CONTRACT DOCUMENTS FOR CONSTRUCTION OF

CHEMICAL SYSTEMS AND ACTUATOR IMPROVEMENTS

BID #913



PREPARED FOR

FAYETTE COUNTY WATER SYSTEM FAYETTE COUNTY, GEORGIA

DRAWINGS VOLUME 2 OF 2

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CH2MHILL®

Project No. 486753, 496783 AUGUST 2014

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CIVIL STANDARD DETAILS
STRUCTURAL STANDARD DETAILS
STRUCTURAL STANDARD DETAILS
STRUCTURAL STANDARD DETAILS SD-02 SD-03 SD-04 SD-05 SD-06 SD-07 SD-08 SD-09

STRUCTURAL STANDARD DETAILS PROCESS MECHANICAL STANDARD DETAILS PROCESS MECHANICAL STANDARD DETAILS ELECTRICAL STANDARD DETAILS
ELECTRICAL, UTILITY STANDARD DETAILS

INSTRUMENTATION AND CONTROL STANDARD DETAILS

LOCATION MAP - CROSSTOWN WTP



LOCATION MAP - SOUTH FAYETTE WTP



LOCATION MAP - LAKE HORTON RWPS

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DRAWING INDEX, LOCATION MAPS

GENERAL SITE NOTES:

- SOURCE OF TOPOGRAPHY SHOWN ON THE CIVIL PLANS ARE BASE MAPS CREATED FROM FIELD MEASUREMENTS, AERIAL PHOTOGRAPHS, AND RECORD DRAWINGS OF BOTH CROSSTOWN AND SOUTH FAYETTE WTP SITES.
- EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION
- EXISTING TOPOGRAPHY, STRUCTURES, AND SITE FEATURES ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW FINISH GRADE, STRUCTURES, AND SITE FEATURES ARE SHOWN HEAVY-LINED.
- MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
- PROVIDE TEMPORARY FENCING AS NECESSARY TO MAINTAIN SECURITY AT ALL TIMES.
- ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE SHOWN
- SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
- ALL DISTURBED AREAS NOT RECEIVING A HARD SURFACE SHALL BE COVERED WITH COMMON BURMUDA GRASS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. EROSION CONTROL DEVICES AND LOCATIONS ARE SHOWN ON THE CIVIL SITE PLANS. REFER TO GEORGIA SOIL AND WATER CONSERVATION COMMISSION MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA, SIXTH EDITION, JANUARY 2014 FOR DETAILS.
- 10. CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE. CONTRACTOR TO SUBMIT EROSION CONTROL PLAN.
- CONTRACTOR SHALL NOT BE REQUIRED TO SUBMIT AN EROSION CONTROL PERMIT. THE DISTURBED AREA DURING CONSTRUCTION SHALL BE LESS THAN 1 ACRE AT ALL TIMES

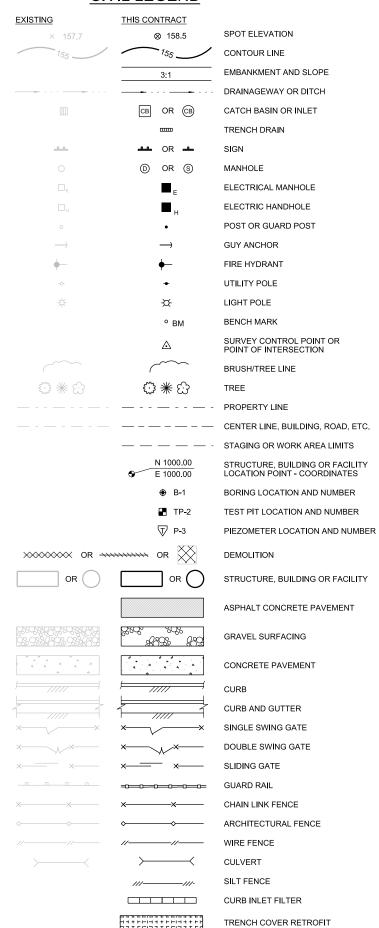
GENERAL YARD PIPING AND UTILITIES NOTES:

- EXISTING UNDERGROUND UTILITIES OBTAINED FROM AS-BUILTS AND FROM FIELD MEASUREMENTS. CONTRACTOR SHALL FIELD VERIFY DEPTH AND LOCATION PRIOR TO EXCAVATION. PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION.
- FOR PIPING FLOW STREAM IDENTIFICATION, SEE DRAWING G-11
- EXISTING PIPING AND EQUIPMENT ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW PIPING AND EQUIPMENT ARE SHOWN HEAVY-LINED
- UNLESS OTHERWISE SHOWN ALL PIPING SHALL HAVE A MINIMUM OF 30" COVER.
- ALL PIPES SHALL HAVE A CONSTANT SLOPE BETWEEN INVERT ELEVATIONS UNLESS A FITTING IS SHOWN.
- ALL NEW WATER PIPES MUST BE PROPERLY FLUSHED, PRESSURE TESTED, CHLORINATED AND BACTERIOLOGICALLY TESTED, AS SPECIFIED.
- 7. FOR TRENCHING AND BACKFILL, SEE (3123-110)
- FOR SURFACE RESTORATION OF ASPHALT CONCRETE, CONCRETE PAVEMENT AND GRASS, SEE (3123-115)
- MINIMUM ALLOWABLE CLEARANCE BETWEEN PIPES AT CROSSINGS SHALL BE 3". CONTROLLED DENSITY FILL SUPPORT IS REQUIRED AS SHOWN ON $\fbox{3123-120}$.

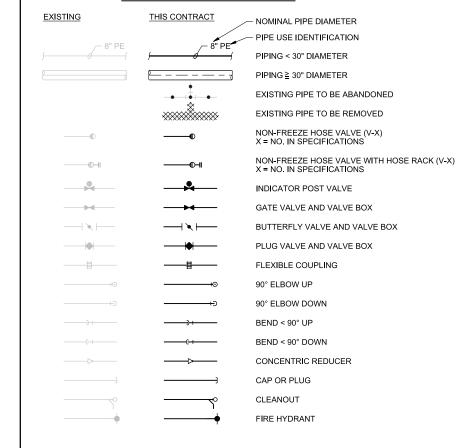
GENERAL NOTE:

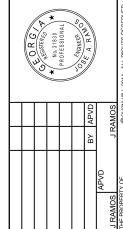
THIS IS A STANDARD LEGEND SHEET. THEREFORE, NOT ALL OF THE INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

CIVIL LEGEND



YARD PIPING LEGEND





LEGEND CIVIL AND

GENERAL

Y SCALE

Y SCALE

WE INCH ON
L DRAWING.

AUGUST 2014

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PROJ WG HEET

GRADE SLOPE DIRECTION

DESIGN CRITERIA

IV

= 0.161 c

- 1. APPLICABLE CODE: 2012 INTERNATIONAL BUILDING CODE (IBC), AS AMENDED BY GEORGIA STATE
- 2. REFER TO THE DRAWINGS FOR ADDITIONAL AND SPECIFIC STRUCTURE LOADINGS AND REQUIREMENTS.

3. RISK CATEGORY

4. ROOF LOADS: SNOW LOADS:

OW LOADS:
GROUND SNOW LOAD, Pg = 5 PSF
TERRAIN CATEGORY = C
SNOW EXPOSURE FACTOR, Ce = 1.0
IMPORTANCE FACTOR, I = 1.2
MINIMUM FLAT ROOF SNOW LOAD, Pf = 10 PSF
SNOW DRIFTS PER ASCE 7

5. WIND LOADS:

ULTIMATE DESIGN WIND SPEED, V = 120 MPH

NOMINAL DESIGN WIND SPEED = 93 MPH

EXPOSURE CATEGORY = C

COMPONENT AND CLADDING WALL ELEMENTS
(WINDOWS, DOORS, LOUVERS, SIDING, ETC FOR
STRUCTURES UNDER 20 FEET IN HEIGHT) = 39 PSF

6. SEISMIC LOADS:

MAPPED SPECTRAL RESPONSE ACCELERATIONS
So

STRUCTURES HAVE BEEN ANALYZED USING THE EQUIVALENT LATERAL FORCE PROCEDURES OF ASCE 7.

7. LATERAL FORCE RESISTING SYSTEMS :

FLAT BOTTOM GROUND SUPPORTED TANKS: REINFORCED OR PRESTRESSED CONCRETE WITH REINFORCED NONSLIDING BASE

 $\begin{array}{ccc} V & & = C_SW \\ C_S & & = 0.129 \\ R & & & = 2 \end{array}$

8. SPECIAL LOADS: FOR STRUCTURE SPECIFIC LOADS SEE PLANS

9. HYDRAULIC LOADS: FOR HYDRAULIC LOADS SEE PLANS

10. SOIL DESIGN PARAMETERS:

11. FROST DEPTH

A. NET ALLOWABLE SOIL BEARING PRESSURES: 2000 PSF

B. EQUIVALENT DRAINED FLUID PRESSURES:

ACTIVE: 40 PCF AT REST: 60 PCF PASSIVE: 180 PCI

C. COEFFICIENT OF FRICTION: 0.45 COMPACTED STRUCTURAL FILL 0.35 NATIVE SOIL

D. SOIL UNIT WEIGHT: 120 PCF

E. GROUND WATER (GW) ELEVATION:

NORMAL HIGH GW EL 832.50' (CROSSTOWN WTP)
EL 809.00' (SOUTH FAYETTE COUNTY WTP)

100 YEAR FLOOD EL 767.00' (CROSSTOWN WTP)
EL 801.00' (SOUTH FAYETTE COUNTY WTP)

0

GENERAL INFORMATION

- FOR ABBREVIATIONS NOT LISTED, SEE ASME Y14.38 "ABBREVIATIONS AND ACRONYMS: PUBLICATION AS DISTRIBUTED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).
- DESIGN DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT.
- VERIFY FINAL OPENING DIMENSIONS IN WALLS, SLABS, AND DECKS WITH OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION OF THESE ELEMENTS.
- 4. FOR NUMBER, TYPE, SIZE, ARRANGEMENT, AND/OR LOCATION OF EQUIPMENT PADS SEE OTHER DISCIPLINE DRAWINGS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO PLACING SLABS, WALLS AND FOUNDATIONS. COORDINATE PIPING OPENINGS WITH OTHER DISCIPLINE DRAWINGS.
- DO NOT CUT OR MODIFY STRUCTURAL MEMBERS FOR PIPES, DUCTS, ETC, UNLESS SPECIFICALLY DETAILED OR APPROVED IN WRITING BY THE ENGINEER.
- 6. VISITS TO THE JOB SITE BY THE ENGINEER TO OBSERVE THE CONSTRUCTION DO NOT IN ANY WAY MEAN THAT ENGINEER IS GUARANTOR OF CONSTRUCTOR'S WORK, NOR RESPONSIBLE FOR THE COMPREHENSIVE OR SPECIAL INSPECTIONS, COORDINATION, SUPERVISION, OR SAFETY AT THE JOB SITE.
- 7. DETAILING AND DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES SHOWN ARE BASED ON AS-BUILT DESIGN DRAWINGS, AND DO NOT NECESSARILY REPRESENT THE AS-CONSTRUCTED CONDITIONS. THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS, ELEVATIONS AND DETAILING OF THE EXISTING STRUCTURES PRIOR TO UNDERTAKING ANY WORK THAT IS AFFECTED BY THE EXISTING STRUCTURE.

SPECIAL INSPECTION AND RELATED TESTING

- SPECIAL INSPECTION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR ANY REQUIRED INSPECTIONS BY THE BUILDING OFFICIAL. THE CONTRACTOR SHALL SCHEDULE BOTH INSPECTIONS
- SPECIFIED CONCRETE AND MASONRY AND OTHER MATERIAL TESTING DURING CONSTRUCTION
 WILL BE OWNER FURNISHED. SPECIFIED LABORATORY TEST MIXES AND SIMILAR TEST RESULTS
 TO VERIFY MATERIAL QUALITY AND CONFORMANCE TO SPECIFICATIONS, AND SUBMITTED FOR
 REVIEW PRIOR TO ACCEPTANCE FOR USE ON THE PROJECT, SHALL BE THE RESPONSIBILITY OF
 THE CONTRACTOR.
- SPECIAL INSPECTION, TESTING AND OBSERVATION (OWNER FURNISHED) IS REQUIRED IN ACCORDANCE WITH IBC SECTIONS 110 AND 1704 AS INDICATED IN THE STATEMENT OF SPECIAL INSPECTION.

FOUNDATIONS

- REFER TO GEOTECHNICAL DATA REPORT FOR SOUTH FAYETTE COUNTY WTP BY PIEDMONT GEOTECHNIAL ASSOCIATES, DATED SEPTEMBER 30, 1997 AND SUPPLEMENTAL DESIGN MEMO BY CH2M HILL DATED MARCH, 2014. REFER TO GEOTECHNICAL DATA REPORT FOR CROSSTOWN WTP BY MALLETT & ASSOCIATES, DATED DECEMBER 21, 1990 AND SUPPLEMENTAL DESIGN MEMO BY CH2M HILL DATED MARCH, 2014.
- EXCAVATIONS SHALL BE SHORED TO PREVENT SUBSIDENCE OR DAMAGE TO ADJACENT EXISTING STRUCTURES, STREETS, UTILITIES, ETC.
- 3. FOUNDATION SLABS, SLABS-ON-GRADE AND WALL AND COLUMN FOUNDATIONS SHALL BEAR ON MINIMUM 6 INCHES OF COMPACTED GRANULAR FILL UNLESS NOTED OTHERWISE.
- 4. FOUNDATION BEARING SURFACES SHALL BE OBSERVED BY A GEOTECHNICAL ENGINEER OR QUALIFIED DESIGNEE PRIOR TO PLACEMENT OF FORMWORK OR REINFORCING STEEL. THE OBSERVATION SHALL VERIFY IF THE ACTUAL EXPOSED SUBGRADE IS AS ANTICIPATED BY THE SITE SPECIFIC BORINGS AND DATA REPORTS.

FORMWORK, SHORING AND BRACING

STRUCTURES SHOWN ON THE DRAWINGS HAVE BEEN DESIGNED FOR STABILITY UNDER FINAL CONDITIONS
ONLY. DESIGN SHOWN DOES NOT INCLUDE NECESSARY COMPONENTS OR EQUIPMENT FOR STABILITY OF
THE STRUCTURES DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR WORK RELATING TO
CONSTRUCTION ERECTION METHODS, BRACING, SHORING, RIGGING, GUYS, SCAFFOLDING, FORMWORK, AND
OTHER WORK AIDS REQUIRED TO SAFELY PERFORM THE WORK SHOWN.

CONCRETE REINFORCING

- REINFORCING STEEL:
 - ICAL:
- 2. FABRICATION AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH CRSI MSP-1 "MANUAL OF STANDARD PRACTICE" AND ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE".
- CLEARANCE FOR REINFORCEMENT BARS, UNLESS SHOWN OTHERWISE, SHALL BE:
 WHEN PLACED ON GROUND:
 OTHER CONCRETE SURFACES:
 2"
 2"
- 4. REFER TO WALL CORNER AND WALL INTERSECTION REINFORCING DETAIL 0330-003. WALL CORNER REINFORCING SIZES AND SPACINGS SHALL BE AS SHOWN ON THE DRAWINGS AND REFERENCED TO THIS DETAIL. TYPICAL HORIZONTAL WALL REINFORCING SHALL LAP WITH THE CORNER HORIZONTAL PENDOPONIC
- 5. 90 DEGREE BENDS, UNLESS OTHERWISE SHOWN, SHALL BE ACI 318 STANDARD HOOKS.
- 6. WALL CORNER AND WALL INTERSECTION REINFORCEMENT BARS SHALL BE CONTINUOUS AROUND CORNERS AND THROUGH COLUMNS OR PILASTERS. REINFORCEMENT SHALL BE EXTENDED INTO CONNECTING WALLS AND LAPPED ON THE OPPOSITE FACE OF THE CONNECTING WALLS, AS INDICATED IN DETAIL 0220 025.
- 7. REFER TO OPENING REINFORCING DETAILS 0330-001.
- 8. REINFORCEMENT BENDS AND LAPS, UNLESS OTHERWISE NOTED, SHALL SATISFY THE FOLLOWING

CONCRETE DESIGN STRENGTH = 4,000 PSI MIN AT 28 DAYS GRADE 60 REINFORCING ST								ING STE	EL	
BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11
LAP SPLICE LE	NGTH									
SPACING<6"	TOP BAR *	1'-4"	2'-0"	3'-0"	4'-0"	5'-10"	6'-8"	7'-7"	8'-6"	9'-5"
	OTHER BAR	1'-4"	1'-7"	2'-4"	3'-1"	4'-6"	5'-2"	5'-10"	6'-7"	7'-3"
SPACING≥6"	TOP BAR *	1'-4"	1'-6"	2'-0"	2'-5"	3'-6"	4'-0"	5'-0"	6'-2"	7'-5"
	OTHER BAR	1'-4"	1'-4"	1'-7"	1'-10"	2'-9"	3'-1"	3'-10"	4'-9"	5'-8"
EMBEDMENT L	ENGTH									
SPACING<6"	TOP BAR *	1'-0"	1'-7"	2'-4"	3'-1"	4'-6"	5'-2"	5'-10"	6'-7"	7'-3"
	OTHER BAR	1'-0"	1'-3"	1'-9"	2'-5"	3'-6"	4'-0"	4'-6"	5'-1"	5'-7"
SPACING≥6"	TOP BAR *	1'-0"	1'-3"	1'-7"	1'-10"	2'-9"	3'-1"	3'-10"	4'-9"	5'-8"
OTHER BAR		1'-0"	1'-0"	1'-3"	1'-5"	2'-1"	2'-5"	3'-0"	3'-8"	4'-5"

* TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12 INCHES OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.

CAST IN PLACE CONCRETE

28-DAY COMPRESSIVE STRENGTHS:

4000 F

2. 56-DAY COMPRESSIVE STRENGTHS:

5000 PSI

- CONTINUOUS WATERSTOP AS SPECIFIED SHALL BE INSTALLED IN CONSTRUCTION JOINTS OF WATER HOLDING BASINS, CHANNELS, AND BELOW GRADE STRUCTURES, EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE.
- CONSTRUCTION JOINTS INDICATED ARE SUGGESTED LOCATIONS. CONTRACTOR MAY REVISE LOCATION OF JOINTS, SUBJECT TO SPECIFIED REQUIREMENTS. LAYOUT SHOWING ALL CONSTRUCTION JOINT LOCATIONS SHALL BE SUBMITTED FOR REVIEW BY ENGINEER.
- 6. ROUGHEN (1/4" AMPLITUDE) AND CLEAN CONSTRUCTION JOINTS IN WALLS AND SLABS AS SPECIFIED PRIOR TO PLACING ADJACENT CONCRETE.
- COORDINATE PLACEMENT OF OPENINGS, CURBS, DOWELS, SLEEVES, CONDUITS, BOLTS AND INSERTS PRIOR TO PLACEMENT OF CONCRETE.
- 8. NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.
- DO NOT PLACE CONDUIT PARALLEL TO BEAM OR COLUMN REINFORCEMENT UNLESS SPECIFICALLY INDICATED IN DRAWINGS.
- 10. PATCH FORM TIE HOLES IN ACCORDANCE WITH DETAILS 0310-051.

3. DESIGN STRENGTHS ARE SAME AS 28-DAY COMPRESSIVE STRENGTHS.

DEFERRED SUBMITTALS

- DEFERRED SUBMITTALS ARE THOSE PORTIONS OF THE DESIGN WHICH ARE NOT SUBMITTED AT THE TIME OF PERMIT APPLICATION AND WHICH ARE TO BE SUBMITTED TO THE PERMITTING AGENCY FOR ACCEPTANCE PRIOR TO INSTALLATION OF THAT PORTION OF THE WORK.
- 2. WHERE DEFERRED SUBMITTALS INCLUDE ADDITIONAL MATERIALS, INSTALLATION, ANCHORAGE, OR CERTIFICATION OF COMPONENTS THAT REQUIRE SPECIAL INSPECTION AND/OR STRUCTURAL OBSERVATION TO MEET CODE REQUIREMENTS, THE DEFERRED SUBMITTAL SHALL INCLUDE SPECIFIC LINE ITEMS TO BE ADDED TO THE APPROPRIATE TABLES IN THE PROJECT'S QUALITY ASSURANCE PLAN AND STATEMENT OF SPECIAL INSPECTIONS PLAN IF THEY ARE NOT ALREADY IDENTIFIED.
- 3. THE FOLLOWING IS A LIST OF DEFERRED SUBMITTALS PER IBC SECTION 106.3.4.2 THAT ARE EXPECTED TO CONTAIN STRUCTURAL CALCULATIONS OR SAFETY RELATED SYSTEM INFORMATION FOR REVIEW TO MEET BUILDING PERMITTING REQUIREMENTS FOR DESIGNED SYSTEMS. PRIOR TO INSTALLATION OF THE INDICATED STRUCTURAL ELEMENT, EQUIPMENT, DISTRIBUTION SYSTEM, OR COMPONENT OR ITS ANCHORAGE, THE CONTRACTOR SHALL SUBMIT THE REQUIRED CALCULATIONS AND SUPPORTING DATA AND DRAWINGS FOR REVIEW AND ACCEPTANCE BY THE ROBINEER. ADDITIONALLY, ACCEPTANCE INDICATED ON THE ENGINEER'S COMMENT FORM, ALONG WITH THE COMPLETED, FINAL SUBMITTAL SHALL THEN BE FILED BY THE CONTRACTOR AND ACKNOWLEDGED AS ACCEPTED BY THE PERMITTING AGENCY PRIOR TO INSTALLATION OF THESE ITEMS.

SPECIFICATION SECTION OR DRAWING	ITEM						
01 88 15	ANCHORAGE AND BRACING						
13 34 23	FABRICATED STRUCTURES						
40 05 15	PIPING SUPPORT SYSTEMS						
43 40 10	LIME SLURRY CHEMICAL STORAGE AND FEED SYSTEM						
OTHER	ANY EQUIPMENT OR COMPONENT IN WHICH A TECHNICAL SPECIFICATION REQUIRES SUBMITTAL OF EQUIPMENT OR ANCHORAGE SYSTEM CALCULATIONS						

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GENERAL NOTES:

- THE STATEMENT OF SPECIAL INSPECTIONS DRAWINGS PROVIDE PROJECT COMPLIANCE WITH THE PROVISIONS OF THE INTERNATIONAL BUILDING CODE (IBC) CHAPTER 17 FOR SPECIAL INSPECTION, STRUCTURAL OBSERVATION, AND TESTING FOR WIND AND SEISMIC RESISTANCE AS APPLICABLE. EXCEPT WHERE OTHERWISE NOTED, THIS INSPECTION IS OWNER FURNISHED.
- STANDARD SPECIAL INSPECTION REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS ARE CONTAINED
- STANDARD SPECIAL INSPECTION REQUIREMENTS FOR STRUCTURAL COMPONENTS. REGARDLESS OF WIND OR SEISMIC DESIGN CATEGORIES, ARE CONTAINED IN TABLE 2. STANDARD TESTING REQUIREMENTS FOR STRUCTURAL COMPONENTS ARE CONTAINED IN TABLE 3.
- PROJECT SPECIFIC REQUIREMENTS FOR STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORIES C, D, E, OR F ARE CONTAINED IN TABLE 4. ADDITIONAL TESTING REQUIREMENTS FOR STRUCTURAL RESISTANCE ARE CONTAINED IN TABLE 1.
- PROJECT SPECIFIC REQUIREMENTS FOR STRUCTURES SUBJECT TO NOMINAL DESIGN WIND SPEEDS IN
- FOR ADDITIONAL REQUIREMENTS, REFER TO SPECIFICATION SECTION 01 45 33, SPECIAL INSPECTION, OBSERVATION AND TESTING. THESE INCLUDE:
 - CONTRACTOR'S REQUIREMENTS TO PROVIDE ACCESS TO THE WORK FOR REQUIRED INSPECTIONS, AND TO PROVIDE NOTICE OF REQUIRED INSPECTIONS AND STRUCTURAL OBSERVATION.
 - CONTRACTOR'S STATEMENT OF RESPONSIBILITY FOR WORK TO BE PERFORMED ON SYSTEMS DESIGNATED UNDER THE STATEMENT OF SPECIAL INSPECTIONS PLAN FOR WIND OR SEISMIC
 - C. DEFINITIONS AND TERMINOLOGY USED IN THIS STATEMENT OF SPECIAL INSPECTIONS.

SPECIAL INSPECTION:

- SPECIAL INSPECTION WILL BE IN ACCORDANCE WITH IBC SECTIONS 1704 AND 1705 TOGETHER WITH LOCAL AND STATE AMENDMENTS. REFER TO THE TABLES CONTAINED ON THESE GENERAL SHEETS FOR PROJECT SPECIFIC INSPECTION TYPES AND FREQUENCIES.
- SPECIAL INSPECTIONS WILL BE PROVIDED BY A CERTIFIED OR QUALIFIED INSPECTOR AND ASSOCIATED TESTING WILL BE PERFORMED BY AN APPROVED ACCREDITED INDEPENDENT AGENCY. THE OWNER WILL SECURE AND PAY FOR THE SERVICES OF THE AGENCY TO PERFORM ALL SPECIAL INSPECTION AND ASSOCIATED TESTS. INSPECTORS FOR EACH SYSTEM AND MATERIAL WILL BE INTERNATIONAL CODE COUNCIL (ICC) CERTIFIED OR OTHERWISE APPROVED BY THE BUILDING OFFICIAL.
- THE SPECIAL INSPECTOR WILL OBSERVE THE INDICATED WORK FOR COMPLIANCE WITH THE APPROVED CONTRACT DOCUMENTS AND SUBMIT RECORDS OF INSPECTION. ALL DISCREPANCIES WILL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.
- SPECIAL INSPECTION AND ASSOCIATED TESTING REPORTS WILL BE SUBMITTED TO THE ENGINEER CONTRACTOR BUILDING OFFICIAL, AND OWNER WITHIN ONE WEEK OF INSPECTION OR WITHIN ONE WEEK OF TEST COMPLETION. INSPECTIONS FOR WHICH REPORTING WILL BE REQUIRED ARE NOTED IN THE TABLES CONTAINED ON THIS STATEMENT OF SPECIAL INSPECTIONS.
- AT THE CONCLUSION OF CONSTRUCTION, A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS AND CORRECTION OF PREVIOUSLY NOTED DISCREPANCIES WILL BE SUBMITTED.
- SPECIAL INSPECTION REPORTS AND FINAL REPORT IN ACCORDANCE WITH SECTION 1704.2.4 SHALL BE SUBMITTED TO THE BUILDING OFFICIAL PRIOR TO THE TIME THAT PHASE OF THE WORK IS APPROVED FOR OCCUPANCY.

GEOTECHNICAL OBSERVATION:

- ALL FOUNDATION BEARING SURFACES SHALL BE INSPECTED BY GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF REINFORCING STEEL. ADDITIONAL SPECIAL INSPECTION REQUIREMENTS ARE LISTED IN TABLE 1.
- GEOTECHNICAL TESTING REQUIREMENTS ARE LISTED IN TABLE 3.

SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE:

- SPECIAL INSPECTIONS REQUIREMENTS FOR SEISMIC RESISTANCE WILL BE IN ACCORDANCE WITH IBC SECTION 1705.11 TOGETHER WITH LOCAL AND STATE AMENDMENTS.
- SPECIAL INSPECTIONS REQUIREMENTS FOR SEISMIC RESISTANCE SHALL APPLY TO THE SYSTEMS AND COMPONENTS LISTED IN TABLE 4.
- MAIN SYSTEMS REQUIRED TO BE COVERED UNDER PROJECT SPECIAL INSPECTION REQUIREMENTS INCLUDE THE FOLLOWING TOGETHER WITH THEIR CONNECTIONS. REFER TO SPECIFICATION 01 45 33, SPECIAL INSPECTION, OBSERVATION AND TESTING
 - A. LIME CONTAINMENT STRUCTURES.

SPECIAL INSPECTIONS FOR WIND RESISTANCE:

SPECIAL INSPECTIONS REQUIREMENTS FOR WIND RESISTANCE IN ACCORDANCE WITH IBC SECTION 1705.10

STRUCTURAL OBSERVATION:

SYSTEM FOR LIME

- STRUCTURAL OBSERVATION WILL BE IN ACCORDANCE WITH IBC SECTION 1704.5 TOGETHER WITH LOCAL AND STATE AMENDMENTS. REFER TO PROJECT SPECIFIC NOTES ON THIS SHEET.
- ONSITE STRUCTURAL OBSERVATION WILL BE PERFORMED FOR EACH IDENTIFIED SEISMIC FORCE-OR WIND FORCE-RESISTING SYSTEM, INCLUDING FOUNDATIONS AND CONNECTIONS. REFER TO THE GENERAL STRUCTURAL NOTES FOR THE BASIC SEISMIC AND WIND FORCE-RESISTING SYSTEMS FOR THE STRUCTURES INCLUDED IN THE
- STRUCTURAL OBSERVATION WILL BE PERFORMED BY A REGISTERED PROJECT DESIGN PROFESSIONAL FOR GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS. STRUCTURAL OBSERVATION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR ANY REQUIRED SPECIAL INSPECTIONS OR INSPECTIONS BY THE BUILDING OFFICIAL.
- STRUCTURAL OBSERVATION REPORTS, NOTING ANY DEFICIENCIES IN OBSERVED CONSTRUCTION, WILL BE DELIVERED TO THE CONTRACTOR, BUILDING OFFICIAL, AND OWNER FOLLOWING EACH OBSERVATION. THE CONTRACTOR WILL BE NOTIFIED ON-SITE OR BY PHONE OR EMAIL WITHIN 24 HOURS UPON FINDING DEFICIENCIES.
- AT THE CONCLUSION OF CONSTRUCTION, A WRITTEN STATEMENT WILL BE PROVIDED TO VERIFY THAT THE STRUCTURAL OBSERVATION SITE VISITS WERE MADE AND WHETHER THERE REMAIN ANY STRUCTURAL DEFICIENCIES THAT HAVE NOT BEEN RESOLVED.

STAGE

STRUCTURAL OBSERVATION WILL INCLUDE VISUAL OBSERVATION OF THE STRUCTURAL SYSTEM AT SIGNIFICANT CONSTRUCTION STAGES AND AT COMPLETION OF THE STRUCTURAL SYSTEM FOR EACH STRUCTURE CONTAINED IN THE WORK. THE CONTRACTOR SHALL SCHEDULE AND FACILITATE STRUCTURAL OBSERVATION INCLUDING THE

ITEMS

COMMENTS

	STORAGE FACILITY	O II I O E	i i i i i i i i i i i i i i i i i i i	COMMENT
1.	CONCRETE STRUCTURES	PRIOR TO FIRST CONCRETE PLACEMENT ON FIRST PRIMARY LIQUID CONTAINING STRUCTURE WHEN ITEMS CAN STILL BE REVISED	REINFORCING STEEL, WALL DOWELS, WATERSTOPS, EMBEDS, AND SIMILAR ITEMS	NOTE 1
2.	CONCRETE STRUCTURES	AT COMPLETION OF PLACEMENT OF ALL CONCRETE COMPONENTS FOR THE FIRST PRIMARY LIQUID CONTAINING STRUCTURE	CONCRETE TOLERANCES, FINISHING, LIQUID TIGHTNESS, AND SIMILAR ITEMS	NOTE 1
3.	AT ADDITIONAL TIMES DURING CONSTRUCTION AT WHICH THE ENGINEER OF RECORD OR OWNER DEEM THE NEED FOR ADDITIONAL STRUCTURAL OBSERVATION			NOTE 1
4.	AT SUBSTANTIAL COMPLETION OF PRIMARY STRUCTURAL FEATURES FOR DETERMINATION OF FINAL CONDITION OF STRUCTURE			NOTE 1

STRUCTURAL OBSERVER TO DISCUSS ITEMS AND SITE SPECIFIC CONDITIONS WITH SPECIAL INSPECTOR AND FIELD INSPECTION STAFF DURING OBSERVATION.

STRUCTURAL ABBREVIATIONS

	0111001010101	<u> </u>	777710110
@ AB ACI ADDL	AT ANCHOR BOLT AMERICAN CONCRETE INSTITUTION ADDITIONAL	J JB JT	JOIST JOIST BEARING JOINT
ADJ AFF AHR AISC	ADJACENT ABOVE FINISH FLOOR ANCHOR ANCHOR AMERICAN INSTITUTE OF STEEL	KIP(S) KSF KSI	THOUSAND POUNDS KIPS PER SQUARE FOOT KIPS PER SQUARE INCH
AL ALLOW ALTN ANSI APPROX APVD ARCH. ASTM	AMERICAN INSTITUTE OF STEEL CONSTRUCTION ALUMINUM ALLOWABLE ALTERNATE AMERICAN NATIONAL STANDARDS INSTITUTE APPROXIMATE APPROVED ARCHITECTURAL AMERICAN SOCIETY FOR TESTING AND MATERIALS	L LB(S) LF LL LLH LLV LNTL LONG. LPT LSL	ANGLE OR L-SHAPE POUND(S) FORCE LINEAR FEET LIVE LOAD LONG LEG HORIZONTAL LONG LEG VERTICAL LINTEL LONGITUDINAL LOW POINT LONG SLOTTED HOLE
AWS BF BLDG BO BOT BRG	AMERICAN WELDING SOCIETY BOTTOM FACE BUILDING BOTTOM OF BOTTOM BEARING	MATL MAX MB MECH MET. MFD MFR(S)	MATERIAL MAXIMUM MACHINE BOLT MECHANICAL METAL MANUFACTURED MANUFACTURER (MANUFACTURER'S)
C CHKD PL CJ CL CLR COL	CHANNEL OR C-SHAPE CHECKERED PLATE CONSTRUCTION JOINT CENTERLINE CLEARANCE, CLEAR COLUMN	MIN MISC NA NIC NO. NTS	MINIMUM MISCELLANEOUS NOT APPLICABLE NOT IN CONTRACT NUMBER NOT TO SCALE
CONC CONN CONT COORD CRSI	CONCRETE CONNECTION CONTINUOUS COORDINATE CONCERTE REINFORCING STEEL INSTITUTE CENTER	OC OD O.F. OPNG(S) OPP	ON CENTER OUTSIDE DIAMETER OUTSIDE FACE OPENING(S) OPPOSITE
CTRD CU DBA DBL DEG DET DIA DIAG DIM. DIR DL	CENTERED CUBIC DEFORMED BAR ANCHOR DOUBLE DEGREE DETAIL DIAMETER DIAGONAL DIMENSION DIRECTION DEAD LOAD	PJF PKG PL PLF PREFAB PRELIM PRI PSF PSI PT PVC	PREMOLDED JOINT FILLER PACKAGE PLATE POUNDS FORCE PER LINEAR FOOT PREFABRICATE(D) PRELIMINARY PRIMARY POUNDS FORCE PER SQUARE FOOT POUNDS FORCE PER SQUARE INCH PRESSURE TREATED POLYVINYL CHLORIDE
DWG DWL EA EF EJ EL ELEC EMBED ENGR EQL EQL SP EQL SP EQPT	DRAWING DOWEL EACH EACH FACE EXPANSION JOINT ELEVATION ELECTRICAL EMBEDMENT, EMBED ENGINEER EQUAL EQUALLY SPACED EQUIPMENT	R RAD RC RECT REF REINF REQD RST SCHED SIM SM SOG SP	RADIUS, RISER RADIUS REINFORCED CONCRETE RECTANGULAR, RECTANGLE REFERENCE REINFORCE, REINFORCING REQUIRED REINFORCING STEEL SCHEDULE SIMILAR SLAB ON GRADE SPACE
EQUIV EW EXP JT EXST EXT	EQUIVALENT EACH WAY EXPANSION JOINT EXISTING EXTERIOR	SPEC(S) SPECD SQ SSL SST STD	SPECIFICATION(S) SPECIFIED SQUARE SHORT SLOTTED HOLE STAINLESS STEEL STANDARD
FAB FB FD FDN FF FG FL FRP	FABRICATE, FABRICATION FLAT BAR FLOOR DRAIN FDN FINISH FLOOR FINISH GRADE FLOOR FIBERGLASS REINFORCED PLASTIC	STL STR STRL STRUCT SYMM T&B TC	STEEL STRAIGHT STRUCTURAL STRUCTURE SYMMETRICAL TOP AND BOTTOM TOP OF CONCRETE, TOP OF CURB
FT FTG FV GA GALV	FEET, FOOT FOOTING FIELD VERIFY GAUGE, GAGE GALVANIZED (HOT DIP)	TEMP TF THK THKNS T.O. TST	TEMPERATURE TOP OF FOOTING, TOP FACE THICK THICKNESS TOP OF TOP OF STEEL
GRTG H.A.S.	GRATING HEADED ANCHOR STUD	TW TYP UNIF	TOP OF WALL TYPICAL UNIFORM, UNIFORMLY
HDR HORIZ HPT HSS HVAC	HEADER HORIZONTAL HIGH POINT HOLLOW STRUCTURAL SECTION HEATING, VENTILATION, AND AIR CONDITIONING	UON VERT W W/	UNLESS OTHERWISE NOTED VERTICAL WIDE FLANGE BEAM WITH
IBC ID I.F. IN. INSUL INTMD INTR	INTERNATIONAL BUILDING CODE INSIDE DIAMETER INSIDE FACE INCH(ES) INSULATION INTERMEDIATE INTERIOR	W/O WP WS WT WWF	WITHOUT WORKING POINT WATERSTOP, WATER SURFACE WEIGHT WELDED WIRE FABRIC

FOR ABBREVIATIONS NOT LISTED, SEE GENERAL ABBREVIATIONS AND ASME Y14.38 - "ABBREVIATIONS AND ACRONYMS FOR USE ON DRAWINGS AND RELATED DOCUMENTS" AS DISTRIBUTED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

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STRUCTURAL SPECIAL INSPECTIONS AND ABBREVIATIONS

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TABLE 1

REQUIRED NON-STRUCTURAL SPECIAL INSPECTION

			R TO SPECIFIC				
SYSTEM OR MATERIAL	2012 IBC CODE REFERENCE	REFERENCED STANDARD	PERIODIC OWNER FURNISHED SPECIAL INSPECTION (SEE NOTE 1)	CONTINUOUS OWNER FURNISHED SPECIAL INSPECTION	REQUIRED REPORTING BY SPECIAL INSPECTOR TO DESIGNATED DISTRIBUTION LIST		TESTING FOR SPECIAL INSPECTION
			GEOTECHNICAL				
1. SOILS:		715.00					
A, VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	1705.6, 1803.5.8, 1803.5.9, 1804.5	SECTION 31 23 13, SUBGRADE PREPARATION	Х		X	PROFESSIONAL OBSERVATION BY GEOTECHNICAL ENGINEER	
B, VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	1705.6	SECTION 31 23 16, EXCAVATION	Х		X	PROFESSIONAL OBSERVATION BY GEOTECHNICAL ENGINEER	
C. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	1705.6	SECTION 31 23 23, FILL AND BACKFILL	Х		X		SEE TABLE 3 FOR GRADATION TEST REQUIREMENTS
D.VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	1705.6, 1803.5.8	SECTION 31 23 23, FILL AND BACKFILL		Х	Х		SEE TABLE 3 FOR DENSITY TEST REQUIREMENTS
E. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY		SECTION 31 23 13, SUBGRADE PREPARATION	х		Х	PROFESSIONAL OBSERVATION BY GEOTECHNICAL ENGINEER	SEE TABLE 3 FOR DENSITY TEST REQUIREMENTS
			GEI	NERAL			•
1. CONSTRUCTION MATERIALS AND SYSTEMS THAT ARE ALTERNATIVES TO MATERIALS AND SYSTEMS PRESCRIBED BY CODE	1705.1.1 ITEM 1		X		Х		
2. UNUSUAL DESIGN APPLICATION OF CODE MATERIALS	1705.1.1 ITEM 2			Х	Х		
3. INSTALLATION OF MATERIALS THAT REQUIRE ADDITIONAL MANUFACTURER'S INSTRUCTIONS BEYOND CODE REQUIREMENTS	1703.4.2, 1705.1.1 ITEM 3	ICC-ES EVALUATION REPORTS		Х	Х		
CEE TABLE 2			STRU	CTURAL			

NOTES:

1. PERIODIC INSPECTION IS DEFINED AS INSPECTION BY THE SPECIAL INSPECTOR OF ALL MATERIALS AND SYSTEMS, IN SOME CASES PERFORMED DURING THEIR PLACEMENT AND IN ALL CASES PERFORMED UPON COMPLETION OF THEIR PLACEMENT. THE COMPLETION INSPECTION SHALL BE PERFORMED SO THAT WORK CAN BE CORRECTED PRIOR TO OTHER RELATED WORK PROCEEDING

TABLE 2 REQUIRED STRUCTURAL SPECIAL INSPECTION REFER TO SPECIFICATION SECTION 01 45 33

		KEFE	TO SPECIFICA	HON SECTION	014533		
SYSTEM	2012 IBC CODE REFERENCE	REFERENCED STANDARD	PERIODIC OWNER FURNISHED SPECIAL INSPECTION (SEE NOTE 1)	CONTINUOUS OWNER FURNISHED SPECIAL INSPECTION	REQUIRED REPORTING BY SPECIAL INSPECTOR TO DESIGNATED DISTRIBUTION LIST		TESTING FOR SPECIAL INSPECTION
			CONC	CRETE			
1. INSPECTION OF REINFORCING STEEL AND PLACEMENT	1705.3, 1903.1, 1910.4	ACI 318: 3.5, 7.1-7.7	X	JILIL	X		
2. INSPECTION OF ANCHORS CAST IN CONCRETE	1705.3, 1908.5, 1909.1	ACI 318: 8.1.3, 21.2.8	Х		Х		
3. INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS	1705.3, 1909.1	ACI 318: 3.8.6, 8.1.3, 21.2.8, ICC-ES EVALUATION REPORTS	X		Х	PROVIDE CONTINUOUS SPECIAL INSPECTION WHERE REQUIRED BY ICC-ES REPORT	
VERIFYING USE OF REQUIRED DESIGN MIX	1705.3, 1904.2, 1910.2, 1910.3	ACI 318: Ch. 4, 5.2-5.4	Х		Х		
5. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	1705.3, 1910.10	ASTM C 172, ASTM C 31, ACI 318: 5.6, 5.8		Х	X		SEE TABLE 3 FOR CONCRETE TEST REQUIREMENTS
6. INSPECTION OF CONCRETE FOR PROPER APPLICATION TECHNIQUES	1705.3, 1910.6, 1910.7, 1910.8	ACI 318: 5.9, 5.10		Х	Х		
7. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	1705.3, 1910.9	ACI 318: 5.11-5.13	Х		х		
8. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED	1705.3, 1906.1	ACI 318: 6.1.1	X		Х		
9. INSPECTION OF WATERSTOPS FOR PROPER SHAPE, LOCATION, JOINT QUALITY, AND SURROUNDING CONCRETE PLACEMENT			X		Х		
10. VERIFY PROPER INSTALLATION OF MECHANICAL REINFORCING SPLICES AND CONNECTIONS	1705.1.1 ITEM 3, 1705.3	ICC-ES EVALUATION REPORTS	Х		Х		

1. PERIODIC INSPECTION IS DEFINED AS INSPECTION BY THE SPECIAL INSPECTOR OF ALL MATERIALS AND SYSTEMS, IN SOME CASES PERFORMED DURING THEIR PLACEMENT AND IN ALL CASES PERFORMED UPON COMPLETION OF THEIR PLACEMENT. THE COMPLETION INSPECTION SHALL BE PERFORMED SO THAT WORK CAN BE CORRECTED PRIOR TO OTHER RELATED WORK PROCEEDING

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STRUCTURAL SPECIAL INSPECTIONS

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			G FOR REQUIRE	LE 3 D SPECIAL INSPI TION SECTION 01			
MATERIAL	TYPE OR SCOPE	STANDARD	2012 IBC CODE REFERENCE	FREQUENCY	BY WHOM	REQUIRED REPORTING TO DESIGNATED DISTRIBUTION LIST	COMMENTS
			GEOTE	CHNICAL			
CONTROLLED FILL	GRADATION	ASTM D422	1704.7	SECTION 31 23 23, FILL AND BACKFILL	OWNER'S APPROVED TESTING AGENCY	x	
CONTROLLED FILL	COMPACTION	ASTM D698	1704.7	SECTION 31 23 23, FILL AND BACKFILL	OWNER'S APPROVED TESTING AGENCY	X	
CONTROLLED FILL	DENSITY	ASTM D1556, D6938	1704.7	SECTION 31 23 23, FILL AND BACKFILL	OWNER'S APPROVED TESTING AGENCY	X	
PREPARED SUBGRADE	DENSITY	ASTM D1556, D6938	1704.7	SECTION 31 23 13, SUBGRADE PREPARATION	OWNER'S APPROVED TESTING AGENCY	X	
+			CONG	RETE			
CONCRETE	STRENGTH	ASTM C39	1704.4, 1905.6	ONCE EACH DAY, BUT NOT LESS THAN ONE SAMPLE FOR EACH 100 CUBIC YARDS OR 5,000 SFT OF WALLS OR SLABS PLACED	OWNERS APPROVED TESTING AGENCY	X	
CONCRETE	SLUMP	ASTM C143, C94	1704.4	ONE SAMPLE PER STRENGTH TEST	OWNER'S APPROVED TESTING AGENCY	X	
CONCRETE	AIR CONTENT	ASTM C231, C94	1704.4	ONE SAMPLE PER STRENGTH TEST	OWNER'S APPROVED TESTING AGENCY	X	
CONCRETE	TEMPERATURE	ASTM C1064	1704.4	ONE SAMPLE PER STRENGTH TEST	OWNER'S APPROVED TESTING AGENCY	X	

	BE	OUIDED SPECIAL	INSPECTION FO	TABLE 4	STANCE FOR ST	BUCTUBAL SVS	TEME	
		9535,755	FOR STANDARD	1.200.0000				
The Seismic Design Category ((SDC) for this Projec	et is D.						
SYSTEM	INSPECTION REQUIRED FOR FOLLOWING SEISMIC DESIGN CATEGORIES	2012 IBC CODE REFERENCE	STANDARD OR CODE	PERIODIC OWNER FURNISHED SPECIAL INSPECTION (SEE NOTE 1)	CONTINUOUS OWNER FURNISHED SPECIAL INSPECTION	REQUIRED REPORTING BY SPECIAL INSPECTOR TO DESIGNATED DISTRIBUTION LIST	St. Nachara	TESTING FOR SPECIAL INSPECTION
			PRO	OCESS MECHAN	ICAI			
INSTALLATION OF PIPING SYSTEMS MEANT TO CARRY FLAMMABLE, COMBUSTIBLE OR HIGHLY TOXIC CONTENTS AND ITS ASSOCIATED MECHANICAL UNITS	"C" AND ABOVE	1705.11.6 ITEM 3		x		х		
INSTALLATION OF OTHER SEISMIC SUPPORTS FOR DESIGNATED MECHANICAL SYSTEMS AND THEIR COMPONENTS	"C" AND ABOVE	1705.11.4		x		х	NOTES 2 & 3	
				STRUCTURAL				
SEISMIC-FORCE-RESISTING	"C" AND ABOVE	1705,11 ITEM 1			X	X		

- NOTES:

 1, PERIODIC INSPECTION IS DEFINED AS INSPECTION BY THE SPECIAL INSPECTOR OF ALL MATERIALS AND SYSTEMS, IN SOME CASES PERFORMED DURING THEIR PLACEMENT AND IN ALL CASES PERFORMED UPON COMPLETION OF THEIR PLACEMENT. THE COMPLETION INSPECTION SHALL BE PERFORMED SO THAT WORK CAN BE CORRECTED PRIOR TO OTHER RELATED WORK PROCEEDING AND COVERING THE INSPECTED WORK
- TESTING OF SYSTEMS AND THEIR ANCHORAGE SHALL BE IN CONFORMANCE WITH 2012 IBC SECTION 1705.12.
 CERTIFICATION OF SYSTEMS AND THEIR ANCHORAGE SHALL BE IN CONFORMANCE WITH 2012 IBC SECTION 1705.12.

TABLE 5

REQUIRED SPECIAL INSPECTION FOR WIND RESISTANCE FOR STRUCTURAL SYSTEMS

The 3-second-gust Nominal Wind Speed for this Project is 93 mph.

PERIODIC CONTINUOUS REPORTING BY COMMENTS OWNER OWNER SPECIAL FOR DETAILS, REFER TO	The Wind Exposure	is Category C.	Taractura .		REQUIRED	
	SYSTEM		OWNER FURNISHED SPECIAL INSPECTION	OWNER FURNISHED SPECIAL	REPORTING BY SPECIAL INSPECTOR TO DESIGNATED DISTRIBUTION	FOR DETAILS, REFER TO SPECIFICATION SECTION

		=	TAB ESTING FOR SEISER TO SPECIFICA		_		
MATERIAL	TYPE OR SCOPE	STANDARD	2012 IBC CODE REFERENCE	FREQUENCY	BY WHOM	REQUIRED REPORTING TO DESIGNATED DISTRIBUTION LIST	COMMENTS
DESIGNATED SEISMIC SYSTEM COMPONENTS (AND ASSOCIATED ANCHORAGES) SUBJECT TO PROVISIONS OF ASCE 7 SECTION 13.2.2	CERTIFICATE OF COMPLIANCE	ASCE 7 SECTION 13.2.2	1705.12 ITEM 2	ER EACH SYSTEM OR COMPONENT	MANUFACTURER	×	NOTE 2
DESIGNATED SEISMIC SYSTEM COMPONENTS (AND ASSOCIATED ANCHORAGES) SUBJECT TO PROVISIONS OF ASCE 7 SECTION 13.2.1	CERTIFICATE OF COMPLIANCE	ASCE 7 SECTION 13.2.1	1705.12 ITEM 3	EACH SYSTEM OR COMPONENT	MANUFACTURER	×	NOTE 2

- 1. TESTING AND QUALIFICATION FOR SEISMIC RESISTANCE ARE REQUIRED FOR SEISMIC-FORCE-RESISTING SYSTEMS IN STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY
- C, D, E, OR F, UNLESS OTHERWISE NOTED.

 2. BASED ON ACTUAL TEST ON SHAKE TABLE, BY THREE-DIMENSIONAL SHOCK TESTS, BY AN ANALYTICAL METHOD USING DYNAMIC CHARACTARISTICS AND FORCES, BY THE USE OF EXPERIENCE DATA, OR BY MORE RIGOROUS ANALYSIS PROVIDING FOR EQUIVALENT SAFETY.

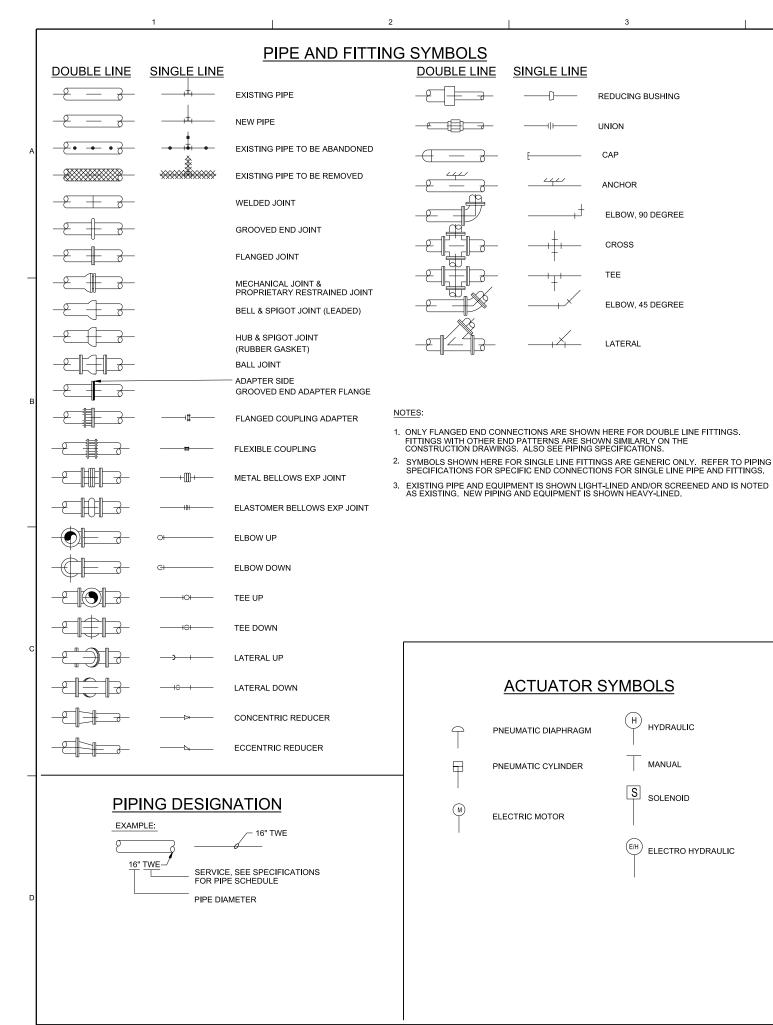
STRUCTURAL SPECIAL INSPECTIONS

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PROJ G-06 **B** DWG SHEET

CODE DATA INTERNATIONAL BUILDING CODE 2012 EDITION APPLICABLE CONSTRUCTION CODES
AS MODIFIED BY THE STATE OF GEORGIA BUILDING: SODIUM PERMANGANATE FACILITY INTERNATIONAL BUILDING CODE, 2012 EDITION GENERAL INFORMATION INTERNATIONAL PLUMBING CODE, 2012 EDITION
INTERNATIONAL MECHANICAL CODE, 2012 EDITION
INTERNATIONAL FUEL GAS CODE, 2012 EDITION
INTERNATIONAL FUEL GAS CODE, 2012 EDITION
INTERNATIONAL ENERGY CONSERVATION CODE, 2009 EDITION GROUP: USE AND OCCUPANCY CLASSIFICATION (CHAPTER 3) MIXED USE: NA INTERNATIONAL FIRE CODE, 2012 EDITION NATIONAL ELECTRICAL CODE, 2011 EDITION CONSTRUCTION
CLASSIFICATION (IBC 602 & TABLE 503) TYPE VB AREA AND HEIGHT LIMITATIONS MAXIMUM ALLOWABLE AREA 5,000 SF (TABLE 503) ACTUAL AREA: 242 SF MAXIMUM ALLOWABLE STORIES ACTUAL NUMBER OF STORIES: CONTROL PANEL -MAXIMUM ALLOWABLE HEIGHT 40 FT ACTUAL HEIGHT: 11 FT OCCUPANCY / EGRESS INFORMATION WATER 20', HEATER **DESIGN OCCUPANCY** SODIUM PERMANGANATE SODIUM PERMANGANATE (TABLE 1004.1.2) FEED PUMPS EGRESS WIDTH BASED ON 0.2" (32" MIN) OCCUPANCY (TABLE 1008.1.1 / 1005.3.2) 4'- 1/2 " REQUIRED FIRE RESISTANT RATINGS 3'-6" MAIN CIRCUIT BREAKER **BUILDING ELEMENTS (TABLE 601)** 0 STRUCTURAL FRAME NA EXTERIOR BEARING WALLS NA LOAD CENTER INTERIOR BEARING WALLS NA INTERIOR NON-BEARING WALLS NA FLOOR CONSTRUCTION NA ROOF CONSTRUCTION NA - FLOOR GRATING SHAFT ENCLOSURE NA STAIRWAY ENCLOSURE NA • F. EXT-1 CHEMICAL CONTAINMENT CORRIDOR NA ALLOWABLE AREA OF EXTERIOR DOORS AND WINDOWS NA L_{S2} - S1 OCCUPANCY SEPARATIONS NA INCIDENTAL USE AREAS NA ACCESSORY USE AREAS NA NON-SEPARATED USE NA NA FIRE SEPARATION DISTANCE CODE COMPLIANT BUILDING ACCESS RAMP WITH HANDRAILS DISTANCE FROM ADJACENT BUILDING OR PROPERTY LINE > 30 FT LIFE SAFETY PLAN EACH SIDE BY BLDG MANUFACTURER **EXIT REQUIREMENTS** REQUIRED EXITS (TABLE 1015.1): MAX. EXIT ACCESS TRAVEL DISTANCE HAZARDOUS MATERIAL INFORMATION 150 FT PLAN ALLOWED: (TABLE 1016.1) MAX. COMMON PATH TRAVEL: (TABLE 1014.3) 25 FT **BUILDING OCCUPANCY CLASSIFICATION: GENERAL NOTES:** SAFETY MAX. DEAD ENDS: (1018.4) **CHEMICAL STORED:** NA FOR CHEMICAL STORAGE BUILDING AND COMPONENTS, SEE SPECIFICATION SECTION 13 34 23. SODIUM PERMANGANATE - LIQUID (20%) CORRIDOR WIDTH (TABLE 1018.2): 3 FT ALLOWABLE AMOUNT PER CONTROL AREA MIN. EGRESS WIDTH (TABLE 1005.1): **LEGEND** 3 FT IBC TABLE 307.1 (1): 50 GALS (SPRINKLERED BLDG) LIFE ACTUAL AMOUNT STORED: 1000 GAL (TWO 500 GAL TANKS) FIRE PROTECTION HAZARDOUS CLASSIFICATION: HIGH-HAZARD GROUP H-3 (IBC 307) TRAVEL DISTANCE (X = TOTAL DISTANCE PROVIDED SPRINKLERS (IBC SECT 903) HEALTH FIRE EXTINGUISHERS (SECT 906) PROVIDED EGRESS WIDTH (IN INCHES) FLAMMABILITY: **EXIT LIGHTING** PROVIDED • F. EXT-1 FIRE EXTINGUISHER REACTIVITY: EXIT LIGHT, ONE SIDED SPECIAL: OXIDIZER (CLASS 2) VERIFY SCALE INCOMPATABILITIES: ACIDS, PEROXIDES & ALL COMBUSTIBLE ORGANIC/READILY OZIDIZED MATERIALS BAR IS ONE INCH ON EYEWASH/SAFETY SHOWER EXTINGUISHING MEDIA: WATER SPRAY S1 = NFPA HAZEMAT DIAMOND FOR CHEMICAL STORED PROJ S2 = DANGER - NO SMOKING G-07 <u>Q</u> DWG SHEET \$PWURL pw://projectwise.ch2m.com;DEN001/Documents/486753&space;-&space;ACUTATOR&space;AND&space;LIME&space;SYSTEM&space;IMPRO/DESIGN/Drawings/GEN/Dlv/001-G-0007 486753.dgn FILENAME: 001-G-0007 486753.dgn PLOT DATE: 8/6/2014 PLOT TIME: 11:38:50 AM



VALVE SYMBOLS

REDUCING BUSHING

UNION

CAP

ANCHOR

CROSS

TEE

LATERAL

ACTUATOR SYMBOLS

PNEUMATIC DIAPHRAGM

PNEUMATIC CYLINDER

ELECTRIC MOTOR

HYDRAULIC

MANUAL

SOLENOID

ELECTRO HYDRAULIC

ELBOW, 90 DEGREE

ELBOW, 45 DEGREE

SINGLE LINE DOUBLE LINE —— GATE — KNIFE GATE OR — | **▼** | BUTTERFLY OR 🗍 📙 BALL SEATING PORT ECCENTRIC PLUG —₩— NEEDLE or 🗍 📗 DIAPHRAGM or 🗐 —D&I— PINCH SWING CHECK → BALL CHECK HOSE VALVE (HV- X) OR (V-X) \langle sangleSAMPLE **③** MUD PRESSURE RELIEF AIR AND/OR VACUUM RELEASE - REGULATED SIDE PRESSURE CONTROL (INTERNAL PILOT) REGULATED SIDE PRESSURE CONTROL (EXTERNAL PILOT)

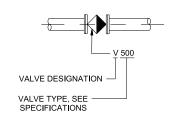
MULTI-PORT VALVE

ARROWS INDICATE FLOW PATTERN. SEATING PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.

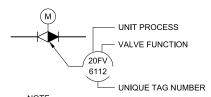
TELESCOPING SCUM VALVE

VALVE DESIGNATIONS

MANUAL VALVES AND CHECK VALVES

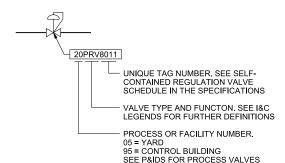


CONTROL VALVES



SEE I&C LEGENDS FOR FURTHER DEFINITIONS AND ACTUATOR TYPES.

SELF-CONTAINED REGULATING VALVES



GENERIC PIPING NOTES

- 1. LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
- OF PIPE, UNLESS OTHERWISE INDICATED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE
- 3. LOCATION AND NUMBER OF PIPE HANGERS AND PIPE SUPPORTS SHOWN IS ONLY APPROXIMATE. CONTRACTOR SHALL DESIGN SUPPORTS AS SPECIFIED.
- 4. ALL JOINTS SHALL BE WATERTIGHT. WALL PIPES SHALL BE USED WHEREVER
- THRUST PROTECTION AS SPECIFIED, UNLESS OTHERWISE NOTED. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED.
- THROUGHOUT THE DRAWINGS, WHEREVER APPLICABLE. NOT ALL OF THE VARIOUS PIPING COMPONENTS ARE NECESSARILY USED IN THE PROJECT.
- UNLESS OTHERWISE NOTED.
- 9. WHERE A GROOVED END COUPLING IS SHOWN, IT SHALL BE THE RIGID JOINT TYPE, UNLESS OTHERWISE SPECIFIED. WHERE A FLANGED COUPLING ADAPTER IS SHOWN, A STANDARD FLANGE SHALL BE JOINED TO THE COUPLING ADAPTER.

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MECHANICAL LEGEND AND NOTES

- 2. SIZE OF FITTINGS SHOWN ON DRAWINGS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
- PIPING PASSES FROM A STRUCTURE TO BACKFILL. 5. ALL FLEXIBLE CONNECTORS AND COUPLING ADAPTERS SHALL BE PROVIDED WITH
- 6 SYMBOLS LEGENDS AND PIPE USE IDENTIFICATIONS SHOWN SHALL BE FOLLOWED
- 7. ALL BURIED PIPING SPECIFIED TO BE PRESSURE TESTED, EXCEPT FLANGED, WELDED, OR SCREWED PIPING, SHALL BE PROVIDED WITH THRUST PROTECTION AS SPECIFIED.
- 8. NUMBER AND LOCATION OF UNIONS SHOWN ON DRAWINGS IS ONLY APPROXIMATE. PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.

SYMBOL	1 DESCRIPTION	2 SYMBOL	3	SYMBOL	4 LESCRIPTION	SYMBOL	6 DESCRIPTION	
	ONE-LINE DIAGRAM-1		POWER SYSTEM PLAN-1		CONTROL DIAGRAM-1		CONTROL DIAGRAM-2	
			PANELBOARD - SURFACE MOUNTED		PUSH-BUTTON SWITCH. MOMENTARY CONTACT.			S S S S S S S S S S S S S S S S S S S
400	CIRCIUT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE, UNO	LPXXA	— PANELBOARD LETTER OR NUMBER		NORMALLY OPEN PUSH-BUTTON SWITCH, MOMENTARY CONTACT,	<u>+ -</u>	BATTERY	July 1
100/M	CIRCUIT BREAKER, MAGNETIC TRIP ONLY, TRIP RATING SHOWN, 3 POLE, UNO				NORMALLY CLOSED PUSH BUTTON SWITCH, MAINTAINED CONTACTS WITH	۱'	LIMIT SWITCH, NORMALLY OPEN, CLOSES AT END	
A 100	SWITCH, CURRENT RATING INDICATED, 3 POLE, UNO	→ LPXXA	DP - DISTRIBUTION PANEL HOME RUN - DESTINATION SHOWN		MECHANICAL INTERLOCK	%	OF TRAVEL	\vdash
60 (3)	FUSE, CURRENT RATING AND QUANTITY INDICATED	or -///-	EXPOSED CONDUIT AND CONDUCTORS*		A PARITION OF FATAR OWNER WANTED CONTACT	0—10	LIMIT SWITCH, NORMALLY CLOSED, OPENS AT END OF TRAVEL	\mathbb{H}
1		G			3 POSITION SELECTOR SWITCH MAINTAINED CONTACT	<u> </u>	TEMPERATURE SWITCH, OPENS ON TEMPERATURE RISE	
	MAGNETIC STARTER WITH OVERLOAD, NEMA SIZE INDICATED, FVNR UNO	or -/#/ _G NOTE:	CONCEALED CONDUIT AND CONDUCTORS*	HAND OFF REMOTE	SELECTOR SWITCH - MAINTAINED CONTACT - CHART IDENTIFIES OPERATION WHEN NEEDED FOR CLARITY:	% %	TEMPERATURE SWITCH, CLOSES ON TEMPERATURE RISE	
AFD—	ELECTRONIC STARTER/SPEED CONTROL	CONDUCTORS IN 3/	NDUIT RUNS CONSIST OF TWO NO. 12, ONE NO. 12 GROUND 4" CONDUIT. RUNS MARKED WITH CROSSHATCHES INDICATE CONDUCTORS. CROSSHATCH WITH SUBSCRIPT "G" INDICATES		POSITION POSITION	T	FLOAT SWITCH, NORMALLY OPEN, CLOSES ON DESCENDING LEVEL	
	RVSS = REDUCED VOLTAGE SOFT STARTER AFD = AC ADJUSTABLE FREQUENCY DRIVE DC = DC ADJUSTABLE SPEED DRIVE	GREEN GROUND W	RE.		CKT HAND OFF REMOTE X - CLOSED CONTACT 1 X O O O - OPEN CONTACT	0,0	FLOAT SWITCH, NORMALLY OPEN, CLOSES ON	
-	RVAT = REDUCED VOLTAGE AUTO TRANSFORMER TYPE RVRT = REDUCED VOLTAGE REACTOR TYPE	——————————————————————————————————————	CROSSHATCHES WITH BAR INDICATE NO 10 CONDUCTOR. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.		2 0 0 X	6,	RISING LEVEL	
	CABLE OR BUS CONNECTION POINT		CONDUIT AND CONDUCTOR CALLOUT, SEE LEGEND.		TOGGLE SWITCH, ON-OFF TYPE	T	PRESSURE SWITCH, NORMALLY CLOSED, OPENS ON RISING PRESSURE	
	SURGE ARRESTER (GAP TYPE)	[A1] —		ON OFF		%	PRESSURE SWITCH, NORMALLY OPEN, CLOSES ON RISING PRESSURE	
(10	CAPACITOR - KVAR INDICATED, 3 PHASE		CONDUIT DOWN	- * <u>o T o </u>	SELECTOR SWITCH, ON-OFF TYPE	_		
]	CAPACITOR - NVAR INDICATED, 3 PHASE	o	CONDUIT UP	<u></u>				
B 3	AC MOTOR, SQUIRREL CAGE INDUCTION - HORSEPOWER INDICATED		CONDUIT, STUBBED AND CAPPED	<u>_</u>	MUSHROOM HEAD PUSHBUTTON SWITCH			
			CONDUIT TERMINATION AT CABLE TRAY		INDICATING LIGHT, PUSH-TO-TEST, LETTER INDICATES COLOR	_	GROUND SYSTEM PLAN	
G 500/625	GENERATOR, KW/KVA RATING SHOWN	——ЕХ——	EXISTING CONDUIT/ DUCT BANK	```		•	GROUND ROD	
	ANALOG METER WITH SWITCH - SCALE RANGE SHOWN	——ВD——	BUS DUCT - SEE SPECIFICATIONS	(A)	INDICATING LIGHT - LETTER INDICATES COLOR A - AMBER G - GREEN S - STROBE B - BLUE R - RED	•	GROUND ROD IN TEST WELL	H
0-600V	V = VOLTAGE KW = KILOWATTS A = AMPERAGE KVAR = KILOVARS	CE	CONCRETE ENCASED CONDUIT		C - CLEAR W - WHITE	— —G— —	GROUNDING CONDUCTOR, SIZE AS INDICATED	
	PF = POWER FACTOR	————	DIRECT BURIED CONDUIT	ETM	ELAPSED TIME METER	─ ∽	PIGTAIL FOR CONNECTION TO EQUIPMENT CABINET OR FRAME	AD 1095
- LDPM	DIGITAL POWER METER (MULTIFUNCTION)	——FО——	FIBER OPTIC CONDUIT	O(M)O	MOTOR STARTER CONTACTOR COIL	G	EQUIPMENT GROUND BUS	DY RO. TE 600
	GROUND	① or HH	GENERAL CONTROL OR WIRING DEVICE. LETTER SYMBOLS OR ABBREVIATIONS	O(CRX)O	CONTROL RELAY, X INDICATES NUMERICAL ORDER IN CIRCUIT	N	EQUIPMENT NEUTRAL BUS	CHTREE DUNWOODY ROA IBASSY ROW, SUITE 600 SA, 30328 PH: 770-604-90
÷			INDICATE TYPE OF DEVICE	o(™)o	TIME DELAY RELAY, X INDICATES NUMERICAL ORDER IN CIRCUIT			EE DUI:
15 KV 480-12 1 PH	A 20/240V TRANSFORMER, SIZE, VOLTAGE RATINGS,	cs	CONTROL STATION, SEE CONTROL DIAGRAMS FOR CONTROL DEVICE(S) REQUIRED.	(SV)	SOLENOID VALVE, X INDICATES NUMERICAL ORDER IN CIRCUIT			CHTRE MBASS GA, 30
J	AND PHASE INDICATED	30 🕝	NONFUSED DISCONNECT SWITCH, CURRENT RATING INDICATED, 3 POLE	──	CONTACT - NORMALLY OPEN			6600 PEACH 400 EME ATLANTA, G,
C 480-120\	POTENTIAL TRANSFORMER, VOLTAGE RATING				CONTACT - NORMALLY CLOSED			66(ATL
	AND QUANTITY INDICATED				REMOTE DEVICE			
100:5	CURRENT TRANSFORMER, RATIO(100:5) AND QUANTITY INDICATED (3)			0~0	TIME DELAY RELAY CONTACT, NORMALLY OPEN, CLOSES WHEN ENERGIZED AND TIMED OUT		COAXIAL CABLE	
A	CONNECTION POINT TO EQUIPMENT SPECIFIED IN OTHER			√ • <u>↑</u> •	TIME DELAY RELAY CONTACT, NORMALLY CLOSED, OPENS WHEN ENERGIZED AND TIMED OUT	=		8
	DIVISIONS. RACEWAY, CONDUCTOR AND CONNECTION IN THIS DIVISION			0,0	TIME DELAY RELAY CONTACT, CLOSES WHEN ENERGIZED, OPENS WHEN DE-ENERGIZED AND TIMED OUT	<u> </u>	MULTICONDUCTOR SHIELDED CABLE	-
T1/22	TRANSIENT VOLTAGE SURGE SUPPRESSOR			0 0	TIME DELAY RELAY CONTACT, OPENS WHEN	b #	DUPLEX RECEPTACLE	│ ₹
TVSS	TONGLET VOLTAGE SUNGE SUFFRESSUR			↓	ENERGIZED, CLOSES WHEN DE-ENERGIZED AND TIMED OUT			2 M HII
	TERMINAL BLOCK LUG			ollo	MOTOR SPACE HEATER		RELAY, WITH MECHANICAL LATCH	
Δ	DELTA CONNECTION				TERMINAL BLOCK, REMOTE	<u>(</u>		7
Y ,	WYE GROUNDED CONNECTION, SOLID GROUND			0	TERMINAL BLOCK, INTERNAL			F
					FUSED TERMINAL BLOCK			
D		NOTES:			FUSE, RATING INDICATED			
		1. THESE ARE STAND, MAY APPEAR ON TH	ARD LEGEND SHEETS. SOME SYMBOLS AND ABBREVIATIONS HE LEGEND AND NOT ON THE DRAWINGS.	CPT	TRANSFORMER, CONTROL POWER			
		2. FOR ADDITIONAL AI STRUCTURAL/ARCH	BBREVIATIONS OF OTHER DIVISIONS (HVAC, MECHANICAL, AND HITECTURAL) SEE OTHER LEGENDS.	120V	TO WHOL OTHER, CONTROL FOWER			VE
					THERMOCOUPLE			OR 0 ■
								PROJ
								DWG SHEET
\$PWURL		pw://proje	ctwise.ch2m.com:DEN001/Documents/486753&space-&spaceACUTATOR&s	pace;AND&spaceLIME&spac	e;SYSTEM&spaceIMPRO/DESIGN/Drawings/GEN/Dlv/001-G-0009_486753.c	ign FILENAME: 001	I-G-0009_486753.dgn PLOT DATE: 8/6/2014	PLO ⁻

CHEMICAL SYSTEMS AND

ACTUATOR IMPROVEMENTS
FAYETTE COUNTY WATER SYSTEM

NO. DATE

REVISION

RAVETTE COUNTY, GEORGIA

FAVETTE COUNTY

FAVETTE COUNT

400 EMBASSY ROW, SULLE 600 ATLANTA, GA, 30328 PH: 770-604-9095

ELECTRICAL LEGEND

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.

O THE AUGUST 2014

OJ 486753

G G-09

EET of

PLOT TIME: 11:38:44 AM

PROJ

DWG SHEET

VERIFY SCALE BAR IS ONE INCH ON

H2MHILL

LEGEND

ELECTRICAL

Y SCALE WY S

INSTRUMENT IDENTIFICATION

INSTRUMENT IDENTIFICATION LETTERS TABLE

SUCCEEDING-LETTERS

FIRST-LETTER

EXAMPLE SYMBOLS
FIRST LETTER(S)
CLARIFYING ABBREVIATIONS
BB SUCCEEDING LETTER(S) FIT UUL-X
UNIT NUMBER
LOOP NUMBER
UNIT PROCESS NUMBER

DIGITAL SYSTEM INTERFACES

ANALOG INPUT

ANALOG OUTPUT

DISCRETE INPUT

DISCRETE OUTPUT

	LETTER	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	READOUT OR PASSIVE FUNCTION	READOUT OR PASSIVE FUNCTION
	Α	ANALYSIS (+)		ALARM		
Ī	В	BURNER, COMBUSTION		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
Ī	С	USER'S CHOICE (*)			CONTROL	
Ī	D	DENSITY (S.G.)	DIFFERENTIAL			
	E	VOLTAGE		PRIMARY ELEMENT, SENSOR		
		FLOW RATE	RATIO (FRACTION)			
	G	USER'S CHOICE (*)		GLASS, GAUGE VIEWING DEVICE	GATE	
Ī	Н	HAND (MANUAL)				HIGH
Ī	I	CURRENT (ELECTRICAL)		INDICATE		
Ī	J	POWER	SCAN			
	ĸ	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
ı	L	LEVEL		LIGHT (PILOT)		LOW
Ī	М	MOTION	MOMENTARY			MIDDLE, INTERMEDIATE
Ī	N	TORQUE		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
	0	USER'S CHOICE (*)		ORIFICE, RESTRICTION		
	Р	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
	Q	QUANTITY	INTEGRATE, TOTALIZE			
Ī	R	RADIATION		RECORD OR PRINT		
İ	S	SPEED, FREQUENCY	SAFETY		SWITCH	
	Т	TEMPERATURE			TRANSMIT	
	U	MULTI VARIABLE		MULTI FUNCTION	MULTI FUNCTION	MULTI FUNCTION
	V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	

TABLE BASED ON THE INSTRUMENTATION, SYSTEMS, AND AUTOMATION SOCIETY (ISA) STANDARD.

ALARM

CONTROLLER

INDICATOR

RECORDER

TRANSMITTER

UNCLASSIFIED

SWITCH

EXAMPLE

X AXIS

Y AXIS

Z AXIS

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS. (*) WHEN USED, DEFINE THE MEANING HERE FOR THE PROJECT.

WELL

UNCLASSIFIED (*)

GENERAL INSTRUMENT OR FUNCTIONAL SYMBOLS

FIELD MOUNTED

REAR-OF-PANEL MOUNTED (OPERATOR INACCESSIBLE)

PANEL MOUNTED (OPERATOR ACCESSIBLE)

MCC MOUNTED

COMPUTER FUNCTION

PLC FUNCTION

CURRENT TO PNEUMATIC TRANSDUCER (BACK OF PANEL, IN A FLOW LOOP)

WEIGHT, FORCE

UNCLASSIFIED (*)

EVENT, STATE OR PRESENCE

POSITION

CURRENT

PNEUMATIC

RESISTANCE

PULSE FREQUENCY |

PULSE DURATION

W

Z

TRANSDUCERS

ANALOG

DIGITAL

VOLTAGE

FREQUENCY

HYDRAULIC

EXAMPLE

ACCESSORY DEVICES SPECIAL CASES

TRANSMITTER AS AN

ACCESSORY TO A

FLOW ELEMENT



UNCLASSIFIED (*)

RELAY, COMPUTE, CONVERT

DRIVE, ACTUATOR, UNCLASSIFIED FINAL

CONTROL FLEMENT

ON AND OFF EVENT

UNCLASSIFIED (*)

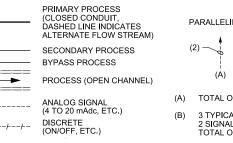
00 / HS

ON-OFF HAND SWITCH MAINTAINED CONTACT SWITCH (CONTROLLED DEVICE WILL RESTART ON RETURN OF POWER AFTER POWER FAILURE)

(HS)

STOP-START HAND SWITCH MOMENTARY CONTACT SWITCHES (CONTROLLED ON RETURN OF POWER

LINE LEGEND



PNEUMATIC SIGNAL XXX FILLED SYSTEM SIGNAL HYDRAULIC SYSTEM SIGNAL —_FO-— FIBER OPTIC (ETHERNET) CAT 5E

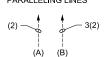
BUILDING OR **FACILITY BOUNDARY** (B)

(A) TOTAL OF 2 SIGNALS

NON-CONNECTING LINES

TYPICAL BREAK

PARALLELING LINES



AC AM CAM

CCS CL₂ etc.

CM COD

CP-X DC DCS DCU DO ENS

FCL₂ FOS FOSA

FOSR FP-W-X

HOA HOR

ISR LEL LOS

LR MA

MC MCC-X

MSC OC OCA OCR OO OOA OOR ORP OSC

pH PLC PP RIO RM-X

RTU-X SF SS SSC

TCL₂

TOC TOD TURE VHC VIB

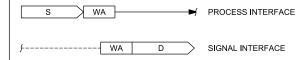
Σ

F(X)

ÅVG

3 TYPICAL SETS OF 2 SIGNALS FACH TOTAL OF 6 SIGNALS. CONNECTING LINES

INTERFACE SYMBOLS

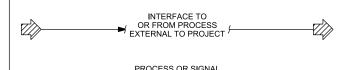


SOURCE UNIT PROCESS NO. (1 OR 2 DIGITS)

INTERFACE NO. (2 DIGITS)

DESTINATION DRAWING NO

SOURCE DRAWING NO.



►(N) LINE CONTINUATION (N)-

SELF CONTAINED VALVE & EQUIPMENT TAG NUMBERS

W-D-X-Y

UNIT PROCESS NUMBER

ARV AIR RELEASE VALVE AIR AND VACUUM RELEASE VALVE AVRV **GATE**

MECHANICAL EQUIPMENT

TANK

LOOP NUMBER LINIT NUMBER

GENERAL NOTES

COMPONENTS AND PANELS SHOWN WITH A SINGLE ASTERISK (*) ARE TO BE PROVIDED AS PART OF A

ABBREVIATIONS & LETTER SYMBOLS

CHLORINE (TYPICAL: USE STANDARD CHEMICAL

ELEMENT ABBREVIATIONS)

FAST-OFF-SLOW-REMOTE FIELD PANEL NO. WX (W=UNIT PROCESS NUMBER

ALTERNATING CURRENT

COMPUTER-MANUAL CHEMICAL OXYGEN DEMAND

CONTROL PANEL NO. X DIRECT CURRENT

DISSOLVED OXYGEN

HAND-OFF-AUTO

LOCKOUT STOP

OCAL-REMOTE MANUAL-AUTO

OPEN-CLOSE(D) OPEN-CLOSE-AUTO OPEN-CLOSE-REMOTE

ON-OFF-AUTO

ON-OFF-REMOTE

ON-OFF

DISTRIBUTED CONTROL SYSTEM

DISTRIBUTED CONTROL UNIT

FREE CHLORINE RESIDUAL FAST-OFF-SLOW FAST-OFF-SLOW-AUTO

INTRINSICALLY SAFE RELAY

MODULATE-CLOSE MOTOR CONTROL CENTER NO. X

MANUFACTURER SUPPLIED CABLE

OXIDATION REDUCTION POTENTIAL OPEN-STOP-CLOSE

PATCH PANEL (FIBER OPTIC)

TOTAL CHLORINE RESIDUAL

TOTAL ORGANIC CARBON

TURBIDITY
VOLATILE HYDROCARBONS

RAISED TO THE Nth POWER SQUARE ROOT

REPEAT OR BOOST SELECT HIGHEST SIGNAL

SELECT LOWEST SIGNAL

GAIN OR ATTENUATE

TOTAL OXYGEN DEMAND

VIBRATION DIFFERENCE

MULTIPLY

AVERAGE

CHARACTERIZED

DIVIDE

REMOTE TELEMETRY UNIT NO. X SLOWER-FASTER

SUPERVISORY SET POINT CONTROL

HYDROGEN ION CONCENTRATION
PROGRAMMABLE LOGIC CONTROLLER

REMOTE MULTIPLEXING MODULE NO. X

COMPUTER-AUTO-MANUAL
CENTRAL CONTROL SYSTEM

ALITO-MANUAL

- COMPONENTS AND PANELS SHOWN WITH A DOUBLE ASTERISK (**) ARE TO BE PROVIDED UNDER DIVISION 16, ELÉCTRICAL.
- THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THE PROJECT.

H2MHILL

INSTRUMENTATION AND CONTROL LEGEND

Y SCALE

Y SCALE

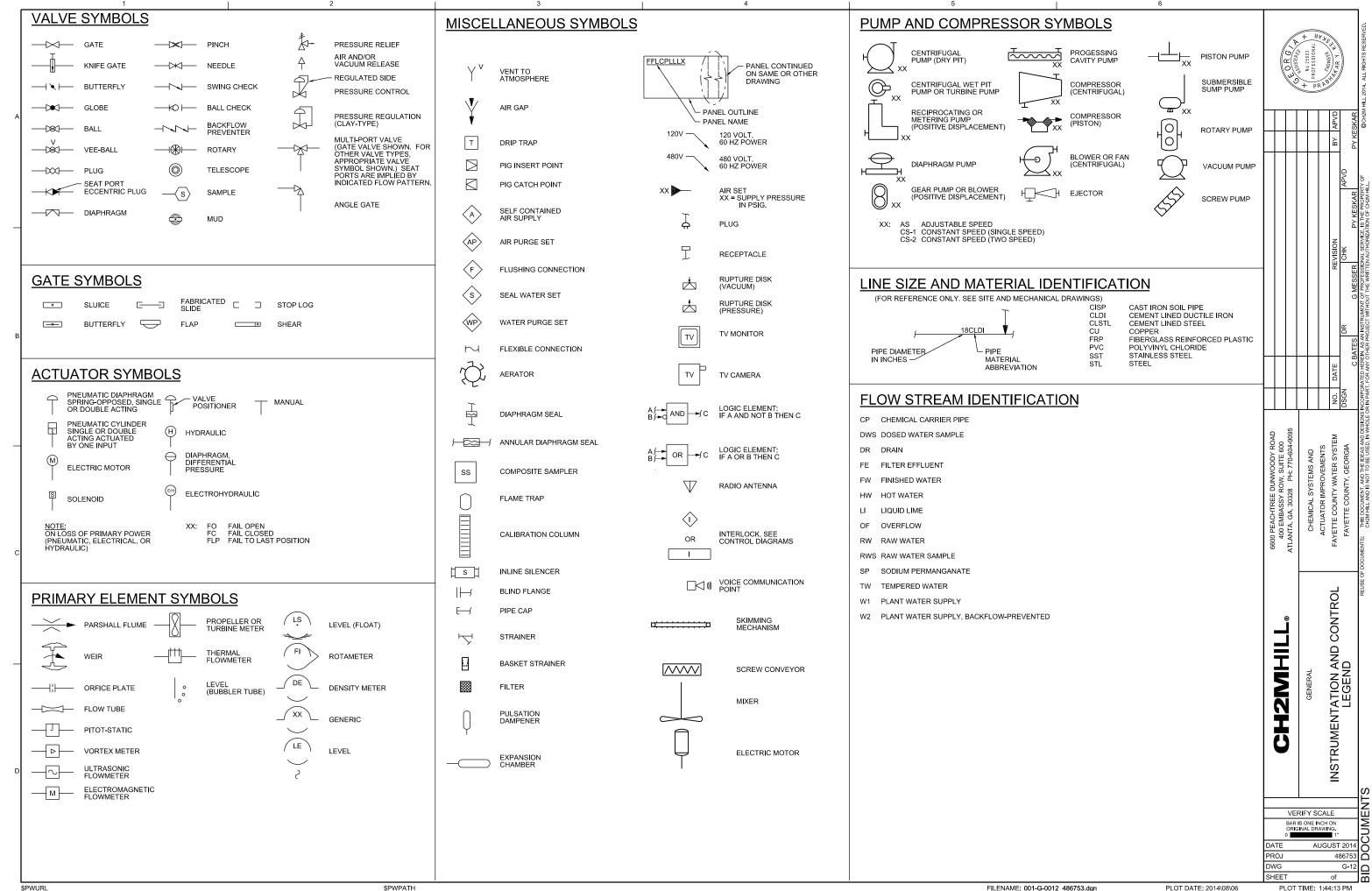
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L DRAWING.

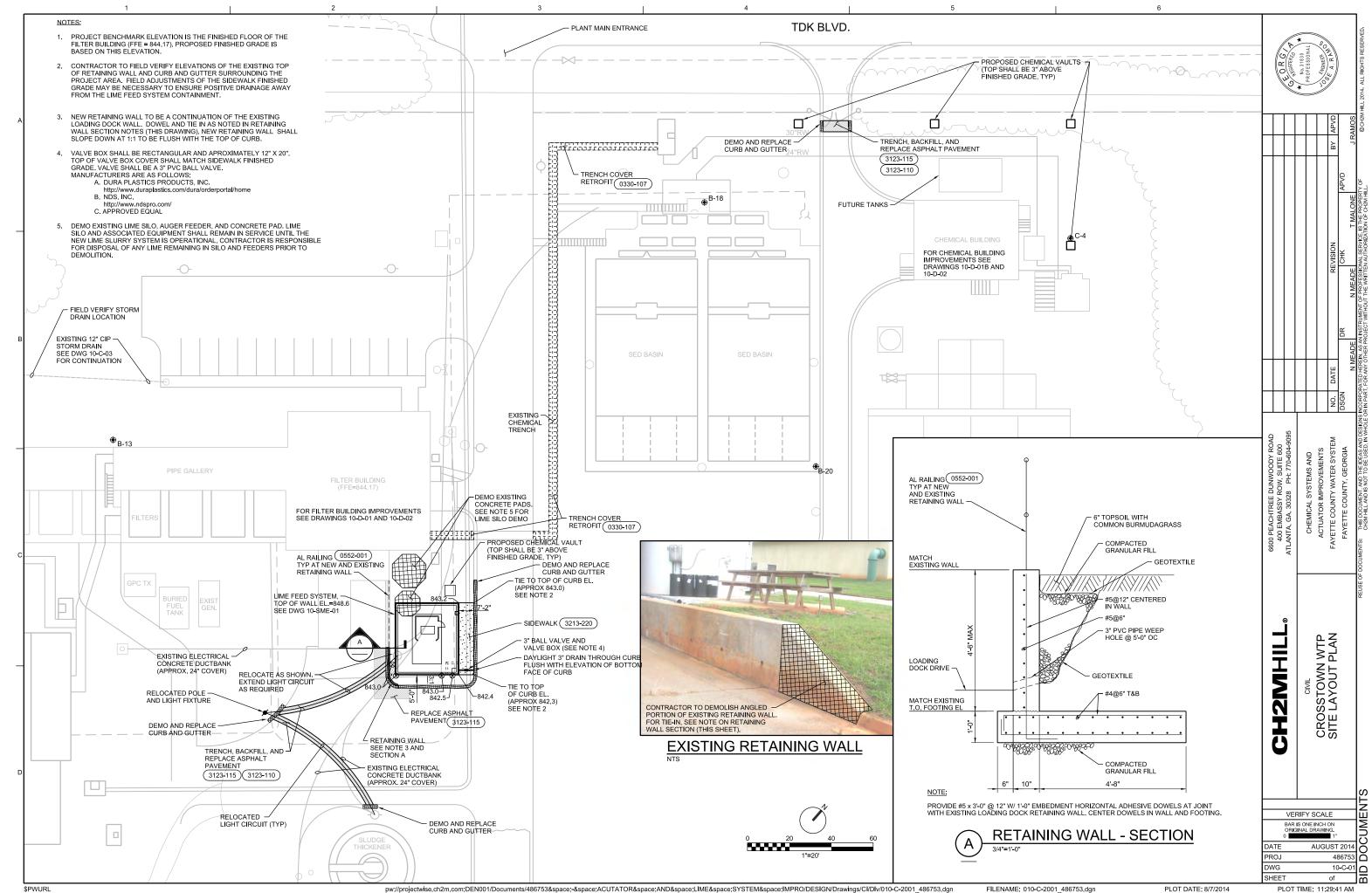
AUGUST 2014

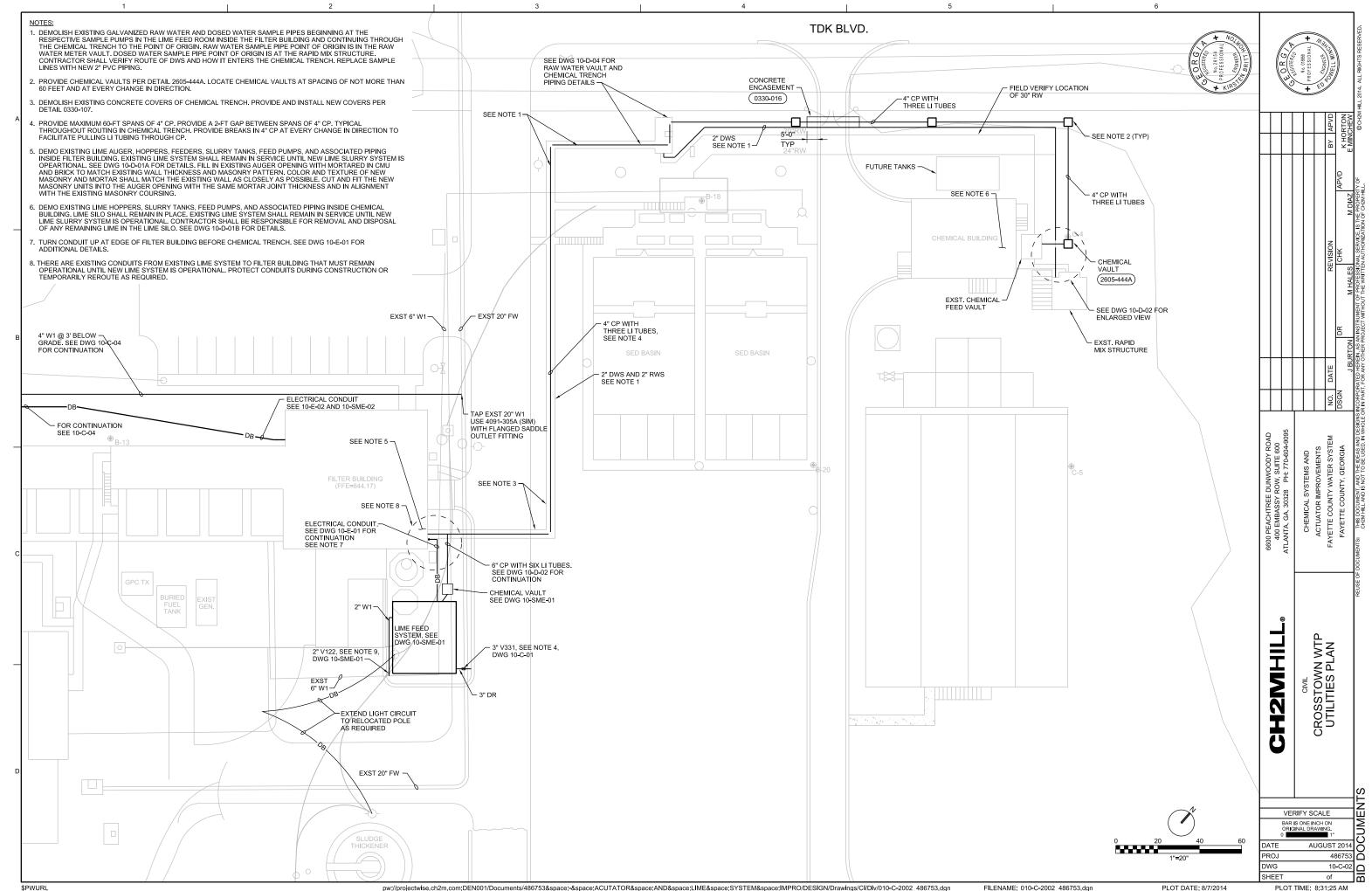
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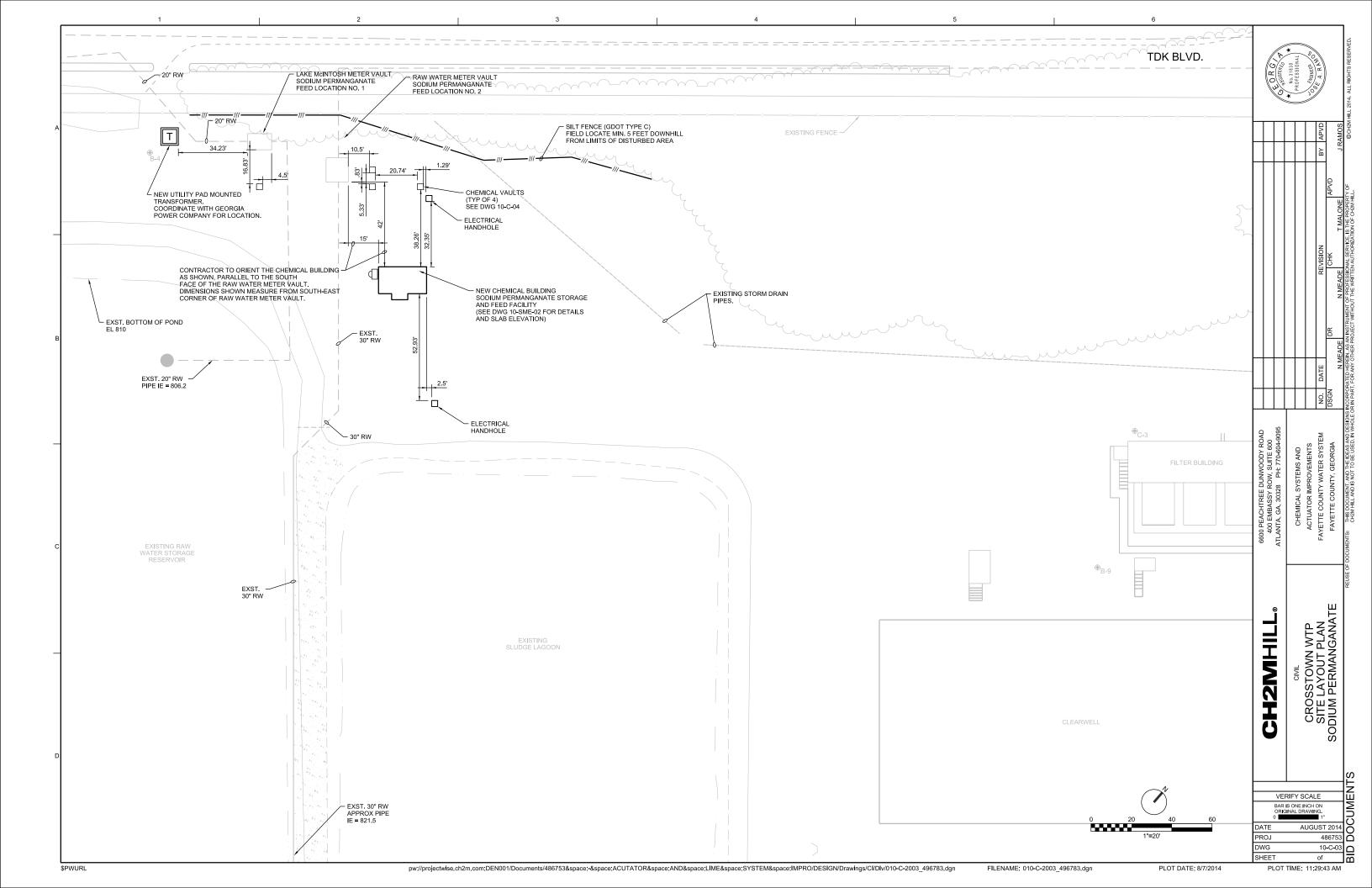
PROJ G-11 **M** WG PLOT TIME: 11:38:39 AM

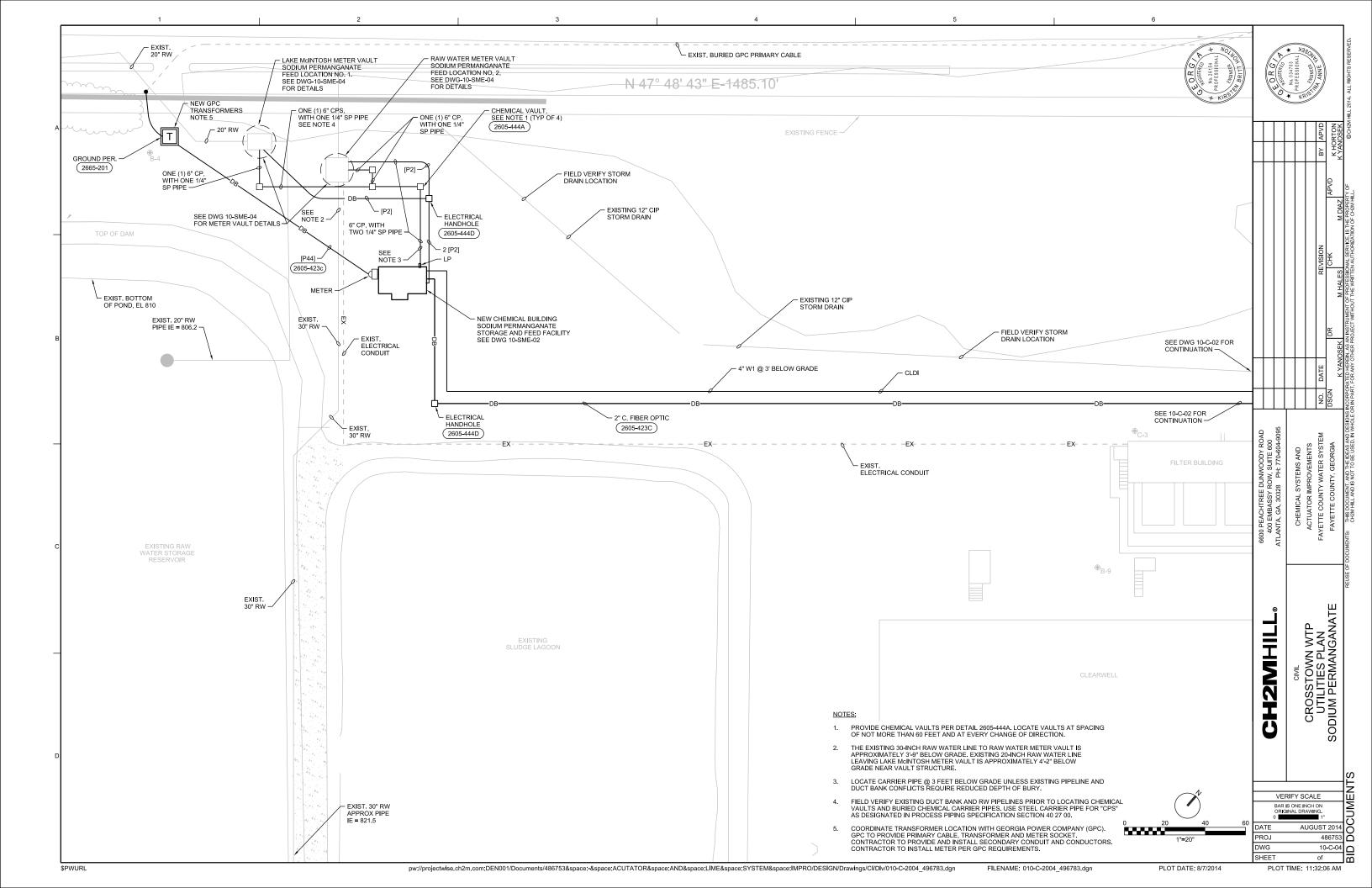
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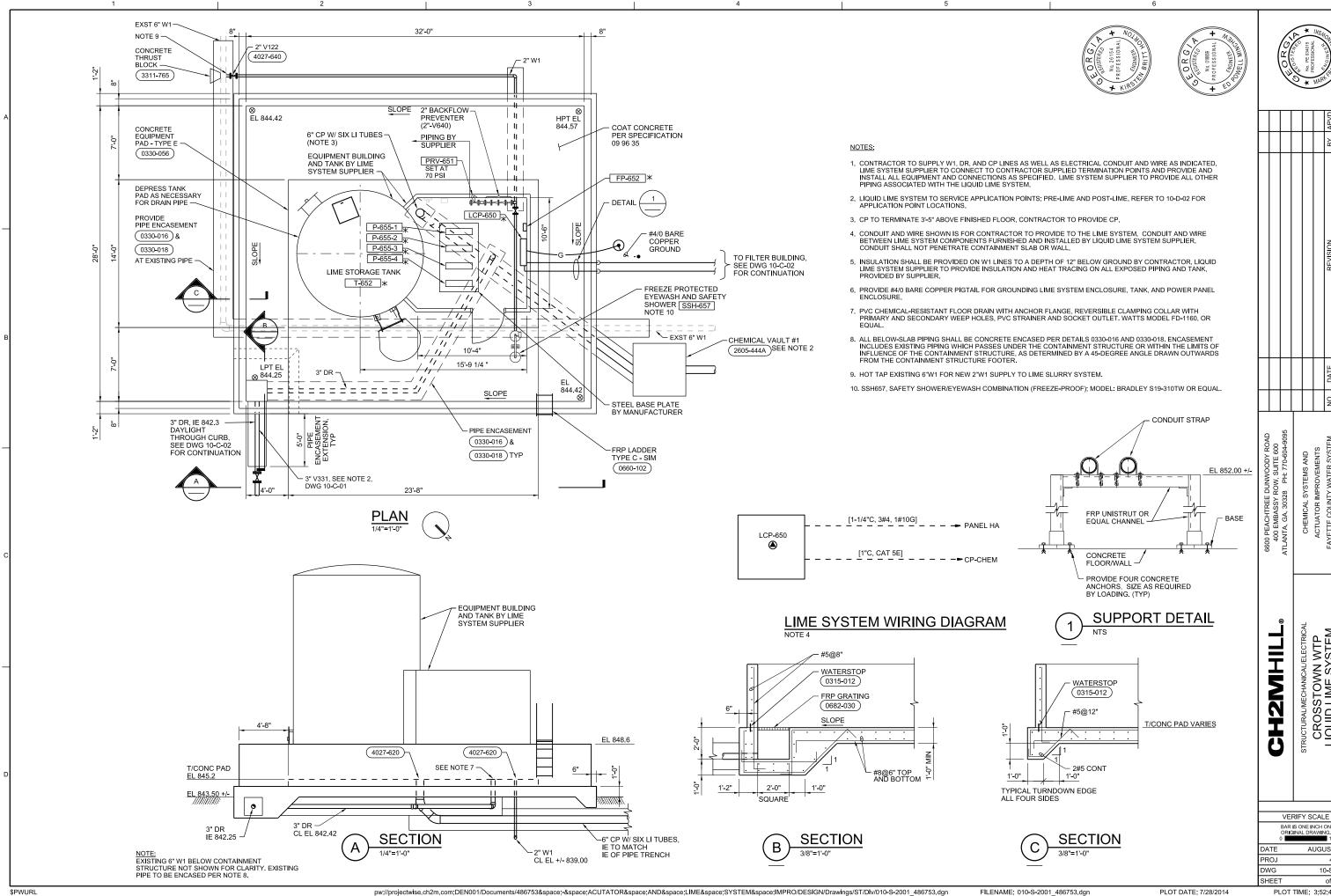






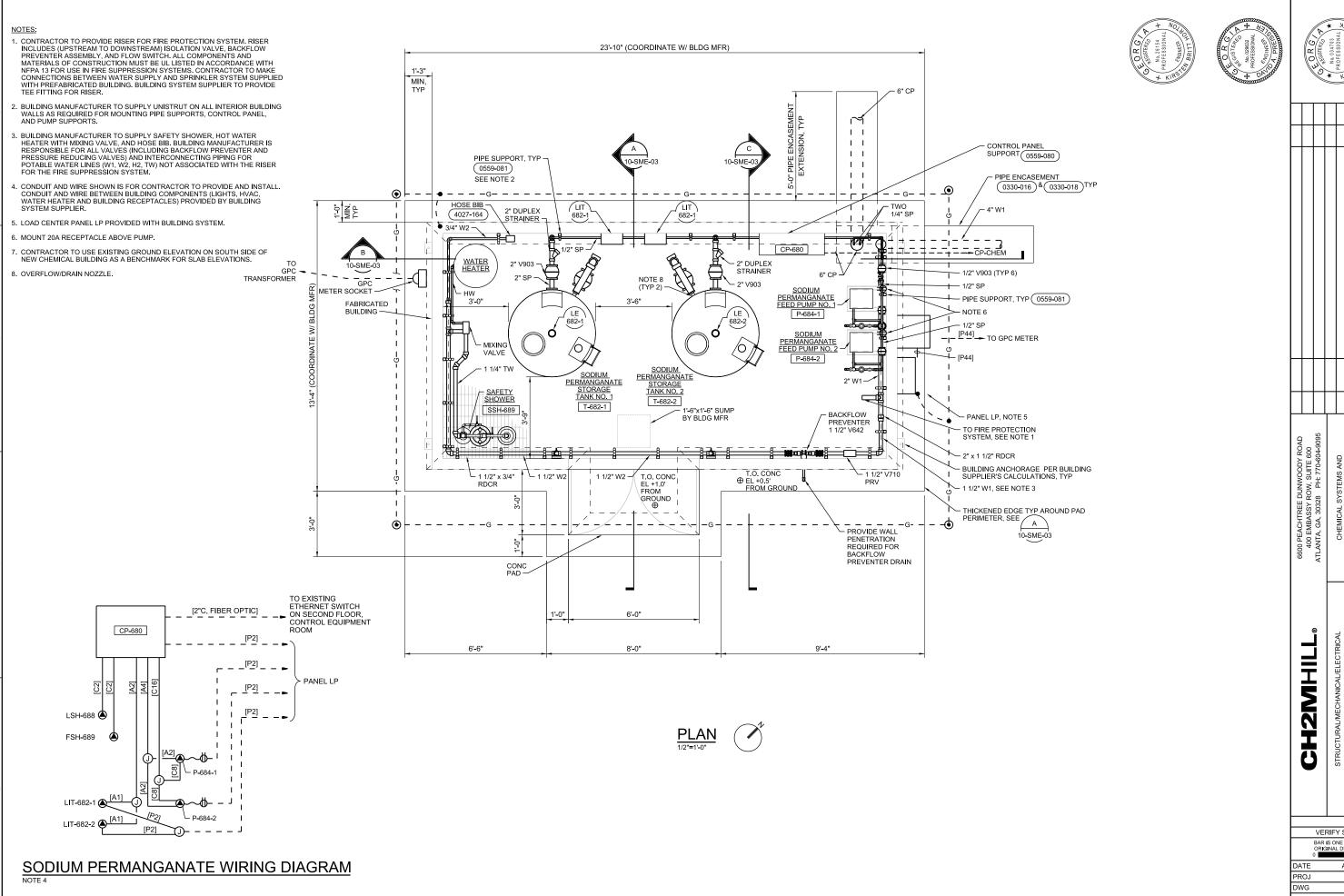






CROSSTOWN WTP LIQUID LIME SYSTEM PLAN AND SECTIONS

AUGUST 2014

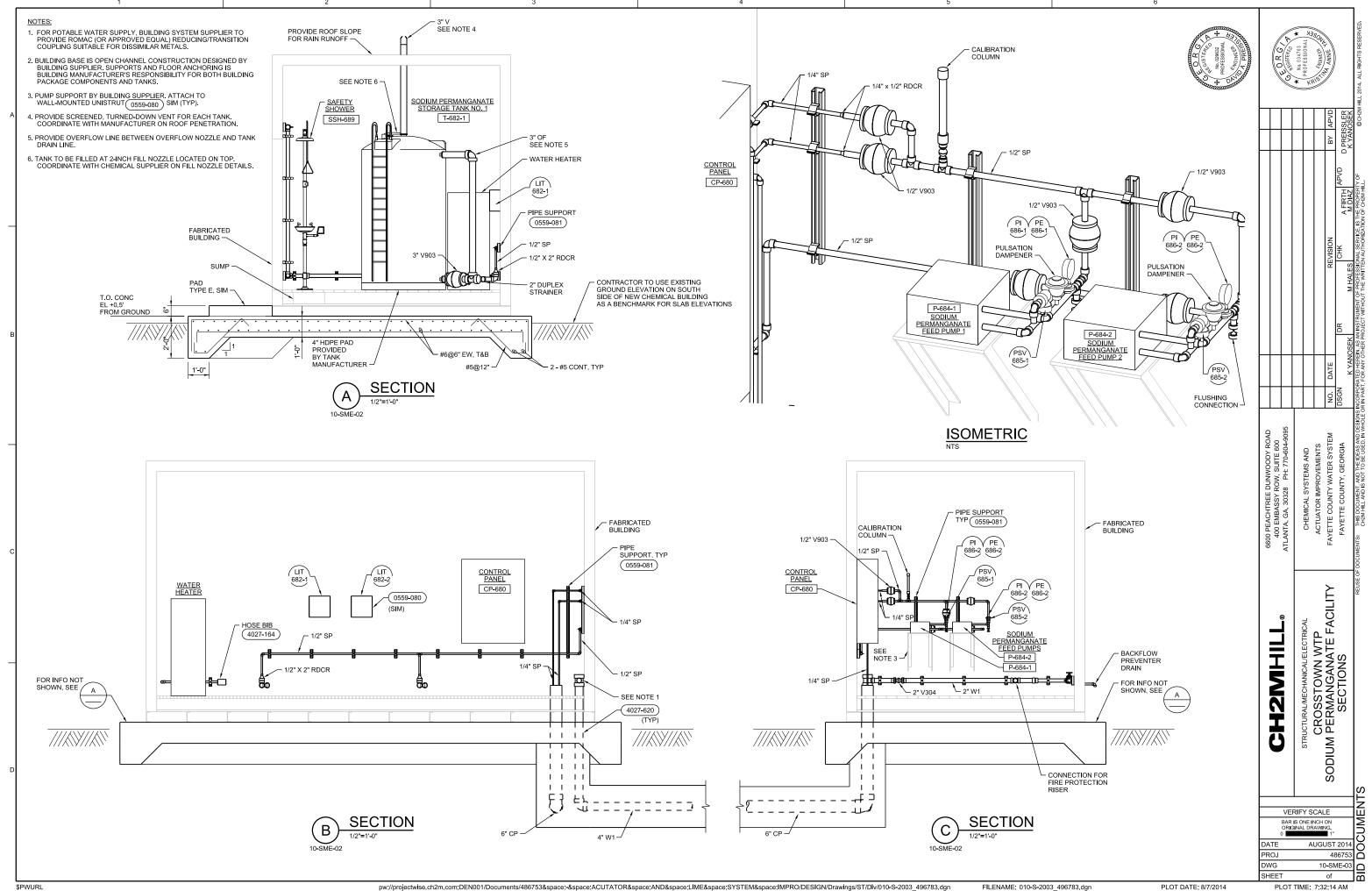


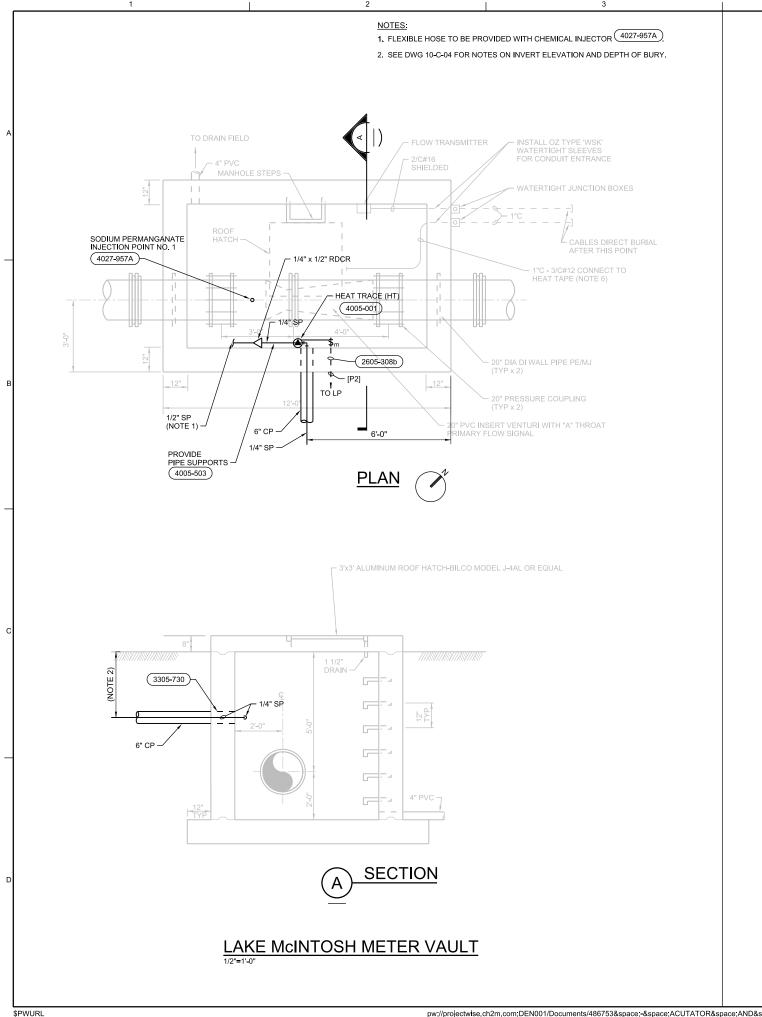
PY KESKAR APVD A FIRTH M DIAZ

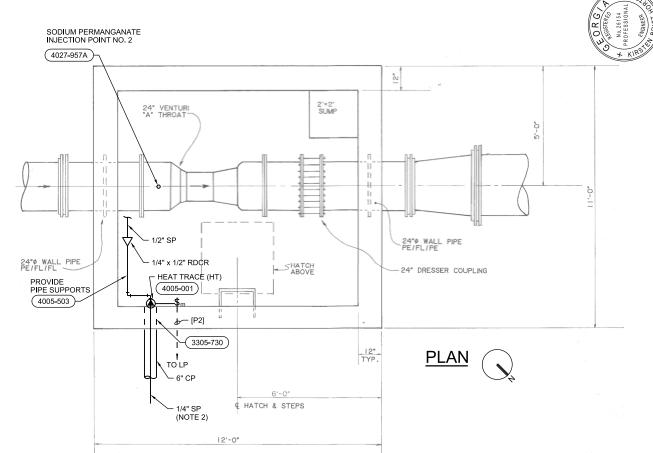
CROSSTOWN WTP SODIUM PERMANGANATE FACILITY PLAN

VERIFY SCALE AUGUST 2014

BAR IS ONE INCH ON ORIGINAL DRAWING. 10-SME-02 Of Of SHEET







RAW WATER METER VAULT
1/2"=1"-0"



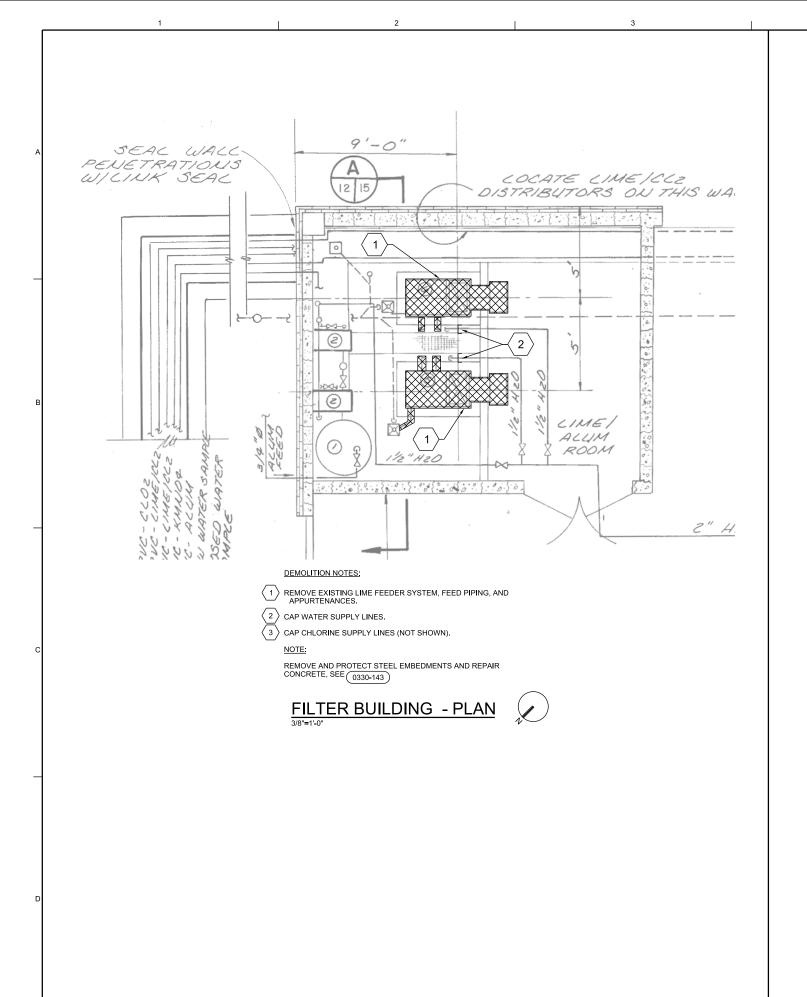
HK PY KESKAR M DIAZ

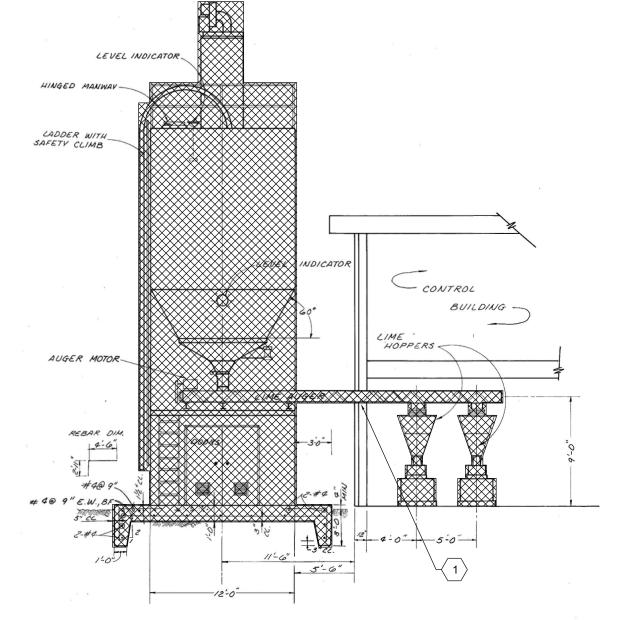
M DIAZ

L SERVICE. IS THE PROPERTY OF

JUHORIZATION OF CHZM HILL.

DWG





LIME SILO DETAIL

NOTE:

TI FILL IN EXISTING AUGER OPENING WITH MORTARED IN CMU AND BRICK TO MATCH EXISTING WALL THICKNESS AND MASONRY PATTERN. COLOR AND TEXTURE OF NEW MASONRY AND MORTAR NEED NOT MATCH THE EXISTING WALL. CUT AND FIT THE NEW MASONRY UNITS INTO THE AUGER OPENING WITH THE SAME MORTAR JOINT THICKNESS AND IN ALIGNMENT WITH THE EXISTING MASONRY COURSING.

Y SCALE

NE INCH ON
L DRAWING.

AUGUST 2014

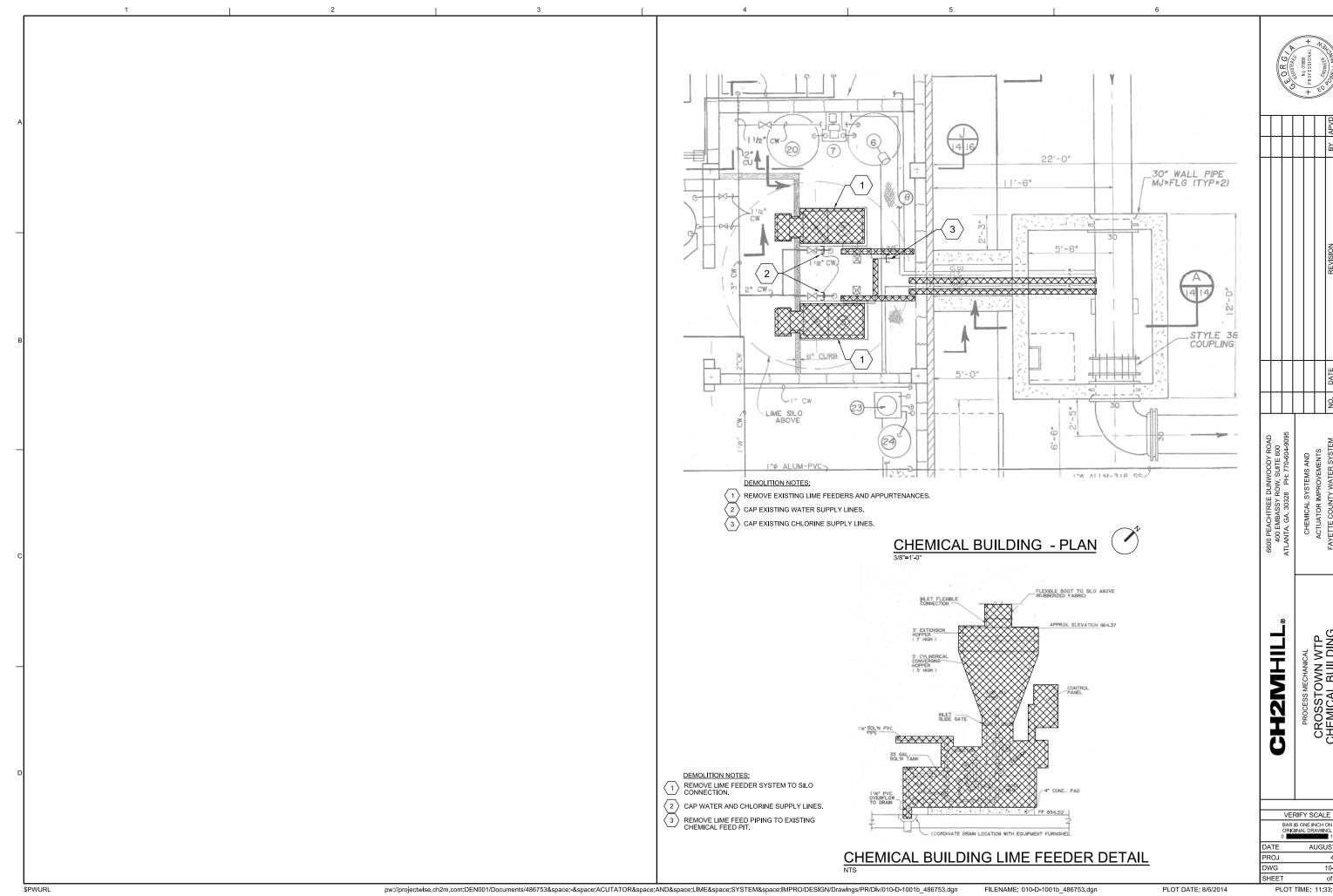
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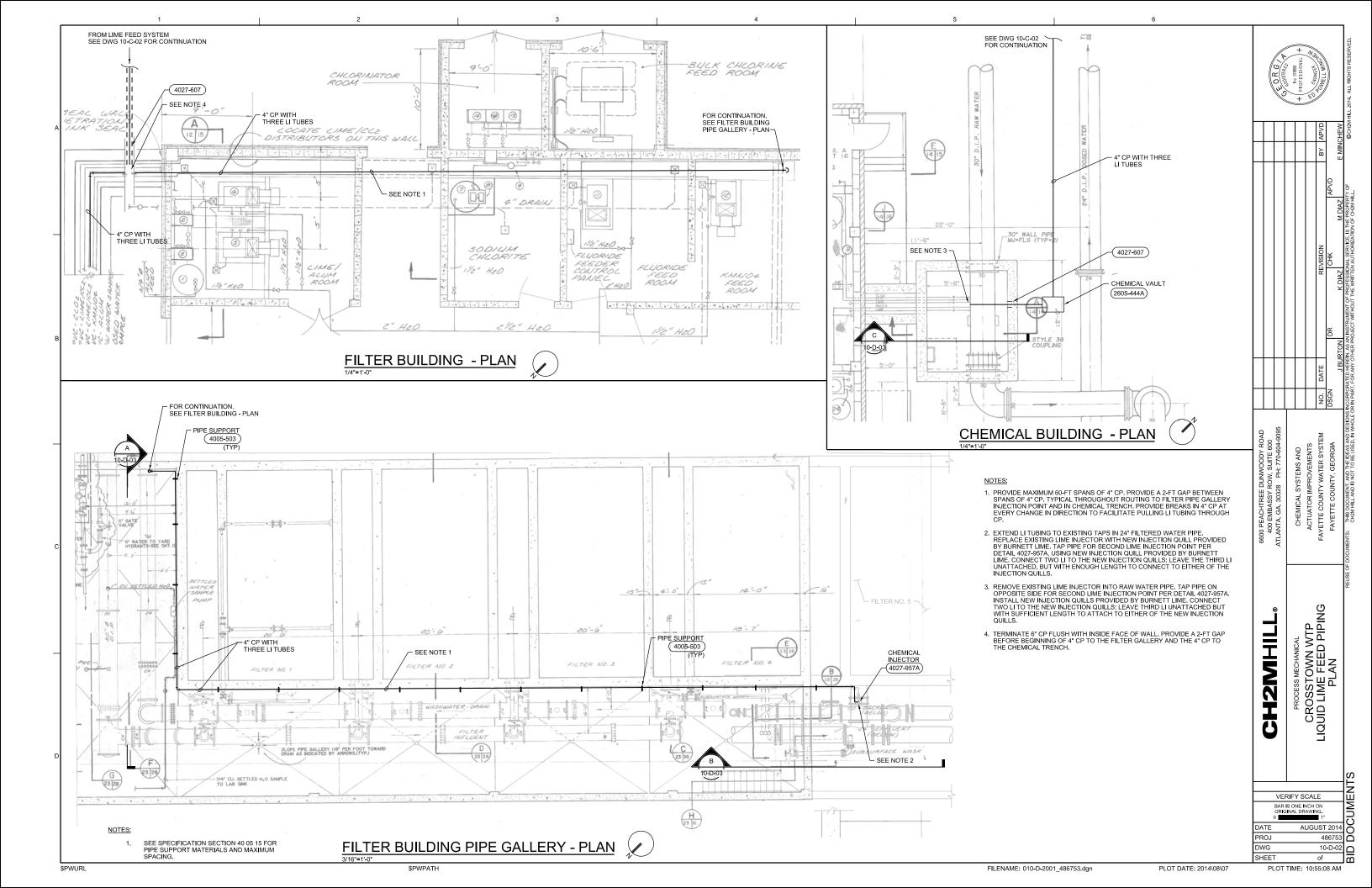
CROSSTOWN WTP FILTER BUILDING DEMOLITION PLAN AND DETAIL

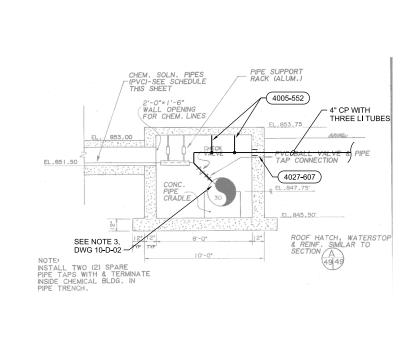
CHZMHILL

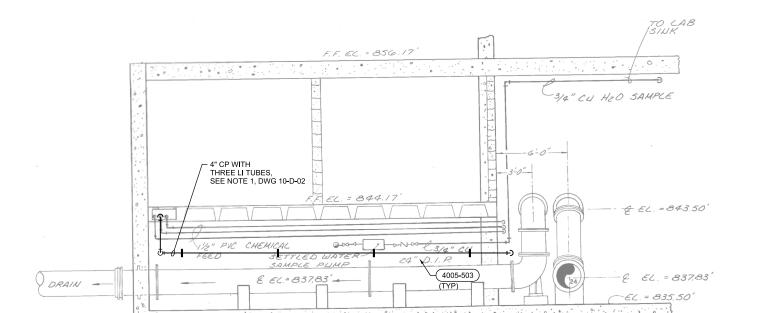


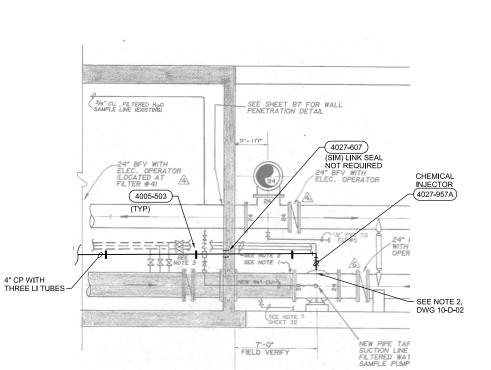
CROSSTOWN WTP CHEMICAL BUILDING DEMOLITION PLAN AND DETAIL

PLOT TIME: 11:33:59 AM









SECTION
1/4"=1"-0"



\$PWURL

SECTION

FILENAME: 010-D-3001_486753.dgn

PLOT DATE: 8/6/2014

PROCESS MECHANICAL
CROSSTOWN WTP
LIQUID LIME FEED PIPING
SECTIONS **CH2MHILL**® Y SCALE

WE NICH ON
L DRAWING.

AUGUST 2014

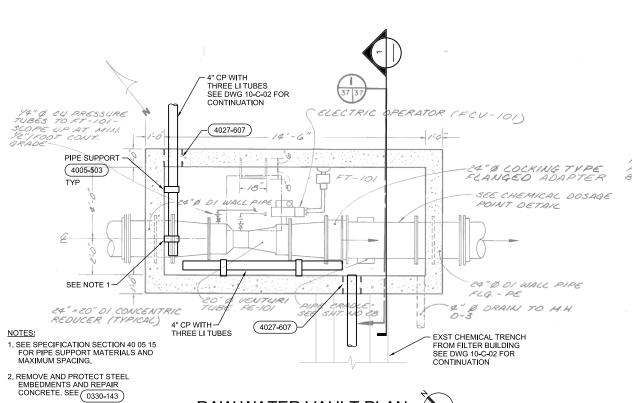
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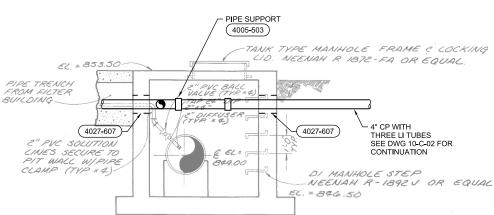
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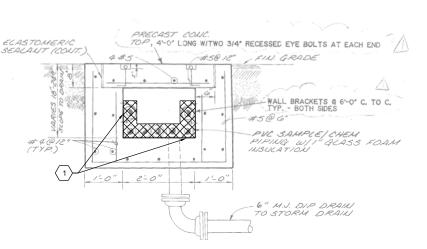
ME: 11:33:53 AM VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" PROJ DWG SHEET PLOT TIME: 11:33:53 AM

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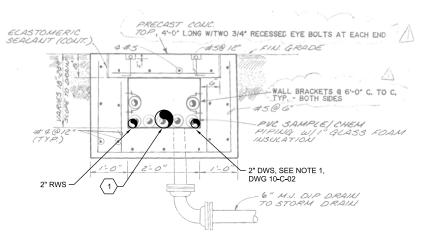






1) REMOVE EXISTING ABANDONED CHEMICAL FEED LINES. SEE NOTE 1, DWG 10-C-02.

EXISTING CHEMICAL TRENCH DEMOLITION



RAW WATER VAULT DETAIL

1 INSTALL 4" CP WITH THREE LI TUBES

EXISTING CHEMICAL TRENCH PIPING

CROSSTOWN WTP CHEMICAL VAULT AND CHEMICAL TRENCH DETAILS CH2MHILL® Y SCALE

NE INCH ON
L DRAWING.

AUGUST 2014

486753

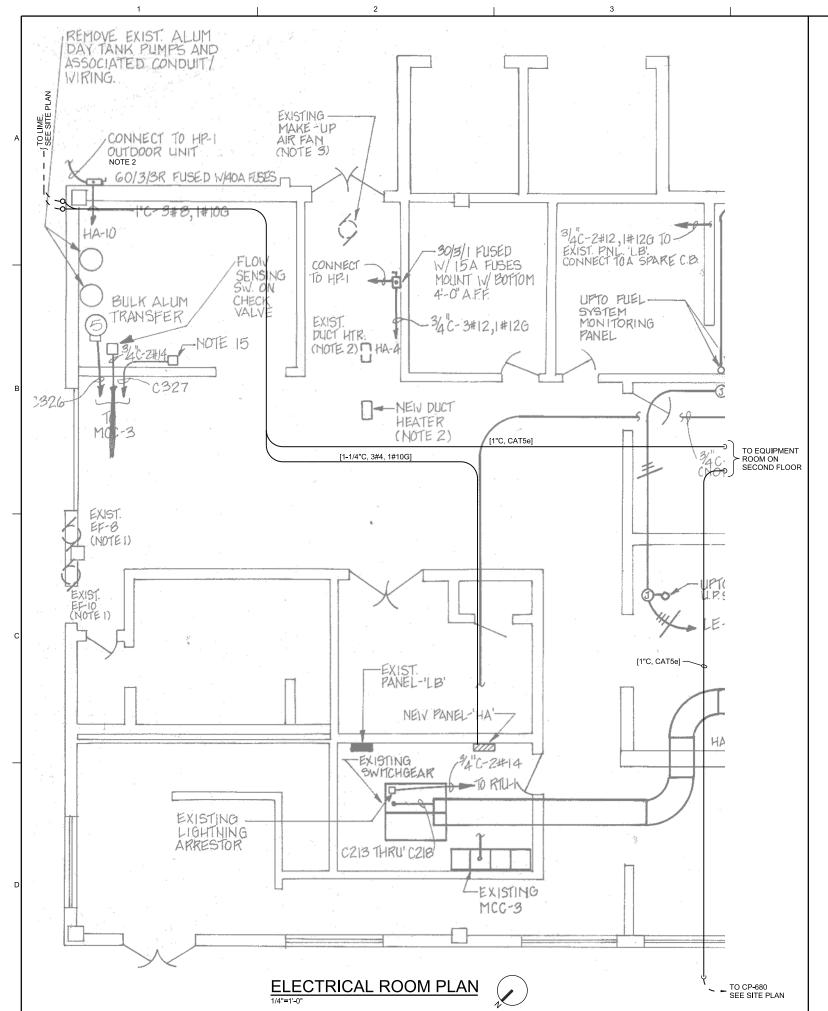
VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING.

PLOT TIME: 11:33:56 AM

10-D-04 of **M**

PROJ

DWG



PANEL: HA SERVICE VOLTAGE: 480V, 3PH, 3W TOTAL LOAD KVA: 115.35					E: IZE:	3 225A		WIRE: MAIN SIZE:		TYPE	: MOL	
RE	MARK	S: HA		NEUT	RAL:	NONE	=	MOUNTING:	SURFACE			
LOAD IN KVA CIRCUIT DESCRIPTION			BKR CKT			BKR	CIRCUIT D	ESCRIPTION	LOAD IN KVA			
Α	В	С	CIRCUIT DESCRIPTION	A/P	NO.	NO.	A/P	CIRCUIT	ESCRIFTION	Α	В	С
			RTU-1	40/3	1	2	15/3	HP-1		0.95		
	10.0			-	3	4	-				0.95	
		10.0		-	5	6	-					0.95
7.0			RTU-2	30/3	7	8	40/3	OUTDOOR	UNIT FOR HP-1	8.0		
	7.0			-	9	10	-				8.0	
		7.0		-	11	12	-					8.0
2.5			UNIT HEATER UH-3	20/3	13	14	15/3	SPARE		0		
	2.5			-	15	16	-				0	
		2.5		-	17	18	-					0
2.5			UNIT HEATER	20/3	19	20	70/3	PANEL HB		2.5		
	2.5			-	21	22	-				2.5	
		2.5		-	23	24	-					2.5
0			SPARE	20/3	25	26	20/3	SPARE		0		
	0			-	27	28	-				0	
		0		_	29	30	-					0
0					31	32	60/3	LIME SYSTE	M NOTE 1	5		
	0				33	34	-				5	
		0			35	36	-					5
0				20/1	37	38	20/1			0		
_	0			20/1	39	40	20/1				0	
		0		20/1	41	42	20/1					0
2.0	22.0	22.0	TOTAL	1 -071				TOTAL		16.45	16.45	16.4

NOTES:

- REMOVE 3-20A/1P CIRCUIT BREAKERS. REPLACE WITH 60A/3P BREAKER.
- EXISTING CONDUIT AND WIRE TO POWER TO HEAT PUMP HP-1 WILL NEED TO BE REPLACED AS INSTALLATION OF LIME SYSTEM WILL INTERFERE WITH EXISTING CONDUIT. PROVIDE NEW 1"C, 3#8, 1#10G FROM DISCONNECT TO HP-1.

ROSSTOWN WTP - ONE LINE DIAGRAM PANEL SCHEDULE, EXISTING FILTER BUILDING ELECTRICAL ROOM PLAN CH2MHILL.

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DWG

UTILITY PAD MOUNTED TRANSFORMER METER SOCKET INSTALLED BY CONTRACTOR – 125A 208V, 3PHASE SERVICE ENTRANCE CIRCUIT BREAKER NEMA 4X ENCLOSURE СВ - LOAD CENTER PROVIDE AS PART OF BUILDING SYSTEM. SEE SPECIFICATION

SODIUM PERMANGANATE ONE-LINE DIAGRAM

PANEI	I · I D			1004	TION	/DDC	WIDE	D BY BUILDING SYSTEM VENDE	D)		
		N TACI	E: 208/120V				VIDE	WIRE:4	K)		
	LOAD	PHASE: 3 BUS SIZE: 125					TVDE:	TYPE: MCB			
						HEE.	TIFE. WICE				
KEIVIA	RNO.	PROV	/IDE EGFI RATED BREAKERS	NEU	RAL.	FULL		MOUNTING: SURFACE			
LOA	AD IN K	(VA		IBKR	ICKT	СКТ	BKR		LOA	AD IN K	VA
Α	В	С	CIRCUIT DESCRIPTION	A/P	NO.	NO.	A/P	CIRCUIT DESCRIPTION	Α	В	С
7.0			HAVC UNIT	40/3	1	2	20/1	RECEPTACLES	0.7		
	7.0				3	- 4	20/1	EXTERIOR LIGHT		0.2	
		7.0		1 - 11	5	6	20/1	INTERIOR LIGHTS			0.4
3.0			WATER HEATER	40/2	7	8	20/1	SAFETY SHOWER FSH	0.2		
	3.0				9	10	20/1	ALARM STROBE LIGHTS		0.3	
			SPARE	30/2	11	12	20/1	CHEMICAL PUMP P-682-1			0.4
					13	14	20/1	CHEMICAL PUMP P-682-2	0.4		
	0.2		HEAT TRACE	20/1*	15	16	20/1	CP-680		1.0	
		0.2	HEAT TRACE	20/1*	17	18	20/1	EXFAN			0.5
			SPARE	20/1	19	20	20/1	LIT-682-1, LI-682-2	0.2		
10.0	10.2	72	TOTAL						1.5	1.5	1.3

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CROSSTOWN WTP - ONE LINE DIAGRAM,
PANEL SCHEDULE
SODIUM PERMANGANATE BUILDING

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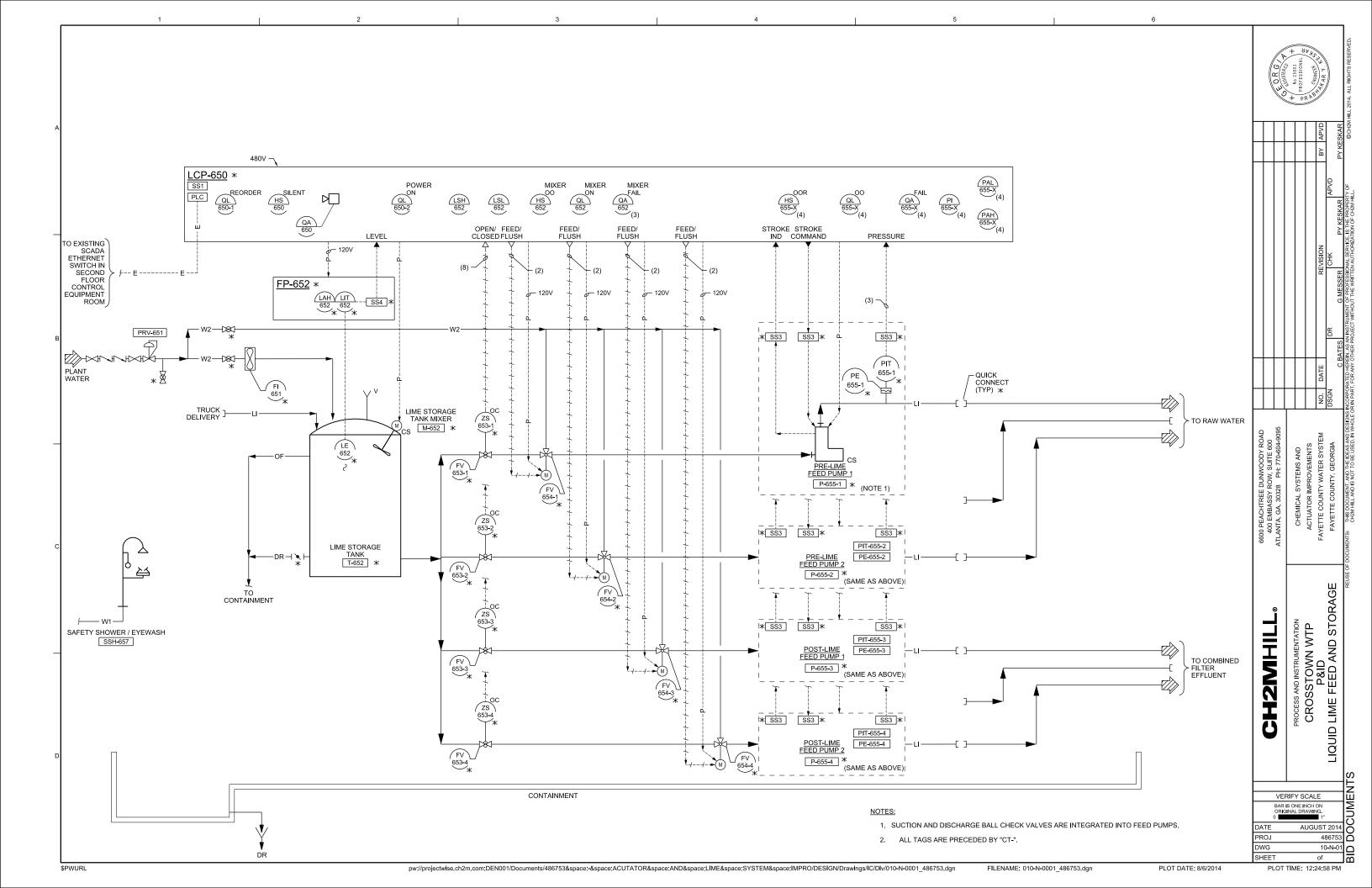
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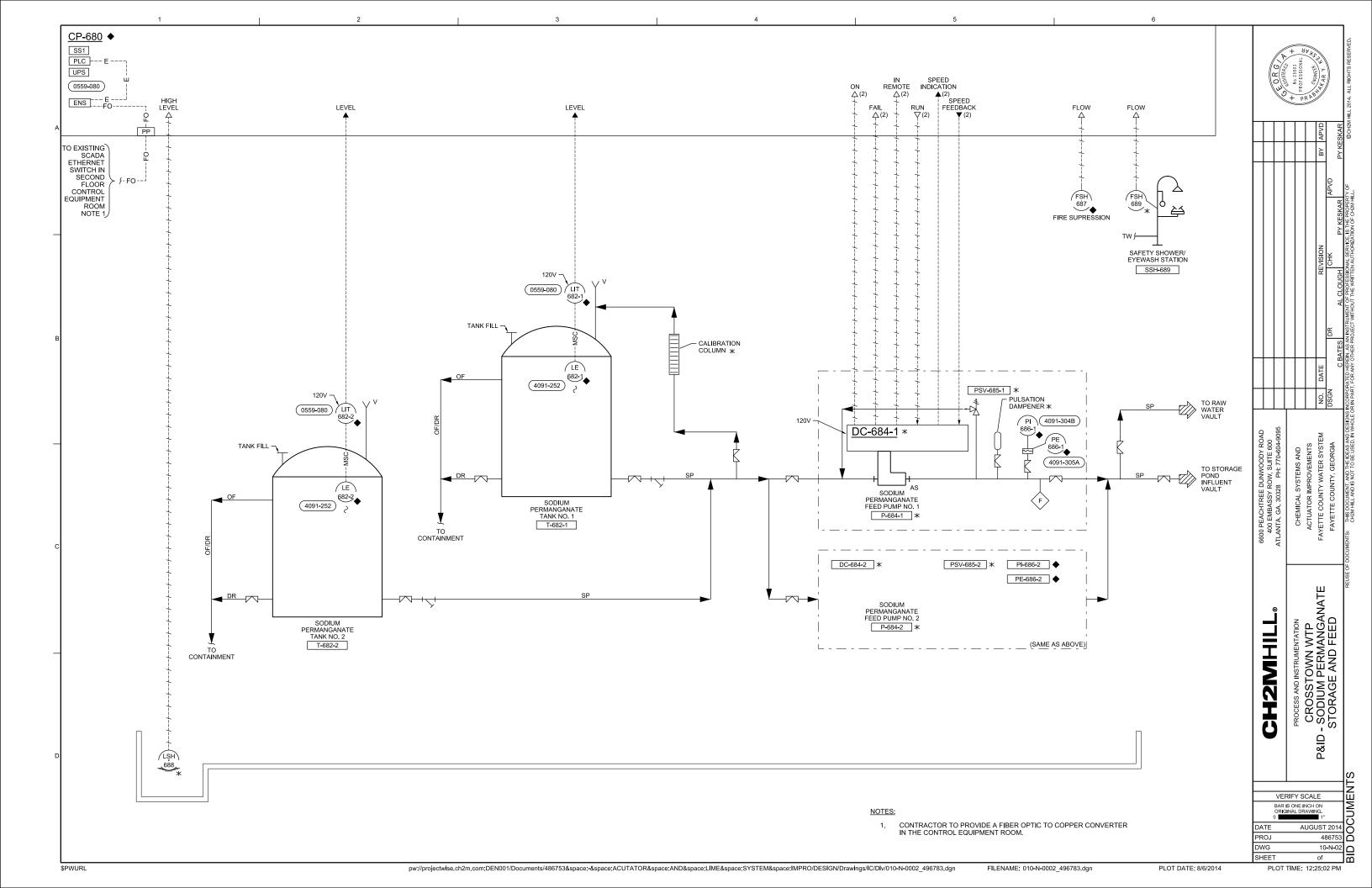
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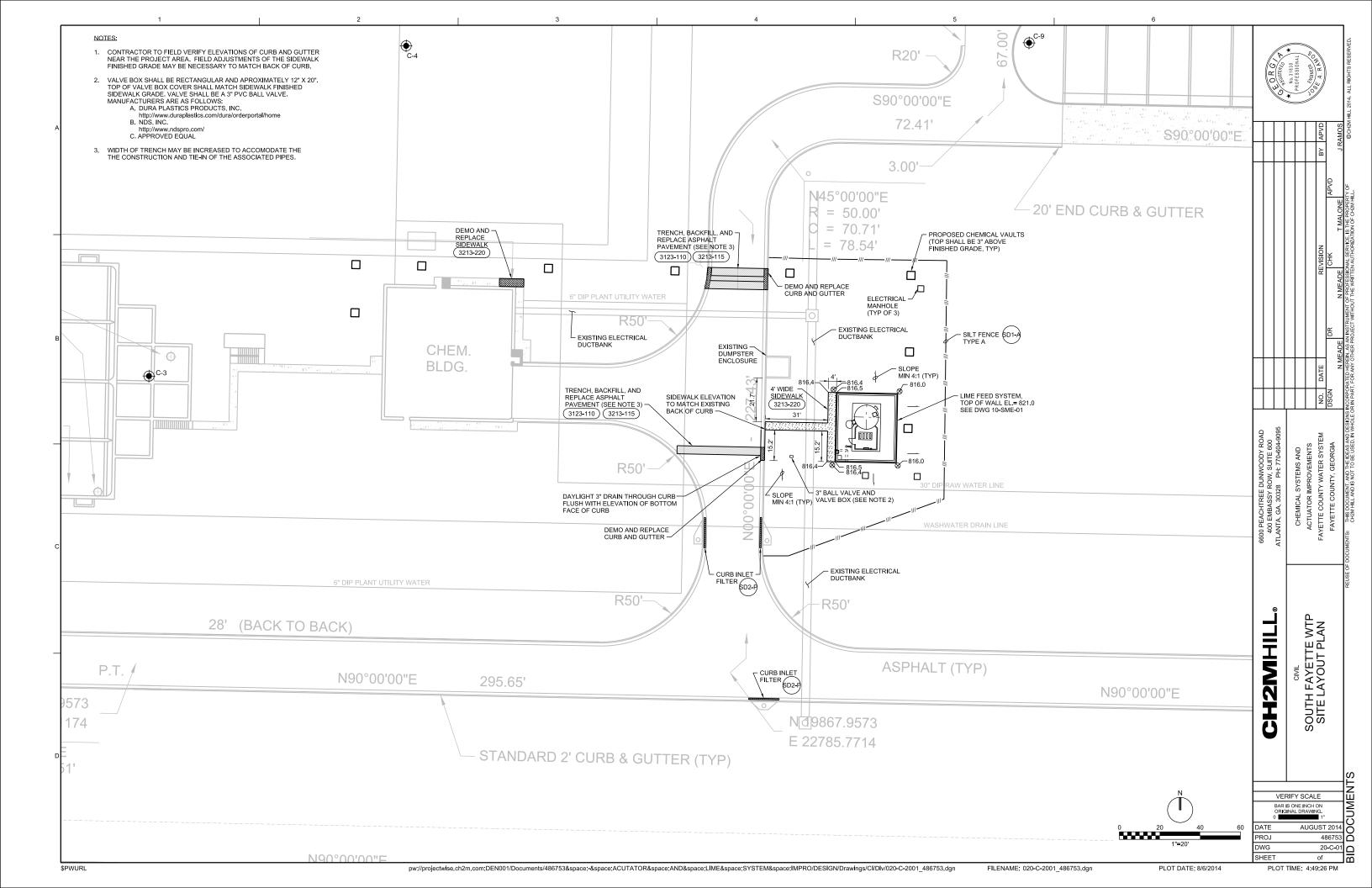
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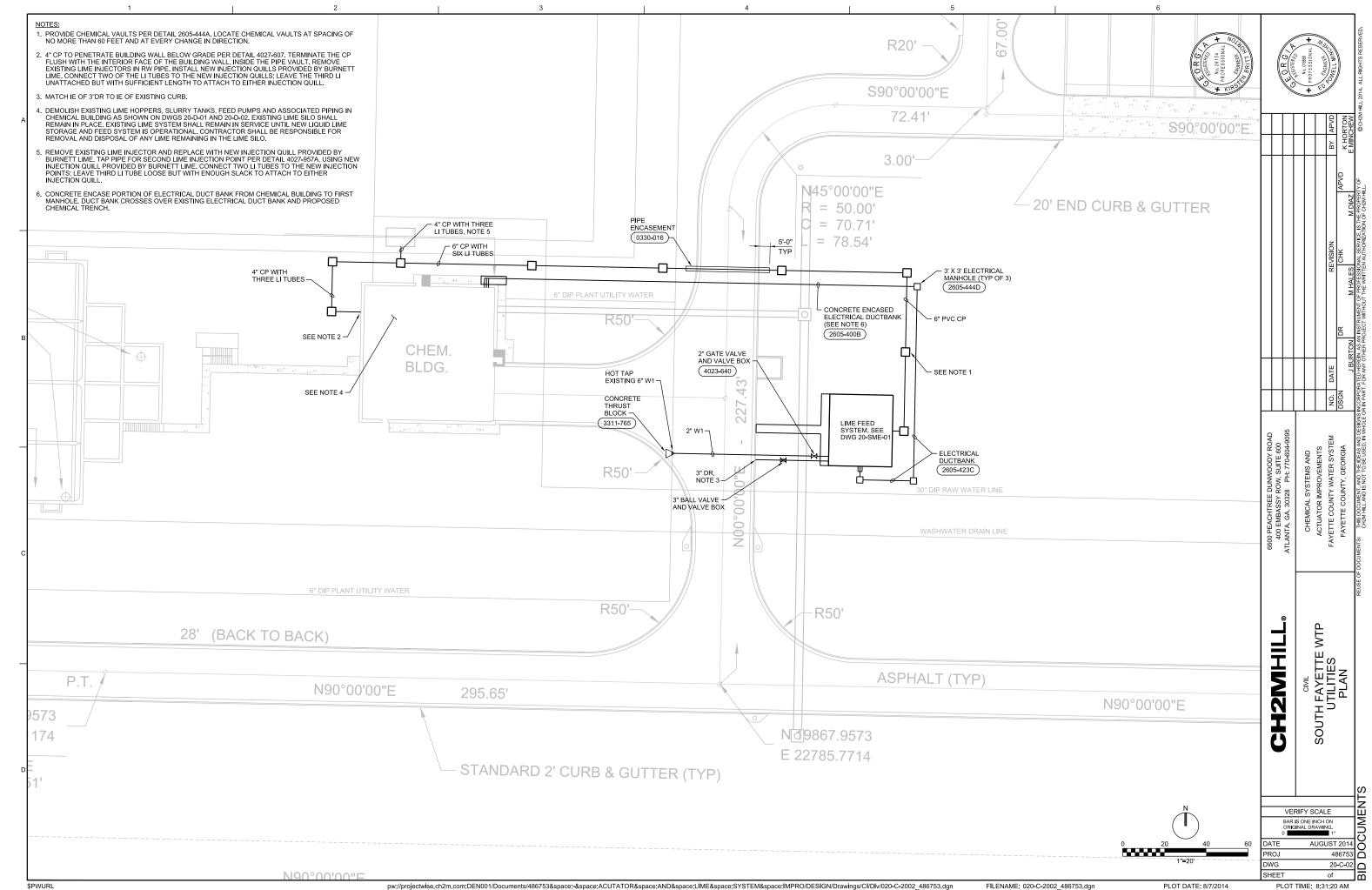
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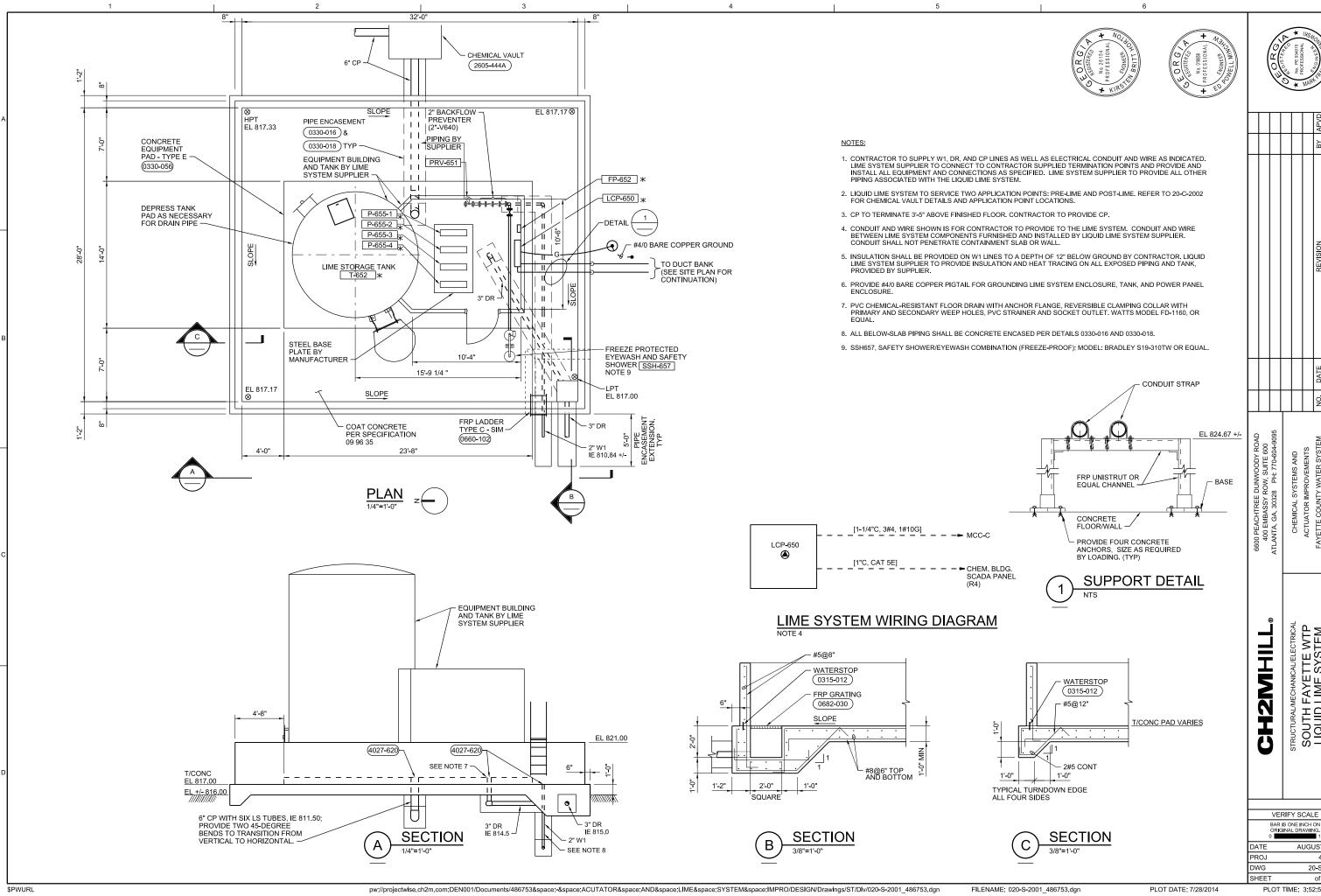
CH2MHILL.





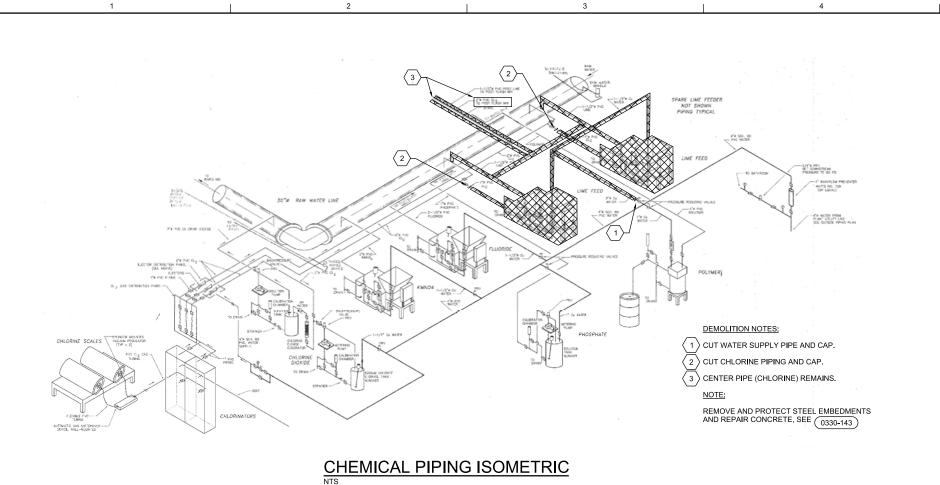


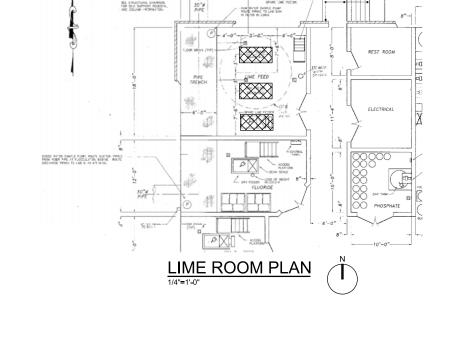


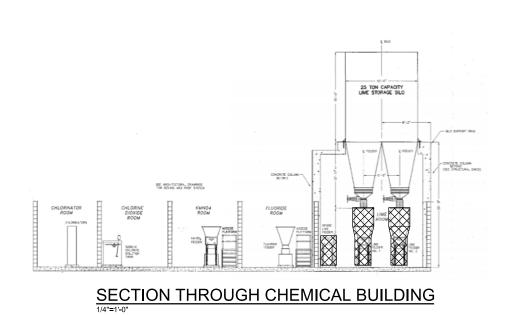


SOUTH FAYETTE WTP LIQUID LIME SYSTEM PLAN AND SECTIONS

AUGUST 2014

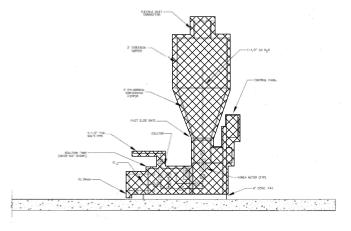








25 TON CAPACITY LIME STORAGE SILO



IME	FEEDER DETAIL
rs	

CH2MHILL.

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CH2MHILL®

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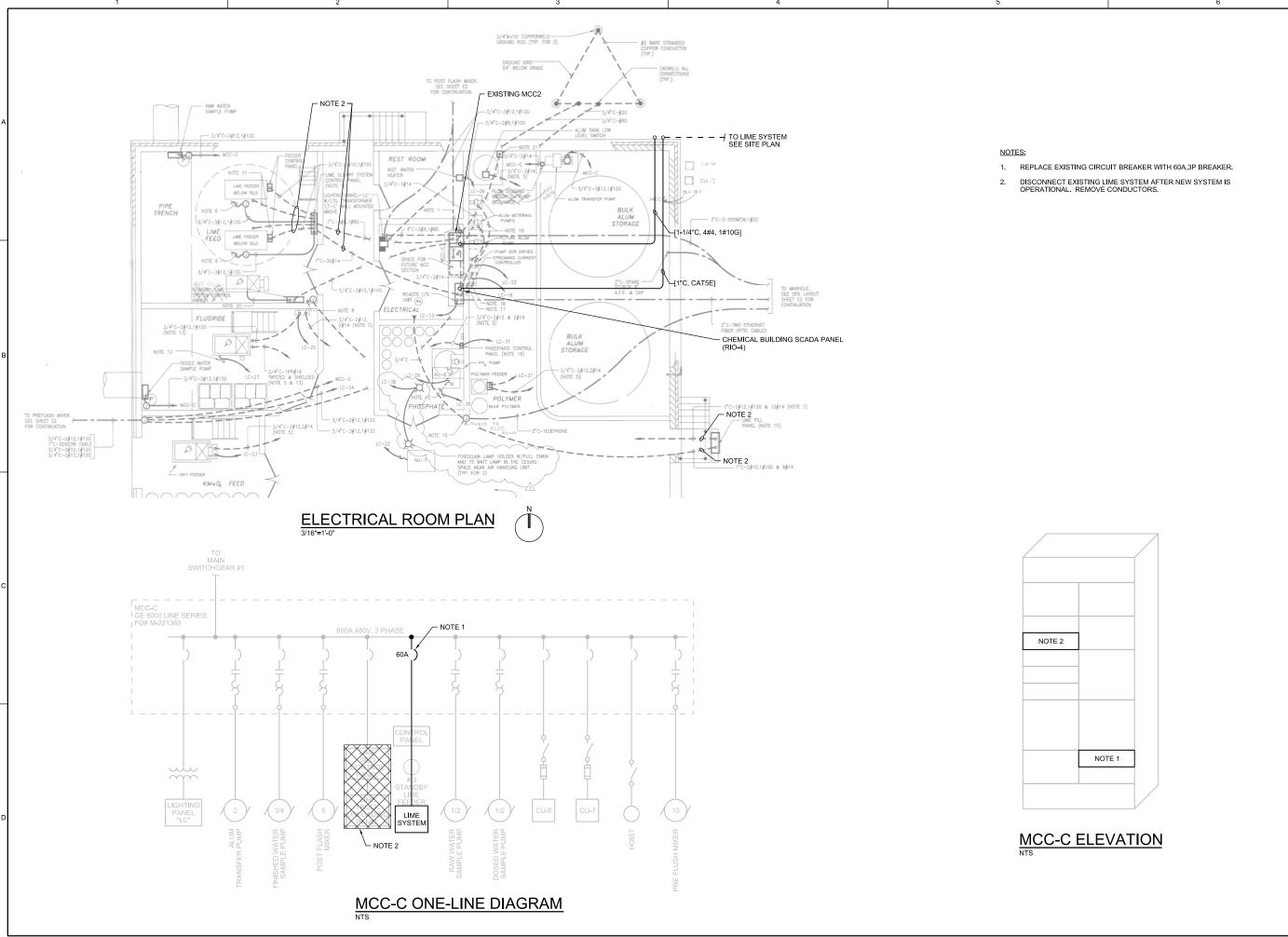
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DEMOLITION NOTES:

- 1) DEMOLISH LIME HOPPERS AND SUPPORT FRAME WORK. REMOVE AND DISPOSE OF REMAINING LIME IN SILO. CLOSE OFF DISCHARGE VALVE.
- 2 DEMOLISH LIME FEEDERS, SLURRY TANKS, AND PUMPS. DEMOLISH LIME SLURRY PIPING TO POINT OF INJECTION IN BOTH RAW WATER PIPE (IN PIPE VAULT IN CHEMICAL BUILDING) AND FINISHED WATER PIPE (IN YARD VAULT NORTH OF CHEMICAL BUILDING, SEE DWG 20-C-02).

GENERAL NOTE:



CH2MHILL.

SOUTH FAYETTE WTP - ONE LINE, PANEL SCHEDULE, EXISTING CHEMICAL BUILDING ELECTRICAL ROOM PLAN

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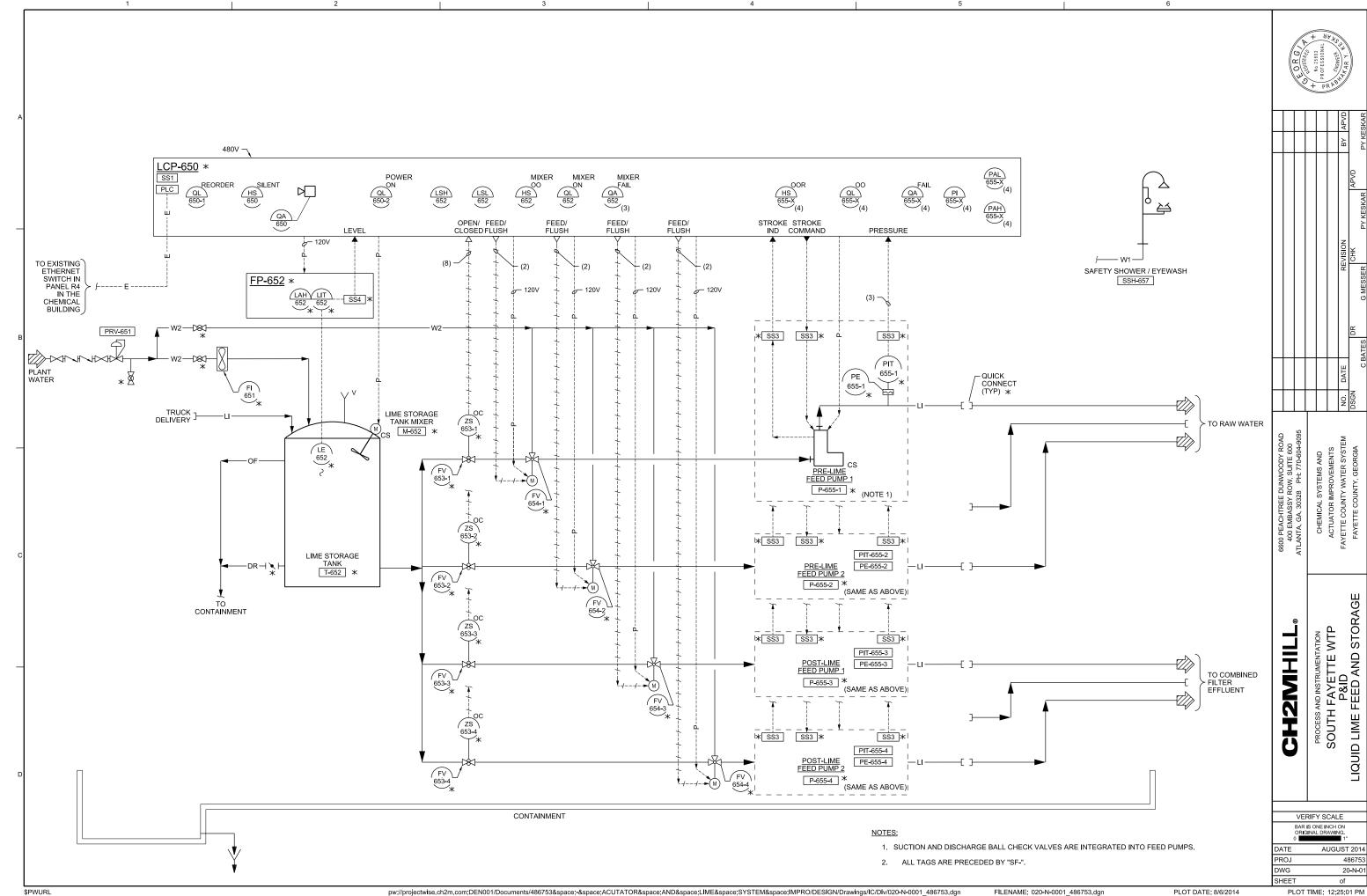
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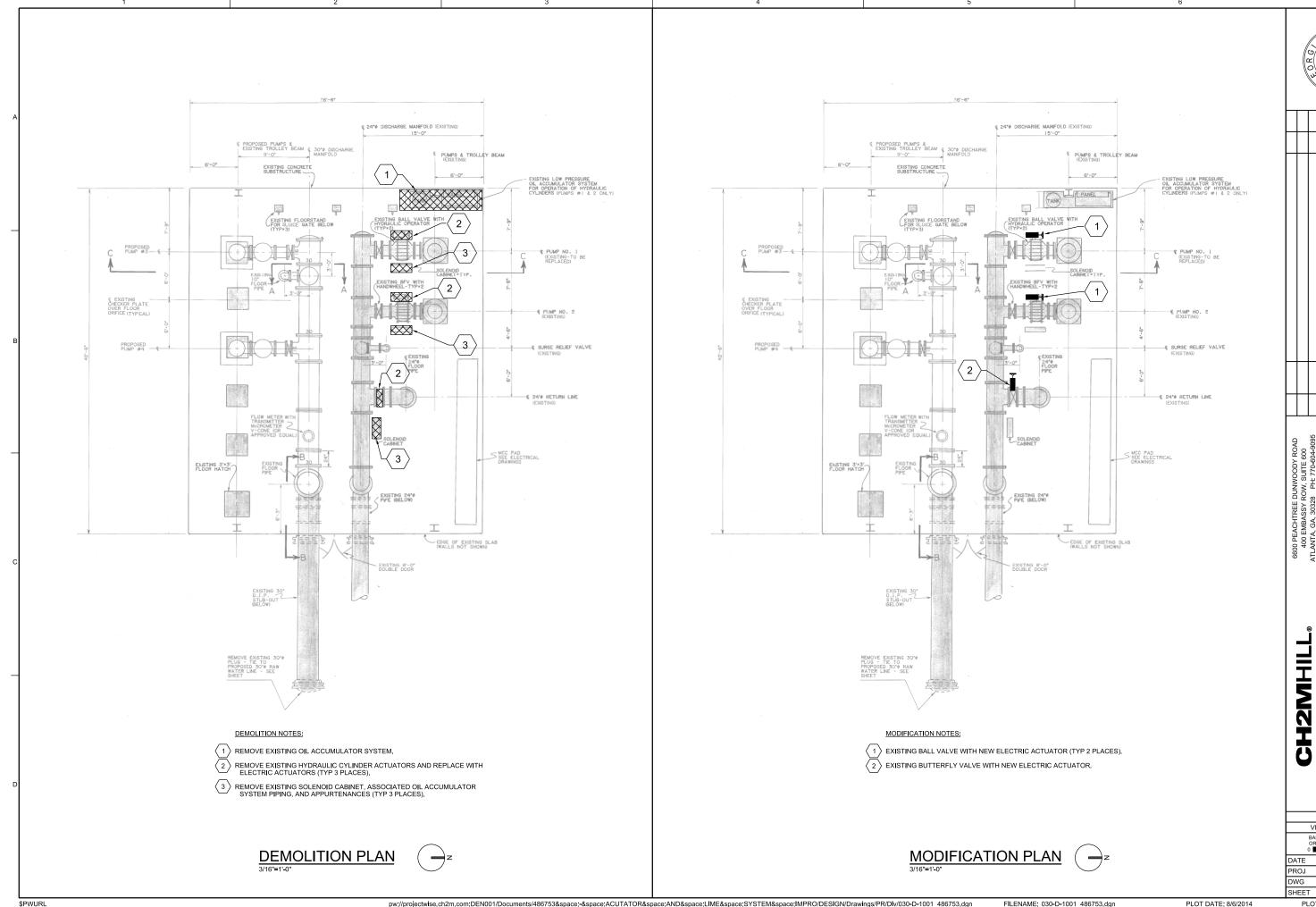
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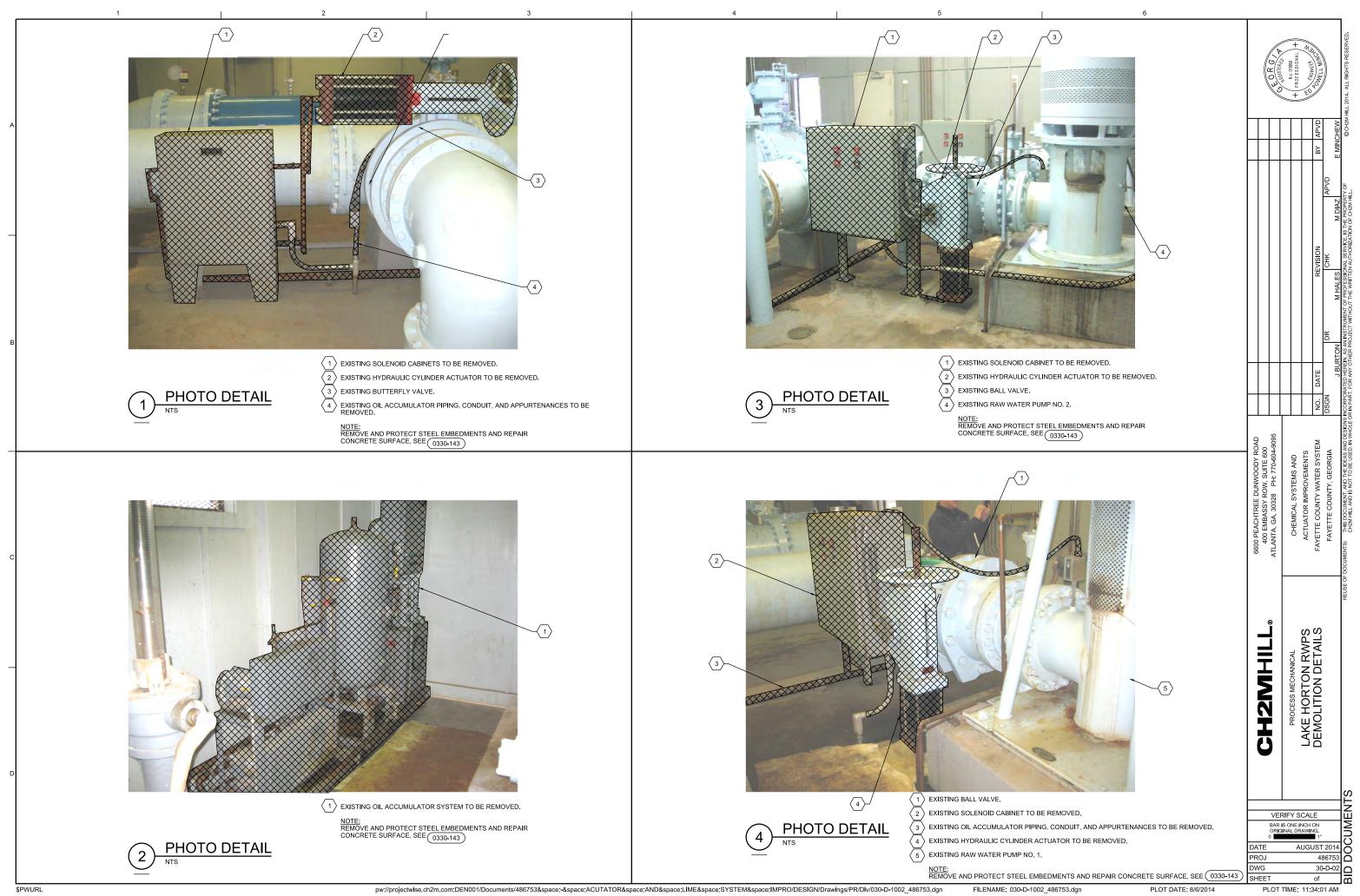
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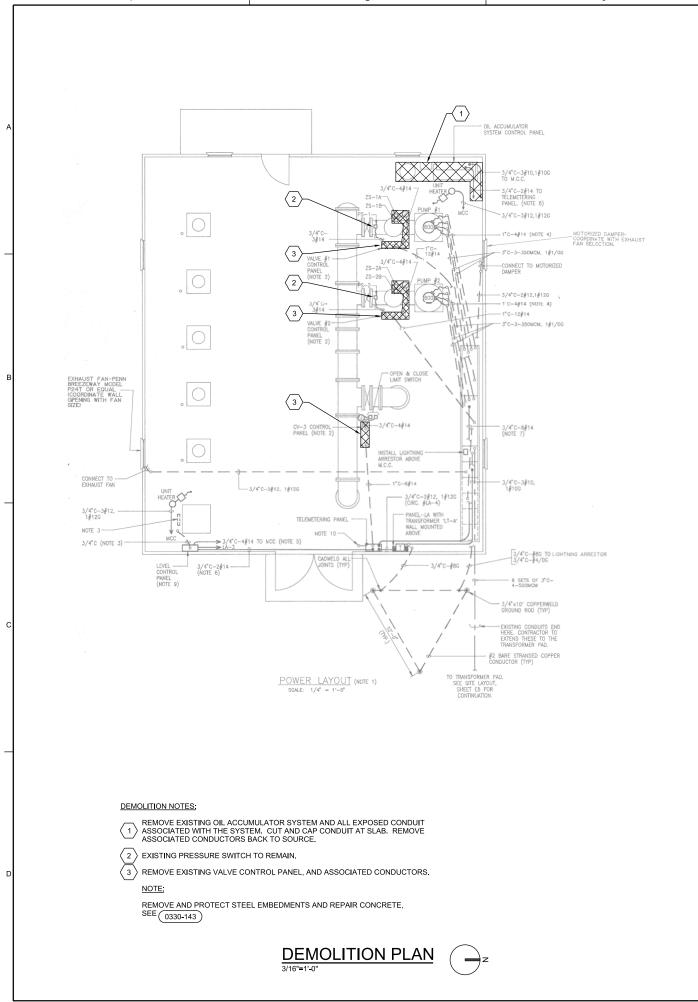
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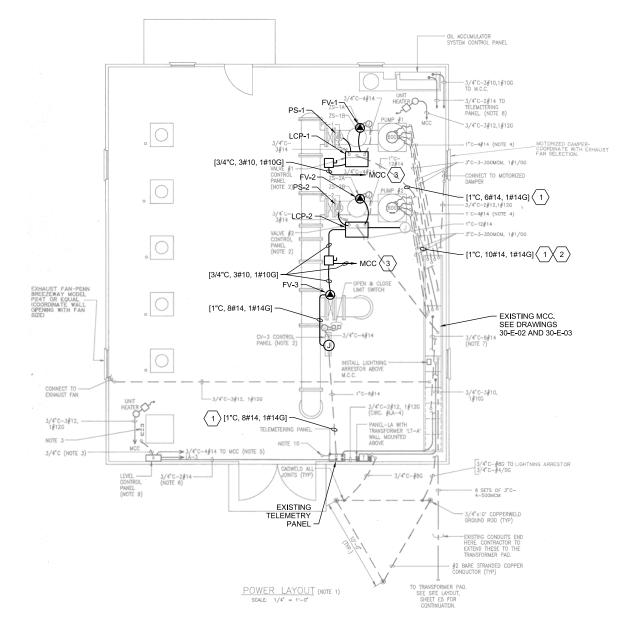
LAKE HORTON RWPS DEMOLITION AND MODIFICATION PLANS

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- MODIFICATION NOTES: TO NEW ACTUATOR. PROVIDE NEW CONDUCTORS.
- (2) PUMP 2 MOTOR SPACE HEATER AND MOTOR T-STAT ROUTE IN SAME CONDUIT AS VALVE CONTROLS. PROVIDE NEW CONDUCTORS FOR ALL.
- $\boxed{3}$ ROUTE CONDUIT EXPOSED AVOID INTERFERENCE WITH THE CRANE MONORAIL USED TO PULL PUMPS.

MODIFICATION PLAN
3/16"=1'-0"

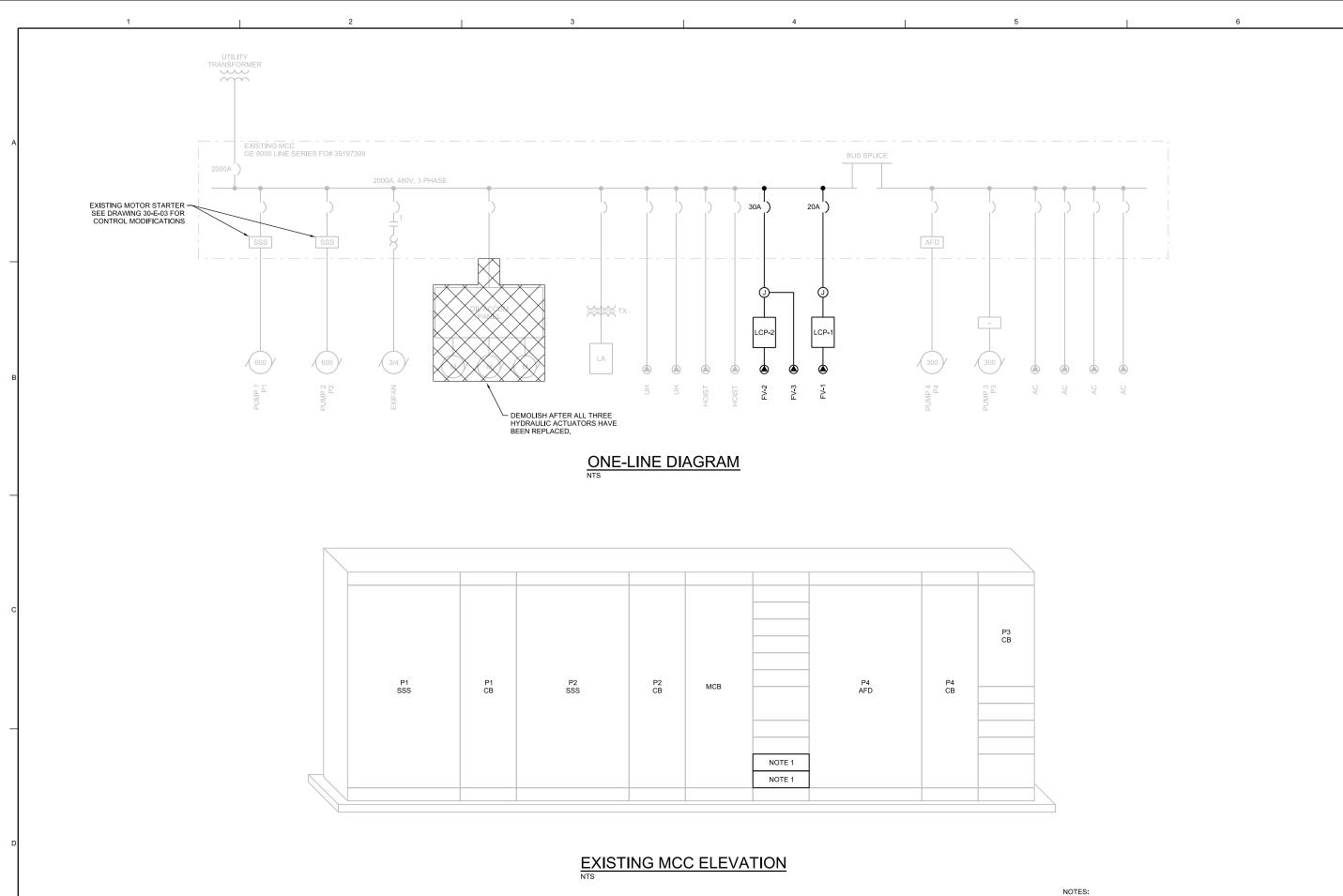


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LAKE HORTON RWPS
DEMOLITION AND MODIFICATION
PLANS

VERIFY SCALE

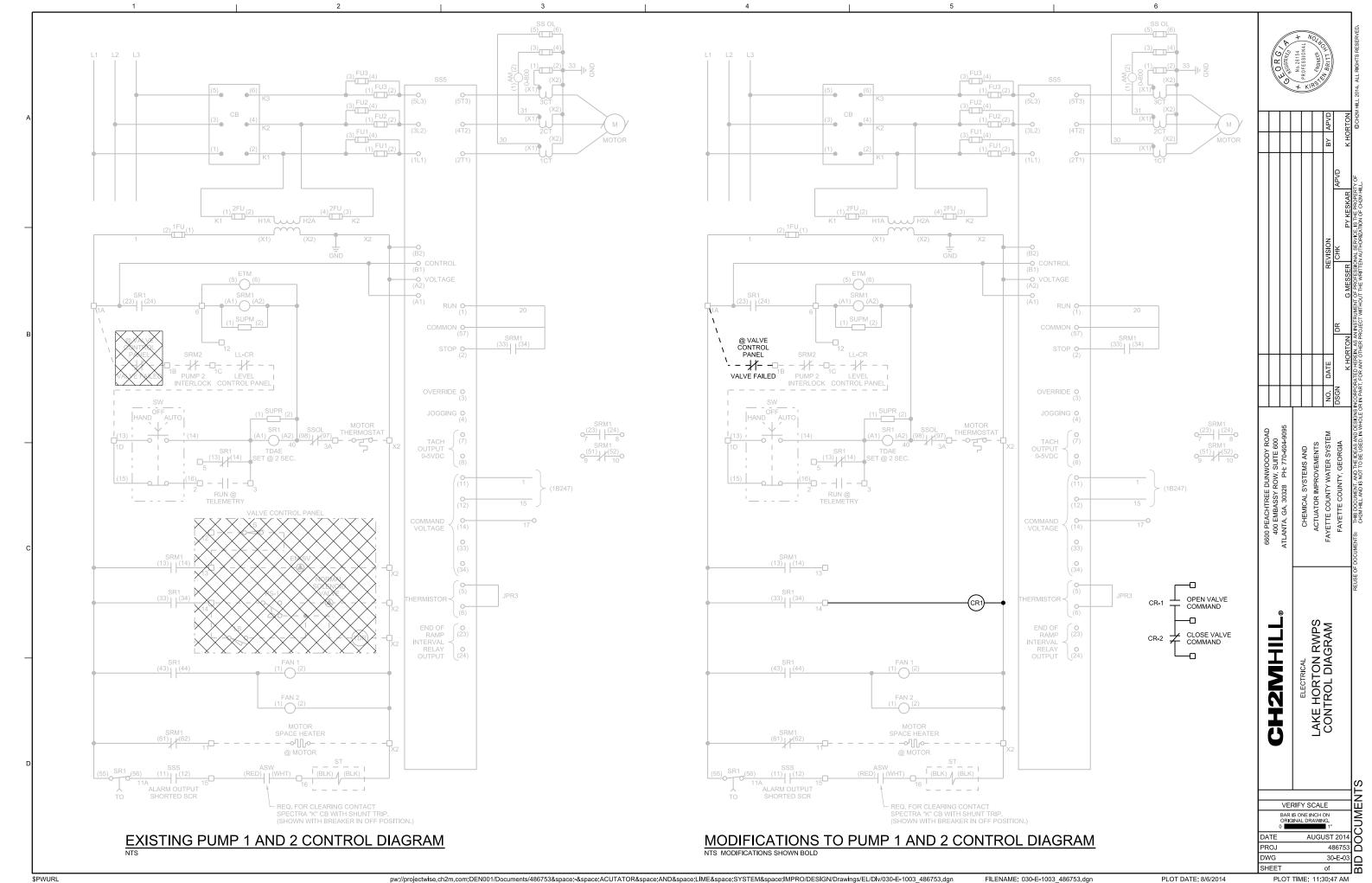


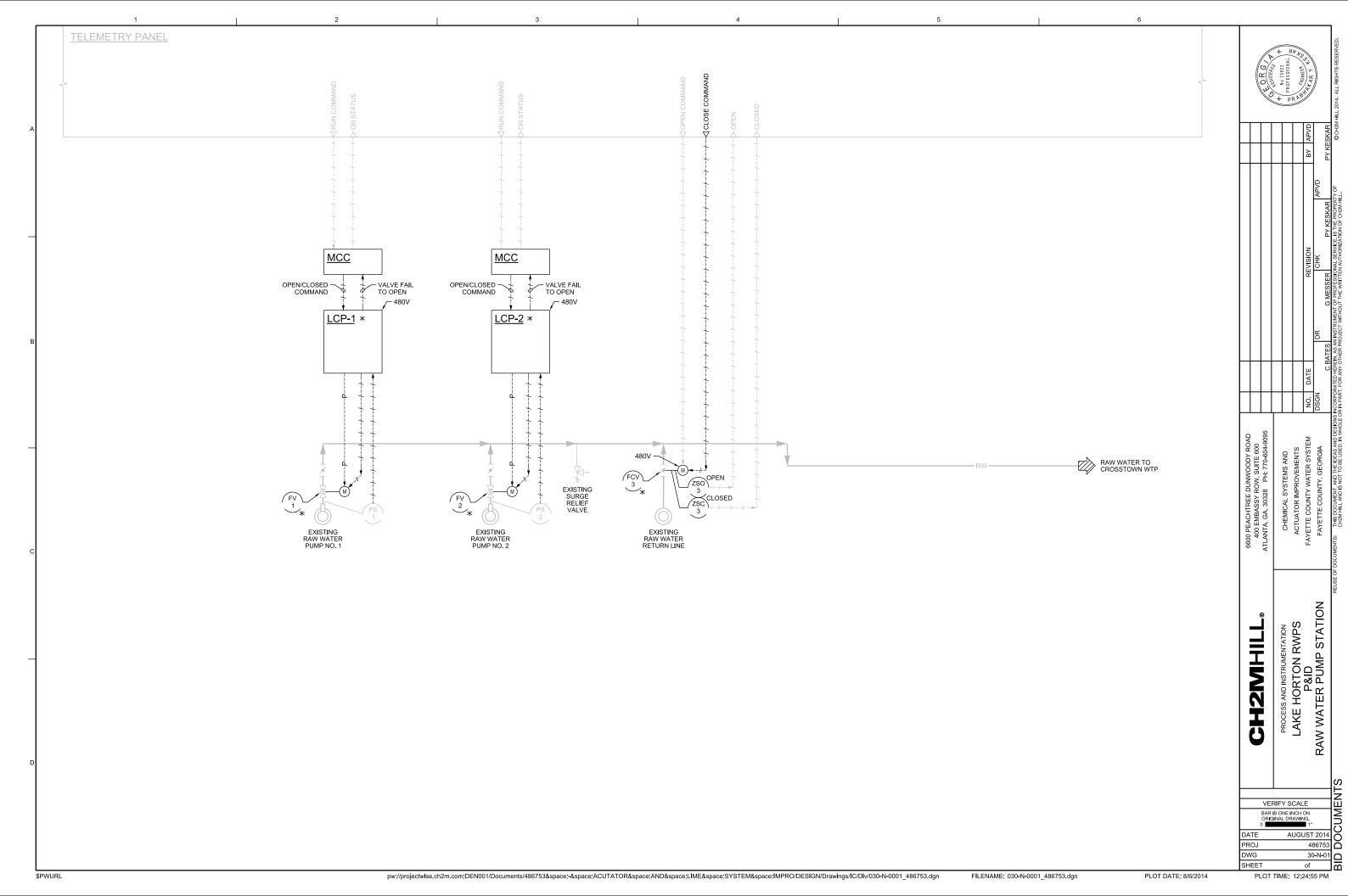
- 1. INSTALL TWO CIRCUIT BREAKERS IN EXISTING MCC SPACE.

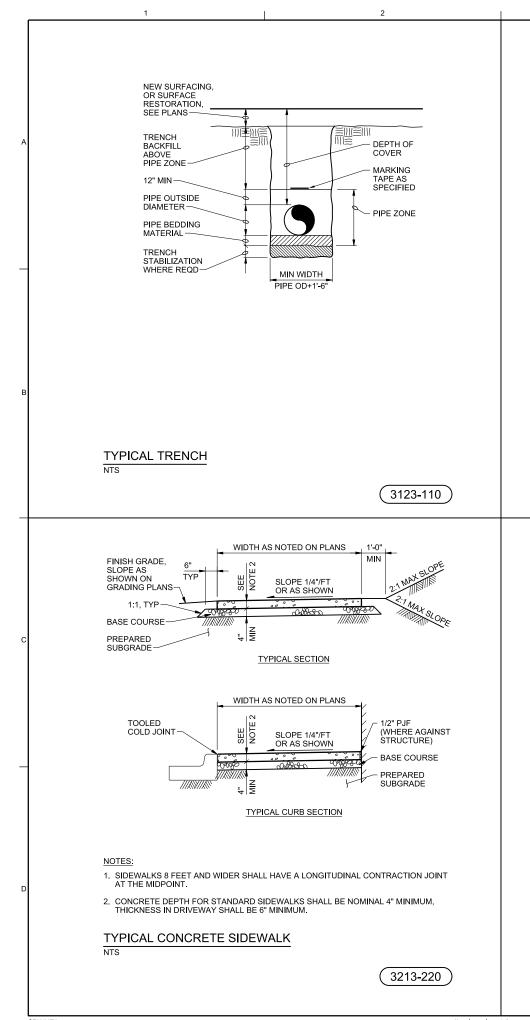
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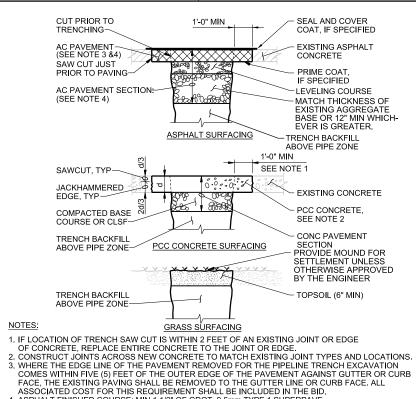
ELECTRICAL
LAKE HORTON RWPS
ONE LINE DIAGRAM

VERIFY SCALE









4. ASPHALT FINISHED COURSE: MIN 1 1/2" OF GDOT, 9.5mm TYPE 1 SUPERPAVE ASPHALT BINDER COURSE: MIN 2 1/2" OF GDOT, 12.5mm SUPERPAVE BASE: MIN 6" OF GDOT 815, GAB TYPE I

SURFACE RESTORATION

NTS

NOTES:

3123-115

CONTROLLED LOW-STRENGTH FILL (CLSF) MINIMUM ALLOWABLE CLEARANCE IS 3" CLSF <u>12" TYP</u> <u>PLAN</u> **SECTION**

CLSF SUPPORT IS REQUIRED:

- 1. WHEN BOTH PIPELINES ARE NEW AND CLEARANCE BETWEEN THEM IS LESS THAN 12".
- 2. WHEN A NEW PIPELINE IS CROSSING OVER AN EXISTING PIPELINE AND THE CLEARANCE BETWEEN THEM IS LESS THAN 12".
- 3. AT ALL PIPE CROSSINGS WHERE A NEW PIPELINE IS CROSSING UNDER AN
- 4. REFER TO SPECIFICATION SECTION 31 23 23.15 FOR CLSF REQUIREMENTS.

TRENCH PIPE CROSSING

3123-120

THRUST BLOCK NOTES

- 1. KEEP CONCRETE CLEAR OF JOINT AND JOINT ACCESSORIES.
- 2. CONCRETE THRUST BLOCKING SHALL BE POURED AGAINST UNDISTURBED FARTH
- 3. REQUIRED VOLUMES OR BEARING AREAS AT FITTINGS SHALL BE AS INDICATED BELOW. ADJUSTED, IF NECESSARY, TO CONFORM TO THE TEST PRESSURE(S) AND ALLOWABLE SOIL BEARING STRESS(ES) STATED IN THE SPECIFICATIONS.
- 4. THRUST BLOCK VOLUMES FOR VERTICAL BENDS HAVING UPWARD RESULTANT THRUSTS ARE BASED ON TEST PRESSURE OF 150 PSIG AND THE WEIGHT OF CONCRETE = 4050 LBS/CU YD. TO COMPUTE VOLUMES FOR DIFFERENT TEST PRESSURES, USE THE FOLLOWING EQUATION: VOLUME = (TEST PRESS./150) x (TABLE VALUE).
- 5. BEARING AREAS FOR HORIZONTAL BEND THRUST BLOCKS ARE BASED ON TEST PRESSURE OF 150 PSIG AND AN ALLOWABLE SOIL BEARING STRESS OF 2000 LBS/SQ FT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, MULTIPLY TABLE VALUES BY THE FACTOR (13.33)(P/S'_b), WHERE:

 P = ACTUAL TEST PRESSURE PSIG
 - P' = ACTUAL TEST PRESSURE, PSIG S'_b = ACTUAL SOIL BEARING PRESSURE, PSF.
- 6. THRUST BLOCKS FOR VERTICAL BENDS HAVING DOWNWARD RESULTANT THRUSTS SHALL BE THE SAME AS FOR HORIZONTAL BENDS.
- 7. BEARING AREAS, VOLUMES, AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER THIS STANDARD
- 8. BEARING AREA OF THRUST BLOCK SHALL NOT BE LESS THAN 1.0 SQ FT.
- VERTICAL BENDS THAT REQUIRE A THRUST BLOCK VOLUME EXCEEDING 5 CUBIC YARDS REQUIRE SPECIAL BLOCKING DETAILS. SEE PLANS FOR VOLUMES SHOWN TO LEFT OF SOLID LINE IN TABLE.
- 10.TEST PRESSURES ARE SHOWN IN THE PIPING SCHEDULE
- 11. ALLOWABLE SOIL BEARING STRESS IS 2000 LBS/SQ FT.

BEARING AREA OF THRUST BLOCKS IN SQ. FT. (HORIZONTAL BENDS)								VOLUME OF THRUST BLOCK IN CUBIC YARDS (VERTICAL BENDS)						
	TEE W	v=	90° BEND	TEE PLUGGED			BEND ANGLE			FITTING	BEND ANGLE			
FITTING SIZE	PLUG, OR CAP		PLUGGED	RI				BEIND ANGLE		SIZE	45° 22 1/2° 11 1			
	CAI		CINOSS	Α	1	Α2	45°	22 1/2°	11 1/4°	4	1.1	0.4	0.2	
4	1.0		1.4	1.	9	1.4	1.0	-	-	6	2.7	1.0	0.4	
6	2.1		3.0	4.	3	3.0	1.6	1.0	-	8	4.0	1.5	0.6	
8	3.8		5.3	7.	6	5.4	2.9	1.5	1.0	10	6.0	2.3	0.9	
10	5.9		8.4	11.	8	8.4	4.6	2.4	1.2	12	8.5	3.2	1.3	
12	8.5		12.0	17.	0	12.0	6.6	3.4	1.7	14	11.5	4.3	1.8	
14	11.5		16.3	23.	0	16.3	8.9	4.6	2.3	16	14.8	5.6	2.3	
16	16 15.0 18 19.0 20 23.5		21.3	30.	30.0 21.3 38.0 27.0		11.6	6.0	3.0		^/2'		A/2* I≣III	
18			27.0	38.			14.6	7.6	3.8					
20			33.3	47.0		33.3	18.1 9.4	9.4	4.7				<u>一</u> 晋	
24 34.0		48.0	68.	8.0 48.0		26.2	13.6	6.8	,≣m r) 提高.	ill n illing			
FITTING ROD								200E	hm#	TEE PLUĞĞED CROSS*				
SIZE SIZE EMBEDMENT 12" AND LESS #6 30"			ENT	an E					黒り					
								. <u>ii</u>	,					
14"-16" #8 36"											II			
GALVANIZED RODS OVER FITTING EMBEDDED IN CONCRETE (SEE TAE					AN BLI	AND A2					⊞⊞⊞ ND	PLUGGED C	ROSS	
OR SIZES)					PLUGGED TEE				====					
	9	ωŀ	2							=			鰤	
					* EAG	CH AI	REA (A/ FD TOT	2) IS 1/2 AL ARE	of 词(/			<u>"""</u>		
					TABOLATED TOTAL AIRE					4	- - 1/4" PLYWOOI	OVER		
PROFILE												ACE OF BOL		

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THRUST BLOCK NOTES AND DETAILS

3311-765

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WG HEET STANDARD DETAIL

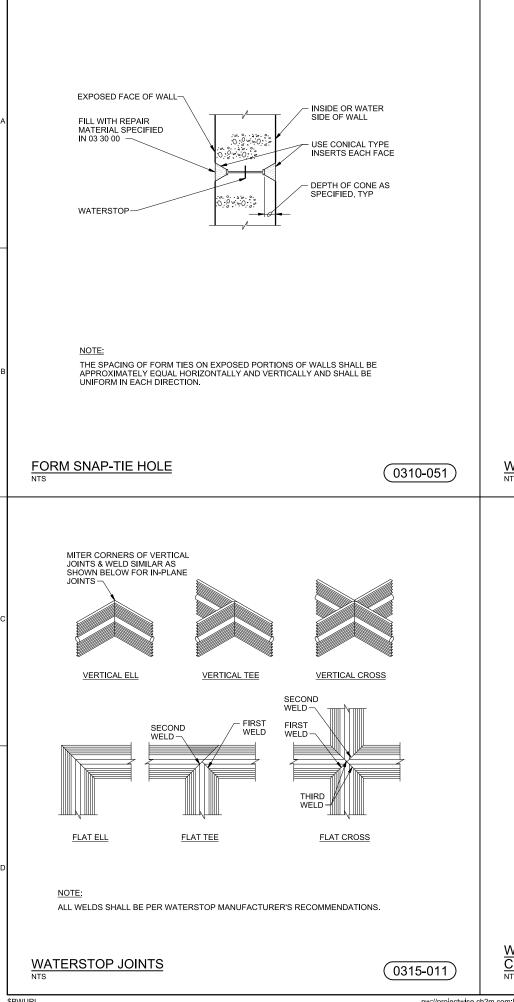
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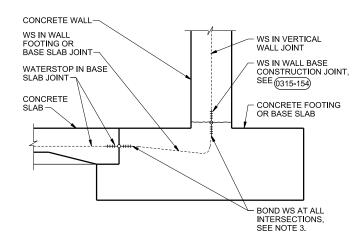
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AUGUST 2014

VERIFY SCALE

BAR IS ONE INCH ON





NOTES:

- 1. SUBMIT DETAILS OF SPLICING AND LOCATION.
- 2. BOND OR SPLICE ALL HORIZONTAL TRANSVERSE WATERSTOPS IN BASE SLAB JOINTS TO CONTINUOUS LONGITUDINAL WATERSTOP IN WALL BASE FOR COMPLETE SEAL.
- 3. BOND OR SPLICE ALL VERTICAL WATERSTOPS IN WALL JOINTS TO LONGITUDINAL WATERSTOP IN WALL BASE FOR COMPLETE SEAL, SEE (0315-011) FLAT CROSS JOINT.

WATERSTOP CONNECTION NTS

(0315-012)

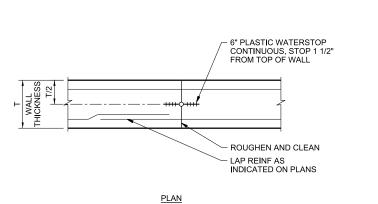
1. FOR WALLS WITH SINGLE MAT OF REINFORCING LOCATE WATERSTOP ON LIQUID FACE, 1" CLEAR OF REINFORCEMENT. 2. SECURE WATERSTOP IN-PLACE AS SPECIFIED.

6" PLASTIC

WATERSTOF

WALL BASE CONSTRUCTION JOINT

(0315-154

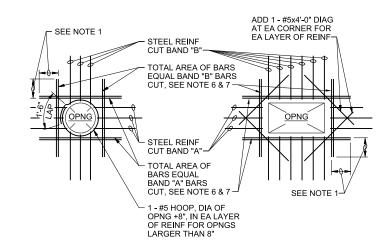


NOTE:

ALL REINFORCING CONTINUOUS ACROSS JOINT.

WALL VERTICAL **CONSTRUCTION JOINT**

0315-151



EQUAL

JOINT

CONSTRUCTION

LOCATION OF BASE SLAB TOP REINF SEE PLANS

- 1. PROVIDE MINIMUM LAP, SEE GENERAL STRUCTURAL NOTES.
- 2. TYPICAL FOR ALL OPENINGS IN CONCRETE WALLS OF BELOW GRADE AND HYDRAULIC STRUCTURES AND ALL STRUCTURAL CONCRETE SLABS UNLESS INDICATED OTHERWISE ON PLANS.
- 3. DO NOT WELD REINFORCEMENT TO PIPE SLEEVES AND INSERTS.
- 4. PROVIDE A MINIMUM OF 2 "A" BARS AND 2 "B" BARS EACH SIDE OF OPENING (1 EACH FACE), INCLUDING DOWELS AND CORNER BARS, TYPICAL.
- 5. FOR OPENINGS LARGER THAN 8'-0", REINFORCE SAME AS FOR 8'-0" OPENINGS.
- SPACE AT 3 BAR DIAMETERS (OR 3" MINIMUM) ON CENTER. LOCATE HALF OF TOTAL AREA ON EACH SIDE OF OPENING.
- 7. AT OPENINGS WITHIN 12" OF AN INTERSECTING WALL OR SLAB, PROVIDE ONLY THE EXTRA REINFORCEMENT WHICH WILL FIT, AT THE BAR SPACING IN NOTE 6.

OPENING REINFORCING

0330-001

H2MHILI VERIFY SCALE

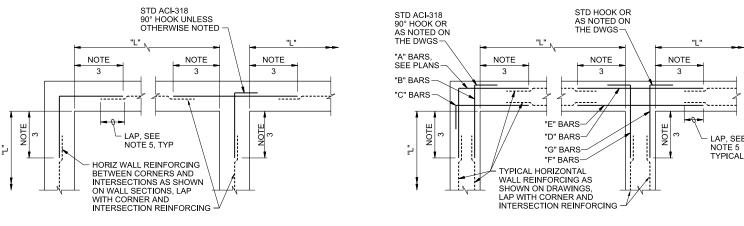
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BAR IS ONE INCH ON

AUGUST 2014

DOUBLE REINFORCING MAT



OTES:

TYPICAL OPENING REINF AROUND PIPE SEE (0330-001)

BOTTOM "U" SECTION OF

8" MIN ALL

AROUND

3" CLR,

TIES CONT TO END OF

ENCASEMEN

- TYPICAL HORIZONTAL WALL CORNER AND INTERSECTION REINFORCING LAYOUT IS SHOWN TO AVOID CONGESTION AND PERMIT PROPER PLACEMENT, FOR SIZE AND SPACING SEE PLANS. ALL HORIZONTAL REINFORCING AT CORNERS AND INTERSECTIONS SHALL BE FABRICATED AND INSTALLED WITH SPLICES LOCATED WHERE SHOWN REGARDLESS OF BAR SIZE AND SPACING.
- 2. WHERE THE CORNER OR INTERSECTION REINFORCING SIZE AND SPACING IS NOT SHOWN, NOTED OR TABULATED ON THE PLANS, THE SIZE AND SPACING SHALL BE THE SAME AS THE WALL HORIZONTAL REINFORCING SHOWN ON THE WALL SECTIONS OR AS NOTED FOR THE REINFORCING BETWEEN THE CORNERS OR INTERSECTIONS.
- 3. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 3" SHALL BE THE LESSER OF L/4, 10 FEET, OR 1.0 TIMES THE HEIGHT OF THE WALL, EXCEPT THAT IN NO CASE SHALL IT BE LESS THAN 2 FEET.
- 4. L = LENGTH OF WALL PARALLEL TO THE BAR LENGTH IN QUESTION.

ENCASEMENT RISER

WHEN PIPE ENCASEMENT IS CLOSER THAN 4" TO SLAB ABOVE, TIE SLAB & ENCASEMENT TOGETHER. SEE 0330-018

SINGLE REINFORCING MAT

- 5. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 5" SHALL BE EQUAL TO ONE "LAP LENGTH" AS REQUIRED BY THE GENERAL STRUCTURAL NOTES. USE THE LAP LENGTH AS REQUIRED FOR THE SMALLER OF THE TWO REINFORCING BARS BEING SPLICED.
- 6. UNLESS OTHERWISE NOTED, "B" AND "C" BARS ARE THE SAME SIZE AND SPACING AND "F" AND "G" BARS ARE THE SAME SIZE AND SPACING.

CONSTRUCTION JOINT

∠ 2 - #5 EACH SIDE

HYDROPHILIC WATERSTOP CONTINUOUS ALL AROUND

TYPICAL PIPE ENCASEMENT REINF

IN ALL CONSTRUCTION JOINTS

PROVIDE LEVEL BEARING AREA BELOW VERT PIPE RISER

FOUAL TO ENCASEMENT

#5 TIES @12"

CONTINUOUS

LAP LENGTH, SEE

GENERAL STRUCTURAL

0330-016

TYPICAL WALL CORNER AND INTERSECTION REINFORCING

2'-0"

NTS



PIPE ENCASEMENT REINF
SEE (3330-016)
EXTEND VERTS & BEND
1'-0" INTO TOP
OF SLAB ABOVE

THICKEN SLAB
AT ENCASEMENT

ONT SHOWN

#5@12"

#5@12"

TYP

SEE NOTE 2

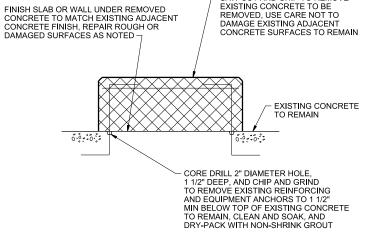
OTES:

- TIE PIPE ENCASEMENT TO SLAB AS SHOWN WHEN DISTANCE BETWEEN PIPE ENCASEMENT AND BOTTOM OF SLAB IS LESS THAN 4".
- 2. 6" PLASTIC WS IN ENCASEMENT JOINTS. WELD TO WS IN SLAB JOINTS.

PIPE ENCASEMENT AT SLAB

0330-018

0330-003



NOTE

#3 ______ TYP

ANCHOR HOLES -

(0330-105)

AT BOLTED FRAME

#4 ADHESIVE DOWEL W/ STD HOOK, 8" EMBED, @ 1'-0" OC

PROVIDE 90° NEENAH FITTINGS TO MATCH FRAME AND COVER AS REQUIRED.

TRENCH COVER RETROFIT

- 1. REMOVE CONCRETE OUT TO SOUND CONCRETE.
- IF CHIPPING INTO THE SURFACE OF THE EXISTING SLAB OR WALL TO REMAIN IS REQUIRED, MAKE EDGES PERPENDICULAR TO THE SURFACE. DO NOT FEATHER EDGES.
- FILL DEFECTIVE AREA WITH NON-SHRINK GROUT OR AN APPROVED PREPACKAGED PATCHING MATERIAL TO MATCH APPREARANCE OF ADJACENT CONCRETE SURFACES.
- USE APPROVED BONDING AGENT ON SURFACES TO BE PATCHED PRIOR TO PLACING NON-SHRINK GROUT.
- DEMONSTRATE METHODS FOR REPAIR USING ACTUAL MATERIALS, METHODS, AND CURING PROCEDURES REQUIRED BY MATERIAL MANUFACTURERS. CONSULT WITH BONDING AGENT MANUFACTURER AND NON-SHRINK GROUT MANUFACTURER ON TECHNIQUES.

CONCRETE DEMOLITION

0330-143



HZMHLL®

VERIFY SCALE

VERIFY SCALE

BAR IS ONE INCH ON
ORIGINAL DRAWING.

DATE

AUGUST 2014

PROJ

486753

DWG

SD-03

SHEET

OF

\$PWURL

PIPE ENCASEMENT

HEAVY DUTY BOLTED FRAME AND SOLID COVER OR

ENGINEERS APPROVED EQUAL

ROUGHEN

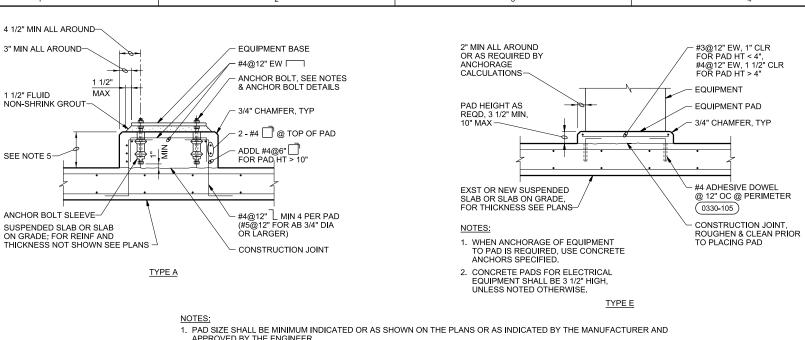
EXISTING CONC TO 1/4"

AMPLITUDE

EXISTING CONC TRENCH

(0330-107

SAW-CUT AND CHIP TO REMOVE

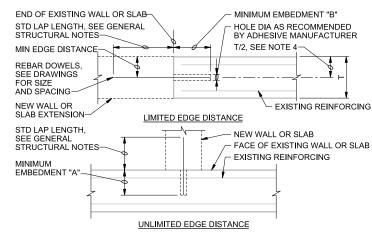


- APPROVED BY THE ENGINEER
- 2. THE SIZE, NUMBER, TYPE, LOCATION, AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER AND AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A TEMPLATE OR OTHER ACCEPTABLE MEANS, MATCHING THE BASE PLATE, WHILE PAD IS BEING PLACED.
- 3. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS INDICATED OTHERWISE.
- 4. WEDGES, SHIMS, OR LEVELING NUTS SHALL BE USED TO SUPPORT THE BASE WHILE THE NON-SHRINK GROUT IS PLACED. WEDGES OR SHIMS THAT ARE LEFT IN PLACE SHALL NOT BE EXPOSED TO VIEW.
- 5. HEIGHT OF PADS SHALL BE MINIMUM REQUIRED FOR ANCHOR BOLT CLEARANCE TO KEEP ANCHOR BOLT ABOVE SUPPORTING SLAB (SEE TABLE BELOW).
- 6. AT CONTRACTOR'S OPTION, CONCRETE ANCHORS MAY BE USED IN LIEU OF CAST-IN-PLACE ANCHOR BOLTS FOR EQUIPMENT ANCHOR BOLTS LESS THAN 3/4" DIAMETER WHEN APPROVED BY THE EQUIPMENT MANUFACTURER AND APPROVED BY THE ENGINEER. ANCHORS SHALL BE INSTALLED WITH 8" MINIMUM EDGE DISTANCE IN EACH DIRECTION.

CONCRETE EQUIPMENT PAD	

AB DIA (IN.)	1/2	5/8	3/4	7/8	1	1 1/4	1 3/8	1 1/2	1 3/4	2
MIN PAD HT (IN.)	7	8 1/2	10	11	12 1/2	15	16 1/2	18	21	24

0330-056



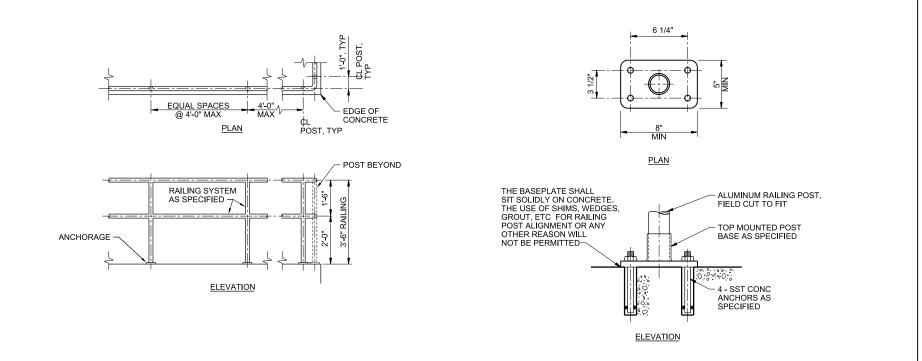
DOWEL SIZE	MINIMUM EDGE DIST	MINIMUM EMBEDMENT A	MINIMUM EMBEDMENT B
#3	2 1/2"	5"	8"
#4	3 1/2"	7"	11"
#5	4"	8"	13"
#6	5"	10 1/2"	16"
#7	6"	12 1/2"	20"
#8	7"	14"	22"
#9	7 1/2"	15"	24"

NOTES:

- 1. CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 03 63 00, CONCRETE
- 2. FOLLOW ADHESIVE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
- 3. USE MINIMUM EMBEDMENTS SHOWN, EXCEPT USE MANUFACTURER'S
- MINIMUM RECOMMENDED EMBEDMENT IF GREATER.
- 4. LOCATE DOWELS CENTERED IN WALL OR SLAB UNLESS OTHERWISE NOTED ON DRAWINGS. WHERE 2 ROWS OF DOWELS INDICATED, STAGGER SPACING & LOCATE ALTERNATING DOWELS AT MINIMUM EDGE DISTANCE FROM OPPOSITE FACES.

ADHESIVE DOWEL

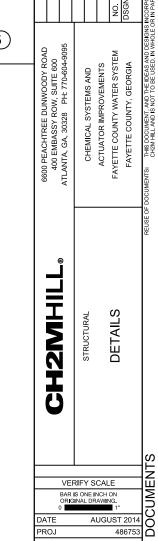
(0330-105



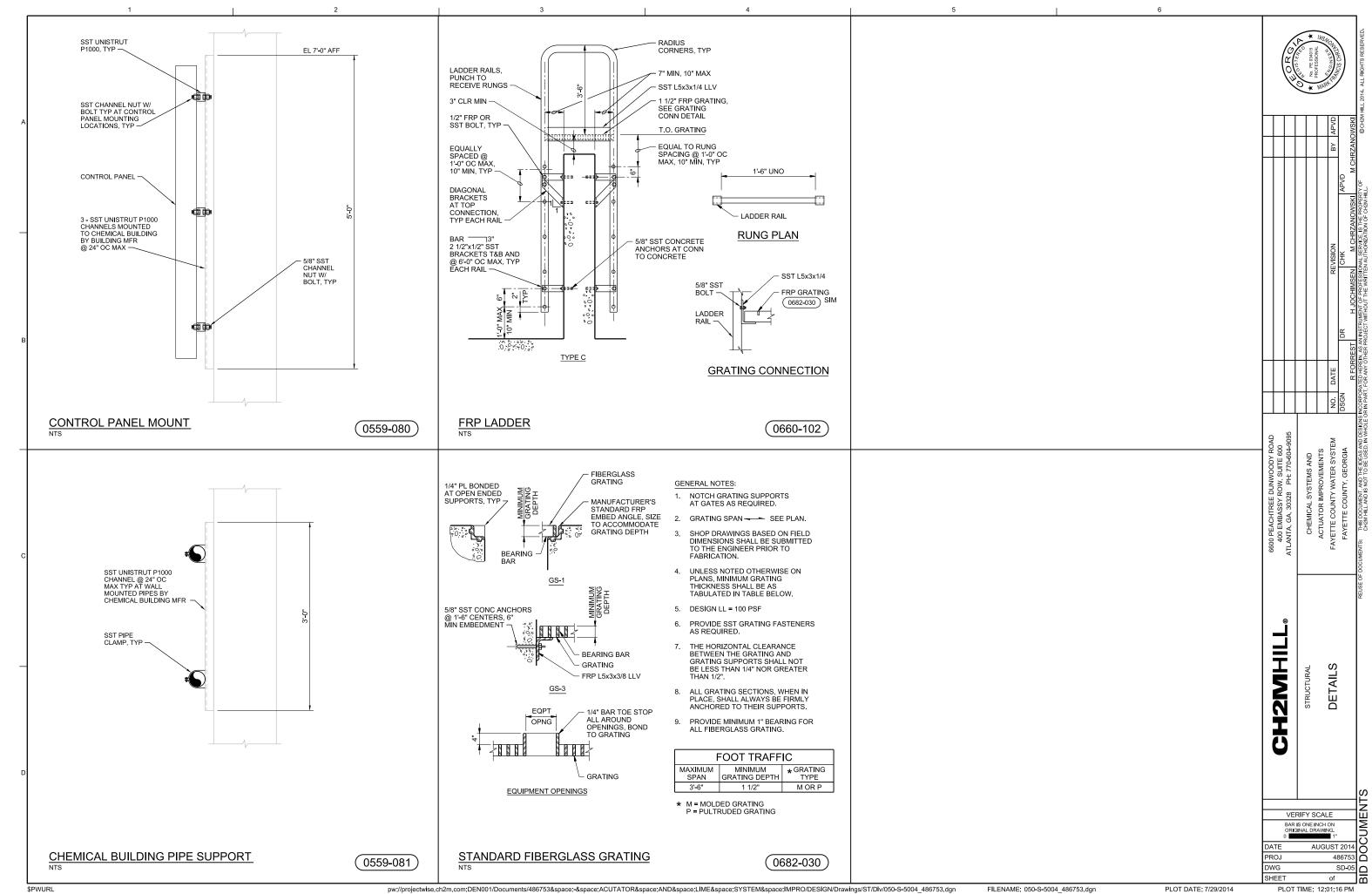
PROVIDE PROTECTION FOR DISSIMILAR METALS AND CONCRETE PER SPECIFICATIONS.

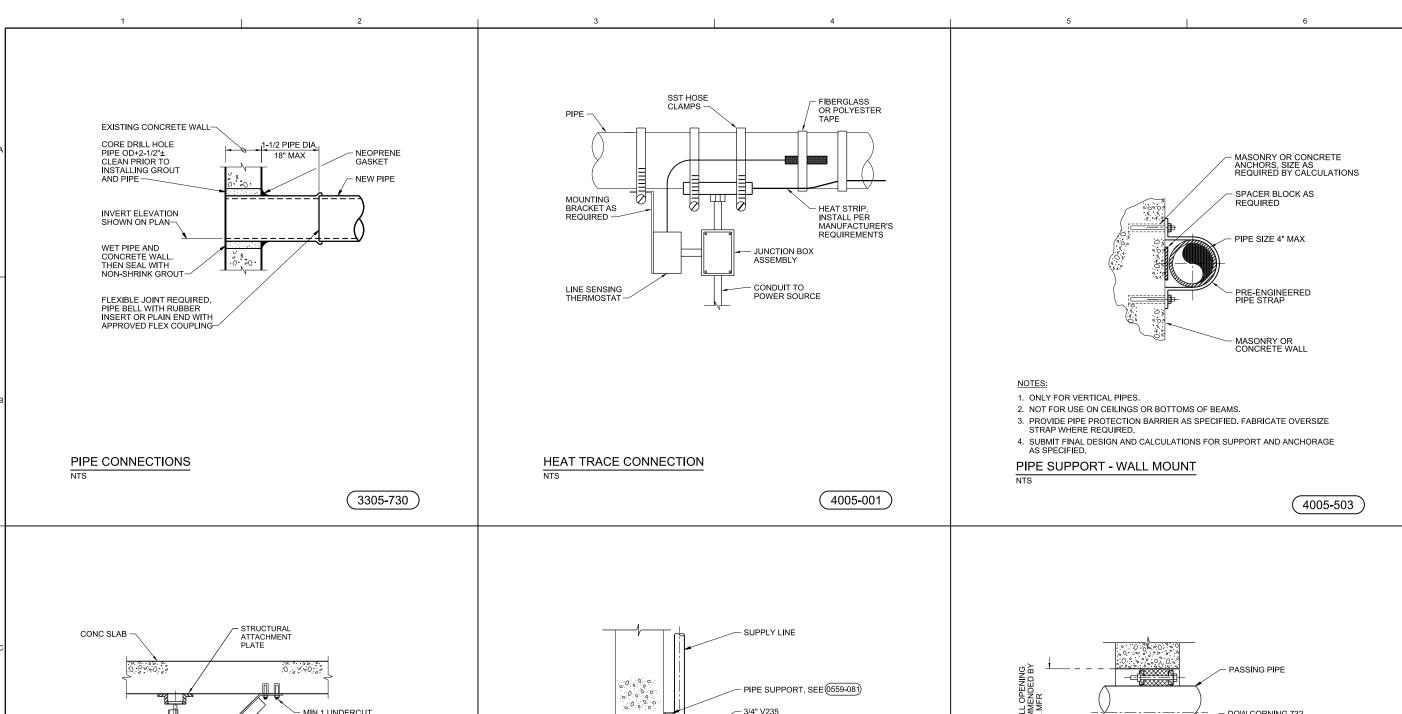
RAILING - 2 RAIL - ALUMINUM

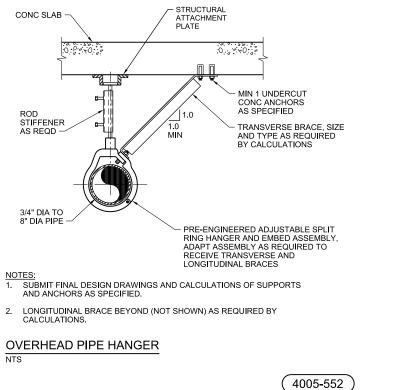
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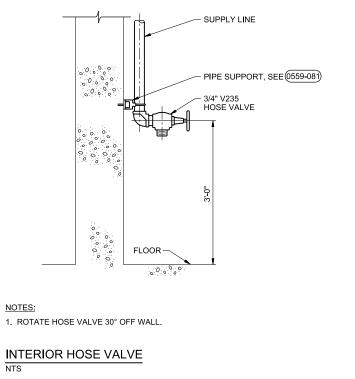


WG HEET

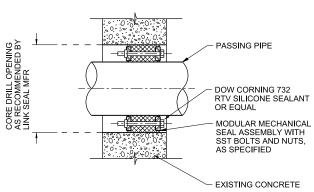








NTS



AFTER CORE DRILLING THROUGH EXST CONCRETE WALLS OR SLABS, EXPOSED ENDS OF REBAR SHALL BE PREPARED AND PROTECTED PER $\fbox{(0330-143)}$.

EXISTING WALL PIPE PENETRATION SEAL NTS

4027-607

4027-164

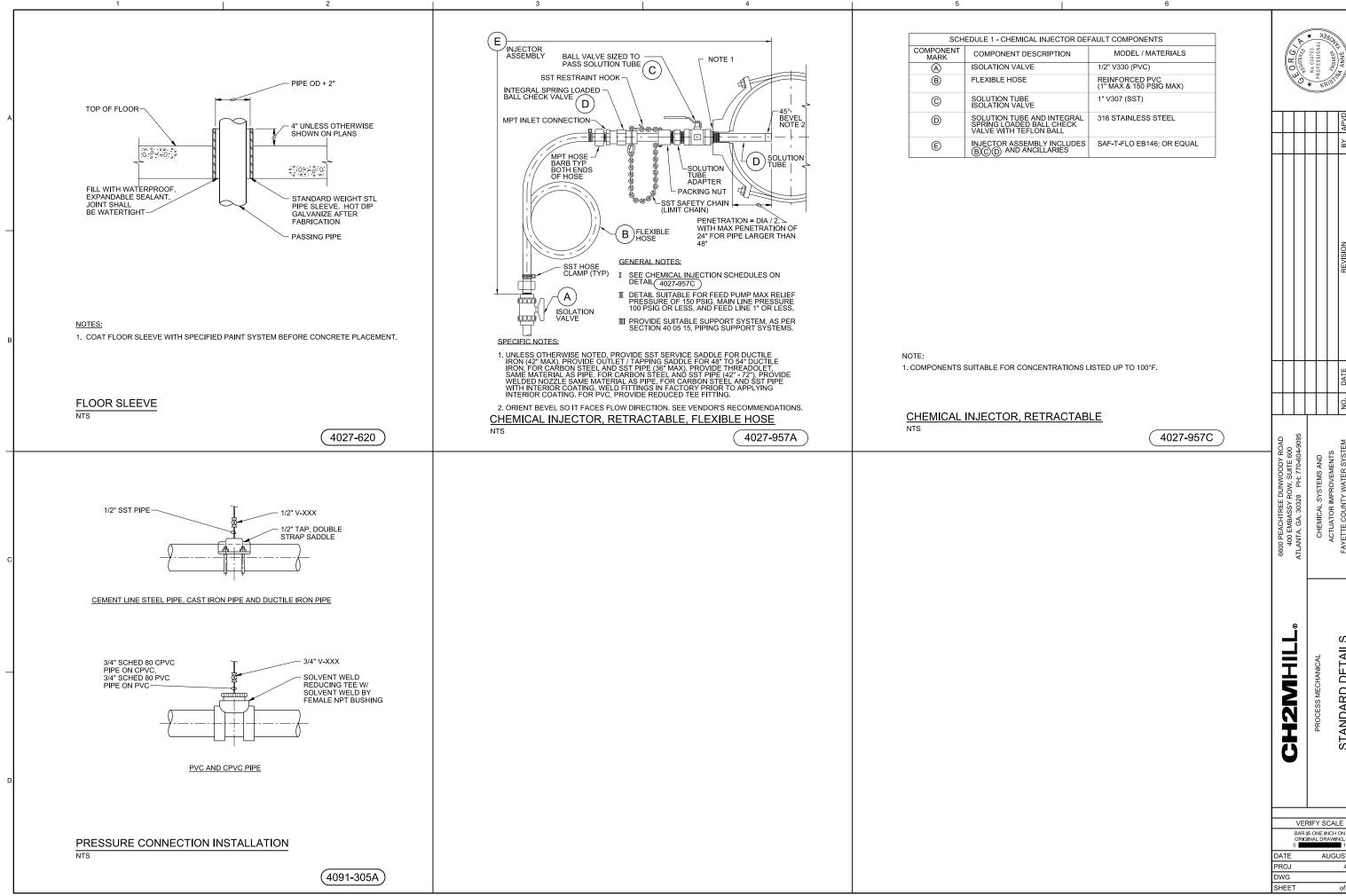
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CHZMHILL

STANDARD DETAILS

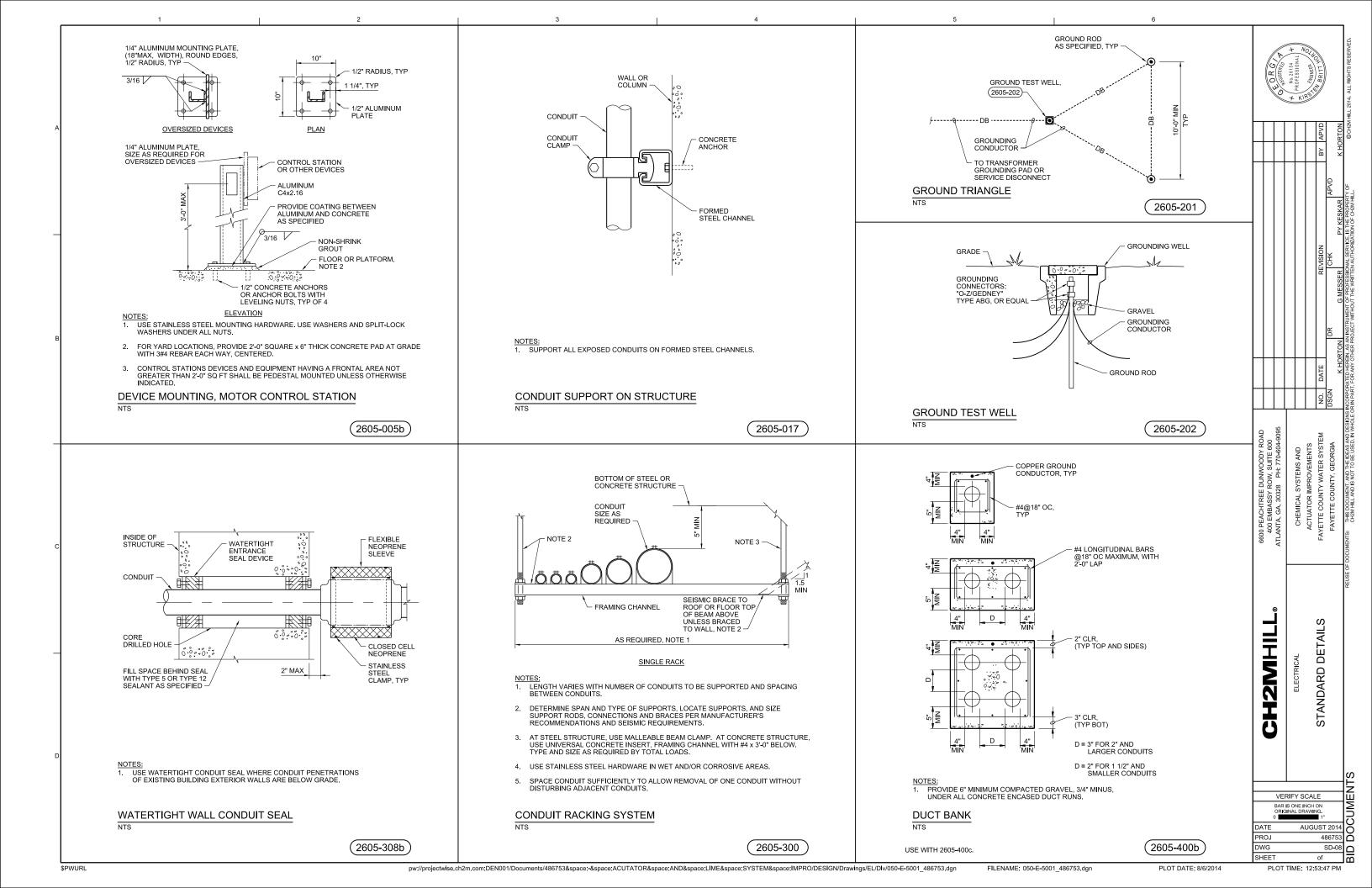
SLNEW NO. 3. 3. 3. 5T 2014 486753 VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING.

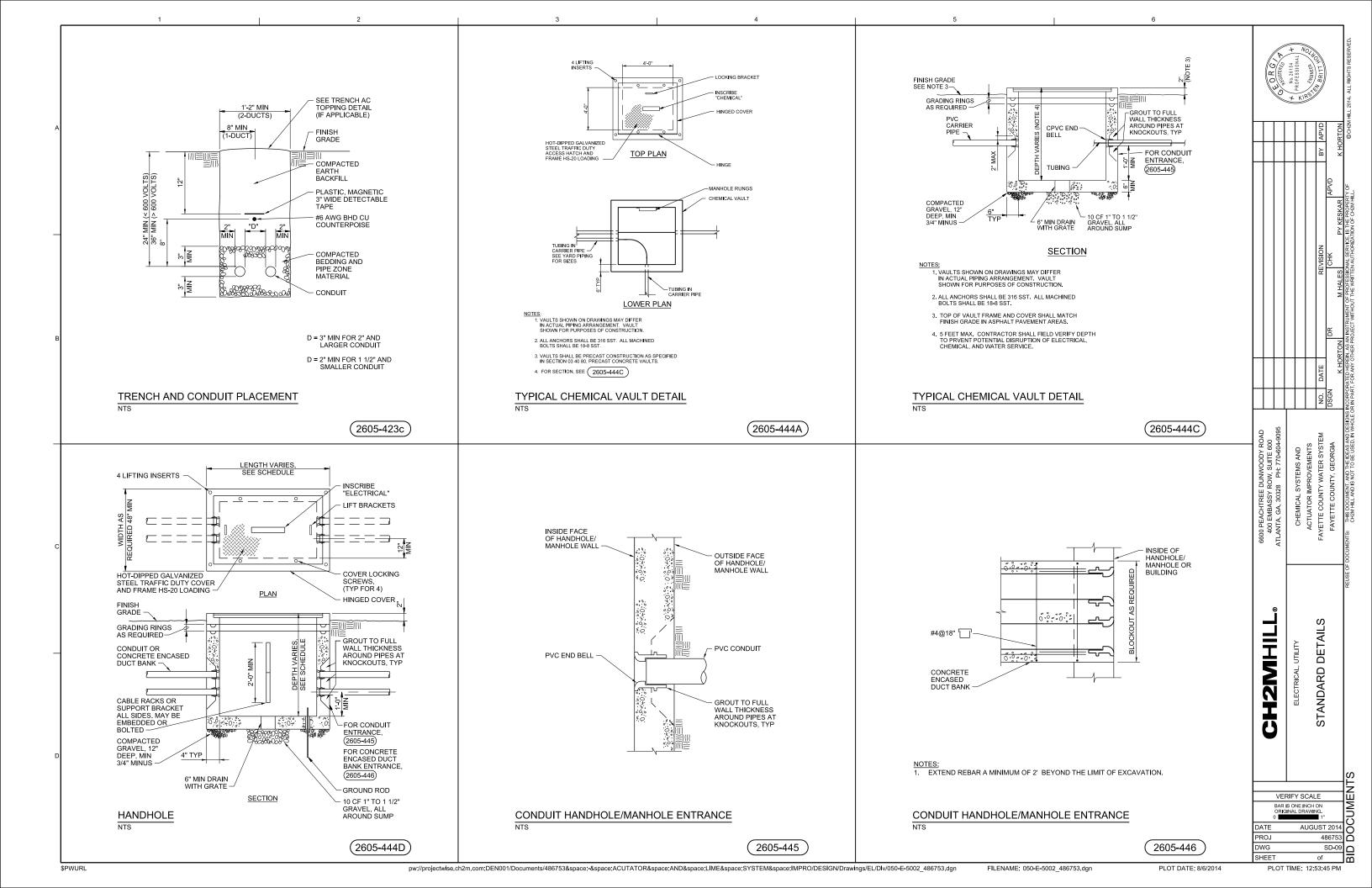
AUGUST 2014 PROJ SD-06 of DWG

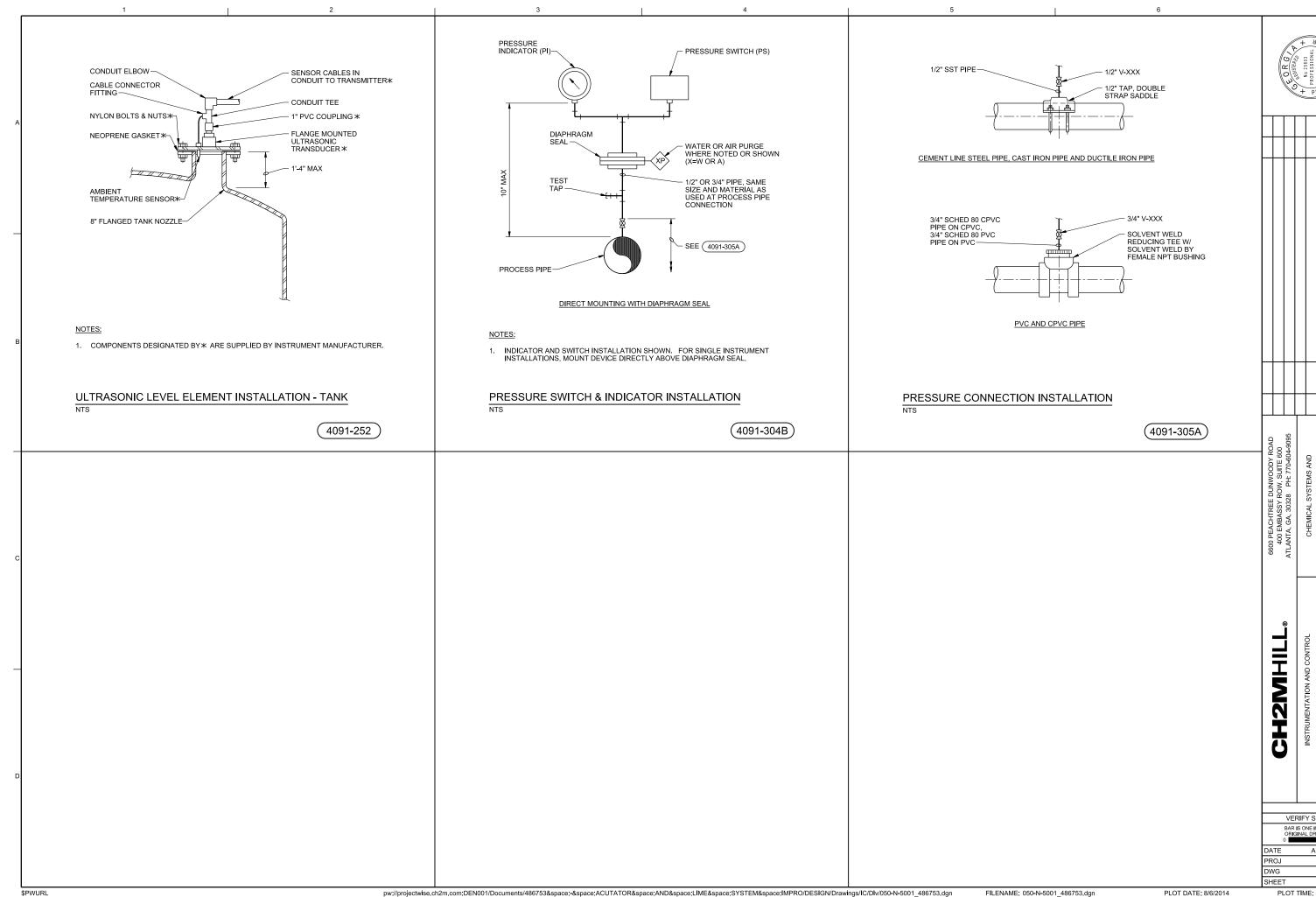


STANDARD DETAIL

Y SCALE WWW. SCHOOL OF THE INCH ON L DRAWING. OO AUGUST 2014 486753







SD-10 of PLOT TIME: 12:25:15 PM

STANDARD DETAILS

Y SCALE

NE INCH ON
L DRAWING.

AUGUST 2014

486753

SD 10 VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING.