

# INDEX OF SHEETS

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TOTAL SHEETS = 60



## DESIGN DESIGNATION

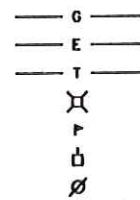
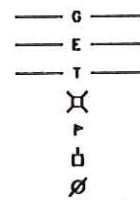
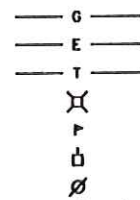
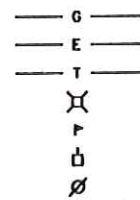
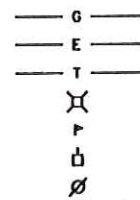
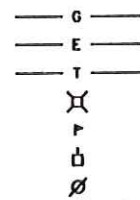
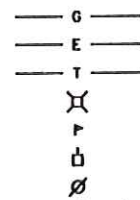
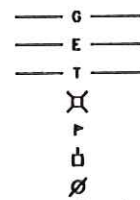
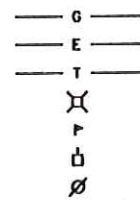
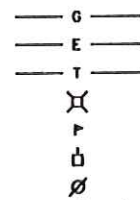
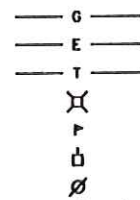
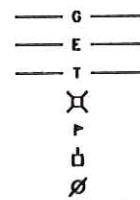
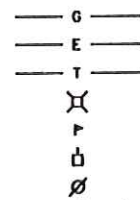
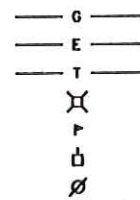
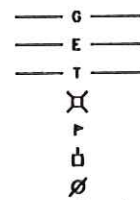
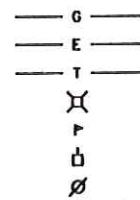
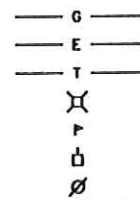
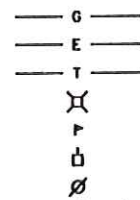
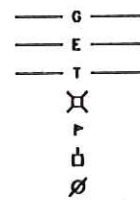
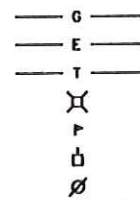
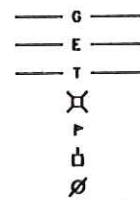
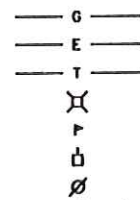
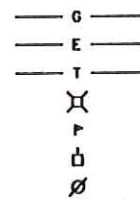
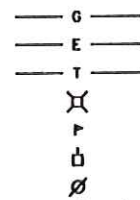
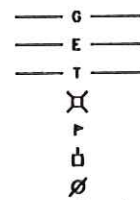
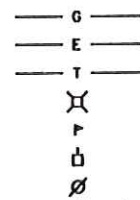
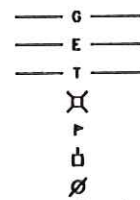
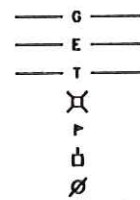
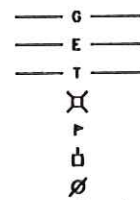
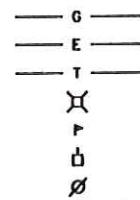
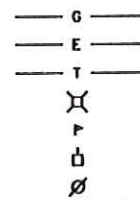
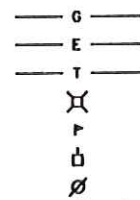
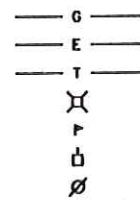
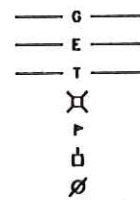
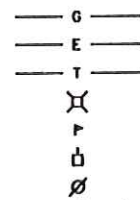
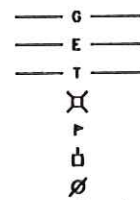
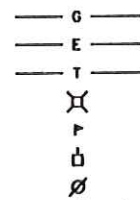
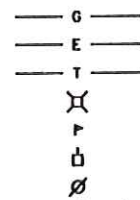
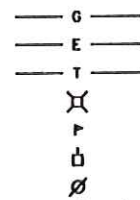
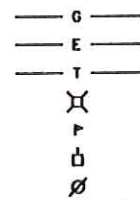
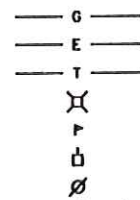
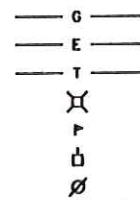
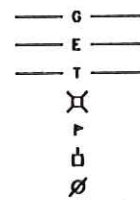
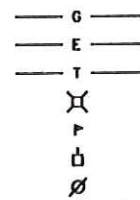
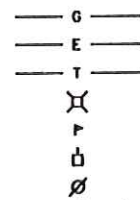
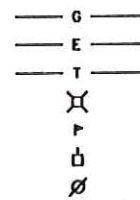
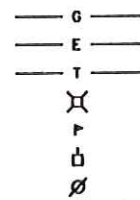
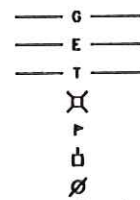
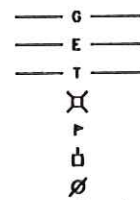
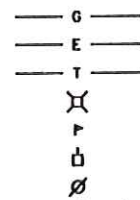
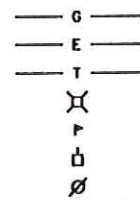
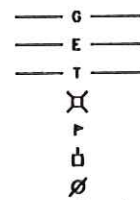
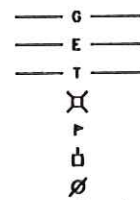
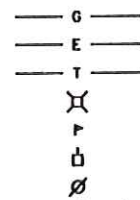
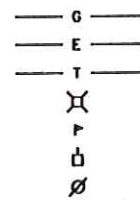
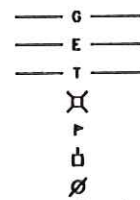
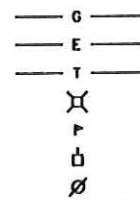
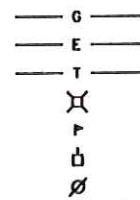
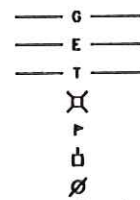
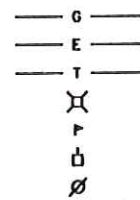
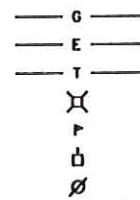
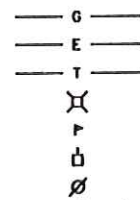
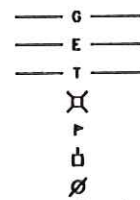
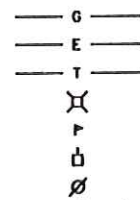
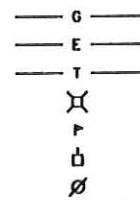
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A.D.T. (2015)	=	5700
D.H.V. (2015)	=	675
D.	=	60-40
T. % ADT	=	10.5%
DESIGN SPEED	=	35
ESALS	=	N/A

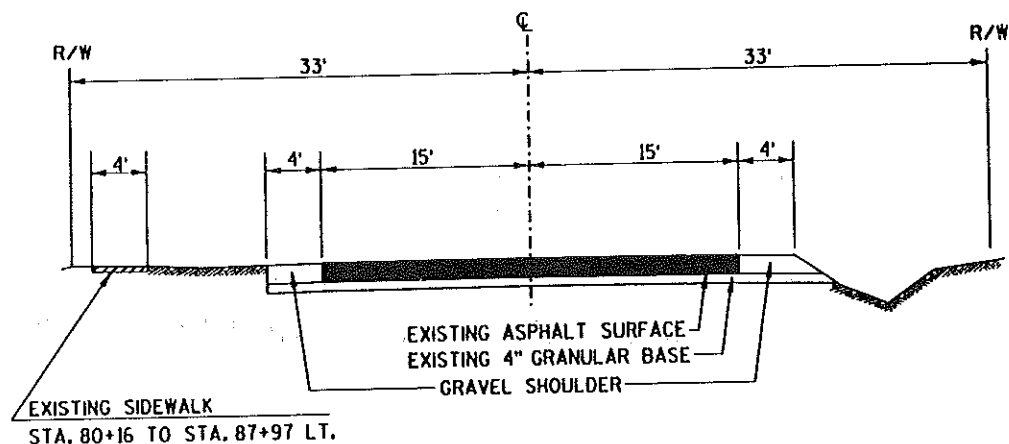
## CONVENTIONAL SIGNS

COUNTY LINE	---
CORPORATE LIMITS	--- PA. 58.1 ---
PROPERTY LINE	---
LOT LINE	---
LIMITED EASEMENT	---
EXISTING RIGHT OF WAY	---
PROPOSED OR NEW R/W LINE	---
SURVEY LINE	---
SLOPE INTERCEPT	---
ORIGINAL GROUND	---
MARSH OR ROCK PROFILE	---
EXISTING CULVERT	---
PROPOSED CULVERT (Box or Pipe)	---
CULVERT (Profile View)	---

## COMBUSTIBLE FLUIDS

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





EXISTING TYPICAL SECTION

STANDARD DETAIL DRAWINGS

S.D.D. NUMBER	TITLE
8A5-9a, b	INLET COVERS
8A5-9d	INLET & MANHOLE COVERS
8B6-3	MANHOLES, TYPE 1
8C1-4	INLETS, TYPE 1, 2, & 3
8C5-1	INLETS, TYPE 8, 9, 10, & 11
8D1-11	CONCRETE CURB, CONCRETE CURB & GUTTER, & PAVEMENT TIES
8D5-8	CURB RAMPS
8E9-4	SILT FENCE
8F1-10a	APRON ENDWALLS FOR CULVERT PIPE
13C1-9	CONCRETE PAVEMENT LONGITUDINAL JOINTS & PAVEMENT TIES
13C4-10	NON-REINFORCED CONCRETE PAVEMENT (TRANSVERSE JOINTS SPACED AT 20' NORMAL)
13C13-1	DOWELED NON-REINFORCED CONCRETE PAVEMENT (TRANSVERSE JOINTS SPACED AT 20' AND NORMAL)
15C2-2	BARRICADES AND TRAFFIC CONTROL FOR ROAD CLOSURES
15C8-5a	PAVEMENT MARKING (MAINLINE & INTERSECTIONS)
16A1-5	LANDMARK REFERENCE MONUMENTS AND COVERS
8D15-1a	EDGEDRAIN OUTLET
8D15-1b	EDGEDRAIN

GENERAL NOTES

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

ALL TRENCHES, HOLES OR OPENINGS BELOW SUBGRADE RESULTING FROM THE ABANDONMENT OR REMOVAL OF EXISTING STRUCTURES OR TANKS, THE GRUBBING OF TREES OR STUMPS, OR THE INSTALLATION OF CONDUIT UNDER ROADWAYS SHALL BE BACKFILLED WITH GRANULAR BACKFILL.

THE EXACT LOCATION OF PRIVATE ENTRANCES IS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

NO TREES OR SHRUBS ARE TO BE REMOVED UNLESS INDICATED FOR REMOVAL BY THE ENGINEER.

ON ALL DISTURBED AREAS, EXCLUSIVE OF THE AREA OCCUPIED BY THE NEW PAVEMENTS, SIDEWALKS AND RELATED STRUCTURES, TOPSOIL, FERTILIZER AND SOD SHALL BE PLACED

A VERTICAL SAW CUT SHALL BE MADE THROUGH EXISTING DRIVEWAYS, SIDEWALKS AND PAVEMENTS AT THE REMOVAL LIMITS. THE COST OF SAWCUTTING SHALL BE PAID FOR UNDER THE BID ITEM "SAWING EXISTING PAVEMENT."

WHEN THE QUANTITY OF THE ITEM OF BASE COURSE IS MEASURED FOR PAYMENT BY THE TON, THE DEPTH OF THICKNESS OF THE COURSE SHOWN ON THE PLANS IS APPROXIMATE, AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

CURB RAMPS FOR HANDICAPPED PERSONS SHALL BE CONSTRUCTED WHERE SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

USE HALF-INCH EXPANSION JOINT FILLER WHERE NEW CONCRETE WILL ABUT EXISTING IN SIDEWALKS AND DRIVEWAYS.

ASPHALTIC SURFACE, WHEN INDICATED ON THE PLANS, SHALL CONSIST OF COURSES AS FOLLOWS UNLESS OTHERWISE NOTED:

4" DEPTH 2 1/2" LOWER LAYER 1 1/2" SURFACE LAYER	3" DEPTH 1 1/2" LOWER LAYER 1 1/2" SURFACE LAYER
--	--

LANDMARK REFERENCE MONUMENTS SHALL BE CONSTRUCTED WITH A CONCRETE DEPTH OF 4-FEET.

ELEVATIONS FOR UNDERDRAIN TO BE DETERMINED BY THE ENGINEER IN THE FIELD. UNDERDRAIN SHALL DISCHARGE INTO STORM SEWER INLETS.

UTILITIES



TO OBTAIN LOCATION OF PARTICIPANTS' UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN

CALL DIGGERS HOTLINE

1-800-242-8511

TOLL FREE

(414) 259-1181 MILWAUKEE METRO

WIS. STATUTE 182.0175 (1974)

REQUIRES MIN. OF 3 WORK DAYS

NOTICE BEFORE YOU EXCAVATE.

WISCONSIN NATURAL GAS CO.

2011ST STREET

RACINE, WI 53403

ATTN: L.E. EASTMAN

(414)-637-7681

WISCONSIN ELECTRIC POWER CO.

7815 NORTHWESTERN AVE.

RACINE, WI. 53406

ATTN: JERRY LONDRE

(414)-886-7032

SOUTHEAST TELEPHONE COMPANY

311 ELIZABETH STREET

P.O. BOX 190

WATERFORD, WI. 53185

ATTN: DONALD HEWITT

(414)-534-5101

MARKEUS CABLE

254 WINNEBAGO DRIVE

P.O. BOX 1197

BURLINGTON, WI. 53105

ATTN: EVERETT BURROWS

(414) 763-8158

VILLAGE OF WATERFORD (WATER DISTRIBUTION)

123 N. RIVER STREET

WATERFORD, WI. 53185

ATTN: RANDY MEWOLNY

(414) 534-3980

WESTERN RACINE COUNTY SANITARY DISTRICT

1020 N. RIVER ROAD

P.O. BOX 177

ROCHESTER, WI. 53167

ATTN: STEVE EMOND

(414) 534-6237



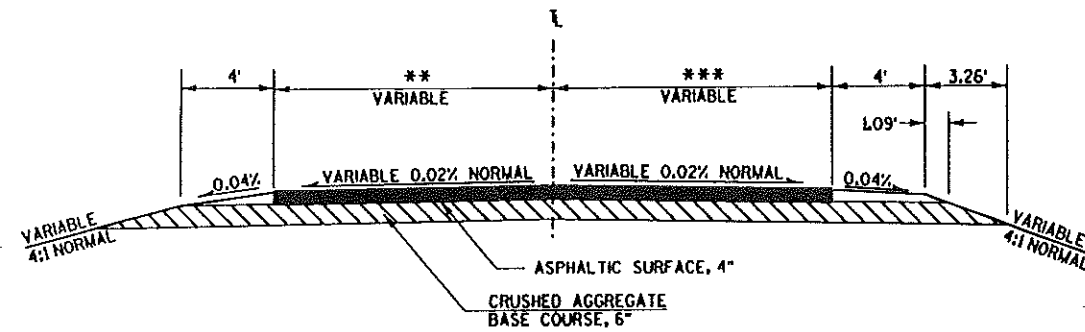
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## CCO #1

Gr p Code	Item Number	Quantity +/-	Unit	Item Description	Contract Price	Increase (Decrease)
01010	21301-1	1	L.S.	Finishing Roadway	750. <sup>00</sup>	750. <sup>00</sup>
01010	41508	-350	S.Y.	Concrete Pavement, 8-Inch	16. <sup>30</sup>	(5,705. <sup>00</sup> )
01010	41518	350	S.Y.	HES. Concrete Pavement 8-Inch	18. <sup>30</sup>	6,405. <sup>00</sup>
01010	61910-1	1	L.S.	Mobilization	3,900. <sup>00</sup>	3,900. <sup>00</sup>
010101	64313	3000	Days	Traffic Control, Drums	0.55	1,650. <sup>00</sup>
01010	64326	475	Days	Traffic Control, Signs	0.50	237. <sup>50</sup>
01010	90001	20	Each	Lane Closures	220. <sup>00</sup>	4,400. <sup>00</sup>
01010	90716	-2627	Days	Traffic Control, Detour Signs	0.45	(1,182. <sup>15</sup> )
Total Estimated Increase					\$ 10,455. <sup>35</sup>	

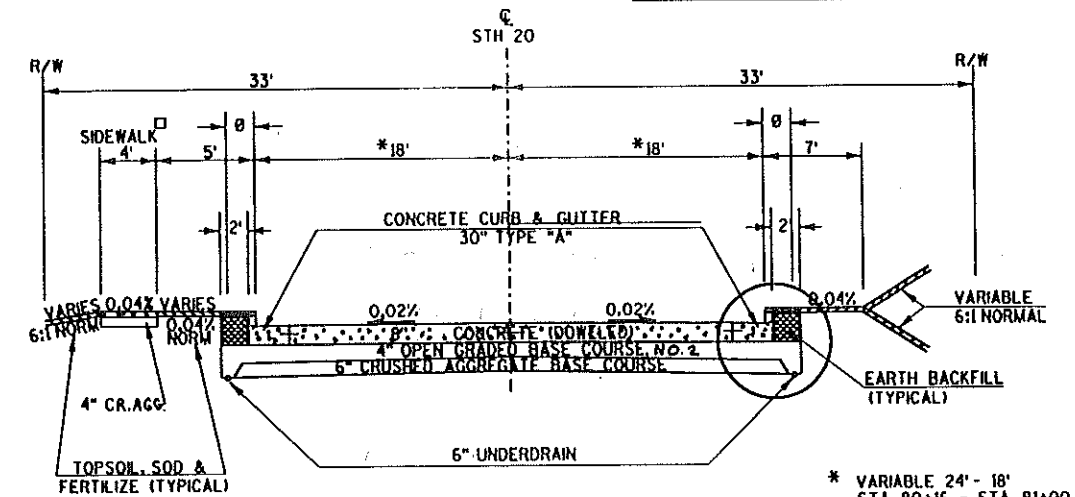
## CCO #2

Gr p Code	Item Number	Quantity +/-	Unit	Item Description	Contract Price	Increase (Decrease)
01010	20801	2725	C.Y.	Borrow Excavation	6. <sup>00</sup>	16,350. <sup>00</sup>
01010	60829	80	L.F.	Reinforced Concrete Pipe, Class III, Storm Sewer, 24-Inch	75. <sup>60</sup>	6,048. <sup>00</sup>
01010	64497	0.37	MI	Locating No Passing Zones	710. <sup>80</sup>	263. <sup>00</sup>
Total Estimated Increase					\$ 22,661. <sup>00</sup>	



**TYPICAL ASPHALT SECTION  
SIDE STREETS**

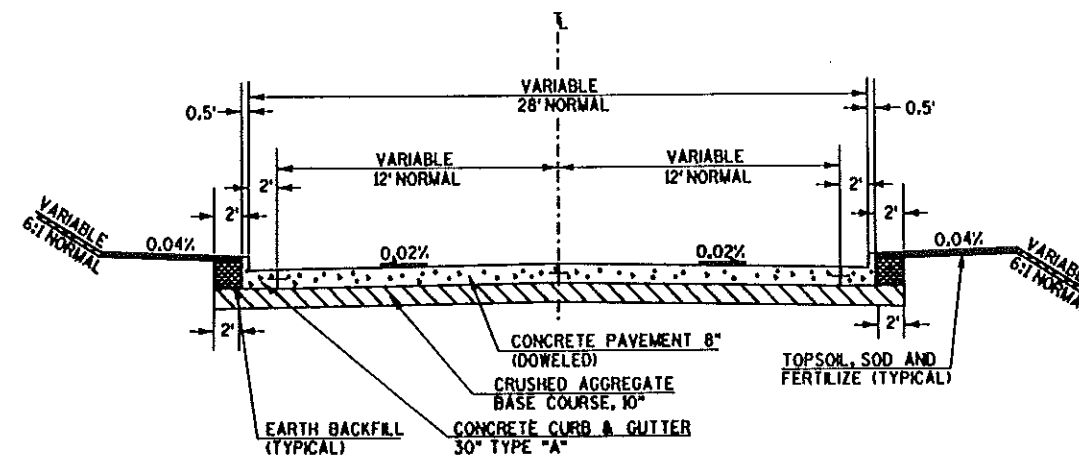
EVERGREEN DRIVE	**	***
STA. 19+25 TO STA. 19+50	9'-15'	9'-15'
STA. 20+50 TO STA. 20+75	15'-11'	15'-11'



**TYPICAL CROWNED SECTION**

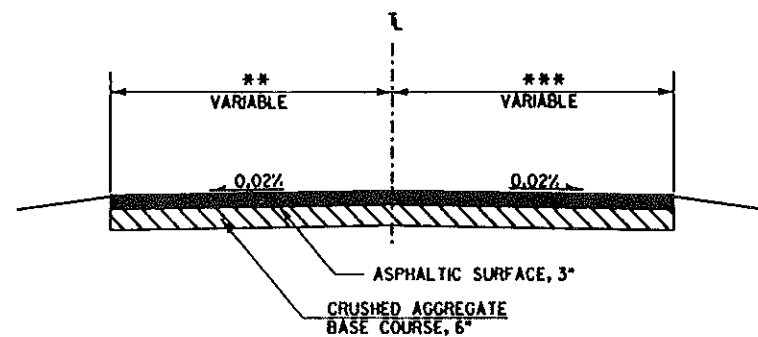
STA. 80+16 - STA. 83+50  
STA. 88+00 - STA. 89+39  
STA. 91+50 - STA. 99+86

\* VARIABLE 24' - 18'  
STA. 80+16 - STA. 81+00  
Ø CLEAR ZONE = 2'



**TYPICAL SECTION  
SIDE STREET**

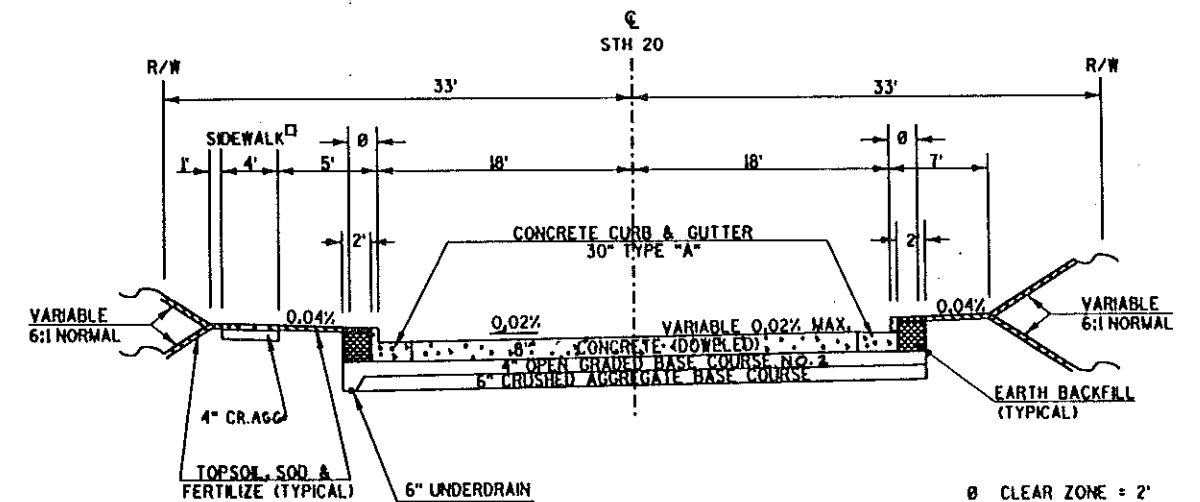
EVERGREEN DRIVE - STA. 19+50 TO STA. 19+79.5  
STA. 20+20.5 TO STA. 20+50



**TYPICAL ASPHALT SECTION  
SIDE STREETS**

WALNUT DRIVE	**	***
STA. 19+25 TO STA. 19+71	9'-10'	9'-10'
HICKORY LANE	**	***
STA. 19+25 TO STA. 19+71	8'-10'	8'-10'

□ SEE MISC. QUANTITY SHEET FOR LOCATIONS.

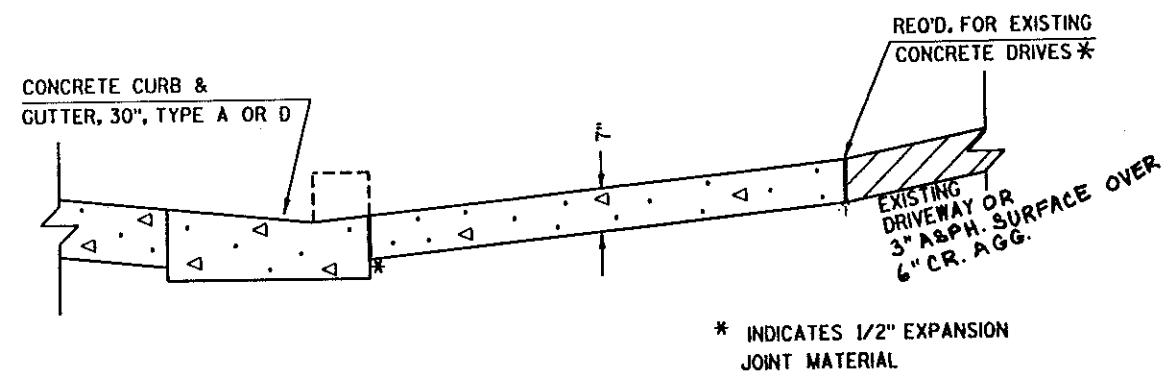
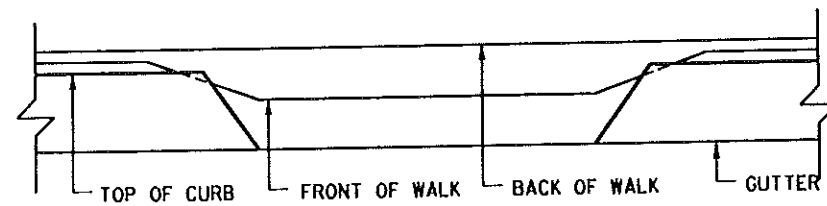
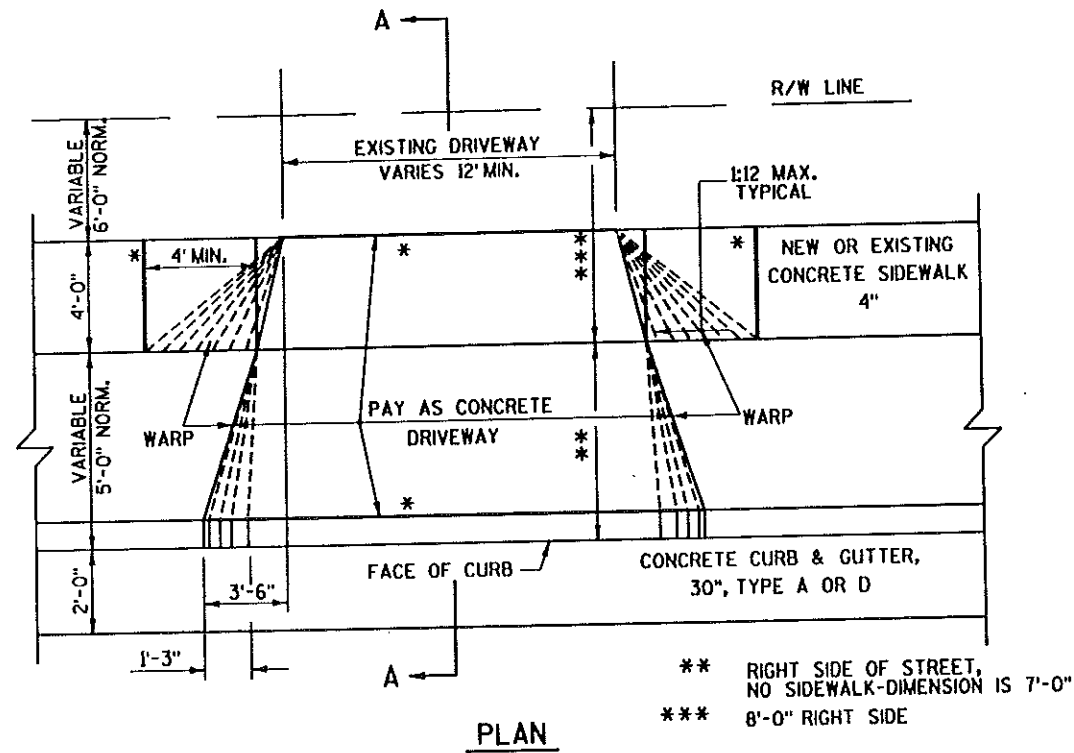


**TYPICAL WARPED SECTION**

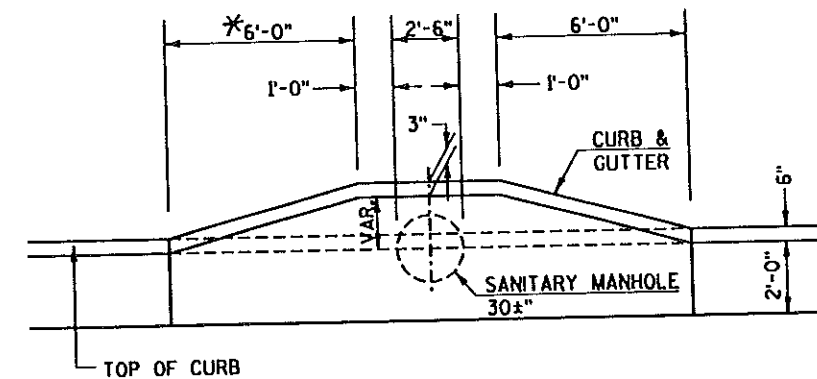
STA. 83+50 - STA. 84+50 LT.  
STA. 84+50 - STA. 88+00 RT.  
STA. 89+39 - STA. 91+50 RT.

Ø CLEAR ZONE = 2'

LEVELS ON - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63



DRIVEWAY DETAIL



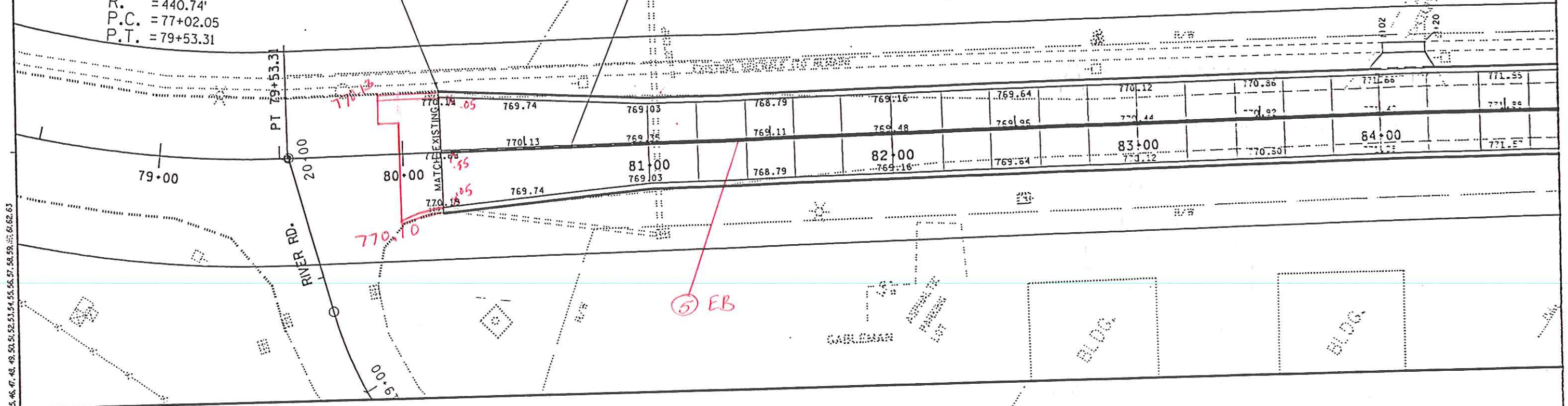
STA. 86+16 16' LT.  
 \* STA. 94+26 37' RT. (ADJUST TAPER LENGTH TO  
 STA. 97+78 20' LT. MATCH INCL. 60 AT CURB LINE)

LEVELS ON - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63

P.I. = 78+31.20  
 Δ = 32°-39'-52"  
 D. = 13°-00' BEGIN CONSTRUCTION  
 T. = 129.15' STA. 80+16  
 L. = 251.26'  
 R. = 440.74'  
 P.C. = 77+02.05  
 P.T. = 79+53.31

STA. 80+16 TO STA. 93+80 &  
 STA. 94+40 TO STA. 99+86  
 WB

ST. THOMAS AQUINAS CONG.



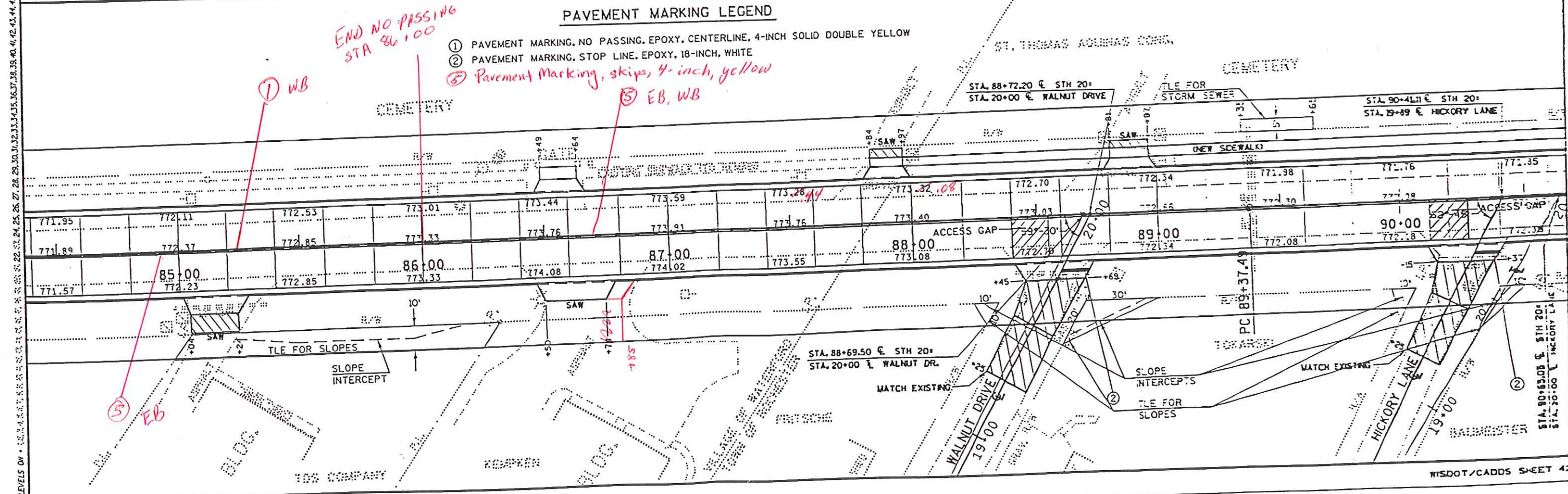
### PAVEMENT MARKING LEGEND

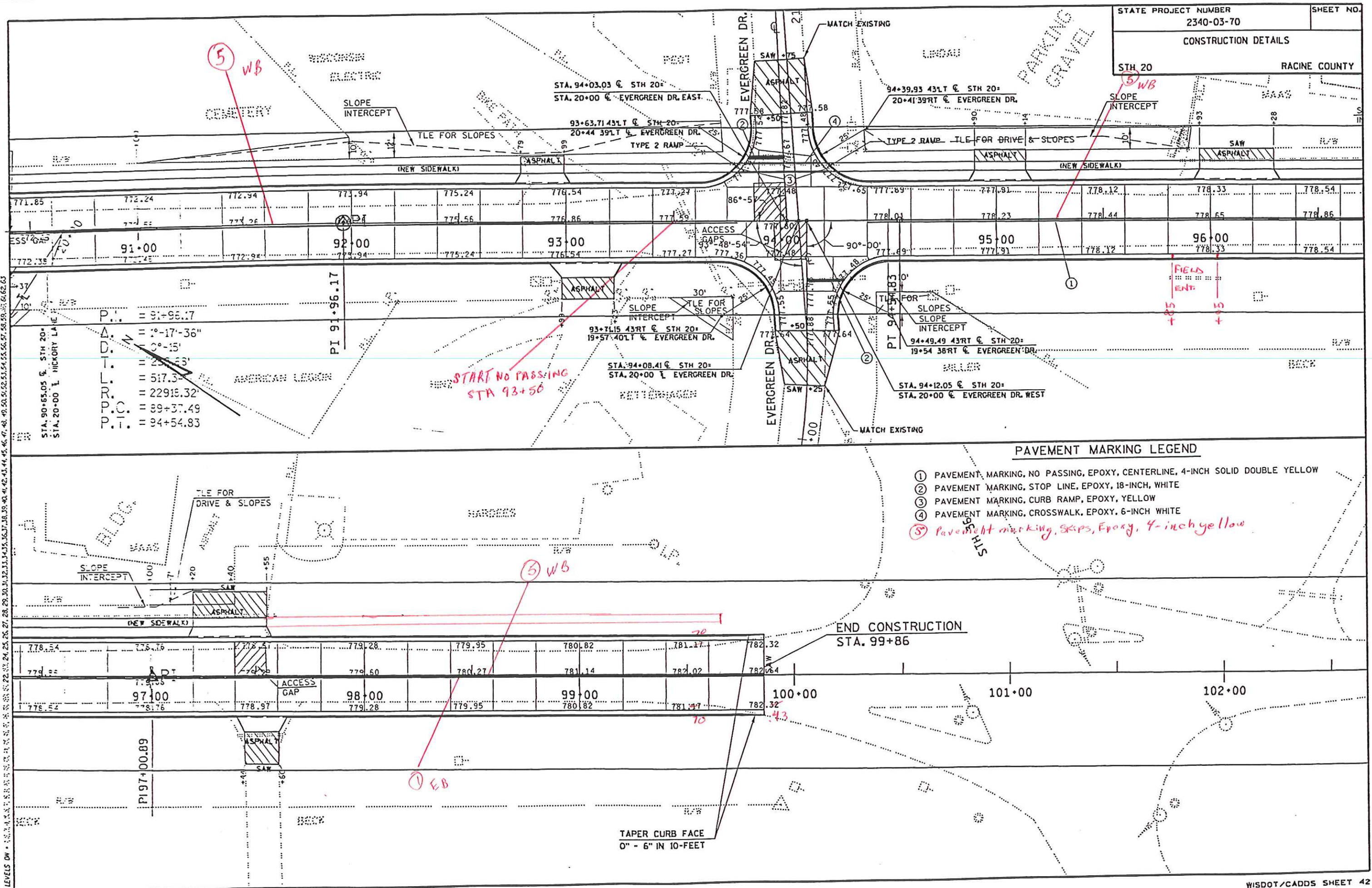
- ① PAVEMENT MARKING, NO PASSING, EPOXY, CENTERLINE, 4-INCH SOLID DOUBLE YELLOW
- ② PAVEMENT MARKING, STOP LINE, EPOXY, 18-INCH, WHITE
- ⑤ Pavement Marking, skips, 4-inch, yellow

END NO PASSING  
STA 86+00

① WB

⑤ EB, WB





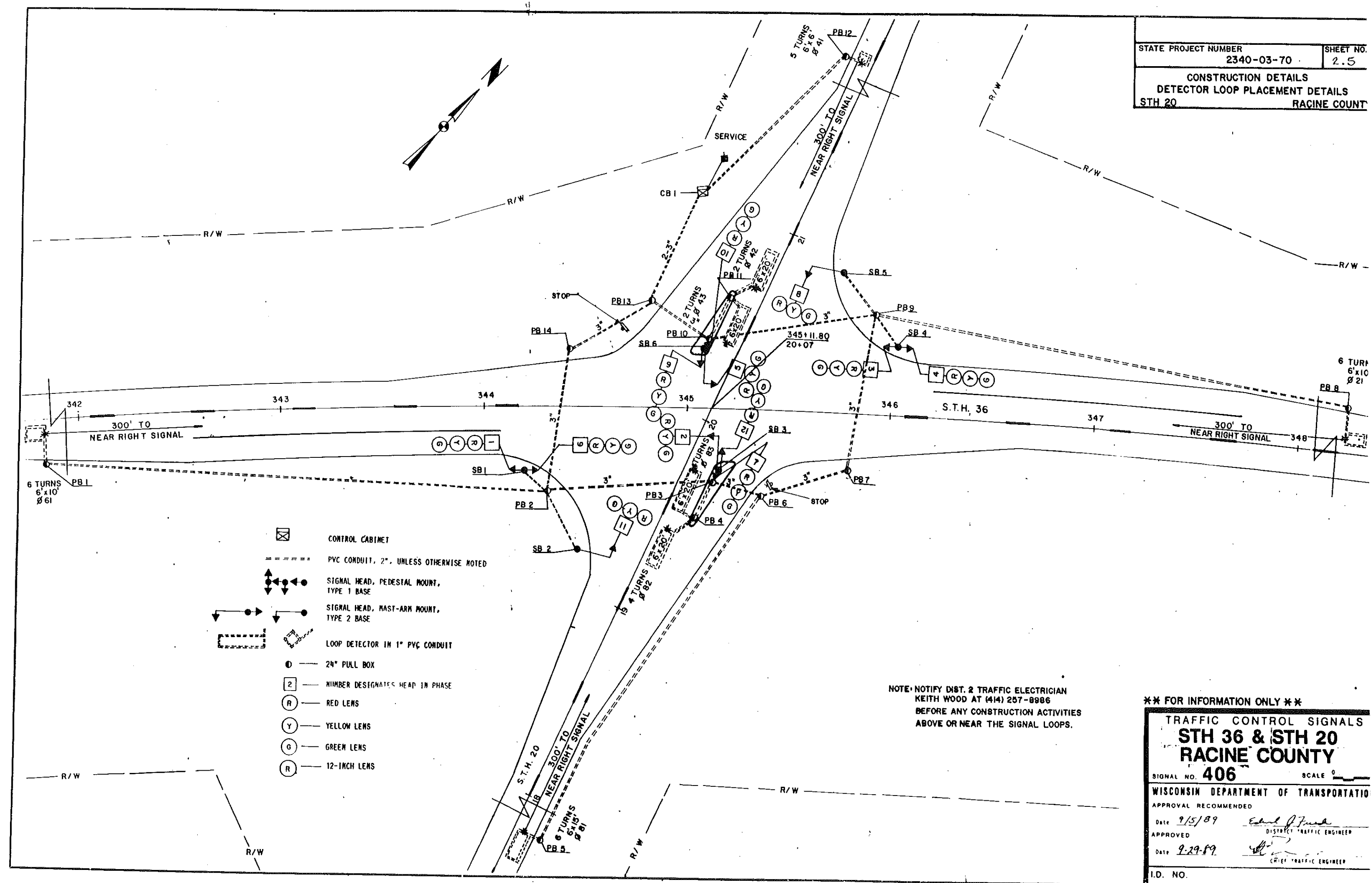
STA. 90+65.05 @ STH 20+  
 STA. 20+00 @ HICKORY LAKE  
 P.I. = 91+96.17  
 Δ = 1°-17'-36"  
 D = 10°-15'  
 T = 255.63'  
 L = 517.3'  
 R = 22918.32'  
 P.C. = 89+37.49  
 P.T. = 94+54.83

### PAVEMENT MARKING LEGEND

- ① PAVEMENT MARKING, NO PASSING, EPOXY, CENTERLINE, 4-INCH SOLID DOUBLE YELLOW
- ② PAVEMENT MARKING, STOP LINE, EPOXY, 18-INCH, WHITE
- ③ PAVEMENT MARKING, CURB RAMP, EPOXY, YELLOW
- ④ PAVEMENT MARKING, CROSSWALK, EPOXY, 6-INCH WHITE
- ⑤ PAVEMENT MARKING, STOPS, EPOXY, 4-INCH YELLOW

END CONSTRUCTION  
STA. 99+86

TAPER CURB FACE  
0" - 6" IN 10-FEET



- CONTROL CABINET
- PVC CONDUIT, 2", UNLESS OTHERWISE NOTED
- SIGNAL HEAD, PEDESTAL MOUNT, TYPE 1 BASE
- SIGNAL HEAD, MAST-ARM MOUNT, TYPE 2 BASE
- LOOP DETECTOR IN 1" PVC CONDUIT
- 24" PULL BOX
- NUMBER DESIGNATES HEAD IN PHASE
- RED LENS
- YELLOW LENS
- GREEN LENS
- 12-INCH LENS

NOTE: NOTIFY DIST. 2 TRAFFIC ELECTRICIAN  
KEITH WOOD AT (414) 257-8986  
BEFORE ANY CONSTRUCTION ACTIVITIES  
ABOVE OR NEAR THE SIGNAL LOOPS.

**\*\* FOR INFORMATION ONLY \*\***

**TRAFFIC CONTROL SIGNALS**  
**STH 36 & STH 20**  
**RACINE COUNTY**

SIGNAL NO. **406** SCALE 0

WISCONSIN DEPARTMENT OF TRANSPORTATION

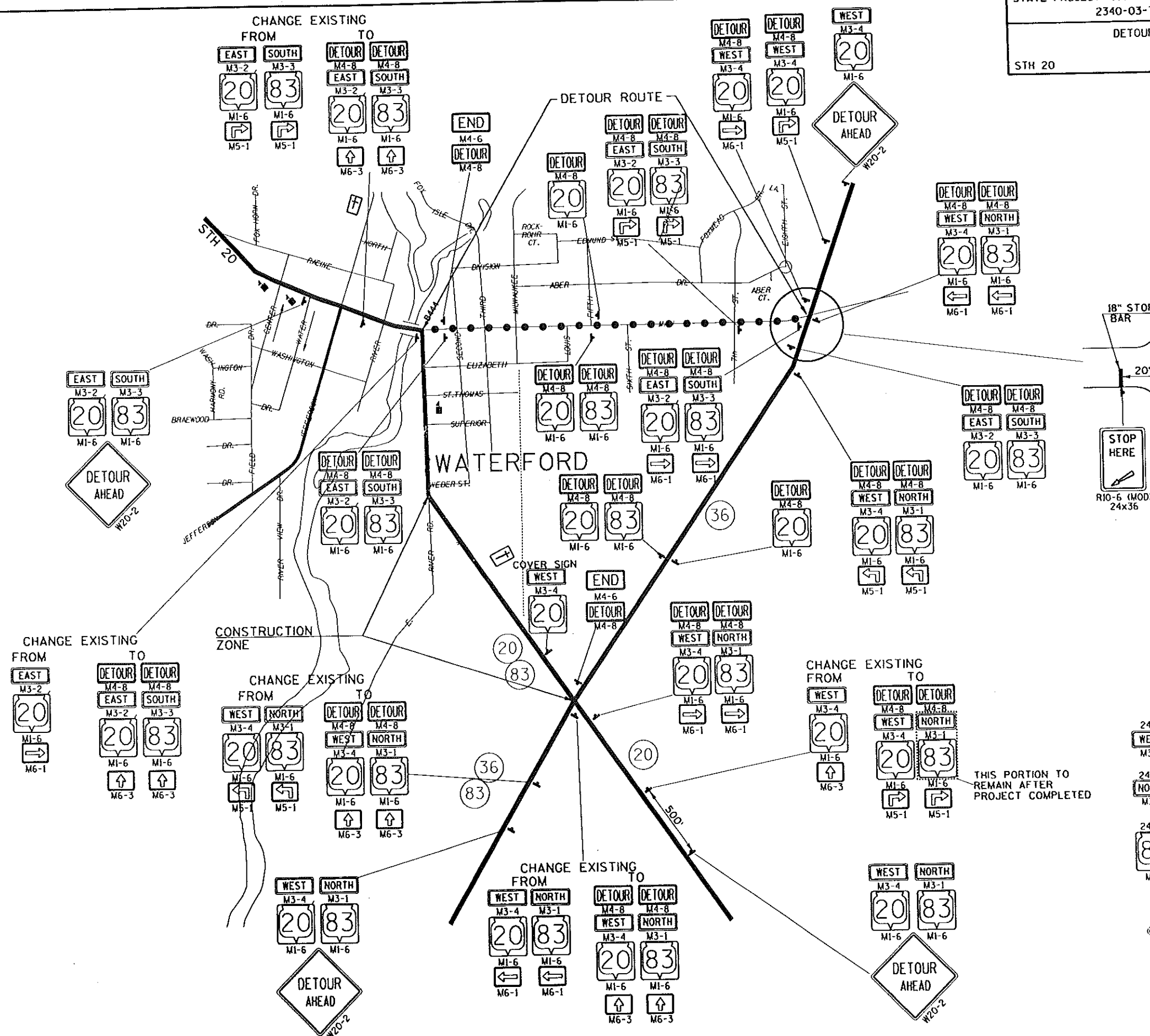
APPROVAL RECOMMENDED

DATE 9/5/89 *Edmund J. Fink*  
DISTRICT TRAFFIC ENGINEER

APPROVED

DATE 9-29-89 *[Signature]*  
CHIEF TRAFFIC ENGINEER

I.D. NO.












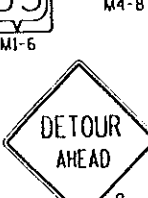


### LEGEND

- 1 SIGN ON WOOD POST  
 2 DETOUR ROUTE

## NOTES

1. COVER EXISTING SIGNS THAT CONFLICT WITH DETOUR ROUTE.
2. ALL WARNING SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

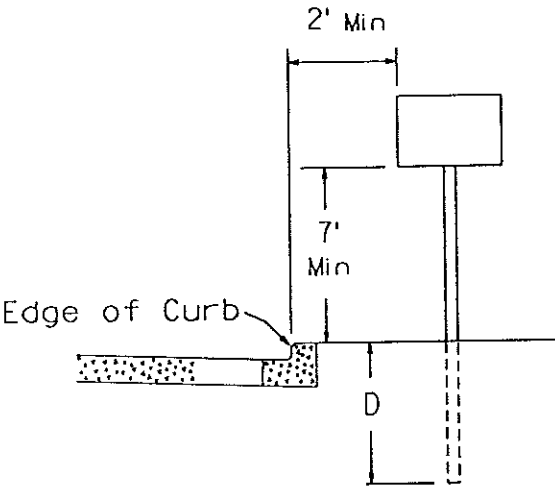
## KEY

24x12  M3-4	24x12  M3-2	24x15  *
24x12  M3-1	24x12  M3-3	21x21  *
24x24  M1-6	24x12  M4-8	21x21  *
 W20-2		24x24  M1-6
		24x12  M4-6

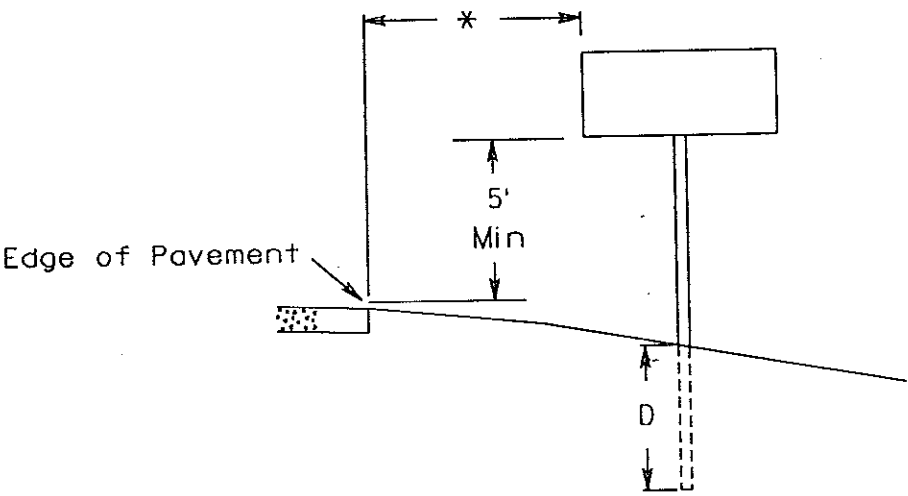
\* BLACK ON ORANGE



URBAN AREA



RURAL AREA

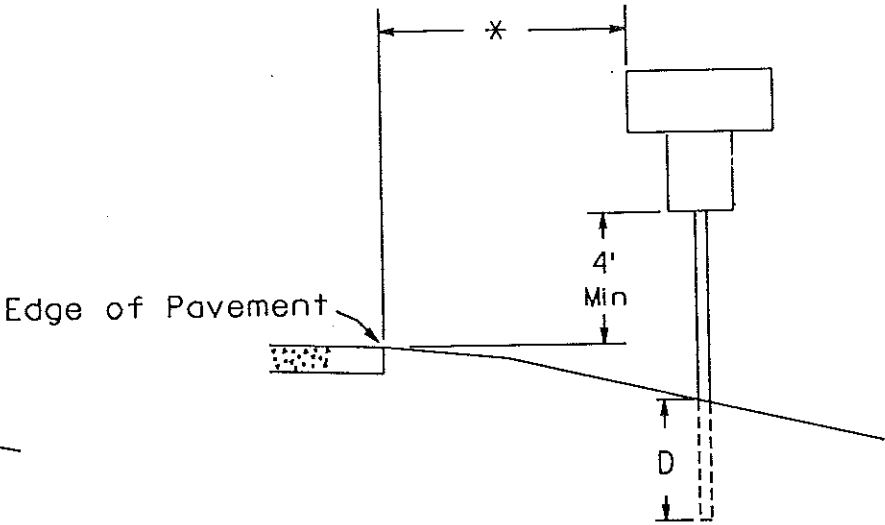
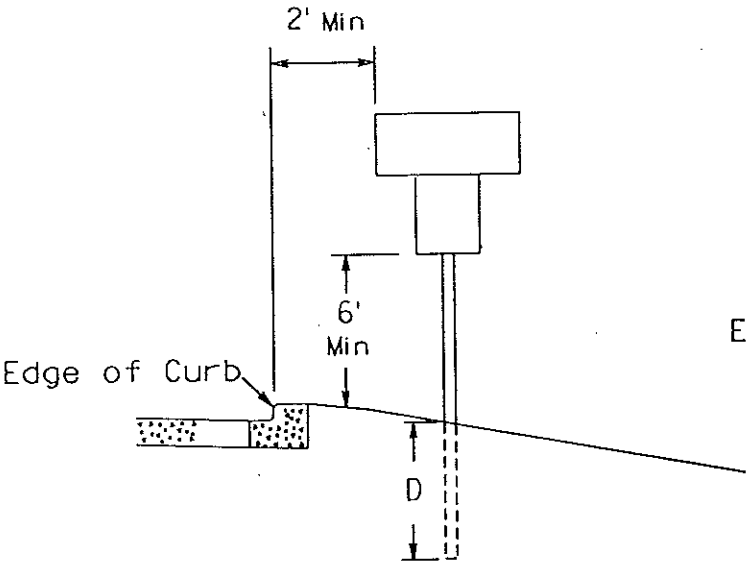


GENERAL NOTES

1. Sign assemblies wider than 4 feet or larger than 20 sq. ft. shall be mounted on multiple posts. See plate A4-4 for typical installations.

POST EMBEDMENT DEPTH

Area of Sign Installation ( Sq. Ft. )	D ( Min )
20 or Less	4'
Greater than 20	5'



\* 12 feet minimum from edge of pavement.  
Where there is a paved shoulder, 6' minimum from edge of paved shoulder, but at least 12 feet from edge of pavement.

DATE DRAWN 9-12-91 DATE REVISION

DATE REVISED 1-14-92

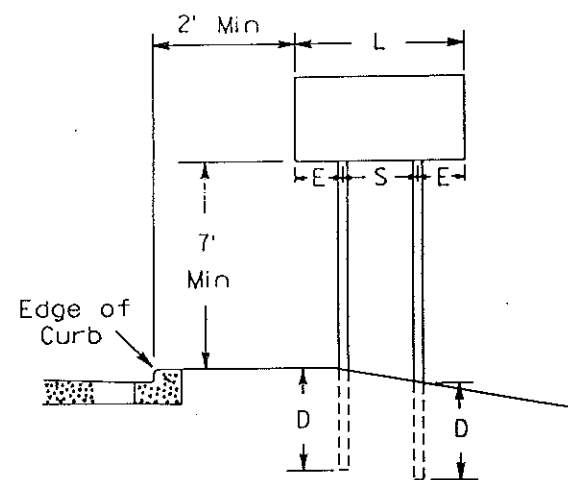
TYPICAL INSTALLATION OF  
TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT. OF TRANSPORTATION

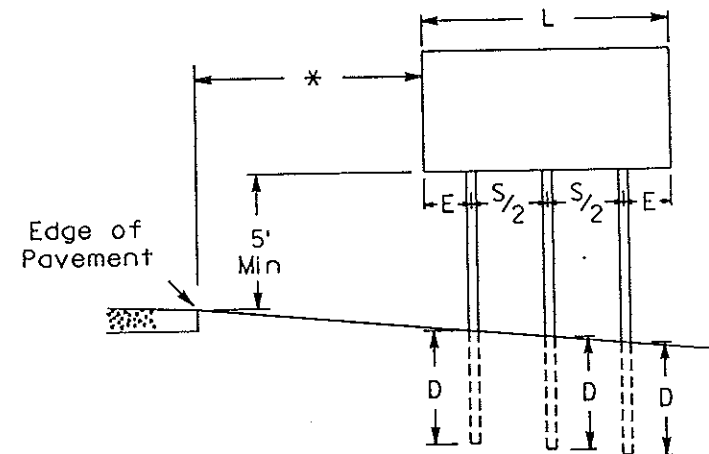
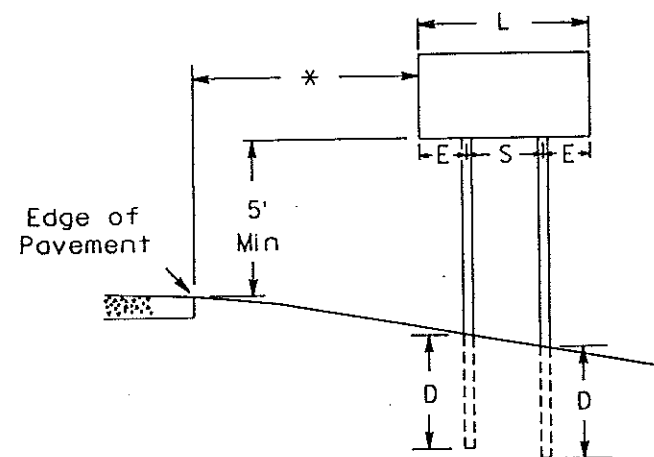
APPROVED *Robert J. Ruch*

DATE 1/21/92 A4-3.8

### URBAN AREA



### RURAL AREA



### GENERAL NOTES

- For 3 post installations, post spacing is  $S/2$  and  $S$  must be greater than 7'-0"
- For 4 post installations, post spacing is  $S/3$  and  $S$  must be greater than 10'-6"

\* 12 feet minimum from edge of pavement.  
Where there is a paved shoulder, 6' minimum from edge of paved shoulder, but at least 12 feet from edge of pavement.

### DIAMOND SHAPED SIGNS

L	S	E
Less than 60"	20"	$L/2 - 10$
60"--72"	32"	$L/2 - 16$
Greater than 72"	$3 L/5$	$L/5$

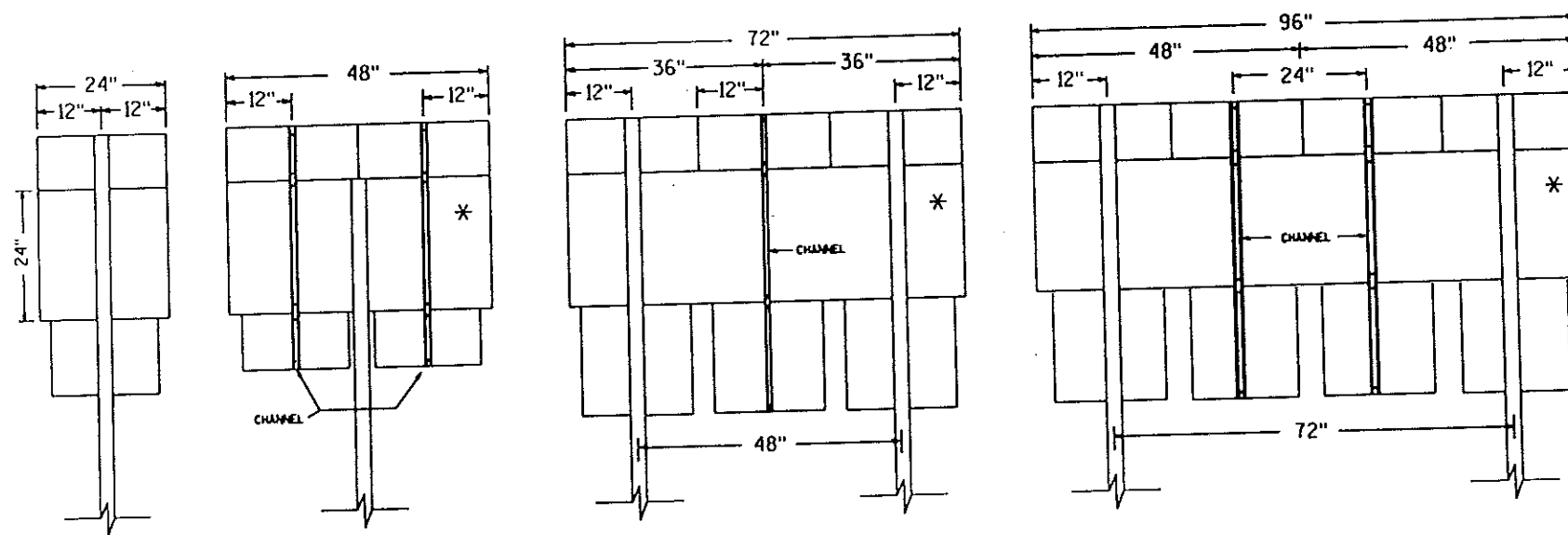
### SIGN SHAPE OTHER THAN DIAMOND (Two Post Installations)

L	S	E
Less than 60"	L-24"	12"
60" or more	$3 L/5$	$L/5$

### POST EMBEDMENT DEPTH

Area of Sign Installation ( Sq. Ft. )	D ( Min )
20 or Less	4'
Greater than 20	5'

DATE DRAWN 6-3-87	DATE APPROVED 10-1-91
DATE REVISED 11-6-92	
TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS	
APPROVED <i>[Signature]</i>	
CASE 11/20/92	PLATE A4-4.3



## NOTES:

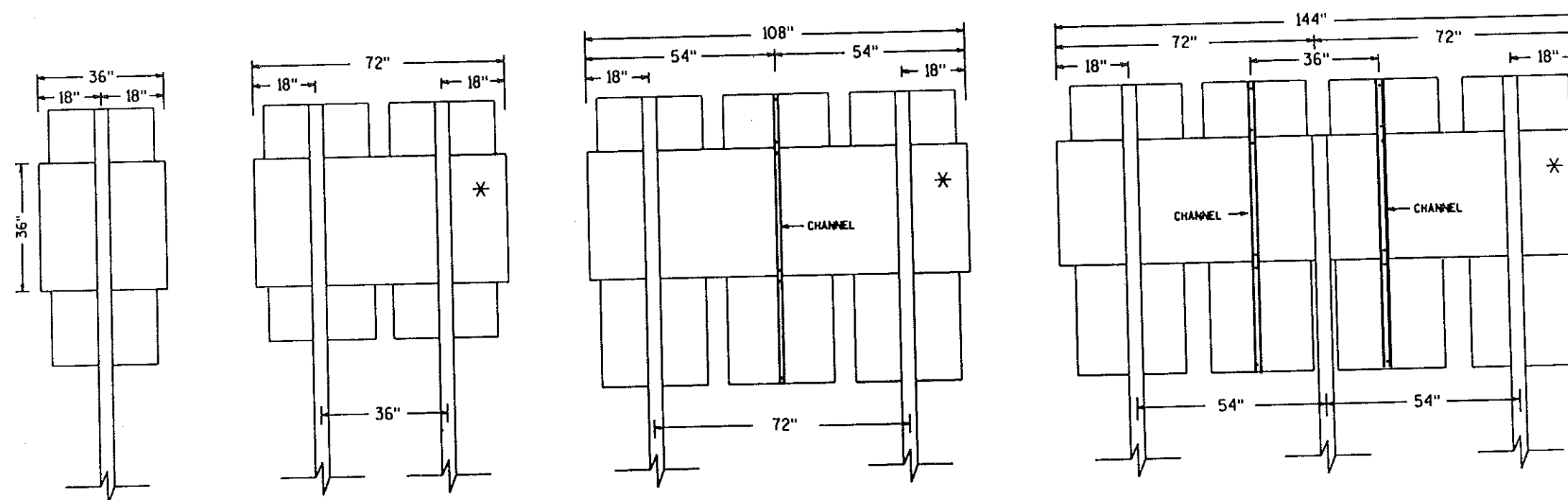
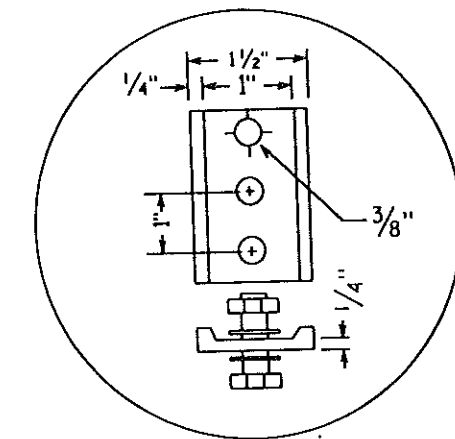
1. Post spacing shall be according to this detail but post embedment depth shall be in accordance with A4-4.
2. Channel material shall be as specified in Section 633 of Std. Specs. and weight shall be approx. 1.4 lbs/ft.
3. Base material for a multiple marker head panel (\*) shall be one piece high density overlay plywood. All other materials within the assembly can be either plywood or aluminum.

## CHANNEL HARDWARE:

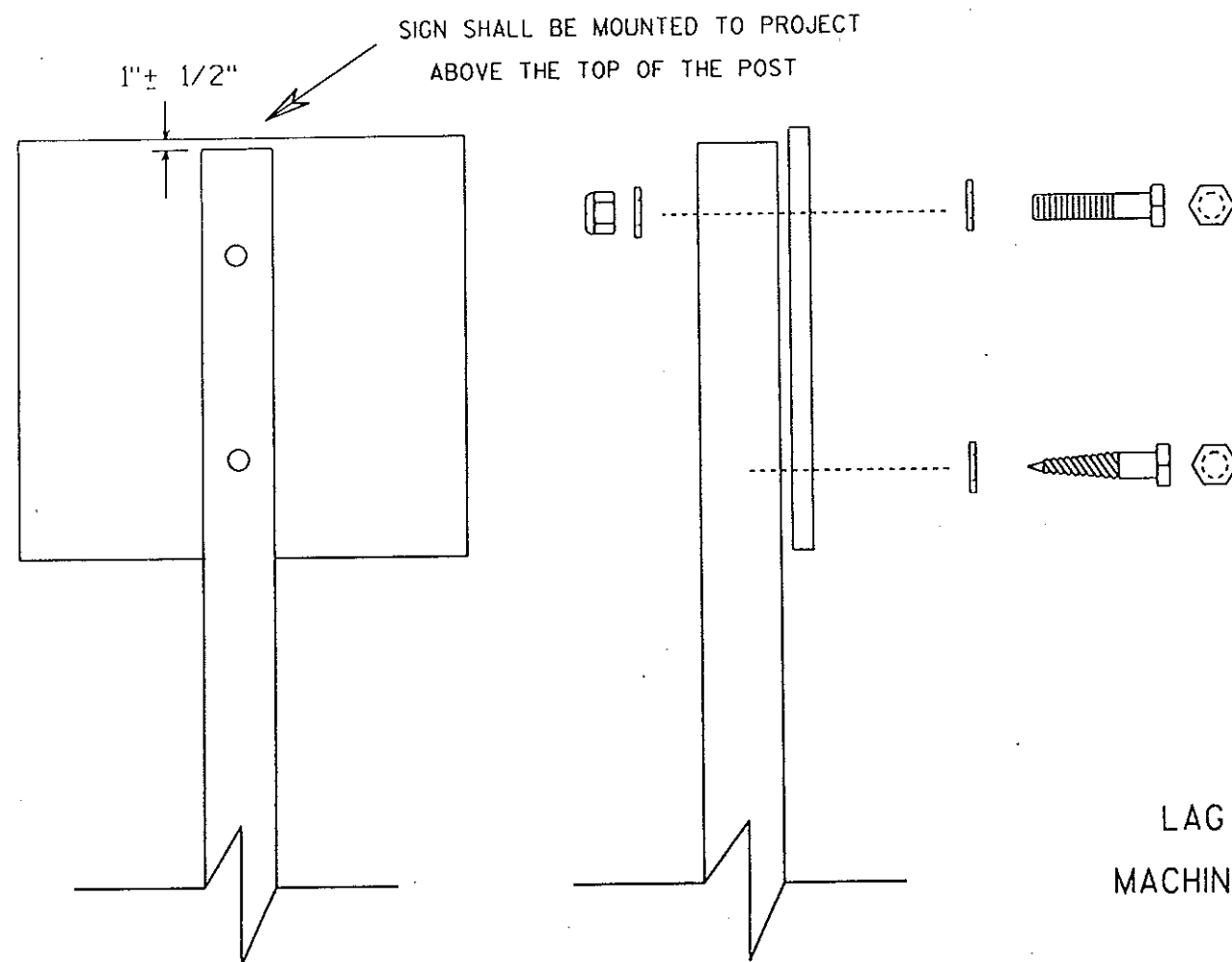
Aluminum Sign components:  $-1/4" \times 3/4"$  bolt and  $1/4"$  flat washers

Plywood Sign Components:  $-1/4" \times 1 1/4"$  bolt and  $1/4"$  flat washers

## CHANNEL DETAIL



DATE DRAWN 6-3-87	DATE REDRAWN 10-3-91
DATE REVISED _____	
TYPICAL PANEL INSTALLATION FOR J TYPE ASSEMBLIES	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED _____	State Traffic Engineer
DATE 11/5/91	PLATE NO. A4-5.3



Nuts, bolts and lags used for mounting signs shall have hexagonal heads and shall be either :

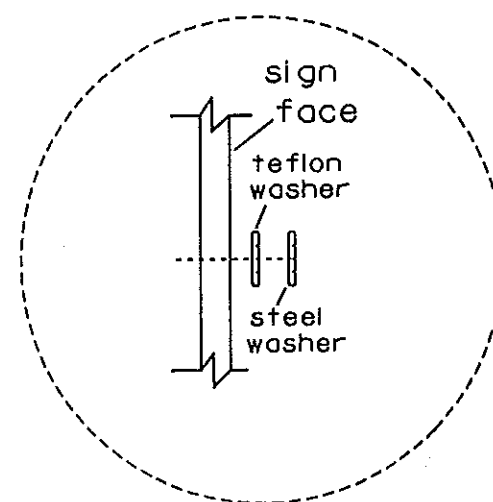
- Hot dip or mechanically galvanized in accordance with ASTM Designation: A 153, Class D, or
- Cadmium plated in accordance with ASTM Designation : B 766 TYPE 3, Class 12, or
- Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

LAG SCREWS -  $\frac{3}{8}$ " X 3"

MACHINE BOLTS -  $\frac{5}{16}$ " X 6-1/2" or 7" Length w/ nuts

WASHERS - 1" O.D. X  $\frac{3}{8}$ " I.D. X  $\frac{1}{16}$ " STEEL for signs 24x24 and smaller.  
 1-1/4" O.D. X  $\frac{3}{8}$ " I.D. X  $\frac{1}{16}$ " STEEL for signs 24x30 to 36x48.  
 1-1/2" O.D. X  $\frac{7}{16}$ " I.D. X  $\frac{1}{16}$ " STEEL for signs 48x48 and larger.  
 1-1/4" O.D. X  $\frac{3}{8}$ " I.D. X .080 TEFLON for all Type H signs.

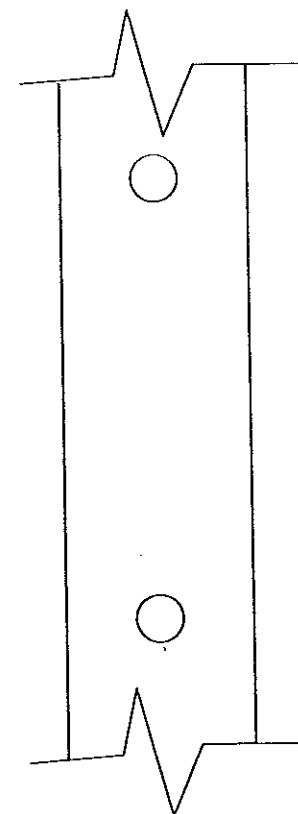
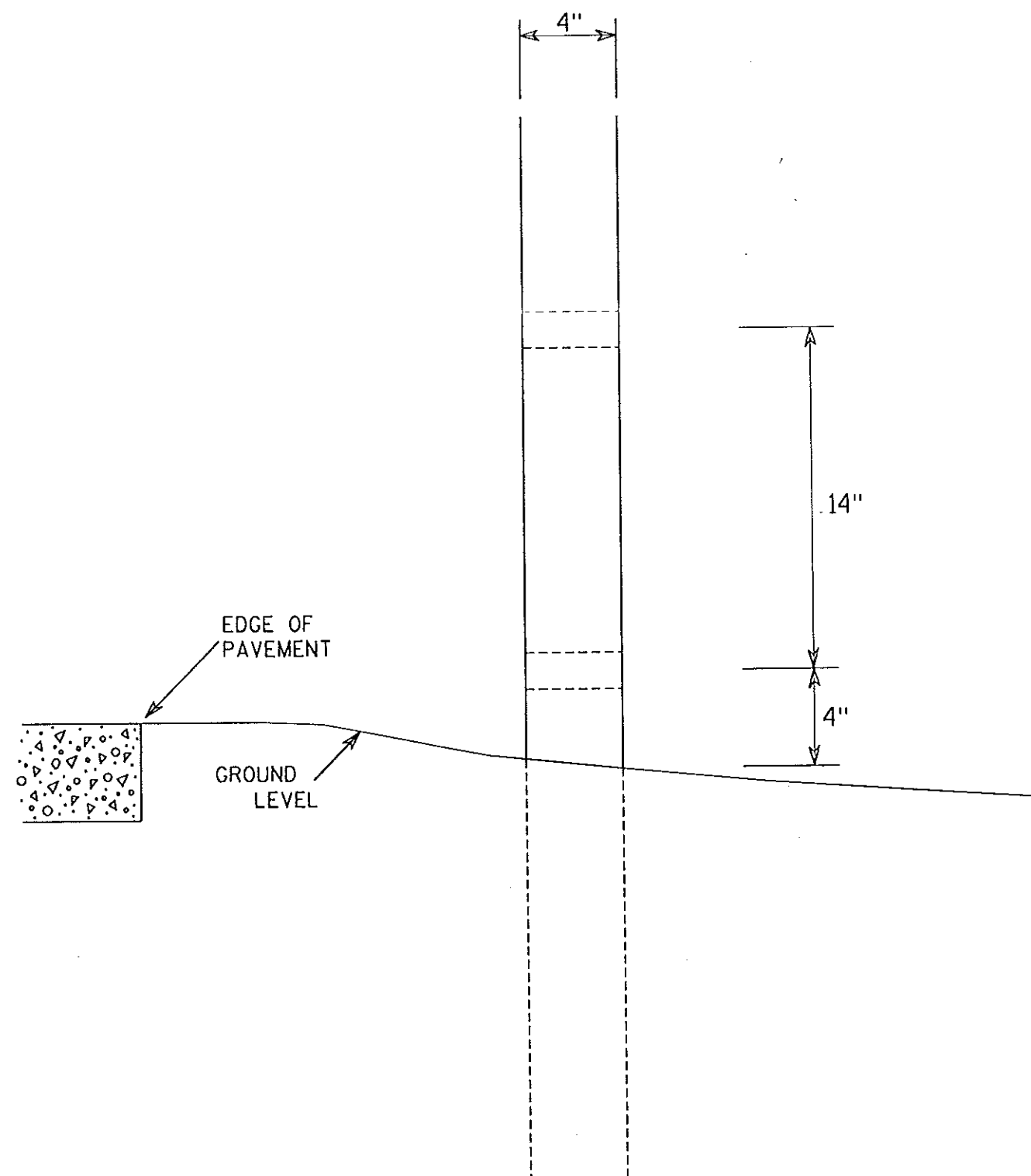


Washer Placement when  
Sign Has Type H Face

DATE DRAWN 1-29-92	DATE REDRAWN
DATE REVISED	
ATTACHMENT OF SIGNS TO WOOD POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Robert R. Ruck</i> State Traffic Engineer
DATE 2-1-92	PLATE NO. A4-8.2

## GENERAL NOTES

1. All 4x6 Wood Posts shall be modified by having two 1½" diameter holes drilled perpendicular to the roadway centerline.

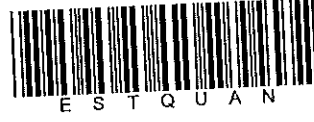


SIDE VIEW

DATE DRAWN 11-1-91	DATE REDRAWN
DATE REVISED	
4 X 6 WOOD POST MODIFICATIONS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED _____ State Traffic Engineer	
DATE 11/5/91	PLATE NO. A4-11.1

DATE 08/08/94

ESTIMATE OF QUANTITIES



ITEM	ITEM DESCRIPTION	UNIT	TOTAL	2340-03-70 QUANTITY
20102	CLEARING	I.D.	30.00	30.00
20105	GRUBBING	I.D.	30.00	30.00
20406	REMOVING CONCRETE SIDEWALK	S.Y.	30.00	30.00
20416	REMOVING INLETS	EACH	1.00	1.00
20503	UNCLASSIFIED EXCAVATION	C.Y.	7,847.00	7,847.00

21132	PREPARATION OF FOUNDATION FOR CRUSHED AGGREGATE BASE COURSE, OPEN GRADED	STA.	19.70	19.70
21301	FINISHING ROADWAY	L.S.	1.00	1.00
30404	CRUSHED AGGREGATE BASE COURSE	TON	3,220.00	3,220.00
30420	CRUSHED AGGREGATE BASE COURSE, OPEN GRADED, NUMBER 2	TON	1,800.00	1,800.00
40204	ASPHALTIC MATERIAL FOR TACK COAT	GAL.	10.00	10.00

41101	ASPHALTIC SURFACE	TON	100.00	100.00
41508	CONCRETE PAVEMENT, 8-INCH	S.Y.	7,313.00	7,313.00
41531	CONCRETE DRIVEWAY	S.Y.	293.00	293.00
41575	CONCRETE PAVEMENT GAPS	EACH	5.00	5.00
52262	REINFORCED CONCRETE APRON ENDWALLS FOR CULVERT PIPE, 18-INCH	EACH	1.00	1.00

60123	CONCRETE CURB AND GUTTER, 30-INCH, TYPE A	L.F.	3,968.00	3,968.00
60204	CONCRETE SIDEWALK, 4-INCH	S.F.	3,128.00	3,128.00
60825	REINFORCED CONCRETE PIPE, CLASS III, STORM SEWER, 12-INCH	L.F.	913.00	913.00
60826	REINFORCED CONCRETE PIPE, CLASS III, STORM SEWER, 15-INCH	L.F.	270.00	270.00
60827	REINFORCED CONCRETE PIPE, CLASS III, STORM SEWER, 18-INCH	L.F.	203.00	203.00

61110	MANHOLES, TYPE 1	EACH	8.00	8.00
61121	INLETS, TYPE 1	EACH	10.00	10.00
61123	INLETS, TYPE 8	EACH	6.00	6.00
61128	RECONSTRUCTING MANHOLES	EACH	1.00	1.00
61151	MANHOLE COVERS, TYPE J	EACH	8.00	8.00

SHEET 3.0

2340-03-70  
QUANTITY

TOTAL

ITEM ITEM DESCRIPTION UNIT

61161 INLET COVERS, TYPE A EACH 10.00 10.00

61170 INLET COVERS, TYPE MS EACH 6.00 6.00

61182 ADJUSTING MANHOLE COVERS EACH 4.00 4.00

61201 PIPE UNDERDRAIN, 6-INCH L.F. 3,590.00 3,590.00

61801 MAINTENANCE AND REPAIR OF HAUL ROADS L.S. 1.00 1.00

61910 MOBILIZATION L.S. 1.00 1.00

62101 LANDMARK REFERENCE MONUMENTS EACH 5.00 5.00

62301 CALCIUM CHLORIDE SURFACE TREATMENT TON 27.00 27.00

62401 WATER MGAL 32.00 32.00

62501 TOPSOIL S.Y. 6,013.00 6,013.00

62815 SILT FENCE, DELIVERED L.F. 415.00 415.00

62816 SILT FENCE, INSTALLED L.F. 415.00 415.00

62817 SILT FENCE MAINTENANCE L.F. 415.00 415.00

62905 FERTILIZER, TYPE B CWT. 4.00 4.00

63101 SODDING S.Y. 6,013.00 6,013.00

64201 FIELD OFFICE, TYPE A L.S. 1.00 1.00

64210 FIELD LABORATORY L.S. 1.00 1.00

64301 TRAFFIC CONTROL L.S. 1.00 1.00

64318 TRAFFIC CONTROL, BARRICADES, TYPE III DAYS 290.00 290.00

64321 TRAFFIC CONTROL, WARNING LIGHTS, TYPE A DAYS 876.00 876.00

64326 TRAFFIC CONTROL, SIGNS DAYS 440.00 440.00

64406 PAVEMENT MARKING, EPOXY, 4-INCH L.F. 4,012.00 4,012.00

64437 PAVEMENT MARKING, STOP LINE, EPOXY, 18-INCH L.F. 58.00 58.00

64457 PAVEMENT MARKING, CROSSWALK, EPOXY, 6-INCH L.F. 88.00 88.00

64493 PAVEMENT MARKING, CURB RAMP, EPOXY L.F. 36.00 36.00

64503 GEOTEXTILE FABRIC, TYPE DF S.Y. 3,323.00 3,323.00

64601 SAVING EXISTING PAVEMENT L.F. 245.00 245.00

90715 TRAFFIC CONTROL, DETOUR L.S. 1.00 1.00

90716 TRAFFIC CONTROL, DETOUR, SIGNS DAYS 8,833.00 8,833.00

SHEET 3.1

95

11, 12, 13, 14, 15, 16, 17, 18, 19, 20

LEVELS ON -

### CLEARING & GRUBBING

LOCATION STA.-STA.	CLEARING I.D.	GRUBBING I.D.
80+16 - 86+00	X	X
86+00 - 87+00	30	30
87+00 - 99+86	X	X

### CONCRETE DRIVEWAY (7-INCH)

LOCATION	S.Y.
84+11 Lt.	24
85+14 Rt.	20
86+56 Lt.	15
86+62 Rt.	20
87+90 Lt.	14
88+57 Rt.	20
88+89 Lt.	16
90+26 Rt.	18
92+89 Lt.	20
93+11 Rt.	20
95+00 Lt.	24
96+10 Lt.	34
97+37 Lt.	34
97+52 Rt.	14

### CONCRETE PAVEMENT, 8-INCH (DOWELED)

LOCATION STA - STA	S.Y.
80+16 - 81+00	355
81+00 - 94+08	4651
94+08 - 99+86	2055

EVERGREEN DRIVE  
19+50 - 19+84 126\*  
20+16 - 20+50 126\*

\*INCLUDES RADII  
CONCRETE PAVEMENT, 8-INCH

### REMOVING SIDEWALK

LOCATION (STA - STA)	S.Y.
83+98 Lt - 84+24 Lt	12
86+45 Lt - 86+68 Lt	10
87+80 Lt - 87+97 Lt	8

### CRUSHED AGGREGATE BASE COURSE

LOCATION S.T.H. 20	TON
Sta 80+16 - 81+00	133
81+00 - 83+50	340
83+50 - 84+50	144
84+50 - 88+00	504
88+00 - 89+39	190
89+39 - 91+50	304
91+50 - 99+86	1140
WALNUT DRIVE	41
HICKORY DRIVE	40
EVERGREEN DRIVE	
19+25 - 19+79.5	108*
20+20.5 - 20+75	110*
SIDEWALK	45
P.E.'S	121

\*INCLUDES RADII

### REMOVING INLETS

LOCATION	EACH
STATION 95+86 , 41' Lt.	1
REMOVING INLETS	

### LANDMARK REFERENCE MONUMENTS\*

LOCATION STA - STA	DESCRIPTION	EACH
91+77.78	PI	5

\*MONUMENTS SHALL BE COST-IN PLACE  
AND SHALL BE 48-INCH MINIMUM DEPTH.  
LANDMARK REFERENCE MONUMENTS\*

LOCATION STA - STA	PIPE UNDERDRAIN 6-INCH L.F.	GEOTEXTILE FABRIC TYPE DF S.Y.
81+16 - 99+86 Lt	1870	1731
81+16 - 86+00 Rt	484	448
87+50 - 99+86 Rt	1236	1144



### SAWING EXISTING PAVEMENT

LOCATION DRIVEWAYS	L.F.
85+14 Rt	20
86+62 Rt	34
87+90 Lt	13
88+89 Lt	16
96+10 Lt	35
97+37 Lt	35
97+52 Rt	16
STH 20	
99+86 Rt	35
EVERGREEN DRIVE	
19+25	18
20+75	23

### CONCRETE SIDEWALK, 4-INCH

GROUP CODE	LOCATION STA - STA	S.F.
020	87+97 Lt - 88+81 Lt	336
	88+97 Lt - 92+79 Lt	1528
	92+99 Lt - 93+78 Lt	316
	94+24 Lt - 94+88 Lt	256
	95+12 Lt - 95+93 Lt	324
020	96+28 Lt - 97+20 Lt	368

### CONCRETE CURB & GUTTER, 30-INCH, TYPE A

LOCATION S.T.H. 20	L.F.
80+16 Lt - 93+63 Lt	1347
80+16 Rt - 93+72 Rt	1356
94+40 Lt - 99+86 Lt	546
94+50 Rt - 99+86 Rt	536

EVERGREEN DRIVE  
19+50 - 19+82 Lt & Rt 92\*  
20+18 - 20+50 Lt & Rt 91\*

\*INCLUDES RADII

ALL ITEMS LISTED ON  
THIS SHEET ARE GROUP  
CODE 010 UNLESS  
OTHERWISE SHOWN

STATE PROJECT NUMBER 2340-03-70	SHEET NO. 3A
MISCELLANEOUS QUANTITIES	
STH 20	RACINE COUNTY

### PAVEMENT MARKING, EPOXY

LOCATION STA - STA	CENTER LINE 4-INCH YELLOW L.F.	STOPLINE 18-INCH WHITE L.F.	CURB RAMP 4-INCH YELLOW L.F.
80+16 - 93+80	2728		
94+40 - 99+86	1092		
EVERGREEN DRIVE			
19+25 - 19+73	96		
20+27 - 20+75	96		
20+25 Lt			18
20+25 Rt			18
WALNUT DRIVE		10	
HICKORY DRIVE		8	
EVERGREEN DRIVE (WEST)		20	
EVERGREEN DRIVE (EAST)		20	

### CRUSHED AGGREGATE BASE COURSE, OPEN GRADED, NO. 2

LOCATION STA - STA	TON	STA
80+16 - 81+00	91	0.84
81+00 - 83+50	234	2.5
83+50 - 84+50	85	1.00
84+50 - 88+00	296	3.5
88+00 - 89+39	130	1.39
89+39 - 91+50	178	2.11
91+50 - 99+86	786	8.36

### ASPHALTIC MATERIAL FOR TACK COAT

LOCATION DRIVEWAYS & SIDE STREETS	GAL	TON
85+14 Lt.	0.4	3
87+90 Lt.	0.1	1
88+57 Rt. (WALNUT DR.)	2.1	18
88+89 Lt.	0.1	1
90+26 Rt. (HICKORY LANE)	1.6	14
92+89 Lt.	0.2	2
93+11 Rt.	0.5	5
95+00 Lt.	0.3	3
96+10 Lt.	0.4	4
97+37 Lt.	1.0	8
97+52 Rt.	0.5	5
EVERGREEN DRIVE		
19+25 - 19+50	1.3	17
20+50 - 20+75	1.5	19

ALL ITEMS LISTED ON  
THIS SHEET ARE GROUP  
CODE OIO UNLESS  
OTHERWISE SHOWN

STATE PROJECT NUMBER 2340-03-70	SHEET NO. 3B
MISCELLANEOUS QUANTITIES	
STH 20	RACINE COUNTY

EROSION CONTROL *			
LOCATION	SILT FENCE DELIVERED L.F.	SILT FENCE INSTALLED L.F.	SILT FENCE MAINTENANCE L.F.
STH 20			
STA - STA			
80+50 - 82+50 Rt	200	200	200
91+50 - 92+75 Lt	125	125	125
93+00 - 93+75 Lt	75	75	75
EVERGREEN DRIVE			
20+75 Rt	15	15	15

\*ASSUME SILTY SOILS

TRAFFIC CONTROL, DETOUR, SIGNS

LOCATION DAYS

UNDISTRIBUTED 8,833

LANDSCAPING ITEMS

LOCATION	TOPSOIL S.Y.	FERTILIZER CWT.	SOD S.Y.
STH 20	5612	3.6	5612
WALNUT DRIVE	89	0.1	89
HICKORY LANE	76	0.1	76
EVERGREEN DRIVE	236	0.2	236

ACCESS GAPS

LOCATION  
STA - STA  
S.T.H. 20

EACH

88+40 - 88+55 RT	1
90+13 - 90+28 RT	1
93+88 - 94+03 LT	1
93+97 - 94+12 RT	1
97+40 - 97+55 LT	1

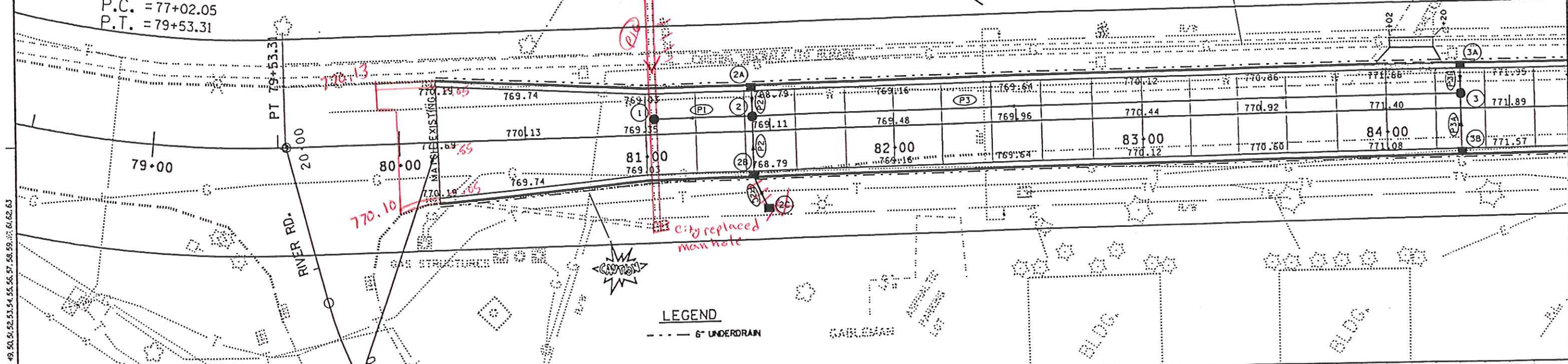
MANHOLES & INLETS										STORM SEWER R.C.C.P.										REMARKS
NON- PART. ITEMS - NP	STRUCTURE NO.	STATION	LOCATION	(EA.) M.H. INL.	(EA.) M.H. INL.	(EA.) M.H. INL.	(EA.) GRATE ELEV.	(EA.) ADJUST	(EA.) RE- CONSTRUCT	DEPTH FT.	PIPE NO.	FROM STR	TO STR	DIAMETER IN	LENGTH LF	INLET ELEV.	DISCH ELEV.	CLASS		
	1	81+03	6'Lt.	1		J	769.1	---	---	4.43	EXIST.	2	1	18	36	764.1	764.0	III	VILLAGE OF WATERFORD W.R.C.S.D. SANITARY W.R.C.S.D. SANITARY	
	2	81+43	6'Lt.	1		J	768.9	---	---	4.08	P1	2A	2	12	9	764.4	764.3	III		
	2A	81+43	18'Lt.	1		A	768.6	---	---	3.80	P2A	2B	2	12	21	764.4	764.3	III		
	2B	81+43	18'Rt.	1		A	768.6	---	---	3.80	P2	2B	2	12	21	764.4	764.3	III		
	2C	81+50	33'Rt.	8		MS	767.5	---	---	2.50	P2C	2C	2B	12	16	765.0	764.9	III		
	3	84+30	6'Lt.	1		J	771.6	---	---	4.00	P3	3	2	15	283	766.8	764.1	III		
	3A	84+30	18'Lt.	1		A	771.4	---	---	3.80	P3B	3A	3	12	9	767.1	767.1	III		
	3B	84+30	18'Rt.	1		A	771.2	---	---	3.80	P3A	3B	3	12	21	767.0	766.9	III		
NP (o3o)	10	86+16	14'Lt.			EXIST.	773.2	X	---	---	---	---	---	---	---	---	---	---		
NP (o4o)	11	88+43	33'Rt.			EXIST.	773.0	X	---	---	---	---	---	---	---	---	---	---		
NP (o4o)	12	90+27	35'Rt.			EXIST.	773.1	---	---	---	---	---	---	---	---	---	---	---		
	4	89+39	35'Lt.			EXIST.	---	---	---	---	---	---	---	---	---	---	---	---		
	4A	89+39	18'Rt.	1		A	771.9	---	---	2.85	P4	4A	4	12	49	768.6	768.5	III		
	4B	90+10	18'Lt.	1		A	771.6	---	---	2.50	P4A	4B	4	12	70	768.7	768.5	III		
	4C	89+39	19'Lt.			EXIST.	---	REMOVE	---	---	---	---	---	---	---	---	---	---		
	5	92+63	6'Lt.	1		J	775.8	---	---	4.33	P5	5	OUTLET	18	50	770.7	770.2	III	A.E.W. REQ'D	
	6	94+22	6'Lt.	1		J	777.7	---	---	4.33	P6	6	5	18	153	772.6	770.7	III		
	6A	20+30	12'Rt.TL	1		A	777.1	---	---	3.40	P6A	6A	6	12	22	773.3	773.2	III		
	6B	94+46	35'Lt.	8		MS	777.2	---	---	2.00	P6B	6B	6A	12	27	775.2	773.3	III		
	6C	19+69	19'Rt.TL	1		A	777.2	---	---	3.40	P6C	6C	6	12	34	773.3	773.2	III		
	6D	19+50	24'Rt.	8		MS	776.3	---	---	2.08	P6D	6D	6C	12	18	774.2	773.3	III		
	6E	19+50	24'Lt.	8		MS	776.3	---	---	2.00	P6E	6E	6D	12	45	774.3	774.2	III		
	7	95+88	6'Lt.	1		J	778.4	---	---	4.08	P7	7	6	15	162	773.6	772.6	III		
	7A	95+88	40'Lt.	8		MS	778.7	REMOVE/ REPLACE	---	3.00	P7A	7A	7	12	30	775.7	775.5	III		
NP (o4o)	13	94+26	37'Rt.			EXIST.	777.3	X	---	---	---	---	---	---	---	---	---	---		
NP (o4o)	14	94+28	16'Lt.			EXIST.	777.6	---	X	---	---	---	---	---	---	---	---	---		
	8	97+00	6'Lt.	1		J	778.9	---	---	4.08	P8	8	7	15	108	774.1	773.6	III		
	8A	97+00	18'Lt.	1		A	778.6	---	---	3.80	P8A	8A	8	12	9	774.4	774.3	III		
	8B	97+00	18'Lt.	1		A	778.6	---	---	3.80	P8B	8B	8	12	21	774.4	774.3	III		
	9	98+00	6'Lt.	1		J	779.4	---	---	3.80	P9	9	8	12	96	774.9	774.1	III		
	9A	98+00	33'Lt.	8		MS	778.7	---	---	3.00	P9A	9A	9	12	22	775.7	775.5	III		
NP (o4o)	15	97+78	20'Lt.			EXIST.	779.4	X	---	---	---	---	---	---	---	---	---	---		
		81+00									P16			24	78.8			III Replaced 24" CMP		

CONSTRUCTION NOTES:  
LOCATION OF STRUCTURES IN CURB AND GUTTER SECTIONS REFER TO FACE OF CURB.  
LOCATION OF STRUCTURES NOT IN CURB AND GUTTER SECTIONS REFER TO CENTERLINE OF STRUCTURE.  
PIPE LENGTHS GIVEN ARE APPROXIMATE OUT TO OUT OF STRUCTURE.  
GRATE & RIM ELEVATIONS ARE GIVEN AT FLOW LINE OF INLET COVER OR AT CENTERLINE OF MANHOLE COVER.  
CONTRACT UNIT PRICE FOR PIPE SHALL INCLUDE COST OF CONNECTING TO EXISTING SEWER OR MANHOLE.  
WHEN RESETTling COVERS, REPAIRING BRICKWORK UP TO 12" IS TO BE PAID AS ADJUSTING INLET OR MANHOLE COVERS.  
WHEN THE DEPTH OF WORK IS GREATER THEN 12", ALL WORK SHALL BE PAID AS RECONSTRUCTING MANHOLES.

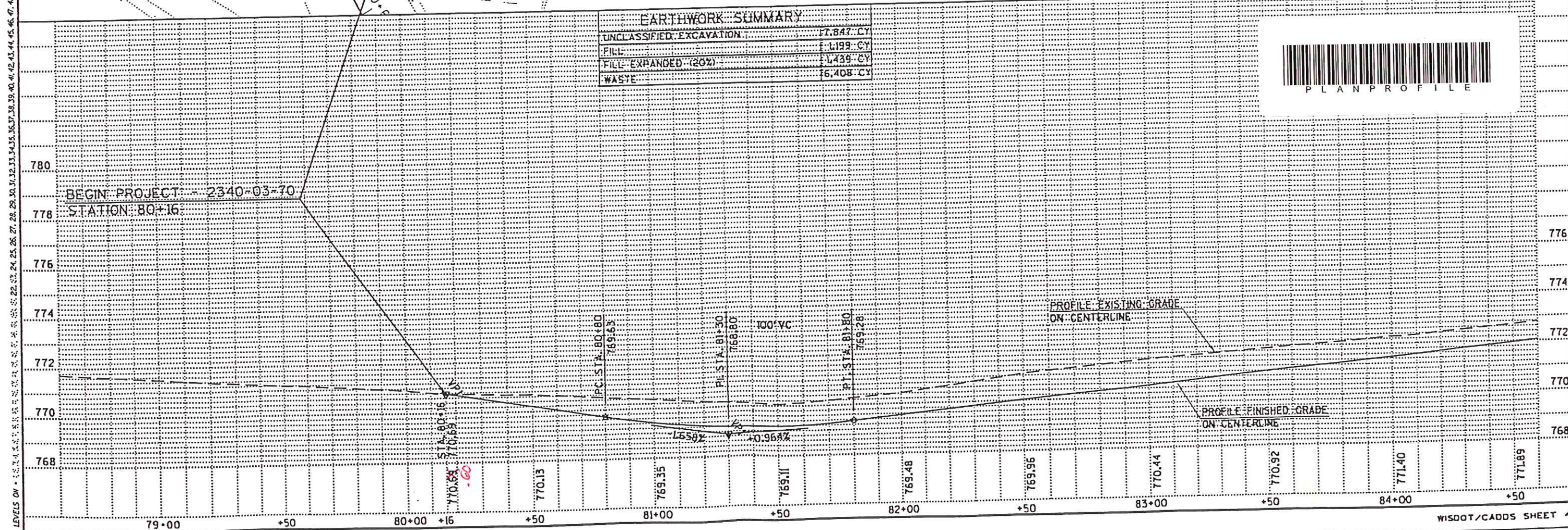
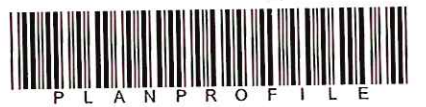
A.E.W. = APRON ENDWALL

Δ = 78°31.20'  
 Δ = 32°-39'-52"  
 D = 13°-00'  
 T = 129.15'  
 L = 251.26'  
 R = 440.74'  
 P.C. = 77+02.05  
 P.T. = 79+53.31

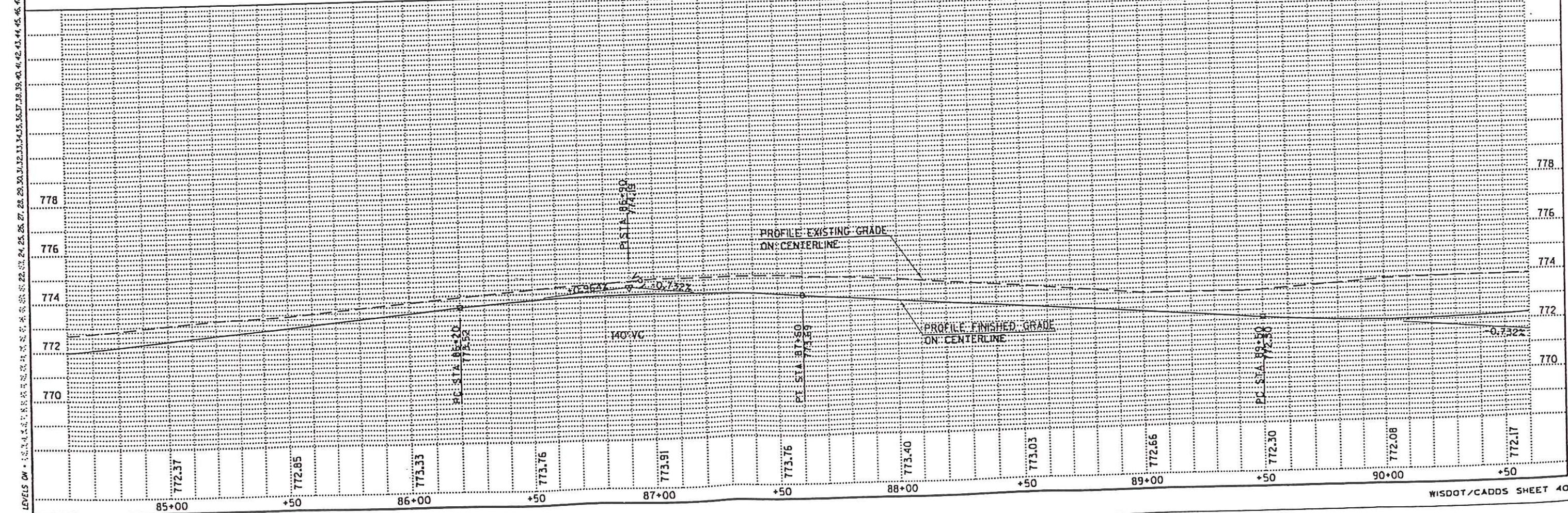
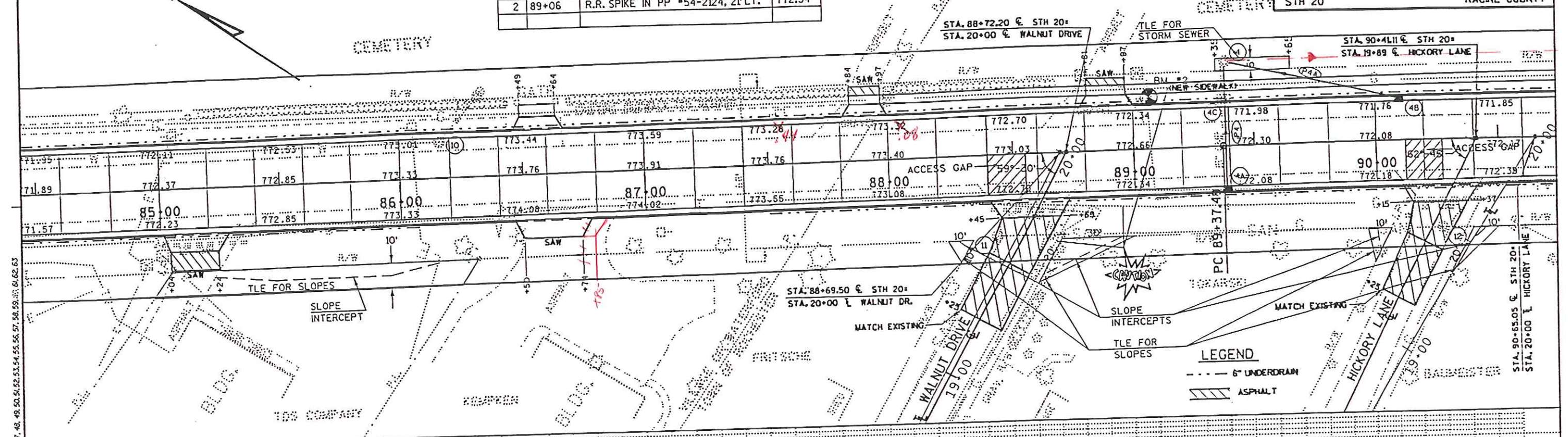
BENCH MARKS			
NO.	STATION	DESCRIPTION	ELEV.
1	80+35	CH. SQ. FLAGPOLE BASE-68' RT.	773.00



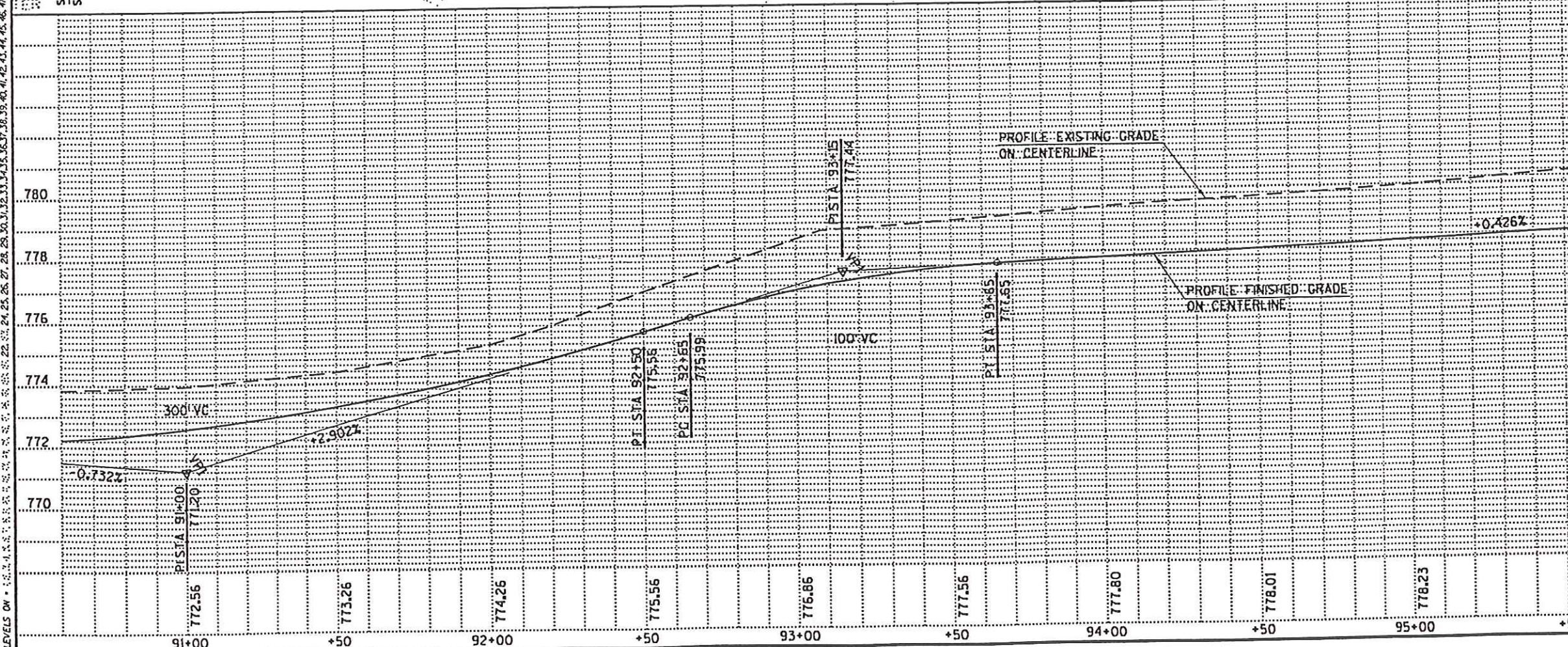
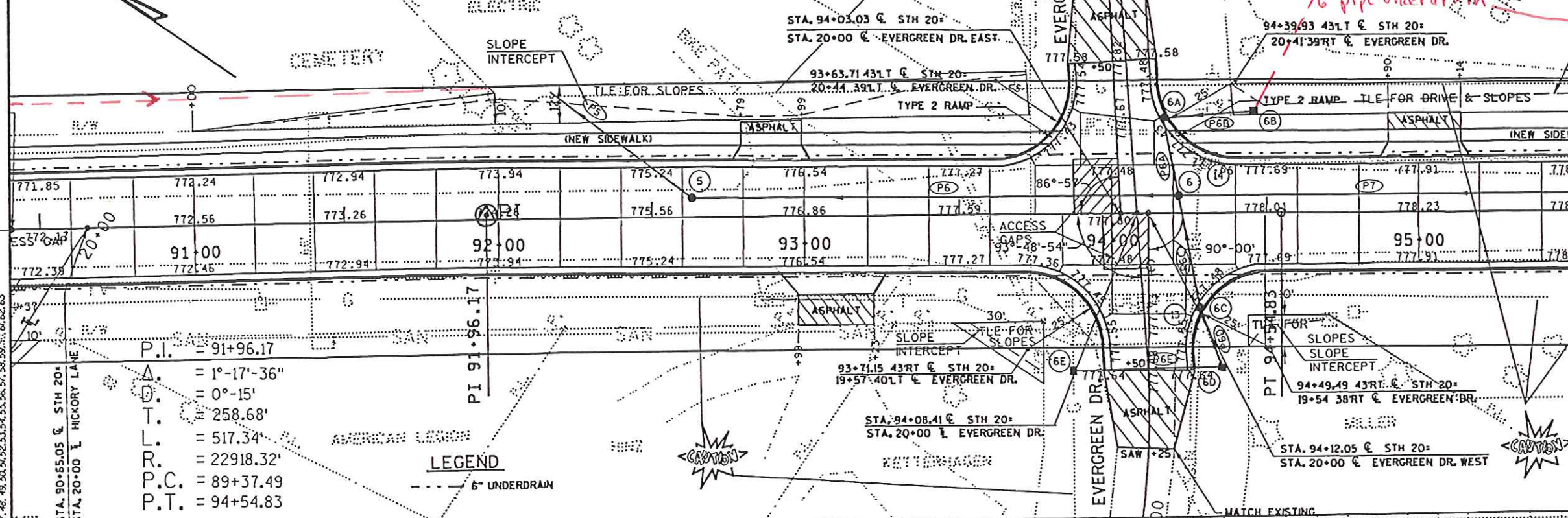
EARTHWORK SUMMARY	
UNCLASSIFIED EXCAVATION	17,847 CY
FILE	1,199 CY
FILE EXPANDED (20%)	1,439 CY
WASTE	16,408 CY

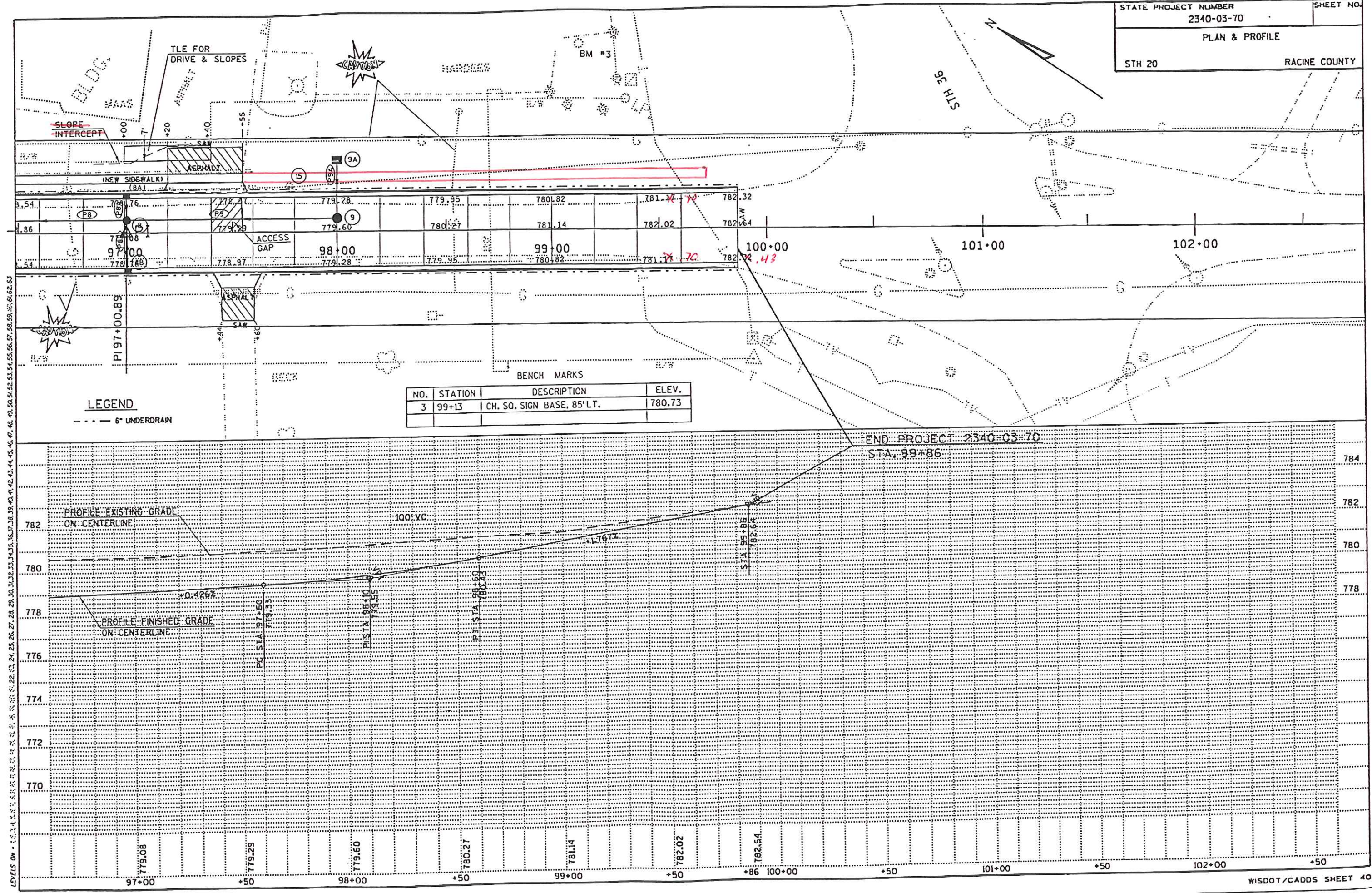


BENCH MARKS			
NO.	STATION	DESCRIPTION	ELEV.
2	89+06	R.R. SPIKE IN PP #54-2124, 21' LT.	772.54



LEVELS ON: 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63.





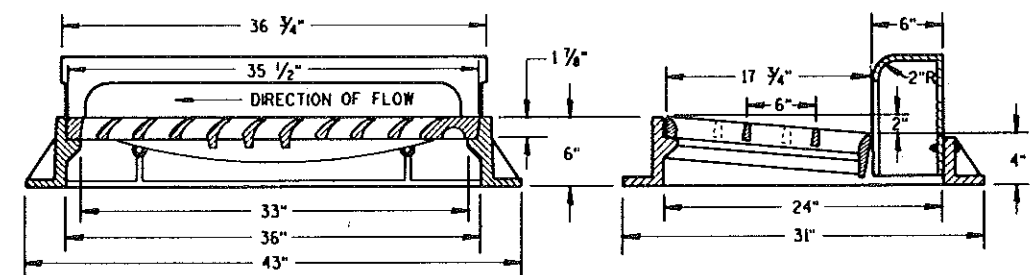
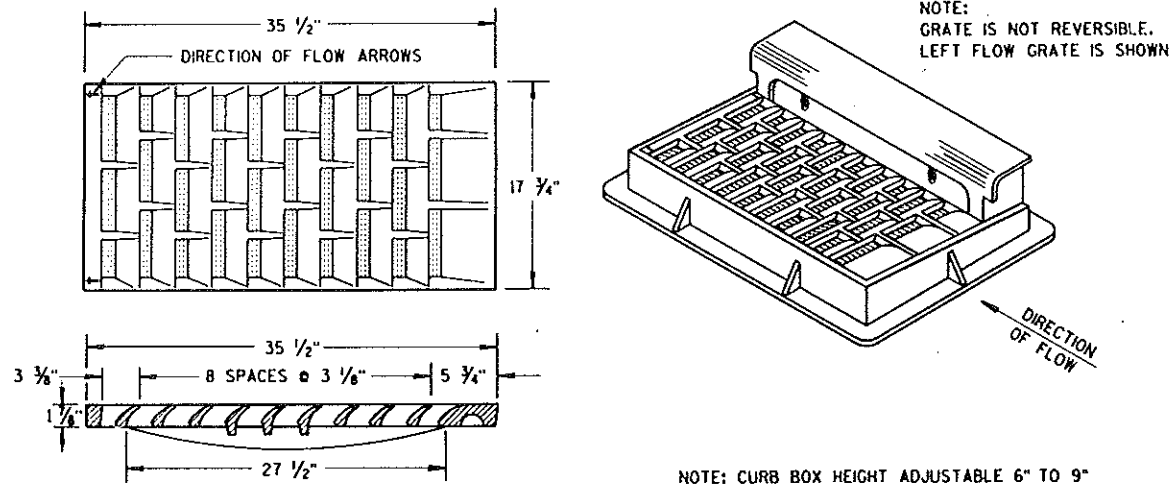
GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

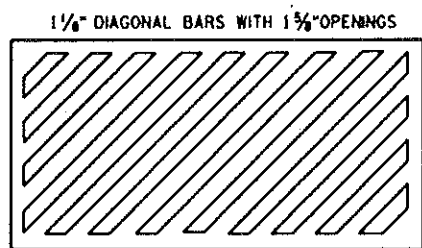
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

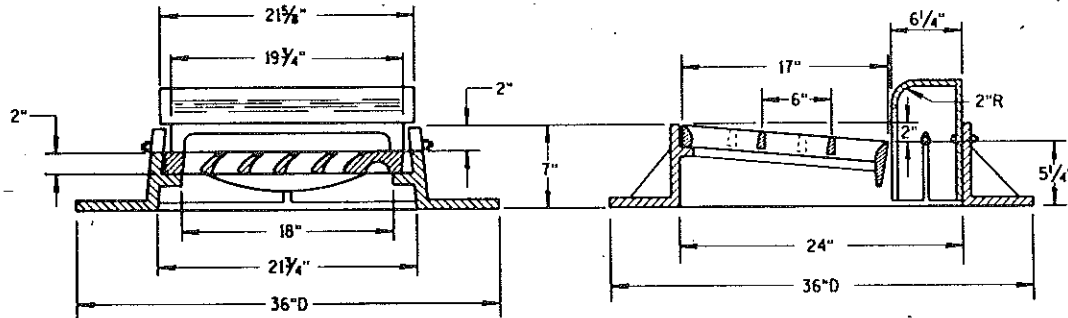
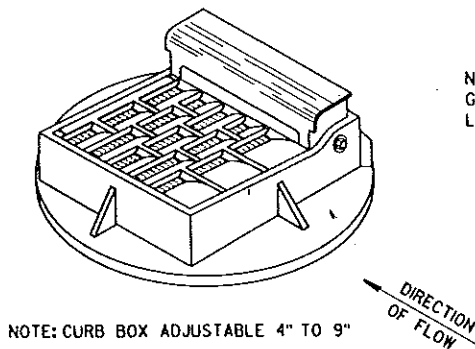
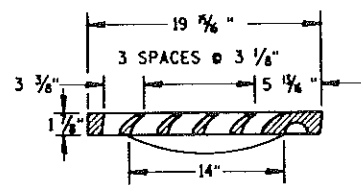
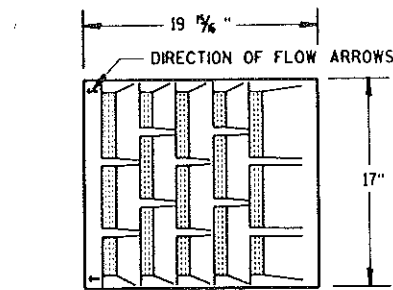
THE ACTUAL WEIGHT OF COVERS MAY VARY WITHIN 5 PERCENT, PLUS OR MINUS, OF THE APPROXIMATE WEIGHT.



**TYPE "H"**  
(APPROXIMATE WEIGHT 145 LBS.)  
FRAME..... 195 LBS.  
GRATE..... 135 LBS.  
CURB BOX..... 115 LBS.

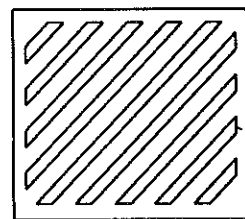


**SPECIAL GRATE FOR TYPE "H" COVER**  
(MEASURES 35 1/2" X 17 3/4" X 2")  
(APPROXIMATE WEIGHT 170 LBS.)  
GRATE..... 170 LBS.  
(NOTE AS TYPE H-S ON DRAINAGE TABLE)



**TYPE "A"**  
(APPROXIMATE WEIGHT 405 LBS.)  
FRAME..... 235 LBS.  
GRATE..... 85 LBS.  
CURB BOX..... 85 LBS.

1" DIAGONAL BARS  
WITH 1 1/2" OPENINGS



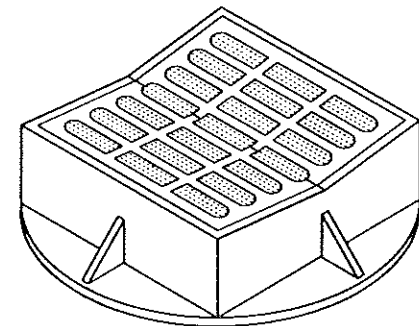
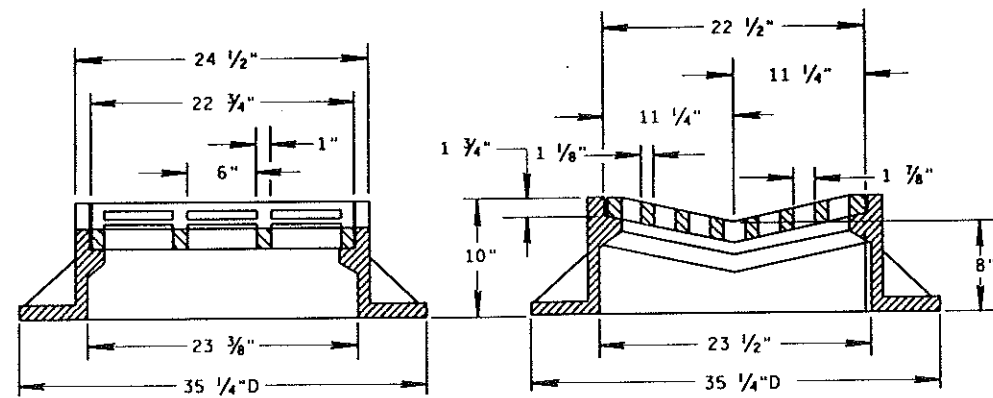
**SPECIAL GRATE FOR TYPE "A" COVER**  
(MEASURES 19 7/8" X 17" X 1 1/8")  
GRATE..... 85 LBS.  
(NOTE AS TYPE A-S ON DRAINAGE TABLE)

INLET COVERS

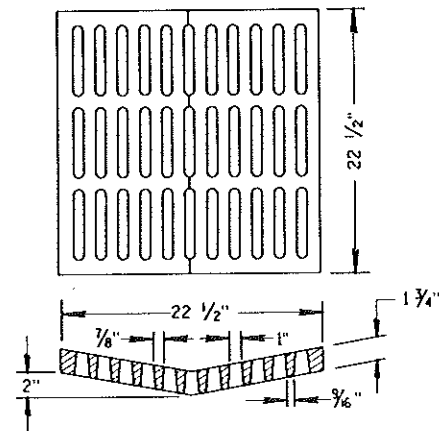
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
1/25/83  
DATE  
STATE DESIGN ENGINEER FOR HWY  
FHWA



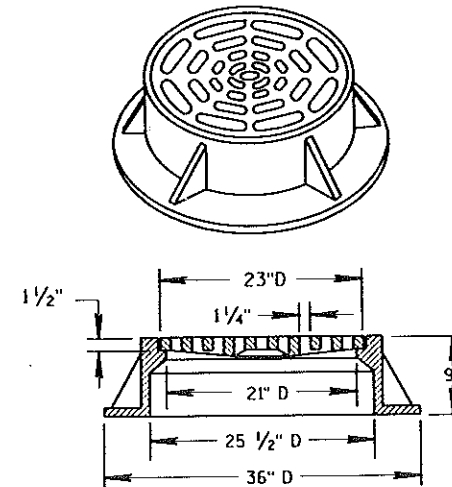


**TYPE "B"**  
(APPROXIMATE WEIGHT 395 LBS.)  
FRAME..... 285 LBS.  
GRATE..... 110 LBS.



**ALTERNATIVE GRATE FOR  
FOR TYPE "B" COVER**

(APPROXIMATE GRATE WEIGHT 125 LBS.)  
GRATE..... 125 LBS.  
USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS POSSIBLE.  
NOTE AS TYPE B-A ON THE DRAINAGE TABLE



**TYPE "C"**  
(APPROXIMATE WEIGHT 340 LBS.)  
FRAME..... 235 LBS.  
GRATE..... 105 LBS.

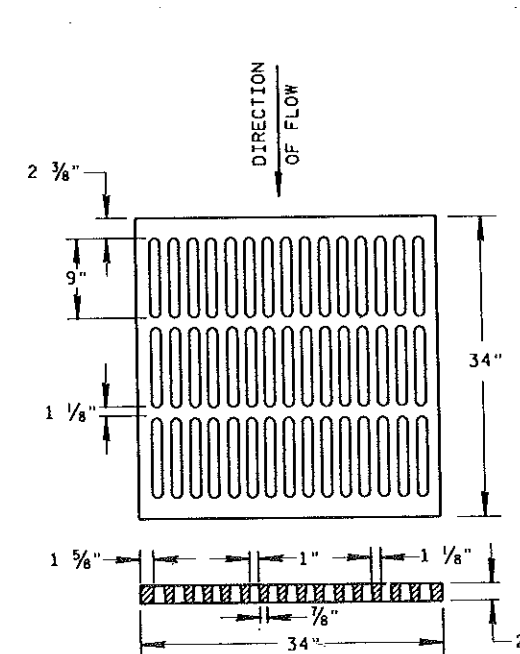
## GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

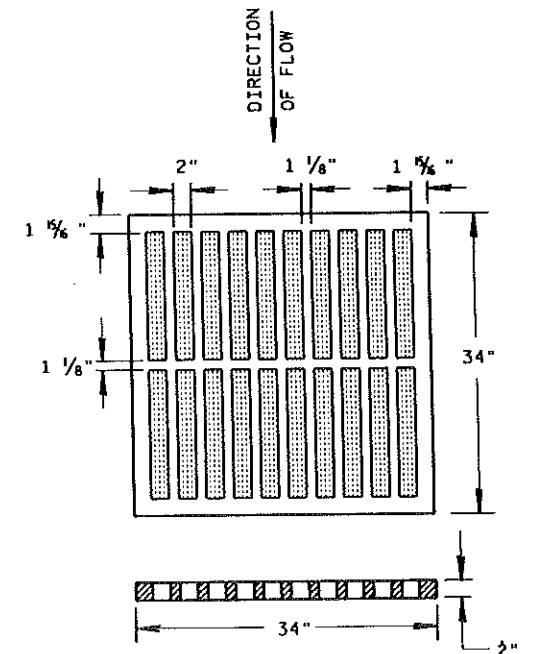
ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

THE ACTUAL WEIGHT OF COVERS MAY VARY WITHIN 5 PERCENT, PLUS OR MINUS, OF THE APPROXIMATE WEIGHT.



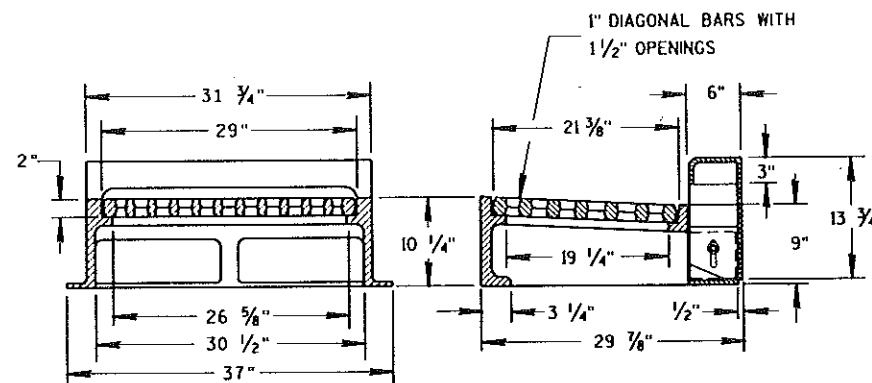
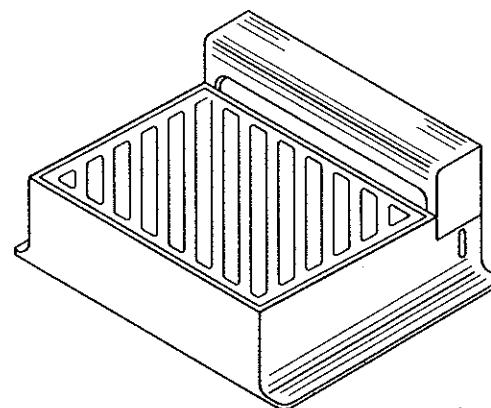
**ALTERNATIVE TYPE "MS"**

(APPROXIMATE GRATE WEIGHT 365 LBS.)  
GRATE..... 365 LBS.  
USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS PERMITTED  
NOTE AS TYPE MS-A ON THE DRAINAGE TABLE



**TYPE "MS"**

(APPROXIMATE GRATE WEIGHT 270 LBS.)  
GRATE..... 270 LBS.  
USE ON FREEWAYS AND EXPRESSWAYS  
NOTE AS TYPE MS ON DRAINAGE TABLE



NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"

**TYPE "WM"**  
(APPROXIMATE WEIGHT 670 LBS.)

FRAME..... 360 LBS.  
GRATE..... 160 LBS.  
CURB BOX..... 150 LBS.

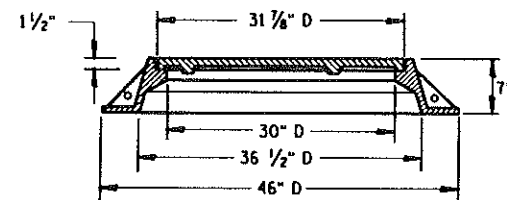
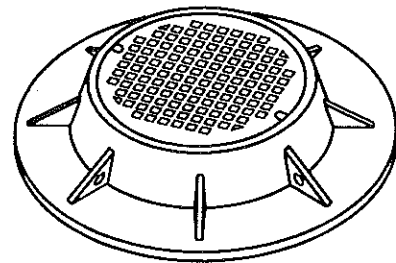
## INLET COVERS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

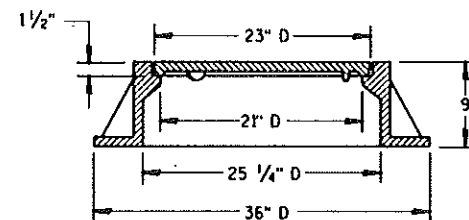
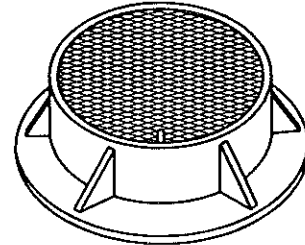
APPROVED  
1/25/93  
DATE

STATE DESIGN ENGINEER FOR HWYS

PHWA



**TYPE "K"**  
(APPROXIMATE WEIGHT 535 LBS.)  
FRAME..... 330 LBS.  
LID..... 205 LBS.



**TYPE "J"**  
(APPROXIMATE WEIGHT 350 LBS.)  
FRAME..... 235 LBS.  
LID..... 115 LBS.

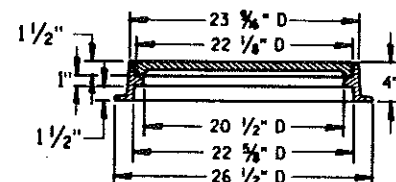
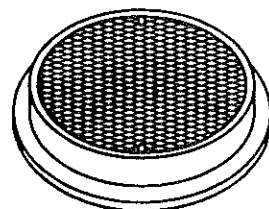
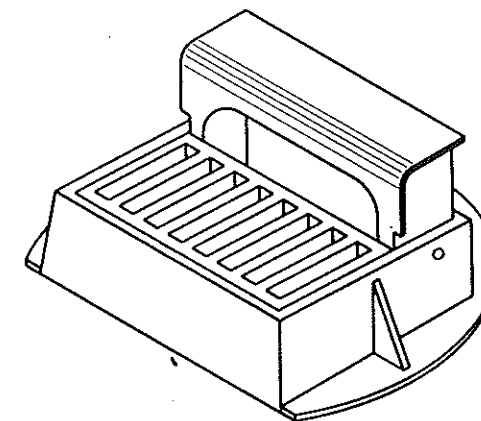
## GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

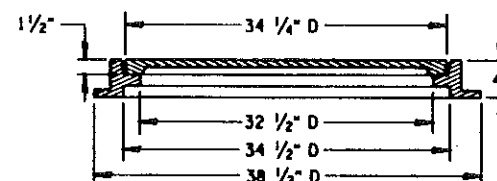
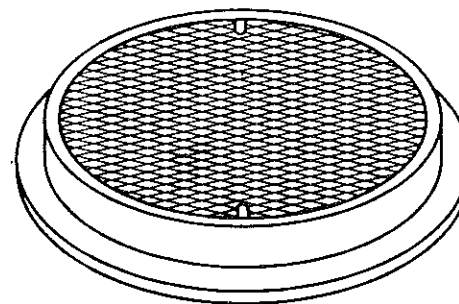
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR MANHOLE COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

THE ACTUAL WEIGHT OF COVERS MAY VARY WITHIN 5 PERCENT, PLUS OR MINUS, OF THE APPROXIMATE WEIGHT.

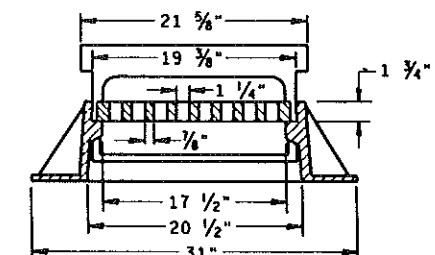
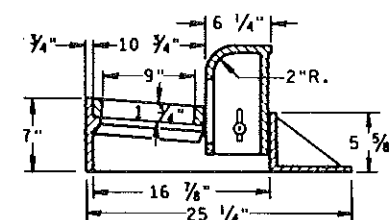


**TYPE "L"**  
(APPROXIMATE WEIGHT 145 LBS.)  
FRAME..... 75\*  
LID..... 70\*



**TYPE "M"**  
(APPROXIMATE WEIGHT 385 LBS.)  
FRAME..... 125\*  
LID..... 260\*

CURB BOX ADJUSTABLE 4" TO 10"



## INLET COVER TYPE "Z"

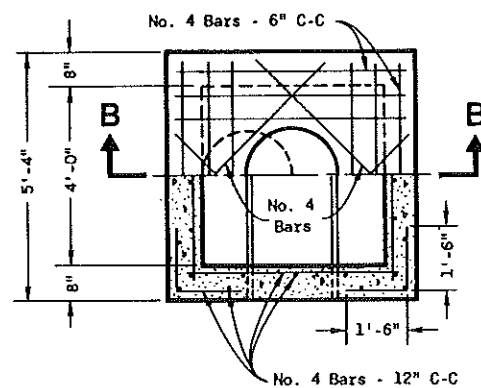
(APPROXIMATE WEIGHT 280 LBS.)  
FRAME..... 145 LBS.  
GRATE..... 50 LBS.  
CURB BOX..... 85 LBS.

INLET AND  
MANHOLE COVERS

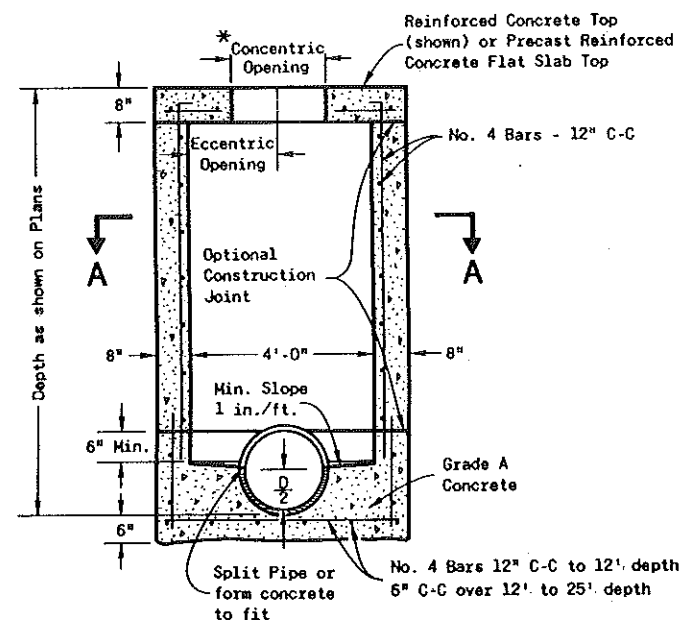
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
1/25/23  
DATE

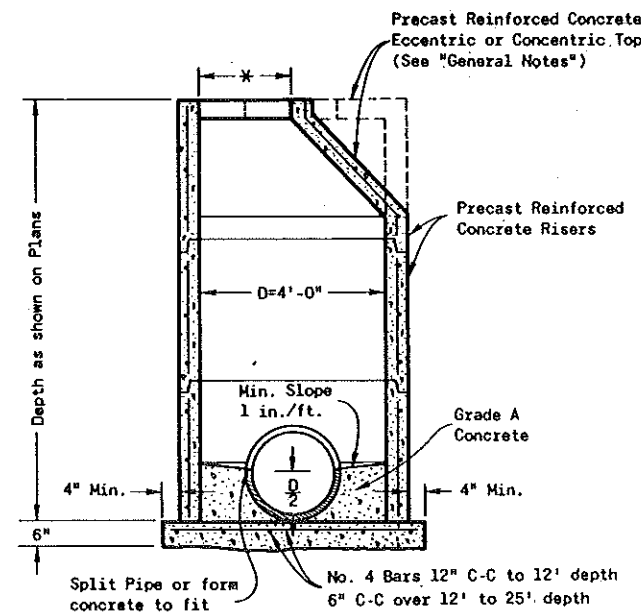
*[Signature]*  
STATE DESIGN ENGINEER FOR HWYS  
FHWA



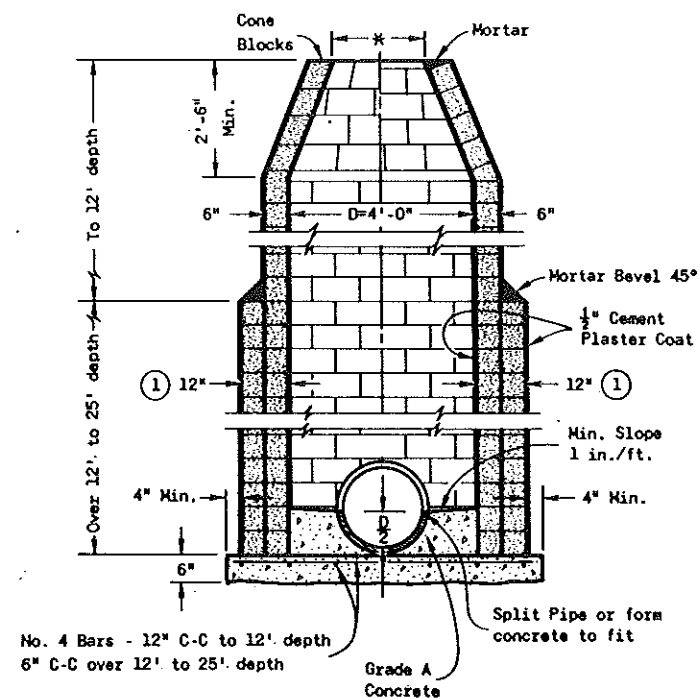
HALF SECTION A-A



SECTION B-B  
REINFORCED CONCRETE



PRECAST REINFORCED CONCRETE



CONCRETE BLOCK

## GENERAL NOTES

Details of construction, materials and workmanship not shown on this drawing shall conform to the pertinent requirements of the Standard Specifications and the applicable Special Provisions.

Detailed drawings for proposed alternate designs for underground drainage structures shall be submitted to the Engineer for approval providing that such alternate designs make provision for equivalent capacity and strength.

All drainage structures are designated on the plans as "Manholes 1-C", "Catch Basins 1-B", "Inlets 3-H", etc. The first digit designates the masonry portion of the structure, and the following letter designates the type of cover to be used to comprise the complete unit.

Precast Reinforced Bases shall be placed on a bed of material at least 6 inches in depth, which meets the requirements for Granular Backfill. This bedding shall be compacted and provide uniform support for the entire area of the base.

Precast Reinforced Concrete Cone Tops (Eccentric or Concentric) may be used on concrete block structures. The Cone Tops shall be installed on a bed of mortar.

Eccentric Cone Tops may be used on all structures, and Concentric Cone Tops shall be used only on structures 5 feet or less in depth, unless otherwise directed by the Engineer.

Steps meeting the following requirements shall be installed in all structures over 5 feet in depth: 16 inch C-C maximum spacing; project a minimum clear distance of 4 inches from the wall at the point of embedment; minimum length of 10 inches; minimum wall embedment of 3 inches; and be capable of supporting a concentrated load of 300 lbs. Ferrous metal steps not painted or treated to resist corrosion shall have a minimum cross sectional dimension of 1 inch.

Solid Aluminum steps shall have a minimum cross sectional dimension of 0.75 inch. Aluminum surfaces to be embedded in concrete shall be given one coat of suitable quality paint, such as zinc chromate primer conforming to Federal Specification TT-P-645 or equivalent. Steps of approved Polypropylene plastic coated reinforcement bar will be acceptable.

All bar steel reinforcement shall be embedded 2 inches clear unless otherwise shown or noted.

Precast Reinforced Concrete Risers may be placed with tongue up or down.

All Precast Inlet Units shall conform to the pertinent requirements of AASHTO Designation M 199.

\* Use 2'-0" diameter opening with Type "C", "L" and "J" covers, or 3'-0" diameter with Type "K" and "M" covers.

① 2 courses 6" block.

MANHOLES TYPE 1

MANHOLES TYPE 1

State of Wisconsin  
Department of Transportation

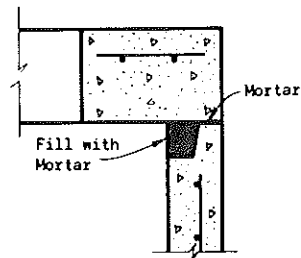
APPROVED  
4-13-82

DATE

FHWA

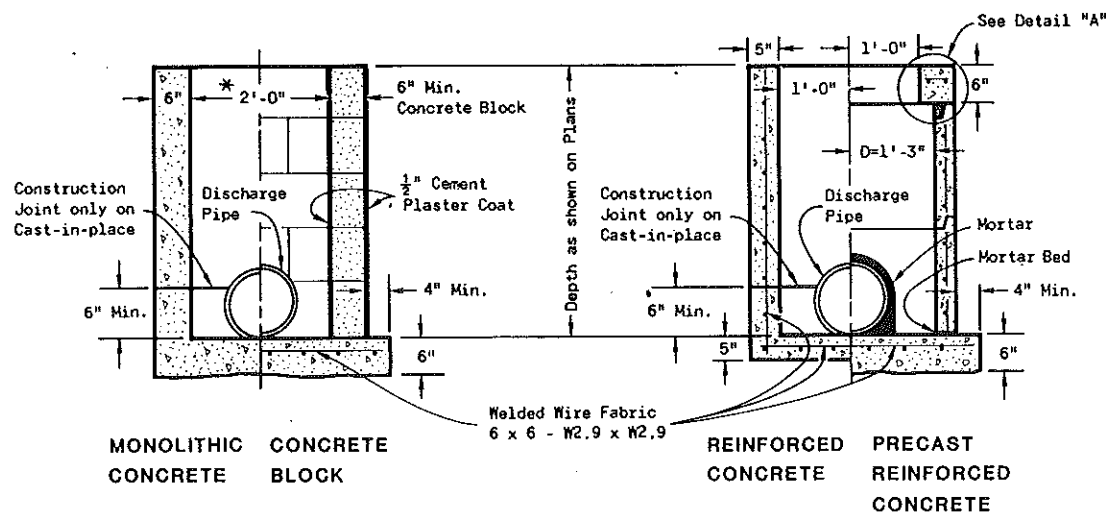
*D. J. Strand*  
CHIEF DESIGN ENGINEER

S.D.D. 8 B 6-3



DETAIL "A"

\* Selection of square or circular design will be based on the pipe sizes and the Inlet Cover being utilized.



INLETS TYPE 1

## GENERAL NOTES

Details of construction, materials and workmanship not shown on this drawing shall conform to the pertinent requirements of the Standard Specifications and the applicable Special Provisions.

Detailed drawings for proposed alternate designs for underground drainage structures shall be submitted to the Engineer for approval providing that such alternate designs make provision for equivalent capacity and strength.

All Precast Inlet units shall conform to the pertinent requirements of AASHTO Designation M 199.

All drainage structures are designated on the plans as "Manholes 1-C", "Catch Basins 1-B", "Inlets 3-H", etc. The first digit designates the masonry portion of the structure, and the following letter designates the type of cover to be used to comprise the complete unit.

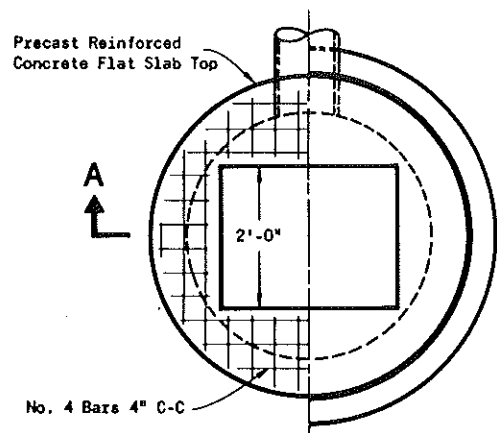
Precast Reinforced Bases shall be placed on a bed of material at least 6 inches in depth, which meets the requirements for Granular Backfill. This bedding shall be compacted and provide uniform support for the entire area of the base.

Precast Reinforced Concrete Flat Slab Tops may be used on the structures. The Tops shall be installed on a bed of mortar.

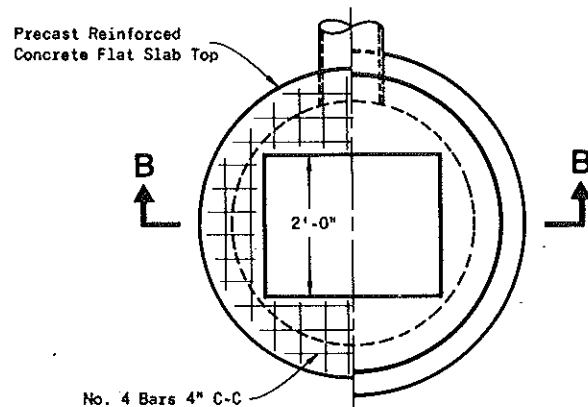
All Bar Steel reinforcement shall be embedded 2 inches clear unless otherwise shown or noted.

Precast Reinforced Concrete Risers shall be placed with tongue down.

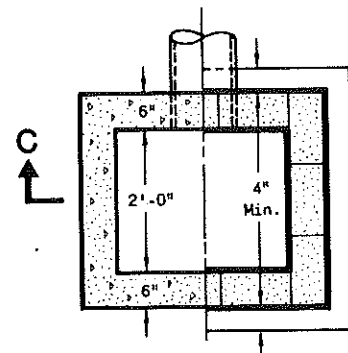
- ① Use 2'-6" opening for Type 2 Inlets and 3'-0" opening for Type 3 Inlets.



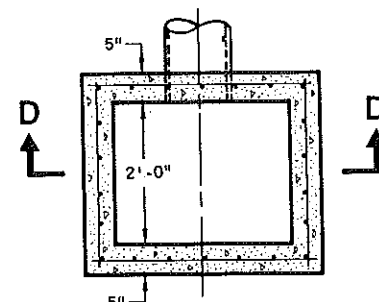
PLAN VIEW



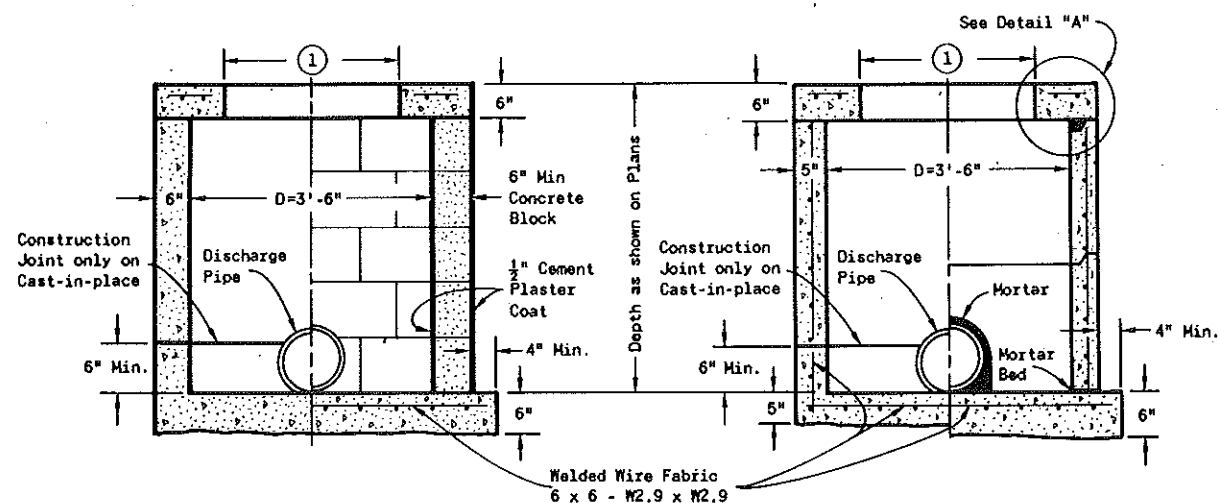
PLAN VIEW



PLAN VIEW

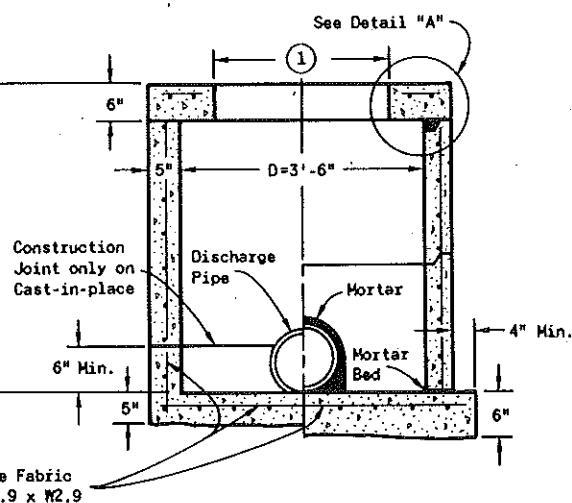


PLAN VIEW



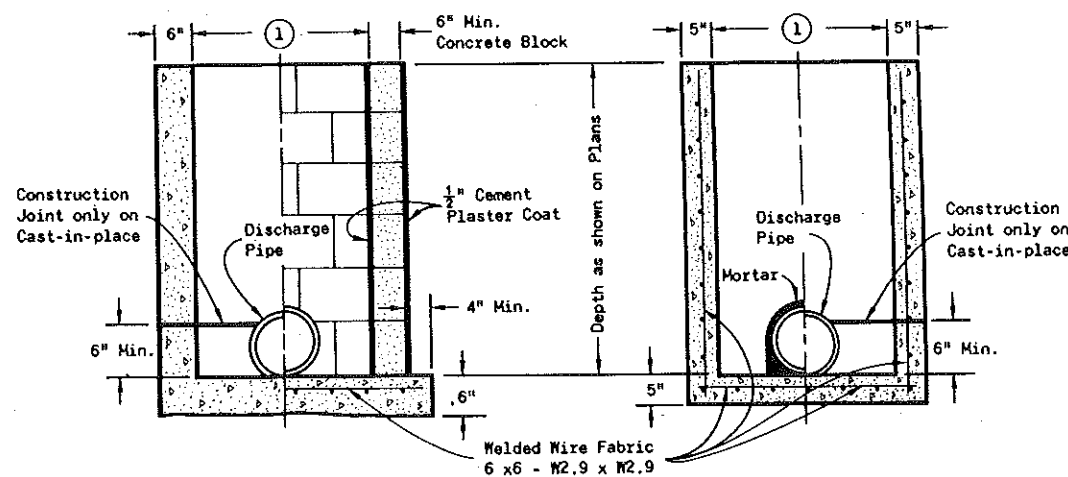
MONOLITHIC CONCRETE

SECTION A-A



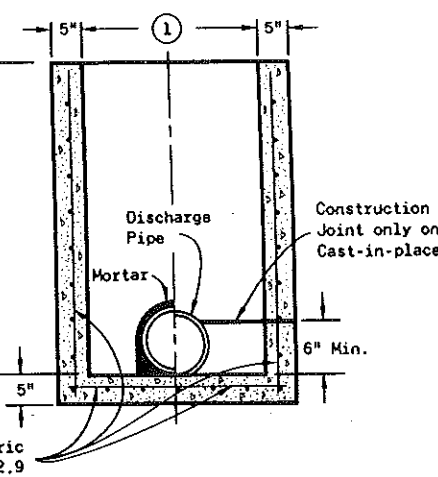
REINFORCED CONCRETE

SECTION B-B



MONOLITHIC CONCRETE

SECTION C-C



PRECAST REINFORCED CONCRETE

SECTION D-D

INLETS TYPE 2 & 3

INLETS TYPE 1, 2 & 3

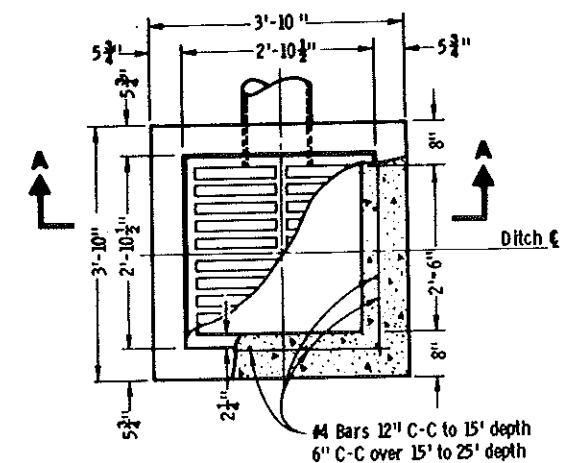
State of Wisconsin  
Department of Transportation

APPROVED  
4-13-82  
DATE

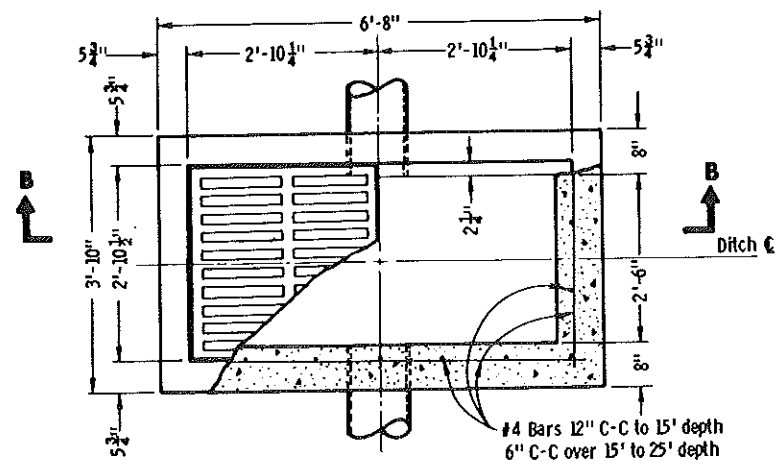
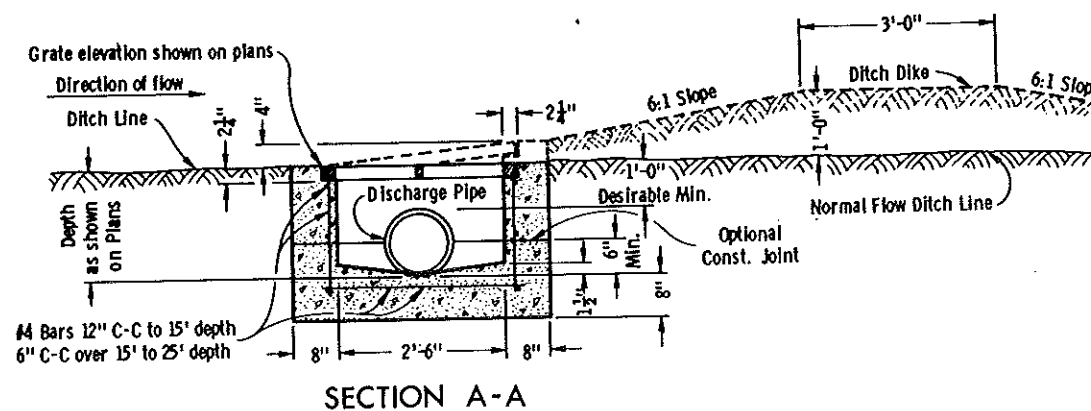
CHIEF DESIGN ENGINEER

FWHA

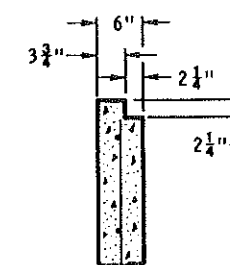
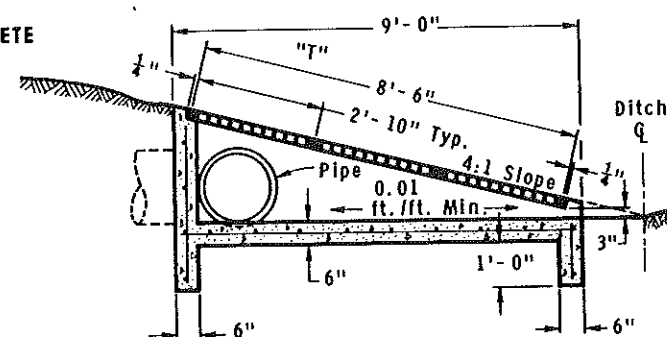
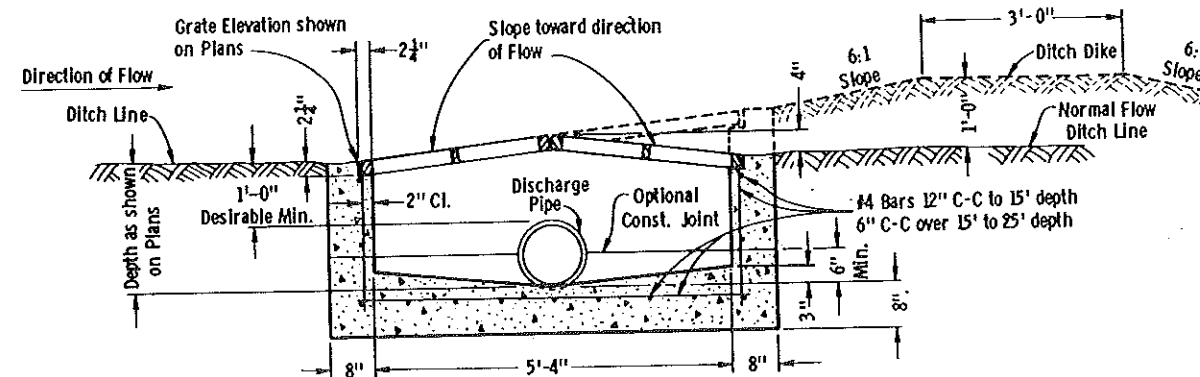
S.D.D. 8 C 1-4



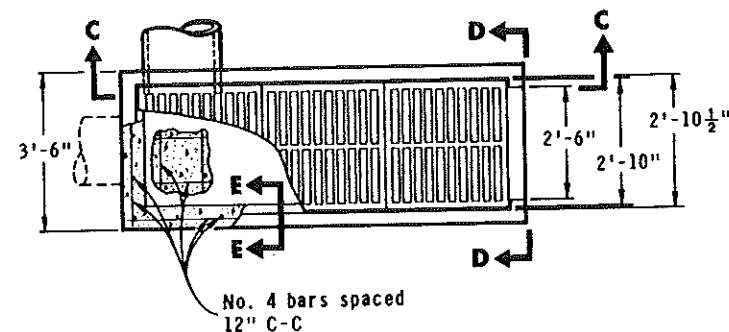
PLAN VIEW



PLAN VIEW

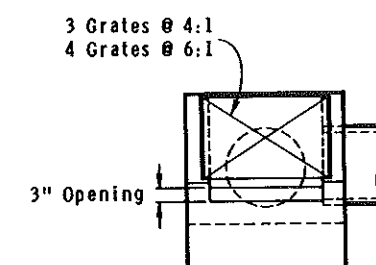


**SECTION E-E**

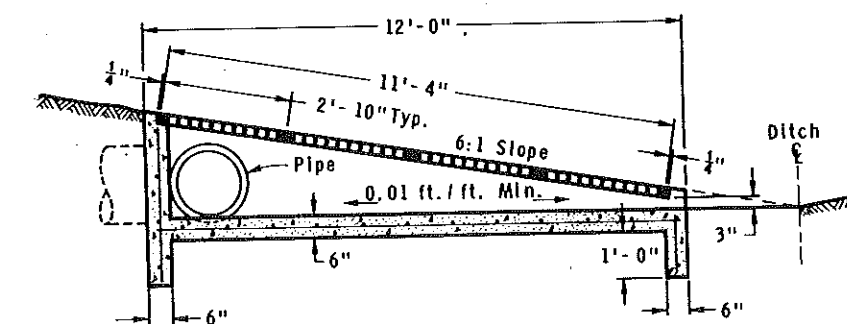


### PLAN VIEW

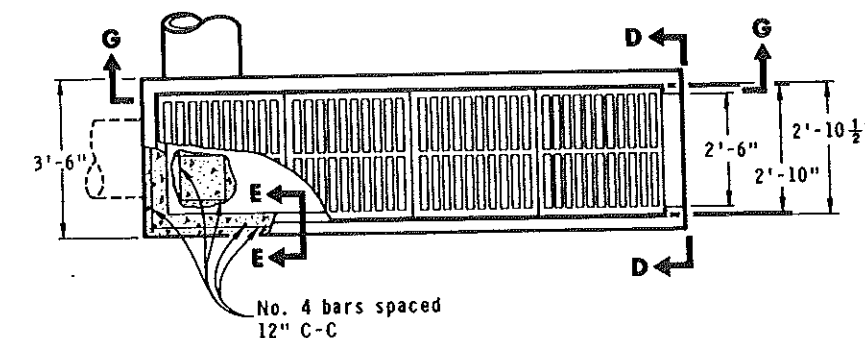
INLET TYPE 10  
REINFORCED CONCRETE



VIEW D-D



## SECTION G-G



PLAN VIEW  
INLET TYPE II  
REINFORCED CONCRETE

### GENERAL NOTES

Details of construction, materials and workmanship not shown on this drawing shall conform to the pertinent requirements of the Standard Specifications and the applicable Special Provisions.

Detailed drawings for proposed alternate designs for inlets which may include precast reinforced concrete inlets, shall be submitted to the Engineer for approval providing that such alternate designs make provision for equivalent capacity and strength.

Precast reinforced concrete inlet units, if used, shall conform to the requirements of the Catch Basins, Manholes and Inlets Section of the Standard Specification's.

All Inlets are designated on the Plans as "Inlets, 8-MS", etc. This designation is interpreted to mean that the number, or first digit designates the masonry portion of the structure and the following letter designates the type of cover or iron casting to be used therewith to comprise the complete unit.

All bar steel reinforcement shall be embedded 2 inches clear unless otherwise shown or noted.

**S.D.D. 8C5-1**

INLETS TYPE 8,9,10 and 11

State of Wisconsin  
Department of Transportation  
Division of Highways

RECOMMENDED FOR APPROVAL

4-30-74

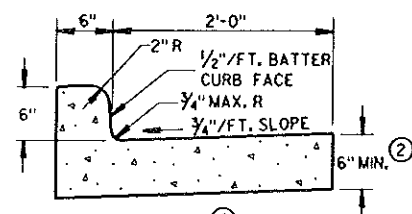
APPROVED

5-02-74

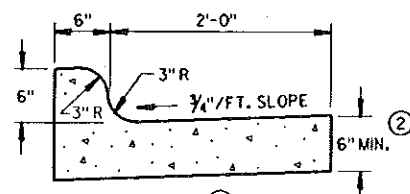
*L. C. Henrich*

*[Signature]*  
STATE HIGHWAY ENGINEER

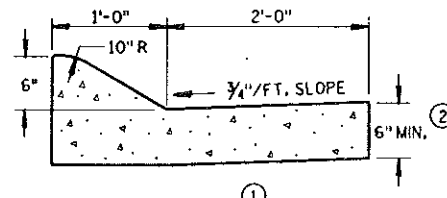
**S.D.D. 8C5-1**



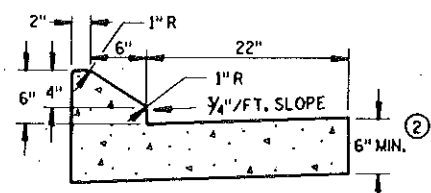
TYPES A & D



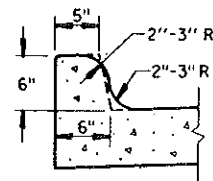
TYPES K & L



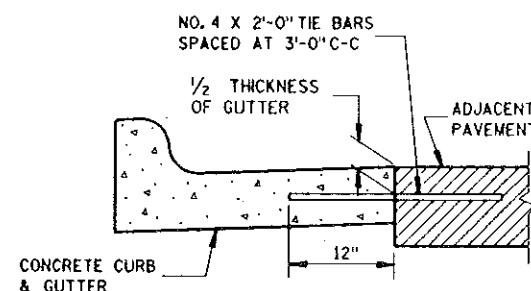
TYPES A & D  
CONCRETE CURB & GUTTER 36"



TYPES G & J

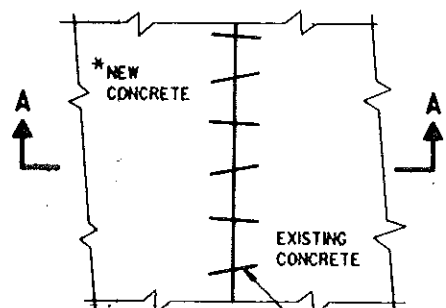


OPTIONAL CURB SHAPE  
FOR TYPES K & L



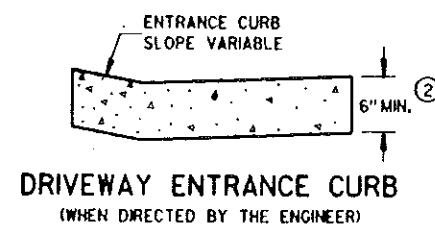
TYPICAL TIE BAR LOCATION

CONCRETE CURB & GUTTER 30"

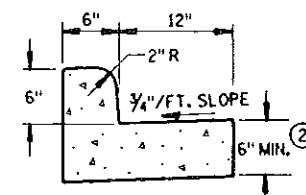


PLAN VIEW

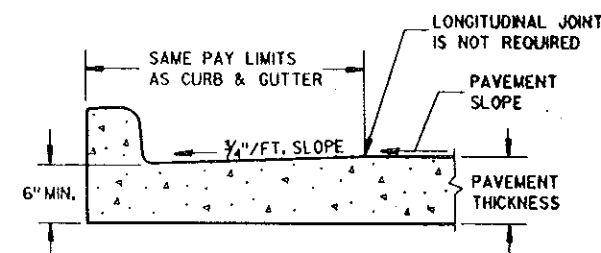
\*NEW CURB & GUTTER,  
SURFACE DRAINS,  
CONCRETE PAVEMENT  
OR OTHER NEW CONCRETE.



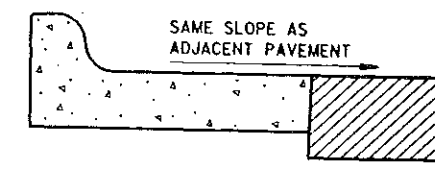
DRIVEWAY ENTRANCE CURB  
(WHEN DIRECTED BY THE ENGINEER)



TYPES A & D  
CONCRETE CURB & GUTTER 18"



PARTIAL SECTION OF PAVEMENT  
WITH INTEGRAL CURB & GUTTER



REVERSE SLOPE GUTTER  
(TYPICAL FOR ALL CURB & GUTTER TYPES)

## GENERAL NOTES

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

SEALANT IS NOT REQUIRED IN THE JOINTS OF CONCRETE CURB OR CONCRETE CURB & GUTTER EXCEPT AS REQUIRED FOR INTEGRAL GUTTER.

PAVEMENT TIES ARE REQUIRED, WHEN INCLUDED IN THE CONTRACT, WHERE CONCRETE CURB, CONCRETE CURB AND GUTTER OR CONCRETE PAVEMENT IS PLACED ADJACENT TO EXISTING CONCRETE.

PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.4 OF THE STANDARD SPECIFICATIONS.

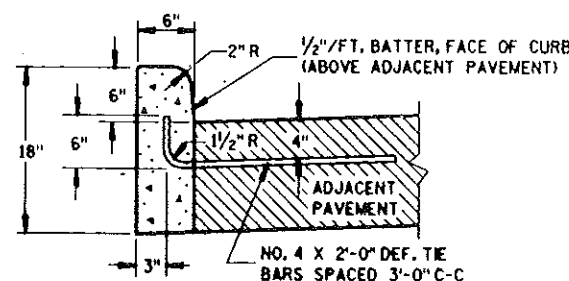
INTEGRAL CURB & GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB & GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE. TIE BARS AND A LONGITUDINAL CONSTRUCTION JOINT ARE NOT REQUIRED WITH THIS ALTERNATE.

PAVEMENT JOINTS SHALL BE EXTENDED THROUGH INTEGRAL CURB & GUTTER. JOINTS IN INTEGRAL GUTTER SHALL HAVE THE SAME DIMENSIONS AS THE JOINTS IN THE ADJACENT PAVEMENT. JOINTS IN INTEGRAL CURB SHALL BE 1/8" WIDE.

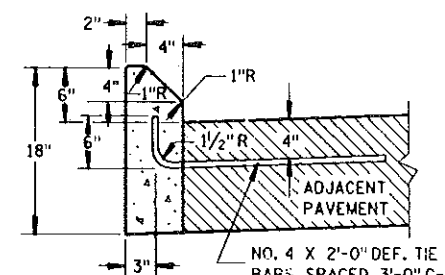
JOINTS IN INTEGRAL CURB & GUTTER SHALL BE SEALED TO THE FACE OF CURB WITH THE SAME SEALANT SPECIFIED FOR THE PAVEMENT JOINT. THE COST OF FURNISHING AND INSTALLING THIS SEALANT SHALL BE INCIDENTAL TO THE ITEM CONCRETE CURB & GUTTER.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE COURSE AND UNCLASSIFIED EXCAVATION LIMITS ARE TWO FEET BEHIND THE BACK OF CURBS.

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G AND K.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE COURSE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATIONS WILL BE SHOWN ELSEWHERE IN THE PLAN.



TYPES A & D



TYPES G & J

CONCRETE CURB

SECTION A-A  
PAVEMENT TIES

NO. 6 X 12" DEF. BARS  
SPACED 3'-0" C-C,  
INSTALLED ON 6" SKEW  
HORIZONTALLY. DIRECTION  
OF SKEW ALTERNATING AFTER  
EVERY ONE OR TWO BARS.

THE HOLE FOR THE BAR SHALL  
BE DRILLED TO A DEPTH OF  
7" AND TO SUCH A DIAMETER  
AS TO PROVIDE A TIGHT  
DRIVEN FIT

EXISTING  
CONCRETE

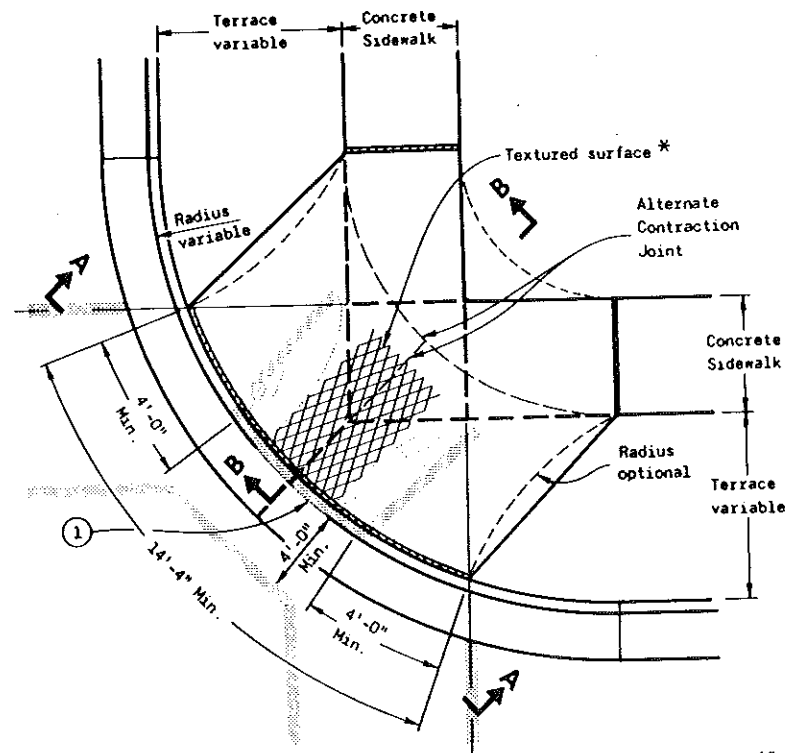
CONCRETE CURB, CONCRETE  
CURB & GUTTER AND  
PAVEMENT TIES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

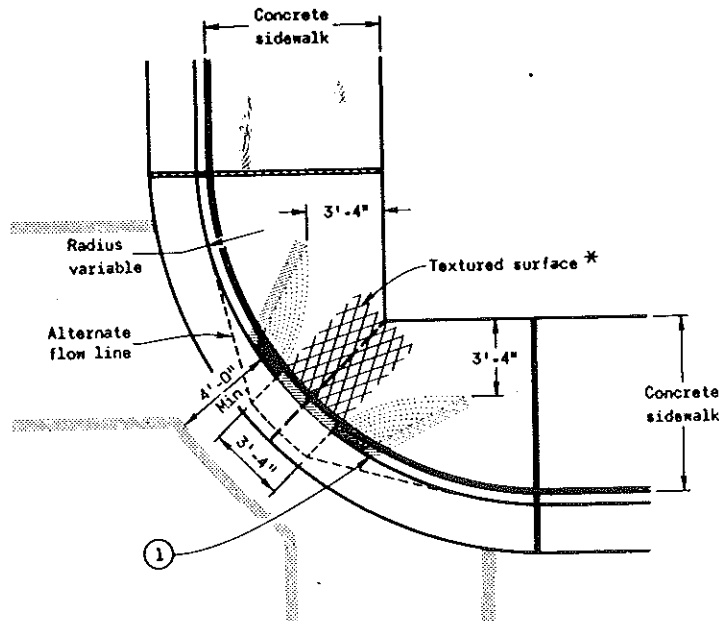
APPROVED  
10-23-86  
DATE

STATE DESIGN ENGINEER FOR HWYS

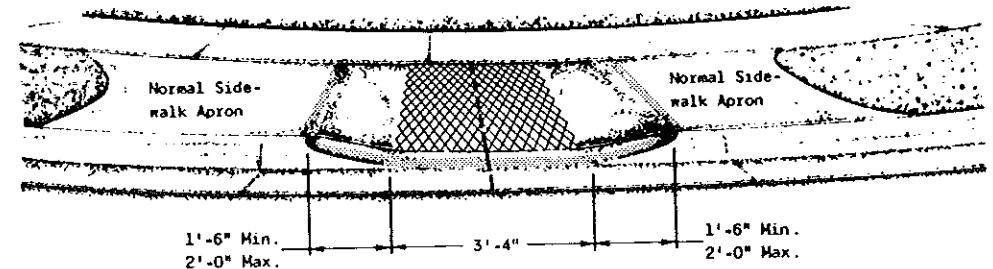
FHWA



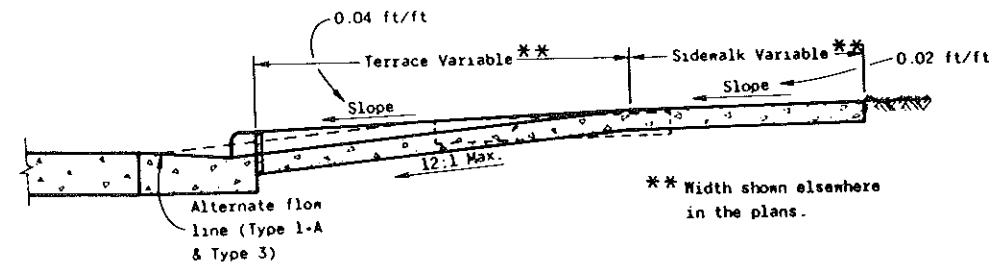
PLAN VIEW  
TYPE 1 RAMP  
(CENTER OF CORNER RADIUS)



PLAN VIEW  
TYPE 1-A RAMP  
(NO TERRACE)

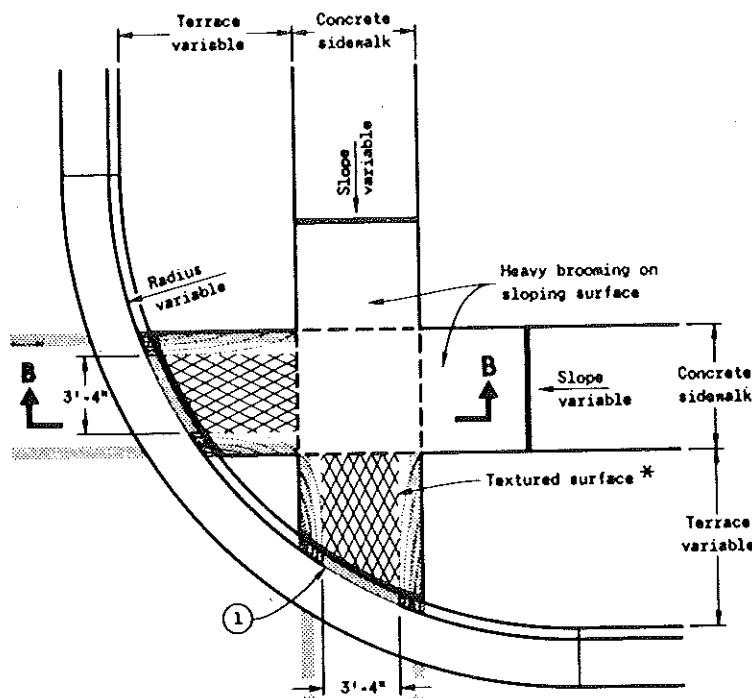


VIEW A-A

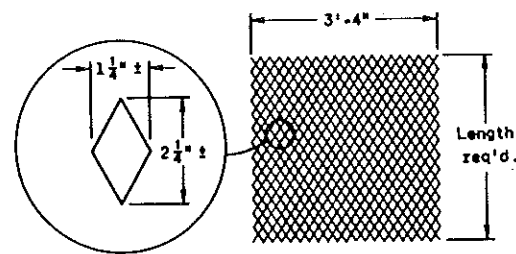


SECTION B-B

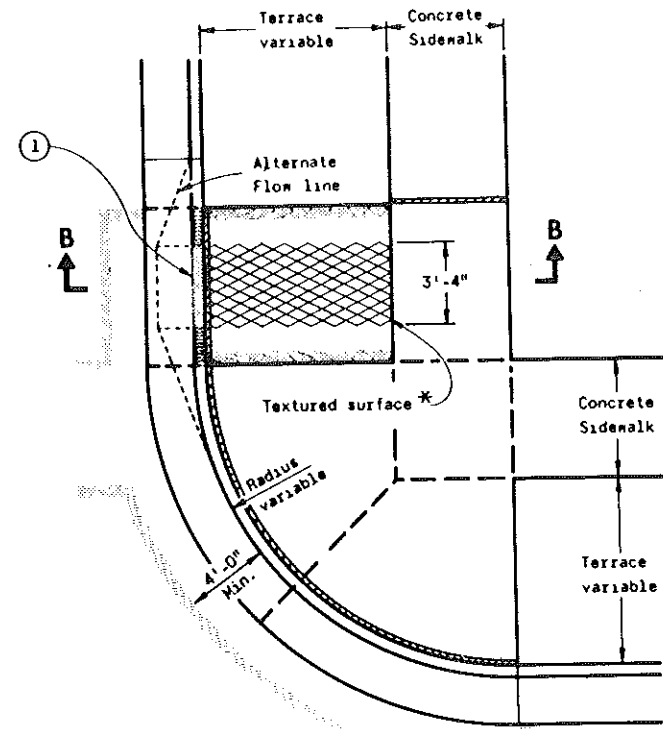
1" ——— EXPANSION JOINTS - SIDEWALK  
 - - - CONTRACTION JOINTS  
 Location of joints may be varied from those shown to better fit site conditions and/or local government preference.



PLAN VIEW  
TYPE 2 RAMP  
(ON LINE WITH SIDEWALK)



DETAIL OF DIAMOND PATTERN \*



PLAN VIEW  
TYPE 3 RAMP  
(OUTSIDE OF CROSSWALK AREA)

## GENERAL NOTES

- Details of construction, materials and workmanship not shown on this drawing shall conform to the pertinent requirements of the Standard Specifications and the applicable Special Provisions.
- Ramps shall be built at 12:1 or flatter. When necessary, the sidewalk elevation may be lowered to meet the high point on the ramp.
- Type 1 or Type 1-A Ramps shall have a normal sidewalk apron and curb on both sides of ramp.
- Curb ramps shall be measured and paid for as Concrete Sidewalk and Concrete Curb and Gutter.
- Surface texturing shall consist of linear impressions approximately  $\frac{1}{8}$  inch to  $\frac{3}{8}$  inch in depth and width, oriented to provide a uniform pattern of diamond shapes measuring approximately  $1\frac{1}{4}$  inches in width by  $2\frac{1}{4}$  inches in length, with the length being parallel to the direction of pedestrian movement. This surface texture may be achieved by impressing and removing a piece of expanded metal regular industrial mesh into the surface of the ramp while the concrete is in a plastic state.
- ① The ramp shall be bordered on both sides and on the curb line with a 4 inch wide yellow stripe or with brick of a contrasting color. Normally the paint stripe alternate will be used. The municipality or the department will apply this striping unless otherwise specified in the contract.
- If a municipality requires the brick alternate, special details and provisions are shown elsewhere in the plans.

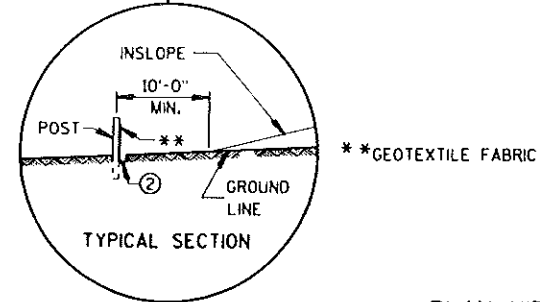
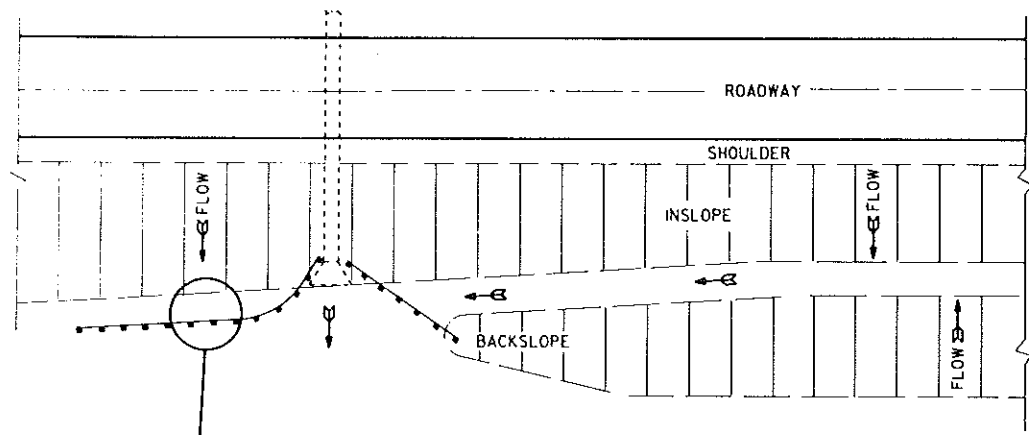
## CURB RAMPS

State of Wisconsin  
Department of Transportation

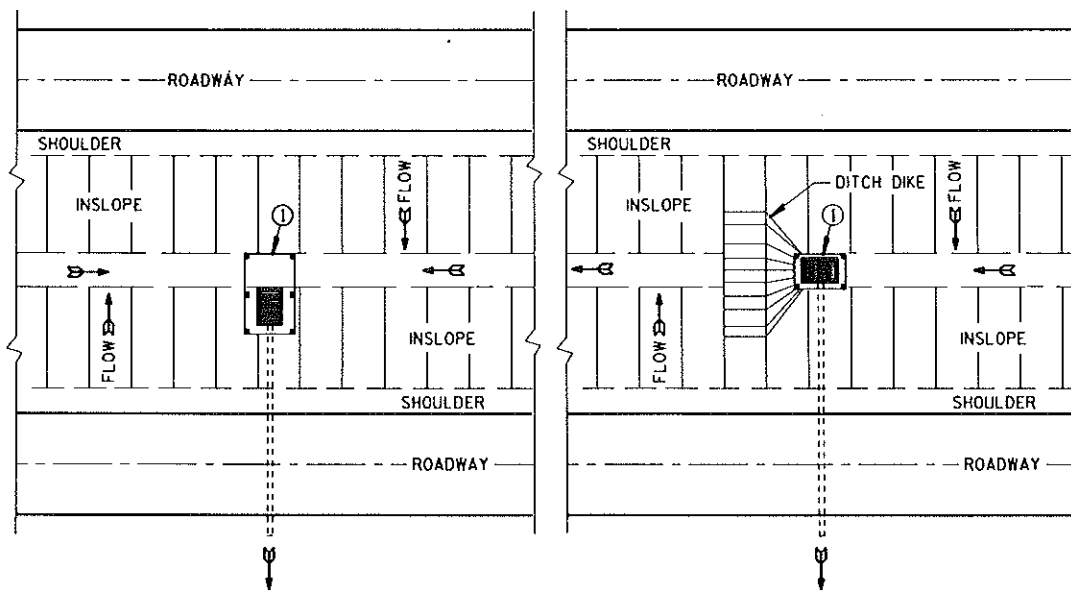
APPROVED  
10-23-84  
DATE

*D. J. Strand*  
CHIEF DESIGN ENGINEER

FHWA



PLAN VIEW  
TYPICAL APPLICATIONS OF SILT FENCE

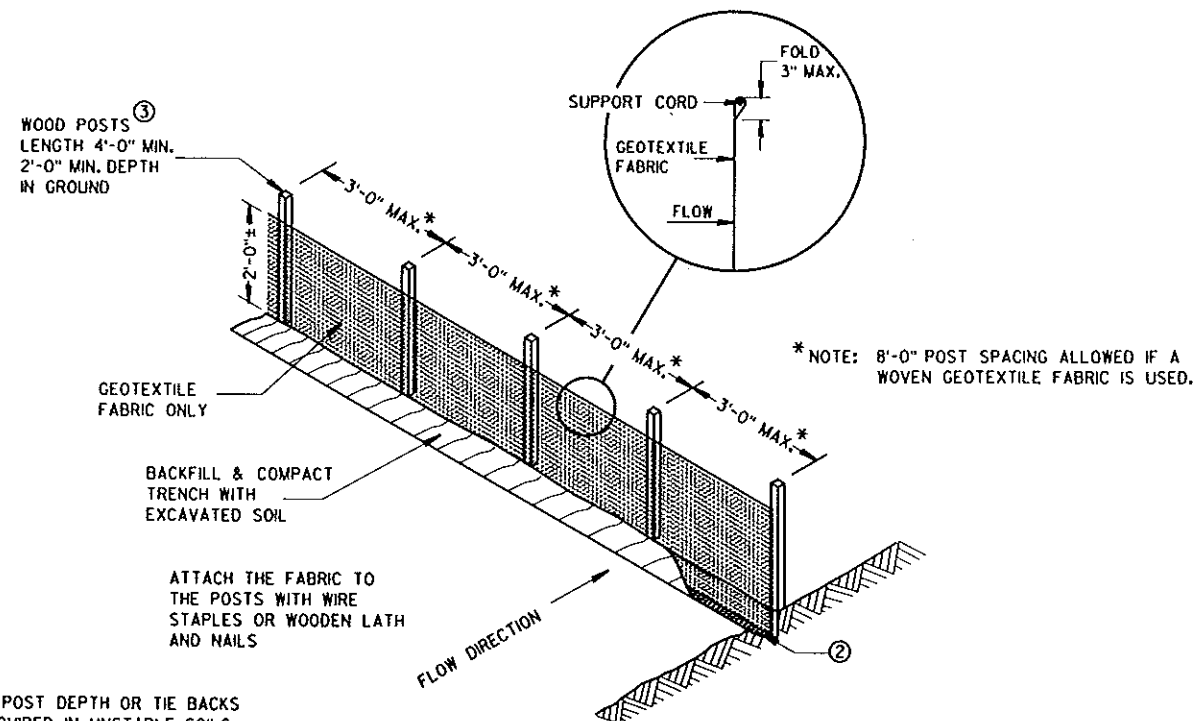


SITUATION 1  
SITUATION 2  
PLAN VIEW  
SILT FENCE AT MEDIAN SURFACE DRAINS

## GENERAL NOTES

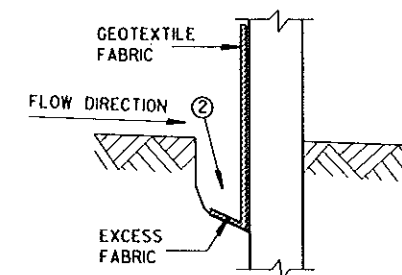
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

- ① HORIZONTAL BRACE WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS AS DIRECTED BY THE ENGINEER.
- ② TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1 1/8" X 1 1/8" OF OAK OR HICKORY.

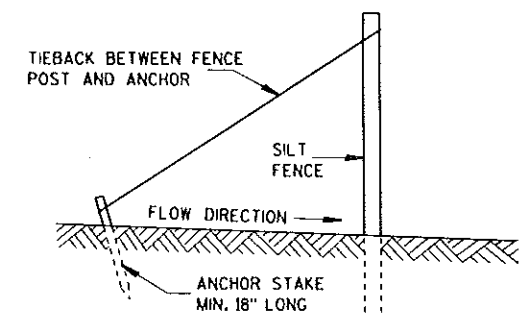


NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS

SILT FENCE  
(NON-REINFORCED)



TRENCH DETAIL



SILT FENCE TIE BACK  
(WHEN REQUIRED BY THE ENGINEER)

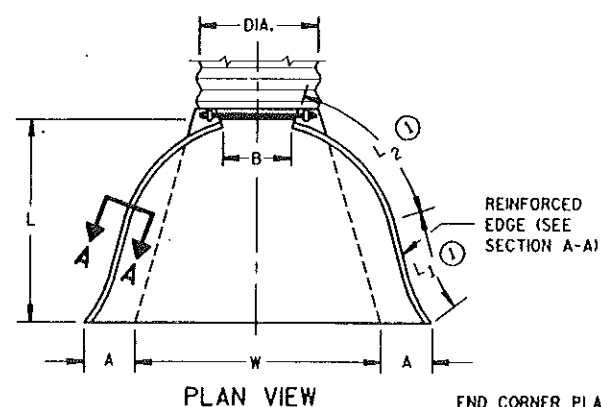
## SILT FENCE

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
6/29/94 *[Signature]*  
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER  
FHWA

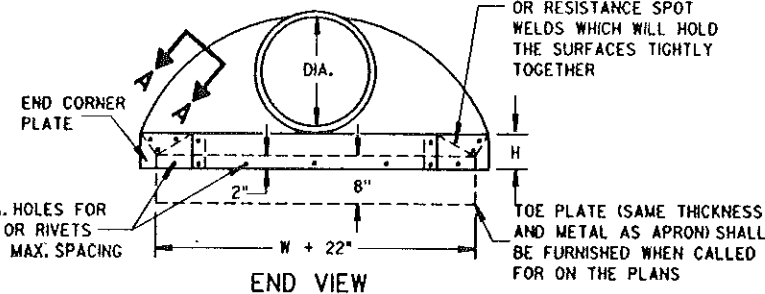
METAL APRON ENDWALLS													
PIPE DIA. (IN.)	MIN. THICK. (inches)		DIMENSIONS (inches)							APPROX. SLOPE	BODY		
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 (1)	L2 (1)	W (±2")				
12	.064	.060	6	6	6	21	12	11 1/2	24	2 1/2 to 1	1 Pc.		
15	.064	.060	7	8	6	26	14	21 1/4	30	2 1/2 to 1	1 Pc.		
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 1	1 Pc.		
21	.064	.060	9	12	6	36	18	29 3/4	42	2 1/2 to 1	1 Pc.		
24	.079	.075	10	13	6	41	18	37 1/4	48	2 1/2 to 1	1 Pc.		
30	.079	.075	12	16	8	51	18	52 1/4	60	2 1/2 to 1	1 Pc.		
36	.109	.105	14	19	9	60	24	59 3/4	72	2 1/2 to 1	2 Pc.		
42	.109	.105	16	22	11	69	24	75 3/8	84	2 1/2 to 1	2 Pc.		
48	.109	.105	18	27	12	78	24	81	90	2 1/2 to 1	3 Pc.		
54	.109	.105	18	30	12	84	30	85 1/2	102	2 1/2 to 1	3 Pc.		
60	.109x	.105x	18	33	12	87	—	—	114	2 to 1	3 Pc.		
66	.109x	.105x	18	36	12	87	—	—	120	2 to 1	3 Pc.		
72	.109x	.105x	18	39	12	87	—	—	126	2 to 1	3 Pc.		
78	.109x	.105x	18	42	12	87	—	—	132	1 1/2 to 1	3 Pc.		
84	.109x	.105x	18	45	12	87	—	—	138	1 1/2 to 1	3 Pc.		
90	.109x	.105x	18	37	12	87	—	—	144	1 1/2 to 1	3 Pc.		
96	.109x	.105x	18	35	12	87	—	—	150	1 1/2 to 1	3 Pc.		

\* EXCEPT CENTER PANEL  
SEE GENERAL NOTES



PLAN VIEW

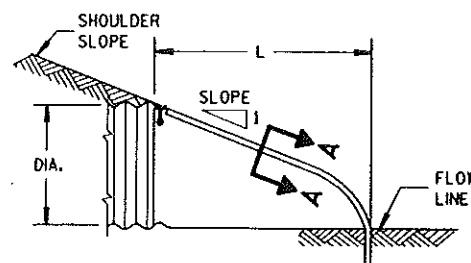
REINFORCED  
EDGE (SEE  
SECTION A-A)



END VIEW

END CORNER PLATES MAY  
BE FASTENED TO APRON  
PROPER BY BOLTS, RIVETS,  
OR RESISTANCE SPOT  
WELDS WHICH WILL HOLD  
THE SURFACES TIGHTLY  
TOGETHER

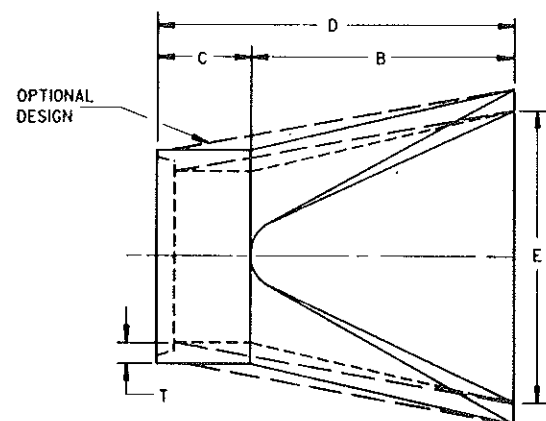
TOE PLATE (SAME THICKNESS  
AND METAL AS APRON) SHALL  
BE FURNISHED WHEN CALLED  
FOR ON THE PLANS



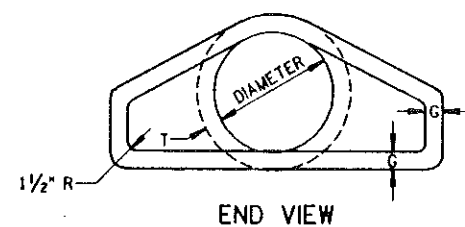
SIDE ELEVATION  
METAL ENDWALLS

REINFORCED CONCRETE APRON ENDWALLS									
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE	
	T	A	B	C	D	E	G		
12	2	4	24	48 <sup>1</sup> / <sub>8</sub>	72 <sup>1</sup> / <sub>8</sub>	24	2	3 to 1	
15	2 <sup>1</sup> / <sub>4</sub>	6	27	46	73	30	2 <sup>1</sup> / <sub>4</sub>	3 to 1	
18	2 <sup>1</sup> / <sub>2</sub>	9	27	46	73	36	2 <sup>1</sup> / <sub>2</sub>	3 to 1	
21	2 <sup>3</sup> / <sub>4</sub>	9	36	37 <sup>1</sup> / <sub>2</sub>	73 <sup>1</sup> / <sub>2</sub>	42	2 <sup>3</sup> / <sub>4</sub>	3 to 1	
24	3	9 <sup>1</sup> / <sub>2</sub>	43 <sup>1</sup> / <sub>2</sub>	30	73 <sup>1</sup> / <sub>2</sub>	48	3	3 to 1	
27	3 <sup>1</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>2</sub>	49 <sup>1</sup> / <sub>2</sub>	24	73 <sup>1</sup> / <sub>2</sub>	54	3 <sup>1</sup> / <sub>4</sub>	3 to 1	
30	3 <sup>1</sup> / <sub>2</sub>	12	54	19 <sup>1</sup> / <sub>4</sub>	73 <sup>1</sup> / <sub>2</sub>	60	3 <sup>1</sup> / <sub>2</sub>	3 to 1	
36	4	15	63	34 <sup>3</sup> / <sub>4</sub>	97 <sup>1</sup> / <sub>4</sub>	72	4	3 to 1	
42	4 <sup>1</sup> / <sub>2</sub>	21	63	35	98	78	4 <sup>1</sup> / <sub>2</sub>	3 to 1	
48	5	24	72	26	98	84	5	3 to 1	
54	5 <sup>1</sup> / <sub>2</sub>	27	65	33 <sup>1</sup> / <sub>4</sub> -35 <sup>**</sup>	98 <sup>1</sup> / <sub>4</sub> -100 <sup>**</sup>	90	5 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub> to 1	
60	6	30-35 <sup>**</sup>	60	39	99	96	5	2 to 1	
66	6 <sup>1</sup> / <sub>2</sub>	33 <sup>**</sup> 24-30 <sup>**</sup>	72-78 <sup>**</sup>	21-27 <sup>**</sup>	99	102	5 <sup>1</sup> / <sub>2</sub>	2 to 1	
72	7	36 <sup>**</sup> 24-36 <sup>**</sup>	78	21	99	108	6	2 to 1	
78	7 <sup>1</sup> / <sub>2</sub>	36 <sup>**</sup> 24-36 <sup>**</sup>	78	21	99	114	6 <sup>1</sup> / <sub>2</sub>	2 to 1	
84	8	36	90 <sup>1</sup> / <sub>2</sub>	21	111 <sup>1</sup> / <sub>2</sub>	120	8 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub> to 1	
90	8 <sup>1</sup> / <sub>2</sub>	41	87 <sup>1</sup> / <sub>2</sub>	24	111 <sup>1</sup> / <sub>2</sub>	132	6 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub> to 1	

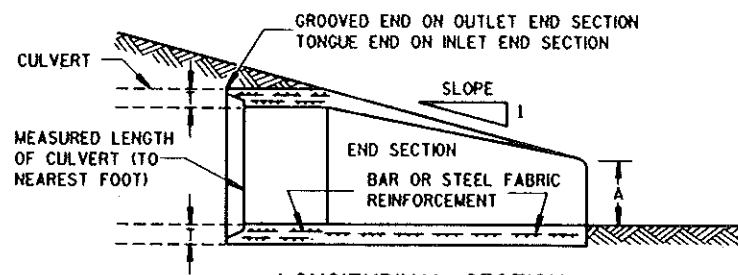
\* MINIMUM  
\*\* MAXIMUM



PLAN

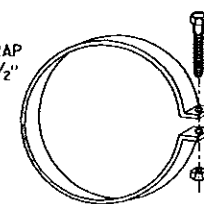


END VIEW



LONGITUDINAL SECTION  
CONCRETE ENDWALLS

1" WIDE, 12 GA. (0.109"  
THICK) GALVANIZED STRAP  
WITH STANDARD 6" X 1/2"  
BAND BOLT AND NUT



ALTERNATE FOR TYPE 1 CONNECTION  
END SECTION CONNECTOR STRAP

THREADED 1/8" DIA. ROD  
AROUND CULVERT & THROUGH  
TANK TYPE CONNECTOR LUG  
OR ALTERNATE CONNECTOR  
STRAP (SEE DETAIL)

MEASURED LENGTH  
OF CULVERT

TYPE 1  
FOR 12" THRU 24" CORR. PIPE

THREADED 1/8" DIA. ROD  
OVER TOP OF APRON, SIDE  
LUGS TO BE RIVETED TO  
APRON

MEASURED LENGTH  
OF CULVERT

TYPE 2  
FOR 30" THRU 96" CORR. PIPE

MEASURED LENGTH  
OF CULVERT

COUPLING BAND  
REQUIRED

CONNECTOR SECTION  
TO BE PAID FOR AS  
PART OF END SECTION

RIVETED OR  
BOLTED

TYPE 3  
FOR 42" THRU 96" CORR. PIPE

DIMPLED OR CORRUGATED  
COUPLING BAND

RIVETED OR BOLTED AT  
DIMPLES (6" C-C FOR  
CORRUGATED BAND)

MEASURED  
LENGTH OF CULVERT

TYPE 5

ALTERNATE FOR:  
ALL SIZES CORRUGATED CIRCULAR PIPE

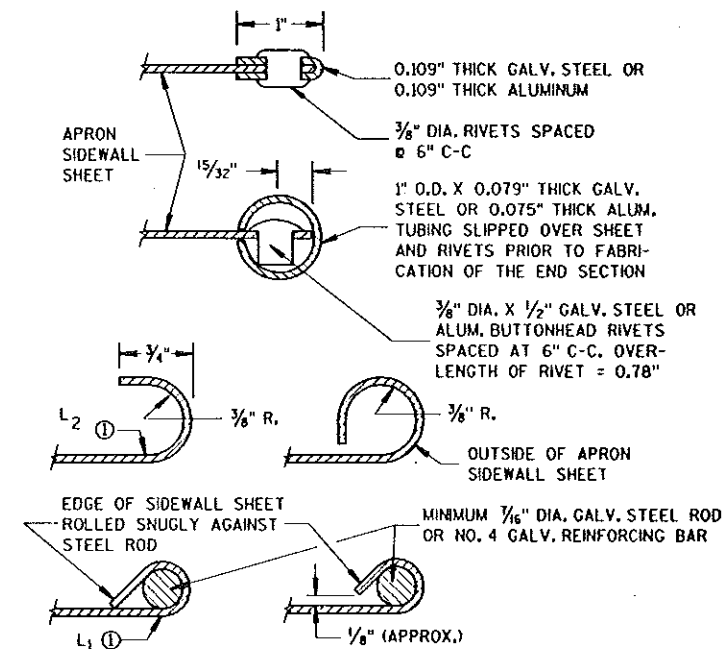
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL,  
AND CORRUGATED BAND FITS INSIDE ENDWALL.  
DIMPLED BAND MAY BE USED WITH HELICALLY  
CORRUGATED PIPE.

FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE  
ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5  
AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL  
CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO  
CIRCUMFERENTIAL CORRUGATIONS AT EACH END  
USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



SECTION A-A

## GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON  
THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE  
STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL  
OR ALUMINUM CULVERT PIPE OR VICE VERSA. GALVANIZED STEEL OR  
ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE  
OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND  
LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL  
THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND  
LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH  
OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE  
PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS  
FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS.  
FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED  
EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH  
GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE  
ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM  
NUTS AND BOLTS FOR ALUMINUM UNITS.

WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT  
TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT  
TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

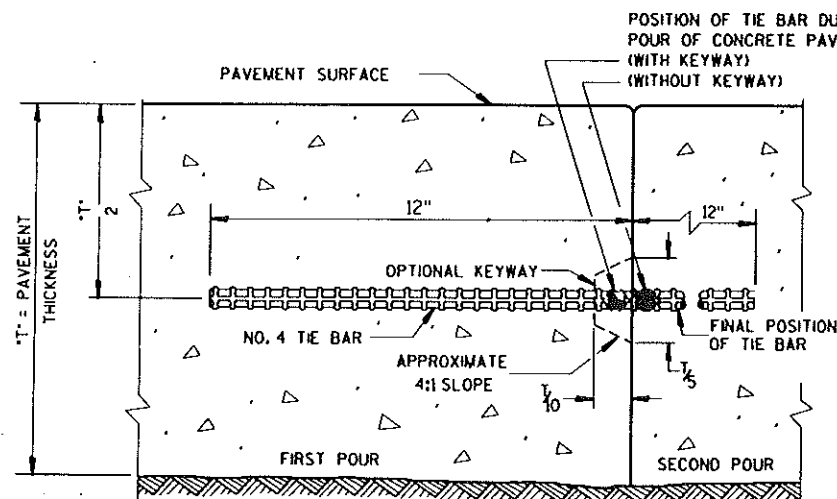
① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED  
INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

## APRON ENDWALLS FOR CULVERT PIPE

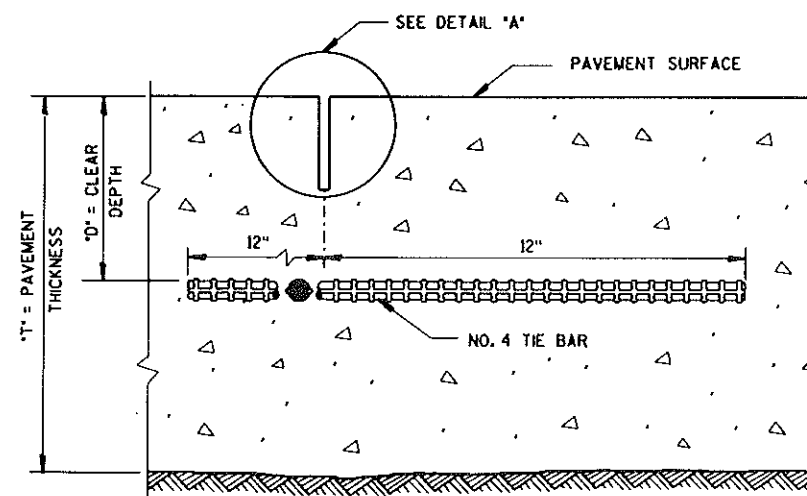
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
12/17/87  
DATE  
FHWA

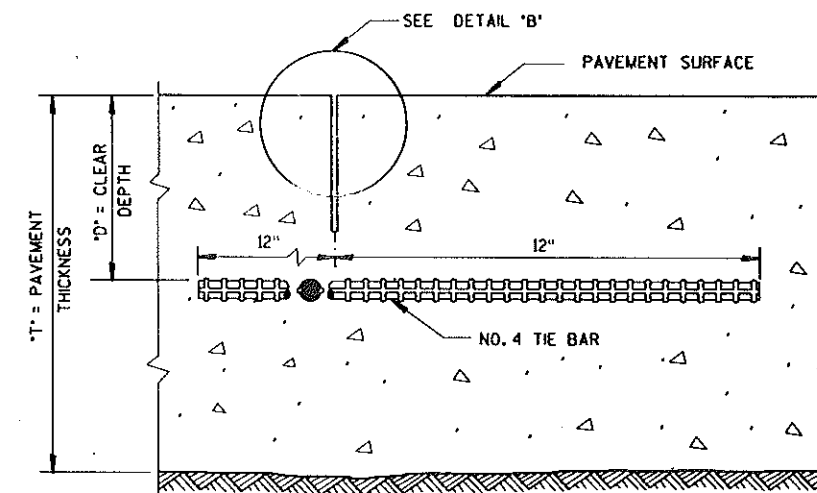
STATE DESIGN ENGINEER FOR HWYS



CONSTRUCTION JOINT



SAWED JOINT



RIBBON JOINT

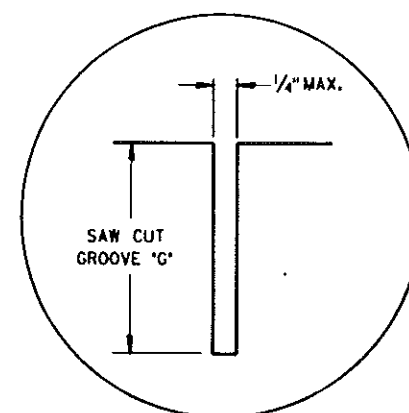
### GENERAL NOTES

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

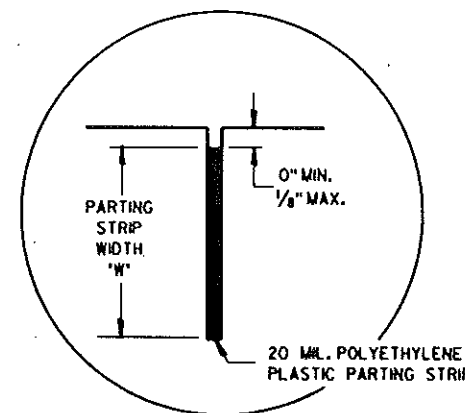
DETAILS "A" AND "B" ARE EQUAL ALTERNATES UNLESS OTHERWISE SPECIFIED IN THE CONTRACT.

LONGITUDINAL JOINTS SHALL NOT BE SEALED OR FILLED.

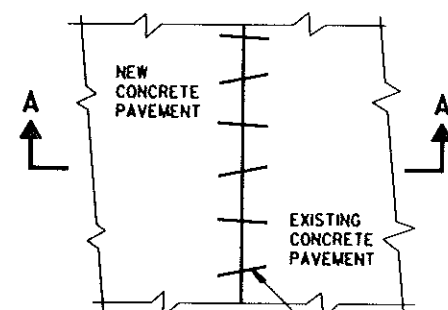
TIE BAR SPACINGS ARE VALID ONLY FOR PAVEMENT WIDTHS IN THE TABLE. FOR WIDER PAVEMENTS, TIED CONCRETE SHOULDERS OR RAMPS, THE TIE BAR SPACING SHALL BE AS SHOWN ON THE PLANS.



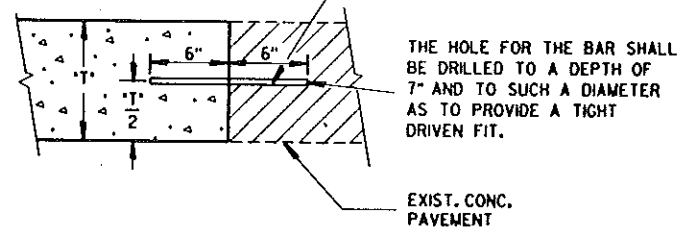
DETAIL 'A'



DETAIL 'B'

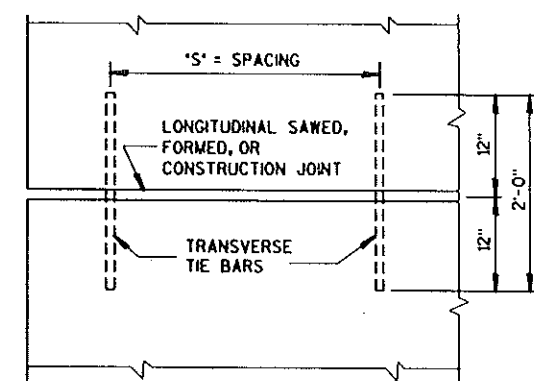


NO. 6 TIE BARS SPACED 3'-0" C-C, INSTALLED ON 6:1 SKEW HORIZONTALLY. DIRECTION OF SKEW ALTERNATING AFTER EVERY ONE OR TWO BARS.



SECTION A-A  
PAVEMENT TIES

PAVEMENT THICKNESS 'T'	CLEAR DEPTH 'D'	SAW CUT GROOVE 'G'	MAXIMUM TIE BAR SPACING "S"		PARTING STRIP WIDTH 'W'
			PAVEMENT WIDTH 24' OR 26'	30'	
6"	3" ± 1/2"	1 1/2"	48"	42"	2"
7"	3 1/4" ± 1"	1 3/4"	45"	36"	2 1/4"
8"	3 3/4" ± 1"	2"	39"	30"	2 1/2"
9"	4 1/4" ± 1"	2 1/4"	33"	27"	3"
10"	4 3/4" ± 1"	2 1/2"	30"	24"	3 1/4"
11"	5 1/4" ± 1"	2 3/4"	27"	21"	3 3/4"
12"	5 3/4" ± 1"	3"	24"	21"	4"



PLAN VIEW  
SHOWING LOCATION OF TIE BARS

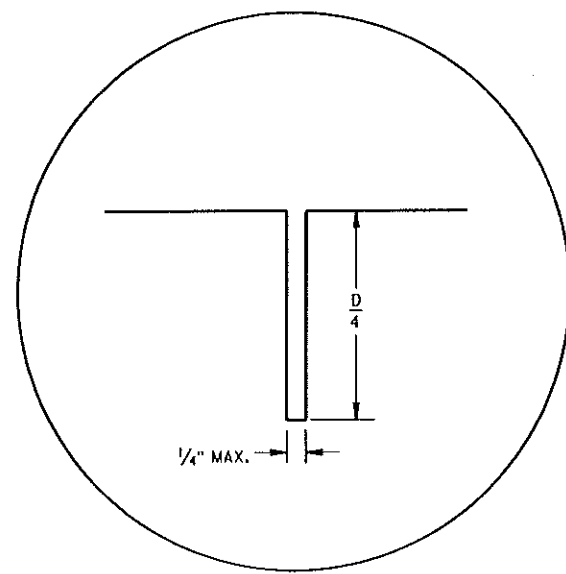
CONCRETE PAVEMENT  
LONGITUDINAL JOINTS  
AND PAVEMENT TIES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

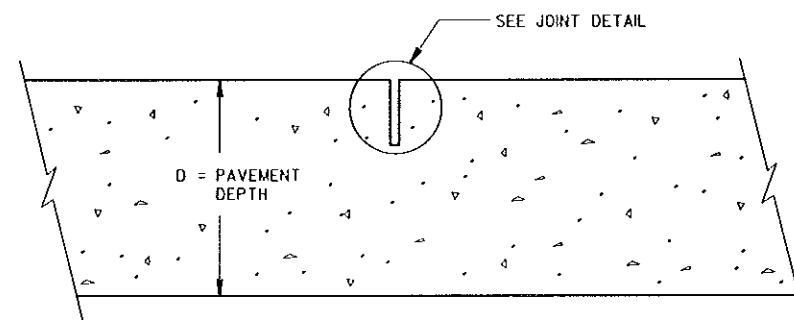
APPROVED  
3/16/92  
DATE

STATE DESIGN ENGINEER FOR HWYS

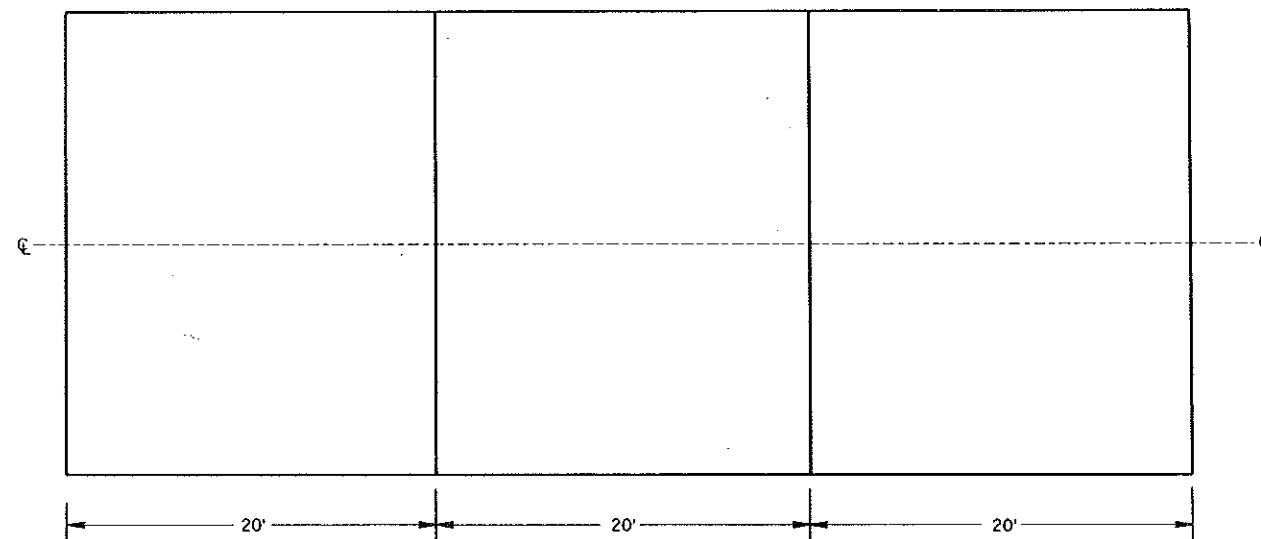
FHWA



JOINT DETAIL



CONTRACTION JOINT



CONTRACTION JOINT LOCATIONS

## GENERAL NOTES

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

### CONTRACTION JOINTS

THE LOCATION AND ORIENTATION OF CONTRACTION JOINTS THRU INTERSECTIONS SHALL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

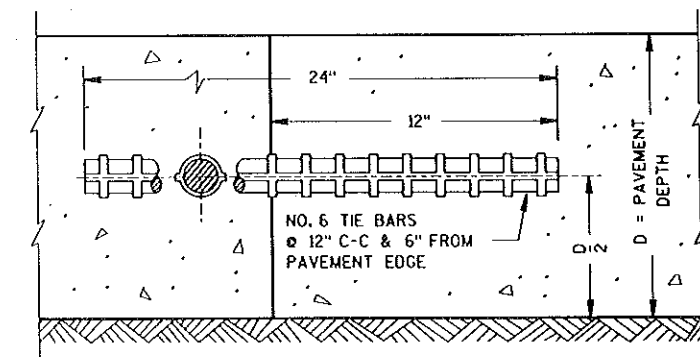
CONTRACTION JOINTS SHALL NOT BE SEALED OR FILLED.

### CONSTRUCTION JOINTS

CONSTRUCTION JOINTS SHALL BE LOCATED A MINIMUM OF 4 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGNED EITHER PARALLEL TO THE CONTRACTION JOINTS OR AT 90° TO THE CENTERLINE.

TIE BARS MAY BE INSERTED THROUGH THE HEADER BOARD AFTER THE CONCRETE HAS BEEN POURED.

TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.4 OF THE STANDARD SPECIFICATIONS.



CONSTRUCTION JOINT

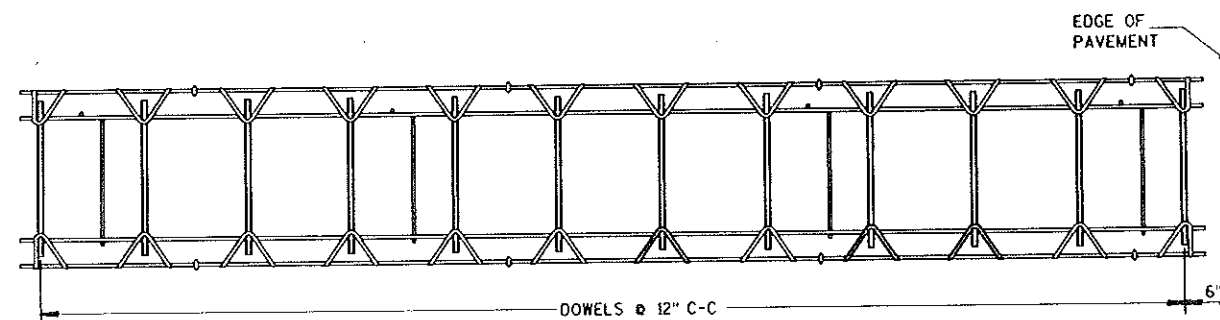
NON-REINFORCED CONCRETE PAVEMENT  
(TRANSVERSE JOINTS SPACED AT 20' NORMAL)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
12/19/92  
DATE

STATE DESIGN ENGINEER FOR HWYS

FHWA



PLAN VIEW



SIDE VIEW

CONTRACTION JOINT DOWEL ASSEMBLY<sup>①</sup>

DOWEL BAR SIZE TABLE

PAVEMENT DEPTH	DOWEL BAR DIAMETER
9" OR LESS	1 1/4"
MORE THAN 9"	1 1/2"

### GENERAL NOTES

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

#### CONTRACTION JOINTS

UNLESS OTHERWISE SPECIFIED OR SHOWN IN THE CONTRACT, CONTRACTION JOINTS MAY BE ORIENTED EITHER NORMAL TO THE CENTERLINE AS SHOWN OR SKEWED 6:1 RIGHT HAND FORWARD. THE LOCATION OF CONTRACTION JOINTS THRU INTERSECTIONS SHALL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

CONTRACTION JOINTS SHALL NOT BE SEALED OR FILLED.

DOWEL BARS SHALL BE INSTALLED PARALLEL TO THE PAVEMENT CENTERLINE AND SURFACE.

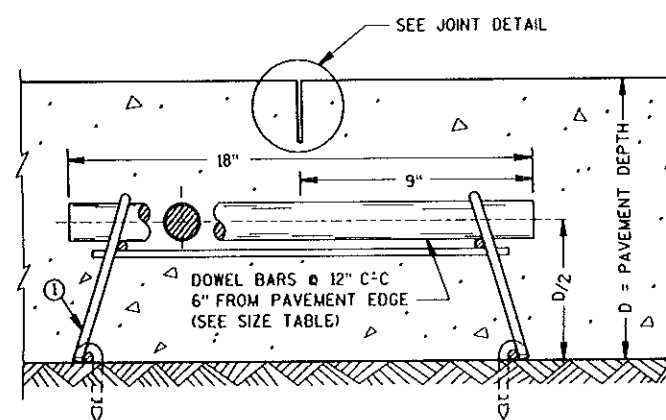
#### CONSTRUCTION JOINTS

CONSTRUCTION JOINTS SHALL BE A MINIMUM OF 4 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGNED EITHER PARALLEL TO CONTRACTION JOINTS OR AT 90° TO THE CENTERLINE.

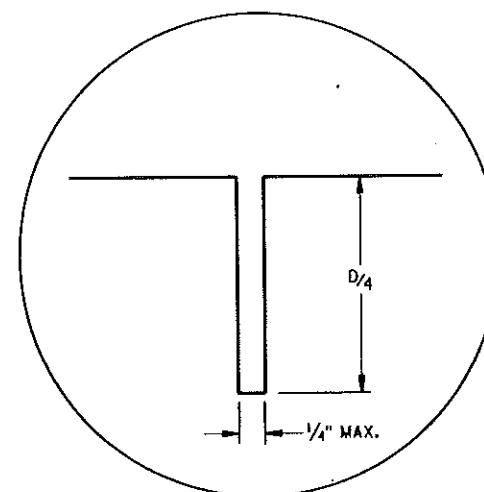
TIE BARS MAY BE INSERTED THROUGH THE HEADER BOARD AFTER THE CONCRETE HAS BEEN POURED.

TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.4 OF THE STANDARD SPECIFICATIONS.

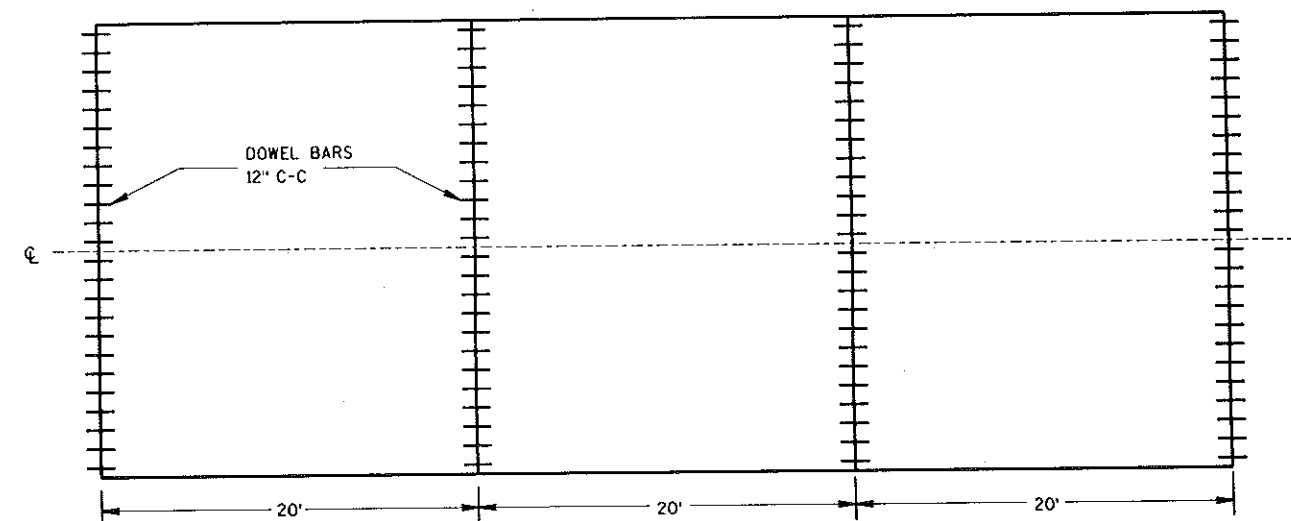
① ALTERNATIVE DESIGNS OF THE DOWEL ASSEMBLY MAY BE USED WHEN APPROVED BY THE ENGINEER. MECHANICAL DOWEL BAR IMPLANTERS MAY BE USED INSTEAD OF DOWEL ASSEMBLIES.



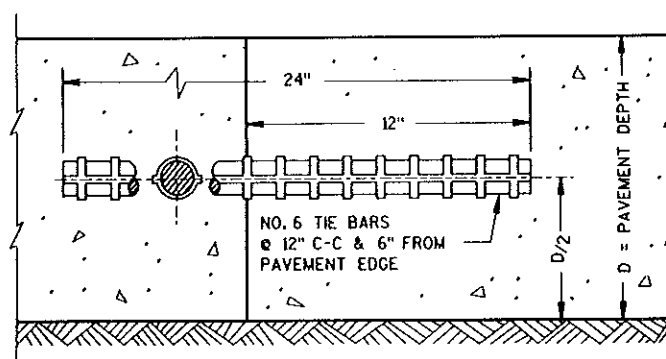
DOWELED CONTRACTION JOINT



JOINT DETAIL



CONTRACTION JOINT LOCATIONS



CONSTRUCTION JOINT

DOWELED NON-REINFORCED  
CONCRETE PAVEMENT  
(TRANSVERSE JOINTS SPACED AT 20' & NORMAL)

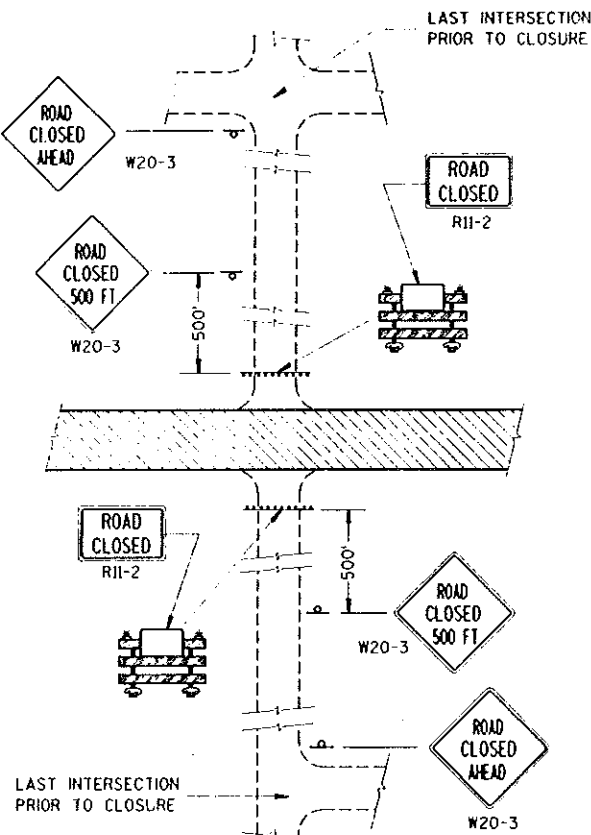
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

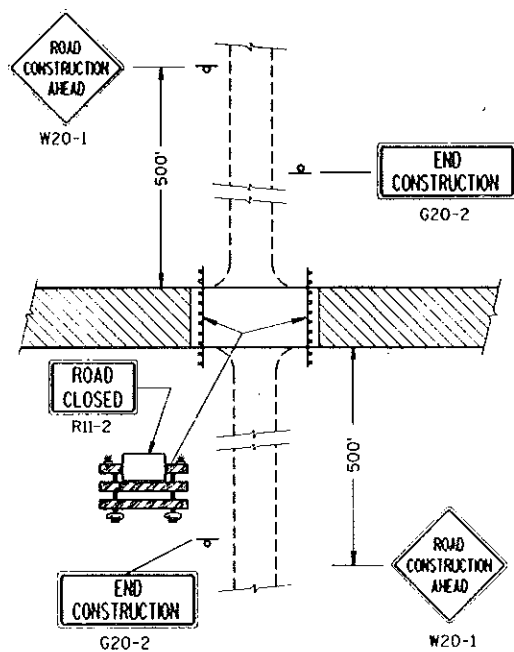
12/17/90  
DATE

FHWA

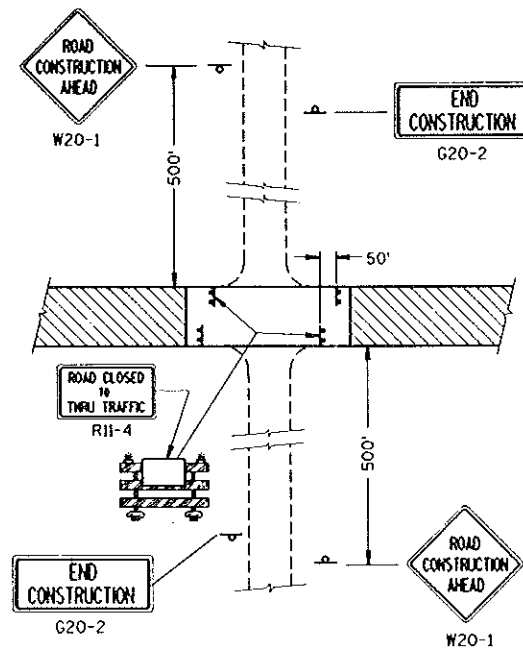
STATE DESIGN ENGINEER FOR HWYS



**DETAIL 1**  
(NO ACCESS TO PROJECT)

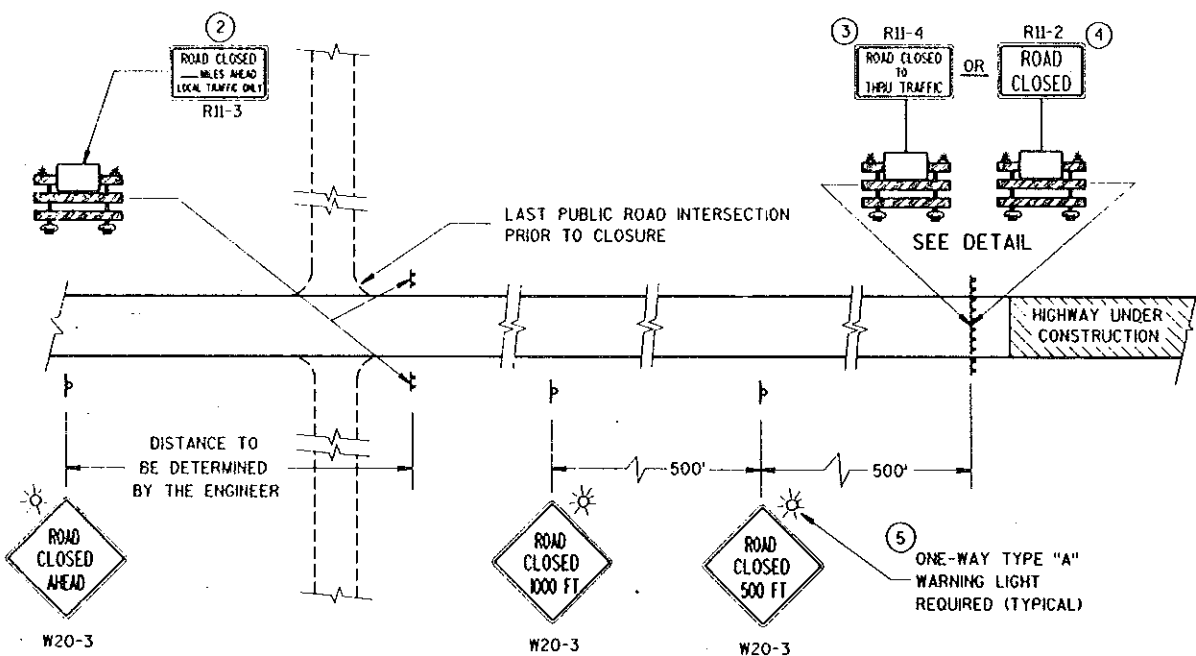


**DETAIL 2**  
(PUBLIC CROSS-TRAFFIC MAINTAINED,  
NO ACCESS TO PROJECT).

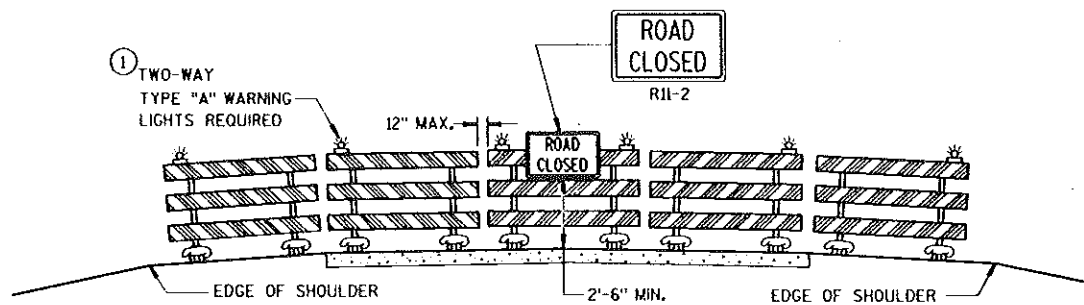


**DETAIL 3**  
(PUBLIC CROSS-TRAFFIC MAINTAINED. CONTRACTOR,  
LOCAL BUSINESS AND RESIDENT ACCESS).

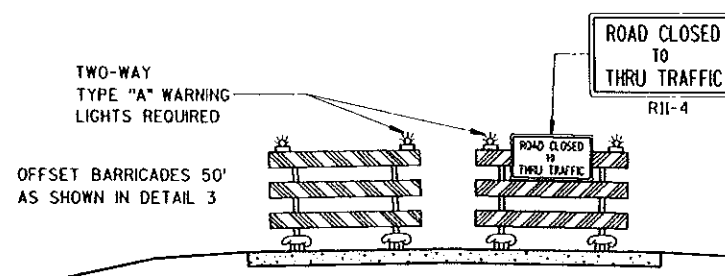
### SIDEROAD CLOSURES



**MAINLINE CLOSURE**



**ROAD CLOSURE BARRICADE DETAIL**



**LANE CLOSURE BARRICADE DETAIL**

### GENERAL NOTES

DETAILS OF TRAFFIC CONTROL DEVICES AND THEIR LOCATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE WISCONSIN MANUAL OF TRAFFIC CONTROL DEVICES, THE PLANS, SPECIFICATIONS AND CONTRACT.

SIGN AND BARRICADE LOCATIONS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER. ANY EXISTING TRAFFIC SIGNS THAT CONFLICT WITH THIS WORK SHALL BE COVERED AS DIRECTED BY THE ENGINEER. ALL "STOP" OR OTHER REGULATORY SIGNS ON THE SIDE ROADS SHALL NOT BE DISTURBED, EXCEPT WHEN NECESSARY TO COMPLETE THE WORK. THE SIGNS MUST THEN BE IMMEDIATELY REESTABLISHED.

ALL TYPE III BARRICADES SHALL HAVE RAILS REFLECTORIZED ON BOTH FACES. STRIPES SHALL BE PROPERLY SLOPED DOWN TOWARD THE TRAFFIC SIDE OR AS SHOWN IN THE ROAD CLOSURE BARRICADE DETAIL FOR FULL ROAD CLOSURES. TYPE "A" LOW INTENSITY FLASHING WARNING LIGHTS SHALL BE VISIBLE ON BOTH SIDES OF THE BARRICADE.

THE ROAD CLOSED SIGN (R11-2), ROAD CLOSED — MILES AHEAD SIGN (R11-3) AND THE ROAD CLOSED TO THRU TRAFFIC SIGN (R11-4) SHALL BE ATTACHED ONLY TO THE TOP RAIL OF THE TYPE III BARRICADE. THE SIGNS SHALL NOT COVER MIDDLE RAIL.

TYPE "H" REFLECTIVE SHEETING SHALL BE USED ON ALL BARRICADES, TYPE I, BAND III, AND ON ALL R11-2, R11-3 AND R11-4 SIGNS.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:

R11-2, "ROAD CLOSED" SIGNS SHALL BE 48" X 30".

R11-3, AND R11-4 SIGNS SHALL BE 60" X 30".

G20-2 SIGNS SHALL BE 60" X 24".

- 1 TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND AT LEAST ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN.
- 2 THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT INTERSECTION.
- 3 FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE LANE CLOSURE BARRICADE DETAIL.
- 4 FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL.
- 5 ONE-WAY LIGHTS SHALL BE PROVIDED ON ALL ADVANCE WARNING SIGNS. THE UNIT SHALL BE POSITIONED SUCH THAT THE LIGHT SOURCE IS OUTSIDE THE SIGN FACE AND AT THE TOP OF THE SIGN.

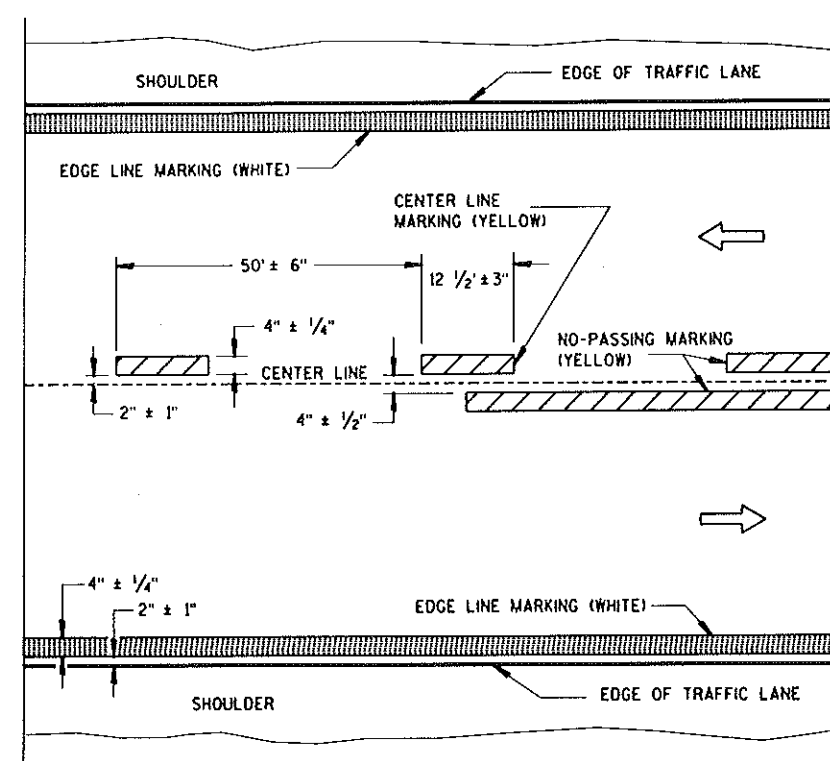
### LEGEND

- POST MOUNTED WARNING SIGN
- TYPE III BARRICADES WITH TYPE "H" REFLECTIVE SHEETING
- TYPE "A" LOW INTENSITY FLASHING WARNING LIGHT (FOR NIGHT USE)
- WORK AREA

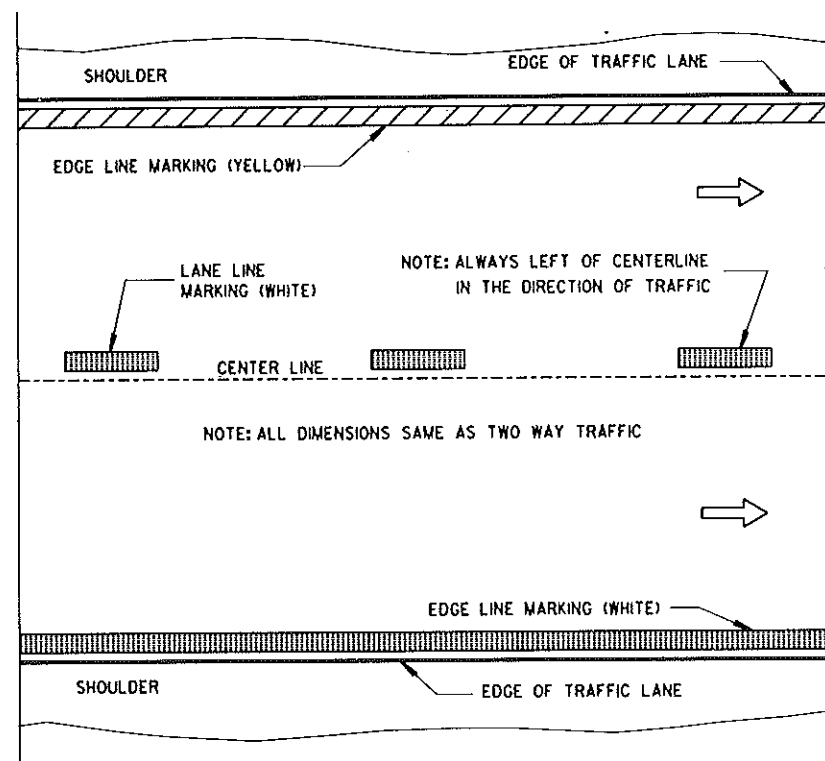
### BARRICADES AND TRAFFIC CONTROL FOR ROAD CLOSURES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
10-31-87  
DATE  
STATE TRAFFIC ENGINEER FOR HWYS  
FHWA



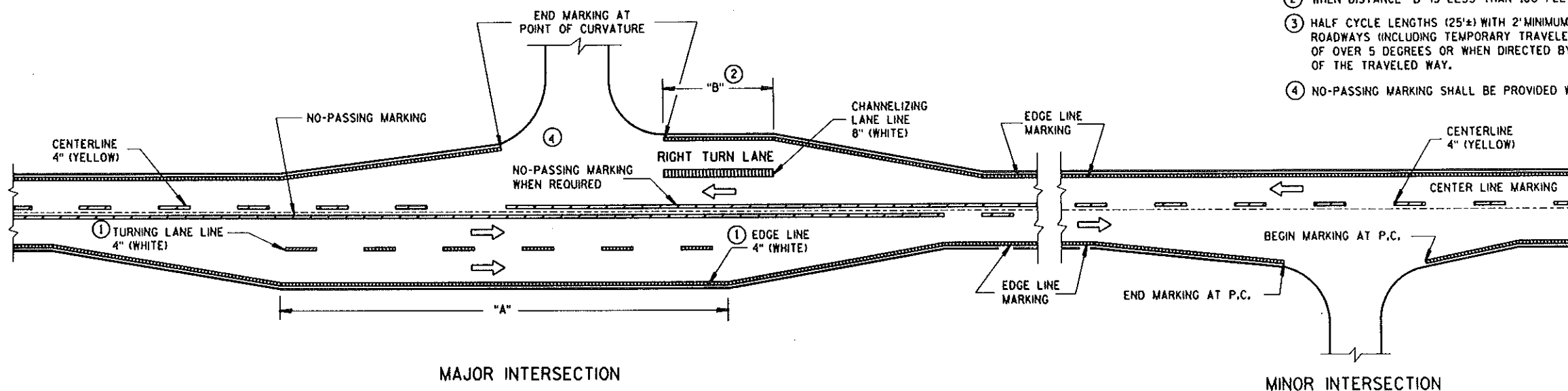
TWO WAY TRAFFIC



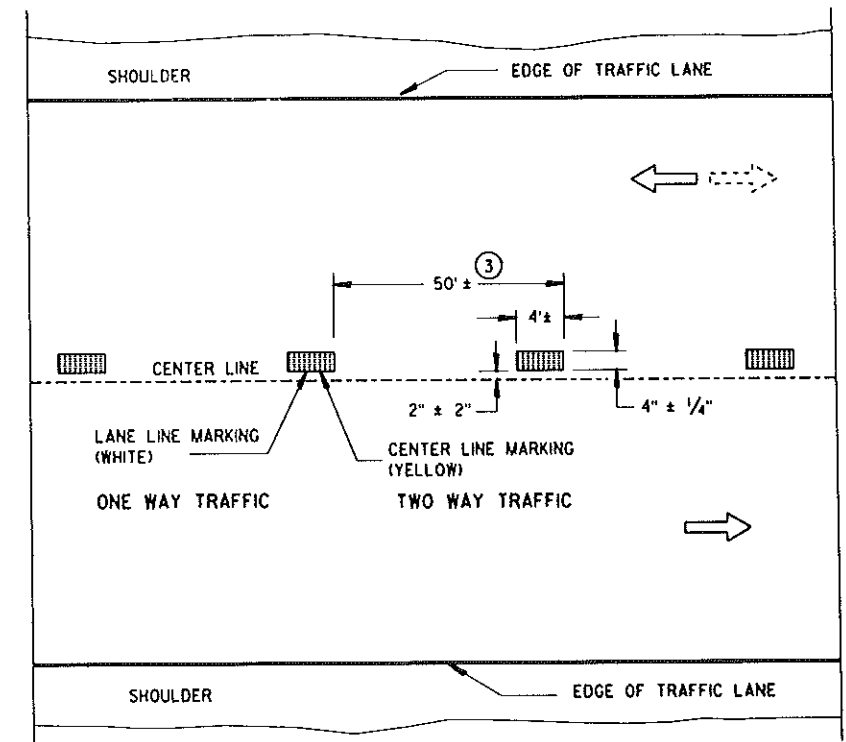
ONE WAY TRAFFIC

### PERMANENT PAVEMENT MARKING (SHOWS CYCLE FOR PERMANENT CENTER LINE MARKING)

NOTE:  
ARROW SYMBOL (→)  
SHOWS DIRECTION OF TRAVEL



### TYPICAL PAVEMENT MARKING FOR RURAL INTERSECTIONS



### TEMPORARY PAVEMENT MARKING (SHOWS CYCLE FOR TEMPORARY CENTER LINE MARKING)

#### GENERAL NOTES

1. DETAILS OF PAVEMENT MARKING NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
2. EDGE LINES SHALL BE OMITTED THROUGH INTERSECTIONS, EDGE LINES SHALL BE CONTINUED THROUGH DRIVEWAYS.
3. WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT TURNING LANE MARKING.
4. WHEN DISTANCE "B" IS LESS THAN 100 FEET, OMIT CHANNELIZING LANE LINE.
5. HALF CYCLE LENGTHS (25'±) WITH 2' MINIMUM STRIPE LENGTHS SHALL BE PROVIDED ON ROADWAYS (INCLUDING TEMPORARY TRAVELED WAYS) WITH REVERSE CURVATURE, CURVATURE OF OVER 5 DEGREES OR WHEN DIRECTED BY THE ENGINEER TO MARK UNUSUAL ALIGNMENT OF THE TRAVELED WAY.
6. NO-PASSING MARKING SHALL BE PROVIDED WHERE SIGHT DISTANCE IS DEFICIENT.

NOTE:  
THIS DRAWING CONSISTS OF UP TO FOUR SHEETS. SHEET 5a MAY BE USED ALONE OR SUPPLEMENTED BY SHEET 5b, SHEET 5c AND/OR SHEET 5d AS APPLICABLE

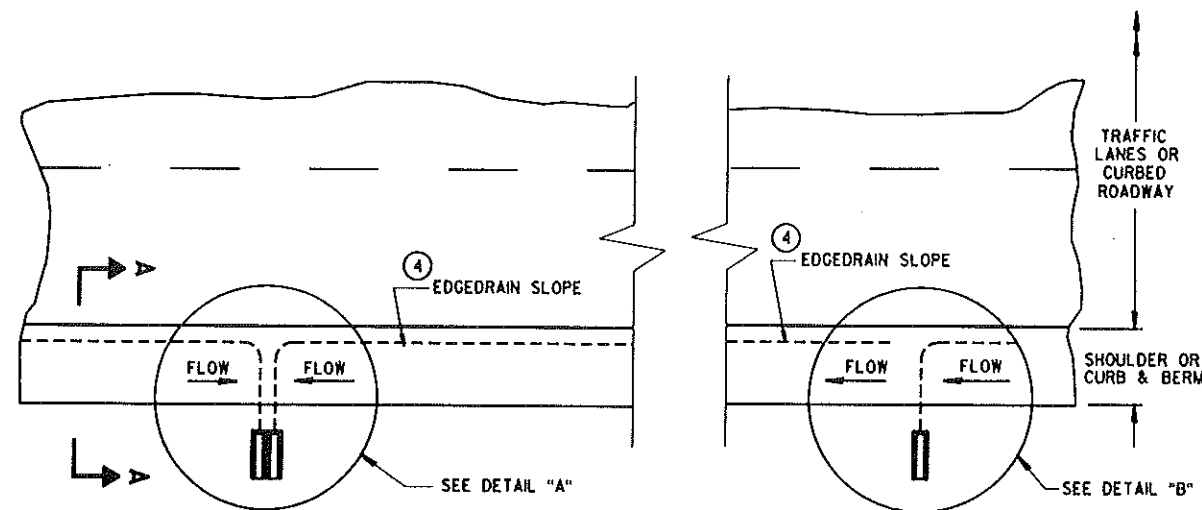
PAVEMENT MARKING  
(MAINLINE & INTERSECTIONS)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

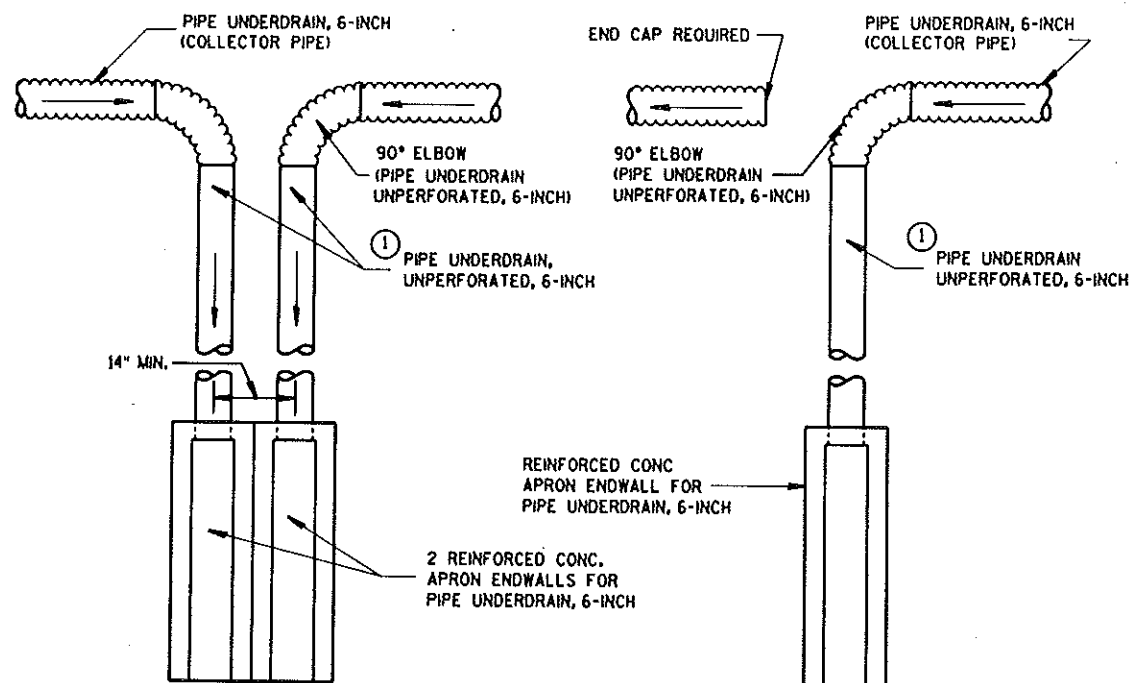
APPROVED  
7/20/93  
DATE  
STATE TRAFFIC ENGINEER FOR HWYS

FHWA

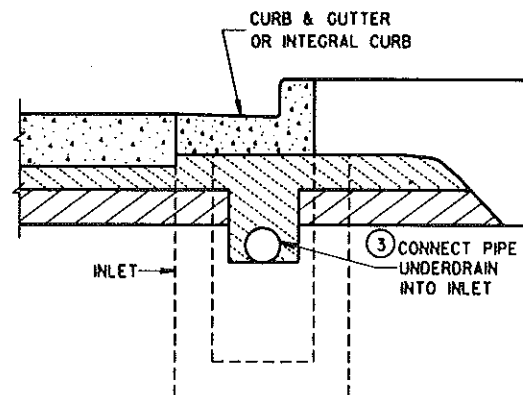




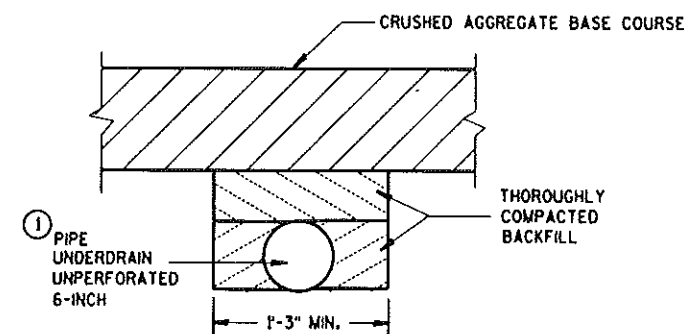
PLAN VIEW  
**ROADWAY WITH SHOULDERS OR CURBS**  
 (EDGEDRAIN OUTLETS TO ROADSIDE) ②



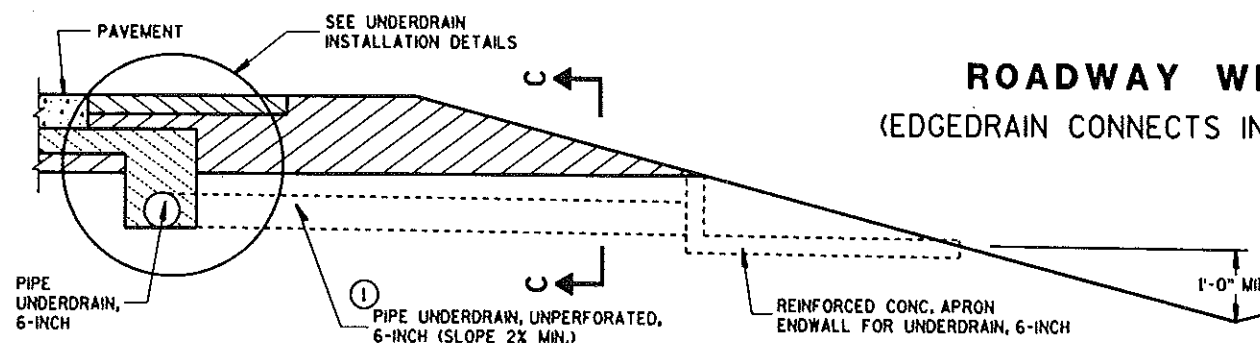
DETAIL "A"  
 TO BE USED AT LOW POINT LOCATIONS  
 DETAIL B  
 TO BE USED AT INTERMEDIATE LOCATIONS  
**TYPICAL DRAIN OUT DETAILS**



SECTION B-B  
**URBAN CROSS SECTION**



SECTION C-C  
**(TRENCH FOR OUTFALL PIPE)**



SECTION A-A  
**RURAL CROSS SECTION**

## GENERAL NOTES

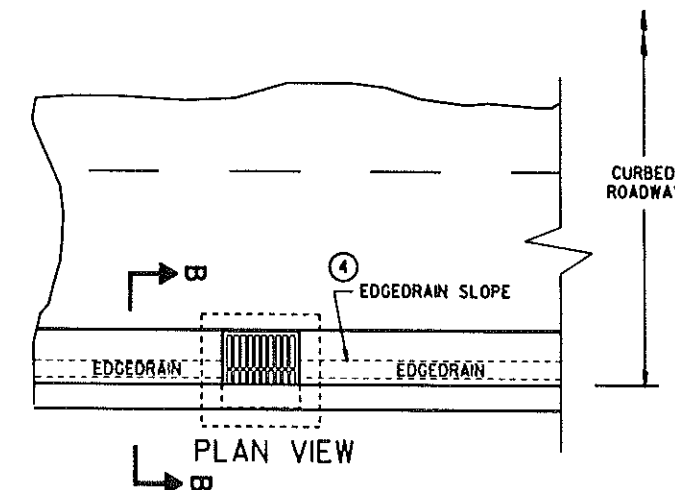
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

- ① UNPERFORATED PIPE UNDERDRAIN AND FITTINGS FURNISHED FOR OUTFALL PIPE SHALL MEET THE REQUIREMENTS OF ONE OF THE FOLLOWING SPECIFICATIONS:

POLYVINYL CHLORIDE (PVC) PLASTIC DRAIN, WASTE, AND VENT PIPE AND FITTINGS, ASTM D 2665, SCHEDULE 40 PVC,

TYPE PSM POLYVINYL CHLORIDE (PVC) SEWER PIPE AND FITTINGS, ASTM D 3034, SDR 23.5 PVC SEWER PIPE.

- ② MAXIMUM SPACING OF EDGEDRAIN OUTLETS SHALL BE 250 FEET UNLESS OTHERWISE SPECIFIED IN THE CONTRACT OR DIRECTED BY THE ENGINEER.  
 ③ EDGEDRAIN SHALL BE CONNECTED TO INLETS REGARDLESS OF FLOW DIRECTION FOR DRAINAGE AND MAINTENANCE ACCESS.  
 ④ EDGEDRAIN SHALL BE LAID PARALLEL TO THE GRADE OF ROADWAY.

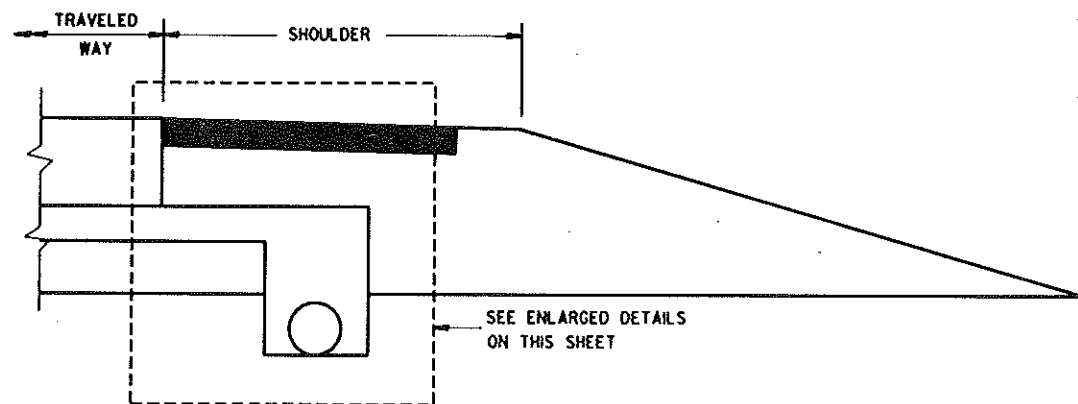


PLAN VIEW  
**ROADWAY WITH CURBS**  
 (EDGEDRAIN CONNECTS INTO INLET STRUCTURE)

NOTE:  
 SDD 8F6-X AND SDD 8D15-1b or SDD 8D15-1c ARE  
 REQUIRED WITH THIS DRAWING IN CONTRACT PLANS.

**EDGEDRAIN OUTLET DETAILS**

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION



**RURAL CROSS SECTION**

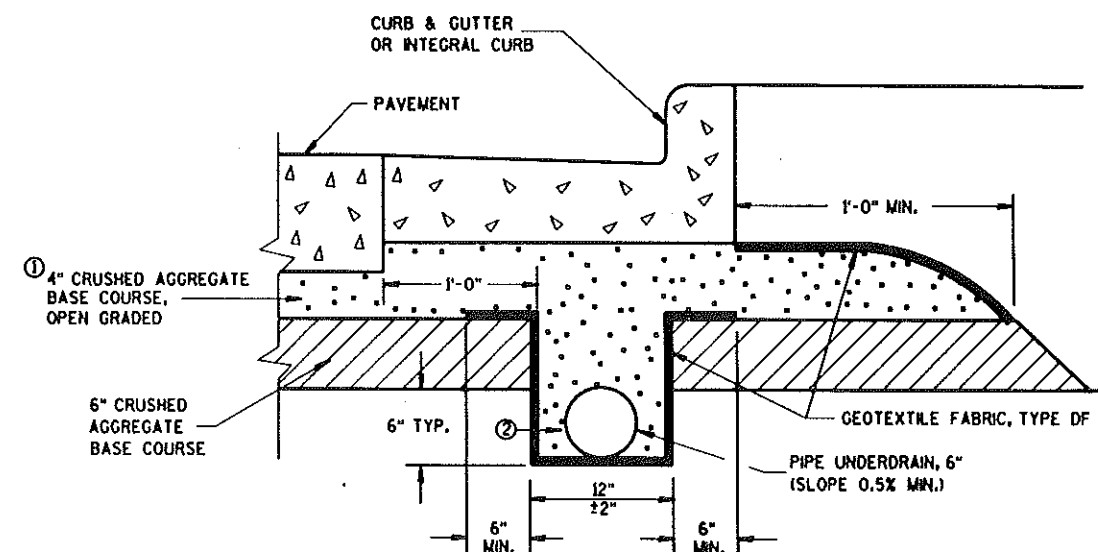
## NOTES

THE DIMENSIONS SHOWN ON THE TYPICAL CROSS SECTIONS WILL GOVERN IN THE EVENT THERE IS A CONFLICT WITH THE DETAILS SHOWN ON THIS DRAWING.

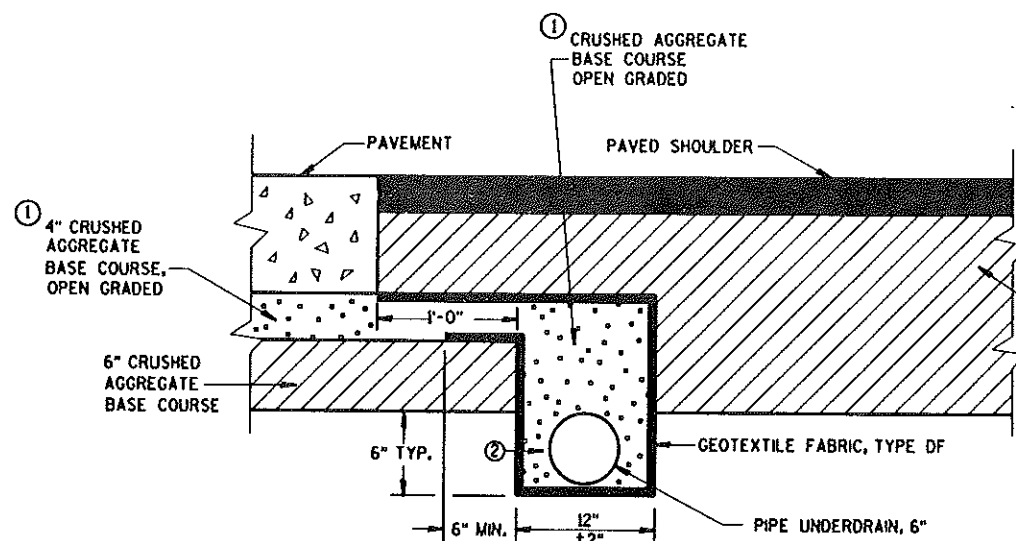
PIPE UNDERDRAIN SHALL BE LAID PARALLEL TO THE GRADE OF THE ROADWAY.

① THE GRADATION OF THE OPEN GRADED BASE COURSE SHALL BE EITHER NO. 1 OR NO. 2 AS SPECIFIED ELSEWHERE IN THE CONTRACT.

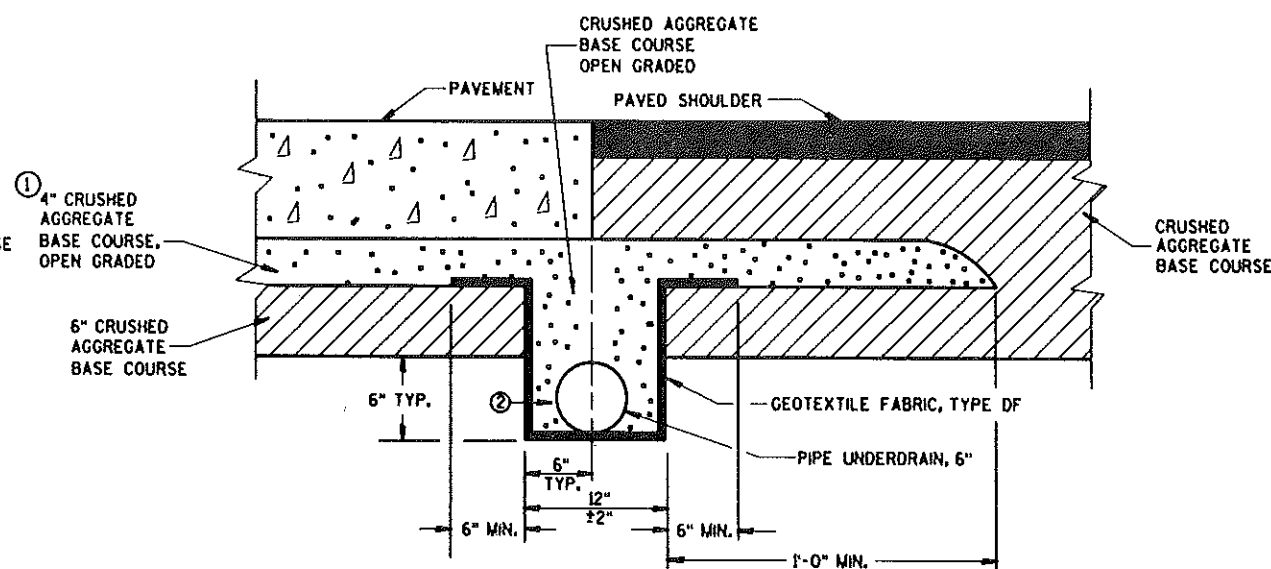
② TRENCH BACKFILL WILL BE PAID FOR AS CRUSHED AGGREGATE BASE COURSE, OPEN GRADED NO. 1 OR NO. 2 AS SPECIFIED.



**EDGEDRAIN IN URBAN ROADWAY**



**POST PAVING INSTALLATION**  
(QUANTITIES ARE BASED ON THIS DETAIL)



**PRE-PAVING INSTALLATION ALTERNATIVE**

**EDGEDRAIN IN RURAL ROADWAY**

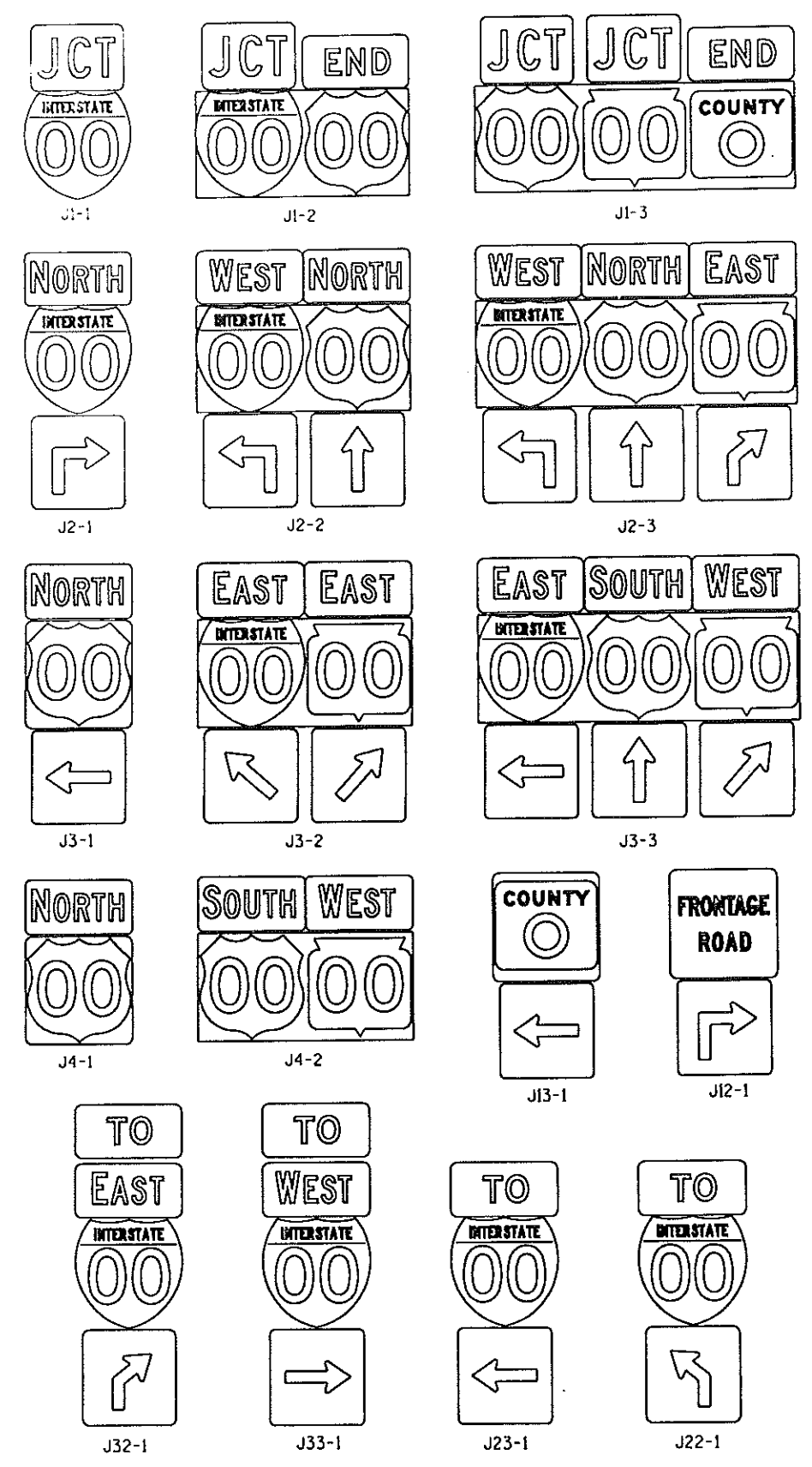
NOTE:  
SDD 8D15-1a IS REQUIRED WITH THIS  
DRAWING IN CONTRACT PLANS.

**EDGEDRAIN AND CRUSHED  
AGGREGATE BASE COURSE,  
OPEN GRADED NO. 1 OR NO. 2**

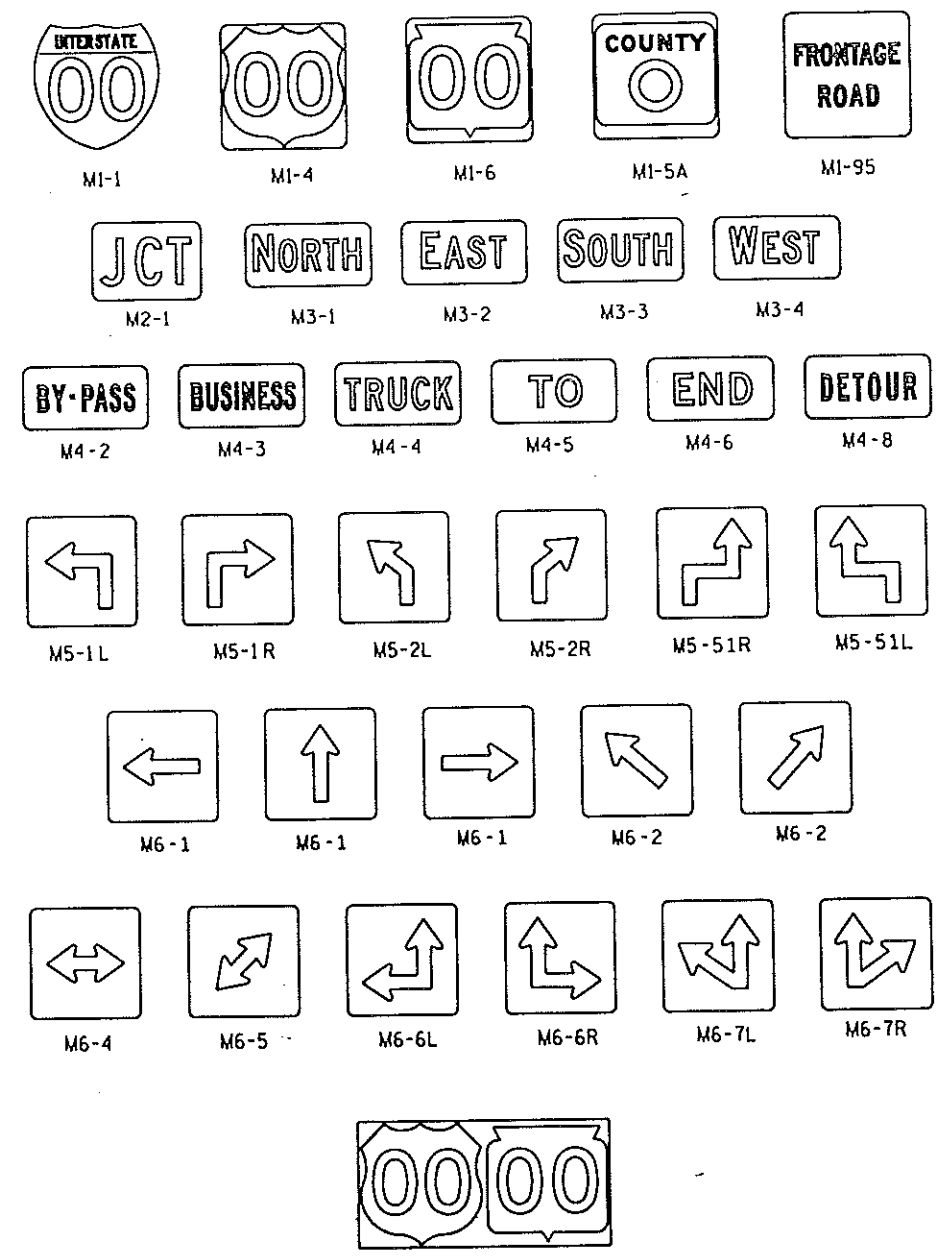
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
12/17/93 *Roy A. Thompson*  
DATE CHIEF METHODS DEVELOPMENT ENGINEER  
FHWA

# TYPICAL ASSEMBLIES



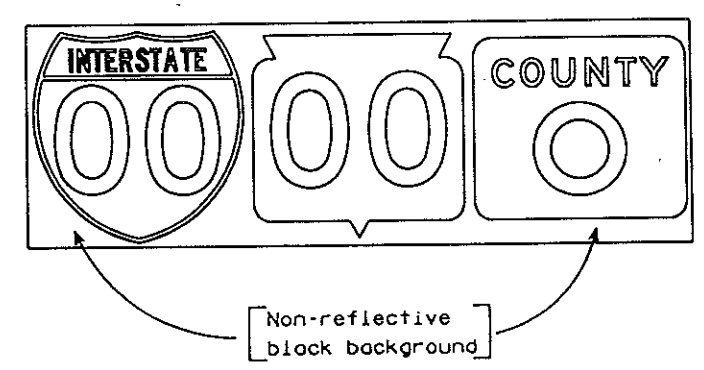
# INDIVIDUAL COMPONENTS OF ASSEMBLIES



## GENERAL NOTES

1. All components within any individual assembly shall be the same "size". The following table illustrates that situation:
2. For any assembly containing two or more route markers, the route markers SHALL be placed on a single PLYWOOD panel. All other materials within the assembly can be either plywood or aluminum.
3. Certain marker heads require the component pieces to be the same color. As an example, all the componets used with an M1-1 marker shall be blue.

SIZE	M1'S	M2	M3'S & M4'S	M5'S & M6'S
2	24 X 24	21 X 15	24 X 12	21 X 21
3,4-5	36 X 36	30 X 21	30 X 15	30 X 30

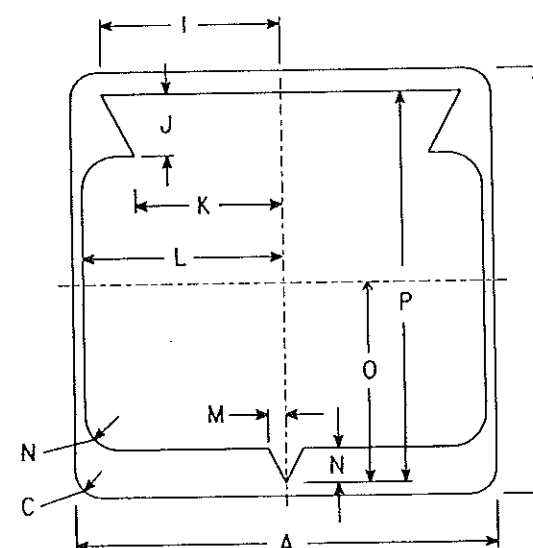
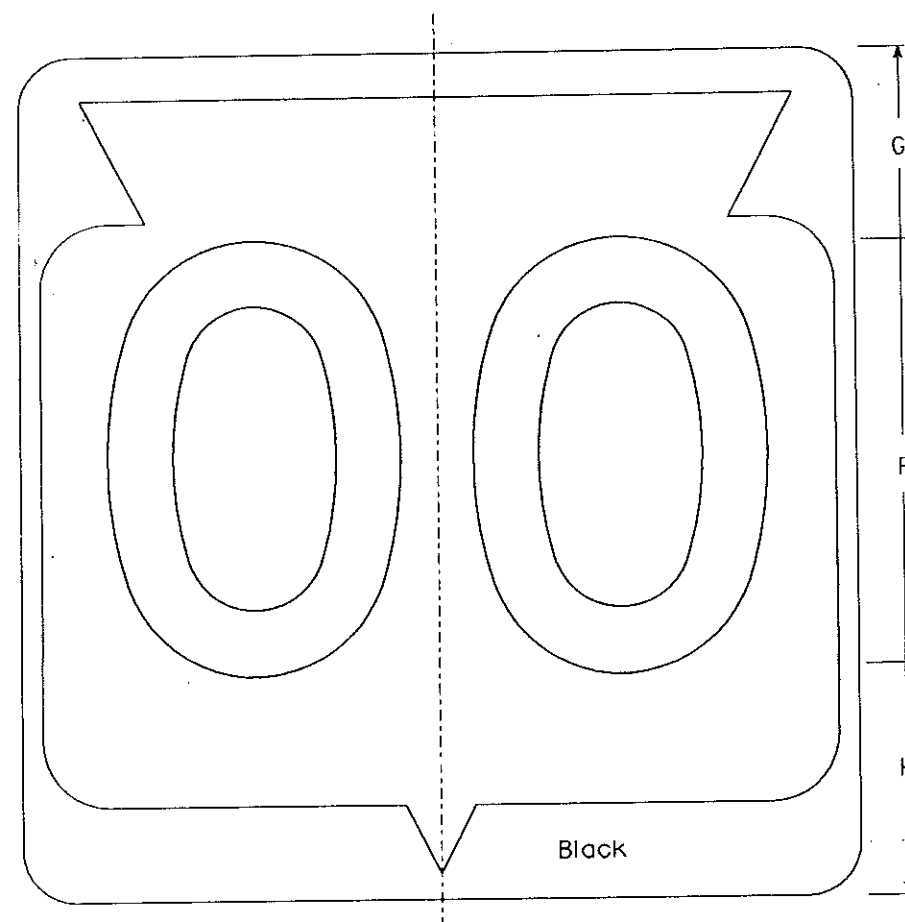


DATE DRAWN 4-19-93	DATE REDRAWN
DATE REVISED	
ROUTE MARKERS & COMPONENTS IN TYPICAL ASSEMBLIES	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Michael J. Busch</i> State Traffic Engineer
DATE 5/5/93	PLATE NO. A2-14

STATE PROJECT NUMBER	SHEET NO.

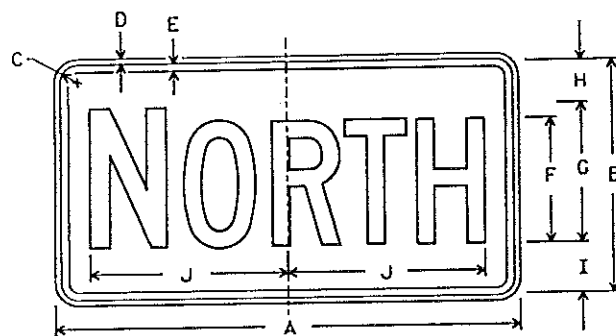
# NOTES

1. Sign is Type II - Reflective - reference WIS DOT Standard Specification for ROAD and BRIDGE CONSTRUCTION latest edition.
2. Color:  
Background - White  
Message - Black
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. Routes having one number - Series "E"  
Routes having two numbers - Series "D"  
or it can be reduced to Series "C" or to the next smaller height commonly available to fit the space available.
5. Substitute appropriate numerals & adjust spacing to achieve proper balance.

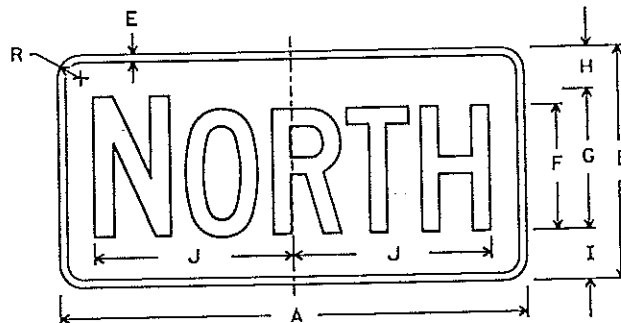


	SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
Standard	2	24		1 1/2			12	5 1/2	6 1/2	10 1/4	2 1/2	8 7/8	11 1/2	1	1 7/8	11 1/4	21 7/8											4.0
Oversize	3																											
Expway	4	36		2 1/4			18	8 1/4	9 3/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0
Freeway	5	36		2 1/4			18	8 1/4	9 3/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0

DATE DRAWN 8-29-88	DATE REDRAWN
DATE REVISED	
STATE ROUTE MARKER M1-6 FOR ASSEMBLIES	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>[Signature]</i> State Traffic Engineer
DATE 10-3-88	PLATE NO. M1-6.5



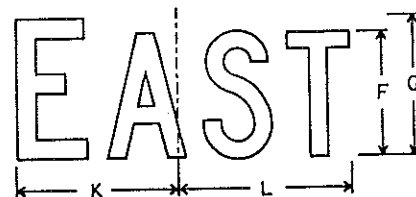
M3-1  
MK3-1  
M03-1



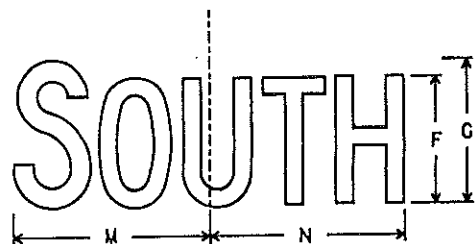
MB3-1  
MG3-1  
MM3-1\*  
MN3-1



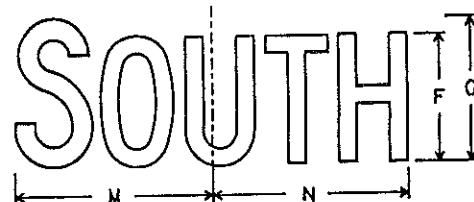
M3-2  
MK3-2  
M03-2



MB3-2  
MG3-2  
MM3-2\*  
MN3-2



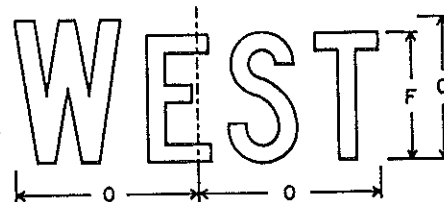
M3-3  
MK3-3  
M03-3



MB3-3  
MG3-3  
MM3-3\*  
MN3-3



M3-4  
MK3-4  
M03-4



MB3-4  
MG3-4  
MM3-4\*  
MN3-4

NOTES

- Signs are Type II - Reflective - reference WIS DOT Standard Specification for ROAD and BRIDGE CONSTRUCTION latest edition
- Color:  
Background - See note 5  
Message - See note 5
- Message Series - C
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- M3-1 thru M3-4 Background - Reflective white  
Message - Black  
MB3-1 thru MB3-4 Background - Reflective blue  
Message - Reflective white  
MG3-1 thru MG3-4 Background - Reflective green  
Message - Reflective white  
MK3-1 thru MK3-4 Background - Non-Reflective green  
Message - Non-Reflective white  
MM3-1 thru MM3-4 Background - Reflective white  
Message - Reflective green  
MN3-1 thru MN3-4 Background - Reflective brown  
Message - Reflective white  
M03-1 thru M03-4 Background - Reflective Orange  
Message - Black
- Border shall be omitted on MM series.
- Note the first letter of each direction is larger than the remainder of the message.

\* See Note 6

Metric equivalent  
for this sign is:

SIZE	
1	
2	600mm x 300mm
3	750mm x 375mm
4	750mm x 375mm
5	750mm x 375mm

750mm x 375mm																											
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
2	24	12	1 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>2</sub>	6	7	2 <sup>1</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>4</sub>	7 <sup>7</sup> / <sub>8</sub>	8 <sup>3</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>4</sub>	9 <sup>3</sup> / <sub>4</sub>	8 <sup>3</sup> / <sub>4</sub>			1 <sup>1</sup> / <sub>2</sub>									2.00
3	30	15	1 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>2</sub>	8	9	2 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>4</sub>	12 <sup>3</sup> / <sub>4</sub>	10 <sup>3</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>8</sub>	12 <sup>5</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>2</sub>	11 <sup>5</sup> / <sub>8</sub>			1 <sup>1</sup> / <sub>2</sub>									3.13
4	30	15	1 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>2</sub>	8	9	2 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>4</sub>	12 <sup>3</sup> / <sub>4</sub>	10 <sup>3</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>8</sub>	12 <sup>5</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>2</sub>	11 <sup>5</sup> / <sub>8</sub>			1 <sup>1</sup> / <sub>2</sub>									3.13
5	30	15	1 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>2</sub>	8	9	2 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>4</sub>	12 <sup>3</sup> / <sub>4</sub>	10 <sup>3</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>8</sub>	12 <sup>5</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>2</sub>	11 <sup>5</sup> / <sub>8</sub>			1 <sup>1</sup> / <sub>2</sub>									3.13

STANDARD SIGNS  
M3-1 thru M3-4  
SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED  
DATE 3/25/94  
State Traffic Engineer  
PLATE NO. M3-1.6

PROJECT L.D.	SHEET NUMBER	TOTAL SHEETS
PROJECT DESIGNATION		

NOTES:

- Sign is Type II
- Color:
 

Background —
 

Message —
 

Face Material —

 See NOTE 5
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- M4-5 and M4-6:
 

Background — Reflectorized White
 

Message — Black
 

Face Material — Reflective Sheeting

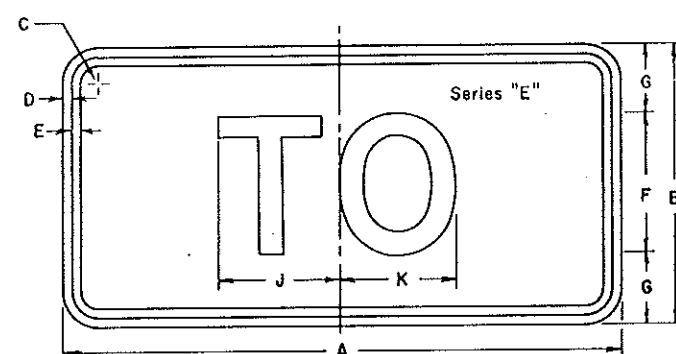
MK4-5 and MK4-6:
 

Background — Non-reflective Green
 

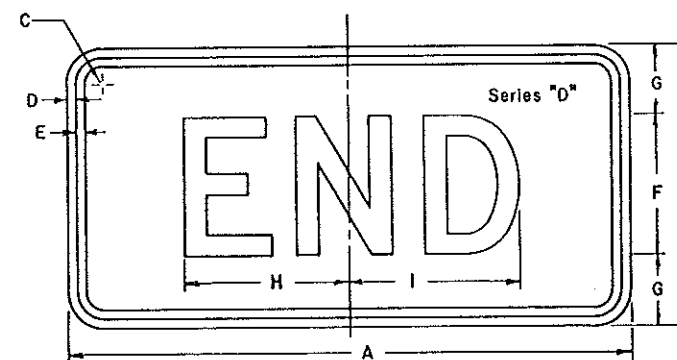
Message — Non-reflective White
 

Face Material — Paint

Drawing may be scaled for standard size only.



M 4 - 5



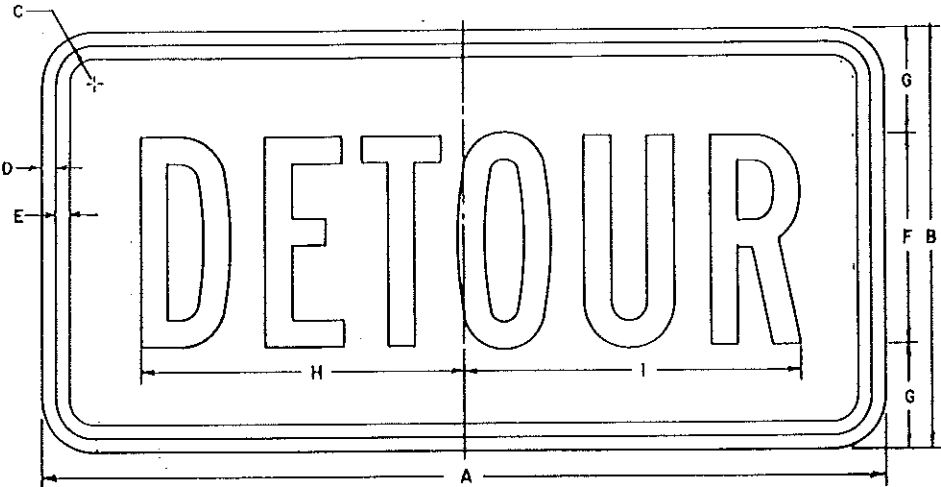
M 4 - 6  
MK 4 - 6

SIZE	CODE SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Minlimum	1	24	12	1 1/8	3/8	3/8	6	3	7	7 1/4	5 3/16	5															
Standard	2	24	12	1 1/8	3/8	3/8	6	3	7	7 1/4	5 3/16	5															
Oversize	3	30	15	1 1/8	3/8	1/2	8	3 1/2	9 5/16	9 5/32	6 21/32	6 21/32															
Exp-way	4	30	15	1 1/8	3/8	1/2	8	3 1/2	9 5/16	9 5/32	6 21/32	6 21/32															
Freeway	5	24	12	1 1/8	3/8	3/8	6	3	7	7 1/4	5 3/16	5															
		AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ
Minimum	1																										
Standard	2																										
Oversize	3																										
Exp-way	4																										
Freeway	5																										

Date Drawn — 12-15-64	Date Redrawn — 2-23-72	cd
Date Revised	1-13-72	
	10-12-72	
STANDARD SIGN		
M4-5, M4-6		
Old Codes M2-52 — M7-1		
WISCONSIN DIVISION OF HIGHWAYS		
APPROVED	<i>S. E. Hicks</i>	
	STATE HIGHWAY ENGINEER	
DATE	9/18/72	PLATE NO. M4-5.5
Replaces in part Old Plate M2-1.2		

NOTES:

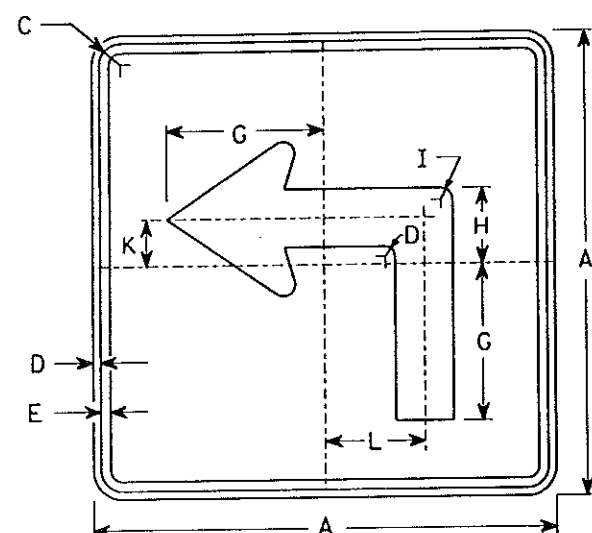
- 1. Sign is Type II
- 2. Color:
  - Background — ReflectORIZED Orange
  - Message — Black
- 3. Face Material — Reflective Sheeting
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 5. Letters Series "B"
- 6. Drawing may be scaled for standard size only.



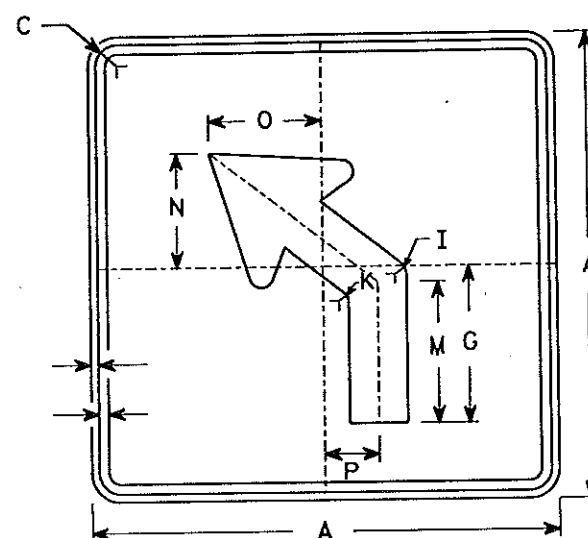
M4-8

SIZE	CODE SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Minimum	1																										
Standard	2	24	12	1 1/8	3/8	3/8	6	3	9 3/16	9 9/16																	
Oversize	3	30	15	1 1/8	3/8	1 1/2	8	3 1/2	12 1/4	12 3/4																	
Exp-way	4																										
Freeway	5																										
		AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ
Minimum	1																										
Standard	2																										
Oversize	3																										
Exp-way	4																										
Freeway	5																										

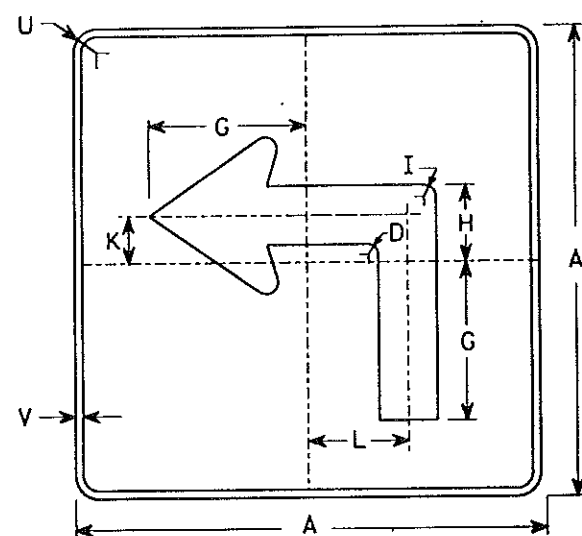
Date Drawn — 10-15-62	Date Redrawn — 8-9-72
Date Revised — 9-27-72	
STANDARD SIGN	
M4-8	
OLD CODE M5-6	
WISCONSIN DIVISION OF HIGHWAYS	
APPROVED	<i>S. C. Hoke</i> STATE HIGHWAY ENGINEER
DATE 9/18/12	PLATE NO. M4-8.2
REPLACES OLD PLATE M	



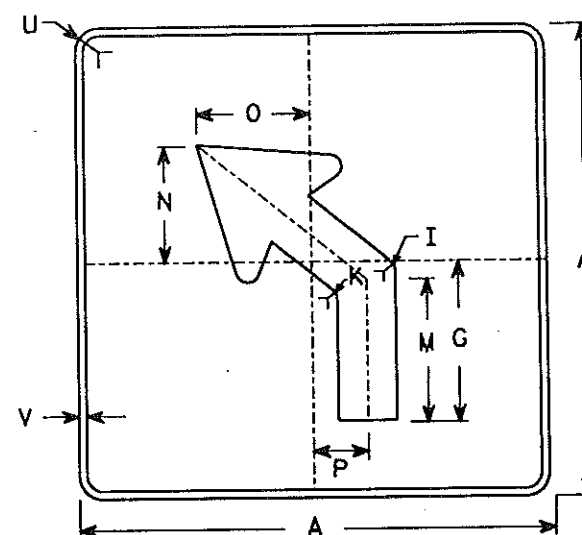
M5-1L  
MK5-1L  
MM5-1L (See Note 7)  
M05-1L



M5-2L  
MK5-2L  
MM5-2L (See Note 7)  
M05-2L



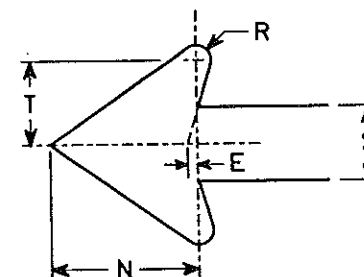
MB5-1L  
MG5-1L  
MN5-1L  
MR5-1L



MB5-2L  
MG5-2L  
MN5-2L  
MR5-2L

## NOTES

- Signs are Type II - Reflective - reference WIS DOT Standard Specification for ROAD and BRIDGE CONSTRUCTION latest edition
- Color:  
Background - See note 4  
Message - See note 4
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- M5-1 and M5-2 Background - Reflective white  
Message - Black  
MB5-1 and MB5-2 Background - Reflective blue  
Message - Reflective white  
MG5-1 and MG5-2 Background - Reflective green  
Message - Reflective white  
MK5-1 and MK5-2 Background - Non-Reflective green  
Message - Non-Reflective white  
MM5-1 and MM5-2 Background - Reflective white  
Message - Reflective green  
MN5-1 and MN5-2 Background - Reflective brown  
Message - Reflective white  
M05-1 and M05-2 Background - Reflective orange  
Message - Black  
MR5-1 and MR5-2 Background - Non-Reflective brown  
Message - Non-Reflective yellow
- M5-1R same as M5-1L except arrow points right.
- M5-2R same as M5-2L except arrow tilts right.
- Border shall be omitted on MM series.



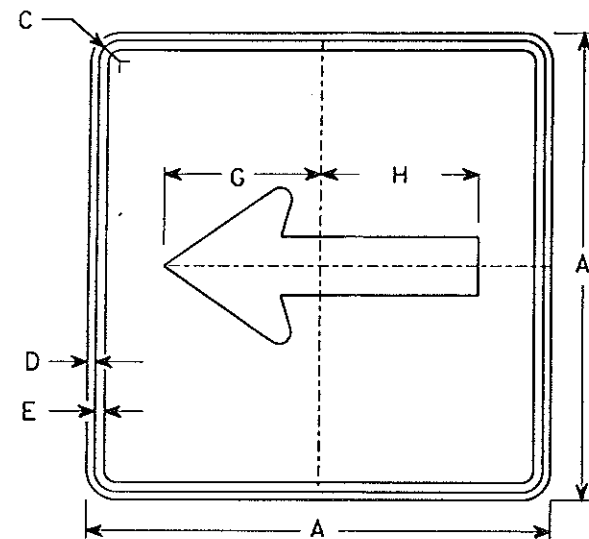
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
2	21		1 1/8	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3	1 1/2	1/2					3.06
3	21		1 1/8	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3	1 1/2	1/2					3.06
4	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25
5	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25

DATE DRAWN 2-1-93 DATE REDRAWN \_\_\_\_\_  
DATE REVISED \_\_\_\_\_

STANDARD SIGNS  
M5-1 & M5-2  
SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *John R. Busch*  
State Traffic Engineer  
DATE 2/12/93 PLATE NO. M5-1.3

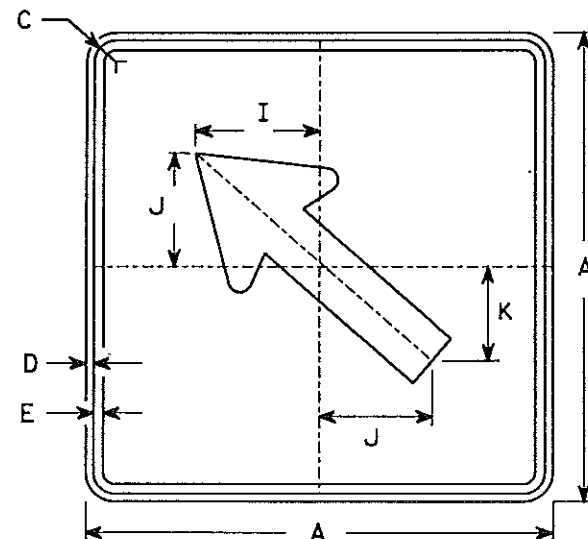


M6-1

MK6-1

MM6-1 (See Note 5)

MO6-1

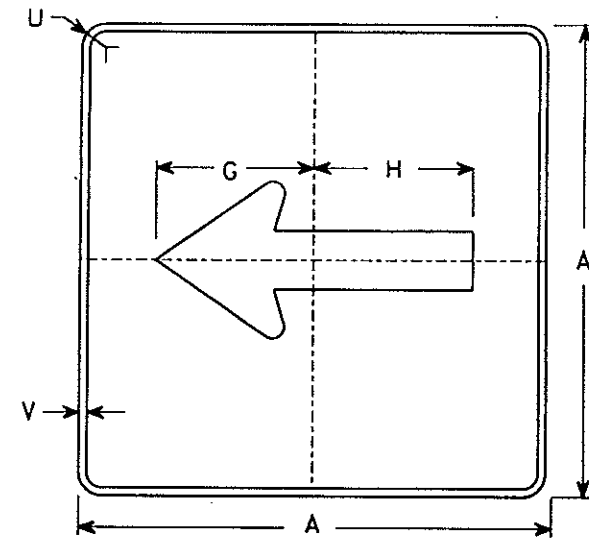


M6-2

MK6-2

MM6-2 (See Note 5)

MO6-2

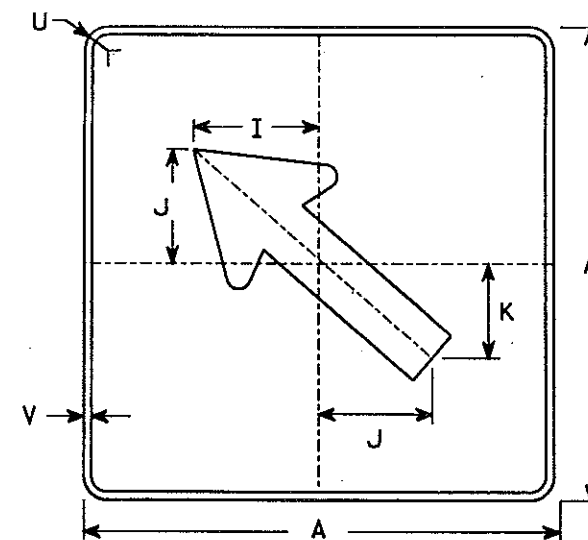


MB6-1

MG6-1

MN6-1

MR6-1



MB6-2

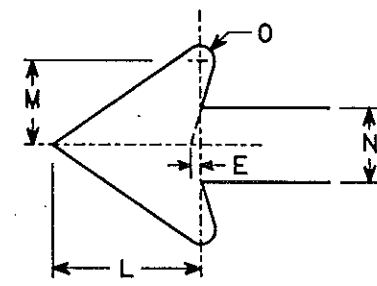
MG6-2

MN6-2

MR6-2

NOTES

- Signs are Type II - Reflective - reference WIS DOT Standard Specification for ROAD and BRIDGE CONSTRUCTION latest edition
- Color:
  - Background - See note 4
  - Message - See note 4
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- M6-1 and M6-2 Background - Reflective white
  - Message - Black
  - MB6-1 and MB6-2 Background - Reflective blue
    - Message - Reflective white
  - MG6-1 and MG6-2 Background - Reflective green
    - Message - Reflective white
  - MK6-1 and MK6-2 Background - Non-Reflective green
    - Message - Non-Reflective white
  - MM6-1 and MM6-2 Background - Reflective white
    - Message - Reflective green
  - MN6-1 and MN6-2 Background - Reflective brown
    - Message - Reflective white
  - MO6-1 and MO6-2 Background - Reflective orange
    - Message - Black
  - MR6-1 and MR6-2 Background - Non-Reflective brown
    - Message - Non-Reflective yellow
- Border shall be omitted on MM series.



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
2	21		1 1/8	3/8	3/8		7 1/2	7 1/8	5 5/8	5	4 1/4	5 1/4	3	2 5/8	1/2						1 1/2	1/2					3.06
3	21		1 1/8	3/8	3/8		7 1/2	7 1/8	5 5/8	5	4 1/4	5 1/4	3	2 5/8	1/2						1 1/2	1/2					3.06
4	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
5	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25

DATE DRAWN 2-4-93 DATE REDRAWN

DATE REVISED

STANDARD SIGNS

M6-1 & M6-2

SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

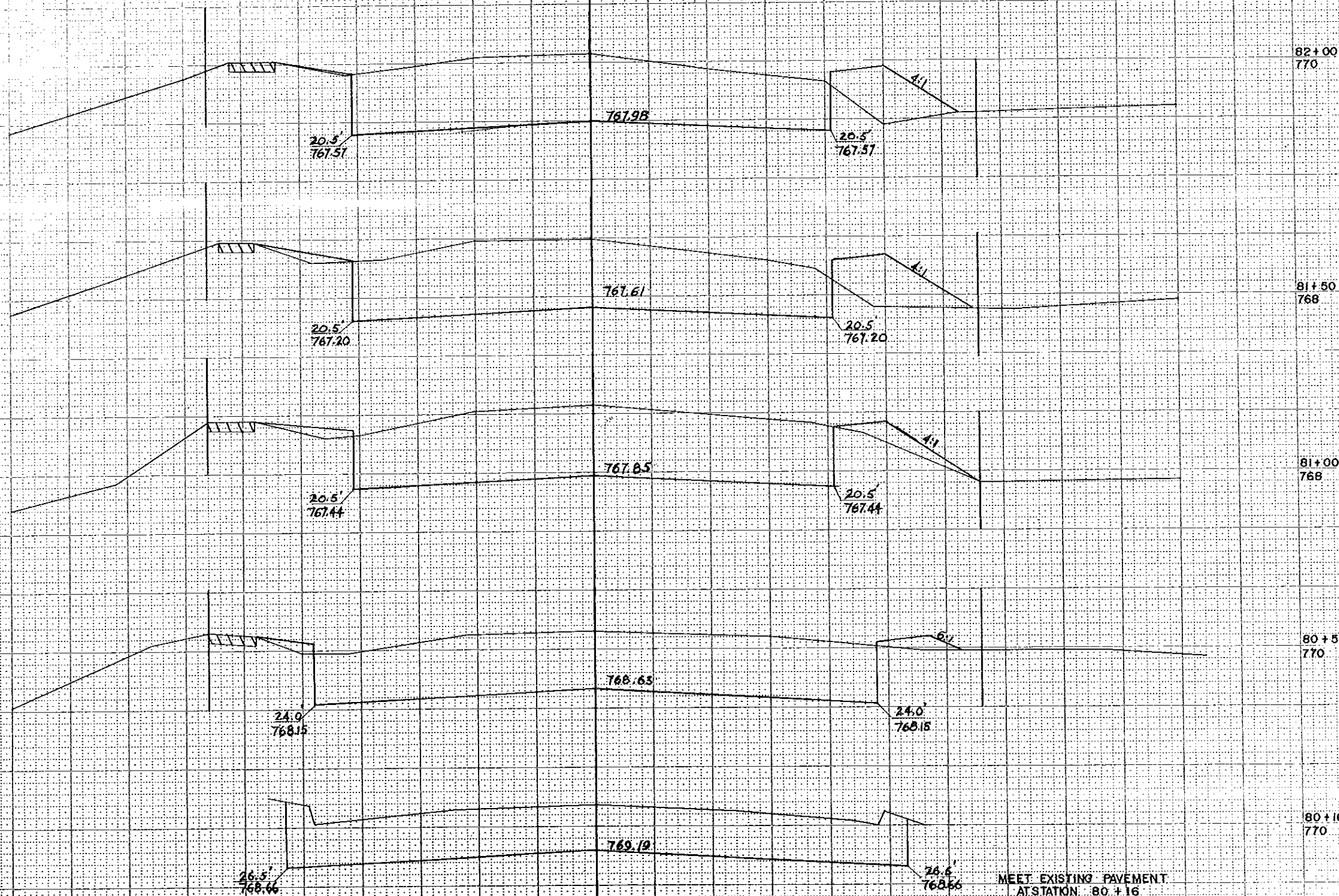
DATE 2/12/93

PLATE NO. M6-1.6

50



R/W



MEET EXISTING PAVEMENT  
AT STATION 80 + 16

2, VERT  
5, HOR

SHEET TOTAL

STATE PROJECT NUMBER

2340-03-70

SHEET  
NUMBER

9.0

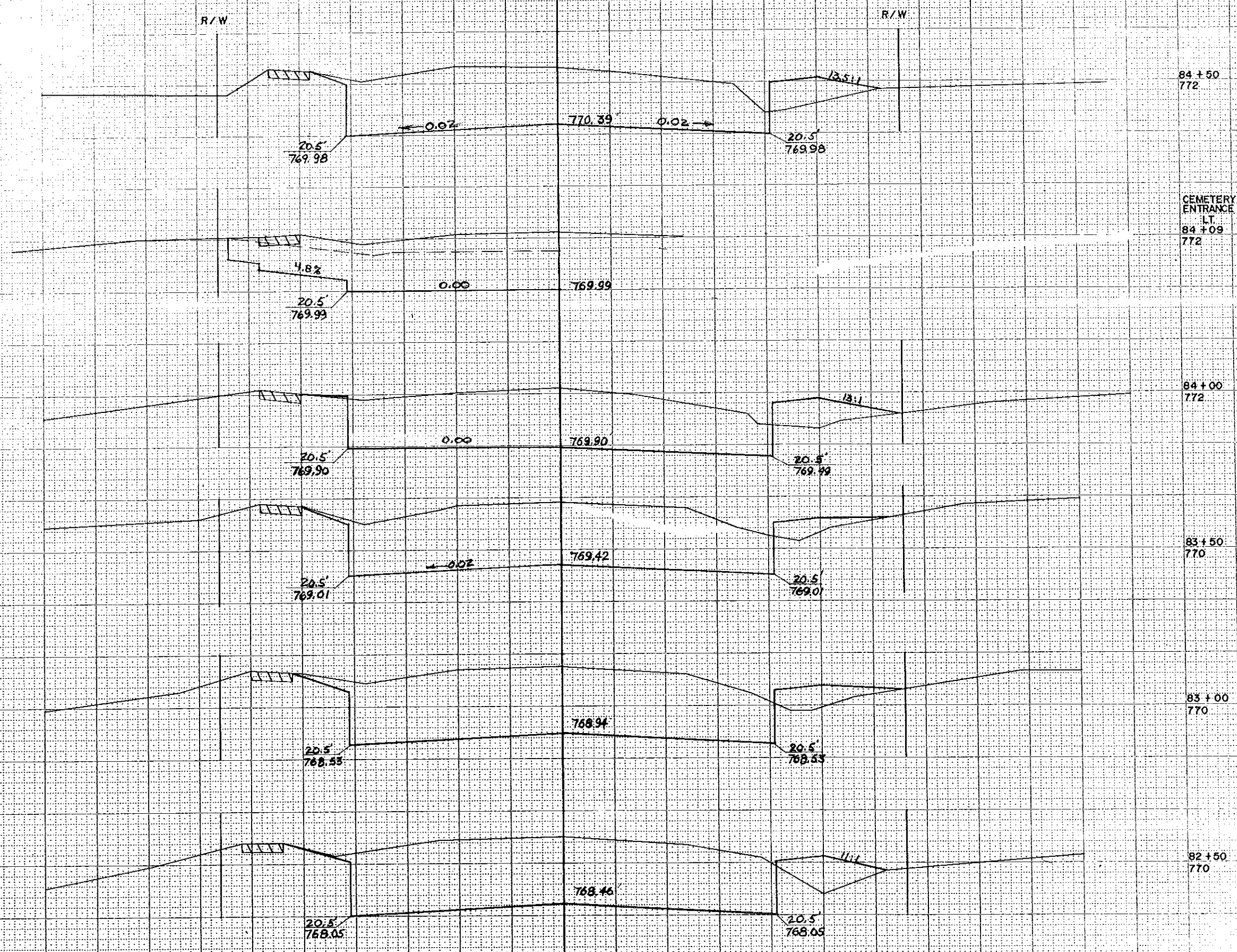
STATION	DISTANCE	YARDAGE		
		EXCAVATION		FILL
		UNCL.		
80 + 16	34	115	2	
80 + 50	50	174	7	
81 + 00	50	168	18	
81 + 50	50	163	24	
82 + 00	50	81	18	
82 + 50				
TOTAL		701	6	

\*\*\*\*\*  
 2130 U121

50 25 0 25 50

STATE PROJECT NUMBER  
2340-03-70

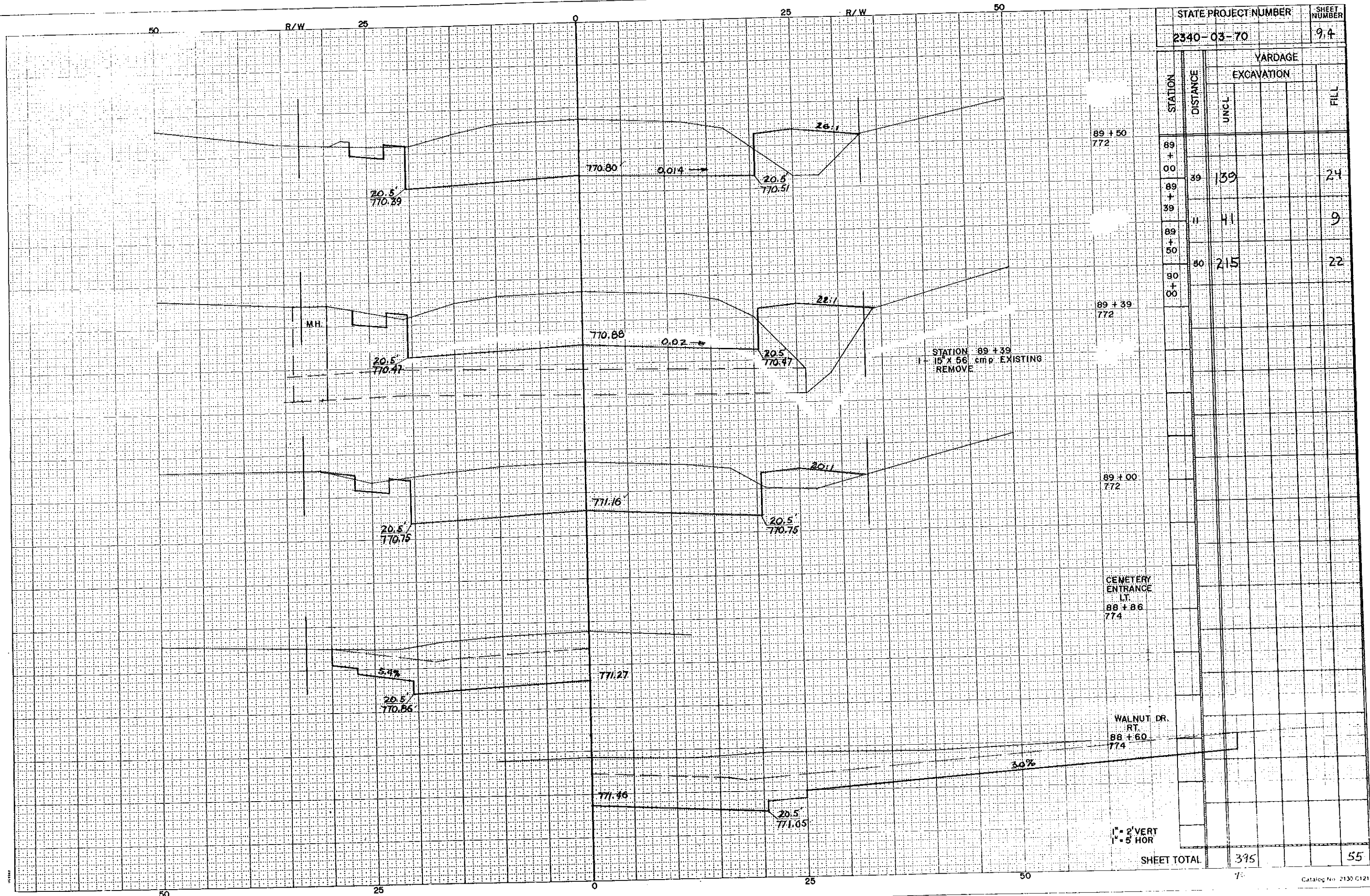
SHEET NUMBER  
9.1

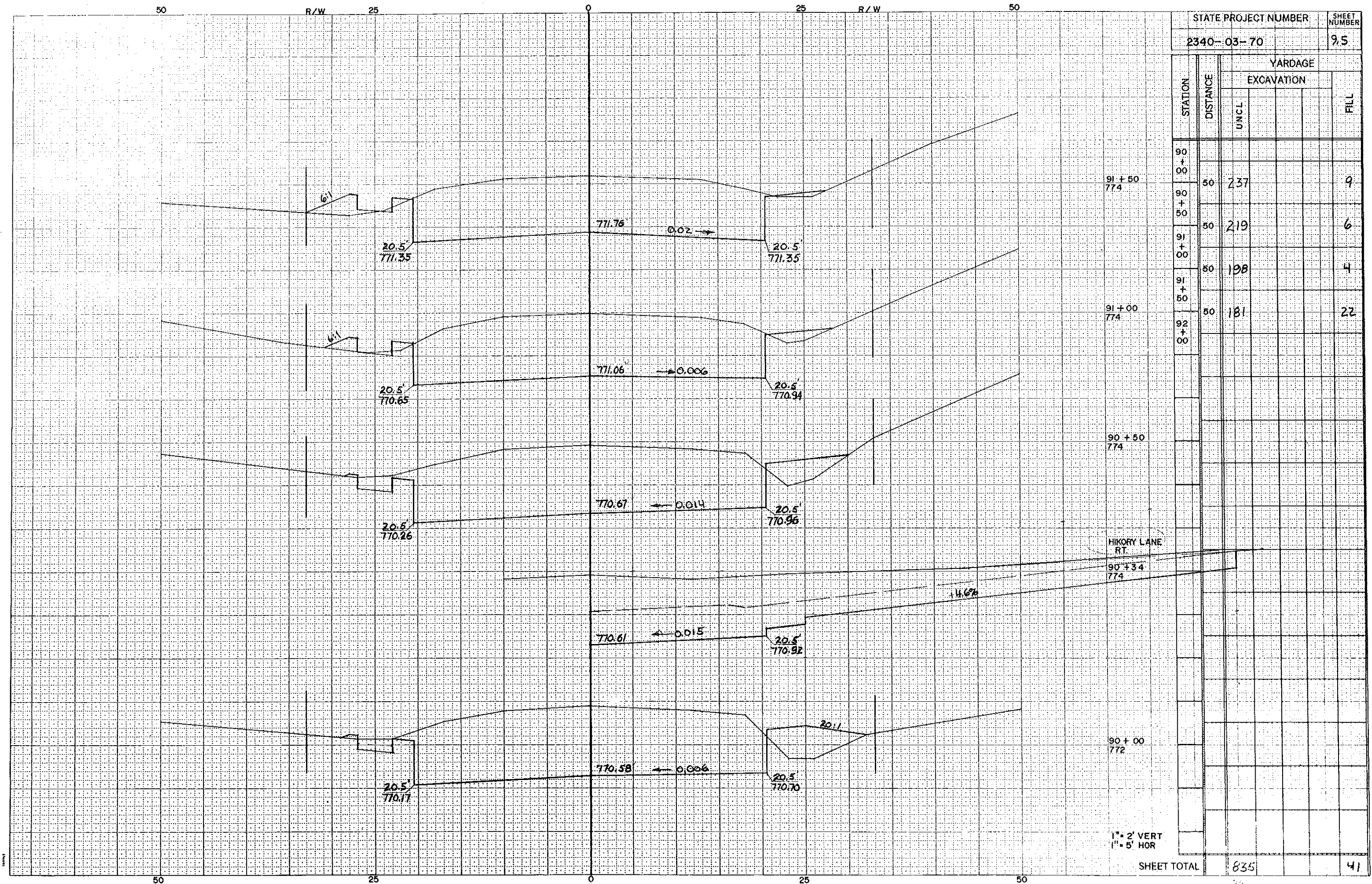


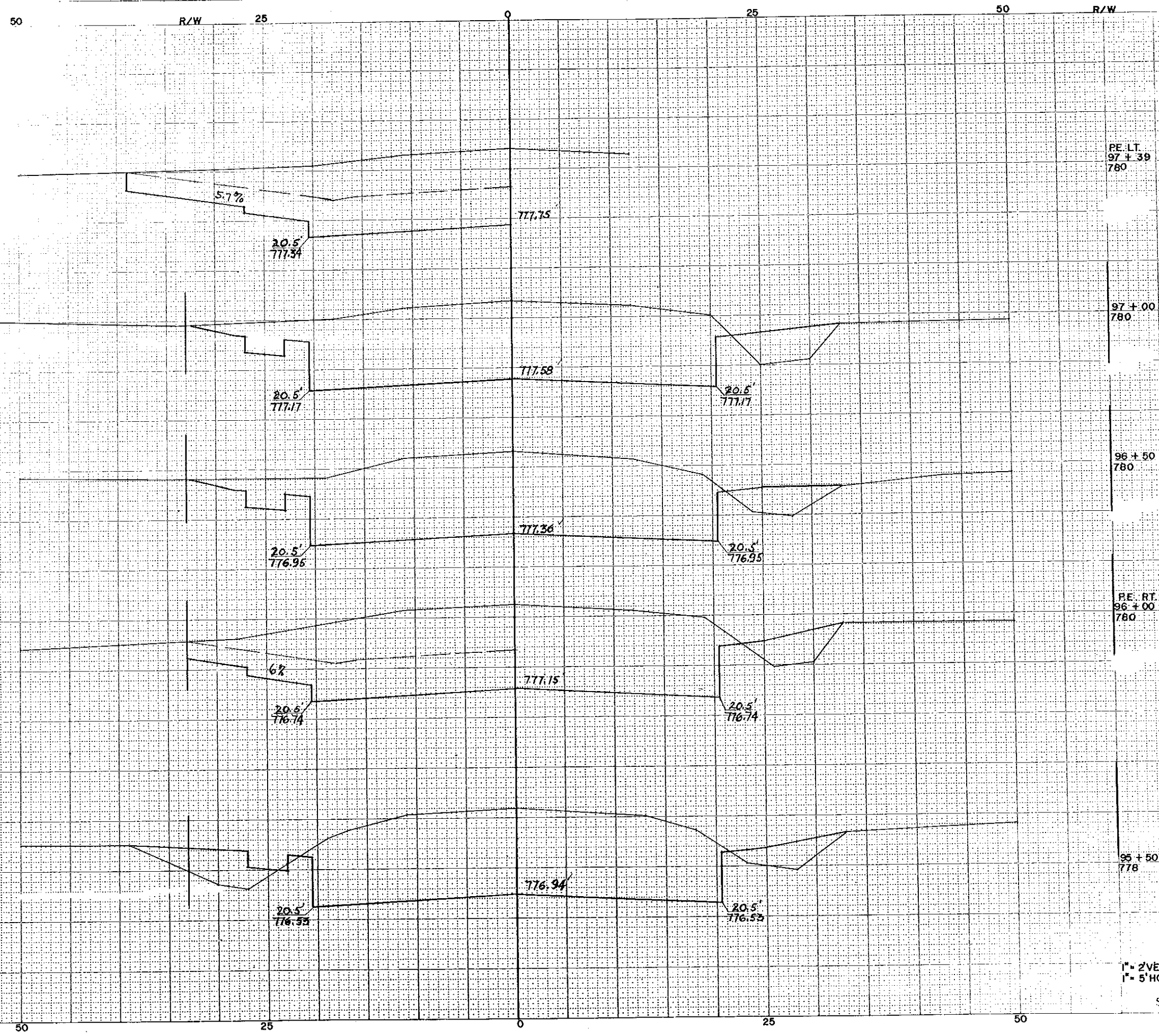
STATION	DISTANCE	YARDAGE			
		EXCAVATION			FILL
		UNCL			
82+50	50				
83+00	50	189			15
83+50	50	181			7
84+00	50	161			6
84+50	50	156			7
85+00	50	156			7
83+50					
83+00					
82+50					

1" = 2' VERT  
1" = 5' HOR

SHEET TOTAL 843 42







1" = 2' VERT  
1" = 5' HOR

SHEET TOTAL	1065
-------------	------

77

R/W    

7.66





50

25

0

25

50

STATE PROJECT NUMBER

2340-03-70

SHEET

NUMBER

9.12

YARDAGE

EXCAVATION

STATION

DISTANCE

UNCL

FILL

21+00  
776

31

9

59

13

MATCH EXISTING  
STA. 20+7520+50  
778

96

6

31

0

AHEAD

BACK

776.0

20+00  
780

R/W

R/W

19+50  
778

776.3

BACK

AHEAD

776.3

MATCH EXISTING  
STA. 19+2519+00  
778

SCALE:

1" = 5' HOR.

1" = 2' VERT.

SHEET TOTAL

217

28

EVERGREEN DRIVE

# RECORD OF CONTROL SURVEY STATION

State of Wisconsin / Department of Transportation

PROJECT IDENTIFICATION										COUNTY										SECTION										TOWN										RANGE										LOCATION									
2340-03-70										RACINE										02										T 93 N										R 19 E										ST. H 26									

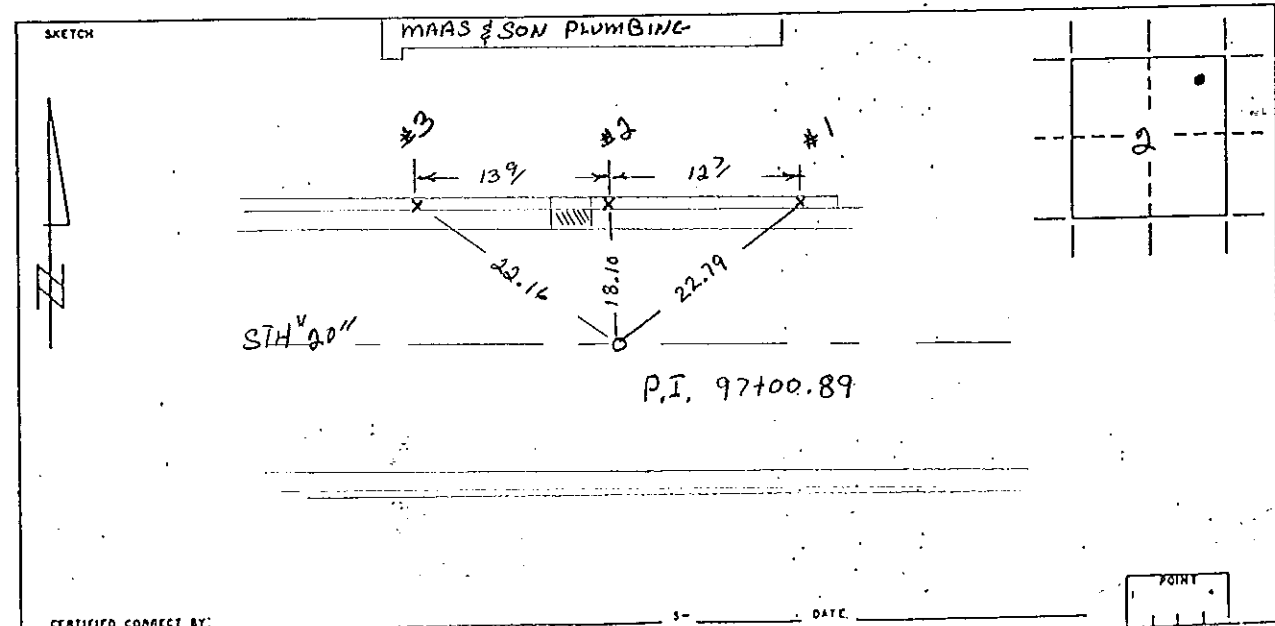
HORIZONTAL DATUM: 1927 NORTH AMERICAN										ZONE										LATITUDE										LONGITUDE										ORDER/CLASS										COORDINATE EFFECTIVE DATE									
2,1										48.0																																																	
2,2																																																											
2,3																																																											

SURVEYOR										DATE										SURVEYOR										DATE									
F. SWITALA										1-03-96																													
3,2																																							

VERTICAL DATUM: MEAN SEA LEVEL, 1929 ADJUSTMENT										ELEVATION										ORDER/CLASS										DATE										SURVEYOR									
4,1																																																	

REFERENCE 1										BEARING										FEET										DIRECTION									
5,1 CHIS "X" TOP OF CURB										NE										22.79																			
REFERENCE 2										BEARING										FEET										DIRECTION									
5,2 CHIS "X" TOP OF CURB										N										18.10																			
REFERENCE 3										BEARING										FEET										DIRECTION									
5,3 CHIS "X" TOP OF CURB										NW										22.14																			
REFERENCE 4										BEARING										FEET										DIRECTION									
5,4																																							
REFERENCE 5										BEARING										FEET										DIRECTION									
5,5																																							

DESCRIPTION/REMARKS									
6,1 POINT, P.I. IS A ALUMINUM MON. SET IN CONC									
6,2 ± E. ST. H 20 CHIS "X" - "I" - "									
6,3									
6,4									
6,5									
6,6									



## 1. State of Wisconsin / Department of Transportation

A hand-drawn survey sketch showing a road intersection and surrounding features. The sketch includes the following elements:

- Top Left:** A north arrow pointing upwards, labeled "N".
- Top Center:** A label "#4 \* 5" SPRUCE" with a star symbol.
- Top Right:** A label "P.R. BED" with a dashed line indicating a boundary.
- Center:** A road intersection labeled "STH #20". A point "P.I. 91+96.17" is marked at the intersection. A "FLD STONE PILLAR" is indicated by a square symbol near the intersection.
- Bottom Left:** A label "#5" with a square symbol.
- Bottom Center:** A label "#1" with a distance of "145" and a label "#2" with a distance of "125".
- Bottom Right:** A label "#3" with a distance of "125".
- Right Side:** A grid with a dashed line and a label "2".
- Bottom:** A label "REGISTERED LAND SURVEYOR" and a date field "DATE: \_\_\_\_\_".
- Bottom Right:** A label "POINT" with a small square symbol.

# RECORD OF CONTROL SURVEY STATION

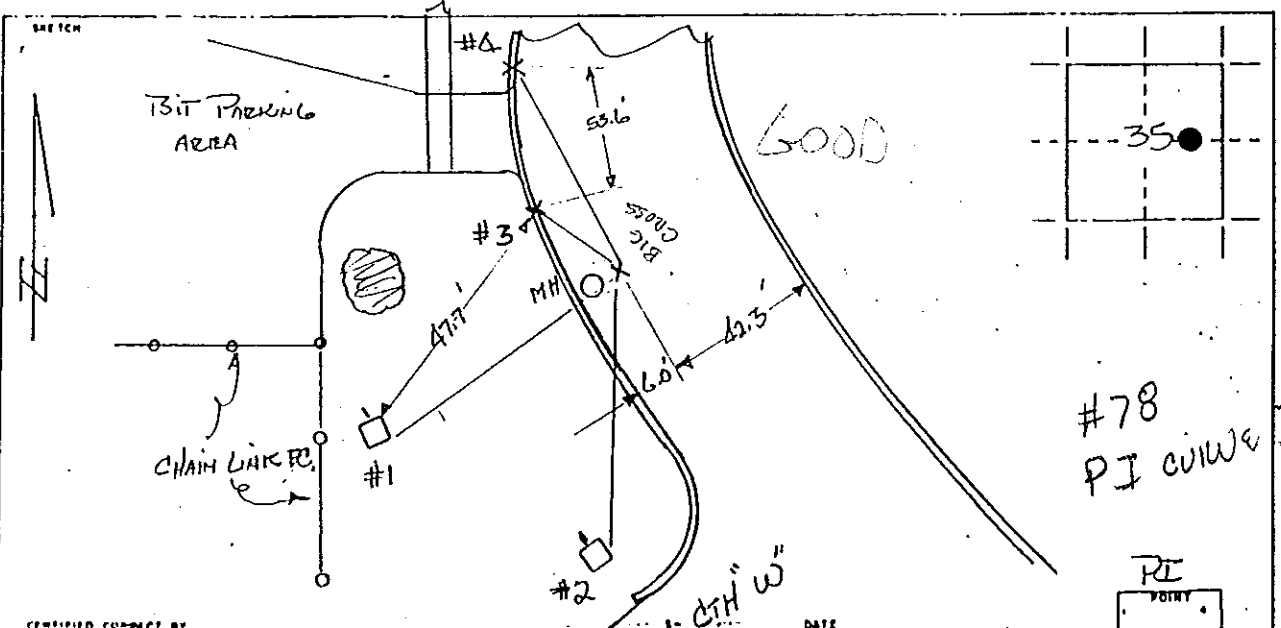
State of Wisconsin / Department of Transportation

PROJECT IDENTIFICATION		COUNTY	SECTION	TOWN	RANGE	LOCATION
2340-03-00		RACINE	35	T4N	R19E	STH 20
HORIZONTAL DATUM 1927 NORTH AMERICAN						
ZONE		EASTING		NORTHING		COORDINATE EFFECTIVE DATE
480						
STATION/ALTERNATE		STATION/ALTERNATE		STATION/ALTERNATE		
78+31.20						

SURVEYOR		DATE	SURVEYOR		DATE
D. WEINFURT		02-27-91			
SURVEYOR		DATE	SURVEYOR		DATE
VERTICAL DATUM MEAN SEA LEVEL, 1929 ADJUSTMENT					
ELEVATION		DATE		SURVEYOR	

REFERENCE		BEARING		FEET	DIRECTION
NAIL AND BUTTON IN SOUTH SIDE OF		WSW		28.64	
POWER POLE # 61-5160 (OLD TIE)					
REFERENCE		BEARING		FEET	DIRECTION
NAIL AND POTTER CAP IN SOUTH EAST SIDE		SW		97.84	
OF POWER POLE # 88-01782					
REFERENCE		BEARING		FEET	DIRECTION
CHISELED "X" IN TOP OF CURB		WNW		14.64	
NORTH EAST OF TIE #1					
REFERENCE		BEARING		FEET	DIRECTION
CHISELED "X" IN TOP OF CURB		NW		66.81	
NORTH OF TIE #3					

DESCRIPTION/REFERENCE	
POINT PI IS A CHISELED "X" IN S.B.L. STH 20 CONC	
ROAD 2 1/2 MI. EAST OF A.M.H. HOUSE	



INTEGRATED CIVIL ENGINEERING SYSTEM - V1 M3 NOV 1969

MAR 10, 1995

TIME=10.21.16

COGO

ICES COGO - COORDINATE GEOMETRY  
WISCONSIN DEPARTMENT OF TRANSPORTATION  
JULY, 1972

\$ STH 20 WATERFORD TO STH 36 (DOUG CAIN) 2340-03-70

\$ ALL COO FROM DOT CADDs - PLAN REVISED FROM PSE

S 75 N 281850.338 E 480002.010  
POINT 75 N 281850.338 E 480002.010 S \*\*\*\*\* Z \*\*\*\*\*

S 78 N 281566.792 E 480012.414  
POINT 78 N 281566.792 E 480012.414 S \*\*\*\*\* Z \*\*\*\*\*

S 91 N 280439.701 E 480794.766  
POINT 91 N 280439.701 E 480794.766 S \*\*\*\*\* Z \*\*\*\*\*

S 97 N 280018.6710 E 481073.149  
POINT 97 N 280018.671 E 481073.149 S \*\*\*\*\* Z \*\*\*\*\*

S 110 N 278902.966 E 481811.134  
POINT 110 N 278902.966 E 481811.134 S \*\*\*\*\* Z \*\*\*\*\*

2 N 278066.164 E 482286.787  
POINT 112 N 278066.164 E 482286.787 S \*\*\*\*\* Z \*\*\*\*\*

S CUR 1 PB 75 PI 78 DEG 13 00 00 PA 91

CURVE 1 TYPE C CURVE ELEMENTS

RADIUS 440.737 DEGREE 13 0 0.00  
LENGTH 251.265 DELTA 32 39 51.99  
TANGENT 129.15 BACK S 2 6 4.97 E  
EXTERNAL 18.533 AHEAD S 34 45 56.96 E  
LONG CHORD 247.876  
MID. ORD. 17.785

CURVE 1 TYPE C CURVE POINTS

POINT CC 1 N 281712.016 E 480448.119 S \*\*\*\*\* Z \*\*\*\*\*  
POINT PC 1 N 281695.855 E 480007.678 S 0+ 0.0 Z \*\*\*\*\*  
POINT PT 1 N 281460.697 E 480086.058 S 2+51.265 Z \*\*\*\*\*  
POINT PI 1 N 281566.792 E 480012.414 S 1+29.150 Z \*\*\*\*\*

S CUR 2 PB 78 PI 91 DEG 0 15 00 PA 97

\*\*\*\*\*

WARNING. RADIUS OF CURVE EXCEEDS 20000.

X

CURVE 2 TYPE C CURVE ELEMENTS

RADIUS 22918.312 DEGREE 0 15 0.00  
 LENGTH 517.335 DELTA 1 17 36.02  
 TANGENT 258.679 BACK S 34 45 56.96 E  
 EXTERNAL 1.46 AHEAD S 33 28 20.95 E  
 LONG CHORD 517.324  
 MID. ORD. 1.46

CURVE 2 TYPE C CURVE POINTS

POINT CC	2	N	267583.639	E	461820.109	S *****	Z *****
POINT PC	2	N	280652.203	E	480647.261	S 0+ 0.0	Z *****
POINT PT	2	N	280223.924	E	480937.437	S 5+17.335	Z *****
POINT PI	2	N	280439.701	E	480794.766	S 2+58.679	Z *****

S CUR 3 PB 97 PI 110 DEG 0 45 00 PA 112

CURVE 3 TYPE C CURVE ELEMENTS

RADIUS 7639.437 DEGREE 0 45 0.00  
 LENGTH 515.74 DELTA 3 52 4.98  
 TANGENT 257.968 BACK S 33 28 57.76 E  
 EXTERNAL 4.354 AHEAD S 29 36 52.79 E  
 LONG CHORD 515.642  
 MID. ORD. 4.352

CURVE 3 TYPE C CURVE POINTS

POINT CC	3	N	274903.559	E	475297.126	S *****	Z *****
POINT PC	3	N	279118.125	E	481668.817	S 0+ 0.0	Z *****
POINT PT	3	N	278678.697	E	481938.613	S 5+15.740	Z *****
POINT PI	3	N	278902.966	E	481811.134	S 2+57.968	Z *****

S CHA '20' 75 CUR 1 CUR 2 97 CUR 3 112

STA CHA '20' FROM 75 75+47.46 AHEAD 112

DES CHA '20'

DESCRIPTION OF CHAIN 20

CHAIN ELEMENTS

COURSE FROM 75 TO PC 1 LENGTH 154.587 BEARING S 2 6 4.97 E

CURVE 1 TYPE C CURVE ELEMENTS

RADIUS 440.737 DEGREE 13 0 0.00  
 LENGTH 251.265 DELTA 32 39 51.99  
 TANGENT 129.15 BACK S 2 6 4.97 E  
 EXTERNAL 18.533 AHEAD S 34 45 56.96 E  
 LONG CHORD 247.876  
 MID. ORD. 17.785

COURSE FROM PT 1 TO PC 2 LENGTH 984.181 BEARING S 34 45 56.96 E

CURVE 2 TYPE C CURVE ELEMENTS

RADIUS 22918.312 DEGREE 0 15 0.00  
LENGTH 517.335 DELTA 1 17 36.02  
TANGENT 258.679 BACK S 34 45 56.96 E  
EXTERNAL 1.46 AHEAD S 33 28 20.95 E  
LONG CHORD 517.324  
MID. ORD. 1.46

COURSE FROM PT 2 TO 97 LENGTH 246.062 BEARING S 33 28 20.95 E  
COURSE FROM 97 TO PC 3 LENGTH 1079.724 BEARING S 33 28 57.76 E

CURVE 3 TYPE C CURVE ELEMENTS

RADIUS 7639.437 DEGREE 0 45 0.00  
LENGTH 515.74 DELTA 3 52 4.98  
TANGENT 257.968 BACK S 33 28 57.76 E  
EXTERNAL 4.354 AHEAD S 29 36 52.79 E  
LONG CHORD 515.642  
MID. ORD. 4.352

COURSE FROM PT 3 TO 112 LENGTH 704.572 BEARING S 29 36 52.79 E

CHAIN POINTS

POINT 75 N 281850.338 E 480002.010 S 75+47.460 Z \*\*\*\*\*

CURVE 1 TYPE C CURVE POINTS

POINT CC 1 N 281712.016 E 480448.119 S \*\*\*\*\* Z \*\*\*\*\*  
POINT PC 1 N 281695.855 E 480007.678 S 77+ 2.047 Z \*\*\*\*\*  
POINT PT 1 N 281460.697 E 480086.058 S 79+53.312 Z \*\*\*\*\*  
POINT PI 1 ±78 N 281566.792 E 480012.414 S 78+31.197 Z \*\*\*\*\*

3 RAD. - 440.737  
0.00

CURVE 2 TYPE C CURVE POINTS

POINT CC 2 N 267583.639 E 461820.109 S \*\*\*\*\* Z \*\*\*\*\*  
POINT PC 2 N 280652.203 E 480647.261 S 89+37.493 Z \*\*\*\*\*  
POINT PT 2 N 280223.924 E 480937.437 S 94+54.828 Z \*\*\*\*\*  
POINT PI 2 ±91 N 280439.701 E 480794.766 S 91+96.172 Z \*\*\*\*\*

3 RAD. - 22,918.312

POINT 97 N 280018.671 E 481073.149 S 97+ 0.891 Z \*\*\*\*\*

CURVE 3 TYPE C CURVE POINTS

POINT CC 3 N 274903.559 E 475297.126 S \*\*\*\*\* Z \*\*\*\*\*  
POINT PC 3 N 279118.125 E 481668.817 S 107+80.615 Z \*\*\*\*\*  
POINT PT 3 N 278678.697 E 481938.613 S 112+96.354 Z \*\*\*\*\*  
POINT PI 3 N 278902.966 E 481811.134 S 110+38.582 Z \*\*\*\*\*

3.501  
2ND ALT 20  
1007

POINT 112 N 278066.164 E 482286.787 S 120+ 0.927 Z \*\*\*\*\*

ALI '20' COO EVEN 100000 26. ALI

LAYOUT COORDINATES FOR CHAIN 20

POINT 75 N 281850.338 E 480002.010 S 75+47.460 Z \*\*\*\*\*



POINT PC	1	N	281695.855	E	480007.678	S	77+ 2.047	Z *****
POINT PT	1	N	281460.697	E	480086.058	S	79+53.312	Z *****
POINT PC	2	N	280652.203	E	480647.261	S	89+37.493	Z *****
POINT PT	2	N	280223.924	E	480937.437	S	94+54.828	Z *****
POINT	97	N	280018.671	E	481073.149	S	97+ 0.891	Z *****
POINT PC	3	N	279118.125	E	481668.817	S	107+80.615	Z *****
POINT PT	3	N	278678.697	E	481938.613	S	112+96.354	Z *****
POINT	112	N	278066.164	E	482286.787	S	120+ 0.927	Z *****

PRI ALL POI 25. CTL

POINT	75	N	281850.338	E	480002.010	S	75+47.460	Z *****
POINT	78	N	281566.792	E	480012.414	S	*****	Z *****
POINT	91	N	280439.701	E	480794.766	S	*****	Z *****
POINT	97	N	280018.671	E	481073.149	S	97+ 0.891	Z *****
POINT	110	N	278902.966	E	481811.134	S	*****	Z *****
POINT	112	N	278066.164	E	482286.787	S	120+ 0.927	Z *****

FINISH CNTL - 96 N 280039.660 SE 481107.430 CEN P.K. TIE PI. 97+02.29, 40.17 LT. EL 779.385  
 CNTL - 88 N 281118.900 E 480355.220 DOT HOLE 80, WALK  
 0 ERRORS CAUSED COMMAND ABORT.  
 0 ATTEMPTS TO USE UNSTORED OBJECTS.  
 LATESTBS (23) 061485

~~27 280439.701 E 480794.766~~

~~28 280018.671 E 481073.149~~

CNTL 100 N 279789.31 E 481283.47 P.D GPS HIGH HWY 36, STA 20 COORDS

C.P. 911 2X2 HVB WENT P.P TIE PI 91 STA 92+9.585 @ 36.947 RT

N 280 398,750 E 480776,060 NO E.L.V.

PH = 5  
 PD = 4  
 1. = 37  
 e = 38  
 20 = 39

N 280 398.53 Z Prop Pipe RT of C.P. 91  
 E 480778.12 EL. 775.80

92+20.92  
 35.34 12T