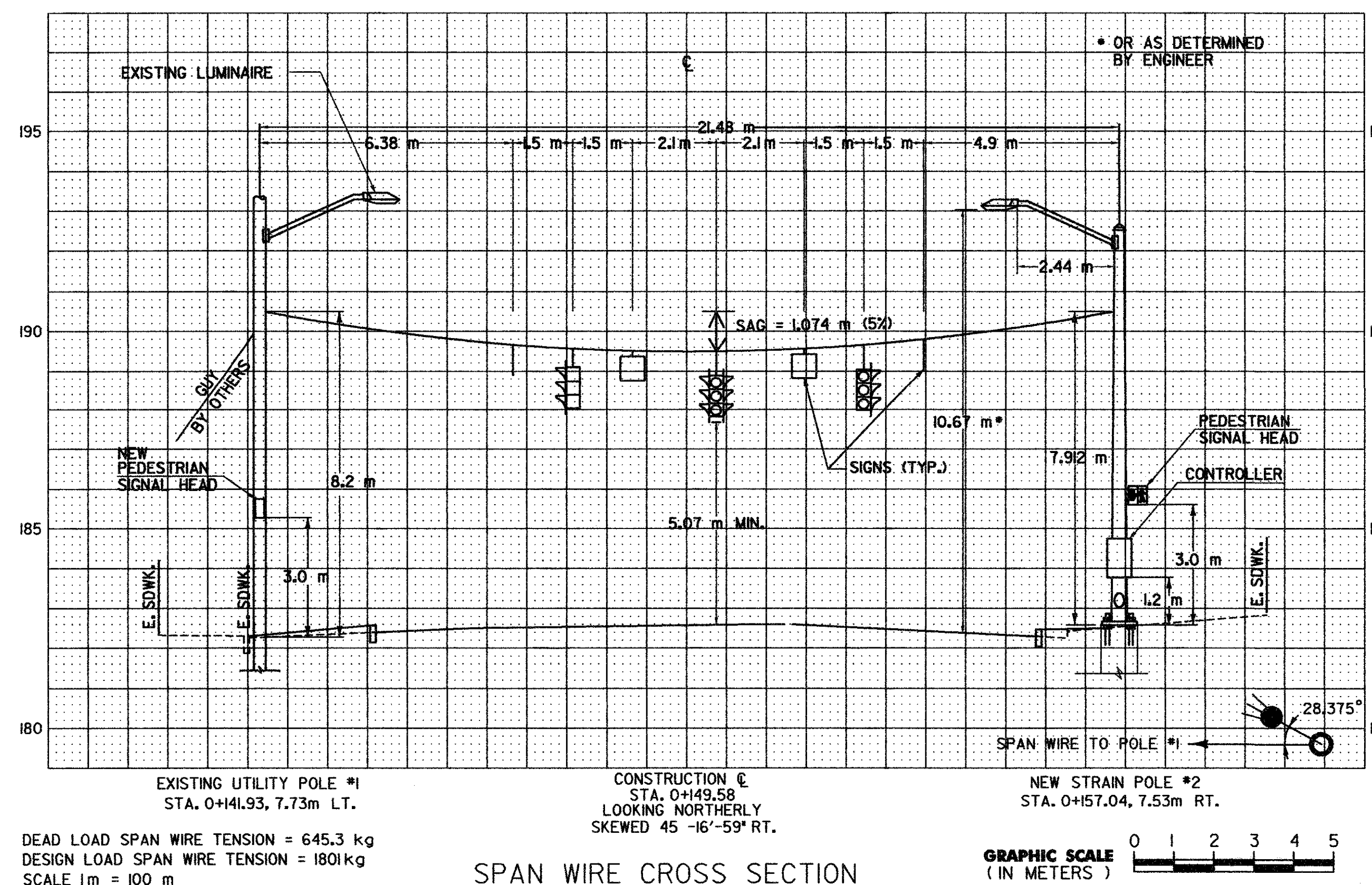


| POLE NO. | POLE LENGTH GAUGE & DIAMETER                   | B.C.  | S     | T    | BASE DEPTH | BASE DIA. | ANCHOR BOLTS | POLE BKRR |
|----------|--|-------|-------|------|------------|-----------|--------------|-----------|
| 1        | EXISTING UTILITY POLE TO SERVE AS STRAIN POLE. |       |       |      |            |           |              |           |
| 2        | 10.36 M<br>6.35mm & 356mm                      | 521mm | 546mm | 45mm | 3.0m       | 0.91M     | 50mm         | 125mm     |

NOTE: ANCHOR BOLTS, BASE PLATE, AND FOOTING DIMENSIONS ARE BASED ON DESIGN POLE DIMENSIONS AND YIELD STRENGTH SHOWN. POLES SUPPLIED OF DIFFERENT SIZE OR STRENGTH MAY REQUIRE CHANGES IN THE DIMENSIONS. BACKRAKE (BKRR) SHOWN IS AS MEASURED AT THE TOP OF THE POLE.

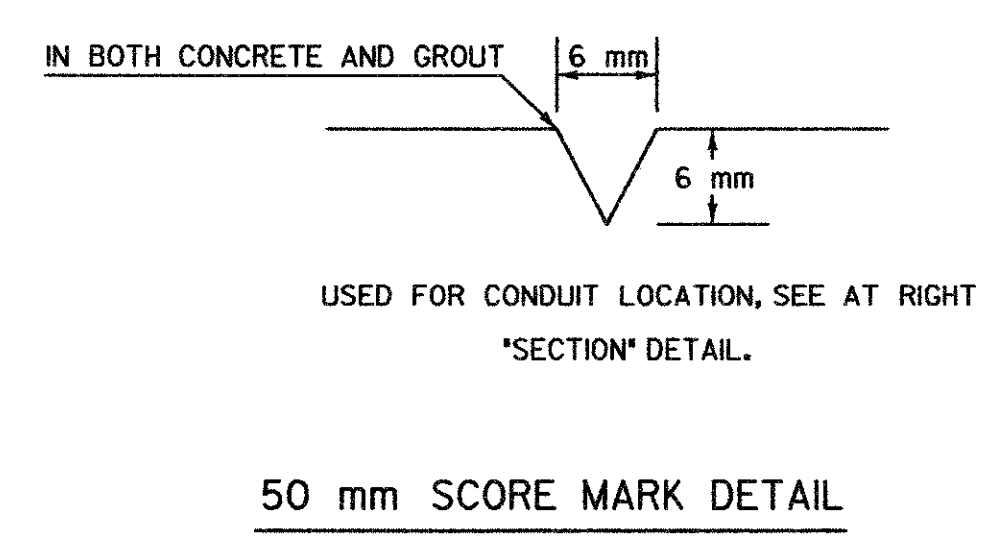
DESIGN CRITERIA USED:  
 POLE FY = 330 MPA  
 BASE PLATE FY = 248 MPA  
 ANCHOR BOLTS FY = 380 MPA

**STRAIN POLE**

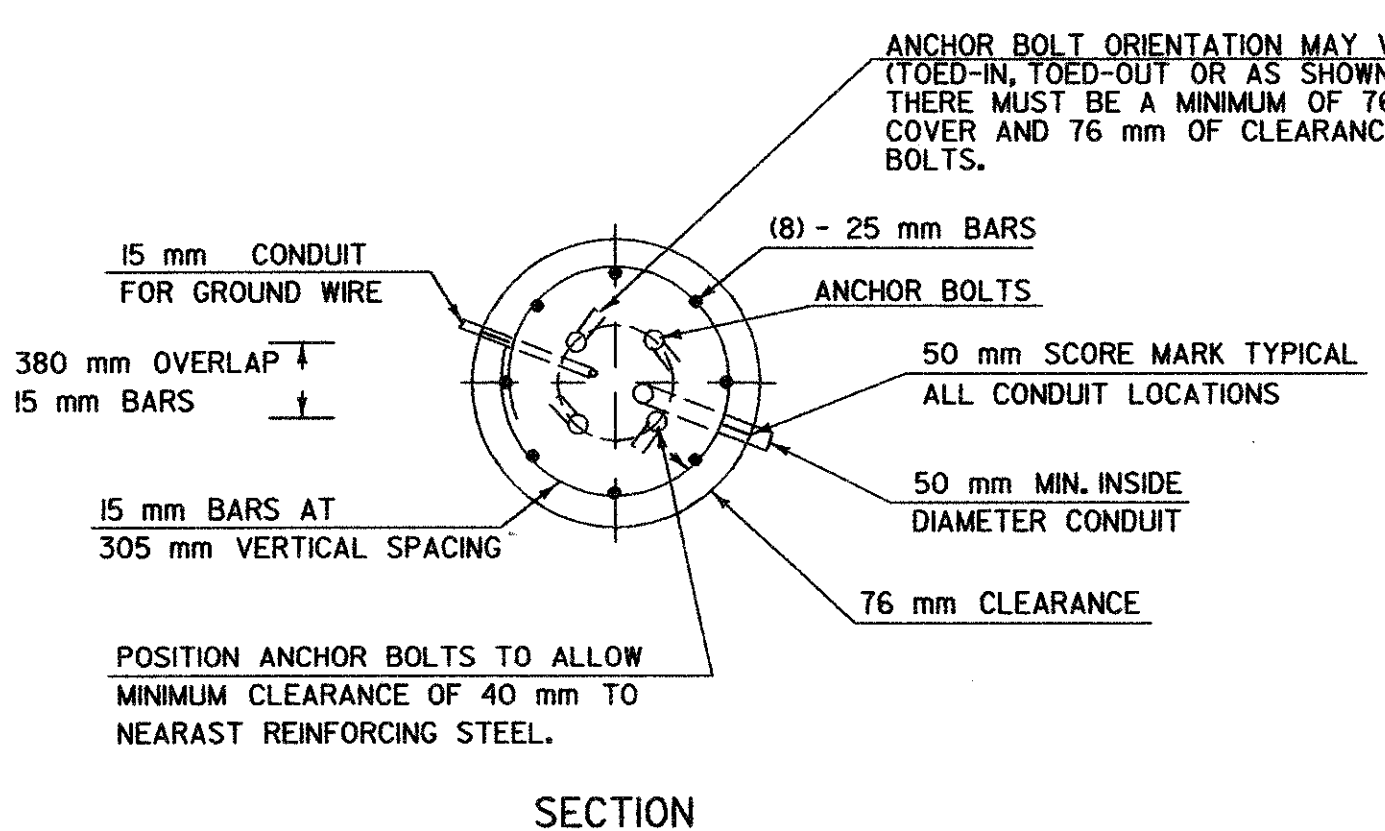
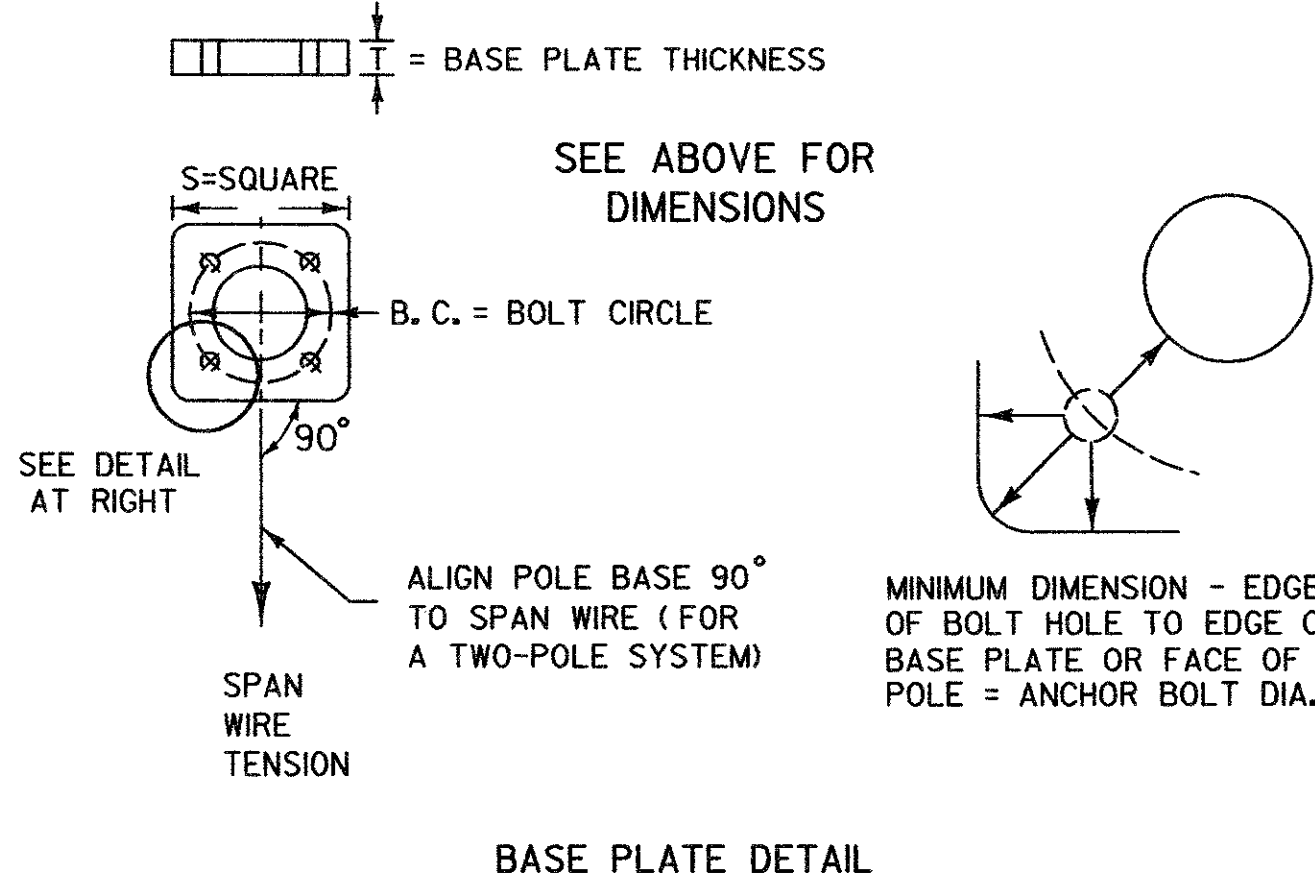
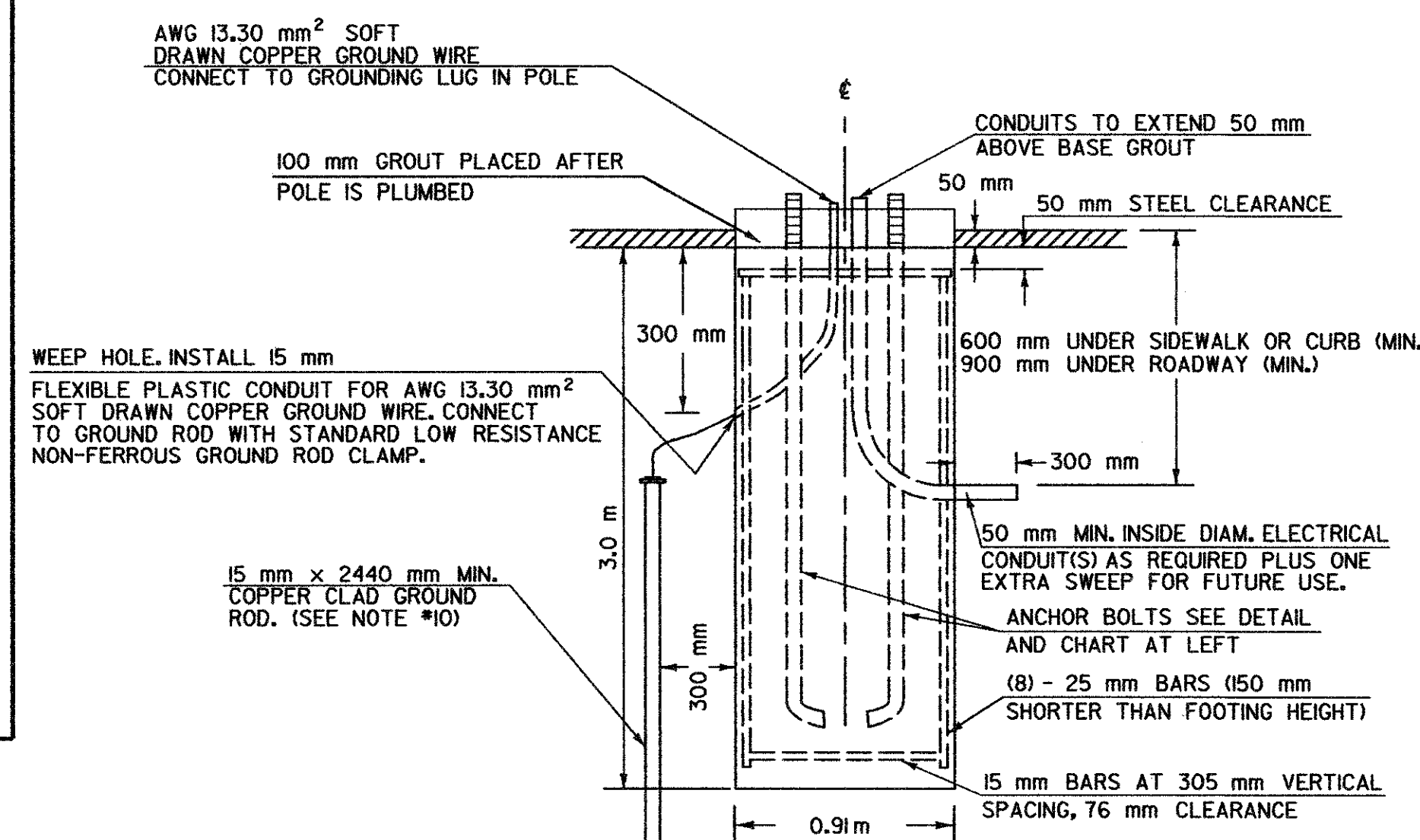
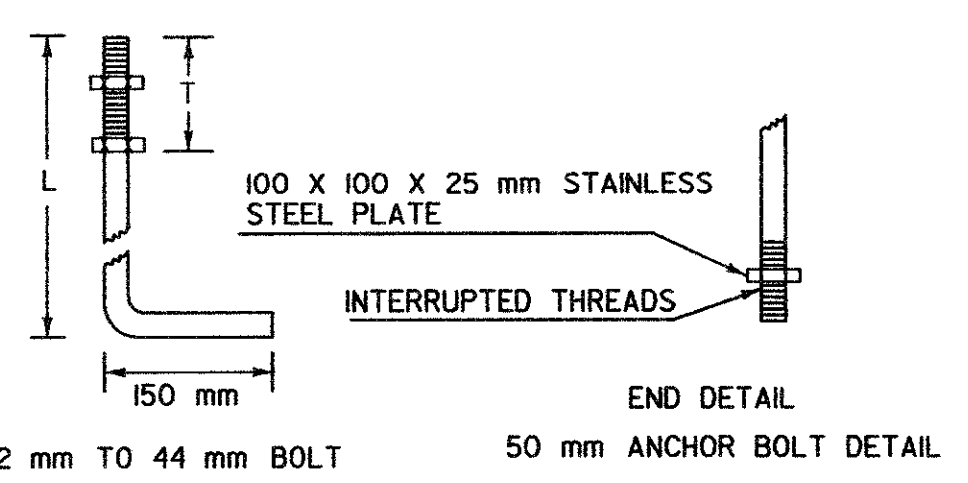


**GENERAL NOTES**

- ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE VTRANS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND AASHTO'S STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, LATEST EDITION.
- TRAFFIC CONTROL SIGNAL STRAIN POLES SHALL CONFORM TO THE REQUIREMENTS OF SUBSECTION 752.02 - STRAIN POLES, AND SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH SECTION 678 - TRAFFIC CONTROL SIGNALS.
- STEEL POLE CAPS SHALL BE PROVIDED WITH A 50-mm BUSHED (BLIND) ELECTRICAL ENTRANCE WHERE APPLICABLE. STRAIN POLES SHALL BE PROVIDED WITH A 50-mm (BLIND) HALF COUPLING FOR SIGNAL CABLE, LOCATED 150 mm BELOW THE SPANWIRE ATTACHMENT HEIGHT.
- FOUR STAINLESS STEEL ANCHOR BOLTS WITH TWO HEXAGON NUTS, ONE WASHER AND ONE LOCK WASHER PER BOLT SHALL BE FURNISHED WITH EACH POLE. (SEE SUBSECTION 714.09) DO NOT INSTALL BOLT COVERS IF STAINLESS STEEL BOLTS ARE USED.
- BOLTS AND BASES SHALL BE OF ADEQUATE SIZE TO RESIST THE FULL BENDING MOMENT OF THE POLE AT YIELD STRENGTH STRESS.
- ADDITIONAL DESIGN CRITERIA:  
 CONCRETE -  $f_c = 10 \text{ MPa}$   $f'_c = 25 \text{ MPa}$   
 WIND LOAD - 1200 Pa (MIN.) ON THE EXPOSED POLE SURFACE.  
 REINFORCING STEEL  $f_s = 165 \text{ MPa}$  (GRADE 420)
- CONCRETE FOR FOOTINGS SHALL CONFORM TO REQUIREMENTS OF CONCRETE CLASS "B" SECTION 501 - STRUCTURAL CONCRETE.
- BACKFILL MATERIAL PLACED ADJACENT TO THE FOOTINGS SHALL MEET THE REQUIREMENTS FOR GRANULAR BACKFILL FOR STRUCTURES-SUBSECTION 704.08.
- WHERE THE DESIGN DEPTH OF A FOOTING CANNOT BE OBTAINED DUE TO UNFORESEEN FIELD CONDITIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND OBTAIN A REVISED FOOTING DETAIL FROM THE ENGINEER.
- EACH METAL POLE SUPPORTING EITHER VEHICLE OR PEDESTRIAN TRAFFIC SIGNALS SHALL BE GROUNDED. THE GROUND SHALL CONSIST OF:  
 A) AN INTERNAL GROUND LUG OPPOSITE THE HAND HOLE.  
 B) A 13.30-mm<sup>2</sup> (MIN.) SOFT DRAWN COPPER GROUNDING ELECTRODE CONDUCTOR.  
 C) A 16 X 2400 (MIN.) COPPER CLAD GROUNDING ELECTRODE.  
 THE RESISTANCE TO GROUND SHALL BE 25 OHMS OR LESS. ADDITIONAL GROUNDING ELECTRODES MAY BE REQUIRED (MINIMUM SPACING SHALL BE 1800 mm).  
 WHERE A POWER SERVICE, METER AND DISCONNECT ARE ATTACHED TO A STRAIN POLE, THERE SHALL BE A CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE METER AND DISCONNECT WHICH MAY RUN INTERNAL TO THE STRAIN POLE, THROUGH THE DNIG FLEXIBLE TUBING IN THE CONCRETE BASE TO THE REQUIRED GROUNDING ELECTRODE(S). THE GROUNDING ELECTRODE CONDUCTOR FROM THE STRAIN POLE GROUNDING LUG, CONTROLLER CABINET AND/OR LUMINAIRE MAY ATTACH TO THIS CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE SERVICE METER AND DISCONNECT. THE CONTRACTOR SHALL PERFORM A RESISTANCE TO GROUND TEST ON THE CONTINUOUS GROUNDING ELECTRODE CONDUCTOR FROM THE SERVICE METER AND DISCONNECT AND PROVIDE A WRITTEN STATEMENT TO THE AREA ELECTRICAL INSPECTOR THAT THE GROUNDING ELECTRODE CONDUCTOR IS CONTINUOUS FROM THE SERVICE METER AND DISCONNECT AND THE RESISTANCE TO GROUND IS 25 OHMS OR LESS.
- STRAIN POLE BASE PLATES SHALL BE STAMPED WITH POLE DIAMETER, HEIGHT, YIELD STRENGTH AND WALL THICKNESS. ALTERNATELY, THE INFORMATION MAY BE STAMPED ON A METAL TAG ATTACHED TO THE POLE NEAR THE HANDHOLE.
- IN ACCORDANCE WITH SUBSECTION 105.03, SHOP DRAWINGS (6 COPIES) SHALL BE SUBMITTED TO VTRANS FOR APPROVAL PRIOR TO FABRICATION. THE SUBMITTAL SHALL INCLUDE THE FOLLOWING INFORMATION:  
 A) DETAILED DRAWING OF EACH COMPONENT OF THE STRAIN POLE;  
 B) MATERIAL SPECIFICATIONS FOR EACH COMPONENT OF THE STRAIN POLE BY COMPLETE SPECIFICATIONS OR BY REFERENCE TO APPLICABLE ASTM STANDARDS;  
 C) NOTATION OF PROJECT NAME, PROJECT NUMBER, ROUTE NUMBER AND STRAIN POLE STATIONING. (TO BE INCLUDED ON EACH SHEET INCLUDING STANDARD SHEETS AND SPECIFICATION SHEETS);  
 D) DETAILS FOR LOCATION OF LUMINAIRE ARMS ON STRAIN POLES;  
 E) ALL ELEVATIONS AND DIMENSIONS NECESSARY TO PROVIDE A COMPLETE SET OF RECORD PLANS. (POLE HEIGHT, SPAN WIRE ATTACHMENT HEIGHT, POLE DIAMETER (TOP AND BOTTOM), WALL THICKNESS OF POLE, HANDHOLE (SIZE AND LOCATION), BASE PLATE, BOLT CIRCLE, ANCHOR BOLT SIZE);  
 F) POLE BASE STAMPING DETAIL;  
 G) DEAD LOAD DEFLECTION INFORMATION; AND  
 H) WELDING DETAILS AND PROCEDURES ARE REQUIRED FOR ALL WELDS. PROCEDURES SHALL BE SUBMITTED FOR APPROVAL WITH REFERENCE TO EACH WELD IDENTIFIED ON THE SHOP DRAWINGS (SEE SUBSECTION 506.10).



| ANCHOR BOLT DETAIL |        |        |
|--------------------|--------|--------|
| SIZE (mm)          | L (mm) | T (mm) |
| 32 X 1219          | 1067   | 203    |
| 38 X 1524          | 1372   | 229    |
| 44 X 2286          | 2134   | 229    |
| 50 X 2438          | 2438   | 229    |



**STRAIN POLE FOOTING**

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

**STRAIN POLE / FOOTING DETAIL SHEET - SINGLE INTERSECTION**



| ORIGINAL PREPARED - JUNE 13, 1997 | DATE | REVISIONS | BY |
|-----------------------------------|------|-----------|----|
|                                   |      |           |    |

|   |                      |
|---|----------------------|
| PROJECT NAME: WALLING FORD  | PLOT DATE: 01/28/02  |
| PROJECT NUMBER: NHG SGNL(26)S / STP ADAS(2)                           | DRAWN BY: RAW        |
| FILE NAME: zb292frm.dgn   | CHECKED BY: GAS      |
| PROJECT LEADER: GAS   | DESIGNED BY: RAW/JCO |
| STRAIN POLE/FOOTING DETAIL SHEET - SINGLE INTERSECTION SHEET 14 OF 25 |                      |

Scan - sfd