STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

MEMO TO: Roadway Design Project Engineers
Cathy Houser, PE
Teresa Bruton, PE
Chris Haire, PE

FROM: Jay A. Bennett, PE
State Roadway Design Engineer

DATE: September 1, 2004

SUBJECT: Structure Recommendation Plans

This is a revision to the Structure Typical Sections in Structure Recommendation Plans. This revision adds a dimension for paved shoulders beneath the structure.

As you know, there has been some confusion with paved shoulder dimensions along median divided facilities as they pass beneath bridges. Roadway Standard Drawings 610.01, 610.02 and 610.03 appear to show the paved shoulder wider beneath the bridge when in fact it is narrower. In order to clarify, the paved shoulder will be dimensioned as shown in the attached examples. Also attached are the pertinent Roadway Standard Drawings.

If you have questions, please contact Dewayne Sykes or me.

JAB/dls

Attachments

cc: Art McMillan, PE
Scott Blevins, PE
Ron Allen, PE
Dewayne Sykes, PE
Greg Perfetti, PE
Emily Lawton, PE
Ron Hancock, PE
Ellis Powell, PE
Shannon Sweitzer, PE
Cynthia Perry, PE

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1582 MAIL SERVICE CENTER
RALEIGH NC 27699-1582

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LOCATION:
CENTURY CENTER COMPLEX
BUILDING A
1000 BIRCH RIDGE DRIVE
RALEIGH NC

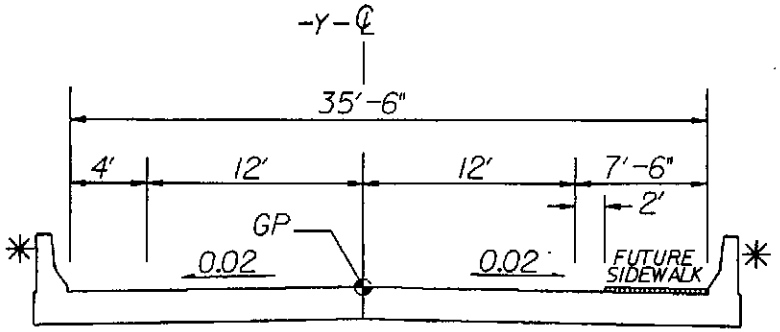
DESIGN DATA -Y-
ADT 2005 = X,XXX
ADT 2025 = X,XXX
D = XX%
DHV = XX%
TTST = X%
DUAL = X%
V = XX mph
FUNC CLASS-COLLECTOR
MINIMUM VERTICAL CLEARANCE = 17'
✳ BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN UNIT
@ SLOPES DETERMINED BY GEOTECHNICAL ENGINEERING UNIT

1 SEE STD. 225.08

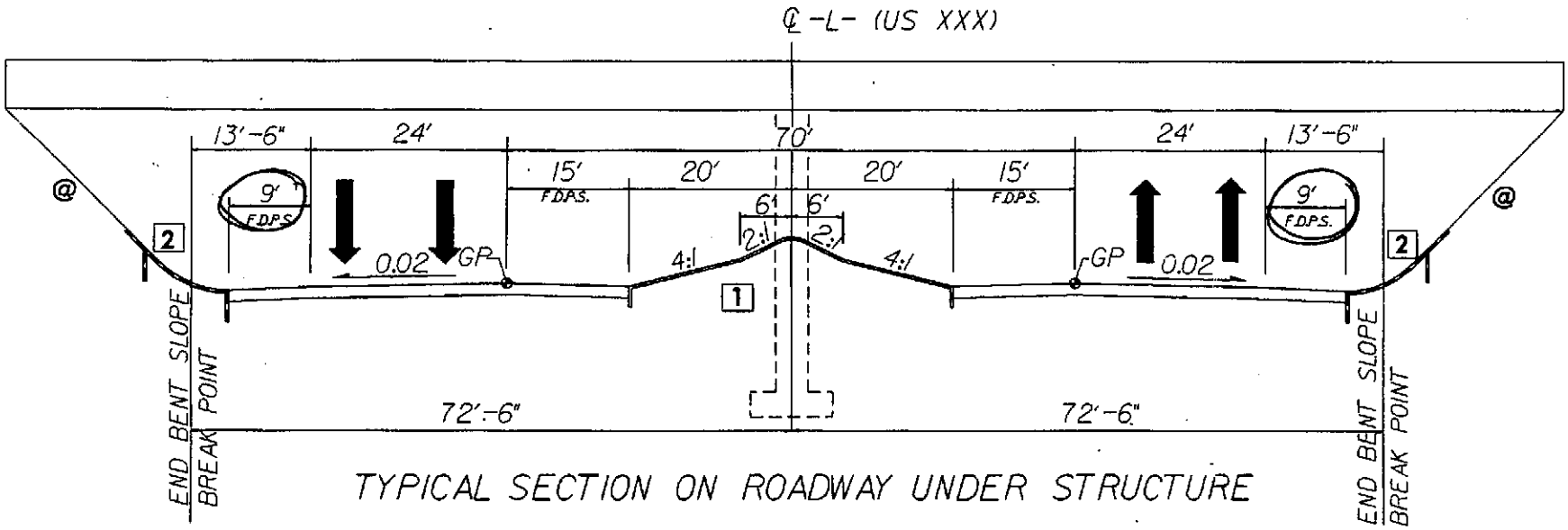
2 SEE STD. 610.03

-Y- STRUCTURE

SR XXXX (XXXX RD.)



TYPICAL SECTION ON STRUCTURE



TYPICAL SECTION ON ROADWAY UNDER STRUCTURE

DESIGN DATA -Y-

ADT 2005 = X,XXX
ADT 2025 = X,XXX
D = XX%
DHV = XX%
TTST = X%
DUAL = X%
V = XX km/h

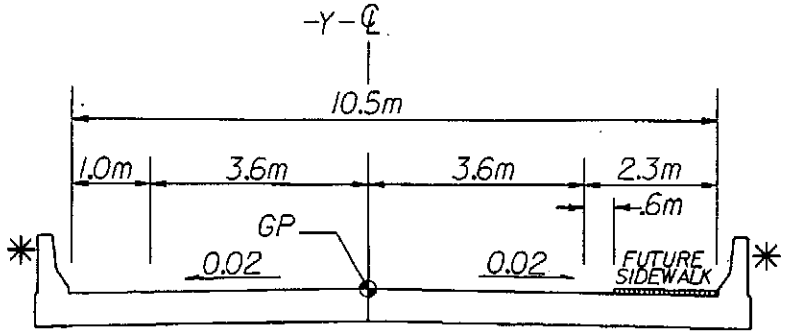
FUNC CLASS-COLLECTOR
MINIMUM VERTICAL CLEARANCE = 5.2 m
✳ BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN UNIT
@ SLOPES DETERMINED BY GEOTECHNICAL ENGINEERING UNIT

1 SEE STD. 225.08

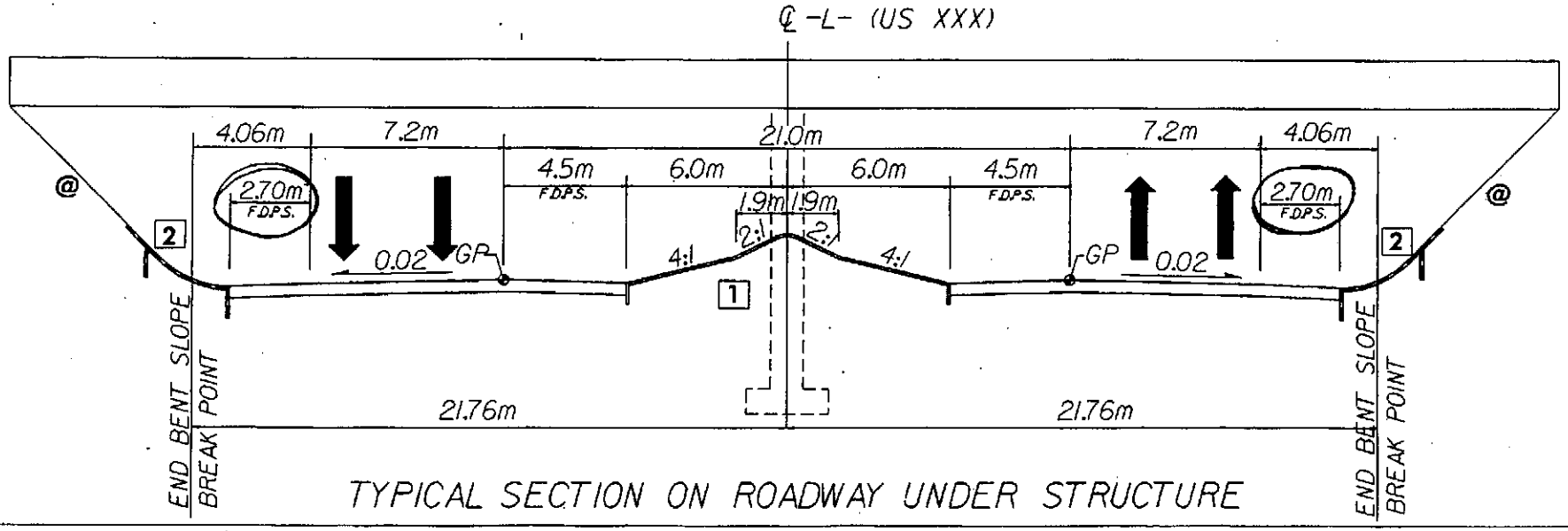
2 SEE STD. 610.03

-Y- STRUCTURE

SR XXXX (XXXX RD.)



TYPICAL SECTION ON STRUCTURE



TYPICAL SECTION ON ROADWAY UNDER STRUCTURE

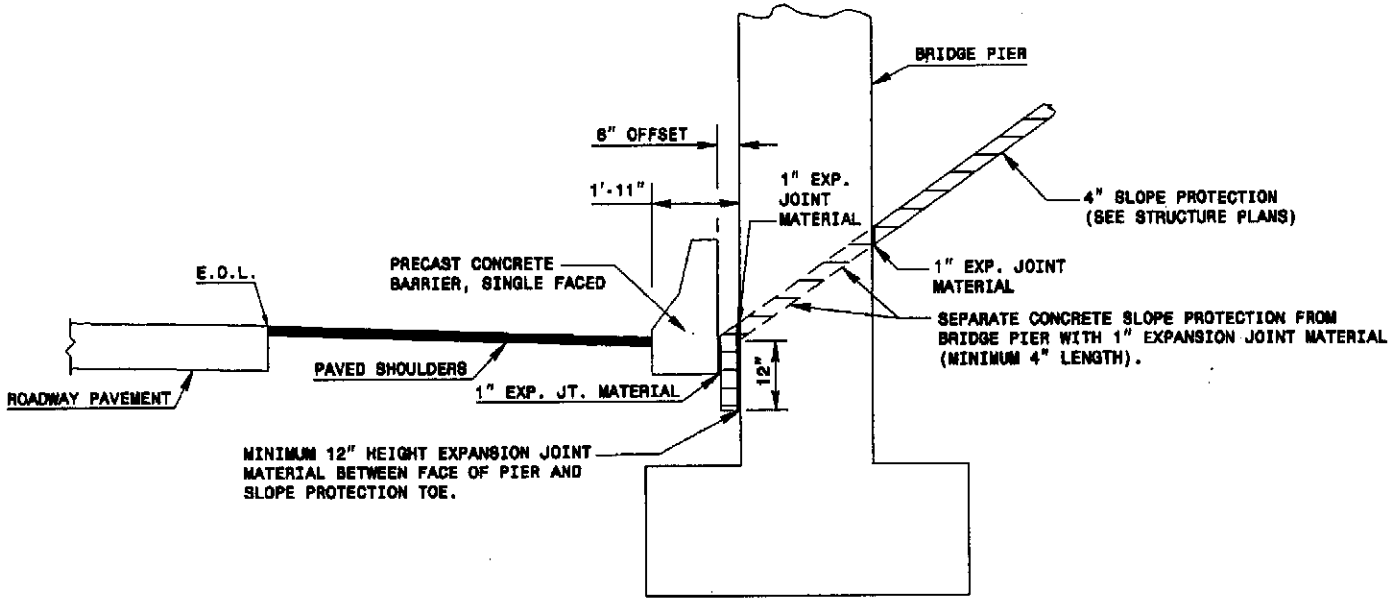
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-02

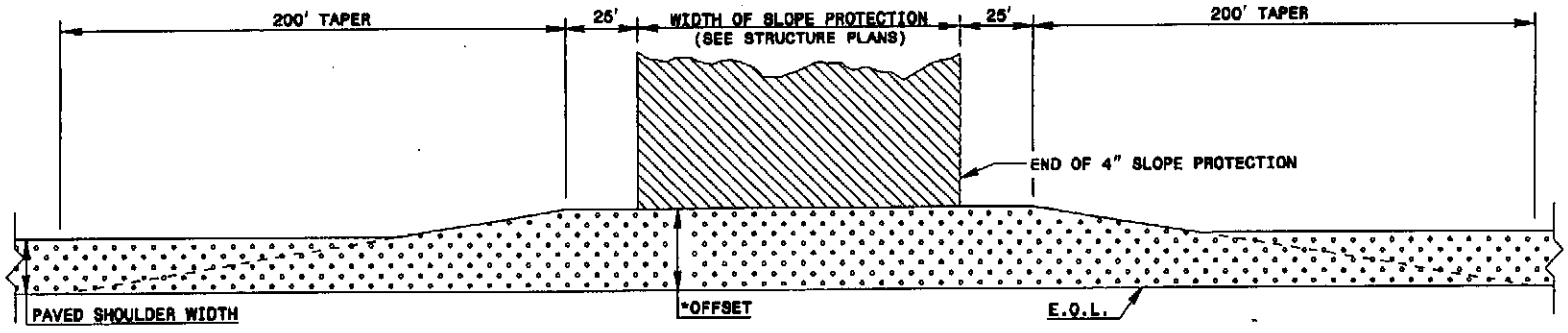
ENGLISH STANDARD DRAWING FOR

GUIDE FOR PAVING SHOULDERS UNDER BRIDGES

METHOD I



ELEVATION



PLAN

NOTES:
PAVE THE FULL WIDTH OF THE SHOULDER AS SHOWN WITH SHOULDER PAVEMENT MATERIAL AS SHOWN ON PLANS.
*OFFSET BASED ON STRUCTURE POLICY (SEE STRUCTURE PLANS).
PROTECT SLOPE WITH REINFORCED CONCRETE PAVING. CONCRETE BLOCK PAVING WILL NOT BE PERMITTED.

SHEET 1 OF 1
610.01

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-02

ENGLISH STANDARD DRAWING FOR
GUIDE FOR PAVING
SHOULDERS UNDER BRIDGES
METHOD I

SHEET 1 OF 1
610.01

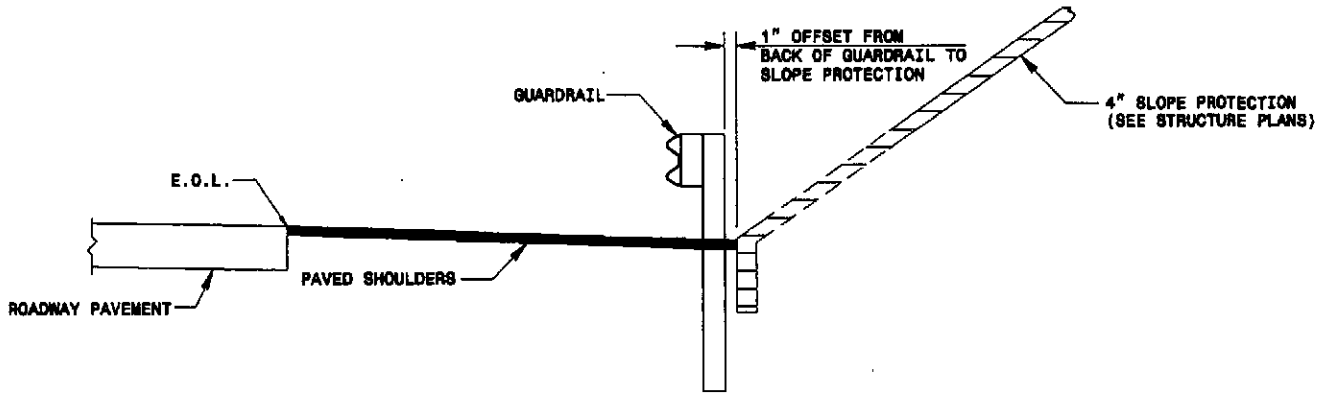
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-02

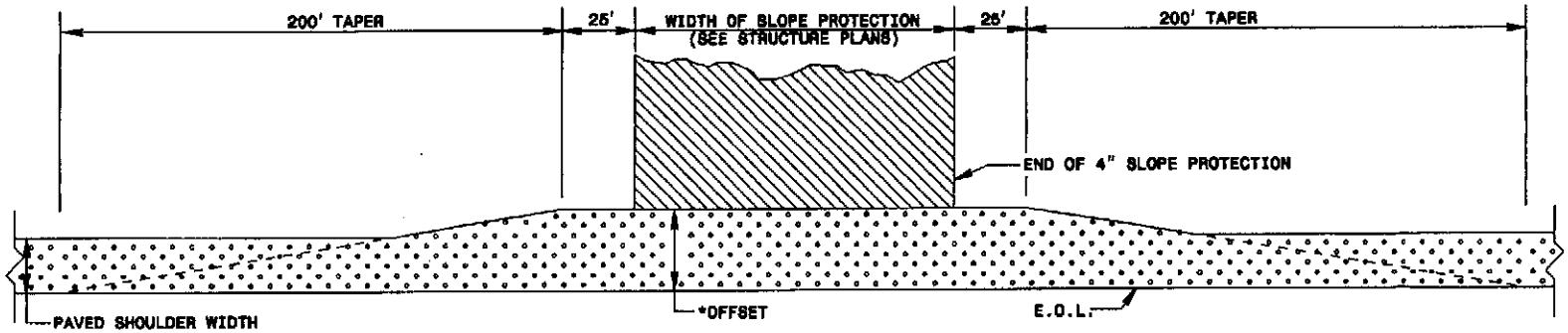
ENGLISH STANDARD DRAWING FOR

GUIDE FOR PAVING SHOULDERS UNDER BRIDGES

METHOD II



ELEVATION



PLAN

NOTES:
PAVE THE FULL WIDTH OF THE SHOULDER AS SHOWN WITH SHOULDER PAVEMENT MATERIAL AS SHOWN ON PLANS.
*OFFSET BASED ON STRUCTURE POLICY (SEE STRUCTURE PLANS).
PROTECT SLOPE WITH REINFORCED CONCRETE PAVING. CONCRETE BLOCK PAVING WILL NOT BE PERMITTED.

SHEET 1 OF 1
610.02

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-02

ENGLISH STANDARD DRAWING FOR
GUIDE FOR PAVING
SHOULDERS UNDER BRIDGES
METHOD II

SHEET 1 OF 1
610.02

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-02

ENGLISH STANDARD DRAWING FOR

GUIDE FOR PAVING SHOULDERS UNDER BRIDGES

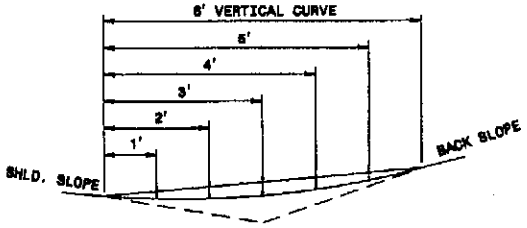
METHOD III

HORIZ. DIM.	1½:1 BACK SLOPE									
	SHOULDER SLOPE									
	.04	.03	.02	.01	.00	-.01	-.02	-.03	-.04	-.05
1'	0.26'	0.27'	0.27'	0.27'	0.28'	0.28'	0.28'	0.29'	0.30'	0.31'
2'	0.42'	0.42'	0.43'	0.44'	0.44'	0.45'	0.46'	0.46'	0.47'	0.48'
3'	0.47'	0.48'	0.49'	0.49'	0.50'	0.51'	0.52'	0.52'	0.53'	0.54'
4'	0.42'	0.42'	0.43'	0.44'	0.44'	0.45'	0.46'	0.46'	0.47'	0.48'
5'	0.26'	0.27'	0.27'	0.27'	0.28'	0.28'	0.28'	0.29'	0.30'	0.31'

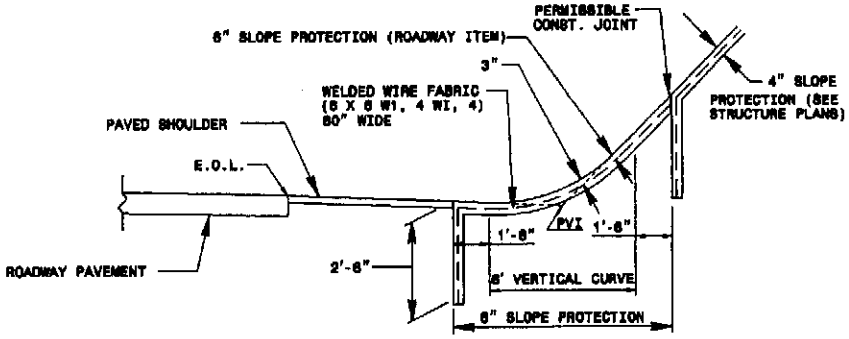
HORIZ. DIM.	2:1 BACK SLOPE									
	SHOULDER SLOPE									
	.04	.03	.02	.01	.00	-.01	-.02	-.03	-.04	-.05
1'	0.19'	0.20'	0.20'	0.20'	0.21'	0.21'	0.22'	0.22'	0.23'	0.23'
2'	0.31'	0.31'	0.32'	0.33'	0.33'	0.34'	0.35'	0.35'	0.36'	0.37'
3'	0.35'	0.35'	0.36'	0.37'	0.36'	0.38'	0.39'	0.40'	0.41'	0.41'
4'	0.31'	0.31'	0.32'	0.33'	0.33'	0.34'	0.35'	0.36'	0.36'	0.37'
5'	0.19'	0.20'	0.20'	0.20'	0.21'	0.21'	0.22'	0.22'	0.23'	0.23'

VERTICAL CURVE OFFSET

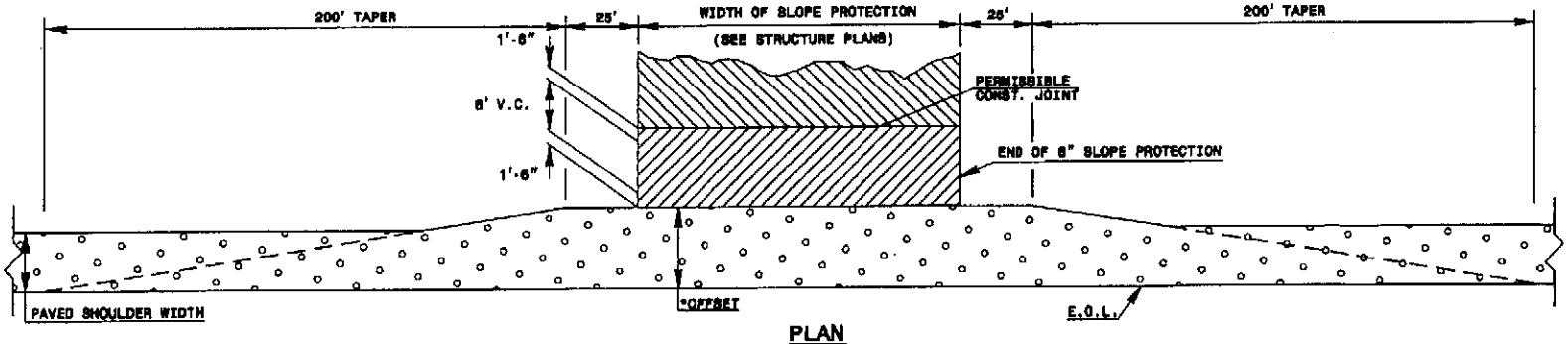
(FOR 6' V.C. AT BRIDGES)



TYPICAL SECTION



ELEVATION



PLAN

NOTES:
PAVE THE FULL WIDTH OF THE SHOULDER AS SHOWN WITH SHOULDER PAVEMENT MATERIAL AS SHOWN ON PLANS.
* OFFSET BASED ON BRIDGE POLICY (SEE BRIDGE PLANS).
PROTECT SLOPE WITH REINFORCED CONCRETE PAVING. CONCRETE BLOCK PAVING WILL NOT BE PERMITTED.
OFFSETS FOR 6' V.C. DENOTES FINISHED GRADE OF SLOPE PROTECTION.

SHEET 1 OF 1

610.03

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-02

ENGLISH STANDARD DRAWING FOR
GUIDE FOR PAVING SHOULDERS UNDER BRIDGES
METHOD III

SHEET 1 OF 1

610.03

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-02

ENGLISH STANDARD DRAWING FOR

EARTH BERM MEDIAN PIER PROTECTION

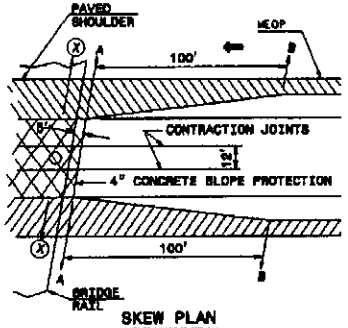
SHEET 1 OF 2

225.08

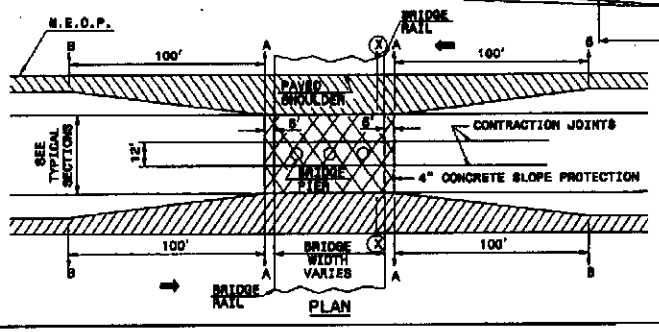
LEGEND

PAVED SHOULDER

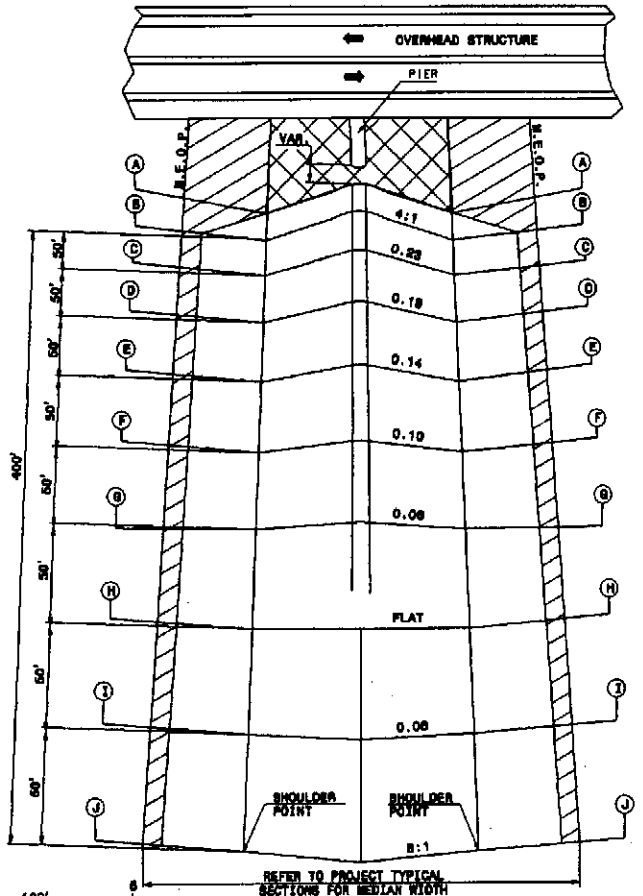
4" CONCRETE SLOPE PROTECTION



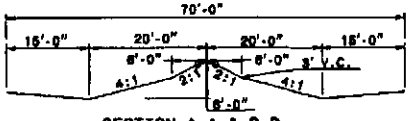
SKEW PLAN



PLAN

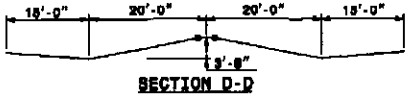


PERSPECTIVE

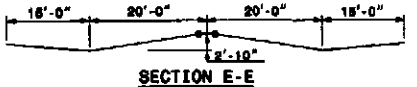


SECTION A-A & B-B

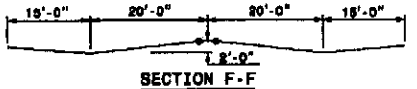
SECTION C-C



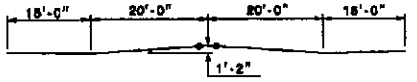
SECTION D-D



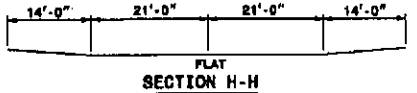
SECTION E-E



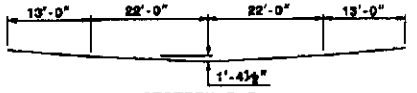
SECTION F-F



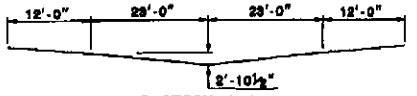
SECTION G-G



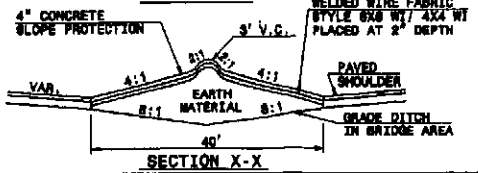
SECTION H-H



SECTION I-I



SECTION J-J



SECTION X-X

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-02

ENGLISH STANDARD DRAWING FOR

EARTH BERM MEDIAN PIER PROTECTION

SHEET 1 OF 2

225.08

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-02

ENGLISH STANDARD DRAWING FOR

EARTH BERM MEDIAN PIER PROTECTION

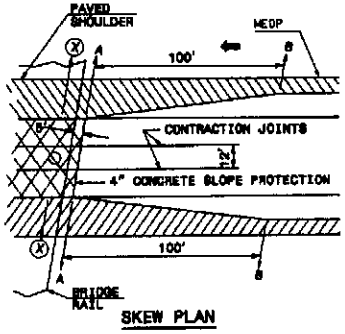
SHEET 1 OF 2

225.08

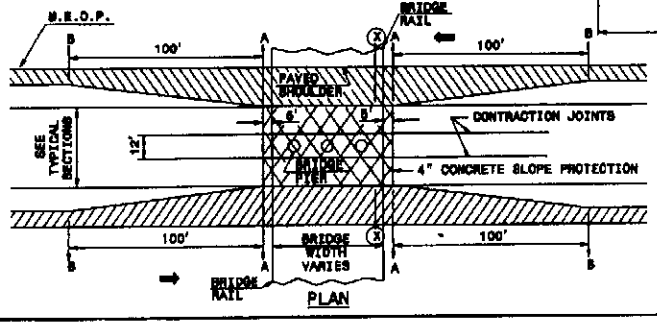
LEGEND

PAVED SHOULDER

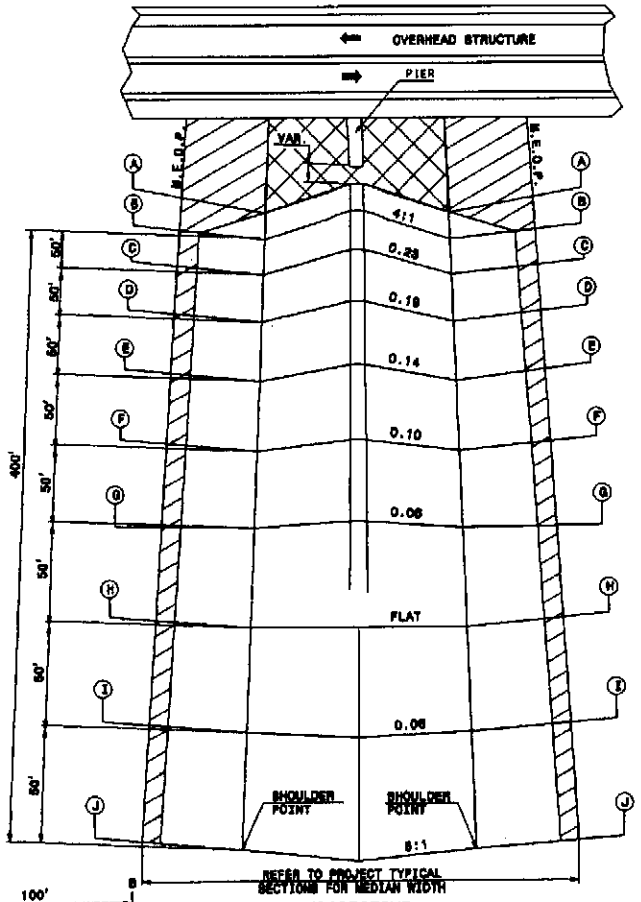
4" CONCRETE SLOPE PROTECTION



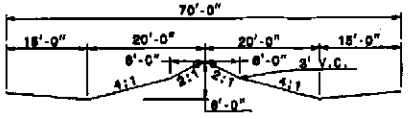
SKEW PLAN



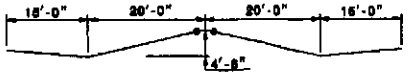
PLAN



PERSPECTIVE

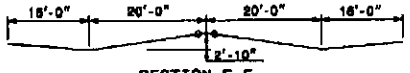


SECTION A-A & B-B



SECTION C-C

SECTION D-D



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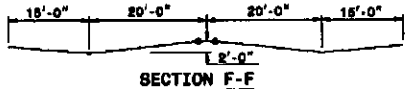
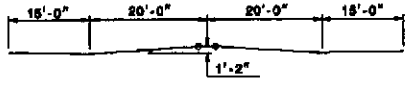
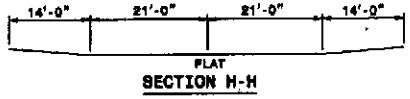


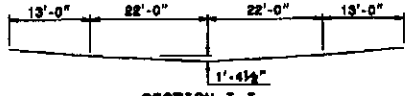
SECTION F-F



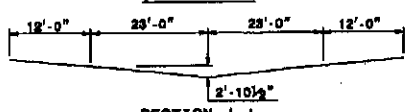
SECTION G-G



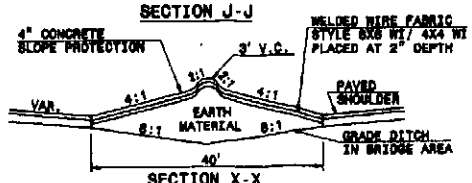
SECTION H-H



SECTION I-I



SECTION J-J



SECTION X-X

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-02

ENGLISH STANDARD DRAWING FOR

EARTH BERM MEDIAN PIER PROTECTION

SHEET 1 OF 2

225.08