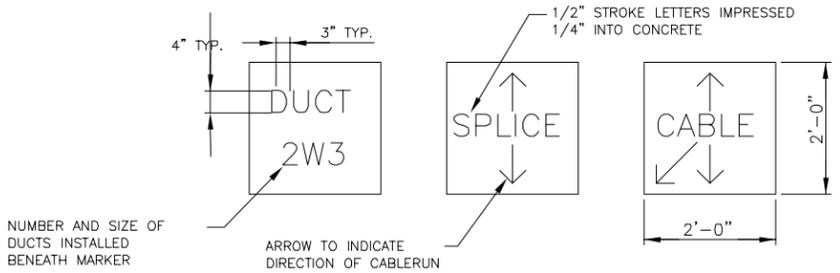


GROUND ROD DETAIL

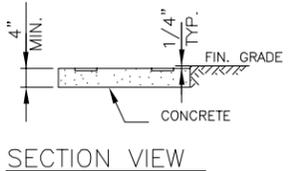
NTS
ALL GROUND RODS ARE INSTALLED VERTICALLY

NOTES:

1. THE RESISTANCE TO GROUND OF ANY GROUNDING SYSTEM SHALL NOT EXCEED 10 OHMS. (VAULT GROUNDING - 10 OHMS)
2. COST OF GROUND RODS AND CONNECTIONS TO COUNTERPOISE IS INCIDENTAL TO ASSOCIATED ITEMS OF WORK REQUIRING GROUNDING AND NO SEPARATE PAYMENT WILL BE MADE.
3. MAXIMUM SPACING OF GROUND RODS FOR AUTHORITY LIGHTING SYSTEMS SHALL NOT EXCEED 400 FEET.
4. MAXIMUM SPACING OF GROUND RODS FOR FAA CABLE PROTECTION SHALL NOT EXCEED 200 FEET.
5. EACH ROD TO BE TESTED INDIVIDUALLY TO ENSURE RESISTANCE TO GROUND OF 5 OHMS OR LESS. ADD ADDITIONAL SECTIONS UNTIL THIS REQUIREMENT IS MET.



PLAN VIEW



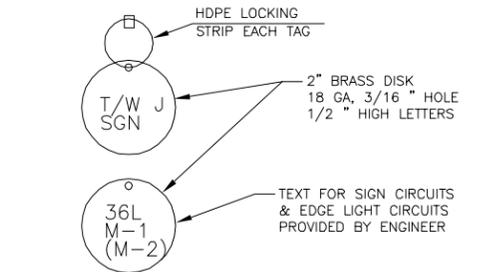
SECTION VIEW

CABLE AND DUCT MARKERS

NTS (IN TURFED AREAS)

NOTES:

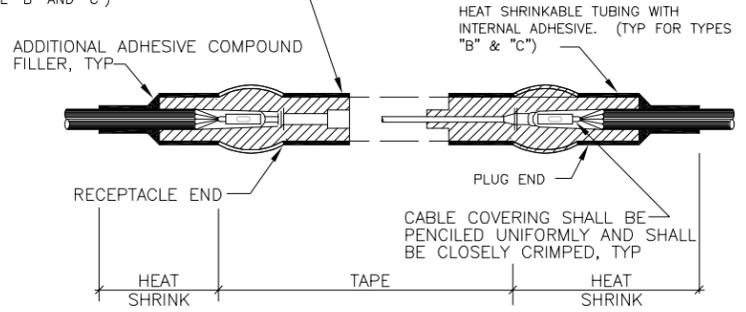
1. MARKERS SHALL BE PLACED AT ALL DUCT CROSSINGS, END OF STUB OUTS, AND ANY CHANGE IN CABLE DIRECTION.
2. CONCRETE FOR PADS SHALL COMPLY WITH ITEM P-610, 3000 PSI.
3. EDGE EXPOSED CONCRETE WITH A 1/4" RADIUS TOOL.
4. LEGEND INSCRIBED BY HAND IN WET CONCRETE WILL NOT BE ACCEPTABLE.
5. CABLE AND DUCT MARKERS ARE INCIDENTAL TO OTHER ITEMS OF WORK NO SEPARATE PAYMENT WILL BE MADE.



CIRCUIT IDENTIFICATION TAGS

NTS (TO BE USED AT CABLE & LIGHT LOCATIONS)

ALL CONNECTIONS SHALL HAVE ONE LAYER, HALF-LAPPED RUBBER OR SYNTHETIC RUBBER INSULATING TAPE COVERED WITH TWO LAYERS OF HALF-LAPPED PLASTIC TAPE TO A DISTANCE OF 1 1/2" FROM JOINT. COVER CABLE ENTRANCES TO SPLICE KIT WITH HEAT SHRINKABLE TUBING WITH INTERNAL ADHESIVE. (TYP. TYPE "B" AND "C")

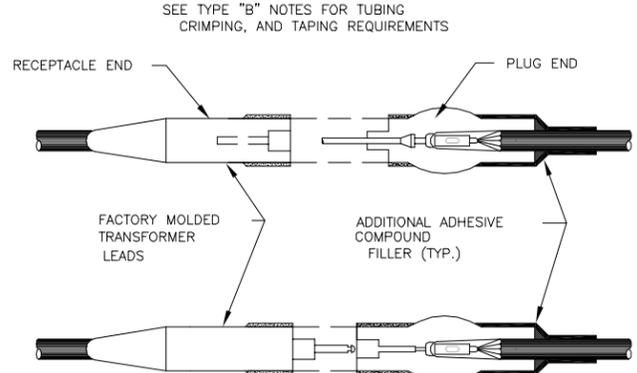


FOR SPLICES AT JUNCTION OF HOMERUN WITH LOOP CIRCUIT. ALL CRIMPING SHALL BE DONE WITH APPROVED TOOL WHICH SHALL NOT RELEASE UNTIL PROPER PRESSURE IS APPLIED.

TYPE "B"

NOTES:

1. INSIDE DIAMETER OF CONNECTOR KITS SHALL PROPERLY MATCH THE OUTSIDE DIAMETER OF CABLE.
2. ALL CABLES SHALL BE CLEANED OF ALL OILS, GREASE, DIRT OR OTHER MATERIALS WHICH COULD CONTAMINATE OR ADVERSELY AFFECT THE SPLICE.
3. NO CAST SPLICES TO BE USED ON THIS PROJECT. WITHOUT WRITTEN AUTHORIZATION OF ENGINEER.
4. NO SEPARATE PAYMENT FOR SPLICES OR CONNECTORS, COST TO BE INCLUDED IN PRICE FOR CABLE.
5. ALL SPLICES SHALL BE PLACED IN JUNCTION BOX.

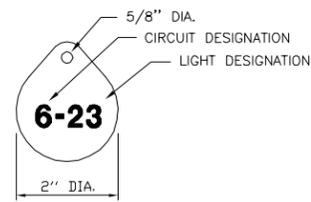


FOR SPLICES AT RUNWAY & TAXIWAY LIGHTS/SIGNS, SEE NOTES REGARDING TAPING AND HEAT SHRINKABLE TUBING.

TYPE "C"

CABLE SPLICES - TYPES 'A', 'B' & 'C'

NTS



NOTES:

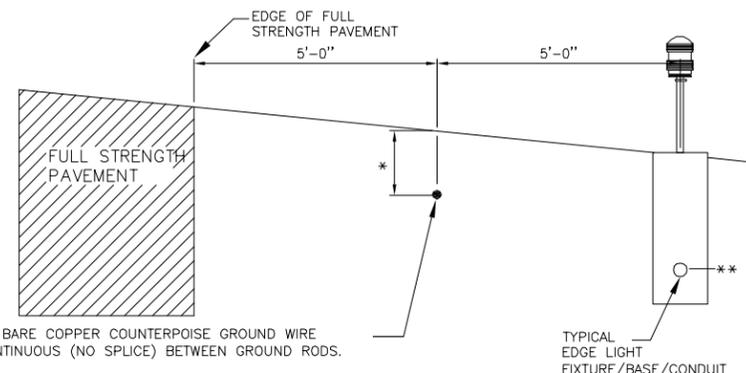
1. INSTALL A NONCORROSIVE DISC OF 2 INCH MINIMUM DIAMETER WITH NUMBER PERMANENTLY STAMPED, CUTOUT, OR ENGRAVED UNDER THE HEAD OF THE BASE PLATE BOLT OR ATTACHED TO LIGHT FLANGE WITH SET SCREW.
2. NUMBERS SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY ALL EXISTING AND PROPOSED EDGE LIGHTS SHALL BE TAGGED AS DIRECTED BY THE ENGINEER. COST OF TAGGING LIGHTS SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL.

LIGHT IDENTIFICATION TAG DETAIL

NTS

NOTES:

1. INSTALL 3/4" x 10' LONG COPPER CLAD GROUND RODS ALONG COUNTERPOISE SYSTEM AT 400' INTERVALS. CONNECTIONS OF GROUND RODS TO COUNTERPOISE CABLE SHALL BE EXOTHERMIC TYPE (CAD WELD OR EQUAL).
2. DO NOT CONNECT COUNTERPOISE WIRING TO EDGE LIGHTS.



#6 BARE COPPER COUNTERPOISE GROUND WIRE CONTINUOUS (NO SPLICE) BETWEEN GROUND RODS.

* - 12" BELOW FINISHED GRADE
** - 24" BELOW FINISHED GRADE

COUNTERPOISE INSTALLATION SECTION DETAIL

NTS

FOR TURF AREAS WITHOUT PAVED SHOULDERS



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NORTH BUSINESS DEVELOPMENT AREA

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signature *Darren K. Christopher*
Typed Name DARREN K. CHRISTOPHER
Date 08/18/2009 Reg. No. 45052

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 08-18-2009
REVIEWED BY: MLS
DRAWN BY: JKE
DESIGNED BY: DKC

AEP PROJECT NUMBER
214-1882-077
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SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E304

BID DOCUMENTS

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