

FILE NAME: G:\USERS\TED.SWANEGAR\DESKTOP\6901801\NEW\FOLDER\T00100SU.DGN

USER: ted.swanegar  
DATE PLOTTED: September 25, 2019

E-SHEET NAME: T00100SU

MicroStation v8,11,9,832

TRAFFIC SIGNAL ESTIMATE OF QUANTITIES

| TOTAL | UNITS  | CODE       | ITEM DESCRIPTION                       |
|-------|--------|------------|--|
| 40    | LIN FT | 4792       | CONDUIT 1 INCH                         |
| 110   | LIN FT | 4795       | CONDUIT 2 INCH                         |
| 7     | EACH   | 4811       | ELECTRICAL JUNCTION BOX TYPE B         |
| 1,600 | LIN FT | 4820       | TRENCHING AND BACKFILLING              |
| 852   | LIN FT | 4830       | LOOP WIRE                              |
| 1,860 | LIN FT | 4844       | CABLE-NO. 14/5C                        |
| 1,880 | LIN FT | 4850       | CABLE-NO. 14/1 PAIR                    |
| 352   | LIN FT | 4895       | LOOP SAW SLOT AND FILL                 |
| 1     | EACH   | 24955ed    | REMOVE SIGNAL EQUIPMENT                |
| 1     | EACH   | 20390NS835 | INSTALL COORDINATING UNIT              |
| 1     | EACH   | 2039INS835 | ELECTRICAL JUNCTION BOX TYPE A         |
| 8     | EACH   | 20408ES835 | INSTALL LED BEACON-12 IN               |
| 110   | LIN FT | 21543EN    | BORE AND JACK CONDUIT                  |
| 1600  | LIN FT | 24900EC    | PVC CONDUIT - 1 1/4 INCH - SCHEDULE 80 |
| 60    | LIN FT | 24901EC    | PVC CONDUIT - 2 INCH - SCHEDULE 80     |
| 1     | EACH   | 24908EC    | INSTALL SIGNAL CONTROLLER-TY ATC       |
| 6     | SQFT   | 6406       | SBM ALUM SHEET SIGNS .080 IN           |
| 320   | SQFT   | 6407       | SBM ALUM SHEET SIGNS .125 IN           |
| 90    | LF     | 6410       | STEEL POST TYPE I                      |
| 4     | EACH   | 21596ND    | GMSS TYPE D                            |
| 1.07  | CUYDS  | 6490       | CLASS A CONCRETE FOR SIGNS             |
| 2     | EACH   | 21373ND    | REMOVE SIGN                            |

THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION, AND OTHER SPECIAL NOTES AND SPECIFICATIONS WILL APPLY ON THIS PROJECT. SEE SECTION 706, 723, AND 112 FOR MEASUREMENT AND OTHER DETAILS. SEE SECTION 602 FOR SPRIAL REINFORCEMENT SPLICING.

THE CONTRACTOR SHALL MAKE AN INSPECTION OF THE PROJECT SITE PRIOR TO SUBMITTING A BID AND SHALL BE THOROUGHLY FAMILIARIZED WITH EXISTING CONDITIONS. SUBMISSIONS OF A BID WILL BE CONSIDERED AN AFFIRMATION OF THIS INSPECTION HAVING BEEN COMPLETED.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PICKING UP INSTALL ITEMS FROM THE FRANKFORT POLE YARD AND DELIVERING THESE ITEMS TO THE SITE. THE CONTRACTOR SHALL CONTACT FRANKFORT POLE YARD PERSONNEL (502-782-8994/ 502-330-8153 OR EMAIL KIM.STAMPER@KY.GOV) AND ARRANGE TO PICK UP INSTALL ITEMS A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO ARRIVAL. THE CONTRACTOR SHALL ALSO CONTACT THE SIGNAL SYSTEM BRANCH (502-782-5543/502-782-5547 OR EMAIL JOE.THOMPSON@KY.GOV/ LARRY.IRISH@KY.GOV) TO ARRANGE PROGRAMMING OF THE ROUTER USED FOR COMMUNICATION IN THE TRAFFIC SIGNAL A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO ARRIVAL. FAILURE TO PROVIDE POLE YARD PERSONNEL/ SIGNAL SYSTEM BRANCH THIS ADVANCE NOTICE COULD RESULT IN LONG DELAYS OR REFUSAL TO DISTRIBUTE EQUIPMENT UPON ARRIVAL.

ADD SENTENCE TO SECTION 835.15: ALL WIRE SHALL HAVE WORDING ADDED TO THE OUTER JACKET THAT STATES : "PROPERTY OF KENTUCKY TRANSPORTATION CABINET 502 564 0501".

CONTACT DISTRICT TRAFFIC ENGINEER AND CENTRAL OFFICE ENGINEER 2 WEEKS PRIOR TO TURN FOR THIS INSTALLATION. THE DISTRICT ENGINEER IS LINZY BREFELD AND CENTRAL OFFICE ENGINEER IS JOE CARTER.

MEASUREMENT NOTES THAT ARE IN ADDITION TO SECTION 723

INSTALL SIGNAL CONTROLLER TYPE ATC. THE DEPARTMENT WILL MEASURE THE QUANTITY AS EACH INDIVIDUAL UNIT INSTALLED. THE DEPARTMENT WILL NOT MEASURE THE CONCRETE BASE, MOUNTING THE CABINET, CONNECTING THE SIGNAL AND DETECTORS, EXCAVATION, BACKFILLING, RESTORATION, ANY NECESSARY POLE MOUNTING HARDWARE, ELECTRIC SERVICE, ELECTRICAL INSPECTION FEES, AND REQUIRED BUILDING FEES INVOLVING UTILITY SECONDARY/PRIMARY SERVICE FOR PAYMENT AND WILL CONSIDER THEM INCIDENTAL TO THIS ITEM OF WORK. THE DEPARTMENT WILL ALSO NOT MEASURE CONNECTING THE INDUCTION LOOP AMPLIFIERS, PEDESTRIAN ISOLATORS, LOAD SWITCHES, MODEL 400 MODEM CARD FOR PAYMENT AND WILL CONSIDER THEM INCIDENTAL TO THIS ITEM OF WORK. THE DEPARTMENT WILL ALSO NOT MEASURE FURNISHING AND INSTALLING ELECTRICAL SERVICE CONDUCTORS, CONDUITS, ANCHORS, METER BASE, FUSED CUTOUT, FUSES, GROUND RODS, GROUND LUGS, AND GROUND WIRES FOR PAYMENT AND WILL CONSIDER THEM INCIDENTAL TO THIS ITEM OF WORK.

TYPE D BREAKAWAY SIGN SUPPORTS. THE DEPARTMENT WILL MEASURE TYPE D SIGN SUPPORTS AS EACH SUPPORT INSTALLED.

SIGN POSTS. THE DEPARTMENT WILL MEASURE THE FINISHED IN-PLACE LENGTH OF SIGN POSTS IN LINEAR FEET, FROM THE TOP OF THE ANCHOR, OR TOP OF THE SIGN SUPPORT, TO THE TOP OF THE SIGN POST. LAPS, CUTOFFS, EXCESS, AND WASTE WILL NOT BE MEASURED FOR PAYMENT. THE DEPARTMENT WILL NOT MEASURE CONDUIT FROM JUNCTION BOX TO SIGNAL HEADS ON SIDE MOUNTED SIGN, CONDUIT FITTINGS AND STRAPS, OR ANY ASSOCIATED SIGN MOUNTING HARDWARE AND WILL CONSIDER THESE INCIDENTAL TO THIS ITEM OF WORK.

SIGNS. THE DEPARTMENT WILL MEASURE THE FINISHED IN-PLACE AREA OF SIGNS IN SQUARE FEET.

CLASS A CONCRETE FOR SIGNS. THE DEPARTMENT WILL MEASURE THE CLASS A CONCRETE USED IN CONJUNCTION WITH TYPE D BREAKAWAY SIGN SUPPORT INSTALLATIONS IN CUBIC YARDS. ANY CONCRETE THAT IS REQUIRED AS BACKFILL DUE TO HITTING ROCK DURING A STANDARD INSTALLATION SHALL BE INCIDENTAL TO THE BID ITEM STEEL POST TYPE I, AND SOIL STABILIZERS WILL NOT BE REQUIRED.

REMOVE SIGN. THE DEPARTMENT WILL CONSIDER ALL SIGNS ATTACHED TO ONE OR MORE CONNECTED POSTS AS A SINGLE SIGN. THE DEPARTMENT WILL MEASURE AS EACH SIGN ASSEMBLY REMOVED AND NOT EACH INDIVIDUAL SIGN REMOVED.

CONSTRUCTION AND MEASUREMENT NOTES THAT ARE CONTRARY TO SECTION 723

SUBSECTION: 03.13 LOOP INSTALLATION.  
REVISION: REPLACE FIRST SENTENCE NOTE WITH THE FOLLOWING:  
TWIST UNSHIELDED LOOP WIRE (IMSA 51-7) WITH 3 TO 5 TURNS FROM THE START OF HOMERUN TO THE INSIDE CONDUIT, JUNCTION BOX, CABINET, OR POLE. TWIST UNSHIELDED LOOP WIRES (IMSA 51-7) WITH 3 TO 5 TURNS PER FOOT FROM THE START OF THE HOMERUN TO THE JUNCTION BOX, CABINET, OR POLE. SLOT CAN BE WIDEN TO 1/2" TO 5/8" TO HELP WITH THE INSTALLATION OF THE TWISTED WIRE.

SUBSECTION: 04.22 REMOVE SIGNAL EQUIPMENT. (CONSTRUCTION ONLY)  
REVISION: REPLACE THE PARAGRAPH WITH THE FOLLOWING:  
THE DEPARTMENT WILL MEASURE THE QUANTITY BY EACH. THE DEPARTMENT WILL NOT MEASURE BACKFILLING AND THE DISPOSAL OR TRANSPORTATION OF EQUIPMENT AND MATERIALS ASSOCIATED WITH ANY STRUCTURAL OR ELECTRICAL COMPONENT OF THE SIGNAL SYSTEM INCLUDING, BUT NOT LIMITED TO POLE BASES, POLES, JUNCTION BOXES, CABINETS, AND WOOD POLES FOR PAYMENT AND WILL CONSIDER THEM INCIDENTAL TO THIS ITEM OF WORK.

NOTES: Signs and Posts. Before beginning installation, the Contractor shall furnish to the Engineer drawings, descriptions, manufacturer's cuts, etc. covering all material to be used. Mill test reports for beams, steel panels, and each different gauge of aluminum or steel sheeting used must be submitted to the Division of Construction and approved prior to erection.

All hardware for the erection of sheeting signs shall be rust resistant: stainless steel, zinc coated, aluminum, or an Engineer approved material. All beams and posts shall be of sufficient lengths to extend from the top of the sign to the required embedment in the anchor. Splicing of the sign post shall NOT be allowed. For installations in soil, Type I steel posts shall be mounted on either a standard anchor, with soil stabilizer plate, or on a Type D breakaway sign support. Refer to Sheeting Sign Detail Sheet 1 of 2 for installation details for a standard anchor with soil stabilizer plate. When installing a standard anchor with soil stabilizer plate, if solid rock is encountered, the Contractor shall drill a hole to the required depth into the rock, install the anchor into the hole, and backfill the anchor post with concrete, or other method approved by the Engineer. The cost shall be incidental to Type I steel post, and a soil stabilizer plate will not be required. Refer to Standard Drawing RGX-065, current edition, for installation details of Type D breakaway sign supports. Approved manufacturers for Type D breakaway sign supports have been placed on the list of approved materials. All hardware including, but not limited to, sign post anchors, soil stabilizer plates, nuts, bolts, washers, fasteners, fittings, and bracing, or any other incidentals necessary to erect the signs shall be furnished by the Contractor and will be incidental to the work.

New concrete bases, posts, support anchors, signs, etc. are to be installed prior to dismantling any existing sign(s). The removal of existing signs, posts, and support anchors is to be performed concurrently with the installation of new signs, posts, and support anchors, under the same lane closure during the same work shift. Completely remove existing sign support anchors or remove them to a minimum depth of six (6) inches below existing ground line and backfill the disturbed area to the existing ground line.

All manufactured sheeting signs shall be free of visual defects including, but not limited to: cracks, tears, ridges, humps, discoloration, etc., and defective signs shall be replaced at no additional cost to the Department.

All sign blanks shall be hole punched by the manufacturer for either horizontal or vertical installation. Attach all aluminum sheeting signs to square post with 3/8" all steel rivets and nylon washers.

Post will be attached to the anchor with 5/16" corner bolts and 5/16" flanged nuts, and all post and anchor cuts shall be treated with a Cold Galvanizing Compound spray.

Sign posts shall be erected vertically by using a bubble level. The tolerance shall be a two (2) degree angle in any direction. For locations where there are more than one sign is mounted beside each other, the posts shall be spaced to provide approximately six inches (6") of spacing between sings.

DESIGNED BY: TAS  
DATE SUBMITTED: 9-20-2019

Commonwealth of Kentucky  
DEPARTMENT OF HIGHWAYS  
COUNTY OF  
  
KENTON

PROJECT \_\_\_\_\_  
NUMBERS: \_\_\_\_\_

TRAFFIC SIGNAL  
ESTIMATE OF QUANTITIES  
MEASUREMENT, CONST, AND MISC NOTES

8-20-2019

SPECIAL NOTE:  
DISCONNECTS (SAFETY SWITCH) AND METER BASE SHALL BE UL RATED FOR COMMERCIAL USE. DISCONNECTS (SAFETY SWITCH) AND METER BASE SHALL BE ALUMINUM ENCLOSURE. THE CONTRACTOR SHALL BE RESPONSIBLE TO CALCULATED THE MAXIMUM AVAILABLE FAULT CURRENT FOR THE SERVICE EQUIPMENT THAT IS INSTALLED. THE CONTRACTOR SHALL SUPPLY A STICKER THAT WILL BE INSTALLED IN THE DISCONNECT WITH THE SYMMETRICAL RMS AMPERES AND THE DATE THAT THIS FAULT CURRENT IS CALCULATED. THE STICKER SHALL BE 4" LONG AND 4" WIDE AND BE METALCRAFT PLY425 PREM STYLEMARK LABEL (OR APPROVED EQUAL) WITH .007 THICKNESS, WITH UV WHITE POLYCARBONATE MATERIAL, AND WITH MC778 PRESSURE SENSITIVE ADHESIVE OR APPROVED EQUAL.

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 BID ITEM \*4931\*. THIS INCLUDES PROVIDING 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 R S CONDUIT. FLEXIBLE CONDUIT SHALL NOT BLOCK THE HAND HOLE OR THE ABILITY TO ACCESS THE GROUNDING SYSTEM.

SERVICE POLE WITH METER BASE AND SERVICE DISCONNECT (SEE SECTION 835 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION)

3-#6 STRANDED FOR SERVICE

MOUNTING BRACKET (TYP.)

MOUNTING STRAP (TYP.)

1" RIGID STEEL (R S) CONDUIT FOR TELEPHONE SERVICE/SERVICE (IF NECESSARY)

3/4" SCHEDULE 80 PVC CONDUIT WITH END BELL BUSHING FOR GROUNDING CONDUCTOR

1" R S CONDUIT FOR SERVICE CONDUCTORS

LOCKNUT (TYP.) (BOTH SIDES)

BUSHING AND LUG

POLE WALL

R S CONDUIT

EXTERIOR CONDUIT MAY BE USED FOR EITHER OR BOTH OF THE FOLLOWING CONDITIONS:

FOR EXTERIOR SERVICE GROUNDING (OPTIONAL), USE 3/4" SCHEDULE 80 PVC

FOR UNDERGROUND SERVICE FEEDS, USE 1" R S CONDUIT TO METER BASE ON EXTERIOR OF POLE

SEE POLE BASE DETAIL SHEET FOR GROUNDING DETAILS.

BLADE STYLE ANTENNA AND ROUTER INSTALLATION- INSTALL ON THE THE BACKSIDE OF THE CABINET OPPOSITE THE MAIN POWER INSTALLATION. THE CONNECTION TO THE TOP OF THE CABINET SHALL BE WATER TIGHT AND BE FLUSH WITH THE TOP OF THE CABINET. ALL WIRING SHALL BE RUN DOWN THE SIDE OF THE THE 19TH RACK. THE ROUTER SHALL BE INSTALLED ON THE PROVIDED SHELF IN THE BACK OF THE CABINET.

GROUNDING BUSHING

LOCKNUT (TYP.) (BOTH SIDES)

CABINET HOUSING

R S CONDUIT

LB CONDULET

GROUND ROD FOR CABINET INSTALLED BELOW GROUND (LEAVE TOPS EXPOSED FOR ELECTRICAL INSPECTION)

POLE MOUNTED CABINETS:  
2- 2" (MIN.) R S CONDUITS FOR SIGNAL WIRES. CONTRACTOR SHALL MODIFY SIZE/QUANTITY OF CONDUITS IN ORDER TO PROVIDE 1 SPARE CONDUIT AND COMPLY WITH NEC REQUIREMENTS

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 (R S) GROUNDING BUSHING. IF GROUND WIRE IS RUN ON THE INSIDE OF THE POLE, RUBBER GROMMETS SHALL BE PROVIDED AT 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.

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

3/4" SCHEDULE 80 PVC GROUNDING CONDUIT WITH END BELL BUSHING.

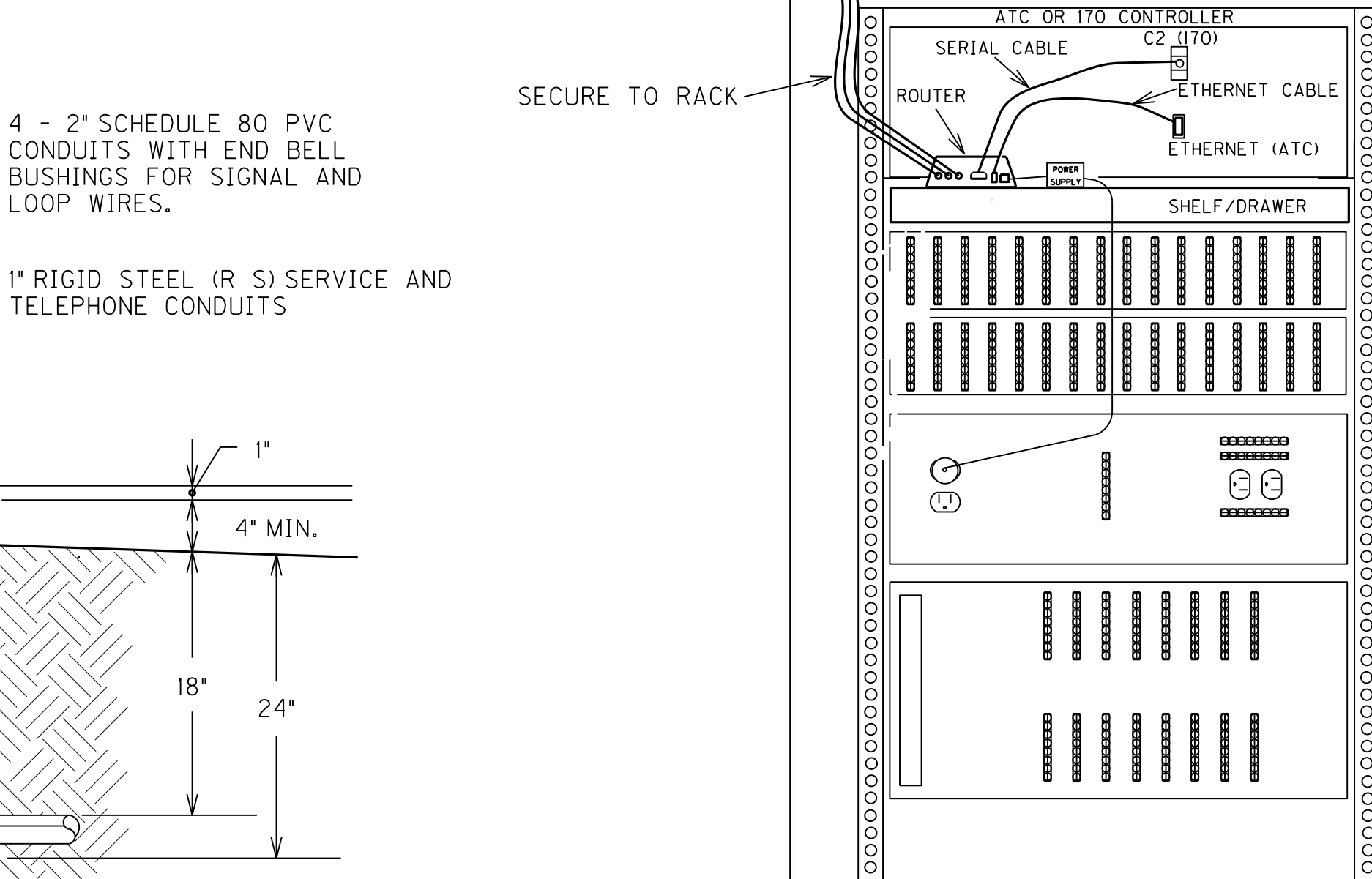
ANCHOR BOLT (TYP.)

1" CHAMFER

FINISH GRADE TO DRAIN AWAY FROM ENCLOSURE

BLADE STYLE ANTENNA AND ROUTER INSTALLATION: INSTALL ON THE THE BACKSIDE OF THE CABINET OPPOSITE THE MAIN POWER INSTALLATION. THE CONNECTION TO THE TOP OF THE CABINET SHALL BE WATER TIGHT AND BE FLUSH WITH THE TOP OF THE CABINET. ALL WIRING SHALL BE RAN DOWN THE SIDE OF THE THE 19TH RACK. THE ROUTER SHALL BE INSTALLED ON THE PROVIDE SHELF IN THE BACK OF THE CABINET.

SECURE TO RACK



ROUTER INSTALLATION  
(REAR OF CABINET)

SECTION A-A

CONCRETE PAD

ANCHOR BOLT (TYP.)

ENCLOSURE BASE

GROUNDING CONDUCTOR

1/4" SPARE SCHEDULE 80 PVC CONDUIT STUBBED WITH END BELL BUSHING, AND CAPPED AT BOTH ENDS. AN ARROW SHALL BE ETCHED IN THE TOP OF THE CABINET BASE TO SHOW THE LOCATION/ DIRECTION OF THE SPARE CONDUIT.

3/4" SCHEDULE 80 PVC CONDUIT WITH END BELL BUSHING FOR GROUNDING CONDUCTOR(S)

GROUND ROD

4- 2" (MIN.) SCHEDULE 80 PVC CONDUITS TO POLE BASE WITH END BELL BUSHING. CONTRACTOR SHALL MODIFY QUANTITY OF CONDUITS IN ORDER TO PROVIDE 1 SPARE CONDUIT AND COMPLY WITH NEC REQUIREMENTS

1" R S CONDUIT FOR SERVICE

1" R S CONDUIT FOR TELEPHONE (IF NECESSARY)

TOP VIEW

PAD MOUNT ENCLOSURE

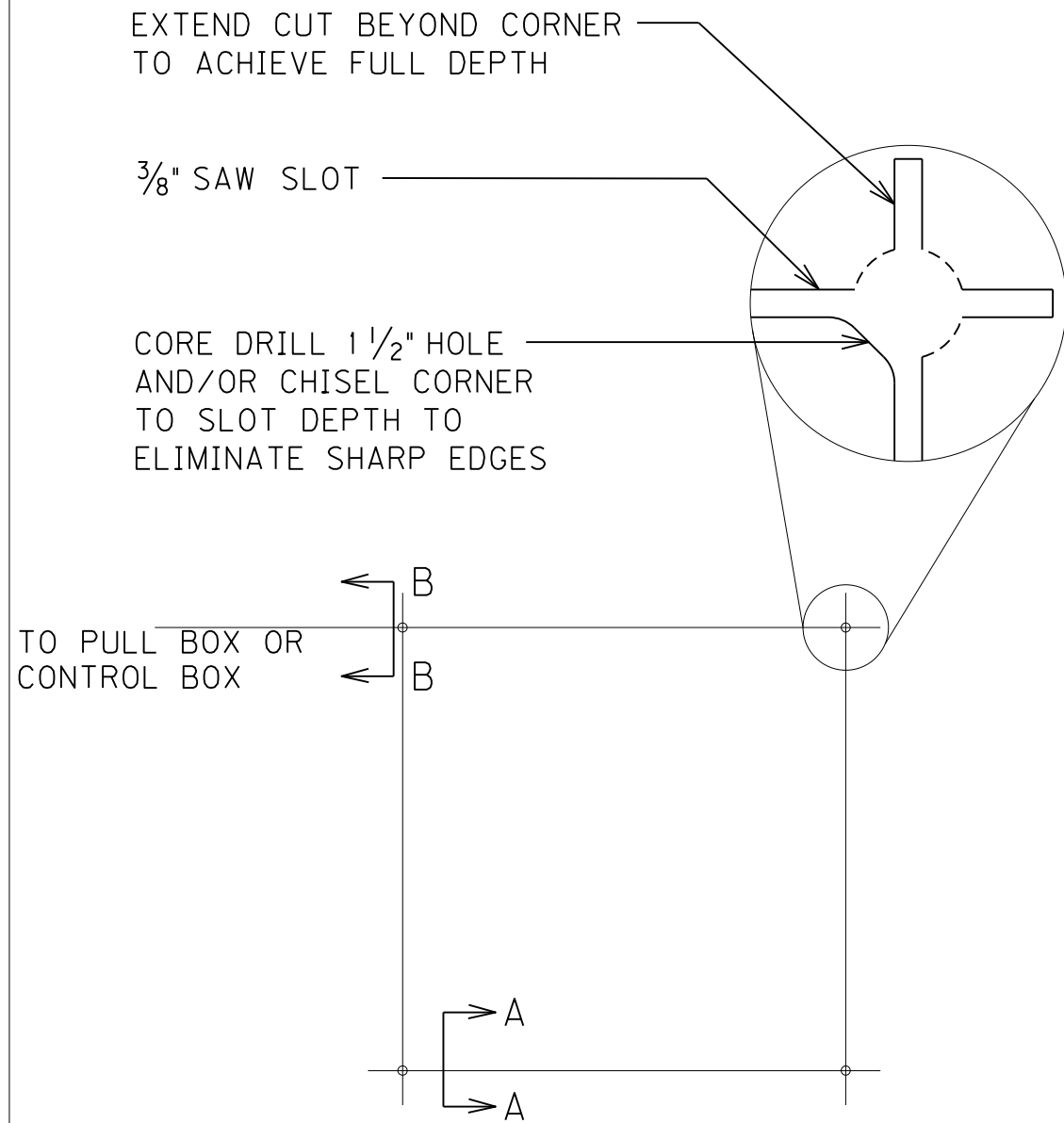
CONTROLLER CABINET  
AND ANTENNA/ROUTER DETAIL

STEEL POLE MOUNT ENCLOSURE

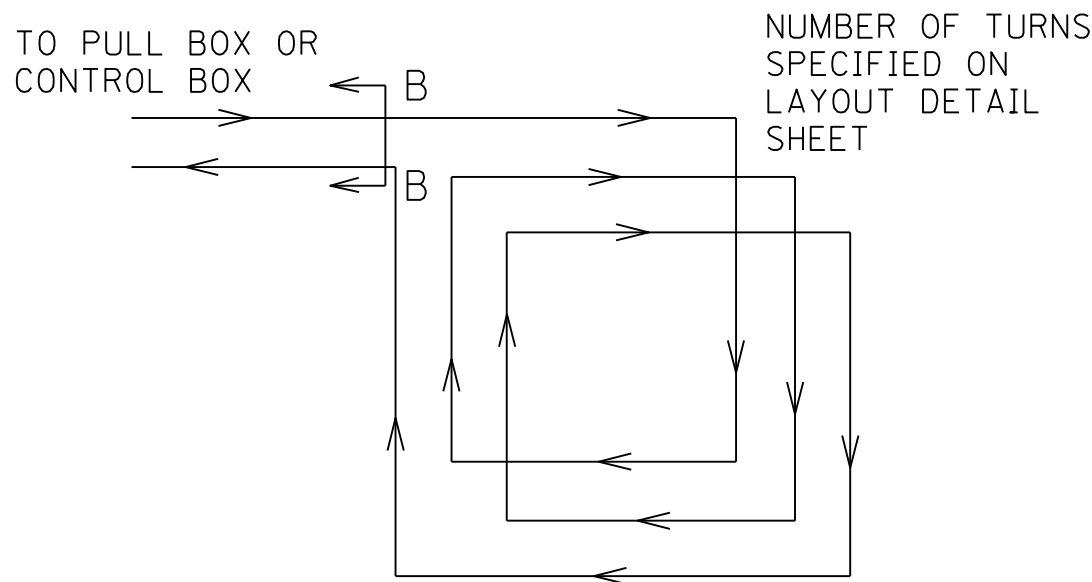
|           |           |           |
|-----------|-----------|-----------|
| COUNTY OF | ITEM NO.  | SHEET NO. |
| KENTON    | 6-9018.01 | T3        |

TWIST UNSHIELDED LOOP WIRES (IMSA 51-7) WITH 3 TO 5 TURNS PER FOOT FROM THE START OF THE HOMERUN TO THE JUNCTION BOX, CABINET, OR POLE. SLOT 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

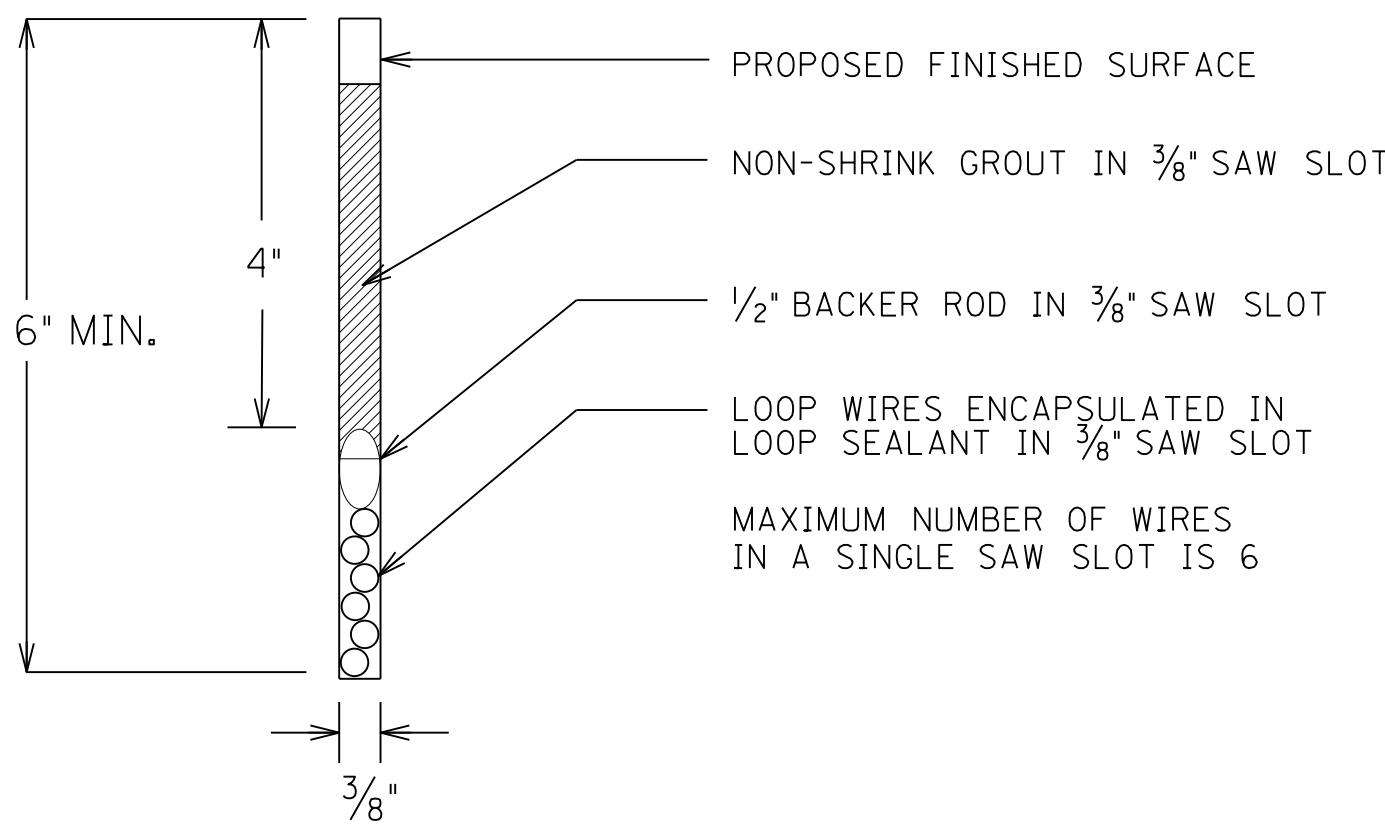


SAW CUT PLAN

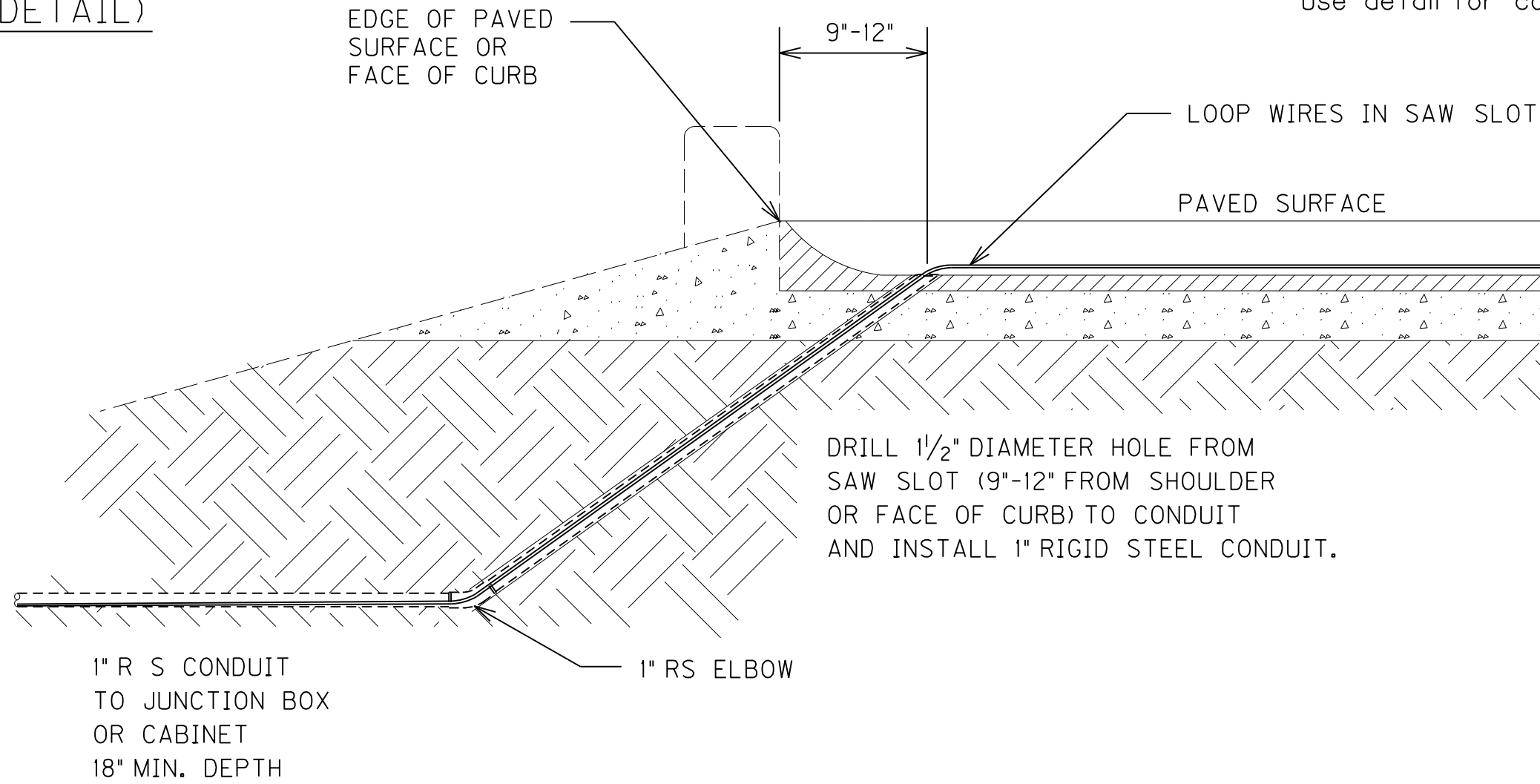


LOOP WIRE PLAN

6'X6' LOOP



SECTION A-A (SAW SLOT DETAIL)



SAW SLOT EDGE OF PAVEMENT TRANSITION

PROPOSED FINISHED SURFACE.

NON-SHRINK GROUT IN 3/4" SAW SLOT.

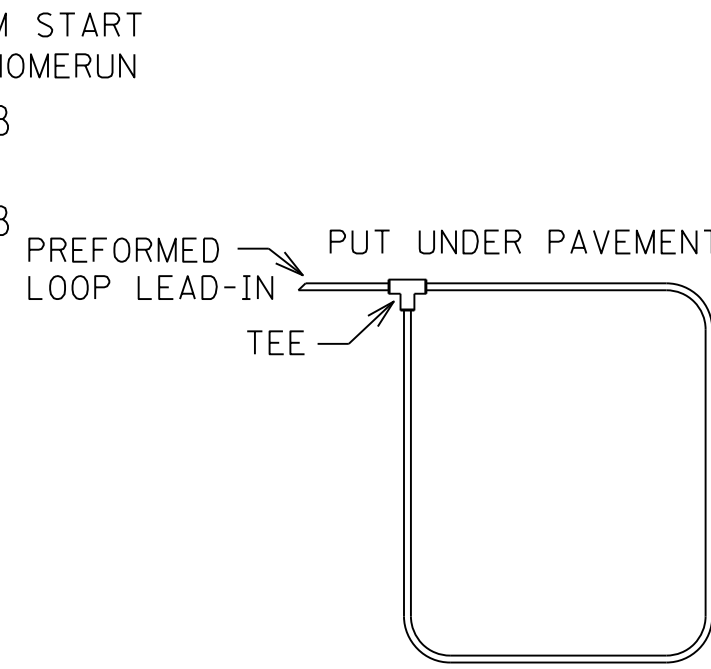
1" BACKER ROD IN 3/4" SAW SLOT.

PREFORMED LOOP IN 3/4" SAW SLOT.

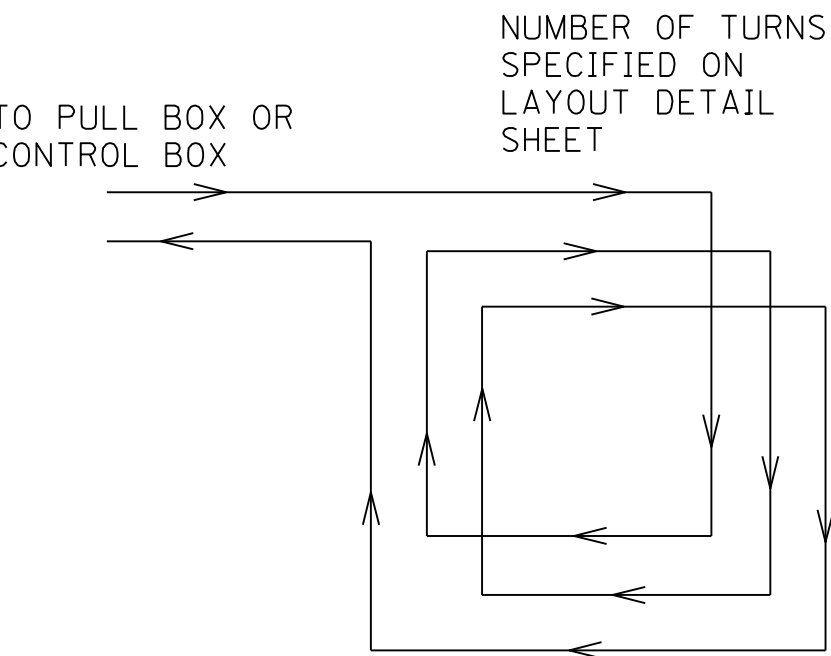
PREFORMED LOOPS SHALL BE CONSTRUCTED WITH 11/16" OR SMALLER HEAVY DUTY REINFORCED RUBBER HOSE (CLASS A OIL RESISANT). THE TEE SHALL BE CONSTRUCTED OF HEAVY DUTY HIGH TEMPERATURE SYNTHETIC RUBBER. STANDARD WIRE SHALL BE WATER RATED #16 THWN OR TFFN.

MAXIMUM NUMBER OF WIRES IN A TUBE PER SLOT IS 4.  
MAXIMUM NUMBER OF TUBES PER SLOT IS 1.

ASPHALT SAW SLOT DETAIL FOR PREFORMED  
Use detail for concrete application if concrete is 4" or less



PREFORMED LOOP DIAGRAM



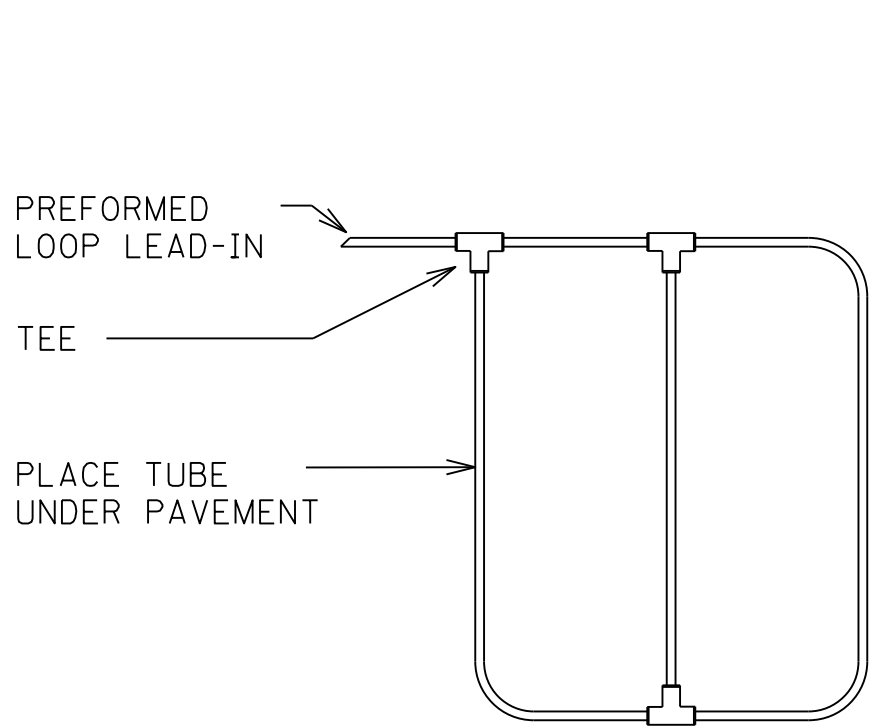
LOOP WIRE PLAN

6'x6' PREFORMED LOOP

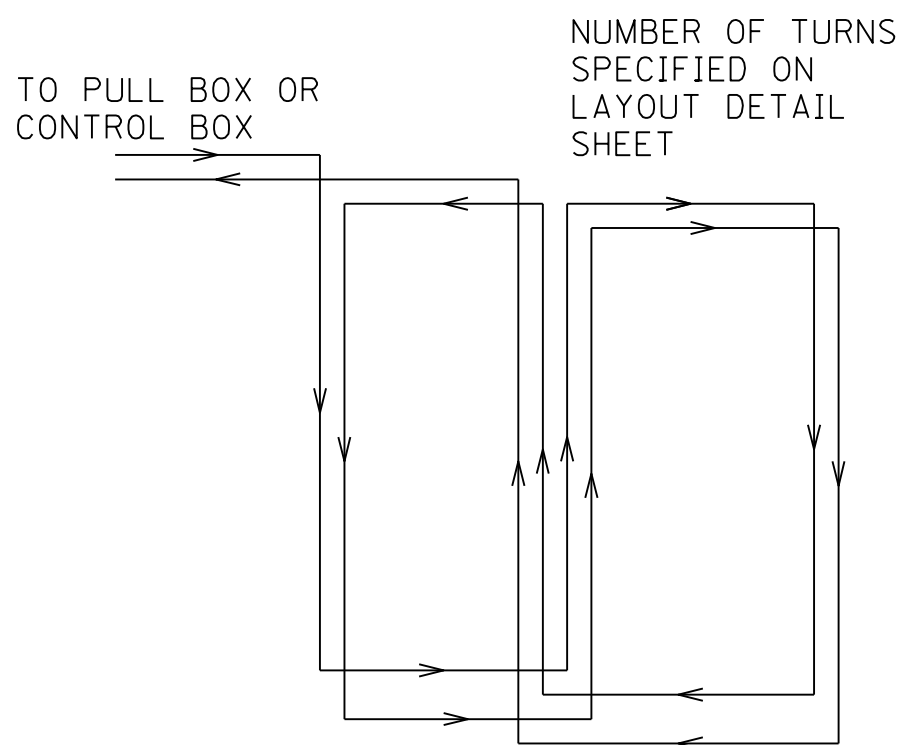
CONSTRUCTION DETAILS FOR LOOP SAW SLOT AND FILL BID ITEM:  
THE FOLLOWING IS A TYPICAL STEP BY STEP PROCEDURE FOR THE INSTALLATION OF A LOOP.

- CAREFULLY MARK THE SLOT TO BE CUT, PERPENDICULAR TO THE FLOW OF TRAFFIC AND CENTERED IN THE LANE.
- MAKE EACH SAW-CUT 3/8" 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.
- DRILL A 1 1/2" INCH CORE HOLE AT EACH CORNER AND USE A CHISEL TO SMOOTHE CORNERS TO PREVENT SHARP BENDS IN THE WIRE.
- CLEAN ALL FOREIGN AND LOOSE MATTER OUT OF THE SLOTS, DRILLED CORES, AND WITHIN 1 FOOT ON ALL SIDES OF THE SLOTS USING A HIGH PRESSURE WASHER.
- COMPLETELY DRY THE SLOTS, DRILLED CORES, AND WITHIN 1 FOOT ON ALL SIDES OF THE SLOTS.
- MEASURE 9-12 INCHES FROM THE EDGE OF THE PAVED SURFACE (SHOULDER BREAK OR FACE OF CURB) AND DRILL A 1 1/2" INCH HOLE ON A 45 DEGREE ANGLE TO THE CONDUIT ADJACENT TO THE ROADWAY.
- CLOSELY INSPECT ALL CUTS, CORES, AND SLOTS FOR JAGGED EDGES OR PROTRUSIONS PRIOR TO THE PLACEMENT OF THE WIRE. ALL JAGGED EDGES AND PROTRUSIONS SHALL BE GROUND OR RE-CUT AND CLEANED AGAIN.
- 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. PLACE THE LOOP WIRE SPLICE-FREE FROM THE TERMINATION POINT. SEE SECTION B-B NOTE.
- 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.
- INSTALL DUCT SEALANT TO A MINIMUM OF 1 INCH DEEP INTO THE CORED 1 1/2" INCH HOLE.
- APPLY LOOP SEALANT FROM THE BOTTOM UP AND FULLY ENCAPSULATE THE LOOP WIRES IN THE SAW SLOT. THE WIRE SHOULD NOT BE ABLE TO MOVE WHEN THE SEALANT HAS SET.
- 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 SEALANT AND BACKER ROD.
- FINISH FILLING THE SAW CUT WITH NON-SHRINKABLE GROUT PER MANUFACTURER'S INSTRUCTIONS. ALLEVIATE 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 ALLEVIATE TRACKING.
- CLEAN UP THE SITE AND DISPOSE OF ALL WASTE OFF THE PROJECT.
- ENSURE THAT THE GROUT HAS COMPLETELY CURED PRIOR TO SUBJECTING THE LOOP TO TRAFFIC. CURING TIME VARIES WITH TEMPERATURE AND HUMIDITY.

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



PREFORMED LOOP DIAGRAM



LOOP WIRE PLAN

6'x30' QUADRAPOLE PREFORMED LOOP

LOOP DETAILS

FILE NAME: G:\USERS\TED.SWANSEGAR\DESKTOP\6901801\NEW\FOLDER\T00300LP.DGN

USER: ted.swansegar  
DATE PLOTTED: September 25, 2019

E-SHEET NAME: T00300LP

MicroStation v8.11.9.B32

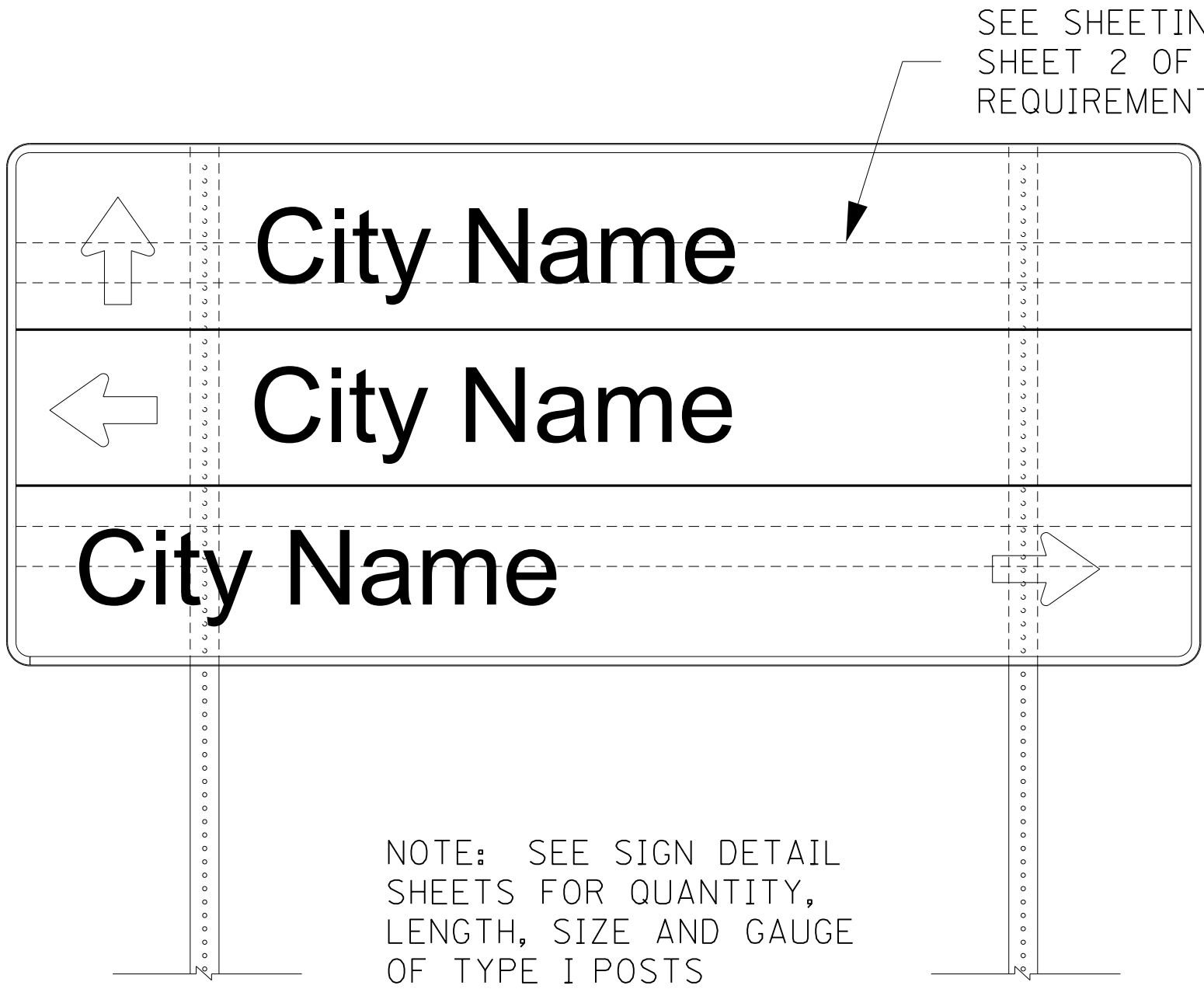
8/20/2019

6'X30' QUADRAPOLE LOOP



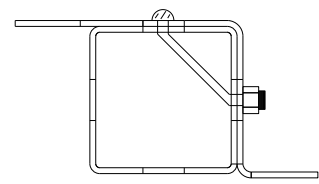


|           |           |           |
|-----------|-----------|-----------|
| COUNTY OF | ITEM NO.  | SHEET NO. |
| KENTON    | 6-9018.01 | T5        |

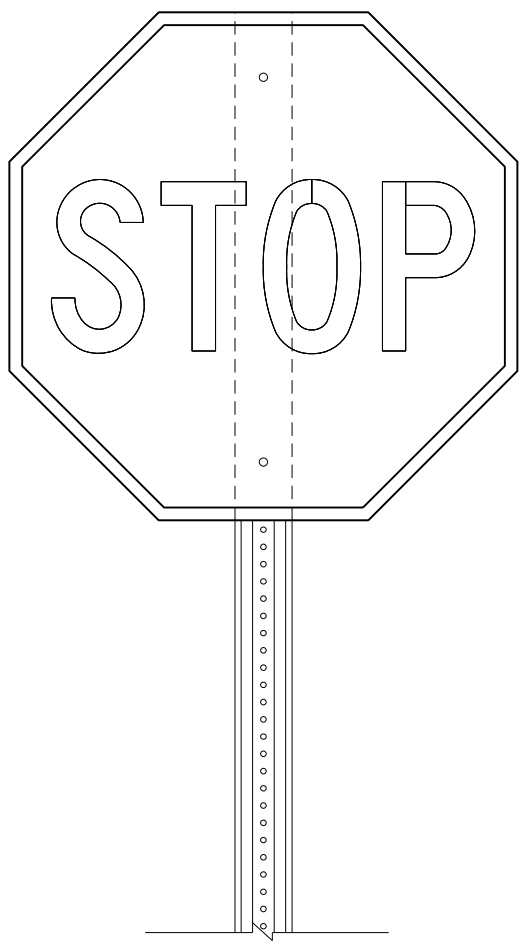
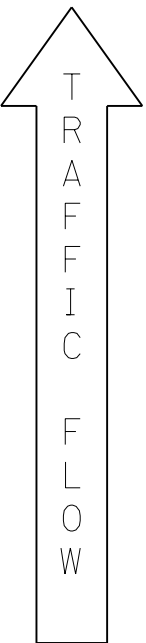


PLAN VIEW  
NOT TO SCALE

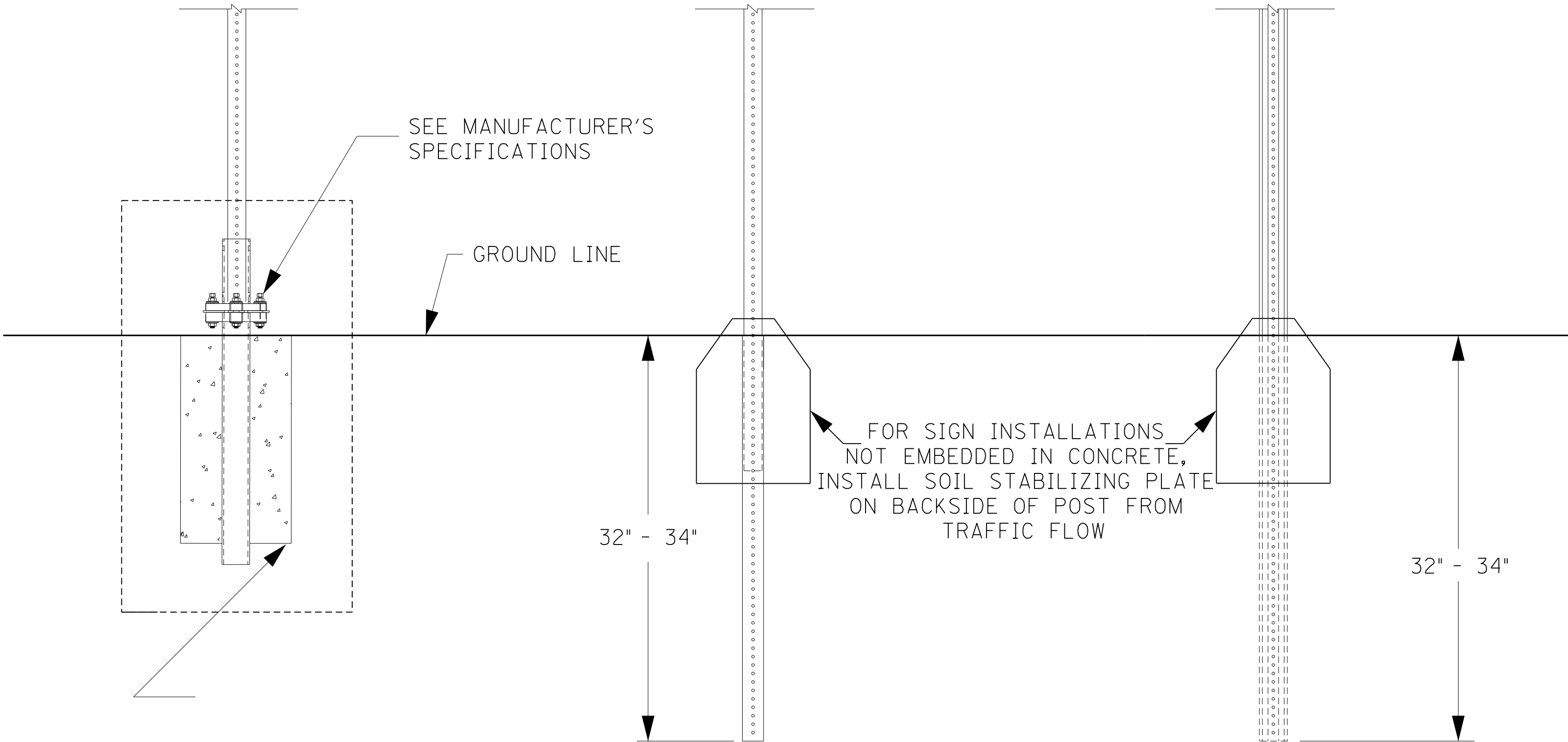
NOTE: SEE SIGN DETAIL  
SHEETS FOR QUANTITY,  
LENGTH, SIZE AND GAUGE  
OF TYPE I POSTS



PLAN VIEW  
NOT TO SCALE



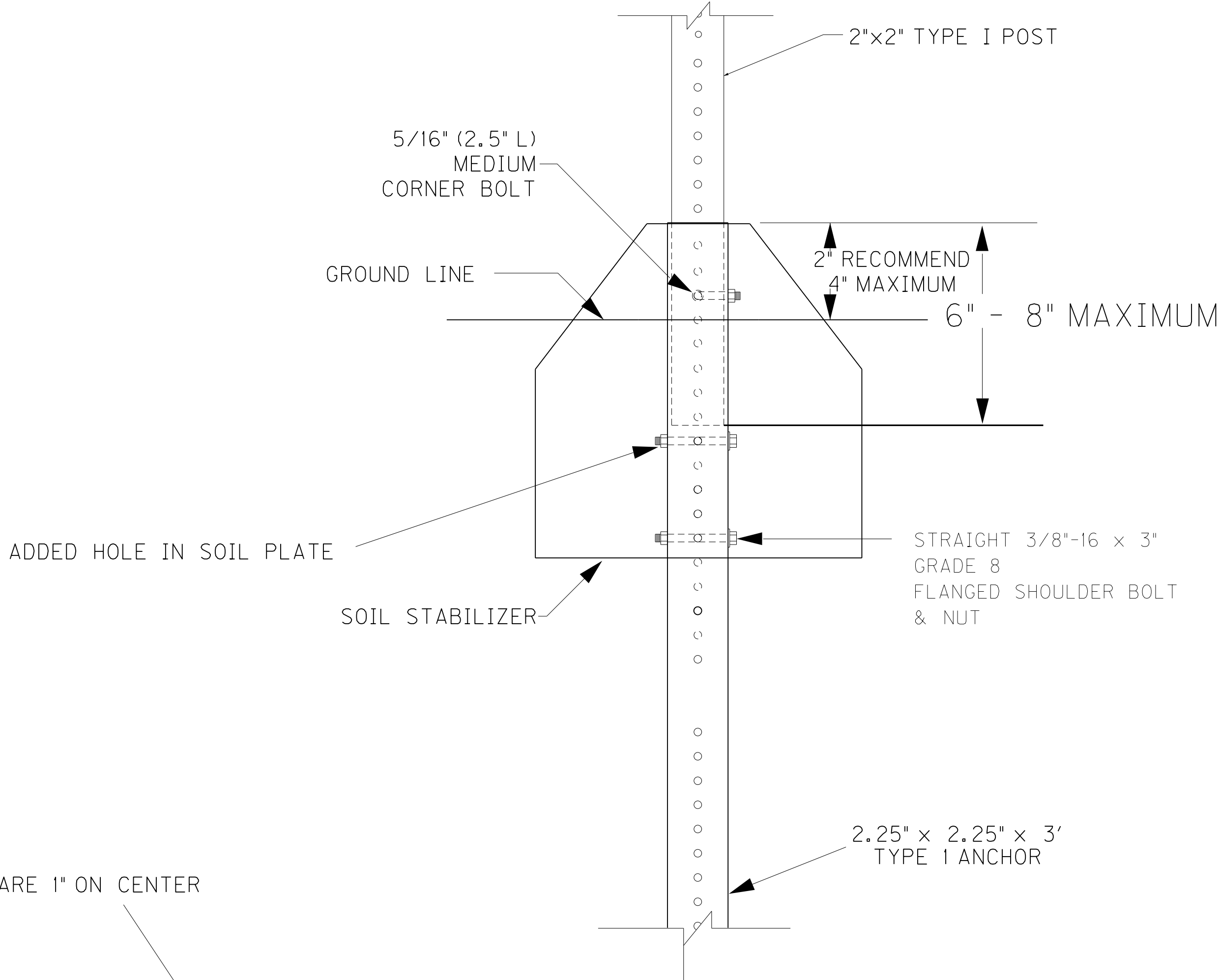
PLAN VIEW  
NOT TO SCALE



TYPE I  
SQUARE TUBING POST  
WITH TYPE "D" SUPPORT

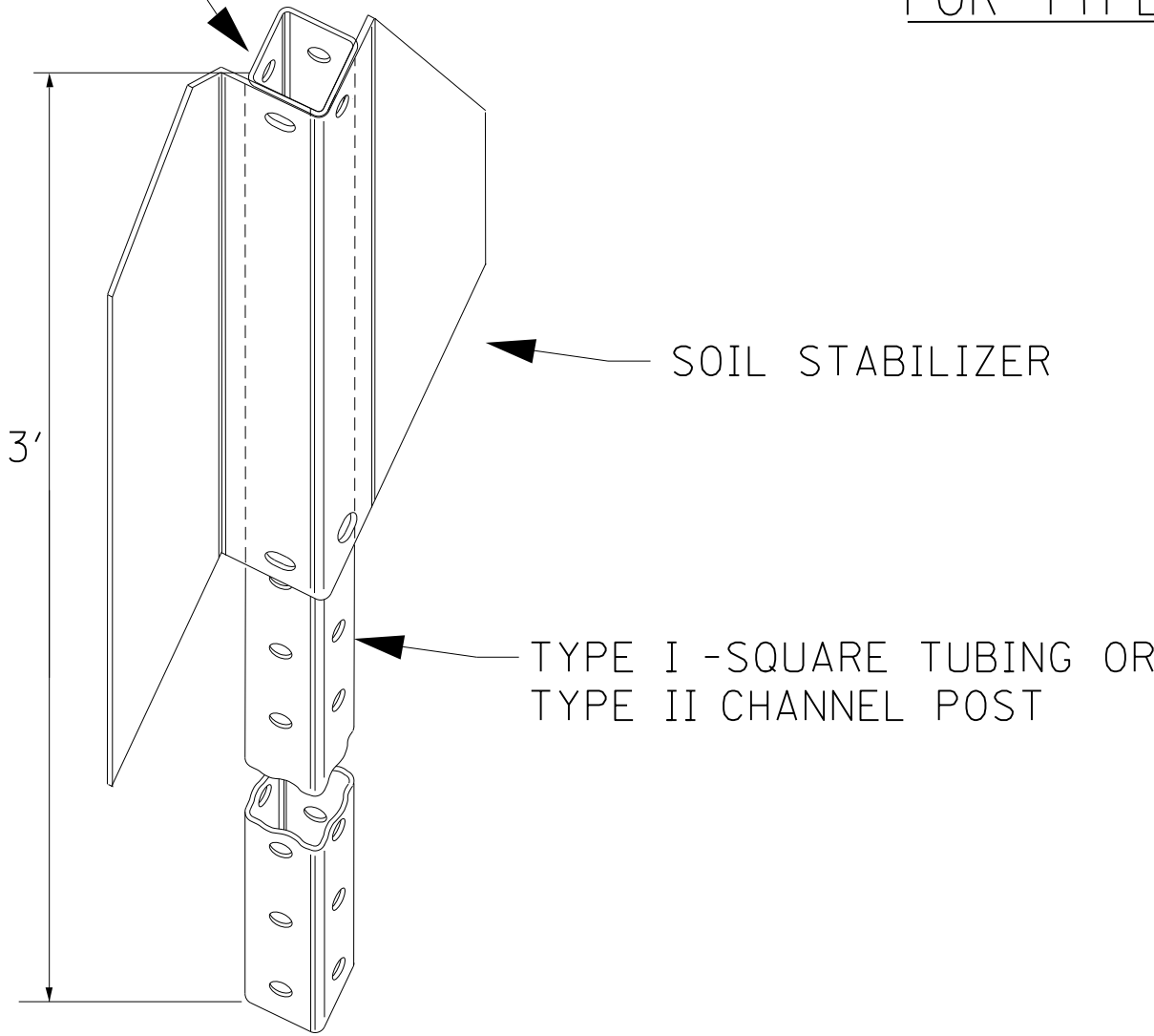
TYPE I  
SQUARE TUBING POST  
WITH SOIL STABILIZER

TYPE II  
CHANNEL POST  
WITH SOIL STABILIZER

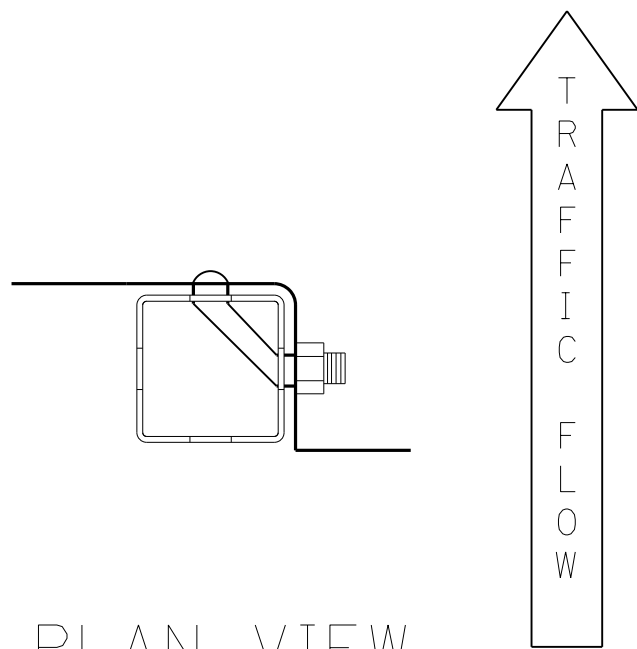


SOIL STABILIZER DETAIL  
FOR TYPE I POST

HOLES ARE 1" ON CENTER



SOIL STABILIZER DETAIL



PLAN VIEW  
NOT TO SCALE

NOT TO SCALE

SHEETING SIGN DETAIL  
SHEET 1 OF 2

FILE NAME: C:\USERS\TED.SWANEGAR\DESKTOP\6901801\NEW\FOLDER\T00500SP.DGN

USER: ted.swanegar  
DATE PLOTTED: September 25, 2019

E-SHEET NAME: T00500SP

MicroStation v8.11.9.832

REMOVE EXISTING BEACON.  
REMOVE EXISTING W2-1 SIGN  
AND SUPPLEMENTAL OF NORTH  
AND SOUTH APPROACH.

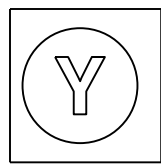
INSTALL INTERSECTION WARNING SIGN  
W2-1: 200 FEET FROM THE INSTALLATION  
OF WARNING SIGN B ON RIGHT SIDE  
OF ROAD COMING SOUTH.

INSTALL WARNING SIGN B ASSEMBLY AT  
520 FEET FROM INTERSECTION ON 2-2"  
SQUARE POST ON TYPE D BREAKAWAY.  
INSTALL JUNCTION BOX B3.  
SPlice LOOP WIRES TO ONE 1-PAIR  
LOOP LEAD-IN INSIDE JB B3.  
THE FINAL LOCATION OF THE SIGN ASSEMBLY  
AND LOOP SHALL BE APPROVED BY THE  
TRAFFIC DISTRICT ENGINEER.

INSTALL ATC CONTROLLER CABINET  
WITH BATTERY BACKUP WITH 4- 2"  
SCHEDULE 80 PVC CONDUITS. THREE  
CONDUITS FROM THE CABINET WILL  
BE CAPPED ON BOTH ENDS.  
EXTEND THE CONCRETE CABINET  
BASE TO ACCOMODATE THE  
BATTERY BACKUP CABINET.  
BASE SHALL EXTEND AT LEAST 12 INCHES  
PASS THE BATTERY BACKUP DOOR  
OPENING. ALL EXTRA ITEMS FOR THE  
BATTERY BACKUP INSTALLATION SHALL BE  
INCIDENTAL TO THE BID ITEM 24908EC.  
INSTALL WARNING SIGN A ASSEMBLY ON  
CORNER ON 2-2" SQUARE POST ON TYPE D  
BREAKAWAY.  
INSTALL JUNCTION BOX A1.  
INSTALL JUNCTION BOX B2.  
JUNCTION BOX B2 SHALL BE 250 FEET  
FROM JUNCTION BOX A1.  
SPlice LOOP WIRES TO ONE 1-PAIR  
LOOP LEAD-IN INSIDE JB B1.  
INSTALL 1- 2" SCHEDULE 80 PVC CONDUITS  
FROM CABINET TO JB A1.  
INSTALL 1- 2" RIGID STEEL CONDUIT FROM  
JB A1 TO JB B1.  
INSTALL ROUTER, CABLING, AND ANTENNA AS  
SHOWN ON STANDARD SHEET.  
THE FINAL LOCATION OF THE SIGN ASSEMBLY  
AND THE CABINET SHALL BE APPROVED  
BY THE TRAFFIC DISTRICT ENGINEER.

INSTALL JUNCTION BOX B1.  
SPlice LOOP WIRES TO ONE 1-PAIR  
LOOP LEAD-IN INSIDE JB B1.  
INSTALL 1- 2" RIGID STEEL CONDUIT FROM  
JB B1 TO JB B5.

### SIGNAL HEADS



ALL HEADS

ALL INDICATIONS L.E.D.

12" YELLOW  
ALTERNATING  
FLASHING BEACONS

BRACING

1 1/4" RSC

CONDUIT ON POST  
AWAY FROM EDGE  
OF PAVEMENT.

TRANSITION FROM RIGID TO  
SCHEDULE 80 PVC UNDERGROUND  
CONDUIT ON SIGN ASSEMBLY IS  
INCLUDED IN THE STEEL POST TYPE I.

WIRE #14/5C

SIGNS/POSTS TO BE PROVIDED BY CONTRACTOR

GMSS TYPE D BREAKAWAY

NOTE: USE GREEN WIRES IN ALL 5C CABLES  
TO ESTABLISH AN EQUIPMENT GROUND ON  
ALL METAL PIECES ON THE SIGN  
STRUCTURES. THE EQUIPMENT GROUND SHALL  
BE CONNECTED TO THE GROUNDING SYSTEM IN  
THE CABINET.

### ADVANCE WARNING BEACON DETAIL

#### WIRING SCHEDULE

| CABLE        | ORIGIN     | ENDING | CONNECTING               |
|--------------|------------|--------|--------------------------|
| 1-#14/5C     | CONTROLLER | SA A   | TRAFFIC ENTERING SIGN    |
| 1-#14/5C     | CONTROLLER | SA B   | TRAFFIC APPROACHING SIGN |
| 1-#14/5C     | CONTROLLER | SA C   | TRAFFIC APPROACHING SIGN |
| 1-#14/5C     | CONTROLLER | SA D   | TRAFFIC ENTERING SIGN    |
| 1-#14/1 PAIR | CONTROLLER | JB B3  | LOOP 2A                  |
| 1-#14/1 PAIR | CONTROLLER | JB B4  | LOOP 4A                  |
| 1-#14/1 PAIR | CONTROLLER | JB B7  | LOOP 6A                  |
| 1-#14/1 PAIR | CONTROLLER | JB B1  | LOOP 8A                  |

48" x 48"  
.125 GA. ALUM.

TYPE III/IV

**TRAFFIC  
ENTERING**

MAY BE DIFFERENT  
SEE LOCATIONS FOR  
EXACT MESSAGE

WHEN  
FLASHING

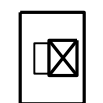
24" x 18"  
.08 GA. ALUM. W16-13

#### LOOP SCHEDULE

| LOOP | PHASE | SLOT | CHANNEL | SIZE | # OF<br>TURNS | DIST. FROM<br>STOP BAR |
|------|-------|------|---------|------|---------------|------------------------|
| 2A   | 2     | I2   | 1       | 6X6  | 3             | 520'                   |
| 4A   | 4     | I6   | 1       | 6X30 | 2             | -12'                   |
| 6A   | 6     | J2   | 1       | 6X6  | 3             | 520'                   |
| 8B   | 8     | J6   | 1       | 6X30 | 2             | 0'                     |

SCALE 1" = 20'

#### LEGEND



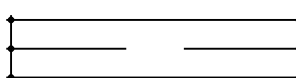
BASE MOUNTED CONTROLLER  
WITH BATTERY BACKUP



SIGN ASSEMBLY



JUNCTION BOXES  
TYPES A & B  
(AS DESIGNATED)



LOOP DETECTOR

1 1/4" SCHEDULE 80 PVC CONDUIT  
(UNLESS OTHERWISE NOTED)



EXISTING WATERLINE



PROPOSED STOPBAR BUT  
MAINLINE WILL NOT BE  
INSTALLED

SIGNAL PLAN FOR ICWS  
KY 177 @ KY 536