COVID 19 NOTE

PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR SHALL COORDINATE AND COMPLY WITH ALL LOCAL AND STATE COVID-19 PROCEDURES AND SHALL PROVIDE LOCAL PERSONNEL WITH WORK PLAN.

FIRESTOPPING

FS.1 APPLY FIRESTOPPING TO PLUMBING PENETRATIONS OF FIRE-RATED FLOOR AND WALL ASSEMBLIES TO RESTORE ORIGINAL FIRE-RESISTANCE RATING OF ASSEMBLY.

A. INSTALL FORMING MATERIALS AND OTHER ACCESSORIES OF TYPES REQUIRED TO SUPPORT FILL MATERIALS DURING THEIR APPLICATION AND IN THE POSITION NEEDED TO PRODUCE CROSS-SECTIONAL SHAPES AND DEPTHS REQUIRED TO ACHIEVE FIRE RATINGS INDICATED.
   i. AFTER INSTALLING FILL MATERIALS AND ALLOWING THEM TO FULLY CURE,vREMOVE COMBUSTIBLE FORMING MATERIALS AND OTHER ACCESSORIES NOT INDICATED AS PERMANENT COMPONENTS OF FIRESTOPPING.

B. INSTALL FILL MATERIALS FOR FIRESTOPPING BY PROVEN TECHNIQUES TO PRODUCE THE FOLLOWING RESULTS:
   i. FILL VOIDS AND CAVITIES FORMED BY OPENINGS, FORMING MATERIALS, ACCESSORIES, AND PENETRATING ITEMS AS REQUIRED TO ACHIEVE FIRE-RESISTANCE RATINGS INDICATED.
   ii. APPLY MATERIALS SO THEY CONTACT AND ADHERE TO SUBSTRATES FORMED BY OPENINGS AND PENETRATING ITEMS.
   iii. FOR FILL MATERIALS THAT WILL REMAIN EXPOSED AFTER COMPLETING THE WORK, FINISH TO PRODUCE SMOOTH, UNIFORM SURFACES THAT ARE FLUSH WITH ADJOINING FINISHES.

PERMITS, FEES AND INSPECTIONS

PFI1. SCHEDULE ALL REQUIRED INSPECTIONS. OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND INSPECTION FEES FOR PLUMBING WORK AND DELIVER TO OWNER.

CODES

C1. THE ENTIRE INSTALLATION, INCLUDING MATERIALS, EQUIPMENT AND WORKMANSHIP, SHALL CONFORM TO APPLICABLE CODES, LAWS, REGULATIONS AND REGULATORY BODIES HAVING JURISDICTION OVER THIS WORK.

C2. INTERNATIONAL MECHANICAL CODE 2018

C3. NATIONAL ELECTRICAL CODE 2017 (NFPA 70)

C4. INTERNATIONAL BUILDING CODE 2018, NEW JERSEY EDITION

C5. NATIONAL STANDARD PLUMBING CODE 2018

CONSTRUCTION AND RIGGING NOTES

CS.1 ON SITE STAGING LOCATIONS:

THE OWNER SHALL PROVIDE THE FOLLOWING SPACE AT THE SITE FOR THE CONTRACTOR TO USE AS STORAGE AND STAGING DURING CONSTRUCTION.

A. EXTERIOR SPACE SUITABLE FOR TRAILERS OR CONTAINERS INDICATED AT PRE-PROPOSAL MEETING.

B. INDOOR SPACE AS INDICATED AT PRE-PROPOSAL MEETING.

CS.2 ALL OTHER STORAGE REQUIREMENTS SHALL BE PROVIDED BY THE CONTRACTOR OFF SITE.

CS.3 IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE ALL EQUIPMENT STORED OUTSIDE IS PROTECTED FROM ALL WEATHER PRIOR TO INSTALLATION.

CS.4 CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY AT ALL OF THEIR TRAILERS, STORAGE LOCATIONS, EQUIPMENT, AND CONTAINERS.

CS.5 CONTRACTOR SHALL COORDINATE WITH OWNER'S REPRESENTATIVE FOR THE AREA TO BE DESIGNATED FOR RIGGING OF UNITS AND THE REQUIRED PATH FOR TRANSPORTING.

GENERAL PLUMBING SPECIFICATIONS

DESCRIPTION:

P1. THE WORK SHALL INCLUDE ALL MATERIAL AND LABOR REQUIRED TO PROVIDE ALL PLUMBING WORK SPECIFIED HEREIN AND SHOWN ON THE DRAWINGS, WITHOUT LIMITING THE GENERALITY OF THE FOREGOING SENTENCE, THE MAJOR CATEGORIES OF THE PLUMBING WORK ARE AS FOLLOWS:
   A. SANITARY DRAINAGE SYSTEM (WASTE AND VENT)
   B. TRAPS, CLEANOUTS, ACCESS DOORS, WATER HAMMER ARRESTORS AND OTHER SPECIALITIES
   C. PLUMBING EQUIPMENT
   D. VALVES
   E. HANGERS AND SUPPORTS
   F. EXCAVATION AND BACKFILL
   G. FLUSHING, SANITIZING & TESTING

P2. RELATED WORK; DOCUMENTS AFFECTING WORK OF THIS SECTION INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, SECTIONS OF DIVISION 1 SPECIFICATIONS AND OTHER DIVISIONS OF THESE SPECIFICATIONS.

P3. COORDINATE THE LOCATION, MATERIALS AND INSTALLATION OF ALL UTILITIES AND ASSOCIATED WORK FOR SERVICES TO THE BUILDING WITH THE APPROPRIATE SUPPLIERS, LOCAL AUTHORITIES AND SITE CONTRACTORS.

SUBMITTALS

S1. COMPLY WITH PERTINENT PROVISIONS OF DIVISION 1 RELATING TO SHOP DRAWINGS.

S2. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
   A. PIPE, FITTINGS & VALVES
   B. PLUMBING FIXTURES AND/OR TRIM
   C. PLUMBING EQUIPMENT
   D. INSULATION
   E. FLOOR DRAINS, CLEAN OUTS & SPECIALITIES.

DEFINITIONS

D1. FURNISH: TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

D2. INSTALL: TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.

D3. WORK OR THE WORK: LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROL ACCESSORIES AND OTHER ITEMS REQUIRED FOR A COMPLETE INSTALLATION AND PROPER OPERATION.

D4. PLUMBING CONTRACTOR, THE CONTRACTOR, THIS CONTRACTOR; THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THE DRAWINGS.

GENERAL NOTES

1. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY ALL EXISTING CONDITIONS IN THE FIELD PRIOR TO SUBMITTING HIS PROPOSAL. WORK TO BE DONE SHALL BE ALL INCLUSIVE AND ANY WORK NOT SPECIFICALLY MENTIONED BUT REASONABLY IMPLIED SHALL BE INCLUDED. THIS INCLUDES ANY PATCH WORK NECESSARY. THE OIL/WATER SEPARATOR SYSTEM SHALL BE COMPLETE IN ALL RESPECTS.

2. DRAWINGS SHOW THE APPROXIMATE SIZE AND LOCATION OF THE EQUIPMENT AND APPURTENANCES. HOWEVER, ALL EQUIPMENT AND APPURTENANCES MAY NOT BE SHOWN. PIPING LAYOUTS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE THE EXACT ROUTING OF THE PIPING IN ACCORDANCE WITH THE ACTUAL FIELD CONDITIONS AND CONSTRAINTS. PROVIDE ALL REQUIRED TRANSITIONS, OFFSETS, ELBOWS, SUPPORTS, ETC., AS REQUIRED TO ROUTE THE PIPING IN ACCORDANCE WITH ACTUAL FIELD CONDITIONS AND TO COMPLY WITH THE WORK SHOWN ON THE DRAWINGS AND SPECS. RELOCATE EXISTING INTERFERENCES AS REQUIRED TO ACCOMPLISH THE WORK SHOWN ON THE DRAWINGS AND SPECS.

2. SHUTDOWNS MUST BE SCHEDULED WITH THE FACILITY IN ADVANCE. PRIOR TO BEGINNING WORK THE CONTRACTOR SHALL SUBMIT A PHASING PLAN SHOWING HOW THE WORK WILL PROCEED DURING THE CONSTRUCTION PERIOD. THIS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE ENGINEER.

3. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND MUNICIPAL LAWS AND ORDINANCES. BEFORE SUBMITTING HIS PROPOSAL THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE RULES OF ALL BOARDS' OR DEPARTMENTS HAVING JURISDICTION AND WITH THE WORK SHOWN ON THE PLANS. HE SHALL NOTIFY THE ENGINEER, IF IN HIS OPINION ANY WORK IS OMITTED OR IF ANY WORK OR MATERIALS SHOWN OR SPECIFIED IS NOT IN ACCORDANCE WITH GOOD PRACTICE OF THESE RULES.

4. WHERE THE WORDS "FURNISH", "PROVIDE", OR "INSTALL" ARE USED EITHER SINGLY OR IN COMBINATION, THESE WORDS ARE HEREBY INTERPRETED TO MEAN "FURNISH AND INSTALL" OR "PROVIDE AND INSTALL" INCLUDING ALL ASSOCIATED WORK UNLESS SPECIFICALLY NOTED OTHERWISE.

5. THE CONTRACTOR SHALL KEEP THE PROPERTY, ROOF AND BUILDING AT ALL TIMES FREE FROM RUBBISH AND DIRT WHICH MAY BE CAUSED BY HIMSELF OR HIS SUBCONTRACTORS. THE CONTRACTOR SHALL MAINTAIN HIS OWN DUMPSTERS ON THE SITE AS REQUIRED FOR HIS WORK. DUMPSTERS RETAINED BY THE FACILITY SHALL NOT BE USED BY THE CONTRACTOR. NO RUBBISH OR MATERIAL SHALL BE ALLOWED TO ACCUMULATE IN THE BUILDING OR ON THE PROPERTY.

6. THE CONTRACTOR SHALL FURNISH THE LABOR AND MATERIAL INCLUDED IN HIS CONTRACT IN AMPLE TIME AND SUFFICIENT QUANTITIES SO THAT ALL WORK MAY BE COMPLETED WITHIN THE DESIGNATED TIME LIMITS.

7. THE CONTRACTOR SHALL PROVIDE FOR THE PROTECTION OF WORK AND PROPERTY AND EFFECTIVELY PROTECT ALL MATERIALS AND EQUIPMENT FROM ENVIRONMENTAL AND PHYSICAL DAMAGE UNTIL COMPLETION OF ALL WORK AND FINAL ACCEPTANCE BY OWNER. CLOSE AND PROTECT ALL OPENINGS DURING CONSTRUCTION. PROVIDE AND INSTALL NEW MATERIALS AND EQUIPMENT TO REPLACE ITEMS DAMAGED.

8. THE EXACT LOCATIONS FOR DUMPSTERS, MATERIAL STORAGE AND STAGING WILL BE ESTABLISHED AT THE PRECONSTRUCTION MEETING.

9. ALL EXTERIOR AND INTERIOR PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING SURFACES. PROVIDE ESCUTCHEON PLATES FOR ALL EXPOSED PIPE AND CONDUIT PENETRATIONS. SEAL AROUND ALL SLAB, WALL AND PARTITION PENETRATIONS.

10. ALL PREVIOUSLY PAINTED SURFACES DISTURBED UNDER THIS CONTRACT SHALL BE REPAINTED. REPAINTING OF SURFACES IN FINISHED AREAS SHALL INCLUDE PAINTING OF THE ENTIRE SURFACE PLANE OF THE DISTURBANCE UP TO THE NEAREST CORNER OR INTERSECTION WITH ANOTHER PLANE. REPAINTING IN ALL UNFINISHED AREAS SHALL BE TOUCH UP PAINTED ONLY. PRIMER COAT IS NOT REQUIRED OVER PREVIOUSLY PAINTED SURFACES, HOWEVER, THESE SURFACES SHALL BE CLEANED PRIOR TO REPAINTING PER THE MANUFACTURER'S DIRECTIONS. ALL COLORS SHALL BE COMPUTER MATCHED TO THE EXISTING ADJACENT PAINT.

11. ALL CURRENT MARKINGS SHALL BE PRESERVED. PREVIOUSLY PAINTED MARKINGS SHALL BE REPAINTED. APPLIED MARKINGS SHALL BE MASKED OFF DURING PAINTING OPERATIONS.

12. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL CLEAN ALL EQUIPMENT AND WORK AREAS AND ADJUST ALL EQUIPMENT TO THE SATISFACTION OF THE OWNER AND ENGINEER.

13. ALL PENETRATIONS TO BE REPAIRED SHALL BE PATCHED TO MATCH EXISTING SURFACES AND MAINTAIN ALL FIRE RATINGS. PROVIDE ESCUTCHEON PLATES FOR ALL EXPOSED PIPE AND CONDUIT PENETRATIONS. SEAL AROUND ALL PENETRATIONS RESULTING FROM PLUMBING UPGRADE WORK.

14. ALL PLUMBING WORK, SHALL BE PERFORMED BY A NJ LICENSED PLUMBER.

15. ANY FLOOR, ASPHALT, CONCRETE, WALL OR STRUCTURE THAT IS DAMAGED SHALL BE REPAIRED TO MATCH EXISTING.

QUALITY ASSURANCE

Q1. USE ADEQUATE NUMBER OF SKILLED TRADESMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE RESPECTIVE MECHANICAL TRADES.

Q2. ALL MATERIALS SHALL BE NEW AND SHALL BE OF THE BEST GRADE.

Q3. ALL PLUMBING WORK SHALL BE DONE IN ACCORDANCE WITH THEN.J STATE UNIFORM CONSTRUCTION CODE, STATE ADOPTED BARRIER FREE REQUIREMENTS, THE NATIONAL STANDARD PLUMBING CODE(N.S.P.C) AND THE INTERNATIONAL FUEL GAS CODE, LATEST EDITION IN FORCE.

Q4. ALL DOMESTIC POTABLE WATER PIPING SHALL BE FLUSHED AND DISINFECTED AND SHALL BE TESTED IN ACCORDANCE WITH THE N.S. P.C. PROVIDE CERTIFICATE OF PERFORMANCE AND LABORATORY TESTS REPORT TO LOCAL AUTHORITIES FOR THEIR APPROVAL.

Q5. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF ALL ACCESSIBLE FIXTURES. MOUNT ALL SUCH FIXTURES IN ACCORDANCE WITH THE STATE ADOPTED BARRIER FREE SUB CODE WITH RESPECT TO SUCH ASPECTS AS MOUNTING HEIGHTS, DISTANCE FROM GRAB BARS, LOCATION OF HAND CONTROLS, CLEARANCES, ETC.

Q6. COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEATH ACTS (OSHA).

DRAWINGS

DWG1. THE DRAWINGS ISSUED WITH THESE SPECIFICATIONS ARE DIAGRAMMATIC AND INTENDED TO SHOW GENERAL ARRANGEMENT, SIZE AND CAPACITY. ALL OFFSETS ARE NOT NECESSARILY SHOWN. THE PLUMBING CONTRACTOR SHALL ARRANGE AND COORDINATE THE WORK, FURNISH NECESSARY OFFSETS, VALVES, VENTS, ACCESS DOORS, CLEAN OUTS AND FITTINGS TO AVOID CONFLICTS WITH OTHER MECHANICAL AND ELECTRICAL SERVICES AND WITH STRUCTURAL AND ARCHITECTURAL EQUIPMENTS ELEMENTS.

PIPE, TUBE AND FITTINGS

PTF1. SEE PIPE MATERIALS SCHEDULE ON DRAWING P0.02.

DRAIN AND CLEANOUT DECK PLATES

CO1. PROVIDE ALL FLOOR DRAINS AND CLEANOUT DECK PLATES AS SHOWN AND SPECIFIED ON THE DRAWINGS.

CO2. DRAINS AND CLEANOUT DECK PLATES SHALL BE JAY R SMITH, ZURN, JOSAM OR EQUAL.

HANGERS AND SUPPORTS

H1. ALL PIPING SHALL BE RIGIDLY SUPPORTED BY HANGERS AND RODS SECURELY FASTENED TO THE BUILDING STRUCTURE. WHERE MULTIPLE PIPES ARE RUN TOGETHER, GROUP PIPING ON UNISTRUT MEMBERS, WITH MATCHING FASTENERS AND HANG WITH THREADED RODS FROM BUILDING STRUCTURE.INCLUDE INSULATION SHIELDS AND PROTECTION TO ALLOW CONTINUOUS INSULATION AND VAPOR BARRIER WITHOUT DAMAGE TO INSULATION. PIPING RUN EXPOSED ON THE ROOF SHALL BE MOUNTED ON PIPE RAILS OR PEDESTALS MANUFACTURED FOR THIS PURPOSE, WITH PIPE SECURED TO SUPPORT AND SUPPORT SECURED TO ROOF WITH PROPER FLASHING AND CEILING. HANGERS SHALL BE GRINNEL, MASON, B-LINE, PATE, RPS OR EQUAL.

GENERAL INSTALLATION

GI1. ALL CONNECTIONS TO EXISTING SERVICES OR SERVICES PROVIDED BY OTHERS SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR, OWNER, OTHER ASSOCIATED CONTRACTORS AND UTILITY COMPANIES AS REQUIRED. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF NEW SERVICES, REVISIONS TO EXISTING SERVICES, TIE INS TO EXISTING PIPING, CONNECTIONS TO NEW PIPING AS PROVIDED BY LOCAL UTILITY COMPANIES AND ALL UTILITY CONTACTS RELATED TO FIELD CONDITIONS AND WORK.

GI2. THE PLUMBING CONTRACTOR SHALL VERIFY ALL LOCATIONS AND ELEVATIONS OF EXISTING SERVICES AND UTILITIES BEFORE STARTING ANY WORK. REPORT ANY DISCREPANCY TO THE ARCHITECT AND ENGINEER FOR RESOLUTION. LOCATE ALL EXISTING PIPING REQUIRED TO RECEIVE NEW CONNECTIONS PRIOR TO INSTALLING ANY NEW PIPING SO AS TO INSURE ADEQUATE ELEVATION AND SIZE.

G13. INSTALL PIPING SO AS NOT TO ENCROACH ON REQUIRED CLEARANCES ABOVE ANY ELECTRIC PANEL/SWITCHBOARDS. NO PIPING SHALL BE INSTALLED DIRECTLY OVER ELECTRICAL PANELS AND NO PIPING SHALL BE INSTALLED WITH THE BOTTOM AT LESS THAN 6'-6" ABOVE THE WORKING SPACE IN FRONT OF ANY ELECTRICAL PANELS/SWITCHBOARDS.

G14. ALL CEILING SPACES WHICH ARE USED AS PLENUMS IN CONJUNCTION WITH ANY AIR DISTRIBUTION SYSTEM SHALL BE NON COMBUSTIBLE IN ACCORDANCE WITH INTERNATIONAL MECHANICAL CODE AND SHALL COMPLY WITH IMC SECTION 602, PLENUMS. ALL MATERIAL LOCATED IN CEILING PLENUMS MUST BE NON COMBUSTIBLES EXCEPT AS PERMITTED BY IMC SECTION 602.2, CONSTRUCTION. THIS INCLUDES BUT IS NOT LIMITED TO PIPING, INSULATION, TUBING, CABLES AND THEIR ASSOCIATED SUPPORTS, HANGERS, FASTENERS, ETC.

G15. ALL WASTE/VENT STACKS IN AREAS WITH FLOOR SLABS AGAINST GRADE SHALL HAVE A CLEANOUT AT THE BASE OF THE STACK AND IN AREAS WITH FINISHED WALLS, PROVIDE FINISHED WALL PLATE.

G16. ALL PIPING EXPOSED OR LOCATED WITHIN AN ACCESSIBLE SPACE SHALL RECEIVE MANUFACTURED PIPE IDENTIFICATION INDICATING USE OF PIPE AND DIRECTION OF FLOW. ALL VALVES SHALL RECEIVE A MANUFACTURED VALVE TAG AND A CORRESPONDING VALVE SCHEDULE SHALL BE SUBMITTED TO THE OWNER FOR HIS REFERENCE.

G17. ALL MATERIALS, EQUIPMENT AND ACCESSORIES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS WRITTEN INSTALLATION INSTRUCTIONS. COORDINATE EXACT LOCATIONS TO ACCOMMODATE ALL REQUIRED CLEARANCES AND OBSERVE ALL REQUIREMENTS FOR VALVING AND CONNECTIONS.

G18. THE PLUMBING CONTRACTOR SHALL REPLACE ANY PIPING SYSTEM AND COMPONENTS WHICH DO NOT PASS TESTING PROCEDURES SPECIFIED AND RETEST REPAIRED PORTIONS OF THE SYSTEM.

GI9. REFER TO ARCHITECTURAL PLANS FOR LOCATION OF FIREWALLS AND WALLS WHICH REQUIRE SEALING. THE PLUMING CONTRACTOR SHALL BE RESPONSIBLE FOR CEILING ALL FLOOR AND WALL PENETRATIONS WITH FIRE RATED SEALANT BEFORE FINAL PAYMENT.

GI10. ALL PENETRATIONS THROUGH FLOOR ASSEMBLIES, CORRIDOR WALLS AND OTHER SIMILAR FIRE RATED PARTITIONS SHALL RECEIVE CODE COMPLIANT FIRESTOPPING TO MAINTAIN THE FORE RATING OF THE ASSEMBLY PENETRATED.

GI11. THE PLUMBING CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO ALL PLUMBING EQUIPMENT, EQUIPMENT SUPPLIED BY OTHERS, INCLUDING REQUIRED STOPS, VALVES, FITTINGS, TRAPS, ETC.

GI12. FURNISH AND INSTALL ALL NECESSARY MISCELLANEOUS INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR VERIFIED.

PIPING LEGEND

SINGLE LINE	DESCRIPTION
	ANGLE GLOBE VALVE
	BALANCING VALVE
	BALL VALVE
	CHECK VALVE
	2 WAY CONTROL VALVE
	3 WAY CONTROL VALVE
	DRAIN VALVE
	GATE ISOLATION VALVE
	GLOBE VALVE
	NEEDLE VALVE. ISOLATION VALVE
	PRESSURE / RELIEF SAFETY VALVE
	SOLENOID VALVE (GAS)
	PLUG VALVE
	GAS COCK
	AIR VENT
	CAP
	CIRCUIT SETTER
	FILL DETECTOR
	FLEXIBLE CONNECTION
FD	FLOOR DRAIN
	FLOW METER
	INLINE FILTER
	REDUCER OR INCREASER
	STRAINER
	UNION
	VENT THRU ROOF
	REDUCED PRESSURE BACKFLOW PREVENTOR
	PUMP
	DIRECTION OF FLOW
	DIRECTION OF PITCH
	ECCENTRIC REDUCER OR INCREASER
	CONCENTRIC REDUCER OR INCREASER
	PIPE RISER UP/DN
	PIPE RISING UP
	PIPE DROPPING DOWN
	BOTTOM TEE
	CAP
	DOMESTIC COLD WATER (CW)
	DOMESTIC HOT WATER (HW)
	HOT WATER RETURN/CIRCULATION (HWR/HWC)
PD	PUMPED DISCHARGE (PD)
	SANITARY (S, SAN)
	VENT (V)
ST	STORM (ST)
GAS G	GAS

CONTROLS LEGEND

TYPE	DESCRIPTION
B	BAROMETRIC RELIEF (W/ ATTRIBUTED TEXT)
M	MOTOR OPERATED VALVE OR DAMPER
X	DETECTOR (FIRE, SMOKE, ETC)
T	THERMOSTAT
	THERMOMETER
	PRESSURE GAUGE
SD	SMOKE DETECTOR
SDD	SMOKE DUCT DETECTOR
D SMOKE	SMOKE DAMPER
F	FIRESTAT
DP	DIFFERENTIAL PRESSURE SWITCH
S	SENSOR
H	HUMIDITY SENSOR

NOTE:
NOT ALL SYMBOLS AND ABBREVIATIONS APPEAR ON THESE DOCUMENTS

GENERAL LEGEND

TYPE	DESCRIPTION
XX	METER (ELECTRIC, GAS, WATER)
	EXISTING / NEW CONNECTION WORK POINT
M03	LETTER INDICATES DISCIPLINE (MECHANICAL, ELECTRICAL, ETC) DRAWING KEY NOTE DESIGNATION WITH LETTER 'D' ADDED INDICATES DEMOLITION
S / 1	RISER TYPE (S, W, G, ST) RISER RISER NUMBER
UH / 1	EQUIPMENT TYPE EQUIPMENT SYMBOL EQUIPMENT NUMBER
1 / A-01	SECTION NUMBER SECTION SHEET NUMBER SECTION IS ON
	DEMOLITION WORK
	EXISTING WORK
	NEW WORK
	MATCH LINE

FOR BID

PHILIP A. QUENSE, P.E.
PROFESSIONAL ENGINEER
NJ LICENSE No. 24GE05368700

DATE: X/XX/2021

CERTIFICATE OF AUTHORIZATION (N.J.S.A. 45:8-56) 24GA27927000

NO.	DATE	REVISIONS DESCRIPTION	DRAWN	DESIGNED	CHECKED
	10.13.2022	FOR REVIEW	GN/AG	AG	AG
	05.22.2023	REVISED PER CLIENT COMMENTS	GN/AG	AG	AG

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PLUMBING GENERAL NOTES & ABBREV.
NJSEA MAINTENANCE BUILDING OIL / WATER SEPARATOR
BLOCK 107.01 - LOT 1
BOROUGH OF EAST RUTHERFORD
BERGEN COUNTY NEW JERSEY

DRAWN BY: --	CHECKED BY: --	PROJECT NO.: ERUTPRV21.014	SHEET NO.: P0.01
DESIGNED BY: --	SCALE: AS NOTED		
FIELD BOOK NO.:	PAGE:	DATE: SEPTEMBER 2022	

ABBREVIATIONS

A
- A, AMP — AMPERE
- AAV — AIR ADMITTANCE VALVE
- ACU — AIR CONDITIONING UNIT
- ACCU — AIR COOLED CONDENSING UNIT
- AD — AREA DRAIN / ACCESS DOOR
- A/E — ARCHITECT/ENGINEER
- AFF — ABOVE FINISHED FLOOR
- AH — AIR HANDLER (SPLIT REFRIG)
- AHU — AIR HANDLING UNIT
- AL — ACOUSTICAL LINING
- ALC — AUTOMATIC LOGIC CONTROL
- ALUM — ALUMINUM
- AP — ACCESS PANEL
- AS — AIR SEPARATOR
- AV — AIR VENT

B
- B — BOILER
- BAS — BUILDING AUTOMATION SYSTEM
- BB — ELECTRIC BASEBOARD RADIATION
- BDD — BACK DRAFT DAMPER
- BFC — BELOW FINISHED CEILING
- BLDG — BUILDING
- BOB — BOTTOM OF BEAM
- BOD — BOTTOM OF DUCT
- BOP — BOTTOM OF PIPE
- BTU — BRITISH THERMAL UNIT
- BTUH — BRITISH THERMAL UNITS PER HOUR

C
- C — CHILLER
- CB — CHILLED BEAM
- CD — CEILING DIFFUSER
- CFH — CUBIC FOOT PER HOUR
- CFM — CUBIC FEET PER MINUTE
- CHW — CHILLED WATER
- CHWP — CHILLED WATER PUMP
- CHWR — CHILLED WATER RETURN
- CHWS — CHILLED WATER SUPPLY
- CLG — CEILING
- CN — CONDENSATE NEUTRALIZATION KIT
- CO — CLEAN OUT
- CONN — CONNECTION
- CP — CONDENSATE PUMP
- CWR — CONDENSER WATER RETURN
- CWS — CONDENSER WATER SUPPLY
- CT — COOLING TOWER
- CU — CONDENSING UNIT
- CU — COPPER
- CUH — CABINET UNIT HEATER
- CVB — CONSTANT VOLUME BOX
- CWP — CONDENSER WATER PUMP
- CW — COLD WATER (CITY WATER)
- CY — CYCLES

D
- DB — DRY BULB TEMPERATURE
- DDC — DIRECT DIGITAL CONTROLS
- DH — DOOR HEATER
- DHS — DOOR HEATER SUPPLY VALVE
- DHR — DOOR HEATER RETURN VALVE
- DIA — DIAMETER
- DN — DOWN
- DS — DIRT SEPARATOR
- DWG — DRAWING
- DWP — DOMESTIC WATER PUMP
- DX — DIRECT EXPANSION

E
- (E) — EXISTING TO REMAIN
- EA — EACH
- EAT — ENTERING AIR TEMPERATURE
- EC — ELECTRICAL CONTRACTOR
- ECM — ELECTRONICALLY COMMUTATED MOTOR
- EF — EXHAUST FAN
- EG — EXISTING GAS
- EHAC — ELECTRIC HOT AIR CURTAIN
- EJ — EXPANSION JOINT
- ER — EXHAUST REGISTER
- ESP — EXTERNAL STATIC PRESSURE
- ET — EXPANSION TANK
- EUH — ELECTRICAL UNIT HEATER
- EWT — ENTERING WATER TEMPERATURE
- EWC — ELECTRIC WATER COOLER
- EXH — EXHAUST
- EXIST — EXISTING

F
- F — FAHRENHEIT
- FA — FREE AREA
- FX — FLEXIBLE CONNECTION
- FC/FCU — FAN COIL UNIT
- FD — FIRE DAMPER
- FLA — FULL LOAD AMPS
- FLR — FLOOR FOB FLAT ON BOTTOM
- FOT — FLAT ON TOP
- FOP — FUEL OIL PUMP
- FP — FIRE PUMP
- FPM — FEET PER MINUTE
- FPS — FOOT PER SECOND
- FRP — FIBERGLASS REINFORCED POLYMERS
- FTR, FT — FINNED TUBE RADIATION

G
- G — NATURAL GAS
- GAL — GALLONS
- GALV — GALVANIZED
- GC — GENERAL CONTRACTOR
- GM — GAS METER
- GPH — GALLONS PER HOUR
- GPM — GALLONS PER MINUTE
- GUH — GAS UNIT HEATER
- GWB — GYPSUM WALL BOARD OR PLASTER

H
- HAC — HOT AIR CURTAIN
- HD — HAND DAMPER
- HORIZ — HORIZONTAL
- HP — HEAT PUMP, HORSE POWER
- HV — HEATING AND VENTILATING UNIT
- HW — HOT WATER
- HWC — HOT WATER CONVERTER
- HWP — HOT WATER PUMP
- HWR — HEATING HOT WATER RETURN
- HWS — HEATING HOT WATER SUPPLY
- HWUH — HOT WATER UNIT HEATER
- HX — HEAT EXCHANGER
- HZ — HERTZ
- H&V — HEATING AND VENTILATION

I
- ID — INSIDE DIAMETER, IDENTIFICATION
- IEER — INTEGRATED ENERGY EFFICIENT RATIO
- IN — INCHES

J
- JB — JUNCTION BOX

K
- KW — KILOWATT
- KWH — KILOWATT HOURS

L
- LAT — LEAVING AIR TEMPERATURE
- LBS — POUNDS
- LWT — LEAVING WATER TEMPERATURE
- LD — LINEAR DIFFUSER
- LF — LINEAR FEET
- LOG — LOOK OUT GALLERY

M
- MAU — MAKE-UP AIR UNIT
- MBH — 1,000 BRITISH THERMAL UNITS PER HOUR
- MC — MECHANICAL CONTRACTOR
- MCA — MINIMUM CIRCUIT AMPACITY
- MIN — MINIMUM
- MTD — MOUNTED
- MOCP — MAXIMUM OVERCURRENT PROTECTION
- MOD — MOTOR OPERATED DAMPER
- MZ — MULTIZONE AC UNIT (TAG-ONLY)

N
- (N) — NEW
- NC — NORMALLY CLOSED
- NFA — NET FREE AREA
- NO — NORMALLY OPEN
- NO.,# — NUMBER
- NOM. — NOMINAL
- NIC — NOT IN CONTRACT
- NK — NECK
- NTS — NOT TO SCALE

O
- OA — OUTSIDE AIR
- OAI — OUTSIDE AIR INTAKE
- OAT — OUTSIDE AIR TEMPERATURE
- OC, O/C — ON CENTER
- OD — OUTSIDE DIAMETER
- OBD — OPPOSED BLADE DAMPER

P
- P — PUMP
- PBD — PARALLEL BLADE DAMPER
- PH — PHASE
- PI — PRESSURE INDICATOR
- PRV — PRESSURE REDUCING VALVE
- PSIG — POUNDS PER SQUARE INCH
- PTAC — PACKAGED TERMINAL AIR CONDITIONER

Q

R
- (R) — REMOVE
- (RR) — REMOVE & RELOCATE
- RA — RETURN AIR
- RAG — RETURN AIR GRILLE
- RAR — RETURN AIR REGISTER
- RCP — REFLECTED CEILING PLAN
- RF — RETURN/RELIEF FAN
- RHC — REHEAT COIL
- RM — ROOM
- RPM — REVOLUTIONS PER MINUTE
- RTU — ROOFTOP UNIT
- RV — RELIEF VENT

S
- SA — SUPPLY AIR
- SAR — SUPPLY AIR REGISTER
- SB — SECURITY (BURGLAR) BAR/GRILLE (ALTERNATE No1)
- SCG — SMOKE CONTROL GRILLE
- SD — SMOKE DAMPER
- SEF — SMOKE EXHAUST FAN
- SF — SUPPLY FAN
- SP — STATIC PRESSURE
- SQ.FT — SQUARE FEET
- SR — SUPPLY REGISTER
- S/S — STAINLESS STEEL

T
- TG — TRANSFER GRILLE
- T, TH — THERMOSTAT
- TSP — TOTAL STATIC PRESSURE
- TYP — TYPICAL

U
- UF — UTILITY FAN
- UH — UNIT HEATER
- UON — UNLESS OTHERWISE NOTED

V
- V — VOLTS
- VAV — VARIABLE AIR VOLUME UNIT
- VD — VOLUME DAMPER
- VERT — VERTICAL
- VF — VENTILATION FAN
- VFD — VARIABLE FREQUENCY DRIVE
- VTR — VENT THRU ROOF

W
- W/ — WITH
- WB — WET BULB

X, Y

Z
- ZV — ZONE VALVE

MATERIAL FOR PLUMBING SYSTEMS

PIPING SYSTEM	LOCATION	REQUIREMENTS
STORM PIPING	EXTERIOR (YARD DRAINAGE)	1. SERVICE WEIGHT CAST IRON BELL AND SPIGOT WITH LEAD AND OAKUM JOINTS. 2. DUCTILE IRON (DI) CLASS 51 FOR ALL SIZES WITH PUSH-ON JOINTS. 3. PRECAST REINFORCED CONCRETE PIPE WITH RUBBER GASKET WATERTIGHT JOINT. 4. HIGH DENSITY POLYETHYLENE (HDPE) PIPING, BELL AND SPIGOT, WATERTIGHT JOINTS.
	EXTERIOR (HOUSE DRAIN & HOUSE SEWER)	SERVICE WEIGHT CAST IRON (SVCI) BELL AND SPIGOT WITH LEAD AND OAKUM JOINTS, DUCTILE IRON CLASS 51 FOR ALL SIZES WITH PUSH-ON JOINTS.
SANITARY PIPING (WASTE & VENT)	INTERIOR (ABOVE GROUND & HOUSE DRAIN LINES)	SERVICE WEIGHT CAST IRON (SVCI) NO-HUB WITH MECHANICAL STAINLESS STEEL COUPLINGS. GALVANIZED STEEL PIPE SCHEDULE 40, WITH THREADED DRAINAGE FITTINGS ALLOWED FOR 3" DIAMETER AND SMALLER
	INTERIOR (PUMP DISCHARGE)	GALVANIZED STEEL PIPE SCHEDULE 40, WITH THREADED DRAINAGE FITTINGS, VICTAULIC FITTING IN CONJUNCTION WITH GROOVE PIPE, 2" AND LARGER IS PERMITTED
	INTERIOR (UNDER GROUND)	SERVICE WEIGHT CAST IRON BELL AND SPIGOT WITH LEAD AND OAKUM JOINTS
	EXTERIOR (HOUSE SEWER / UNDERGROUND)	DUCTILE IRON PIPE CLASS 56 WITH PUSH-ON JOINT

PLUMBING SLEEVE SCHEDULE

STORM, SANITARY, VENT & GAS (UNINSULATED) THROUGH FLOORS & WALLS	STORM, SANITARY, VENT & GAS (UNINSULATED) THROUGH BEAMS	DOMESTIC WATER PIPING (INSULATED) THROUGH FLOORS & WALLS
1½" – 4" SLEEVE	1½" – 3" OPENING	½" & ¾" – 5" SLEEVE
2" – 4" SLEEVE	2" – 4" OPENING	1" – 5" SLEEVE
2½" – 5" SLEEVE	2½" – 4" OPENING	1¼" – 6" SLEEVE
3" – 5" SLEEVE	3" – 5" OPENING	1½" – 6" SLEEVE
4" – 6" SLEEVE	4" – 6" OPENING	2" & 2½" – 7" SLEEVE
5" – 8" SLEEVE	5" – 7" OPENING	3" – 7" SLEEVE
6" – 8" SLEEVE	6" – 8" OPENING	4" – 8" SLEEVE
8" – 10" SLEEVE	8" – 10" OPENING	5" – 9" SLEEVE
10" – 12" SLEEVE	10" – 12" OPENING	6" – 10" SLEEVE
12" – 15" SLEEVE	12" – 14" OPENING	8" – 12" SLEEVE
15" – 18" SLEEVE	15" – 17" OPENING	10" – 15" SLEEVE

NOTES :

1. SCHEDULE INDICATES PIPE SIZE AND SLEEVE SIZE.
2. ALL BEAM, FLOOR AND WALL PENETRATIONS ARE TO BE COORDINATED AND APPROVED BY BOTH THE ARCHITECT AND STRUCTURAL ENGINEER.
3. ALL WALL PENETRATIONS IN RATED WALLS ARE TO HAVE FIRE STOPPING INSTALLED TO ORIGINAL OR GREATER RATING.
4. EXPOSED PENETRATIONS IN OCCUPIED AREAS SHALL RECEIVE ESCUTCHEON PLATES ON THE INSIDE.\
5. SEE DETAILS FOR FURTHER INFORMATION.

PUMP SCHEDULE

GENERAL							PERFORMANCE					MOTOR DATA								
TAG	QTY	SERVICE	LOCATION	MANUFACTURE	MODEL	TYPE	FLOW (GPM)	HEAD (FT.HD)	EFF (%)	RATED SPEED (RPM)	IMPELLAR DIA. (IN)	MOTOR (HP)	DUTY PT. (BRAKE HP)	SPEED (RPM)	MOTOR TYPE	FLA	POWER (V/PH/HZ)	WORKING PRESSURE (PSIG)	WEIGHT (LBS)	NOTES
OSP-1,2	2	OIL/WATER SEPARATOR	PIT	ABS SULZER	DOL-10-PIR-28-1.3-S10/4W	SUBMERSIBLE GRINDER	10	28	46.1	1715	6.02	1.3	0.279	1750	ENCLOSED SUBMERSIBLE	5.8	208/3/60	175	100	1 - 9

NOTES:
1. Pump shall meet or exceed the requirements of AHJ adopted plumbing code as well as all state, city and local rules, regulations, ordinances, etc.
2. Pump shall be rated for exterior use with a truckwashdown which may be subject to Storm runoff, ambient conditions, oil, detergents and other FOSS
3. Grinder shall be capable of shearing and reducing to a fine slurry and cutter disc assembly shall be constructed similar to Chrome Molydbdenum Cobalt Steel or approved equal.
4. Pumps shall be explosion proof and constructed of non-corrosive materials similar to Cast Iron for housing and impellar, Motor Shaft of #420 Stainless Steel, Seals of Buna N Lip and Silicon Carbide
5. Provide NEMA 4x control panel with polycarbonate enclosure when installed near washdown operation. Control Panel to include HOA switches, through the door disconnect, status lights and alarms and dry contact for remote alarm.
6. Provide (4) submersible float switches similar to Anchor Scientific Inc. Eco-Float Model G. Install per manufacturer recommendations.
7. Pumps shall include quick disconnect fittings, mounting system with integrated base elbow, upper guide bar holders, and lifting cable for each pump. See Details and specs for further information.
8. Provide a heavy duty, round 36" diameter fiberglass basin with anti-flotation collar similar to AK Industries Inc., Part # GB-36-200 or approved equal.
9. Coordinate location with on-site personnel and per drawings and diagrams.
10. Interlock control panel with building/site BMS as directed per NJSEA. Coordinate with existing controls contractor. Provide 24v input control from pressure switch of hose and output control of on/off gate valve (see detail P5.01).

OIL/WATER SEPARATOR SCHEDULE

GENERAL							CAPACITY				DIMENSIONAL DATA					
TAG	QTY	SERVICE	LOCATION	MANUFACTURER	MODEL	TYPE	FLOW RATE (GPM)	VOLUME (GAL)	OIL CAPACITY (GAL)	SOLIDS CAPACITY (GAL)	DIMENSIONS (LxWxH)(IN)	INLET/ OUTLET DIA (IN)	ACCESSWAY DIA (IN)	VENT QTY/DIA (IN)	SHIP WEIGHT (LBS)	NOTES
OST-1	1	OIL/WATER SEPARATOR	TRUCKWASH AREA	ZURN GREENTURTLE	OMC200	UNDERGROUND FIBERGLASS	10	200	90 GAL	72 GAL	62x32x48	4 / 4	24	2 / 3	225	1 -5

NOTES:
1. UNIT SHALL INCLUDE DOUBLE WALL, FIBERGLASS OVAL SHAPED BASIN AND INCLUDE SEPARATE CHAMBERS, COALESCING MEDIA AND ALL AS REQUIRED FOR 99%+ SEPARATION.
2. COORDINATE LOCATION WITH CIVIL/SITE CONTRACTOR PRIOR TO INSTALLATION. UNIT SHALL BE INSTALLED IN LOCATION DOWNSTREAM OF TRENCH DRAIN AND WHERE NOT TO CAUSE A NUISANCE OR REROUTE TRAFFIC IN ANYWAY.
3. PROVIDE SMARTPRO OR SIMILAR EFFLUENT LEVEL MONITOR. INCLUDE G5 IMD TANK UNIT WITH ULTRASONIC TRANSDUCER AND BATTERY POWERED; AND COMBINATION GATEWAY AND ALARM PANEL TO BE INSTALLED WITHIN RADIO SIGNAL
4. COORDINATE WITH OWNER FOR DETERMINATION OF USING IP ADDRESS MONITORING FOR YEARLY FEE.
5. PROVIDE 12" HIGH ANCHORING SLAB AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

PLUMBING DRAIN SCHEDULE

			BODY												STRAINER																										REMARKS
DESIGNATION	REQUIRED	SERIES NO. (ZURN / WADE / SMITH • / MIFAB)	CAST IRON	GALVANIZED	ALL BRONZE	STAINLESS STEEL	ACID RESISTANCE COATING	SECONDARY CLAMP	CLAMPING DEVICE	DECK CLAMP	BACK WATER VALVE	SUMP RECIEVER	FLASHING COLLAR	TRAP PRIMER	CAST IRON	GALVANIZED	ALL BRONZE	STAINLESS STEEL	NICKEL BRONZE	CHROME PLATED	SEDIMENT BUCKET	SECONDARY STRAINER	POLISHED FINISH	SATIN FINISH	BRONZE MESH SCREEN	BRONZE TOP	FUNNEL TOP	SQUARE TOP	ADJUSTABLE STRAINER	DOME	RAISED LIP	EXTENSION	STANDPIPE	LESS GRATE	TRACTOR GRATE	IRON GRATE	ANGLE GRATE	POLYETHYLENE	SOLID HINGED COVER	VANDAL PROOF/SECURED GRATE	LOCATION
BACKWATER VALVE (BWV)	•	7012	•								•																														DUCO COATED C.I. W/ FLAPPER
CO	•	4020			•												•						•			•															FLUSH FLOOR CLEAN OUT
WCO	•	4432			•												•						•			•															WALL CLEAN OUT

NOTES:

1. PROVIDE CLEANOUTS IN ACCORDANCE WITH NATIONALS STANDARD PLUMBING CODE, 2019. AT A MINIMUM, CLEANOUTS SHALL BE INSTALLED 5'-0" OUTSIDE OF BUILDING EXTERIOR, AT ALL CHANGES IN DIRECTION GREATER THAN 45°, AND AT THE BASE OF ALL VERTICAL RISERS.
2. PROVIDE CLEANOUTS COVERS THAT ARE COMPATIBLE WITH ENVIRONMENT, I.E. CORROSION RESISTANT WHERE EXPOSED TO CHEMICALS, RUST-PROOF FOR EXTERIOR, ETC.
3. BACKWATER VALVES SHALL BE INSTALLED BETWEEN ALL EQUIPMENT INCLUDING PUMPS, TANKS, ETC.

FOR BID

PHILIP A. QUENSE, P.E.
PROFESSIONAL ENGINEER
NJ LICENSE No. 24GE05368700

DATE: X/XX/2021

CERTIFICATE OF AUTHORIZATION (N.J.S.A. 45:8-56) 24GA27927000

REVISIONS

NO.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED
	10.13.2022	FOR REVIEW	GN/AG	AG	AG
	05.22.2023	REVISED PER CLIENT COMMENTS	GN/AG	AG	AG

PROJECT SITE MECHANICAL ENGINEER:

PHILIP A. QUENSE, P.E.
PROFESSIONAL ENGINEER
NJ LICENSE No. 24GE05368700

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A PROJECT OF
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MICHAEL J. NEGLIA, P.E., P.L.S., P.P.
PROFESSIONAL ENGINEER — N.J. LICENSE NO. 38604
PROFESSIONAL LAND SURVEYOR — N.J. LICENSE NO. 38604
PROFESSIONAL PLANNER — N.J. LICENSE NO. 33LI00569800

PLUMBING SCHEDULES & LEGENDS
NJSEA MAINTENANCE BUILDING OIL / WATER SEPARATOR
BLOCK 107.01 - LOT 1
BOROUGH OF EAST RUTHERFORD
BERGEN COUNTY NEW JERSEY

DRAWN BY: --	CHECKED BY: --	PROJECT NO.: ERUTPRV21.014	SHEET NO.: P0.02
DESIGNED BY: --	SCALE: AS NOTED		
FIELD BOOK NO.:	PAGE:		DATE: SEPTEMBER 2022

PLUMBING SPECIFICATIONS

I. WORK INCLUDED

A. WORK UNDER THIS PLUMBING CONTRACT SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE PLUMBING WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. FURNISH AND INSTALL ALL PIPES, FITTINGS, TRAPS, SUPPLIES, VALVES, HANGERS AND SUPPORTS, INSULATION, ETC. AND ALL OTHER ITEMS NECESSARY FOR COMPLETE, SATISFACTORY OPERATING AND APPROVED TYPE SYSTEM.
2. PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS TO THE OWNER.
3. PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH THE WORK OF THIS CONTRACT.
4. PROTECT, TEST, BALANCE, CLEAN, ADJUST AND GUARANTEE ALL OF THE WORK OF THIS CONTRACT TO SAFELY, PROPERLY AND CONTINUOUSLY OPERATE.
5. SUBMIT AS-BUILDING DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUALS.
6. PROVIDE IDENTIFICATION LABELS, TAGS, CHARTS AND DIAGRAMS.
7. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION REQUIRED FOR THE WORK OF THIS CONTRACT.
8. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS, AND BASES FOR PIPING AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF THIS CONTRACT.
9. PROVIDE SHOCK ABSORBERS WHERE REQUIRED ON ALL FLUSH VALVE FIXTURES.
10. PROVIDE DISINFECTION OF DOMESTIC WATER SYSTEM.
11. CATALOG CUTS OF EQUIPMENT.
12. PROVIDE INSULATION FOR EQUIPMENT, PIPING, AND ACCESSORIES PROVIDED OR INSTALLED UNDER THE WORK OF THIS CONTRACT.
13. PROVIDE COUNTERFLASHING, SLEEVES AND SEALS FOR ROOF, FLOOR AND WALL PENETRATIONS.
14. PROVIDE METERS, GAUGES AND INDICATORS.
15. PROVIDE CEILING ACCESS DOORS LIST FOR FURNISH AND INSTALLATION BY OTHERS.
16. MAINTAIN ALL EXISTING PLUMBING SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATIONS DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING ALL TEMPORARY PROTECTIVE DEVICES AND CONNECTIONS REQUIRED.
17. DEMOLISH AND REMOVE EXISTING PIPING, EQUIPMENT AND ACCESSORIES AS SHOWN ON THE DRAWINGS AND ANY OTHER RELATED OR ABANDONED ITEMS OR EQUIPMENT NOT SHOWN ON THE DRAWINGS.
   a) CONTRACTOR TO DEMOLISH (SPECIFIER TO LIST EQUIPMENT AND SYSTEMS TO BE DEMOLISHED, REMOVED, ABANDONED UNDER THIS CONTRACT).
18. PROVIDE ALL EQUIPMENT COMPONENTS, APPURTENANCES, PIPING, CONTROLS AND SPECIALTIES REQUIRED.
   a) CONTRACTOR TO FURNISH AND INSTALL NEW (SPECIFIER TO LIST EQUIPMENT AND SYSTEMS TO BE FURNISHED AND INSTALLED UNDER THIS CONTRACT).
19. PROVIDE POWER OR CONTROL WIRING LESS THAN 120 VOLTS.

II. WORK INCLUDED UNDER OTHER SECTIONS OF WORK

A. ALL POWER WIRING 120 VOLTS AND ABOVE AND ELECTRICAL CONNECTIONS TO EQUIPMENT.

B. INSTALLATION OF ACCESS PANELS IN FINISHED CONSTRUCTION.

C. REPAIR OF FIREPROOFING DAMAGED DURING THE INSTALLATION OF HANGERS AND SUPPORTS FOR EQUIPMENT, PIPING, AND DUCTWORK.

D. PROVISION OF ELECTRICAL DISCONNECTS.

III. GENERAL REQUIREMENTS

A. GENERAL

1. AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THEIR PROPOSAL, EACH BIDDER SHALL VISIT THE SITE TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED. NO EXTRA WILL BE ALLOWED IF THE CONTRACTOR FAILS TO EXAMINE THE SITE, OR HAVING EXAMINED THE SITE, THE CONTRACTOR FAILS TO NOTIFY THE OWNER IN WRITING OF ANY DISCREPANCIES THAT HE MAY HAVE NOTED BETWEEN THE EXISTING CONDITIONS, AND DRAWINGS AND SPECIFICATIONS.
2. THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS UPON WHICH THE CONTRACTOR SHALL SUBMIT A CONTRACT PRICE FOR THE MATERIAL AND LABOR PROVISIONS.
3. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK AND APPROXIMATE LOCATION OF EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS AND COORDINATE FINAL LOCATIONS OF ALL PLUMBING FIXTURES. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID CONFLICT.
4. WHEN CONFLICTS OCCUR IN THE SPECIFICATIONS OR ON THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS OF GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED.
5. THE CONTRACTOR SHALL PROVIDE ALL ITEMS OF LABOR OR MATERIALS NOT SPECIFICALLY INDICATED, BUT REQUIRED TO COMPLETE THE INTENDED INSTALLATIONS.
6. THE CONTRACTOR SHALL VERIFY ALL MEASUREMENTS OF HIS OWN OR OTHERS AT THE SITE, AND SHALL BE RESPONSIBLE FOR CORRECTNESS OF SAME AS RELATED TO HIS WORK.
7. CONTRACTOR SHALL COOPERATE WITH ALL OTHER CONTRACTORS WHO FURNISH AND INSTALL WORK IN CONNECTION WITH THE WORK OF THIS PROJECT. GIVE THEM COMPLETE DATA AS TO HIS REQUIREMENTS, AND NOTIFY OWNER OF ANY CONDITION THAT WILL INTERFERE WITH PROPER COMPLETION OF THIS WORK. COOPERATE IN THE SCHEDULING OF THIS WORK WITH THE WORK OF OTHER CONTRACTS SO AS NOT TO DELAY JOB PROGRESS.

B. APPROVALS AND SUBSTITUTIONS

1. IT IS THE INTENT OF THESE SPECIFICATIONS THAT WHENEVER A MANUFACTURER IS SPECIFIED AND SUBSTITUTIONS ARE MADE, THEY SHALL CONFORM IN ALL RESPECTS TO THE SPECIFIED ITEM. CRITERIA AS DELINEATED FROM EQUIPMENT SHALL BE INTERPRETED AS MINIMUM PERFORMANCE REQUIREMENTS.
2. BASE ALL BIDS ON THE EQUIPMENT MANUFACTURERS LISTED. IF SUBSTITUTION IS PROPOSED, MAKE APPLICATION TO OWNER IN WRITING STATING THE COST DIFFERENTIAL.
3. IF CONTRACTORS INCUR ADDITIONAL COSTS DUE TO THE PROPOSED SUBSTITUTION, DUE TO DIFFERENTIATED MEASUREMENTS, WEIGHTS, VOLTAGES, AMPERAGES, OR ADDITIONAL EQUIPMENT REQUIREMENTS ETC.. IT IS THE RESPONSIBILITY OF THE PROPOSING CONTRACTOR TO ABSORB THESE COSTS. THE OWNER SHALL NOT ABSORB ADDITIONAL COSTS DUE TO SUBSTITUTIONS.

C. GUARANTEE AND SERVICE

1. THE CONTRACTOR SHALL GUARANTEE AND SERVICE THE ENTIRE INSTALLATION FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE FINAL ACCEPTANCE OF THE INSTALLATION BY THE ENGINEER.
2. THE CONTRACTOR SHALL, DURING THE PERIOD OF GUARANTEE, REPLACE OR REPAIR AT HIS OWN EXPENSE ANY PIECE OF EQUIPMENT AND/OR MATERIAL WHICH IS FOUND TO BE DEFECTIVE. THE REPLACEMENT OR REPAIR SHALL BE PERFORMED THE SAME DAY OF NOTIFICATION IN AN EMERGENCY FASHION WHEN NOTIFIED BY THE OWNER OR AUTHORIZED REPRESENTATIVE. THE CONTRACTOR SHALL ALSO REPAIR OR REPLACE ALL DAMAGE TO SURROUNDING WORK CAUSED BY THE FAILURE, REPAIR, OR REPLACEMENT OF DEFECTIVE EQUIPMENT.
3. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS, AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTIONS AND APPROVALS.

D. MOTORS

1. ALL MOTORS SHALL BE IEEE PREMIUM EFFICIENCY AND SHALL MEET THE ENERGY CONSERVATION CONSTRUCTION CODE. MOTORS SELECTED AT THE SPECIFIED OPERATING VOLTAGE, RPM, AND EFFICIENCY AS SPECIFIED HEREIN IN THE SCHEDULE ON THE CONTRACT DRAWINGS.
2. ALL INVERTER DUTY MOTORS, IN ADDITION TO THE ABOVE, SHALL BE PROVIDED WITH AN AEGIS BEARING PROTECTION RING TO PREVENT ELECTRICAL DISCHARGE MACHINING (EDM) DAMAGE TO THE MOTOR BEARINGS. BEARING SHALL HAVE L10 80,000 RATING.

E. CODES, REGULATIONS AND STANDARDS

1. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING CODES:
   a) FEDERAL, STATE AND LOCAL CODES HAVING JURISDICTION
   b) NATIONAL STANDARD PLUMBING CODE, 2021
   c) INTERNATIONAL BUILDING CODE, NJ EDITION, 2021
   d) ASHRAE STANDARDS AS APPLICABLE
   e) BUILDING STANDARDS AS APPLICABLE
   f) NFPA
   g) NEC
   h) COMPLY WITH OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) REQUIREMENTS.
2. ALL WORK TO BE APPROVED BY OWNER.

F. FEES

1. THE CONTRACTOR SHALL INCLUDE IN HIS BID THE COST OF ALL REQUIRED PERMITS, FEES, INSPECTIONS, TESTS AND CERTIFICATES OF APPROVAL.

G. COORDINATION AND SUPERVISION

1. THE WORK SHALL BE CAREFULLY LAID OUT IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, THE WORK SHALL BE CAREFULLY DONE. ANY DAMAGE TO THE BUILDING OR EQUIPMENT SHALL BE PATCHED AND/OR REPAIRED IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER.
2. THIS CONTRACTOR SHALL OBTAIN A COPY OF THE BUILDING RULES AND REGULATIONS PRIOR TO BID SUBMISSION TO DETERMINE THE REQUIREMENTS AND EXTENT OF PREMIUM TIME WORK REQUIRED BY BUILDING FOR THE PURPOSE OF THE BID. ASSUME NOISY WORK (E.G. CHOPPING, CORE DRILLING, ETC.) AND BASE BUILDING SYSTEM INTERRUPTIONS SHALL BE PERFORMED OUTSIDE NORMAL BUSINESS HOURS.
3. THIS CONTRACTOR IS RESPONSIBLE FOR ADHERING TO THE BUILDING OWNER'S RULES AND REGULATIONS. ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND THE BUILDING RULES AND REGULATIONS SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT/ ENGINEER FOR REVIEW WITH BID SUBMISSION.
4. COORDINATE WITH BUILDING MANAGER FOR ANY SERVICE INTERRUPTION OF EXISTING SYSTEMS AND GIVE NOTICE AS REQUIRED BY BUILDING RULES AND REGULATIONS OR A MINIMUM OF TWO (2) DAYS PRIOR TO ANY WORK, WHICHEVER IS MORE STRINGENT.

H. SECURITY

1. OBEY ALL SECURITY REGULATIONS ESTABLISHED BY THE OWNER, AND ABIDE BY ALL BUILDING RULES AND REGULATIONS. OWNER'S APPROVAL SHALL BE OBTAINED BEFORE ENTERING SECURED AREAS OF THE BUILDING.

I. REMOVALS AND ALTERATIONS.

1. THE CONTRACTOR SHALL REMOVE, RELOCATE, REPLACE, ADJUST, ADAPT, AND MODIFY EXISTING EQUIPMENT AND/OR SYSTEM AS REQUIRED BY THE DRAWINGS OR SPECIFICATIONS AND AS MAY BE REQUIRED WHEN SUCH WORK IS UNCOVERED AND FOUND TO INTERFERE WITH THE COMPLETION OF WORK IN THE CONTRACT.
2. IN DEMOLITION WORK, UNUSED PIPING SHALL NOT BE ABANDONED "IN PLACE". PIPING SHALL BE REMOVED BACK TO SOURCE OR POINT OF DISCHARGE, AND THE RESULTING OPENINGS PLUGGED AS INDICATED ON THE DRAWINGS.
3. DISCONNECT, REMOVE, AND CAP OR PLUG EXISTING UNUSED PIPING AS NOTED OR REQUIRED TO PERMIT NEW INSTALLATION.
4. ALL EXISTING PLUMBING FIXTURES, PIPING, AND EQUIPMENT TO BE REMOVED SHALL REMAIN PROPERTY OF THE OWNER AND SHALL BE DISPOSED OF BY THIS CONTRACTOR AS DIRECTED BY THE OWNER.
5. THE CONTRACTOR SHALL DISCONNECT AND REMOVE ALL EXISTING UNUSED PIPING AND FIXTURES WITHOUT INTERRUPTING EXISTING REQUIRED FUNCTIONING SERVICES.
6. ALL PIPING FROM FIXTURES TO BE REMOVED AND REPLACED SHALL BE PROPERLY PLUGGED OR CAPPED, AT WALL OR FLOOR, TO AWAIT INSTALLATION OF NEW FIXTURES.
7. ALL UNUSED PIPING AND RELATED ITEMS CONCEALED IN WALLS, FLOORS, AND CEILINGS WITHIN THE STRUCTURE SHALL BE ABANDONED AND REMOVED WHERE EXPOSED TO VIEW.

J. CLEANING

1. MAINTAIN ALL AREAS, UNDER CONTRACTOR'S CONTROL, FREE OF EXTRANEOUS DEBRIS. INITIATE AND MAINTAIN A SPECIFIC PROGRAM TO PREVENT ACCUMULATION OF DEBRIS AT CONSTRUCTION SITE, STORAGE AND PARKING AREAS.
   a) PROVIDE CONTAINERS FOR DEPOSIT OF DEBRIS AS SPECIFIED HEREIN.
2. SCHEDULE REGULAR COLLECTION AND DISPOSAL OF DEBRIS DAILY AND HEREIN.
3. ALL PIPING, FIXTURES, EQUIPMENT, ETC., INSTALLED UNDER THIS CONTRACT SHALL BE THOROUGHLY CLEANED AND PROTECTED DURING CONSTRUCTION AND PUT INTO FIRST-CLASS OPERATING CONDITION BEFORE BEING OFFERED FOR ACCEPTANCE.
4. UPON COMPLETION OF ALL WORK, THE PLUMBING CONTRACTOR SHALL THOROUGHLY CLEAN ALL PLUMBING FIXTURES, SINKS AND TRIM AND LEAVE ALL ITEMS READY FOR USE BY THE OWNER.

K. SPECIAL REQUIREMENTS

A. IDENTIFICATION

1. NAMEPLATES
   a) IDENTIFY EQUIPMENT WITH LAMINATED PLASTIC NAMEPLATES. SETON NAMEPLATE CO. STYLE 2060 OR EQUAL.
   b) MINIMUM NAMEPLATE LENGTH SHALL BE THREE INCHES WITH 3/16 INCH LETTERING.
   c) SECURE NAMEPLATES WITH SCREWS.
2. PIPE IDENTIFICATION
   a) PROVIDE ADHESIVE-TYPE SYMBOLS INDICATING PURPOSE, SIZE AND DIRECTION OF FLOW. SETON NAMEPLATE SETMARK OF EQUAL.
3. VALVE TAGS AND CHARTS
   a) IDENTIFY EACH MANUAL, AUTOMATIC AND SELF-CONTAINED VALVE WITH A PERMANENTLY ATTACHED TAG BEARING DISTINGUISHING NUMBERS AND LETTERS CORRESPONDING TO THE VALVE CHART.
   b) TAGS SHALL BE AS MANUFACTURED BY SETON NAMEPLATE CO. STYLE 250-BL, 1 ½ INCH DIAMETER BRASS WITH DEPRESSED BLACK-FILLED ½ INCH HIGH NUMBERS AND ¼ INCH HIGH LETTERS.
4. PROVIDE TWO COPIES OF VALVE CHARTS. CHARTS SHALL INCLUDE SCHEMATIC DRAWINGS OF PIPING LAYOUTS, VALVE IDENTIFICATION NUMBERS, LOCATION AND PURPOSE.
   a) MOUNT FIRST CHART IN AN ALUMINUM FRAME WITH A GLASS FRONT, SETON NAMEPLATE CO. STYLE A 11G. SECURE ON THE PLANT WALL WHERE DIRECTED.
   b) MOUNT THE SECOND CHART IN A HEAVY GAUGE CLEAR VINYL PLASTIC ENVELOPE IN A ½ INCH LENGTH OF NICKEL-PLATED BEAD CHAIN AS MANUFACTURED BY SETON NAMEPLATE CO. STYLE P. THIS CHART IS TO BE PRESENTED TO THE OWNER.

B. CUTTING AND PATCHING

1. ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED FOR THE WORK SHALL BE PROVIDED BY THE CONTRACTOR.
2. CUTTING OF BEAMS, FLOORS OR WALLS FOR PIPING OR CONDUIT SHALL BE DONE AS APPROVED BY THE OWNER IN A CAREFUL MANNER, WITH CORE DRILLS, SO AS NOT TO SERIOUSLY IMPAIR THE APPEARANCE OR STRENGTH OF THE STRUCTURE.
3. PROVIDE ALL DRILLING, AND PATCHING FOR EXPANSION BOLTS, HANGERS AND OTHER SUPPORTS FOR PROPER AND SAFE INSTALLATION OF THE WORK.

C. TESTING

1. TEST EQUIPMENT AND SYSTEMS FOLLOWING THE PROCEDURES SPECIFIED HEREIN, OR AS DIRECTED BY THE OWNER.

D. MAINTENANCE OF EXISTING FACILITIES AND CONDUCT OF THE WORK

1. THE BUILDING WILL BE OCCUPIED AND IN OPERATION DURING THE PROGRESS OF THE WORK. WHEN NECESSARY TO TEMPORARILY HALT BUILDING EGRESS OR FLOW OF PERSONNEL TRAFFIC, CONFER WITH THE BUILDING OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON. IT IS REQUIRED THAT THE WORK INDICATED AND/OR SPECIFIED SHALL BE CARRIED OUT WITH A MINIMUM OF INTERFERENCE TO THE ESTABLISHED ROUTINE OF THE BUILDING.
2. EQUIPMENT DELIVERIES AND USE OF FREIGHT ELEVATORS SHALL BE CONFERRED WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON TIME TO HAVE MINIMUM OF INTERFERENCE TO THE ESTABLISHED ROUTINE OF THE BUILDING.
3. NO WORK SHALL BE LEFT INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS. AT NO TIME SHALL THE WORK INTERFERE WITH OR CUT OFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.
4. WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON.

E. SCAFFOLDING, RIGGING AND HOISTING

1. PROVIDE, ERECT, MAINTAIN AND BE RESPONSIBLE FOR THE SAFE AND LEGAL USE OF ALL SCAFFOLDING, HOISTING AND RIGGING. ALSO, PROVIDE ADDITIONAL BRACING AND SERVICES REQUIRED FOR THE DELIVERY OR ERECTION OF THE EQUIPMENT AND CONSTRUCTION MATERIALS PROVIDED OR INSTALLED UNDER THIS CONTRACT.

F. ACCESS DOORS

1. THIS CONTRACTOR SHALL PREPARE A LIST OF ALL ACCESS DOORS REQUIRED FOR THE OPERATION AND MAINTENANCE OF ALL CONCEALED EQUIPMENT, VALVES, DAMPERS, CONTROLS, AND OTHER SIMILAR DEVICES, WHICH SHALL BE SUPPLIED TO THE GENERAL CONTRACTOR WHO SHALL FURNISH AND INSTALL THESE ACCESS DOORS AFTER COORDINATING FINAL LOCATIONS WITH ARCHITECT. ACCESS DOORS SHALL BE AMPLE SIZE AND MINIMUM OF 12"X12".
2. THIS CONTRACTOR IN ADVANCE OF CEILING INSTALLATIONS SHALL SUITABLY FIELD TAG AND IDENTIFY ALL CONCEALED EQUIPMENT, VALVES, ETC. WHICH REQUIRE ACCESS DOOR PROVISIONS.

G. SUBMITTALS

1. SHOP DRAWINGS
   a) SUBMIT FOUR (4) PRINTS AND/OR A PDF OF SYSTEM FABRICATION DRAWINGS AND AUTOMATIC CONTROL SYSTEM SCHEMATIC DIAGRAMS.
   b) SUBMIT FOUR (4) COPIES AND/OR A PDF OF MANUFACTURER'S SUBMITTAL SHEETS OR CATALOG CUTS.
   c) SUBMIT SHOP DRAWINGS OF THE FOLLOWING:
      (1) COMPLETE DETAILED SET OF SYSTEM FABRICATION/INSTALLATION DRAWINGS FOR PIPING, FIXTURES, AND EQUIPMENT. INDICATE DIMENSIONS, MATERIALS OF CONSTRUCTION, AND METHOD OF ASSEMBLY.
         (A) PIPING SHOP DRAWINGS SHALL BE A MINIMUM OF 3/8" = 1'-0" SCALE. THESE SHOP DRAWINGS WILL BE USED AS THE COORDINATION DRAWINGS FOR ALL TRADES.
      (2) ALL EQUIPMENT SPECIFIED HEREIN.
      (3) STRUCTURAL WORK.
2. AS-BUILT DRAWINGS
   a) PROVIDE OWNER WITH A COMPLETE SET OF AS-BUILT DRAWINGS COVERING EVERY ASPECT OF THE WORK. THE COMPLETE SET SHALL INCLUDE A SET OF MYLARS OR QUALITY VELLUMS CAPABLE OF PRODUCING QUALITY PRINTS, PDFS, AND TWO FULL SETS, AND OF ALL AS-BUILT DRAWINGS
3. SERVICE MANUALS
   a) UPON COMPLETION OF THE WORK, FULLY INSTRUCT THE OWNER AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL, EQUIPMENT AND SYSTEMS. A SIGNED RECEIPT WHICH SHALL BE OBTAINED FROM THE OPERATOR SHALL BE CONSTRUED AS EVIDENCE THAT INSTRUCTIONS WERE SATISFACTORY.
   b) PROVIDE THREE (3) COMPLETE BOUND SETS OF WRITTEN DESCRIPTIONS OF ALL SYSTEMS COVERING ALL MANUAL OPERATING PROCEDURES, TEMPERATURE AND PRESSURE SETTINGS. EQUIPMENT OPERATING AND MAINTENANCE (O&M) MANUALS SHALL INCLUDE BUT NOT LIMITED TO LUBRICATION SCHEDULES, PARTS LISTS, PERFORMANCE SERVICES FOR EQUIPMENT, FILTER SIZE/QUANTITY, ETC. WHEN MANUFACTURERS' STANDARD INSTRUCTIONS ARE UTILIZED, THEY SHALL BE CLEARLY MARKED TO INDICATE APPLICABILITY.

V. PIPING SYSTEMS, ACCESSORIES, SUPPORTS, SLEEVES

A. INSTALL ALL EQUIPMENT, PLUMBING FIXTURES AND PIPING SYSTEMS USING THE BEST STANDARD PRACTICES OF THE TRADE AND AS REQUIRED TO MAKE THE CONNECTED SYSTEM COMPONENTS COMPLETE AND READY FOR OPERATION. UNLESS OTHERWISE NOTED, SPECIFIED OR INDICATED, ALL PIPING AND EQUIPMENT SHALL BE CONNECTED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDED DETAILS AND AS APPROVED BY THE OWNER.

B. UNIONS OR BOLTED FLANGES WITH REMOVABLE SECTIONS OF PIPING SHALL BE INSTALLED AT ALL EQUIPMENT TO PERMIT RAPID DISCONNECTION AND FOR EQUIPMENT SERVICE/ REMOVALS WITHOUT DISMANTLING OF MAJOR PORTIONS OF EQUIPMENT.

C. PROMPTLY INSTALL PIPING REQUIRED TO BE CONCEALED IN FLOOR, WALL OR CEILING CONSTRUCTION NOT TO CAUSE DELAY TO OTHER WORK, AND TO ALLOW AMPLE TIME FOR NECESSARY TASKS AND APPROVALS.

D. MODIFY PIPING ARRANGEMENTS AS NECESSARY TO SUIT CONDITIONS IN THE BUILDING, AND TO PERMIT ACCESS TO EQUIPMENT AND ACCESSORIES.

E. ALL EXPOSED POLISHED, FINISHED OR ENAMELED CONNECTIONS SHALL BE MADE WITH SPECIAL CARE. TOOL MARKS OR EXPOSED THREADS ARE NOT PERMITTED.

F. PIPING SYSTEMS ARE NOT TO BE OPERATED UNTIL ALL CONSTRUCTION DIRT AND DEBRIS HAVE BEEN REMOVED FROM THE SYSTEM.

G. UPON COMPLETION OF ALL PIPING SYSTEMS, NOTIFY THE OWNER, IN WRITING, FIVE DAYS IN ADVANCE OF THE TIME LEAK TESTS ARE TO BE MADE.

1. CONDUCT TESTS IN ACCORDANCE WITH THE SPECIFICATIONS, OR AS DIRECTED BY THE OWNER.
2. PIPING TESTS ARE TO BE CONDUCTED PRIOR TO PAINTING, INSULATING, BACKFILLING OR CONCEALING WITHIN THE BUILDING.
3. ALL MATERIALS, EQUIPMENT AND COSTS INVOLVED IN TESTING THE PIPING SYSTEMS SHALL BE INCLUDED IN THE WORK.
4. DOMESTIC WATER PIPING SHALL BE TESTED WITH WATER FOR TWO HOURS AT A PRESSURE OF 125 PSIG, UNLESS OTHERWISE DIRECTED.
5. DRAINAGE AND VENT PIPING SHALL BE TESTED WITH WATER FOR TWO HOURS AT A 10-FOOT HEAD OF WATER UNLESS OTHERWISE DIRECTED.

H. PIPING

1. STORM, SOIL, WASTE, AND VENT PIPE AND FITTINGS (ST, SAN, V) SHALL BE:
   a) ALL BELOW GROUND STORM, SOIL, WASTE, AND VENT PIPING SHALL BE SERVICE WEIGHT CAST IRON SOIL PIPE, HUB AND SPIGOT FITTINGS, WITH GROOVED HUB AND MALE SPIGOT COMPRESSION TYPE JOINTS USING A NEOPRENE GASKET AND LUBRICANT SIMILAR TO TY-SEAL GASKETS OR APPROVED EQUAL. PIPE AND FITTINGS SHALL CONFORM TO THE LATEST ASTM A-74 AND C-564 STANDARDS.
   b) ALL ABOVE GROUND STORM, SOIL, WASTE, AND VENT PIPING SHALL BE CAST IRON SCHEDULE 40 "NO-HUB" CAST IRON PIPE AND FITTINGS EXCEPT AS NOTED OTHERWISE.
   c) ALL JOINTS AND CONNECTIONS SHALL BE ASSEMBLED BY MEANS OF SEALING SLEEVES AND STAINLESS STEEL CLAMPS AND SHIELD ASSEMBLIES.
   d) PIPE AND FITTINGS SHALL BE BY CENTRAL FOUNDRY COMPANY, TYLER PIPE COMPANY, EAST PENN FOUNDRY, OR APPROVED EQUAL AND BE CISPI APPROVED PER CAST IRON SOIL PIPE INSTITUTE STANDARDS NO 301 AND 310 ALL NO-HUB FITTINGS TO BE (4) FOUR BAND COUPLINGS MINIMUM.

I. HANGERS, SUPPORTS, ANCHORS AND SEALS SHALL CONFORM TO THE FOLLOWING STANDARDS:

2. PIPE SUPPORTS - ANSI B31.1
3. MSS SP-58

J. PROVIDE DIELECTRIC FITTINGS FOR CONNECTION OF DISSIMILAR MATERIALS. PERFECTION CORP. CLEARFLOW OR EQUAL.

VI. MANUAL VALVES

A. VALVES TO 2-INCH:

1. BA - BALL VALVE: BRONZE, ANSI 150, ASTM B62 PTFE SEAT RING AND PACKING, LEVER STEM OPERATION, EQUAL TO APOLLO 70 SERIES.
2. CH - SWING CHECK VALVE: ANSI 150, ASTM B62, THREADED OR SOLDER JOINT CONNECTION, BRONZE BODY, DISC AND SEAT, EQUAL TO STOCKHAM NO. B-309, B-319
3. GC - GAS COCK VALVE: ANSI 150, ASTM B62, BRONZE BODY AND DISC, CRANE NO. 250.
4. HB - HOSE BIBB: ¾" MAKE HOSE-THREAD CONNECTION, ANSI 150, ASTM B62, BRONZE BODY, BUNA-N DISC, BRASS STEM, INTEGRAL VACUUM BREAKER, NIBCO FIG. 63VB

VII. METERS AND GAUGES

A. PRESSURE GAUGE

1. 0 PSIG TO 100 PSIG RANGE, 4 ½ INCH DIAMETER, T-HANDLE LOCK, WEISS SERIES PG-1. WEKSLER, MARSH.

B. THERMOMETER

1. 30 DEGREES F TO 300 DEGREES F RANGE, BI-METAL 5 INCH CASE, 3 ½ INCH STEM, SEPARABLE WELL, WEISS 5VBM VARI-ANGLE. WEKSLER, MARSH.

VIII. INSULATION

A. INSULATION SHALL HAVE COMPOSITE (INSULATION JACKET AND ADHESIVE) FIRE AND SMOKE HAZARD RATINGS AS TESTED UNDER PROCEDURE ASTM E-84, NFPA 266 AND UL 723, NOT EXCEEDING:

1. FLAME SPREAD - 25
2. SMOKE DEVELOPED - 50
3. INSULATION MUST CONFORM TO USDA REQUIREMENTS; NON-TOXIC.

B. PIPING SYSTEM INSULATION SHALL BE MOLDED SEMI-RIGID FIBERGLASS INSULATION WITH VAPOR BARRIER. 0.24 @ 75°F THERMAL CONDUCTIVITY R:8.2, 2.5 LBS/FT3 DENSITY, EQUAL TO JOHNS-MANVILLE MICRO-LOK OR EQUAL.

1. PIPING SYSTEM INSULATION SHALL BE FIBERGLASS OF FOLLOWING THICKNESS:

PIPING SYSTEM	PIPE SIZE			
	UNDER 1"	1" TO 1¼"	1 ½" TO 3"	4" TO 6"
	INSULATION THICKNESS			
STORM/DRAIN	1/2"	1"	1½"	2"
PD *	1/2"	1"	1½"	2"

* PIPING EXPOSED TO AMBIENT CONDITIONS SHALL APPLY ONLY

2. ALL FIBERGLASS PIPING INSULATION SHALL BE INSTALLED WITH LONGITUDAL LAP AND VAPOR BARRIER JOINT SEAL STRIPS WITH ADHESIVE OR SELF SEALING LAPS AND WHITE CRAFT PAPER FACING.
3. FITTINGS AND VALVES SHALL BE INSULATED WITH MOLDED FITTINGS MITERED SECTIONS OR COMPRESSED BLANKET INSULATION. INSULATION FITTING COVERS TO BE EQUAL TO JOHNS-MANVILLE ZESTON 2000 PVC COVERS OR EQUAL.

C. FOR EXTERIOR PIPING, PROVIDE VAPOR BARRIER AND FIELD-APPLIED JACKET AS INDICATED BELOW.

1. UNDERGROUND DIRECT-BURIED JACKET: 125-MIL- THICK VAPOR BARRIER AND WATERPROOFING MEMBRANE, CONSISTING OF A RUBBERIZED BITUMINOUS RESIN REINFORCED WITH A WOVEN-GLASS FIBER OR POLYESTER SCRIM AND LAMINATED ALUMINUM FOIL.
2. SELF-ADHESIVE OUTDOOR JACKET: 60-MIL- THICK, LAMINATED VAPOR BARRIER AND WATERPROOFING MEMBRANE FOR INSTALLATION OVER INSULATION LOCATED ABOVEGROUND OUTDOORS; CONSISTING OF A RUBBERIZED BITUMINOUS RESIN ON A CROSS-LAMINATED POLYETHYLENE FILM COVERED WITHSTUCCO-EMBOSSED ALUMINUM-FOIL FACING.

D. INSULATION ACCESSORIES SUCH AS ADHESIVES, MASTICS, CEMENT AND CLOTH FOR FITTINGS SHALL HAVE THE SAME COMPONENT RATINGS LISTED ABOVE.

E. REPAIR OR REPLACE ALL EXISTING INSULATION ALTERED, DAMAGED OR REMOVED DURING THE WORK OF THIS PROJECT.

IX. FLOOR DRAINS

A. IN ACCORDANCE WITH FLOOR CONSTRUCTION, PROVIDE THE FOLLOWING:

1. FOR BUILT-UP MEMBRANE: FLASHING CLAMP WITH 6 LB. SHEET LEAD TO 10" AROUND DRAIN.
2. FOR LIQUID MEMBRANE: 4" WIDE FLANGE.
3. FOR ELASTOMERIC TYPE FLOOR: 4" WIDE TOP FLANGE AT REQUIRED HEIGHT.
4. PROVIDE STRAINER WITH NICKEL BRONZE FINISH, EXCEPT AS NOTED.

B. COATED CAST IRON BODY

1. INTEGRAL DOUBLE DRAINAGE FLANGE AND WEEP HOLES.
2. INSIDE CAULKED OUTLET.
3. NO-HUB OUTLET.

XI. VACUUM BREAKERS

A. NON-CONTINUOUS PRESSURE USE WITH BACK PRESSURE.

1. CP CAST BRASS BODY, WITH FULL SIZE ORIFICE.
2. ATMOSPHERIC TYPE, WATTS NO 288A.

XII. PUMPS

A. GENERAL

1. FURNISH AND INSTALL PUMP AS INDICATED ON SCHEDULES. THE MOTOR SHALL BE AN INTEGRAL PART OF THE PUMPING UNIT. THE PUMP DISCHARGE SHALL BE 1-1/2"
2. THE GRINDER UNIT SHALL BE CAPABLE OF SHEARING AND REDUCING TO A FINE SLURRY ALL MATERIAL NORMALLY FOUND IN DOMESTIC AND COMMERCIAL SEWAGE SUCH AS SANITARY NAPKINS, DISPOSABLE DIAPERS, CLOTH DIAPERS, WASH RAGS, WOOD, PLASTIC, ETC. THE SLURRY SHALL BE CAPABLE OF FREELY PASSING THROUGH A 1-1/2" PIPING SYSTEM INCLUDING CHECK AND GATE VALVES.

B. GRINDER PUMP CONSTRUCTION

1. THE PUMP SHALL BE OF THE CENTRIFUGAL TYPE WITH THE ROTATING CUTTER MOUNTED ON THE PUMP SHAFT DIRECTLY AGAINST THE IMPELLER. THE STATIONARY CUTTER SHALL BE MOUNTED IN AN ADJUSTABLE BOTTOM PLATE. THE STATIONARY CUTTER SHALL HAVE SLOTS TO FACILITATE BETTER FLOW. THE BOTTOM PLATE SHALL BE CAST WITH GROOVES THREADING OUTWARD FROM THE CENTER OPENING OF THE PLATE TO THE OUTER DIAMETER. THE IMPELLER SHALL BE A MULTIPLE VANE CENTRIFUGAL TYPE. THE CUTTER MATERIAL SHALL BE SIMILAR TO AN ANSI 440C STAINLESS STEEL WITH THE ADDITION OF COBALT, VANADIUM, AND MOLYBDENUM FOR SUPERIOR ABRASION RESISTANCE AND A HARDNESS OF 58-62 ROCKWELL C.
2. THE COMMON PUMP AND MOTOR SHAFT SHALL BE 420 STAINLESS STEEL SUPPORTED ON THE IMPELLER END BY A HEAVY DUTY SINGLE ROW BALL BEARING ON 1.3-2.4 HP PUMPS, OR A HEAVY DUTY DOUBLE ROW BALL BEARING ON 3.5-4 HP PUMPS. THE OPPOSITE END OF THE SHAFT IS SUPPORTED ON A SEALED SINGLE ROW BALL BEARING (ALL MODELS). THE CUTTING ELEMENTS AND IMPELLER SHALL BE DESIGNED TO KEEP THE OVERHUNG LOAD DISTANCE TO A MINIMUM. ALL FASTENERS SHALL BE 304 STAINLESS STEEL.

B. SHAFT SEALS:

1. EACH PUMP SHALL BE EQUIPPED WITH TWO (2) SEALS. THE LOWER SEAL (PUMP SIDE) SHALL BE OF THE MECHANICAL TYPE WITH SILICON CARBIDE FACES. THE UPPER SEAL SHALL BE A LIP TYPE SEAL. THE SEALS SHALL BE SEPARATED BY AN OIL CHAMBER PROVIDING COOLING AND LUBRICATION OF THE SEALS, AND A BARRIER BETWEEN THE PUMPED FLUID, AND THE DRY MOTOR CHAMBER.

D. SEAL FAILURE WARNING SYSTEM:

1. AN ELECTRIC PROBE SHALL BE PROVIDED IN THE OIL CHAMBER TO DETECT THE PRESENCE OF WATER IN THE OIL. A SOLID-STATE DEVICE MOUNTED IN THE PUMP CONTROL PANEL OR IN A SEPARATE ENCLOSURE SHALL SEND A LOW VOLTAGE, LOW AMPERAGE SIGNAL TO THE PROBE. IF WATER ENTERS THE OIL CHAMBER IN SUFFICIENT QUANTITY TO WARRANT CONCERN, THE PROBE SHALL ACTIVATE A WARNING LIGHT IN THE CONTROL PANEL.

E. MOTOR CONSTRUCTION

1. THE MOTOR SHALL BE OF SUBMERSIBLE TYPE RATED FOR ______ HP AT 3450 RPM (1750 RPM FOR S10/4 MODEL). SINGLE PHASE MOTORS SHALL BE OF THE CAPACITOR START CAPACITOR RUN TYPE FOR HIGH STARTING AND RUNNING TORQUE.
2. THE MOTOR SHALL BE AIR-FILLED AND SHALL HAVE CLASS "GF"H INSULATION. THE ROTOR AND STATOR SHALL BE ENCLOSED IN A CAST IRON OUTER HOUSING. BI-METALLIC THERMAL SWITCHES SHALL BE IMBEDDED IN EACH PHASE OF THE WINDING TO SENSE HIGH TEMPERATURE. THE RATING OF THE SWITCH SHALL BE 130••C +/- 5••C. THE CONTROL CIRCUIT SHALL BE CONNECTED THROUGH THE BI-METALLIC SWITCHES SO THE MOTOR IS SHUT DOWN SHOULD A HIGH TEMPERATURE CONDITION EXIST. THE SWITCHES SHALL BE SELF-RESETTING WHEN THE MOTOR COOLS. POWER CABLE SHALL BE RATED FOR EXPLOSION PROOF ENVIRONMENT.

F. APPROVALS

1. ALL MODELS SHALL BE UL AND CSA APPROVED. EXPLOSION PROOF MODELS SHALL BE FM APPROVED FOR CLASS I DIVISION I GROUP C AND D.

XIII. CONNECTION TO MISCELLANEOUS EQUIPMENT

A. PROVIDE ALL NECESSARY PIPE, FITTINGS, VACUUM BREAKER, VALVES, ETC., AND MAKE ALL FINAL PLUMBING PIPING CONNECTIONS, INCLUDING WASTE, VENT, HOT AND COLD WATER, ETC., TO ALL EQUIPMENT REQUIRING SAME THAT IS FURNISHED UNDER ANOTHER SECTION OF THE SPECIFICATIONS".

ASBESTOS WORK

WARNING: THE HANDLING, REMOVAL OR ENCAPSULATION OF ANY ASBESTOS PRODUCTS DOES NOT FALL WITHIN THE SCOPE OF THIS WORK. IN THE EVENT THE CONTRACTOR DISCOVERS ASBESTOS OR ASBESTOS PRODUCTS DURING THE COURSE OF HIS/HER WORK, OR HAS REASON TO SUSPECT THAT ASBESTOS OR ASBESTOS FIBERS MAY BE CONTAINED WITHIN EXISTING DUCTWORK, AIR HANDLING UNITS OR OTHER ENCLOSURES, THE CONTRACTOR SHALL IMMEDIATELY STOP WORK IN THE IMMEDIATE AREA AND SHALL NOTIFY THE OWNER OF HIS /HER FINDINGS.

FOR BID

PHILIP A. QUENSE, P.E.
PROFESSIONAL ENGINEER
NJ LICENSE No. 24GE05368700

DATE: X/XX/2021

CERTIFICATE OF AUTHORIZATION (N.J.S.A. 45:8-56) 24GA27927000

REVISIONS

NO.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED
	10.13.2022	FOR REVIEW	GN/AG	AG	AG
	05.22.2023	REVISED PER CLIENT COMMENTS	GN/AG	AG	AG

PROJECT SITE MECHANICAL ENGINEER:
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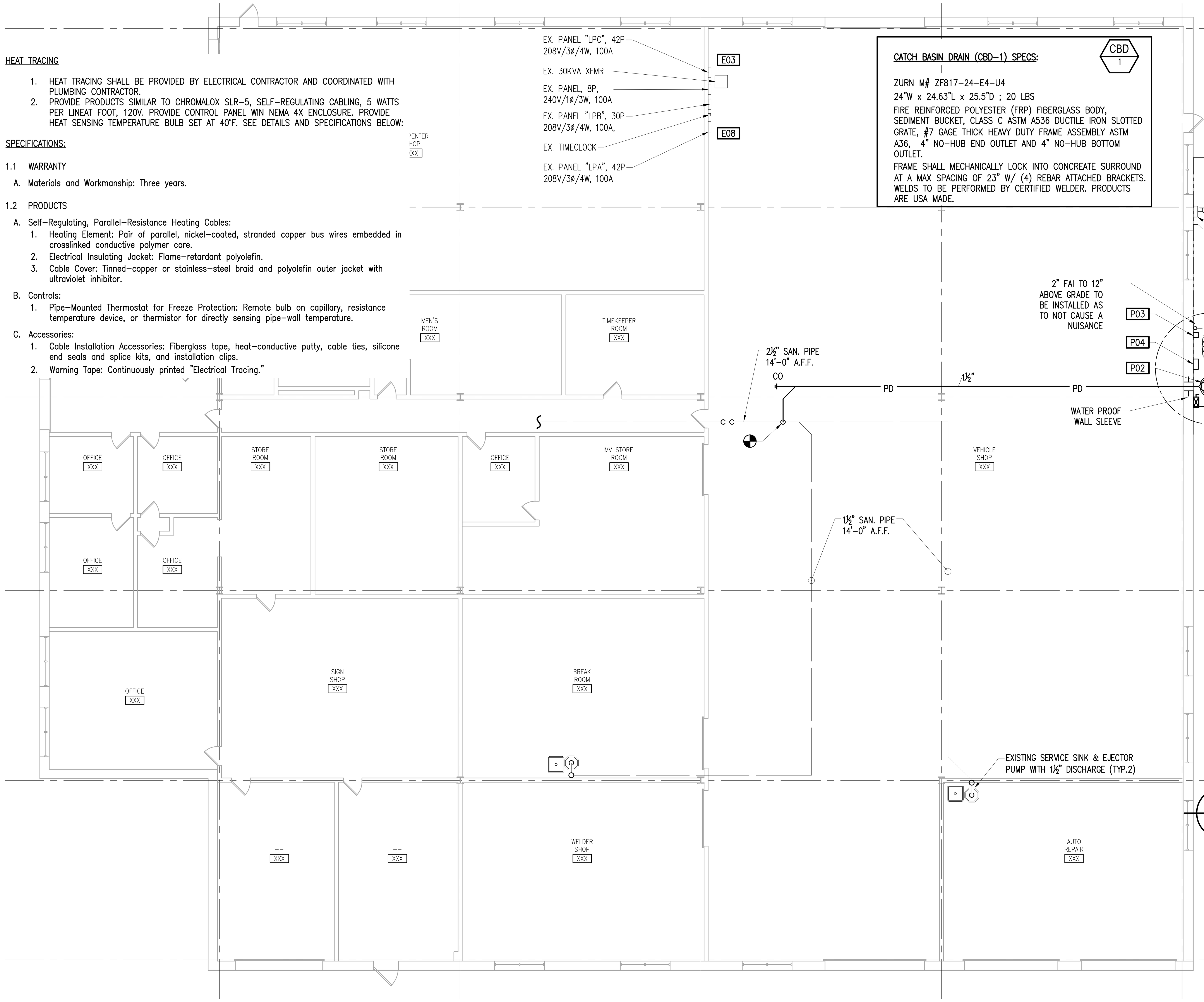
PROFESSIONAL PLANNER N.J. LICENSE NO. 33LI00569800

NJSEA MAINTENANCE BUILDING OIL / WATER SEPARATOR
BLOCK 107.01 - LOT 1
BOROUGH OF EAST RUTHERFORD
BERGEN COUNTY NEW JERSEY

DRAWN BY:	CHECKED BY:	PROJECT NO.: ERUTPRV21.014	SHEET NO.:
DESIGNED BY:	SCALE:		
FIELD BOOK NO.:	PAGE:		DATE: SEPTEMBER 2022



HEAT TRACING

1. HEAT TRACING SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR AND COORDINATED WITH PLUMBING CONTRACTOR.
2. PROVIDE PRODUCTS SIMILAR TO CHROMALOX SLR-5, SELF-REGULATING CABLING, 5 WATTS PER LINEAT FOOT, 120V. PROVIDE CONTROL PANEL WIN NEMA 4X ENCLOSURE. PROVIDE HEAT SENSING TEMPERATURE BULB SET AT 40°F. SEE DETAILS AND SPECIFICATIONS BELOW:

SPECIFICATIONS:

1.1 WARRANTY

A. Materials and Workmanship: Three years.

1.2 PRODUCTS

A. Self-Regulating, Parallel-Resistance Heating Cables:
1. Heating Element: Pair of parallel, nickel-coated, stranded copper bus wires embedded in crosslinked conductive polymer core.
2. Electrical Insulating Jacket: Flame-retardant polyolefin.
3. Cable Cover: Tinned-copper or stainless-steel braid and polyolefin outer jacket with ultraviolet inhibitor.

B. Controls:
1. Pipe-Mounted Thermostat for Freeze Protection: Remote bulb on capillary, resistance temperature device, or thermistor for directly sensing pipe-wall temperature.

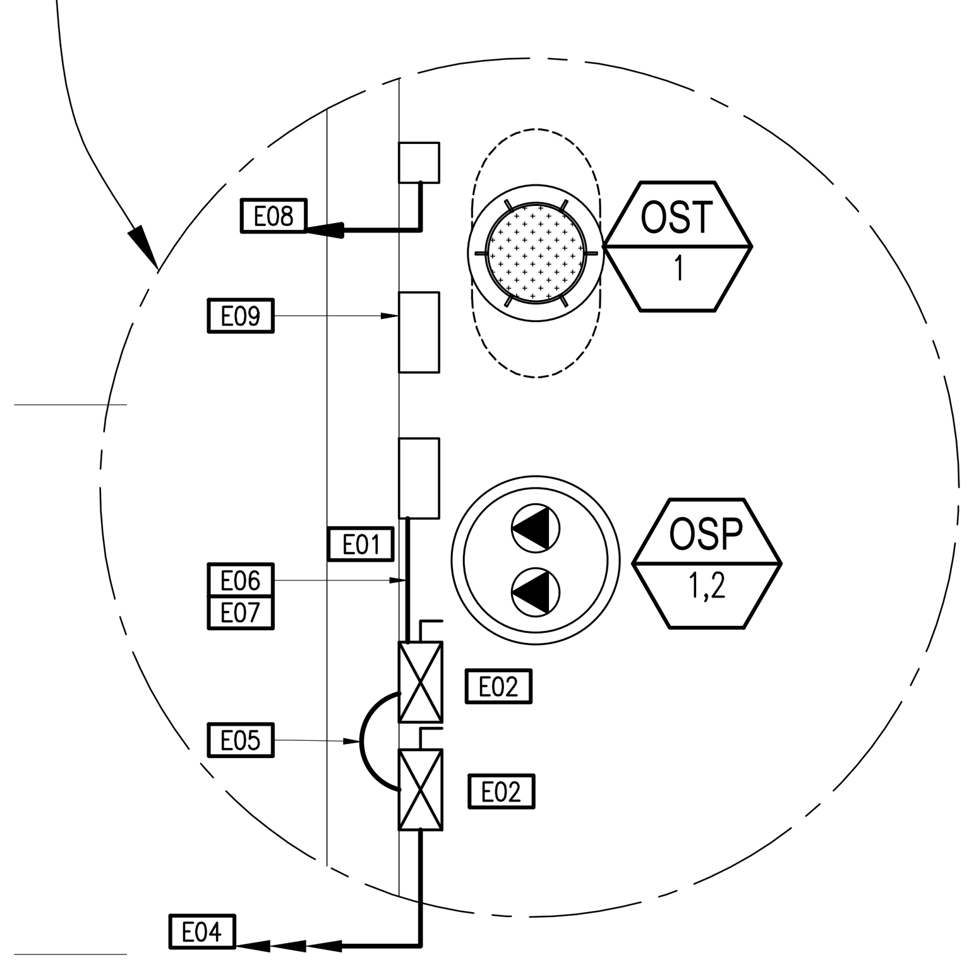
C. Accessories:
1. Cable Installation Accessories: Fiberglass tape, heat-conductive putty, cable ties, silicone end seals and splice kits, and installation clips.
2. Warning Tape: Continuously printed "Electrical Tracing."

CATCH BASIN DRAIN (CBD-1) SPECS: CBD 1

ZURN M# ZF817-24-E4-U4
24"W x 24.63"L x 25.5"D ; 20 LBS
FIRE REINFORCED POLYESTER (FRP) FIBERGLASS BODY, SEDIMENT BUCKET, CLASS C ASTM A536 DUCTILE IRON SLOTTED GRATE, #7 GAGE THICK HEAVY DUTY FRAME ASSEMBLY ASTM A36, 4" NO-HUB END OUTLET AND 4" NO-HUB BOTTOM OUTLET.
FRAME SHALL MECHANICALLY LOCK INTO CONCREATE SURROUND AT A MAX SPACING OF 23" W/ (4) REBAR ATTACHED BRACKETS. WELDS TO BE PERFORMED BY CERTIFIED WELDER. PRODUCTS ARE USA MADE.

1 PE1.01 PLUMBING & ELECTRICAL FLOOR PLAN

Scale: 3/32" = 1'-0" 8 0 8 16



2 PE1.01 PARTIAL PLUMB & ELECT PLAN

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

PLUMBING KEYED NOTES

P01 INSTALL NEW OIL/WATER SEPARATOR TANK BELOW GRADE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. SEE DETAILS P5.01.

P02 (2) 1¼" PUMPED DISCHARGE UP WITH CHECK VALVE AND GATE VALVE (SEE DETAILS) TO COMBINE TO (1) 2" PD PIPE. CONNECT TO EXISTING SANITARY RUNNING AT 14'-0" A.F.F. FIELD VERIFY EXACT LOCATION AND ROUTING.

P03 NEW TANK LEVEL MONITOR AND ALARM BY TANK MANUFACTURER.

P04 NEW PUMP CONTROL PANEL FOR DUPLEX PUMPS, 480V/3PH, SIMILAR TO COUGAR SYSTEMS, SPARTAN CONTROL PANEL IN TYPE 4X POLYCARBONATE ENCLOSURE WITH INCOMING SERVICE MAIN DISCONNECT. PUMP CONTROL PANEL SHALL HAVE H-O-A SWITCH TO ALLOW MANUAL OPERATION OF THE PUMPS.

P05 NEW BACKWATER VALVE BETWEEN EQUIPMENT AS SHOWN. COORDINATE WITH EQUIPMENT MANUFACTURERS FOR REQUIREMENTS.

P06 PROVIDE NEW PRESSURE SWITCH IN HI-PRESSURE WATER CANNON AND CONNECT TO SUMP-PUMP CONTROL PANEL. UPON ACTIVATION OF WATER, THE PUMPS SHALL BE ENERGIZED BASED ON LEAD/LAG AND SHALL CONTINUE TO OPERATE FOR A MINIMUM OF 5 MINUTES FROM CEASING OF WATER FLOW.

P07 NEW 4"ø MOTORIZED VALVE WITH ACCESS GRATE TO BE INSTALLED ON OUTLET TO INTERCEPTOR SYSTEM. VALVE SHALL BE NORMALLY CLOSED. UPON ACTIVATION OF PRESSURE SWITCH FROM WATER WASHING HOSE, VALVE SHALL OPEN AND REMAIN OPEN FOR MINUTES AFTER PRESSURE SWITCH IS OFF.

ELECTRICAL NEW WORK KEYED NOTES

E01 NEW SUBMERSIBLE SEWAGE PUMPS. ALL CONDUIT COMING FROM THE NEW SYSTEM SHALL HAVE HUBBELL TYPE EY EXPLOSION PROOF SEALING WITHIN 18" AFTER LEAVING THE AREA. PROVIDE RGS CONDUIT WITH PVC COATING TO EQUIPMENT FROM NEMA 4X RATED JUNCTION BOX.

E02 NEW 480V, NEMA 4X, SIZE 0 STARTER FOR INDIVIDUAL PUMP CONTROL. COORDINATE FINAL OVERLOAD SETTING WITH INSTALLED MOTOR NAMEPLATE DATA PER NEC 430.32. FIELD VERIFY LOCATION.

E03 EXISTING PANEL "LPC", 480V/3PH 100A, PROVIDE 3-POLE 15A BREAKER IN EXISTING SPACE FOR NEW SUBMERSIBLE PUMPS OSP-1 & 2.

E04 PROVIDE NEW 3#10AWG & 1#10G IN ¾" CONDUIT FROM NEW 15A/3P BREAKER IN EXISTING PANEL "LPC" TO NEW STARTER TO FEED NEW PUMPS. DETERMINE EXACT LOCATION AND ROUTING IN FIELD.

E05 PROVIDE NEW POWER FEED FROM ONE STARTER TO THE OTHER STARTER. CIRCUIT CONDUCTORS SHALL BE 3#10 & 1#10G IN ¾" CONDUIT.

E06 PROVIDE 120V POWER (¾" CONDUIT AND 3#12AWG WIRES) FROM ONE NEW STARTER CONTROL POWER TRANSFORMER TO NEW CONTROL PANEL.

E07 PROVIDE 120V STARTER CONTROL SIGNAL AND MONITORING WIRING (4#12AWG CONDUCTORS IN ¾" CONDUIT) BETWEEN NEW CONTROL PANEL AND NEW STARTER.

E08 PROVIDE NEW 120V POWER FEED FROM NEW 20A/1P BREAKER IN PANEL "LPA" TO NEW 24VAC CONTROL TRANSFORMER TANK OIL LEVEL MONITOR PANEL. PROVIDE CONDUIT AS REQUIRED FOR ADDITIONAL WIRING PER TANK MANUFACTURER REQUIREMENTS.

E09 PROVIDE HEAT TRACING CONTROL PANEL FOR (2) LOOP CIRCUITS TO BE INSTALLED IN NEMA 4X ENCLOSURE. PROVIDE ALL LOW VOLTAGE WIRING AS PER DETAILS AND SPECIFICATIONS IN ¾" CONDUIT. COORDINATE WITH PLUMBING CONTRACTOR FOR TOTAL HEAT TRACING LENGTH AND REQUIREMENTS. COORDINATE

E10 PROVIDE (2) 15A/1P BREAKERS IN EXISTING PANEL "LPC" AND CONNECT (2) CIRCUITS WITH POWER FEED 2#10AWG & 1#10G FOR EACH CIRCUIT IN ¾" CONDUIT TO HEAT TRACE CONTROL PANEL. USE SPARE BREAKERS WHERE AVAILABLE.

GENERAL NOTES - PLUMBING

1. PROVIDE BACKFILL TO MATCH EXISTING FOR BURIED SYSTEMS. COORDINATE WITH SITE UTILITY CONTRACTOR.
2. ALL STORM PIPING SHALL BE LOCATED BELOW FROST LINE.
3. ALL EXTERIOR CONTROL PANELS AND CONTROLS SHALL BE PROVIDED WITH WEATHER PROTECTED ENCLOSURES.
4. FRESH AIR INLETS SHALL RISE A MINIMUM OF 12" ABOVE GRADE.
5. FIELD VERIFY LOCATION OF ALL EXISTING STORM SYSTEM PIPING AND DRAINS PRIOR TO START OF WORK.
6. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR TANKS, PUMPS, PIPING, CONTROLS AND LOW VOLTAGE CONTROL WIRING. COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL POWER REQUIREMENTS AND LINE VOLTAGE CONTROL WIRING AS REQUIRED.
7. COORDINATE WITH SITE CONTRACTOR TO PROVIDE APPROPRIATE SLOPING OF GRADE TO DRAIN TO CATCH BASIN IN AREA OF WORK.
8. COORDINATE WITH OWNER FOR EXACT LOCATION OF TRUCK WASHING STATION.
9. ALL WORK SHALL COMPLY WITH APPLICABLE CODES INCLUDING BUT NOT LIMITED TO NSPC 2021, IBC-NJ 2021, ASHRAE 90.1-2019 AND AHJ.
10. SEE FULL DRAWING PACKAGE INCLUDING DETAILS AND SPECIFICATIONS FOR ALL SCOPE OF WORK.
11. ALL EXTERIOR PIPING SHALL BE INSULATED WITH A WEATHERPROOF JACKET. PIPING SHALL RECEIVE HEAT TRACING BY EC. FIELD VERIFY EXTENTS AND LENGTHS AND SEE SPECIFICAITONS FOR FURTHER INFORMATION.

GENERAL NOTES - ELECTRICAL

1. ENTIRE ELECTRICAL INSTALLATION SHALL MEET THE REQUIREMENTS OF THE LATEST ELECTRICAL CODES AS ADOPTED AND AMENDED BY THE STATE OF NEW JERSEY.
2. ALL SEWAGE EJECTOR PUMP AREAS ARE CLASS 1, DIVISION 1 LOCATIONS PER NFPA 820, PROVIDE PROPER MATERIALS, ENCLOSURES, CONNECTIONS AND SEALS FOR CONDUITS EXITING THE SEWAGE EJECTOR AREA.
3. ALL ELECTRICAL EQUIPMENT LOCATED IN SEWAGE EJECTOR ROOMS SHALL BE PROVIDED WITH NEMA 8, CLASS 1, DIVISION 1 APPROVED ENCLOSURES.
4. EXISTING PANELS / SOURCES SHALL BE USED TO FEED NEW PUMPS / CONTROL PANELS. PROVIDE NEW (3) #10 AND (1) #10 GND IN A ¾" C FROM EXISTING BREAKERS AS REQUIRED.
5. ELECTRICAL CONTRACTOR SHALL PROVIDE LABELS FOR EACH PIECE OF NEW EQUIPMENT BEING INSTALLED INDICATING THE NAME OF THE EQUIPMENT, THE SOURCE PANEL AND THE LOAD.
6. ALL EXISTING PANEL SCHEDULES BEING MODIFIED AS A PART OF THIS SCOPE SHALL BE UPDATED IN THE FIELD WITH NEW, UP-TO-DATE PANEL SCHEDULE AFFIXED TO PANELBOARD INTERIOR DOOR.
7. SEVERAL NEW EQUIPMENT LOCATIONS ARE BEING MODIFIED TO ALLOW FOR THE NEC REQUIRED WORKING SPACE. EC SHALL ENSURE FINAL EQUIPMENT LOCATIONS PERMIT ADEQUATE WORKING SPACE AS INDICATED IN NEC 110.16. NEW EQUIPMENT LOCATIONS SHALL BE COORDINATED WITH EXISTING EQUIPMENT LOCATED IN AREAS SHOWN.
8. THE NEW CONTROL PANEL SHALL HAVE A MAXIMUM VOLTAGE OF 120V TO GROUND ON ALL CONDUCTORS INSIDE THE PANEL TO ALLOW PUMP AND SYSTEM TROUBLESHOOTING WITHOUT REQUIRING THE OPERATOR TO WEAR ARC FLASH PPE (AS PERMITTED IN NFPA 70E, TABLE 130.7(C)(15)(A)(a).
9. REPAIR AND FINISH ALL SURFACES IMPACTED BY DEMOLITION AND NEW WORK.
10. LOCATIONS OF DUCTWORK, PIPING, AND EQUIPMENT ARE APPROXIMATE. VERIFY EXACT ROUTING AND LOCATION IN FIELD.
11. CONDUIT PATH SHALL NOT EXCEED 360° BETWEEN PULL POINTS IN ACCORDANCE WITH NEC. EC SHALL PROVIDE PULL BOXES AS REQUIRED.
12. EC SHALL PROVIDE SHOP DRAWINGS OF INTENDED LAYOUT OF EQUIPMENT IN EACH ROOM TO ENSURE PROPER CLEARANCES AND CONNECTIONS.
13. ALL CONDUIT RUNS WITHIN SEWAGE EJECTOR ROOMS TO NEW AND EXISTING EQUIPMENT AND NOT WITHIN WET WELLS SHALL BE RIGID GALVANIZED STEEL (RGS). REFER TO CHART ON E0.01.
14. PROVIDE HEAT TRACING FOR EXTERIOR PLUMBING PIPING, COORDINATE WITH PC. HEAT TRACING SHALL BE SELF-REGULATING TAPE SIMILAR TO CHROMALOX SRL-5, 5W/FT, 120V. PROVIDE CONTROL PANEL, FIBERGLASS TAPE, CABLING, SENSORS, AND ALL EQUIPMENT AS REQUIRED FOR A COMPLETE INSTALLATION. SEE DETAILS AND SPECIFICATIONS. COORDINATE WITH MANUFACTURER.

FOR BID

PHILIP A. QUENSE, P.E.
PROFESSIONAL ENGINEER
NJ LICENSE No. 24GE05368700

DATE X/XX/2021

CERTIFICATE OF AUTHORIZATION (N.J.S.A. 45:8-56) 24GA27927000

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NO.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED
	10.13.2022	FOR REVIEW	GN/AG	AG	AG
	05.22.2023	REVISED PER CLIENT COMMENTS	GN/AG	AG	AG

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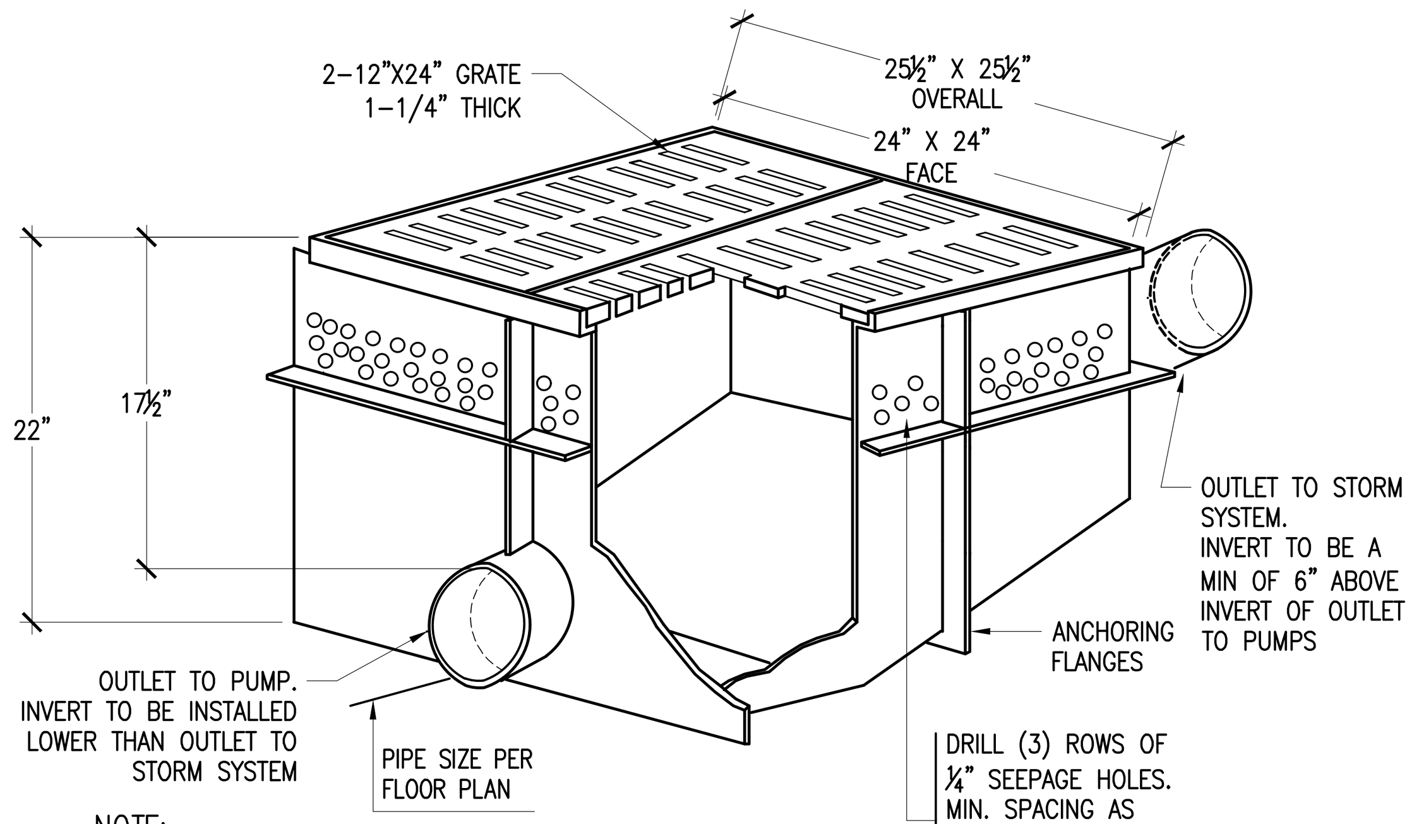
PLUMBING & ELECTRICAL - FLOOR & PARTIAL SITE PLAN

NJSEA MAINTENANCE BUILDING OIL / WATER SEPARATOR
BLOCK 107.01 - LOT 1
BOROUGH OF EAST RUTHERFORD
BERGEN COUNTY NEW JERSEY

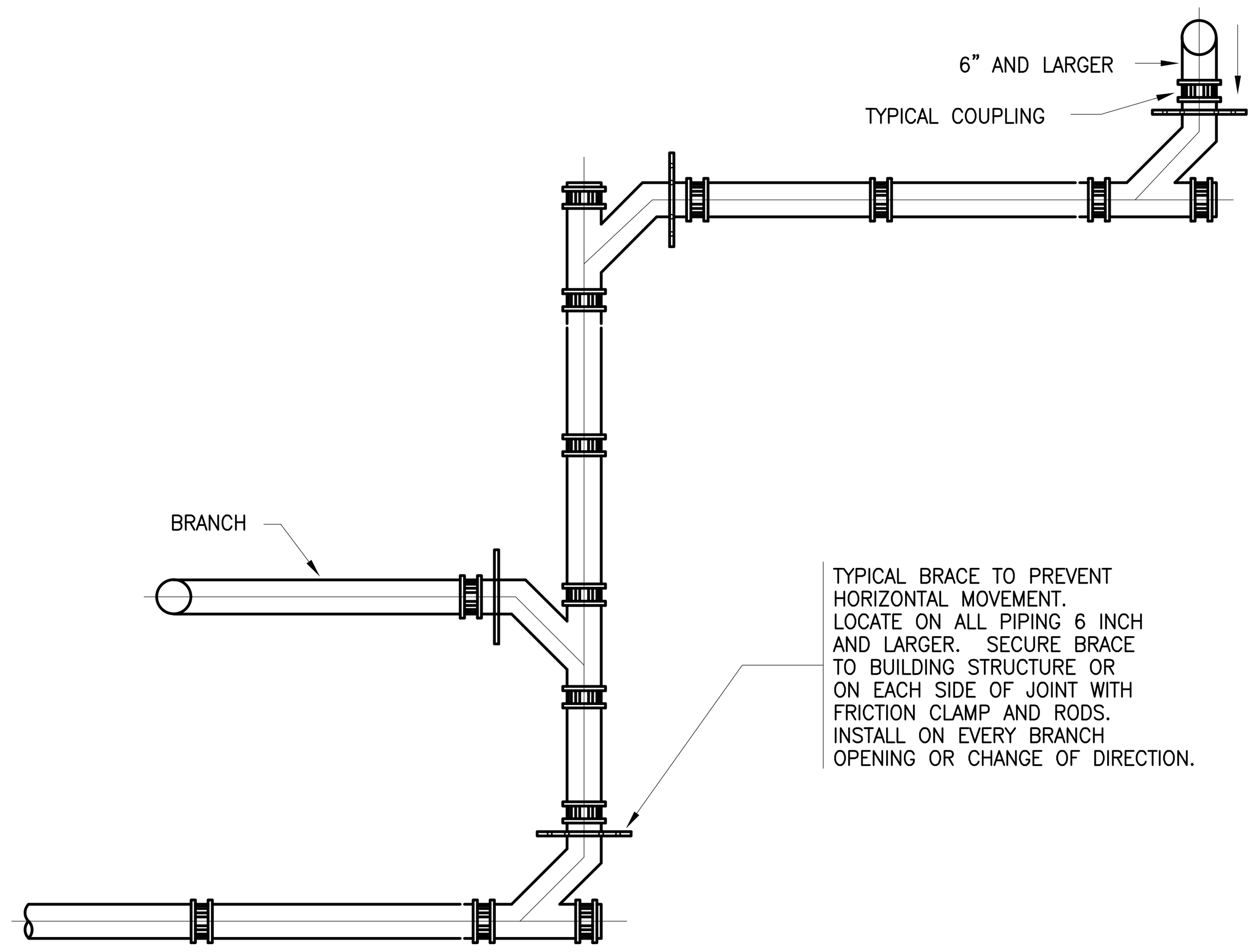
DRAWN BY: --	CHECKED BY: --	PROJECT NO.: ERUTPRV21.014	SHEET NO.: PE1.01
DESIGNED BY: --	SCALE: AS NOTED		
FIELD BOOK NO.:	PAGE:		DATE: SEPTEMBER 2022



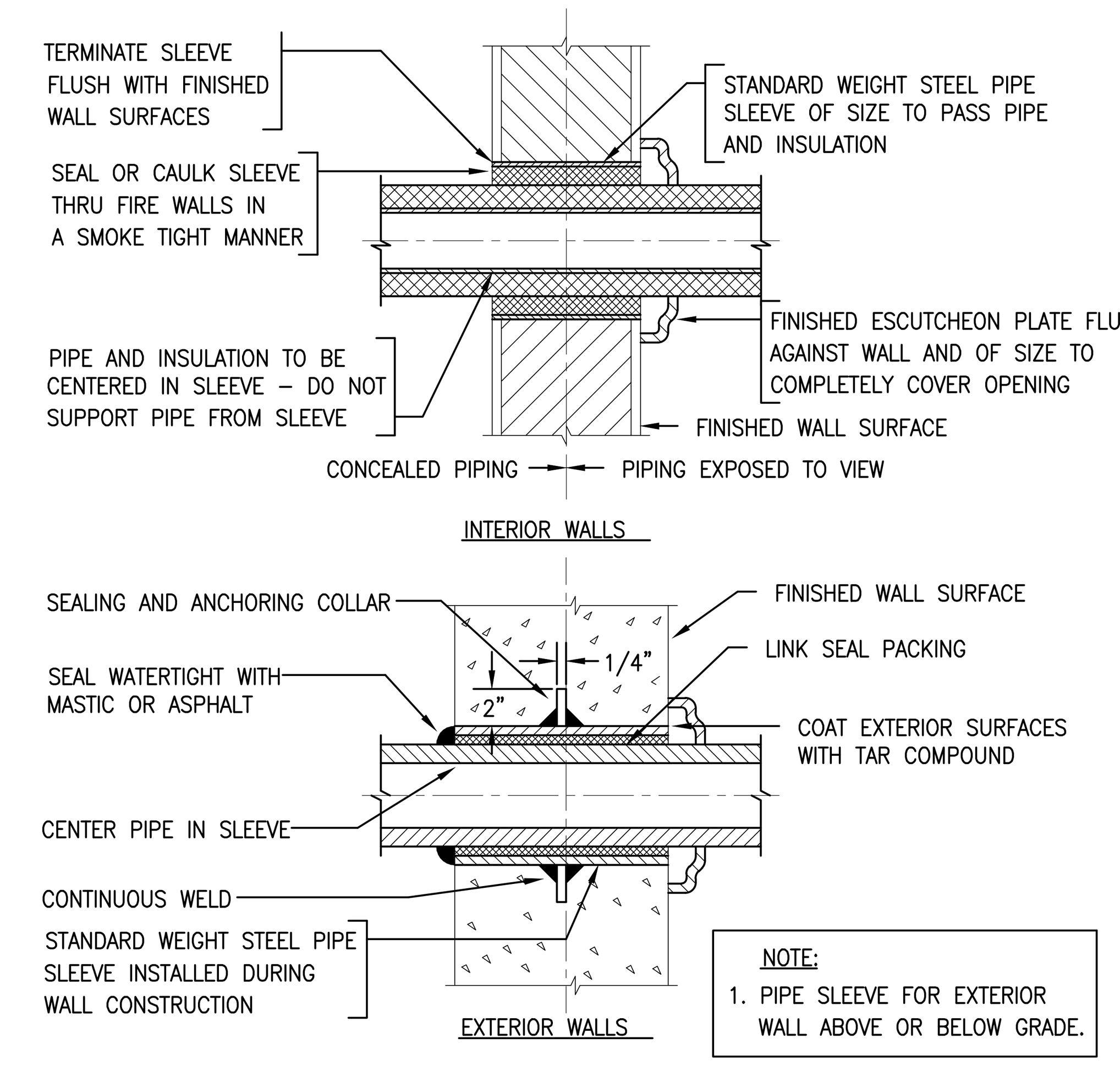
NOTE:

1. EPOXY COATED FABRICATED STEEL BODY
2. EXTRA HEAVY DUTY 24"X24" TWO SECTION CAST IRON GRATE WITH FREE AREA OF 200 SQUARE INCHES
3. PARKING LOT CATCH BASIN DRAIN WITH 4"ø OUTLETS. OUTLET TO PUMP SHALL HAVE INVERT A MINIMUM 6" BELOW OUTLET TO STORM SYSTEM.

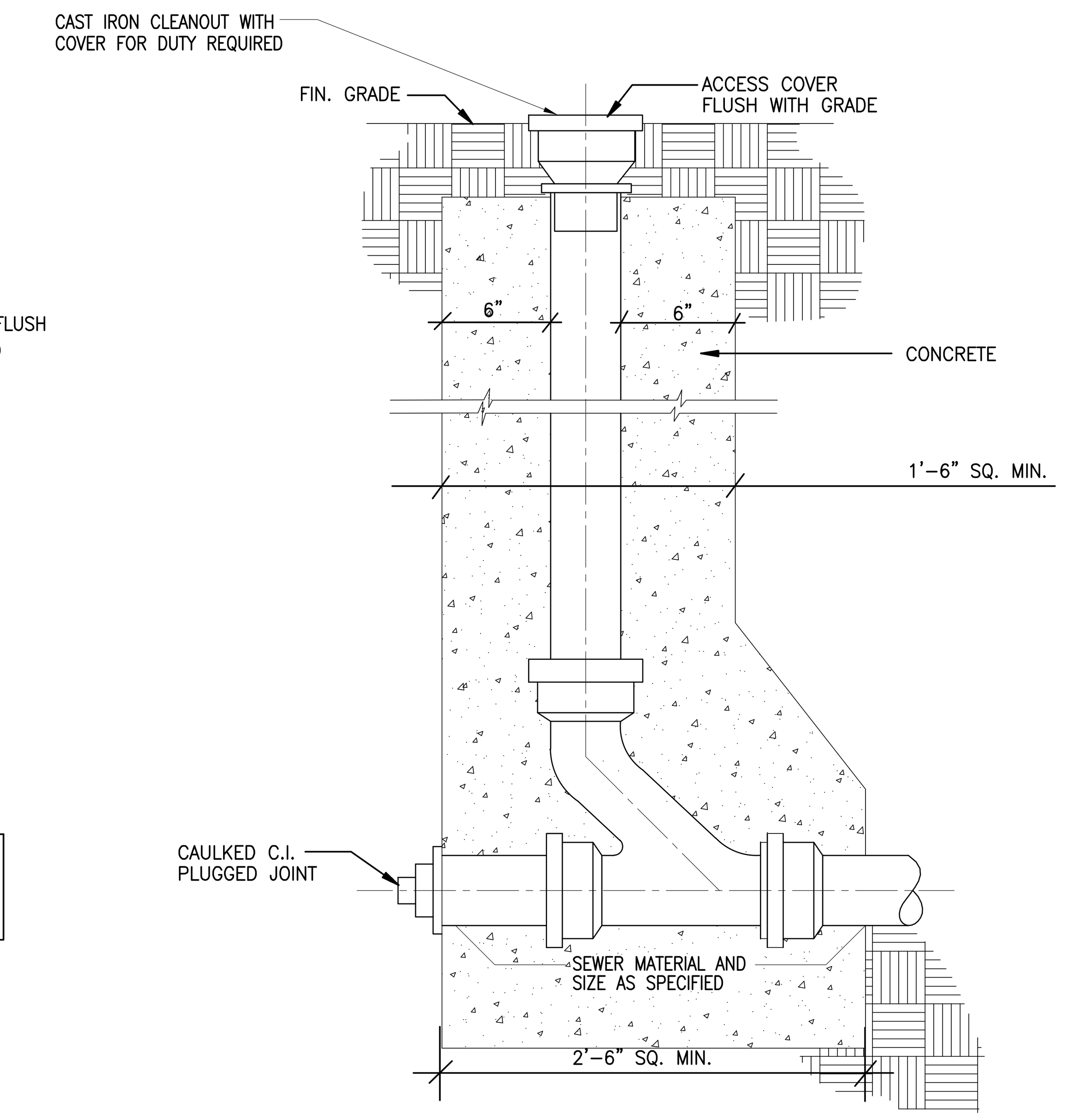
1 PARKING LOT CATCH BASIN DRAIN DETAIL
P5.01 Scale: NONE



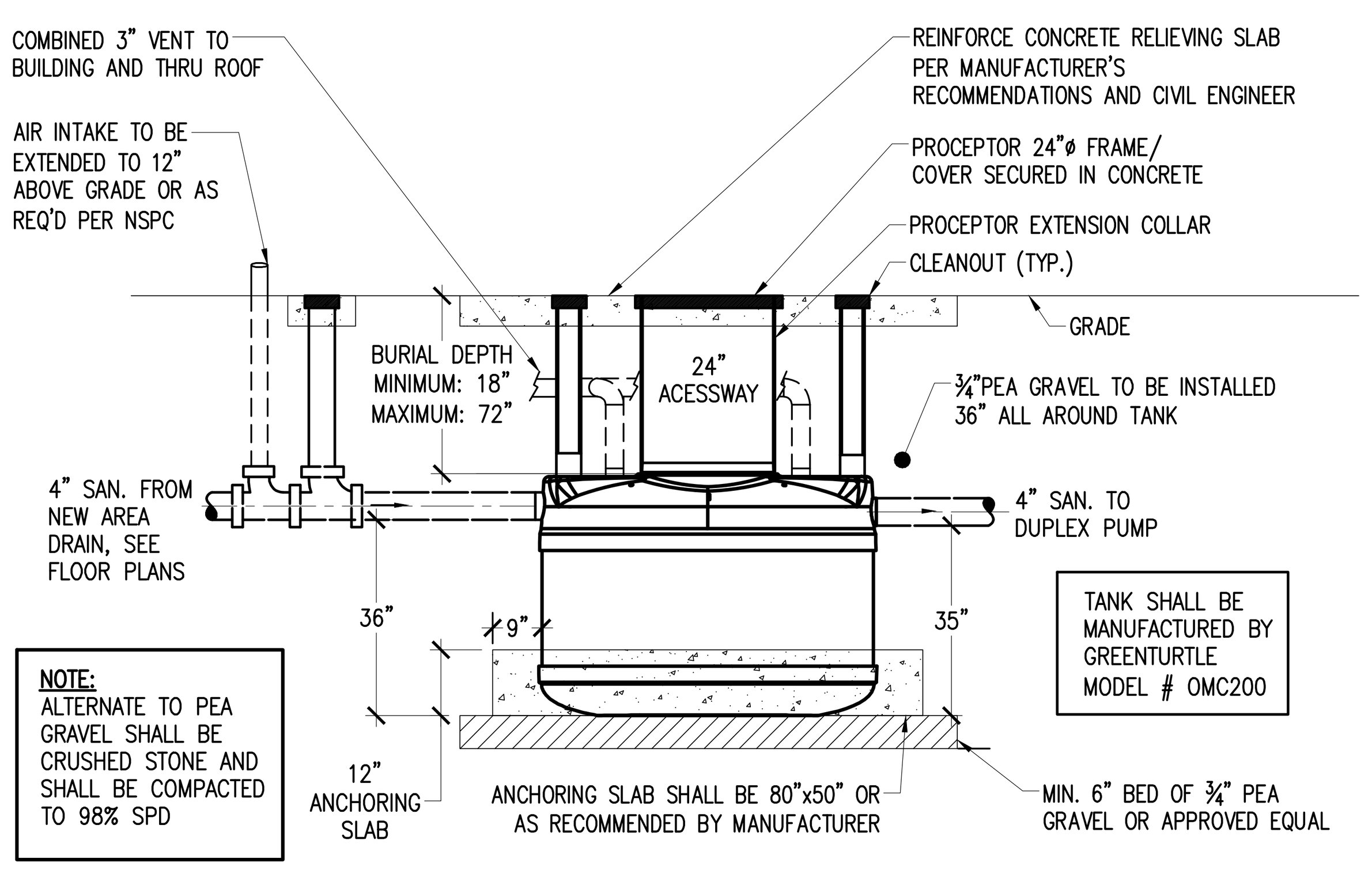
2 HUBLESS PIPE BRACING LOCATION FOR HORIZONTAL PIPING
P5.01 Scale: NTS



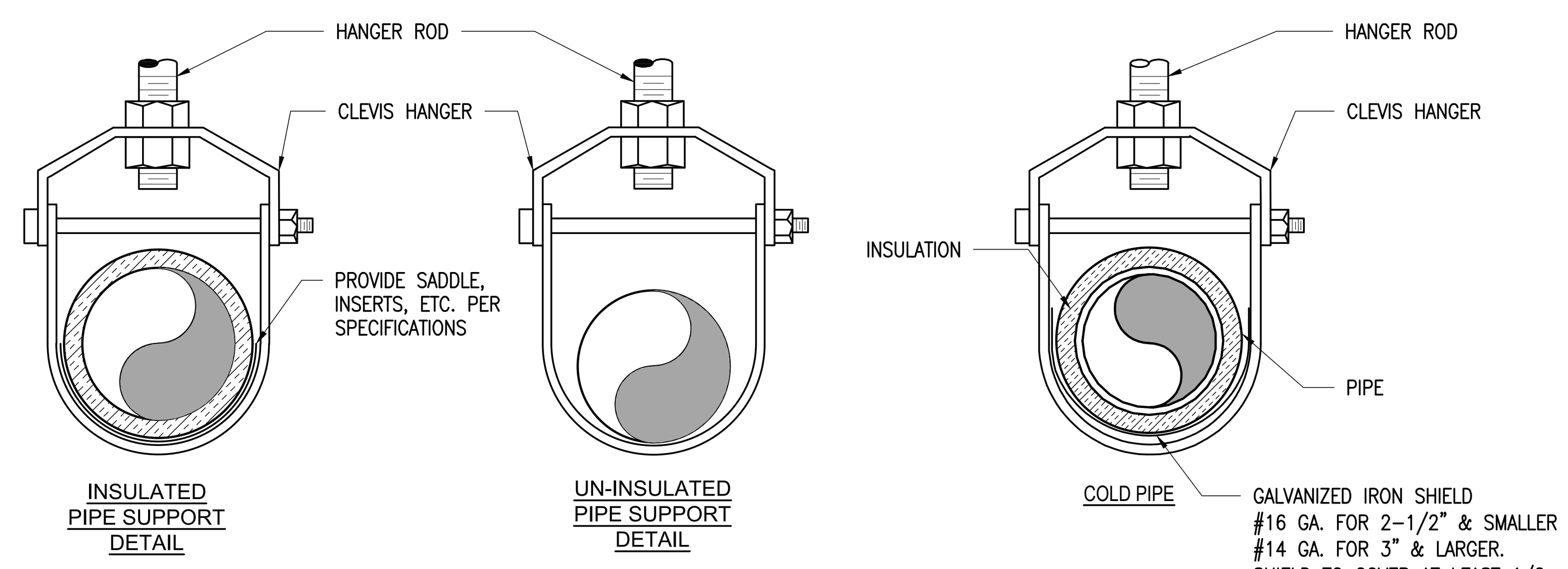
3 PIPE SLEEVE THRU WALLS DETAIL
P5.01 Scale: N.T.S.



4 EXTERIOR GRADE CLEANOUT
P5.01 Scale: N.T.S.

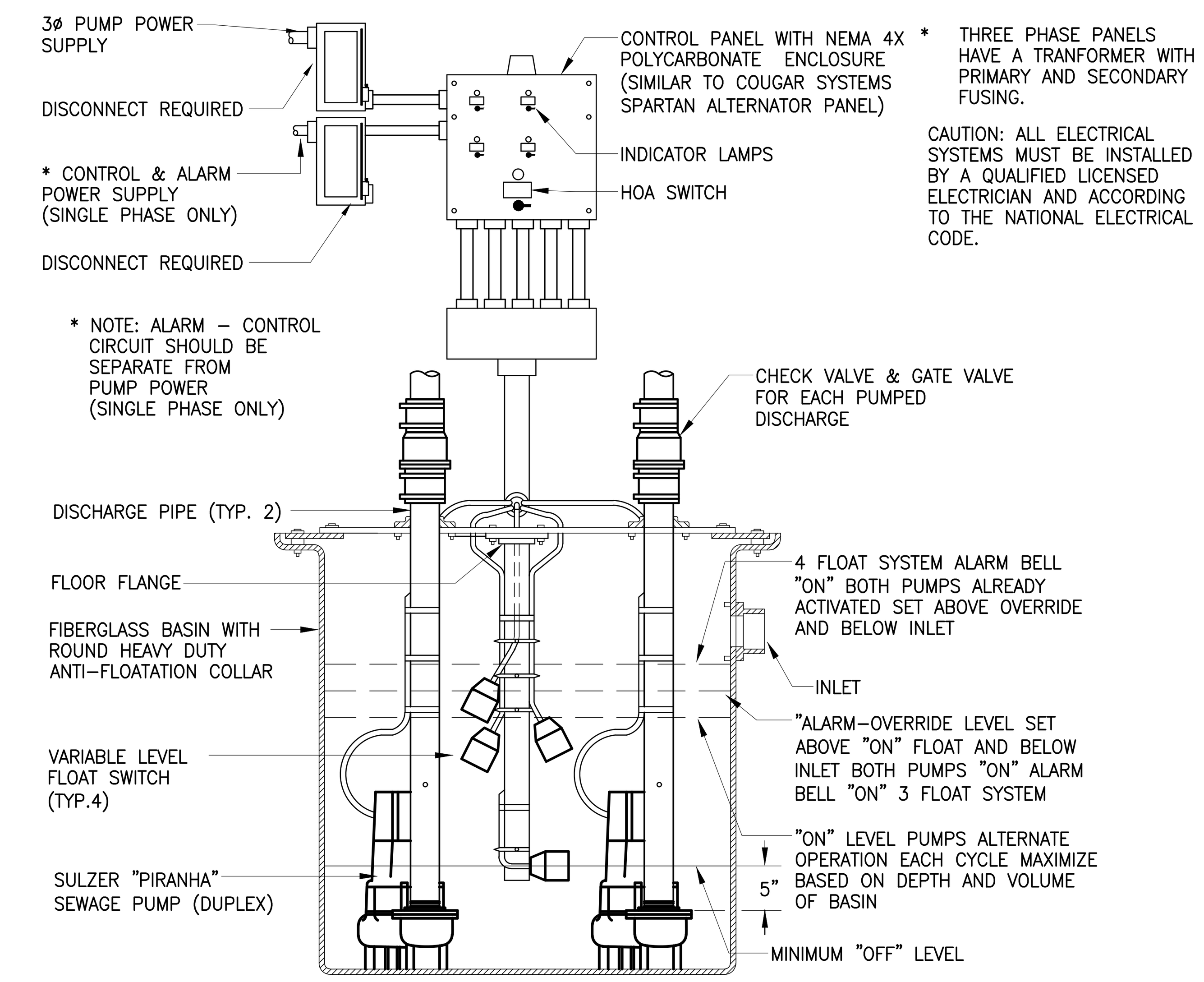


5 OIL / SAND / WATER INTERCEPTOR
P5.01 Scale: N.T.S.

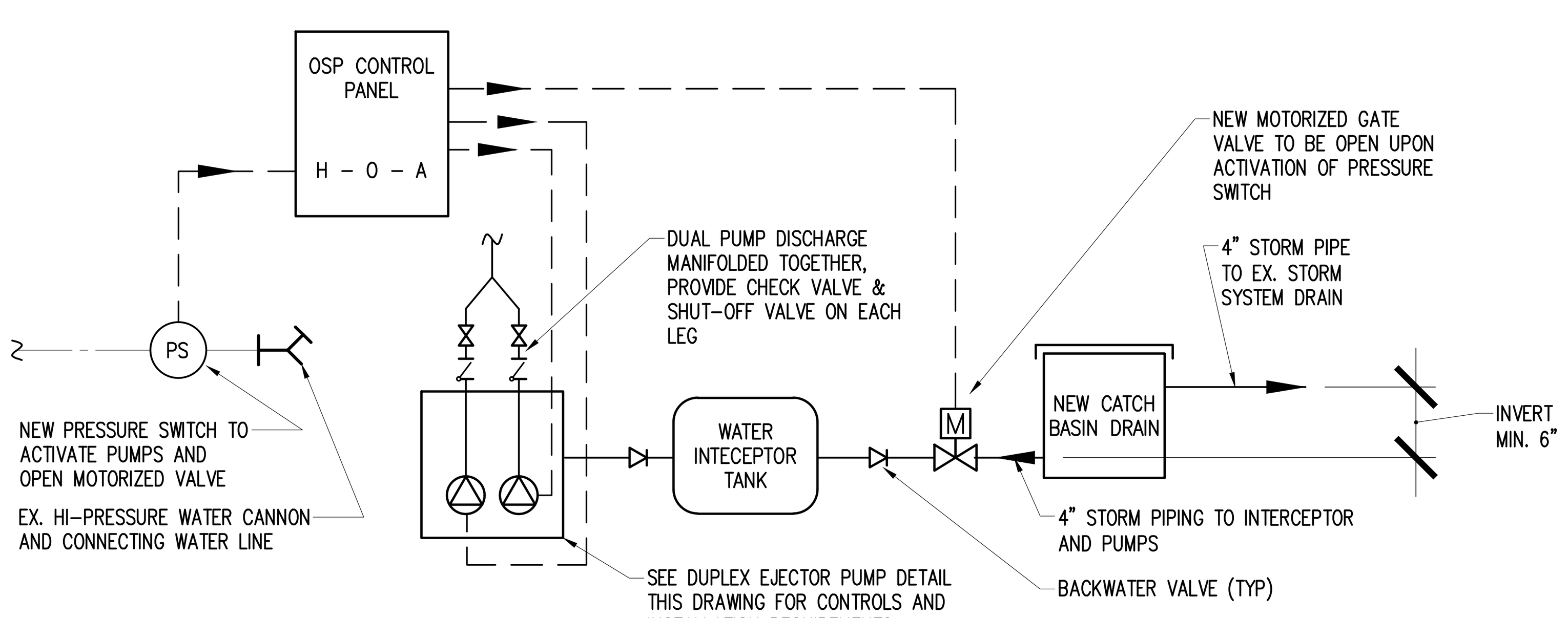


NOTES:
1. SEE SPECIFICATIONS FOR INSULATED PIPE PROTECTION REQUIREMENTS.
2. DO NOT SUPPORT PIPES FROM ROOF DECK. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED.

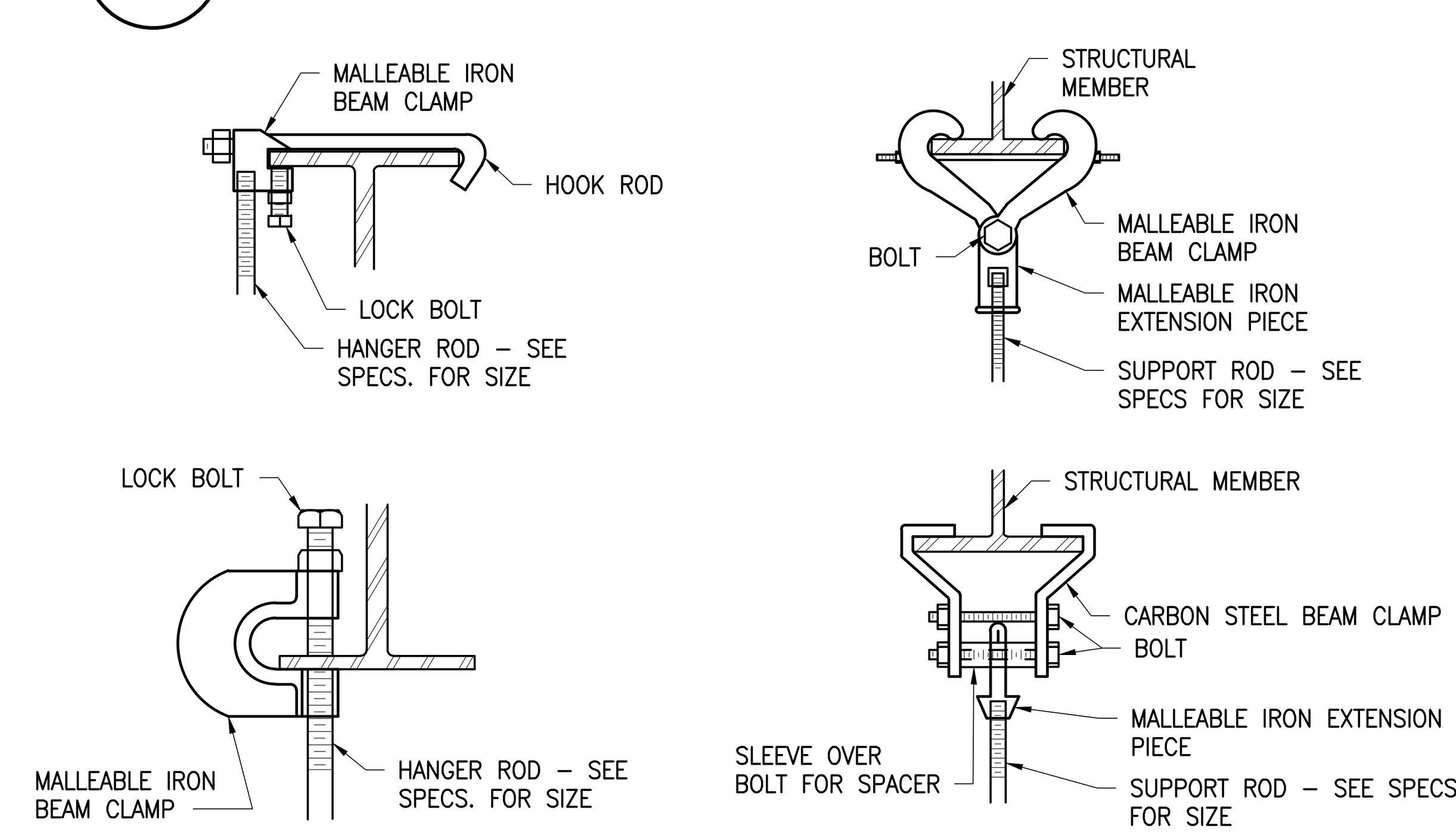
6 TYPICAL PIPE HANGER DETAILS
P5.01 Scale: NONE



7 DUPLEX EJECTOR PUMP & BASIN
P5.01 Scale: N.T.S.



8 PI&D DIAGRAM - TRUCK WASHING STATION
P5.01 Scale: N.T.S.



9 BEAM CLAMPS FOR PIPE OR EQUIPMENT SUPPORT
M4.01 Scale: NONE

FOR BID

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PLUMBING - DETAILS
NJSEA MAINTENANCE BUILDING OIL / WATER SEPARATOR
BLOCK 107.01 - LOT 1
BOROUGH OF EAST RUTHERFORD
BERGEN COUNTY NEW JERSEY

DRAWN BY: --	CHECKED BY: --	PROJECT NO.: ERUTPRV21.014	SHEET NO.: P5.01
DESIGNED BY: --	SCALE: AS NOTED		
FIELD BOOK NO.:	PAGE:		DATE: SEPTEMBER 2022

GENERAL NOTES:

1. ALL PROPOSED WORK AND DIRECTIVES DEPICTED AND NOTED ON THESE PLANS SHALL BE UNDERSTOOD TO BE REQUIRED TO BE PERFORMED BY THE CONTRACTOR, INCLUDING FURNISHING AND INSTALLING ALL PROPOSED MATERIALS, UNLESS NOTED OTHERWISE.
2. THE DRAWINGS SHOW THE EXISTING CONDITIONS WHICH ARE LIKELY TO AFFECT THE EXECUTION OF THE WORK INSOFAR AS THEY HAVE BEEN DETERMINED. THE DRAWINGS SHOULD NOT BE USED FOR SCALING OF DIMENSIONS. CONTRACTOR SHALL VERIFY ALL MEASUREMENTS IN THE FIELD PRIOR TO ORDERING SPECIFIC MATERIALS AND EQUIPMENT.
3. BUILDING PLANS AND SECTIONS SHOW GENERAL FEATURES OF THE INTERNATIONAL AND BULK MAIL CENTER REQUIRED FOR THE PROPOSED CONTRACT WORK UNDER THIS PROJECT. NOT ALL MECHANICAL PIPE, EQUIPMENT, AND CONDUITS ARE SHOWN.
4. NOT ALL WATER, GAS, SEWER, DRAINAGE, ELECTRIC, AND COMMUNICATION LINES ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL COORDINATE IDENTIFICATION, LOCATION, AND VERIFICATION OF UTILITIES WITH SITE CONSTRUCTION REPRESENTATIVE.
5. THE CONTRACTOR IS ENCOURAGED TO VISIT THE SITE BEFORE SUBMITTING A BID FOR THE WORK. ANY DISCREPANCY BETWEEN FIELD CONDITIONS AND CONDITIONS SHOWN ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION.

RESTORATION NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL AREAS TO A BETTER CONDITION THAN EXISTED PRIOR TO THE START OF CONSTRUCTION INCLUDED CLEANING AND DISINFECTION OF SURFACES AS NOTED ON THE PLANS.
2. FINAL PAYMENT WILL NOT BE MADE BEFORE THE CONTRACTOR HAS CLEANED THE SITE TO THE SATISFACTION OF THE PROJECT REPRESENTATIVE.

SCOPE OF WORK:

1. THE SCOPE OF THIS PROJECT INCLUDES INSTALLING (1) NEW EXTERIOR DUPLEX SEWAGE EJECTOR PUMPS, 1 OIL LEVEL MONITORING SYSTEM. NEW MOTOR STARTERS SHALL BE PROVIDED AS INDICATED ON PLANS ALONG WITH NEW CONTROL PANELS.
2. THE ELECTRICAL CONTRACTOR SHALL SUPPORT THE PUMP INSTALLER AND VENDOR AS INDICATED IN THESE DRAWINGS BY PROVIDING CONDUIT, POWER WIRING, STARTERS, ETC.
3. THE CONTROL PANELS (PROVIDED BY OTHERS) OPERATING THE PUMPS SHALL CONTAIN A MAXIMUM OF 120V TO GROUND, TO ALLOW FOR PUMP / SYSTEM TROUBLESHOOTING WITHOUT REQUIRING ARC FLASH PPE FOR SYSTEM OPERATORS.
4. ENTIRE INSTALLATION SHALL BE COORDINATED WITH PLUMBING CONTRACTOR AND BUILDING MAINTENANCE PERSONNEL.
5. POWER AND CONTROL WIRING AND CONDUIT.
6. MOTOR STARTERS AND DISCONNECTS.
7. MODIFICATION TO EXISTING PANELBOARD.
8. HEAT TRACING INCLUDING BUT NOT LIMITED TO HEATING ELEMENTS, CONTROL PANELS, SENSORS, WIRING, AND INSTALLATION APPURTENANCES FOR A COMPLETE SYSTEM.

PROJECT COORDINATION

PC.1 VERIFY FIELD CONDITIONS AT THE SITE AND NOTIFY THE OWNER OF ANY DISCREPANCIES, PRIOR TO COMMENCING WITH THE WORK.

PROTECTION OF WORK

PW.1 EFFECTIVELY PROTECT ALL MATERIALS AND EQUIPMENT FROM ENVIRONMENTAL AND PHYSICAL DAMAGE UNTIL FINAL ACCEPTANCE. CLOSE AND PROTECT ALL OPENINGS DURING CONSTRUCTION. PROVIDE NEW MATERIALS AND EQUIPMENT TO REPLACE ITEMS DAMAGED.

CODES

C.1 THE ENTIRE INSTALLATION, INCLUDING MATERIALS, EQUIPMENT AND WORKMANSHIP, SHALL CONFORM TO APPLICABLE LAWS AND REGULATIONS AND REGULATORY BODIES HAVING JURISDICTION OVER THIS WORK.

C.2 NATIONAL ELECTRICAL CODE: NFPA 70 NATIONAL ELECTRICAL CODE – 2021 (WITH SPECIAL ATTENTION TO ARTICLE 501 – CLASS 1 ENVIRONMENTS).

REMOVAL NOTES

R.1 THE CONTRACTOR SHALL COORDINATE WITH A/E AND NJSEA IN ADVANCE PRIOR TO ANY INTERRUPTIONS IN EXISTING ELECTRICAL, COMMUNICATIONS AND SIGNAL SERVICES DURING DEMOLITION.

R.2 ALL DEBRIS IS TO BE KEPT FROM FALLING ONTO ADJACENT SPACES. CONTRACTOR IS REQUIRED TO KEEP SPACES CLEAR AT ALL TIMES SO AS NOT TO INTERRUPT OPERATIONS.

R.3 ANY REPAIRS AND/OR PATCHING WORK NECESSITATED BY THE REMOVAL WORK SHALL BE INCLUDED.

WIRING

W.1 POWER AND LIGHTING – TYPE THHN-2 IN CONDUIT OR TYPE MC CABLE IN DRY INTERIOR SPACES.

W.2 WHERE EQUIPMENT, LIGHTING FIXTURES AND WIRING DEVICES ARE SHOWN WITH CIRCUIT NUMBERS ONLY, THE MINIMUM BRANCH CIRCUITING REQUIREMENTS SHALL BE AS FOLLOWS:

A. RECEPTACLES – (2)#12 & #12 GND.
B. 20A, 277 OR 120V CIRCUITS – (2)#12 & #12 GND
C. HOMERUNS TO PANEL BOARDS SHALL CONTAIN NO MORE THAN THREE CIRCUITS.

W.3 WIRE SIZES SHALL BE INCREASED TO COMPENSATE FOR VOLTAGE DROP. INCREASE WIRE SIZE TO COMPENSATE FOR VOLTAGE DROP FOR 20 AMP CIRCUITS AS FOLLOWS:

A. $120V/1\phi$ CIRCUITS LONGER THAN 80' SHALL UTILIZE MIN. #10 AWG.
B. $208V/3\phi$ CIRCUITS LONGER THAN 110' SHALL UTILIZE MIN. #10 AWG.

W.4 ALL CONDUCTORS IN CONDUIT SHALL BE STRANDED EXCEPT 120V RECEPTACLE WIRING.

CONSTRUCTION NOTES:

1. UTILIZE PROPER SAFETY PROTECTION IN ACCORDANCE WITH OSHA STANDARDS TO PROTECT WORKERS. THE CONTRACTOR MUST SUBMIT HIS HEALTH AND SAFETY PLAN FOR PROTECTION OF THEIR WORKERS AND THIS PLAN MUST BE CONSISTENT WITH NJSEA SAFETY POLICY.
2. PROVIDE PROPER BRACING OF ALL EXISTING UTILITIES AND OTHER STRUCTURES WITHIN THE VICINITY OF THE WORK WHICH MAY BE AFFECTED BY THE CONSTRUCTION. INCLUDE ALL COST ASSOCIATED WITH THIS WORK IN THE PRICES BID FOR THE CONTRACT WORK.
3. PERFORM ALL WORK WITH CARE SO THAT ANY MATERIALS WHICH REMAIN IN PLACE OR REMAIN THE PROPERTY OF THE NJSEA WILL NOT BE DAMAGED. IF THE CONTRACTOR DAMAGES ANY OF THESE MATERIALS TO REMAIN, THE DAMAGED MATERIALS SHALL BE REPAIRED OR REPLACED IN A MANNER SATISFACTORY TO THE NJSEA CONSTRUCTION REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
4. ALL STORM FLOW FROM PARKING DRAINAGE AND OTHER MISCELLANEOUS FLOWS DOWNSTREAM OF POINT OF CONNECTION TO PIPING MUST BE TURNED OFF PRIOR TO COMMENCING ANY WORK ON AN EJECTOR PUMPS.
5. THE CONTRACTOR SHALL CONSTRUCT ANY WALL PENETRATIONS NECESSARY TO ACCOMMODATE ELECTRICAL AND PLUMBING WORK. ALL PENETRATIONS MUST BE SEALED WATER TIGHT.
6. WIRE PENETRATIONS SHALL BE LOCATED NEAR DISCHARGE PIPING AND THE AREA WALL TO MINIMIZE ANY TRIPPING HAZARDS.
7. THE NEW PUMP CONTROL PANELS AND OIL MONITORING PANEL SHALL BE A LOW VOLTAGE (120V) DESIGN AND BE HOUSED IN A SEPARATE ENCLOSURE FROM THE PUMP POWER SUPPLY PANEL CONTAINING THE 208V CIRCUIT BREAKERS, COMBINATION STARTERS, ETC.
8. LOCKABLE DISCONNECTS SHALL BE PROVIDED FOR EACH PUMP. SEE ELECTRICAL DRAWINGS.

GENERAL REQUIREMENTS

E.1 THE WORK TO BE DONE UNDER THIS PROJECT INCLUDES PROVIDING ALL EQUIPMENT, MATERIALS, LABOR AND SERVICES, AND PERFORMING ALL OPERATIONS FOR COMPLETE AND OPERATING SYSTEMS. ANY WORK NOT SPECIFICALLY COVERED BUT NECESSARY TO COMPLETE THIS INSTALLATION, SHALL BE PROVIDED. ALL EQUIPMENT AND WIRING TO BE NEW AND PROVIDED UNDER THIS CONTRACT UNLESS OTHERWISE NOTED.

E.2 ENTIRE INSTALLATION, INCLUDING MATERIALS, EQUIPMENT AND WORKMANSHIP, SHALL CONFORM TO THE 2021 EDITION OF THE NATIONAL ELECTRIC CODE (NFPA 70 AND NECA-1) AS WELL AS ALL APPLICABLE LAWS AND REGULATIONS AND REGULATORY BODIES HAVING JURISDICTION OVER THIS WORK:

E.3 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 "CONTRACTOR" SHALL MEAN ELECTRICAL CONTRACTOR.

E.4 ONLY WRITTEN CHANGES AND/OR MODIFICATIONS APPROVED BY THE ARCHITECT, CONSULTING ENGINEER OR OWNER'S REPRESENTATIVE WILL BE RECOGNIZED.

E.5 ALL NEW ELECTRICAL MATERIAL AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS' LABORATORIES, INC. (UL) AND BEAR THE UL LABEL.

E.6 PROVIDE ALL SCAFFOLDING, LADDERS, RIGGING, HOISTING, ETC., FOR THIS WORK.

E.7 PROVIDE TECHNICAL MANUALS, PER SPECIFICATIONS, AND GIVE INSTRUCTIONS TO USER FOR ALL EQUIPMENT AND SYSTEMS PROVIDED UNDER THIS CONTRACT AFTER ALL ARE CLEANED AND OPERATING.

E.8 THE DRAWINGS ARE DIAGRAMMATIC AND ALL SPECIALTIES AND APPURTENANCES ARE NOT SHOWN, BUT SHALL BE PROVIDED AS REQUIRED.

E.9 CONTRACTOR SHALL FIELD VERIFY DIMENSIONS OF FINISHED CONSTRUCTION PRIOR TO FABRICATION AND INSTALLATION OF FIXTURES AND EQUIPMENT.

E.10 THE WORK SHALL INCLUDE ALL PANELS, DEVICES, FEEDERS AND BRANCH CIRCUIT WIRING AS REQUIRED FOR THE DISTRIBUTION SYSTEM INDICATED AND CALLED FOR ON THE DRAWINGS, REQUIRED BY SPECIFICATIONS AND AS NECESSARY FOR COMPLETE FUNCTIONAL SYSTEMS PRESENTED AND INTENDED.

E.11 CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR, TOOLS, EQUIPMENT, CONSUMABLES AND SERVICES REQUIRED FOR OBTAINING, DELIVERY, INSTALLATION, CONNECTION, DISCONNECTION, REMOVAL, RELOCATION, REPAIR, REPLACEMENT, TESTING AND COMMISSIONING OF ALL EQUIPMENT AND DEVICES INCLUDED IN OR NECESSARY FOR THE WORK, AS APPLICABLE.

E.12 ELECTRICAL WORK SHALL INCLUDE ALL REQUIRED CUTTING, PATCHING AND THE FULL RESTORATION OF WALL AND FLOOR STRUCTURE AND SURFACES.

E.13 EXACT ROUTING OF CONDUITS SHALL BE DETERMINED IN THE FIELD.

E.14 CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL CONDITIONS AND SYSTEMS THAT EFFECT HIS BIDDING AND WORK, AND SHALL PROVIDE VALUE FOR SAME IN HIS BID.

E.15 UPON COMPLETION OF THE ELECTRICAL WORK, CONTRACTOR SHALL TEST THE COMPLETE ELECTRICAL SYSTEM FOR SHORTS, GROUNDS, AND PROPER OPERATION, IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE.

E.16 UPON COMPLETION OF WORK, THE CONTRACTOR SHALL CLEAN AND ADJUST ALL EQUIPMENT AND TEST SYSTEMS TO THE SATISFACTION OF OWNER AND ENGINEER. RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

E.17 ALL WORK SHALL BE PERFORMED BY THOSE SKILLED IN THEIR PARTICULAR TRADE IN A NEAT AND WORKMANLIKE MANNER.

E.18 ELECTRICAL WORK SHALL BE DONE AT SUCH A TIME, AND IN SUCH MANNER, AS WILL LEAST INTERFERE WITH THE MAINTENANCE AND OPERATION OF THE SITE'S AND/OR BUILDING'S ACTIVITIES. PROVISIONS SHALL BE MADE TO PERMIT THE USE OF ALL EXISTING ELECTRICAL SYSTEMS AT ALL TIMES. PROVIDE TEMPORARY FACILITIES TO SECURE THESE CONDITIONS AND REMOVE SUCH TEMPORARY FACILITIES WHEN NO LONGER REQUIRED.

E.19 SHUTDOWN WORK SHALL BE SCHEDULED AT SUCH TIME AND IN SUCH MANNER AS DIRECTED BY THE OWNER AND ENGINEER. PROVIDE A MINIMUM ONE WEEK NOTICE.

E.20 WHERE ALLOWABLE SHUTDOWN PERIODS CANNOT BE OF DURATION TO ACCOMMODATE ALL OF THE REQUIRED WORK, THE CONTRACTOR SHALL PERFORM THE WORK IN A SERIES OF PREPLANNED STAGES DURING ALLOWABLE SHUTDOWN PERIODS. PROVIDE TEMPORARY FACILITIES TO ALLOW RE-ENERGIZING OF SERVICES BETWEEN WORKING STAGES.

E.21 CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WIRING AND CIRCUITS 110V AND ABOVE, U.O.N.

RACEWAYS

RW.1 ALL EXPOSED CONDUIT IN WET AND DAMP AREAS SHALL BE STEEL RMC (RIGID METAL CONDUIT). EXPOSED AND DRY AREAS SHALL BE EMT (ELECTRICAL METALLIC TUBING). UNDERGROUND POWER CONDUIT SHALL BE CONCRETE ENCASED RNC (RIGID NONMETALLIC CONDUIT). CONCRETE SHALL BE REINFORCED WITH #4 REBAR IN CORNERS AND ON 1' SPACING TOP AND BOTTOM.

RW.2 CONDUIT SHALL BE RUN AT RIGHT ANGLES AND PARALLEL TO BUILDING LINES, SHALL BE NEATLY RACKED, AND SECURELY FASTENED. JUNCTION BOXES SHALL BE PROVIDED WHERE REQUIRED TO FACILITATE INSTALLATION OF WIRES.

RW.3 ALL CONDUIT AND ELECTRICAL EQUIPMENT SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN AN APPROVED MANNER.

RW.4 ARRANGEMENT OF CONDUIT AND EQUIPMENT SHALL BE AS REQUIRED TO AVOID INTERFERENCES.

RW.5 FOR CONDUITS CROSSING EXPANSION JOINTS, PROVIDE EXPANSION FITTINGS FOR SIZE 1-1/4", AND LARGER. PROVIDE SECTIONS OF FLEXIBLE CONDUIT WITH GROUNDING JUMPERS FOR SIZES 1" AND SMALLER.

RW.6 UNDERGROUND AND UNDER SLAB CONDUITS SHALL BE MINIMUM 1".

RW.7 INSTALL DETECTABLE UNDERGROUND TAPES FOR THE PROTECTION, LOCATION, AND IDENTIFICATION OF UNDERGROUND CONDUIT INSTALLATIONS.

RW.8 CONDUITS WITHOUT DESIGNATED SIZE SHALL BE 3/4".

A. RACEWAYS:
1. EMT: ANSI C80.3, ZINC-COATED STEEL, WITH SETSCREW OR COMPRESSION FITTINGS.
2. ENT: NEMA TC 13, COMPLYING WITH UL 1653.
3. FMC: ZINC-COATED STEEL.
4. IMC: ANSI C80.6, ZINC-COATED STEEL, WITH THREADED FITTINGS.
5. LFMC: ZINC-COATED, FLEXIBLE STEEL WITH SUNLIGHT-RESISTANT AND MINERAL-OIL-RESISTANT PLASTIC JACKET.
6. RNC: NEMA TC 2, TYPE EPC-40-PVC, WITH NEMA TC3 FITTINGS.
7. RMC: GALVANIZED RIGID STEEL. MANUFACTURED IN ACCORDANCE WITH ANSI C80.1HOT-DIP GALVANIZED INSIDE AND OUT TO PROVIDE GALVANIC CORROSION PROTECTION. ALSO, TOP COATED WITH A COMPATIBLE ORGANIC LAYER TO PROTECT AGAINST WHITE RUST.
8. RACEWAY FITTINGS: SPECIFICALLY DESIGNED FOR RACEWAY TYPE USED IN PROJECT.

B. WIREWAYS: SHEET METAL SIZED AND SHAPED, WITH SCREW COVERS.

BOXES AND ENCLOSURES

BE.1 ELECTRICAL BOXES AND ENCLOSURES SHALL BE CAST METAL, EXCEPT AS NOTED.

BE.2 MOUNTING HEIGHTS OF EQUIPMENT AND DEVICES SHALL BE AS INDICATED ON THE DRAWINGS. WHERE MOUNTING HEIGHTS ARE NOT GIVEN ON THE DRAWINGS, UTILIZE THE FOLLOWING MOUNTING HEIGHTS (ALL DIMENSIONS TO CENTERLINE OF BOX):

A. RECEPTACLES (WALL MOUNTED) – 24" A.F.F.
B. RECEPTACLES (EXTERIOR) – 24" ABOVE FINISHED GRADE
C. LIGHTING SWITCHES AND CONTROLS – 48" A.F.F.
D. PANELBOARDS AND CABINETS – 78" TO TOP OF ENCLOSURE

BE.3 WHERE MULTIPLE SWITCHES AND RECEPTACLES ARE INDICATED AT THE SAME LOCATION, THEY SHALL BE MOUNTED BEHIND A COMMON FACEPLATE.

BE.4 PROVIDE WHILE IN USE METALLIC COVERS FOR ALL OUTDOOR AND ALL GROUND FAULT CIRCUIT INTERRUPTER (GFCI) RECEPTACLES.

BE.5 NEMA RATINGS:
PROVIDE NEMA 4X BOXES AND ENCLOSURES IN WET AND CORROSIVE AREAS.
PROVIDE NEMA 3R FOR OUTDOOR AND WET AREAS
PROVIDE NEMA 7 FOR ALL CLASS 1, DIV. 1 & DIV. 2, EXCEPT PULL BOXES FOR DIV. 2.

BE.6 FIBERGLASS HANDHOLES AND BOXES: MOLDED OF FIBERGLASS-REINFORCED POLYESTER RESIN, WITH FRAME AND COVERS OF FIBERGLASS.

STANDARD: COMPLY WITH SCTE 77.

A. CONFIGURATION: DESIGNED FOR FLUSH BURIAL WITH CLOSED BOTTOM UNLESS OTHERWISE INDICATED.
B. COVER: WEATHERPROOF, SECURED BY TAMPER-RESISTANT LOCKING DEVICES AND HAVING STRUCTURAL LOAD RATING CONSISTENT WITH ENCLOSURE AND HANDHOLE LOCATION.
C. COVER FINISH: NONSKID FINISH SHALL HAVE A MINIMUM COEFFICIENT OF FRICTION OF 0.50. COVER LEGEND: MOLDED LETTERING, "ELECTRIC." .
D. CONDUIT ENTRANCE PROVISIONS: CONDUIT-TERMINATING FITTINGS SHALL MATE WITH ENTERING DUCTS FOR SECURE, FIXED INSTALLATION IN ENCLOSURE WALL.
E. HANDHOLES 12 INCHES WIDE BY 24 INCHES LONG (300 MM WIDE BY 600 MM LONG) AND LARGER: HAVE INSERTS FOR CABLE RACKS AND PULLING-IN IRONS INSTALLED BEFORE CONCRETE IS POURED.

MOUNTING HEIGHTS

MH.1 UNLESS OTHERWISE INDICATED, OUTLET BOXES IN WALLS SHALL BE LOCATED WITH CENTERLINE AT THE FOLLOWING ELEVATIONS ABOVE THE FINISHED FLOOR (AFF) LINE. VERIFY ALL HEIGHTS WITH THE GENERAL CONSTRUCTION CONTRACTOR PRIOR TO ACTUAL LAYOUT OF WORK.

A.	SWITCH OUTLETS	4'-0" AFF
B.	BRACKET OUTLETS (STAIRS)	7'-0" AFF
C.	BRACKET OUTLETS (OTHER)	6'-6" AFF
D.	RECEPTACLE OUTLETS (UON)	1'-6" AFF
E.	CLOCK OUTLETS	1'-0" BELOW CEILING
F.	MOTOR STARTERS AND SAFETY SWITCHES	4'-6" AFF
G.	PANELBOARDS (TOP)	6'-6" AFF

MOUNTING HEIGHT NOTE: THE ABOVE MOUNTING HEIGHTS SHALL BE ADHERED TO UNLESS OTHERWISE NOTED ON PLANS OR SPECIFICATIONS.

IDENTIFICATION

ID.1 TAPE MARKERS FOR WIRE: VINYL OR VINYL-CLOTH, SELF-ADHESIVE, WRAPAROUND TYPE WITH CIRCUIT IDENTIFICATION LEGEND MACHINE PRINTED BY THERMAL TRANSFER OR EQUIVALENT PROCESS.

ID.2 RACEWAY IDENTIFICATION MATERIALS: SELF-ADHESIVE, COLOR-CODING VINYL TAPE; FLEXIBLE, PREPRINTED, SELF-ADHESIVE VINYL. INDICATING L-L AND L-N VOLTAGES.

ID.3 SELF-ADHESIVE WARNING LABELS: FACTORY PRINTED, MULTICOLOR, PRESSURE-SENSITIVE ADHESIVE LABELS, CONFIGURED FOR DISPLAY ON FRONT COVER, DOOR, OR OTHER ACCESS TO EQUIPMENT UNLESS OTHERWISE INDICATED.

ID.4 EQUIPMENT IDENTIFICATION LABELS: ENGRAVED, LAMINATED ACRYLIC OR MELAMINE LABEL; PUNCHED OR DRILLED FOR SCREW MOUNTING. WHITE LETTERS ON A DARK-GRAY BACKGROUND; RED LETTERS FOR EMERGENCY SYSTEMS.

ID.5 EQUIPMENT TO BE LABELED:

IDENTIFICATION LABELING OF SOME ITEMS LISTED BELOW MAY BE REQUIRED BY INDIVIDUAL SECTIONS OR BY NFPA 70.

A. PANELBOARDS, ELECTRICAL CABINETS, AND ENCLOSURES.
B. MOTOR-CONTROL CENTERS.
C. DISCONNECT SWITCHES.
D. ENCLOSED CIRCUIT BREAKERS.
E. MOTOR STARTERS.
F. PUSH-BUTTON STATIONS.
G. POWER TRANSFER EQUIPMENT.
H. CONTACTORS.

CONDUIT SUPPORTS AND HANGERS

SH.1 MOUNTING, ANCHORING, AND ATTACHMENT COMPONENTS:

A. POWDER-ACTUATED FASTENERS: THREADED-STEEL STUD.
B. MECHANICAL-EXPANSION ANCHORS: INSERT-WEDGE-TYPE, STAINLESS STEEL, FOR USE IN HARDENED PORTLAND CEMENT CONCRETE.
C. CONCRETE INSERTS: STEEL OR MALLEABLE-IRON, SLOTTED-SUPPORT SYSTEM UNITS SIMILAR TO MSS TYPE 18; COMPLYING WITH MFMA-3 OR MSS SP-58.
D. CLAMPS FOR ATTACHMENT TO STEEL STRUCTURAL ELEMENTS: MSS SP-58, TYPE SUITABLE FOR ATTACHED STRUCTURAL ELEMENT.
E. THROUGH BOLTS: STRUCTURAL TYPE, HEX HEAD, HIGH STRENGTH; COMPLYING WITH ASTM A 325.
F. TOGGLE BOLTS: ALL-STEEL SPRINGHEAD TYPE.
G. HANGER RODS: THREADED STEEL.

SH.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

STEEL SLOTTED SUPPORT SYSTEMS: COMPLY WITH MFMA-4, FACTORY FABRICATED COMPONENTS FOR FIELD ASSEMBLY.

MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

1. ALLIED TUBE & CONDUIT.
2. COOPER B-LINE, INC.; A DIVISION OF COOPER INDUSTRIES.
3. ERICO INTERNATIONAL CORPORATION.
4. GS METALS CORP.
5. THOMAS & BETTS CORPORATION.
6. UNISTRUT; TYCO INTERNATIONAL, LTD.

A. METALLIC COATINGS: HOT-DIP GALVANIZED AFTER FABRICATION AND APPLIED ACCORDING TO MFMA-4.
B. STAINLESS STEEL: TYPE 316 IN ACCORDANCE WITH ASTM A240.
C. NONMETALLIC COATINGS: MANUFACTURER'S STANDARD PVC, POLYURETHANE, OR POLYESTER COATING APPLIED ACCORDING TO MFMA-4.
D. CHANNEL DIMENSIONS: SELECTED FOR APPLICABLE LOAD CRITERIA.

ELECTRICAL EQUIPMENT REQUIREMENTS

EE.1 ELECTRICAL PANELS, ELECTRICAL SERVICE MAIN SWITCHES/CIRCUIT BREAKERS, AND CONTROL CABINETS SHALL BE MOUNTED A MAXIMUM OF 6'7" TO MID POINT OF HANDLE.

EE.2 ANY EQUIPMENT FED WITH SERVICE ENTRANCE CONDUCTORS SHALL BE RATED FOR A SERVICE ENTRANCE.

EE.3 THE AIC RATING OF THE EQUIPMENT COINCIDE WITH THE EQUIPMENT UPSTREAM, U.O.N.

EE.4 COLOR CODING:

A. COLOR-CODING FOR PHASE AND VOLTAGE LEVEL IDENTIFICATION, 600 V AND LESS: UNGROUNDED SERVICE, FEEDER, AND BRANCH-CIRCUIT CONDUCTORS.

1. COLORS FOR 208/120-V CIRCUITS:
   a. PHASE A: BLACK.
   b. PHASE B: RED.
   c. PHASE C: BLUE.

2. COLORS FOR 480/277-V CIRCUITS:
   a. PHASE A: BROWN.
   b. PHASE B: ORANGE.
   c. PHASE C: YELLOW.

B. FIELD-APPLIED, COLOR-CODING CONDUCTOR TAPE: APPLY IN HALF-LAPPED TURNS FOR A MINIMUM DISTANCE OF 6 INCHES (150 MM) FROM TERMINAL POINTS.

MOTOR CONTROL AND STARTERS

CS.1 STARTERS, CONTROLS, AND CONNECTIONS TO MECHANICAL EQUIPMENT

A. STARTERS:

1. STARTERS USED INSIDE TO HAVE NEMA 1 ENCLOSURES, STARTERS USED IN DAMP LOCATIONS OR EXPOSED TO THE WEATHER TO HAVE NEMA 3R OR 4X ENCLOSURES DEPENDING ON THE AREA CLASSIFICATION.
2. STARTERS TO BE CIRCUIT BREAKER COMBINATION, NON-REVERSING TYPE STARTERS, SIZES REQUIRED FOR THE PARTICULAR MOTORS.
3. ALL STARTERS TO HAVE 3-PHASE AMBIENT COMPENSATED OVERLOADS AND LOW VOLTAGE PROTECTION.
4. RESET BUTTONS, HAND/OFF/AUTO PUSH-BUTTON SELECTOR SWITCHES, AND PILOT LIGHTS WHERE REQUIRED, AS SHOWN ON DRAWINGS, TO BE MOUNTED IN COVERS.
5. ALL NECESSARY AUXILIARY INTERLOCKS AS REQUIRED AND SHOWN ON ELEMENTARY DIAGRAMS TO BE FURNISHED; AND IN ADDITION, ONE SPARE AUXILIARY INTERLOCK TO BE FURNISHED WITH EACH STARTER.
6. STARTERS USED ON 208-VOLT SYSTEMS TO HAVE TWO CARTRIDGE FUSES IN THE CONTROL CIRCUIT.
7. ALL STARTERS TO HAVE AMBIENT COMPENSATED OVERLOADS AND LOW VOLTAGE PROTECTION.
8. ALL STARTERS SHALL BE NEMA RATED.

ENCLOSED SWITCHES & CIRCUIT BREAKERS

CB.1 FUSIBLE SWITCHES

A. TYPE GD, GENERAL DUTY, SINGLE THROW, 240-V OR 600-V AC, 800 A AND SMALLER: UL 98 AND NEMA KS 1, HORSEPOWER RATED, WITH CARTRIDGE FUSE INTERIORS TO ACCOMMODATE SPECIFIED FUSES, LOCKABLE HANDLE WITH CAPABILITY TO ACCEPT TWO PADLOCKS, AND INTERLOCKED WITH COVER IN CLOSED POSITION.
B. TYPE HD, HEAVY DUTY, SINGLE THROW, 240 OR 600-V AC, 1200 A AND SMALLER: UL 98 AND NEMA KS 1, HORSEPOWER RATED, WITH CLIPS OR BOLT PADS TO ACCOMMODATE SPECIFIED FUSES, LOCKABLE HANDLE WITH CAPABILITY TO ACCEPT THREE PADLOCKS, AND INTERLOCKED WITH COVER IN CLOSED POSITION.
C. ACCESSORIES:
1. EQUIPMENT GROUND KIT: INTERNALLY MOUNTED AND LABELED FOR COPPER AND ALUMINUM GROUND CONDUCTORS.
2. NEUTRAL KIT: INTERNALLY MOUNTED; INSULATED, CAPABLE OF BEING GROUNDED AND BONDED; LABELED FOR COPPER AND ALUMINUM NEUTRAL CONDUCTORS.
3. CLASS R FUSE KIT: PROVIDES REJECTION OF OTHER FUSE TYPES WHEN CLASS R FUSES ARE SPECIFIED.
4. AUXILIARY CONTACT KIT: TWO NO/NC (FORM "C") AUXILIARY CONTACT(S), ARRANGED TO ACTIVATE BEFORE SWITCH BLADES OPEN.
5. LUGS: MECHANICAL TYPE, SUITABLE FOR NUMBER, SIZE, AND CONDUCTOR MATERIAL.
6. SERVICE-RATED SWITCHES: LABELED FOR USE AS SERVICE EQUIPMENT.

CB.2 MOLDED-CASE CIRCUIT BREAKERS

A. THERMAL-MAGNETIC CIRCUIT BREAKERS: INVERSE TIME-CURRENT ELEMENT FOR LOW-LEVEL OVERLOADS AND INSTANTANEOUS MAGNETIC TRIP ELEMENT FOR SHORT CIRCUITS. ADJUSTABLE MAGNETIC TRIP SETTING FOR CIRCUIT BREAKER FRAME SIZES 250 A AND LARGER.
B. ADJUSTABLE, INSTANTANEOUS-TRIP CIRCUIT BREAKERS: MAGNETIC TRIP ELEMENT WITH FRONT-MOUNTED, FIELD-ADJUSTABLE TRIP SETTING.
C. GROUND-FAULT, CIRCUIT-INTERRUPTER (GFCI) CIRCUIT BREAKERS: SINGLE- AND TWO-POLE CONFIGURATIONS WITH CLASS A GROUND-FAULT PROTECTION (6-MA TRIP).
D. GROUND-FAULT, EQUIPMENT-PROTECTION (GFEP) CIRCUIT BREAKERS: WITH CLASS B GROUND-FAULT PROTECTION (30-MA TRIP).
E. FEATURES AND ACCESSORIES:
1. STANDARD FRAME SIZES, TRIP RATINGS, AND NUMBER OF POLES.
2. LUGS: MECHANICAL TYPE, SUITABLE FOR NUMBER, SIZE, TRIP RATINGS, AND CONDUCTOR MATERIAL.
3. APPLICATION LISTING: APPROPRIATE FOR APPLICATION; TYPE SWD FOR SWITCHING FLUORESCENT LIGHTING LOADS; TYPE HID FOR FEEDING FLUORESCENT AND HIGH-INTENSITY DISCHARGE LIGHTING CIRCUITS.

FOR BID

EDWARD QUARANTA, P.E.
PROFESSIONAL ENGINEER
N.J. LICENSE NO. 24GE04661100

DATE X/XX/2021

CERTIFICATE OF AUTHORIZATION (N.J.S.A. 45:8-56) 24GA27927000

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	05.22.2023	REVISED PER CLIENT COMMENTS	GN/AG	AG	AG

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ELECTRICAL NOTES & WIRING DIAGRAM

NJSEA MAINTENANCE BUILDING OIL / WATER SEPARATOR

BLOCK 107.01 - LOT 1

BOROUGH OF EAST RUTHERFORD

BERGEN COUNTY NEW JERSEY

DRAWN BY: --	CHECKED BY: --	PROJECT NO.: ERUTPRV21.014	SHEET NO.: E0.01
DESIGNED BY: --	SCALE: AS NOTED		
FIELD BOOK NO.:	PAGE:		DATE: SEPTEMBER 2022

GENERAL ELECT. LEGEND

SYMBOL	DESCRIPTION
$	20A 120/277V SWITCH HUBBELL 1221, MOUNT 3'-4" AFF
$M	FRACTIONAL HP MOTOR SWITCH - SNAP SWITCH
	20A 125V DUPLEX GROUNDING OUTLET HUBBELL 5362-I, SEE MTG SPECIFICATIONS
WP	20A 125V DUPLEX GROUNDING OUTLET HUBBELL 5362-I, SEE MTG. SPECIFICATIONS WP DENOTES WEATHERPROOF GFI WITH "WHILE IN USE" COVERS.
	TELEPHONE OUTLET WITH 1-4/C#22 TO TELCO SERVICE POINT, MOUNT 1'-6" AFF
	DATA OUTLET WITH CAT 5E OR CAT 6 TWISTED PAIRS, MOUNT 1'-6" AFF
(W)	WEATHER PROTECTED CONSTRUCTION NEMA 4
(C)	CORROSION RESISTANT CONSTRUCTION NEMA 4X
	NON-FUSED DISCONNECT SWITCH RATING AS SHOWN, SEE SPECIFICATIONS
	FUSED DISCONNECT SWITCH RATING AS SHOWN, SEE SPECIFICATIONS
	COMBINATION DISCONNECT SWITCH AND STARTER
VFD	VARIABLE FREQUENCY DRIVE DISCONNECT
VFD	VARIABLE FREQUENCY DRIVE
	FULL VOLTAGE NON-REVERSING MOTOR STARTER
	MOTOR STARTER WITH DISCONNECT
	CONDUIT
	CONDUIT UP
	CONDUIT DOWN
X	SQUIRREL CAGE MOTOR X DENOTES HORSEPOWER RATING
	POWER PANEL 208V OR 480V PANEL
ATS	AUTOMATIC TRANSFER SWITCH
MCB	MAIN CIRCUIT BREAKER
XX	HOMERUN ARROW INDICATES HOMERUN TO POWER PANEL, DISTRIBUTION PANEL, OR MCC 'XX' DENOTES DESIGNATED PANEL
LM	LOUVER OR DAMPER MOTOR OPERATOR BY HVAC CONTRACTOR, WIRED BY ELECT. CONTRACTOR
M	UTILITY METER
M	MANUAL MOTOR STARTER, SEE SPECS FOR TYPE & WIRING DIAGRAM FOR CONTROLS
J	JUNCTION BOX SIZED PER THE NEC
J HT	JUNCTION BOX FOR HEAT TRACING: COOLING TOWER PIPING
T	STEP DOWN TRANSFORMER
	TYPE A EXTERIOR LIGHT FIXTURE MTD TO COOLING TOWER, SEE SPEC 265600-2.2A FOR DESCRIPTION, CATALOG NO., & MANUFACTURER.
PC	PHOTO CELL TORK No 2000-7, RATED FOR 120/277V, MOUNT ABOVE ROOF
OR	P-1 DOCK TRUCK LED LIGHT. IMPACT RESISTANT.
IR	INFRARED SENSOR FOR DOCK DOOR
	CONNECT TO EXISTING
M2	CONTACTS (NORMALLY OPEN)
OL1	CONTACTS (NORMALLY CLOSED)
OL1	OVERLOAD
M1	RELAY (LOCATED EXTERNALLY SHOWN BY BOX)
M1	RELAY (LOCATED INTERNAL TO PANEL)
HAND OFF AUTO; 001 AUTO; 100 HAND; 010 OFF	HAND, OFF, AUTO SWITCH
RUNNING	PILOT LIGHT (WITH TAG)
	MOMENTARY PUSH BUTTON SWITCH

ABBREVIATIONS

A
- A, AMP — AMPERE(S)
- AC — ALTERNATING CURRENT
- A/E — ARCHITECT/ENGINEER
- AF — AMPERE FRAME
- AFF — ABOVE FINISHED FLOOR
- AIC — AMPERE INTERRUPTING CAPACITY
- AM — AMMETER
- ANN — ANNUNCIATOR
- AT — AMMETER TRIP (CIRCUIT BREAKER)
- ATS — AUTOMATIC TRANSFER SWITCH
- AUX — AUXILIARY
- AWG — AMERICAN WIRE GAUGE

B
- BKR — BREAKER
- BLDG — BUILDING
- BP — BYPASS

C
- C — CONDUCTOR
- C, CDT — CONDUIT
- CB — CIRCUIT BREAKER
- CKT — CIRCUIT
- CLG — CEILING
- COL — COLUMN
- COMM — COMMUNICATIONS
- CONT — CONTROL
- CP — CONTROL PANEL
- CPT — CONTROL PANEL TRANSFORMER
- CPU — CENTRAL PROCESSING UNIT
- CS — CONTROL SWITCH
- CT — CURRENT TRANSFORMER
- CU — COPPER

D
- DC — DIRECT CURRENT
- DEMO — DEMOLITION
- DIA — DIAMETER
- DISC — DISCONNECT
- DIST — DISTRIBUTION
- DN — DOWN
- DWG — DRAWING

E
- (E) — EXISTING TO REMAIN
- E, ELEC — ELECTRIC
- EF — EXHAUST FAN
- EL, ELEV — ELEVATION
- EM — EMERGENCY
- EMT — ELECTRICAL METAL TUBING
- EO — ELECTRICALLY OPERATED
- EPO — EMERGENCY POWER OFF
- EQ — EQUAL
- EQUIP — EQUIPMENT
- EUH — ELECTRIC UNIT HEATER
- EXIST — EXISTING

F
- F — FLUSH
- FCU — FAN COIL UNIT
- FDR — FEEDER
- FIN FL — FINISHED FLOOR
- FIP — FIELD INTERFACE PANEL
- FIXT — FIXTURE
- FLA — FULL LOAD AMPERES
- FL, FLR — FLOOR
- FU — FUSE
- FVR — FULL VOLTAGE REVERSIBLE
- FVNR — FULL VOLTAGE NON-REVERSIBLE

G
- G, GRD — GROUND
- GF — GROUND FAULT
- GFI — GROUND FAULT CIRCUIT INTERRUPTER
- GRC — GALVANIZED RIGID STEEL CONDUIT
- GRND — GROUNDING

H
- HH — HAND HOLE
- HOA — HAND-OFF-AUTOMATIC SWITCH
- HP — HORSEPOWER
- HT — HEIGHT
- HZ — HERTZ

I
- I/INST — INSTANTANEOUS
- ICM — INTERCOM MASTER
- ICR — INTERCOM REMOTE
- IG — ISOLATED GROUND
- IMC — INTERMEDIATE METAL CONDUIT
- INSTR — INSTRUMENT

J
- J, J/B — JUNCTION BOX

K
- K — KEY LOCK (KEY INTERLOCK SCHEME)
- KA — KILOAMPERE(S)
- KCM — THOUSAND CIRCULAR MILS
- KW — KILOWATT(S)
- KWH — KILOWATT HOUR
- KV — KILOVOLT(S)
- KVA — KILOVOLT-AMPERE(S)
- KVAR — KVA REACTIVE

L
- LA — LIGHTNING SURGE ARRESTOR
- LAB — LABORATORY
- LAN — LOCAL AREA NETWORK
- LOG — LOOKOUT GALLERY
- LP — LIGHTING PANEL
- LT — LONG TIME
- LTG — LIGHTING
- LTS — LIGHTS

M
- M — METER(S)
- MAX — MAXIMUM
- MCB — MAIN CIRCUIT BREAKER
- MCC — MOTOR CONTROL CENTER
- MCCB — MOLDED CASE CIRCUIT BREAKER
- MECH — MECHANICAL
- MFR — MANUFACTURER
- MH — MANHOLE
- MIC — MEDIA INTERFACE CONNECTOR
- MIN — MINIMUM
- MLO — MAIN LUGS ONLY
- MP — MAIN PANEL
- MS — MOTOR STARTER
- MTD — MOUNT/MOUNTED
- MTG — MOUNTING
- MTS — MANUAL TRANSFER SWITCH

N
- (N) — NEW
- N — NEUTRAL
- NC — NORMALLY CLOSED
- NEC — NATIONAL ELECTRIC CODE
- NIC — NOT IN CONTRACT
- NO — NORMALLY OPEN
- NO. — NUMBER
- NORM — NORMAL
- NTS — NOT TO SCALE

O
- OC — ON CENTER
- OCB — OIL CIRCUIT BREAKER
- OL — OVERLOAD
- OS — OCCUPANCY SENSOR

P
- P — POLE
- PB — PUSH BUTTON/PULL BOX
- PBX — PRIVATE BRANCH EXCHANGE
- PC — PHOTOCELL
- PDU — POWER DISTRIBUTION UNIT
- PF — POWER FACTOR
- PFCC — POWER FACTOR CORRECTION CAPACITOR
- PH, ϕ — PHASE
- PNL — PANEL
- PP — POWER PANEL
- PR — PAIR
- PRI — PRIMARY
- PT — POTENTIAL TRANSFORMER
- PVC — POLYVINYLCHLORIDE
- PWR — POWER

Q
- QTY — QUANTITY

R
- (R) — REMOVE
- REC, RECPT — RECEPTACLE
- REPO — REMOTE EMERGENCY POWER SHUTOFF
- REQ, REQD — REQUIRED
- RF — RETURN FAN
- RIK — REPLACE IN KIND
- RM — ROOM
- RTU — REMOTE TERMINAL UNIT

S
- SCA — SHORT CIRCUIT AMPERE(S)
- SEC — SECONDARY
- SF — SUPPLY FAN
- SPD — SURGE PROTECTIVE DEVICE
- SPEC — SPECIFICATION
- SS — STAINLESS STEEL/SOLID STATE
- ST — SHUNT TRIP/SHORT TIME
- STD — STANDARD
- STP — SHIELDED TWISTED PAIR
- SW — SWITCH
- SWBD — SWITCHBOARD
- SWGR — SWITCHGEAR
- SYS — SYSTEM

T
- T, TRANSF — TRANSFORMER
- TB, T/B — TERMINAL BOX
- TEL — TELEPHONE
- TEMP — TEMPERATURE
- TVSS — TRANSIENT VOLTAGE SURGE SUPPRESSION
- TYP — TYPICAL

U
- UG — UNDERGROUND
- UH — UNIT HEATER
- UL — UNDERWRITER'S LABORATORY
- UON — UNLESS OTHERWISE NOTED
- UPS — UNINTERRUPTIBLE POWER SUPPLY
- UTP — UNSHIELDED TWISTED PAIR

V
- V — VOLT(S)
- VA — VOLT-AMPERE(S)
- VFD — VARIABLE FREQUENCY DRIVE
- VM — VOLTMETER
- VS — VOLTMETER SWITCH

W
- W/ — WITH
- WP — WEATHERPROOF
- WT — WATERTIGHT

X
- XFMR — TRANSFORMER
- XP — EXPLOSION-PROOF

FOR BID

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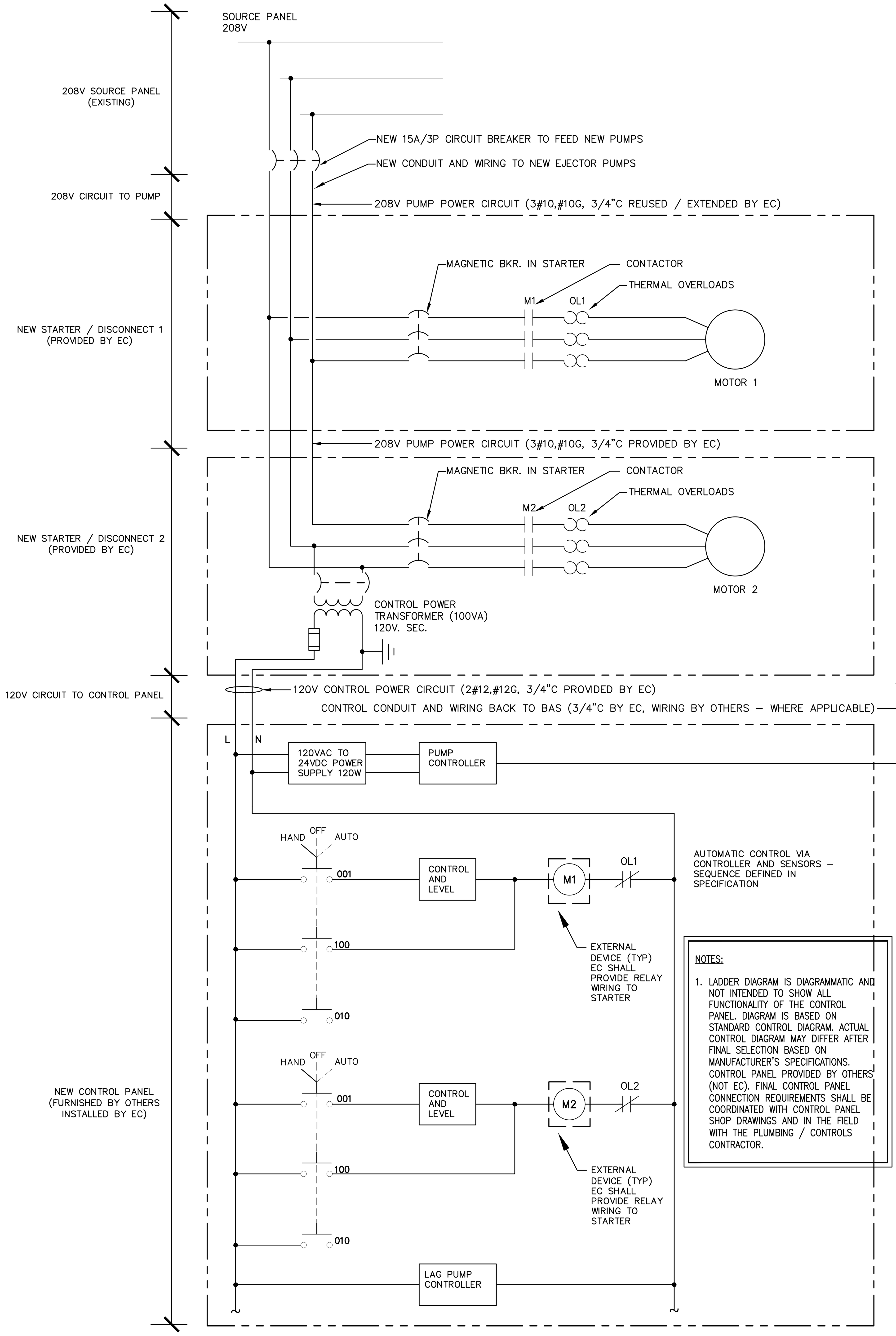
ELECTRICAL LEGEND, ABBREV. & DETAILS
NJSEA MAINTENANCE BUILDING OIL / WATER SEPARATOR
BLOCK 107.01 - LOT 1
BOROUGH OF EAST RUTHERFORD
BERGEN COUNTY NEW JERSEY

DRAWN BY: --	CHECKED BY: --	PROJECT NO.: ERUTPRV21.014	SHEET NO.: E0.02
DESIGNED BY: --	SCALE: AS NOTED		
FIELD BOOK NO.:	PAGE:		DATE: SEPTEMBER 2022

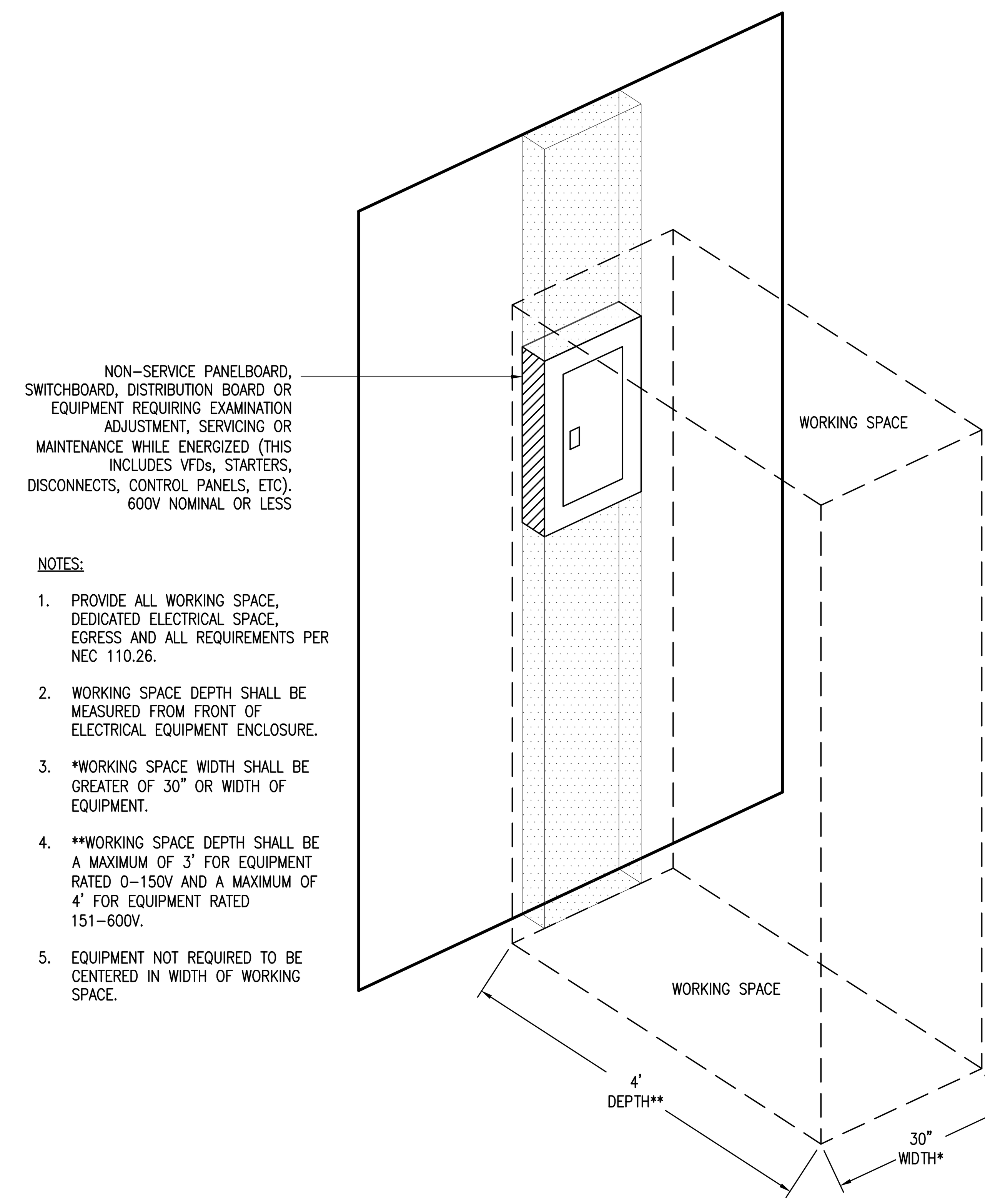


NOTES:

1. LADDER DIAGRAM IS DIAGRAMMATIC AND NOT INTENDED TO SHOW ALL FUNCTIONALITY OF THE CONTROL PANEL. DIAGRAM IS BASED ON STANDARD CONTROL DIAGRAM. ACTUAL CONTROL DIAGRAM MAY DIFFER AFTER FINAL SELECTION BASED ON MANUFACTURER'S SPECIFICATIONS. CONTROL PANEL PROVIDED BY OTHERS (NOT EC). FINAL CONTROL PANEL CONNECTION REQUIREMENTS SHALL BE COORDINATED WITH CONTROL PANEL SHOP DRAWINGS AND IN THE FIELD WITH THE PLUMBING / CONTROLS CONTRACTOR.

1 E0.03 SIMPLIFIED CONTROL PANEL WIRING DIAGRAM

Scale: NTS

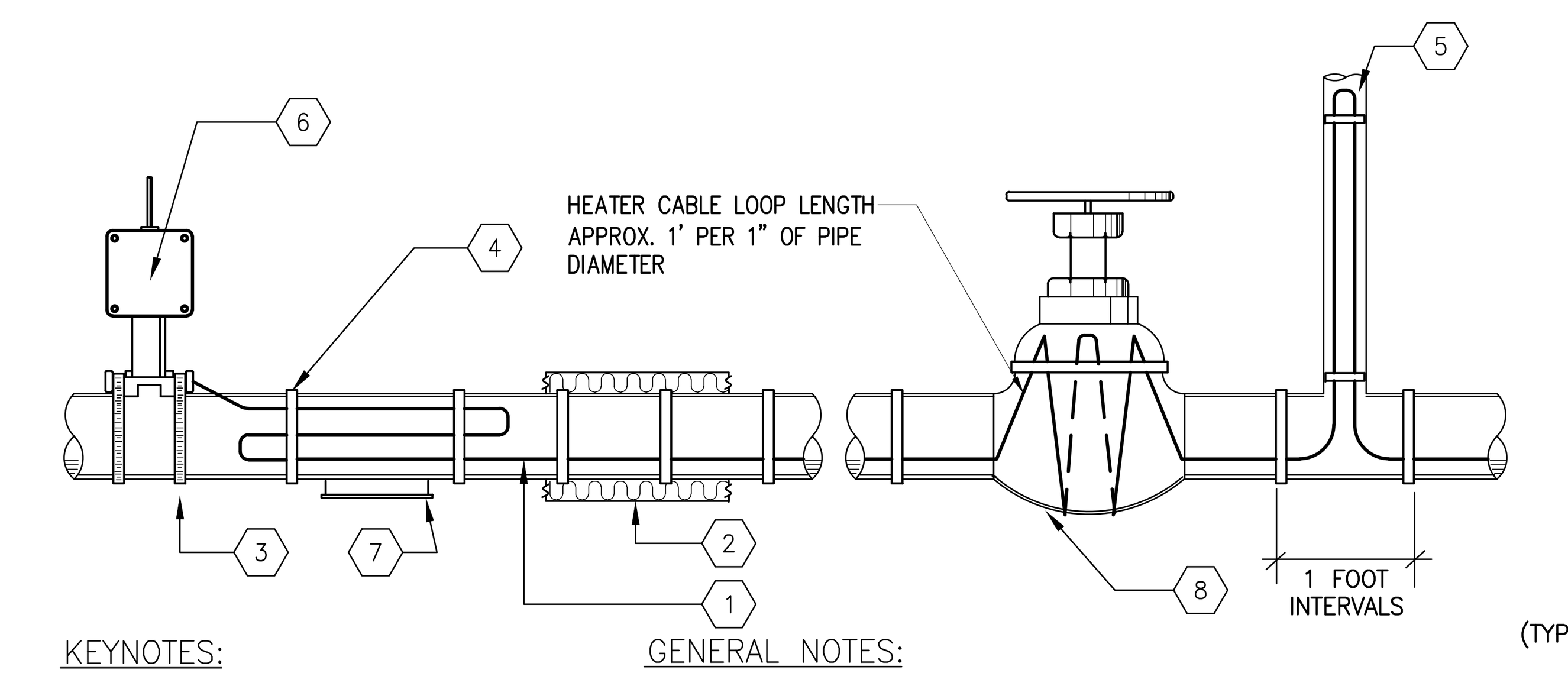


NOTES:

1. PROVIDE ALL WORKING SPACE, DEDICATED ELECTRICAL SPACE, EGRESS AND ALL REQUIREMENTS PER NEC 110.26.
2. WORKING SPACE DEPTH SHALL BE MEASURED FROM FRONT OF ELECTRICAL EQUIPMENT ENCLOSURE.
3. *WORKING SPACE WIDTH SHALL BE GREATER OF 30" OR WIDTH OF EQUIPMENT.
4. **WORKING SPACE DEPTH SHALL BE A MAXIMUM OF 3' FOR EQUIPMENT RATED 0–150V AND A MAXIMUM OF 4' FOR EQUIPMENT RATED 151–600V.
5. EQUIPMENT NOT REQUIRED TO BE CENTERED IN WIDTH OF WORKING SPACE.

1 E0.03 TYPICAL ELECTRICAL EQUIPMENT CLEARANCE

Scale: N.T.S.

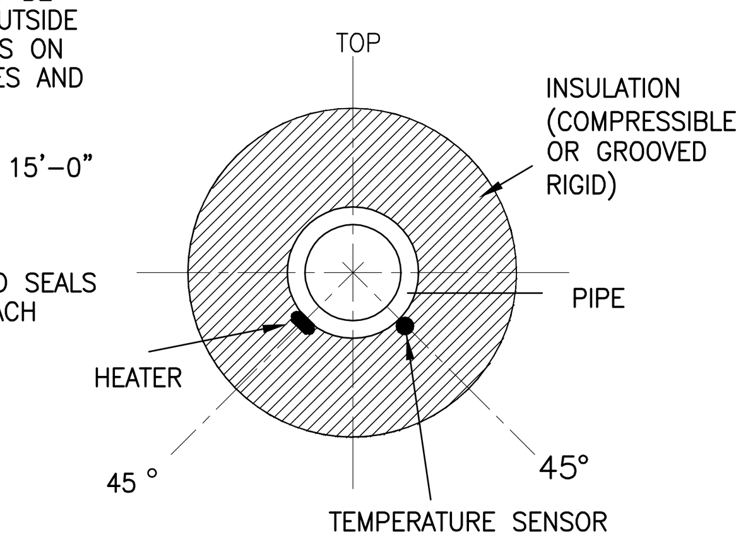


KEYNOTES:

1. HEATING CABLE
2. INSULATION WITH WEATHERPROOF JACKET BY OTHERS
3. STAINLESS STEEL CLAMPS
4. FIBERGLASS TAPE
5. HEATING CABLE LOOP
6. POWER CONNECTION KIT WITH CABLE POWER SEAL KIT
7. PIPE SUPPORT
8. VALVE BY OTHERS

GENERAL NOTES:

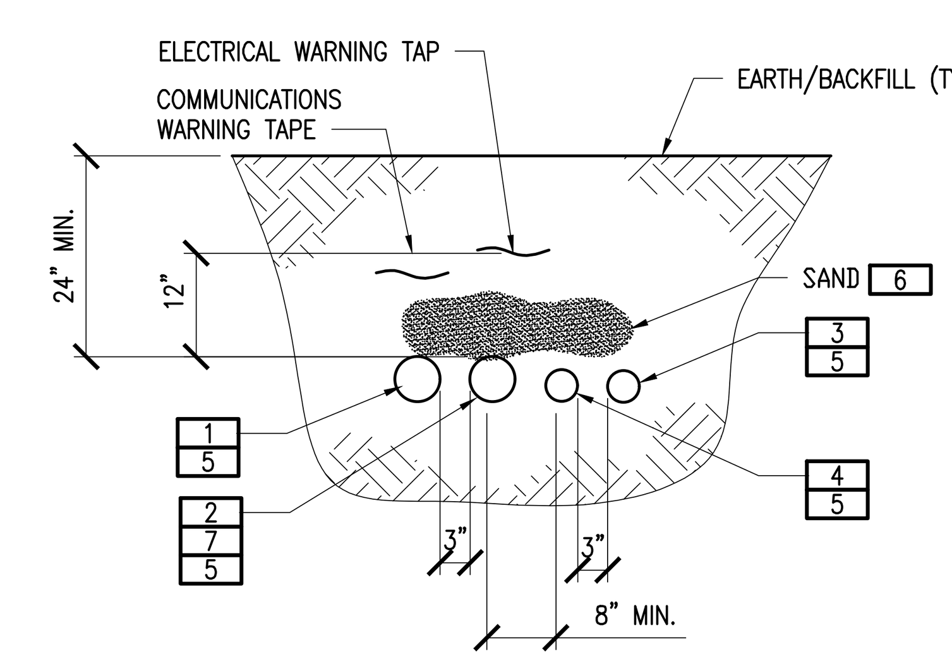
1. HEATER CABLE SHOULD BE POSITIONED ON THE OUTSIDE RADIUS OF ALL ELBOWS ON 2-INCH DIAMETER PIPES AND LARGER.
2. PROVIDE LABEL EVERY 15'-0" LINEAR FEET
3. HEATING CABLE POWER CONNECTIONS AND END SEALS ARE REQUIRED FOR EACH HEATER.



PIPE SECTION

3 E0.03 HEAT TRACE INSTALLATION DETAIL

Scale: N.T.S.



4 E0.03 DIRECT BURIED SECONDARY DETAIL

Scale: NONE

NOTES:

1. CONDUIT, POWER, ACTIVE
2. CONDUIT, POWER OR CONTROLS, SPARE
3. CONDUIT, POWER, ACTIVE
4. CONDUIT, CONTROLS, ACTIVE
5. PROVIDE PVC-COATED RIGID STEEL CONDUIT, SIZE PER PLANS. PROVIDE PULL STRING AND CAP FOR SPARE CONDUITS.
6. PROVIDE SAND ABOVE CONDUITS BEFORE BACKFILL.
7. PROVIDE PULL STRING AND CAP FOR SPARE CONDUIT(S).

GENERAL NOTES

1. COORDINATE WITH PROJECT REQUIREMENTS FOR TOTAL # OF CONDUITS.
2. COORDINATE WITH CIVIL CONTRACTOR FOR INSTALLATION.

FOR BID

EDWARD QUARANTA, P.E.
PROFESSIONAL ENGINEER
N.J. LICENSE NO. 24GE04661100

DATE: X/XX/2021

CERTIFICATE OF AUTHORIZATION (N.J.S.A. 45:8-56) 24GA27927000

REVISIONS					
NO.	DATE	DESCRIPTION	DRAWN	DESIGNED	CHECKED
	10.13.2022	FOR REVIEW	GN/AG	AG	AG
	05.22.2023	REVISED PER CLIENT COMMENTS	GN/AG	AG	AG

PROJECT SITE ELECTRICAL ENGINEER:
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A PROJECT OF
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PROFESSIONAL PLANNER N.J. LICENSE NO. 33LI00569800

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