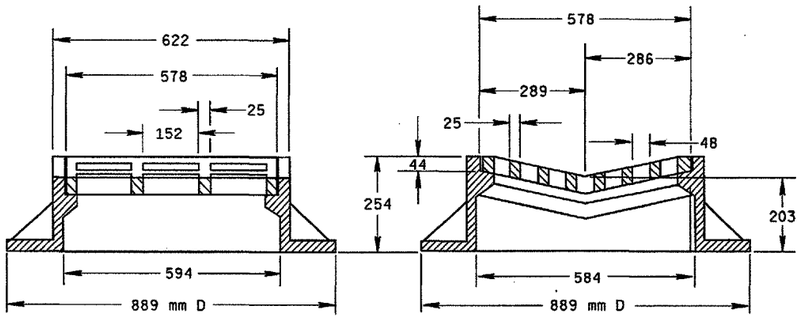
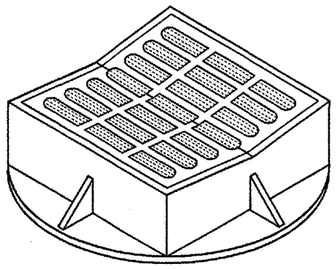
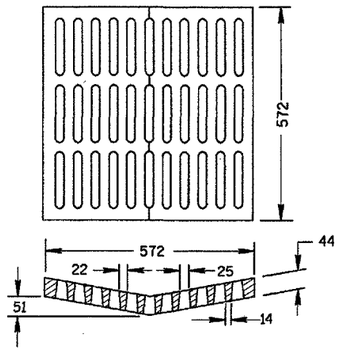




TYPE "B"

(APPROXIMATE WEIGHT 179 kg)

FRAME..... 129 kg
GRATE..... 50 kg

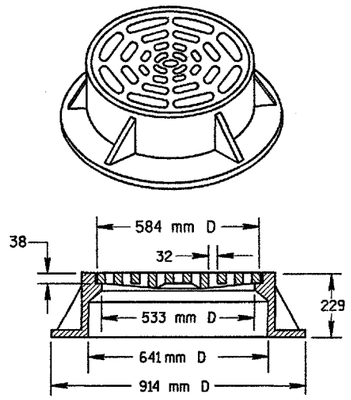


ALTERNATIVE GRATE FOR FOR TYPE "B" COVER

(APPROXIMATE GRATE WEIGHT 57 kg)
GRATE.....57 kg

USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS POSSIBLE.

NOTED AS TYPE B-A ON THE DRAINAGE TABLE



TYPE "C"

(APPROXIMATE WEIGHT 154 kg)

FRAME..... 107 kg
GRATE..... 48 kg

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.

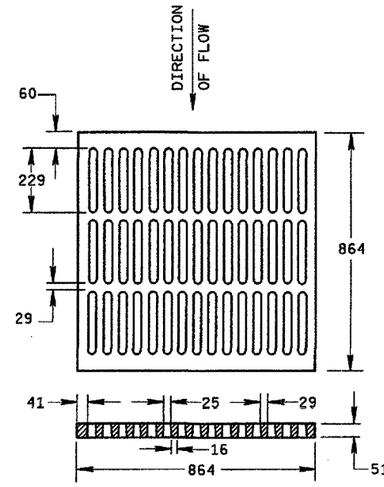
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

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.

NOTES

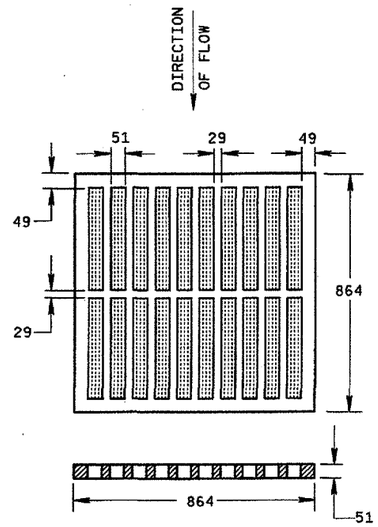
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.



ALTERNATIVE TYPE "MS"

(APPROXIMATE GRATE WEIGHT 166 kg)
GRATE.....166 kg

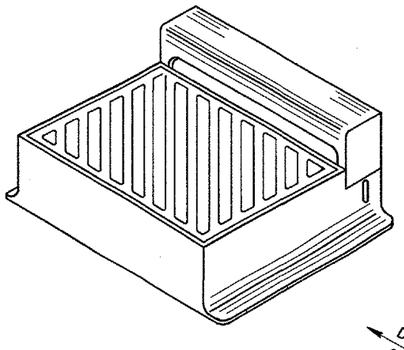
USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS PERMITTED
NOTED AS TYPE MS-A ON THE DRAINAGE TABLE



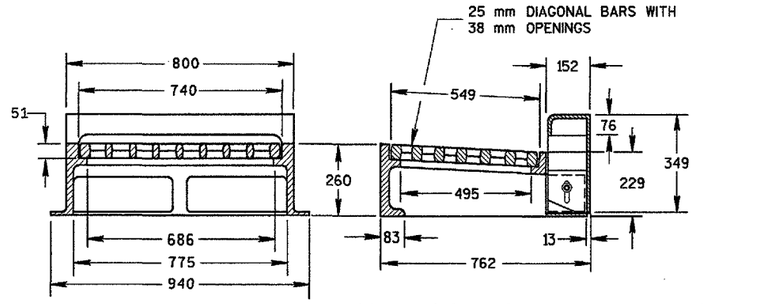
TYPE "MS"

(APPROXIMATE GRATE WEIGHT 122 kg)
GRATE.....122 kg

USE ON FREEWAYS AND EXPRESSWAYS
NOTED AS TYPE MS ON DRAINAGE TABLE



DIAGONAL SLOTS, SHALL BE ORIENTED
TO THE DIRECTION OF FLOW AS ILLUSTRATED.
GRATES ARE MANUFACTURED TO BE REVERSIBLE.



NOTE: CURB BOX HEIGHT ADJUSTABLE 152 mm TO 229 mm

TYPE "WM"

(APPROXIMATE WEIGHT 304 kg)

FRAME..... 163 kg
GRATE..... 73 kg
CURB BOX..... 68 kg

INLET COVERS
TYPE B, B-A, C, MS, MS-A, & WM

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 8/28/98
DATE

Roy L. Thomsen
CHIEF ROADWAY DEVELOPMENT ENGINEER

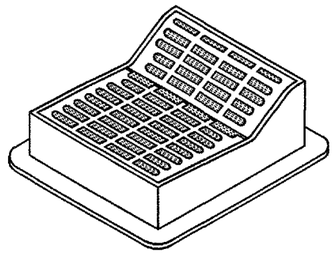
FHWA

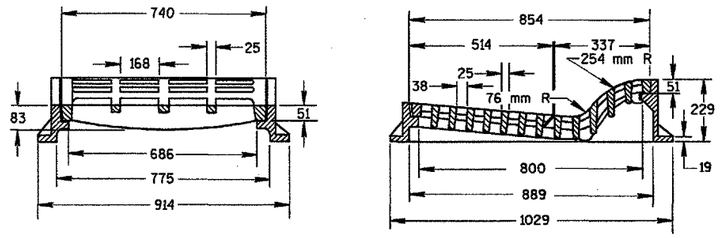
M

S.D.D. 8 A 5-15b

PLOT SCALE:
PLOT NAME:
LEVELS ON - 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
REV. DATE:
ORIGINATOR:
FILE NAME:

S.D.D. 8 A 5-15b



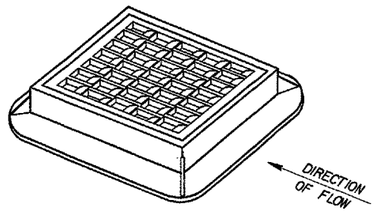


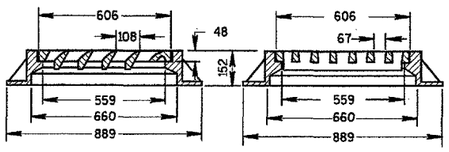
TYPE "F"

(APPROXIMATE WEIGHT 292 kg)

FRAME..... 136 kg
GRATE..... 74 kg
GRATE..... 82 kg

USE WITH CONCRETE CURB & GUTTER, 900 mm

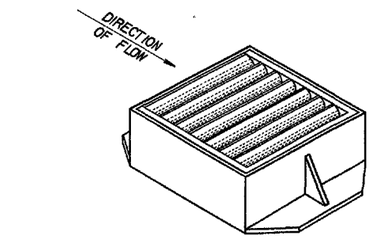


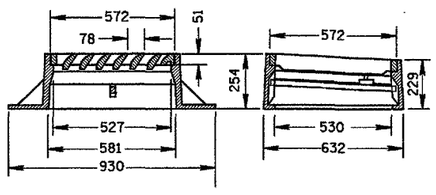


TYPE "S"

(APPROXIMATE WEIGHT 181 kg)

FRAME..... 111 kg
GRATE..... 70 kg

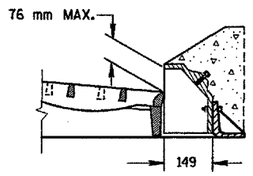




TYPE "V"

(APPROXIMATE WEIGHT 180 kg)

FRAME..... 110 kg
GRATE..... 70 kg



ALTERNATIVE CURB BOX FOR TYPE "HM" COVER

(APPROXIMATE WEIGHT 36 kg.)

CURB BOX..... 36 kg

USE WITH TYPES G & J CONCRETE CURB & GUTTER, 762 mm
NOTED AS TYPE HM-GJ ON DRAINAGE TABLE

NOTE:
SPECIAL GRATE FOR THE
TYPE "H" COVER MAY ALSO BE
USED FOR THE TYPE "HM-GJ" COVER
NOTED AS TYPE HM-GJ-S ON DRAINAGE TABLE

GENERAL NOTES

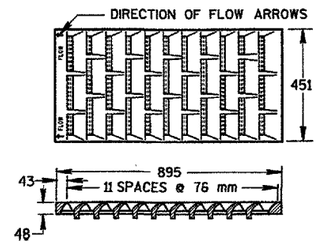
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

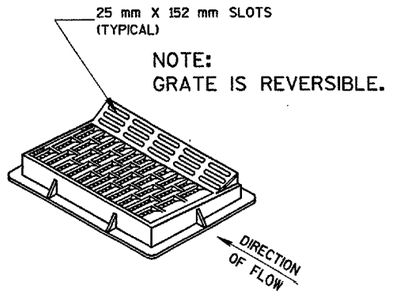
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

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

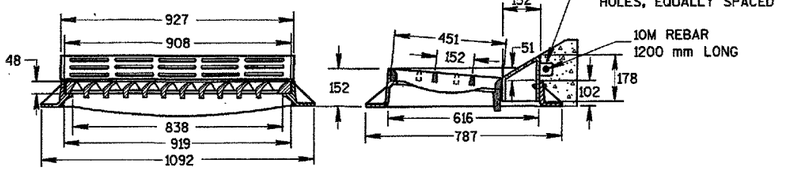
NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.





NOTE:
GRATE IS REVERSIBLE.



TYPE "HM"

(APPROXIMATE WEIGHT 183 kg)

FRAME..... 79 kg
GRATE..... 63 kg
CURB BOX..... 41 kg

USE WITH CONCRETE CURB & GUTTER, 900 mm

NOTE:
SPECIAL GRATE FOR THE
TYPE "H" COVER MAY ALSO BE
USED FOR THE TYPE "HM" COVER
NOTED AS TYPE HM-S ON DRAINAGE TABLE

INLET COVERS
TYPE F, HM, HM-S, S, V, HM-GJ, & HM-GJ-S

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 8/27/98 DATE
Roy L. Thompson
CHIEF ROADWAY DEVELOPMENT ENGINEER

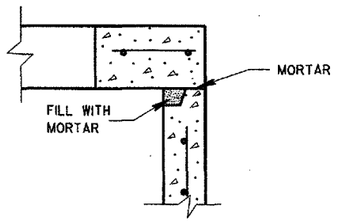
FHWA **M**

S.D.D. 8 A 5-15c

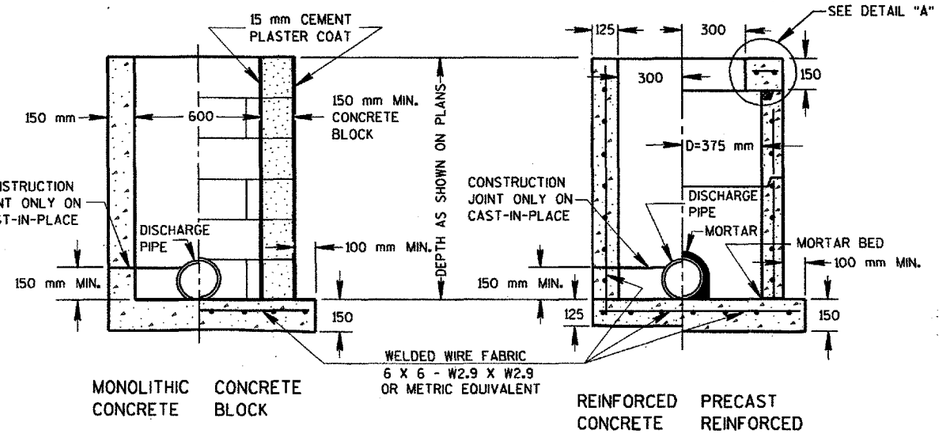
PLOT SCALE:
PLOT NAME:
REV. DATE:
LEVELS ON = 2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63
ORIGINATOR:
FILE NAME:

S.D.D. 8 A 5-15c

*SELECTION OF SQUARE OR CIRCULAR DESIGN WILL BE BASED ON THE PIPE SIZES AND THE INLET COVER BEING UTILIZED



DETAIL "A"



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 199 M.

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 150 mm IN DEPTH, WHICH MEETS THE REQUIREMENTS OF 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 50 mm CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

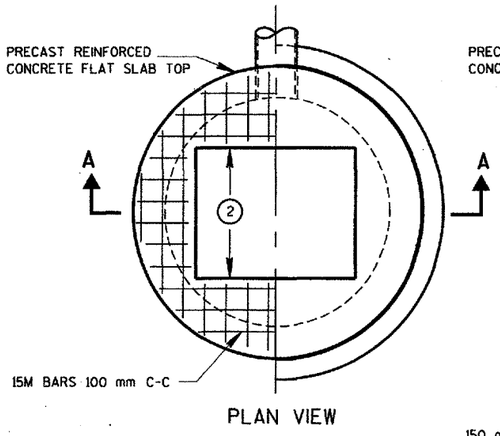
PRECAST REINFORCED CONCRETE RISERS SHALL BE PLACED WITH TONGUE DOWN.

(1) USE 760 mm OPENING FOR TYPE 2 INLETS, 915 mm OPENING FOR TYPE 3 INLETS, AND 890 mm TYPE 4 INLETS.

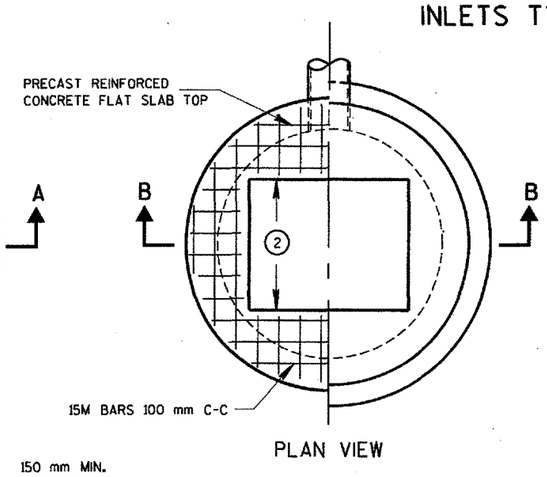
(2) USE 610 mm OPENING FOR TYPE 1, 2 & 3 INLETS, 775 mm OPENING FOR TYPE 4 INLETS.

NOTE

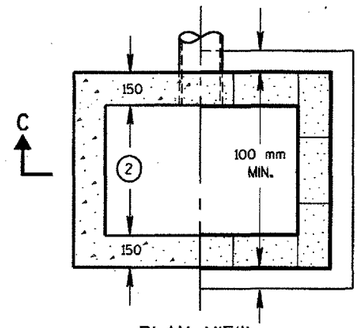
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.



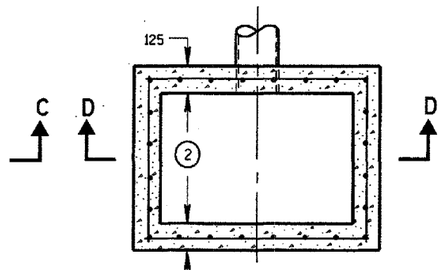
PLAN VIEW



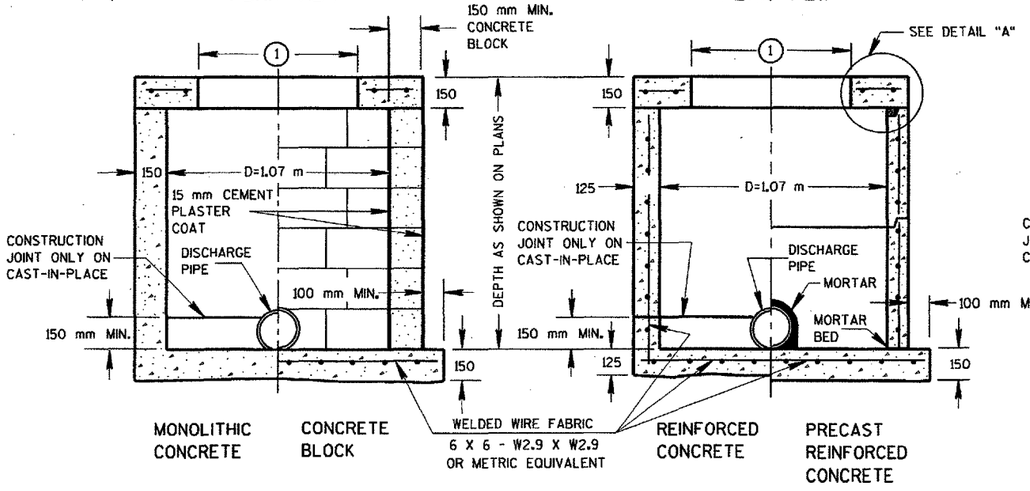
PLAN VIEW



PLAN VIEW

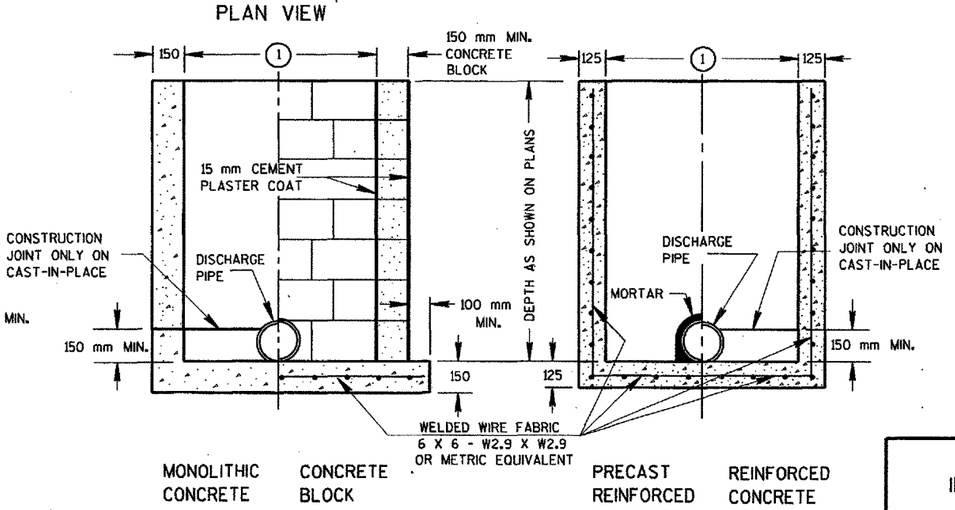


PLAN VIEW



SECTION A-A

SECTION B-B



SECTION C-C

SECTION D-D

INLETS TYPE 2, 3 & 4

INLETS TYPE 1, 2, 3 & 4

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 01/31/95 DATE

Roy L. Thomsen
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

M

S.D.D. 8 C 1-5

PLOT SCALE:

PLOT NAME:

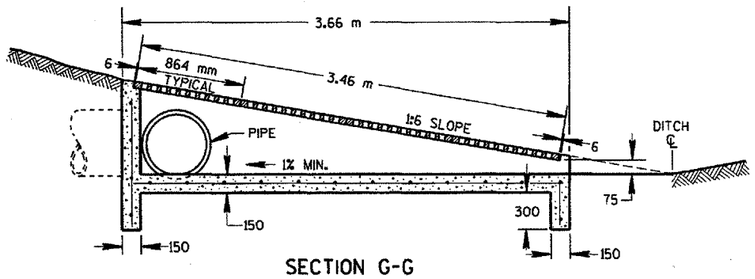
REV. DATE:

ORIGINATOR:

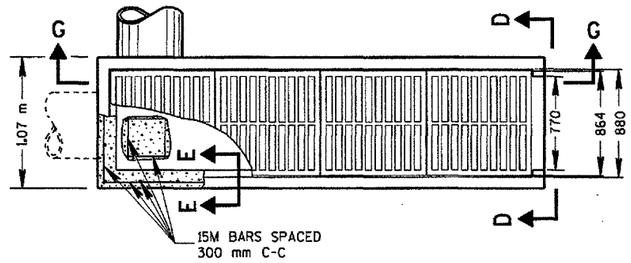
LEVELS ON • 2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63

FILE NAME:

S.D.D. 8 C 1-5

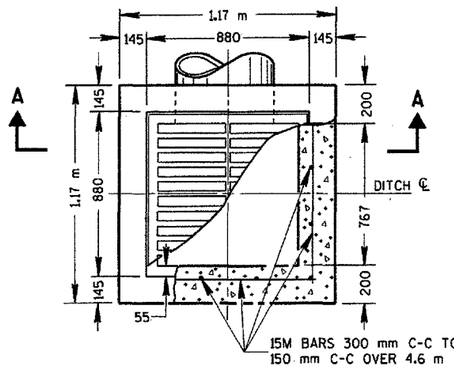


SECTION G-G

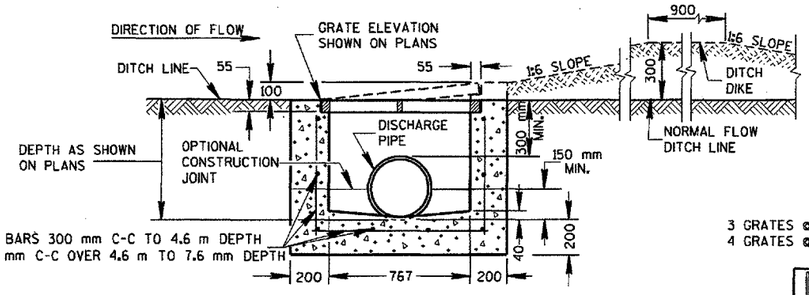


PLAN VIEW

REINFORCED CONCRETE INLET TYPE 11



PLAN VIEW



SECTION A-A

REINFORCED CONCRETE INLET TYPE 8

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.

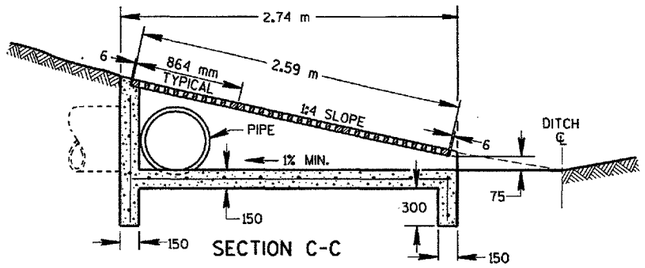
PRECAST REINFORCED CONCRETE INLET UNITS, IF USED, SHALL CONFORM TO THE REQUIREMENTS OF THE CATCH BASINS, MANHOLES AND INLETS SECTION OF THE STANDARD SPECIFICATIONS, UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST INLET UNITS REQUIRED FOR THE PROJECT UNTIL A CORRECTED LIST OF SIZES IS FURNISHED BY THE ENGINEER.

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.

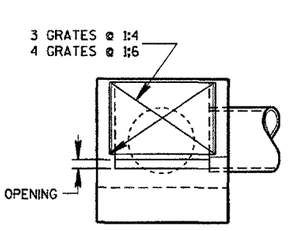
ALL BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 50 mm CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

NOTE

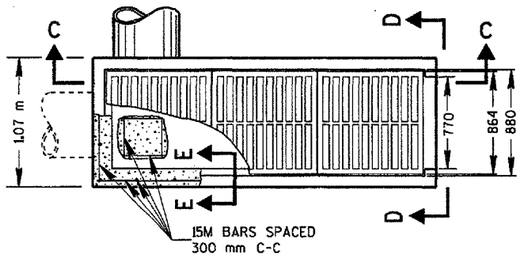
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.



SECTION C-C

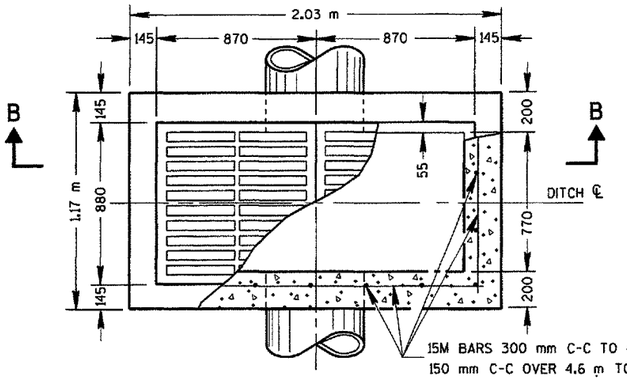


SECTION D-D

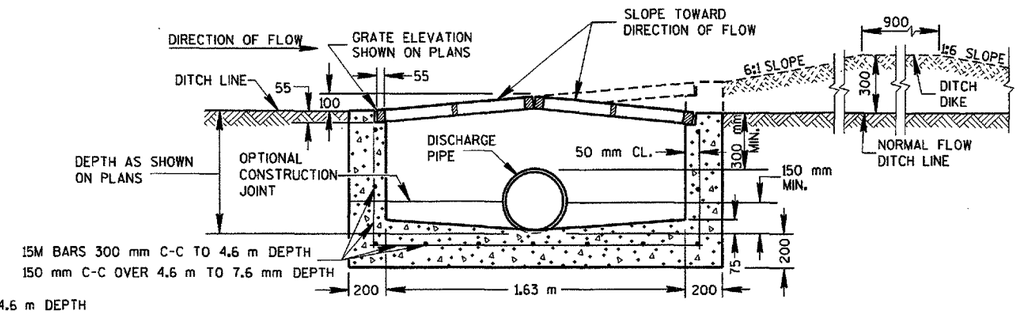


PLAN VIEW

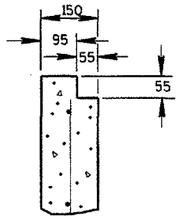
REINFORCED CONCRETE INLET TYPE 10



PLAN VIEW



SECTION B-B



SECTION E-E

REINFORCED CONCRETE INLET TYPE 9

INLETS TYPE 8, 9, 10 & 11

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
01/30/95
DATE

Roy L. Thompson
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

M

S.D.D. 8 C 5-2

PLOT SCALE:

PLOT NAME:

REV. DATE:

ORIGINATOR:

LEVELS ON - 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, 3233, 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

S.D.D. 8 C 5-2

FILE NAME:

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:

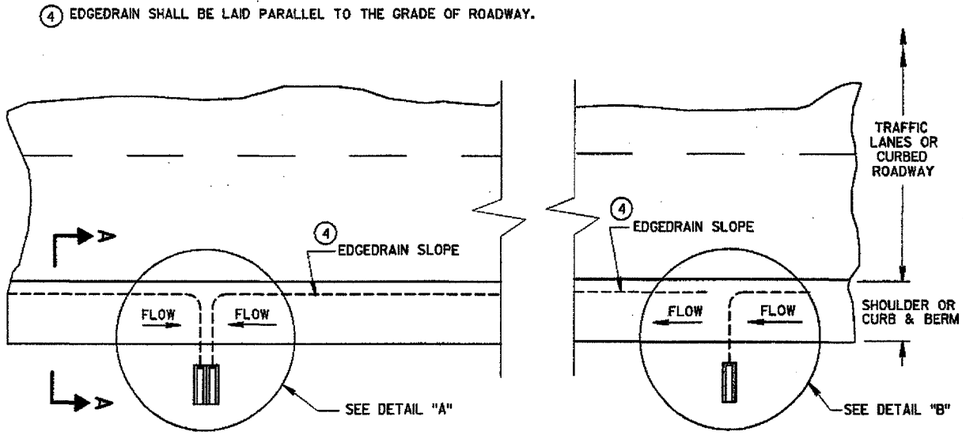
POLYVINYL CHLORIDE (PVC) PLASTIC DRAIN, WASTE, AND VENT PIPE AND FITTINGS, ASTM D 2665, SCHEDULE 40 PVC.

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 75 m 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.

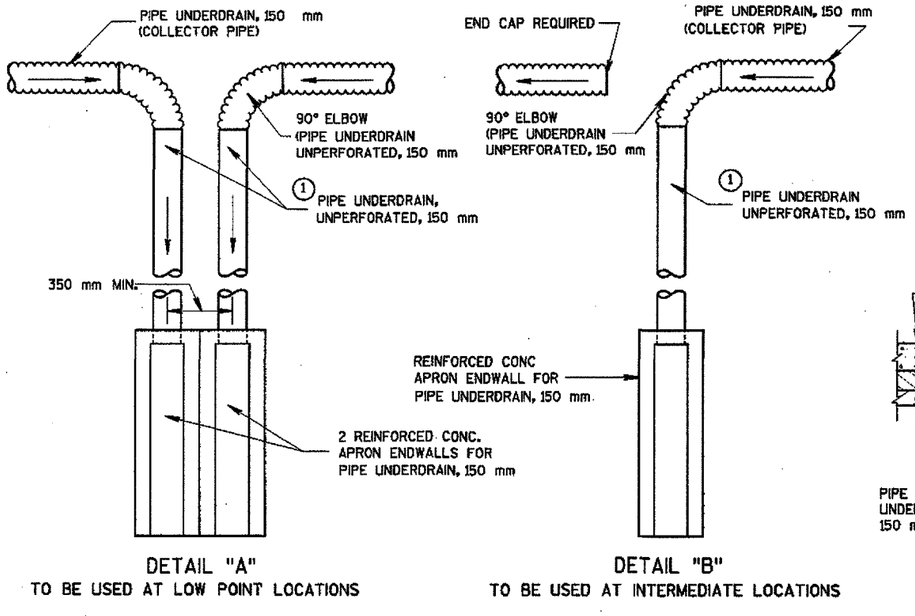
(4) EDGEDRAIN SHALL BE LAID PARALLEL TO THE GRADE OF ROADWAY.



PLAN VIEW

ROADWAY WITH SHOULDERS OR CURBS

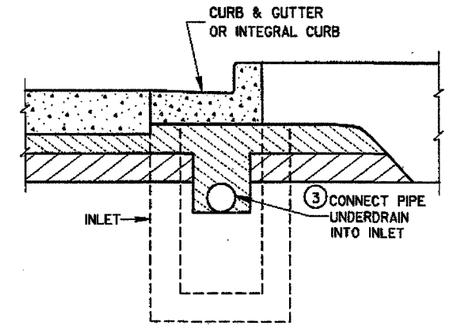
(EDGEDRAIN OUTLETS TO ROADSIDE)(2)



DETAIL "A"
TO BE USED AT LOW POINT LOCATIONS

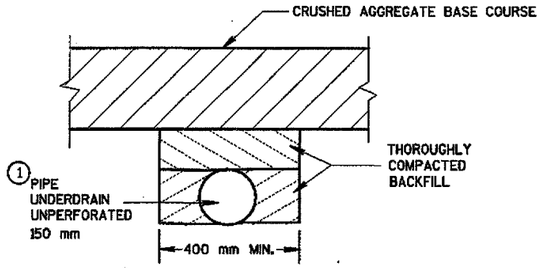
DETAIL "B"
TO BE USED AT INTERMEDIATE LOCATIONS

TYPICAL DRAIN OUT DETAILS



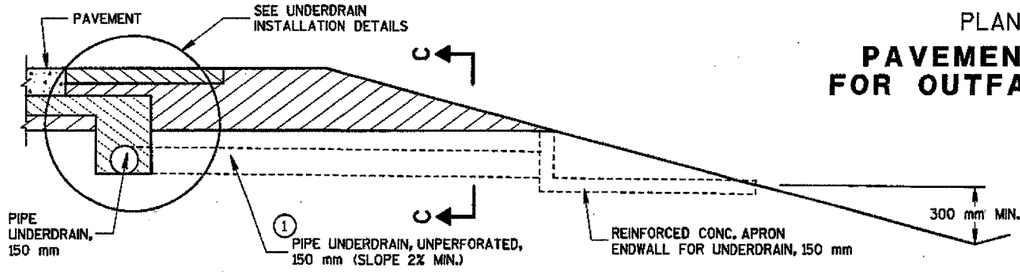
SECTION B-B

URBAN CROSS SECTION



SECTION C-C

(TRENCH FOR OUTFALL PIPE)

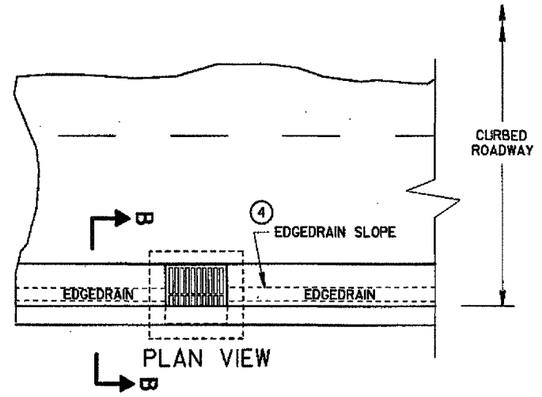


SECTION A-A

RURAL CROSS SECTION

NOTE

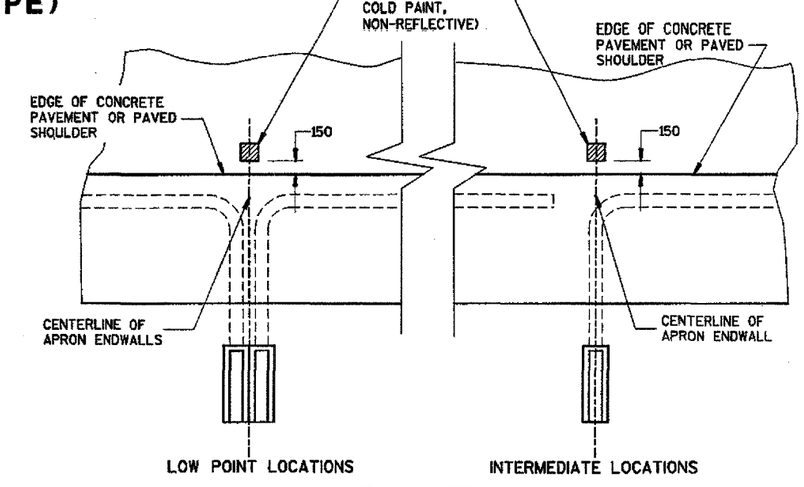
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN



PLAN VIEW

ROADWAY WITH CURBS

(EDGEDRAIN CONNECTS INTO INLET STRUCTURE)



PLAN VIEW

PAVEMENT MARKING FOR OUTFALL MARKERS

EDGEDRAIN OUTLET AND OUTFALL MARKERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

S.D.D. 8 D 15-3a

FILE NAME:

S.D.D. 8 D 15-3a

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.

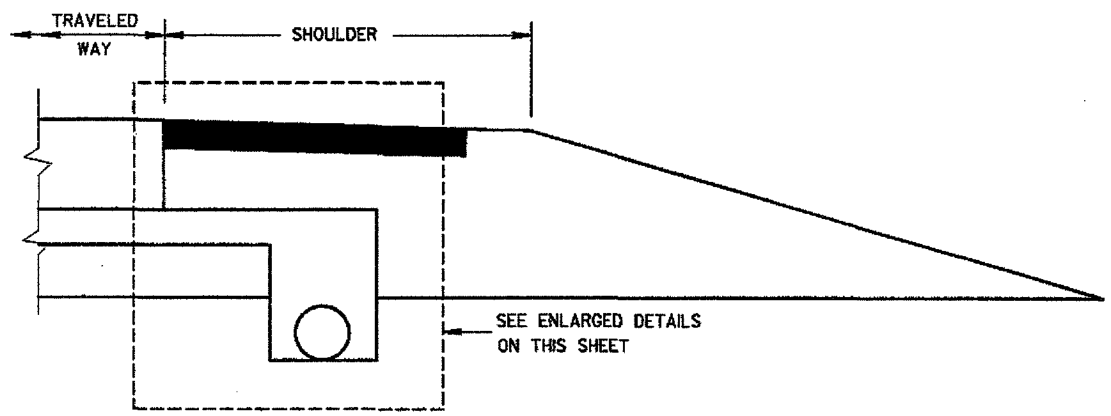
PIPE UNDERDRAIN SHALL BE LAID PARALLEL TO THE GRADE OF THE ROADWAY.

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

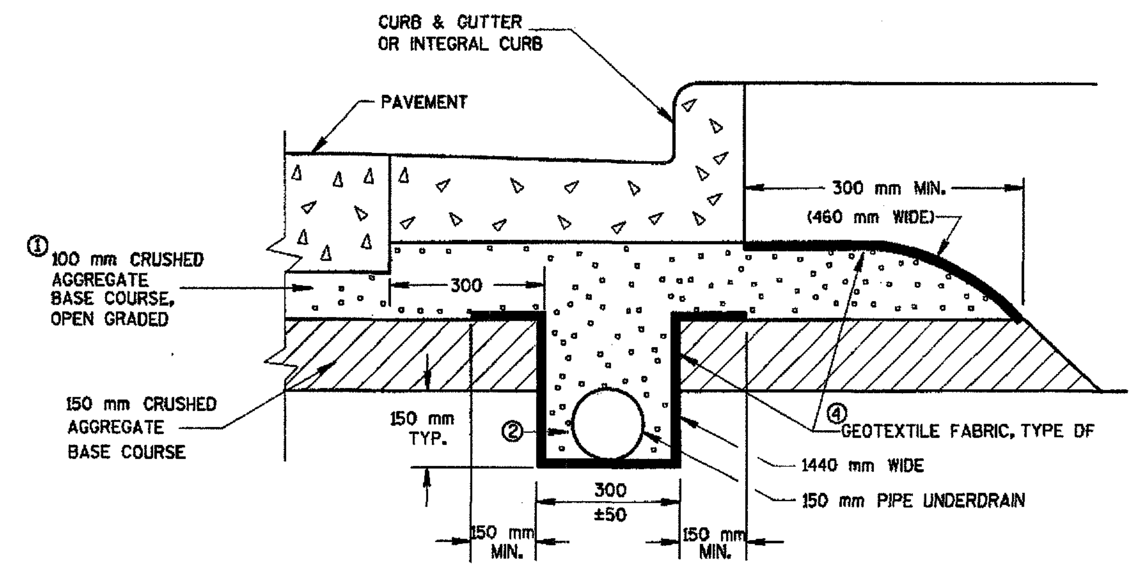
② TRENCH BACKFILL WILL BE PAID FOR AS CRUSHED AGGREGATE BASE COURSE, OPEN GRADED NO. 1 OR NO. 2 AS SPECIFIED.

③ FOLD OVER EXCESS GEOTEXTILE FABRIC AT THIS LOCATION.

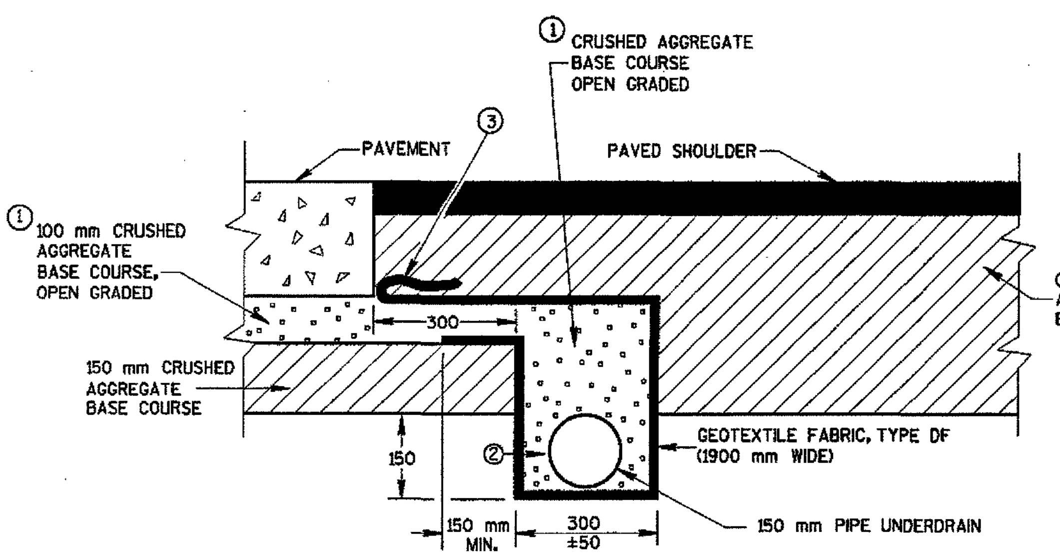
④ TOTAL FABRIC WIDTH IS 1900 mm FOR PAYMENT.



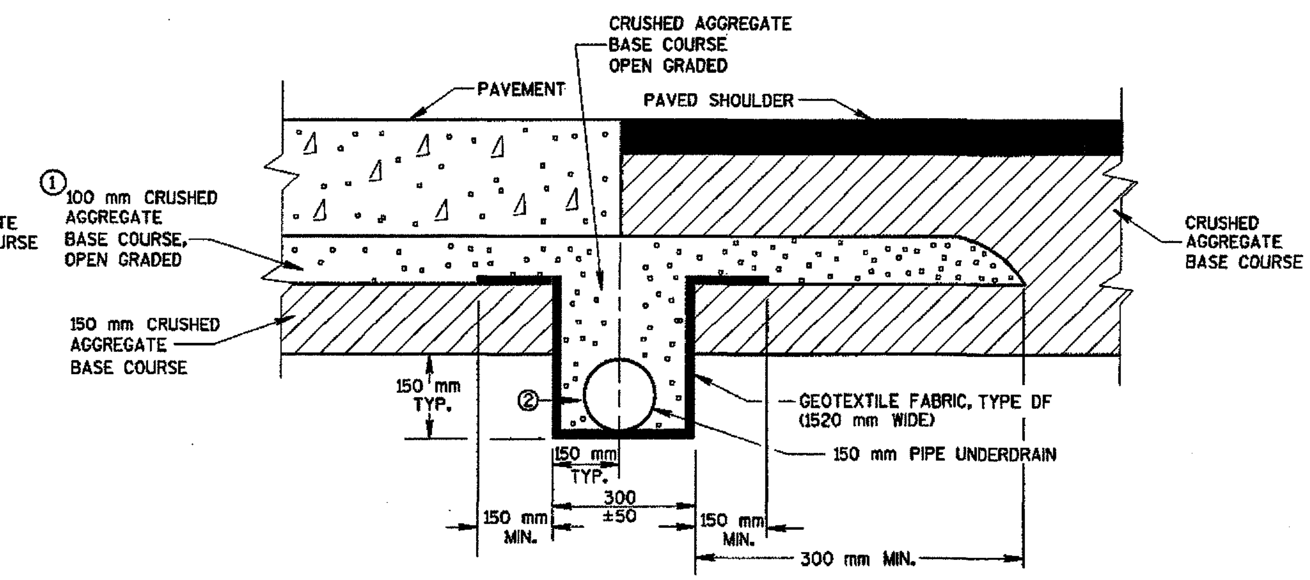
RURAL CROSS SECTION



EDGEDRAIN IN URBAN ROADWAY



POST PAVING INSTALLATION
(QUANTITIES ARE BASED ON THIS DETAIL)



PRE-PAVING INSTALLATION ALTERNATIVE

EDGEDRAIN IN RURAL ROADWAY

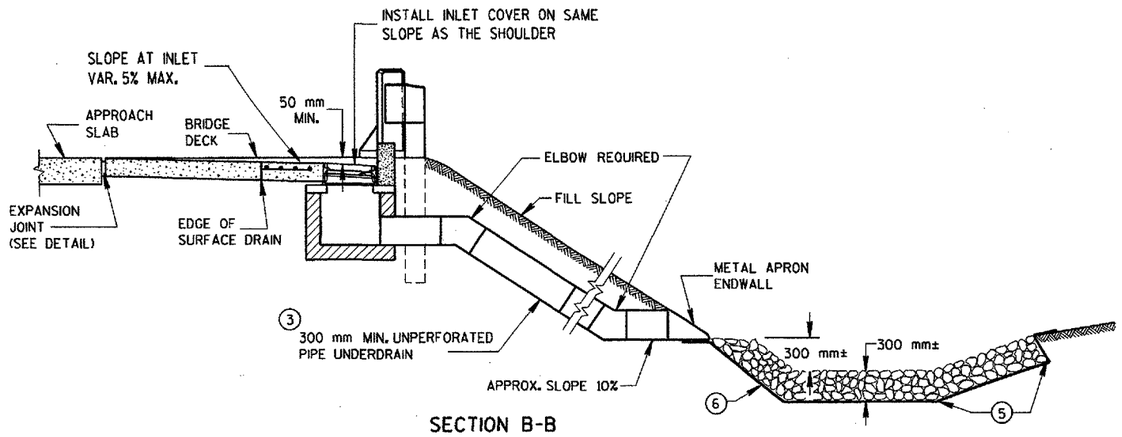
NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

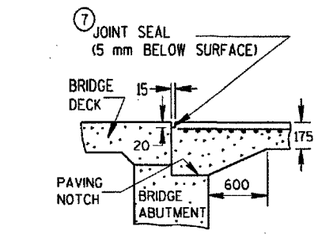
EDGEDRAIN AND CRUSHED AGGREGATE BASE COURSE, OPEN GRADED, NO. 1 OR NO. 2
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION
APPROVED 01/13/99 DATE — CHIEF ROADWAY DEVELOPMENT ENGINEER — FHWA — M

S.D.D. 8 D 15-3b

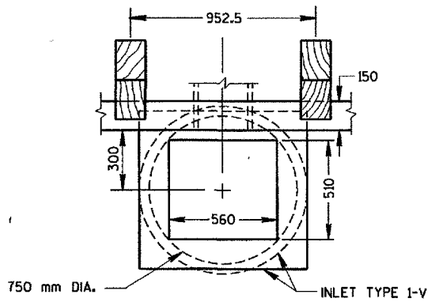
FILE NAME:



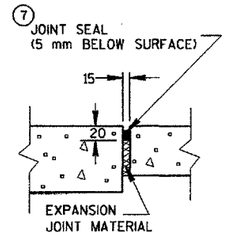
SECTION B-B



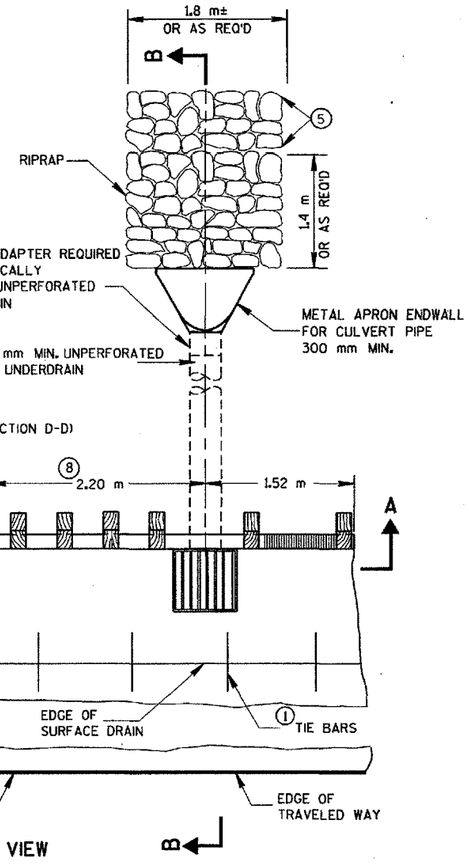
SECTION D-D
300 mm C-C.



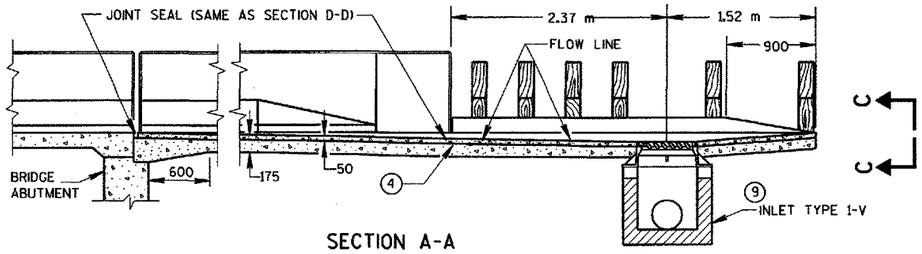
PLAN VIEW



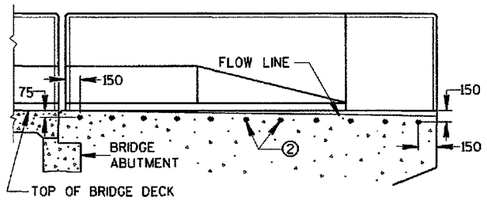
EXPANSION JOINT DETAIL



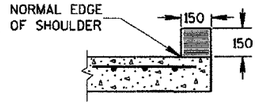
PLAN VIEW



SECTION A-A



LOCATION OF TIE BARS IN WINGWALL



SECTION C-C

GENERAL NOTES

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

(1) 10M X 600 mm TIE BARS SPACED AT 900 mm CENTERS TO BE USED ONLY WHEN ADJACENT TO P.C. CONCRETE.

(2) 10M X 600 mm TIE BARS SPACED AT 300 mm CENTERS TO BE PLACED BY BRIDGE CONTRACTOR, OR PAVEMENT TIES PLACED AS DIRECTED BY THE ENGINEER.

(3) THE PIPE UNDERDRAIN MAY BE ANY ONE OF THE SIX MATERIALS LISTED IN THE STANDARD SPECIFICATIONS SECTION 612.2 (EXCEPT SECTION 612.2.3 DRAIN TILE).

(4) MINIMUM REINFORCEMENT SHALL BE 6 X 6 - W4.0 X W4.0 (OR METRIC EQUIVALENT) OR 10M BARS LONGITUDINAL AND TRANSVERSE SPACING 300 mm C-C.

(5) LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.

(6) GEOTEXTILE FABRIC, TYPE 'R"

(7) HOT POURED SEALANT UNLESS OTHERWISE SPECIFIED.

(8) THIS DIMENSION MAY VARY DEPENDING ON THE SPACING OF POSTS FOR THE STEEL PLATE BEAM GUARD. THE TYPICAL LOCATION FOR THE SURFACE DRAIN IS WHERE THE POST SPACING WIDENS TO 952.5 mm.

(9) SEE CURRENT STANDARD DETAIL DRAWINGS 8A5 AND 8C1 FOR DETAILS.

NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

CONCRETE SURFACE DRAIN DROP INLET TYPE AT STRUCTURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 02/07/95 DATE
Roy L. Rhinesmith
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

M

S.D.D. 8 D 3-4

S.D.D. 8 D 3-4

PLOT SCALE:

PLOT NAME:

REV. DATE:

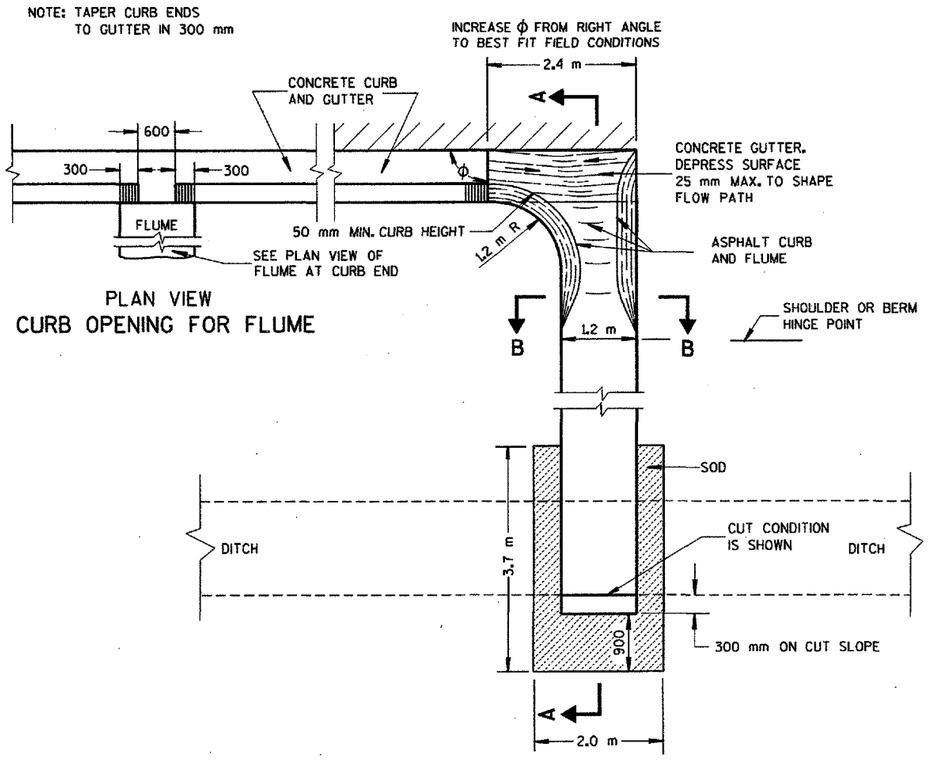
ORIGINATOR:

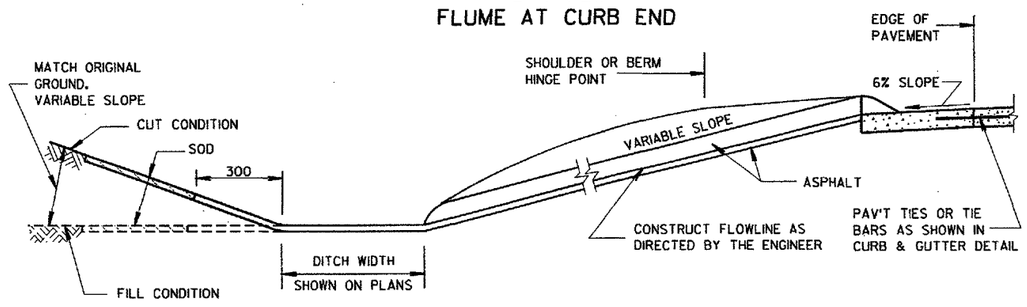
LEVELS ON - 2,3,4,5,6,7,8, 9,10,11,12,13,14,15, 16,17,18,19, 20,21,22, 23,24, 25,26,27, 28,29,30,31,32,33, 34,35,36,37,38, 39, 40,41, 42,43,44, 45,46,47, 48, 49,50,51, 52,53,54,55,56,57,58,59,60,61,62,63

S.D.D. 8 D 4-3

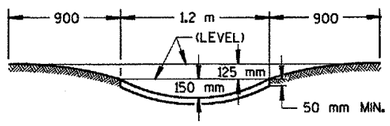
FILE NAME:

ASPHALTIC FLUME





SECTION A-A



SECTION B-B

GENERAL NOTES

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

WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

① JOINTS SHALL BE 5 mm WIDE BY 40 mm DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 1.2 m.

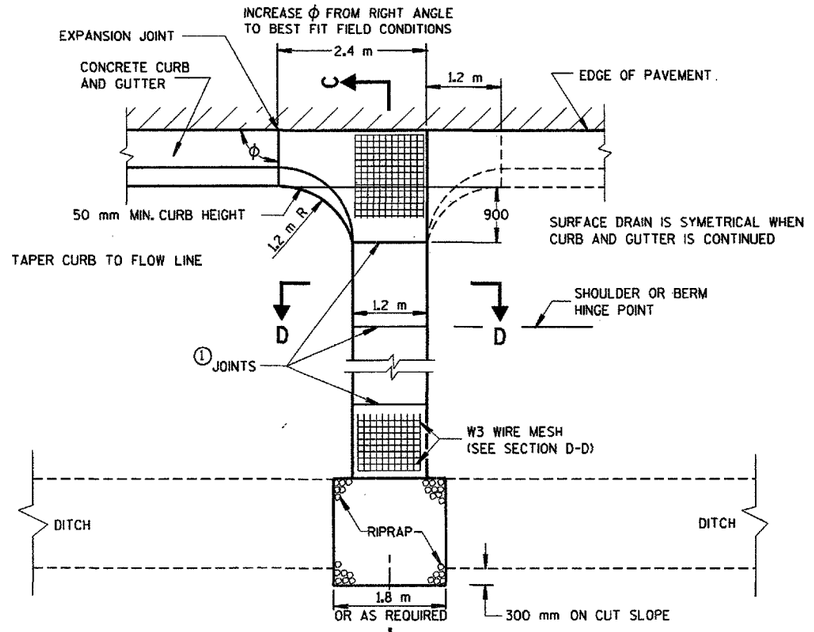
② GEOTEXTILE FABRIC TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.

③ CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED

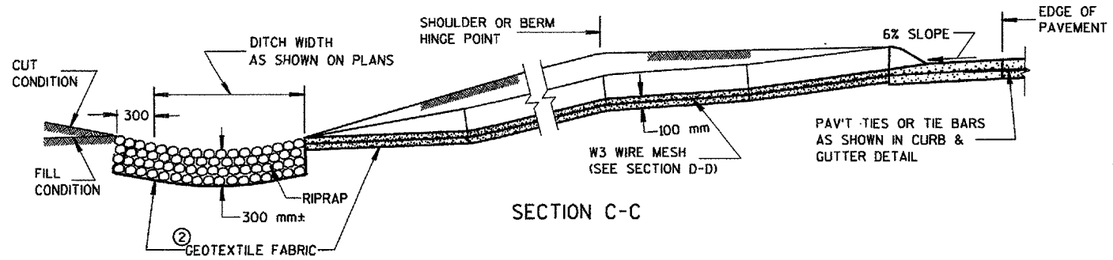
NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

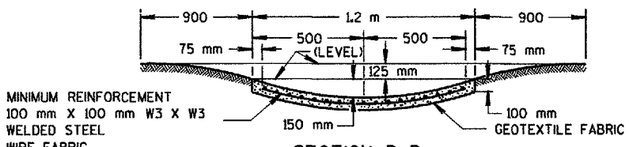
③ CONCRETE SURFACE DRAIN



PLAN VIEW



SECTION C-C



SECTION D-D

CONCRETE SURFACE DRAIN & ASPHALTIC FLUME

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 02/08/95 (DATE)

Roy L. Hutchinson
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

M

S.D.D. 8 D 4-3

PLOT SCALE:

PLOT NAME:

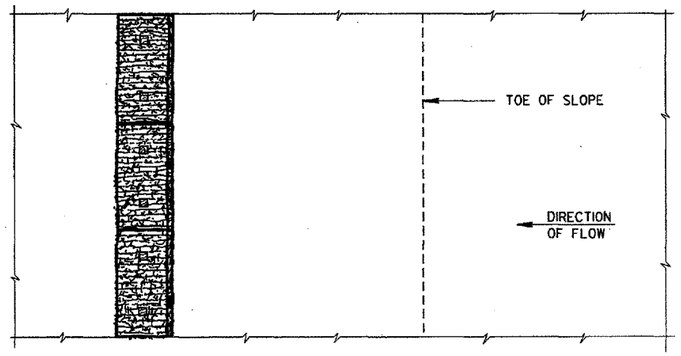
REV. DATE:

ORIGINATOR:

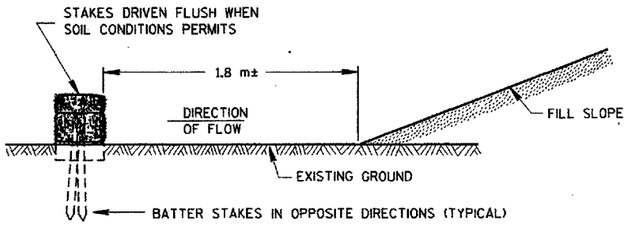
LEVELS ON • 2,3,4,5,6,7,8, 9,10,11,12,13,14,15, 16,17,18,19, 20,21,22, 23,24,25,26,27, 28,29,30,31,32,33, 34,35,36,37,38,39, 40,41,42,43,44,45,46,47,48, 49,50,51,52,53,54,55,56,57,58,59,60,61,62,63

S.D.D. 8 E 8-2

FILE NAME:



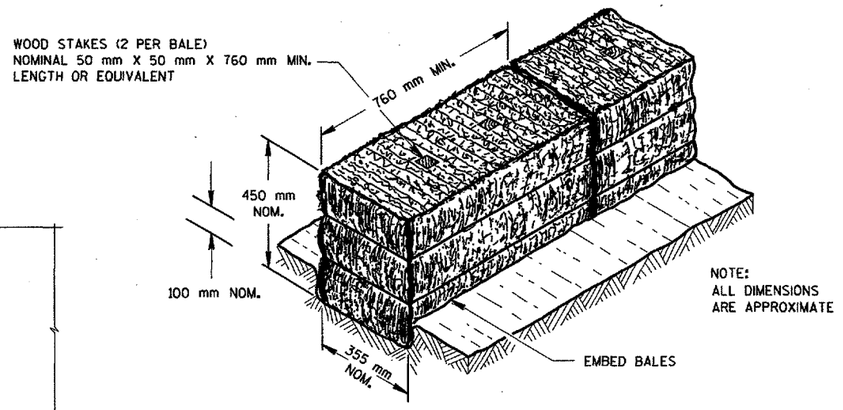
PLAN VIEW

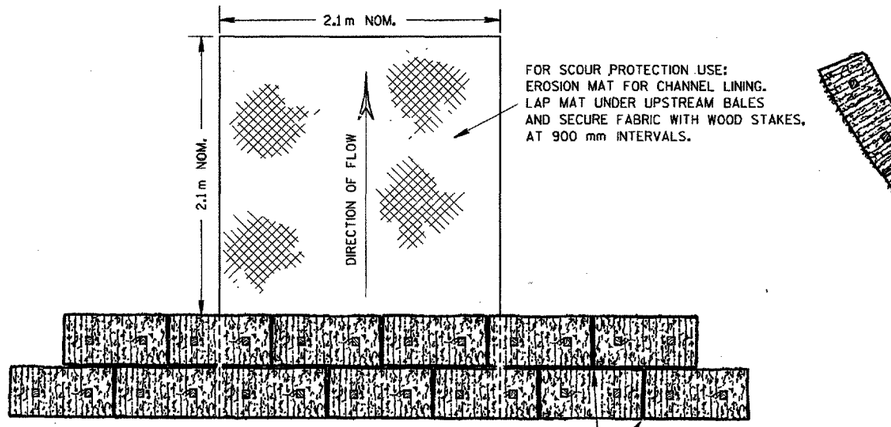


FRONT ELEVATION

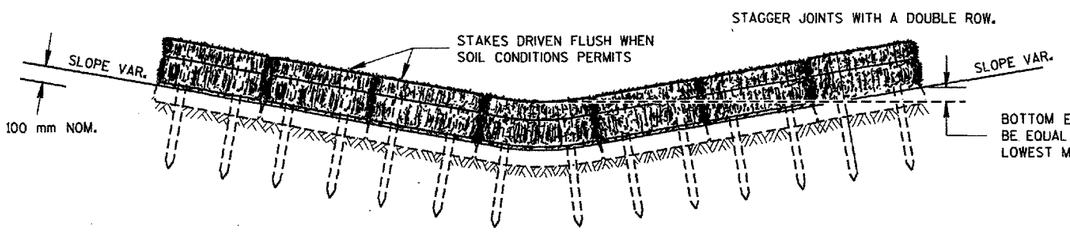
WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW





PLAN VIEW

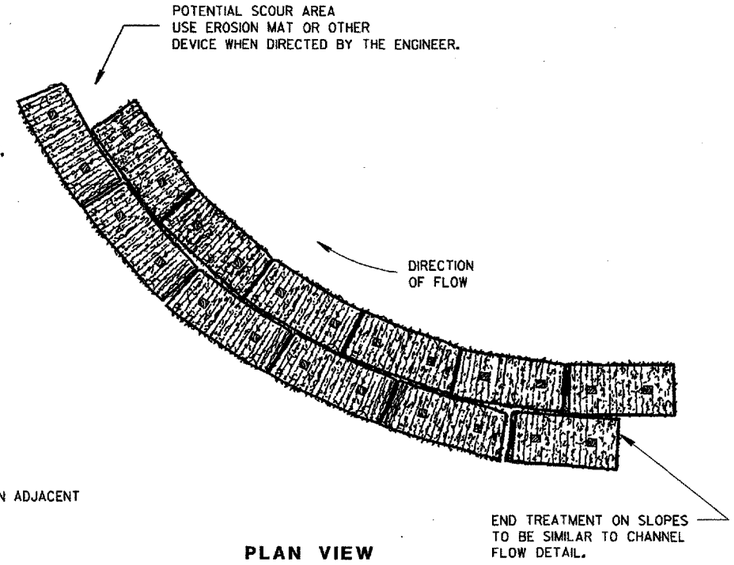


FRONT ELEVATION

EROSION BALES FOR CHANNEL FLOW

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.



PLAN VIEW

EROSION BALES WHEN ALTERING THE DIRECTION OF FLOW

TYPICAL INSTALLATIONS OF EROSION BALES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

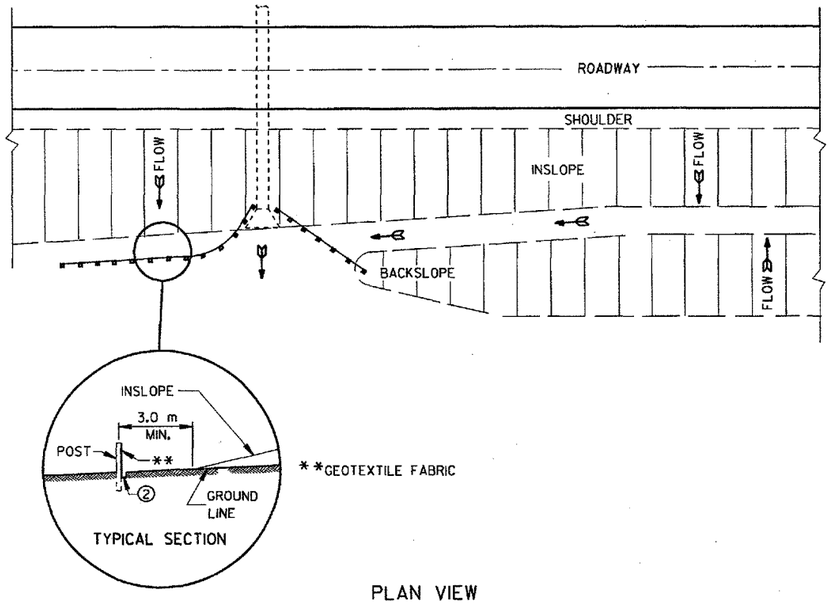
APPROVED
01/27/95
DATE

Roy L. Thimesch
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

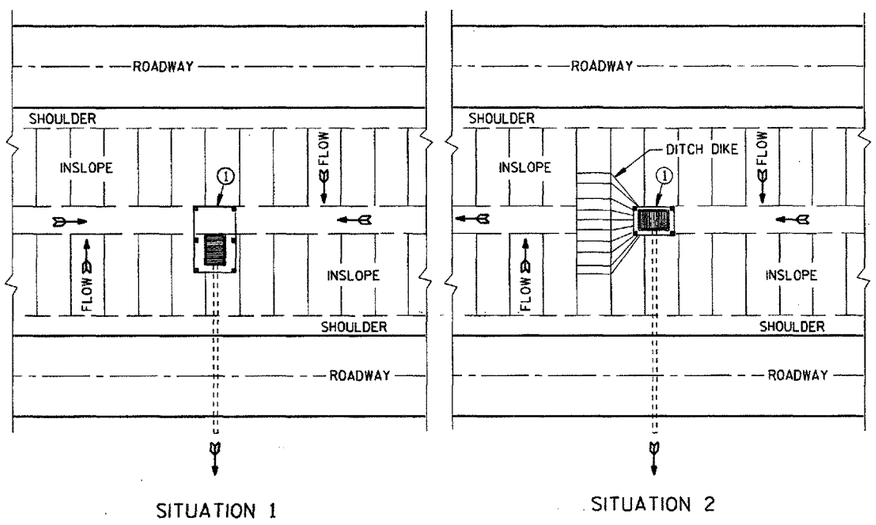
M

S.D.D. 8 E 8-2



PLAN VIEW

TYPICAL APPLICATIONS OF SILT FENCE



PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

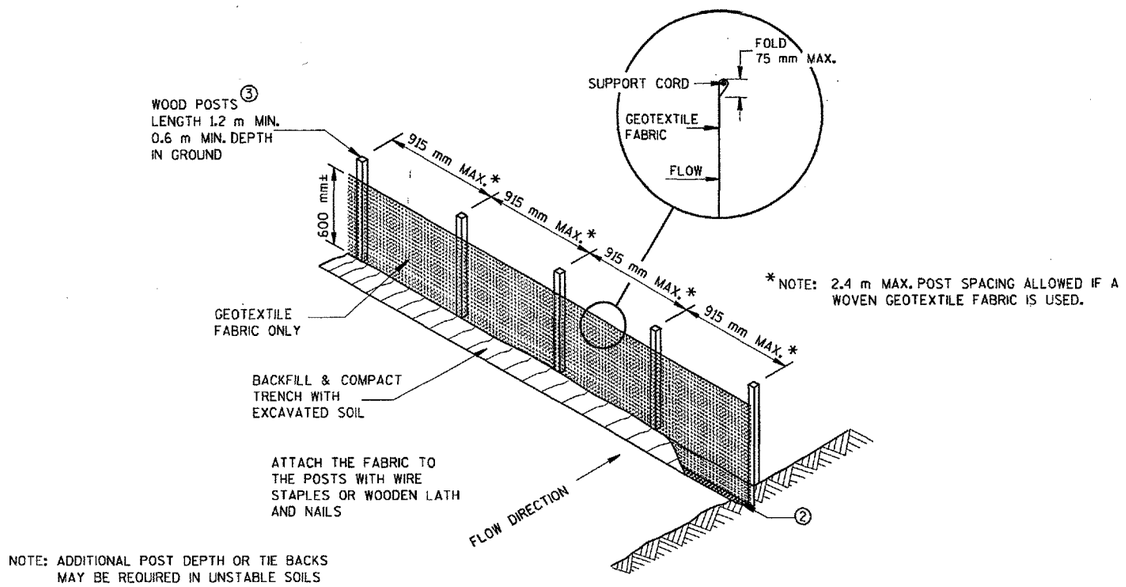
GENERAL NOTES

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 50 mm X 100 mm WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS AS DIRECTED BY THE ENGINEER.

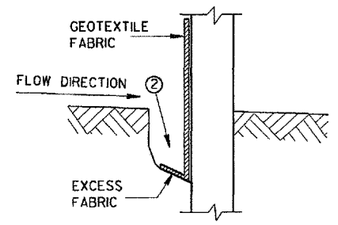
② TRENCH SHALL BE A MINIMUM OF 100 mm WIDE & 150 mm DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.

③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 30 mm X 30 mm OF OAK OR HICKORY.

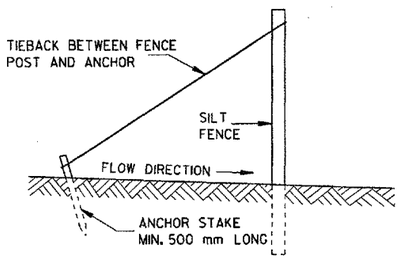


NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS

SILT FENCE
(NON-REINFORCED)



TRENCH DETAIL



SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
03/11/96
DATE
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

M

S.D.D. 8 E 9-5

PLOT SCALE:

PLOT NAME:

REV. DATE:

ORIGINATOR:

LEVELS ON = 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

S.D.D. 8 E 9-5

FILE NAME:

PLOT SCALE:

PLOT NAME:

REV. DATE:

ORIGINATOR:

LEVELS ON - 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

S.D.D. 8 F 1-11

FILE NAME:

METAL APRON ENDWALLS

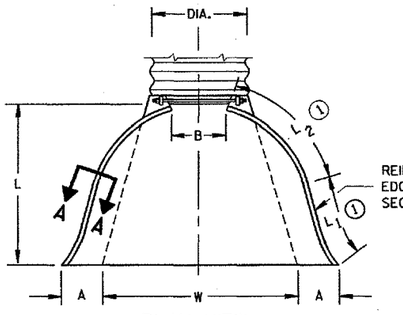
PIPE DIA. (mm)	MIN. THICK. (mm) STEEL	MIN. THICK. (mm) ALUM.	DIMENSIONS (MILLIMETERS) A (±1")	B (MAX.)	H (±1")	L (±1½")	L_1 ①	L_2 ①	W (±2")	APPROX. SLOPE	BODY
300	1.6	1.5	150	150	150	535	305	445	610	1:2.5	1 Pc.
375	1.6	1.5	180	205	150	660	355	552	760	1:2.5	1 Pc.
450	1.6	1.5	205	255	150	790	380	718	915	1:2.5	1 Pc.
525	1.6	1.5	230	305	150	915	455	752	1065	1:2.5	1 Pc.
600	1.6	1.5	255	330	150	1040	455	949	1220	1:2.5	1 Pc.
750	2.0	1.9	305	405	205	1300	455	1327	1525	1:2.5	1 Pc.
900	2.0	1.9	355	480	230	1525	610	1905	1830	1:2.5	2 Pc.
1050	2.8	2.7	405	560	280	1755	610	1921	2135	1:2.5	2 Pc.
1200	2.8	2.7	455	685	305	1980	610	2057	2285	1:2.5	3 Pc.
1350	2.8	2.7	455	760	305	2140	760	2172	2590	1:2.25	3 Pc.
1500	2.8×	2.7×	455	840	305	2210	—	—	2895	1:2	3 Pc.
1650	2.8×	2.7×	455	915	305	2210	—	—	3050	1:2	3 Pc.
1800	2.8×	2.7×	455	990	305	2210	—	—	3200	1:2	3 Pc.
1950	2.8×	2.7×	455	1070	305	2210	—	—	3355	1:1.5	3 Pc.
2100	2.8×	2.7×	455	1145	305	2210	—	—	3505	1:1.5	3 Pc.
2250	2.8×	2.7×	455	940	305	2210	—	—	3660	1:1.5	3 Pc.
2400	2.8×	2.7×	455	890	305	2210	—	—	3960	1:1.5	3 Pc.

× EXCEPT CENTER PANEL SEE GENERAL NOTES

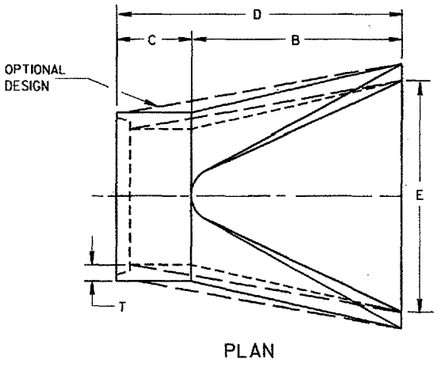
REINFORCED CONCRETE APRON ENDWALLS

PIPE DIA. (mm)	DIMENSIONS (MILLIMETERS) T	A	B	C	D	E	G	APPROX. SLOPE
305	51	102	610	1241	1851	610	51	1:3
380	57	152	686	1168	1854	762	57	1:3
450	64	229	686	1168	1854	914	64	1:3
525	70	229	915	953	1867	1067	70	1:3
600	76	241	1105	762	1867	1219	76	1:3
675	83	267	1257	610	1867	1372	83	1:3
750	89	305	1372	502	1867	1524	89	1:3
900	102	381	1600	883	2483	1829	102	1:3
1050	114	533	1600	889	2489	1981	114	1:3
1200	127	610	1829	660	2489	2134	127	1:3
1350	140	686	1651	* 635 ** 889	* 2496 ** 2540	2286	140	1:2.4
1500	152	* 762 ** 924	1524	991	2515	2448	127	1:2
1650	165	* 610 ** 762	* 1829 ** 1981	* 533 ** 686	2515	2591	140	1:2
1800	178	* 610 ** 915	1981	533	2515	2743	152	1:2
1950	190	* 610 ** 915	1981	533	2515	2896	165	1:2
2100	203	915	2299	533	2832	3048	165	1:1.5
2250	216	1041	2222	610	2832	3353	165	1:1.5

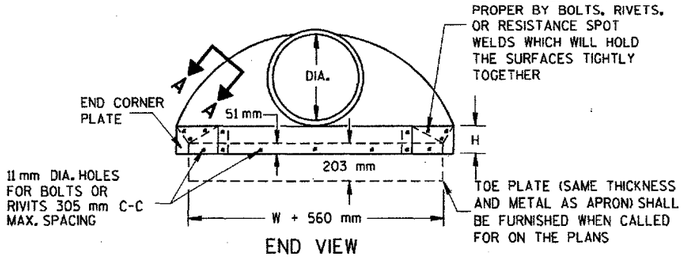
* MINIMUM
** MAXIMUM



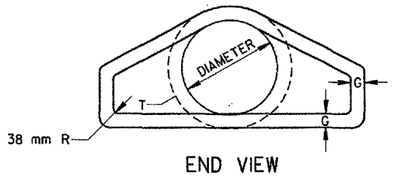
PLAN VIEW



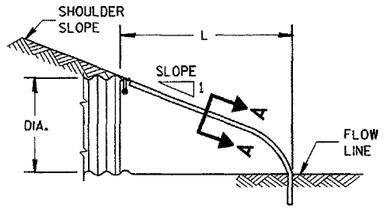
PLAN



END VIEW

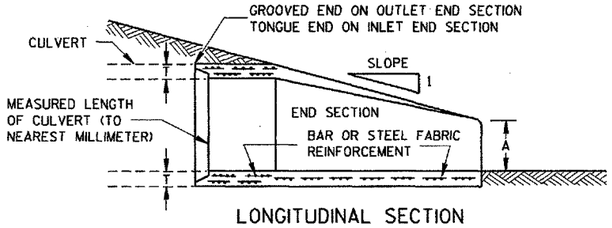


END VIEW



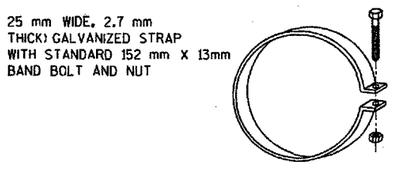
SIDE ELEVATION

METAL ENDWALLS



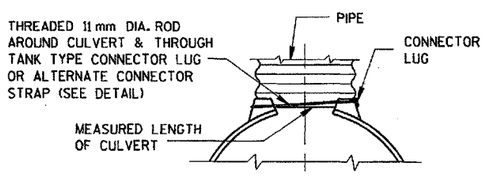
LONGITUDINAL SECTION

CONCRETE ENDWALLS

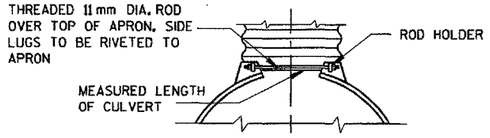


ALTERNATE FOR TYPE 1 CONNECTION

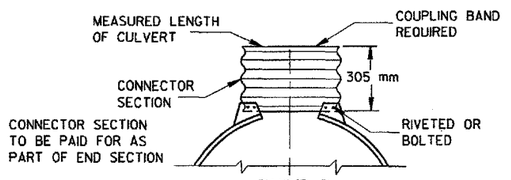
END SECTION CONNECTOR STRAP



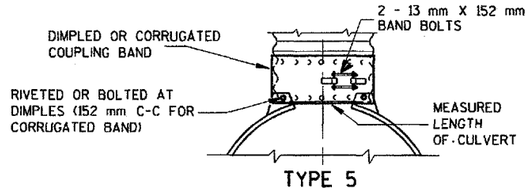
TYPE 1
FOR 300 mm THRU 600 mm CORR. PIPE



TYPE 2
FOR 750 mm THRU 2400 mm CORR. PIPE



TYPE 3
FOR 1050 mm THRU 2400 mm CORR. PIPE



TYPE 5

ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

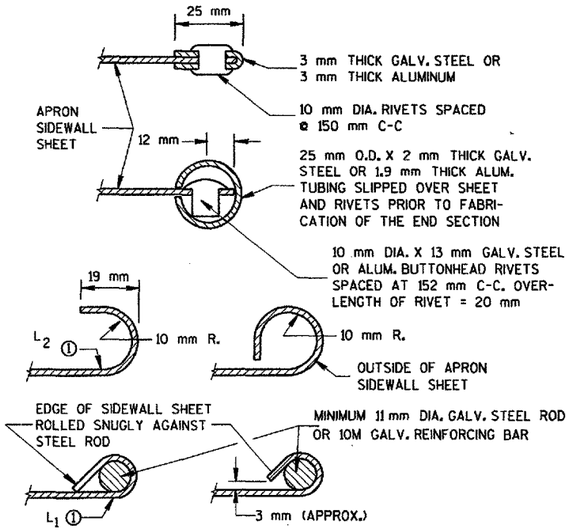
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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 VISE VERSA. GALVANIZED STEEL OR ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 1500 mm DIAMETER PIPE AND LARGER SHALL HAVE 2.8 mm SIDES AND 3.5 mm CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 1500 mm DIAMETER PIPE AND LARGER SHALL HAVE 3.4 mm SIDES AND 3.4 mm 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 1500 mm THROUGH 2400 mm 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 152 mm BETWEEN APRON ENDWALLS.

① FOR PIPE SIZES UP TO 1500 mm DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR CULVERT PIPE

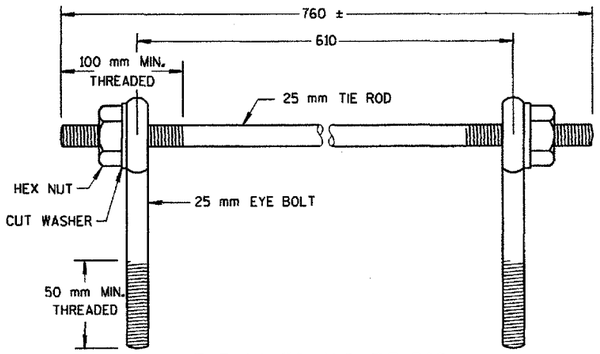
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 01/27/95 DATE
Roy L. Thomas
CHIEF ROADWAY DEVELOPMENT ENGINEER

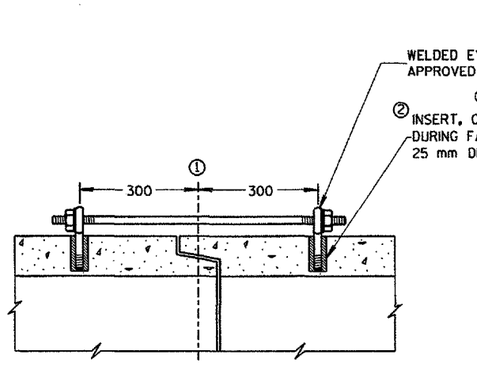
FHWA

M

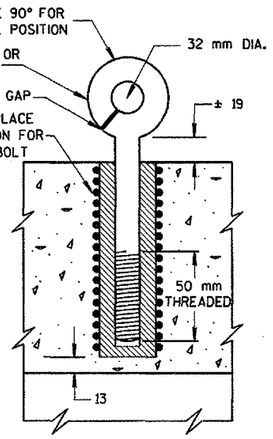
S.D.D. 8 F 1-11



EYE BOLTS AND TIE ROD



(CAST-IN-PLACE THREADED INSERT)



LONGITUDINAL SECTIONS

GENERAL NOTES

CONCRETE CULVERT PIPE SHALL BE TIED TOGETHER IN THE MANNER ILLUSTRATED BY THIS DETAIL AT LOCATIONS DESIGNATED ON THE PLAN. THE CONTRACTOR MAY USE EITHER ALTERNATE 1, 2 OR 3 FOR DRAINAGE STRUCTURES. ONLY ALTERNATE 1 AND 3 MAY BE USED FOR CATTLE PASSES, UNLESS OTHERWISE STATED IN THE CONTRACT THE MATERIALS, FABRICATION AND WORK NECESSARY TO TIE CULVERT PIPE AS INDICATED ON THE PLANS AND BY THIS DETAIL WILL BE CONSIDERED INCIDENTAL TO CULVERT PIPE, REINFORCED CONCRETE CULVERT PIPE, OR REINFORCED CONCRETE PIPE CATTLE PASS.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR JOINT TIES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

① CENTERLINE OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.

② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.

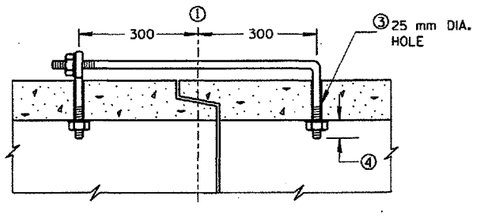
③ HOLES SHALL BE CAST-IN-PLACE OR DRILLED.

④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 50 mm.

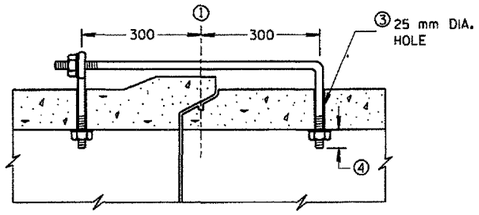
⑤ ROD DIAMETER + 25 mm.

⑥ LENGTH ADEQUATE TO EXTEND TO WITHIN 13 mm OF THE INNER SURFACE OF THE PIPE.

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 1)



(TONGUE & GROOVE PIPE)



(MODIFIED BELL PIPE)

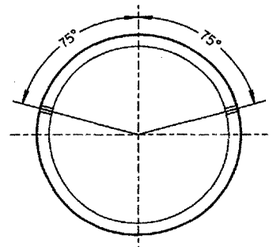
LONGITUDINAL SECTION

EYE BOLT DIMENSION TABLE

PIPE SIZE	L = LENGTH	
	TONGUE & GROOVE PIPE	MODIFIED BELL PIPE
400-600	115	160
750	130	180
900	140	180
1000	150	
1200	165	
1500	190	
1650	200	

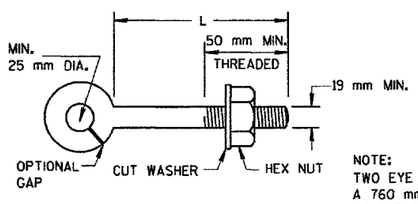
ADJUSTABLE TIE ROD TABLE

PIPE DIAMETER	TIE ROD DIAMETER	D	L_1	N
300-1500	16	16	125	13
1650-2100	19	19	125	13
2250-2700	25	25	180	36

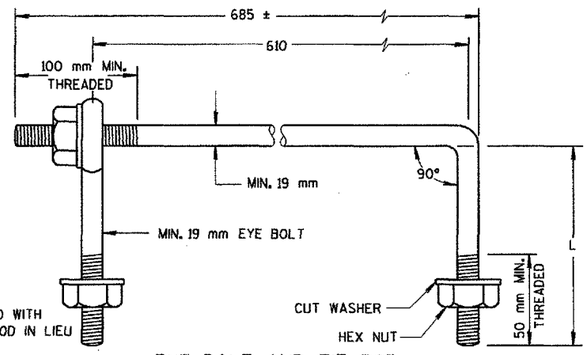


PLACEMENT OF (2) CAST-IN-PLACE INSERTS OR HOLES DURING FABRICATION FOR PIPE SECTIONS REQUIRING TIE RODS

TRANSVERSE SECTION



EYE BOLT

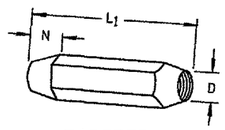


NOTE:
TWO EYE BOLTS MAY BE USED WITH A 760 mm LONG THREADED ROD IN LIEU OF THE 90° BENT TIE ROD.

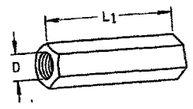
EYE BOLT AND TIE ROD

(JOINT TIES FOR 450 mm TO 1650 mm DIA. CONCRETE PIPE)

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 2)



TAPERED



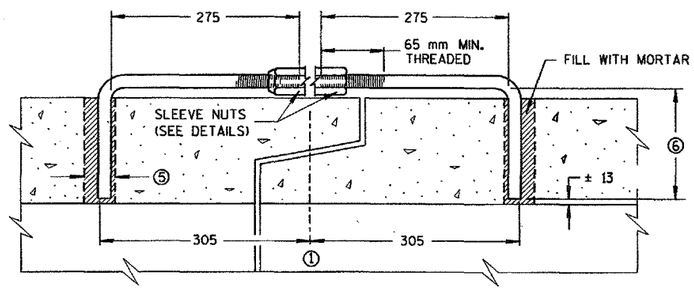
PLAIN

RIGHT AND LEFT THREADS

SLEEVE NUTS

NOTE

ALL DIMENSIONS IN THIS DRAWING ARE IN MILLIMETERS.



LONGITUDINAL SECTION

(JOINT TIES FOR 300 mm TO 2700 mm DIA. CONCRETE PIPE)

ADJUSTABLE TIE ROD (ALTERNATE NO. 3)

JOINT TIES FOR CONCRETE PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
01/27/05
DATE

Roy L. Thompson
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

M

S.D.D. 8 F 4-5

PLOT SCALE:

PLOT NAME:

REV. DATE:

ORIGINATOR:

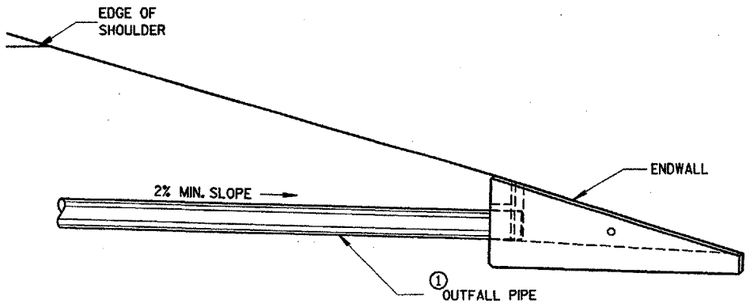
LEVELS ON - 2,3,4,5,6,7,8, 9,10,11, 12,13,14,15, 16,17, 18,19, 20,21,22, 23,24, 25, 26,27, 28,29,30,31, 32,33, 34,35,36,37,38,39, 40,41, 42,43, 44, 45, 46,47, 48, 49,50,51,52,53,54,55,56,57,58,59,60,61,62,63

FILE NAME:

S.D.D. 8 F 4-5

DIMENSIONS IN MILLIMETERS											
PIPE DIA.	A	B	C	D	E	F	G	H	J	L	Z
**100	155	305	135	230	205	815	915	280	60	165	100
150	205	355	185	280	255	1065	1115	330	90	215	150

**APRON ENDWALL FOR 150 mm DIAMETER PIPE MAY BE SUBSTITUTED FOR THIS SIZE PROVIDED THE HOLE IN THE HEADWALL IS SIZED AND LOCATED TO CONFORM TO THE 100 mm DIAMETER PIPE DIMENSIONS (C & J)



INSTALLATION DETAIL

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.

ALTERNATIVE DESIGNS WHICH PROVIDE EQUIVALENT CAPACITY AND STRENGTH MAY BE USED WHEN APPROVED BY THE ENGINEER. ENDWALL MAY BE EITHER PRECAST OR CAST-IN-PLACE CONCRETE.

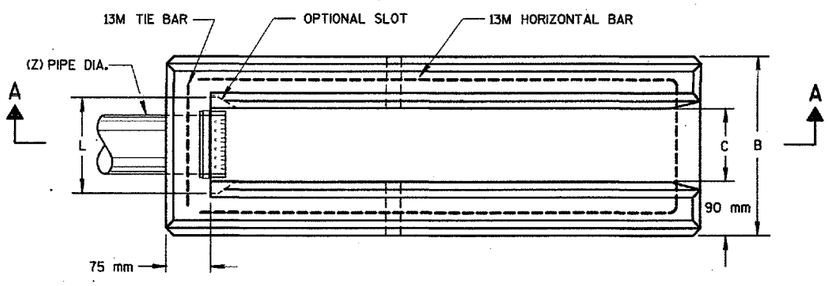
THE UNDERDRAIN PIPE SHALL BE FULLY INSERTED AND SEALED INTO THE ENDWALL WITH CEMENT MORTAR PRIOR TO BACKFILLING AROUND THE STRUCTURE.

THE UPPERMOST POINT OF THE ENDWALL SHALL BE PLACED FLUSH WITH THE ROADWAY SLOPE. ADJACENT EMBANKMENT SLOPES SHALL BE SHAPED TO FIT THE SIDES AND TOE OF THE ENDWALL. EXACT PLACEMENT OF THE OUTFALL PIPE AND ENDWALL SHALL BE DETERMINED BY THE ENGINEER TO MATCH THE ELEVATIONS AND FLOW DIRECTION OF THE ROADSIDE DITCH.

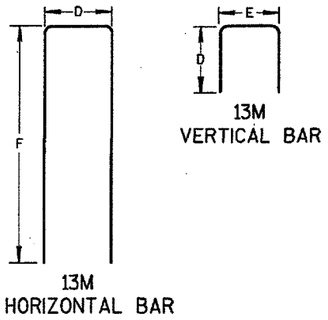
① THE OUTFALL PIPE UNDERDRAIN AND FITTINGS SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATION FOR POLY (VINYL CHORIDE) (PVC) PLASTIC DRAIN, WASTE AND VENT PIPE AND FITTINGS, ASTM DESIGNATION: D 2665, SCHEDULE 40 PVC OR THE STANDARD SPECIFICATION FOR TYPE PSM POLY (VINYL CHORIDE) (PVC) SEWER PIPE AND FITTINGS, ASTM DESIGNATION: D 3034, TYPE PSM SDR 23.5 PVC SEWER PIPE, ALL JOINTS SHALL BE SOLVENT WELDED.

THE OUTFALL PIPE INCLUDING ALL FITTINGS AND THE RODENT SHIELD SHALL BE MEASURED AND PAID FOR AS PIPE UNDERDRAIN UNPERFORATED.

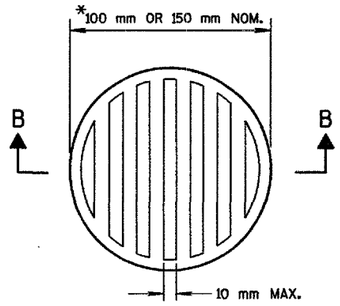
② THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALLY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE OUTFALL PIPE. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE M5 X 30 mm STAINLESS STEEL SHEET METAL SCREWS.

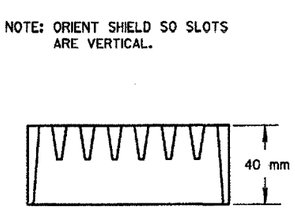


PLAN VIEW



BAR STEEL REINFORCEMENT DETAILS

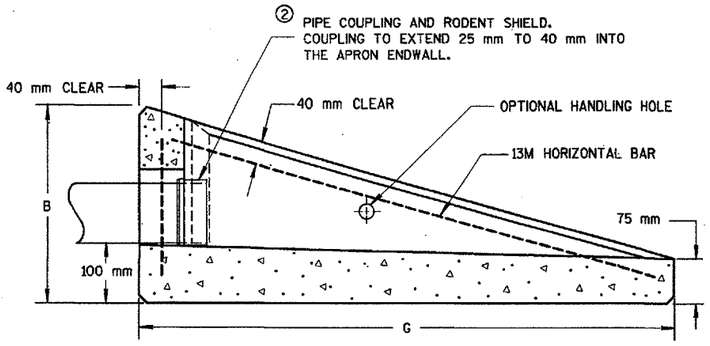




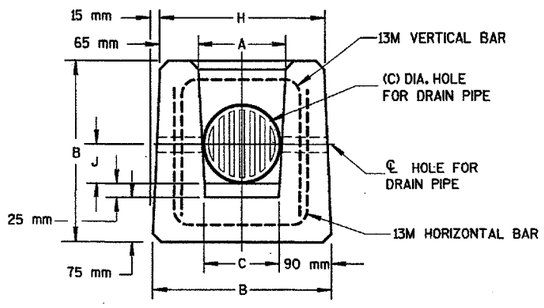
SECTION B-B

② RODENT SHIELD

*NOTE: DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING.



SECTION A-A



END VIEW

CONCRETE APRON ENDWALL FOR UNDERDRAIN

REINFORCED CONCRETE APRON ENDWALL FOR PIPE UNDERDRAIN

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

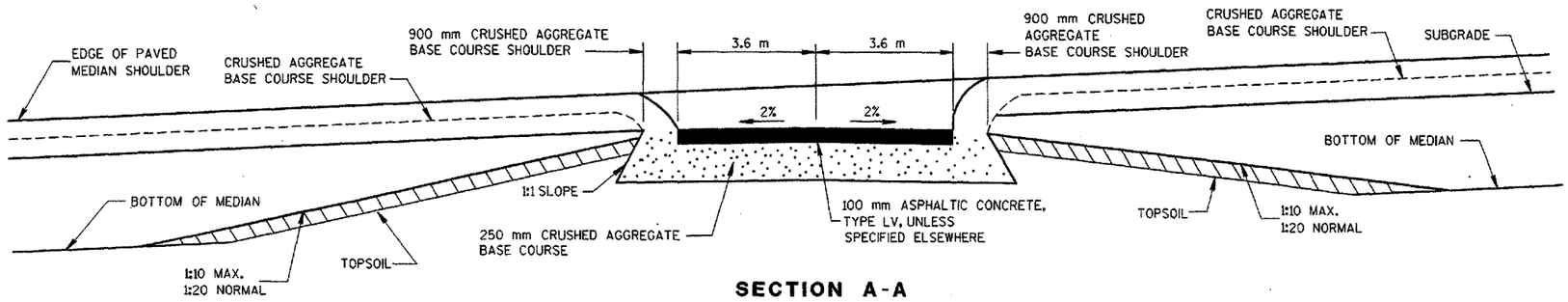
APPROVED 3/10/98 DATE
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

M

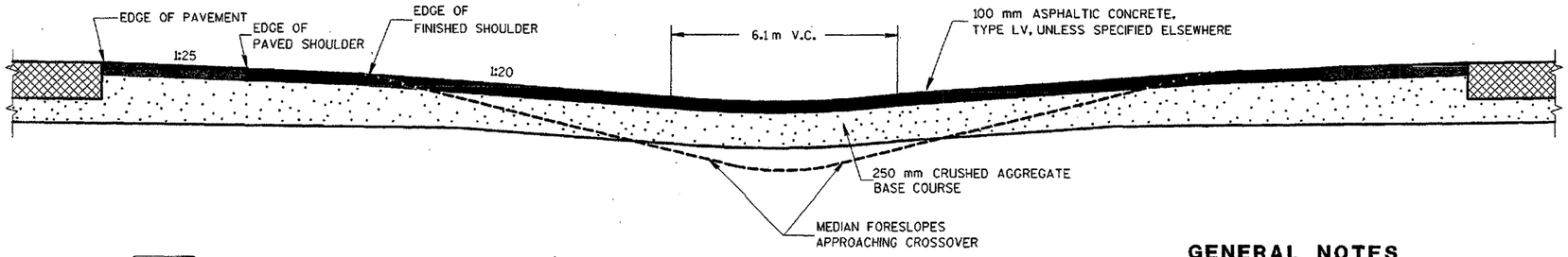
S.D.D. 8 F 6-4

PLOT SCALE:
PLOT NAME:
REV. DATE:
ORIGINATOR:
LEVELS ON - 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
FILE NAME:

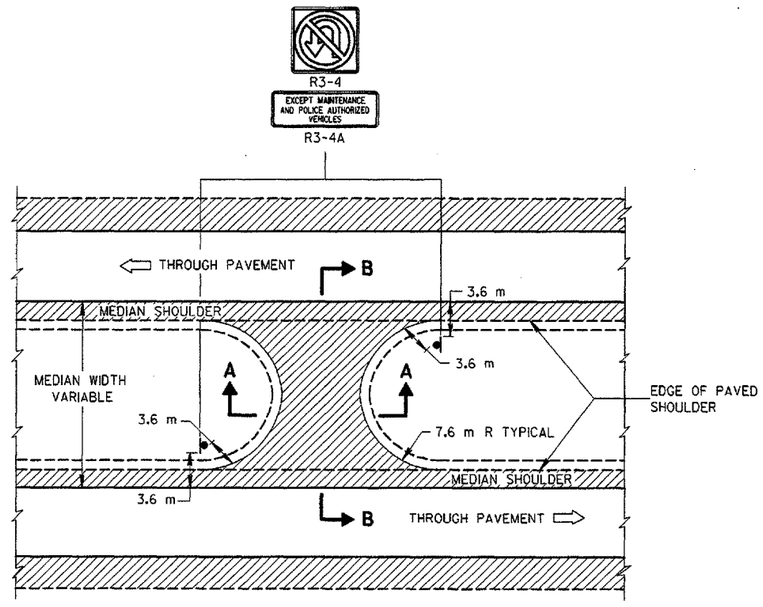
S.D.D. 8 F 6-4



SECTION A-A



SECTION B-B



PLAN VIEW

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.

INSTALL SIGNS R3-4 AND R3-4A IN LOCATION SHOWN.

SIGNING DETAILS AND SPECIFICATIONS ARE PROVIDED ELSEWHERE IN THE CONTRACT.

MAINTENANCE CROSSOVER FOR FREEWAYS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 01/06/98 DATE
Roy L. Amundsen
CHIEF ROADWAY DESIGN ENGINEER

FHWA

M

S.D.D. 11 A 1-3

S.D.D. 11 A 1-3

PAVEMENT TYPE OF TRAFFIC LANES	TIE BAR SPACING (mm)	SHOULDER JOINT SPACING
NON-REINFORCED	600	MATCH JOINT SPACING OF ADJACENT TRAFFIC LANE
REINFORCED	600	6.0 m AND MATCH JOINT SPACING OF ADJACENT TRAFFIC LANE
CONTINUOUSLY REINFORCED	600	3.6 m FOR 1.8 m TO 3 m WIDE SHOULDERS
CONTINUOUSLY REINFORCED	720	3.6 m FOR 0.9 m SHOULDERS

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.

CORRUGATIONS SHALL BE PERPENDICULAR TO THE PAVEMENT EDGE.

TRANSVERSE JOINT DETAILS ARE SHOWN ELSEWHERE IN THE PLAN.

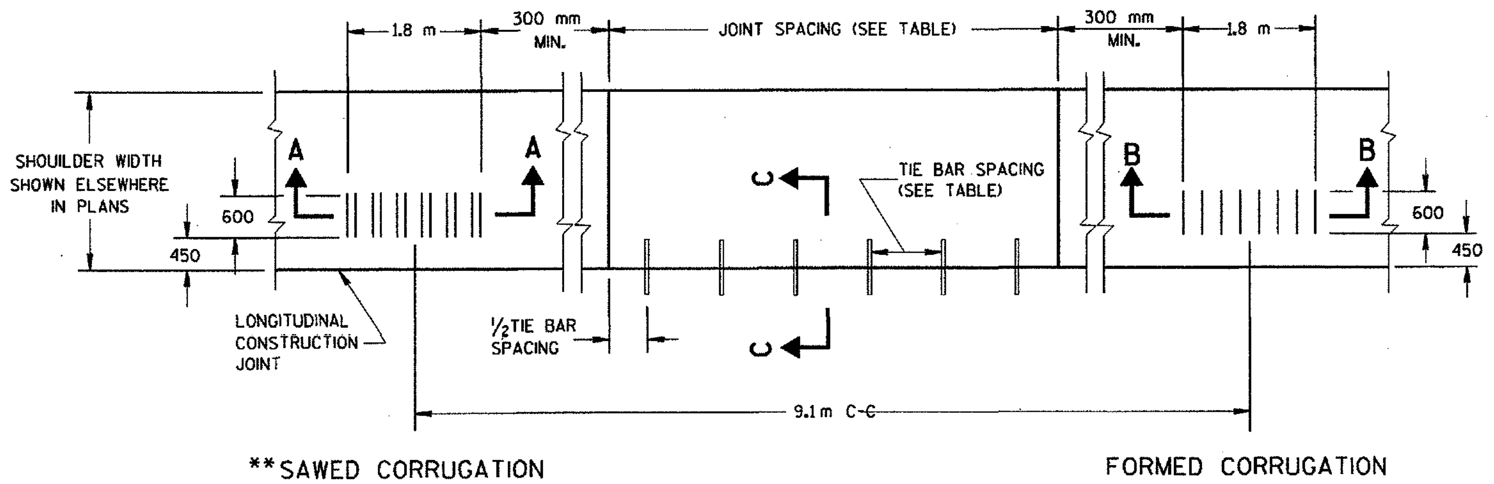
THE SHOULDER PAVEMENT SHALL RECEIVE A FINISH WITH AN ARTIFICIAL TURF DRAG IN CONFORMANCE WITH SUBSECTION 415.5.9.6.2 OF THE STANDARD SPECIFICATIONS

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

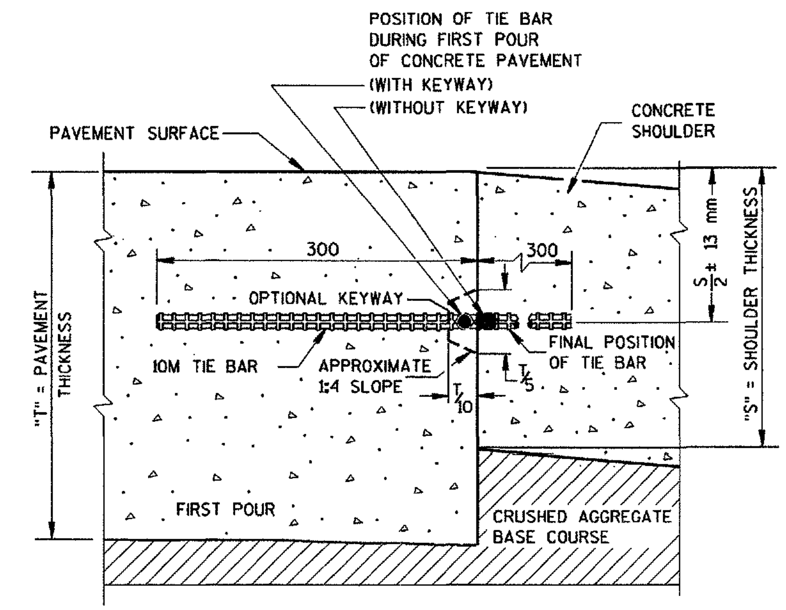
** SAWED CORRUGATIONS SHALL NOT BE USED UNLESS SPECIFIED ELSEWHERE IN THIS CONTRACT.

NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

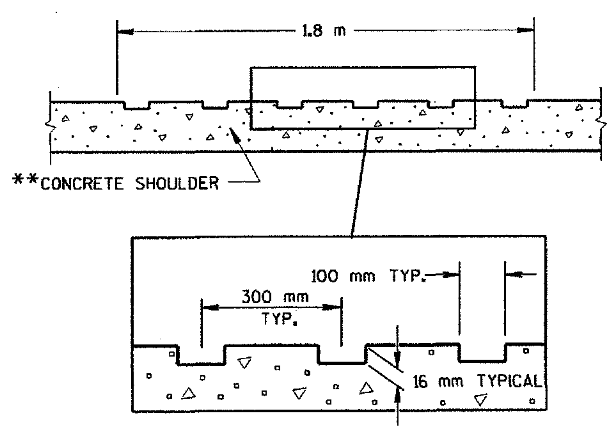


PLAN VIEW OF CONCRETE SHOULDER

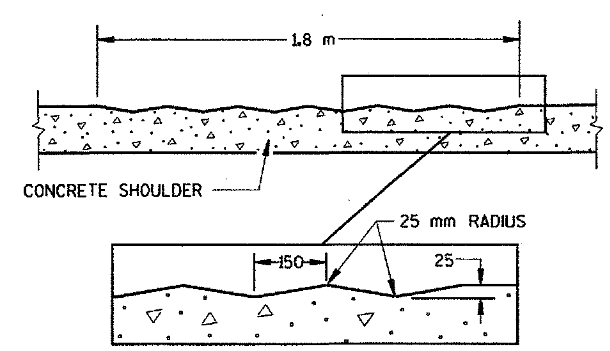


SECTION C-C

LONGITUDINAL CONSTRUCTION JOINT



** SECTION A-A (SAWED)



SECTION B-B (FORMED)

CORRUGATION DETAIL

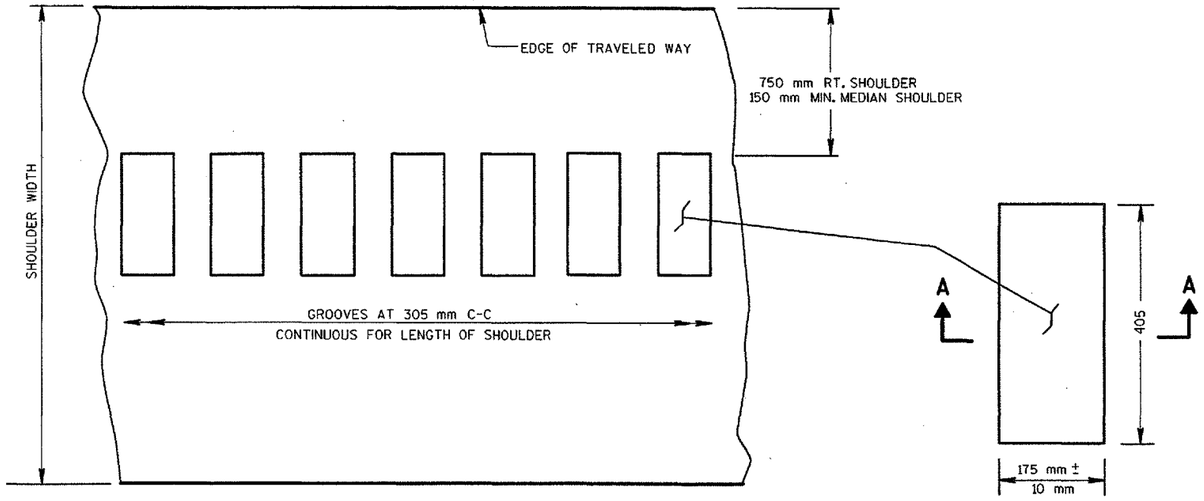
CONCRETE SHOULDERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 01/25/95
DATE
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA
M

PLOT SCALE:
PLOT NAME:
REV. DATE:
ORIGINATOR:
S.D.D. 13 A 3-3
LEVELS ON - 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

FILE NAME:



PLAN VIEW
SHOULDER WITH GROOVES

PLAN VIEW
(SINGLE GROOVE)

PLACEMENT DETAIL FOR MILLED RUMBLE STRIP

GENERAL NOTES

DETAILS OF CONSTRUCTION SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

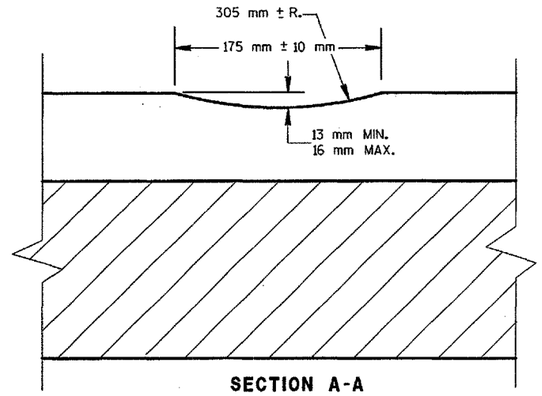
RUMBLE STRIPS ON EXPRESSWAYS

DO NOT INSTALL RUMBLE STRIPS ACROSS SIDE ROAD INTERSECTIONS, COMMERICAL DRIVEWAYS OR ADJACENT TO RIGHT TURN LANES, LEFT TURN LANES OR TURN LANE TAPERS. THE ATTACHED STANDARD DETAIL DRAWING SHOWS THE LOCATION OF THE RUMBLE STRIPS AT INTERCHANGE AREAS.

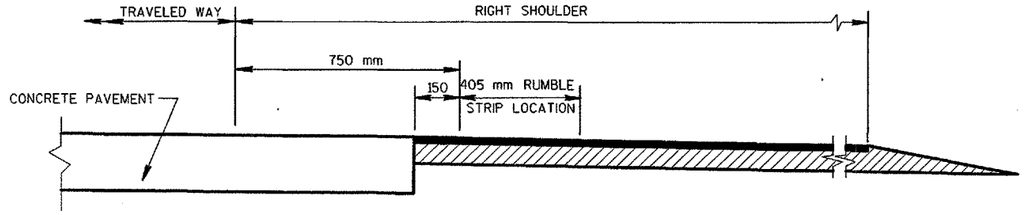
(1) 750 mm FOR MEDIAN SHOULDERS THAT HAVE A PAVED WIDTH OF 1.5 m OR MORE.

NOTE

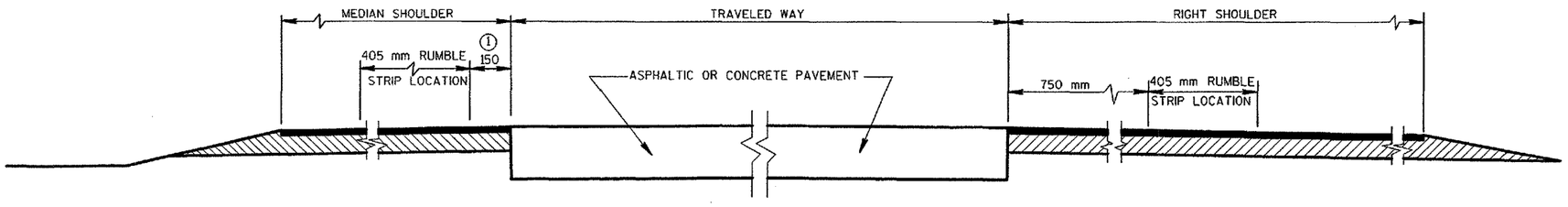
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.



SECTION A-A



SECTION VIEW
CONCRETE PAVEMENT EXTENDS INTO RIGHT SHOULDER)



SECTION VIEW

TYPICAL LOCATIONS OF ASPHALTIC SHOULDER RUMBLE STRIPS IN RURAL DIVIDED HIGHWAYS

(ONE ROADWAY IS SHOWN)

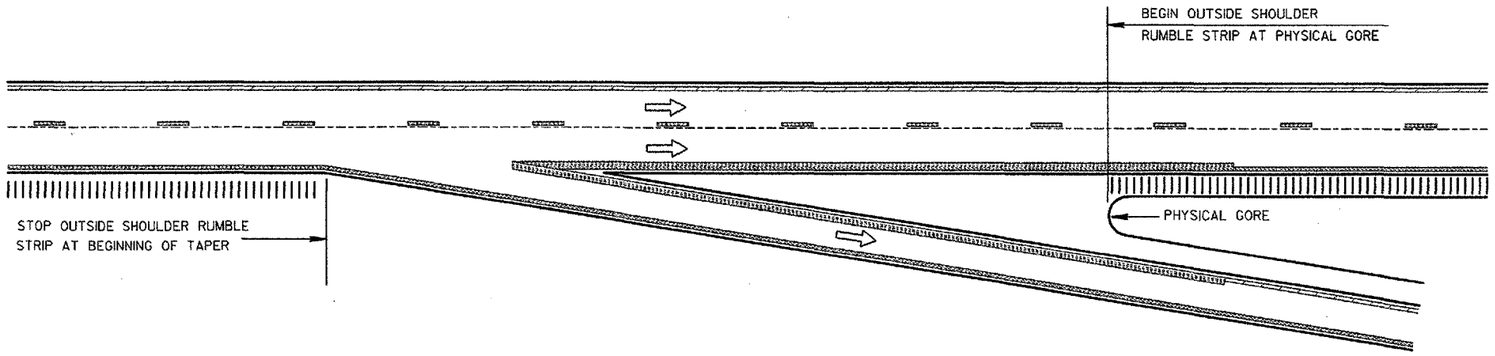
ASPHALTIC SHOULDER
RUMBLE STRIP, MILLING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION M

S.D.D. 13 A 5-2a

FILE NAME:

S.D.D. 13 A 5-2a



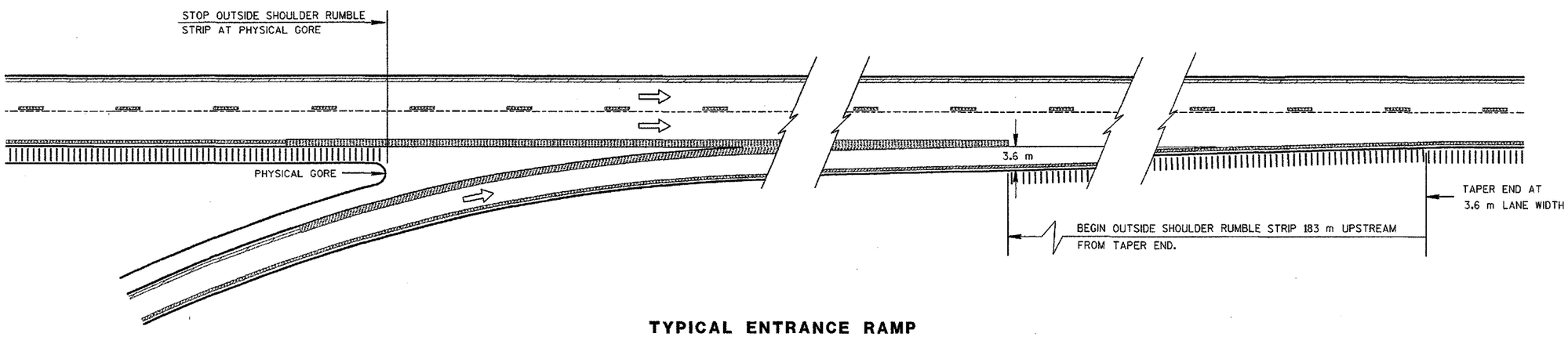
TYPICAL EXIT RAMP

NOTE:
ARROW SYMBOL (⇨)
SHOWS DIRECTION OF TRAVEL

NOTES:

NO RUMBLE STRIP ON EXIT, DIRECTIONAL, OR ENTRANCE RAMPS, EXCEPT NEAR THE ENTRANCE TAPER END AS SHOWN.

PAVEMENT MARKING DETAILS AND SPECIFICATIONS ARE PROVIDED ELSEWHERE IN THE CONTRACT.



TYPICAL ENTRANCE RAMP

RAMP AND GORE RUMBLE STRIP LOCATIONS

ASPHALTIC SHOULDER
RUMBLE STRIP, MILLING

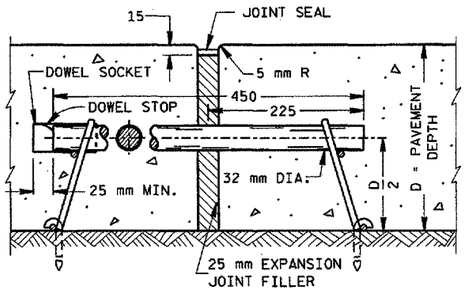
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
2/19/99
DATE
Roy D. Thiesen
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA
M

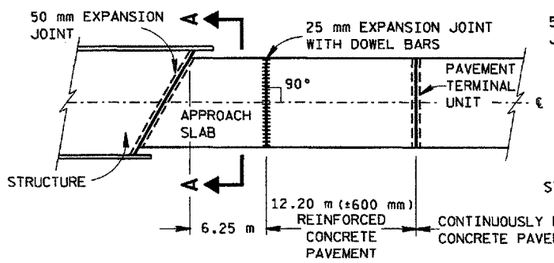
S.D.D. 13 A 5-2b

FILE NAME:

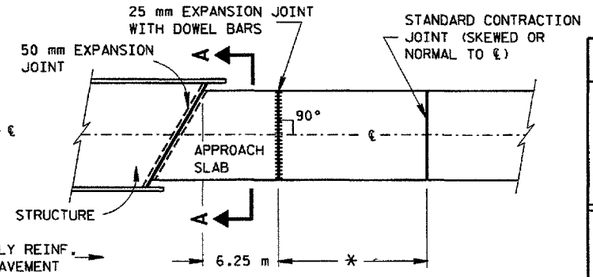
S.D.D. 13 A 5-2b



EXPANSION JOINT



APPROACH SLAB AND ADJACENT PAVEMENT

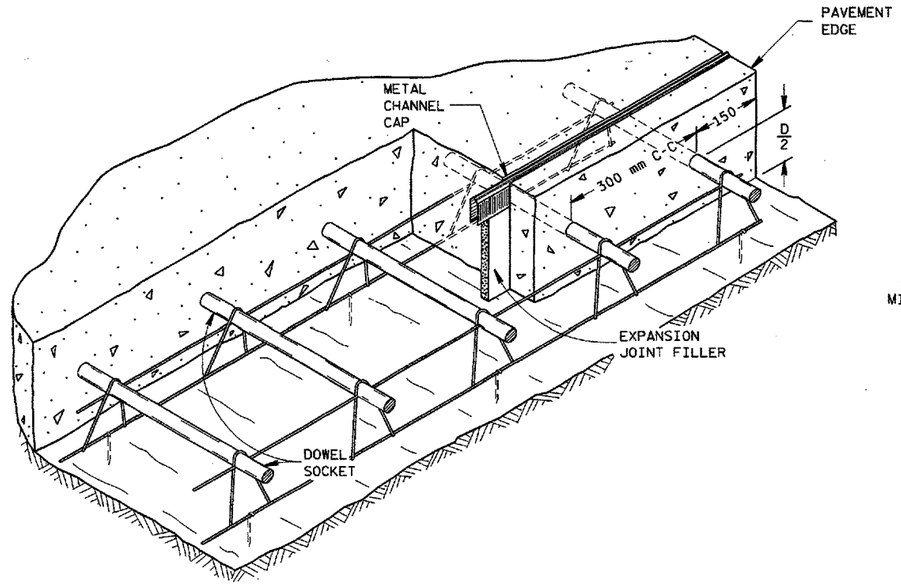


APPROACH SLAB AND ADJACENT PAVEMENT

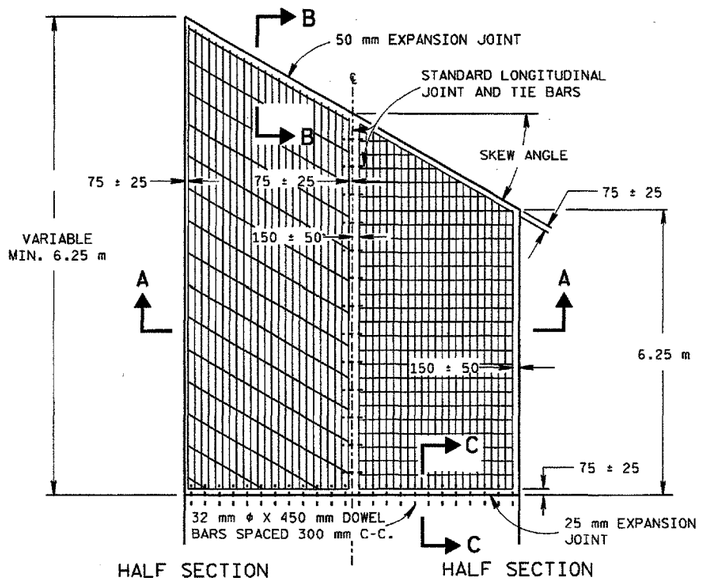
* 3.70 m MIN., 6.1 m MAX. FOR NON-REINFORCED CONCRETE PAVEMENT. 12.2 m ±0.6 m FOR REINFORCED CONCRETE PAVEMENT.

BIDDING INFORMATION

APPROACH SLAB QUANTITIES (ONE SLAB, 7.2 m WIDE)						
SKEW ANGLE	CONCRETE PAVEMENT		WELDED WIRE FABRIC (1) 2.68 kg/m²		STEEL REINFORCEMENT (GRADE 60)	
					25M BARS	15M BARS
	m²	m³	m²	kg	kg	kg
0°	45.7	15.2	45.7	123	1201	67
15°	52.8	17.6	52.8	142	1385	76
30°	66.9	22.3	66.9	164	1600	88
45°	72.5	24.2	72.5	195	1840	103
60°	92.1	30.7	92.1	247	2395	130



INSTALLING DEVICE FOR DOWEL BARS AND EXPANSION JOINT ASSEMBLY



HALF SECTION BOTTOM REINFORCEMENT

HALF SECTION TOP REINFORCEMENT

APPROACH SLAB

GENERAL NOTES

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

DOWEL BARS

DOWEL BARS ACROSS EXPANSION JOINTS SHALL BE CORROSION RESISTANT COATED CONFORMING TO THE REQUIREMENTS OF AASHTO DESIGNATION M 254.

THE COATING TYPE SHALL BE, TYPE B - THERMOSETTING EPOXY.

JOINT SEALING

EXPANSION JOINTS SHALL BE SEALED AS FOLLOWS:

1. ON PAVEMENTS HAVING TRANSVERSE CONTRACTION JOINTS SEALED WITH A POURED TYPE SEALER, EXPANSION JOINTS SHALL BE SEALED WITH THE SAME TYPE SEALANT, 5 mm BELOW PAVEMENT SURFACE.

2. ON PAVEMENTS WITH NO CONTRACTION JOINTS, UNSEALED CONTRACTION OR CONTRACTION JOINTS SEALED WITH COMPRESSION TYPE SEALS, EXPANSION JOINTS SHALL BE SEALED WITH A POURED TYPE SEALER AS SPECIFIED IN THE PLANS OR SPECIAL PROVISIONS.

JOINT FILLER

EXPANSION JOINT FILLER BETWEEN STRUCTURE AND APPROACH SLAB MAY CONSIST OF TWO, 25 mm THICKNESSES OF MATERIAL.

(1) WELDED WIRE FABRIC

6 X 12 - W5.5 X W4.0 OR METRIC EQUIVALENT

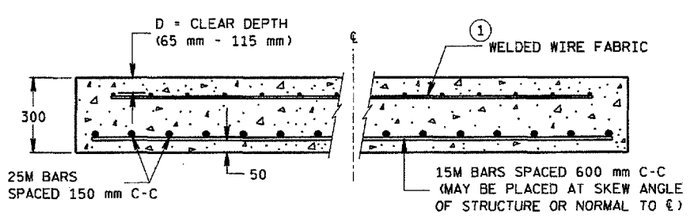
SHEET WIDTHS OF 2.5 m ARE PERMITTED.

STEEL REINFORCEMENT

SPLICING OF 25M BARS IN THE APPROACH SLAB IS PERMITTED FOR SKEWED STRUCTURES ONLY. SPLICES SHALL BE STAGGERED, WITH A MAXIMUM OF ONE SPLICE PER BAR. LAPS SHALL CONFORM TO THE STANDARD SPECIFICATIONS.

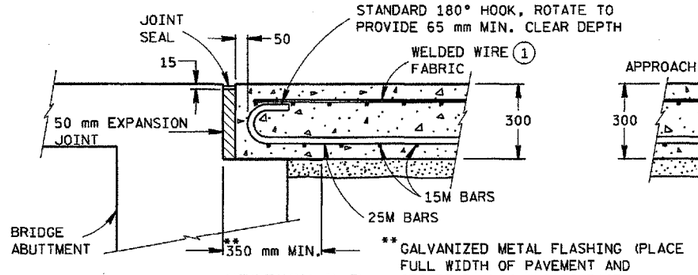
NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.



SECTION A-A

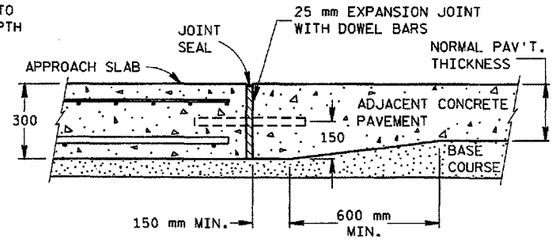
REINFORCEMENT POSITIONING DETAIL



SECTION B-B

BEND DETAIL

BOTTOM REINFORCEMENT



SECTION C-C

TRANSITION DETAIL

APPROACH SLAB TO ADJACENT PAVEMENT

CONCRETE PAVEMENT
APPROACH SLAB

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

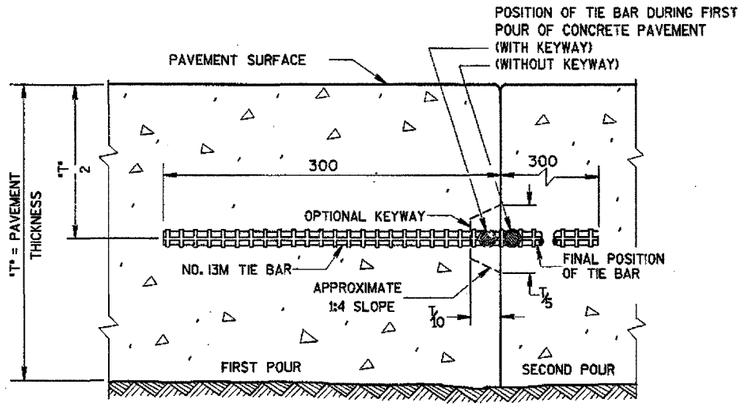
APPROVED 02/10/95 DATE
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

M

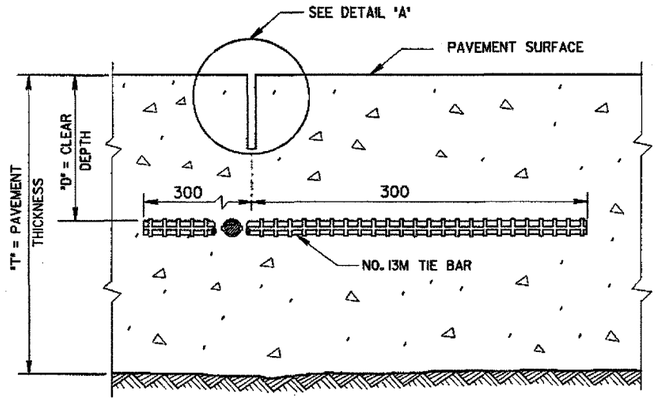
S.D.D. 13 B 2-3

PLOT SCALE:
PLOT NAME:
REV. DATE:
ORIGINATOR:
LEVELS ON • 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
FILE NAME:

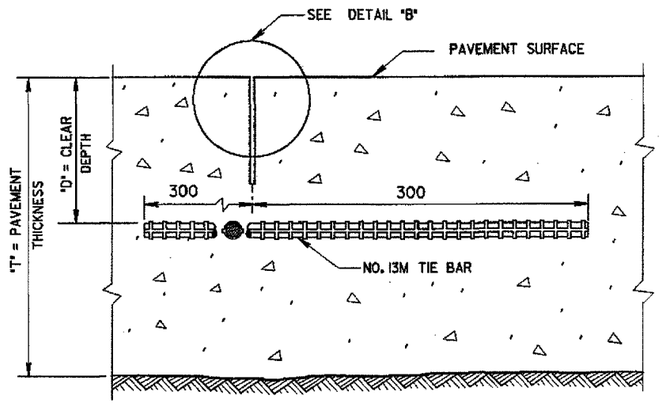
S.D.D. 13 B 2-3



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 APPL ICABLE SPECIAL PROVISIONS.

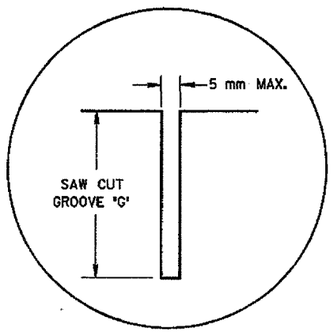
DETAILS "A" AND "B" ARE EQUAL ALTERNATES UNLESS OTHERWISE SPECIFIED IN THE CONTRACT.

LONGITUDINAL JOINTS SHALL NOT BE SEALED OR FILLED.

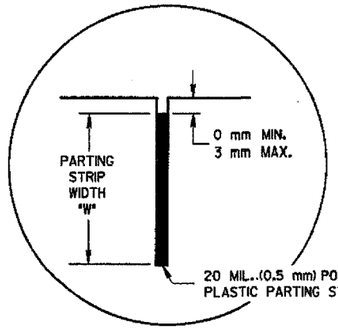
TIE BAR SPACINGS ARE VALID ONLY FOR PAVEMENT WIDTHS IN THE TABLE. FOR WIDER PAVEMENTS, TIED CONCRETE SHOULDERS OR RAMPS, THE TIE BAR SPACING SHALL BE AS SHOWN ON THE PLANS.

NOTE

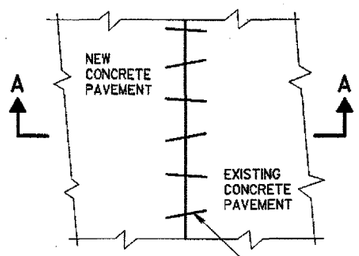
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.



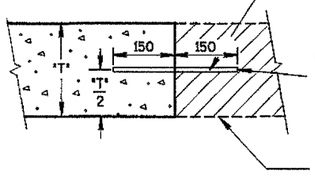
DETAIL "A"



DETAIL "B"



PLAN VIEW



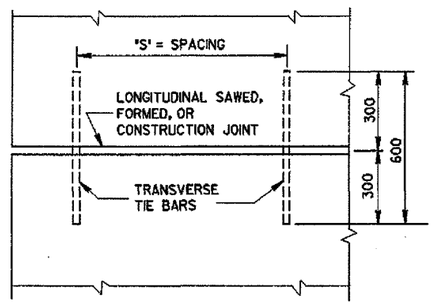
NO. 19M TIE BARS SPACED 900 mm C-C, INSTALLED ON 6:1 SKEW HORIZONTALLY. DIRECTION OF SKEW ALTERNATING AFTER EVERY ONE OR TWO BARS.

THE HOLE FOR THE BAR SHALL BE DRILLED TO A DEPTH OF 175 mm AND TO SUCH A DIAMETER AS TO PROVIDE A TIGHT DRIVEN FIT.

EXIST. CONC. PAVEMENT

SECTION A-A
PAVEMENT TIES

PAVEMENT THICKNESS "T" (mm)	CLEAR DEPTH "D" (mm)	SAW CUT GROOVE "G" (mm)	MAXIMUM TIE BAR SPACING "S" (mm)		PARTING STRIP WIDTH "W" (mm)
			PAVEMENT WIDTH (m)		
			7.2 OR 7.8	9.0	
150,165	75 ± 13	50	1 000	900	50
175,190	85 ± 25	55	850	800	55
200,215	95 ± 25	65	750	700	65
225,240	110 ± 25	75	650	600	75
250,265	120 ± 25	85	600	550	85
275,290	135 ± 25	95	550	500	95
300	145 ± 25	100	500	450	100



PLAN VIEW
SHOWING LOCATION OF TIE BARS

CONCRETE PAVEMENT
LONGITUDINAL JOINTS
AND PAVEMENT TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9-24-98
DATE

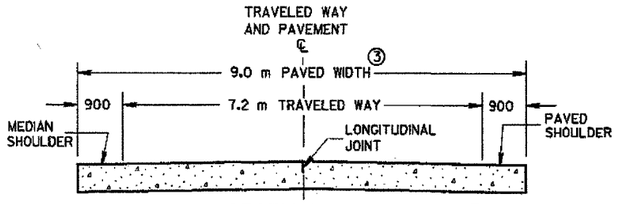
CHIEF PAVEMENTS & RESEARCH ENGINEER

FHWA

M

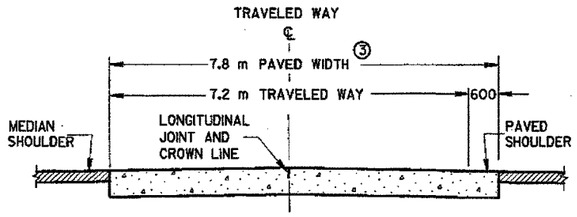
S.D.D. 13 C 1-10

S.D.D. 13 C 1-10

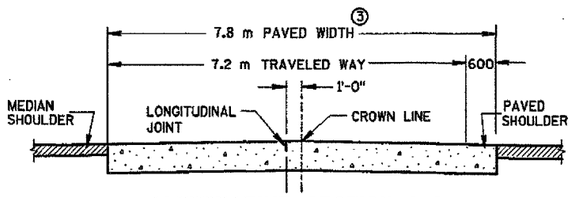


SECTION A-A ②

TWO-LANE TWO-WAY HIGHWAY



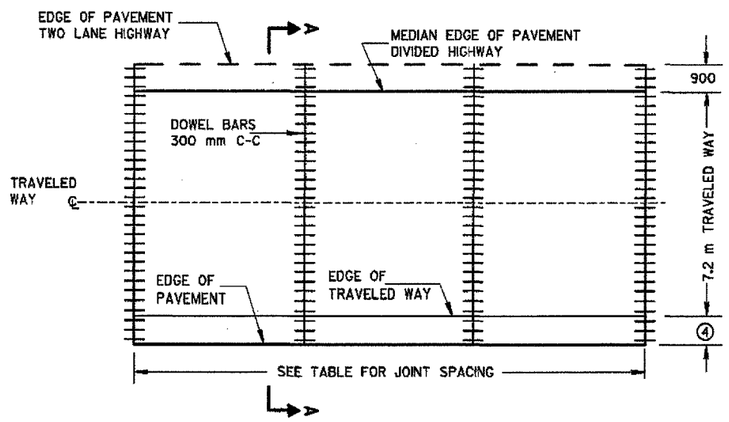
SECTION A-A



ALTERNATIVE SECTION A-A

②

DIVIDED HIGHWAY



CONTRACTION JOINT LOCATIONS

DOWEL BAR SIZE & JOINT SPACING TABLE

PAVEMENT DEPTH	DOWEL BAR DIAMETER	CONTRACTION JOINT SPACING
≤240 mm	32 mm	4.5 m
>240 mm	38 mm	5.5 m

GENERAL NOTES

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

CONTRACTION JOINTS

CONTRACTION JOINTS MAY BE SKEWED 1:6 WITH THE CENTERLINE OR BE NORMAL TO THE CENTERLINE. 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 PARALLEL TO THE PAVEMENT CENTERLINE AND SURFACE.

CONSTRUCTION JOINTS

CONSTRUCTION JOINTS SHALL BE A MINIMUM OF 1.2 m 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.

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.

② REFER TO TYPICAL CROSS SECTIONS FOR ADDITIONAL DETAILS.

③ THE ENTIRE PAVED WIDTH INCLUDING THE PORTION(S) LABELED PAVED SHOULDER WILL BE MEASURED AS CONCRETE PAVEMENT.

④ 600 mm DIVIDED HIGHWAYS
900 mm TWO-LANE TWO-WAY HIGHWAYS
SEE SECTION A-A

⑤ DOWEL BARS SHALL BE ANCHORED INTO DRILL HOLES WITH AN APPROVED EPOXY GROUT.

⑥ THE FREE END OF DOWEL BARS SHALL RECEIVE A THIN UNIFORM COATING OF BOND BREAKING GREASE.

⑦ DOWEL BARS INSTALLED BY DRILLING SHALL BE SPACED 380 mm ON CENTER. THE GROUPING OF DOWEL BARS SHALL BE CENTERED INSIDE THE SLAB BASED ON ALL THE FOLLOWING SITUATIONS:

BETWEEN THE EDGES OF PAVEMENTS WITHOUT LONGITUDINAL JOINTS OR BETWEEN THE EDGE OF PAVEMENT AND NEAREST LONGITUDINAL JOINT OR BETWEEN TWO ADJACENT LONGITUDINAL JOINTS.

THE CLEAR DISTANCE FROM THE EDGE OF PAVEMENT OR LONGITUDINAL JOINT TO THE NEAR EDGE OF DOWEL BAR NEAREST THAT EDGE OR JOINT SHALL BE A MINIMUM OF 150 mm AND A MAXIMUM OF 355 mm.

NOTES

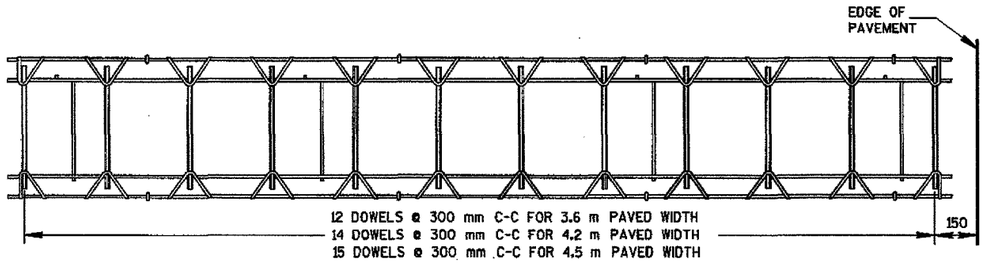
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

RURAL DOWELED
CONCRETE PAVEMENT

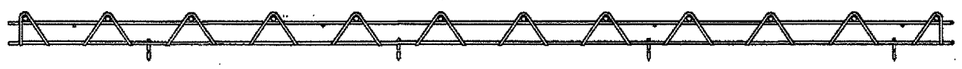
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION M

S.D.D. 13 C 11-6a

S.D.D. 13 C 11-6a

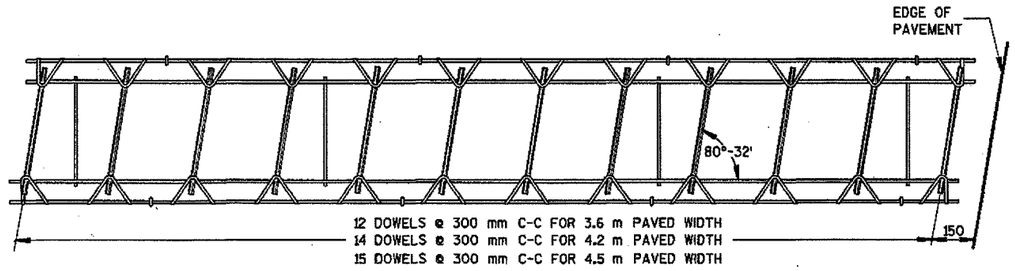


PLAN VIEW

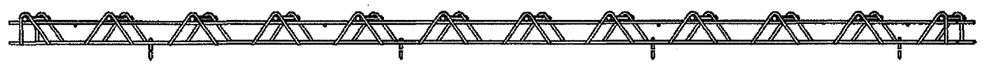


SIDE VIEW

(NORMAL TO CENTERLINE)



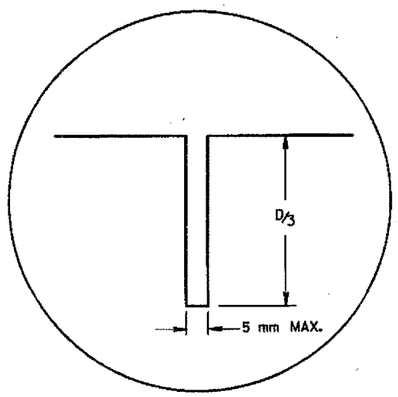
PLAN VIEW



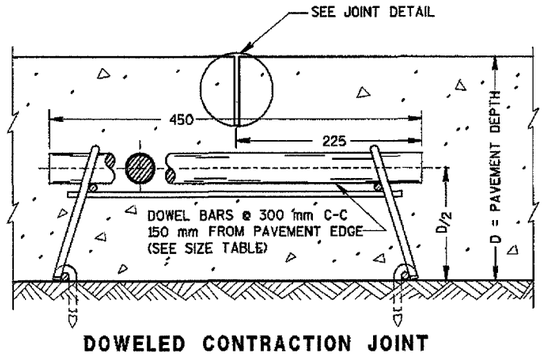
SIDE VIEW

(SKEWED)

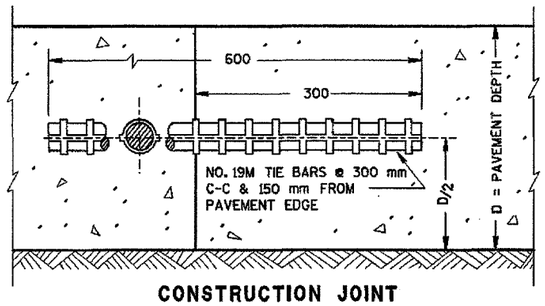
CONTRACTION JOINT DOWEL ASSEMBLY ①



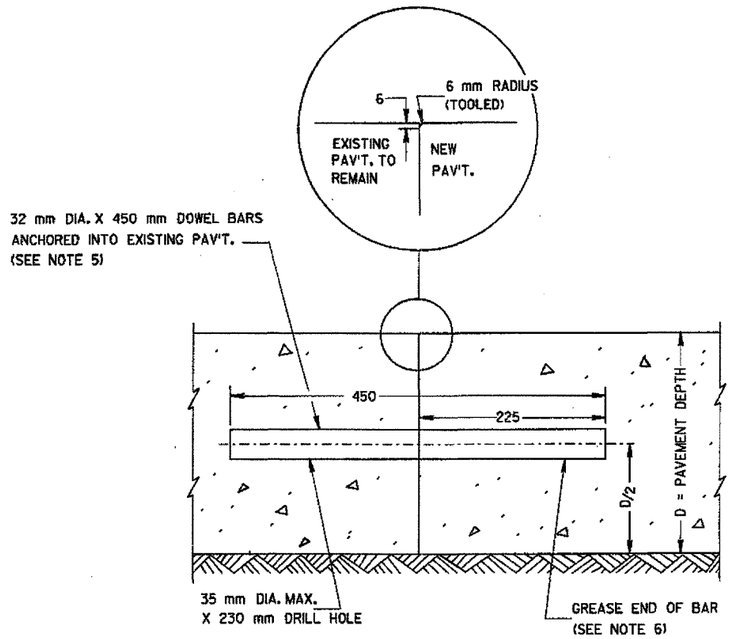
JOINT DETAIL



DOWELED CONTRACTION JOINT



CONSTRUCTION JOINT



TRANSVERSE CONTRACTION JOINTS ABUTTING EXISTING PAVEMENT

⑦ **DOWEL BAR DETAIL**

RURAL DOWELED
CONCRETE PAVEMENT

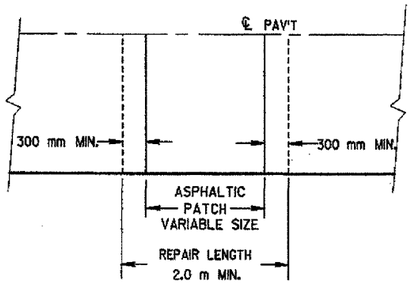
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9-24-98
DATE
CHIEF PAVEMENTS & RESEARCH ENGINEER
FHWA
M

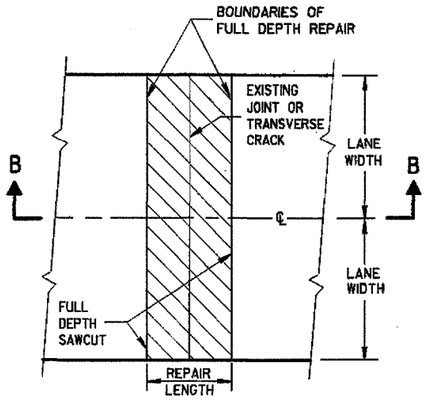
S.D.D. 13 C 11-6b

PLOT SCALE:
PLOT NAME:
REV. DATE:
ORIGINATOR:
LEVELS ON = 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
FILE NAME:

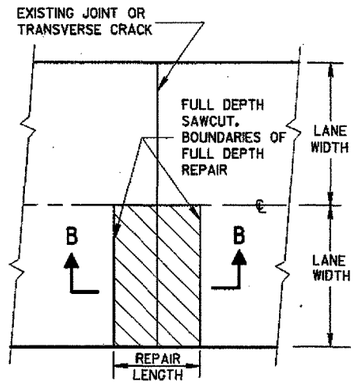
S.D.D. 13 C 11-6b



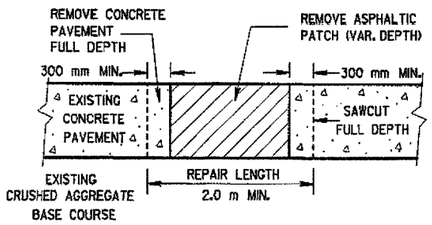
PLAN VIEW



PLAN VIEW
(DOUBLE LANE REPAIR)



PLAN VIEW
(SINGLE LANE REPAIR)



CROSS SECTION

PATCH REMOVAL

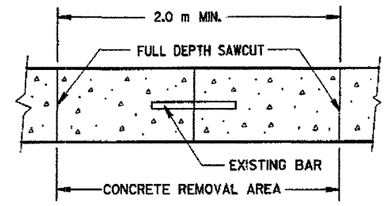
FULL DEPTH CONCRETE PAVEMENT REMOVAL

(SEE NOTE)

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.

EXISTING CONCRETE PAVEMENT WITHIN THE BOUNDARIES OF CONCRETE REPAIR AREAS SHALL BE DRILLED AND LIFTED OUT. ADDITIONAL SAW CUTS MAY BE MADE INSIDE THE REPAIR LIMITS TO REDUCE WEIGHT AND SIZE OF CONCRETE PIECES. BOUNDARIES OF CONCRETE REPAIR AREAS SHALL BE 2.0 m MINIMUM FROM REMAINING TRANSVERSE JOINT OR CRACK.

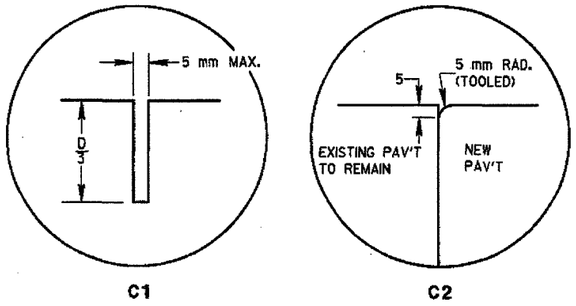


SECTION B-B

CONCRETE PAVEMENT REPAIR

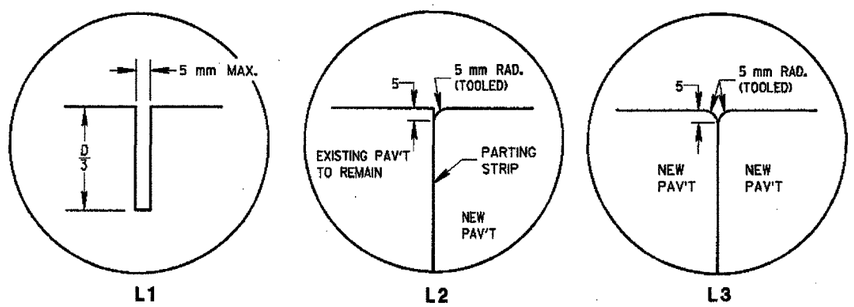
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

S.D.D. 13 C 9-6a



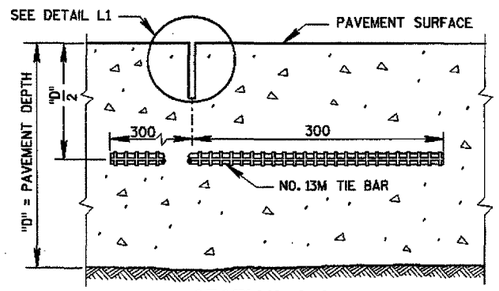
C1 C2

TRANSVERSE JOINTS



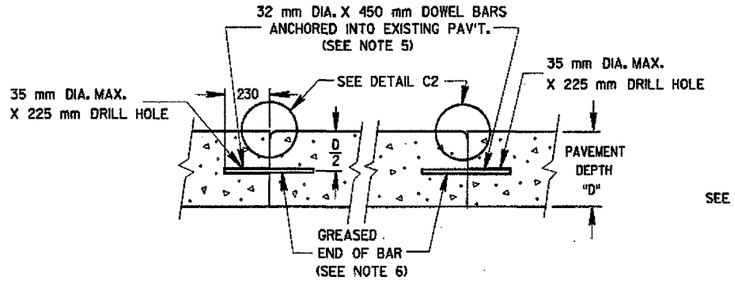
L1 L2 L3

LONGITUDINAL JOINTS



SECTION C-C

SAWED JOINT



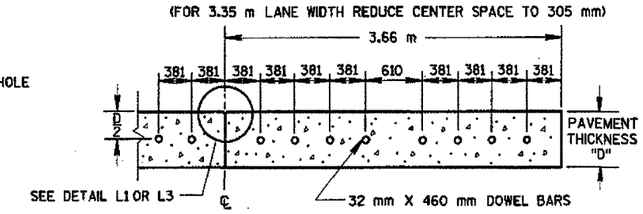
SECTION D-D

GENERAL NOTES

1. DOWEL BARS SHALL BE INSTALLED PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.
2. PARTING STRIPS SHALL BE MADE OF POLYETHELENE PLASTIC SHEETING HAVING A MINIMUM THICKNESS OF 20 MILS (0.5 mm), A WIDTH EQUAL TO THE PAVEMENT DEPTH AND THE SAME LENGTH AS THE REPAIR.
3. CONCRETE REPAIR AND CONCRETE REPLACEMENT SIZES AND LOCATIONS ARE SHOWN ELSEWHERE IN THE CONTRACT.
4. THE PREPARATION OF FOUNDATION FOR FULL DEPTH CONCRETE PAVEMENT REPAIR SHALL BE IN ACCORDANCE WITH SUBSECTION 211.4.4 OF THE STANDARD SPECIFICATIONS.
5. DOWEL BARS SHALL BE ANCHORED INTO DRILL HOLES WITH AN APPROVED EPOXY GROUT.
6. THE FREE END OF DOWEL BARS SHALL RECEIVE A THIN UNIFORM COATING OF BOND BREAKER.
7. JOINTS SHALL NOT BE SEALED OR FILLED.

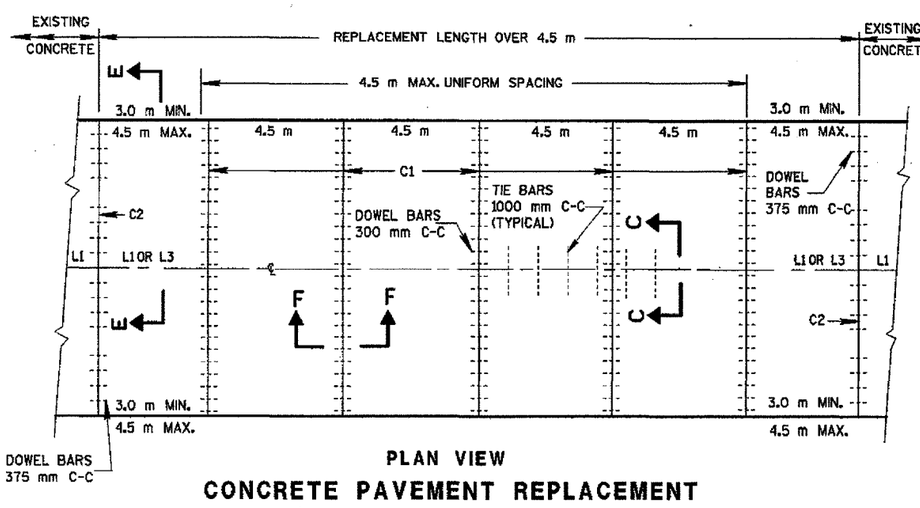
NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.



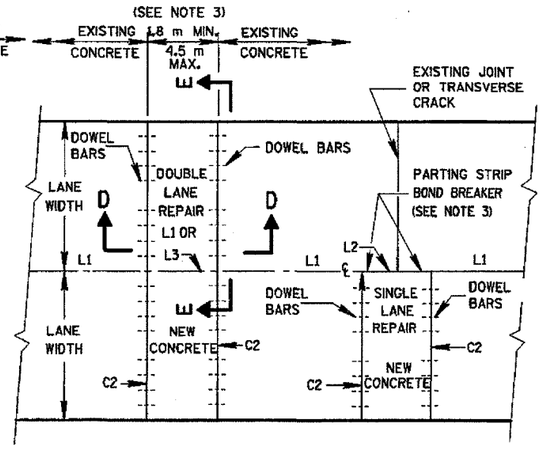
SECTION E-E

DOWEL BAR SPACING ABUTTING EXISTING PAVEMENT



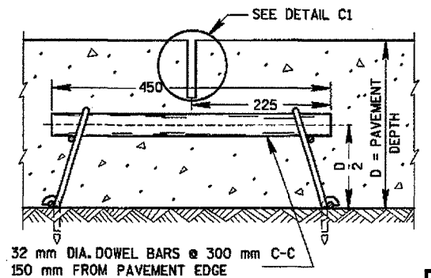
PLAN VIEW

CONCRETE PAVEMENT REPLACEMENT



PLAN VIEW

CONCRETE PAVEMENT REPAIR



SECTION F-F

CONTRACTION JOINT

CONCRETE PAVEMENT REPAIR & DOWEL BAR INSTALLATION DETAILS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 9-24-98 DATE

CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

M

S.D.D. 13 C 9-6b

PLOT SCALE:

PLOT NAME:

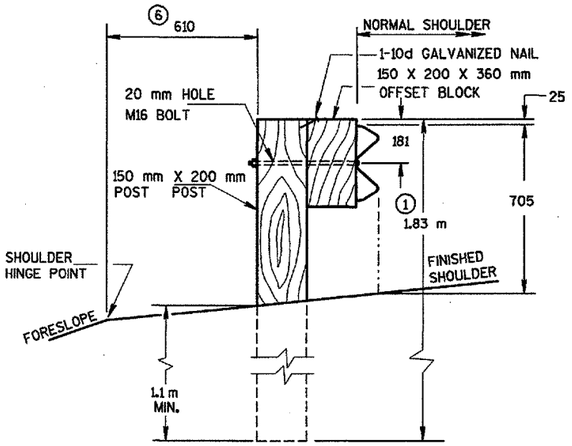
REV. DATE:

LEVELS ON - 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

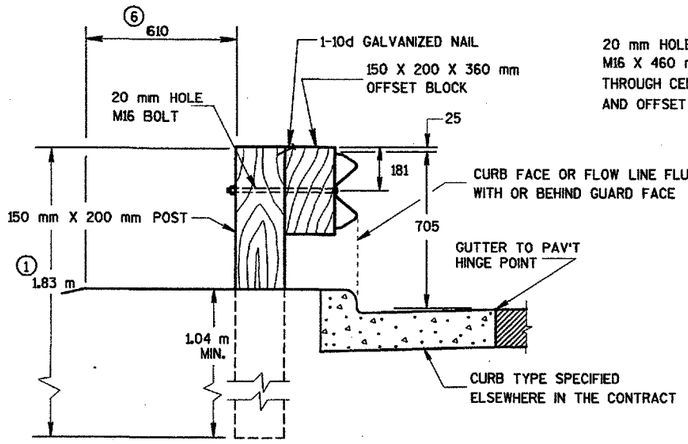
ORIGINATOR:

FILE NAME:

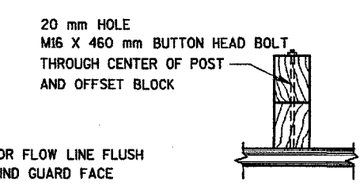
S.D.D. 13 C 9-6b



END VIEW
LOCATED ALONG A ROADWAY SHOULDER



END VIEW
LOCATED ALONG A CURBED ROADWAY



PLAN VIEW
POST, OFFSET BLOCK AND BEAM

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 POST LENGTH SHALL BE INCREASED TO PROVIDE A MINIMUM EMBEDMENT OF 1.07 m WHERE THE SHOULDER HINGE POINT IS LOCATED IN FRONT OF THE POST. WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 305 mm DIA. POST HOLE EXTENDING 510 mm DEEP INTO THE ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL SHALL BE PLACED IN THE BOTTOM OF THE HOLE APPROXIMATELY 65 mm DEEP TO PROVIDE DRAINAGE. THE POSTS SHALL BE FIELD CUT TO LENGTH, PLACED IN THE HOLE AND BACKFILLED WITH ADEQUATELY COMPACTED MATERIAL EXCAVATED FROM THE HOLE.

② PROVIDE TYPE "H" SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH TYPE "H" YELLOW REFLECTIVE SHEETING.

③ REFLECTORS SHALL NOT BE INSTALLED ON THE FIRST 15.24 m OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

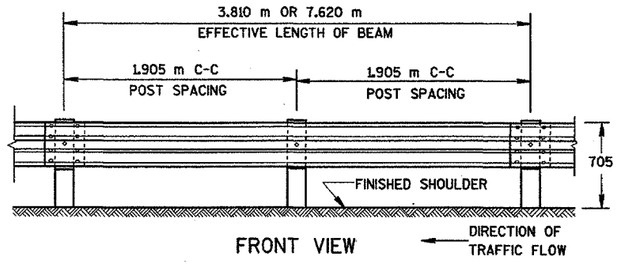
④ EVERY OTHER REFLECTOR REVERSED FOR 2-WAY VISIBILITY. CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.

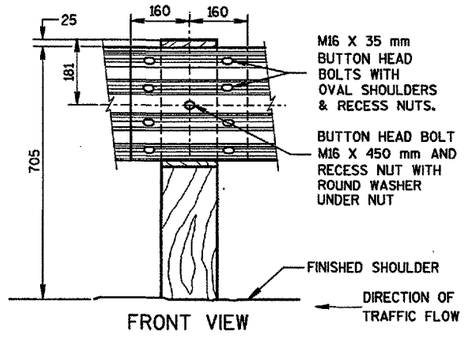
⑤ ANGLE OF BEND TO BE 90° ± 1° FOR TWO-SIDED REFLECTORS.

⑥ WHEN SPECIFIED ELSEWHERE IN THE CONTRACT THE 610 mm MINIMUM TO HINGE POINT, MAY BE REDUCED OR ELIMINATED WHERE EXISTING CONDITIONS WILL NOT PERMIT THE DESIRABLE EARTHWORK.

NOTE

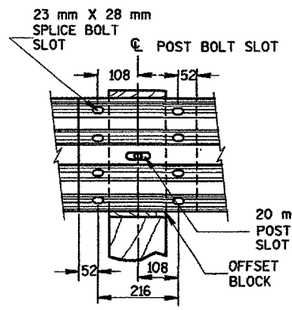
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.



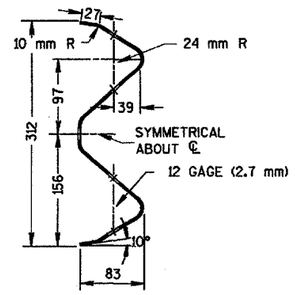


BEAM SPLICING AND POST MOUNTING DETAIL

TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD



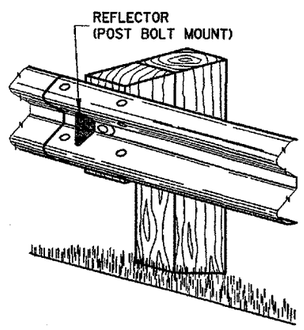
W BEAM SPLICE

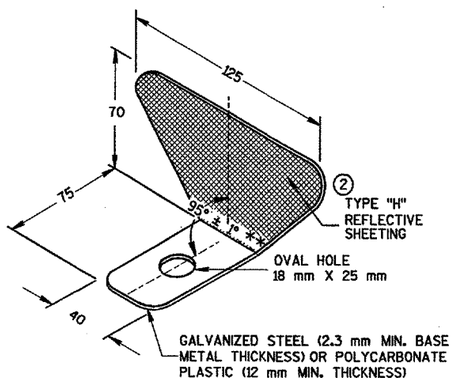


SECTION THRU W BEAM

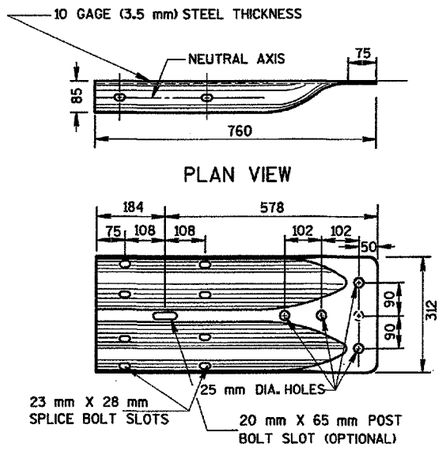
REFLECTOR SPACING ③

	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 60 m > 60 m	15 m C-C 30 m C-C	1 1	3
TWO WAY TRAFFIC	< 60 m > 60 m	8 m C-C 15 m C-C	1 ④ 1	6
TWO WAY TRAFFIC	< 60 m > 60 m	15 m C-C 30 m C-C	2 2 ⑤	3





② REFLECTOR DETAIL AND TYPICAL INSTALLATION



FRONT VIEW

W BEAM TERMINAL CONNECTOR

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

CLASS "A"
STEEL PLATE BEAM GUARD
INSTALLATION & ELEMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 2/19/99 DATE
Roy D. Thunstrom
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

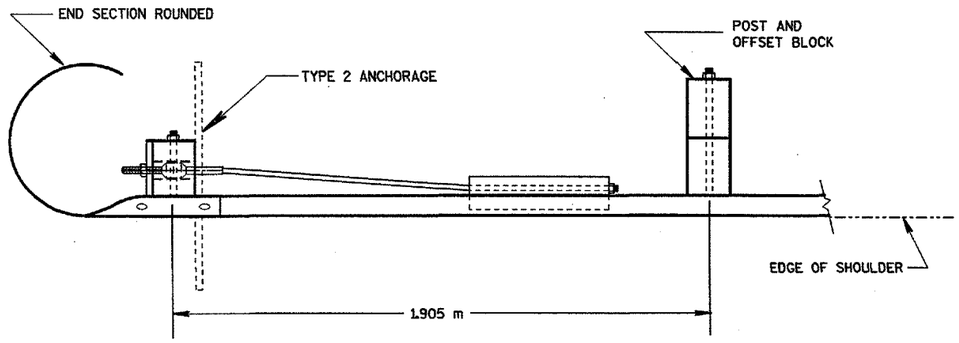
M

S.D.D. 14 B 15-3a

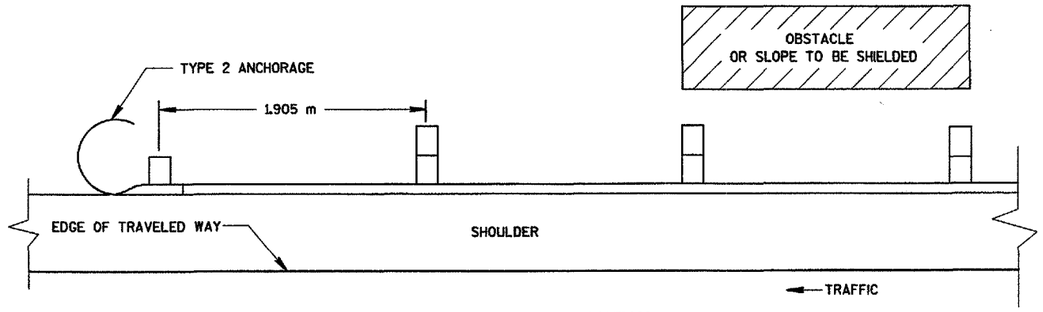
FILE NAME:

S.D.D. 14 B 15-3a

LEVELS ON - 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

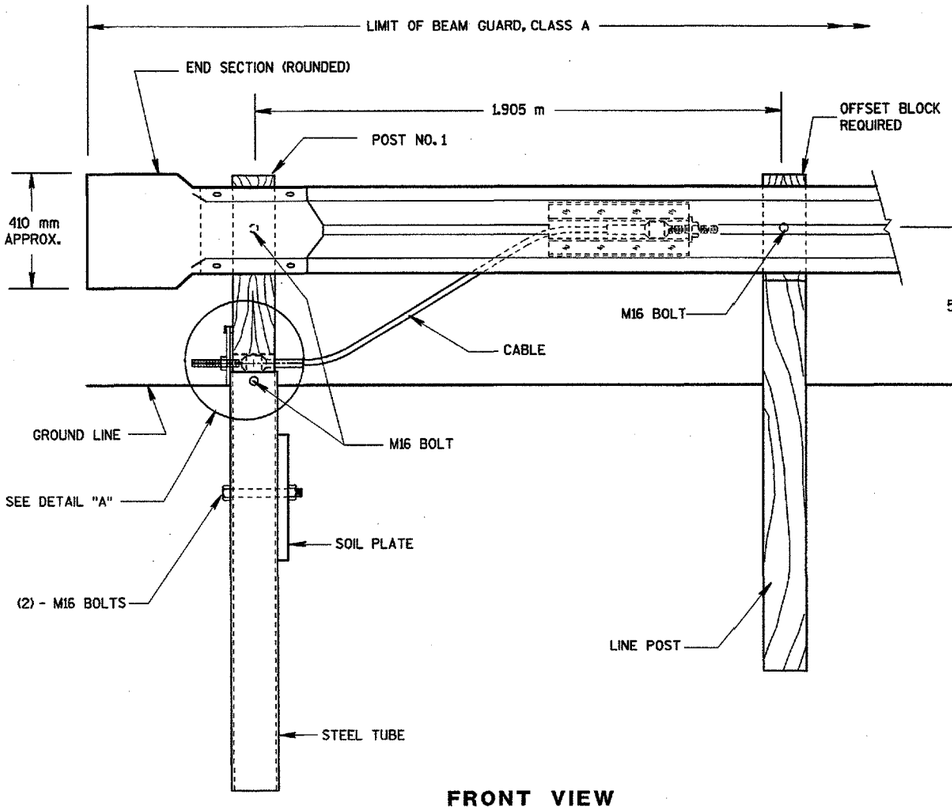


PLAN VIEW



PLAN VIEW

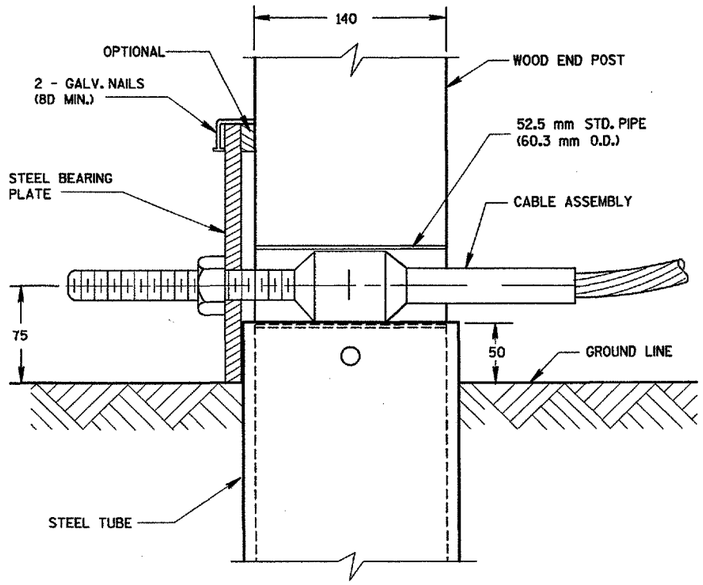
BEAM GUARD WITH TYPE 2 ANCHORAGE EXIT END - ONE WAY TRAFFIC



FRONT VIEW

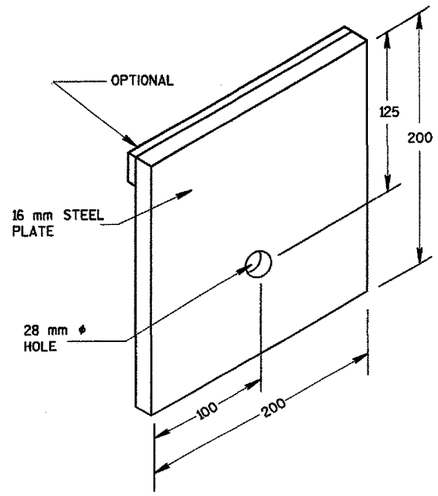
END TREATMENT WITH TYPE 2 ANCHORAGE

(USE ON ONE-WAY ROADWAYS ONLY - DEPARTING END)



DETAIL "A"

POST NO. 1



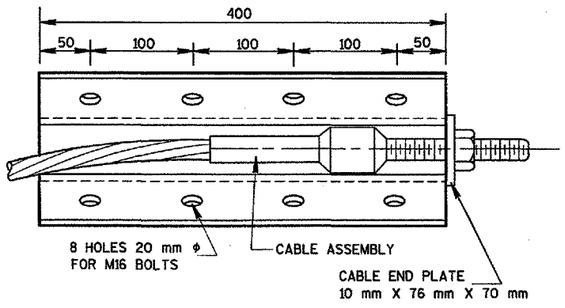
STEEL BEARING PLATE

CLASS "A" STEEL PLATE BEAM GUARD END TREATMENT WITH ANCHORAGE, TYPE 2

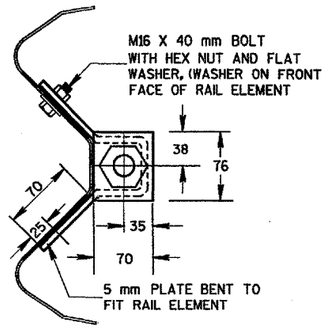
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

S.D.D. 14 B 16-3a

PLOT SCALE:
PLOT NAME:
REV. DATE:
ORIGINATOR:
LEVELS ON = 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
S.D.D. 14 B 16-3a
FILE NAME:

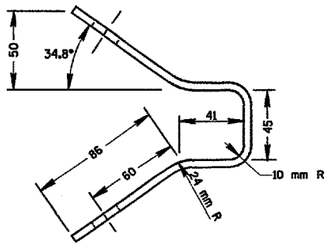


FRONT VIEW

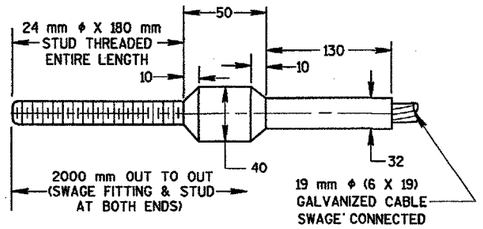


END VIEW

ANCHOR PLATE DETAIL



END VIEW OF BRACKET



CABLE ASSEMBLY

CABLE, SWAGE FITTING, STUD AND NUT SHALL DEVELOP
A MINIMUM BREAKING STRENGTH OF 190 kN
(TIGHTEN UNTIL TAUT)

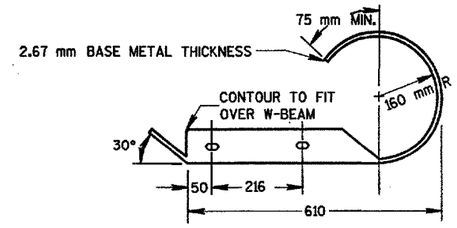
GENERAL NOTES

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

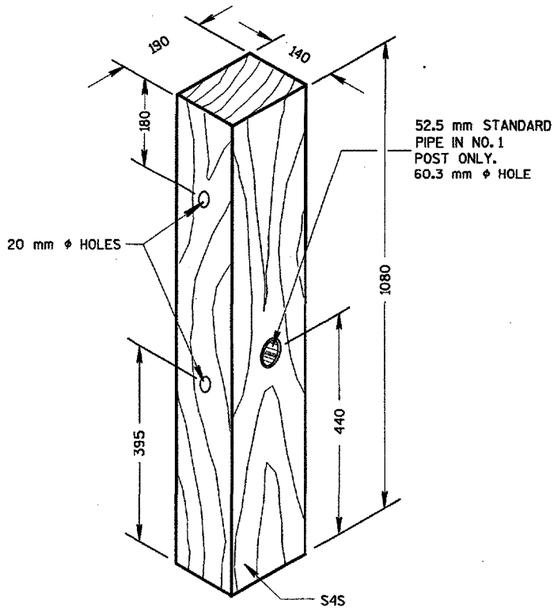
STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-500 GRADE B OR ASTM A-501.

POST NO. 1 SHALL BE WOOD BREAKAWAY POST INSERTED AND BOLTED INTO STEEL TUBE.

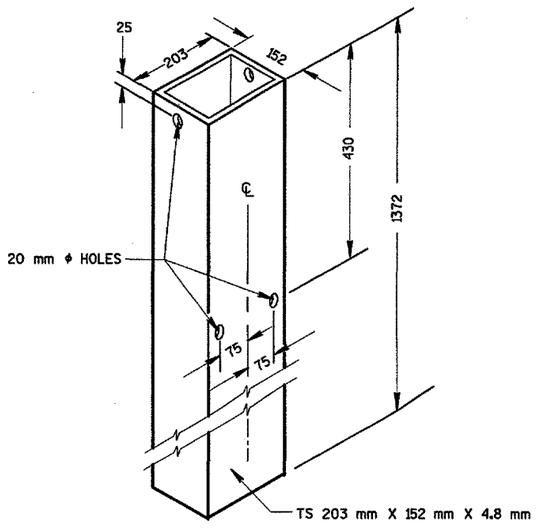
TYPE 2 ANCHORAGE SHALL CONSIST OF A STEEL TUBE, SOIL PLATE WOOD BREAKAWAY POST, BEARING PLATE, ANCHOR PLATE, CABLE ASSEMBLY AND ALL ASSOCIATED HARDWARE, ALL STEEL PARTS SHALL BE GALVANIZED.



PLAN VIEW

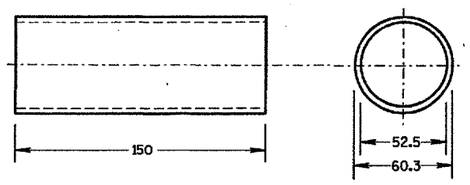


WOOD BREAKAWAY POST



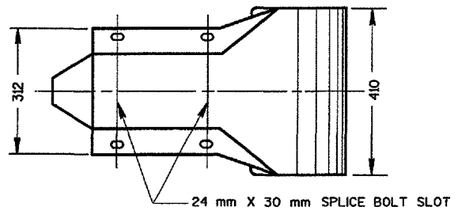
STEEL TUBE

STEEL TUBE SHALL CONFORM TO
REQUIREMENTS OF ASTM A500

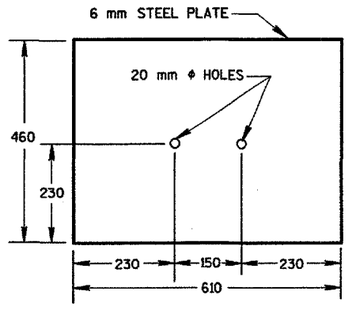


BREAKAWAY TERMINAL POST SLEEVE

STANDARD STRENGTH STEEL PIPE, ASTM 53 GRADE "B"



FRONT VIEW
W BEAM END SECTION ROUNDED



SOIL PLATE

CLASS "A" STEEL PLATE BEAM GUARD END TREATMENT WITH ANCHORAGE, TYPE 2

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 2/19/99 DATE
CHIEF ROADWAY DEVELOPMENT ENGINEER

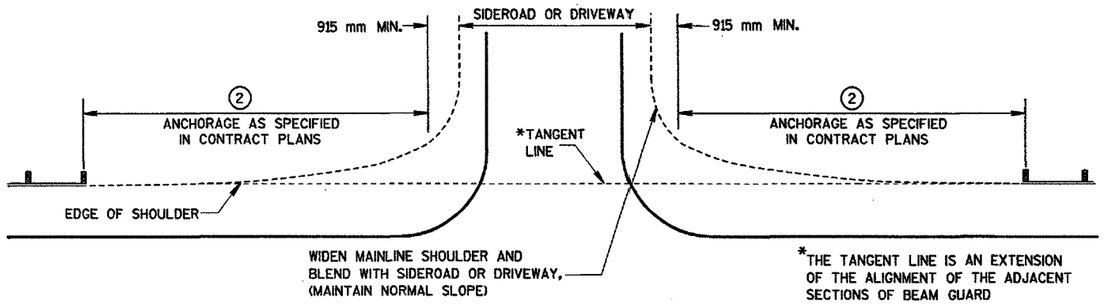
FHWA M

S.D.D. 14 B 16-3b

FILE NAME:

S.D.D. 14 B 16-3b

LEVELS ON - 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



BEAM GUARD AT MINOR SIDEROADS OR DRIVEWAYS

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.

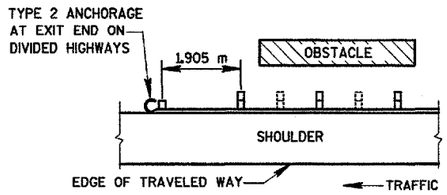
BEAM GUARD LOCATIONS AND LENGTHS ARE SHOWN ELSEWHERE IN THE PLAN.

(1) STEEL THRIE BEAM STRUCTURE APPROACH.

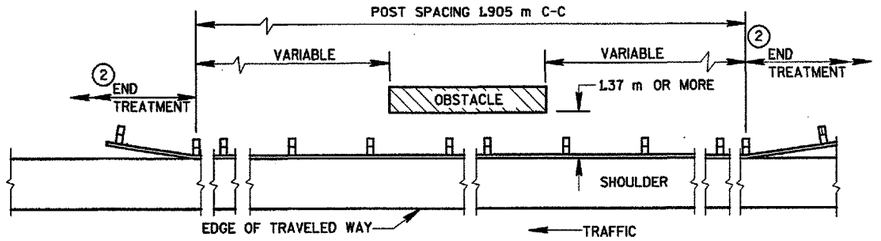
(2) FOR TRAFFIC APPROACH SIDE OF BRIDGES/OBSTACLES, TYPE 2 ANCHORAGE SHALL BE USED ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

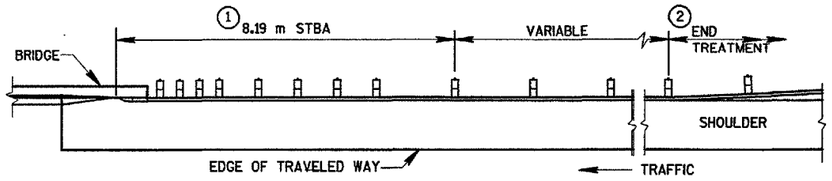


BEAM GUARD AT OBSTACLES EXIT END - ONE WAY TRAFFIC

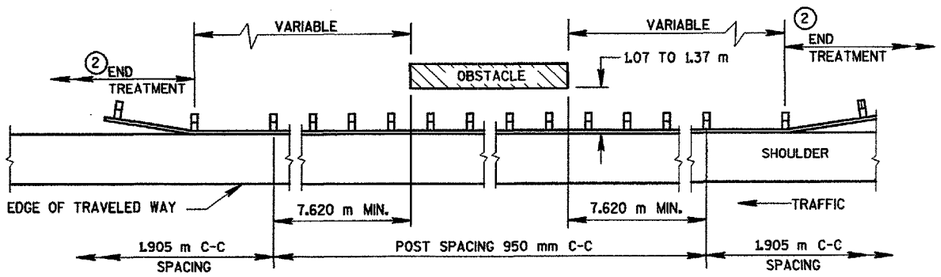


BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

(RAIL TO OBSTACLE CLEARANCE 1.37 m OR MORE)

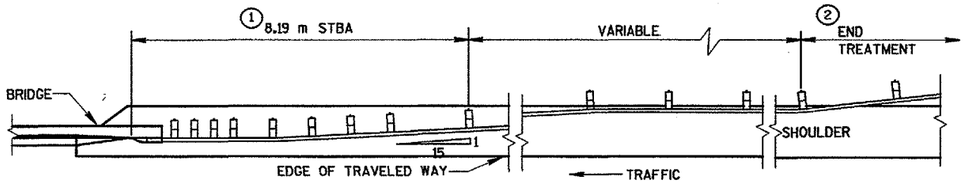


BEAM GUARD AT FULL WIDTH BRIDGES



BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

(RAIL TO OBSTACLE CLEARANCE 1.07 TO 1.37 m)



BEAM GUARD AT NARROW BRIDGES

(FLARED TO SHOULDER EDGE, THEN PARALLEL TO ROADWAY)

CLASS "A" STEEL PLATE
BEAM GUARD
(AT BRIDGES, OBSTACLES
AND SIDEROADS/DRIVEWAYS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
2/19/99
DATE

Roy D. Thunstrom
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

M

S.D.D. 14 B 18-4a

PLOT SCALE: 5-19-98

PLOT NAME:

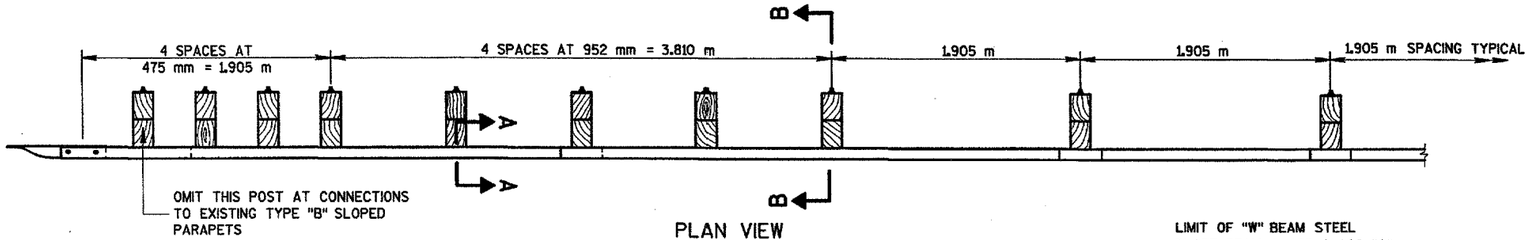
REV. DATE:

LEVELS ON - 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

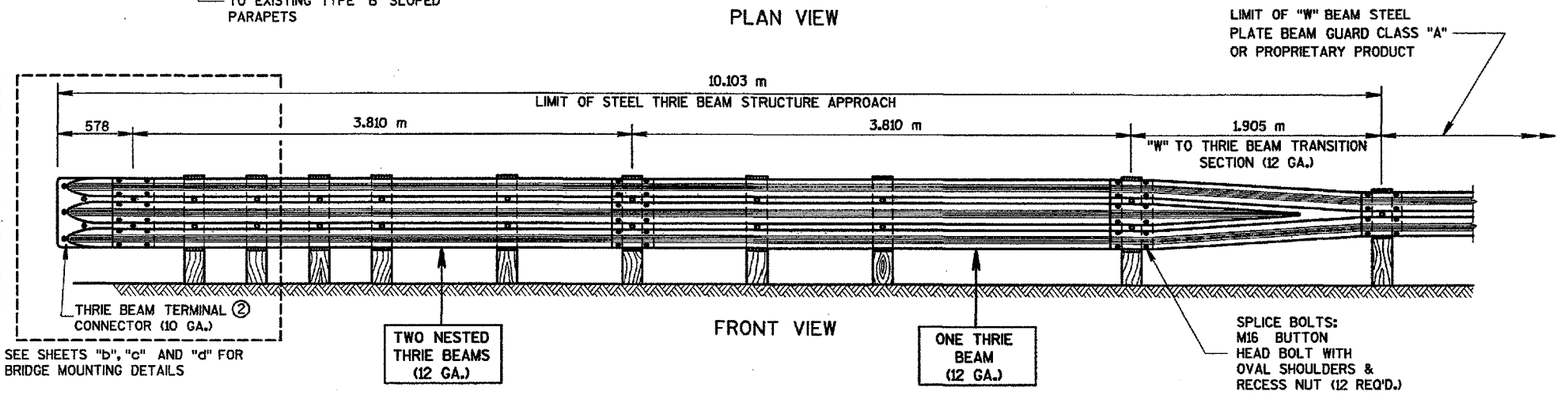
ORIGINATOR:

S.D.D. 14 B 18-4a

FILE NAME:



PLAN VIEW



FRONT VIEW

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.

THRIE BEAM STRUCTURE APPROACH SHALL BE FURNISHED AND CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 614 OF THE STANDARD SPECIFICATIONS. THRIE BEAM SECTIONS SHALL CONFORM TO THE REQUIREMENTS FOR CLASS "A", TYPE 2, BEAM AS SPECIFIED IN AASHTO DESIGNATION M180.

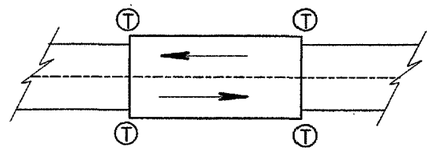
THRIE BEAM SHALL BE BOLTED TO ALL POSTS AND OFFSET BLOCKS. FIELD DRILLING/PUNCHING OF BOLT HOLES IN THE BEAM IS PERMITTED WHERE POST SPACING IS LESS THAN 1.905 m.

WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 305 mm DIA. POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL SHALL BE PLACED IN THE BOTTOM OF THE HOLE APPROXIMATELY 65 mm DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES SHALL BE FIELD CUT TO LENGTH, PLACED IN THE HOLE AND BACKFILLED WITH ADEQUATELY COMPACTED MATERIAL EXCAVATED FROM THE HOLE.

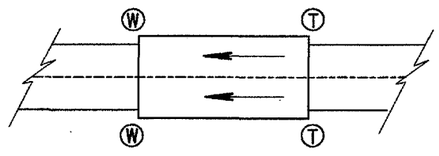
① POST LENGTH SHALL BE INCREASED TO PROVIDE A MINIMUM EMBEDMENT OF 1.2 m WHERE THE SHOULDER HINGE POINT IS LOCATED IN FRONT OF THE POST.

② A TERMINAL CONNECTOR IS NOT REQUIRED AT CONNECTIONS TO BRIDGE RAILING TYPE "W".

③ WHEN SPECIFIED ELSEWHERE IN THE CONTRACT THE 610 mm MINIMUM TO HINGE POINT, MAY BE REDUCED OR ELIMINATED WHERE EXISTING CONDITIONS WILL NOT PERMIT THE DESIRABLE EARTHWORK.



TWO WAY TRAFFIC

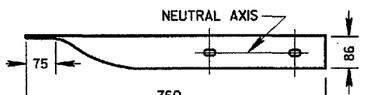


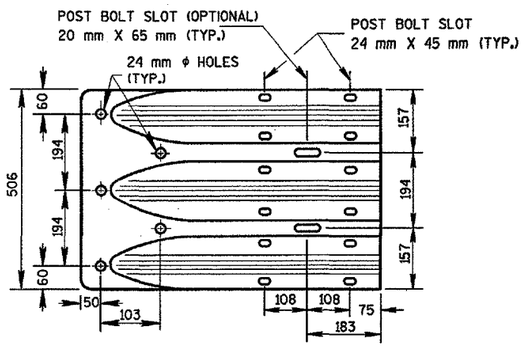
ONE WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION

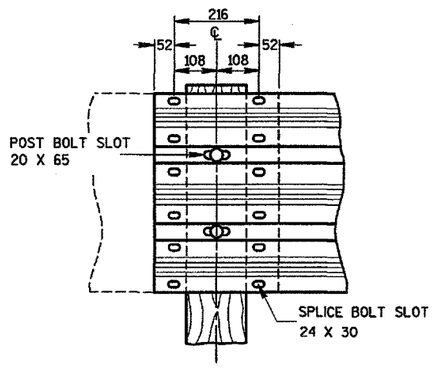
Ⓦ W-BEAM CONNECTION WHEN REQUIRED

TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

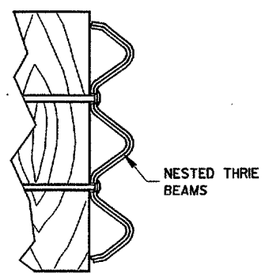




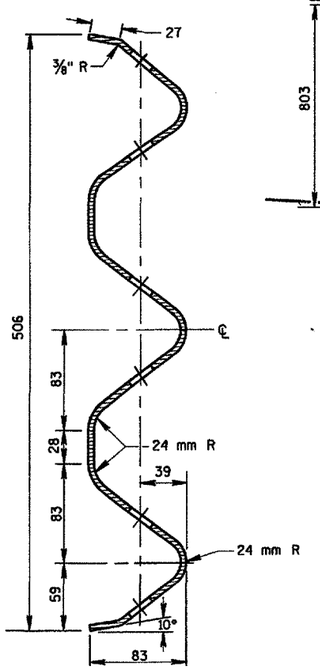
THRIE BEAM TERMINAL CONNECTOR



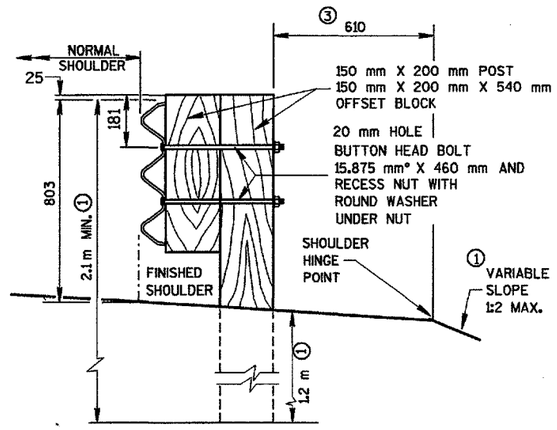
THRIE BEAM SPLICE



PARTIAL SECTION A-A



SECTION THRU THRIE BEAM RAIL ELEMENT



SECTION B-B

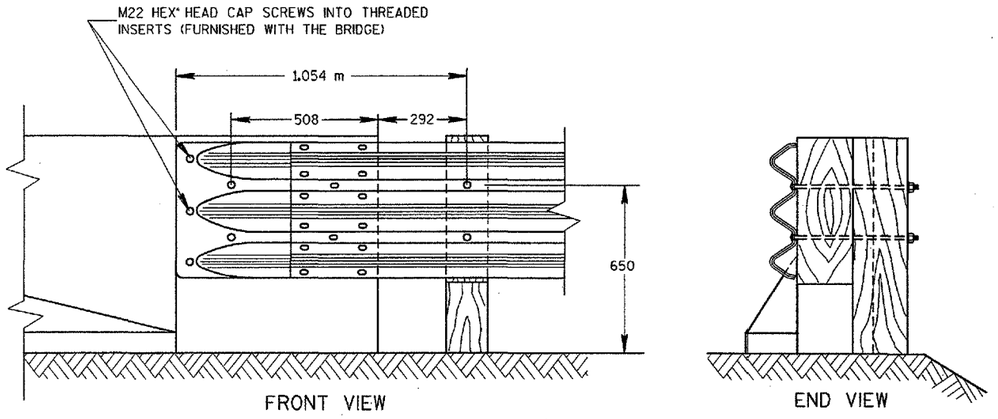
STEEL THRIE BEAM
STRUCTURE APPROACH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION M

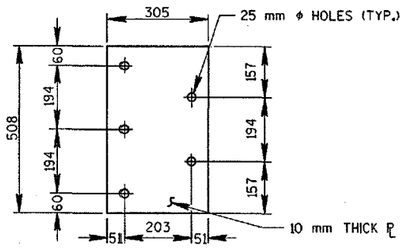
S.D.D. 14 B 20-6a

FILE NAME:

LEVELS ON = 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



THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS



② BACKUP PLATE DETAIL

GENERAL NOTES

THE CONNECTION DETAILS SHOWN ARE TYPICAL. THE POSITION OF CONNECTIONS TO EXISTING BRIDGES SHALL BE ADJUSTED WHERE NECESSARY TO FIT ACTUAL BRIDGE AND SITE DIMENSIONS.

BOLTS, PLATES, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A325M, AND BE GALVANIZED IN ACCORDANCE WITH ASTM A153.

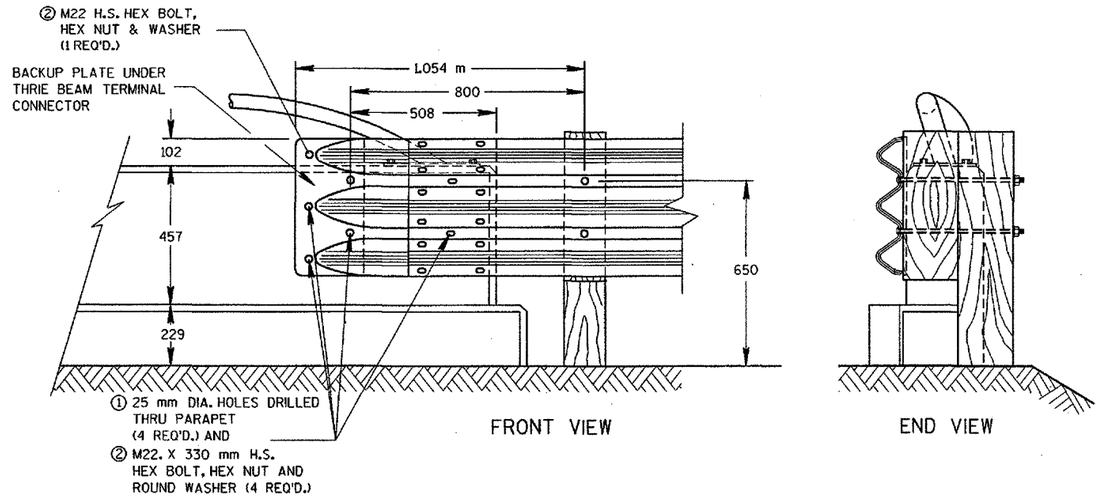
① PAYMENT FOR DRILLING BOLT HOLES THRU THE PARAPET, BACKUP PLATE AND ALL BOLTS, NUTS AND WASHERS REQUIRED SHALL BE INCLUDED IN ITEM STEEL THRIE BEAM STRUCTURE APPROACH.

② HARDENED WASHER REQUIRED WITH EACH BOLT AT THE BACKFACE OF PARAPET.

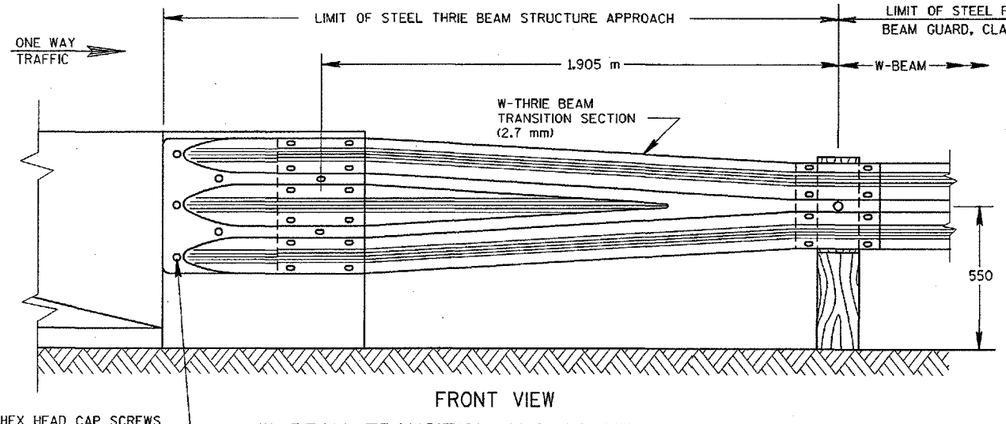
③ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 455 mm X 610 mm X 90 mm.

NOTE

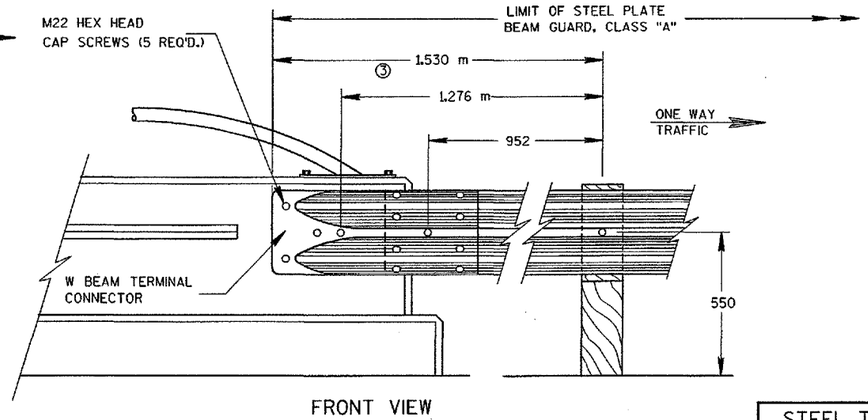
ALL DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS OTHERWISE SPECIFIED



THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS



W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)



W BEAM CONNECTION TO VERTICAL FACE PARAPET (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SQUARE END AND VERTICAL FACED PARAPETS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

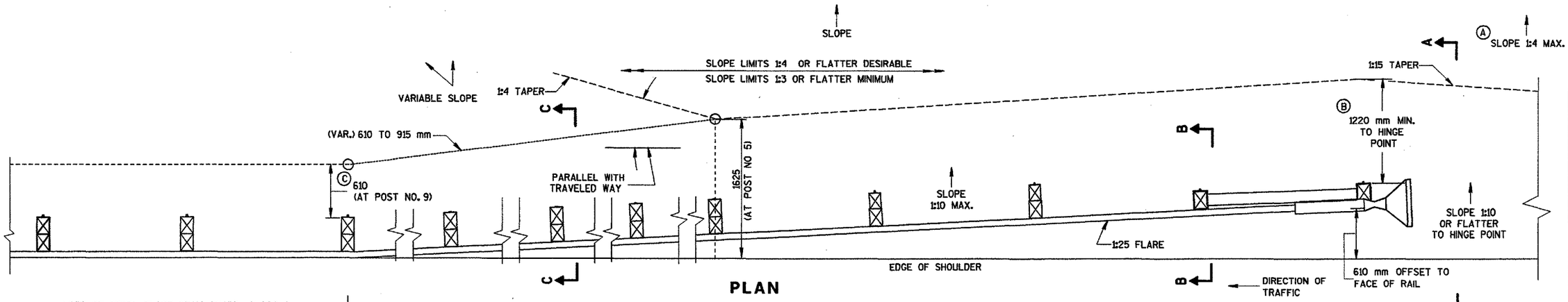
APPROVED 3-23-99 DATE
Roy L. Thimmesch
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

M

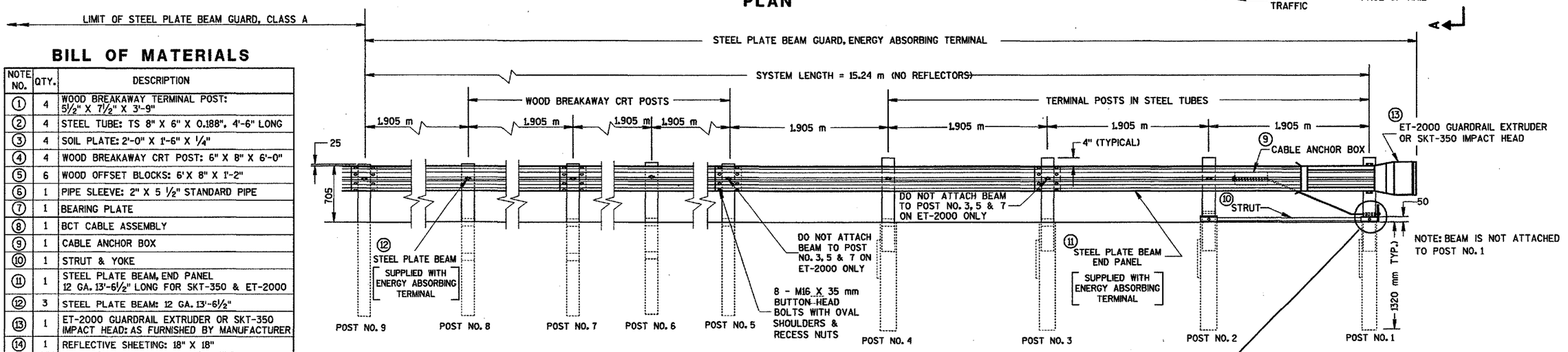
S.D.D. 14 B 20-6b

FILE NAME: de msdd

S.D.D. 14 B 20-6b



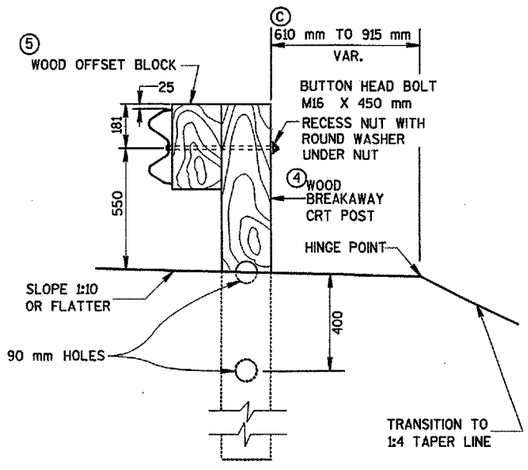
PLAN



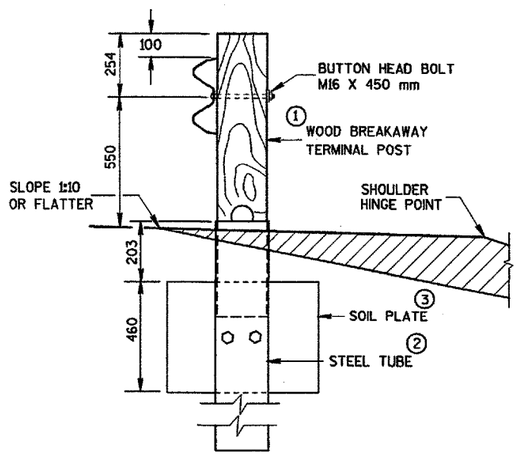
ELEVATION

BILL OF MATERIALS

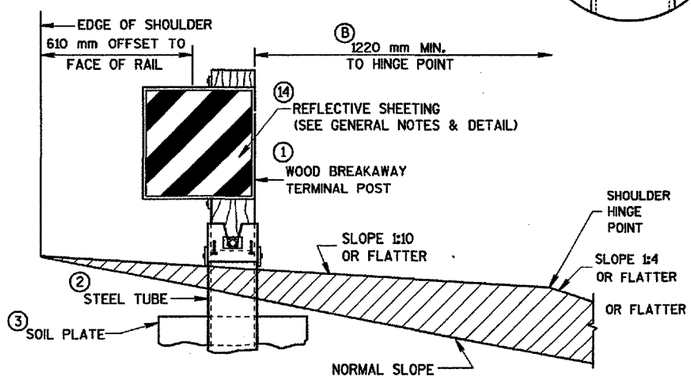
NOTE NO.	QTY.	DESCRIPTION
①	4	WOOD BREAKAWAY TERMINAL POST: 5½" X 7½" X 3'-9"
②	4	STEEL TUBE: TS 8" X 6" X 0.188", 4'-6" LONG
③	4	SOIL PLATE: 2'-0" X 1'-6" X ¼"
④	4	WOOD BREAKAWAY CRT POST: 6" X 8" X 6'-0"
⑤	6	WOOD OFFSET BLOCKS: 6'X 8" X 1'-2"
⑥	1	PIPE SLEEVE: 2" X 5 ½" STANDARD PIPE
⑦	1	BEARING PLATE
⑧	1	BCT CABLE ASSEMBLY
⑨	1	CABLE ANCHOR BOX
⑩	1	STRUT & YOKE
⑪	1	STEEL PLATE BEAM, END PANEL 12 GA. 13'-6½" LONG FOR SKT-350 & ET-2000
⑫	3	STEEL PLATE BEAM: 12 GA. 13'-6½"
⑬	1	ET-2000 GUARDRAIL EXTRUDER OR SKT-350 IMPACT HEAD: AS FURNISHED BY MANUFACTURER
⑭	1	REFLECTIVE SHEETING: 18" X 18"



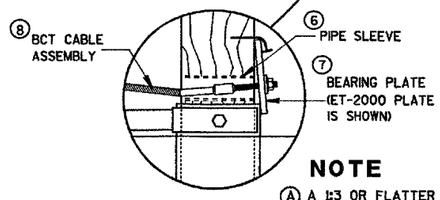
SECTION C-C
TYPICAL AT POST NOS. 5-8 INC.



SECTION B-B
TYPICAL AT POST NO. 2
(ADD WOOD OFFSET BLOCK AT POST 3 & 4)



SECTION A-A
TYPICAL AT POST NO. 1



NOTE

Ⓐ A 1:3 OR FLATTER SLOPE MAY BE USED FOR INSTALLATION ON EXISTING HIGHWAYS.

Ⓑ WHEN SPECIFIED ELSEWHERE IN THE CONTRACT THE 1220 mm MINIMUM TO HINGE POINT, MAY BE REDUCED OR ELIMINATED WHERE EXISTING CONDITIONS WILL NOT PERMIT THE DESIRABLE EARTHWORK. SIMILIARLY THE 1:15 TAPER MAY BE REDUCED TO 1:4.

Ⓒ WHEN SPECIFIED ELSEWHERE IN THE CONTRACT THE 610 mm MINIMUM TO HINGE POINT, MAY BE REDUCED OR ELIMINATED WHERE EXISTING CONDITIONS WILL NOT PERMIT THE DESIRABLE EARTHWORK.

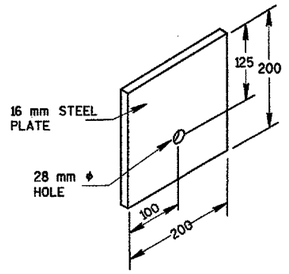
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

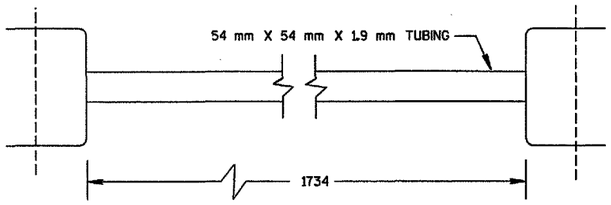
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

S.D.D. 14 B 24-3a

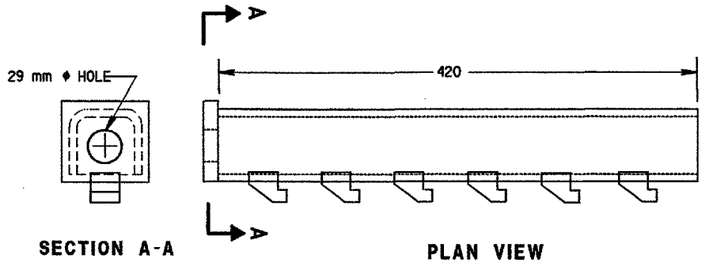
S.D.D. 14 B 24-3a



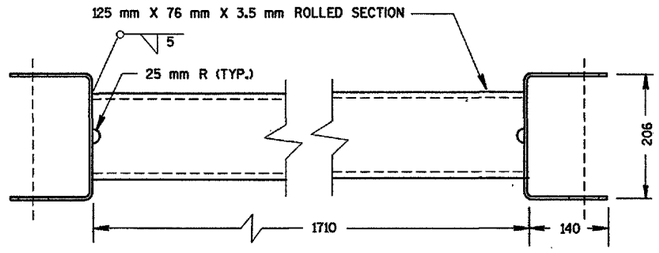
STEEL BEARING PLATE (SKT-350)



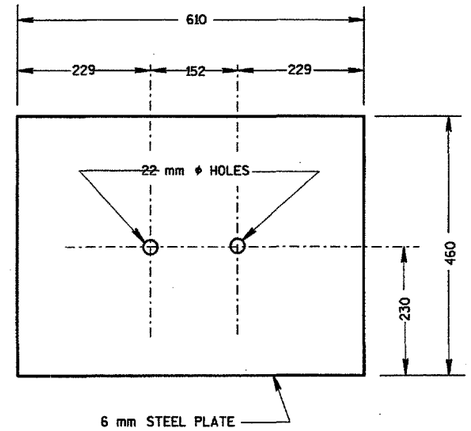
STRUT DETAIL (SKT-350)



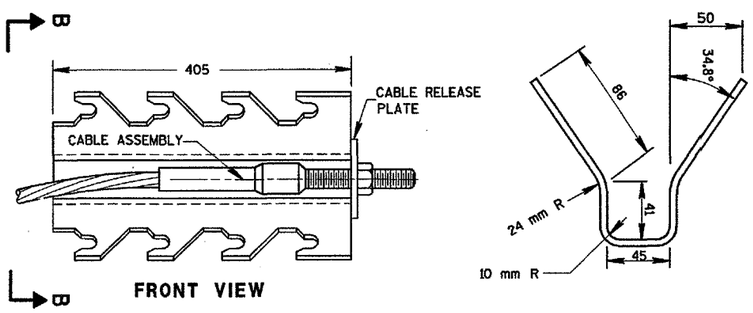
CABLE ANCHOR BOX (ET-2000)



STRUT DETAIL (ET-2000)

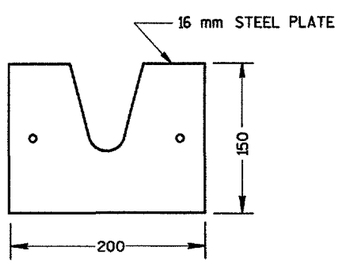


SOIL PLATE (SKT-350 & ET-2000)

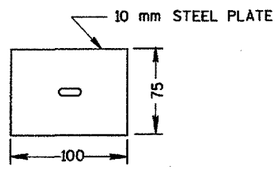


CABLE ANCHOR BOX (SKT-350)

(SKT-350)



STEEL BEARING PLATE (ET-2000)



BEARING PLATE WASHER ET-2000)

(ET-2000)

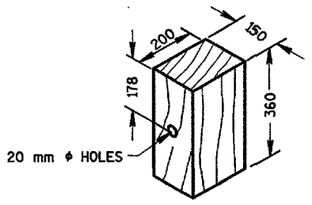
NOTE
ALL DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS OTHERWISE SHOWN.

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

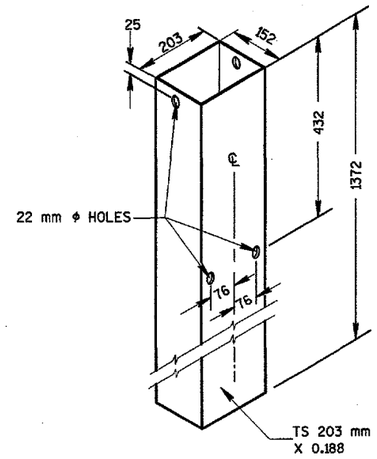
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

S.D.D. 14 B 24-3b

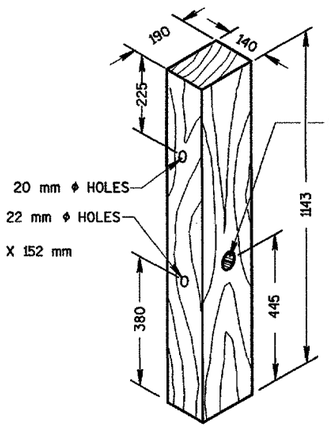
PLOT SCALE:
PLOT NAME:
REV. DATE:
ORIGINATOR:
S.D.D. 14 B 24-3b



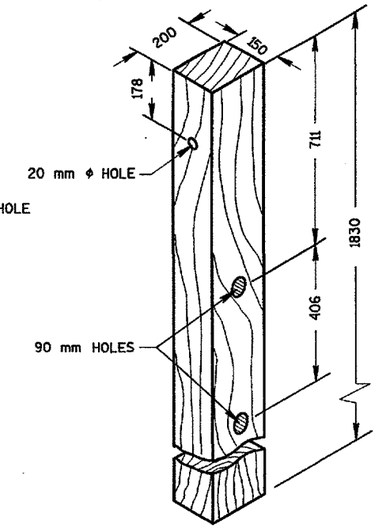
WOOD OFFSET BLOCK
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



STEEL TUBE
(POSTS NO. 1-4
THE STEEL TUBE SHALL CONFORM
TO REQUIREMENTS OF ASTM A500



TERMINAL POST
(POSTS NO. 1-4



CRT POST
(POSTS NO'S 5-8

WOOD BREAKAWAY POSTS

GENERAL NOTES

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

STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL SHALL BE EITHER THE EXTRUDER TERMINAL (ET-2000), OR THE SEQUENTIAL KINKING TERMINAL (SKT-350). THE CONTRACTOR SHALL NOT INTERMIX PROPRIATERY PRODUCT MATERIALS.

THE "ET-2000" IS AVAILABLE FROM SYRO, INC., 2524 N. STEMMONS FREEWAY, DALLAS TEXAS 75207. TELEPHONE 1-800-835-6086 OR 1-800-644-7976

THE "SKT-350" IS AVAILABLE FROM ROAD SYSTEMS, INC., 7631 NEW CASTLE DRIVE, FRANKFORT, ILLINOIS 60423. TELEPHONE (815) 464-5917

THE ET-2000, AND SKT-350 END TERMINALS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

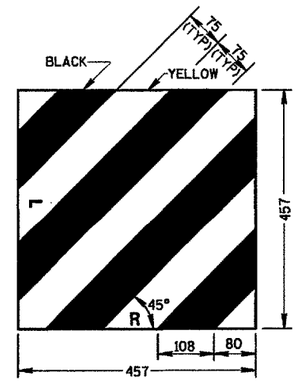
STEEL PLATE BEAM GUARD, ENERGY ABSORBING TERMINAL SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH, WHICH SHALL INCLUDE HARDWARE, STEEL PLATE BEAM GUARD, POSTS, REFLECTIVE SHEETING AND INSTALLATION AS SHOWN.

REFLECTIVE SHEETING - SHALL CONFORM TO ASTM SPECIFICATION D4956-93b, REFLECTIVE SHEETING TYPE III, BACKING CLASS 4, PERFORMANCE REQUIREMENT TYPE III. THE MESSAGE AND LINES SHALL BE APPLIED TO THE SIGNS BY THE SILK SCREEN STENCIL PROCESS USING A BLACK OR DARK STENCIL PASTE AS A TYPE APPROVED BY THE MANUFACTURER OF THE FACE MATERIAL TO WHICH IT IS TO BE APPLIED. MESSAGE UNITS CUT FROM NONREFLECTIVE SHEETING AND APPLIED TO THE SIGN FACE ARE NOT ACCEPTABLE. AFTER THE APPROACH END OF THE STEEL PLATE BEAM GUARD INSTALLATION IS COMPLETE, CLEAN THE AREA WHERE THE REFLECTIVE SHEETING WILL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION. ONCE CLEAN, APPLY REFLECTIVE SHEETING DIRECTLY TO THE STEEL PLATE BEAM GUARD AS SHOWN. THE CONTRACTOR SHALL TURN OVER THE MANUFACTURERS WARRANTY FOR THE REFLECTIVE SHEETING TO THE DEPARTMENT FOR POTENTIAL DEALING WITH THE MANUFACTURER. PAYMENT OF REFLECTIVE SHEETING IS INCIDENTAL TO STEEL PLATE BEAM GUARD, ENERGY ABSORBING TERMINAL.

WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 305 mm DIA. POST HOLE EXTENDING 510 mm DEEP INTO THE ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL SHALL BE PLACED IN THE BOTTOM OF THE HOLE APPROXIMATELY 65 mm DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES SHALL BE FIELD CUT TO LENGTH, PLACED IN THE HOLE AND BACKFILLED WITH ADEQUATELY COMPACTED MATERIAL EXCAVATED FROM THE HOLE.

NOTE

ALL DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS OTHERWISE SHOWN.



REFLECTIVE SHEETING DETAIL

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 3-23-99 DATE
Roy D. Thompson
CHIEF ROADWAY DEVELOPMENT ENGINEER

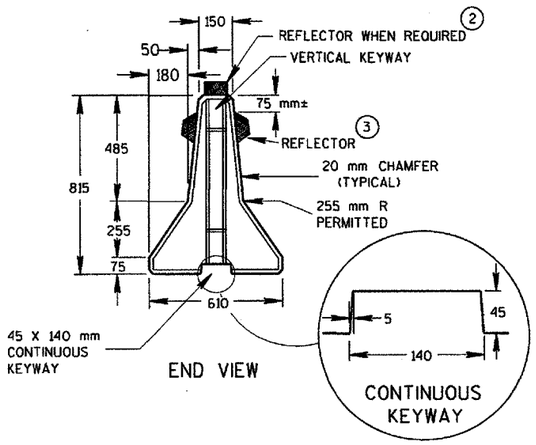
FHWA M

S.D.D. 14 B 24-3c

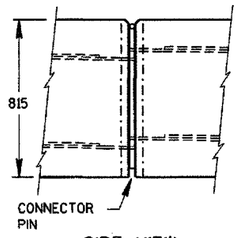
S.D.D. 14 B 24-3c

DESCRIPTION	SIZE	NO. REQ'D	LENGTH (mm)
TOP CONNECTOR WIRE ROPE (1)	12.7 mm	2	1800
BOTTOM CONN. WIRE ROPE (1)	12.7 mm	2	1800
TOP CONNECTOR STEEL BAR	15M	1	2740
BOTTOM CONN. STEEL BAR	15M	1	2740
STEEL CONNECTING PIN	31.75 mm DIA.	1	760
BOTTOM TIE BARS	15M	5	560
VERTICAL STEEL BAR	15M	10	635
HORIZONTAL STEEL BAR	15M	4	2845

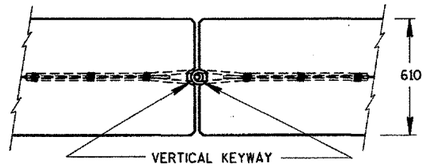
BILL OF MATERIALS



END VIEW

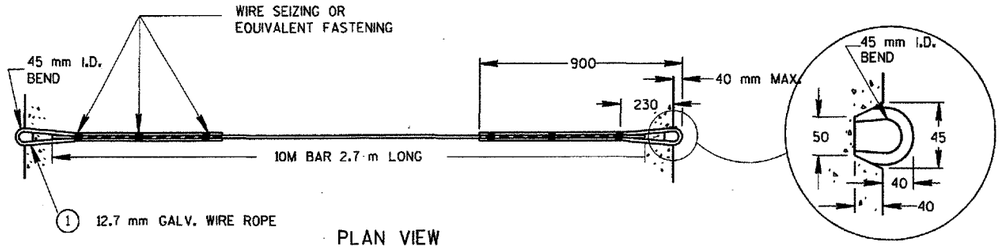


SIDE VIEW



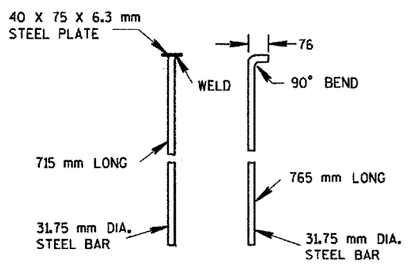
PLAN VIEW

CONNECTION DETAILS

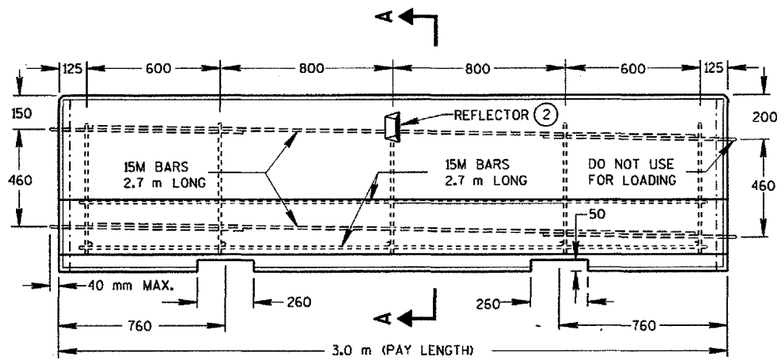


PLAN VIEW

TOP & BOTTOM CONNECTOR ASSEMBLY (1)

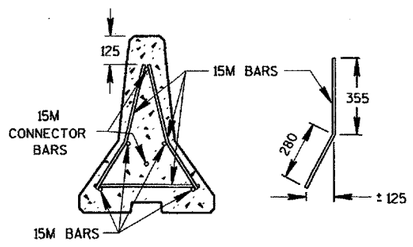


ALTERNATE CONNECTING PINS



SIDE VIEW

LOCATION OF REINFORCEMENT STEEL



SECTION A-A

BAR STEEL REINFORCEMENT

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.

BARRIERS SHALL BE REINFORCED WITH EITHER BAR STEEL REINFORCEMENT AS DETAILED ON THIS DRAWING OR WELDED STEEL WIRE FABRIC ADEQUATE TO ASSURE SAFE HANDLING STRENGTH.

ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 50 mm CLEAR UNLESS OTHERWISE SHOWN.

GALVANIZED WIRE ROPE SHALL BE 6 X 19 CLASS 2 IWRC WITH A MINIMUM BREAKING STRENGTH OF 8900 N AND SHALL CONFORM TO FEDERAL SPECIFICATION RR-W-410. THE ZINC COATING SHALL CONFORM TO TABLE II OF THE FEDERAL SPECIFICATIONS.

REFLECTORS SHALL CONFORM TO SECTION 633 OF THE STANDARD SPECIFICATIONS EXCEPT THE SHAPE SHALL BE AS SHOWN ON THIS DRAWING. ALTERNATIVE SHAPES MAY BE USED WHEN APPROVED BY THE ENGINEER. CONCRETE SURFACE PREPARATION, ADHESIVE AND METHOD OF APPLICATION SHALL BE AS RECOMMENDED BY THE REFLECTOR MANUFACTURER. THE COLOR OF REFLECTORS SHALL BE YELLOW. MAXIMUM SPACING SHALL BE 6.0 m.

(1) CONNECTOR ASSEMBLIES MAY, AT THE CONTRACTORS OPTION, BE FORMED FROM A CONTINUOUS SECTION OF 12.7 mm GALV. WIRE ROPE (5 m MIN. LENGTH). THE 15M CONNECTOR STEEL BARS MAY THEN BE OMITTED.

(2) TOP MOUNTED REFLECTORS SHALL BE PROVIDED IN ADDITION TO THE SIDE MOUNTED REFLECTORS ON ALL BARRIER INSTALLATIONS LOCATED ON CURVED ALIGNMENT LONGER THAN 60 m.

(3) BARRIERS USED TO SEPARATE OPPOSING TRAFFIC SHALL HAVE REFLECTORS ON BOTH SIDES. TOP MOUNTED REFLECTORS SHALL BE DOUBLE FACED FOR THIS CONDITION.

ALTERNATE DESIGN

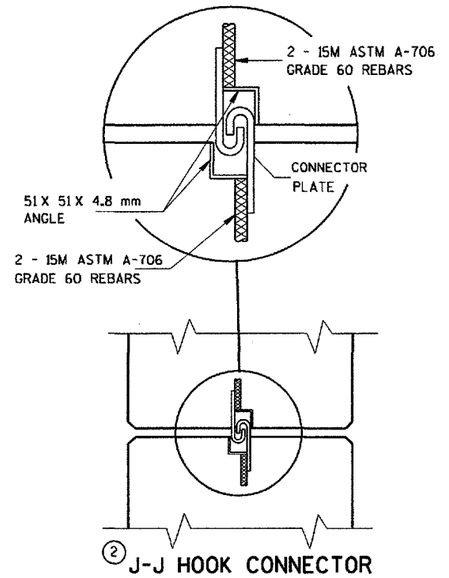
J-J HOOKS PORTABLE CONCRETE BARRIER BY EASI-SET INDUSTRIES MAY BE FURNISHED INSTEAD OF THE BARRIER DETAILED ON THIS DRAWING. CONTACT INFORMATION: EASI-SET INDUSTRIES, P.O. BOX 300, MIDLAND, VIRGINIA 22728, TELEPHONE (703) 439-8911.

NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

ALTERNATE DESIGN

J-J HOOKS PORTABLE CONCRETE BARRIER BY EASI-SET INDUSTRIES MAY BE FURNISHED INSTEAD OF THE BARRIER DETAILED ON THIS DRAWING. CONTACT INFORMATION : EASI SET INDUSTRIES, P.O. BOX 300, MIDLAND, VIRGINIA 22728, TELEPHONE (703) 439-8911.



(2) J-J HOOK CONNECTOR

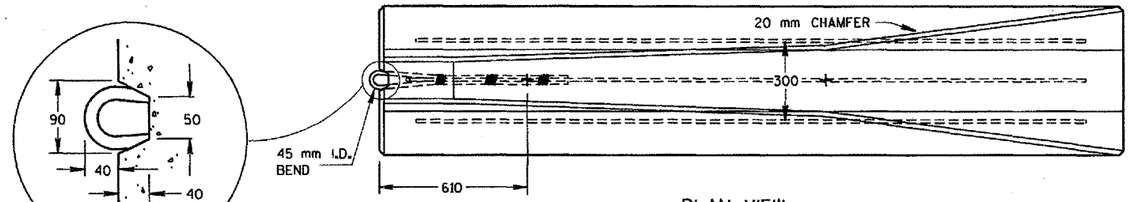
(ALTERNATIVE TO PIN & LOOP CONNECTOR)

TEMPORARY PRECAST CONCRETE BARRIER

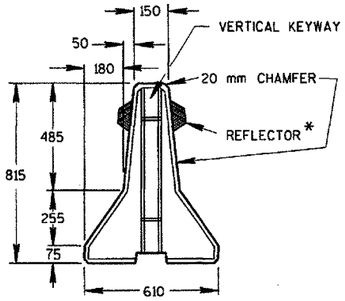
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

S.D.D. 14 B 7-9a

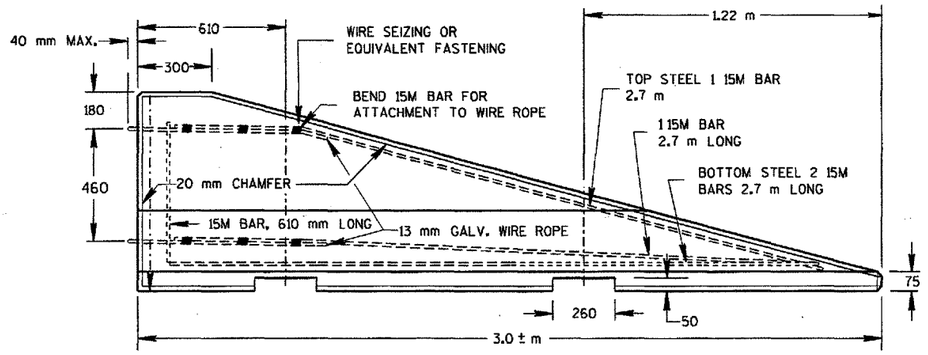
PLOT SCALE:
PLOT NAME:
REV. DATE:
ORIGINATOR:
LEVELS ON • 2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63
FILE NAME:
S.D.D. 14 B 7-9a



PLAN VIEW

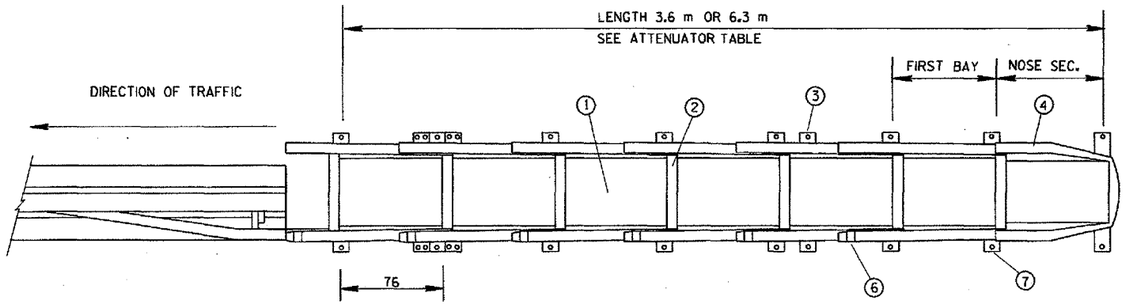


END VIEW

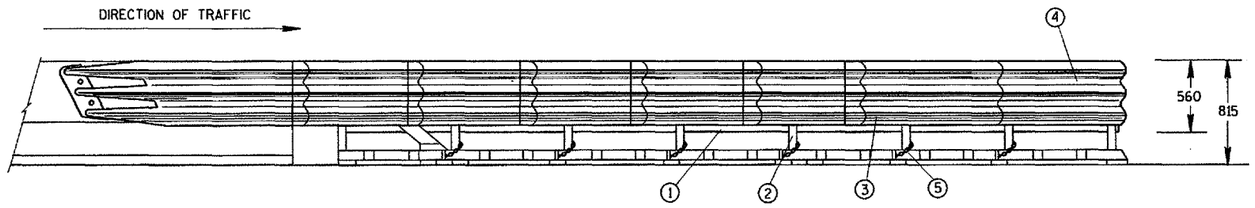


SIDE VIEW

END SECTION FOR TEMPORARY PRECAST CONCRETE BARRIER



PLAN VIEW



NOTE: CROSS SLOPE OF UNIT NOT TO EXCEED 5%

SIDE VIEW

CONSTRUCTION ZONE PORTABLE CRASH CUSHION

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.

THE PORTABLE CRASH CUSHION SHALL BE THE G-R-E-A-T CZ IMPACT ATTENUATOR MANUFACTURED BY ENERGY ABSORPTION SYSTEMS, INC: ONE EAST WACKER DRIVE, CHICAGO, IL., 60601.

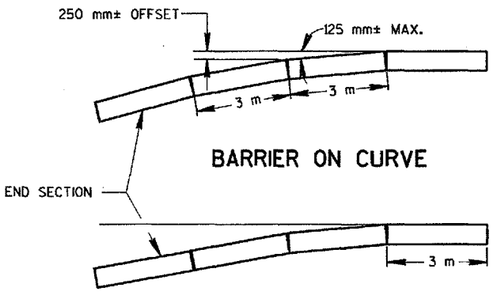
THE CRASH CUSHION SHALL BE MANUFACTURED, ASSEMBLED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS DETAILED ELSEWHERE IN THE PLANS OR AS SHOWN ON THE APPROVED SHOP DRAWINGS. THE CRASH CUSHION PLATFORM SHALL BE ANCHORED TO EITHER 150 mm MINIMUM CONCRETE PAVEMENT OR 75 mm MINIMUM ASPHALTIC SURFACES THAT HAVE A PREPARED COMPACTED SUBBASE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

GALVANIZED WIRE ROPE SHALL BE 6 X 19 CLASS 2 IWRC WITH A MINIMUM BREAKING STRENGTH OF 9050 kg, AND SHALL CONFORM TO FEDERAL SPECIFICATION RR-W-410. THE ZINC COATING SHALL CONFORM TO TABLE II OF THE FEDERAL SPECIFICATIONS.

*WHEN BARRIERS ARE USED TO SEPARATE OPPOSING TRAFFIC, REFLECTORS ARE REQUIRED ON BOTH SIDES.

NOTE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.



BARRIER ON CURVE

FLARE AT BARRIER END

ATTENUATOR TABLE

ATTENUATOR LENGTH (m)	NO. OF BAYS	DESIGN SPEED km/h
3.6	3	60 OR LESS
6.3	6	60 TO 90

OPERATING SPEED, km/h	FLARE RATE
60 OR LESS	1:10
80 OR MORE	1:15

① HEX-FOAM CARTRIDGE
② DIAPHRAGM
③ THRIE BEAM FENDER PANEL
④ NOSE COVER
⑤ STABILIZING CHAIN
⑥ DEFLECTOR PANEL
⑦ ANCHORAGE DEVICE (WHERE ONE-WAY TRAFFIC EXISTS)

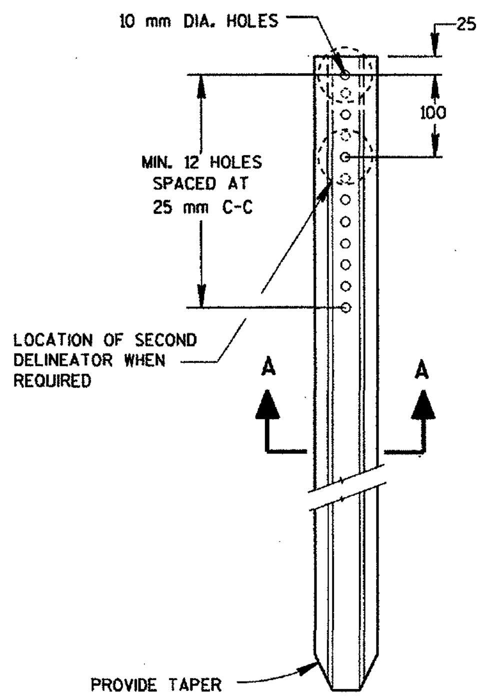
PRECAST CONCRETE BARRIER
END SECTION AND
PORTABLE CRASH CUSHION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

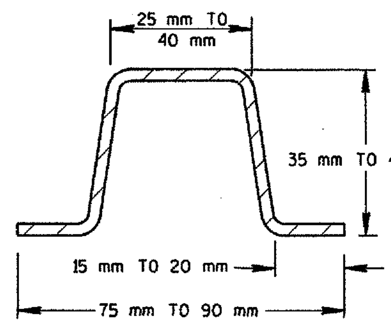
APPROVED 10/24/95 DATE
Tony L. Thurmaier
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA M

S.D.D. 14 B 7-9b

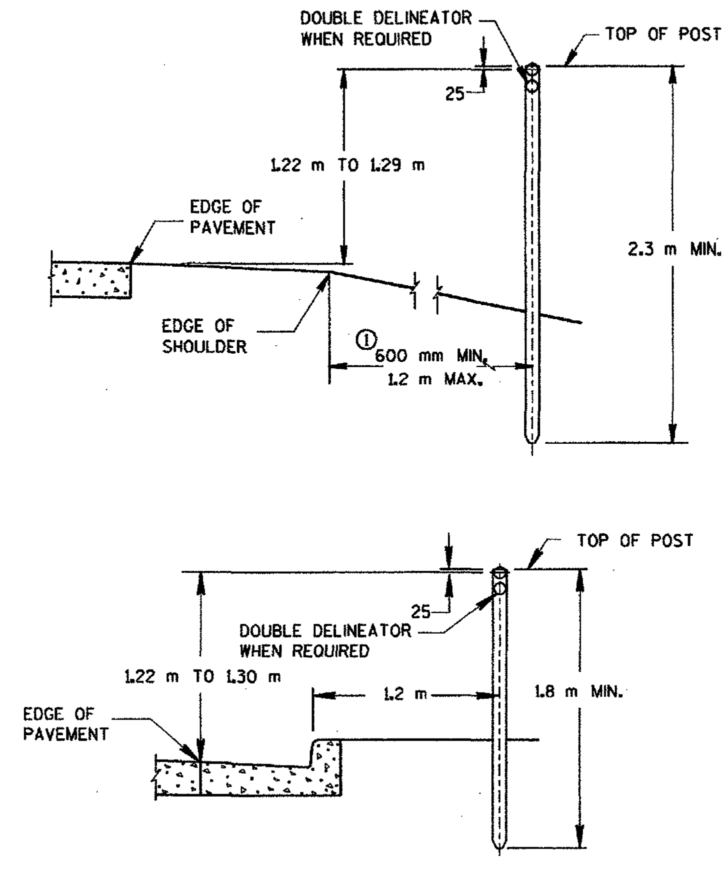
PLOT SCALE:
PLOT NAME:
REV. DATE:
ORIGINATOR:
LEVELS ON - 2,3,4,5,6,7,8, 9,10,11, 12,13,14,15, 16,17,18,19, 20,21,22, 23,24,25, 26,27, 28,29,30,31,32,33, 34,35,36,37,38,39, 40,41, 42,43,44,45,46,47, 48, 49,50,51, 52,53,54,55,56,57,58,59,60,61,62,63
FILE NAME:



DELINEATOR POST



SECTION A-A
WEIGHT 3kg PER METER



TYPICAL INSTALLATIONS OF DELINEATOR POSTS

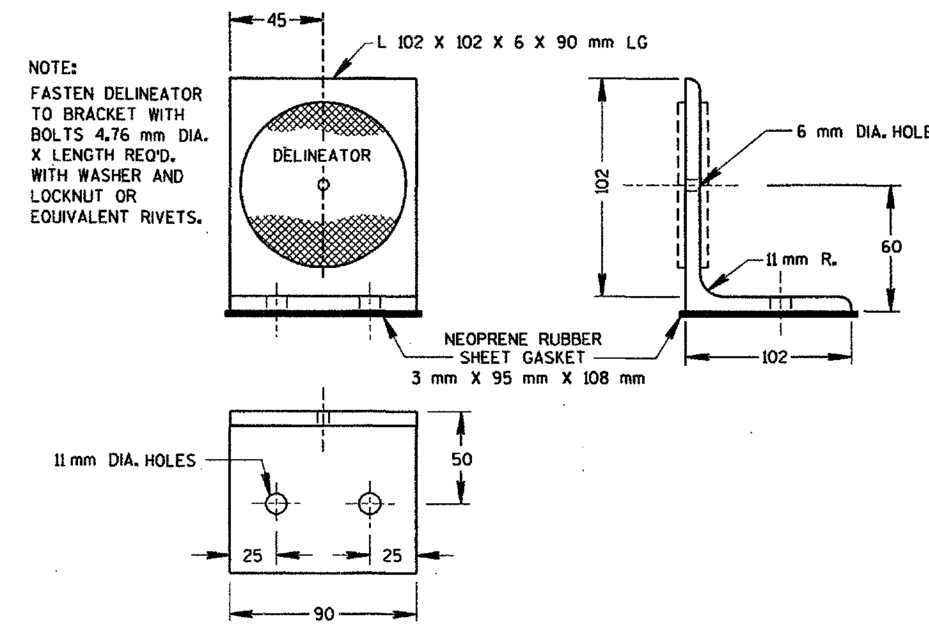
GENERAL NOTES

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

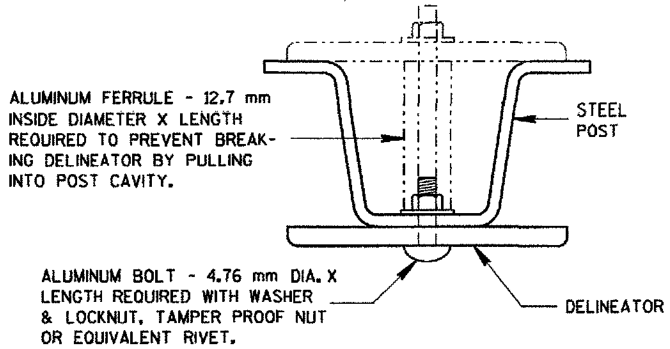
① DELINEATORS SHALL BE PLACED AT A CONSTANT DISTANCE FROM THE EDGE OF THE ROADWAY FOR THE LENGTH OF THE INSTALLATION.

NOTE

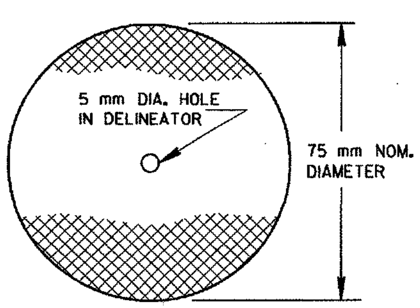
ALL DIMENSIONS ARE IN MILLMETERS UNLESS OTHERWISE SHOWN.

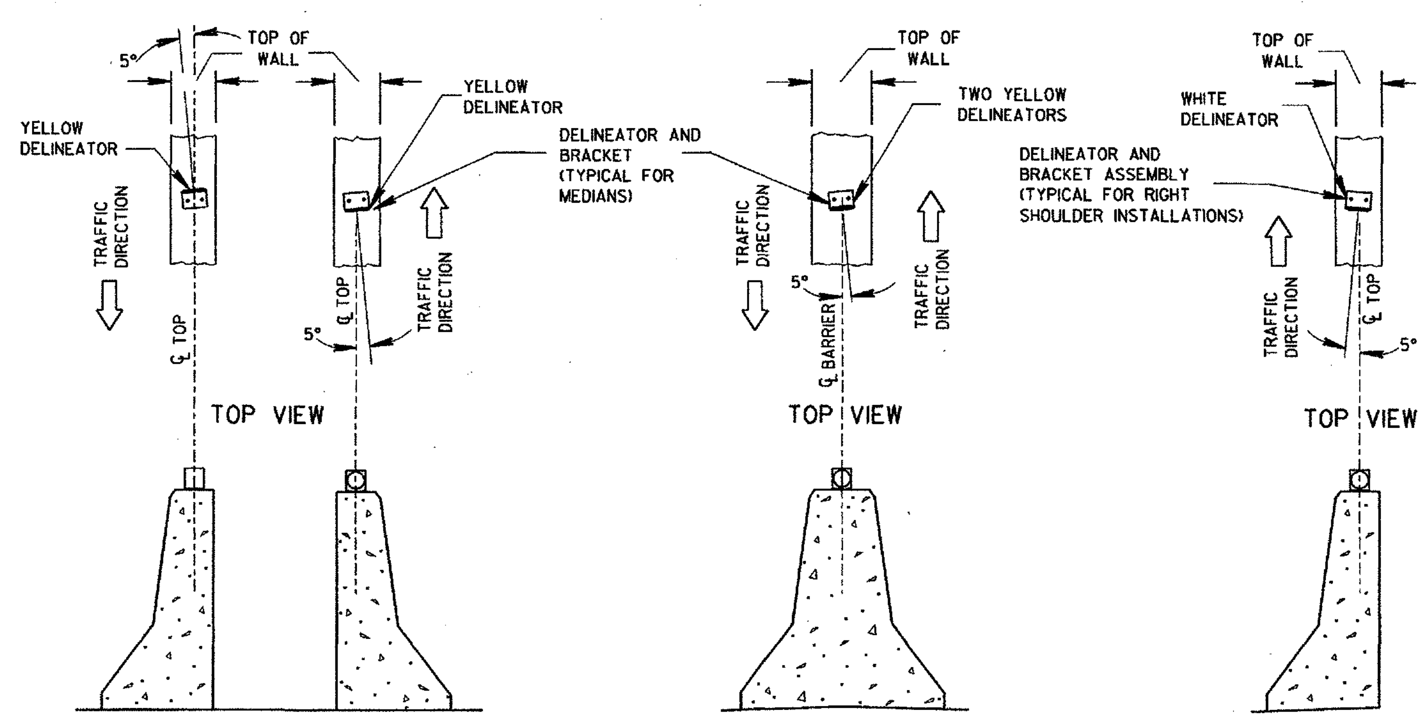


DELINEATOR BRACKET



MOUNTING DETAIL FOR DELINEATOR



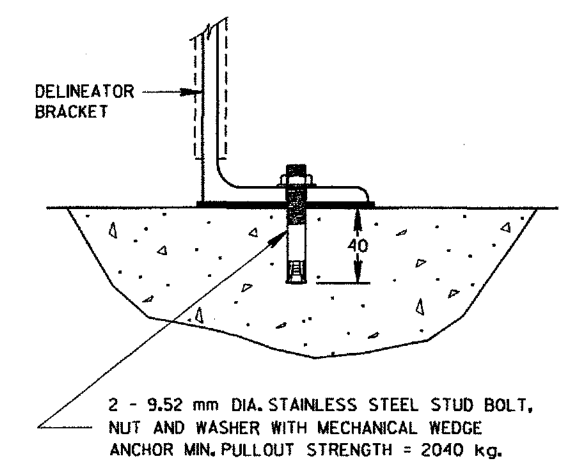


DOUBLE BARRIERS IN MEDIAN

MEDIAN BARRIER

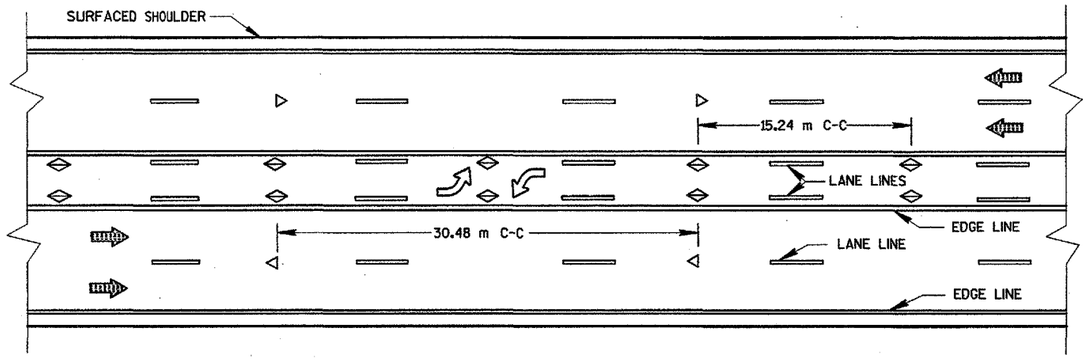
BARRIER LOCATED TO RT. OF TRAFFIC FLOW

LOCATION AND AIMING DETAILS FOR DELINEATORS MOUNTED ON CONCRETE BARRIERS



DELINEATOR BRACKET MOUNTING DETAIL

DELINEATOR POST, DELINEATOR BRACKET AND DELINEATOR
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION
APPROVED 02/07/95 DATE — CHIEF ROADWAY DEVELOPMENT ENGINEER — FHWA — M

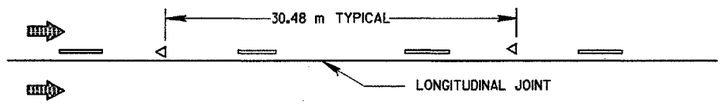


TWO WAY LEFT TURN LANE

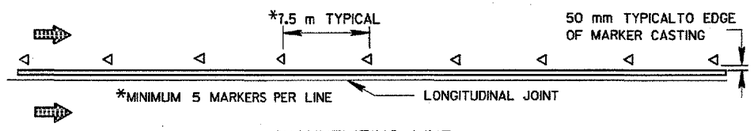
GENERAL NOTES

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

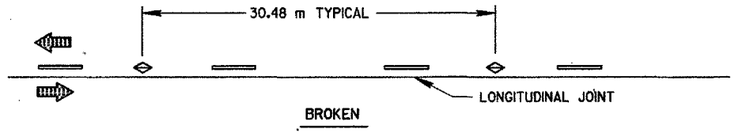
MARKERS SHALL NOT BE LOCATED DIRECTLY OVER LONGITUDINAL JOINTS. PLACE MARKERS ADJACENT TO THE JOINT LINE.

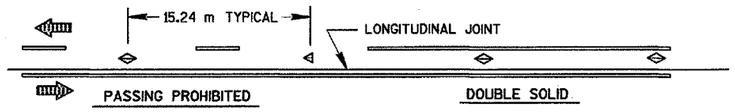


LANE LINE



CHANNELIZING LINE





NOTE:
IN 2-WAY NO-PASSING ZONE, ALL MARKERS ARE 2-WAY YELLOW
IN 1-WAY NO-PASSING ZONE, MARKERS ARE ALTERNATELY 2-WAY AND 1-WAY YELLOW

CENTER LINE

LEGEND

- ONE WAY REFLECTOR (WHITE)
- ONE WAY REFLECTOR (YELLOW)
- TWO WAY REFLECTOR (YELLOW/YELLOW)
- DIRECTION OF TRAFFIC
- PAVEMENT ARROW

TYPICAL RAISED PAVEMENT MARKER PLACEMENT

RAISED PAVEMENT MARKERS
(MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-10-98
DATE

Chester J. Spang
CHIEF SIGNS AND MARKING ENGINEER

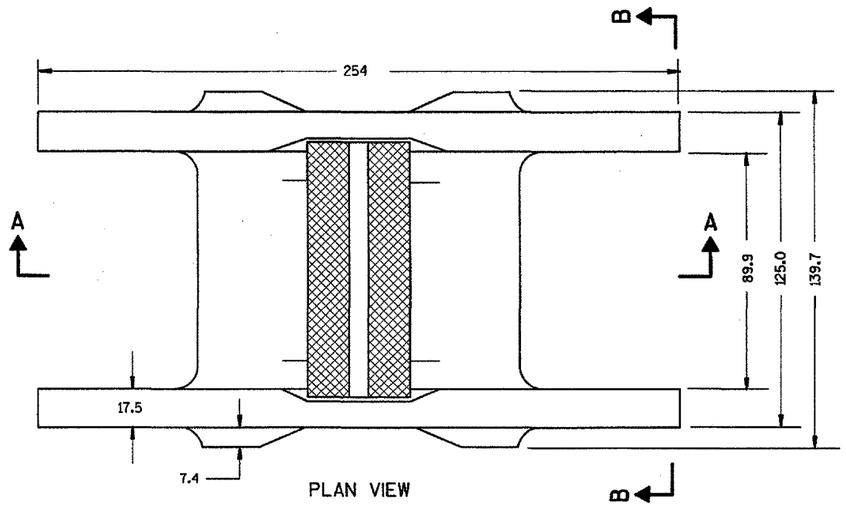
FHWA

M

S.D.D. 15 C 10-5a

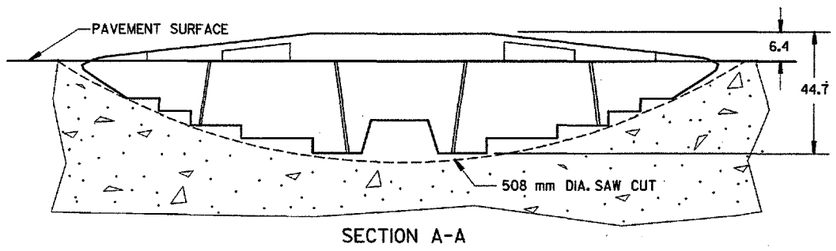
PLOT SCALE:
PLOT NAME:
REV. DATE: 7-19-95
LEVELS ON - 2,3,4,5,6,7,8, 9,10,11,12,13,14,15, 16,17,18,19, 20,21,22, 23,24, 25, 26,27, 28,29,30,31,32,33, 34,35,36,37,38,39, 40,41, 42,43,44,45,46,47,48, 49,50,51, 52,53,54,55,56,57, 58,59,60,61,62,63
ORIGINATOR:
FILE NAME:

S.D.D. 15 C 10-5a

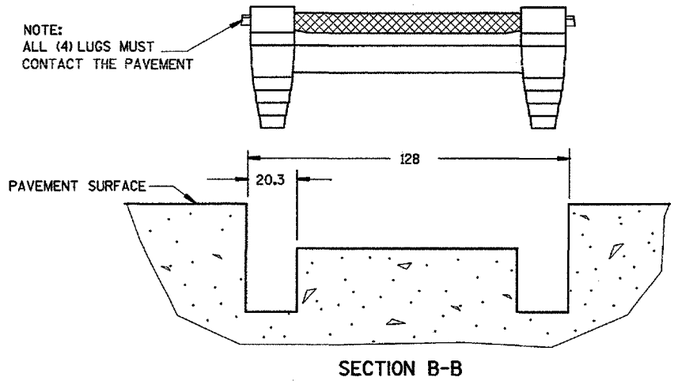


PLAN VIEW

RAISED MARKER
INSTALLED IN PAVEMENT



SECTION A-A



SECTION B-B

GENERAL NOTES

THE PAVEMENT SHALL BE SAW CUT TO THE DIMENSIONS SHOWN ON THIS DRAWING.

THE CONCRETE SAW SHALL BE FITTED WITH A GANG OF 457.2 mm DIAMETER CONCRETE BLADES, BORDERED BY 508 mm DIAMETER BLADES AT EACH END.

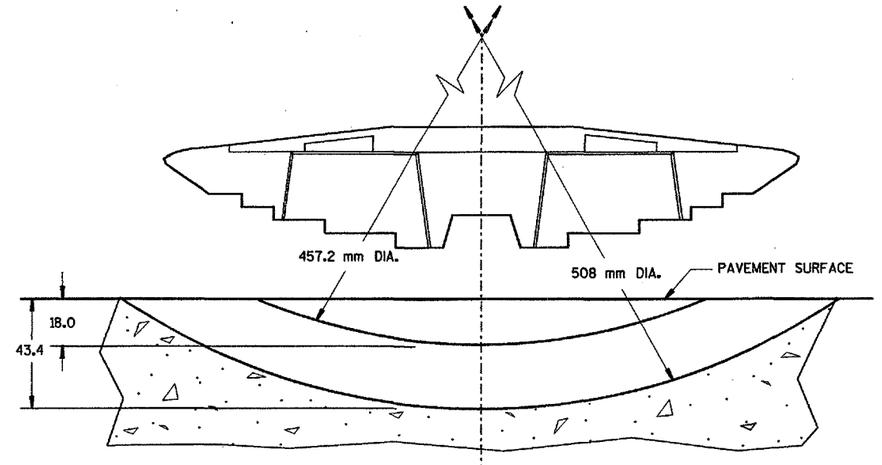
FOR PROPER FIT OF THE MARKER THE CASTING SHOULD HAVE APPROXIMATELY 3 mm INCH CLEARANCE (SIDE TO SIDE MOVEMENT) WHEN INSERTED AT EACH END, ALL FOUR LEVELING LUGS MUST CONTACT THE PAVEMENT, AND THE LEADING EDGES OF THE CASTING MUST

LIE BELOW THE PAVEMENT SURFACE.

THE SAW CUT AREA MUST BE DRY AND FREE OF DUST, DIRT OR ANY MATERIAL WHICH WILL ADVERSELY AFFECT THE BOND OF THE ADHESIVE.

INSTALL THE MARKER WITH AN APPROVED TWO COMPONENT EPOXY ADHESIVE, BY FIRST FILLING THE SAW CUT TO WITHIN APPROXIMATELY 10 mm OF PAVEMENT SURFACE AND THEN PLACING THE MARKER BY HAND INTO THE EPOXY FILLED SAW CUT. AFTER PLACEMENT OF MARKER, EPOXY SHOULD BE FLUSH WITH THE PAVEMENT SURFACE. EPOXY SHOULD NOT BE ALLOWED TO BUILD UP IN FRONT OF THE MARKER LENS, COVER THE MARKER LENS OR ADJACENT PAVEMENT MARKING. ANY DEBRIS OR RESIDUE CAUSED BY THE PAVEMENT SAWING, CUTTING AND MARKER INSTALLATION SHALL BE REMOVED FROM THE PAVEMENT MARKINGS.

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS.



SAW CUT DETAIL

RAISED PAVEMENT MARKERS (CASTING & SAWCUT DETAILS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-10-98
DATE

Chester J. Sprang
CHIEF SIGNS AND MARKING ENGINEER

FHWA

M

S.D.D. 15 C 10-5c

ORIGINATOR:

REV. DATE: 7-19-95

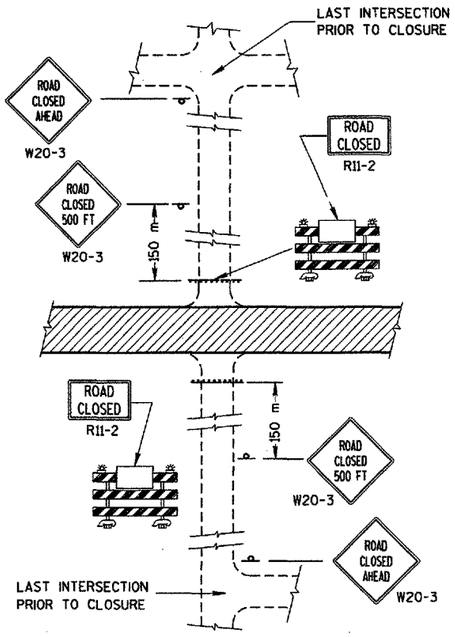
PLOT NAME:

PLOT SCALE:

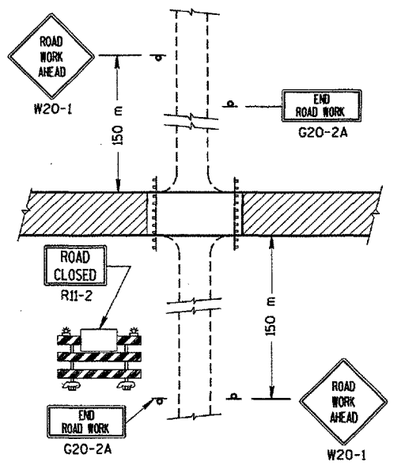
LEVELS ON • 2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63

FILE NAME:

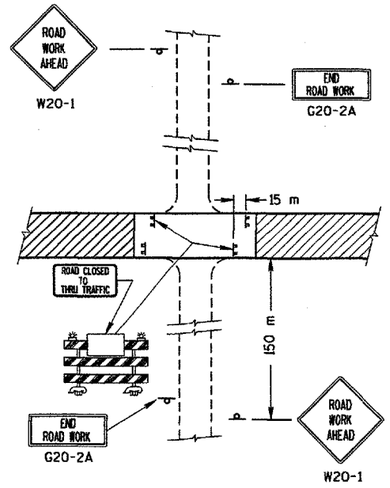
S.D.D. 15 C 10-5c



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

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, II AND III, AND ON ALL R11-3 AND R11-4 SIGNS.

ALL SIGNS SHALL BE 1200 mm X 1200 mm UNLESS OTHERWISE NOTED BELOW:
R11-2, "ROAD CLOSED" SIGNS SHALL BE 1200 mm X 750 mm.
R11-3, AND R11-4 SIGNS SHALL BE 1500 mm X 750 mm.
G20-2A SIGNS SHALL BE 1200 mm X 600 mm.

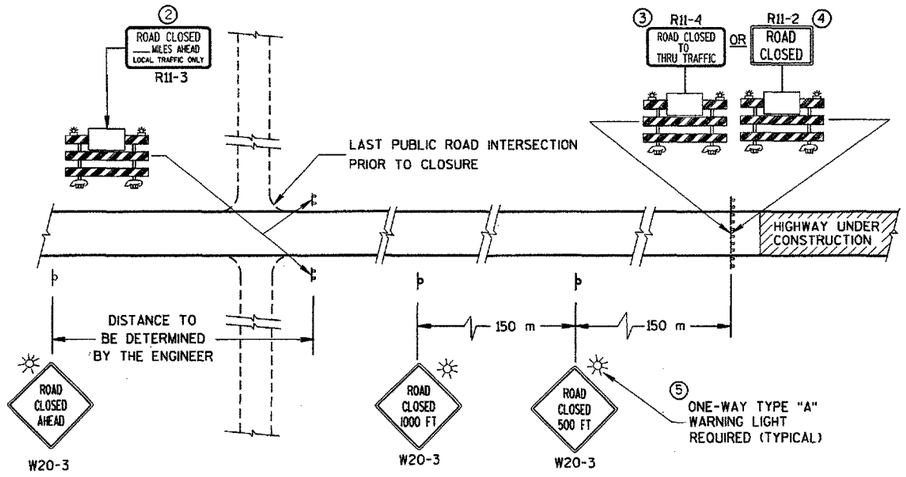
(1) TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND AT LEAST ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN.

(2) THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT INTERSECTION.

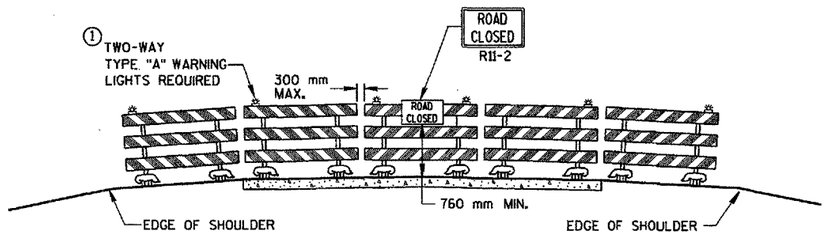
(3) FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE LANE CLOSURE BARRICADE DETAIL.

(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.



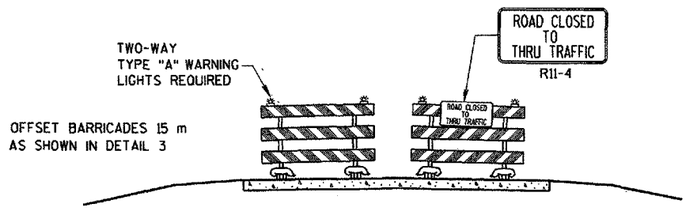
MAINLINE CLOSURE



APPROACH VIEW

ROAD CLOSURE BARRICADE DETAIL

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



APPROACH VIEW

LANE CLOSURE BARRICADE DETAIL

BARRICADES AND SIGNS FOR ROAD CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8-10-95
DATE

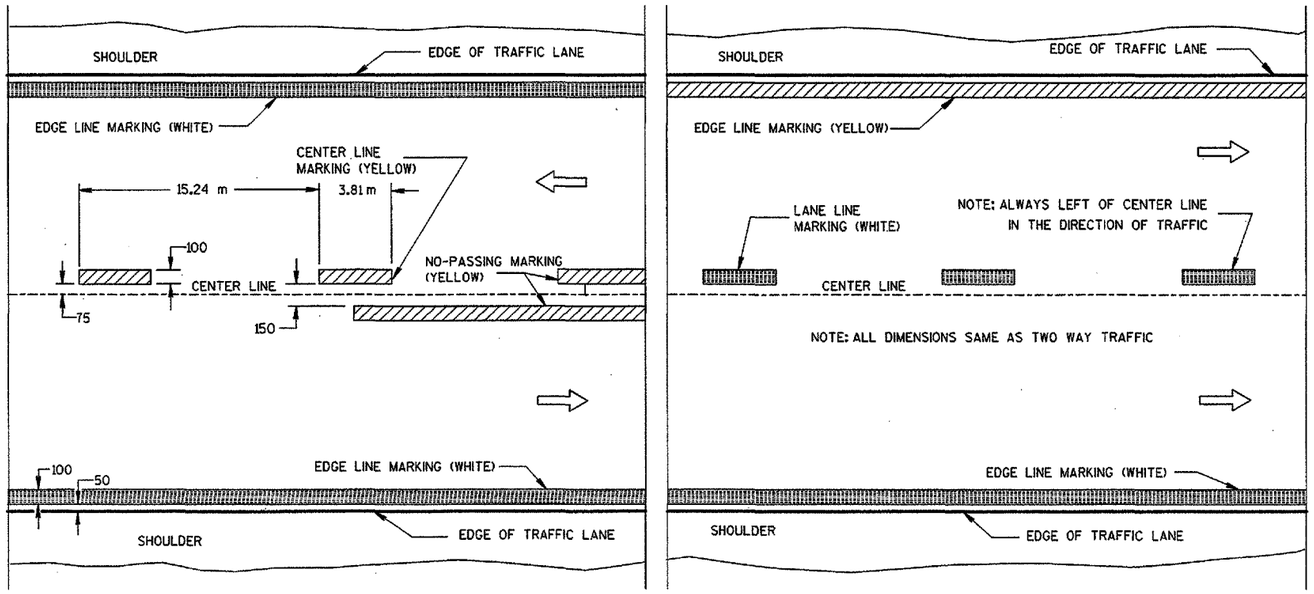
Charles J. Spang
for DIRECTOR, OFFICE OF TRAFFIC

FHWA

M

S.D.D. 15 C 2-3

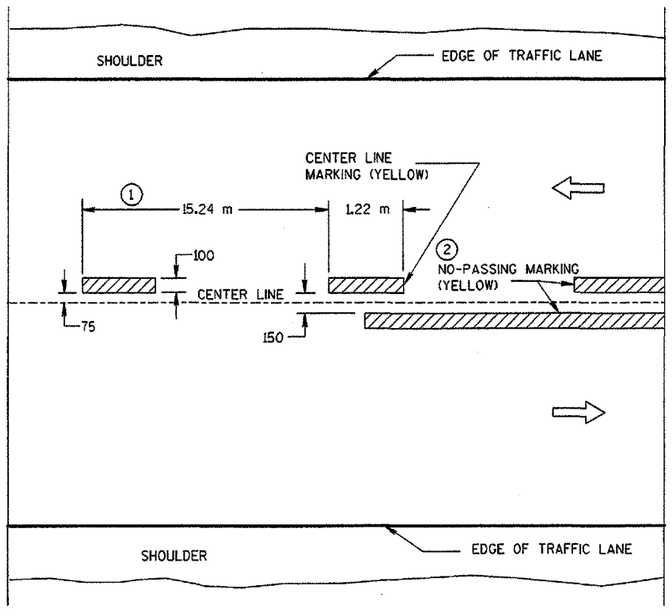
PLOT SCALE:
PLOT NAME:
REV. DATE: 8-10-95
LEVELS ON = 2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63
ORIGINATOR:
S.D.D. 15 C 2-3
FILE NAME:



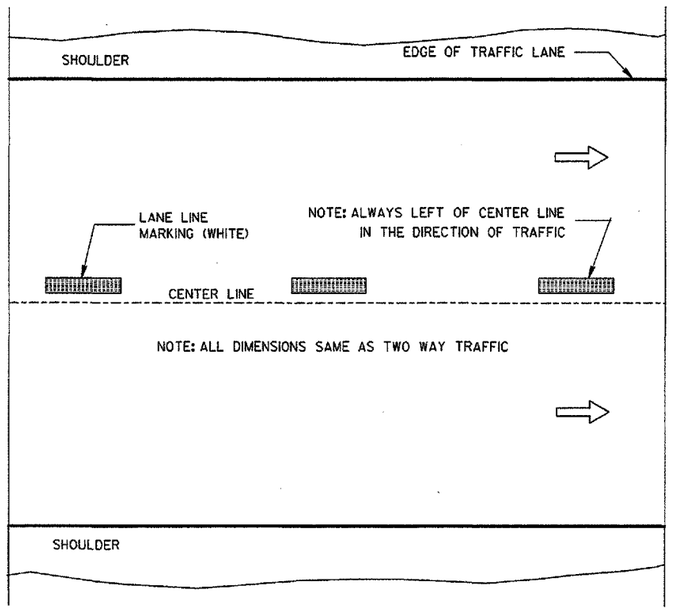
TWO WAY TRAFFIC

ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY (INTERMEDIATE) PAVEMENT MARKING

(SHOWS CYCLE FOR TEMPORARY CENTER LINE OR TEMPORARY LANE LINE MARKING)

GENERAL NOTES

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

(1) HALF CYCLE LENGTHS (7.62 m±) WITH 600 mm 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.

(2) NO PASSING ZONE TEMPORARY PAVEMENT MARKING IS REQUIRED TO BE PLACED, WHERE APPROPRIATE, ALONG WITH CENTERLINE TEMPORARY PAVEMENT MARKING WHEN A SAME DAY PERMANENT PAVEMENT MARKING ITEM IS INCLUDED IN THE CONTRACT.

NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

PAVEMENT MARKING
(MAINLINE)

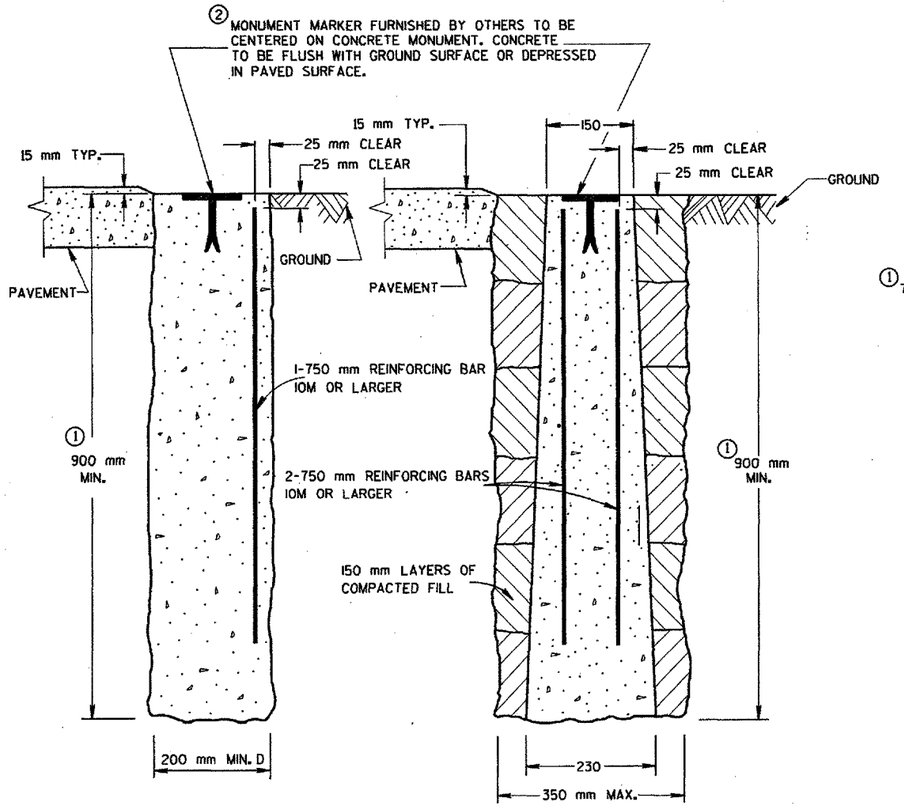
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-10-98
DATE
Charles J. Spang
CHIEF SIGNS AND MARKING ENGINEER
FHWA
M

S.D.D. 15 C 8-8a

PLOT NAME:
PLOT SCALE: 6-28-95
REV. DATE:
ORIGINATOR:
LEVELS ON - 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
FILE NAME:

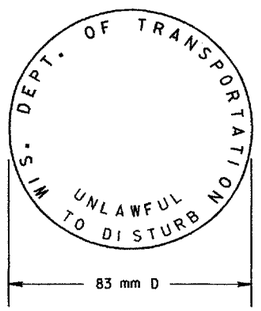
S.D.D. 15 C 8-8a



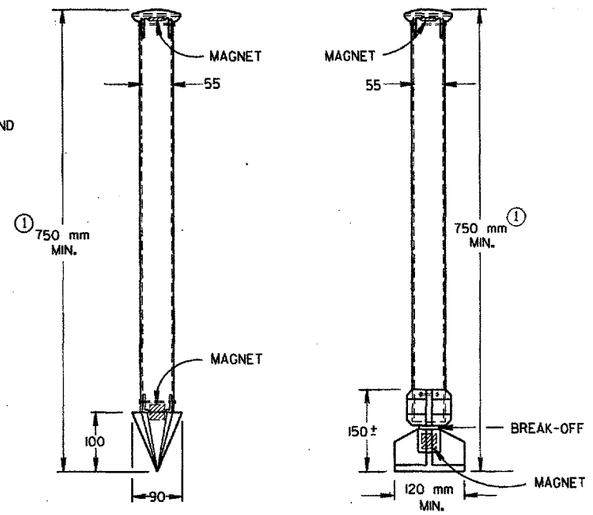
CAST-IN-PLACE PRECAST

CONCRETE MONUMENTS

TYPE A



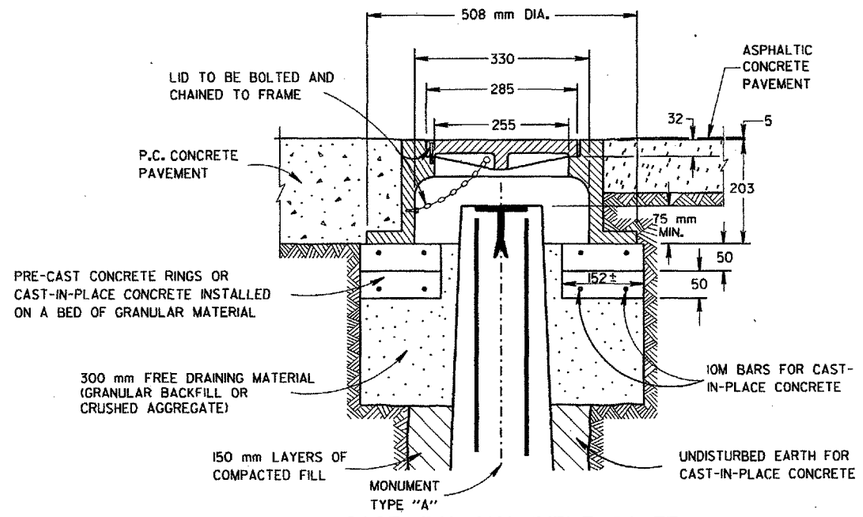
② WIS DOT MONUMENT MARKER LOGO
FOR TYPES "A", "C" & "D"



ALUMINUM MONUMENTS

(INCLUDES MARKER)

NOTE
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SPECIFIED OTHERWISE



CAST IRON MONUMENT COVER

(APPROXIMATE WEIGHT - 43 kg)

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 OF PROPOSED ALTERNATE DESIGNS FOR METAL MONUMENTS OR MONUMENT COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

INSTALLED METAL MONUMENTS MUST BE EASILY DETECTED WITH A DIP NEEDLE. INSERT PERMANENT MAGNETS SHALL BE ATTACHED NEAR THE TOP AND BOTTOM OF THOSE MONUMENTS CONSTRUCTED OF A METAL ALLOY WHICH IS NOT ATTRACTIVE TO A DIP NEEDLE.

THE CAST IRON MONUMENT COVER SHALL BE A "NON-ROCKING" TYPE. ADJUSTMENT OF THE COVER TO GRADE MAY BE ACCOMPLISHED BY THE USE OF MORTAR AND BRICK, OR BY EITHER PRECAST OR CAST-IN-PLACE REINFORCED CONCRETE GRADE RINGS.

MONUMENTS SHALL BE LOCATED AND PLACED AT THE DIRECTION OF THE ENGINEER.

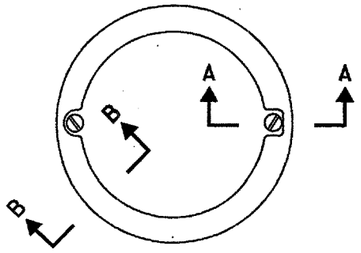
ALUMINUM MONUMENTS AND MONUMENT COVERS SHALL BE MADE FROM AN ALUMINUM AND MAGNESIUM ALLOY AS DETERMINED BY THE MANUFACTURER.

THE MONUMENT COVERS DETAILED ON THIS DRAWING ARE NOT EQUAL ALTERNATES. MONUMENT COVERS SHALL BE CAST IRON UNLESS ALUMINUM IS SPECIFIED ELSEWHERE IN THE CONTRACT.

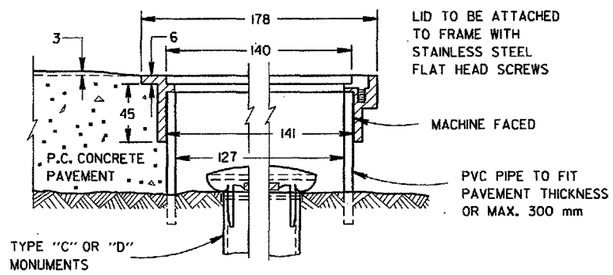
MONUMENT SHALL BE CAST-IN-PLACE CONCRETE UNLESS PRECAST CONCRETE OR ALUMINUM MONUMENTS ARE SPECIFIED IN THE CONTRACT OR PERMITTED BY THE ENGINEER.

① MINIMUM LENGTH SHALL BE 1.2 m FOR MONUMENTS INSTALLED IN PAVED AREAS.

② AN OFFICIAL COUNTY MONUMENT MARKER SUPPLIED BY A COUNTY MAY BE REQUIRED FOR SOME SECTION CORNERS AND WITNESS MONUMENTS INSTEAD OF THIS WIS DOT MARKER.



TOP VIEW



SECTION B-B SECTION A-A

ALUMINUM MONUMENT COVER

(APPROXIMATE WEIGHT 0.9 kg)
(FOR CONCRETE PAVEMENT ONLY)

LANDMARK REFERENCE MONUMENTS AND COVERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 02/07/95 DATE
Roy L. Thompson
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA
M