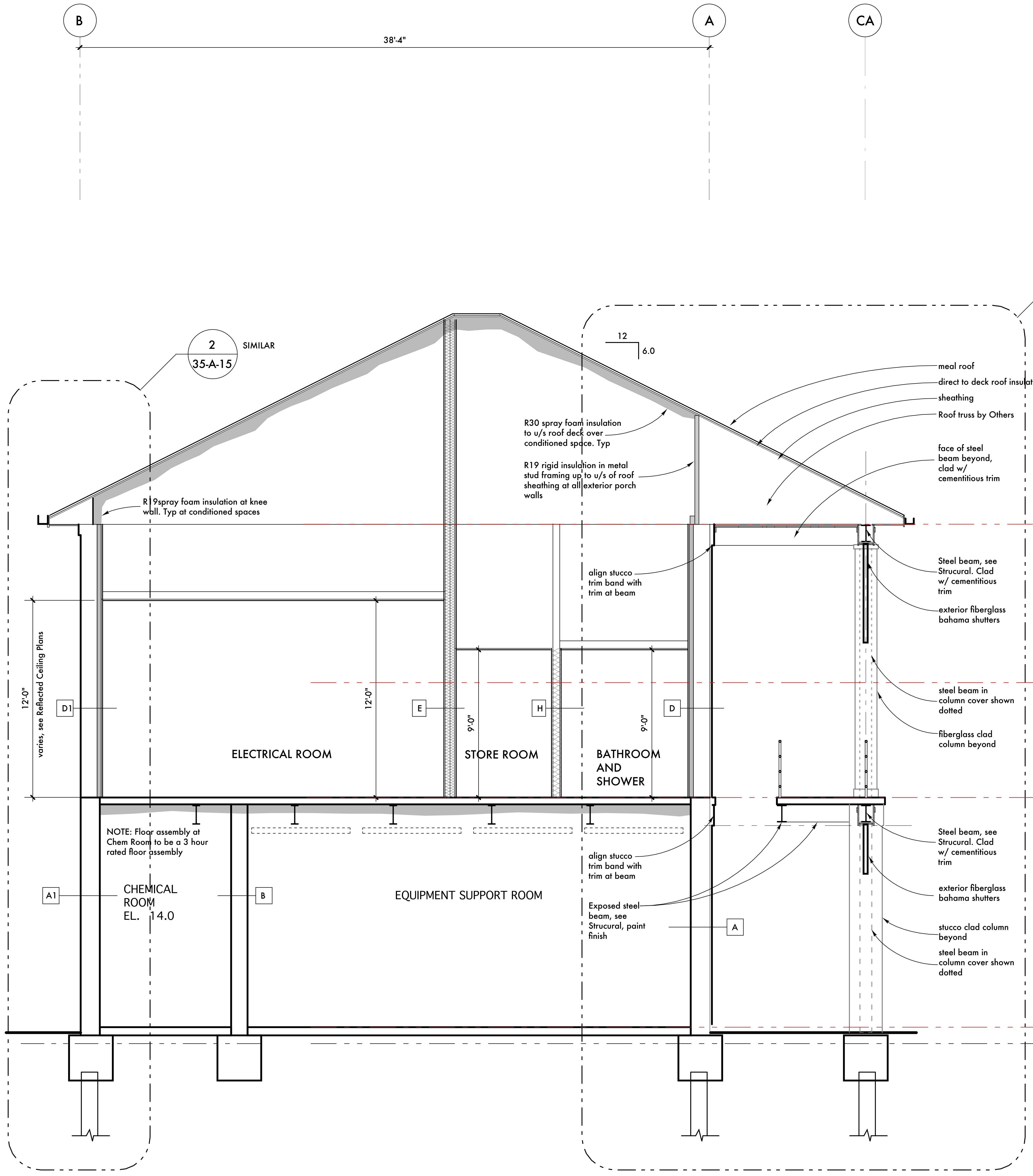
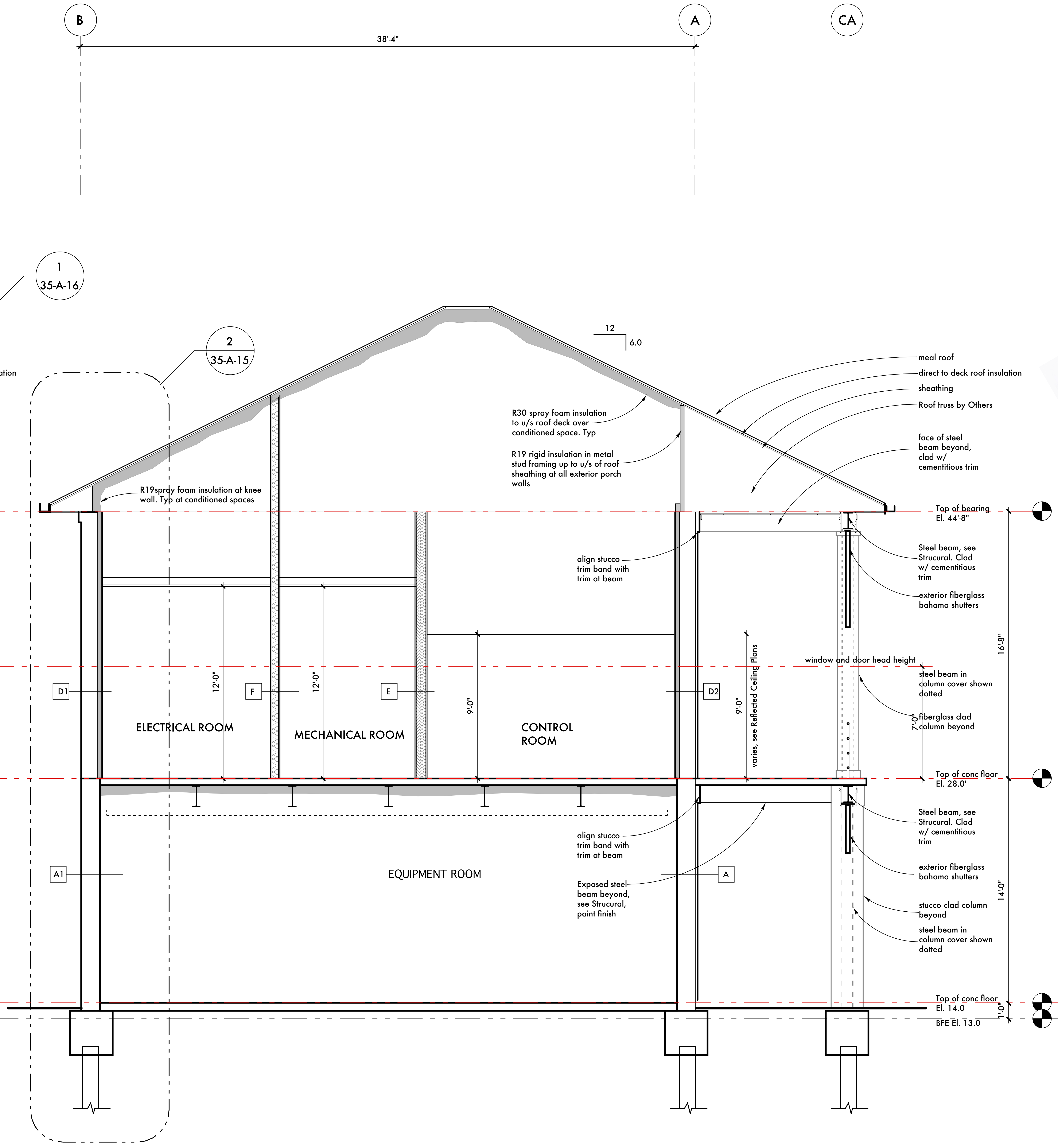

B
A
CA
38'-4"
1
35-A-16
2
35-A-15
SIMILAR
12
6.0
meal roof
direct to deck roof insulation
sheathing
Roof truss by Others
R30 spray foam insulation to u/s roof deck over conditioned space. Typ
R19 rigid insulation in metal stud framing up to u/s of roof sheathing at all exterior porch walls
face of steel beam beyond, clad w/ cementitious trim
R19spray foam insulation at knee wall. Typ at conditioned spaces
align stucco trim band with trim at beam
Steel beam, see Strucural. Clad w/ cementitious trim
exterior fiberglass bahama shutters
steel beam in column cover shown dotted
fiberglass clad column beyond
12'-0"
varies, see Reflected Ceiling Plans
D1
12'-0"
E
9'-0"
H
9'-0"
D
ELECTRICAL ROOM
STORE ROOM
BATHROOM AND SHOWER
NOTE: Floor assembly at Chem Room to be a 3 hour rated floor assembly
A1
CHEMICAL ROOM EL. 14.0
B
EQUIPMENT SUPPORT ROOM
align stucco trim band with trim at beam
Exposed steel beam, see Strucural, paint finish
A
Steel beam, see Strucural. Clad w/ cementitious trim
exterior fiberglass bahama shutters
stucco clad column beyond
steel beam in column cover shown dotted

1 Building Section
Scale: 1/4" = 1'-0"


B
A
CA
38'-4"
2
35-A-15
12
6.0
meal roof
direct to deck roof insulation
sheathing
Roof truss by Others
R30 spray foam insulation to u/s roof deck over conditioned space. Typ
R19 rigid insulation in metal stud framing up to u/s of roof sheathing at all exterior porch walls
face of steel beam beyond, clad w/ cementitious trim
R19spray foam insulation at knee wall. Typ at conditioned spaces
Top of bearing El. 44'-8"
align stucco trim band with trim at beam
Steel beam, see Strucural. Clad w/ cementitious trim
exterior fiberglass bahama shutters
window and door head height
steel beam in column cover shown dotted
fiberglass clad column beyond
16'-8"
7'-0"
D1
12'-0"
F
12'-0"
E
9'-0"
D2
9'-0"
varies, see Reflected Ceiling Plans
ELECTRICAL ROOM
MECHANICAL ROOM
CONTROL ROOM
Top of conc floor El. 28.0'
A1
EQUIPMENT ROOM
align stucco trim band with trim at beam
Exposed steel beam beyond, see Strucural, paint finish
A
Steel beam, see Strucural. Clad w/ cementitious trim
exterior fiberglass bahama shutters
stucco clad column beyond
steel beam in column cover shown dotted
14'-0"
Top of conc floor El. 14.0
1'-0"
BFE El. 13.0

2 Building Section
Scale: 1/4" = 1'-0"

No.	Issued For	Date
1	Issued For Bid	Jan. 29, 2016
2		
3		

Stamps

SWALLOWTAIL ARCHITECTURE LLC
Summerville, SC
No. 100760

RACHEL BEVERLEY BURTON
Summerville, SC
No. 8440
January 29 2016

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ARCHITECTURE AND INTERIOR DESIGN
843-885-9400 • SwallowtailArchitecture.com
814 N Cedar Street, Summerville, SC, 29483

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WASTE WATER TREATMENT FACILITY BUILDING SECTIONS

Plot Date
1/29/16

Checked
RB

Drawn
RB

Drawing Title
Waste Water Treatment Facility - BLDG Sections

Drawing No.
35-A-14

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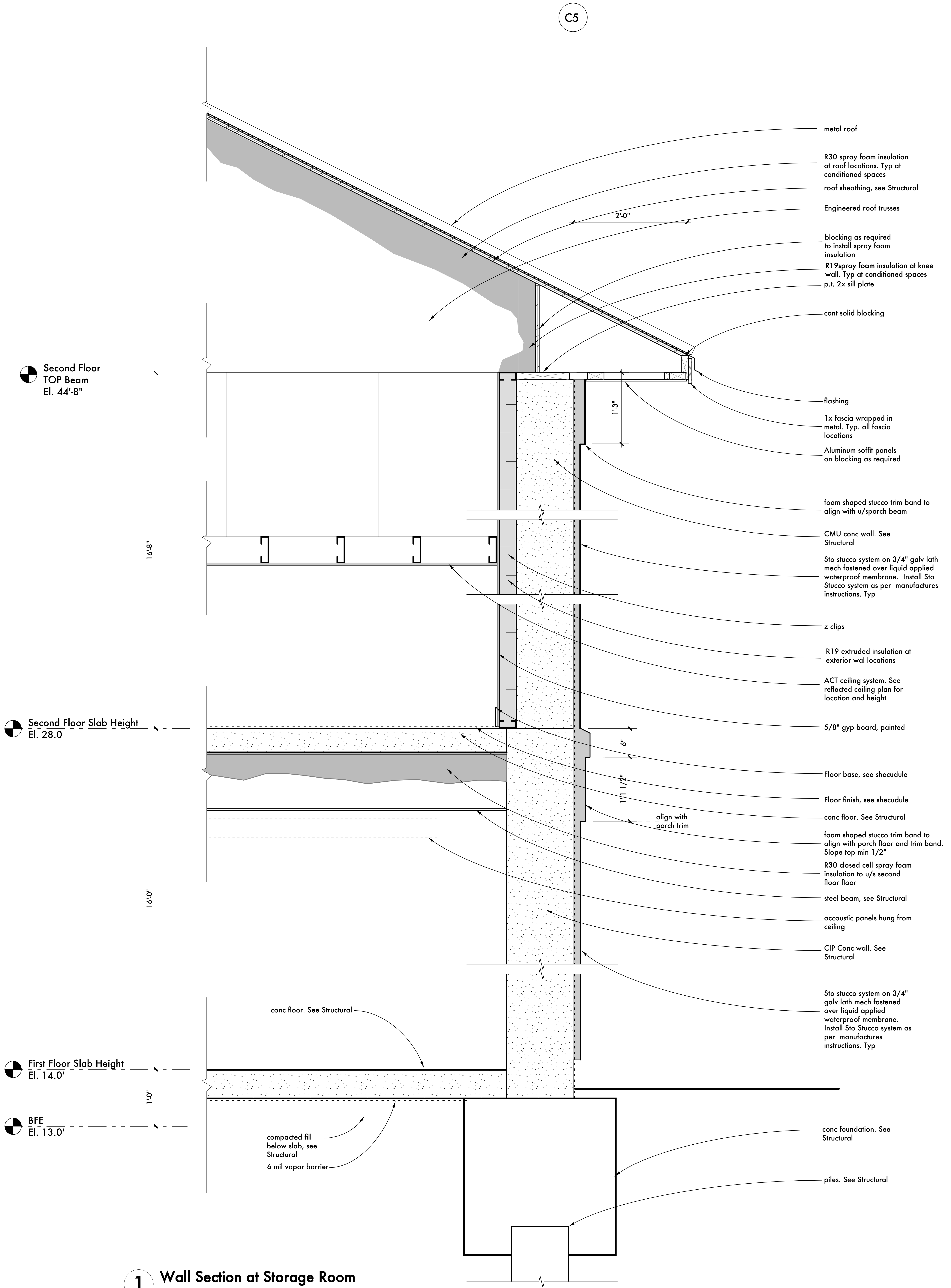
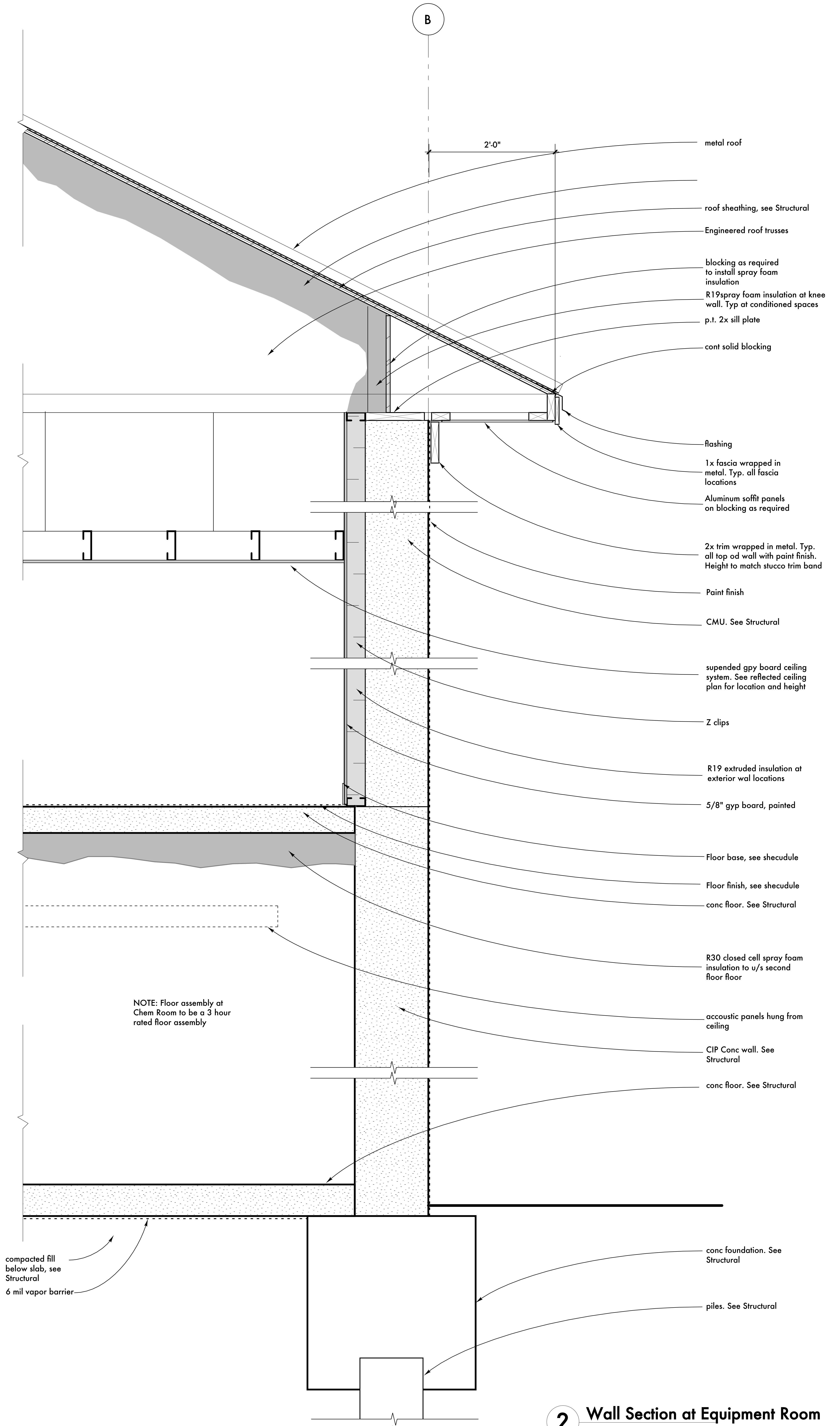

C5
2'-0"
metal roof
R30 spray foam insulation at roof locations. Typ at conditioned spaces
roof sheathing, see Structural
Engineered roof trusses
blocking as required to install spray foam insulation
R19spray foam insulation at knee wall. Typ at conditioned spaces
p.t. 2x sill plate
cont solid blocking
flashing
1x fascia wrapped in metal. Typ. all fascia locations
Aluminum soffit panels on blocking as required
foam shaped stucco trim band to align with u/sporch beam
CMU conc wall. See Structural
Sto stucco system on 3/4" galv lath mech fastened over liquid applied waterproof membrane. Install Sto Stucco system as per manufactures instructions. Typ
z clips
R19 extruded insulation at exterior wal locations
ACT ceiling system. See reflected ceiling plan for location and height
5/8" gyp board, painted
Floor base, see shecudule
Floor finish, see shecudule
conc floor. See Structural
foam shaped stucco trim band to align with porch floor and trim band. Slope top min 1/2"
R30 closed cell spray foam insulation to u/s second floor floor
steel beam, see Structural
accoustic panels hung from ceiling
CIP Conc wall. See Structural
Sto stucco system on 3/4" galv lath mech fastened over liquid applied waterproof membrane. Install Sto Stucco system as per manufactures instructions. Typ
1'-3"
6"
1'-1 1/2"
align with porch trim
Second Floor TOP Beam El. 44'-8"
Second Floor Slab Height El. 28.0
First Floor Slab Height El. 14.0'
BFE El. 13.0'
16'-8"
16'-0"
1'-0"
conc floor. See Structural
compacted fill below slab, see Structural
6 mil vapor barrier
conc foundation. See Structural
piles. See Structural

1 Wall Section at Storage Room

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


B
2'-0"
metal roof
roof sheathing, see Structural
Engineered roof trusses
blocking as required to install spray foam insulation
R19spray foam insulation at knee wall. Typ at conditioned spaces
p.t. 2x sill plate
cont solid blocking
flashing
1x fascia wrapped in metal. Typ. all fascia locations
Aluminum soffit panels on blocking as required
2x trim wrapped in metal. Typ. all top od wall with paint finish. Height to match stucco trim band
Paint finish
CMU. See Structural
supended gpy board ceiling system. See reflected ceiling plan for location and height
Z clips
R19 extruded insulation at exterior wal locations
5/8" gyp board, painted
Floor base, see shecudule
Floor finish, see shecudule
conc floor. See Structural
R30 closed cell spray foam insulation to u/s second floor floor
accoustic panels hung from ceiling
CIP Conc wall. See Structural
conc floor. See Structural
compacted fill below slab, see Structural
6 mil vapor barrier
conc foundation. See Structural
piles. See Structural

NOTE: Floor assembly at Chem Room to be a 3 hour rated floor assembly

2 Wall Section at Equipment Room

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

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Summerville, SC
No. 100760
REGISTERED ARCHITECTS

STATE OF SOUTH CAROLINA
RACHEL BEVERLEY BURTON
Summerville, SC
No. 8440
REGISTERED ARCHITECT

January 29 2016

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WASTE WATER TREATMENT FACILITY WALL SECTIONS

Plot Date 1/29/16

Checked RB

Drawn RB

Drawing Title
Waste Water Treatment Facility - Wall Sections

Drawing No.
35-A-15

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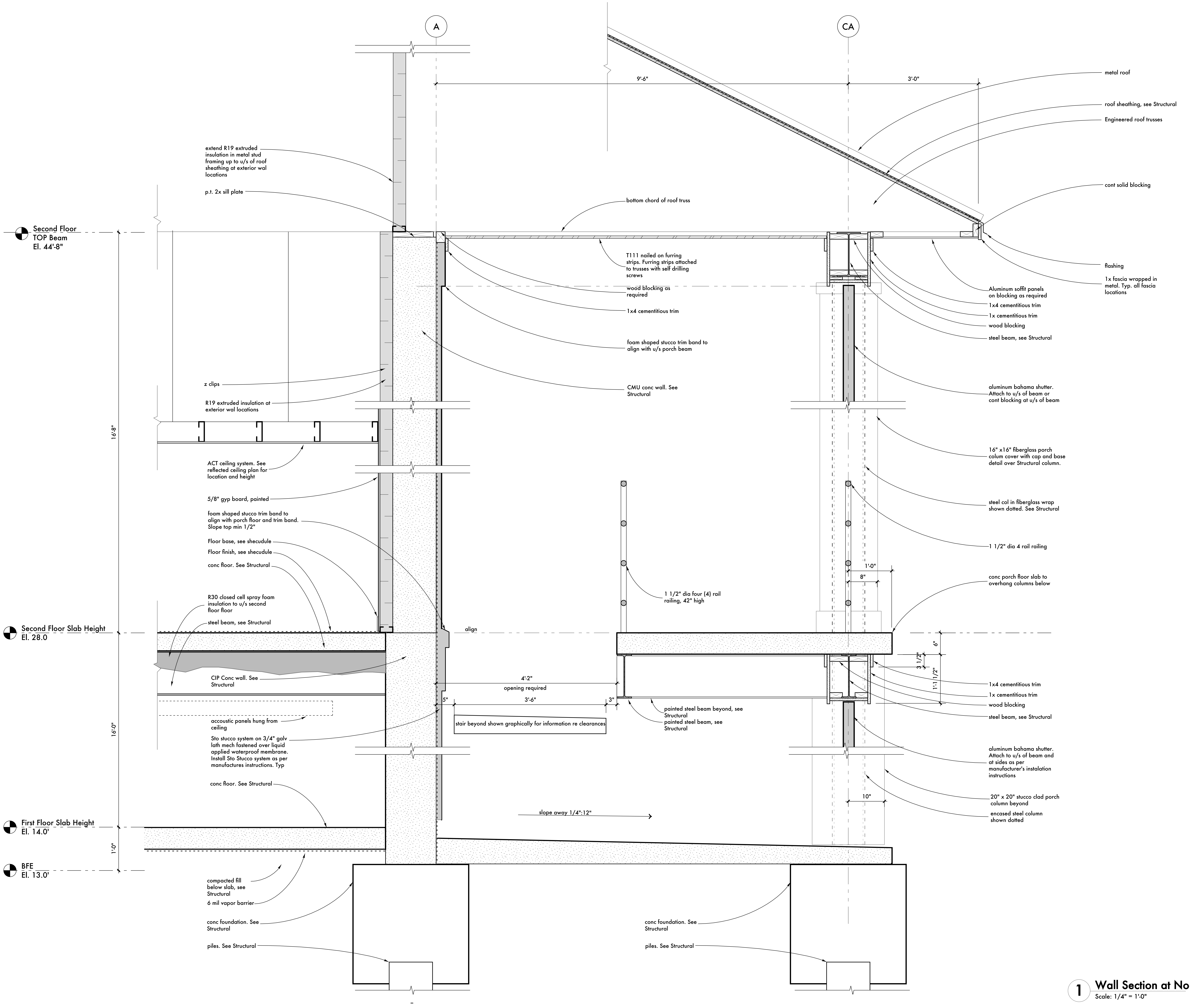
A
CA
9'-6"
3'-0"
metal roof
roof sheathing, see Structural
Engineered roof trusses
cont solid blocking
extend R19 extruded insulation in metal stud framing up to u/s of roof sheathing at exterior wal locations
p.t. 2x sill plate
bottom chord of roof truss
Second Floor TOP Beam El. 44'-8"
T111 nailed on furring strips. Furring strips attached to trusses with self drilling screws
wood blocking as required
1x4 cementitious trim
flashing
1x fascia wrapped in metal. Typ. all fascia locations
Aluminum soffit panels on blocking as required
1x4 cementitious trim
1x cementitious trim
wood blocking
steel beam, see Structural
foam shaped stucco trim band to align with u/s porch beam
z clips
CMU conc wall. See Structural
aluminum bahama shutter. Attach to u/s of beam or cont blocking at u/s of beam
R19 extruded insulation at exterior wal locations
16'-8"
16" x16" fiberglass porch colum cover with cap and base detail over Structural column.
ACT ceiling system. See reflected ceiling plan for location and height
steel col in fiberglass wrap shown dotted. See Structural
5/8" gyp board, painted
1 1/2" dia 4 rail railing
foam shaped stucco trim band to align with porch floor and trim band. Slope top min 1/2"
Floor base, see shecudule
Floor finish, see shecudule
conc floor. See Structural
1'-0"
8"
conc porch floor slab to overhang columns below
1 1/2" dia four (4) rail railing, 42" high
R30 closed cell spray foam insulation to u/s second floor floor
steel beam, see Structural
Second Floor Slab Height El. 28.0
align
6"
3 1/2"
1'-1 1/2"
CIP Conc wall. See Structural
4'-2"
opening required
1x4 cementitious trim
1x cementitious trim
wood blocking
5"
3'-6"
3"
painted steel beam beyond, see Structural
painted steel beam, see Structural
steel beam, see Structural
accoustic panels hung from ceiling
stair beyond shown graphically for information re clearances
16'-0"
Sto stucco system on 3/4" galv lath mech fastened over liquid applied waterproof membrane. Install Sto Stucco system as per manufactures instructions. Typ
aluminum bahama shutter. Attach to u/s of beam and at sides as per manufacturer's instalation instructions
conc floor. See Structural
10"
20" x 20" stucco clad porch column beyond
slope away 1/4":12"
encased steel column shown dotted
First Floor Slab Height El. 14.0'
1'-0"
BFE El. 13.0'
compacted fill below slab, see Structural
6 mil vapor barrier
conc foundation. See Structural
conc foundation. See Structural
piles. See Structural
piles. See Structural

1 Wall Section at North Porch

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

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1	Issued For Bid	Jan. 29, 2016
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Summerville, SC
No. 8440

January 29 2016

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WASTE WATER TREATMENT FACILITY WALL SECTIONS

Plot Date
1/29/16

Checked
RB

Drawn
RB

Drawing Title
Waste Water Treatment Facility - Wall Sections

Drawing No.
35-A-16

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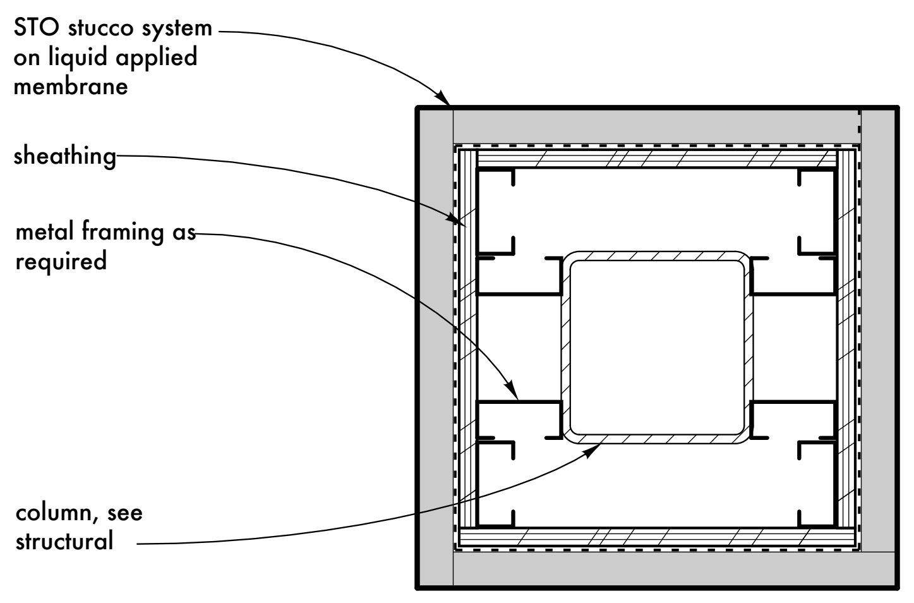
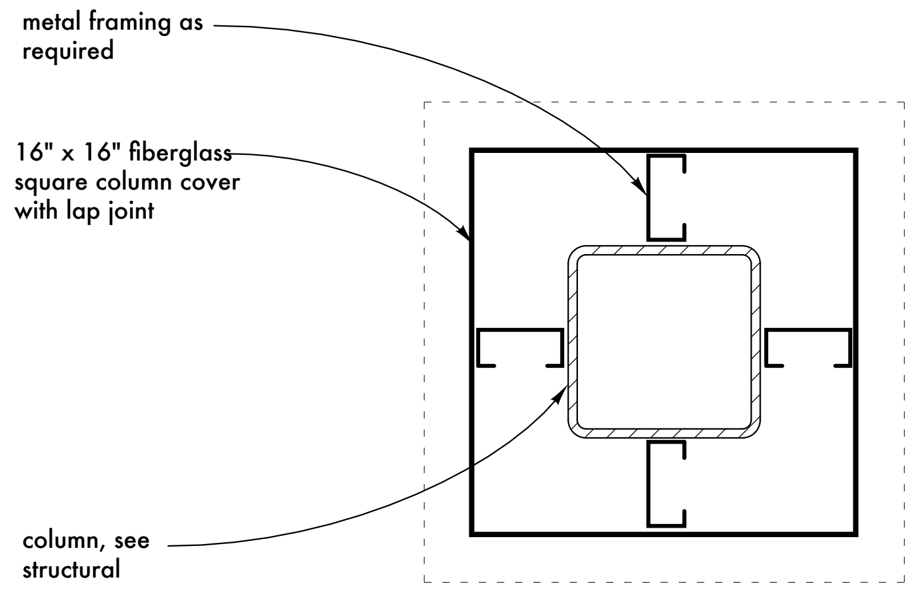
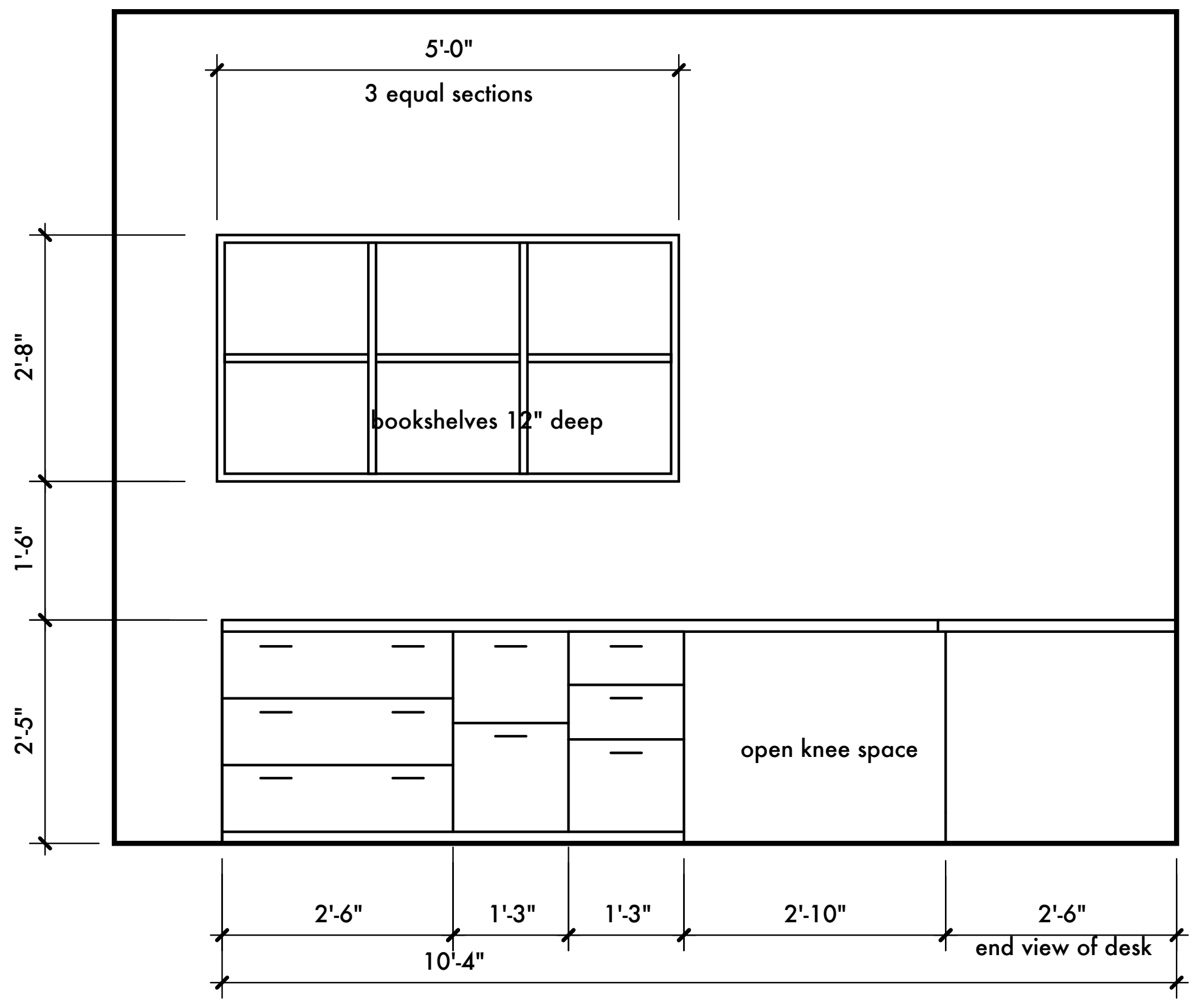

STO stucco system on liquid applied membrane
sheathing
metal framing as required
column, see structural

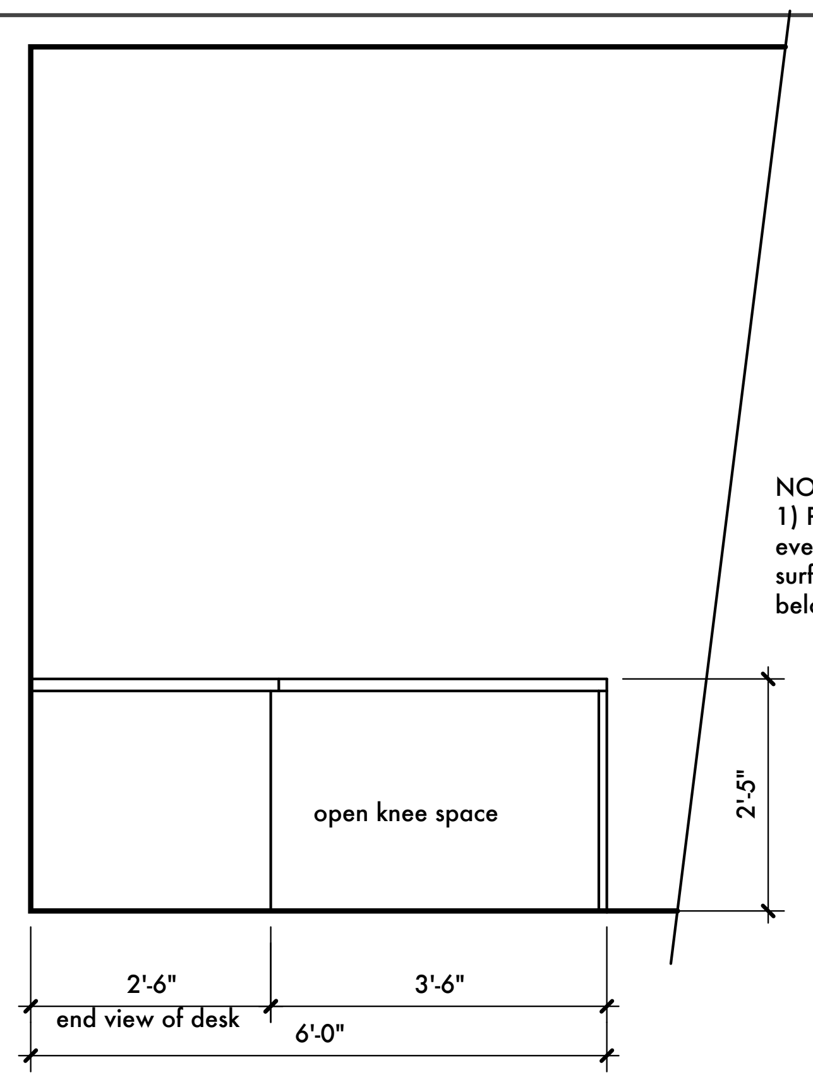
6 Section- Stucco Column
Scale: 1 1/2" = 1'-0"


metal framing as required
16" x 16" fiberglass square column cover with lap joint
column, see structural

7 Section- Upper Level Column
Scale: 1 1/2" = 1'-0"

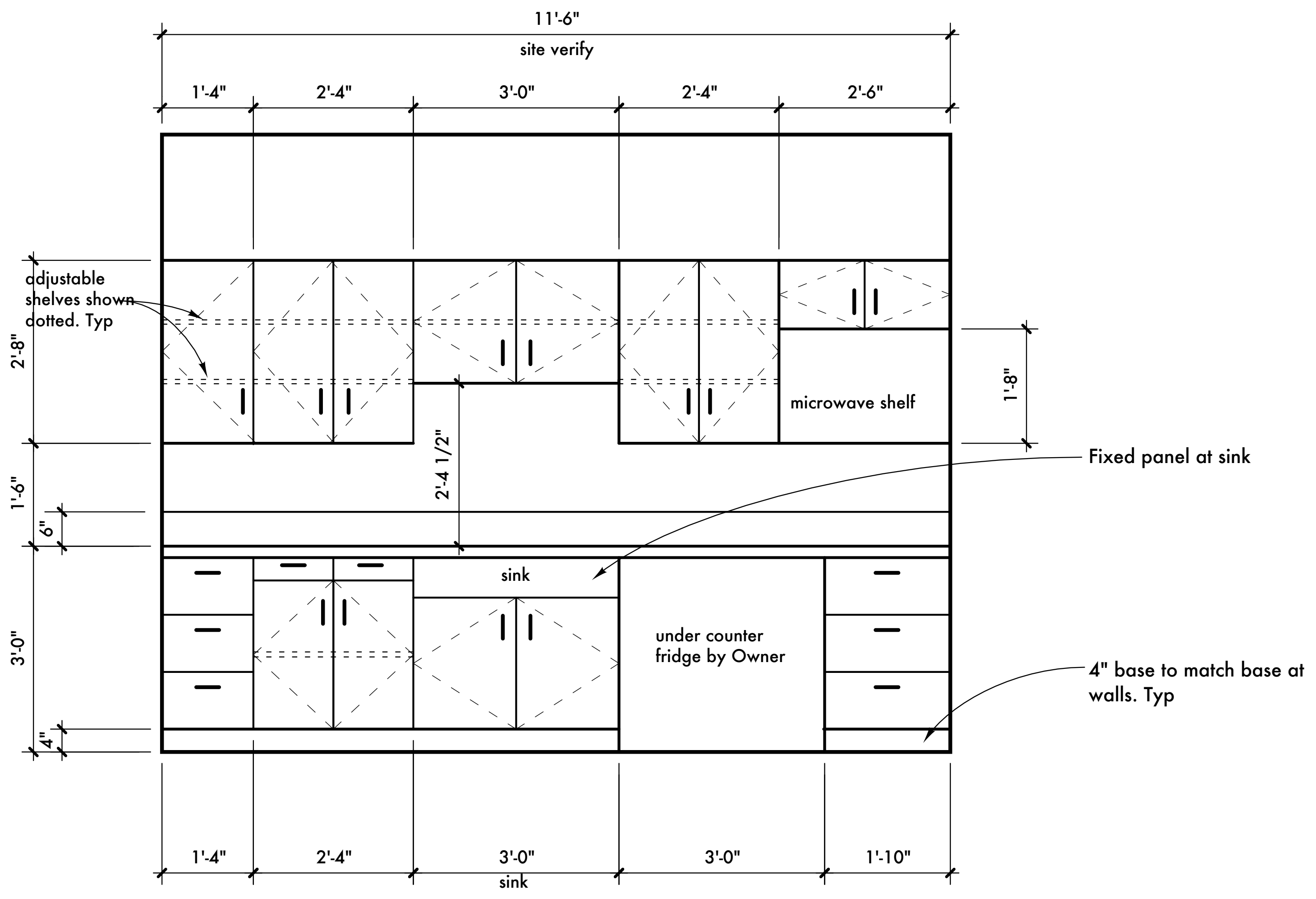


1 Elevation of Work Station - long end
Scale: 3/4" = 1'-0"



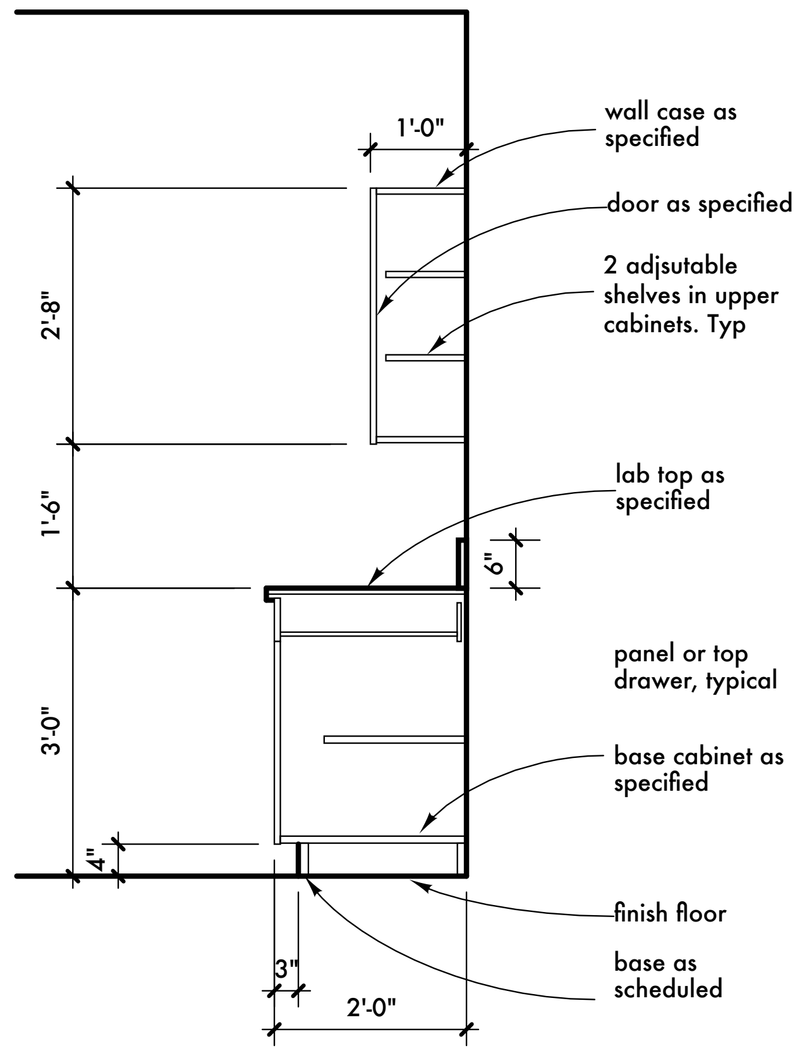
NOTE:
1) Provide 3 electrical outlets evenly spaces above desk surface, as well as 2 outlets below the desk

2 Elevation of Work Station - short end
Scale: 3/4" = 1'-0"



3 Elevation of Lab Case-Work
Scale: 3/4" = 1'-0"

NOTE:
1) Provide 2 electrical outlets above the counter on either side of the sink, as well as outlets for fridge and microwave
2) See specifications for additional construction information.



4 Elevation of Lab Case-Work
Scale: 3/4" = 1'-0"

CONTROL ROOM FURNISHING SCHEDULE

Item Key Number	Item Name	Material	Color/Code	Finish	Notes
1	Workstation top	Formica			
2	Workstation drawers and panels	Formica			
3	Workstation Interior	Formica			
4	Workstation exterior	Formica			
5	Lab counter top	Chemtop			
6	Lab lower cabinets	Formica			
7	Lab upper cabinets	Formica			
8	Lab backsplash	Formica			

5 Control Room Furnishing Schedule

No.	Issued For	Date
1	Issued For Bid	Jan. 29, 2016
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January 29 2016

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CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WASTE WATER TREATMENT FACILITY DETAILS

Plot Date
1/29/16

Checked
RB

Drawn
RB

Drawing Title
Waste Water Treatment Facility - Details

Drawing No.
35-A-17

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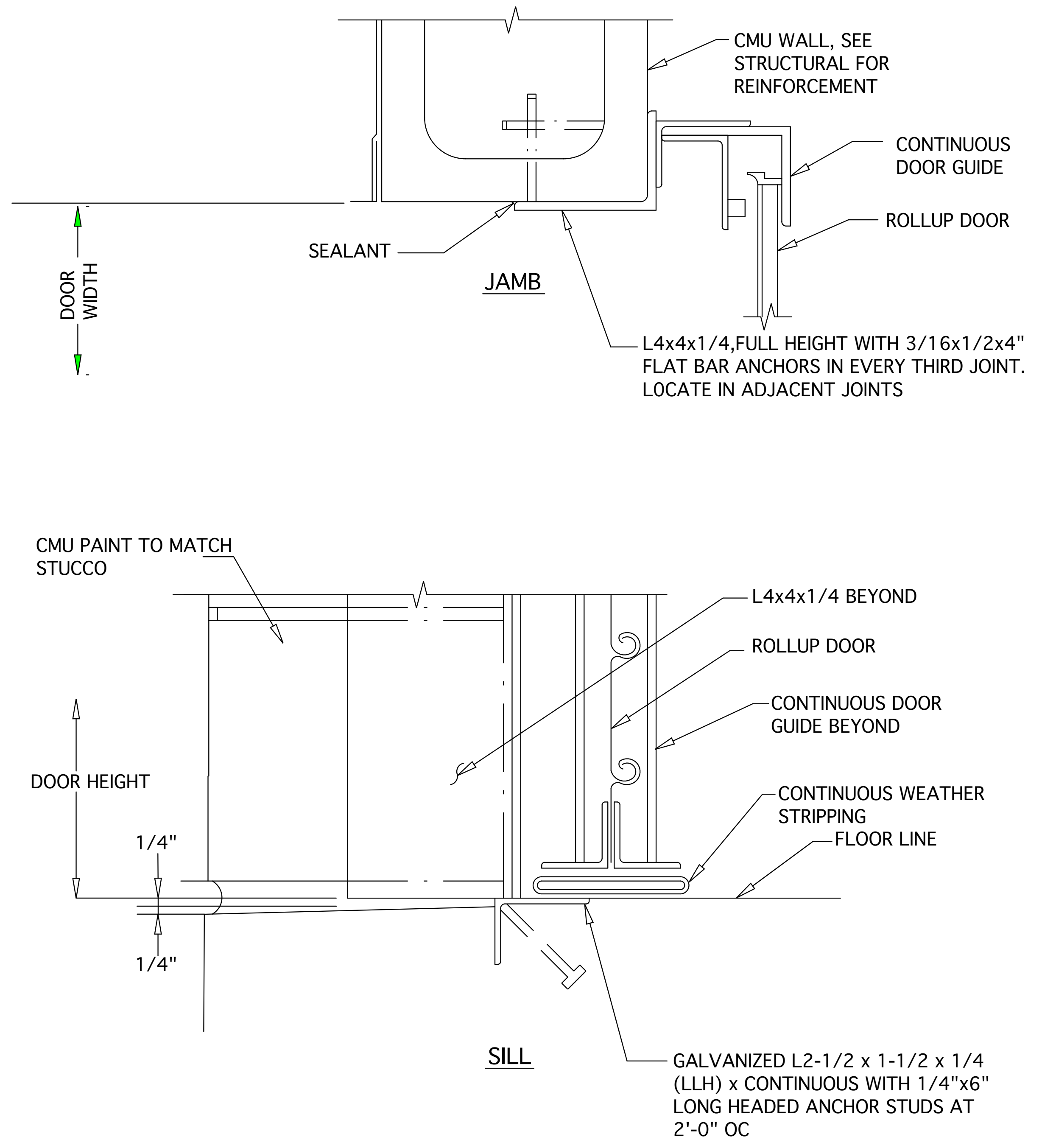
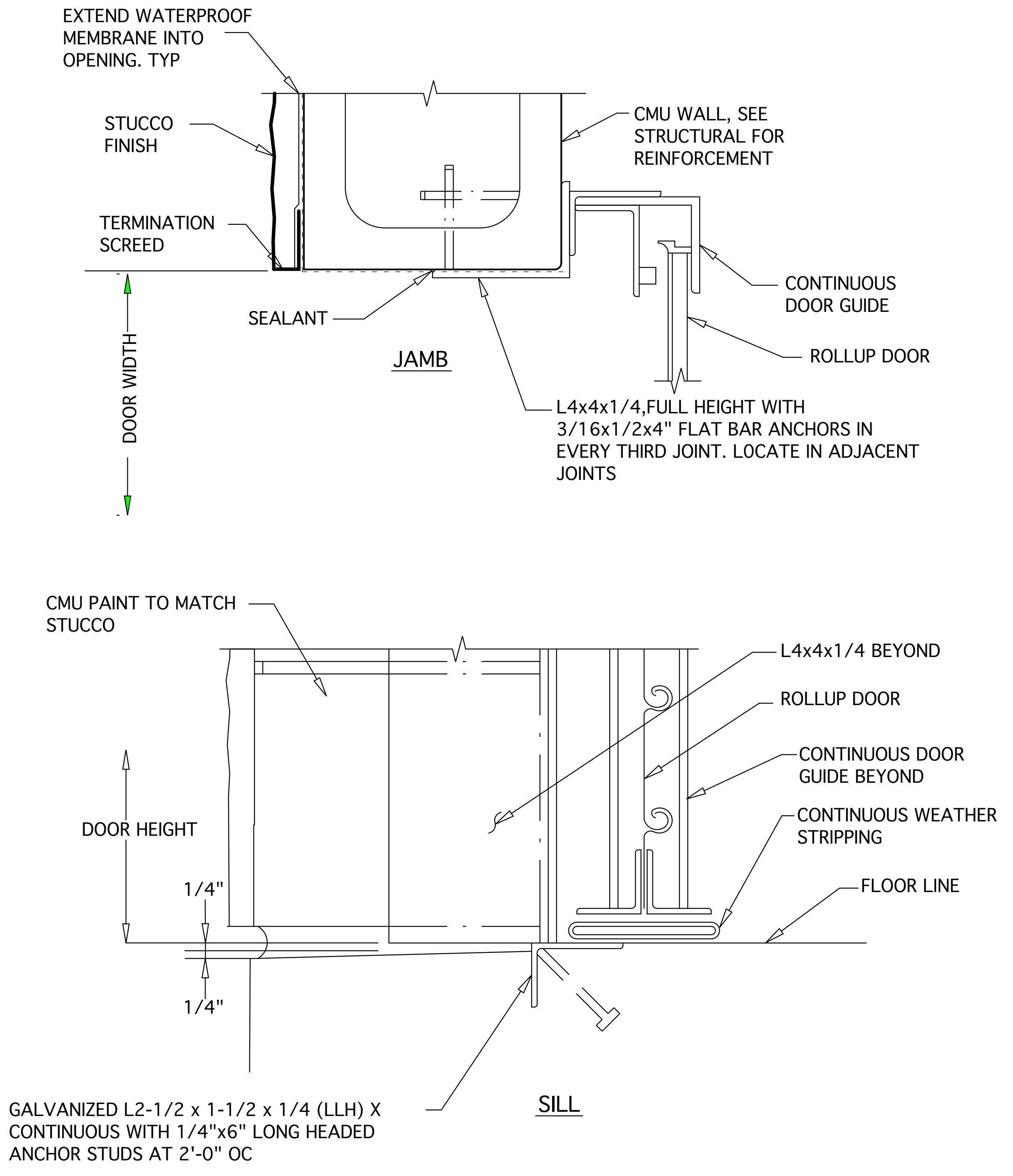
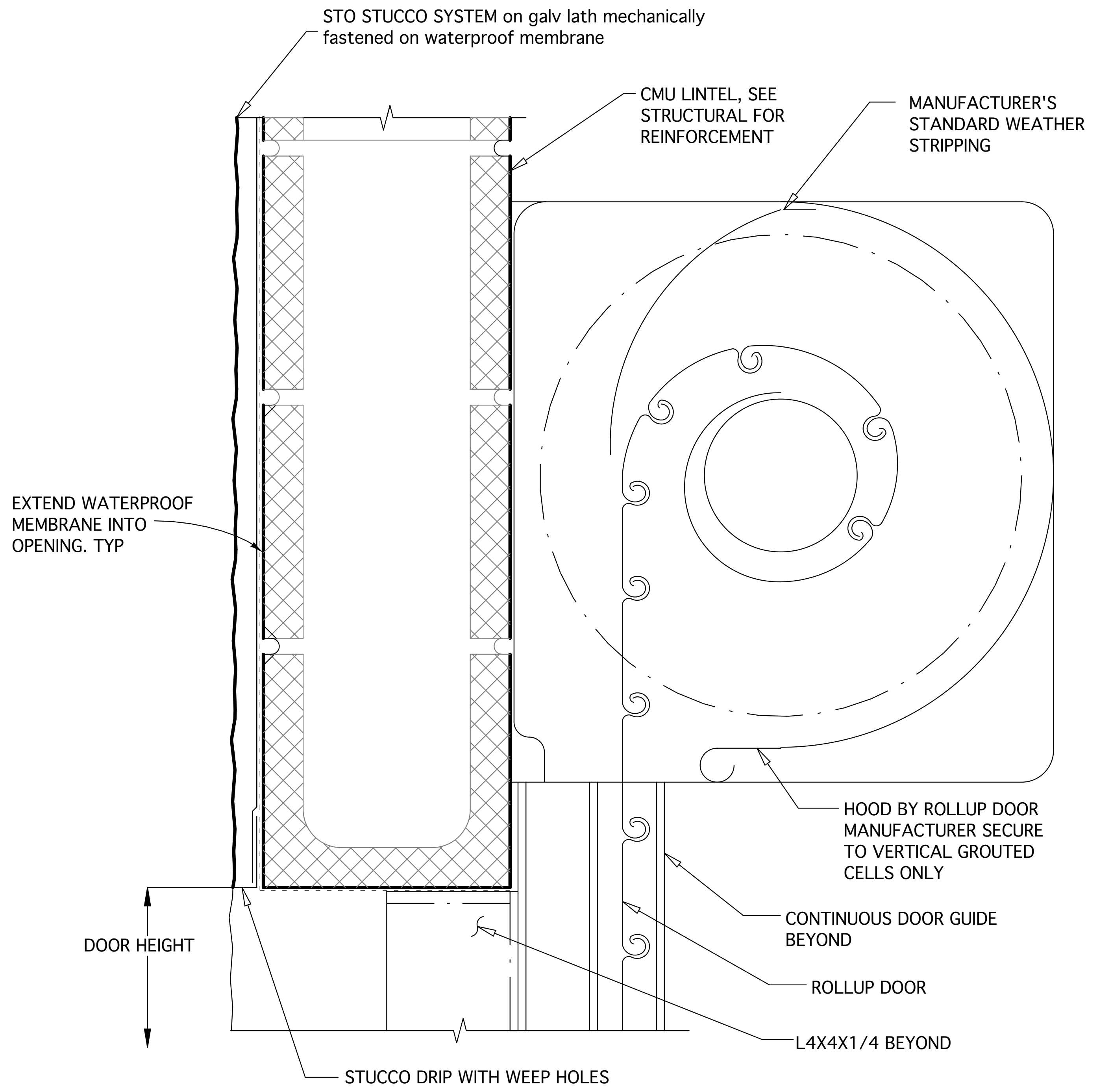

CMU WALL, SEE STRUCTURAL FOR REINFORCEMENT
CONTINUOUS DOOR GUIDE
ROLLUP DOOR
SEALANT
JAMB
DOOR WIDTH
L4x4x1/4,FULL HEIGHT WITH 3/16x1/2x4" FLAT BAR ANCHORS IN EVERY THIRD JOINT. LOCATE IN ADJACENT JOINTS
CMU PAINT TO MATCH STUCCO
L4x4x1/4 BEYOND
ROLLUP DOOR
CONTINUOUS DOOR GUIDE BEYOND
CONTINUOUS WEATHER STRIPPING
FLOOR LINE
DOOR HEIGHT
1/4"
1/4"
SILL
GALVANIZED L2-1/2 x 1-1/2 x 1/4 (LLH) x CONTINUOUS WITH 1/4"x6" LONG HEADED ANCHOR STUDS AT 2'-0" OC

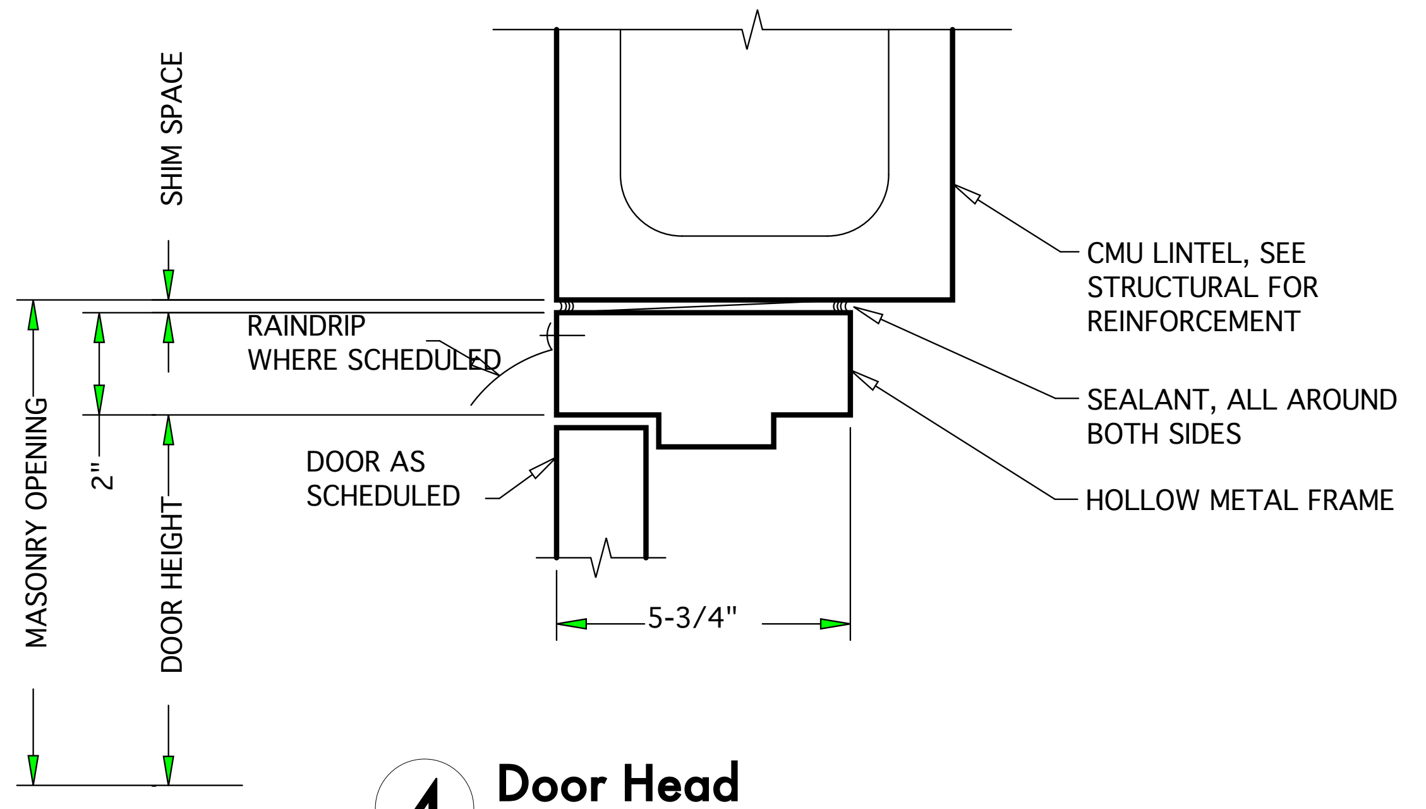
1 Roll Up Door Jamb and Sill - no stucco
Scale: NTS


EXTEND WATERPROOF MEMBRANE INTO OPENING. TYP
STUCCO FINISH
TERMINATION SCREED
CMU WALL, SEE STRUCTURAL FOR REINFORCEMENT
CONTINUOUS DOOR GUIDE
ROLLUP DOOR
SEALANT
JAMB
DOOR WIDTH
L4x4x1/4,FULL HEIGHT WITH 3/16x1/2x4" FLAT BAR ANCHORS IN EVERY THIRD JOINT. LOCATE IN ADJACENT JOINTS
CMU PAINT TO MATCH STUCCO
L4x4x1/4 BEYOND
ROLLUP DOOR
CONTINUOUS DOOR GUIDE BEYOND
CONTINUOUS WEATHER STRIPPING
FLOOR LINE
DOOR HEIGHT
1/4"
1/4"
GALVANIZED L2-1/2 x 1-1/2 x 1/4 (LLH) X CONTINUOUS WITH 1/4"x6" LONG HEADED ANCHOR STUDS AT 2'-0" OC
SILL

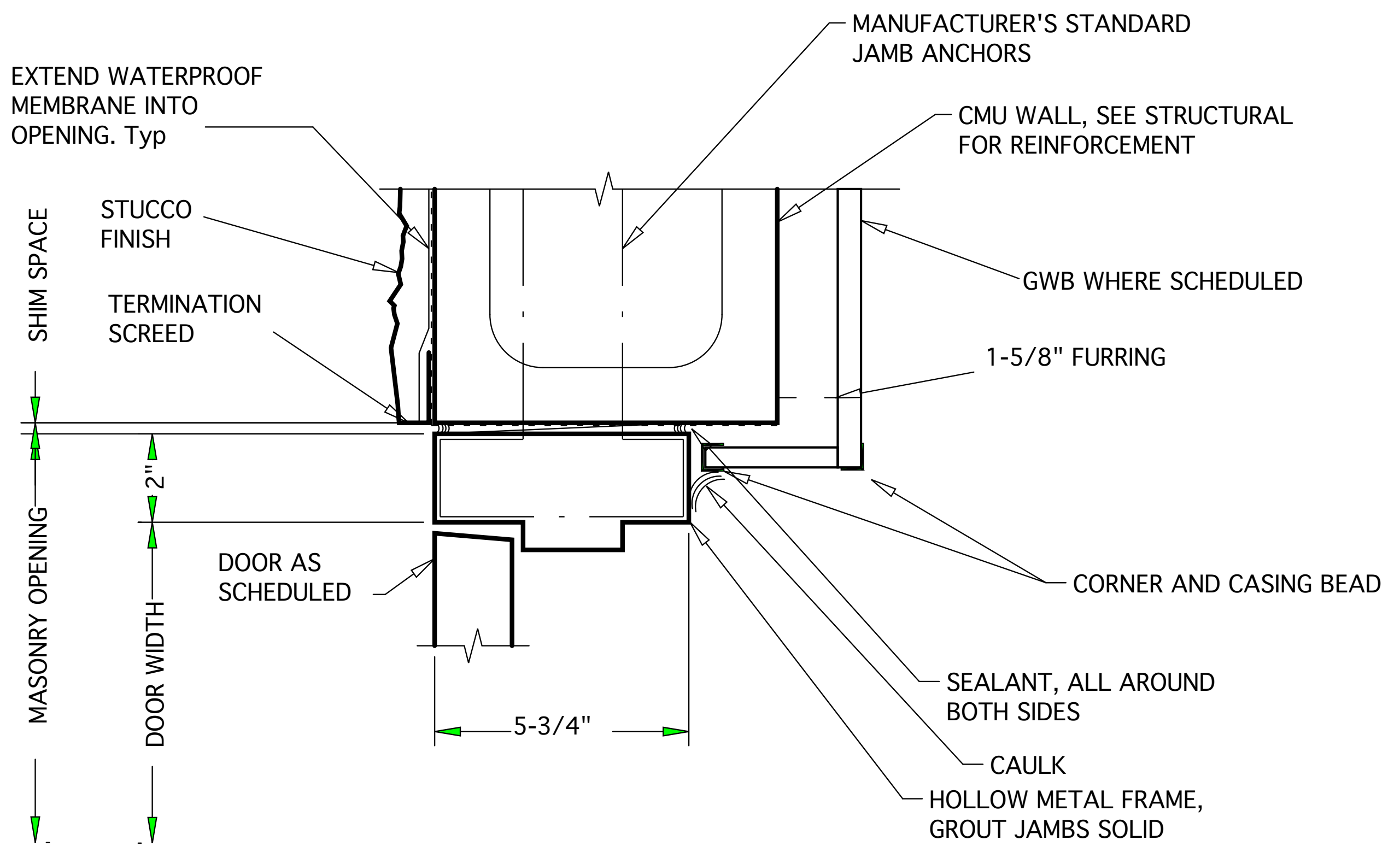
2 Roll Up Door Jamb and Sill
Scale: NTS


STO STUCCO SYSTEM on galv lath mechanically fastened on waterproof membrane
CMU LINTEL, SEE STRUCTURAL FOR REINFORCEMENT
MANUFACTURER'S STANDARD WEATHER STRIPPING
EXTEND WATERPROOF MEMBRANE INTO OPENING. TYP
HOOD BY ROLLUP DOOR MANUFACTURER SECURE TO VERTICAL GROUTED CELLS ONLY
CONTINUOUS DOOR GUIDE BEYOND
ROLLUP DOOR
L4X4X1/4 BEYOND
DOOR HEIGHT
STUCCO DRIP WITH WEEP HOLES

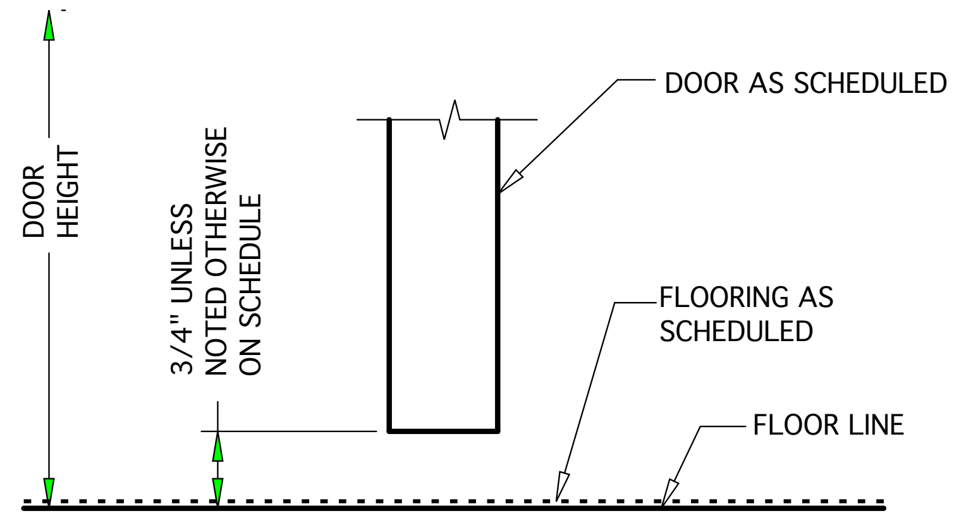
3 Roll Up Door Head
Scale: NTS



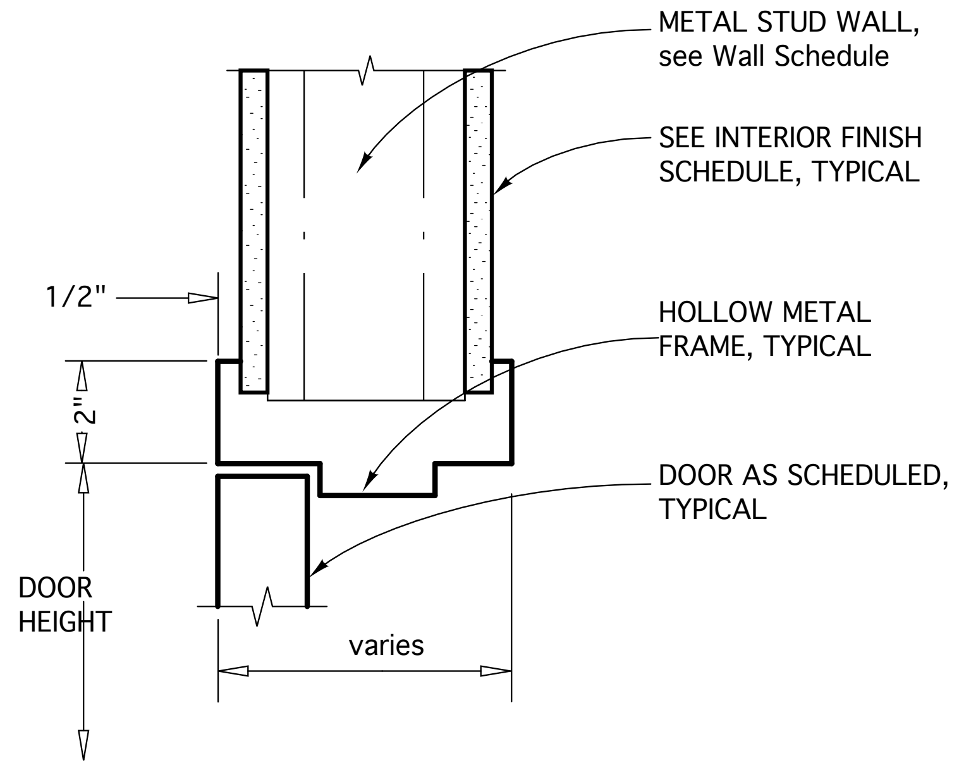
4 Door Head
Scale: NTS


MANUFACTURER'S STANDARD JAMB ANCHORS
EXTEND WATERPROOF MEMBRANE INTO OPENING. Typ
CMU WALL, SEE STRUCTURAL FOR REINFORCEMENT
STUCCO FINISH
TERMINATION SCREED
SHIM SPACE
GWB WHERE SCHEDULED
1-5/8" FURRING
2"
DOOR AS SCHEDULED
CORNER AND CASING BEAD
MASONRY OPENING
DOOR WIDTH
SEALANT, ALL AROUND BOTH SIDES
5-3/4"
CAULK
HOLLOW METAL FRAME, GROUT JAMBS SOLID

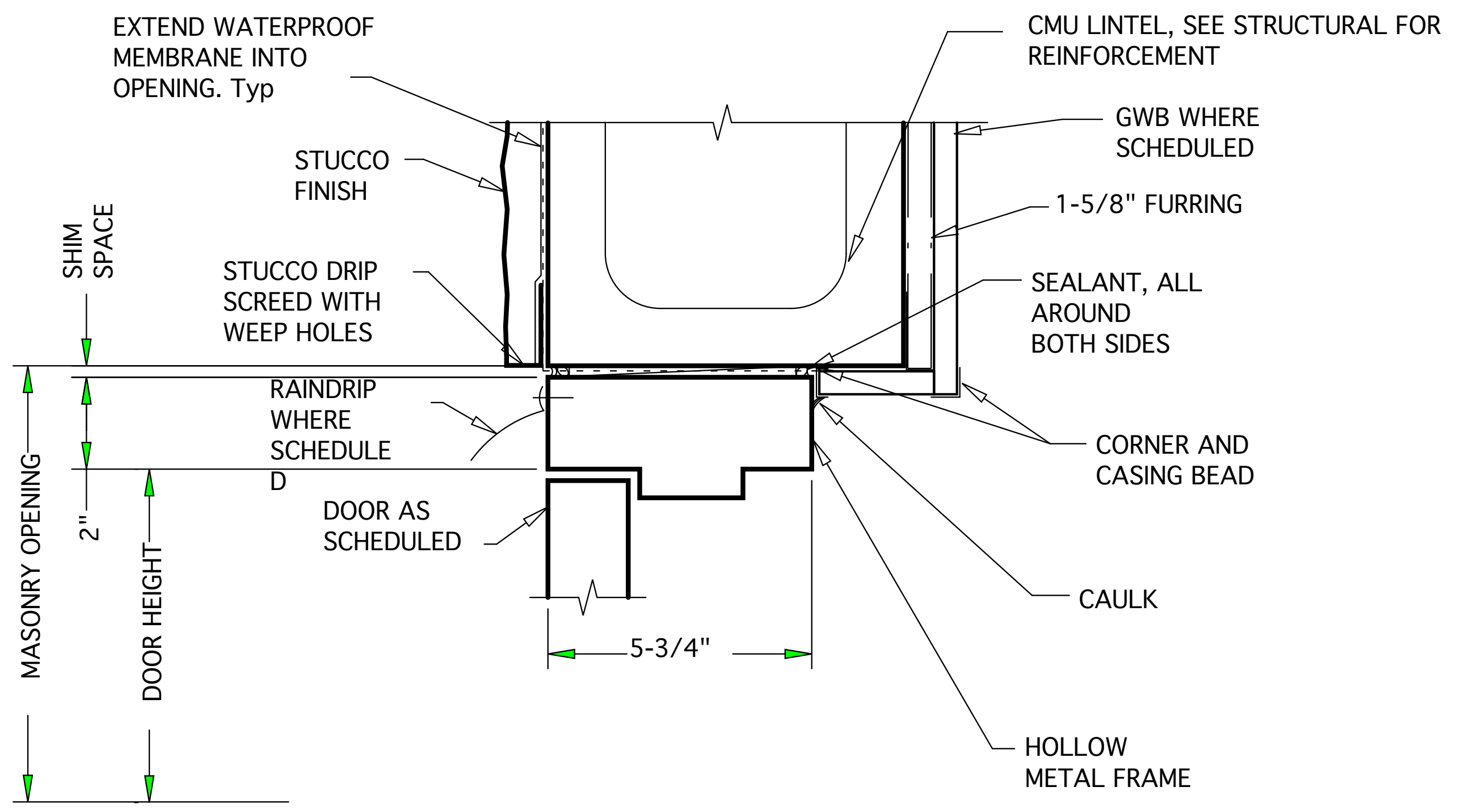
5 Door Jamb
Scale: NTS



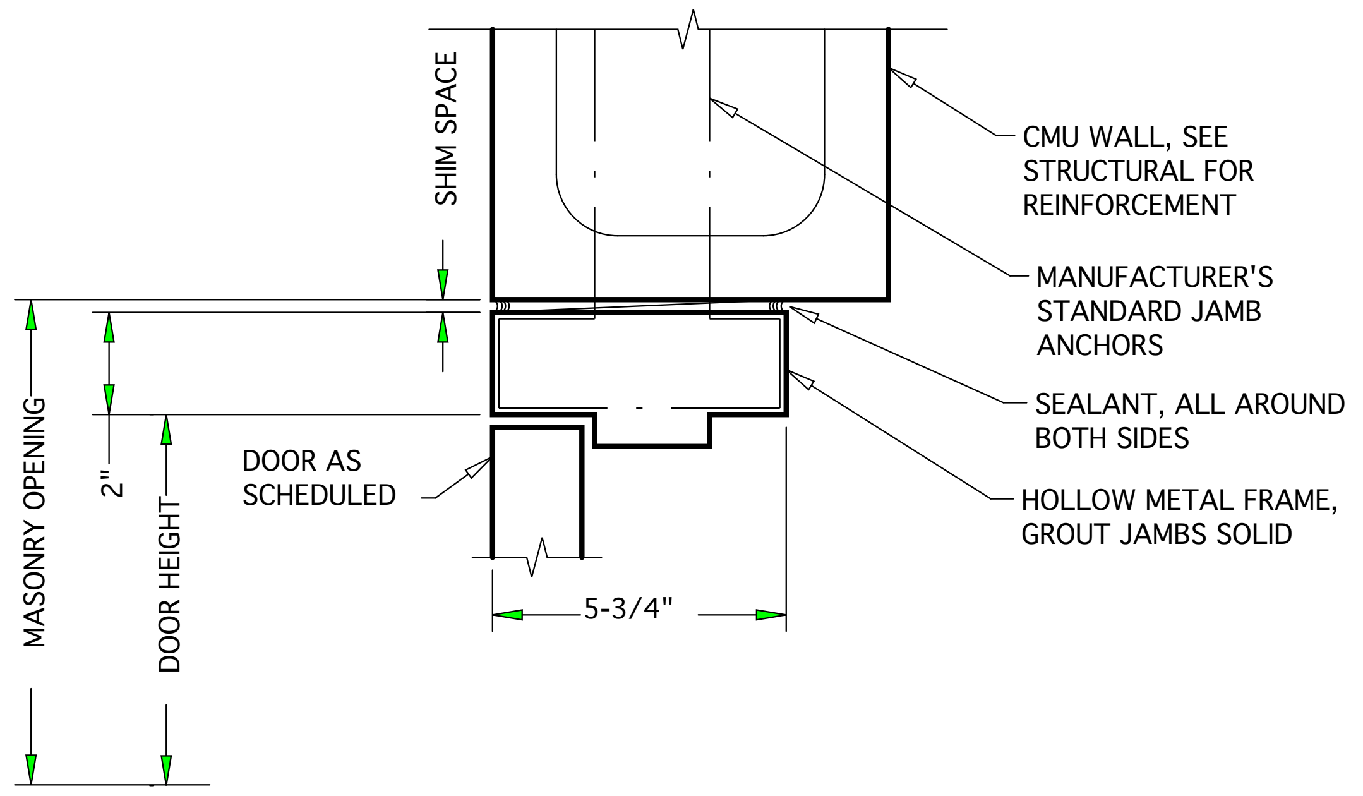
6 Interior Door Head
Scale: NTS


METAL STUD WALL, see Wall Schedule
SEE INTERIOR FINISH SCHEDULE, TYPICAL
1/2"
HOLLOW METAL FRAME, TYPICAL
2"
DOOR AS SCHEDULED, TYPICAL
DOOR HEIGHT
varies

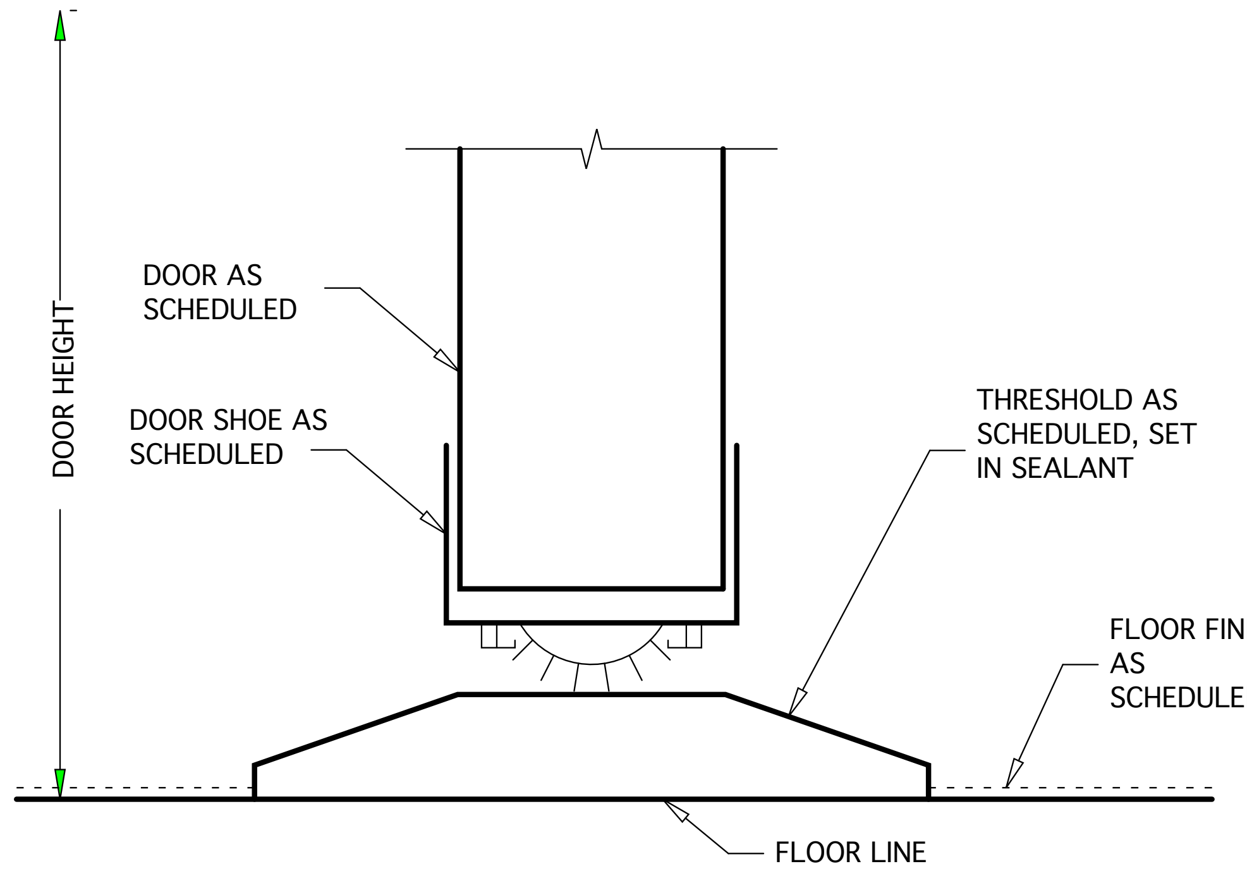
7 Interior Door Head
Scale: NTS



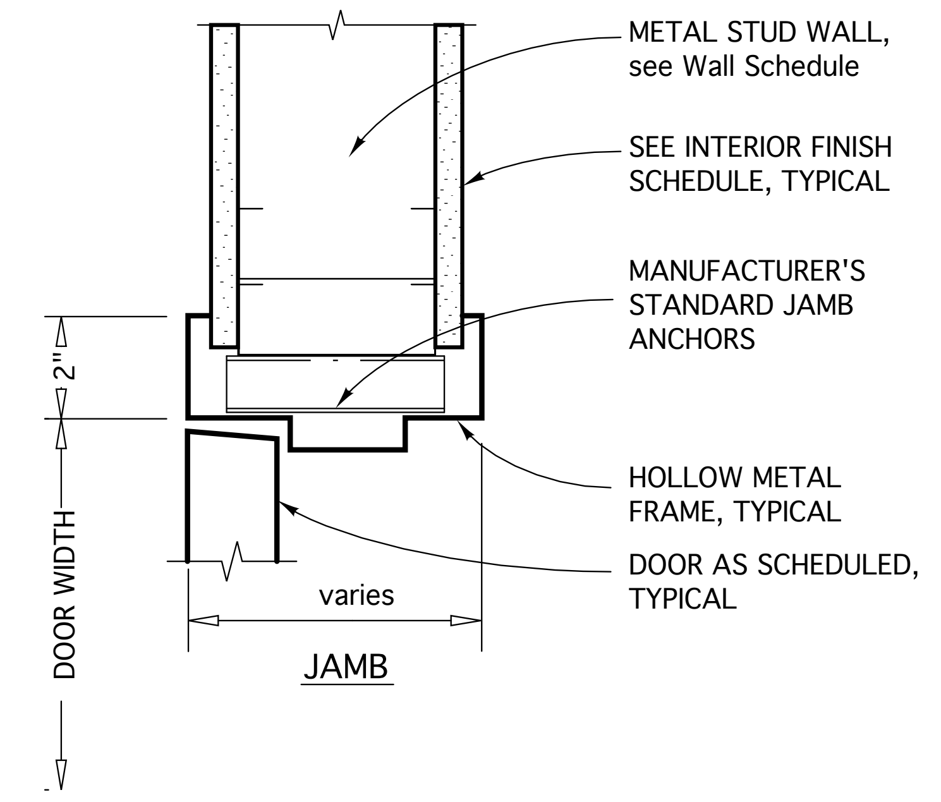
8 Door Head
Scale: NTS


SHIM SPACE
CMU WALL, SEE STRUCTURAL FOR REINFORCEMENT
MANUFACTURER'S STANDARD JAMB ANCHORS
DOOR AS SCHEDULED
SEALANT, ALL AROUND BOTH SIDES
HOLLOW METAL FRAME, GROUT JAMBS SOLID
MASONRY OPENING
2"
DOOR HEIGHT
5-3/4"

9 Door Jamb
Scale: NTS


DOOR HEIGHT
DOOR AS SCHEDULED
DOOR SHOE AS SCHEDULED
THRESHOLD AS SCHEDULED, SET IN SEALANT
FLOOR FINISH AS SCHEDULED
FLOOR LINE

10 Door Sill with Threshold
Scale: NTS


METAL STUD WALL, see Wall Schedule
SEE INTERIOR FINISH SCHEDULE, TYPICAL
MANUFACTURER'S STANDARD JAMB ANCHORS
2"
HOLLOW METAL FRAME, TYPICAL
DOOR AS SCHEDULED, TYPICAL
DOOR WIDTH
varies
JAMB

11 Door Jamb
Scale: NTS

No.	Issued For	Date
1	Issued For Bid	Jan. 29, 2016
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January 29 2016

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
WASTE WATER TREATMENT FACILITY DETAILS

Plot Date 1/29/16
Checked RB
Drawn RB
Drawing Title
Waste Water Treatment Facility Details
Drawing No.
35-A-18

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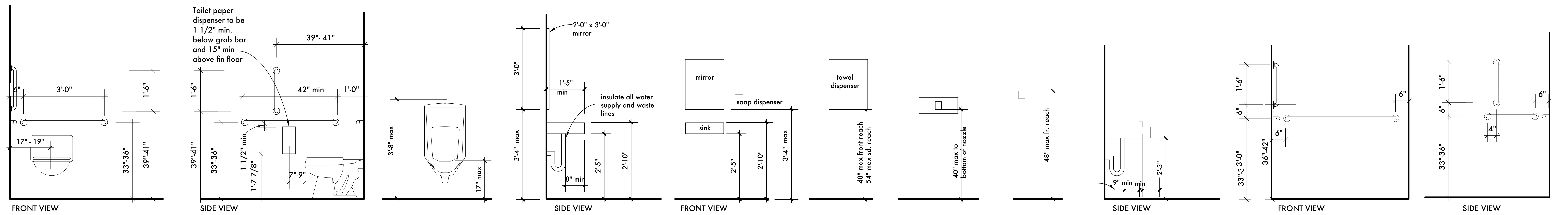


TOILET AND GRAB BAR HEIGHTS

URINAL HEIGHT

SINK HEIGHT

TOWEL DISPENSER HEIGHT

BLOWER HEIGHT

COAT HOOK HEIGHT

DRINKING FOUNTAIN HEIGHT

SHOWER GRAB BAR HEIGHTS

1 Standard Mounting Heights and Reach Distances

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

GRAB BARS AND SEATS

1.GRAB BARS AND SHOWER SEATS ARE TO BE CONSTRUCTED AND INSTALLED TO MEET THE FOLLOWING STRUCTURAL STRENGTHS:

250 LB. BENDING MOMENT
250 LB. SHEAR STRESS

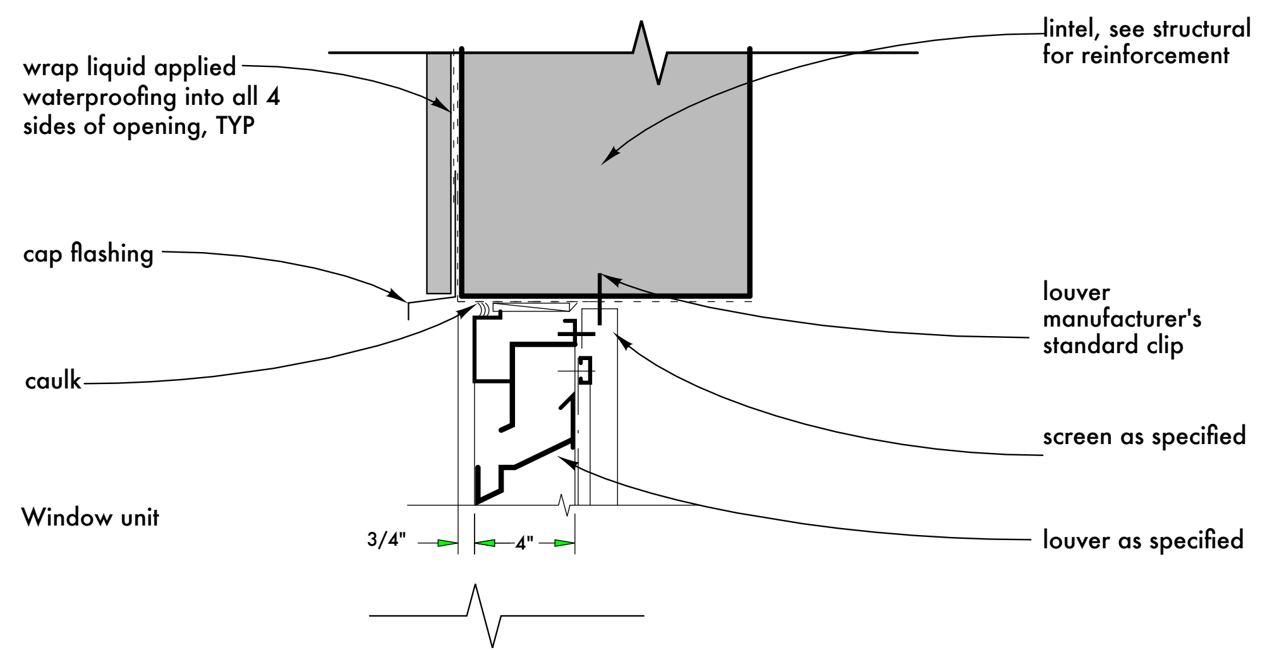
SHEAR FORCE INDUCED ON FASTENER OR MOUNTING DEVICE FROM APPLICATION OF 250 LB. FORCE SHALL BE LESS THAN ALLOWABLE LATERAL LOAD OF FASTENER OR SUPPORT STRUCTURE.

TENSILE FORCE INDUCED BY DIRECT TENSION FORCE OF 250 LB. PLUS MAXIMUM MOMENT FROM THE APPLICATION OF 250 LB. SHALL BE LESS THAN THE ALLOWABLE WITHDRAWAL LOAD BETWEEN FASTENER AND SUPPORTING STRUCTURE.

2. GRAB BARS SHALL NOT ROTATE WITHIN THEIR FITTINGS.

DOORS

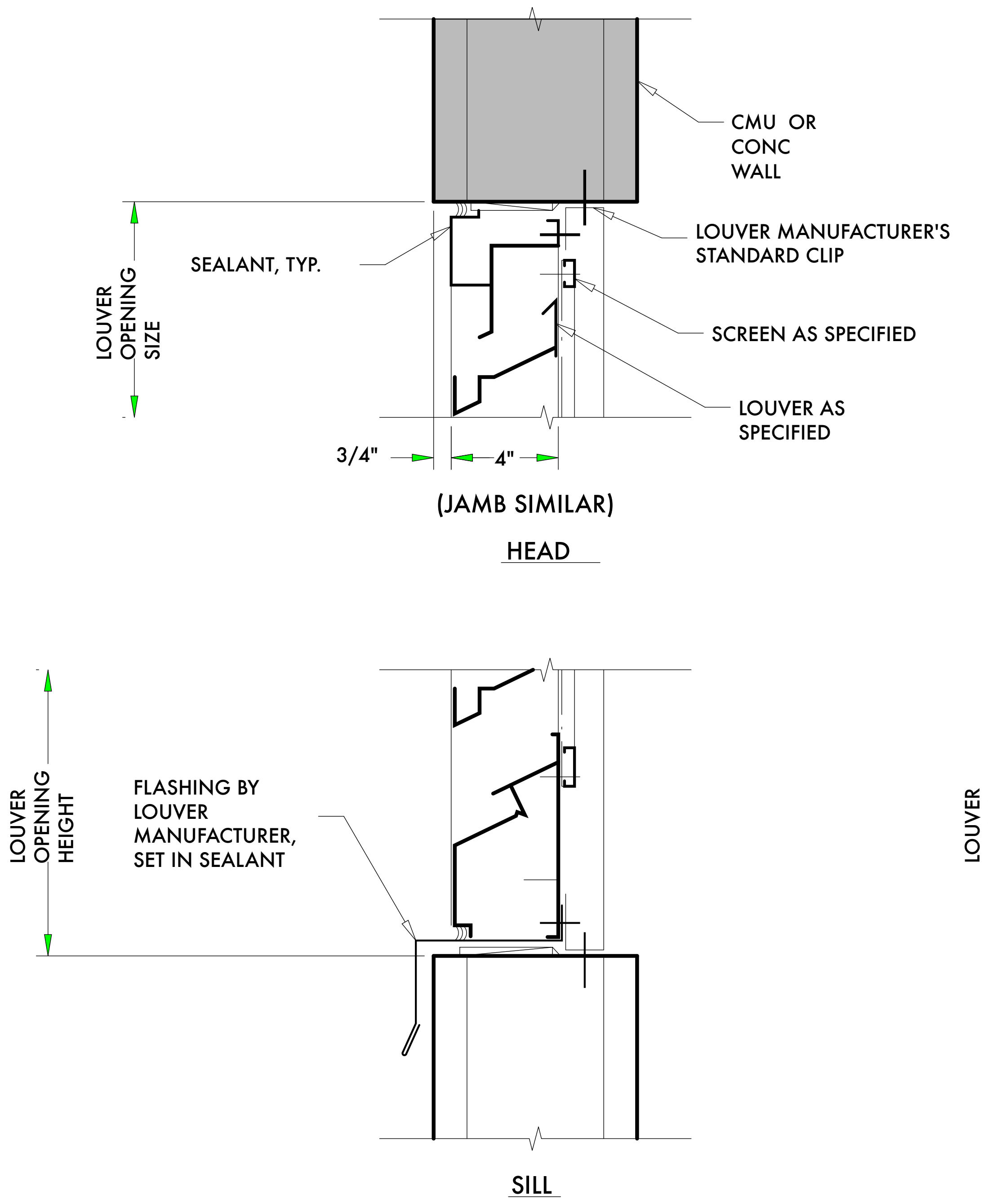
DOOR OPENING FORCE:
EXTERIOR - 8.5 LB.
INTERIOR - 5 LBS.
SLIDING OR FOLDING - 5 LB.

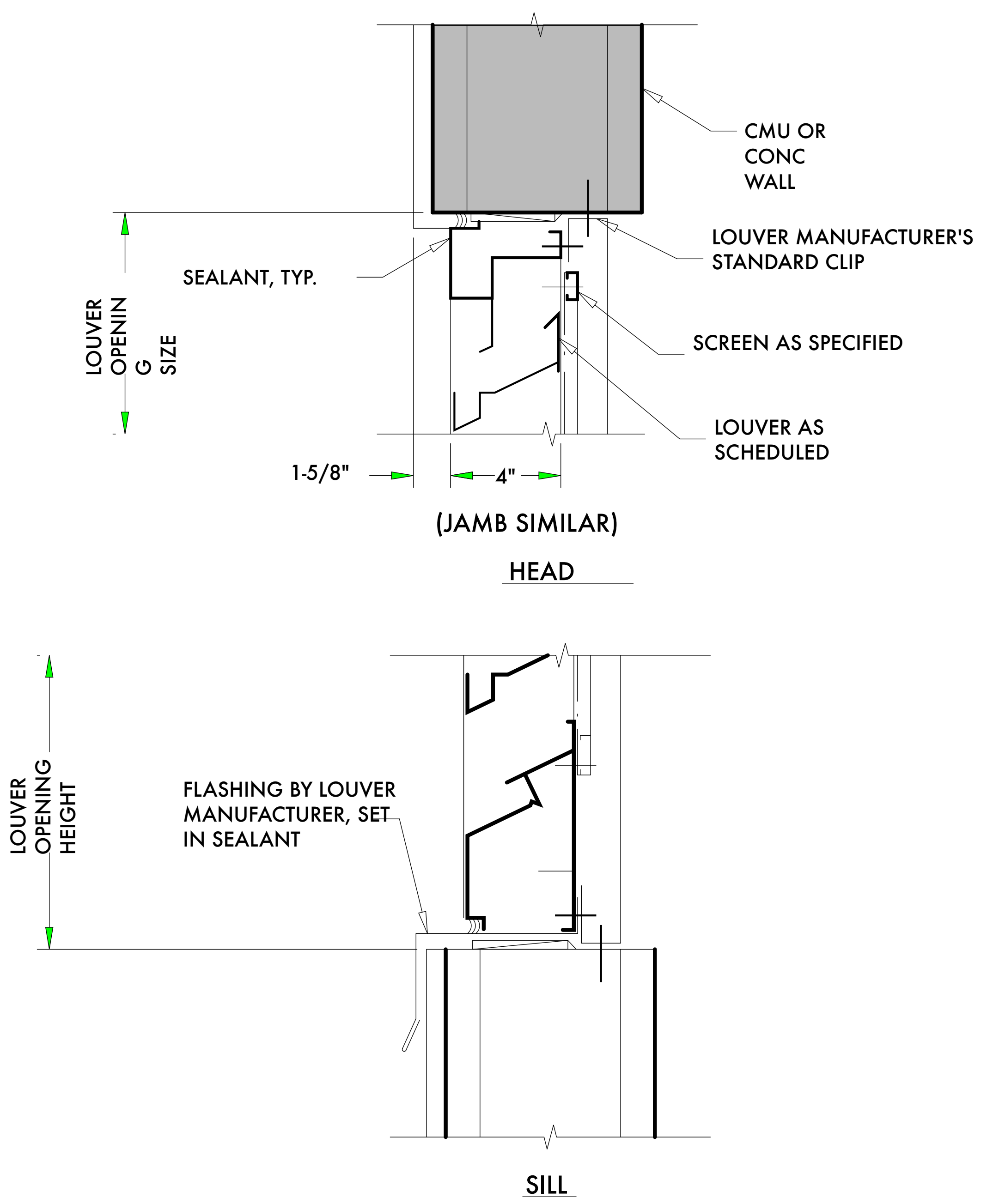

wrap liquid applied waterproofing into all 4 sides of opening, TYP
cap flashing
caulk
Window unit
3/4"
4"
lintel, see structural for reinforcement
louver manufacturer's standard clip
screen as specified
louver as specified

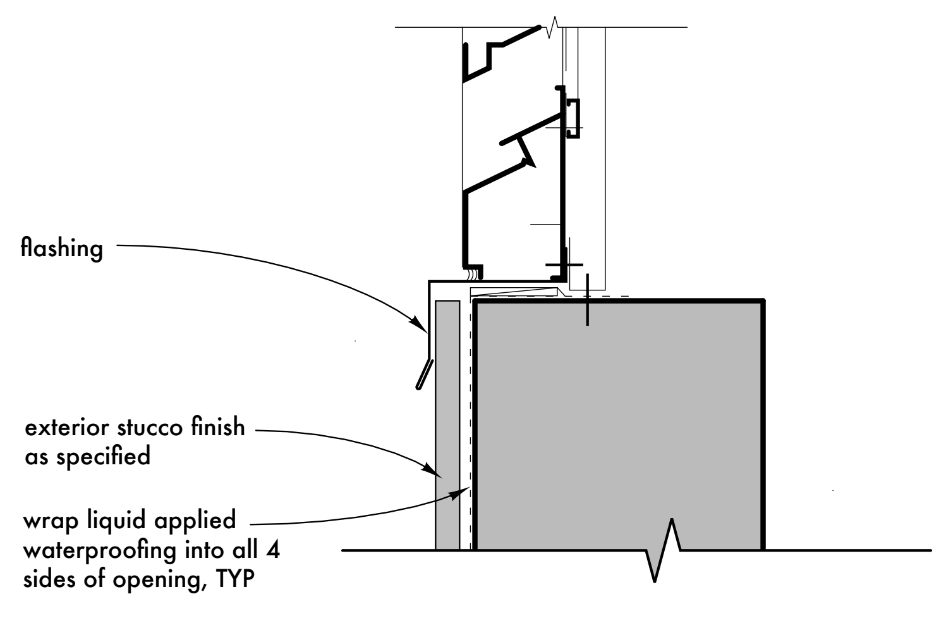
2 Louver Window Head

JAMB SIM

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






flashing
exterior stucco finish as specified
wrap liquid applied waterproofing into all 4 sides of opening, TYP

3 Louver Sill

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

4 Louver Head and Sill - No Stucco

Scale: NTS

5 Louver Head and Sill - No Stucco

Scale: NTS

No.	Issued For	Date
1	Issued For Bid	Jan. 29, 2016
2		
3		

Stamps

SWALLOWTAIL ARCHITECTURE LLC
Summerville, SC
No. 100760

RACHEL BEVERLEY BURTON
Summerville, SC
No. 8440
January 29 2016

SWALLOWTAIL
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ARCHITECTURE AND INTERIOR DESIGN
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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
WASTE WATER TREATMENT FACILITY DETAILS

Plot Date 1/29/16

Checked RB

Drawn RB

Drawing Title
Waste Water Treatment Facility Details + Schedules

Drawing No.
35-A-19

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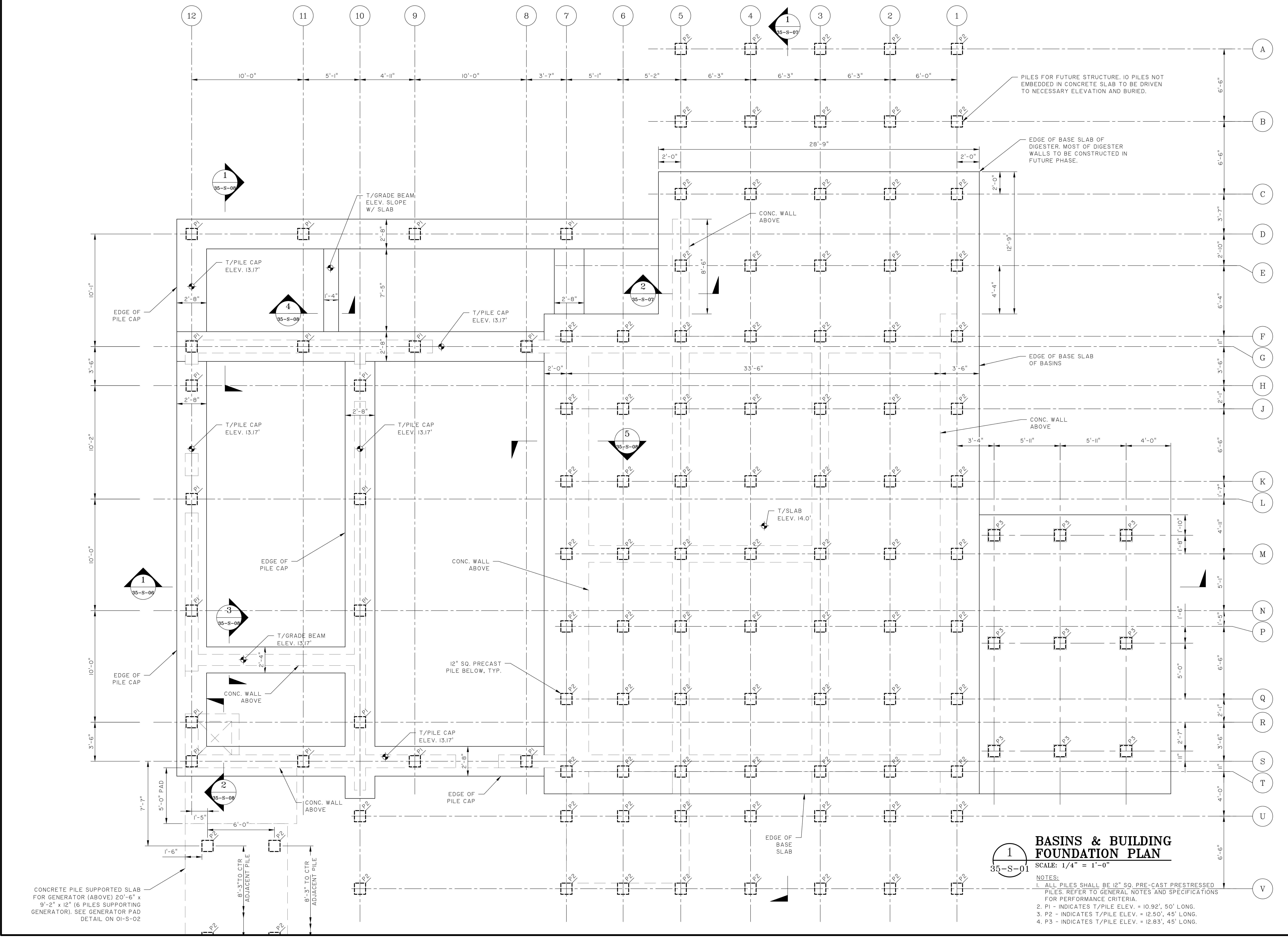

1
35-S-01

BASINS & BUILDING FOUNDATION PLAN

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

NOTES:

1. ALL PILES SHALL BE 12" SQ. PRE-CAST PRESTRESSED PILES. REFER TO GENERAL NOTES AND SPECIFICATIONS FOR PERFORMANCE CRITERIA.
2. P1 - INDICATES T/PILE ELEV. = 10.92', 50' LONG.
3. P2 - INDICATES T/PILE ELEV. = 12.50', 45' LONG.
4. P3 - INDICATES T/PILE ELEV. = 12.83', 45' LONG.

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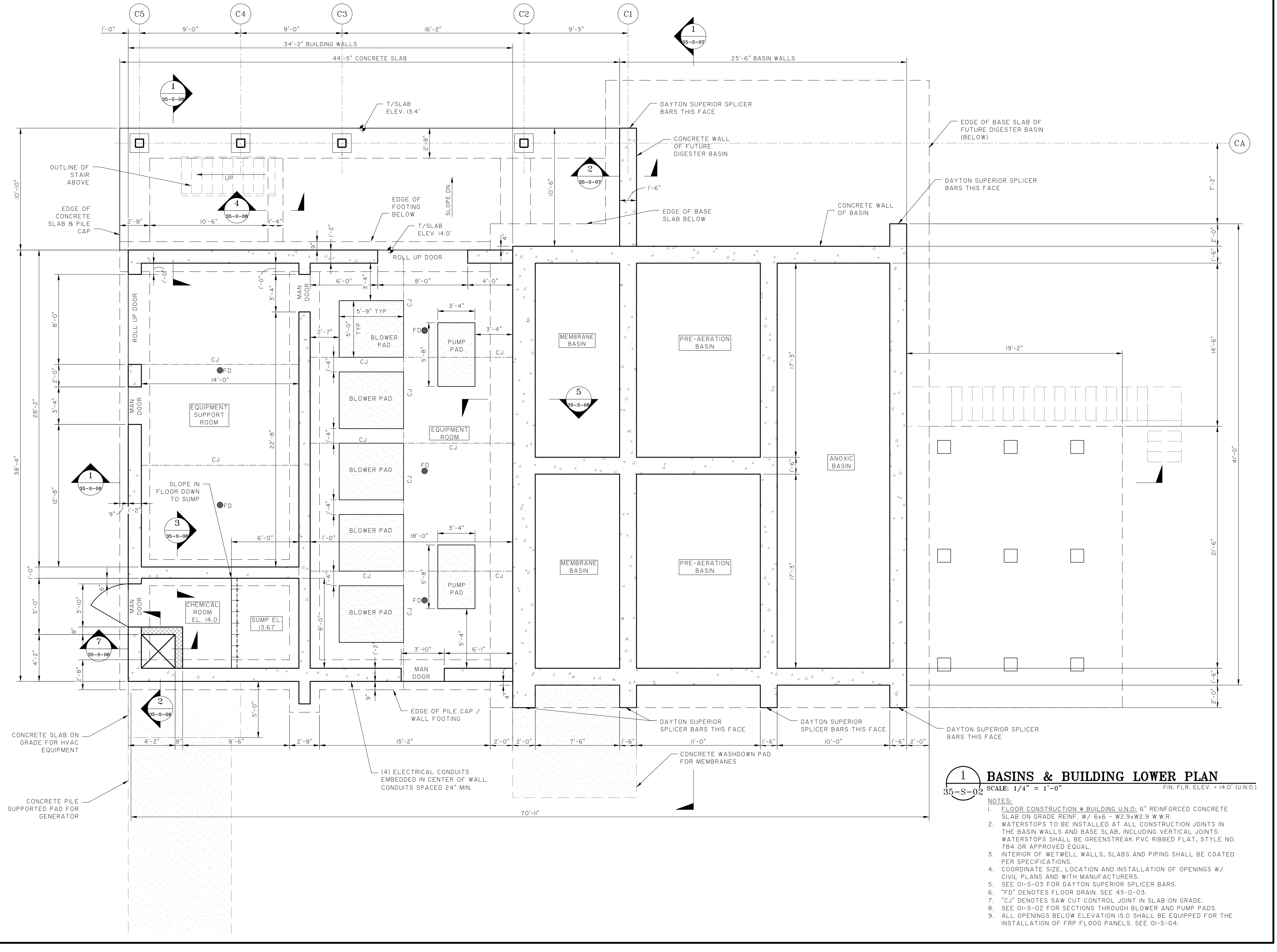
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
BASINS & CONTROL BUILDING FNDN PLAN

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	JAH/SHG
DESIGNED:	JAH/EAC
REVIEWED:	JAH/SHG
APPROVED:	MFY
SCALE:	AS NOTED

35-S-01



1 35-S-02 BASINS & BUILDING LOWER PLAN

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

FIN. FLR. ELEV. = 14.0' (U.N.O.)

NOTES:

1. FLOOR CONSTRUCTION @ BUILDING U.N.O: 6" REINFORCED CONCRETE SLAB ON GRADE REINF. W/ 6x6 - W2.9xW2.9 W.W.R.
2. WATERSTOPS TO BE INSTALLED AT ALL CONSTRUCTION JOINTS IN THE BASIN WALLS AND BASE SLAB, INCLUDING VERTICAL JOINTS. WATERSTOPS SHALL BE GREENSTREAK PVC RIBBED FLAT, STYLE NO. 784 OR APPROVED EQUAL.
3. INTERIOR OF WETWELL WALLS, SLABS AND PIPING SHALL BE COATED PER SPECIFICATIONS.
4. COORDINATE SIZE, LOCATION AND INSTALLATION OF OPENINGS W/ CIVIL PLANS AND WITH MANUFACTURERS.
5. SEE 01-S-03 FOR DAYTON SUPERIOR SPLICER BARS.
6. "FD" DENOTES FLOOR DRAIN. SEE 45-D-03.
7. "CJ" DENOTES SAW CUT CONTROL JOINT IN SLAB ON GRADE.
8. SEE 01-S-02 FOR SECTIONS THROUGH BLOWER AND PUMP PADS.
9. ALL OPENINGS BELOW ELEVATION 15.0 SHALL BE EQUIPPED FOR THE INSTALLATION OF FRP FLOOD PANELS. SEE 01-S-04.

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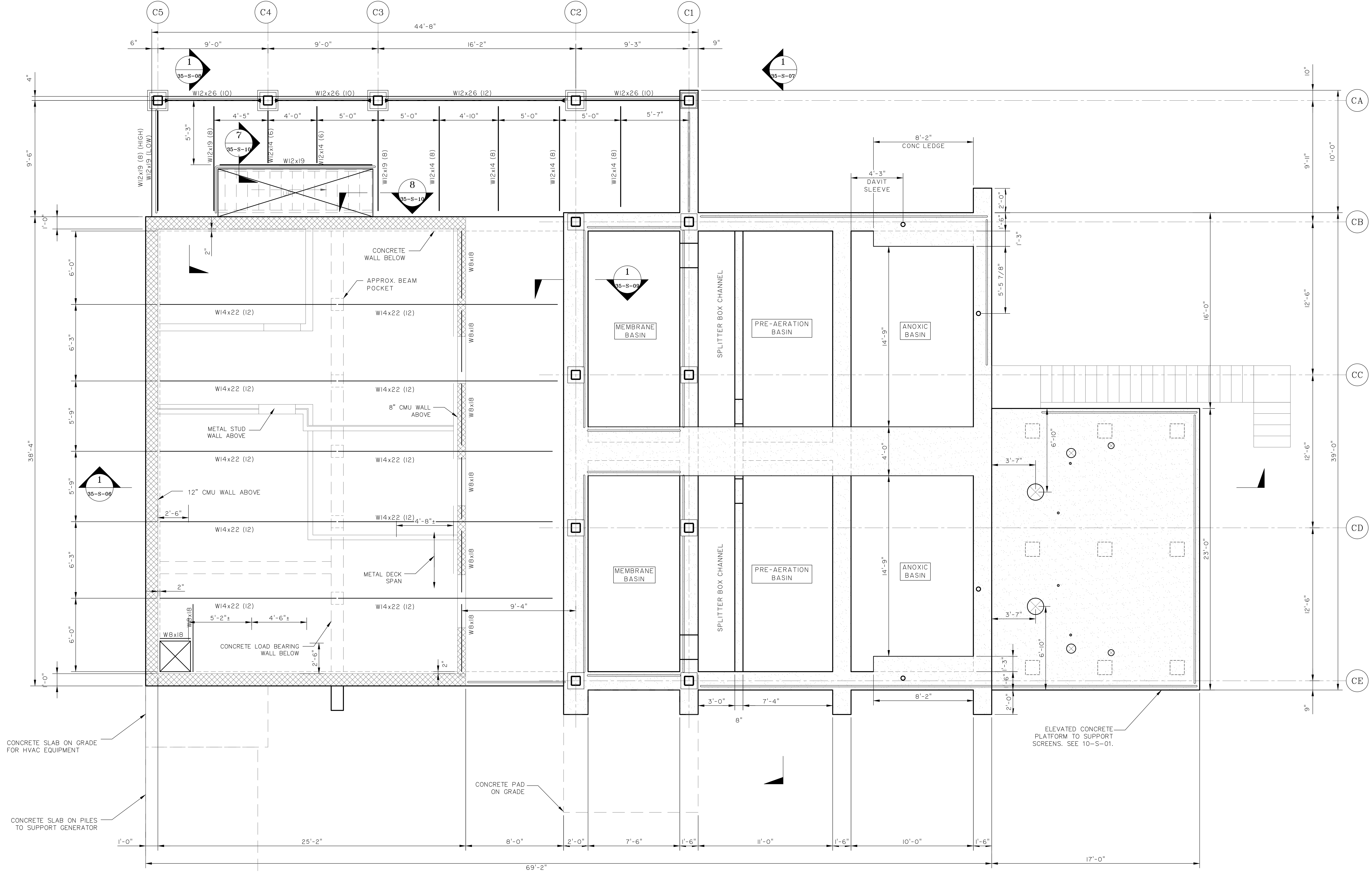
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
BASINS & BUILDING LOWER PLAN

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	JAH/SHG
DESIGNED:	JAH/EAC
REVIEWED:	JAH/SHG
APPROVED:	MFY
SCALE:	AS NOTED

35-S-02



1 35-S-03 BASINS & BUILDING UPPER FRAMING PLAN

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

FIN. FLR. ELEV. = 28.0'
T/STEEL ELEV. = 27.50'

NOTES:

1. FLOOR CONSTRUCTION @ BUILDING U.N.O.: 4" CONCRETE ON 2", 20 GA., GALV. COMPOSITE METAL DECK. REINF. W/ 6x6-W2.1xW2.1 W.W.R.
2. WATERSTOPS TO BE INSTALLED AT ALL CONSTRUCTION JOINTS IN THE BASIN WALLS AND BASE SLAB, INCLUDING VERTICAL JOINTS. WATERSTOPS SHALL BE GREENSTREAK PVC RIBBED FLAT, STYLE NO. 784 OR APPROVED EQUAL.
3. INTERIOR OF WETWELL WALLS, SLABS AND PIPING SHALL BE COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
4. COORDINATE SIZE, LOCATION AND INSTALLATION OF OPENINGS W/ CIVIL PLANS AND WITH MANUFACTURERS.
5. ▶ - INDICATES MOMENT CONNECTIONS

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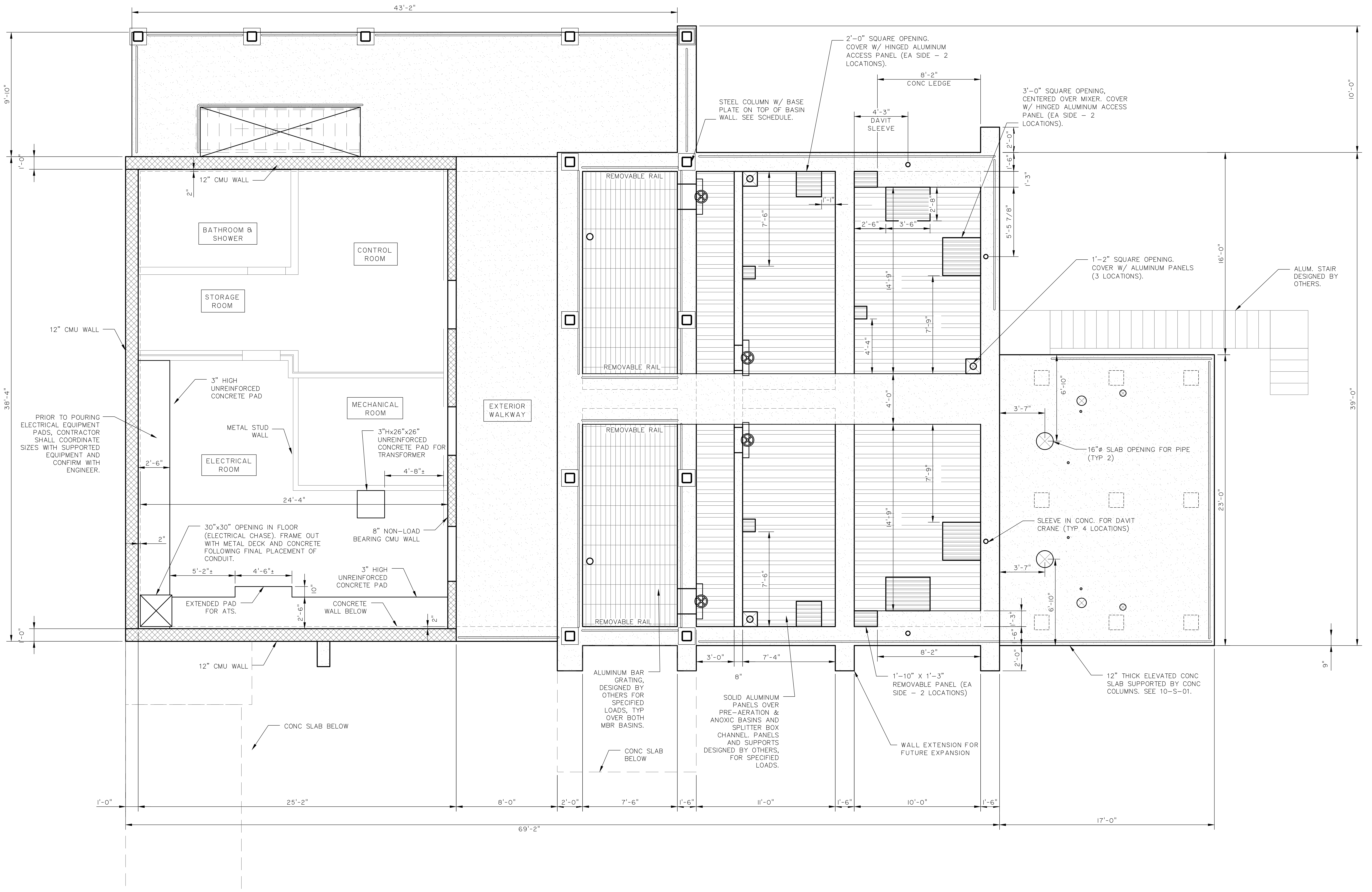
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

BASINS & BLDG 2ND FLR FRAMING PLAN

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	JAH/SHG
DESIGNED:	JAH/EAC
REVIEWED:	JAH/SHG
APPROVED:	MFY
SCALE:	AS NOTED

35-S-03


43'-2"
9'-10"
1'-0"
38'-4"
1'-0"
12" CMU WALL
2"
BATHROOM & SHOWER
CONTROL ROOM
STORAGE ROOM
12" CMU WALL
3" HIGH UNREINFORCED CONCRETE PAD
PRIOR TO POURING ELECTRICAL EQUIPMENT PADS, CONTRACTOR SHALL COORDINATE SIZES WITH SUPPORTED EQUIPMENT AND CONFIRM WITH ENGINEER.
MECHANICAL ROOM
METAL STUD WALL
3"Hx26"x26" UNREINFORCED CONCRETE PAD FOR TRANSFORMER
2'-6"
ELECTRICAL ROOM
4'-8"±
24'-4"
30"x30" OPENING IN FLOOR (ELECTRICAL CHASE). FRAME OUT WITH METAL DECK AND CONCRETE FOLLOWING FINAL PLACEMENT OF CONDUIT.
8" NON-LOAD BEARING CMU WALL
2"
5'-2"±
4'-6"±
3" HIGH UNREINFORCED CONCRETE PAD
10"
EXTENDED PAD FOR ATS.
2'-6"
CONCRETE WALL BELOW
2"
12" CMU WALL
CONC SLAB BELOW
EXTERIOR WALKWAY
STEEL COLUMN W/ BASE PLATE ON TOP OF BASIN WALL. SEE SCHEDULE.
2'-0" SQUARE OPENING. COVER W/ HINGED ALUMINUM ACCESS PANEL (EA SIDE - 2 LOCATIONS).
8'-2"
CONC LEDGE
4'-3"
DAVIT SLEEVE
3'-0" SQUARE OPENING, CENTERED OVER MIXER. COVER W/ HINGED ALUMINUM ACCESS PANEL (EA SIDE - 2 LOCATIONS).
10'-0"
2'-0"
1'-6"
1'-3"
5'-5 7/8"
REMOVABLE RAIL
1'-1"
7'-6"
2'-8"
2'-6"
3'-6"
14'-9"
7'-9"
4'-4"
1'-2" SQUARE OPENING. COVER W/ ALUMINUM PANELS (3 LOCATIONS).
ALUM. STAIR DESIGNED BY OTHERS.
16'-0"
REMOVABLE RAIL
4'-0"
6'-10"
3'-7"
REMOVABLE RAIL
16"ø SLAB OPENING FOR PIPE (TYP 2)
39'-0"
7'-9"
14'-9"
23'-0"
SLEEVE IN CONC. FOR DAVIT CRANE (TYP 4 LOCATIONS)
3'-7"
7'-6"
6'-10"
REMOVABLE RAIL
1'-3"
1'-6"
2'-0"
9"
3'-0"
7'-4"
8'-2"
8"
ALUMINUM BAR GRATING, DESIGNED BY OTHERS FOR SPECIFIED LOADS, TYP OVER BOTH MBR BASINS.
SOLID ALUMINUM PANELS OVER PRE-AERATION & ANOXIC BASINS AND SPLITTER BOX CHANNEL. PANELS AND SUPPORTS DESIGNED BY OTHERS, FOR SPECIFIED LOADS.
1'-10" X 1'-3" REMOVABLE PANEL (EA SIDE - 2 LOCATIONS)
WALL EXTENSION FOR FUTURE EXPANSION
12" THICK ELEVATED CONC SLAB SUPPORTED BY CONC COLUMNS. SEE 10-S-01.
CONC SLAB BELOW
1'-0"
25'-2"
8'-0"
2'-0"
7'-6"
1'-6"
11'-0"
1'-6"
10'-0"
1'-6"
17'-0"
69'-2"

1
35-S-04

BASINS & BUILDING UPPER LEVEL OVERVIEW

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

No. C00285

No. 24727
JENNIFER A. HAYES
2.1.16

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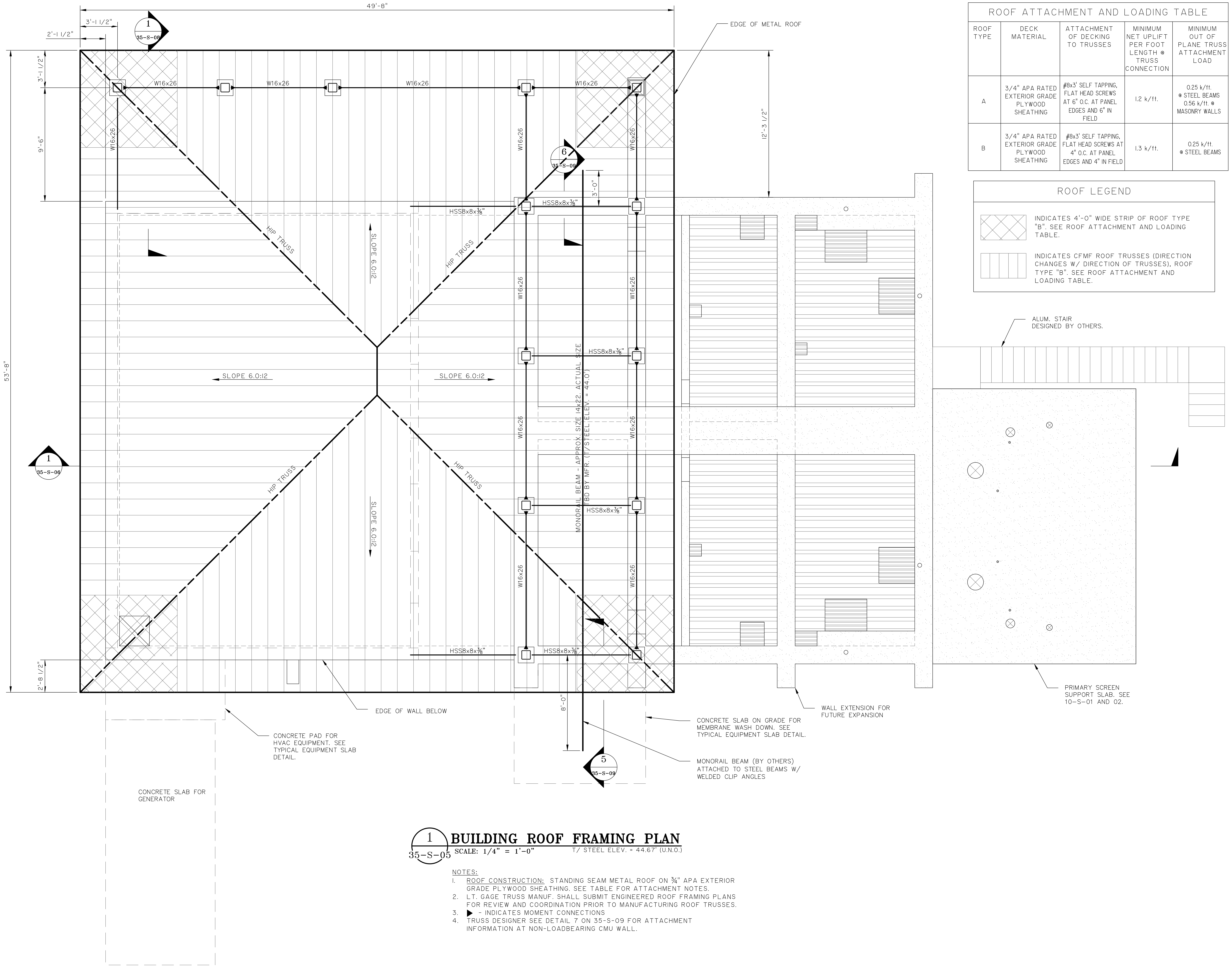
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
BASINS & BLDG UPPER LEVEL OVERVIEW

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	JAH/SHG
DESIGNED:	JAH/EAC
REVIEWED:	JAH/SHG
APPROVED:	MFY
SCALE:	AS NOTED

35-S-04


49'-8"
3'-1 1/2"
2'-1 1/2"
1
35-S-08
EDGE OF METAL ROOF
3'-1 1/2"
9'-6"
53'-8"
2'-8 1/2"
12'-3 1/2"
3'-0"
8'-0"
W16x26
W16x26
W16x26
W16x26
W16x26
W16x26
W16x26
W16x26
W16x26
W16x26
W16x26
W16x26
W16x26
6
35-S-09
HSS8x8x⅜"
HSS8x8x⅜"
HSS8x8x⅜"
HSS8x8x⅜"
HSS8x8x⅜"
HSS8x8x⅜"
HIP TRUSS
HIP TRUSS
HIP TRUSS
HIP TRUSS
SLOPE 6.0:12
SLOPE 6.0:12
SLOPE 6.0:12
SLOPE 6.0:12
MONORAIL BEAM - APPROX. SIZE 14x22, ACTUAL SIZE TBD BY MFR. (T/STEEL ELEV. = 44.0')
1
35-S-06
ALUM. STAIR DESIGNED BY OTHERS.
EDGE OF WALL BELOW
CONCRETE PAD FOR HVAC EQUIPMENT. SEE TYPICAL EQUIPMENT SLAB DETAIL.
CONCRETE SLAB FOR GENERATOR
CONCRETE SLAB ON GRADE FOR MEMBRANE WASH DOWN. SEE TYPICAL EQUIPMENT SLAB DETAIL.
MONORAIL BEAM (BY OTHERS) ATTACHED TO STEEL BEAMS W/ WELDED CLIP ANGLES
5
35-S-09
WALL EXTENSION FOR FUTURE EXPANSION
PRIMARY SCREEN SUPPORT SLAB. SEE 10-S-01 AND 02.

ROOF ATTACHMENT AND LOADING TABLE

ROOF TYPE	DECK MATERIAL	ATTACHMENT OF DECKING TO TRUSSES	MINIMUM NET UPLIFT PER FOOT LENGTH @ TRUSS CONNECTION	MINIMUM OUT OF PLANE TRUSS ATTACHMENT LOAD
A	3/4" APA RATED EXTERIOR GRADE PLYWOOD SHEATHING	#8x3' SELF TAPPING, FLAT HEAD SCREWS AT 6" O.C. AT PANEL EDGES AND 6" IN FIELD	1.2 k/ft.	0.25 k/ft. @ STEEL BEAMS 0.56 k/ft. @ MASONRY WALLS
B	3/4" APA RATED EXTERIOR GRADE PLYWOOD SHEATHING	#8x3' SELF TAPPING, FLAT HEAD SCREWS AT 4" O.C. AT PANEL EDGES AND 4" IN FIELD	1.3 k/ft.	0.25 k/ft. @ STEEL BEAMS

ROOF LEGEND

▨	INDICATES 4'-0" WIDE STRIP OF ROOF TYPE "B". SEE ROOF ATTACHMENT AND LOADING TABLE.
▥	INDICATES CFMF ROOF TRUSSES (DIRECTION CHANGES W/ DIRECTION OF TRUSSES), ROOF TYPE "B". SEE ROOF ATTACHMENT AND LOADING TABLE.

1 BUILDING ROOF FRAMING PLAN
35-S-05

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

T/ STEEL ELEV. = 44.67' (U.N.O.)

NOTES:

1. ROOF CONSTRUCTION: STANDING SEAM METAL ROOF ON ¾" APA EXTERIOR GRADE PLYWOOD SHEATHING. SEE TABLE FOR ATTACHMENT NOTES.
2. LT. GAGE TRUSS MANUF. SHALL SUBMIT ENGINEERED ROOF FRAMING PLANS FOR REVIEW AND COORDINATION PRIOR TO MANUFACTURING ROOF TRUSSES.
3. ▶ - INDICATES MOMENT CONNECTIONS
4. TRUSS DESIGNER SEE DETAIL 7 ON 35-S-09 FOR ATTACHMENT INFORMATION AT NON-LOADBEARING CMU WALL.

No. C00285

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
BUILDING ROOF FRAMING PLAN

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	JAH/SHG
DESIGNED:	JAH/EAC
REVIEWED:	JAH/SHG
APPROVED:	MFY
SCALE:	AS NOTED

35-S-05

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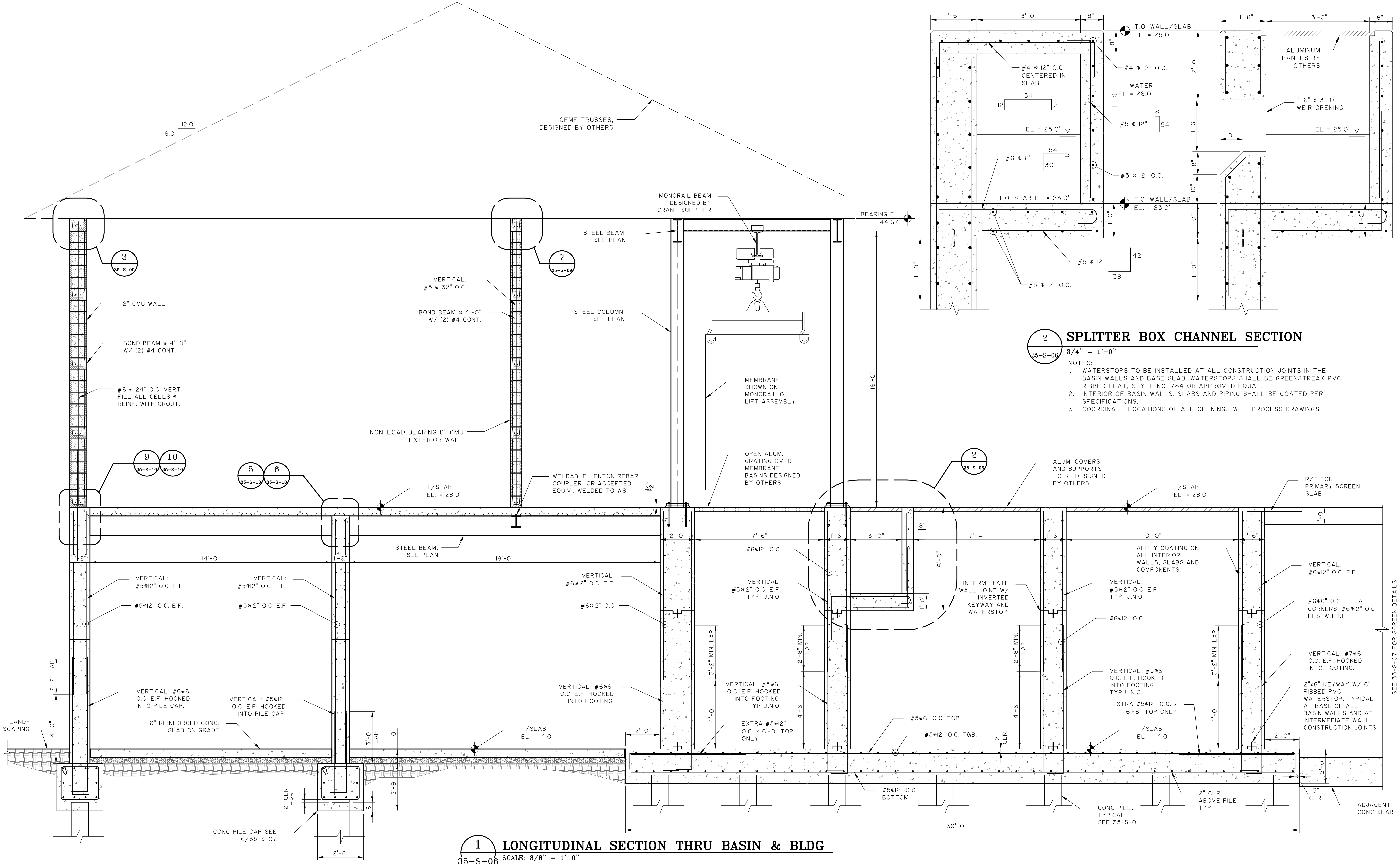

1 / 35-S-06 LONGITUDINAL SECTION THRU BASIN & BLDG

SCALE: 3/8" = 1'-0"

NOTES:

1. WATERSTOPS TO BE INSTALLED AT ALL CONSTRUCTION JOINTS IN THE BASIN WALLS AND BASE SLAB. WATERSTOPS SHALL BE GREENSTREAK PVC RIBBED FLAT, STYLE NO. 784 OR APPROVED EQUAL.
2. INTERIOR OF BASIN WALLS, SLABS AND PIPING SHALL BE COATED PER SPECIFICATIONS.
3. COORDINATE SIZE, LOCATION AND INSTALLATION OF ACCESS HATCHES W/ PROCESS PLANS AND WITH MANUFACTURERS. HATCHES SHALL ALIGN WITH EQUIPMENT BELOW AND SHALL BE PROVIDED BY PANEL MANUFACTURER.
4. COORDINATE LOCATIONS OF ALL OPENINGS WITH PROCESS DRAWINGS.

2 / 35-S-06 SPLITTER BOX CHANNEL SECTION

3/4" = 1'-0"

NOTES:

1. WATERSTOPS TO BE INSTALLED AT ALL CONSTRUCTION JOINTS IN THE BASIN WALLS AND BASE SLAB. WATERSTOPS SHALL BE GREENSTREAK PVC RIBBED FLAT, STYLE NO. 784 OR APPROVED EQUAL.
2. INTERIOR OF BASIN WALLS, SLABS AND PIPING SHALL BE COATED PER SPECIFICATIONS.
3. COORDINATE LOCATIONS OF ALL OPENINGS WITH PROCESS DRAWINGS.

THOMAS & HUTTON ENGINEERING CO. No. C00285

JENNIFER A. HAYES
2.1.16

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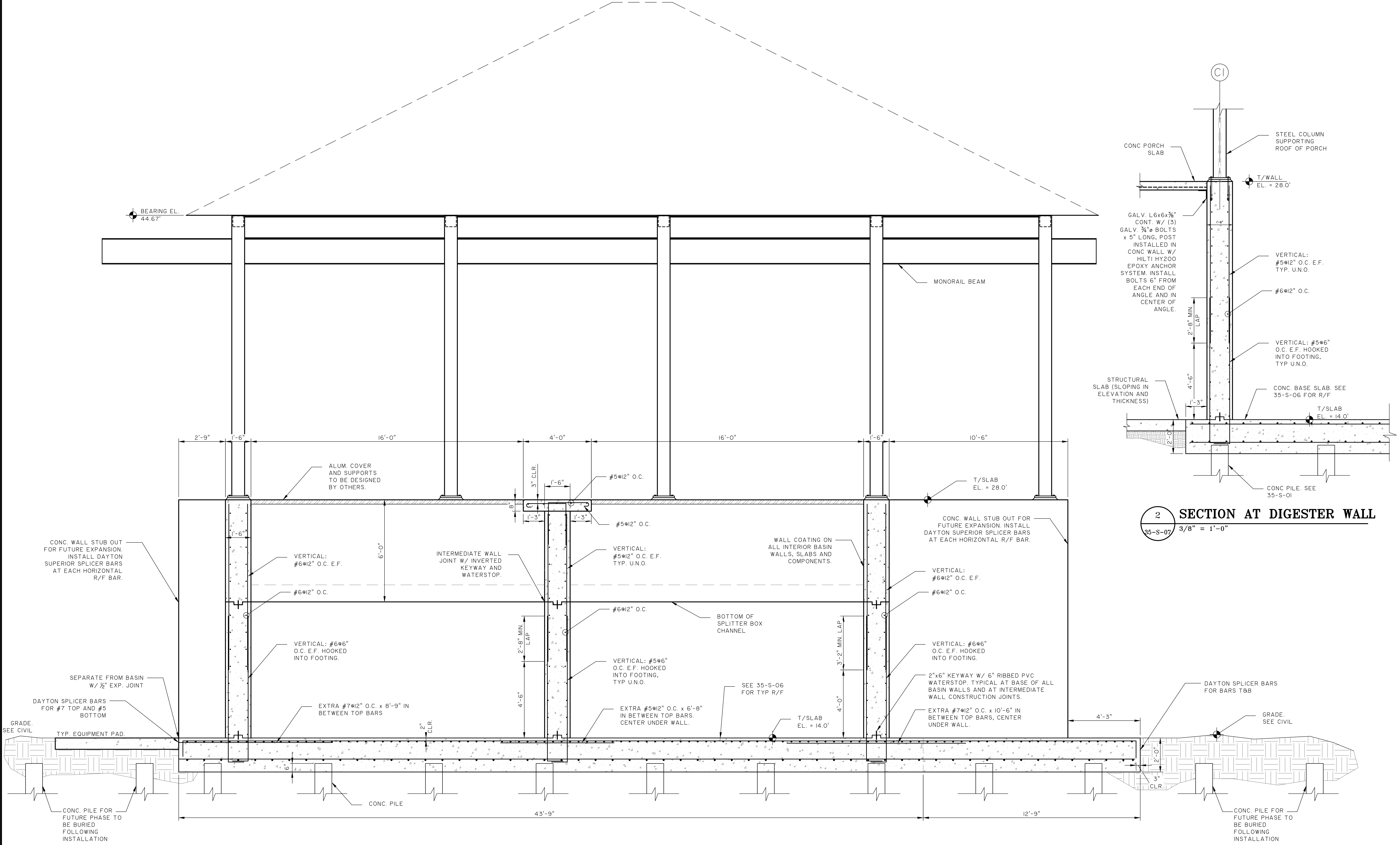
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
CAINHOY PLANTATION WATER & SEWER - PHASE I
BASINS & BUILDING SECTION

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: JAH/EAC
DESIGNED: JAH/EAC
REVIEWED: JAH/SHG
APPROVED: MFY
SCALE: AS NOTED

35-S-06

Z:\25328\25328.0000\Engineering\Drawings\Construction Plans\25238.0000 - Structural - Basin-Bldg Sections.dwg - Feb 1, 2016 - 3:04:51 PM



BEARING EL.
44.67'
MONORAIL BEAM
2'-9"
1'-6"
16'-0"
4'-0"
16'-0"
1'-6"
10'-6"
ALUM. COVER AND SUPPORTS TO BE DESIGNED BY OTHERS.
3" CLR.
1'-6"
#5@12" O.C.
T/SLAB
EL. = 28.0'
8"
1'-3"
1'-3"
#5@12" O.C.
1'-6"
6'-0"
CONC. WALL STUB OUT FOR FUTURE EXPANSION. INSTALL DAYTON SUPERIOR SPLICER BARS AT EACH HORIZONTAL R/F BAR.
VERTICAL: #6@12" O.C. E.F.
INTERMEDIATE WALL JOINT W/ INVERTED KEYWAY AND WATERSTOP.
VERTICAL: #5@12" O.C. E.F. TYP. U.N.O.
WALL COATING ON ALL INTERIOR BASIN WALLS, SLABS AND COMPONENTS.
CONC. WALL STUB OUT FOR FUTURE EXPANSION. INSTALL DAYTON SUPERIOR SPLICER BARS AT EACH HORIZONTAL R/F BAR.
VERTICAL: #6@12" O.C. E.F.
#6@12" O.C.
#6@12" O.C.
#6@12" O.C.
BOTTOM OF SPLITTER BOX CHANNEL
2'-8" MIN. LAP
3'-2" MIN. LAP
VERTICAL: #6@6" O.C. E.F. HOOKED INTO FOOTING.
VERTICAL: #5@6" O.C. E.F. HOOKED INTO FOOTING, TYP U.N.O.
VERTICAL: #6@6" O.C. E.F. HOOKED INTO FOOTING.
SEPARATE FROM BASIN W/ ½" EXP. JOINT
DAYTON SPLICER BARS FOR #7 TOP AND #5 BOTTOM
4'-6"
4'-0"
SEE 35-S-06 FOR TYP R/F
2"x6" KEYWAY W/ 6" RIBBED PVC WATERSTOP. TYPICAL AT BASE OF ALL BASIN WALLS AND AT INTERMEDIATE WALL CONSTRUCTION JOINTS.
DAYTON SPLICER BARS FOR BARS T&B
EXTRA #7@12" O.C. x 8'-9" IN BETWEEN TOP BARS
EXTRA #5@12" O.C. x 6'-8" IN BETWEEN TOP BARS. CENTER UNDER WALL.
EXTRA #7@12" O.C. x 10'-6" IN BETWEEN TOP BARS, CENTER UNDER WALL.
T/SLAB
EL. = 14.0'
2" CLR.
4'-3"
GRADE. SEE CIVIL
TYP. EQUIPMENT PAD.
GRADE. SEE CIVIL
2'-0"
6"
3" CLR.
CONC. PILE
CONC. PILE FOR FUTURE PHASE TO BE BURIED FOLLOWING INSTALLATION
CONC. PILE FOR FUTURE PHASE TO BE BURIED FOLLOWING INSTALLATION
43'-9"
12'-9"

① TRANSVERSE SECTION THRU BASINS
35-S-07
3/8" = 1'-0"

C1
STEEL COLUMN SUPPORTING ROOF OF PORCH
CONC PORCH SLAB
T/WALL
EL. = 28.0'
GALV. L6x6x⅜" CONT. W/ (3) GALV. ¾"ø BOLTS x 5" LONG, POST INSTALLED IN CONC WALL W/ HILTI HY200 EPOXY ANCHOR SYSTEM. INSTALL BOLTS 6" FROM EACH END OF ANGLE AND IN CENTER OF ANGLE.
1'-6"
VERTICAL: #5@12" O.C. E.F. TYP. U.N.O.
#6@12" O.C.
2'-8" MIN. LAP
VERTICAL: #5@6" O.C. E.F. HOOKED INTO FOOTING, TYP U.N.O.
4'-6"
STRUCTURAL SLAB (SLOPING IN ELEVATION AND THICKNESS)
CONC. BASE SLAB. SEE 35-S-06 FOR R/F
1'-3"
T/SLAB
EL. = 14.0'
2'-0"
CONC. PILE. SEE 35-S-01

② SECTION AT DIGESTER WALL
35-S-07
3/8" = 1'-0"

THOMAS & HUTTON ENGINEERING CO. No. C00285

JENNIFER A. HAYES

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
682 Johnnie Dodds Boulevard • Suite 100
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www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
CAINHOY PLANTATION WATER & SEWER - PHASE I

SECTIONS AND DETAILS

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	----
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

35-S-07

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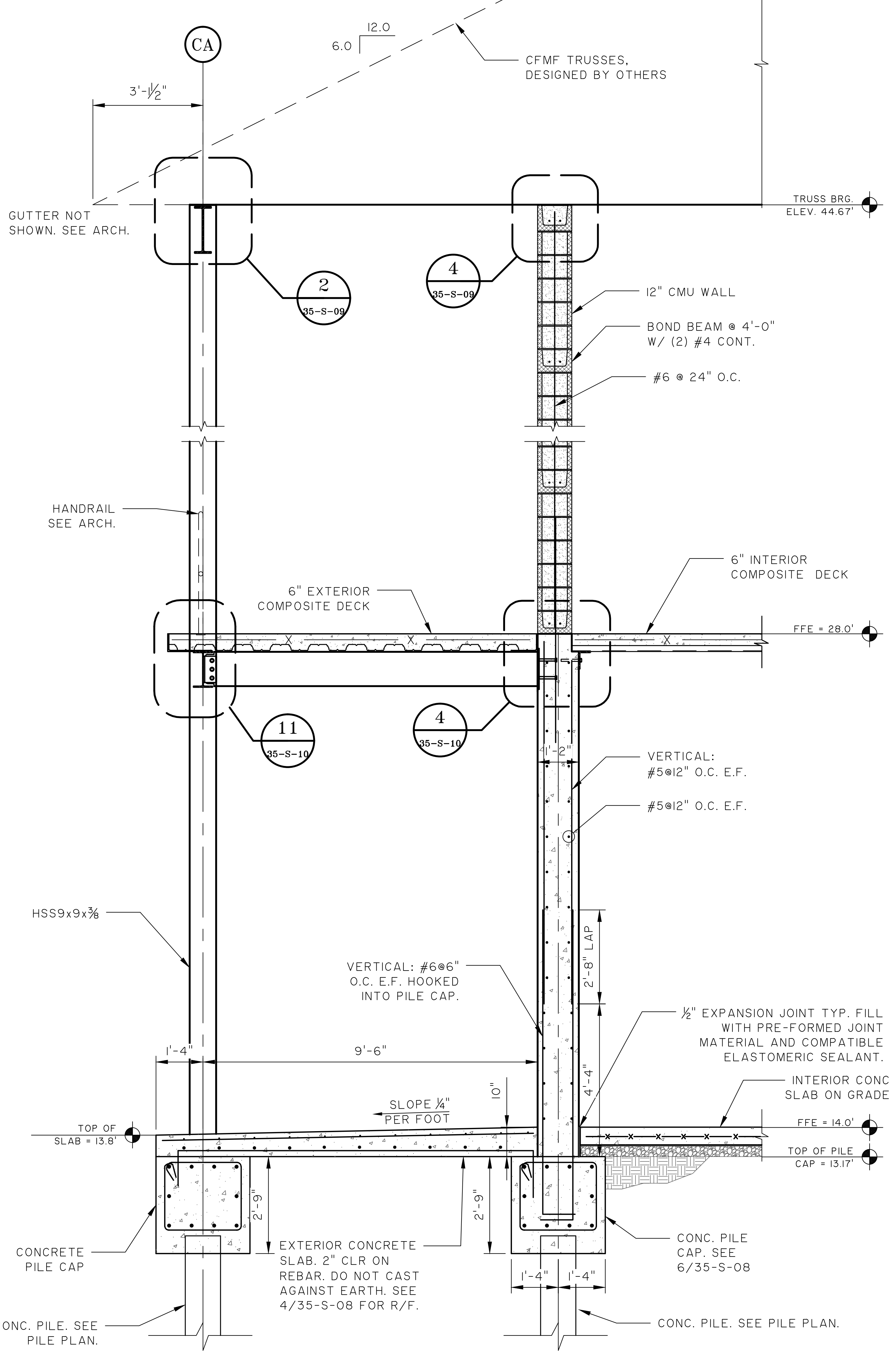
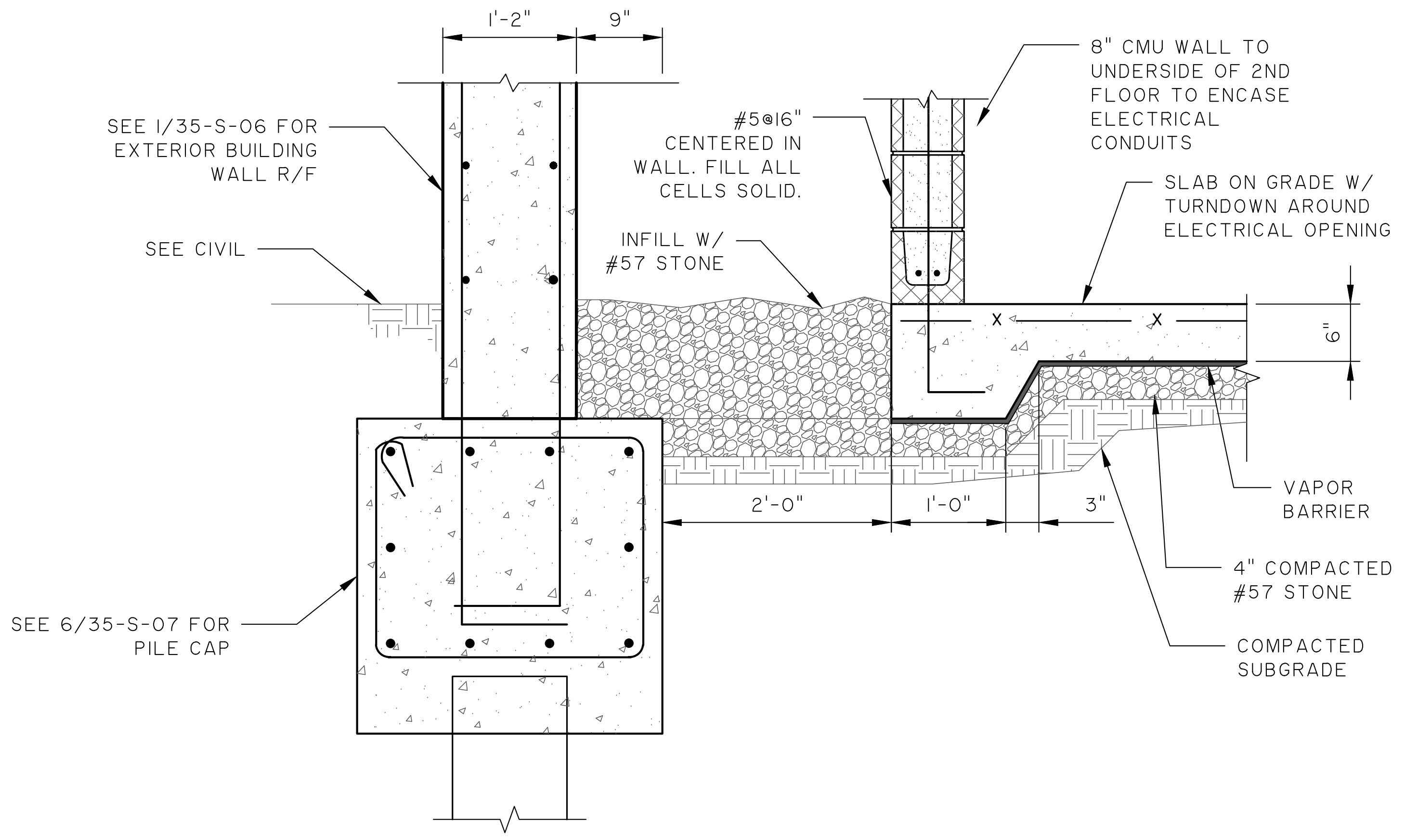
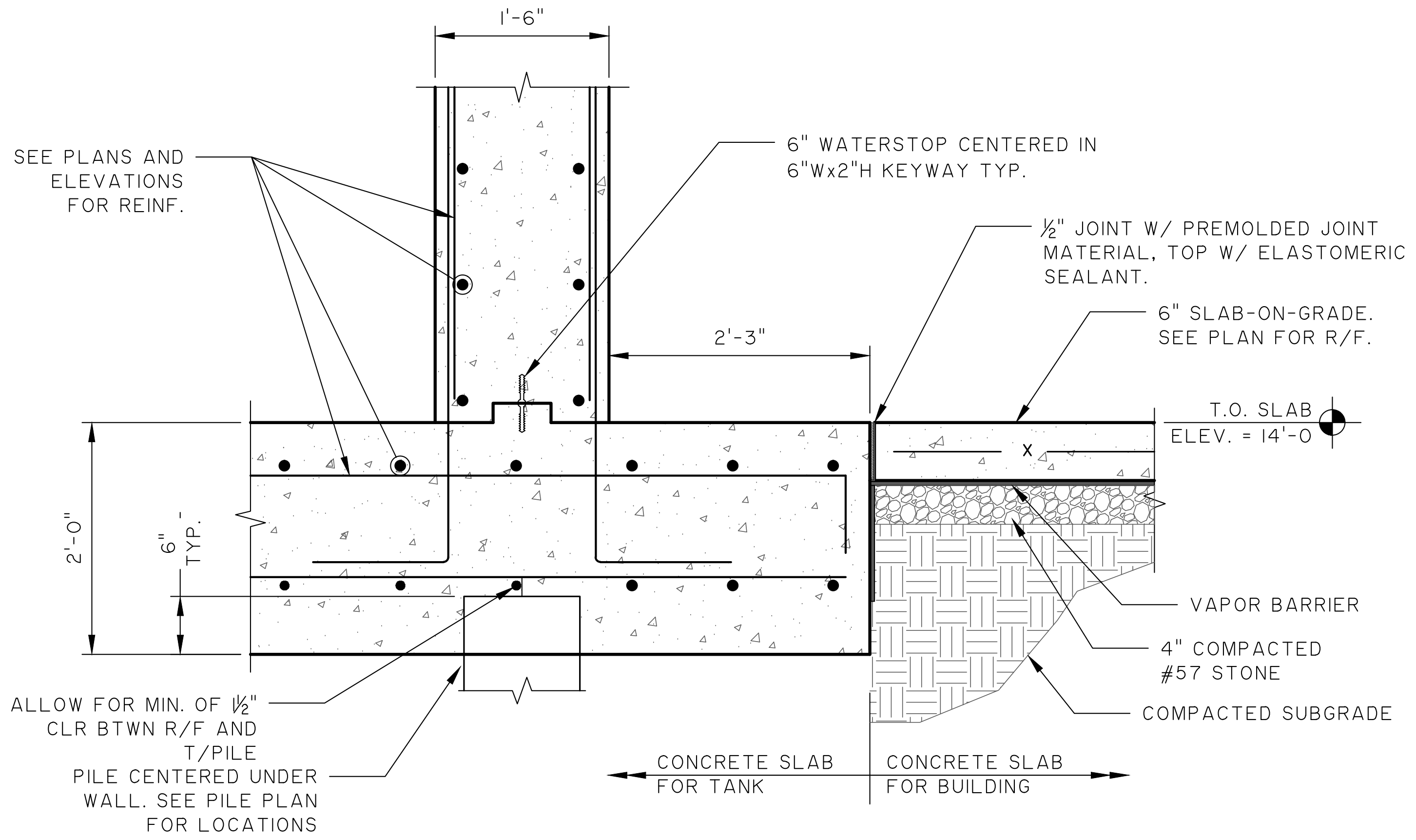

CA
3'-1½"
6.0
12.0
CFMF TRUSSES, DESIGNED BY OTHERS
GUTTER NOT SHOWN. SEE ARCH.
TRUSS BRG. ELEV. 44.67'
2
35-S-09
4
35-S-09
12" CMU WALL
BOND BEAM @ 4'-0" W/ (2) #4 CONT.
#6 @ 24" O.C.
HANDRAIL SEE ARCH.
6" EXTERIOR COMPOSITE DECK
6" INTERIOR COMPOSITE DECK
FFE = 28.0'
11
35-S-10
4
35-S-10
1'-2"
VERTICAL: #5@12" O.C. E.F.
#5@12" O.C. E.F.
HSS9x9x⅜
VERTICAL: #6@6" O.C. E.F. HOOKED INTO PILE CAP.
2'-8" LAP
½" EXPANSION JOINT TYP. FILL WITH PRE-FORMED JOINT MATERIAL AND COMPATIBLE ELASTOMERIC SEALANT.
1'-4"
9'-6"
4'-4"
INTERIOR CONC SLAB ON GRADE
10"
SLOPE ¼" PER FOOT
TOP OF SLAB = 13.8'
FFE = 14.0'
TOP OF PILE CAP = 13.17'
2'-9"
2'-9"
CONCRETE PILE CAP
EXTERIOR CONCRETE SLAB. 2" CLR ON REBAR. DO NOT CAST AGAINST EARTH. SEE 4/35-S-08 FOR R/F.
CONC. PILE CAP. SEE 6/35-S-08
1'-4"
1'-4"
CONC. PILE. SEE PILE PLAN.
CONC. PILE. SEE PILE PLAN.

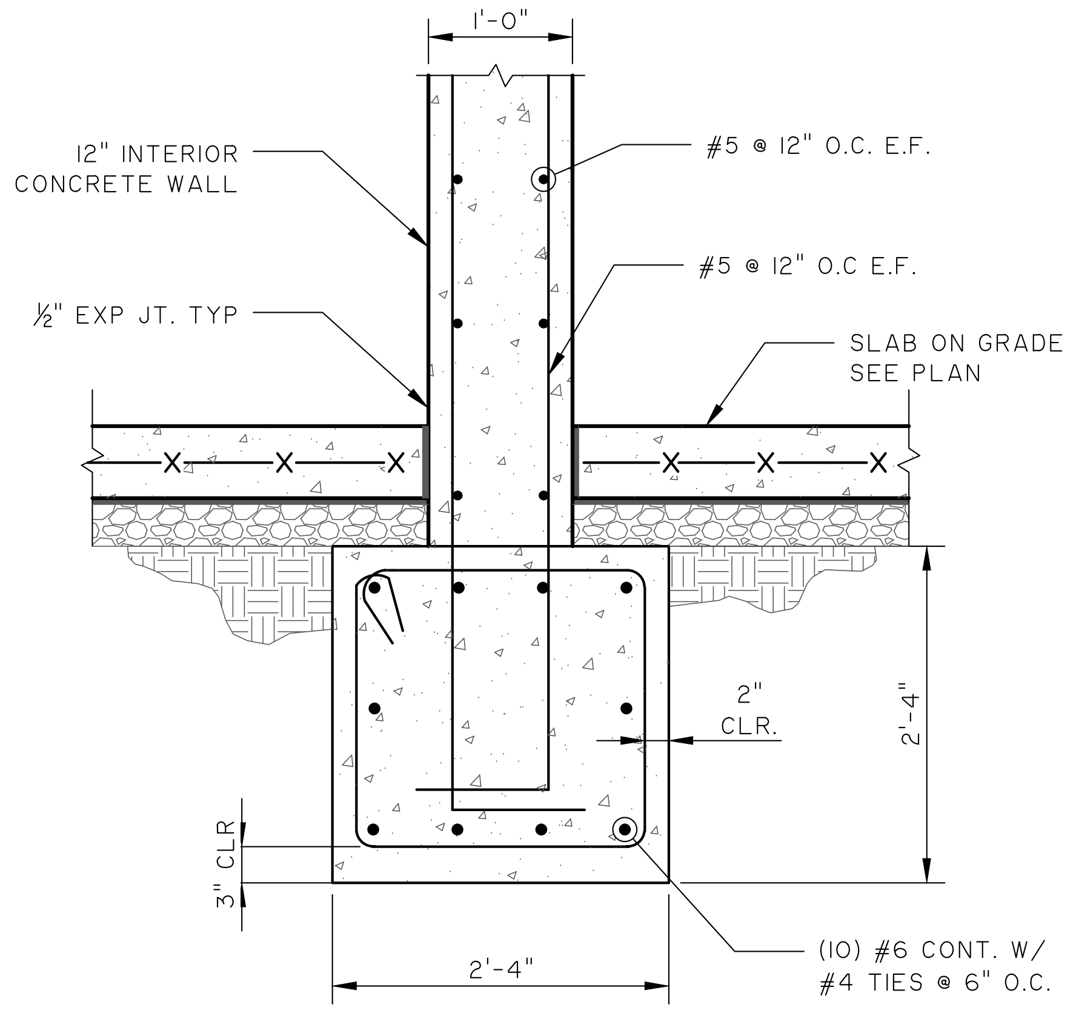
1 SECTION AT STAIR SLAB
35-S-08
3/8" = 1'-0"


1'-2"
9"
SEE 1/35-S-06 FOR EXTERIOR BUILDING WALL R/F
SEE CIVIL
#5@16" CENTERED IN WALL. FILL ALL CELLS SOLID.
INFILL W/ #57 STONE
8" CMU WALL TO UNDERSIDE OF 2ND FLOOR TO ENCASE ELECTRICAL CONDUITS
SLAB ON GRADE W/ TURNDOWN AROUND ELECTRICAL OPENING
6"
2'-0"
1'-0"
3"
VAPOR BARRIER
4" COMPACTED #57 STONE
COMPACTED SUBGRADE
SEE 6/35-S-07 FOR PILE CAP

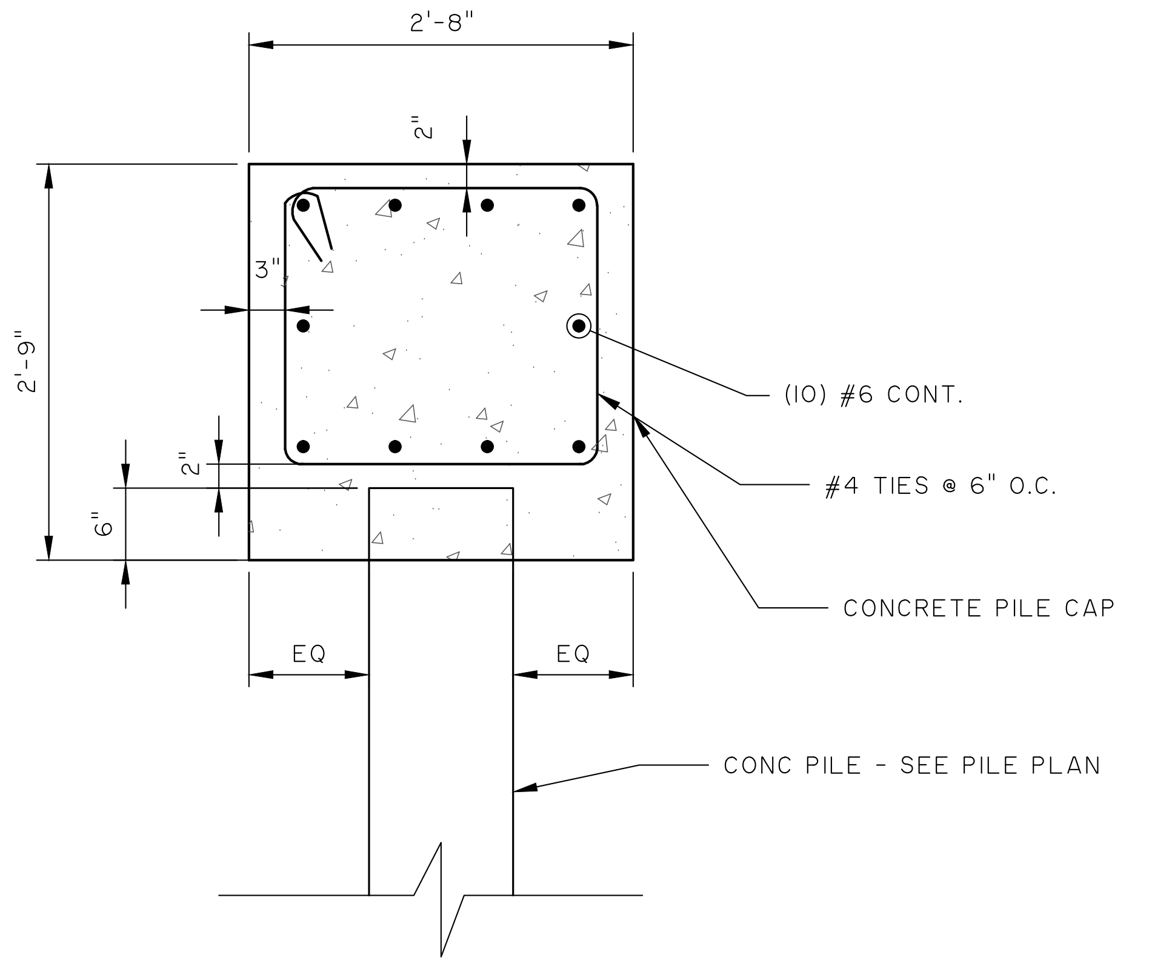
2 SECTION AT ELECTRICAL CHASE
35-S-08
3/4" = 1'-0"


1'-6"
SEE PLANS AND ELEVATIONS FOR REINF.
6" WATERSTOP CENTERED IN 6"Wx2"H KEYWAY TYP.
½" JOINT W/ PREMOLDED JOINT MATERIAL, TOP W/ ELASTOMERIC SEALANT.
6" SLAB-ON-GRADE. SEE PLAN FOR R/F.
2'-3"
T.O. SLAB ELEV. = 14'-0
2'-0"
6" TYP.
VAPOR BARRIER
4" COMPACTED #57 STONE
COMPACTED SUBGRADE
ALLOW FOR MIN. OF 1½" CLR BTWN R/F AND T/PILE
PILE CENTERED UNDER WALL. SEE PILE PLAN FOR LOCATIONS
CONCRETE SLAB FOR TANK
CONCRETE SLAB FOR BUILDING

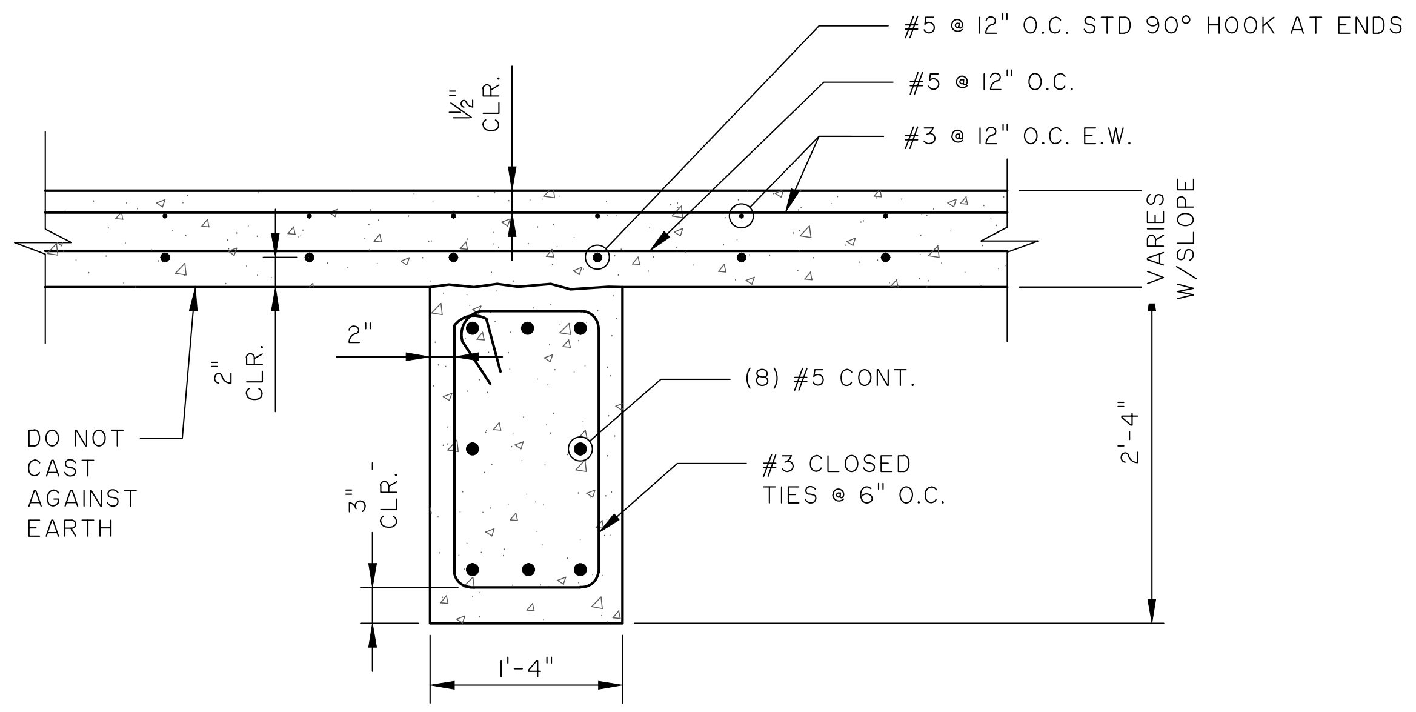
5 FOOTING SECTION
35-S-08
3/4" = 1'-0"



3 FOOTING AT INTERIOR WALL
35-S-08
3/4" = 1'-0"



6 TYPICAL PILE CAP
35-S-08
3/4" = 1'-0"



4 SECTION AT GRADE BEAM
35-S-08
3/4" = 1'-0"

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No. C00285

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Savannah, GA 31405 A 912.234.5300
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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
BUILDING SECTIONS & DETAILS

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	JAH/EAC
DESIGNED:	JAH/EAC
REVIEWED:	JAH/SHG
APPROVED:	MFY
SCALE:	AS NOTED

35-S-08

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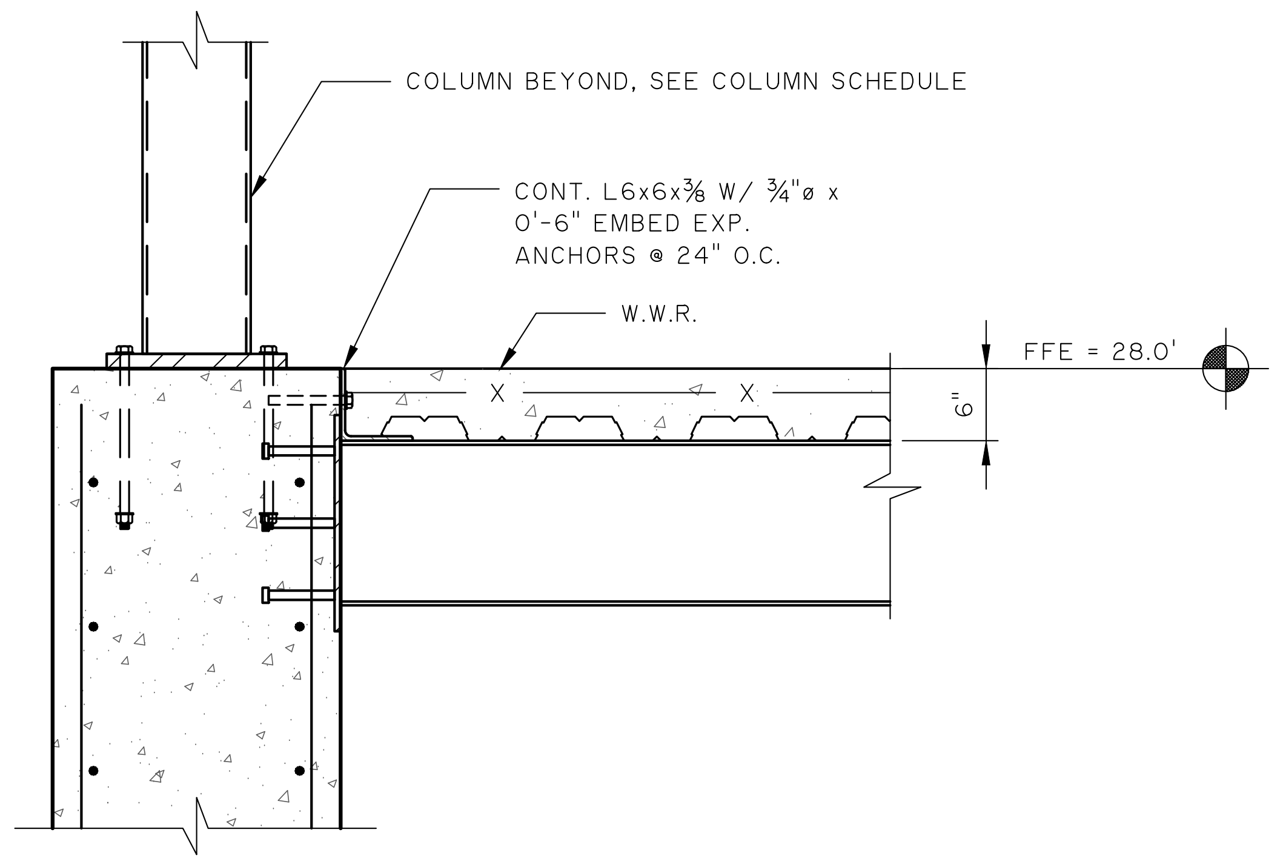
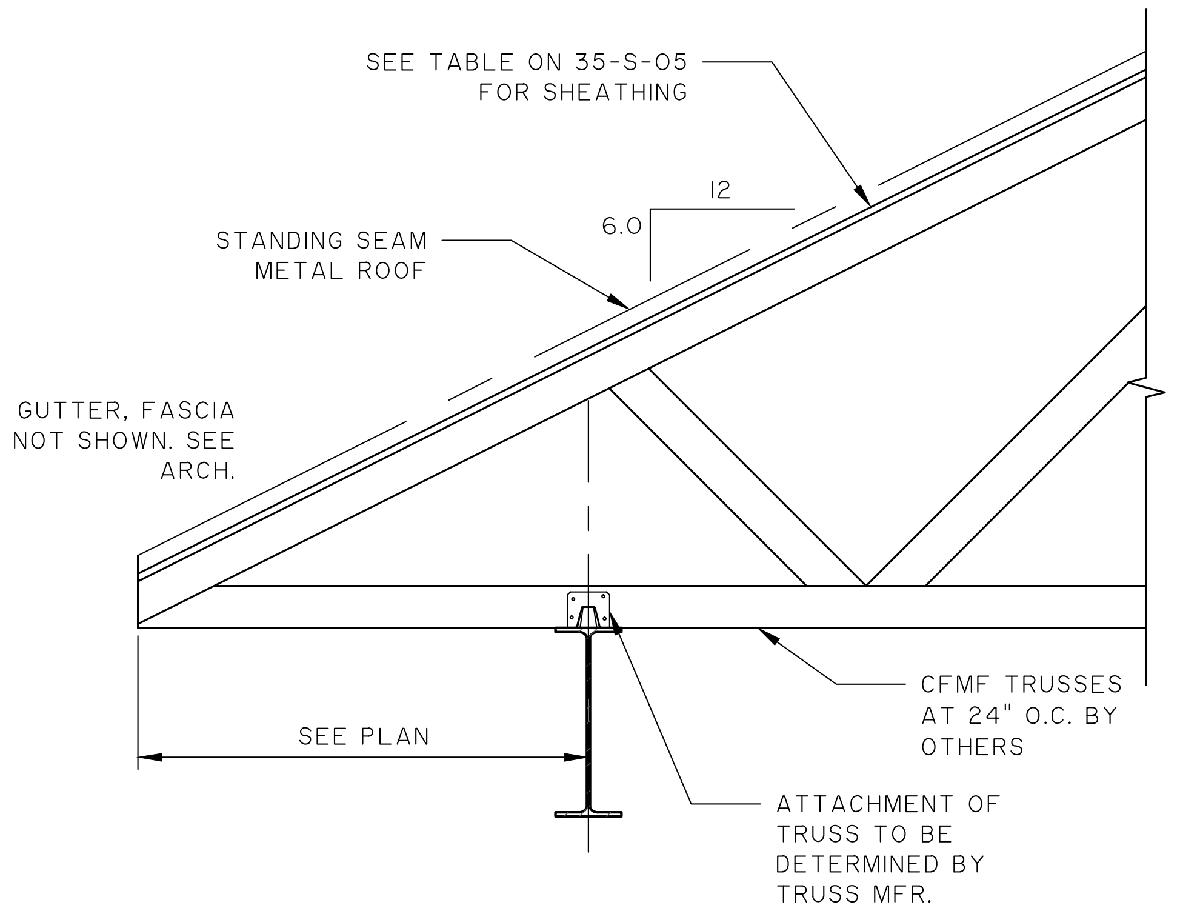
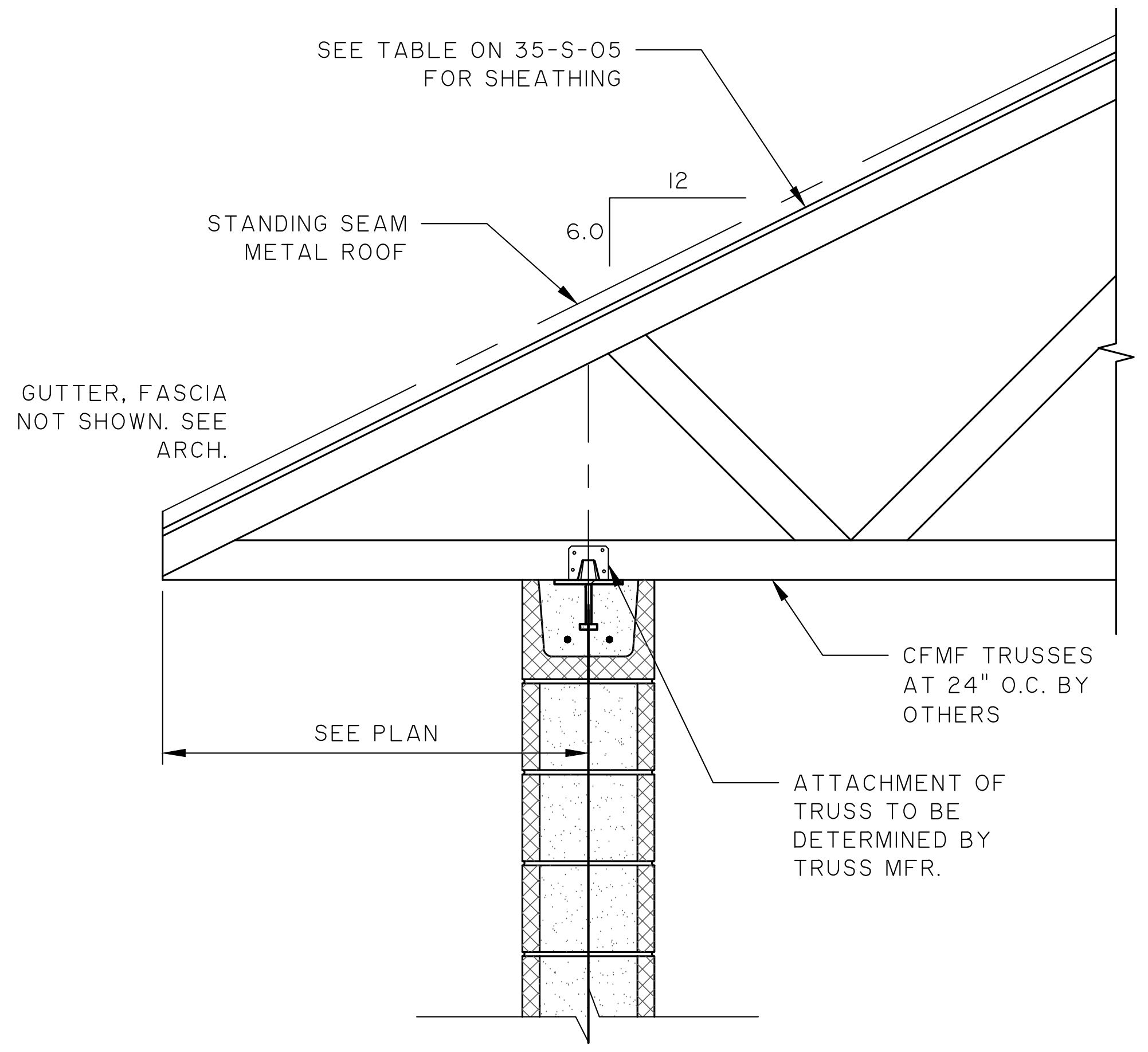

COLUMN BEYOND, SEE COLUMN SCHEDULE
CONT. L6x6x⅜ W/ ¾"ø x 0'-6" EMBED EXP. ANCHORS @ 24" O.C.
W.W.R.
FFE = 28.0'
6"
X
X

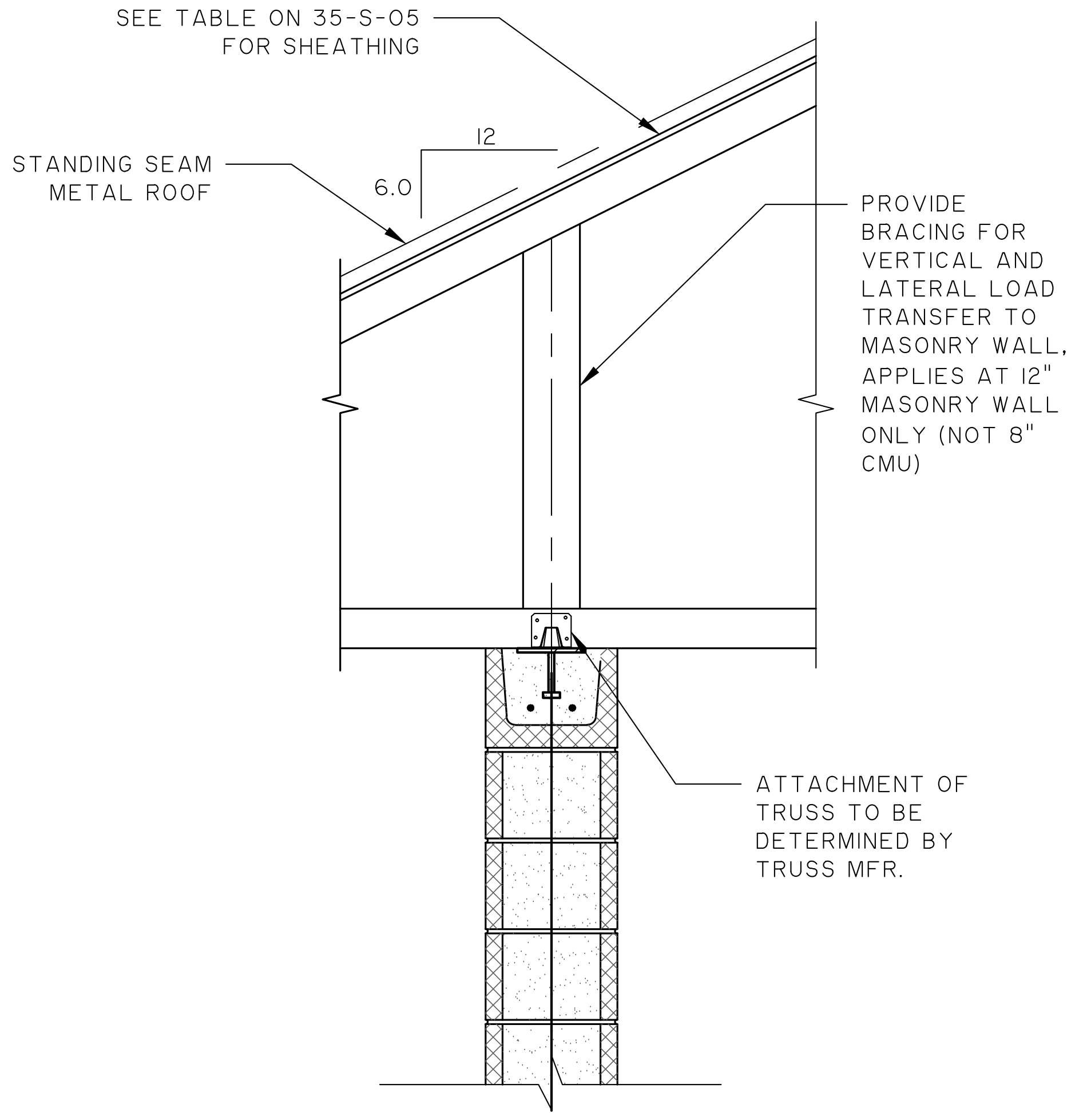
1 SECTION
35-S-09
3/4" = 1'-0"


SEE TABLE ON 35-S-05 FOR SHEATHING
STANDING SEAM METAL ROOF
12
6.0
GUTTER, FASCIA NOT SHOWN. SEE ARCH.
SEE PLAN
CFMF TRUSSES AT 24" O.C. BY OTHERS
ATTACHMENT OF TRUSS TO BE DETERMINED BY TRUSS MFR.

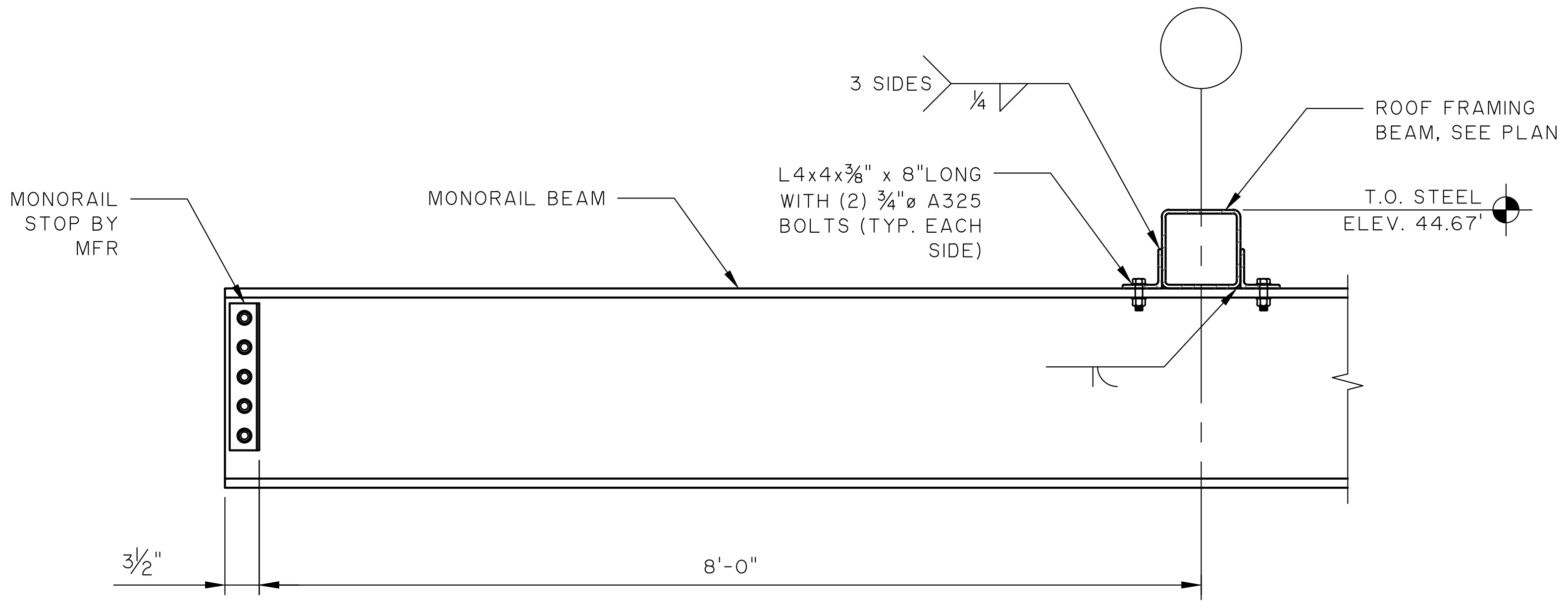
2 ROOF SECTION
35-S-09
3/4" = 1'-0"


SEE TABLE ON 35-S-05 FOR SHEATHING
STANDING SEAM METAL ROOF
12
6.0
GUTTER, FASCIA NOT SHOWN. SEE ARCH.
SEE PLAN
CFMF TRUSSES AT 24" O.C. BY OTHERS
ATTACHMENT OF TRUSS TO BE DETERMINED BY TRUSS MFR.

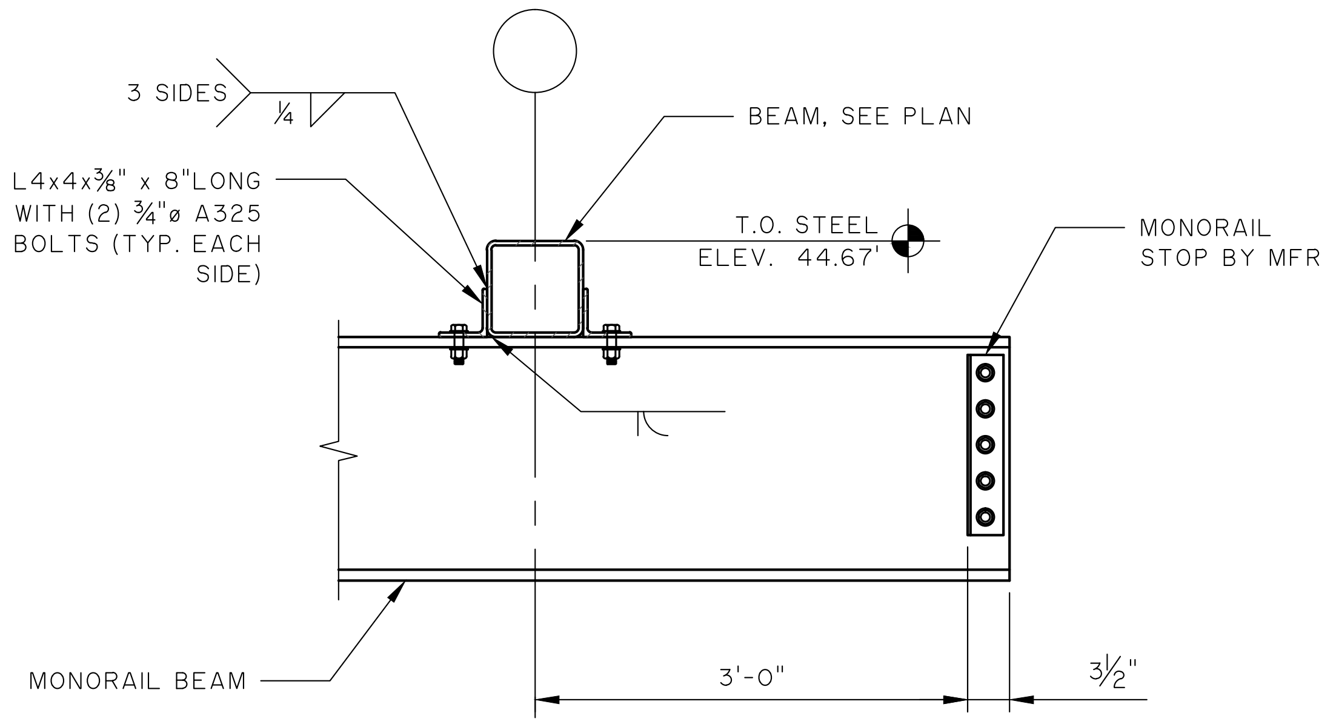
3 ROOF SECTION
35-S-09
3/4" = 1'-0"


SEE TABLE ON 35-S-05 FOR SHEATHING
STANDING SEAM METAL ROOF
12
6.0
PROVIDE BRACING FOR VERTICAL AND LATERAL LOAD TRANSFER TO MASONRY WALL. APPLIES AT 12" MASONRY WALL ONLY (NOT 8" CMU)
ATTACHMENT OF TRUSS TO BE DETERMINED BY TRUSS MFR.

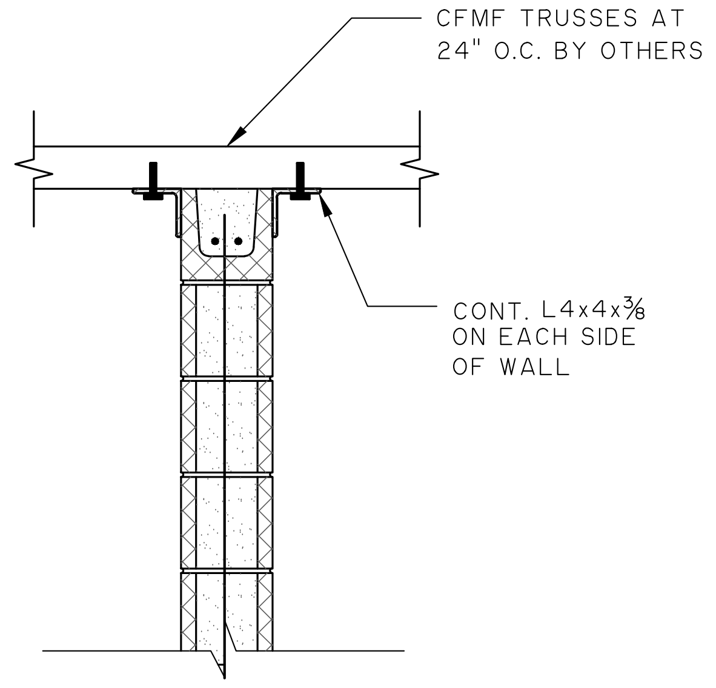
4 ROOF SECTION @ LOAD-BEARING CMU WALL
35-S-09
NTS


MONORAIL STOP BY MFR
MONORAIL BEAM
3 SIDES
¼
L4x4x⅜" x 8"LONG WITH (2) ¾"ø A325 BOLTS (TYP. EACH SIDE)
ROOF FRAMING BEAM, SEE PLAN
T.O. STEEL ELEV. 44.67'
3½"
8'-0"

5 MONORAIL CANTILEVER
35-S-09
3/4" = 1'-0"



6 TYP CONN OF MONORAIL BEAM
35-S-09
3/4" = 1'-0"


CFMF TRUSSES AT 24" O.C. BY OTHERS
CONT. L4x4x⅜ ON EACH SIDE OF WALL

NOTE: TRUSS ATTACHMENT TO BE DETERMINED BY TRUSS MFR. OUT-OF-PLANE WIND LOAD = (±) 560 LB/FT.

7 NON LOAD-BEARING WALL CONNECTION @ TRUSS
35-S-09
3/4" = 1'-0"

SOUTH CAROLINA THOMAS & HUTTON ENGINEERING CO. No. C00285 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 24127 JENNIFER A. HAYES

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
BUILDING DETAILS

JOB NO: J-25328.0000
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DESIGNED: JAH/EAC
REVIEWED: JAH/SHG
APPROVED: MFY
SCALE: AS NOTED

35-S-09

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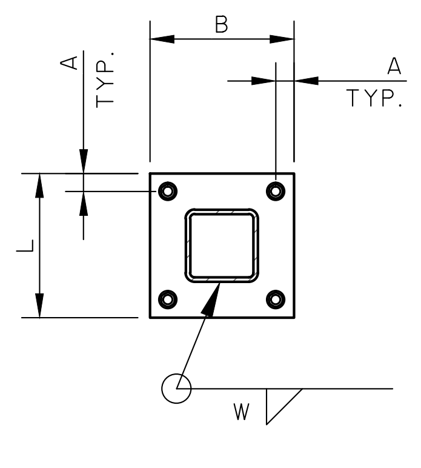
LINTEL SCHEDULE					
LENGTH	**MAT'L**	**SIZE**	**BEARING**	**FLEXURAL R/F**	**SHEAR R/F**
≤ 3'-6"	8" CMU	8"X8"	16"	(1) #5 BOTTOM	NONE
≤ 3'-6"	12" CMU	12"X8"	16"	(1) #5 BOTTOM	NONE
3'-7" - 6'-0"	8" CMU	8"X16"	16"	(2) #5 BOTTOM	NONE
3'-7" - 6'-0"	12" CMU	12"X16"	16"	(2) #5 BOTTOM	NONE
≤ 3'-6"	CONC	14"wX14"d	N/A	(2) #5 T&B, W/ 1½" COVER, EXTEND 36" BEYOND EDGE OF OPENING	#4 TIES @ 6" O.C.
3'-7" - 10'-0"	CONC	14"wX18"d	N/A	(2) #7 T&B, W/ 1½" COVER, EXTEND 42" BEYOND EDGE OF OPENING	#4 TIES @ 4" O.C.

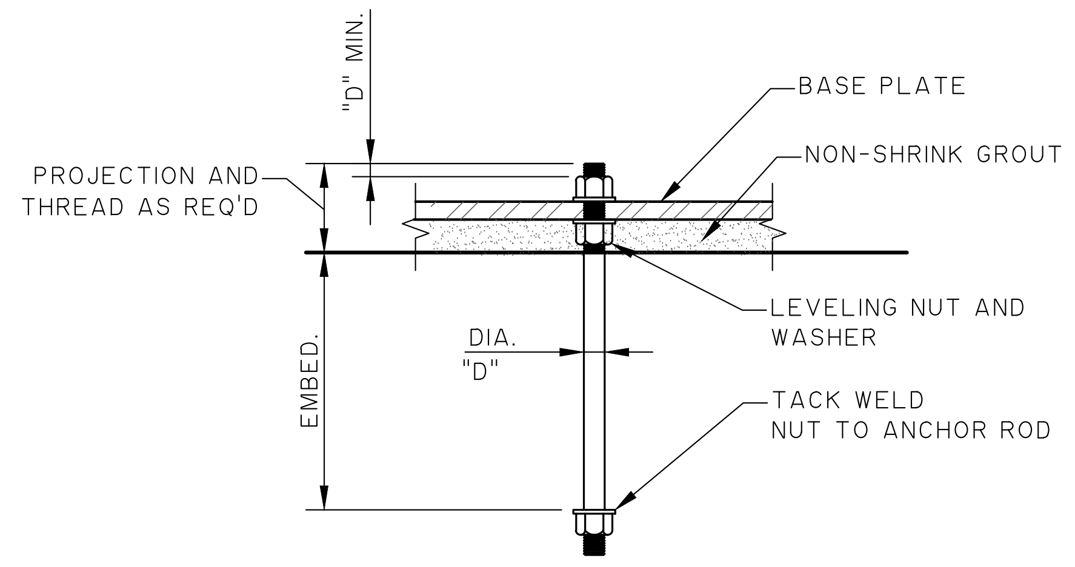
LINTEL NOTES:

1. COORDINATE ALL LINTELS WITH ARCHITECTURAL DRAWINGS.
2. OPENINGS FOR ROUND DUCTS, PIPING, AND ELECTRICAL CONDUIT ARE NOT SHOWN. SLEEVE ROUND OPENINGS BETWEEN 4 AND 12 INCHES WITH SCHEDULE 40 STEEL PIPE OR AS DIRECTED BY MANUFACTURER (FOR EQUIPMENT ITEMS).
3. FOR MASONRY LINTELS, FILL (2) CMU CELLS EACH SIDE OF OPENING (BELOW LINTEL BEARING) WITH GROUT FULL HEIGHT AND REINFORCE W/ (1) VERTICAL BAR EACH CELL (TO MATCH WALL R/F).
4. CONTINUE CMU WALL REINFORCING THROUGH LINTEL WHERE WALL REINFORCING OCCURS OVER MASONRY LINTELS.
5. PLACE BOTTOM REINFORCING AT BOTTOM OF LINTEL. PLACE TOP REINFORCING W/1½" CLEAR.

1 LINTEL SCHEDULE
35-S-10
3/4" = 1'-0"



BASE PLATE TYPE "A"



TYP. ANCHOR BOLT DETAIL

BASE PLATE SCHEDULE										
BASE PLATE				**ANCHOR BOLTS**					**GROUT THICK.**	**REMARKS**
tp	**L**	**B**	**WELD, W**	**No.**	**DIA. "D"**	**EMBED**	**"A"**	**PL. WASHER**		
1¼"	15"	15"	5/16"	4	¾"	1'-0"	1½"	-	1½"	-

NOTES:

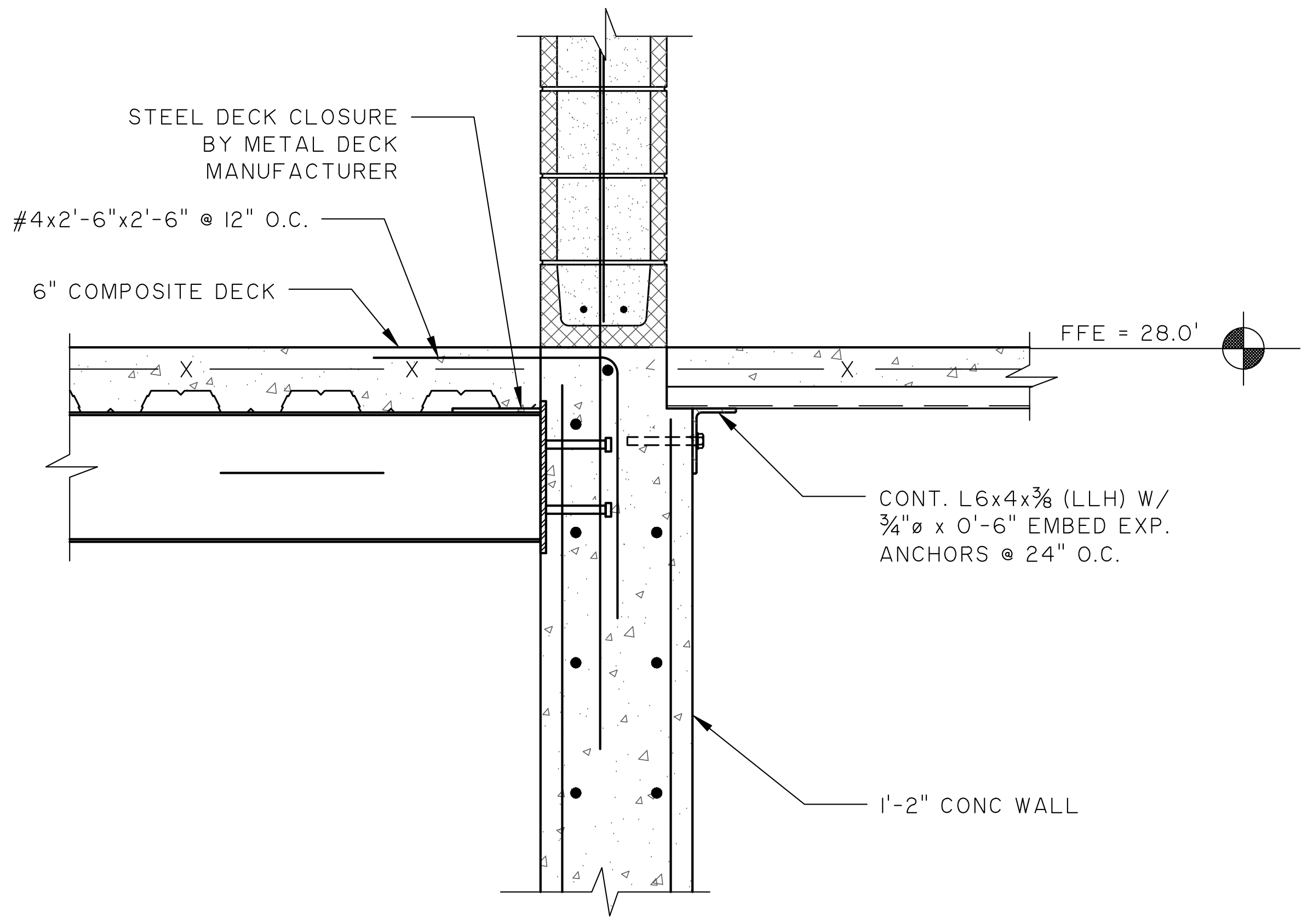
1. PROVIDE OVERSIZE HOLES IN BASE PLATES AS PER AISC MANUAL OF STEEL CONSTRUCTION, LATEST EDITION.
2. GROUT SHALL BE NON-SHRINK, NON-METALLIC GROUT. USE FLOWABLE GROUT AT BASE PLATES WITH SHEAR LUGS.

2 COLUMN BASE PLATE DETAILS
35-S-10
3/4" = 1'-0"

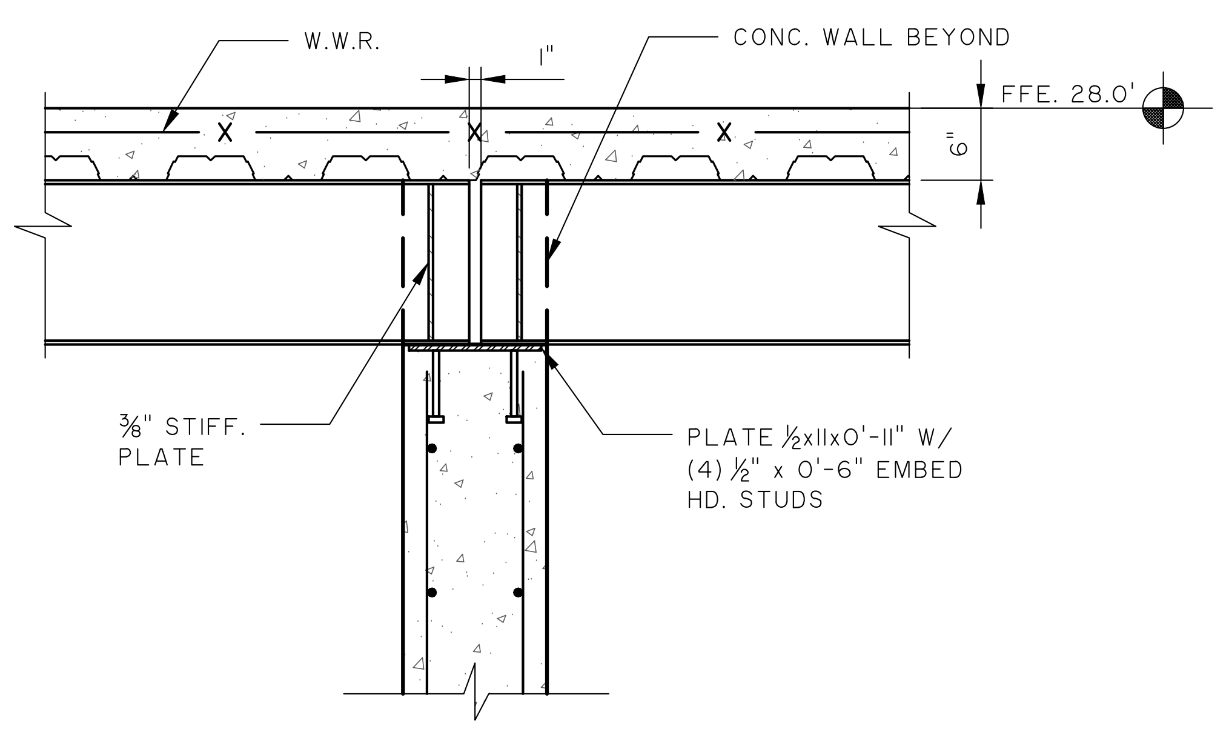
COLUMN SCHEDULE		
COLUMN MARK	C5-CA, C4-CA, C3-CA, C2-CA	C1-CA, C2-CB, C1-CB, C2-CC, C1-CC, C2-CD, C1-CD, C2-C3, C1-CE
ROOF ELEV. VARIES SECOND LEVEL F.F.E. = 28.0'	HSS9x9x3/8	HSS9x9x3/8
FIRST LEVEL F.F.E. = 14.0'		
BOTT. OF BASE PL EL. = 13.94'		

B/BASE PLATE ELEV. = 28.13'

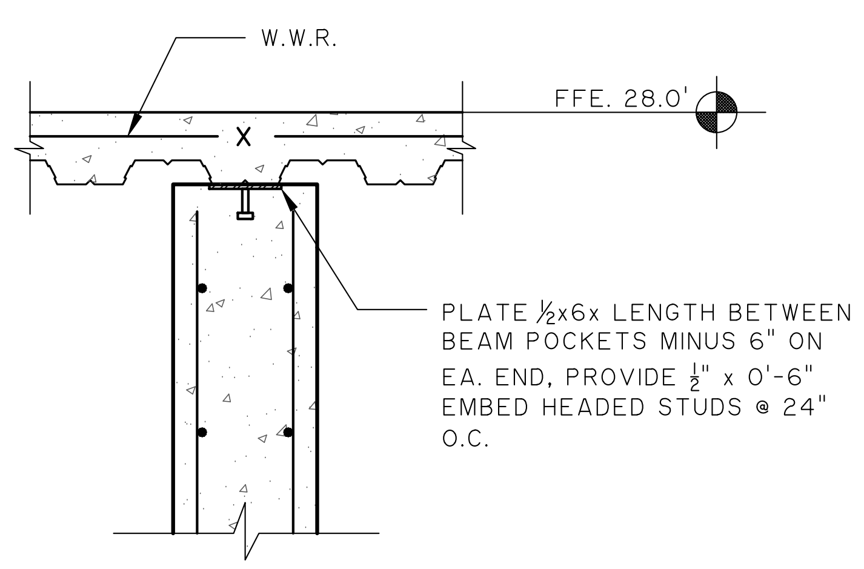
3 COLUMN SCHEDULE
35-S-10
NTS


STEEL DECK CLOSURE BY METAL DECK MANUFACTURER
#4x2'-6"x2'-6" @ 12" O.C.
6" COMPOSITE DECK
FFE = 28.0'
CONT. L6x4x⅜ (LLH) W/ ¾"ø x 0'-6" EMBED EXP. ANCHORS @ 24" O.C.
1'-2" CONC WALL

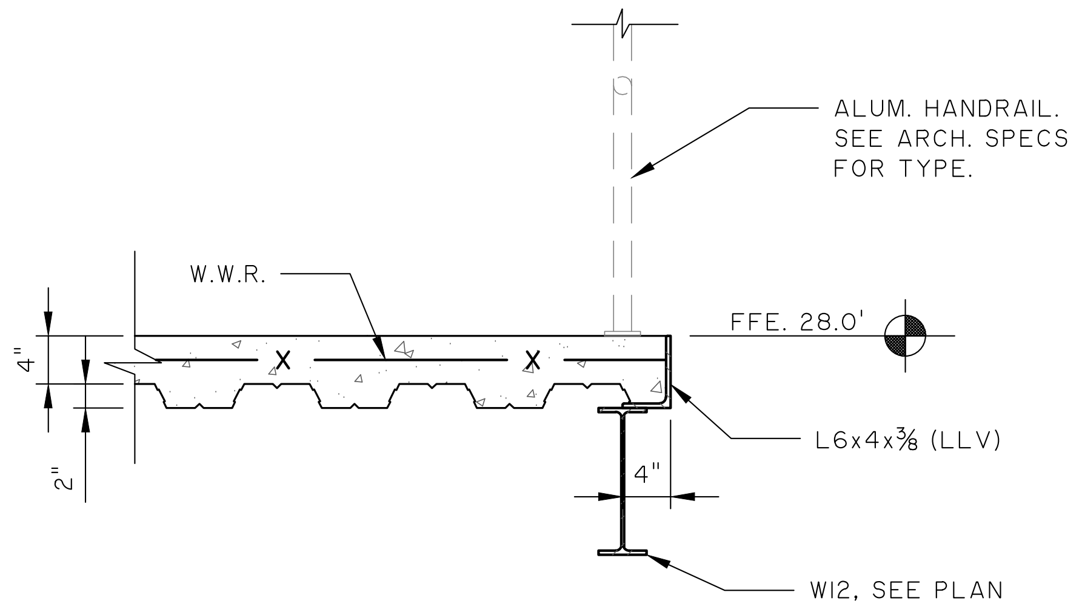
4 SECTION AT ELEVATED WALKWAY
35-S-10
3/4" = 1'-0"



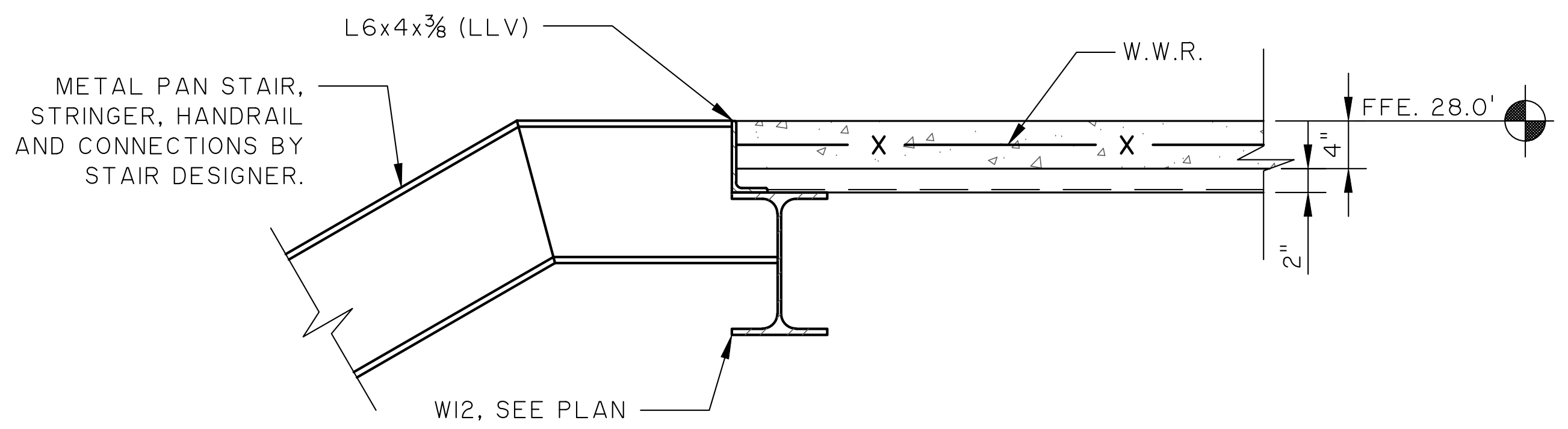
5 BEAMS BEARING ON CONC WALL
35-S-10
3/4" = 1'-0"


W.W.R.
FFE. 28.0'
PLATE ½x6x LENGTH BETWEEN BEAM POCKETS MINUS 6" ON EA. END, PROVIDE ½" x 0'-6" EMBED HEADED STUDS @ 24" O.C.

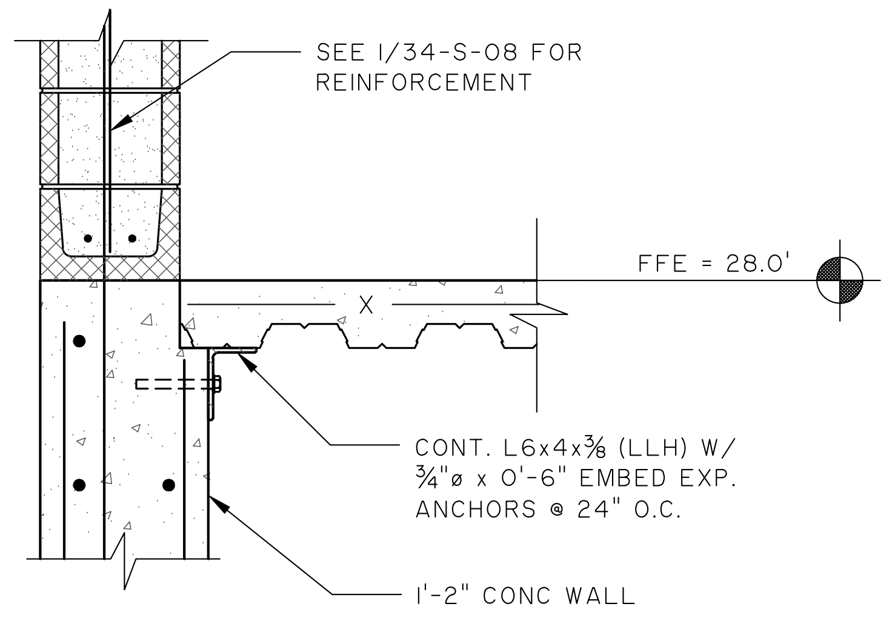
6 DECK BEARING SECTION
35-S-10
3/4" = 1'-0"



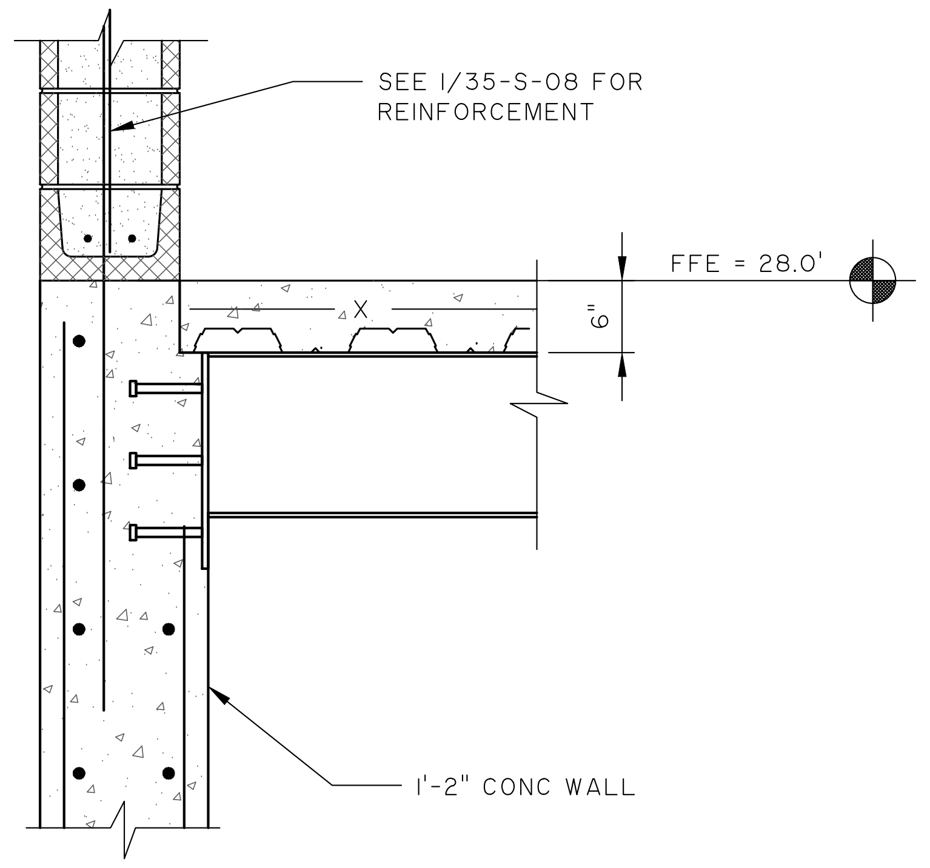
7 SECTION AT STAIR LANDING
35-S-10
3/4" = 1'-0"


L6x4x⅜ (LLV)
METAL PAN STAIR, STRINGER, HANDRAIL AND CONNECTIONS BY STAIR DESIGNER.
W.W.R.
FFE. 28.0'
4"
2"
W12, SEE PLAN

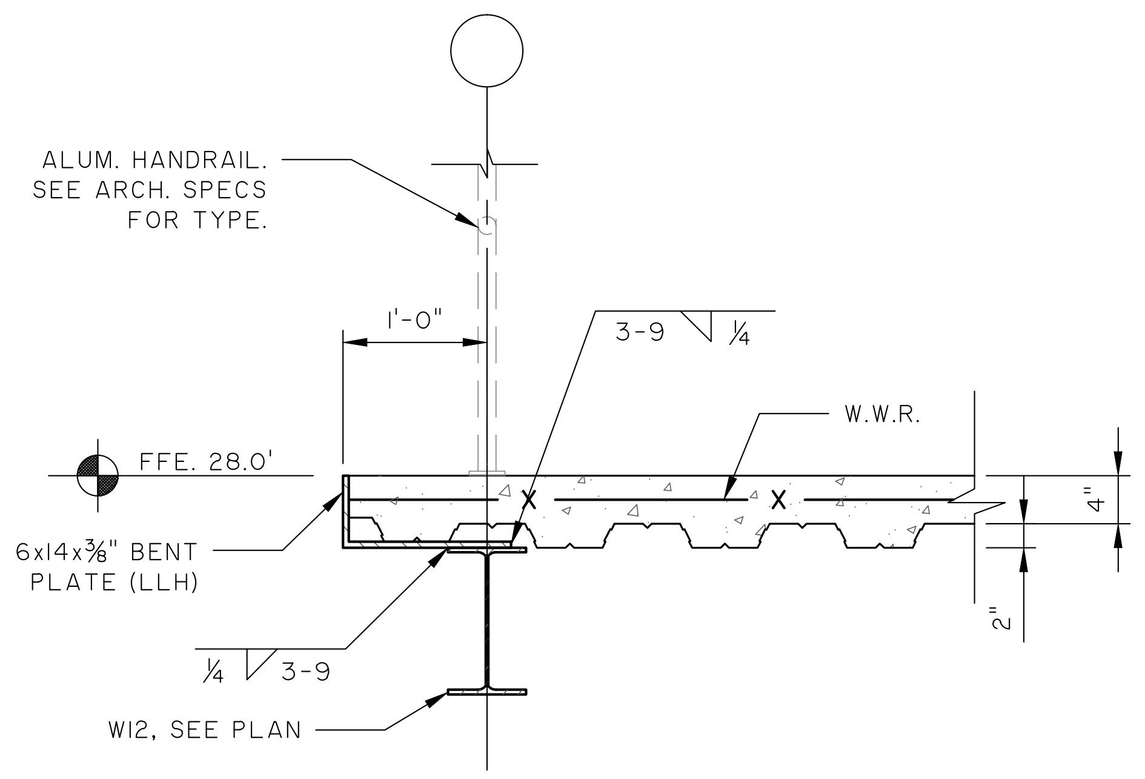
8 SECTION AT TOP OF STAIR
35-S-10
3/4" = 1'-0"


SEE 1/34-S-08 FOR REINFORCEMENT
FFE = 28.0'
CONT. L6x4x⅜ (LLH) W/ ¾"ø x 0'-6" EMBED EXP. ANCHORS @ 24" O.C.
1'-2" CONC WALL

9 SECTION
35-S-10
3/4" = 1'-0"



10 SECTION
35-S-10
3/4" = 1'-0"



11 SECTION AT EDGE OF PORCH
35-S-10
3/4" = 1'-0"

THOMAS & HUTTON ENGINEERING CO. No. C00285
JENNIFER A. HAYES No. 24727

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CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
BUILDING DETAILS

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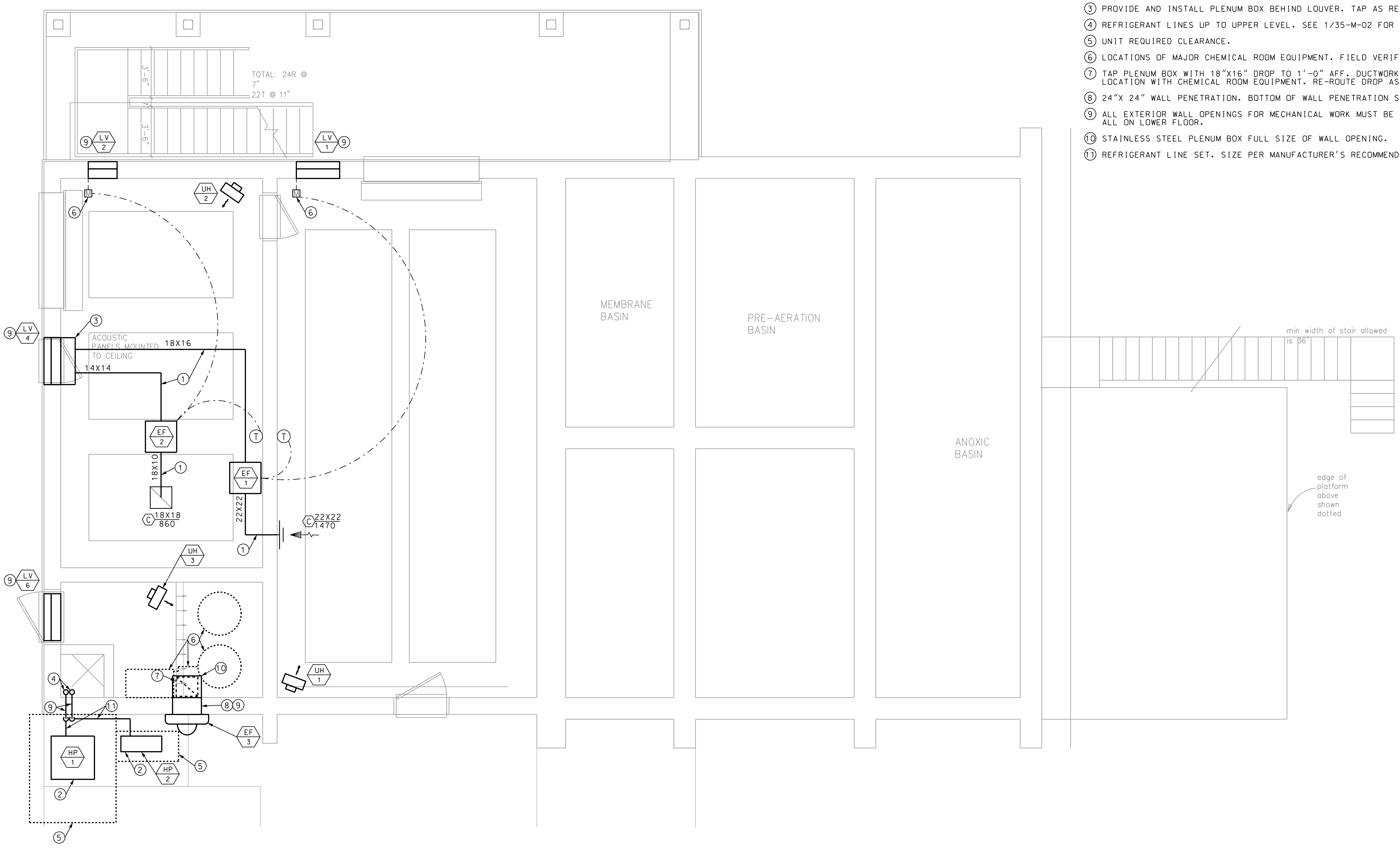
REVIEWED:	JAH/SHG
APPROVED:	MFY
SCALE:	AS NOTED

35-S-10



1
35-M-01

HVAC - LOWER LEVEL

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

NOTES:

① VERIFY ALL DUCT ROUTING PRIOR TO DUCTWORK MANUFACTURE AND INSTALLATION.

② UNIT SHALL BE MOUNTED ON EQUIPMENT PAD. SEE 2/01-M-01 FOR DETAIL.

③ PROVIDE AND INSTALL PLENUM BOX BEHIND LOUVER. TAP AS REQUIRED FOR DUCTWORK.

④ REFRIGERANT LINES UP TO UPPER LEVEL. SEE 1/35-M-02 FOR CONT.

⑤ UNIT REQUIRED CLEARANCE.

⑥ LOCATIONS OF MAJOR CHEMICAL ROOM EQUIPMENT. FIELD VERIFY.

⑦ TAP PLENUM BOX WITH 18"X16" DROP TO 1'-0" AFF. DUCTWORK SHALL BE STAINLESS STEEL. COORDINATE EXACT LOCATION WITH CHEMICAL ROOM EQUIPMENT. RE-ROUTE DROP AS REQUIRED.

⑧ 24"X 24" WALL PENETRATION. BOTTOM OF WALL PENETRATION SHALL BE 5'-0" ABOVE FINISHED FLOOR.

⑨ ALL EXTERIOR WALL OPENINGS FOR MECHANICAL WORK MUST BE GREATER THAN 2'-0" AFF AT LOWEST POINT. TYPICAL ALL ON LOWER FLOOR.

⑩ STAINLESS STEEL PLENUM BOX FULL SIZE OF WALL OPENING.

⑪ REFRIGERANT LINE SET. SIZE PER MANUFACTURER'S RECOMMENDATIONS.

SOUTH CAROLINA
CHATHAM ENGINEERING COMPANY LLC
C04812
CERTIFICATE OF AUTHORIZATION

No. 30827
S. MICHELLE PEAVLER
1-28-16

NO	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
682 Johnnie Dodds Boulevard • Suite 100
Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
HVAC LOWER LEVEL PLAN AND DETAILS

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	JM
DESIGNED:	JM
REVIEWED:	MP
APPROVED:	MP
SCALE:	1/4" = 1'

GRAPHIC SCALE
4 0 2 4 8 16
(IN FEET)
1 inch = 4 ft.

35-M-01

CADD PLOT
28-JAN-2016
18:02
JMITCHEL

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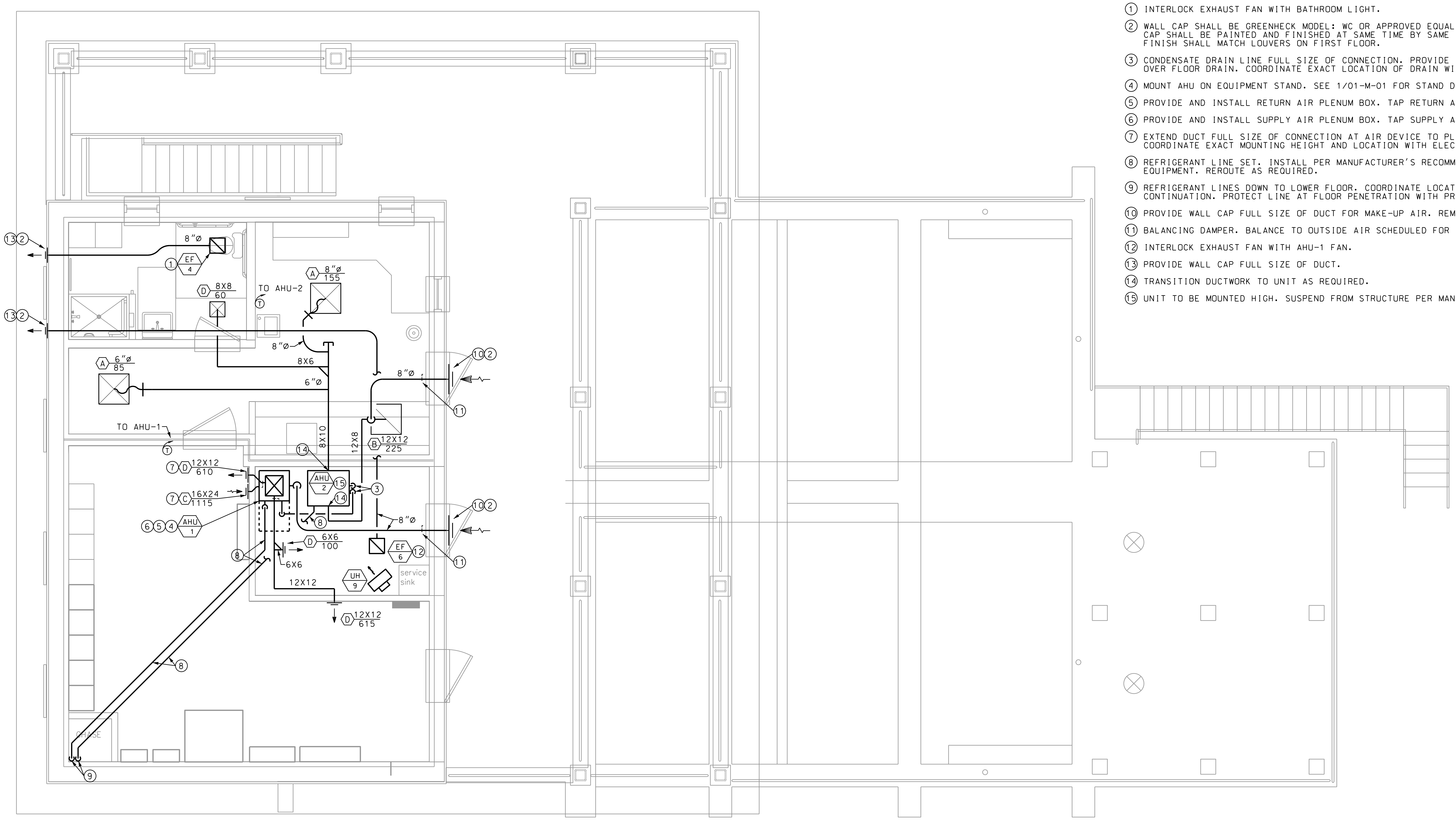

1
35-M-02

HVAC - UPPER LEVEL

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

NOTES:

① INTERLOCK EXHAUST FAN WITH BATHROOM LIGHT.

② WALL CAP SHALL BE GREENHECK MODEL: WC OR APPROVED EQUAL. MOUNT 12'-0" AFF TO BOTTOM OF WALL CAP. WALL CAP SHALL BE PAINTED AND FINISHED AT SAME TIME BY SAME MANUFACTURER AS LOUVERS ON FIRST FLOOR. PAINT AND FINISH SHALL MATCH LOUVERS ON FIRST FLOOR.

③ CONDENSATE DRAIN LINE FULL SIZE OF CONNECTION. PROVIDE P-TRAP AT UNIT CONNECTION. TURNDOWN AND TERMINATE OVER FLOOR DRAIN. COORDINATE EXACT LOCATION OF DRAIN WITH 1/35-P-02. SEE 3/01-M-01 FOR P-TRAP DETAIL.

④ MOUNT AHU ON EQUIPMENT STAND. SEE 1/01-M-01 FOR STAND DETAIL.

⑤ PROVIDE AND INSTALL RETURN AIR PLENUM BOX. TAP RETURN AND OUTSIDE AIR AS REQUIRED.

⑥ PROVIDE AND INSTALL SUPPLY AIR PLENUM BOX. TAP SUPPLY AS REQUIRED.

⑦ EXTEND DUCT FULL SIZE OF CONNECTION AT AIR DEVICE TO PLENUM. AIR DEVICE SHOWN OFFSET FOR CLARITY. COORDINATE EXACT MOUNTING HEIGHT AND LOCATION WITH ELECTRICAL EQUIPMENT.

⑧ REFRIGERANT LINE SET. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. DO NOT INSTALL ABOVE ELECTRICAL EQUIPMENT. REROUTE AS REQUIRED.

⑨ REFRIGERANT LINES DOWN TO LOWER FLOOR. COORDINATE LOCATION IN CHASE WITH OTHER TRADES. SEE 1/35-M-01 FOR CONTINUATION. PROTECT LINE AT FLOOR PENETRATION WITH PROTECTIVE SLEEVE.

⑩ PROVIDE WALL CAP FULL SIZE OF DUCT FOR MAKE-UP AIR. REMOVE BACKDRAFT DAMPER.

⑪ BALANCING DAMPER. BALANCE TO OUTSIDE AIR SCHEDULED FOR ASSOCIATED UNIT.

⑫ INTERLOCK EXHAUST FAN WITH AHU-1 FAN.

⑬ PROVIDE WALL CAP FULL SIZE OF DUCT.

⑭ TRANSITION DUCTWORK TO UNIT AS REQUIRED.

⑮ UNIT TO BE MOUNTED HIGH. SUSPEND FROM STRUCTURE PER MANUFACTURER'S RECOMMENDATIONS.

GRAPHIC SCALE
4 0 2 4 8 16
(IN FEET)
1 inch = 4 ft.

CHATHAM ENGINEERING COMPANY LLC
C04812

No. 30827
MICHELLE PEAVLER
1-28-16

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

HVAC UPPER LEVEL PLAN AND DETAILS

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	JM
DESIGNED:	JM
REVIEWED:	MP
APPROVED:	MP
SCALE:	1/4" = 1'

35-M-02

CADD PLOT
28-JAN-2016
18:03
JMITCHELL

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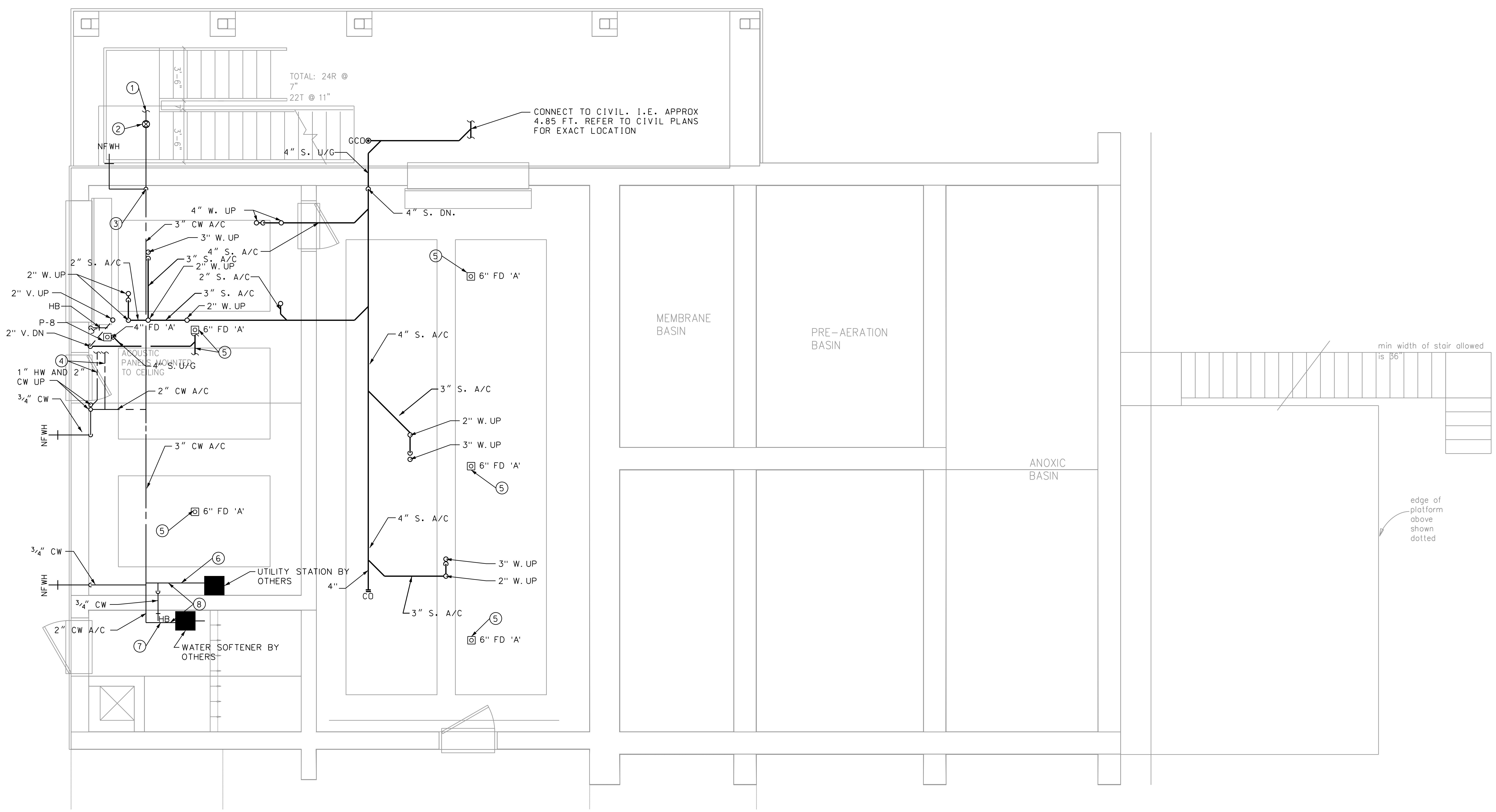

NOTES:

① 3" CW U/G. SEE CIVIL DRAWINGS FOR CONT.

② GATE VALVE IN VALVE BOX.

③ 3" CW. RISER.

④ EXTEND 1½" CW AND 1" HW TO FIXTURE P-8 AND CONNECT. INSTALL MIXING VALVE AND CONNECT TO P-8.

⑤ CONNECT TO SANITARY U/G. SEE CIVIL DRAWINGS FOR CONT. PROVIDE DEEP SEAL TRAPS. PROVIDE VENT FROM FLOOR TO EXTERIOR. VENT SHALL BE 2" IN SIZE.

⑥ 2" CW TO UTILITY STATION PROVIDED BY OTHERS.

⑦ 2" CW TO WATER SOFTENER PROVIDED BY OTHERS. COORDINATE CONNECTION WITH WATER SOFTENER MANUFACTURER.

⑧ INSTALL RP BACK FLOW PREVENTER IN LINE.

1
35-P-01

PLUMBING - LOWER LEVEL

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

GRAPHIC SCALE

(IN FEET)
1 inch = 4 ft.

CHATHAM ENGINEERING COMPANY LLC
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No. 30827
S. MICHELLE PEAVLER
1-28-16

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

PLUMBING PLAN LOWER LEVEL

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	SNS
DESIGNED:	SNS
REVIEWED:	MP
APPROVED:	MP
SCALE:	1/4"=1'-0"

35-P-01

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CADD PLOT
28-JAN-2016
18:04
JMITCHEL

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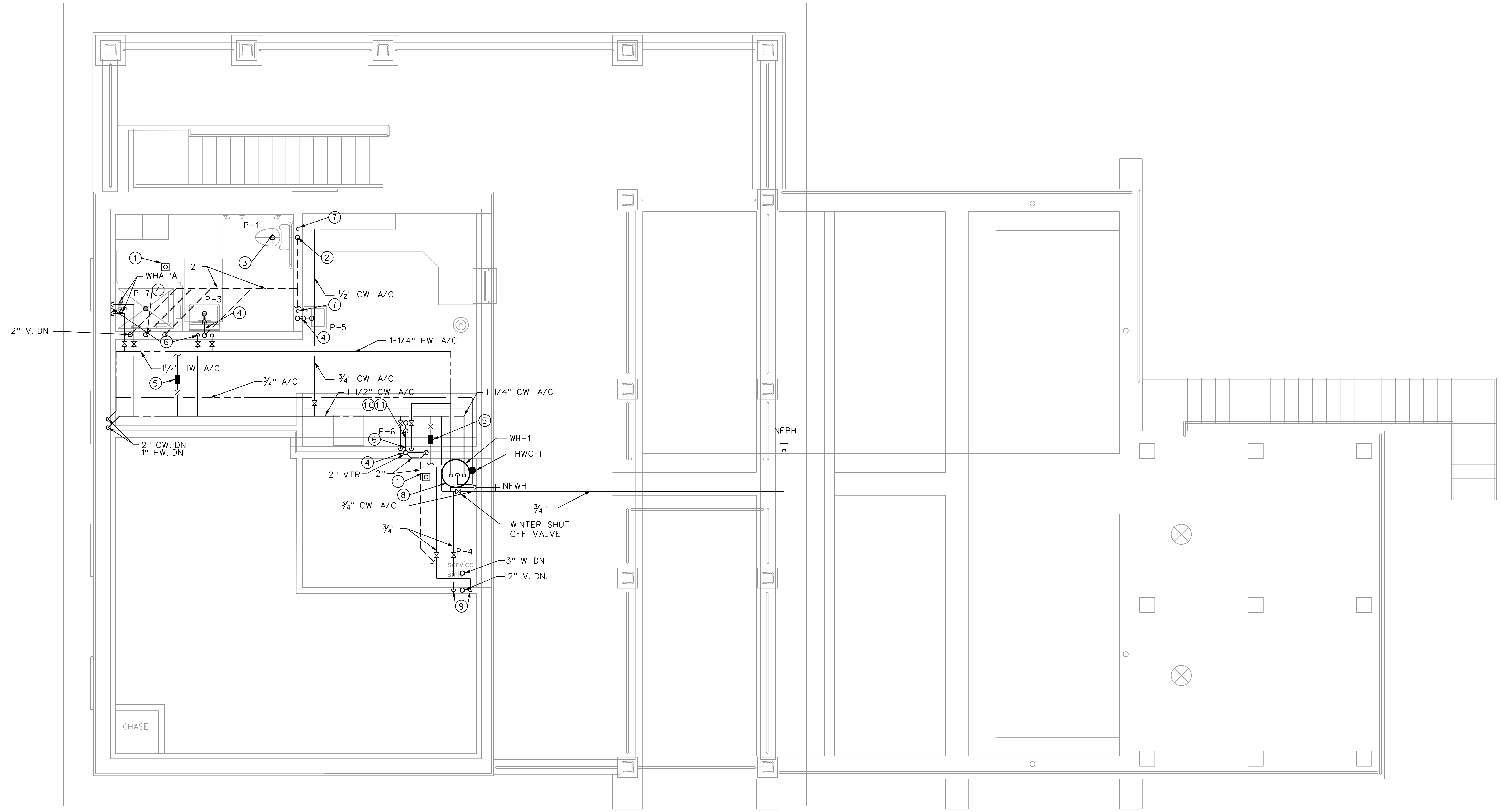


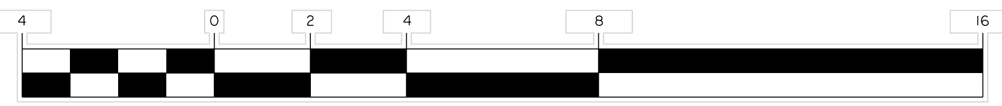
NOTES:

① 3" FD'B' WITH TRAP PRIMER CONNECTION.
② 3" V. DN. AND 3" VTR
③ 4" SAN. DN.
④ 2" W. DN. AND 2" V. DN.
⑤ TRAP PRIMER VALVE. EXTEND 1/2" CW TO CONNECTION AT FLOOR DRAIN.
⑥ 1/2" HW & CW DROPS.
⑦ 1/2" CW DROP.
⑧ 1-1/4 " HW & CW & 3/4" HWR DROPS TO WH-1. SEE 1/45-P-01 FOR DETAIL.
⑨ 3/4" HW & CW DROPS.
⑩ INSTALL ACID NEUTRALIZATION TANK UNDER SINK. TANK SHALL BE RECESSED IN CABINET.
⑪ INSTALL ACID RATED CPVC DRAIN AND P-TRAP FROM ACID NEUTRILIZATION TANK TO SINK.

1 / 35-P-02 PLUMBING - UPPER LEVEL

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

GRAPHIC SCALE



(IN FEET)
1 inch = 4 ft.

CHATHAM ENGINEERING COMPANY LLC
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No. 30827
S. MICHELLE PEAVLER
1-28-16

NO	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
PLUMBING PLAN UPPER LEVEL

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	SNS
DESIGNED:	SNS
REVIEWED:	MP
APPROVED:	MP
SCALE:	1/4"=1'-0"

35-P-02

CADD PLOT
28-JAN-2016
18:05
JMITCHELL

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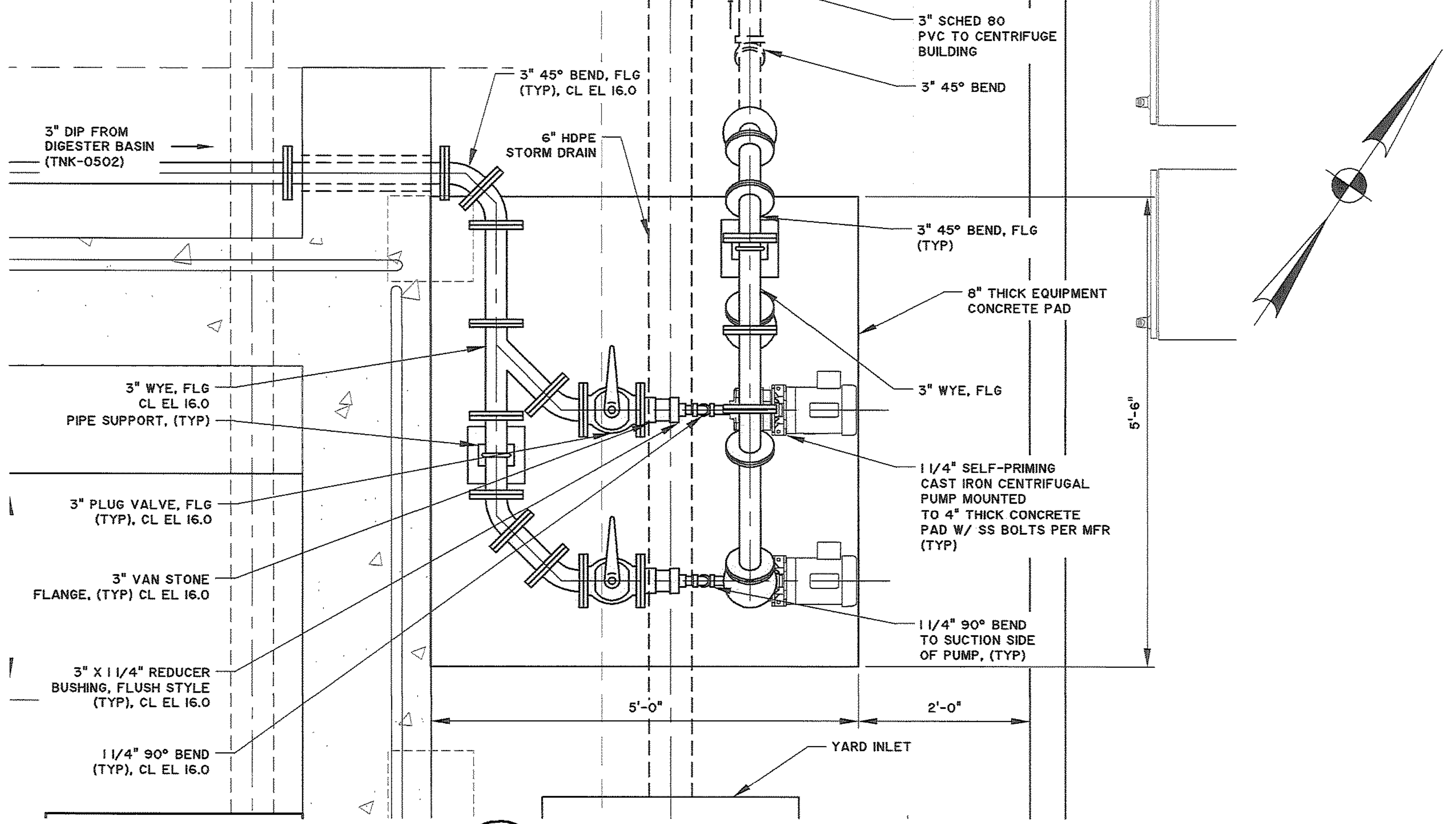
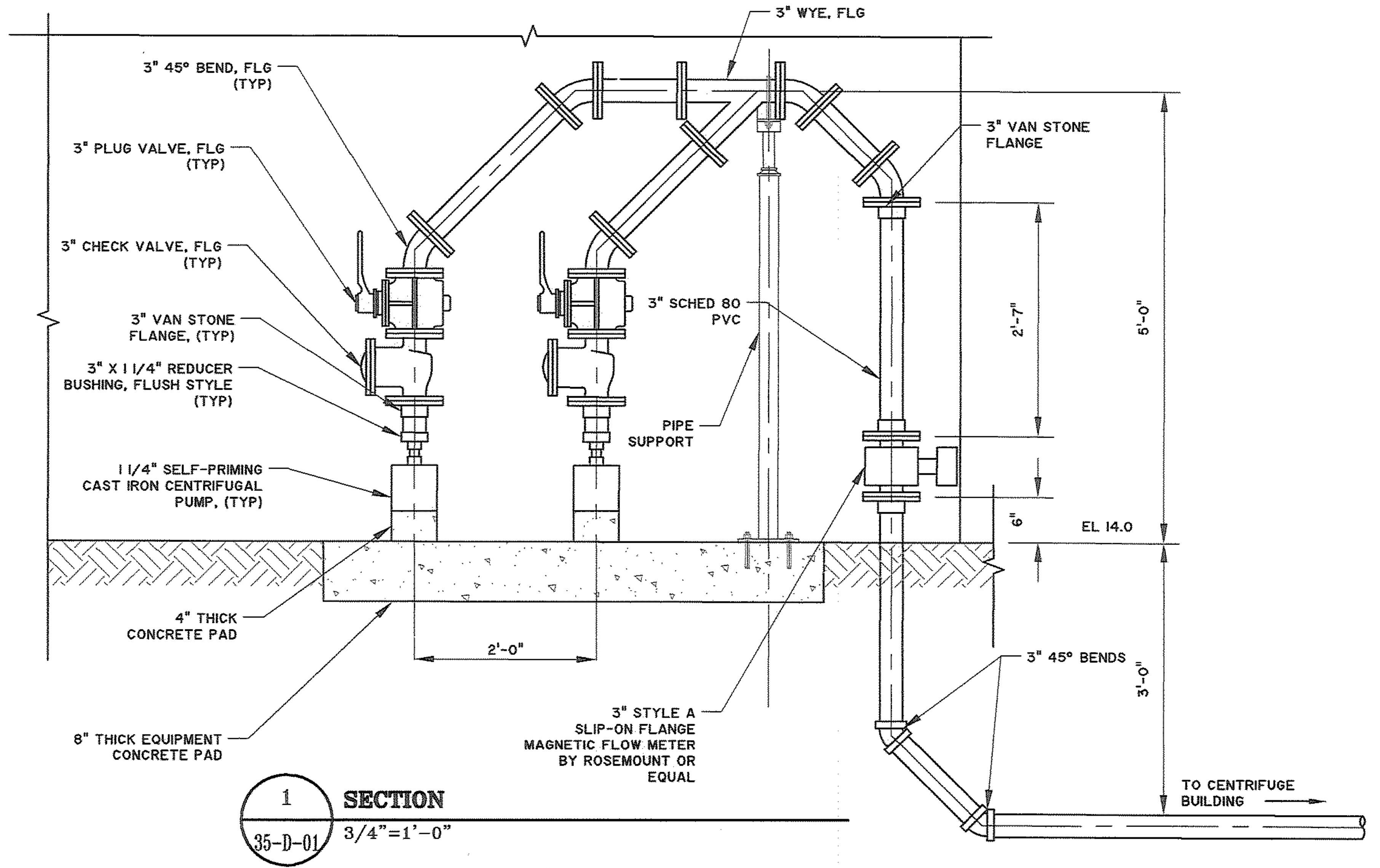
Z:\25328\25328.0000\Engineering\Drawings\Construction Plans\25328.0000-TREATMENT BASINS LOWER LEVEL.dwg - Dec 7, 2015 - 8:03:44 AM


3" DIP FROM DIGESTER BASIN (TNK-0502)
3" 45° BEND, FLG (TYP), CL EL 16.0
6" HDPE STORM DRAIN
3" SCHED 80 PVC TO CENTRIFUGE BUILDING
3" 45° BEND
3" 45° BEND, FLG (TYP)
8" THICK EQUIPMENT CONCRETE PAD
3" WYE, FLG
3" WYE, FLG CL EL 16.0
PIPE SUPPORT, (TYP)
3" PLUG VALVE, FLG (TYP), CL EL 16.0
3" VAN STONE FLANGE, (TYP) CL EL 16.0
3" X 1 1/4" REDUCER BUSHING, FLUSH STYLE (TYP), CL EL 16.0
1 1/4" 90° BEND (TYP), CL EL 16.0
1 1/4" SELF-PRIMING CAST IRON CENTRIFUGAL PUMP MOUNTED TO 4" THICK CONCRETE PAD W/ SS BOLTS PER MFR (TYP)
1 1/4" 90° BEND TO SUCTION SIDE OF PUMP, (TYP)
5'-6"
5'-0"
2'-0"
YARD INLET

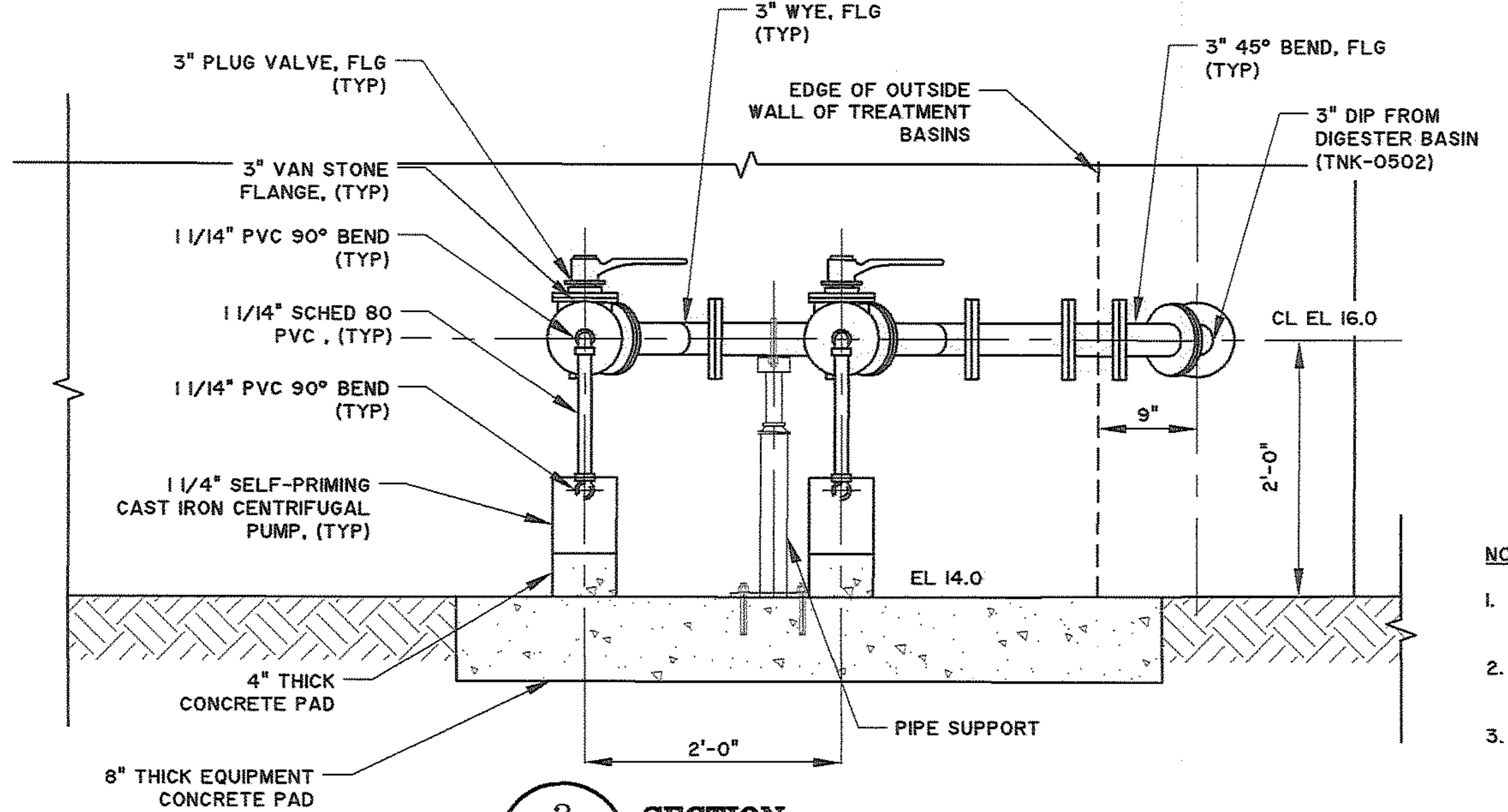
A / 35-D-01 **WAS PUMPS DETAIL - PLAN**

3/4"=1'-0"


3" WYE, FLG
3" 45° BEND, FLG (TYP)
3" PLUG VALVE, FLG (TYP)
3" CHECK VALVE, FLG (TYP)
3" VAN STONE FLANGE, (TYP)
3" X 1 1/4" REDUCER BUSHING, FLUSH STYLE (TYP)
1 1/4" SELF-PRIMING CAST IRON CENTRIFUGAL PUMP, (TYP)
4" THICK CONCRETE PAD
8" THICK EQUIPMENT CONCRETE PAD
2'-0"
3" VAN STONE FLANGE
3" SCHED 80 PVC
PIPE SUPPORT
3" STYLE A SLIP-ON FLANGE MAGNETIC FLOW METER BY ROSEMOUNT OR EQUAL
2'-7"
5'-0"
6"
EL 14.0
3" 45° BENDS
3'-0"
TO CENTRIFUGE BUILDING

1 / 35-D-01 **SECTION**

3/4"=1'-0"

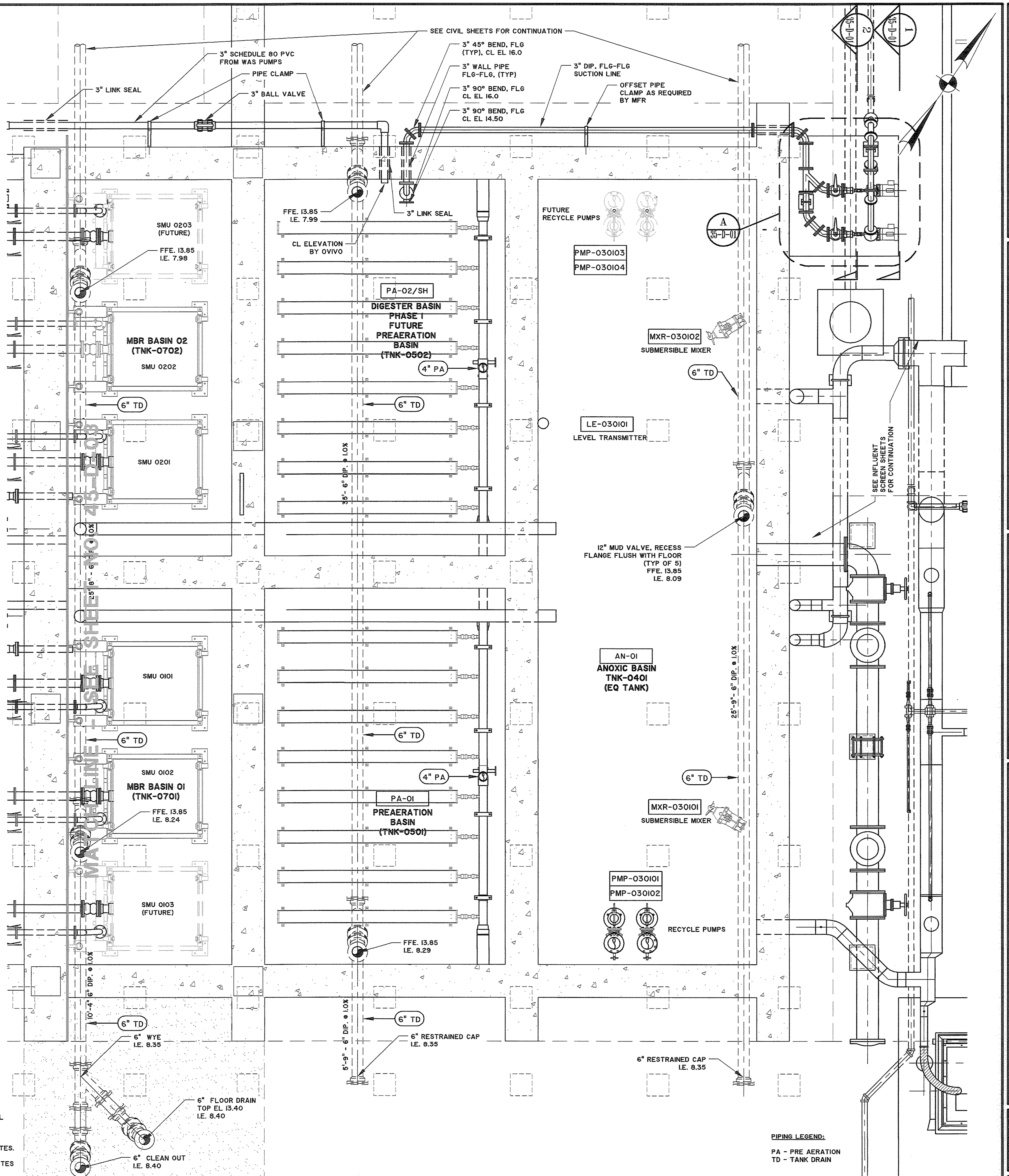

3" PLUG VALVE, FLG (TYP)
3" WYE, FLG (TYP)
EDGE OF OUTSIDE WALL OF TREATMENT BASINS
3" 45° BEND, FLG (TYP)
3" DIP FROM DIGESTER BASIN (TNK-0502)
3" VAN STONE FLANGE, (TYP)
1 1/4" PVC 90° BEND (TYP)
1 1/4" SCHED 80 PVC, (TYP)
1 1/4" PVC 90° BEND (TYP)
1 1/4" SELF-PRIMING CAST IRON CENTRIFUGAL PUMP, (TYP)
CL EL 16.0
9"
2'-0"
EL 14.0
4" THICK CONCRETE PAD
8" THICK EQUIPMENT CONCRETE PAD
2'-0"
PIPE SUPPORT

2 / 35-D-01 **SECTION**

3/4"=1'-0"

NOTES:

1. CONTRACTOR SHALL COORDINATE LOCATIONS OF LEVEL SWITCHES IN MBR BASINS 01 AND 02 WITH OVIVO.
2. CONTRACTOR SHALL COORDINATE RAILINGS AND GATE PENETRATIONS IN GRATING/COVERS FOR THE SLIDE GATES.
3. CONTRACTOR SHALL SEAL OPENINGS AROUND SLIDE GATES AND OTHER OPENINGS WITH ALUMINUM PLATES.



PIPING LEGEND:

PA - PRE AERATION
TD - TANK DRAIN

B / 35-D-01 **LOWER PIPING PLAN**

3/8"=1'-0"

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE No. 13293

12-2-2015

NO.	GENERAL REVISIONS	BY	DATE
1	GENERAL REVISIONS	MFY	12/2/15

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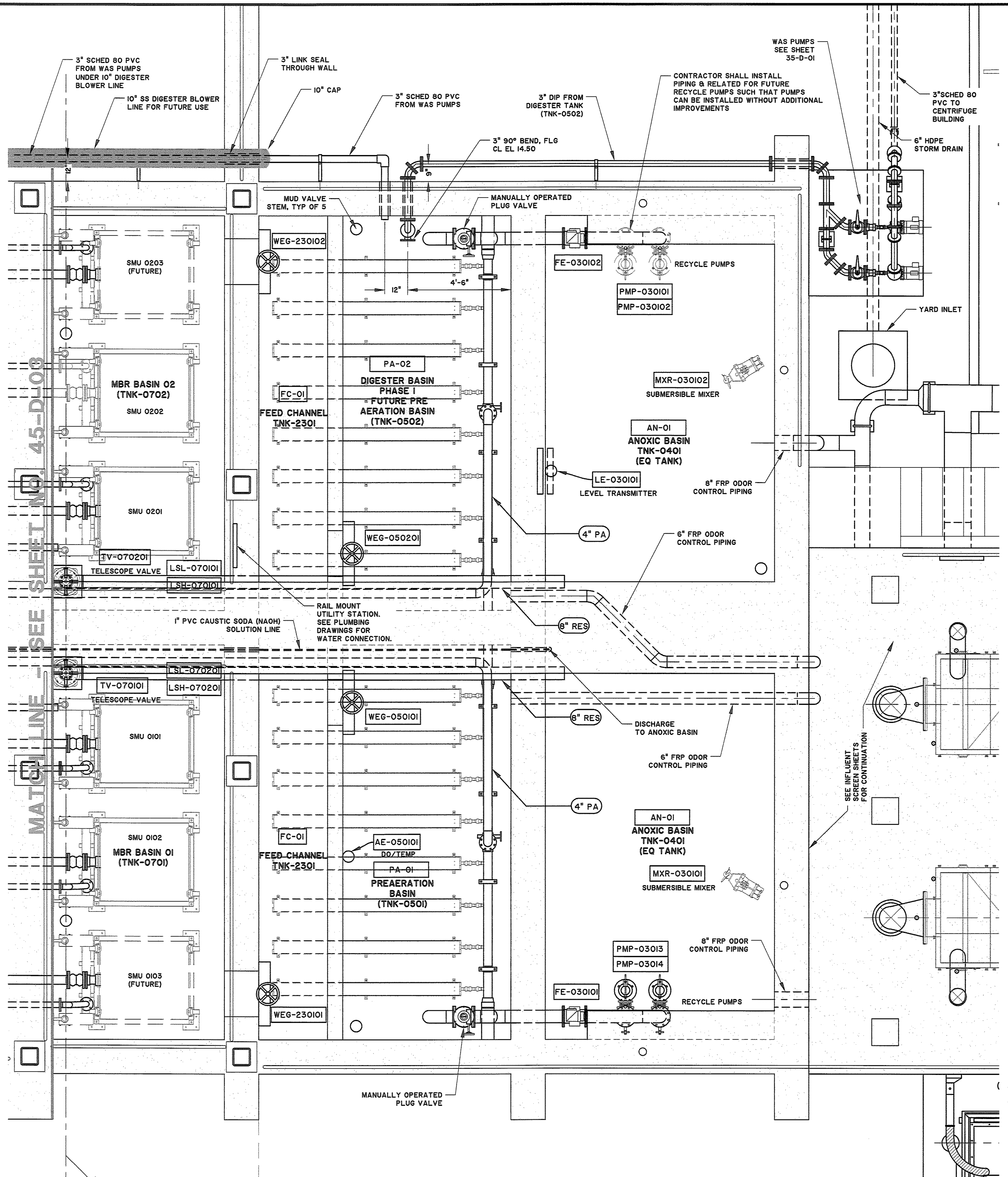
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

TREATMENT BASINS LOWER LEVEL - PLAN

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	MFY
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

35-D-01


3" SCHED 80 PVC FROM WAS PUMPS UNDER 10" DIGESTER BLOWER LINE
10" SS DIGESTER BLOWER LINE FOR FUTURE USE
3" LINK SEAL THROUGH WALL
10" CAP
3" SCHED 80 PVC FROM WAS PUMPS
3" DIP FROM DIGESTER TANK (TNK-0502)
3" 90° BEND, FLG CL EL 14.50
CONTRACTOR SHALL INSTALL PIPING & RELATED FOR FUTURE RECYCLE PUMPS SUCH THAT PUMPS CAN BE INSTALLED WITHOUT ADDITIONAL IMPROVEMENTS
WAS PUMPS SEE SHEET 35-D-01
3"SCHED 80 PVC TO CENTRIFUGE BUILDING
6" HDPE STORM DRAIN
YARD INLET
12"
9"
MUD VALVE STEM, TYP OF 5
MANUALLY OPERATED PLUG VALVE
12"
4'-6"
FE-030102
RECYCLE PUMPS
PMP-030101
PMP-030102
SMU 0203 (FUTURE)
WEG-230102
PA-02
DIGESTER BASIN PHASE I FUTURE PRE AERATION BASIN (TNK-0502)
MBR BASIN 02 (TNK-0702)
SMU 0202
FC-01
FEED CHANNEL TNK-2301
MXR-030102
SUBMERSIBLE MIXER
AN-01
ANOXIC BASIN TNK-0401 (EQ TANK)
LE-030101
LEVEL TRANSMITTER
8" FRP ODOR CONTROL PIPING
SMU 0201
WEG-050201
4" PA
6" FRP ODOR CONTROL PIPING
TV-070201
TELESCOPE VALVE
LSL-070101
LSH-070101
RAIL MOUNT UTILITY STATION. SEE PLUMBING DRAWINGS FOR WATER CONNECTION.
8" RES
1" PVC CAUSTIC SODA (NAOH) SOLUTION LINE
MATCH LINE – SEE SHEET NO. 45-DL03
LSL-070201
TV-070101
LSH-070201
TELESCOPE VALVE
WEG-050101
8" RES
DISCHARGE TO ANOXIC BASIN
6" FRP ODOR CONTROL PIPING
SMU 0101
SEE INFLUENT SCREEN SHEETS FOR CONTINUATION
4" PA
AN-01
ANOXIC BASIN TNK-0401 (EQ TANK)
FC-01
FEED CHANNEL TNK-2301
AE-050101
DO/TEMP
PA-01
PREAERATION BASIN (TNK-0501)
SMU 0102
MBR BASIN 01 (TNK-0701)
MXR-030101
SUBMERSIBLE MIXER
PMP-03013
PMP-03014
8" FRP ODOR CONTROL PIPING
FE-030101
RECYCLE PUMPS
SMU 0103 (FUTURE)
WEG-230101
MANUALLY OPERATED PLUG VALVE

A
35-D-01

UPPER LEVEL PIPING PLAN

3/8"=1'-0"

NOTES:

1. CONTRACTOR SHALL COORDINATE LOCATIONS OF LEVEL SWITCHES IN MBR BASINS 01 AND 02 WITH OVIVO.
2. CONTRACTOR SHALL COORDINATE RAILINGS AND GATE PENETRATIONS IN GRATING/COVERS FOR THE SLIDE GATES.
3. CONTRACTOR SHALL SEAL OPENINGS AROUND SLIDE GATES AND OTHER OPENINGS WITH ALUMINUM PLATES.

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE

NO.	REVISIONS	BY	DATE
1	GENERAL REVISIONS	MFY	12/2/15

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

TREATMENT BASINS UPPER LEVEL - PLAN

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	MFY
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	3/8"=1'-0"

35-D-02

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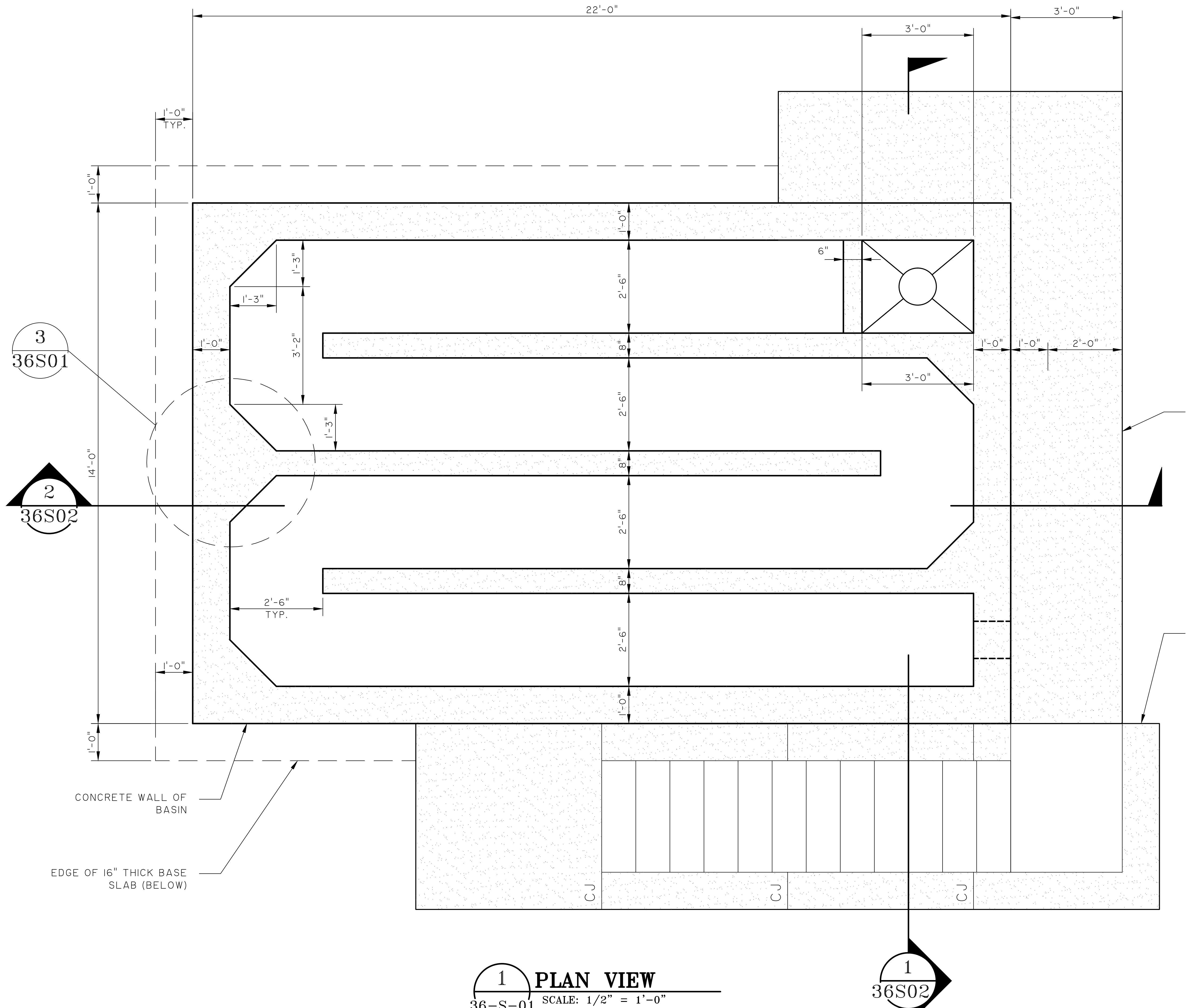


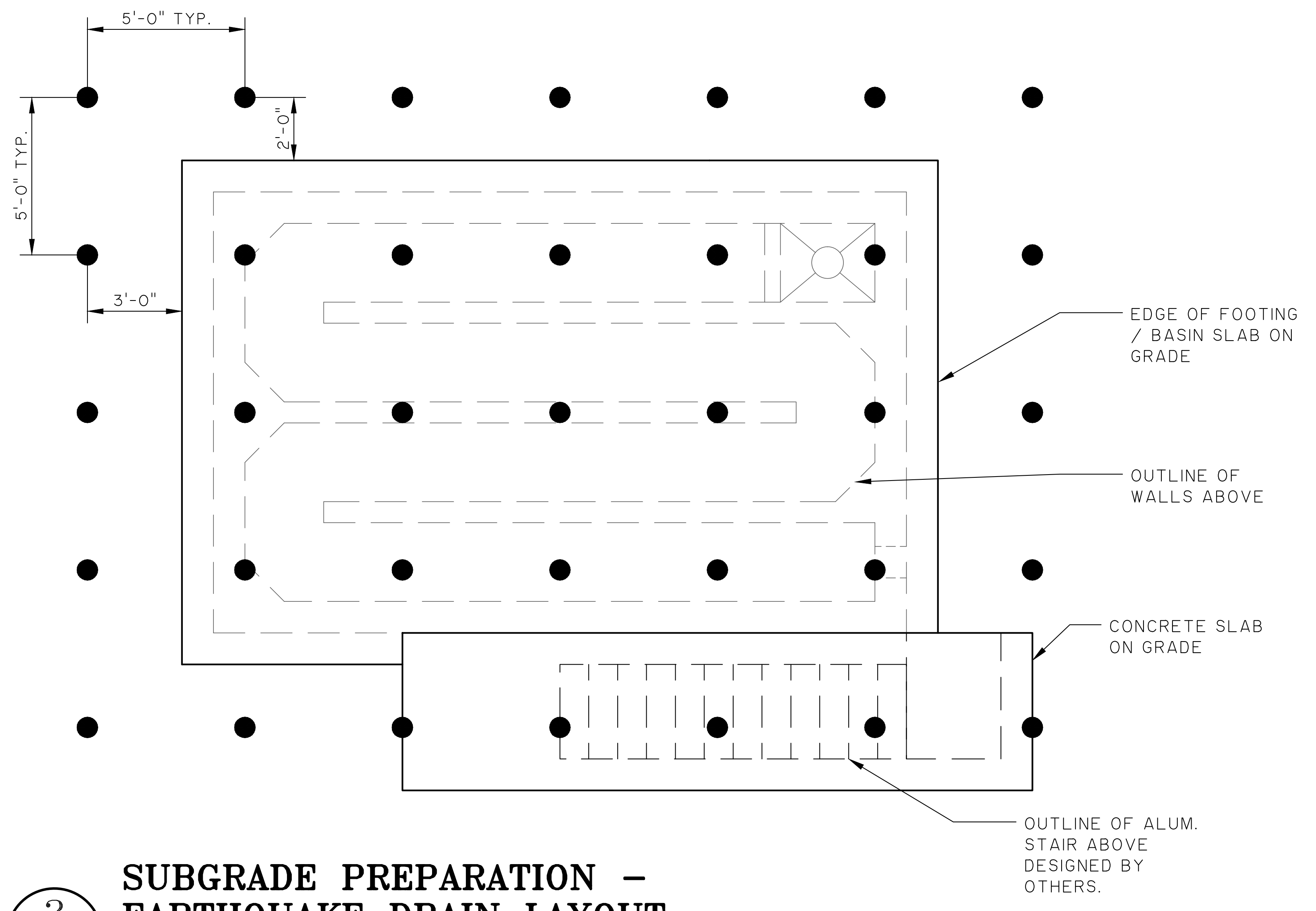
1 PLAN VIEW

36-S-01

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

NOTES:

1. INTERIOR OF BASINS AND BASE SLAB TO BE COATED WITH WATERPROOF COATING, PER THE SPECIFICATIONS.
2. EXTERIOR WALLS TO BE PAINTED COLOR 2 TO MATCH EXTERIOR COLOR OF THE WWTP BASINS.


5'-0" TYP.
5'-0" TYP.
2'-0"
3'-0"
EDGE OF FOOTING / BASIN SLAB ON GRADE
OUTLINE OF WALLS ABOVE
CONCRETE SLAB ON GRADE
OUTLINE OF ALUM. STAIR ABOVE DESIGNED BY OTHERS.

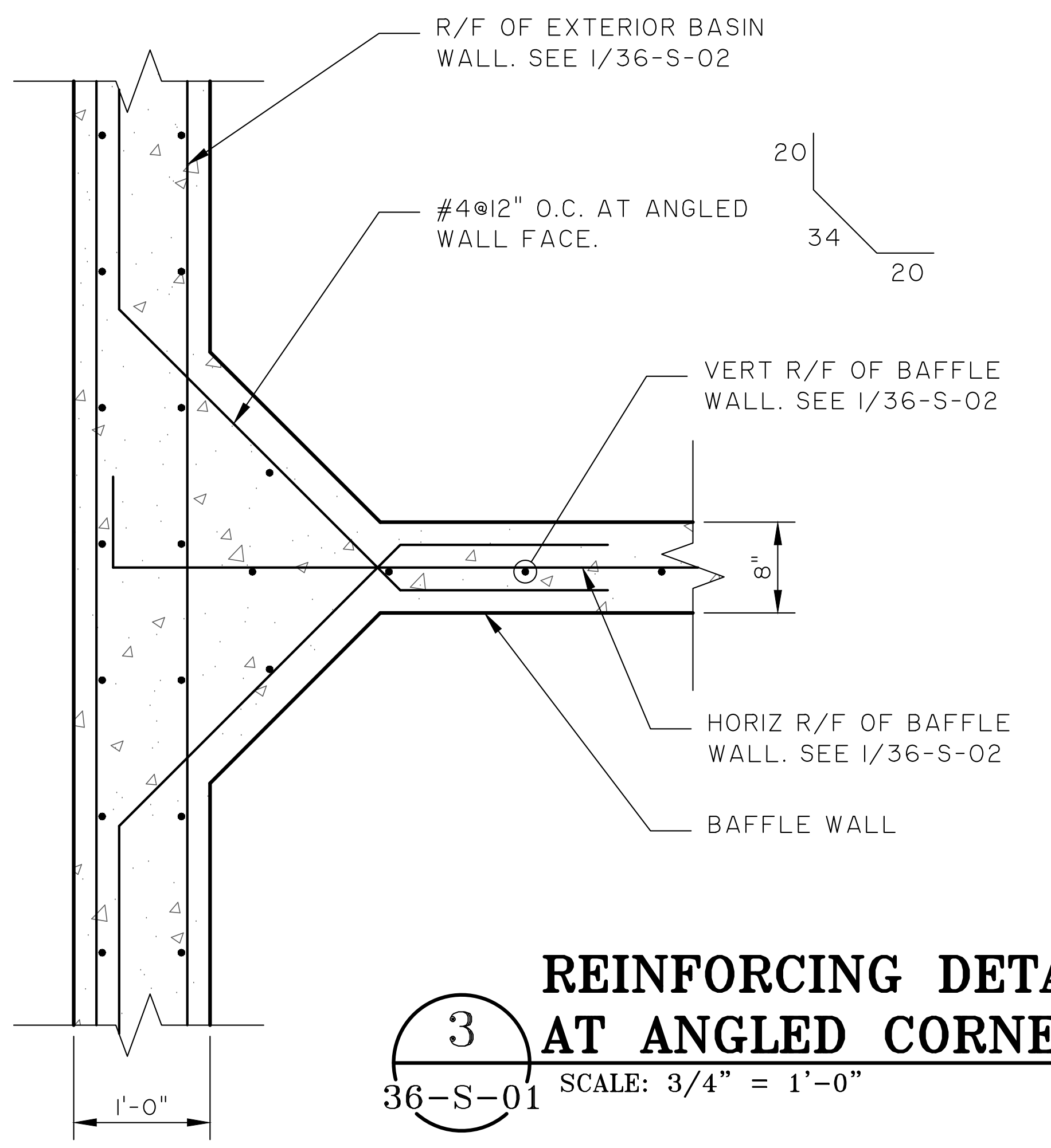
2 SUBGRADE PREPARATION – EARTHQUAKE DRAIN LAYOUT

36-S-01

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

NOTES:

1. EARTHQUAKE DRAINS SHALL BE AS SPECIFIED IN THE GEOTECHNICAL REPORT COMPLETED BY TERRACON, DATED FEBRUARY 06, 2015, PROJECT NO. EN145129.
2. EARTHQUAKE DRAINS SHALL BE PREFABRICATED POLYMER TUBES WRAPPED IN FILTER FABRIC, INSTALLED VERTICALLY IN THE GROUND. THEY SHALL BE 4"ø AND SHALL EXTEND TO A DEPTH OF 40 FEET BELOW EXISTING GRADE. THE EXACT DEPTH SHOULD BE DETERMINED BY THE CONTRACTOR, USING THE GEOTECHNICAL REPORT AND, CONSULTING WITH TERRACON, IF NEEDED.
3. INSTALLATION OF EARTHQUAKE DRAINS SHALL OCCUR AFTER ROUGH GRADING IS COMPLETED AND PRIOR TO FINE GRADING. CONTRACTOR IS FULLY RESPONSIBLE FOR INSTALLATION AND CONDITION OF EARTHQUAKE DRAINS THROUGHOUT CONSTRUCTION.
4. INSTALLATION AND DRAINAGE DETAILS SHALL BE PROVIDED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.


R/F OF EXTERIOR BASIN WALL. SEE 1/36-S-02
#4@12" O.C. AT ANGLED WALL FACE.
20
34
20
VERT R/F OF BAFFLE WALL. SEE 1/36-S-02
8"
HORIZ R/F OF BAFFLE WALL. SEE 1/36-S-02
BAFFLE WALL
1'-0"

3 REINFORCING DETAIL AT ANGLED CORNER

36-S-01

SCALE: 3/4" = 1'-0"

THOMAS & HUTTON ENGINEERING CO. No. C00285

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
WASTEWATER TREATMENT PLANT
CHLORINE CONTACT PLAN VIEW

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	JAH
DESIGNED:	JAH
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

36-S-01

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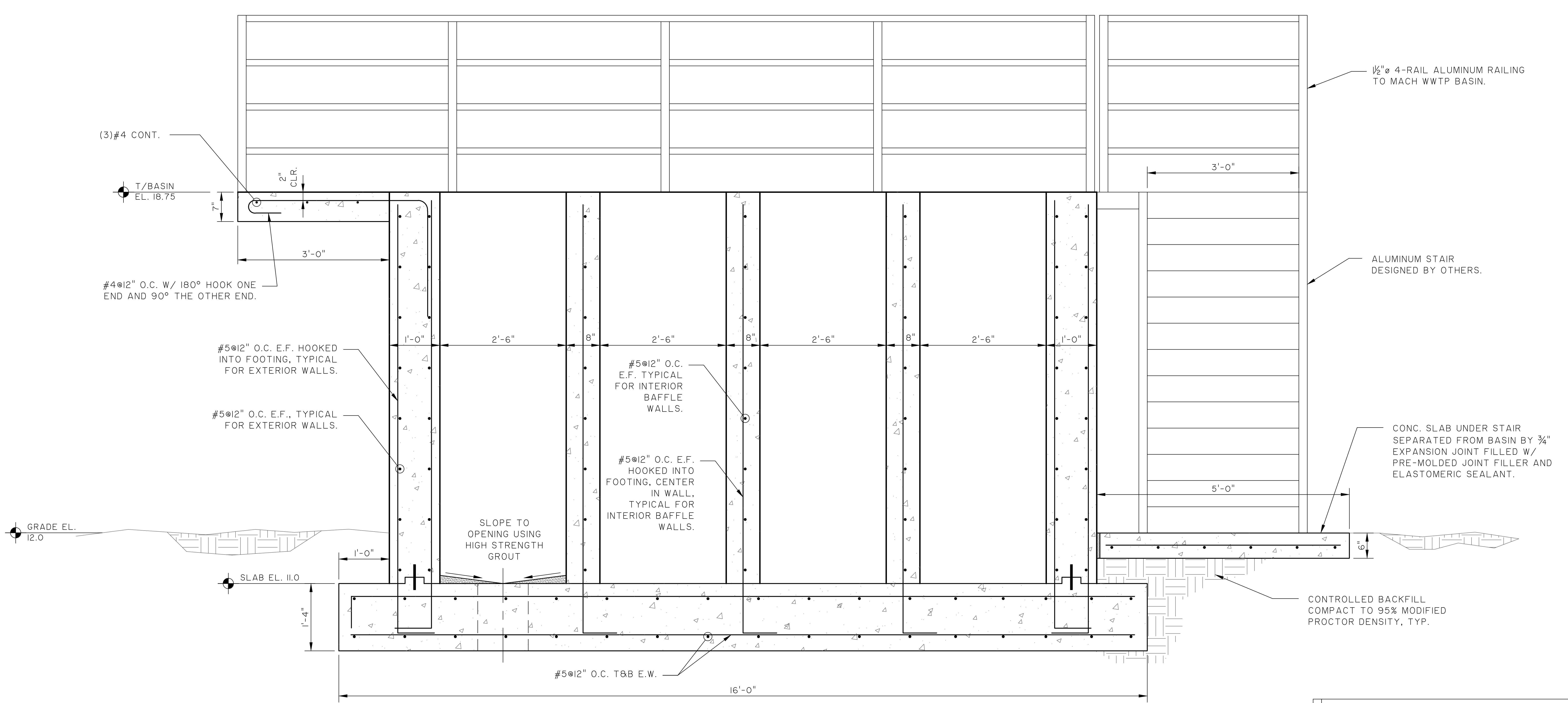
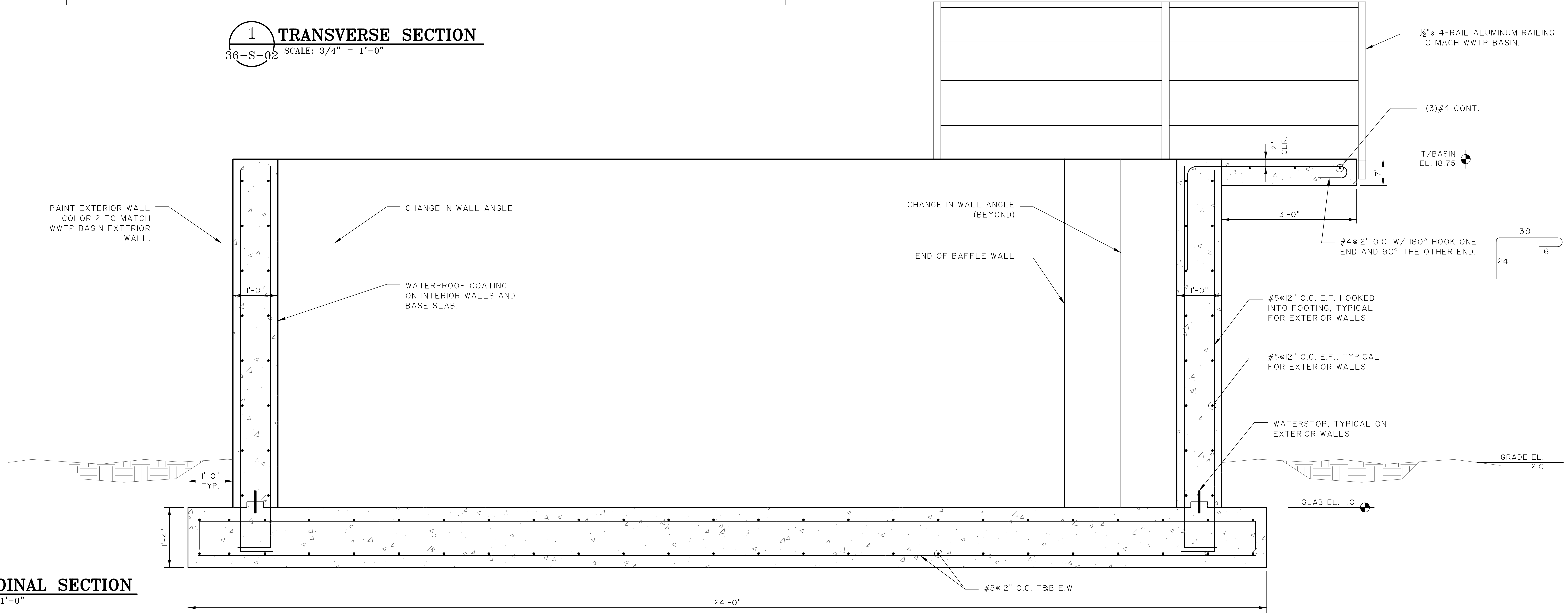
SHEET NOTES:

1. WATERSTOPS TO BE INSTALLED AT ALL CONSTRUCTION JOINTS IN THE BASIN WALLS AND BASE SLAB. WATERSTOPS SHALL BE GREENSTREAK PVC RIBBED FLAT, STYLE NO. 784 OR APPROVED EQUAL.
2. INTERIOR OF BASIN WALLS, SLABS AND PIPING SHALL BE COATED WITH RAVEN 405.
3. COORDINATE SIZE, LOCATION AND INSTALLATION OF PIPE OPENINGS W/ PROCESS PLANS AND WITH MANUFACTURERS.



(3)#4 CONT.
T/BASIN EL. 18.75
2" CLR.
7"
3'-0"
#4@12" O.C. W/ 180° HOOK ONE END AND 90° THE OTHER END.
#5@12" O.C. E.F. HOOKED INTO FOOTING, TYPICAL FOR EXTERIOR WALLS.
#5@12" O.C. E.F., TYPICAL FOR EXTERIOR WALLS.
1'-0"
2'-6"
8"
2'-6"
8"
2'-6"
8"
2'-6"
1'-0"
#5@12" O.C. E.F. TYPICAL FOR INTERIOR BAFFLE WALLS.
#5@12" O.C. E.F. HOOKED INTO FOOTING, CENTER IN WALL, TYPICAL FOR INTERIOR BAFFLE WALLS.
SLOPE TO OPENING USING HIGH STRENGTH GROUT
GRADE EL. 12.0
1'-0"
SLAB EL. 11.0
1'-4"
#5@12" O.C. T&B E.W.
16'-0"
1½"ø 4-RAIL ALUMINUM RAILING TO MACH WWTP BASIN.
3'-0"
ALUMINUM STAIR DESIGNED BY OTHERS.
CONC. SLAB UNDER STAIR SEPARATED FROM BASIN BY ¾" EXPANSION JOINT FILLED W/ PRE-MOLDED JOINT FILLER AND ELASTOMERIC SEALANT.
5'-0"
6"
CONTROLLED BACKFILL COMPACT TO 95% MODIFIED PROCTOR DENSITY, TYP.

① 36-S-02 **TRANSVERSE SECTION**
SCALE: 3/4" = 1'-0"



1½"ø 4-RAIL ALUMINUM RAILING TO MACH WWTP BASIN.
(3)#4 CONT.
2" CLR.
T/BASIN EL. 18.75
7"
3'-0"
#4@12" O.C. W/ 180° HOOK ONE END AND 90° THE OTHER END.
38
6
24
PAINT EXTERIOR WALL COLOR 2 TO MATCH WWTP BASIN EXTERIOR WALL.
CHANGE IN WALL ANGLE
WATERPROOF COATING ON INTERIOR WALLS AND BASE SLAB.
CHANGE IN WALL ANGLE (BEYOND)
END OF BAFFLE WALL
1'-0"
1'-0"
#5@12" O.C. E.F. HOOKED INTO FOOTING, TYPICAL FOR EXTERIOR WALLS.
#5@12" O.C. E.F., TYPICAL FOR EXTERIOR WALLS.
WATERSTOP, TYPICAL ON EXTERIOR WALLS
GRADE EL. 12.0
1'-0" TYP.
SLAB EL. 11.0
1'-4"
#5@12" O.C. T&B E.W.
24'-0"

② 36-S-02 **LONGITUDINAL SECTION**
SCALE: 3/4" = 1'-0"

THOMAS & HUTTON ENGINEERING CO. No. C00285

JENNIFER A. HAYES

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
682 Johnnie Dodds Boulevard Â Suite 100
Mt. Pleasant, SC 29464 Â 843.849.0200
www.thomasandhutton.com

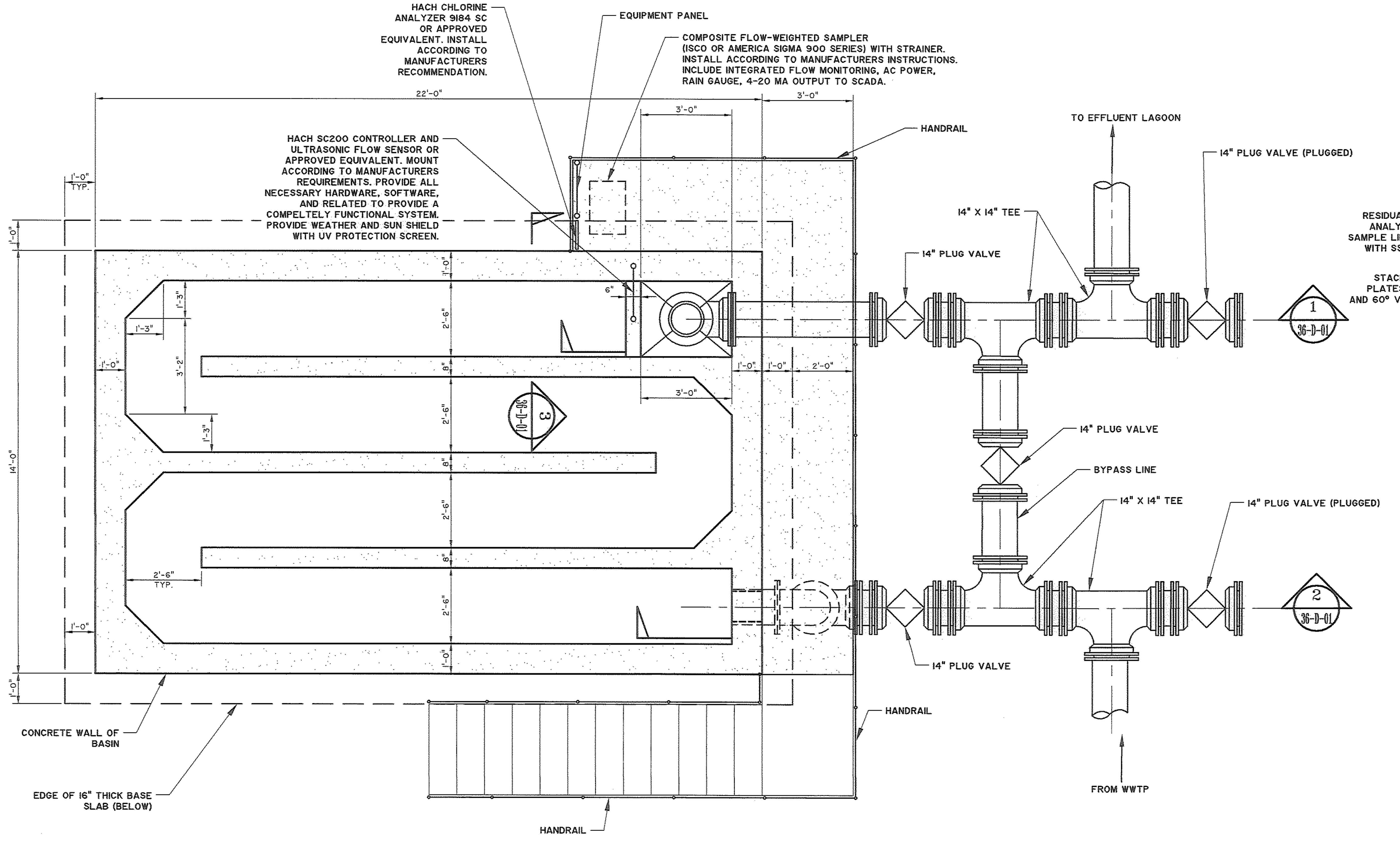
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

CAINHOY PLANTATION WATER & SEWER - PHASE I

CHLORINE CONTACT SECTIONS & DETAILS

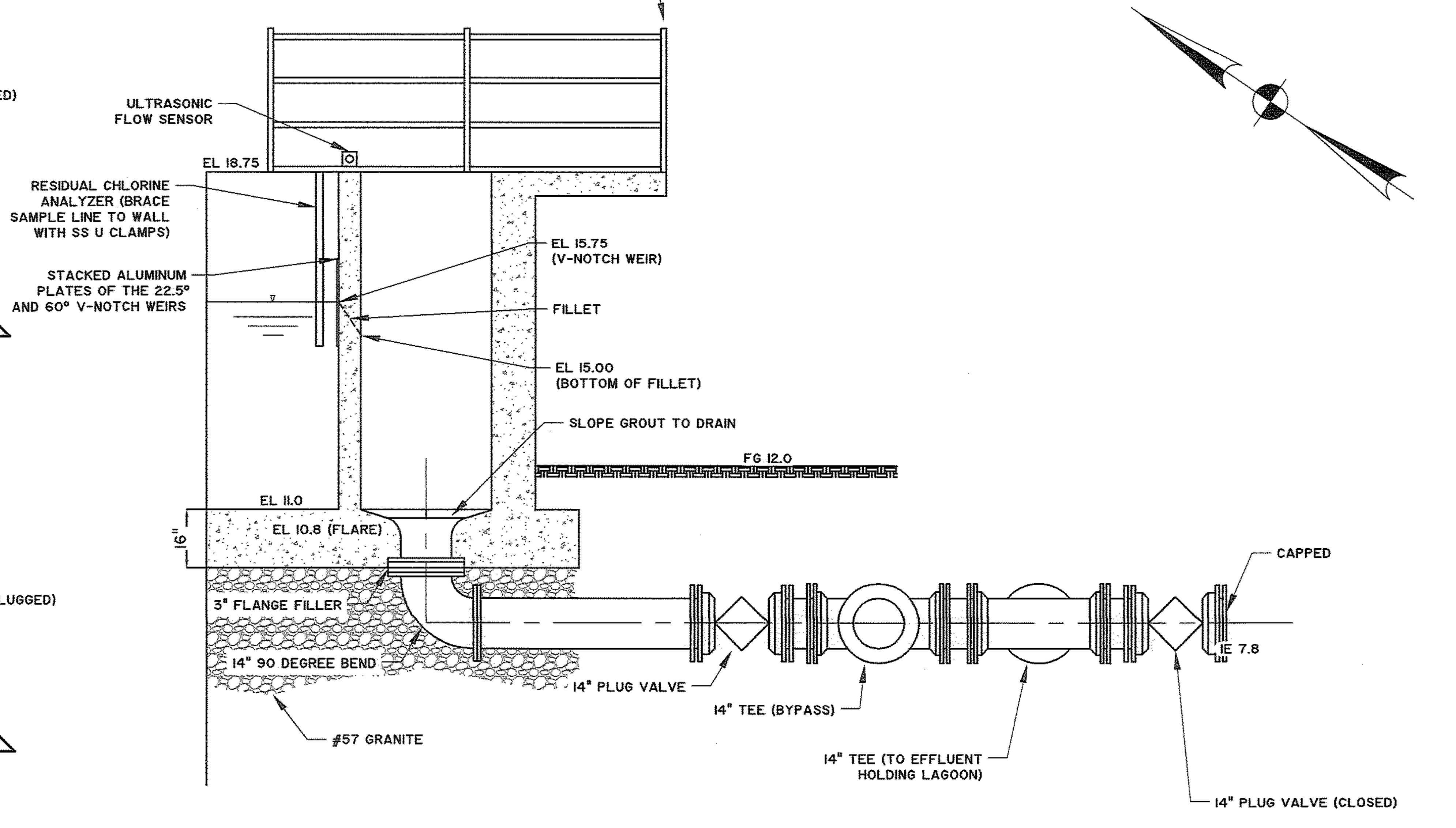
JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	JAH
DESIGNED:	JAH
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

36-S-02


HACH CHLORINE ANALYZER 9184 SC OR APPROVED EQUIVALENT. INSTALL ACCORDING TO MANUFACTURERS RECOMMENDATION.
EQUIPMENT PANEL
COMPOSITE FLOW-WEIGHTED SAMPLER (ISCO OR AMERICA SIGMA 900 SERIES) WITH STRAINER. INSTALL ACCORDING TO MANUFACTURERS INSTRUCTIONS. INCLUDE INTEGRATED FLOW MONITORING, AC POWER, RAIN GAUGE, 4-20 MA OUTPUT TO SCADA.
22'-0"
3'-0"
3'-0"
HANDRAIL
HACH SC200 CONTROLLER AND ULTRASONIC FLOW SENSOR OR APPROVED EQUIVALENT. MOUNT ACCORDING TO MANUFACTURERS REQUIREMENTS. PROVIDE ALL NECESSARY HARDWARE, SOFTWARE, AND RELATED TO PROVIDE A COMPELTELY FUNCTIONAL SYSTEM. PROVIDE WEATHER AND SUN SHIELD WITH UV PROTECTION SCREEN.
1'-0" TYP.
1'-0"
14'-0"
1'-0"
1'-3"
1'-3"
3'-2"
1'-3"
1'-0"
2'-6"
8"
2'-6"
8"
2'-6"
8"
2'-6"
1'-0"
6"
1'-0"
1'-0"
2'-0"
3'-0"
2'-6" TYP.
1'-0"
3
36-D-01
TO EFFLUENT LAGOON
14" PLUG VALVE (PLUGGED)
14" X 14" TEE
14" PLUG VALVE
1
36-D-01
14" PLUG VALVE
BYPASS LINE
14" X 14" TEE
14" PLUG VALVE (PLUGGED)
2
36-D-01
14" PLUG VALVE
HANDRAIL
FROM WWTP
CONCRETE WALL OF BASIN
EDGE OF 16" THICK BASE SLAB (BELOW)
HANDRAIL

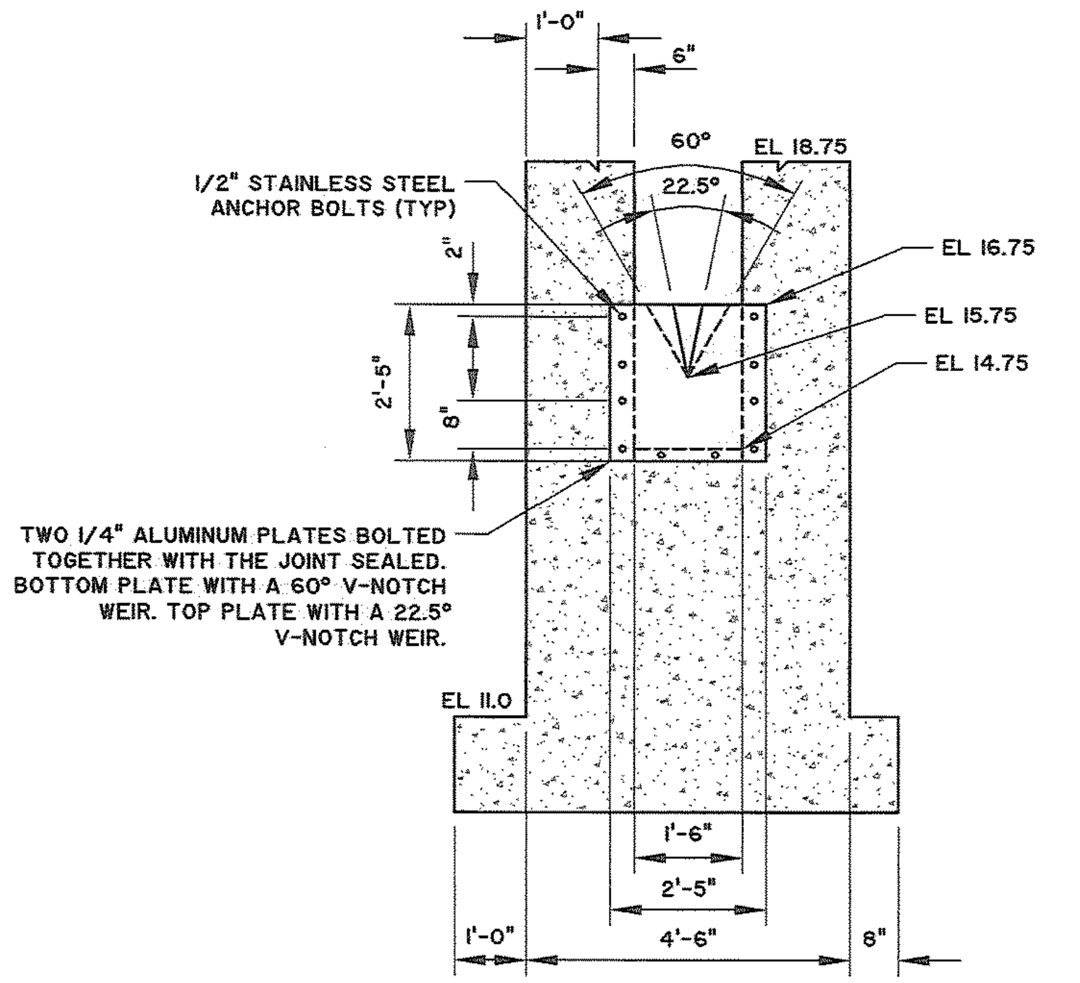
A
36-D-01

CHLORINE CONTACT CHAMBER - PLAN
3/8'=1'-0"



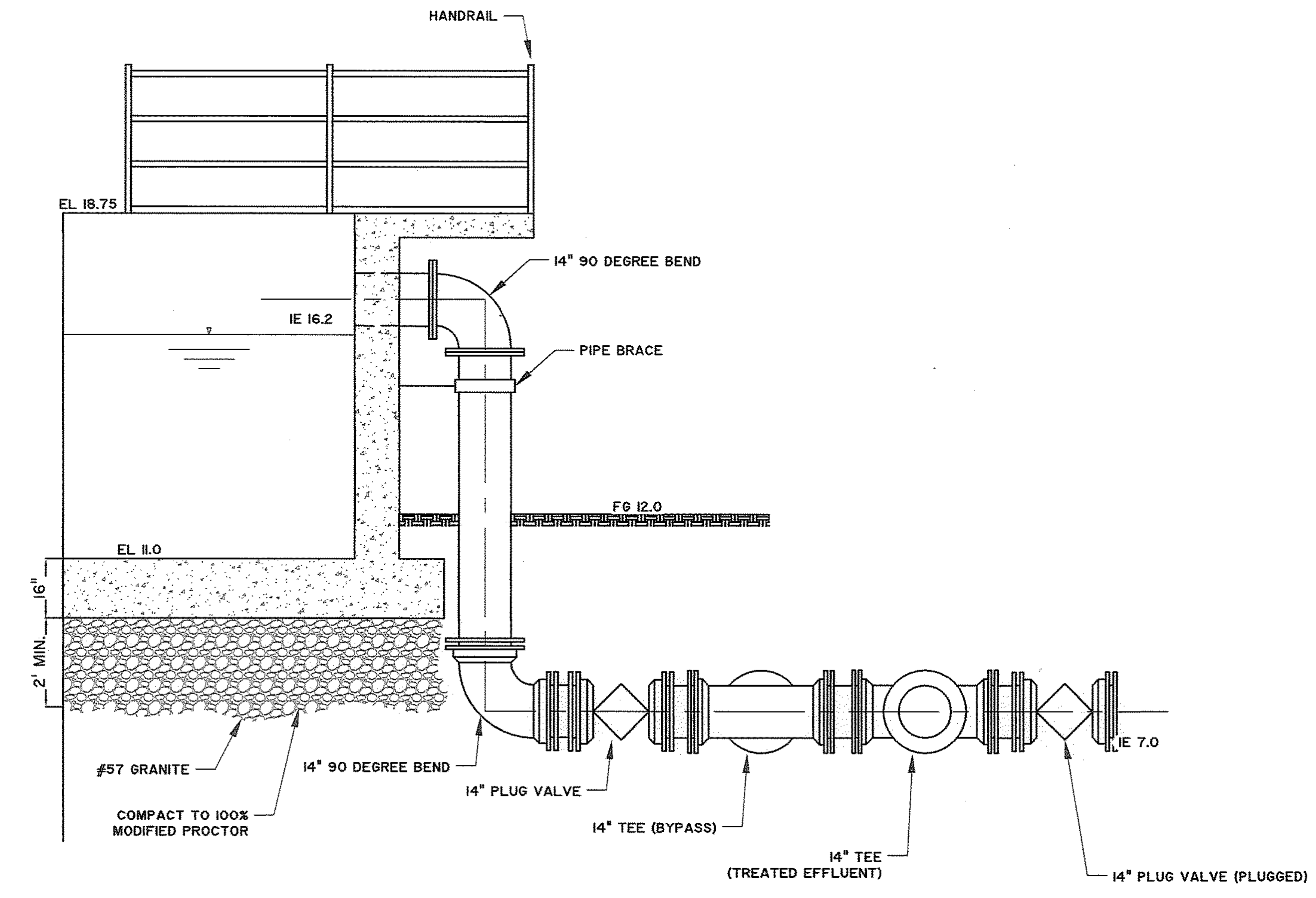
1
36-D-01

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


1'-0"
6"
60°
22.5°
EL 18.75
1/2" STAINLESS STEEL ANCHOR BOLTS (TYP)
EL 16.75
EL 15.75
EL 14.75
2"
2'-5"
8"
TWO 1/4" ALUMINUM PLATES BOLTED TOGETHER WITH THE JOINT SEALED. BOTTOM PLATE WITH A 60° V-NOTCH WEIR. TOP PLATE WITH A 22.5° V-NOTCH WEIR.
EL 11.0
1'-6"
2'-5"
1'-0"
4'-6"
8"

3
36-D-01

V-NOTCH WEIR SECTION
3/8"=1'-0"



2
36-D-01

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

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE No. 13293
12-2-2015

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
CHLORINE CONTACT CHAMBER - PLAN AND SECTIONS

JOB NO:	J-25328.0000
DATE:	7/31//15
DRAWN:	CDY
DESIGNED:	MFY
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	3/8"= 1'-0"

36-D-01

CENTRIFUGE BUILDING CODE REVIEW

OCCUPANCY GROUP F2
CONSTRUCTION TYPE IIB

BUILDING AREA: 1584 SQ FT

OCCUPANT LOAD FOR EXITING: 6
OCCUPANT LOAD FOR PLUMBING: 0

EXTERIOR: SPLIT FACE CMU
FOUNDATION CONT REINFORCED CONC
FLOOR: CONC SLAB
ROOF METAL ROOF ON ENGINEERED METAL TRUSS
CONST TYPE CMU BEARING WALL

JURISDICTION: CHARLESTON COUNTY
FLOOD ZONE AE13

THE CODE ANALYSIS IS CONDUCTED UNDER THE 2012 INTERNATIONAL BUILDING CODE (IBC). NOTE: THIS REVIEW IS INTENDED PRIMARILY TO DETERMINE THE ACTUAL DESIGN REQUIREMENTS FOR THIS PROJECT AND IS SUBJECT TO REVIEW BY THE LOCAL BUILDING/CODE OFFICIAL.

CODE SUMMARY FOR THE CENTRIFUGE BUILDING, CHARLESTON COUNTY, SOUTH CAROLINA

THE CODE ANALYSIS IS CONDUCTED UNDER THE 2012 INTERNATIONAL BUILDING CODE (IBC). NOTE: This analysis does not include a review of other applicable codes including the International Plumbing Code, International Mechanical Code, International Electrical Code and International Fire Code. Note: this review is intended primarily to determine the actual design requirements for this project and is subject to review by the Local Building/Code Official.

CONSTRUCTION :
The new & construction will be one story approximately 1584 sf. The building will be a Use Group F-2 (low hazard processing plant) of type IIB Construction with two rooms

The building is a one story, CMU block wall, engineered metal truss roof system, conc slab floor

CHAPTER 3
SECTION 306.3- The occupancy for this building is "Factory and Industrial" Group F-2 Low Hazard.

CHAPTER 4
NOT REQUIRED

CHAPTER 5
TABLE 503- ALLOWABLE HEIGHT & BUILDING AREA- The allowable height is 3 story and the allowable area is 23,000 sq.. ft. BUILDING IS COMPLIANT WITH AREA, HEIGHT, AND CONSTRUCTION.

SECTION 504 and 506- HEIGHT and AREA MODIFICATIONS- No modifications to height or area are necessary. BUILDING IS COMPLIANT.

CHAPTER 6
TABLE 601- FIRE RESISTIVE RATING REQUIREMENTS- Type VB
Table 601 - Fire Resistance rating requirements for building elements (hours). BUILDING IS COMPLIANT.

Structural Frame	0 hours
Bearing walls Exterior	0 hours
Bearing walls Interior	0 hours
Non Bearing Interior Walls	0 hours
Floor construction	0 hours
Roof construction	0 hours

TABLE 602- EXTERIOR WALL RATING REQUIREMENTS BASED ON FIRE SEPARATION DISTANCE- Fire separation distance between x>30' Type IIB construction, Occupancy Group F2- EXTERIOR WALLS ARE REQUIRED TO HAVE A RATING OF 0. BUILDING IS COMPLIANT.

SECTION 602.5- CONSTRUCTION TYPE-. Type IIB construction are those types of construction in which the building elements listed in table 601 are of non combustible material except as permitted in Section 603 and elsewhere in the Code. BUILDING IS COMPLIANT.

CHAPTER 7
SECTION 705 EXTERIOR WALLS. With a fire separation distance of greater than 5', projections of up to 40" is permitted. BUILDING COMPLIANT FOR ROOF OVERHANGS.

SECTION 705.3 BUILDINGS ON THE SAME LOT. Buildings on the same lot shall be assumed to have an imaginary line between them. BUILDING COMPLIANT FOR OPENING PROTECTION AND ROOF OVERHANGS.

SECTION 705.8 Addition: The maximum area of openings in the new exterior walls with fire separation distave greater than 25' and less then 30' are required to limit the area of openings to 70%. Openings are less than 70%. BUILDING IS COMPLIANT.

CHAPTER 8
SECTION 803.1 WALL AND CEILING FINISHES
CLASS A: FLAME SPREAD 0-25; SMOKE-DEVELOPED 0-450 MIN.
CLASS B: FLAME-SPREAD 26-75; SMOKE-DEVELOPED 0-450 MIN.
CLASS C: FLAME-SPREAD 76-200; SMOKE-DEVELOPED 0-450 MIN.

TABLE 803.5- INTERIOR WALL & CEILING FINISH REQUIREMENTS
BASED ON F-2 LOW HAZARD, UNSPRINKLERED:
Exit Corridors & other Exitways not to exceed: Class B
Corridors: Class C
Rooms & Enclosed Spaces not to exceed: Class C

BUILDING IS COMPLIANT.

CHAPTER 9
SECTION 903.- AUTOMATIC SPRINKLER SYSTEMS is not required for F-2 Occupancy. BUILDING IS COMPLIANT

SECTION 906 PORTABLE FIRE EXTINGUISHERS. Portable fire extinguishers shall be provided and selected and installed as per NFPA 10 and NFPA 820.

SECTION 907 FIRE ALARM AND DETECTION SYSTEMS. An approved fire alarm system does not need to be installed in accordance with provisions of IBC 2012 and NFPA 72, but does need to be provided by NFPA 820

SECTION 907.2.4 GROUP F2. A manual fire alarm system that activates the occupant notification system is not required as Building meets exceptions for height and occupant load, but does need to be provided by NFPA 820. BUILDING IS COMPLIANT

CHAPTER 10
SECTION 1004- DESIGN OCCUPANT LOAD- Per table 1004.1.1 occupant load is calculated as follows:
NEW BUILDING = 1584 sq. ft,
Occupant load for accessory storage areas & mechanical equipment room 300 gross
TOTAL 6 OCCUPANTS

SECTION 1005.3.2- EGRESS WIDTH REQ.- 1.2" of egress width is required for other components in the building. New building will provide 1 36" door 34" of egress width . BUILDING IS IN COMPLIANCE.

SECTION 1006- EGRESS ILLUMINATION- Section requires means of egress, including the exit discharge shall be illuminated at all times when building is occupied. EMERGENCY LIGHTING UNITS SHALL BE PROVIDED, SEE LIFE SAFETY PLAN AND ELECTRICAL DESIGN. BUILDING WILL BE IN COMPLIANCE WITH REQUIREMENTS OF THIS SECTION.

SECTION1007.1- ACCESSIBLE MEANS OF EGRES.Accessible means of egress shall be provided with not less than one accessible means of egress. BUILDING IS IN COMPLIANCE WITH REQUIREMENTS OF THIS SECTION.

SECTION 1008.1.1- SIZE OF DOORS- Section requires minimum width of each door opening to provide clear width of 32". ALL DOOR ARE 36" WIDE. BUILDING IS IN COMPLIANCE.

SECTION 1008.1.6 Section requires thresholds shall not exceed .5", and shall be beveled if over 1/4". BUILDING IN COMPLIANCE

SECTION 1008.1.8.1- HARDWARE. Door handles, pulls and latches, locks and other operating devices on doors required to be accessible shall not requires tight grasping, tight pinching or twisting to operate. ALL DOORS MEET ACCESSIBILITY REQUIREMENT.

SECTION 1011.1- EXIT SIGNS- Section requires illuminated exit signs marking exits and exit paths. BUILDING SHALL BE IN COMPLIANCE WITH REQUIREMENTS OF THIS SECTION, SEE LIFE SAFETY PLAN AND ELECTRICAL DRAWINGS.

SECTION 1014.2(2)- EGRESS THROUGH INTERVENING SPACES- Egress shall not pass through kitchens, storage rooms, closets or spaces used for similar purposes. Exception allows means of egress through adjoining rooms in 'F' occupancy where rooms are of same or lesser hazard occupancy. BUILDING IS COMPLIANT.

SECTION 1014.3- COMMON PATH OF EGRESS TRAVEL- The common path of egress travel shall not exceed 75 feet. BUILDING IS COMPLIANT.

SECTION 1015.1- NUMBER OF EXITS REQUIRED- Building meets criteria for 1 exit or exit access doorways. Building has exit travel distance of less than 75 feet, and has less than 49 occupants allowed for F occupancy . BUILDING IS COMPLIANT.

SECTION 1024.1 EXIT DISCHARGE. Exits shall discharge directly to the exterior of the building. The exit discharge shall be at grade. BUILDING IS COMPLIANT.

CHAPTER 12
SECTION 1203- VENTILATION. Ventilation meeting the requirements of this section shall be provided

SECTION 1204- TEMPERATURE CONTROL. Temperature control meeting the requirements of this section shall be provided

SECTION 1205- LIGHTING- Artificial lighting meeting the requirements of this section shall be provided

SECTION 1208.2- MINIMUM CEILING HEIGHT- Spaces shall have a ceiling height of not less than 7'-6". BUILDING IS COMPLIANT.

NFPA 820 REVIEW

NFPA 820 SUMMARY FOR THE CENTRIFUGE BUILDING, CHARLESTON COUNTY, SOUTH CAROLINA

THE ANALYSIS IS CONDUCTED UNDER THE NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities -

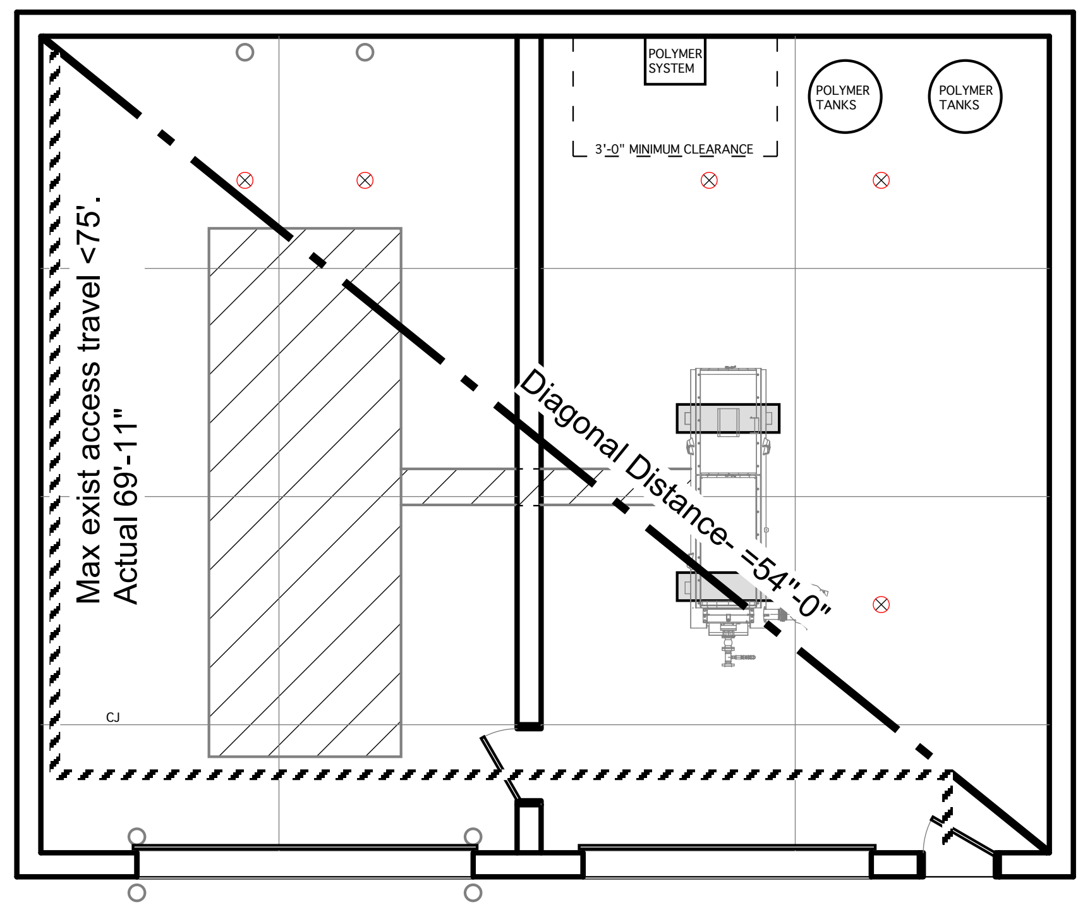
Nothing from Table 5.2 is included included in this project:

From Table 6.2a the following are included in this project:

- Row 12 (in centrifuge building), FE, H & FAS required
- Row 13, line a (in centrifuge building), FE, H & FAS required

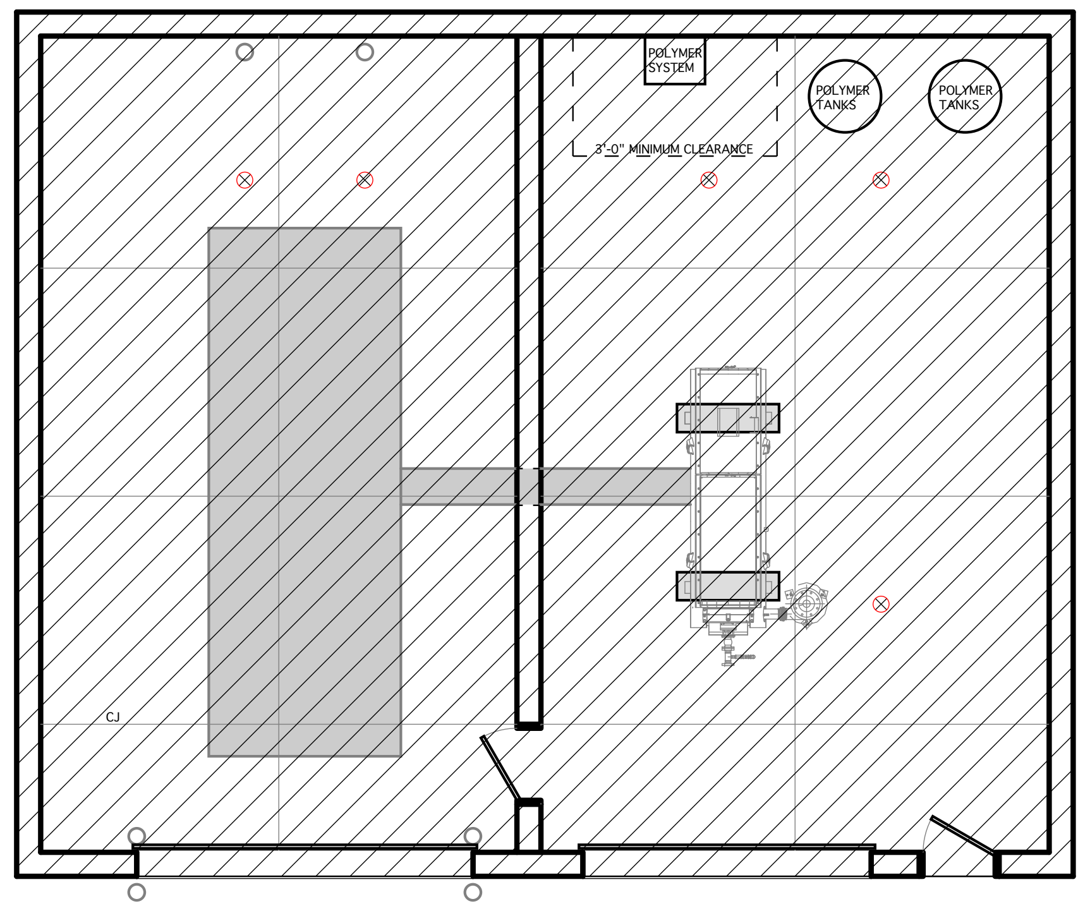
Nothing from Table 6.2b is included in this project.

H = hydrant
FE = fire extinguisher
CGD = combustible gas detection system
FAS = fire alarm system



EGRESS

SCALE: NTS

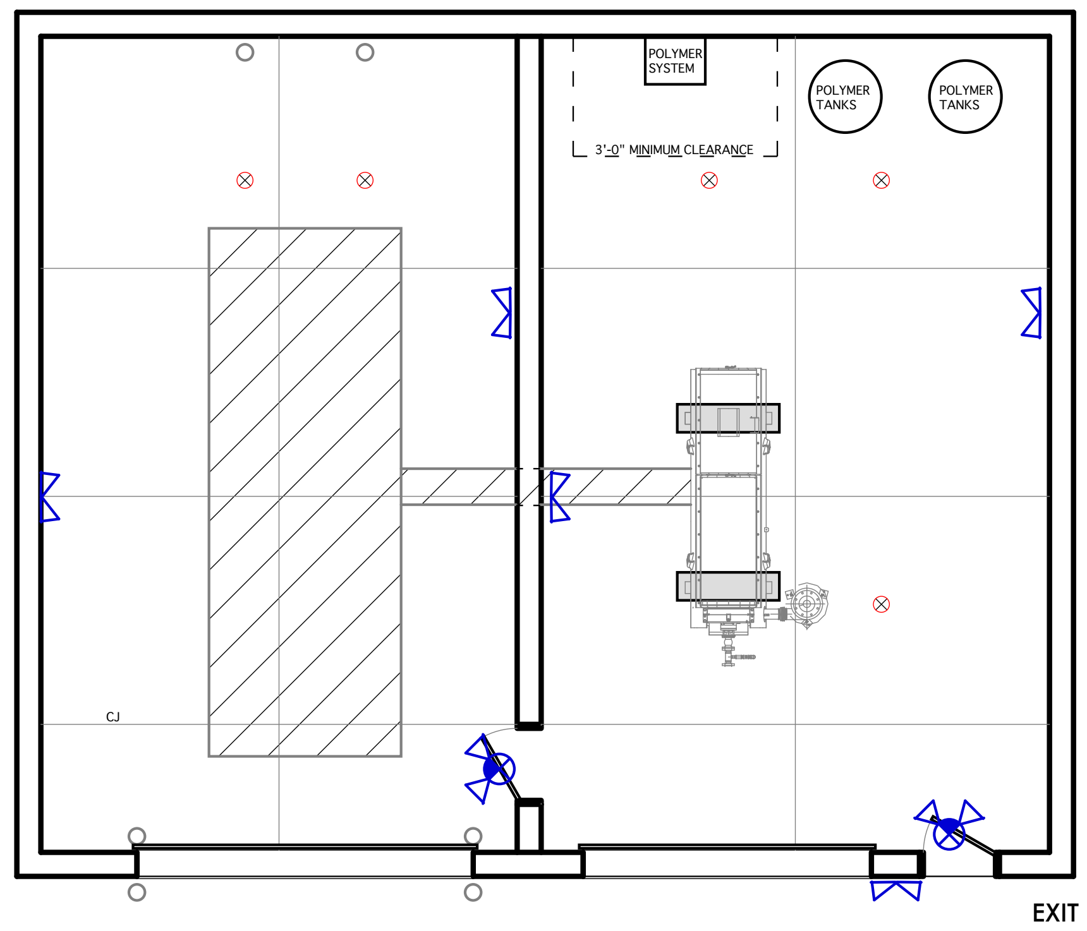


▨ ACCESSORY STORAGE , MECHANICAL EQUIPMENT AREA @1300 SF GROSS PER OCCUPANT
1584 SF GROSS = 6 OCCUPANTS

TOTAL = 6 OCCUPANTS

OCCUPANCY CALCULATIONS

SCALE: NTS



EXIT SIGN W/ INTEGRATED EMERGENCY LIGHTING. TYP
MAX DOOR EGRESS
CAPACITY = 1x 32"/.2"PER OCCUPANT
TOTAL CAPACITY = 160

WALL TYPES & EMERGENCY LIGHTING

SCALE: NTS

No.	Issued For	Date
1	Issued For Bid	Jan. 29, 2016
2		
3		

Stamps

SWALLOWTAIL ARCHITECTURE LLC
Summerville, SC
No. 100760

RACHEL BEVERLEY BURTON
Summerville, SC
No. 8440

January 29 2016

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

CETRIFUGE BUILDING PLAN, LIFE SAFETY

Plot Date
1/29/16

Checked
RB

Drawn
RB

Drawing Title
Centrifuge Building Life Safety Analysis

Drawing No.
40-A-01

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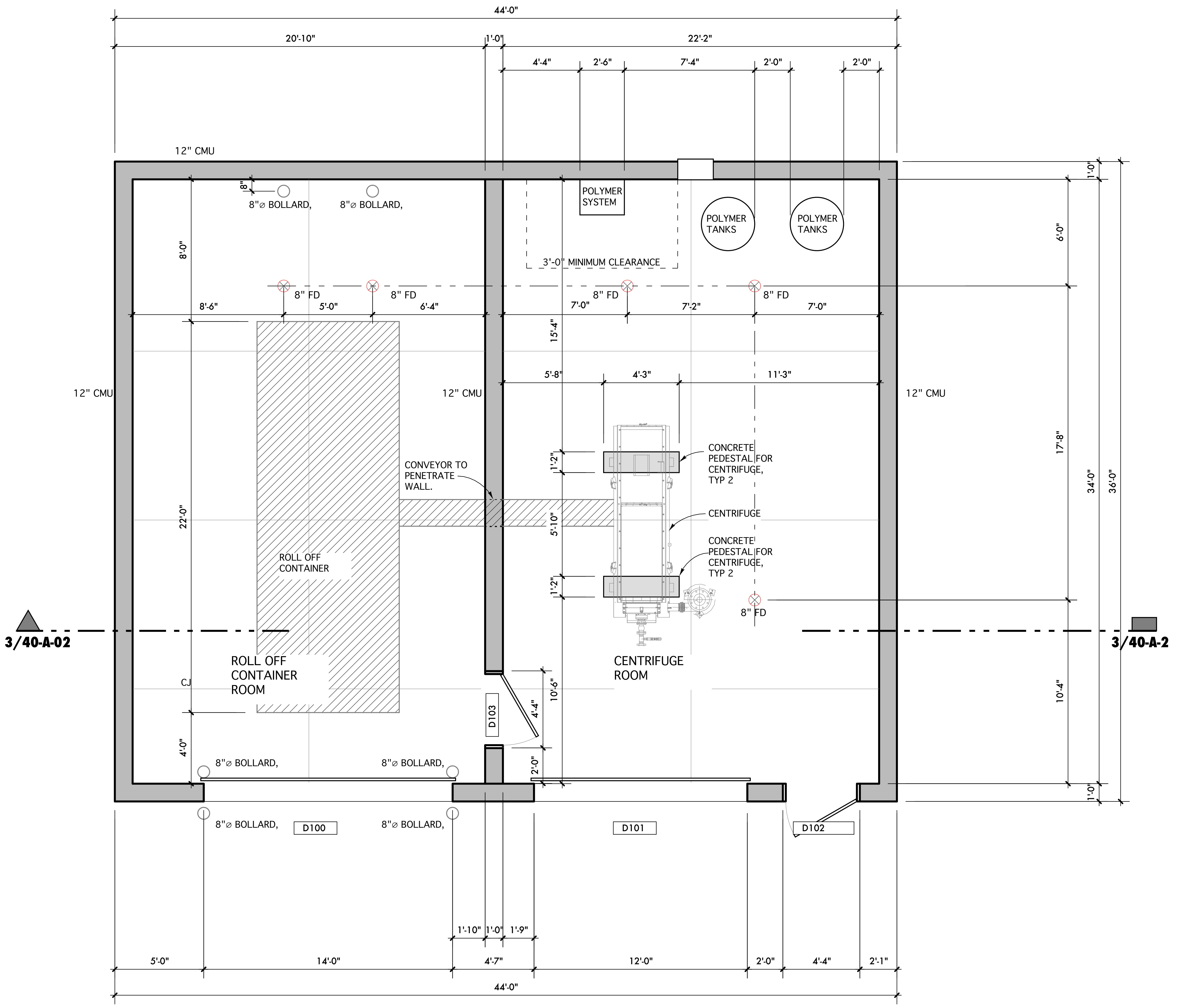
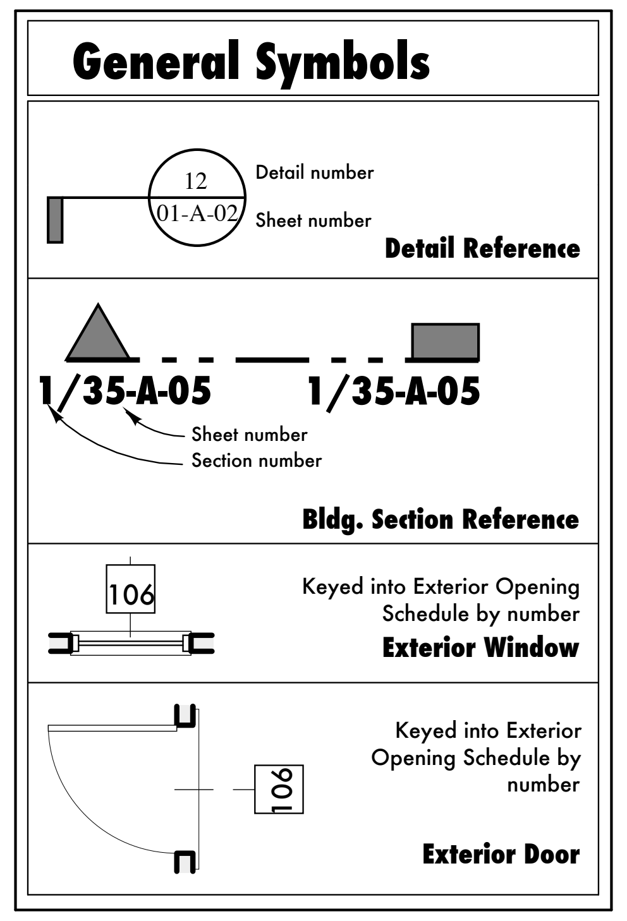
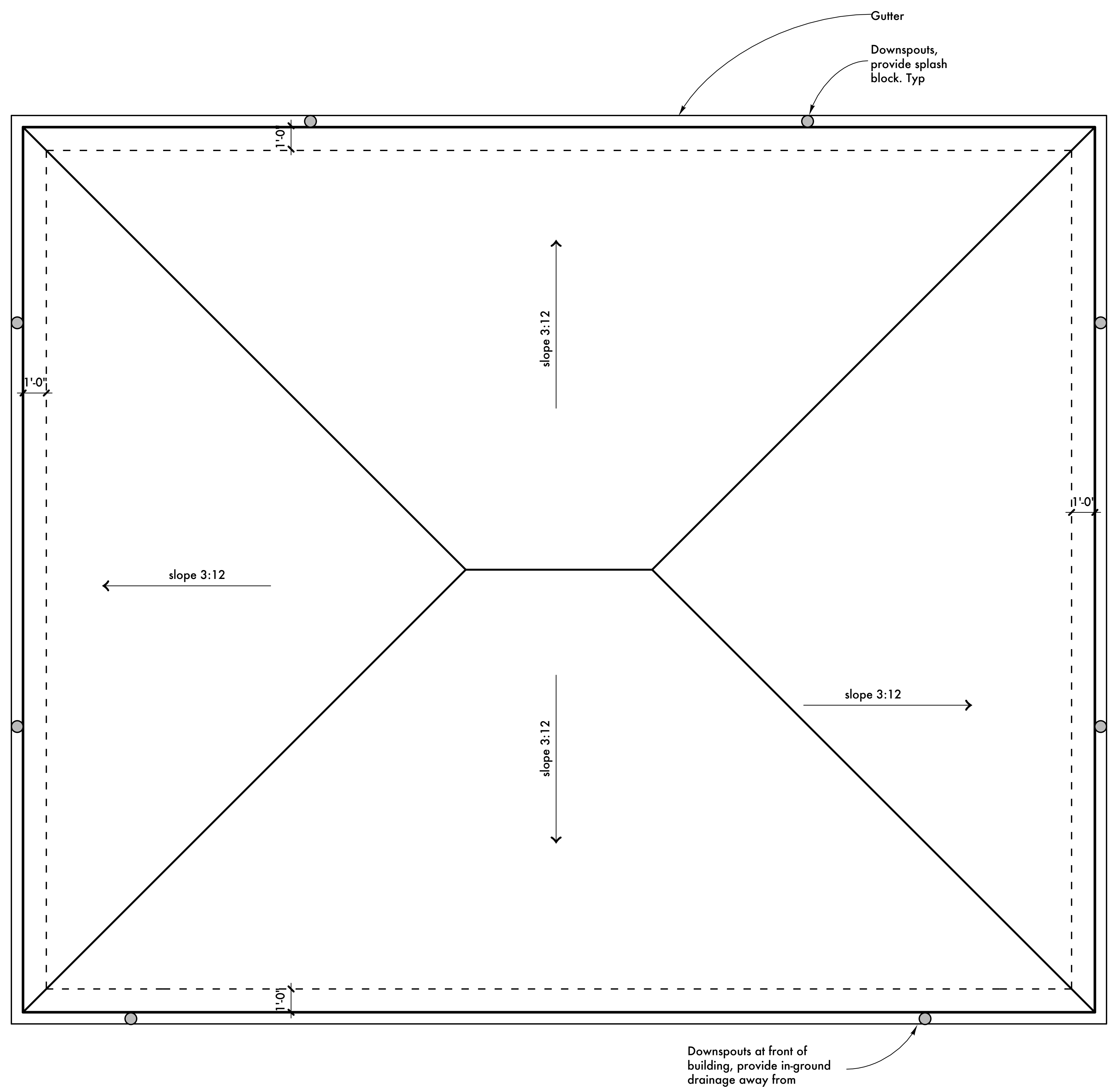


1 Plan- Centrifuge Building

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

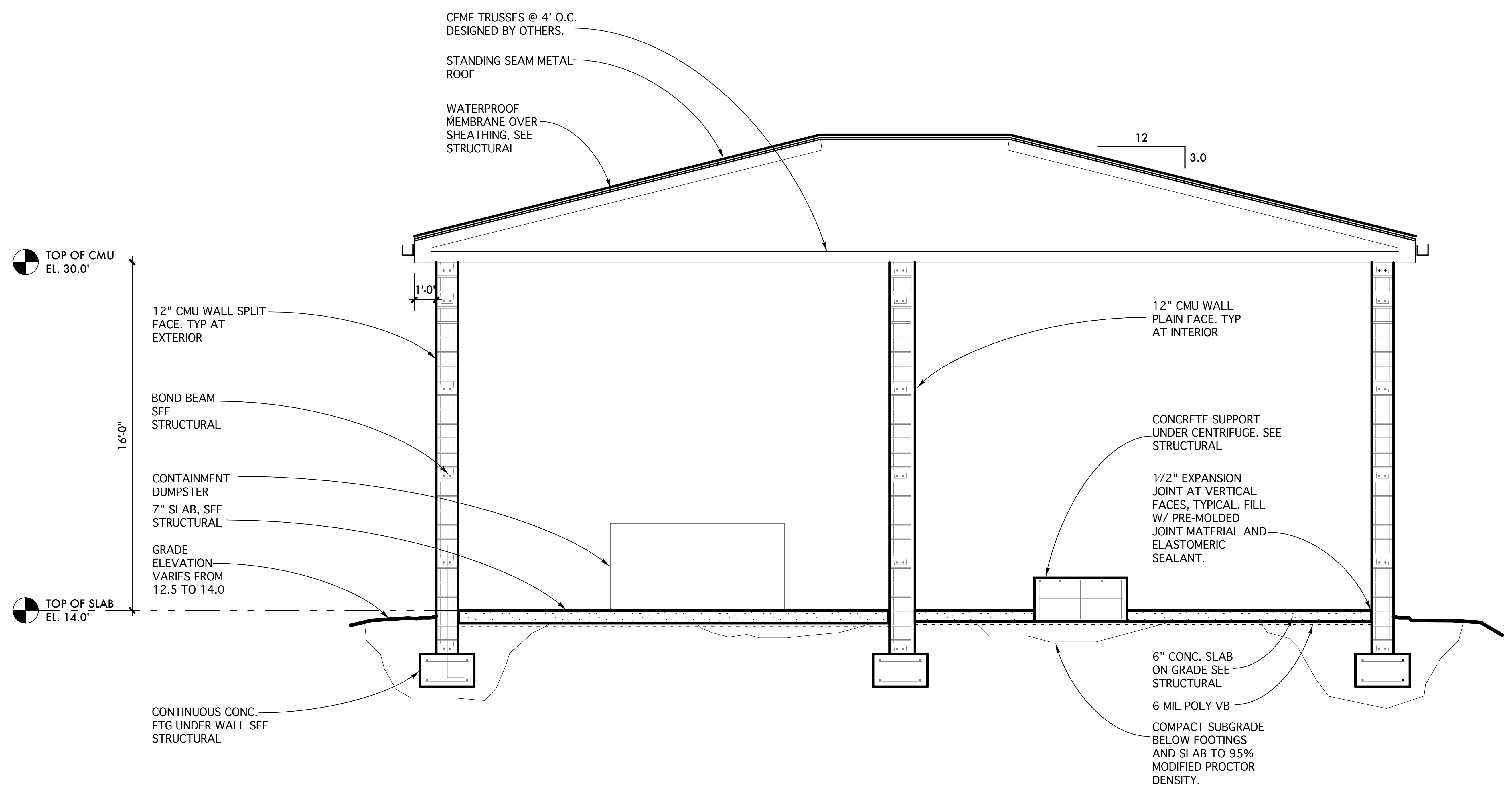




Gutter
Downspouts, provide splash block. Typ
1'-0"
1'-0"
1'-0"
1'-0"
slope 3:12
slope 3:12
slope 3:12
slope 3:12
Downspouts at front of building, provide in-ground drainage away from building Typ.

2 Roof Plan- Centrifuge Building

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



CFMF TRUSSES @ 4' O.C. DESIGNED BY OTHERS.
STANDING SEAM METAL ROOF
WATERPROOF MEMBRANE OVER SHEATHING, SEE STRUCTURAL
12
3.0
TOP OF CMU EL. 30.0'
1'-0"
12" CMU WALL SPLIT FACE. TYP AT EXTERIOR
12" CMU WALL PLAIN FACE, TYP AT INTERIOR
16'-0"
BOND BEAM SEE STRUCTURAL
CONTAINMENT DUMPSTER
7" SLAB, SEE STRUCTURAL
GRADE ELEVATION VARIES FROM 12.5 TO 14.0
TOP OF SLAB EL. 14.0'
CONCRETE SUPPORT UNDER CENTRIFUGE. SEE STRUCTURAL
1/2" EXPANSION JOINT AT VERTICAL FACES, TYPICAL. FILL W/ PRE-MOLDED JOINT MATERIAL AND ELASTOMERIC SEALANT.
6" CONC. SLAB ON GRADE SEE STRUCTURAL
6 MIL POLY VB
COMPACT SUBGRADE BELOW FOOTINGS AND SLAB TO 95% MODIFIED PROCTOR DENSITY.
CONTINUOUS CONC. FTG UNDER WALL SEE STRUCTURAL

3 Building Section- Centrifuge Building

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

No.	Issued For	Date
1	Issued For Bid	Jan. 29, 2016
2		
3		

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Summerville, SC
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RACHEL BEVERLEY BURTON
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No. 8440

January 29 2016

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CHARLESTON COUNTY, SOUTH CAROLINA

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CETRIFUGE BUILDING PLAN, ROOF PLAN AND SECTION

Plot Date 1/29/16
Checked RB
Drawn RB
Drawing Title
Centrifuge Building Plan + Roof Plan

Drawing No.
40-A-02

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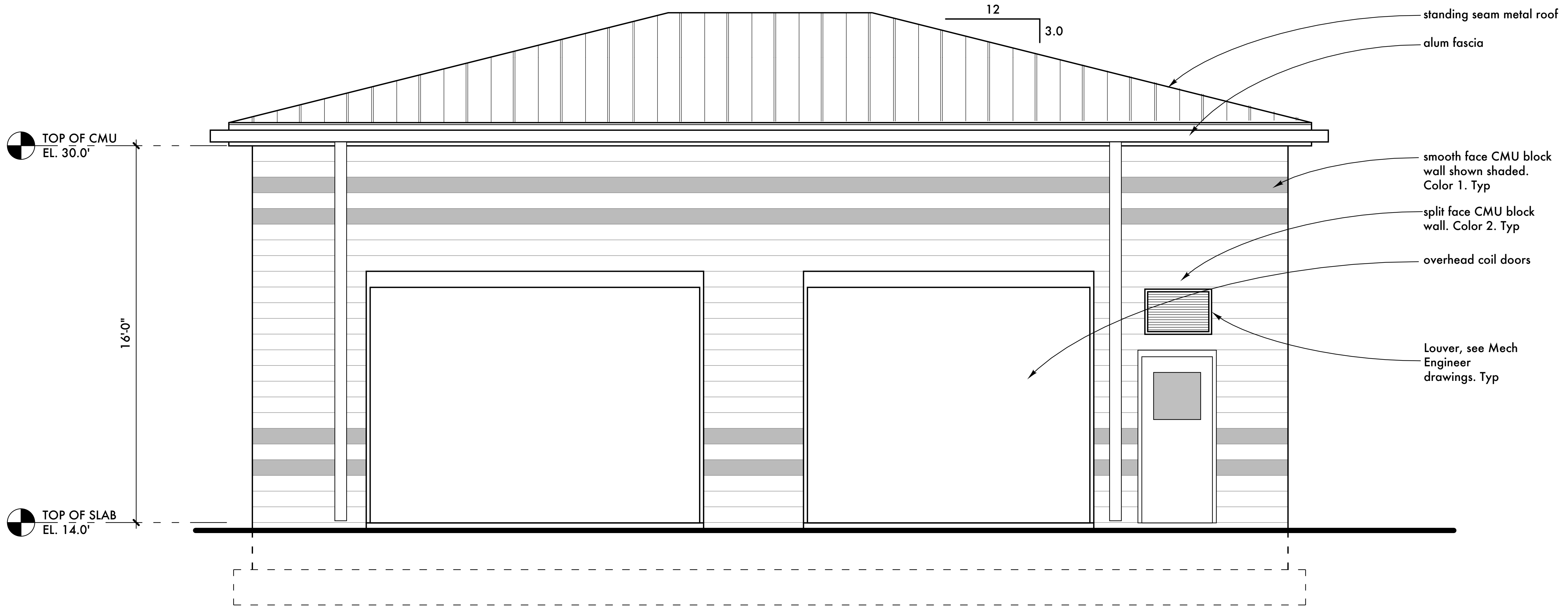
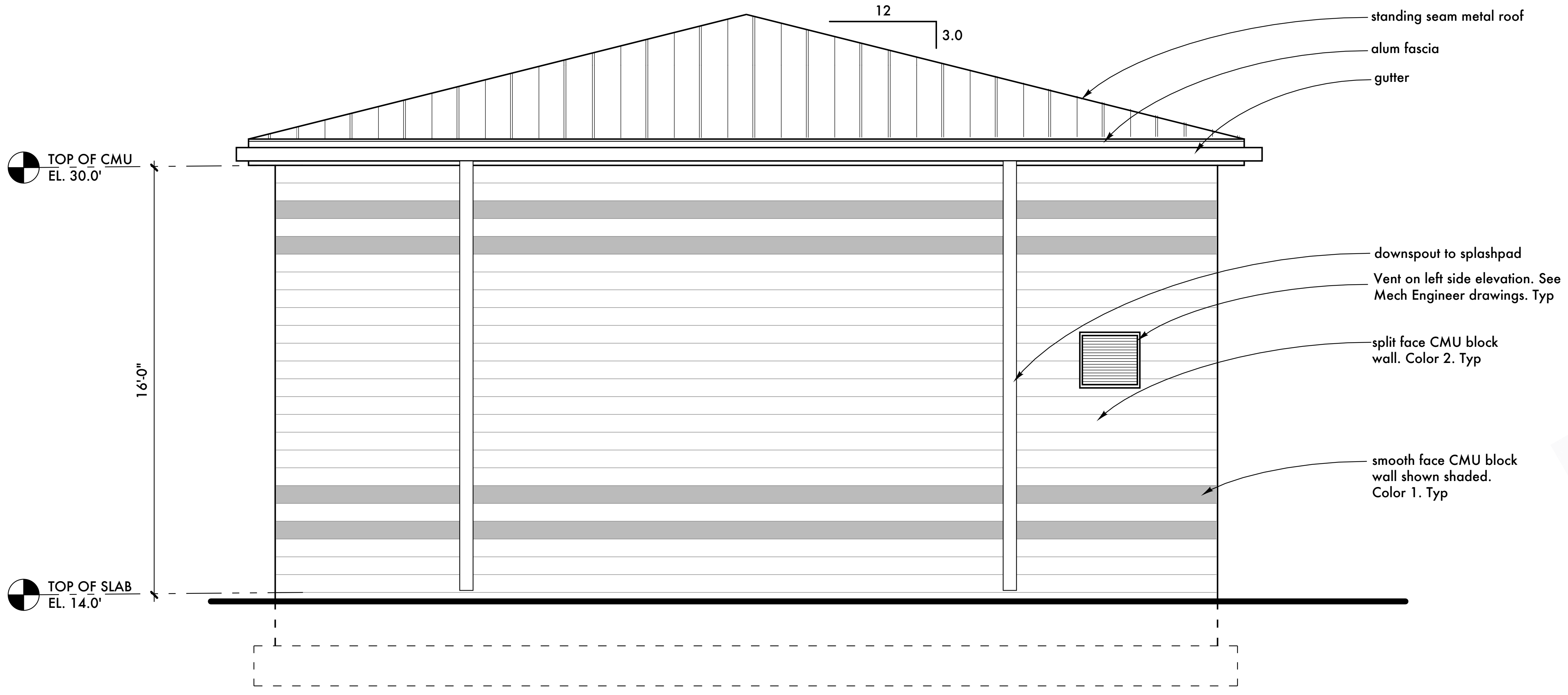

12
3.0
TOP OF CMU
EL. 30.0'
16'-0"
TOP OF SLAB
EL. 14.0'
standing seam metal roof
alum fascia
smooth face CMU block wall shown shaded. Color 1. Typ
split face CMU block wall. Color 2. Typ
overhead coil doors
Louver, see Mech Engineer drawings. Typ

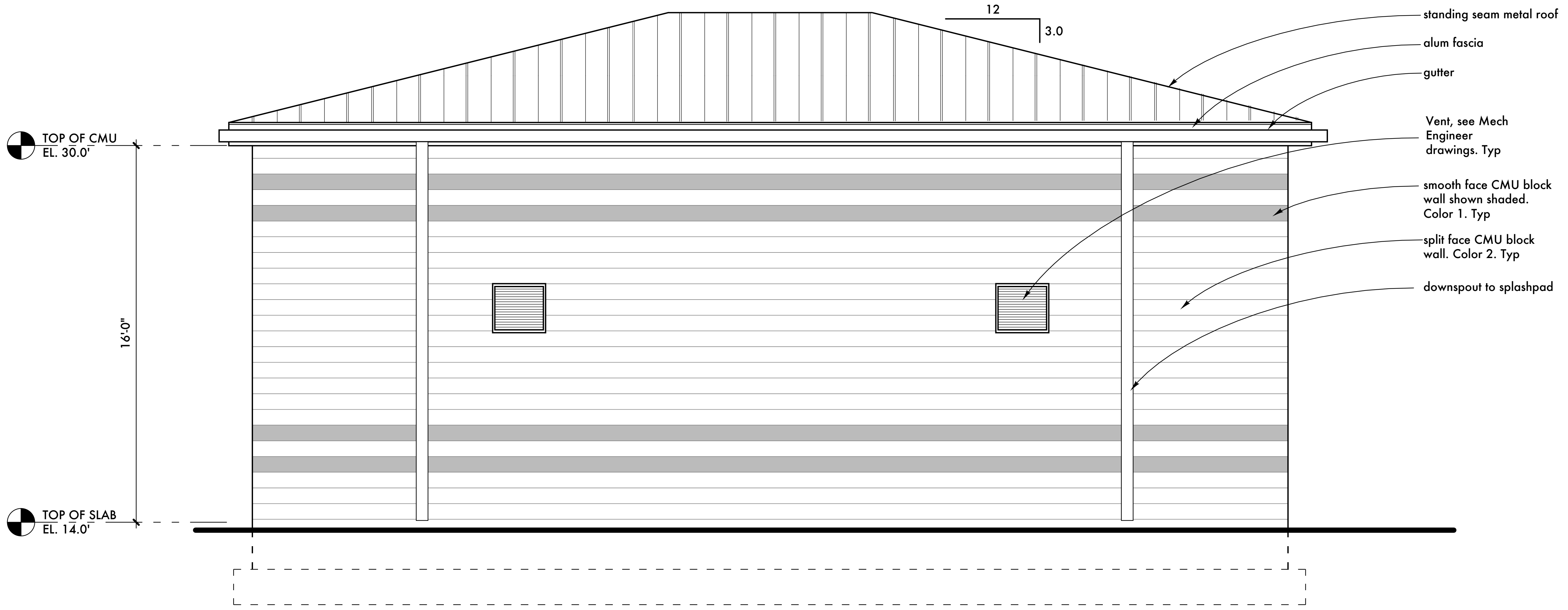
1 **Front Elevation**

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


12
3.0
TOP OF CMU
EL. 30.0'
16'-0"
TOP OF SLAB
EL. 14.0'
standing seam metal roof
alum fascia
gutter
downspout to splashpad
Vent on left side elevation. See Mech Engineer drawings. Typ
split face CMU block wall. Color 2. Typ
smooth face CMU block wall shown shaded. Color 1. Typ

2 **Left and Right Side Elevation**

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


12
3.0
TOP OF CMU
EL. 30.0'
16'-0"
TOP OF SLAB
EL. 14.0'
standing seam metal roof
alum fascia
gutter
Vent, see Mech Engineer drawings. Typ
smooth face CMU block wall shown shaded. Color 1. Typ
split face CMU block wall. Color 2. Typ
downspout to splashpad

3 **Rear Elevation**

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

No.	Issued For	Date
1	Issued For Bid	Jan. 29, 2016
2		
3		

Stamps

SWALLOWTAIL ARCHITECTURE LLC
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No. 100760

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January 29 2016

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CETRIFUGE BUILDING ELEVATIONS

Plot Date
1/29/16

Checked
RB

Drawn
RB

Drawing Title
Centrifuge Building Elevations

Drawing No.
40-A-03

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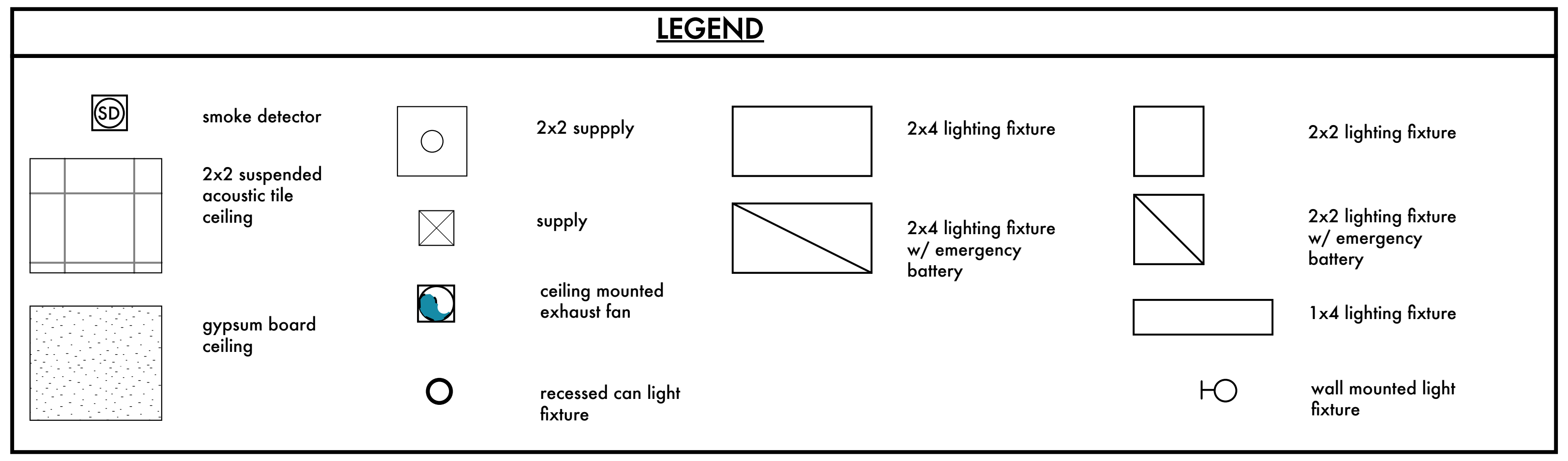
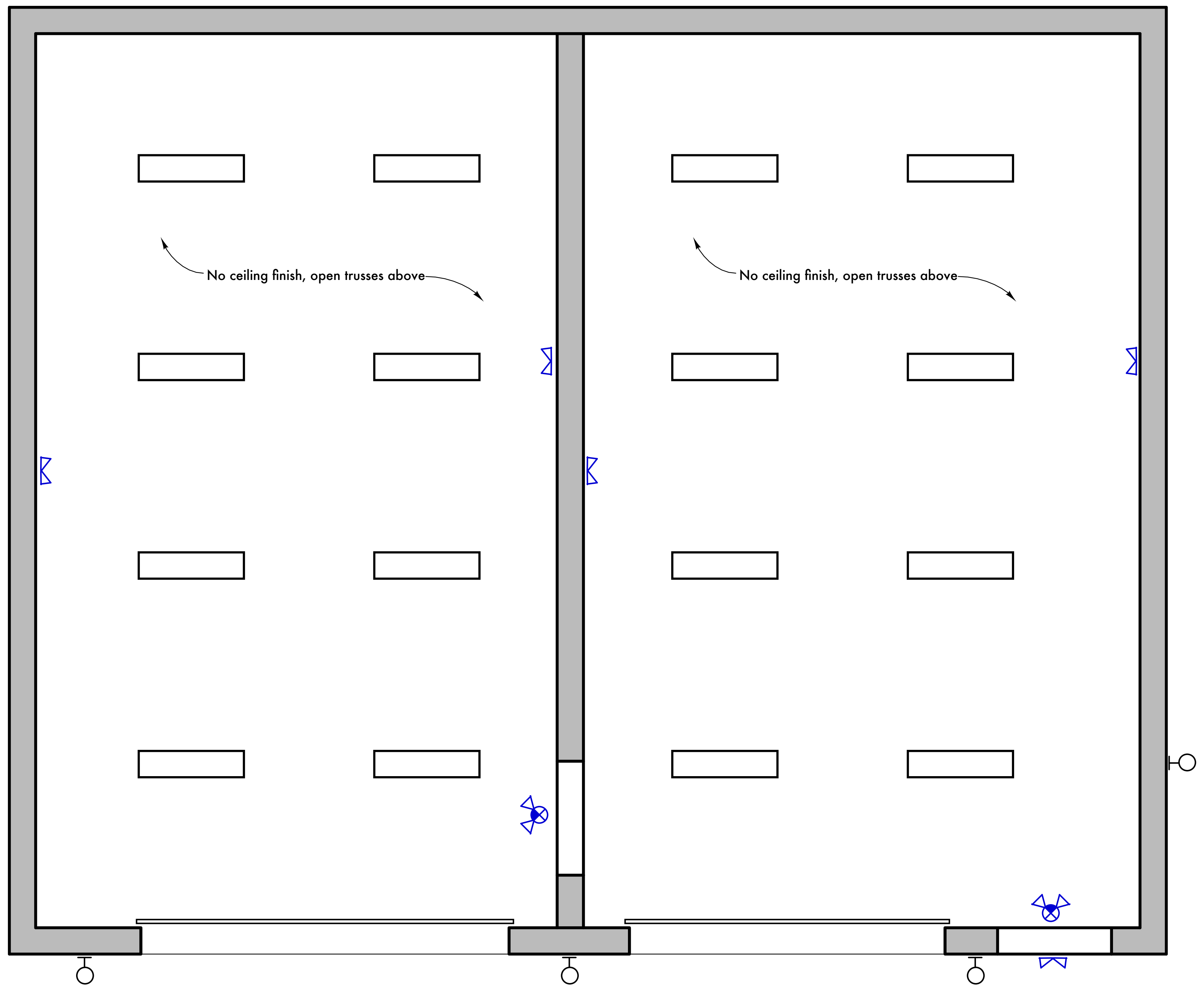

LEGEND
SD
smoke detector
2x2 suspended acoustic tile ceiling
gypsum board ceiling
2x2 suppply
supply
ceiling mounted exhaust fan
recessed can light fixture
2x4 lighting fixture
2x4 lighting fixture w/ emergency battery
2x2 lighting fixture
2x2 lighting fixture w/ emergency battery
1x4 lighting fixture
wall mounted light fixture

GENERAL NOTES

1. VERIFY ELECTRICAL FIXTURE COUNT AND LOCATION WITH ELECTRICAL PLANS.

2. VERIFY MECHANICAL FIXTURE LOCATIONS WITH MECHANICAL PLANS.


No ceiling finish, open trusses above
No ceiling finish, open trusses above

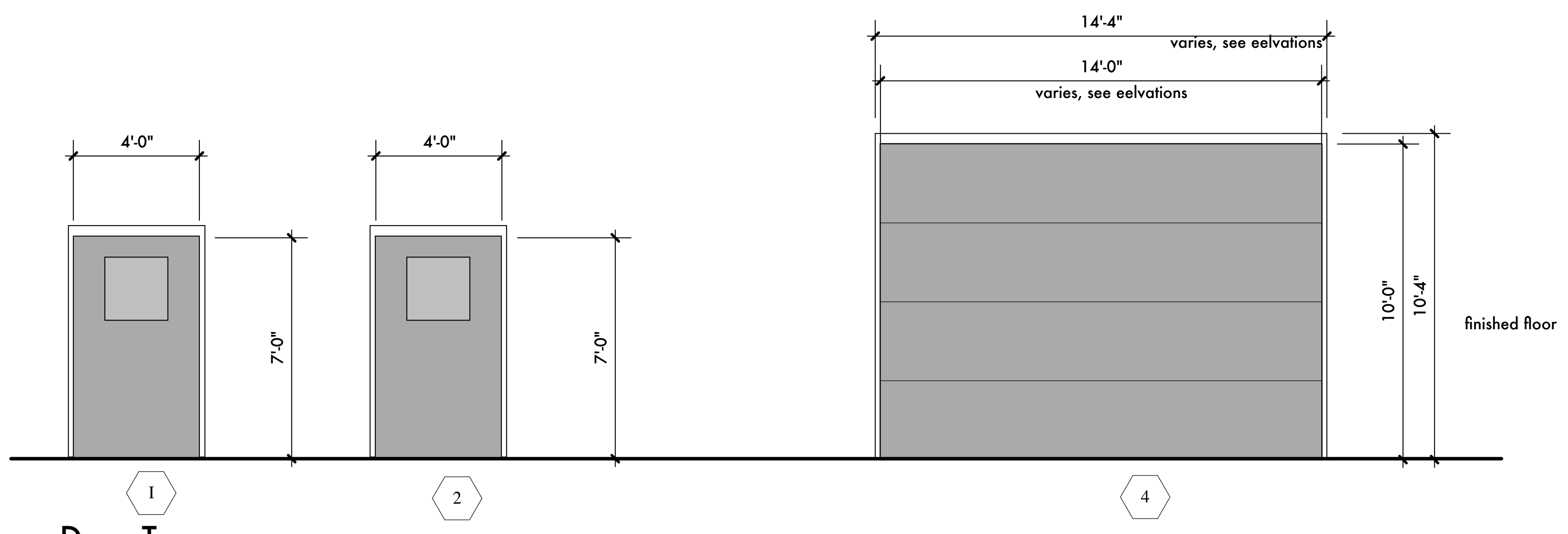
1 **Reflected Ceiling Plan Centrifuge Building**
Scale: 1/4" = 1'-0"

DOOR SCHEDULE - CENTRIFUGE BUILDING

Mark	Elevation	Unit Size	Thickness	Fire Rated	Door Type/ Size	Header Height	req. DP rating	Opening Protection see legend at right	Glazing	Type: Man Door	Type: Dbl. French	Type: Coil Door	Type: Screened door							Remarks
Lower Level																				
D100		14'-0" x 10'-0"		no	4	10'-0"						●								
D101		12'-0" x 10'-0"		no	4 sim	10'-0"						●								
D102		4'-0" x 7'-0"	1 3/4"	no	1	7'-0"	50	IG	2'-0" x 2'-0"	●										Exterior insulated
D103		4'-0" x 7'-0"	1 3/4"	no	2	7'-0"			2'-0" x 2'-0"	●										

Door Notes:

1. All doors must meet current International Building Code 2012 (IBC 2012) requirements for Design Pressure (DP) and Impact Protection . Verify compliance of all doors.
2. Please refer to specifications for door/window material and finish requirements.
3. All exterior glazing to be impact rated.



Door Types

EXTERIOR FINISH SCHEDULE

Item Name	Material	Finish
Roof	Standing Seam Metal Roof	Standard factory color finish
Soffit	Aluminum	Standard factory color finish
Exterior Walls	split face	intregral color, Color 2
Exterior Walls	smooth face bands	intregral color, Color 1
Overhead Door	Metal	Ext. Paint 1
Man Door	Insulated fiberglasss	Ext. Paint 1

INTERIOR FINISH SCHEDULE

Room Name	Floor	Ceiling	Walls	Interior Door	Interior Door Frame
Roll Off Container Room	StonChem	no celing	CMU unfinished	3-Int Paint, gloss	4-Int Paint, gloss
Centrifuge Room	StonChem	no ceiling	CMU unfinished	3-Int Paint, gloss	4-Int Paint, gloss

EXTERIOR PAINT SCHEDULE

Number	Location	Brand	Name
Ext. Paint 1	Ext. Doors	Sherwin Williams	

INTERIOR PAINT SCHEDULE

Number	Location	Brand	Name
3-Int Paint, gloss	Interior Doors	Sherwin Williams	
4-Int Paint, gloss	Interior Door Trim	Sherwin Williams	

No.	Issued For	Date
1	Issued For Bid	Jan. 29, 2016
2		
3		

Stamps

SWALLOWTAIL ARCHITECTURE LLC
No. 100760

RACHEL BEVERLEY BURTON
No. 8440
January 29 2016

SWALLOWTAIL
SWALLOWTAIL ARCHITECTURE, LLC
ARCHITECTURE AND INTERIOR DESIGN
843-885-9400 • SwallowtailArchitecture.com
814 N Cedar Street, Summerville, SC, 29483

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

CETRIFUGE BUILDING SCHEDULES

Plot Date 1/29/16
Checked RB
Drawn RB
Drawing Title
Schedules

Drawing No.
40-A-04

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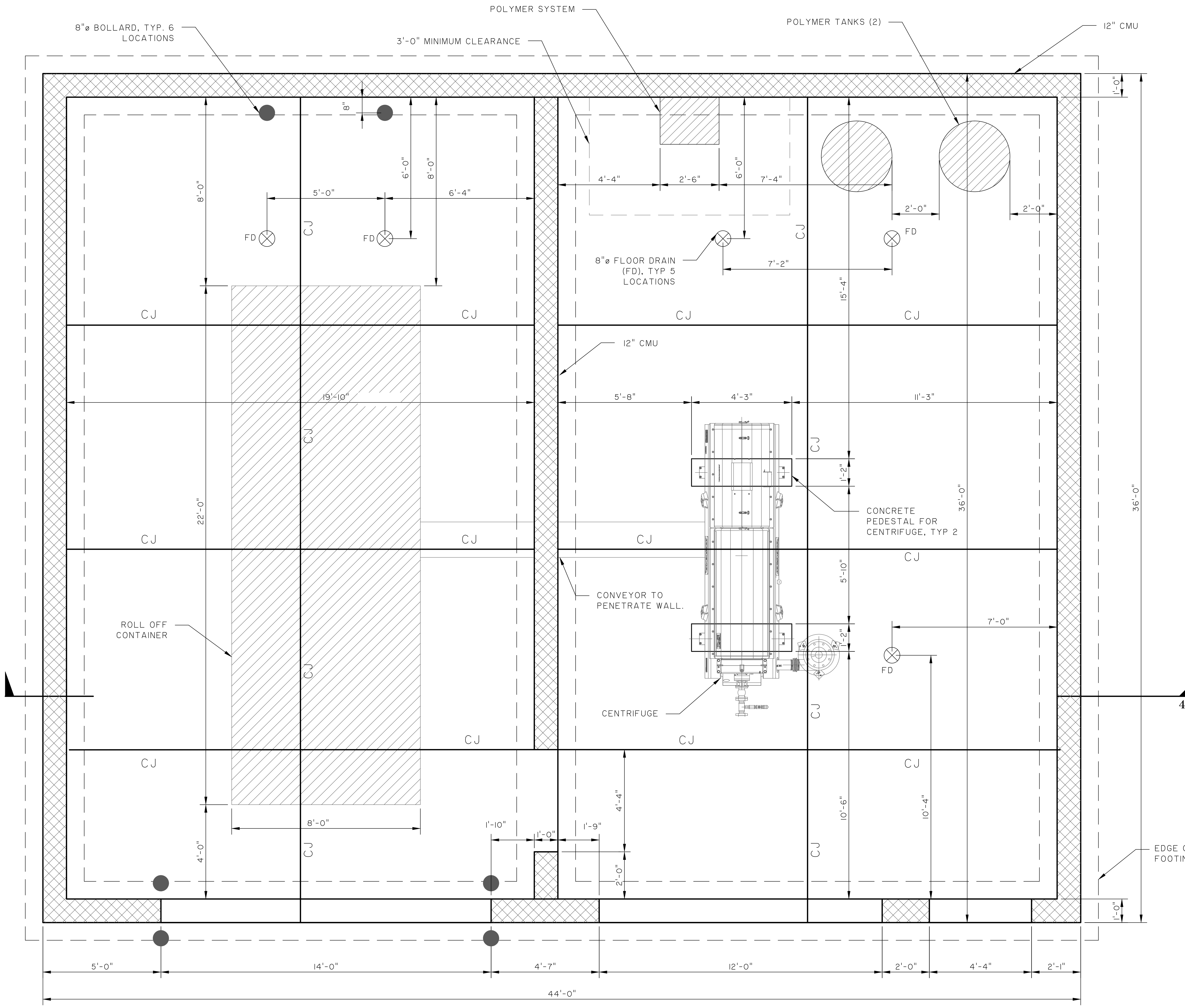


SLAB PLAN – CENTRIFUGE BUILDING

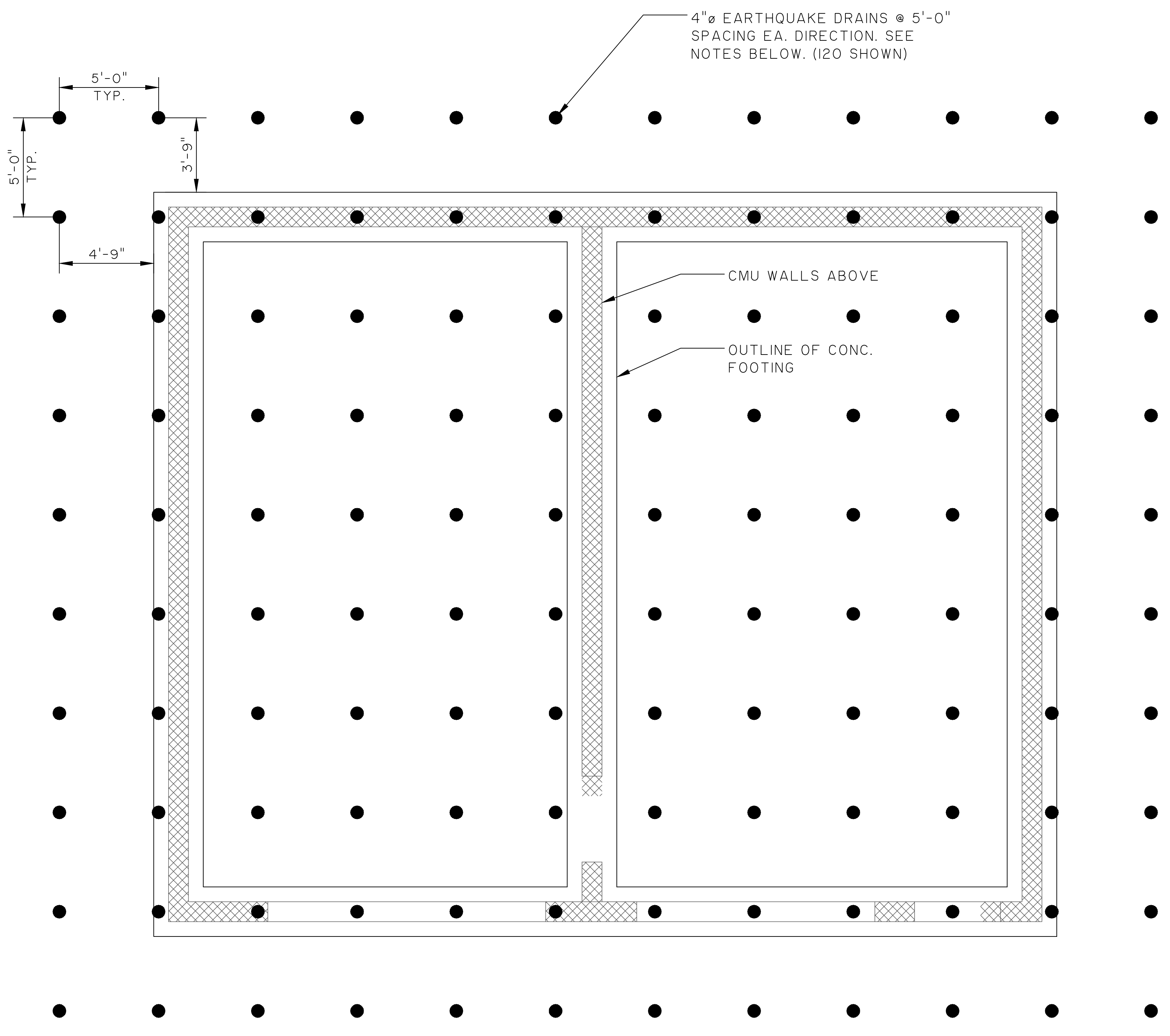
1
40-S-01

SCALE: 3/8" = 1'-0"

FIN. FLR. ELEV = 14.0'
T/FTG. ELEV. = 12.0'

NOTES:

1. FLOOR CONSTRUCTION @ BUILDING U.N.O: 6" REINFORCED CONCRETE SLAB ON GRADE REINF. W/ 6X6 – W2.9XW2.9 W.W.R.
2. CJ DENOTES SAW CUT CONTROL JOINT LOCATION IN SLAB ON GRADE.
3. FD DENOTED FLOOR DRAIN IN SLAB ON GRADE.


4"ø EARTHQUAKE DRAINS @ 5'-0" SPACING EA. DIRECTION. SEE NOTES BELOW. (120 SHOWN)
5'-0" TYP.
5'-0" TYP.
3'-9"
4'-9"
CMU WALLS ABOVE
OUTLINE OF CONC. FOOTING

SUBGRADE PREPARATION – EARTHQUAKE DRAIN LAYOUT

2
40-S-01

SCALE: 3/16" = 1'-0"

NOTES:

1. EARTHQUAKE DRAINS SHALL BE AS SPECIFIED IN THE GEOTECHNICAL REPORT COMPLETED BY TERRACON, DATED FEBRUARY 06, 2015, PROJECT NO. EN145129.
2. EARTHQUAKE DRAINS SHALL BE PREFABRICATED POLYMER TUBES WRAPPED IN FILTER FABRIC, INSTALLED VERTICALLY IN THE GROUND. THEY SHALL BE 4"ø AND SHALL EXTEND TO A DEPTH OF 40 FEET BELOW EXISTING GRADE. THE EXACT DEPTH SHOULD BE DETERMINED BY THE CONTRACTOR, USING THE GEOTECHNICAL REPORT AND, CONSULTING WITH TERRACON, IF NEEDED.
3. INSTALLATION OF EARTHQUAKE DRAINS SHALL OCCUR AFTER ROUGH GRADING IS COMPLETED AND PRIOR TO FINE GRADING. CONTRACTOR IS FULLY RESPONSIBLE FOR INSTALLATION AND CONDITION OF EARTHQUAKE DRAINS THROUGHOUT CONSTRUCTION.
4. INSTALLATION AND DRAINAGE DETAILS SHALL BE PROVIDED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

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JENNIFER A. HAYES

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CHARLESTON COUNTY, SOUTH CAROLINA

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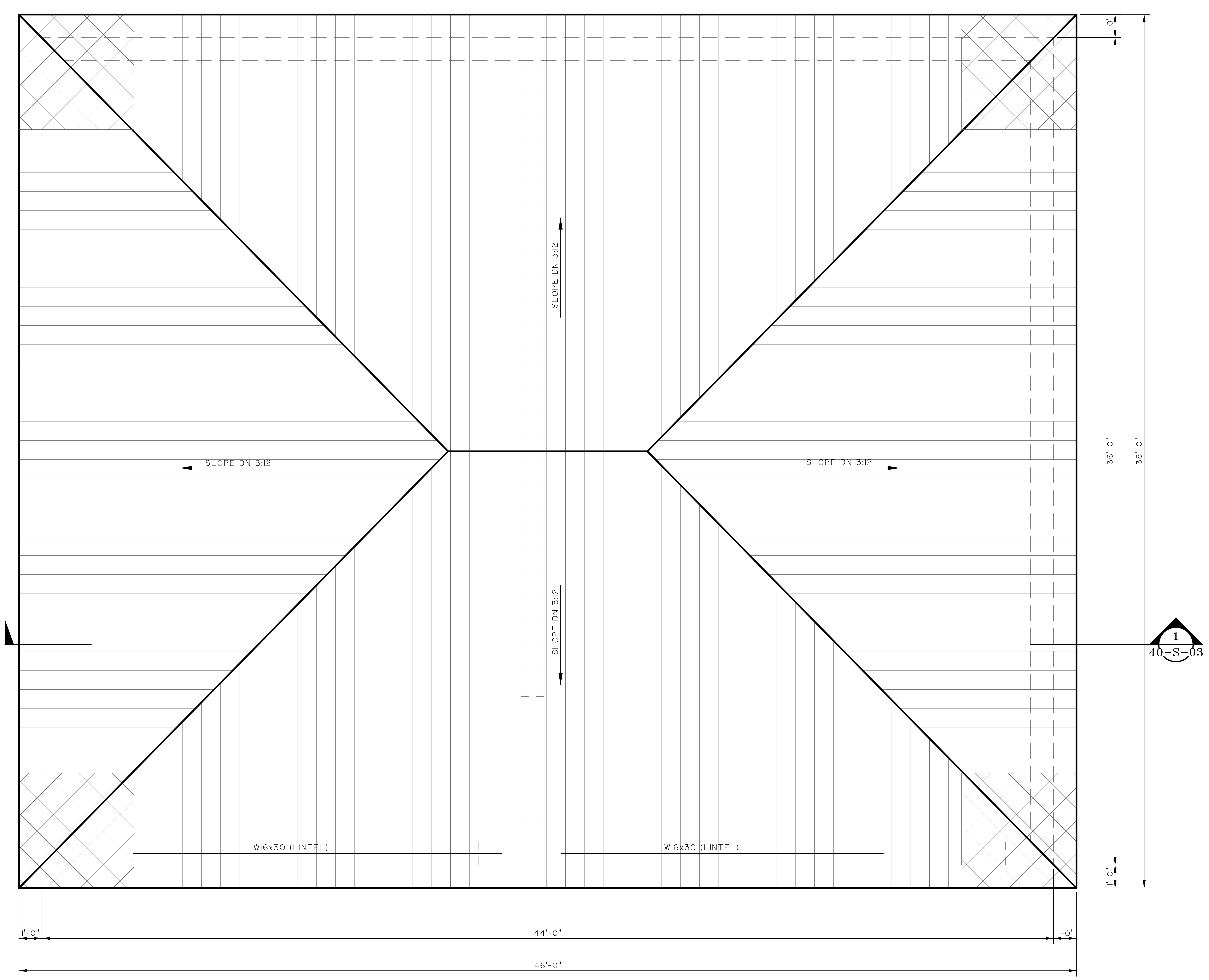
CENTRIFUGE BUILDING - SLAB PLAN

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: JAH/SHG
DESIGNED: JAH/EAC
REVIEWED: JAH/SHG
APPROVED: MFY
SCALE: AS NOTED

40-S-01



1 BUILDING ROOF PLAN
40-S-02
SCALE: 3/8" = 1'-0"

NOTES:

1. ROOF CONSTRUCTION: STANDING SEAM METAL ROOF ON ¾" APA EXTERIOR GRADE PLYWOOD SHEATHING. SEE TABLE FOR ATTACHMENT NOTES.
2. LT. GAGE TRUSS MANUF. SHALL SUBMIT ENGINEERED ROOF FRAMING PLANS FOR REVIEW AND COORDINATION PRIOR TO MANUFACTURING ROOF TRUSSES.
3. SEE 35-S-10 FOR CMU LINTEL SCHEDULE.
4. SEE SHEET 01-S-04 FOR TYPICAL BEAM BEARING DETAIL FOR BEARING PLATE.

ROOF ATTACHMENT AND LOADING TABLE

ROOF TYPE	DECK MATERIAL	ATTACHMENT OF DECKING TO TRUSSES	MINIMUM NET UPLIFT PER FOOT LENGTH @ TRUSS CONNECTION	MINIMUM OUT OF PLANE TRUSS ATTACHMENT LOAD
A	3/4" APA RATED EXTERIOR GRADE PLYWOOD SHEATHING	#8x3' SELF TAPPING, FLAT HEAD SCREWS AT 6" O.C. AT PANEL EDGES AND 6" IN FIELD	1.2 k/ft.	0.56 k/ft. @ MASONRY WALLS
B	3/4" APA RATED EXTERIOR GRADE PLYWOOD SHEATHING	#8x3' SELF TAPPING, FLAT HEAD SCREWS AT 4" O.C. AT PANEL EDGES AND 4" IN FIELD	1.3 k/ft.	0.56 k/ft. @ MASONRY WALLS

ROOF LEGEND

▨	INDICATES 4'-0" WIDE STRIP OF ROOF TYPE "B". SEE ROOF ATTACHMENT AND LOADING TABLE.
▥	INDICATES CFMF ROOF TRUSSES (DIRECTION CHANGES W/ DIRECTION OF TRUSSES), ROOF TYPE "B". SEE ROOF ATTACHMENT AND LOADING TABLE.

THOMAS & HUTTON ENGINEERING CO.
No. C00285

No. 24727
JENNIFER A. HAYES
2.1.16

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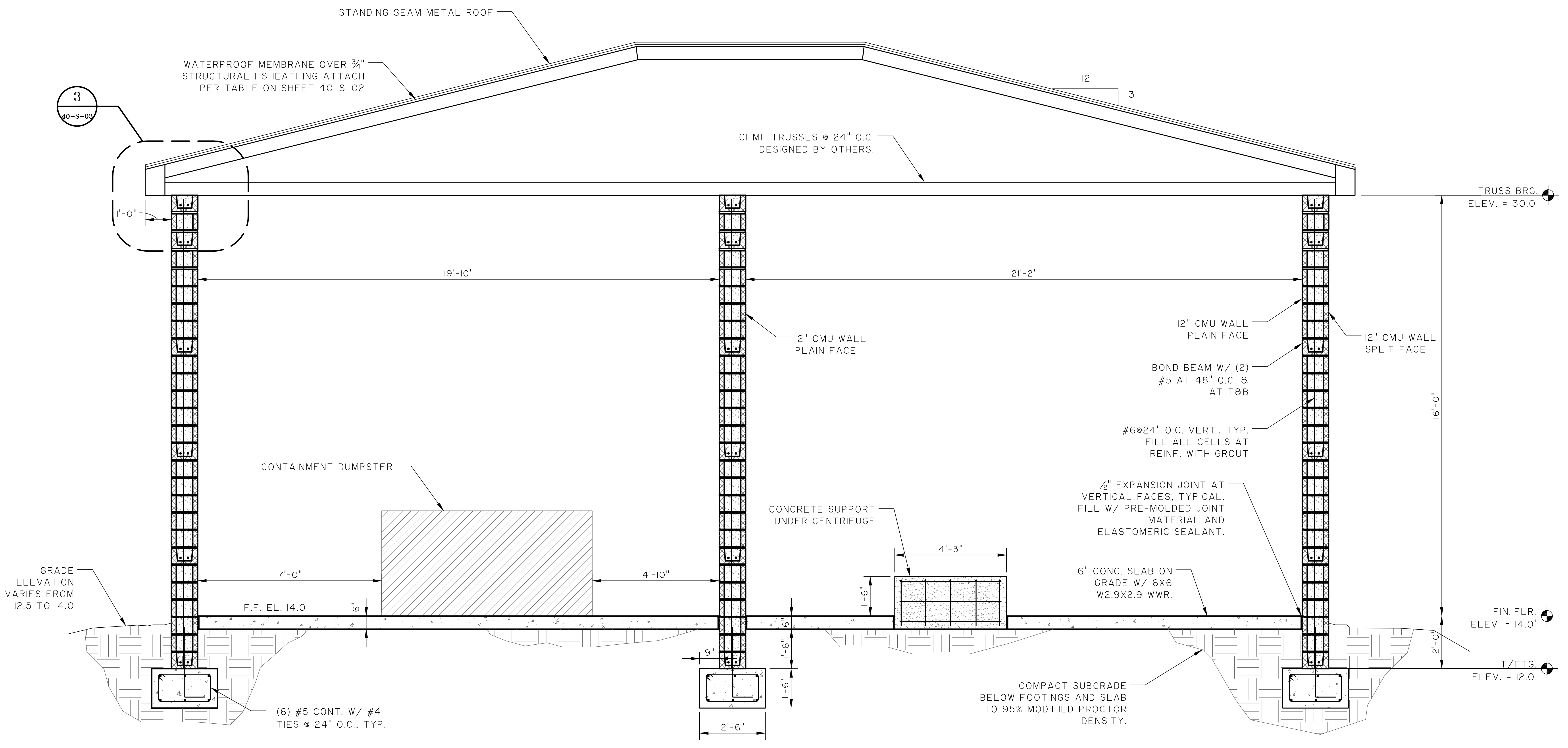
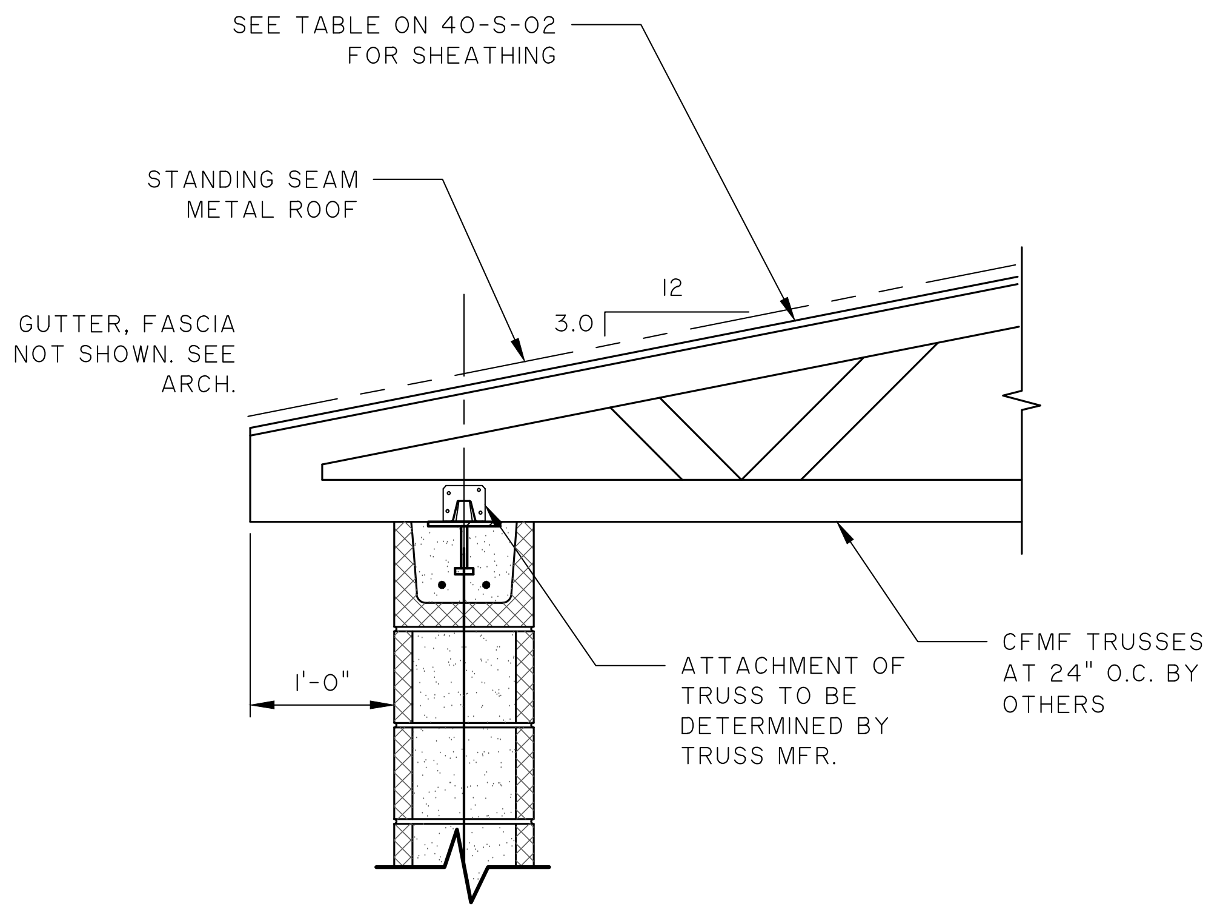
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
CENTRIFUGE BUILDING - ROOF PLAN

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: JAH/SHG
DESIGNED: JAH/EAC
REVIEWED: JAH/SHG
APPROVED: MFY
SCALE: AS NOTED

40-S-02


STANDING SEAM METAL ROOF
WATERPROOF MEMBRANE OVER ¾" STRUCTURAL I SHEATHING ATTACH PER TABLE ON SHEET 40-S-02
3
40-S-03
12
3
CFMF TRUSSES @ 24" O.C. DESIGNED BY OTHERS.
1'-0"
TRUSS BRG. ELEV. = 30.0'
19'-10"
21'-2"
12" CMU WALL PLAIN FACE
12" CMU WALL PLAIN FACE
12" CMU WALL SPLIT FACE
BOND BEAM W/ (2) #5 AT 48" O.C. & AT T&B
#6@24" O.C. VERT., TYP. FILL ALL CELLS AT REINF. WITH GROUT
16'-0"
CONTAINMENT DUMPSTER
CONCRETE SUPPORT UNDER CENTRIFUGE
½" EXPANSION JOINT AT VERTICAL FACES, TYPICAL. FILL W/ PRE-MOLDED JOINT MATERIAL AND ELASTOMERIC SEALANT.
4'-3"
GRADE ELEVATION VARIES FROM 12.5 TO 14.0
7'-0"
4'-10"
1'-6"
6" CONC. SLAB ON GRADE W/ 6X6 W2.9X2.9 WWR.
F.F. EL. 14.0
6"
6"
FIN. FLR. ELEV. = 14.0'
9"
1'-6"
1'-6"
2'-0"
T/FTG. ELEV. = 12.0'
COMPACT SUBGRADE BELOW FOOTINGS AND SLAB TO 95% MODIFIED PROCTOR DENSITY.
(6) #5 CONT. W/ #4 TIES @ 24" O.C., TYP.
2'-6"

1 SECTION
40-S-03
SCALE: 3/8" = 1'-0"


SEE TABLE ON 40-S-02 FOR SHEATHING
STANDING SEAM METAL ROOF
12
3.0
GUTTER, FASCIA NOT SHOWN. SEE ARCH.
ATTACHMENT OF TRUSS TO BE DETERMINED BY TRUSS MFR.
CFMF TRUSSES AT 24" O.C. BY OTHERS
1'-0"

2 TRUSS CONNECTION AT CMU
40-S-03
SCALE: 3/8" = 1'-0"

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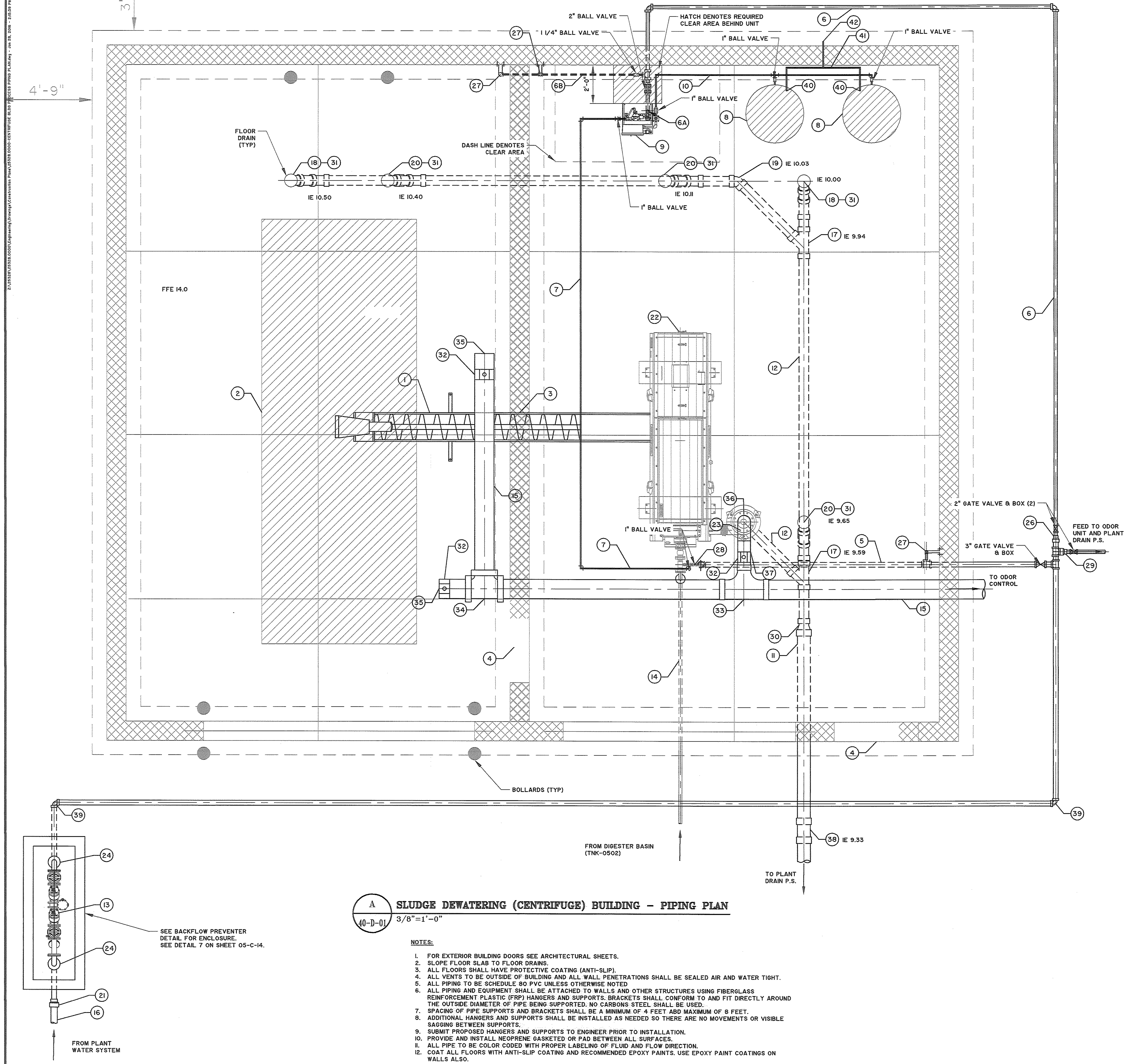
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
CENTRIFUGE BUILDING - SECTIONS

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: JAH/SHG
DESIGNED: JAH/EAC
REVIEWED: JAH/SHG
APPROVED: MFY
SCALE: AS NOTED

40-S-03



A 40-D-01 SLUDGE DEWATERING (CENTRIFUGE) BUILDING – PIPING PLAN

3/8"=1'-0"

NOTES:

1. FOR EXTERIOR BUILDING DOORS SEE ARCHITECTURAL SHEETS.
2. SLOPE FLOOR SLAB TO FLOOR DRAINS.
3. ALL FLOORS SHALL HAVE PROTECTIVE COATING (ANTI-SLIP).
4. ALL VENTS TO BE OUTSIDE OF BUILDING AND ALL WALL PENETRATIONS SHALL BE SEALED AIR AND WATER TIGHT.
5. ALL PIPING TO BE SCHEDULE 80 PVC UNLESS OTHERWISE NOTED
6. ALL PIPING AND EQUIPMENT SHALL BE ATTACHED TO WALLS AND OTHER STRUCTURES USING FIBERGLASS REINFORCEMENT PLASTIC (FRP) HANGERS AND SUPPORTS. BRACKETS SHALL CONFORM TO AND FIT DIRECTLY AROUND THE OUTSIDE DIAMETER OF PIPE BEING SUPPORTED. NO CARBONS STEEL SHALL BE USED.
7. SPACING OF PIPE SUPPORTS AND BRACKETS SHALL BE A MINIMUM OF 4 FEET ABD MAXIMUM OF 8 FEET.
8. ADDITIONAL HANGERS AND SUPPORTS SHALL BE INSTALLED AS NEEDED SO THERE ARE NO MOVEMENTS OR VISIBLE SAGGING BETWEEN SUPPORTS.
9. SUBMIT PROPOSED HANGERS AND SUPPORTS TO ENGINEER PRIOR TO INSTALLATION.
10. PROVIDE AND INSTALL NEOPRENE GASKETED OR PAD BETWEEN ALL SURFACES.
11. ALL PIPE TO BE COLOR CODED WITH PROPER LABELING OF FLUID AND FLOW DIRECTION.
12. COAT ALL FLOORS WITH ANTI-SLIP COATING AND RECOMMENDED EPOXY PAINTS. USE EPOXY PAINT COATINGS ON WALLS ALSO.

PIPING AND EQUIPMENT LEGEND

NUMBER	DESCRIPTION	QUANTITY
1	12-INCH (MIN) DISTRIBUTION SHAFTLESS SCREW CONVEYOR – U TROUGH WITH COVER – DOUBLE FORMED FLANGE. INSTALL A MIN 48-INCHES ABOVE WALL OF WASTE BIN. (STAINLESS STEEL 304) CONTRACTOR SHALL VERIFY CLEARANCE REQUIRED TO REMOVE WASTE BIN	1
2	20 OR 12 CUBIC YARD WASTE BIN	1
3	CUT OR PROVIDE WALL OPENING TO CLEAR SCREW CONVEYOR BY 6" ALL THE WAY AROUND. INSTALL RUBBER BOOT AROUND OPENING.	1
4	FIBERGLAS DOOR (4' X 8') AND FRAME (TAN) WITH 24" X 24" FIBERGLASS WINDOW KIT W/ S.S. HARDWARE	1
5	3-INCH WATER SUPPLY LINE. CONNECT TO CENTRIFUGE @ 1" NPT WASHWATER CONNNECTION (75 GPM@ 40 PSI)	1
6	2-INCH WATER SUPPLY (PVC) TO POLYMER SYSTEM (20 GPM @ 40 PSI)	1
6A	REDUCE AND CONNECT TO 1-INCH FNPT DILUTION WATER INLET. PROVIDE 1" BALL VALVE	1
6B	1 1/4-INCH WATER SUPPLY (PVC) TO HOSE BIBBS	1
7	1-INCH POLYMER FEED LINE (LINE OVERHEAD) – HANG FROM CEILING	1
8	POLYMER DRUMS	2
9	POLYMER FEED SYSTEM – SKID MOUNTED	1
10	1-INCH POLYMER INLET	1
11	8-INCH C-900 DRAIN LINE @ 1.0%	-
12	6-INCH C-900 DRAIN LINE @ 1.0%	-
13	3-INCH REDUCED PRESSURE ASSEMBLY (WATTS SERIES 909RPDA OR EQUIVALENT) IWITH INSULATED FIBERGLASS ENCLOSURE (HOT BOX MODEL # HB3NS OR EQUIVALENT) NSTALLED ON 5-INCH THICK CONCRETE PAD	1
14	3-INCH PVC CENTRIFUGE FEED INLET – REDUCE TO 2-INCH AT CONNECTION TO CENTRIFUGE	1
15	12-INCH FRP VENT LINE – HANG FROM CEILING	1
16	4-INCH PVC POTABLE WATER SUPPLY LINE	1
17	6-INCH WYE	1
18	(2) 6-INCH 45° BENDS AT END OF LINE	2
19	6-INCH 45° BEND	1
20	6-INCH WYE AND 45° BEND AT IN-LINE FLOOR DRAINS	3
21	4-INCH X 3-INCH REDUCER	1
22	CENTRIFUGE D4 SERIES BY ANDRITZ	1
23	6-INCH 90° BEND UP AND TRANSITION CONNECTION TO 5-INCH FLANGE FOR EFFLUENT OUTLET	1
24	3-INCH 90° BEND – RESTRAINED	2
25	3-INCH TEE	1
26	REDUCE TO 2-INCH PVC LINE PAST TEE	1
27	INSTALL WATER HOSE BIBB (WITH VACUUM BREAKERS) – SEE DETAIL 4/05-C-13	3
28	INSTALL SHUT OFF VALVE WITH FLEXIBLE (REINFORCED) PIPE/TUBING AT CONNECTION TO CENTRIFUGE	1
29	3-INCH X 2-INCH REDUCER	1
30	8-INCH X 6-INCH REDUCER COUPLING	1
31	FLOOR DRAIN WITH TRAP PRIMER	5
32	DAMPER	3
33	12-INCH X 8-INCH TEE	1
34	12-INCH X 12-INCH TEE	1
35	OPEN INTAKE GRILL	2
36	FLEXIBLE CONNECTION AT UNIT	1
37	8-INCH FRP UNIT LINE – HANG FROM CEILING	1
38	22 1/2° BEND TURNED DOWN – DIRECT AND CONNECT TO GRAVITY LINE	1
39	3-INCH 90° BEND	2
40	VENT CONNECTION – 1 1/4 INCH MIN	2
41	1 1/2 INCH PVC VENT	1
42	VENT TO EXTERIOR (1 FOOT BELOW CEILING)	1

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MARK F. YODICE No. 13

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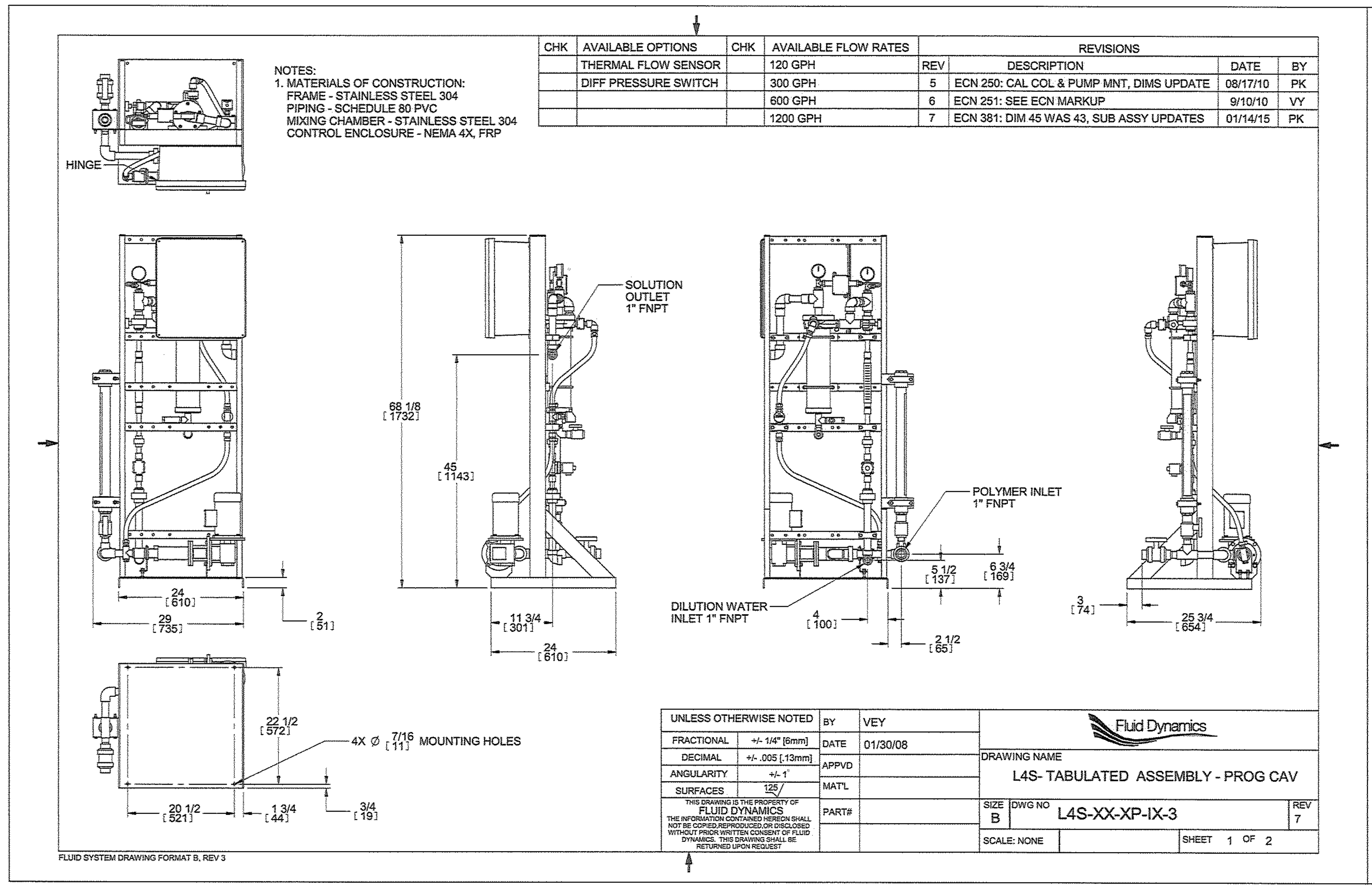
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

SLUDGE DEWATERING (CENTRIFUGE) - PIPING PLAN

JOB NO: J-25328.0000
DATE: 12/18/15
DRAWN: DNF
DESIGNED: MFY
REVIEWED: MFY
APPROVED: MFY
SCALE: 3/8"=1'-0"

40-D-01



NOTES:
1. MATERIALS OF CONSTRUCTION:
FRAME - STAINLESS STEEL 304
PIPING - SCHEDULE 80 PVC
MIXING CHAMBER - STAINLESS STEEL 304
CONTROL ENCLOSURE - NEMA 4X, FRP

CHK	AVAILABLE OPTIONS	CHK	AVAILABLE FLOW RATES
	THERMAL FLOW SENSOR		120 GPH
	DIFF PRESSURE SWITCH		300 GPH
			600 GPH
			1200 GPH

REVISIONS

REV	DESCRIPTION	DATE	BY
5	ECN 250: CAL COL & PUMP MNT, DIMS UPDATE	08/17/10	PK
6	ECN 251: SEE ECN MARKUP	9/10/10	VY
7	ECN 381: DIM 45 WAS 43, SUB ASSY UPDATES	01/14/15	PK

UNLESS OTHERWISE NOTED		BY	VEY
FRACTIONAL	+/- 1/4" [6mm]	DATE	01/30/08
DECIMAL	+/- .005 [.13mm]	APPVD	
ANGULARITY	+/- 1°	MAT'L	
SURFACES	125	PART#	

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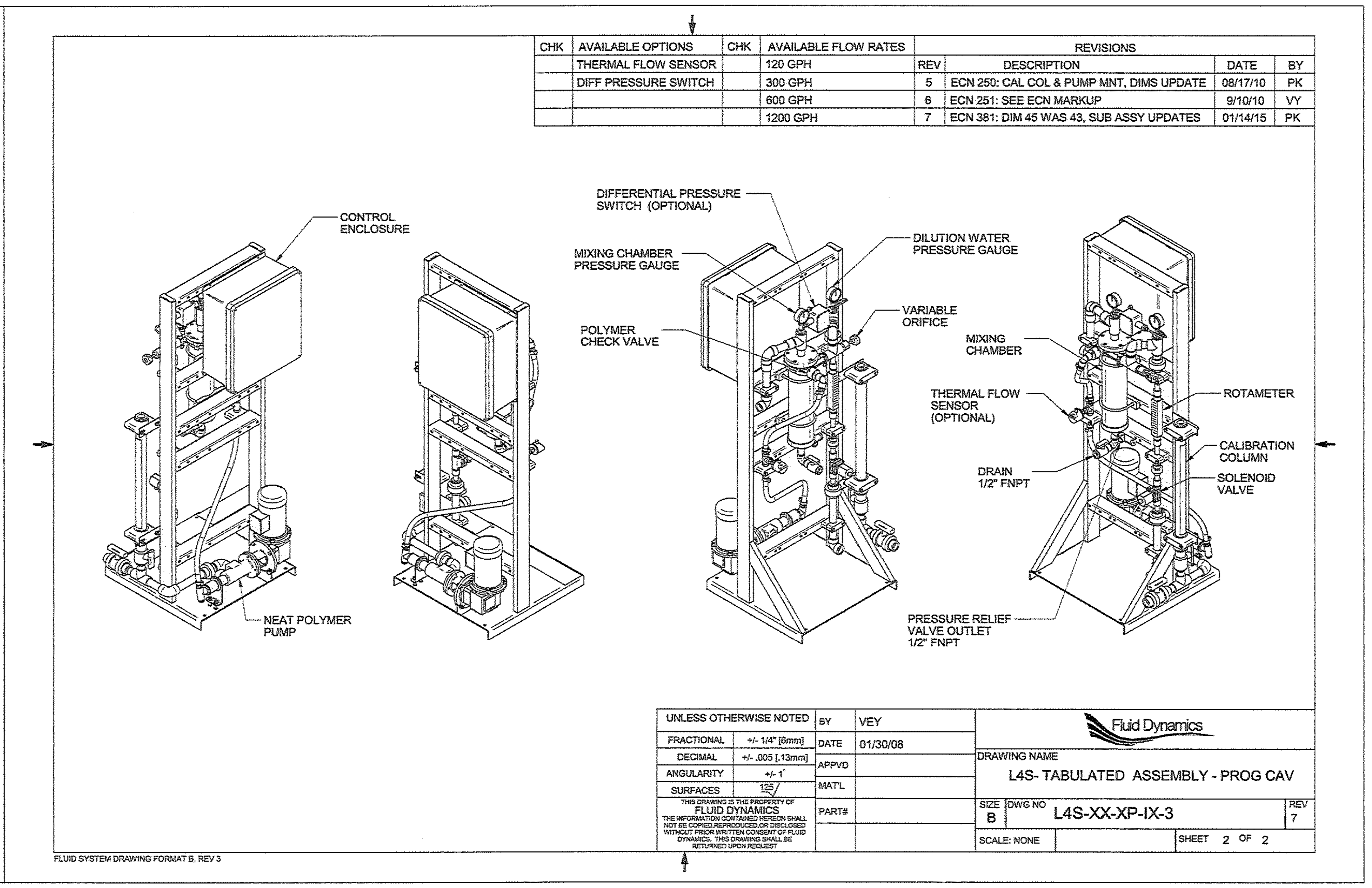
Fluid Dynamics

DRAWING NAME
L4S- TABULATED ASSEMBLY - PROG CAV

SIZE B DWG NO L4S-XX-XP-IX-3 REV 7
SCALE: NONE SHEET 1 OF 2

FLUID SYSTEM DRAWING FORMAT B, REV 3


CONTROL ENCLOSURE
NEAT POLYMER PUMP
DIFFERENTIAL PRESSURE SWITCH (OPTIONAL)
MIXING CHAMBER PRESSURE GAUGE
POLYMER CHECK VALVE
DILUTION WATER PRESSURE GAUGE
VARIABLE ORIFICE
MIXING CHAMBER
THERMAL FLOW SENSOR (OPTIONAL)
DRAIN 1/2" FNPT
ROTAMETER
CALIBRATION COLUMN
SOLENOID VALVE
PRESSURE RELIEF VALVE OUTLET 1/2" FNPT

CHK	AVAILABLE OPTIONS	CHK	AVAILABLE FLOW RATES
	THERMAL FLOW SENSOR		120 GPH
	DIFF PRESSURE SWITCH		300 GPH
			600 GPH
			1200 GPH

REVISIONS

REV	DESCRIPTION	DATE	BY
5	ECN 250: CAL COL & PUMP MNT, DIMS UPDATE	08/17/10	PK
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UNLESS OTHERWISE NOTED		BY	VEY
FRACTIONAL	+/- 1/4" [6mm]	DATE	01/30/08
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SURFACES	125	PART#	

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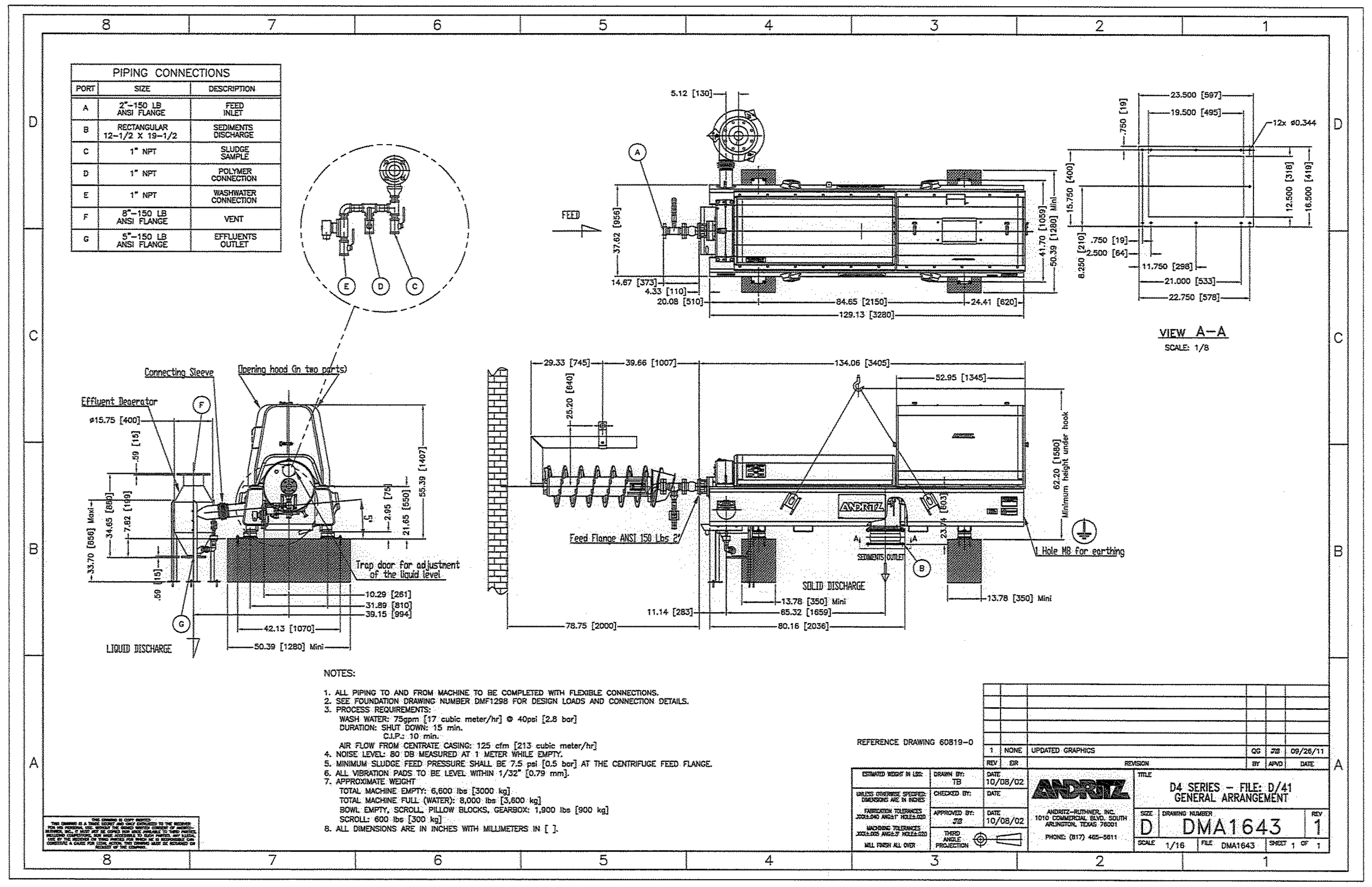
Fluid Dynamics

DRAWING NAME
L4S- TABULATED ASSEMBLY - PROG CAV

SIZE B DWG NO L4S-XX-XP-IX-3 REV 7
SCALE: NONE SHEET 2 OF 2

FLUID SYSTEM DRAWING FORMAT B, REV 3



PIPING CONNECTIONS		
PORT	SIZE	DESCRIPTION
A	2"-150 LB ANSI FLANGE	FEED INLET
B	RECTANGULAR 12-1/2 X 19-1/2	SEDIMENTS DISCHARGE
C	1" NPT	SLUDGE SAMPLE
D	1" NPT	POLYMER CONNECTION
E	1" NPT	WASHWATER CONNECTION
F	8"-150 LB ANSI FLANGE	VENT
G	5"-150 LB ANSI FLANGE	EFFLUENTS OUTLET

NOTES:

1. ALL PIPING TO AND FROM MACHINE TO BE COMPLETED WITH FLEXIBLE CONNECTIONS.
2. SEE FOUNDATION DRAWING NUMBER DMF1298 FOR DESIGN LOADS AND CONNECTION DETAILS.
3. PROCESS REQUIREMENTS:
   WASH WATER: 75gpm [17 cubic meter/hr] @ 40psi [2.8 bar]
   DURATION: SHUT DOWN: 15 min.
   C.I.P.: 10 min.
   AIR FLOW FROM CENTRATE CASING: 125 cfm [213 cubic meter/hr]
4. NOISE LEVEL: 80 DB MEASURED AT 1 METER WHILE EMPTY.
5. MINIMUM SLUDGE FEED PRESSURE SHALL BE 7.5 psi [0.5 bar] AT THE CENTRIFUGE FEED FLANGE.
6. ALL VIBRATION PADS TO BE LEVEL WITHIN 1/32" [0.79 mm].
7. APPROXIMATE WEIGHT
   TOTAL MACHINE EMPTY: 6,600 lbs [3000 kg]
   TOTAL MACHINE FULL (WATER): 8,000 lbs [3,600 kg]
   BOWL EMPTY, SCROLL, PILLOW BLOCKS, GEARBOX: 1,900 lbs [900 kg]
   SCROLL: 600 lbs [300 kg]
8. ALL DIMENSIONS ARE IN INCHES WITH MILLIMETERS IN [ ].

REFERENCE DRAWING 60819-0

REV	EIR	REVISION	BY	APVD	DATE
1	NONE	UPDATED GRAPHICS	QG	JB	09/26/11

ESTIMATED WEIGHT IN LBS:
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES
FABRICATION TOLERANCES .XXX±.040 ANG±1° HOLE±.020
MACHINING TOLERANCES .XXX±.005 ANG±.5° HOLE±.020
MILL FINISH ALL OVER

DRAWN BY: TB DATE 10/08/02
CHECKED BY: DATE
APPROVED BY: JB DATE 10/08/02
THIRD ANGLE PROJECTION

ANDRITZ
ANDRITZ-RUTHNER, INC.
1010 COMMERCIAL BLVD. SOUTH
ARLINGTON, TEXAS 76001
PHONE: (817) 465-5611

TITLE
D4 SERIES - FILE: D/41
GENERAL ARRANGEMENT

SIZE D DRAWING NUMBER DMA1643 REV 1
SCALE 1/16 FILE DMA1643 SHEET 1 OF 1

THOMAS & HUTTON ENGINEERING CO. No. C00285

MARK F. YODICE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

SLUDGE DEWATERING (CENTRIFUGE) - MISCELLANEOUS DETAILS

JOB NO: J-25328.0000
DATE: 7/31/15
DRAWN: DNF
DESIGNED: MFY
REVIEWED: MFY
APPROVED: MFY
SCALE: AS NOTED

40-D-02

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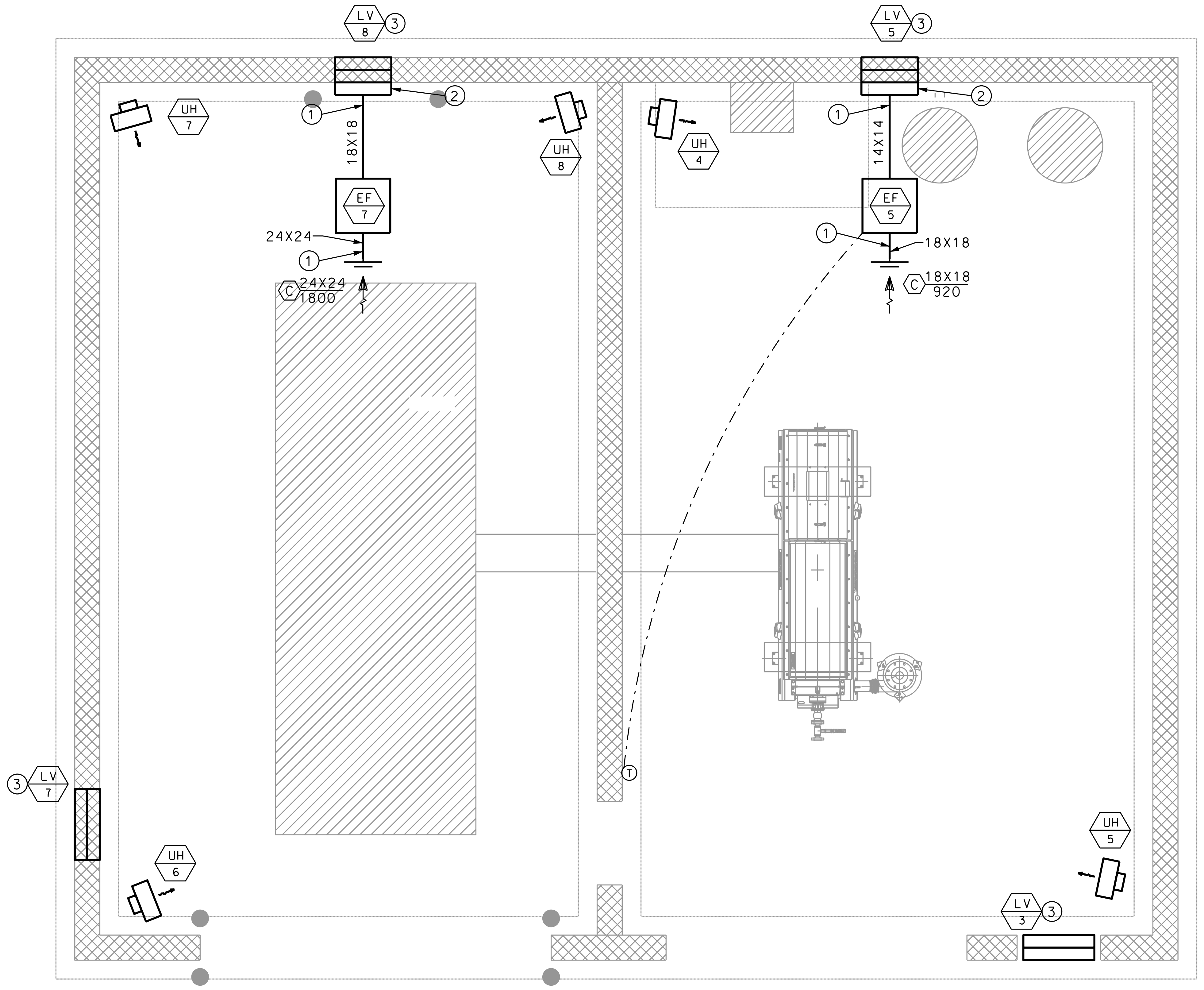
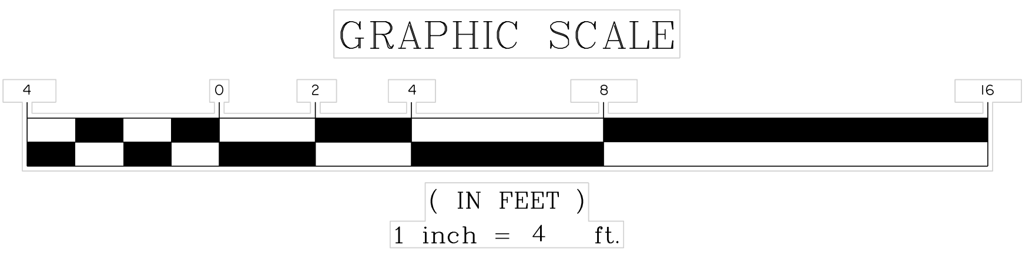
NOTES:

① VERIFY ALL DUCT ROUTING PRIOR TO DUCTWORK MANUFACTURE AND INSTALLATION.
② PROVIDE PLENUM BOX BEHIND LOUVER. TAP AS REQUITED FOR DUCTWORK.
③ ALL EXTERIOR WALL OPENINGS FOR MECHANICAL WORK MUST BE GREATER THAN 2'-0" AFF AT LOWEST POINT. TYPICAL ALL IN CENTRIFUGE BUILDING.



1 / 40-M-01 HVAC - CENTRIFUGE BUILDING
SCALE: 1/4" = 1'-0"



SOUTH CAROLINA
CHATHAM ENGINEERING COMPANY LLC
C04812
CERTIFICATE OF AUTHORIZATION

No. 30827
S. MICHELLE PEAVLER
1-28-16

NO	REVISIONS	BY	DATE

THOMAS & HUTTON
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682 Johnnie Dodds Boulevard • Suite 100
Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
HVAC PLAN

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	JM
DESIGNED:	JM
REVIEWED:	MP
APPROVED:	MP
SCALE:	1/4" = 1'

40-M-01

CADD PLOT
28-JAN-2016
18:03
JMITCHELL

E:\Kiawah River Plantation WWTP.14026.14\m_04.dgn

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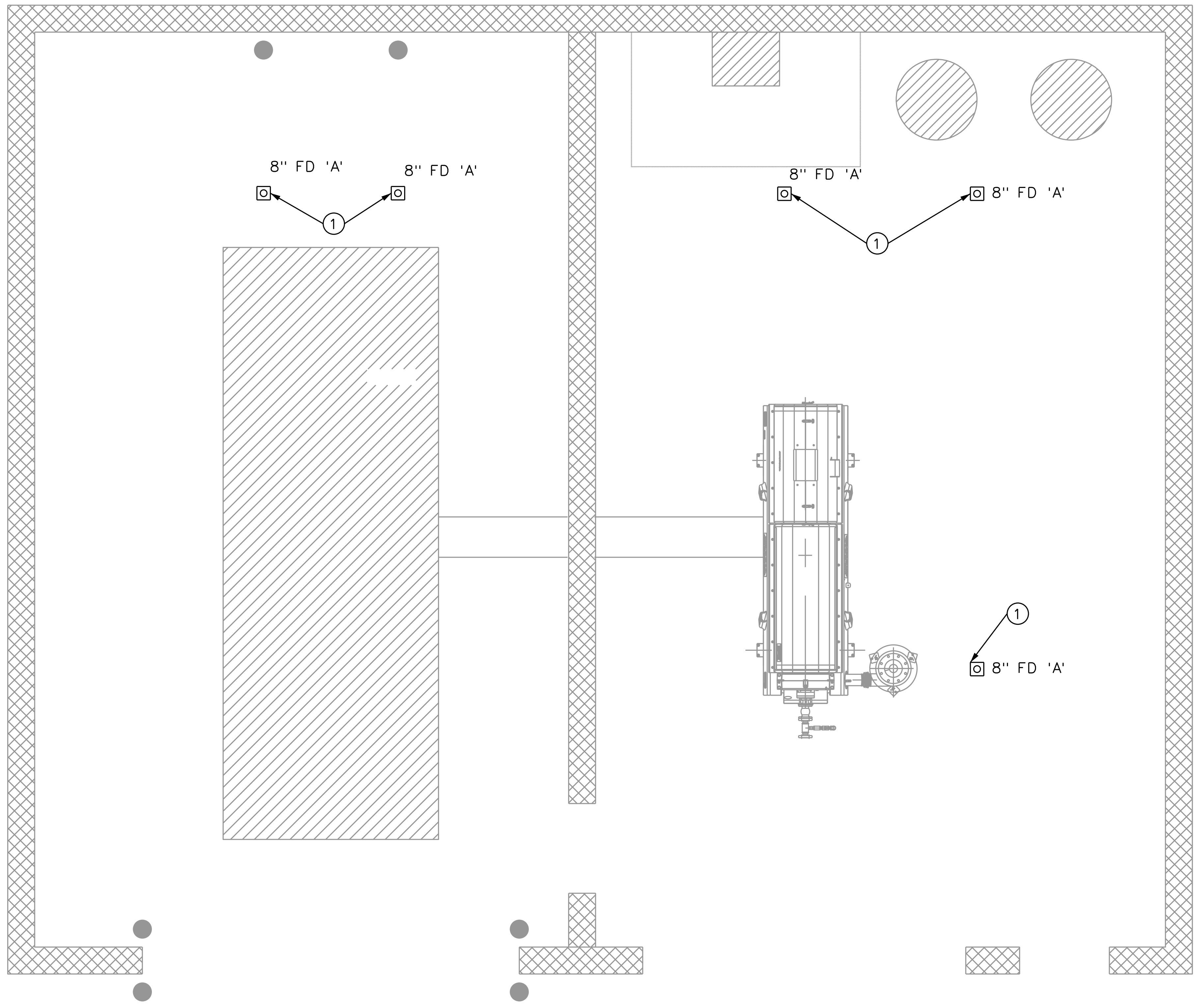


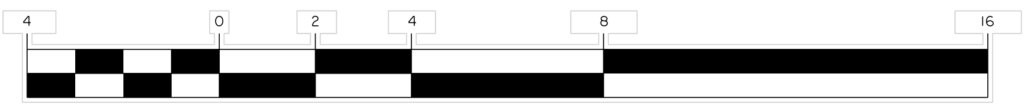
1 / 40-P-01 PLUMBING PLAN

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

NOTES:

① CONNECT TO SANITARY U/G. SEE CIVIL DRAWINGS FOR CONT. PROVIDE DEEP SEAL TRAPS. PROVIDE VENT FROM FLOOR TO EXTERIOR. VENT SHALL BE 2" IN SIZE.

GRAPHIC SCALE



(IN FEET)
1 inch = 4 ft.

CHATHAM ENGINEERING COMPANY LLC
C04812

No. 30827
S. MICHELLE PEAVLER
1-28-16

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

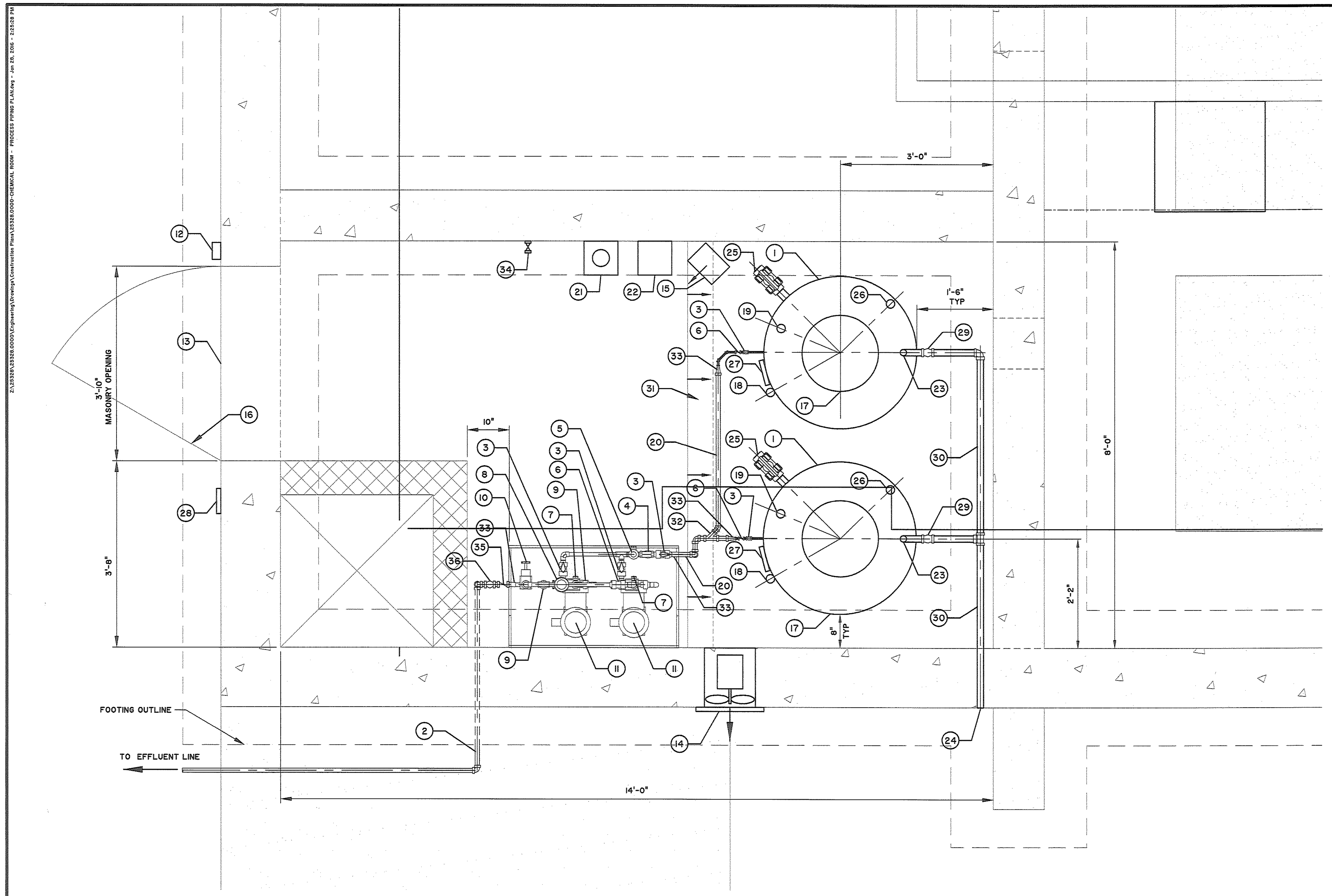
PLUMBING PLAN

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	SS
DESIGNED:	SS
REVIEWED:	MP
APPROVED:	MP
SCALE:	1/4" = 1'

40-P-01

CADD PLOT
28-JAN-2016
18:06
JMITCHELL

E:\Kiawah River Plantation WWTP.14026.14\p_04.dgn



1
45-D-01

OPERATIONS BLDG CHEMICAL ROOM - PROCESS PIPING PLAN
3/4"=1'-0"

LEGEND		
NUMBER	DESCRIPTION	QUANTITY
1	250 GALLON HDPE STORAGE TOTE (SNYDER INDUSTRIES OR EQUIVALENT) ON CONCRETE PEDESTAL	2
2	1" PVC	—
3	1/2" BALL VALVE	10
4	1/2" Y-STRAINER	1
5	CALIBRATION COLUMN - 500 ML	1
6	1/2" CHECK VALVE	4
7	1/2" RELIEF VALVE	2
8	1/2" PULSATION DAMPENER (10 CU IN PVC, WETTED)	1
9	PRESSURE GAUGE WITH PROTECTOR	1
10	BACK PRESSURE VALVE	1
11	METERING PUMP (3 GPH@ 150 PSIG) MILTON ROY MACROY MECHANICAL ACTUATED DIAPHRAGM, PVC LE, MANUAL STROKE LENGTH, NPT CONNECTIONS	2
12	EXTERIOR SWITCH FOR LIGHTS AND EXHAUST FAN (WEATHERPROOF)	1
13	VENT WITH MECHANICAL LOUVERS (CORROSION PROTECTED)	1
14	EXHAUST FAN (CORROSION PROTECTED)	1
15	SPACE HEATER	1
16	3'-6" DOOR WITH SAFETY GLASS	1
17	18" MIN. VENTED MANWAY ACCESS	2
18	SIGHT LEVEL GAGE	2
19	TANK FILL	2
20	SLOPE PIPE TO METERING PUMPS (1%)	—
21	WATER SOFTENER, CULLIGAN MEDALLIST 8 OR APPROVED EQUIVALENT (CULLIGAN OF N. CHARLESTON) (CONNECT TO POTABLE WATER SUPPLY WITH BACKFLOW PREVENTOR)	1
22	HOSE AND FILL LINE FOR STORAGE TOTES FROM WATER SOFTENER	2
23	VENT CONNECTION (1 1/4"MIN.)	2
24	VENT TO EXTERIOR 1'-0" BELOW CEILING	2
25	DRAIN VALVE	2
26	OVERFLOW (TYP.)	2
27	STORAGE TANK LABEL (PRODUCT NAME, SAFETY SYMBOL, TANK IDENTIFICATION AND ORANGE ADR PLATE)	2
28	ROOM IDENTIFICATION LABEL NAME PLATE (ROOM NAME, CHEMICAL NAME AND ORANGE ADR PLATE)	1
29	1 1/4" BALL VALVE	2
30	1 1/2" PVC	—
31	SLOPE TO 4" DEEP SUMP IN 6" DISTANCE	—
32	1" X 1" WYE	1
33	1/2" X 1" INCREASER	4
34	WATER HOSE BIBB - SEE DETAIL 5/05-C-13	1
35	1" CHECK VALVE	1
36	1" BALL VALVE	1

NOTES:
1. ALL VENTS TO BE OUTSIDE OF BUILDING AND ALL WALL PENETRATIONS SHALL BE SEALED AIR AND WATER TIGHT.
2. ALL PIPING TO BE SCHEDULE 80 PVC UNLESS OTHERWISE NOTED.
3. ALL PIPING AND EQUIPMENT SHALL BE ATTACHED TO WALLS AND OTHER STRUCTURES USING FIBERGLASS REINFORCED PLASTIC (FRP) HANGERS AND SUPPORTS. BRACKETS SHALL CONFORM TO AND FIT DIRECTLY AROUND THE OUTSIDE DIAMETER OF PIPE BEING SUPPORTED. NO CARBONS STEEL SHALL BE USED.
4. SPACING OF PIPE SUPPORTS AND BRACKETS SHALL BE A MINIMUM OF 4 FEET ABD MAXIMUM OF 8 FEET.
5. ADDITIONAL HANGERS AND SUPPORTS SHALL BE INSTALLED AS NEEDED SO THERE ARE NO MOVEMENTS OR VISIBLE SAGGING BETWEEN SUPPORTS.
6. SUBMIT PROPOSED HANGERS AND SUPPORTS TO ENGINEER PRIOR TO INSTALLATION.
7. PROVIDE AND INSTALL NEOPRENE GASKETED OR PAD BETWEEN ALL SURFACES.
8. ALL PIPE TO BE COLOR CODED WITH PROPER LABELING OF FLUID AND FLOW DIRECTION.
9. CONTRACTOR SHALL CONFIRM PIPE SIZES, SUBMIT SHOP DRAWINGS FOR REVIEW, INCLUDING SIZING CALCULATIONS FOR PIPE, ETC....
10. EXHAUST DUCTS TO BE ALUMINUM WITH PROTECTIVE COATINGS SIZED FOR AIR FLOW REQUIREMENT TO HAVE A MINIMUM OF 2 COMPLETE AIR CHANGES PER MINUTE.
11. ALL MATERIALS SHALL BE SUITABLE FOR SODIUM HYPOCHLORITE SERVICE.
12. INSTALL FLEXIBLE CONNECTIONS TO ALL SIDEWALL TANK OUTLETS.
13. COAT ALL FLOORS WITH ANTI-SLIP COATING AND RECOMMENDED EPOXY PAINTS. USE EPOXY PAINT COATINGS ON WALLS ALSO.
14. USE VENT VALVES.

THOMAS & HUTTON ENGINEERING CO.
No. C00285

MARK F. YODICE

NO.	REVISIONS	BY	DATE
1	GENERAL REVISIONS	MFY	12/2/15

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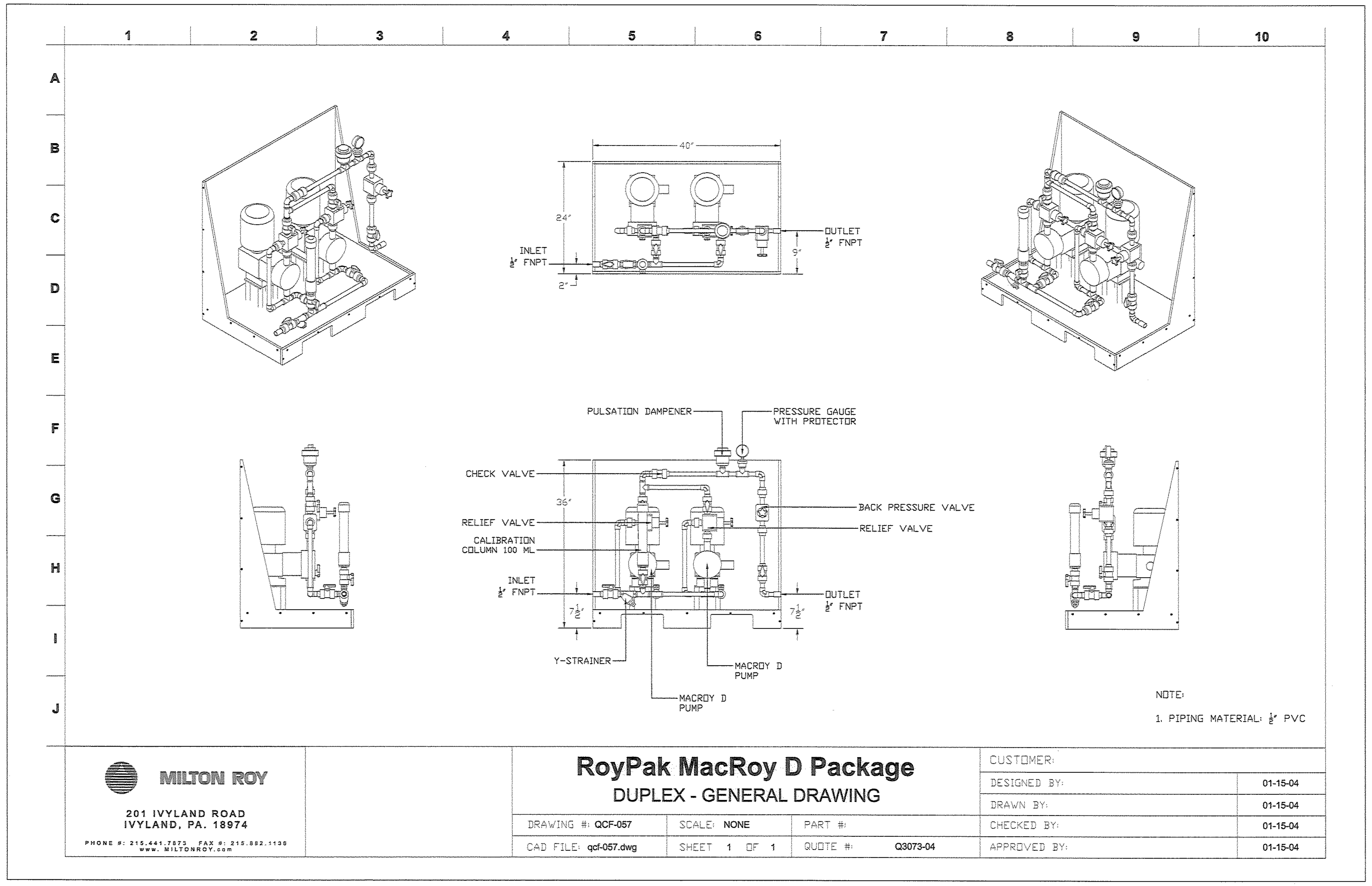
KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

OPERATIONS BLDG CHEMICAL ROOM- PROCESS PIPING PLAN

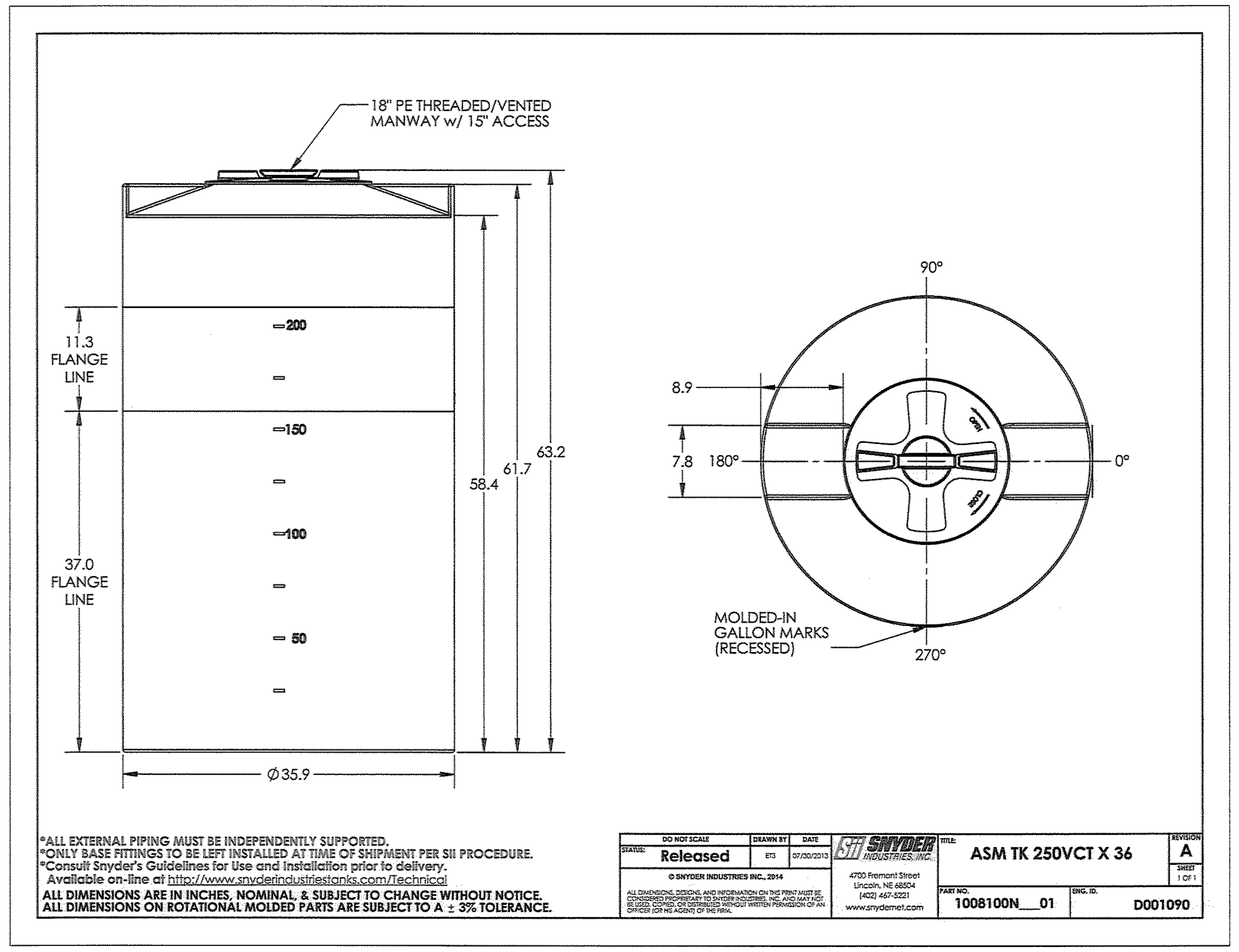
JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	MFY
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

45-D-01



1 SODIUM HYPOCHLORITE SKID
45-D-02

SCALE: N.T.S.


18" PE THREADED/VENTED MANWAY w/ 15" ACCESS
11.3 FLANGE LINE
37.0 FLANGE LINE
200
150
100
50
58.4
61.7
63.2
Ø35.9
90°
0°
180°
270°
8.9
7.8
MOLDED-IN GALLON MARKS (RECESSED)
*ALL EXTERNAL PIPING MUST BE INDEPENDENTLY SUPPORTED.
*ONLY BASE FITTINGS TO BE LEFT INSTALLED AT TIME OF SHIPMENT PER SII PROCEDURE.
*Consult Snyder's Guidelines for Use and Installation prior to delivery.
Available on-line at http://www.snyderindustriestanks.com/Technical
ALL DIMENSIONS ARE IN INCHES, NOMINAL, & SUBJECT TO CHANGE WITHOUT NOTICE.
ALL DIMENSIONS ON ROTATIONAL MOLDED PARTS ARE SUBJECT TO A ± 3% TOLERANCE.
DO NOT SCALE
STATUS: Released
DRAWN BY ET3
DATE 07/30/2013
© SNYDER INDUSTRIES INC., 2014
SNYDER INDUSTRIES, INC.
4700 Fremont Street
Lincoln, NE 68504
(402) 467-5221
www.snydernet.com
TITLE: ASM TK 250VCT X 36
REVISION A
SHEET 1 OF 1
PART NO. 1008100N__01
ENG. ID. D001090

2 SODIUM HYPOCHLORITE STORAGE TANK
45-D-02

SCALE: N.T.S.

THOMAS & HUTTON ENGINEERING CO. No. C00285

No. 13293 MARK F. YODER

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

OPERATIONS BLDG CHEMICAL ROOM - MISCELLANEOUS DETAILS

JOB NO: J-25328.0000
DATE: 7/31/15
DRAWN: DNF
DESIGNED: MFY
REVIEWED: MFY
APPROVED: MFY
SCALE: AS NOTED

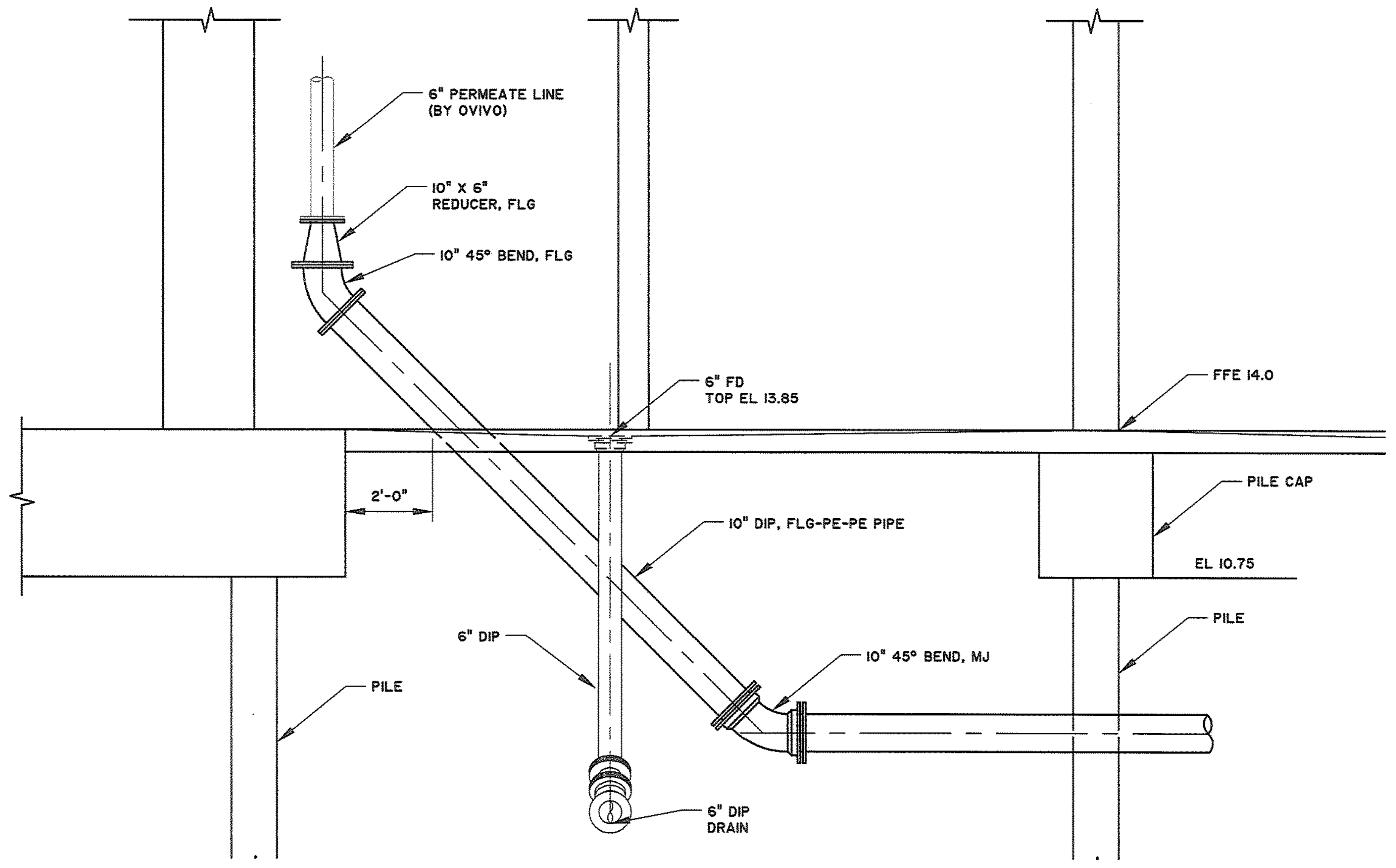
45-D-02

EQUIPMENT ROOM LEGEND

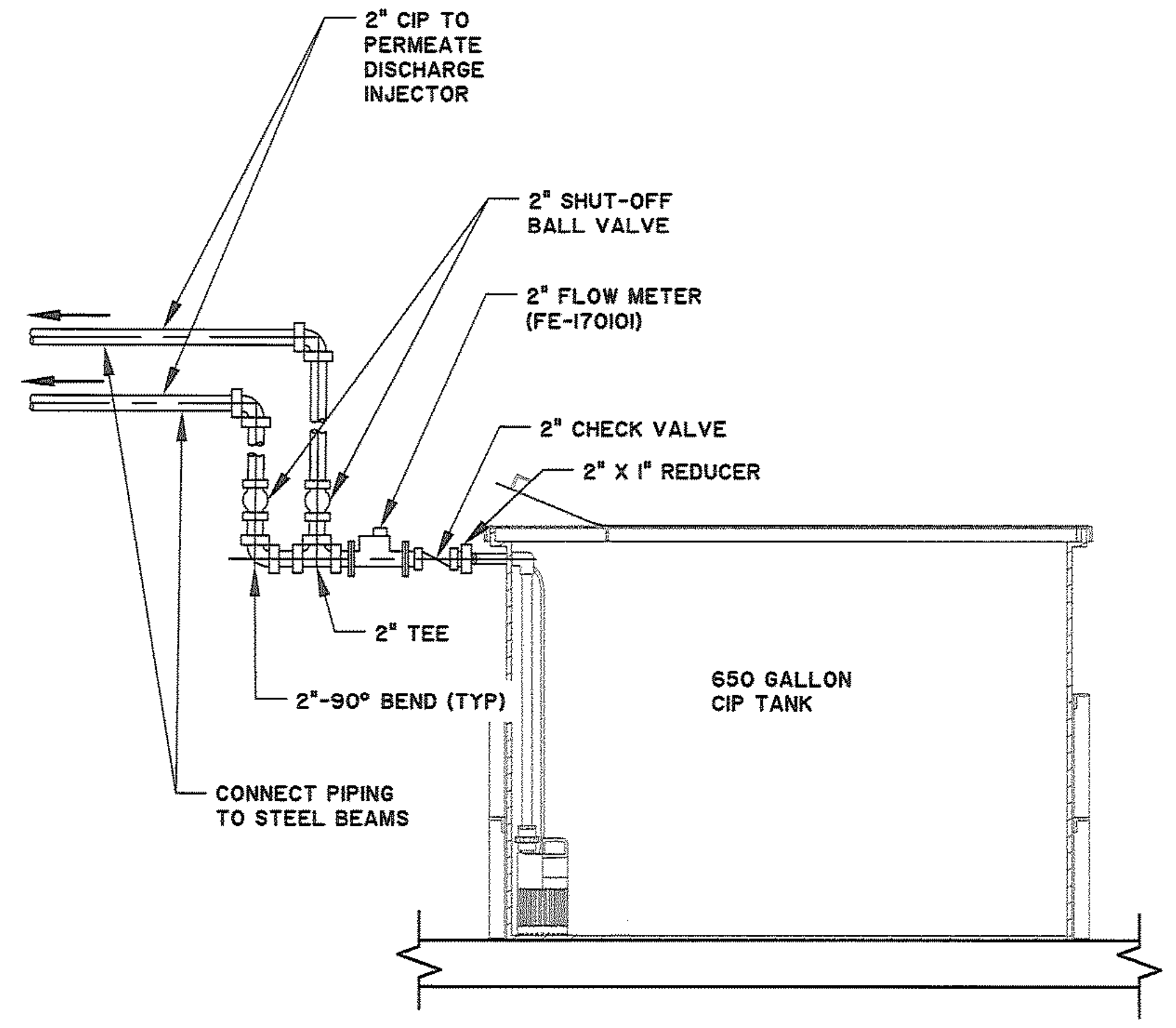
NUMBER	DESCRIPTION	QUANTITY
1	4 SHELF ADJUSTABLE SOLID TOP (36" X 24") DURASHELF ALL PLASTIC INDUSTRIAL GRADE SHELVING SYSTEM OR APPROVED EQUIVALENT WITH 2 CONTAINMENT TRAYS (BLACK)	1
2	48" X 30" ALUMINUM WORK BENCH WITH HDPE TOP	1
3	2" CIP INJECTION POINT	2
4	55-GAL. DRUM W/ TOP CONNECTION FOR CAUSTIC SODA, MODEL 655BLK OR EQUAL	1
5	FOUR DRUM, LOW PROFILE SPILL CONTAINMENT PALLET FOR CAUSTIC SODA STORAGE - EAGLE MODEL 1635B OR EQUAL	1
6	WALL MOUNTED SUPPORT ANGLE	1
7	1" FLEXIBLE SUCTION TUBING	1
8	CHEMICAL METERING PUMP, PMP-160101, WATSON MARLOW, Q DOS 30 UNIVERSAL METERING PUMP (PROVIDE ON SPARE)	2
9	LOW PROFILE HDPE RAMP - EAGLE MODEL 1689B OR EQUAL	1

GENERAL NOTES:

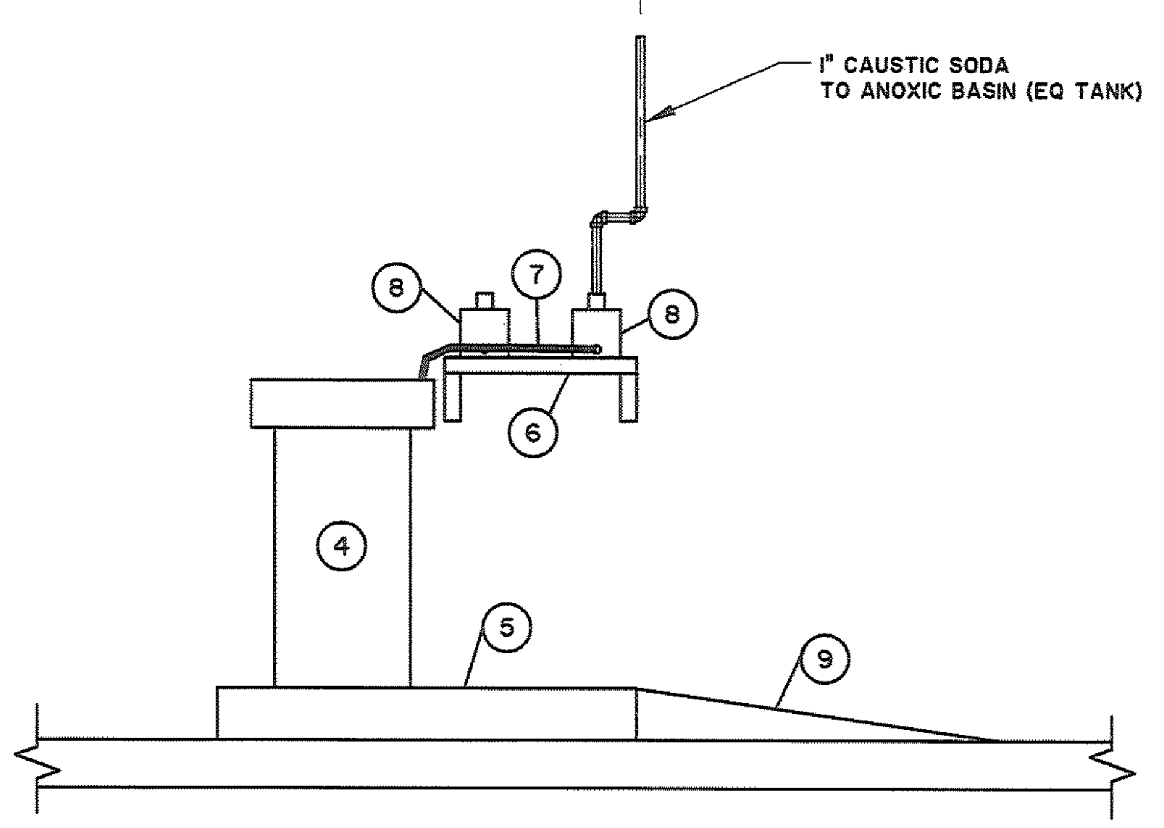
1. BLOWERS TO BE PROVIDED WITH INTAKE FILTER AND SILENCER, PRESSURE RELIEF VALVE, AND CHECK VALVE IN A SOUND ENCLOSURE.
2. ALL AIR PIPING BELOW EL. 23.00 SHALL BE INSULATED PER THE SPECIFICATIONS.
3. INSTALL PIPING SO THAT MAG METERS HAVE AT LEAST 5 DIAMETERS OF STRAIGHT PIPE UPSTREAM AND 3 DIAMETERS DOWNSTREAM.
4. REFER TO SPECIFICATION 40-05-15 FOR PIPE SUPPORT REQUIREMENTS.
5. REFER TO P & IDS FOR VALVES AND INSTRUMENTS.



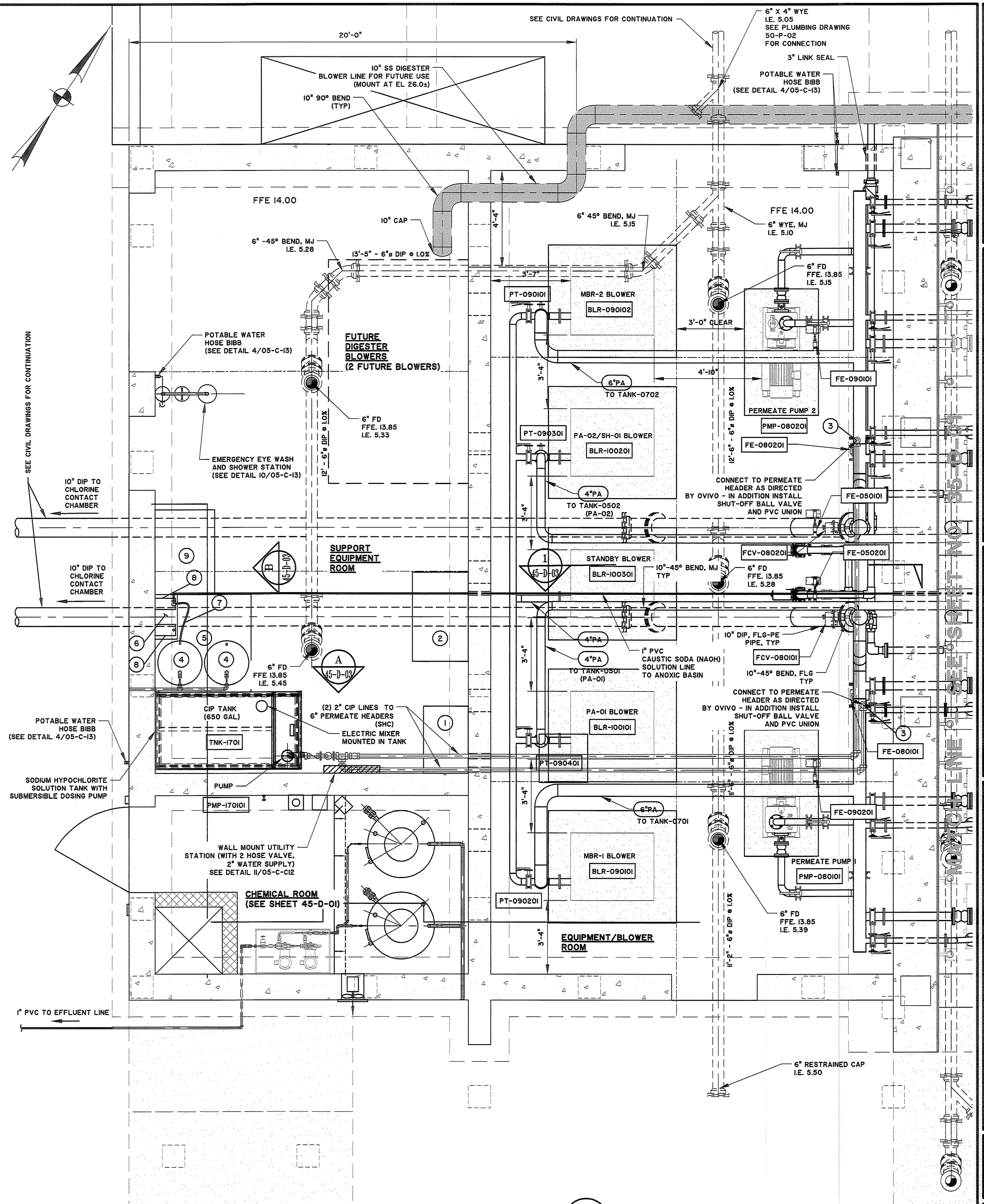
1 SECTION 45-D-03
3/8"=1'-0"



A ELEVATION 45-D-03
1/2"=1'-0"



B ELEVATION 45-D-03
1/2"=1'-0"


SEE CIVIL DRAWINGS FOR CONTINUATION
20'-0"
10" SS DIGESTER BLOWER LINE FOR FUTURE USE (MOUNT AT EL 26.0±)
10" 90° BEND (TYP)
FFE 14.00
10" CAP
6" -45° BEND, MJ I.E. 5.28
13'-5" - 6"ø DIP @ 1.0%
4'-4"
3'-7"
6" X 4" WYE I.E. 5.05 SEE PLUMBING DRAWING 50-P-02 FOR CONNECTION
3" LINK SEAL
POTABLE WATER HOSE BIBB (SEE DETAIL 4/05-C-13)
6" 45° BEND, MJ I.E. 5.15
FFE 14.00
6" WYE, MJ I.E. 5.10
6" FD FFE. 13.85 I.E. 5.15
PT-090101
MBR-2 BLOWER
BLR-090102
3'-0" CLEAR
FE-090101
4'-10"
6"PA TO TANK-0702
PERMEATE PUMP 2
PMP-080201
FE-080201
3
POTABLE WATER HOSE BIBB (SEE DETAIL 4/05-C-13)
FUTURE DIGESTER BLOWERS (2 FUTURE BLOWERS)
6" FD FFE. 13.85 I.E. 5.33
EMERGENCY EYE WASH AND SHOWER STATION (SEE DETAIL 10/05-C-13)
12' - 6"ø DIP @ 1.0%
SEE CIVIL DRAWINGS FOR CONTINUATION
10" DIP TO CHLORINE CONTACT CHAMBER
10" DIP TO CHLORINE CONTACT CHAMBER
PT-090301
PA-02/SH-01 BLOWER
BLR-100201
12'-6" - 6"ø DIP @ 1.0%
4"PA TO TANK-0502 (PA-02)
CONNECT TO PERMEATE HEADER AS DIRECTED BY OVIVO - IN ADDITION INSTALL SHUT-OFF BALL VALVE AND PVC UNION
FE-050101
FCV-080201
FE-050201
3'-4"
SUPPORT EQUIPMENT ROOM
B 45-D-03
1 45-D-03
STANDBY BLOWER
BLR-100301
10"-45° BEND, MJ TYP
6" FD FFE. 13.85 I.E. 5.28
9
8
7
6
5
4
4
8
2
6" FD FFE 13.85 I.E. 5.45
A 45-D-03
4"PA
4"PA TO TANK-0501 (PA-01)
1" PVC CAUSTIC SODA (NAOH) SOLUTION LINE TO ANOXIC BASIN
10" DIP, FLG-PE PIPE, TYP
FCV-080101
10"-45° BEND, FLG TYP
CONNECT TO PERMEATE HEADER AS DIRECTED BY OVIVO - IN ADDITION INSTALL SHUT-OFF BALL VALVE AND PVC UNION
3
FE-080101
POTABLE WATER HOSE BIBB (SEE DETAIL 4/05-C-13)
CIP TANK (650 GAL)
TNK-1701
(2) 2" CIP LINES TO 6" PERMEATE HEADERS (SHC)
ELECTRIC MIXER MOUNTED IN TANK
1
PA-01 BLOWER
BLR-100101
PT-090401
SODIUM HYPOCHLORITE SOLUTION TANK WITH SUBMERSIBLE DOSING PUMP
PUMP
PMP-170101
6"PA TO TANK-0701
FE-090201
WALL MOUNT UTILITY STATION (WITH 2 HOSE VALVE, 2" WATER SUPPLY) SEE DETAIL 11/05-C-C12
CHEMICAL ROOM (SEE SHEET 45-D-01)
MBR-1 BLOWER
BLR-090101
PERMEATE PUMP 1
PMP-080101
PT-090201
11'-2" - 6"ø DIP @ 1.0%
6" FD FFE. 13.85 I.E. 5.39
EQUIPMENT/BLOWER ROOM
1" PVC TO EFFLUENT LINE
6" RESTRAINED CAP I.E. 5.50
MATCHLINE SEE SHEET NO. 35-D-04

1 PIPING PLAN 35-D-01
3/8"=1'-0"

SOUTH CAROLINA THOMAS & HUTTON ENGINEERING CO. No. C00285 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 13293 MARK F. YODICE

1-20-16

NO.	REVISIONS	BY	DATE
	GENERAL REVISIONS	MFY	12/2/15

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
OPERATIONS BLDG LOWER LEVEL - PLAN

JOB NO:	J-25328.0000
DATE:	12/18/15
DRAWN:	DNF
DESIGNED:	MFY
REVIEWED:	MFY
APPROVED:	MFY
SCALE:	AS NOTED

45-D-03

LEGEND

SYMBOL	DESCRIPTION
A-1,3,5 1 a B A-3,5	A-1,3,5 ADJACENT TO ARROW INDICATES HOME-RUN OF CIRCUITS 1,3,5 TO PANEL A. 3,5 OR A-3,5 ADJACENT TO ARROW INDICATES CIRCUIT CONTINUATION. MARKS ACROSS RACEWAY RUNS INDICATE THE NUMBER OF NO. 12 CONDUCTORS. UNLESS NOTED, NO MARKS INDICATES TWO NO. 12 CONDUCTORS. EQUIPMENT GROUNDING CONDUCTORS ARE NOT SHOWN, SEE GENERAL NOTES. IF INDICATED ADJACENT TO OUTLET, NUMERAL AND LOWER CASE LETTER INDICATES CIRCUIT CONNECTION AND SWITCHLEG DESIGNATION RESPECTIVELY. TYPE B OR CAPITAL LETTER B INDICATES LIGHT FIXTURE TYPE. UNLESS NOTED, DIMENSIONS INDICATED IN LEGEND AND ON PLANS ARE TO BOTTOM OF OUTLET OR DEVICE. ALL SYMBOLS INDICATED HEREIN MAY NOT NECESSARILY BE USED ON THE PLANS.
	CEILING OUTLET AND LED FIXTURE
	WALL OUTLET AND LED FIXTURE
	WALL MTD DUAL REMOTE EMERGENCY HEAD - MTD 8' AFF.
⊗ XA	OUTLET AND LED EXIT LIGHT - LETTERS INDICATE FIXTURE TYPE. PROVIDE ARROWS INDICATED
	POST TOP LED LUMINAIRE, POLE, AND CONCRETE BASE, REFER TO DETAIL 1/E-02.
	FLOOD LIGHT
	WALL MOUNTED TWO HEAD EMERGENCY FIXTURE, MT. 8' AFF.
PC	PHOTOCELL, EATON/GREENGATE PPS-5, MOUNTED UNDER EAVE OR 10' AFG, NOTE G10.
J J	WEATHERPROOF JUNCTION BOX MOUNTED TO STRUCTURE
P C	POLYMER CONCRETE PULL BOX MOUNTED FLUSH IN GRADE, REFER TO DETAIL 4/E-03.
6	DUPLEX RECEPTACLE- MT. 16" AFF, NUMBER DESIGNATES LOCAL BRANCH CIRCUIT SERVING OUTLET
	DUPLEX RECEPTACLE- MT. 48" AFF AND/OR ABOVE COUNTER TOP
WP	WEATHERPROOF DUPLEX RECEPTACLE, MT. 16" ABOVE FLOOR AND 36" ABOVE EARTH W/ IN-USE COVER, TYPE 'WR' RECEPTACLE
GF	GROUND FAULT INTERRUPTER DUPLEX RECEPTACLE- MT. 48" AFF AND/OR ABOVE COUNTER TOP OR AS INDICATED
20A	DUPLEX RECEPTACLE, NEMA 5-20R- MT. 16" AFF
W	DUPLEX RECEPTACLE, NEMA 5-20R- MTD. WITHIN WATER COOLER HOUSING, SERVED FROM GFCI BRANCH CIRCUIT BREAKER.
▼	TELEPHONE/DATA OUTLET- MT. 16" AFF U.N.O. EXTEND 1"C TO NEAREST TELEPHONE CABINET OR BACKBOARD
S	SINGLE POLE TOGGLE SWITCH- MT. 48" UP
S^3	THREE-WAY TOGGLE SWITCH- MT. 48" UP
OS^1	PIR WALL OCCUPANCY SENSOR - MT. 48" UP, EATON/GREENGATE OSW-P-1001-MV
OS^2	ULTRASONIC WALL OCCUPANCY SENSOR - MT. 48" UP, EATON/GREENGATE OSW-U-0721-MV
S_S	MOTOR RATED SWITCH WITH OVERLOAD PROTECTION - MT. 48" UP.
S_M	MOTOR RATED DISCONNECT SWITCH, SINGLE PHASE - MT. 48" UP.
S^D	DOOR SWITCH FOR CHEMICAL ROOM, SQUARE D CLASS 9007 MS/ML WITH LEVER ARM.
⊡ EPO	EMERGENCY POWER-OFF PUSHBUTTON STATION
▬	PANELBOARD, SURFACE MOUNTED
OOOOOO	TELEPHONE OR SIGNAL BACKBOARD, 3/4"X 4'X 8' UNLESS NOTED
T	DRY-TYPE TRANSFORMER - VOLTAGE, PHASE, AND KVA AS INDICATED
▭	EQUIPMENT AS NOTED
M	ELECTRIC METER
	MOTOR, HORSEPOWER AS INDICATED
	NON-FUSIBLE DISCONNECT SWITCH, RATING/POLES/ENCLOSURE AS INDICATED
⊠	MAGNETIC STARTER
⊠	COMBINATION MAGNETIC STARTER/NON-FUSIBLE DISCONNECT SWITCH
	RACEWAY INSTALLED CONCEALED IN WALLS AND/OR ABOVE CEILING
	RACEWAY INSTALLED CONCEALED IN/OR BELOW FLOOR SLAB OR BELOW GRADE
———	RACEWAY INSTALLED EXPOSED
—G—G—	GROUND RING AROUND SITE 4/0 CU BURIED AT 36" BELOW GRADE. NOTE G9.
	FLEXIBLE METALLIC RACEWAY
	CONDUIT STUB-UP AND HOMERUN
○ / ●	CONDUIT UP/CONDUIT DOWN
	CONDUIT TERMINATION, STUB-OUT
⏚	GROUND
	GROUND ROD LOCATION
SV	SOLENOID VALVE, FURNISHED WITH EQUIPMENT PROVIDED BY OTHERS
VP	VALVE POSITION SWITCH, FURNISHED WITH EQUIPMENT PROVIDED BY OTHERS
FM	FLOW METER, FURNISHED WITH EQUIPMENT PROVIDED BY OTHERS
PT	PRESSURE TRANSDUCER, FURNISHED WITH EQUIPMENT PROVIDED BY OTHERS
	ULTRASONIC TRANSDUCER
FACP	FIRE ALARM CONTROL PANEL
F	FIRE ALARM MANUAL PULL STATION - MT. 48" UP
F	FIRE ALARM AUDIBLE AND VISUAL SIGNAL DEVICE. MOUNT 6" BELOW FINISHED CEILING OR 80" AFF, WHICHEVER IS LOWER, TO THE BOTTOM OF THE LENS
F	FIRE ALARM VISUAL SIGNAL. MOUNT 6" BELOW FINISHED CEILING OR 80" AFF, WHICHEVER IS LOWER, TO THE BOTTOM OF THE LENS

ABBREVIATIONS

A OR AMP	AMPERES
AFF	ABOVE FINISHED FLOOR
AIC	AMPERE INTERRUPTING CAPACITY
ASYM	ASYMMETRICAL
ATS	AUTOMATIC TRANSFER SWITCH
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CNTL	CONTROL
CT	CURRENT TRANSFORMER
D	DEPTH
DISC	DISCONNECT SWITCH
DISC SW	DISCONNECT SWITCH
EXP	EXPLOSION PROOF
F	FUSE
G OR GND	GROUND
H	HEIGHT
HP	HORSEPOWER
JB OR J	JUNCTION BOX
KVA	KILOVOLT - AMPS
KW	KILOWATTS
L	LENGTH
MCB OR MB	MAIN CIRCUIT BREAKER
MH OR MTG	MOUNTING HEIGHT
MLO	MAIN LUGS ONLY
MT OR MTD	MOUNT OR MOUNTED
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOC.
NTS	NOT TO SCALE
P	POLE
PMT	PAD MOUNT TRANSFORMER
PNL	PANELBOARD
RECEPT	RECEPTACLE
RMS	ROOT MEAN SQUARE
SPD	SURGE PROTECTION DEVICE (TVSS)
SW	SWITCH
SYM	SYMMETRICAL
TBB	TELEPHONE BACKBOARD
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
W	WIDTH
W/	WITH
WP	WEATHER PROOF
XDUCER	TRANSDUCER, ULTRASONIC TYPE
XFMR	TRANSFORMER

GENERAL NOTES: (FOR ALL DRAWINGS WHERE APPLICABLE)

G1. WHEN CONDUCTOR SIZE IS INDICATED FOR BRANCH CIRCUIT HOME RUN, THE CONDUCTOR SIZE INDICATED SHALL BE USED FOR THE COMPLETE CIRCUIT.

G2. ALL EQUIPMENT SUPPORTS AND HANGERS SHALL BE COORDINATED WITH STRUCTURAL DRAWINGS TO INSURE THAT LOCATION OF SUPPORTS AND HANGERS OCCUR WITHIN 4" OF PANEL POINT.

G3. HEAT TAPE CONNECTIONS SHALL BE DIRECT CONNECTIONS.

G4. GROUNDING CONDUCTORS SHALL BE PROVIDED FOR ALL BRANCH CIRCUITS. REFER TO SECONDARY GROUNDING SPECIFICATION SECTION.

G5. THE CONTRACTOR SHALL COORDINATE THE ELECTRICAL REQUIREMENTS OF THE EQUIPMENT PROVIDED WITH THE DRAWINGS. ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER. ANY REQUIRED ADJUSTMENTS IN BREAKER RATINGS, MOTOR CONTROLLERS, FEEDERS, ETC. SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER.

G6. THE RECEPTACLE SHALL BE MOUNTED ON THE EQUIPMENT FRAME OR CONCRETE STRUCTURE. PROVIDE WEATHER RESISTANT TYPE 'WR'.

G7. THE AUTOMATIC TRANSFER SWITCH SHALL PROVIDE A PRE-TRANSFER, POST-TRANSFER, NORMAL POWER AND EMERGENCY POWER SIGNAL TO THE IN-PLANT SCADA PANEL AND OVIVO CONTROL PANEL. THE IN-PLANT SCADA PANEL AND OVIVO PANEL SHALL PROVIDE THE LOAD STEP SEQUENCE REQUIRED IN SPECIFICATION SECTION 263213, IT SHALL ALSO PROVIDE LOCK-OUT OF SPECIFIED LOADS DURING EMERGENCY GENERATOR OPERATION.

G8. ITEM PROVIDED WITH EQUIPMENT FURNISHED BY OTHERS. FIELD CONNECTION BY ELECTRICAL CONTRACTOR.

G9. PROVIDE DETECTABLE BARRIER TAPE, 3M SCOTCH SERIES 400, BURIED AT 18" BELOW GRADE. FURNISH 6" WIDE X 5 MIL TAPE WITH ALUMINUM BACKING. INSTALL ABOVE ALL BURIED ELECTRICAL CONDUITS AND CABLES.

G10. AIM PHOTO CELL AWAY FROM ARTIFICIAL LIGHT SOURCES. ADJUST SHIELD FOR PROPER OPERATION AND TO REDUCE FALSE-SWITCHING.

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Paul M
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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
LEGEND, ABBREVIATIONS & GEN. NOTES

JOB NO: J-25328.0000
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DRAWN: CC
DESIGNED: CC
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SCALE: NONE

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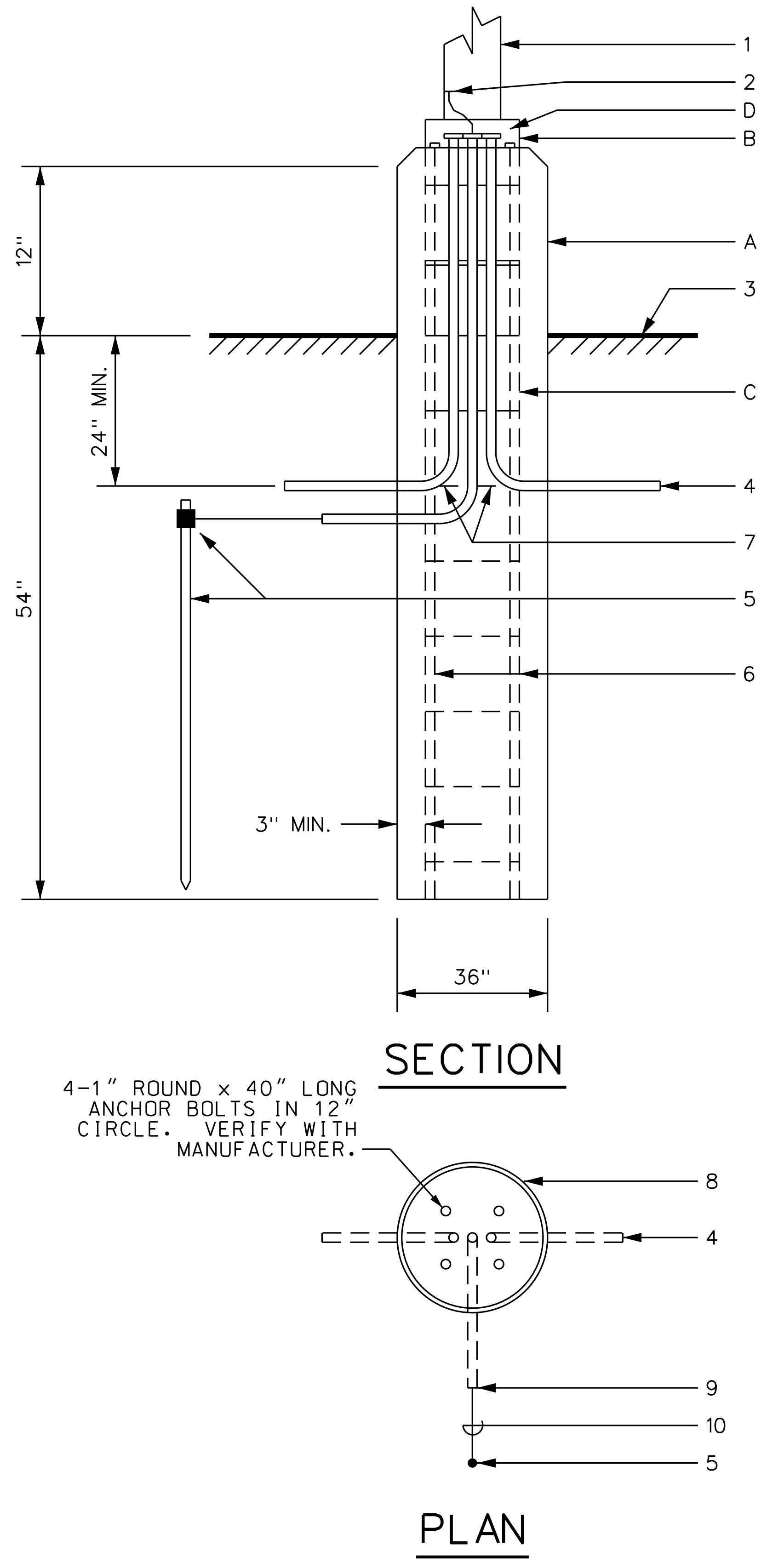
1
2
D
B
A
3
C
4
7
5
6
12"
24" MIN.
54"
3" MIN.
36"
SECTION
4-1" ROUND x 40" LONG ANCHOR BOLTS IN 12" CIRCLE. VERIFY WITH MANUFACTURER.
8
4
9
10
5
PLAN

1 POLE BASE DETAIL (VERTICAL FOOTING)
E-02
N.T.S.

LEGEND:

1 POLE
2 GROUND LUG BOND POLE TO GROUND ROD
3 FINISHED GRADE OF PAVING
4 RACEWAY AND CONDUCTORS
5 3/4" x 10' GROUND ROD WITH EXOTHERMIC CONNECTION
6 REINFORCING STEEL STRUCTURE 4#8 VERTICAL
7 #4@12 RE-BAR TIES TO ANCHOR BOLTS
8 SONO-TUBE CONSTRUCTION WITH 1" CHAMFER
9 WEATHERPROOF WITH SEALING COMPOUND
10 1#6 CU. GROUND IN 1/2" PVC.

NOTES: POLE BASE DETAIL

A. UNLESS NOTED, BASES SHALL BE INSTALLED ABOVE GRADE. FOR ABOVE GRADE BASE, INSTALL 12" ABOVE FINISHED GRADE OR PAVING. HAND RUB EXPOSED BASE TO SAND FINISH.

B. ANCHOR BOLT COVER.

C. ANCHOR BOLTS SHALL BE PRE-FABRICATED AND FURNISHED BY THE POLE MANUFACTURER. ANCHOR BOLTS SHALL BE COORDINATED WITH AND TIED TO THE REINFORCING STEEL STRUCTURE.

D. PACK HIGH STRENGTH GROUT BETWEEN POLE BASE AND FOUNDATION TO INSURE FULL CONTACT WITH FOOTING.

LIGHT FIXTURE SCHEDULE - KIAWAH RIVER PLANTATION WWTP

TYPE	DESCRIPTION	VOLTAGE	LAMP	MOUNTING	NOTES
A	**4' VAPORTITIE LED** METALUX 4VT2-LD4-8-DR100-UNV-L840-CD1-WL- ACCESSORIES: SSL/TEH/VT2-SS-MBK OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	SURFACE	PROVIDE WITH STAINLESS STEEL LATCHES AND MOUNTING BRACKET
B	**LED WALL PACK** LUMARK LD-WP-FC-4A-ED-EMLED-CD OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	WALL	PROVIDE WITH LED BATTERY BACKUP COORDINATE ELEVATION WITH ARCHITECTURAL PLANS
C	**LED VAPORPROOF NON-METALLIC** CANLET 02-15W-L-C-F-OG-01 OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	SURFACE	
D	**4' SURFACE LED** METALUX 4SWLED-LD4-40SL-LW-L840-CD-1-AIB/SPACER-U OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	SURFACE	PROVIDE WITH 1-1/2" SPACER
F	**2' X 4' RECESSED LED TROFFER** METALUX 24ALN-G-LD4-55-UNV-L840-CD-1 OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	RECESSED	
G	**LED VANITY WALL BRACKET** METALUX 2-BCLED-LD4-2400-F-UNV-L840-CD-1 OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	WALL 7'AFF	
H	**LED DOWNLIGHT** PORTFOLIO LD6A-15-D010TE-ERM6A15-9-40-6LM1-H-WF OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	RECESSED	
I	**LED DOWNLIGHT** PORTFOLIO LD6A-30-D010TE-ERM6A30-9-40-6LM1-H-WF OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	RECESSED	
J	**LED FLOOD LIGHT** LUMARK NFFLD-A25-E-UNV-66-S-BZ OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	RECESSED	PROVIDE WITH COOPER RAB (RIGHT ANGLE WALL BRACKET). ROUTE CIRCUIT THROUGH INVERTER FOR EMERGENCY ILLUMINATION.
J1	**LED FLOOD LIGHT** LUMARK NFFLD-A25-E-UNV-66-S-BZ OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	RECESSED	MOUNT ON 15' STRAIGHT ALUMINUM ANCHOR BASE POLE, EATON CAT. NO. SSA-5-T-15-W-D-2-1-G WITH 2 3/8" O.D. TENON
K	**LED AREA LIGHT** LUMARK PRV-A25-D-UNV-T4-SA-BK-10K OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	RECESSED	MOUNT ON 15' STRAIGHT ALUMINUM ANCHOR BASE POLE, EATON CAT. NO. SSA-5-T-15-W-D-M-1-G COORDINATE DRILL PATTERN WITH FIXTURE
K1	**LED AREA LIGHT WITH HOUSE SIDE SHIELD** LUMARK PRV-A25-D-UNV-T4-SA-BK-10K-HSS OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	RECESSED	MOUNT ON 15' STRAIGHT ALUMINUM ANCHOR BASE POLE, EATON CAT. NO. SSA-5-T-15-W-D-M-1-G COORDINATE DRILL PATTERN WITH FIXTURE
K2	**LED AREA LIGHT ON BASIN PLATFORM** LUMARK PRV-A15-D-UNV-T4-SA-BK-10K OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	RECESSED	MOUNT ON 12' STRAIGHT ALUMINUM ANCHOR BASE POLE, EATON CAT. NO. SSA-5-T-12-W-D-M-1-G COORDINATE DRILL PATTERN WITH FIXTURE
L	**LED CLASS I, DIV.2 HAZARDOUS LOCATION FIXTURE** CROUSE-HINDS MLL-4-N-/UNV1-TF-P OR APPROVED EQUAL BY KILLARK OR EMERSON	UNV	LED INCLUDED	RECESSED	PROVIDE WITH DP1057MTK FLUSH/BACK MOUNT BACK PLATE
XA	**LED WET LOCATION EMERGENCY LIGHT EXIT W/REMOTE HEAD** ISOLITE MAC-C-12V-42-R-BB-W-7W REMOTE HEAD: WRH-2-9W OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNIV	SUPPLIED W/ FIX.	WALL 8'AFF	PROVIDE ARROWS, MOUNTING & SINGLE FACE OR DOUBLE FACE AS INDICATED ON THE DRAWINGS MOUNT REMOTE HEADS 8'AFF WHERE SHOWN
XB	**LED THERMOPLASTIC EXIT W/DOUBLE REMOTE HEADS** ISOLITE RLCLED-R-WH-SD-RLLEDWP2 OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNIV	SUPPLIED W/ FIX.	WALL 8'AFF	PROVIDE ARROWS, MOUNTING & SINGLE FACE OR DOUBLE FACE AS INDICATED ON THE DRAWINGS MOUNT REMOTE HEADS 8'AFF WHERE SHOWN
ELU1	**NEMA 4X EMERGENCY LIGHT** ISOLITE HZN-12-42-7W(LED)-SD-NC OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	WALL 8'AFF	PROVIDE WITH HAND HELD REMOTE TESTER ISOLITE TLRT
ELU2	**COMPACT LED EMERGENCY LIGHT** ISOLITE RL2LED-4-WH-SD W/ RLLEDWP2 OR APPROVED EQUAL BY LITHONIA OR HUBBELL	UNV	LED INCLUDED	WALL 8'AFF	PROVIDE WITH HAND REMOTE HEADS WHERE INDICATED

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ELECTRICAL DETAILS & FIXTURE SCHEDULE

JOB NO: J-25328.0000
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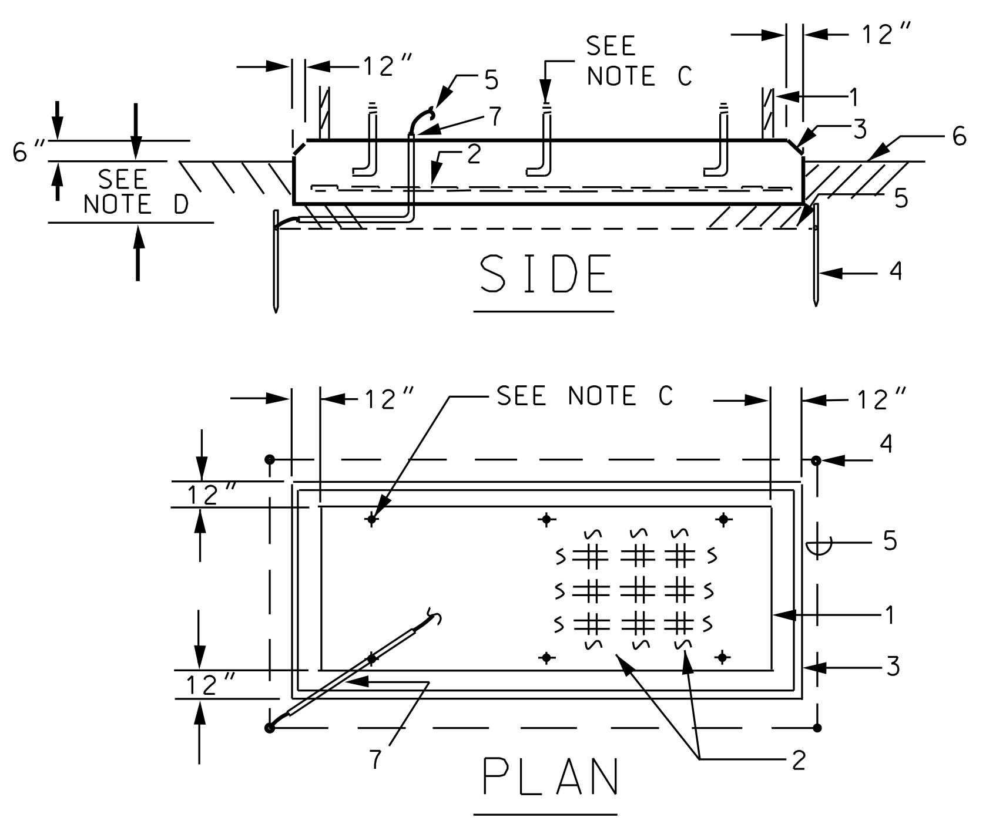

1 - GENERATOR SET ENCLOSURE OUTLINE
2 - REINFORCING STEEL, NOTE A
3 - 1" CHAMFER
4 - $\frac{3}{4}$" X 10' COPPERCLAD GROUND ROD AND
5 - #1/0 CU BARE GROUND CONDUCTOR
6 - FINISHED GRADE
7 - $\frac{3}{4}$" PVC, SEE NOTE B

NOTES: GENERATOR FOUNDATION DETAIL

A. #8 GA. STEEL WIRE MESH, 6" O.C. OR #6 REBAR, 12" O.C., HORIZ. & VERTICALLY.

B. CONNECT TO GENERATOR GROUND CONNECTION LUG. VERIFY STUB UP LOCATION WITH MANUFACTURERS SHOP DRAWINGS. WATERPROOF CONDUIT END WITH SEALING COMPOUND.

C. ANCHOR BOLTS FURNISHED WITH GENERATOR SET. PROVIDE SIX MINIMUM. TIE TO REINFORCING STEEL.

D. DIMENSION SHALL BE 6" (12" OVERALL DEPTH) UP TO & INCLUDING 600 KW, 12" (18" OVERALL DEPTH) LARGER THAN 600 KW.

1 E-03 GENERATOR FOUNDATION DETAIL

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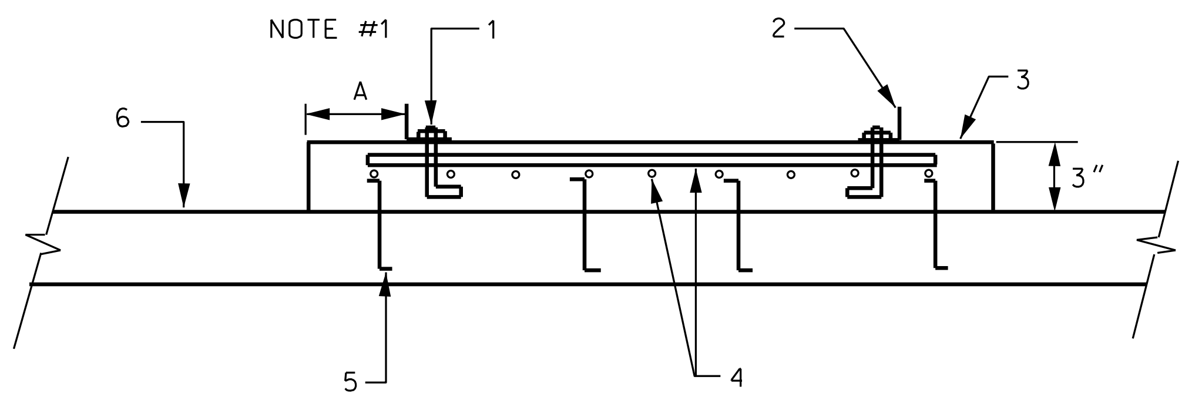


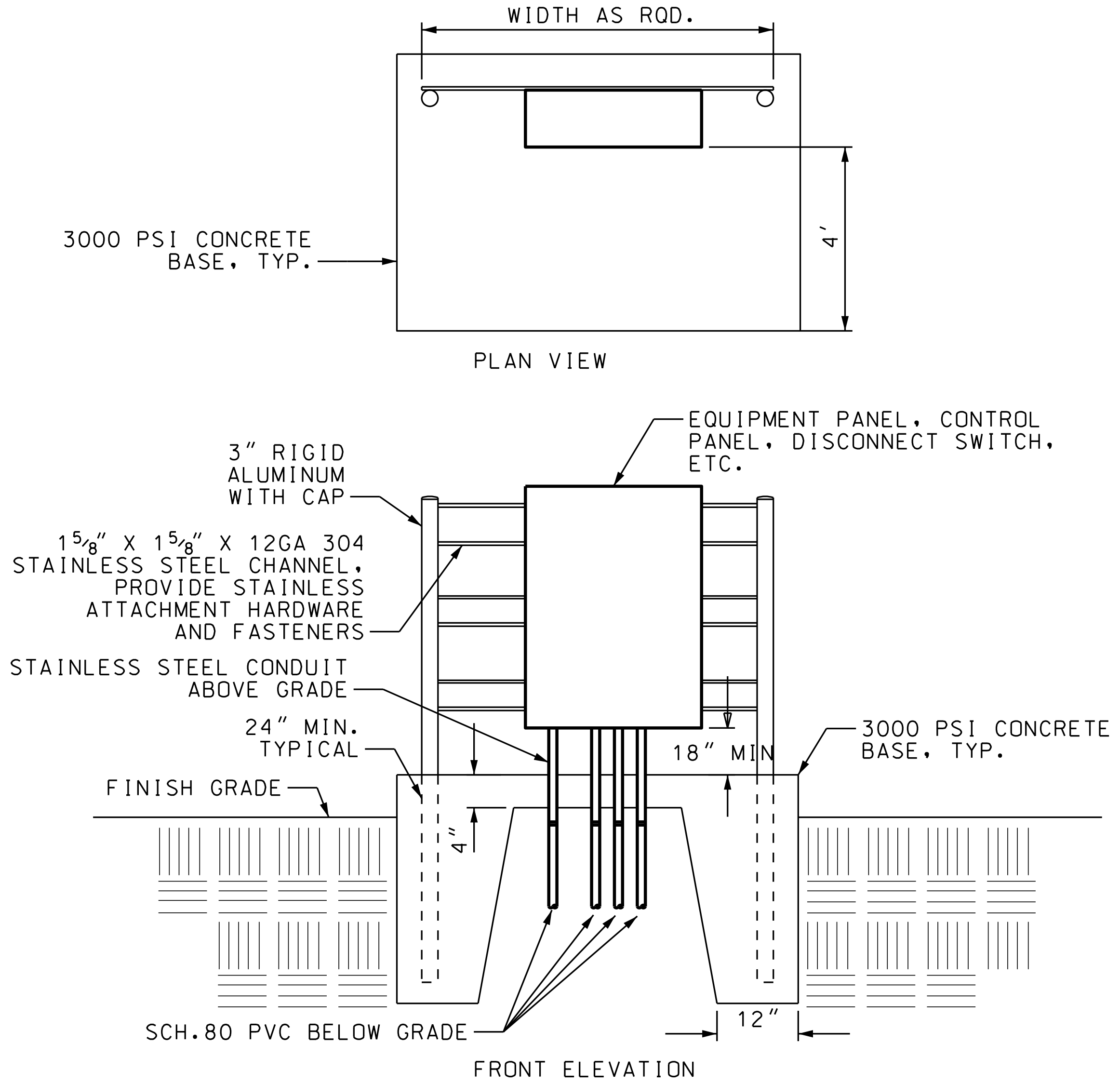
1. $\frac{1}{2}$" GALV. ANCHOR BOLTS - 24" O.C. MIN.
2. ELECTRICAL EQUIPMENT MOUNTING FRAME
3. HOUSEKEEPING BASE
4. REINFORCING #4 BAR 12" O.C. BOTH DIRECTIONS
5. #4 Z BAR DOWELLS - 12" O.C. BOTH DIRECTIONS
6. FLOOR SLAB

1. DIMENSION 'A' SHALL EXCEED DIMENSIONS OF EQUIPMENT BASE BY NOT LESS THAN THREE INCHES IN ALL DIMENSIONS.

2. THIS DETAIL SHALL BE APPLICABLE TO MAIN SWITCHBOARD, FLOOR MOUNTED DRY TYPE TRANSFORMER, FLOOR MOUNTED AUTOMATIC TRANSFER SWITCHES, COMMUNICATIONS EQUIPMENT RACKS AND OTHER FLOOR MOUNTED ELECTRICAL EQUIPMENT EXCEEDING 200 LBS IN WEIGHT.

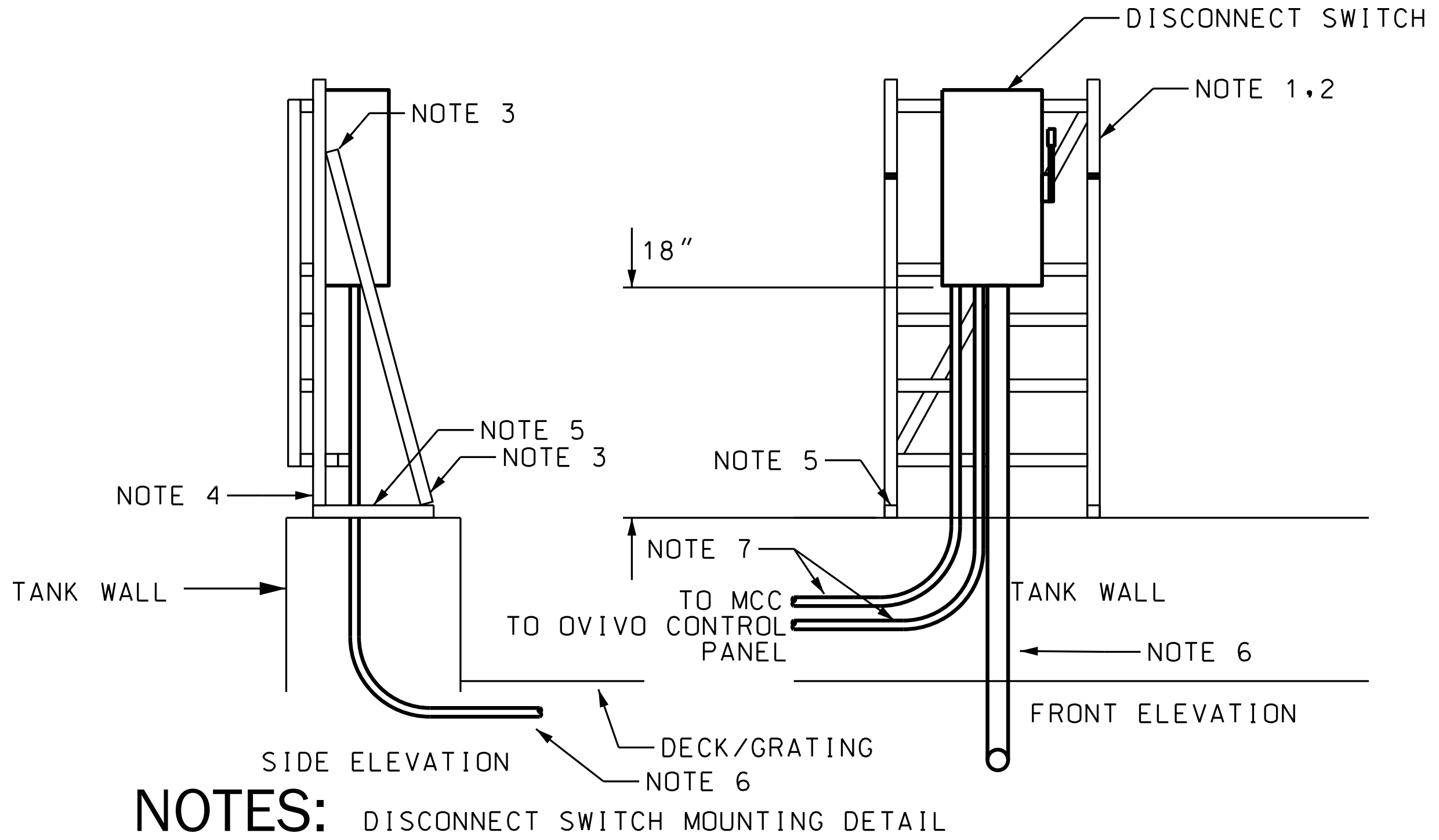
5 E-03 ELECTRICAL EQUIPMENT HOUSEKEEPING BASE

N.T.S.


WIDTH AS RQD.
3000 PSI CONCRETE BASE, TYP.
4'
PLAN VIEW
EQUIPMENT PANEL, CONTROL PANEL, DISCONNECT SWITCH, ETC.
3" RIGID ALUMINUM WITH CAP
1 5/8" X 1 5/8" X 12GA 304 STAINLESS STEEL CHANNEL, PROVIDE STAINLESS ATTACHMENT HARDWARE AND FASTENERS
STAINLESS STEEL CONDUIT ABOVE GRADE
24" MIN. TYPICAL
18" MIN
3000 PSI CONCRETE BASE, TYP.
FINISH GRADE
4"
SCH.80 PVC BELOW GRADE
12"
FRONT ELEVATION

2 E-03 EQUIPMENT RACK

N.T.S.



NOTES: DISCONNECT SWITCH MOUNTING DETAIL

1. ALL CHANNEL, FASTENERS, ACCESSORIES, ETC. SHALL BE 304 STAINLESS STEEL, MINIMUM. PROVIDE PRODUCTS OF B-LINE, UNISTRUT OR POWERSTRUT.

2. 12GA, 304 STAINLESS STEEL CHANNEL, $1\frac{5}{8}$" X $1\frac{5}{8}$", B-LINE B22 SERIES OR EQUAL.

3. B-LINE B335 FOUR-HOLE ADJUSTABLE HINGE, FOUR LOCATIONS.

4. B-LINE B104 FOUR-HOLE CORNER ANGLE.

5. PROVIDE FOUR RED HEAD TRUBOLT TYPE 316 ANCHORS TO SECURE FRAME TO STRUCTURE, PROVIDE SWW1236, $\frac{1}{2}$"X$3\frac{3}{4}$" ANCHOR.

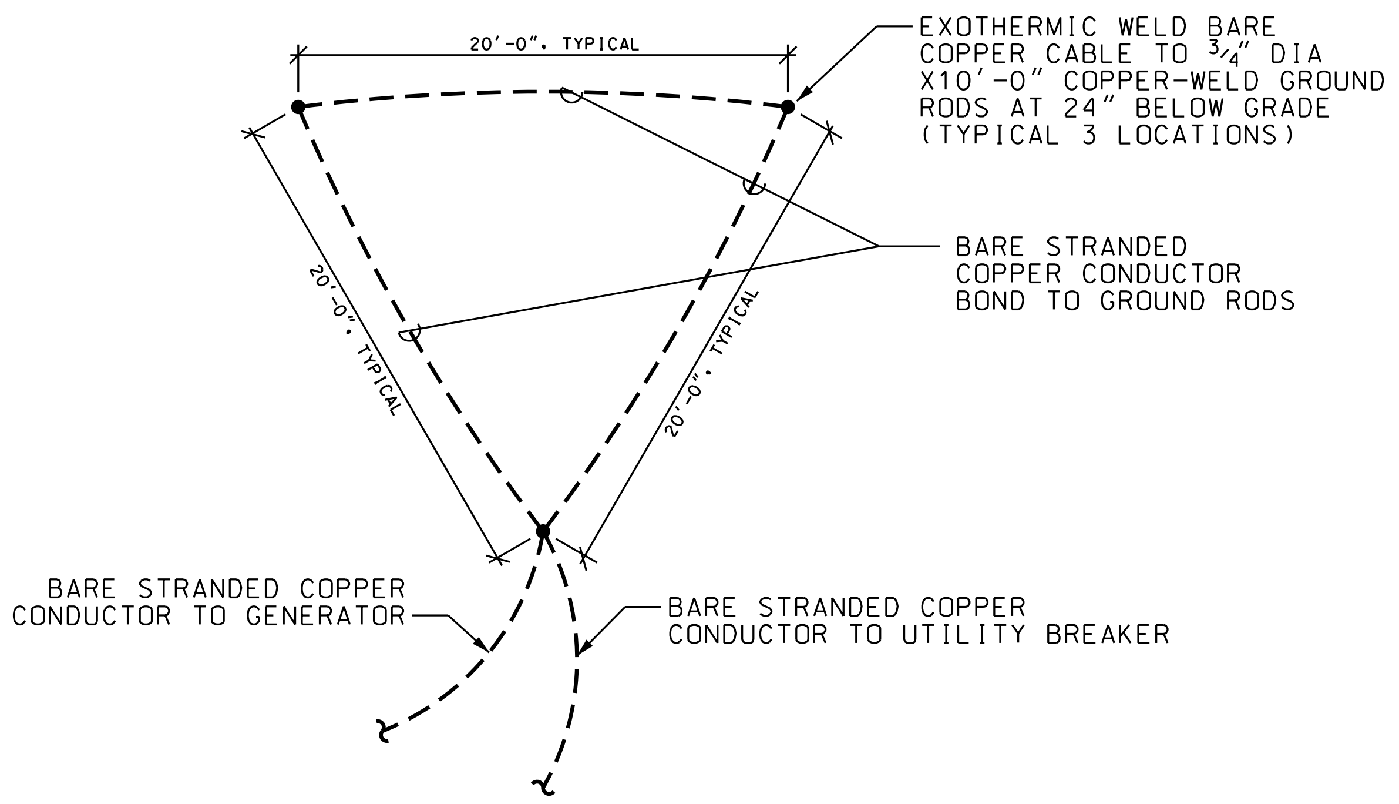
6. STUB 2" STAINLESS STEEL CONDUIT FROM DISCONNECT SWITCH INTO TANK BELOW DECKING. FIELD COORDINATE LOCATION AND ELEVATION OF STUBOUT WITH STRUCTURAL DRAWINGS. PROVIDE STAINLESS STEEL CABLE SUPPORT BRACKET ADJACENT TO GUIDE RAILS. PROVIDE NONCONDUCTIVE, SINGLE EYE, DOUBLE WEAVE, NON-METALLIC GRIP (ARAMID FIBER) FOR SUPPORT OF MOTOR CABLES. ATTACH TO MOTOR CABLE WITH TWO HEAVY DUTY ZIP TIES. FURNISH PRODUCTS OF HUBBELL - KELLEMS.

7. STAINLESS STEEL CONDUIT FROM WITHIN CONCRETE TO DISCONNECT SWITCH. SCH.80 PVC WITHIN CONCRETE. NO FITTINGS ALLOWED 18" OR LESS ABOVE TANK WALL.

8. THIS DETAIL APPLIES TO INSTALLATION ON OR ABOUT THE TREATMENT BASINS OR INFLUENT SCREENS.

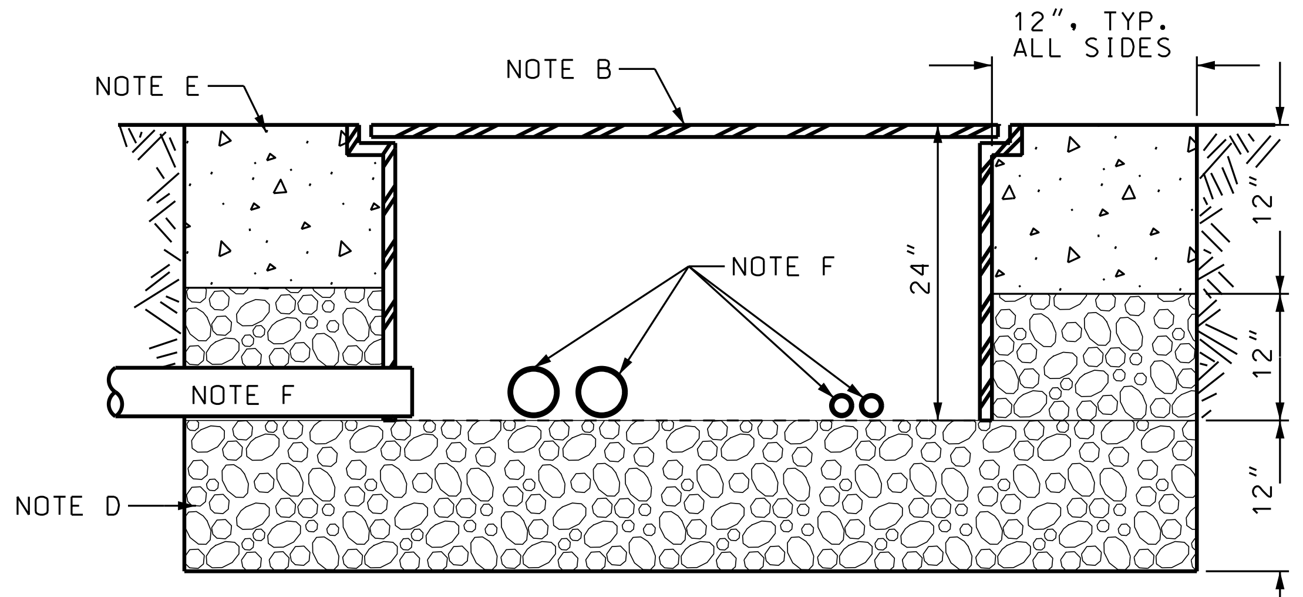
6 E-03 DISCONNECT SWITCH MOUNTING DETAIL

N.T.S.


20'-0", TYPICAL
EXOTHERMIC WELD BARE COPPER CABLE TO 3/4" DIA X10'-0" COPPER-WELD GROUND RODS AT 24" BELOW GRADE (TYPICAL 3 LOCATIONS)
BARE STRANDED COPPER CONDUCTOR BOND TO GROUND RODS
20'-0", TYPICAL
20'-0", TYPICAL
BARE STRANDED COPPER CONDUCTOR TO GENERATOR
BARE STRANDED COPPER CONDUCTOR TO UTILITY BREAKER

3 E-03 SECONDARY ELECTRICAL GROUNDING

N.T.S.



NOTES:

A. JUNCTION BOXES SHALL BE QUAZITE POLYMER CONCRETE TYPE "PG" OPEN BOTTOM, OR EQUIVALENT BY OLD CASTLE.

B. THE COVER SHALL BE TIER 22 RATED. LOGO - "POWER" OR "CONTROLS".

C. BOX DIMENSIONS SHALL BE AS NOTED ON THE DRAWINGS.

D. PROVIDE A BASE OF CRUSHED STONE, 12" DEEP AND EXTENDING 12" BEYOND THE BOX ON ALL SIDES.

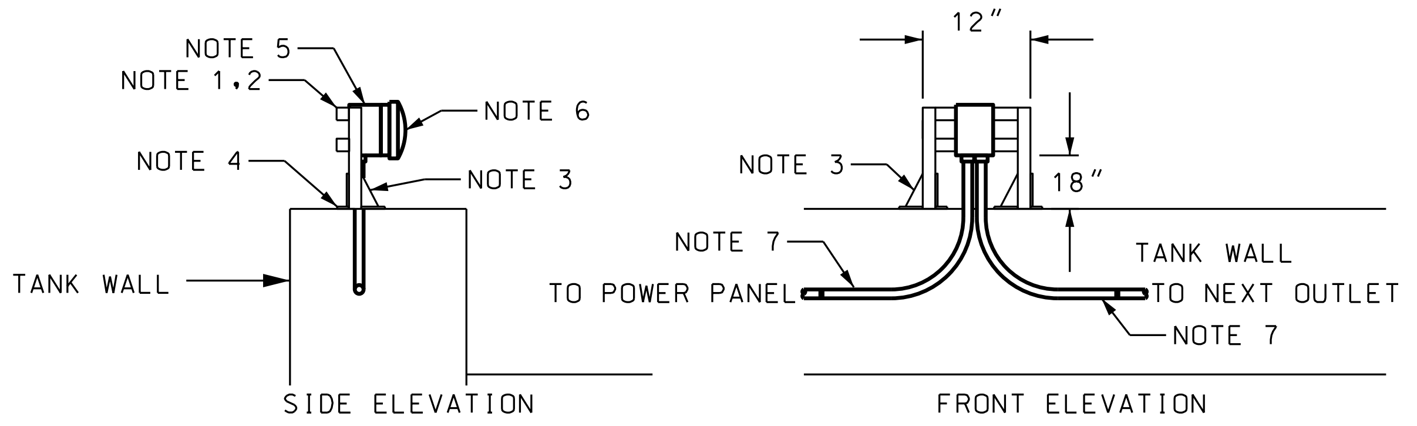
E. PROVIDE A CONCRETE SUPPORT AROUND THE BOX, 12" WIDE AND 12" DEEP, ALL SIDES.

F. CONDUIT ENTRY SHALL BE THROUGH THE SIDE WALL AT THE BOTTOM BELOW THE CONCRETE OR UP THROUGH THE BOTTOM.

G. FOR ALL CONDUCTORS: PROVIDE PERMANENT TAGS IDENTIFYING ALL CABLES.

4 E-03 PULL BOX - FLUSH WITH FINISHED GRADE

N.T.S.



NOTES: MBR TANK RECEPTACLE DETAIL

1. ALL CHANNEL, FASTENERS, ACCESSORIES, ETC. SHALL BE 304 STAINLESS STEEL, MINIMUM. PROVIDE PRODUCTS OF B-LINE, UNISTRUT OR POWERSTRUT.

2. 12GA, 304 STAINLESS STEEL CHANNEL, $1\frac{5}{8}$" X $1\frac{5}{8}$", B-LINE B22 SERIES OR EQUAL.

3. B-LINE B278 STAINLESS STEEL POST BASE FOR B22, TWO PER ASSEMBLY.

4. PROVIDE SIX RED HEAD TRUBOLT TYPE 316 ANCHORS TO SECURE FRAME TO STRUCTURE, PROVIDE SWW1236, $\frac{1}{2}$"X$3\frac{3}{4}$" ANCHOR.

5. RECEPTACLE OUTLET BOX SHALL BE A CROUSE-HINDS FDS2SS, STAINLESS STEEL DEVICE BOX WITH TWO $\frac{3}{4}$" CONDUIT HUBS.

6. RECEPTACLE OUTLET WEATHERPROOF COVER SHALL BE A CALBRITE STAINLESS STEEL 1-GANG DEEP LID WEATHERPROOF COVER, S60000FVCD.

7. STAINLESS STEEL CONDUIT FROM WITHIN CONCRETE TO OUTLET BOX, PVC WITHIN CONCRETE. NO FITTINGS ALLOWED 18" OR LESS ABOVE TANK WALL.

7 E-03 MBR TANK RECEPTACLE DETAIL

N.T.S.

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
ELECTRICAL DETAILS

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	CC
DESIGNED:	CC
REVIEWED:	PM
APPROVED:	PM
SCALE:	NONE

50-E-03

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SPRAYFIELD ELECTRICAL SERVICE & CONTROL LOCATED IN THIS AREA. REFER TO SHEET 50-E-14 FOR ELECTRICAL DESIGN.
APPROXIMATE LOCATION OF MONITORING WELL REFER TO CIVIL DRAWINGS FOR PRECISE LOCATION
24"X24"X24" IN-GRADE POLYMER CONCRETE PULL BOX, TYPICAL
EFFLUENT PUMP STATION ELECTRICAL SERVICE & CONTROL LOCATED IN THIS AREA. REFER TO SHEET 50-E-13 FOR ELECTRICAL DESIGN.
EFFLUENT PS SCADA PANEL
APPROXIMATE LOCATION OF MONITORING WELL REFER TO CIVIL DRAWINGS FOR PRECISE LOCATION
2½"C W/ONE OPTICAL FIBER CABLE
2½"C W/ONE OPTICAL FIBER CABLE
SPRAY FIELD SCADA PANEL
2½"C W/ONE OPTICAL FIBER CABLE
24"X24"X24" IN-GRADE POLYMER CONCRETE PULL BOX, TYPICAL
APPROXIMATE LOCATION OF MONITORING WELL REFER TO CIVIL DRAWINGS FOR PRECISE LOCATION
2½"C W/TWO OPTICAL FIBER CABLES
APPROXIMATE LOCATION OF MONITORING WELL REFER TO CIVIL DRAWINGS FOR PRECISE LOCATION
24"X24"X24" IN-GRADE POLYMER CONCRETE PULL BOX, TYPICAL
APPROXIMATE LOCATION OF MONITORING WELL REFER TO CIVIL DRAWINGS FOR PRECISE LOCATION
CENTRAL TREATMENT PLANT LOCATED IN THIS AREA. REFER TO SHEET E-05 THROUGH E-10 FOR CENTRAL PLANT ELECTRICAL PLANS.
APPROXIMATE LOCATION OF MONITORING WELL REFER TO CIVIL DRAWINGS FOR PRECISE LOCATION
J

1 E-04 **OVERALL PLAN - ELECTRICAL**

SCALE: 1" = 100'

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
CHATHAM ENGINEERING COMPANY LLC
C04812

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PAUL MAMALAKIS
Paul M
1/28/16

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

OVERALL PROJECT PLAN - ELECTRICAL

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	CC
DESIGNED:	CC
REVIEWED:	PM
APPROVED:	PM
SCALE:	1" = 100'

50-E-04

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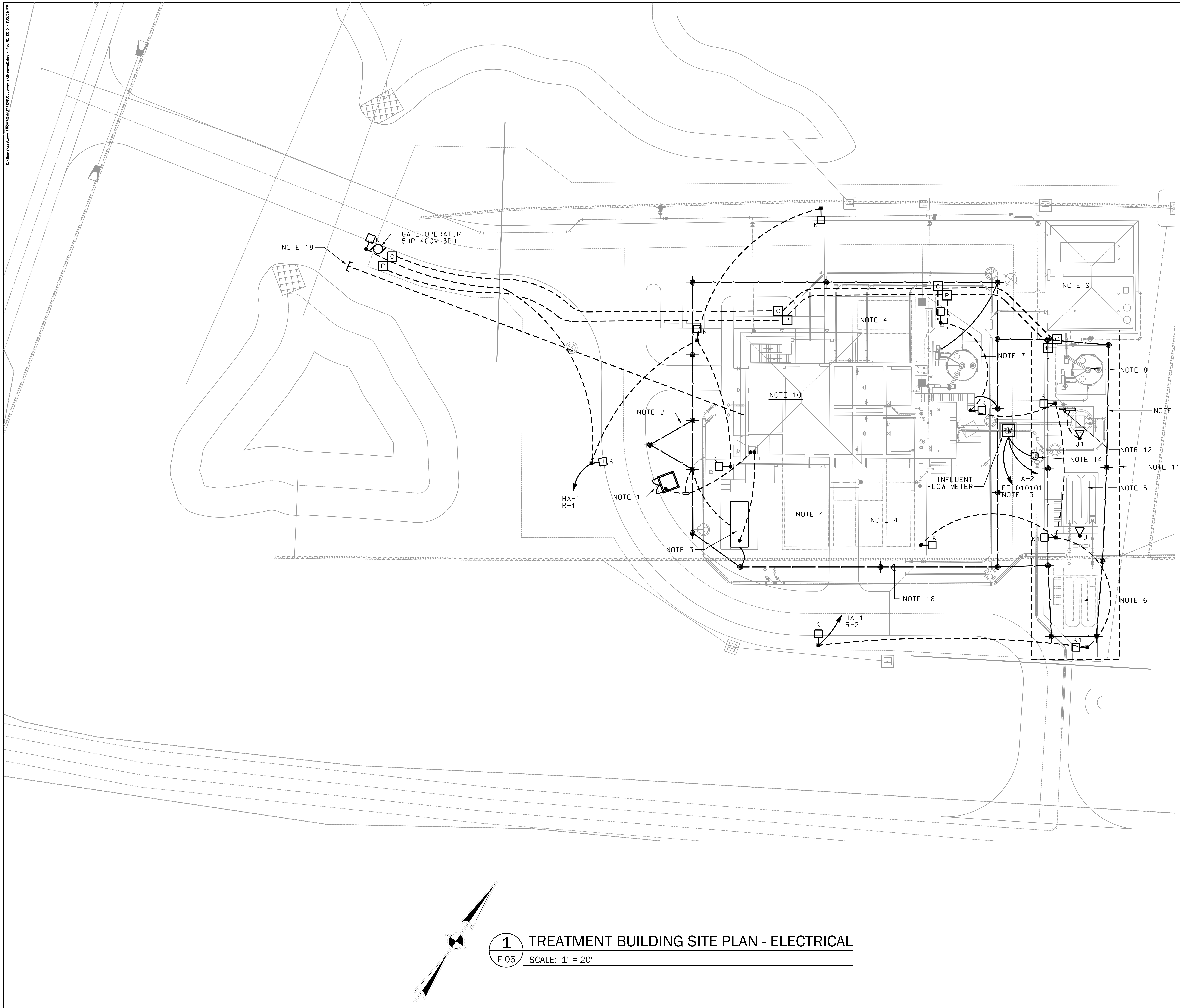

1 E-05 TREATMENT BUILDING SITE PLAN - ELECTRICAL

SCALE: 1" = 20'

NOTES:

1. FIELD COORDINATE THE PAD MOUNTED TRANSFORMER LOCATION WITH JOHN HALL, BERKELEY ELECTRIC COOP, 843-899-8463.
2. LOCATE GROUNDING DELTA IN THIS AREA. INSTALL PER DETAIL 3/E-03.
3. FIELD COORDINATE THE LOCATION OF THE GENERATOR WITH EQUIPMENT ACTUALLY PROVIDED. DO NOT INSTALL GENERATOR ON TOP OF CONDUITS RUNS.
4. FUTURE PLANT EXPANSION AREA. DO NOT INSTALL ANY CONDUITS, PULL BOXES, ETC IN THIS AREA.
5. PROJECT PHASE I CHLORINE CONTACT CHAMBER.
6. PROJECT PHASE III CHLORINE CONTACT CHAMBER.
7. ODOR CONTROL SYSTEM FOR TREATMENT PLANT.
8. ODOR CONTROL SYSTEM FOR CENTRIFUGE BUILDING.
9. CENTRIFUGE BUILDING. REFER TO SHEET 50-E-11 FOR ELECTRICAL PLAN.
10. TREATMENT BUILDING. REFER TO SHEETS 50-E-07 THROUGH 50-E-12 FOR ELECTRICAL PLANS.
11. ODOR CONTROL(CENTRIFUGE)CHLORINE CONTACT BASIN AND PLANT DRAIN PUMP STATION. REFER TO SHEET 50-E-12 FOR ELECTRICAL PLAN.
12. PLANT DRAIN PUMP STATION IN-PLANT SCADA PANEL. MOUNT ON EQUIPMENT FRAME ADJACENT TO PUMP STATION CONTROL PANEL.
13. REFER TO 50-E-18, OVIVO FIELD INSTRUMENT CONNECTION SCHEDULE FOR CONDUIT AND WIRE REQUIREMENTS.
14. EXTEND 120V CIRCUIT, $\frac{3}{4}$" CW/2 NO.12, 1 NO.12(G). TO AUTO SAMPLER.
15. EXTEND LIGHTING CIRCUIT THROUGH EXTERIOR LIGHTING CONTROL PANEL, RELAY NUMBER AS INDICATED.
16. 4/0 COPPER GROUND RING ABOUT BUILDING AND STRUCTURES. BOND METAL STRUCTURES TO GROUND RING.
17. ENCLOSED UTILITY SERVICE BREAKER IN NEMA 4X STAINLESS STEEL ENCLOSURE MOUNTED ON EQUIPMENT FRAME. REFER TO DETAIL 2/E-03.
18. STUB OUT TWO 3" SCH.80 PVC CONDUITS FOR TELEPHONE SERVICE. FIELD COORDINATE STUB OUT TERMINATION WITH TELEPHONE SERVICE PROVIDES.

CHATHAM ENGINEERING COMPANY LLC
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No. 14134
PAUL MAMALAKIS
1/28/16

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CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

TREATMENT PLANT SITE - ELECTRICAL

JOB NO: J-25328.0000
DATE: 01/28/16
DRAWN: CC
DESIGNED: CC
REVIEWED: PM
APPROVED: PM
SCALE: 1" = 20'

50-E-05

CADD PLOT
28-JAN-2016
18x34
CCOBB

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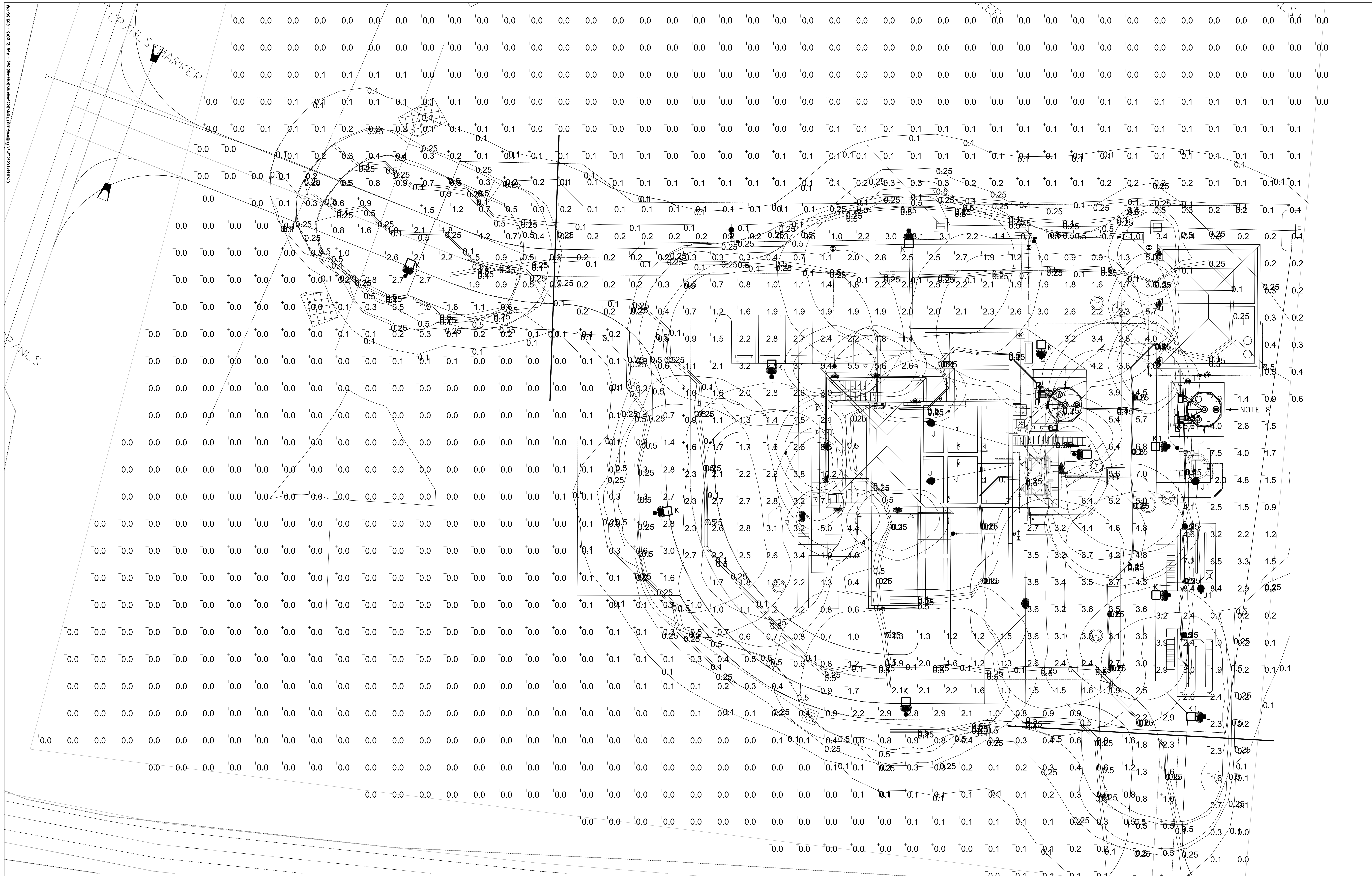

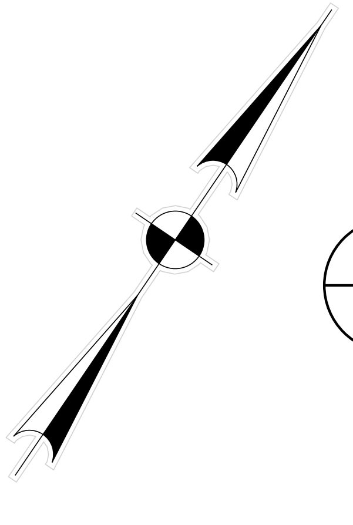

1 E-06 TREATMENT BUILDING SITE PLAN - PHOTOMETRY

SCALE: 1" = 20'

PHOTOMETRY:

Luminaire Locations

		Location						Aim		
No.	Label	X	Y	Z	MH	Orientation	Tilt	X	Y	Z
1	B	631.69	446.94	8.00	8.00	269.31	0.00	631.69	446.94	0.00
2	B	631.76	468.46	8.00	8.00	269.42	0.00	631.76	468.46	0.00
3	B	631.83	487.05	8.00	8.00	270.00	0.00	631.83	487.05	0.00
4	B	541.43	432.19	8.00	8.00	0.20	0.00	541.43	432.19	0.00
5	B	526.90	441.48	8.00	8.00	359.47	0.00	526.90	441.48	0.00
7	B	599.00	416.00	8.00	8.00	0.00	0.00	599.00	416.00	0.00
8	B	595.00	408.00	8.00	8.00	90.00	0.00	595.00	408.00	0.00
9	B	511.90	441.48	8.00	8.00	359.47	0.00	511.90	441.48	0.00
10	B	509.00	416.00	8.00	8.00	270.00	0.00	509.00	416.00	0.00
11	B	509.00	404.00	8.00	8.00	270.00	0.00	509.00	404.00	0.00
12	B	513.00	393.00	8.00	8.00	180.00	0.00	513.00	393.00	0.00
13	B	535.00	393.00	8.00	8.00	180.00	0.00	535.00	393.00	0.00
3	J	546.00	425.00	25.00	25.00	106.19	52.24	577.00	416.00	0.00
4	J	546.00	403.00	25.00	25.00	79.05	51.63	577.00	409.00	0.00
1	J1	647.00	362.00	15.00	15.00	357.50	56.91	646.00	385.00	0.00
2	J1	645.00	402.00	15.00	15.00	0.00	30.96	645.00	411.00	0.00
2	K	445.40	391.45	15.00	15.00	80.65	0.00	446.69	391.66	0.00
3	K	538.18	317.08	15.00	15.00	358.00	0.00	538.14	318.38	0.00
7	K	539.12	495.62	15.00	15.00	178.65	0.00	539.15	494.32	0.00
8	K	488.52	441.70	15.00	15.00	359.53	0.00	488.50	443.00	0.00
9	K	353.30	478.91	15.00	15.00	23.92	0.00	353.82	480.10	0.00
10	K	502.02	390.00	15.00	15.00	272.90	0.00	500.72	390.06	0.00
11	K	588.00	448.00	15.00	15.00	0.00	0.00	588.00	449.30	0.00
1	K1	634.96	415.89	15.00	15.00	268.41	0.00	634.41	415.87	0.00
12	K	600.00	413.00	15.00	15.00	90.00	0.00	601.30	413.00	0.00
2	K1	635.14	360.94	15.00	15.00	270.00	0.00	634.59	360.94	0.00
3	K1	648.07	316.04	15.00	15.00	270.00	0.00	647.52	316.04	0.00
13	K	580.00	358.00	15.00	15.00	90.00	0.00	581.30	358.00	0.00

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	1.9 fc	10.2 fc	0.0 fc	N/A	N/A
Calc Zone #2	+	2.8 fc	7.0 fc	0.1 fc	70.0:1	28.0:1
Calc Zone #3	+	0.2 fc	3.0 fc	0.0 fc	N/A	N/A
Calc Zone #4	+	0.1 fc	1.5 fc	0.0 fc	N/A	N/A
Calc Zone #5	+	1.6 fc	13.5 fc	0.0 fc	N/A	N/A

Schedule

Symbol	Label	QTY	Manufacturer	Description	Catalog Number	Lamp	Number Lamps	Filename	Lumens per Lamp	LLF	Wattage
▯	B	12	EATON - LUMARK (FORMER COOPER LIGHTING)	LUMARK WAL-PAK LED FULL CUTOFF WITH SPECULAR REFLECTOR & SOLITE GLASS LENS	LDWP-FC-4A-ED	(4)CHIP LED (5000K, 67 CRI)	4	LDWP-FC-4A-ED.ies	328	1	40.1
□	K	9	EATON - LUMARK (FORMER COOPER LIGHTING)	PREVAIL AREA AND ROADWAY LUMINAIRE (1) 70 CRI, 4000K LED AT 40% STANDARD LUMENS AND TYPE IV OPTICS, BRONZE PAINTED FINISH ABSOLUTE PHOTOMETRY IS BASED ON CALIBRATION FACTORS CREATED USING LAB LUMEN STANDARDS IN GONIOPHOTOMETER WITH TEST DISTANCE OF 28.75 FEET	PRV-A15-D-UNV-T4-BZ		1	TYPE K PRV-A15-D--UNV-T4-BZ.ies	6174.266	1	57
□	K1	3	EATON - LUMARK (FORMER COOPER LIGHTING)	PREVAIL AREA AND ROADWAY LUMINAIRE (1) 70 CRI, 4000K LED AT 40% STANDARD LUMENS AND TYPE IV OPTICS WITH HOUSE SIDE SHIELD, BRONZE PAINTED FINISH ABSOLUTE PHOTOMETRY IS BASED ON CALIBRATION FACTORS CREATED USING LAB LUMEN STANDARDS IN GONIOPHOTOMETER WITH TEST DISTANCE OF 28.75 FEET	PRV-A15-D-UNV-T4-BZ-HSS		1	TYPE K1 PRV-A15-D-UNV-T4-BZ-HSS.ies	5626.672	1	57
	J	2	EATON - LUMARK (FORMER COOPER LIGHTING)	COB FLOODLIGHT	NFFLD-A25-X-U-66-7030-XX	(2) 3000K LEDS	1	NFFLD-A25-X-U-66--7030-XX.ies	-1	1	85
	J1	2	EATON - LUMARK (FORMER COOPER LIGHTING)	COB FLOODLIGHT	NFFLD-A25-X-U-66-7030-XX	(2) 3000K LEDS	1	NFFLD-A25-X-U-66--7030-XX.ies	-1	1	85

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CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

TREATMENT PLANT SITE - PHOTOMETRY

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	CC
DESIGNED:	CC
REVIEWED:	PM
APPROVED:	PM
SCALE:	1" = 20'

50-E-06

CADD PLOT
28-JAN-2016
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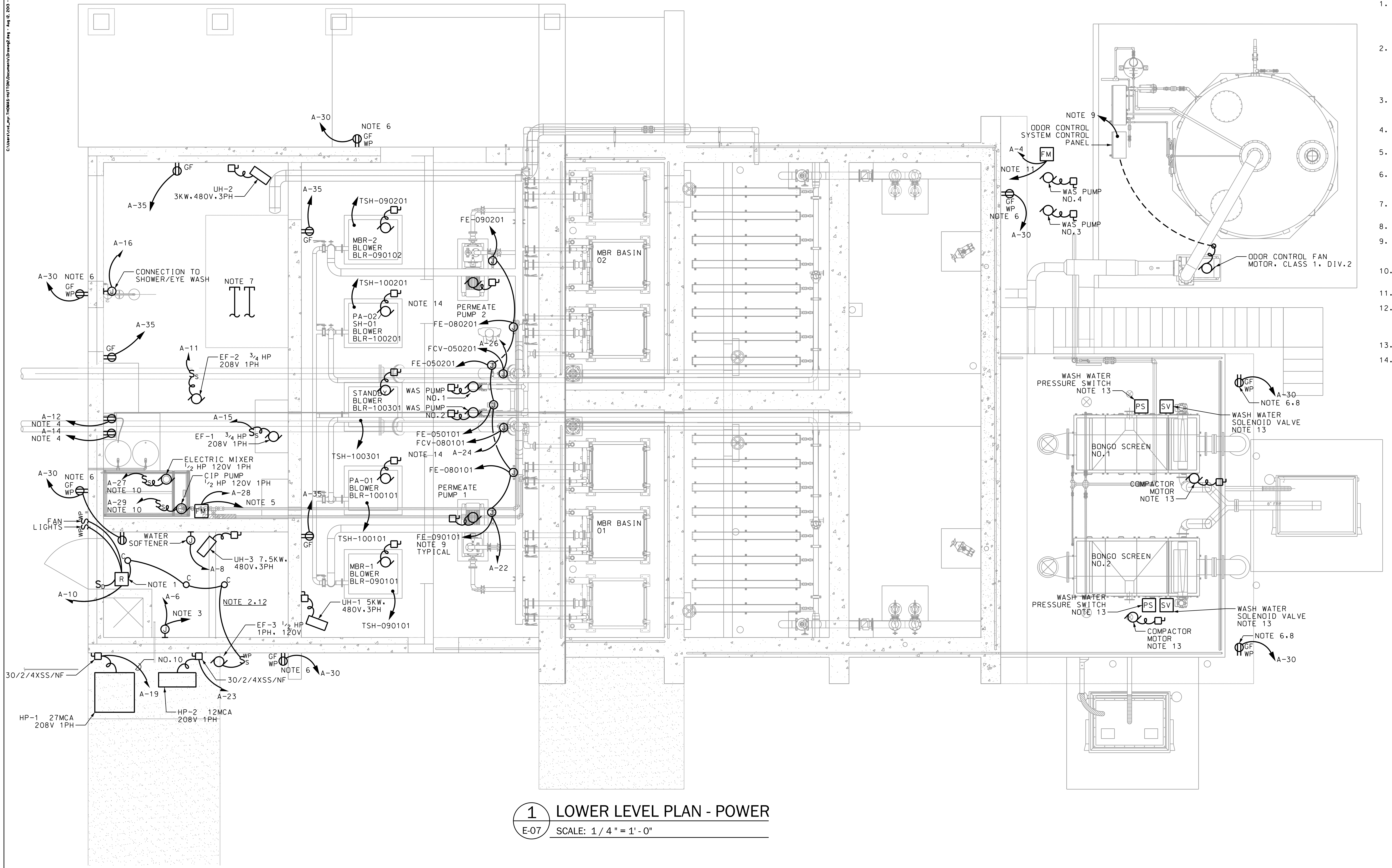

1 LOWER LEVEL PLAN - POWER
E-07 SCALE: 1/4" = 1'-0"

NOTES:

1. LIGHT AND FAN IN CHLORINE ROOM AND EQUIPMENT ROOM SHALL BE CONTROLLED THROUGH AN AUXILIARY RELAY IN A NEMA 4X FIBERGLASS BOX SO THAT IF THE EXTERIOR DOOR IS OPEN OR THE SWITCH IS ON, THE LIGHT AND FAN OPERATE.
2. ALL CONDUITS BOXES AND SUPPORTS IN THE CHEMICAL ROOM SHALL BE SCH.80 PVC. SEAL ALL CONDUIT TERMINATIONS (OUTLETS, LIGHTS, EQUIPMENT, ETC.) WITH ELECTRICAL DUCT SEAL. SEAL ALL PENETRATIONS THROUGH WALLS, CEILING AND FLOORS WITH SILICONE CAULK.
3. EXTEND CONTROL WIRING TO MAIN IN-PLANT SCADA PANEL FOR START/STOP, SPEED AND ALARMS. REFER TO MAIN IN-PLANT SCADA I/O CONNECTION SCHEDULE.
4. RECEPTACLES FOR CAUSTIC SODA PUMPS. INTERLOCK THROUGH OVIVO CONTROL PANEL.
5. EXTEND NAHCL FLOW METER OUTPUT TO OVIVO CONTROL PANEL.
6. INSTALL EXTERIOR RECEPTACLES FOR LOWER LEVEL AT 15.5′ MSL. REFER TO THE CIVIL AND ARCHITECTURAL DRAWINGS FOR DATUM REFERENCE.
7. STUB OUT TWO 1″ CONDUITS FROM MCC FOR FUTURE BLOWERS (PHASE 2).
8. MOUNT RECEPTACLES ON COLUMNS.
9. EXTEND WIRING TO OVIVO CONTROL PANEL. REFER TO OVIVO FIELD INSTRUMENT CONNECTION SCHEDULE, SHEET 50-E-18.
10. EXTEND FRACTION HP MOTOR CIRCUIT THROUGH OVIVO CONTROL PANEL FOR ON/OFF CONTROL.
11. EXTEND TO IN-PLANT SCADA PANEL.
12. RECEPTACLES IN THE CHLORINE ROOM SHALL BE MARINE GRADE CORROSION RESISTANT TYPE. PROVIDE HUBBELL HBL53CM62 OR EQUAL BY ARROW-HART.
13. EXTEND CONTROL FROM SCREEN CONTROL PANEL.
14. FIELD COORDINATE WITH OVIVO FIELD INSTALLATION DRAWINGS FOR HTE FOLLOWING INSTRUMENTS:
PERMEATE PUMPS
FCV-080101 FCV-080201
PROCESS AIR BLOWERS
PT-090101 PT-090201
MBR BLOWERS
PT-090101 OT-090201

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No. 14134
Paul Mamalantis
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CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WWTP BUILDING - LOWER LEVEL- POWER

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	CC
DESIGNED:	C
REVIEWED:	PM
APPROVED:	PM
SCALE:	1/4" = 1'-0"

50-E-07

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28-JAN-2016
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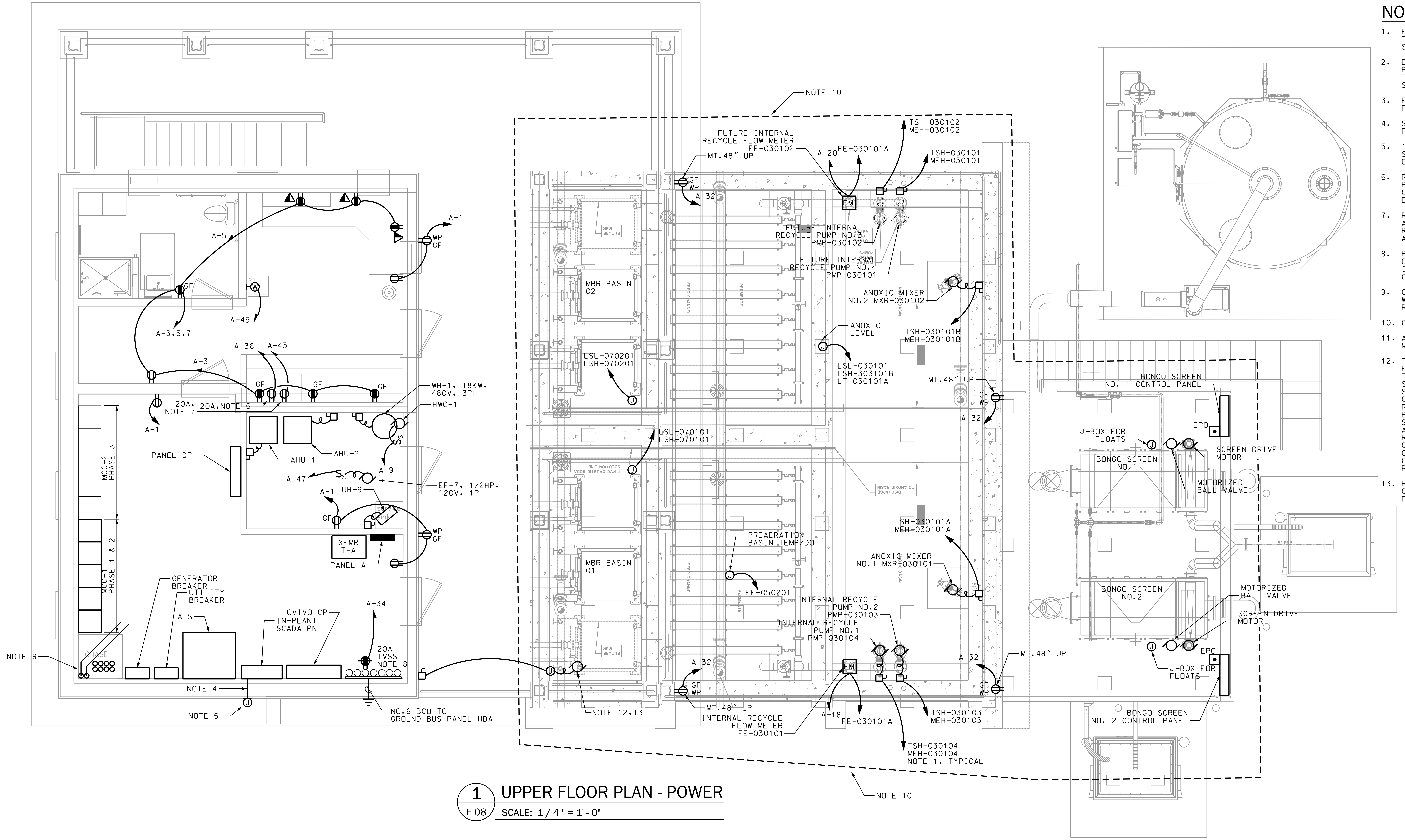

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E-08

UPPER FLOOR PLAN - POWER

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

NOTES:

1. EXTEND WIRING TO OVIVO CONTROL PANEL. REFER TO OVIVO FIELD INSTRUMENT CONNECTION SCHEDULE, SHEET 50-E-18.
2. EXTEND CONTROL WIRING TO MAIN IN-PLANT SCADA PANEL FOR START/STOP, SPEED AND ALARMS. REFER TO MAIN IN-PLANT SCADA I/O CONNECTION SCHEDULE.
3. EXTEND FRACTION HP MOTOR CIRCUIT THROUGH IN-PLANT SCADA PANEL FOR ON/OFF CONTROL.
4. STUB 2"C THROUGH WALL 6" BELOW EAVE FOR FUTURE SCADA ANTENNA CABLE.
5. 12" X 12" X 6", NEMA 4X, STAINLESS STEEL, SCREW COVER JUNCTION BOX. MOUNT AT BOTTOM OF EAVE. PAINT TO MATCH WALL.
6. RECEPTACLE FOR UNDER COUNTER REFRIGERATOR, PROVIDE NEMA 5-20R RECEPTACLE. FIELD COORDINATE LOCATION WITH ARCHITECTURAL ELEVATIONS.
7. RECEPTACLE FOR MICROWAVE IN WALL CABINET ABOVE COUNTER. PROVIDE NEMA 5-20R RECEPTACLE. FIELD COORDINATE LOCATION WITH ARCHITECTURAL ELEVATIONS.
8. PROVIDE DOUBLE DUPLEX SURGE PROTECTION OUTLET ON TELEPHONE BACKBOARD. MOUNT OUTLET 36" AFF IN SURFACE OUTLET BOX WITH RAISED STEEL COVER. RECEPTACLES SHALL BE HUBBELL HBL5362SA.
9. COORDINATE INSTALLATION OF CONDUITS IN CHASE WITH MECHANICAL CONTRACTOR AND HVAC REFRIGERANT LINES.
10. CLASS 1, DIV.2 HAZARDOUS AREA PER NFPA 820.
11. AHU-2 POWERED THROUGH HP-2. COORDINATE WITH MECHANICAL.
12. THE CONTRACTOR SHALL PROVIDE A COMPLETE FESTOON CABLE SYSTEMS, TO PROVIDE POWER TO THE MOTORIZED TROLLEY/HOIST. THE SYSTEM SHALL CONSIST OF STAINLESS STEEL C-RAIL, STAINLESS STEEL CABLE TROLLEYS, FESTOON CABLE (SUNLIGHT RESISTANT/OUTSIDE INSTALLATION RATED). THE C-RAIL SHALL BE MOUNTED TO THE BUILDING STRUCTURE ADJACENT TO THE HOIST SUPPORT BEAM. INSTALL AND SUPPORT IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. PROVIDE PRODUCTS OF CONDUCTIX/WAMPFLER, NO SUBSTITUTIONS. CONTACT RICHARD S. BAZLEY, INSIDE SALES, CONDUCTIX/ WAMPFLER, (800)521-4888, EXT.574. REF: KIAWAH WWTP.
13. PROVIDE JUNCTION BOX AND CONNECTION TO FESTOON CABLE SYSTEM FOR MOTORIZED HOIST. SEE 50-E-15 FOR CIRCUIT TO HOIST.

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Paul Mamalakis
1/28/16

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WWTP BUILDING - UPPER FLOOR - POWER

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	CC
DESIGNED:	C
REVIEWED:	PM
APPROVED:	PM
SCALE:	1/4" = 1'-0"

50-E-08

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28-JAN-2016
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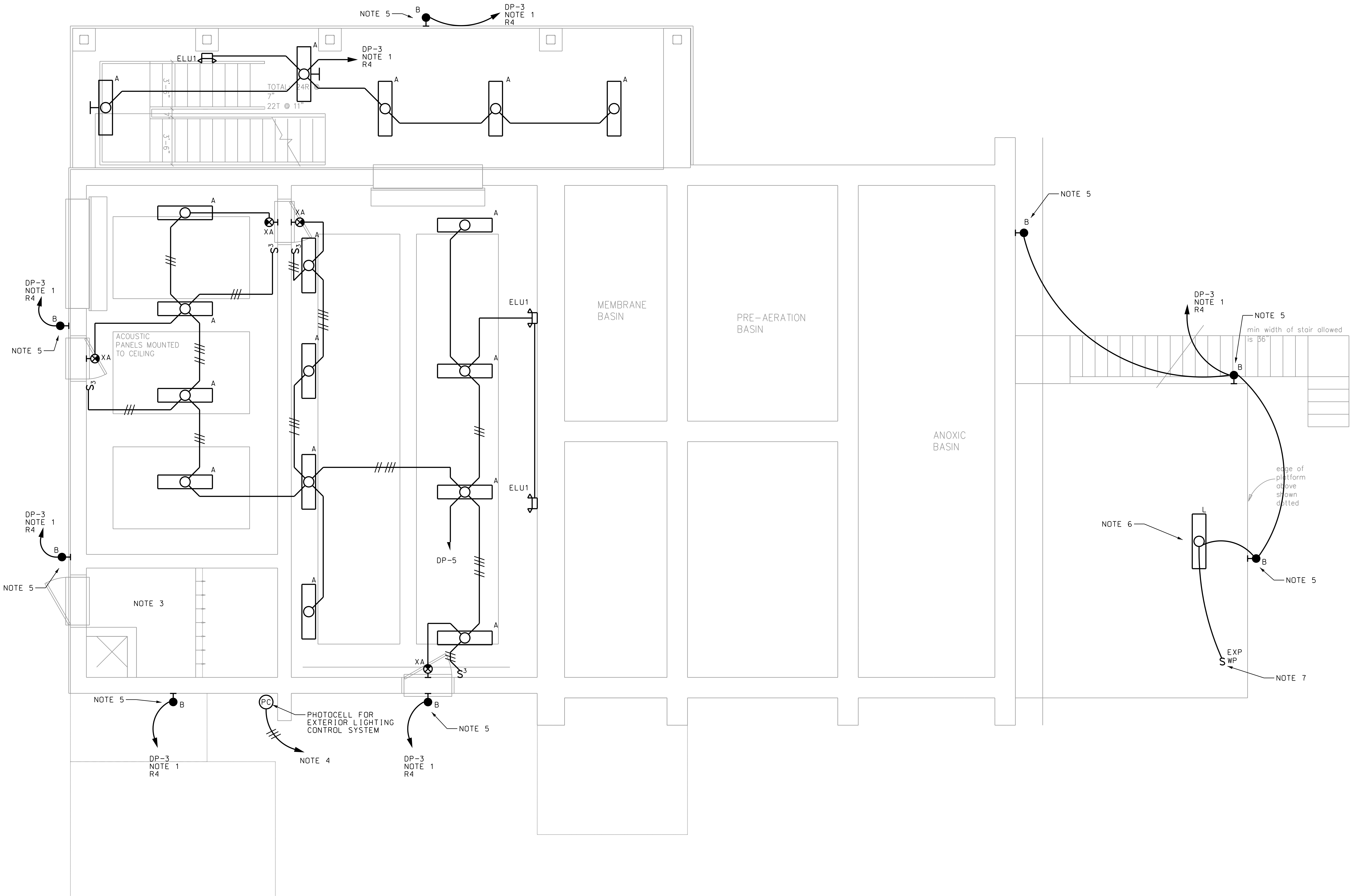

1 LOWER LEVEL PLAN - LIGHTING
E-09

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

NOTES:

1. EXTEND BUILDING EXTERIOR LIGHTING CIRCUIT THROUGH LIGHTING CONTROL PANEL IN ELECTRICAL ROOM. RELAY NUMBER INDICATED.
2. EXTEND SITE LIGHTING CIRCUIT THROUGH LIGHTING CONTROL PANEL IN ELECTRICAL ROOM.
3. REFER TO SHEET 50-E-07 FOR LIGHTING IN CHEMICAL ROOM.
4. EXTEND PHOTO CONTROL TO LIGHTING CONTROL PANEL IN MAIN ELECTRICAL ROOM. PROVIDE SEPARATE SWITCHES FOR BUILDING AND FOR SITE LIGHTING CIRCUITS.
5. FIELD COORDINATE THE LOCATION AND ELEVATION OF ALL EXTERIOR BUILDING MOUNTED LIGHTS WITH THE ARCHITECTURAL ELEVATION DRAWINGS.
6. MOUNT UNDER DECK TO STRUCTURE.
7. MOUNT ON PILLAR, 48" AFF.

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
WWTP BUILDING - LOWER LEVEL - LIGHTING

JOB NO: J-25328.0000
DATE: 01/28/16
DRAWN: CC
DESIGNED: C
REVIEWED: PM
APPROVED: PM
SCALE: 1/4" = 1'-0"

50-E-09

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28-JAN-2016
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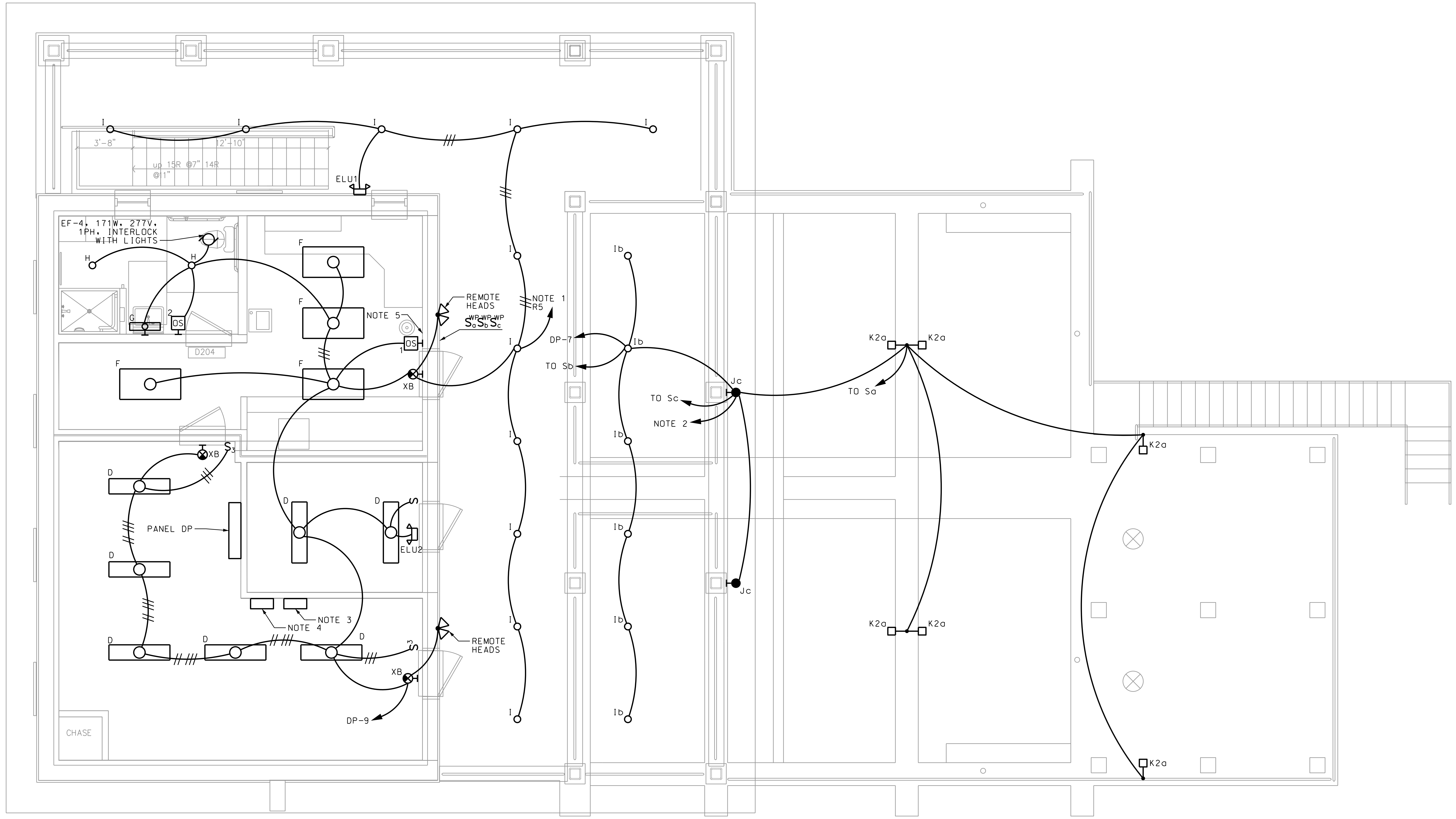

1 UPPER LEVEL PLAN - LIGHTING

E-10

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

NOTES:

1. EXTEND PORCH LIGHTING CIRCUIT THROUGH RELAY PANEL IN ELECTRICAL ROOM. RELAY NUMBER INDICATED.
2. FLOOD LIGHTING CIRCUIT SHALL BE ROUTED THROUGH THE MINI-INVERTER IN THE ELECTRICAL ROOM TO PROVIDE EMERGENCY LIGHTING FOR PATH OF EGRESS.
3. PROVIDE 250W MINI-INVERTER. FURNISH ISOLITE IMI SERIES (ISOLITE CAT. NO. IMI-25-LC-V2-AA) OR APPROVED EQUAL.
4. EATON/GREENGATE LK8 LIGHTING CONTROL PANEL. PROVIDE WITH EIGHT 20A 120/277V RATED RELAYS. EACH RELAY SHALL BE CONTROLLED BY A 3-BUTTON SWITCH (EATON/GREENGATE GDS-3TLB-W) WITH ENGRAVING: ON, OFF, PHOTO. THE SYSTEM WILL ALLOW THE OPERATOR TO HAVE EACH ONE 'ON', 'OFF', OR CONTROLLED VIA PANEL INPUT FROM PHOTOCELL (EATON/GREENGATE PPS-5).
5. LOCATE EXTERIOR LIGHTING CONTROL SWITCHES: S1, S2, S3, S4, AND S5 ADJACENT TO THE ROOM LIGHTING CONTROL.

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

WWTP BUILDING - UPPER LEVEL - LIGHTING

JOB NO: J-25328.0000
DATE: 01/28/16
DRAWN: CC
DESIGNED: C
REVIEWED: PM
APPROVED: PM
SCALE: 1/4" = 1'-0"

50-E-10

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29-JAN-2016
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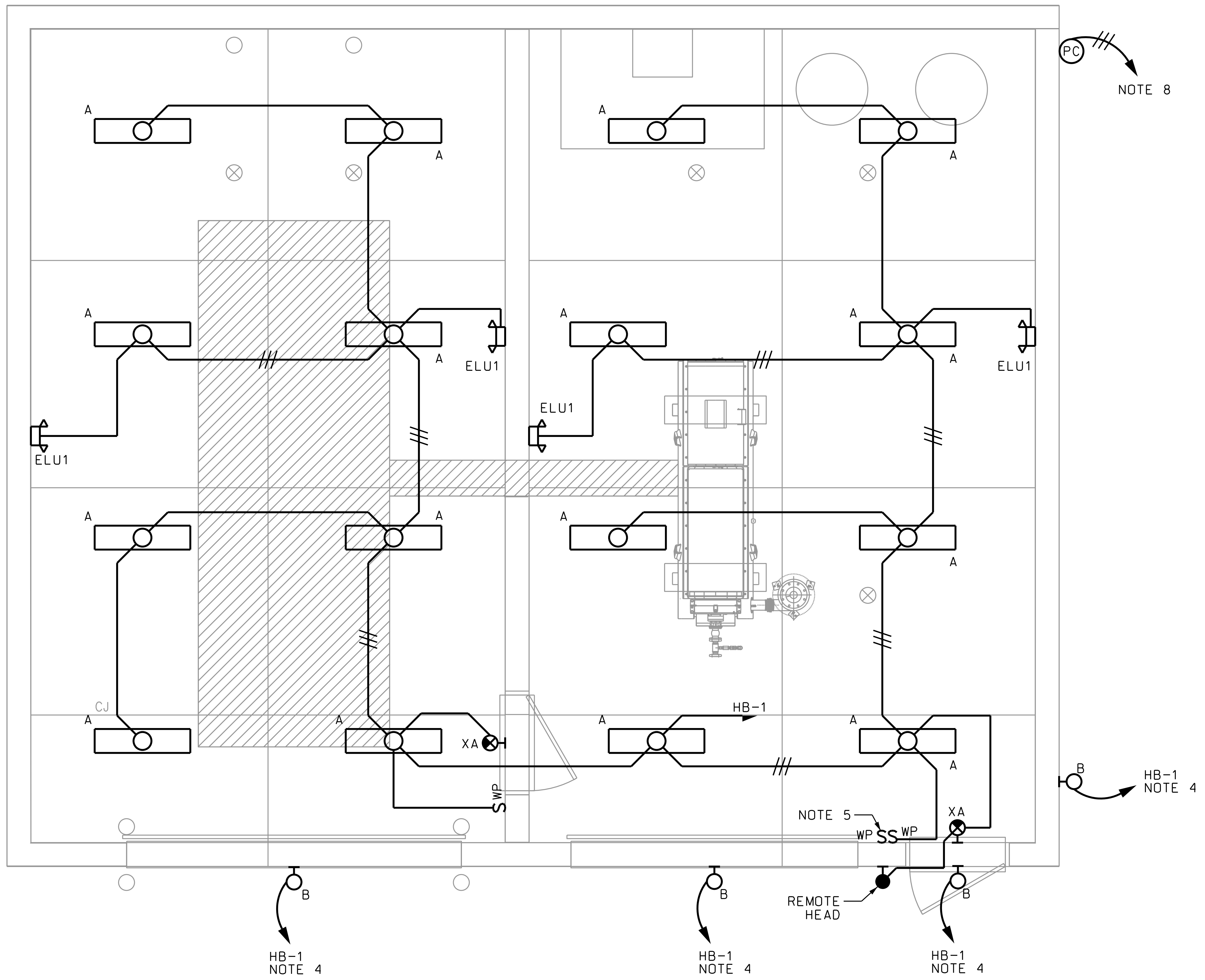
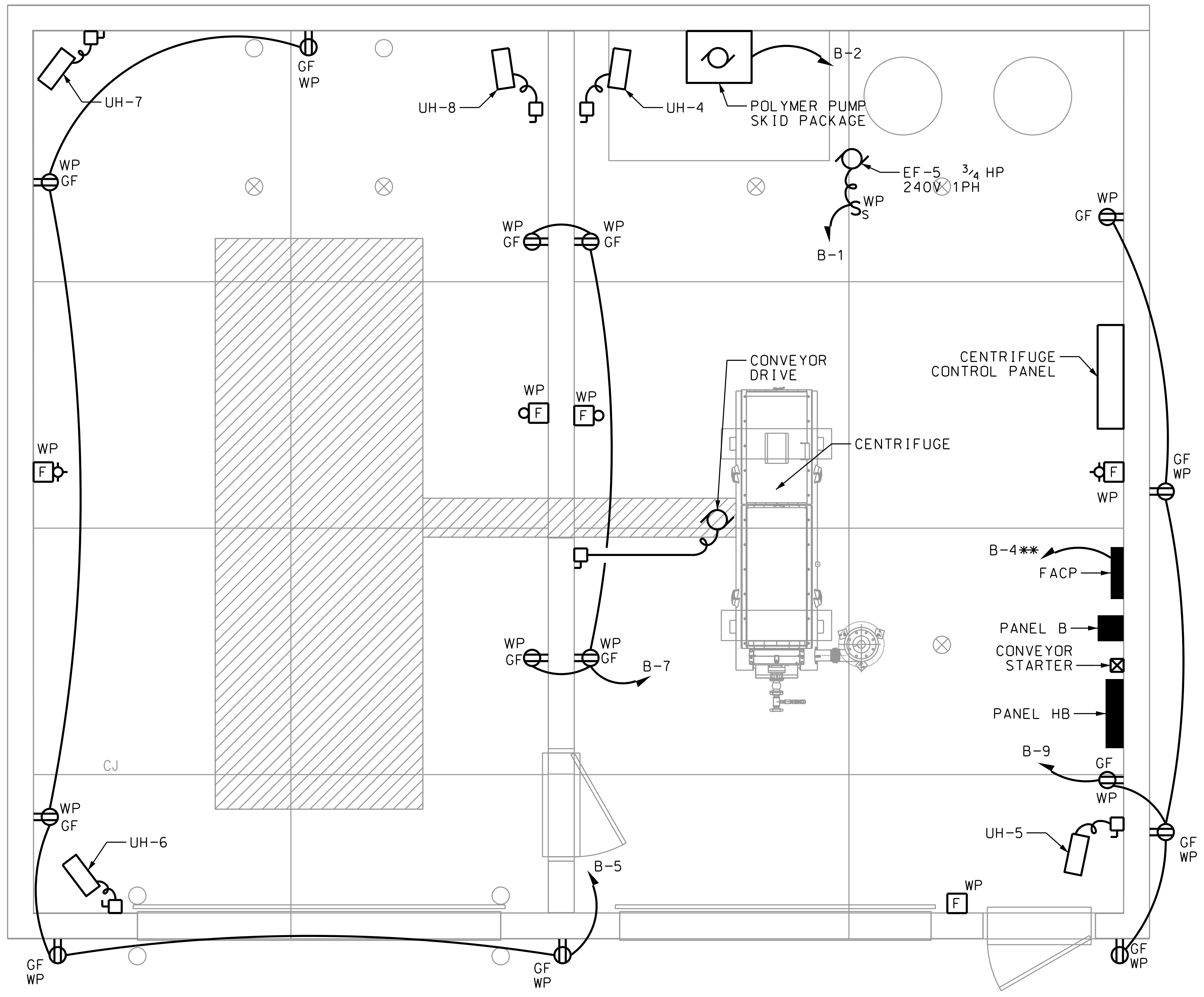


1 CENTRIFUGE BUILDING PLAN - LIGHTING

E-11

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



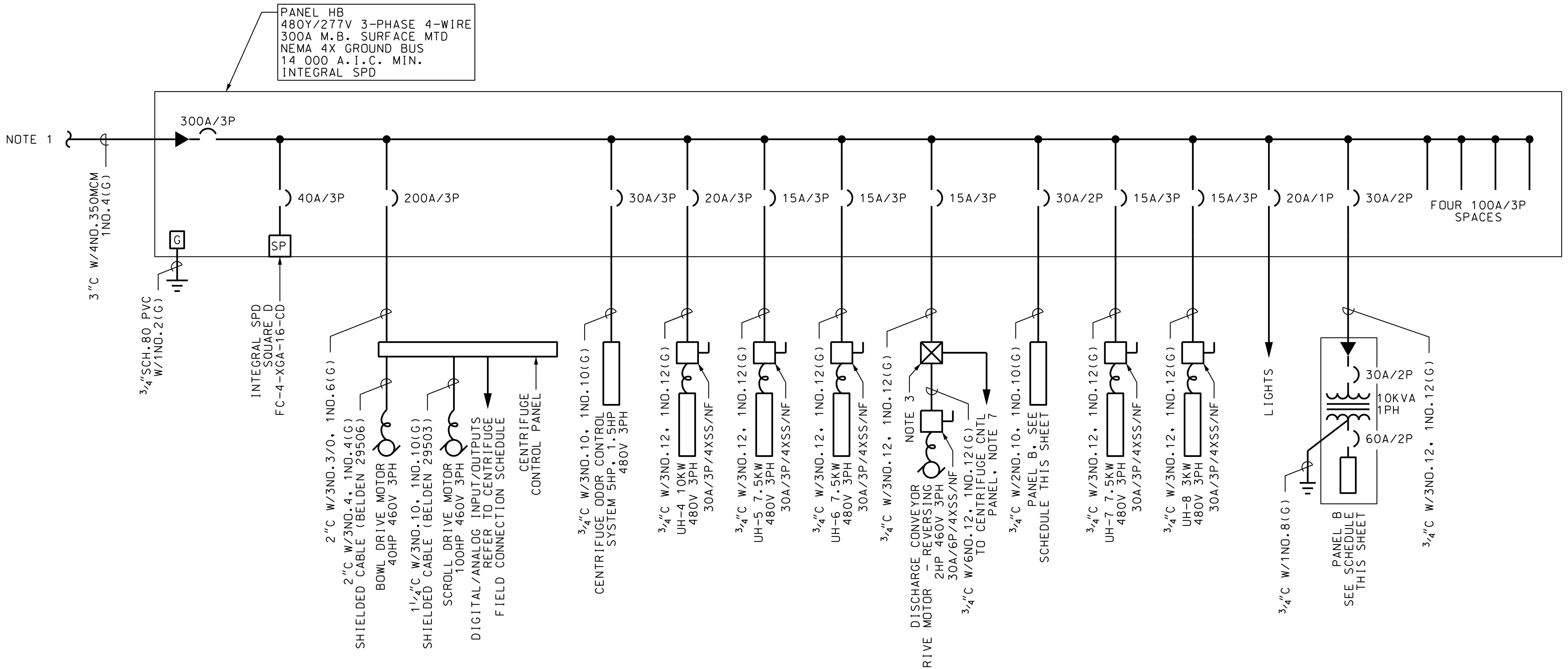
2 CENTRIFUGE BUILDING PLAN - POWER

E-11

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

NOTES:

1. FEEDER FROM PANEL DP IN MAIN BUILDING. REFER TO SITE PLAN FOR ROUTING OF FEEDER.
2. EXTEND GROUNDING ELECTRODE CONDUCTOR FROM GROUND BUS TO GROUND RODS. DO NOT BOND NEUTRAL IN PANEL.
3. CONVEYOR STARTER SHALL BE A NEMA SIZE 1, FULL-VOLTAGE, REVERSING STARTER. PROVIDE WITH SOLID STATE OVERLOAD PROTECTION. PROVIDE 4X STAINLESS STEEL ENCLOSURE. PROVIDE FORWARD/REVERSE AND H-O-A SWITCHES. NOTE 7.
4. EXTEND EXTERIOR LIGHTING CIRCUIT THROUGH 3-POSITION SWITCH ADJACENT TO DOOR.
5. FURNISH AND INSTALL A 20A 120/277V SINGLE POLE, MAINTAINED THREE-POSITION SWITCH FOR CONTROL OF EXTERIOR LIGHTS. UP - PHOTO CONTROL, CENTER - OFF, DOWN - MANUAL ON. LABEL SWITCH POSITIONS AND PROVIDE NAMEPLATE FOR SWITCH. HUBBELL HBL 1385.
6. EXTEND FIRE ALARM SIGNAL TO SCADA. COORDINATE INTERFACE BETWEEN FACP AND SCADA PANEL.
7. EXTEND CONTROL IN AUTO POSITION THROUGH CENTRIFUGE CONTROL PANEL.
8. EXTEND PHOTO CONTROL THROUGH 3-POSITION SWITCH BESIDE DOOR. SEE NOTE 5.



PANEL HB
480Y/277V 3-PHASE 4-WIRE
300A M.B. SURFACE MTD
NEMA 4X GROUND BUS
14 000 A.I.C. MIN.
INTEGRAL SPD
NOTE 1
300A/3P
3"C W/4NO.350MCM 1NO.4(G)
G
3/4"SCH.80 PVC W/1NO.2(G)
40A/3P
SP
INTEGRAL SPD SQUARE D FC-4-XGA-16-CD
200A/3P
2"C W/3NO.3/0, 1NO.6(G)
2"C W/3NO.4, 1NO.4(G) SHIELDED CABLE (BELDEN 29506)
BOWL DRIVE MOTOR 40HP 460V 3PH
1 1/4"C W/3NO.10, 1NO.10(G) SHIELDED CABLE (BELDEN 29503)
SCROLL DRIVE MOTOR 100HP 460V 3PH
DIGITAL/ANALOG INPUT/OUTPUTS REFER TO CENTRIFUGE FIELD CONNECTION SCHEDULE
CENTRIFUGE CONTROL PANEL
30A/3P
3/4"C W/3NO.10, 1NO.10(G)
CENTRIFUGE ODOR CONTROL SYSTEM 5HP, 1.5HP 480V 3PH
20A/3P
3/4"C W/3NO.12, 1NO.12(G)
UH-4 10KW 480V 3PH
30A/3P/4XSS/NF
15A/3P
3/4"C W/3NO.12, 1NO.12(G)
UH-5 7.5KW 480V 3PH
30A/3P/4XSS/NF
15A/3P
3/4"C W/3NO.12, 1NO.12(G)
UH-6 7.5KW 480V 3PH
30A/3P/4XSS/NF
15A/3P
3/4"C W/3NO.12, 1NO.12(G)
NOTE 3
DISCHARGE CONVEYOR DRIVE MOTOR - REVERSING 2HP 460V 3PH
30A/6P/4XSS/NF
3/4"C W/6NO.12, 1NO.12(G) TO CENTRIFUGE CNTL PANEL, NOTE 7
30A/2P
3/4"C W/2NO.10, 1NO.10(G)
PANEL B, SEE SCHEDULE THIS SHEET
15A/3P
3/4"C W/3NO.12, 1NO.12(G)
UH-7 7.5KW 480V 3PH
30A/3P/4XSS/NF
15A/3P
3/4"C W/3NO.12, 1NO.12(G)
UH-8 3KW 480V 3PH
30A/3P/4XSS/NF
20A/1P
LIGHTS
30A/2P
30A/2P
10KVA 1PH
60A/2P
3/4"C W/1NO.8(G)
PANEL B SEE SCHEDULE THIS SHEET
3/4"C W/3NO.12, 1NO.12(G)
FOUR 100A/3P SPACES

3 CENTRIFUGE BUILDING - ONE-LINE DIAGRAM

E-11

SCALE: NONE

SCHEDULE OF PANEL 'B'

VOLTAGE: 240 / 120
BUS AMPS: 100 A
A.I.C RATING: 10,000 A

PHASE: 1
DEVICE AMPS: 60 A MCB
MOUNTING: SURFACE

WIRE: 3
NEMA: 4X

LOCATION DESCRIPTION	LOAD (KVA)	LOAD TYPE	TRIP POLE	#	PH	#	TRIP POLE	LOAD TYPE	LOAD (KVA)	LOCATION DESCRIPTION
EF-5 3/4HP	0.8	F	20A/2P	1	A	2	20A/1P	G	1.0	POLYMER PUMP SKID
230V 1PH	0.8	F	-	3	B	4	20A/1P	H	1.0	FACP **
RCPT DUMPSTER	1.0	B	20A/1P	5	A	6	20A/1P			SPARE
RCPT DUMPSTER/CENTRIFUGE	0.8	B	20A/1P	7	B	8	20A/1P			SPARE
RCPT CENTRIFUGE	1.0	B	20A/1P	9	A	10	20A/1P			SPARE

PANEL LOAD ANALYSIS

Load Type	DESCRIPTION	Conn. KVA	Demand KVA	2008 NEC Reference	Load Type	DESCRIPTION	Conn. KVA	Demand KVA	2008 NEC Reference
A	Lighting	0.0	0.0	NEC Article 215.3	E	Heating	0.0	0.0	NEC Article 220.60
B	Receptacles	2.8	2.8	NEC Table 220.44	F	Largest Motor	1.6	2.0	NEC Article 440.7
C	Kitchen Equipment	0.0	0.0	NEC Table 220.56	G	Other Motors	1.0	1.0	NEC Article 440.7
D	Air-Conditioning	0.0	0.0	NEC Article 220.60	H	Other Loads	1.0	1.0	

Phase A Connected Load	3.8 KVA	**Notes:** ** PROVIDE BREAKER WITH TRIP FREE LOCK TAB AND PAINT 'RED' 10KVA MPZ, 30A/2P PRI. CB	TOTAL CONNECTED LOAD	6.4 KVA	26.6 AMPS
Phase B Connected Load	2.6 KVA		TOTAL DEMAND LOAD	6.8 KVA	28.2 AMPS
			MINIMUM SIZING AMPS	10.6 KVA	25.5 AMPS

CHATHAM ENGINEERING COMPANY LLC
C04812

No. 14134
Paul Mamalakis
1/28/16

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

CENTRIFUGE BUILDING - LIGHTING & POWER

JOB NO: J-25328.0000
DATE: 01/28/16
DRAWN: CC
DESIGNED: C
REVIEWED: PM
APPROVED: PM
SCALE: 1/4" = 1'-0"

50-E-11

CADD PLOT
28-JAN-2016
19:30
CCOBB

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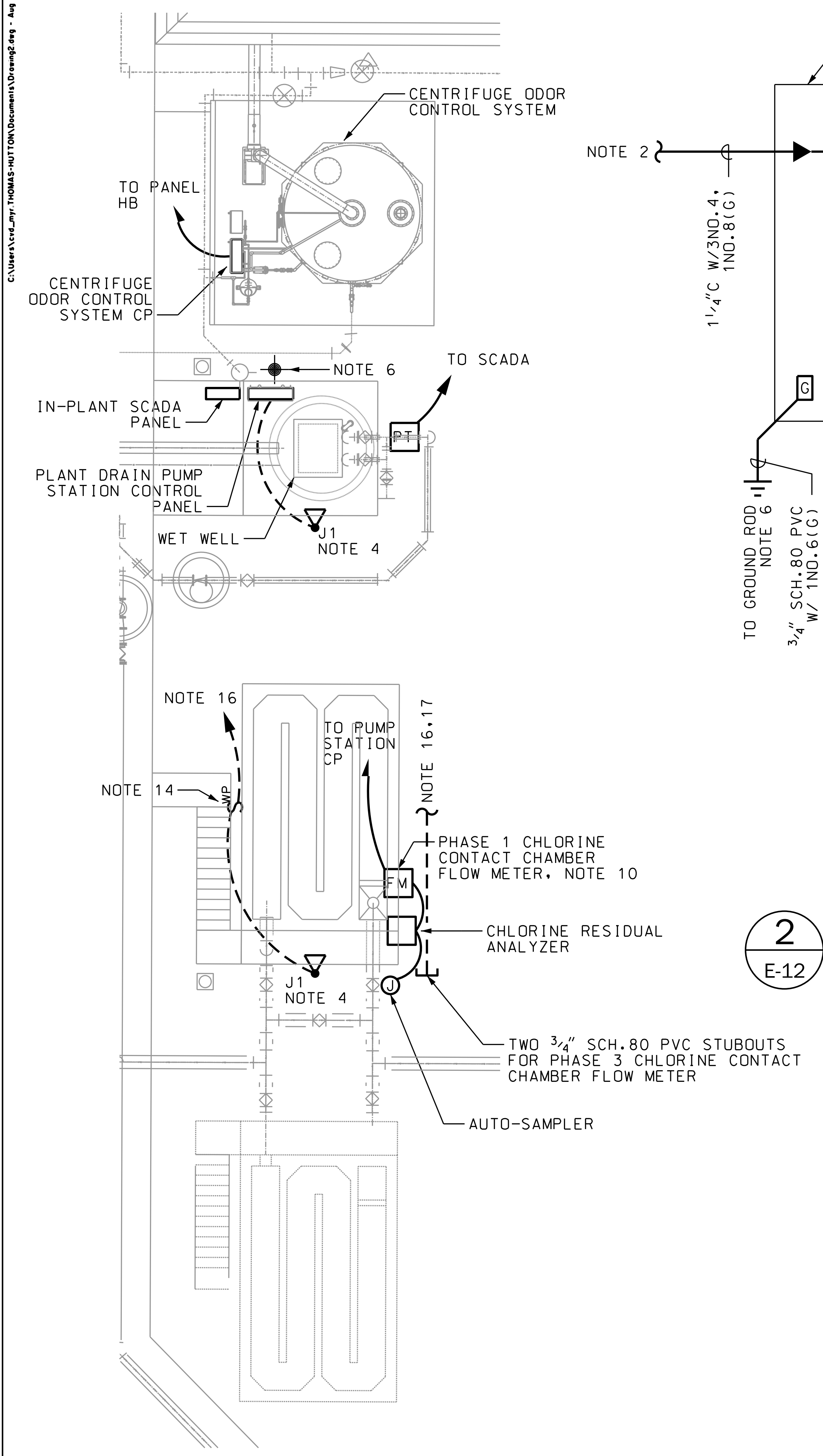
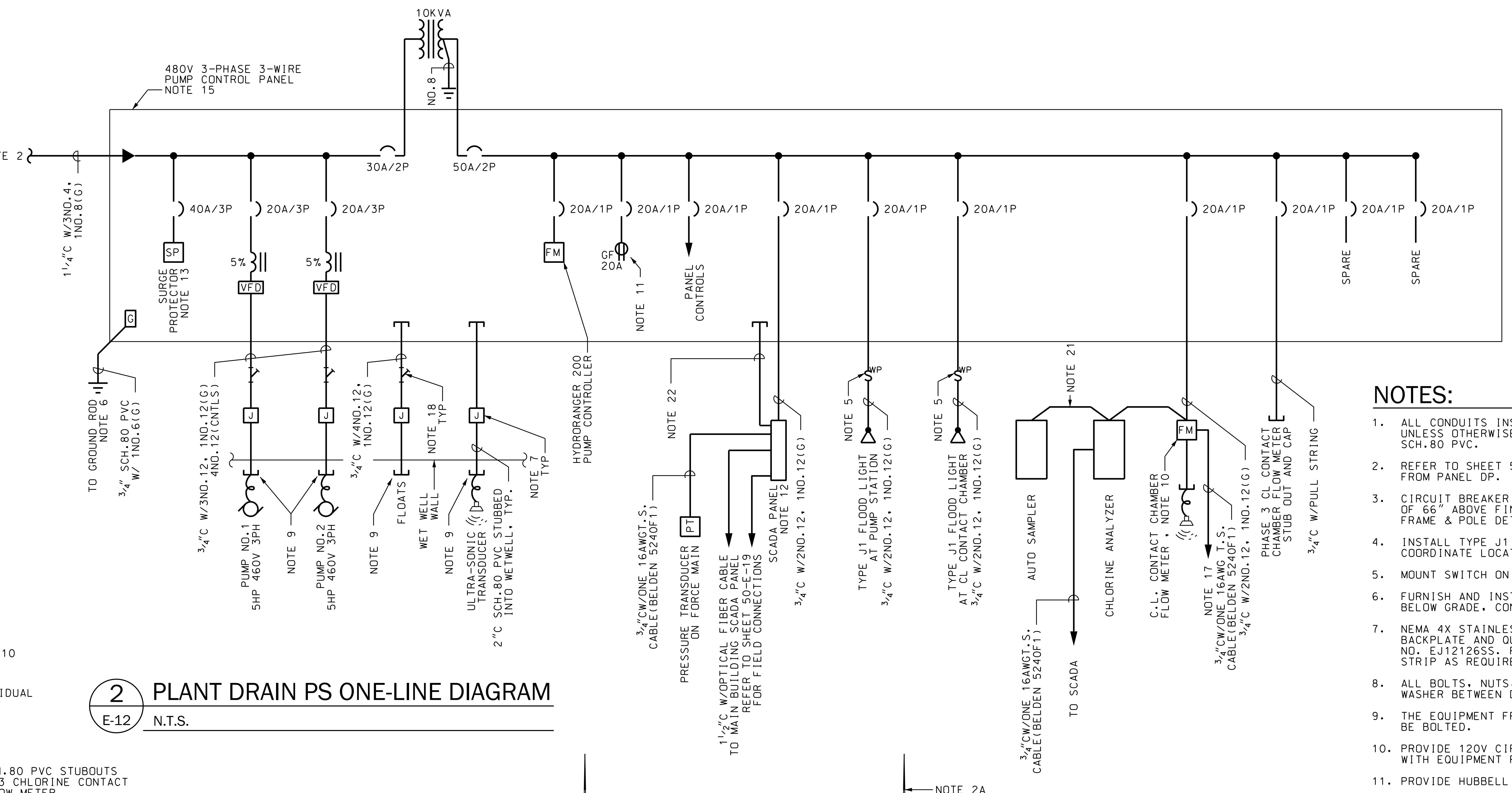
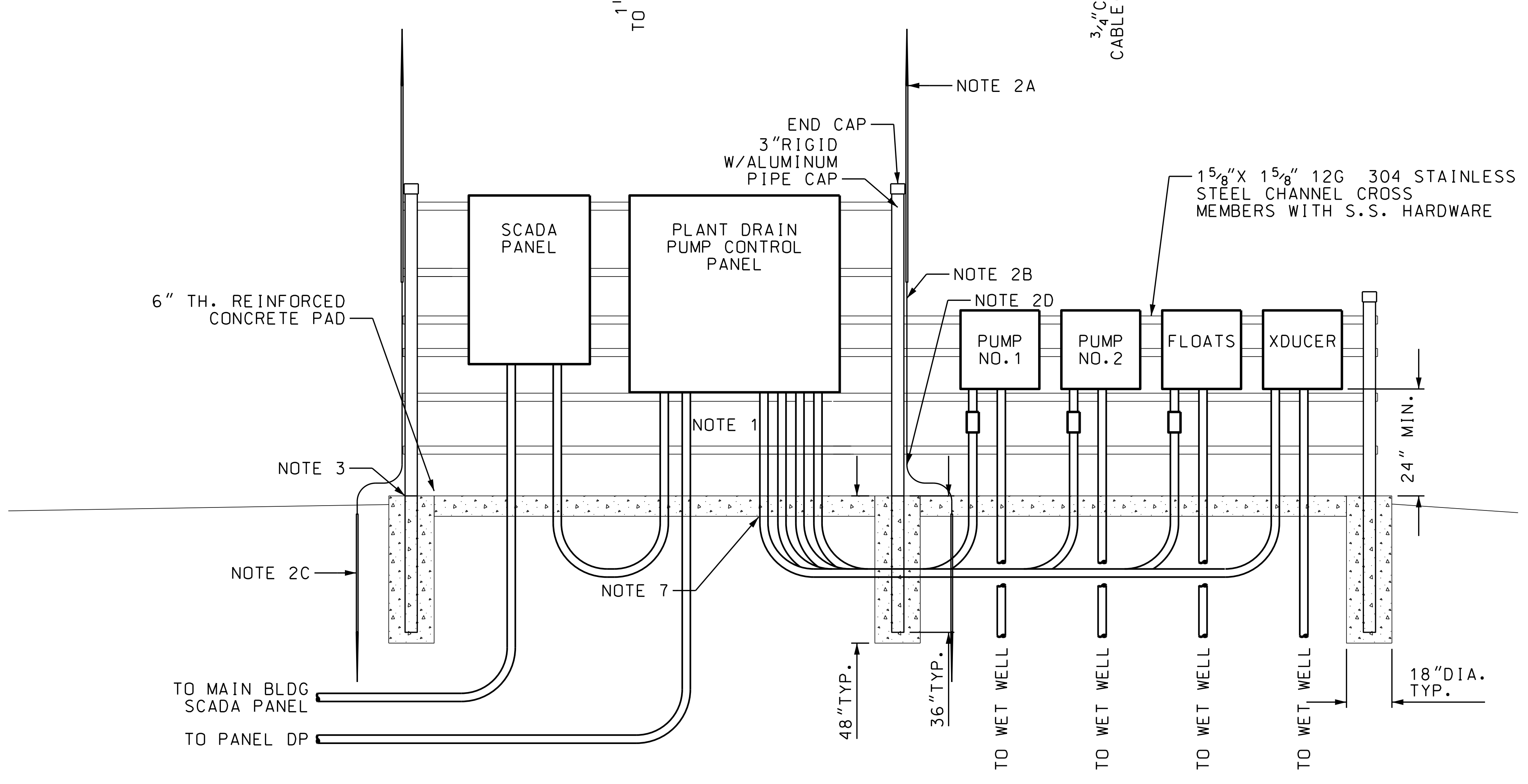

CENTRIFUGE ODOR CONTROL SYSTEM
TO PANEL HB
CENTRIFUGE ODOR CONTROL SYSTEM CP
NOTE 6
TO SCADA
IN-PLANT SCADA PANEL
PLANT DRAIN PUMP STATION CONTROL PANEL
PT
WET WELL
J1 NOTE 4
NOTE 16
NOTE 14
WP
TO PUMP STATION CP
NOTE 16,17
PHASE 1 CHLORINE CONTACT CHAMBER FLOW METER, NOTE 10
FM
CHLORINE RESIDUAL ANALYZER
J1 NOTE 4
TWO 3/4" SCH.80 PVC STUBOUTS FOR PHASE 3 CHLORINE CONTACT CHAMBER FLOW METER
AUTO-SAMPLER

1 PLANT DRAIN PS SITE PLAN - ELECTRICAL
E-12
SCALE: 1" = 10'


10KVA
480V 3-PHASE 3-WIRE PUMP CONTROL PANEL NOTE 15
NO.8
NOTE 2
1 1/4"C W/3NO.4, 1NO.8(G)
30A/2P
50A/2P
40A/3P
20A/3P
20A/3P
20A/1P
20A/1P
20A/1P
20A/1P
20A/1P
20A/1P
20A/1P
20A/1P
20A/1P
20A/1P
SP
SURGE PROTECTOR NOTE 13
5%
VFD
5%
VFD
FM
GF 20A
NOTE 11
PANEL CONTROLS
SPARE
SPARE
G
TO GROUND ROD NOTE 6
3/4" SCH.80 PVC W/ 1NO.6(G)
3/4"C W/3NO.12, 1NO.12(G) 4NO.12(CNTLS)
J
J
J
J
PUMP NO.1 5HP 460V 3PH
PUMP NO.2 5HP 460V 3PH
NOTE 9
NOTE 9
3/4"C W/4NO.12, 1NO.12(G)
NOTE 18 TYP
FLOATS
WET WELL WALL
NOTE 9
ULTRA-SONIC TRANSDUCER
2"C SCH.80 PVC STUBBED INTO WETWELL, TYP.
NOTE 7 TYP
HYDRORANGER 200 PUMP CONTROLLER
NOTE 22
PT
3/4"CW/ONE 16AWGT.S. CABLE(BELDEN 5240F1)
PRESSURE TRANSDUCER ON FORCE MAIN
1 1/2"C W/OPTICAL FIBER CABLE TO MAIN BUILDING SCADA PANEL REFER TO SHEET 50-E-19 FOR FIELD CONNECTIONS
SCADA PANEL NOTE 12
3/4"C W/2NO.12, 1NO.12(G)
NOTE 5
WP
TYPE J1 FLOOD LIGHT AT PUMP STATION
3/4"C W/2NO.12, 1NO.12(G)
NOTE 5
WP
TYPE J1 FLOOD LIGHT AT CL CONTACT CHAMBER
3/4"C W/2NO.12, 1NO.12(G)
NOTE 21
AUTO SAMPLER
3/4"CW/ONE 16AWGT.S. CABLE(BELDEN 5240F1)
TO SCADA
CHLORINE ANALYZER
FM
C.L. CONTACT CHAMBER FLOW METER , NOTE 10
NOTE 17
3/4"CW/ONE 16AWG T.S. CABLE(BELDEN 5240F1)
3/4"C W/2NO.12, 1NO.12(G)
PHASE 3 CL CONTACT CHAMBER FLOW METER STUB OUT AND CAP
3/4"C W/PULL STRING

2 PLANT DRAIN PS ONE-LINE DIAGRAM
E-12
N.T.S.



3 PLANT DRAIN PS ELEVATION DETAIL
E-12
N.T.S.

NOTES: EFF. PS ELEVATION DETAIL

1. PROVIDE A CONDUIT WINDOW BENEATH THE PANELS THROUGH THE CONCRETE PADS. THE WINDOW SHALL BE 12" DEEP AND EXTEND THE FULL WIDTH OF THE PANEL, EXCEPT FOR FREE-STANDING ENCLOSURES, THE WINDOW SHALL EXTEND THE WIDTH OF THE PANEL BETWEEN THE SUPPORT LEGS. AFTER CONDUIT INSTALLTION, FILL THE WINDOW WITH CRUSHED GRAVEL.

2. PROVIDE LIGHTNING PROTECTION SYSTEM AIR TERMINAL ON A 10' MAST ATTACHED TO THE EQUIPMENT FRAME.
   A. THE AIR TERMINAL SHALL HAVE A MINIMUM ELEVATION OF 15'. PROVIDE 5/8"DIA. X 12" COPPER CLASS I. KUEFLER LPC202.
   B. EXTEND SMOOTH WEAVE COPPER CABLE FROM AIR TERMINAL TO GROUND ROD DRIVEN AJACENT TO THE EQUIPMENT FRAME. PROVIDE 59,450 CIR. MIL. CABLE. KUEFLER LPC120.
   C. PROVIDE TWO 10'X3#4" COPPERBONDED SECTIONAL GROUND RODS WITH COUPLING AT EACH END OF THE FRAME AND WHERE INDICATED. KUEFLER 633400 AND CR34. ALL GROUND ROD CONNECTIONS SHALL BE EXOTHERMIC WELD.
   D. PROVIDE BONDING PLATE MOUNTED TO EQUIPMENT FRAME. PLATE SHALL BE FOR USE WITH COPPER CABLE AND DISSIMILAR METAL SURFACE. KUEFLER LPC540L.
   E. PROVIDE SECONDARY COPPER CABLE CONDUCTOR BETWEEN AIR TERMINAL MASTS/BONDING PLATES. FURNISH 28,700 CIR. MIL. SMOOTH WEAVE COPPER CABLE, KUEFLER LPC150.
   F. PROVIDE CONCENTRIC STRAND COPPER CABLE GROUND RING AROUND STRUCTURE AT 24" BELOW GRADE. PROVIDE 250,000 CIR. MIL. CABLE, KUEFLER LPC138. ALL GROUND RING CONNECTIONS SHALL BE EXOTHERMIC WELD.
   G. BOND CORNER LIGHT POLES AND OTHER METAL STRUCTURES TO THE GROUNDING RING.
   H. CATALOG NUMBERS ARE REPRESENTATIVE OF REQUIRED QUALITY, LISTING AND CERTIFICATION. EQUAL EQUIPMENT BY A DIFFERENT MANUFACTURER WILL BE ACCEPTABLE.

3. COAT ALL RIGID ALUMINUM STRUCTURAL SUPPORTS ENCASED IN CONCRETE WITH TWO COATS OF SCOTCH WRAP PRIMER AND TWO OVERLAPPING LAYERS OF SCOTCHRAP 51(20 MIL) TAPE. APPLY FROM 6" ABOVE GRADE TO BOTTOM OF STRUCTURAL MEMBER. CORROSION PROTECTION METHODS DESCRIBED ABOVE SHALL ALSO BE APPLIED TO ALL RIGID ALUMINUM CONDUIT THROUGH CONCRETE AND SOILS.

NOTES:

1. ALL CONDUITS INSTALLED EXPOSED TO ATMOSPHERE SHALL BE RIGID ALUMINUM UNLESS OTHERWISE NOTED, ALL CONDUITS INSTALLED BELOW GRADE SHALL BE SCH.80 PVC.
2. REFER TO SHEET 50-E-15, ONE-LINE DIAGRAM FOR SOURCE PANEL AND FEEDER FROM PANEL DP.
3. CIRCUIT BREAKER AND SWITCH OPERATING HANDLES SHALL BE A MAXIMUM OF 66" ABOVE FINISHED GRADE OR SERVICE PLATFORM. REFER TO EQUIPMENT FRAME & POLE DETAIL 3/E1; THIS SHEET.
4. INSTALL TYPE J1 FLOOD LIGHT AND POLE WHERE INDICATED, FIELD COORDINATE LOCATION WITH OTHER TRADES BEFORE INSTALLATION OF THE BASE.
5. MOUNT SWITCH ON EQUIPMENT FRAME ADJACENT TO THE CONTROL PANEL.
6. FURNISH AND INSTALL ONE 10' X 3/4" DIA. GROUND ROUND, DRIVEN 12" BELOW GRADE, CONNECT TO GROUND BUS IN PUMP CONTROL PANEL.
7. NEMA 4X STAINLESS STEEL JUNCTION BOX. 12"X12"X6" WITH ALUMINUM BACKPLATE AND QUARTER-TURN LATCHES. HAMMOND MANUFACTURING CAT. NO. EJ12126SS. PROVIDE POWER TERMINAL BLOCK AND/OR TERMINAL STRIP AS REQUIRED.
8. ALL BOLTS, NUTS, WASHERS, ETC. SHALL BE STAINLESS STEEL. PROVIDE FIBER WASHER BETWEEN DIS-SIMILAR METAL COMPONENTS AND ENCLOSURES.
9. THE EQUIPMENT FRAME SHALL BE FIELD FABRICATED. ALL CONNECTIONS SHALL BE BOLTED.
10. PROVIDE 120V CIRCUIT FOR FLOW METER OPERATION. FIELD COORDINATE WITH EQUIPMENT PROVIDED BY OTHERS.
11. PROVIDE HUBBELL GFTWRST83W RECEPTACLE.
12. REFER TO SHEET 50-E-19 FOR SCADA TELEMETRY AND CONNECTIONS.
13. SURGE PROTECTION INTEGRAL TO CONTROL PANEL. PROVIDE APT TYPE ONE SPD, XDS SERIES: APT CAT. NO. TE-05-XDS-15-4X-A
14 MOUNT SWITCH FOR CHLORINE CONTACT CHAMBER FLOOD LIGHT ON HAND RAIL OR STRUCTURE ADJACENT TO WALK.
15. THE PUMP CONTROL PANEL SHALL BE A RACK MOUNTED, NEMA 4X STAINLESS STEEL ENCLOSURE CONTAINING ALL NECESSARY EQUIPMENT FOR A COMPLETE AND OPERATIONAL SYSTEM. THE PANEL SHALL BE FURNISHED WITH DOOR-WITHIN-DOOR CONSTRUCTION WHERE ALL MANUALLY OPERATED CONTROLS, DISPLAYS AND INDICATOR LIGHTS ARE MOUNTED IN THE INNER DOOR. THE EXTERIOR DOOR SHALL BE PROVIDED WITH A 3-POINT LATCH THAT MAINTAINS THE NEMA 4X RATING OF THE ENCLOSURE. THE FOLLOWING LIST OF EQUIPMENT AND FEATURES SHALL BE PROVIDED, HOWEVER, THE LIST IS NOT EXHAUSTIVE AND ALL REQUIRED EQUIPMENT FOR CONTROL AND OPERATION SHALL BE PROVIDED AS PART OF THIS PROJECT.
    - MAIN POWER LUGS
    - POWER DISTRIBUTION LUGS
    - OVER CURRENT PROTECTION FOR BRANCH FEEDERS
    - INTEGRAL SURGE PROTECTION DEVICE
    - VARIABLE FREQUENCY DRIVE
    - 240/120V 1-PHASE DISTRIBUTION LUGS
    - 1-POLE AND 2-POLE BRANCH CIRCUIT BREAKERS
    - TERMINAL STRIPS FOR ANALOG AND DIGITAL I/O SIGNALS
    - 10KVA ENCLOSED TRANSFORMER, STAINLESS STEEL ENCLOSURE, MTD TO EQUIPMENT FRAME

    THE PUMP CONTROL PANEL SHALL BE FABRICATED AND LABELED BY A U.L. 508 FABRICATION SHOP.
16. TO PLANT DRAIN PUMP CONTROL PANEL.
17. TO SCADA PANEL.
18. SEAL OFF FITTING. PROVIDE FIBER AND EPOXY SEALANT AFTER CONDUCTOR INSTALLATION.
19. SEAL ENDS OF EACH CONDUIT RUN TO THE WET WELL WITH ELECTRICAL DUCT SEAL.
20. PROVIDE STAINLESS STEEL SUPPORT HOOK AND CABLE GRIPS FOR ALL CABLES IN THE WET WELL. GRIPS SHALL BE CLOSED MESH, NON-CONDUCTIVE, DOUBLE WEAVE, ARAMID FIBER TYPE PULLING GRIPS. COORDINATE GRIP SIZE WITH CABLES SUPPORTED, ATTACH GRIP TO CABLE WITH TWO HEAVY-DUTY PLASTIC ZIP TIES. PROVIDE PRODUCTS OF HUBBELL, NO SUBSTITUTIONS PERMITTED.
21. EXTEND 120V CKT FROM PLANT DRAIN PS CONTROL PANEL TO AUTO SAMPLER, CHLORINE ANALYZER AND FLOW METER.
22. REFER TO SHEET 50-E-19, PLANT DRAIN PS SCADA I/O CONNECTION SCHEDULE.

CHATHAM ENGINEERING COMPANY LLC
C04812

No. 14134
SAUL MAMALAKIS
1/28/16

NO.	REVISIONS	BY	DATE

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Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

PLANT DRAIN P.S. PLAN - ELECTRICAL

JOB NO: J-25328.0000
DATE: 01/28/16
DRAWN: CC
DESIGNED: CC
REVIEWED: PM
APPROVED: PM
SCALE: 1" = 10'

50-E-12

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28-JAN-2016
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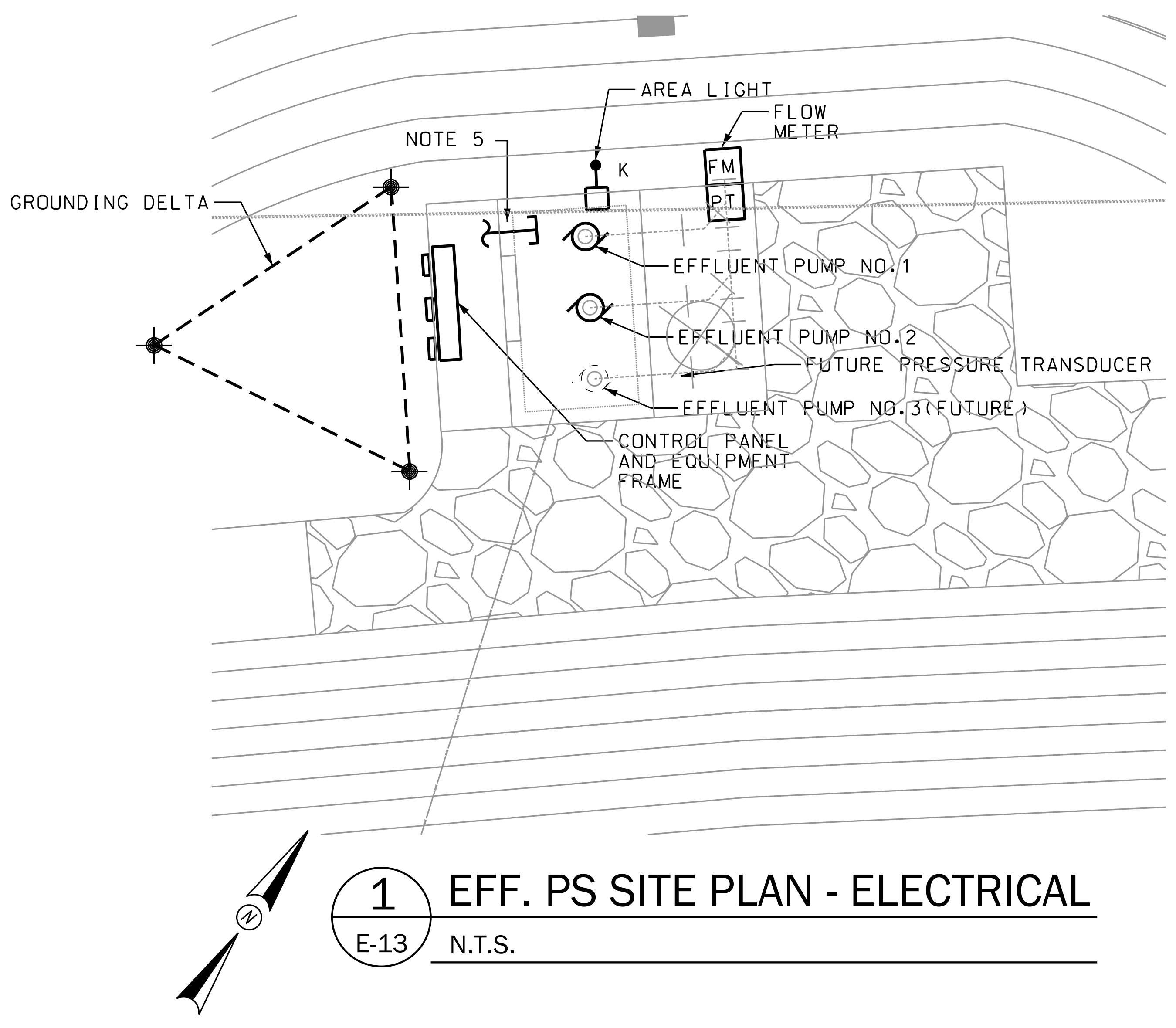

AREA LIGHT
FLOW METER
NOTE 5
K
FM
PT
GROUNDING DELTA
EFFLUENT PUMP NO.1
EFFLUENT PUMP NO.2
FUTURE PRESSURE TRANSDUCER
EFFLUENT PUMP NO.3(FUTURE)
CONTROL PANEL AND EQUIPMENT FRAME

1 E-13 EFF. PS SITE PLAN - ELECTRICAL

N.T.S.

NOTES:

1. ALL CONDUITS INSTALLED EXPOSED TO ATMOSPHERE SHALL BE RIGID ALUMINUM UNLESS OTHERWISE NOTED, ALL CONDUITS INSTALLED BELOW GRADE SHALL BE SCH.80 PVC.

2. THE EXACT LOCATION OF THE METER AND SERVICE SHALL BE COORDINATED IN THE FIELD WITH THE UTILITY COMPANY AND WITH OTHER WORK ON THE PROJECT SITE. CONTACT JOHN HALL, SUPT. DISTRIBUTION ENGINEER, BERKELEY ELECTRIC COOP, (843)899-8463.

3. CIRCUIT BREAKER AND SWITCH OPERATING HANDLES SHALL BE A MAXIMUM OF 66" ABOVE FINISHED GRADE OR SERVICE PLATFORM. LOCATE SERVICE BREAKER, AUTOMATIC TRANSFER SWITCH, NORMAL BREAKER AND EMERGENCY BREAKER WHERE INDICATED. REFER TO EQUIPMENT FRAME & POLE DETAIL 3/E1; THIS SHEET.

4. INSTALL AREA LIGHT AND POLE WHERE INDICATED, FIELD COORDINATE LOCATION WITH OWNER BEFORE INSTALLATION OF THE BASE.

5. STUB 1½"C WITH THE ULTRASONIC TRANSDUCER CABLE INTO THE WET WELL. SEAL BOTH ENDS OF THE CONDUIT WITH ELECTRICAL DUCT SEAL AFTER INSTALLATION OF THE CABLE.

6. FURNISH AND INSTALL THREE 10' X ¾" DIA. GROUND ROUNDS, DELTA CONFIGURATION, WITH 20' SEPARATION, DRIVEN 12" BELOW GRADE, SERVICE GROUNDING SHALL BE BONDED AT THE ENCLOSED BREAKER ON THE EQUIPMENT FRAME. REFER TO DETAIL 3/E2.

7. COAT ALL RIGID ALUMINIM STRUCTURAL SUPPORTS ENCASED IN CONCRETE WITH TWO COATS OF SCOTCH WRAP PRIMER AND TWO OVERLAPPING LAYERS OF SCOTCHRAP 51(20 MIL) TAPE. APPLY FROM 6" ABOVE GRADE TO BOTTOM OF STRUCTURAL MEMBER. CORROSION PROTECTION METHODS DESCRIBED ABOVE SHALL ALSO BE APPLIED TO ALL RIGID ALUMINUM CONDUIT THROUGH CONCRETE AND SOILS.

8. ALL BOLTS, NUTS, WASHERS, ETC. SHALL BE STAINLESS STEEL. PROVIDE FIBER WASHER BETWEEN STAINLESS STEEL COMPONENTS AND ENCLOSURES.

9. THE EQUIPMENT FRAME SHALL BE FIELD FABRICATED. ALL CONNECTIONS SHALL BE BOLTED.

10. PROVIDE 120V CIRCUIT FOR FLOW METER OPERATION. FIELD COORDINATE WITH EQUIPMENT PROVIDED BY OTHERS.

11. PROVIDE HUBBELL GFTWRST83W RECEPTACLE.

12. THE SCADA SYSTEM SHALL MONITOR AND TRANSMIT THE FOLLOWING POINTS AND TELEMETRY:

    DIGITAL POINTS: (FROM CONTROL PANEL)

- PUMP NO.1 STATUS	- PUMP NO.2 STATUS
- PUMP NO.1 CALL TO RUN	- PUMP NO.2 CALL TO RUN
- PUMP NO.1 RUNNING	- PUMP NO.2 RUNNING
- PUMP NO.1 FAIL	- PUMP NO.2 FAIL
- PUMP NO.1 HOA IN AUTO	- PUMP NO.2 HOA IN AUTO
- PUMP NO.3 STATUS(FUTURE)	- POND LOW LEVEL
- PUMP NO.3 CALL TO RUN(FUTURE)	- POND HIGH LEVEL
- PUMP NO.3 RUNNING(FUTURE)	- PANEL AC NO.1 FAIL
- PUMP NO.3 FAIL(FUTURE)	- PANEL AC NO.2 FAIL
- PUMP NO.3 HOA IN AUTO(FUTURE)	- PANEL INTRUSION
- MAIN PHASE FAILURE AND LOW VOLTAGE	

    ANALOG POINTS:

- PUMP NO.1 SPEED (AO)	- PUMP NO.1 RUNNING SPEED (AI)
- PUMP NO.2 SPEED (AO)	- PUMP NO.2 RUNNING SPEED (AI)
- PUMP NO.3 SPEED (AO)	- PUMP NO.3 RUNNING SPEED (AI)
- FLOW	- LEVEL
- LOW FLOW	- HIGH LEVEL
- HIGH FLOW	- LOW LEVEL
- PRESSURE	

13. SURGE PROTECTION INTEGRAL TO CONTROL PANEL. PROVIDE APT TYPE ONE SPD, XDS SERIES: APT CAT. NO. TE-05-XDS-20-4X-A

14. MOUNT SWITCH ON EQUIPMENT FRAME.

15. THE PUMP CONTROL PANEL SHALL BE A FREE-STANDING NEMA 4X STAINLESS STEEL ENCLOSURE CONTAINING ALL NECESSARY EQUIPMENT FOR A COMPLETE AND OPERATIONAL SYSTEM. THE PANEL SHALL BE FURNISHED WITH DOOR- WITHIN-DOOR CONSTRUCTION WHERE ALL MANUALLY OPERATED CONTROLS, DISPLAYS AND INDICATOR LIGHTS ARE MOUNTED IN THE INNER DOOR. THE EXTERIOR DOOR SHALL BE PROVIDED WITH A 3-POINT LATCH THAT MAINTAINS THE NEMA 4X RATING OF THE ENCLOSURE. THE FOLLOWING LIST OF EQUIPMENT AND FEATURES SHALL BE PROVIDED, HOWEVER, THE LIST IS NOT EXHAUSTIVE AND ALL REQUIRED EQUIPMENT FOR CONTROL AND OPERATION SHALL BE PROVIDED AS PART OF THIS PROJECT.

    -MAIN POWER LUGS
    -POWER DISTRIBUTION LUGS
    -OVERCURRENT PROTECTION FOR BRANCH FEEDERS
    -INTEGRAL SURGE PROTECTION DEVICE
    -MOTOR VARIABLE FREQUENCY DRIVES WITH 5% LINE REACTORS
    -TWO PANEL MOUNTED NEMA 4X STAINLESS STEEL A/C UNITS
    -240/120V 1-PHASE DISTRIBUTION LUGS
    -1-POLE AND 2-POLE BRANCH CIRCUIT BREAKERS
    -TERMINAL STRIPS FOR ANALOG AND DIGITAL I/O SIGNALS

    THE PUMP CONTROL PANEL SHALL BE FABRICATED AND LABELED BY A U.L. 508 FABRICATION SHOP.

16. PROVIDE ONE CROUSE HINDS POSI-LOCK E0400 SERIES, 400A, MALE PANEL WITH FIVE RECEPTACLES. CROUSE-HINDS CAT. NO. E0400-1703. ONE REQUIRED FOR GENERATOR CONNECTION. PROVIDE NEMA 4X STAINLESS STEEL JUNCTION BOX WITH SCREW COVER (ON BOTTOM) AND POSI-LOCK PANELS MOUNTED IN THE SIDE FACING OUT. PROVIDE ENCLOSURE WITH MINIMUM DIMENSIONS OF 36"W X 24"H X 12"D.

17. IN THE WET WELL, AT THE LEVEL TRANSDUCER CONDUIT STUBOUT, PROVIDE A STAINLESS STEEL CABLE SUPPORT ANCHORED TO THE CONCRETE WALL. PROVIDE A NON-CONDUCTIVE, SINGLE EYE, DOUBLE WEAVE, NON-METALLIC (ARIMID FIBER) CABLE GRIP; ATTACH TO THE CABLE WITH TWO HEAVY DUTY ZIP TIES. THE GRIP SHALL BE BY HUBBELL-KELLEMS.

18. MOUNT SWITCH ON EQUIPMENT FRAME.

19. TO PUMP CONTROL PANEL.

20. TO MANUAL TRANSFER SWITCH.

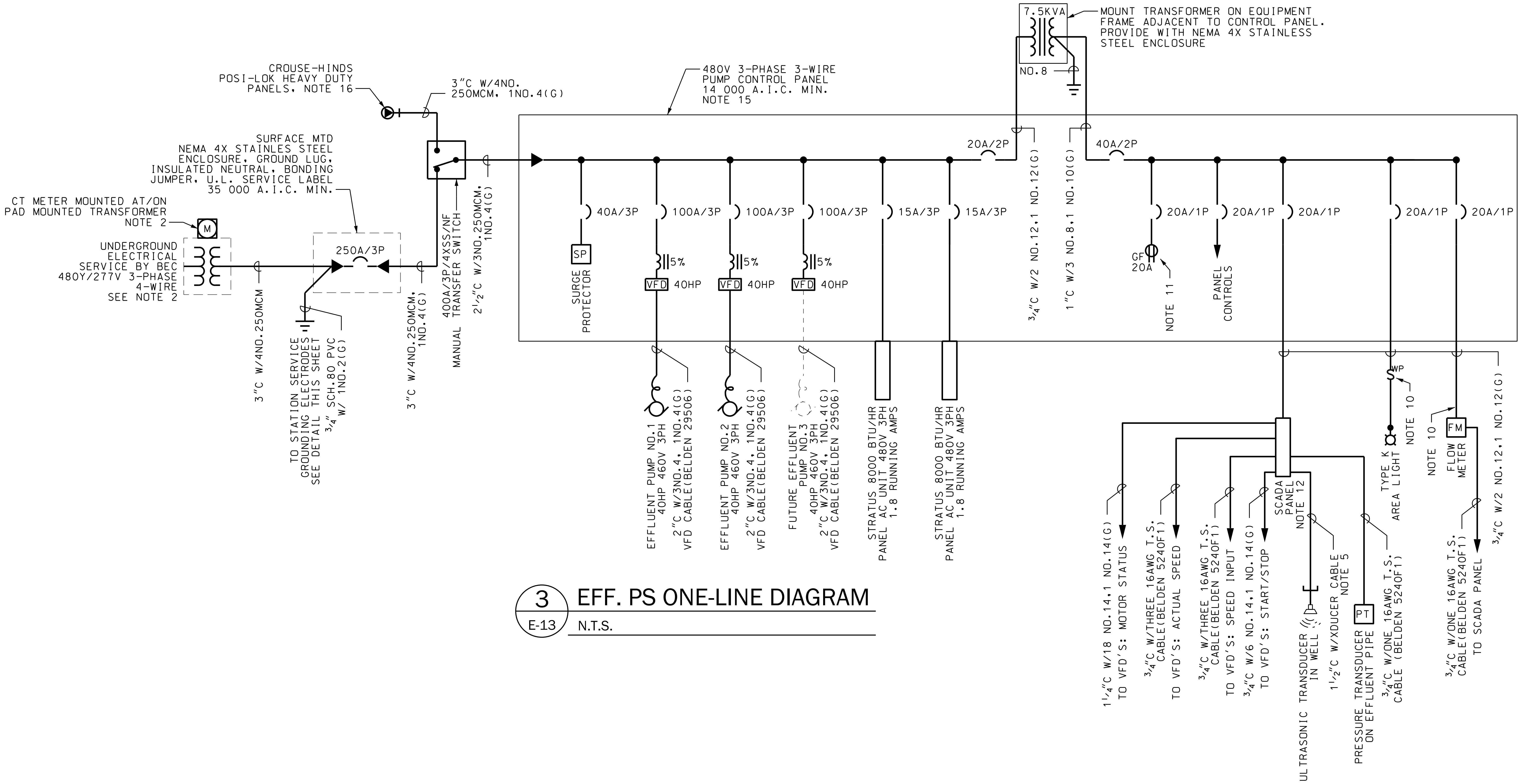
21. TO SCADA PANEL.

22. TO PUMP MOTORS.

23. NEMA 4X STAINLESS STEEL PANEL MOUNTED AIR CONDITIONER UNITS, STRATUS TA10-060-46-4X. THE PANEL FABRICATION SHOP SHALL DETERMINE THE THERMAL LOAD OF THE CONTROL PANEL AND PROVIDE THE NECESSARY COOLING CAPACITY. THE MANUFACTURER LISTED IS TO INDICATE THE QUALITY AND PERFORMANCE REQUIRED; OTHER MANUFACTURERS WITH EQUAL QUALITY OF CONSTRUCTION WILL BE ACCEPTABLE.

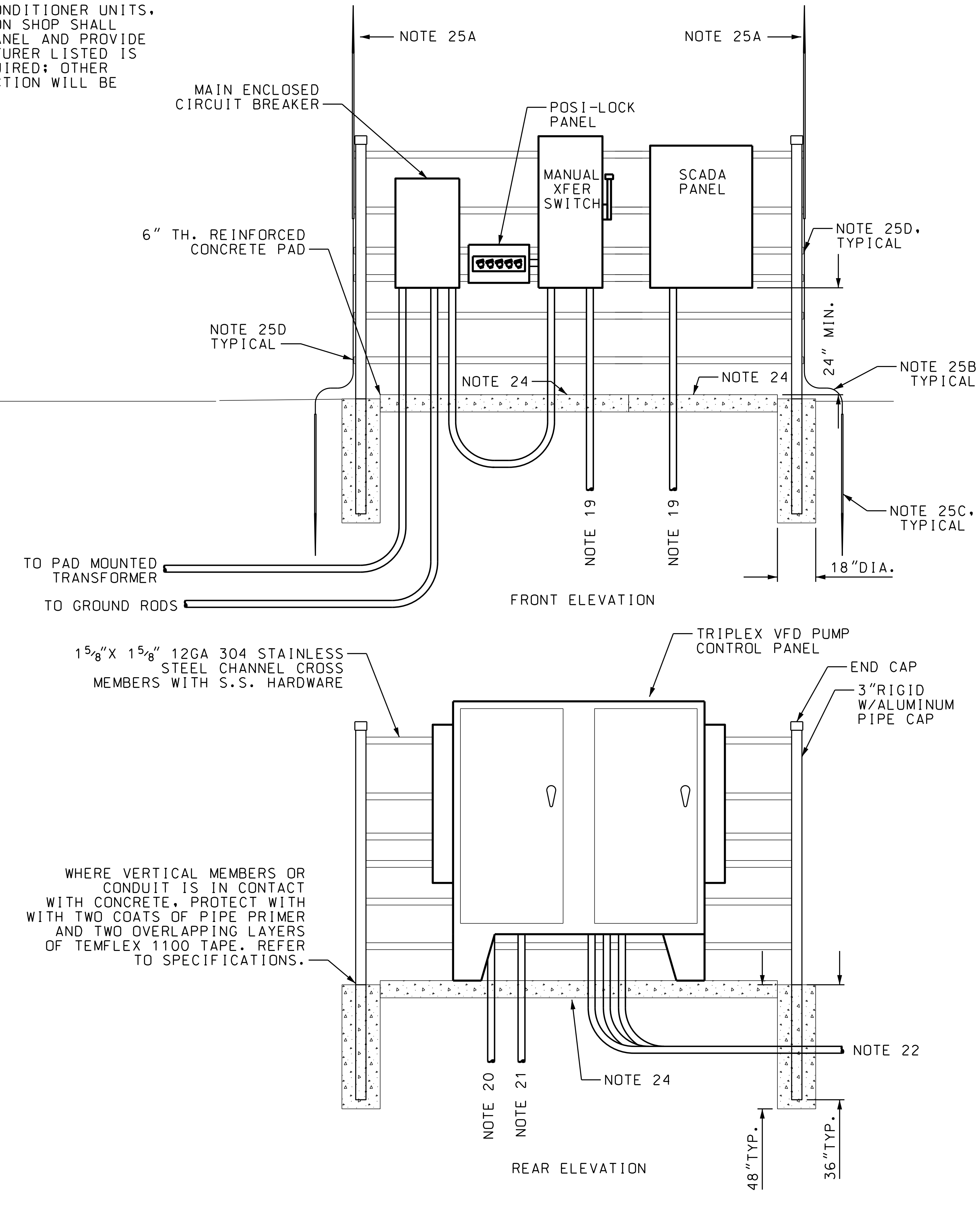
24. PROVIDE A CONDUIT WINDOW BENEATH THE PANELS THROUGH THE CONCRETE PADS. THE WINDOW SHALL BE 12" DEEP AND EXTEND THE FULL WIDTH OF THE PANEL, EXCEPT FOR FREE-STANDING ENCLOSURES, THE WINDOW SHALL EXTEND THE WIDTH OF THE PANEL BETWEEN THE SUPPORT LEGS. AFTER CONDUIT INSTALLTION, FILL THE WINDOW WITH CRUSHED GRAVEL.

25. PROVIDE LIGHTNING PROTECTION SYSTEM AIR TERMINAL ON A 10' MAST ATTACHED TO THE EQUIPMENT FRAME.
    A. THE AIR TERMINAL SHALL HAVE A MINIMUM ELEVATION OF 15'. PROVIDE ⅝" DIA. X 12" COPPER CLASS I. KUEFLER LPC202.
    B. EXTEND SMOOTH WEAVE COPPER CABLE FROM AIR TERMINAL TO GROUND ROD DRIVEN AJACENT TO THE EQUIPMENT FRAME. PROVIDE 59,450 CIR. MIL. CABLE. KUEFLER LPC120.
    C. PROVIDE TWO 10'X ¾" COPPERBONDED SECTIONAL GROUND RODS WITH COUPLING AT EACH END OF THE FRAME AND WHERE INDICATED. KUEFLER 633400 AND CR34. ALL GROUND ROD CONNECTIONS SHALL BE EXOTHERMIC WELD.
    D. PROVIDE BONDING PLATE MOUNTED TO EQUIPMENT FRAME. PLATE SHALL BE FOR USE WITH COPPER CABLE AND DISSIMILAR METAL SURFACE. KUEFLER LPC540L.
    E. PROVIDE SECONDARY COPPER CABLE CONDUCTOR BETWEEN AIR TERMINAL MASTS/BONDING PLATES. FURNISH 28,700 CIR. MIL. SMOOTH WEAVE COPPER CABLE, KUEFLER LPC150.
    F. PROVIDE CONCENTRIC STRAND COPPER CABLE GROUND RING AROUND STRUCTURE AT 24" BELOW GRADE. PROVIDE 250,000 CIR. MIL. CABLE, KUEFLER LPC138. ALL GROUND RING CONNECTIONS SHALL BE EXOTHERMIC WELD.
    G. WHERE FENCING IS INSTALLED, BOND CORNER POSTS AND GATE POSTS TO THE GROUNDING RING.
    H. CATALOG NUMBERS ARE REPRESENTATIVE OF REQUIRED QUALITY, LISTING AND CERTIFICATION. EQUAL EQUIPMENT BY A DIFFERENT MANUFACTURER WILL BE ACCEPTABLE.


7.5KVA
NO.8
MOUNT TRANSFORMER ON EQUIPMENT FRAME ADJACENT TO CONTROL PANEL. PROVIDE WITH NEMA 4X STAINLESS STEEL ENCLOSURE
CROUSE-HINDS POSI-LOK HEAVY DUTY PANELS. NOTE 16
3"C W/4NO. 250MCM, 1NO.4(G)
480V 3-PHASE 3-WIRE PUMP CONTROL PANEL 14,000 A.I.C. MIN. NOTE 15
SURFACE MTD NEMA 4X STAINLES STEEL ENCLOSURE, GROUND LUG, INSULATED NEUTRAL, BONDING JUMPER, U.L. SERVICE LABEL 35,000 A.I.C. MIN.
CT METER MOUNTED AT/ON PAD MOUNTED TRANSFORMER NOTE 2
M
UNDERGROUND ELECTRICAL SERVICE BY BEC 480Y/277V 3-PHASE 4-WIRE SEE NOTE 2
250A/3P
3"C W/4NO.250MCM
TO STATION SERVICE GROUNDING ELECTRODES THIS SHEET SEE DETAIL 3/4"C SCH.80 PVC W/ 1NO.2(G)
3"C W/4NO.250MCM, 1NO.4(G)
400A/3P/4XSS/NF MANUAL TRANSFER SWITCH
2½"C W/3NO.250MCM, 1NO.4(G)
20A/2P
40A/2P
40A/3P
100A/3P
100A/3P
100A/3P
15A/3P
15A/3P
SP
SURGE PROTECTOR
5%
VFD 40HP
VFD 40HP
VFD 40HP
¾"C W/2 NO.12,1 NO.12(G)
1"C W/3 NO.8,1 NO.10(G)
20A/1P
20A/1P
20A/1P
20A/1P
20A/1P
GF 20A
NOTE 11
PANEL CONTROLS
EFFLUENT PUMP NO.1 40HP 460V 3PH 2"C W/3NO.4, 1NO.4(G) VFD CABLE(BELDEN 29506)
EFFLUENT PUMP NO.2 40HP 460V 3PH 2"C W/3NO.4, 1NO.4(G) VFD CABLE(BELDEN 29506)
FUTURE EFFLUENT PUMP NO.3 40HP 460V 3PH 2"C W/3NO.4, 1NO.4(G) VFD CABLE(BELDEN 29506)
STRATUS 8000 BTU/HR PANEL AC UNIT 480V 3PH 1.8 RUNNING AMPS
STRATUS 8000 BTU/HR PANEL AC UNIT 480V 3PH 1.8 RUNNING AMPS
1¼"C W/18 NO.14,1 NO.14(G) TO VFD'S: MOTOR STATUS
¾"C W/THREE 16AWG T.S. CABLE(BELDEN 5240F1) TO VFD'S: ACTUAL SPEED
¾"C W/THREE 16AWG T.S. CABLE(BELDEN 5240F1) TO VFD'S: SPEED INPUT
¾"C W/6 NO.14,1 NO.14(G) TO VFD'S: START/STOP
SCADA PANEL NOTE 12
ULTRASONIC TRANSDUCER IN WELL
1½"C W/XDUCER CABLE NOTE 5
PT
PRESSURE TRANSDUCER ON EFFLUENT PIPE
¾"C W/ONE 16AWG T.S. CABLE (BELDEN 5240F1)
WP
TYPE K AREA LIGHT
NOTE 10
NOTE 10
FM
FLOW METER
¾"C W/ONE 16AWG T.S. CABLE (BELDEN 5240F1) TO SCADA PANEL
¾"C W/2 NO.12,1 NO.12(G)

3 E-13 EFF. PS ONE-LINE DIAGRAM

N.T.S.


NOTE 25A
NOTE 25A
MAIN ENCLOSED CIRCUIT BREAKER
POSI-LOCK PANEL
MANUAL XFER SWITCH
SCADA PANEL
NOTE 25D, TYPICAL
6" TH. REINFORCED CONCRETE PAD
NOTE 25D TYPICAL
NOTE 24
NOTE 24
24" MIN.
NOTE 25B, TYPICAL
NOTE 19
NOTE 19
NOTE 25C, TYPICAL
TO PAD MOUNTED TRANSFORMER
TO GROUND RODS
18"DIA.
FRONT ELEVATION
1⅝"X 1⅝" 12GA 304 STAINLESS STEEL CHANNEL CROSS MEMBERS WITH S.S. HARDWARE
TRIPLEX VFD PUMP CONTROL PANEL
END CAP
3"RIGID W/ALUMINUM PIPE CAP
WHERE VERTICAL MEMBERS OR CONDUIT IS IN CONTACT WITH CONCRETE, PROTECT WITH WITH TWO COATS OF PIPE PRIMER AND TWO OVERLAPPING LAYERS OF TEMFLEX 1100 TAPE. REFER TO SPECIFICATIONS.
NOTE 22
NOTE 20
NOTE 21
NOTE 24
48"TYP.
36"TYP.
REAR ELEVATION

4 E-13 EFF. PS ELEVATION DETAIL

N.T.S.

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
CHATHAM ENGINEERING COMPANY LLC
C04812

No. 14134
PAUL MAMALAKIS
Paul Mamalakis
1/28/16

NO	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

EFF. PUMP STATION PLAN - ELECTRICAL

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	CC
DESIGNED:	CC
REVIEWED:	PM
APPROVED:	PM
SCALE:	1" = 10'

50-E-13

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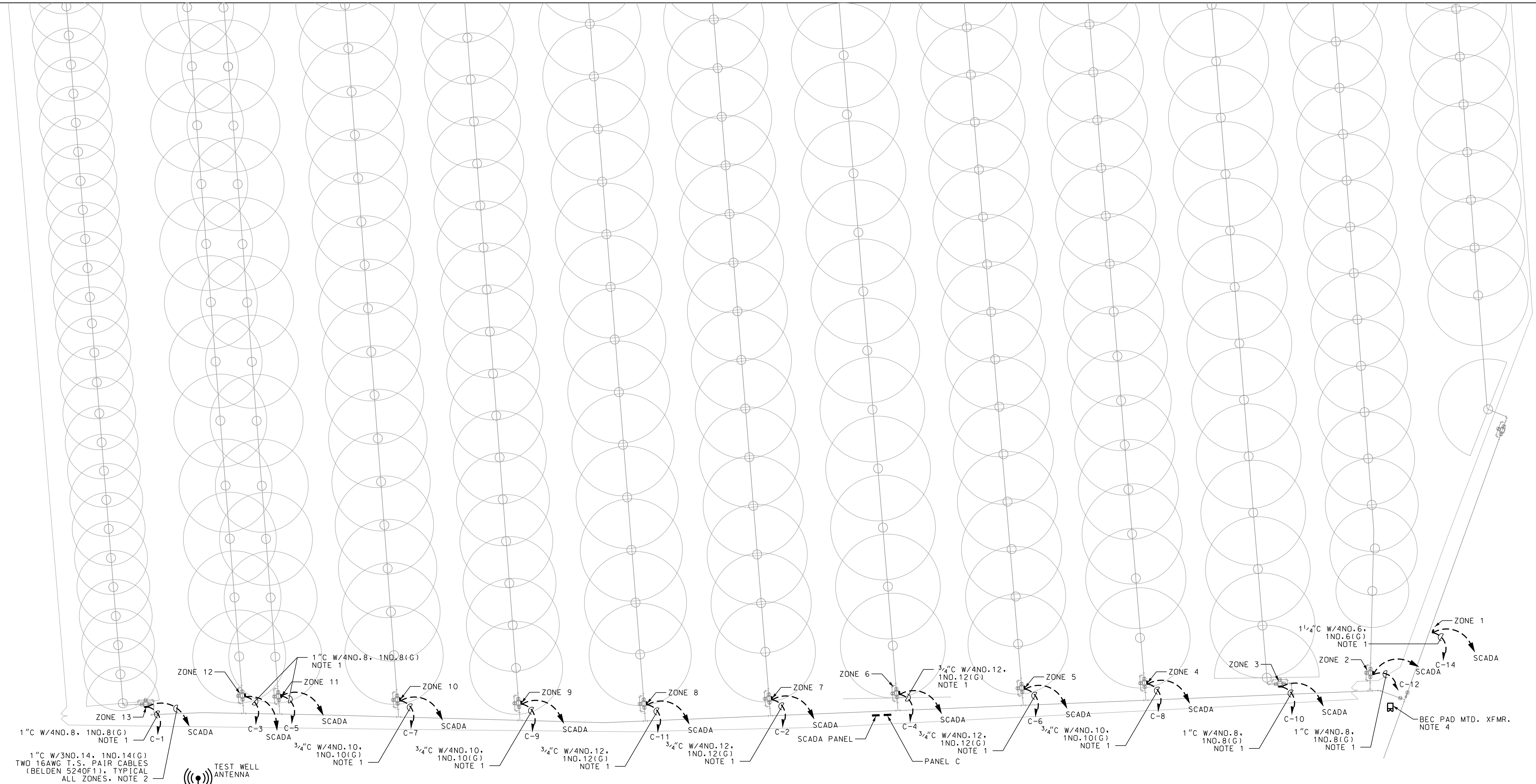
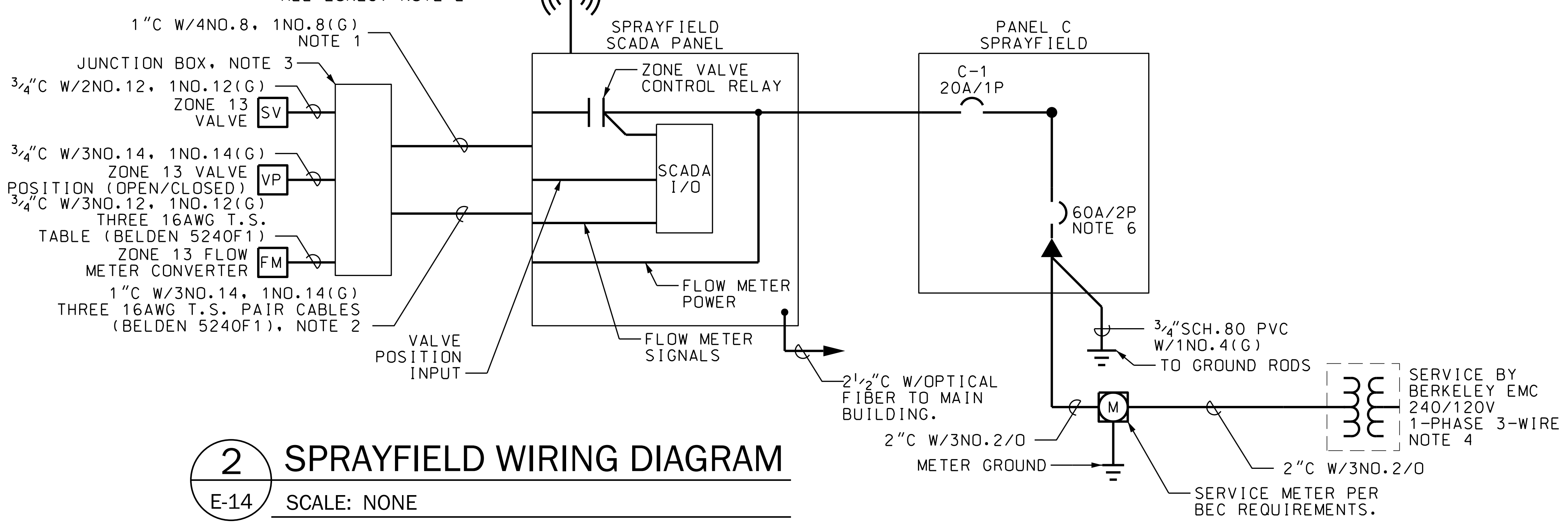

ZONE 13
1"C W/4NO.8, 1NO.8(G) NOTE 1
C-1
SCADA
1"C W/3NO.14, 1NO.14(G) TWO 16AWG T.S. PAIR CABLES (BELDEN 5240F1), TYPICAL ALL ZONES, NOTE 2
ZONE 12
1"C W/4NO.8, 1NO.8(G) NOTE 1
ZONE 11
C-3
SCADA
C-5
SCADA
ZONE 10
C-7
SCADA
3/4"C W/4NO.10, 1NO.10(G) NOTE 1
ZONE 9
C-9
SCADA
3/4"C W/4NO.10, 1NO.10(G) NOTE 1
ZONE 8
C-11
SCADA
3/4"C W/4NO.12, 1NO.12(G) NOTE 1
ZONE 7
C-2
SCADA
3/4"C W/4NO.12, 1NO.12(G) NOTE 1
SCADA PANEL
PANEL C
ZONE 6
3/4"C W/4NO.12, 1NO.12(G) NOTE 1
C-4
SCADA
3/4"C W/4NO.12, 1NO.12(G) NOTE 1
ZONE 5
C-6
SCADA
3/4"C W/4NO.10, 1NO.10(G) NOTE 1
ZONE 4
C-8
SCADA
ZONE 3
C-10
SCADA
1"C W/4NO.8, 1NO.8(G) NOTE 1
ZONE 2
C-12
SCADA
1"C W/4NO.8, 1NO.8(G) NOTE 1
ZONE 1
1 1/4"C W/4NO.6, 1NO.6(G) NOTE 1
C-14
SCADA
BEC PAD MTD. XFMR. NOTE 4

1 SPRAYFIELD ELECTRICAL PLAN
E-14

SCALE: 1" = 60'


TEST WELL ANTENNA
SPRAYFIELD SCADA PANEL
PANEL C SPRAYFIELD
1"C W/4NO.8, 1NO.8(G) NOTE 1
JUNCTION BOX, NOTE 3
3/4"C W/2NO.12, 1NO.12(G)
ZONE 13 VALVE
SV
3/4"C W/3NO.14, 1NO.14(G)
ZONE 13 VALVE POSITION (OPEN/CLOSED)
VP
3/4"C W/3NO.12, 1NO.12(G) THREE 16AWG T.S. TABLE (BELDEN 5240F1)
ZONE 13 FLOW METER CONVERTER
FM
1"C W/3NO.14, 1NO.14(G) THREE 16AWG T.S. PAIR CABLES (BELDEN 5240F1), NOTE 2
VALVE POSITION INPUT
ZONE VALVE CONTROL RELAY
SCADA I/O
FLOW METER POWER
FLOW METER SIGNALS
2 1/2"C W/OPTICAL FIBER TO MAIN BUILDING.
C-1 20A/1P
60A/2P NOTE 6
3/4"SCH.80 PVC W/1NO.4(G)
TO GROUND RODS
M
2"C W/3NO.2/0
METER GROUND
SERVICE METER PER BEC REQUIREMENTS.
2"C W/3NO.2/0
SERVICE BY BERKELEY EMC 240/120V 1-PHASE 3-WIRE NOTE 4

2 SPRAYFIELD WIRING DIAGRAM
E-14

SCALE: NONE

NOTES:

1. POWER CONDUCTORS FOR THE SOLENOID VALVE AND THE FLOW METER. REFER TO 1/E-14 FOR HOME-RUN CONDUCTOR AND CONDUIT SIZE.
2. SIGNAL CONDUCTORS FOR VALVE POSITION INPUT AND FLOW METER INPUTS (FLOW, LOW FLOW, EMPTY PIPE) TO SCADA.
3. NEMA 4X STAINLESS STEEL JUNCTION BOX MOUNTED ON EQUIPMENT FRAME ADJACENT TO VALVE PIT. PROVIDE HAMMOND MANUFACTURING ECLIPSE JUNIOR SERIES WITH ALUMINUM BACKPLATE, CAT. NO. EJ14128SS. PROVIDE WITH QUARTER TURN LATCHES. PROVIDE WITH TERMINAL STRIP AND POWER TERMINAL BLOCK MOUNTED TO BACK PLATE.
4. FIELD COORDINATE LOCATION OF PAD MOUNTED TRANSFORMER AND METER WITH BERKELEY ELECTRIC CO-OP. CONTACT JOHN HALL, 843-899-8463.
5. WIRING DIAGRAM SHOWS TYPICAL CONNECTIONS, CONDUIT AND WIRING BETWEEN PANEL C AND THE ZONE VALVE EQUIPMENT. REFER TO THE SITE PLAN FOR POWER WIRING CONDUIT AND CONDUCTOR SIZE. COORDINATE ALL CONNECTIONS WITH EQUIPMENT FURNISHED.
6. PROVIDE OVERSIZED LUGS ON PANEL MAIN BREAKER.

SCHEDULE OF PANEL 'C'

VOLTAGE: 240 / 120
BUS AMPS: 125 A
A.I.C RATING: 10,000 A
PHASE: 1
DEVICE AMPS: 60 A **MCB**
MOUNTING: SURFACE
WIRE: 3
NEMA: 4X

LOCATION DESCRIPTION	LOAD (KVA)	LOAD TYPE	TRIP POLE	#	PH	#	TRIP POLE	LOAD TYPE	LOAD (KVA)	LOCATION DESCRIPTION
ZONE 13	0.6	H	20A/1P	1	A	2	20A/1P	H	0.6	ZONE 7
ZONE 12	0.6	H	20A/1P	3	B	4	20A/1P	H	0.6	ZONE 6
ZONE 11	0.6	H	20A/1P	5	A	6	20A/1P	H	0.6	ZONE 5
ZONE 10	0.6	H	20A/1P	7	B	8	20A/1P	H	0.6	ZONE 4
ZONE 9	0.6	H	20A/1P	9	A	10	20A/1P	H	0.6	ZONE 3
ZONE 8	0.6	H	20A/1P	11	B	12	20A/1P	H	0.6	ZONE 2
SCADA PANEL	1.0	H	20A/1P	13	A	14	20A/1P	H	0.6	ZONE 1
SPARE			20A/1P	15	B	16	20A/1P			SPARE
SPARE			20A/1P	17	A	18	20A/1P			SPARE
SPARE			20A/1P	19	B	20	20A/1P			SPARE
SPARE			20A/1P	21	A	22	20A/1P			SPARE
SPARE			20A/1P	23	B	24	20A/1P			SPARE

PANEL LOAD ANALYSIS

Load Type	DESCRIPTION	Conn. KVA	Demand KVA	2008 NEC Reference	Load Type	DESCRIPTION	Conn. KVA	Demand KVA	2008 NEC Reference
A	Lighting	0.0	0.0	NEC Article 215.3	E	Heating	0.0	0.0	NEC Article 220.60
B	Receptacles	0.0	0.0	NEC Table 220.44	F	Largest Motor	0.0	0.0	NEC Article 440.7
C	Kitchen Equipment	0.0	0.0	NEC Table 220.56	G	Other Motors	0.0	0.0	NEC Article 440.7
D	Air-Conditioning	0.0	0.0	NEC Article 220.60	H	Other Loads	8.8	8.8	

Phase A Connected Load	5.2 KVA	**Notes:**	TOTAL CONNECTED LOAD	8.8 KVA	36.7 AMPS
Phase B Connected Load	3.6 KVA		TOTAL DEMAND LOAD	8.8 KVA	36.7 AMPS
			MINIMUM SIZING AMPS	13.8 KVA	33.1 AMPS

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No. 14134
PAUL MAMALAKIS
Paul M
1/28/16

NO.	REVISIONS	BY	DATE

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

LAS SPRAY FIELD PLAN - ELECTRICAL

JOB NO: J-25328.0000
DATE: 01/28/16
DRAWN: CC
DESIGNED: CC
REVIEWED: PM
APPROVED: PM
SCALE: 1" = 10'

50-E-14

CADD PLOT
28-JAN-2016
19:46
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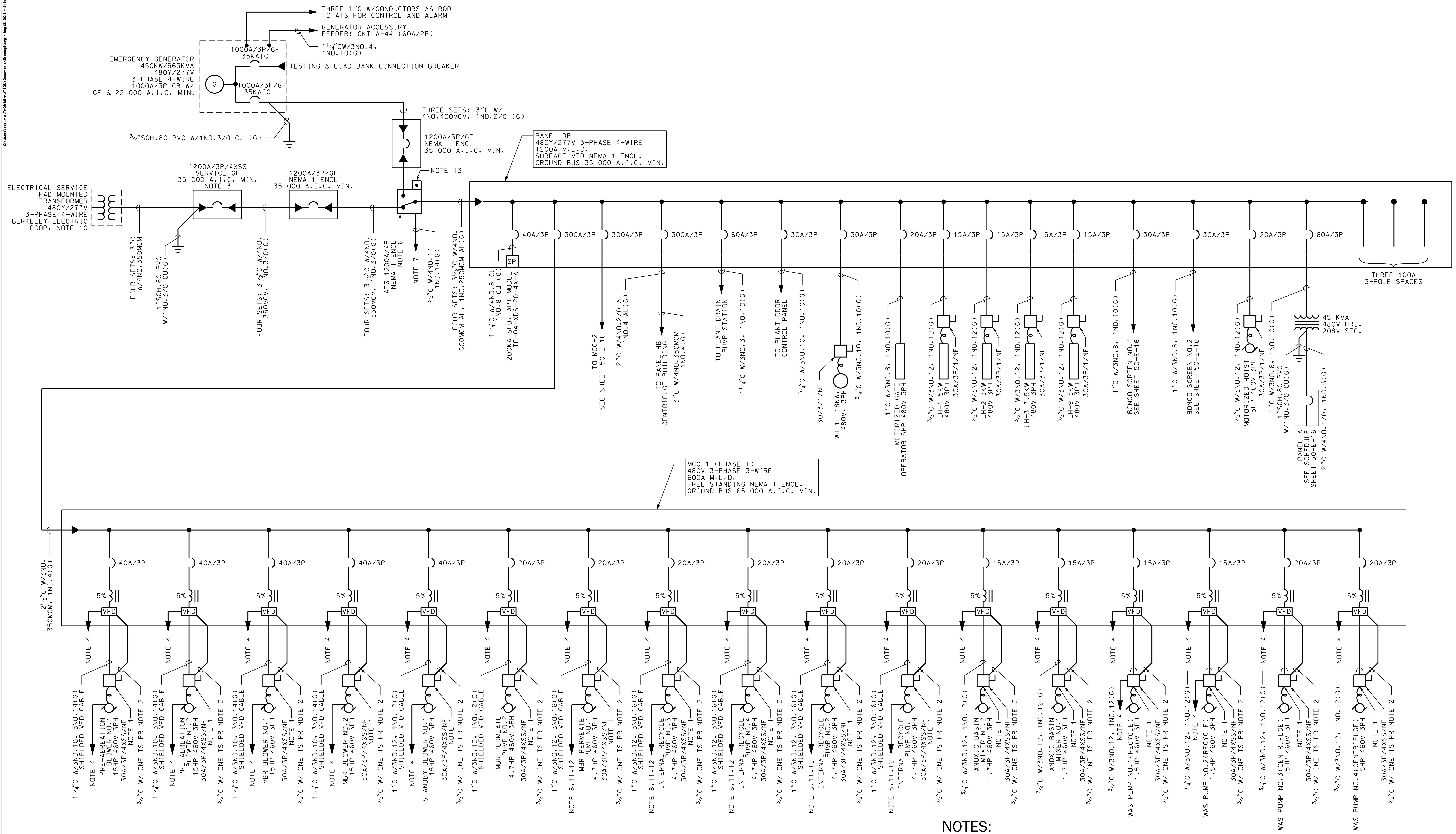
THREE 1"C W/CONDUCTORS AS ROD TO ATS FOR CONTROL AND ALARM
GENERATOR ACCESSORY FEEDER: CKT A-44 (60A/2P)
1¼"CW/3NO.4, 1NO.10(G)
1000A/3P/GF 35KAIC
TESTING & LOAD BANK CONNECTION BREAKER
EMERGENCY GENERATOR 450KW/563KVA 480Y/277V 3-PHASE 4-WIRE 1000A/3P CB W/ GF & 22 000 A.I.C. MIN.
G
1000A/3P/GF 35KAIC
THREE SETS: 3"C W/ 4NO.400MCM, 1NO.2/0 (G)
¾"SCH.80 PVC W/1NO.3/0 CU (G)
1200A/3P/GF NEMA 1 ENCL 35 000 A.I.C. MIN.
PANEL DP 480Y/277V 3-PHASE 4-WIRE 1200A M.L.O. SURFACE MTD NEMA 1 ENCL. GROUND BUS 35 000 A.I.C. MIN.
NOTE 13
1200A/3P/4XSS SERVICE GF 35 000 A.I.C. MIN. NOTE 3
1200A/3P/GF NEMA 1 ENCL 35 000 A.I.C. MIN.
ELECTRICAL SERVICE PAD MOUNTED TRANSFORMER 480Y/277V 3-PHASE 4-WIRE BERKELEY ELECTRIC COOP. NOTE 10
FOUR SETS: 3"C W/4NO.350MCM
1"SCH.80 PVC W/1NO.3/0 CU(G)
FOUR SETS: 3½"C W/4NO. 350MCM, 1NO.3/0(G)
FOUR SETS: 3½"C W/4NO. 350MCM, 1NO.3/0(G)
ATS 1200A/4P NEMA 1 ENCL NOTE 6
NOTE 7
¾"C W/4NO.14 1NO.14(G)
FOUR SETS: 3½"C W/4NO. 500MCM AL, 1NO.250MCM AL(G)
40A/3P
SP
1¼"C W/4NO.8 CU 1NO.8 CU (G)
200KA SPD, APT MODEL TE-04-XDS-20-4X-A
300A/3P
TO MCC-2 SEE SHEET 50-E-16
300A/3P
2"C W/4NO.2/0 AL 1NO.4 AL(G)
300A/3P
TO PANEL HB CENTRIFUGE BUILDING
3"C W/4NO.350MCM 1NO.4(G)
60A/3P
TO PLANT DRAIN PUMP STATION
1¼"C W/3NO.3, 1NO.10(G)
30A/3P
TO PLANT ODOR CONTROL PANEL
¾"C W/3NO.10, 1NO.10(G)
30A/3P
30/3/1/NF
WH-1 18KW, 480V, 3PH
¾"C W/3NO.10, 1NO.10(G)
20A/3P
1"C W/3NO.8, 1NO.10(G)
MOTORIZED GATE OPERATOR 5HP 480V 3PH
15A/3P
¾"C W/3NO.12, 1NO.12(G)
UH-1 5KW 480V 3PH
30A/3P/1/NF
15A/3P
¾"C W/3NO.12, 1NO.12(G)
UH-2 3KW 480V 3PH
30A/3P/1/NF
15A/3P
¾"C W/3NO.12, 1NO.12(G)
UH-3 7.5KW 480V 3PH
30A/3P/1/NF
15A/3P
¾"C W/3NO.12, 1NO.12(G)
UH-9 3KW 480V 3PH
30A/3P/1/NF
30A/3P
1"C W/3NO.8, 1NO.10(G)
BONGO SCREEN NO.1 SEE SHEET 50-E-16
30A/3P
1"C W/3NO.8, 1NO.10(G)
BONGO SCREEN NO.2 SEE SHEET 50-E-16
20A/3P
¾"C W/3NO.12, 1NO.12(G)
MOTORIZED HOIST 5HP 460V 3PH
30A/3P/1/NF
60A/3P
1"C W/3NO.6, 1NO.10(G)
45 KVA 480V PRI. 208V SEC.
1"SCH.80 PVC W/1NO.3/0 CU(G)
PANEL A SEE SCHEDULE SHEET 50-E-16
2"C W/4NO.1/0, 1NO.6(G)
THREE 100A 3-POLE SPACES
MCC-1 (PHASE 1) 480V 3-PHASE 3-WIRE 600A M.L.O. FREE STANDING NEMA 1 ENCL. GROUND BUS 65 000 A.I.C. MIN.
2½"C W/3NO. 350MCM, 1NO.4(G)
40A/3P
5%
VFD
NOTE 4
1¼"C W/3NO.10, 3NO.14(G) SHIELDED VFD CABLE
NOTE 4
PRE-AERATION BLOWER NO.1 15HP 460V 3PH
30A/3P/4XSS/NF NOTE 1
¾"C W/ ONE TS PR NOTE 2
40A/3P
1¼"C W/3NO.10, 3NO.14(G) SHIELDED VFD CABLE
PRE-AERATION BLOWER NO.2 15HP 460V 3PH
40A/3P
MBR BLOWER NO.1 15HP 460V 3PH
40A/3P
MBR BLOWER NO.2 15HP 460V 3PH
40A/3P
1"C W/3NO.12, 1NO.12(G) SHIELDED VFD CABLE
STANDBY BLOWER NO.1 15HP 460V 3PH
20A/3P
MBR PERMEATE PUMP NO.2 4.7HP 460V 3PH
20A/3P
1"C W/3NO.12, 3NO.16(G) SHIELDED VFD CABLE
NOTE 8,11,12
MBR PERMEATE PUMP NO.1 4.7HP 460V 3PH
20A/3P
INTERNAL RECYCLE PUMP NO.3 4.7HP 460V 3PH
20A/3P
INTERNAL RECYCLE PUMP NO.4 4.7HP 460V 3PH
20A/3P
INTERNAL RECYCLE PUMP NO.2 4.7HP 460V 3PH
20A/3P
INTERNAL RECYCLE PUMP NO.1 4.7HP 460V 3PH
30A/3P/4XSS/NF NOTE 1
15A/3P
¾"C W/3NO.12, 1NO.12(G)
ANOXIC BASIN MIXER NO.2 1.7HP 460V 3PH
15A/3P
ANOXIC BASIN MIXER NO.1 1.7HP 460V 3PH
15A/3P
WAS PUMP NO.1(RECYCLE) 1.5HP 460V 3PH
15A/3P
WAS PUMP NO.2(RECYCLE) 1.5HP 460V 3PH
20A/3P
WAS PUMP NO.3(CENTRIFUGE) 5HP 460V 3PH
20A/3P
WAS PUMP NO.4(CENTRIFUGE) 5HP 460V 3PH

NOTES:

1. PROVIDE DISCONNECT SWITCH WITH AUXILIARY CONTACTS; BREAK FIRST/MAKE LAST. INTERLOCK WITH VFD TO SHUTDOWN VFD BEFORE DISCONNECT OPENS AND PREVENT VFD OPERATION UNTIL DISCONNEC IS CLOSED.
2. PROVIDE BELDEN 5240F1 16AWG TWISTED SHIELDED PAIR CABLE WITH WATER RESISTANT JACKET.
3. PROVIDE ENCLOSED BREAKER ADJACENT TO PAD MOUNTED TRANSFORMER WITH A NEMA 4X STAINLESS STEEL ENCLOSURE. MOUNT BREAKER ON EQUIPMENT FRAME ADJACENT TO THE TRANSFORMER.
4. REFER TO OVIVO FIELD INSTRUMENT CONNECTIONS SCHEDUL, SHEET 50-E-18, FOR REQUIRED I/O TERMINATIONS.
5. INTERLOCK MOTOR CONTROL CIRCUIT THROUGH SYSTEM CONTROL PANEL.
6. THE AUTOMATIC TRANSFER SWITCH SHALL BE AN ISOLATION/BY-PASS TYPE SWITCH. THE SWITCH SHALL ONLY REQUIRE SIDE OR FRONT ACCESS FOR TERMINATION OF CABLES.
7. EXTEND PRE-TRANSFER AND POST-TRANSFER SIGNALS TO THE IN-PLANT SCADA AND OVIVO CONTROL PANELS. THESE SYSTEMS SHALL PROVIDE LOAD-STEP AND LOCKOUT CONTROL OF ALL EQUIPMENT IDENTIFIED IN THE GENERATOR SPECIFICATION.
10. FIELD COORDINATE THE ELECTRICAL SERVICE WITH BERKELEY ELECTRIC COOP.
13. GENERATOR EMERGENCY STOP SWITCH. MOUNT ON FACE OF ATS, PROVIDE BREAK-GLASS TYPE OR E-STOP.
14. CONNECT ALL FIELD DEVICES AS REQUIRED. COORDINATE WITH MANUFACTURER'S INSTRUCTIONS AND REQUIREMENTS.

① PARTIAL ONE-LINE DIAGRAM
E-15 N.T.S.

SOUTH CAROLINA
CHATHAM ENGINEERING COMPANY LLC
C04812
CERTIFICATE OF AUTHORIZATION

PAUL MAMALAKIS
No. 14134
Paul Mamalakis 1/28/16

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ONE-LINE DIAGRAM

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SCALE:	NONE

50-E-15

CADD PLOT
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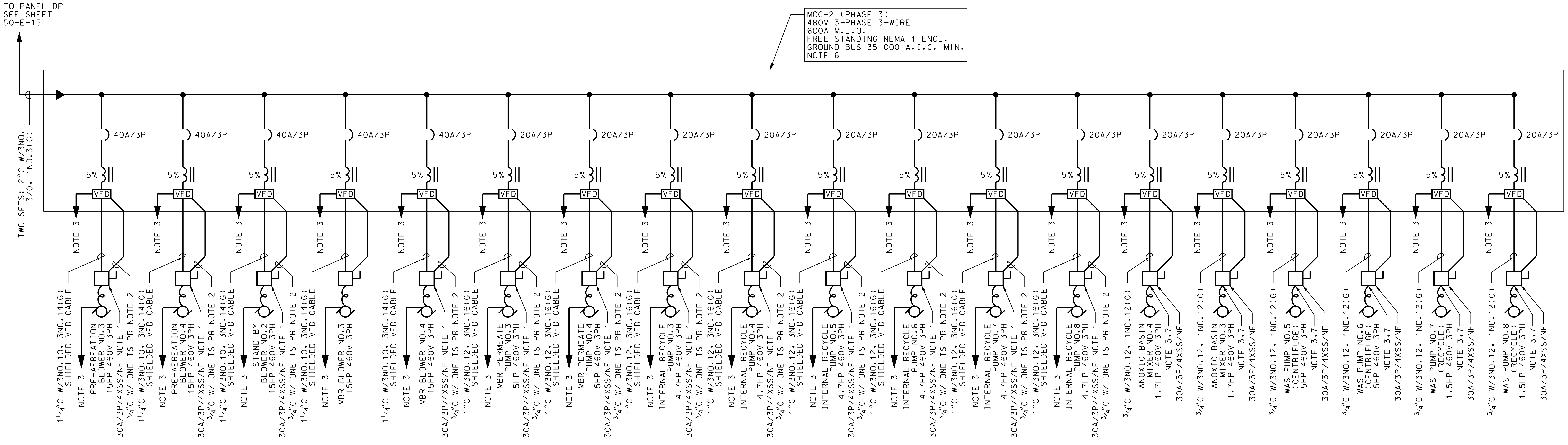
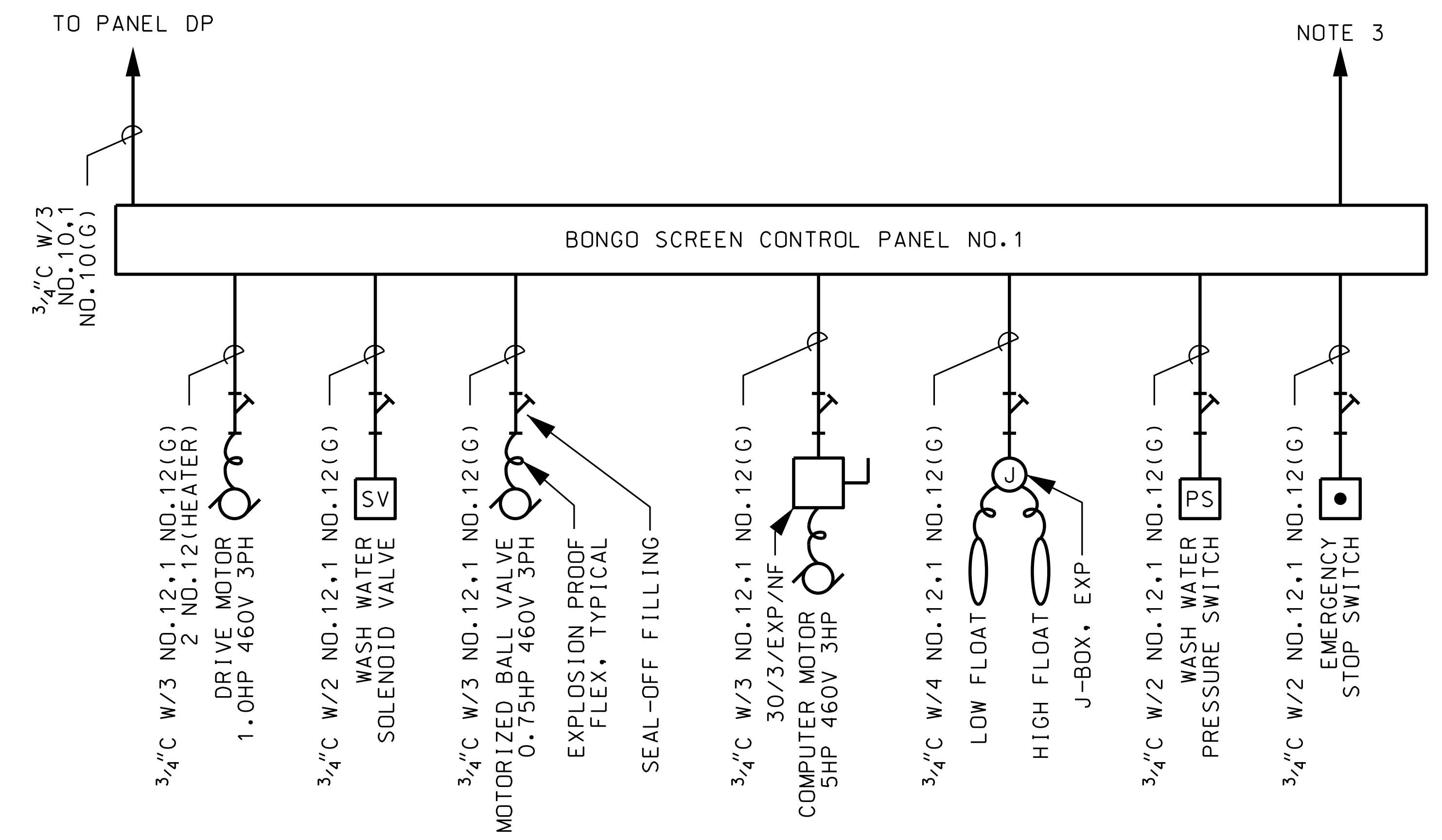

TO PANEL DP
SEE SHEET
50-E-15
TWO SETS: 2"C W/3NO. 3/0, 1NO.3(G)
MCC-2 (PHASE 3)
480V 3-PHASE 3-WIRE
600A M.L.O.
FREE STANDING NEMA 1 ENCL.
GROUND BUS 35 000 A.I.C. MIN.
NOTE 6
40A/3P
20A/3P
5%
VFD
NOTE 3
1¼"C W/3NO.10, 3NO.14(G) SHIELDED VFD CABLE
PRE-AEREATION BLOWER NO.3 15HP 460V 3PH
30A/3P/4XSS/NF NOTE 1
3/4"C W/ ONE TS PR NOTE 2
PRE-AEREATION BLOWER NO.4 15HP 460V 3PH
STAND-BY BLOWER NO.2 15HP 460V 3PH
MBR BLOWER NO.3 15HP 460V 3PH
MBR BLOWER NO.4 15HP 460V 3PH
1"C W/3NO.12, 3NO.16(G) SHIELDED VFD CABLE
MBR PERMEATE PUMP NO.3 5HP 460V 3PH
MBR PERMEATE PUMP NO.4 5HP 460V 3PH
INTERNAL RECYCLE PUMP NO.3 4.7HP 460V 3PH
INTERNAL RECYCLE PUMP NO.4 4.7HP 460V 3PH
INTERNAL RECYCLE PUMP NO.5 4.7HP 460V 3PH
INTERNAL RECYCLE PUMP NO.6 4.7HP 460V 3PH
INTERNAL RECYCLE PUMP NO.7 4.7HP 460V 3PH
INTERNAL RECYCLE PUMP NO.8 4.7HP 460V 3PH
3/4"C W/3NO.12, 1NO.12(G)
ANOXIC BASIN MIXER NO.4 1.7HP 460V 3PH
ANOXIC BASIN MIXER NO.3 1.7HP 460V 3PH
WAS PUMP NO.5 (CENTRIFUGE) 5HP 460V 3PH
WAS PUMP NO.6 (CENTRIFUGE) 5HP 460V 3PH
WAS PUMP NO.7 (RECYCLE) 1.5HP 460V 3PH
WAS PUMP NO.8 (RECYCLE) 1.5HP 460V 3PH
NOTE 3,7
30A/3P/4XSS/NF

1 PARTIAL ONE-LINE DIAGRAM - MCC-2 (PHASE 3)

E-16

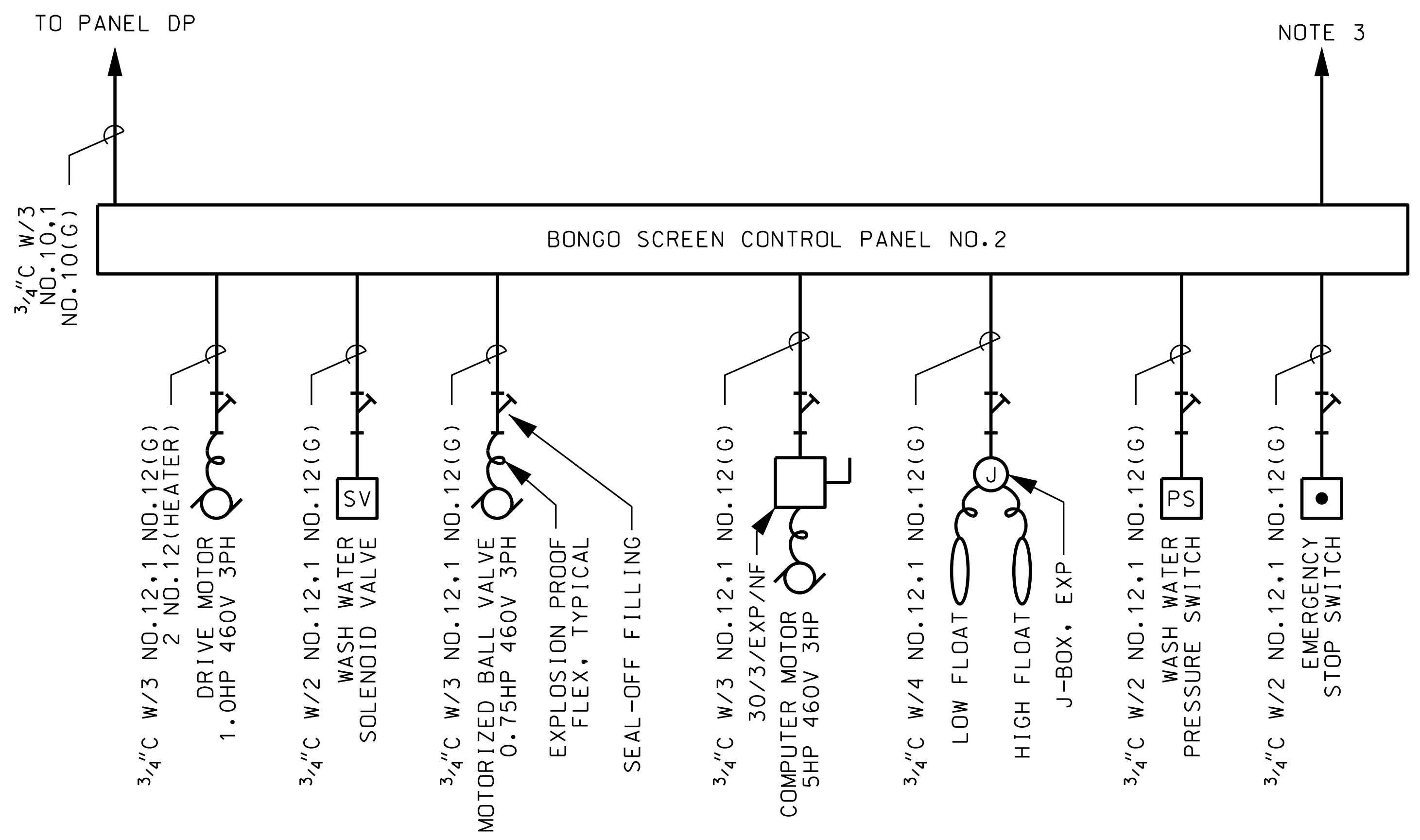
N.T.S.


TO PANEL DP
NOTE 3
3/4"C W/3 NO.10,1 NO.10(G)
BONGO SCREEN CONTROL PANEL NO.1
3/4"C W/3 NO.12,1 NO.12(G) 2 NO.12(HEATER)
DRIVE MOTOR 1.0HP 460V 3PH
3/4"C W/2 NO.12,1 NO.12(G)
SV
WASH WATER SOLENOID VALVE
3/4"C W/3 NO.12,1 NO.12(G)
MOTORIZED BALL VALVE 0.75HP 460V 3PH
EXPLOSION PROOF FLEX, TYPICAL
SEAL-OFF FILLING
3/4"C W/3 NO.12,1 NO.12(G)
30/3/EXP/NF
COMPUTER MOTOR 5HP 460V 3HP
3/4"C W/4 NO.12,1 NO.12(G)
J
LOW FLOAT
HIGH FLOAT
J-BOX, EXP
3/4"C W/2 NO.12,1 NO.12(G)
PS
WASH WATER PRESSURE SWITCH
3/4"C W/2 NO.12,1 NO.12(G)
EMERGENCY STOP SWITCH

2 BONGO SCREEN NO.1

E-16

N.T.S.


TO PANEL DP
NOTE 3
3/4"C W/3 NO.10,1 NO.10(G)
BONGO SCREEN CONTROL PANEL NO.2
3/4"C W/3 NO.12,1 NO.12(G) 2 NO.12(HEATER)
DRIVE MOTOR 1.0HP 460V 3PH
3/4"C W/2 NO.12,1 NO.12(G)
SV
WASH WATER SOLENOID VALVE
3/4"C W/3 NO.12,1 NO.12(G)
MOTORIZED BALL VALVE 0.75HP 460V 3PH
EXPLOSION PROOF FLEX, TYPICAL
SEAL-OFF FILLING
3/4"C W/3 NO.12,1 NO.12(G)
30/3/EXP/NF
COMPUTER MOTOR 5HP 460V 3HP
3/4"C W/4 NO.12,1 NO.12(G)
J
LOW FLOAT
HIGH FLOAT
J-BOX, EXP
3/4"C W/2 NO.12,1 NO.12(G)
PS
WASH WATER PRESSURE SWITCH
3/4"C W/2 NO.12,1 NO.12(G)
EMERGENCY STOP SWITCH

3 BONGO SCREEN NO.2

E-16

N.T.S.

SCHEDULE OF PANEL 'A'

VOLTAGE: 208 / 120
BUS AMPS: 200 A
A.I.C RATING: 10,000 A
PHASE: 3
DEVICE AMPS: 150 A MCB
MOUNTING: SURFACE
WIRE: 4
NEMA: 1

LOCATION DESCRIPTION	LOAD (KVA)	LOAD TYPE	TRIP POLE	#	PH	#	TRIP POLE	LOAD TYPE	LOAD (KVA)	LOCATION DESCRIPTION
RCPT ELECT & MECH ROOM	0.8	B	20A/1P	1	A	2	20A/1P	H	0.0	INFLUENT FLOW METER
RCPT LAB	0.8	B	20A/1P	3	B	4	20A/1P	H	0.0	WAS FLOW METER
RCPT TOILET	1.5	B	20A/1P	5	C	6	20A/1P	H	0.0	NaHCl Pump Skid
RCPT WORK STATION	1.0	B	20A/1P	7	A	8	20A/1P	H	0.0	WATER SOFTENER
HWC-1 1/3HP 120V 1PH	0.8	G	20A/1P	9	B	10	20A/1P	H	0.0	LIGHTS, EF-3 CHEMICAL ROOM
EF-2 3/4HP	0.9	G	20A/2P	11	C	12	20A/1P	H	0.0	CAUSTIC SODA METERING PUMP NO.1
208V 1-PHASE	0.9	G	-	13	A	14	20A/1P	H	0.0	CAUSTIC SODA METERING PUMP NO.2
EF-1 3/4HP	0.9	G	20A/2P	15	B	16	20A/1P	H	0.0	EMERGENCY SHOWER
208V 1-PHASE	0.9	G	-	17	C	18	20A/1P	H	0.0	ANOXIC FLOW METER NO.1
HP-1 27MCA	2.3	D	45A/2P	19	A	20	20A/1P	H	0.0	ANOXIC FLOW METER NO.2
208V 1PH	2.3	D	-	21	B	22	20A/1P	H	0.0	PROCESS FLOW METERS
HP-2 12MCA	1.0	D	15A/2P	23	C	24	20A/1P	H	0.0	POWERED VALVE FCV-080101
208V 1PH	1.0	D	-	25	A	26	20A/1P	H	0.0	POWERED VALVE FCV-050201
ELECTRIC MIXER 1/2HP 120V 1PH	1.1	G	20A/1P	27	B	28	20A/1P	H	0.0	NaHCl Pump FLOW METER
CIP PUMP 1/2HP 120V 1PH	1.1	G	20A/1P	29	C	30	20A/1P	B	1.2	RCPT CKT EXTERIOR
AHU-1 27MCA	2.3	D	30A/2P	31	A	32	20A/1P	B	0.8	RCPT UPPER LEVEL TREATMENT
208V 1PH	2.3	D	-	33	B	34	20A/1P	B	0.4	TELEPHONE BACKBOARD
RCPT EQUIPMENT ROOM	0.8	B	20A/1P	35	C	36	20A/1P	B	1.2	REFRIGERATOR
SPARE			20A/1P	37	A	38	20A/1P	B		SPARE
SPARE			20A/1P	39	B	40	20A/1P			SPARE
SPARE			20A/1P	41	C	42	20A/1P			SPARE
MICROWAVE	1.5	B	20A/1P	43	A	44	60A/2P	H	3.5	GENERATOR PANEL
WATER COOLER **	0.8	B	20A/1P	45	B	46	-	H	3.5	-
EF-7 1/2HP 120V 1PH	1.1	G	20A/1P	47	C	48	20A/1P			SPARE
SPARE			20A/1P	49	A	50	20A/1P			SPARE
SPARE			20A/1P	51	B	52	20A/1P			SPARE
SPARE			20A/1P	53	C	54	20A/1P			SPARE
SPARE			20A/1P	55	A	56	20A/1P			SPARE
SPARE			20A/1P	57	B	58	20A/1P			SPARE
SPARE			20A/1P	59	C	60	20A/1P			SPARE
SPARE			20A/1P	61	A	62	20A/1P			SPARE
SPARE			20A/1P	63	B	64	20A/1P			SPARE
SPARE			20A/1P	65	C	66	20A/1P			SPARE

PANEL LOAD ANALYSIS

Load Type	DESCRIPTION	Conn. KVA	Demand KVA	2008 NEC Reference	Load Type	DESCRIPTION	Conn. KVA	Demand KVA	2008 NEC Reference
A	Lighting	0.0	0.0	NEC Article 215.3	E	Heating	0.0	0.0	NEC Article 220.60
B	Receptacles	10.8	10.4	NEC Table 220.44	F	Largest Motor	0.0	0.0	NEC Article 440.7
C	Kitchen Equipment	0.0	0.0	NEC Table 220.56	G	Other Motors	7.8	7.8	NEC Article 440.7
D	Air-Conditioning	11.0	11.0	NEC Article 220.60	H	Other Loads	7.1	7.1	

Phase A Connected Load	14.1 KVA	TOTAL CONNECTED LOAD	36.7 KVA	102.0 AMPS
Phase B Connected Load	12.9 KVA	TOTAL DEMAND LOAD	36.4 KVA	100.9 AMPS
Phase C Connected Load	9.8 KVA	MINIMUM SIZING AMPS	56.8 KVA	157.9 AMPS

Notes: ** GFCI BREAKER

NOTES:

1. PROVIDE DISCONNECT SWITCH WITH AUXILIARY CONTACTS; BREAK FIRST/MAKE LAST. INTERLOCK WITH VFD TO SHUTDOWN VFD BEFORE DISCONNECT OPENS AND PREVENT VFD OPERATION UNTIL DISCONNEC IS CLOSED.
2. PROVIDE BELDEN 5240F1 16AWG TWISTED SHIELDED PAIR CABLE WITH WATER RESISTANT JACKET.
3. REFER TO OVIVO FIELD INSTRUMENT CONNECTION SCHEDULE, SHEET 50-E-18 FOR REQUIRED CONNECTIONS.
4. EXTEND CONTROL CIRCUIT TO CONTROL PANEL.
5. INTERLOCK MOTOR CONTROL CIRCUIT THROUGH SYSTEM CONTROL PANEL.
6. MCC-2 ONE-LINE FOR INFORMATION ONLY. ALL EQUIPMENT SHOWN IS FOR PHASE 3 CONSTRUCTION, NOT IN THIS CONTRACT.

CHATHAM ENGINEERING COMPANY LLC
C04812

No. 14134
PAUL MAMALAKIS
1/28/16

NO.	REVISIONS	BY	DATE

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Engineering | Surveying | Planning | GIS | Consulting
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Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

ONE-LINE DIAGRAM AND SCHEDULE

JOB NO: J-25328.0000
DATE: 01/28/16
DRAWN: CC
DESIGNED: CC
REVIEWED: PM
APPROVED: PM
SCALE: NONE

50-E-16

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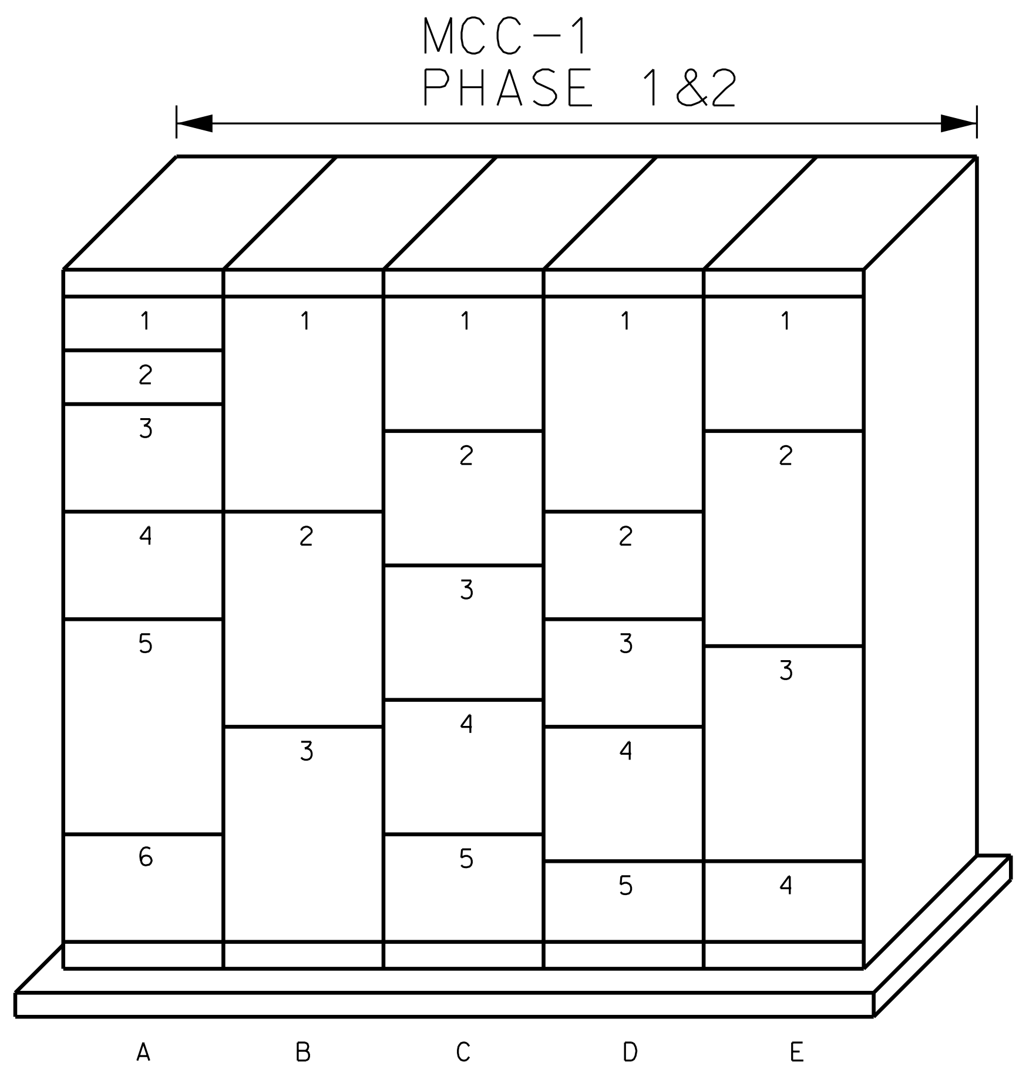

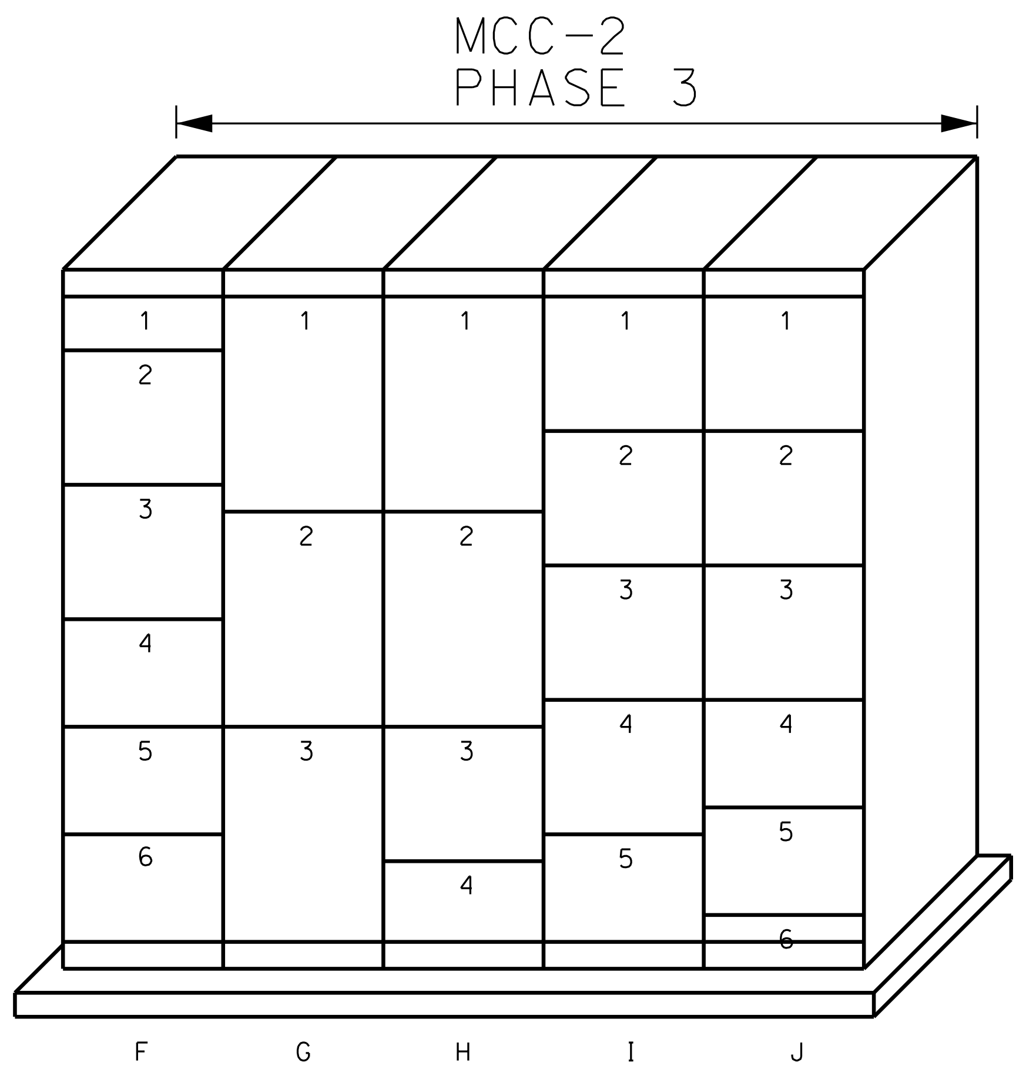

MOTOR CONTROL CENTER MCC-1 PHASE 1&2

VOLTAGE: 480V		PHASE: 3	WIRE: 3	MAIN BUS: 600A		VERT BUS: 300		
BUS BRACING: 65 000 MIN.		MAX. OVERALL LENGTH: 100″				DEMAND LOAD: 156.2KVA		

UNIT NO.	EQUIPMENT SERVED	HP	STARTER	CIRCUIT BREAKER			NOTES	REMARKS
			SIZE	FRAME	TRIP	POLES		
A-1	MAIN LUG COMPARTMENT	N/A	N/A	–	–	–	600A	6″
A-2	SURGE PROTECTION DEVICE	N/A	N/A	100	40	3	260KA	6″
A-3	ANOXIC BASIN MIXER NO.1	1.7	VFD	100	15	3	–	12″
A-4	ANOXIC BASIN MIXER NO.2	1.7	VFD	100	15	3	–	12″
A-5	MBR BLOWER NO.1	15	VFD	100	40	3	–	24″
A-6	SPACE	N/A	N/A	N/A	N/A	N/A	–	12″
B-1	MBR BLOWER NO.2	15	VFD	100	40	3	–	24″
B-2	PRE-AERATION BLOWER NO.1	15	VFD	100	40	3	–	24″
B-3	PRE-AERATION BLOWER NO.2	15	VFD	100	40	3	–	24″
C-1	INTERNAL RECYCLE PUMP NO.1	4.7	VFD	100	20	3	–	15″
C-2	INTERNAL RECYCLE PUMP NO.2	4.7	VFD	100	20	3	–	15″
C-3	MBR PERMEATE PUMP NO.1	5.0	VFD	100	20	3	–	15″
C-4	MBR PERMEATE PUMP NO.2	5.0	VFD	100	20	3	–	15″
C-5	SPACE	N/A	N/A	N/A	N/A	N/A	–	12″
D-1	STAND-BY BLOWER NO.1	15	VFD	100	40	3	–	24″
D-2	WAS PUMP NO.1	1.5	VFD	100	20	3	–	12″
D-3	WAS PUMP NO.2	1.5	VFD	100	20	3	–	12″
D-4	WAS PUMP NO.3	5.0	VFD	100	20	3	–	15″
D-5	SPACE	N/A	N/A	N/A	N/A	N/A	–	9″
E-1	WAS PUMP NO.4	5.0	VFD	100	20	3	–	15″
E-2	DIGESTER BLOWER NO.1 (PHASE 2)	15	VFD	100	40	3	PHASE 2	24″
E-3	DIGESTER BLOWER NO.2 (PHASE 2)	15	VFD	100	40	3	PHASE 2	24″
E-3	SPACE	N/A	N/A	N/A	N/A	N/A	–	9″

MOTOR CONTROL CENTER MCC-2 PHASE 3

VOLTAGE: 480V		PHASE: 3	WIRE: 3	MAIN BUS: 600A		VERT BUS: 300		
BUS BRACING: 65 000 MIN.		MAX. OVERALL LENGTH: 100″				DEMAND LOAD: 138.4KVA		

UNIT NO.	EQUIPMENT SERVED	HP	STARTER	CIRCUIT BREAKER			NOTES	REMARKS
			SIZE	FRAME	TRIP	POLES		
F-1	MAIN LUG COMPARTMENT	N/A	N/A	–	–	–	600A	6″
F-2	INTERNAL RECYCLE PUMP NO.3	4.7	VFD	100	20	3	–	15″
F-3	INTERNAL RECYCLE PUMP NO.4	4.7	VFD	100	20	3	–	15″
F-4	ANOXIC BASIN MIXER NO.3	1.7	VFD	100	15	3	–	12″
F-5	ANOXIC BASIN MIXER NO.4	1.7	VFD	100	15	3	–	12″
F-6	SPACE	N/A	–	–	–	–	–	12″
G-1	MBR BLOWER NO.3	15	VFD	100	40	3	–	24″
G-2	MBR BLOWER NO.4	15	VFD	100	40	3	–	24″
G-3	PRE-AERATION BLOWER NO.4	15	VFD	100	40	3	–	24″
H-1	PRE-AERATION BLOWER NO.5	15	VFD	100	40	3	–	24″
H-2	STAND-BY BLOWER NO.2	15	VFD	100	40	3	–	24″
H-3	WAS PUMP NO.5 (TO CENTRIFUGE)	5.0	VFD	100	20	3	–	15″
H-4	SPACE	N/A	–	–		–	–	9″
I-1	WAS PUMP NO.6 (TO CENTRIFUGE)	5.0	VFD	100	20	3	–	15″
I-2	INTERNAL RECYCLE PUMP NO.5	4.7	VFD	100	20	3	–	15″
I-3	INTERNAL RECYCLE PUMP NO.6	4.7	VFD	100	20	3	–	15″
I-4	INTERNAL RECYCLE PUMP NO.7	4.7	VFD	100	20	3	–	15″
I-5	SPACE	N/A	–	–	–	–	–	12″
J-1	INTERNAL RECYCLE PUMP NO.8	4.7	VFD	100	20	3	–	15″
J-2	MBR PERMEATE PUMP NO.3	5.0	VFD	100	20	3	–	15″
J-3	MBR PERMEATE PUMP NO.4	5.0	VFD	100	20	3	–	15″
J-4	WAS PUMP NO.7 (RECYCLE)	1.5	VFD	100	20	3	–	12″
J-5	WAS PUMP NO.8 (RECYCLE)	1.5	VFD	100	20	3	–	12″
J-6	SPACE	N/A	–	–	–	–	–	30″

1 MCC ELEVATIONS & SCHEDULES
E-17
N.T.S.

SOUTH CAROLINA
CHATHAM ENGINEERING COMPANY LLC
C04812
CERTIFICATE OF AUTHORIZATION

No. 14134
PAUL MAMALAKIS
Paul M
1/28/16

NO	REVISIONS	BY	DATE

THOMAS & HUTTON
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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA
KIAWAH RIVER PLANTATION WWTP
MCC ELEVATIONS & SCHEDULES

JOB NO: J-25328.0000
DATE: 01/28/16
DRAWN: CC
DESIGNED: CC
REVIEWED: PM
APPROVED: PM
SCALE: NONE

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OVIVO FIELD INSTRUMENT CONNECTIONS

Instrument Tag	Instrument	Conduit	Conductors	Source/Termination	Notes
INFLUENT FLOW METER					
FE-010101	INFLUENT FLOW METER	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO FLOW METER	
		3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	FLOW METER TO OVIVO C.P.	4-20mA FLOW
			2 NO.14, 1 NO.14(G)		LOW FLOW
FINE SCREENS TANK LEVEL					
LAL-010101A	FINE SCREEN TANK LOW LEVEL	3/4"	2 NO.14, 1 NO.14(G)	TANK TO OVIVO C.P.	BONGO SCREEN 1
LAH-010101A	FINE SCREEN TANK HIGH LEVEL	3/4"	2 NO.14, 1 NO.14(G)	TANK TO OVIVO C.P.	
LAL-010101B	FINE SCREEN TANK LOW LEVEL	3/4"	2 NO.14, 1 NO.14(G)	TANK TO OVIVO C.P.	BONGO SCREEN 2
LAH-010101B	FINE SCREEN TANK HIGH LEVEL	3/4"	2 NO.14, 1 NO.14(G)	TANK TO OVIVO C.P.	
FINE SCREENS TANK GRIT SOLENOID VALVES					
XC-010101A	VALVE OPEN/CLOSE	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO OVIVO C.P. TO VALVE	GRIT RELEASE FROM TANK
YI-010101A	REMOTE	3/4"	2 NO.12, 1NO.12(G)	VALVE TO OVIVO C.P.	
XC-010101B	VALVE OPEN/CLOSE	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO OVIVO C.P. TO VALVE	GRIT RELEASE FROM TANK
YI-010101B	REMOTE	3/4"	2 NO.12, 1NO.12(G)	VALVE TO OVIVO C.P.	
FINE SCREENS MOTORS					
YI-010101A	REMOTE	1"	8 NO.14, 1 NO.14(G)	MCC-A TO OVIVO C.P.	BONGO SCREEN NO.1
YC-010101A	CALL TO RUN	INCLUDED			SCREEN MOTOR
YI-010101A	RUNNING	INCLUDED			1HP 460V 3PH
ZA-010101A	FAIL	INCLUDED			
YI-010101B	REMOTE	1"	8 NO.14, 1 NO.14(G)	MCC-A TO OVIVO C.P.	BONGO SCREEN NO.2
YC-010101B	CALL TO RUN	INCLUDED			SCREEN MOTOR
YI-010101B	RUNNING	INCLUDED			1HP 460V 3PH
ZA-010101B	FAIL	INCLUDED			
YI-010101C	REMOTE	1"	8 NO.14, 1 NO.14(G)	MCC-A TO OVIVO C.P.	BONGO SCREEN NO.1
YC-010101C	CALL TO RUN	INCLUDED			WASH/COMPACTOR MOTOR
YI-010101C	RUNNING	INCLUDED			5HP 460V 3PH
ZA-010101C	FAIL	INCLUDED			
YI-010101D	REMOTE	1"	8 NO.14, 1 NO.14(G)	MCC-A TO OVIVO C.P.	BONGO SCREEN NO.2
YC-010101D	CALL TO RUN	INCLUDED			WASH/COMPACTOR MOTOR
YI-010101D	RUNNING	INCLUDED			5HP 460V 3PH
ZA-010101D	FAIL	INCLUDED			
ANOXIC BASIN MIXERS					
YI-030101	REMOTE	1"	8 NO.14, 1 NO.14(G)	MCC-A TO OVIVO C.P.	ANOXIC BASIN MIXER NO.1
YC-030101	CALL TO RUN	INCLUDED			SUBMERSIBLE MIXER MOTOR
YI-030101	RUNNING	INCLUDED			1.7HP 460V 3PH
ZA-030101	FAIL	INCLUDED			
TSH-030101	HIGH TEMP	3/4"	4 NO.14, 1 NO.14(G)	DISC. SW. TO OVIVO C.P.	
ME-030101	HIGH MOISTURE	INCLUDED			
YI-030102	REMOTE	1"	8 NO.14, 1 NO.14(G)	MCC-A TO OVIVO C.P.	ANOXIC BASIN MIXER NO.2
YC-030102	CALL TO RUN	INCLUDED			SUBMERSIBLE MIXER MOTOR
YI-030102	RUNNING	INCLUDED			1.7HP 460V 3PH
ZA-030102	FAIL	INCLUDED			
TSH-030102	HIGH TEMP	3/4"	4 NO.14, 1 NO.14(G)	DISC. SW. TO OVIVO C.P.	
ME-030102	HIGH MOISTURE	INCLUDED			
ANOXIC BASIN LEVEL					
LT-030101	ANOXIC TANK LOW LEVEL	3/4"	4 NO.14, 1 NO.14(G)	J.B. @ TANK TO OVIVO C.P.	ANOXIC BASIN LEVEL PROBES
LSL-030101	ANOXIC TANK HIGH LEVEL	INCLUDED	INCLUDED		
LSH-030101	ANOXIC TANK HIGH LEVEL	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	TRANSDUCER TO OVIVO C.P.	ANOXIC BASIN LEVEL XDUCER
ANOXIC BASIN RECYCLE PUMPS					
YI-030101	REMOTE	1"	8 NO.14, 1 NO.14(G)	MCC-A TO OVIVO C.P.	ANOXIC BASIN RECYCLE PUMP NO.1
YC-030101	CALL TO RUN	INCLUDED			SUBMERSIBLE PUMP MOTOR
YI-030101	RUNNING	INCLUDED			4.7HP 460V 3PH
	FAIL	INCLUDED			
TSH-030101	HIGH TEMP	3/4"	4 NO.14, 1 NO.14(G)	DISC. SW. TO OVIVO C.P.	
ME-030101	HIGH MOISTURE	INCLUDED			
YI-030102	REMOTE	1"	8 NO.14, 1 NO.14(G)	MCC-A TO OVIVO C.P.	ANOXIC BASIN RECYCLE PUMP NO.2
YC-030102	CALL TO RUN	INCLUDED			SUBMERSIBLE PUMP MOTOR
YI-030102	RUNNING	INCLUDED			4.7HP 460V 3PH
ZA-030102	FAIL	INCLUDED			
TSH-030102	HIGH TEMP	3/4"	4 NO.14, 1 NO.14(G)	DISC. SW. TO OVIVO C.P.	
ME-030102	HIGH MOISTURE	INCLUDED			
YI-030103	REMOTE	1"	8 NO.14, 1 NO.14(G)	MCC-A TO OVIVO C.P.	ANOXIC BASIN RECYCLE PUMP NO.3
YC-030103	CALL TO RUN	INCLUDED			SUBMERSIBLE PUMP MOTOR
YI-030103	RUNNING	INCLUDED			4.7HP 460V 3PH
ZA-030103	FAIL	INCLUDED			
TSH-030103	HIGH TEMP	3/4"	4 NO.14, 1 NO.14(G)	DISC. SW. TO OVIVO C.P.	
ME-030103	HIGH MOISTURE	INCLUDED			
YI-030104	REMOTE	1"	8 NO.14, 1 NO.14(G)	MCC-A TO OVIVO C.P.	ANOXIC BASIN RECYCLE PUMP NO.4
YC-030104	CALL TO RUN	INCLUDED			SUBMERSIBLE PUMP MOTOR
YI-030104	RUNNING	INCLUDED			4.7HP 460V 3PH
ZA-030104	FAIL	INCLUDED			
TSH-030104	HIGH TEMP	3/4"	4 NO.14, 1 NO.14(G)	DISC. SW. TO OVIVO C.P.	
ME-030104	HIGH MOISTURE	INCLUDED			
ANOXIC BASIN RECYCLE PUMP FLOW METERS					
FE-030101	INFLUENT FLOW METER	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO FLOW METER	RECYCLE PUMPS 1&2
		3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	FLOW METER TO OVIVO C.P.	4-20mA FLOW
			2 NO.14, 1 NO.14(G)		LOW FLOW
FE-030102	INFLUENT FLOW METER	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO FLOW METER	RECYCLE PUMPS 3&4
		3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	FLOW METER TO OVIVO C.P.	4-20mA FLOW
			2 NO.14, 1 NO.14(G)		LOW FLOW
PRE-AERATION/SLUDGE HOLDING BASIN 01 FLOW METER					
FE-050101	PROCESS AIR FLOW	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO FLOW METER	PROCESS AIR FROM PA BLOWERS
	HIGH AIR FLOW	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	FLOW METER TO OVIVO C.P.	4-20mA FLOW
	LOW AIR FLOW		4 NO.14, 1 NO.14(G)		HIGH FLOW
					LOW FLOW
PRE-AERATION/SLUDGE HOLDING BASIN 01 DO/TEMPERATURE PROBE					
AE-050101	BASIN DO/TEMPERATURE	1"	TWO 16AWG T.S. PAIR (BELDEN 5240F1)	PROBE CONTROLLER TO OVIVO C.P.	BASIN DO/TEMPERATURE
			4 NO.14, 1 NO.14(G)		4-20mA TEMP
					LOW TEMP
					4-20mA DO
					LOW DO
PRE-AERATION BASIN 02 FLOW METER					
FE-050201	PROCESS AIR FLOW	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO FLOW METER	PROCESS AIR FROM PA BLOWERS
	HIGH AIR FLOW	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	FLOW METER TO OVIVO C.P.	4-20mA FLOW
	LOW AIR FLOW		4 NO.14, 1 NO.14(G)		HIGH FLOW
					LOW FLOW
MEMBRANE BIOREACTOR BASIN 01 FLOW METER					
FE-090101	PROCESS AIR FLOW	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO FLOW METER	PROCESS AIR FROM MB BLOWERS
	HIGH AIR FLOW	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	FLOW METER TO OVIVO C.P.	4-20mA FLOW
	LOW AIR FLOW		4 NO.14, 1 NO.14(G)		HIGH FLOW
					LOW FLOW
MEMBRANE BIOREACTOR BASIN 01 LEVEL					
LAL-070101	MBR BASIN 01 LOW LEVEL	3/4"	2 NO.14, 1 NO.14(G)	BASIN TO OVIVO C.P.	MBR BASIN 01
LAH-070101	MBR BASIN 01 HIGH LEVEL	3/4"	2 NO.14, 1 NO.14(G)	BASIN TO OVIVO C.P.	
MEMBRANE BIOREACTOR BASIN 02 FLOW METER					
FE-090201	PROCESS AIR FLOW	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO FLOW METER	PROCESS AIR FROM MB BLOWERS
	HIGH AIR FLOW	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	FLOW METER TO OVIVO C.P.	4-20mA FLOW
	LOW AIR FLOW		4 NO.14, 1 NO.14(G)		HIGH FLOW
					LOW FLOW
MEMBRANE BIOREACTOR BASIN 02 LEVEL					
LAL-070101	MBR BASIN 01 LOW LEVEL	3/4"	2 NO.14, 1 NO.14(G)	BASIN TO OVIVO C.P.	MBR BASIN 01
LAH-070101	MBR BASIN 01 HIGH LEVEL	3/4"	2 NO.14, 1 NO.14(G)	BASIN TO OVIVO C.P.	
WAS COLLECTION FLOW METER					
FE-080101	WAS FLOW METER	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO FLOW METER	WAS PUMPS 1&2
		3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	FLOW METER TO OVIVO C.P.	4-20mA FLOW
FE-080102	WAS FLOW METER	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO FLOW METER	WAS PUMPS 1&2
		3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	FLOW METER TO OVIVO C.P.	4-20mA FLOW
PERMEATE & WAS COLLECTION 01 SOLENOID VALVE					
FCV-080101	VALVE OPEN/CLOSE	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO OVIVO C.P. TO VALVE	PROCESS AIR FROM MB BLOWERS
	REMOTE	3/4"	2 NO.12, 1NO.12(G)	VALVE TO OVIVO C.P.	
PERMEATE & WAS COLLECTION 02 SOLENOID VALVE					
FCV-080102	VALVE OPEN/CLOSE	3/4"	2 NO.12, 1NO.12(G)	PANEL A TO OVIVO C.P. TO VALVE	PROCESS AIR FROM MB BLOWERS
YI-070101	REMOTE	3/4"	2 NO.12, 1NO.12(G)	VALVE TO OVIVO C.P.	
SCOUR AIR BLOWERS					
YI-090101A	REMOTE	1"	8 NO.14, 1 NO.14(G)	OVIVO C.P. TO MCC-A	MBR BLOWER NO.1
YC-090101A	CALL TO RUN	INCLUDED		OVIVO C.P. TO MCC-A	BLOWER MOTOR
YI-090101A	RUNNING	INCLUDED		MCC-A TO OVIVO C.P.	15HP 460V 3PH
YA-090101A	FAIL	INCLUDED		MCC-A TO OVIVO C.P.	
TSH-090101A	HIGH TEMP	3/4"	4 NO.14, 1 NO.14(G)	MOTOR TO OVIVO C.P.	
PC-090101A	SPEED	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	VFD TO OVIVO C.P.	
YI-090101B	REMOTE	1"	8 NO.14, 1 NO.14(G)	OVIVO C.P. TO MCC-A	MBR BLOWER NO.2
YC-090101B	CALL TO RUN	INCLUDED		OVIVO C.P. TO MCC-A	BLOWER MOTOR
YI-090101B	RUNNING	INCLUDED		MCC-A TO OVIVO C.P.	15HP 460V 3PH
YA-090101B	FAIL	INCLUDED		MCC-A TO OVIVO C.P.	
TSH-090101B	HIGH TEMP	3/4"	4 NO.14, 1 NO.14(G)	MOTOR TO OVIVO C.P.	
PC-090101B	SPEED	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	VFD TO OVIVO C.P.	
SCOUR AIR PRESSURE					
PT-090101	SCOUR AIR PRESSURE	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1) 2 NO.14, 1 NO.14(G)	PRESSURE TRANSMITTER TO OVIVO C.P.	SCOUR AIR FROM MB BLOWER NO.1 4-20mA PRESSURE
	HIGH AIR PRESSURE	INCLUDED		PRESSURE TRANSMITTER TO OVIVO C.P.	HIGH PRESSURE
PT-090201	SCOUR AIR PRESSURE	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1) 2 NO.14, 1 NO.14(G)	PRESSURE TRANSMITTER TO OVIVO C.P.	SCOUR AIR FROM MB BLOWER NO.2 4-20mA PRESSURE
	HIGH AIR PRESSURE	INCLUDED		PRESSURE TRANSMITTER TO OVIVO C.P.	HIGH PRESSURE
PROCESS AIR BLOWERS					
YI-100101	REMOTE	1"	8 NO.14, 1 NO.14(G)	OVIVO C.P. TO MCC-A	PA-01/SH-01 BLOWER
YC-100101	CALL TO RUN	INCLUDED		OVIVO C.P. TO MCC-A	BLOWER MOTOR
YI-100101	RUNNING	INCLUDED		MCC-A TO OVIVO C.P.	15HP 460V 3PH
YA-100101	FAIL	INCLUDED		MCC-A TO OVIVO C.P.	
TSH100101	HIGH TEMP	3/4"	4 NO.14, 1 NO.14(G)	MOTOR TO OVIVO C.P.	
PC-100101	SPEED	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	VFD TO OVIVO C.P.	
YI-100102	REMOTE	1"	8 NO.14, 1 NO.14(G)	OVIVO C.P. TO MCC-A	PA-02 BLOWER
YC-100102	CALL TO RUN	INCLUDED		OVIVO C.P. TO MCC-A	BLOWER MOTOR
YI-100102	RUNNING	INCLUDED		MCC-A TO OVIVO C.P.	15HP 460V 3PH
YA-100102	FAIL	INCLUDED		MCC-A TO OVIVO C.P.	
TSH-100102	HIGH TEMP	3/4"	4 NO.14, 1 NO.14(G)	MOTOR TO OVIVO C.P.	
PC-100102	SPEED	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	VFD TO OVIVO C.P.	
YI-100103	REMOTE	1"	8 NO.14, 1 NO.14(G)	OVIVO C.P. TO MCC-A	STAND-BY BLOWER
YC-100103	CALL TO RUN	INCLUDED		OVIVO C.P. TO MCC-A	BLOWER MOTOR
YI-100103	RUNNING	INCLUDED		MCC-A TO OVIVO C.P.	15HP 460V 3PH
YA-100103	FAIL	INCLUDED		MCC-A TO OVIVO C.P.	
TSH-100103	HIGH TEMP	3/4"	4 NO.14, 1 NO.14(G)	MOTOR TO OVIVO C.P.	
PC-100103	SPEED	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1)	VFD TO OVIVO C.P.	
PROCESS AIR PRESSURE					
PT-100101	SCOUR AIR PRESSURE	3/4"	ONE 16AWG T.S. PAIR (BELDEN 5240F1) 2 NO.14, 1 NO.14(G)	PRESSURE TRANSMITTER TO OVIVO C.P.	PROCESS AIR FROM PA-01/SH-01 BLOWER 4-20mA PRESSURE
	HIGH AIR PRESSURE	INCLUDED		PRESSURE TRANSMITTER TO OVIVO C.P.	HIGH PRESSURE

CHATHAM ENGINEERING COMPANY LLC
C04812

No. 14134
PAUL MAMALAKIS
1/28/16

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KIAWAH RIVER PLANTATION
CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

OVIVO FIELD INSTRUMENT CONNECTIONS

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	CC
DESIGNED:	CC
REVIEWED:	PM
APPROVED:	PM
SCALE:	NONE

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CENTRIFUGE SYSTEM I/O CONNECTION SCHEDULE

I/O Point	Centrifuge Control Panel (CCP)	Conduit	Conductor/Cable	Source/Termination	Notes
DI-1	Bowl Drive Moter Temperature switch	3/4"	2 No.14, 1 No.14(G)	Motor to CCP	
DI-2	Scroll Drive Moter Temperature switch	3/4"	2 No.14, 1 No.14(G)	Motor to CCP	
DI-3	Polymer Pump Run Confirm	3/4"	4 No.14, 1 No.14(G)	Polymer CP to CCP	
DI-4	Polymer Pump Fault		INCLUDED	Polymer CP to CCP	
DI-5	Sludge Pump No.1 Run Confirm		Ethernet Connection	Plant Drain PS SCADA to CCP	Via In-Plant SCADA
DI-6	Sludge Pump No.1 Run Fault		INCLUDED		
DI-7	Sludge Pump No.2 Run Confirm		INCLUDED		
DI-8	Sludge Pump No.2 Run Fault		INCLUDED		
DI-9	Conveyor Run Forward	3/4"	4 No.14, 1 No.14(G)	Conveyor Starter to CCP	
DI-10	Conveyor Run Reverse		INCLUDED		
DI-11	Conveyor Overload		INCLUDED		
DI-12	Spare Digital Input, not wired, available for future use.				
DI-13	Spare Digital Input, not wired, available for future use.				
DO-1	Polymer Pump Run	3/4"	2 No.14, 1 No.14(G)	CCP to Polymer CP	
DO-2	Sludge Pump No.1 Run/Stop		Ethernet Connection	Plant Drain PS SCADA to CCP	Via In-Plant SCADA
DO-3	Sludge Pump No.2 Run/Stop		INCLUDED		
DO-4	Conveyor Run Forward/Stop	3/4"	4 No.14, 1 No.14(G)	CCP to Conveyor Starter	
DO-5	Conveyor Run Reverse/Stop		INCLUDED	CCP to Conveyor Starter	
DO-6	Wash Water Valve Open/Close	3/4"	2 No.14, 1 No.14(G)	CCP to Water Solenoid Valve	
DO-7	Conveyor Water Valve Open/Close	3/4"	2 No.14, 1 No.14(G)	CCP to Conveyor Water SV	
DO-8	Spare Digital Output wired to Field Terminal via Interposing Relay				
DO-9	Spare Digital Output, available for future use but not wired.				
DO-10	Spare Digital Output, available for future use but not wired.				
				MCC-A TO OVIVO C.P.	
AI-1	Centrifuge Vibration	3/4"	3 No.16 T.S. Pair (Belden 5240F1)	Machine Junction Box to CCP	
AI-2	Drive End Bearing Temperature		INCLUDED		
AI-3	Feed End Bearing Temperature		INCLUDED		
AI-4	Polymer Pump Flow and/or Speed	3/4"	3 No.16 T.S. Pair (Belden 5240F1)	Polymer CP to CCP	
AI-5	Sludge Pump Flow and/or Speed		Ethernet Connection	Plant Drain PS SCADA to CCP	Via In-Plant SCADA
AI-6	Spare Analog Input wired to Analog Surge Protector				
AI-7	Spare Analog Input, available for future use but not wired.				
AO-1	Polymer Pump Speed	3/4"	1 No.16 T.S. Pair (Belden 5240F1)		
AO-2	Sludge Pump No.1 Speed		Ethernet Connection	CCP to Plant Drain PS SCADA	Via In-Plant SCADA
	Sludge Pump No.2 Speed		INCLUDED		
Ethernet-1	PLC Communications	3/4"	1 CAT6 Cable	CCP to Plant Drain PS SCADA	Via In-Plant SCADA
Ethernet-2	Spare Port				
Ethernet-3	Spare Port				
Ethernet-4	Spare Port				
Ethernet-5	Spare Port				

RECIRCULATION P.S. IN-PLANT SCADA I/O CONNECTION SCHEDULE

I/O Point	Centrifuge Control Panel (CCP)	Conduit	Conductor/Cable	Source/Termination	Notes
DI-1	Centrifuge Building Odor Control Blower Run	1"	10No.14, 1 No.14(G)	Odor Cntl CP to SCADA	
DI-2	Centrifuge Building Odor Control Blower Fail		INCLUDED		
DI-3	Centrifuge Building Odor Control Recirc Pump Run		INCLUDED		
DI-4	Centrifuge Building Odor Control Recirc Pump Fail		INCLUDED		
DI-5	Centrifuge Building Odor Control Common Fault		INCLUDED		
DI-6	Plant Drain Pump No.1 Status	1-1/2"	24No.14, 1 No.14(G)	Recirc PS CP to SCADA	
DI-7	Plant Drain Pump No. 1 Call To Run		INCLUDED		
DI-8	Plant Drain Pump No.1 Fail		INCLUDED		
DI-9	Plant Drain Pump No.1 HOA in Auto		INCLUDED		
DI-10	Plant Drain Pump No.2 Status		INCLUDED		
DI-11	Plant Drain Pump No. 2 Call To Run		INCLUDED		
DI-12	Plant Drain Pump No.2 Fail		INCLUDED		
DI-13	Plant Drain Pump No.2 HOA in Auto		INCLUDED		
DI-14	Plan Drain Wet Well High Level		INCLUDED		
DI-15	Plant Drain Wet Well Low Level		INCLUDED		
DI-16	Panel Intrusion		INCLUDED		
DI-17	Power/Phase Failure		INCLUDED		
DI-18					
DO-1	Spare Digital Output wired to Field Terminal via Interposing Relay				
DO-2	Spare Digital Output wired to Field Terminal via Interposing Relay				
DO-3	Spare Digital Output wired to Field Terminal via Interposing Relay				
DO-4	Spare Digital Output wired to Field Terminal via Interposing Relay				
DO-5	Spare Digital Output, available for future use but not wired.				
DO-6	Spare Digital Output, available for future use but not wired.				
DO-7	Spare Digital Output, available for future use but not wired.				
DO-8	Spare Digital Output, available for future use but not wired.				
AI-1	Plant Drain Wet Well Level	3/4"	1 No.16 T.S. Pair (Belden 5240F1)	Plant Drain PS to SCADA	
AI-2	Chlorine Contact Chamber Flow	3/4"	1 No.16 T.S. Pair (Belden 5240F1)	Phase 1 Cl Contact to SCADA	
AI-3	Spare Analog Input wired to Analog Surge Protector				
AI-4	Spare Analog Input, available for future use but not wired.	3/4"	Stub out with pull string	For Phase 3 Cl Contact Flow	
AI-5	Spare Analog Input, available for future use but not wired.				
AI-6	Spare Analog Input, available for future use but not wired.				
AI-7	Spare Analog Input, available for future use but not wired.				
AO-1					
AO-2					
Ethernet-1	PLC Communications	3/4"	1 CAT6 Cable	Plant Drain PS SCADA to CCP	
Ethernet-2	PLC Communications		1 CAT6 Cable	Optical Fiber Switch	To In-Plant SCADA Panel Main Building
Ethernet-3	Spare Port				
Ethernet-4	Spare Port				
Ethernet-5	Spare Port				

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C04812

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1/28/16

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KIAWAH RIVER PLANTATION WWTP

IN-PLANT SCADA FIELD INSTRUMENT CONN.

JOB NO:	J-25328.0000
DATE:	01/28/16
DRAWN:	CC
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APPROVED:	PM
SCALE:	NONE

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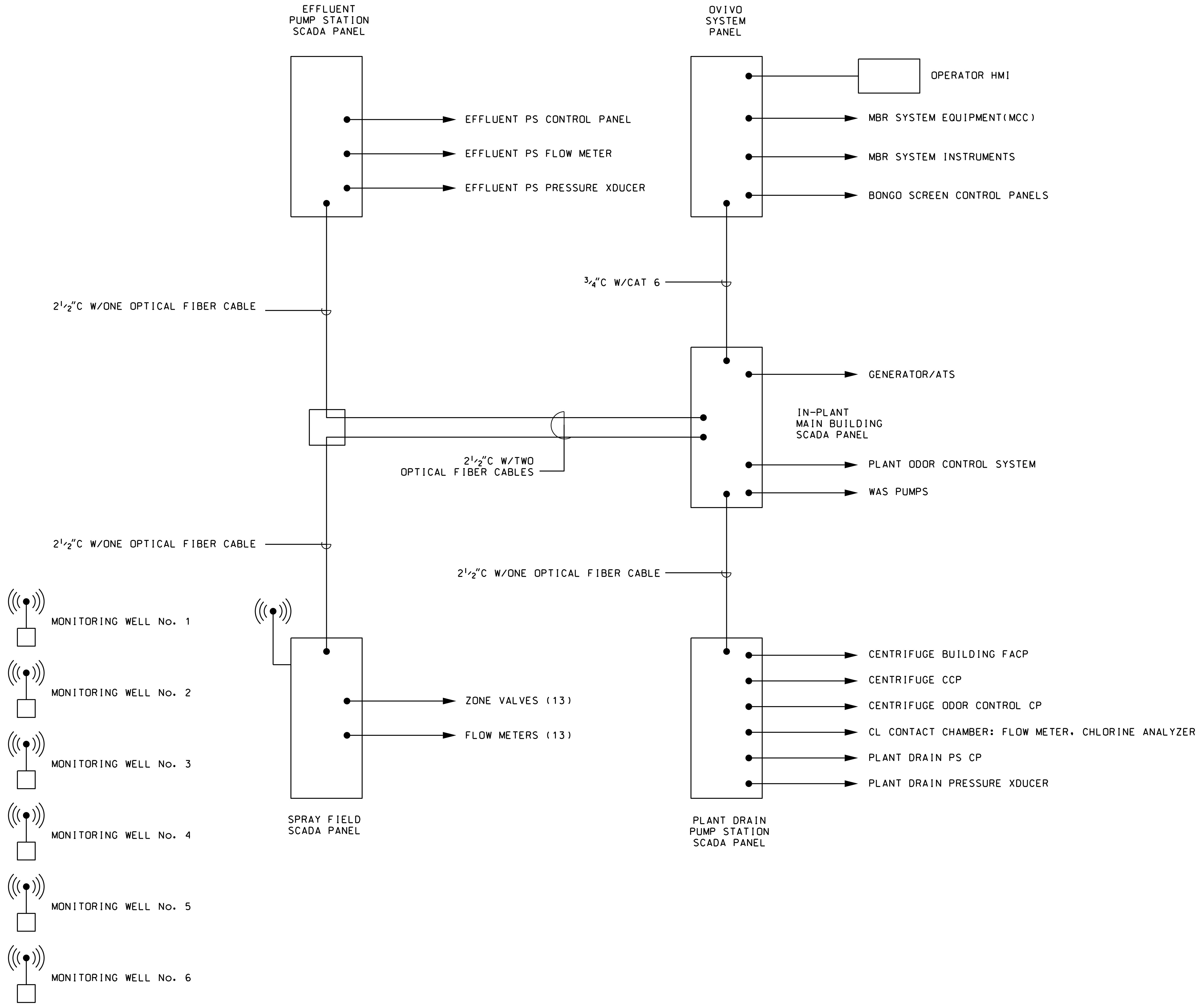

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IN-PLANT SCADA RISER DIAGRAM

NO SCALE

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IN-PLANT SCADA RISER DIAGRAM

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APPROVED: PM
SCALE: NONE

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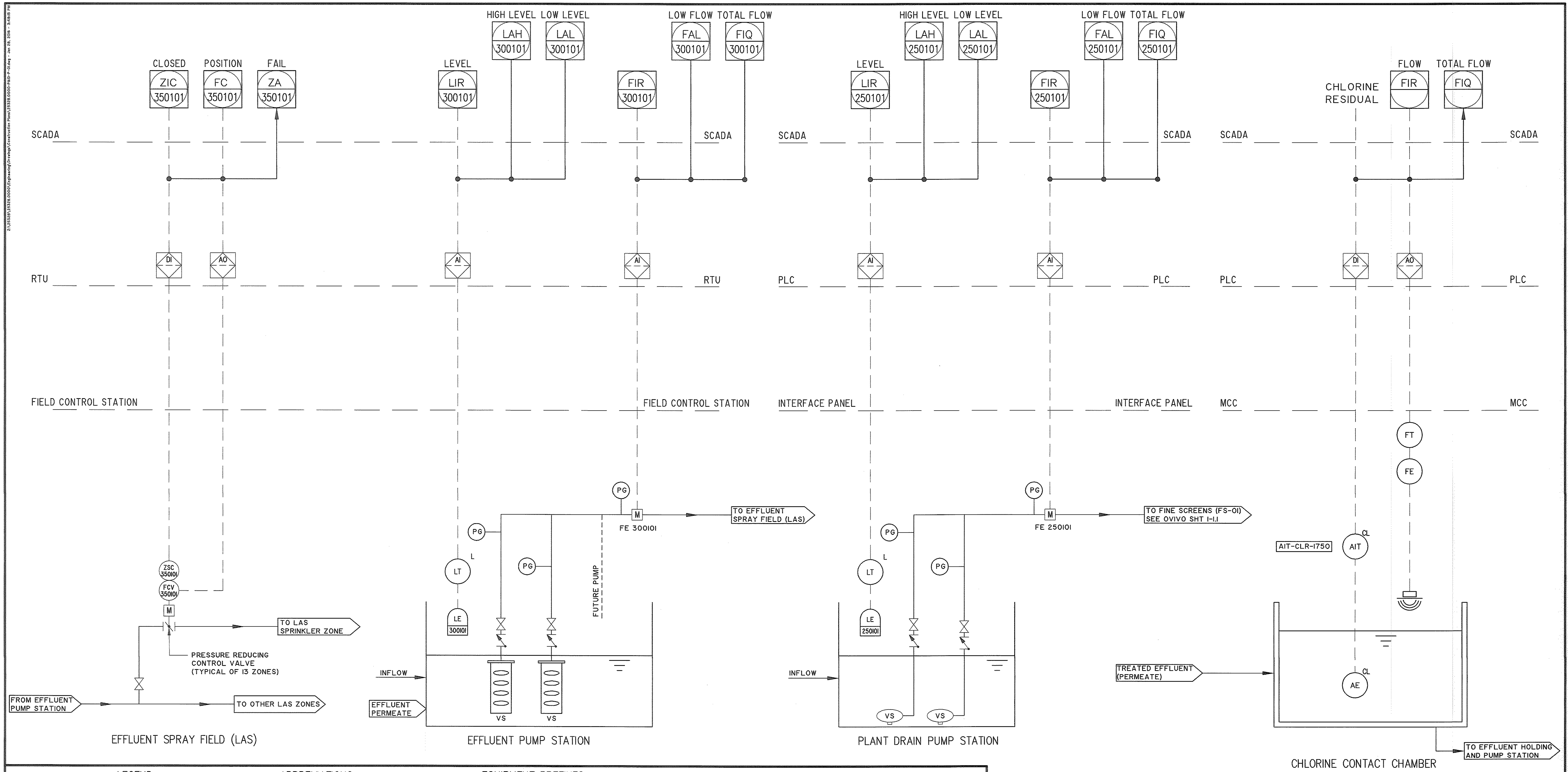


LEGEND

———	PROPOSED
NO ⋈	GATE VALVE
↗	CHECK VALVE
M	FLOW METER
M	MOTOR ACTUATOR AND FLOW CONTROL VALVE
⌓	LEVEL SENSOR
▯	VERTICAL TURBINE PUMP
⬭	SUBMERSIBLE PUMP
⌓	FLOW METER (ULTRASONIC TYPE)

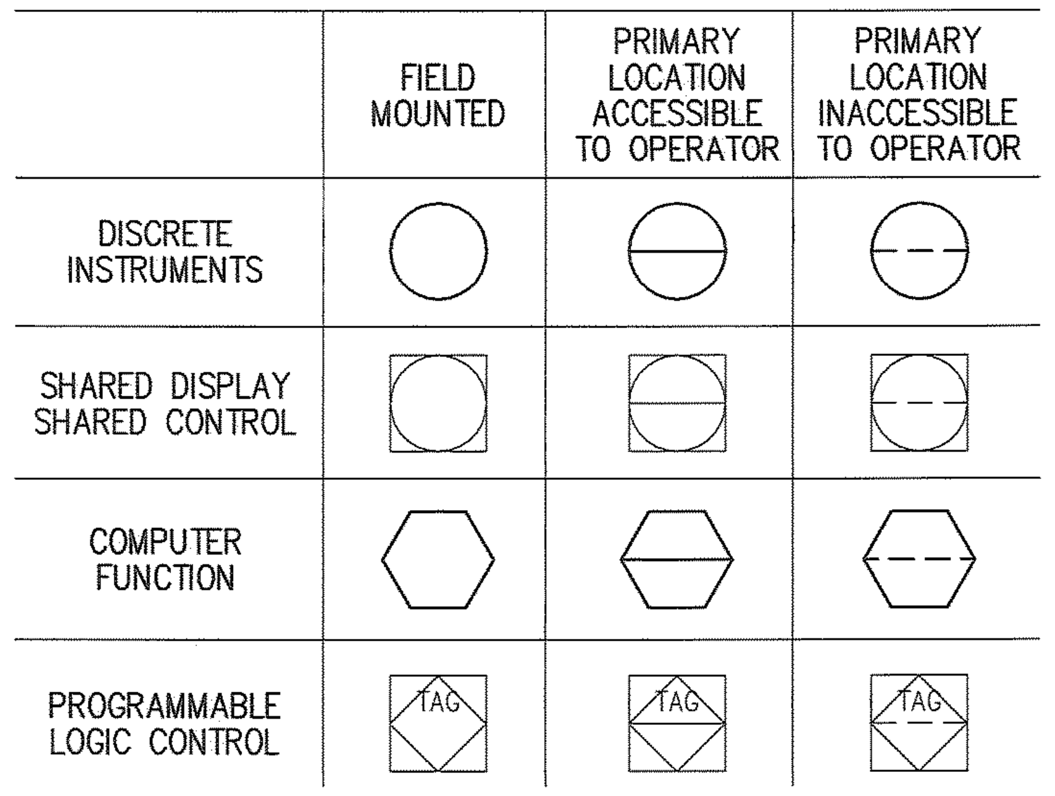
ABBREVIATIONS

CL	CHLORINE
DIP	DUCTILE IRON PIPE
FT	FLOW TRANSMITTER
HSP	HIGH SERVICE PUMP
L	LEVEL
LAS	LAND APPLICATION SYSTEM
M	MOTOR
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
VS	VARIABLE SPEED

EQUIPMENT PREFIXES

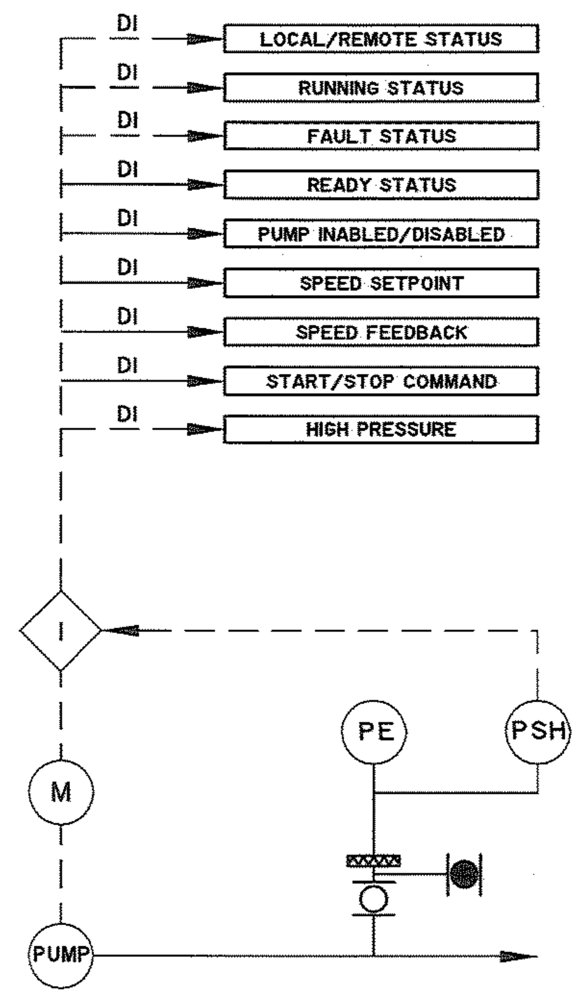
FAL	FLOW ALARM
FC	FLOW CONTROLLER
FCV	FLOW CONTROL VALVE (MODULATING)
FE	FLOW SENSOR
FI	FLOW INDICATOR
FIR	FLOW INDICATOR RECORDER
FIT	FLOW INDICATOR TRANSMITTER
FIQ	FLOW INDICATOR TOTAL
FT	FLOW TRANSMITTER
LAH	LEVEL ALARM HIGH
LAL	LEVEL ALARM LOW
LE	LEVEL SENSOR
LIR	LEVEL INDICATOR RECORDER
LIT	LEVEL INDICATOR TRANSMITTER
LS	LEVEL SWITCH
LSL	LEVEL SWITCH LOW
LSH	LEVEL SWITCH HIGH
LT	LEVEL TRANSMITTER
PE	PRESSURE SENSOR
PG	PRESSURE GAUGE
ZIC	INDICATING CONTROLLER CLOSED
ZSC	VALVE MOTOR OPERATOR CLOSED SWITCH
ZSO	VALVE MOTOR OPERATOR OPEN SWITCH

GENERAL INSTRUMENT OR FUNCTION SYMBOLS



	FIELD MOUNTED	PRIMARY LOCATION ACCESSIBLE TO OPERATOR	PRIMARY LOCATION INACCESSIBLE TO OPERATOR
DISCRETE INSTRUMENTS	○	⊖	⊝
SHARED DISPLAY SHARED CONTROL	⊡	⊟	⊟
COMPUTER FUNCTION	⬡	⬡	⬡
PROGRAMMABLE LOGIC CONTROL	TAG	TAG	TAG

** SEE OVIVO SHEETS FOR OTHER P&ID'S SHEETS 11.1 THRU 11.13



NOTES:
1. TYPICAL OF EACH PUMP WITH VFDS OR VARIABLE SPEEDS (VS).
2. PRESSURE INDICATOR IS TO LOCATED ON DISCHARGE PIPING HEADER.

THOMAS & HUTTON No. C00285

MARK F. YODICE No. 13293
Mark F. Yodice
1-29-2016

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CHARLESTON COUNTY, SOUTH CAROLINA

KIAWAH RIVER PLANTATION WWTP

PROCESS & INSTRUMENTATION DIAGRAM

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REVIEWED:	MFY
APPROVED:	MFY
SCALE:	NOT TO SCALE

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Bringing water to life

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I-1.1 FINE SCREENS
I-1.2 ANOXIC BASIN
I-1.3 PREAERATION / SLUDGE HOLDING BASIN 01
I-1.4 PREAERATION BASIN 02
I-1.5 FEED CHANNEL
I-1.6 MEMBRANE BIOREACTOR BASIN 01
I-1.7 MEMBRANE BIOREACTOR BASIN 02
I-1.8 PERMEATE & WAS COLLECTION
I-1.9 SCOUR AIR BLOWERS
I-1.10 PROCESS AIR BLOWERS
I-1.11 CHEMICAL CLEANING
I-1.12 CODES LEGEND
I-1.13 SYMBOLS LEGEND

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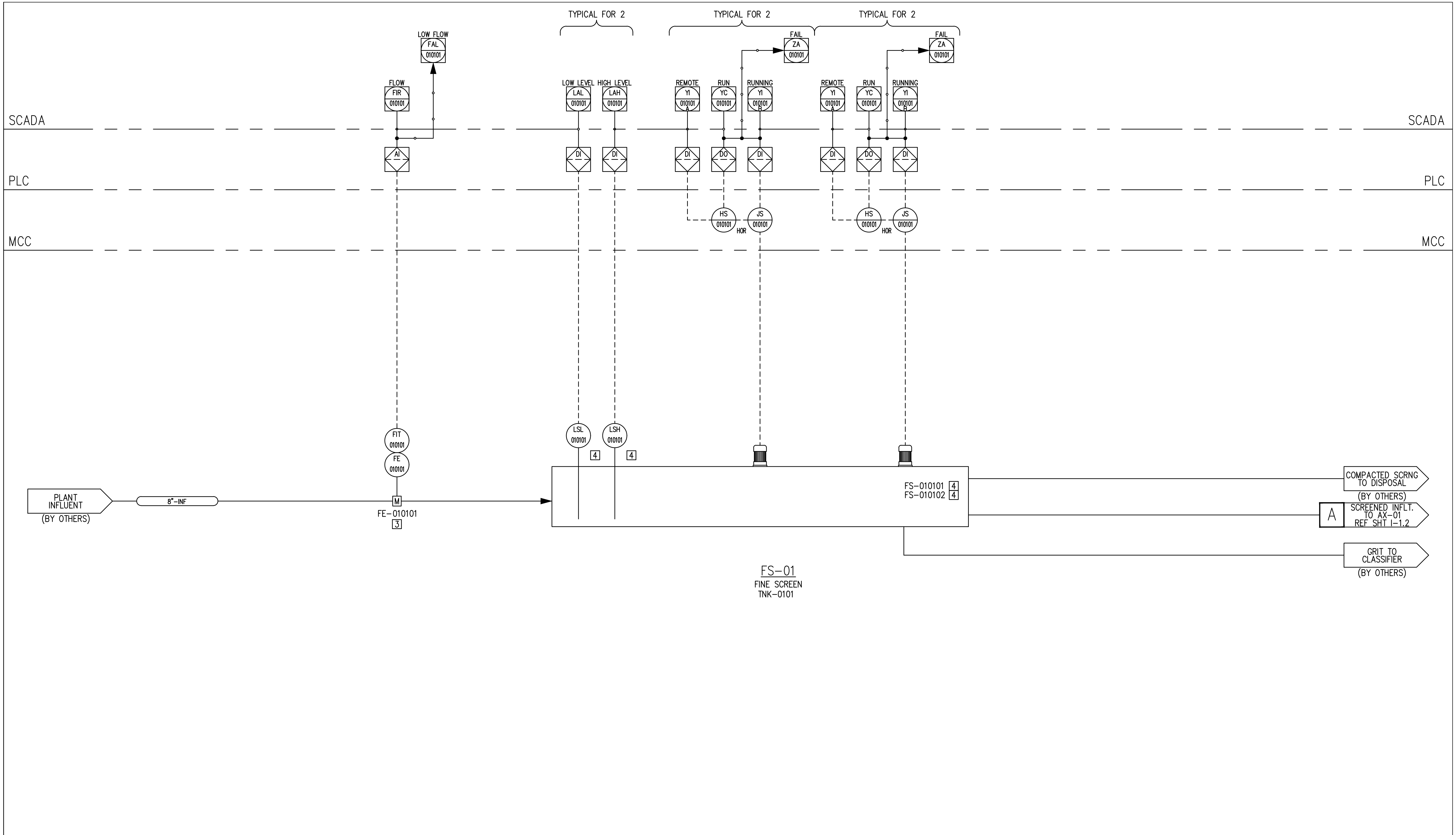
WORKMANSHIP STANDARD ES0001 APPLIES

OVIVO
Bringing water to life

KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P & I D
COVER SHEET

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER	NONE				
SHEET	I-1.0 OF 13				



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3. SUPPLIED BY OTHERS.
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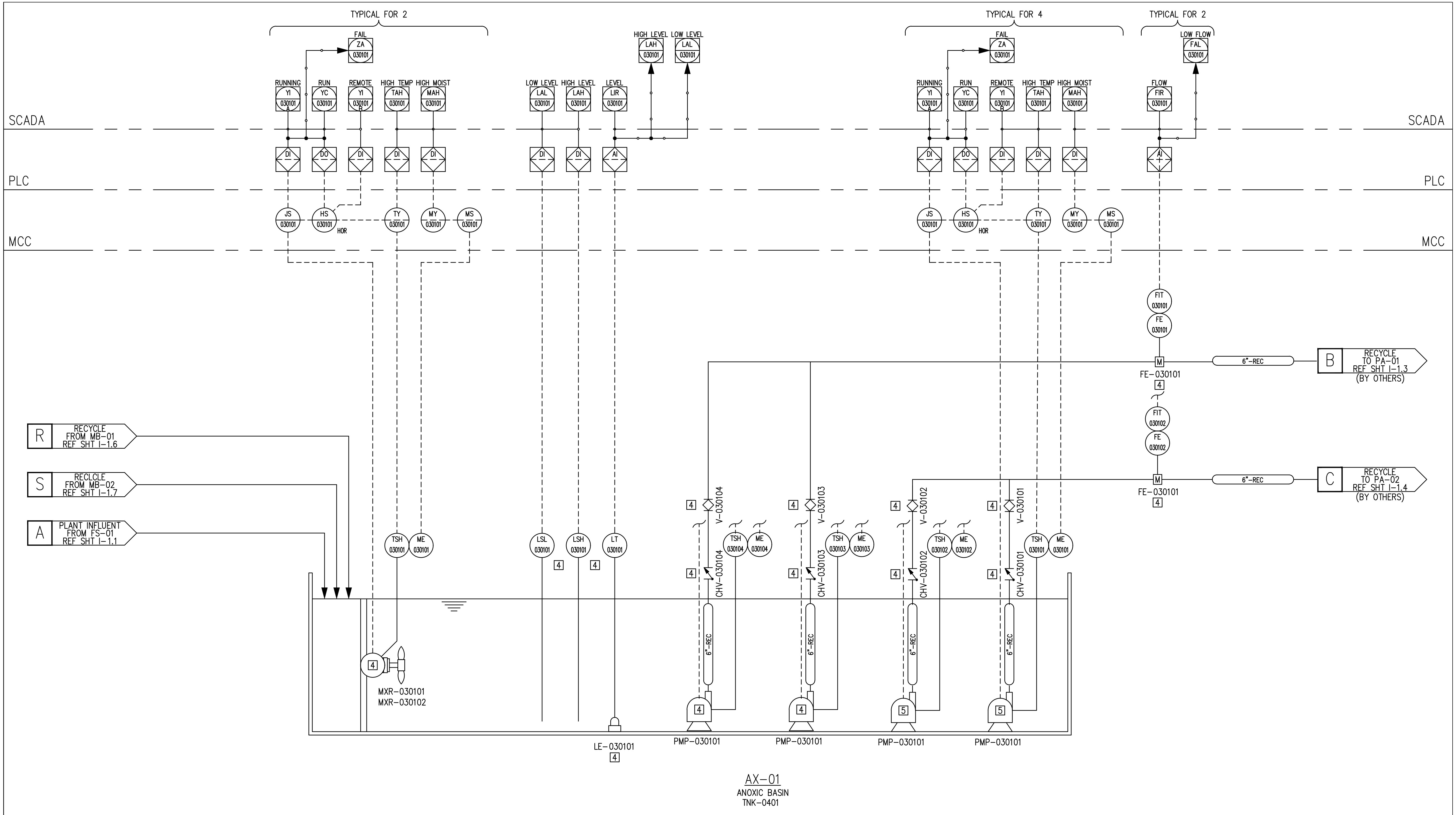
KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P & I D
FINE SCREENS

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER					
SHEET	I-1.1	OF	13		



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3. SUPPLIED BY OTHERS.
4. SUPPLIED BY OVIVO .
5. FUTURE. *UNLESS OTHERWISE NOTED

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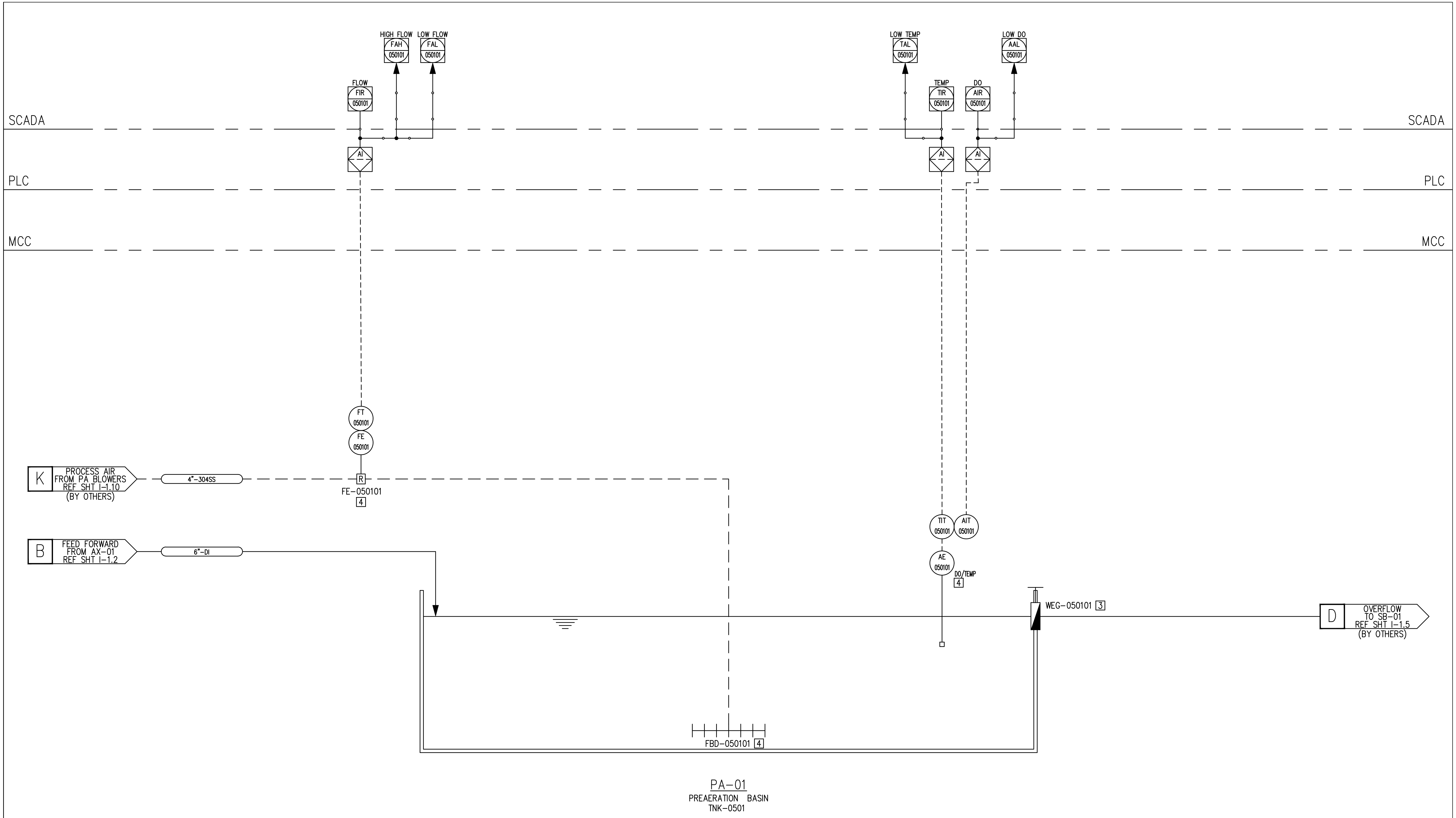
KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P & I D
ANOXIC BASIN

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER					
SHEET	I-1.2	OF	13		



PA-01
PREAERATION BASIN
TNK-0501

NOTES:

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2 ALL MANUAL VALVES AND ASSOCIATED FITTINGS SUPPLIED BY OTHERS. *
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4 SUPPLIED BY OVIVO .
5 FUTURE. *UNLESS OTHERWISE NOTED

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Bringing water to life

KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P & I D
PREAERATION / SLUDGE HOLDING BASIN 01

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER					
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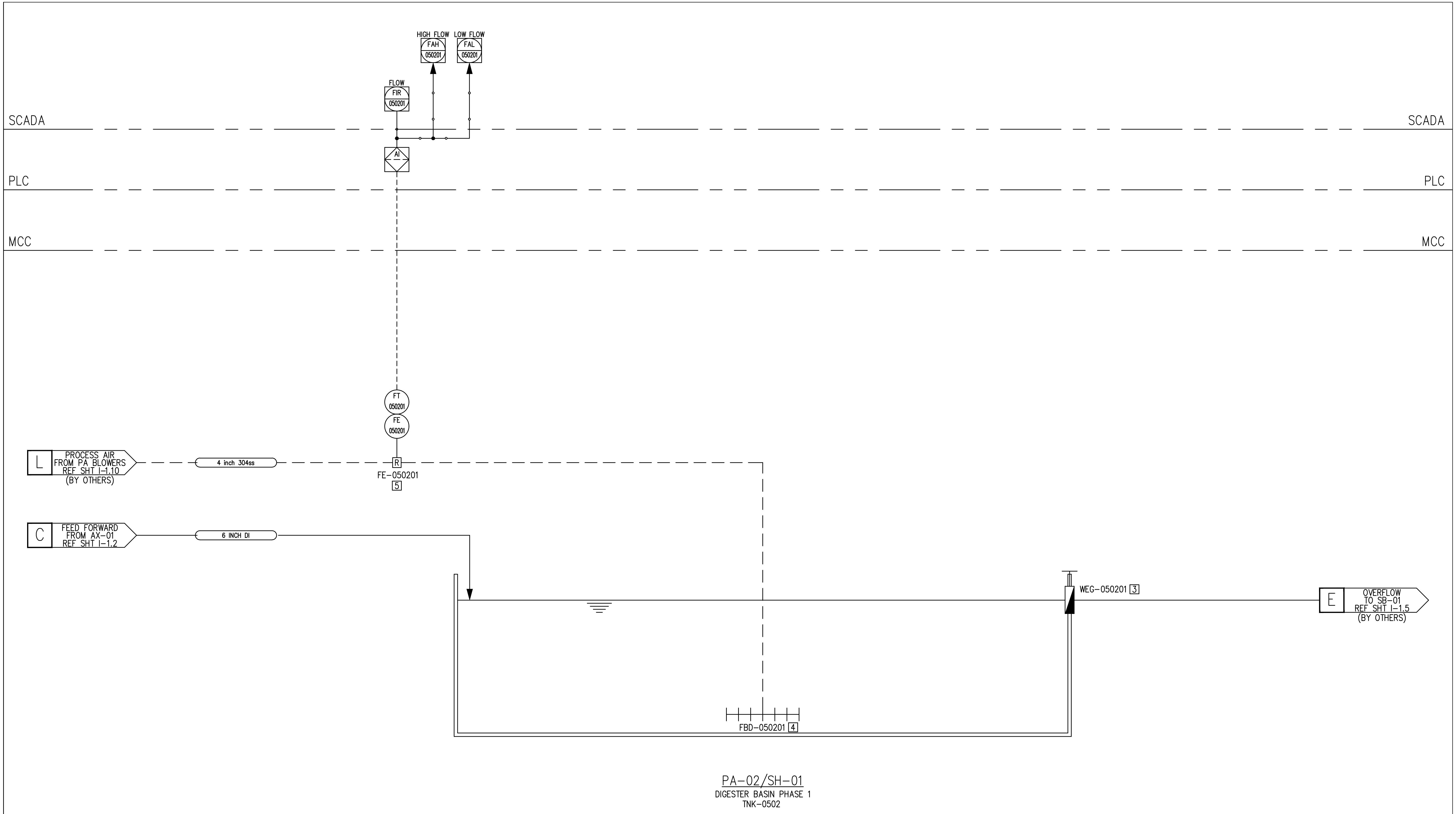

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3. SUPPLIED BY OTHERS.
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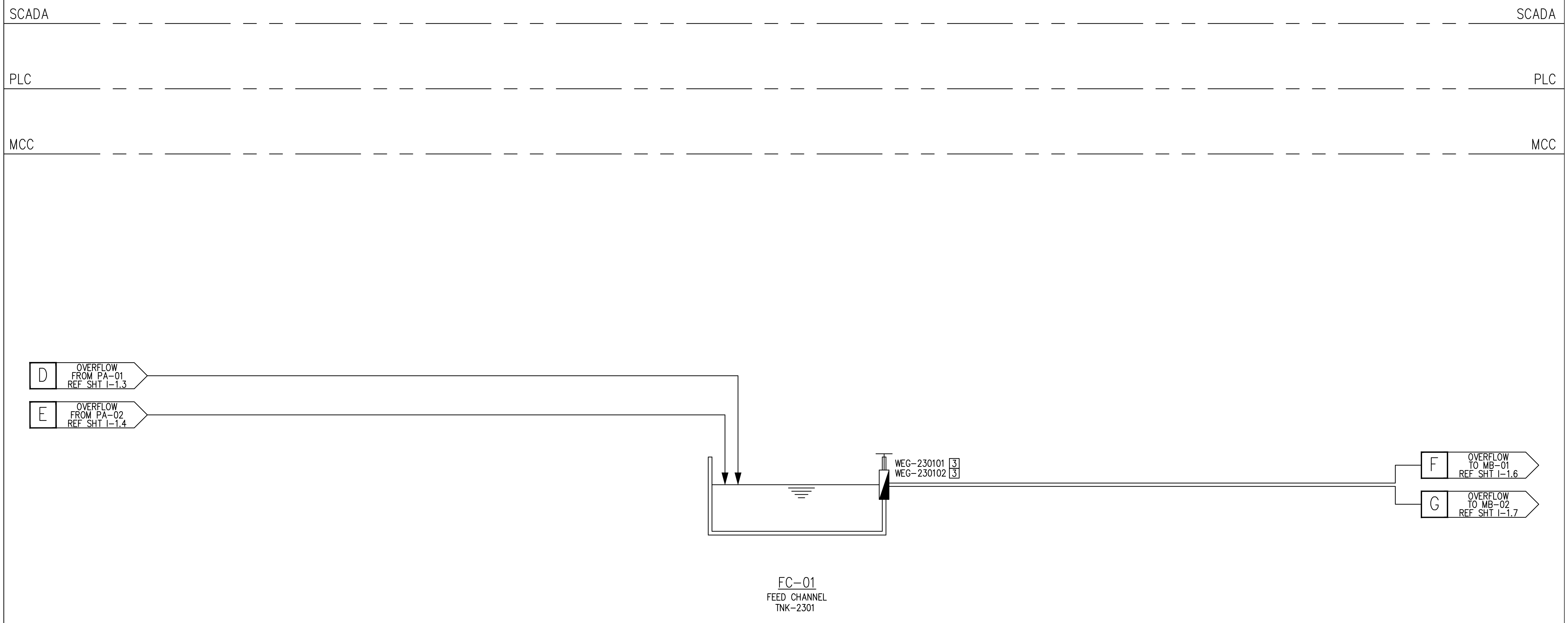
KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P & I D
PREAERATION BASIN 02

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER					
SHEET	I-1.4 OF 13				



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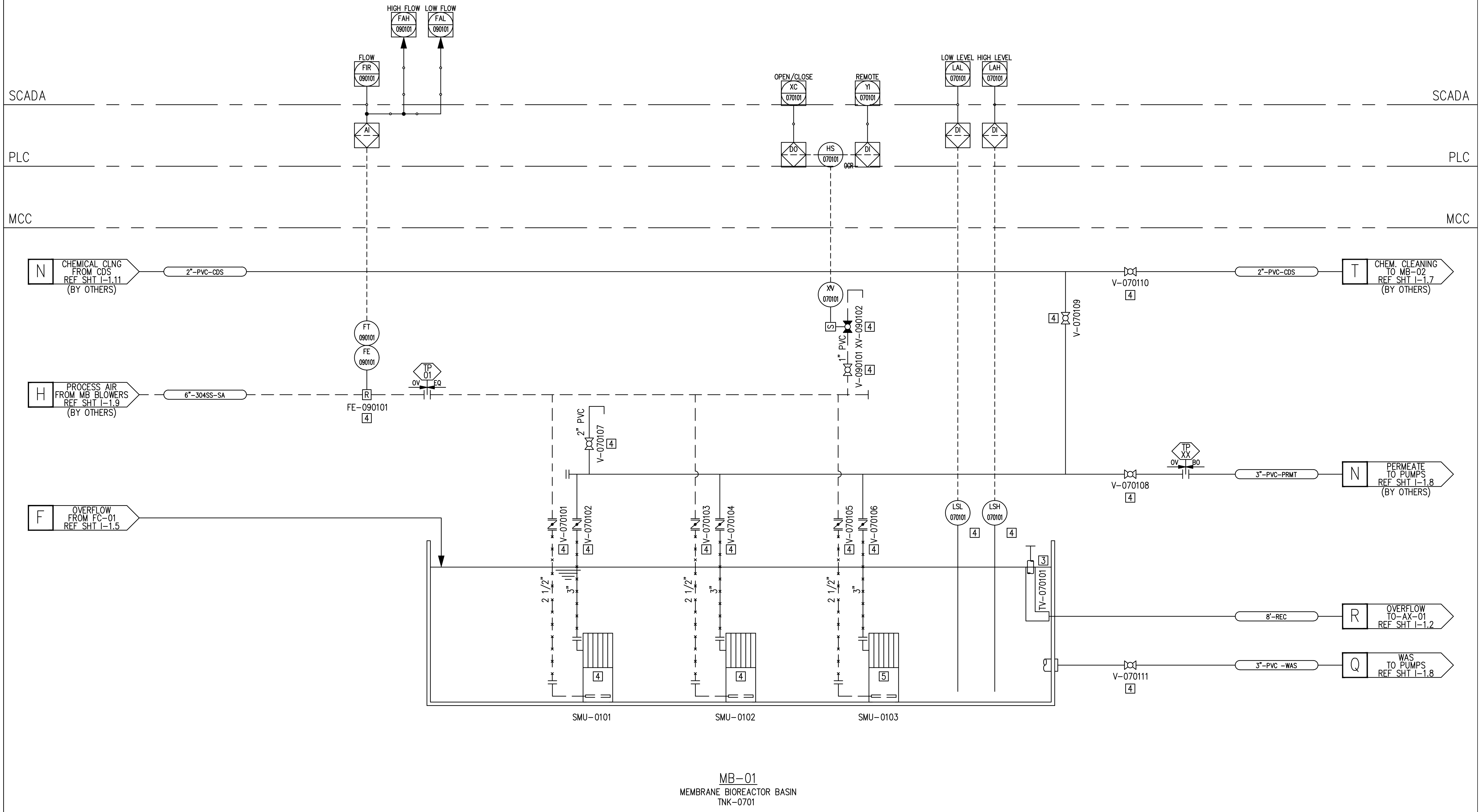
Bringing water to life

KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P & I D
FEED CHANNEL

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER					
SHEET	I-1.5	OF	13		



MB-01
MEMBRANE BIOREACTOR BASIN
TNK-0701

NOTES:
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OVIVO
Bringing water to life

KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P & I D
MEMBRANE BIOREACTOR BASIN 01

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
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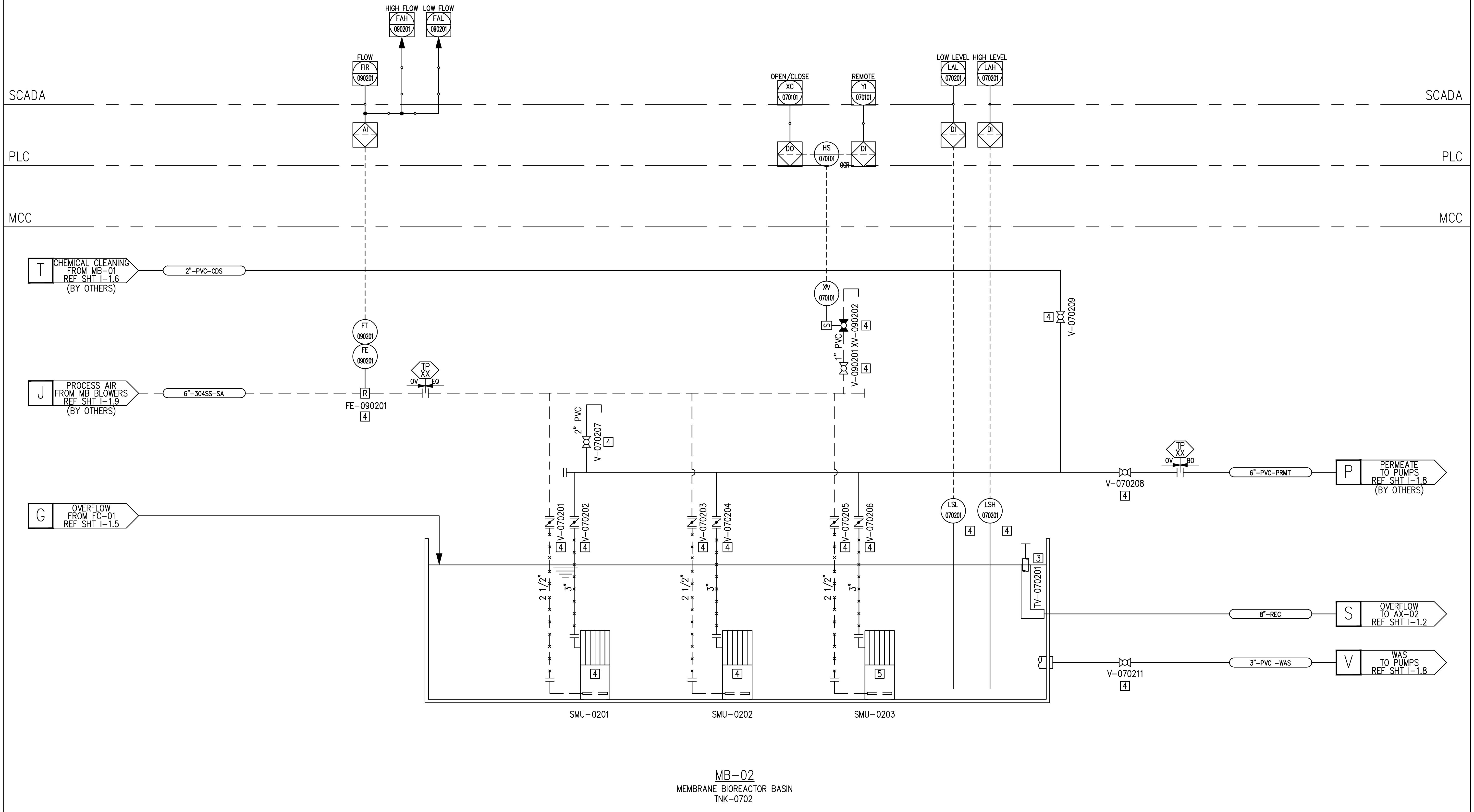

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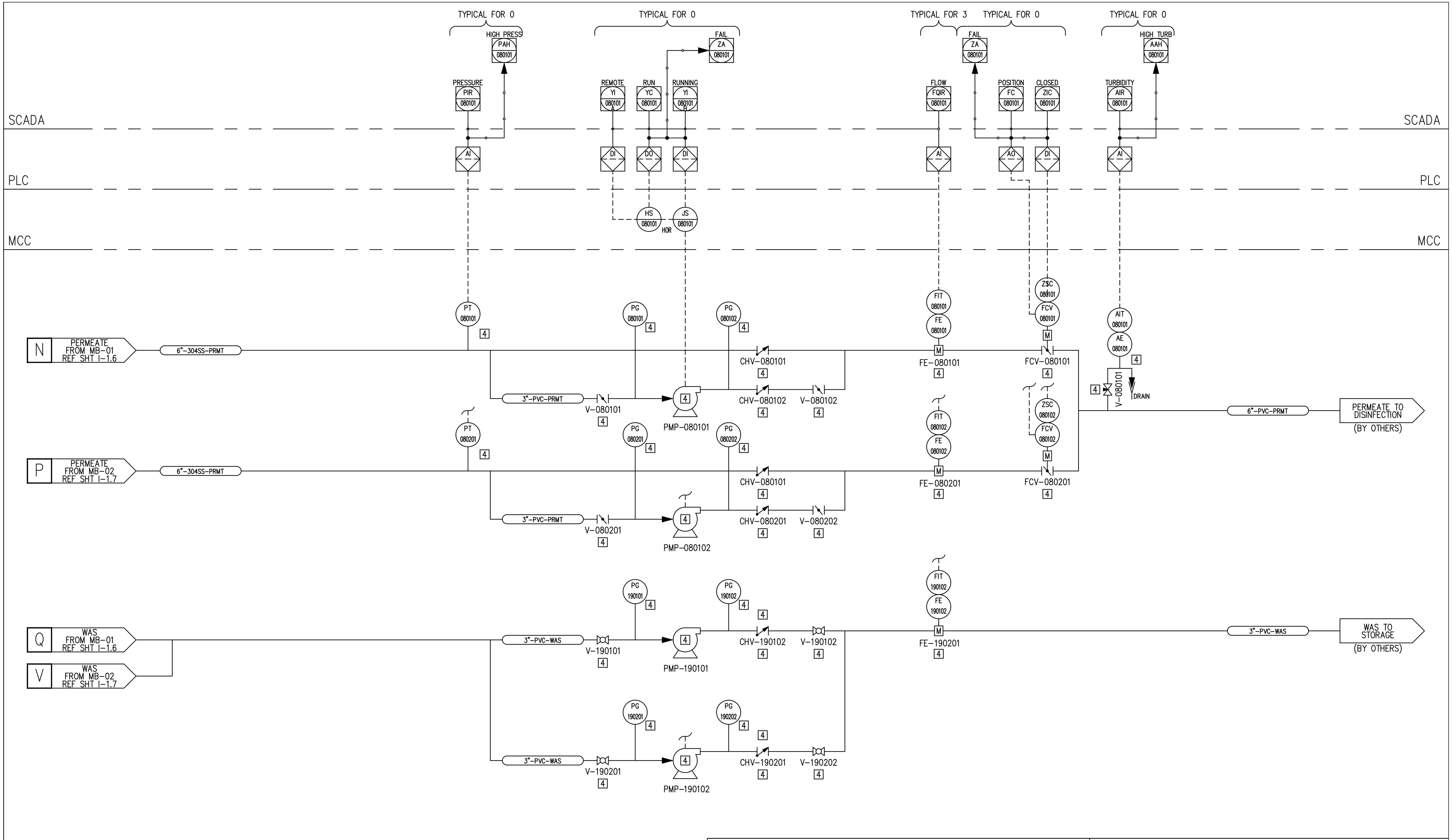
KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P & I D
MEMBRANE BIOREACTOR BASIN 02

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER					
SHEET	I-1.7 OF 13				



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5 FUTURE. *UNLESS OTHERWISE NOTED

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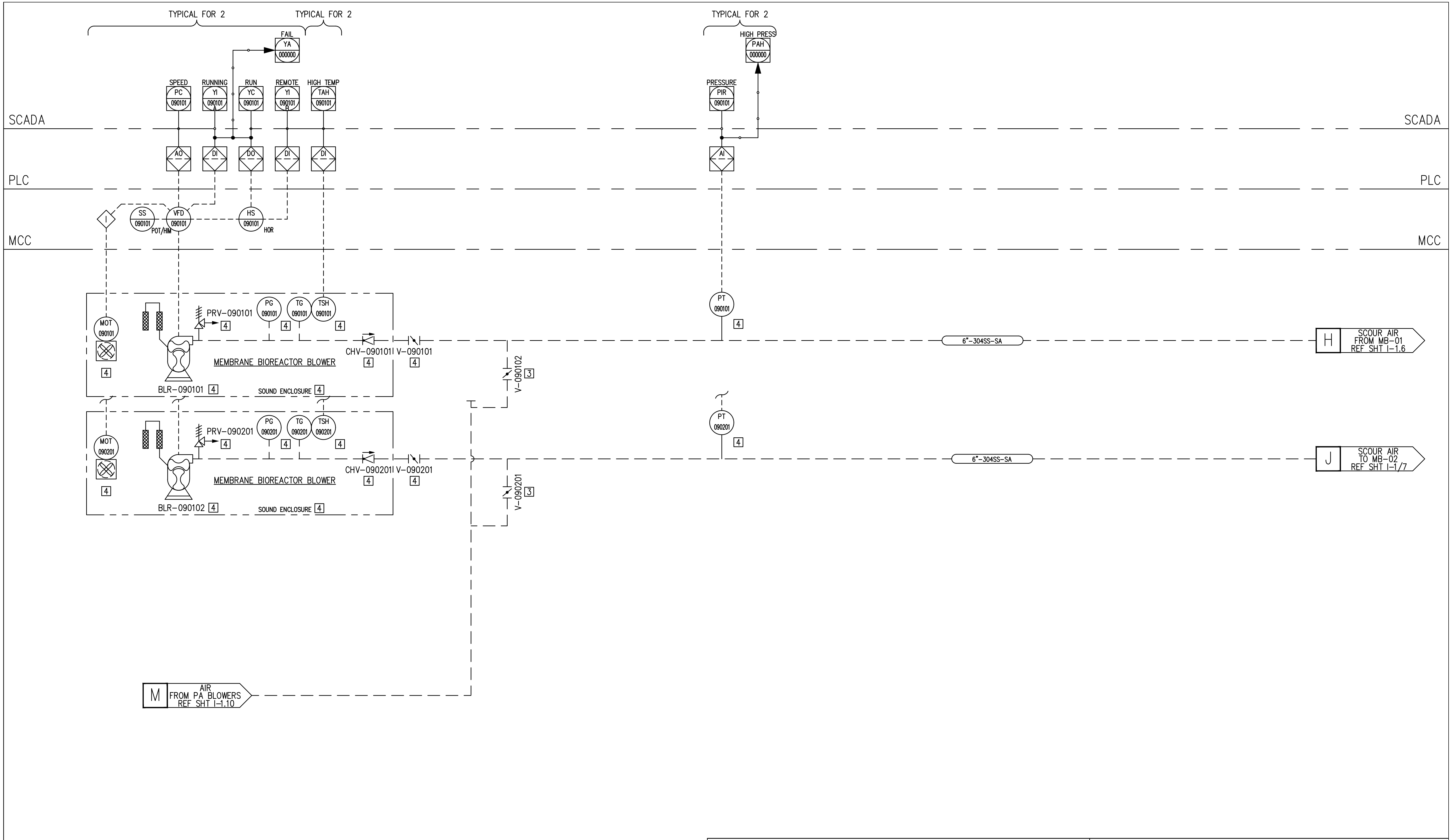
Bringing water to life

KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P & I D
PERMEATE & WAS COLLECTION

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER					
SHEET	I-1.8 OF 13				



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3. SUPPLIED BY OTHERS.
4. SUPPLIED BY OVIVO .
5. FUTURE.

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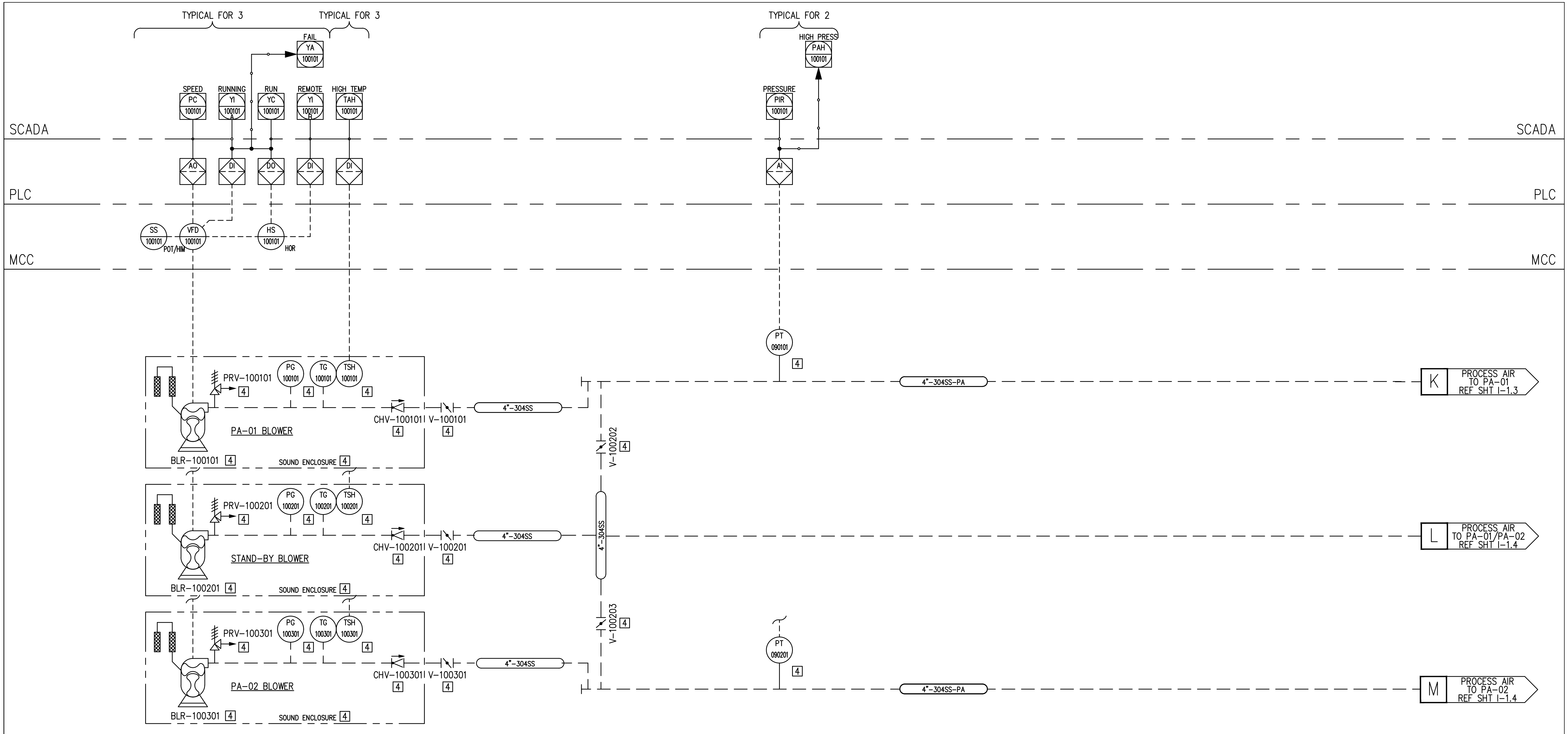
KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P & I D
SCOUR AIR BLOWERS

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER					
SHEET	I-1.9	OF	13		



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3 SUPPLIED BY OTHERS.
4 SUPPLIED BY OVIVO .
5 FUTURE. *UNLESS OTHERWISE NOTED

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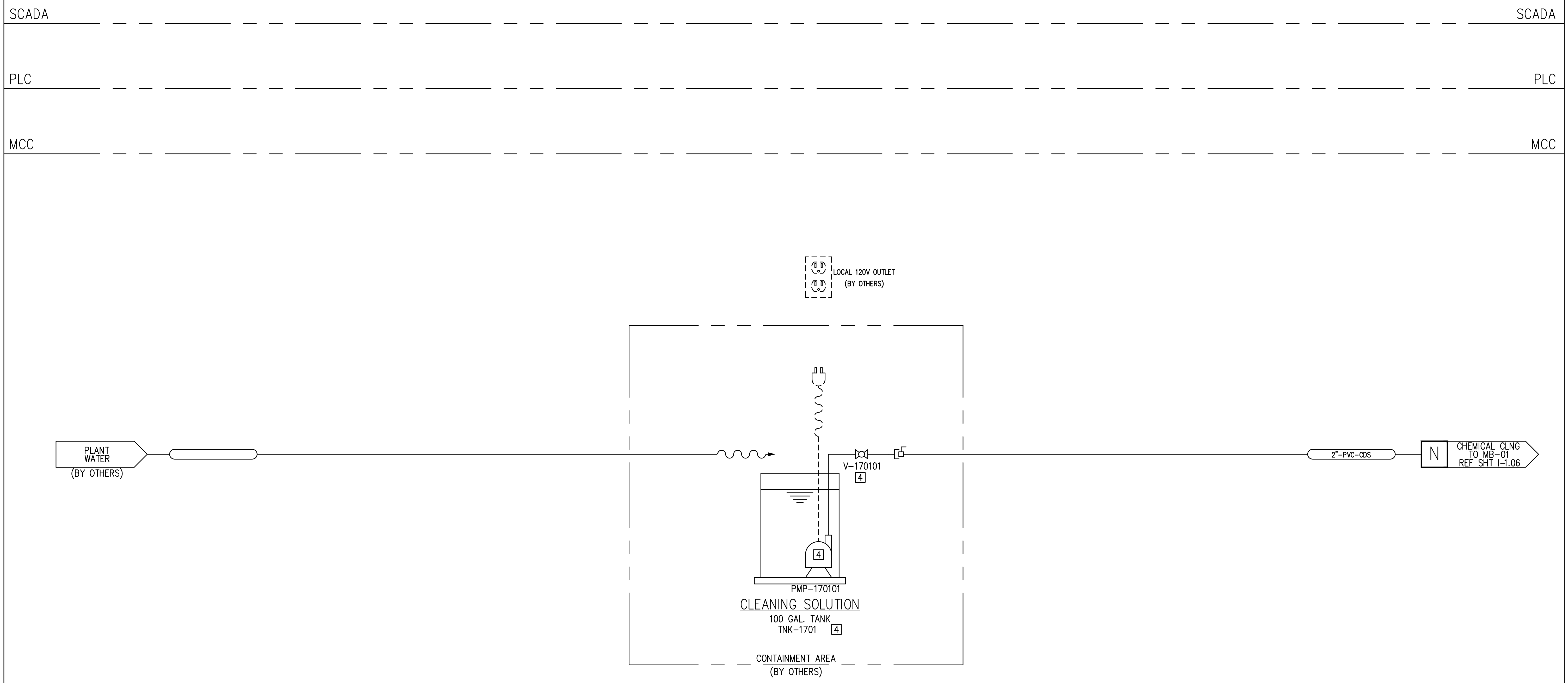
JOHN'S ISLAND SC USA
P & I D
PROCESS AIR BLOWERS

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER					
SHEET	I-1.10 OF 13				



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3 SUPPLIED BY OTHERS.
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KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P & I D
CHEMICAL CLEANING

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER					
SHEET	I-1.11	OF	13		

TYPICAL VARIABLE LETTER COMBINATIONS

FIRST LETTERS	INITIATING OR MEASURED VARIABLE	CONTROLLERS				READOUT DEVICES		SWITCHES AND ALARM DEVICES			TRANSMITTERS			SOLENOIDS, RELAYS, COMPUTING DEVICES	PRIMARY ELEMENT	TEST POINT	WELL OR PROBE	VIEWING DEVICE, GLASS	SAFETY DEVICE	FINAL ELEMENT
		RECORDING	INDICATING	BLIND	SELF-ACTUATED CONTROL VALVES	RECORDING	INDICATING	HIGH	LOW	COMB	RECORDING	INDICATING	BLIND							
A	Analysis	ARC	AIC	AC	–	AR	AI	ASH	ASL	ASHL	ART	AIT	AT	AY	AE	AP	AW	–	–	AZ
B	Burner/Combustion	BRC	BIC	BC	–	BR	BI	BSH	BSL	BSHL	BRT	BIT	BT	BY	BE	–	BW	BG	–	BZ
C	User's Choice	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
D	User's Choice	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
E	Voltage	ERC	EIC	EC	–	ER	EI	ESH	ESL	ESHL	ERT	EIT	ET	EY	EE	–	–	–	–	EZ
F	Flow Rate	FRC	FIC	FC	FCV	FR	FI	FSH	FSL	FSHL	FRT	FIT	FT	FY	FE	FP	–	FG	–	FZ
FQ	Flow Quantity	FQRC	FQIC	–	–	FQR	FQI	FQSH	FQSL	FQSHL	–	FQIT	FQT	FQY	FQE	–	–	–	–	FQZ
FF	Flow Ratio	FFRC	FFIC	FFC	–	FFR	FFI	FFSH	FFSL	FFSHL	–	–	–	–	–	–	–	–	–	FFZ
G	User's Choice	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	Hand	–	HIC	HC	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
I	Current	IRC	IIC	–	–	IR	II	ISH	ISL	ISHL	IRT	IIT	IT	IY	IE	–	–	–	–	IZ
J	Power	JRC	JIC	–	–	JR	JI	JSH	JSL	JSHL	JRT	JIT	JT	JY	JE	–	–	–	–	JZ
K	Time	KRC	KIC	KC	KCV	KR	KI	KSH	KSL	KSHL	KRT	KIT	KT	KY	KE	–	–	–	–	KZ
L	Level	LRC	LIC	LC	LCV	LR	LI	LSH	LSL	LSHL	LRT	LIT	LT	LY	LE	–	LW	LG	–	LZ
M	User's Choice	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N	User's Choice	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
O	User's Choice	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
P	Pressure/Vacuum	PRC	PIC	PC	PCV	PR	PI	PSH	PSL	PSHL	PRT	PIT	PT	PY	PE	PP	–	–	PSE	PZ
PD	Pressure Differential	PDRC	PDIC	PDC	PDCV	PDR	PDI	PDSH	PDSL	PDSHL	PDRT	PDIT	PDT	PDY	PDE	PDP	–	–	–	PDZ
Q	Quantity	QRC	QIC	–	–	QR	QI	QSH	QSL	QSHL	QRT	QIT	QT	QY	QE	–	RW	–	–	QZ
R	Radiation	RRC	RIC	RC	–	RR	RI	RSH	RSL	RSHL	RRT	RIT	RT	RY	RE	–	–	–	–	RZ
S	Speed/Frequency	SRC	SIC	SC	SCV	SR	SI	SSH	SSL	SSHL	SRT	SIT	ST	SY	SE	–	–	–	–	SZ
T	Temperature	TRC	TIC	TC	TCV	TR	TI	TSH	TSL	TSHL	TRT	TIT	TT	TY	TE	TP	TPW	–	TSE	TZ
TD	Temperature Differential	TDRC	TDIC	TDC	TDCV	TDR	TDI	TDSH	TDSL	TDSHL	TDRT	TDIT	TDT	TDY	TDE	TDP	TDPW	–	–	TDZ
U	Multivariable	–	–	–	–	UR	UI	–	–	–	–	–	–	–	–	–	–	–	–	–
V	Vibration/Machinery Analysis	–	–	–	–	VR	VI	VSH	VSL	VSHL	VRT	VIT	VT	VY	VE	–	–	–	–	VZ
W	Weight/Force	WRC	WIC	WC	WCV	WR	WI	WSH	WSL	WSHL	WRT	WIT	WT	WY	WE	–	–	–	–	WZ
WD	Weight/Force Differential	WDRC	WDIC	WDC	WDCV	WDR	WDI	WDSH	WDSL	WDSHL	WDRT	WDIT	WDT	WDY	WDE	–	–	–	–	WDZ
X	Unclassified	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Y	Event/State/Presence	–	YIC	YC	–	YR	YI	YSH	YSL	YSHL	YRT	YIT	YT	YY	YE	–	–	–	–	YZ
Z	Position/Dimension	ZRC	ZIC	ZC	ZCV	ZR	ZI	ZSH	ZSL	ZSHL	ZRT	ZIT	ZT	ZY	ZE	–	–	–	–	ZZ
ZD	Gauging/Deviation	ZDRC	ZDIC	ZDC	ZDCV	ZDR	ZDI	ZDSH	ZDSL	ZDSHL	ZDRT	ZDIT	ZDT	ZDY	ZDE	–	–	–	–	ZDZ

NOTE: This table is not all-inclusive.

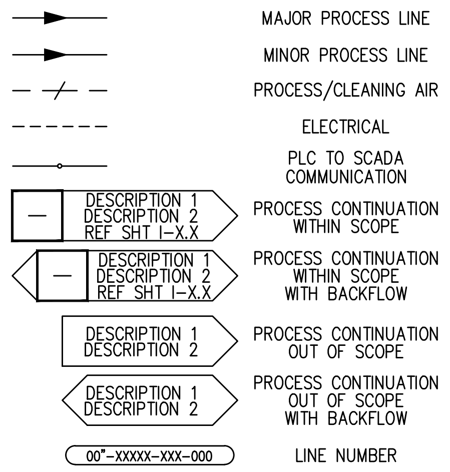
SUCEEDING LETTERS

VALUE	DESCRIPTION
A	ALARM
B	–
C	CLOSED
D	–
E	–
F	–
–	–
–	–
G	–
H	HIGH
HH	HIGH HIGH
I	–
J	–
K	–
L	LOW
LL	LOW LOW
M	MIDDLE
N	–
O	OPEN
P	–
Q	–
R	–
S	–
T	–
U	–
V	–
W	–
–	–
X	–
Y	–
Z	–
–	–

EQUIPMENT PREFIXES

ACP	ACCESS CONTROL PANEL
AE	ANALYTICAL SENSOR
AIT	ANALYTICAL INDICATOR TRANSMITTER
AT	ANALYTICAL TRANSMITTER
BLR	BLOWER
CBD	COARSE BUBBLE DIFFUSER
CFR	CHEMICAL FEEDER
CHV	CHECK VALVE
CMP	COMPACTOR
CON	CONVEYOR
CWC	COMPACTOR/WASHER/CONVEYOR
DRY	BIOSOLIDS DRYER
EDT	EDUCTOR TUBE
EJ	EXPANSION JOINT
FBD	FINE BUBBLE DIFFUSER
FCV	MODULATING CONTROL VALVE
FE	FLOW SENSOR
FI	FLOW INDICATOR
FIT	FLOW INDICATOR TRANSMITTER
FS	FINE SCREEN
FT	FLOW TRANSMITTER
GDR	GRINDER
GRC	GRIT CLASSIFIER
LE	LEVEL SENSOR
LIT	LEVER INDICATOR TRANSMITTER
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW LOW
LSM	LEVEL SWITCH MEDIUM
LT	LEVEL TRANSMITTER
MCC	MOTOR CONTROL CENTER
ME	MOISTURE SENSOR
MOT	MOTOR
MXR	MIXER
OWS	OPERATOR WORK STATION
PE	PRESSURE SENSOR
PG	PRESSURE GAUGE
PI	PRESSURE INDICATOR
PIT	PRESSURE INDICATOR TRANSMITTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PMP	PUMP
PNL	PANEL
PRV	PRESSURE RELIEF OR REDUCING VALVE
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
PT	PRESSURE TRANSMITTER
SB	SPECTACLE BLIND
SMU	SUBMERGED MEMBRANE UNIT
STG	MANUAL STOP GATE
SUG	SLUICE GATE
TC	TABLET CHLORINATOR
TE	TEMPERATURE SENSOR
TG	TEMPERATURE GAUGE
TI	TEMPERATURE INDICATOR
TIT	TEMPERATURE INDICATOR TRANSMITTER
TNK	TANK
TSH	TEMPERATURE SWITCH HIGH
TT	TEMPERATURE TRANSMITTER
TV	TELESCOPING VALVE
UPS	UNINTERRUPTIBLE POWER SUPPLY
UVU	ULTRAVIOLET UNIT
V	MANUAL VALVE
VFD	VARIABLE FREQUENCY DRIVE
WE	WEIR
WEG	WEIR GATE
WR	ADJUSTABLE WEIR
XV	AUTOMATED OPEN/CLOSE VALVE

LINE CODES



LINE NUMBERING

$\underbrace{00"}$ – $\underbrace{DI}$ – $\underbrace{INFLT}$ – $\underbrace{001}$ (EXAMPLE)
SEQUENTIAL LINE NO.
FLUID CODE
PIPE MATERIAL
NOMINAL LINE SIZE

PIPE MATERIAL ABBRIVIATION

304SS	304 STAINLESS STEEL
DI	DUCTILE IRON
HDGCS	HOT DIPPED GALVANIZED CARBON STEEL
PVC	POLYVINYL CHLORIDE
FLEX	FLEXIBLE HOSE

FLUID CODE ABBREVIATION

CA	CLEANING AIR
CDS	CHEMICAL DOSING
INFLT	INFLUENT
OVRFL	OVERFLOW
PA	PLANT AIR
PRMT	PERMEATE
PW	PLANT WATER
RAS	RETURN ACTIVATED SLUDGE
RECYC	RECYCLE
RNS	RINSE
WAS	WASTE ACTIVATED SLUDGE

LINE NUMBER GROUPS

000	OVERFLOW
100	INFLUENT
200	RECYCLE
300	PERMEATE
400	PROCESS AIR
500	CHECMICAL DOSING
600	CLEANING AIR
700	PLANT WATER/RINSE
800	RETURN ACTIVATED SLUDGE
900	WASTE ACTIVATED SLUDGE

INSTRUMENT NUMBERING

000000 (EXAMPLE)
DEVICE INSTANCE
BASIN INSTANCE
SUBSYSTEM CODE

EQUIPMENT NUMBERING

XXX – 000000 (EXAMPLE)
DEVICE INSTANCE
BASIN INSTANCE
SUBSYSTEM CODE
EQUIPMENT PREFIX

SUBSYSTEM CODES

01	HEADWORKS
02	EQUALIZATION ZONE
03	ANAEROBIC ZONE
04	PRE-ANOXIC ZONE
05	PRE-AERATION ZONE
06	POST ANOXIC ZONE
07	MEMBRANE BIOREACTOR ZONE
08	PREMEATE CONTROL
09	MEMBRANE BIOREACTOR ZONE AERATION
10	PRE-AERATION ZONE AERATION
11	SUPPLEMENTAL AERATION
12	INTERNAL RECYCLE
13	MPE DOSING
14	COAGULANT DOSING
15	SUPPLEMENTAL CARBON ADDITION
16	pH ADJUSTMENT
17	SMU CLEAN-IN-PLACE
18	DISINFECTION
19	WAS HANDLING
20	PAD-K ANOXIC ZONE
21	MEMBRANE THICKENER ZONE
22	AEROBIC DIGESTER ZONE
23	MISCELLANEOUS

					G
					F
					E
					D
					C
					B
INITIAL RELEASE					A
REVISION	EN	BY	CHECK'D	DATE	

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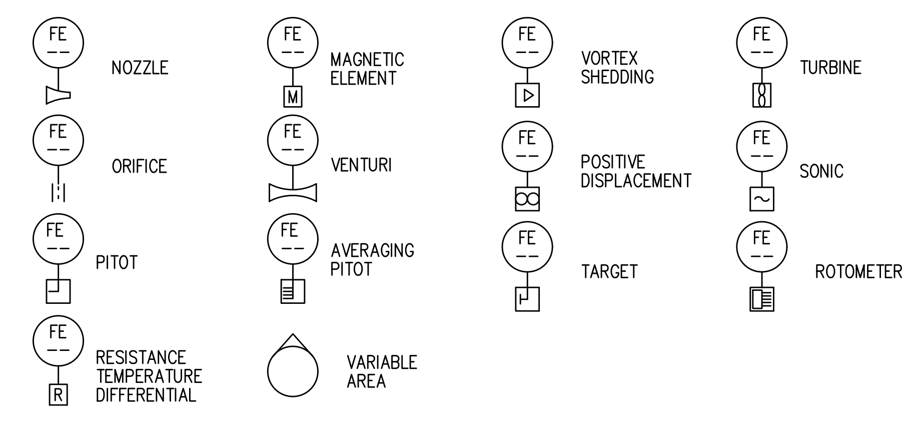
WORKMANSHIP STANDARD ES0001 APPLIES

OVIVO
Bringing water to life

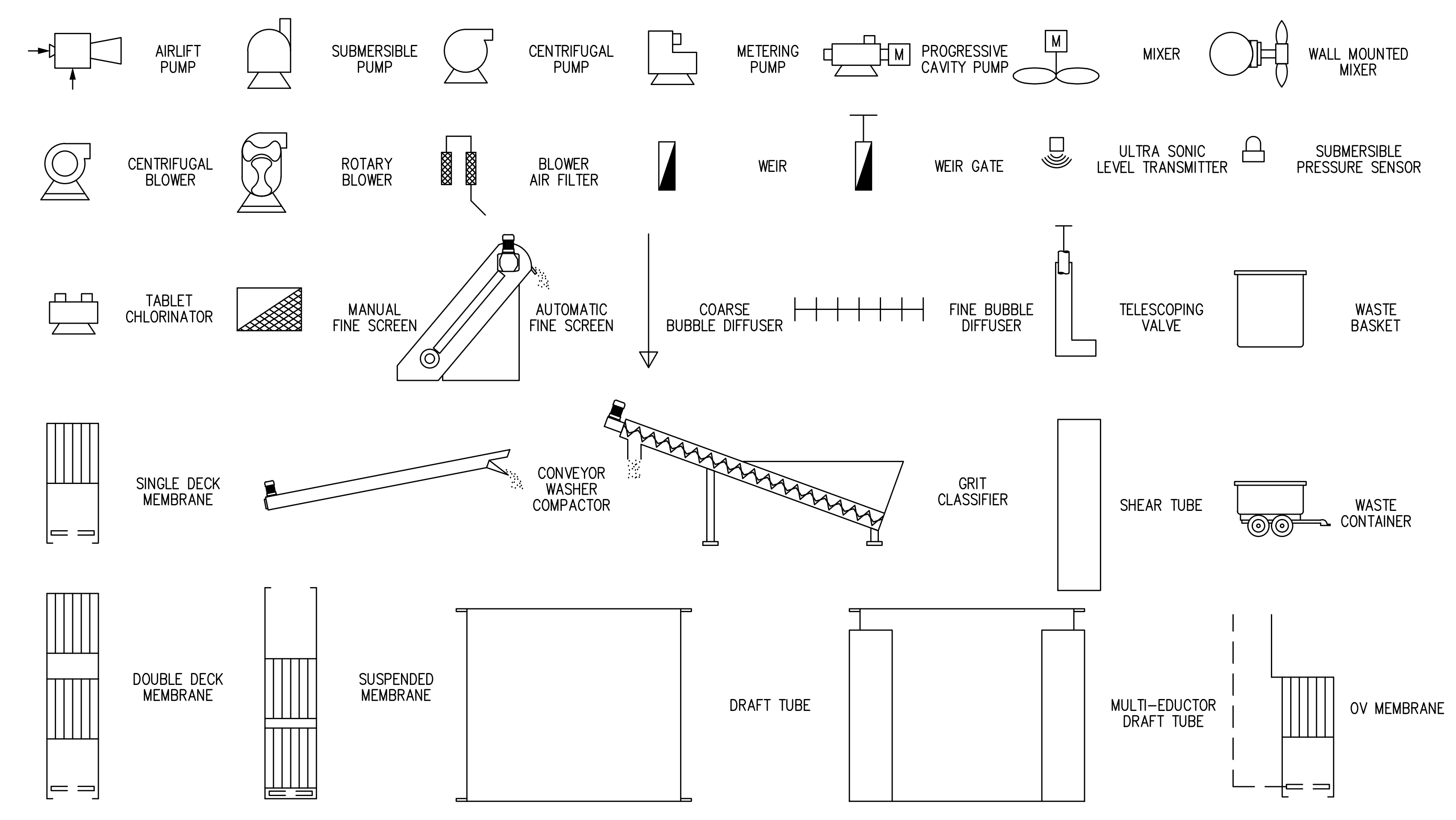
KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P&ID
CODES LEGEND

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER					
SHEET	I-1.12	OF	13		

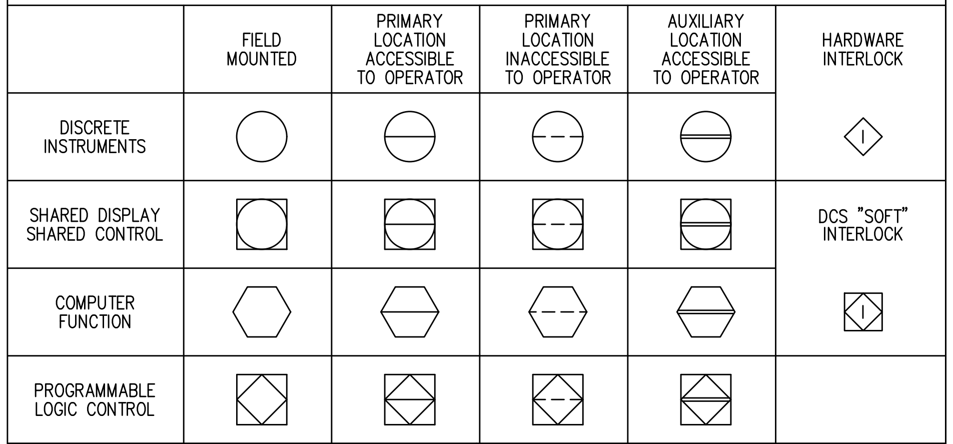
INLINE INSTRUMENTS



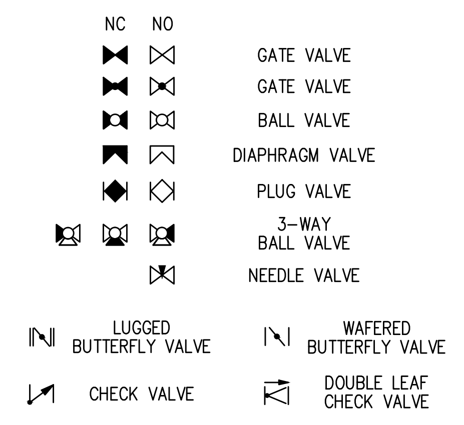
MECHANICAL EQUIPMENT



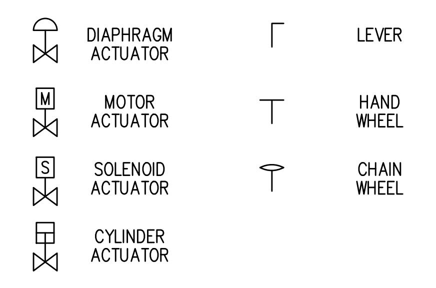
GENERAL INSTRUMENT OR FUNCTION SYMBOLS


FIELD MOUNTED
PRIMARY LOCATION ACCESSIBLE TO OPERATOR
PRIMARY LOCATION INACCESSIBLE TO OPERATOR
AUXILIARY LOCATION ACCESSIBLE TO OPERATOR
HARDWARE INTERLOCK
DISCRETE INSTRUMENTS
I
SHARED DISPLAY SHARED CONTROL
DCS "SOFT" INTERLOCK
COMPUTER FUNCTION
I
PROGRAMMABLE LOGIC CONTROL

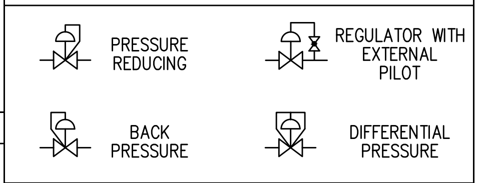
VALVE SYMBOLS



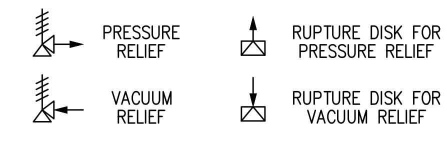
VALVE ACTUATORS



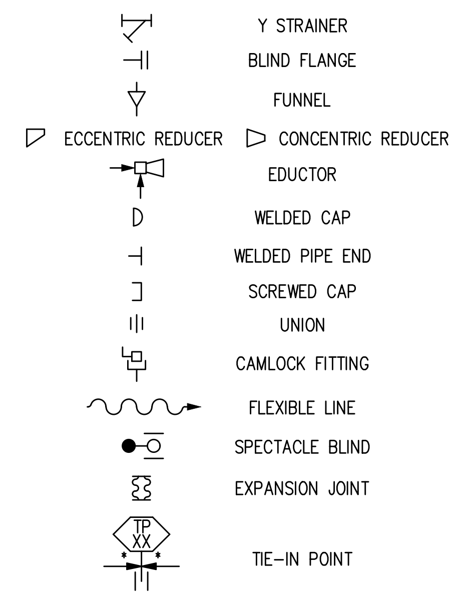
SELF-ACTING REGULATORS



RELIEF DEVICES


PRESSURE RELIEF
RUPTURE DISK FOR PRESSURE RELIEF
VACUUM RELIEF
RUPTURE DISK FOR VACUUM RELIEF

PIPING SYMBOLS



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REVISION	EN	BY	CHECK'D	DATE

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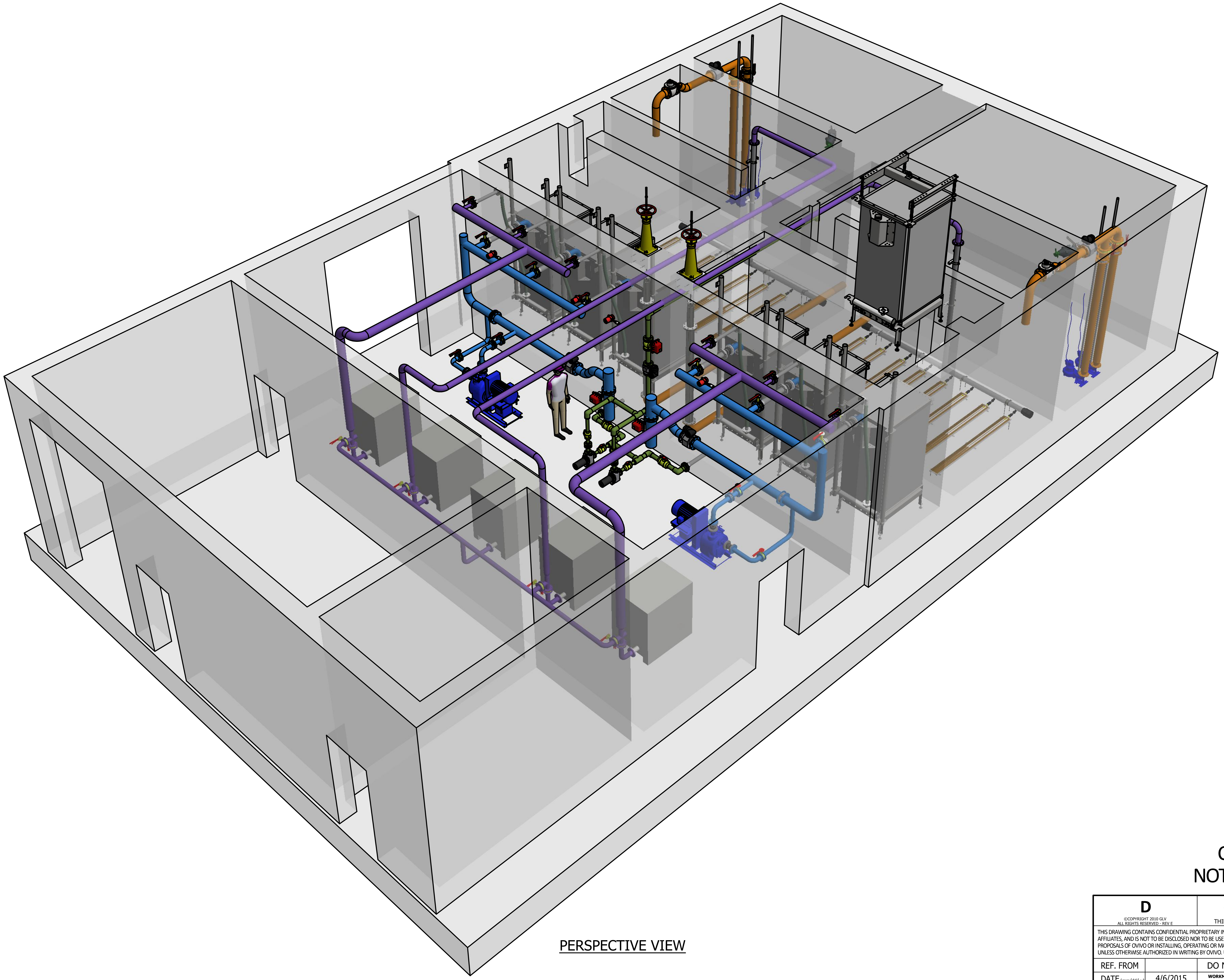
WORKMANSHIP STANDARD ES0001 APPLIES

OVIVO
Bringing water to life

KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
P & I D
SYMBOLS LEGEND

DATE	06-28-15	BY	JAT	CHECK'D	DS
DWG SCALE	NONE				
JOB NUMBER					
SHEET	I-1.13 OF 13				



PERSPECTIVE VIEW

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THIRD ANGLE PROJECTION

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DRAWN	jim.telfer	ORIGINAL S.O.
CHECK'D		

OVIVO
Bringing water to life

KIAWAH PLANTATION WWTP
JOHN'S ISLAND SC USA
MBR PLANT LAYOUT

DWG. NO. **011915-1-DS-R0**

SHEET **1** OF **6**

REV

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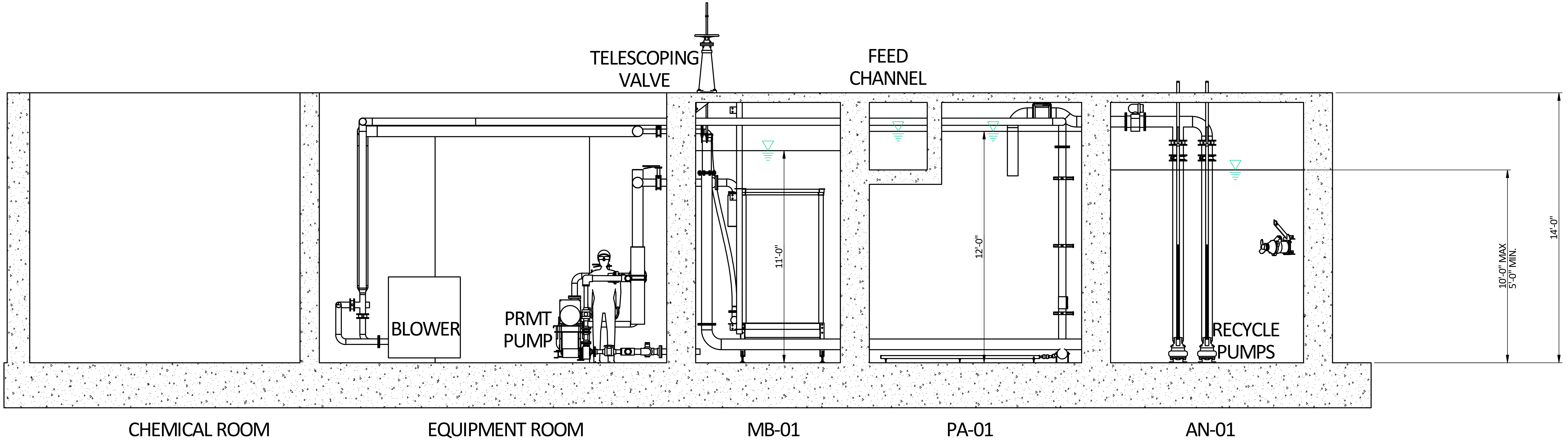
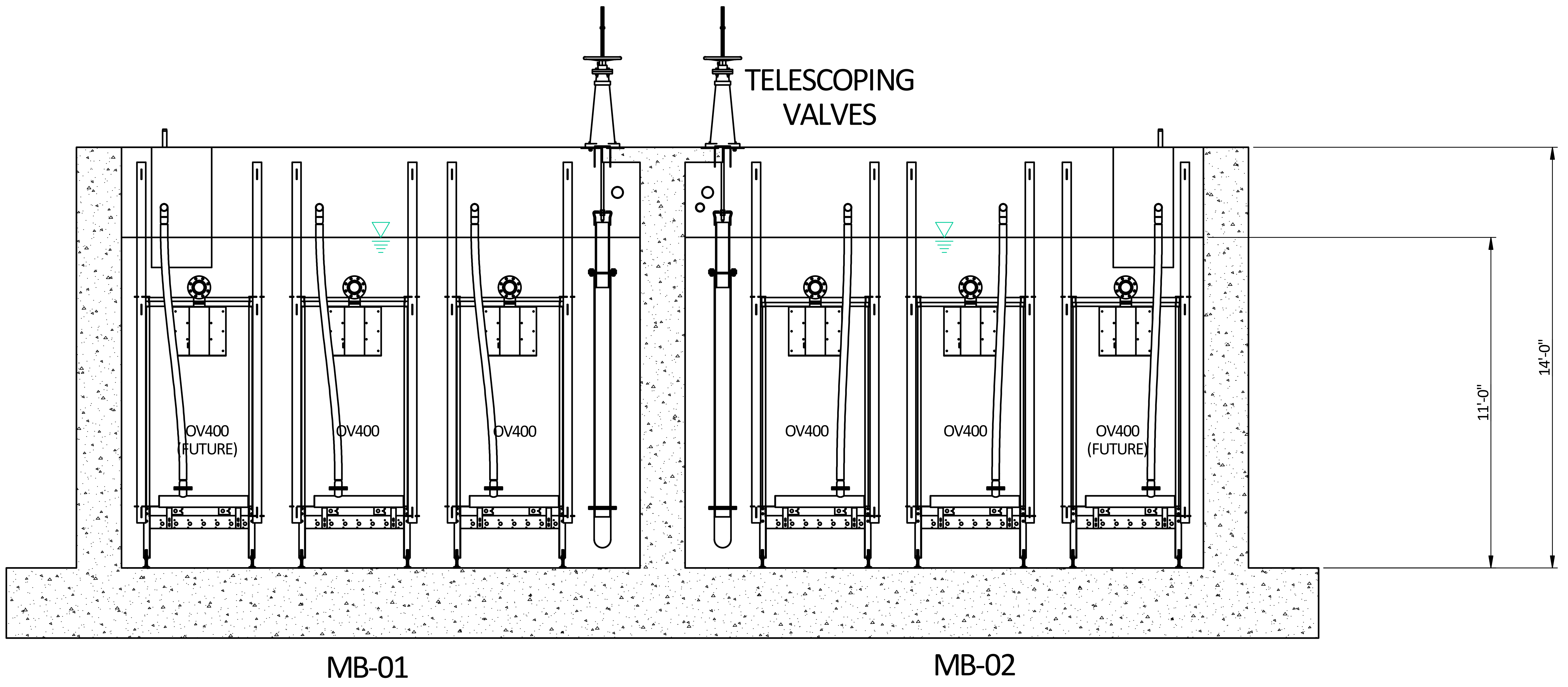
CHECK'D			



SECTION B-B



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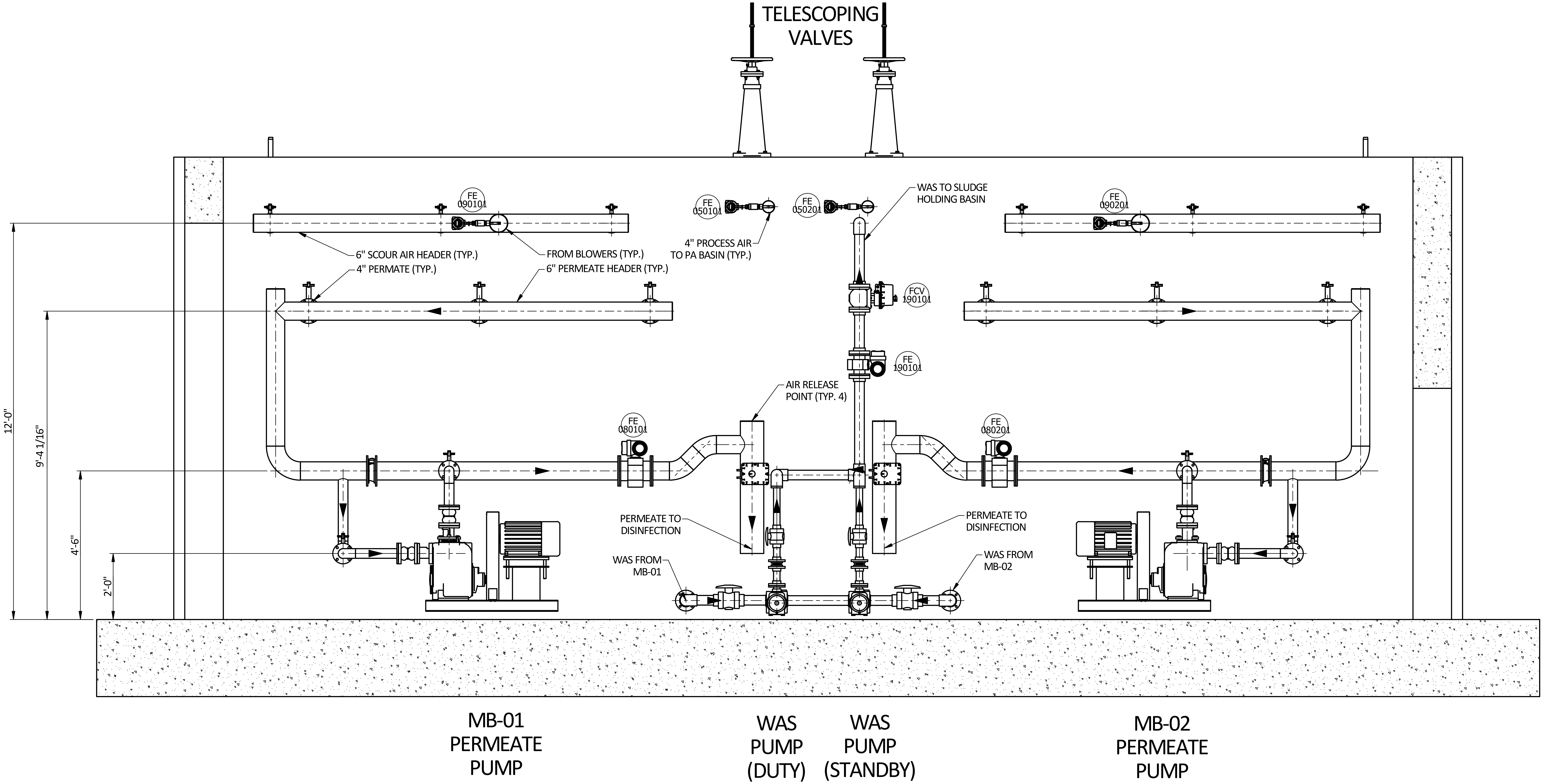
CHECK'D			SHEET **3** OF **6**
			REV



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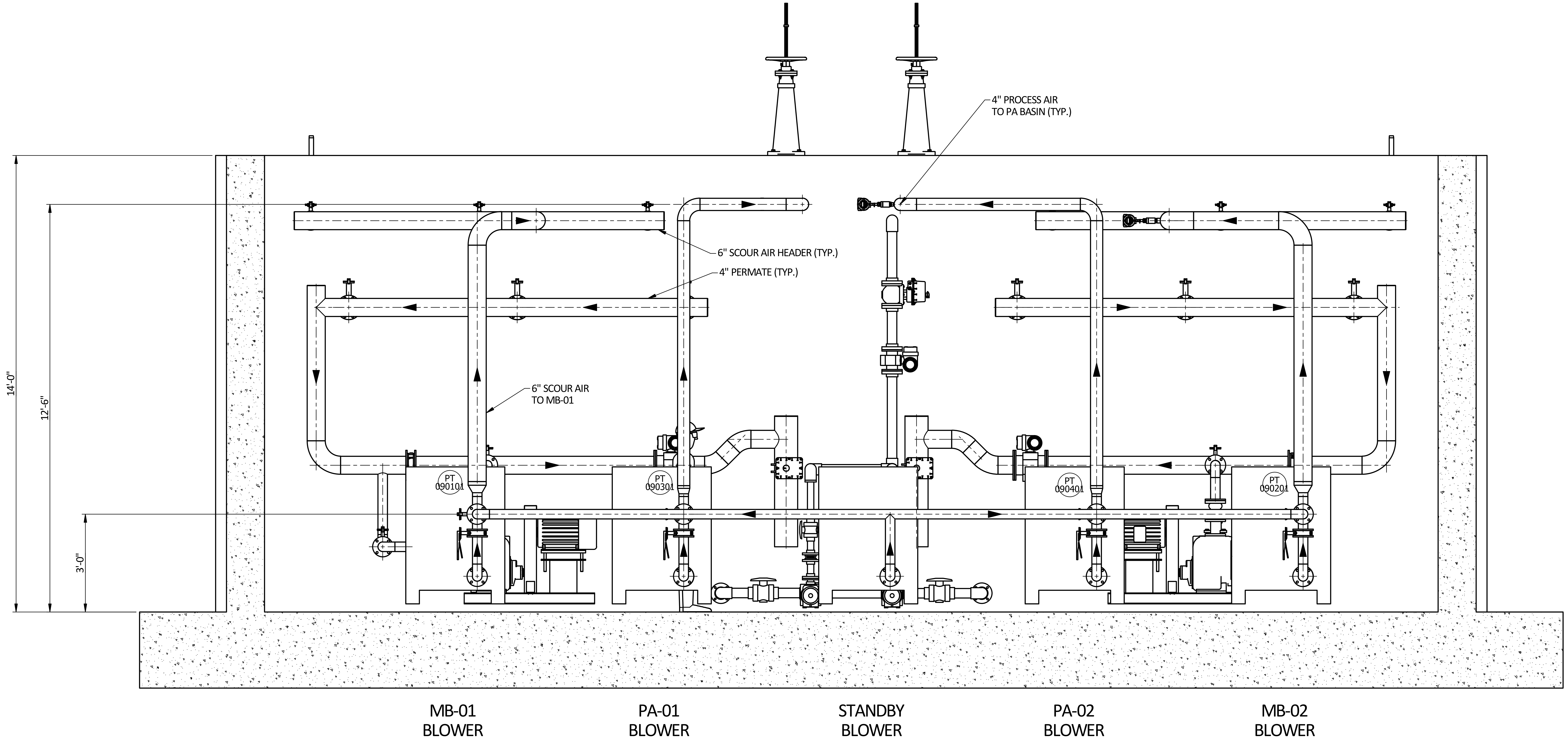
CHECK'D				REV



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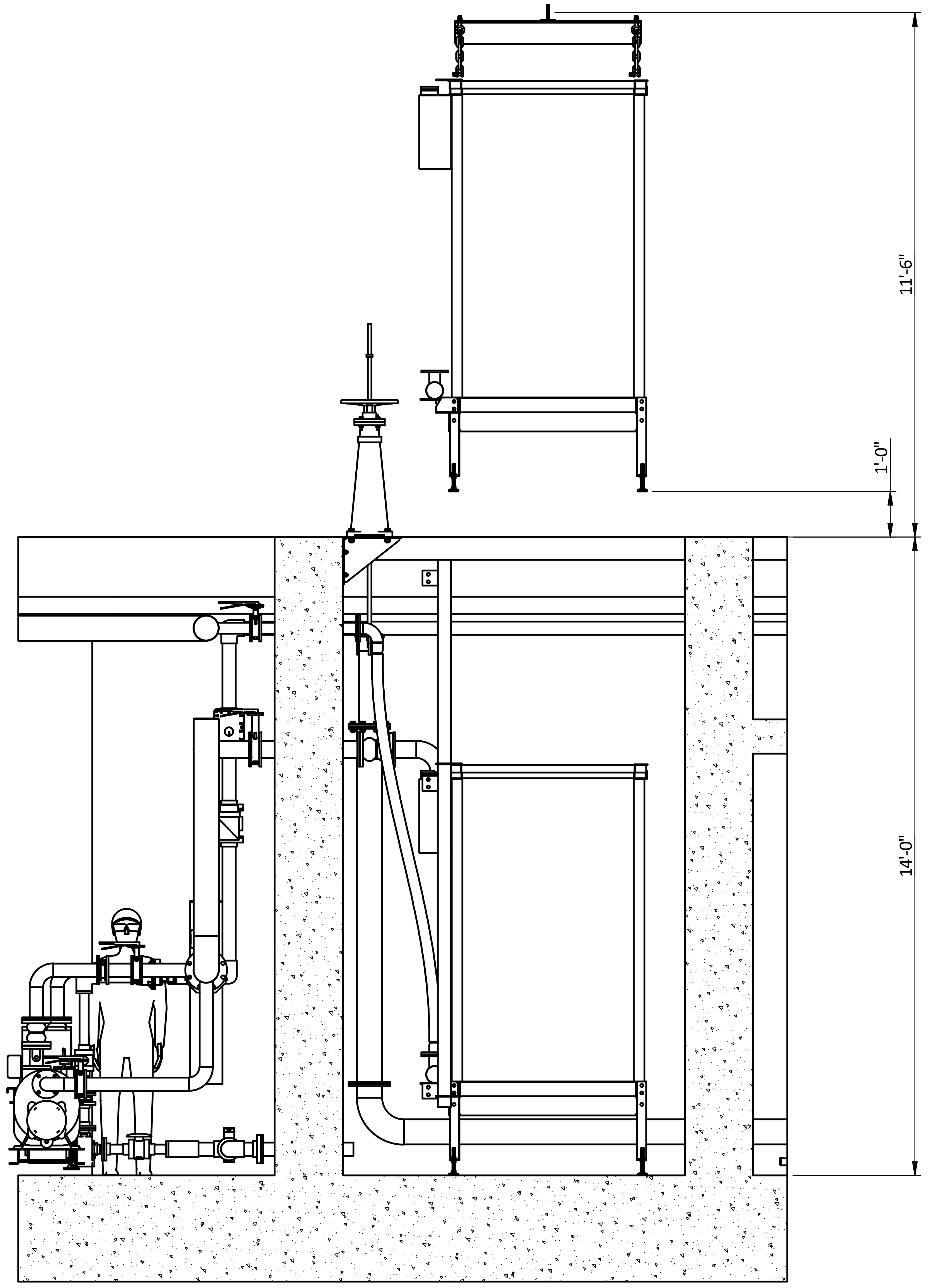

MB-02

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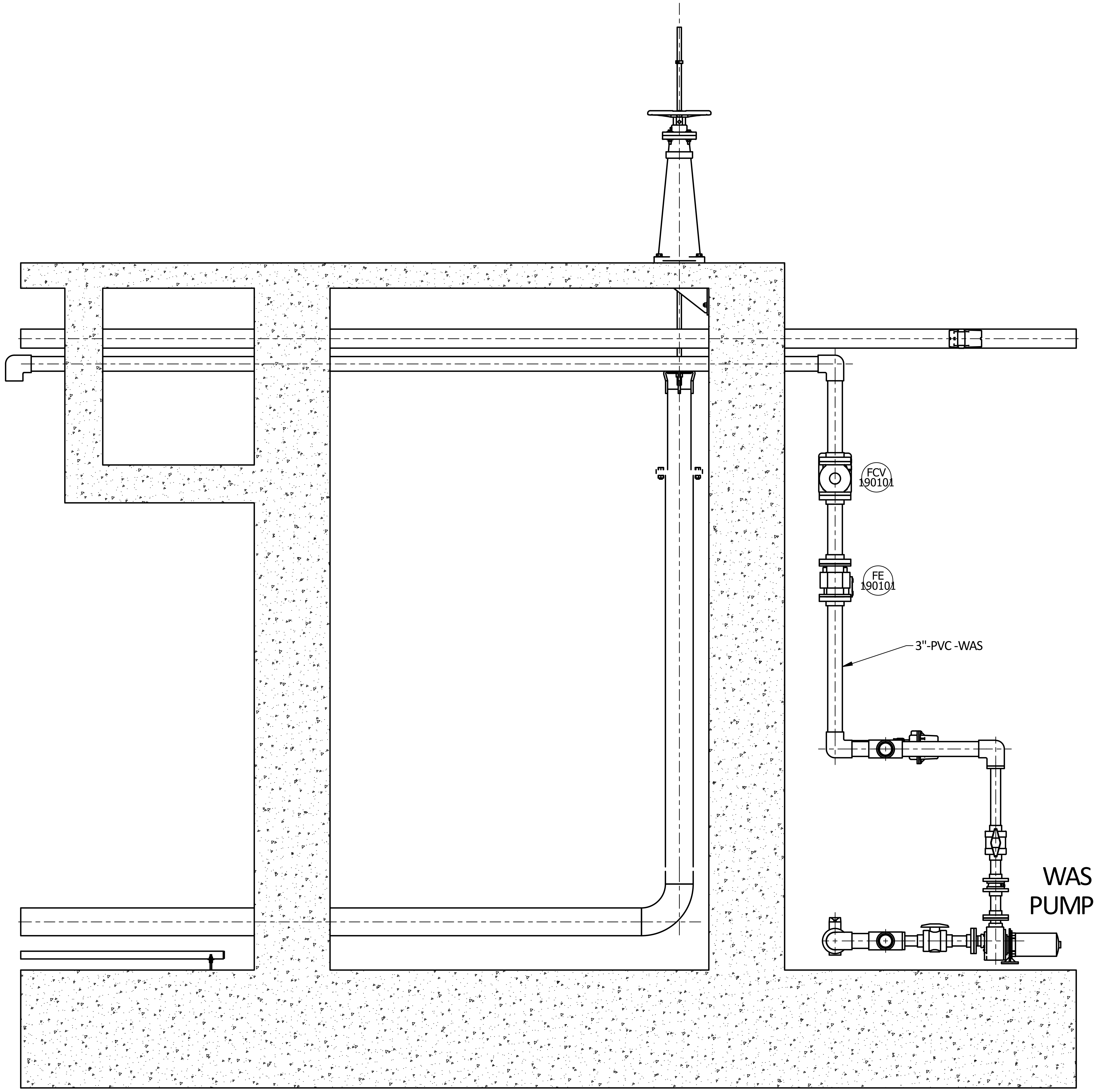

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DATE (mm/dd/yy)	4/6/2015	**WORKMANSHIP STANDARD WI-7501-01 APPLIES**	
DRAWN	jim.telfer	ORIGINAL S.O.	DWG. NO. **011915-1-DS-R0** SHEET **6** OF **6** REV
CHECK'D			