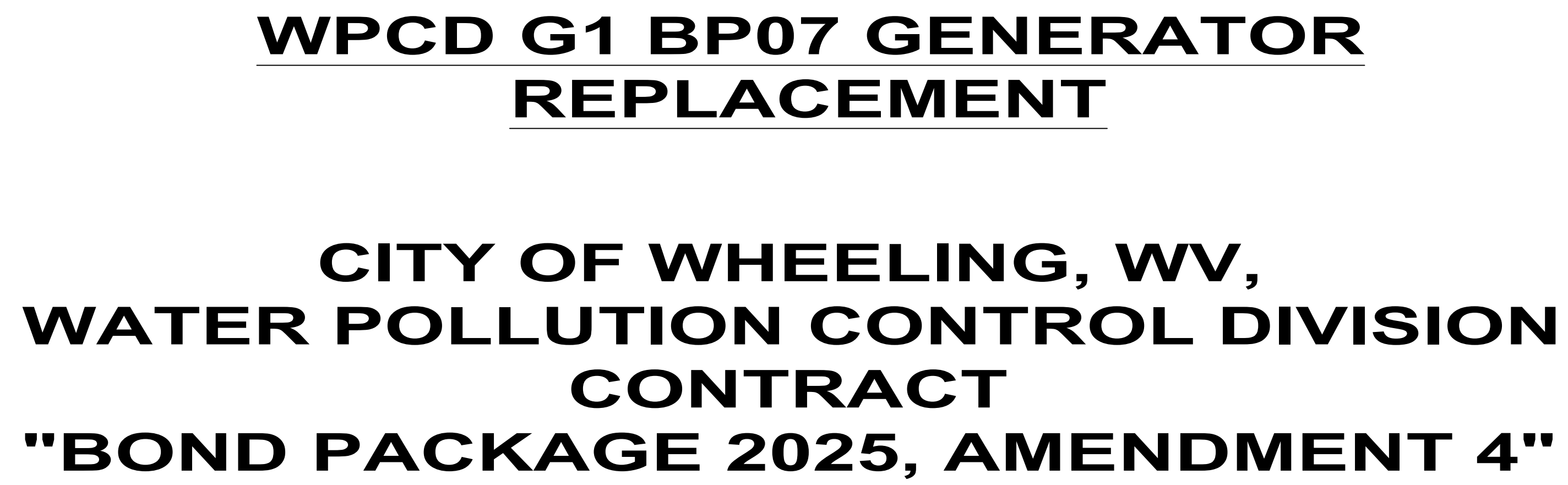




DESIGN ENGINEER:



Troy L Delzer, WV P.E. NO. 24338

09/22/2026

DATE

DATE	09-18-2026
SCALE	NO SCALE
SHEET	G1-15G-CS

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GENERAL ABBREVIATIONS

VALVE OPERATOR ID:

CH = CHAIN
EM = ELECTRIC MOTOR
ES = EXTENSION STEM
FB = FLOOR BOX
FS = FLOOR STAND
GE = GEAR
HC = HYDRAULIC CYLINDER
HW = HANDWHEEL
LE = LEVER
LW = "L" WRENCH
ON = OPERATING NUT
PC = PNEUMATIC CYLINDER
PD = PNEUMATIC DIAPHRAGM
TW = "T" WRENCH
VB = VALVE BOX

PIPE END JOINT ID:

BE = BELL
CM = COMPRESSION
FL = FLANGED
GR = GROOVED
LU = LUG
MJ = MECHANICAL JOINT
NPT = NATIONAL PIPE THREAD
RJ = RESTRAINED JOINT
PE = PLAIN END
S = SOLDERED
SJ = SLIP JOINT (PUSH ON)
SW = SOLVENT WELDED
TH = THREADED
W = WELDED

EQUIPMENT ID:

AC = AIR COMPRESSOR
AER = AERATOR
B = BLOWER
BFP = BELT FILTER PRESS
CLS = CLASSIFIER
C = COMMUNITOR
CMP = COMPACTOR
CFD = CHEMICAL FEEDER
CNV = CONVEYOR
CNT = CENTRIFUGE
CC = CALIBRATION CYLINDER
CFD = CHEMICAL FEEDER
CP = CONTROL PANEL
CR = CRANE
D = DECANTER
DR = DRIVE
DFL = DISC FILTER
F = FAN
FL = FILTER
FM = FLOW METER
GBT = GRAVITY BELT THICKENER
GR = GRINDER
GEN = GENERATOR
HB = HOSE BIB
M = MOTOR
MX = MIXER
P = PUMP
PS = PUMP STATION
SMP = SAMPLER
SCR = SCREEN

PIPE MATERIAL ID:

BR = BRASS
BS = BLACK STEEL
BZ = BRONZE
CI = GRAY CAST IRON
CU = COPPER
CS = CAST IRON
CT = CARBON STEEL TUBING
DIP = DUCTILE IRON PIPE
DR = DIAMETER RATIO
FRP = FIBERGLASS REINFORCED PLASTIC
GS = GALVANIZED STEEL
HDPE = HIGH-DENSITY POLYETHYLENE PIPE
PVC = POLYVINYL CHLORIDE PIPE
SS = STAINLESS STEEL
STL = STEEL PIPE
SDR = STANDARD DIAMETER RATIO
SCH = SCHEDULE

GATE ABBREVIATIONS:

BG - BULKHEAD GATE
SG - SLIDE GATE
SP - STOP PLATE
SL - STOP LOG
ALUM - ALUMINUM
SS - STAINLESS STEEL
CI - CAST IRON
POLY - POLYMER
B/C - BOTTOM OF CHANNEL
T/C - TOP OF CHANNEL
A - HEIGHT
B - WIDTH

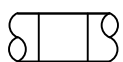
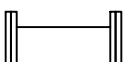
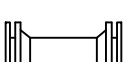
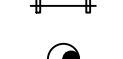
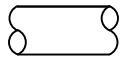
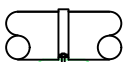
OTHER:

ADD'L = ADDITIONAL
AGG = AGGREGATE
ALUM. = ALUMINUM
BTWN = BETWEEN
C/L = CENTERLINE
CLR = CLEAR
COMM = COMMUNICATION(S)
CONC = CONCRETE
CONT = CONTINUOUS
DWL = DOWEL(S)
EF = EACH FACE
EL = ELEVATION
EMBED = EMBEDMENT
EW = EACH WAY
EX = EXISTING
FF = FINISH FLOOR
FG = FINISH GRADE
FND = FOUNDATION
GALV = GALVANIZED
HORIZ = HORIZONTAL
HP = HIGH POINT
LLV = LONG LEG VERTICAL
LP = LOW POINT
MAX = MAXIMUM
MFR = MANUFACTURER
MIN = MINIMUM
REC = RECORD
REF = REFERENCE
REINF = REINFORCING
STRC = STRUCTURE
T/ = TOP OF
TYP = TYPICAL
UNO = UNLESS NOTED OTHERWISE
VERT = VERTICAL

VALVE ID:

AC = AIR CHECK VALVE
AN = ANGLE VALVE
AR = AIR RELEASE VALVE
AV = AIR & VACUUM VALVE
BA = BALL VALVE
B'FLY = BUTTERFLY VALVE
BK = BACKPRESSURE VALVE
BP = BACKFLOW PREVENTER
CV = CHECK VALVE
CO = CONE VALVE
GV = GATE VALVE
GL = GLOBE VALVE
KG = KNIFE GATE VALVE
KN = KNIFE VALVE
MV = MUD VALVE
PD = PLUG DRAIN VALVE
PF = PRESSURE RELIEF
PG = PRESSURE REGULATOR
PI = PINCH VALVE
PV = PLUG VALVE
PRV = PRESSURE REDUCING VALVE
PT = PRESSURE TEMPERATURE RELIEF
RF = RATE-OF-FLOW CONTROLLER
SV = SOLENOID VALVE
SU = SURGE VALVE
TE = TELESCOPING VALVE
TM = TEMPERATURE CONTROL VALVE

MISC. PIPE SYMBOLOGY

 PIPE TO BE PAINTED
 WELDED PIPING
 FLG PIPING
 MJ PIPING
 FLEXIBLE CONNECTOR
 PIPE THROUGH SECTION
 PIPE CONTINUOUS BREAK
 PIPE BASE SUPPORT
 CONCRETE PIPE SUPPORT

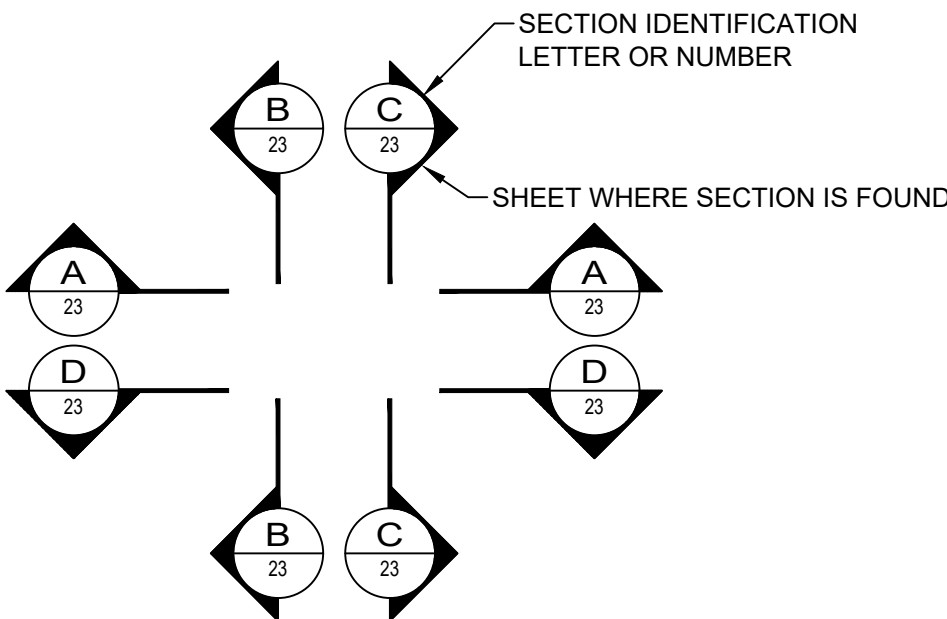
GENERAL SYMBOLOGY NOTES:

- THIS IS A STANDARD SHEET SHOWING COMMONLY USED SYMBOLOGY.
- ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
- SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE NEW IMPROVEMENTS SO AS TO HIGHLIGHT SPECIFIC TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
- SYMBOLY OR DIAGRAMMATICAL LEGENDS MAY BE SHOWN ON INDIVIDUAL SHEETS FOR SCHEDULES, DIAGRAMS, DETAILS, SCHEMATICS OR EQUIPMENT.

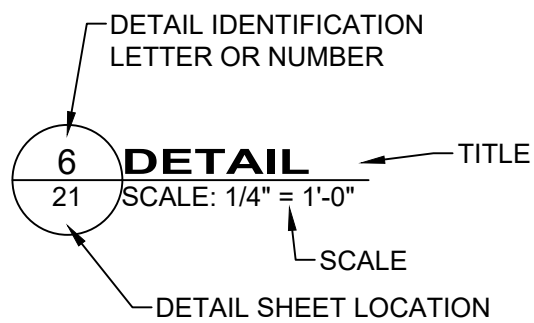
REFERENCE DIMENSION:

12'-4" (REF.)
REFERENCE DIMENSIONS ARE GIVEN FOR INFORMATION ONLY. THEY ARE CALCULATED DIMENSIONS NOT INTENDED TO BE USED WITHOUT FIELD VERIFICATION AND ARE USEFUL IN SHOWING INTENDED DESIGN.

MAJOR SECTION CUT CONVENTIONS:



DETAIL REFERENCES:



GATE INFORMATION:

IDENTIFIER	DESCRIPTION
G0	GATE ZERO
G1	GATE ONE
G2	GATE TWO
G3	GATE THREE
G4	GATE FOUR
G5	GATE FIVE

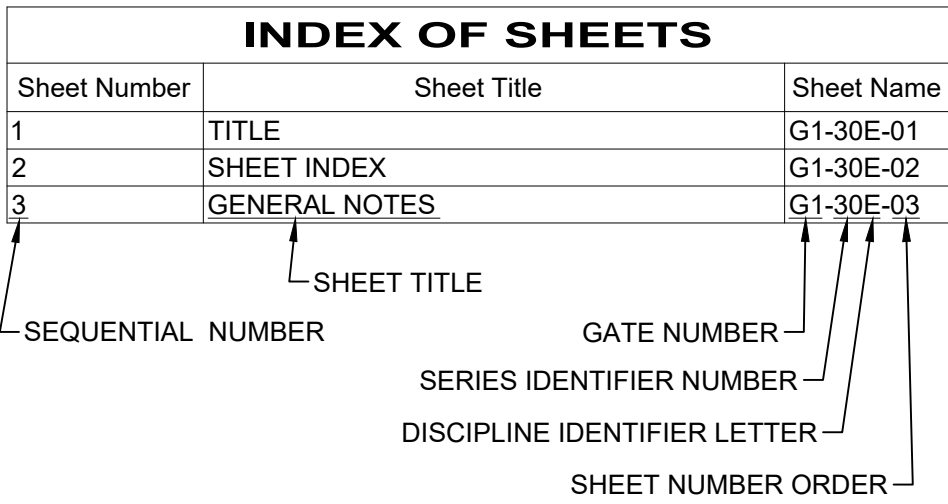
SERIES INFORMATION:

GENERAL -	00 SERIES
SITE IMPROVEMENT -	01 SERIES
SLUDGE DEWATERING AND HEATER EXCHANGE REPLACEMENT -	10 SERIES
GENERATOR REPLACEMENT -	15 SERIES
BOILER REPLACEMENT -	20 SERIES
BAR SCREENS, INFLUENT GATES -	25 SERIES
AERATOR GRIT -	30 SERIES
DIVERSION STRUCTURE -	35 SERIES
AERATOR UPGRADES -	40 SERIES
HRT GRAVITY FEED TO LIFT STATION -	45 SERIES
LIFT STATION -	50 SERIES
TERTIARY FILTERS -	55 SERIES
BACKWASH LIFT STATION -	60 SERIES
LIFT STATION UV SITE -	70 SERIES
HRT INSTALLATION -	75 SERIES
CHECK VALVE REPLACEMENT -	80 SERIES

DISCIPLINE INFORMATION:

IDENTIFIER	DISCIPLINE
G	GENERAL
C	CIVIL
P	PROCESS
A	ARCHITECTURAL
S	STRUCTURAL
M	MECHANICAL
E	ELECTRICAL
I	INSTRUMENTATION

INDEX EXPLANATION:

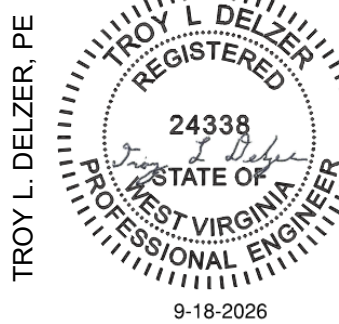


ELECTRICAL DRAWING ISSUENCE RECORD		
SHEET NUMBER	SHEET TITLE	SHEET NAME
Cover - Index		
1	GENERATOR REPLACEMENT COVER SHEET	G1-15G-CS
2	INDEX AND SYMBOLS SHEET	G1-15G-01
ELECTRICAL		
3	ELECTRICAL NOTES AND SYMBOLS	G1-15E-01
4	ELECTRICAL DEMOLITION SINGLE-LINES	G1-15E-02
5	ELECTRICAL CONSTRUCTION SINGLE LINE	G1-15E-03
6	ELECTRICAL DEMOLITION PLAN	G1-15E-04
7	ELECTRICAL CONSTRUCTION PLAN	G1-15E-05
8	ELECTRICAL CONSTRUCTION PLAN	G1-15E-06
9	ELECTRICAL DETAILS AND SCHEDULES	G1-15E-07
MECHANICAL		
10	MECHANICAL LEGEND, NOTES, AND ABBREVIATIONS	G1-15M-01
11	MECHANICAL SPECIFICATIONS	G1-15M-02
12	MECHANICAL DEMOLITION PLAN	G1-15M-03
13	MECHANICAL CONSTRUCTION PLAN	G1-15M-04
14	MECHANICAL SCHEDULES AND DETAILS	G1-15M-05
15	MECHANICAL P&ID	G1-15M-06
INSTRUMENTATION		
16	INSTRUMENTATION CONSTRUCTION PLAN	G1-15I-01
STRUCTURAL		
17	MAIN DIESEL TANK CONCRETE PAD AND DETAILS	G1-15S-01
18	GENERAL NOTES	G1-15S-02

verdantas

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TROY L. DELZER, PE



P.E. #24338
STATE: WV

DESIGNED BY
CZ

DRAWN BY
DJP/HJC

CHECKED BY
CZ

PROJECT NO.
38010

CHK'D BY
DATE

REVISION

No.

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PLAN SYMBOLS

SINGLE LINE AND SCHEMATIC DIAGRAM SYMBOLS

ABBREVIATIONS

27	UNDER VOLTAGE RELAY
2SFVNR	2 SPEED FULL VOLTAGE NONREVERSING
AFB	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AWG	AMERICAN WIRE GAUGE
AMP	AMP FRAME
AM	AMMETER
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
CA	AC CONDUIT
CB	CIRCUIT BREAKER
CB	COMPRESSOR BUILDING
CD	DC AND COMMON CONDUIT
COP	CONTROLS DISTRIBUTION PANEL
C	CONDUIT
CLG	CEILING
CT	CURRENT TRANSFORMER
CU, Cu	COPPER
EC	ELECTRICAL CONTRACTOR
ETR	EXISTING TO REMAIN
FD	FIELD DETERMINE
FLA	FULL LOAD AMPS
FM	FREQUENCY METER
FMC	FLEXIBLE METAL CONDUIT
FO	FIBER OPTIC
FVC	FULL VOLTAGE CONTACTOR
FVNR	FULL VOLTAGE NON REVERSING
GC	GENERAL CONTRACTOR
GFCI, GFI	GROUND FAULT CIRCUIT INTERRUPTING
GRND	GROUND
HD	HEAVY DUTY RATED
HP	HORSE POWER
HSS	HOLLOW STRUCTURAL STEEL
I/O	INPUT / OUTPUT
J, JB	JUNCTION BOX
KAIC	KILO AMPERE INTERRUPT CAPACITY
KVA	KILO VOLT AMPERE
KW	KILOWATT
LFMC	LIQUID-TIGHT FLEXIBLE METAL CONDUIT
LRA	LOCKED ROTOR AMPS
LSI	LONG, SHORT, INST.
LSIG	LONG, SHORT, INST., GROUND FAULT
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANEL
MFR'S	MANUFACTURER'S
MLO	MAIN LUGS ONLY
MPF	MOTOR PROTECTION FILTER
MPR	MOTOR PROTECTIVE RELAY
MS	MOTOR STARTER
OL	OVERLOAD
PB	PULL BOX
PF	POWER FACTOR
PT	POTENTIAL TRANSFORMER
QTY	QUANTITY
RGS	RIGID GALVANIZED STEEL
RO	REVERSE OSMOSIS
RPM	REVOLUTIONS PER MINUTE
RTD	RESISTANCE TEMPERATURE DETECTOR
SCH	SCHEDULE
ST	SHUNT TRIP
TRNSFMR	TRANSFORMER
TYP	TYPICAL
UGE	UNDERGROUND ELECTRIC
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
V, VAC	VOLT ALTERNATING CURRENT
VDC	VOLT DIRECT CURRENT
VAR	VOLT AMP REACTANCE
VFD	VARIABLE FREQUENCY DRIVE
VM	VOLT METER
WHM	WATT HOUR METER
WM	WATT METER
XFMR	TRANSFORMER

INSTRUMENTATION/CONTROLS TRANSMITTERS

LS	POSITION - LIMIT SWITCH
HL	HIGH LEVEL SWITCH
LL	LOW LEVEL SWITCH
SS	SPEED SWITCH
SCS	DIRECTIONAL CONTROL SOLENOID
SV	SOLENOID VALVE
LT	LEVEL TRANSMITTER
PT	PRESSURE TRANSMITTER
PC	PLUGGED CHUTE

GENERAL

COMMON EQUIPMENT TAG SUFFIX:

P	POWER
C	CONTROL
I	INSTRUMENTATION
COM	COMMUNICATION
FO	FIBER OPTIC
LSX	LIGHT SWITCH (X = SEQ. #)
RECX	RECEPTACLE (X = SEQ. #)
WP	WEATHERPROOF

ST	SHUNT TRIP BREAKER
GF	GROUND FAULT EQUIPMENT PROTECTION

X	DETAIL STANDARD NUMBER
Sxxx	DETAIL DRAWING SHEET NUMBER

X	SECTION CUT NUMBER
Sxxx	SECTION CUT DRAWING

X	BILL OF MATERIAL ITEM NUMBER
X =	NUMBER OF THE ITEM

CONDUIT & CABLE

	CONDUIT OR CABLE, TURNED DOWN
	CONDUIT OR CABLE, TURNED UP
	CONDUIT CAPPED
	MAIN GROUND LOOP, #20 AWG Cu, GREEN TYPE TW, 600V/GROUND WIRE, 30" MIN. BFG
	EQUIPMENT GROUND TAP, 600V, Cu., GREEN TW INSULATION, #2 AWG MIN. (UON)
	FLEXIBLE CONDUIT
	CABLE/WIRE CONNECTED
	EXPOSED CONDUIT OR CABLE RUN
	BELOW GRADE OR SURFACE (UON)
	CONDUIT OR CABLE HOME RUN

POWER

EQUIPMENT SHOWN WITH SCHEDULE SEQUENCE NUMBER AND/OR CIRCUIT NO.

MCC0A	MOTOR (HP,VOLTAGE AS INDICATED)
	SPECIAL PURPOSE RECEPTACLE
REC1 DP10	INDUSTRIAL GRADE SINGLE RECEPTACLE 125V, 20A (UON), SEQUENCE NO. & CIRCUIT NO.
REC2 DP12	INDUSTRIAL GRADE DUPLEX RECEPTACLE 125V, 20A, SEQUENCE NO. & CIRCUIT NO.
REC3 DP1W	EXPLOSION PROOF RECEPTACLE
	HD DISCONNECT SWITCH
	HD STARTER
	HD COMBINATION STARTER/DISCONNECT
	MOTOR RATED SWITCH
	START-STOP EMERGENCY MUSHROOM HEAD PULL STATION
	CONTROLLER - ON/OFF PUSHBUTTONS
	VENTILATION FAN

	SOLID STATE OVERLOAD RELAY
	SPACE HEATER
	SOLENOID
	DIODE
	INDUCTOR
	CAPACITOR
	VAR - VOLTAGE ADJUSTING RHEOSTAT
	SAR - SPEED ADJUSTING RHEOSTAT
	VENDOR WIRING (SCHEMATIC ONLY)
	FIELD WIRING (SCHEMATIC ONLY)

	SINGLE Ø MOTOR WITH ESTIMATED HORSEPOWER AS INDICATED
	MOTOR THERMAL OVERLOAD RELAY
	MOTOR OVERLOAD THERMAL CONTACTS

	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	CIRCUIT BREAKER, SIZE AS INDICATED
	SEPARABLE CONNECTOR (STAB-IN)
	BUS TIE OR WIRING TERMINATION POINT
	FUSE, SIZE AS INDICATED

	OPERATING COILS-RELAYS-TIMERS, ETC.
CR	CONTROL RELAY
M	MOTOR CONTACTOR
T	TIME RELAY
C	CONTACTOR - LIGHTING, HEATER, ETC.
	START
	MOMENTARY PUSHBUTTON - NORMALLY OPEN
	STOP
	MOMENTARY PUSHBUTTON - NORMALLY CLOSED

	THREE POSITION MAINTAINED CONTACT SELECTOR SWITCH - "HAND-OFF-AUTO"
--	---

	TWO POSITION MAINTAINED CONTACT SELECTOR SWITCH - "ON-OFF"
--	--

	PILOT LIGHT
R - RED	
G - GREEN	B - BLUE
W - WHITE	A - AMBER
	GROUND, EARTH
	GROUND, CHASSIS

	AUTOMATIC TRANSFER SWITCH
N-NORMAL, E-EMERGENCY, L-LOAD	

	STATION CONTROL PANEL
--	-----------------------

	EMERGENCY SHUT DOWN
--	---------------------

TERMINAL	LOCATION
	MOTOR CONTROL CENTER
	MOTOR STARTER TERMINAL
	PLC OUTPUT
	PLC INPUT
	INTERPOSING RELAY LOCATED IN STARTER ENCLOSURE
	DEVICE TERMINAL
	I/O JUNCTION BOX
	ENGINE CONTROL PANEL
	LOCAL CONTROL PANEL
	ENGINE JUNCTION BOX
	MARSHALLING CABINET
	TERMINAL IN PLC
	DCS TERMINAL
	MASTER PANEL JUNCTION BOX
	PNEUMATIC PANEL JUNCTION BOX
	TERMINAL JUNCTION BOX

	LIMIT SWITCH, NORMALLY CLOSED
	LIMIT SWITCH, NORMALLY CLOSED, HELD OPEN.
	LIMIT SWITCH, NORMALLY OPEN
	LIMIT SWITCH, NORMALLY OPEN, HELD CLOSED.
	VIBRATION SWITCH, NORMALLY CLOSED
	PRESSURE OR VACUUM ACTUATED SWITCH, OPENING ON RISING PRESSURE
	PRESSURE OR VACUUM ACTUATED SWITCH CLOSING, ON RISING PRESSURE
	LIQUID LEVEL ACTUATED SWITCH, OPENS ON RISING LEVEL
	LIQUID LEVEL ACTUATED SWITCH, CLOSSES ON RISING LEVEL
	TEMPERATURE ACTUATED SWITCH, OPENS ON RISING TEMPERATURE
	TEMPERATURE ACTUATED SWITCH, CLOSSES ON RISING TEMPERATURE
	FLOW SWITCH, OPENING ON INCREASE OF FLOW
	FLOW SWITCH, CLOSING ON INCREASE OF FLOW

	VFD
AMPS: X	
	VARIABLE FREQUENCY DRIVE
AMPS: X	INDICATES CURRENT RATING
	SHUNT TRIP (120VAC CONTROL)

GENERAL DEMOLITION NOTES:

- UNLESS OTHERWISE NOTED ALL WORK ON ELECTRICAL DRAWINGS SHALL BE DONE BY THE ELECTRICAL CONTRACTOR.
- CONTRACTOR SHALL VISIT AND EXAMINE CAREFULLY THE EXISTING AREAS AFFECTED BY THIS WORK TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND WITH DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THE WORK. CONTRACTOR SHALL PERFORM THIS, PRIOR TO SUBMITTING BID. IF DISCREPANCIES ARE NOTED BETWEEN DOCUMENTS AND EXISTING CONDITIONS, THE BIDDING CONTRACTOR SHALL IMMEDIATELY BRING THIS TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE IN WRITING. SUBMISSION OF BID WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN COMPLETED.
- COORDINATE DEMOLITION WORK WITH OWNER IN AREAS OF DEMOLITION, REMOVE ALL EXISTING ABANDONED ELECTRICAL EQUIPMENT IN ITS ENTIRETY.
- REMOVALS SHOWN ON DRAWINGS GIVE GENERAL INTENT ONLY, AND MAY NOT INDICATE ENTIRE EXTENT WHICH ARE REQUIRED. ALL WIRE NO LONGER NEEDED SHALL BE REMOVED BACK TO ITS SOURCE, UNLESS NOTED OTHERWISE. EXISTING EXPOSED CONDUIT SHALL BE REMOVED. CONDUIT IN FLOOR SHALL BE CUT BACK 2" BELOW FLOOR AND FLOOR PATCHED TO MATCH EXISTING ADJACENT SURFACE.
- FULL ROUTING OF EXISTING CIRCUITING IS NOT SHOWN. CONTRACTOR SHALL DETERMINE ACTUAL CIRCUITING AS REQUIRED FOR DEMOLITION AND PROPER INSTALLATION OF NEW WORK. FOR RELATIONSHIP OF ELECTRICAL EQUIPMENT AND ACTUAL PHYSICAL INSTALLATION OF CONDUIT AND WIRING, CONTRACTOR SHALL VERIFY PHYSICAL INSTALLATION IN FIELD.
- WHERE REMOVAL OF ELECTRICAL DEVICES INTERRUPTS SERVICE TO EXISTING SYSTEMS THAT ARE REMAINING, CONTRACTOR SHALL EXTEND SERVICE TO EXISTING EQUIPMENT TO REMAIN TO MAINTAIN OPERATION. ROUTING OF THIS EXTENDED SERVICE SHALL BE SUCH THAT IT DOES NOT INTERFERE WITH NEW WORK.
- WHERE EXISTING ELECTRICAL EQUIPMENT IS TO REMAIN, THE CIRCUITS WHICH FEED THIS EQUIPMENT SHALL BE REWORKED AS REQUIRED TO MAINTAIN OPERATION OF SUCH EQUIPMENT. WHERE WALLS ARE BEING DEMOLISHED, CONTRACTOR SHALL REWORK ANY CONDUIT AND WIRE WITHIN OR ON THESE WALLS TO MAINTAIN ELECTRICAL SERVICE TO EQUIPMENT WHICH IT SERVES.
- NO WORK IS SCHEDULED FOR AREAS MARKED NIC (NOT IN CONTRACT). HOWEVER, IF ELECTRICAL SERVICE TO THESE AREAS IS INTERRUPTED DUE TO RENOVATIONS OF ELECTRICAL SYSTEMS, THESE SYSTEMS SHALL BE REWORKED AS REQUIRED TO MAINTAIN SERVICE TO THESE AREAS.
- UNLESS OTHERWISE NOTED, REMOVED MATERIALS SHALL BE REMOVED FROM THE SITE. REMOVED WIRING OR MATERIALS SHALL NOT BE RE-USED UNLESS OTHERWISE NOTED.
- DEMOLITION WORK SHALL NOT INTERFERE WITH ACTIVITIES IN OTHER BUILDING AREAS. UNLESS OTHERWISE DESIGNATED, REMOVED MATERIALS SHALL BE PROMPTLY REMOVED. SHUTDOWNS AND SERVICE INTERRUPTIONS SHALL BE COORDINATED WITH AND APPROVED BY OWNER BEFORE THEY ARE IMPLEMENTED. MINIMUM OF FIVE BUSINESS DAYS ADVANCE WRITTEN NOTICE MUST BE PROVIDED TO OWNER PER THE OWNERS REQUIREMENTS.
- CONTRACTOR SHALL PROVIDE BLANK COVER PLATES ON ALL JUNCTION BOXES AND DEVICE BOXES WHICH ARE UNCOVERED AS A RESULT OF REMOVAL OF EQUIPMENT.
- CONTRACTOR SHALL IDENTIFY THE SOURCE AND LOAD OF ALL FEEDERS TO BE REMOVED PRIOR TO REMOVAL. FEEDER REMOVALS AND REPLACEMENTS SHALL BE DONE SEQUENTIALLY SO AS NOT TO INTERRUPT SERVICE TO BUILDINGS INVOLVED. FEEDER REMOVALS SHALL INCLUDE COMPLETE DISCONNECTION OF TERMINATIONS AT THE RESPECTIVE ELECTRICAL EQUIPMENT.
- DISPOSAL OF ALL DEMOLITION MATERIAL SHALL BE OFFSITE IN ACCORDANCE WITH APPLICABLE GOVERNMENTAL AUTHORITIES HAVING JURISDICTION.
- ALL EXISTING SURFACES DAMAGED OR EXPOSED BY DEMOLITION OR REMOVAL OF EQUIPMENT SHALL BE PATCHED AND REPAIRED WITH MATERIALS AND FINISHES TO MATCH EXISTING ADJACENT SURFACES.
- CONTRACTOR SHALL COORDINATE DEMOLITION WORK WITH OTHER TRADES.

SCOPE OF WORK

- DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTAL CONDITIONS AND SPECIFICATION SECTIONS APPLY TO THIS SPECIFICATION.
- FURNISH ALL LABOR, EQUIPMENT, MATERIALS, SERVICES, TESTING, APPURTENANCES, AND PROGRAMMING REQUIRED FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS, MANUFACTURER'S INSTRUCTIONS, AND CODES AND REGULATIONS IN FORCE.
- PROCURE ALL PERMITS AND INSPECTIONS AND PAY FOR SAME.
- THE ELECTRICAL WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - PROVIDE NEW EQUIPMENT AS INDICATED IN THE DRAWING DOCUMENTS INCLUDING BUT NOT LIMITED TO
 - GENERATOR
 - GENERATOR CIRCUIT BREAKER (AS NOTED)
 - PANEL (AS INDICATED)
 - DISCONNECT SWITCHES (AS NOTED)
 - MOUNTING HARDWARE (AS REQUIRED PER MANUFACTURER AND CODE)
 - CONDUCTORS AS DEPICTED, NOTED, OR SCHEDULED AND PER CURRENT NEC.
 - LIGHTING
 - COORDINATE ALL WORK WITH GENERAL CONTRACTOR, OWNER REPRESENTATIVE AND ENGINEER OF RECORD.

DEFINITIONS

- WHEREVER THE WORD "PROVIDE" APPEARS ON THE DRAWINGS OR IN THE SPECIFICATIONS, IT SHALL MEAN FURNISH AND INSTALL WITH ALL REQUIRED WORK, MATERIALS, EQUIPMENT AND APPURTENANCES.
- WHEREVER THE WORD "FURNISH" APPEARS ON THE DRAWINGS OR IN THE SPECIFICATION, IT SHALL MEAN TO RECEIVE, HANDLE, INSPECT FOR PROPER CONDITION AND INSTALL WITH ALL REQUIRED ASSOCIATED WORK MATERIALS, EQUIPMENT AND APPURTENANCES.
- WHEREVER THE WORD "INSTALL" APPEARS ON THE DRAWINGS OR IN THE SPECIFICATION, IT SHALL MEAN TO RECEIVE, HANDLE, INSPECT FOR PROPER CONDITION AND INSTALL WITH ALL REQUIRED ASSOCIATED WORK MATERIALS, EQUIPMENT AND APPURTENANCES.

GENERAL NEW WORK NOTES:

- REFERENCE TO CODES AND STANDARDS LISTED HEREIN SHALL CONSTITUTE MINIMUM ACCEPTABLE REQUIREMENTS. WHERE DRAWING AND SPECIFICATION REQUIREMENTS EXCEED THOSE OF CODES LISTED, DRAWINGS AND SPECIFICATIONS SHALL TAKE PRECEDENCE FOR WORK OF THIS PROJECT:
 - TITLE 48 OF THE CODE OF FEDERAL REGULATIONS PART 192
 - NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 70 - NEC, 70E, 37, 497)
 - NATIONAL ELECTRICAL SAFETY CODE (IEEE/ANSI C2)
 - UNDERWRITERS LABORATORIES (UL)
 - NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION (NEMA)
 - INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
 - INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)
 - AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)
 - AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
 - ANY STATE, COUNTY, OR LOCAL ACTS OR CODES HAVING JURISDICTION.
- DRAWINGS ARE DIAGRAMMATIC IN NATURE. DRAWINGS INDICATE THE GENERAL DETAILS OF WORK INTENDED AND ARE NOT INCLUSIVE OF ALL ANCILLARY ITEMS REQUIRED FOR PROPER INSTALLATION. EC WILL ENSURE ALL REFERENCED CODES AND STANDARDS UNDER ITEM #1 ARE ADHERED TO.
- CONTRACTOR SHALL PROVIDE ELECTRICAL INSPECTION AND SHALL BE MADE BY AN AGENCY ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION. ALL CERTIFICATES SHALL BE IN TRIPPLICATE, SHALL BE DELIVERED TO AND BECOME PROPERTY OF OWNER.
- COMPLETE CIRCUIT ROUTING IS NOT SHOWN. FIELD DETERMINE ACTUAL ROUTING AS REQUIRED FOR PROPER INSTALLATION OF NEW WORK.
- COORDINATE WORK WITH THAT OF OTHER TRADES SO THAT WORK WILL BE PROVIDED IN THE MOST DIRECT MANNER AND SO THAT INTERFERENCE BETWEEN CONDUITS, PIPING, DUCTS, EQUIPMENT, STRUCTURAL FEATURES AND ALL OTHER ASPECTS OF THE WORK WILL BE AVOIDED.
- MATERIALS SHALL BE PROVIDED IN ACCORDANCE WITH MATERIAL MANUFACTURER'S INSTALLATION INSTRUCTIONS. OBTAIN MANUFACTURER'S INSTALLATION INSTRUCTIONS PRIOR TO ROUGHING-IN. WHERE EQUIPMENT IS FURNISHED BY OTHER TRADES FOR INSTALLATION AS WORK UNDER THIS DIVISION, OR WHERE ELECTRICAL SERVICE OR UTILITY CONNECTION TO EQUIPMENT INSTALLED BY OTHERS IS INDICATED AS WORK OF THIS DIVISION, OBTAIN SHOP DRAWINGS AND INSTALLATION INSTRUCTIONS FROM THE RESPECTIVE CONTRACTOR PRIOR TO ROUGHING-IN. DISCREPANCIES BETWEEN INSTALLATION INSTRUCTIONS AND CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ELECTRICAL CONTRACTOR.
- MATERIALS SHALL BE NEW, OF THE BEST OF THEIR RESPECTIVE KINDS, WITHOUT IMPERFECTIONS OR BLEMISHES, AND SHALL BE PROTECTED FROM THE ELEMENTS PRIOR TO INSTALLATION.
- WORK SHALL BE INSTALLED BY PERSONNEL SKILLED IN THE TRADE INVOLVED.
- DRAWINGS ARE GENERALLY INDICATIVE OF WORK TO BE INSTALLED, BUT MAY NOT INDICATE ALL BENDS, FITTINGS, BOXES, ETC., REQUIRED TO MEET CONDITIONS. WHERE ITEMS SHOWN ON THE DRAWINGS, OR HEREIN DESCRIBED, ARE NOT CLEARLY UNDERSTOOD, BIDDERS SHALL CONFER WITH THE RPR AND ENGINEER. NO ALLOWANCE WILL BE MADE FOR LACK OF INFORMATION AFTER BID IS SUBMITTED AND PROJECT IS AWARDED TO EC.
- CONFIRM THE POSITION, LOCATION, AND MANUFACTURER'S REQUIREMENTS FOR EQUIPMENT PRIOR TO ROUGH-IN.
- CONDUIT, WIRE, CABLE, WIRING DEVICES, AND EQUIPMENT SHALL BE INSTALLED IN SUCH A MANNER AS TO PRESERVE ACCESS TO EQUIPMENT INSTALLED UNDER THIS PROJECT.
- DAMAGES TO FACTORY FINISHES ON ELECTRICAL EQUIPMENT SHALL BE TOUCHED UP TO MATCH ORIGINAL FINISH AND RATINGS.
- UPON COMPLETION OF WORK, REMOVE ALL DIRT, FOREIGN MATERIALS, STAINS, FINGERPRINTS, ETC., FROM ALL PARTS AND EQUIPMENT. INSTALLATION SHALL BE SUBJECT TO INSPECTION BY THE RPR.
- AFTER INSTALLATION OF WIRING AND ASSOCIATED DEVICES HAS BEEN COMPLETED, ELECTRICAL CONDUCTORS SHALL BE TESTED TO INSURE CONTINUITY, PROPER SPLICING, FREEDOM FROM GROUND (EXCEPT "MADE GROUND" AND THOSE REQUIRED FOR PROTECTION), AND INSULATION RESISTANCE IN ACCORDANCE WITH UNDERWRITERS LABORATORIES REQUIREMENTS. FURNISH AND EMPLOY NECESSARY INSTRUMENTS SUCH AS AMMETERS, VOLTMETERS, MEGGERS, ETC.
- CONSULT WITH THE PLANT ENGINEER AND CONSULTANT ENGINEER PRIOR TO TESTING AND ADJUSTING TO DETERMINE INTENDED FUNCTION OF EQUIPMENT, WIRING, AND SYSTEMS. PERFORM SUCH TESTS AND MAKE NECESSARY ADJUSTMENTS TO ENSURE THAT DESIGN FUNCTION IS OBTAINED.
- INTERRUPTIONS OF AN ESTABLISHED POWER SUPPLY SHALL BE CONDUCTED ONLY WHEN AUTHORIZED IN WRITING BY THE OWNER/PLANT ENGINEER. EC SHALL SUBMIT A WRITTEN REQUEST FIVE (5) DAYS IN ADVANCE, FOR A SERVICE INTERRUPTION AND SHALL STATE THE ESTIMATED TIME INVOLVED DURING WHICH THE POWER SUPPLY WILL BE INTERRUPTED. POWER SUPPLY INTERRUPTIONS SHALL BE COORDINATED WITH OTHER TRADES SO THERE WILL BE A MINIMUM OF INCONVENIENCE TO THESE TRADES. IF TEMPORARY POWER SERVICE IS REQUIRED DURING THE POWER SUPPLY INTERRUPTION, IT SHALL BE THE RESPONSIBILITY OF THE EC TO FURNISH, INSTALL, CONNECT AND OTHERWISE PROVIDE THE TEMPORARY SERVICE AT NO ADDITIONAL COST.
- UNLESS OTHERWISE NOTED, ALL ELECTRICAL EQUIPMENT AND ITEMS SHALL BE AS LISTED OR AS APPROVED. SUBSTITUTION OF ELECTRICAL EQUIPMENT AND ITEMS MUST BE APPROVED BY PLANT ENGINEER AND CONSULTANT ENGINEER.
- PROVIDE 2-HOUR FIRE STOP FOR ANY PENETRATIONS THAT PENETRATE FIRE RATED WALLS.
- PROVIDE AS-BUILT INFORMATION FOR ALL MAJOR ELECTRICAL DEVICES (IE., PULL BOXES, GENERAL CONDUIT ROUTES, DEVICE LOCATIONS) SO TO ENSURE A COMPLETE AND THOROUGH SET OF "AS-BUILT" PLANS.
- UNLESS OTHERWISE NOTED, ITEMS SHOWN IN DARK LINE WEIGHT IS WORK THAT SHALL BE PERFORMED BY EC, AND ITEMS SHOWN IN LIGHT LINE WEIGHT IS EITHER EXISTING TO REMAIN OR WORK PERFORMED BY OTHERS.
- ALL EMPTY CONDUITS SHALL HAVE A NYLON CORD PROVIDED CONTINUOUSLY THROUGH THE LENGTH OF EACH EMPTY CONDUIT AND ACCESSIBLE AT BOTH ENDS OF EACH CONDUIT.
- LOCATION OF NEW EQUIPMENT IS APPROXIMATE AND SHALL BE COORDINATED IN FIELD WITH EXISTING INTERFERENCES. MAINTAIN PROPER CLEARANCES IN AVAILABLE SPACE AS REQUIRED BY NATIONAL ELECTRICAL CODE AND BE RATED FOR ENVIRONMENT.
- WHERE ITEMS OF MATERIAL OR EQUIPMENT ARE SPECIFIED BY BRAND NAME, CATALOG NUMBERS, OR BY NAMES OF MANUFACTURERS, REFERENCE IS INTENDED TO BE DESCRIPTIVE, NOT RESTRICTIVE, AND IS SOLELY FOR PURPOSES OF INDICATING TYPE, QUALITY, AND APPEARANCE OF ITEM THAT WILL BE ACCEPTABLE.
- WHERE CONDUIT CAN BE REUSED IS NOTED IN THE DRAWINGS THE FOLLOWING REQUIREMENTS SHALL BE MET. BE FREE OF DAMAGE, NO CORROSION, SIZED CORRECTLY FOR CONDUCTORS AND PROPERLY/SECURELY MOUNTED. EC SHALL ALSO REVIEW WITH OWNER AS WELL AND HAVE APPROVAL.
- EC TO PROVIDE PROTECTIVE FUNCTIONS, RELAY/METERING SCHEDULE, SYNCHRONIZATION CRITERIA, SETTINGS AND COMMISSIONING SETPOINT DOCUMENTATION ON EMERGENCY POWER SYSTEM "EPS".
- EC TO PROVIDE UPDATED ARC FLASH LABELS FOR ALL NEW EQUIPMENT PROVIDED.

WHEELING-OHIO-WV

WHEELING WPCD PHASE 4 BOND IMP. WV
WPCD G1 BP07 GENERATOR REPLACEMENT
BOND PACKAGE 2025, AMENDMENT 4
ELECTRICAL NOTES AND SYMBOLS



2001 MAIN STREET, SUITE 202
WHEELING, WV 26003-2855
TEL. 304.232.2764

TROY L. DELZER, PE

DESIGNED BY
CZ

DRAWN BY
DUPH/C

CHECKED BY
CZ

PROJECT NO.
38010

No.

REVISION

CHKO BY
DATE

ISSUED FOR
BID

DATE

SCALE

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DATE

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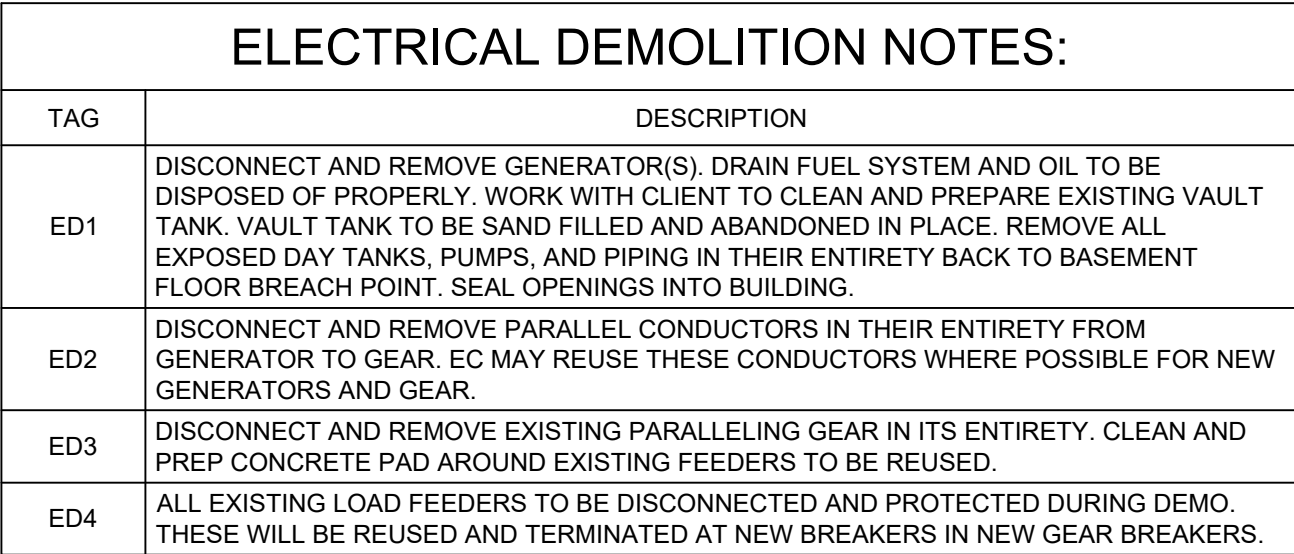
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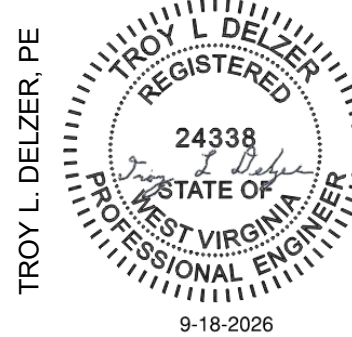


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☐ EXIST.

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☐ EXIST.

verdantas

2001 MAIN STREET, SUITE 202
WHEELING, WV 26003-2855
TEL. 304.232.2784



9-18-2026

DESIGNED BY	
CZ	
DRAWN BY	
DJP/HJC	
CHECKED BY	
CZ	
PROJECT NO.	
38010	

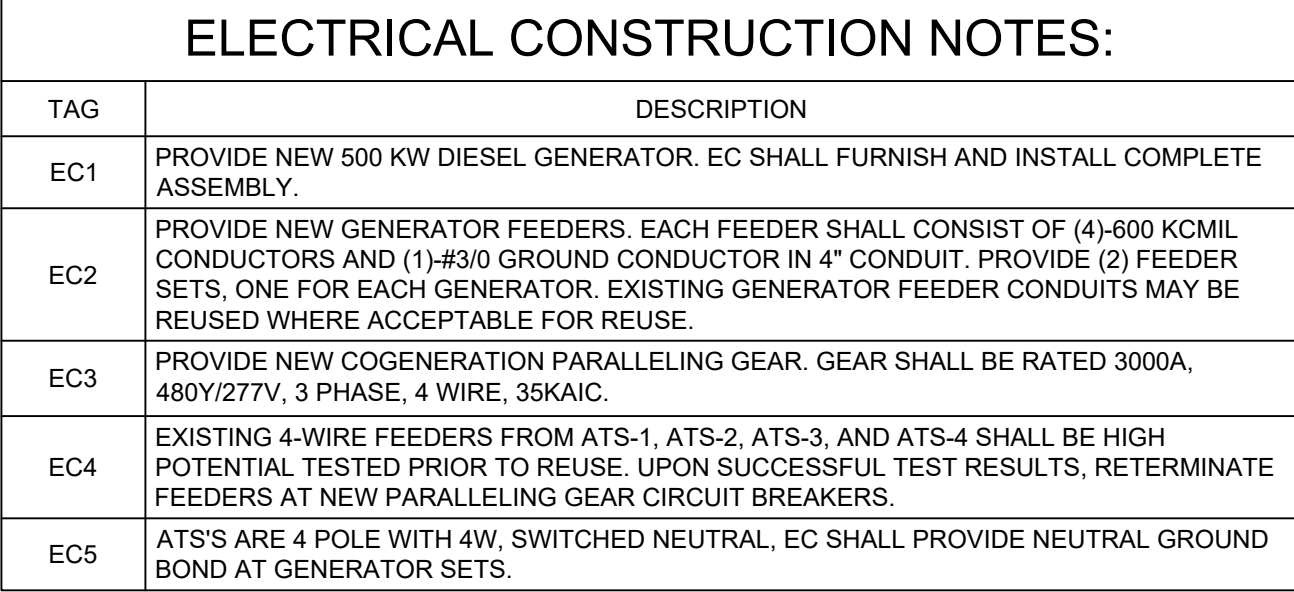
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WHEELING-OHIO-WV
WHEELING WPCD PHASE 4 BOND IMP. WV
WPCD G1 BP07 GENERATOR REPLACEMENT
BOND PACKAGE 2025, AMENDMENT 4
ELECTRICAL DEMOLITION SINGLE-LINES

DATE 09-18-2026

SCALE NO SCALE

SHEET
G1-15E-02



LEGEND
 — NEW
 — EXIST.



TROY L. DELZER, PE

24338

REGISTERED

STATE OF WEST VIRGINIA

PROFESSIONAL ENGINEER

9-18-2026

P.E. #24338

STATE: WV

DESIGNED BY CZ	DRAWN BY DJP/HJC	CHECKED BY CZ	PROJECT NO. 38010
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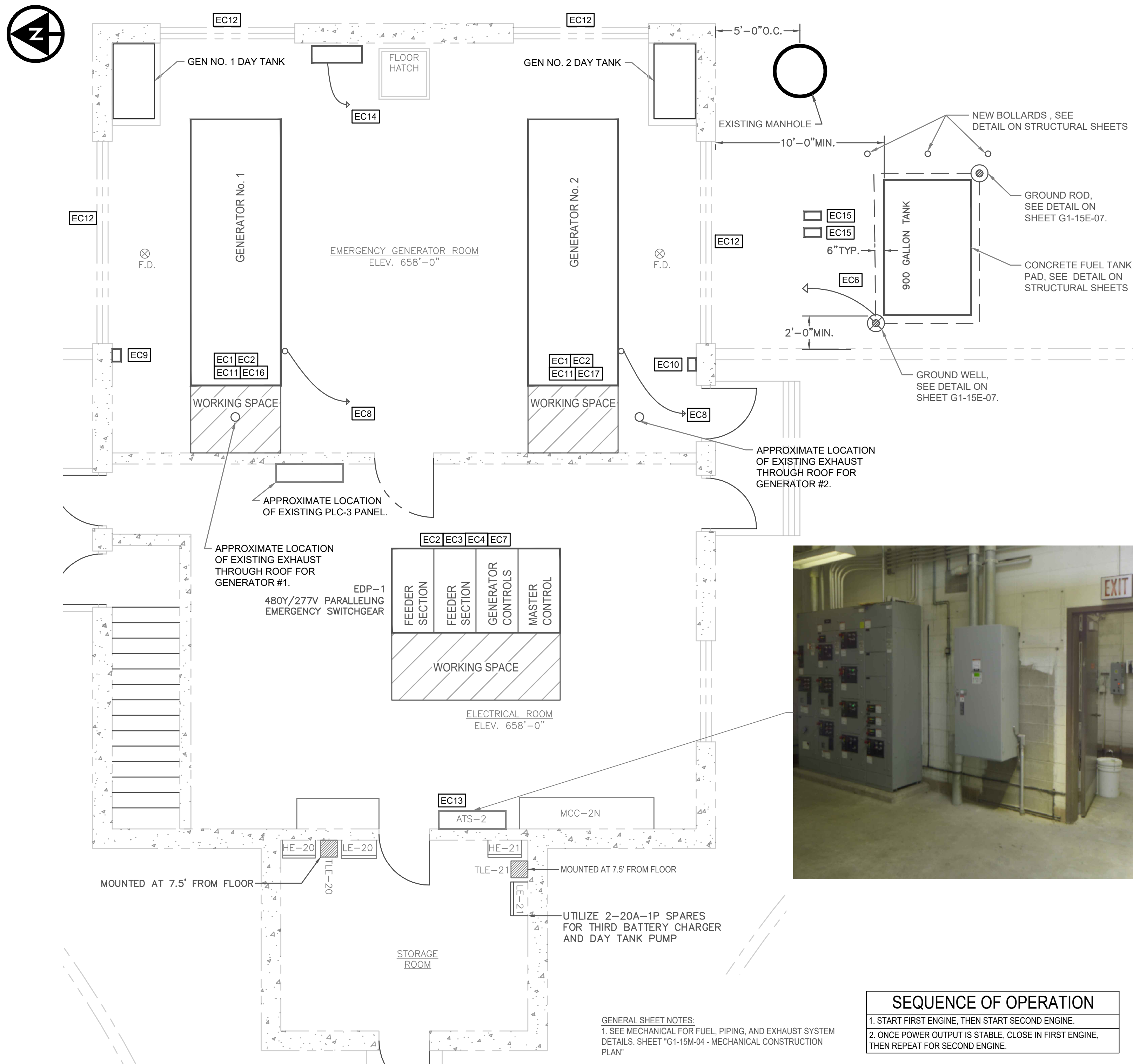
WHEELING--OHIO--WV
WHEELING WPCD PHASE 4 BOND IMP. WW
WPCD G1 BP07 GENERATOR REPLACEMENT
BOND PACKAGE 2025, AMENDMENT 4
ELECTRICAL CONSTRUCTION SINGLE LINE

DATE 09-18-2026

SCALE NO SCALE

SHEET
G1-15E-03

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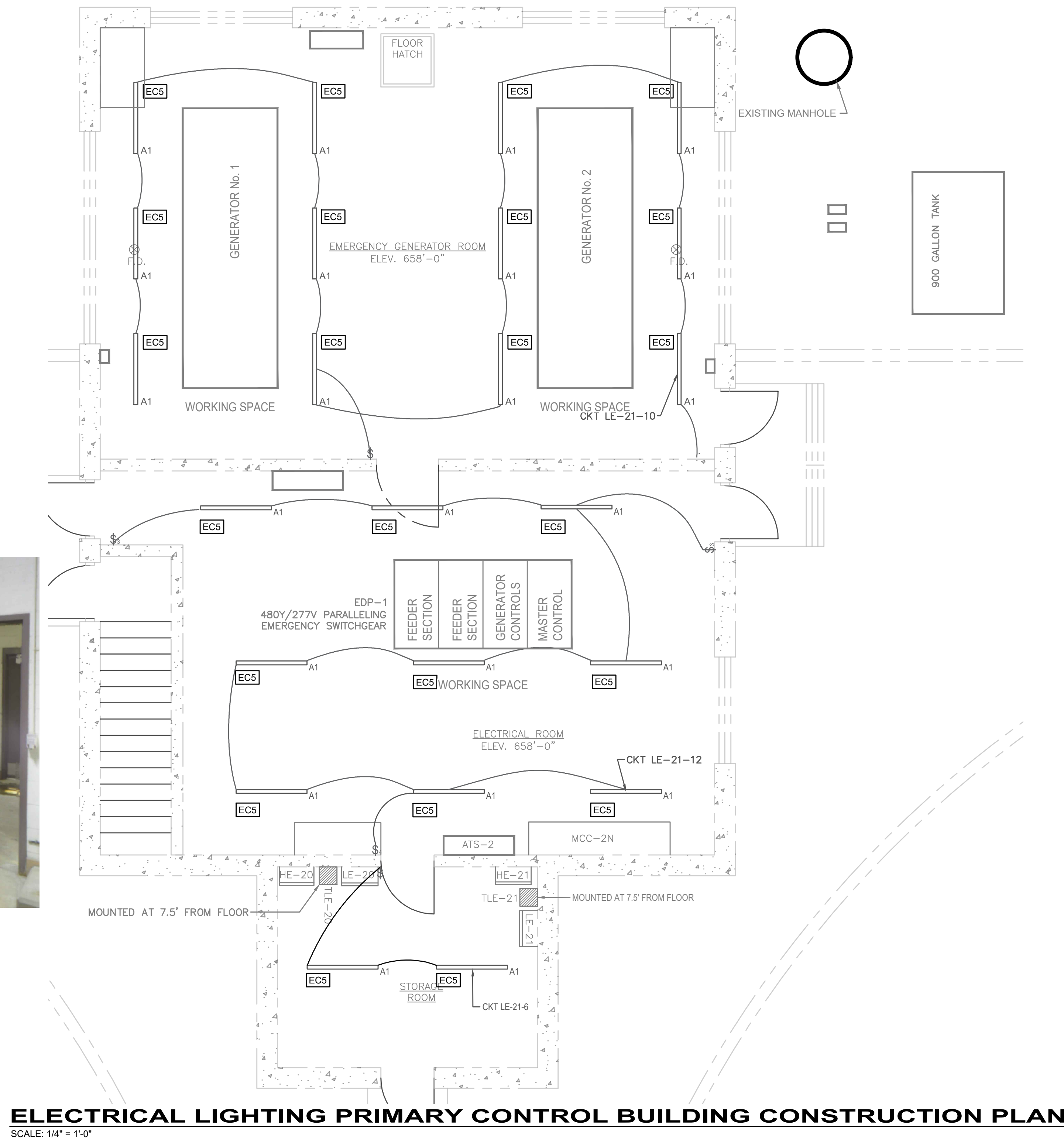
ELECTRICAL POWER PRIMARY CONTROL BUILDING CONSTRUCTION PLAN

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

ELECTRICAL CONSTRUCTION NOTES:	
TAG	DESCRIPTION
EC1	PROVIDE NEW 500 KW DIESEL GENERATOR, 480Y/277V, 3 PHASE, 4 WIRE. EC SHALL FURNISH AND INSTALL COMPLETE ASSEMBLY. NEW GENERATOR SHALL HAVE MASTER CONTROLLER RUN SIGNAL AUX CONTACTS AND CONNECTED TO EXISTING POWERED LOUVERS RELAY SO LOUVERS OPEN UPON GENERATOR RUN COMMAND.
EC2	PROVIDE NEW GENERATOR FEEDERS. EACH FEEDER SHALL CONSIST OF (4)-600 KCMIL CONDUCTORS AND (1) #3/0 GROUND CONDUCTOR IN 4" CONDUIT. PROVIDE (2) FEEDER SETS, ONE FOR EACH GENERATOR. EXISTING GENERATOR FEEDER CONDUITS MAY BE REUSED WHERE ACCEPTABLE FOR REUSE.
EC3	PROVIDE NEW SWITCH GEAR. GEAR SHALL BE RATED 3000A, 480Y/277V, 3 PHASE, 4 WIRE, 35KAIC.
EC4	EXISTING FEEDERS FROM ATS-1, ATS-2, ATS-3, AND ATS-4 SHALL BE HIGH POTENTIAL TESTED PRIOR TO REUSE. UPON SUCCESSFUL TEST RESULTS, RE-TERMINATE FEEDERS AT NEW SWITCH GEAR CIRCUIT BREAKERS. FEEDERS SHALL MEET MANUFACTURER'S TESTING SPECIFICATIONS.
EC5	FURNISH AND INSTALL NEW LIGHT FIXTURES AND SWITCHING DEVICES. REFER TO LIGHT FIXTURE SCHEDULE FOR FIXTURE TYPE, MOUNTING REQUIREMENTS, AND OTHER INFORMATION. COORDINATE INSTALLATION WITH BUILDING OWNER. LIGHT SWITCHES SHALL BE RATED FOR CONDITIONS AND APPLICATION.
EC6	GND NEW DIESEL TANK TO NEW 3/4" X 10'-0" COPPERWELD GND ROD, #4/0 BARE GND BOND THIS TO EXISTING GND SYSTEM AND NEW FENCE IN (2) LOCATIONS.
EC7	BOND NEW GEAR TO EXISTING GROUND SYSTEM WITH (1) 4/0 AWG COPPER GROUNDING CONDUCTOR.
EC8	BOND GENERATOR ENGINE FRAME TO EXISTING PERIMETER GROUNDING SYSTEM WITH NEW 4/0 AWG BARE COPPER GROUNDING CONDUCTOR. ROUTE CONDUCTOR THROUGH GENERATOR PAD AS REQUIRED.
EC9	EC TO PROVIDE NEW BATTERY CHARGER FOR NO. 1 GENERATOR. CONNECT TO PANEL LE-21-20. SEE PANEL SCHEDULE FOR SIZING.
EC10	EC TO PROVIDE NEW BATTERY CHARGER FOR NO. 2 GENERATOR. CONNECT TO PANEL LE-21-28. SEE PANEL SCHEDULE FOR SIZING.

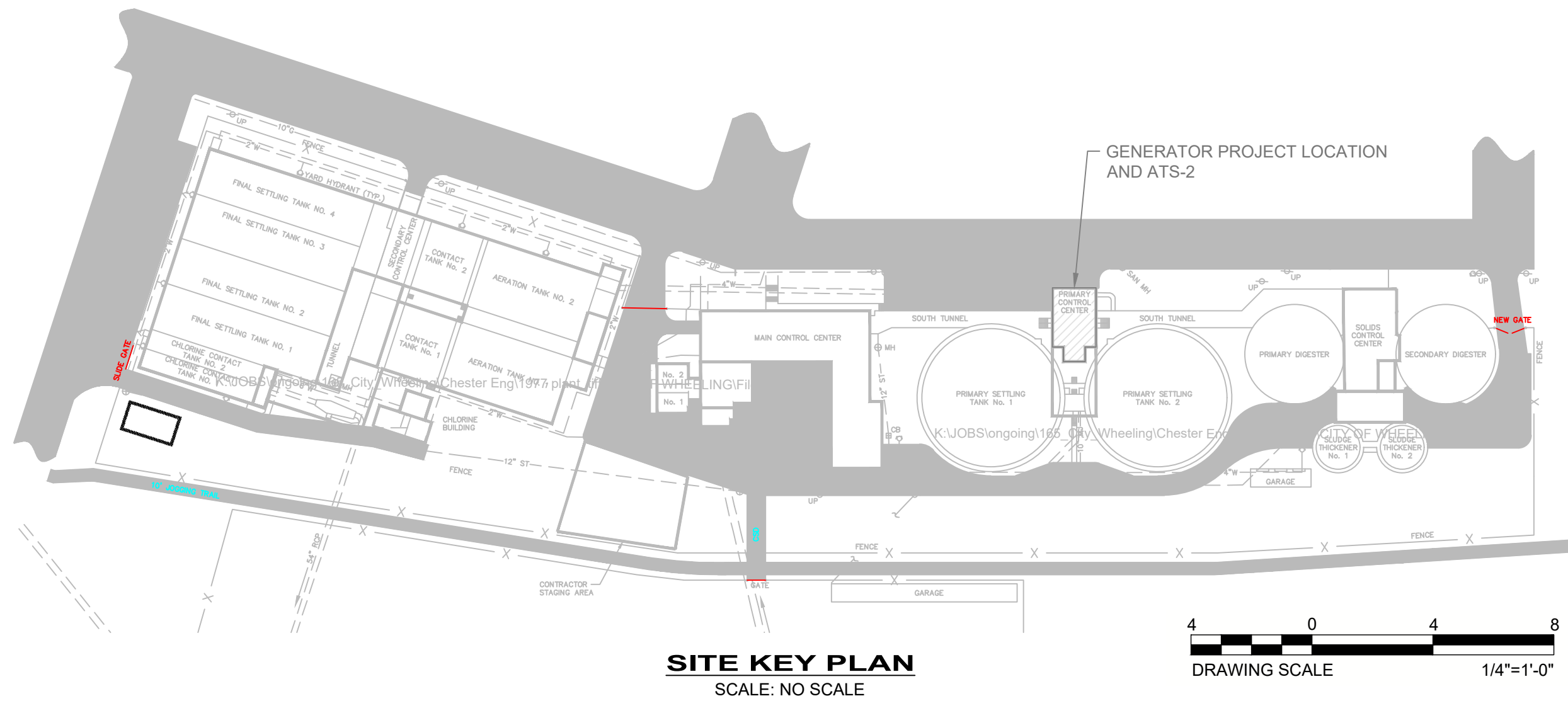
ELECTRICAL CONSTRUCTION NOTES:	
TAG	DESCRIPTION
EC11	EC TO PROVIDE NEW CONTROL CABLES FROM EACH GENERATOR MASTER CONTROLLER TO EXISTING ATS-1,2,3,4 AND SCADA PLC. TERMINATE ALL CONTROL WIRING AS REQ'D.
EC12	EXISTING POWERED LOUVER ARE RELAYED ON BY GENERATOR RUN SIGNAL FROM MASTER CONTROLLER. RECONNECT TO NEW GENERATOR RUN SIGNAL CONTACT IN NEW CONTROLLER.
EC13	EC TO PROVIDE NEW CONTROL CABLES FROM GENERATOR MASTER CONTROLLER TO EXISTING ATS-1,2,3, 4 AND PLC-3. TERMINATE ALL CONTROL WIRING AS REQUIRED PER MANUFACTURER.
EC14	GENERATOR FUEL PUMP CONTROL PANEL. EC SHALL COORDINATE WITH VENDOR AND PROVIDE PANEL. PANEL SHALL INCLUDE A 15A BRANCH DEVICE, NEMA SIZE 0 CONTACTOR, AND THERMAL OVERLOAD FOR EACH FUEL PUMP. OVERLOAD SHALL BE SIZED TO MOTOR NAMEPLATE FLA. EC SHALL PROVIDE POWER FOR PANEL FROM LE-21-19. SEE PANEL SCHEDULE FOR SIZING. PANEL COMPONENTS, RATINGS, AND FEEDER SIZE SHALL BE CONFIRMED WITH VENDOR PRIOR TO ORDERING.
EC15	EC TO PROVIDE POWER FROM GENERATOR FUEL PUMP CONTROL PANEL TO NEW 1/2 HP, 120V, 1P TRANSFER PUMPS SERVING NO. 1 AND NO. 2 GENERATORS. PROVIDE A SEPARATE CIRCUIT FOR EACH PUMP, #12AWG & 1#12AWG IN 3" CONDUIT. PROVIDE DISCONNECTING MEANS AT EACH MOTOR PER NEC 430.120(B). COORDINATE FINAL TERMINATIONS WITH VENDOR.
EC16	EC TO PROVIDE NEW CIRCUIT TO THE JACKET HEATER AT GENERATOR NO. 1 FROM PANEL LE-21-14 & 16. EC SHALL PROVIDE DISCONNECTING MEANS WITHIN SIGHT OF HEATER PER NEC 422.31(B). CIRCUIT SIZE AND HEATER ELECTRICAL CHARACTERISTICS SHALL BE CONFIRMED WITH VENDOR. COORDINATE FINAL TERMINATIONS WITH GENERATOR VENDOR.
EC17	EC TO PROVIDE NEW CIRCUIT TO THE JACKET HEATER AT GENERATOR NO. 2 FROM PANEL LE-21-32 & 34. EC SHALL PROVIDE DISCONNECTING MEANS WITHIN SIGHT OF HEATER PER NEC 422.31(B). CIRCUIT SIZE AND HEATER ELECTRICAL CHARACTERISTICS SHALL BE CONFIRMED WITH VENDOR. COORDINATE FINAL TERMINATIONS WITH GENERATOR VENDOR.

LEGEND
— NEW
— EXIST.



ELECTRICAL LIGHTING PRIMARY CONTROL BUILDING CONSTRUCTION PLAN

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



SITE KEY PLAN
SCALE: NO SCALE

4 0 4 8
DRAWING SCALE 1/4"=1'-0"

2001 MAIN STREET, SUITE 202
WHEELING, WV 26003-2855
TEL: 304.232.2784

TROY L. DELZER, P.E.
REGISTERED PROFESSIONAL ENGINEER
24338
9-18-2026
STATE: WV
P.E. #24338

DESIGNED BY
CZ
DRAWN BY
DJP/HJC
CHECKED BY
CZ
PROJECT NO.
38010

REVISION

ISSUED FOR BID

No.

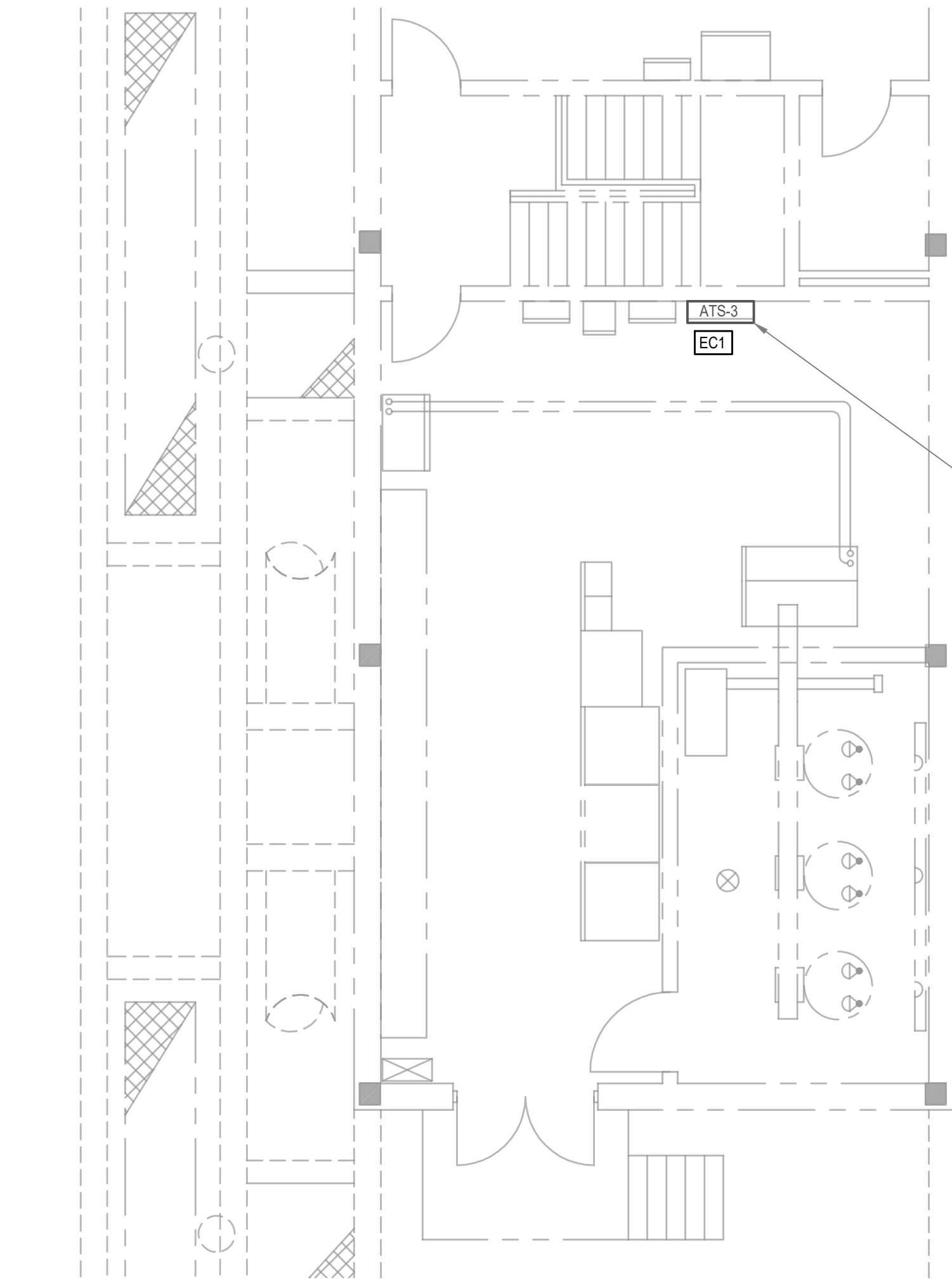
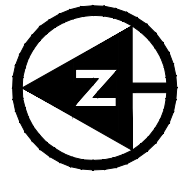
WHEELING-OHIO-WV

WHEELING WPCD PHASE 4 BOND IMP. WW
WPCD G1 BP07 GENERATOR REPLACEMENT
BOND PACKAGE 2025, AMENDMENT 4
ELECTRICAL CONSTRUCTION PLAN

DATE
09-18-2026

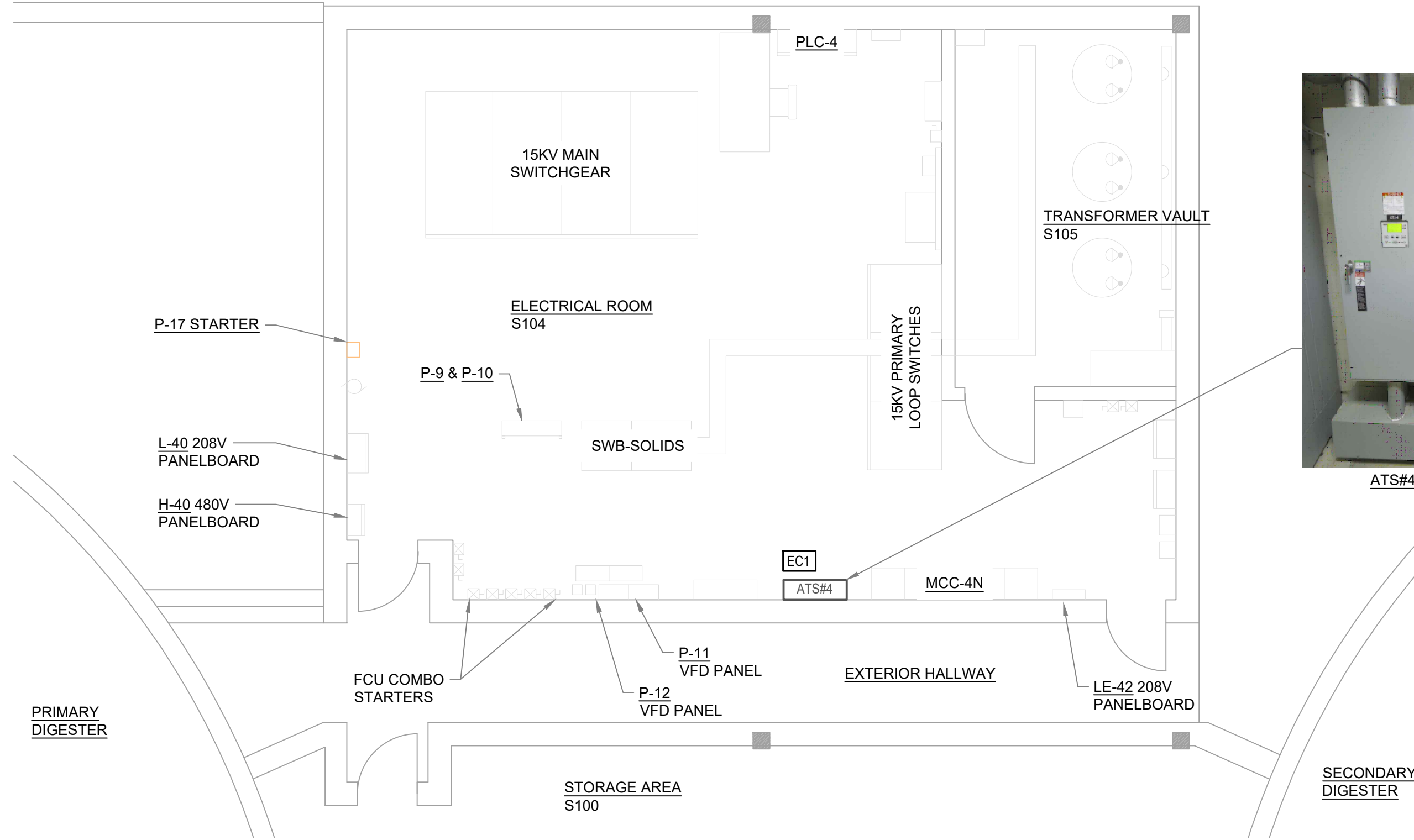
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SHEET
G1-15E-05



ELECTRICAL POWER SECONDARY CONTROL CENTER CONSTRUCTION PLAN

SCALE: 3/16" = 1'-0"



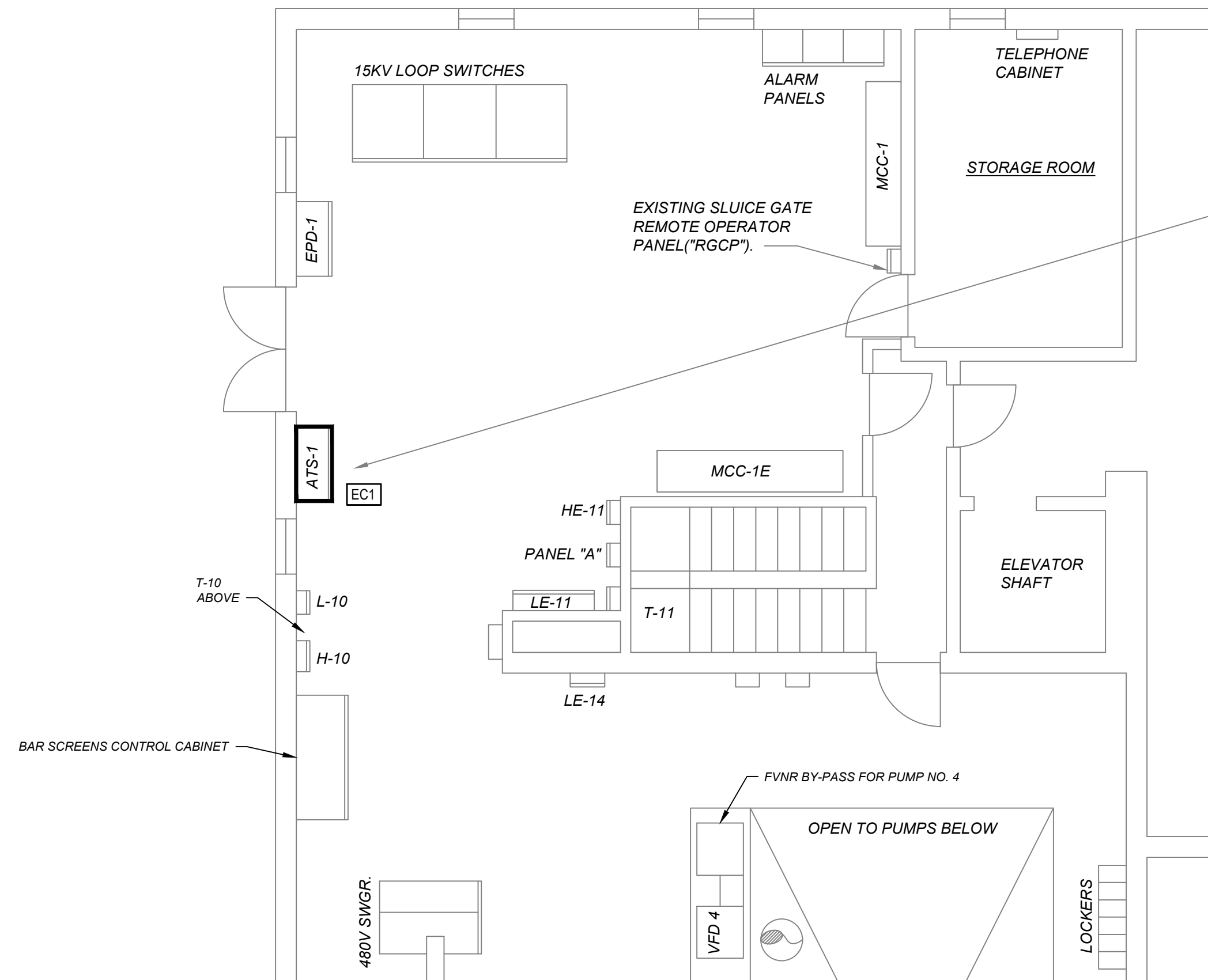
ELECTRICAL POWER SOLIDS CONTROL CENTER PLAN

SCALE: 3/16" = 1'-0"



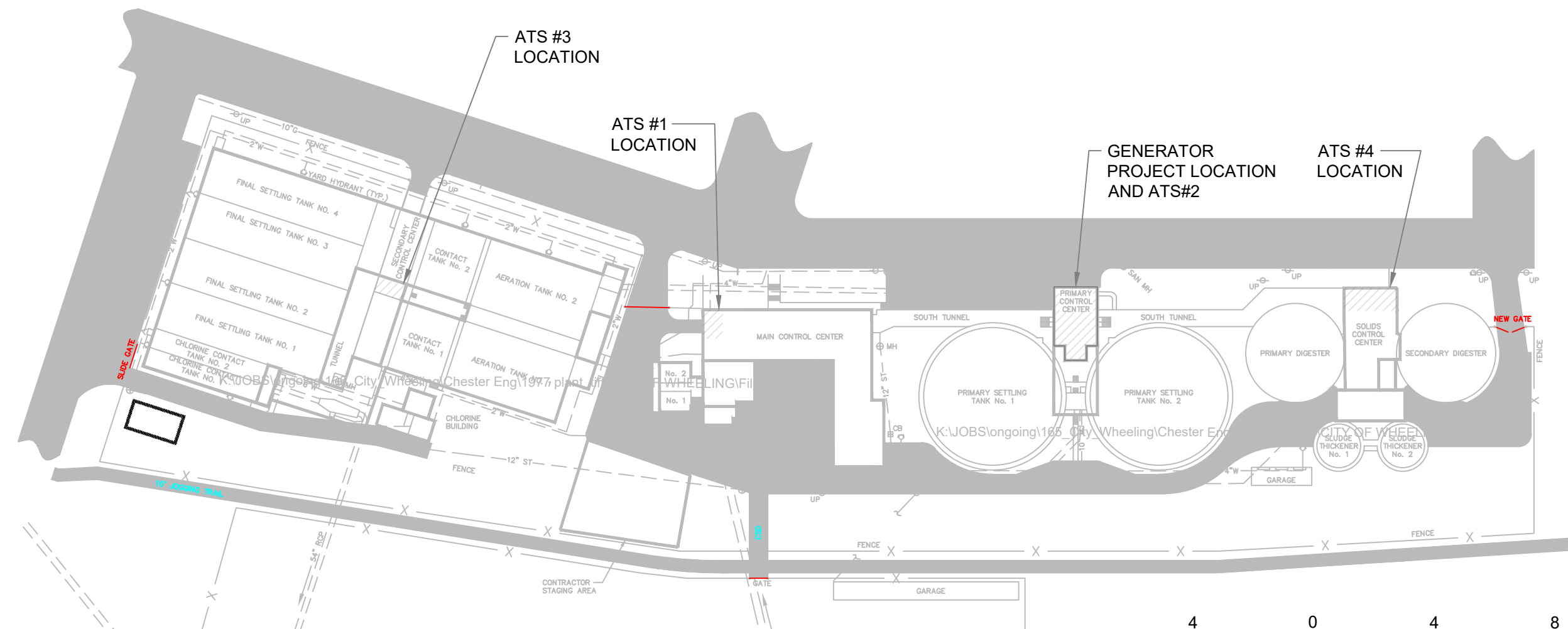
ELECTRICAL CONSTRUCTION NOTES:	
TAG	DESCRIPTION
EC1	EC TO PROVIDE NEW CONTROL CABLES FROM GENERATOR MASTER CONTROLLER TO EXISTING ATS-1,2,3, 4 AND SCADA PLC. TERMINATE ALL CONTROL WIRING AS REQUIRED PER MANUFACTURER.

LEGEND
— NEW
— EXIST.



MAIN CONTROL CENTER PARTIAL FIRST FLOOR PLAN

SCALE: 3/16" = 1'-0"



SITE KEY PLAN
SCALE: NO SCALE

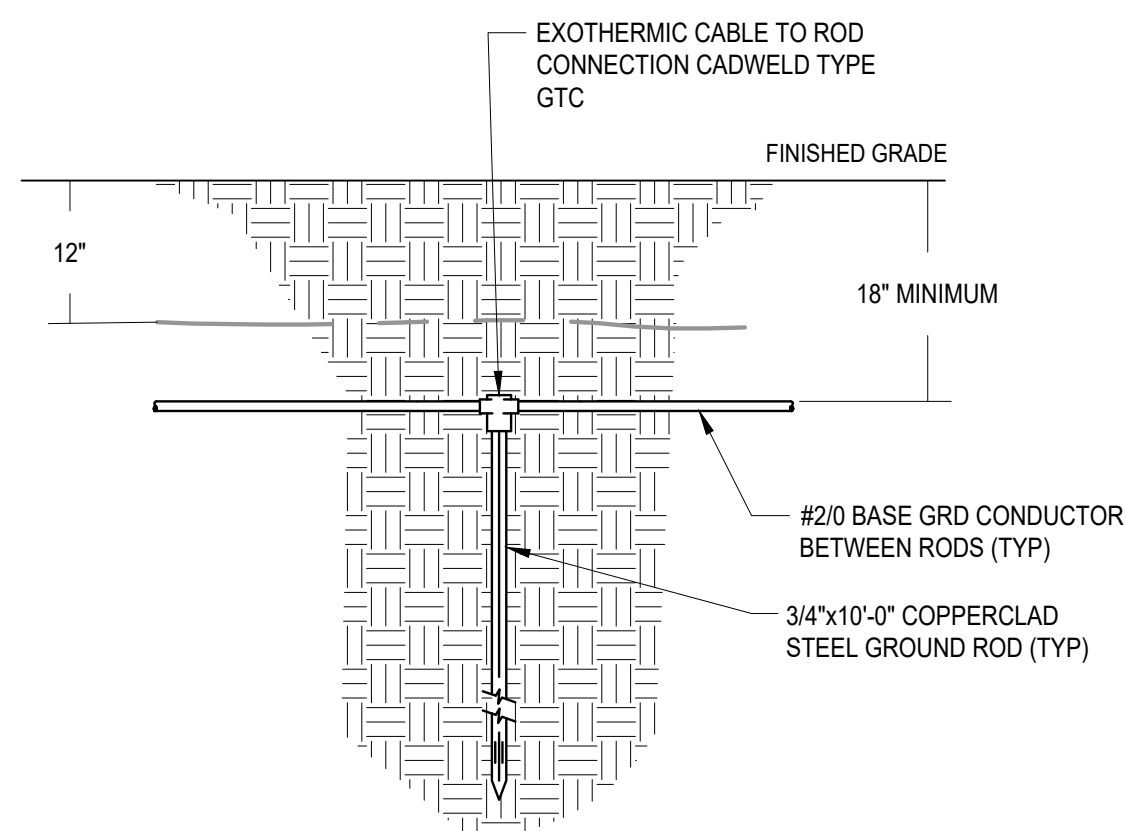
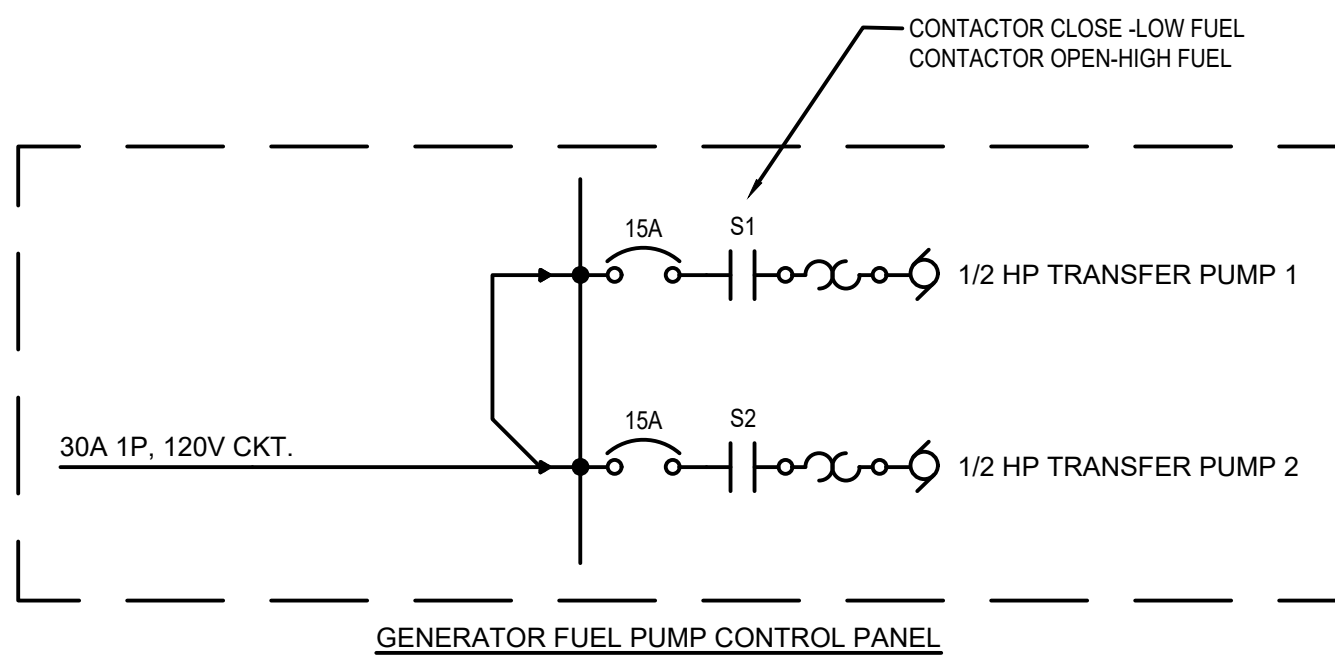
4 0 4 8
DRAWING SCALE 1/64"=1'-0"

REVISION	NO.
ISSUED FOR BID	1

PANELBOARD: 'LE-21' EXISTING										MCB RATING: 125A MAINS RATING: 125A LOCATION: GATE-1				VOLTGS: 120/208PHASE: 3 WIRES: 4				A.I.C. RATING: 10KA MOUNTING: SURFACE NEMA 1 ENCLOSURE			
CKT	CIRCUIT DESCRIPTION	WIRE	G.	C.	TRIP	POLE	A	B	C	POLE	TRIP	C.	G.	WIRE	CIRCUIT DESCRIPTION	CKT					
1	4-REC. (POLE LIGHT) S/S TUNNEL				20	1	0.0	0.0			1	20			3- REC. STOR & SETL	2					
3	3-REC. N/S TUNNEL				20	1		0.0	0.0		1	20			REC BY SCUM PUMP	4					
5	2-REC. PUMP GALLERY				20	1			0.0	0.0	1	20			LTS STOR RM P102 - OUTSIDE REC	6					
7	EXIT LTS PRI CONT. CTR				20	1	0.0	0.0			1	20			2-STOR RM P102-OUTSIDE REC	8					
9	BAD				20	1		0.0	0.0		1	20			LTS GEN RM P101	10					
11	LTS-STAIR 23 & PUMP GALLERY				20	1				0.0	0.0	1	20		LTS SW GEAR RM P100	12					
13	1 REC.-SW. GEAR RM 3 REC GEN RM				20	1	0.0	0.0			1	20			DAY TANK-S	14					
15	1 REC. SW GEAR RM NORTH WALL				20	1		0.0	0.0		1	20			BATTERY CHARGER-S	16					
17	EM LIGHTS GEN RM				20	1			0.0	0.0	1	20			DAY TANK-N	18					
19	BAD				20	1	0.0	0.0			1	20			BATTERY CHARGER-N	20					
21	SPARE				20	1		0.0	0.0		1	20			MAG-METERS BASEMENT	22					
23	EM LTS SW GEAR RM				20	1				0.0	0.0	1	20		PLC-3	24					
25	LTS S TUNNEL				20	1	0.0	0.0			1	20			SPARE	26					
27	SPARE				20	1		0.0	0.0		1	20			SPARE	28					
29	SPARE				20	1			0.0	0.0	1	20			HAZ GAS DETECTION SYS	30					
31	SPACE						0.0	0.0							SPACE	32					
33	SPACE							0.0	0.0						SPACE	34					
35	SPACE								0.0	0.0					SPACE	36					
37	SPACE						0.0	0.0							SPACE	38					
39	SPACE							0.0	0.0						SPACE	40					
41	SPACE								0.0	0.0					SPACE	42					
TOTAL LOAD IN KVA							0.0	0.0	0.0												
							A	B	C												
REMARKS: LOAD VALUES ARE SHOWN AS 0.0 AND ARE NOT REPRESENTATIVE OF ACTUAL PANEL LOADING.																					
															PANEL TOTALS						
															TOTAL CONNECTED LOAD (KVA)		0.0				
															TOTAL DEMAND LOAD (KVA)		18.4				

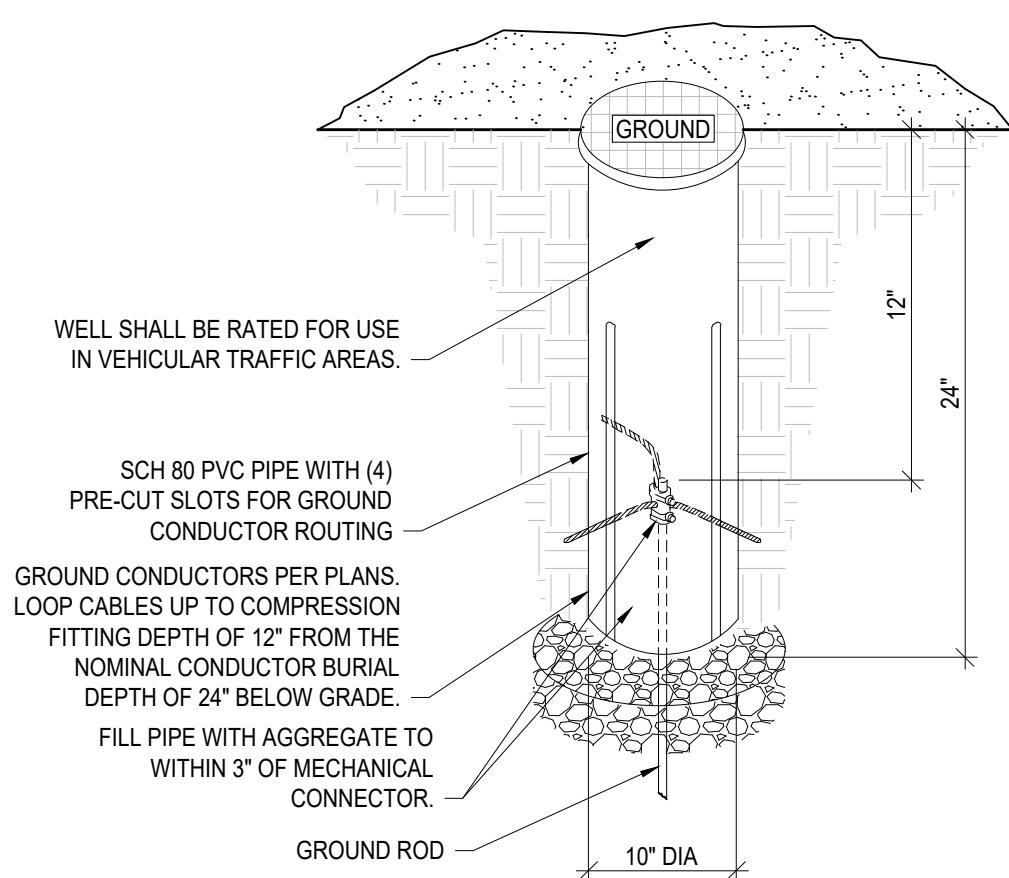
PANELBOARD: 'LE-21' NEW						MCB RATING: 125A MAINS RATING: 125A LOCATION: GATE-1				VOLTS: 120/208 PHASE: 3 WIRES: 4				A.I.C. RATING: 10KA MOUNTING: SURFACE NEMA 1 ENCLOSURE			
CKT	CIRCUIT DESCRIPTION	WIRE	G.	C.	TRIP	POLE	A	B	C	POLE	TRIP	C.	G.	WIRE	CIRCUIT DESCRIPTION	CKT	
1	4-REC. (POLE LIGHT) S/S TUNNEL				20	1	0.0	0.0			1	20			3- REC STOR & SETL	2	
3	3-REP. N/S TUNNEL				20	1			0.0	0.0		1	20		REC BY SCUM PUMP	4	
5	2-REC. PUMP GALLERY				20	1			0.0	0.0	1	20			LTS STOR RM P102-OUTSIDE REC	6	
7	EXIT LTS PRI CONT. CTR				20	1	0.0	0.0			1	20			2-STOR RM P102-OUTSIDE REC	8	
9	SPARE				20	1			0.0	0.0		1	20		LTS GEN RM P101	10	
11	LTS-STAIR 23 & PUMP GALLERY				20	1			0.0	0.0	1	20			LTS SW GEAR RM P100	12	
13	1 REC.-SW. GEAR RM 3 REC GEN RM				20	1	0.0	0.0							JACKET HEATER-GEN NO. 1	14	
15	1 REC. SW GEAR RM NORTH WALL				20	1			0.0	0.0	2	20	3/4	12	12		16
17	EM LIGHTS GEN RM				20	1			0.0	0.0	1	20			SPARE	18	
19	GEN FUEL-PUMP CONTROL PANEL	10	10	3/4	30	1	0.0	0.0			1	20	3/4	12	12	BATTERY CHARGER-GEN NO. 1	20
21	SPARE				20	1			0.0	0.0		1	20			MAG-METERS BASEMENT	22
23	EM LTS SW GEAR RM				20	1			0.0	0.0	1	20			PLC-3	24	
25	LTS S TUNNEL				20	1	0.0	0.0			1	20			SPARE	26	
27	SPARE				20	1			0.0	0.0	1	20	3/4	12	12	BATTERY CHARGER-GEN NO. 2	28
29	SPARE				20	1			0.0	0.0	1	20			HAZ GAS DETECTION SYS	30	
31	SPARE				20	2	0.0	0.0			2	20	3/4	12	12	JACKET HEATER-GEN NO. 2	32
33								0.0	0.0								34
35	SPACE								0.0	0.0						SPACE	36
37	SPACE						0.0	0.0								SPACE	38
39	SPACE							0.0	0.0							SPACE	40
41	SPACE								0.0	0.0						SPACE	42
						TOTAL LOAD IN KVA	0.0	0.0	0.0								
						A	B	C									
REMARKS: LOAD VALUES ARE SHOWN AS 0.0 AND ARE NOT REPRESENTATIVE OF ACTUAL PANEL LOADING. *REPLACE 20A-1P BREAKERS AT POLES 9 WITH NEW CIRCUIT BREAKER.															PANEL TOTALS		
															TOTAL CONNECTED LOAD (KVA)	0.0	
															TOTAL DEMAND LOAD (KVA)	20.0	

LIGHT FIXTURE SCHEDULE (BASIS OF DESIGN)												
TYPE	DESCRIPTION	MOUNTING	LAMP				RATINGS	MT HGT	LUMINAIRE		REMARKS	
			#	TYPE	WATTS	LUMENS	COLOR TEMP.		VOLTS	MANUFACTURER		MODEL NO.
A1	LED STRIP LIGHT	CEILING	N/A	L.E.D.	30	4000	4000K	120-277	10.00 Ft	LITHONIA	CSS L48 4000LM MVOLT 40K 80CRI	



NOTES:
1. GROUNDING LOOP SHALL BE TESTED TO SHOW THAT IT MEETS NEC CODE 2020 AND RECORDED FOR OWNERS RECORDS.

1	TYPICAL GROUND ROD BURIAL DETAIL
G1-15E-07	NOT TO SCALE



NOTES:
1. BASIS OF DESIGN IS HARGER, PART NO. 360PP INSPECTION WELL.

2 TEST WELL
G1-15E-07 NOT TO SCALE

A
B
C
D
E
F

DUCTWORK LEGEND		
DOUBLE LINE	SINGLE LINE	DESCRIPTION
		NEW DUCTWORK
		EXISTING DUCTWORK TO REMAIN
		DROP IN DUCT ELEVATION
		DUCT UP / DUCT DOWN
		VANED ELBOW
		RADIUS ELBOW
		90 DEGREE SPLIT / TEE
		BRANCH DUCT TAKEOFF
		DUCT TRANSITION (CONCENTRIC)
		DUCT TRANSITION (ECCENTRIC)
		DUCT TRANSITION (RECTANGULAR TO ROUND)
		FLEXIBLE DUCT
		ACCESS PANEL / ACCESS DOOR
		VOLUME DAMPER
		SUPPLY DIFFUSER
		RETURN GRILLE / REGISTER
		EXHAUST GRILLE
		DUCT MOUNTED SUPPLY REGISTER
		SIDEWALL SUPPLY DIFFUSER
		SIDEWALL RETURN GRILLE / REGISTER
		3-WAY BLOW DIFFUSER (SHADED AREA INDICATES SECTION WITH NO AIRFLOW)
		2-WAY BLOW DIFFUSER (SHADED AREA INDICATES SECTION WITH NO AIRFLOW)
		CEILING MOUNTED EXHAUST FAN
		ROOF MOUNTED EXHAUST FAN
		MOTOR OPERATED DAMPER (ELECTRIC)
		NON-POWERED BACKDRAFT DAMPER
		FIRE DAMPER
		SMOKE DAMPER
		COMBINATION FIRE / SMOKE DAMPER
		HOT WATER HEATING COIL
		ELECTRIC HEATING COIL
		TEMPERATURE SENSOR / THERMOSTAT
		CARBON DIOXIDE SENSOR
		HYDROGEN SENSOR
		HUMIDITY SENSOR / HUMIDISTAT

VALVES / FITTINGS LEGEND	
SYMBOL	DESCRIPTION
	VERTICAL PIPE RISING UP
	VERTICAL PIPE DROPPING DOWN
	DIRECTION OF FLOW
	DIRECTION OF PITCH
	CONCENTRIC REDUCER / INCREASER
	ECCENTRIC REDUCER / INCREASER
	CAPPED FOR FUTURE
	UNION (SCREWED OR FLANGED)
	DRAIN
	ANGLE GLOBE VALVE
	AUTOMATIC FLOW CONTROL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	CIRCUIT SETTER VALVE
	GATE VALVE
	GLOBE VALVE
	OUTSIDE STEM AND YOKE VALVE
	PLUG VALVE
	PRESSURE REDUCING VALVE
	PRESSURE SAFETY VALVE
	SOLENOID VALVE
	2-WAY AUTOMATIC CONTROL VALVE
	3-WAY AUTOMATIC CONTROL VALVE
	AUTOMATIC AIR VENT
	BACKFLOW PREVENTER
	MANUAL AIR VENT
	PRESSURE GAUGE
	STRAINER
	THERMOMETER WELL
	THERMOSTATIC STEAM TRAP
	VENTURI METER
	PUMP
	IN-LINE FUEL FILTER
	FLEX PIPE

PIPING LEGEND	
SYMBOL	DESCRIPTION
S	STEAM
LPS	LOW PRESSURE STEAM (15# MAX)
MPS	MEDIUM PRESSURE STEAM (15# TO 150#)
HPS	HIGH PRESSURE STEAM (>150#)
CD	CONDENSATE DRAIN - GRAVITY
PC	CONDENSATE DRAIN - PUMPED
LPC	LOW PRESSURE CONDENSATE
MPC	MEDIUM PRESSURE CONDENSATE
HPC	HIGH PRESSURE CONDENSATE
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
CHS	CHILLED WATER SUPPLY
CHR	CHILLED WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
HPWS	HEAT PUMP WATER SUPPLY
HPWR	HEAT PUMP WATER RETURN
CTS	COOLING TOWER WATER SUPPLY
CTR	COOLING TOWER WATER RETURN
DI	DEIONIZED WATER
DW	DISTILLED WATER
RO	REVERSE OSMOSIS WATER
MU	MAKE UP WATER
TW	TEPID WATER
VAC	VACUUM
MVAC	MEDICAL VACUUM
FOS	FUEL OIL SUPPLY
FOR	FUEL OIL RETURN
GFOS	GENERATOR FUEL OIL SUPPLY
OFOR	OVERFLOW FUEL OIL RETURN
WO	WASTE OIL
OX	OXYGEN
CA	COMPRESSED AIR
LA	LABORATORY COMPRESSED AIR
MA	MEDICAL COMPRESSED AIR
HCA	HOT COMPRESSED AIR
OCA	COLD COMPRESSED AIR
RCA	REFRIGERATED COMPRESSED AIR
DCA	DESSICANT COMPRESSED AIR
LPG	LOW PRESSURE GAS
HPG	HIGH PRESSURE GAS
AW	ACID WASTE
HYS	HYDRONIC SUPPLY
HYR	HYDRONIC RETURN
RHG	REFRIGERANT HOT GAS
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
RV	REFRIGERANT VENT (RELIEF)

NOTE

ALL SYMBOLS, NOTES, AND ABBREVIATIONS SHOWN ABOVE MAY NOT BE APPLICABLE TO THIS PROJECT

GENERAL NOTES	
1. THE TERM "FURNISH" SHALL MEAN TO OBTAIN AND SUPPLY TO THE JOB SITE. THE TERM "INSTALL" SHALL MEAN TO FIX IN POSITION AND CONNECT FOR USE. THE TERM "PROVIDE" SHALL MEAN TO FURNISH AND INSTALL. THE TERM "MECHANICAL WORK" OR "WORK" SHALL MEAN ALL LABOR, MATERIAL, EQUIPMENT, SCAFFOLDING, RIGGING, TOOLS, SUPERVISION, SERVICES, AND ALL OTHER INCIDENTALS NECESSARY FOR COMPLETE AND OPERABLE INSTALLATION.	9. THE CONTRACTOR SHALL FIELD COORDINATE ALL ASPECTS OF PHASING FOR THIS PROJECT WITH THE BUILDING OWNER TO ENSURE THAT WORK DOES NOT DISRUPT NORMAL BUILDING OPERATION. THIS INCLUDES PROVIDING TEMPORARY PIPING/VALVES WHEN NECESSARY TO ALLOW PORTIONS OF THE MECHANICAL SYSTEM TO REMAIN OPERATIONAL UNTIL THE FULL BUILDING IS CONVERTED.
2. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL EQUIPMENT, MATERIALS, AND LABOR TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM AS INDICATED ON THE DESIGN DOCUMENTS.	10. THE WORK TO BE DONE UNDER THESE SPECIFICATIONS AND THE DRAWINGS CONSISTS OF FURNISHING ALL EQUIPMENT, MATERIALS, LABOR AND SERVICES, AND PERFORMING ALL OPERATIONS TO COMPLETE THE MECHANICAL CONSTRUCTION WORK FOR THIS PROJECT AND PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
3. ALL MATERIALS, EQUIPMENT, AND INSTALLATIONS SHALL BE IN STRICT ACCORDANCE WITH ICC 2018 MECHANICAL CODES, STATE CODES, LOCAL CODES, SMACNA, UL, MANUFACTURER'S RECOMMENDATIONS, AND ALL AUTHORITIES HAVING JURISDICTION.	11. ANY CHANGES AND/OR MODIFICATIONS MUST BE REVIEWED AND APPROVED BY THE ENGINEER OR OWNER'S REPRESENTATIVE PRIOR TO BEGINNING CONSTRUCTION.
4. THE CONTRACTOR SHALL FIELD COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO THE INSTALLATION OF ANY WORK. ALL CONFLICTS ARE TO BE IMMEDIATELY REPORTED TO THE ARCHITECT AND ENGINEER.	12. ALL TRASH, DEBRIS, AND DEMOLITION MATERIAL SHALL BE REMOVED FROM THE PREMISES AT THE END OF EACH WORK DAY.
5. THE CONTRACTOR SHALL COORDINATE THE ACTUAL LOCATIONS OF ALL EQUIPMENT, CASEWORK, DEVICES, FIXTURES, SWITCHES, SENSORS, ETC. WITH THE ARCHITECTURAL DRAWINGS PRIOR TO PERFORMING ANY ROUGH-IN WORK FOR UTILITIES.	13. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS AT THE SITE AND NOTIFY THE OWNER/ENGINEER OF ANY AND ALL DISCREPANCIES PRIOR TO STARTING ANY WORK.
6. ALL DEVICES SHOWN ON DRAWINGS ARE DIAGRAMMATIC IN LOCATION AND ARE SHOWN FOR GENERAL WIRING PURPOSES ONLY. ALL DEVICES INDICATED TO BE INSTALLED IN THE SAME LOCATIONS WITH DIFFERENT ELEVATIONS SHALL BE ALIGNED VERTICALLY AND HORIZONTALLY.	14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND APPROVALS PRIOR TO BEGINNING CONSTRUCTION.
7. THE DRAWINGS INDICATE DIAGRAMMATICALLY THE EXTENT, GENERAL CHARACTER, AND LOCATION OF THE WORK INCLUDED. OFFSETS OR CHANGES IN DUCT SHAPE TO AVOID STRUCTURAL OR OTHER INTERFERENCES, AND WORK INDICATED BUT HAVING MINOR DETAILS OBVIOUSLY OMITTED SHALL BE PROVIDED WITHOUT ADDITIONAL COST.	15. ALL EQUIPMENT INSTALLED ON FLOORS OR ON GRADE SHALL BE PROVIDED ON 4" THICK CONCRETE PADS HAVING DIMENSIONS 6" LARGER THAN THE EQUIPMENT ON ALL SIDES.
8. REPAIR ALL HOLES, CRACKS, AND OTHER DAMAGED AREAS CREATED BY PERFORMING ALL WORK WITH THE SAME MATERIAL TO MATCH EXISTING, ADJACENT, UNDISTURBED SURFACE. CONTRACTOR SHALL MAKE OWNER AWARE OF ALL EXISTING CRACKS, BLEMISHES, AND IMPERFECTIONS IN AREAS OF INTENDED WORK PRIOR TO THE START OF ANY WORK.	16. DIMENSIONAL DATA INDICATED FOR MECHANICAL EQUIPMENT IS BASED ON VARIOUS MANUFACTURERS. COORDINATE DIMENSIONAL REQUIREMENTS FOR CONCRETE PADS, STEEL FRAMING, ROOF OPENINGS, ETC. WITH ACTUAL SUPPLIED EQUIPMENT.
	17. ALL WORK REQUIRING SYSTEM SHUTDOWNS MUST BE SUBMITTED TO THE OWNER FOR APPROVAL A MINIMUM OF 48 HOURS BEFORE STARTING THE WORK.

ABBREVIATIONS			
ABV	ABOVE	MCA	MINIMUM CIRCUIT AMPS
AC	AIR CONDITIONING	MFG	MANUFACTURER
ACC	AIR COOLED CONDENSER	MOCP	MAXIMUM OVERCURRENT PROTECTION
AFF	ABOVE FINISHED FLOOR	MOD	MOTOR OPERATED DAMPER
AH	AIR HANDLER / AIR HANDLING UNIT	MPR	MEDIUM PRESSURE CONDENSATE RETURN
B	BOILER	MPS	MEDIUM PRESSURE STEAM (16 TO 59 PSIG)
BMS	BUILDING MANAGEMENT SYSTEM	(N)	NEW WORK OR EQUIPMENT
CAD	CLEAN AGENT DAMPER	NC	NORMALLY CLOSED
CLG	CEILING	NIC	NOT IN CONTRACT
CO	CARBON MONOXIDE	NO	NORMALLY OPEN
CP	CONDENSATE PUMP	N02	NITROGEN DIOXIDE
CU	CONDENSER / CONDENSING UNIT	OA	OUTSIDE AIR
CUH	CABINET UNIT HEATER	OAI	OUTSIDE AIR INTAKE
CRU	CONDENSER RECOVERY UNIT	OED	OPEN ENDED DUCT
DC	DRY COOLER	P	PUMP
DDC	DIRECT DIGITAL CONTROL	PD	PRESSURE DROP
DH	DOOR HEATER	PH	PHASE
(E)	EXISTING WORK TO REMAIN	PSV	PRESSURE SAFETY VALVE
(ED)	EXISTING WORK TO BE DEMOLISHED	RA	RETURN AIR
(ER)	EXISTING WORK TO BE RELOCATED	RD	ROOF DRAIN
EAT	ENTERING AIR TEMPERATURE	REQ	REQUIREMENT / REQUIRED
EC	ELECTRICAL CONTRACTOR	RF	RETURN OR RELIEF FAN
EF	EXHAUST FAN	RG	RETURN GRILLE / REGISTER
EJ	EXPANSION JOINT	RTU	ROOFTOP UNIT
EXH	EXHAUST AIR	RH	RADIANT HEATER
(F)	FUTURE	SA	SUPPLY AIR
FD	FLOOR DRAIN	SD	SMOKE DAMPER
F. DPR.	FIRE DAMPER	SF	SUPPLY FAN
GC	GENERAL CONTRACTOR	TXV	THERMAL EXPANSION VALVE
GRD	GRILLE, REGISTER, OR DIFFUSER	UH	UNIT HEATER
HWC	HOT WATER COIL	UF	UNDER FLOOR
IFB	INTEGRAL FACE AND BYPASS	UV	UNIT VENTILATOR
IH	INTAKE HOOD	VD	VOLUME DAMPER
L	LOUVER	VFD	VARIABLE FREQUENCY DRIVE
LAT	LEAVING AIR TEMPERATURE	WC	WALL CAP
MC	MECHANICAL CONTRACTOR	WTD	WATER TEMPERATURE DROP (DEGREES)

MECHANICAL DRAWINGS LIST AND ISSUANCE RECORD			09/18/2026 - ISSUED FOR BID
SHEET NUMBER	SHEET NAME		
MECHANICAL			
G1-15M-01	MECHANICAL LEGEND, NOTES, AND ABBREVIATIONS	X	
G1-15M-02	MECHANICAL SPECIFICATIONS	X	
G1-15M-03	MECHANICAL DEMOLITION PLAN	X	
G1-15M-04	MECHANICAL CONSTRUCTION PLAN	X	
G1-15M-05	MECHANICAL SCHEDULES AND DETAILS	X	
G1-15M-06	MECHANICAL P&ID	X	

MISCELLANEOUS SYMBOLS LEGEND	
SYMBOL	DESCRIPTION
	POINT OF CONNECTION BETWEEN NEW WORK AND EXISTING WORK
	POINT OF SEPARATION BETWEEN WORK TO BE DEMOLISHED AND WORK TO REMAIN
	EQUIPMENT TAG (REFER TO SCHEDULE)
	DIRECTION OF SECTION SECTION LETTER DRAWING NUMBER WHERE DRAWN AND REFERENCED
	GRILLE, REGISTER, AND DIFFUSER TAG WITH CFM
	KEY NOTE SYMBOL - NEW WORK
	KEY NOTE SYMBOL - DEMO WORK

2001 MAIN STREET, SUITE 202
WHEELING, WV 26003-2855
TEL. 304.232.2764

A.J. SPEICHER
REGISTERED PROFESSIONAL ENGINEER
2609
STATE OF WEST VIRGINIA
9/18/2026

P.E. #26091
STATE: WV

DESIGNED BY:	AK	DRAWN BY:	TJZ	CHECKED BY:	AJS	PROJECT NO.	38010
CHKD & ISSUED BY:		DATE:		REVISION:			
No.							

WHEELING~OHIO~WV

WHEELING WPCD PHASE 4 BOND IMP. WW
WPCD G1 BP07 GENERATOR REPLACEMENT
BOND PACKAGE 2025, AMENDMENT 4
MECHANICAL LEGEND, NOTES, AND ABBREVIATIONS

PROJECT STATUS
ISSUED FOR BID

DATE
09/18/2026

SCALE
AS NOTED

SHEET
G1-15M-01

GENERAL MECHANICAL REQUIREMENTS

1. **SCOPE OF WORK:** PROVIDE ALL WORK INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN.
2. **CONTRACT DOCUMENTS:** DRAWINGS WHICH CONSTITUTE A PART OF THIS CONTRACT INDICATE THE GENERAL ARRANGEMENT OF PIPING, ACCESSORIES, EQUIPMENT, AND OTHER WORK. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO DESCRIBE A COMPLETE AND INTEGRATED SYSTEM. IT IS UNDERSTOOD THAT THE DRAWINGS MAY NOT SHOW EVERY PIPE, VALVE, DAMPER AND DETAIL; HOWEVER, ALL EQUIPMENT AND ACCESSORIES WHICH ARE REASONABLY INFERRABLE FROM THE DRAWINGS AND SPECIFICATIONS AS BEING NECESSARY FOR THE COMPLETION AND PROPER PERFORMANCE OF THE WORK SHALL BE INCLUDED EVEN THOUGH NOT SPECIFICALLY MENTIONED. WHAT IS CALLED FOR ON EITHER THE DRAWINGS OR IN THE SPECIFICATIONS SHALL BE AS BINDING AS IF CALLED FOR ON BOTH. THE INTENT OF THE CONTRACT DOCUMENTS IS FOR CONTRACTOR TO PROVIDE COMPLETE AND OPERABLE SYSTEMS. CONTRACTOR SHALL PROVIDE ALL NECESSARY ANCILLARY DEVICES AND COMPONENTS NECESSARY TO MEET INTENT.
3. **DRAWING INTERPRETATION:** DRAWINGS ARE DIAGRAMATIC AND INDICATE THE GENERAL SIZE AND LOCATION OF WORK. SCALED DIMENSIONS SHALL NOT BE USED. ANY DIMENSIONS NOT SHOWN SHALL BE OBTAINED FROM FIELD MEASUREMENTS BY CONTRACTOR. THE DRAWINGS INDICATE THE LOCATIONS OF EQUIPMENT, DUCTWORK, ETC. AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. IF BEFORE THE INSTALLATION IT IS FOUND NECESSARY TO CHANGE THE LOCATION TO ACCOMMODATE CONDITIONS AT THE BUILDING, SUCH CHANGES SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER. ALL CONFLICTS AND ROUTING SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER.
4. **TRADE COORDINATION:** COORDINATE THE WORK WITH OTHER TRADES PRIOR TO STARTING ANY WORK. PURCHASE OF EQUIPMENT, ETC. CONFER WITH OTHER (SUB)CONTRACTORS WHOSE WORK MIGHT AFFECT THIS INSTALLATION AND ARRANGE ALL PARTS OF THIS WORK AND EQUIPMENT OF OTHERS, WITH THE BUILDING CONSTRUCTION AND WITH ARCHITECTURAL FINISH SO THAT IT WILL HARMONIZE IN SERVICE AND APPEARANCE.
5. **RECORD DRAWINGS:** DURING CONSTRUCTION, CONTRACTOR SHALL MAINTAIN A RECORD SET OF CONTRACT DRAWINGS AND SHALL RECORD ON THIS SET IN COLORED PENCIL OR INK ALL DEVIATIONS FROM THE ORIGINAL IN PIPE, DUCT, OR EQUIPMENT SIZES, LOCATIONS, AND OTHER PERTINENT DETAILS. UPON COMPLETION OF THE WORK, CONTRACTOR SHALL FORWARD THESE MARKED PRINTS TO THE ARCHITECT/ENGINEER FOR REVIEW.
6. **AS-BUILT DOCUMENTATION:** PREPARE AND FURNISH TO THE ENGINEER "REDLINED" COPY OF CONTRACT DRAWINGS TO SERVE AS "AS-BUILT" PLANS FOR ALL WORK INSTALLED. ALONG WITH AS-BUILTS, SUBMIT THREE COPIES OF O&M MANUALS FOR ALL REQUIRED EQUIPMENT AND ACCESSORIES. O&M MANUALS SHALL ALSO INCLUDE TEST AND STARTUP REPORTS FOR POWERED EQUIPMENT AND DOCUMENTATION STATING PRESSURE TESTING OF PIPING SYSTEMS WERE PERFORMED AS REQUIRED. SUBMIT 3 COPIES OF T.A.B. REPORTS AS SPECIFIED.
7. **EXAMINATION OF SITE:** BEFORE SUBMITTING BID PROPOSALS FOR THE WORK, EACH BIDDER SHALL BE REQUIRED TO VISIT THE SITE, CAREFULLY EXAMINE THE PREMISES, EXAMINE THE AREAS AFFECTED BY THIS WORK TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THIS WORK, AND BECOME FAMILIAR WITH ALL EXISTING AND LIMITING CONDITIONS WHICH MAY HAVE BEARING ON THE WORK. DUE ALLOWANCE SHALL BE MADE IN THE BID FOR DIFFICULTIES THAT MAY BE ENCOUNTERED. CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. CONTRACTOR SHALL BE ALLOWED NO EXTRAS OR CHANGE ORDERS ARISING OUT OF FAILURE TO MAKE THE ABOVE EXAMINATION, OR NEGLECTING TO INCLUDE ALL MATERIALS AND LABOR REQUIRED TO COMPLETE THE WORK. SUBMISSION OF A BID PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH EXAMINATION BEEN MADE.
8. **CODES AND PERMITS:** PERFORM ALL WORK IN ACCORDANCE WITH WEST VIRGINIA CODES, LOCAL FIRE MARSHALS, LOCAL CODES, O.S.H.A. AND N.F.P.A. CODES, RULES AND REGULATIONS OF ALL LOCAL, MUNICIPAL, STATE AND FEDERAL AUTHORITIES HAVING JURISDICTION. PROVIDE OWNER WITH CERTIFICATES OF INSPECTION. ALL NECESSARY PERMITS AND APPROVALS REQUIRED FOR THE COMPLETION OF THIS WORK SHALL BE OBTAINED FOR AND PAID FOR BY THIS CONTRACTOR. ALL HVAC WORK UNDER THIS CONTRACT SHALL BE SUBJECT TO ALL PROVISIONS OF THE 2018 INTERNATIONAL PLUMBING CODE, 2018 INTERNATIONAL MECHANICAL CODE, WEST VIRGINIA STATE FIRE CODE, NFPA (LATEST EDITION). ALL ELECTRICAL WORK SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE.
9. **MATERIALS AND EQUIPMENT:** ALL MATERIALS AND EQUIPMENT SHALL BE NEW, THE BEST OF THEIR RESPECTIVE KINDS, AND BE IN THE CONDITIONS AND QUANTITIES SPECIFIED. THE BUILDING EQUIPMENT SHALL BE EXACTLY AS SPECIFIED AND SCHEDULED. SUBSTITUTIONS WILL ONLY BE ALLOWED IF THE EQUIPMENT SPECIFIED CANNOT BE SUPPLIED BY THE CONTRACTOR DUE TO CONDITIONS BEYOND THE CONTROL OF THE CONTRACTOR.
10. **SHOP DRAWINGS AND SUBMITTALS:** SUBMIT SHOP DRAWINGS AND PRODUCT LITERATURE TO THE ENGINEER FOR REVIEW. COMMENTS: SUBMIT ONE (1) ELECTRONIC COPY FOR REVIEW IN PDF FORMAT. PROVIDE SUBMITTALS FOR ALL EQUIPMENT SCHEDULED, TAB AND COMMISSIONING REPORTS, UL FIRESTOPPING ASSEMBLIES AND PRODUCTS TO BE USED, PIPE INSULATION, PIPE ROUTING, AND DUCTWORK ROUTING. FURNISH CATALOG DATA, DIMENSIONAL DATA, PERFORMANCE SPECIFICATIONS, ETC., IN SUFFICIENT DETAIL TO PROPERLY IDENTIFY AND JUDGE EACH ITEM. EACH ITEM OR PIECE OF EQUIPMENT PROPOSED SHALL BE A STANDARD PRODUCT OF THE APPROVED MANUFACTURER.
11. **SUBSTITUTION REQUIREMENTS:** PRODUCTS AND MATERIALS DESCRIBED BY BRAND NAME AND/OR MODEL NUMBER ARE TO ESTABLISH A STANDARD OF QUALITY AND ARE MEANT TO BE RESTRICTIVE. PRODUCTS AND MATERIAL OF EQUAL QUALITY AND CAPACITY WILL BE ACCEPTABLE ONLY UPON APPROVAL OF THE ARCHITECT/ENGINEER AS EQUAL PRIOR TO BID SUBMISSION. THIS STANDARD OF QUALITY WILL INCLUDE PERFORMANCE, CONFIGURATION, SIZE, CONSTRUCTION, CAPACITY, ACCESS, EASE OF SERVICE AND MAINTENANCE, AVAILABILITY OF REPAIR PARTS, WARRANTIES AND GUARANTEES. COORDINATION OF ALL INSTALLATION ASPECTS OF ANY SUBSTITUTIONS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR, INCLUDING BUT NOT LIMITED TO FIT, CONNECTIONS, MAINTENANCE CLEARANCES, STRUCTURAL SUPPORT, POWER, CONTROLS, DRAIN REQUIREMENTS, ETC.
12. **GUARANTEE/WARRANTY:** THE MATERIALS, EQUIPMENT, AND SYSTEMS FURNISHED UNDER THIS PROJECT SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE THEREOF, AGAINST ANY DEFECTS OF MATERIAL, DESIGN, WORKMANSHIP AND/OR OPERATION. ANY MATERIAL OR EQUIPMENT COMPRISING A PART OF ANY SYSTEM, WHICH SHALL DEVELOP ANY DEFECT DURING THE GUARANTEE PERIOD, SHALL BE REPLACED OR REPAIRED IN A MANNER SATISFACTORY TO THE OWNER BY THE CONTRACTOR AT THEIR OWN EXPENSE. CONTRACTOR SHALL TURN OVER TO THE OWNER ALL WARRANTIES AND GUARANTEES UPON COMPLETION AND FINAL ACCEPTANCE OF PROJECT.
13. **OPERATING AND MAINTENANCE MANUALS:** CONTRACTOR SHALL SUBMIT OPERATING AND MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT FURNISHED BY THE CONTRACTOR. THE FINAL JOB ACCEPTANCE DATE SHALL BE THE DATE STAMPED ON THE OPERATING AND MAINTENANCE INSTRUCTIONS AND THE GUARANTEE PERIOD SHALL EXTEND FROM THAT DATE.
14. **HANGERS AND SUPPORTS:** UNLESS SPECIFICALLY NOTED OTHERWISE, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY HANGERS, INSERTS, SUPPORTS, SUPPLEMENTARY STEEL, MISCELLANEOUS STRUCTURAL STEEL, RODS AND HANGERS, MATERIALS, ETC. REQUIRED TO PROPERLY SUPPORT ALL EQUIPMENT AND PIPING IN AN APPROVED MANNER AND IN FULL ACCORDANCE WITH THE MANUFACTURERS' RECOMMENDATIONS. USE APPROVED CLAMPING OR FASTENING DEVICES AT ALL LOCATIONS OF STEEL BEAMS, LONG SPAN TRUSSES AND OPEN BAR JOISTS. CLAMPS SHALL BE OF THE TYPE THAT WILL NOT BE LOOSEEN BY VIBRATION. WHERE SUPPORTS CANNOT BE ATTACHED DIRECTLY TO STRUCTURAL MEMBERS, PROVIDE INTERMEDIATE SUPPORTS SECURELY CLAMPED OR WELDED TO STRUCTURAL MEMBERS. ALL WORK SHALL BE PERFORMED BY SKILLED WORKERS OF TRADES INVOLVED.
15. **EQUIPMENT INSTALLATION AND CONNECTIONS:** INSTALL ALL EQUIPMENT AND WORK IN A PROFESSIONAL AND WORKMANLIKE MANNER IN ACCORDANCE WITH THE BEST ENGINEERING PRACTICES AND IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS AND RECOMMENDATIONS USING MECHANICS SKILLED IN THE TRADE INVOLVED. AUXILIARY PIPING, VALVES, AND ELECTRIC CONNECTIONS RECOMMENDED BY THE MANUFACTURER OR REQUIRED FOR PROPER OPERATION SHALL BE PROVIDED. ALL DETAILS OF THE INSTALLATION SHALL BE MECHANICALLY CORRECT.
16. **CUTTING AND PATCHING:** CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING AND SHALL RESTORE ALL SPACES TO ORIGINAL CONDITIONS AS REQUIRED.
17. **FIRESTOPPING:** PROVIDE FIRE STOPPING FOR ALL "FIRE-RESISTANCE-RATED ASSEMBLIES," INCLUDING BOTH EMPTY OPENINGS AND OPENINGS CONTAINING PENETRATING ITEMS IN FLOORS, WALLS, AND PARTITIONS. SLEEVE AND FIRE STOP ALL PENETRATIONS THROUGH FLOORS AND CORRIDOR WALLS, RATED AND NON-RATED, WHETHER SHOWN ON THE DRAWINGS OR NOT.
18. **TESTING AND ADJUSTING:** ALL ASPECTS OF THE WORK AND ASSOCIATED EQUIPMENT SHALL BE TESTED AND ADJUSTED TO WORK PROPERLY AND BE LEFT IN PERFECT OPERATING CONDITION AT COMPLETION OF WORK.
19. **PAINTING AND FINISHES:** THE CONTRACTOR SHALL BE RESPONSIBLE FOR TOUCH UP TO FACTORY PAINTED FINISHES AND PRIMING OF BARE FERROUS COMPONENTS IN UNFINISHED AREAS.
20. **FLEXIBLE CONNECTIONS:** PROVIDE FLEXIBLE CONNECTIONS IN ALL PIPING SYSTEMS (SUPPLY AND RETURN) CONNECTED TO PUMPS AND OTHER EQUIPMENT. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.
21. **ASSET DOCUMENTATION AND TRAINING:** CONTRACTOR SHALL PROVIDE AN EQUIPMENT ASSET LIST WITH TAGS, MODELS, SERIAL NUMBERS, LOCATIONS AND FILTER SIZES; ALL MANUFACTURER RECOMMENDED SPARE PARTS, INCLUDING A FULL SET OF FILTERS. IN ADDITION PROVIDE ROLE SPECIFIC TRAINING FOR BUILDING OPERATORS/MANAGERS AND MAINTENANCE STAFF. RECORD AND RETAINED, AND A COMPLETE BUILDING SYSTEMS OPERATIONS MANUAL (I.E. SINGLE SOURCE OF INFORMATION FOR ALL MECHANICAL SYSTEMS & EQUIPMENT SERVING THE BUILDING(S), COORDINATED WITH THE COMMISSIONING SPECIFICATION.

MECHANICAL IDENTIFICATION FOR PIPING, VALVES, AND RELATED ITEMS

1. **GENERAL:**
- A. PROVIDE A COMPLETE DIESEL FUEL PIPING SYSTEM INCLUDING SUPPLY, RETURN, FILL, VENT, OVERFLOW, DRAIN, VALVES, FITTINGS, SUPPORTS, FLEXIBLE CONNECTORS, STRAINERS, GAUGES, SAFETY DEVICES, LEAK DETECTION, IDENTIFICATION, TESTING, FLUSHING, AND STARTUP.
- B. PROVIDE MATERIALS AND EQUIPMENT SUITABLE FOR DIESEL FUEL AND RATED FOR SYSTEM PRESSURE, TEMPERATURE, AND SERVICE CONDITIONS.
- C. COORDINATE PIPING AND ACCESSORIES WITH FUEL TANKS, DAY TANKS, TRANSFER PUMPS, GENERATORS, CONTROLS, AND EQUIPMENT MANUFACTURER REQUIREMENTS.
- D. SUBMIT PRODUCT DATA AND A COORDINATED FUEL-SYSTEM SCHEMATIC SHOWING PIPE SIZES, FLOW DIRECTION, VALVES, PUMPS, TANKS, SAFETY DEVICES, AND NORMAL VALVE POSITIONS.
2. **SUBMITTALS:** SUBMIT LIST OF WORDING, SYMBOLS, LETTER SIZE, DIRECTIONAL, INDICATION AND COLOR CODING FOR MECHANICAL IDENTIFICATION IN ACCORDANCE WITH ASME A13.1 - SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS. SUBMIT EQUIPMENT, PIPING AND VALVE CHART, AND SCHEDULE, INCLUDING TAG TYPE, TAG NUMBER, LOCATION, FUNCTION, AND MANUFACTURER'S NAME AND MODEL NUMBER.
3. **QUALIFICATIONS:** COMPANY SPECIALIZING IN MANUFACTURING PRODUCTS SPECIFIED IN THIS SECTION WILL BE REQUIRED TO HAVE RELEVANT EXPERIENCE. INSTALLATION SPECIALIZING IN PERFORMING WORK OF THIS SECTION WITH MINIMUM FIVE YEARS' EXPERIENCE.
4. **PRODUCTS:**
- A. **PLASTIC TAGS:** LAMINATED THREE-LAYER PLASTIC WITH ENGRAVED BLACK LETTERS ON LIGHT CONTRASTING BACKGROUND COLOR. TAG SIZE MINIMUM 1-1/2 INCHES DIAMETER.
- B. **TAG CHART:** TYPEWRITTEN LETTER SIZE LIST OF APPLIED TAGS AND LOCATION (PLASTIC LAMINATED).
- C. **PIPE MARKERS:** FLEXIBLE, VINYL FILM TAPE WITH PRESSURE SENSITIVE ADHESIVE BACKING AND PRINTED MARKINGS.
- D. **VALVE TAGS:** BRASS WITH STAMPED LETTERS; TAG SIZE MINIMUM 1-1/2 INCHES DIAMETER WITH FINISHED EDGES.
- E. **EQUIPMENT LABELS:** ALUMINUM, SIZE 1.9 X 0.75 INCHES, ADHESIVE BACKED WITH PRINTED IDENTIFICATION.
5. **EXECUTION:**
- A. **PREPARATION:** DEGREASE AND CLEAN SURFACES TO RECEIVE ADHESIVE FOR IDENTIFICATION MATERIALS.
- B. **INSTALLATION:**
- a. INSTALL IDENTIFYING DEVICES AFTER COMPLETION OF COVERINGS AND PAINTING.
- b. INSTALL PLASTIC NAMEPLATES WITH CORROSION-RESISTANT MECHANICAL FASTENERS, OR ADHESIVE.
- c. INSTALL LABELS WITH SUFFICIENT ADHESIVE FOR PERMANENT ADHESION AND SEAL WITH CLEAR LAQUER.
- C. **TAG INSTALLATION:** INSTALL TAGS USING CORROSION RESISTANT CHAIN. NUMBER TAGS CONSECUTIVELY BY LOCATION.
- D. **PIPE IDENTIFICATION:** IDENTIFY PIPING, CONCEALED OR EXPOSED, WITH PLASTIC PIPE MARKERS. USE TAGSON PIPING 3/4 INCH DIAMETER AND SMALLER. IDENTIFY SERVICE, FLOW, LOCATION, AND PRESSURE. INSTALL IN CLEAR VIEW AND ALIGN WITH AXIS OF PIPING. LOCATE IDENTIFICATION NOT TO EXCEED 20 FEET ON STRAIGHT RUNS INCLUDING RISERS AND DROPS, ADJACENT TO EACH VALVE AND AT EACH SIDE OF PENETRATION OF STRUCTURE OR ENCLOSURE, AND AT EACH OBSTRUCTION.
- E. **CONTROL SYSTEM IDENTIFICATION:** IDENTIFY CONTROL PANELS AND MAJOR CONTROL COMPONENTS OUTSIDE PANELS WITH PLASTIC NAMEPLATES. TAG AUTOMATIC CONTROLS, INSTRUMENTS, AND RELAYS. KEY TO CONTROL SCHEMATIC.
- F. **VALVE IDENTIFICATION:** IDENTIFY VALVES IN MAIN AND BRANCH PIPING WITH TAGS.
6. **PIPING MATERIALS:**
- A. ABOVEGROUND PIPING: ASTM A53 GRADE B OR ASTM A106 GRADE B, SCHEDULE 40 BLACK CARBON-STEEL PIPE, PROVIDE SCHEDULE 80 FOR THREADED NIPPLES AND PIPING EXPOSED TO PHYSICAL DAMAGE.
- B. CONCEALED, BELOW-FLOOR, AND UNDERGROUND PIPING: LISTED DOUBLE-WALL PIPING SYSTEM, RATED FOR DIESEL FUEL SERVICE, WITH CONTINUOUS SECONDARY CONTAINMENT AND ACCESSIBLE LEAK MONITORING POINTS.
- C. DO NOT USE GALVANIZED STEEL, COPPER TUBING, PVC, CPVC, OR UNLISTED NONMETALLIC PIPING UNLESS SPECIFICALLY APPROVED BY THE ENGINEER AND EQUIPMENT MANUFACTURERS.
- D. DO NOT INSTALL CONCEALED THREADED JOINTS. USE WELDED STEEL JOINTS OR LISTED JOINTS FURNISHED AS PART OF THE DOUBLE-WALL PIPING SYSTEM.
7. **FITTINGS AND JOINTS:**
- A. THREADED FITTINGS: FORGED CARBON STEEL, CLASS 2000 MINIMUM.
- B. WELDED FITTINGS: ASTM A234 GRADE WPB, MATCHING PIPE SCHEDULE.
- C. FLANGES: ASTM A106 FORGED CARBON STEEL, CLASS 150 MINIMUM, WITH DIESEL-RESISTANT GASKETS AND BOLTING.
- D. THREAD-JOINT COMPOUND SHALL BE NONHARDENING AND SPECIFICALLY RATED FOR PETROLEUM FUEL. DO NOT USE PTFE TAPE AS THE SOLE SEALANT.
8. **VALVES:**
- A. ISOLATION VALVES: FULL-PORT BALL VALVES WITH CARBON-STEEL OR BRONZE BODIES, STAINLESS-STEEL BALL AND STEM, DIESEL-COMPATIBLE SEATS AND SEALS, BLOWOUT-PROOF AND SHOCK-RESISTANT HANDLE.
- B. CHECK VALVES: SPRING-LOADED, NON-SLAM TYPE WITH BRONZE OR CARBON-STEEL BODY, STAINLESS-STEEL TRIM, AND DIESEL-COMPATIBLE SEAT.
- C. PROVIDE LISTED ANTISIPHON VALVES WHERE TANK ELEVATION OR PIPING ARRANGEMENT COULD PERMIT GRAVITY SIPHONING. SELECT VALVE SETTING FOR ACTUAL STATIC HEAD AND DISCHARGE CAPABILITY.
- D. PROVIDE NORMALLY CLOSED EMERGENCY FUEL SHUTOFF VALVES WHERE INDICATED OR REQUIRED BY EQUIPMENT CONTROLS. COORDINATE REMOTE SHUTDOWN WITH GENERATOR EMERGENCY-STOP SEQUENCE.
- E. PROVIDE PRESSURE-RELIEF OR BYPASS VALVES FOR POSITIVE-DISPLACEMENT PUMPS AND THERMAL-RELIEF VALVES WHERE LIQUID CAN BE TRAPPED BETWEEN CLOSED VALVES. PIPE DISCHARGE TO AN APPROVED TANK OR RETURN CONNECTION.
9. **ACCESSORIES:**
- A. PROVIDE STRAINERS UPSTREAM OF TRANSFER PUMPS. USE DUPLEX STRAINERS WHERE UNINTERRUPTED OPERATION IS REQUIRED; OTHERWISE PROVIDE SIMPLEX BASKET OR Y-STRAINERS RECOMMENDED BY THE PUMP MANUFACTURER.
- B. PROVIDE PRESSURE GAUGES AT PUMP DISCHARGE AND COMPOUND GAUGES AT PUMP SUCTION WHERE REQUIRED. INCLUDE GAUGE ISOLATION VALVES AND PULSATION SNUBBERS.
- C. PROVIDE LISTED METALLIC FLEXIBLE CONNECTORS AT PUMPS, GENERATORS, AND VIBRATION-PRODUCING EQUIPMENT. FLEXIBLE CONNECTORS SHALL NOT BE USED TO CORRECT PIPING MISALIGNMENT.
- D. PROVIDE CAPPED DRAIN AND SAMPLING VALVES AT ACCESSIBLE LOW POINTS AND CAPPED MANUAL VENTS AT HIGH POINTS WHERE REQUIRED.
- E. PROVIDE A LEAK DETECTION SYSTEM FOR THE DOUBLE-WALL FUEL TANKS. THE SYSTEM SHALL INCLUDE ALARM RELAYS FOR INTERFACE TO THE GENERATOR FUEL PUMP CONTROL PANEL AND THE WWTP PLC/3 PANEL.
- F. PROVIDE WATER-TIGHT, FUEL-RESISTANT SLEEVES AND SEALS AT WALLS, FLOORS, SUMPS, AND CONTAINMENT TRANSITIONS.
- G. PROVIDE PIPE MARKERS WITH SERVICE IDENTIFICATION AND FLOW ARROWS. TAG VALVES AND COORDINATE TAG NUMBERS WITH THE FUEL-SYSTEM SCHEMATIC.
10. **INSTALLATION:**
- A. INSTALL PIPING NEATLY, SECURELY, AND INDEPENDENTLY SUPPORTED FROM TANKS AND EQUIPMENT. ARRANGE AIR POCKETS, UNWANTED TRAPS, UNCONTROLLED SIPHONING, AND STRAIN ON EQUIPMENT CONNECTIONS.
- B. USE WELDED JOINTS FOR CONCEALED CARBON-STEEL PIPING AND FOR PIPING LARGER THAN 2 INCHES. LIMIT THREADED JOINTS TO PIPING 2 INCHES AND SMALLER IN ACCESSIBLE LOCATIONS.
- C. PROVIDE UNIONS OR FLANGES AT EQUIPMENT, PUMPS, STRAINERS, VALVES REQUIRING REMOVAL, AND OTHER SERVICEABLE COMPONENTS.
- D. KEEP PIPING CLEAN AND CAPPED DURING CONSTRUCTION. REMOVE DEBRIS, CUTTING OIL, WELD SLAG, WATER, AND FOREIGN MATERIAL BEFORE CONNECTION TO EQUIPMENT.
- E. PROTECT EXTERIOR STEEL PIPING FROM CORROSION AND PHYSICAL DAMAGE. INSTALL UNDERGROUND AND DOUBLE-WALL PIPING IN ACCORDANCE WITH THE PIPING-SYSTEM MANUFACTURER INSTRUCTIONS.
11. **TESTING AND STARTUP:**
- A. TEST PRIMARY METALLIC PIPING AT 1.5 TIMES MAXIMUM OPERATING PRESSURE, BUT NOT LESS THAN 5 PSIG, FOR 2 HOURS OR AS REQUIRED BY THE EQUIPMENT MANUFACTURER. TEST WITH A COMPATIBLE LIQUID OR INERT GAS APPROVED FOR THE INSTALLATION. REPAIR LEAKS AND RETEST.
- B. TEST SECONDARY CONTAINMENT AND LEAK-DETECTION SYSTEMS IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS BEFORE PIPING IS CONCEALED.
- C. FLUSH PIPING WITH CLEAN DIESEL FUEL OR APPROVED FLUSHING LIQUID UNTIL FREE OF DEBRIS. CLEAN STRAINERS AND REPLACE FILTER ELEMENTS AFTER FLUSHING.
- D. DEMONSTRATE PUMP OPERATION, AUTOMATIC DAY-TANK FILLING, VALVE OPERATION, HIGH- AND LOW-LEVEL ALARMS, LEAK ALARM, EMERGENCY SHUTDOWN, AND CONTROL-SYSTEM INTERFACES.
- E. SUBMIT FINAL TEST REPORTS, STARTUP RECORDS, VALVE-POSITION SCHEDULE, AND AS-BUILT FUEL-SYSTEM SCHEMATIC.

900-GALLON MAIN DIESEL FUEL STORAGE TANK

1. **GENERAL:**
- A. PROVIDE ONE COMPLETE 900-GALLON ABOVEGROUND MAIN DIESEL FUEL STORAGE TANK INCLUDING TANK, SECONDARY CONTAINMENT, CONNECTIONS, ACCESSORIES, LEVEL MONITORING, FUEL TRANSFER CONTROLS, AND ALL COMPONENTS REQUIRED FOR A COMPLETE OPERATING SYSTEM.
- B. TANK SHALL BE USED AS THE MAIN STORAGE TANK SERVING THE GENERATOR DAY TANKS. REFERENCES TO "DAY TANK" IN THE BASIS-OF-DESIGN PRODUCT INFORMATION SHALL BE INTERPRETED AS "900-GALLON MAIN DIESEL FUEL STORAGE TANK" FOR THIS APPLICATION.
- C. TANK AND ACCESSORIES SHALL BE SUITABLE FOR DIESEL FUEL AND FOR THE INSTALLED OUTDOOR SERVICE CONDITIONS.
- D. SUBMIT PRODUCT DATA, DIMENSIONED SHOP DRAWINGS, TANK CAPACITY, CONNECTION SIZES AND LOCATIONS, ACCESSORY LIST, CONTROL PANEL DATA, WIRING DIAGRAMS, INSTALLATION INSTRUCTIONS, AND OPERATION AND MAINTENANCE MANUALS.
- E. COORDINATE FINAL TANK DIMENSIONS, OPERATING WEIGHT, ANCHORAGE, HOUSEKEEPING PAD, BOLLARDS, FILL CONNECTION, VENT TERMINATION, PIPING, POWER, AND CONTROL CONNECTIONS WITH THE DRAWINGS AND OTHER TRADES.
2. **TANK CONSTRUCTION:**
- A. TANK SHALL BE FACTORY-FABRICATED, UL 142 LISTED, DOUBLE-WALL STEEL CONSTRUCTION WITH INTEGRAL SECONDARY CONTAINMENT, AND MEANS TO MONITOR THE INTERSTITIAL SPACE FOR LEAKAGE.
- B. PROVIDE FACTORY-FINISHED EXTERIOR COATING SUITABLE FOR OUTDOOR INSTALLATION AND DIESEL FUEL SERVICE.
- C. PROVIDE FACTORY-INSTALLED LIFTING LUGS, SUPPORTS, CONNECTIONS, OPENINGS, AND ACCESSORIES REQUIRED FOR HANDLING, INSTALLATION, OPERATION, INSPECTION, AND MAINTENANCE.
- D. PROVIDE TANK NAMEPLATE IDENTIFYING MANUFACTURER, MODEL, SERIAL NUMBER, CAPACITY, LISTING, AND OTHER REQUIRED RATINGS INFORMATION.
3. **TANK CONNECTIONS AND ACCESSORIES:**
- A. PROVIDE FILL, SUPPLY, RETURN, NORMAL VENT, EMERGENCY VENT, DRAIN, LEVEL-SENSING, AND INTERSTITIAL MONITORING CONNECTIONS AS REQUIRED FOR THE COMPLETE SYSTEM.
- B. PROVIDE FILL ASSEMBLY, VENT DEVICES, CAPS, ADAPTERS, WEATHERPROOF FITTINGS, AND OTHER ACCESSORIES REQUIRED FOR SAFE TANK FILLING AND OPERATION.
- C. PROVIDE LOCAL TANK LEVEL INDICATION AND CONTINUOUS ELECTRONIC LEVEL SENSING FOR REMOTE MONITORING.
- D. PROVIDE LOW-LEVEL ALARM SETPOINT FOR OWNER NOTIFICATION AND FUEL DELIVERY SCHEDULING.
- E. CONNECTION SIZES AND LOCATIONS SHALL BE COORDINATED WITH THE APPROVED FUEL PIPING LAYOUT AND MANUFACTURER SHOP DRAWINGS.
- F. PROVIDE OVERFLOW FUEL OIL RETURN PIPING FROM EACH GENERATOR DAY TANK TO THE 900-GALLON MAIN DIESEL FUEL STORAGE TANK. SLOPE PIPING CONTINUOUSLY TOWARD THE MAIN STORAGE TANK AT A MINIMUM OF 1/8 INCH PER FOOT. INSTALL PIPING WITHOUT TRAPS, HIGH POINTS, OR OTHER OBSTRUCTIONS TO GRAVITY FLOW.
4. **INSTALLATION AND TESTING:**
- A. INSTALL TANK, ACCESSORIES, AND CONTROL PANEL IN ACCORDANCE WITH APPROVED SHOP DRAWINGS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- B. SET TANK LEVEL, PLUMB, AND SECURELY ANCHOR TO THE SUPPORTING CONCRETE PAD. COORDINATE ANCHORAGE WITH STRUCTURAL REQUIREMENTS.
- C. MAINTAIN REQUIRED ACCESS, SERVICE CLEARANCES, WORKING CLEARANCE AT CONTROL PANEL, AND CLEARANCE FOR FILLING, VENTING, INSPECTION, AND MAINTENANCE.
- D. TEST TANK, INTERSTITIAL SPACE, PIPING CONNECTIONS, VENT DEVICES, ALARMS, TRANSFER PUMP CONTROLS, AND PLC/SCADA SIGNALS. CORRECT LEAKS AND DEFICIENCIES BEFORE ACCEPTANCE.
- E. DEMONSTRATE AUTOMATIC START AND STOP OF EACH TRANSFER PUMP, MAIN-TANK LOW-LEVEL ALARM, SYSTEM RUNNING SIGNAL, SYSTEM FAULT SIGNAL, AND MAIN-TANK LEVEL SIGNAL.
- F. PROVIDE MANUFACTURER STARTUP, ADJUSTMENT, AND OWNER INSTRUCTION FOR THE COMPLETE FUEL STORAGE AND TRANSFER SYSTEM.

200-GALLON DAY TANK

1. PROVIDE FACTORY-FABRICATED, UL-LISTED, DOUBLE-WALL DIESEL FUEL DAY TANK WITH 200-GALLON CAPACITY. TANK SHALL BE STEEL CONSTRUCTION WITH INTEGRAL SECONDARY CONTAINMENT AND LEAK MONITORING CAPABILITY. TANK SHALL BE APPROVED ABOVEGROUND STORAGE OF FLAMMABLE LIQUIDS.
2. PROVIDE INTERNAL EPOXY COATING, REMOVABLE 5-INCH ROUND INSPECTION PLATE WITH VITON SEAL, THREADED PIPE CONNECTIONS, FUEL LEVEL GAUGE, HEAVY-DUTY FLOAT SWITCH, TANK DRAIN CONNECTION, REMOVABLE TOP COVER, PRESS-TO-TEST SWITCH.
3. PROVIDE HIGH FUEL LEVEL, LOW FUEL LEVEL ALARMS. PROVIDE LOCAL VISUAL INDICATION AND DRY CONTACTS RATED FOR CONNECTION TO REMOTE MONITORING DEVICES UP TO 3 AMPS.
4. PROVIDE DOUBLE-WALL TANK INTERSTITIAL LEAK DETECTOR. UPON DETECTION OF A LEAK, THE DETECTOR SHALL ACTIVATE A LOCAL RED ALARM LIGHT AND STOP THE PUMP MOTORS.
5. TANK MANUFACTURER SHALL PRESSURE TEST THE INNER AND OUTER TANKS TO 5 PSI. INNER AND OUTER TANKS SHALL BE SEPARATELY VENTED. PIPE THE INNER-TANK OVERFLOW AND DRAIN CONNECTIONS THROUGH THE OUTER TANK.
6. BASIS OF DESIGN: PRYCG MODEL PY200LDW, 200-GALLON DOUBLE-WALL DAY TANK, OR APPROVED EQUAL.
7. COORDINATE ALARM POINTS, SHUTDOWN FUNCTIONS, ELECTRICAL REQUIREMENTS, AND REMOTE MONITORING CONNECTIONS WITH THE GENERATOR MANUFACTURER, GENERATOR CONTROL PANEL, AND PROJECT ELECTRICAL DRAWINGS.

AUTOMATIC FUEL TRANSFER CONTROLS

1. PROVIDE A VENDOR-SUPPLIED FUEL PUMP CONTROL PANEL FOR A COMPLETE AUTOMATIC SYSTEM TO TRANSFER FUEL FROM THE 900-GALLON MAIN TANK TO BOTH GENERATOR DAY TANKS. REFER TO 33000 - GENERATOR FUEL PUMP CONTROL PANEL SPECIFICATION.
2. PROVIDE SIGNALS FROM THE GENERATOR FUEL PUMP CONTROL PANEL TO THE PLC/3 PANEL FOR MAIN TANK LEVEL, LOW MAIN TANK FUEL LEVEL ALARM, SYSTEM RUNNING, AND SYSTEM FAULT. REFER TO DWG G1-15I-01 FOR GENERAL LOCATION AND NOTES.

GENERATOR EXHAUST SYSTEM

1. **PRODUCTS**
- A. EXHAUST PIPING SHALL BE WELDED CARBON STEEL, SCHEDULE 40 BLACK STEEL, ASTM A53 GRADE B.
- B. EXHAUST PIPING FITTINGS SHALL BE STANDARD WEIGHT, BUTT-WELDED FORGED STEEL FITTINGS.
- C. EXHAUST PIPING EXPOSED TO WEATHER SHALL RECEIVE HIGH-TEMPERATURE ALUMINUM WEATHER JACKET OVER INSULATION.
- D. PROVIDE STAINLESS STEEL FLEXIBLE EXHAUST CONNECTOR AT GENERATOR EXHAUST OUTLET.
- E. PROVIDE CRITICAL-GRADE EXHAUST SILENCER FURNISHED BY GENERATOR MANUFACTURER AND SIZED FOR GENERATOR FULL-LOAD OPERATION. SILENCER SHALL MATCH GENERATOR EXHAUST CONNECTION SIZE AND MAINTAIN ENGINE BACKPRESSURE WITHIN MANUFACTURER LIMITS.
- F. PROVIDE COMPANION FLANGES, GASKETS, BOLTS, ANCHORS, SUPPORTS, GUIDES, EXPANSION PROVISIONS, CONDENSATE DRAIN FITTINGS, AND ALL ACCESSORIES REQUIRED FOR A COMPLETE OPERATING SYSTEM.
2. **INSULATION**
- A. INSULATE ALL INTERIOR EXHAUST PIPING, SILENCER, FITTINGS, AND ACCESSORIES WITH 2-INCH THICK MINERAL WOOL INSULATION RATED FOR EXHAUST SERVICE TEMPERATURES.
- B. PROVIDE ALUMINUM JACKET FOR INTERIOR EXPOSED PIPING AND WEATHERPROOF ALUMINUM JACKET FOR EXTERIOR PIPING.
- C. SURFACE TEMPERATURE OF INSULATED COMPONENTS SHALL NOT EXCEED 140 DEGREES F UNDER FULL-LOAD OPERATION.
3. **INSTALLATION**
- A. INSTALL EXHAUST SYSTEM IN ACCORDANCE WITH GENERATOR MANUFACTURER'S RECOMMENDATIONS AND NFPA 37 REQUIREMENTS.
- B. ROUTE EXHAUST PIPING TO MAINTAIN POSITIVE DRAINAGE AWAY FROM ENGINE.
- C. PROVIDE CONDENSATE DRAIN POCKET WITH THREADED CAP AT LOWEST POINT OF SYSTEM.
- D. SUPPORT PIPING INDEPENDENTLY OF GENERATOR, NO PIPING LOADS SHALL BE TRANSMITTED TO GENERATOR EXHAUST MANIFOLD.
- E. PROVIDE EXPANSION JOINTS, FLEXIBLE CONNECTORS, OR OFFSETS AS REQUIRED TO ACCOMMODATE THERMAL EXPANSION.
- F. INSTALL PIPING TO MAINTAIN GENERATOR MANUFACTURER'S MAXIMUM ALLOWABLE EXHAUST BACKPRESSURE OF 2.9 INCHES HG. CONTRACTOR SHALL CALCULATE AND VERIFY TOTAL SYSTEM BACKPRESSURE AND SUBMIT CALCULATIONS FOR REVIEW.
- G. TERMINATE EXHAUST DISCHARGE ABOVE ROOF WITH RAIN CAP AND WEATHER PROTECTION ASSEMBLY.
- H. EXISTING ROOF PENETRATIONS MAY BE REUSED WHERE INDICATED. REPAIR ROOFING AND FLASHING AROUND PENETRATIONS TO MAINTAIN WATERTIGHT CONDITIONS.

GENERATOR FLEXIBLE FUEL CONNECTIONS

1. **GENERAL**
- A. **SUMMARY**
- a. PROVIDE FLEXIBLE FUEL CONNECTORS AT DIESEL GENERATOR FUEL SUPPLY CONNECTIONS.
- b. FLEXIBLE CONNECTORS SHALL ACCOMMODATE NORMAL ENGINE VIBRATION AND MINOR THERMAL MOVEMENT WHILE MAINTAINING A LEAK-FREE FUEL SYSTEM.
2. **PRODUCTS**
- A. **FLEXIBLE CONNECTORS**
- a. PROVIDE LISTED METALLIC FLEXIBLE CONNECTOR ASSEMBLIES SUITABLE FOR DIESEL FUEL SERVICE AND RATED FOR THE OPERATING PRESSURE AND TEMPERATURE OF THE SYSTEM.
- b. CONNECTOR CONSTRUCTION SHALL CONSIST OF STAINLESS-STEEL BRAIDED HOSE WITH WETTED MATERIALS COMPATIBLE WITH DIESEL FUEL.
- c. SIZE FLEXIBLE CONNECTORS THE SAME AS THE CONNECTED PIPING UNLESS OTHERWISE REQUIRED BY THE GENERATOR MANUFACTURER.
- d. PROVIDE THREADED, FLANGED, OR OTHER END CONNECTIONS COMPATIBLE WITH THE CONNECTED PIPING AND GENERATOR CONNECTIONS.
3. **EXECUTION**
- A. **INSTALLATION**
- a. INSTALL FLEXIBLE CONNECTORS AT GENERATOR FUEL SUPPLY CONNECTIONS.
- b. INSTALL CONNECTORS IN ACCORDANCE WITH THE CONNECTOR AND GENERATOR MANUFACTURERS' WRITTEN INSTRUCTIONS.
- c. SUPPORT FUEL PIPING INDEPENDENTLY OF THE GENERATOR, PUMPS, TANKS, AND OTHER EQUIPMENT. DO NOT IMPOSE PIPING WEIGHT OR LOADS ON FLEXIBLE CONNECTORS OR GENERATOR CONNECTIONS.
- d. DO NOT USE FLEXIBLE CONNECTORS TO CORRECT PIPING MISALIGNMENT. ALIGN PIPING BEFORE INSTALLING CONNECTORS.
- e. PROVIDE FULL-PORT ISOLATION VALVES AND UNIONS OR SERVICE CONNECTIONS ADJACENT TO FLEXIBLE CONNECTORS WHERE INDICATED FOR SERVICE AND MAINTENANCE.
- f. INSTALL CONNECTORS WITHOUT TWISTING, STRETCHING, KINKING, OR EXCEEDING THE MANUFACTURER'S MINIMUM BEND RADIUS.
- B. **FIELD QUALITY CONTROL**
- a. INSPECT AND TEST COMPLETED CONNECTIONS FOR LEAKAGE AS PART OF THE DIESEL FUEL PIPING SYSTEM TESTING.
- b. REPLACE DAMAGED, LEAKING, OR IMPROPERLY INSTALLED FLEXIBLE CONNECTORS.

WHEELING-OHIO-WV

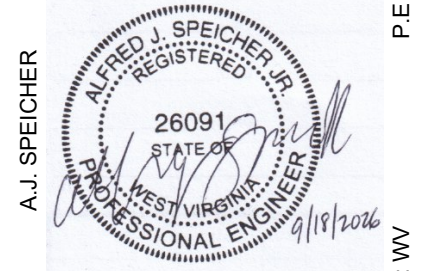
WHEELING WPCD PHASE 4 BOND IMP. WW

WPCD G1 BP07 GENERATOR REPLACEMENT

BOND PACKAGE 2025, AMENDMENT 4

MECHANICAL SPECIFICATIONS

PROJECT STATUS	ISSUED FOR BID
DATE	09/18/2026
SCALE	AS NOTED
SHEET	G1-15M-02



DESIGNED BY:	AK	DRAWN BY:	TJZ	CHECKED BY:	AJS	PROJECT NO.	38010
CHKD & ISSUED BY:		DATE		REVISION		No.	
ISSUED FOR BID							

2001 MAIN STREET, SUITE 202
WHEELING, WV 26003-2855
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P.E. #26091
STATE: WV

MECHANICAL DEMOLITION PLAN

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

MECHANICAL DEMOLITION NOTES - GENERAL

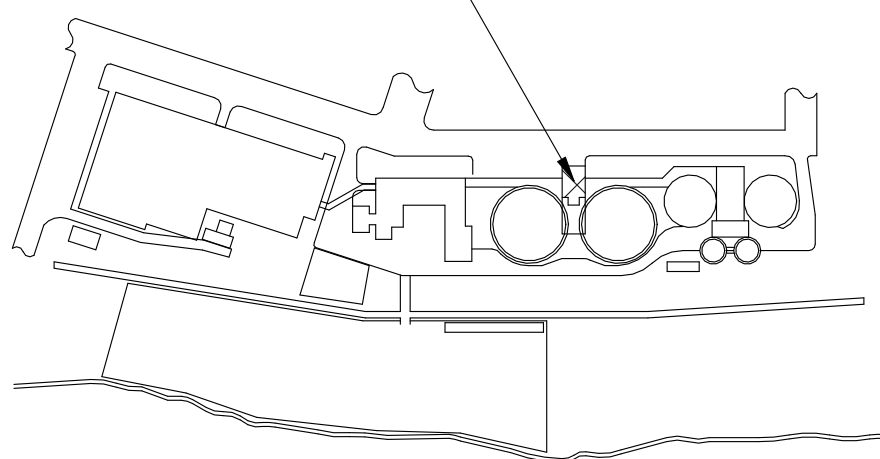
- BEFORE STARTING WORK ALL CONTRACTORS MUST MAKE A THOROUGH EXAMINATION OF THOSE PORTIONS OF THE FACILITY IN WHICH THE WORK IS TO BE PERFORMED. CHECK ALL THE WORK ADJOINING OR AT UNDERLYING LOCATIONS. REPORT TO THE PROFESSIONAL ANY AND ALL CONDITIONS WHICH MAY INTERFERE WITH OR OTHERWISE AFFECT OR PREVENT THE PROPER EXECUTION AND COMPLETION OF THE WORK. CONTRACTOR SHALL NOT START THE WORK UNTIL SUCH CONDITIONS HAVE BEEN EXAMINED AND A COURSE OF ACTION MUTUALLY AGREED UPON.
- BEFORE COMMENCING ANY DEMOLITION ACTIVITIES, CONTRACTOR SHALL THOROUGHLY INVESTIGATE THE BUILDINGSITE, THE PIPING/EQUIPMENT AND SYSTEM BEING DEMOLISHED, AND ALL OTHER SYSTEMS AND EQUIPMENT TO REMAIN IN OPERATION. CONTRACTOR SHALL ENSURE THAT NO SYSTEM NOR ELEMENT THEREOF IS DAMAGED, SHUTDOWN, OR OTHERWISE ADVERSELY AFFECTED BY THE DEMOLITION ACTIVITIES. CONTRACTOR SHALL NOT CUT ANY LIVE PIPE. SHOULD A LIVE PIPE BE CUT, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CLEAN-UP, REPAIRS, RESTORATION, EQUIPMENT REPLACEMENT, AND ANY/ALL COSTS ASSOCIATED WITH THE CUTTING OF THE LIVE PIPE AND DAMAGE CAUSED.
- CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT ANY DAMAGE TO EXISTING EXTERIOR FINISHES WHEN INSTALLING NEW WORK. ANY DAMAGE TO ADJACENT AREAS SHALL BE REPAIRED AND REFINISHED BY CONTRACTOR TO MATCH EXISTING AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL KEEP ALL ADJOINING AREAS CLEAN AND FREE OF DEBRIS OR CONSTRUCTION MATERIALS DURING WORKING HOURS AND PROVIDE SAFE CONDITIONS FOR THE FACILITIES AND CONTRACT WORKERS.
- ALL REMOVED MATERIALS, UNLESS OTHERWISE NOTED, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE LEGALLY DISPOSED OF OFF SITE. CONTRACTOR SHALL PROVIDE ALL LABOR, TRUCK PERMITS AND FEES TO DISPOSE OF REMOVED MATERIALS DAILY.
- CONTRACTOR SHALL DISCONNECT AND REMOVE ALL EQUIPMENT SHOWN TO BE REMOVED, HOWEVER, NOT ALL REQUIRED CHANGES CAN BE COMPLETELY DETAILED ON THE DRAWINGS. SOME REMOVALS AND RELOCATION(S) OF EXISTING MECHANICAL WORK SHALL BE NECESSARY FOR SATISFACTORY PERFORMANCE OF THIS AND OTHER TRADES. TAKE INTO CONSIDERATION ALL REQUIRED CHANGES IN THE BID/PROPOSAL.
- CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORTS, RECONNECTIONS AND OTHER INSTALLATIONS AS REQUIRED FOR CONSTRUCTION. REMOVE TEMPORARY ITEMS AT JOB COMPLETION.
- ALL WORK REQUIRING SHUT DOWN OF EXISTING SYSTEMS SHALL BE APPROVED BY THE OWNER. SUBMIT SCHEDULE OF REQUIRED OUTAGES TO THE OWNER FOR PRIOR APPROVAL AT NO ADDITIONAL COST TO THE OWNER. PERFORM WORK IN A MANNER TO MINIMIZE SHUT DOWN TIME.
- CONTRACTOR SHALL TAKE POSSESSION AND REMOVE FROM THE PROJECT PREMISES ALL ABANDONED OR OBSOLETE MATERIALS AND EQUIPMENT UNLESS SPECIFIED AS RETURNABLE TO THE OWNER. IN THIS CASE, REMOVE WITHOUT DAMAGE ALL EQUIPMENT AND DELIVER/TURN OVER TO OWNER AT LOCATION DESIGNATED BY THE OWNER.
- CUT BACK TO FLOOR, WALL OR ABOVE CEILINGS AND PLUG ENDS OF CONCEALED PIPING MADE OBSOLETE BY ALTERATIONS TO PERMIT REFINISHING SURFACE. REMOVE EXPOSED PIPING AND HANGERS MADE OBSOLETE BY THIS WORK UNLESS DESIGNATED SPECIFICALLY TO REMAIN.
- PROTECT THE EXISTING ROOF AS REQUIRED TO PREVENT ANY DAMAGE DURING EQUIPMENT REMOVAL.
- THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REINSTALLATION OF THE CEILING SYSTEM TO ACCOMMODATE THE PERFORMANCE OF THE PROJECT WORK.
- WHERE WALL MOUNTED AND CEILING MOUNTED SENSORS, DEVICES, AND OTHER APPURTENANCE ARE REMOVED, THE MECHANICAL CONTRACTOR SHALL PATCH AND PAINT THE WALL TO MATCH ADJACENT SURFACES.
- CONTRACTOR TO DEMOLISH ALL PNEUMATIC CONTROL DEVICES AND ASSOCIATED COMPRESSED AIR LINES NOT LONGER REQUIRED FOR HVAC EQUIPMENT OPERATION BACK TO NEAREST ISOLATION VALVE, AND CAP.
- CONTRACTOR SHALL DEMOLISH AND COMPLETELY REMOVE ALL ABANDONED STEAM AND CONDENSATE PIPING NO LONGER IN USE.
- FOR EQUIPMENT SHOWN TO BE DEMOLISHED, CONTRACTOR SHALL REMOVE THE EQUIPMENT, ASSOCIATED CONTROLS, DUCTWORK, DRAIN LINES, SUPPORTS, HANGERS, AND ANY/ALL DEVICES NO LONGER REQUIRED FOR SYSTEM OPERATION. COORDINATE WITH ELECTRICAL CONTRACTOR / DISCIPLINE TO REMOVE AND SAFE OFF ALL EXISTING EQUIPMENT POWER FEEDS BEFORE EQUIPMENT IS REMOVED.
- CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY FIRE/SMOKE PROTECTION DEVICES IN EXISTING CONSTRUCTION NOT SHOWN ON THE DEMOLITION PLANS. FIRE/SMOKE PROTECTION DEVICES INCLUDE, BUT ARE NOT LIMITED TO, FIRE/SMOKE DAMPERS, FIRE/SMOKE RATED AIR TERMINAL ENCLOSURES, SLEEVES, FIRE CAULKING, WALL PENETRATION SEALS, ETC.

MECH DEMOLITION NOTES - KEYED

NUMBER	DESCRIPTION
MD1	DEMOLISH EXISTING DAY TANK, PUMPS, ACCESSORIES, AND ASSOCIATED FUEL OIL PIPING ABOVE GRADE. ABANDON EXISTING FUEL OIL PIPING BELOW GRADE IN PLACE AND CAP OPEN ENDS. PREPARE AREA FOR NEW WORK. REFER TO NEW WORK PLANS.
MD2	DEMOLISH EXISTING GENERATOR, ASSOCIATED ACCESSORIES, FUEL OIL PIPING, AND FLUE PIPING. PREPARE AREA FOR NEW WORK. REFER TO NEW WORK PLANS.
MD3	ABANDON EXISTING DIESEL TANK IN PLACE. DEMOLISH ALL ASSOCIATED FUEL OIL PIPING AND ACCESSORIES ABOVE GRADE. PREPARE AREA FOR NEW WORK. REFER TO NEW WORK PLANS.
MD4	EXISTING MOTORIZED LOUVER TO REMAIN.
MD5	EXISTING MOTORIZED LOUVER TO BE TEMPORARILY REMOVED FOR NEW GENERATOR INSTALLATION, THEN REINSTALLED UPON COMPLETION. REFER TO NEW WORK PLANS.
MD6	DEMOLISH ALL ASSOCIATED FUEL OIL PIPING AND ACCESSORIES ABOVE GRADE. ABANDON EXISTING FUEL OIL PIPING BELOW GRADE IN PLACE AND CAP OPEN ENDS.
MD7	DEMOLISH EXISTING GENERATOR EXHAUST FLUE PIPING THROUGH ROOF AND ASSOCIATED ACCESSORIES. FIELD VERIFY EXISTING FLUE SIZE, ROUTING, AND HEIGHT ABOVE ROOF PRIOR TO DEMOLITION AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES. PREPARE EXISTING ROOF OPENING FOR NEW WORK. REFER TO NEW WORK PLANS.



GENERATOR PROJECT LOCATION
(PRIMARY CONTROL CENTER)



WHEELING~OHIO~WV
WHEELING WPCD PHASE 4 BOND IMP. WW
WPCD G1 BP07 GENERATOR REPLACEMENT
BOND PACKAGE 2025, AMENDMENT 4
MECHANICAL DEMOLITION PLAN

PROJECT STATUS
ISSUED FOR BID

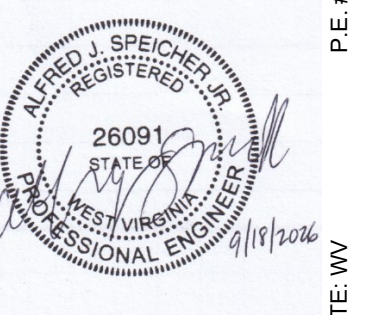
DATE
09/18/2026

SCALE
AS NOTED

SHEET
G1-15M-03

verdantas

2001 MAIN STREET, SUITE 202
WHEELING, WV 26003-2655
TEL. 304.232.2764



DESIGNED BY: AK
DRAWN BY: TJZ
CHECKED BY: AJS
PROJECT NO. 38010

CHKD & ISSUED BY	DATE	REVISION
No.		

ISSUED FOR
BID



GENERATOR PROJECT LOCATION
(PRIMARY CONTROL CENTER)

PROJECT NORTH

WHEELING, WV 26003-2855
TEL. 304.232.2784

STATE: WV P.E. #26091

W NT

PROJECT STATUS	
ISSUED FOR BID	
DATE	09/18/2026
SCALE	AS NOTED
SHEET	
G1-15M-04	

900-GALLON MAIN DIESEL FUEL STORAGE TANK SCHEDULE									
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TAG	MANUFACTURER	MODEL	CAPACITY (GAL)	WIDTH (IN)	DEPTH (IN)	HEIGHT (IN)	DRY WEIGHT (LBS)	NOTES
MT-1	PRYCO	PY900MULDW	900	62	90	64	2050	1 - 2

NOTES:

1. **BASIS OF DESIGN:** REFER TO SPECIFICATIONS ON G1-15M-02 FOR ADDITIONAL REQUIREMENTS.
2. **PROVIDE CONCRETE PAD.** REFER TO STRUCTURAL DRAWINGS FOR PAD DETAILS AND ANCHORAGE.

200-GALLON DIESEL FUEL DAY TANK SCHEDULE

TAG	MANUFACTURER	MODEL	CAPACITY (GAL)	WIDTH (IN)	DEPTH (IN)	HEIGHT (IN)	DRY WEIGHT (LBS)	NOTES
DT-1	PRYCO	PY200ULDW	200	30	54	64	895	1 - 2
DT-2	PRYCO	PY200ULDW	200	30	54	64	895	1 - 2

NOTES:

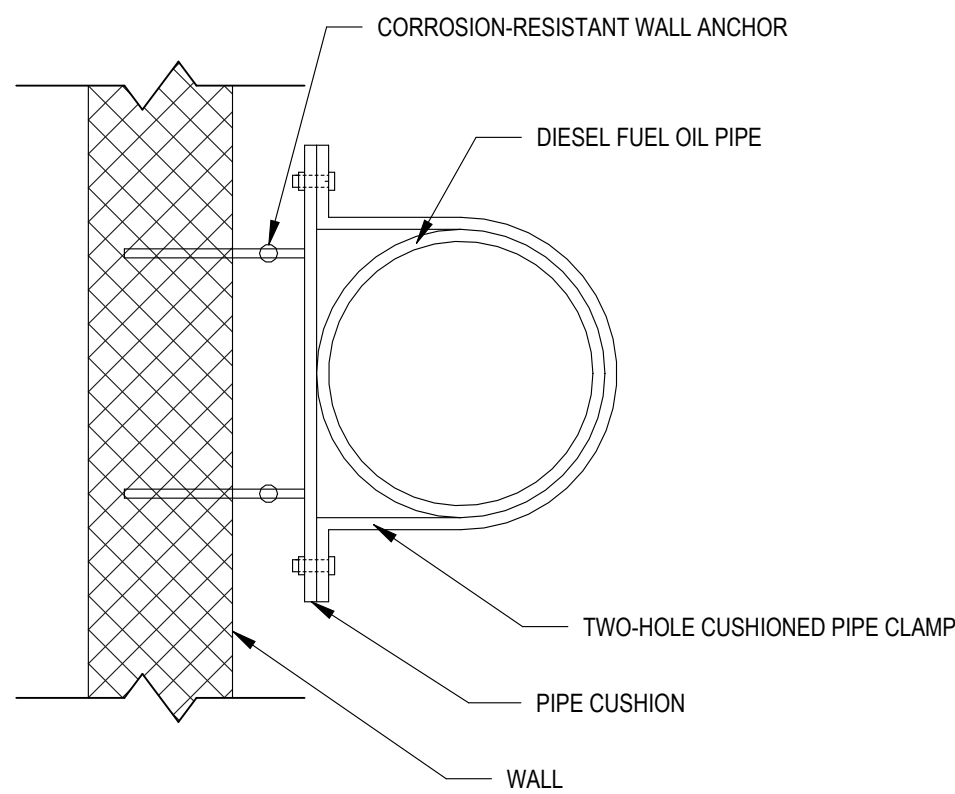
1. **BASIS OF DESIGN:** REFER TO SPECIFICATIONS ON G1-15M-02 FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE CONCRETE PAD. COORDINATE PAD SIZE AND THICKNESS WITH FINAL TANK DIMENSIONS AND OPERATING WEIGHT

PUMP / MOTOR SCHEDULE

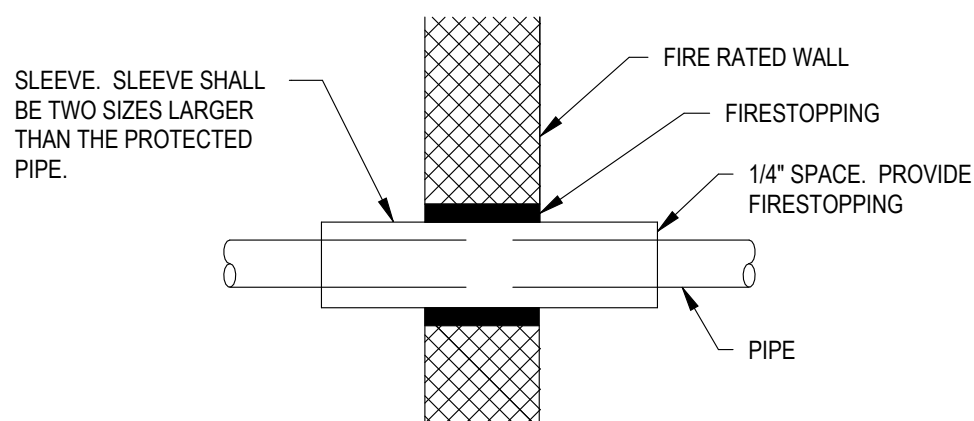
TAG	MANUFACTURER	MODEL	TYPE	FLOW (GPM)	HP	RPM	VOLTS	PHASE	HERTZ	NOTES
P-1	VIKING / MARATHON	SG SERIES / 06651702066	PD EXTERNAL GEAR PUMP	7	1/2	1725	115	1	60	1-3
P-2	VIKING / MARATHON	SG SERIES / 06651702066	PD EXTERNAL GEAR PUMP	7	1/2	1725	115	1	60	1-3

NOTES:

1. **BASIS OF DESIGN:** TRANSFER PUMPS AND MOTORS SHALL BE FURNISHED AND MOUNTED BY THE 900-GALLON MAIN DIESEL FUEL STORAGE TANK PROVIDER AS PART OF A COMPLETE PACKAGED FUEL TRANSFER SYSTEM. PROVIDE PUMP, MOTOR, AND ACCESSORIES COORDINATED WITH TANK MANUFACTURER REQUIREMENTS.
2. PUMP SHALL SHUT DOWN ON CRITICAL HIGH FUEL LEVEL AND ON DETECTION OF A LEAK IN THE DOUBLE-WALL CONTAINMENT AREA.
3. PROVIDE PUMP HOUSEKEEPING PLATFORM, CONCRETE PAD, AND/OR WEATHER PROTECTION COVER AS NEEDED AND PER EQUIPMENT MANUFACTURER RECOMMENDATION AND APPLICABLE CODES.



DIESEL FUEL PIPE WALL MOUNTING DETAIL



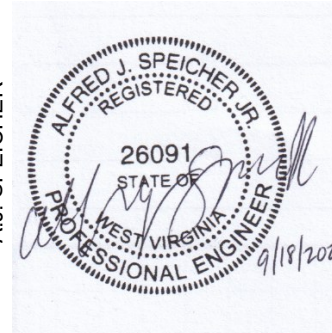
NOTES:

1. SLEEVE ENTERING REINFORCED MASONRY WALLS SHALL NOT CONTACT REINFORCING STEEL. SEAL SPACE AROUND SLEEVE WITH MINERAL WOOL INSULATION OR OTHER UL LISTED MATERIAL APPROVED FOR ASSEMBLY.
2. FILL PENETRATION WITH NONCOMBUSTIBLE FILLER AND APPLY FIRE CAULK AT INSIDE AND OUTSIDE FACES TO PROVIDE A MINIMUM 2-HOUR FIRE RATING.

PIPE PENETRATION FIRE RATED ASSEMBLY DETAIL



2001 MAIN STREET, SUITE 202
WHEELING, WV 26003-2855
TEL: 304.232.2784



P.E. #26091

STATE: WV

No.	REVISION	DATE	CHK'D & ISSUED BY	DESIGNED BY:
				AK
				DRAWN BY:
				TJZ
				CHECKED BY:
				AJS
				PROJECT NO.
				38810

WHEELING~OHIO~WV

WHEELING WPCD PHASE 4 BOND IMP. WW

WPCD G1 BP07 GENERATOR REPLACEMENT

BOND PACKAGE 2025, AMENDMENT 4

MECHANICAL SCHEDULES AND DETAILS

PROJECT STATUS

ISSUED FOR BID

DATE _____

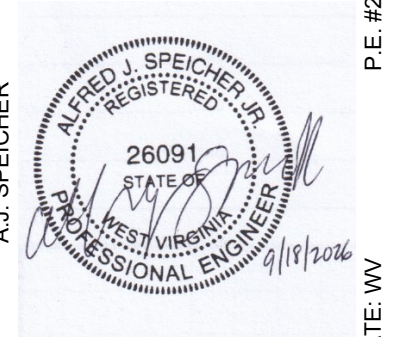
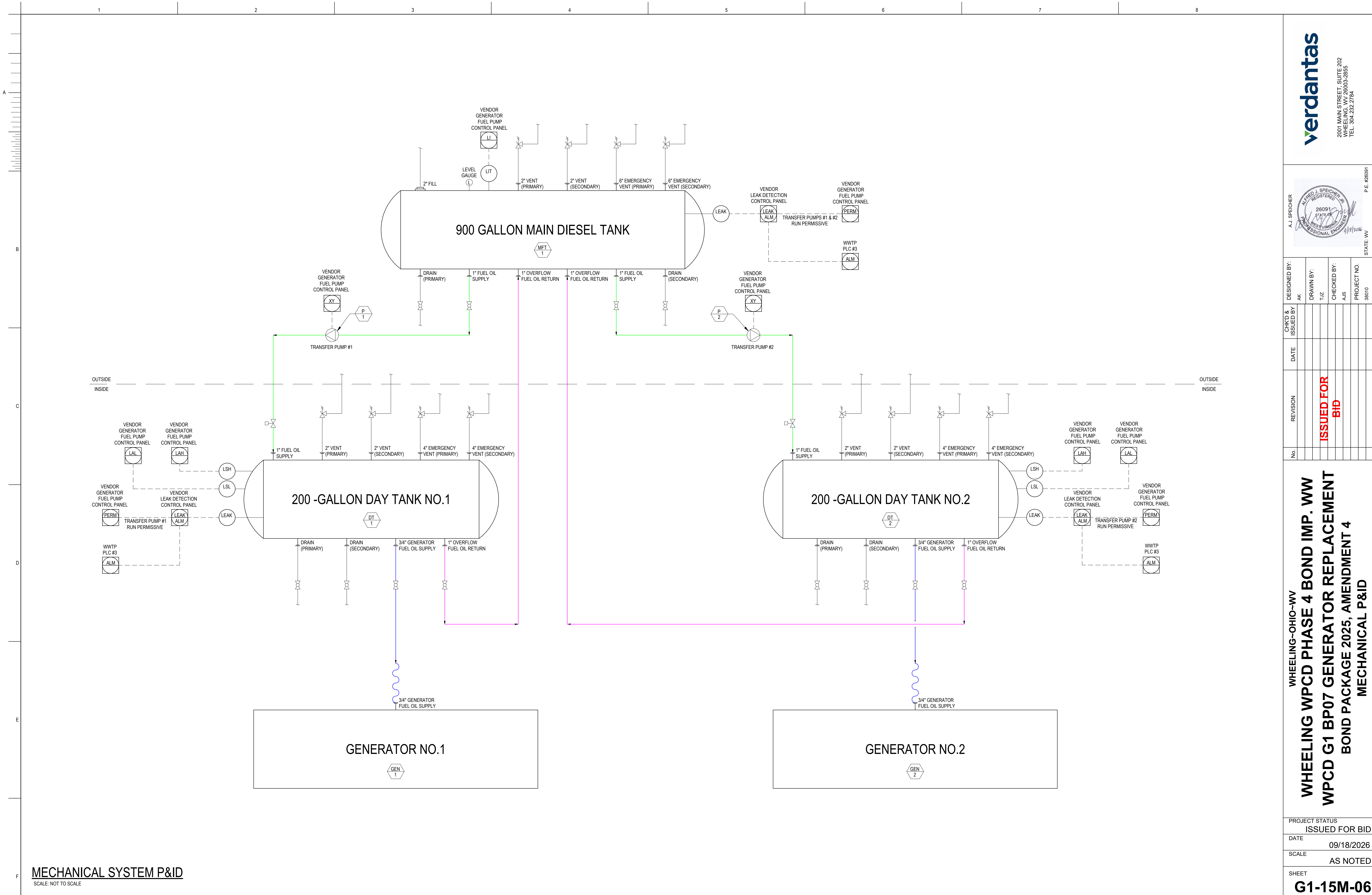
09/18/2026

SCALE

AS NOTED

SHEET

G1-15M-05



P.E. #26091
STATE: WV

DESIGNED BY:	CHKD & ISSUED BY:	DATE	REVISION	No.
AK				
DRAWN BY:				
TJZ				
CHECKED BY:				
AJS				
PROJECT NO.				
38010				

WHEELING~OHIO~WV
**WHEELING WPCD PHASE 4 BOND IMP. WW
WPCD G1 BP07 GENERATOR REPLACEMENT
BOND PACKAGE 2025, AMENDMENT 4
MECHANICAL P&ID**

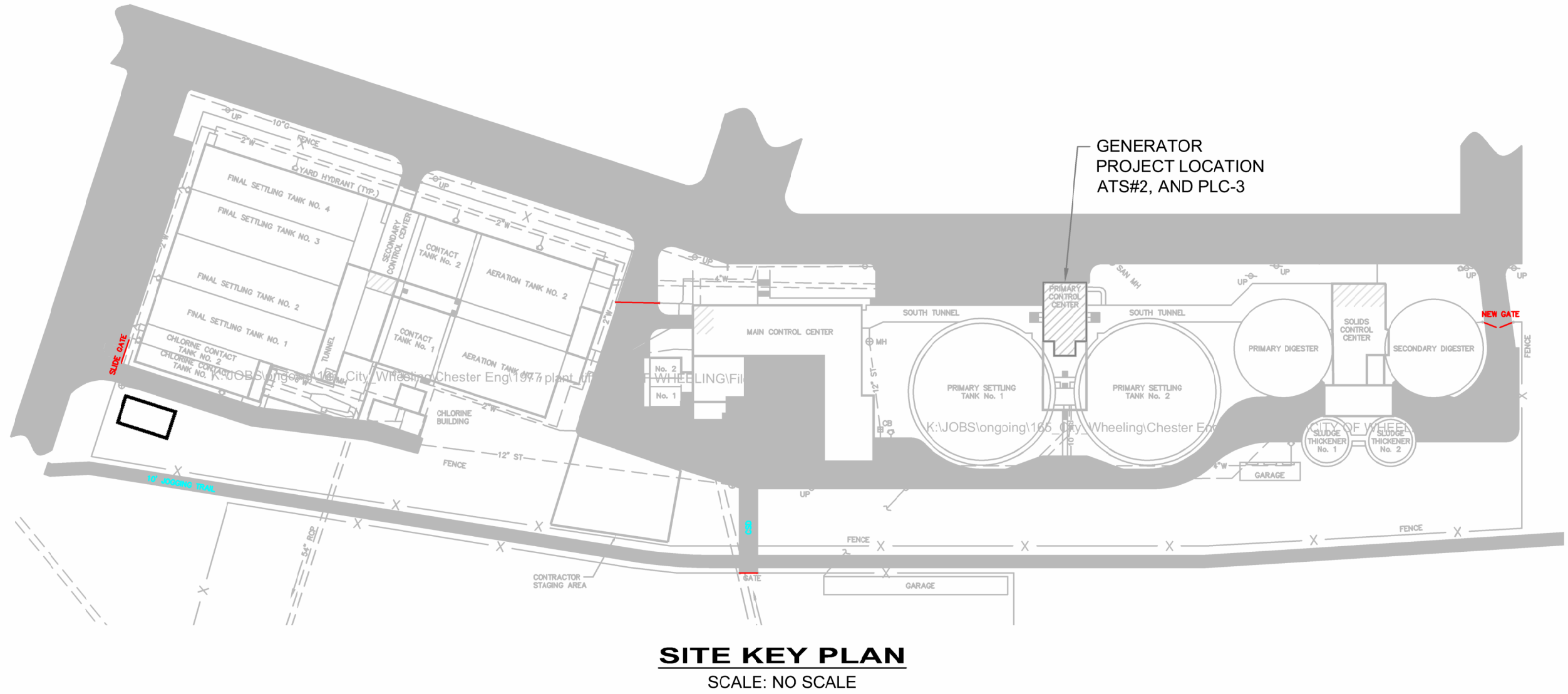
PROJECT STATUS	ISSUED FOR BID
DATE	09/18/2026
SCALE	AS NOTED
SHEET	G1-15M-06



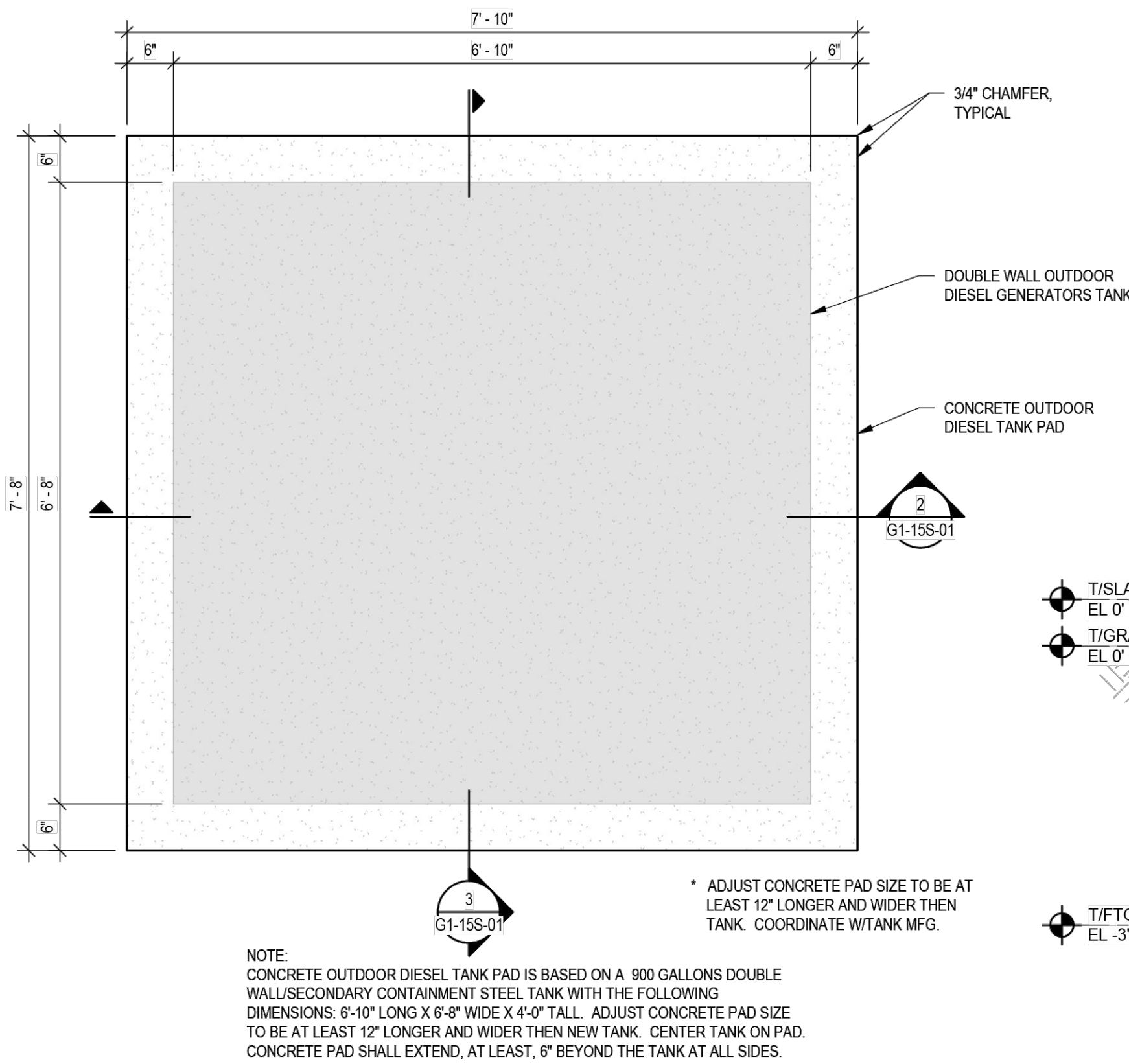
EXISTING PLC #3 PANEL (SEE NOTES IC1 THRU IC14)

GENERAL CONSTRUCTION NOTES:

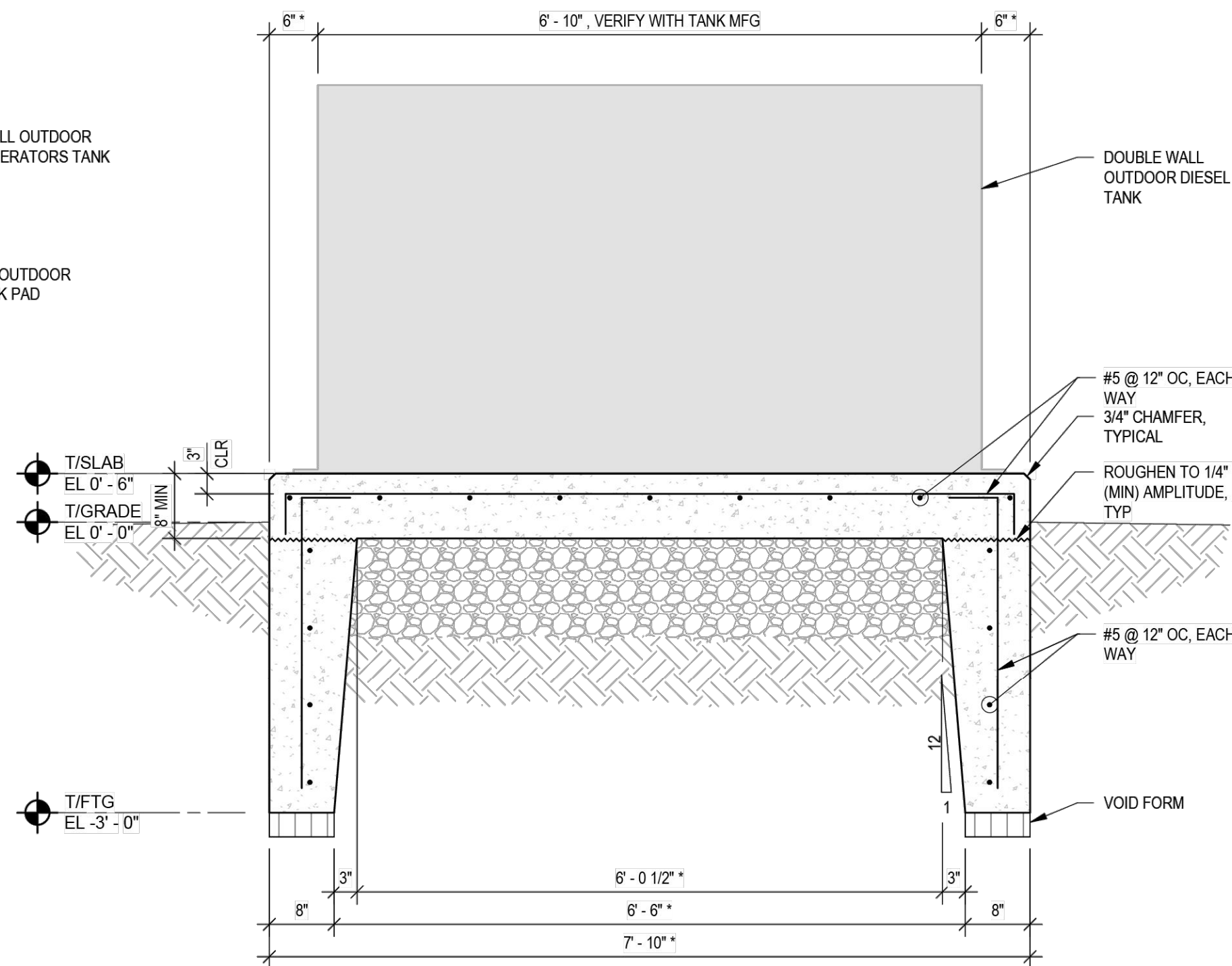
IC20	THE CONTRACTOR SHALL FURNISH, INSTALL AND FIELD ROUTE QTY (1) CAT 6 CABLE FROM EACH SWITCH GEAR SECTION BREAKER METER, QTY (4) IN TOTAL, TO THE EXISTING PLC #3. PROVIDE ALL CABLE, CONDUIT, REQUIRED JACKS, HARDWARE AND SUPPORTS REQUIRED TO FACILITATE THE INSTALLATION AND TERMINATION OF THE CAT CABLES.
IC22	THE CONTRACTOR SHALL FURNISH, INSTALL AND FIELD ROUTE CABLE AND CONDUIT FROM EACH GENERATOR CONTROL PANEL TO THE EXISTING PLC #3. THE CABLE TYPE AND QUANTITY SHALL DEPEND ON THE GENERATOR SELECTED AND THE AVAILABLE SIGNALS FOR BIDDING PURPOSES ASSUME QTY (12) TSP# 18 AWG, QTY (1) 12 COND #16 AWG AND AN AWG MODBUS. PROVIDE ALL CABLE, CONDUIT, HARDWARE AND SUPPORTS REQUIRED TO FACILITATE THE INSTALLATION AND TERMINATION OF THE CABLES.
IC22	THE CONTRACTOR SHALL FURNISH, INSTALL AND FIELD ROUTE CAT 6 CABLE AND CONDUIT FROM THE VENDOR PROVIDED GENERATOR FUEL PUMP CONTROL PANEL TO THE EXISTING PLC #3
IC23	THE GENERATOR FUEL SYSTEM VENDOR IS RESPONSIBLE FOR THE COMPLETE DESIGN OF THE GENERATOR FUEL PUMP CONTROL SYSTEM AND TANK LEAK DETECTION SYSTEM. REFER TO VENDOR DRAWINGS FOR ALL REQUIRED CABLES. FOR BIDDING PURPOSE, THE CONTRACTOR SHALL FURNISH, INSTALL AND FIELD ROUTE ALL TSP# 18 AWG AND QTY (2) 4 COND #16 AWG CABLES FROM EACH DAY TANK FOR THE LEVEL SWITCHES AND QTY (1) TSP# 18 AWG CABLE FROM THE MAIN FUEL TANK LEVEL TRANSMITTER TO THE VENDOR PROVIDED FUEL PUMP CONTROL PANEL. FURNISH, INSTALL AND FIELD ROUTE QTY (1) 4 COND #16 AWG CABLE AND CONDUIT FROM THE EACH TANK'S LEAK SENSOR TO VENDOR PROVIDED LEAK DETECTION CONTROL PANEL.
IC24	THE GENERATOR FUEL SYSTEM VENDOR IS RESPONSIBLE FOR THE COMPLETE DESIGN OF THE TANK LEAK DETECTION SYSTEM AND CONTROL PANEL. REFER TO VENDOR DRAWINGS FOR ALL REQUIRED CABLES. FOR BIDDING PURPOSE, THE CONTRACTOR SHALL FURNISH, INSTALL AND FIELD ROUTE QTY (1) 4 COND #16 AWG CABLE AND CONDUIT FROM THE VENDOR PROVIDED LEAK DETECTION CONTROL PANEL TO THE EXISTING PLC #3
IC25	THE GENERATOR FUEL SYSTEM VENDOR SHALL REFER TO 339900 GENERATOR FUEL PUMP CONTROL PANEL SPECIFICATION.



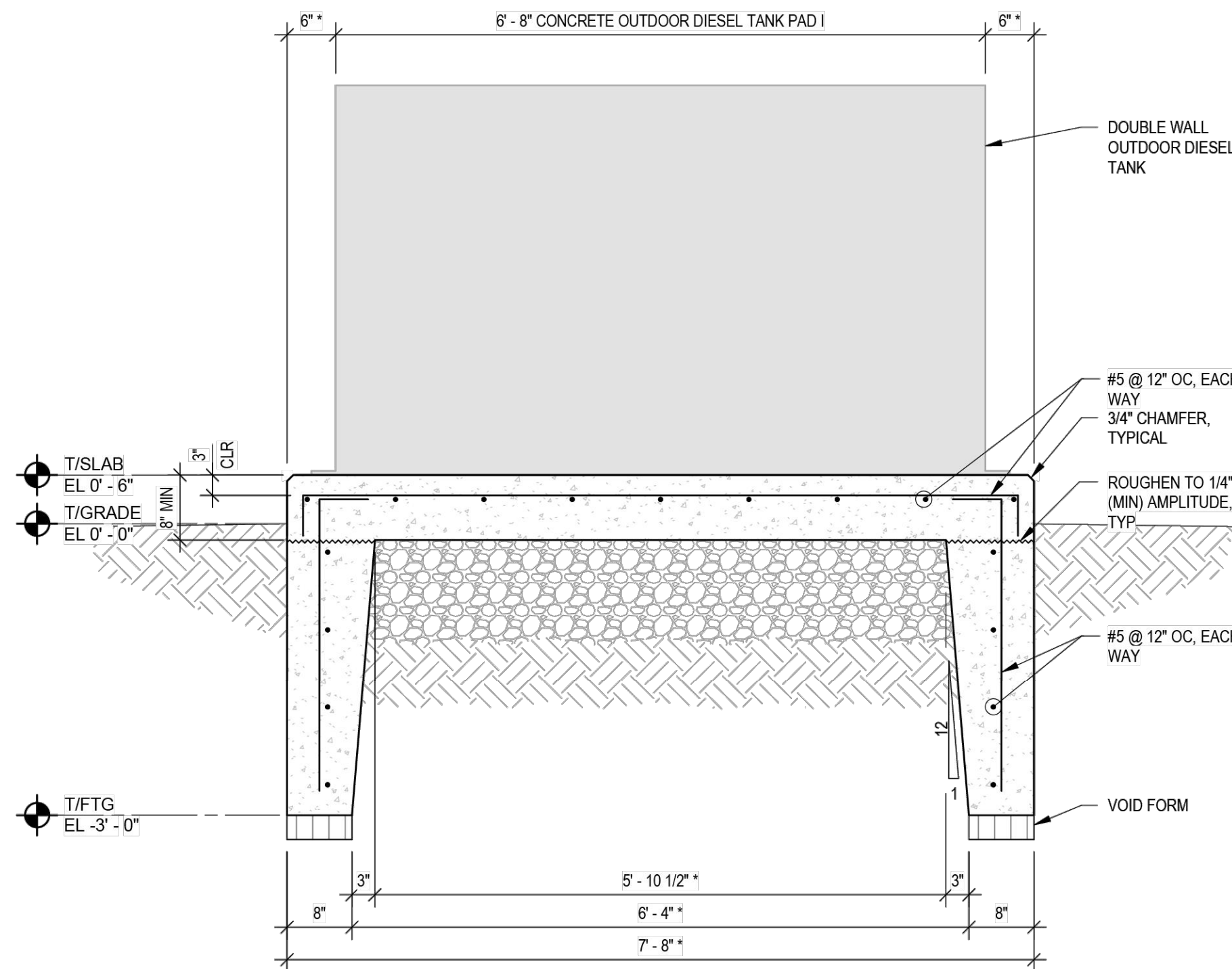
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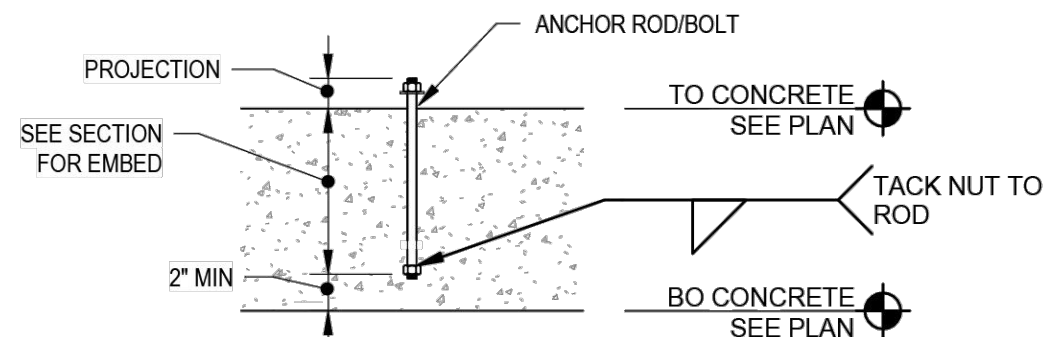
1 T/SLAB
G1-15S-01 SCALE: 3/4" = 1'-0"



2 SECTION
G1-15S-01 SCALE: 3/4" = 1'-0"

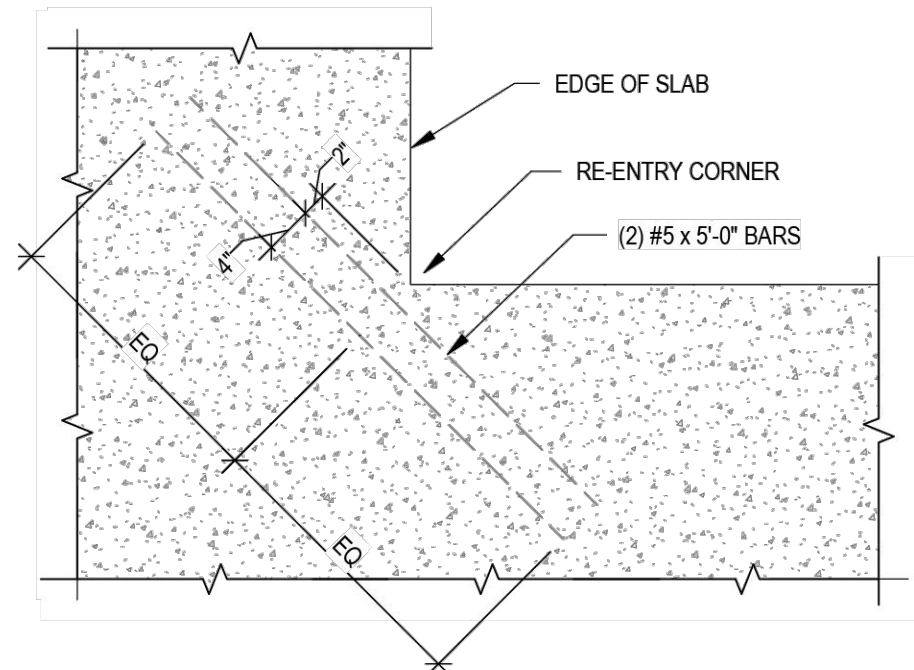


3 SECTION
G1-15S-01 SCALE: 3/4" = 1'-0"

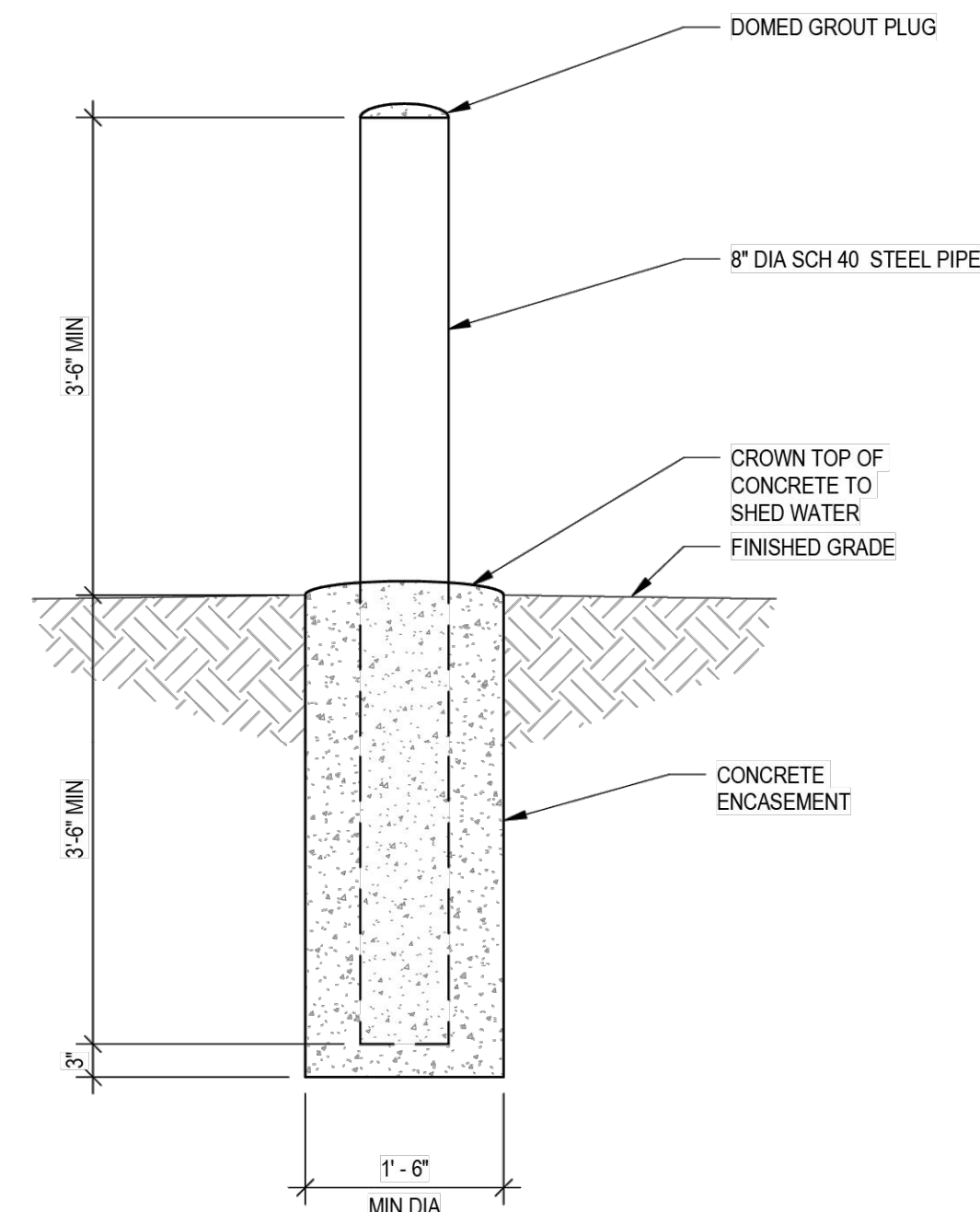


- NOTES:
1. USE HEAD BOLTS OR TACK WELD
 2. COORDINATE PROJECTION WITH EQUIPMENT SUPPLIER UNLESS NOTED OTHERWISE
 3. DO NOT USE U-BOLTS. U-BOLTS ARE NOT ACCEPTABLE
 4. ANCHOR BOLTS TO BE STAINLESS STEEL UNLESS NOTED OTHERWISE

5 CONCRETE ANCHORS
G1-15S-01 SCALE: 3/4" = 1'-0"

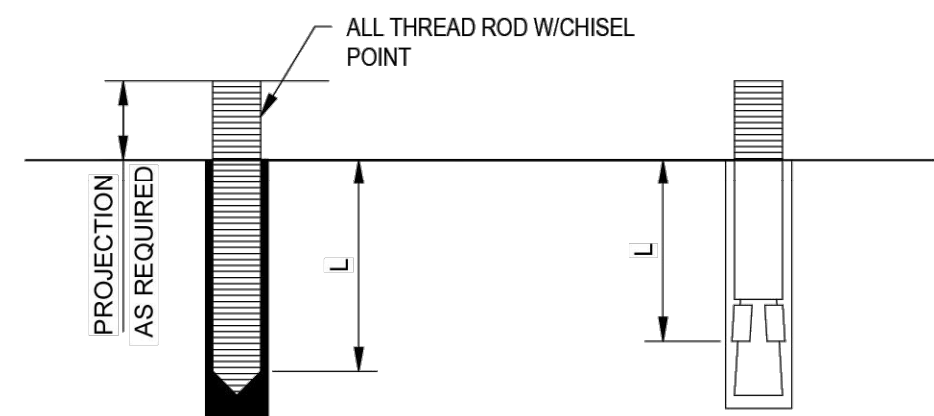


6 CONCR REINF AT RE-ENTRANT CORNERS
G1-15S-01 SCALE: 3/4" = 1'-0"



- NOTES:
1. PIPE BOLLARD SHALL BE AN 8" DIA SCH 40 STRUCTURAL STEEL PIPE. GRIND SMOOTH. FILL PIPE WITH CONCRETE. PRIME AND PAINT PIPE.
 2. STEEL PIPE BOLLARDS SHALL BE PREPARED, PRIMED, AND PAINTED SAFETY YELLOW FOR CORROSION PROTECTION AND VISIBILITY. PRIOR TO COATING, REMOVE ALL DIRT, OIL, GREASE, RUST, MILL SCALE, WELD SLAG, AND OTHER CONTAMINANTS AND PREPARE SURFACES IN ACCORDANCE WITH SSPC SURFACE PREPARATION STANDARDS. APPLY ONE COAT OF RUST-INHIBITIVE METAL PRIMER COMPATIBLE WITH THE SELECTED FINISH SYSTEM, FOLLOWED BY TWO COATS OF OSHA/ANSI-COMPLIANT SAFETY YELLOW INDUSTRIAL-GRADE EXTERIOR PAINT. COATINGS SHALL BE APPLIED ONLY UNDER ENVIRONMENTAL CONDITIONS RECOMMENDED BY THE MANUFACTURER AND IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THE COMPLETED FINISH SHALL BE UNIFORM IN COLOR AND APPEARANCE AND FREE OF RUNS, SAGS, HOLIDAYS, BLISTERS, AND OTHER DEFECTS. ANY DAMAGE TO THE COATING RESULTING FROM FABRICATION, HANDLING, TRANSPORT, OR INSTALLATION SHALL BE REPAIRED PRIOR TO FINAL ACCEPTANCE. PRIMER AND FINISH COATS SHALL BE PRODUCTS OF A SINGLE MANUFACTURER, SUCH AS SHERWIN-WILLIAMS, TNEPEC, OR CARBOLINE, OR APPROVED EQUAL.

7 GUARD POST BOLLARD
G1-15S-01 SCALE: 3/4" = 1'-0"

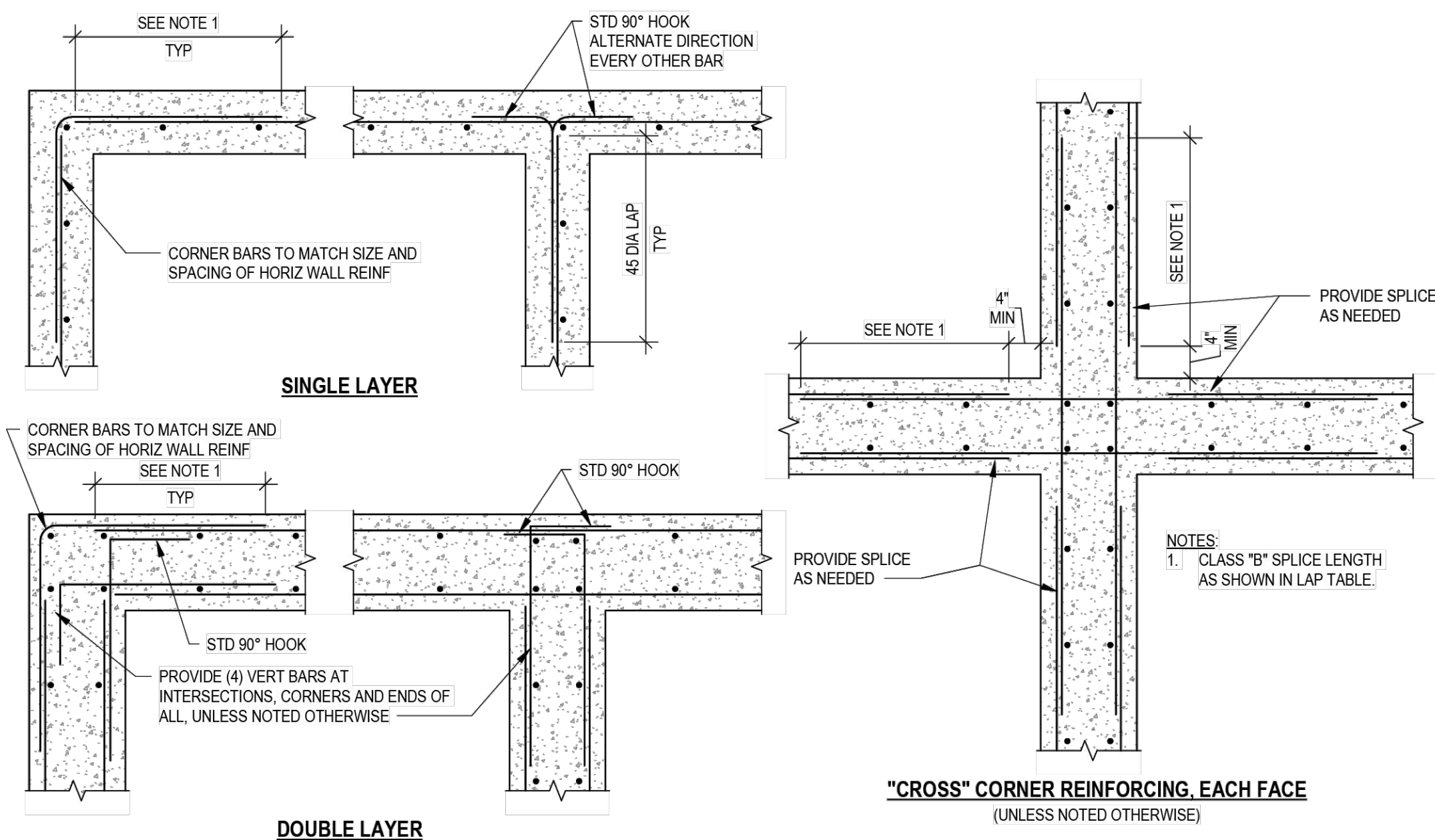


ADHESIVE ANCHOR EXPANSION ANCHOR

DIAMETER	MINIMUM EMBEDMENT LENGTH, L	
	ADHESIVE ANCHOR	EXPANSION ANCHOR
3/8"	4 1/2"	3 1/2"
1/2"	6"	4 3/4"
5/8"	7 1/2"	5 1/2"
3/4"	9"	6 1/2"
7/8"	10 1/2"	-
1"	12"	-

- NOTES:
1. CONFORM TO ICC EVALUATION SERVICE REPORT (ES REPORT) REQUIREMENTS AND MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION.
 2. PROVIDE TYPE 316 STAINLESS STEEL ALL-THREAD ROD MATERIAL.
 3. PROVIDE HOLE DIAMETER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
 4. EXPANSION ANCHOR EMBEDMENT LENGTHS ARE BASED ON HILTI KWIK BOLT TZ STAINLESS STEEL ANCHORS. SUBMIT ICC EVALUATION SERVICE REPORT (ES REPORT) FOR ALTERNATE PRODUCTS.
 5. ADHESIVE ANCHOR EMBEDMENT LENGTHS ARE BASED ON HILTI HIT-RE 500-V3 ADHESIVE. SUBMIT ICC ES REPORT FOR ALTERNATE PRODUCTS.

8 CONCRETE ANCHORS
G1-15S-01 SCALE: 1/2" = 1'-0"



4 TYPICAL CONCRETE WALL CORNER DETAILS
G1-15S-01 SCALE: 3/4" = 1'-0"

HEADWORK BUILDING FLOOR PLAN NOTES:

1. SEE SHEETS G1-15S-02 FOR GENERAL STRUCTURAL NOTES.
2. SEE SHEETS G1-15S-02 THRU G1-15S-02 FOR TYPICAL DETAILS AND TABLES.
3. VERIFY ALL DIMENSIONS AND ELEVATIONS, SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL MEASUREMENTS AND ELEVATIONS. ALL DIMENSIONS SHALL CONFORM TO THE MECHANICAL AND ELECTRICAL DRAWINGS.
4. COORDINATE LOCATION AND SIZE OF PENETRATIONS AND OPENINGS WITH MECHANICAL AND ELECTRICAL DRAWINGS.
5. SLAB DESIGNS ARE BASED UPON FOUNDATIONS BEARING ON MATERIALS AS LISTED IN FOUNDATION GENERAL NOTES. BEARING ELEVATIONS HAVE BEEN ESTABLISHED FROM THE GRADING PLAN AND SOILS REPORT. FOUNDATION BEARING SURFACES MUST BE INSPECTED AND APPROVED IN ACCORDANCE WITH FOUNDATION GENERAL NOTES AND BOTTOM OF FOOTING ELEVATIONS ADJUSTED ACCORDINGLY.
6. ADDITIONAL BASE MATERIAL, ALL SLABS AND FOOTINGS SHALL BEAR ON, AT LEAST, 12" COMPACTED ENGINEERED GRANULAR MATERIAL OR FLOWABLE FILL.
7. STRICTLY FOLLOW THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT FOR SITE PREPARATION AND BACKFILLING.
8. BOTTOM OF DROP SLAB ELEVATION AS NOTED ON PLAN.
9. TOP OF SLAB AND RELATIVE FINISHED ELEVATION AS NOTED ON PLAN.
10. MAT REINFORCING SHALL TERMINATE WITH STANDARD 90 DEGREE HOOKS.
11. VOID FORM: MANUFACTURED CORRUGATED PAPER, MOLDED PULP, WOOD COMPOSITE, OR OTHER ACCEPTABLE TYPE OF FORM MATERIALS, TO PROVIDE CONTINUOUS, STRAIGHT, AND SMOOTH SURFACES. VOID FORM SHALL BE DESIGNED TO SUPPORT THE WEIGHT OF FRESH CONCRETE. FORM SHALL CRUSH 20% TO 25% OF ITS ORIGINAL SIZE AFTER THE CONCRETE IS CURED. FORMS CAN BE DEGRADABLE.
 - A. FORM SHALL BE DESIGNED TO SUPPORT THE WEIGHT OF THE CONCRETE PLUS 40 PSF.
 - B. FORMS SHALL DEFORM OR NOT SUPPORT THE WEIGHT OF THE CONCRETE PLUS 500 PSF.
12. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR CONCRETE ANCHOR REQUIREMENTS FOR FLOOR MOUNTED EQUIPMENT.
13. EXTERIOR EMBEDDED THREADED RODS SHALL BE HOT DIPPED GALVANIZED.
14. CONCRETE SHALL HAVE A BROOMED FINISH, UNLESS OTHERWISE NOTED.
15. SLOPE TOP OF TANK SLAB TO SHED STORM WATER. SLOPE TOP OF SLAB A 0.5%.
16. DO NOT ALLOW GROUND WATER TO ACCUMULATE WITHIN EXCAVATION.
17. PROVIDE RE-ENTRY REINFORCING AT ALL RE-ENTRY CORNERS.
18. BACKFILL THE STRUCTURE WITH COMPACTED ENGINEERED GRANULAR MATERIAL.
19. CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO UNDERMINE, DISTURB, DAMAGE OR, IN ANY WAY, CAUSE UNDESIRABLE MOVEMENT, CRACKING, AND/OR SETTLEMENT OF THE ADJACENT CONSTRUCTION.

WHEELING-OHIO-WV

WHEELING WPCD PHASE 4 BOND IMP. WW WPCD G1 BP07 GENERATOR REPLACEMENT BOND PACKAGE 2025, AMENDMENT 4 MAIN DIESEL TANK CONCRETE PAD AND DETAILS

DATE 09-18-2026

SCALE NO SCALE

SHEET
G1-15S-01

verdantas

2001 MAIN STREET, SUITE 202
WHEELING, WV 26003-2855
TEL: 304.232.2764

DESIGNED BY
BAS

DRAWN BY
BAS

CHECKED BY
CMM

PROJECT NO.
38010

CHK'D BY
DATE

REVISION

No.

ISSUED FOR BID

STATE: WV

P.E. #27655

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GENERAL:

- THE GENERAL NOTES AND TYPICAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY. THE WORK SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS, CONSTRUCTION SPECIFICATIONS AND THE LATEST EDITION OF THE APPLICABLE LOCAL AND STATE BUILDING CODES.
 - WHERE CONFLICT IS FOUND TO EXIST BETWEEN THE SPECIFICATIONS AND THESE NOTES, THE REQUIREMENTS OF THE SPECIFICATIONS SHALL GOVERN.
 - ALL WORK SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE OR THESE DOCUMENTS, WHICHEVER IS MORE STRINGENT.
- TYPICAL DETAILS MAY NOT NECESSARILY BE CUT ON THE PLANS BUT APPLY UNLESS NOTED OTHERWISE.
- SHOP DRAWINGS PREPARED BY SUPPLIERS AND SUBCONTRACTORS SHALL BE REVIEWED AND APPROVED BY THE GENERAL CONTRACTOR PRIOR TO SUBMISSION TO THE ENGINEER/ARCHITECT.
- SHOP DRAWINGS PREPARED BY THE CONTRACTORS, SUPPLIERS, ETC., WILL BE REVIEWED BY THE ENGINEER ONLY FOR CONFORMANCE WITH DESIGN CONCEPT. NO WORK AFFECTED BY THE SHOP DRAWINGS SHALL BE STARTED WITHOUT SUCH REVIEW.
 - THE GENERAL CONTRACTOR SHALL COORDINATE ALL REVISIONS, CORRECTIONS, AND COMMENTS INDICATED ON THE SHOP DRAWINGS BY THE ENGINEER.
- ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR AND SHALL CONFORM TO THOSE SHOWN ON THE PLAN AND PROFILE DRAWINGS. DIMENSIONS AND ELEVATIONS MARKED "REF" ARE FOR REFERENCE ONLY AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO USING THEM FOR ANY CONSTRUCTION.
- THE STRUCTURAL CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE ENGINEER SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.
- ALL REQUIRED MATERIAL TESTING SHALL BE PERFORMED AT THE EXPENSE OF CONTRACTOR AND PERFORMED BY AN APPROVED TESTING AGENCY OR LABORATORY. TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY WORK THAT IS DAMAGED OR IS NON-COMPLIANT IN ACCORDANCE WITH THE GOVERNING CODE OR AS INDICATED IN THE CONTRACT DOCUMENTS OR AS DEMANDED BY THE BUILDING OFFICIAL, ARCHITECT OR ENGINEER OF RECORD.
- ALL MATERIALS AND EQUIPMENT FURNISHED WILL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
- COORDINATE WITH CIVIL AND PLAN AND PROFILE DRAWINGS FOR PIPE SLEEVES, DRAINS, INSERTS, HANGERS, WALL AND SLAB OPENINGS, CONDUIT RUNS IN WALLS AND SLABS, SIZE AND LOCATION OF SUPPORTS, CONCRETE ANCHORS, RAILING, ETC. THE CONTRACTOR SHALL PROVIDE THESE OPENINGS IN ACCORDANCE WITH THE OTHER CONTRACT DRAWINGS. REINFORCEMENT AROUND OPENINGS FOR NEW WALLS AND SLABS SHALL BE PER THE STANDARD DETAILS. UNLESS OTHERWISE SHOWN, SEE STANDARD DETAILS FOR CONSTRUCTION OF OPENINGS IN EXISTING WALLS AND SLABS.
- THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES WITH THE OWNER TO AVOID SYSTEM/OPERATION INTERFERENCE.
- MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THE WORK SHALL BE STORED AT OWNER'S DESIGNATED LOCATIONS.
- THE CONTRACTOR SHALL AT ALL TIMES KEEP THE WORK AREA AND SURROUNDING PREMISES FREE OF WASTE, SURPLUS MATERIALS, RUBBISH, AND DEBRIS RESULTING FROM THE WORK.
- ALL CONTRACTORS SHALL CONFORM TO THE SAFETY REQUIREMENTS OF THE OWNER, AIA DOCUMENTS A201, OSHA SAFETY AND HEALTH STANDARD, AND ALL OTHER APPLICABLE SAFETY STANDARDS, AND THE REQUIREMENTS OF THE PROJECT. ALL EXCAVATIONS SHALL BE PROPERLY SHORED IN ACCORDANCE WITH OSHA STANDARDS AND REQUIREMENTS. ENGINEER DOES NOT ASSUME ANY RESPONSIBILITY FOR CONSTRUCTION SITE SAFETY.
- SLOPE STRUCTURAL TOP SLABS, THAT ARE EXPOSED, TO DRAIN. SLOPE SHALL BE 1/8" TO 1/4" PER FOOT EXCEPT WHERE NOTED OTHERWISE ON THE PLANS.
- NO SUBSTITUTIONS OF MATERIAL WILL BE ALLOWED WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.

GOVERNING CODES AND STANDARDS:

THE FOLLOWING CODES AND STANDARDS SHALL BE UTILIZED BY THE CONTRACTOR TO ESTABLISH MINIMUM LEVELS OF QUALITY AND CONSTRUCTION TECHNIQUES. UNLESS NOTED OTHERWISE, REFERENCE THE BUILDING CODE AND/OR ASCE FOR THE REFERENCED STANDARDS' EDITION.

IBC	- INTERNATIONAL BUILDING CODE, 2018 EDITION
IEBC	- INTERNATIONAL EXISTING BUILDING CODE, 2018 EDITION
ASCE 7	- MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, 2016 EDITION
ACI 318	- BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
ACI 301	- SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS
ACI 302	- RECOMMENDED PRACTICE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION
ACI 544	- GUIDE FOR SPECIFYING, PROPORTIONING, MIXING, PLACING, AND FINISHING STEEL FIBER REINFORCED CONCRETE
ACI 347	- GUIDE TO FORMWORK FOR CONCRETE
ACI 348R	- HOT WEATHER CONCRETING
ACI 308R	- COLD WEATHER CONCRETING
ACI 207	- GUIDE TO MASS CONCRETE
ACI 211.1	- SELECTING PROPORTIONS FOR NORMAL, HEAVY WEIGHT AND MASS CONCRETE
ACI 217.4R	- COOLING AND INSULATING SYSTEMS FOR MASS
ACI SP-66	- ACI DETAILING MANUAL
PCA	- DESIGN AND CONTROL OF CONCRETE MIXTURES
MSP-2	- MANUAL OF STANDARD PRACTICE
AISC 360	- LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS

SUBMITTALS

- SHOP DRAWINGS AND SUBMITTALS
 - REPRODUCTION OF STRUCTURAL DRAWINGS FOR SHOP DRAWINGS IS NOT PERMITTED.
 - ELECTRONIC DRAWING FILES WILL NOT BE PROVIDED TO THE CONTRACTOR.
 - REVIEW OF SHOP DRAWINGS WILL BE FOR CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS REGARDING ARRANGEMENT AND SIZES OF MEMBERS AND THE CONTRACTORS' INTERPRETATION OF THE DESIGN LOADS, IF APPLICABLE, AND CONSTRUCTION DOCUMENT DETAILS. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF THE FULL RESPONSIBILITY TO COMPLY WITH THE CONSTRUCTION DOCUMENTS.
- SUBMITTALS
 - THE STRUCTURAL QUALITY ASSURANCE PLAN AND SPECIFICATIONS IDENTIFY THE REQUIRED SUBMITTALS. PRIOR TO (OR WITH) THE FIRST SUBMITTAL, CONTRACTOR SHALL SUBMIT A LIST OF ALL REQUIRED SUBMITTALS FOR ENGINEERS' REVIEW.

DESIGN LOADS:

1. LIVE LOADS: (REDUCIBLE PER GOVERNING CODE)	UNIFORM (PSF)	CONCENTRATED (LBS)
A. EXTERIOR EQUIPMENT PADS	300	2000
2. SNOW LOADS:		
RISK CATEGORY	III	
GROUND SNOW LOAD, P_g	20 PSF	
FLAT ROOF SNOW LOAD, P_f	N/A	
SNOW EXPOSURE FACTOR, C_e	1.0	
SNOW LOAD IMPORTANCE FACTOR, I_s	1.1	
THERMAL FACTOR, C_t	N/A	

STRUCTURAL STEEL:

- STEEL SHALL BE FABRICATED BY A FABRICATOR HAVING AN AISC QUALITY CERTIFICATION CATEGORY. "STANDARD FOR STEEL BUILDING STRUCTURES (STD)".
- STRUCTURAL STEEL WORK SHALL CONFORM TO THE "STEEL CONSTRUCTION MANUAL, AISC 360".
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF MEMBERS AND CONNECTIONS FOR ANY PORTION OF THE STRUCTURE NOT INDICATED ON THE PLANS. ALL SPECIAL CONDITIONS AND CONNECTIONS SHALL BE CAREFULLY AND COMPLETELY DETAILED AND SUBMITTED FOR APPROVAL.
- STEEL SHALL CONFORM TO THE FOLLOWING UNLESS OTHERWISE NOTED:
 - W-SHAPES: ASTM A992
 - ANGLES, PLATES, RODS, ETC.: ASTM A36
 - CHANNELS: ASTM A36 (A572, GRADE 50)
 - PIPES: ASTM A53, GRADE B
 - STRUCTURAL TUBING:
 - ROUND: ASTM A500, GRADE B, 42 KSI
 - SQUARE & RECTANGULAR: ASTM A500, GRADE B, 46 KSI
 - ANCHOR RODS: ASTM F1554, GRADE 36
- WELDED CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN WELDING SOCIETY, AWS D1.1. WELDING ELECTRODE MATERIAL SHALL BE E70XX.
- ALL WELDED CONNECTIONS SHALL BE DESIGNED TO BE FULLY EQUIVALENT IN STRENGTH TO BOLTED CONNECTIONS FOR THE SAME SIZE BEAM. MINIMUM WELDS, WHERE NOT SHOWN ON DRAWINGS, SHALL BE 3/16 INCH FILLET WELD, ALL AROUND.
- ALL STEEL AND CORRESPONDING CONNECTIONS EXPOSED TO WEATHER SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 AND A153, RESPECTIVELY.

FOUNDATIONS:

- FOR THE DESIGN IS BASED ON RECOMMENDATIONS IN THE GEOTECHNICAL REPORT NO. 38010, PREPARED BY VERDANTAS, LLC, DATED SEPTEMBER 9, 2026. CONTRACTOR SHALL REVIEW GEOTECHNICAL REPORT PRIOR TO CONSTRUCTION AND ADHERE TO THE RECOMMENDATIONS.
- DURING THE INVESTIGATION, FILL MATERIAL WITH AN UNKNOWN PLACEMENT HISTORY WAS ENCOUNTERED IN THE BORINGS. THE EXISTING FILL SOILS ARE NOT SUITABLE FOR FOUNDATION SUPPORT. AT LOCATIONS WITH FILL SOILS, OVER EXCAVATION BACKFILLED WITH COMPACTED DENSE-GRADED AGGREGATE IS REQUIRED. SHALLOW FOUNDATIONS ARE DESIGNED TO BEAR ON UNDISTURBED NATURAL SOILS WITH PRIOR APPROVAL OF THE GEOTECHNICAL ENGINEERS. ON THE PROPERLY COMPACTED ENGINEERED FILL, OR FLOWABLE CONTROLLED-DENSITY FILL. SHALLOW FOUNDATIONS SHALL HAVE A GROSS ALLOWABLE BEARING CAPACITY OF 2000 PSF. SEE GEOTECHNICAL REPORT.
 - OTHER SOIL LOADING AND BEARING CHARACTERISTICS ARE DESCRIBED IN THE REPORT.
 - REFERENCE GEOTECHNICAL REPORT FOR FROST DEPTH (OR FROST DEPTH IS 36"). EXTERIOR FOOTINGS SHALL BEAR AT FROST DEPTH OR DOWN TO ACCEPTABLE SOILS, WHICHEVER IS DEEPER.
- TOPSOIL, FILL, AND/OR OTHER DELETERIOUS MATERIALS ENCOUNTERED DURING THE SITE PREPARATION MUST BE REMOVED AND REPLACED WITH SELECT ENGINEERED FILL COMPACTED TO 98% PER ASTM D698 (STANDARD PROCTOR) AND MEETING THE SPECIFIED DESIGN BEARING CAPACITY. (SEE GEOTECHNICAL REPORT FOR MORE INFORMATION).
- OWNER SHALL EMPLOY A SOILS TESTING LABORATORY APPROVED BY THE ENGINEER TO PERFORM TESTING SERVICES AS REQUIRED BY THE SPECIFICATIONS AND TO INSPECT ALL BEARING SURFACES OF SLABS AND FOUNDATIONS. EXCAVATIONS FOR FOUNDATIONS SHOULD BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF REINFORCING STEEL AND CONCRETE. UNDERCUT UNSUITABLE SOILS AND BACKFILL AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
- NOTIFY ENGINEER IF FOUNDATION CONDITIONS ENCOUNTERED DIFFER FROM SOILS EXPLORATION INFORMATION MADE AVAILABLE TO THE CONTRACTOR.
- REMOVE ALL EXISTING PAVEMENT, STRUCTURES AND FOUNDATIONS, AND TOPSOIL, UNSUITABLE FILLS AND ORGANIC SOILS ENCOUNTERED WITHIN AND BELOW THE AREA TO BE OCCUPIED BY SLABS ON GRADE AND FOUNDATIONS. THESE MATERIALS SHALL NOT BE USED FOR FILL WITHIN OR ADJACENT TO THE BUILDING. AFTER EXCAVATING THE EXPOSED NATURAL SOIL, SHALL BE THOROUGHLY COMPACTED PRIOR TO PLACEMENT OF FILL OR AS DIRECTED BY THE GEOTECHNICAL REPORT. BACKFILL AND BACKFILL PLACEMENT SHALL BE AS PER THE GEOTECHNICAL ENGINEERS RECOMMENDATIONS. IN LIEU OF GEOTECHNICAL ENGINEERS RECOMMENDATIONS BACKFILL SHALL BE CLEAN, CRUSHED STONE (#57 STONE) OR SELECT ENGINEERED FILL AND SHALL BE PLACED IN MAXIMUM 8" LIFTS AND COMPACT AS PER THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
- CONTRACTOR SHALL KEEP ALL FREE-STANDING EXCAVATIONS. CONTRACTOR SHALL PROVIDE DEWATERING MEASURES AS NECESSARY PRIOR TO PLACING CONCRETE. WATER SHOULD BE REMOVED FROM THE FOUNDATION BOTTOMS BEFORE CONCRETE OR REINFORCING STEEL IS PLACED.
 - CHANGES IN ELEVATION OF WALL FOOTING SHALL BE MADE IN STEPS NOT MORE THAN 2'-0" HIGH AND AT LEAST 4'-0" APART, UNLESS DETAILED OTHERWISE. SEE TYPICAL FOOTING STEP DETAIL.
- THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING, BRACING, UNDERPINNING, AND OTHER MEASURES NECESSARY TO INSURE STABILITY AND SAFETY DURING ERECTION AND CONSTRUCTION AND TO PREVENT MOVEMENT OF SOIL THAT COULD DAMAGE EXISTING STRUCTURES, PAVEMENT, UTILITIES, ETC.
- CENTER FOOTINGS UNDER COLUMNS AND WALLS UNLESS NOTED.
- THE DIFFERENCE IN ELEVATION OF THE BACKFILL ON THE INSIDE AND OUTSIDE OF WALLS SHALL NOT EXCEED TWO FEET UNTIL THE FIRST FLOOR STRUCTURE SUPPORTING THE WALLS IS IN PLACE, UNLESS THE WALL IS BRACED TO PREVENT MOVEMENT.
- UNLESS NOTED OTHERWISE ON THE CIVIL/SITE DRAWINGS, PROVIDE A MINIMUM 2% GRADE WITHIN 10-FEET OF THE PERIMETER OF THE FOUNDATION SYSTEM TO ALLOW SURFACE WATER TO DRAIN AWAY.
- DO NOT PLACE FILL OR CONCRETE ON FROZEN GROUND.

REINFORCEMENT

- ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED SHALL BE IN ACCORDANCE WITH MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI-315, LATEST EDITION) AND MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (CRSI, LATEST EDITION). REINFORCING STEEL SHALL NOT BE HEATED OR WELDED AND MUST BE DRY AND FREE OF CONTAMINANTS SUCH AS RUST, DIRT, GREASE, AND PROTECTIVE COATINGS.
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60. ALL REINFORCING USED IN SEISMIC DESIGN CATEGORY (SDC) D AND HIGHER OR REINFORCING TO BE WELDED SHALL CONFORM TO ASTM A706 GRADE 60. REINFORCING STEEL SHALL NOT BE HEATED OR WELDED AND MUST BE DRY AND FREE OF CONTAMINANTS SUCH AS RUST, DIRT, GREASE, AND PROTECTIVE COATINGS.
- WHERE GRADE BEAMS OR STRIP FOOTINGS INTERSECT COLUMN FOUNDATIONS, EXTEND GRADE BEAM OR STRIP FOOTING REINFORCEMENT CONTINUOUSLY THROUGH THE COLUMN FOUNDATION.
- ALL WELDED WIRE REINFORCING SHALL CONFORM TO ASTM A185, A1064 PROVIDED IN FLAT SHEETS.
- PROVIDE DOWELS FROM FOUNDATIONS TO MATCH COLUMN, PIER AND WALL VERTICAL REINFORCING. WHERE SHOWN, PROVIDE DOWELS OUT OF WALLS TO MATCH SLAB REINFORCING.
- PROVIDE ADEQUATE BOLSTERS, H-CHAIRS, SUPPORT BARS, ETC., TO MAINTAIN SPECIFIED CLEARANCES FOR THE ENTIRE LENGTH OF ALL REINFORCING BARS. SUPPORT BARS THAT BEAR DIRECTLY ON EXPOSED SURFACES SHALL BE A CRSI CLASS 1. STRUCTURAL SLABS SHALL UTILIZE A CRSI CLASS 2 SUPPORTS.
- ALL DEVELOPMENT AND SPLICE LENGTHS SHALL BE PER ACI 318 WITH CLEAR SPACING GREATER OR EQUAL TO 3 BAR DIAMETER. PROVIDE CLASS "B" TENSION LAP SPLICE OR FULL MECHANICAL SPLICE (ACI 318, SECT. 25.4.2) FOR ALL REINFORCING STEEL IN WALLS, COLUMNS, AND SLABS. SEE LAP SCHEDULE ON SHEET SD-S-02 FOR LAP LENGTHS. UNO.
- LAP SPLICES SHALL NOT BE MADE AT POINTS OF MAXIMUM STRESS AS DETERMINED BY THE ENGINEER. LAP SPLICES FOR CONTINUOUS SLAB OR BEAM BARS, WITH DOUBLE BAR REINFORCING, SHALL BE LOCATED IN THE MIDDLE 1/3 OF THE SPAN FOR TOP BARS AND CENTERED OVER THE SUPPORT FOR THE BOTTOM BARS. LAP SPLICE IN BEAMS, CONTINUOUS SLABS AND WALLS SHALL BE STAGGERED. CENTERLINE OF STAGGERS SHALL BE A MINIMUM OF A SPLICE LENGTH APART.
- A TOP BAR IS A HORIZONTAL BAR WHERE MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST DIRECTLY BELOW THE BAR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS FOR EPOXY-COATED REINFORCEMENT, MULTIPLY THE TABULATED VALUES BY 1.5 FOR "REGULAR BARS" AND 1.3 FOR "TOP BARS".
- SUBMIT REINFORCING SHOP DRAWINGS FOR REVIEW. AT A MINIMUM, THESE DRAWINGS SHALL SHOW THE GENERAL PLACEMENT OF REINFORCING, CONSTRUCTION JOINTS, CONTROL JOINTS, EXPANSION JOINTS, CONCRETE MEMBER DIMENSIONS, DOWELS, BAR LENGTHS, SPLICE LENGTH, AND REINFORCING BEND TABLES.
- TACK WELDING OR WELDING OF REBAR SHALL NOT BE PERMITTED UNLESS OTHERWISE CALLED FOR OR APPROVED BY THE ENGINEER. IF APPROVED, REINFORCING MAY BE WELDED IN ACCORDANCE WITH AWS SPECIFICATION D1.4. ALL REINFORCING TO BE WELDED SHALL CONFORM TO ASTM A706.
- IN ADDITION TO NORMAL ACCESSORIES USED TO HOLD REINFORCING STEEL FIRMLY IN POSITION, EXTRA ACCESSORY BARS SHALL BE USED AS FOLLOWS:
 - IN SLABS, #5 REBAR BARS AT 36" ON CENTER MAXIMUM TO SUPPORT TOP REINFORCING STEEL.
 - IN WALLS WITH TWO CURTAINS, #5 REBAR SPACERS AT 6" ON CENTER MAXIMUM TO SUPPORT EACH WALL REINFORCING CURTAIN.
- CONCRETE CONSTRUCTION SHALL BE REINFORCED CONCRETE EXCEPT WHERE PLAIN CONCRETE IS INDICATED ON THE DRAWINGS. UNLESS OTHERWISE NOTED, MINIMUM REINFORCING STEEL SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING SCHEDULES:

SLAB	THICKNESS	SIZE	SPACING	LOCATION
	4"	#3	12"	CENTERED
	5"	#4	12"	CENTERED
	6"	#4	12"	CENTERED
	8"	#4	12"	T & B
	9"	#4	12"	T & B
	10"	#4	12"	T & B
	12"	#5	12"	T & B
WALL	THICKNESS	SIZE	SPACING	LOCATION
	6"	#4	12"	CENTERED
	8"	#4	12"	CENTERED
	10"	#4	12"	E F
	12"	#5	12"	E F
	14"	#5	12"	E F
	16"	#6	12"	E F
	18"	#6	12"	E F

- ALL HOOKS SHALL BE ACI STANDARD HOOKS UNLESS DIMENSIONED OTHERWISE. BARS ENDING IN RIGHT ANGLE BENDS OR HOOKS SHALL CONFORM TO THE REQUIREMENTS OF ACI 318, SECT. 25.3. IN CASES WHERE REINFORCING BARS CANNOT BE EXTENDED AS REQUIRED TO PROVIDE SPECIFIED DEVELOPMENT LENGTH DUE TO AN ADJACENT STRUCTURE, EXTEND AS FAR AS POSSIBLE AND END IN STANDARD HOOKS.
- LAP SPLICE WELDED WIRE FABRIC PLUS 2 INCHES AT EDGES AND ENDS AND PROVIDE ADDITIONAL REINFORCING WHERE SHOWN ON DRAWINGS. PLACE MESH 2 INCHES FROM TOP OF SLAB FOR SLABS ON GROUND AND 1 INCH FROM TOP OF SUPPORTED SLABS UNLESS NOTED OTHERWISE.

CAST-IN-PLACE CONCRETE:

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH ACI 318 AND ACI 350. CAST-IN-PLACE CONCRETE SHALL CONFORM WITH THE REQUIREMENT OF THE SPECIFICATIONS AND CONFORM TO THE MINIMUM REQUIREMENT OF ODOT CLASS C REINFORCED CONCRETE. CONCRETE SHALL HAVE THE FOLLOWING 28-DAY COMPRESSIVE STRENGTHS:

CAST-IN-PLACE CONCRETE:	5,000 PSI
FILL CONCRETE:	1,500 PSI
- CONCRETE SHALL BE PROPORTIONED, BATCHED, MIXED, PLACED, CONSOLIDATED, AND CURED IN ACCORDANCE WITH ACI 301, 304, 308, 309 AND 318. ALL CONCRETE SHALL BE MECHANICALLY VIBRATED IN ACCORDANCE WITH ACI 304 AND ACI 309.
 - USE 6% $\pm$ 1.5% ENTRAINED AIR PER ASTM C260 FOR ALL CONCRETE EXPOSED TO WEATHER.
 - ADDMIXTURES SHALL CONTAIN NO MORE THAN 0.05% CHLORIDE IONS BY WEIGHT OF CEMENT WHEN TESTED IN ACCORDANCE WITH ASTM D 750.
- ALL REINFORCING DETAILS SHALL CONFORM TO THE ACI DETAILING MANUAL, SP-66, UNLESS DETAILED OTHERWISE ON THE STRUCTURAL DRAWINGS. CONTRACTOR SHALL KEEP A COPY OF "FIELD REFERENCE MANUAL: STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE ACI 301 WITH SELECTED ACI REFERENCES", (ACI PUBLICATION SP-15) AT THE PROJECT FIELD OFFICE.
- SUBMIT FOR APPROVAL CONCRETE MIX DESIGN AND CERTIFICATION OF CONCRETE MATERIALS CONFORMING TO THE FOLLOWING EXPOSURE CATEGORIES:

CATEGORY	INTERIOR CONCRETE	EXTERIOR CONCRETE
FREEZE AND THAWING	F0	F3
SULFATE	S3	S3
IN CONTACT WITH WATER	W2	W2
CORROSION PROTECTION	C2	C2

- THE CONTRACTOR SHALL EMPLOY A TESTING LABORATORY APPROVED BY THE ENGINEER/ARCHITECT TO PERFORM THE TESTING SPECIFIED PER PARAGRAPH 1.6.4 OF ACI 301. THE TESTING LABORATORY SHALL MEET THE REQUIREMENTS OF ASTM E329. TESTING SHALL BE MADE BY AN ACI CERTIFIED FIELD-TESTING TECHNICIAN GRADE 1 OR APPROVED EQUIVALENT. A TECHNICIAN GRADE 1 SHALL BE PRESENT DURING ALL CONCRETE PLACEMENT. ALL SLABS SHALL BE POURED MONOLITHICALLY, EXCEPT FOR THE REQUIRED CONSTRUCTION JOINTS, CONTROL JOINTS, AND/OR EXPANSION JOINTS.
- PROVIDE 3/4 INCH CHAMFER ON ALL EXPOSED CORNERS OF SLABS UNLESS OTHERWISE INDICATED ON THE ARCHITECTURAL DRAWINGS. MINIMUM CLEARANCES FOR REINFORCING STEEL SHALL BE MAINTAINED. CHAMFERS SHALL EXTEND 2'-0", MINIMUM, BELOW GRADE.
- CURE ALL CONCRETE FOR A MINIMUM 7-DAYS. APPLY CURING COMPOUND AT THE MAXIMUM COVERAGE RATE OF 300 SQUARE FEET PER GALLON. USE PRODUCT IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. SEE SPECIFICATIONS.
- CONTRACTOR SHALL PROVIDE BONDING AGENT TO ALL SURFACES BETWEEN EXISTING AND FRESH CONCRETE. BONDING AGENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. PRIOR TO APPLICATION OF BONDING AGENT, THE EXISTING CONCRETE BASE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE ANY GREASE, OIL OR OTHER CONTAMINANTS THAT MAY PREVENT ADEQUATE BOND TO THE EXISTING CONCRETE. REMOVE WEAK OR DETERIORATED CONCRETE.
- THE CONCRETE INTERFACE OF ALL CONSTRUCTION JOINTS SHALL BE ROUGHEN TO 1/4", MINIMUM, AMPLITUDE. PRIOR TO CASTING AGAINST THE CONCRETE, APPLY EPOXY BASED BONDING AGENT.
- CONTRACTOR SHALL SUBMIT PROPOSED LOCATIONS OF CONSTRUCTION JOINTS NOT INDICATED ON THE DRAWINGS FOR REVIEW BY THE ENGINEER/ARCHITECT.
- ALUMINUM OR DISSIMILAR METALS IN CONTACT WITH CONCRETE SHALL BE COATED WITH GRAY EPOXY PRIMER. EPOXY PRIMER SHALL BE PRE-APPROVED BY THE ENGINEER.
- FORMWORK FOR SLAB CONCRETE THAT WILL BE EXPOSED IN THE COMPLETED STRUCTURE, SHALL BE CONSTRUCTED FROM A METAL OR SUITABLE SURFACE PLYWOOD THAT WILL PRODUCE AN ACCEPTABLY SMOOTH SURFACE. SEE SPECIFICATIONS.
- ANCHOR BOLTS SHALL BE ASTM F1554-36 UNLESS OTHERWISE NOTED. EMBEDMENT, EDGE DISTANCES AND ALLOWABLE LOADS SHALL CONFORM TO IBC TABLE 1912.2 OR AS NOTED ON THE DRAWINGS.
- CONCRETE PROTECTION (CLEAR COVER) FOR REINFORCEMENT BARS SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:
 - FOOTINGS AND FOUNDATION MATS CAST ON GROUND:
 - 3 INCHES, BOTTOM AND UNIFORM EDGES
 - 2 INCHES, FORMED SURFACES: EXPOSED TO EARTH, WATER OR WEATHER
 - 2 INCHES, BOTTOM, ON CONCRETE MUDMAT
 - CONCRETE IN CONTACT WITH SEWAGE OR WATER:
 - 2 INCHES
 - CONCRETE IN CONTACT WITH GROUND OR WEATHER:
 - 2 INCHES
 - CONCRETE NOT TO BE EXPOSED TO GROUND, WEATHER OR LIQUID:
 - 2 INCHES, SLABS AND WALLS
 - 1-1/2 INCHES, STIRRUPS & TIES

POST-INSTALLED FASTENERS:

- POST-INSTALLED ANCHORS SHALL BE USED ONLY WHERE SPECIFIED ON THE STRUCTURAL DRAWINGS.
- ANCHORS ADHESIVE ANCHOR INSTALLATION CERTIFICATION IS REQUIRED FOR ALL INSTALLERS OF ADHESIVE ANCHORS IN HORIZONTAL OR UPWARDLY INCLINED ORIENTATION. THIS CERTIFICATION CAN BE OBTAINED THROUGH ACI OR APPROVED EQUIVALENT.
- FASTENERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING IN COORDINATION WITH INFORMATION HEREIN. THE STRUCTURAL ENGINEER SHALL BE NOTIFIED IF CONFLICTS EXIST BETWEEN THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS AND THE REQUIREMENTS HEREIN.
- REINFORCEMENT STEEL SHALL NOT BE CUT. PRIOR TO DRILLING THE CONCRETE, THE CONTRACTOR SHALL BE LOCATED WITH A MAGNETIC BAR LOCATOR. POST-INSTALLED BOLTS AND FASTENERS SHALL BE INSTALLED TO MISS REINFORCEMENT STEEL IN CONCRETE. EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS.
- DRILL HOLES USING ROTARY PERCUSSION DRILL WITH A DEPTH GAGE. DO NOT DRILL THROUGH FULL THICKNESS OF CONCRETE. USE OF A DIAMOND CORE BIT WITH GRINDING TOOL. FOR ANCHOR HOLES MUST BE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO DRILLING. UNLESS OTHERWISE SHOWN IN THE DRAWINGS, ALL HOLES SHALL BE DRILLED PERPENDICULAR TO THE CONCRETE SURFACE. CLEAN HOLES IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS. IF CONCRETE IS DAMP, BLOW DRY HOLE WITH OIL-FREE COMPRESSED AIR. CLEAN HOLE WITH WATER ONLY IF RECOMMENDED BY MANUFACTURER. ADHESIVE ANCHORS MAY NOT BE SET IF WATER IS SEEPING INTO HOLE AND THE STRUCTURAL ENGINEER OF RECORD SHALL BE NOTIFIED.
- ANCHOR SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE SUBMITTED AND APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE DOCUMENTATION DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF MEETING THE PERFORMANCE OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR ITS USE, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE, INSTALLATION TEMPERATURE, MOISTURE CONDITION OF CONCRETE, AND DRILLING METHODS.
- THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL ANCHOR PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF ANCHOR INSTALLATION.
- ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS. CONTRACTOR SHALL CONTACT STRUCTURAL ENGINEER SHOULD THE LAYOUT OF THE ANCHOR, EMBEDMENT, SPACING OR EDGE DISTANCES, IS MODIFIED.
- EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES:
 - ANCHORAGE TO CONCRETE:
 - ADHESIVE ANCHORS:
 - HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HIT-Z ROD
 - HILTI HIT-HY 200 SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND VACUUM WITH HAS-V-36 GRADE 36 THREADED ROD
 - HILTI HIT-RE 500V SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND VACUUM WITH HAS THREADED ROD
 - SIMPSON SET-XP WITH ASTM A36 THREADED ROD
 - SIMPSON SET-XP INSTALLED USING SIMPSON SPEED CLEAN DXS SYSTEM WITH ASTM A36 THREADED ROD
 - APPROVED EQUAL
 - MECHANICAL ANCHORS:
 - HILTI KWIK HUS-EZ (KH-EZ), KH-EZ CRC, KH-EZ SS316, KH-EZ C, KH-EZ E, KH-EZ I, AND KH-EZ P SCREW ANCHOR SAFE SET SYSTEM INSTALLED USING HOLLOW DRILL BIT AND VACUUM
 - HILTI KWIK BOLT-1 EXPANSION ANCHOR
 - HILTI KWIK BOLT-T22 EXPANSION ANCHOR
 - SIMPSON TITEN HD SCREW ANCHOR
 - SIMPSON STRONG-BOLT 2 WEDGE ANCHOR
 - APPROVED EQUAL
 - REBAR DOWELING INTO CONCRETE:
 - HILTI HIT-HY 200 SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND VACUUM WITH CONTINUOUSLY DEFORMED REBAR
 - HILTI HIT-HY 500V SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND VACUUM WITH CONTINUOUSLY DEFORMED REBAR
 - SIMPSON SET-XP WITH CONTINUOUSLY DEFORMED REBAR
 - SIMPSON SET-XP INSTALLED USING SIMPSON SPEED CLEAN DXS SYSTEM WITH CONTINUOUSLY DEFORMED REBAR
 - APPROVED EQUAL

STRUCTURAL DRAWING ABBREVIATIONS

ADL	ADDITIONAL	GA	GAGE	QL	SEISMIC LOAD
ADJ	ADJACENT	GALV	GALVANIZED	QTY	QUANTITY
AESS	ARCH EXPOSED STRUCTURAL STEEL	GC	GENERAL CONTRACTOR	RAD	RADIUS
ALT	ALTERNATE	GEN	GENERAL	REF	REFERENCE
&	AND	GLB	GLASS LAMINATED BEAM	REIN	REINFORCEMENT
APPROX	APPROXIMATELY	GR	GRADE	REQD	REQUIRED
ARCH	ARCHITECT OR ARCHITECTURAL	GYP BD	GYPSPUM BOARD	SCHED	SCHEDULE
@	AT OR SPACING	HC	HOLLOW CORE	SECT	SECTION
B/	BOTTOM OF	HORIZ	HORIZONTAL	SER	STRUCTURAL ENGINEER
BLD	BUILDING	HP	HIGH POINT	SPAC	SPACING
BLK	BLOCKING	HS	HIGH STRENGTH	SPC(S)	SPECIFICATION(S)
BM	BEAM	HT	HEIGHT	SF	SQUARE FOOT
BRDG	BRIDGING	HVY	HEAVY	SHT	SHEET
BRS	BEARING	ID	INSIDE DIAMETER	SIM	SIMILAR
BTWN	BETWEEN	IF	INSIDE FACE	SOG	SLAB ON-GRADE
BTM	BOTTOM	IN	INCH	SPA	SPACING
CANT	CANTILEVER	INFO	INFORMATION	SPEC(S)	SPECIFICATION(S)
CL	CENTERLINE	INT	INTERIOR	SPF	SPRUCE PINE FIR
CLR	CLEAR	INV	INVERT	SQ	SQUARE
CLSM	CONTROLLED LOW	JOIST	JOIST	SS	STAINLESS STEEL
CTR	CENTER	JT	JOINT	STD	STANDARD
COL	COLUMN	K	KIPS	STIFF	STIFFENER
COL	COLUMN	KSF	KIPS PER SQUARE FOOT	STL	STEEL
CONC	CONCRETE	KSI	KIPS PER SQUARE INCH	STR	STRUCTURAL
CONN	CONNECTION	L	ANGLE	STRUCT	STRUCTURAL
CONST	CONSTRUCTION	LBS	POUNDS	SUP	SUPPORT
CONT	CONTINUOUS	LF	LINEAL FEET	SYM	SYMMETRICAL
CONTR	CONSTRUCTION JOINT	LONG	LONG	SYN	SYNTHETIC YELLOW PINE
CMU	CONCRETE MASONRY UNIT	LL	LIVE LOAD	T	TOP
CONT	CONTINUOUS	LLH	LONG LEG HORIZONTAL	T/	TOP OF
COORD	COORDINATE	LLV	LONG LEG VERTICAL	T&B	TOP AND BOTTOM
CUFT	CUBIC FEET	LOC	LOCATION	T&G	TONGUE AND GROOVE
DEG	DEGREE	LONG	LONGITUDINAL	TEMP	TEMPERATURE STEEL
DBL	DOUBLE	LOW	LOW POINT	THD	THREAD
DBA	DEFORMED BAR ANCHOR	LSH	LONG SIDE HORIZONTAL	THK	THICK
DEG	DEGREE	LSV	LONG SIDE VERTICAL	THRU	THROUGH
DEMO	DEMOLITION	LT WT	LIGHT WEIGHT	TOL	TOLERANCE
DET	DETAIL	MANUF	MANUFACTURER	TRANS	TRANSVERSE
DF	DOUGLAS FIR LARCH	MAS	MASONRY	TYP	TYPICAL
DIA	DIAGONAL	MATL	MATERIAL	UN or UNO	UNLESS NOTED
DIA or ϕ	DIAMETER	MAX	MAXIMUM		(OTHERWISE)
DIM	DIMENSION	MECH	MECHANICAL	VERT	VERTICAL
DO	DITTO	MEZZ	MEZZANINE	VIF	VERIFY IN FIELD
DN	DOWN THE SLOPE	MFR	MANUFACTURER	W	WOOD
DWG	DRAWING	MIN	MINIMUM	w/o	WITHOUT
DWL	DOWEL	MISC	MISCELLANEOUS	WD	WOOD
EA	EACH	MK	MARK	WP	WORKPOINT
EF	EACH FACE	MO	MASONRY OPENING	WT	WEIGHT
EJ	EXPANSION JOINT	MTL	METAL	WWF	WELDED WIRE FABRIC
EL	ELEVATION	NO 12"	NUMBER		
ELEC	ELECTRICAL	NOM	NOMINAL		
EMBED	EMBEDDED, EMBEDMENT	NS	NEARSCALE		
EQ	EQUAL	NTS	NOT TO SCALE		
EQUIP	EQUIPMENT	OC	ON CENTER		
EQ	EQUIPMENT	OD	OUTSIDE DIAMETER		
CS	EACH SIDE	OF	OUTSIDE FACE		
EW	EACH WAY	O/O	OUT TO OUT		
EX	EXISTING	OPNG	OPENING		