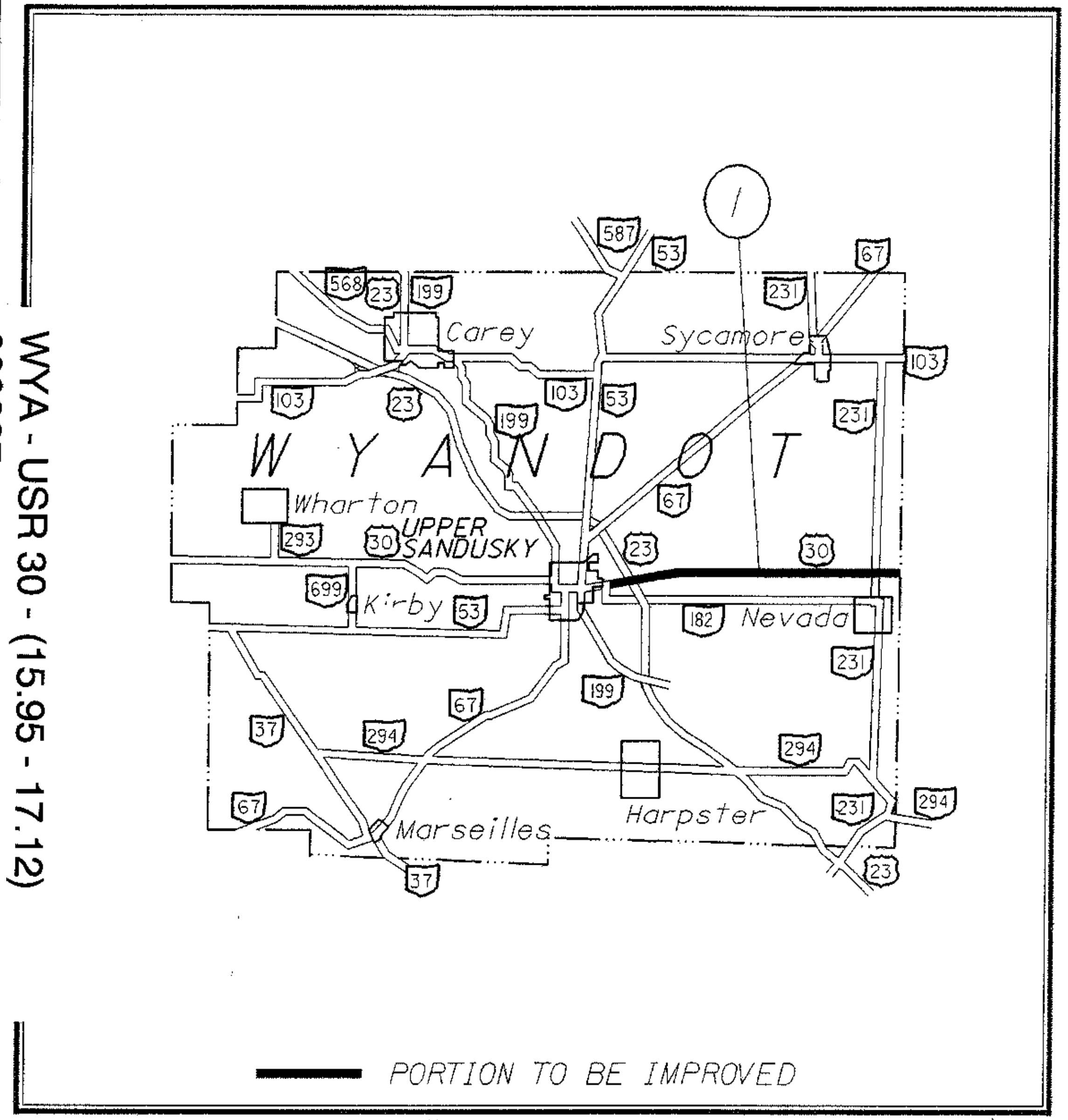
WYA - USR 30 - (15.95 - 17.12)
000027 PID# 19555
DIST 01 01-19-00

OHIO DEPARTMENT OF TRANSPORTATION

PLAN NO.

LOCATION MAP



PART	COUNTY	ROUTE	SECTIONS	PROJECT TERMINII		NET LENGTH MILES	CITY
				BEGIN	END		
1	WYA	US30	(15.95-17.12)	15.95	22.90	6.95	UPPER SANDUSKY

1997 SPECIFICATIONS

THE STANDARD 1997 SPECIFICATIONS OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PLANS AND THE PROPOSAL SHALL GOVERN THESE IMPROVEMENTS.

INDEX OF SHEETS:

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THESE IMPROVEMENTS WILL NOT REQUIRE THE CLOSING OF THE HIGHWAY AND PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS INDICATED IN THE PROPOSAL.

APPROVED [signature]
DATE 10/7/99 DISTRICT DEPUTY DIRECTOR

APPROVED Gordon Proctor, Jr.
DATE 10-20-99 DIRECTOR, DEPARTMENT OF TRANSPORTATION

63 11 20 40 50 10

UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
CALL 1-800-362-2764 (TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS MUST BE CALLED DIRECTLY

PLAN PREPARED BY:
DISTRICT ONE
DEPARTMENT OF TRANSPORTATION
1885 N. McCULLOUGH
LIMA, OHIO 45802

ENGINEERS SEAL

STATE OF OHIO ... REGISTERED PROFESSIONAL ENGINEER

Signed [signature]
Date 10-5-99

STANDARD DRAWINGS	
MT-97.10M	04-25-94
MT-97.11M	01-30-95
MT-99.10M	01-30-95
MT-99.20M	01-30-95
MT-105.10M	04-25-94
MT-105.11M	04-25-94
BP-3.1M	10-28-94
BP-4.1M	10-28-94

STANDARD DRAWINGS	
TC-41.10M	03-31-94
TC-41.20M	07-01-94
TC-52.10M	07-29-94
TC-52.20M	07-29-94
TC-65.10M	11-01-95
TC-65.12M	11-01-95

STANDARD DRAWINGS

SUPPLEMENTAL SPECIFICATIONS

FEDERAL PROJECT NO. TE21-G000 (61)

PID NO. 19555

CONSTRUCTION PROJECT NO.

TITLE SHEET

WYA-30-15.95

1/7

PLAN NO.

GENERAL NOTES

TRAFFIC:
TRAFFIC SHALL BE MAINTAINED AT ALL TIMES. THE LENGTH OF RESTRICTED TRAFFIC ZONES SHALL BE KEPT TO A MINIMUM CONSISTENT REQUIREMENTS FOR PROTECTION OF COMPLETED COURSES.

RAILROAD CROSSINGS & BRIDGE TREATMENT:
THE NEW SURFACE COURSE SHALL BE FEATHERED OR BUTT JOINTED TO MEET THE PROFILE AS SPECIFIED BY THE ENGINEER.

ALIGNMENT AND PROFILE:
THE WORK PROPOSED BY THIS PROJECT IS FOR THE RESURFACING OF THE EXISTING PAVEMENT. FOR THE MOST PART THE PROPOSED SURFACE WILL BE RAISED 1¾". THE REMAINDER OF THE MATERIAL IS TO BE USED AS DETERMINED BY THE ENGINEER TO CORRECT THE EXISTING CROSS-SLOPE, ROUGH OR WEAK PAVEMENT, RUTTED AREAS, OR APPROACHES TO INTERSECTIONS, RAILROAD CROSSINGS OR BRIDGES.
SPREADING EQUIPMENT WILL HAVE AN AUTOMATIC PROFILE CONTROL DEVICE ADDED TO BE USED WHEN DIRECTED BY THE ENGINEER. THE MINIMUM LENGTH OF THE SKI FOR THIS DEVICE SHALL BE 30 FEET.

INTERMEDIATE COURSE, SPOT LEVELING AND PATCHING:
THIS MATERIAL SHALL BE PLACED IN A SEPARATE OPERATION WHERE AND AS DIRECTED BY THE ENGINEER.

ITEM 407 TACK COAT:
THE RATE OF APPLICATION OF 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT, AS DIRECTED BY THE ENGINEER. PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF 0.075 GALLON PER SQUARE YARD OF TACK COAT FOR ESTIMATING PURPOSES ONLY.
THE CONTRACTOR SHALL NOTE THAT ADDITIONAL CLEANING AND SURFACE PREPARATIONS MAY BE REQUIRED WITHIN THE CORPORATE LIMITS OF THE MUNICIPALITIES ON THIS PROJECT. ANY AND ALL ADDITIONAL WORK SHALL BE INCIDENTAL TO 407.04 PREPARATION OF SURFACE.

EXTRA AREAS:
PRIVATE DRIVES SHALL BE FEATHERED IN 3 FEET USING 448 ASPHALT CONCRETE. SOME DRIVES MAY REQUIRE MORE THAN 3 FEET TO ALLOW FOR AN ADEQUATE TRANSITION TO THE MAINLINE PAVEMENT. THESE TRANSITIONS WILL BE AS DIRECTED BY THE ENGINEER. THE 448 ASPHALT CONCRETE QUANTITIES FOR DRIVES, MAILBOXES, BRIDGE APPROACHES AND INTERSECTIONS ARE INCLUDED IN THE EXTRA AREA QUANTITIES.

ASPHALT CONCRETE PLACEMENT ON SHOULDERS:
THE ASPHALT CONCRETE ON THE SHOULDERS SHALL BE PLACED AT THE SAME TIME THAT THE ASPHALT CONCRETE IS PLACED ON THE ADJACENT LANES OF PAVEMENT. THE SHOULDER MATERIAL SHALL BE PLACED PARALLEL TO THE EXISTING SHOULDER GRADES

ITEM 448 ASPHALT CONCRETE SURFACE COURSE TYPE IH, AS PER PLAN:
THIS ITEM SHALL MEET ALL REQUIREMENTS OF SPECS 401,441 AND 448 WITH THE FOLLOWING EXCEPTION:
1) NO RECYCLED ASPHALT PAVEMENT SHALL BE USED IN THE SURFACE COURSE.

ALL COSTS ASSOCIATED WITH THE EQUIPMENT, LABOR AND MATERIALS NECESSARY FOR SUPPLYING AND PLACING THIS ITEM SHALL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR ITEM 448 ASPHALT CONCRETE SURFACE COURSE TYPE IH, AS PER PLAN.

WEARING COURSE REMOVED:
A QUANTITY OF WEARING COURSE REMOVED HAS BEEN SUPPLIED TO BE USED AS DIRECTED BY THE ENGINEER FOR THE TRANSITION BETWEEN AREAS TO BE PLANED AND/OR AREA TO JUST RECEIVE A SURFACE COURSE. THIS QUANTITY IS TO BE USED FOR A BUTT JOINT AS PER BP-3.1M (ASPHALT CONCRETE TEMPORARY WEDGES SHALL BE PLACED PRIOR TO OPENING TO TRAFFIC AT ALL BUTT JOINTS), TO REMOVE IRREGULARITIES IN THE PAVEMENT AND TO TRANSITION FROM THE MAINLINE PAVEMENT INTO AN INTERSECTION. THESE AREAS SHALL BE RESURFACED WITHIN (7) SEVEN CALENDAR DAYS OF REMOVAL. IF THIS IS NOT DONE, LIQUIDATED DAMAGES WILL BE LEVIED AS PER SECTION 108.07 OF THE ODOT CONSTRUCTION AND MATERIALS SPECIFICATIONS.

MAINTAINING TRAFFIC AT PLANED AREAS:
THE CONTRACTOR SHALL ARRANGE HIS OPERATIONS SO THAT TRAFFIC IS RETURNED TO AN AREA WHEN THE PLANING IS COMPLETE. THE PLANED AREA SHALL BE CLEANED TO THE SATISFACTION OF THE ENGINEER PRIOR TO PLACING TEMPORARY MARKINGS.
ALL REQUIRED TEMPORARY PAVEMENT MARKINGS SHALL BE PLACED PRIOR TO OPENING THE AREA TO TRAFFIC. NO PLANED SURFACE SHALL REMAIN OPEN TO TRAFFIC MORE THAN (7) DAYS BEFORE BEING COVERED WITH AN ASPHALT COURSE. IF THIS IS NOT DONE, LIQUIDATED DAMAGES WILL BE LEVIED AS PER SECTION 108.07 OF THE ODOT CONSTRUCTION AND MATERIALS SPECIFICATIONS.

ITEM 604 MONUMENT BOX ADJUSTED TO GRADE, AS PER PLAN:
INCLUDED IN THE GENERAL SUMMARY FOR USE ON THIS PROJECT IS A CONTINGENCY QUANTITY OF 2 EACH - ITEM 604 MONUMENT BOX ADJUSTED TO GRADE, AS PER PLAN . THIS ITEM SHALL INCLUDE ALL COSTS ASSOCIATED WITH THE LABOR AND EQUIPMENT TO OBTAIN THE MONUMENT BOX RISER FROM THE ENGINEER AND INSTALL IT TO THE ENGINEER'S SATISFACTION. THE USE OF THIS ITEM SHALL BE "AS DIRECTED BY THE ENGINEER."

CONVERSION OF METRIC STANDARD DRAWINGS:
THE METRIC STANDARD DRAWINGS REFERENCED IN THIS PLAN SHALL BE CONVERTED TO ENGLISH UNITS USING SI (METRIC) TO ENGLISH CONVERSION FACTORS PROVIDED IN SECTION 109.01 OF THE 1997 CONSTRUCTION AND MATERIALS SPECIFICATIONS. THE APPENDIX OF ASTM 380 SHALL BE UTILIZED FOR ANY ADDITIONAL CONVERSION FACTORS REQUIRED. CONVERSIONS SHALL BE APPROPRIATELY PRECISE AND SHALL REFLECT STANDARD INDUSTRY ENGLISH VALUES WHERE SUITABLE.

CALCULATIONS
CHECKED

GENERAL NOTES

WYA-30-15.95

PLAN NO.

GENERAL NOTES

ITEMS 251 & 253 - PARTIAL DEPTH PAVEMENT REPAIR & PAVEMENT REPAIR:

THESE ITEMS OF WORK SHALL CONSIST OF THE REMOVAL OF THE EXISTING PAVEMENT OR PAVED BERM WHICH MAY BE ASPHALT, BRICK, CONCRETE, OR A COMBINATION OF EACH, IN AREAS OF EXISTING PAVEMENT FAILURE.

THE ENGINEER SHALL DESIGNATE THE LOCATIONS AND LIMITS OF THE AREAS TO BE PREPARED. THE REPAIR AREAS SHALL BE ROUGHLY RECTANGULAR IN SHAPE AND CUT OR SAWED TO A NEAT LINE. THE PAVEMENT SHALL BE REMOVED WITHIN THE DESIGNATED AREAS BY METHODS WHICH WILL NOT DAMAGE THE ADJACENT PAVEMENT. THE DEPTH OF REMOVAL, AS DIRECTED BY THE ENGINEER, SHALL BE SUFFICIENT TO REMOVE ALL DETERIORATED PAVEMENT (MAXIMUM - 3.0 INCHES FOR ITEM 251 PARTIAL DEPTH REPAIR AND 3.0 - 8.0 INCHES AVERAGE FOR ITEM 253 PAVEMENT REPAIR). THE MATERIALS SO REMOVED SHALL BE DISPOSED OF IN ACCORDANCE WITH 203.05.

THE VERTICAL FACES OF THE REPAIR AREA SHALL BE TACKED PRIOR TO PLACING THE 301 FOR ITEM 253 PAVEMENT REPAIR AND/OR 448 ASPHALT FOR ITEM 251 PARTIAL DEPTH REPAIR. THIS MATERIAL SHALL BE PLACED AND COMPACTED TO FINISH FLUSH WITH THE ADJACENT EXISTING PAVEMENT SURFACE PRIOR TO PLACING THE PROPOSED ASPHALT CONCRETE OVERLAY ALL COMPACTION SHALL BE ACHIEVED BY MECHANICAL METHODS TO THE SATISFACTION OF THE ENGINEER.

PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THE PAVEMENT REPAIR. AN ESTIMATED QUANTITY IS PROVIDED IN THE SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER. PAYMENT WILL BE MADE AT THE UNIT PRICE BID PER SQUARE YARD OF ITEM 251 PARTIAL DEPTH PAVEMENT REPAIR AND PER CUBIC YARD ITEM 253 PAVEMENT REPAIR.

251 PARTIAL DEPTH PAVEMENT REPAIR	50	SQUARE YARD
253 PAVEMENT REPAIR	50	CUBIC YARD

CALCULATIONS

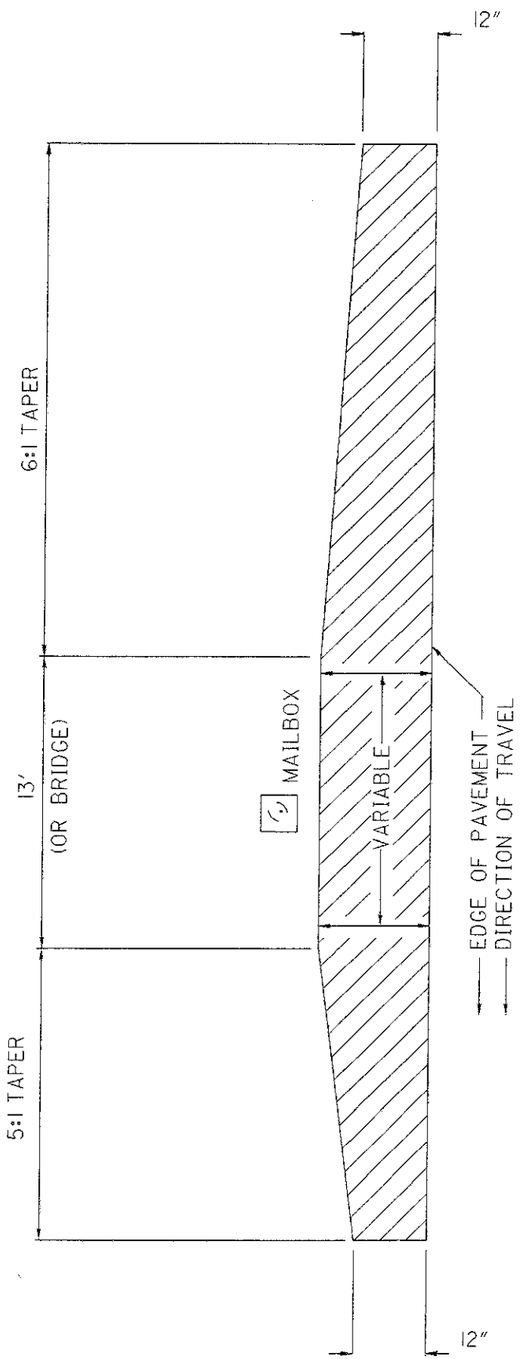
CHECKED

GENERAL NOTES

WYA-30-15.95

DEPARTMENT OF TRANSPORTATION
M & R 712 REV. 9-1-83

PLAN NO.



SINGLE - MAILBOX TURNOUT & BRIDGE APPROACHES

* IF THERE IS A DISTANCE OF 100 FEET OR LESS BETWEEN MAILBOXES: APPROCHES SHALL BE PAVED THRU TO LAST MAILBOX. THIS AREA SHALL REPRESENT LOCATION OF BRIDGE (VARIABLE LENGTH, NO WORK) FOR BRIDGE APPROACHES.

** IF THERE IS A DISTANCE OF 50 FEET OR LESS BETWEEN DRIVEWAY AND MAILBOX: APPROACH SHALL BE PAVED THRU TO MAILBOX.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATING OF MATERIALS FROM ALL STONE DRIVEWAYS AND MAILBOX APPROACHES TO A DEPTH OF 2 INCHES BELOW EXISTING PAVEMENT. EXCAVATED MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR AT HIS OWN RESPONSIBILITY OUTSIDE THE LIMITS OF THE HIGHWAY RIGHT OF WAY.

WHEN UNSTABLE MATERIAL IS ENCOUNTERED, EXCAVATION OF THIS MATERIAL SHALL BE TO A DEPTH OF 6 INCHES BELOW EXISTING PAVEMENT ELEVATION. AN ESTIMATED QUANTITY OF 304 AGGREGATE BASE HAS BEEN SET UP FOR BACKFILL OF THESE AREAS.

AN ESTIMATED QUANTITY OF 408 BITUMINOUS PRIME COAT HAS BEEN SET UP TO BE USED IN THE AREAS OF EXCAVATION.

AN ADDITIONAL QUANTITY OF 448 ASPHALT CONCRETE, TYPE IH HAS BEEN SET UP TO BE USED IN THOSE AREAS EXCAVATED FOR DRIVEWAYS, MAILBOX AND BRIDGE APPROACHES.

ALL WORK, MATERIALS, EXCEPT 304 AND 408, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE ABOVE DESCRIBED WORK SHALL BE INCIDENTAL TO THE PLACEMENT OF THE 448 ASPHALT CONCRETE, TYPE IH, AS PER PLAN

DOT 1920

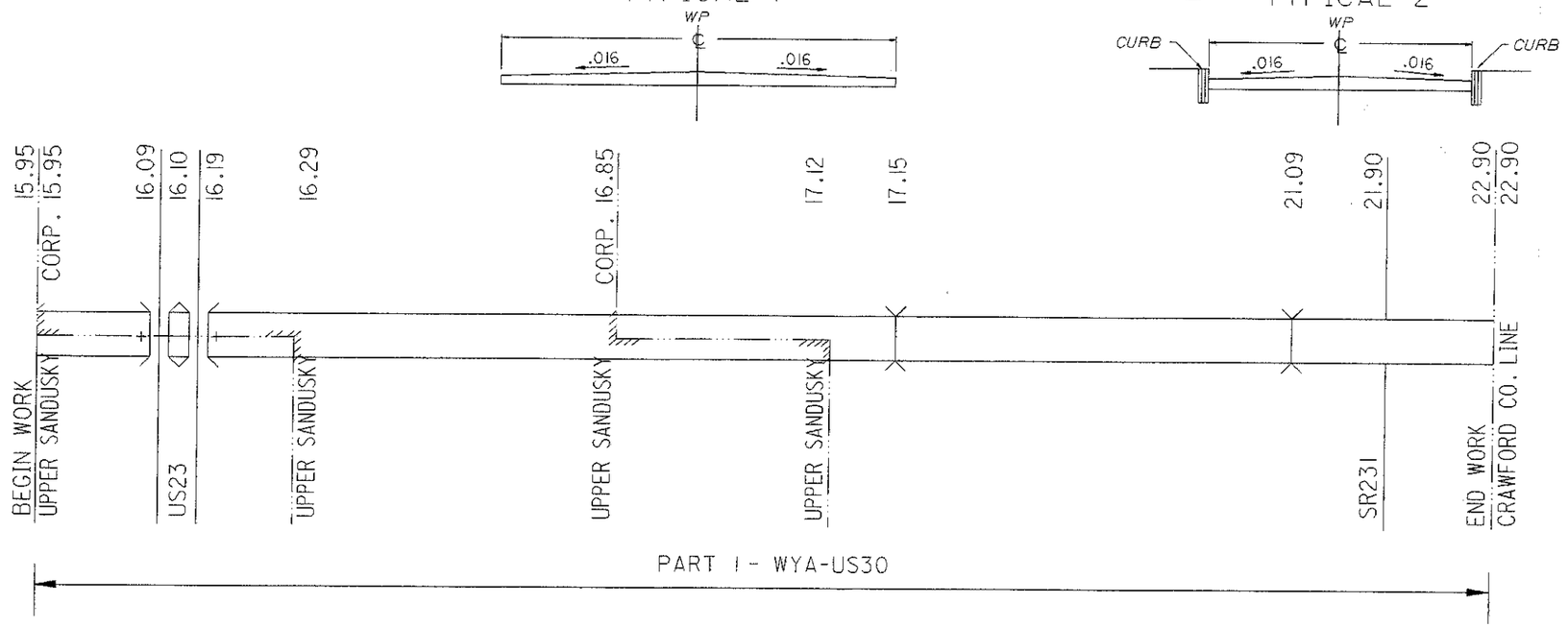
MAILBOX TURNOUT

WYA-30-15.95

DEPARTMENT OF TRANSPORTATION
M&R707 REV. 9-1-83

TYPICAL 1 ASPHALT CONCRETE TYPICAL 2

PLAN NO.



*NOTE: ESTIMATED QUANTITIES

NOTE: DRAWINGS NOT TO SCALE

NOTE: ALL TOTALS CARRIED TO GENERAL SUMMARY

NOTE: MAILBOX, DRIVES AND INTERSECTION QUANTITIES ARE INCLUDED IN THE EXTRA AREAS

+ = VARIABLE
MB = MONUMENT BOX

PAVEMENT DATA

PART	ROUTE	LOG POINT FROM	LOG POINT TO	LENGTH MILES	LENGTH FEET	WP FEET PAV'T.	TYPICAL	EXISTING TYPE PAV'T.	PAVEMENT AREA SQUARE YARDS	PROPOSED PAVEMENT 407 TACK COAT @ 0.075 GAL/YD² GALLON	407 TACK COAT FOR INTERMEDIATE COURSE @ 0.075 GAL/YD² GALLON	408 PRIME COAT @ 0.40 GAL/YD² GALLON	ASPHALT CONCRETE 448 ASPHALT CONCRETE THICK INCHES AVG.	448 ASPHALT CONCRETE SURFACE COURSE TYPE 1, AS PER PLAN CUBIC YARD	448 ASPHALT CONCRETE THICK INCHES AVG.	448 ASPHALT CONCRETE SURFACE COURSE TYPE [illegible] CUBIC YARD	448 ASPHALT CONCRETE THICK INCHES AVG.	448 ASPHALT CONCRETE INTERMEDIATE COURSE TYPE [illegible] CUBIC YARD	202 WEARING COURSE REMOVED 1 INCH AVG. DEPTH SQUARE YARD	304 AGGREGATE BASE CUBIC YARD	254 PAVEMENT PLANING BITUMINOUS 1¼ INCH AVG. SQUARE YARD	254 PATCHING PLANED SURFACE SQUARE YARD	617 COMPACTED AGGREGATE TYPE A 2 @ 2 FT #1 @ 2 FT 2 INCH AVG. THICKNESS CUBIC YARD
1	US30	15.95	16.14	0.19	1003	26	1	404	2898	217	217		1.50	121			.50	40			2898	6	# 12
1	US30	16.14	16.29	0.15	792	23	1	404	2024	152	152		1.50	84			.50	28			2024	4	# 10
1	US30	16.85	17.12	0.27	1426	15	1	404	2377	178	178		1.50	99			.50	33			2377	4	# 18
1	US30	17.12	22.90	5.78	30518	30	1	404	101727	7630	7630		1.50	4239			.50	1413			101727	203	754
	EXTRA	AREAS							4234	318	318		+	147			+	59			4234	8	
	TOTAL	PART	1	6.39	41606				113260	8495	8495	*64		4690				1573		*13	113260	225	794
	UPPER	SANDUSKY																					
1	US30	15.95	16.14	0.19	1003	26	1	404	2898	217	217		1.50	121			.50	40			2898	6	# 12
1	US30	16.14	16.29	0.15	792	23	1	404	2024	152	152		1.50	84			.50	28			2024	4	# 10
1	US30	16.29	16.54	0.25	1320	46	1	404	6747	506	506		1.50	281			.50	94			6747	13	33
1	US30	16.54	16.85	0.31	1637	30	1	404	5457	409	409		1.50	227			.50	76			5457	11	40
1	US30	16.85	17.12	0.27	1426	15	1	404	2377	178	178		1.50	99			.50	33			2377	4	# 18
	TOTAL	PART	1	1.17	6178				19503	1462	1462			812				271			19503	38	113

CALCULATIONS
CHECKED

ASPHALT CONCRETE

WYA-30-15.95

DEPARTMENT OF TRANSPORTATION
M & R 712 REV. 9-1-83

RPM LOCATION SUB-SUMMARY

PLAN NO.

CALCULATIONS | CHECKED

DETAIL	
1	MAINLINE UNDIVIDED
1	TYPICAL SPACING

DETAIL	
2	TAPERED ACCELERATION LANE
3	DECELERATION LANE
4	PARALLEL ACCELERATION LANE
5	MULTILANE DIVIDED / EXPRESSWAY

DETAIL	
6	STOP APPROACH
7	ONE LANE APPROACH W / IT TURN LANE
8	THRU APPROACH
9	TWO LANE APPROACH W / IT TURN LANE

DETAIL	
10	4 LANE DIVIDED TO 2 LANE TRANSITION
11	4 LANE UNDIVIDED TO 2 LANE TRANSITION
12	TWO LANE NARROW BRIDGE
13	ONE LANE BRIDGE
14	TWO WAY LEFT TURN
15	HORIZONTAL CURVE

DETAIL	
16	HORIZONTAL CURVE ALTERNATE
17	STOP APPROACH ALTERNATE
GAP	CENTERLINE AT 80 FT. TYPICAL

LOCATION NUMBER	TYPICAL SPACING				DETAIL	R P M	PRISMATIC RETRO-REFLECTOR	INSTALLATION ONLY			PRISMATIC RETRO-REFLECTOR COLORS						REMARKS
	COUNTY	ROUTE	S L M SECTION					R P M			ONE-WAY		TWO-WAY				
			FROM	TO							WHITE	YELLOW	WHITE/ WHITE	YELLOW/ YELLOW	WHITE/ RED		
	WYANDOT	US30	15.95	16.14	9			27						27			
	WYANDOT	US30	16.14	16.54	14			53						53			
	WYANDOT	US30	16.54	22.90	GAP			420						420			
	TOTAL	PART	1					500						500			

TOTALS CARRIED TO GENERAL SUMMARY

RPM LOCATION SUB-SUMMARY

WYA-30-15.95

DOT 1920

DEPARTMENT OF TRANSPORTATION
M & R 710 REV. 4-85

GENERAL SUMMARY

PLAN NO.

ITEM	PART 1	UPPER SANDUSKY		ITEM	EXTENSION	GRAND TOTAL	UNIT	DESCRIPTION
202	500			202	54100	500	EACH	RAISED PAVEMENT MARKERS REMOVED FOR STORAGE
251	50			251	01000	50	SQ YARD	PARTIAL DEPTH PAVEMENT REPAIR
253	50			253	02000	50	CU YARD	PAVEMENT REPAIR
254	113260	19503		254	01000	132763	SQ YARD	PAVEMENT PLANING, BITUMINOUS
254	225	38		254	01600	263	SQ YARD	PATCHING PLANED SURFACE
304	13			304	20000	13	CU YARD	AGGREGATE BASE
407	8495	1462		407	10000	9957	GALLON	TACK COAT
407	8495	1462		407	14000	9957	GALLON	TACK COAT FOR INTERMEDIATE COURSE
408	64			408	10000	64	GALLON	BITUMINOUS PRIME COAT
448	1573	271		448	46010	1844	CU YARD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG64-28
448	4690	812		448	50001	5502	CU YARD	ASPHALT CONCRETE SURFACE COURSE, TYPE 1H, AS PER PLAN
604	2			604	39501	2	EACH	MONUMENT BOX ADJUSTED TO GRADE, AS PER PLAN
614	27	5		614	12460	32	EACH	WORK ZONE MARKING SIGN
614	12.78	2.34		614	21400	15.12	MILE	TEMPORARY CENTER LINE, CLASS II
617	794	113		617	10100	907	CU YARD	COMPACTED AGGREGATE, TYPE A
621	500			621	00200	500	EACH	RAISED PAVEMENT MARKER, INSTALLATION ONLY
614	LUMP			614	11000		LUMP	MAINTAINING TRAFFIC
624	LUMP			624	10000		LUMP	MOBILIZATION

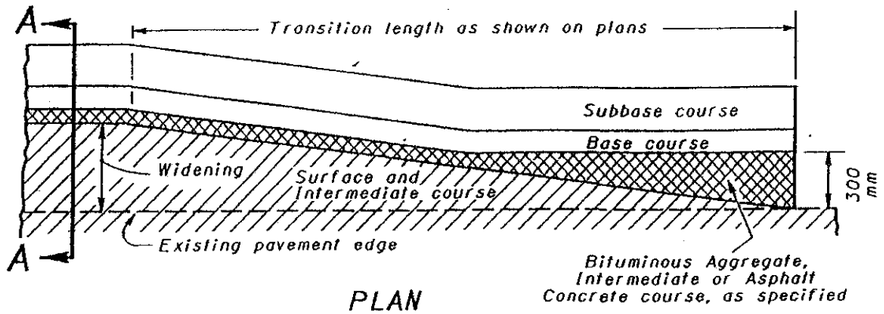
CALCULATIONS

CHECKED

GENERAL SUMMARY

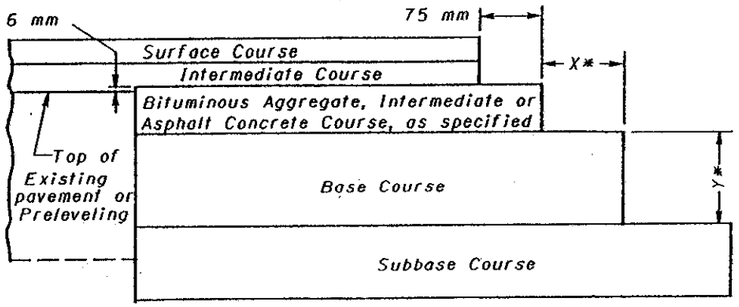
WYA-30-15.95

7



PLAN

MERGING EDGE OF PAVEMENT WIDENING WITH EDGE OF EXISTING PAVEMENT

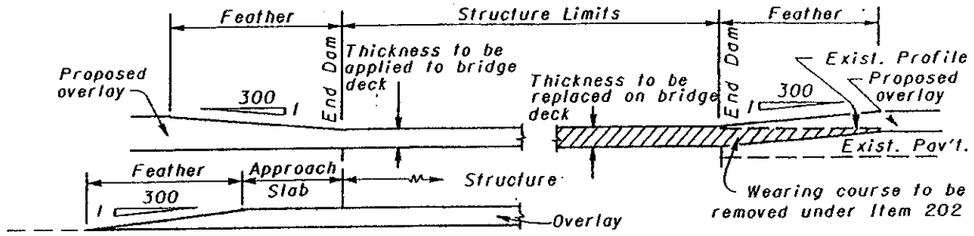


The Bituminous Aggregate in the upper part of the base widening shall finish approximately 6 mm above the edge of the existing pavement where no preleveling is used. Where a preleveling (using intermediate course material) is specified it shall be placed prior to excavation of the widening trench and the upper course of the base widening shall finish approximately 6 mm above the preleveling.

*The extended width (X) of a base or subbase course shall be equal to the depth (Y) of that particular course. unless otherwise specified in the plans.

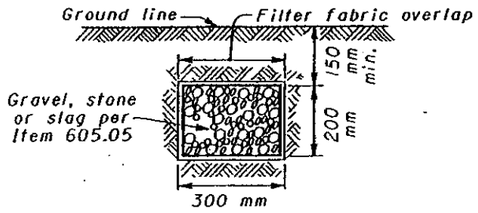
SECTION A-A

COURSE DETAIL FOR WIDENING



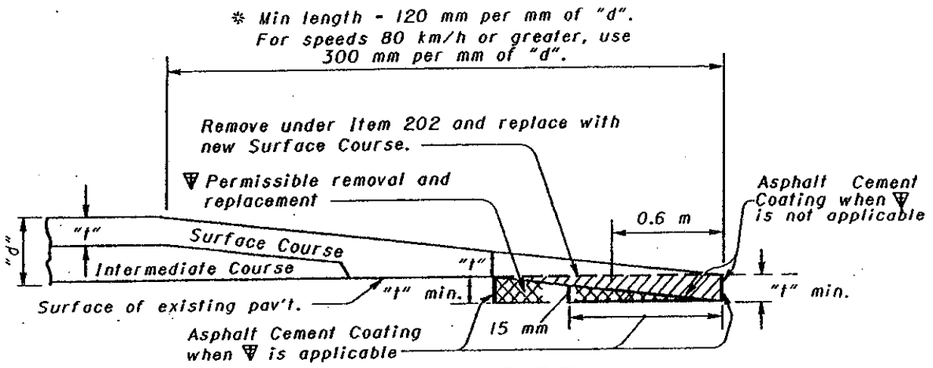
Details assume non-settled approach slabs. Smoothing of the profile for settlement is required per plan grades or as directed by the Engineer.

FEATHERING AT STRUCTURES

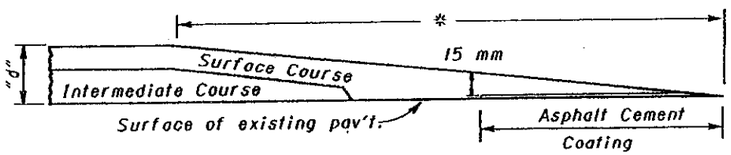


Aggregate drains to be placed where and as directed by Engineer. Provide filter fabric when specified as a separate pay item.

AGGREGATE DRAIN



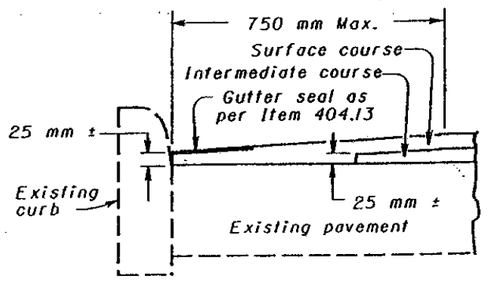
BUTT JOINT TYPE



TAPER EDGE TYPE

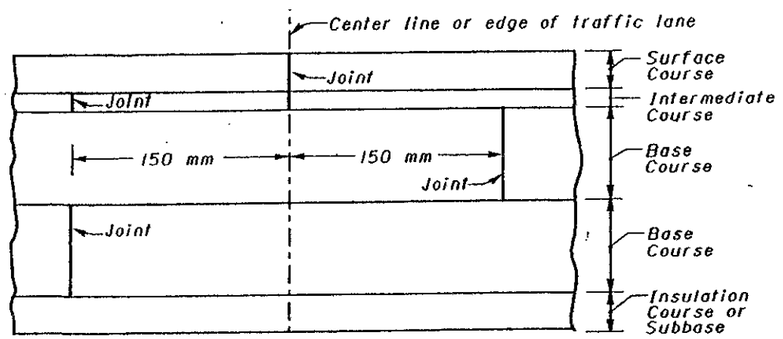
NOTE: Either butt or taper type may be used unless type is specified by the plan.

PLACING FEATHERED AREAS

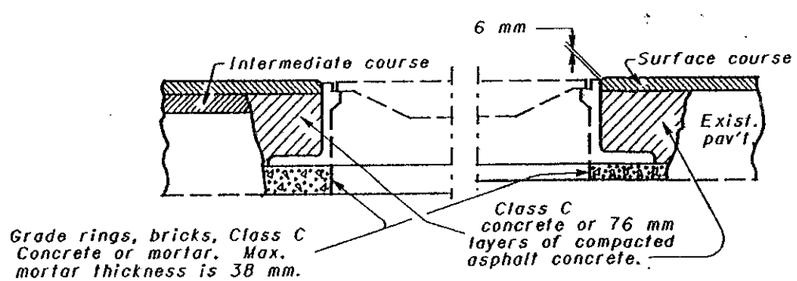


Special care shall be taken during construction to obtain maximum compaction of bituminous concrete in gutters.

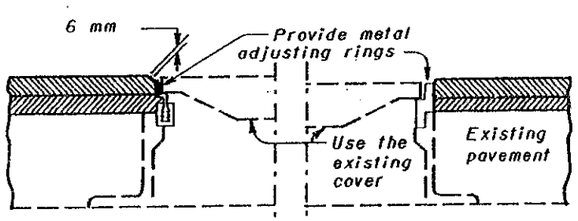
GUTTER FINISH



LAPPING LONGITUDINAL JOINTS



USING CONCRETE OR MORTAR



USING METAL ADJUSTING RINGS

Metal adjusting rings shall: (a) attach securely to the existing frame by welding or mechanical devices; (b) consist either of cast metal having an integral rim and seat, or be fabricated metal with a sturdy connection between the seat and rim; and (c) provide an even seat for the manhole cover. In addition, the adjusting ring type shall be a design acceptable to the local governmental agency responsible for street and sewer maintenance. Any installation unacceptable to the Engineer shall be replaced by the Contractor at his expense.

MANHOLES ADJUSTED TO GRADE

metric units

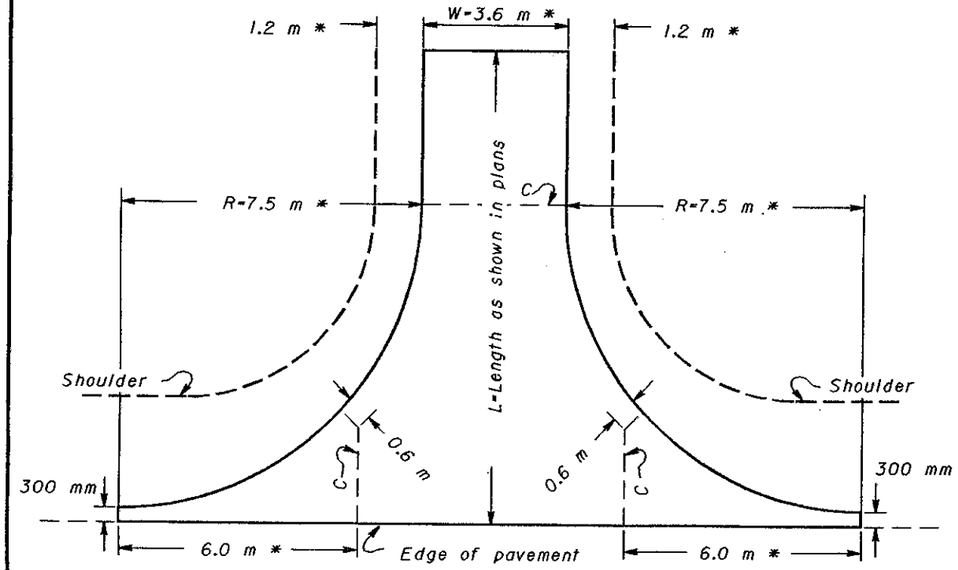
BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

RESURFACING

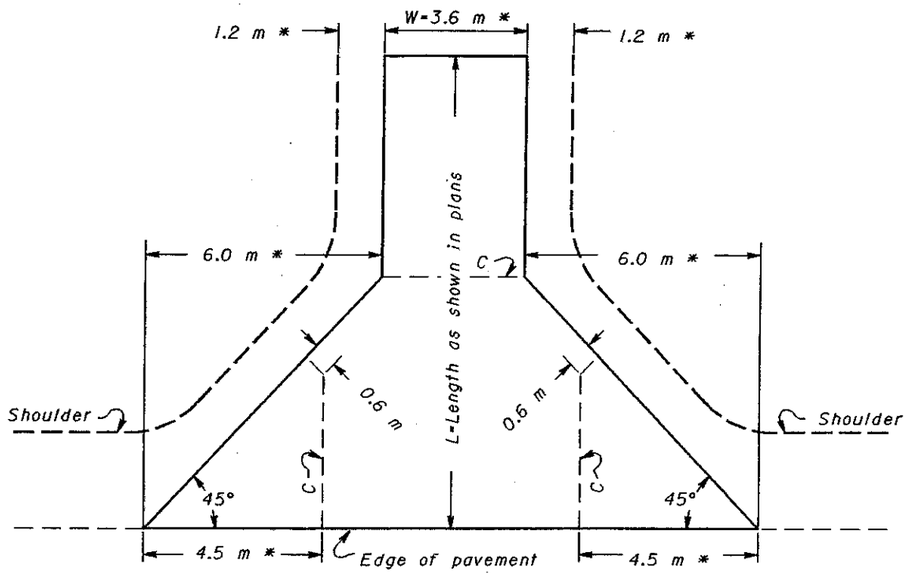
DATE 10-28-94

STANDARD CONSTRUCTION DRAWING **BP-3.1M**

APPROVED W. K. Hukman
ENGR., L & D



TYPE 1 DRIVEWAY



TYPE 2 DRIVEWAY

NOTES

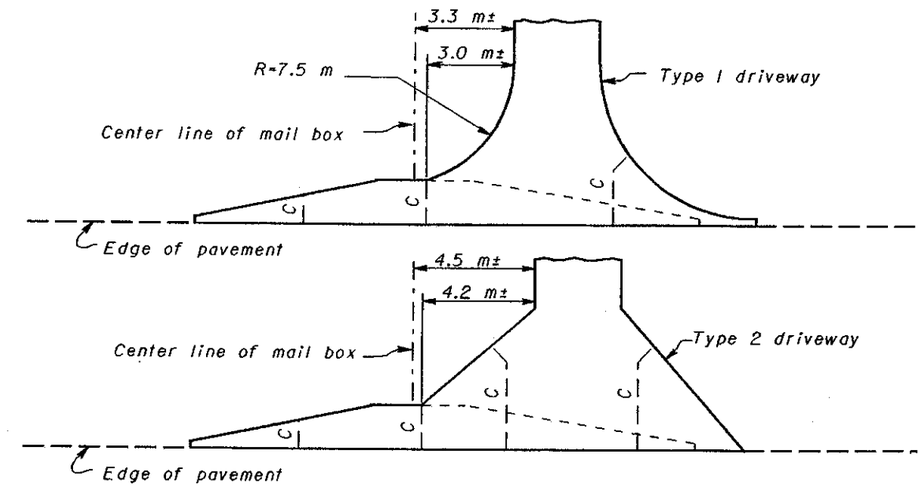
GENERAL: The design details shown hereon shall govern the construction of driveways unless otherwise shown in the project plans.

The pavement type and thickness shall be specified in the project plans.

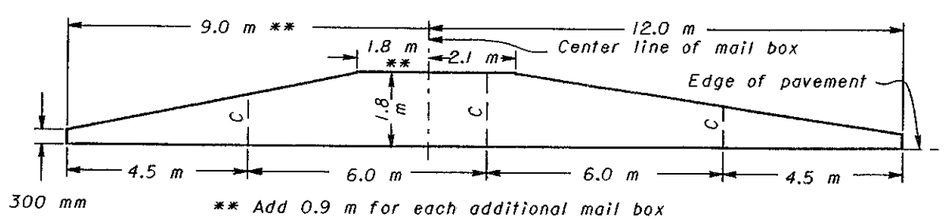
Driveway and mail box approaches shall be combined when feasible.

JOINTS: Impressed joints for portland cement concrete driveways shall be 6 mm minimum width by 75 mm ± depth and shall be sealed with Item 705.04 or ASTM D 1850.

In addition to the joints shown hereon, impressed joints without tie bars shall be placed in portland cement concrete driveways at intervals not to exceed 5.2 m in the portion of the driveway back of the flare.



COMBINED DRIVEWAY & MAIL BOX APPROACH

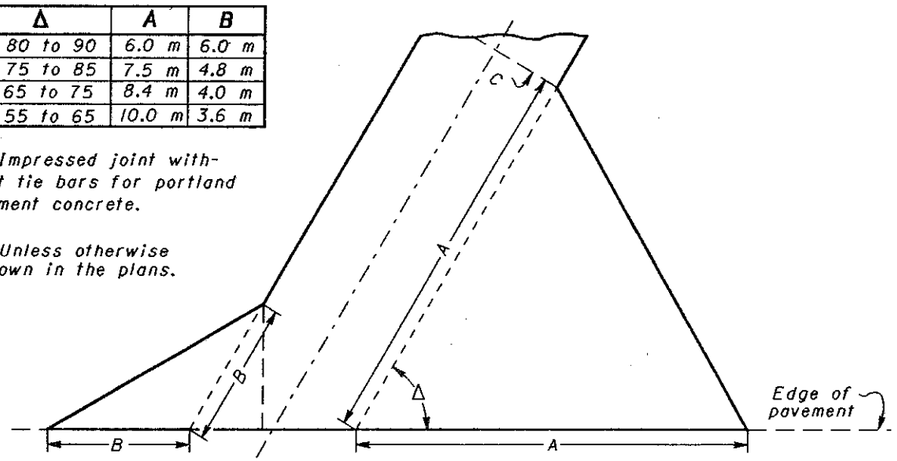


TYPICAL MAIL BOX APPROACH

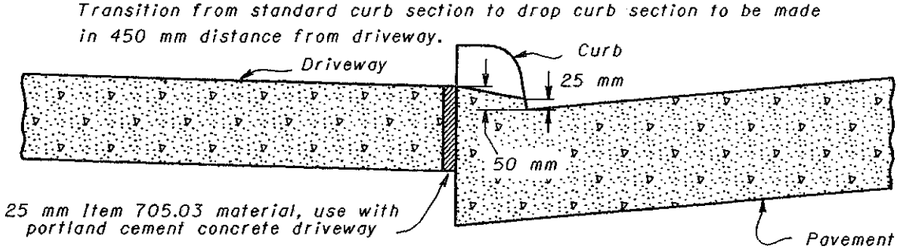
Δ	A	B
80 to 90	6.0 m	6.0 m
75 to 85	7.5 m	4.8 m
65 to 75	8.4 m	4.0 m
55 to 65	10.0 m	3.6 m

C-Impressed joint without tie bars for portland cement concrete.

* Unless otherwise shown in the plans.



TYPE 2 SKEWED DRIVEWAY



DROP CURB DETAILS AT DRIVEWAYS

metric units

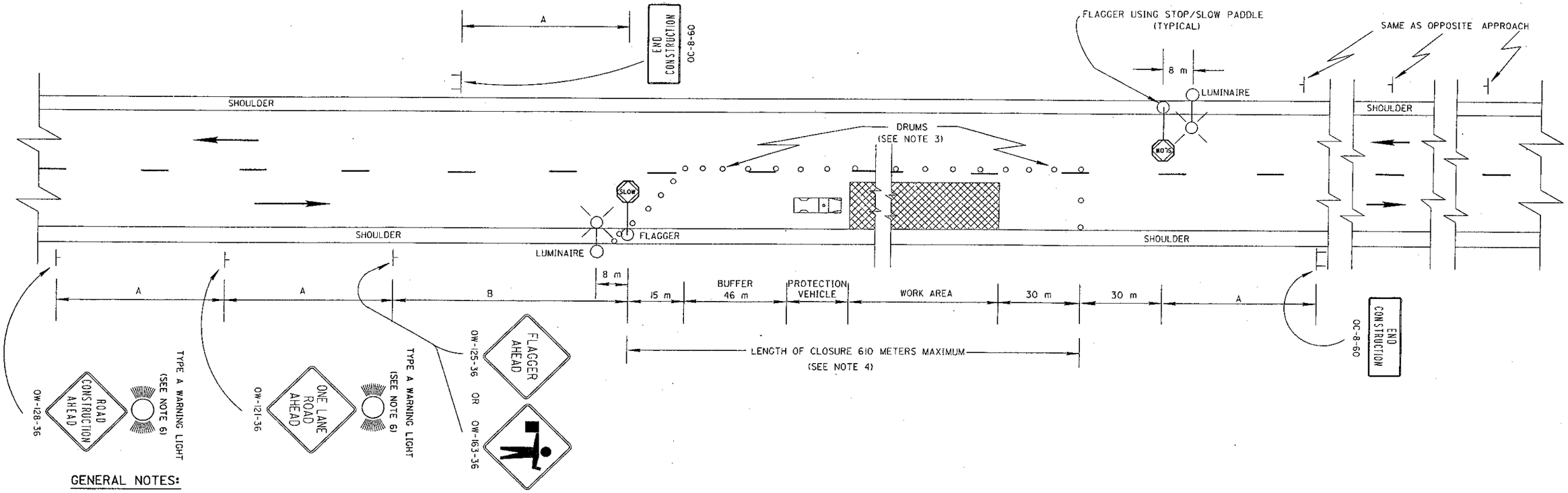
BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

DRIVEWAYS

DATE 10-28-94

STANDARD CONSTRUCTION DRAWING **BP-4.1M**

APPROVED W.K. Hulsman
ENGR., L & D



GENERAL NOTES:

1. THE LOCATION OF THE ADVANCE WARNING SIGNS SHOULD BE ADJUSTED TO PROVIDE FOR ADEQUATE SIGHT DISTANCE FOR THE EXISTING VERTICAL AND HORIZONTAL ROADWAY ALIGNMENT. THE DISTANCES SHOWN ARE MINIMUMS. DISTANCE B MAY ALSO BE INCREASED, PRIOR TO IMPLEMENTATION OF THE CLOSURE OR AFTER IT IS IN EFFECT, AS DIRECTED BY THE ENGINEER FOR SUCH OCCURENCES AS LONG TRAFFIC BACKUPS.

2. FLAGGERS, ONE FOR EACH DIRECTION SHALL BE USED TO CONTROL TRAFFIC CONTINUOUSLY FOR AS LONG AS A ONE LANE OPERATION IS IN EFFECT. THE FLAGGERS SHALL BE ABLE TO COMMUNICATE WITH EACH OTHER AT ALL TIMES.

3. DRUMS SHALL BE SPACED AT 15 m CENTER TO CENTER ALONG THE CLOSURE. DRUMS ON THE ADVANCE TAPER SHALL BE SPACED AT 3 m CENTER TO CENTER. CONES HAVING A MINIMUM HEIGHT OF 0.7 m MAY BE SUBSTITUTED FOR DRUMS FOR DAYTIME LANE CLOSURES. PROVISIONS SHALL BE MADE TO STABILIZE THE CONES TO PREVENT THEM FROM BLOWING OVER.

4. SEVERAL SMALL WORK AREAS CLOSE TOGETHER SHALL BE COMBINED INTO ONE WORK ZONE. HOWEVER, THE CLOSURE SHALL NOT BE MORE THAN 610 m LONG UNLESS APPROVED BY THE ENGINEER. THE MINIMUM LENGTH BETWEEN CLOSURES SHALL BE 610 m ONLY ONE SIDE OF THE ROAD SHALL BE CLOSED IN ANY ONE WORK ZONE.

5. THE PROTECTION VEHICLE SHOWN AT THE BEGINNING OF THE WORK AREA SHALL BE IN PLACE AND UNOCCUPIED WHENEVER WORKERS ARE IN THE WORK AREA. THIS PROTECTION VEHICLE SHALL BE REMOVED FROM THE PAVEMENT WHEN WORKERS ARE NOT IN THE WORK AREA. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF THE PROTECTION VEHICLE SHOWN WHEN APPROVED BY THE ENGINEER. THE VEHICLE SHALL BE EQUIPPED WITH A 360° ROTATION OR FLASHING AMBER BEACON CLEARLY VISIBLE A MINIMUM OF 402 m.

6. THE TYPE A FLASHING WARNING LIGHTS SHOWN ON THE OW-128 AND THE OW-121 SIGNS ARE REQUIRED WHENEVER A NIGHT LANE CLOSURE IS NECESSARY.

7. ADEQUATE AREA ILLUMINATION OF EACH FLAGGER STATION SHALL BE PROVIDED AT NIGHT BY USING 150 WATT MINIMUM HIGH PRESSURE SODIUM LUMINAIRES OR 250 WATT MINIMUM MERCURY LUMINAIRES. LUMINAIRES SHALL BE LOCATED ADJACENT TO ONE FLAGGER STATION FOR EACH DIRECTION OF TRAFFIC AS SHOWN ABOVE. THE MOUNTING HEIGHT FOR LUMINAIRES SHALL BE A MINIMUM OF 8.2 m ABOVE THE PAVEMENT AND MOUNTED ON A SUPPORT OF ADEQUATE STRENGTH TO PROVIDE A SATISFACTORY INSTALLATION. THE OVERHEAD CONDUCTOR CLEARANCE SHALL BE A MINIMUM OF 5.5 m ABOVE THE PAVEMENT. THE LUMINAIRE ARM SHALL BE OF SUFFICIENT LENGTH TO EXTEND TO THE EDGE OF THE PAVEMENT. POLES SHALL BE ERECTED A MINIMUM OF 1.7 m BEHIND FACE OF GUARDRAIL WHERE EXISTING, OR 3.6 m FROM THE EDGE OF PAVEMENT. WHERE POSSIBLE LOCATE BEHIND DITCH. LIGHTING MATERIAL SHALL COMPLY WITH SPECIFICATION 713.

8. WITHIN THE LENGTH OF CLOSURE, PROVISION SHALL BE MADE TO CONTROL TRAFFIC ENTERING FROM INTERSECTING STREETS AND MAJOR DRIVES AS NECESSARY TO PREVENT WRONG WAY MOVEMENTS AND TO KEEP VEHICLES OFF OF NEW PAVEMENT NOT READY FOR TRAFFIC. THE METHOD OF CONTROL SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

MINIMUM DISTANCE (METERS)	A	B
URBAN	61	61
RURAL	152	152

METRIC

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE C & M SPECIFICATIONS AS WELL AS IN ACCORDANCE WITH PART 7 OF OMUTCD. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE THIS METHOD OF TRAFFIC CONTROL SHALL BE INCIDENTAL TO THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC

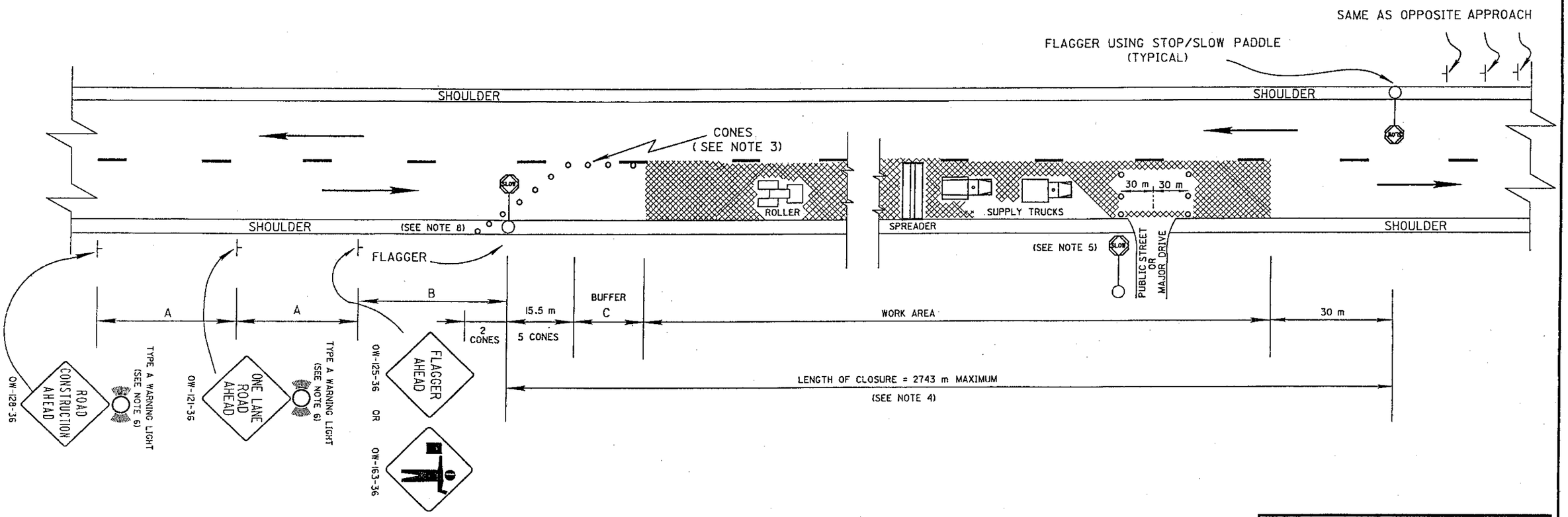
FLAGGERS CLOSING
1 LANE OF A 2 LANE HIGHWAY
STATIONARY OPERATION

DATE 04/25/94

STANDARD CONSTRUCTION DRAWING MT-97.10M

APPROVED _____ ENGR. OF DESIGN SERVICES

WCC



GENERAL NOTES:

1. THE LOCATION OF THE ADVANCE WARNING SIGNS SHOULD BE ADJUSTED TO PROVIDE FOR ADEQUATE SIGHT DISTANCE FOR THE EXISTING VERTICAL AND HORIZONTAL ROADWAY ALIGNMENT.

2. FLAGGERS, ONE FOR EACH DIRECTION, SHALL BE USED TO CONTROL TRAFFIC CONTINUOUSLY FOR AS LONG AS A ONE LANE OPERATION IS IN EFFECT. THE FLAGGERS SHALL BE ABLE TO COMMUNICATE WITH EACH OTHER AT ALL TIMES.

3. CONES ON THE TAPERS SHALL BE SPACED AT 3 m CENTER TO CENTER. CONES IN THE BUFFER SHALL BE SPACED AT 12 m CENTER TO CENTER. CONES SHALL HAVE A MINIMUM HEIGHT OF 0.7 m AND SHALL BE SAFELY STABILIZED TO PREVENT THEM FROM BLOWING OVER. CLOSURES AT NIGHT SHALL USE DRUMS RATHER THAN CONES.

4. IT IS REQUIRED THAT THE LENGTH OF CLOSURE BE KEPT TO A MINIMUM AT ALL TIMES, AS DIRECTED BY THE ENGINEER.

   WHEN THE AMBIENT TEMPERATURE EXCEEDS 29° C, THE ENGINEER MAY INCREASE THE MAXIMUM ALLOWABLE LENGTH OF CLOSURE TO ALLOW FOR SUFFICIENT COOLING OF NEW PAVEMENT.

   THE ENGINEER MAY SHORTEN THE MAXIMUM ALLOWABLE LENGTH OF CLOSURE TO RELIEVE EXCESSIVE TRAFFIC BACKUPS OR TO IMPROVE TRAFFIC OPERATION.

4. CONT. ALL TRAFFIC CONTROL SIGNS, CONES (OR DRUMS), AND THE FLAGGER SHALL BE MOVED FORWARD AS A GROUP BEFORE THE CLOSURE REACHES THE MAXIMUM ALLOWABLE LENGTH. ONLY ONE SIDE OF THE ROAD SHALL BE CLOSED AT ANY TIME.

5. WITHIN THE LENGTH OF CLOSURE, PROVISION SHALL BE MADE TO CONTROL TRAFFIC ENTERING FROM INTERSECTING STREETS AND MAJOR DRIVES AS NECESSARY TO PREVENT WRONG WAY MOVEMENTS AND TO KEEP VEHICLES OFF OF NEW PAVEMENT NOT READY FOR TRAFFIC. AS A MINIMUM, THE CONTRACTOR SHALL:

   A) PROVIDE AN ADDITIONAL FLAGGER AT EVERY PUBLIC STREET INTERSECTION AND MAJOR DRIVEWAY OR -
   B) PLACE A ROW OF 3 CONES ACROSS THE CLOSED LANE APPROXIMATELY 30 m ON EACH SIDE OF THE INTERSECTION OR DRIVEWAY.

   ROWS OF CONES MAY BE MOVED OFF THE ROAD TO ALLOW PASSAGE OF ROLLERS, PAVING SPREADER OR SUPPLY TRUCKS BUT SHALL BE MOVED BACK ONTO THE ROAD WHEN THE ACTIVITY HAS PASSED.

6. THE TYPE A FLASHING WARNING LIGHTS ARE REQUIRED ON THE OW-128 AND THE OW-121 SIGNS WHENEVER A NIGHT LANE CLOSURE IS NECESSARY.

7. ADEQUATE AREA ILLUMINATION OF EACH FLAGGER STATION SHALL BE PROVIDED AT NIGHT BY USING 150 WATT MINIMUM HIGH PRESSURE SODIUM LUMINAIRES OR 250 WATT MINIMUM MERCURY LUMINAIRES. LUMINAIRES SHALL BE LOCATED ADJACENT TO ONE FLAGGER STATION FOR EACH DIRECTION OF TRAFFIC.

8. TWO (2) CONES REQUIRED ON PAVED SHOULDER.

MINIMUM DISTANCE (METERS)	A MINIMUM	B RANGE	C MINIMUM
URBAN	61	61 TO 107	30
RURAL	152	152 TO 305	61

METRIC

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE C & M SPECIFICATIONS AS WELL AS IN ACCORDANCE WITH PART 7 OF OMUTCD. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE THIS METHOD OF TRAFFIC CONTROL SHALL BE INCLUDED IN THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC

FLAGGER CLOSING
1 LANE OF A 2 LANE HIGHWAY
FOR PAVING OPERATIONS

DATE 01/30/95

STANDARD CONSTRUCTION DRAWING MT-97.11M

APPROVED _____ ENGR. OF DESIGN SERVICES

614 WORK ZONE PAVEMENT MARKINGS

GENERAL

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND WHEN NECESSARY, REMOVE WORK ZONE RETROREFLECTIVE PAVEMENT MARKINGS ON EXISTING, RECONSTRUCTED, RESURFACED OR TEMPORARY ROADS WITHIN THE WORK LIMITS, IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE MARKINGS SHALL BE EVALUATED BY THE ENGINEER IN ACCORDANCE WITH THE THREE PERFORMANCE PARAMETERS CONTAINED IN SUPPLEMENT 1047. THE MARKINGS SHALL BE REPAIRED OR REPLACED WHEN THE NUMERICAL RATING OF A PARAMETER IS (a) SIX OR LOWER FOR DURABILITY, (b) FOUR OR LOWER FOR VISUAL EFFECTIVENESS AND (c) FOUR OR LOWER FOR NIGHT VISIBILITY. THE CONTRACTOR SHALL REPAIR OR REPLACE UNSATISFACTORY MARKINGS IMMEDIATELY AND AT NO ADDITIONAL COST TO THE STATE.

TEMPORARY PAVEMENT MARKING MATERIALS

UNLESS OTHERWISE INDICATED ON THE PLANS, TEMPORARY PAVEMENT MARKINGS MAY BE EITHER 641.02 PAINT OR 740.05 TYPE B OR TYPE C PREFORMED MATERIAL.

PAINT

PAINTED MARKINGS SHALL BE IN ACCORDANCE WITH 642 EXCEPT THAT (a) PARAGRAPH 641.11 SHALL NOT APPLY, (b) WHERE THE MARKINGS ARE NOT LIABLE TO BE TRACKED, EITHER CONVENTIONAL OR FAST DRY PAINT MAY BE USED FOR 641.02 AND (c) WHEN APPLYIED TO NEW ASPHALT PAVEMENT SURFACES PLACED BY THIS PROJECT, THE SPECIFIED APPLICATION RATE SHALL BE AS FOLLOWS:

LITERS PER KILOMETER OF LINE	WIDTH OF LINE (MILLIMETERS) 100	200	300		
SOLID LINE	56.6	113.3	169.9	-	-
3.0 m DASHED LINE	14.2	-	-	-	-
1.2 m DASHED LINE	5.7	-	-	-	-
DOTTED LINE	19.0	-	-	-	-

(d) WHEN APPLIED TO PLANED ASPHALT PAVEMENT SURFACES, THE SPECIFIED APPLICATION RATE SHALL BE AS FOLLOWS:

LITERS PER KILOMETER OF LINE	WIDTH OF LINE (MILLIMETERS) 100	200	300		
SOLID LINE	67.9	135.9	203.8	-	-
3.0 m DASHED LINE	17.0	-	-	-	-
1.2 m DASHED LINE	6.8	-	-	-	-
DOTTED LINE	22.7	-	-	-	-

TYPE B AND TYPE C PREFORMED MATERIAL

PREFORMED MATERIAL SHALL COMPLY WITH 740.05 EXCEPT THAT NO PREFORMED MATERIAL CONTAINING METAL SHALL BE PLACED ON ANY SURFACE UNLESS IT WILL BE REMOVED LATER BY THE CONTRACTOR. TEMPORARY PAVEMENT MARKINGS OF 740.05 PREFORMED MATERIAL SHALL BE REMOVED PRIOR TO PLACEMENT OF 642 OR 644 SURFACE COURSE MARKINGS AT THAT LOCATION. PREFORMED MATERIAL SHALL BE IN ACCORDANCE WITH 644 EXCEPT AS MODIFIED HEREIN.

PLACEMENT

TEMPORARY MARKINGS SHALL BE COMPLETE AND IN PLACE ON ALL PAVEMENT, INCLUDING RAMPS, PRIOR TO EXPOSING IT TO TRAFFIC. WHEN TEMPORARY MARKINGS CONFLICT WITH THE TRAFFIC PATTERN, THEY SHALL BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH 641.10.

LINE PLACEMENT TOLERANCE FOR FINAL SURFACES SHALL BE IN ACCORDANCE WITH 641.07. ON SURFACES OTHER THAN THE FINAL, THE TOLERANCE PERMITTED SHALL BE TWICE THAT IN 641.07. LAYOUT AND PREMARKING SHALL BE IN ACCORDANCE WITH 641.06.

TEMPORARY MARKING CLASSES

CLASS I MARKINGS

CLASS I MARKINGS SHALL BE APPLIED TO THE STANDARD DIMENSIONS AS DEFINED IN 642 WITH THE FOLLOWING EXCEPTION:

1. TRANSVERSE LINES SHALL BE 200 mm IN WIDTH.
2. STOP LINES SHALL BE 300 mm IN WIDTH.
3. CROSSWALK LINES SHALL BE 200 mm IN WIDTH.

CLASS II MARKINGS

CLASS II MARKINGS (ABBREVIATED) SHALL BE DEFINED AS FOLLOWS:

CENTER LINES SHALL CONSIST OF SINGLE, YELLOW 100 mm WIDE BY A MINIMUM OF 1.2 m LONG DASHES SPACED AT A MAXIMUM OF 12.0 m INTERVALS.

LANE LINES SHALL CONSIST OF WHITE 100 mm WIDE BY A MINIMUM OF 1.2 m LONG DASHES SPACED AT A MAXIMUM OF 12.0 m INTERVALS.

GORE MARKINGS SHALL BE CONTINUOUS, WHITE 100 mm LINES PLACED AT THE THEORETICAL GORE OF AN EXIT RAMP OR DIVERGING ROADWAYS.

CONFLICTING EXISTING MARKINGS

THE CONTRACTOR SHALL, PRIOR TO PLACING TEMPORARY MARKINGS, REMOVE ALL CONFLICTING EXISTING MARKINGS VISIBLE TO THE TRAVELING PUBLIC DURING DAYLIGHT OR NIGHTTIME HOURS IN ACCORDANCE WITH 641.10. THE COST FOR REMOVAL OF CONFLICTING MARKINGS SHALL BE INCLUDED IN 614 MAINTAINING TRAFFIC UNLESS SPECIFICALLY ITEMIZED.

THE CONTRACTOR SHALL ALSO REMOVE THE PRISMATIC RETRO-REFLECTOR WITHIN ANY RAISED PAVEMENT MARKER (RPM) WHICH IS IN CONFLICT WITH THE TEMPORARY PAVEMENT MARKINGS. WHEN THE TEMPORARY PAVEMENT MARKINGS ARE REMOVED AND THE RPM IS NO LONGER IN CONFLICT, THE CONTRACTOR SHALL THOROUGHLY CLEAN THE RECESSED REFLECTOR ATTACHMENT AREA OF THE CASTING AND INSTALL A NEW PRISMATIC RETRO-REFLECTOR OF THE SAME KIND AND COLOR. THE COST FOR THIS WORK SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS.

ALLOWABLE DURATION OF CLASS II CENTER LINES

EXCEPT AS NOTED BELOW, ANYTIME EXISTING PERMANENT NO PASSING ZONE MARKINGS HAVE BEEN REMOVED OR OBLITERATED AS THE RESULT OF A CONSTRUCTION OPERATION (PAVEMENT GRINDING, ASPHALT PAVEMENT OVERLAYS, ETC,) AND THE SECTION OF PAVEMENT CONTINUES TO BE USED BY THE TRAVELING PUBLIC, THE CONTRACTOR MUST WITHIN 3 CALENDAR DAYS PLACE FINAL CENTER LINE MARKINGS AS SPECIFIED BY THE PLAN. EQUIVALENT 614 CLASS I CENTER LINE MARKINGS MAY BE USED IN LIEU OF FINAL MARKINGS. IN THIS EVENT, THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, AND MATERIAL NECESSARY TO PLACE AND MAINTAIN 614 CLASS I MARKINGS AS PART OF THE LUMP SUM BID FOR MAINTAINING TRAFFIC.

IF AFTER THE ORIGINAL MARKINGS ARE REMOVED OR OBLITERATED, THE CONTRACTOR RETURNS TO THE SUBJECT NO PASSING ZONE AND PLACES A PLAN SPECIFIED PAVEMENT COURSE WITHIN THE 3 CALENDAR DAY LIMIT, OR PERFORMS WORK IN PREPARATION FOR A SUBSEQUENT PAVEMENT COURSE, THE CONTRACTOR WILL HAVE TEMPORARILY SATISFIED THE CONDITIONS OF THE PREVIOUS PARAGRAPH. IN THIS EVENT THE 3 CALENDAR DAY LIMIT WILL BEGIN AGAIN.

SECTIONS OF PAVEMENT WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS SHALL BE GOVERNED BY THE 21 DAY LIMIT DESCRIBED BELOW IN THE PARAGRAPH ENTITLED "ALLOWABLE DURATION OF CLASS II LANE LINES, GORE MARKINGS AND ABSENCE OF EDGE LINES."

FOR EACH CALENDAR DAY BEYOND 3 DAYS THAT THIS WORK SHALL REMAIN UNCOMPLETED, THE SUM OF $200 PER CALENDAR DAY WILL BE DEDUCTED FROM ANY MONEY DUE THE CONTRACTOR, NOT AS A PENALTY BUT AS LIQUIDATED DAMAGES.

ALLOWABLE DURATION OF CLASS II LANE LINES AND GORE MARKINGS AND ABSENCE OF EDGE LINES

ANYTIME EXISTING PERMANENT LANE LINES, GORE MARKINGS OR EDGE LINES HAVE BEEN REMOVED OR OBLITERATED AS THE RESULT OF A CONSTRUCTION OPERATION (PAVEMENT GRINDING, ASPHALT PAVEMENT OVERLAYS, PAVEMENT WIDENING, ETC.) AND THE SECTION OF PAVEMENT CONTINUES TO BE USED BY THE TRAVELING PUBLIC, THE CONTRACTOR MUST WITHIN 21 CALENDAR DAYS PLACE FINAL PAVEMENT MARKINGS AS SPECIFIED BY THE PLAN. EQUIVALENT 614 CLASS I MARKINGS MAY BE USED IN LIEU OF FINAL MARKINGS. IN THIS EVENT, THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, AND MATERIAL NECESSARY TO PLACE AND MAINTAIN 614 CLASS I MARKINGS AS PART OF THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC.

IF, AFTER THE ORIGINAL MARKINGS ARE REMOVED OR OBLITERATED, THE CONTRACTOR RETURNS TO THE SUBJECT SECTION OF PAVEMENT AND PLACES A PLAN SPECIFIED PAVEMENT COURSE WITHIN THE 21 CALENDAR DAY LIMIT, OR PERFORMS SPECIFIED WORK WHICH REQUIRES A LANE CLOSURE, EXCEPT ROUTINE MAINTENANCE REQUIRED BY 614.02, THE CONTRACTOR WILL HAVE TEMPORARILY SATISFIED THE CONDITIONS OF THE PREVIOUS PARAGRAPH. IN THIS EVENT, THE 21 CALENDAR DAY LIMIT WILL BEGIN AGAIN.

FOR EACH CALENDAR DAY BEYOND 21 DAYS THAT THIS WORK SHALL REMAIN UNCOMPLETED, THE SUM OF $200 PER CALENDAR DAY WILL BE DEDUCTED FROM ANY MONEY DUE THE CONTRACTOR, NOT AS A PENALTY BUT AS LIQUIDATED DAMAGES.

IF A SECTION OF PAVEMENT IS IN A CONTINUOUS PART OF THE PROJECT THEN A NEW 21 DAY LIMIT FOR RENEWED WORK ON A SECTION SHALL APPLY TO ALL SECTIONS IN THAT PART. IF THE PROJECT IS IN PARTS AND THE TRAVELING PUBLIC WOULD NOT DISCERN THE PARTS AS ONE CONTINUOUS PROJECT, THEN A NEW 21 DAY LIMIT IN ONE PART WILL NOT APPLY TO THE OTHER PARTS. THE TWO DIRECTIONAL SIDES OF A FREEWAY SHALL BE TREATED AS SEPARATE PARTS. WORK ON ONE SIDE OF A FREEWAY SHALL NOT CREATE A NEW 21 DAY LIMIT FOR THE OTHER SIDE.

METHOD OF MEASUREMENT

TEMPORARY PAVEMENT MARKINGS WILL BE MEASURED COMPLETE IN PLACE, BY CLASS AND MATERIAL, IN THE UNITS DESIGNATED. LINE QUANTITIES WILL BE THE LENGTH OF THE COMPLETED STRIPE, INCLUDING GAPS, INTERSECTIONS, AND OTHER SECTIONS OF PAVEMENT NOT NORMALLY MARKED.

TEMPORARY PAVEMENT MARKINGS WILL INCLUDE THE LAYOUT, APPLICATION AND REMOVAL OF THE MARKINGS, WHEN REQUIRED.

BASIS OF PAYMENT

PAYMENT FOR ACCEPTED QUANTITIES COMPLETE IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR PLACEMENT, MAINTENANCE AND NECESSARY REMOVAL OF MARKINGS.

ITEM	UNIT	DESCRIPTION
614	KILOMETER	TEMPORARY LANE LINES, CLASS____, ____*
614	KILOMETER	TEMPORARY CENTER LINES, CLASS____, ____*
614	METER	TEMPORARY CHANNELIZING LINES, CLASS I, ____*
614	KILOMETER	TEMPORARY EDGE LINES, CLASS I, ____*
614	METER	TEMPORARY GORE MARKINGS, CLASS I I, ____*
614	METER	TEMPORARY STOP LINES, CLASS I, ____*
614	METER	TEMPORARY CROSSWALK LINES, CLASS I, ____*
614	METER	TEMPORARY DOTTED LINES, CLASS I, ____*

* TYPE MATERIAL (642 PAINT, 740.05 TYPE B OR 740.05 TYPE C OR LEFT BLANK TO PERMIT ANY OF THE THREE)

614 WORK ZONE MARKING SIGNS

GENERAL

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND SUBSEQUENTLY REMOVE WORK ZONE MARKING SIGNS (OW-1-67, R-33 AND R-34) AND THEIR SUPPORTS WITHIN THE WORK LIMITS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE CONTRACTOR SHALL, IN ADVANCE OF ANY SECTION OF ROADWAY LACKING OMUTCD STANDARD EDGE LINE MARKINGS, ERECT A "NO EDGE LINES" (OW-1-67-36) SIGN. ON FREEWAYS AND EXPRESSWAYS AN OW-1-67-48 SIGN SHALL BE USED. THESE SIGNS SHALL BE IN PLACE PRIOR TO EXPOSING THE ROADWAY TO TRAFFIC. THESE SIGNS SHALL ALSO BE ERECTED ON EACH ENTRANCE RAMP, AT INTERSECTIONS OF THROUGH ROADS TO WARN ENTERING OR TURNING TRAFFIC OF THE CONDITIONS AND AT LEAST ONCE EVERY 3.2 km ALONG THE ROADWAY. THESE SIGNS SHALL BE REMOVED WHEN THEY DO NOT APPLY.

THE CONTRACTOR SHALL AT THE BEGINNING OF EACH NO-PASSING ZONE LACKING OMUTCD STANDARD CENTER LINE MARKINGS, ERECT A "DO NOT PASS" (R-33-30) SIGN AND AT THE END OF EACH NO-PASSING ZONE, ERECT A "PASS WITH CARE" (R-34-30) SIGN.

MATERIALS

THE CONTRACTOR MAY USE SIGNS AND SUPPORTS IN USED BUT GOOD CONDITION. SIGN FACES SHALL BE REFLECTORIZED WITH TYPE G SHEETING COMPLYING WITH THE REQUIREMENTS OF 730.19. WORK ZONE MARKING SIGNS SHALL BE PROVIDED WITH SUITABLE YIELDING SUPPORTS OF SUFFICIENT STRENGTH AND STABILITY.

METHOD OF MEASUREMENT

WORK ZONE MARKING SIGNS WILL BE MEASURED AS THE NUMBER OF SIGN INSTALLATIONS, INCLUDING THE SIGN, NECESSARY SUPPORTS AND ALL ATTACHMENT HARDWARE. ALL OTHER WORK ZONE SIGNS SHALL BE INCLUDED IN 614 MAINTAINING TRAFFIC UNLESS SEPARATELY ITEMIZED.

BASIS OF PAYMENT

PAYMENT FOR ACCEPTED QUANTITIES, COMPLETE, IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR PLACEMENT, MAINTENANCE AND REMOVAL OF THE SIGNS.

ITEM	UNIT	DESCRIPTION
614	EACH	WORK ZONE MARKING SIGNS

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC

WORK ZONE PAVEMENT MARKINGS AND SIGNS

DATE 01/30/95

STANDARD CONSTRUCTION DRAWING MT-99.10M

APPROVED _____ ENGR. OF DESIGN SERVICES

GENERAL

IN ADDITION TO 614, TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE PURPOSE OF THE FOLLOWING REQUIREMENTS FOR TRAFFIC CONTROL FOR PAVEMENT MARKING OPERATIONS IS TO PROVIDE SAFETY FOR HIGHWAY USERS, WORKERS AND EQUIPMENT AND TO PROTECT THE MARKINGS FROM DAMAGE DURING APPLICATION. THESE REQUIREMENTS ARE THE REQUIRED MINIMUMS. IF AT ANY TIME DURING THE APPLICATION OF MARKINGS IT IS FOUND BY THE ENGINEER THAT THESE MINIMUM TRAFFIC CONTROL REQUIREMENTS ARE NOT ACHIEVING THE NECESSARY SAFETY AND MARKING PROTECTION. ADDITIONAL TRAFFIC CONTROL SHALL BE IMPLEMENTED AT NO ADDITIONAL COST.

THE ENGINEER MAY SUSPEND WORK IN ORDER TO RELIEVE TRAFFIC CONGESTION AT ANY TIME. NO WORK SHALL BE DONE DURING PEAK HOURS, AS DETERMINED BY THE ENGINEER.

VEHICLES TRANSPORTING FLAMMABLE PAVEMENT MARKING MATERIALS (MATERIAL SUPPLY VEHICLES) SHALL NOT BE UTILIZED FOR LEAD OR TRAIL VEHICLES OR FOR POWER BROOM EQUIPMENT. ALL PAVEMENT MARKING APPLICATION, PROTECTION AND SUPPORT EQUIPMENT FOLLOWING THE LINE MARKING MACHINE SHALL HAVE THE TRAFFIC CONTROL EQUIPMENT OF A TRAIL VEHICLE.

LINE MARKING MACHINES SHALL NOT BE USED FOR SIGN AND CONE PLACEMENT.

LEAD VEHICLE

A LEAD VEHICLE IS TO BE USED TO WARN OPPOSING TRAFFIC OF THE APPROACH OF CENTER LINE AND OTHER MARKING EQUIPMENT WHEN THIS EQUIPMENT EXTENDS INTO THE ADJACENT OPPOSING TRAFFIC LANE. THE LEAD VEHICLE SHALL PRECEDE THE "LEFT OF CENTER" MARKING EQUIPMENT A DISTANCE THAT WILL PROVIDE ADVANCE SAFE WARNING TO APPROACHING TRAFFIC. THE OPERATOR OF THIS UNIT SHALL DRIVE AHEAD OF THE CREST OF A VERTICAL CURVE OR AROUND A HORIZONTAL CURVE AND WAIT UNTIL THE "LEFT OF CENTER" MARKING EQUIPMENT NEARS AND THEN PROCEED, MAINTAINING AN ADVANCE LOCATION OF 122 m TO 183 m.

A LEAD VEHICLE SHALL BE EQUIPPED AND OPERATED WITH THE FOLLOWING TRAFFIC CONTROL DEVICES:

1. A 360° ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE IN ALL DIRECTIONS A MINIMUM OF 400 m.
2. LIGHTED HEADLIGHTS AND TAILLIGHTS , AND
3. A KEEP RIGHT SIGN (OC-31R-48) AND WET PAINT SIGN (OC-52-48) MOUNTED A MINIMUM OF 1.5 m ABOVE THE ROAD SURFACE MEASURED TO THE BOTTOM OF THE SIGN, AND VISIBLE TO OPPOSING TRAFFIC.

POWER BROOM EQUIPMENT

POWER BROOM EQUIPMENT SHALL BE EQUIPPED AND OPERATED DURING PAVEMENT PREPARATIONS WITH THE FOLLOWING TRAFFIC CONTROL DEVICES:

1. A 360° ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE IN ALL DIRECTIONS A MINIMUM OF 400 m.
2. LIGHTED HEADLIGHTS AND TAILLIGHTS , AND
3. ✳ A FLASHING ARROW PANEL 1.4 X .76 m CONFORMING TO MT-35.10M (TYPE B) VISIBLE TO THE REAR MOUNTED A MINIMUM OF 2 m ABOVE THE ROAD SURFACE, MEASURED TO THE BOTTOM OF THE PANEL, AND USED ONLY ON MULTI-LANE HIGHWAYS.

LINE MARKING MACHINE

ALL TRAFFIC LINE MARKING MACHINES SHALL BE EQUIPPED AND OPERATED WITH THE FOLLOWING TRAFFIC CONTROL EQUIPMENT:

1. THREE 360° ROTATING OR FLASHING AMBER BEACONS CLEARLY VISIBLE IN ALL DIRECTIONS A MINIMUM OF 400 m, MOUNTED A MINIMUM OF 2 m ABOVE THE ROAD SURFACE, ONE FORWARD, ONE ON THE RIGHT REAR AND ONE ON THE LEFT REAR OF THE VEHICLE.
2. ✳ (A) A FLASHING ARROW PANEL 1.4 X .76 m CONFORMING TO MT-35.10M (TYPE B) DISPLAYED TO THE REAR MOUNTED A MINIMUM OF 2 m ABOVE THE THE ROAD SURFACE, MEASURED TO BOTTOM OF THE PANEL, AND USED ONLY ON MULTI-LANE HIGHWAYS, OR
   (B) A DO NOT PASS SIGN (R-33A-48) VISIBLE TO THE REAR DURING CENTER LINE MARKING ON TWO-LANE, TWO-WAY ROADWAYS AND MOUNTED A MINIMUM OF 2 m ABOVE THE ROAD SURFACE, MEASURED TO THE BOTTOM OF THE SIGN. THIS SIGN MAY BE USED TO COVER THE ARROW PANEL WHICH SHALL NOT BE USED ON TWO-LANE, TWO WAY ROADWAYS.
3. A WET PAINT WITH ARROW SIGN (OC-50-24 OR OC-51-48) SHALL FACE THE REAR. THE SIGN SHALL BE POSITIONED WITH THE ARROW POINTING TO THE WET LINE. WHEN USED, OC-50-24 SHALL BE MOUNTED ON THE SIDE OF THE VEHICLE NEAREST THE WET MARKING MATERIAL. OC-50-24 AND OC-51-48 SIGNS SHALL BE MOUNTED A MINIMUM OF 0.3 m ABOVE THE ROAD SURFACE.
4. A KEEP RIGHT SIGN (OC-31R-48) AND WET PAINT SIGN (OC-52-48) MOUNTED A MINIMUM OF 1.5 m ABOVE THE ROAD SURFACE, MEASURED TO THE BOTTOM OF THE SIGN FACING OPPOSING TRAFFIC WHEN THIS UNIT EXTENDS INTO THE ADJACENT OPPOSING TRAFFIC LANE.
5. THE GUIDE AND SIDE MOUNTED MARKING CARRIAGES SHALL EACH BE EQUIPPED WITH A CLEAN RED FLAG NOT LESS THAN 0.4 m SQUARE AND FASTENED TO A STAFF OF SUFFICIENT LENGTH SO AS TO PERMIT THE FLAG TO MOVE FREELY OF ANY OBSTRUCTION.

TRAIL VEHICLE

WHEN REQUIRED, A TRAIL VEHICLE SHALL BE POSITIONED AT THE TRACK FREE END OF THE WET LINE.

TRAIL VEHICLES SHALL BE EQUIPPED AND OPERATED WITH THE FOLLOWING TRAFFIC CONTROL EQUIPMENT:

1. A 360° ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE IN ALL DIRECTIONS A MINIMUM OF 400 m,
2. ✳ (A) A FLASHING ARROW PANEL 1.4 X .76 m CONFORMING TO MT-35.10M (TYPE B) VISIBLE TO THE REAR MOUNTED AT A MINIMUM HEIGHT OF 2 m ABOVE THE ROAD SURFACE, MEASURED TO THE BOTTOM OF THE PANEL, AND USED ONLY ON MULTI-LANE HIGHWAYS, OR
   (B) A DO NOT PASS SIGN (R-33A-48) VISIBLE TO THE REAR DURING CENTER LINE MARKING ON TWO-LANE, TWO-WAY ROADWAYS AND MOUNTED A MINIMUM OF 2 m ABOVE THE ROAD SURFACE, MEASURED TO THE BOTTOM OF THE SIGN. THIS SIGN MAY BE USED TO COVER THE ARROW PANEL, WHICH SHALL NOT BE USED ON TWO-LANE, TWO-WAY ROADWAYS.
3. A WET PAINT WITH ARROW SIGN (OC-50-24 OR OC-51-48) SHALL FACE THE REAR. THE SIGN SHALL BE POSITIONED WITH THE ARROW POINTING TO THE WET LINE. WHEN USED, OC-50.24 SHALL BE MOUNTED ON THE SIDE OF THE VEHICLE NEAREST, THE WET MARKING MATERIAL. OC-50-24 SHALL BE MOUNTED A MINIMUM OF 1.4 m ABOVE THE ROAD SURFACE AND OC-51-48 SHALL BE MOUNTED A MINIMUM OF 1.5 m ABOVE THE ROAD SURFACE, BOTH MEASURED TO THE BOTTOM OF THE SIGN.

✳ WHEN A VEHICLE IS OPERATING ON A TWO-LANE TWO-WAY ROADWAY THE FLASHING ARROW PANEL SHALL BE TILTED HORIZONTALLY OR COVERED.

CONES AND WET PAINT-KEEP OFF SIGNS

CONES AND WET PAINT-KEEP OFF SIGNS (R-87-24) SHALL BE PLACED TO PROTECT THE LINE WHENEVER THE TRACK FREE TIME EXCEEDS 2 MINUTES. THESE DEVICES SHALL NOT BE REMOVED UNTIL THE LINE HAS DRIED TO A TRACK FREE CONDITION. RETRIEVAL EQUIPMENT SHALL HAVE THE TRAFFIC CONTROL EQUIPMENT OF A TRAIL VEHICLE. CONES SHALL HAVE A MINIMUM HEIGHT OF 0.46 m. THEY SHALL BE SPACED TO PROTECT THE WET LINE NORMALLY BETWEEN 37 m AND 61 m. IN AREAS OF TRAFFIC CONGESTION , ON CURVES AND AT OTHER LOCATIONS WHERE TRACKING OF THE WET LINE IS EXPECTED SPACINGS AS CLOSE AS 6.1 m MAY BE REQUIRED. THE WET PAINT-KEEP OFF SIGNS (R-87-24) SHALL BE PLACED FACING TRAFFIC AT:

A. THE BEGINNING AND END OF LINE APPLICATION,
B. ALL SIDE AND CROSS ROADS, AND
C. MAXIMUM INTERVALS OF 1.6 km.

WHEN LANE LINE MARKINGS REQUIRE GREATER THAN A TWO MINUTE DRYING TIME, THE LANE FROM WHICH THE LINE MARKING MACHINE APPLIES LANE LINE MARKINGS SHALL BE CLOSED UNTIL THE LINE HAS DRIED TO A TOTALLY TRACK FREE CONDITION.

IMMOBILE OPERATIONS

WHEN LOADING MATERIAL, CLEANING OR PERFORMING OTHER OPERATIONS IN THE FIELD, EVERY EFFORT SHALL BE MADE TO HAVE ALL EQUIPMENT COMPLETELY OFF OF THE TRAVELED WAY. WHEN IT BECOMES NECESSARY TO ENTER UPON PRIVATE PROPERTY, PERMISSION SHALL BE OBTAINED IN ADVANCE. WHEN THE CONTRACTOR CANNOT REMOVE HIS EQUIPMENT FROM THE TRAVELED WAY ALL TRAFFIC CONTROL DEVICES ON THE VEHICLES SHALL BE IN OPERATION AND FLAGGERS AND VEHICLES SHALL BE STATIONED TO PROTECT THE WORK SITE AND THE TRAVELING PUBLIC.

TWO-WAY TRAFFIC SHALL BE MAINTAINED. FLAGGERS SHALL BE EQUIPPED IN ACCORDANCE WITH ITEM 614.03.

AUXILIARY MARKINGS

PAVEMENT PREPARATION AND PLACING OF AUXILIARY MARKINGS (SEE (3)) ARE CONSIDERED TO BE STATIONARY OPERATIONS AND TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH PLAN DETAILS, STANDARD CONSTRUCTION DRAWINGS AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD).

LAYOUT AND PREMARKING

THE VEHICLE USED IN LAYOUT AND PREMARKING SHALL BE EQUIPPED AND OPERATED WITH THE FOLLOWING EQUIPMENT:

1. A 360° ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE IN ALL DIRECTIONS A MINIMUM OF 400 m.
2. LIGHTED HEADLIGHTS AND TAILLIGHTS, AND
3. A KEEP RIGHT SIGN (OC-31R-48) MOUNTED A MINIMUM OF 1.5 m ABOVE THE ROAD SURFACE, MEASURED TO THE BOTTOM OF THE SIGN, AND VISIBLE TO OPPOSING TRAFFIC.

NIGHTTIME OPERATION

NIGHTTIME OPERATION IS DEFINED TO INCLUDE THE TIME FROM ONE-HALF HOUR AFTER SUNSET TO ONE-HALF HOUR BEFORE SUNRISE , AND AT ANY OTHER TIME WHEN THERE ARE UNFAVORABLE ATMOSPHERIC CONDITIONS OR WHEN THERE IS NOT SUFFICIENT NATURAL LIGHT TO RENDER DISCERNIBLE PERSONS, VEHICLES, AND SUBSTANTIAL OBJECTS ON THE HIGHWAY AT A DISTANCE OF 305 m.

DURING NIGHTTIME CONDITIONS THE FOLLOWING TRAFFIC CONTROL SHALL BE PROVIDED:

1. CONES SHALL BE REFLECTORIZED OR EQUIPPED WITH LIGHTING DEVICES FOR MAXIMUM VISIBILITY (SEE 7F-5, OMUTCD), AND
2. THE GUIDE AND SIDE-MOUNTED CARRIAGES SHALL BE ILLUMINATED.

THE PRESENCE OF HIGHWAY LIGHTING DOES NOT WAIVE THESE REQUIREMENTS.

MINIMUM PAVEMENT MARKING TRAFFIC CONTROL EQUIPMENT REQUIREMENTS

THIS TABLE INDICATES THE TRAFFIC CONTROL EQUIPMENT WHICH SHALL BE FURNISHED FOR EACH TYPE OF LONG LINE PAVEMENT MARKING OPERATION. IN ADDITION, THE TYPE OF TRAFFIC CONTROL EQUIPMENT WHICH SHALL BE FURNISHED WHEN DIRECTED BY THE ENGINEER IS INDICATED.

EQUIPMENT	PAVEMENT MARKING LINE TYPE (1)					
	CENTER LINE		EDGE LINE		LANE LINE (2) CHANNELIZING LINE (3)	
	LONGER THAN 2 MIN. DRY	2 MIN. OR LESS DRY	LONGER THAN 2 MIN. DRY	2 MIN. OR LESS DRY	LONGER THAN 2 MIN. DRY	2 MIN. OR LESS DRY
LEAD VEHICLE	A	A	C	C	C	C
POWER BROOM EQUIPMENT	B	B	A	A	B	B
LINE MARKING MACHINE	A	A	A	A	A	A
TRAIL VEHICLE	D	A	D	A	LANE CLOSURE REQUIRED (0.7 m CONES REQUIRED)	A
TRAIL VEHICLE (ADDITIONAL)	C	B	C	B		A
TRAIL VEHICLE (SIGN & CONE RETRIEVAL)	A	C	A	C		C
TRAIL VEHICLE (SHADOW FOR RETRIEVAL)	A	C	A	C		C

(1) FOR EQUIPMENT REQUIREMENTS FOR AUXILIARY MARKING OPERATIONS SEE THE PLANS AND PART 7, OMUTCD.

(2) INCLUDES BOTH DASHED AND SOLID LANE LINES.

(3) CHANNELIZING LINE SEGMENTS OF 61 m OR LESS SHALL BE CONSIDERED AUXILIARY MARKINGS, EXECPT WHEN APPLIED AS COMPONENTS OF GORE MARKINGS SPRAYED IN MOVING OPERATIONS SEPARATE FROM THE APPLICATION OF TRANSVERSE LINES.

A	REQUIRED EQUIPMENT
B	EQUIPMENT REQUIRED WHEN DIRECTED BY THE ENGINEER
C	NOT REQUIRED
D	REQUIRED EQUIPMENT FOR SIGN & CONE PLACEMENT

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC

DATE 01/30/95

TRAFFIC CONTROL FOR LONG LINE PAVEMENT MARKING OPERATIONS

STANDARD CONSTRUCTION DRAWING MT-99.20M

APPROVED Roy J. Crump ENGR. OF DESIGN SERVICES

TEMPORARY SIGN SUPPORT REQUIREMENTS

A. PLACEMENT OF SIGNS WHICH WILL REMAIN MORE THAN ONE DAY:

1) LATERAL PLACEMENT TO NEAREST EDGE OF SIGNS SHALL BE AS FOLLOWS:

   a) ON THE RIGHT SIDE OF THE ROAD FOR APPROACHING TRAFFIC (EXCEPT FOR DUAL MOUNTED SIGNS AND SIGNS DESIGNATED IN THE PLANS FOR LEFT SIDE MOUNTING).

   b) CURBED ROADWAY - MINIMUM 0.6 m BEHIND FACE OF CURB.

   c) UNCURBED ROADWAY- 3.7 m FROM EDGE OF TRAFFIC LANE OR 1.8 m FROM EDGE OF PAVED OR USEABLE SHOULDER, WHICHEVER IS GREATER.

   d) BEHIND GUARDRAIL OR BARRIER - PREFERABLY 0.6 m BEHIND FACE OF GUARDRAIL (MINIMUM 0.3 m) FOR SIGNS ON CLASS A SUPPORTS: 1.2 m FOR CLASS B OR C SUPPORTS: 0.3 m BEHIND FACE OF CONCRETE BARRIER UNLESS BARRIER TOP MOUNTING IS REQUIRED BY THE PLAN.

2) VERTICAL CLEARANCE OF SIGNS, MEASURED ABOVE ROADWAY ELEVATION; SHALL BE AS FOLLOWS:

   a) RURAL - 1.5 m WHEN PARKED CARS, CONSTRUCTION EQUIPMENT, ETC WILL NOT OBSCURE SIGN VISIBILITY.

   b) RURAL AREAS WITH PARKED CARS OR CONSTRUCTION EQUIPMENT - 2.1 m

   c) URBAN - 2.1 m

   d) CARE SHALL BE TAKEN TO ASSURE THAT SIGNS WILL NOT BE OBSCURED BY CONSTRUCTION EQUIPMENT, TREES, WEEDS OR OTHER OBSTACLES. BRUSH, WEEDS OR GRASS WITHIN THE RIGHT OF WAY SHALL BE TRIMMED AS NECESSARY. SIGNS SHALL NORMALLY BE VISIBLE TO TRAFFIC 122 m TO 183 m IN ADVANCE OF THE SIGN.

3) SUPPORTS FOR SIGNS WHICH WILL REMAIN IN PLACE MORE THAN ONE DAY SHALL BE FIXED RATHER THAN PORTABLE EXCEPT IN SITUATIONS WHERE THE SIGN MUST REST ON PERMANENT PAVEMENT OR OTHER SURFACE WHICH WOULD BE DAMAGED BY INSERTION OF POST TYPE SUPPORTS.

B. PLACEMENT OF SIGNS WHICH WILL REMAIN FOR ONE DAY OR LESS:

1) SAME AS A-1 ABOVE EXCEPT THAT SIGNS MAY BE PLACED ON THE ROADWAY ONLY IF THEY DO NOT INTRUDE INTO A TRAFFIC LANE IN USE.

2) MINIMUM OF 0.3 m ABOVE ROADWAY

C. CLASSES OF SUPPORTS:

ALL TEMPORARY SIGN SUPPORTS SHALL BE OF THE FOLLOWING TYPES:

1) CLASS A:

SUPPORTS SHALL BE USED FOR EXPOSED LOCATIONS ON HIGHWAYS WHERE TRAFFIC APPROACH SPEEDS OF 40 MPH AND HIGHER ARE ENCOUNTERED. THEY ARE ALSO SUITABLE FOR USE IN ALL OTHER LOCATIONS.

2) CLASS B:

SUPPORTS SHALL BE USED FOR EXPOSED LOCATIONS ON HIGHWAYS WHERE TRAFFIC APPROACH SPEEDS OF LESS THAN 40 MPH ARE ENCOUNTERED. THEY ARE ALSO SUITABLE FOR USE IN ALL APPLICATIONS DEFINED FOR CLASS C SUPPORTS.

3) CLASS C:

SUPPORTS MAY ONLY BE USED WHERE FULLY PROTECTED BY GUARDRAIL, CONCRETE BARRIER AND IN LOCATIONS POSITIVELY PROTECTED FROM TRAFFIC SUCH AS ON RETAINING WALLS OR WHERE TRAFFIC APPROACH SPEEDS ARE LESS THAN 25 MPH.

D. TRAFFIC APPROACH SPEEDS:

TRAFFIC APPROACH SPEEDS SHALL BE THE LOCALLY POSTED SPEED (NOT ADVISORY SPEED SIGNS) OR THE MEASURED ACTUAL (85TH PERCENTILE) SPEED (IF AVAILABLE) OF APPROACHING TRAFFIC, WHICHEVER IS HIGHER, ADJACENT TO THE SIGN LOCATION.

TABLE

APPROACH SPEED (MPH)	COMPLETELY PROTECTED BY GUARDRAIL OR BARRIER	PARTLY PROTECTED BY GUARDRAIL OR BARRIER *	GREATER THAN 9 m FROM EDGE OF PAVEMENT	WITHIN 9 m FROM EDGE OF PAVEMENT
40 AND HIGHER	A, B OR C	A OR B	A OR B **	A ONLY
26 TO 39	A, B OR C	A OR B	A OR B	A OR B
0 TO 25	A, B OR C	A, B OR C	A, B OR C	A, B OR C

* IF SUPPORTS ARE BEHIND GUARDRAIL BUT NOT FULLY 1.7 m BEHIND FACE OF RAIL OR IF SIGN IS NOT 0.3 m BEHIND FACE OF CONCRETE BARRIER.

** 9 m CRITERION IS BASED UPON STRAIGHT ROADWAY AND A SLOPE OF 6 to 1 OR FLATTER. SUPPORTS ON THE OUTSIDE OF CURVES OR LOCATED DOWN A SLOPE (STEEPER THAN 6 : 1) WILL REQUIRE USE OF CLASS A SUPPORTS.

E. BALLASTING

BALLASTING OF PORTABLE SUPPORTS SHALL BE WITH SANDBAGS PLACED WITHIN 0.3 m OF THE GROUND. IN NO CASE SHALL HARD OBJECTS BE USED FOR BALLAST.

F. STRENGTH OF SIGN SUPPORTS

THE CONTRACTOR SHALL CHOOSE SIGN SUPPORTS OF ADEQUATE STRENGTH AND WITH ADEQUATE FOUNDATIONS AND ANCHORAGE TO SUPPORT THE SIGN SIZES ERECTED. PROPRIETARY DEVICES SHALL NOT BE LOADED BEYOND THE LIMITS RECOMMENDED BY THE MANUFACTURER. SLIP BASE TYPE BREAKAWAY BEAM CONNECTIONS SHALL BE AT LEAST PARTIALLY EMBEDDED IN CONCRETE CONSISTING OF A 0.3 m DEEP BY 0.3 m DIAMETER COLLAR. SIGN SUPPORTS WHICH FAIL UNDER TYPICAL WIND LOAD CONDITIONS SHALL BE IMMEDIATELY MODIFIED OR REPLACED WITH A SUPPORT OF ADEQUATE STRENGTH.

G. PROHIBITED SUPPORTS

THE FOLLOWING SUPPORT TYPES SHALL NOT BE PERMITTED ON PROJECTS:

1) SUPPORTS FABRICATED FROM AUTOMOTIVE AXLE DIFFERENTIAL ASSEMBLIES AND SIMILARLY HEAVY ASSEMBLIES WHICH CANNOT BE CONSIDERED BREAKAWAY TYPE.

2) SUPPORTS CONSISTING OF VERTICAL POSTS WITH ANGLED BRACES MADE FROM DRIVEPOST OR OTHER RIGID ELEMENTS.

CLASS A SUPPORTS

FIXED SUPPORTS

1) ALL #2 AND #3 POST WHEN INSTALLED SINGLY OR IN PAIRS (SIDE BY SIDE) ACCORDING TO THE DETAILS OF TC-41.20M. THE NUMBER OF SUPPORTS SHALL BE AS SHOWN ON TC-52.10M AND TC-52.20M.

2) THE FOLLOWING POST TYPES, WHEN INSTALLED SINGLY, BY IMBEDMENT OR DRIVING INTO EARTH TO A DEPTH OF ABOUT 1.1 m.

   a) - UP TO 102 X 102 mm WOOD.

   b) - UP TO 51 mm DIAMETER SCHEDULE 40 STEEL PIPE.

   c) - UP TO 76 mm DIAMETER SCHEDULE 40 ALUMINUM PIPE.

   d) - UP TO 56.4 mm SQUARE, 12 GAUGE WALL, PUNCHED STEEL POST.

   e) - UP TO 152 X 203 mm WOOD WITH BREAKAWAY HOLES SHOWN BELOW.

3) THE FOLLOWING POST TYPES WHEN INSTALLED IN PAIRS (SIDE BY SIDE) WITH LESS THAN 2 m BETWEEN POSTS, BY IMBEDMENT OR DRIVING INTO EARTH TO A DEPTH OF ABOUT 1.1 m :

   a) - UP TO 102 X 102 mm WOOD.

   b) - UP TO 51 mm DIAMETER SCHEDULE 40 STEEL PIPE.

   c) - UP TO 76 mm DIAMETER SCHEDULE 40 ALUMINUM PIPE.

   d) - UP TO 51 mm SQUARE, 14 GAUGE WALL, PUNCHED STEEL POST.

4) FIXED TYPE III BARRICADES:

5) ALL BREAKAWAY CONNECTION BEAM SUPPORTS, WHEN INSTALLED ACCORDING TO THE PROPER DETAILS SHOWN ON TC-41.10M WITH A MINIMUM CLEAR DISTANCE BETWEEN SUPPORTS OF 2.1 m FOR SUPPORTS LARGER THAN W6 X 9.

6) ANY BREAKAWAY POST OR POST AND CONNECTION WHICH HAS BEEN CRASH TESTED AND APPROVED BY THE FHWA AS SATISFYING THE BREAKAWAY CRITERIA DESCRIBED IN 630.06.

(CONTINUED ON MT-105.11M)

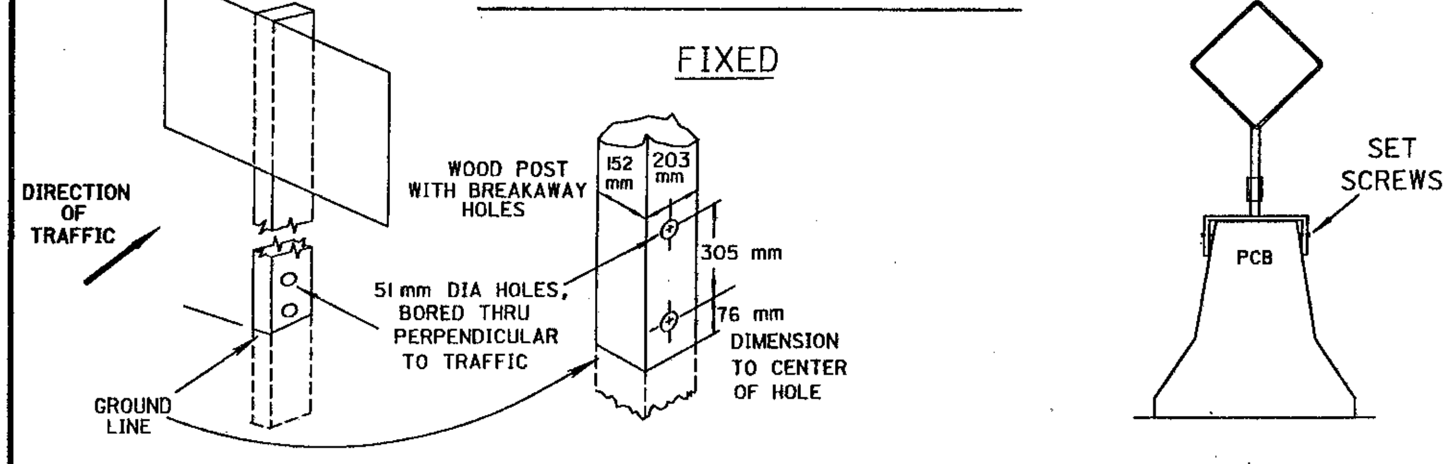
METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

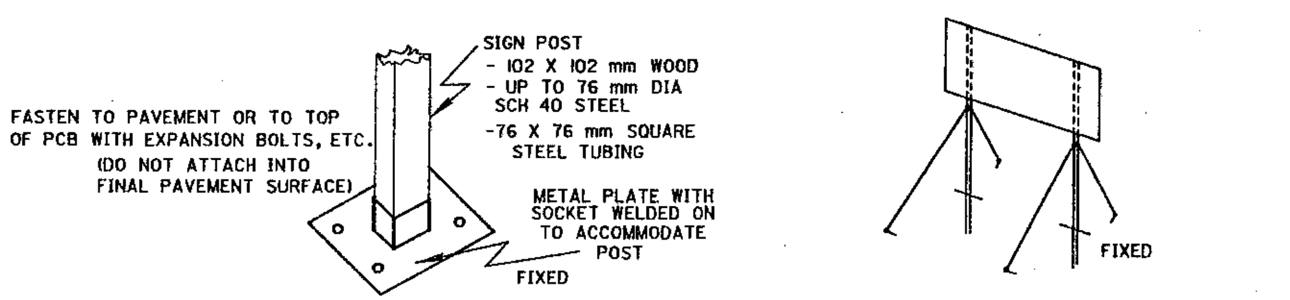
MAINTENANCE OF TRAFFIC	DATE 04/25/94
TEMPORARY SIGN SUPPORT	
STANDARD CONSTRUCTION DRAWING MT-105.10M	
APPROVED Jay Drage ENGR. OF DESIGN SERVICES	

CLASS A SUPPORTS

FIXED

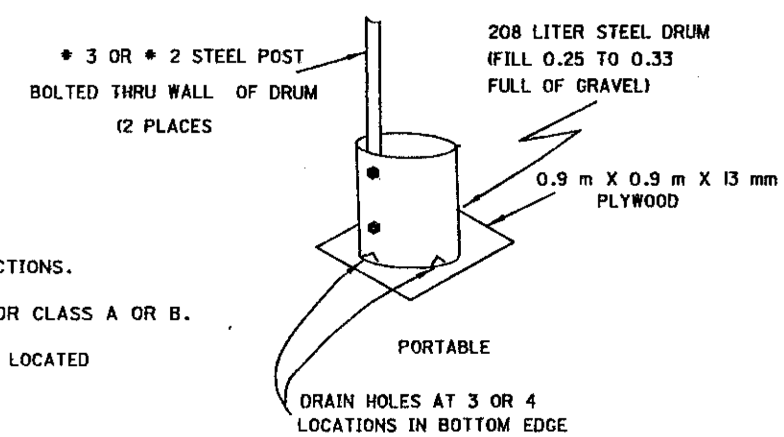


CLASS B SUPPORTS



ANY CLASS A SIGN POST WITH GUY WIRES ADDED TO INCREASE SIGN CARRYING ABILITY. (GUY WIRES SHALL NOT BE HEAVIER THAN 3.2 mm DIA. BRAIDED CABLE. GUY ANCHORS SHALL NOT EXTEND MORE THAN 152 mm ABOVE GROUND SURFACE).

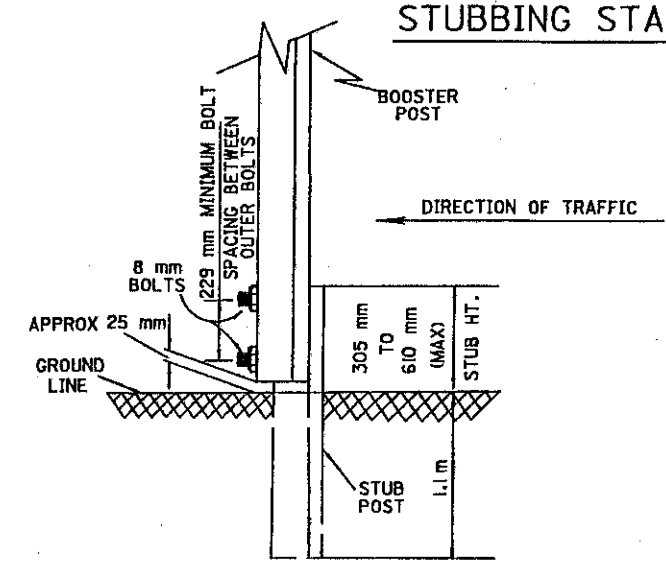
CLASS C SUPPORTS



1. ALL BEAM TYPE SUPPORTS WITHOUT BREAKAWAY CONNECTIONS.
2. SUPPORTS SIMILAR TO BUT LARGER THAN PERMITTED FOR CLASS A OR B.
3. THE STEEL DRUM(S) SHOWN BELOW MAY BE USED ONLY WHEN LOCATED BEHIND GUARDRAIL OR BARRIER.

CLASS A SUPPORTS

STUBBING STANDARD

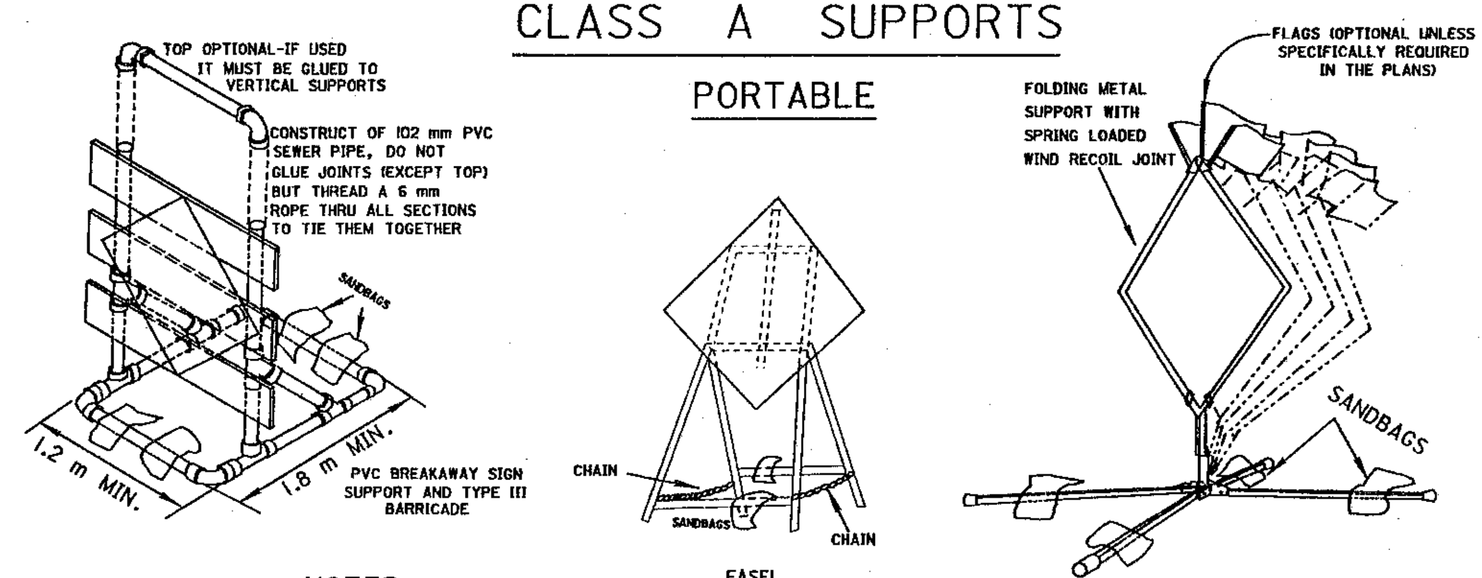


NOTES

1. FOR USE WITH #3 POST OR SMALLER ONLY
2. BOLTS SHALL BE STEEL OR ALUMINUM
3. A MINIMUM OF TWO FASTENERS SHALL BE USED PER ASSEMBLY
4. BOOSTER POST SHALL BE MOUNTED BEHIND STUB POST
5. BOOSTER POST SHALL BE THE SAME OR 1.5 kg/m LESS THAN STUB POST

CLASS A SUPPORTS

PORTABLE



NOTES

RAIL MATERIALS:

25 X 203 mm OR 51 X 203 mm COMMON LUMBER
203 mm X (16 mm TO 25 mm) THICK EXTERIOR PLYWOOD
EXTRUDED PLASTIC OR FORMED SHEET METAL WITH A 203 mm WIDE SURFACE AND OF SUFFICENT STIFFNESS TO RESIST TYPICAL WIND LOADS OF UP TO 147 kg/m², BUT HAVING A WEIGHT OF NOT MORE THAN 7.5 kg/m.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE C & M SPECIFICATIONS AS WELL AS IN ACCORDANCE WITH PART 7 OF THE OMUTCD. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE THIS METHOD OF TRAFFIC CONTROL SHALL BE INCLUDED IN THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

METRIC

BUREAU OF DESIGN SERVICES DIVISION OF HIGHWAYS OHIO DEPARTMENT OF TRANSPORTATION	
MAINTENANCE OF TRAFFIC	DATE 04/25/94
TEMPORARY SIGN SUPPORT	
STANDARD CONSTRUCTION DRAWING	MT-105.11M
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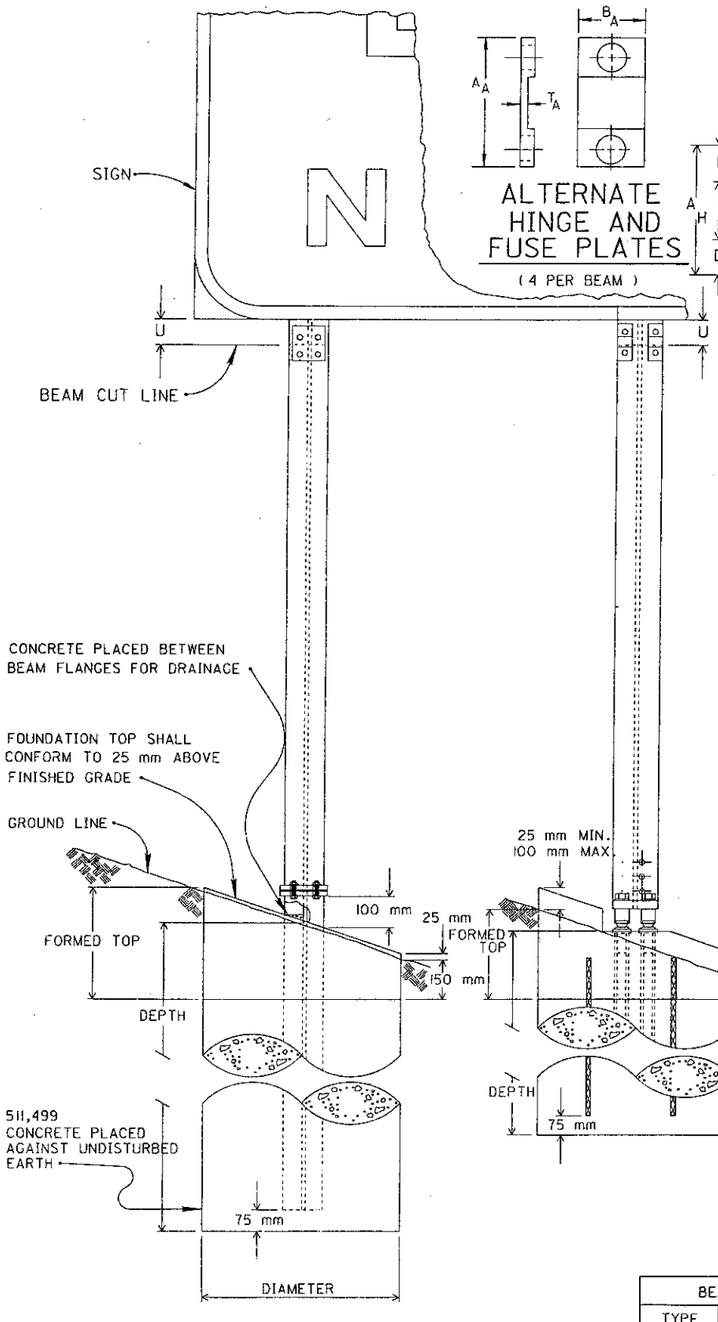
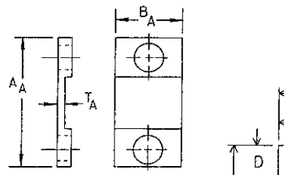
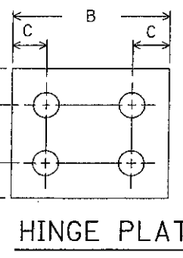
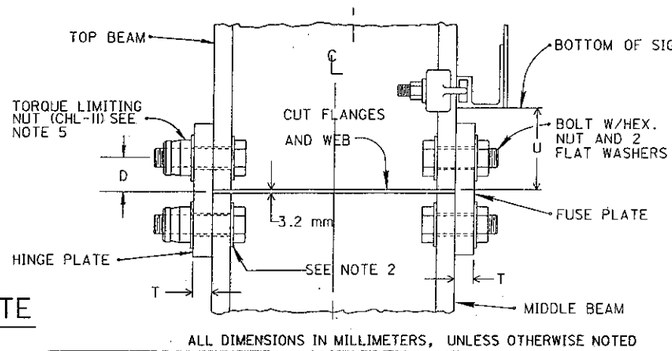
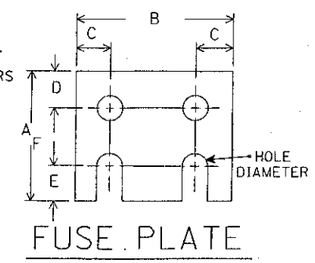






HINGE PLATE



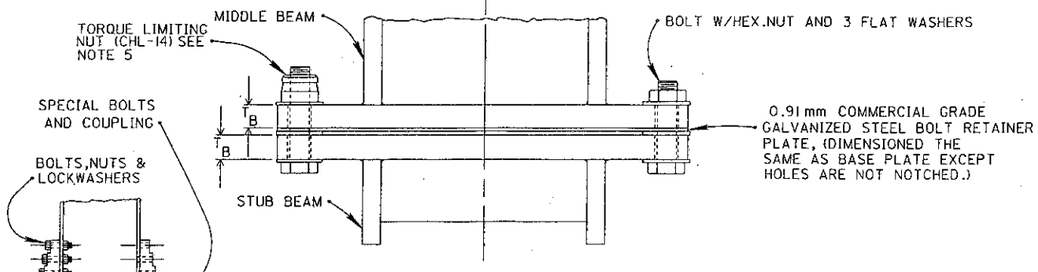


FUSE PLATE

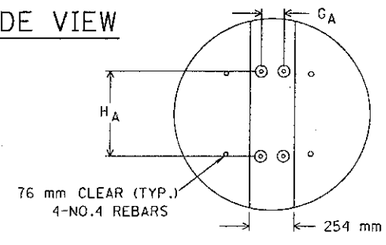
SEE NOTE 6

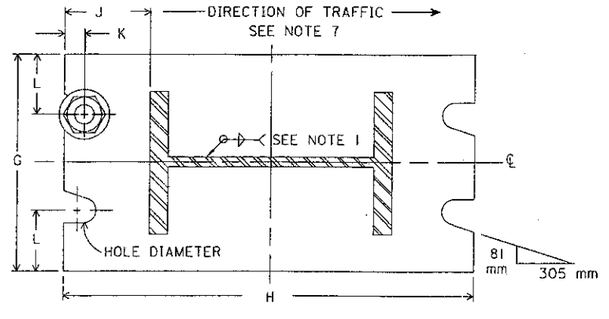
ALL DIMENSIONS IN MILLIMETERS, UNLESS OTHERWISE NOTED

BEAM TYPE	BEAM SIZE	HINGE AND FUSE PLATE DIMENSIONS A_H	A_F	B	C	D	E	T	U	HOLE DIA.	BOLT SIZE	MIN. PRELOAD (kg)	ALTERNATE DESIGN SEE NOTE 8 A_A	B_A	BOLT SIZE	T_A
S4 X 7.7	102 x 67	105	92	67	14	25	13	4.8	64	14	13	4535	95	25	13	1.80
W6 X 9	149 x 102	105	92	102	22	25	13	4.8	64	14	13	4535	95	25	13	1.80
W10 X 12	244 x 102	156	137	102	22	38	19	4.8	90	21	19	11339	95	25	13	1.80
W8 X 18	206 x 133	181	159	133	32	45	22	6.4	102	24	22	15875	121	38	19	2.87
W10 X 22	257 x 146	206	181	146	38	51	25	8	114	27	25	20865	121	38	19	2.87
W12 X 30	314 x 165	206	181	165	38	51	25	8	114	27	25	20865	121	38	19	2.87



SIDE VIEW





ALL DIMENSIONS IN MILLIMETERS, UNLESS OTHERWISE NOTED

BEAM TYPE	BEAM SIZE	FOUNDATIONS DIA. (METER)	DEPTH (METER)	CONCRETE m^3 / EA	BASE PLATE DIMENSIONS G	H	J	K	L	T_B	HOLE DIA.	BOLT SIZE	MAX. TORQUE N·m	ALTERNATE DESIGN SEE NOTE 8 G_A	H_A	BOLT SIZE
S4 X 7.7	102 X 67	0.5	1.2	0.24	102	203	51	13	25	19	14	13	22.6	108	195	13
W6 X 9	149 X 102	0.5	1.5	0.30	140	254	52	13	25	19	14	13	22.6	108	243	13
W10 X 12	244 X 102	0.8	1.8	0.91	203	368	59	19	38	19	21	19	85	108	346	13
W8 X 18	206 X 133	0.8	1.8	0.91	203	368	83	19	38	25	21	19	85	76	413	13
W10 X 22	257 X 146	0.8	2.1	1.06	203	368	59	24	51	25	27	25	150	102	465	16
W12 X 30	314 X 165	0.8	2.5	1.26	254	432	62	24	51	32	27	25	150	102	519	16

NOTES

1. BASE PLATE WELD SIZE SHALL BE EQUAL TO THE BEAM FLANGE AND WEB THICKNESS RESPECTIVELY, BUT NO LESS THAN 6.4 mm IN EITHER INSTANCE.
2. BEVELED WASHERS SHALL BE USED WITH THE S4X7.7 BEAM AND SHALL BE MALLEABLE IRON CONFORMING WITH ASTM A47 GRADE 35018.
3. FUSE AND HINGE PLATE CONNECTIONS SHALL BE TIGHTENED IN THE SHOP FOLLOWING A METHOD APPROVED BY THE ENGINEER TO PRODUCE THE MINIMUM BOLT PRELOAD SPECIFIED.
4. THE FOLLOWING PROCEDURE SHALL BE USED IN ASSEMBLING THE BREAKAWAY BASE PLATE:

   AFTER ALL BOLTS, WASHERS, STANDARD NUTS AND BOLT RETAINER PLATE ARE IN PLACE, TIGHTEN ALL STANDARD NUTS SNUGLY WITH A 305 mm WRENCH. LOOSEN EACH BOLT IN TURN AND RETIGHTEN IN A SYSTEMATIC MANNER TO THE SPECIFIED MAXIMUM TORQUE. WRENCHES SHALL BE CALIBRATED AT LEAST ONCE EACH WORKING DAY FOR EACH BOLT DIAMETER BEING TORQUED. BURR THREADS AT JUNCTION WITH NUT USING A CENTER PUNCH.

5. IN LIEU OF THE STANDARD NUTS AND PROCEDURES OUTLINED IN 3 AND 4 ABOVE, THE SUPPORTS MAY BE ASSEMBLED USING TORQUE LIMITING NUTS. EACH NUT SHALL BE TIGHTENED WITH SUFFICIENT TORQUE APPLIED UNTIL THE UPPER WRENCHING SURFACE HAS SHEARED AWAY FROM THE STRUCTURAL BODY OF THE NUT. FUSE AND HINGE PLATES SHALL BE SHOP ASSEMBLED FOLLOWING THIS PROCEDURE. THE NUTS USED SHALL BE AS MANUFACTURED BY HI-SHEAR CORP. TORRANCE, CALIFORNIA; VOI SHAN INDUSTRIES - CULVERT CITY, CALIFORNIA; STANDARD PRESSED STEEL - JENKINTOWN, PENNSYLVANIA OR APPROVED EQUAL.

   THE TORQUE LIMITING NUT PART NUMBER CHL - 14 SHALL BE USED FOR THE BASE PLATE, CHL - 11 FOR THE FUSE AND HINGE PLATES.

6. FOR BEAMS SUBJECT TO IMPACT FROM OPPOSITE DIRECTIONS (SUCH AS IN FREEWAY MEDIANS) PROVIDE FUSE PLATES ON BOTH SIDES.
7. NOTCHES SHOWN FOR INSTALLATION TO THE RIGHT OF TRAFFIC. FOR INSTALLATIONS TO THE LEFT OF TRAFFIC, FABRICATE WITH SKEWED EDGE OF NOTCHES REVERSED FROM THAT SHOWN.
8. DIMENSIONS SHOWN FOR ALTERNATE DESIGHS ARE APPROXIMATE. SPECIFIED DIMENSIONS FOR ALTERNATE DESIGNS REQUIRE PREQUALIFICATION. AN APPROVED LIST OF SUPPLIERS IS MAINTAINED BY O.D.O.T. PAYMENT FOR ALTERNATE DESIGNS WILL BE BASED ON THE PLAN QUANTITIES FOR EMBEDDED BEAMS.

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

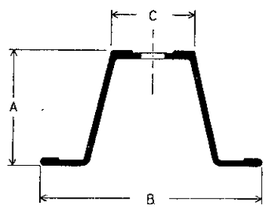
TRAFFIC CONTROL

DATE 03/31/94

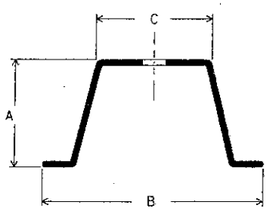
STRUCTURAL BEAM SIGN SUPPORTS

STANDARD CONSTRUCTION DRAWING TC-41.10M

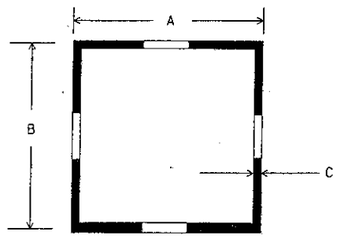
APPROVED _____ ENGR. OF DESIGN SERVICES



TYPE P

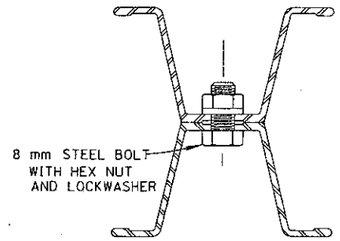


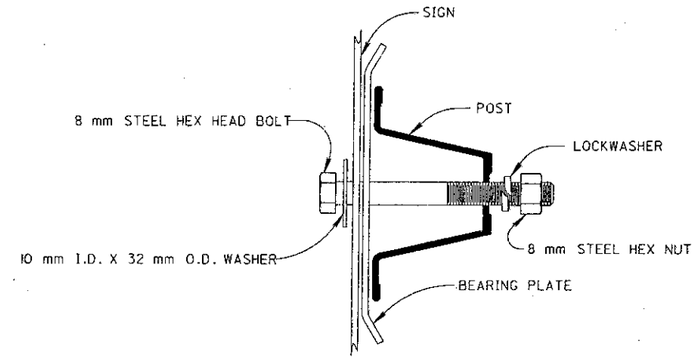
TYPE F



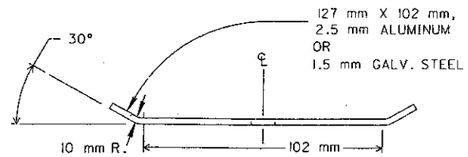
TYPE S

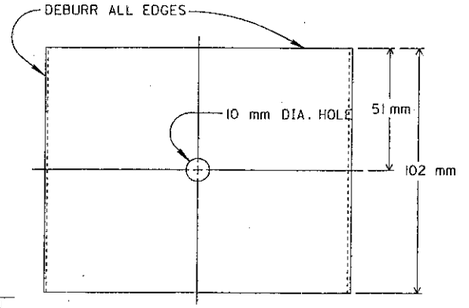
POST NO.	TYPE	Kg/m	POST DIMENSIONS MILLIMETERS A	B	C	ANCHOR DIMENSIONS A	B	C	NUMBER OF POSTS PERMITTED IN SEVEN FOOT PATH IN EXPOSED LOCATIONS
1	F	1.7	22	52	2.1				
2	P	3.0	37	78	3.3				2
	F	3.0	39	79	3.2				2
	S		51	51	2.1	57	57	2.7	2
3	P	4.5	48	89	3.3				2
	F	4.5	44	89	4.1				2
	S		51	51	2.1	57	57	2.7	2
4	P	6.0	TWO NO.2 POST						0
	F	6.0	TWO NO.2 POST						0
	S		63	63	2.7	76	76	4.8	1
6	P	9.0	TWO NO.3 POST						0
	F	9.0	TWO NO.3 POST						0



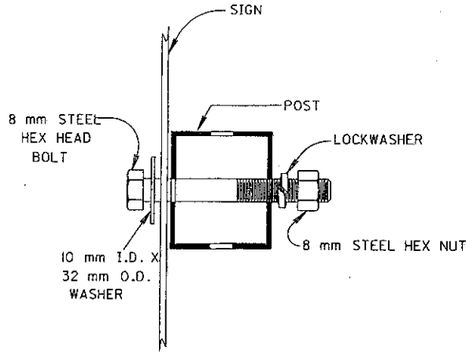


U - CHANNEL
SIGN ATTACHMENT DETAIL





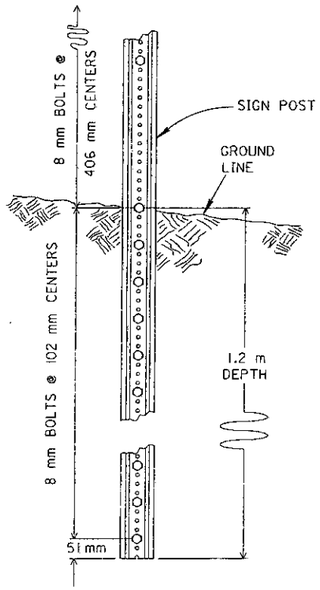
BEARING PLATE



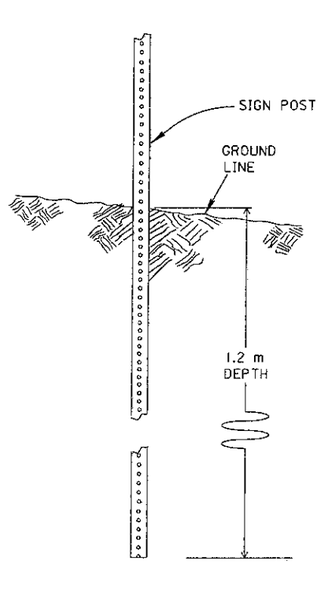
SQUARE POST
SIGN ATTACHMENT DETAIL

NOTES

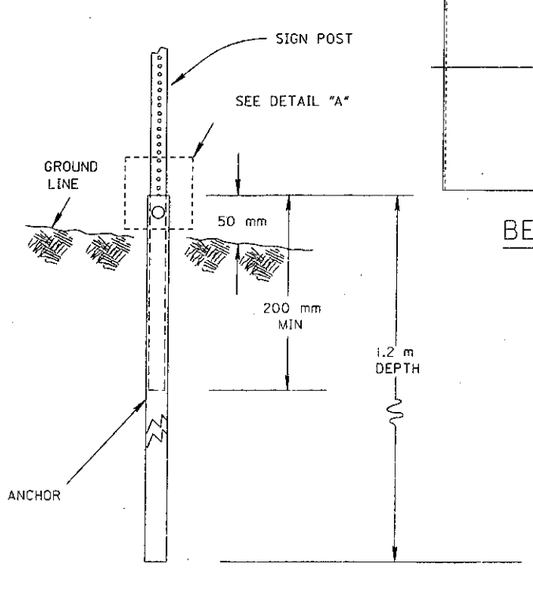
1. NUMBER 4 TYPE P AND F POST, AND NUMBER 6 TYPE P AND F POST, SHALL ONLY BE INSTALLED IN PROTECTED LOCATIONS (e.g. BEHIND GUARDRAIL). TWO POST INSTALLATIONS OF NUMBER 4 TYPE S POST SHALL BE INSTALLED IN PROTECTED LOCATIONS.
2. USE OF ANCHOR BASE WITH SQUARE POST IS OPTIONAL.
3. SQUARE POST MAY HAVE DIE-CUT KNOCKOUTS OR OPEN HOLES.



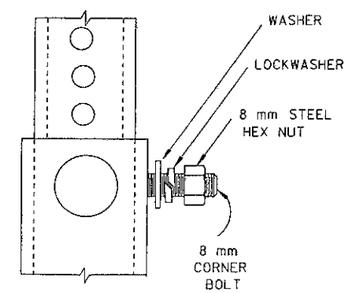
TYPICAL U - CHANNEL
DRIVEN INSTALLATION



TYPICAL SQUARE POST
DRIVEN INSTALLATION



TYPICAL SQUARE POST ANCHOR
BASE INSTALLATION



DETAIL "A"

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

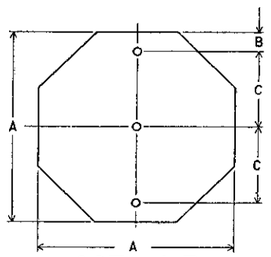
DATE 07/01/94

YIELDING POST

STANDARD CONSTRUCTION DRAWING TC-41.20M

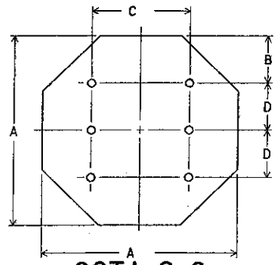
APPROVED _____ ENGR. OF DESIGN SERVICES

WCC



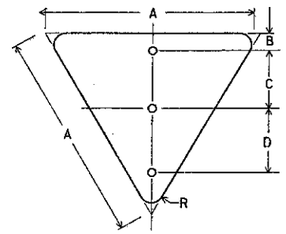
OCTA-1-3

A	B	C	THICKNESS	m^2
750	75	300	2.0	0.56
900	150	300	2.0	0.81



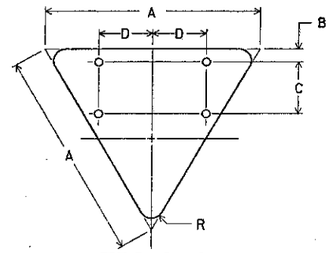
OCTA-2-6

A	B	C	D	THICKNESS	m^2
1200	300	600	300	2.5	1.44



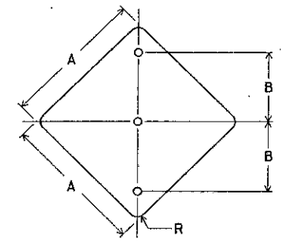
TRI-1-3

A	B	C	D	R	THICKNESS	m^2
900	75	250	275	50	2.5	0.35



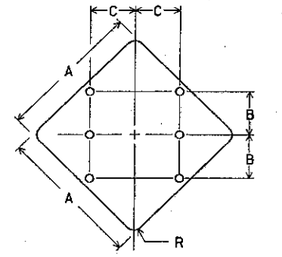
TRI-2-4

A	B	C	D	R	THICKNESS	m^2
1200	75	300	300	75	2.5	0.62
1500	75	450	375	100	2.5	0.97



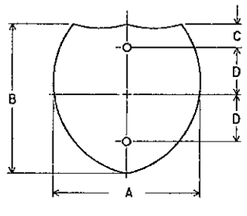
DIA-1-3

A	B	R	THICKNESS	m^2
600	300	38	1.6	0.36
750	375	48	2.0	0.56
900	450	57	2.0	0.81



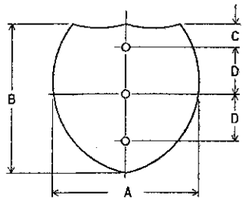
DIA-2-6

A	B	C	R	THICKNESS	m^2
1200	375	375	75	2.5	1.44
1500	450	450	95	2.5	2.25



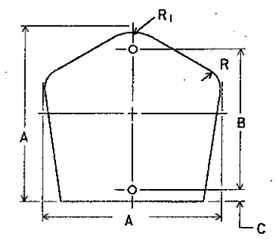
I.S.-1-2

A	B	C	D	THICKNESS	m^2
600	600	75	225	1.6	0.36
750	600	75	225	2.0	0.45
750	750	75	300	2.0	0.56
1000	750	75	300	2.0	0.75



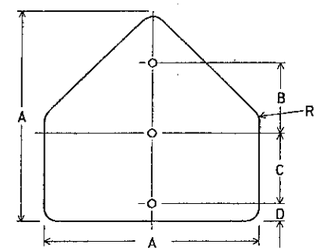
I.S.-1-3

A	B	C	D	THICKNESS	m^2
900	900	150	300	2.0	0.81
1200	900	150	300	2.5	1.08



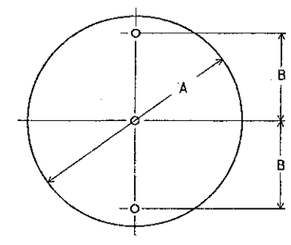
CO-1-2

A	B	C	R_1	R	THICKNESS	m^2
450	375	25	125	50	1.6	0.20
600	450	50	135	68	1.6	0.36
750	600	50	168	86	2.0	0.56



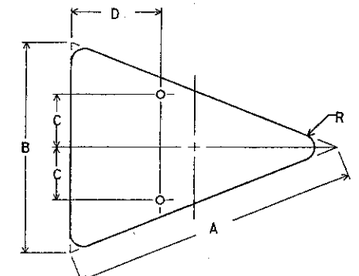
PENT-1-3

A	B	C	D	R	THICKNESS	m^2
750	250	275	75	48	2.0	0.56
900	300	300	75	57	2.0	0.81
1050	350	325	100	64	2.5	1.10



CIR-1-3

A	B	THICKNESS	m^2
750	300	1.6	0.56
900	375	2.0	0.81

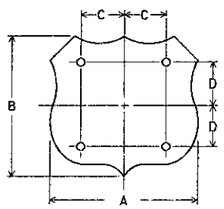


ISOS-1-2

A	B	C	D	R	THICKNESS	m^2
1000	750	187	300	48	2.0	0.35
1200	900	225	375	57	2.5	0.50

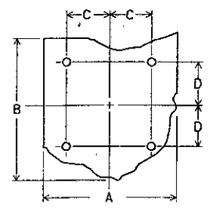
ROUTE SHIELDS

(FOR GUIDE SIGNS ONLY)



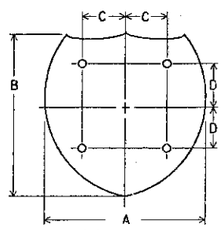
M-1C-

A	B	C	D
610	600	175	175
750	600	200	200
750	750	225	225
937	750	225	225
900	900	250	250
1125	900	375	250



M-2C-

A	B	C	D
600	600	175	175
750	600	200	200
750	750	225	225
937	750	225	225
900	900	250	250
1125	900	375	250



M-5C-

A	B	C	D
600	600	175	175
750	600	200	200
750	750	225	225
1000	750	225	225
900	900	250	250
1200	900	375	250

ALL SHIELDS SHALL BE 1.6 mm THICK

SHAPE — OCTA-2-6 — NO. BOLTS REQUIRED

NO. SUPPORTS REQUIRED

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.
2. ALL BOLT HOLES SHALL BE 10 MILLIMETERS IN DIAMETER, AND MAY BE DRILLED OR PUNCHED TO FINISHED SIZE.
3. DIMENSIONS BETWEEN BOLT HOLES SHALL BE TO TOLERANCE OF ± 0.8 MILLIMETER.
4. FOR ADDITIONAL BLANK DETAILS, SEE SIGN LAYOUT DRAWING.

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

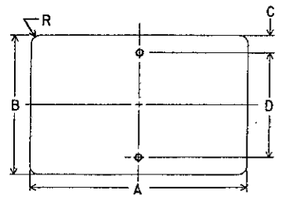
DATE 07/29/94

SIGN BLANK DETAILS I

STANDARD CONSTRUCTION DRAWING TC-52.10M

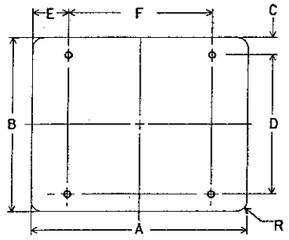
APPROVED Gary Brogan ENGR. OF DESIGN SERVICES

WCC



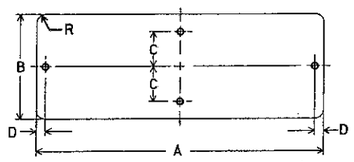
H-REC-1-2

A	B	C	D	R	THICKNESS	m^2
300	150	37.5	75	38	1.6	0.05
450	150	37.5	75	38	1.6	0.07
450	300	37.5	225	38	1.6	0.14
525	375	37.5	300	38	1.6	0.20
525	450	75	300	38	1.6	0.24
600	150	37.5	75	38	1.6	0.09
600	200	37.5	125	38	1.6	0.12
600	250	37.5	175	38	1.6	0.15
600	300	37.5	225	38	1.6	0.18
600	450	75	300	38	1.6	0.27
750	200	37.5	125	38	1.6	0.15
750	250	37.5	175	38	1.6	0.19
750	300	37.5	225	38	2.0	0.23
750	375	37.5	300	38	2.0	0.28
750	400	37.5	325	38	2.0	0.30
750	450	75	300	38	2.0	0.34
750	600	75	450	38	2.0	0.45
900	150	37.5	75	38	2.0	0.14
900	300	37.5	225	38	2.0	0.27
900	375	37.5	300	38	2.0	0.34
900	450	75	300	38	2.0	0.41
900	600	75	450	38	2.0	0.54
937	750	75	600	38	2.0	0.70
1050	375	37.5	300	38	2.0	0.39
1200	500	75	350	38	2.0	0.60



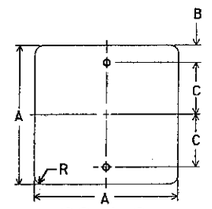
H-REC-2-4

A	B	C	D	E	F	R	THICKNESS	m^2
900	600	75	450	150	600	38	2.0	0.54
900	750	75	600	150	600	48	2.0	0.68
1000	500	75	350	150	700	38	2.0	0.50
1050	900	150	600	225	600	57	2.5	0.95
1125	900	150	600	225	675	57	2.5	1.01
1200	200	37.5	125	225	750	38	2.0	0.24
1200	212	37.5	137	225	750	38	2.0	0.25
1200	350	37.5	275	225	750	38	2.0	0.42
1200	400	37.5	325	225	750	38	2.0	0.48
1200	450	75	300	225	750	38	2.0	0.54
1200	600	75	450	225	750	48	2.5	0.72
1200	750	75	600	225	750	48	2.5	0.90
1200	900	150	600	225	750	57	2.5	1.08
1200	1050	150	750	225	750	57	2.5	1.26
1400	200	37.5	125	300	800	38	2.5	0.28
1500	300	37.5	225	300	900	38	2.0	0.45
1500	600	75	450	300	900	38	2.5	0.90
1500	750	75	600	300	900	48	2.5	1.13
1500	900	150	600	300	900	57	2.5	1.35
1500	1000	150	700	300	900	57	2.5	1.50
1600	200	37.5	125	300	1000	38	2.5	0.32
1650	600	75	450	300	1050	38	2.5	0.99
1650	900	150	600	300	1050	57	2.5	1.49
1800	300	37.5	225	300	1200	38	2.5	0.54
1800	450	75	300	300	1200	38	2.5	0.81
1800	600	75	450	300	1200	38	2.5	1.08
1800	900	75	600	300	1200	38	2.5	1.62



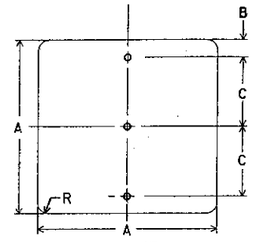
H-REC-1-4 (ONE WAY)

A	B	C	D	R	THICKNESS	m^2
900	300	100	25	38	2.0	0.27
1200	450	150	38	38	2.5	0.54



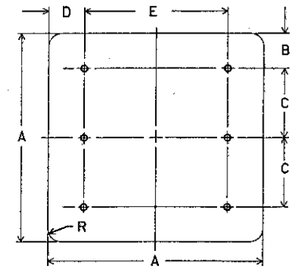
SQ-1-2

A	B	C	R	THICKNESS	m^2
375	75	112.5	38	1.6	0.14
450	75	150	38	1.6	0.20
600	75	225	38	1.6	0.36



SQ-1-3

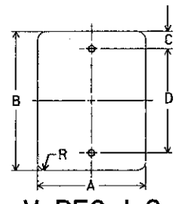
A	B	C	R	THICKNESS	m^2
750	75	300	48	2.0	0.56
900	150	300	57	2.0	0.81



SQ-2-6

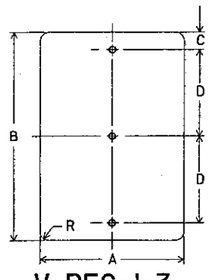
	A	B	C	D	E	R	THICKNESS	m^2
*	900	150	300	150	600	57	2.0	0.81
	1200	150	450	225	750	75	2.5	1.44

* "DO NOT ENTER" SIGN.



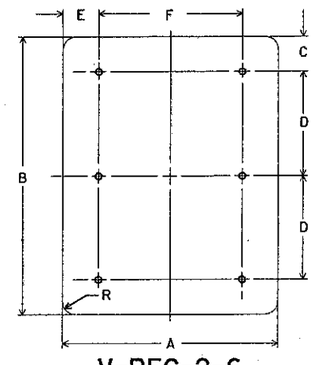
V-REC-1-2

A	B	C	D	R	THICKNESS	m^2
200	650	125	400	38	1.6	0.13
225	300	37.5	225	38	1.6	0.07
300	450	37.5	375	38	1.6	0.14
300	600	75	450	38	1.6	0.18
450	600	75	450	38	1.6	0.27



V-REC-1-3

A	B	C	D	R	THICKNESS	m^2
150	1350	225	450	38	2.0	0.20
300	900	75	375	38	1.6	0.27
300	1200	150	450	38	2.0	0.36
600	750	75	300	38	2.0	0.45
600	900	75	375	38	2.0	0.54
600	1200	225	375	38	2.5	0.72
750	900	75	375	48	2.0	0.68
750	950	75	400	38	2.0	0.68
750	1050	225	300	38	2.0	0.79
900	1050	225	300	57	2.5	0.95



V-REC-2-6

A	B	C	D	E	F	R	THICKNESS	m^2
900	1200	150	450	150	600	57	2.0	1.08
900	1350	150	525	150	600	57	2.5	1.22
900	1500	150	600	150	600	57	2.5	1.35
900	1800	225	675	150	600	57	2.5	1.62
1200	1350	150	525	225	750	75	2.5	1.62
1200	1500	150	600	225	750	75	2.5	1.80
1200	2400	300	900	225	750	75	2.5	2.88

SHAPE — H-REC-2-4 — NO. BOLTS REQUIRED

NO. SUPPORTS REQUIRED

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.
2. ALL BOLT HOLES SHALL BE 10 MILLIMETERS IN DIAMETER, AND MAY BE DRILLED OR PUNCHED TO FINISHED SIZE.
3. DIMENSIONS BETWEEN BOLT HOLES SHALL BE TO TOLERANCE OF ± 0.8 MILLIMETER.
4. FOR ADDITIONAL BLANK DETAILS SEE SIGN LAYOUT DRAWINGS.

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

DATE 07/29/94

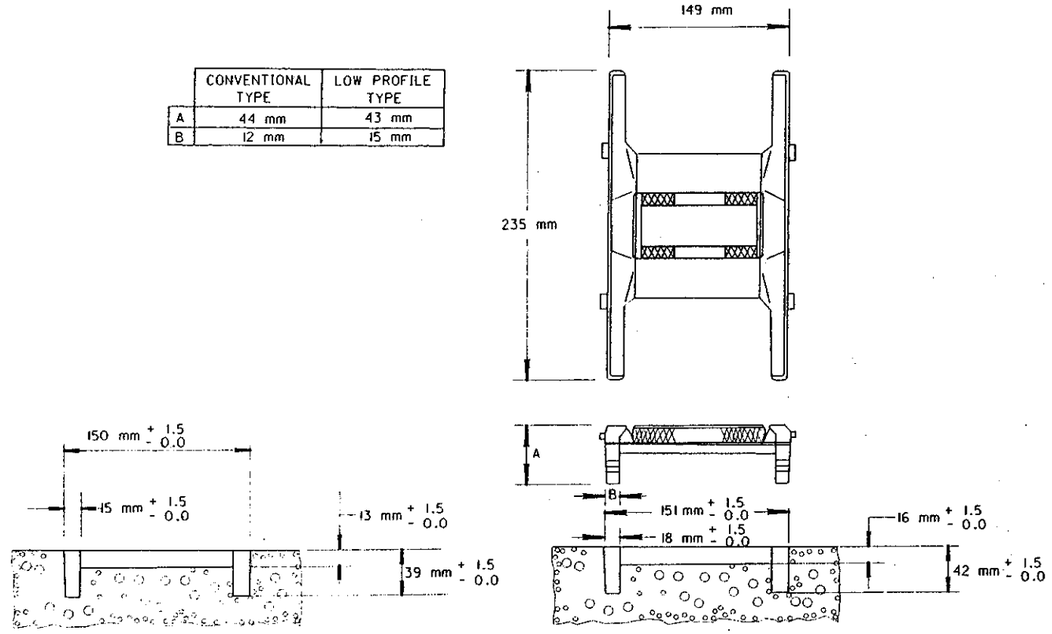
SIGN BLANK DETAILS II

STANDARD CONSTRUCTION DRAWING TC-52.20M

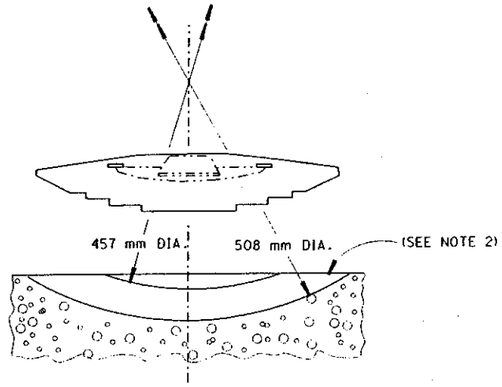
APPROVED Dayl Creager ENGR. OF DESIGN SERVICES

WCC

	CONVENTIONAL TYPE	LOW PROFILE TYPE
A	44 mm	43 mm
B	12 mm	15 mm



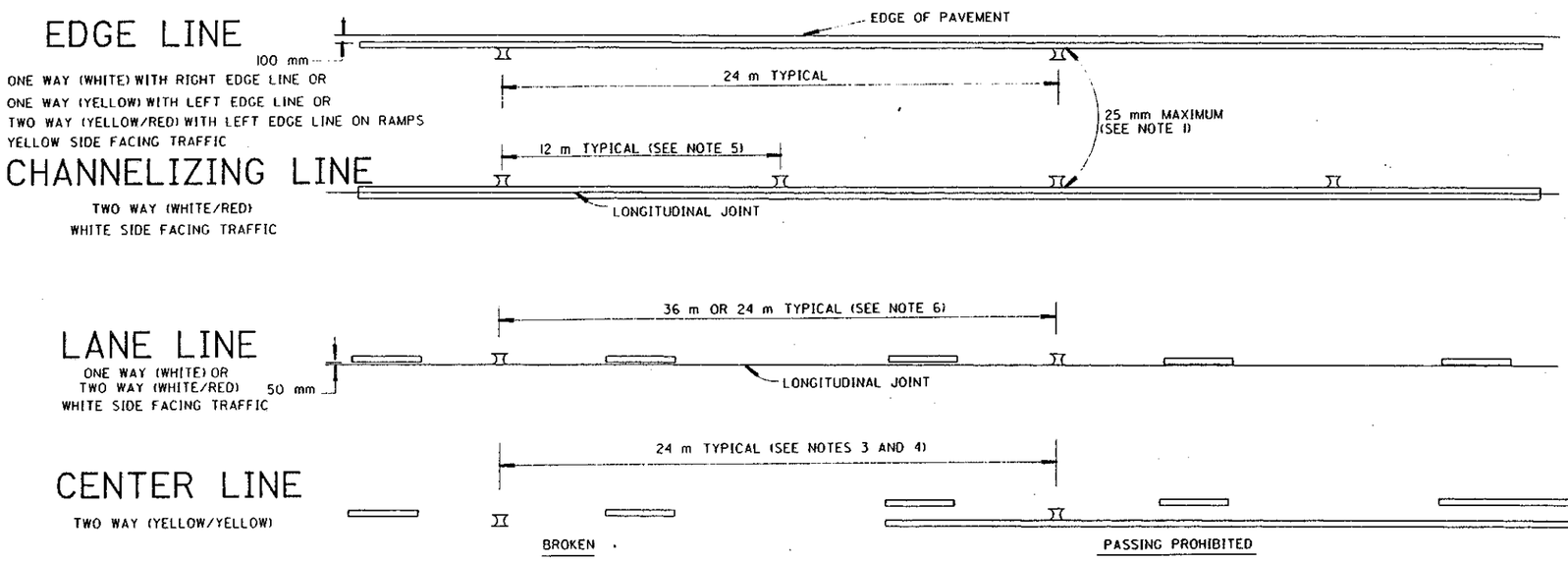
OPTIONAL FOR CONVENTIONAL TYPE



NOTES

1. CENTER LINE MARKERS SHALL BE PLACED BETWEEN THE TWO LINES. MARKERS INSTALLED ALONG AN EDGE LINE OR CHANNELIZING LINE SHALL BE PLACED SO THAT THE CASTING IS NO MORE THAN 25 mm FROM THE NEAR EDGE OF THE LINE. MARKERS INSTALLED ALONG A LANE LINE OR DASHED YELLOW CENTER LINE SHALL BE PLACED BETWEEN AND IN LINE WITH THE DASHES. MARKERS SHALL NOT BE PLACED OVER THE LINES EXCEPT WHERE THE LINES DEVIATE VISIBLY FROM THEIR CORRECT ALIGNMENT, AND THEN ONLY WITH THE APPROVAL OF THE ENGINEER.
2. TO FACILITATE THE CUTTING OF THE TWO PARALLEL SLOTS AND INTERVENING CONCAVED SURFACE SIMULTANEOUSLY, IT IS RECOMMENDED THAT AN ARBOR AND SAW BLADES ASSEMBLY BE USED. FOR ADDITIONAL DETAILS AND TOLERANCES OF THE CASTING AND ARBOR-SAW ASSEMBLY CONTACT THE CASTING MANUFACTURE.
3. FOR HORIZONTAL CURVE RADIUS OF 380 METERS OR LESS, THE SPACING OF THE CENTER LINE MARKERS SHALL BE REDUCED TO 12 m BETWEEN P.C. OR T.S. AND P.T. OR S.T.
4. FOR HORIZONTAL CURVE RADIUS OF 250 METERS OR LESS, THE SPACING OF THE CENTER LINE MARKERS MAY BE REDUCED TO 6 m BETWEEN P.C. OR T.S. AND P.T. OR S.T. WHEN USING 6m SPACING, 12 RAISED PAVEMENT MARKERS AT 12 m SPACING SHALL BE INSTALLED ON EACH END OF THE 6 m SPACING.
5. WHEN A CHANNELIZING LINE IS LESS THAN 24 m IN LENGTH, ONE RAISED PAVEMENT MARKER SHALL BE PLACED AT EACH END OF THE LINE AND ONE SHALL BE PLACED IN THE CENTER OF THE LINE.
6. RAISED PAVEMENT MARKERS ON LANE LINES ON FREEWAYS SHALL BE ONE WAY WHITE SPACED AT 36 METERS. ALL OTHER RAISED PAVEMENT MARKERS ON LANE LINES ON MULTILANE OR DIVIDED ROADWAYS SHALL BE TWO WAY RED/WHITE SPACED AT 24 METERS.

CASTING AND SAW CUT DETAILS



TYPICAL RAISED PAVEMENT MARKER PLACEMENT WITH LONGITUDINAL PAVEMENT MARKINGS

metric Units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

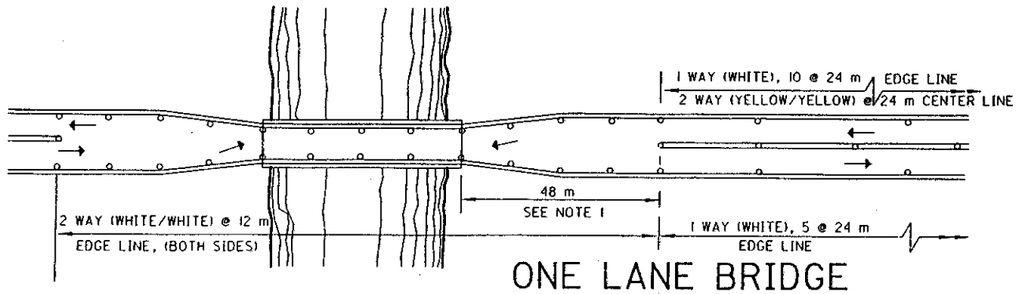
RAISED PAVEMENT MARKER INSTALLATION DETAILS

STANDARD CONSTRUCTION DRAWING TC-65.10M

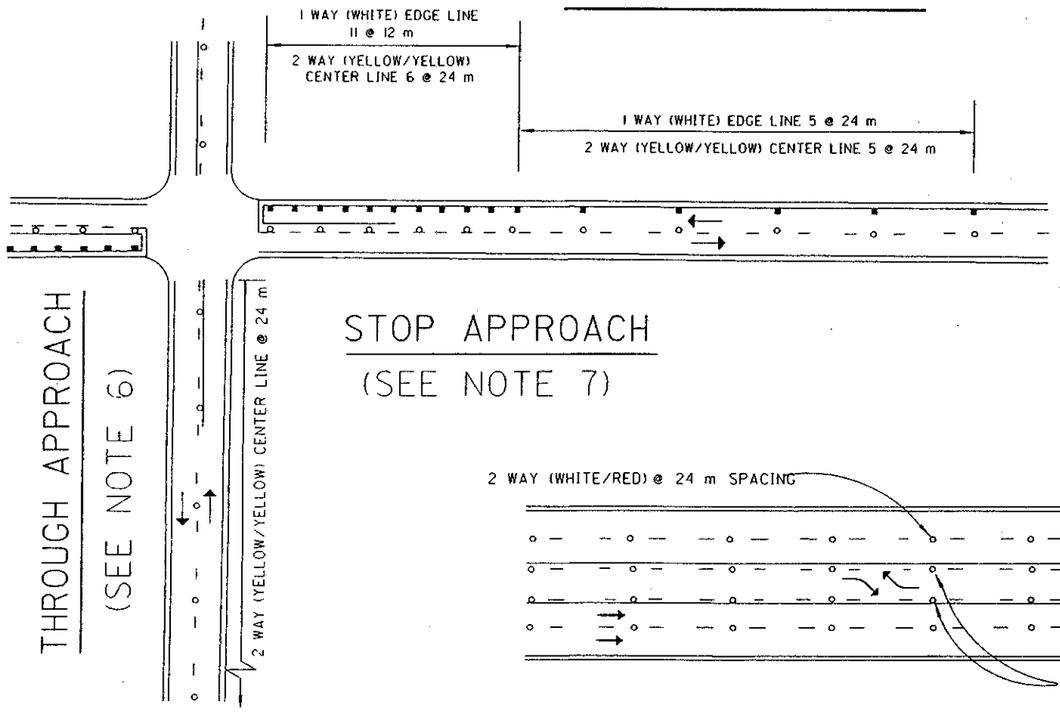
APPROVED _____ ADMINISTRATOR

DATE
11/03/93
11/01/95

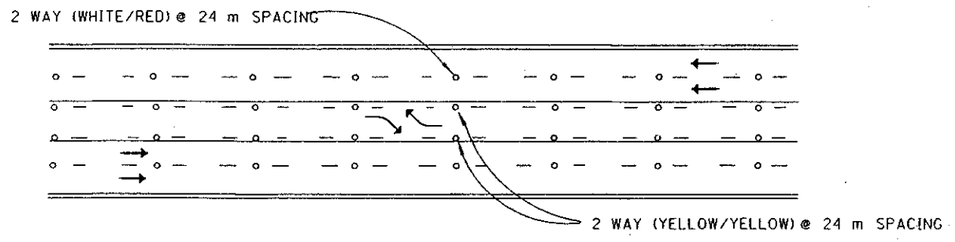
WCC



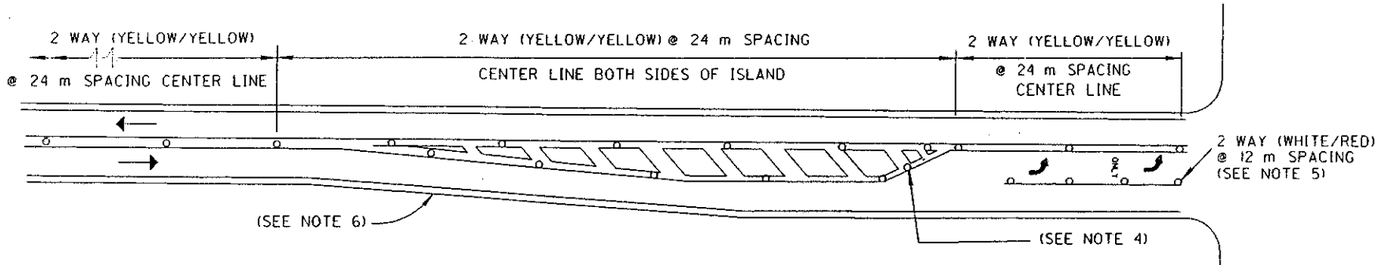
ONE LANE BRIDGE



STOP APPROACH
(SEE NOTE 7)



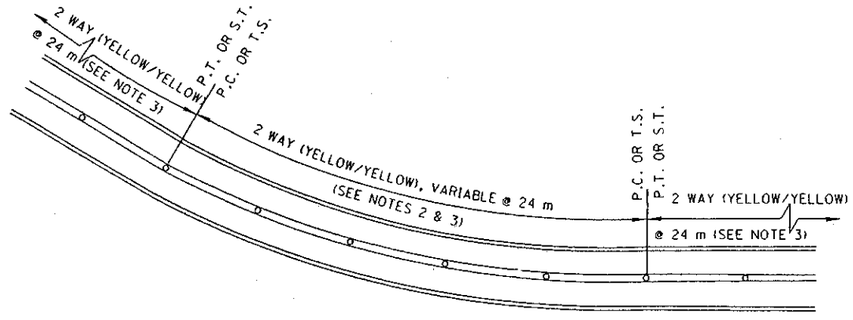
TWO WAY LEFT TURN LANE



APPROACH W/LEFT TURN LANE

LEGEND

- ■ 1 WAY REFLECTORS
- ○ 2 WAY REFLECTORS



HORIZONTAL CURVE

NOTES

1. FOR ONE LANE BRIDGES, PAINTED CENTER LINE AND CENTER LINE MARKERS SHALL BE OMITTED 48 METERS ON EACH SIDE AND ACROSS THE BRIDGE.
2. FOR HORIZONTAL CURVE RADIUS OF 380 METERS OR LESS, THE SPACING OF THE CENTER LINE MARKERS SHALL BE REDUCED TO 12 m BETWEEN P.C. OR T.S. AND P.T. OR S.T.
3. FOR HORIZONTAL CURVE RADIUS OF 250 METERS OR LESS, THE SPACING OF THE CENTER LINE MARKERS MAY BE REDUCED TO 6 m BETWEEN P.C. OR T.S. AND P.T. OR S.T. WHEN USING 6 m SPACING, 12 RAISED PAVEMENT MARKERS AT 12 m SPACING SHALL BE INSTALLED ON EACH END OF THE 6 m SPACING.
4. A MINIMUM OF 3 EQUALLY SPACED RAISED PAVEMENT MARKERS SHALL BE INSTALLED ON THE BACK TAPER.
5. WHEN A CHANNELIZING LINE IS LESS THAN 24 m LONG, ONE RAISED PAVEMENT MARKER SHALL BE PLACED AT EACH END OF THE LINE AND ONE SHALL BE PLACED IN THE CENTER OF THE LINE.
6. RAISED PAVEMENT MARKERS SHALL NOT BE PLACED ON EDGE LINES ON A THROUGH APPROACH.
7. ALL APPROACHES AT A SIGNALIZED INTERSECTION SHALL BE TREATED AS SHOWN IN THE STOP APPROACH DETAIL.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

OFFICE OF TRAFFIC ENGINEERING DIVISION OF ENGINEERING POLICY OHIO DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL	DATE 11/03/93 11/01/95
RAISED PAVEMENT MARKER DETAILS II	
STANDARD CONSTRUCTION DRAWING APPROVED ..... ADMINISTRATOR	TC-65.12M