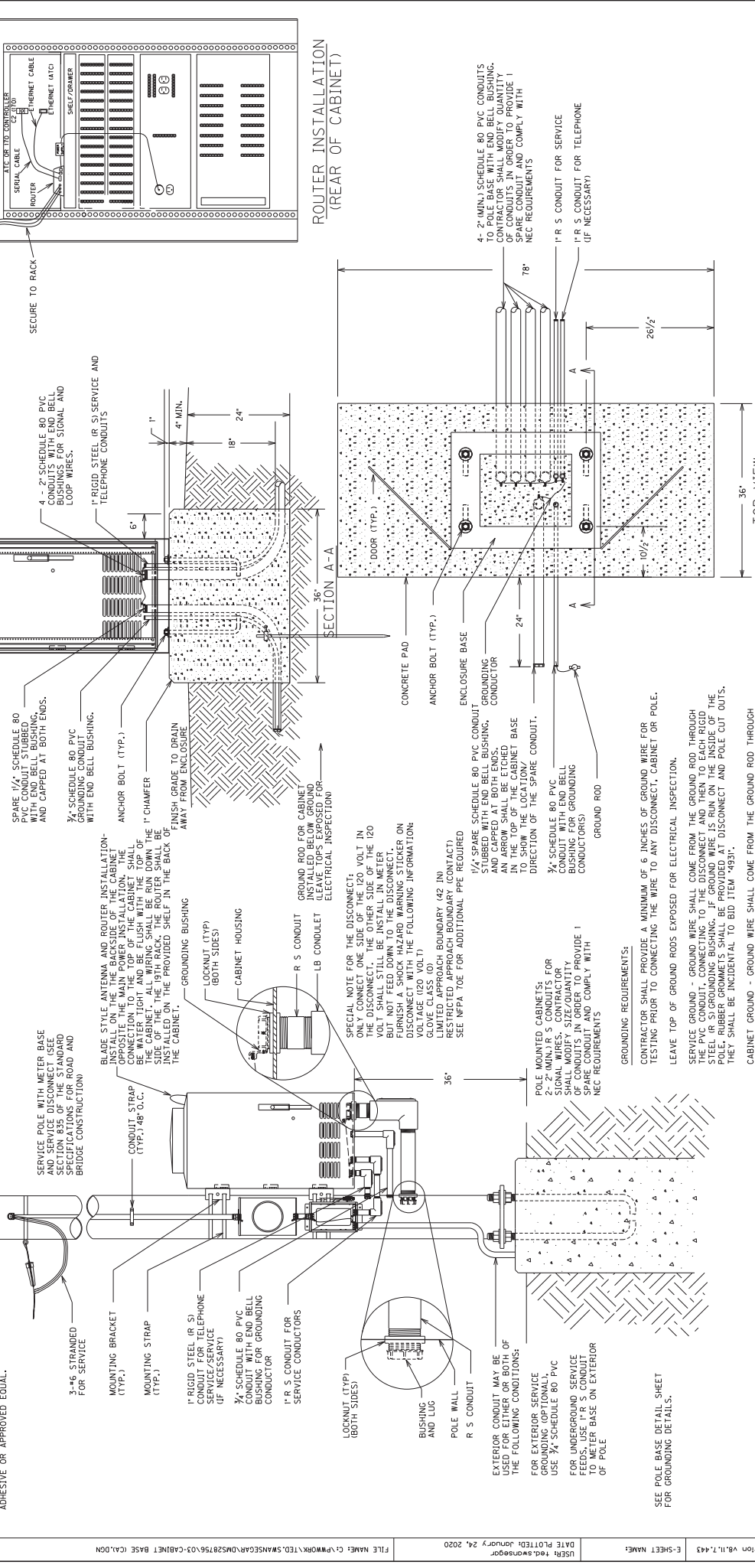


SPECIAL NOTE:
ALL CONDUITS USED FOR THE TELEPHONE, GROUNDING, SPARES, AND SERVICE (INCLUDING FLEX CONDUIT IF IT IS RUN INSIDE THE POLE) THAT ARE INSTALLED ON THE POLE AND/OR IN THE CABINET BASE ARE INCIDENTAL TO BID ITEM 4931. THIS INCLUDES PROVIDING A MINIMUM OF 24 INCHES OF CONDUIT PAST THE EDGE OF THE CONCRETE PAD.

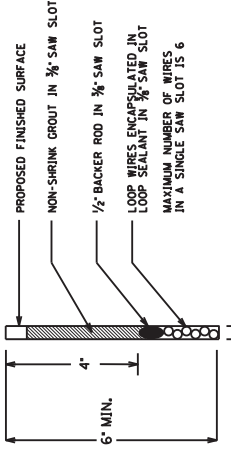
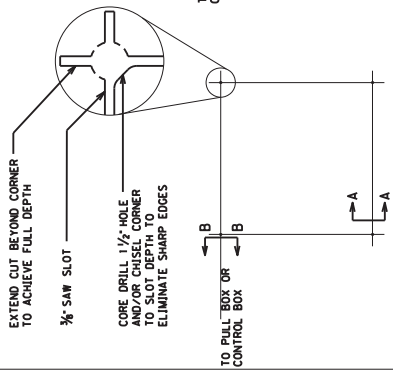
NOTES:
ALL CONDUITS SHALL BE INSTALLED BETWEEN 4 TO 6 INCHES ABOVE THE CONCRETE PAD, AND THEY CANNOT EXCEED THE 6 INCH HEIGHT.
SERVICE WIRES FOR BASE MOUNTED CABINETS MAY BE INSTALLED IN FLEXIBLE CONDUIT FROM THE DISCONNECT TO THE RIGID STEEL CONDUIT INSIDE THE POLE BASE. USE THE PROPER CONNECTIONS FOR TRANSITION FROM FLEXIBLE CONDUIT TO R S CONDUIT. FLEXIBLE CONDUIT MUST BE INSTALLED TO LOCK THE HAND HOLE OR THE ABILITY TO ACCESS THE GROUNDING SYSTEM.

GROUNDING REQUIREMENTS:
CONTRACTOR SHALL PROVIDE A MINIMUM OF 6 INCHES OF GROUND WIRE FOR TESTING PRIOR TO CONNECTING THE WIRE TO ANY DISCONNECT, CABINET OR POLE.
LEAVE TOP OF GROUND RODS EXPOSED FOR ELECTRICAL INSPECTION.
SERVICE GROUND - GROUND WIRE SHALL COME FROM THE GROUND ROD THROUGH THE PVC CONDUIT, CONNECTING TO THE DISCONNECT AND THEN TO EACH RIGID STEEL (IF GROUNDING BUSHING IS USED). GROUND WIRE IS RUN ON THE INSIDE OF THE POLE RUBBER GASKET. DISCONNECT AND POLE CUT OUTS, THEY SHALL BE INCIDENTAL TO BID ITEM 4931.
CABINET GROUND - GROUND WIRE SHALL COME FROM THE GROUND ROD THROUGH THE PVC CONDUIT, CONNECTING TO THE CABINET GROUND BUS.

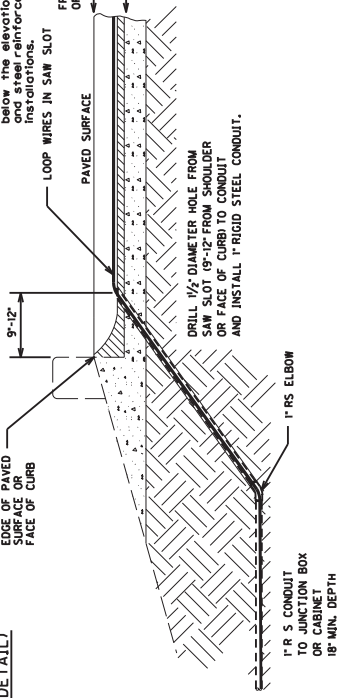


TWIST UNSHIELDED LOOP WIRES (UNSA 51-7) WITH 1/2" CORE TO THE JUNCTION BOX, CABINET OR POLE. SLOTTED WIRE CAN BE WIDEN TO 1/2" TO 5/8" TO HELP WITH THE INSTALLATION OF THE TWISTED WIRE.

SECTION B-B (TWIST NOTE)
-FOR CANCELING OUT CROSSTALK-



SECTION A-A (SAW SLOT DETAIL)



SAW CUT PLAN

LOOP WIRE PLAN

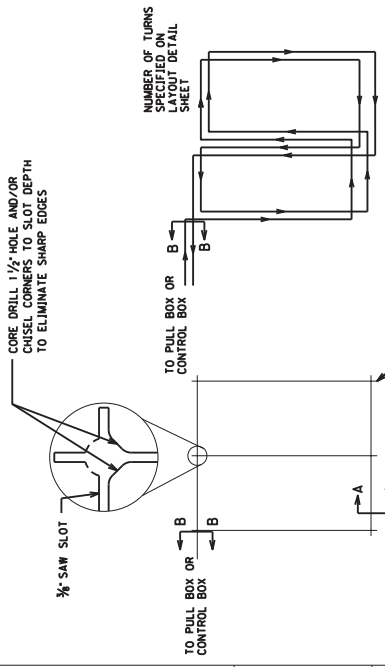
6'x6' LOOP

SAW SLOT EDGE OF PAVEMENT TRANSITION

CONSTRUCTION DETAILS FOR LOOP SAW SLOT AND FILL BID ITEM:
THE FOLLOWING IS A TYPICAL STEP BY STEP PROCEDURE FOR THE INSTALLATION OF A LOOP SAW SLOT:

- 1. CAREFULLY MAKE THE SLOT TO BE CUT, PERPENDICULAR TO THE FLOW OF TRAFFIC AND CENTERED IN THE LANE.
- 2. MAKE EACH SAW-CUT 1/2" INCH WIDE AND AT A DEPTH SUCH THAT THE TOP OF THE BACKER ROD IS A MINIMUM OF 4 INCHES BELOW THE SURFACE OF ASPHALT PAVEMENT.
- 3. DRILL A 1 1/2" INCH CORE HOLE AT EACH CORNER AND USE A CHISEL TO SMOOTH THE CORNERS TO PREVENT SHARP BENDS IN THE WIRE.
- 4. CLEAN ALL FOREIGN AND LOOSE MATTER OUT OF THE SLOTS, DRILLED CORES, AND THE WIRE. WASH THE SLOTS AND CORES WITH A PRESSURE WASHER. COMPLETELY DRY THE SLOTS, DRILLED CORES, AND WITHIN 1 FOOT ON ALL SIDES OF THE SLOTS.
- 5. MEASURE 9-12 INCHES FROM THE EDGE OF THE PAVED SURFACE (SHOULDER BREAK CONDUIT ADJACENT TO THE ROADWAY).
- 6. CLOSELY INSPECT ALL CUTS, CORES, AND SLOTS FOR JAGGED EDGES OR PROTRUSIONS PRIOR TO THE PLACEMENT OF THE WIRE. ALL JAGGED EDGES AND PROTRUSIONS SHOULD BE SMOOTHED OR CHISELED OFF.
- 7. INSTALL 1" RIGID STEEL CONDUIT IN 45 DEGREE DRILLED SLOT. CONNECT CONDUIT TO 1" RIGID STEEL CONDUIT ADJACENT TO THE ROADWAY WITH RIGID STEEL ELBOW.
- 8. PLACE THE LOOP WIRE SPICE-FREE FROM THE TERMINATION POINT. SEE SECTION B-B FOR WIRE SPICE DETAIL.
- 9. PUSH THE WIRE INTO THE SAW SLOT WITH A BLUNT OBJECT SUCH AS A WOODEN STICK. MAKE SURE THAT THE LOOP WIRE IS PUSHED FULLY TO THE BOTTOM OF THE SAW SLOT. SCREWDRIVERS SHALL NOT BE USED.
- 10. APPLY ALL DUCT SEALANT TO A MINIMUM OF 1 INCH DEEP INTO THE CORED 1/2" INCH HOLES IN THE SAW SLOT. THE WIRE SHOULD NOT BE ABLE TO MOVE WHEN THE WIRE IS IN THE SAW SLOT.
- 11. COVER THE ENCAPSULATED LOOP WIRE WITH A CONTINUOUS LAYER OF BACKER ROD ALONG THE ENTIRE LOOP AND HOME RUN SAW SLOTS SUCH THAT NO VOIDS ARE PRESENT BETWEEN THE LOOP AND BACKER ROD.
- 12. INSTRUCTIONS: ALLEVATE ALL AIR POCKETS AND REFILL LOW SPACES. THERE SHALL BE NO CONCAVE PORTION TO THE GROUT IN THE SAW SLOT. ANY EXCESS GROUT SHALL BE CLEANED FROM THE ROADWAY TO ALLEVATE TRACKING.
- 13. ENSURE THAT THE GROUT IS COMPLETELY CURED PRIOR TO SUBJECTING THE LOOP TO TRAFFIC. CURING TIME VARIES WITH TEMPERATURE AND HUMIDITY.

CORE DRILL 1 1/2" HOLE AND/OR CHISEL CORNERS TO SLOT DEPTH TO ELIMINATE SHARP EDGES



SAW CUT PLAN

WIRING PLAN

6'x30' QUADRAPOLE LOOP

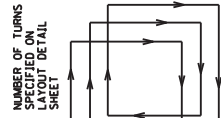
10/25/2021

LOOP DETAILS



PREFORMED LOOP CROSS SECTION

PREFORMED LOOPS SHALL BE CONSTRUCTED WITH 11/16" OR SMALLER HEAVY DUTY REINFORCED RUBBER HOSE (CLASS A OIL RESISTANT). THE TEE SHALL BE CONSTRUCTED OF HEAVY DUTY HIGH TENSILE STRENGTH STEEL. THE RUBBER HOSE SHALL BE WATER RATED #16 THIN OR TFFAL.

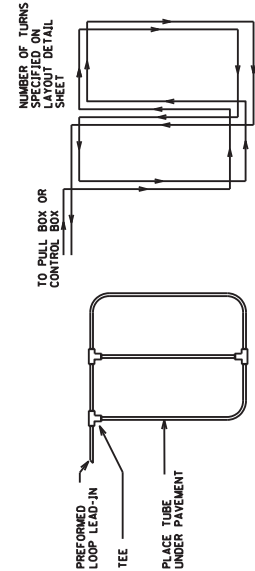


PREFORMED LOOP DIAGRAM

LOOP WIRE PLAN

6'x6' PREFORMED LOOP

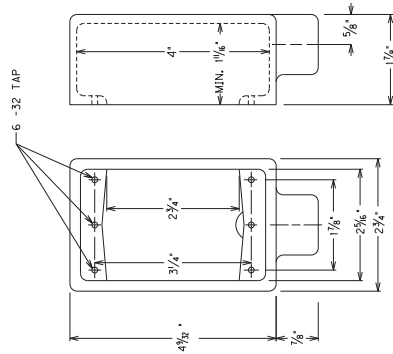
PREFORMED LOOP LEAD-IN SHALL BE TWISTED WITH THREE TO FIVE TURNS PER FOOT UNTIL TERMINATED AT FIELD SHIELDED CABLE.



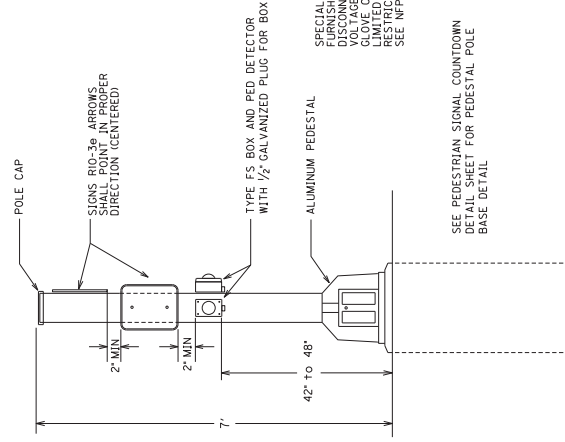
PREFORMED LOOP DIAGRAM

LOOP WIRE PLAN

6'x30' QUADRAPOLE PREFORMED LOOP

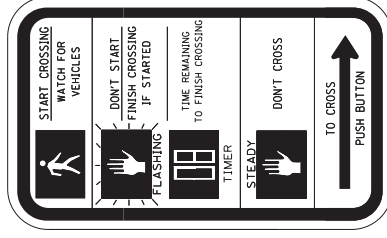


TYPE FS BOX FOR PED DETECTOR FOR USE WITH STEEL STRAIN POLE, WOOD POST, PEDESTAL, AND WOOD POLE

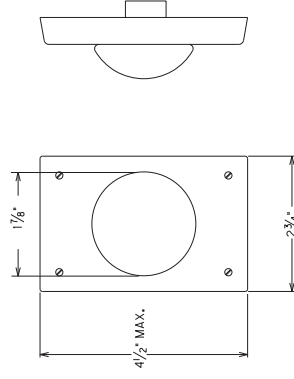


SPECIAL NOTE FOR TRANSFORMER DOOR:
FURNISH A SHOCK HAZARD WARNING STICKER ON
DISCONNECT WITH THE FOLLOWING INFORMATION:
VOLTAGE (120 VOLTS)
CURRENT CLASS (0)
LIMITED APPROACH BOUNDARY (42 IN)
RESTRICTED APPROACH BOUNDARY (CONTACT)
SEE NFPA 70E FOR ADDITIONAL PPE REQUIRED

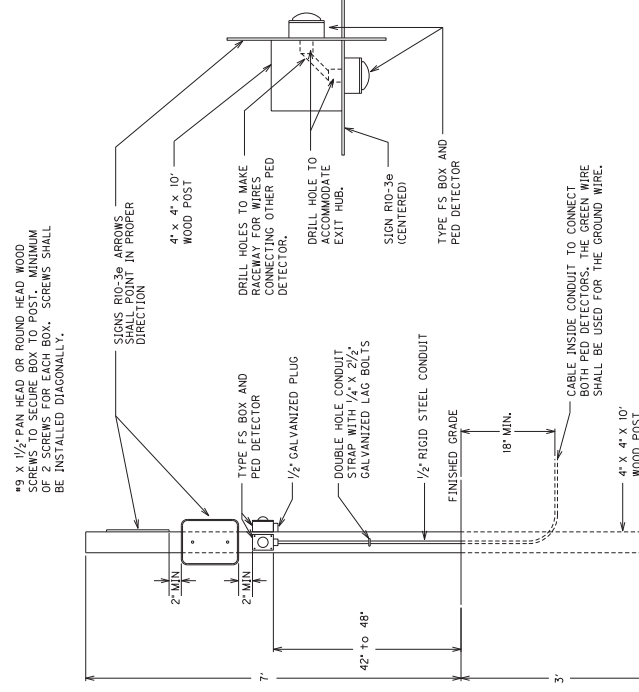
SEE PEDESTRIAN SIGNAL COUNTDOWN
DETAIL SHEET FOR PEDESTAL POLE
BASE DETAIL



R10-3e SIGN (9" X 15")
FOR COUNTDOWN ONLY



PED DETECTOR



PED DETECTOR ON WOOD POST DETAIL

PEDESTRIAN DETECTOR DETAIL

(6) #6 VERTICAL REINFORCING BARS EQUALLY SPACED

3" CLR

#3 TIE OR SPIRAL BARS TO BE 12" ON CENTER



Diagram illustrating the components of the HEBC-JW-RYC connector assembly:

- LOAD SIDE ASSEMBLY**: The component on the left, featuring a tapered, multi-segmented body and a central pin.
- BREAKAWAY POINT**: The central joint where the Load Side Assembly and Line Side Assembly meet.
- LINE SIDE ASSEMBLY**: The component on the right, featuring a cylindrical body with horizontal ridges and a central pin.

TYPE HEBC-JW-RYC CONNECTOR SHOWN

8/19/2021

PEDESTRIAN SIGNAL COUNTDOWN DETAIL

NOTES:

- ALL CONDUITS USED FOR THE TELEPHONE, GROUNDING, SPARE, AND SERVICE THAT ARE INSTALLED IN THE POLE BASE ARE INCIDENTAL TO BID ITEM "23157EN". THIS INCLUDES PROVIDING A MINIMUM OF 24 INCHES OF CONDUIT PAST THE EDGE OF THE CONCRETE POLE BASE.
- ALL CONDUITS SHALL BE INSTALLED BETWEEN 4 TO 6 INCHES ABOVE THE CONCRETE PAD, AND THEY CANNOT EXCEED THE 6 INCH HEIGHT.
- FOR POLE BASE DEPTH SEE CHART IN SECTION 723 OF THE KENTUCKY STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION.
- OVERHEAD SERVICE WIRES SHALL BE INSTALLED ON THE EXTERIOR OF THE POLE IN A 1" RIGID STEEL CONDUIT WITH WEATHERHEAD, OR ON THE INSIDE THE STEEL STRAIN POLE IN FLEXIBLE CONDUIT.
- UNDERGROUND SERVICE WIRES SHALL BE INSTALLED IN 1" RIGID STEEL CONDUIT AS SHOWN ON THE CONTROLLER CABINET DETAIL SHEET.
- PROVIDE 2 FOOT COIL IN SIGNAL CABLES TO PREVENT WATER ACCESS TO WEATHERHEADS FOR EACH SIGNAL HEAD.
- 5/2 MIN. SAG FOR ALL SPANS OR OTHERWISE NOTED
- 17' - 19' & CONFORM TO HIGHWAY 107-POLES (P.O.D.N. LATEST EDITION)

STEEL STRAIN POLE BASE WITH POLE GROUND DETAIL

1/4" SCHEDULE 80 PVC CONDUIT; STUBBED OUT WITH END BELL BUSHING FOR GROUNDING CONDUCTOR

3" CLR

1" CHAMFER

HEX NUT AND WASHER FOR PLUMBING OR RAKING POLE (TYP)

CONCRETE

1/4" SCHEDULE 80 PVC CONDUIT; STUBBED OUT WITH END BELL BUSHING AND CAPPED AT BOTH ENDS.

CONCRETE GROUNDING REQUIREMENTS:

CONTRACTOR SHALL PROVIDE A MINIMUM OF 6 INCHES OF GROUND ROD FOR EACH DISCONNECT, CABINET OR POLE.

POLE GROUND - GROUND WIRE SHALL COME FROM THE GROUND ROD THROUGH THE PVC CONDUIT, CONNECTING TO THE POLE AND BUSHING. EACH RIGID STEEL GROUNDING BUSHING.

ALL GROUND RODS SHALL BE 24" FROM THE CONCRETE POLE BASE.

POLE MANUFACTURER AND POLE MOUNTED CABINET GROUNDING DETAILS

STEEL STRAIN POLE BASE WITH SERVICE POLE

3" CLR

18"

4" - 6"

FINISHED GRADE

1" CHAMFER

STEEL STRAIN POLE

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18"

4" - 6"

FINISHED GRADE

1" CHAMFER

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STEEL STRAIN POLE BASE WITH SERVICE POLE

3" CLR

18"

4" - 6"

FINISHED GRADE

1" CHAMFER

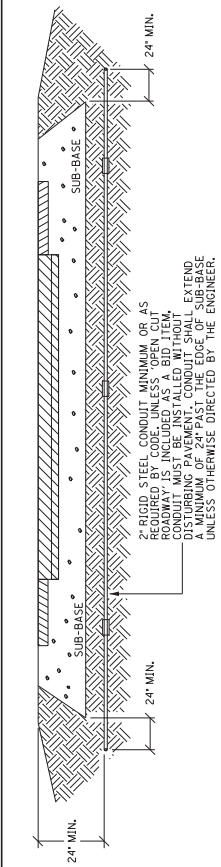
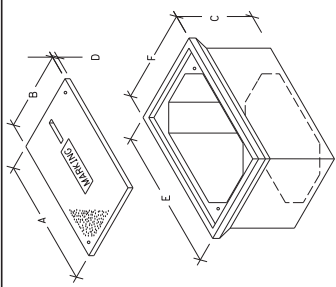
STEEL STRAIN POLE

1/4" SCHEDULE 80 PVC CONDUIT; STUBBED OUT WITH END BELL BUSHING FOR GROUNDING CONDUCTOR

3

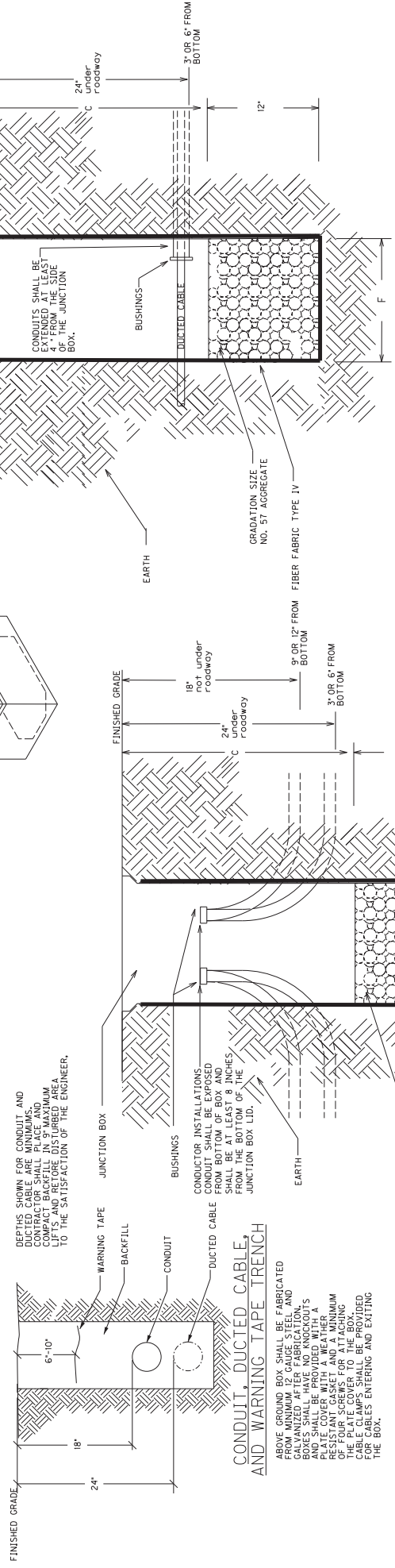
JUNCTION BOX DIMENSIONS (NOMINAL)						
	A	B	C	D	E	F
TYPE A	23"	14"	27"	2"	25"	15"
TYPE B	18"	11"	12"	1 1/2"	20"	13"
TYPE C	36"	24"	30"	3"	38"	26"

* MINIMUM
NOTE: STACKABLE BOXES ARE PERMITTED
JUNCTION BOX



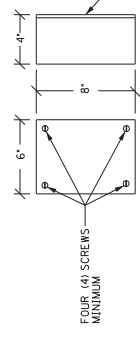
CONDUIT INSTALLATION UNDER EXISTING PAVEMENT DETAIL

DEPTHS SHOWN FOR CONDUIT AND DUCTED CABLE ARE MINIMUMS. CONTRACTOR SHALL PLACE AND COMPACT EXISTING PAVEMENT LIFTS AND BEFORE DISTURBED AREA TO THE SATISFACTION OF THE ENGINEER.

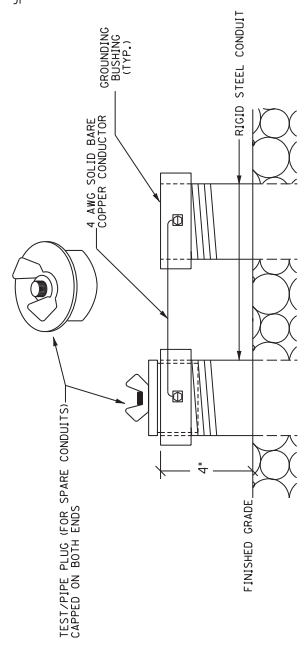


CONDUIT, DUCTED CABLE, AND WARNING TAPE TRENCH

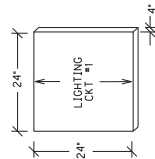
ABOVE GROUND BOX SHALL BE FABRICATED FROM MINIMUM 16 GAUGE STEEL AND SHALL BE PROVIDED WITH A RESISTANT GASKET AND A MINIMUM OF FOUR (4) SCREWS FOR ATTACHING THE BOX TO THE CONDUIT. CABLE CLAMP SHALL BE PROVIDED FOR CABLES ENTERING AND EXITING THE BOX.



ABOVE GROUND BOX

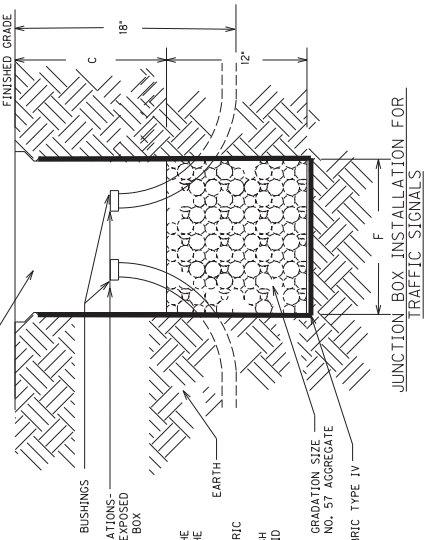


JUNCTION BOX INSTALLATION FOR CONVENTIONAL LIGHTING



BEFORE THE INSTALLATION OF THE #57 AGGREGATE AND JUNCTION BOX, THE CONTRACTOR SHALL INSTALL GRATELY FILTER FABRIC TYPE IV IN THE TRENCH. THE GRATELY FILTER FABRIC SHALL BE CONTINUOUSLY ADHERED TO THE EXTERIOR OF THE BOX WITH ADHESIVE. ANY LOCATIONS WHERE CONDUITS ENTER THE BOX, THE FABRIC SHALL BE CUT ONLY AS MUCH AS NECESSARY TO ALLOW CONDUITS TO ENTER THE BOX. THE FABRIC SHALL BE INCIDENTAL TO BID ITEMS 4811, 20392NS835, OR 20392NS835.

JUNCTION BOX INSTALLATION FOR HIGHMAST LIGHTING

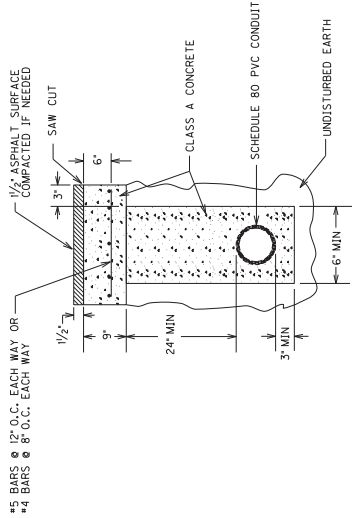


JUNCTION BOX INSTALLATION FOR TRAFFIC SIGNALS

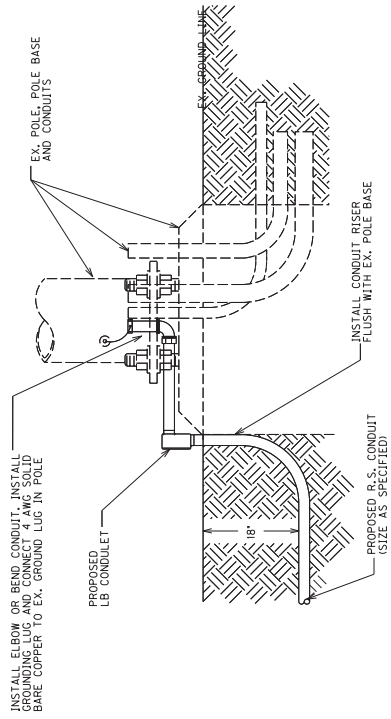
TEST/PIPE PLUG(FOR SPARE CONDUITS) AND GROUNDING DETAIL CONCRETE CABLE MARKERS

TRAFFIC SIGNAL AND ROADWAY LIGHTING
JUNCTION BOX AND CONDUIT DETAILS

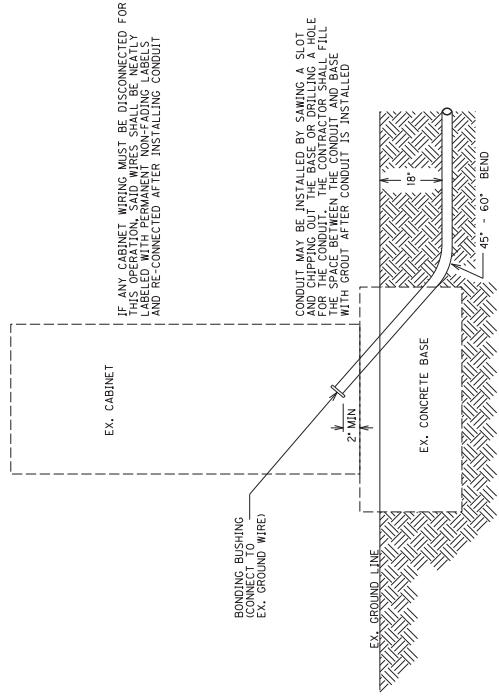
COUNTY OF	ITEM NO.	SHEET NO.



OPEN CUT PAVEMENT DETAIL



CONDUIT INSTALLATION IN EX. POLE BASE



CONDUIT INSTALLATION IN EX. CABINET BASE

COUNTY OF	ITEM NO.	SHEET NO.

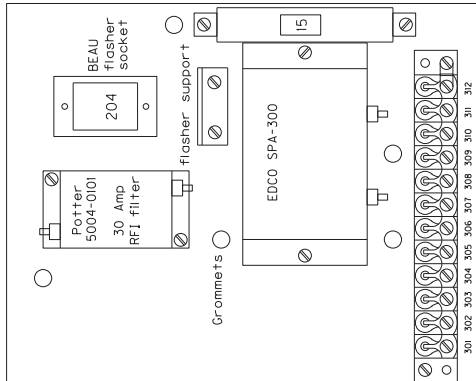
NOTES:

ALL CONDUITS USED FOR THE TELEPHONE, GROUNDING, SPARES, AND SERVICE (INCLUDING FLEX CONDUIT IF IT IS RUN INSIDE THE POLE) THAT ARE INSTALLED ON THE POLE AND/OR IN THE CABINET BASE ARE INCIDENTAL TO THE PROJECT. ALL CONDUITS SHALL BE A MINIMUM OF 24 INCHES OF CONDUIT PAST THE EDGE OF THE CONCRETE PAD.

ALL CONDUITS SHALL BE INSTALLED BETWEEN 4 TO 6 INCHES ABOVE THE CONCRETE PAD, AND THEY CANNOT EXCEED THE 6 INCH HEIGHT.

SERVICE WIRES FOR BASE MOUNTED CABINETS MAY BE INSTALLED IN FLEXIBLE CONDUIT FROM THE DISCONNECT TO THE 1" RIGID STEEL CONDUIT INSIDE THE POLE BASE. USE THE PROPER CONNECTIONS FOR TRANSITION FROM FLEXIBLE CONDUIT TO RIGID CONDUIT. FLEXIBLE CONDUIT SHALL BE INSTALLED TO THE BACK OF THE POLE ON THE ABILITY TO ACCESS THE GROUNDING SYSTEM.

Beacon Control Cabinet
Backpanel Layout



SPECIAL NOTE:
DISCONNECT, SAFETY SWITCH AND METER BASE SHALL BE RATED FOR COMMERCIAL USE. DISCONNECTS (SAFETY SWITCH AND METER BASE) SHALL BE ALUMINUM ENCLOSURE. THE CONTRACTOR SHALL BE RESPONSIBLE TO CALCULATE THE MAXIMUM AVAILABLE FAULT CURRENT FOR THE DISCONNECT. THE CONTRACTOR SHALL BE INSTALLED IN THE DISCONNECT WITH THE SYMMETRICAL RMS AMPERES AND THE DATE THAT THIS FAULT CURRENT IS CALCULATED. THE STICKER SHALL BE PLACED ON THE DISCONNECT WITH .007 THICKNESS WITH UV WHITE POLYCARBONATE MATERIAL, AND WITH MC78 PRESSURE SENSITIVE ADHESIVE OR APPROVED EQUAL.

THE BOTTOM HEIGHT OF THE LOWER SIGNAL FACE HOUSING SHALL NOT BE LESS THAN 17" AND NOT MORE THAN 19" ABOVE THE PAVEMENT GRADE OF THE CENTER OF THE ROADWAY.

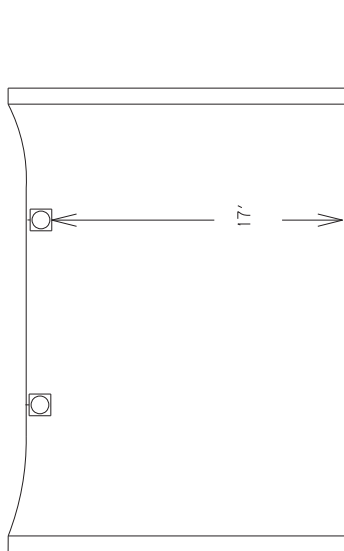
GROUNDING REQUIREMENTS:

CONTRACTOR SHALL PROVIDE A MINIMUM OF 6 INCHES OF GROUND WIRE FOR TESTING PRIOR TO CONNECTING THE WIRE TO ANY DISCONNECT, CABINET OR POLE.

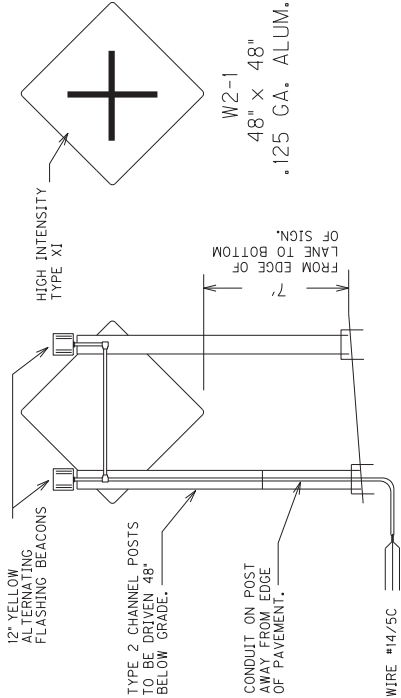
LEAVE TOP OF GROUND RODS EXPOSED FOR ELECTRICAL INSPECTION.

SERVICE GROUND - GROUND WIRE SHALL COME FROM THE GROUND ROD THROUGH THE PVC CONDUIT, CONNECTING TO THE DISCONNECT AND THEN TO EACH RIGID STEEL OR SIGNAL HOUSING. IF GROUND WIRE IS RUN ON THE INSIDE OF THE SIGNAL HOUSING, IT SHALL BE INSTALLED TO THE DISCONNECT AND POLE CUT OUTS. THEY SHALL BE INCIDENTAL TO BID ITEM #431.

CABINET GROUND - GROUND WIRE SHALL COME FROM THE GROUND ROD THROUGH THE PVC CONDUIT, CONNECTING TO THE CABINET GROUND BUS.

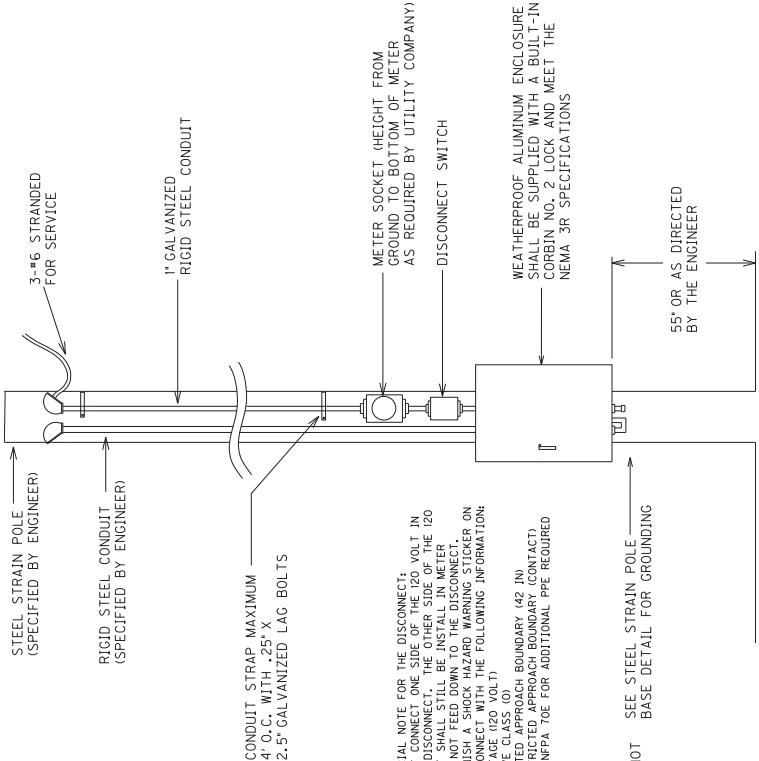


BEACON FLASHER SPAN DETAIL



ADVANCE WARNING BEACON DETAIL

BEACON FLASHER CONTROL CABINET DETAIL

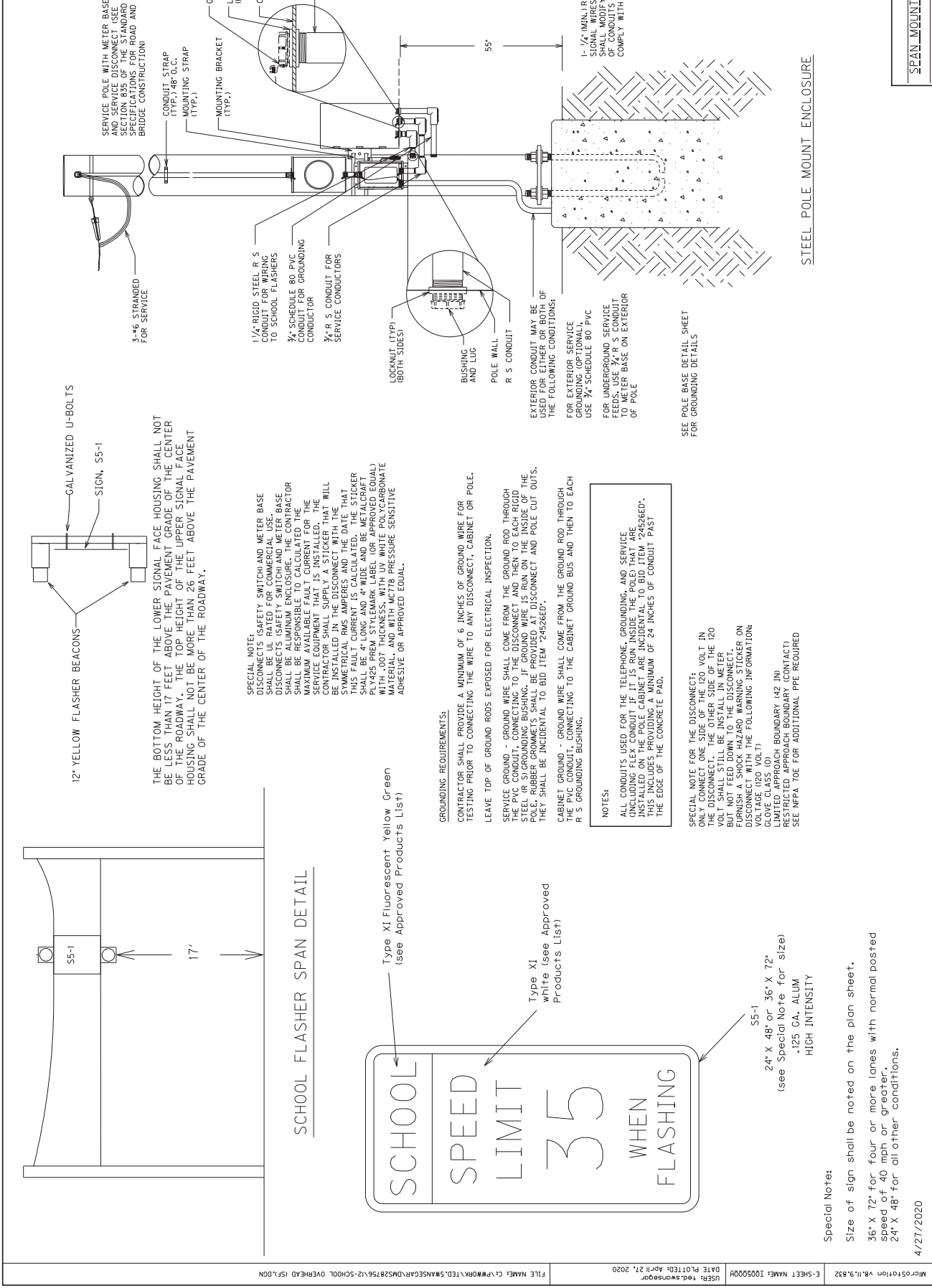


SPECIAL NOTE FOR THE DISCONNECT:
ONLY CONNECT ONE SIDE OF THE 120 VOLT IN THE DISCONNECT. THE OTHER SIDE OF THE 120 VOLT SHALL BE CONNECTED TO THE DISCONNECT, BUT NOT FEED DOWN TO THE DISCONNECT. FURNISH A SHOCK HAZARD WARNING STICKER ON THE DISCONNECT WITH THE FOLLOWING INFORMATION:
DANGER - LIVE ELECTRICAL PARTS
VOLTAGE (120 VOLT)
UNLIMITED APPROACH BOUNDARY (42 IN)
RESTRICTED APPROACH BOUNDARY (CONTACT)
SEE NFPA 70E FOR ADDITIONAL PPE REQUIRED

SEE STEEL STRAIN POLE
BASE DETAIL FOR GROUNDING

55" OR AS DIRECTED
BY THE ENGINEER

COUNTY OF	ITEM NO.	SHEET NO.



SPAN MOUNTED SCHOOL FLASHER DETAIL

Special Note:

Size of sign shall be noted on the plan sheet.
 36" X 72" for four or more lanes with normal posted speed of 40 mph or greater.
 24" X 48" for all other conditions.

4/27/2020