CONCRETE ENCASED GROUND
1617004

- ELECTRICAL EQUIPMENT GROUND BUS OR LUG
- GROUND CONDUCTOR (IN CONDUIT, WHERE EXPOSED TO POSSIBLE PHYSICAL DAMAGE)
- GROUND CONNECTIONS
- CONCRETE FOUNDATION, SLAB OR FOOTING
- BOND TO INTERIOR METALLIC COLD WATER PIPING SYSTEM WHERE AVAILABLE
- 20'-0" MIN GROUND CONDUCTOR

* 1" CLEAR FOR ELEVATED SLABS
3" CLEAR FOR SLABS ON GRADE OR FOOTING
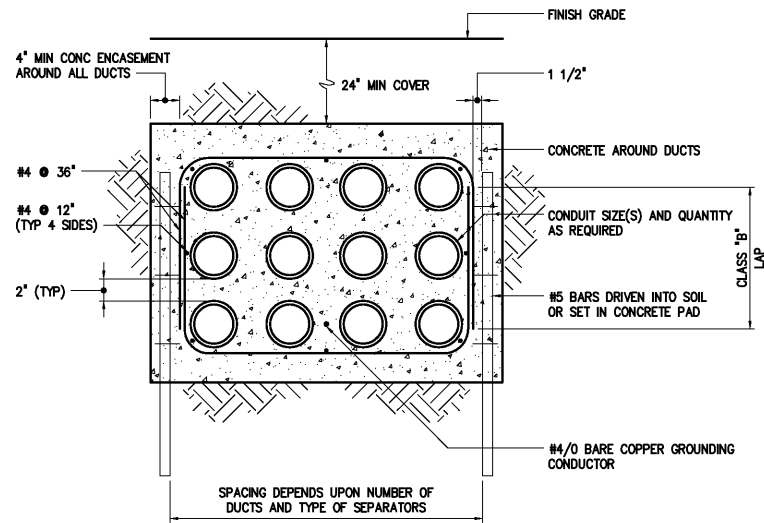
TYPICAL DUCT BANK DETAIL
1611801

- FINISH GRADE
- 4" MIN CONC ENCASEMENT AROUND ALL DUCTS
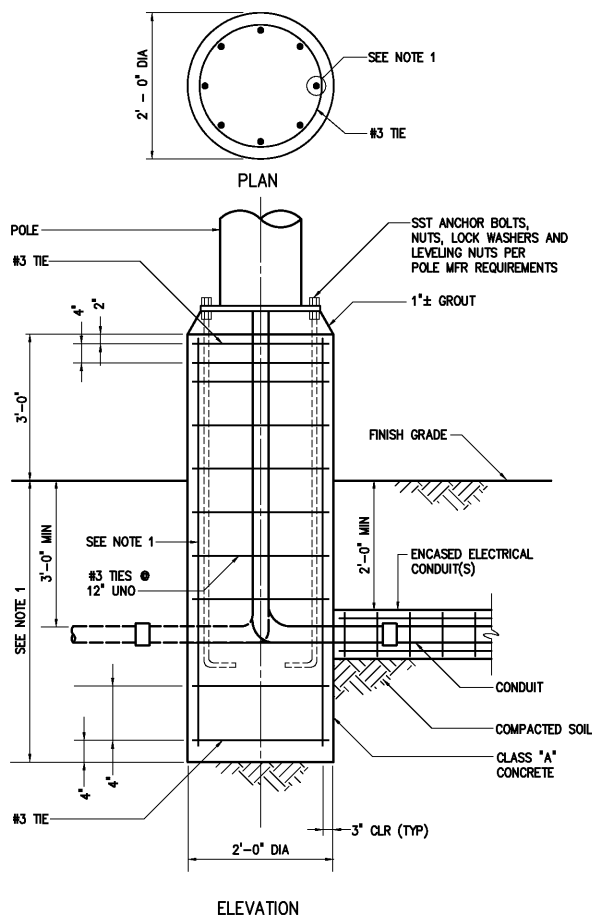- 24" MIN COVER
- 1 1/2"
- CONCRETE AROUND DUCTS
- #4 @ 36"
- #4 @ 12" (TYP 4 SIDES)
- CONDUIT SIZE(S) AND QUANTITY AS REQUIRED
- CLASS "B" LAP
- 2" (TYP)
- #5 BARS DRIVEN INTO SOIL OR SET IN CONCRETE PAD
- #4/0 BARE COPPER GROUNDING CONDUCTOR
- SPACING DEPENDS UPON NUMBER OF DUCTS AND TYPE OF SEPARATORS
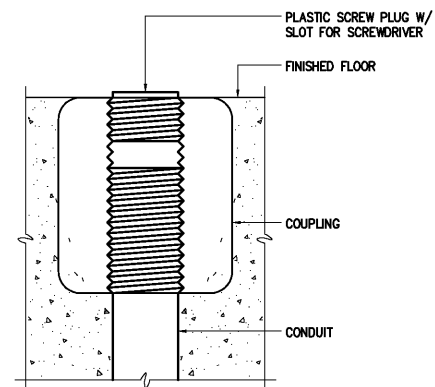
CONDUIT, FLOOR STUB-UP
1611101

- PLASTIC SCREW PLUG W/ SLOT FOR SCREWDRIVER
- FINISHED FLOOR
- COUPLING
- CONDUIT
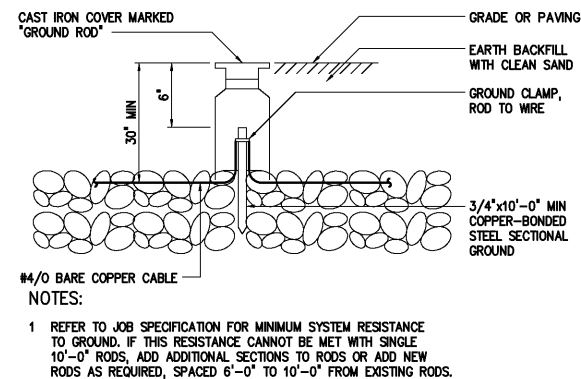
ELECTRICAL INSTALLATION DETAIL
GROUND ROD ASSEMBLY
1617003

- CAST IRON COVER MARKED "GROUND ROD"
- GRADE OR PAVING
- EARTH BACKFILL WITH CLEAN SAND
- GROUND CLAMP, ROD TO WIRE
- 30" MIN
- 6"
- 3/4"x10'-0" MIN COPPER-BONDED STEEL SECTIONAL GROUND
- #4/0 BARE COPPER CABLE

NOTES:
1. REFER TO JOB SPECIFICATION FOR MINIMUM SYSTEM RESISTANCE TO GROUND. IF THIS RESISTANCE CANNOT BE MET WITH SINGLE 10'-0" RODS, ADD ADDITIONAL SECTIONS TO RODS OR ADD NEW RODS AS REQUIRED, SPACED 6'-0" TO 10'-0" FROM EXISTING RODS.

AREA LIGHTING FIXTURE MOUNTING
1650002

PLAN
- 2'-0" DIA
- SEE NOTE 1
- #3 TIE

ELEVATION
- POLE
- #3 TIE
- SST ANCHOR BOLTS, NUTS, LOCK WASHERS AND LEVELING NUTS PER POLE MFR REQUIREMENTS
- 1"± GROUT
- FINISH GRADE
- SEE NOTE 1
- #3 TIES @ 12" UNO
- ENCASED ELECTRICAL CONDUIT(S)
- CONDUIT
- COMPACTED SOIL
- CLASS "A" CONCRETE
- #3 TIE
- 2'-0" DIA
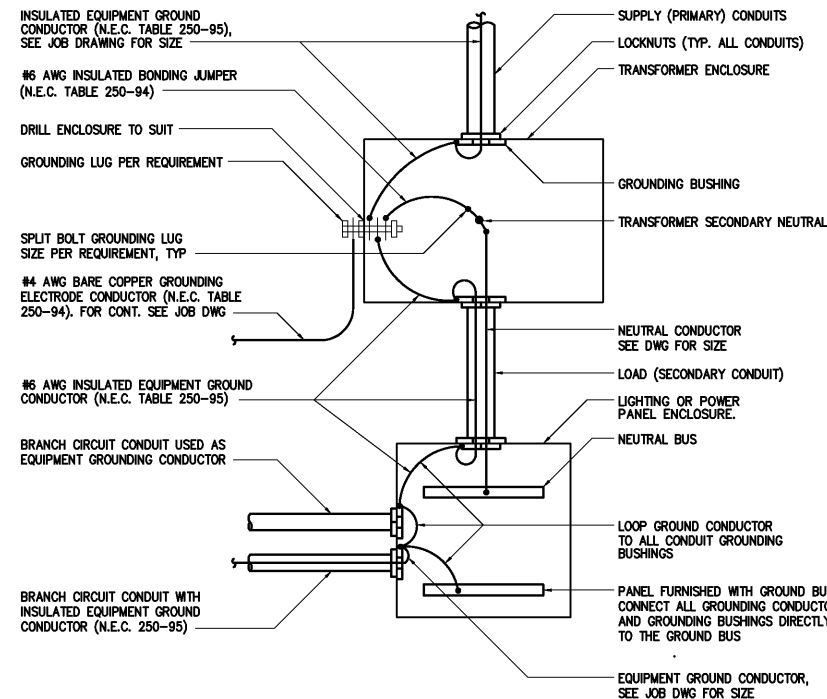- 3" CLR (TYP)

NOTES:
1. IF NOT SPECIFIED OR SHOWN, DEPTH AND REINFORCEMENT SHALL BE DETERMINED BY POLE MANUFACTURER. LOADING SHALL BE DEAD LOAD PLUS 100 MPH WIND, STANDARD EXPOSURE PER STANDARD BUILDING CODE.

PULL BOX AND HAND HOLE (HH) INSTALLATION DETAIL
1611803

- HEAVY DUTY COVER MARKED 'ELECTRICAL' (TRAFFIC RATED IF REQUIRED)
- 10"
- CONCRETE RING AROUND BOX, (CLASS B CONC, TYP)
- QUAZITE GASKETED PULL BOX AS PER SPECIFICATIONS
- COMPACTED EARTH

LOW VOLTAGE TRANSFORMER GROUNDING INSTALLATION DETAIL
1618003

- INSULATED EQUIPMENT GROUND CONDUCTOR (N.E.C. TABLE 250-95), SEE JOB DRAWING FOR SIZE
- #6 AWG INSULATED BONDING JUMPER (N.E.C. TABLE 250-94)
- DRILL ENCLOSURE TO SUIT
- GROUNDING LUG PER REQUIREMENT
- SPLIT BOLT GROUNDING LUG SIZE PER REQUIREMENT, TYP
- #4 AWG BARE COPPER GROUNDING ELECTRODE CONDUCTOR (N.E.C. TABLE 250-94). FOR CONT. SEE JOB DWG
- #6 AWG INSULATED EQUIPMENT GROUND CONDUCTOR (N.E.C. TABLE 250-95)
- BRANCH CIRCUIT CONDUIT USED AS EQUIPMENT GROUNDING CONDUCTOR
- BRANCH CIRCUIT CONDUIT WITH INSULATED EQUIPMENT GROUND CONDUCTOR (N.E.C. 250-95)
- SUPPLY (PRIMARY) CONDUITS
- LOCKNUTS (TYP. ALL CONDUITS)
- TRANSFORMER ENCLOSURE
- GROUNDING BUSHING
- TRANSFORMER SECONDARY NEUTRAL
- NEUTRAL CONDUCTOR SEE DWG FOR SIZE
- LOAD (SECONDARY CONDUIT)
- LIGHTING OR POWER PANEL ENCLOSURE.
- NEUTRAL BUS
- LOOP GROUND CONDUCTOR TO ALL CONDUIT GROUNDING BUSHINGS
- PANEL FURNISHED WITH GROUND BUS. CONNECT ALL GROUNDING CONDUCTORS AND GROUNDING BUSHINGS DIRECTLY TO THE GROUND BUS
- EQUIPMENT GROUND CONDUCTOR, SEE JOB DWG FOR SIZE

NOTES:
1. GROUNDING CONDUCTORS SHOWN ARE FOR TRANSFORMERS UP TO 45KVA. SEE ELECT. JOB DRAWINGS FOR LARGER TRANSFORMERS OR WHEN VOLTAGE DROP REQUIRES LARGER CONDUCTORS.

NO.	ISSUED FOR	DATE	BY
3	RECORD DRAWING	JAN 2006	RLT
2	CONSTRUCTION	JAN 2004	RLT
1	REGULATORY APPROVAL	NOV 2003	RLT

DESIGNED H & S
DRAWN H & S
CHECKED
PROJ. ENGR. H & S
APPROVED

HAZEN AND SAWYER
Environmental Engineers & Scientists
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CITY OF ROANOKE
VIRGINIA

REGIONAL WATER POLLUTION CONTROL PLANT
PROCESS TRAIN IMPROVEMENTS

MISCELLANEOUS STANDARD DETAILS

DATE JANUARY 2004
H & S JOB NUMBER 30788C
CONTRACT NUMBER C
DRAWING NUMBER D14