ELECTRICAL GENERAL NOTES:

1. ALL ELECTRICAL WORKS, ALL MATERIALS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), APPLICABLE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA), AND AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), UNDERWRITERS LABORATORIES (UL), NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA), INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE), INSTALLATION DRAWINGS, SPECIFICATIONS AND LOCAL CODES.
   A.) ALL MATERIALS SHALL BE NEW, LISTED AND LABELED BY AN APPROVED ORGANIZATION.
   B.) ALL WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER AS DEFINED BY PIPELINE INDUSTRY BEST PRACTICES AND NEC.
2. MANUFACTURER'S MODEL NUMBERS SPECIFIED HEREIN ARE USED FOR FACILITATING DESCRIPTION AND ESTABLISHING A STANDARD OF QUALITY AND REQUIRED DESIGN CHARACTERISTICS.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONSTRUCT ALL ELECTRICAL ITEMS IN FULL ACCORDANCE WITH PROJECT DRAWINGS, NOTES AND THE CLIENT SPECIFICATIONS AND STANDARDS.
4. ALL ELECTRICAL WORK SHALL COMPLY IN THE FOLLOWING ORDER:
   A.) CODES AND REGULATIONS CALLED OUT ABOVE AND CALLED OUT IN DUKE STANDARDS AND SPECIFICATIONS
   B.) DUKE CONSTRUCTION STANDARDS, DUKE ELECTRICAL STANDARDS AND DUKE SPECIFICATIONS
   C.) ELECTRICAL GENERAL NOTES
5. RACEWAY OPENINGS THROUGH GRATING SHALL BE FINISHED IN A NEAT WORKMANLIKE MANNER. OPENINGS FOR MULTIPLE CONDUITS AND CABLES SHALL INCLUDE A KICK PLATE.
6. RACEWAYS OR CONDUITS CROSSING BUILDING OR STRUCTURAL EXPANSION JOINTS SHALL BE PROVIDED WITH 40 PERCENT (40%) FILL SEALS EXPANSION FITTINGS, CROUSE-HINDS TYPE EYSX (OR EQUAL). THESE FITTINGS SHALL BE INSTALLED IN A MANNER THAT WILL ASSURE GROUND PATH CONTINUITY IN EACH CONDUIT OR RACEWAY, WHERE REQUIRED BY NEC. IF EXPANSION FITTINGS DO NOT HAVE AN APPROVED INTEGRAL GROUND, AN EXTERNAL BONDING JUMPER SHALL BE PROVIDED.
7. THE FOLLOWING MOUNTING HEIGHTS SHALL BE USED TO LOCATE THE TOP OF EQUIPMENT ABOVE FINISHED FLOORS OR PLATFORMS UNLESS NOTED OTHERWISE:
   A.) 1 FEET 6 INCHES (18") CONVENIENCE OUTLETS IN FINISHED WALL AREAS.
   B.) 3 FEET (3'-0") CONVENIENCE OUTLETS IN PLANT AREAS.
   C.) 4 FEET 6 INCHES (4'-6") CONTROL STATIONS, POWER RECEPTACLES, MANUAL MOTOR STARTER SWITCHES.
   D.) 6 FEET (6'-0") CONTROLLERS, STARTERS, SAFETY SWITCHES, POWER PANELS, DC PANELS, LIGHTING PANELS, SMALL CONTROL PANELS, JUNCTION BOXES.
8. THE CONTRACTOR SHALL INSTALL ADDITIONAL PULL POINTS (PULL SLEEVES, WIREWAYS, PULL BOXES OR CONDULETS) WHERE REQUIRED TO LIMIT THE NUMBER OF EQUIVALENT 90 DEGREE (90°) BENDS TO THE REQUIREMENTS OF THE NEC. MAXIMUM LENGTH OF RUNS BETWEEN PULL POINTS SHALL BE 250 FEET (250'-0") FOR STRAIGHT RUNS AND NOT TO EXCEED 360 DEGREES (360°). THESE PULL POINTS SHALL BE OF THE TYPE TO MEET AREA ENVIRONMENT REQUIREMENTS, SUCH AS HAZARDOUS AREA CLASSIFICATION AND WEATHER RATING. NUMBER OF PULL POINTS REFLECTED ON DRAWINGS MAY NOT REFLECT TOTAL. WHETHER OR NOT THEY ARE SHOWN ON DRAWINGS, ANY ADDITIONAL PULL POINTS WILL BE PROVIDED BY CONTRACTOR TO MEET REQUIREMENTS PER THESE NOTES AND NEC.
9. ALL ELECTRICAL DEVICES SUCH AS JUNCTION BOXES, PULL BOXES, LIGHTING PANELS, ELECTRONIC PANELS, LOCAL CONTROL STATIONS, LOCAL STARTERS AND SAFETY SWITCHES SHALL BE PROVIDED WITH LAMINATED NAMEPLATES ENGRAVED WITH THE EQUIPMENT NAME AND NUMBER PER OWNER STANDARD.
10. JUNCTION BOXES AND PULL BOXES WHICH CONTAIN BOTH POWER AND CONTROL CIRCUITS SHALL BE LABELED ON THE OUTSIDE OF THE COVER, LISTING THE HIGHEST VOLTAGE. POWER CABLE, CONTROL CABLE AND CABLE OF DIFFERENT VOLTAGE LEVEL SHALL BE SEPARATED PER NEC AND AS SHOWN IN DRAWINGS.
11. CONDUITS TRANSITIONING FROM UNDERGROUND TO ABOVE GROUND OR VICE VERSA SHALL HAVE A 40 PERCENT (40%) CONDUIT SEAL INSTALLED.
12. FOR ALL CONDUITS AND CABLES PENETRATING WALLS OR FLOORS ABOVE THE GROUND FLOOR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING NECESSARY BLOCK-OUTS OR PIPE SLEEVES (THEY SHALL BE LEVEL AND SYMMETRICAL) FOR CONDUIT PENETRATION, WHETHER SHOWN ON THE DRAWINGS OR NOT. THIS WORK SHALL BE COORDINATED WITH THE CONCRETE POUR TO ELIMINATE AS MUCH CORE DRILLING AS POSSIBLE.
13. ALL CONDUIT 90 DEGREE (90°) BENDS (EITHER FACTORY PURCHASED OR FIELD BENT) SHALL BE OF THE MINIMUM RADIUS SHOWN IN LATEST NEC TABLE 2. ALL OFFSETS AND SWEEPS SHALL BE FIELD BENT TO A MINIMUM RADIUS AS SHOWN IN NEC TABLE 2. ALL FIELD BENDS SHALL BE MADE WITH A MACHINE BENDER.
14. IN ORDER TO PREVENT CABLE DAMAGE, ALL ROUGH EDGES SHALL BE GROUND SMOOTH AFTER INSTALLATION.
15. REDUCERS (SIZE AS REQUIRED) SHALL BE INSTALLED AT EQUIPMENT OR DEVICE CONDUIT OPENINGS TO SUIT CONDUIT AND CABLE SIZE SHOWN ON DRAWINGS.
16. ALL FITTINGS SHALL BE OF THE LONG RADIUS TYPE WITH VOLUMES MEETING THE LATEST NEC REQUIREMENTS. RETAINING CLIP TYPE COVER BOLTS ARE NOT ACCEPTABLE. ALL COVERS SHALL BE PROVIDED WITH NEOPRENE GASKETS.
17. LIQUIDTIGHT FLEXIBLE METAL CONDUIT ARE NOT SHOWN ON PLAN DRAWINGS BUT ALL CONDUIT, WHEN USED, SHALL BE TERMINATED AT MOTORS, DEVICES AND INSTRUMENTATION WITH LIQUIDTIGHT FLEXIBLE CONDUIT EXCEPT WHERE DEVICES ARE MOUNTED ON WALLS OR COLUMNS AND NOT SUBJECT TO MOVEMENT DUE TO VIBRATION OR EXPANSION AND CONTRACTION. FLEXIBLE CONDUIT FOR MOTOR SHALL HAVE EXTERNAL GROUND IF IN CLASS 1 DIVISION 2 AREA AND SHALL BE UL LISTED AND LABELED AS CLASS 1 DIVISION 1 IF IN CLASS 1 DIVISION 1 AREA.
18. ALL CONDUIT AND CABLES FITTINGS, JUNCTION BOXES, PULL BOXES, AND ELECTRICAL EQUIPMENT IN HAZARDOUS AREAS SHALL BE APPROVED FOR USE IN THAT HAZARDOUS AREA AND SHALL BE LABELED AND LISTED FOR THAT AREA. SEALS SHALL BE INSTALLED AS REQUIRED BY THE LATEST NEC.
19. WHERE THERE IS A CHANGE OF ELEVATION IN AN OUTDOOR ABOVE GRADE CONDUIT RUN, INSTALL A FITTING WITH A DRAIN AT THE LOWEST POINT. ADDITIONALLY, CONDUIT SEAL IS REQUIRED WITHIN 10 FEET (10'-0") OF AN AREA CLASS BOUNDARY CHANGES.
20. ALL CONDUIT LEAVING A CLASSIFIED AREA SHALL HAVE A SEAL INSTALLED WITHIN 10 FEET (10'-0") OF A DIVISION LINE.
   - REFER TO AREA CLASSIFICATION DRAWING.
   - REFER TO NEC 501.15(B)(2) AND 501.15(A)(4).
   - EXPLOSION-PROOF ENCLOSURES SHALL HAVE ITS CONDUIT SEALED WITHIN 1 FEET 6 INCHES (18") OF THE ENCLOSURE PER NEC 501.15(B)(1) AND 501.15(A)(1).
21. WHERE APPLICABLE ALL ELECTRICALLY OPERATED DEVICES, MOTORS AND EQUIPMENT SHALL BE PROPERLY MARKED, LABELED, BE TEMPERATURE RATED, AND APPROVED FOR USE IN THAT HAZARDOUS AREA. ALL ELECTRICAL INSTALLATIONS SHALL ADHERE TO NFPA 70 ARTICLE 501.
22. ALL OUTDOOR ENCLOSURES SHALL HAVE A DRAIN FITTING INSTALLED AND A GROUND LUG FOR EXTERNAL CONNECTION TO THE GROUND GRID.
23. STUB-UPS AND BOXES SHALL BE PROVIDED WITH GROUND BUSHINGS. STEEL CONDUITS CONNECTIONS SHALL BE THREADED WRENCH-TIGHT WITH CONDUCTIVE THREAD COMPOUND.
24. ALL SPARE CONDUITS SHALL BE STUBBED-UP AND PLUGGED. ALL UNUSED CONDUIT, CONDUIT ENTRIES IN FITTINGS, JUNCTION BOXES AND EQUIPMENT SHALL BE PLUGGED.
25. CONDUIT SHALL REMAIN PLUGGED ON BOTH ENDS UNTIL WIRE IS PULLED. INSTALL CONDUIT BUSHING AND GROUNDING BUSHING BEFORE PULLING WIRE.
26. MANUFACTURER APPROVED PULLING COMPOUND OR LUBRICANT SHALL BE USED WHERE NECESSARY. GREASE SHALL NOT BE USED. COMPOUND USED MUST NOT DETERIORATE CONDUCTOR OR INSULATION. DO NOT EXCEED MANUFACTURERS RECOMMENDED MAXIMUM PULLING TENSIONS AND SIDEWALL PRESSURE VALUES.
27. AFTER PULLING WIRE, THE CONTRACTOR SHALL PERFORM AN INSULATION RESISTANCE TEST TO ENSURE IT HAS NOT BEEN DAMAGED. THE APPLIED POTENTIAL SHALL BE 500 VOLTS DC FOR 300-V CABLES AND 1000 VOLTS DC FOR 600-V CABLES. TEST DURATION SHALL BE 1 MINUTE. VALUES SHALL NOT BE LESS THAN 50 MEGAOHMS. THESE TESTS SHALL BE DOCUMENTED AND SUBMITTED TO OWNER AND THE REPRESENTATIVE OF THE OWNER.
28. CONTRACTOR SHALL PERFORM CONTINUITY TESTS TO ENSURE CORRECT CABLE CONNECTION. THESE TESTS SHALL BE DOCUMENTED AND SUBMITTED TO OWNER AND THE REPRESENTATIVE OF THE OWNER.
29. CONDUIT DRAINS OR DRAIN SEALS SHALL BE INSTALLED AT ALL LOW POINTS IN THE CONDUIT SYSTEM.
30. ALL SUPPORTING SYSTEM ACCESSORIES AND CONDUIT ATTACHING DEVICES SUCH AS BUT NOT LIMITED TO BOLTS, NUTS, WASHERS, CLAMPS, THREADED RODS SHALL BE HOT-DIPPED GALVANIZED STEEL.
31. ALL CONDUIT AND CABLE SHALL BE MARKED USING APPROVED MANUFACTURED TYPE MARKERS AND LABELS. NO TAPE OR HAND WRITTEN MARKERS ARE PERMITTED.
32. CONTRACTOR SHALL FOLLOW A MINIMUM OF THE FOLLOWING STANDARDS WHEN PERFORMING WORK:
   – NECA 1 STANDARD PRACTICE OF GOOD WORKMANSHIP IN ELECTRICAL CONSTRUCTION
   – NECA 101 STANDARD FOR INSTALLING STEEL CONDUIT [RIGID METAL CONDUIT (RMC), INTERMEDIATE METAL CONDUIT (IMC), ELECTRICAL METALLIC TUBING (EMT)]
   – NECA 130 STANDARD FOR INSTALLING AND MAINTAINING WIRING DEVICES
   – NECA 331 STANDARD FOR BUILDING AND SERVICE ENTRANCE GROUNDING AND BONDING
   – NECA 505 STANDARD FOR INSTALLING AND MAINTAINING HIGH MAST, ROADWAY AND AREA LIGHTING
   – NECA 90 RECOMMENDED PRACTICE FOR COMMISSIONING BUILDING ELECTRICAL SYSTEMS

BELOW GRADE CONDUIT AND CABLE SYSTEM:

1. ALL CONDUIT AND CABLE RUNS ARE SHOWN DIAGRAMMATICALLY ONLY. THE EXACT ROUTING AND ARRANGEMENT SHALL BE DETERMINED BY THE CONTRACTOR TO SUIT MECHANICAL AND STRUCTURAL CONDITIONS AND GET AN APPROVAL FROM OWNER PRIOR TO INSTALLATION. FINAL ROUTING SHALL BE RECORDED BY THE CONTRACTOR AND SUBMITTED TO OWNER FOR APPROVAL PRIOR TO INSTALLATION. SUPPORTS ARE TO BE PROVIDED BY THE CONTRACTOR AT INTERVALS NOT TO EXCEED CODE REQUIREMENTS. CONDUIT AND CABLE SHALL NOT BE SUPPORTED FROM PIPE HANGERS. CONDUITS AND CABLES SHALL BE INSTALLED PARALLEL TO OR PERPENDICULAR TO WALLS, STRUCTURAL MEMBERS OR THE INTERSECTION OF VERTICAL PLANES AND CEILINGS UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
2. UNDERGROUND CONDUITS SHALL BE PER DUKE STANDARDS AND SPECIFICATIONS.
3. CONDUITS SHALL SLOPE AT LEAST 3 INCHES (3") PER 100 FEET (100'-0") AND BE ARRANGED TO DRAIN INTO MANHOLES OR CABLE VAULTS. ALL CONDUIT RUNS SHALL BE INSTALLED TO BE FREE OF MOISTURE TRAPS.
4. CONDUIT SIZES SHALL BE AS SHOWN ON THE ASSOCIATED CABLE SCHEDULE AND PLAN DRAWINGS.
5. CONDUIT AND CABLE INSTALLATION SHALL FOLLOW EXCAVATION AS CLOSELY AS PRACTICAL. CONDUIT AND CABLE SHALL BE INSTALLED IN DRY TRENCHES MAINTAINED FREE OF ACCUMULATED WATER. TRENCH BOTTOM SHALL BE GRADED SMOOTH, FREE OF STONES, SOFT SPOTS AND LEVEL WITH SLOPE OF GRADE.
6. WUNPEECE (OR APPROVED EQUAL) PLASTIC SEPARATORS SPACED AT INTERVALS OF NOT MORE THAN 20 FEET (20'-0") SHALL BE PLACED ON THE BOTTOM OF THE TRENCH AND THE FIRST TIER OF THE CONDUITS. THE SEPARATION BETWEEN CONDUITS SHALL BE 3 INCHES (3"), UNLESS NOTED OTHERWISE. SUCCEEDING TIERS SHALL BE LAID ON SPACERS, PLACED ON TOP OF THE TIER BELOW.
7. DUCT BANK SPACERS AND JOINTS IN TIERS OF CONDUITS SHALL BE STAGGERED. THE COMPLETED DUCT BANK SHALL BE TIGHTLY WRAPPED WITH TWO TURNS OF #12 IRON WIRE AT 10 FEET (10'-0") INTERVALS TO MAINTAIN ALIGNMENT OF TIERS. WHERE DUCTS CROSS UNDER ROADWAYS, RAILROADS, DISTURBED SOIL, AND OPEN TRENCHES, SUCH AS FOR SEWERS OR WATER MAINS, A REINFORCED CONCRETE ENCASEMENT SHALL BE PROVIDED.
8. CONDUIT STUB-UPS (INDOOR AND OUTDOOR) SHALL BE TERMINATED WITH A COUPLING 6 INCHES (6") ABOVE THE FLOOR AND DUCT BANK ENCASEMENT FOR EXTENSION OF THE CONDUIT EXCEPT FOR CONDUITS UNDER MAJOR EQUIPMENT WHICH SHALL BE TERMINATED WITH A COUPLING FLUSH WITH THE FLOOR. ABOVE GRADE CONDUIT EXTENSIONS INCLUDING 90 DEGREE (90°) ELBOWS SHALL BE RIGID GALVANIZED STEEL (RGS). CONDUIT STUB-UPS SHALL BE ENCASED IN CONCRETE FROM A POINT 3 FEET (3'-0") FROM THE START OF THE BEND TO FLUSH WITH THE FLOOR UNDER EQUIPMENT OR 6 INCHES (6") ABOVE FLOOR AND GRADE FOR CONDUIT RISERS. ALL SPARE CONDUIT STUB-UPS SHALL BE THREADED, CAPPED AND LABELED "SPARE". INSTALL GROUNDING BUSHINGS AS REQUIRED.
9. PRIOR TO BACKFILL, EACH CONDUIT SHALL BE CLEANED AND TESTED (MANDATORY) WITH A MANDREL WITH DIAMETER NOT MORE THAN ¼ OF AN INCH (1/4") LESS THAN CONDUIT INSIDE DIAMETER (POSSIBLE MANDREL MANUFACTURERS, CONDUX INTL. OR GREENLEE). MANDRELS MUST BE APPROVED AND VERIFIED BY OWNER AND THE OWNER REPRESENTATIVE.
10. ALL BURIED CONDUIT SHALL HAVE A MINIMUM OF 2 FEET (2'-0") OF BELOW GRADE COVERAGE.
11. ALL BELOW GRADE CONDUIT AND CONTINUING FOR A DISTANCE OF 1 FEET 6 INCHES (18") MINIMUM ABOVE GRADE SHALL BE 40 MIL PVC COATED RIGID STEEL CONDUIT.
12. BACKFILL AND COMPACT FILL TO HAVE A MINIMUM OF 2 FEET (2'-0") ABOVE TOP OF DUCT BANK. INSTALL A CONTINUOUS WARNING STRIP OF 6 INCHES (6") WIDE RED DETECTABLE UNDERGROUND TAPE WITH LEGEND "CAUTION-ELECTRIC LINE BURIED BELOW" PANDUIT CATALOG NUMBER HTDU6R-E (OR EQUAL). CONTINUE BACKFILL AND COMPACTING PER SPECIFICATIONS. ALL BELOW GRADE CONDUIT RUNS REQUIRE CAUTION TAPE INSTALLED ABOVE CONDUIT.

UNDERGROUND CONDUIT INSTALLATION:

1. INSTALLATION OF THE CONDUIT AND CABLE SHOULD BEGIN BY PLACING A 2 INCHES (2") LAYER OF GRANULAR FILL MATERIAL IN THE BOTTOM OF THE TRENCH AS A BASE FOR THE BOTTOM CONDUIT TIER. CARE MUST BE TAKEN HOWEVER, TO EXCAVATE MATERIAL FROM UNDER THE CONDUIT AND CABLE COUPLINGS TO ASSURE A SMOOTH HORIZONTAL RUN.
2. WHEN THE CONDUIT AND CABLE HAS BEEN LAID AND THE SEPARATORS POSITIONED BETWEEN THEM, THE FIRST LAYER OF FILL IS ADDED. THE MATERIAL IS NOW TAMPED AS REQUIRED TO ACHIEVE THE DESIRED PROCTOR DENSITY AT WHICH TIME THE SPACERS ARE REMOVED. FILL AND TAMP ALL VOIDS CREATED BY THEIR REMOVAL.
3. THE INSTALLATION IS NOW READY FOR THE SECOND LAYER OF CONDUIT AND CABLE WHICH IS PLACED IN THE SAME MANNER AS THE FIRST LAYER.
4. PLACEMENT OF THE CONDUIT AND CABLE SHALL BE DONE IN SUCH A WAY AS TO STAGGER THE LOCATION OF THE COUPLINGS BOTH HORIZONTALLY AND VERTICALLY.
5. THIS PROCEDURE OF LAYING CONDUIT AND CABLE, BACKFILLING AND TAMPING IS CONTINUED UNTIL THE APPROPRIATE NUMBER OF CONDUITS HAVE BEEN INSTALLED.
6. AFTER THE FINAL LAYER OF TAMPING AND COMB REMOVAL IS COMPLETE, NATIVE MATERIAL MAY BE USED TO FINISH THE BACKFILLING OPERATION UP TO GRADE AS PER PROJECT SPECIFICATIONS.

GROUNDING GENERAL NOTES:

1. ALL GROUNDING MATERIALS - INCLUDING BUT NOT LIMITED TO GROUND CABLE, GROUND RODS, TEST WELLS, CONNECTIONS, NUTS AND BOLTS SHALL BE PROVIDED BY CONTRACTOR UNLESS NOTED OTHERWISE.
2. FINAL EXACT GROUND ROUTING SHALL BE DETERMINED BY CONTRACTOR IN THE FIELD.
3. GROUNDING WORK SHALL CONFORM TO THE LATEST EDITION OF NEC.
4. GROUNDING WORK AND ALL GROUNDING MATERIALS SHALL COMPLY THE CLIENT STANDARDS AND SPECIFICATIONS.
5. THE TOTAL RESISTANCE TO GROUND OF THE COMPLETE GROUNDING SYSTEM SHALL BE LESS THAN 5 OHMS AND SHALL BE RECORDED AND SUBMITTED TO THE CLIENT.
6. GROUNDING SYSTEM SHALL CONSIST OF GALVANIZED STEEL GROUND RODS INTERCONNECTED BY 2/0 AWG 600V SIZE CONDUCTORS AS SHOWN ON THE GROUNDING DRAWINGS.
7. GALVANIZED STEEL GROUND RODS SHALL BE MINIMUM OF (3/4" X 10") 10-MIL THICK. TOP OF GROUND RODS SHALL BE A MINIMUM OF 1.5 FEET (1'-6") BELOW GRADE.
8. CONTRACTOR SHALL USE CORROSION RESISTANT BACKFILL PER NEC 250.62 WHERE APPLICABLE.
9. ALL BURIED GROUND CONDUCTORS TO BE LAID SLACK IN TRENCHES TO PREVENT STRESS AND BREAKAGE. GROUND CABLES SHALL BE INSTALLED
   - A MINIMUM OF 1.5 FEET (1'-6") BELOW GRADE,
   - 3 FEET (3'-0") MINIMUM DISTANCE FROM BUILDING FOOTINGS AND FOUNDATIONS, AND
   - 1 FEET (12") DISTANCE AWAY FROM ALL OTHER UNDERGROUND FACILITIES INCLUDING GAS PIPELINE.
10. PROVIDE MINIMUM 10 FEET (10'-0") OF GROUNDING CONDUCTOR PIGTAIL ABOVE FINISHED FLOOR ELEVATION TO ALLOW FOR CONNECTION TO STRUCTURAL STEEL OR EQUIPMENT UNLESS OTHERWISE NOTED. PIGTAILS SHALL BE CLEARLY MARKED WITH STAKES OR COLORED TAPE. WHERE BURIED LEADS OR TAPS ARE REQUIRED FOR CONNECTIONS NOT AVAILABLE AT TIME OF INSTALLATION SUCH LEADS SHALL BE BROUGHT UP AT OR NEAR THE FUTURE TERMINAL POINT, COILED AND TAGGED.
11. ALL BELOW GRADE GROUNDING CONNECTIONS SHALL BE OF EXOTHERMIC WELD CONNECTOR TYPE.
12. ABOVE GRADE GROUNDING CONNECTIONS SHALL BE BOLTED PRESSURE CONNECTOR TYPE OR MECHANICAL CONNECTION TYPE.
13. EXPOSED GROUNDING CONNECTIONS SHALL BE OF THE MECHANICAL TYPE WITH THE EXCEPTION OF ABOVE GROUND ANODE CONNECTION. THIS CONNECTION SHALL BE OF THE EXOTHERMIC TYPE.
14. A SEPARATELY DERIVED GROUND SYSTEM SHALL BE PROVIDED FOR THE PLANT INSTRUMENT CONTROL SYSTEM (CHASSIS, SIGNAL). THIS GROUND SYSTEM SHALL NOT BE USED FOR POWER EQUIPMENT UNDER ANY CIRCUMSTANCE. MAXIMUM GROUND RESISTANCE SHALL BE LESS THAN 5 OHMS.
15. AFTER COMPLETE INSTALLATION OF THE GROUNDING ELECTRODE SYSTEM THE CONTRACTOR SHALL MEASURE THE GROUNDING RESISTANCE AT THE DESIGNATED TEST POINTS. THIS DATA SHALL BE RECORDED AND SUBMITTED TO OWNER AND OWNER REPRESENTATIVE BY THE CONTRACTOR. THE TOTAL RESISTANCE OF THE GROUND LOOP SYSTEM SHALL BE 5 OHMS OR LESS.
16. GROUND RESISTANCE TESTING SHALL BE ACCOMPLISHED WITH A GROUNDING RESISTANCE DIRECT READING SINGLE TEST METER UTILIZING THE AC FALL OF POTENTIAL METHOD AND TWO REFERENCE ELECTRODES. PROVIDE OWNER AND OWNER REPRESENTATIVE WITH TEST RESULTS IN WRITING INCLUDING TEMPERATURE, HUMIDITY AND CONDITION OF THE SOIL AT THE TIME OF THE TEST.
17. ALL NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT AND INSTALLATIONS SHALL BE CONNECTED TO THE GROUND GRID AS REQUIRED BY THE DRAWINGS. THESE WILL INCLUDE, BUT NOT NECESSARILY LIMITED TO RACEWAYS, ELECTRICAL EQUIPMENT ENCLOSURES, GROUND BUS, TRANSFORMERS, MOTOR FRAMES, TANKS, PIPE RACKS, ELECTRICAL EQUIPMENT RACKS, AND VESSELS.
18. CARE SHALL BE TAKEN TO ASSURE THAT GROUND SYSTEM DOES NOT DIRECTLY CONTACT UNDERGROUND STEEL (INCLUDING BUT NOT LIMITED TO DRIVEN PILES, REBAR AND ANCHOR BOLTS) FOR PURPOSE OF CORROSION PROTECTION, UNLESS INDICATED ON THE PLAN DRAWING.
19. WHERE GROUND RISERS ARE REQUIRED FOR ADDITIONAL SUPPLEMENTAL GRID OR BONDING CASES, BURNDY TYPE "GB" GROUND CLAMPS SHALL BE INSTALLED AT 5 FEET (5'-0") SPACING FOR THE ENTIRE LENGTH OF THE RISER. FASTENERS FOR LIGHTNING PROTECTION RISERS SHALL BE SPACED NOT MORE THAN 3 FEET (3'-0") APART ON ALL CONDUCTORS.
20. ALL ABOVE GROUND SURFACES TO BE GROUNDED SHALL BE THOROUGHLY CLEANED TO BARE METAL BEFORE ATTACHING GROUND CONNECTIONS. WHERE PAINTED SURFACES ARE CLEANED A TOUCH-UP COATING, MATCHING THE ORIGINAL FINISH, SHALL BE APPLIED AFTER GROUND CONNECTION IS COMPLETE.
21. ALL ALTERNATING CURRENT (AC) MOTOR FRAMES SHALL BE GROUNDED INSIDE THE CONDUIT BOX BY MEANS OF AN EQUIPMENT GROUNDING CONDUCTOR RUN IN THE CONDUIT AND CABLE WITH THE POWER CONDUCTORS. THE OTHER END OF THE GROUNDING CONDUCTOR SHALL BE CONNECTED TO THE MOTOR POWER SUPPLY EQUIPMENT GROUND BUS (MCC, PANEL). FLEXIBLE CONDUIT FOR MOTOR SHALL HAVE EXTERNAL GROUND IF IN CLASS 1 DIVISION 2 AREA, AND UL LISTED AND LABELED AS CLASS 1 DIVISION 1 IF IN CLASS 1 DIVISION 1 AREA.
22. TANKS AND VESSELS TIED INTO BELOW GRADE MAIN GAS PIPING SHALL BE CONNECTED TO THE PLANT GROUND GRID NEAR THE EQUIPMENT LOCATION.
23. GEOTECH FABRIC TO BE USED ON ALL NEW COMPACTED AND GRAVELED AREAS.
24. EXISTING FENCING GROUND TO BE CUT AND SPLICED WITH NEW FENCING GROUND ON BOTH SIDES OF NEW GATE.
25. ALL CONNECTORS SHALL COMPLY WITH IEEE 837 AND ANSI/UL 467; LISTED FOR USE FOR SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND CONNECTED ITEMS. CONNECTIONS INTENDED TO BE BURIED SHALL BE LISTED FOR SUCH USE.
26. BONDING STRAPS AND JUMPERS SHALL BE INSTALLED SO VIBRATION BY EQUIPMENT MOUNTED ON VIBRATION ISOLATION HANGERS OR SUPPORTS IS NOT TRANSMITTED TO RIGIDLY MOUNTED EQUIPMENT. BOND STRAPS DIRECTLY TO THE BASIC STRUCTURE AND CARE MUST BE TAKEN NOT TO PENETRATE ANY ADJACENT PARTS. INSTALL STRAPS ONLY IN LOCATIONS ACCESSIBLE FOR MAINTENANCE.
27. TIGHTEN SCREWS AND BOLTS FOR GROUNDING AND BONDING CONNECTIONS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A AND UL 486B.
28. ALL GROUND WIRE CONDUIT STUB UPS SHALL BE SEALED TO PREVENT WATER, MOISTURE, AND DEBRIS FROM ENTERING CONDUIT.

LIGHTING GENERAL NOTES:

1. MINIMUM SIZE OF RIGID CONDUIT SHALL BE — THREE QUARTER OF AN INCH (3/4").
2. SPLICES IN CABLE UP TO THE SIZE OF 10 AWG FOR LIGHTING AND RECEPTACLE CIRCUITS SHALL BE MADE WITH SOLDERLESS CONNECTORS. SPLICES MAY BE MADE WITH HAND TWIST WIRE JOINTS SIMILAR TO "SCOTCHLOK" AS MANUFACTURED BY 3M COMPANY.
3. SPLICES IN CABLE LARGER THAN 10 AWG SHALL BE MADE WITH SPLIT BOLT CONNECTORS.
4. FIXTURE STEMS (PENDANTS) SHALL NOT EXCEED 5 FEET (5'-0") IN LENGTH IN UNCLASSIFIED AREAS. ALL FIXTURE STEMS (PENDANTS) LOCATED IN CLASS 1 DIVISION 2 AREAS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF NEC CODE. ADDITIONAL SUPPORTING STRUCTURE SHALL BE PROVIDED WHERE REQUIRED.
5. MOUNTING HEIGHT IS TO THE LOWEST PART OF THE FIXTURE FROM THE FINISH ELEVATION.
6. FIXTURES WITHOUT ELEVATIONS NOTED SHALL BE SURFACE OR FLUSH MOUNTED FROM BOTTOM OF STEEL OR CEILING.
7. THE CONTRACTOR SHALL INSTALL ALL FIXTURE WIRE, PENDANT CORD AND ASSOCIATED CONNECTORS REQUIRED TO CONNECT THE FIXTURE TO ITS LIGHTING OUTLET. SUCH MATERIALS SHALL BE FURNISHED IN ACCORDANCE WITH THE LIGHTING SYSTEM FIXTURE SCHEDULE AND THE FIXTURE MOUNTING DETAILS AND MANUFACTURER INSTRUCTIONS.
8. THE CONTRACTOR SHALL INSTALL ALL LIGHTING AND POWER DISTRIBUTION PANELS AS NEEDED. THE PANELS SHALL BE AS SPECIFIED AND AS LOCATED ON THE DRAWINGS. A COMPLETE TYPE WRITTEN DIRECTORY CARD FOR EACH PANEL SHALL BE PROVIDED.
9. COMPLETE ROUTING FOR CONDUIT AND CABLE IS NOT SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL ROUTE ALL CONDUITS AND CABLES AS REQUIRED.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL FIXTURES AND RACEWAYS AND SHALL REPLACE ALL DAMAGED FIXTURES, BROKEN LAMPS OR LENSES AS REQUIRED TO INSURE A SOUND, OPERATING LIGHTING SYSTEM.
11. ALL FRAMING STRUT TO BE 1-5/8 INCHES (1-5/8") SQUARE GALVANIZED UNLESS OTHERWISE NOTED. INSULATED END CAPS SHALL BE INSTALLED FOR PROTECTION OR EDGES SHALL BE GROUND SMOOTH.

WIRE AND CONDUCTOR GENERAL NOTES:

1. WIRE AND CABLE SHALL BE PER DUKE SPECIFICATION AND PER NEC CODE.
2. WIRE COLOR CODING FOR 277/480 VAC, 3-PHASE, LIGHTING BRANCH CIRCUITS SHALL BE:
   - PHASE A: BROWN (BLACK WITH BROWN TAPE)
   - PHASE B: ORANGE (BLACK WITH ORANGE TAPE)
   - PHASE C: YELLOW (BLACK WITH YELLOW TAPE)
   - NEUTRAL: GRAY
   - GROUND: GREEN (BARE COPPER)
3. WIRE COLOR CODING FOR 120/208 VAC, 3-PHASE SMALL POWER AND LIGHTING BRANCH CIRCUITS SHALL BE:
   - PHASE A: RED
   - PHASE B: BLACK
   - PHASE C: BLUE
   - NEUTRAL: WHITE
   - GROUND: GREEN (BARE COPPER)
4. WIRE COLOR CODING FOR 120/240 VAC, 1-PHASE SMALL POWER AND LIGHTING BRANCH CIRCUITS SHALL BE:
   - HOT (PHASE A): RED
   - HOT (PHASE B): BLACK
   - NEUTRAL: WHITE
   - GROUND: GREEN (BARE COPPER)
5. ALL POWER CABLES WILL BE MARKED WITH APPROPRIATE PHASE MARKING AT BOTH ENDS AND ANY TERMINATION POINTS.

INSTRUMENTATION GENERAL NOTES:

1. ALL CONDUCTORS SHALL BE PERMANENTLY MARKED AND IDENTIFIED WITH DESTINATION MARKING NOMENCLATURE AT ALL TERMINATION POINTS AND PULL BOXES. CABLE MARKING LABELS MANUFACTURED BY BRADY (OR APPROVED EQUAL) SHALL BE USED FOR MARKING CONDUCTORS.
2. INSULATING WIRE FERRULES SHALL BE USED FOR ALL CONDUCTOR TERMINATIONS.
3. ALL INSTRUMENT LOCATIONS AND ELEVATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE DETERMINED BY THE CONTRACTOR AND APPROVED BY OWNER PRIOR TO INSTALLATION.
4. ALL CONDUIT AND CABLE RUNS TO INSTRUMENTATION SHALL BE ORIENTED SO THAT STUB-UPS WILL CONNECT ON SAME SIDE AS DEVICE CONDUIT CONNECTION AND ALLOW ACCESS TO INSTRUMENT AND ELECTRICAL DEVICE.

BURNS & McDONNELL
ENGINEERING COMPANY, INC.
STATE LICENSE # COA.01557

STATE OF OHIO
YEVGENIY KHISLAVSKIY
E-84164
REGISTERED PROFESSIONAL ENGINEER
11/18/2020
PROFESSIONAL ENG/ARCH STAMP

NO.	DATE	REVISION(S) DESCRIPTION	BY	CHK	APPD
0	11/18/2020	ISSUED FOR CONSTRUCTION	MCR	MCH	YBK

DESCRIPTION	
AREA CODE	-
ACCOUNT NUMBER	Q3680
PROJECT NUMBER	1880115
DRAWING BY	MCR
STATION ID	C350
CHECKER INITIALS	MCH

APPROVALS		
DATE	INITIALS	REGIONAL ENGINEER
DATE	INITIALS	MGR TECH REC & STD
DATE 11/18/2020	INITIALS YBK	PRINCIPAL ENGINEER

C350 PROJECT
MAINLINE VALVES
ELECTRICAL GENERAL NOTES

HAMILTON COUNTY, OHIO

REF. DWG(S)

SHEET(S) 1 OF 7		DWG SCALE	NONE
DWG DATE 06/01/2020		SUPERSEDED	__
DRAWING NUMBER PNG -E-350-0001026		REVISION 0	
DISCIPLINE / RESOURCE CENTER / LINE NUMBER			

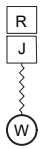
CONDUIT AND CABLE

- EXPOSED CONDUIT OR CABLE VISIBLE
- UNDERGROUND OR CABLE HIDDEN
- FLEXIBLE CONDUIT
- CONDUIT OR CABLE CONTINUATION
- CONDUIT OR CABLE TURNING DOWN
- CONDUIT OR CABLE TURNING UP
- CONDUIT WITH BUSHING
- CONDUIT CAPPED FOR FUTURE USE
- CONDUIT CONTINUATION FROM EXISTING CAPPED STUB
- EL XX' X" — CONDUIT TURNED UP AND CAPPED (CAP AT ELEVATION NOTED)
- CONDUIT DROPPING OUT BOTTOM OF EQUIPMENT
- COMMUNICATIONS TEE
- TEE IN HORIZONTAL CONDUIT RUN WITH THE BRANCH GOING HORIZONTAL
- TEE IN HORIZONTAL CONDUIT RUN WITH THE BRANCH GOING UP (AND PIERCING THE PLANE OF PROJECTION)
- TEE IN HORIZONTAL CONDUIT RUN WITH THE BRANCH GOING DOWN
- TEE IN VERTICAL CONDUIT RUN WITH THE BRANCH GOING HORIZONTAL
- NO CONNECTION
- NEUTRAL CONNECTION
- LOOP INDICATES SHIELDED CABLE (SIZE AS REQUIRED)
- CABLE CHANNEL TURNS DOWN
- CABLE CHANNEL TURNS UP
- C## — CONDUIT NUMBER CALLOUT, SEE CABLE SCHEDULE

GROUNDING

- GROUND CABLE BURIED
- GROUND CABLE EXPOSED
- GROUND ROD
- TEST WELL IN ACCESSIBLE BOX WITH COVER
- GROUND CONDUCTOR TURNING UP
- GROUND CONDUCTOR TURNING DOWN
- EXOTHERMIC CONNECTION
- EQUIPMENT, DEVICE, STRUCTURAL, SUPPORT CONNECTION
- 10 FT — GROUND CONDUCTOR PIGTAIL FOR ABOVE GRADE AND FINISHED CONCRETE CONNECTION TO EQUIPMENT AND FUTURE CONNECTION
- AIR TERMINAL (LIGHTNING ROD) CONNECTED TO GROUND CABLE
- GROUND CABLE CONTINUATION
- GROUND BAR

CATHODIC PROTECTION



RECTIFIER AND RECTIFIER JUNCTION BOX FOR CATHODIC PROTECTION

EQUIPMENT

- TWO WINDING TRANSFORMER
- AUTO TRANSFORMER (H, Y, X)
- OR — POTENTIAL TRANSFORMER
- LINE TRAP
- CAPACITOR
- TRANSFER SWITCH
- AIR OR VACUUM CIRCUIT BREAKER
- LIGHTNING OR SURGE ARRESTER
- GROUND CONNECTION
- BATTERY
- EQUIPMENT AS NOTED ON PLANS
- GAUGEBOARD
- DISCONNECT SWITCH
- ELECTRICAL DEVICE
- T — THERMOSTAT
- J — JUNCTION BOX
- TB — TERMINAL BOX CONTAINING TERMINAL BLOCKS WITH SUFFICIENT NUMBER OF POLES TO TERMINATE ALL CONDUCTORS ENTERING THE BOX
- G — GENERATOR
- SPD — SURGE SUPPRESSION DEVICE
- R — INDICATING LIGHT (COLOR)
  - A - AMBER
  - BL - BLUE
  - C - CLEAR
  - G - GREEN
  - R - RED
  - W - WHITE
  - Y - YELLOW
- L — INDICATING LIGHT (FUNCTIONS)
  - L - LINE POTENTIAL
  - S - SYNCHRONIZING
  - SO - SCOPE ON
  - T - TRIP INDICATION
  - T&S - TRIP & SUPER-VISING (TWO LIGHTS)
- M — COIL DESIGNATIONS
  - M - MOTOR STARTER
  - TDR - TIME DELAY RELAY
  - C - CONTACTOR
  - CR - CONTROL RELAY
  - MX - MOTOR STARTER AUX RELAY (USUALLY PICKS UP THE "M" COIL)
  - F - FORWARD OR FAST
  - R - REVERSE
  - S - SLOW
- X — CONTROL STATION
  - X - TYPE/DESIGNATION:
  - A - HAND/OFF/AUTO
  - B - H/O/A WITH START
  - C - REMOTE STOP
  - D - START/STOP
  - E - AUTO/ON
  - F - JOG/OFF/AUTO
  - G - J/O/A WITH START
  - P - PHOTOCELL
  - V - VIBRATION SWITCH
- XXX — DCS INTERFACE SYMBOL W/ SCHEMATIC REFERENCE DRAWING NUMBER
- XXX-##### — INSTRUMENTATION WITH TAG NUMBER

GENERAL NOTES:

1. NOT ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THE DRAWING ARE USED FOR THIS PROJECT.

CABLE CONDUCTOR COLOR CODING

BK	BLACK
RD	RED
BL	BLUE
OR	ORANGE
YL	YELLOW
BR	BROWN
WH	WHITE
GN	GREEN
RD/BK	RED/BLACK
BL/BK	BLUE/BLACK
OR/BK	ORANGE/BLACK
YL/BK	YELLOW/BLACK
BR/BK	BROWN/BLACK
BK/RD	BLACK/RED

ABBREVIATIONS

A	AMPERES
AC	ALTERNATING CURRENT
AGA	AMERICAN GAS ASSOCIATION
AH	ALARM HORN
ALM	ALARM
ANN	ANNUNCIATOR
API	AMERICAN PETROLEUM INSTITUTE
A/R (OR) AR	AS REQUIRED
AS	AMMETER SWITCH
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BAT	BATTERY
BKR	BREAKER
B.O.M. (OR) BOM	BILL OF MATERIALS
C	CONDUIT
CA	CABLE
CB	CIRCUIT BREAKER
CHGR	CHARGER
CKT	CIRCUIT
CTRL	CONTROL
CNVT	CONVERTER
CONT'D	CONTINUED ON DRAWING (OR) CONTINUED
CP	CONTROL PANEL
CS	CIRCUIT SWITCHER
CT	CURRENT TRANSFORMER
DB	DIRECT BURIED
DC	DIRECT CURRENT
DET	DETECTOR
DI	DIGITAL INPUT
DIFF	DIFFERENTIAL
DISC	DISCONNECT
DN	DOWN
DO	DIGITAL OUTPUT
DP	DISTRIBUTION PANEL
DS	DISTRIBUTION SWITCH (OR) DISCONNECT SWITCH
DWG	DRAWING
EL	ELEVATION
ELEC	ELECTRICAL
EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EP	EXPLOSION PROOF
ES (OR) ESD	EMERGENCY STOP (OR) EMERGENCY SHUTDOWN
F (OR) FWD	FORWARD
FDR	FEEDER
FREQ	FREQUENCY
FU	FUSE
GEN	GENERATOR
GND	GROUND
GRC	GALVANIZED RIGID CONDUIT
HTR	HEATER
HV	HIGH VOLTAGE
HVS	HIGH VOLTAGE SWITCHGEAR
HZ	HERTZ (FREQUENCY)
INSTR	INSTRUMENT
INTLK	INTERLOCK
I/O	INPUT/OUTPUT FOR CONTROLLER
JB (OR) J-BOX	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT AMPERES
LP	LIGHTING PANEL, SMALL POWER PANEL
LTG	LIGHTING
LV	LOW VOLTAGE
M	METER
MAN	MANUAL
MISC	MISCELLANEOUS
MTR	MOTOR
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEUT	NEUTRAL
NO	NORMALLY OPEN
NTS	NOT TO SCALE
Ω	OHMMETER
O/H (OR) OH	OVERHEAD
OL	OVERLOAD
OP	OPERATING
P	POLE
PC	PHOTOCELL
P.F. (OR) PF	POWER FACTOR
PH (OR) Ø	PHASE
PNL	PANEL
POT	POTENTIOMETER
PP	POWER PANEL
PS	PRESSURE SWITCH

ABBREVIATIONS CONT'D

PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
PWR	POWER
R (OR) REV	REVERSE
RCT	RECTIFIER
RCPT	RECEPTACLE
REF	REFERENCE
REF DWG #	REFERENCE DRAWING NUMBER (AS INDICATED)
REQ'D	REQUIRED
RES	RESISTOR
RGS	RIGID GALVANIZED STEEL
RMC	RIGID METALLIC CONDUIT
RTD	RESISTANCE TEMPERATURE DETECTOR
SHLD	SHIELDED
SH (OR) SHT	SHEET
SP	SPARE
STA	STATION
STR	STARTER
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TB	TERMINAL BLOCK
TBD	TERMINAL BOARD
TBX	TERMINAL BOX
TDR	TIME DELAY RELAY
TEL	TELEPHONE
T.O.C. (OR) TOC	TOP OF CONCRETE
T.O.D. (OR) TOD	TOP OF DUCT
T.O.G. (OR) TOG	TOP OF GRATING
T.O.S. (OR) TOS	TOP OF STEEL
TSP	TWISTED SHIELDED PAIR
TYP	TYPICAL
U/G (OR) UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
UV	UNDERVOLTAGE
V	VOLTS (OR) VOLTAGE
VFD	VARIABLE FREQUENCY DRIVE
VS	VOLTMETER SWITCH
W	WATT or WIRE
WP	WEATHERPROOF
WR	WELDING RECEPTACLE
XDCR	TRANSDUCER
XE	MISC. ELECTRICAL EQUIPMENT
XF	POWER TRANSFORMER
XFER	TRANSFER
XFMR	TRANSFORMER
XMTR	TRANSMITTER

BURNS & McDONNELL
ENGINEERING COMPANY, INC.
STATE LICENSE # COA:01557

PROFESSIONAL ENG/ARCH STAMP

NO.	DATE	REVISION(S) DESCRIPTION	BY	CHK	APPD
0	11/18/2020	ISSUED FOR CONSTRUCTION	MCR	MCH	YBK

DESCRIPTION	
AREA CODE	-
ACCOUNT NUMBER	Q3680
PROJECT NUMBER	1880115
DRAWING BY	MCR
STATION ID	C350
CHECKER INITIALS	MCH

APPROVALS		
DATE	INITIALS	REGIONAL ENGINEER
DATE	INITIALS	MGR TECH REC & STD
11/18/2020	YBK	PRINCIPAL ENGINEER

DUKE ENERGY®

C350 PROJECT
MAINLINE VALVES
ELECTRICAL LEGEND

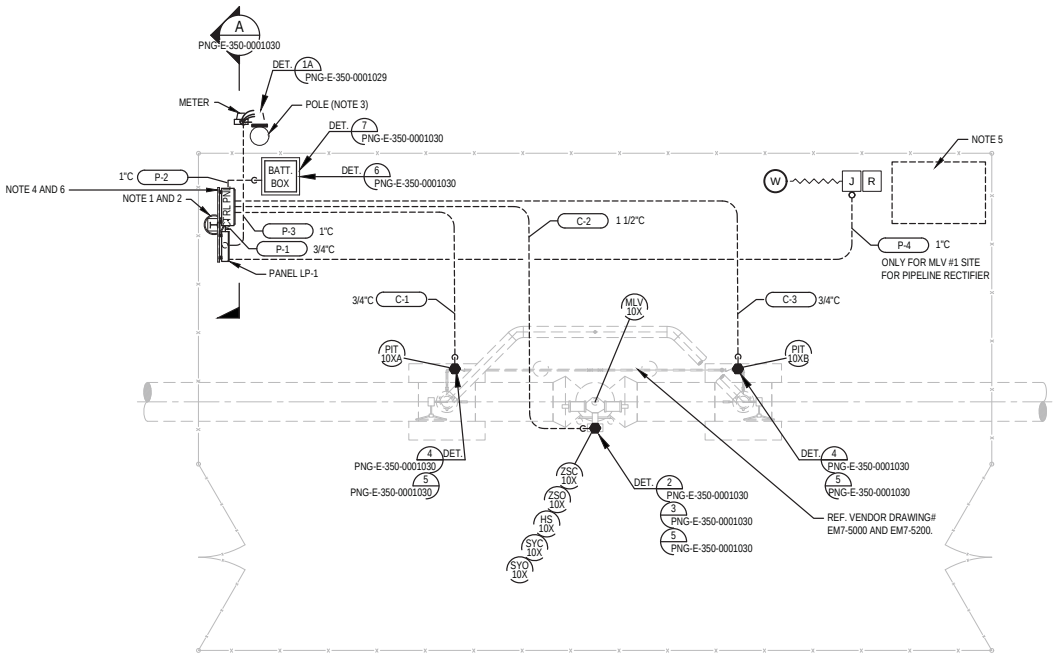
HAMILTON COUNTY, OHIO

REF. DWG(S)

SHEET(S)	2 OF 7	DWG SCALE	NONE
DWG DATE	06/01/2020	SUPERSEDED	—
DRAWING NUMBER		REVISION	
PNG -E-350-0001027		0	

DISCIPLINE / RESOURCE CENTER / LINE NUMBER

ADDITIONAL INFORMATION FOR UTILITY POLE LOCATION DRAWING REFERENCE		
	DRAWING NUMBER	DUKE'S TRANSMISSION POLE NUMBER
FOR C350-MLV-101	PNG-C-350-0001338	U22-3E (CG&E 381-2000)
FOR C350-MLV-102	PNG-C-350-0001340	R20-423E



TYPICAL SITE PLAN UTILITY POWER SUPPLY TO METER

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

NOTES:

1. ELECTRICAL EQUIPMENT SHALL BE LOCATED ON EITHER SIDE OF PROPERTY AND ELECTRICAL EQUIPMENTS MUST BE LOCATED OUTSIDE THE AREA CLASSIFICATION-SEE DWG PNG-E-350-0001032.
2. EQUIPMENTS CAN BE ROTATED 90° FOR MORE CONVENIENCE TO CONNECT TO UTILITY POWER SUPPLY.
3. EXACT LOCATION OF POLE WITH METER SHALL BE FIELD DETERMINED WITH LAND APPROVAL. REFERENCE DWG. PNG-E-350-0001029.
4. PIEDMONT MEASUREMENT IS RESPONSIBLE FOR FURNISHING AND INSTALLING POLE AND DEMARK BOX. ALSO RESPONSIBLE FOR ROUTING CONDUIT AND CAT5/6 CABLE TO CISCO 1750 ROUTER LOCATED IN MAIN VALVE CONTROL PANEL.
5. ALTERNATE AREA FOR ELECTRICAL EQUIPMENT.
6. CONTROL PANEL (CTRL PNL) SHALL BE DUKE'S STANDARD WESTERN REGION CONTROL PANEL. CONTRACTOR SHALL COORDINATE WITH OWNER PRIOR TO COMMENCING WORK.

INSTRUMENT TAG NUMBER REFERENCE TABLE		
TAG NUMBERS	FOR C350-MLV-101	FOR C350-MLV-102
MLV-10X	MLV-106	MLV-107
PIT-10XA	PIT-106A	PIT-107A
PIT-10XB	PIT-106B	PIT-107B
ZSC-10X	ZSC-106	ZSC-107
ZSO-10X	ZSO-106	ZSO-107
HS-10X	HS-106	HS-107
SYC-10X	SYC-106	SYC-107
SYO-10X	SYO-106	SYO-107

MAIN LINE VALVE (MLV)
CABLE AND CONDUIT SCHEDULE (240/120VAC POWER SUPPLY)

CABLE/CONDUIT NUMBER	CONDUIT SIZE	CONDUIT TYPE	% FILL	INSTRUMENT TAG	NUMBER OF CABLE	CONDUCTOR (COPPER) (600V INSULATION)	WORKING VOLTAGE	FROM	TO
P-1	3/4"	RGS	9.13%	N/A	1	2-1/C #12 AWG + #14 AWG GND, THWN-2	120 VAC	AC PANEL, LP-1, CKT-1	RTU, CONTROL PANEL
P-2	1"	RGS	7.52%	N/A	1	2-1/C #10 AWG + #12 AWG GND, THWN-2	12 VDC	POWER SUPPLY/CHARGER	12VDC BATTERY
P-3	1"	RGS	29.48%	N/A	1	3-1/C #6 AWG + #8 AWG GND, THWN-2	240/120 VAC	METER	AC PANEL, LP-1
C-1	3/4"	RGS	11.06%	PIT-10XA	1	1PR #18 AWG TSP, THWN-2	24 VDC	RTU, CONTROL PANEL	PIT-10XA
C-3	3/4"	RGS	11.06%	PIT-10XB	1	1PR #18 AWG TSP, THWN-2	24 VDC	RTU, CONTROL PANEL	PIT-10XB
C-2	1.5"	RGS	19.50%	ZSO-10X	1	12PR #18 AWG TSP, THWN-2	12 VDC	RTU, CONTROL PANEL	SV-10X
				ZSC-10X			12 VDC	RTU, CONTROL PANEL	
				HS-10X			12 VDC	RTU, CONTROL PANEL	
				SYO-10X			12 VDC	RTU, CONTROL PANEL	
				SYC-10X			12 VDC	RTU, CONTROL PANEL	
P-4 (ONLY FOR MLV #1)	1"	RGS	5.65%	N/A	1	2-1/C #12 AWG + #14 AWG GND, THWN-2	120 VAC	AC PANEL, LP-1, CKT-2	CP/AC RECTIFIER

1. MULTIPAIR CONDUCTOR MAY BE USED IN PLACE OF SINGLE PAIR INSTRUMENT CABLE WITH OWNER'S APPROVAL.
2. CABLE LENGTH ARE SIZED FOR 100 FEET MAXIMUM AND CONTRACTOR TO FIELD VERIFY BASED ON THE FINAL ROUTING AND ADJUST PER NEC CODE AS NEEDED.

BURNS & McDONNELL
ENGINEERING COMPANY, INC.
STATE LICENSE # COA.01557

STATE OF OHIO
YEVGENIY KHISLAVSKIY
E-84164
REGISTERED
PROFESSIONAL ENGINEER
11/13/2020
PROFESSIONAL ENG/ARCH STAMP

NO.	DATE	REVISION(S) DESCRIPTION	BY	CHK	APPD
0	11/18/2020	ISSUED FOR CONSTRUCTION	MCR	MCH	YBK

DESCRIPTION	
AREA CODE	-
ACCOUNT NUMBER	Q3680
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DRAWING BY	MCR
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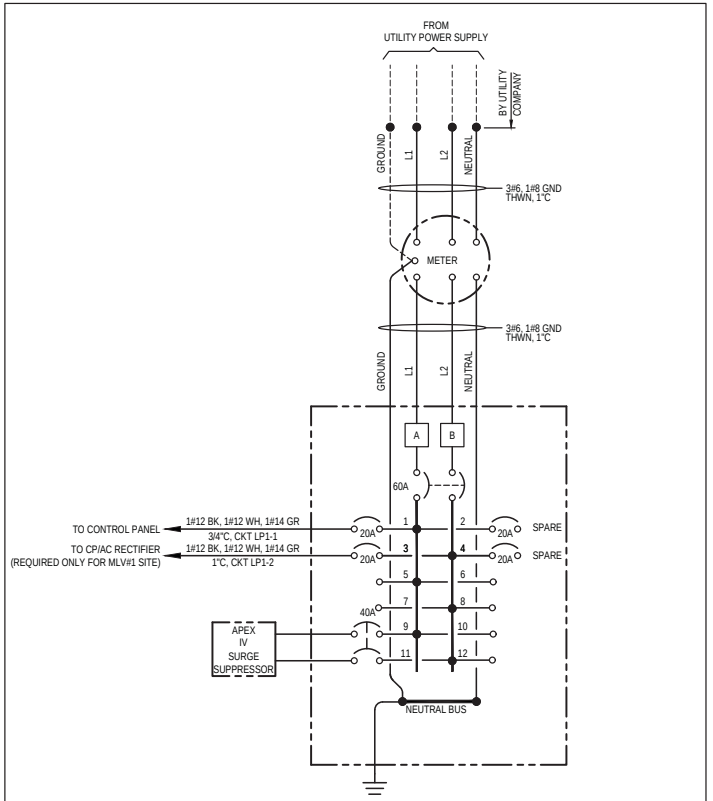
APPROVALS		
DATE	INITIALS	
		REGIONAL ENGINEER
DATE	INITIALS	
		MGR TECH REC & STD
DATE	INITIALS	
11/18/2020	YBK	PRINCIPAL ENGINEER

REF. DWG(S)

C350 PROJECT
MAINLINE VALVES
TYPICAL INSTRUMENT PLAN

HAMILTON COUNTY, OHIO

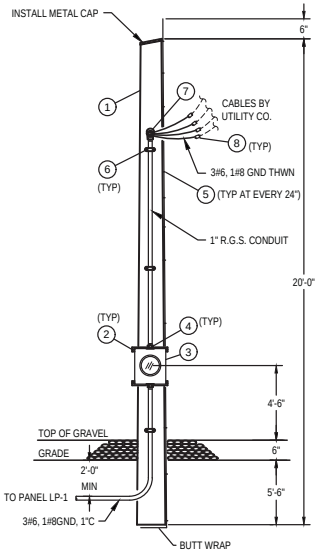
SHEET(S) 3 OF 7	DWG SCALE AS NOTED
DWG DATE 06/01/2020	SUPERSEDED —
DRAWING NUMBER	REVISION
PNG -E-350-0001028	0
DISCIPLINE / RESOURCE CENTER / LINE NUMBER	



PANEL LP-1 WIRING DIAGRAM FOR UNDERGROUND POWER SUPPLY TO METER

DETAIL 1
SCALE: N.T.S.
PNG-E-350-0001029

ITEM	QTY	DESCRIPTION (QUANTITY ARE FOR ONE INSTALLATION)	ITEM	QTY	DESCRIPTION (QUANTITY ARE FOR ONE INSTALLATION)
1	1	WOOD POLE, SOUTHERN PINE, CLASS 2, 20 FT	7	1	WEATHERHEAD FITTING, 2", R.G.S.
2	A/R	UNISTRUT CHANNEL, P-1000, GALV. WITH HARDWARE	8	A/R	COPPER COMPRESSION TAP, BURNDY TYPE #YGHC, SIZE AS REQUIRED
3	1	METER, 240V, 1Ø	9	A/R	#6 BARE COPPER GROUND WIRE
4	3	MYERS HUB FITTING, ZINC, SIZE AS REQUIRED	10	1	WOOD POLE, SOUTHERN PINE, CLASS 2, 16 FT
5	A/R	STAPLE, 1/4"X 1/4"	11	1	PVC TO R.G.S. ADAPTOR, 2"
6	A/R	TWO HOLE STRAP, R.G.S., 2"	12	A/R	R.G.S. CONDUIT COUPLING, 2"



TYPICAL INSTALLATION FOR
OVERHEAD POWER SUPPLY

A

NOTES:

1. CONTRACTOR SHALL RUN 2" EMPTY PVC CONDUIT WITH PULL WIRE TO UTILITY POWER SUPPLY POLE, TERMINATE CONDUIT 5'-0" ABOVE GRADE. UTILITY COMPANY WILL FURNISH AND PULL WIRE.

POLE/METER INSTALLATION DETAIL

DETAIL 1A
SCALE: N.T.S.
PNG-E-350-0001028

BURNS & McDONNELL
ENGINEERING COMPANY, INC.
STATE LICENSE # COA.01557

STATE OF OHIO
YEVGENIY
KHESLAVSKIY
E-84164
REGISTERED
PROFESSIONAL ENGINEER
11/18/2020

PROFESSIONAL ENG/ARCH STAMP

NO.	DATE	REVISION(S) DESCRIPTION	BY	CHK	APPD
0	11/18/2020	ISSUED FOR CONSTRUCTION	MCR	MCH	YBK

DESCRIPTION	
AREA CODE	-
ACCOUNT NUMBER	Q3680
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DRAWING BY	MCR
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APPROVALS		
DATE	INITIALS	REGIONAL ENGINEER
DATE	INITIALS	MGR TECH REC & STD
11/18/2020	YBK	PRINCIPAL ENGINEER

DUKE ENERGY®

C350 PROJECT
MAINLINE VALVES
TYPICAL AC POWER DETAILS

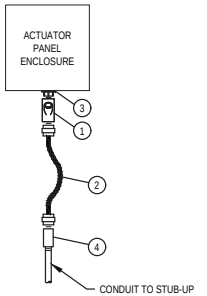
HAMILTON COUNTY, OHIO

REF. DWG(S)

SHEET(S) 4 OF 7	DWG SCALE NONE
DWG DATE 06/02/2020	SUPERSEDED —
DRAWING NUMBER	REVISION
PNG -E-350-0001029	0

DISCIPLINE / RESOURCE CENTER / LINE NUMBER

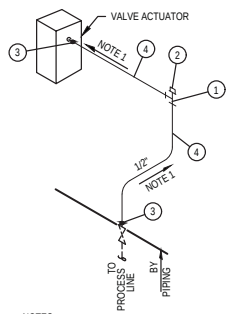
ITEM	QTY.	DESCRIPTION (QUANTITY FOR ONE INSTALLATION)
1	1	SEAL FITTING, M/F, 1 1/2", CROUSE-HINDS #EYS516
2	1	EXPLOSION PROOF FLEX COUPLING, M/F, 1 1/2", 15" LONG, CROUSE-HINDS #ECLK515
3	1	MYERS HUB FITTING, 1 1/2", ZINC
4	1	CONDUIT COUPLING, R.G.S., 1 1/2"



CLASS 1, DIVISION 1 APPLICATION

DETAIL 2
SCALE: N.T.S. PNG-E-350-0001028

ITEM	QTY	DESCRIPTION (ALL MANUFACTURERS ARE "OR EQUAL")
1	1	1/2" TUBE TEE, 316 S.S.
2	1	1/2" TUBE CAP, 316 S.S.
3	2	1/2"T x 1/2" N.P.T. MALE CONNECTOR, 316 S.S.
4	A/R	1/2" O.D. x .035" WALL 316 S.S. TUBING SMLS

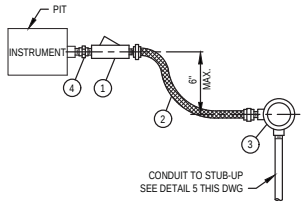


NOTES:
1. SLOPE TUBING DOWN TO DRAIN VALVE 1" PER 1'-0" MIN., DO NOT POCKET.
2. SUPPORT INSTRUMENT TUBING AT TAPS AND AT 5'-0" INTERVALS.

INSTRUMENT INSTALLATION DETAIL
INSTRUMENT MOUNTED ABOVE PROCESS LINE

DETAIL 3
SCALE: N.T.S. PNG-E-350-0001028

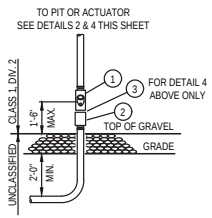
ITEM	QTY.	DESCRIPTION (ALL MANUFACTURERS ARE "OR EQUAL")
1	1	CONDUIT SEAL, M/F, 3/4", CROUSE-HINDS #EYS216
2	1	EXPLOSION PROOF FLEX COUPLING, M/F, 3/4", 8" LONG, CROUSE-HIND #ECLK28
3	1	CONDULET W/2-3/4" HUBS, CROUSE-HINDS #GUAL26
4	1	CONDUIT UNION, 3/4", CROUSE-HINDS #UNY205



ELECTRICAL DETAIL FOR INSTRUMENT WITHOUT PIG-TAIL
(CLASS 1, DIVISION 1 AREA)

DETAIL 4
SCALE: N.T.S. PNG-E-350-0001028

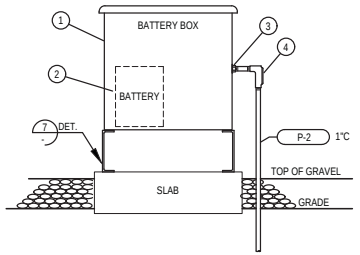
ITEM	QTY	DESCRIPTION (QUANTITY FOR ONE INSTALLATION)
1	1	DRAIN SEAL FITTING, M/F, SIZE AR, CROUSE-HINDS TYPE EYD
2	1	CONDUIT COUPLING, R.G.S., SIZE AS REQ'D
3	1	REDUCING BUSHING, 1"X 3/4" (FOR DETAIL 4 ONLY)



TYPICAL CONDUIT STUB-UP

DETAIL 5
SCALE: N.T.S. PNG-E-350-0001028

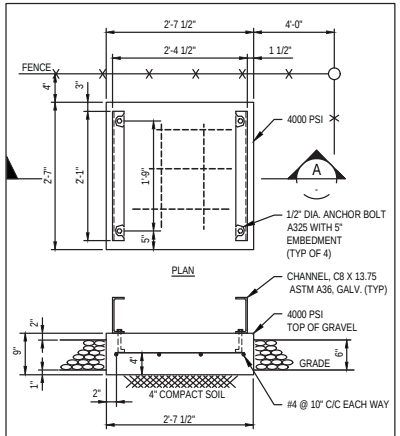
ITEM	QTY.	DESCRIPTION (ALL MANUFACTURERS ARE "OR EQUAL")
1	1	NEMA 3R ENCLOSURE, 16"H X 25" D (TRU), WITH DOOR LOCK & RACKING RAIL, DDB #OD-16DXC
2	1	UPG SEALED LEAD-ACID UNIVERSAL BATTERY #UB121100
3	1	MYERS HUB FITTING, 1", ZINC
4	1	LB FITTING, 1", WITH COVER & GASKET, CROUSE-HINDS FORM 7



BATTERY BOX DETAIL

UNCLASSIFIED AREA APPLICATION

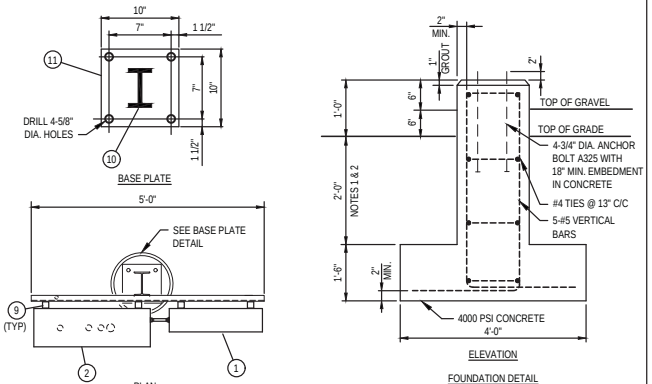
DETAIL 6
SCALE: N.T.S. PNG-E-350-0001028



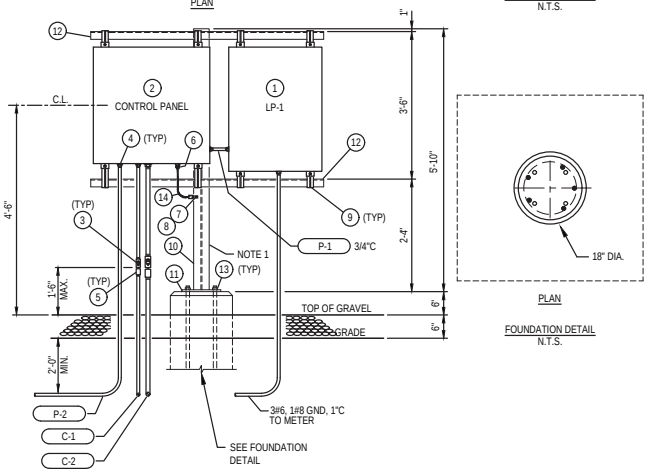
BATTERY FOUNDATION DETAIL

DETAIL 7
SCALE: N.T.S. PNG-E-350-0001028

ITEM	QTY	DESCRIPTION (ALL MANUFACTURERS ARE "OR EQUAL")
1	1	PANELBOARD, NEMA 3R ENCLOSURE, 100A MAIN, 12 CIRCUITS MAXIMUM, 120/240V, WITH NEUTRAL BUS, 4-20A SINGLE POLE CIRCUIT BREAKER, SQUARE D TYPE NQOD
2	1	MAINLINE VALVE CONTROL PANEL, 36"X 30"X 10", SEE DWG 175-MLV-TYP16
3	2	"DRAIN SEAL FITTING, M/F, SIZE AS REQUIRED, CROUSE-HINDS TYPE EYD
4	5	MYERS HUB FITTING, ZINC, SIZE AS REQUIRED
5	2	CONDUIT COUPLING, R.G.S., SIZE AS REQUIRED
6	1	CGB CONNECTOR, 3/8", CROUSE-HINDS #CGB3814
7	1	BURNDY "QIKLUG" CONNECTOR, TYPE QA FOR #6 WIRE
8	1	H.H. DURIUM BOLT W/NUT & LOCK WASHER, SIZE AS REQ'D
9	A/R	UNISTRUT CHANNEL, P-1000, GALV. WITH HARDWARE
10	A/R	WIDE FLANGE, W6X12, ASTM A992
11	A/R	PLATE C.S. 1/2", ASTM A36
12	A/R	C.S. ANGLE, 2" X 2" X 1/4"
13	4	H.H. 1/2" NUT, ASTM A325
14	A/R	#6 BARE COPPER GROUND WIRE



FOUNDATION DETAIL
N.T.S.



TYPICAL CONTROL PANEL AND PANEL LP-1 INSTALLATION

PLAN

FOUNDATION DETAIL
N.T.S.

NOTES:
1. HOT DIPPED GALVANIZED STANCHION AFTER FABRICATION.

DETAIL A
SCALE: N.T.S. PNG-E-350-0001028

BURNS & McDONNELL
ENGINEERING COMPANY, INC.
STATE LICENSE # COA:01557

STATE OF OHIO
YEVGENIY KHISLAVSKIY
E-84164
PROFESSIONAL ENGINEER
11/13/2020
PROFESSIONAL ENGINEER STAMP

NO.	DATE	REVISION(S) DESCRIPTION	BY	CHK	APPD
0	11/18/2020	ISSUED FOR CONSTRUCTION	MCR	MCH	YBK

DESCRIPTION	
AREA CODE	-
ACCOUNT NUMBER	Q3680
PROJECT NUMBER	1880115
DRAWING BY	MCR
STATION ID	C350
CHECKER INITIALS	MCH

APPROVALS			
DATE	INITIALS		REGIONAL ENGINEER
DATE	INITIALS		MGR TECH REC & STD
11/18/2020	YBK		PRINCIPAL ENGINEER

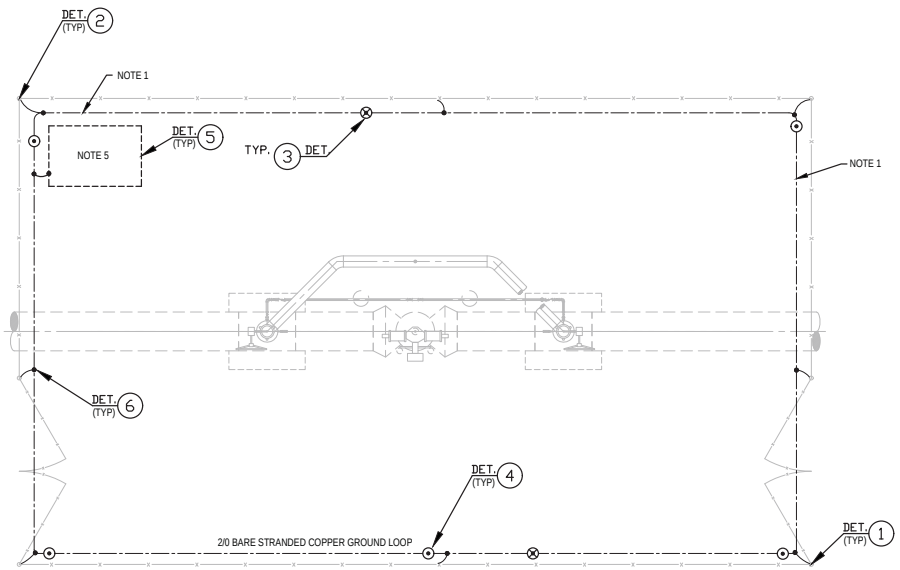
REF. DWG(S)

C350 PROJECT
MAINLINE VALVES
TYPICAL INSTALLATION DETAILS

HAMILTON COUNTY, OHIO

SHEET(S)	5 OF 7	DWG SCALE	NONE
DWG DATE	06/02/2020	SUPERSEDED	—

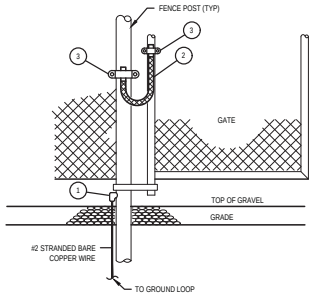
DRAWING NUMBER: PNG -E-350-0001030
REVISION: 0
DISCIPLINE / RESOURCE CENTER / LINE NUMBER



TYPICAL GROUNDING PLAN

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

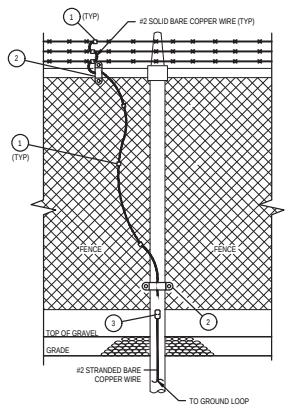
ITEM	QTY	DESCRIPTION (QUANTITY ARE FOR ONE INSTALLATION)
1	1	EXOTHERMIC WELD, CABLE TO STEEL PIPE, TYPE BURNDY BCS-3 - NOTE 2
2	1	FLEXIBLE COPPER BRAID, BURNDY TYPE BD, LENGTH AS REQUIRED
3	2	GROUND CONNECTOR, BURNDY TYPE GAR, SIZE AS REQ,D



NOTES:
1. FOR DOUBLE GATE APPLICATION EACH GATE SHALL BE GROUNDED AS SHOWN.
2. REFERENCE BURNDY CATALOG FOR COMPLETE MODEL NO.

DETAIL 1
SCALE: N.T.S.

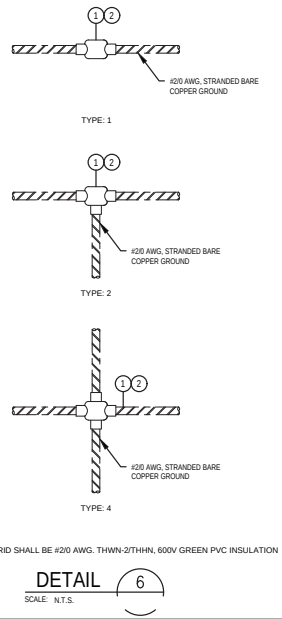
ITEM	QTY	DESCRIPTION (QUANTITY ARE FOR ONE INSTALLATION)
1	A/R	COPPER COMPRESSION TAP, BURNDY #YGHC2C2
2	2	GROUND CONNECTOR, BURNDY TYPE GAR, SIZE AS REQ,D
3	1	EXOTHERMIC WELD, CABLE TO STEEL PIPE, TYPE BURNDY BCS-3 - NOTE 2



NOTES:
1. #6 WIRE SHALL BE LOOPED THROUGH GROUND WIRE CLAMPS AND FENCE CLAMPS TO KEEP WIRE SPLICES TO A MINIMUM.
2. REFERENCE BURNDY CATALOG FOR COMPLETE MODEL NO.

DETAIL 2
SCALE: N.T.S.

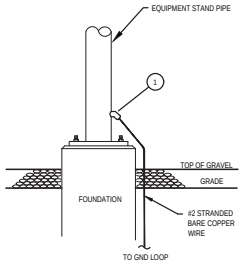
ITEM	QTY	DESCRIPTION
1	A/R	EXOTHERMIC WELD, CABLE TO CABLE, CADWELD TYPE.
2	A/R	EXOTHERMIC WELD, TEE TYPE, BURNDY BCS-1 (OR) BCS-2 (OR) BCS-4



NOTES:
1. MAIN GROUND GRID SHALL BE #2/0 AWG. THWN-2/THHN, 600V GREEN PVC INSULATION

DETAIL 6
SCALE: N.T.S.

ITEM	QTY	DESCRIPTION (QUANTITY ARE FOR ONE INSTALLATION)
1	A/R	EXOTHERMIC WELD, CABLE TO PIPE OR FLAT PLATE, 45° BURNDY BCS-3 - NOTE 1

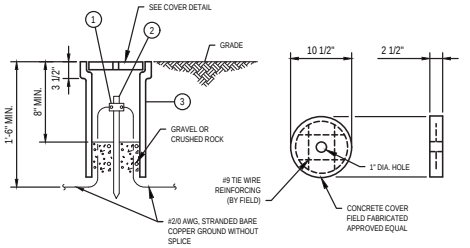


TYPICAL EQUIPMENT STAND GROUNDING

NOTES:
1. REFERENCE BURNDY CATALOG FOR COMPLETE MODEL NO.

DETAIL 5
SCALE: N.T.S.

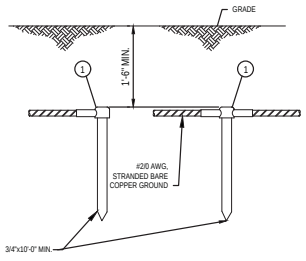
ITEM	QTY	DESCRIPTION
1	1	GROUND CONNECTOR BURNDY TYPE "YGHR-C"
2	1	GALV. STEEL COATED GROUND ROD, 3/4"x10'-0", 10MIL THICK MIN. COATED
3	1	8" X 1'-6" VITRIFIED CLAY PIPE



NOTES:
1. MAIN GROUND GRID SHALL BE #2/0 AWG. THWN-2/THHN, 600V GREEN PVC INSULATION

DETAIL 3
SCALE: N.T.S.

ITEM	QTY	DESCRIPTION
1	A/R	GALVANIZED STEEL COATED GROUND ROD, 3/4"x10'-0", 10MIL THICK MIN



NOTES:
1. MAIN GROUND GRID SHALL BE #2/0 AWG. THWN-2/THHN, 600V GREEN PVC INSULATION

DETAIL 4
SCALE: N.T.S.

GROUNDING LEGEND:

- GROUND TESTING WELL
- GROUND ROD
- EXOTHERMIC TEE
- BARE GROUND WIRE

GROUNDING NOTES:

1. GROUNDING INSTALLATION MUST COMPLY WITH OSHA AND NATIONAL ELECTRICAL CODE REQUIREMENTS, EXCEPT WHERE LOCAL CODE PREVAILS.
2. A TEST MEASUREMENT OF THE RESISTANCE OF THE GROUNDING SYSTEM MUST BE TAKEN WHEN INSTALLED. IF THE RESISTANCE TO GROUND IS GREATER THAN 5 OHMS. ADDITIONAL GROUND RODS MUST BE INSTALLED UNTIL A COMBINED RESISTANCE OF 5 OHMS OR LESS IS OBTAINED.
3. THE GROUNDING SYSTEM IS SHOWN DIAGRAMMATICALLY SO THAT APPROXIMATE ROUTING OF GROUNDING CONDUCTORS AND LOCATIONS OF TAPS, WELLS AND GROUND RODS CAN BE ACCOMPLISHED.
4. WHERE GROUNDING CONDUCTORS ARE ROUTED EXPOSED, THEY MUST BE SECURED MINIMUM EVERY 24".
5. AREA RESERVED FOR 120VAC PANEL INSTALLATIONS. ONLY ONE SYSTEM PER SITE. GROUND ALL PANELS PER DETAIL 5 - SEE DRAWING PNG-E-350-0001028 FOR PANEL LOCATIONS AND ACCESSORY EQUIPMENT. SEE DRAWING PNG-E-350-0001030 FOR DETAILS ON PROPOSED PANEL LOCATIONS.
6. FENCE IS SHOWN DIAGRAMMATICALLY AND WILL CHANGE DIMENSIONS BASED HAZARDOUS LOCATION DWG. PNG-E-350-0001032.

BURNS & McDONNELL
ENGINEERING COMPANY, INC.
STATE LICENSE # COA:01557

STATE OF OHIO
YEVGENIY KHISLAVSKIY
E-84164
REGISTERED
PROFESSIONAL ENGINEER
11/13/2020
PROFESSIONAL ENG/ARCH STAMP

REF. DWG(S)

NO.	DATE	REVISION(S) DESCRIPTION	BY	CHK	APPD
0	11/18/2020	ISSUED FOR CONSTRUCTION	MCR	MCH	YBK

DESCRIPTION	
AREA CODE	-
ACCOUNT NUMBER	Q3680
PROJECT NUMBER	1880115
DRAWING BY	MCR
STATION ID	C350
CHECKER INITIALS	MCH

APPROVALS		
DATE	INITIALS	REGIONAL ENGINEER
DATE	INITIALS	MGR TECH REC & STD
11/18/2020	YBK	PRINCIPAL ENGINEER

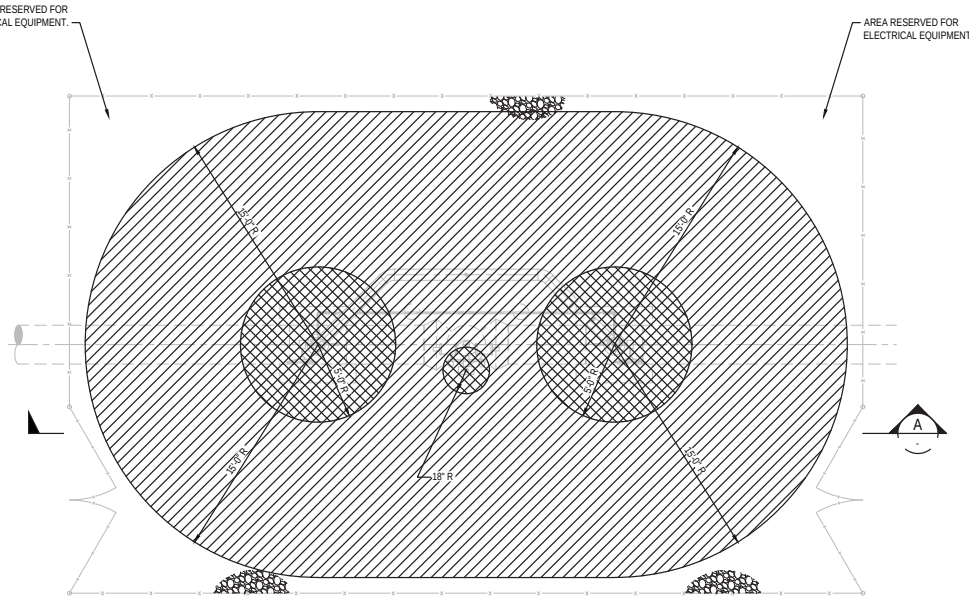
DUKE ENERGY®

C350 PROJECT
MAINLINE VALVES
TYPICAL GROUNDING PLAN AND DETAILS

HAMILTON COUNTY, OHIO

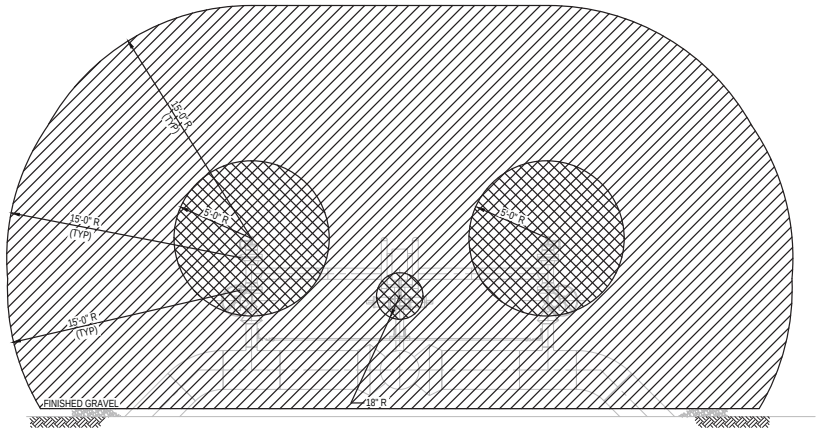
SHEET(S)	6 OF 7
DWG SCALE	AS NOTED
DWG DATE	06/01/2020
SUPERSEDED	—
DRAWING NUMBER	PNG -E-350-0001031
REVISION	0

DISCIPLINE / RESOURCE CENTER / LINE NUMBER



TYPICAL HAZARDOUS AREA CLASSIFICATION PLAN

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



SECTION A

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

LEGEND:

- CLASS 1, DIVISION 1, GROUP D, T1
- CLASS 1, DIVISION 2, GROUP D, T1
- UNCLASSIFIED

NOTES:

1. AREA CLASSIFICATION ARE PER THE LATEST EDITION OF AMERICAN GAS ASSOCIATION AGA-XL1001.
2. ELECTRICAL WORK IN AREA CLASSIFICATION SHALL BE IN COMPLIANCE WITH THE LATEST EDITION OF NATIONAL ELECTRIC CODE, ARTICLE 500, 501 AND 504, AND PER STATE, LOCAL AND OSHA REGULATIONS.

REF. DWG(S)

BURNS & McDONNELL ENGINEERING COMPANY, INC.
STATE LICENSE # COA01557

STATE OF OHIO — YEVGENIY KHESLAVSKIY — E-84164 — REGISTERED PROFESSIONAL ENGINEER — 11/18/2020

PROFESSIONAL ENG/ARCH STAMP

NO.	DATE	REVISION(S) DESCRIPTION	BY	CHK	APPD
0	11/18/2020	ISSUED FOR CONSTRUCTION	MCR	MCH	YBK

DESCRIPTION	
AREA CODE	-
ACCOUNT NUMBER	Q3680
PROJECT NUMBER	1880115
DRAWING BY	MCR
STATION ID	C350
CHECKER INITIALS	MCH

APPROVALS	DATE	INITIALS
REGIONAL ENGINEER		
MGR TECH REC & STD		
PRINCIPAL ENGINEER	11/18/2020	YBK

DUKE ENERGY®

C350 PROJECT
MAINLINE VALVES
TYPICAL HAZARDOUS LOCATION SITE PLAN

HAMILTON COUNTY, OHIO

SHEET(S)	7 OF 7
DWG SCALE	AS NOTED
DWG DATE	06/01/2020
SUPERSEDED	—
DRAWING NUMBER	PNG -E-350-0001032
REVISION	0

DISCIPLINE / RESOURCE CENTER / LINE NUMBER

Summary: Exhibit CCP Drawings for Preconstruction Conference Set 2 part 5 electronically filed by Mrs. Debbie L Gates on behalf of Duke Energy Ohio Inc. and Kingery, Jeanne W and Vaysman, Larisa