1011

(1/18)

Resurfacing

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

FHWA REGION	STATE	FEDERAL PROJECT	
5	OHIO		

CALCULATED BY D.M. DATE 8-6-84

CHECKED BY Rm DATE 8-9-84

PLAN NO. 98

PER-204-3.15 1011(85)

PART	COUNTY	ROUTE	SECTIONS	PROJECT TERMINI BEGIN	PROJECT TERMINI END	NET LENGTH MILES	TOWNSHIP	CITY	VILLAGE
1	PER	204	(3.15-3.27)(9.39)	3.15	9.53	6.24			
2	PER	204	(9.25)(9.53-9.67)	9.25	10.06	0.61			Glenford

The Standard 19 85 Specifications of the State of Ohio, Department of Transportation, including changes and Supplemental Specifications listed in this plan and proposal shall govern these improvements.

I hereby approve these plans and declare that the making of these improvements will not require closing of the highways to traffic on Route No. NONE and that adequate detours will be provided by State forces. The closing to traffic of the highways shall not exceed [illegible] Route No. 1 and 2 and provisions for the maintenance of traffic on the detour shall be as indicated in this proposal.

Approved Date 8-21-84 — John M. Hayes, District Deputy Director of Transportation

Approved Date 8-30-84 — Walter J. Jestings, Engineer of Bridges

Approved Date ____ — Engineer of Maintenance

Approved Date 10/11/85 — Chief Engineer, Operations

Approved Date ____ — Assistant Deputy Director, Program Development

Approved Date ____ — Chief Engineer, Construction

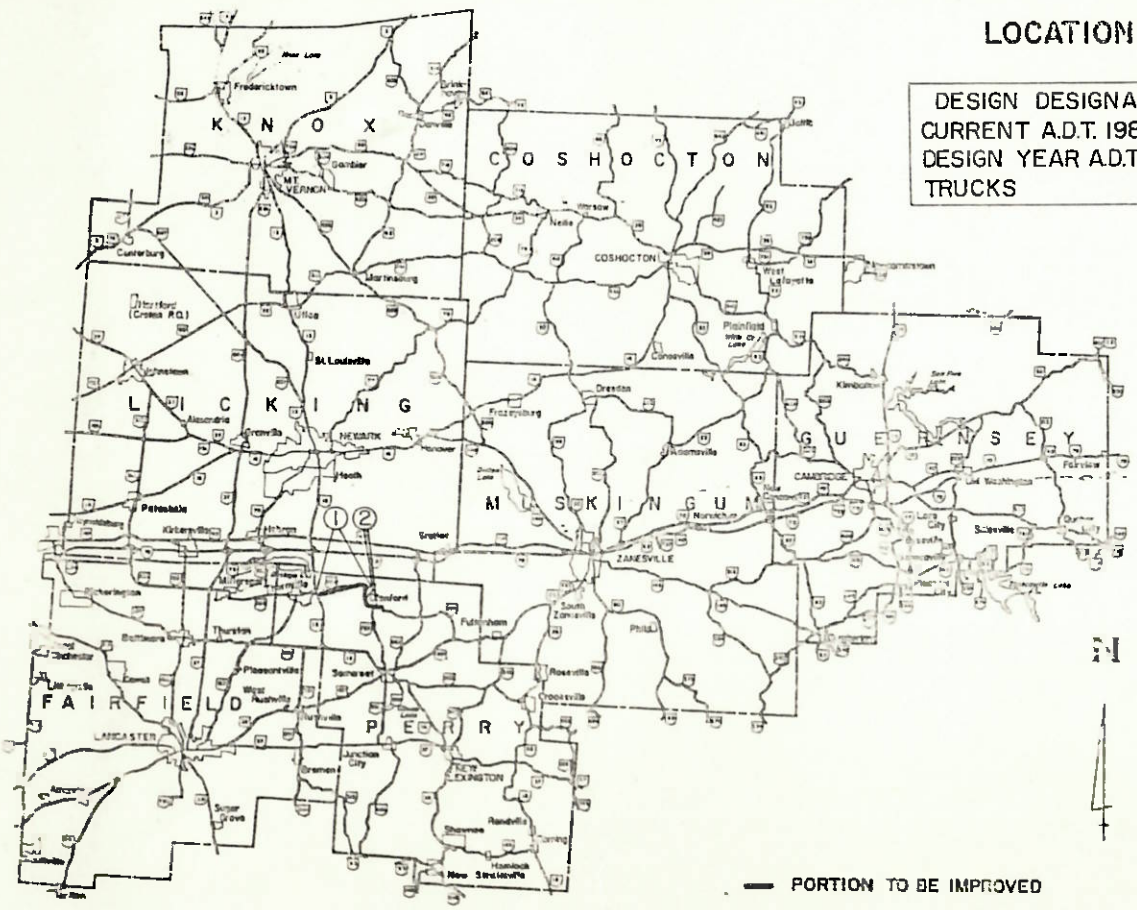
Approved Date ____ — Chief Engineer, Design

Approved Date ____ — Assistant Director, Department of Transportation

Approved Date 10-11-85 — Director, Department of Transportation

LOCATION MAP

DESIGN DESIGNATION
CURRENT A.D.T. 1984 1260
DESIGN YEAR A.D.T. 1995 1400
TRUCKS 7%



— PORTION TO BE IMPROVED

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE

STANDARD DRAWINGS		SUPPLEMENTAL SPECIFICATIONS	
BP-5	1-11-85		
TC-71.10	4-9-79	847	10-17-83
		947	10-17-83
		861	9-9-83
		961	9-9-83

10-17-85

Shoulder Restoration:

In order to provide positive drainage from the roadway surface to the shoulder break, the existing roadway shoulders shall be graded and shaped using a grader having a minimum weight of 23,000 pounds. Payment for all of the above grading and shaping work, including labor and incidentals, shall be paid for at the unit price bid for ITEM SPECIAL - GRADER RENTAL, and shall be for the actual number of grader hours worked.

All excess material remaining around guardrail and other areas after the grader work is completed, and not disposed of on the site, shall be removed and disposed of by the contractor. Payment for all of the above removal work shall be paid for at the unit price bid for ITEM SPECIAL - LOADER RENTAL, and shall be for the actual number of loader hours worked. Any other equipment, labor or incidentals required to complete this Item shall be included therein for payment.

The following estimated quantities have been included in the General Summary for the above purposes.

	PART 1	PART 2
ITEM SPECIAL - GRADER RENTAL	19 Hours	1 Hours
ITEM SPECIAL - LOADER RENTAL	9 Hours	1 Hours

PART 1
BRIDGE PER-204-0431, 0660

The existing wearing course shall be removed from the timber decks. Care shall be exercised not to damage the bolt heads or timber decks. From the time of the removal to the time of replacement there shall be a period of seven (7) work days to allow State Forces to repair the wood portion of the bridge decks. Through traffic shall be maintained at all times at each location during the removal and replacement of the wearing course and while the decks are being repaired.

The thickness of material on the decks to be removed and replaced is shown on Sheet 14.

Also, for distance of 50 ft.± at each end of the bridge there will be a wearing course removal to assure a smooth transition onto the bridge deck after the wearing course has been removed and while the bridge deck is being repaired. This transition shall begin at the timber deck of the bridge after the wearing course has been removed and feather to 0 inches 50 ft.± in both directions. After the bridge deck has been repaired, the deck and the transition area shall be tacked with 407 material before the 404 material is applied as directed by the Engineer. The actual thickness and distance of the transition area may vary due to irregularities in the existing surface. The final profile shall be smooth.

The following quantities are carried to the General Summary for the above purpose.

Br. No's.	0431	0660	
202 Wearing Course Removed	200	200	Sq. Yds.
404 Extra Asphalt Concrete for Transition Areas	7	7	Cu. Yds.

PART 2 (See sheet 12)
PAVEMENT PLANING, BITUMINOUS, WITHOUT HEATING:

The existing pavement shall have a minimum of 1½" of the asphalt concrete wearing surface removed by planing without heating. The planing shall be performed in a manner that will establish a transverse slope of 3/16 inch per foot from the centerline of the roadway to the edge of the pavement on tangent sections. The entire pavement width, as shown on sheet 12, shall be planed each day as directed by the Engineer.

PAVED SHOULDERS -

The paved shoulder shall be applied at the same time as the final course of 404 Asphalt Concrete, as directed by the Engineer.

CALCULATED BY R.D. DATE 8-6-84
CHECKED BY [illegible] DATE 8-9-84

PER-204-3.15

REFERENCE:

Detailed drawings of the existing structures may be inspected in the District 5 Office of the Ohio Department of Transportation, Newark, Ohio.

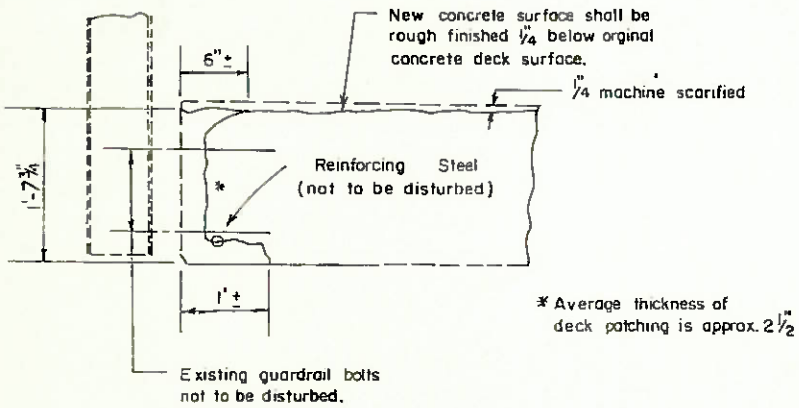
REMOVED MATERIALS:

All removed materials shall become the property of the Contractor and shall be removed by him from the job site.

EXISTING STRUCTURE VERIFICATION:

Details and dimensions shown on these plans pertaining to the existing structures have been obtained from plans of the existing structures and/or from field observations and measurements. Consequently, they are indicative of the existing structures and the proposed work but they shall be considered tentative and approximate. The Contractor is referred to CMS Sections 102.05 and 105.02.

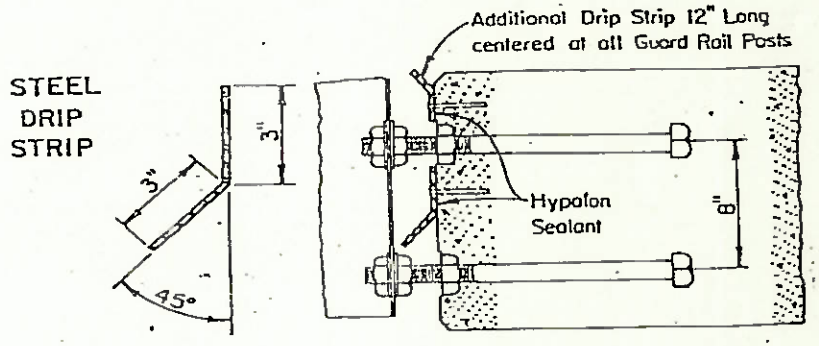
Contract bid prices shall be based upon a recognition of the uncertainties described above and upon a prebid examination of the existing structures by the Contractor. However, all project work shall be based upon actual details and dimensions which have been verified by the Contractor in the field.



DECK EDGE DETAIL (at various locations)
(BOTH SIDES)
PATCHING CONCRETE STRUCTURES
PER-204-0943
PART I

PART I
ITEM 614 - MAINTAINING TRAFFIC PER-204-0943

Through traffic shall be maintained at all times by use of half width construction. The bridge shall be repaired half width at a time while one lane traffic is maintained on the other half. A minimum lane width of 12 feet shall be maintained for the one way traffic. The Contractor shall provide traffic signal lights for controlling the alternating flow of traffic over the one lane. These signals shall conform to the requirements of the Ohio Manual of Uniform Traffic Control Devices for Streets and Highways. See Sheet No. 16 for location of signals and signs.
For additional notes see sheets 6 & 15.



PART I
DRIP STRIP - PER-204-0943

A bent drip strip shall be installed along the edges of the deck as shown. The drip strips shall be embedded in a 3/16" x 3" layer of hypalon sealant. The strips shall be fastened at 1'-6" c/c maximum with 1 1/2" x 5/32" x 1/4" (Length x Shank Diameter x Head Diameter) flat head drive pins and washers. Pins and washers shall be stainless steel or galvanized, or no. 10 galvanized screws and expansion anchors, subject to the approval of the Engineer. The strips shall be placed the full length of the deck, ending at the face of the abutment wingwall. Where splices are required the individual pieces shall be butted together, not lapped. Steel for galvanized strips shall be 6" x 0.105" and shall meet the requirements of ASTM A568. Galvanizing shall be in accordance with 711.02. Stainless Steel shall be 20 gauge ASTM A167, Type 304, mill finish. Payment shall be at the contract price bid for item Special Sq. FL steel drip strip, which shall include all materials, labor, tools, and incidentals necessary to complete item.

Sealant shall meet Government Specification TT-S-0023C, Type II.

PREPARED BY D.M. DATE 8-6-84

REVIEWED - Rm 8-9-84

614 WORK ZONE PAVEMENT MARKINGS

PER-204-3.15

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 MAINTAINED IN GOOD CONDITION TO PROVIDE DAY AND NIGHT VISIBILITY. THE MARKINGS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER TO MAINTAIN REQUIRED VISUAL EFFECTIVENESS AND NIGHT VISIBILITY AT NO ADDITIONAL COST TO THE STATE.

THE CONTRACTOR SHALL, IN ADVANCE OF ANY SECTION OF ROADWAY LACKING OMUTCD FULL PATTERN STANDARD DIMENSION EDGE LINE OR CENTER LINE MARKINGS, ERECT A "NO EDGE LINES" (CW-167) SIGN OR "UNMARKED NO PASSING ZONES" (CW-168) SIGN OR BOTH AS MAY BE APPROPRIATE. THESE SIGNS SHALL BE IN PLACE PRIOR TO EXPOSING THE ROADWAY TO TRAFFIC. THESE SIGNS SHALL BE REPEATED EVERY 1 TO 2 MILES AND AT OTHER LOCATIONS AS NECESSARY. THESE SIGNS SHALL BE REMOVED WHEN THEY NO LONGER APPLY. THE COST FOR FURNISHING AND ERECTING AND SUBSEQUENTLY REMOVING THESE SIGNS SHALL BE INCLUDED IN 614 MAINTAINING TRAFFIC, UNLESS SPECIFICALLY ITEMIZED.

TEMPORARY PAVEMENT MARKING MATERIALS

UNLESS OTHERWISE INDICATED ON THE PLANS, TEMPORARY PAVEMENT MARKINGS MAY BE EITHER 521.02 PAINT OR 947.03 TYPE B OR C PREFORMED MATERIAL. *

PAINT

PAINTED MARKINGS SHALL BE IN ACCORDANCE WITH 621 EXCEPT THAT THE INCREASE OF 25 PERCENT IN THE APPLICATION RATE FOR NEW BITUMINOUS PAVEMENT AND PARAGRAPH 621.14 SHALL NOT APPLY.

TYPE B AND TYPE C PREFORMED MATERIAL

PREFORMED MATERIAL SHALL COMPLY WITH 947.03 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 947.03 PREFORMED MATERIAL SHALL BE REMOVED PRIOR TO PLACEMENT OF 621 OR 847 SURFACE COURSE MARKINGS AT THAT LOCATION. PREFORMED MATERIAL SHALL BE APPLIED IN ACCORDANCE WITH 847 EXCEPT AS MODIFIED HEREIN.

PLACEMENT

TEMPORARY MARKINGS SHALL BE COMPLETE AND IN PLACE ON ALL PAVEMENT PRIOR TO EXPOSING IT TO TRAFFIC. WHEN TEMPORARY MARKINGS CONFLICT WITH THE TRAFFIC PATTERN, THEY SHALL BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH 621.134.

TEMPORARY MARKING CLASSES

CLASS I MARKINGS

CLASS I MARKINGS SHALL BE APPLIED TO THE FULL DIMENSIONS AS DEFINED IN 621 WITH THE FOLLOWING ADDITIONS OR EXCEPTIONS:

1) LANE LINES SHALL BE 4-INCHES IN WIDTH.
2) TRANSVERSE LINES SHALL BE 8-INCHES IN WIDTH.
3) STOP LINES SHALL BE 12-INCHES IN WIDTH.
4) CROSS WALK LINES SHALL BE 8-INCHES IN WIDTH.

CLASS II MARKINGS

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

CENTER LINES SHALL CONSIST OF SINGLE, YELLOW 4-INCH WIDE BY A MINIMUM OF 48-INCH LONG DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

LANE LINES SHALL CONSIST OF WHITE 4-INCH WIDE BY A MINIMUM OF 48-INCH LONG DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

GORE MARKINGS SHALL BE TWO CONTINUOUS, WHITE 4-INCH LINES PLACED AT THE THEORETICAL GORE OF AN EXIT RAMP OR DIVERGING ROADWAYS.

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 1.6 GALLONS PER MILE FOR LANE LINE AND CENTER LINE AND 16 GALLONS PER MILE FOR GORE MARKINGS.

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 621.134. 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.

INTERIM MARKINGS

WITHIN 21 CALENDAR DAYS AFTER OPENING ANY LENGTH OF PAVEMENT TO TRAFFIC, THE 621 OR 847 PAVEMENT MARKINGS CALLED FOR IN THE PLANS OR EQUIVALENT 614 CLASS I, PAINT MARKINGS SHALL BE APPLIED. THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, AND MATERIAL NECESSARY TO PLACE AND MAINTAIN 614 CLASS I PAINT MARKINGS AS PART OF THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC.

FOR EACH CALENDAR DAY BEYOND 21 DAYS THAT THIS WORK SHALL REMAIN UNCOMPLETED, THE PROVISIONS OF 108.07 WILL BE INVOKED. EXCEPT THAT BETWEEN NOVEMBER 15 AND APRIL 15 WEATHER CONDITIONS SHALL NOT BE AN ACCEPTABLE REASON FOR EXTENSION.

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, IN ACCORDANCE WITH 621.15.

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 THE MARKINGS.

ITEM	UNIT	DESCRIPTION
~~614~~	~~MILES~~	~~TEMPORARY LANE LINES, CLASS ____, ____ *~~
614	MILES	TEMPORARY CENTER LINES, CLASS II, *
~~614~~	~~LIN. FT.~~	~~TEMPORARY CHANNELIZING LINES, CLASS I, ____ *~~
~~614~~	~~MILES~~	~~TEMPORARY EDGE LINES, CLASS I, ____ *~~
~~614~~	~~LIN. FT.~~	~~TEMPORARY GORE MARKINGS, CLASS II, ____ *~~
~~614~~	~~LIN. FT.~~	~~TEMPORARY STOP LINES, CLASS I, ____ *~~
~~614~~	~~LIN. FT.~~	~~TEMPORARY CROSSWALK LINES, CLASS I, ____ *~~
~~614~~	~~EACH~~	~~TEMPORARY LANE ARROWS, CLASS I, ____ *~~
~~614~~	~~EACH~~	~~TEMPORARY RAILROAD SYMBOL MARKINGS, CLASS I, ____ *~~
~~614~~	~~EACH~~	~~TEMPORARY LOAD "POWER" ON PAVEMENT, 72-INCH, CLASS I, ____ *~~
~~614~~	~~LIN. FT.~~	~~TEMPORARY TRANSVERSE LINES, CLASS I, ____ *~~
~~614~~	~~LIN. FT.~~	~~TEMPORARY DOTTED LINES, CLASS I, ____ *~~

*621 PAINT, 947.03 TYPE B OR 947.03 TYPE C

fh4

+ where pavement markings are not liable to be tracked, either conventional or fast dry paint may be used for 621.02.

INITIAL PAVEMENT MARKINGS FOR RESURFACED SECTIONS

GENERAL NOTES

In addition to the requirements of 621 and 847 the following shall apply:

621 Materials

Glass beads shall be kept dry during storage and prior to use.

621 SPECIAL EQUIPMENT

The Contractor's striper shall be equipped with an odometer graduated to 1/100 of a mile. The Engineer will determine the degree of accuracy of the Contractor's odometer and establish an adjustment factor as may be required to accurately determine the pay item quantities. The Engineer will periodically check the odometer's operation to assure maintenance of accurate measurements.

Failure of the odometer to function properly shall be cause to stop the work until the odometer is made to function properly. On short projects the Engineer may approve alternate methods to accurately measure the length of the various types of markings applied. If measurement of the work has to be done by the Department, the cost of the Department labor and equipment plus 10 percent shall be deducted from payment due the Contractor for the work. When measuring lane, edge and center line marking the odometer shall be started at the first marked line and remain in operation, until the end of the section being marked, where it shall be shut off and the reading of the odometer recorded.

Electrical foot counters shall be provided and installed in the striper. The counters shall individually tabulate the amount of footage applied by each striping gun on the center line carriage and lane line carriage, whether solid or dashed. The counters shall be 6 digit type with a reset feature.

The pavement marking equipment shall be equipped with a pressure regulated air jet which shall remove all debris from the pavement in advance of the applicator gun. The air jet shall operate when marking material is being applied and shall be synchronized with marking material application or remain "on" at all times.

The Contractor shall use an accurate dashing mechanism, capable of being easily adjusted

Provision for the above special equipment by the Contractor shall be incidental to the application.

847 LAYOUT AND PREMARKING

In addition to the requirements of 847 premarking for auxiliary markings shall be located from schematic forms provided at the pre-construction conference.

621 MATERIAL QUANTITY MEASUREMENT

The quantity of marking material or glass beads per unit of measurement will be computed by the Engineer at the end of each day's work. A day's applied mileage of less than 2 miles may be included in the next day's applied markings for the purpose of computing marking material and bead application rates.

The Contractor shall provide a calibrated measuring device acceptable to the Engineer for measuring material in the striper tanks.

The quantity of marking material used shall be determined by measuring the marking material in the tanks before and after marking material is applied. The Contractor shall cooperate with the Engineer in providing measurements whenever requested. The marking material application rate shall be determined by dividing the total gallons used by the appropriate marking length as determined from the foot counter as described within the Special Equipment Section of these notes. Any determination of pay deduction resulting from shortages in marking quantities shall be based on the measurements obtained by this method. The amount of glass beads applied will be ascertained by the Engineer by observation and from information supplied by the Contractor as to quantity used.

847 AUXILIARY PAVEMENT MARKING

For this project auxiliary markings shall be defined as: stop lines, crosswalk lines, transverse lines, railroad symbol markings, lane arrows, word on pavement and dotted lines except when used to extend edge lines.

STANDARD CONSTRUCTION DRAWING TC 71.10

The dimensions shown on Standard Construction Drawing TC 71.10 are nominal. Letters, numerals and symbols conforming to the requirements of section 38-17 of the 1978 National Manual On Uniform Traffic Control Devices may also be used. Any of the following standards for letters, numeral or symbol dimensioning may be used: A.) Standard dimensions shown on this detail or B.) Standard dimensions (either metric or their hard converted English unit equivalents) in accord with the 1977 Metric Edition Standard Alphabets For Highway Signs and Pavement Marking with Errata or C.) Standard dimensions shown in figures 3-17, 3-18, 7-2, 7-3, 8-2 or 9-6 of the 1978 National Manual On Uniform Traffic Contol Devices.

CALCULATED BY D M DATE 8-6-84
CHECKED BY [illegible] DATE 8-9-84

PER-204-3.15 (6/18)

TRAFFIC CONTROL FOR LONG LINE PAVEMENT MARKING OPERATIONS

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 device requirements are not achieving the necessary safety and marking protection, additional traffic control devices shall be implemented in accordance with 104.02.

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.

LEAD VEHICLE

A lead vehicle is to be used to warn opposing traffic of the approach of centerline 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 should 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 400 feet to 600 feet.

A lead vehicle shall be equipped and operated with the following traffic control devices:

1. A 360° rotating or flashing amber beacon clearly visible a minimum of ½ mile.
2. Lighted head lights and tail lights, and
3. A KEEP RIGHT sign (OC-31R-48) and WET PAINT sign (OC-52-48) mounted a minimum of 5' 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 (Item 621.04) with the following traffic control devices:

1. A 360° rotating or flashing amber beacon clearly visible a minimum of ½ mile.
2. Lighted head lights and tail lights, and
3. A flashing arrow panel 54" x 30" (Type B) visible to the rear mounted a minimum of 7' 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 a minimum of ½ mile mounted a minimum of 7' 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 54" x 30" (Type B) displayed to the rear mounted a minimum of 7' above the road surface measured to the bottom of the panel and used only on multilane highways, or
   (b) A DO NOT PASS sign (R-33A-48) visible to the rear during centerline marking on two lane, two way roadways and mounted a minimum of 7' 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 in use carriage side of the vehicle. OC-50-24 and OC-51-48 signs shall be mounted a minimum of 1' above the road surface.
4. A KEEP RIGHT sign (OC-31R-48) and WET PAINT sign (OC-52-48) mounted a minimim of 5' above the road surface measured to the bottom of the sign and 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 16" square and fastened to staffs of sufficient length so as to permit the flags 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. An additional trail vehicle shall be used when applying lane lines of fast dry material (i.e. ≤ 2 min. dry) to protect the wet line between the line marking machine and the track free end of the wet line. All pavement marking application, protection and support equipment following the line marking machine shall be equipped with the traffic control of a trail vehicle.

Trail vehicles shall be equipped and operated with the following traffic control equipment:

1. A 360° rotating or flashing amber beacon clearly visible a minimum of ½ mile.
2. (a) A flashing arrow panel 54" x 30" (Type B) visible to the rear mounted at a minimum height of 7' 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 centerline marking on two lane, two way roadways, and mounted a minimum of 7' 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. When used, OC-50-24 shall be mounted a minimum of 4'6" above the road surface and OC-51-48 shall be mounted a minimum of 5'0" above the road surface, both measured to the bottom of the sign.

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 two minutes. These devices shall not be removed until the line has dried to a track free condition. Retrieval equipment shall have traffic control of a trail vehicle. Cones shall have a minimum height of 18". They shall be spaced to protect the wet line, normally between 120' and 200'. In areas of traffic congestion, on curves and at other locations where tracking of the wet line is expected, spacings as close as 20' 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 one mile.

DATE
9-1-82
12-02

CALCULATED BY D.M DATE 8-6-84
CHECKED BY [illegible] DATE 8-9-84

PER-204-3.15

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 roadway. 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 roadway 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 travelling 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 are considered to be stationary operations and traffic control shall be in accordance with plan details shown on Sheet(s) 16, 17 & 18 and Part 7, Ohio Manual of Uniform Traffic Control Devices (OMUTCD).

LAYOUT AND PREMARKING

The vehicle used in layout and premarking (Item 621.051) shall be equipped and operated with the following equipment:

1. A 360° rotating or flashing amber beacon clearly visible a minimum of ½ mile.
2. Lighted head lights and tail lights, and
3. A KEEP RIGHT sign (OC-31R-48) mounted a minimum of 5' 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 no sufficient natural light to render discernible persons, vehicles, and substantial objects on the highway at a distance of one thousand feet.

During nighttime conditions the following additional 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, those types of traffic control equipment which shall be furnished when directed by the Engineer are indicated.

EQUIPMENT	PAVEMENT MARKING LINE TYPE [1]					
	CENTER LINE		EDGE LINE		LANE LINE [2] CHANNELIZING LINE	
	>2 MIN. DRY	≤2 MIN. DRY	>2 MIN. DRY	≤2 MIN. DRY	>2 MIN. DRY	≤2 MIN. DRY
LEAD VEHICLE						
POWER BROOM EQUIPMENT						
LINE MARKING MACHINE						
TRAIL VEHICLE						
TRAIL VEHICLE (ADDITIONAL)						
TRAIL VEHICLE (SIGN & CONE RETRIEVAL)						

1. For equipment requirements for auxiliary operations see plan sheet(s)____ and Part 7, OMUTCD.
2. Includes both dashed and solid lane lines.

Required Equipment

Equipment Required When Directed by the Engineer

Not Required

TRAFFIC CONTROL FOR LONG LINE PAVEMENT MARKING OPERATIONS

DATE 9-10-[illegible] 12-02

Mod. 6-84

FED.RD DIV.	STATE	PROJECT	
5	OHIO		

8/18

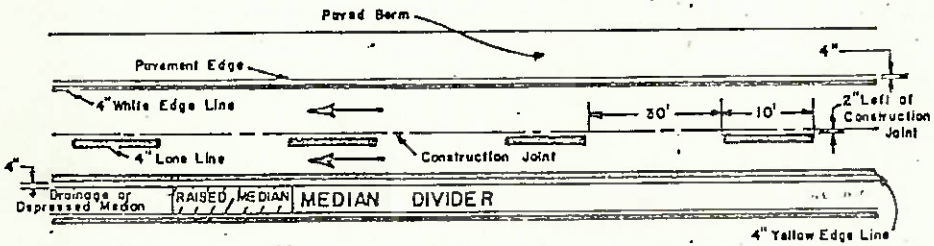
PAVEMENT MARKING TYPICAL DETAILS

CALCULATED BY D.M. DATE 8-6-84
CHECKED BY [illegible] DATE 8-9-84

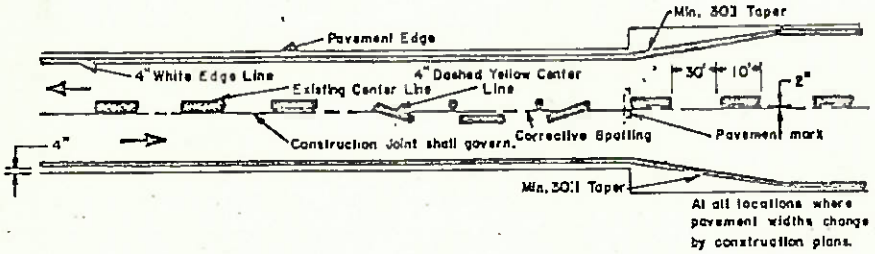
PLAN NO. 98

PER-204-3.15

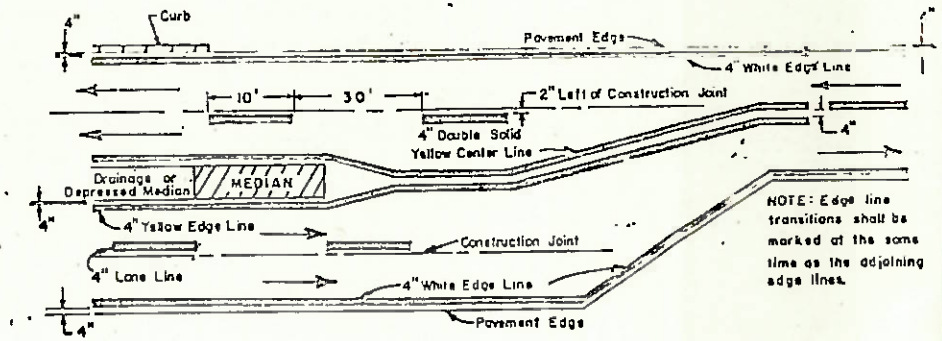
FREEWAY & EXPRESSWAY MAINLINE MARKINGS



TWO LANE MARKINGS



MULTILANE DIVIDED & UNDIVIDED HIGHWAY MARKINGS



NOTES:

1. THE DISTANCE FROM THE PAVEMENT EDGE TO THE NEARSIDE EDGE OF THE EDGELINE MAY BE INCREASED WITH THE APPROVAL OF THE ENGINEER IN ORDER TO MAINTAIN UNIFORM LANE WIDTH.

2. SEE TC 72.20 FOR PAVEMENT ENTRANCE AND EXIT RAMP TERMINALS.

DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING TYPICAL DETAILS

JOL CDR.

12/81

CALCULATED BY RM. DATE 8-3-84
CHECKED BY PH. DATE 8-3-84

PAVEMENT MARKING SUB-SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

9/18

PER-204-3.15

PLAN Nº 98

847 AUXILIARY MARKING (947.03 TYPE A) INLAID

CO.	ROUTE	S.L.M. FROM	S.L.M. TO	24" TRANSVERSE LINES WHITE LIN. FT.	24" TRANSVERSE LINES YELLOW LIN. FT.	STOP LINE 24" LIN. FT.	12" CROSSWALK LINES WHITE LIN. FT.	WORD ON PAVEMENT ONLY 96" EACH	WORD ON PAVEMENT SCHOOL 96" EACH	LANE ARROWS TURN LEFT EACH	LANE ARROWS TURN RIGHT EACH	LANE ARROWS THRU EACH	LANE ARROWS COMB. EACH	RAILROAD SYMBOL ON PAVEMENT EACH	DOTTED LINES WHITE LIN. FT.	DOTTED LINES YELLOW LIN. FT.	8" CHANNEL LINE LIN. FT.	REMARKS * and Parallel
PER	Co. Rd. 73 (A)																	
	(Blackbird La.)	Lt. Side				8												Place at Stop Sign
PER	Co. Rd. 73 (B)																	
	(Blackbird La.)	Lt. Side				7												Place at Stop Sign
PER	Co. Rd. 72																	
	(Lonesome Rd.)	Rt. Side				35												Place 17' from S.R. 204 ℄ *
PER	Twp. Rd. 37	Lt. Side				14												Place 17' from S.R. 204 ℄ *
PER	Twp. Rd. 37	Rt. Side				11												Place 20' from S.R. 204 ℄ *
PER	Twp. Rd. 21	Rt. Side				15												Place 16' from S.R. 204 ℄ *
PER	Co. Rd. 10																	
	(Yost Rd.)	Lt. Side				19												Place 20' from S.R. 204 ℄ *
PER	Co. Rd. 64 (A)																	
	(Hopewell Indian)	Lt. Side				8												Place at Stop Sign
PER	Co. Rd. 64 (B)																	
	(Hopewell Indian)	Lt. Side				17												Place 18' from S.R. 204 ℄ *
PER	Twp. Rd. 22	Rt. Side				37												Place 12' from S.R. 204 ℄ *
PER	S.R. 757	Rt. Side				16												Place 25' from S.R. 204 ℄ *
TOTAL	PART 1					187												
PER	Main Street	Rt. Side				20												Place 28' from S.R. 204 ℄ *
PER	Co. Rd. 32																	
	(Geo. Ice Rd.)	Lt. Side				19												Place 23' from S.R. 204 ℄ *
PER	Main Street	Rt. Side				23												Place 21' from S.R. 204 ℄ *
~~PER~~	~~S.R. 204~~	~~9.63~~																~~See Request Form~~
PER	S.R. 204	9.86					64		2									See Request Form
PER	Twp. Rd. 411 (A)	Lt. Side				9												See Request Form
PER	Twp. Rd. 411 (B)	Lt. Side				43												See Request Form
PER	Alley	Lt. Side				8												Place 20' from S.R. 204 ℄ *
TOTAL	PART 2	(Carried to	sheet 15)			122	64		2									

CALCULATED BY R.M. DATE 8-3-84
CHECKED BY D.H. DATE 8-3-84

PAVEMENT MARKING SUB-SUMMARY

PER-204-3.15

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

10/18

PLAN Nº 98

CO.	ROUTE	FROM S.L.M.	FROM	TO S.L.M.	TO	621 QUANTITIES CENTER LINES MILES TOTAL	DASHED	SOLID	PARTICIPATION	621 CENTER LINE REMARKS
PER	SR 204	3.15	SR 13	9.25	Glenford Corp.	6.10	1.521	10.374	Part 1	
PER	SR 204	9.39	Glenford Corp.	9.53	Glenford Corp.	0.14	—	0.280	Part 1	
PER	SR 204	9.25	Glenford Corp.	9.39	Glenford Corp.	0.14	—	0.280	Part 2	
PER	SR 204	9.53	Glenford Corp.	10.06	Glenford Corp.	0.47	0.124	0.936	Part 2	Equation 9.61 B = 9.67 A
CENTER LINE TOTAL						6.85	1.745	11.870		

CO.	ROUTE	FROM S.L.M.	FROM	TO S.L.M.	TO	621 QUANTITIES 4" LANE LINES MILES TOTAL	DASHED	SOLID	PARTICIPATION	621 LANE LINE REMARKS
LANE LINE TOTAL										

CO.	ROUTE	FROM S.L.M.	FROM	TO S.L.M.	TO	WHITE EDGE LINE QUANTITIES TOTAL MILES	HIGHWAY MILES	RAMP MILES	PART.	YELLOW EDGE LINE QUANTITIES TOTAL MILES	HIGHWAY MILES	RAMP MILES	PART.	621 EDGE LINE REMARKS
PER	SR 204	3.15	SR 13	9.25	Glenford Corp.	12.20	12.20		Part 1					
PER	SR 204	9.39	Glenford Corp.	9.53	Glenford Corp.	0.28	0.28		Part 1					
PER	SR 204	9.25	Glenford Corp.	9.39	Glenford Corp.	0.28	0.28		Part 2					
PER	SR 204	9.53	Glenford Corp.	10.06	Glenford Corp.	0.94	0.94		Part 2					Equation 9.61 B = 9.67 A
EDGE LINE TOTAL						13.70	13.70							

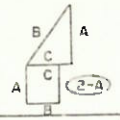
DEPARTMENT OF TRANSPORTATION
M& R 709 REV. 9-1-83

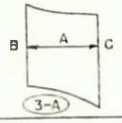
EXTRA AREA AND DEDUCTIONS

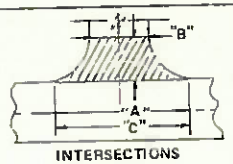
PLAN NO. 98 (11/18)

PER-204-3.15

CALCULATED BY D.M. DATE 6-8-86
CHECKED BY [illegible] DATE 8-[illegible]-86







INTERSECTIONS

PART	ROUTE	LOG POINT TO LOG POINT	SIDE	DESCRIPTION	LENGTH IN FEET A	LENGTH IN FEET B	LENGTH IN FEET C	AREA IN SQ. YDS.	PROPOSED ITEMS 407 TACK COAT @ 0.10 gal./s.y. Gals.	407 COVER AGGR. @ ..... lbs./s.y. Tons	ASPHALT CONCRETE THICK INCHES	CU. YDS. ITEM 404	CU. YDS. ITEM	THICK INCHES	408 Bituminous Prime Coat @ 0.40 Gals/S.Y. Gals.	Existing Surface P=Paved G=Gravel
1	S.R.204		℄	Radius S.R.13	50			119	12		1½	5				P
			Lt.	Blackbird Lane C.R.73(A) 1-A	24	60	60	80	8		1½	3				P
			Lt.	Blackbird Lane C.R.73(B) 2-A	90 15	102 14	34 14	204			2	11			82	G
			Rt.	C.R.72	56	18	151	526			2	29			210	G
			Lt.	T.R.37	25	16	52	94			2	5			38	G
			Rt.	T.R.37	30	16	45	102			2	6			41	G
			Rt.	T.R.21	22	19	50	84			2	5			34	G
			Lt.	Yost Rd C.R.10	46	19	75	240	24		1½	10				P
			Lt.	Hopewell Indian C.R.64 (A) 1-A	36	130	130	260			2	14			104	G
				Hopewell Indian C.R.64 (B)	22	17	51	83			2	5			33	G
			Rt.	T.R.22 1-A	49	120	116	321			2	18			128	G
			Rt.	S.R.757	63	20	98	413	41		1½	17				P
				PART 1 Total's (carried to sheet 12)				2526	85			128			670	
2	S.R.204		Rt.	Main St.	63	19	62	354	35		1½	15				P
			Lt.	Geo. Ice Rd. C.R. 32	36	21	68	178	18		1½	7				P
			Rt.	Main St.	40	24	100	276	28		1½	11				P
			Lt.	T.R. 411 (A) 1-A	20	113	102	123			2	7			49	G
			Lt.	T.R. 411 (B) 3-A	41	57	72	224	29		1½	12				P
			Lt.	Alley	20	14	32	73			2	4			29	G
				PART 2 Totals (carried to sheet 12)				1298	110			56			78	

Project History Entry

Route

District	Unknown
Jurisdiction	S
County	PER
System	SR
Route	204
Suffix	R
Station	UP
NLFID	

Existing Pavement

Layer	Thickness	Type	Description
1	in	404	
2	in		
3	in		
4	in		
5	in		

Pavement Thickness Removed: in

Added Pavement

Layer	Thickness	Type	Description
1	10 in	406	AC
2	1 in	404	AC
3	in		
4	in		
5	in		
6	in		

Structural Number Added:

Project

Blog	3.15
Elog	10.06
Year	1985
Number	1011
Project ID	
Activity Code	50
Modified Code	

Miscellaneous

Surface Course Aggregate Type: | Grinding:
Flexible Repair Quantity: | Pavement Special:
Rigid Repair Quantity: | Date Entered: 7/7/2004 | Date Modified:
Notes: | Date Open: | Entry No.: 26006
Pavement Cost: | Estimated Cost: | Total Cost:

Extra Parameters

Parameter	Value
PRIORITY	
APP BLOG	
APP ELOG	
APP YEAR	
LANES	
New Activity Code	
New Activity Priority	

Record Locator

Searching Criteria: District: Non-specified | Station: Non-specified | County: Non-specified | Year: Non-specified | Route: Non-specified
Find First | Next | Previous

Locate For: Entry No. | Goto
Project History Plot | Print

Record 21364 of 21364 | Restore | Update | Delete | Close

Project History Entry

Route

District	Unknown
Jurisdiction	
County	
System	
Route	
Suffix	
Station	
NLFID	

Existing Pavement

Layer	Thickness	Type	Description
1	in		
2	in		
3	in		
4	in		
5	in		

Pavement Thickness Removed: in

Added Pavement

Layer	Thickness	Type	Description
1	in		
2	in		
3	in		
4	in		
5	in		
6	in		

Structural Number Added:

Project

Blog	
Elog	
Year	
Number	
Project ID	
Activity Code	
Modified Code	

Miscellaneous

Surface Course Aggregate Type: | Grinding:
Flexible Repair Quantity: | Pavement Special:
Rigid Repair Quantity: | Date Entered: 7/7/2004 | Date Modified:
Notes: | Date Open: | Entry No.: 26006
Pavement Cost: | Estimated Cost: | Total Cost:

Extra Parameters

Parameter	Value
PRIORITY	
APP BLOG	
APP ELOG	
APP YEAR	
LANES	
New Activity Code	
New Activity Priority	

Record Locator

Searching Criteria: District: Non-specified | Station: Non-specified | County: Non-specified | Year: Non-specified | Route: Non-specified
Find First | Next | Previous

Locate For: Entry No. | Goto
Project History Plot | Print

Record 21364 | Restore | Update | Delete | Close

DEPARTMENT OF TRANSPORTATION
M& R 707 REV. 9-1-83

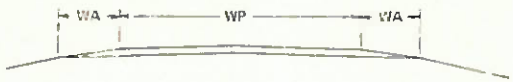
CALCULATED BY D.M. DATE 8-6-84
CHECKED BY R. DATE 8-9-84

ASPHALT CONCRETE

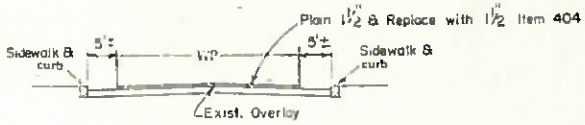
PER-204-3.15

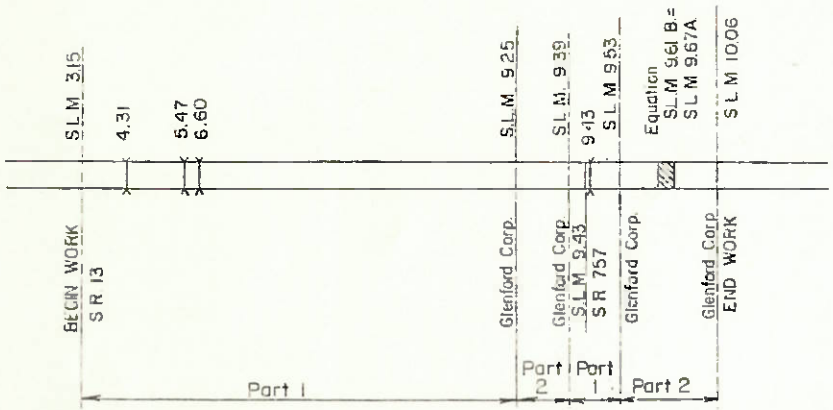
PLAN NO. 98

TYPICAL 1



TYPICAL 2





BRIDGE TREATMENT

PER-204-0431 45.25' x 25.5' (see sheets 2 and 14.)
PER-204-0547 14.16' x 33' (see sheet 14.)
PER-204-0660 20' x 25.7' (see sheets 2 and 14.)
PER-204-0943 131.6' x 36' (see sheets 3 and 14.)

(1) Field Measured (2) Bridge Length x Pav't Width

PAVEMENT DATA

PART	ROUTE	LOG POINT TO LOG POINT	LENGTH MILES	LENGTH LIN. FT.	WP FEET	TYPICAL	EXISTING TYPE PAVEMENT	PAVEMENT AREA SQ. YDS.	PROPOSED PAVEMENT 407 TACK COAT @ 0.10 gals/s.y. GALS.	407 COVER AGGR. @ 1 lb/s.s.y. TONS	ASPHALT CONCRETE ITEM 403 THICK INCHES M/N	ITEM 403 CU. YDS.	ITEM 404 THICK INCHES	ITEM 404 CU. YDS.	ITEM ____ THICK INCHES	ITEM ____ CU. YDS.	614 Temporary Center Lines, Class II MILES	408 Bituminous Prime Coat at 0.40 Gal./S.Y. GALS.	SPECIAL Pavement Planing Bituminous without Heating (1½") SQ. YDS.
1	S.R.204	3.15 - 3.27	0.12	634	21(1)	1	404	1,479	148	1	0	21	1	41			.24		
		3.27 - 9.25	5.98	31,574	19(1)	1	404	66,656	6,666	33	0	926	1	1,852			11.96		
		9.39 - 9.53	0.14	739	24(1)	1	404	1,971	197	1	0	27	1	55			.28		
Extra Tack Coat for Longitudinal Joint									76										
Extra Area from sheet 11.								2,526	95					123				670	
Bridge Deductions (2)								(519)	(52)			(7)		(14)					
PART 1 TOTALS			6.24	32,947				72,113	7,120	35		967		2,062			12.48	670	
2	S.R.204	9.25 - 9.39	0.14	739	24(1)	1	404	1,971	197	1	0	27	1	55			.28		
		9.53 - 9.61B	0.08	422	24(1)	1	404	1,125	113	1	0	16	1	31			.16		
		9.67A - 9.93	0.26	1,373	22(1)	2	404	3,356	336	2			1½	140			.52		3,356
		9.93 - 10.06	0.13	686	20(1)	1	404	1,524	152	1	0	21	1	42			.26		
Extra Tack Coat for Longitudinal Joint									9										
Extra Area from sheet 11.								1,288	110					58				78	
PART 2 TOTALS			0.61	3,220				9,274	917	5		64		336			1.22	78	3,356

(13/18)

M & R 684 REV. 9-1-79 CALCULATED BY D.M DATE 8-6-84

CHECKED BY Bm DATE 8.9.84

PAVED SHOULDERS

PER-204-3.15 PLAN NO. -8 (13/18)

TYPICAL 1

TYPICAL 2

~~ITEM 411 - STABILIZED CRUSHED AGGREGATE: Whenever 411 stabilized crushed aggregate is stipulated, the first paragraph of 411.03 is waived and subgrade compaction shall be to the satisfaction of the Engineer.~~

~~** One station equals 100 lin. ft. Stations shall be measured along each edge of pavement.~~

*NOTES

1. ITEM 203 LINEAR GRADING: This work shall consist of preparing a subgrade for the shoulder paving by excavating the existing shoulder material to the depth shown in the plan, or as directed by the Engineer to remove any unstable material and by shaping and compacting the subgrade. The unsound or broken edge of bituminous pavements shall first be trimmed to a line established by the Engineer. The existing shoulder then shall be excavated and the subgrade shaped and compacted. Compaction shall be carried out to the satisfaction of the Engineer by means of a trench roller, 401.11. Areas graded in excess of depths specified or directed by the Engineer shall be backfilled to desired grade using 617 Compacted Aggregate at the contractor's expense. Excavated material shall be disposed of as indicated in the plan.
   - ☐ a. Used to back up shoulders where required; the balance to be disposed of as directed by the Engineer.
   - ☐ b. Disposed of by the Contractor at his own responsibility outside the limits of the right-of-way.
   - ☐ c. Wasted adjacent to the pavement and within the right-of-way as directed by the Engineer.
2. ITEM 402 ASPHALT CONCRETE: Prior to placing a bituminous mixture for shoulder paving, the edge of the existing pavement, for the full depth of the trench, shall be coated with bituminous material in accordance with 401.12.
3. ITEM 301 BITUMINOUS AGGREGATE BASE may be used in lieu of Item 402 Asphalt Concrete.
4. ITEM 617 COMPACTED AGGREGATE: A quantity of Item 617 Compacted Aggregate has been provided for areas where the shoulders were low prior to grading and/or low areas caused by removal of unsuitable material.
5. ITEM 408 BITUMINOUS PRIME COAT: After application of the Prime Coat, no further treatment shall be performed until so directed by the Engineer.
6. ~~SHIELD: The contractor shall provide a shield to prevent the spraying or drifting of liquid bituminous material onto the edge of the pavement or edgeline. The attention of the contractor is directed to 107.12 of the Specifications.~~

PAVED SHOULDER DATA

PART	ROUTE	LOG POINT TO LOG POINT	LENGTH MILES	LENGTH LIN. FT.	TYPICAL	PROPOSED WIDTH (FT.) A	B	C	D	SHOULDER AREA SQ. YDS.	203 LINEAR GRADING DEPTH INCHES	**STA	404 ASPHALT CONCRETE AVG. THICK INCHES	CU. YDS.	411 STABILIZED CRUSHED AGGREGATE AVG. THICK INCHES	CU. YDS.	408 Bituminous Prime Coat .... @ 0.40 gal./s.y. GALS.	409 SEAL Bit. Mat'l. .... @ ..... gal./s.y. GALS.	Aggr. .... @ ..... c.y./s.y. CU. YDS.	617 COMPACTED AGGREGATE Used to back up berms 2" Ave (thick) x 18" wide CU. YDS.	605 AGGREGATE DRAINS LIN. FT.	* NOTES
1	S.R.204	3.15-9.25	6.10	32,208	1	2	2			14,315			2	795			5,726			596		
		9.39-9.53	0.14	739	1	2	2			328			2	18			131			14		
		TOTALS PART 1	6.24	32,947						14,643				813			5,857			610		
2	S.R.204	9.25-9.39	0.14	739	1	2	2			328			2	18			131			14		
		9.53-9.61B	0.08	422	1	2	2			188			2	10			75			8		
		9.93-10.06	0.13	686	1	2	2			305			2	17			122			13		
		TOTALS PART 2	0.35	1,847						821				45			328			35		

DEPARTMENT OF TRANSPORTATION
M& R 714 REV. 9-1-83

CALCULATED BY R.D. DATE 8-6-84
CHECKED BY Rm DATE 8-9-84

BRIDGE DECK TREATMENT

PER-204-3.15

PLAN NO. 98

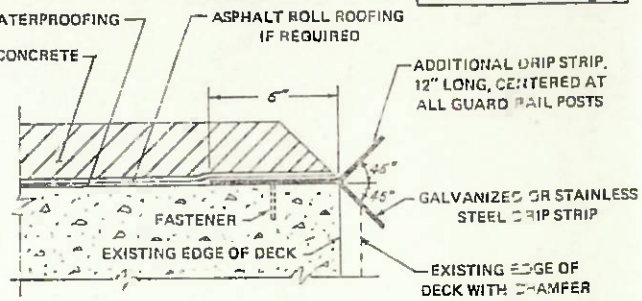
PROTECTIVE COURSE FOR MEMBRANE WATERPROOFING

MEMBRANE WATERPROOFING, Sheet Type 1: A minimum of 1-1/2 inches of Asphalt Concrete shall be placed over the membrane.

MEMBRANE WATERPROOFING: A minimum of 2-1/2 inches of Asphalt Concrete shall be placed over the membrane.

Br. Nº PER-204-0547

DRIP STRIP: Prior to applying deck membrane waterproofing, a bent drip strip shall be installed along the edges of the deck as shown. The strips shall be fastened at 1'—6" c/c maximum with 1-1/4" x 5/32" x 1/4" (Length x Shank diameter x Head diameter) flat head drive pins and washers or No. 10 galvanized screws and expansion anchors, subject to the approval of the Engineer. The strips shall be placed the full length of the deck, ending at the face of the abutment wingwall or steel end dam angle. Where splices are required a 3" (Min.) lap shall be used with a fastener through the lap. Steel for galvanized strips shall be 8" x 0.105" and shall meet the requirements of ASTM A568. Galvanizing shall be in accordance with 711.02. Stainless steel shall be 20 gauge ASTM A167, Type 304, mill finish. Payment shall be at the contract price bid for Item Special, Sq. Ft., Steel Drip Strip, which shall include all materials, labor, tools and incidentals necessary to complete item.



TYP. SEC. DRIP STRIP

BRIDGE DECK DATA

PART	COUNTY, ROUTE, BRIDGE NO.	LENGTH (BRIDGE LIMITS)	WIDTH	BRIDGE DECK AREA	202 WEARING COURSE REMOVED DEPTH * "	BRIDGE DECK REPAIR ☐ SPECIAL SUPERPLASTICIZED DENSE CONCRETE OVERLAY 1 3/4" THICK OVERLAY	VARIABLE THICKNESS OVERLAY	FULL-DEPTH REPAIR	519 PATCHING CONCRETE STRUCTURES	SPECIAL STEEL DRIP STRIP	DECK WATERPROOFING MEMBRANE WATERPROOFING SHEET TYPE 1	MEMBRANE WATERPROOFING	516 VERT. EXT. OF STR. EXP. JOINTS	ASPHALT CONCRETE THICK INS.	404	ASPHALT CONCRETE THICK INS.	403	407 TACK COAT @ 0.10 GAL/S.Y.
		L.F.	L.F.	S.Y.	S.Y.	S.Y.	C.Y.	C.Y.	S.F.	S.F.	S.Y.	S.Y.	L.F.		C.Y.		C.Y.	GAL.
1	PER-204-0431	42.25	25.5	120	120									1	3	3	10	12
1	PER-204-0547	14.16	33	52						18	52			1	1	1/2	1	5
1	PER-204-0660	20	25.7	57	57									1	2	3	5	6
1	PER-204-0943	131.6	36	526	526	526	10	5	528	150								
	Totals Part 1				703	526	10	5	528	168	52				6		16	23
	(Quantities carried to Sheet 15)																	

* Wearing Course Removed
Per-204-0431-4"
Per-204-0660-4¼"
Per-204-0943-1½"

M & R 693 REV. 9-1-81

PER-204-3.15

PLAN NO. 98

15/18

GENERAL SUMMARY

ITEM	PART 1	PART 2		GRAND TOTAL PARTS 1 and 2	UNIT	DESCRIPTION
407	7,143	917		8,060	Gal	Tack Coat
407	35	5		40	Ton	Cover Aggregate
403	983	64		1,047	Cu. Yd.	Asphalt Concrete AC-20
404	2,895	369		3,264	Cu. Yd.	Asphalt Concrete AC-20
202	1,103			1,103	Sq. Yd.	Wearing Course Removed
408	6,527	406		6,933	Gal.	Bituminous Prime Coat
Special		3,356		3,356	Sq. Yd.	Pavement Planing, Bituminous, without Heating
Special	526			526	Sq. Yd.	Superplasticized Dense Concrete Overlay (1 3/4 Inches Thick)
Special	10			10	Cu. Yd.	Superplasticized Dense Concrete Overlay (Variable Thickness)
Special	5			5	Cu. Yd.	Full Depth Repair
519	528			528	Sq. Ft.	Patching Concrete Structures
621	6.24	0.61		6.85	Mile	Center Lines
621	12.48	1.22		13.70	Mile	Edge Lines
947	197	122		309	Lin. Ft.	Stop Lines, 947.03 Type A1, Inlaid
947		64		64	Lin. Ft.	Crosswalk Lines, 947.03 Type A1, Inlaid
947		2		2	Each	Word on Pavement, "SCHOOL" 96-inch, 947.03 Type A1, Inlaid
Special	19	1		20	Hour	Grader Rental
Special	9	1		10	Hour	Loader Rental
614	12.48	1.22		13.70	Mile	Temporary Center Lines, Class II
624	Lump	Lump		Lump	Lump	Mobilization
Special	168			168	Sq. Ft.	Steel Drip Strip
Special	52			52	Sq. Yd.	Membrane Waterproofing Sheet Type I
617	610	35		645	Cu. Yd	Compacted Aggregate
614	Lump	Lump		Lump	Lump	Maintaining Traffic

GENERAL NOTES

TRAFFIC:
Traffic shall be maintained at all times. The length of restricted traffic zones shall be kept to a minimum consistent with the specification requirements for protection of completed courses.

~~RAILROAD CROSSINGS:~~
~~The new surface course shall be feathered or butt-jointed to meet the rail grades as specified.~~

ALIGNMENT AND PROFILE:
The work proposed by this project is for the resurfacing of the existing pavement. The alignment of the existing pavement will not be changed, and the profile of the proposed surface will be similar to that of the existing pavement except that it will be raised an amount equal to the thickness of the resurfacing course or courses specified in these plans.

INTERMEDIATE COURSE, SPOT LEVELING AND PATCHING:
This material shall be placed in a separate operation where and as directed by the engineer.

TACK COAT:
The tack coat operation shall be as determined at a pre-construction conference as per 407.05, and application rates shall not exceed 0.10 gal. per sq. yd.

COVER AGGREGATE:
Cover aggregate shall conform to 703.06.

TACK COAT: (CONTINUED)
In addition to the requirements of 407.05 the tack coat shall be applied immediately ahead of the paving operation or as otherwise determined by the Project Engineer.

CONTROL OF ONE WAY TRAFFIC:
In addition to the requirements of the Ohio Manual of Uniform Traffic Control Devices and Material Specifications the following requirements shall apply.
Communications between flaggers shall be by two-way radio during the paving operations.
Payment for the above shall be included in Item 614, Maintaining Traffic.

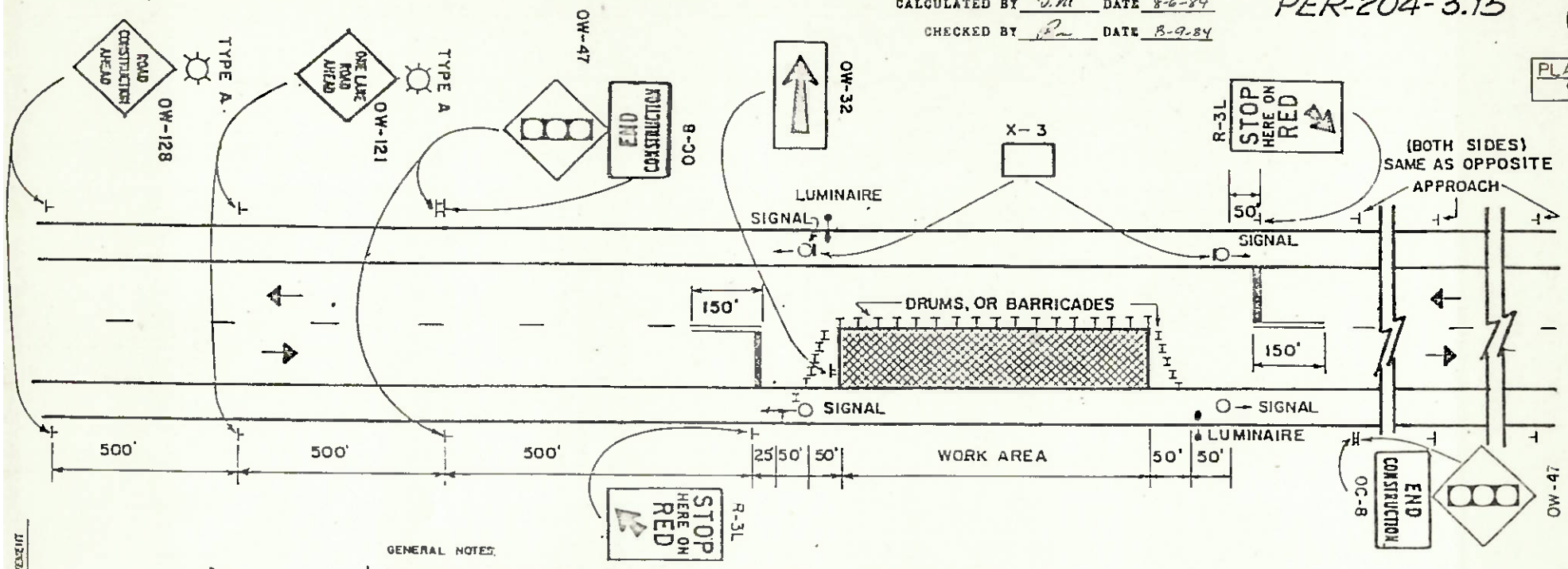
CALCULATED BY D.M. DATE 8-6-84

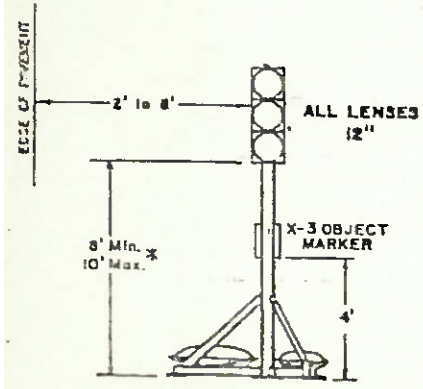
CHECKED BY R.M. DATE 8-9-84

PER-204-3.15

16/18

PLAN NO. 98





TYPICAL POLE SUPPORTED SIGNAL

* Above grade of roadway centerline

GENERAL NOTES:

1. The maximum length of work area for one way traffic signal control is determined by the capacity required to handle the peak hour demand. Practical maximum length is 400 feet. Signal timing shall be approved by the Engineer.

2. Signals shall be installed and operated in accordance with the requirements of Part 6 of the Ohio Manual of Uniform Traffic Control Devices.

3. Drums or barricades shall be spaced at 50' to 80' center to center within the work area. Drums or barricades on the advance and return tapers shall be spaced at 10' center to center.

4. Adequate area illumination to clearly identify both ends of the work area at night for long term operations shall be provided by using 150 watt minimum high pressure sodium luminaires or 250 watt minimum mercury luminaires. Luminaires shall be located adjacent to one signal for each direction of traffic as shown above. The mounting height for temporary luminaires shall be a minimum of 27 feet above the pavement and the overhead conductor clearance shall be 20 feet above the pavement.

5. Temporary no passing lines and 24" stop lines shall be installed and maintained where no passing lines are not already in place. Removable pavement markings may be used. Existing conflicting pavement markings between the work area and stop line shall be removed. After completion of the work, temporary markings shall be removed in accordance with 621.134.

6. The Type A flashing barricade warning lights shown on the "Road Construction Ahead" and the "One Lane Road Ahead" signs are required whenever a night lane closure is necessary.

7. Type C steady burning barricade warning lights shall be erected on drums or barricades for night lane closures. The maximum spacing shall be identical to the channelizing device spacing requirements described in Note 3.

8. The horizontal or vertical alignment of the roadway may require adjustments in the location of the advance warning signs (the distances shown for advance warning sign spacings are minimums). The vertical alignment of the roadway may require adjustments in the height of the signal heads within the range specified in the Typical Pole Supported Signal Detail.

9. All traffic signals and equipment used in this traffic signal installation, such as a signal cable and signal heads, shall be in conformance with Specifications* 632 and 732. However, the performance test provision noted in Specification 632.27, paragraph 6 and the working drawing requirements of 632.03 are waived. The controller, flashers, load switches, conflict monitor and other controller accessories shall comply with Supplemental Specifications 861 and 961, except that the requirements of 861.03 and 861.05 are waived. Used equipment meeting current ODOT Specifications is acceptable.
Conflict monitors shall be furnished at all locations unless an electro-mechanical preTimed controller with cam shaft is provided.
When the signal is changed to a flash condition either manually or automatically, red shall be flashed to both approaches.

OHIO DEPARTMENT OF TRANSPORTATION

SIGNALIZED CLOSING
1 LANE OF A 2 LANE
HIGHWAY

DATE

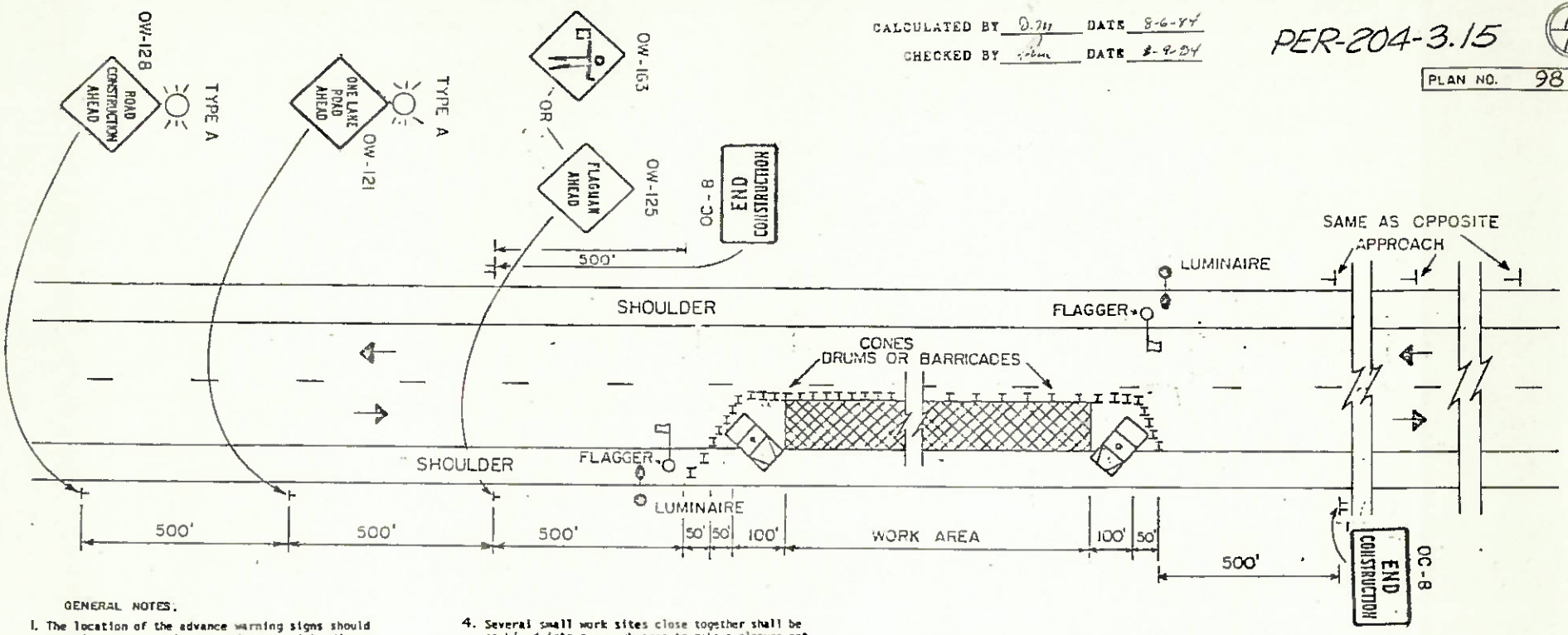
CALCULATED BY D.M. DATE 8-6-84

CHECKED BY [illegible] DATE 8-9-84

PER-204-3.15

17/18

PLAN NO. 98



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.

2. Flaggers shall be used to control traffic continuously for as long as a one lane operation is in effect. The flaggers shall communicate with each other at all times as described in the Ohio Manual of Uniform Traffic Control Devices (OMUTCD) in Section 7H: Control of Traffic Through Work Areas.

3. Cones drums or barricades shall be spaced at approximately 50' to 60' center to center for the first 1000 feet of the work area and at a maximum of 100' to 120' center to center for the balance of the work area. Cones, drums or barricades on the advance and return tapers shall be spaced at 10' center to center. Cones may be substituted for barricades or drums for short term lane closures. Cones shall not be used for night lane closures.

4. Several small work sites close together shall be combined into one work area to make a closure not more than 2000 feet long including tapers. Closures of more than 2000 feet may be approved by the Engineer. The minimum length between closures shall be 2000 feet. Only one side of the road shall be closed in any one work area.

5. The work vehicles shown at the beginning and end of the work area shall be in place and unoccupied whenever workers are in the work area. These work vehicles shall be removed from the pavement whenever workers are not in the work area. Other protective devices may be used in lieu of the work vehicles shown when approved by the Engineer. The vehicles shall be equipped with a 360° rotating or flashing amber beacon clearly visible in all directions a minimum of a ¼ mile.

6. The Type A flashing barricade warning lights shown on the "Road Construction Ahead" and the "One Lane Road Ahead" signs are required whenever a night lane closure is necessary.

7. Type C steady burning barricade warning lights shall be erected on drums or barricades for night lane closures. The maximum spacing shall be identical to the channelizing device spacing requirements described in Note 3.

8. Adequate area illumination to clearly identify the flagger station at night for long term operations shall be provided 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 temporary luminaires shall be a minimum of 27 feet above the pavement and the overhead conductor clearance shall be 20 feet above the pavement.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF TRANSPORTATION

FLAGGERS CLOSING
I LANE OF A 2 LANE
HIGHWAY

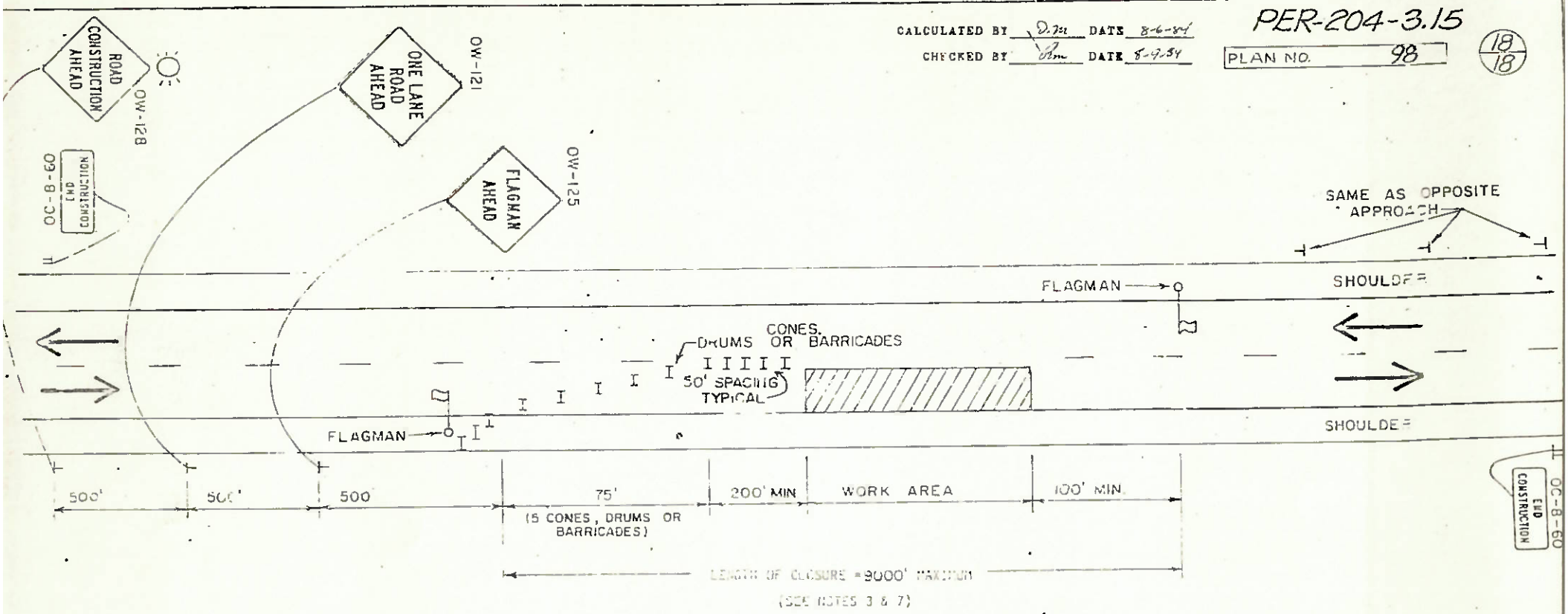
CALCULATED BY D.J.H. DATE 8-6-84

CHECKED BY [illegible] DATE 8-9-84

PER-204-3.15

PLAN NO. 98

18/18



GENERAL NOTES

1. FLAGMEN SHALL BE USED TO CONTROL TRAFFIC CONTINUOUSLY FOR AS LONG AS ONE LANE OPERATION IS IN EFFECT. FLAGMEN SHALL BE ABLE TO COMMUNICATE WITH EACH OTHER AT ALL TIMES EITHER VERBALLY OR BY MEANS OF RADIO OR FIELD TELEPHONES. FLAGMAN STATIONS SHALL BE ADEQUATELY ILLUMINATED FOR NIGHT TIME OPERATIONS BY USE OF A 175 WATT MINIMUM LUMINAIRE.

2. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS FOR THE LANE CLOSURES DURING DAYLIGHT HOURS ONLY.

3. WHEN THE AMBIENT TEMPERATURE EXCEEDS 80 DEGREES F, THE ENGINEER MAY INCREASE THE LENGTH OF CLOSURE TO ALLOW FOR SUFFICIENT COOLING OF THE NEW PAVEMENT.

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

   ALL TRAFFIC CONTROL SIGNS, CHANNELIZING DEVICES, AND FLAGMEN SHALL BE MOVED FORWARD BEFORE THE CLOSURE REACHES THE MAXIMUM ALLOWABLE LENGTH. ONLY ONE SIDE OF THE ROAD SHALL BE CLOSED AT ANY TIME IN A WORK AREA.

4. THE TYPE B HIGH INTENSITY BARRICADE WARNING LIGHT SHOWN ON THE ROAD CONSTRUCTION AHEAD SIGN IS REQUIRED WHENEVER NIGHT LANE CLOSURE IS NECESSARY.

5. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES.

6. THE ADVANCE WARNING SIGNS "OW-128" "OW-121" AND "OW-125" SHALL BE MOVED BACK AS REQUIRED BY THE QUEUING OF STOPPED VEHICLES.

7. 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.

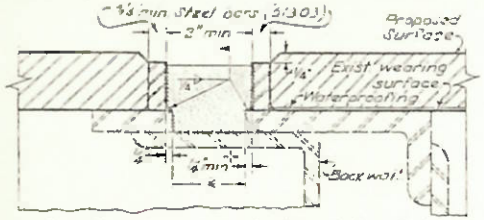
OHIO DEPARTMENT OF TRANSPORTATION

FLAGMEN - CLOSING 1 LANE OF A 2 LANE HIGHWAY

PAVING OPERATIONS

RESURFACING

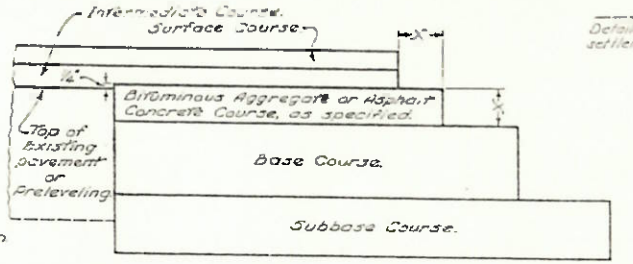
* Increase as necessary to maintain 2" min opening.
* Vertical extension of joints found to be closed to ¼" or less may be non-performed as directed by the Engineer.



As a part of Item 516, Seal joint with a hot-applied bridge deck waterproofing material which also meets the requirements of 705.01. Sandblast vertical surfaces (||) and wipe clean. Seal joint before rust forms. If rust forms, re-sandblast. Use Sand Breaker on the horizontal surface (———)

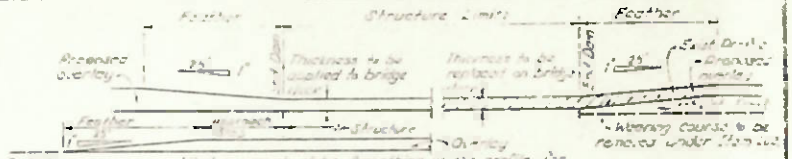
MAINTENANCE OF TRAFFIC: Generally the bars shall be welded while the lane is closed for waterproofing or resurfacing. However, if traffic is routed over the bars before resurfacing, temporary ramps shall be constructed to the tops of the bars using 402 or 404 feathering at a max slope of 6:1/in. The ramps shall be removed prior to resurfacing. Payment for placing and removing the ramps shall be included in the lump sum bid for Item 514.

VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS



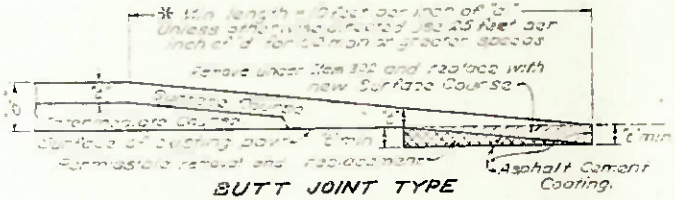
The Bituminous Aggregate in the upper part of the base widening shall finish approximately ¼" above the edge of the existing pavement where no preleveling is used. Where a preleveling (using intermediate course material) is specified, it shall be placed prior to excavation of the widening trench and the upper course of the base widening shall finish approximately ¼" above the preleveling.

COURSE DETAIL FOR WIDENING

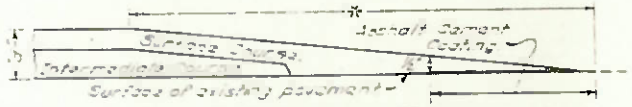


Details assume non-settled approach slabs. Smoothing in the profile for settlement is required per plan grades or as directed by the Engineer.

FEATHERING AT STRUCTURES



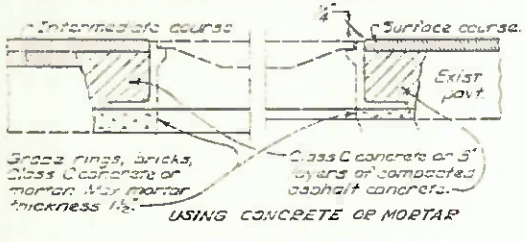
BUTT JOINT TYPE



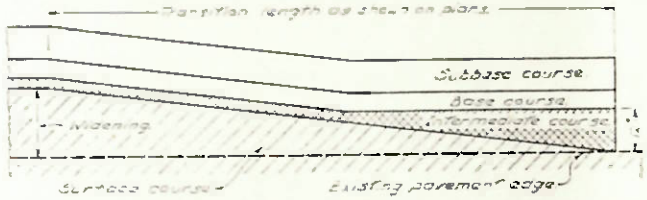
TAPER EDGE TYPE

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

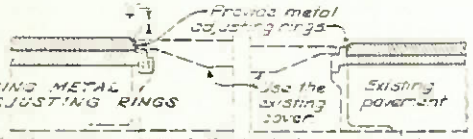
PLACING FEATHERED AREAS



LAPPING LONGITUDINAL JOINTS

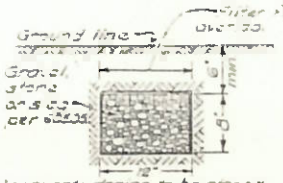


MERGING EDGE OF PAVEMENT WIDENING WITH EDGE OF EXISTING PAVEMENT



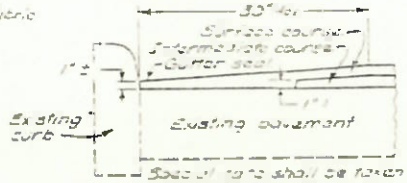
Metal adjusting rings shall: (a) be attached securely to the existing frame by welding or mechanical devices; (b) consist either of cast metal having an integral rim and seat, or be fabricated metal with a strong connection between the seat and rim, and (c) provide an even seat for the manhole cover.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

MANHOLES ADJUSTED TO GRADE



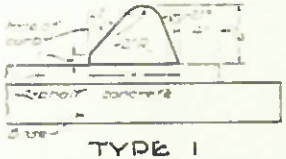
Aggregate drains to be placed where and as directed by Engineer. Provide filter fabric when specified as a separate pay item.

AGGREGATE DRAIN



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

GUTTER FINISH



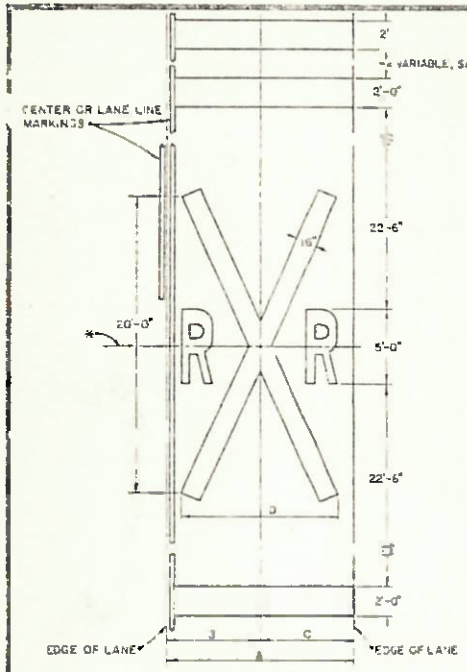
TYPE I ASPHALT CONCRETE CURB

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

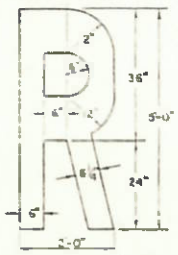
RESURFACING

STANDARD CONSTRUCTION DRAWING BP-5

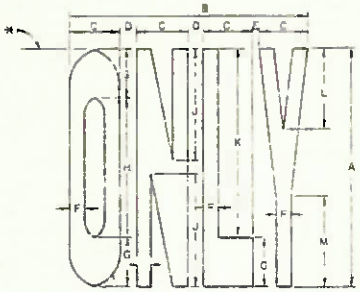
DATE



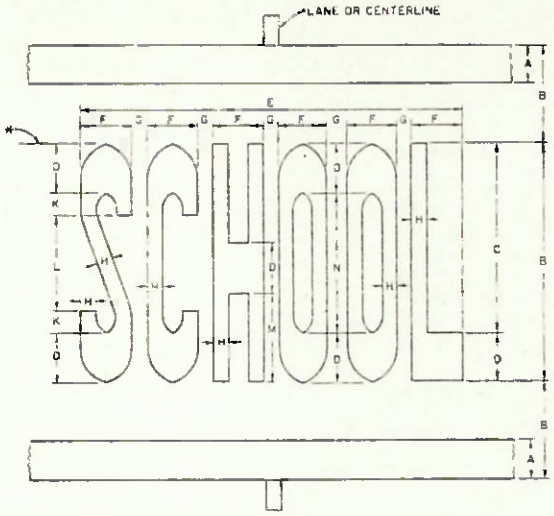
A PVMT WIDTH	DIMENSIONS (INCHES) B	C	D
8'-0"	52	44	84
9'-0"	58	50	96
10'-0"	60	60	96
11'-0"	66	66	96
12'-0"	72	72	120



RAILROAD "R"

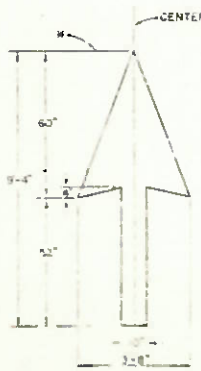


TYPE	DIMENSIONS (INCHES) A	B	C	D	E	F	G	H	J	K	L	M
RURAL	96	94	20	6	2	6	20	56	45	76	32	36
URBAN	72	90	18	8	2	4.50	15	42	33.75	57	27	31

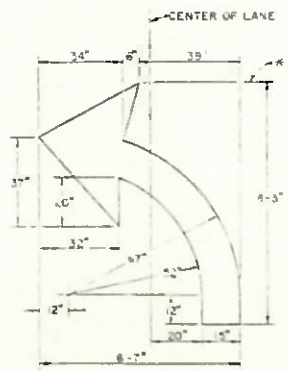


TYPE	DIMENSIONS (INCHES) A	B	C	D	E	F	G	H	J	K	L	M	N
RURAL	16	96	74	20	150	20	6	6	8	9	38	45	56
URBAN	16	72	57	15	148	18	8	4.50	9	6.75	28.50	33.75	42

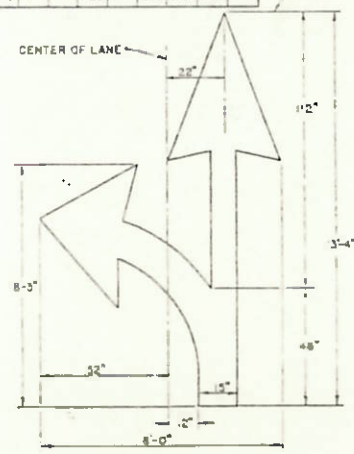
* INDICATES STATION REFERENCE POINT



THROUGH ARROW



TURN ARROW



COMBINED ARROW

NOTES:

1. PAVEMENT MARKING FOR WORDS, SYMBOLS, ARROWS, AND TRANSVERSE LINES FOR THE WORD SCHOOL OR THE RAILROAD SYMBOL SHALL BE WHITE REFLECTIVE MATERIAL.
2. TWO TRANSVERSE LINES SHALL BE INCLUDED IN THE PAYMENT FOR EACH WORD SCHOOL. THREE TRANSVERSE LINES SHALL BE INCLUDED IN THE PAYMENT FOR EACH RAILROAD SYMBOL.
3. ON MULTI-LANE APPROACHES, THE TRANSVERSE LINES USED WITH THE RAILROAD SYMBOLS SHALL EXTEND ACROSS ALL APPROACH LANES AND INDIVIDUAL SYMBOLS SHALL BE PLACED IN EACH APPROACH LANE.
4. FOR THE RAILROAD SYMBOL, NO PORTION OF ONE TRANSVERSE LINE SHALL BE CLOSER THAN 30 FEET FROM THE NEAREST RAILROAD TRACK RAIL AND THE LINE MAY BE EITHER PARALLEL TO THE TRACK OR PERPENDICULAR TO THE CENTERLINE OF THE ROADWAY. THE OTHER TWO TRANSVERSE LINES AND THE RAILROAD SYMBOL SHALL BE LOCATED FROM THE STATION REFERENCE POINT SHOWN IN THE PLANS.
5. ON MULTI-LANE APPROACHES, THE TRANSVERSE LINES USED WITH THE WORD SCHOOL SHALL EXTEND ACROSS ALL APPROACH LANES WITH A SINGLE WORD SCHOOL CENTERED ACROSS THE APPROACH LANES. ON TWO LANE ROADWAYS, THE TRANSVERSE LINES SHALL EXTEND ACROSS THE ROADWAY WITH THE WORD SCHOOL CENTERED ACROSS THE ROADWAY. CENTER OR LANE LINES SHALL NOT PASS THROUGH THE SCHOOL MARKING.
6. THE PAVEMENT ARROW STATION REFERENCE POINT SHALL BE 30 FEET IN ADVANCE OF THE STOP LINE. THE WORD ONLY SHALL BE LOCATED FROM 35 TO 45 FEET (IN URBAN AREAS) OR 40 TO 85 FEET (IN RURAL AREAS) IN ADVANCE OF THE PAVEMENT ARROW STATION REFERENCE POINT. IN AREAS WHERE THESE DIMENSIONS ARE NOT PRACTICAL, THEY MAY BE REDUCED AS DETERMINED BY THE ENGINEER.
7. DIMENSIONS SHOWN ARE NOMINAL. SYMBOLS FROM NATIONAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES MAY BE USED.

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

WORDS, SYMBOLS AND ARROWS

DATE 12/1/75 4/9/79

STANDARD CONSTRUCTION DRAWING TC-71.10

APPROVED [illegible] Chief Engineer of Design Services