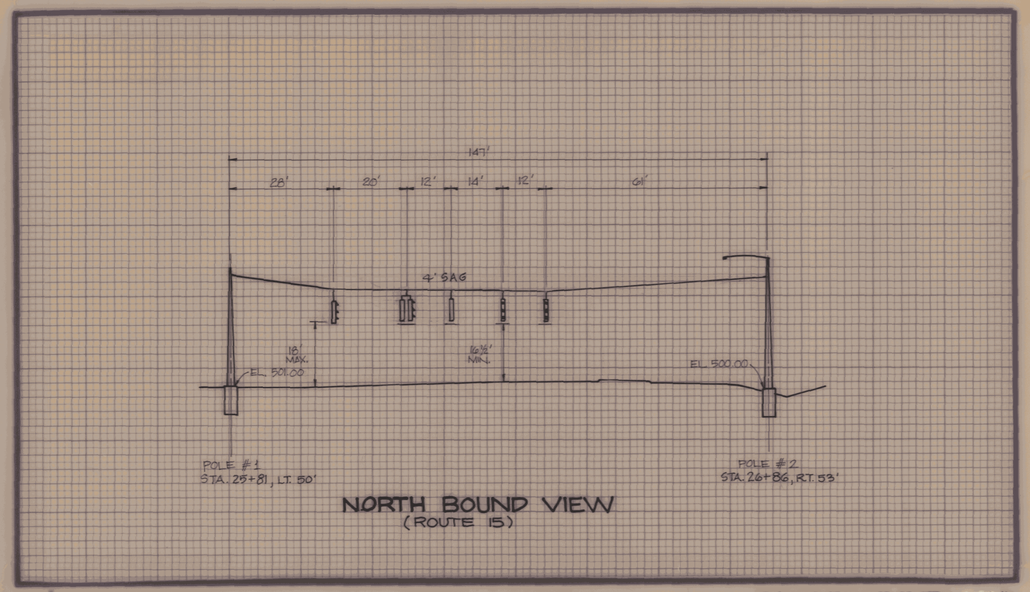
POLE NO.	POLE LENGTH GAGE & DIAMETER	B.C.	S	T	BASE DEPTH	BASE DIA.	ANCHOR BOLTS	POLE BKRK
1	33', 0 GA., 12"	18"	20"	1 3/4	8'	60"	1 34"X90°	
2	36', 0 GA., 12"	18"	20"	1 3/4	8'	60"	1 34"X90°	

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 (BKRK) SHOWN IS AS MEASURED AT THE TOP OF THE POLE.

DESIGN CRITERIA USED:
POLE FY = 48,000 p.s.i
BASE PLATE FY = 36,000 p.s.i
ANCHOR BOLTS FY = 55,000 p.s.i

STRAIN POLE



NORTH BOUND VIEW
(ROUTE 15)

(SEE SHEET(S) FOR LOCATION PLAN)

DEAD LOAD SPAN WIRE TENSION= 1,250 lbs.
DEAD LOAD & LIVE LOAD SPAN WIRE TENSION= 3,830 lbs.
SCALE 1" = 20'

SPAN WIRE CROSS SECTION

GENERAL NOTES

1) ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND AASHTO'S STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGN, LUMINAIRES AND TRAFFIC SIGNALS, 1985. SEE SPECIFICATION BOOK FOR REVISED ALLOWABLE BENDING STRESS.

2) 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.

3) STEEL POLE CAPS SHALL BE PROVIDED WITH A 2-INCH BUSHED (BLIND) ELECTRICAL ENTRANCE WHEN APPLICABLE. STRAIN POLES SHALL BE PROVIDED WITH A 2-INCH (BLIND) HALF COUPLING FOR SIGNAL CABLE, LOCATED 6 INCHES BELOW THE SPANWIRE ATTACHMENT HEIGHT.

4) FOUR STAINLESS STEEL ANCHOR BOLTS WITH TWO HEXAGON NUTS PER BOLT SHALL BE FURNISHED WITH EACH POLE. ANCHOR BOLTS AND WASHERS SHALL BE AN AUSTENITIC GRADE OF STAINLESS STEEL CONFORMING TO THE CHEMISTRY OF ASTM A276 TYPE 304 WITH THE FOLLOWING PHYSICAL PROPERTIES:

(A) TENSILE STRENGTH, MINIMUM	80,000 psi
(B) YIELD STRENGTH, MINIMUM	55,000 psi
(C) ELONGATION IN 2 INCHES, MINIMUM	25%
(D) ROCKWELL B HARDNESS, MINIMUM	86
OR CHARPY V-NOTCH (AASHTO T243 USING H FREQUENCY OF TESTING),	15 ft.-lbs. @ 40° F

NUTS FOR THE ANCHOR BOLTS SHALL BE THE HEAVY HEX TYPE CONFORMING TO THE REQUIREMENTS OF ASTM A-194 GRADE B

5) BOLTS AND BASES SHALL BE OF ADEQUATE SIZE TO RESIST THE FULL BENDING MOMENT OF THE POLE AT YIELD STRENGTH STRESS.

6) ADDITIONAL DESIGN CRITERIA:
CONCRETE - f'c = 1,400 P.S.I. f'c = 3,500 P.S.I.
WIND LOAD - 25 LBS PER SQUARE FOOT (MIN.) ON THE EXPOSED POLE SURFACE.
REINFORCING STEEL = 24,000 psi (GRADE 60)

7) CONCRETE FOR FOOTINGS SHALL CONFORM TO REQUIREMENTS OF CONCRETE CLASS 'B' SECTION 501. STRUCTURAL CONCRETE.

8) BACKFILL MATERIAL PLACED ADJACENT TO THE FOOTINGS SHALL MEET THE REQUIREMENTS FOR GRANULAR BACKFILL FOR STRUCTURES. SUBSECTION 704.08.

9) WHEN 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.

10) EACH METAL POLE SUPPORTING EITHER VEHICLE OR PEDESTRIAN TRAFFIC SIGNAL SHALL BE GROUNDED. RESISTANCE OF MADE ELECTRODES. A SINGLE ELECTRODE CONSISTING OF A GROUND ROD WHICH DOES NOT HAVE A RESISTANCE TO GROUND OF 25 OHMS OR LESS SHALL BE AUGMENTED BY AT LEAST ONE ADDITIONAL ELECTRODE. THEY SHALL BE AT LEAST 6 FEET APART.

11) STRAIN POLE BASE PLATES SHALL BE STAMPED WITH POLE DIAMETER, HEIGHT, YIELD STRENGTH, AND GAGE. ALTERNATELY, THE INFORMATION MAY BE STAMPED ON A METAL TAG ATTACHED TO THE POLE NEAR THE HANDHOLE.

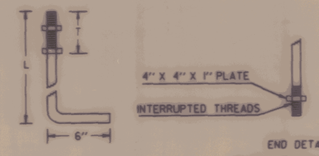
12) ALL DESIGN DETAILS, WORKMANSHIP, PROCEDURES AND INSPECTION OF WELDING SHALL CONFORM TO THE REQUIREMENTS OF THE AWS D.1.1.- 80 AS MODIFIED BY THE LATEST EDITION OF AASHTO STANDARD STEEL SPECIFICATIONS FOR WELDING OF STRUCTURAL HIGHWAY BRIDGES. THE SHEILDED METAL ARC WELDING (SMAW) OR SUBMERGED ARC WELDING (SAW) PROCESSES SHALL BE USED FOR ALL WELDING UNLESS OTHER PROCESSES ARE APPROVED. ON A PROJECT BY PROJECT BASIS, FROM ACCEPTABLE RESULTS OF PROCEDURE QUALIFICATION TESTS. WHERE WELDMENTS ARE TO BE GALVANIZED AFTER WELDING, A TYPE OF FILLER METAL WHICH WILL DEPOSIT WELD METAL WITH A SILICON CONTENT LESS THAN 0.4 PERCENT SHALL BE USED. ALL WELDS SHALL BE AT LEAST AS STRONG AS THE MATERIAL(S) BEING WELDED.

13) IN ACCORDANCE WITH SUBSECTION 105.03, SHOP DRAWINGS (6 COPIES OF EACH; 1 - TRAFFIC & SAFETY, 1 - PRIME CONTR., 1 - SUB CONTR., 3 - CONST.) SHALL BE SUBMITTED TO THE VERMONT AGENCY OF TRANSPORTATION 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 ARM(S) ON STRAIN POLE(S).
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), POLE GAGE, HANDHOLE (SIZE AND LOCATION), BASE PLATE, BOLT CIRCLE, ANCHOR BOLT SIZE)
F) POLE BASE STAMPING DETAIL.
G) DEAD LOAD DEFLECTION INFORMATION.
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) THE FOLLOWING INFORMATION WILL BE REQUIRED FOR ALL WELDED JOINTS (ALUMINUM OR STEEL):
(a) PROCEDURE SPECIFICATIONS PER AWS D1.1 APPENDIX E FORM E1
(b) PROCESS AND PROCEDURE QUALIFICATION TESTS PER AWS D1.1 APPENDIX E FORM E2
(c) CERTIFICATE OF CONFORMANCE TO SPECIFICATIONS FOR FILLER MATERIAL.
WHEN USING ANY GMAW OR FCAW WELDING PROCESS (WITH PRIOR APPROVAL AS NOTED ABOVE), THE FOLLOWING WILL ALSO BE REQUIRED:
A MANUFACTURER'S CERTIFICATE THAT THE GAS OR GAS MIXTURE IS SUITABLE FOR THE INTENDED APPLICATION AND MEETS THE DEW POINT REQUIREMENTS.
REFERENCE-ASSHTO MODIFICATION OF AWS D1.1 SEC. 4.18

USED FOR CONDUIT LOCATION, SEE AT RIGHT 'SECTION' DETAIL.

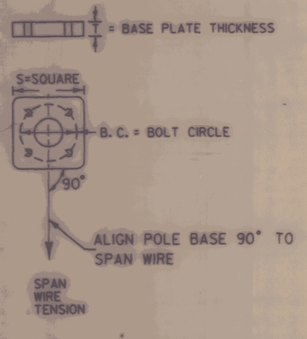
2" SCORE MARK DETAIL

ANCHOR BOLT DETAIL		
SIZE	L	T
1 - 1/4" X 48"	42	8
1 - 1/2" X 60"	54	9
1 - 3/4" X 90"	84	9
2" X 96"	96	9

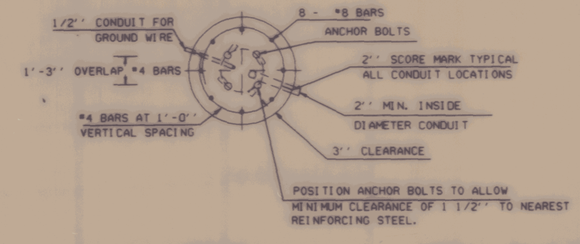


1 - 1/4" TO 1 - 3/4" BOLT

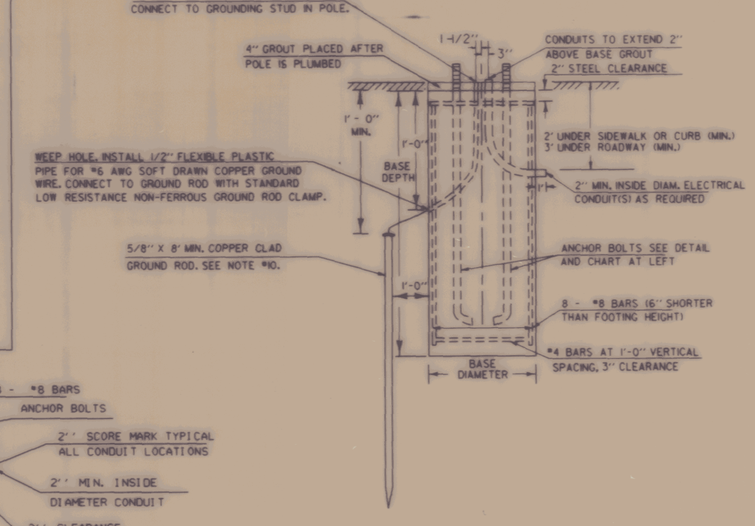
ANCHOR BOLT DETAIL



BASE PLATE DETAIL



SECTION



ELEVATION

STRAIN POLE FOOTING

STRAIN POLE/FOOTING DETAIL SHEET

SIGNAL #

PREPARED BY MSP DATE 2/91
CHECKED BY SJS DATE 2/91
DESIGN SUPERVISOR LDW DATE 2/91
PROJ. PB 033-1(2)
TRAFFIC SHEET NO. ____ OF ____
SHEET 396 OF 400 SHEETS

TDM2