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TOTAL SHEETS = 31

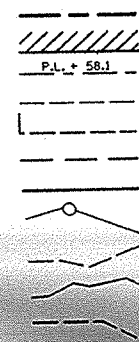


DESIGN DESIGNATION

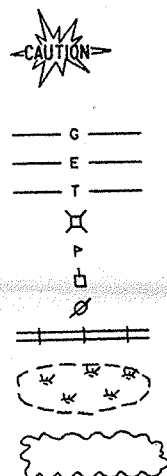
T. (1996) = 5545
 T. (2010) = 15,900
 V. = 1590
 = 60-40
 = 10.0%
 DESIGN SPEED = 45 MPH
 LS =

CONVENTIONAL SIGNS

PROPERTY LINE
 CORPORATE LIMITS
 EASEMENT LINE
 EASEMENT
 RIGHT OF WAY
 OPENED OR NEW R/W LINE
 KEY LINE
 EASEMENT INTERCEPT
 EASEMENT GROUND
 EASEMENT OR ROCK PROFILE



COMBUSTIBLE FLUIDS
 UNDERGROUND UTILITIES
 GAS
 ELECTRIC
 TELEPHONE OR TELEGRAPH
 SERVICE PEDESTAL
 CABLE MARKER
 POWER POLE
 TELEPHONE POLE
 RAILROAD
 MARSH AREA
 WOODED OR SHRUB AREA



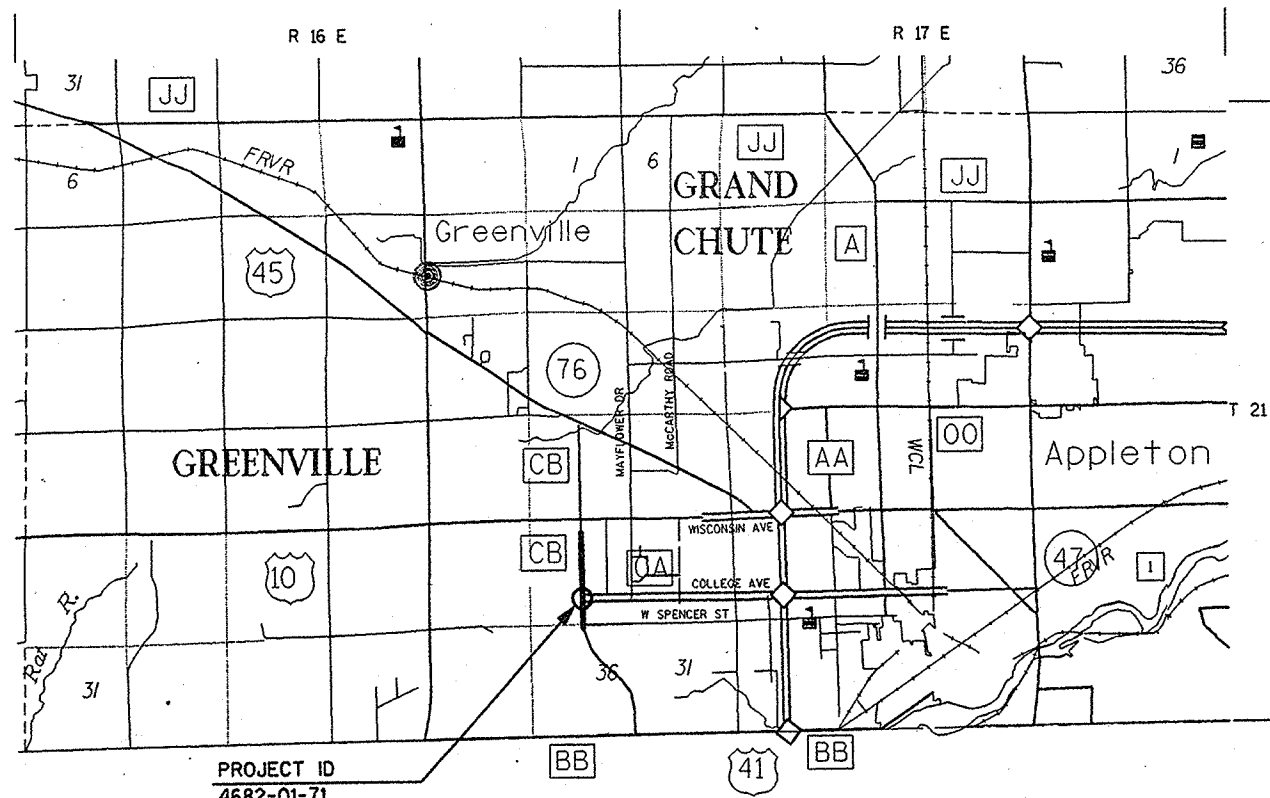
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

CTH CB & CTH CA INTERSECTION CTH CB

OUTAGAMIE COUNTY

STATE PROJECT NUMBER
 4682-01-71



PROJECT ID
 4682-01-71

LAYOUT
 SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.000 MI. (SIGNALS)

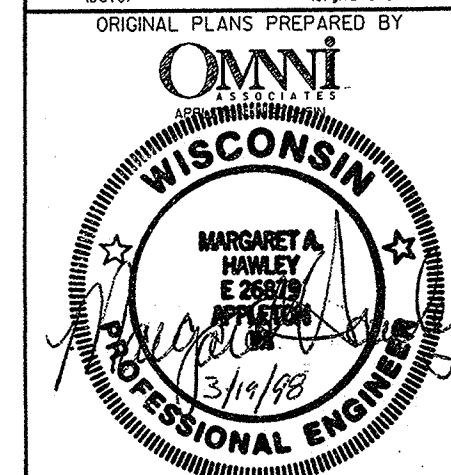
STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4682-01-71	STP 1998 580	1

AS-BUILT PLAN

AS BUILT PLAN NO.

SUPERVISOR J. Lamers
 RESIDENT H. Malcom
 CONTRACTOR Cable Life
 COMPLETED 12-7-98

ACCEPTED FOR
 OUTAGAMIE COUNTY
 3/19/98 (Date) M. Hawley (Signature)



STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION
 PREPARED BY
 Surveyor OMNI ASSOCIATES
 Designer OMNI ASSOCIATES
 District Examiner J. LAMERS
 District Supervisor J. LAMERS
 Proj. Dev. Engineer J. GOODMAN
 C.O. Examiner J. GOODMAN

APPROVED FOR DISTRICT OFFICE
 DATE: 3/27/98 James Lamers (Signature)

APPROVED FOR CENTRAL OFFICE TRAFFIC
 DATE: 5/8/98 Paul And (Signature)

CB-1

FILE NAME: EID05A / SHEETS / SIGNAL / QN01200 / TECH/ENGR: CRK/MAH / PLOT DATE: 03/25/97 / 5/92 / PLOT SCALE: 1:1
ORIGINATOR: OMNI ASSOCIATES / ONE SYSTEMS DRIVE / APPLETON, WI 54914 / REV. DATE: /

STANDARD DETAIL DRAWINGS

9B2-6 CONDUIT
9B4-3 PULL BOX
9C2-2 CONCRETE BASES, TYPES 1, 2, AND 5
9C3-2 TRANSFORMER/PEDESTAL BASE
9C5-2 CONCRETE CONTROL CABINET BASES
9D1-2 CABINET SERVICE INSTALLATION
9E1-2a POLE MOUNTINGS FOR TRAFFIC SIGNALS, TYPE 2
9E1-2b POLE MOUNTINGS FOR TRAFFIC SIGNALS AND LIGHT UNITS, TYPE 3
9E1-2c POLE MOUNTINGS FOR TRAFFIC SIGNALS AND LIGHTING UNITS, TYPE 4
9E1-2f HARDWARE DETAILS FOR POLE MOUNTINGS
9E6-1 TRAFFIC SIGNAL STANDARD POLY BRACKET MOUNTING (TYPICAL) 13 FEET OR 15 FEET
9F1-2 DETAILS FOR THE INSTALLATION OF TRAFFIC SIGNAL AND TRAFFIC COUNTER
9F8-2 LOOP DETECTOR WIRES IN PAVEMENT IN PLACE
15C12-2 LOOP DETECTOR PLACED IN CRUSHED AGGREGATE BASE (NEW ASPHALTIC PAVEMENT)
TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)

UTILITIES

ELECTRIC WISCONSIN ELECTRIC POWER COMPANY
P.O. BOX 1699
APPLETON, WISCONSIN 54913
ATTN: BUDGET ENGINEERING SUPERVISOR
TELEPHONE: (920) 735-8445

TELEPHONE AMERITECH
221 W. WASHINGTON STREET
FOURTH FLOOR, OSPE
APPLETON, WISCONSIN 54911
ATTN: MR. JOHN STUMPF
TELEPHONE: (920) 735-3250
CABLE LOCATE: (800) 242-8511 (TOLL FREE)

GAS WISCONSIN ELECTRIC POWER COMPANY
GAS DIVISION
800 SOUTH LYNNDAL DRIVE
APPLETON, WISCONSIN 54914
ATTN: MR. DENNIS GIRARD
TELEPHONE: (920) 735-8466

WATER AND TOWN OF GREENVILLE
SANITARY SEWER P.O. BOX 60
GREENVILLE, WISCONSIN 54942
ATTN: MR. DON SCHINKE
TELEPHONE: (920) 757-5151

DIGGERS HOTLINE CABLE LOCATE
TELEPHONE: (800) 242-8511 (TOLL FREE)

DNR LIAISON MS. KELLEY O'CONNOR
WDNR - LAKE MICHIGAN DISTRICT
1125 N. MILITARY AVENUE
GREEN BAY, WISCONSIN 54307-0448
TELEPHONE: (920) 492-5819

TRAFFIC SIGNALS CITY OF APPLETON
100 NORTH APPLETON STREET
APPLETON, WISCONSIN 54911
ATTN: MR. GREG HANSON
TELEPHONE: (920) 832-6474

STATE PROJECT NUMBER 4682-01-71	SHEET NO. 2.1
GENERAL NOTES FOR CTH CB (TWO MILE RD) OUTAGAMIE CO	

GENERAL NOTES

THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

CURVE DATA BASED ON ARC DEFINITION.

BEARINGS SHOWN ON THIS PLAN ARE GRID BEARINGS.

DISTANCES SHOWN ON THIS PLAN ARE GROUND DISTANCES.

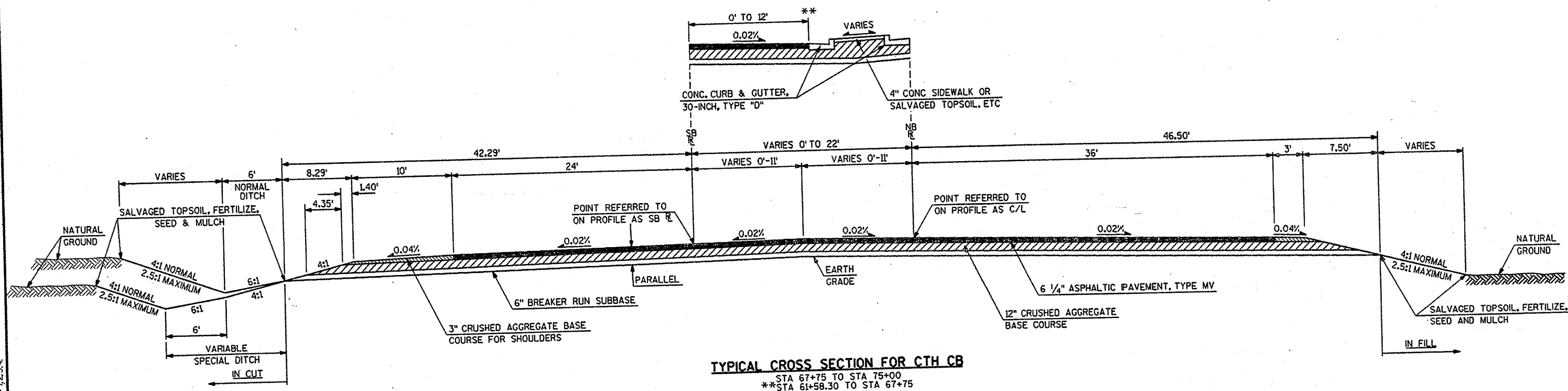
CONVERSION FACTOR = 0.999935

PLAN ELEVATIONS = USGS DATUM.

ALL COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COORDINATE SYSTEM.

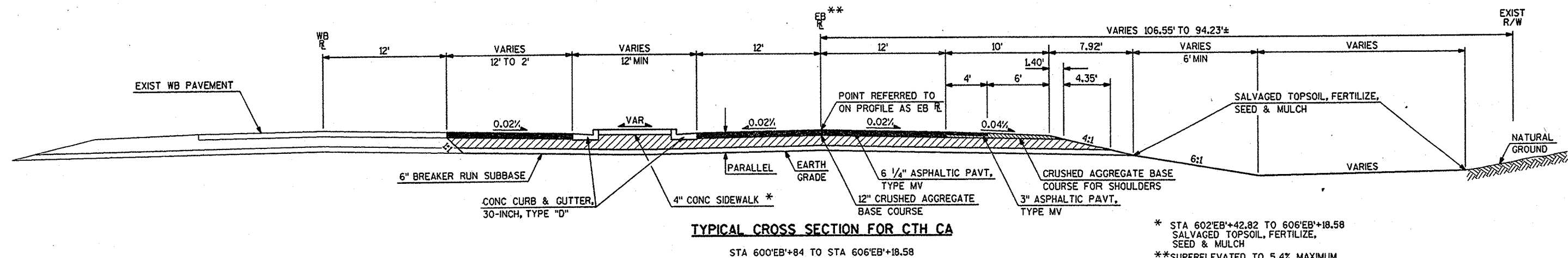
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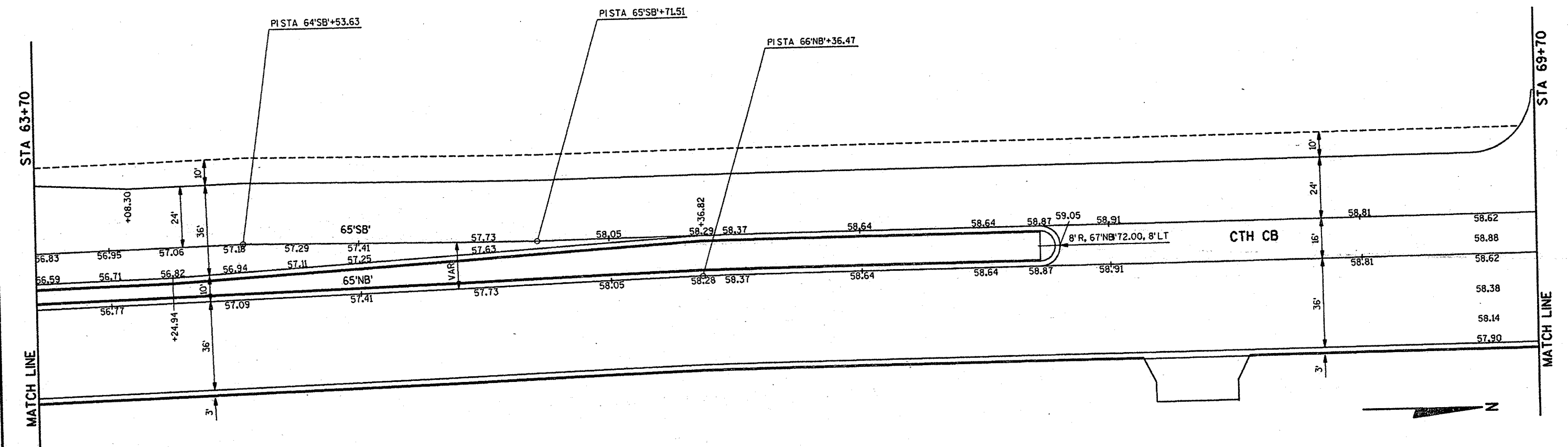
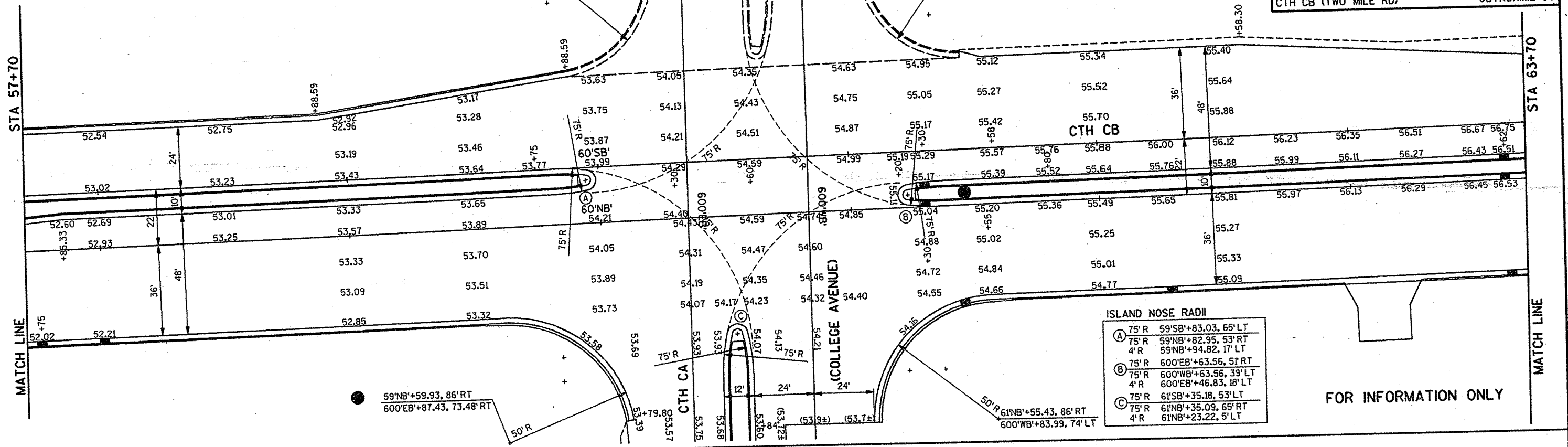
FOR INFORMATION ONLY



TYPICAL CROSS SECTION FOR CTH CB
 STA 67+75 TO STA 75+00
 **STA 61+58.30 TO STA 67+75

LEVELS ON - 1, 2, 3, 4



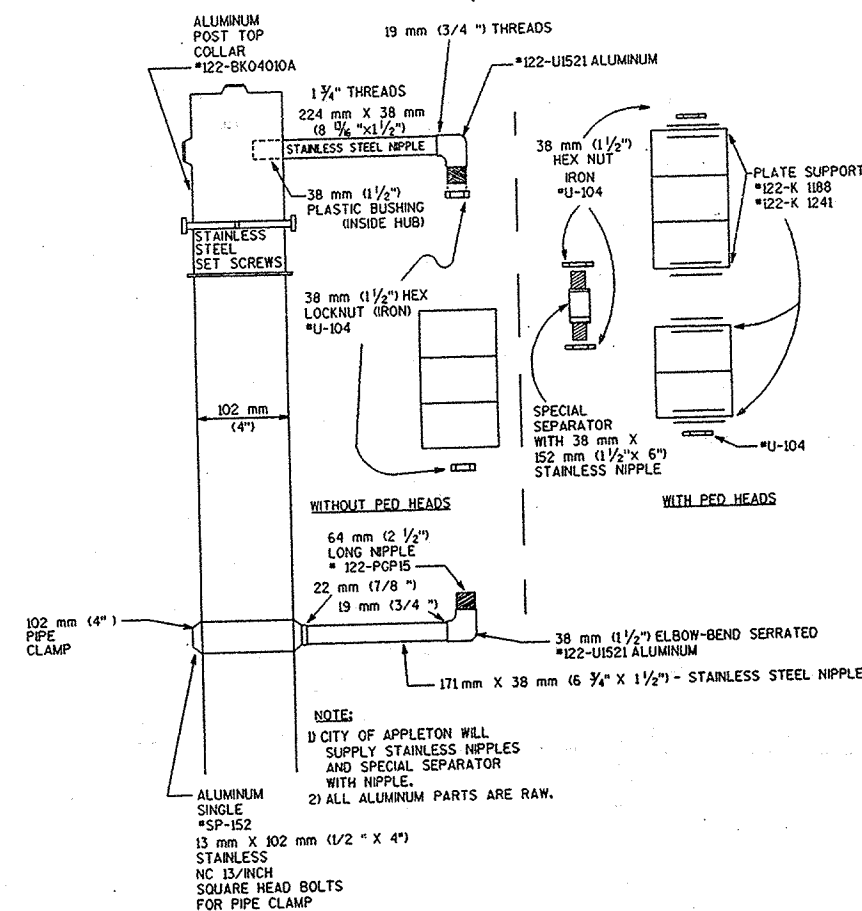


CITY OF APPLETON TYPICAL TRAFFIC SIGNAL POLE AND HARDWARE ITEM LIST SINGLE TRAFFIC STANDARD

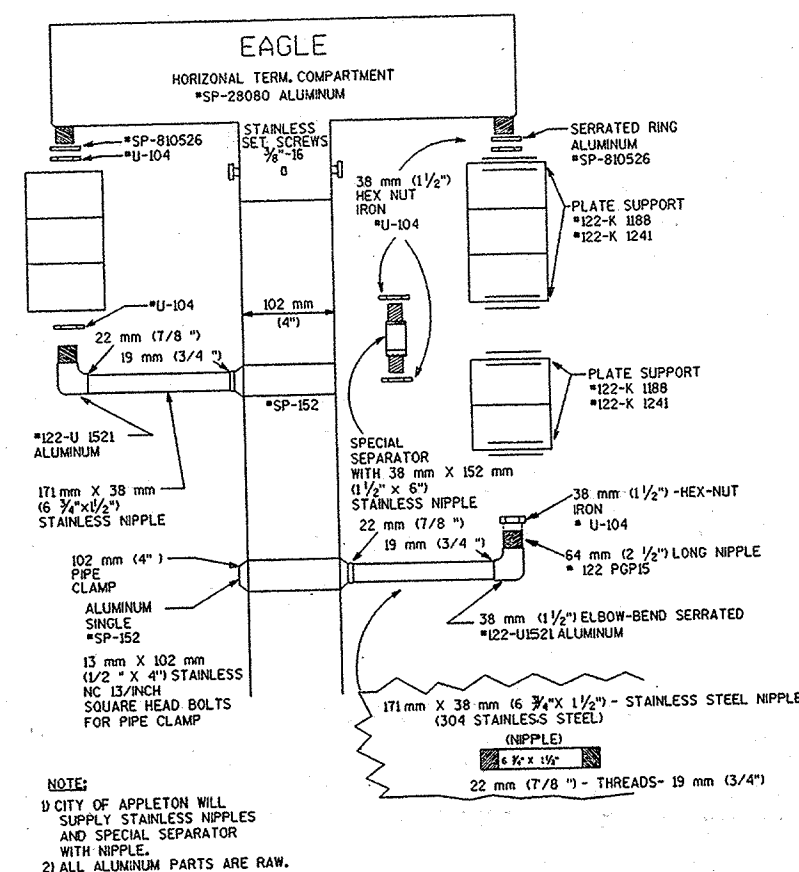
NUMBER	ITEM
203-00014	BASE, ALUM. SQ. NO PAINT, W/ALUM TAPCO DOOR PB-5334-01
373-13	PIPE, ALUM. SCHED 40, 6061-T6, 13", 4.5 O.D. T.O.E.
SA-103A-1111YBB	SIGNAL, 3 SEC 12" POLY W/TUN WISDOT SPEC
122-BPD503AN	BACKPLATES-VERTICAL
122-BK04010A	COLLAR POST TOP BK040-10A PN# A31435 UNPAINTED
SP-152	CLAMP 4", POLE, SING HUB UJ-152 UNPAINTED
122-K1188	PLATE SUPRT 2" HOLE K-1188 SM-0225-FHWA YEL
122-K1241	PLAT SUPRT 2.8125 K-1241 SM-0226-FHWA YEL
122-U104	LOCKNUTS U-104 P/N# M30244
122-U1521	ELBOW 1 END SERRATED U-1521 FROM U1616 & U847 PN# M311
122-PGP15	NIPPLE - 1 1/2" PGP-15 PN#380200
122-U-1616	RING, SERRATED U-1616 WHITE NYLON PN# M20466
SP-810526	SERRATED RING - ALUM-A-810526
122-EJ4	PUSHBUTTON PED. EJ4Y
SA-302B-1212YBB	SIGNAL, 2 SEC 12" PED SYMBOLS W/CUTAWAY VISORS

CITY OF APPLETON TYPICAL TRAFFIC SIGNAL POLE AND HARDWARE ITEM LIST DOUBLE TRAFFIC STANDARD

NUMBER	ITEM
203-00014	BASE, ALUM. SQ. NO PAINT, W/ALUM TAPCO DOOR PB-5334-01
373-13	TRAFFIC SIGNAL STANDARDS, ALUMINUM, 13 FEET
SA-103A-1111YBB	TRAFFIC SIGNAL FACES, 3-12 VERTICAL WITH TUNNEL
122-BPD503AN	BACKPLATES - VERTICAL
SP-28080	COMP TERM HORIZ BK280-20A UNPAINTED
SP-152	CLAMP 4", POLE, SING HUB UJ-152 UNPAINTED
122-K1188	PLATE SUPRT 2" HOLE K-1188 SM-0225-FHWA YEL
122-K1241	PLATE SUPRT 2.8125 K-1241 SM-0226-FHWA YEL
122-U104	LOCKNUTS U-104 P/N# M30244
122-U1521	ELBOW 1 END SERRATED U-1521 FROM U1616 & U847 PN# M311
122-PGP15	NIPPLE - 1 1/2" PGP-15 PN#380200
122-U-1616	RING, SERRATED U-1616 WHITE NYLON PN# M20466
SP-810526	SERRATED RING - ALUM-A-810526
122-EJ4	PUSHBUTTON PED. EJ4Y
SA-302B-1111YBB	PEDESTRIAN SIGNAL FACES, 12 INCH, CUT AWAY SYMBOL



TRAFFIC STANDARD (SINGLE)
CITY OF APPLETON
TRAFFIC DIVISION
DEPARTMENT OF PUBLIC WORKS



TRAFFIC STANDARD (DOUBLE)
CITY OF APPLETON
TRAFFIC DIVISION
DEPARTMENT OF PUBLIC WORKS

TRAFFIC SIGNAL MOUNTING HARDWARE

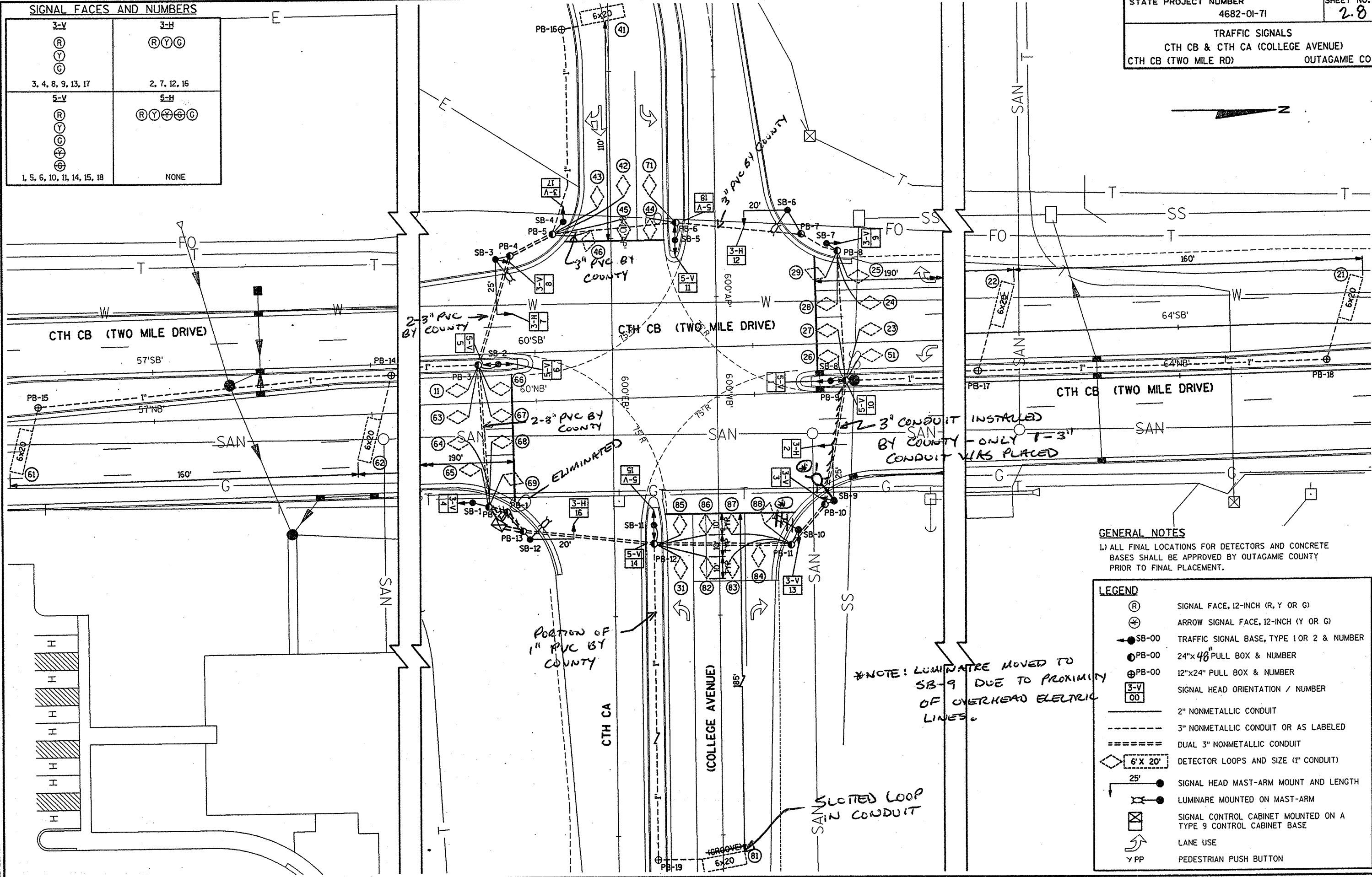
SIGNAL FACES AND NUMBERS

3-V (R) (Y) (G) 3, 4, 8, 9, 13, 17	3-H (R)(Y)(G) 2, 7, 12, 16
5-V (R) (Y) (G) (H) (P) 1, 5, 6, 10, 11, 14, 15, 18	5-H (R)(Y)(G)(H) NONE

STATE PROJECT NUMBER
4682-01-71

SHEET NO.
2.8

TRAFFIC SIGNALS
CTH CB & CTH CA (COLLEGE AVENUE)
CTH CB (TWO MILE RD) OUTAGAMIE CO



GENERAL NOTES

1) ALL FINAL LOCATIONS FOR DETECTORS AND CONCRETE BASES SHALL BE APPROVED BY OUTAGAMIE COUNTY PRIOR TO FINAL PLACEMENT.

LEGEND

- (R) SIGNAL FACE, 12-INCH (R, Y OR G)
- (Y) ARROW SIGNAL FACE, 12-INCH (Y OR G)
- SB-00 TRAFFIC SIGNAL BASE, TYPE 1 OR 2 & NUMBER
- PB-00 24"x48" PULL BOX & NUMBER
- PB-01 12"x24" PULL BOX & NUMBER
- 3-V SIGNAL HEAD ORIENTATION / NUMBER
- 00 2" NONMETALLIC CONDUIT
- 3" NONMETALLIC CONDUIT OR AS LABELED
- DUAL 3" NONMETALLIC CONDUIT
- 6' x 20' DETECTOR LOOPS AND SIZE (1" CONDUIT)
- 25' SIGNAL HEAD MAST-ARM MOUNT AND LENGTH
- LUMINARE MOUNTED ON MAST-ARM
- SIGNAL CONTROL CABINET MOUNTED ON A TYPE 9 CONTROL CABINET BASE
- LANE USE
- Y PP PEDESTRIAN PUSH BUTTON

59. PLOT SCALE: 1:1
REV. DATE: / / 97
/ SIGNAL / SGO2.DGN TECH/ENGR CRK/MAM
/ SHEETS / SHEETS
/ ORIGINATOR: OMNI ASSOCIATES
/ LEVELS ON - 1,2

SEQUENCE OF OPERATION

RING 1	HEAD NUMBERS	Ø1 CLEAR TO				Ø2 CLEAR TO			
		R/W	**			R/W	**		
Ø1	1, 5								
Ø2	6, 7, 8, 9, 10	R	R	R		G	Y	R	
Ø3	11, 14								
Ø4	15, 16, 17, 18	R	R	R		R	R	R	
Ø5	6, 10								
Ø6	1, 2, 3, 4, 5	R	R	R		R	R	R	
Ø7	15, 18								
Ø8	11, 12, 13, 14	R	R	R		R	R	R	

RING 2	HEAD NUMBERS	Ø5 CLEAR TO				Ø6 CLEAR TO			
		R/W	**			R/W	**		
Ø1	1, 5								
Ø2	6, 7, 8, 9, 10	R	R	R		R	R	R	
Ø3	11, 14								
Ø4	15, 16, 17, 18	R	R	R		R	R	R	
Ø5	6, 10								
Ø6	1, 2, 3, 4, 5	R	R	R		G	Y	R	
Ø7	15, 18								
Ø8	11, 12, 13, 14	R	R	R		R	R	R	

BARRIER

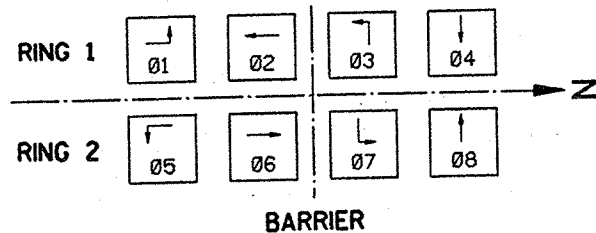
** CLEARANCE TO A PHASE IN CONFLICT WITH THIS PHASE ON (SEE CHART 1 BELOW)

CHART 1

PHASE ON	NON-CONFLICTING PHASE ALLOWED TO TIME CONCURRENTLY	PHASES IN CONFLICT WITH PHASE ON
Ø1	5 or 6	2, 3, 4, 7, 8
Ø2	5 or 6	1, 3, 4, 7, 8
Ø3	7 or 8	1, 2, 4, 5, 6
Ø4	7 or 8	1, 2, 3, 5, 6
Ø5	1 or 2	3, 4, 6, 7, 8
Ø6	1 or 2	3, 4, 5, 7, 8
Ø7	3 or 4	1, 2, 5, 6, 8
Ø8	3 or 4	1, 2, 5, 6, 7

GENERAL NOTES

1. ANY ACTUATED PHASE FOR WHICH THERE IS NO CALL SHALL BE SKIPPED.
2. WHEN ONE PHASE IS ON ALONE, ANY NON-CONFLICTING PHASE MAY START TIMING CONCURRENTLY WITHOUT A CLEARANCE INTERVAL. (SEE CHART 1 AT LEFT.)
3. IF ANY OPPOSING THRU PHASES ARE TIMING CONCURRENTLY, THEY SHALL TERMINATE TOGETHER DUE TO PERMISSIVE LEFT TURN CONFLICT.
4. PROVIDE FOR HAND OPERATION.



TYPE OF INTERCONNECT	
NONE	☒
TBC	☐
CLOSED LOOP	☐
HARDWIRE	☐
TONE (FREQ)	☐

TYPE OF PRE-EMPT	
NONE	☐
RAILROAD	☐
EMERGENCY VEHICLE	☒
	☐
	☐

TYPE OF LIGHTING	
NONE	☒
IN TRAFFIC CONTROL CABINET	☐
IN SEPARATE CONTROL CABINET	☐
	☐
	☐

TWO MILE DRIVE (CTH CB) & COLLEGE AVE (CTH CA)

CTH CB & CTH CA

OUTAGAMIE CO.

SIGNAL NO. ---

DATE: 03/98

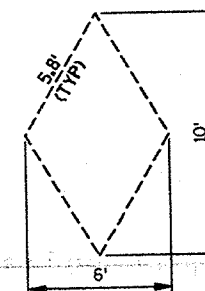
SHEET NO. 2 OF 2

WISDOT/CADD SHEET 40

DETECTOR LOGIC

DETECTOR NUMBER	AMPLIFIER CHANNEL NUMBER	DETECTOR OPERATION			PHASE CALLED	PHASE EXTENDED	DETECTOR DISCONNECT	CALLING DELAY	EXTENSION STRETCH	SIZE	NUMBER OF TURNS
		CALLS AND EXTENDS	CALLS ONLY	EXTENDS ONLY							
11	1	X			1	1				*5.8' x 5.8'	4
21	2	X			2	2			X	6' x 20'	4
22	3	X			2	2			X	6' x 20'	4
23	4		X		2					*5.8' x 5.8'	4
24	5		X		2					*5.8' x 5.8'	4
25	6		X		2			X		*5.8' x 5.8'	4
26	7		X		2					*5.8' x 5.8'	4
27	4		X		2					*5.8' x 5.8'	4
28	5		X		2					*5.8' x 5.8'	4
29	6		X		2			X		*5.8' x 5.8'	4
31	8	X			3	3				*5.8' x 5.8'	4
41	9	X			4	4			X	6' x 20'	4
42	10		X		4					*5.8' x 5.8'	4
43	11		X		4			X		*5.8' x 5.8'	4
44	12		X		4					*5.8' x 5.8'	4
45	10		X		4					*5.8' x 5.8'	4
46	11		X		4			X		*5.8' x 5.8'	4
51	13	X			5	5				*5.8' x 5.8'	4
61	14	X			6	6			X	6' x 20'	4
62	15	X			6	6			X	6' x 20'	4
63	16		X		6					*5.8' x 5.8'	4
64	17		X		6					*5.8' x 5.8'	4
65	18		X		6			X		*5.8' x 5.8'	4
66	19		X		6					*5.8' x 5.8'	4
67	16		X		6					*5.8' x 5.8'	4
68	17		X		6					*5.8' x 5.8'	4
69	18		X		6			X		*5.8' x 5.8'	4
71	20	X			7	7				*5.8' x 5.8'	4
81	21	X			8	8			X	6' x 20'	4
82	22		X		8					*5.8' x 5.8'	4
83	23		X		8					*5.8' x 5.8'	4
84	24		X		8			X		*5.8' x 5.8'	4
85	25		X		8					*5.8' x 5.8'	4
86	22		X		8					*5.8' x 5.8'	4
87	23		X		8					*5.8' x 5.8'	4
88	24		X		8			X		*5.8' x 5.8'	4

* DIAMOND LOOP DETAIL

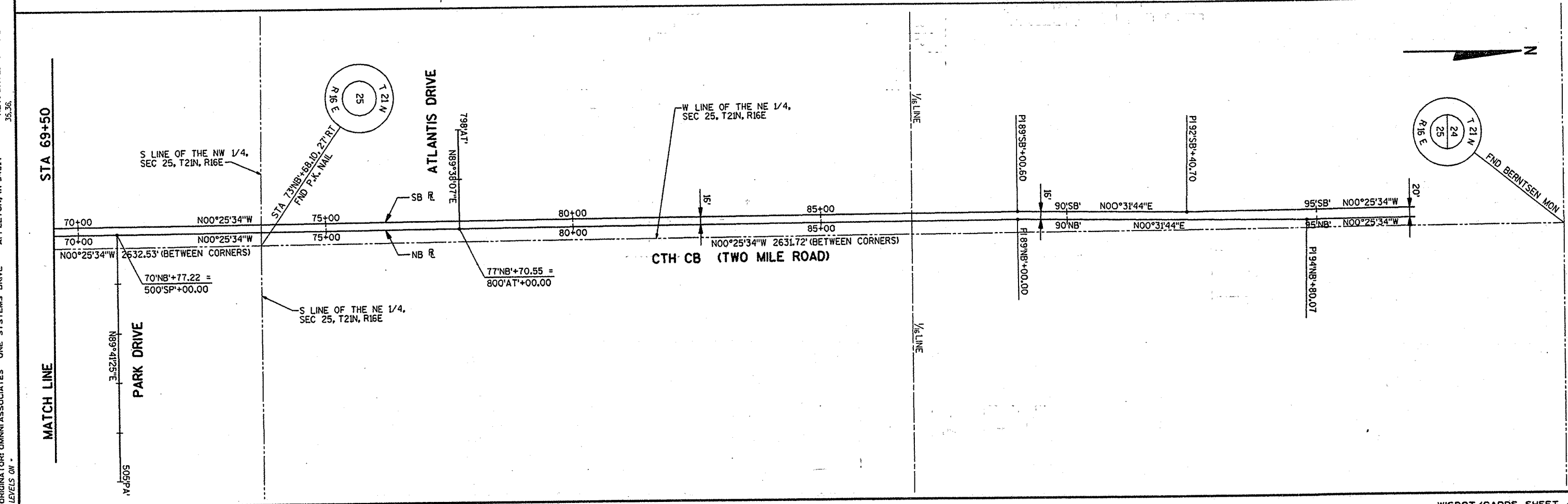


CONTROLLER LOGIC

PHASE NUMBER	PHASE LOCKING	PHASE RECALL	DUAL ENTRY W/O
Ø1			6
Ø2		MIN	6
Ø3			8
Ø4			8
Ø5			2
Ø6		MIN	2
Ø7			4
Ø8			4

OVERLAPS

O.L. "A" =
O.L. "B" =
O.L. "C" =
O.L. "D" =



DATE 06MAY98

ESTIMATE OF QUANTITIES

SHEET: 3.1

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	4682-01-71 QUANTITY
0010	61910	MOBILIZATION	LS	1.00	1.00
0020	64301	TRAFFIC CONTROL	LS	1.00	1.00
0030	65216	NONMETALLIC CONDUIT, SCHEDULE 40, 1-INCH	L.F.	1,021.00	1,021.00
0040	65219	NONMETALLIC CONDUIT, SCHEDULE 40, 2-INCH	L.F.	77.00	77.00
0050	65221	NONMETALLIC CONDUIT, SCHEDULE 40, 3-INCH	L.F.	924.00	924.00
0060	65250	LOOP DETECTOR CONDUIT	L.F.	1,628.00	1,628.00
0070	65301	PULL BOXES, STEEL, 12X24-INCH	EACH	6.00	6.00
0080	65311	PULL BOXES, STEEL, 24X48-INCH	EACH	13.00	13.00
0090	65401	CONCRETE BASES, TYPE 1	EACH	7.00	7.00
0100	65402	CONCRETE BASES, TYPE 2	EACH	5.00	5.00
0110	65418	CONCRETE CONTROL CABINET BASES, TYPE 9	EACH	1.00	1.00
0120	65425	PEDESTAL BASES	EACH	7.00	7.00
0130	65430	TRANSFORMER BASES, STANDARD, 11 1/2-INCH BOLT CIRCLE	EACH	5.00	5.00
0140	65526	TRAFFIC SIGNAL CABLE, 7 CONDUCTOR, NO. 14	L.F.	1,615.00	1,615.00
0150	65532	TRAFFIC SIGNAL CABLE, 15 CONDUCTOR, NO. 14	L.F.	1,130.00	1,130.00
0160	65557	ELECTRICAL WIRE, TRAFFIC SIGNALS, NO. 10	L.F.	2,100.00	2,100.00
0170	65567	ELECTRICAL WIRE, LIGHTING, NO. 10	L.F.	1,500.00	1,500.00
0180	65569	ELECTRICAL WIRE, LIGHTING, NO. 6	L.F.	500.00	500.00
0190	65580	LOOP DETECTOR LEAD IN CABLE	L.F.	6,695.00	6,695.00
0200	65585	LOOP DETECTOR WIRE	L.F.	5,620.00	5,620.00
0210	65615	ELECTRICAL SERVICE, METER BREAKER PEDESTAL, CTH CB & CTH CA INTERSECTION	LS	1.00	1.00
0220	65702	POLES, TYPE 2	EACH	1.00	1.00
0230	65703	POLES, TYPE 3	EACH	3.00	3.00
0240	65704	POLES, TYPE 4	EACH	1.00	1.00
0250	65732	TRAFFIC SIGNAL STANDARDS, ALUMINUM, 13-FOOT	EACH	3.00	3.00
0260	65733	TRAFFIC SIGNAL STANDARDS, ALUMINUM, 15-FOOT	EACH	4.00	4.00
0270	65803	TROMBONE ARMS, 20-FOOT	EACH	2.00	2.00
0280	65804	TROMBONE ARMS, 25-FOOT	EACH	2.00	2.00
0290	65826	TRAFFIC SIGNAL FACES, 3-12 INCH VERTICAL	EACH	6.00	6.00

DATE 06MAY98

ESTIMATE OF QUANTITIES

SHEET: 3.2

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	4682-01-71 QUANTITY
0300	65828	TRAFFIC SIGNAL FACES, 5-12 INCH VERTICAL	EACH	8.00	8.00
0310	65829	TRAFFIC SIGNAL FACES, 3-12 INCH HORIZONTAL	EACH	4.00	4.00
0320	65836	BACKPLATES, 3 SECTION, 12-INCH SIGNAL FACES	EACH	10.00	10.00
0330	65838	BACKPLATES, 5 SECTION, 12-INCH SIGNAL FACES	EACH	4.00	4.00
0340	65850	TRAFFIC SIGNAL MOUNTING HARDWARE, CTH CB & CTH CA INTERSECTION	LS	1.00	1.00
0350	65905	LUMINAIRES, UTILITY, 250 WATTS	EACH	4.00	4.00
0360	65936	LUMINAIRE ARMS, TRUSS TYPE, 4 1/2-INCH CLAMP, 12-FOOT	EACH	4.00	4.00
0370	90005	MISC 90005A TRAFFIC SIGNAL CONTROLLER, FULLY ACTUATED, 16-PHASE, SPECIAL	EACH	1.00	1.00
0380	90030	MISC 90030A LOOP DETECTOR GROVES	L.F.	55.00	55.00

57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

NONMETALLIC CONDUIT, SCHEDULE 40

FROM	TO	1-INCH LF	2-INCH LF	3-INCH LF
CB	PB1	---	---	10
PB1	PB2	---	---	20
PB2	PB3	---	---	126
PB2	SB1	---	7	---
PB3	PB4	---	---	100
PB3	PB14	180	---	---
PB3	SB2	---	10	---
PB4	PB5	---	---	48
PB4	SB3	---	5	---
PB5	PB6	---	---	55
PB5	PB16	95	---	---
PB5	SB4	---	5	---
PB6	PB7	---	---	58
PB6	SB5	---	8	---
PB7	PB8	---	---	18
PB7	SB6	---	12	---
PB8	PB9	---	---	59
PB8	SB7	---	6	---
PB9	PB10	---	---	114
PB9	PB17	165	---	---
PB9	SB8	---	7	---
PB10	PB11	---	---	48
PB10	SB9	---	5	---
PB11	PB12	---	---	126
PB11	SB10	---	7	---
PB12	PB13	120	---	120
PB12	PB19	133	---	---
PB12	SB11	8	---	---
PB13	PB1	---	---	22
PB13	SB12	---	5	---
PB14	PB15	160	---	---
PB17	PB18	160	---	---
TOTALS		1 021	77	924

TRAFFIC SIGNAL CABLE, NO. 14

FROM	TO	15 COND. LF	7 COND. LF	BASE TO HEAD 7 COND. LF
CB	SB1	---	43	4
CB	SB2	115	---	5
CB	SB3	167	---	7
CB	SB4	---	199	17
CB	SB5	261	---	11
CB	SB6	---	329	12
CB	SB12	---	42	16
CB	SB11	108	---	14
CB	SB10	---	180	13
CB	SB9	207	---	2
CB	SB8	272	---	3
CB	SB7	---	332	9
TOTALS		1 130	1 125	490

7 COND. TOTAL = 1615

COLOR CODE

NB & WB	SB & EB
RED = RED	RED = RED W/ BLACK
YELLOW = ORANGE	YELLOW = ORANGE W/ BLACK
GREEN = GREEN	GREEN = GREEN W/ BLACK
LT. GREEN = BLUE	LT. GREEN = BLUE W/ BLACK
LT. YELLOW = BLACK	LT. YELLOW = BLACK W/ WHITE

LOOP DETECTORS

LOOP NO.	SIZE FT X FT	NO. OF TURNS	CONDUIT LF	WIRE LF	LEAD IN CABLE LF
11	*5.8 X 5.8	4	35	123	88
21	6 X 20	4	72	254	570
22	6 X 20	4	72	254	410
23	*5.8 X 5.8	4	46	145	230
24	*5.8 X 5.8	4	48	143	285
25	*5.8 X 5.8	4	36	123	285
26	*5.8 X 5.8	4	34	121	230
27	*5.8 X 5.8	4	46	145	230
28	*5.8 X 5.8	4	48	143	285
29	*5.8 X 5.8	4	36	123	285
31	*5.8 X 5.8	4	37	127	84
41	6 X 20	4	61	232	260
42	*5.8 X 5.8	4	56	165	162
43	*5.8 X 5.8	4	41	137	162
44	*5.8 X 5.8	4	33	119	217
45	*5.8 X 5.8	4	53	159	162
46	*5.8 X 5.8	4	38	129	162
51	*5.8 X 5.8	4	36	125	230
61	6 X 20	4	63	236	420
62	6 X 20	4	72	254	260
63	*5.8 X 5.8	4	46	145	87
64	*5.8 X 5.8	4	52	157	24
65	*5.8 X 5.8	4	40	133	24
66	*5.8 X 5.8	4	34	123	88
67	*5.8 X 5.8	4	46	145	88
68	*5.8 X 5.8	4	51	157	24
69	*5.8 X 5.8	4	38	129	24
71	*5.8 X 5.8	4	37	127	217
81	6 X 20	4	18	264	255
82	*5.8 X 5.8	4	49	157	85
83	*5.8 X 5.8	4	50	153	148
84	*5.8 X 5.8	4	36	125	148
85	*5.8 X 5.8	4	35	123	85
86	*5.8 X 5.8	4	47	147	85
87	*5.8 X 5.8	4	50	153	148
88	*5.8 X 5.8	4	36	125	148
TOTALS			1 628	5 620	6695

* DIAMOND SHAPED WITH OVERALL LENGTH OF 10' AND WIDTH OF 6'.

LOOP DETECTOR GROOVES

LOOP NO.	LF
81	55

CONCRETE CONTROL CABINET BASE

LOCATION	TYPE 9 EACH
SE QUADRANT CTH CA AND CTH CB	1

TRAFFIC SIGNALS

SIGNAL BASE NUMBER	CONCRETE BASES TYPE 1 EACH	CONCRETE BASES TYPE 2 EACH	PEDESTAL BASES EACH	TRANSFORMER BASES EACH	POLES TYPE 2 EACH	POLES TYPE 3 EACH	POLES TYPE 4 EACH	TRAFFIC SIGNAL STANDARDS 13 FT EACH	TRAFFIC SIGNAL STANDARDS 15 FT EACH	TROMBONE ARMS 20 FT EACH	TROMBONE ARMS 25 FT EACH	LUMINAIRE ARMS TRUSS TYPE 12-FOOT EACH	LUMINAIRE 250 WATT HIGH PRESSURE SODIUM EACH
SB-1	1	---	1	---	---	---	---	1	---	---	---	---	---
SB-2	1	---	1	---	---	---	---	---	1	---	---	---	---
SB-3	---	1	---	1	---	---	---	1	---	---	---	---	---
SB-4	1	---	1	---	---	---	---	---	1	---	---	---	---
SB-5	1	---	1	---	---	---	---	---	1	---	---	---	---
SB-6	---	1	---	1	---	---	---	---	---	1	---	1	1
SB-7	1	---	1	---	---	---	---	1	---	---	---	---	---
SB-8	1	---	1	---	---	---	---	---	1	---	1	---	---
SB-9	---	1	---	1	1	---	---	---	---	---	---	1	1
SB-10	---	1	---	1	---	---	1	---	---	---	---	---	---
SB-11	1	---	1	---	---	---	---	---	1	---	---	1	1
SB-12	---	1	---	1	---	1	---	---	---	1	---	---	---
TOTALS	7	5	7	5	1	3	1	3	4	2	2	4	4

ELECTRICAL WIRE, TRAFFIC SIGNALS, NO. 10

FROM	TO	BONDED JUMPER LF	CURRENT CARRYING NEUTRAL LF
CB	SB1	40	40
SB1	SB2	100	100
SB1	PB2	13	---
SB2	SB3	84	84
SB2	PB3	16	---
SB3	SB4	53	53
SB3	PB4	11	---
SB4	SB5	86	86
SB4	PB5	11	---
SB5	SB6	96	96
SB5	PB6	15	---
SB6	SB7	48	48
SB6	PB7	18	---
SB7	SB8	88	88
SB7	PB8	11	---
SB8	SB9	88	88
SB8	PB9	13	---
SB9	SB10	55	55
SB9	PB10	11	---
SB10	SB11	96	96
SB10	PB11	15	---
SB11	SB12	90	90
SB11	PB12	15	---
SB12	CB	46	46
SB12	PB13	11	---
TOTALS		1 130	970

STATE PROJECT NUMBER
4682-01-71

SHEET NO.
3A

MISCELLANEOUS QUANTITIES
FOR

CTH CB OUTAGAMIE CO

TRAFFIC SIGNAL FACES

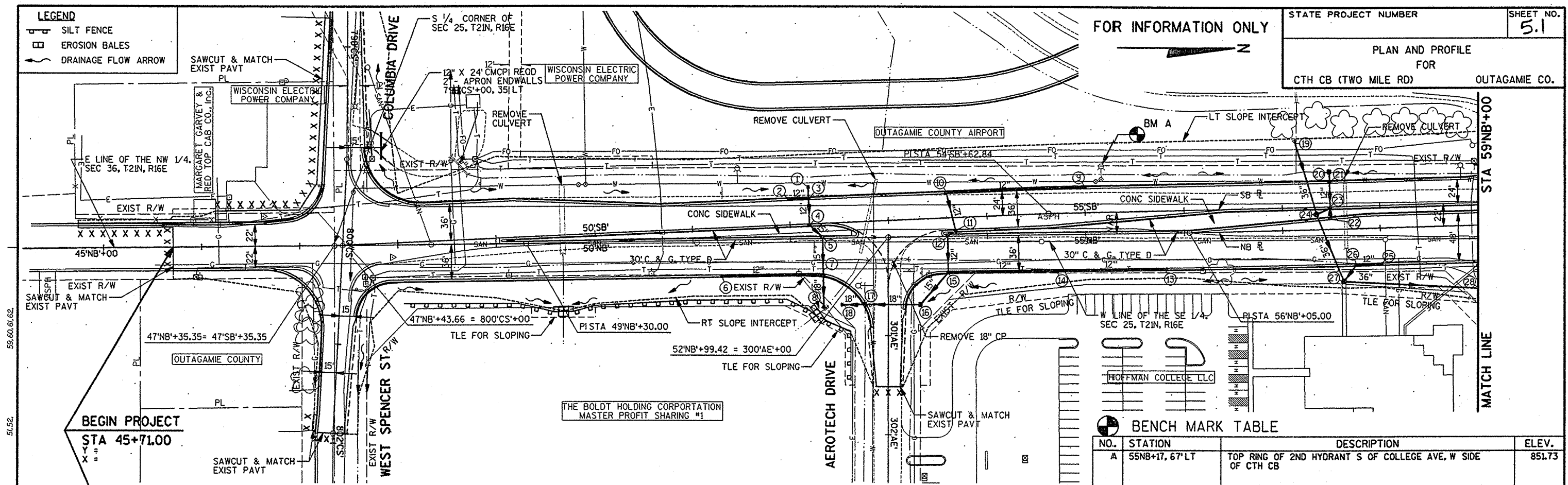
FACES 3-12 VERT. EACH	FACES 5-12 VERT. EACH	FACES 3-12 HORIZ. EACH	BACKPLATES 3-12 EACH	5-12 EACH
6	8	4	10	4

ELECTRICAL WIRE, LIGHTING

FROM	TO	NO. 6 LF	NO. 10 LF
CB	SB3	500	100
SB3	SB6	---	550
CB	SB12	---	220
CB	SB10	---	630
TOTALS		500	1 500

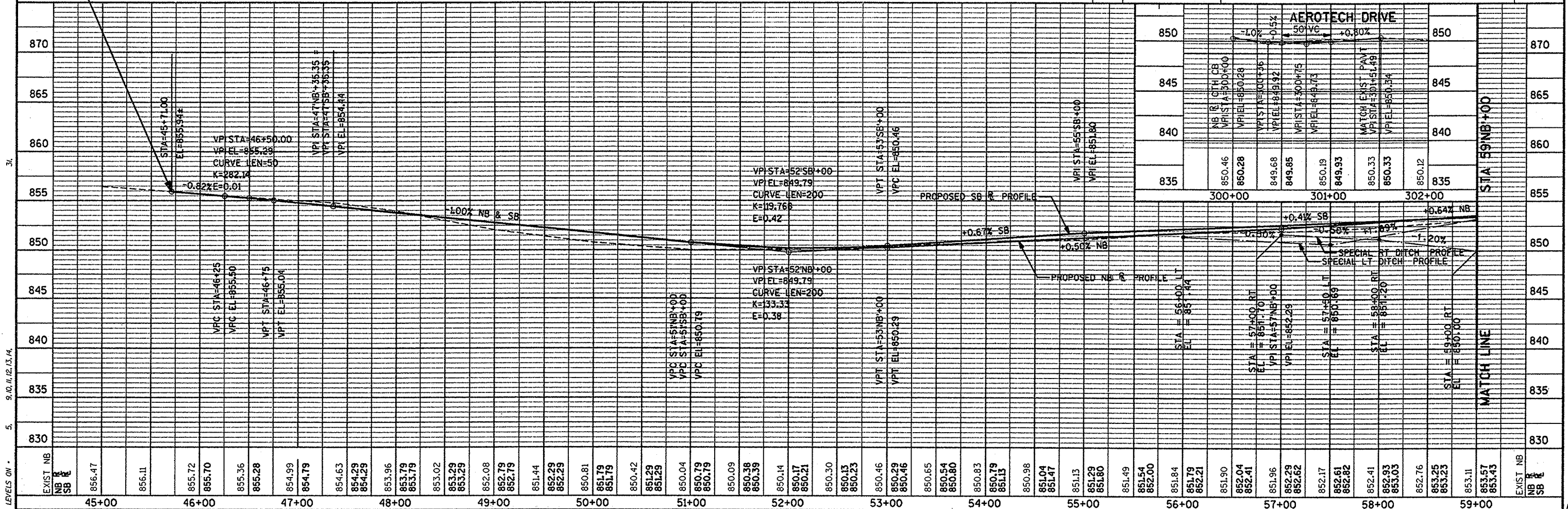
PULL BOXES, STEEL

PULL BOX NUMBER	12" X 24" EACH	24" X 48" EACH</
--------------------	-------------------	---------------------



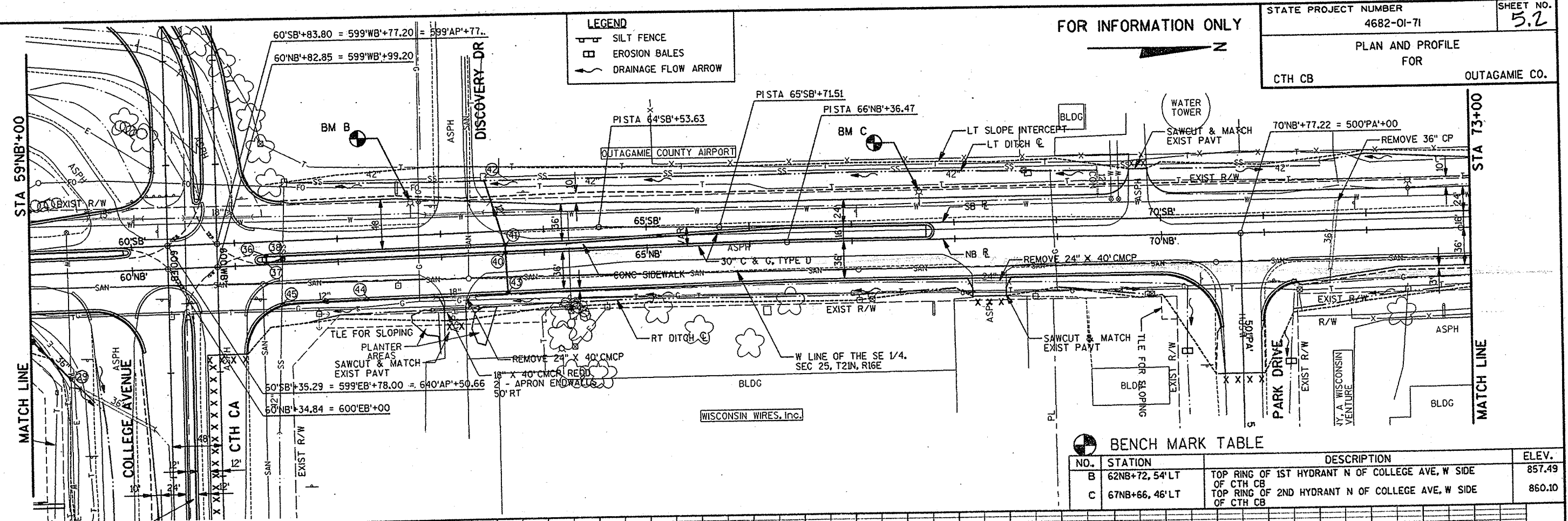
BENCH MARK TABLE

NO.	STATION	DESCRIPTION	ELEV.
A	55NB+17, 67' LT	TOP RING OF 2ND HYDRANT S OF COLLEGE AVE, W SIDE OF CTH CB	851.73



5.2

LEVELS ON - 5. 9.10.11.12.13.14.

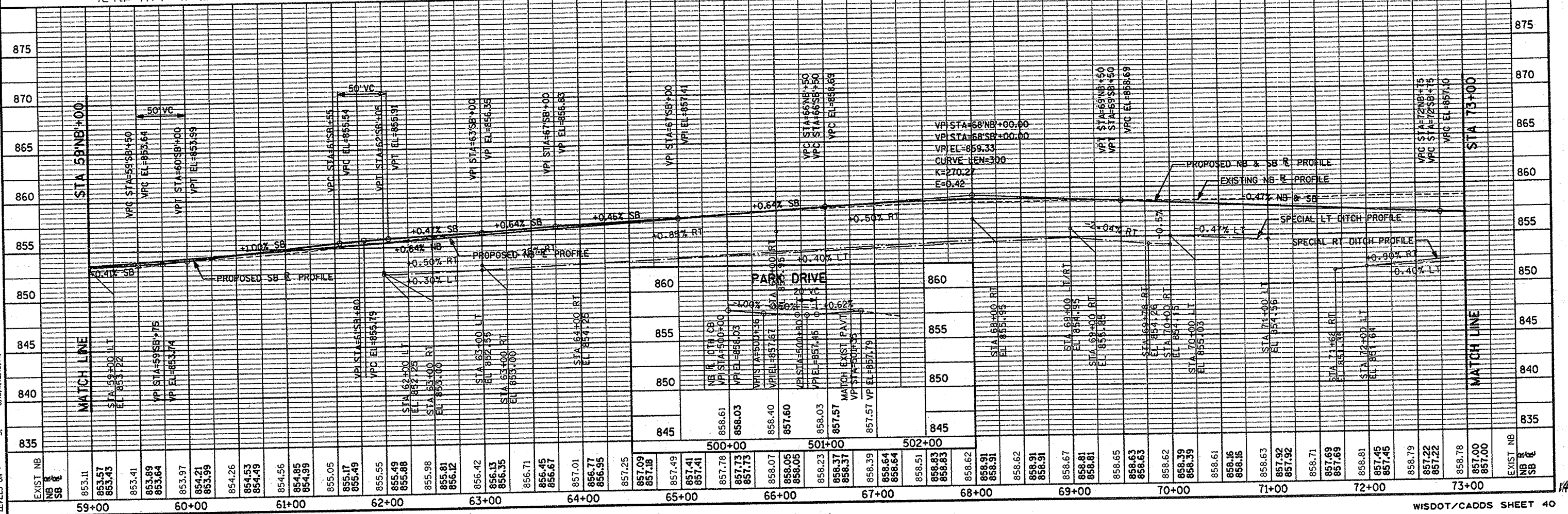


STATE PROJECT NUMBER
4682-01-71

PLAN AND PROFILE
FOR
CTH CB

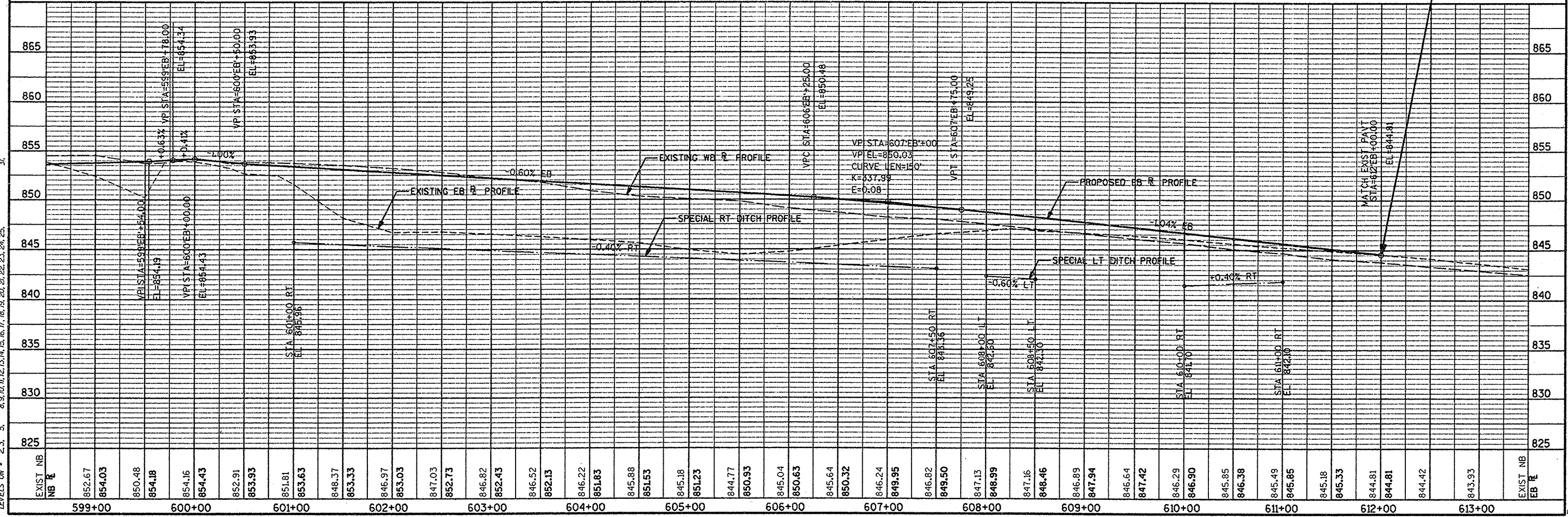
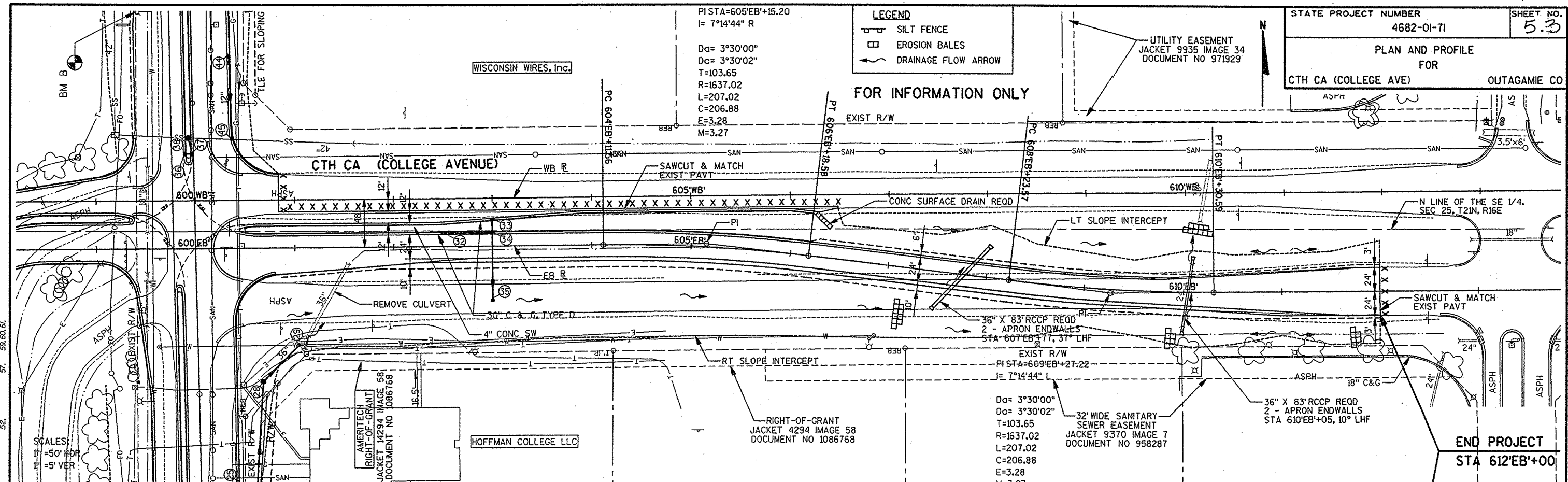
SHEET NO.
5.2

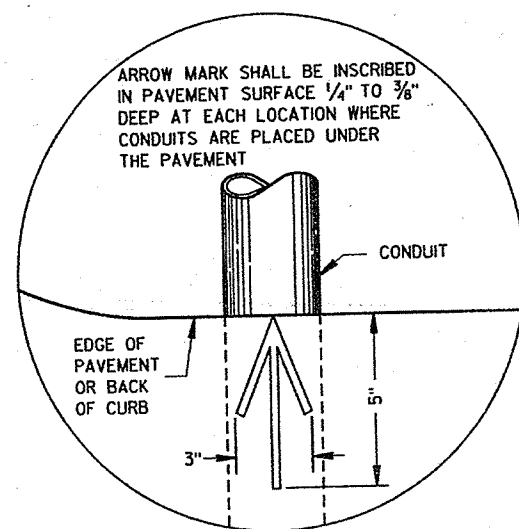
OUTAGAMIE CO.



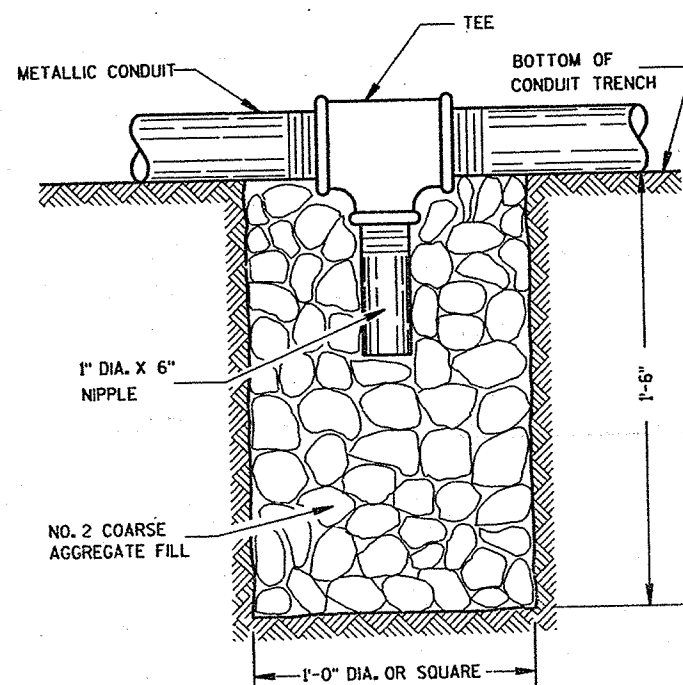
FILE NAME: E:\205A /SIGNAL / PROJ.CADD / TECH/ENGR/ ASK/MAH
ORIGINATOR: OMNIA ASSOCIATES, ONE SYSTEMS DRIVE, APPLETON, WI 54914
LEVELS ON - 2, 3, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25
PLOT DATE: 03/19/98
REV. DATE: / 97

PLOT SCALE: 1"=50' HOR
1"=5' VER



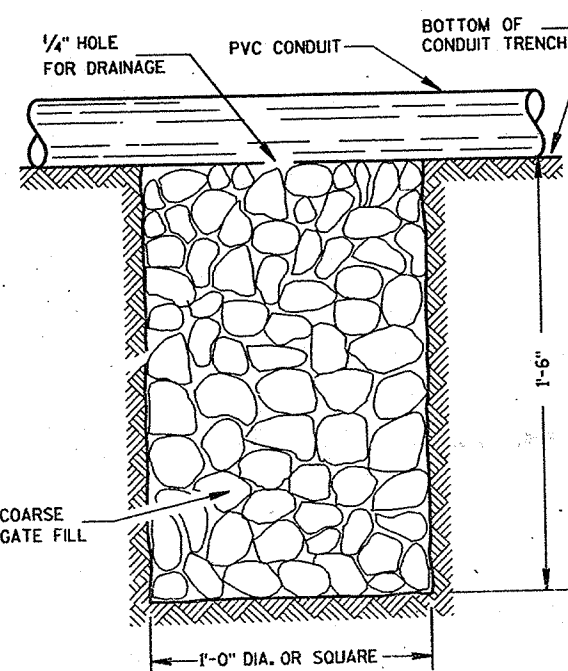


PLAN VIEW
ARROW MARK



NOTE: INSTALL AT LOCATIONS WHERE METALLIC CONDUITS CANNOT BE PITCHED TO DRAIN INTO A PULL BOX.

DRAIN SUMP FOR METALLIC CONDUIT



NOTE: INSTALL AT LOCATIONS WHERE PVC CONDUITS CANNOT BE PITCHED TO DRAIN INTO A PULL BOX.

DRAIN SUMP FOR PVC CONDUIT

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

METALLIC (STANDARD SPECIFICATION 652.2.2) OR NONMETALLIC (STANDARD SPECIFICATION 652.2.3) CONDUIT SHALL BE FURNISHED AND PLACED AS SHOWN.

DEPTH OF CONDUIT INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES MINIMUM AND 36 INCHES MAXIMUM.

DEPTH OF CONDUIT INSTALLED THAT IS NOT BELOW THE TRAVELED WAY SHALL BE 18 INCHES MINIMUM AND 36 INCHES MAXIMUM.

ANY EXCEPTION TO THE MAXIMUM DEPTH SHALL BE ONLY WITH THE WRITTEN APPROVAL OF THE ENGINEER.

THE TRENCH SHALL NOT BE BACKFILLED PRIOR TO INSPECTION OF THE CONDUIT.

ALL METALLIC CONDUIT RACEWAY ENDS SHALL BE REAMED AND THREADED.

ALL METALLIC CONDUIT IN WHICH WIRE OR CABLE IS TO BE INSTALLED SHALL BE BUSHED WITH APPROVED THREADED BUSHINGS BEFORE INSTALLATION OF THE WIRE OR CABLE.

ALL METALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT TO BE INSTALLED SHALL BE CAPPED WITH THREADED PROTECTIVE CAPS, AS APPROVED BY THE ENGINEER.

ALL NONMETALLIC CONDUIT SHALL BE CAPPED OR PLUGGED IMMEDIATELY AFTER INSTALLATION AND SHALL REMAIN CAPPED OR PLUGGED UNTIL WIRE/CABLES ARE INSTALLED.

NONMETALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT BEING INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

BENDING OF PVC ELECTRICAL CONDUIT SHALL BE ACCOMPLISHED BY USING A BLANKET OR EMERSION TYPE TANK DESIGNED FOR THE PURPOSE OF BENDING PVC ELECTRICAL CONDUIT.

ALL CUT ENDS SHALL BE TRIMMED INSIDE AND OUTSIDE TO REMOVE ALL ROUGH EDGES ON NONMETALLIC CONDUIT. (SEE NEC 347.5)

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY U.L. LISTED ADAPTER FITTINGS SHALL BE USED.

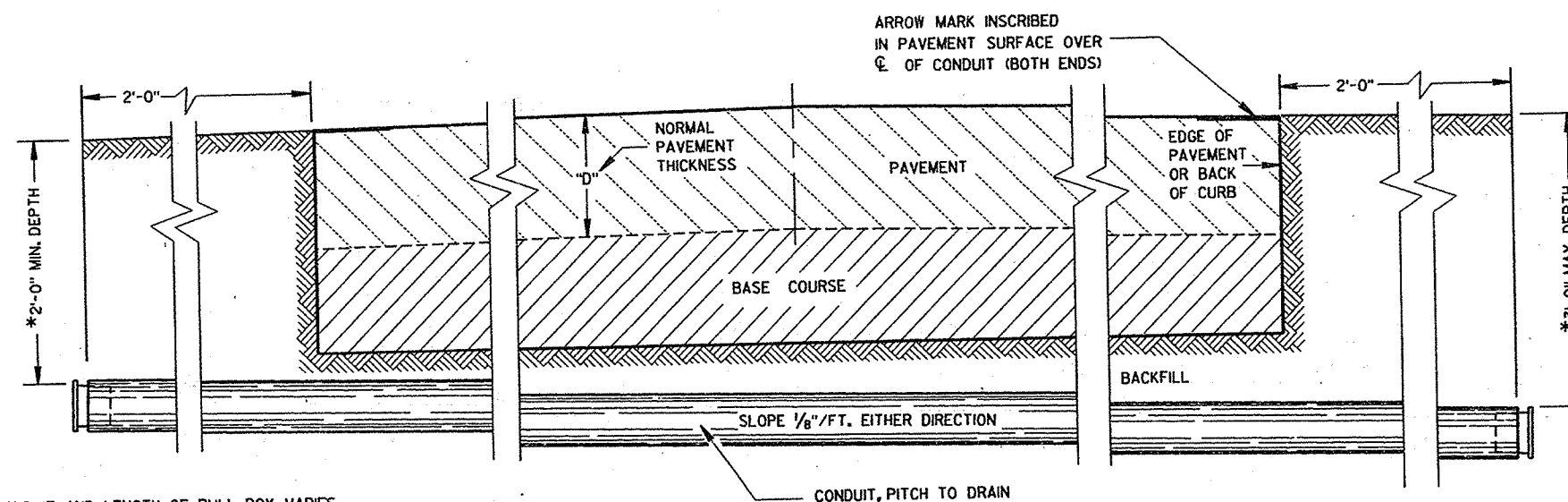
PRIOR TO CONDUIT ACCEPTANCE, CONDUIT CAPS OR PLUGS SHALL BE REMOVED, AND THE CAPS, PLUGS AND CONDUIT ENDS SHALL BE THOROUGHLY CLEANED AND THEN THE CAPS OR PLUGS REINSTALLED TO ENSURE THAT THE CAPS OR PLUGS CAN BE EASILY REMOVED IN THE FUTURE.

ALL CONDUIT BEING FURNISHED AND INSTALLED SHALL HAVE THE U.L. LABEL FIRMLY ATTACHED.

CONDUIT RUNS SHALL BE THE SAME SIZE OF CONDUIT FROM ONE END TO THE OTHER (FROM PULL BOX TO PULL BOX-OR-JUNCTION BOX TO JUNCTION BOX-OR-BASE, ETC.).

POLY ROPE OR A PULL WIRE SHALL BE INSTALLED AS STATED IN THE STANDARD SPECIFICATION, ITEM 652.3.1.1.

ALL CONDUIT RUNS SHALL BE STRAIGHT (WITHOUT BENDS) FROM PULL BOX TO PULL BOX, PULL BOX TO BASE AND BASE TO BASE AS SHOWN ON THE PLANS UNLESS OTHERWISE APPROVED BY THE PROJECT ENGINEER.



*DEPTH OF CONDUIT AND LENGTH OF PULL BOX VARIES WITH HEIGHT OF CURB USED. ALSO SEE PULL BOX S.D.D. 9B4

SIDE ELEVATION
DETAIL FOR CONDUIT UNDER PAVED HIGHWAYS

CONDUIT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/21/66
DATE
FHWA

Paul J. Smith
STATE ELECTRICAL ENGINEER FOR
HIGHWAYS

S.D.D. 9 B 2-6

TABLE OF NOMINAL DIMENSIONS AND WEIGHTS

DIMENSION IN INCHES		TYPE OF PIPE								
		CORRUGATED STEEL								
PIPE DIAMETER (INSIDE)	A	12	12	12	18	18	18	24	24	24
PIPE LENGTH **	B	24	30	36	24	30	36	36	42	48
WALL THICKNESS	C	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.4
COVER	D	10 1/4	10 1/4	10 1/4	16 1/4	16 1/4	16 1/4	22 1/4	22 1/4	22 1/4
FRAME	E	14 1/2	14 1/2	14 1/2	20 1/2	20 1/2	20 1/2	26 1/2	26 1/2	26 1/2
FRAME	F	8 1/2	8 1/2	8 1/2	14 1/2	14 1/2	14 1/2	20 1/2	20 1/2	20 1/2
FRAME	G	11 1/2	11 1/2	11 1/2	17 1/2	17 1/2	17 1/2	23 1/2	23 1/2	23 1/2
WEIGHT IN POUNDS *										
FRAME AND COVER		60	60	60	110	110	110	155	155	155

* THE ACTUAL WEIGHT OF THE MANHOLE FRAME AND COVER MAY VARY WITHIN 5 PERCENT PLUS OR MINUS OF THE WEIGHTS SHOWN.

** NORMALLY USED LENGTHS. THE PROJECT ENGINEER SHALL DETERMINE IF PIPE LENGTHS, OTHER THAN THOSE SPECIFIED, SHALL BE USED, TO A MAXIMUM OF 48" (CONTINUOUS LENGTH, NON-SPLICED). THE ADDITIONAL LENGTH SHALL BE INCIDENTAL TO THE PULL BOX BID PRICE.

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

ALL FRAMES AND COVERS SHALL BE HEAVY DUTY TYPE, SUITABLE FOR VEHICULAR TRAFFIC LOADS.

POLYETHYLENE PULL BOXES SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALTIC PAVEMENT. PULL BOXES LOCATED IN THE ROADWAY SHALL HAVE LOCKING COVERS.

ENTRANCE HOLES INTO PULL BOXES SHALL BE CUT WITH A CIRCULAR HOLE SAW OR HYDRAULIC CONDUIT PUNCH. HOLE SIZE SHALL BE THE OUTSIDE DIAMETER OF THE CONDUIT THAT IS TO FIT IN THE OPENING PLUS NO MORE THAN 1/4".

THE CONTRACTOR SHALL NOT INSTALL WIRE IN ANY PULL BOX UNTIL ITS INSTALLATION HAS BEEN INSPECTED AND ACCEPTED BY THE ENGINEER.

GROUNDING LUGS (MECHANICAL CONNECTORS) SHALL BE U.L. LISTED AND APPROVED FOR USE WITH COPPER WIRE. THE MECHANICAL CONNECTION (INSIDE AND OUTSIDE) TO THE PULL BOX, SHALL BE TOTALLY AND PERMANENTLY SEALED WITH A SILICONE OR RUBBERIZED CAULKING COMPOUND AS APPROVED BY THE ENGINEER.

GROUNDING LUGS ARE NOT REQUIRED IN PULL BOXES WHEN VOLTAGES OF LESS THAN 50 VOLTS AC ARE THE ONLY VOLTAGES ENCOUNTERED IN THE BOXES.

DRAIN DUCT SHALL BE MEASURED AND PAID FOR SEPARATELY.

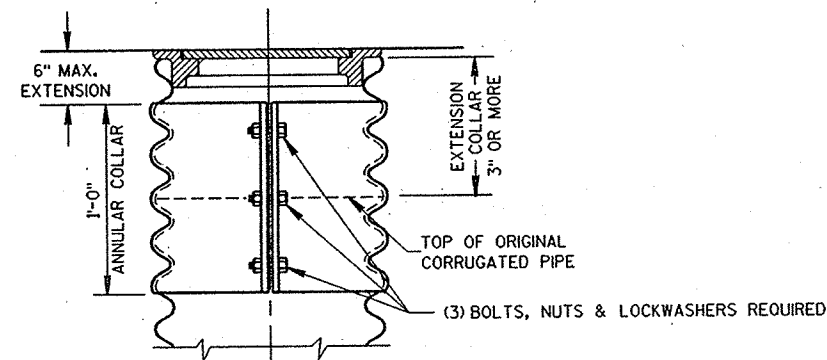
RODENT WIRE SCREEN SHALL BE 1/8" STAINLESS STEEL MESH AND BE INSTALLED WITH A STAINLESS STEEL HOSE CLAMP OF SUFFICIENT SIZE.

ALL METALLIC CONDUIT IN WHICH WIRE AND/OR CABLE IS TO BE INSTALLED, SHALL BE BUSHED BEFORE INSTALLATION OF THE WIRE AND/OR CABLE.

S.D.D. 9B2, "CONDUIT", APPLIES TO THIS DRAWING.

WHEN PULL BOXES ARE INSTALLED FOR FUTURE USE, DO NOT INSTALL THE EQUIPMENT GROUNDING LUG. THE EQUIPMENT GROUNDING LUG, THE EQUIPMENT GROUNDING ELECTRODE AND THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE REQUIRED AND INSTALLED UNDER A FUTURE WIRING CONTRACT.

IF PULL BOX EQUIPMENT GROUNDING IS REQUIRED USING AN EQUIPMENT GROUNDING ELECTRODE IN EACH PULL BOX, THE EQUIPMENT GROUNDING ELECTRODE SHALL BE 5/8" X 8'-0", COPPERCLAD AND BE EXOTHERMICALLY WELDED TO A #4 AWG, COPPER, STRANDED WIRE (BARE OR GREEN INSULATED). THE #4 AWG WIRE SHALL BE 4 FEET IN LENGTH, NEATLY COILED, TAPED AND AVAILABLE FOR USE WHEN REQUIRED.



CORRUGATED PIPE EXTENDER

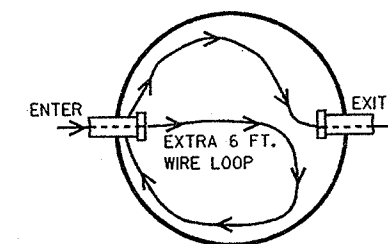
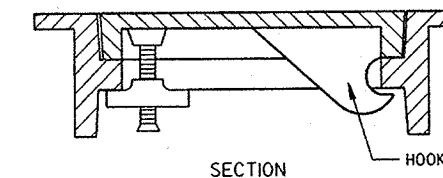
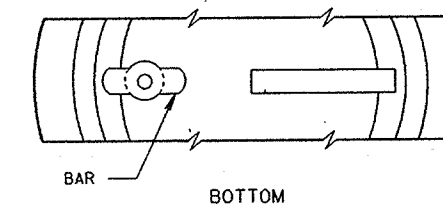
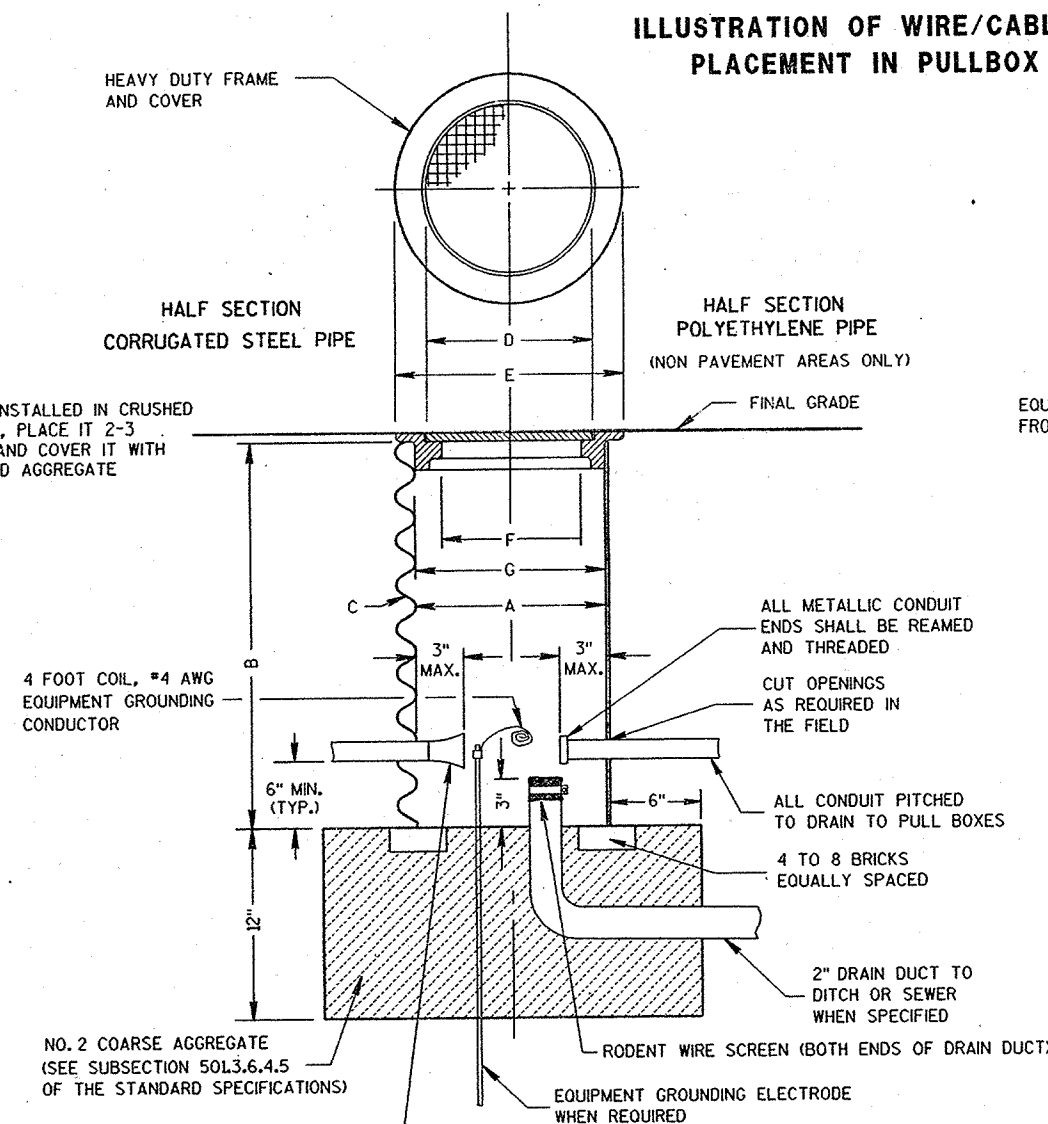


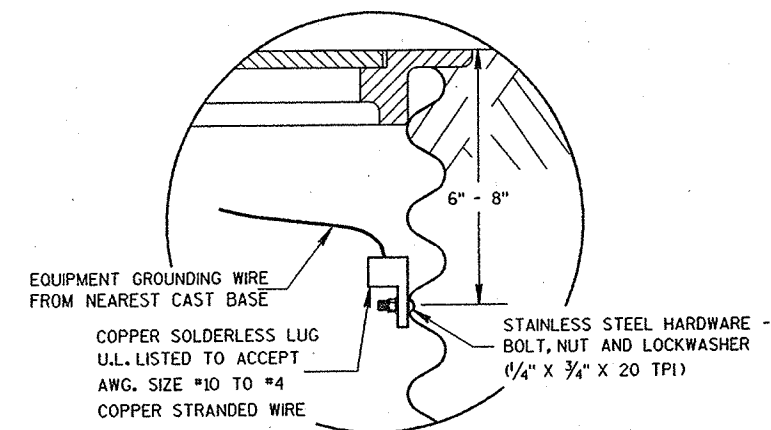
ILLUSTRATION OF WIRE/CABLE PLACEMENT IN PULLBOX



ALTERNATE COVER (LOCKING)
TIGHTENING BAR TYPE



PULL BOX



EQUIPMENT GROUNDING LUG AND LOCATION IN STEEL PULL BOXES

PULL BOX

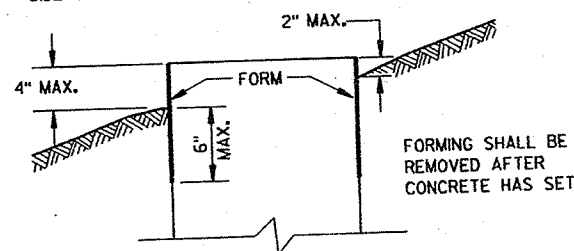
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
3/2/97
DATE
FHWA

John A. ...
STATE ELECTRICAL ENGINEER FOR
HIGHWAYS

S.D.D. 9 B 4-3

FORM DEPTH SHALL BE NO MORE THAN 6" BELOW GRADE ON THE LOWER SIDE OF BASE



FORMING DETAIL

QUANTITY REQUIREMENTS	CONCRETE BASE TYPE		
	1	2	5
APPROX. CUBIC YARDS OF CONCRETE	0.40	0.57	0.40
LBS. OF HOOP BAR STEEL	NONE	23	16
LBS. OF VERTICAL BAR STEEL	NONE	60	18

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

BASES SHALL BE EXCAVATED BY USE OF A CIRCULAR AUGER.

TOP SURFACES OF CONCRETE BASES SHALL BE TROWEL FINISHED AND LEVEL.

CONDUIT SIZES AND LOCATIONS SHALL BE AS SHOWN ON THE PLANS.

THE FINAL OR TERMINATING CONCRETE BASE IN A CONDUIT RUN SHALL HAVE A 6" EXIT STUB INSTALLED FOR FUTURE CABLING USE. THE EXIT STUB SHALL BE SIZED AS USED THROUGHOUT THE CONDUIT RUN AS SHOWN AT THE ENTRANCE OF THE BASE.

MINIMUM BENDING RADIUS OF CONDUIT IS EQUAL TO 6 X THE DIAMETER.

CONDUIT HEIGHT ABOVE CONCRETE BASES SHALL BE 1 INCH. ALL METALLIC CONDUIT ENDS SHALL BE REAMED AND THREADED.

ALL CONDUIT ENDS AT THE TOP OF CONCRETE BASES SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC IMMEDIATELY AFTER PLACEMENT AND BEFORE CONCRETE IS POURED. CONDUITS IN WHICH WIRE OR CABLE IS NOT INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

GENERAL NOTES (CONTINUED)

BELL ENDS SHALL BE INSTALLED ON ALL PVC CONDUIT EXPOSED AT THE TOP OF CONCRETE BASES BEFORE INSTALLATION OF CABLE OR WIRE.

ENDS OF CONDUIT INSTALLED BELOW GRADE FOR FUTURE USE SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC.

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY ADAPTER FITTINGS, U.L. LISTED FOR ELECTRICAL USE, SHALL BE USED.

IF A BASE REQUIRES A DEEP FORM BECAUSE OF LOOSE DIRT OR FILL, THE FORM SHALL BE REMOVED BEFORE BACKFILLING AROUND THE BASE. BACKFILL SHALL BE TAMPED TIGHT AGAINST THE BARE CONCRETE BASE IN LAYERS OF 1 FOOT OR LESS.

A NO. 4 AWG, STRANDED COPPER EQUIPMENT GROUNDING CONDUCTOR SHALL BE EXOTHERMICALLY WELDED TO THE EQUIPMENT GROUNDING ELECTRODE (GROUND ROD) FOR TYPE 2 AND TYPE 5 BASES.

THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE FURNISHED AND INSTALLED TO ENTER THE BASE OF THE TYPE 2 AND TYPE 5 BASES THROUGH A 1 INCH CONDUIT INSTALLED FOR GROUNDING PURPOSES, LEAVING A 4 FOOT COIL OF WIRE ABOVE THE CONCRETE BASE. THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE NEATLY COILED AND THE COILS TIED TOGETHER.

ANCHOR RODS SHALL BE THREADED 12" IN LENGTH ON EACH END OF THE ROD. ANCHOR RODS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 654.2.1 AND 641.2.2 OF THE STANDARD SPECIFICATIONS, ASTM A-449, OR ASTM A-687 (GRADE 105).

WASHERS AND LOCK WASHERS ARE REQUIRED ON ALL ANCHOR RODS.

WHEN ANCHOR RODS USING THE ALTERNATE "L" BEND ARE FURNISHED, THE 4" "L" BEND SHALL BE IN ADDITION TO THE SPECIFIED ANCHOR ROD BAR LENGTH. THE "L" BEND END SHALL NOT BE THREADED.

WELDING OF THE ANCHOR RODS TO THE CAGE IS UNACCEPTABLE. TIE WIRES SHALL BE USED.

BAR STEEL REINFORCEMENT SHALL BE COATED WITH POWERED EPOXY RESIN IN ACCORDANCE WITH SECTION 505 OF THE STANDARD SPECIFICATIONS (LATEST EDITION).

1 THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE AND INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES. THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE THAT IS NOT INSTALLED BELOW THE TRAVELED WAY SHALL BE 18 INCHES. THE MAXIMUM DEPTH OF ALL CONDUIT SHALL BE 36 INCHES EXCEPT WITH WRITTEN APPROVAL BY THE ENGINEER.

2 (4) 1" DIA. X 3'-6" ANCHOR RODS.

3 (4) 1" DIA. X 5'-0" ANCHOR RODS.

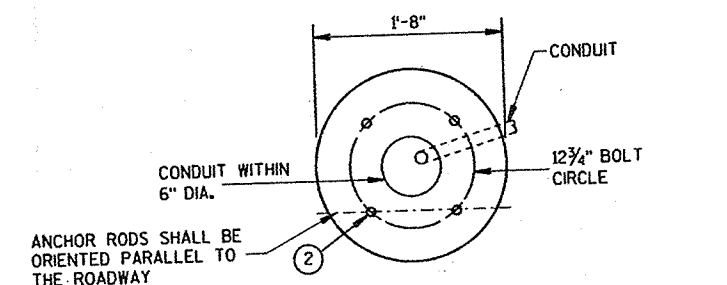
4 (6) NO. 6 X 6'-8" BAR STEEL REINFORCEMENT.

5 (7) NO. 4 X 5'-1" BAR STEEL REINFORCEMENT @ 1'-0" C-C.

6 (4) 1" DIA. X 3'-6" ANCHOR RODS.

7 (6) NO. 4 X 4'-8" BAR STEEL REINFORCEMENT

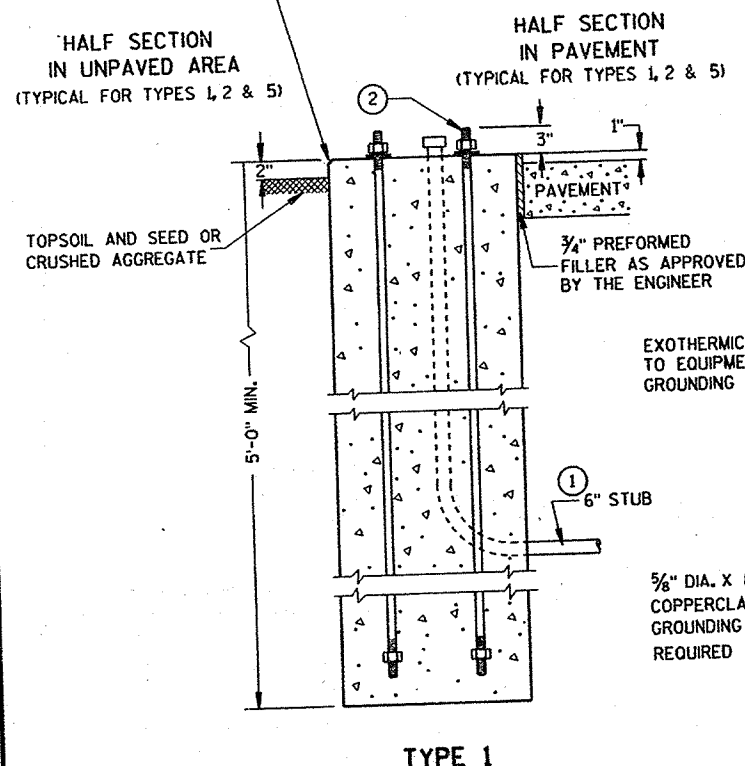
8 (5) NO. 4 X 5'-1" BAR STEEL REINFORCEMENT @ 1'-0" C-C.



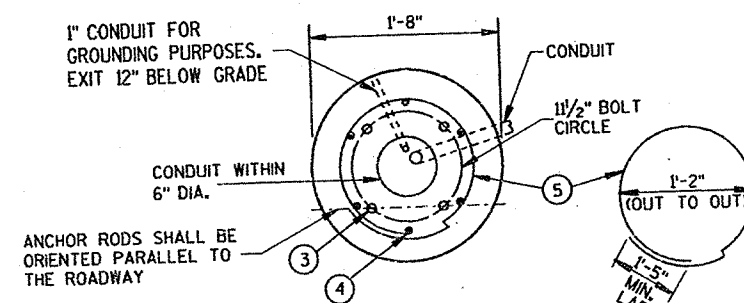
FORM ALL EXPOSED CONCRETE. PROVIDE 1" CHAMFER ALL AROUND

HALF SECTION IN UNPAVED AREA (TYPICAL FOR TYPES 1, 2 & 5)

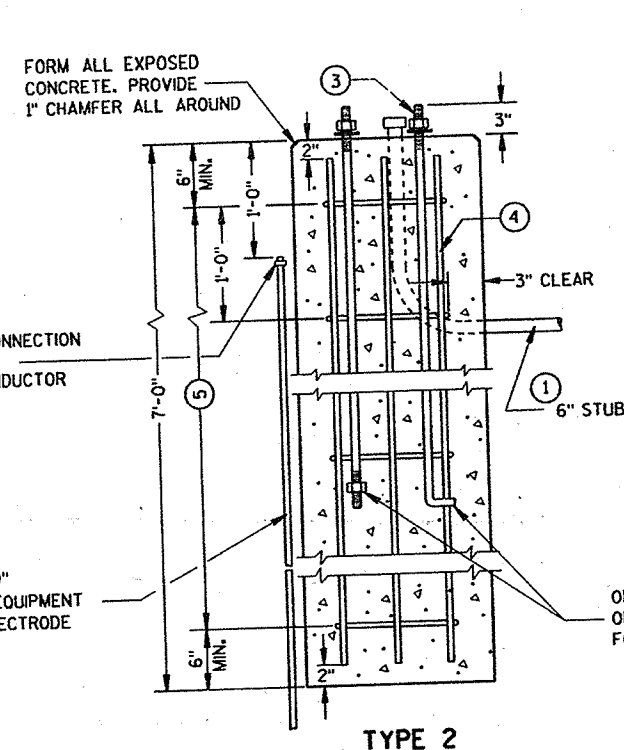
TOPSOIL AND SEED OR CRUSHED AGGREGATE



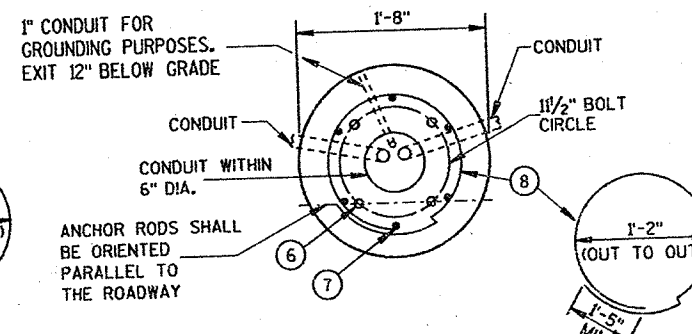
TYPE 1



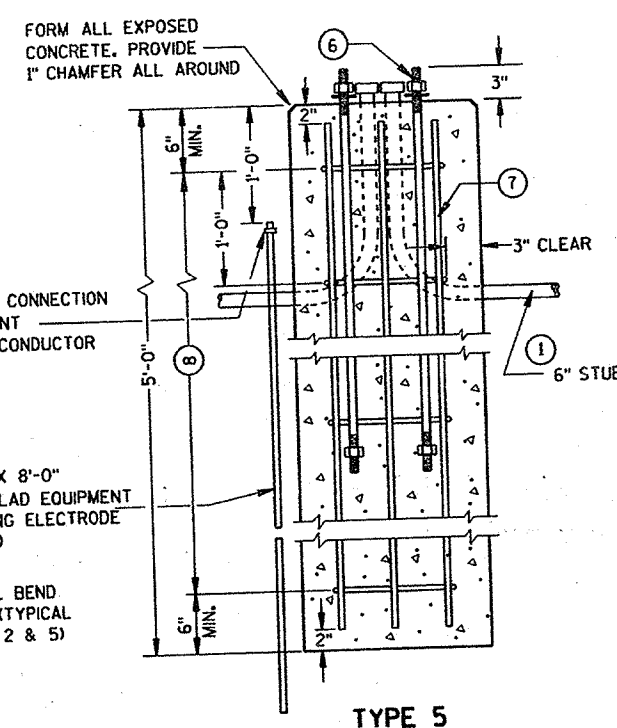
FORM ALL EXPOSED CONCRETE. PROVIDE 1" CHAMFER ALL AROUND



TYPE 2



FORM ALL EXPOSED CONCRETE. PROVIDE 1" CHAMFER ALL AROUND



TYPE 5

CONCRETE BASES

CONCRETE BASES,
TYPES 1, 2 & 5

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE 10/21/04
FHWA
STATE ELECTRICAL ENGINEER FOR HIGHWAYS

S.D.D. 9 C 2-2

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

FOUR (4) BOLTS SHALL BE FURNISHED WITH EACH TRANSFORMER BASE. BOLTS SHALL BE 1" DIAMETER, 4" IN LENGTH, WITH WASHERS, LOCK WASHERS AND NUTS. BOLTS, NUTS AND WASHERS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 641.2.2 OF THE STANDARD SPECIFICATIONS, ASTM A-325, (92,000 YIELD) HEAVY HEX NUT AND BE GALVANIZED IN ACCORDANCE WITH ASTM A-153, CLASS C.

LEVELING SHIMS, IF NEEDED, SHALL BE DESIGNED FOR THE PURPOSE AND USED UNDER CAST BASES WHEN PLUMBING POLES OR STANDARDS DURING INSTALLATION. THE USE OF WASHERS IN LIEU OF PROPER LEVELING SHIMS IS NOT ACCEPTABLE.

SHIM LENGTH SHALL BE LONG ENOUGH TO COMPLETELY COVER THE AREA UNDER THE LENGTH AND WIDTH OF THE BASE MOUNTING FLANGE.

DOUBLE NUTTING IS NOT ACCEPTABLE FOR LEVELING OR MOUNTING PURPOSES.

A NEMA APPROVED AND U.L. LISTED MECHANICAL CONNECTOR (LUG) AL/CU RATED AND SIZED TO ACCEPT #10 AWG STRANDED WIRE, SHALL BE FURNISHED AND INSTALLED IN THE PEDESTAL AND TRANSFORMER BASES.

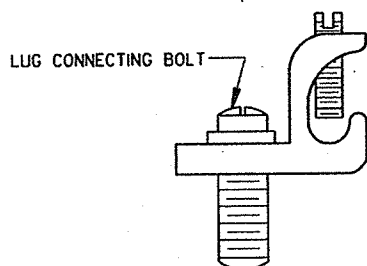
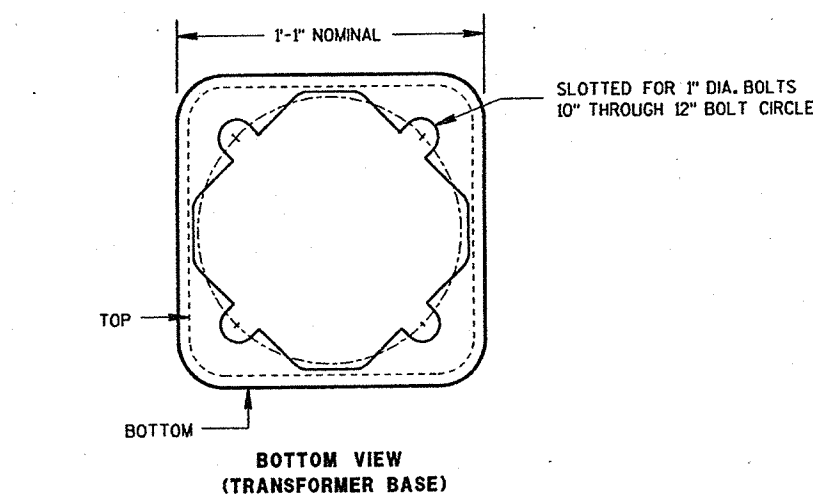
THE MECHANICAL CONNECTOR SHALL BE INSTALLED USING A 1/4" - 20 (TPI) STAINLESS STEEL HEX HEAD BOLT OF SUFFICIENT LENGTH TO FIRMLY ATTACH THE LUG TO THE BASE.

SHOULD THE MANNER OF ATTACHMENT OF THE LUG REQUIRE WASHERS, HEX NUTS, LOCK WASHER - THEY SHALL BE STAINLESS STEEL AS IS THE BOLT. THE MANNER OF ATTACHMENT SHALL NOT BLOCK ACCESSIBILITY TO WIRE PLACEMENT IN THE CONNECTOR.

PEDESTAL BASE COLLAR THREADING SHALL BE TAPERED AND IN ACCORDANCE WITH NATIONAL PIPE THREADING DIMENSIONS.

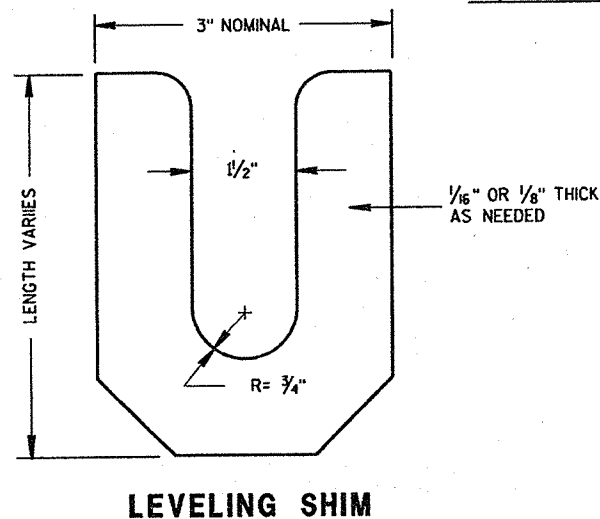
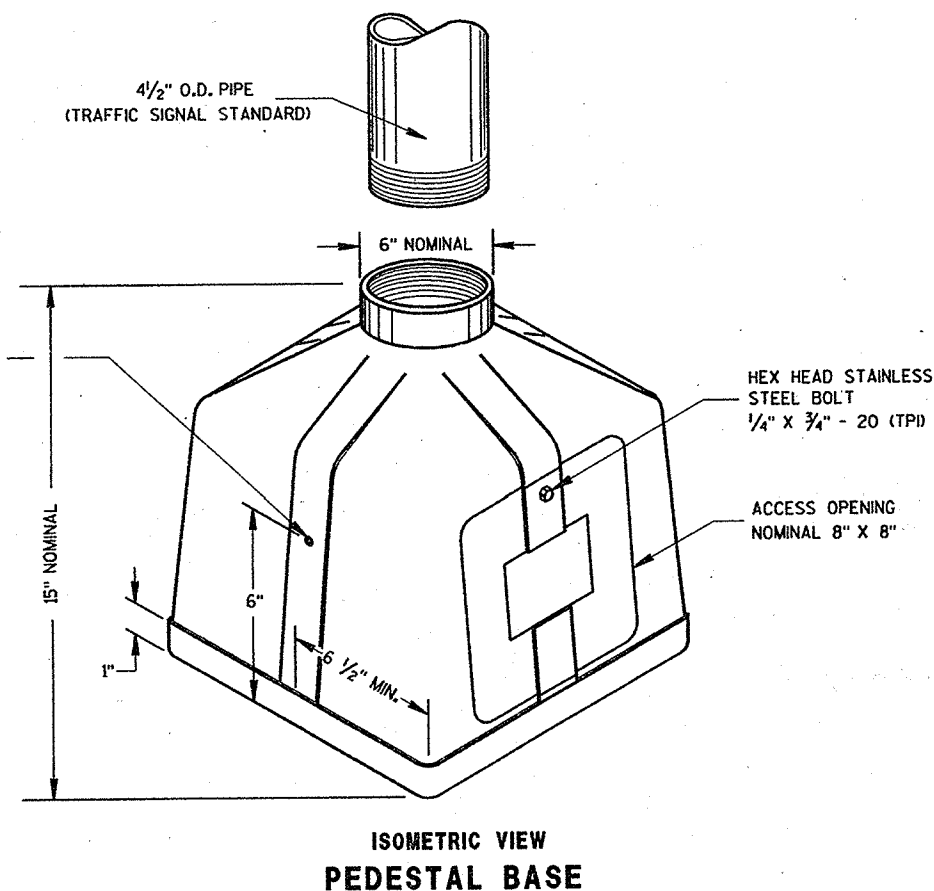
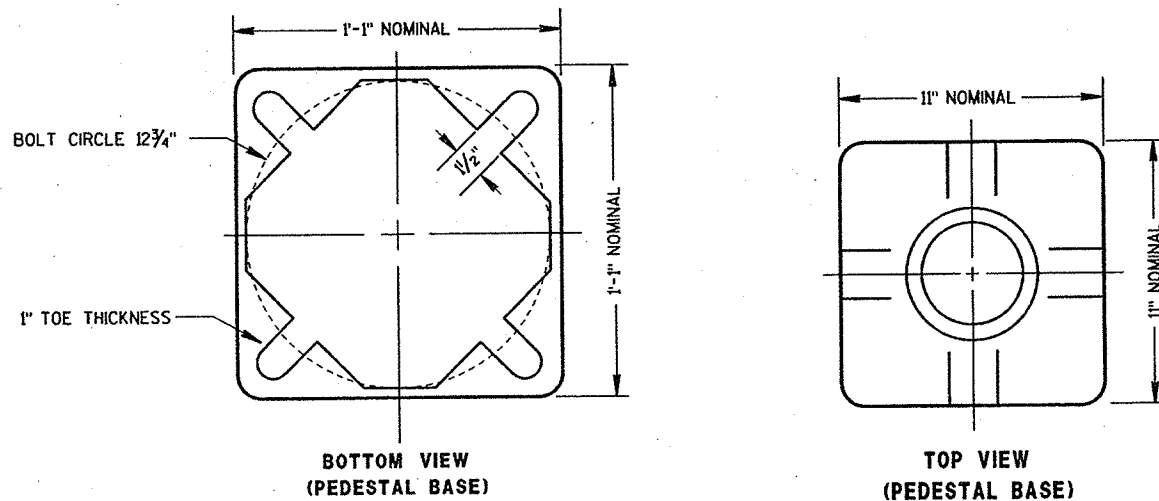
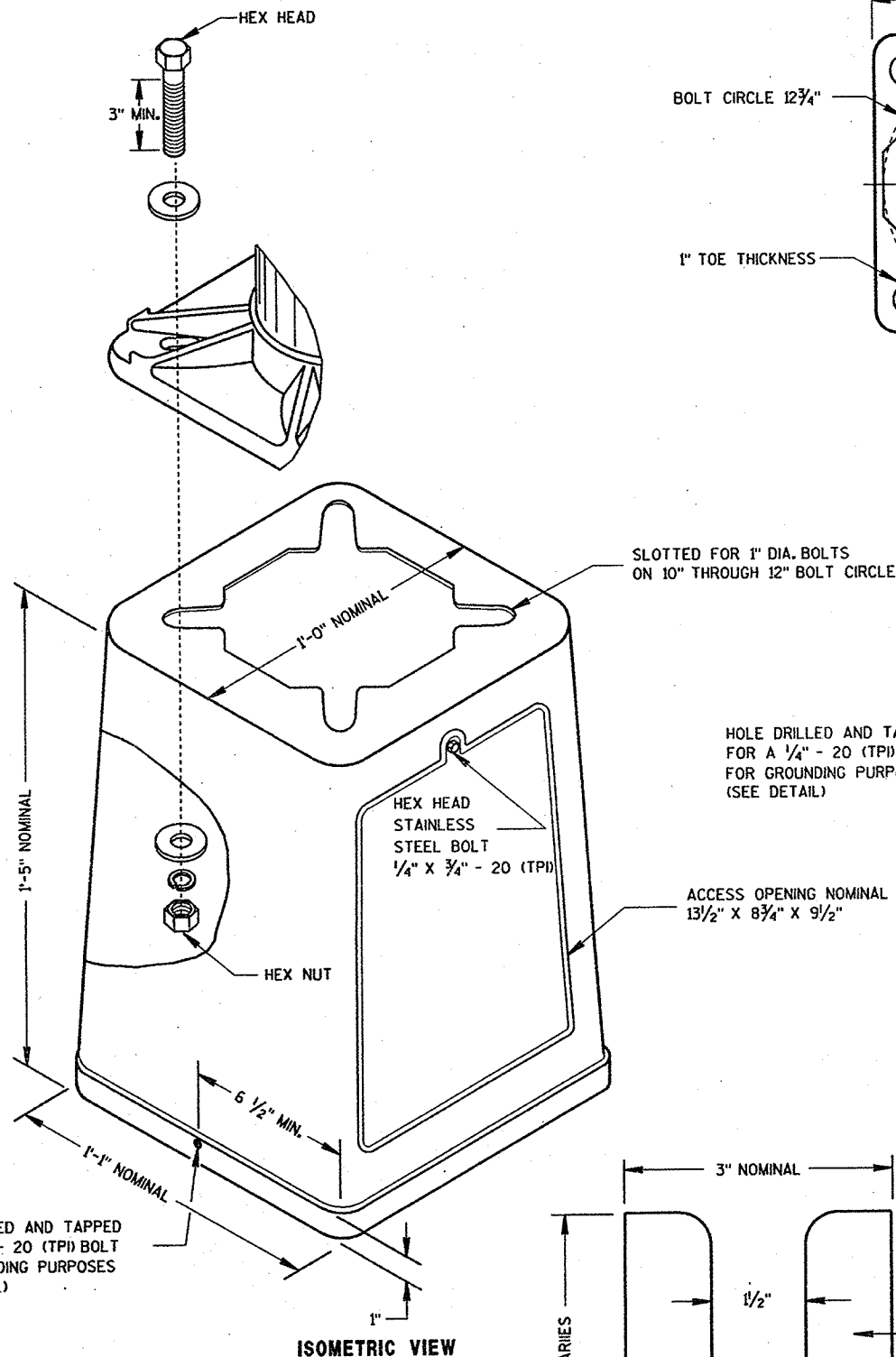
BASE COLLAR THREADING SHALL EXTEND INTO THE BASE COLLAR WITH SUFFICIENT DEPTH TO ACCEPT THE INSTALLATION OF TRAFFIC SIGNAL STANDARDS TO A DEPTH OF 1/2", THEN TIGHTENING TO A POINT OF BEING IMMOVABLE.

THE ACCESS DOOR SHALL BE OF THE SAME MATERIAL AS THE BASE.



TYPICAL MECHANICAL CONNECTOR LUG
TO BE FURNISHED WITH EACH BASE

TRANSFORMER BASE
INTENDED FOR USE WITH TYPE 2, 3, 4, 5 & 6 POLES



TRANSFORMER/PEDESTAL BASES

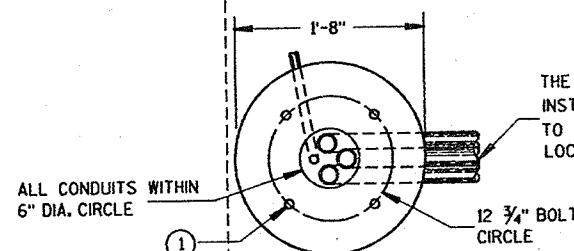
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/21/96
DATE
STATE ELECTRICAL ENGINEER FOR
HIGHWAYS

S.D.D. 9 C 3-2

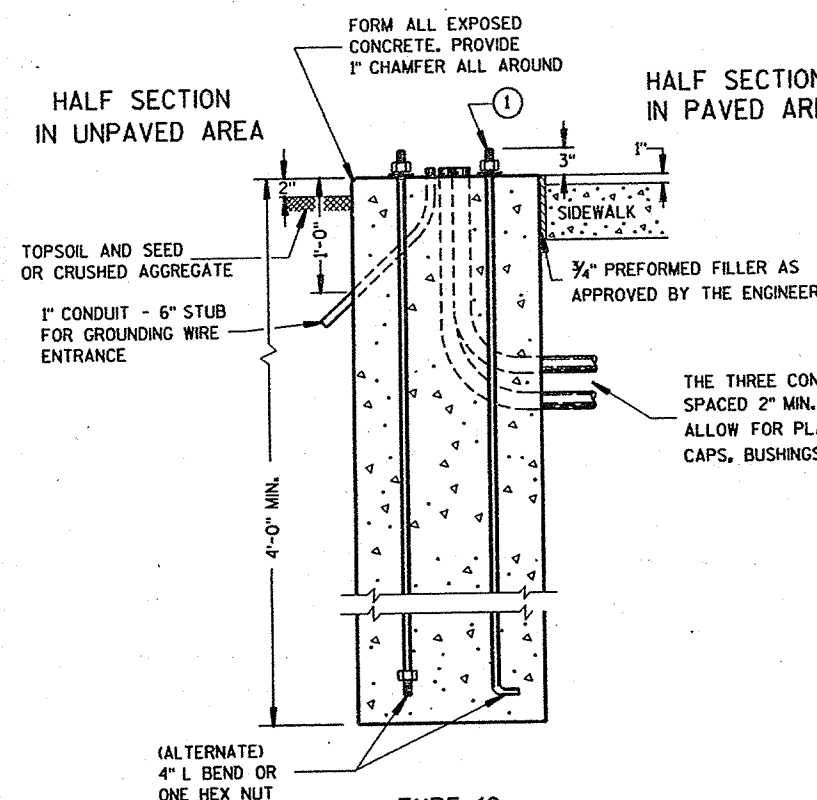
CONTROL CABINET BASE TYPE	DIMENSIONS				C.Y. CONCRETE (APPROX.)
	H	I	J	K	
TYPE 6 - 30" CABINET	34"	60"	10"	17"	.64
TYPE 7 - 38" CABINET	42"	60"	10"	21"	.93
TYPE 8 - 38" CABINET	42"	72"	12"	21"	1.29
TYPE 9 - VARIABLE	54"	72"	14"	27"	1.56
TYPE 10 - POST MOUNT	AS SHOWN				.32

TYPICAL 3'-0" X 3'-0"
MAINTENANCE PLATFORM.
LOCATION TO BE DETERMINED
IN THE FIELD.



THE THREE CONDUITS SHALL BE
INSTALLED FROM THE CABINET BASE
TO THE FIRST (NEAREST) PULL BOX
LOCATED AS SHOWN ON THE PLAN

HALF SECTION
IN UNPAVED AREA



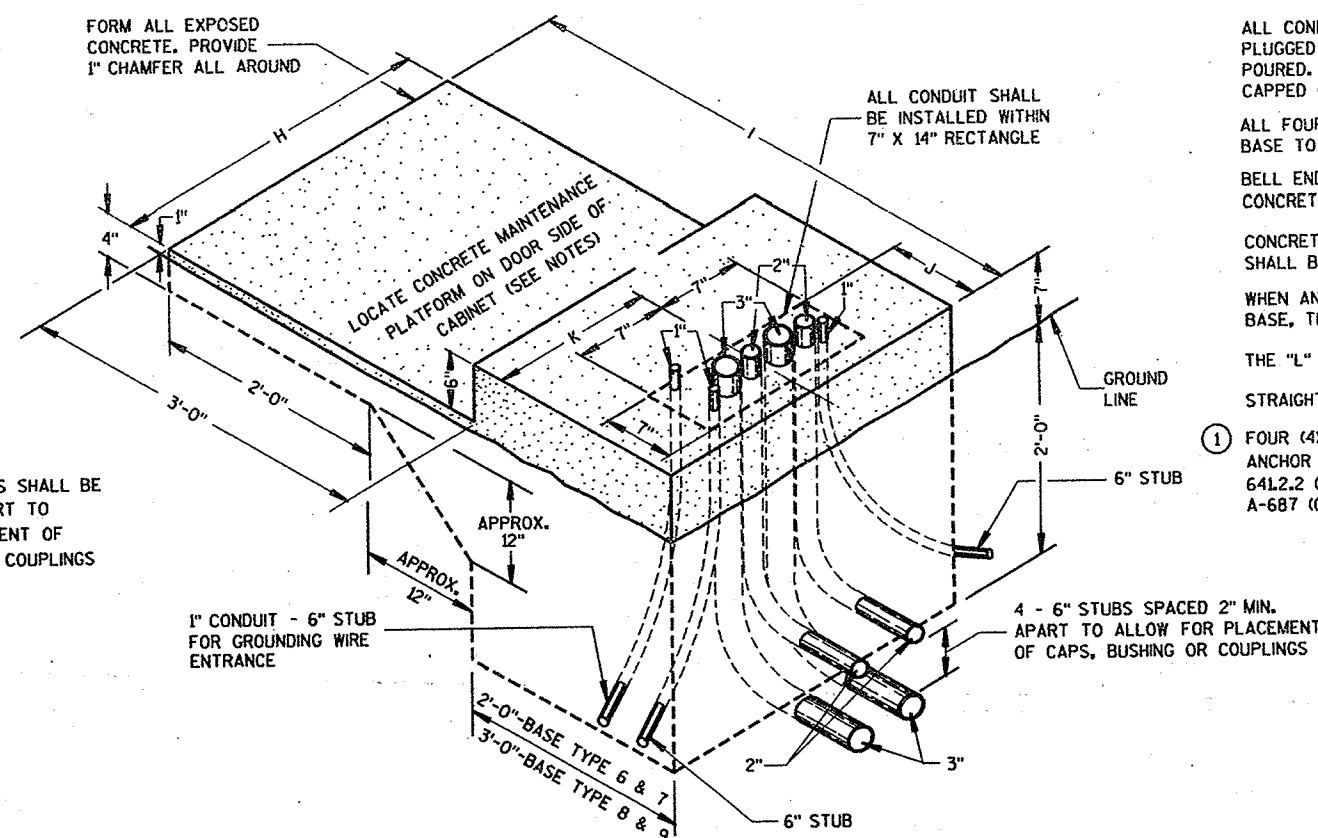
TYPE 10

HALF SECTION
IN PAVED AREA

THE THREE CONDUITS SHALL BE
SPACED 2" MIN. APART TO
ALLOW FOR PLACEMENT OF
CAPS, BUSHINGS OR COUPLINGS

CONCRETE CONTROL CABINET BASES

CONDUIT LOCATIONS IN 24" X 36" PULL BOX (LEADING TO CONTROLLER CABINET BASE TYPE 6, 7, 8 AND 9)



TYPE 6, 7, 8 AND 9
(ISOMETRIC VIEW)

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

INSTALL FOUR 1/2 INCH MINIMUM DIAMETER X 4 INCH MINIMUM LENGTH APPROVED CONCRETE MASONRY ANCHORS TO ANCHOR THE CABINET TO TYPE 6, 7, 8, AND 9 BASES. THE ANCHOR STUDS SHALL BE LOCATED AS DIRECTED BY THE ENGINEER TO PROPERLY ANCHOR THE CONTROL CABINET TO THE BASE.

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY ADAPTER FITTINGS, U.L. LISTED FOR ELECTRICAL USE, SHALL BE USED.

CONDUIT HEIGHT ABOVE THE CONCRETE BASE SHALL BE 1 INCH.

DEPTH OF CONDUIT INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES MINIMUM AND 36 INCHES MAXIMUM.

DEPTH OF CONDUIT INSTALLED THAT IS NOT BELOW THE TRAVELED WAY SHALL BE 18 INCHES MINIMUM AND 36 INCHES MAXIMUM.

ANY EXCEPTION TO THE MAXIMUM DEPTH SHALL BE ONLY WITH THE WRITTEN APPROVAL OF THE ENGINEER.

CONTROL CABINET BASE TOP SURFACES SHALL BE TROWEL FINISHED AND LEVEL.

WHEN A TYPE 10 CONTROL CABINET BASE IS USED TO POST MOUNT A CONTROL CABINET, A 36" SQUARE 4" THICK CONCRETE MAINTENANCE PLATFORM SHALL BE REQUIRED ON THE DOOR SIDE OF THE CABINET. THE TOP 1 INCH SHALL BE ABOVE FINISHED GRADE AND BE BROOM FINISHED AND LEVEL.

MAINTENANCE PLATFORMS ARE NOT REQUIRED WHEN THE SURROUNDING AREA IS PAVED.

MINIMUM BENDING RADIUS OF CONDUIT = 6 X THE DIAMETER.

ALL METALLIC CONDUIT ENDS SHALL BE REAMED AND THREADED.

ALL CONDUIT ENDS AT THE TOP OF CONCRETE BASES SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC IMMEDIATELY AFTER PLACEMENT AND BEFORE CONCRETE IS POURED. CONDUITS IN WHICH WIRE OR CABLE IS NOT BEING INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

ALL FOUR (TWO INCH AND THREE INCH) CONDUIT SHALL BE INSTALLED FROM THE CABINET BASE TO THE FIRST (NEAREST) PULL BOX LOCATED AS SHOWN ON THE PLANS.

BELL ENDS SHALL BE INSTALLED ON ALL PVC CONDUIT EXPOSED AT THE TOP OF THE CONCRETE BASE BEFORE INSTALLATION OF CABLE OR WIRE.

CONCRETE FORM DEPTH BELOW FINISHED GRADE SHALL BE 6" MAXIMUM. CONCRETE FORMS SHALL BE REMOVED AFTER CONCRETE HAS SET.

WHEN ANCHOR RODS USING THE ALTERNATE L BEND ARE FURNISHED FOR THE TYPE 10 BASE, THE 4" L BEND SHALL BE IN ADDITION TO THE SPECIFIED ANCHOR ROD BAR LENGTH.

THE "L" BEND SHALL NOT BE THREADED.

STRAIGHT ANCHOR RODS SHALL BE THREADED 12" IN LENGTH ON EACH END OF THE ROD.

- ① FOUR (4) ANCHOR RODS, 1" DIA. X 3'-6" ANCHOR RODS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 654.2.1 AND 641.2.2 OF THE STANDARD SPECIFICATIONS AND IN ACCORDANCE WITH A-449, OR ASTM, A-687 (GRADE 105).

CONCRETE CONTROL CABINET BASES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

10/21/02

DATE

FHWA

Bala
STATE ELECTRICAL ENGINEER FOR
HIGHWAYS

S.D.D. 9 C 5-2

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

THE EXACT LOCATION OF THE METER BREAKER PEDESTAL SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

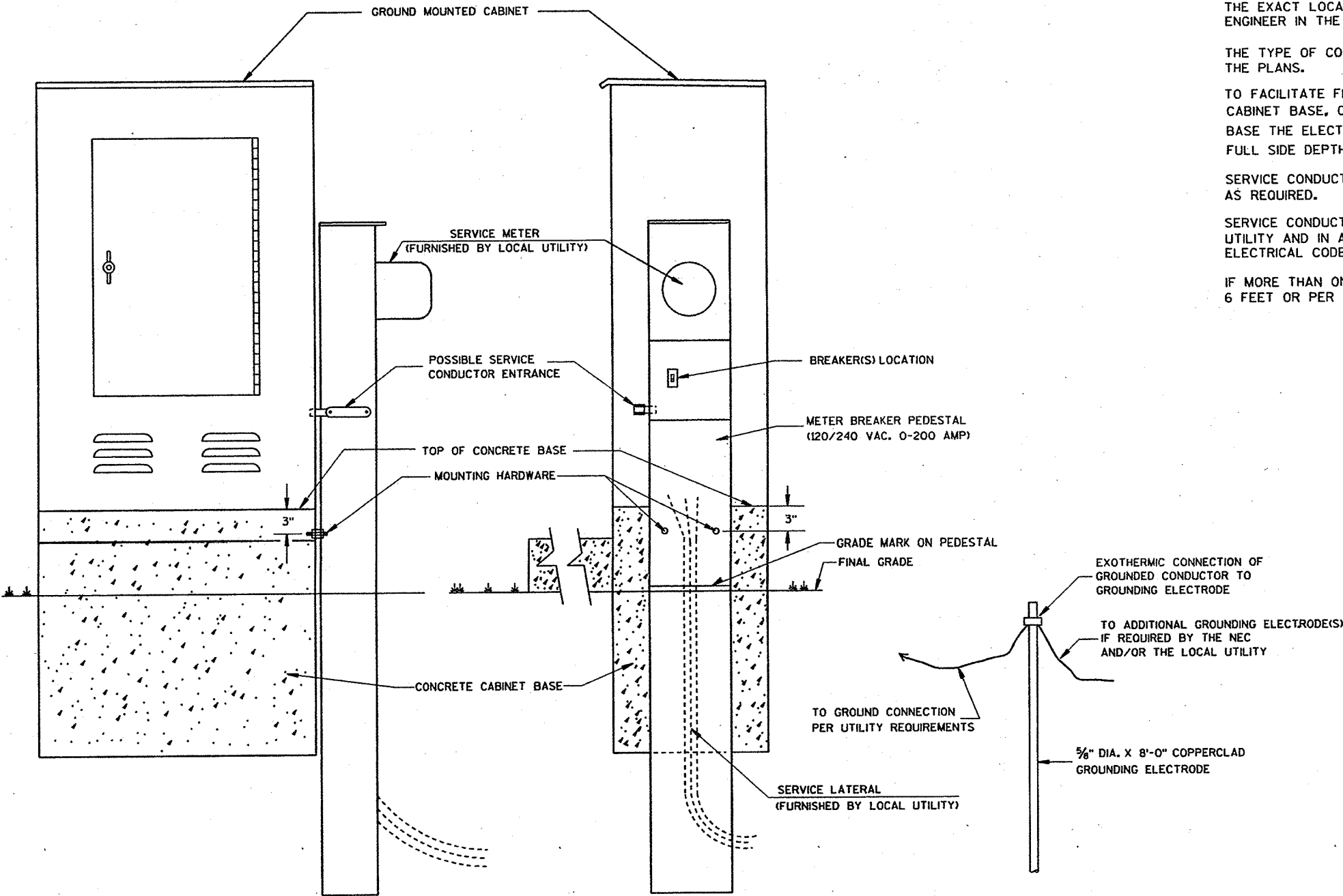
THE TYPE OF CONCRETE CABINET BASE TO BE INSTALLED SHALL BE AS CALLED FOR IN THE PLANS.

TO FACILITATE FLUSH MOUNTING OF THE METER BREAKER PEDESTAL AGAINST THE SIDE OF THE CABINET BASE, CONFER WITH THE LOCAL UTILITY TO DETERMINE WHICH SIDE OF THE CONCRETE BASE THE ELECTRIC SERVICE LATERAL WILL APPROACH. THEN FORM THAT INDICATED SIDE FOR FULL SIDE DEPTH.

SERVICE CONDUCTOR ENTRANCES SHALL BE RIGID METALLIC CONDUIT, NIPPLES AND/OR CONDULETS AS REQUIRED.

SERVICE CONDUCTOR ENTRANCES SHALL BE SIZED AND LOCATED AS REQUIRED BY THE LOCAL UTILITY AND IN ACCORDANCE WITH APPROPRIATE ARTICLES OF THE LATEST ACCEPTED NATIONAL ELECTRICAL CODE.

IF MORE THAN ONE GROUNDING ELECTRODE IS REQUIRED, THE DISTANCE APART SHALL BE 6 FEET OR PER LOCAL UTILITY REGULATIONS.



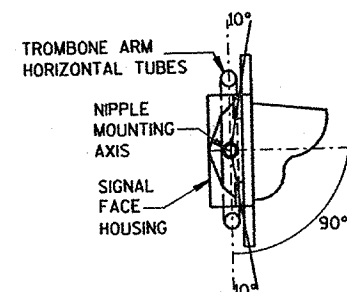
TYPICAL CABINET SERVICE INSTALLATION

CABINET SERVICE INSTALLATION
(METER BREAKER PEDESTAL)

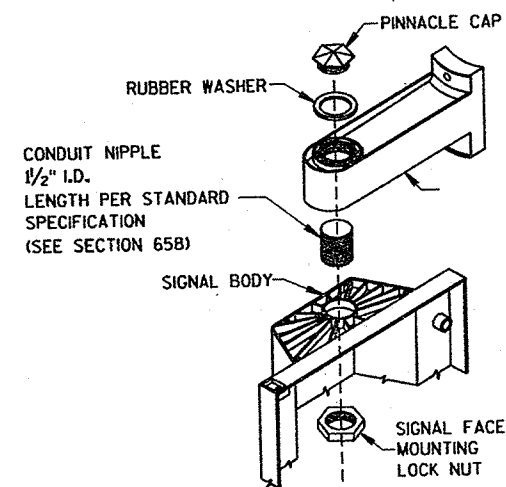
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE
FHWA

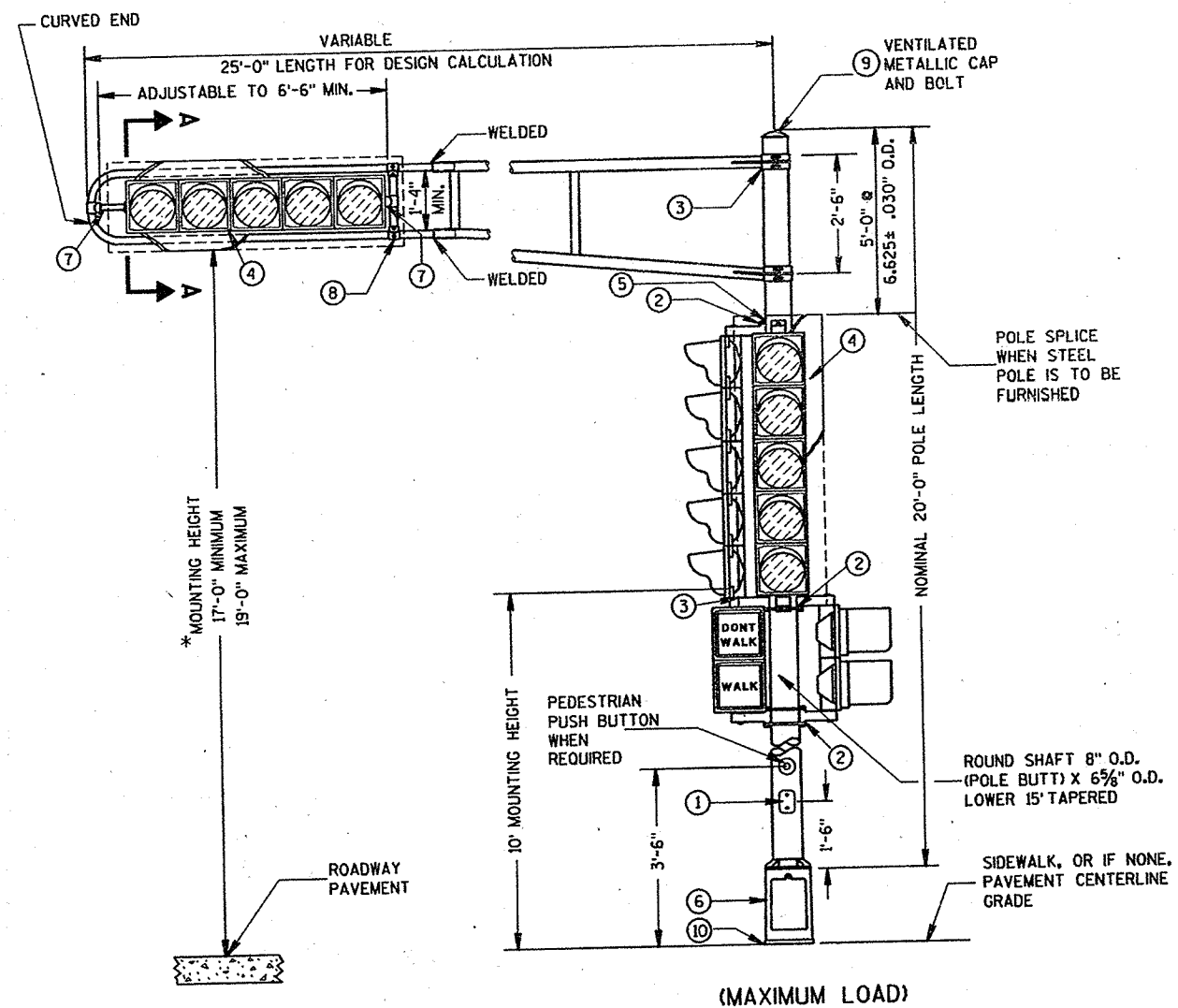
STATE ELECTRICAL ENGINEER FOR
HIGHWAYS



SECTION A-A
(10 DEGREES TILT REQUIREMENT OF FACE(S) IN THE TROMBONE MOUNTING)

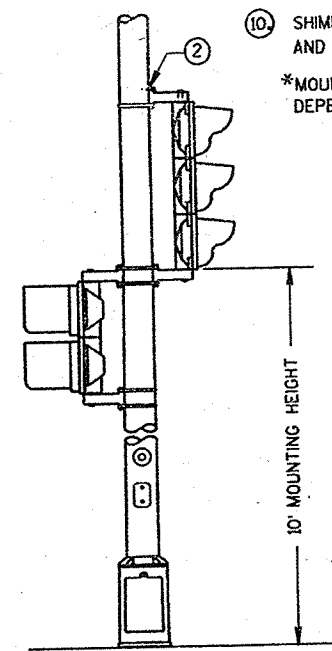
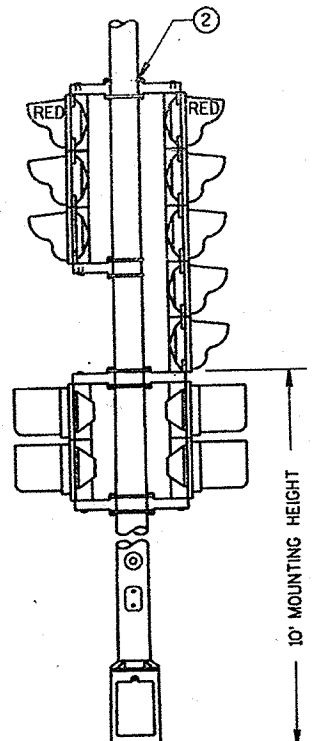


SIGNAL FACE MOUNTING DETAIL
(BANDED)



TYPICAL MOUNTING OF BACK TO BACK 3 AND 5 SECTION SIGNAL FACES

TYPE 2 POLE MOUNTING CONFIGURATION



TYPICAL MOUNTING OF 3 SECTION SIGNAL FACE

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT. POLES SHALL BE EITHER ALUMINUM OR GALVANIZED STEEL AS CALLED FOR IN THE CONTRACT.

SECTION 657, POLES, OF THE STANDARD SPECIFICATIONS SHALL APPLY TO THIS DRAWING.

A PULL WIRE/ROPE IN ACCORDANCE WITH STANDARD SPECIFICATION 652 SHALL BE INSTALLED IN EACH TROMBONE ARM RACEWAY DURING THE MANUFACTURING PROCESS.

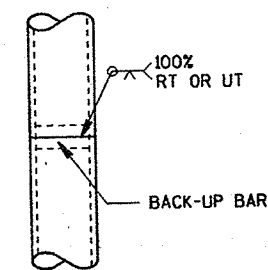
TYPE 2 ALUMINUM POLES SHALL BE CONSTRUCTED OF 6063-T6 ALUMINUM ALLOY. SLEEVING INSIDE THE POLE IS NOT ACCEPTABLE.

- ① 4" X 6" REINFORCED HANDHOLE & COVER ASSEMBLY WITH 2 (TWO) 1/4" X 3/4" - 20 TPI HEX HEAD STAINLESS STEEL BOLTS.
- ② SIGNAL FACE MOUNTING BRACKETS, MOUNT WITH CAP SCREWS AND BANDING. (SEE STANDARD SPECIFICATIONS - SEC. 658)
- ③ GROMMETS, 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR 1 1/8" HOLE IN POLE SHAFT FOR WIRING.
- ④ BACKBOARDS ARE REQUIRED AT ALL TIMES ON TROMBONE MAST ARM MOUNTED SIGNAL FACES. VERTICAL MOUNTED SIGNAL FACES WITH BACKBOARDS REQUIRED ARE LOCATED AS SHOWN ON THE PLANS. BACKBOARDS ARE REQUIRED TO SURROUND SIGNAL FACES. BACKBOARDS SHALL EXTEND 5" BEYOND EXTREMITIES OF THE SIGNAL FACE.
- ⑤ POLE MOUNTED SIGNAL FACES SHALL REQUIRE 1 OR MORE MOUNTING SPACERS UNDER THE TOP MOUNTING BRACKET(S) AS REQUIRED, TO PLUMB THE SIGNAL FACES.
- ⑥ CAST ALUMINUM TRANSFORMER BASE, WHEN REQUIRED.
- ⑦ MOUNTING BRACKET NIPPLES FOR THE SIGNAL FACE(S) SHALL BE 2 INCHES IN LENGTH AND 1/2 INCHES IN DIAMETER. (SEE STANDARD SPECIFICATION - SECTION 658).
- ⑧ VERTICAL STRUT (ADJUSTABLE), ONE (1) SET SCREW (1/4" X 3/4" LONG - 20 TPI, STAINLESS STEEL, HEX HEAD) INTO EACH ARM MEMBER IF STRUT IS THE SLIDING TYPE.
- ⑨ FURNISH AND INSTALL VENTILATED, CAST, METALLIC (ALUMINUM ALLOY) CAPS. FASTEN CAPS WITH ONE (1) 1/4" X 3/4" - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.
- ⑩ SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND THE TRANSFORMER BASE.

*MOUNTING HEIGHT LIMITATION DIMENSIONS OF THE TROMBONE MAST ARM WILL BE DEPENDENT UPON THE USE/NON-USE OF A TRANSFORMER BASE.

FOR MANUFACTURERS USE ONLY

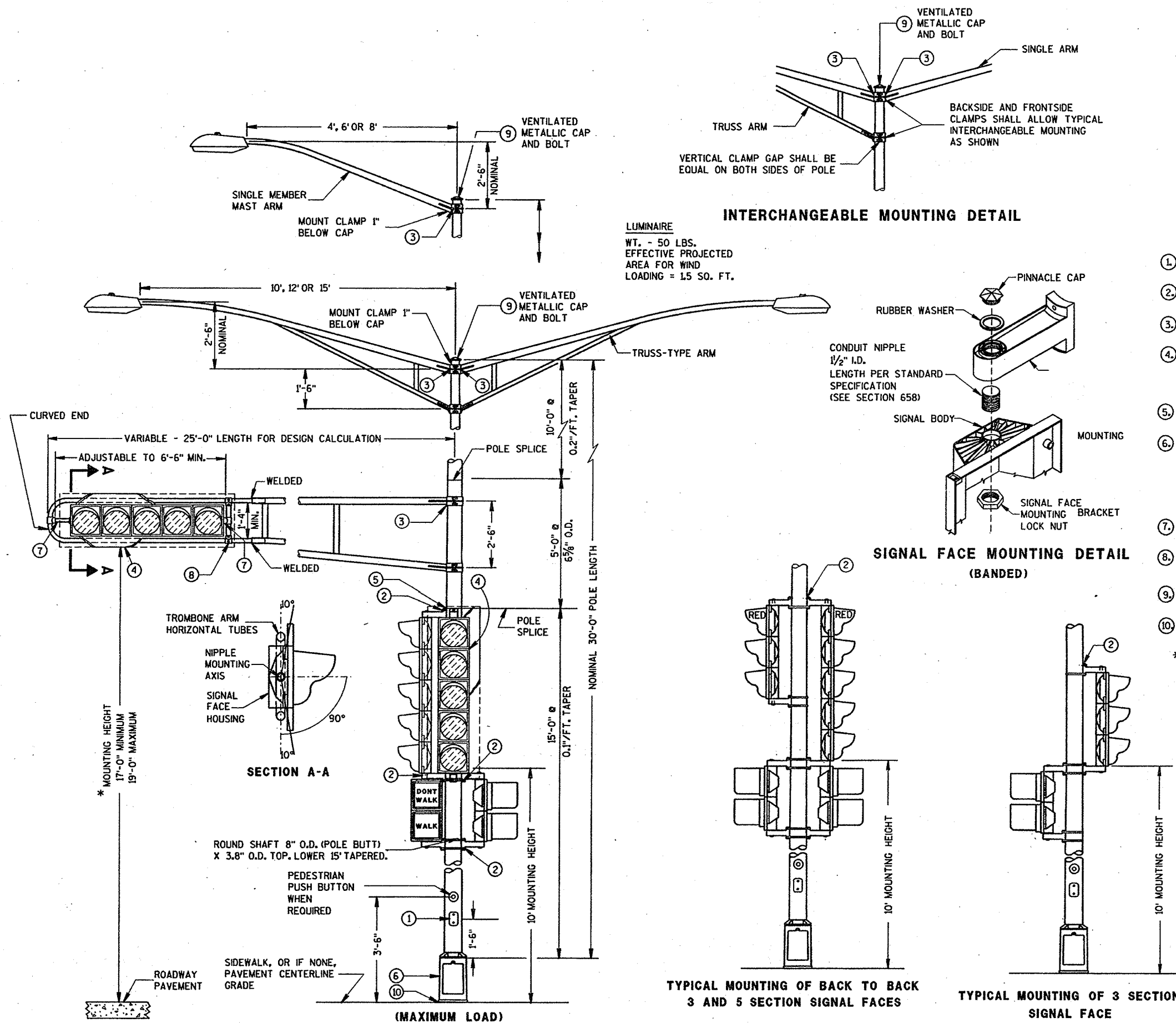
WELD TO BE 100% R.T. OR U.T. TESTED AS PER THE REQUIREMENTS OF AWS D 15-88. RECORDS OF COMPLIANCE OF SUCH TESTING SHALL BE FURNISHED TO THE OFFICE OF DESIGN/BRIDGE FOR VERIFICATION AND APPROVAL.



POLE SPLICE DETAIL

POLE MOUNTINGS FOR TRAFFIC SIGNALS TYPE 2

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

ALL TYPE 3 POLE MOUNTINGS SHALL BE DESIGNED TO INCLUDE TWIN 15' ARMS WITH LUMINAIRES.

POLES SHALL BE GALVANIZED STEEL.

SECTION 657, POLES, OF THE STANDARD SPECIFICATIONS SHALL APPLY TO THIS DRAWING.

A PULL WIRE/ROPE IN ACCORDANCE WITH STANDARD SPECIFICATION 652, SHALL BE INSTALLED IN EACH TRUMBONE ARM RACEWAY DURING THE MANUFACTURING PROCESS.

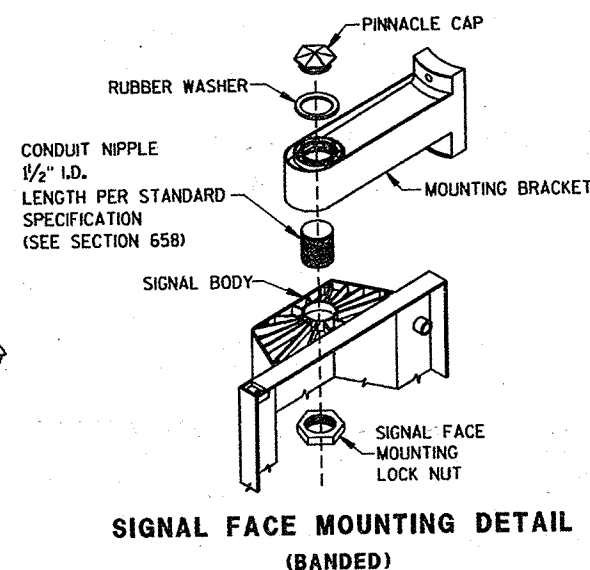
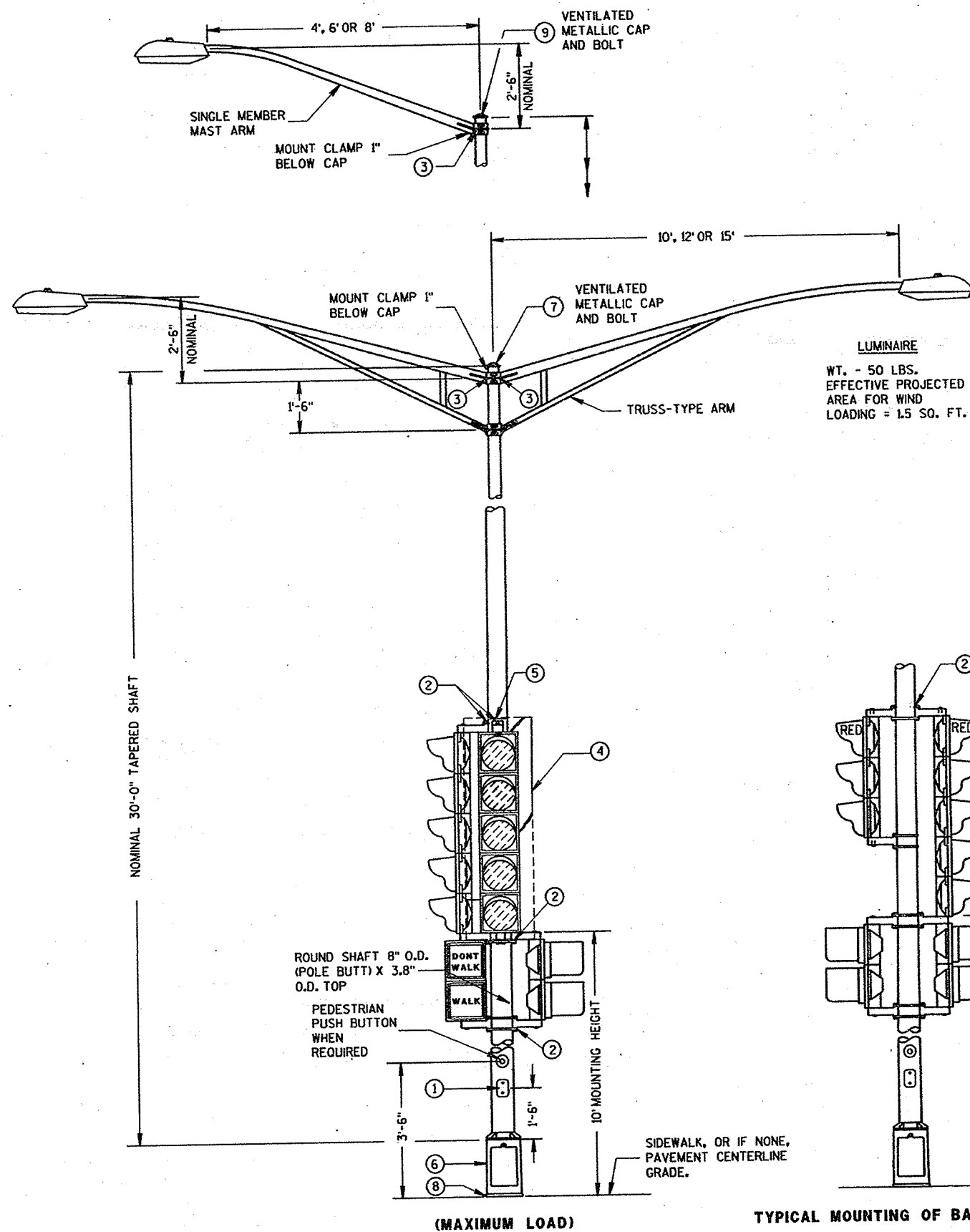
THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 2 3/8 INCHES IN OUTSIDE DIAMETER. THE STRAIGHT PORTION OF THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 12 INCHES IN LENGTH.

- ① 4" X 6" REINFORCED HANDHOLE & COVER ASSEMBLY WITH 2 (TWO) 1/4" X 3/4" - 20 TPI HEX HEAD STAINLESS STEEL BOLTS.
- ② SIGNAL FACE MOUNTING BRACKETS, MOUNT WITH CAP SCREWS AND BANDING. (SEE STANDARD SPECIFICATIONS - SEC. 658)
- ③ GROMMETS, 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR 1 3/8" HOLE IN POLE SHAFT FOR WIRING.
- ④ BACKBOARDS ARE REQUIRED AT ALL TIMES ON TRUMBONE MAST ARM MOUNTED SIGNAL FACES. VERTICAL MOUNTED SIGNAL FACES WITH BACKBOARDS REQUIRED ARE LOCATED AS SHOWN ON THE PLANS. BACKBOARDS ARE REQUIRED TO SURROUND SIGNAL FACES. BACKBOARDS SHALL EXTEND 5" BEYOND EXTREMITIES OF THE SIGNAL FACE.
- ⑤ POLE MOUNTED SIGNAL FACES SHALL REQUIRE 1 OR MORE MOUNTING SPACERS UNDER THE TOP MOUNTING BRACKET(S) AS REQUIRED, TO PLUMB THE SIGNAL FACE.
- ⑥ TYPE 3 POLE CONFIGURATIONS SHALL BE MOUNTED DIRECTLY TO THEIR CONCRETE BASES.
- IF AND/OR WHEN TRANSFORMER BASES ARE REQUIRED, THEY SHALL BE DESIGNED FOR THE MAXIMUM LOAD SHOWN WITH AN ACCEPTABLE FACTOR OF SAFETY IN ACCORDANCE WITH THE LATEST AASHTO CRITERIA FOR WIND LOADING.
- ⑦ MOUNTING BRACKET NIPPLES FOR THE SIGNAL FACE(S) SHALL BE 2 INCHES IN LENGTH AND 1/2 INCHES IN DIAMETER. (SEE STANDARD SPECIFICATION - SECTION 658)
- ⑧ VERTICAL STRUT (ADJUSTABLE), ONE (1) SET SCREW (1/4" X 3/4" - 20 TPI, STAINLESS STEEL, HEX HEAD) INTO EACH ARM MEMBER IF STRUT IS THE SLIDING TYPE.
- ⑨ FURNISH AND INSTALL VENTILATED, CAST, METALLIC (ALUMINUM ALLOY) CAPS. FASTEN CAPS WITH ONE (1) 1/4" X 3/4" - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.
- ⑩ SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND THE TRANSFORMER BASE (WHEN REQUIRED)

* MOUNTING HEIGHT LIMITATION DIMENSIONS OF THE TRUMBONE MAST ARM WILL BE DEPENDENT UPON THE USE/NON-USE OF A TRANSFORMER BASE.

WELD TO BE 100% R.T. OR U.T. TESTED AS PER THE REQUIREMENTS OF AWS D 15-88. RECORDS OF COMPLIANCE OF SUCH TESTING SHALL BE FURNISHED TO THE OFFICE OF DESIGN/BRIDGE FOR VERIFICATION AND APPROVAL.

TYPE 3 POLE MOUNTING CONFIGURATION



GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

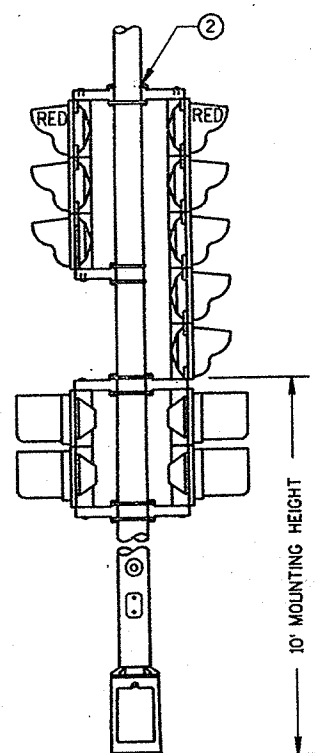
ALL TYPE 4 POLE MOUNTINGS SHALL BE DESIGNED TO INCLUDE TWIN 15' ARMS WITH LUMINAIRES.

POLES SHALL BE GALVANIZED STEEL.

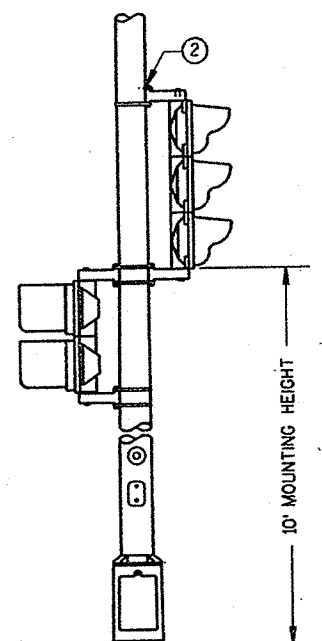
SECTION 657, POLES, OF THE STANDARD SPECIFICATIONS SHALL APPLY TO THIS DRAWING.

THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 2 3/8 INCHES IN OUTSIDE DIAMETER. THE STRAIGHT PORTION OF THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 12 INCHES IN LENGTH.

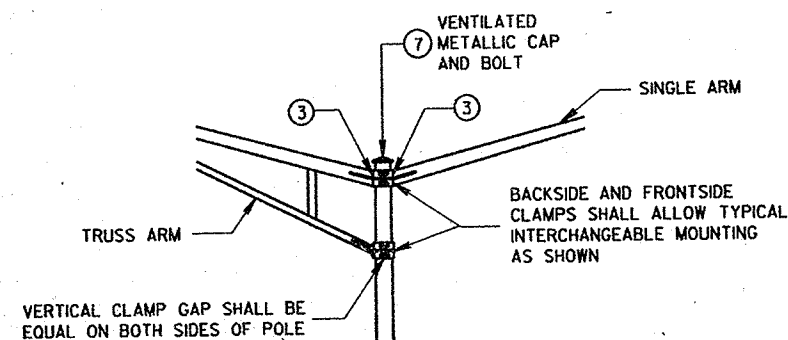
1. 4" X .6" REINFORCED HANDHOLE & COVER ASSEMBLY WITH 2 (TWO) 1/4" X 3/4" - 20 TPI HEX HEAD STAINLESS STEEL BOLTS.
2. SIGNAL FACE MOUNTING BRACKETS, MOUNT WITH CAP SCREWS AND BANDING. (SEE STANDARD SPECIFICATIONS - SEC. 65B).
3. GROMMETS, 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR 1 3/8" HOLE IN POLE SHAFT FOR WIRING.
4. VERTICAL MOUNTED SIGNAL FACES WITH BACKBOARDS REQUIRED ARE LOCATED AS SHOWN ON THE PLANS. BACKBOARDS ARE REQUIRED TO SURROUND SIGNAL FACES. BACKBOARDS SHALL EXTEND 5" BEYOND EXTREMITIES OF THE SIGNAL FACE.
5. POLE MOUNTED SIGNAL FACES SHALL REQUIRE 1 OR MORE MOUNTING SPACERS UNDER THE TOP MOUNTING BRACKET(S) AS REQUIRED, TO PLUMB THE SIGNAL FACE.
6. CAST ALUMINUM TRANSFORMER BASE, WHEN REQUIRED.
7. FURNISH AND INSTALL VENTILATED, CAST, METALLIC (ALUMINUM ALLOY) CAPS. FASTEN CAPS WITH ONE (1) 1/4" X 3/4" - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.
8. SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND THE TRANSFORMER BASE.



TYPICAL MOUNTING OF BACK TO BACK
3 AND 5 SECTION SIGNAL FACES



TYPICAL MOUNTING OF 3 SECTION
SIGNAL FACE



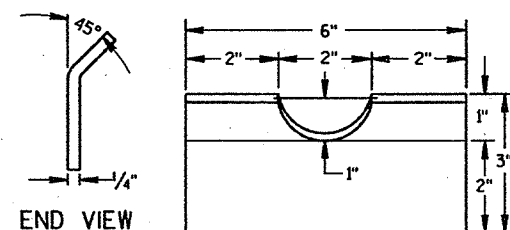
INTERCHANGEABLE MOUNTING DETAIL

POLE MOUNTINGS FOR
TRAFFIC SIGNALS AND
LIGHTING UNITS, TYPE 4

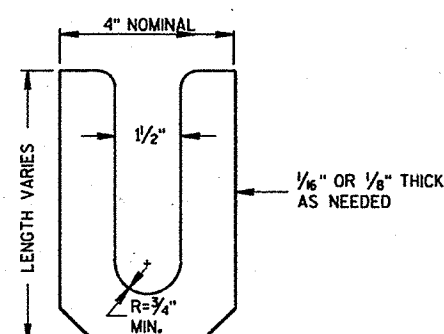
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

S.D.D. 9 E 1-2c

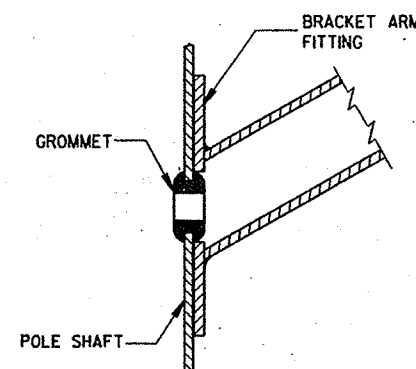
TYPE 4 POLE MOUNTING CONFIGURATION



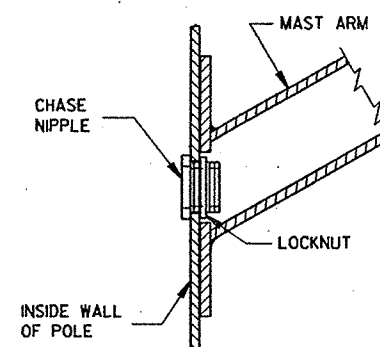
**FRONT VIEW
RECTANGULAR CLAMP SHIM**
(4 TO A SET)



LEVELING SHIM
SHALL BE ALUMINUM



**TYPICAL APPLICATION OF
GROMMET IN POLE SHAFT**

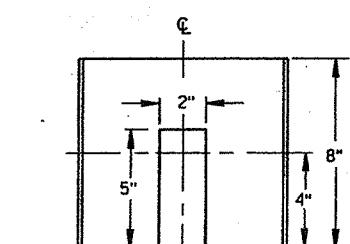
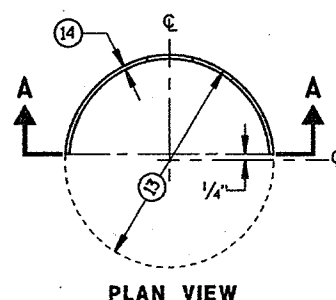


**TYPICAL APPLICATION OF
CHASE NIPPLE IN POLE SHAFT**

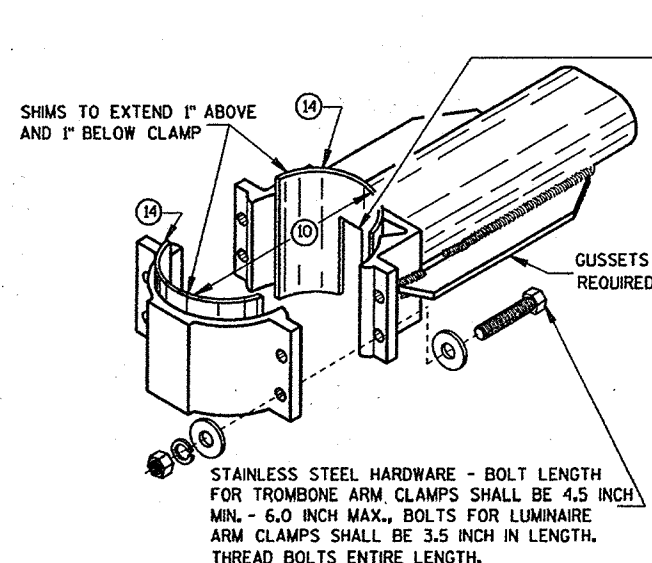
GENERAL NOTES

CLAMP BOLT-NUT TIGHTENING TORQUE SHALL BE INDICATED BY INDENT STAMPING (1/2 INCH NUMERALS AND LETTERS) OR WEATHERPROOF PRINTING ON THE INSIDE OF THE CLAMP THAT IS WELDED TO THE ARM MEMBER.

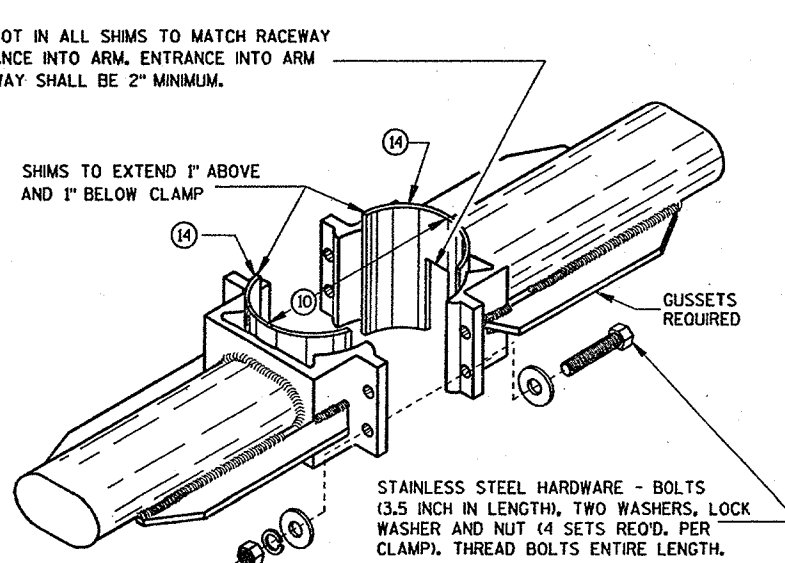
- (10) 4.5" I.D. FOR LUMINAIRE MAST ARM CLAMP.
6.625" I.D. FOR TROMBONE MAST ARM CLAMP.
- (11) INDIVIDUAL BASE PLATE ANCHOR ROD COVERS, (4 REQUIRED)
- (12) BASE PLATE SLOTTED TO ACCEPT 1" THROUGH 12" BOLT CIRCLE USING 1" DIAMETER ANCHOR RODS.
- (13) OUTSIDE SHIM DIAMETER - (4.5" O.D. FOR LUMINAIRE MAST ARM)
(6.625" O.D. FOR TROMBONE MAST ARM)
- (14) VARIABLE SHIM THICKNESS - (0.10", 0.25", 0.35", 0.53" OR 0.70")
SHIM THICKNESS FOR TROMBONE MAST ARMS MAY BE TYPICALLY 0.25", 0.35", 0.53" OR 0.70".
SHIM THICKNESS FOR LUMINAIRE MAST ARMS MAY BE TYPICALLY 0.10", 0.25" OR 0.35".
SHIM MATERIAL SHALL BE ALUMINUM ALLOY.
SHIM THICKNESS SHALL BE IMPRESSED INTO EACH SHIM. NUMERALS SHALL BE 1/4" HIGH AND LEGIBLE.
THE CONTRACTOR SHALL SUBMIT TWO COPIES OF ALL SHIM SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL.
- (15) LEVELING SHIMS, DESIGNED FOR THE PURPOSE, SHALL BE USED WHEN PLUMBING POLES. THE USE OF WASHERS IN LIEU OF PROPER LEVELING SHIMS IS NOT ACCEPTABLE. LEVELING SHIMS SHALL BE USED ONLY BETWEEN THE TOP OF THE CONCRETE BASE AND A METALLIC BASE PLATE.
SHIMS SHALL BE LONG ENOUGH AND WIDE ENOUGH TO COMPLETELY COVER THE AREA UNDER THE LENGTH AND WIDTH OF THE BASE MOUNTING FLANGE.



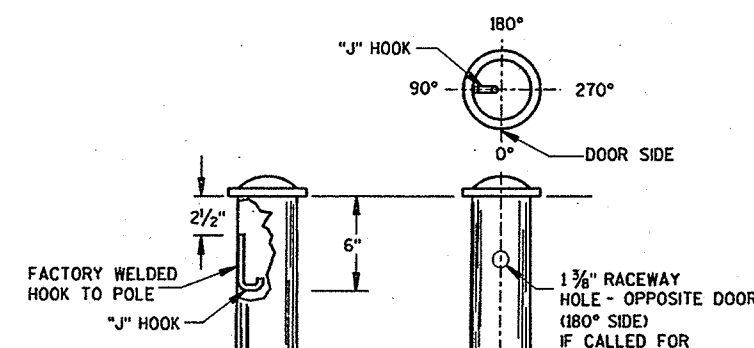
**SECTION A-A
CIRCULAR CLAMP SHIM**
(2 TO A SET)



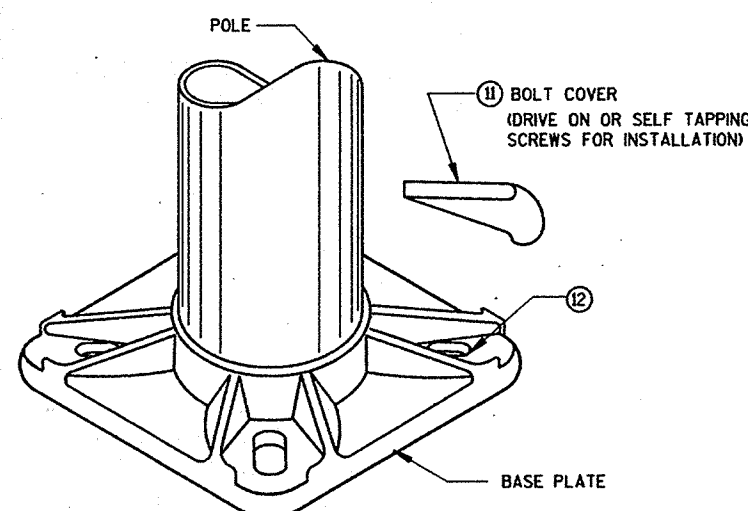
**TYPICAL TROMBONE MAST ARM AND SINGLE
LUMINAIRE MAST ARM MOUNTING CLAMP**



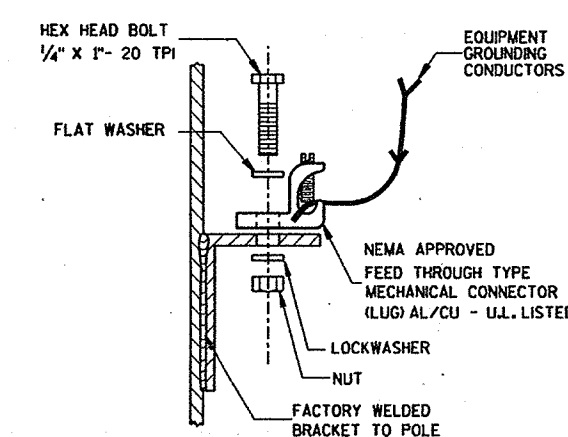
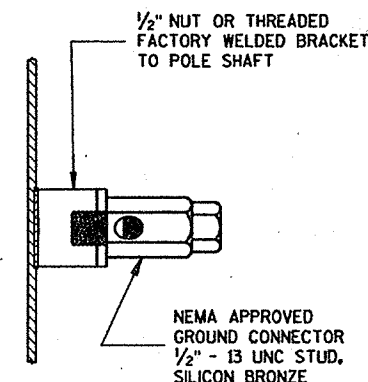
**TYPICAL LUMINAIRE MAST ARM
(DOUBLE) MOUNTING BRACKETS**



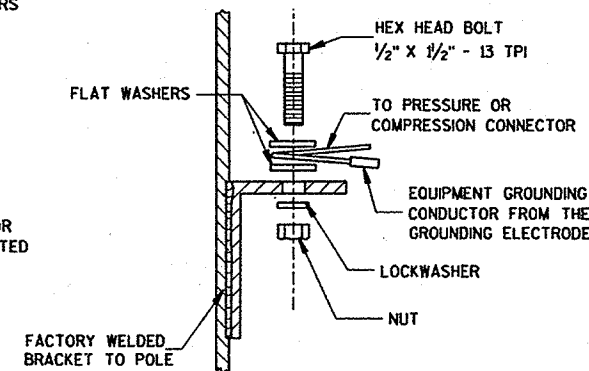
TYPICAL "J" HOOK LOCATION



BASE PLATE



TYPICAL GROUNDING CONNECTIONS
NUT, BOLT AND WASHERS SHALL BE STAINLESS STEEL



HARDWARE DETAILS FOR POLE MOUNTINGS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/6/96
DATE
FWHA
STATE ELECTRICAL ENGINEER FOR
HIGHWAYS

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

SEE THE SIGNAL PLAN FOR REQUIRED SIGNAL FACE SIZES.

ALL PEDESTAL BASES SHALL BE MOUNTED ON CONCRETE BASE - TYPE 1.

FOR APPROVED MOUNTING HARDWARE, SEE THE CONTRACT SPECIAL PROVISIONS.

POLYCARBONATE MOUNTING BRACKETS SHALL BE USED.

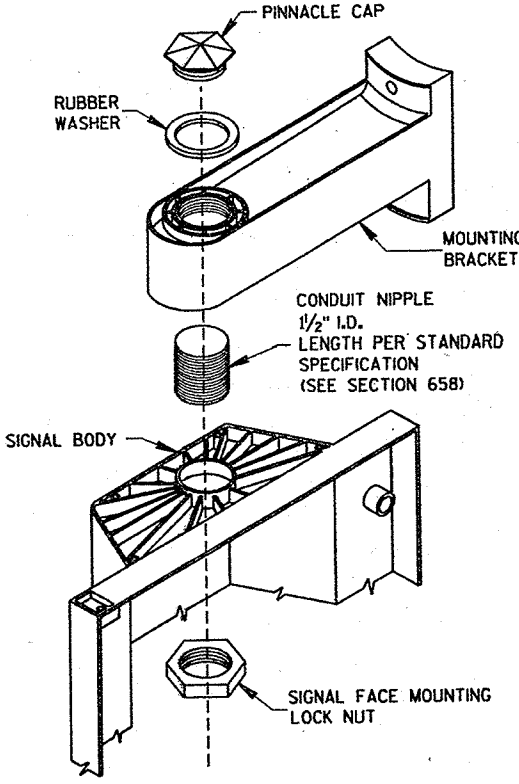
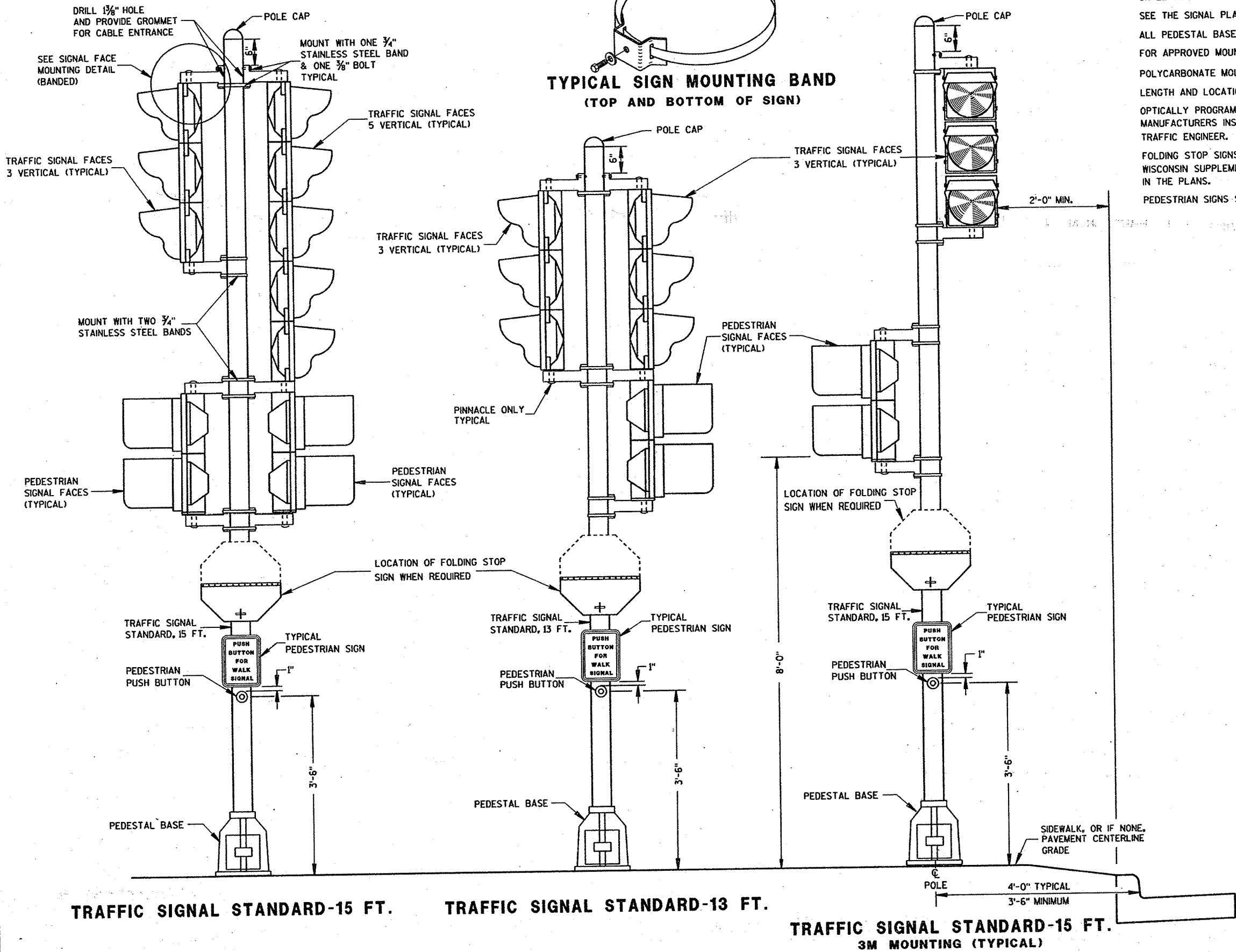
LENGTH AND LOCATION OF TRAFFIC SIGNAL STANDARDS SHALL BE AS SHOWN ON THE PLANS.

OPTICALLY PROGRAMMED SIGNAL FACES SHALL BE MASKED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS, AND UNDER THE DIRECTIONS OF THE DISTRICT TRAFFIC ENGINEER.

FOLDING STOP SIGNS SHALL BE IN ACCORDANCE WITH THE MUTCD AND/OR THE LATEST WISCONSIN SUPPLEMENT. THE SIGNS SHALL BE SIZED AND LOCATED AS CALLED FOR IN THE PLANS.

PEDESTRIAN SIGNS SHALL BE AS DESIGNATED IN THE PLANS.

TYPICAL SIGN MOUNTING BAND
(TOP AND BOTTOM OF SIGN)



SIGNAL FACE MOUNTING DETAIL
(BANDED)

TRAFFIC SIGNAL STANDARD POLY BRACKET MOUNTINGS (TYPICAL) 13 FT. OR 15 FT.	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 10/23/64 DATE	<i>Paul J. Smith</i> STATE ELECTRICAL ENGINEER FOR HIGHWAYS
FHWA	

S.D.D. 9 E 6-1

S.D.D. 9 E 6-1

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

LOOP SIZE, LOCATION, NUMBER OF TURNS OF WIRE AND ASSOCIATED SIGNAL PHASE SHALL BE AS SHOWN ON THE PLANS.

PITCH LEAD-OUT CONDUIT TO DRAIN TO ROADSIDE PULL BOX.

SPLICES SHALL BE INSTALLED BY USING CAST IN PLACE SPLICE KITS SUCH AS 3M TYPE 82A1 OR APPROVED EQUAL. NON-INSULATED BUTT SPLICES TO FIT #12 AWG STRANDED WIRE SHALL BE USED. SPLICES SHALL BE SOLDERED AND INSULATED FROM EACH OTHER AS PER INSTRUCTIONS INCLUDED IN THE SPLICE KIT.

THE GROUND RESISTANCE READING OF THE LOOP SHALL READ "INFINITY" TO GROUND ON AN OHMMETER USING A MULTIPLIER SCALE OF 1 MEGOHM AND AN INPUT RESISTANCE OF 11 MEGOHMS MINIMUM BEFORE SPLICING THE LOOP TO THE LEAD-IN CABLE.

AFTER SPLICING THE LOOP WIRE TO THE LOOP LEAD-IN CABLE, THE CONTRACTOR SHALL MEASURE INDUCTANCE, GROUND RESISTANCE AND WIRE RESISTANCE AT THE CABINET END OF THE LEAD-IN CABLE AND FURNISH A COPY OF THE READINGS TO THE PROJECT ENGINEER FOR EVALUATION.

ANTI-SIEZE LUBRICATING MATERIAL SHALL BE USED ON ALL THREADS OF THREADED ASSEMBLIES BEFORE INSTALLATION.

LOOP DETECTOR LEADS SHALL BE IDENTIFIED WITH THEIR ASSOCIATED LOOP BY USE OF WATERPROOF TAGS AT BOTH ENDS OF THE CABLE. A LISTING OF THE CABLE IDENTIFICATION PER INDIVIDUAL LOOP LEAD-IN SHALL BE PLACED IN THE CABINET.

THE #12 AWG LOOP WIRE FROM THE LOOP TO THE ROADSIDE PULL BOX, SHALL BE HAND TWISTED AT LEAST 3 TWISTS PER FOOT BEFORE INSTALLATION.

SPLICES OF LOOP WIRE TO LEAD-IN CABLE SHALL BE MADE ONLY IN PULL BOXES AT THE SIDE OF THE ROAD.

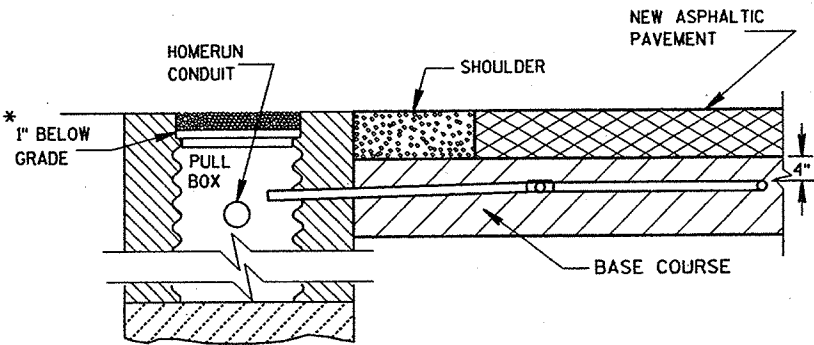
THE #12 AWG LOOP WIRE SHALL BE INSTALLED FROM THE ROADSIDE PULL BOX, THROUGH THE LOOP DUCT, BACK TO THE ROADSIDE PULL BOX, AND BE INSTALLED IN ONE, NON-SPLICED, CONTINUOUS LENGTH.

PROTECTION OF THE CONDUIT AND CONDULET SHALL BE REQUIRED AFTER INSTALLATION AND BEFORE THE ASPHALTIC PAVEMENT IS PLACED.

WHEN MULTIPLE LAYERS OF ASPHALTIC PAVEMENT ARE TO BE PLACED, LOOPS MAY BE INSTALLED BY SAWING A TWO INCH WIDE SLOT IN THE FIRST LAYER, DIG OUT THE ASPHALTIC MATERIAL AND BASE COURSE, PLACE THE LOOP, FILL THE SLOT WITH BASE COURSE MATERIAL AND NEW ASPHALTIC MATERIAL AND TAMP THE ASPHALTIC MATERIAL IN PLACE.

SHOULD TRAFFIC BE ALLOWED TO USE THE AREA OF ROADWAY WITH THE NEWLY INSTALLED LOOP BEFORE THE PLACEMENT OF THE NEXT LAYER OF ASPHALTIC PAVEMENT, THE SLOT/PAVEMENT OPENING SHALL BE SEALED WITH HOT POURED ELASTIC TYPE MATERIAL CONFORMING TO THE REQUIREMENTS OF THE "SPECIFICATION FOR JOINT SEALANTS, HOT POURED, FOR CONCRETE AND ASPHALT PAVEMENTS, ASTM DESIGNATION: D3405".

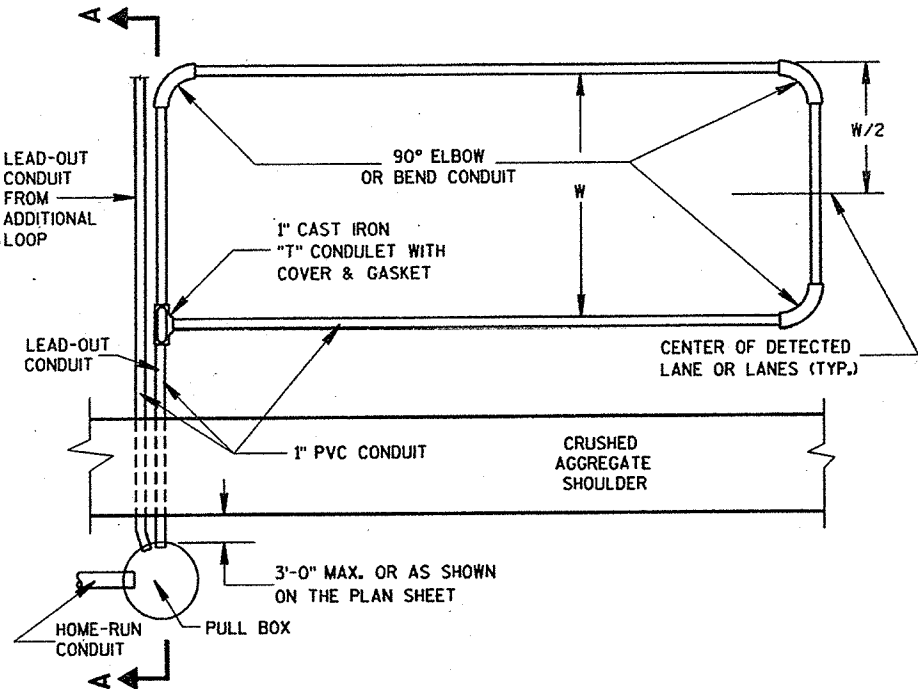
DRIVE A 1 1/2" MAX. PK NAIL INTO THE NEW ASPHALTIC PAVEMENT AND DIRECTLY ABOVE THE CONDULET AFTER THE FINAL LAYER OF NEW ASPHALTIC PAVEMENT IS COMPLETELY INSTALLED, IF REQUIRED BY THE DISTRICT TRAFFIC SECTION.



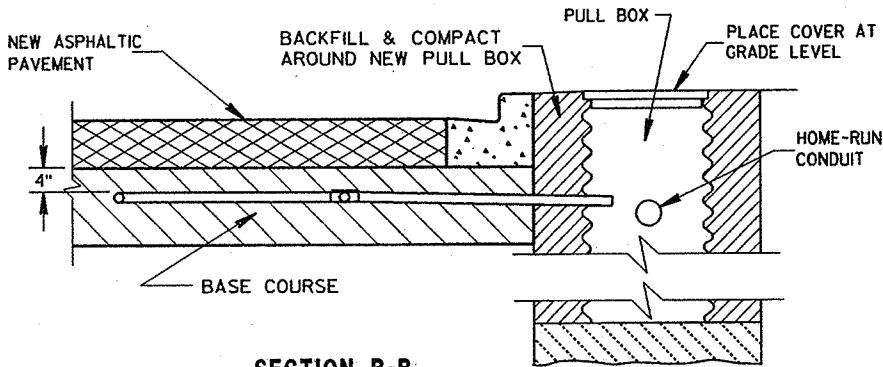
SECTION A-A
NO CURB & GUTTER

DETECTOR LOOP INSTALLATION DETAIL

*RECESS PULL BOX SO THAT THE COVER IS 3" BELOW GRADE IN SHOULDER AREAS OF CRUSHED AGGREGATE. BACKFILL OVER COVER WITH THE CRUSHED AGGREGATE TO BRING THE AREA TO GRADE LEVEL.

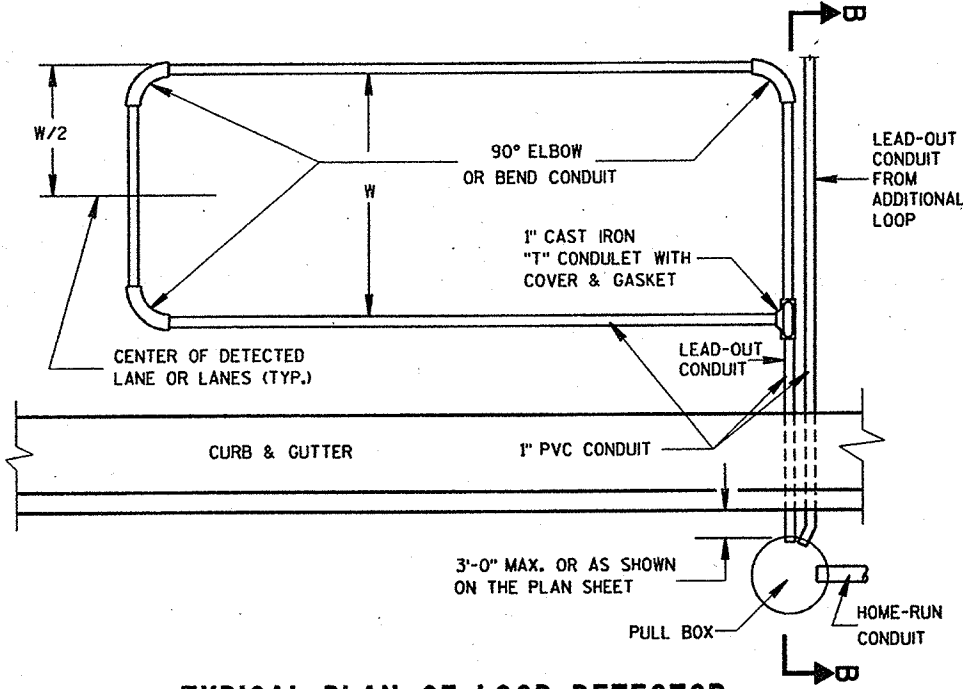


TYPICAL PLAN OF LOOP DETECTOR



SECTION B-B
CURB & GUTTER

LOOP DETECTOR INSTALLATION DETAIL



TYPICAL PLAN OF LOOP DETECTOR

LOOP DETECTOR PLACED
IN CRUSHED AGGREGATE BASE
(NEW ASPHALTIC PAVEMENT)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

10/31/96
DATE
FHWA

Bala Struss
STATE ELECTRICAL ENGINEER FOR
HIGHWAYS

TWO-LANE ROADWAY

SYMBOLS

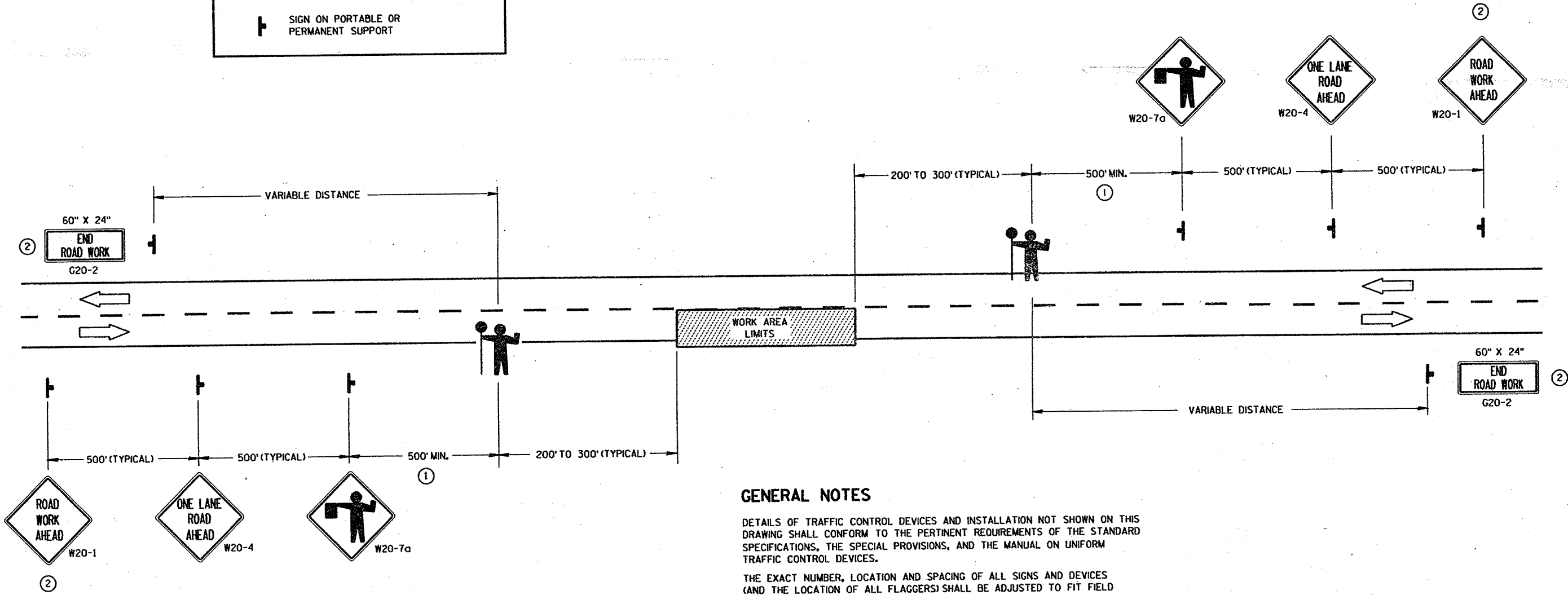
WORK AREA

FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

SIGN ON PORTABLE OR PERMANENT SUPPORT



USE OF THE "BE PREPARED TO STOP" SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7a AND W20-4 SIGNS. A 500' TYPICAL SPACING SHALL BE PROVIDED BETWEEN THE SIGNS.



GENERAL NOTES

DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND DEVICES (AND THE LOCATION OF ALL FLAGGERS) SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

THE FIRST ADVANCE WARNING SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.

WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS DIRECTED BY THE ENGINEER.

FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT, THE "FLAGGER AHEAD", THE "ROAD WORK AHEAD" AND THE "ONE LANE ROAD AHEAD" SIGNS SHALL BE COVERED OR REMOVED AND THE HIGHWAY RESTORED TO NORMAL OPERATION.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

① FOR A MOVING WORK OPERATION, SIGNING FOR BOTH DIRECTIONS SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3500 FOOT INTERVALS IN THE MOVING WORK OPERATION OR AS DIRECTED BY THE ENGINEER.

② SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.

TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
2/17/94
DATE
STATE TRAFFIC ENGINEER FOR HWYS

FHWA