CONTRACT DOCUMENTS

FOR THE CONSTRUCTION OF

NORTH REGIONAL WATER RECLAMATION FACILITY MASTER REUSE WET WEATHER MANAGEMENT WELL SYSTEM PROJECT



PREPARED FOR

MANATEE COUNTY UTILITIES MANATEE COUNTY, FL

VOLUME 2 OF 2 DRAWINGS

For information regarding this project, contact:

NIEL POSTLETHWAIT, P.E.

4350 West Cypress Street

Suite #600

Tampa, FL 33607-4178

(813) 281-7749

CH2MHILL

Project No. 674077

NOVEMBER 2019

PROJECT LOCATION ➤ **VICINITY MAP**

LOCATION MAP

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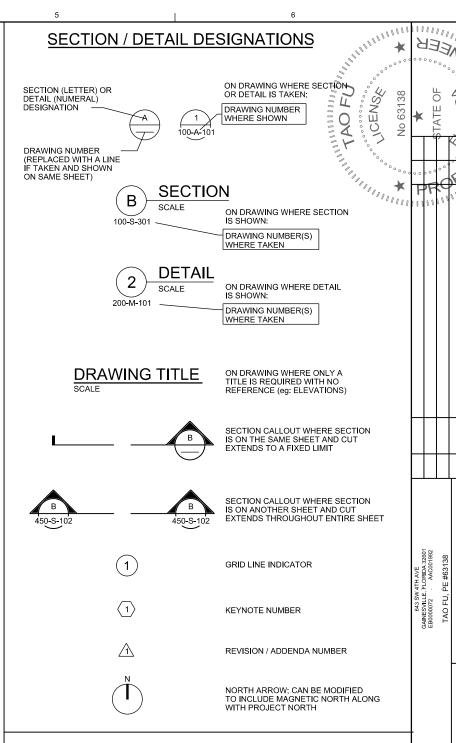
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DESIGN DETAIL DESIGNATION

DESIGN DETAIL DESIGNATION (NUMERAL) 1234-567 SHOWN ON DESIGN DETAIL DRAWING(S)

- 1. ALL DESIGN DETAILS ARE TYPICAL AND MUST BE USED IF DESIGN DETAIL DESIGNATION IS NOT SHOWN
- 2. THE TERM STANDARD DETAIL, OR A FORM OF IT, IS SYNOMONOUS WITH DESIGN DETAIL. THE DESIGN DETAILS REPRESENT THE CHARACTER AND NATURE OF THE WORK REQUIRED THROUGHOUT THE PROJECT. ALL ASSOCIATED WORK SHALL BE IN ACCORDANCE WITH THE DESIGN DETAILS SHOWN WHETHER THE DETAILS ARE SPECIFICALLY REFERENCED OR NOT.

VICINITY MAPS AWINGS AND L DESIGNATIONS ch2m

NTS VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 01-G-001 02 of 61 DWG

NOT IN CONTRACT

FILENAME: 01-G-002 674077.dgn

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY TAO FU, PE

ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE.
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Digitally signed by Tao Fu

Date: 2019.12.16 11:12:57

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PLOT DATE: 11/15/2019

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NOVEMBER 2019

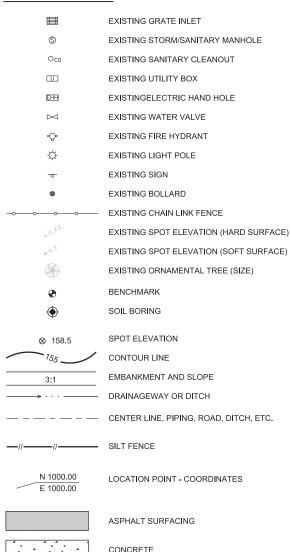
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ABBREVIATION

GENERAL SITE NOTES:

- SOURCE OF TOPOGRAPHY SHOWN ON THE CIVIL PLANS IS A SURVEY PROVIDED BY ZNS ENGINEERING. ADDITIONAL MAPPING HAS BEEN ADDED FROM RECORD DRAWINGS PREPARED BY URS AND WERE PROVIDED BY MANATEE COUNTY. 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.
- HORIZONTAL DATUM: FLORIDA STATE PLANE COORDINATE SYSTEM (WEST ZONE) NAD83/2011
- VERTICAL DATUM: NAVD88
- 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.
- COORDINATES AND DIMENSIONS SHOWN FOR ROADWAY IMPROVEMENTS ARE TO FACE OF CURB OR EDGE OF PAVEMENT.
- STAGING AREA SHALL BE FOR CONTRACTOR'S EMPLOYEE PARKING, CONTRACTOR'S TRAILERS AND ON-SITE STORAGE OF MATERIALS.
- ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE SHOWN.
- SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
- 10. ALL DISTURBED AREAS NOT RECEIVING A HARD SURFACE SHALL BE COVERED WITH GRASS.
- 11. CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING, PERMITTING, IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. CONTRACTOR SHALL PREPARE A SWPPP AND OBTAIN NECESSARY NPDES PERMIT
- 12. CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE. CONTRACTOR TO SUBMIT EROSION CONTROL PLAN.

CIVIL LEGEND



GENERAL NOTE:

THIS IS A STANDARD LEGEND SHEET. THIS IS A STANDARD LEGEND SHEET.

THEREFORE, NOT ALL OF THE INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

Richard Thomas Digitally signed by Richard Morrison

Thomas Morrison Date: 2019.12.16 12:05:59 -05'00'

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY RICHARD THOMAS MORRISON, PE ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE.
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CIVIL LEGEND AND GENERAL NOTES ch2m NTS ZERIFY SCALE Z VERIFY SCALE BAR IS ONE INCH ON DATE PROJ 01-G-003 04 of 61 WG HEET 04 of 61 PLOT TIME: 9:11:55 AM

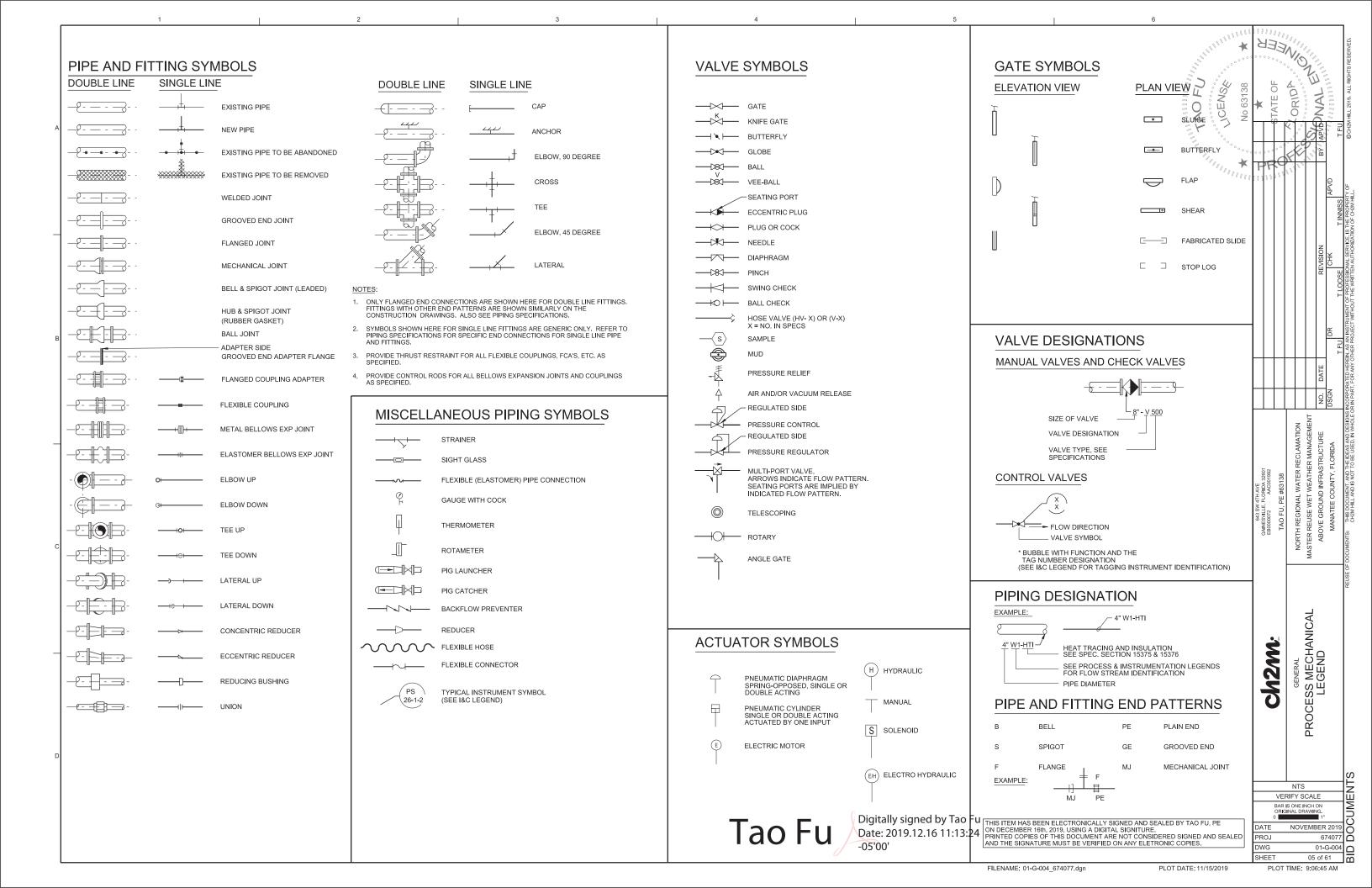
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FILENAME: 01-G-003 674077.dgn

PLOT DATE: 11/15/2019



DESIGN CRITERIA

- APPLICABLE CODE: FLORIDA BUILDING CODE SIXTH EDITION (2017), AS AMENDED BY APPLICABLE LOCAL AGENCIES.
- 2. REFER TO THE DRAWINGS FOR ADDITIONAL AND SPECIFIC STRUCTURE LOADINGS AND REQUIREMENTS.
- 3. ALL LOADS SHOWN ARE SERVICE LEVEL (UNFACTORED) UNLESS SPECIFICALLY NOTED OTHERWISE.

DEAD LOADS:

LIVE LOADS:

SLAB ON GARDE

= 100 PSF

= SELF WEIGHT

= 0 PSE

6. WIND LOADS: ASCE 7 METHOD

DIRECTIONAL PROCEDURE

BASIC WIND SPEED, Vult= 151 MPH

NOMINAL WIND SPEED, Vasd= 117 MPH

RISK CATEGORY= III

EXPOSURE CATEGORY= C

7. SNOW LOAD: GROUND SNOW LOAD

CENTEDAL INICODMATIC

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 AND SLABS WITH OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION OF THESE ELEMENTS.
- 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.
- S. 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. INFORMATION (DETAILING, DIMENSIONS, CONFIGURATIONS, AND ELEVATIONS, ETC.) OF EXISTING CONSTRUCTION SHOWN REFLECTS AVAILABLE EXISTING DESIGN DOCUMENTS, AND DOES 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. NOTIFY ENGINEER IF CONDITIONS VARY FROM THAT SHOWN PRIOR TO STARTING WORK.

INSPECTION AND TESTING

- 1. THE CONTRACTOR SHALL SCHEDULE INSPECTIONS
- 2. SPECIFIED CONCRETE AND OTHER MATERIAL TESTING RELATED TO INSPECTION DURING CONSTRUCTION WILL BE OWNER FURNISHED.
- 3. 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.

FOUNDATIONS

- EXCAVATIONS SHALL BE SHORED TO PREVENT SUBSIDENCE OR DAMAGE TO ADJACENT EXISTING STRUCTURES, ROADS, UTILITIES, ETC.
- FOUNDATION SLABS, SLABS-ON-GRADE AND WALL SPECIFICALLY NOTED TO BE ON FILL SHALL BEAR ON 6" COMPACTED GRANULAR FILL, UNLESS OTHERWISE NOTED.
- FOUNDATION BEARING SURFACES WILL BE OBSERVED BY THE GEOTECHNICAL ENGINEER OR QUALIFIED DESIGNEE PRIOR TO PLACEMENT OF FORMWORK OR REINFORCING STEEL. THE OBSERVATION WILL VERIFY IF THE ACTUAL EXPOSED SUBGRADE IS AS ANTICIPATED BY THE SITE SPECIFIC BORINGS AND DATA REPORTS.
- 4. NO BACKFILL SHALL BE PLACED BEHIND CANTILEVERED, FREE TOP WALLS UNTIL THE CONCRETE HAS ATTAINED 100 PERCENT OF ITS SPECIFIED 28 DAY COMPRESSIVE STRENGTH.

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.
- 2. TEMPORARY SHORING SHALL REMAIN IN PLACE UNTIL ELEVATED CONCRETE FLOOR OR SLABS HAVE REACHED 80 PERCENT OF THE 28 DAY COMPRESSIVE STRENGTH AS DETERMINED BY FIELD CYLINDER BREAKS.
- 3. "BURY"BARS OR "CARRIER"BARS ARE NOT ALLOWED FOR THE BOTTOM MATS OF REINFORCING IN ALL ELEVATED SLABS AND ARE NOT ALLOWED FOR THE TOP MATS OF REINFORCING IN ELEVATED SLABS LESS THAN 12 INCHES THICK

CONCRETE REINFORCING

REINFORCING STEEL

= ASTM A615, GRADE 60

 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".

. CONCRETE COVER FOR REINFORCING, UNLESS SHOWN OTHERWISE, SHALL BE:

WHEN PLACED ON GROUND OTHER CONCRETE SURFACES

= 3" = 2" UNLESS OTHERWISE NOTED

- 4. 90 DEGREE BENDS, UNLESS OTHERWISE SHOWN, SHALL BE ACI 318 STANDARD HOOKS.
- REINFORCING FOR SLABS ON GRADE SHALL BE ADEQUATELY SUPPORTED ON BAR SUPPORTS WITH SPACERS TO KEEP REINFORCING ABOVE THE PREPARED GRADE. LIFTING REINFORCING OFF GRADE DURING CONCRETE PLACEMENT IS NOT PERMITTED.
- REFER TO OPENING REINFORCING DETAILS 0330-001.
- REINFORCEMENT BENDS AND LAPS, UNLESS OTHERWISE NOTED, SHALL SATISFY THE FOLLOWING MINIMUM REQUIREMENTS:

CONCRETE REINFORCING CONTINUED

CONCRETE DES	SIGN STRENGTH	= 4,000 F	PSI MIN .	AT 28 D	AYS	GRADE 60 REINFORCING STEEL				
BAR SIZE	BAR SIZE			#5	#6	#7	#8	#9	#10	#11
LAP SPLICE LEN	NGTH									
SPACING < 6"	TOP BAR	1'-4"	1'-8"	2'-1"	3'-0"	5'-2"	6'-8"	8'-6"	10'-10"	13'-4"
	OTHER BAR	1'-4"	1'-4"	1'-8"	2'-4"	4'-0"	5'-2"	6'-7"	8'-4"	10'-3"
SPACING ≥ 6"	TOP BAR	1'-4"	1'-8"	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 LE	MBEDMENT LENGTH									
SPACING < 6"	TOP BAR	1'-0"	1'-3"	1'-8"	2'-4"	4'-0"	5'-2"	6'-7"	8'-4"	10'-3"
	OTHER BAR	1'-0"	1'-0"	1'-3"	1'-10"	3'-1"	4'-0"	5'-1"	6'-5"	7'-11"
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"

- A. LAP LENGTHS ARE BASED ON MINIMUM CONCRETE COVER OF 2 INCHES. LONGER LENGTHS ARE REQUIRED FOR CONCRETE COVER LESS THAN 2 INCHES.
 B. TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12 INCHES OF
- B. 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
- C. WHERE 3000 PSI CONCRETE IS USED, INCREASE ABOVE LENGTHS BY 16 PERCENT.

CAST IN PLACE CONCRETE

- . 28-DAY COMPRESSIVE STRENGTH
- = 4000 PSI
- ROUGHEN AND CLEAN CONSTRUCTION JOINTS IN AS SPECIFIED PRIOR TO PLACING ADJACENT CONCRETE.
- COORDINATE PLACEMENT OF OPENINGS AND PIPE PENETRATIONS, CURBS, DOWELS, SLEEVES, CONDUITS, BOLTS AND INSERTS PRIOR TO PLACEMENT OF CONCRETE.
- 4. NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.

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 OR ARE REQUIRED TO BE SUBMITTED FOR REVIEW ONLY BY THE ENGINEER.
- 2. THE FOLLOWING IS A LIST OF DEFERRED SUBMITTALS PER FBC SECTION 107.3.4.1 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 DRAWNINGS FOR REVIEW AND ACCEPTANCE BY THE ENGINEER. ADDITIONALLY, ACCEPTANCE INDICATED ON THE ENGINEER'S COMMENT FORM, ALONG WITH THE COMPLETED, FINAL SUBMITTAL SHALL THEN BE SUBMITTED BY THE CONTRACTOR TO THE PERMITTING AGENCY AND APPROVED PRIOR TO INSTALLATION OF THESE ITEMS.

SPECIFICATION SECTION	CODE REQUIRED DEFERRED SUBMITTALS FOR REVIEW BY PERMITTING AGENCY					
01 88 15	ANCHORAGE AND BRACING					
05 52 16	ALUMINUM RAILING					
40 05 15	PIPING SUPPORT SYSTEMS					
OTHER	ANY EQUIPMENT OR COMPONENT IN WHICH A TECHNICAL SPECIFICATION REQUIRES SUBMITTAL OF EQUIPMENT OR ANCHORAGE SYSTEM CALCULATIONS					

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY CLEMENT W ANSON, PE ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELETRONIC COPIES.

Clement Digitally signed by Clement W. Anson
W. Anson Date: 2019.12.16
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GENERAL NOTES

- CONDUIT, WIRE AND EQUIPMENT SIZES AND LOCATIONS SHOWN ARE FOR BID BASIS ONLY AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE ALL WORK WITH APPROVED SHOP DRAWINGS, WITH THE REQUIREMENTS OF EQUIPMENT PROVIDED, WITH EQUIPMENT FURNISHED BY OWNER FOR INSTALLATION BY CONTRACTOR AND WITH REQUIREMENTS OF OTHER DIVISIONS OF THE CONTRACT AS NECESSARY TO PROVIDE COMPLETE AND WORKING SYSTEMS COMPLYING WITH THE CONTRACT DOCUMENTS. ALL PROPOSED DEVIATIONS FROM CONTRACT DOCUMENTS SHALL BE SUBMITTED AND APPROVED BY ENGINEER BEFORE EXECUTION OF THE AFFECTED WORK.
- THE TERMS RACEWAY AND CONDUIT ARE USED IN THESE DOCUMENTS TO DENOTE NOT ONLY THE RACEWAY OR CONDUIT ITSELF BUT ALSO ALL JUNCTION BOXES, PULL BOXES, CONDULETS, FITTINGS, CLAMPS, SUPPORTS AND ALL OTHER ITEMS NECESSARY FOR A COMPLETE AND WORKING SYSTEM COMPLYING WITH THE CONTRACT DOCUMENTS.
- NOTES INDICATED AS "REF", "REFERENCE" OR "REFER TO" ARE PROVIDED TO ASSIST IN LOCATING RELATED CONTRACTUAL REQUIREMENTS BUT ARE NOT CONTRACTUAL INSTRUCTIONS THEMSELVES. MISSING, INCORRECT OR INCOMPLETE REFERENCES SHALL HAVE NO EFFECT ON THE REQUIREMENTS OF THE CONTRACT.
- AT ITEMS MARKED MSC (MANUEACTURER SUPPLIED OR SPECIFIED CABLE) CONTRACTOR SHALL DETERMINE REQUIREMENTS FOR, AND PROVIDE, CONDUIT AND CABLE AS REQUIRED BY MANUFACTURER AND IN COMPLIANCE WITH CONTRACT DOCUMENTS.
- EXCEPT AS NOTED BELOW, ALL WIRE AND CABLE, INCLUDING GROUNDED CONDUCTORS ABOVE GRADE AND FIBER OPTIC CABLE, SHALL BE INSTALLED IN RACEWAY AND ENCLOSURES. EXCEPTIONS ARE EQUIPMENT CABLES PROVIDED BY EQUIPMENT MANUFACTURERS AND UL LISTED FOR INSTALLATION OUTSIDE OF CONDUIT, INCLUDING FLOAT SWITCH AND SUBMERSIBLE PUMP CABLES.
- SPARE RUNS OF CONDUCTORS SHALL BE INSULATED OR TERMINATED AND LABELED AT BOTH ENDS. SPARE RUNS OF FIBER OPTIC STRANDS SHALL BE LABELED AND TERMINATED AT BOTH ENDS. ALL CONDUCTORS AND FIBERS SHALL BE TESTED AFTER INSTALLATION AND TEST REPORTS SHALL BE SUBMITTED. REPLACE ALL DEFECTIVE MATERIAL; DO NOT SUBMIT TEST REPORTS SHOWING DEFECTS.
- LOCATIONS AND ELEVATIONS OF ELECTRICAL CONNECTIONS, MOTORS PANEL BOARDS, SWITCH GEAR, TRANSFORMERS, CONTROL CABINETS AND OTHER ITEMS SHOWN ON DOCUMENTS ARE APPROXIMATE ONLY UNLESS DIMENSIONED. COORDINATE EXACT LOCATIONS AND ELEVATIONS WITH REQUIREMENTS OF OTHER DIVISIONS OF THESE DOCUMENTS. IN AREAS WHERE SPACE AVAILABLE IS LIMITED, INCLUDING ALL SPACES CONTAINING PANELBOARDS, MOTOR CONTROL CENTERS, SWITCHBOARDS OR SWITCHGEAR, PREPARE DIMENSIONED DRAWINGS SHOWING EXACT PROPOSED LOCATIONS OF EQUIPMENT AND VERIFYING THAT EQUIPMENT PROPOSED FOR USE CAN BE INSTALLED AS SHOWN ON PLANS IN COMPLIANCE WITH NEC AND MANUFACTURER'S REQUIREMENTS. SUBMIT THESE DRAWINGS AND RECEIVE APPROVAL BEFORE EXECUTING THE WORK. DO NOT SUBMIT SHOP DRAWINGS FOR EQUIPMENT WHICH IS NOT ACCOMPANIED BY DRAWINGS VERIFYING COMPLIANCE WITH CONTRACT REQUIREMENTS.
- CONTROL (LADDER LOGIC) DIAGRAMS DEPICT FUNCTIONS REQUIRED MAJOR COMPONENTS AND THEIR INTERCONNECTIONS, BUT ARE NOT INTENDED TO BE COMPLETE WIRING DIAGRAMS. CONTRACTOR SHALL COORDINATE WITH MANUFACTURERS OF EQUIPMENT PROVIDED TO ENSURE THAT ALL MATERIALS AND LABOR ARE PROVIDED WHICH ARE NECESSARY TO SECURE COMPLETE AND WORKING SYSTEMS WITH ALL FUNCTIONS AND COMPONENTS SHOWN ON THE CONTRACT DOCUMENTS, INCLUDING ELECTRICAL, AND INSTRUMENTATION AND CONTROL DOCUMENTS
- WHERE RAILINGS, FRAMING, PROCESS EQUIPMENT OR OTHER CONDUCTIVE ITEMS WHICH ARE NORMALLY NOT ENERGIZED ARE INSTALLED OUTDOORS, BOND TO GROUND RING WITH #4/0 MINIMUM BARE COPPER CONDUCTOR, UL LISTED CLAMPS ABOVE GRADE AND CAD WELDS BELOW GRADE.
- 10. CONDUCTIVE ENCLOSURES AND OTHER EXTERIOR METAL COMPONENTS OF INSTRUMENTS AND CONTROLS WHICH ARE NOT NORMALLY ENERGIZED SHALL BE CONNECTED TO GROUND WITH #6 MINIMUM COPPER CONDUCTOR
- 11. WHERE THE NUMBER OR SIZE OF CONDUCTORS SHOWN TO BE CONNECTED ARE IN EXCESS OF THE CAPACITY OF THE STANDARD TERMINALS OF THE CONNECTED FOUIPMENT, PROVIDE ADDITIONAL TERMINALS, ENCLOSURES, JUNCTION BOXES, PULL SECTIONS, WIRES, CONDUITS AND ALL OTHER MATERIALS AND LABOR AS NECESSARY TO MAKE THE CONNECTIONS SHOWN IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.
- ALL MATERIALS AND EQUIPMENT PROPOSED FOR USE SHALL BE FULLY RATED AS SPECIFIED AND SCHEDULED IN THE CONTRACT DOCUMENTS AT THE PROJECT ALTITUDE AND MAXIMUM AMBIENT TEMPERATURE.
- 13. PROVIDE ARC FLASH WARNING AND OTHER SIGNS ON ALL PANELBOARDS, MANUAL TRANSFER SWITCH, MOTOR CONTROLLERS, CONTROL PANELS, AND OTHER EQUIPMENT PROVIDED OR MODIFIED UNDER THIS CONTRACT AND REQUIRED TO BE LABELED BY NEC INCLUDING BUT NOT LIMITED TO PARAGRAPH 110.16 FLASH PROTECTION.
- COORDINATE SIZE AND INSTALLATION OF ALL EQUIPMENT WITH EXISTING CONDITIONS AND WORK IN OTHER DIVISIONS OF CONTRACT TO ENSURE COMPLIANCE WITH THE NEC, INCLUDING BUT NOT LIMITED TO PARAGRAPH 110.26 SPACES ABOUT ELECTRICAL EQUIPMENT

- 15. STANDARD DETAILS INCLUDED IN THESE DOCUMENTS SHALL BE USED WHERE APPLICABLE WHETHER SPECIFICALLY CALLED OUT ON THE PLANS OR NOT. PRACTICES CUSTOMARY TO THE TRADE MAY BE USED ONLY WHERE NO APPLICABLE STANDARD DETAIL CAN BE FOUND IN THESE DOCUMENTS AND WHERE THE CUSTOMARY PRACTICE WILL RESULT IN A COMPLETE AND WORKING SYSTEM IN COMPLIANCE WITH
- ALL TERMINATIONS OF RIGID METAL CONDUIT IN WALLS OF ENCLOSURES WITHOUT CAST-IN-PLACE THREADED CONDUIT BOSSES, AND WHICH ARE LOCATED OUTDOORS OR IN WET OR DAMP LOCATIONS, SHALL BE MADE USING MYERS HUBS.
- REFER TO DOCUMENTS OF OTHER DIVISIONS OF CONTRACT, INCLUDING BUT NOT LIMITED TO PROCESS MECHANICAL, FOR LOCATIONS OF PROCESS, INSTRUMENTATION, CONTROL, AND OTHER EQUIPMENT REQUIRING ELECTRICAL, FIBER OPTIC OR RACEWAY-ONLY CONNECTIONS TO BE PROVIDED UNDER THIS DIVISION OF CONTRACT. ALL EQUIPMENT LOCATIONS SHOWN ON DRAWINGS IN THIS DIVISION ARE APPROXIMATE ONLY UNLESS
- PROVIDE ADDITIONAL RACEWAY, WIRING AND CONNECTIONS AS NECESSARY FOR MOTOR HEATERS, TEMPERATURE PROTECTIVE DEVICES AND OTHER MOTOR AUXILIARIES WHERE RECOMMENDED BY EQUIPMENT MANUFACTURERS, SHOWN IN CONTROL DIAGRAMS OR ON LANS OR REQUIRED IN SPECIFICATIONS.
- 19. ALL SHEET METAL JUNCTION BOXES, TERMINAL JUNCTION BOXES, CONTROL PANELS AND OTHER SHEET METAL ELECTRICAL ENCLOSURES SHALL BE NEMA 4-X STAINLESS STEEL WITH FAST OPERATING CLAMP ASSEMBLIES. PROVIDE HOFFMAN SUFFIX TYPE SSLP WITH AFC412SS CLAMPS OR APPROVED EQUALS. PROVIDE TERMINAL JUNCTION BOXES AND CONTROL PANELS WITH REMOVABLE INTERIOR STEEL PANELS FACTORY PAINTED WHITE.
- 20. ALL FABRICATED ASSEMBLIES SUPPORTING ELECTRICAL FOLIPMENT PROVIDED UNDER THIS DIVISION OF CONTRACT SHALL BE UL LISTED INDIVIDUALLY, UL LISTED AS PART OF AN ASSEMBLY OR SHALL BE FABRICATED TO A DESIGN PREPARED BY A STRUCTURAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF FLORIDA OR OTHERWISE PERMITTED TO PRACTICE ENGINEERING IN THE STATE OF FLORIDA. WHERE DETAILS IN THE CONTRACT DOCUMENTS CONTAIN SPECIFIC DIMENSIONS, SIZES WELD INSTRUCTIONS OR SIMILAR INFORMATION THESE SHALL BE INTERPRETED AS MINIMUM CONTRACT REQUIREMENTS AND MAY BE SUPERSEDED BY UL OR DESIGN REQUIREMENTS ABOVE.
- 21. COORDINATE EARTH WORK AND INSTALLATION OF FLECTRICAL ITEMS WITH INTERFERENCE'S SHOWN ON DOCUMENTS OF ALL DIVISIONS OF CONTRACT, INCLUDING CIVIL AND YARD PIPING, REPORT ALL DAMAGE AT ONCE TO OWNER AND ENGINEER AND REPAIR AS DIRECTED AT NO CHANGE IN CONTRACT.
- PROVIDE RACKS AND SUPPORT ARMS ON WALLS OF ALL HANDHOLES. ROUTE CABLES ON, AND SECURED TO, THESE SUPPORTS. CABLES SHALL NOT BE ROUTED DIRECTLY FROM ONE DUCT TO ANOTHER.
- TOP OF CONCRETE DUCTBANKS TO BE DYED RED. SPRINKLE RED CONCRETE DYED ON TOP OF DUCTBANK WHILE WET. TRIAL IN TO A MINIMUM OF 90% COVERAGE ON TOP OF DUCTBANK
- 24. TAG EACH END OF CONDUITS WITH STAINLESS STEEL RACEWAY TAGS. AGS SHALL INDICATE SOURCE AND DESTINATION OF CONDUIT RUN

David **Nicholson**

FILENAME: 01-G-006 674077.dgn

Digitally signed by David Nicholson Date: 2019.12.17 08:56:08 -05'00'

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY DAVID C. NICHOLSON, PE ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELETRONIC COPIES.

Clybo """""" LEGEN ch2m ELECTRICAL

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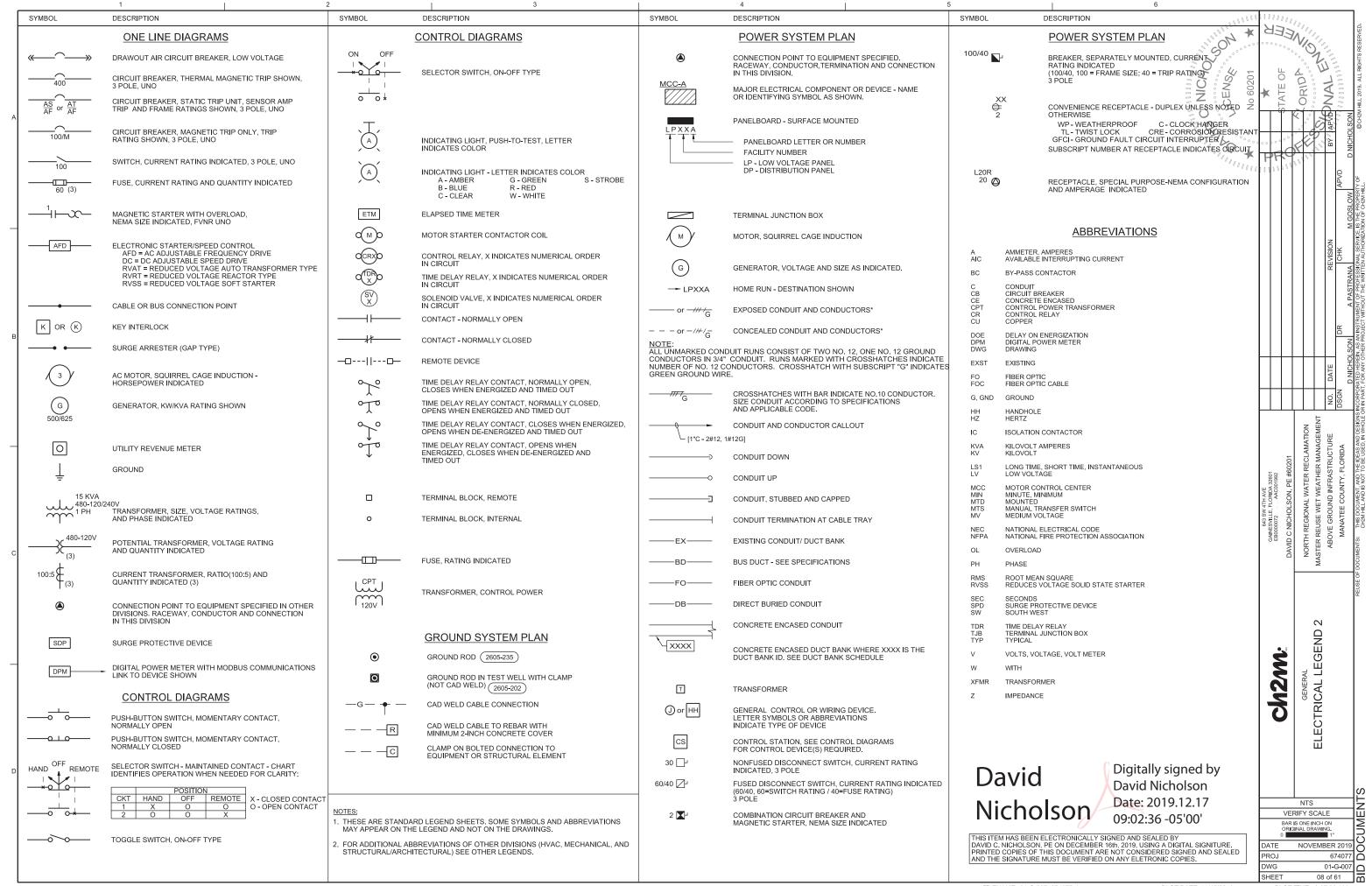
NTS

VERIFY SCALE BAR IS ONE INCH ON

NOVEMBER 2019

07 of 61

ER 2019 674077



FILENAME: 01-G-007_674077.dgn

PLOT DATE: 11/15/2019

PLOT TIME: 9:07:30 AM

GENERAL CIRCUIT CONDUCTOR AND CONDUIT IDENTIFICATION

POWER CIRCUIT CALLOUT SCHEDULE				LE		MULTICON	DUCTOR POWER CABLE CIRC	JIT CALLOUTS]
	MENT GROUNDS		100% GROUNDS	SERVICE NEUTRAL		[PC1]	[3/4"C,1 (3C#12,1#12G) TYF	PE 2]	
NEC	250 Table 122		NEC 250-122(A)		NEC 250 Table 66	[PC2]	[3/4"C,1 (3C#10,1#10G) TYF	-	
[20E2]	2/4"C 2#42 #42C	2 V [20M2]	Vire + Ground	NA	NA	[PC3]	[1"C,1 (3C#8,1#10G) TYPE 2	2]	
[20E2] [30E2]	3/4"C-2#12,#12G 3/4"C-2#10,#10G	[20M2]	3/4"C-2#12,#12G 3/4"C-2#10,#10G	NA	NA	[PC4]	[1 1/4"C,2 (3C#12,1#12G) T	YPE 2]	
[40E2]	3/4"C-2#8,#10G	[40M2]	3/4"C-2#8,#8G	[40S2]	3/4"C-2#8,#8N	[PC5]	[1 1/2"C,2 (3C#10,1#10G) T\	YPE 2]	
[50E2]	3/4"C-2#8,#10G	[50M2]	3/4"C-2#8,#8G	[50S2]	3/4"C-2#8,#8N	[PC1A]	[3/4"C,1 (2C#12,1#12G) TYF	PE 2]	
[60E2]	1"C-2#6,#10G	[60M2]	1"C-2#6,#6G	[60S2]	3/4"C-2#6,#8N	[PC2A]	[3/4"C,1 (2C#10,1#10G) TYF	PE 2]	
[70E2]	1"C-2#4,#8G	[70M2]	1"C-2#4,#4G	[70S2]	3/4"C-2#4,#8N				
[80E2] [90E2]	1"C-2#4,#8G 1"C-2#3,#8G	[80M2] [90M2]	1"C-2#4,#4G 1"C-2#3,#3G	[80S2] [90S2]	3/4"C-2#4,#8N 1"C-2#3,#8N		EMPTY CONDUIT		
[100E2]	1"C-2#3,#8G	[100M2]	1"C-2#3,#3G	[100S2]	1"C-2#3,#8N	[EC-1]	[3/4"C,WITH PULL STRING]		
[110E2]	1"C-2#2,#6G	[110M2]	1"C-2#2,#2G	[110S2]	1"C-2#2,#8N	[EC-2]	[1"C,WITH PULL STRING]		
[125E2]	1-1/4"C-2#1,#6G	[125M2]	1-1/4"C-2#1,#1G	[125S2]	1-1/4"C-2#1,#6N	[EC-3]	[1 1/4"C,WITH PULL STRING	31	
[150E2]	1-1/4"C-2#1/0,#6G	[150M2]	1-1/4"C-2#1/0,#1/0G	[150S2]	1-1/4"C-2#1/0,#6N	[EC-4]	[1 1/2"C,WITH PULL STRING	•	
[200E2] [225E2]	1-1/2"C-2#3/0,#6G 2"C-2#4/0,#4G	[200M2] [225M2]	1-1/2"C-2#3/0,#3/0G 2"C-2#4/0,#4/0G	[200S2] [225S2]	1-1/4"C-2#3/0,#4N 1-1/2"-2#4/0,#2N	[EC-5]	[2"C,WITH PULL STRING]	•	
[400E2]	3"C-2#500,#3G		3"C-2#500,#500G	[400S2]	3"-2#500,#1/0N	[EC-6]	[3"C,WITH PULL STRING]		
	,		Vire + Ground		,	[EC-7]	[4"C,WITH PULL STRING]		
[20E3]	3/4"C-3#12,#12G	[20M3]	3/4"C-3#12,#12G	NA	NA	[EC-8]	[5"C,WITH PULL STRING]		
[30E3]	3/4"C-3#10,#10G	[30M3]	3/4"C-3#10,#10G	NA	NA	MULTICON	DUCTOR CONTROL CABLE CIRC	CHIT CALL OUT	-
[40E3]	3/4"C-3#8,#10G 3/4"C-3#8,#10G	[40M3]	3/4"C-3#8,#8G 3/4"C-3#8,#8G	[40S3] [50S3]	3/4"C-3#8,#8N 3/4"C-3#8,#8N			JOIT CALLOUTS	1
[50E3] [60E3]	3/4"C-3#8,#10G 3/4"C-3#6,#10G	[50M3] [60M3]	3/4"C-3#8,#8G 3/4"C-3#6,#6G	[6083]	3/4"C-3#8,#8N	[CC5]	[3/4"C,1-5C TYPE 1]		
[70E3]	1"C-3#4,#8G	[70M3]	1"C-3#4,#4G	[70S3]	1"C-3#4,#8N	[CC7]	[3/4"C,1-7C TYPE 1]		
[80E3]	1"C-3#4,#8G	[80M3]	1"C-3#4,#4G	[80S3]	1"C-3#4,#8N	[CC9]	[1"C,1-9C TYPE 1]		
[90E3]	1-1/4"C-3#3,#8G	[90M3]	1-1/4"C-3#3,#3G	[9083]	1"C-3#3,#8N	[CC12]	[1"C,1-12C TYPE 1]		
[100E3]	1-1/4"C-3#3,#8G	[100M3]	1-1/4"C-3#3,#3G	[10083]	1"C-3#3,#8N	[CC19]	[1 1/2"C, 1-19C TYPE 1]		
[110E3] [125E3]	1-1/2"C-3#2,#6G 1-1/2"C-3#1,#6G	[110M3] [125M3]	1-1/2"C-3#2,#2G 1-1/2"C-3#1,#1G	[110S3] [125S3]	1"C-3#2,#8N 1-1/2"C-3#1,#6N	[CC25]	[1 1/2"C,1-25C TYPE 1]		
[150E3]	1-1/2"C-3#1/0,#6G	[150M3]	1-1/2"C-3#1/0,#1/0G	[150S3]	1-1/4"C-3#1/0,#6N	[CC37] [CCC1]	[2"C,1-37C TYPE 1] [1-7C #12 TYPE 1]		
[200E3]	2"C-3#3/0,#6G	[200M3]	2"C-3#3/0,#3/0G	[200S3]	1-1/2"C-3#3/0,#4N	[MSC]	[MANUFACTURER SUPPL	IED CABLEL	
[225E3]	2"C-3#4/0,#4G	[225M3]	2"C-3#4/0,#4/0G	[225S3]	2"C-3#4/0,#2N	[CAT]	[1"C, CAT6 CABLE]	LIED OADELJ	
[250E3]	2-1/2"C-3#300,#4G	·n	2-1/2"C-3#300,#300G	[250S3] [300S3]	2-1/2"C-3#300,#2N 2-1/2"C-3#350.#2N	[CX]	[1-1/2"C, COAX CABLE]		
[300E3] [350E3]	3"C-3#350,#4G 3"C-3#500,#3G	-^	3"C-3#350,#350G 3"C-3#500,#500G	[350S3]	3"C-3#500,#1/0N	[FMM]	[2"C, MULTI-MODE FIBER	OPTIC CABLE	
[400E3]	3"C-3#500,#3G	[400M3]	3"C-3#500,#500G	[400S3]	3"C-3#500,#1/0N		W/INNER DUCT		
[500E3]	(2)2-1/2"C-3#250,#2G	[500M3]	(2)2-1/2"C-3#250,#250G	[500S3]	(2)2-1/2"C-3#250,#1/0N	[PH]	[1"C, PHONE CABLE]		
[600E3]	(2)3"C-3#350,#1G	[600M3]	(2)3"C-3#350,#350G	[600S3]	(2)3"C-3#350,#2/0N	[DP]	[1"C, PROFIBUS DP CABL	.E]	
[700E3] [800E3]	(2)3"C-3#500,#1/0G (2)4"C-3#600,#1/0G	[700M3] [800M3]	(2)3"C-3#500,#500G (2)3"C-3#500,#500G	[700S3] [800S3]	(2)3"C-3#500,#2/0N (2)4"C-3#600,#2/0N	[HDMI]	[1 1/2"C, HDMI CABLE]		
[1000E3]	(3)3"C-3#350,#2/0G		(3)3"C-3#500,#500G		(3)3"C-3#500,#2/0N	ANALO	G CIRCUIT CALLOUTS	CONTRO	L CIRCUIT CALLOUTS
[1200E3]	(3)4"C-3#600,#3/0G		(3)4"C-3#600,#600G		(3)4"C-3#600,#3/0N	[A1] [3	3/4"C,1 TYPE 3]	[04]	DAUC MCCI
[1600E3]	(4)4"C-3#600,#4/0G	·*···	(4)4"C-3#600,#600G	***************************************	(4)4"C-3#600,#3/0N		"C,2 TYPE 3]		3/4"C,MSC] 3/4"C,2#14,1#14G]
[2000E3]	(5)4"C-3#600,#250G		(5)4"C-3#600,#600G		(5)4"C-3#600,#3/0N		"C,3 TYPE 3]		3/4"C,3#14,1#14G]
[2500E3] [3000E3]	(6)4"C-3#600,#350G (8)4"C-3#600,#400G		(6)4"C-3#600,#600G (8)4"C-3#600,#600G		(6)4"C-3#600,#3/0N (8)4"C-3#600,#3/0N		"C,4 TYPE 3]		3/4"C,4#14,1#14G]
[4000E3]	(10)4"C-3#600,#500G		(10)4"C-3#600,#600G		(10)4"C-3#600,#3/0N	[A5] [1	1/4"C,5 TYPE 3]		3/4"C,5#14,1#14G]
	4 Wire + G	round			JLTI-WIRE 20 AMP	[A6] [1	1/4"C,6 TYPE 3]		3/4"C,6#14,1#14G]
[20E4]	3/4"C-4#12,#12G	[20M4]	3/4"C-4#12,#12G	[20E5]	3/4"C-5#12,1#12N		1/2"C,7 TYPE 3]		3/4"C,7#14,1#14G]
[30E4]	3/4"C-4#10,#10G	[30M4]	3/4"C-4#10,#10G 3/4"C-4#8,#8G	[20E6]	3/4"C-6#12,1#12N		1/2"C,8 TYPE 3]		3/4"C,8#14,1#14G]
[40E4] [50E4]	3/4"C-4#8,#10G 3/4"C-4#8,#10G	[40M4] [50M4]	3/4"C-4#8,#8G	[20E7] [20E8]	3/4"C-7#12,1#12N 3/4"C-8#12,1#12N		1/2"C,9 TYPE 3]	[C9] [3	3/4"C,9#14,1#14G]
[60E4]	1"C-4#6,#8G	[60M4]	1"C-4#6,#6G	[20E9]	3/4"C-9#12,1#12N		2"C,10 TYPE 3]		3/4"C,10#14,1#14G]
[/0⊨4]	1-1/4"C-4#4,#8G	[/UNI4]	1-1/4"C-4#4,#4G	[20 ೬1 0]	1"C-10#10,1#10N		2"C,11 TYPE 3]		3/4"C,11#14,1#14G]
[80E4]	1-1/4"C-4#4,#8G	[80M4]	1-1/4"C-4#4,#4G	[20E11]	1"C-11#10,1#10N		2"C,12 TYPE 3]		3/4"C,12#14,1#14G]
[90E4] [100E4]	1-1/4"C-4#3,#8G 1-1/4"C-4#3,#8G	[90M4] [100M4]	1-1/4"C-4#3,#3G 1-1/4"C-4#3,#3G	[20E12] [20E13]	1"C-12#10,1#10N 1"C-13#10,1#10N		2"C,13 TYPE 3]		3/4"C,13#14,1#14G]
[110S4]	1-1/2"C-4#2,#6G	[110M3]	1-1/2"C-4#2,#2G	[20E14]	1"C-14#10,1#10N		"C,14 TYPE 3]		3/4"C,14#14,1#14G]
[125E4]	1-1/2"C-4#1,#6G	[125M4]	1-1/2"C-4#1,#1G	[20E15]	1"C-15#10,1#10N		8/4"C,1 TYPE 4] 8/4"C,2 TYPE 4]		3/4"C,15#14,1#14G]
[150E4]	2"C-4#1/0,#6G		2"C-4#1/0,#1/0G	[20E16]	1-1/4"C-16#10,1#10N		"C,3 TYPE 4]		3/4"C,16#14,1#14G] 3/4"C,17#14,1#14G]
[200E4]	2"C-4#3/0,#6G		2"C-4#3/0,#3/0G	[20E17]	1-1/4"C-17#10,1#10N		1/4"C,4 TYPE 4]		3/4"C,17#14,1#14G] 3/4"C,18#14,1#14G]
[225E4] [250E4]	2-1/2"C-4#4/0,#4G 3"C-4#300,#4G	-	2-1/2"C-4#4/0,#4/0G 3"C-4#300,#300G	[20E18] [20E19]	1-1/4"C-18#10,1#10N 1-1/4"C-19#10,1#10N		1/4"C,5 TYPE 4]		3/4"C,19#14,1#14G]
[300E4]	3"C-4#350,#2G	[300M4]	3"C-4#350,#350G	[20E20]	1-1/4"C-20#10,1#10N		1/4"C,6 TYPE 4]		1"C,20#14,1#14G]
[350E4]	3-1/2"C-4#500,#3G	[350M4]	3-1/2"C-4#500,#500G				1/2"C,7 TYPE 4]		1"C,21#14,1#14G]
[400E4]	3-1/2"C-4#500,#3G	[400M4]	3-1/2"C-4#500,#500G				1/2"C,8 TYPE 4]		1"C,22#14,1#14G]
[500E4]	(2)3-1/2"C-4#250,#2G		(2)3-1/2"C-4#250,#250G	THE CC.	VIEIGUIDATIONS CUOVES		2"C,9 TYPE 4]		1"C,23#14,1#14G]
[600E4] [700E4]	(2)3"C-4#350,#1G (2)3-1/2"C-4#500,#1/0G	[600M4] [700M4]	(2)3"C-4#350,#350G (2)3-1/2"C-4#500,#500G		NFIGURATIONS SHOWN SECTION TITLED "MULTI-	[A24] [3	3/4"C,1-4 pr. TYPE 5]		1"C,24#14,1#14G]
[800E4]	(2)3-1/2"C-4#500,#1/0G		(2)3-1/2 C-4#500,#500G		0 AMP" SHALL NOT BE	[A25] [1	"C,2-4 pr. TYPE 5]		1"C,25#14,1#14G]
[1000E4]	(3)3"C-4#350,#2/0G		(3)3"C-4#350,#350G		FOR RECEPTACLE			[C30] [1"C,30#14, 1#14G]
[1200E4]	(3)4"C-4#600,#3/0G		(3)4"C-4#600,#600G		OR OTHER CORD-AND-				1 1/4"C, 40#14, 1#14G]
[1600E4] [2000E4]	(4)4"C-4#600,#4/0G (5)4"C-4#600.#250G		(4)4"C-4#600,#600G 4"C-4#600.#600G		ONNECTED PORTABLE ADS. NEC-240.4(B)	NOTEO		[C50] [1 1/4"C, 50#14, 1#14G]

LOADS. NEC-240.4(B)

2000M4] 4"C-4#600,#600G

[2500M4] 4"C-4#600,#600G

3000M4] 4"C-4#600,#600G

4000M4] 4"C-4#600,#600G

[2000E4]

[2500E4]

[3000E4]

(5)4"C-4#600,#250G

(6)4"C-4#600,#350G

(8)4"C-4#600,#400G

(10)4"C-4#600,#500G

NOTES:
1. FOR CABLE TYPES, SEE SPECIFICATIONS.

- CONDUIT SIZES ARE BASE ON THE AREA OF THE CONDUCTORS.
- SIZING OF CONDUCTORS #1AWG AND SMALLER BASED ON AMPACITIES AT 60 DEGREES C, SIZING OF CONDUCTORS #1/0AWG AND LARGER BASED ON AMPACITIES AT 75 DEGREES C.

- 4. WHERE CIRCUITS ARE UNDERGROUND, DIRECT BURIED OR CONCRETE ENCASED, MINIMUM CONDUIT SIZE SHALL BE 1".
- FOR METRIC CONDUIT SIZES USE THE FOLLOWING CONVERSION: 1/2" = 16 mm 1/4" = 35 mm 3/4" = 21 mm 1 1/2" = 41 mm 1" = 27 mm 2" = 55 mm

David Nicholson

Digitally signed by David Nicholson Date: 2019.12.17 09:09:44 -05'00'

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY DAVID C. NICHOLSON, PE ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELETRONIC COPIES.

C. NICHOCOLLA COLLA COLL GENERAL ELECTRICAL LEGEND ch2m: NTS
RIFY SCALE
IS ONE INCH ON GINAL DRAWNING.
NOVEMBER 2019
6740777 VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1 DATE PROJ 01-G-008 09 of 61 WG 09 of 61 PLOT TIME: 9:10:12 AM

INSTRUMENT IDENTIFICATION **EXAMPLE SYMBOLS** - FIRST LETTER(S) CLARIFYING ABBREVIATIONS SUCCEEDING LETTER(S) FÍT U-LL-UNIT LETTER (USED WHEN THERE ARE MULTIPLE DEVICES WITH THE SAME UNIT NUMBER) UNIT PROCESS NUMBER **DIGITAL SYSTEM INTERFACES** ANALOG INPUT ANALOG OUTPUT DISCRETE INPUT DISCRETE OUTPUT \square $I \setminus J$

INSTRUMENT IDENTIFICATION LETTERS TABLE

		INSTR	UNICINI IDEI	NITICATION LET	IERS IADLE				
		FIRST-LETT	ER	SUCCEEDING-LETTERS					
	LETTER	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER			
Ī	Α	ANALYSIS (+)		ALARM					
Ī	В	BURNER, COMBUSTION		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)			
	С	USER'S CHOICE (*)			CONTROL				
	D	DENSITY (S.G.)	DIFFERENTIAL						
	E	VOLTAGE		PRIMARY ELEMENT, SENSOR					
	F	FLOW RATE	RATIO (FRACTION)						
	G	USER'S CHOICE (*)		GLASS, GAUGE VIEWING DEVICE	GATE				
Ī	Н	HAND (MANUAL)				HIGH			
Ī	Ţ	CURRENT (ELECTRICAL)		INDICATE					
	J	POWER	SCAN						
	K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION				
Ī	L	LEVEL		LIGHT (PILOT)		LOW			
	М	MOTION	MOMENTARY			MIDDLE, INTERMEDIAT			
	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					
Ī	S	SPEED, FREQUENCY	SAFETY		SWITCH				
Ī	Т	TEMPERATURE			TRANSMIT				
	U	MULTI VARIABLE		MULTI FUNCTION	MULTI FUNCTION	MULTI FUNCTION			
	V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER				
Ī	W	WEIGHT, FORCE		WELL					
Ī	Х	UNCLASSIFIED (*)	X AXIS	UNCLASSIFIED (*)	UNCLASSIFIED (*)	UNCLASSIFIED (*)			
	Υ	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT				
	Z	POSITION	Z AXIS		DRIVE, ACTUATOR, UNCLASSIFIED FINAL				

TABLE BASED ON THE INTERNATIONAL SOCIETY OF AUTOMATION (ISA) STANDARD.

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

CURRENT

PNEUMATIC

PD PULSE DURATION

RESISTANCE

CURRENT TO PNEUMATIC

TRANSDUCER (BACK OF

PANEL IN A FLOW LOOP

PULSE FREQUENCY

GENERAL INSTRUMENT OR FUNCTIONAL SYMBOLS

FIELD MOUNTED REAR-OF-PANEL MOUNTED (OPERATOR

> PANEL MOUNTED (OPERATOR

MCC MOUNTED

COMPUTER FUNCTION

PLC FUNCTION

SHARED DISPLAY SHARED CONTROL

ACCESSORY DEVICES

TRANSDUCERS

ANALOG

DIGITAL

VOI TAGE

FREQUENCY

HYDRAULIC

EXAMPLE

CONTROLLER

INDICATOR

RECORDER

SWITCH

TRANSMITTER

UNCLASSIFIED

EXAMPLE

TRANSMITTER AS AN ACCESSORY TO A FLOW ELEMENT

SPECIAL CASES



ON AND OFF EVENT LIGHTS

CONTROL ELEMENT



ON-OFF HAND SWITCH, MAINTAINED CONTACT DEVICE WILL RESTART AFTER POWER FAILURE)



STOP-START HAND SWITCH MOMENTARY CONTACT SWITCHES (CONTROLLED DEVICE WILL NOT RESTART ON RETURN OF POWER AFTER POWER FAILURE).

ELECTRIC ACTUATOR WITH



Cyrus Saharkhiz 14:30:42 -05'00'

Digitally signed by Cyrus John Saharkhiz Date: 2019.12.16

Cyrus John Saharkhiz

Digitally signed by Cyrus John Saharkhiz Date: 2019.12.16 13:37:09 -05'00'

AND THE SIGNATURE MUST BE VERIFIED ON ANY ELETRONIC COPIES.

LINE LEGEND PRIMARY PROCESS (CLOSED CONDUIT, PARALLELING LINES ALTERNATE FLOW STREAM) SECONDARY PROCESS BYPASS PROCESS (A) (B) PROCESS (OPEN CHANNEL) (A) TOTAL OF 2 SIGNALS ANALOG SIGNAL (4 TO 20 mAdc, ETC.) 3 TYPICAL SETS OF 2 SIGNALS FACH (ON/OFF, ETC.) TOTAL OF 6 SIGNALS. MANUFACTURER CONNECTING LINES --- MSC -SUPPLIED CABLE MANUFACTURES SUPPLIED CABLE (POWER) HYDRAULIC SYSTEM SIGNAL DATA LINK BUILDING OF NON-CONNECTING LINES PACKAGE SYSTEM TYPICAL BREAK **INTERFACE SYMBOLS** PROCESS INTERFACE SIGNAL INTERFACE

SELF CONTAINED VALVE & EQUIPMENT TAG NUMBERS

INTERFACE (A, B, C, ETC.)

SOURCE DRAWING NO

DESTINATION DRAWING NO

OR FROM PROCESS EXTERNAL TO PROJECT

N LINE CONTINUATION (N)

D-WXY

ARV AIR RELEASE VALVE AIR AND VACUUM RELEASE VALVE AVRV

FJECTOR

MECHANICAL EQUIPMENT

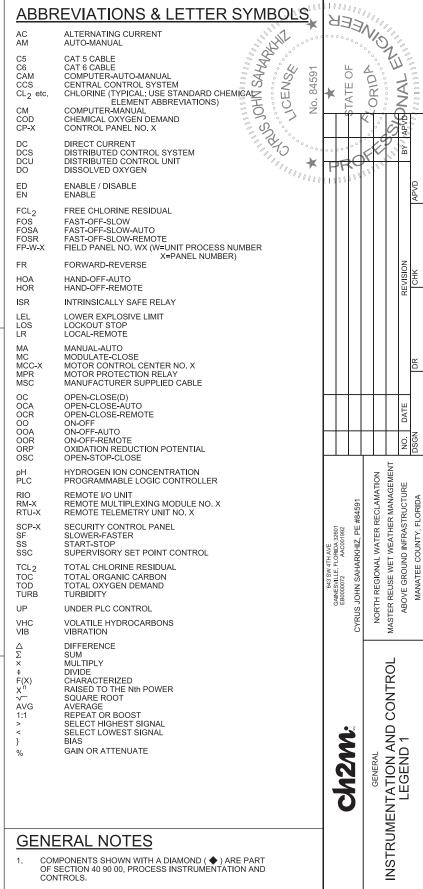
LOOP NUMBER

PCV PRESSURE RELIEF VALVE PRESSURE REDUCING VALVE PRESSURE SUSTAINING VALVE

UNIT PROCESS NUMBER

UNIT LETTER

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY CYRUS JOHN SAHARKHIZ, PE ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED



ABBREVIATIONS & LETTER SYMBOLS

ALTERNATING CURRENT

COMPONENTS AND PANELS SHOWN WITH A ASTERISK (\star ARE PART OF A PACKAGE SYSTEM: SEE EQUIPMENT SPECIFICATIONS FOR MULTIPLE PACKAGES ON SAME DRAWING, USE *, *2, * 3, ETC.

COMPONENTS AND PANELS SHOWN WITH A DOUBLE ASTERISK (**) ARE TO BE PROVIDED UNDER DIVISION 26, ELÉCTRICAL.

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

NTS VERIFY SCALE BAR IS ONE INCH ON NOVEMBER 2019 01-G-009 10 of 61 10 of 61

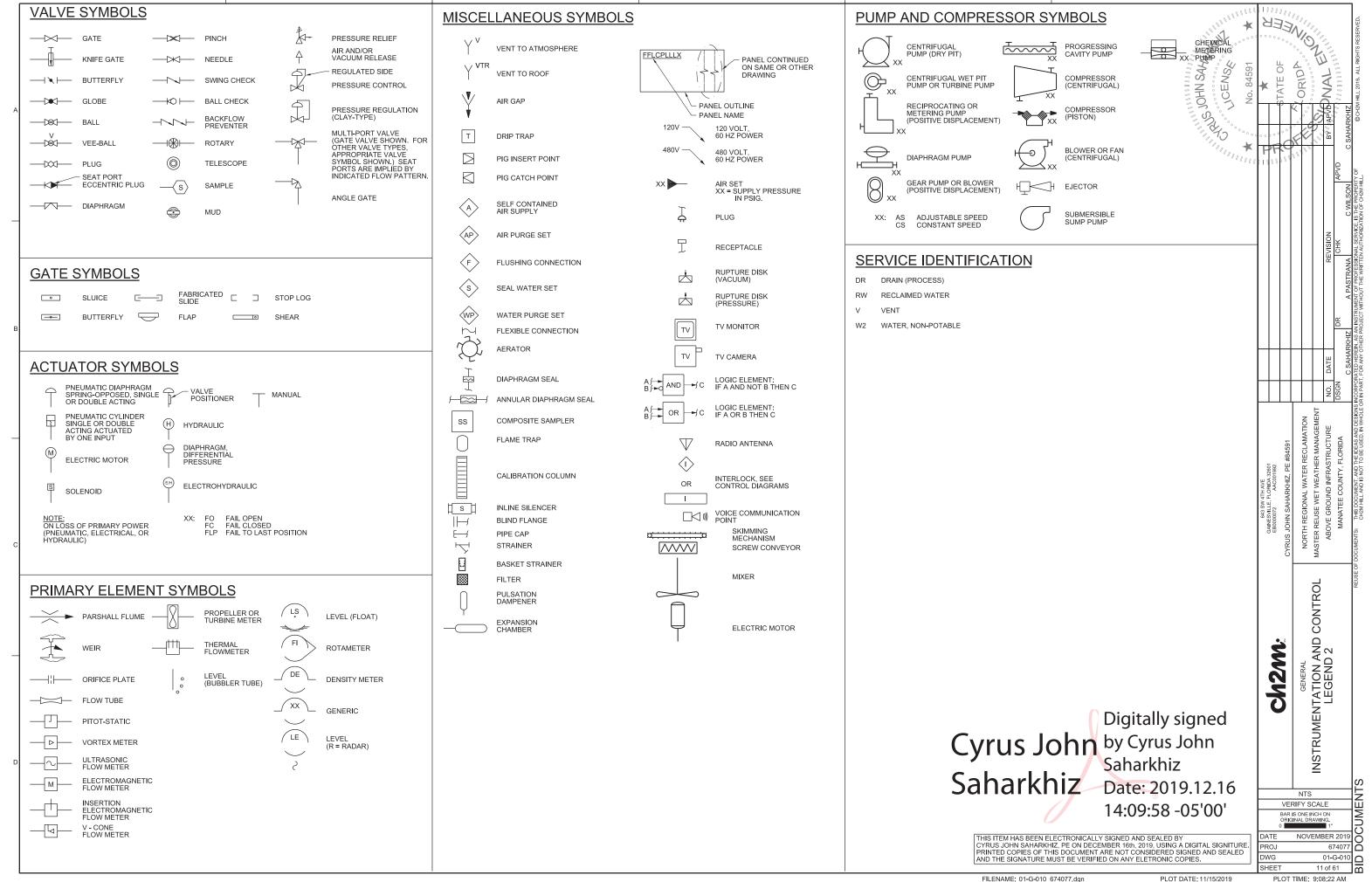
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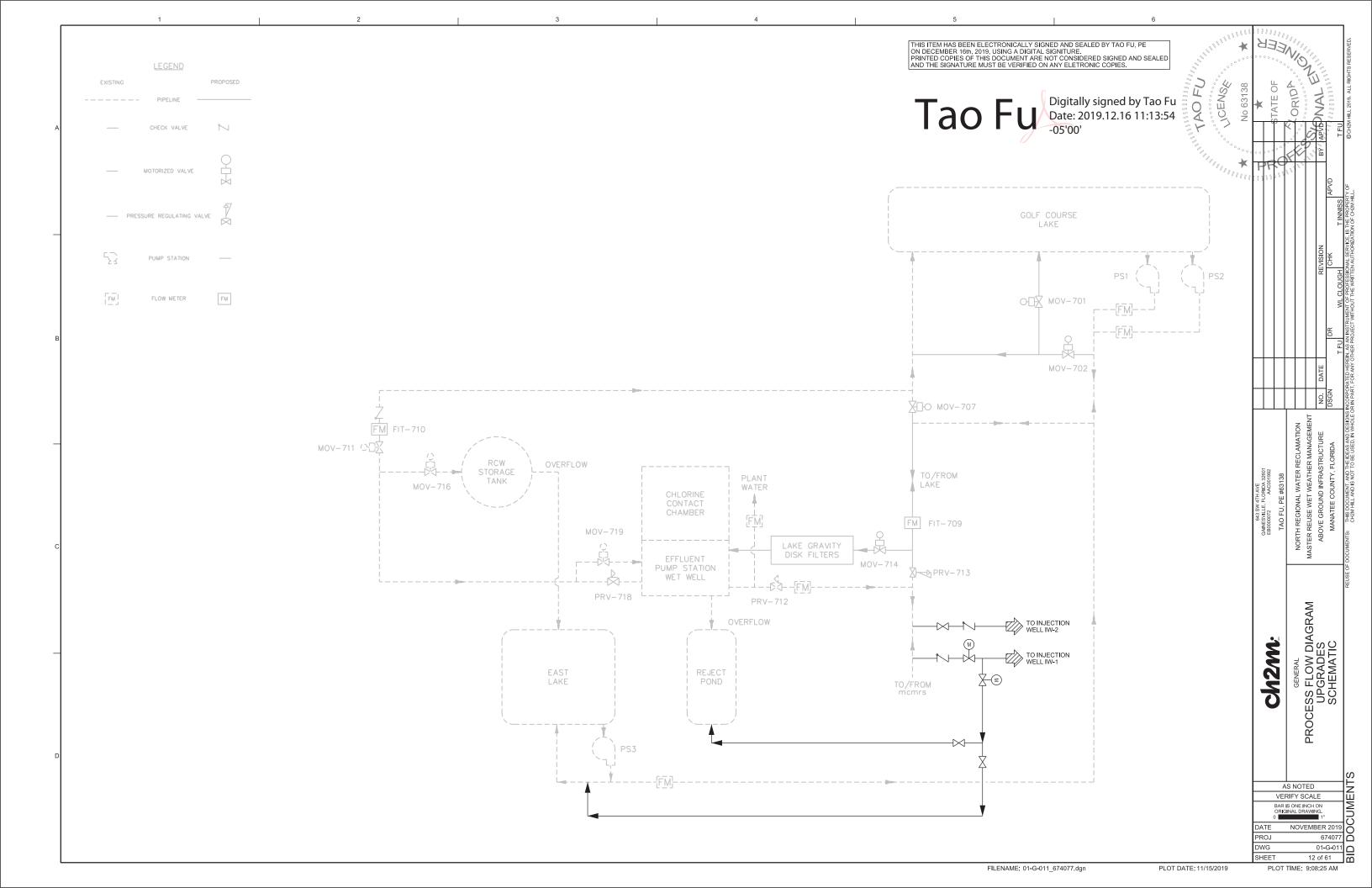
CONTROL

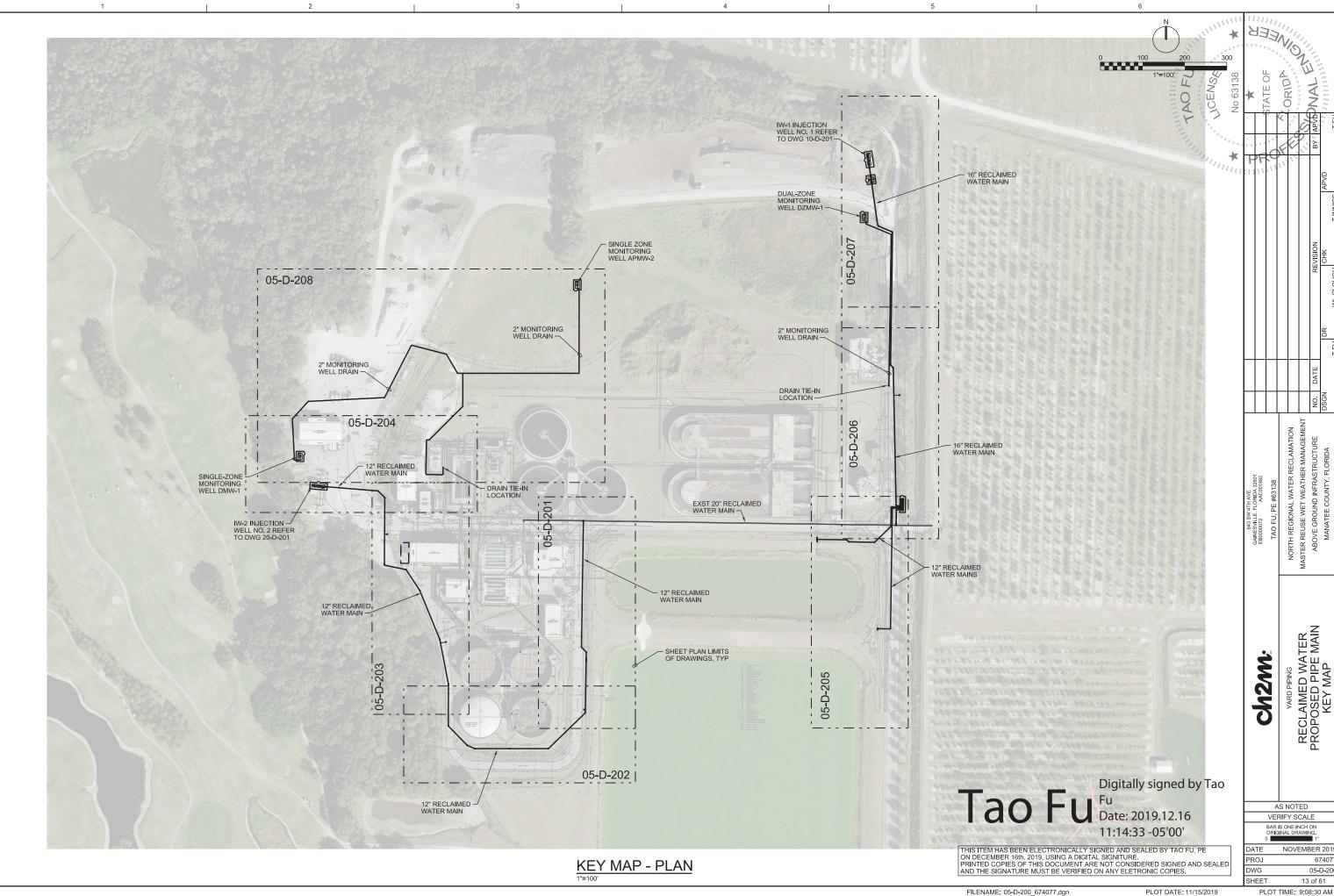
STRUMENTATION AND LEGEND 1

ORIDA

NAL







FILENAME: 05-D-200_674077.dgn

SLAUE

ALE

CHON

MING.

1"

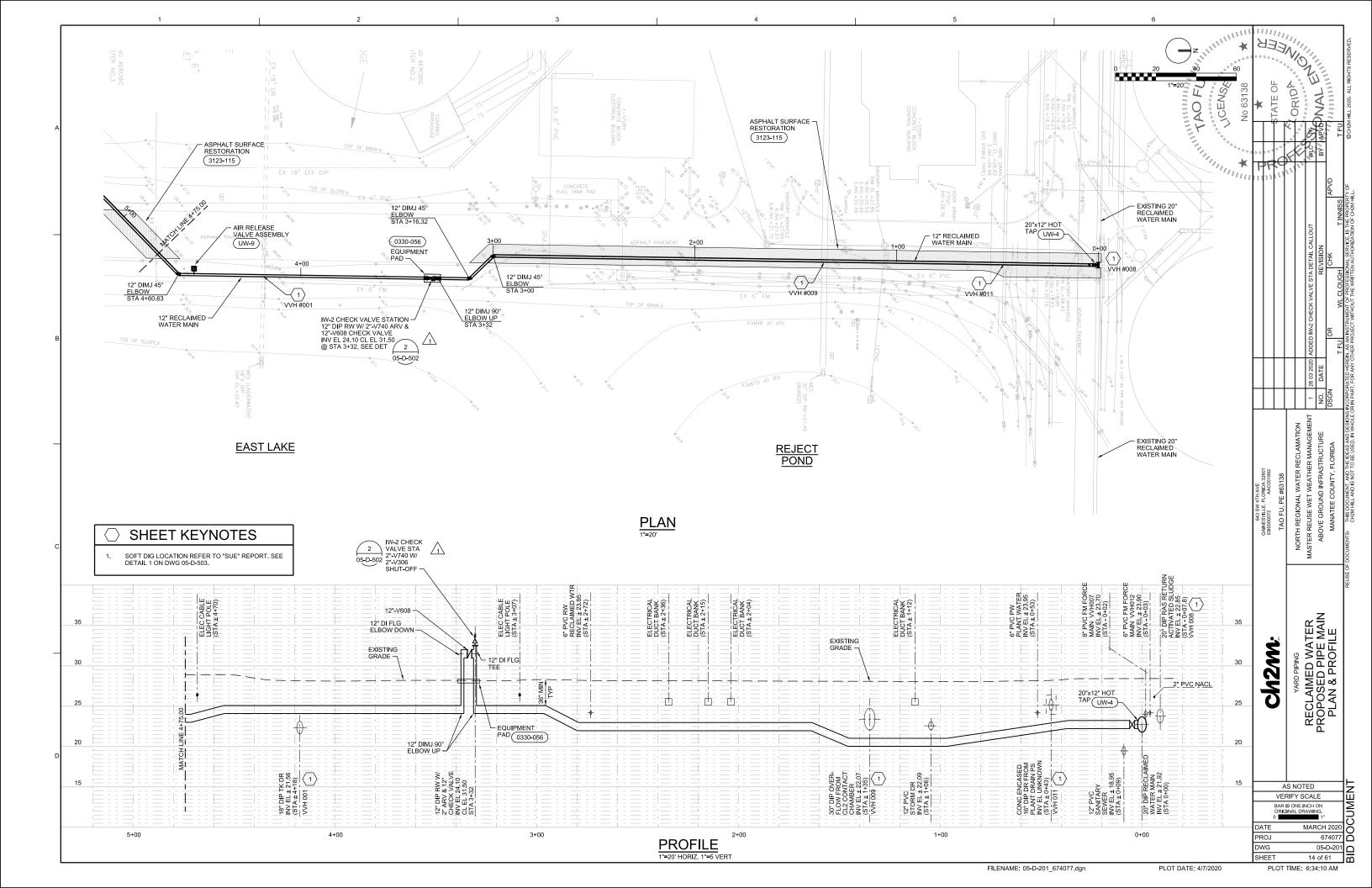
MBER 2019

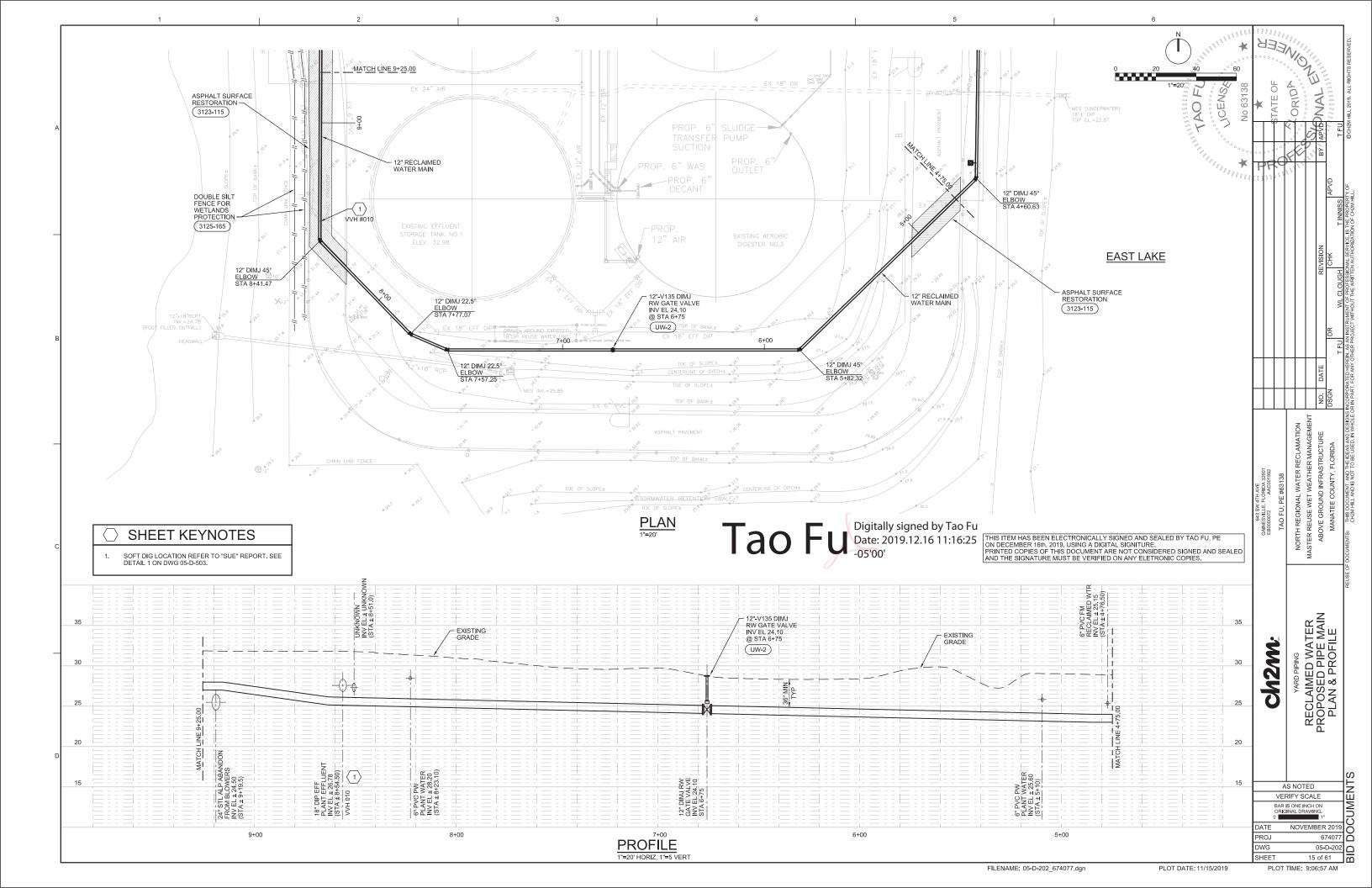
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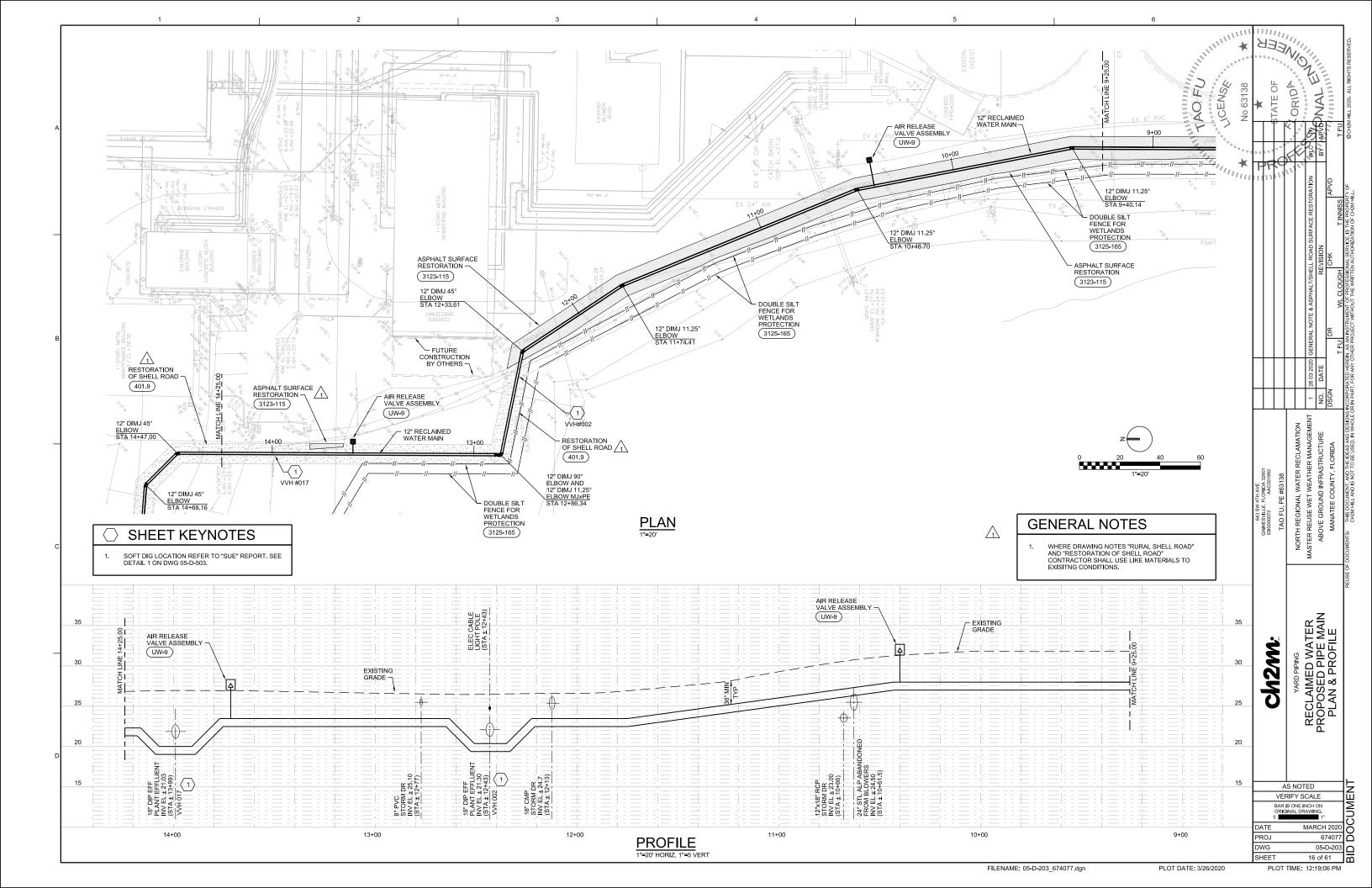
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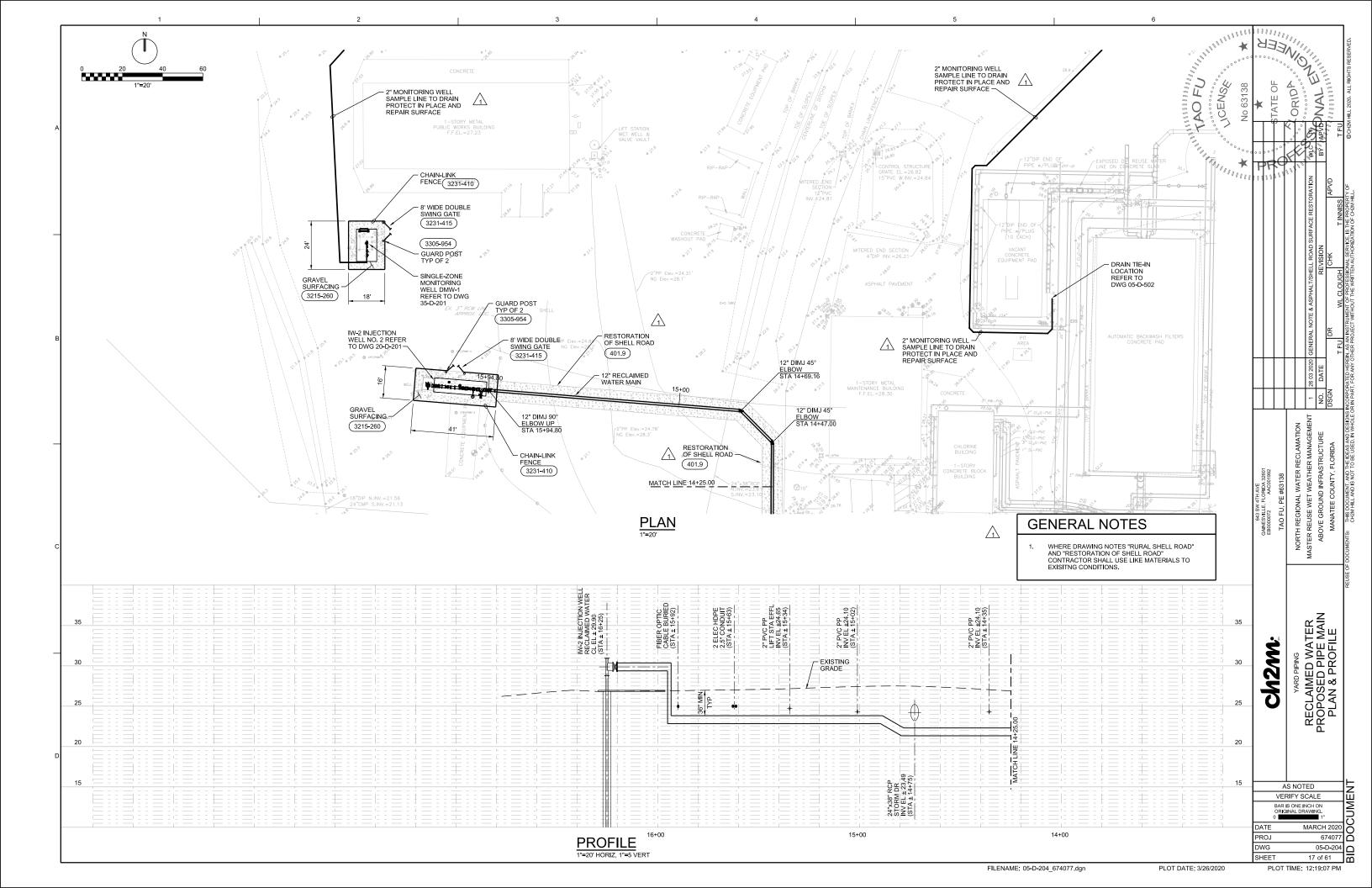
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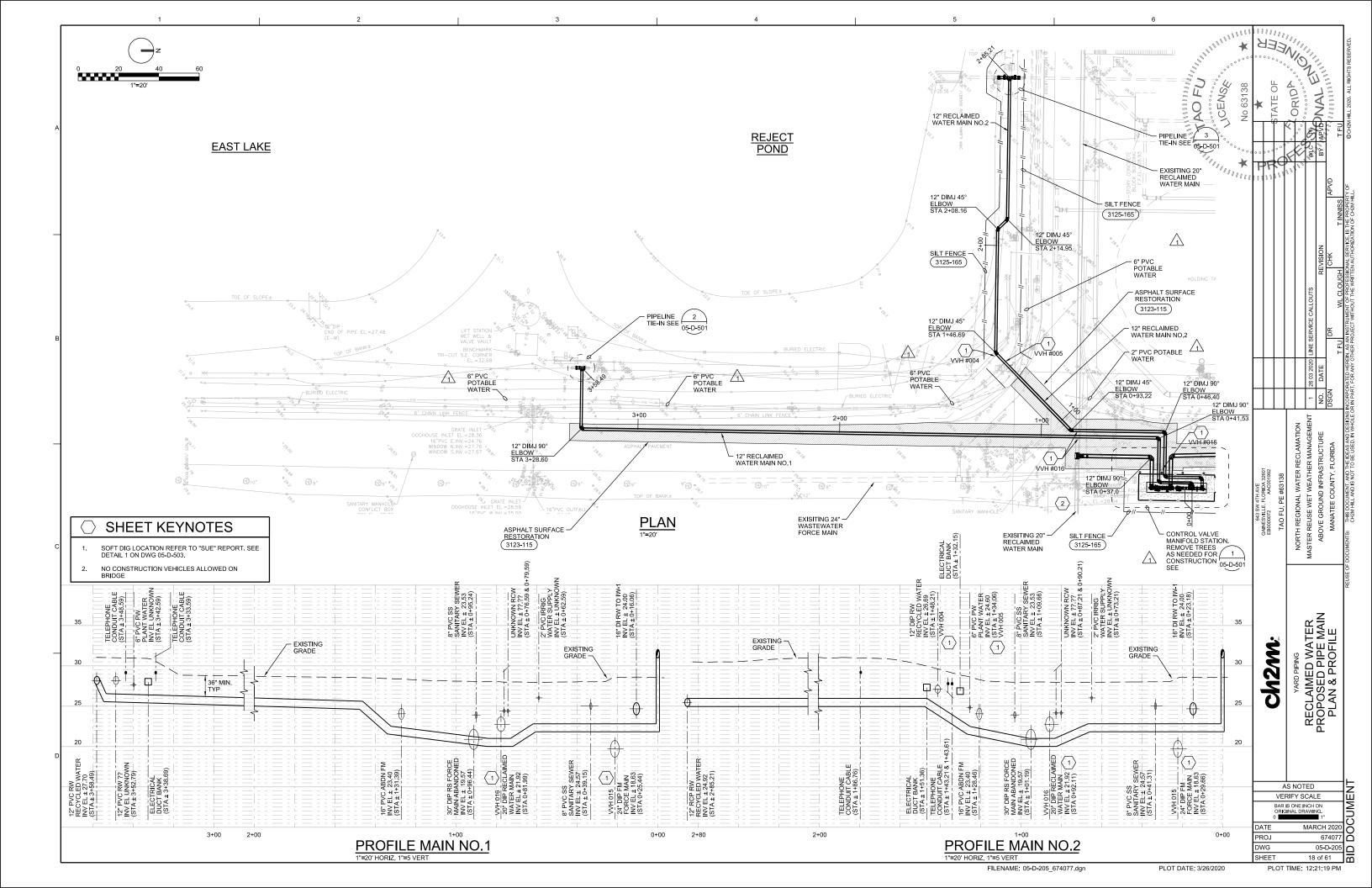
108-30 AM 13 of 61 PLOT TIME: 9:08:30 AM

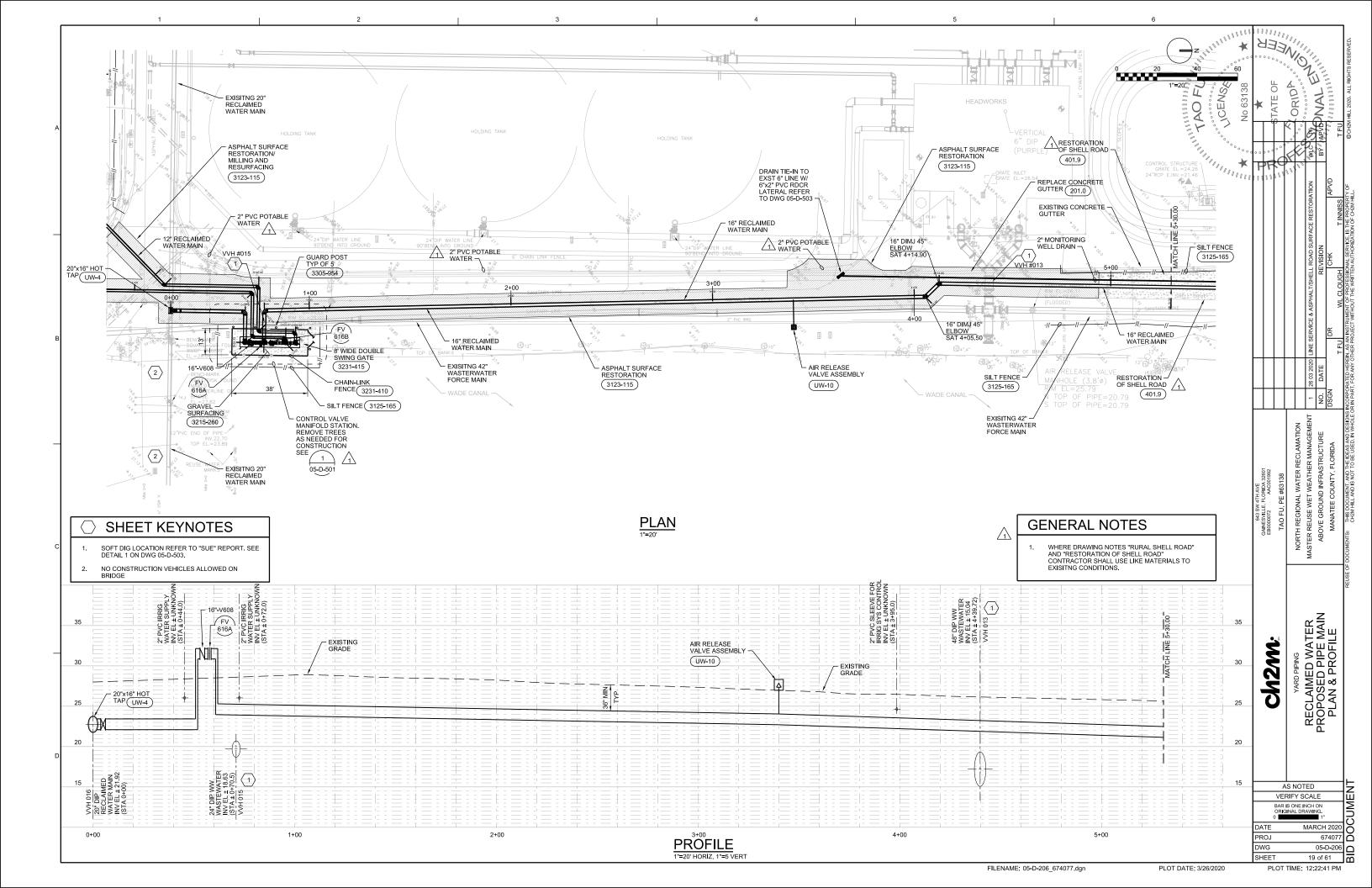


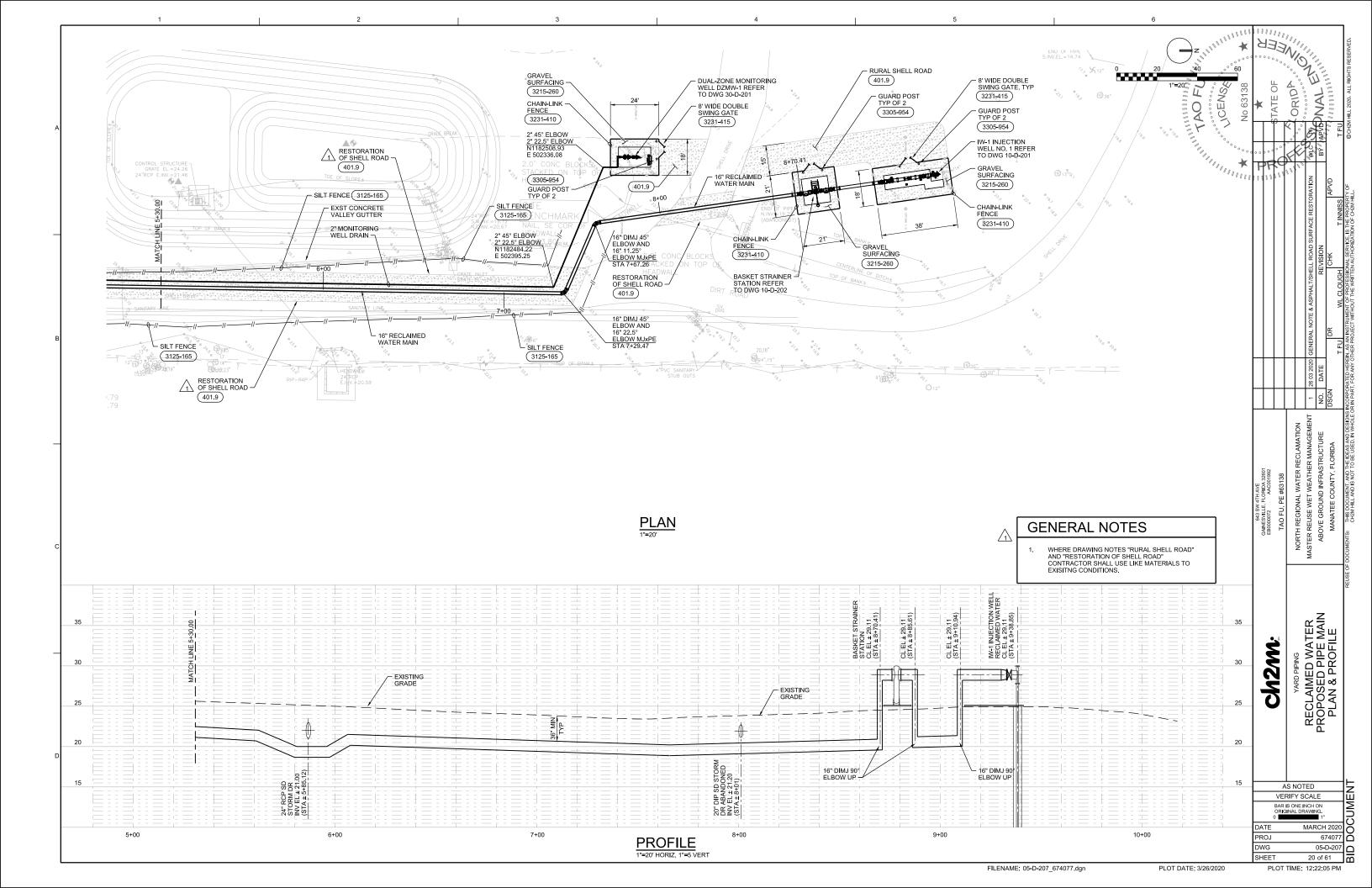


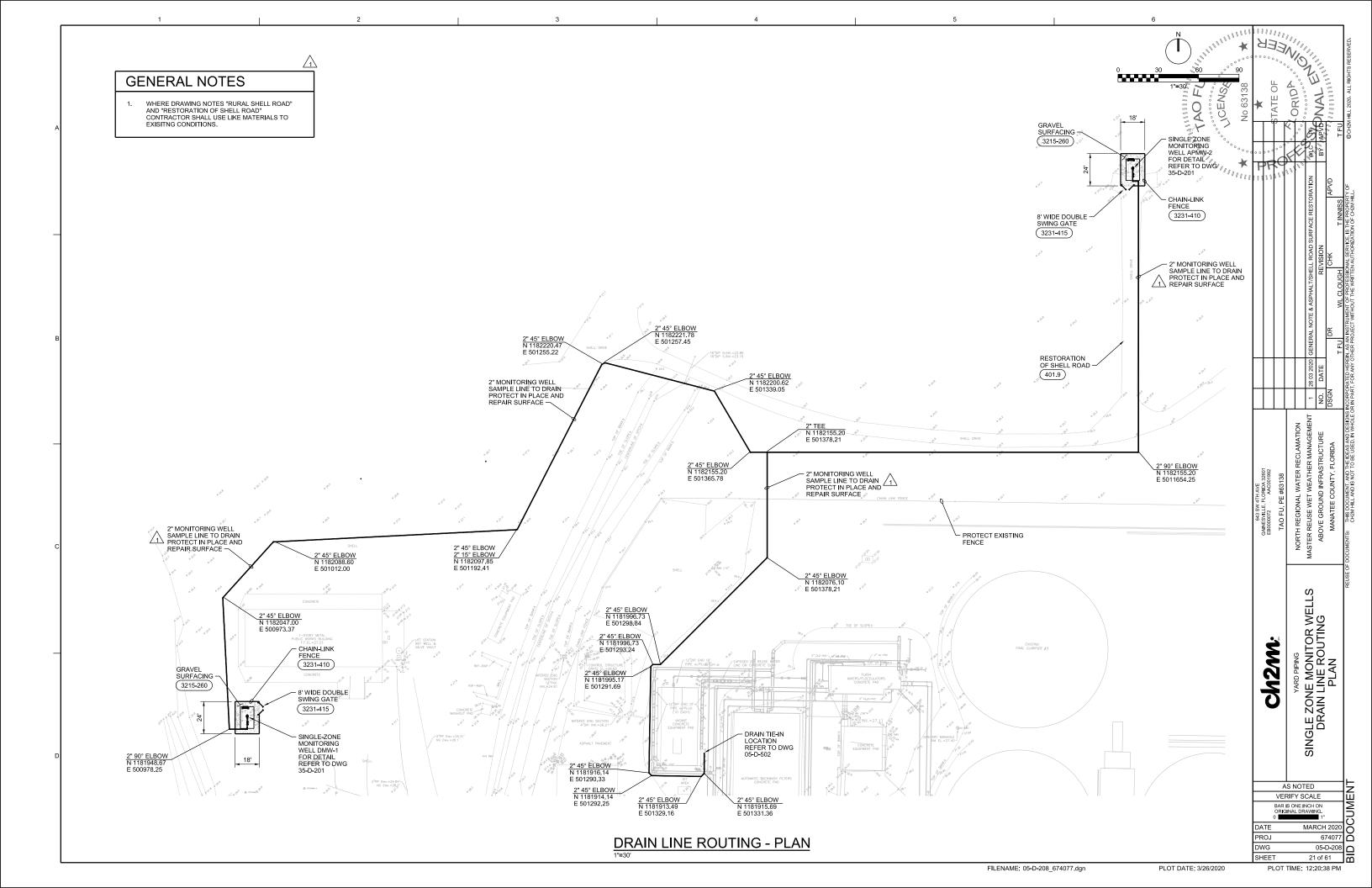


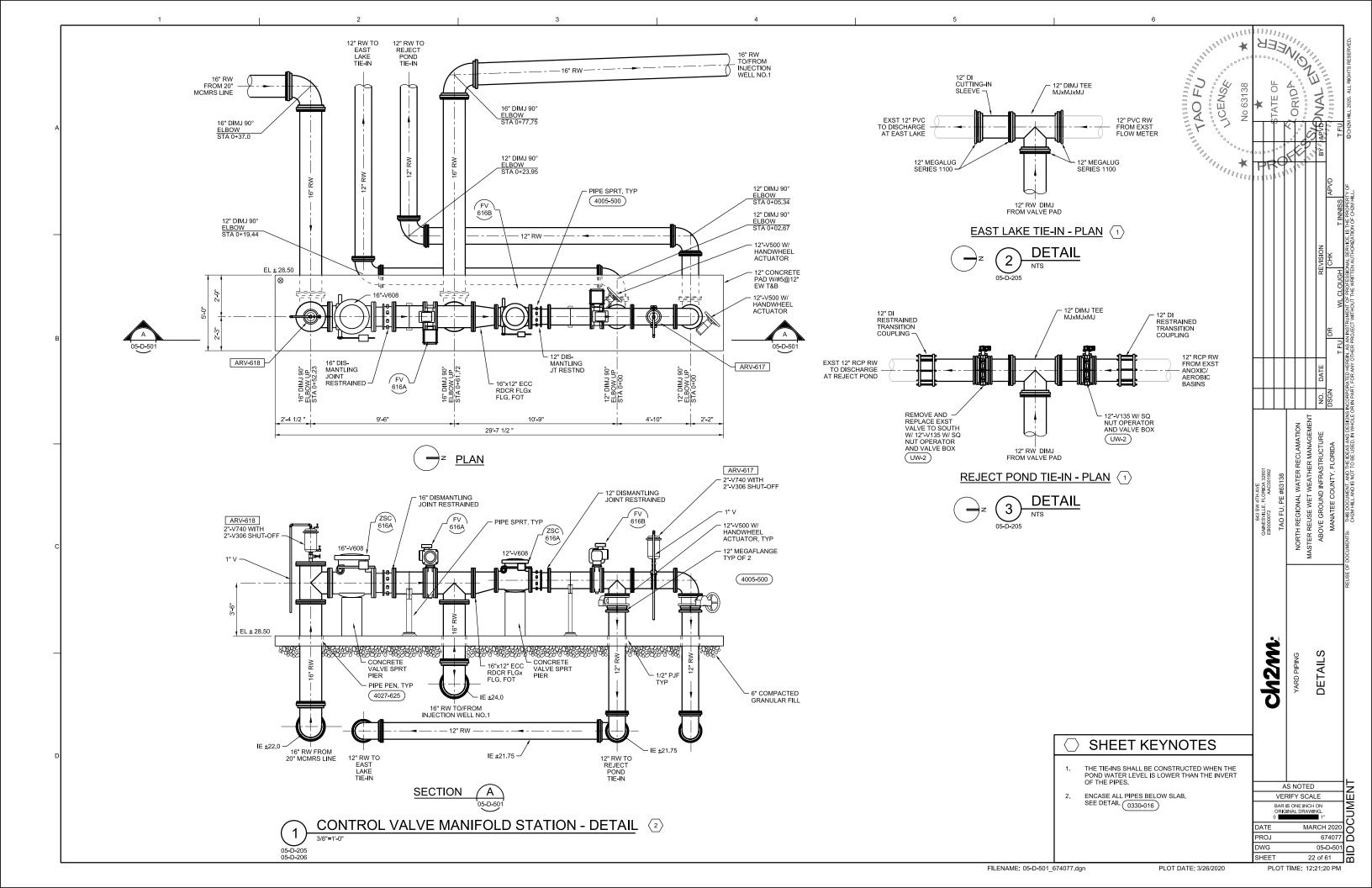


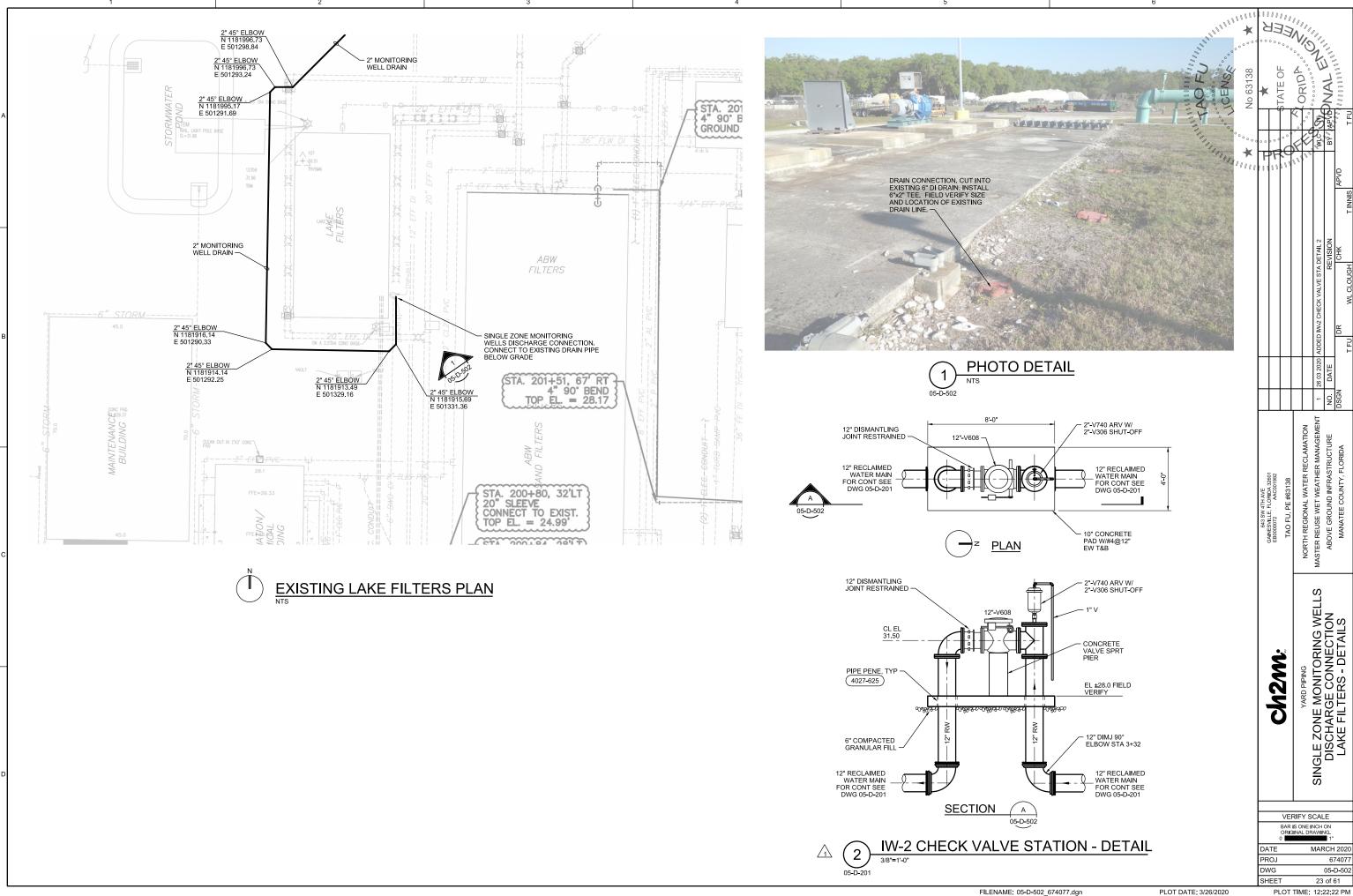












SINGLE ZONE MONITORING WELLS DISCHARGE CONNECTION LAKE FILTERS - DETAILS

SCALE III SINCH ON DRAWING.

MARCH 2020 O

674077

05-D-502

05-D-502 23 of 61

23 of 61

North Regional Wastewater Reclamation Facility subsurface utility excavation (sue) report

							` /		
ID Name	Northing	Easting	Surface	Measured	Top of	Pipe	Pipe	Type	Surface
Location	_	_	Elevation	Depth (ft.)	Pipe	Size	Material	• •	
VVH#001	1181393.37	501670.22	28.06	4.87	23.19	18"	DIP	EFFLUENT	GROUND
VVH#002	1181692.07	501233.11	26.47	3.54	22.93	18"	DIP	RECLAIMED	GROUND
VVH#003	1181761.29	502221.21	30.44	2.78	27.66	12"	DIP	RECLAIMED	GROUND
VVH#004	1181756.36	502358.02	30.16	2.37	27.79	12"	DIP	RECLAIMED	GROUND
VVH#005	1181767.85	502362.39	28.33	3.21	25.12	6"	PVC	WATER	GROUND
VVH#006	1182492.98	502407.96	23.49	5.12	18.37	48"	DIP	FORCE MAIN	GROUND
VVH#007	1181807.24	501673.66	28.15	3.73	24.42	8"	PVC	RECLAIMED	4" PVMT.
VVH#008	1181811.80	501666.12	27.98	3.33	24.65	20"	DIP	RECLAIMED	GROUND
VVH#009	1181671.31	501663.61	27.91	3.17	24.74	30"	DIP	EFFLUENT	4" PVMT.
VVH#010	1181329.12	501344.87	31.84	3.44	28.40	18"	DIP	RECLAIMED	4" PVMT.
VVH#011	1181782.39	501666.22	28.36	1.96	26.40	28"±	CONC. CAP	UNKNOWN	4" PVMT.
VVH#012	1181809.63	501665.88	28.03	3.57	24.46	6"	PVC	FORCE MAIN	GROUND
VVH#013	1182199.83	502393.60	26.10	6.82	19.28	48"	DIP	FORCE MAIN	4" PVMT.
VVH#014	1182109.89	502397.26	27.00	1.47	25.53	8"	PVC	SANITARY	4" PVMT.
VVH#015	1181841.62	502411.92	28.58	7.80	20.78	48"±	DIP	FORCE MAIN	2" PVMT.
VVH#016	1181800.67	502406.23	27.85	4.13	23.72	20"	DIP	RECLAIMED	3" PVMT.
VVH#017	1181806.90	501194.16	27.36	4.71	22.65	18"	DIP	RECLAIMED	GROUND

DIP = Ductile Iron Pipe, PVC = Polyvinyl Chloride Pipe, PVMT. = Pavement, CONC. = Concrete

MANATEE COUNTY NORTH REGIONAL WASTEWATER RECLAMATION FACILITY

I am a Professional Surveyor and Mapper, registered in the State of Florida, holding Certificate No. PSM 4292 and that I am acting on behalf of ZNS Engineering, L.C., a corporation authorized to offer services of registered Surveyors and Mappers in the State of Florida, holding L.B. No. 6982.

This certificate is made to SUE Report of Subsurface Utility Location as shown hereon.

Elevations shown are based on 1988 NAVD. The elevations are derived from Square Cut Found at Northwest corner of bridge, East side of site, WMBP BM 6897 (Elevation of 28.04) and Manatee County Benchmark Revit & Disk Found at North centerline of bridge, East side of site (Elevation of 27.82).

Coordinates are based on the Florida State Plane Coordinate System (West Zone) NAD 83 / 2011 - EPOCH 2010.0000 and were derived using Real Time Kinematic Method and the Florida Department of Transportation Permanent Reference Network Site "Manatee G. Stroop CORS-ARP" (PID DL7628)

onal Surveyor and Mappe

Florida License No. 4292

T:\Manatee\NRWRF\ SUE Report 06-13-19.dwg



SUBSURFACE UTILITY EXCAVATION (SUE) REPORT - DETAIL

05-D-201 05-D-202 05-D-203 05-D-205 05-D-206

Tao Fu Digitally signed by Tao Fu Date: 2019.12.16 11:30:47

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY TAO FU, PE ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE.
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELETRONIC COPIES.



SHEET KEYNOTES

ER 2019 674077 AS NOTED BAR IS ONE INCH ON ORIGINAL DRAWING. NOVEMBER 2019

DUAL ZONE MONITORING WELL DISCHARGE CONNECTION AT EXISTING HEADWORKS - DETAIL

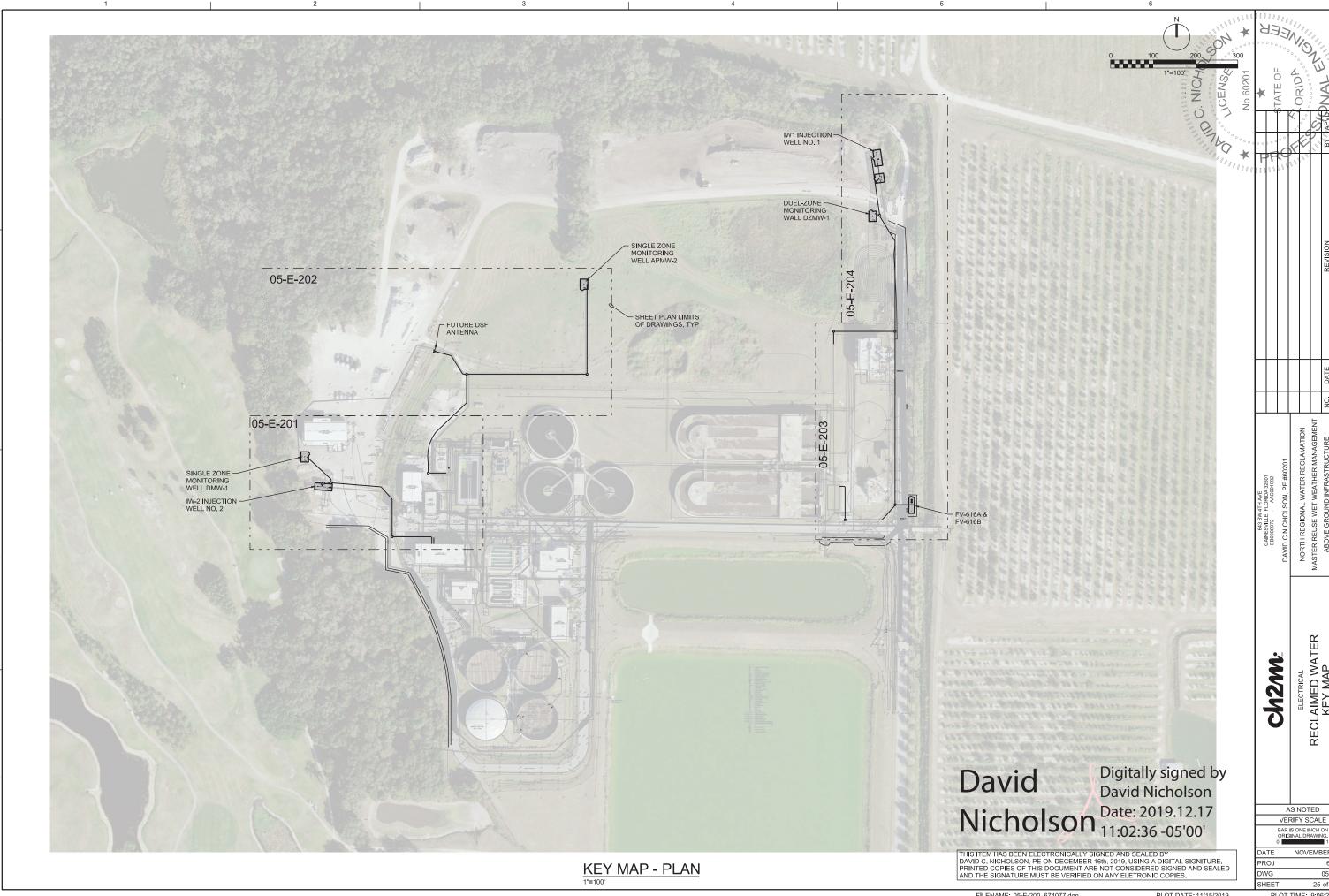
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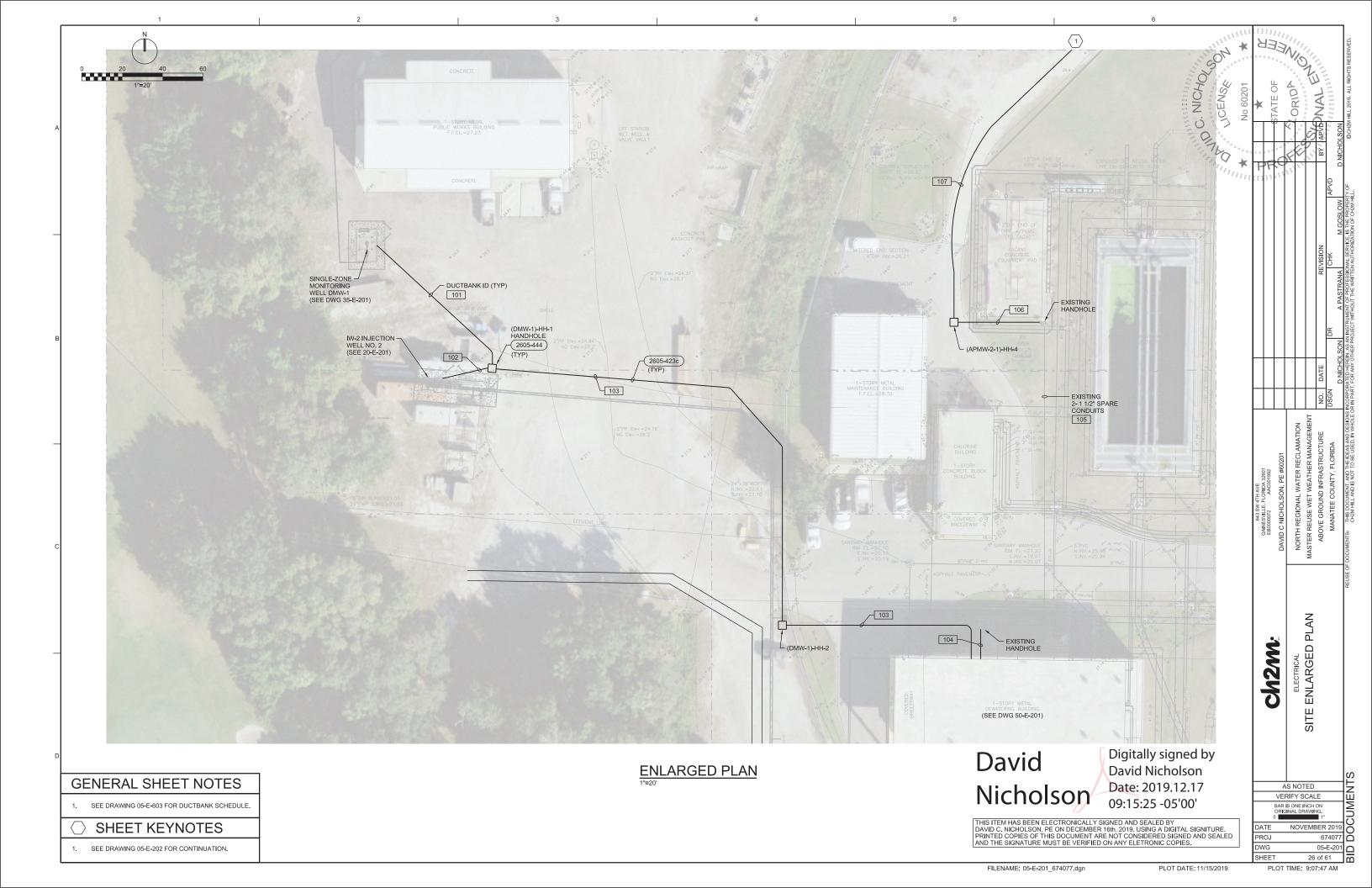
AAO FU

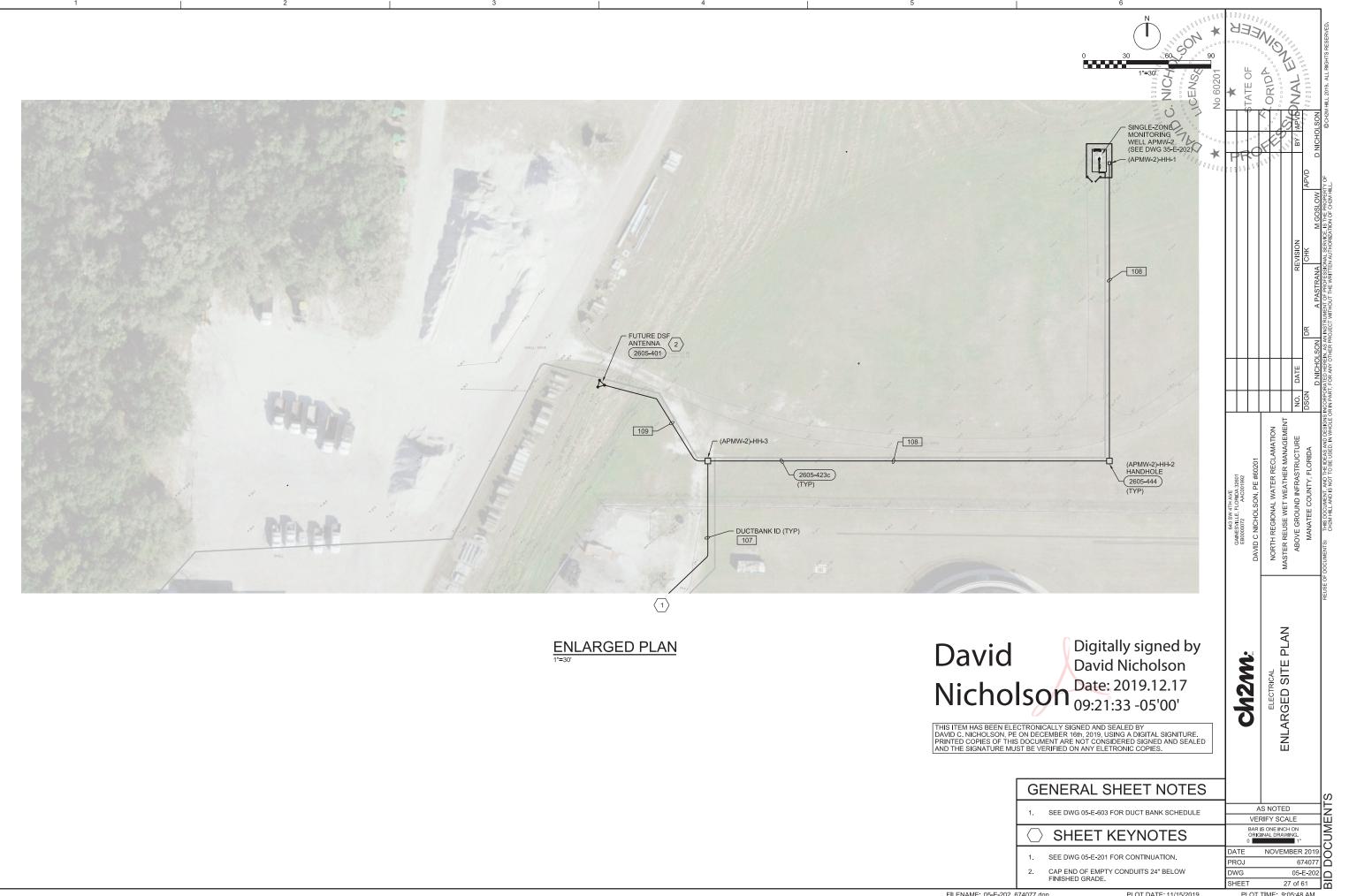
05-D-503 24 of 61 24 of 61 PLOT TIME: 9:06:39 AM



NOVEMBER 2019

ELECTRICAL
RECLAIMED WATER
KEY MAP

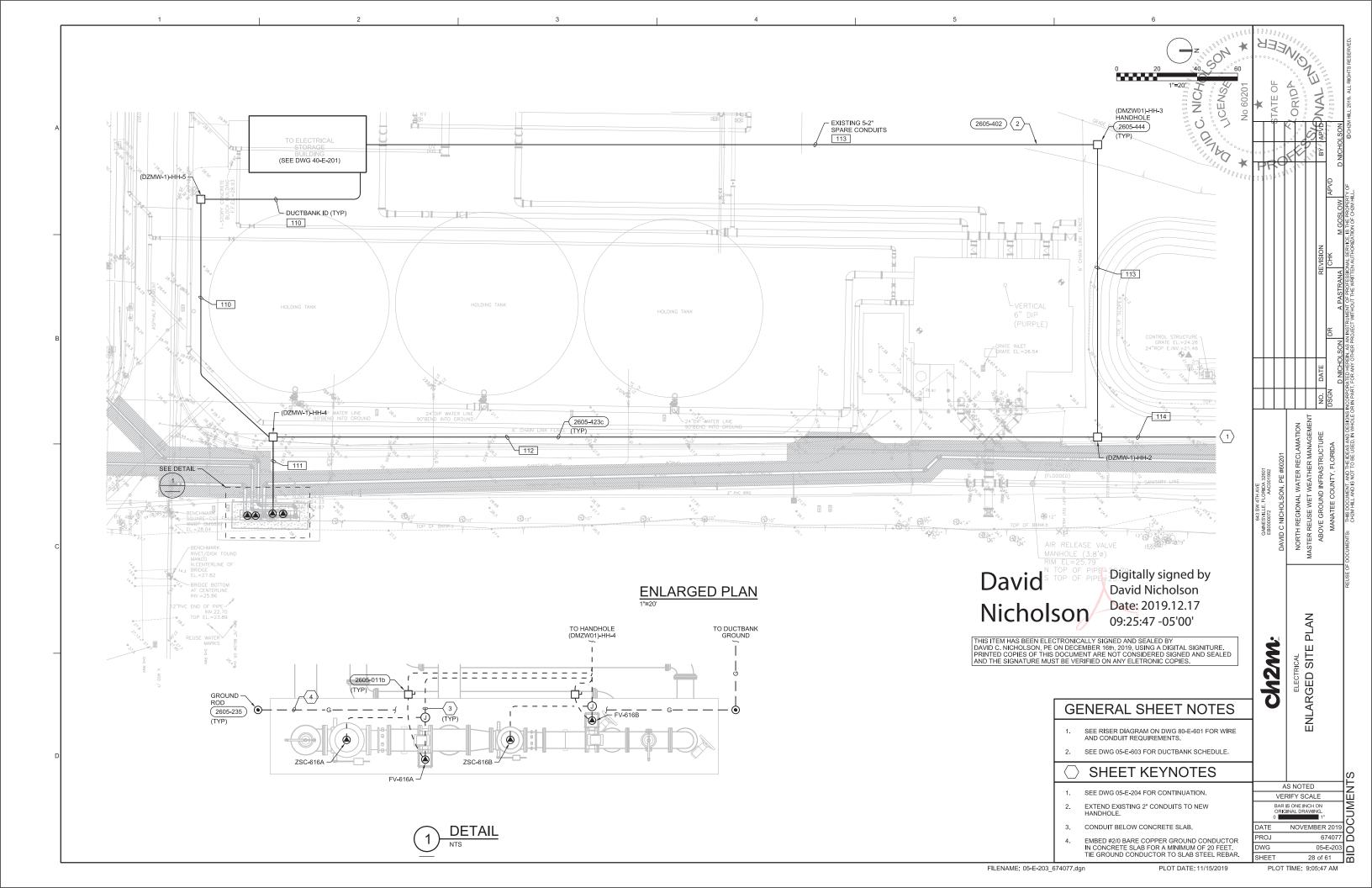


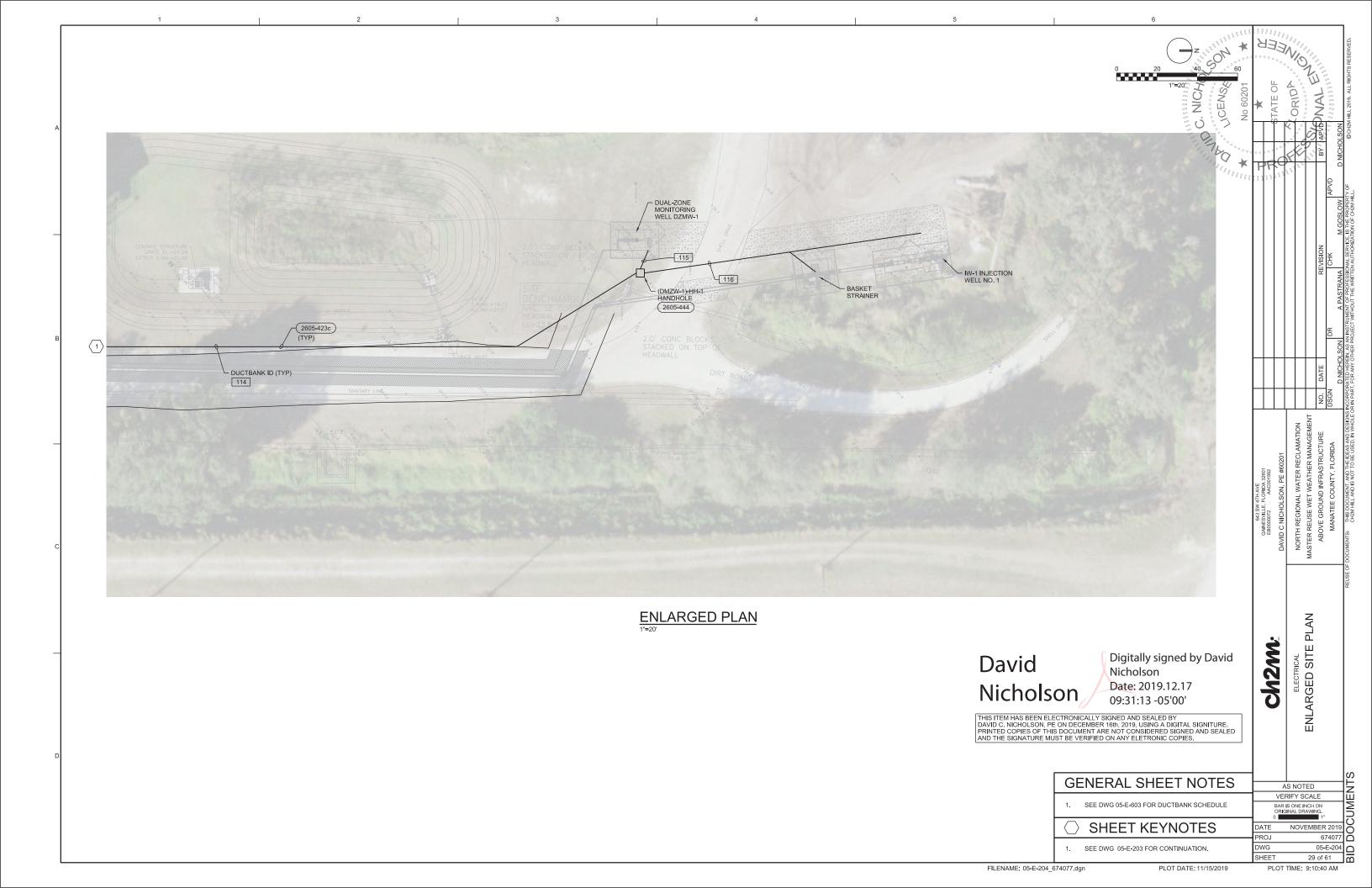


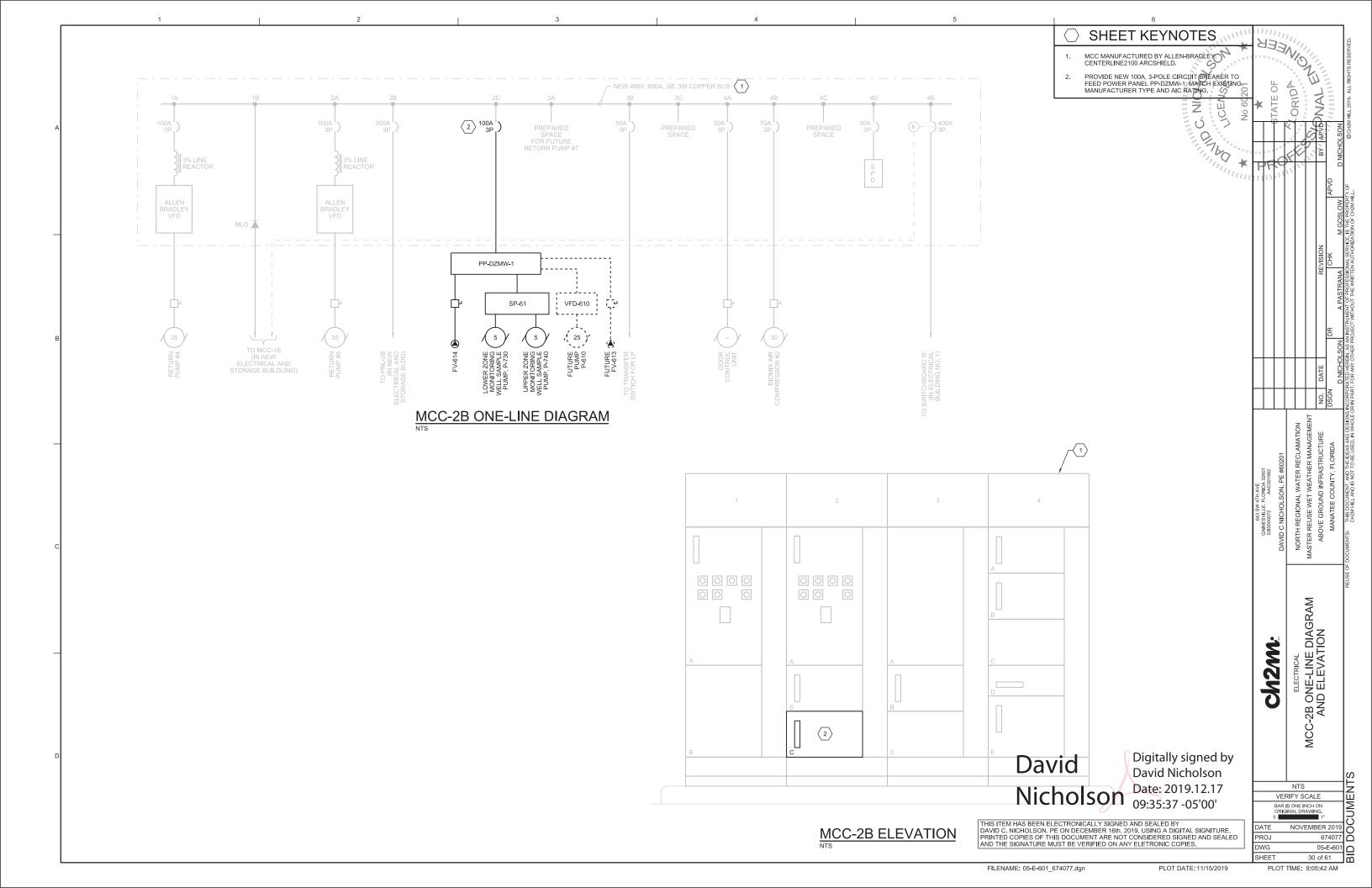
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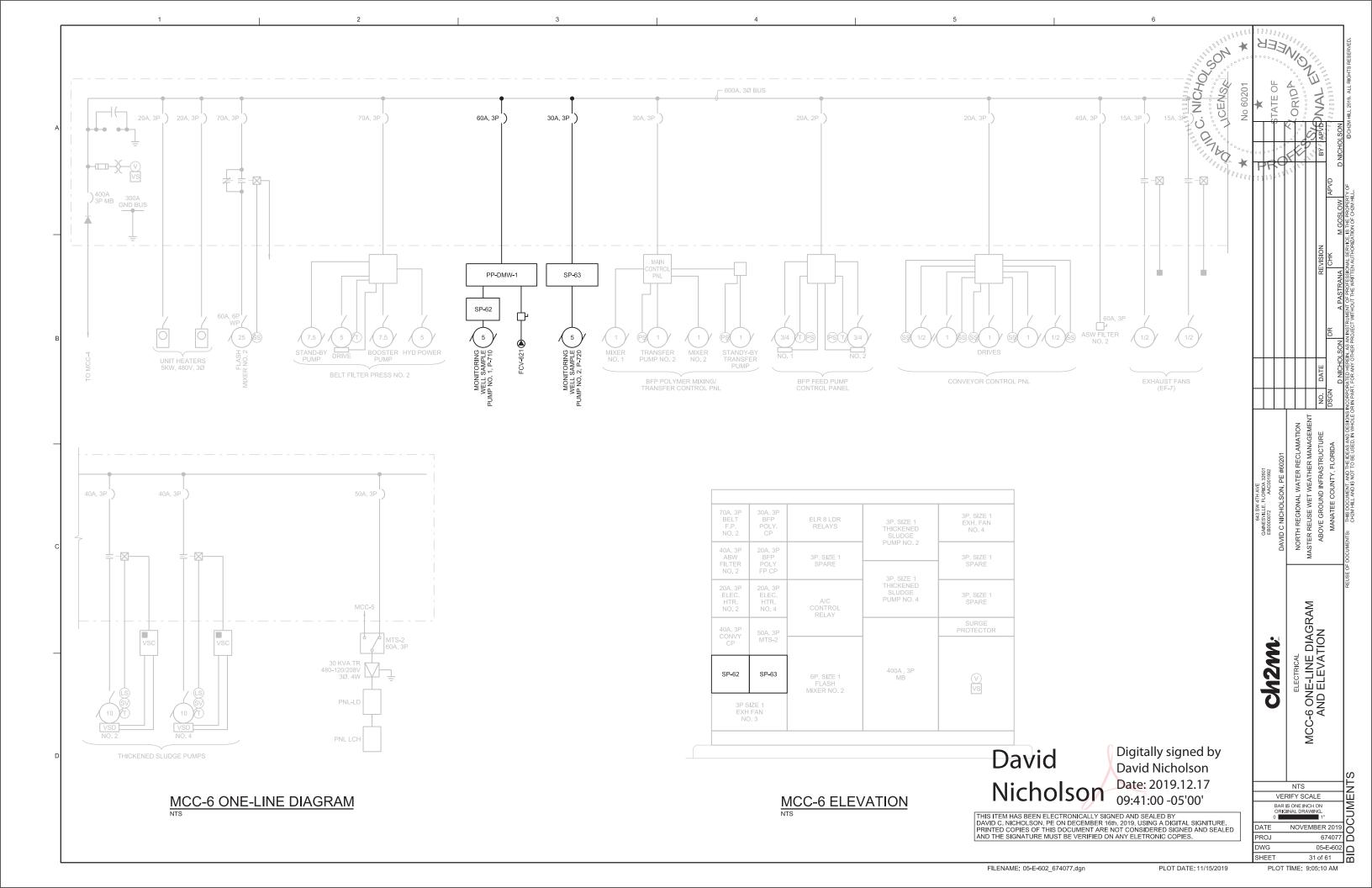
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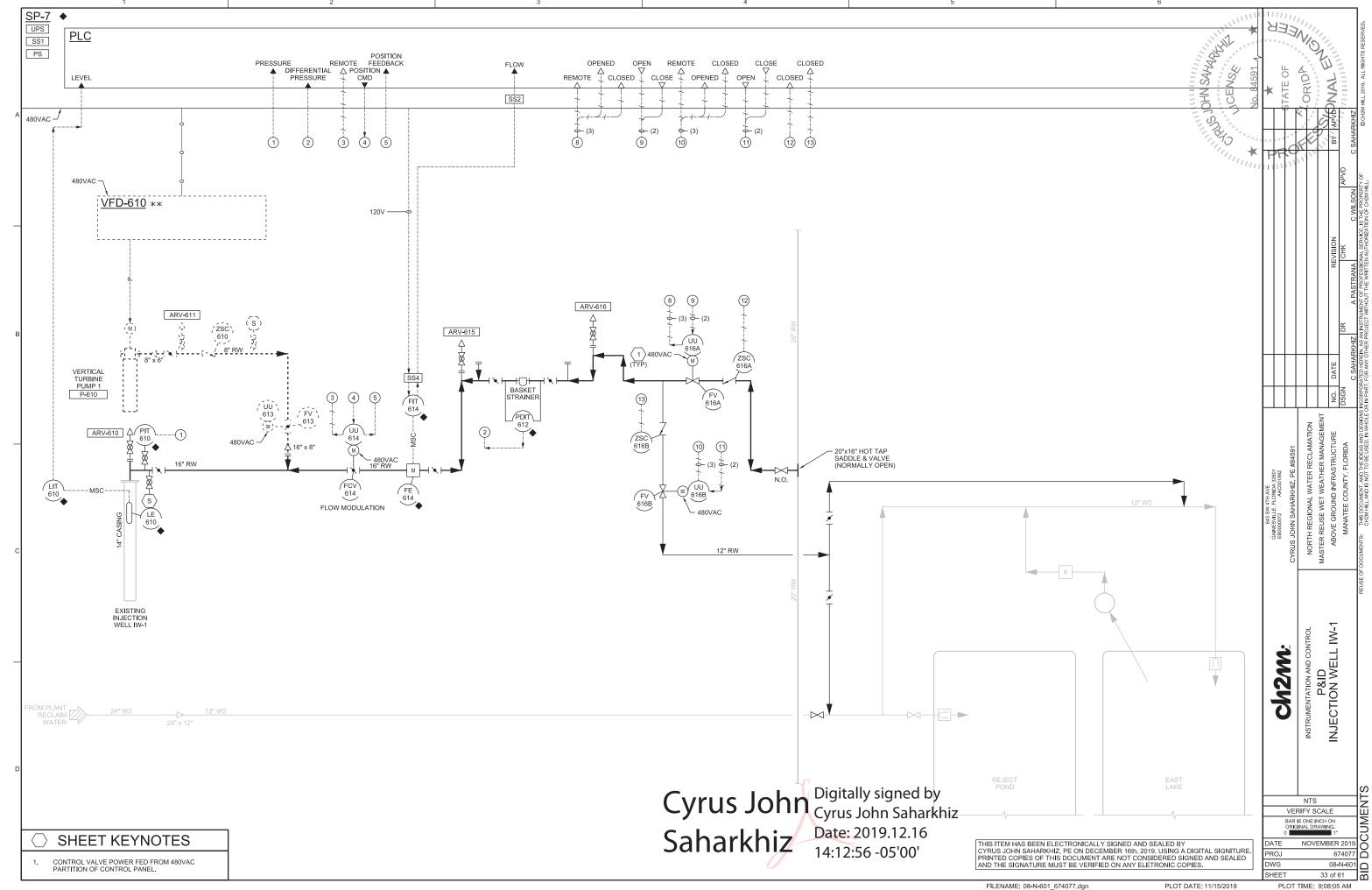


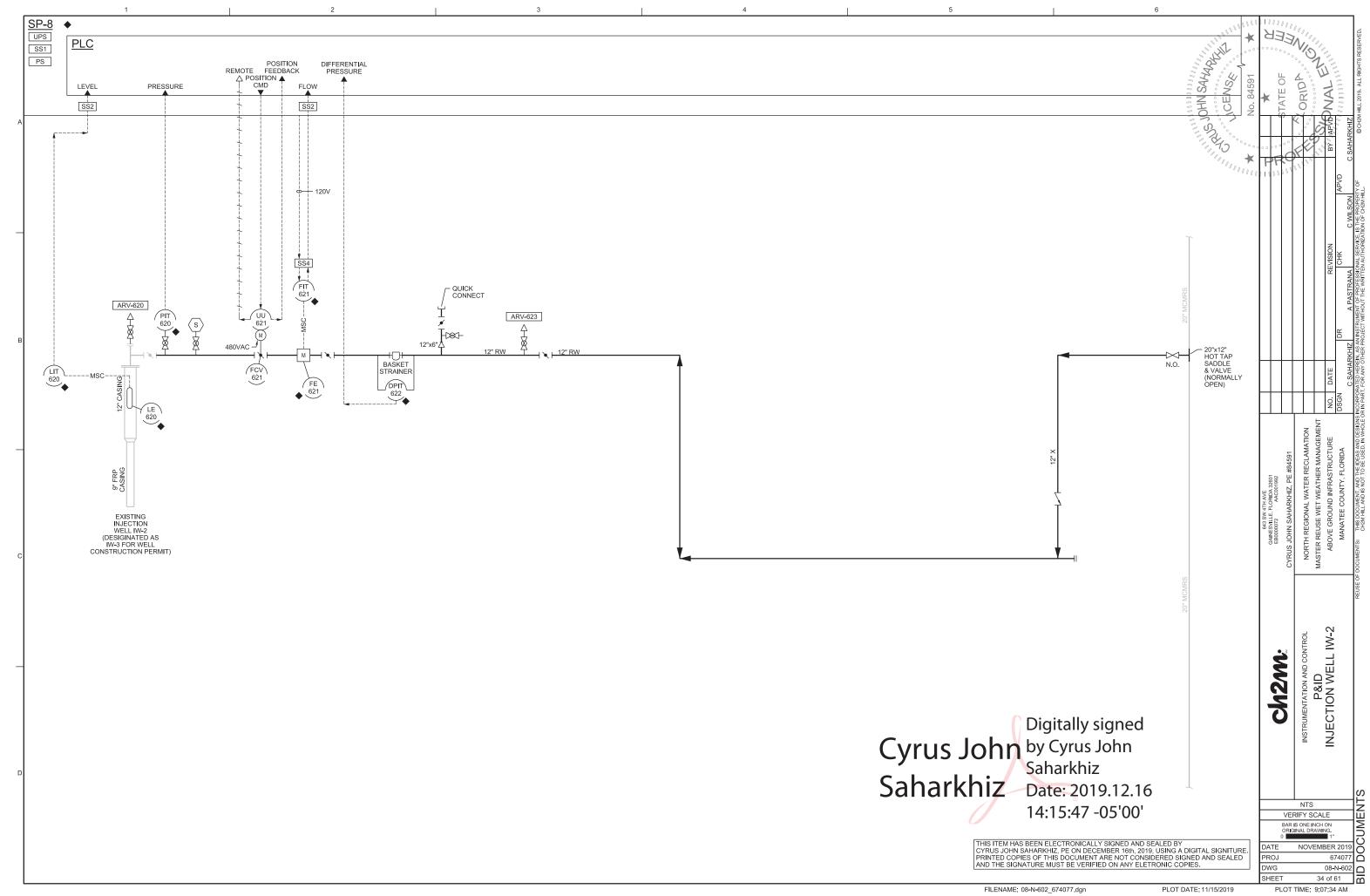


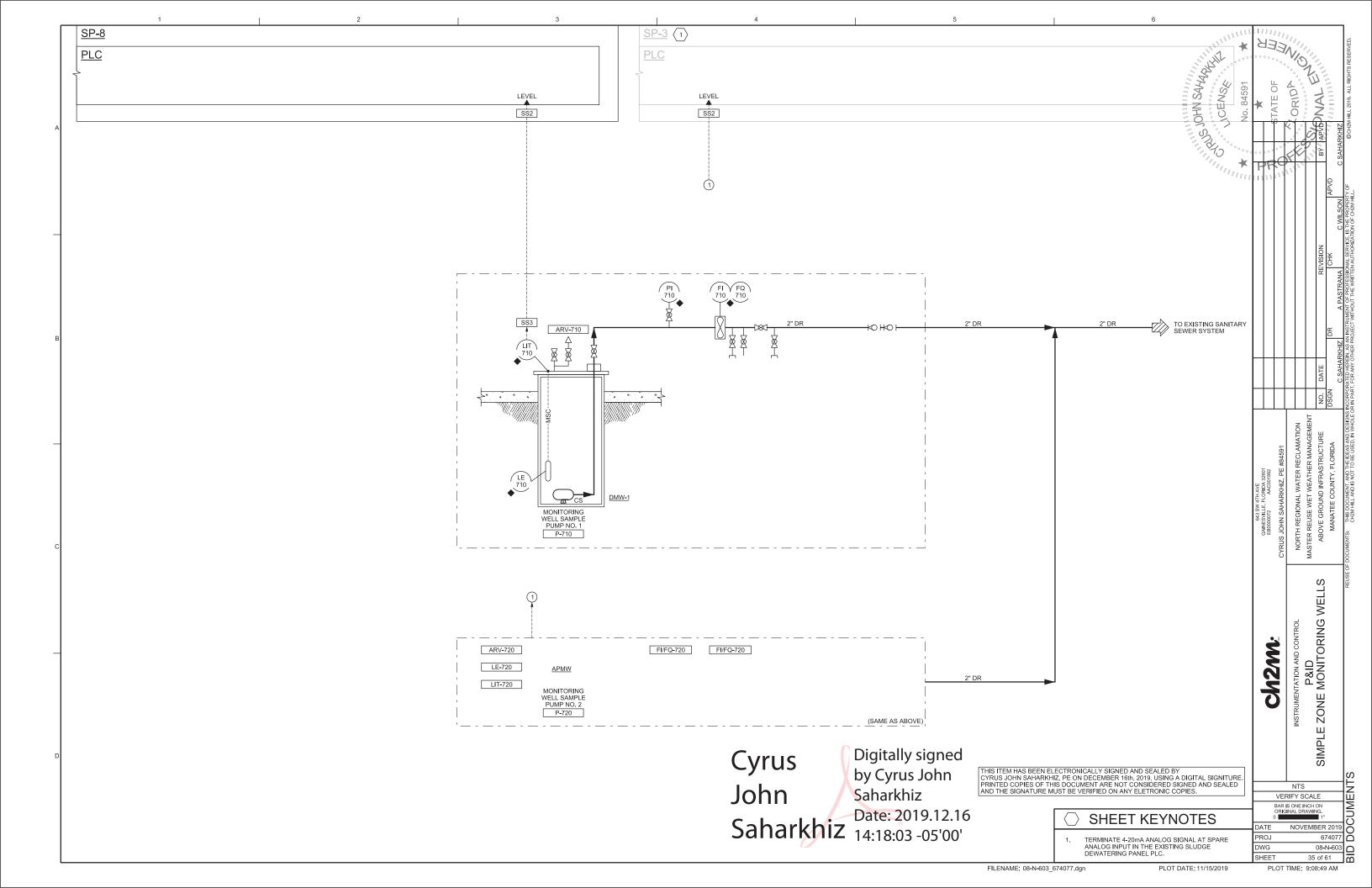
HEER ... ON * ELECTRICAL AND STORAGE BUILDING FLOOR MCC-2B VOLTAGE: 480 PHASE: 3 BUS RATING DUCT BANK SCHEDULE DUCT BANK SCHEDULE CONDUIT CIRCUIT CONDUIT CIRCUIT COMMENTS BANK CIRCUIT ID FROM COMMENTS BANK CIRCUIT ID FROM SIZE TYPF SIZE YPF ID ORIDA OF POWER CONTROL SP-61 1 1/2" PP-DMW-MCC-6 PP-DMW-1 FV-616A FV-616A NAL SP-62 NETWORK SP-3 SP-62 FIRER OPTIC FV-616B CONTROL SP-61 FV-616B 112 LIT-620 ANALOG SP-62 LIT-620 SHEET KEYNOTE EMPTY SPARE SP-61 FV-616A PIT-620 PIT-620 SHEET KEYNOTE EMPTY SPARE FV-616B ANALOG SP-62 DPIT-622 ANALOG SP-62 DPIT-622 SHEET KEYNOTE SHEET KEYNOTE 2 POWER MCC-2B PP-DZMW-1 PP-DZMW-FV-616A 1.0 20 A/B/C FIBER OPTIC SP-62 FIT-62 POWER FIT-621 SP-61 NETWORK EQ-1 SP-61 FV-616B 1.0 20 A/B/C 1" 1" FCV-621 ANALOG SP-62 FCV-621 SHEET KEYNOTE 2 (DZMW-1)-HH-1 PP-DMW-1 FCV-621 POWER FCV-621 EMPTY SPARE DZMW-1)-HH-1 FCV-621 CONTROL | SP-62 FCV-621 EMPTY SPARE DZMW-1)-HH-1 POLE LIGHT IW POWER POLE LIGHT DMW1 POLE LIGHT IW2 1 1/2" MCC-6 PP-DMW-SPARE PP-DMW-1 PP-DZMW-1 POWER MCC-2B PP-DZMW-1 A B C TOTAL EMPTY SPARE FIBER OPTIC SP-61 SP-61 NETWORK EQ-1 EAIS INGS PARE 20, SPECILE CIRCOIT BREARER STALL BE UTILIZD FOR NEW STORAGE ROOM HVAC UNIT, CONTRACTOI SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS WITH HVAC UNIT PROVIDED. EMPTY SPARE PP-DMW-1 IW-2 (DZMW-1)-HH-1 FMPTY SPARE MCC-2B EMPT) SPARE SP-3 SP-62 EMPTY SPARE (DZMW-1)-HH-1 MCC-1B (DZMW-1)-HH-1 ANALOG SP-62 ANALOG SP-62 LIT-620 LIT-620 SHEET KEYNOTE 2 FV-616/ CONTROL SP-61 PIT-620 PIT-620 SHEET KEYNOTE FV-616B CONTROL SP-61 FV-616B DPIT-622 ANALOG SP-62 SHEET KEYNOTE DPIT-622 EMPTY SPARE SP-61 FV-616A ANALOG SP-62 FIT-621 FIT-621 SHEET KEYNOTE FMPTY SPARE FV-616B PANEL: PP-DMW-1 LOCATION: SINGLE ZONE MONITORING WELL NO. 1 POWER FIT-621 SERVICE VOLTAGE: 480Y/277V PHASE: 3 WIRE: 4 102 FCV-621 FCV-621 SHEET KEYNOTE 2 PP-DZMW-1 PP-DZMW POWER OTAL LOAD KVA: 11.5 BUS SIZE: 100 MAIN SIZE: 60 TYPE: CB FCV-621 FCV-621 POWER PP-DMW-1 FIBER OPTIC FCV-621 NETWORK EQ-1 ONTROL SP-62 REMARKS: INTREGRAL SPD NEUTRAL: N/A MOUNTING: SURFACE AIC: 35K FCV-621 FV-616A NEMA 4X 316 SS ENCLOSURE POLE LIGHT IW2 POWER POLE LIGHT DMW1 POLE LIGHT IW2 FV-616B CONTROL SP-61 FV-616B SPARE LOAD IN KVA EMPTY SPARE SP-61 FV-616A LOAD IN KVA SPARE PP-DMW-1 FMPTY SPARE SP-61 FV-616B CIRCUIT DESCRIPTION A/P NO. NO. A/P CIRCUIT DESCRIPTION A B C A B C VFD-610 POWER PP-DZMW-VFD-610 FUTURE POWER MCC-6 PP-DMW-1 1/2" PP-DMW-VFD-610 NETWORK SP-61 VFD-610 FUTURE 30/3 SP-62 4 30/3 SPARE NETWORK SP-3 FIBER OPTIC POWER PP-DZMW-FUTURE FV-613 FV-613 103 1 1/2" EMPTY 2" EMPTY FV-613 ZSC-610 SPARE PP-DMW-1 ONTROI ZSC-610 SPARE SP-3 SP-62 CONTROL SP-61 9 10 20/3 SPARE V-621 115 SHEET KEYNOTE I IT-610 ANALOG SP-61 I IT-610 SP-63 LIT-720 PIT-610 1 1/2" SP-63 POWER MCC-6 PIT-610 ANALOG SP-61 SHEET KEYNOTE DPIT-612 DPIT-621 SP-61 SHEET KEYNOTE SHEET KEYNOTE 2 SPARE SPACE ANALOG SP-3 PACE 14 DPIT-621 ANALOG SP-61 RPACE 15 16 SPACE SHEET KEYNOTE FIT-614 FIT-614 POWER MCC-6 SP-63 PACE SPACE 105 FIT-614 FIT-614 POWER SP-61 SPACE 19 19 20 21 22 30/3 SPD FCV-614 ANALOG SP-61 FCV-614 SHEET KEYNOTE: SPACE PP-DZMW-1 POWER MCC-6 FCV-614 POWER FCV-614 106 1" FCV-614 SHEET KEYNOTE: SPACE 23 ANALOG SP-3 LIT-720 CONTROL | SP-62 FCV-614 POLE LIGHT IW1 POWER POLE LIGHT DZMW1 POLE LIGHT IW1 0.0 0.0 PP-DZMW-1 POWER EMPTY SPARE SP-61 IW-1 ANALOG SP-3 SHEET KEYNOTE: FUTURE ANTENNA EMPT SPARE (APMW-2)-HH-4 107 EMPTY SPARE (APMW-2)-HH-4 FUTURE ANTENNA PANEL: PP-DZMW-1 LOCATION: DUEL ZONE MONITORING WELL NO.1 (APMW-2)-HH-4 (APMW-2)-HH-1 VFD-610 POWER PP-DZMW-1 VFD-610 FUTURE PHASE: 3 EMPTY SPARE (APMW-2)-HH-4 (APMW-2)-HH-1 VFD-610 NETWORK SP-61 VFD-610 FUTURE SERVICE VOLTAGE: 480Y/277V WIRE: 4 FV-613 POWER PP-DZMW-FV-613 FUTURE TOTAL LOAD KVA: 52.2 BUS SIZE: 100 MAIN SIZE: 100 TYPE CB FV-613 FUTURE 1 1/2" SP-63 FV-613 CONTROL SP-61 POWER MCC-6 REMARKS: INTERGRAL SPD NEUTRAL: N/A MOUNTING: SURFACE AIC: 35K 1" ZSC-610 CONTROL SP-61 ZSC-610 ANALOG SP-3 SHEET KEYNOTE 2 NEMA 4X 316 SS ENCLOSUBE 108 SHEET KEYNOTE 2 ANALOG SP-61 EMPT) SPARE (APMW-2)-HH-4 SP-63 SPARE PIT-610 LOAD IN KVA PIT-610 ANALOG SP-61 SHEET KEYNOTE 2 FMPTY SPARE (APMW-2)-HH-4 SP-63 SPARE A B C CIRCUIT DESCRIPTION A/P NO. NO. A/P CIRCUIT DESCRIPTION A B C DPIT-621 ANALOG SP-61 DPIT-621 DPIT-612 SHEET KEYNOTE DPIT-621 SPARE SP-61 SHEET KEYNOTE EMPTY SPARE (APMW-2)-HH-4 FUTURE ANTENNA SPARE 109 FIT-614 FIT-614 SHEET KEYNOTE ANALOG 4 60/3 FUTURE VFD-610 EMPTY SPARE (APMW-2)-HH-4 FUTURE ANTENNA SPARE 3.5 FIT-614 FIT-614 FCV-614 FCV-614 SHEET KEYNOTE 2 ANALOG FV-616A POWER PP-DMW-1 FV-616A PANEL SCHEDULES, LIGHTING FICTURE SCHEDULE, AND AND DUCTBANK SCHEDULE FCV-614 POWER PP-DZMW-1 FCV-614 POWER PP-DMW-1 FV-616B FV-614 9 10 20/3 FUTURE FV-613 0.3 110 FCV-614 CONTROL SP-62 FCV-614 1" PNL-2B FMPTY SPARE FV-616A POLE LIGHT IW1 POWER POLE LIGHT DZMW1 POLE LIGHT IW1 FMPTY SDARE PNL-2B FV-616B EMPTY SPARE PP-DZMW-1 IW-1 SPARE SP-61 IW-1 EMPTY SPARE 30/3 15 16 20/3 SPARE PP-DMW-FV-616A PP-DMW-FV-616B POWER FV-616B 19 20 21 22 30/3 SPD EMPTY SPARE PNL-2B FV-616A SPACE ch2m PNL-2B EMPT SPARE FV-616B PACE FV-616/ FV-616A PACE 23 FV-616E CONTROL SP-61 FV-616B Digitally signed by 3.8 TOTAL David 3.8 0.01 EMPT) SPARE FV-616A **David Nicholson** EMPTY SPARE SP-61 FV-616F Date: 2019.12.17 **Nicholson** LIGHTING FIXTURE SCHEDULE 09:46:12 -05'00' SYMBOL MARK VOLTS DRIVER CURRENT TYPE WATTS LUMENS MOUNT DESCRIPTION MAKE/MODEL THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY DAVID C. NICHOLSON, PE ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELETRONIC COPIES. LITHONIA KAD LED SERIES CUT-OFF SHOE BOX LIGHTING FIXTURE ALL ALUMINUM WITH DIE CAST KAD LED 60C 700 40K R3 MVOLT SP09 DDBXD BODY W/ DARK BRONZE FINISH AND DOOR TEMPERED GLASS LENS MOUNTED ON NINE INCH ARM, SEALED AGAINST ENTRY OF INSECTS. ALUMINUM REFLECTOR, TYPE R3 DISTRIBUTION WITH HINGED DOOR ACCESS. PROVIDE COOPER/LUMARK RK RIDGEWAY SERIES MANUAL ON-OFF SWITCH 48-INCH AFG ON POLE UL LISTED FOR OUTDOOR CONCRETE ER 2019 674077 Q LOCATIONS, CONTRACTOR SHALL HAVE STRUCTURAL CALCULATIONS LED 700mA NTS 120 137 15,964 POLE 10FT (MIN) 40K PERFORMED TO DETERMINE REQUIRED POLE AND HARDWARE STRENGTH SHEET KEYNOTES VERIFY SCALE AND DEPTH OF BURIAL. CALCULATIONS SHALL BE BASED ON BAR IS ONE INCH ON CHARACTERISTICS OF LIGHT FIXTURE AND DESIGN CRITERIA ON STRUCTURAL PROVIDE NEW 20A, 3-POLE CIRCUIT BREAKER NOTES SHEET OF THESE DOCUMENTS AND SHALL BE PREFORMED BY AND HUBBELL/SPAULDING CIMARRON SERIES MATCH EXISTING MANUFACTURER, TYPE AND AIC NOVEMBER 2019 ENGINEER QUALIFIED UNDER FLORIDA STATUTES 471,003 EITHER BY ATE LICENSURE OF FULL TIME EMPLOYMENT BY POLE MANUFACTURER ROJ SEPERATE ANALOG FROM 480V CABLES BY A MINIMUM OF 18 INCHES, AND FROM 120V CABLES 05-E-603 32 of 61 WG BY A MINIMUM OF 12 INCHES. SHEET 32 of 61

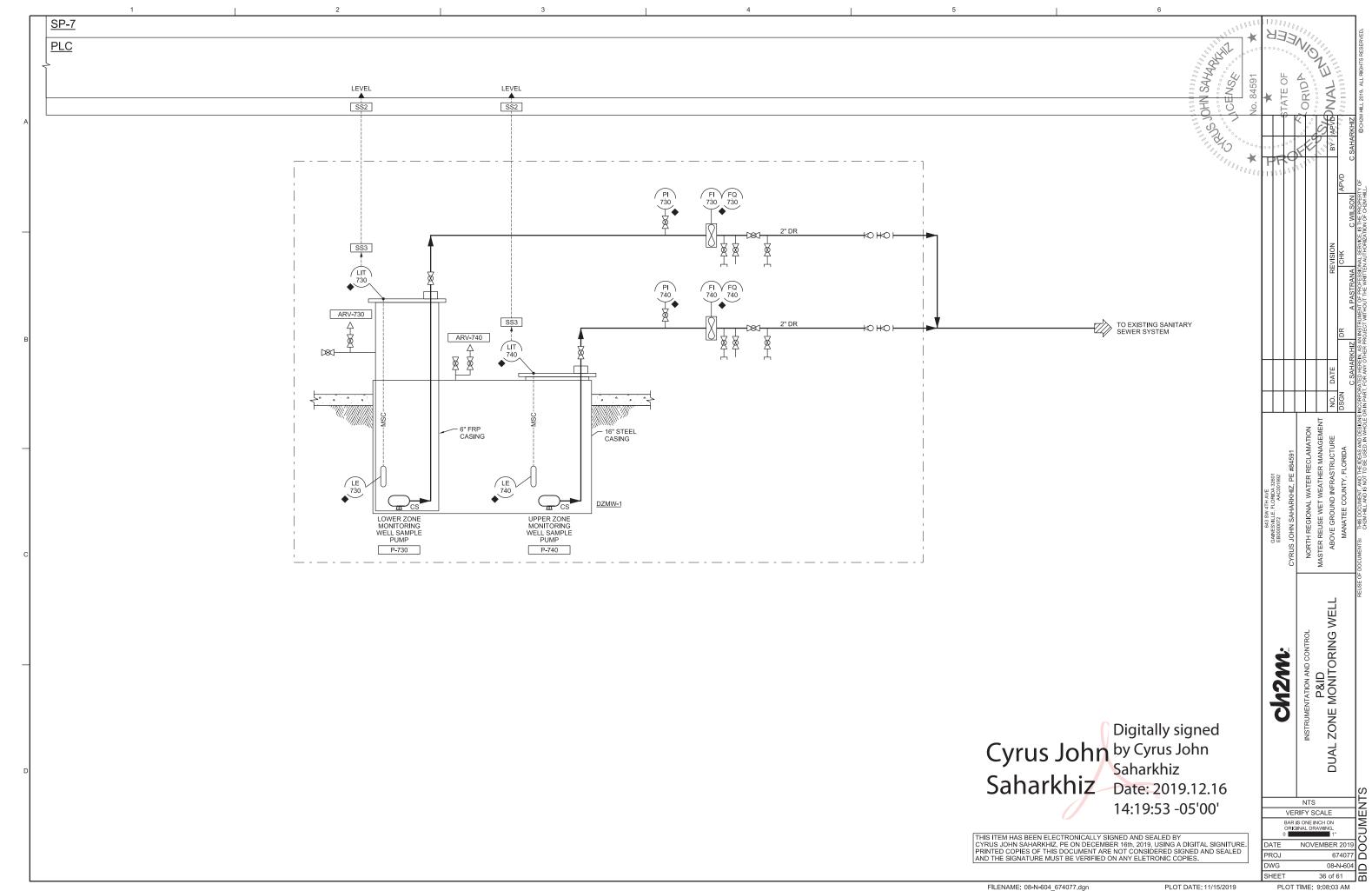
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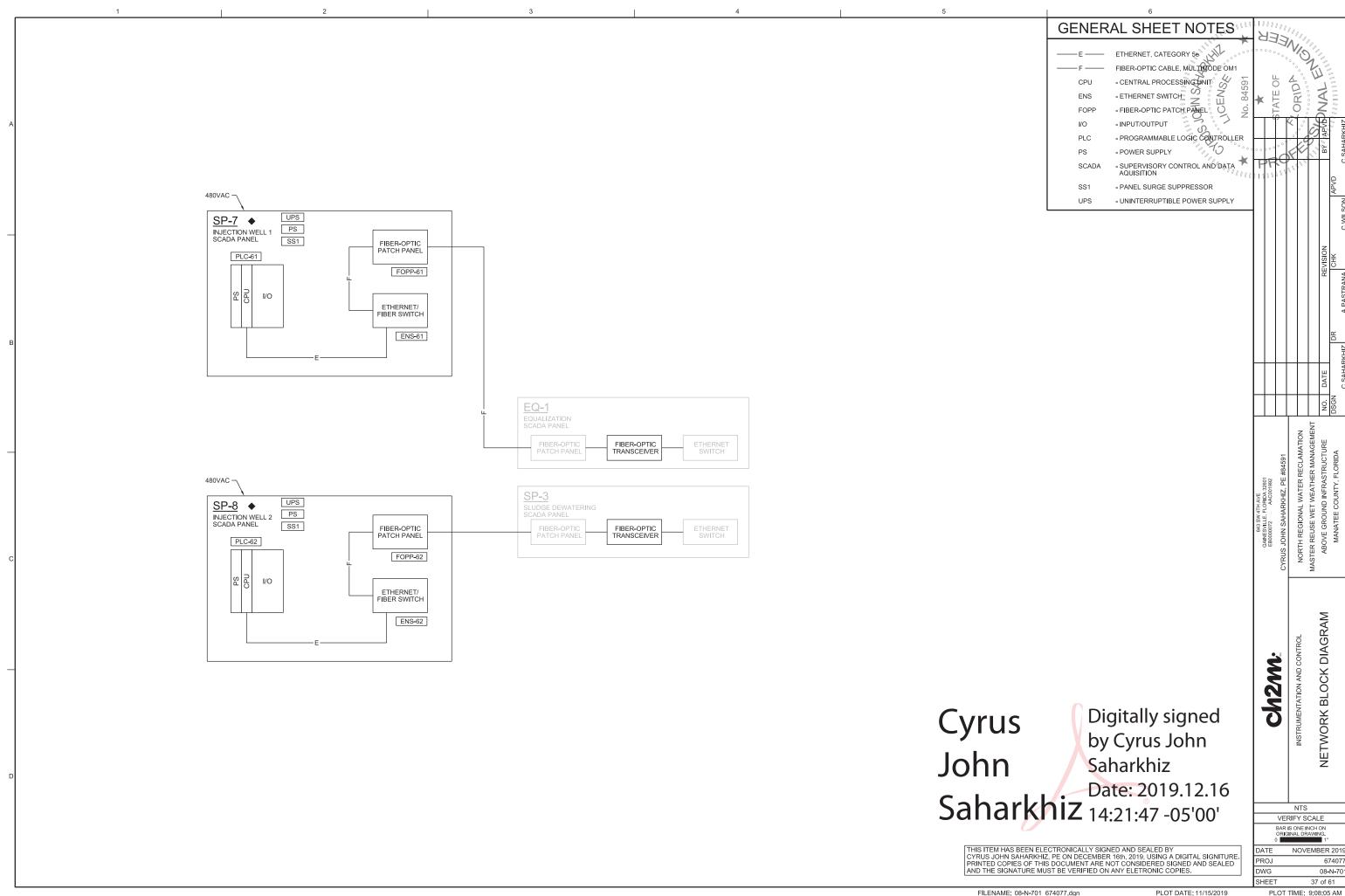
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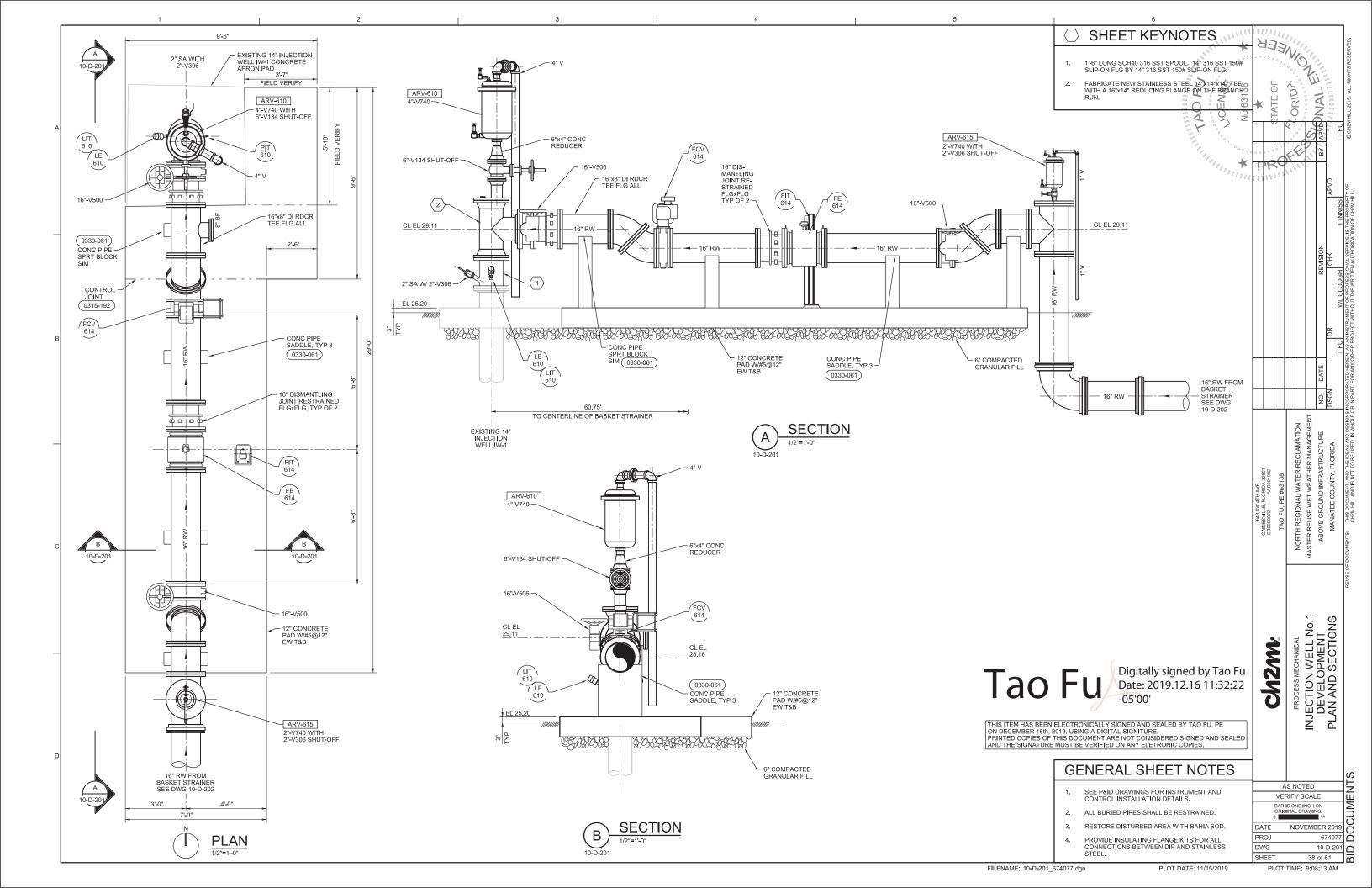


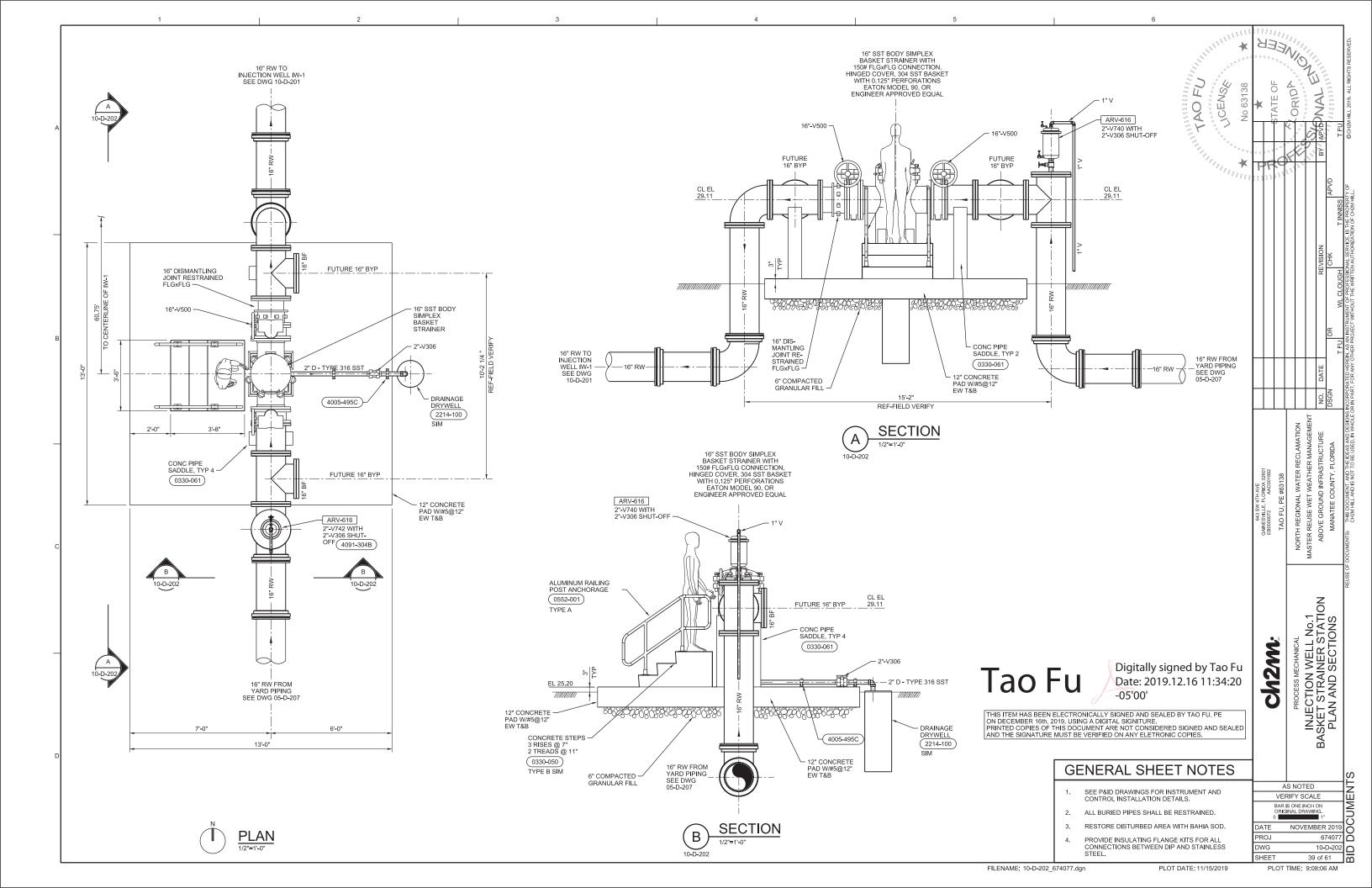


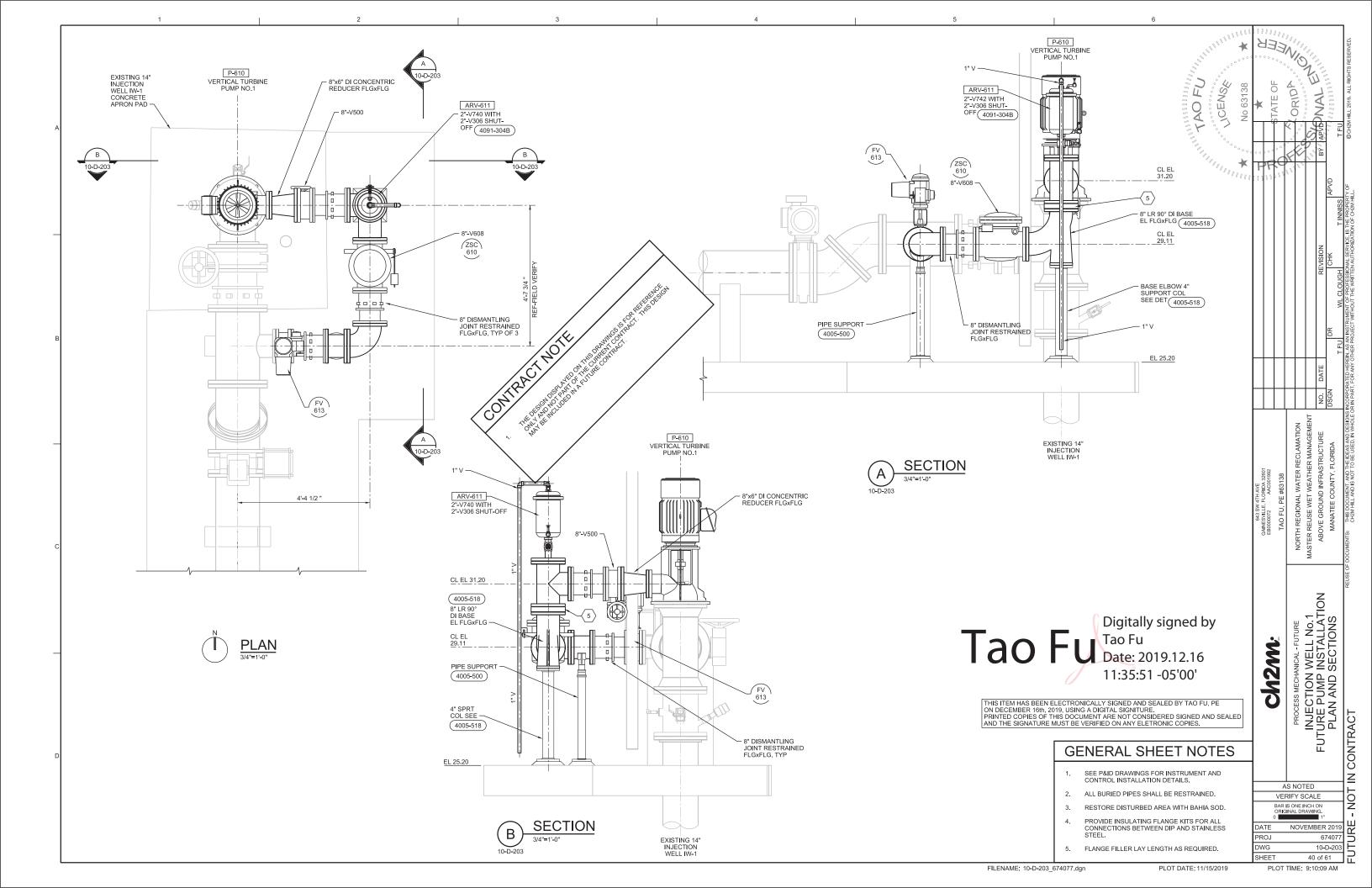
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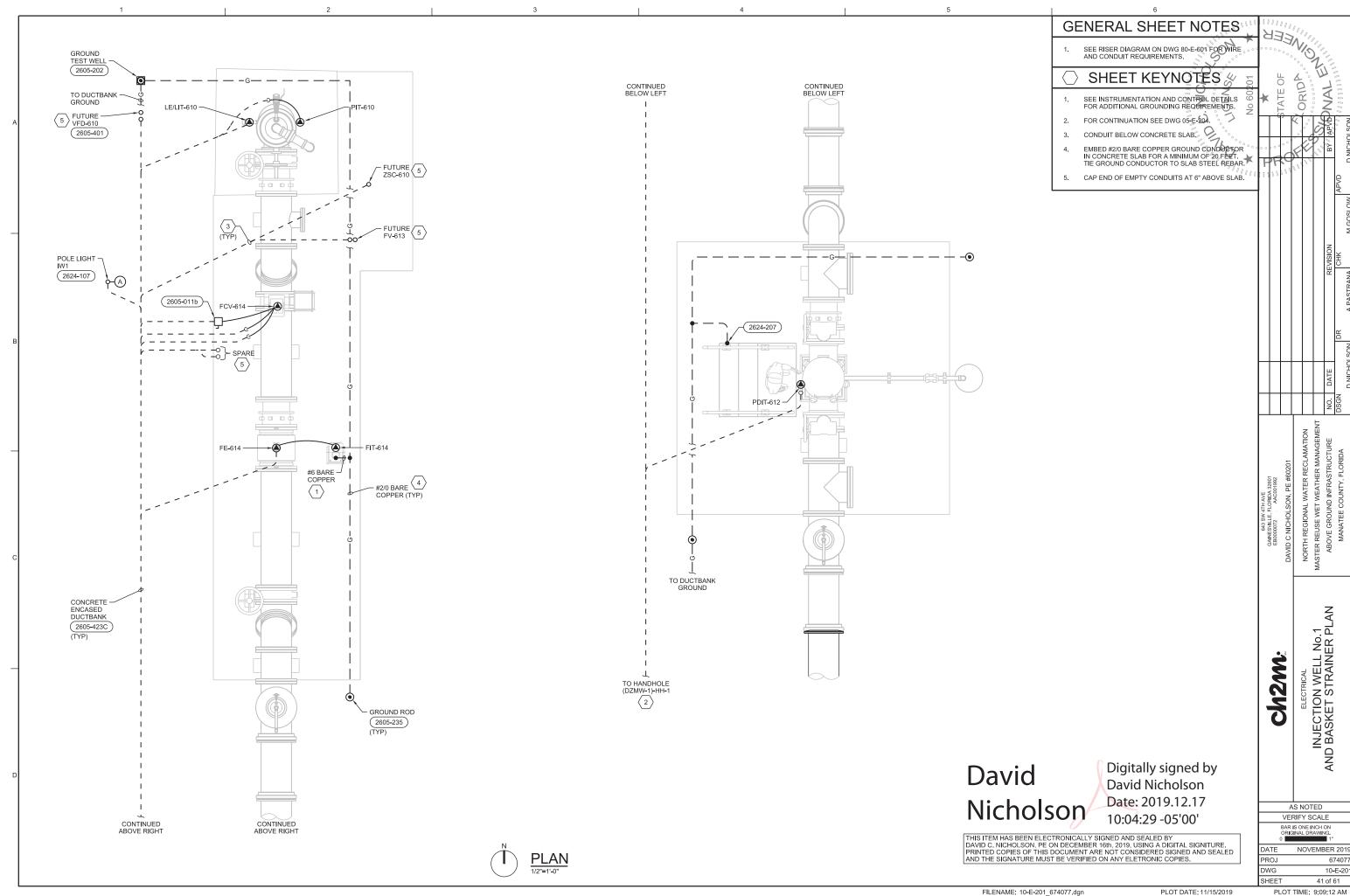
ER 2019 674077

08-N-701 7 of 61 37 of 61



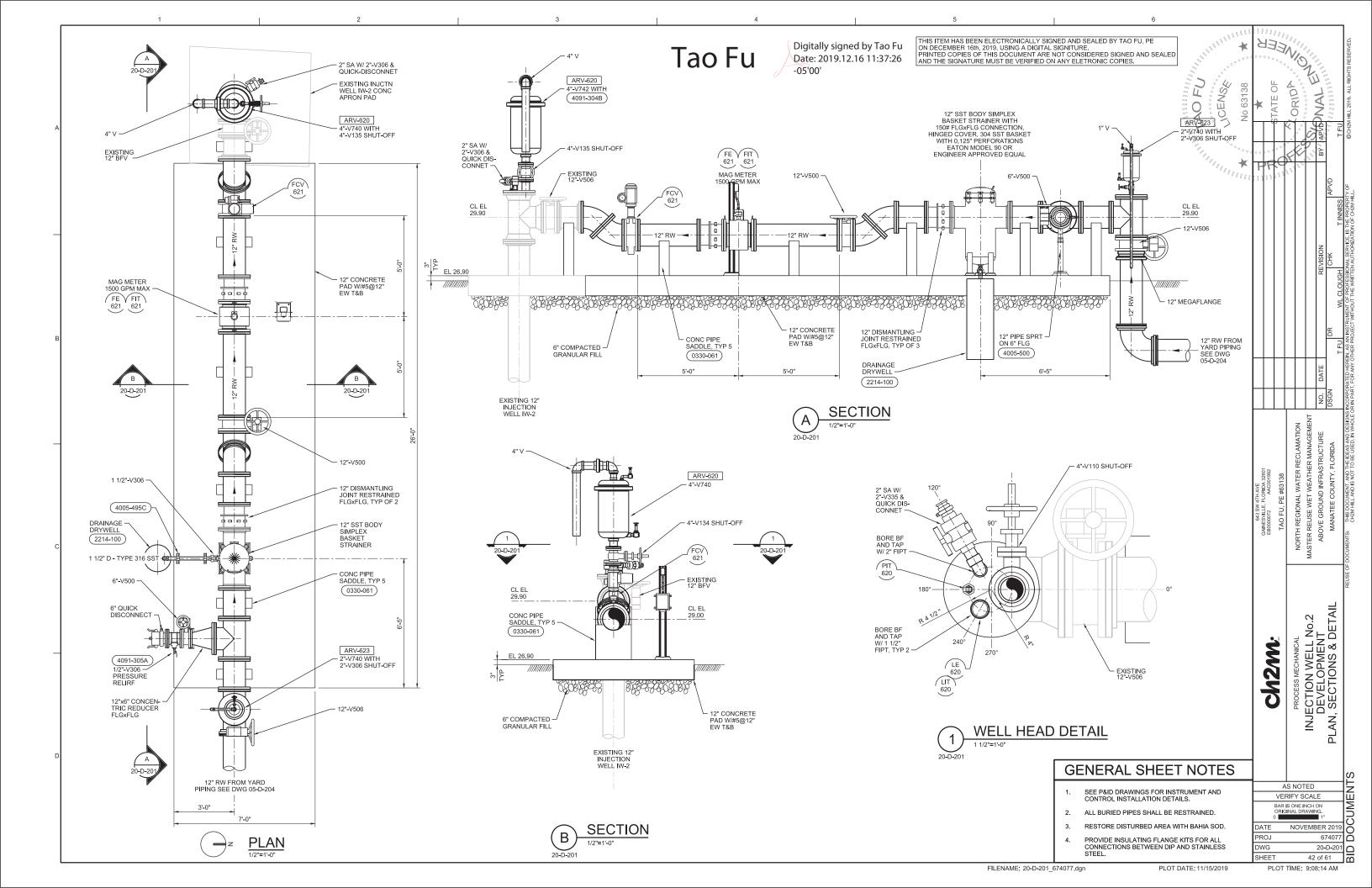


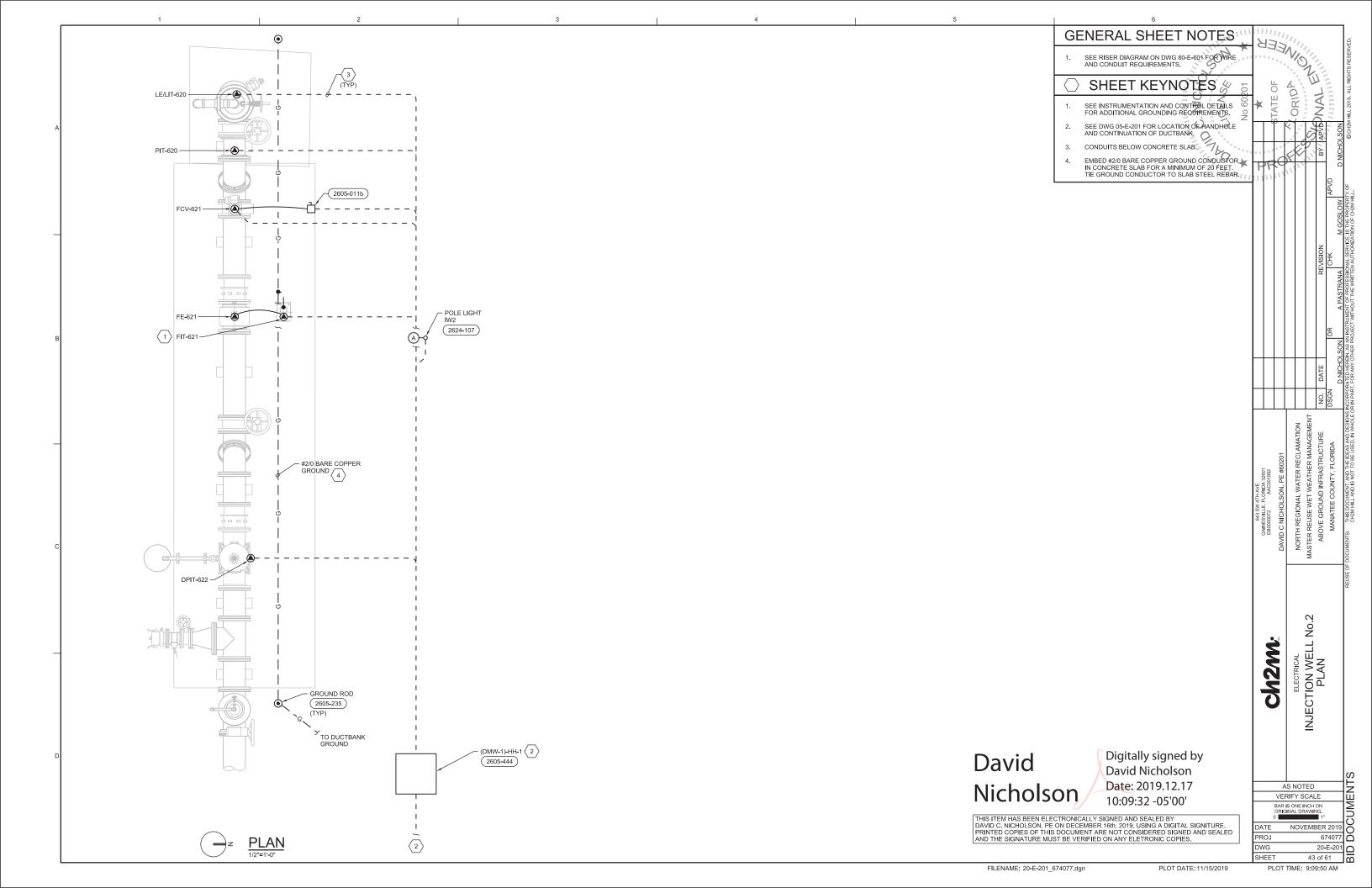


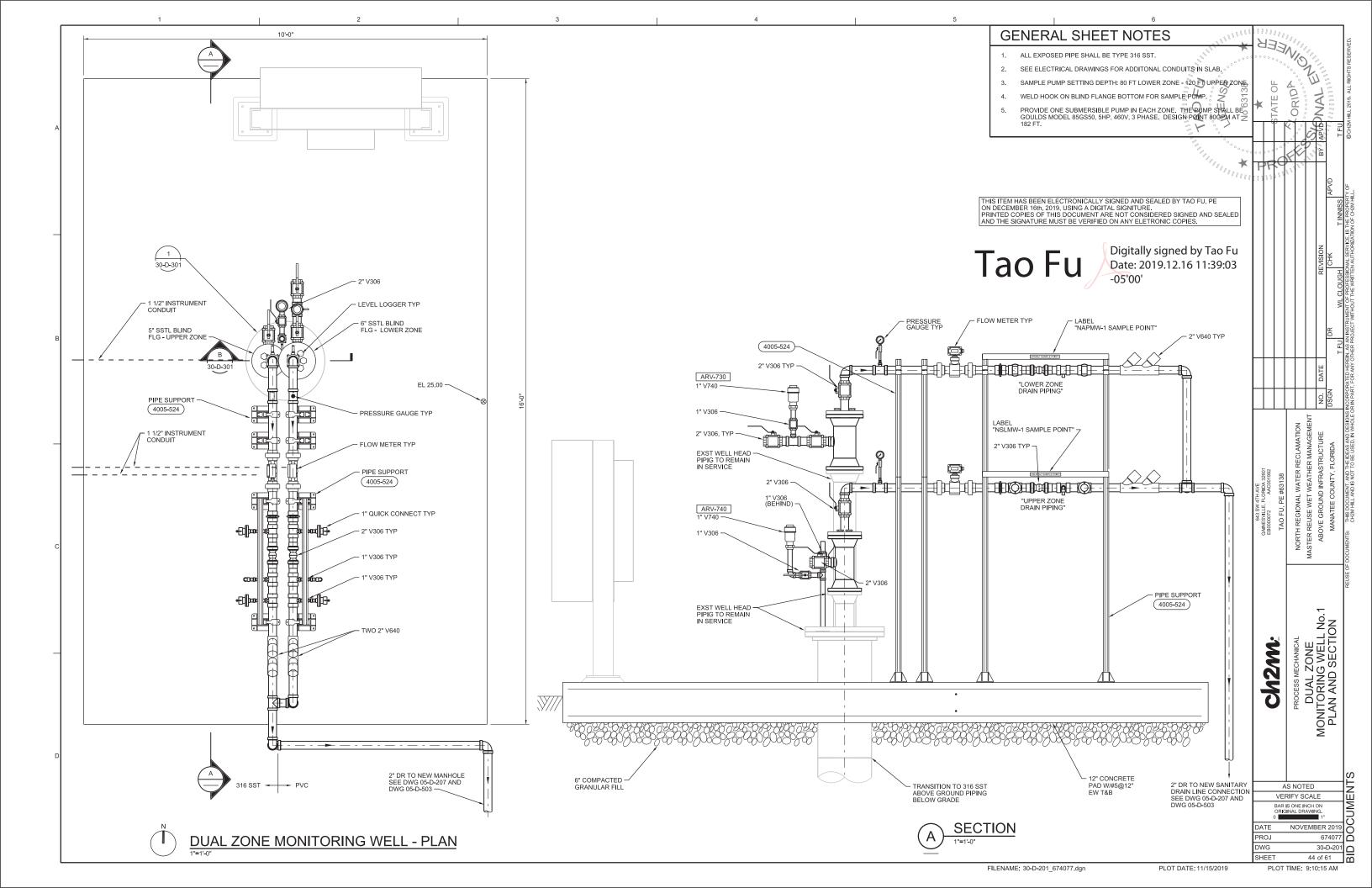


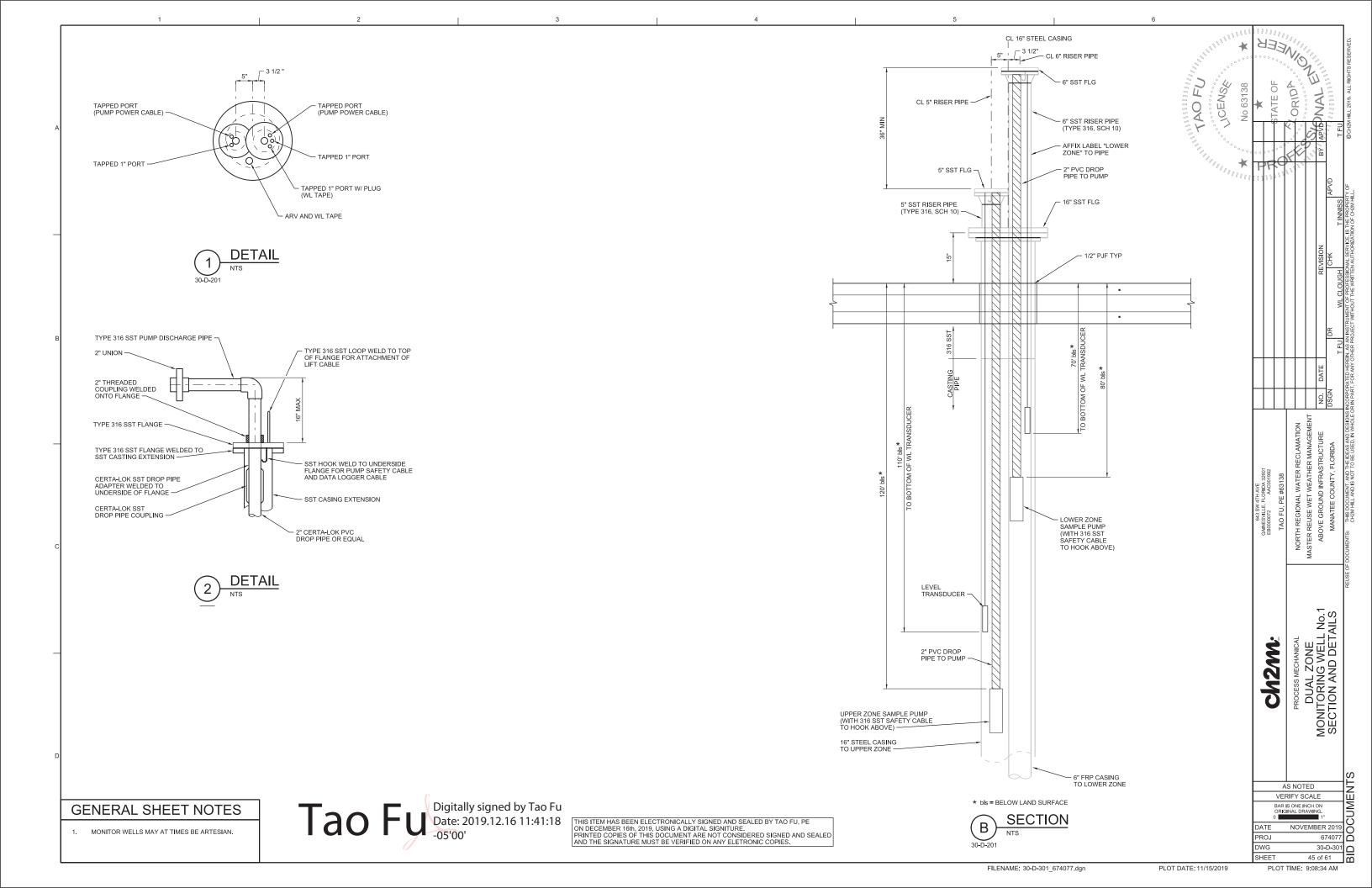
ER 2019 674077

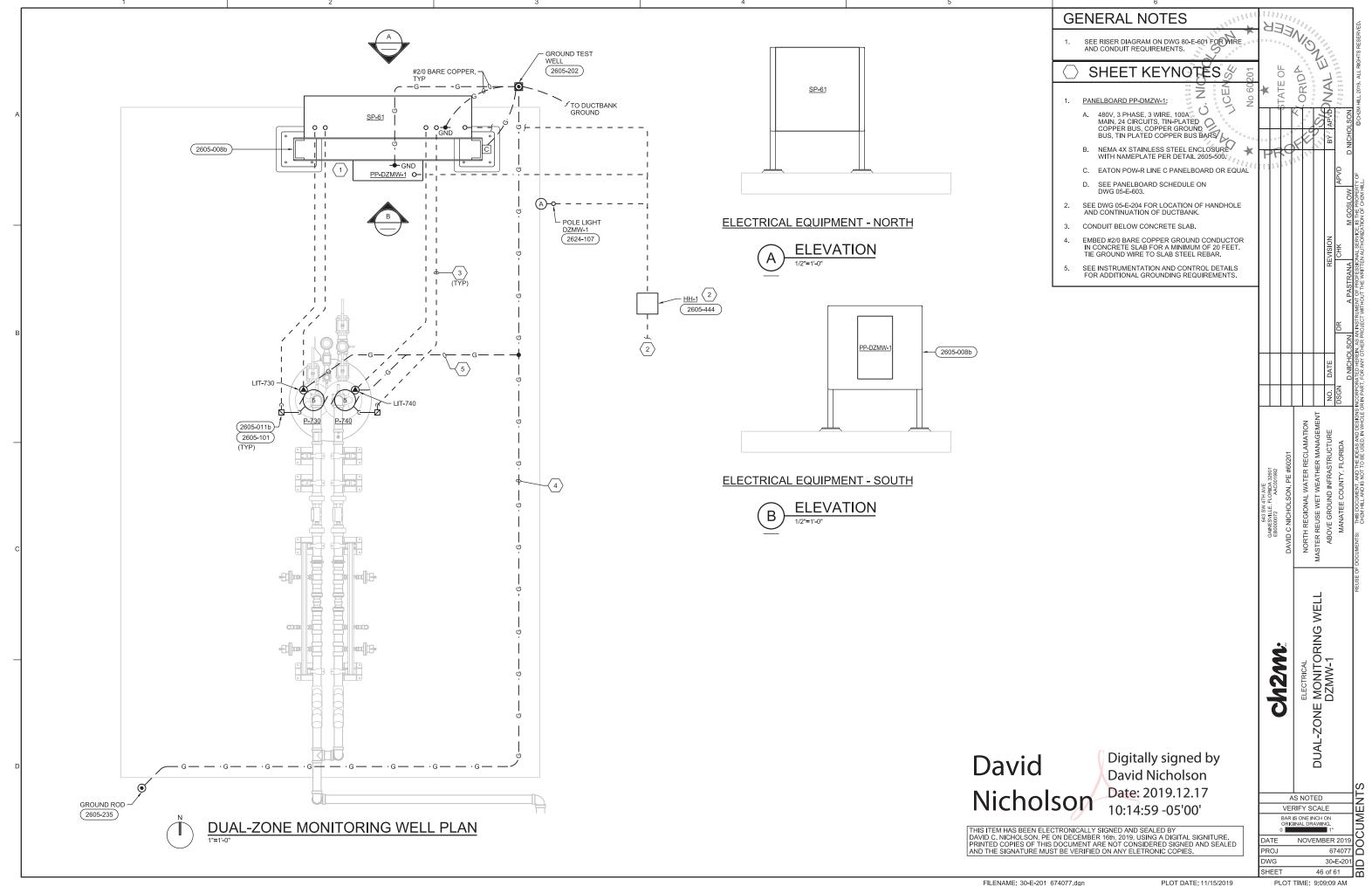
10-E-201 1 of 61

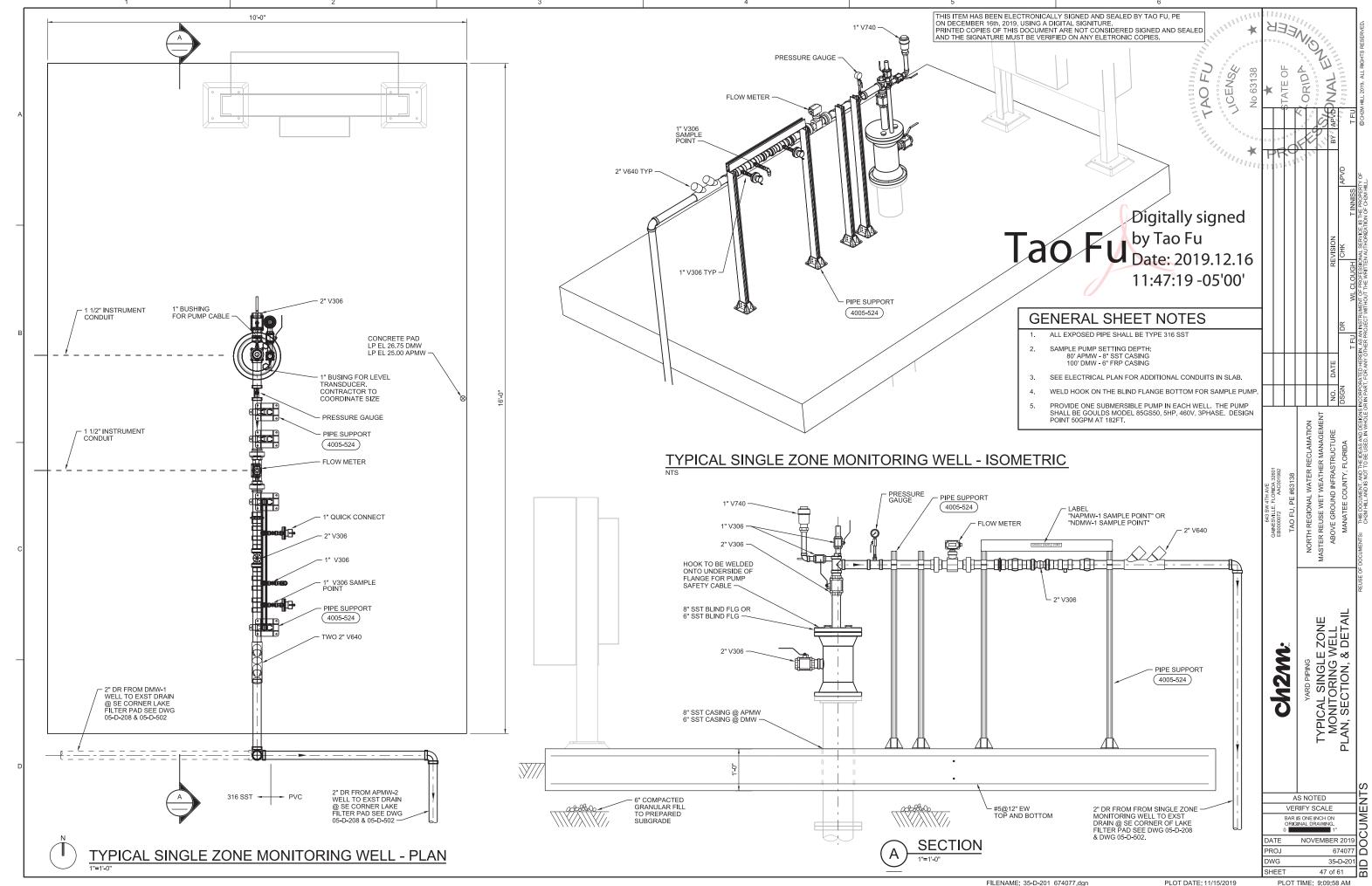


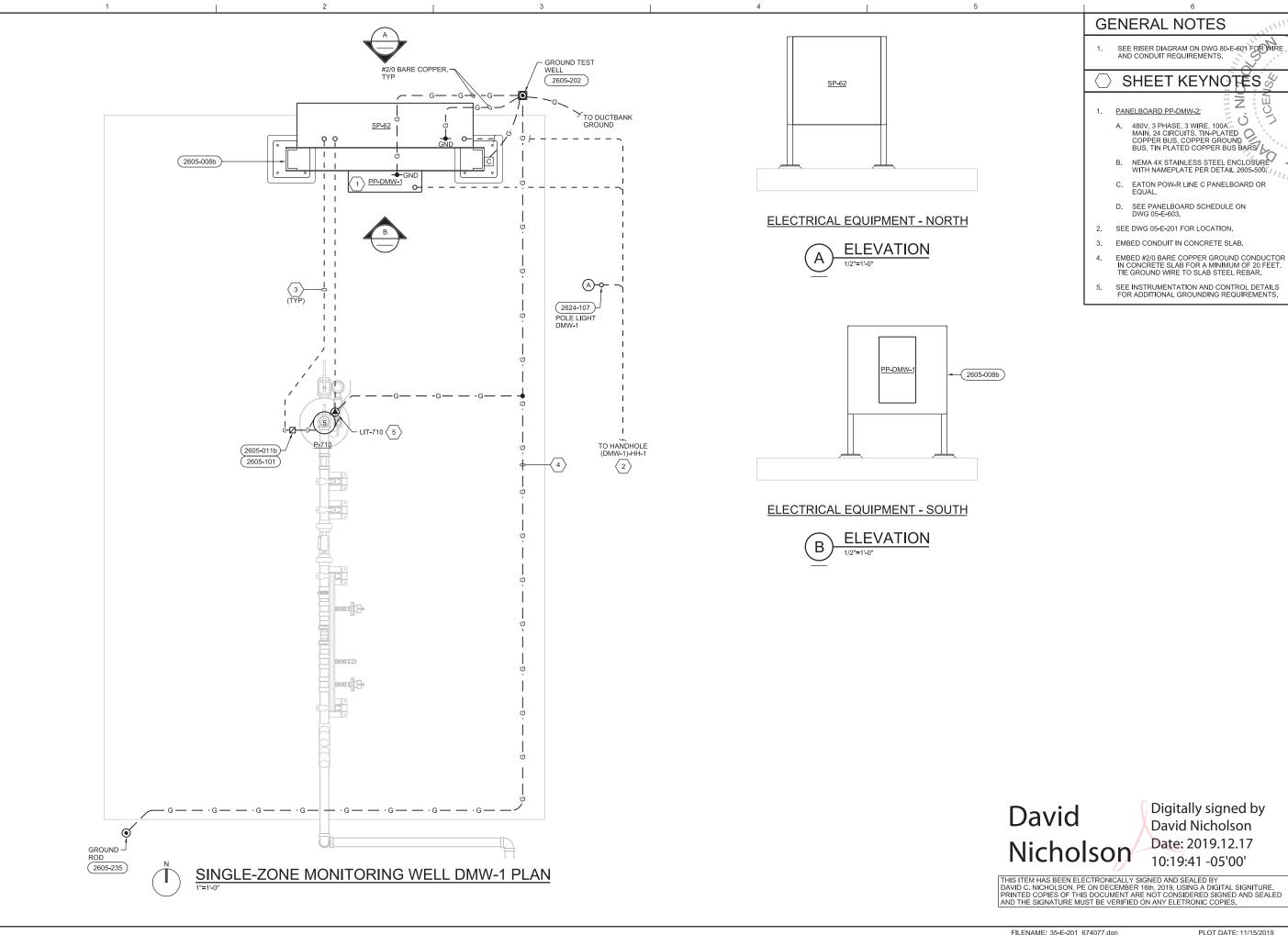












ELECTRICAL
SINGLE-ZONE MONITORING WELL
DMW-1

AS NOTED

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.

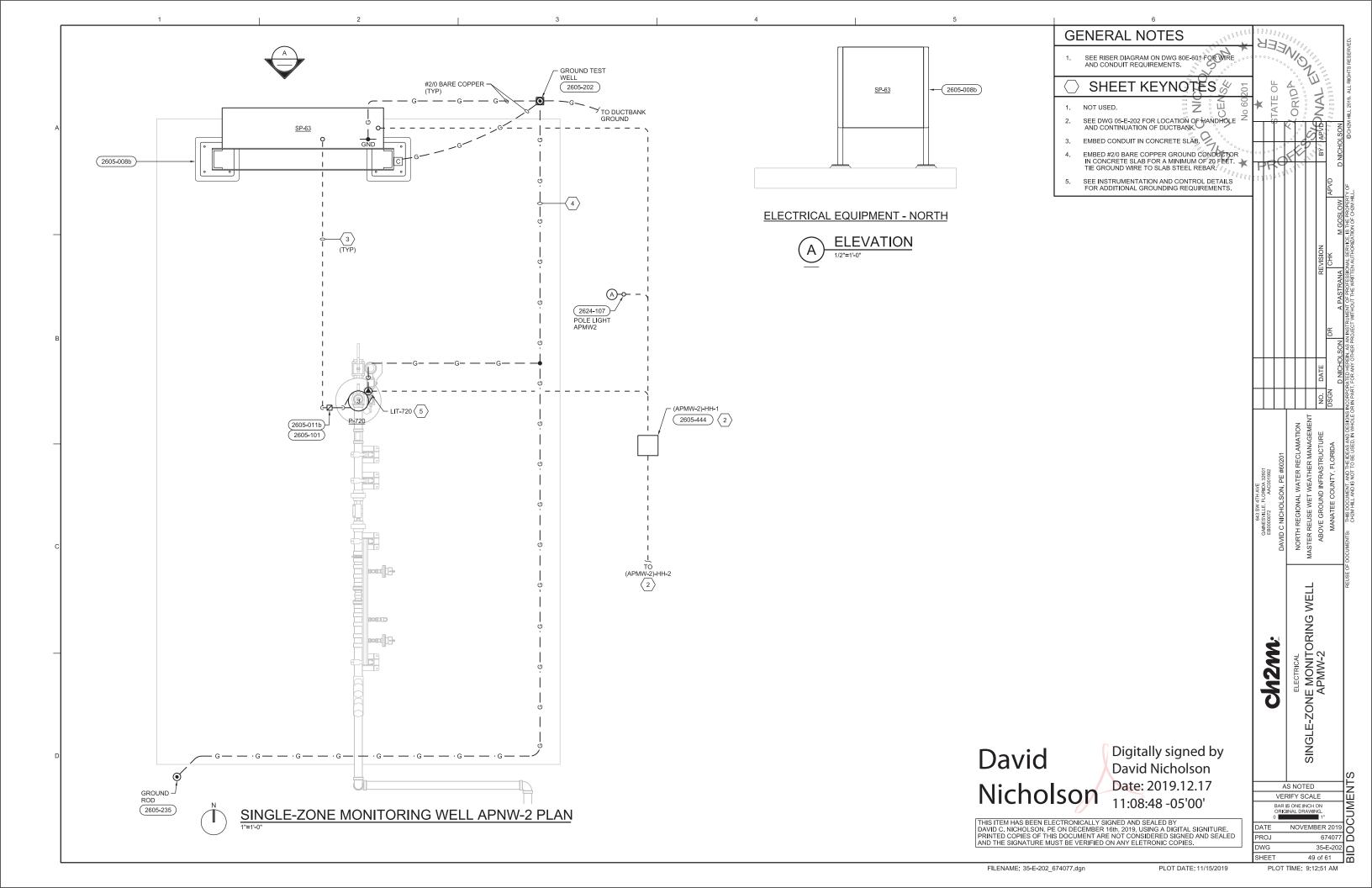
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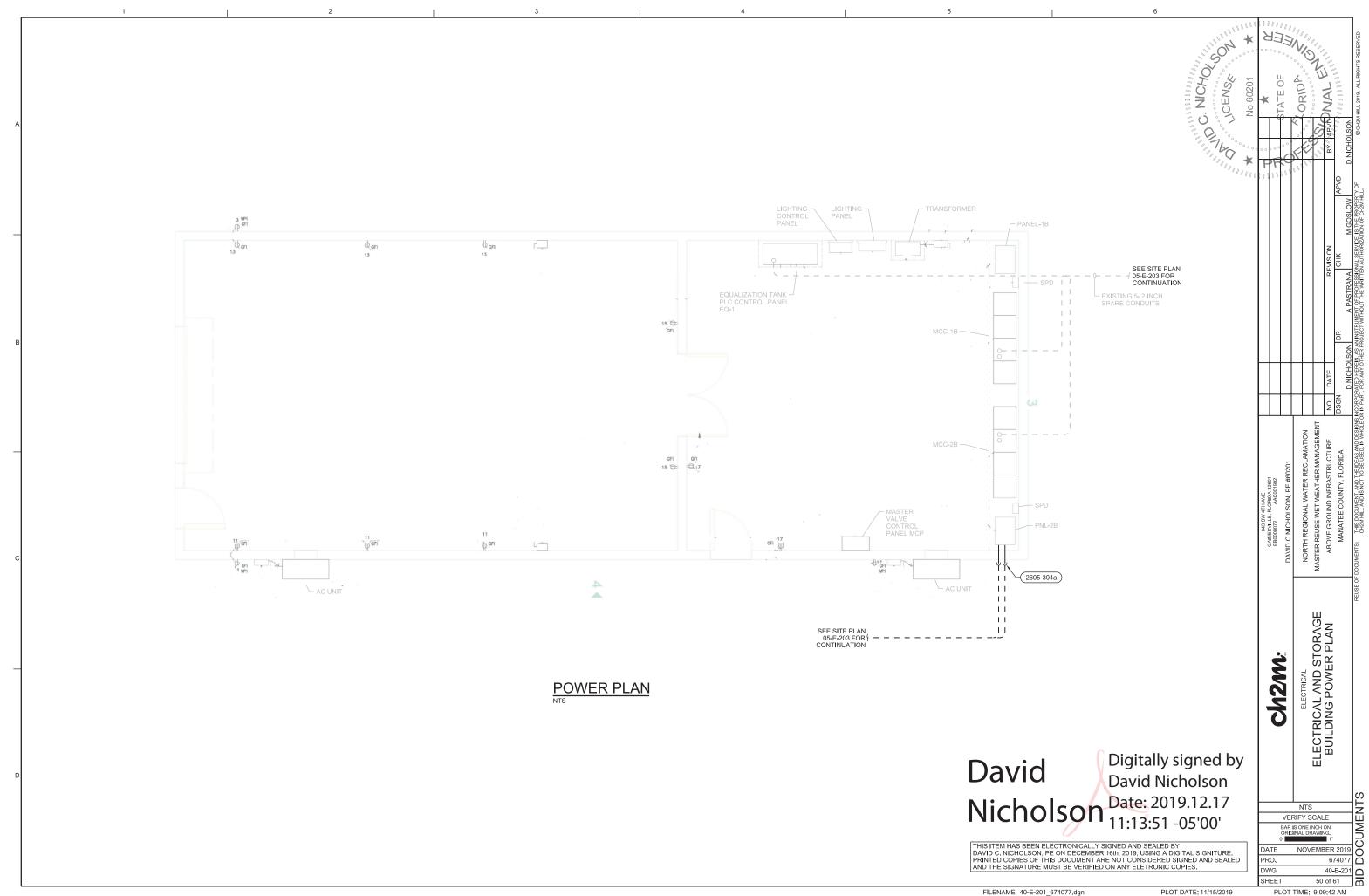
NOVEMBER 201

ER 2019 674077

35-E-201 8 of 61 48 of 61

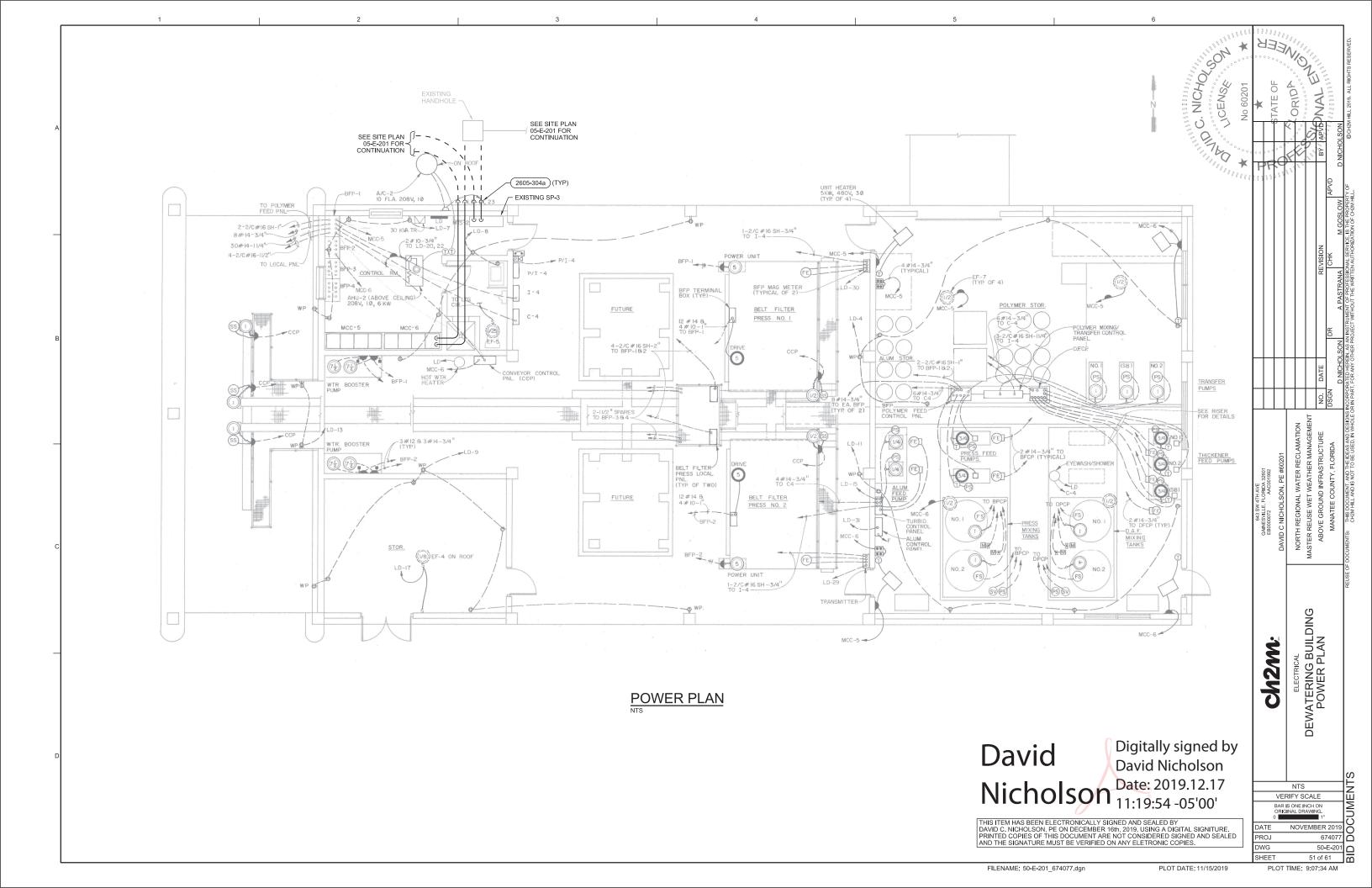
ch2m.

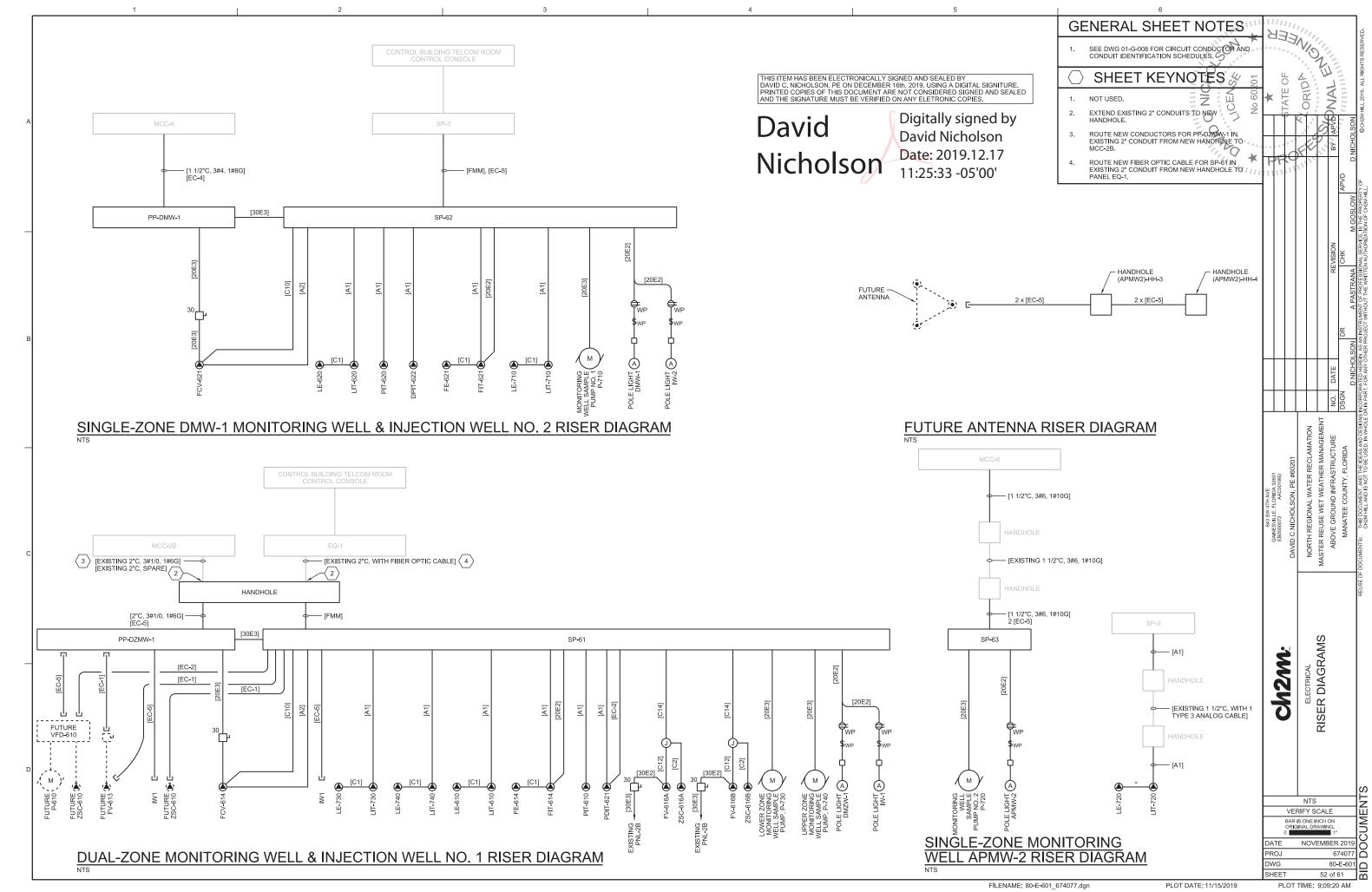


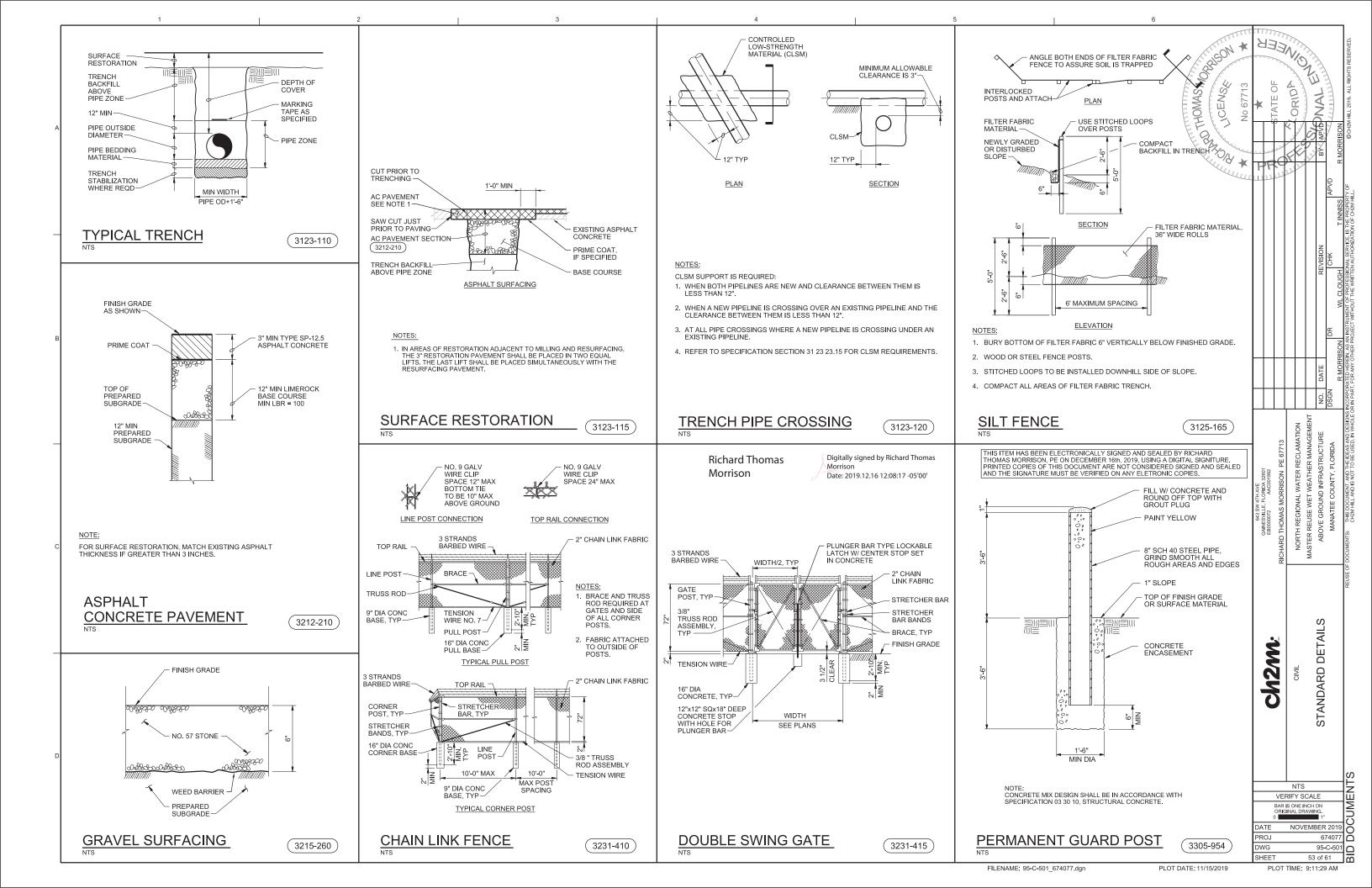


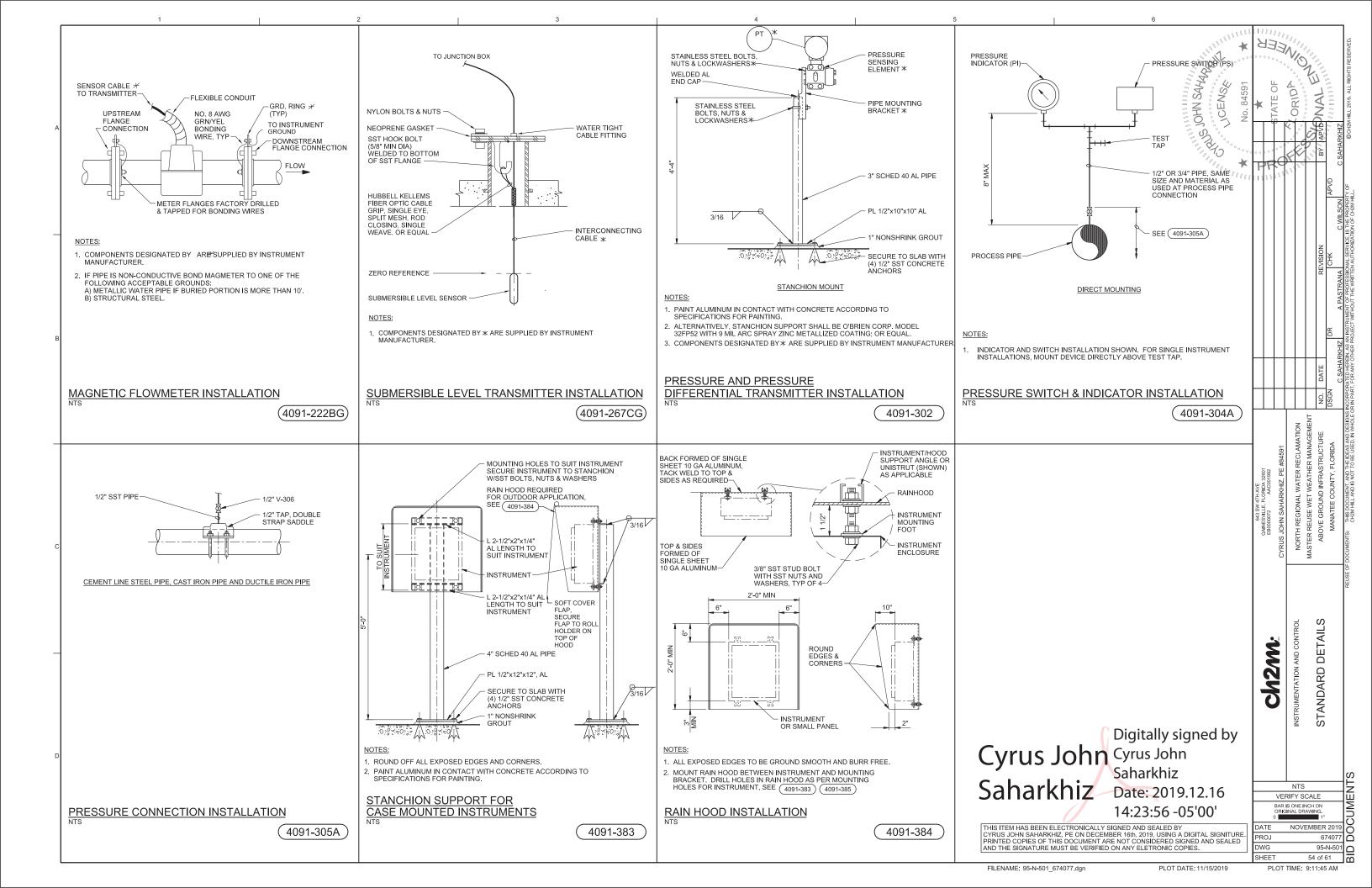
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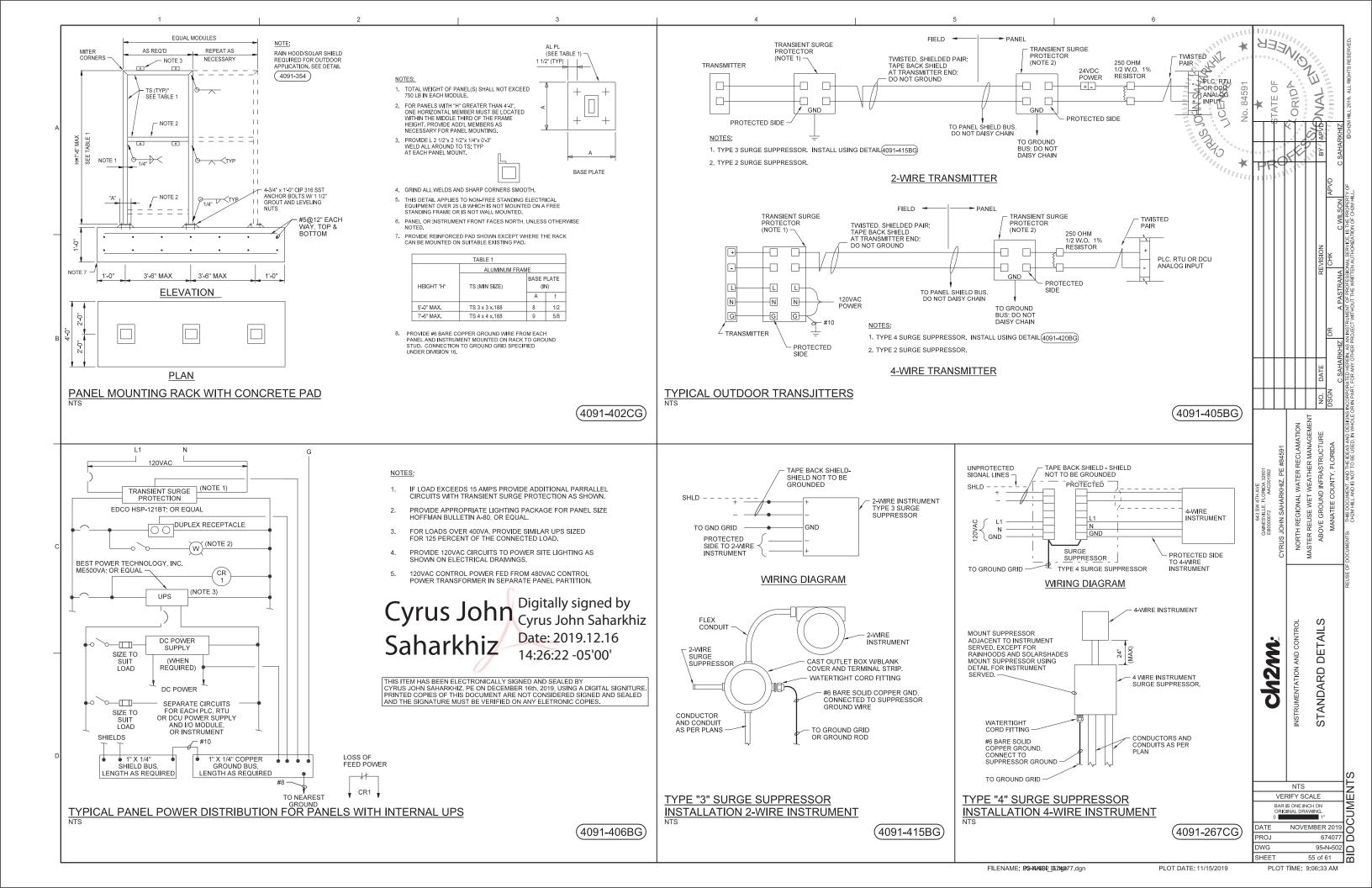
50 of 61 PLOT TIME: 9:09:42 AM

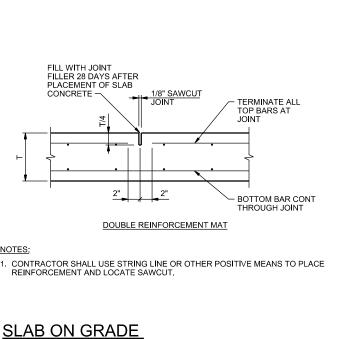


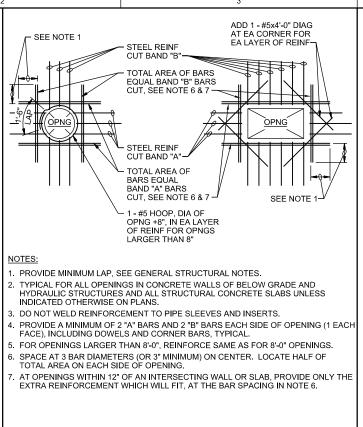




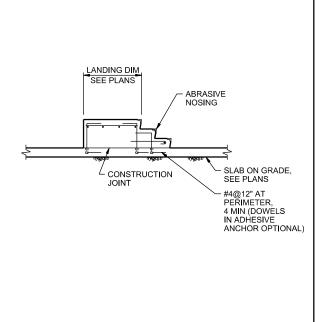








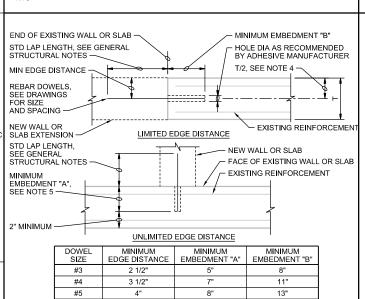
OPENING REINFORCING



REINFORCE WITH #5 @12", UNLESS OTHERWISE NOTED.

CONCRETE STAIR -ON GRADE

0330-050



SAWN CONTROL JOINT

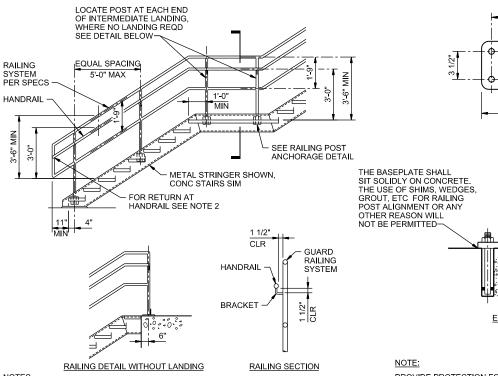
UNLIMITED EDGE DISTANCE										
DOWEL SIZE	MINIMUM EDGE DISTANCE	MINIMUM EMBEDMENT "A"	MINIMUM EMBEDMENT "B"							
#3	2 1/2"	5"	8"							
#4	3 1/2"	7"	11"							
#5	4"	8"	13"							
#6	5"	10 1/2"	16"							
#7	6"	12 1/2"	20"							
#8	7"	14"	22"							
#9	7 1/2"	15"	24"							

- 1, CONFORM TO REQUIREMENTS OF SPECIFICATION SECTION 03 63 00, CONCRETE DOWELING
- 2. FOLLOW ADHESIVE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION. B. USE MINIMUM EMBEDMENTS SHOWN, EXCEPT USE MANUFACTURER'S MINIMUM RECOMMENDED EMBEDMENT IF GREATER.
- 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.
- 5. PROVIDE MINIMUM EMBEDMENT "A" SHOWN IN TABLE UNLESS SHORTER EMBEDMENT DEPTH IS CALLED OUT ON DRAWINGS.

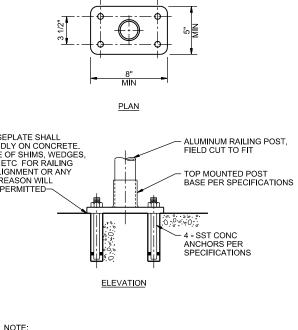
ADHESIVE DOWEL

0330-105

0315-192



0330-001



PROVIDE PROTECTION FOR DISSIMILAR METALS AND FOR ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATIONS.

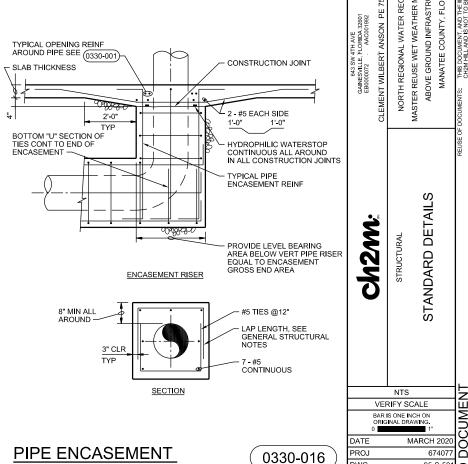
DETAIL 1 OF 2

RAILING - 2 RAIL STAIR - ALUMINUM

PROVIDE TOE BOARD AT LANDING WHERE REQUIRED.

2. RETURN ENDS OF HANDRAIL TO GUARD AT BOTH ENDS.





FILENAME: 95-S-501_674077.dgn

PLOT DATE: 2020\03\30

95-S-501 6 of 61 56 of 61

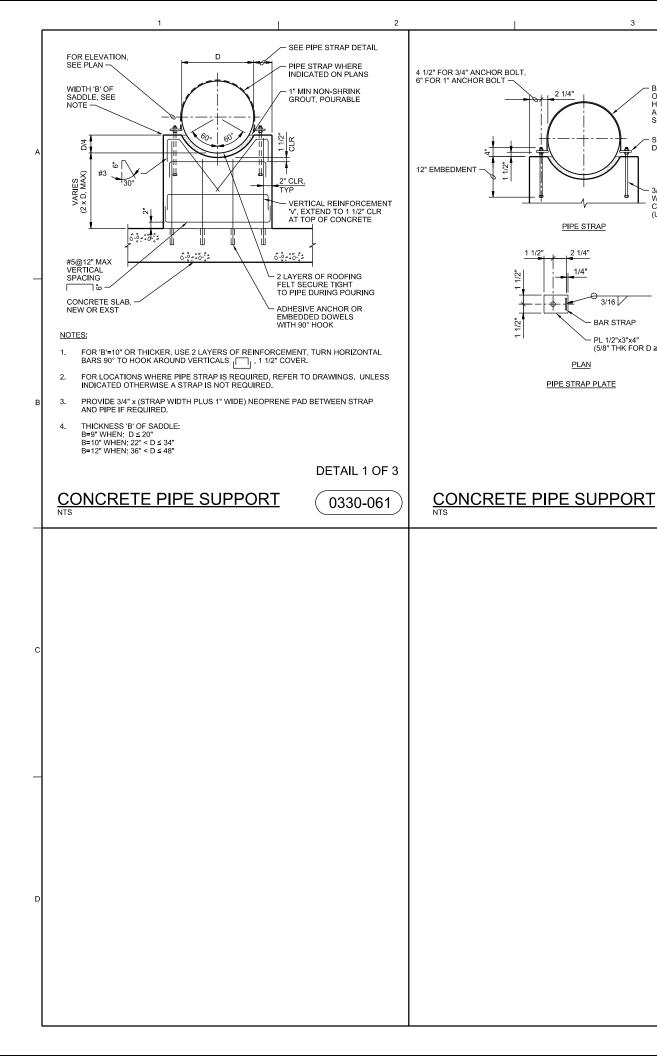
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HAJANOVIIII

ORIDA

CENSE

TARENT W.



PIPE SADDLE TABLE									
PIPE	SADDLE	LAYERS OF	VERTICAL	PIPE					
DIAMETER WIDTH		REINFORCEMENT	REINFORCEMENT	STRAP SIZE	NO. OF				
D	В		V	S	STRAPS				
D ≤ 12"	D≤12" 9" 1		1 (CTRD) #5@12"		1				
12" < D ≤ 24"	9"	1 (CTRD)	#5@12"	3/16"x2 1/2"	1				
24" < D ≤ 36"	10"	2 (EF)	#5@12"	1/4"x2"	1				
36" < D ≤ 48"	36" < D ≤ 48" 12"		#5@12"	1/4"x3"	1				
48" < D ≤ 60"	16"	2 (EF)	#6@12"	3/8"x3"	2				
60" < D ≤ 72"	60" < D ≤ 72" 18" 2		#6@12"	3/8"x3"	2				

TYPE 'B' PIPE SADDLE FOOTING TABLE									
PIPE FOOTING FOOTING									
DIAMETER	WIDTH	REINFORCEMENT	DEPTH						
D	w	A	С						
D ≤ 12"	1'-6"	#5@12"	2'-0"						
12" < D ≤ 24"	2'-0"	#5@12"	2'-0"						
24" < D ≤ 36"	3'-0"	#5@12"	2'-0"						
36" < D ≤ 48"	4'-0"	#5@12"	2'-0"						
48" < D ≤ 60"	6'-0"	#5@6"	2'-0"						
60" < D ≤ 72"	8'-0"	#5@6"	2'-0"						

- BAR STRAP 'S' BENT TO OD OF PIPE, SEE TABLE, HOT DIP GALVANIZE

3/4" DIA ANCHOR BOLTS WITH LEVELING NUTS CENTERED IN SADDLE

DETAIL 2 OF 3

0330-061

PIPE STRAP

<u>PLAN</u>

PIPE STRAP PLATE

BAR STRAP - PI 1/2"x3"x4"

(5/8" THK FOR D ≥ 48")

AFTER FABRICATION, SEE NOTES 5 & 6 SEE STRAP PL DETAIL BELOW

- FOR 'B'=10" OR THICKER, USE 2 LAYERS OF REINFORCEMENT, TURN HORIZONTAL BARS 90° TO HOOK AROUND VERTICALS $[\ \ \]$, 1 1/2" COVER.
- 2. FORM 3/4" BEVEL ON ALL EXPOSED CORNERS OF SUPPORT.
- USE TYPE 'A' SADDLE IN ALL LOCATIONS WHERE A SLAB (NEW OR EXISTING) OCCURS. USE TYPE 'B' IN OTHER LOCATIONS.
- FOR LOCATIONS WHERE PIPE STRAP IS REQUIRED, REFER TO DRAWINGS. UNLESS INDICATED OTHERWISE A STRAP IS NOT REQUIRED.
- AT SUBMERGED CONDITIONS, STRAP SHALL BE STAINLESS STEEL.
- PROVIDE 3/4" x (STRAP WIDTH PLUS 1" WIDE) NEOPRENE PAD BETWEEN STRAP AND PIPE.

DETAIL 3 OF 3

CONCRETE PIPE SUPPORT

0330-061

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY CLEMENT W. ANSON, PE. ON MARCH 30th, 2020 USING A DIGITAL SIGNATURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ORIDA STANDARD DETAIL ch2m.

HAJANOVIIII

PROJ

DWG

NTS VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING.

SCALE

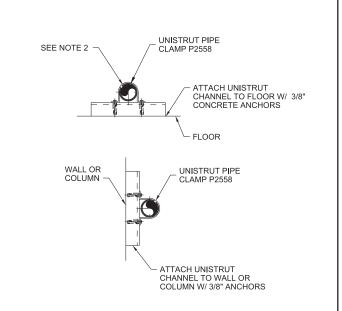
SCALE

III

MARCH 2020

674077

56A of 61



NOTES:

- 1. FOR MATERIALS OF CONSTRUCTION SEE SPECIFICATIONS SECTION 40 05 13.
- 2. FOR PVC PIPE USE UNISTRUT P2600 UNICUSHION INSTALLED BY THE MECHANICAL CONTRACTOR.
- 3. TIGHTEN CLAMP SNUG TO PIPE.

PIPE SUPPORT

4005-495C

2 1/2" THRU 24" PIPF PRF-ENGINEERED SIZE AS REQUIRED BY CALCULATIONS. STANDARD WALL PIPE MINIMUM — STANDARD PIPE FLANGE MINIMUM 1 1/2' NON-SHRINK GROUT — CONCRETE ANCHORS, SIZE AND NUMBER BY CALCULATIONS

PIPE SIZE	"A" MINIMUM NOMINAL PIPE SIZE				
2-1/2"	2-1/2"				
3"	2-1/2"				
4"	3"				
6"	3"				
8"	3"				
10"	3"				
12"	3"				
14"	4"				
16"	4"				
20"	6"				
24"	6"				

NOTE: SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND

PIPE SUPPORT -SADDLE SUPPORT PEDESTAL TYPE - ADJUSTABLE

4005-500

BASE ELBOW, TEE ETC STANDARD WEIGHT STEEL PIPE, DIAMETER IN TABLE BELOW NUTS AND BOLTS AS REQUIRED-PLATE THICKNESS SEE TABLE MINIMUM NON-SHRINK GROUT CONCRETE ANCHORS

DIMENSION TABLE										
PIPE SIZE	SUPPORT	PL	ANCHOR BOL							
FIFE SIZE	DIAMETER	DIAMETER	THICKNESS	DIAMETER						
3"	1 1/2"	5"	3/8"	3/8"						
4"	2"	6"	3/8"	3/8"						
6"	3"	7"	3/8"	3/8"						
8" and 10"	4"	9"	1/2"	1/2"						
12" thru 16"	6"	11"	1/2"	1/2"						
18" thru 24"	8"	13 1/2"	5/8"	5/8"						
30"	10"	16"	5/8"	5/8"						
36"	12"	19"	5/8"	5/8"						
42"	16"	23 1/2"	3/4"	3/4"						
48"	18"	25"	3/4"	3/4"						
54"	20"	30"	3/4"	3/4" (USE 6)						
60"	24"	32"	3/4"	3/4" (USE 6)						

1. ALSO USE FOR SUPPORT OF HORIZONTALTEE OR CROSS.

BASE BEND/TEE SUPPORT

4005-518

Digitally signed by Tao Fu

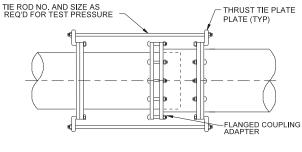
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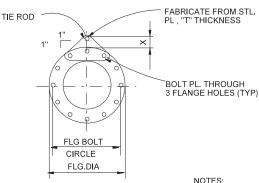
CHANNEL, ANGLE OR PRE-ENGINEERED PIPE SUPPORT PRE-ENGINEERED PIPE CLAMP EXTERIOR WALLS CONCRETE ANCHORS 2 MIN, NUMBER AND SIZE AS REQUIRED BY CALCULATIONS 1 1/2" MIN NON-CONCRETE SLAB

- SUBMIT FINAL DESIGN DRAWINGS AND CALCULATIONS OF SUPPORTS AND ANCHORAGES AS SPECIFIED.
- 2. MAXIMUM PIPE SIZE: 2" DIAMETER.
- 3. MATERIAL TYPE SHALL BE AS SHOWN ON DRAWINGS OR AS SPECIFIED.
- PROVIDE PIPE PROTECTION BARRIER AS SPECIFIED.
- 5. LENGTH IS DEPENDENT ON PIPE SPACING & DISTANCE OF PIPE FROM BASE.
- USE 1 5/8" SQUARE CHANNEL MINIMUM OR 1 5/8"x3 1/4" BACK-TO-BACK PROFILE TO ACHIEVE PROPER SUPPORT CHARACTERISTICS.

PIPE SUPPORT

4005-524





DIDE OUT		T @ TEST	T @ TEST		
PIPE SIZE	Х	PRESS <150 PSI	150< PRESS <375 PSI		
6"	2 3/4 "	5/8 "	5/8 "		
8"	2 3/4 "	5/8 "	3/4 "		
10"	2 3/4 "	5/8 "	1"		
12"	3"	3/4 "	1"		
14	3 1/4 "	3/4 "	1"		
16"	3 1/4 "	1"	1"		
18"	3 1/2 "	1"	1"		
20"	3 3/4 "	1"	1 1/2 "		
22"	4"	1"	1 3/4 "		
24"	4 1/4 "	1 1/4 "	1 3/4 "		

TIE ROD SCHEDULE													
TEST PRESSURE		25 PSI		50 PSI		100 PSI		150 PSI		225 PSI		375 PSI	
PIPE	MINIMUM PIPE WALL THICKNESS (IN.)	TIE	RODS	TIE	RODS	TIE	RODS	TIE	RODS	TIE	RODS	TIE	RODS
DIAM. (IN.)		DIA. (IN.)	NO. REQD	DIA. (IN.)	NO. REQD	DIA. (IN.)		DIA. (IN.)		DIA. (IN.)		DIA. (IN.)	NO. REQD
6	3/16	-	-	-	-	5/8	2	5/8	2	5/8	2	5/8	2
8	3/16	-	_	_	_	5/8	2	5/8	2	5/8	2	3/4	2
10	3/16	-	-	_	_	5/8	2	5/8	2	5/8	2	7/8	2
12	3/16	5/8	2	5/8	2	5/8	2	5/8	2	5/8	2	7/8	4
14	3/16	5/8	2	5/8	2	3/4	2	3/4	2	3/4	4	1	4
16	3/16	5/8	2	5/8	2	3/4	2	7/8	2	7/8	4	1	4
18	1/4	5/8	2	5/8	2	7/8	2	1	2	1	4	1-1/4	4
20	1/4	5/8	2	3/4	2	7/8	2	7/8	4	7/8	4	1-1/4	4
22	1/4	5/8	2	3/4	2	3/4	4	7/8	4	7/8	4	1-1/2	4
24	1/4	5/8	2	3/4	2	7/8	4	1	4	1	6	1_1/2	6

- TIE RODS SHALL CONFORM TO ASTM A193 GRADE B7.
- NUTS SHALL CONFORM TO ASTM A194 GRADE 2H.
- PLATE SHALL CONFORM TO ASTM A283 GRADE D.
- TIE ROD NUTS SHALL BE TIGHTENED GRADUALLY AND EQUALLY IN STAGES TO PREVENT UNEVEN ALIGNMENT AND TO ALLOW EQUAL STRESS ON ALL TIE RODS UNDER PRESSURE. TIGHTEN UNTIL SNUG. THREADS SHALL PROTRUDE FROM NUTS. PEEN THREADS AFTER TIGHTENING NUTS. CONTRACTOR SHALL USE DATA FOR ONLY THOSE PIPE SIZES AND TEST PRESSURES SPECIFIED IN THIS CONTRACT.

SLAB ON GRADE PIPE PENETRATIONS

FILL WITH WATERPROOF EXPANDABLE SEALANT. FLOOR SLAB ON GRADE ch2m2 PREMOLDED -JOINT FILLER (PJF)

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY TAO FU, PE

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ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE.

Tao Fu

4027-625

DOCUMENT VERIFY SCALE BAR IS ONE INCH ON NOVEMBER 201 674077 95-D-501 7 of 61 57 of 61

NTS

STANDARD DETAILS

THRUST TIE ROD/CONNECTION PLATE

FILENAME: 95-D-501 674077.dgn

4005-544

PLOT DATE: 11/15/2019

PLOT TIME: 9:09:10 AM

