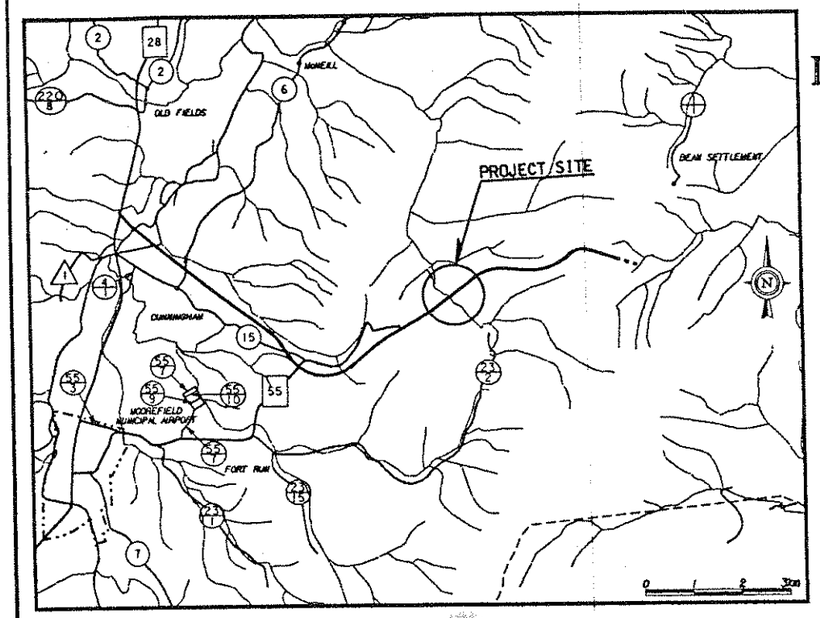


WEST VIRGINIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

OF

STATE HIGHWAY

FEDERAL PROJECT NO. APD-0484(124)CTC

STATE PROJECT NO. X316-H-101.92 05

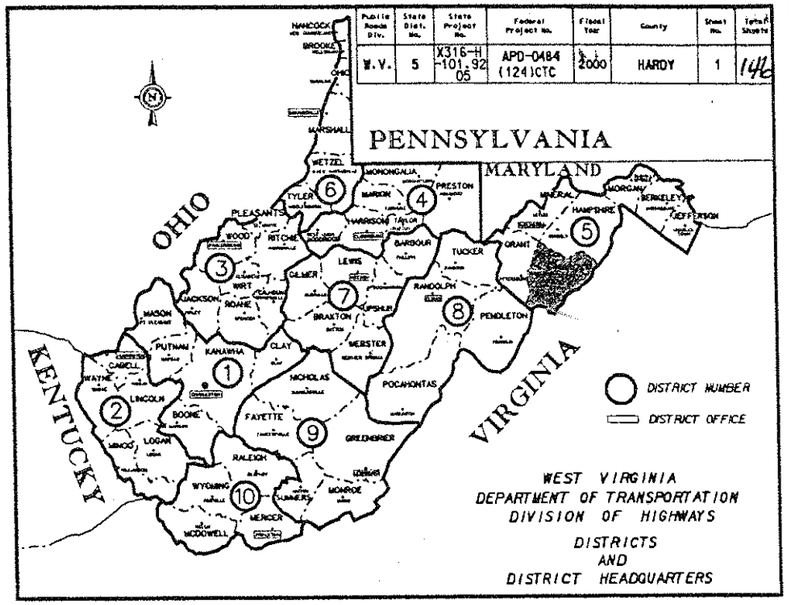
ROUTE NO. CORRIDOR - H

MOOREFIELD DISTRICT

HARDY COUNTY

CLIFFORD HOLLOW BRIDGE

	STATION	TO	STATION	ft	(m)	mile	(km)
ROADWAY	STA. 198+530.000	TO	STA. 198+780.720	= 822.56	= (250.720)	= 0.16	= (0.251)
BRIDGE	STA. 198+780.720	TO	STA. 199+247.780	= 1532.33	= (467.060)	= 0.29	= (0.467)
ROADWAY	STA. 199+247.780	TO	STA. 199+550.000	= 991.52	= (302.220)	= 0.19	= (0.302)
			TOTAL PROJECT LENGTH	= 3346.41	= (1020.000)	= 0.64	= (1.020)

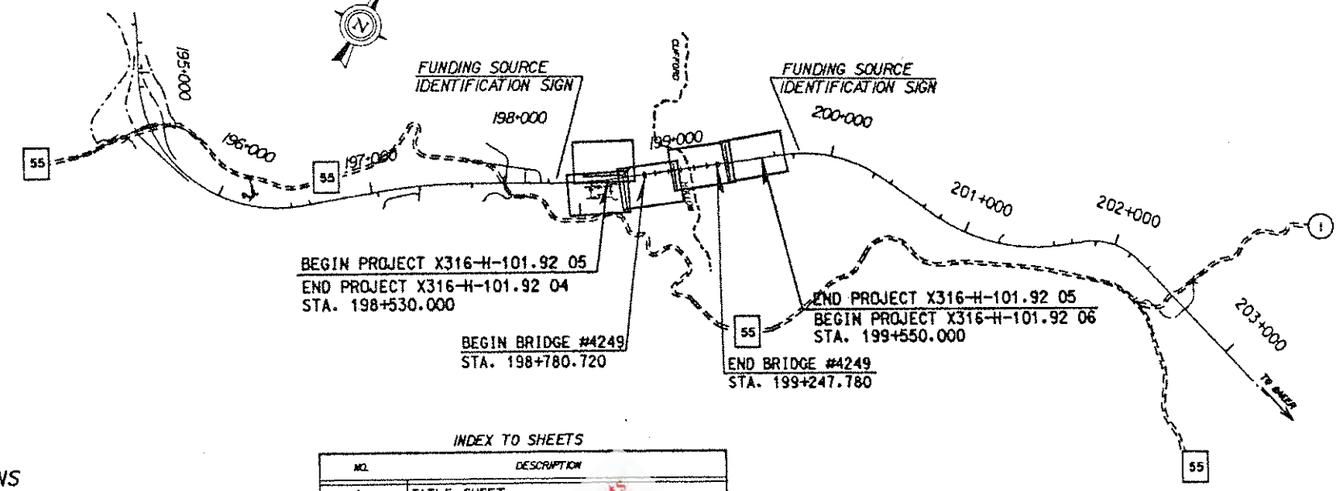


UTILITIES

NONE

TYPE OF CONSTRUCTION

PAVE, GRADE, DRAIN, PAVEMENT MARKING, SIGNING & BRIDGE NO. 4249



NOTES: STANDARD DETAIL BOOK VOL. I DATED APRIL 1, 1995 & VOLUME II DATED MARCH 1, 1996, SHALL APPLY TO THIS PROJECT.

SCALES

PLAN HOR. 0 10m

PROFILE VERT. 2m, 0 HOR. 0 10m

DESIGN DESIGNATION	
A.D.T. (1999)	8,000
A.D.T. (2019)	14,000
D.H.V.	10%
D	55/45
T	13%
V	100 km/h

CONVENTIONAL SIGNS

- STATE LINE
- COUNTY LINE
- CORPORATION LINE
- PROPOSED R/W LINE
- PROPERTY LINE
- EXISTING FENCE
- PROPOSED FENCE
- EDGE OF STREAM
- PROPOSED GUARD RAIL
- EXISTING GUARD RAIL
- RAILROAD
- GAS LINE
- WATER LINE
- TELEPHONE LINE
- ELECTRIC LINE
- TELEPHONE POLE
- POWER POLE
- COMBINED POWER AND TELEPHONE POLE
- TREE
- SHRUB
- RIGHT OF WAY MARKER

INDEX TO SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2-7	TYPICAL SECTIONS
8	ESTIMATE SHEET
9	QUANTITY SHEET
10	GENERAL NOTES
11-21	SPECIAL DETAILS
22-28	PAVEMENT MARKING & SIGNING
29	SUPERELEVATION DIAGRAM & TABLES
30	GEOMETRIC LAYOUT
31-38	PLAN & PROFILE SHEETS
39-131	BRIDGE PLANS
132-146	CROSS SECTIONS

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

LAYOUT SCALE 0 1000 m

4/21/2000

I HEREBY CERTIFY THAT THIS IS A CORRECT COPY OF THE PLANS OF PROJECT X316-H-101.92 05, APD-0484(124)CTC

Sheila Samms FOR EXECUTIVE SECRETARY

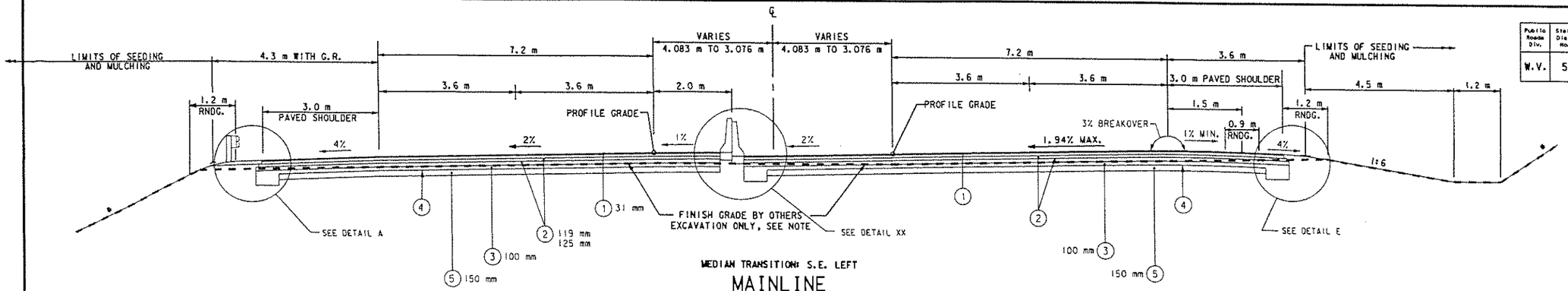
RECOMMENDED [illegible] DESIGN ENGINEER

RECOMMENDED [illegible] STATE HIGHWAY ENGINEER

APPROVED Samuel N. Bowman COMMISSIONER OF HIGHWAYS

PROJECT NO. X316-H-101.92 05, APD-0484(124)CTC

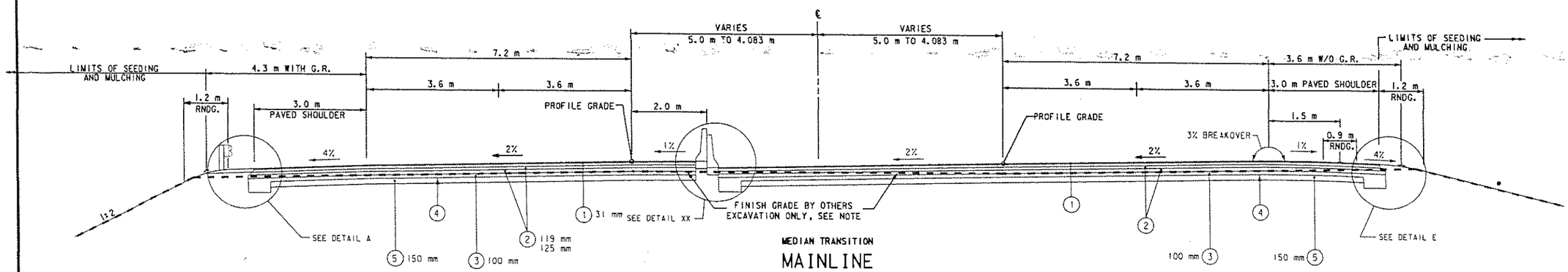
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	2	146



MEDIAN TRANSITION: S.E. LEFT

MAINLINE

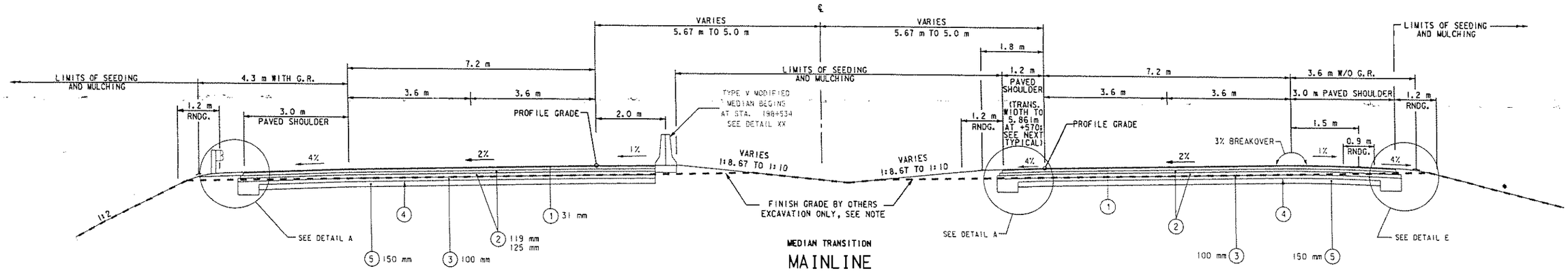
STA. 198+625.000 TO STA. 198+685.453



MEDIAN TRANSITION

MAINLINE

STA. 198+570.000 TO STA. 198+625.000



MEDIAN TRANSITION

MAINLINE

STA. 198+530.000 TO STA. 198+570.000

NOTES: 1) FINAL GRADE LINES FOR THE 'GRADE WORK ONLY'
SECTIONS UNDER SEPARATE CONTRACT ARE AS FOLLOWS:
FOR EMBANKMENT: 250mm ABOVE BOTTOM OF SUBGRADE (ITEM 207002)
FOR EXCAVATION IN ROCK: TO BOTTOM OF SUBGRADE (ITEM 207002)
FOR EXCAVATION IN SOIL: TO BOTTOM OF SUBGRADE (ITEM 207002)
ADDITIONAL EXCAVATION SHOULD BE EXPECTED IN CERTAIN AREAS TO MATCH SUBGRADE ELEVATION. EXCAVATION TO BE INCLUDED IN ITEM 228001-001 "SUBGRADE PREP"

• SLOPES VARY: SEE CROSS SECTIONS

NOT TO SCALE

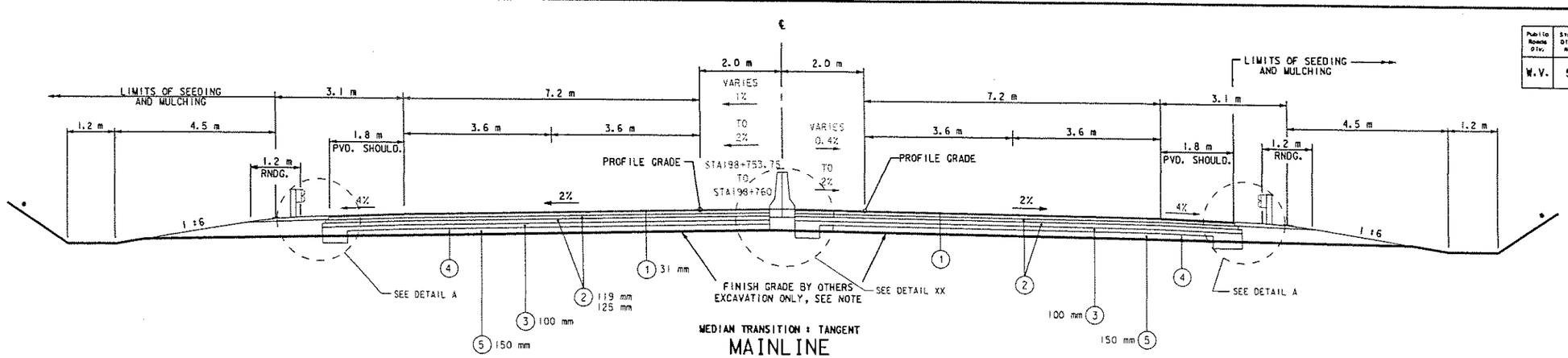
**SEE PAGE 5 FOR LEGEND

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

TYPICAL SECTIONS

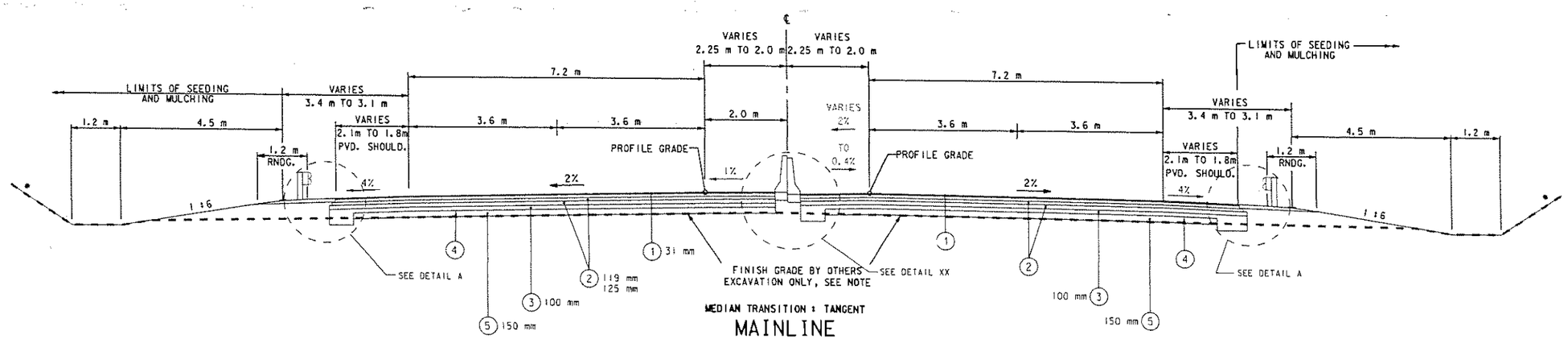
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	3	146



MEDIAN TRANSITION : TANGENT

MAINLINE

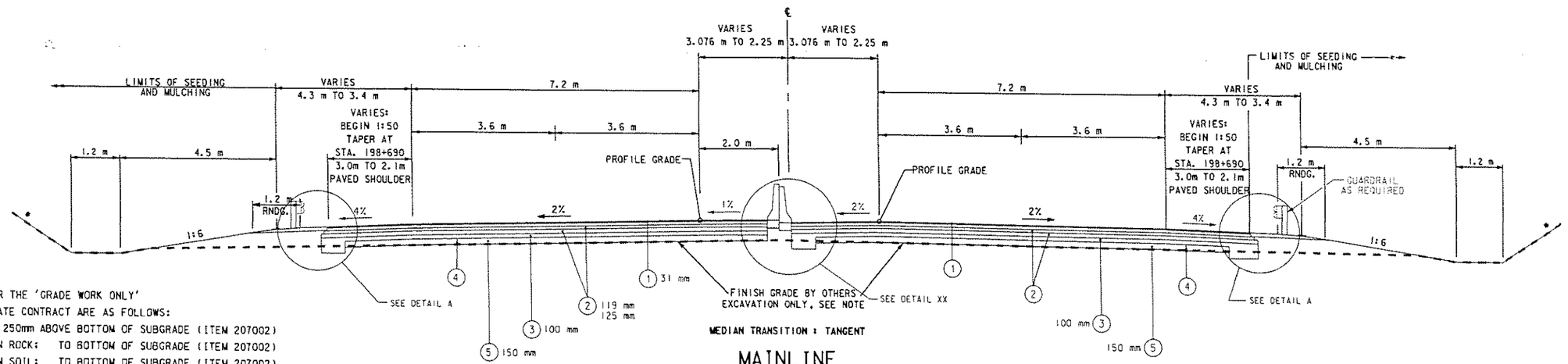
STA. 198+750.000 TO STA. 198+760.000



MEDIAN TRANSITION : TANGENT

MAINLINE

STA. 198+735.000 TO STA. 198+750.000



MEDIAN TRANSITION : TANGENT

MAINLINE

STA. 198+685.453 TO STA. 198+735.000

NOTES: 1) FINAL GRADE LINES FOR THE 'GRADE WORK ONLY'
SECTIONS UNDER SEPERATE CONTRACT ARE AS FOLLOWS:
FOR EMBANKMENT: 250mm ABOVE BOTTOM OF SUBGRADE (ITEM 207002)
FOR EXCAVATION IN ROCK: TO BOTTOM OF SUBGRADE (ITEM 207002)
FOR EXCAVATION IN SOIL: TO BOTTOM OF SUBGRADE (ITEM 207002)
ADDITIONAL EXCAVATION SHOULD BE EXPECTED IN CERTAIN AREAS TO MATCH SUBGRADE ELEVATION. EXCAVATION TO BE INCLUDED IN ITEM 228001-001 "SUBGRADE PREP"

* SLOPES VARY: SEE CROSS SECTIONS

NOT TO SCALE

**SEE PAGE 5 FOR LEGEND

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

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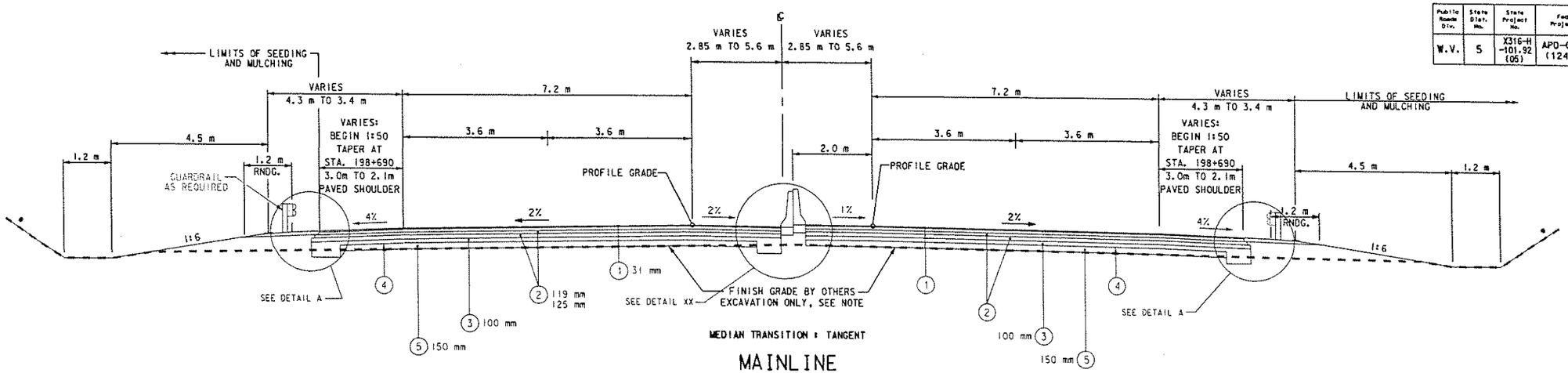
DIVISION OF HIGHWAYS

TYPICAL SECTIONS

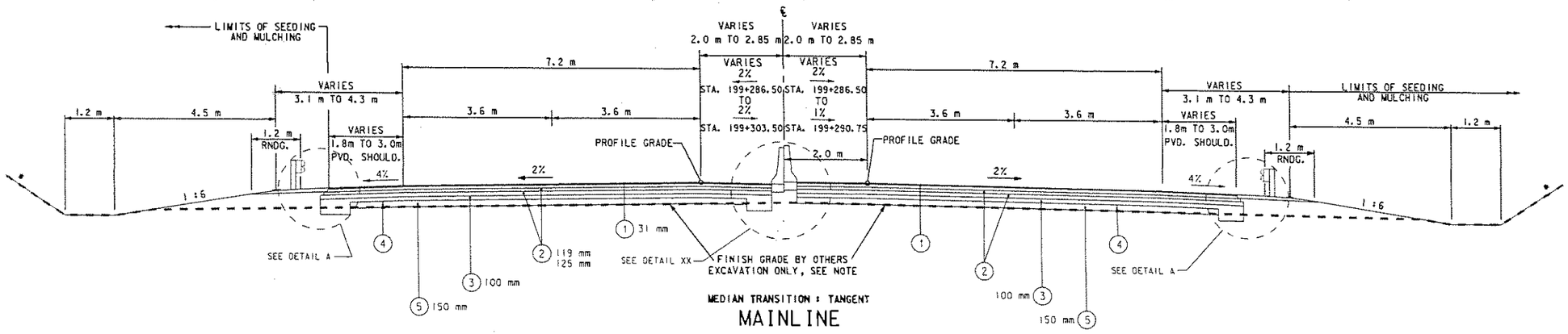
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	4	146



MEDIAN TRANSITION : TANGENT

MAINLINE

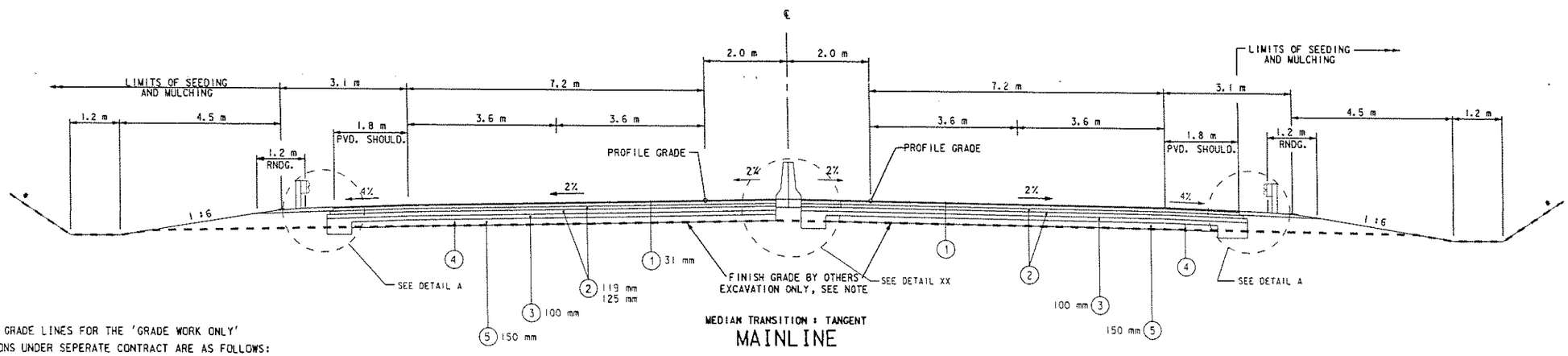
STA. 199+330 TO STA. 199+495



MEDIAN TRANSITION : TANGENT

MAINLINE

STA. 199+270.000 TO STA. 199+330.000



MEDIAN TRANSITION : TANGENT

MAINLINE

STA. 199+260.000 TO STA. 199+270.000

NOTES: 1) FINAL GRADE LINES FOR THE 'GRADE WORK ONLY' SECTIONS UNDER SEPERATE CONTRACT ARE AS FOLLOWS:

FOR EMBANKMENT: 250mm ABOVE BOTTOM OF SUBGRADE (ITEM 207002)
FOR EXCAVATION IN ROCK: TO BOTTOM OF SUBGRADE (ITEM 207002)
FOR EXCAVATION IN SOIL: TO BOTTOM OF SUBGRADE (ITEM 207002)

ADDITIONAL EXCAVATION SHOULD BE EXPECTED IN CERTAIN AREAS TO MATCH SUBGRADE ELEVATION. EXCAVATION TO BE INCLUDED IN ITEM 228001-001 "SUBGRADE PREP"

* SLOPES VARY: SEE CROSS SECTIONS

** SEE PAGE 5 FOR LEGEND

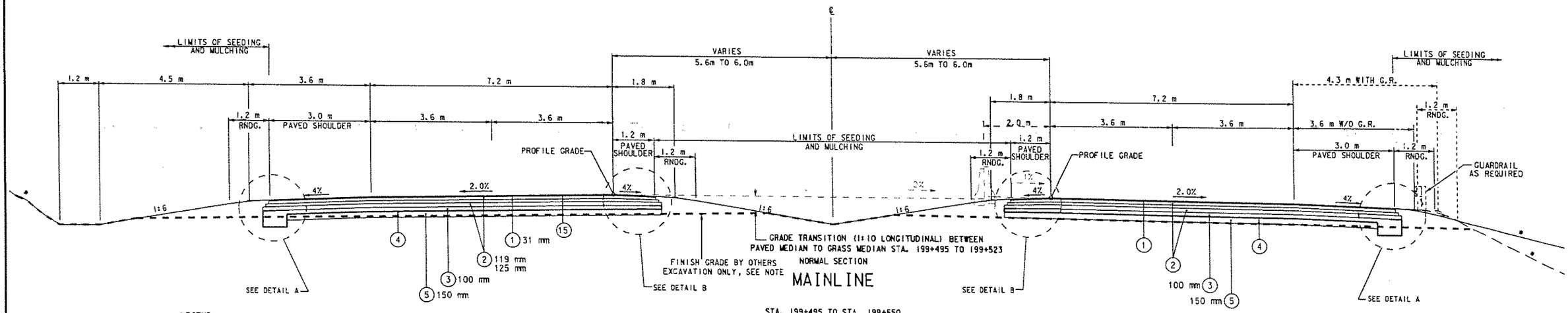
NOT TO SCALE

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

TYPICAL SECTIONS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	5	146



LEGEND:

(1)	ITEM 402001-011	SUPERPAVE HMA SKID RESISTANT PAVEMENT, PER MG
(2)	ITEM 401001-011	SUPERPAVE HMA BASE COURSE, PER MG
(3)	ITEM 311006-001	OPEN GRADED FREE DRAINING BASE COURSE, PER M3
(4)	ITEM 207034-001	FABRIC FOR SEPARATION, PER M2
(5)	ITEM 207002-000	SUBGRADE, PER M3
(6)	UNCLASSIFIED EMBANKMENT	
(7)	ITEM 606029-001	FREE DRAINING BASE (FDB) TRENCH, PER M

NOTES: 1) FINAL GRADE LINES FOR THE 'GRADE WORK ONLY' SECTIONS UNDER SEPERATE CONTRACT ARE AS FOLLOWS:

FOR EMBANKMENT: 250mm ABOVE BOTTOM OF SUBGRADE (ITEM 207-02)
FOR EXCAVATION IN ROCK: TO BOTTOM OF SUBGRADE (ITEM 207-02)
FOR EXCAVATION IN SOIL: TO BOTTOM OF SUBGRADE (ITEM 207-02)

ADDITIONAL EXCAVATION SHOULD BE EXPECTED IN CERTAIN AREAS TO MATCH SUBGRADE ELEVATION. EXCAVATION TO BE INCLUDED IN ITEM 228001-001 "SUBGRADE PREP"

* SLOPES VARY: SEE CROSS SECTIONS

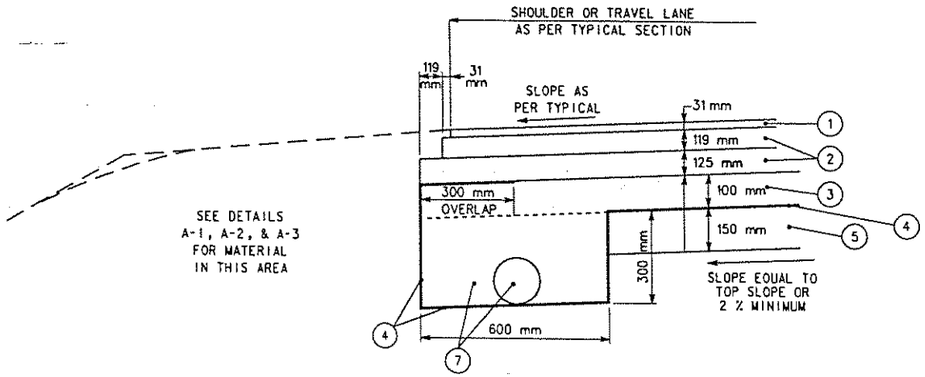
NOT TO SCALE

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

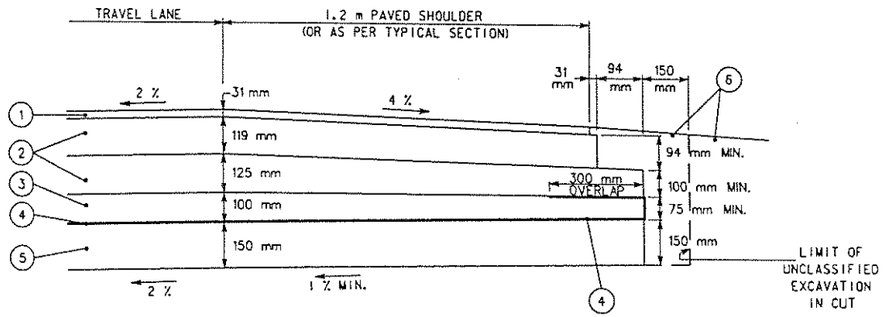
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

TYPICAL SECTIONS

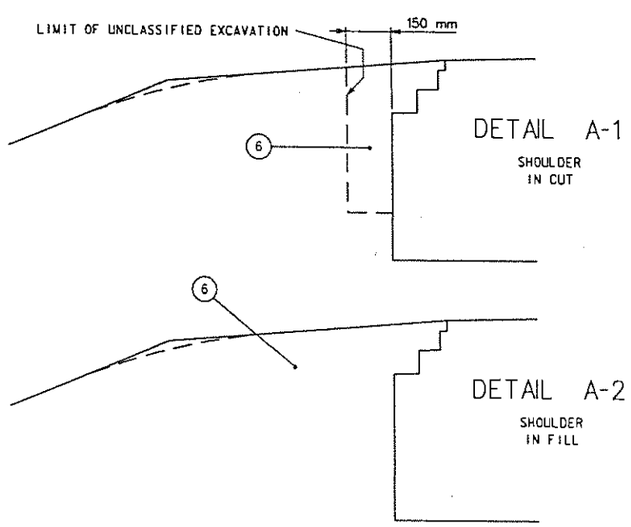
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	6	14



DETAIL A

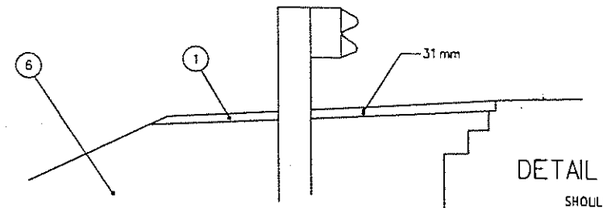


DETAIL B

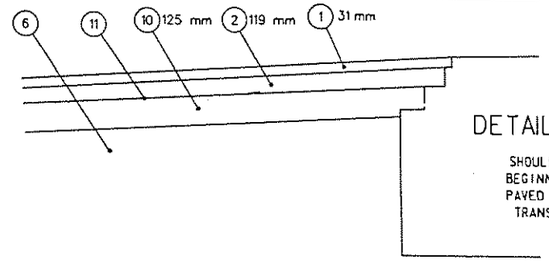


DETAIL A-1
SHOULDER
IN CUT

DETAIL A-2
SHOULDER
IN FILL



DETAIL A-3
SHOULDER
IN FILL WITH
GUARDRAIL



DETAIL A-4
SHOULDER AT
BEGINNING OF
PAVED MEDIAN
TRANSITION

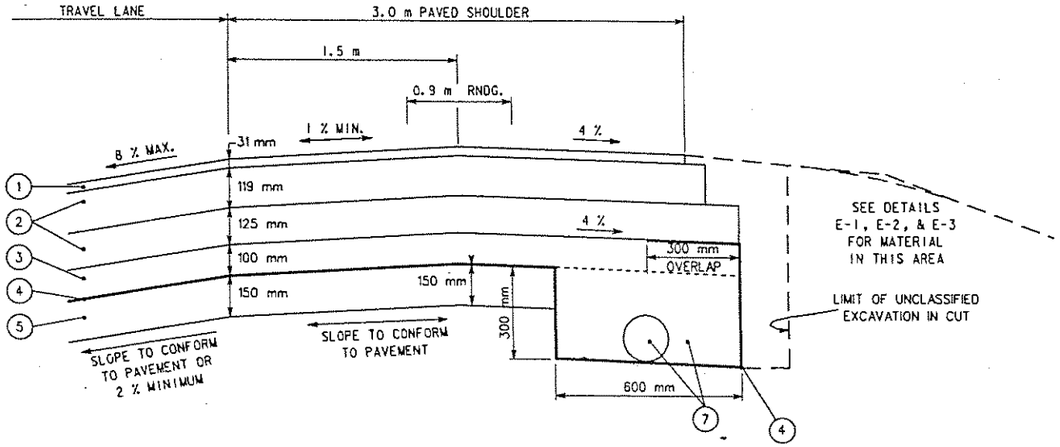
NOT TO SCALE

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

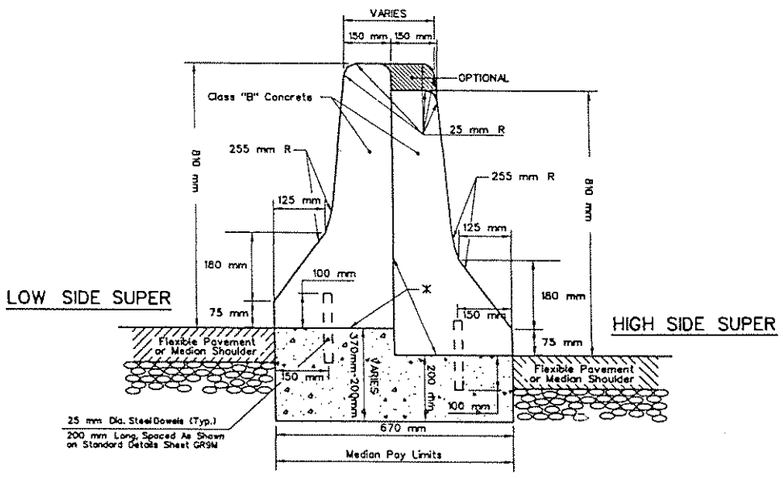
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

TYPICAL DETAILS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (105)	APD-0484 (124)CTC	2000	HARDY	7	196



DETAIL E

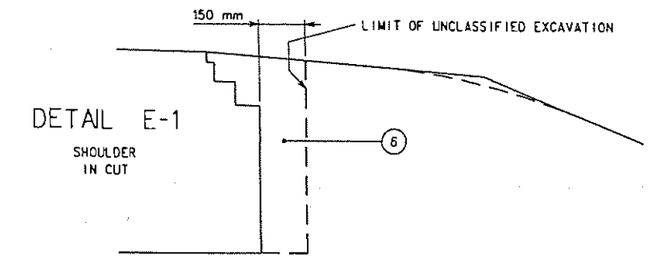


MODIFIED CONCRETE BARRIER MEDIAN
(Adjacent to Bituminous Paving)

*Optional Construction Joints: not applicable when median barrier is poured monolithically for it's entire depth. When a Horizontal Construction Joint is used, dowelbars are to be installed as shown. When a Vertical Construction Joint is used, dowelbars or bolts are to be used to tie the two sides together. Plans for the vertical ties must be preapproved by the project engineer.

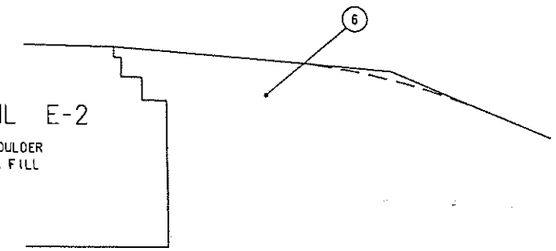
NOTES AS PER STANDARD DETAIL SHEET GR9M

DETAIL XX



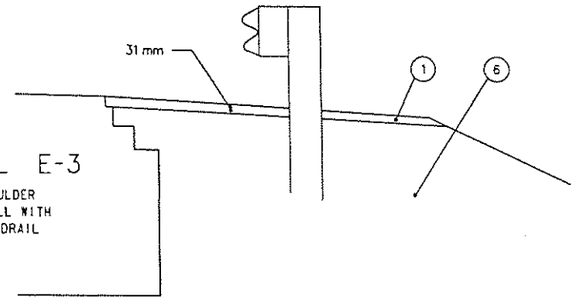
DETAIL E-1

SHOULDER IN CUT



DETAIL E-2

SHOULDER IN FILL



DETAIL E-3

SHOULDER IN FILL WITH GUARDRAIL

NOT TO SCALE

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

TYPICAL DETAILS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	8	146

ROADWAY ITEMS

ITEM NUMBER	ALTER. ITEM	ITEM DESCRIPTION	QUANTITY	UNITS
201001-000		CLEARING AND GRUBBING	1	LS
204001-000		MOBILIZATION	1	LS
207002-000		SUBGRADE	2116	M3
207034-000		FABRIC FOR SEPARATION	15925	M2
228001-000		SUBGRADE PREPARATION	18460	M2
311006-001		OPEN GRADED FREE DRAIN BASE	1363	M3
401001-011	AA1	SUPERPAVE HMA BASE 1 STONE AND GRAVEL	7972	MGR
401001-012	AA2	SUPERPAVE HMA BASE 1 SLAG	7497	MGR
402001-011	BB1	SUPERPAVE HMA SKID WEAR 1 STONE AND GRAVEL	1012	MGR
402001-012	BB2	SUPERPAVE HMA SKID WEAR 1 SLAG	920	MGR
502001-012		300 MM PCC APPROACH SLAB	306	M2
604001-020	DD1	600 MET CSP A2	192	M
604025-020	DD2	600 CORR. ALUM ALLOY PIPE	192	M
604037-020	DD3	600 RCP CLASS II	192	M
605009-001		TYPE G INLET	1	EA
605010-001		TYPE H INLET	3	EA
606029-001		FREE DRAINING BASE TRENCH	1040	M
606030-001		OUTLET PIPE	50	M
607001-001		TYPE 1 GUARDRAIL CL 1	506	M
607030-001		SPECIAL TRAILING END TERMINAL	1	EA
607065-001		FLARED END TERMINAL	1	EA
610006-005		MEDIAN TYPE V	496	M
639001-001		CONSTRUCTION LAYOUT STAKES	1	LS
640002-001		LARGE FIELD OFFICE/ STORAGE BLDG.	36	MO
652002-001		FERTILIZER:10-20-10	160	MGR
652003-001		SEED MIXTURE B, C-1, OR C-2	100	KG
664001-016		IMPACT ATT. DEVICE TYPE VIII	2	EA

PAVEMENT MARKINGS AND SIGNS

ITEM NUMBER	ALTER. ITEM	ITEM DESCRIPTION	QUANTITY	UNITS
657006-001		S100X11.5 A-441 SUPPORT GALVINIZED	28	M
657008-001		2.98 KG CHANNEL POST	43	M
657010-001		4.5 KG CHANNEL POST	11	M
657017-001		CLASS B CONCRETE FOOTING	1.56	M3
661001-001		2 MM FLAT SHEET SIGN	4	M2
661002-001		EXTRUDED PANEL SIGN	15	M2
661004-001		DELINEATOR REFLEX REFLECTOR AMBER	22	EA
661004-001		DELINEATOR REFLEX REFLECTOR WHITE	18	EA
661008-001		DELINEATOR BRACKET	10	EA
663001-004		EDGE LINE TYPE II WHITE	2040	M
663001-004		EDGE LINE TYPE II YELLOW	2040	M
663002-005		LANE LINE OR CENTERLINE TYPE II WHITE	510	M

BRIDGE ITEMS

ITEM NUMBER	ALTER. ITEM	ITEM DESCRIPTION	QUANTITY	UNITS
207001-001		UNCLASSIFIED EXCAVATION	4950	M3
211002-000		ROCK BORROW EXCAVATION	2395	M3
212001-000		STRUCTURE EXCAVATION	6400	M3
212004-000		COFFERDAM	5	EA
212005-000		SELECT MATERIAL FOR BACKFILLING	201	M3
217001-000		SPECIAL ROCK FILL	4950	M3
218004-001		200 MMM CRUSHED ROCK SLOPE PROTECTION	1800	M2
218007-000		FABRIC FOR EROSION	3300	M2
601002-001		CLASS B CONCRETE	1970	M3
601002-003		CLASS B CONCRETE ARCHITECTURAL	667	M3
601003-001		CLASS K CONCRETE	2903	M3
601003-003		CLASS K CONCRETE ARCHITECTURAL	335	M3
601006-001		CLASS D CONCRETE	98	M3
601025-001		MOD CLASS B ARCH 34 MPA CONCRETE	3488	M3
602001-001		REINFORCING STEEL BAR	559090	KG
602002-001		EPOXY COATED REIN STEEL BAR	426636	KG
603003-001		POST TENSIONING STRANDS	10890	KG
615001-001		STEEL SUPERSTRUCTURE	1	LS
615003-001		FABRICATED STRUCTURAL STEEL	1	LS
615005-001		ROCK ANCHOR INSTALLED	88	EA
615007-001		CONSOLIDATION GROUT AND REDRILL	665	M
615028-001		GUIDED BEARING	16	EA
615030-001		FIXED BEARING	12	EA
617003-001		ALUMINUM RAILING	982	M
627020-001		INSTALL MODULAR EXP. JOINT SYS	46	M
628004-001		EXPLORATORY DRILLING AND SAMPLING	180	M
631001-001		ELECTRICAL WORK	1	LS
639001-001		CONSTRUCTION LAYOUT STAKE	1	LS
679002-001		SPECIALIZED CONCRETE OVERLAY	398	M3
679006-001		TEST SLAB	1	LS

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

ESTIMATE SHEET

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H-101.92 05	APD-0484 (124)CTC	2000	HARDY	9	146

PAVING QUANTITIES

LOCATION	ITEM 207002 SUBGRADE m^3	ITEM 207034 FABRIC FOR SEPAR. m^2				ITEM 311006 OPEN GRADE FREE DRAIN BASE m^3	ITEM 401001-011 PRINCIPLE SUPERPAVE ASPHALT BASE Mg	ITEM 401001-012 ALTERNATE SUPERPAVE ASPHALT BASE Mg		ITEM 402001-011 PRINCIPLE SUPERPAVE ASPHALT SKID Mg	ITEM 402001-012 ALTERNATE SUPERPAVE ASPHALT SKID Mg	ITEM * 401007 PRINCIPLE SCRATCH COURSE Mg	ITEM * 401007 ALTERNATE SCRATCH COURSE Mg	ITEM 606029 FOB TRENCH m	ITEM 606030 OUTLET PIPE m	ITEM 228001 SUBGRADE PREP. m^2
STA. 198+530 TO STA. 198+640	688	3564				297	1749	1590		222	202	41	37	220	10	3905
STA. 198+640 TO STA. 198+760	415	3495				292	1763	1493		223	202	41	37	240	10	4260
STA. 199+260 TO STA. 199+330	133	1922				161	878	744		112	112	21	19	140	10	2485
STA. 199+330 TO STA. 199+550	880	6944				613	3582	3670		455	414	84	76	440	20	7810
TOTAL	2116	15925				1363	7972	7497		1012	920	187	169	1040	50	18460

* SCRATCH COURSE TO BE USED BETWEEN LIFTS OF BASE AND SKID

SUMMARY OF DRAINAGE QUANTITIES

LOCATION		CSP WITH ALUMINUM & CONCRETE ALTERNATES														CLASS B CONCRETE ITEM 601-02 ①	* REINFORCING STEEL	* ST'D. PIPE CULVERT WINGWALL ②	450mm METAL END SECTION	600mm METAL END SECTION	TYPE H INLET	TYPE G INLET	TYPE B INLET	PIPE ** SADLE CONNECTION				REMARKS
		CSP				ALUMINUM				RCP																		
		450	600	750	900	450	600	750	900	450	450	600	750	900	900									600 TO 1050	600 TO 1500	750 TO 1500	750 TO 1800	
		1.63	1.63	1.63	1.63	1.52	1.54	1.91	3.43																			
		68 x 12 CORR.	68 x 12 CORR.	68 x 12 CORR.	68 x 12 CORR.	68 x 12 CORR.	68 x 12 CORR.	76 x 25 CORR.	68 x 12 CORR.	CL II	CL IV	CL II	CL II	CL II	CL IV													
STATION	STATION	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m^3	Kg	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	
198+560	198+625		64.5				64.5					64.5										1						
198+625	198+685		59.5				59.5					59.5									1							*INCLUDE APPROPRIATE END
198+685	198+735		49.5				49.5					49.5									1							SECTION IN PRICE OF PIPE
198+735	198+744		18.5				18.5					18.5								1	1							
												36																
												15																
												39																
												30																
TOTAL		192					192					192								1	3	1						

① CLASS B CONCRETE QUANTITIES SHOWN FOR WINGWALLS ARE FOR METAL PIPE. QUANTITIES SHOULD BE ADJUSTED ACCORDINGLY FOR CONCRETE PIPE ALTERNATES.

② HEADWALLS & WINGWALLS - BID ITEM 601-02

CONCRETE MEDIAN (ITEM 610006-005)

LOCATION		LENGTH		IMPACT ATTEN 664001-016	REMARKS
STATION	STATION	LEFT	RIGHT		
198+534	198+768	234		1	
199+260	199+522		262	1	
		234	262	2	

GUARDRAIL

ROADWAY	LOCATION		ITEM 607001-001 CLASS I					ITEM 607065 F.E.T.	ITEM 607030 S.T.E.T.		BUFFER END	REMARKS
	STATION	STATION	LEFT	RIGHT	LEFT	RIGHT						
	198+661	198+776	115						1			TIE TO BRIDGE PARAPET
	198+700	198+776		76				1				TIE TO BRIDGE PARAPET
	199+245	199+560	315									
		TOTAL	430	76				1	1			

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

QUANTITIES

GENERAL NOTES

GOVERNING SPECIFICATIONS

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, SI METRIC STANDARD SPECIFICATIONS ROADS AND BRIDGES, ADOPTED 2000, THE CONTRACT DOCUMENTS AND THE CONTRACT PLANS ARE THE GOVERNING PROVISIONS APPLICABLE TO THIS PROJECT.

DRAINAGE

THE CONTRACTOR SHALL MAINTAIN WORKING STORM DRAINAGE SYSTEMS THROUGH THE WORK AREAS AT ALL TIMES DURING CONSTRUCTION. THE WORKING SYSTEM MAY CONSIST OF THE EXISTING STORM DRAINAGE SYSTEM, THE PROPOSED STORM DRAINAGE SYSTEM OR A COMBINATION THEREOF. DRAINAGE PIPES FOR PROPOSED SYSTEMS SHALL BE CONSTRUCTED IN SECTION LENGTHS NECESSARY TO MAINTAIN THE LANES OF TRAFFIC INDICATED IN THE MAINTENANCE OF TRAFFIC NOTES OR DISIGNATED BY PROJECT SUPERVISOR. NO ADDITIONAL PAYMENT OR COMPENSATION WILL BE MADE FOR THIS WORK.

FREE DRAINING BASE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OF ANY SECTION OF FREE DRAINING BASE, FREE DRAINING BASE TRENCH AND OUTLET PIPE DAMAGED BY CONSTRUCTION ACTIVITIES SUBSEQUENT TO PLACEMENT. DAMAGED AREAS SUBJECT TO REPLACEMENT SHALL BE DETERMINED BY THE PROJECT ENGINEER. NO ADDITIONAL PAYMENT OR COMPENSATION WILL BE MADE FOR THESE REPAIRS.

GEOTECHNICAL INFORMATION

ADDITIONAL GEOTECHNICAL INFORMATION MAY BE AVAILABLE IN THE FORM OF REPORTS OF GEOLOGICAL AND SUBSURFACE INVESTIGATIONS. ANY INQUIRIES SHOULD BE DIRECTED TO:

MATERIAL CONTROL, SOIL & TESTING SECTION
312 MICHIGAN AVENUE
CHARLESTON, WV 25305-0450

ITEM 308-01

THE GRADATION REQUIREMENTS SHALL BE MODIFIED AS FOLLOWS:
4% TO 12% PASSING THE 75 um SIEVE.

EROSION AND SEDIMENT CONTROL

DETAILS NOT SHOWN IN THE PLANS SHALL BE IN ACCORDANCE WITH THE WEST VIRGINIA DEPARTMENT OF HIGHWAYS EROSION AND SEDIMENT CONTROL MANUAL, DATED MARCH 1, 1995. IN THE EVENT THAT TEMPORARY EROSION AND POLLUTION CONTROL MEASURES ARE REQUIRED DUE TO THE CONTRACTOR NEGLIGENCE, CARELESSNESS, OR FAILURE TO INSTALL PERMANENT CONTROLS AS PART OF THE WORK AS SCHEDULED, AND ARE ORDERED BY THE ENGINEER, SUCH WORK SHALLBE PERFORMED BY THE CONTRACTOR AT HIS OWN EXPENSE.

THE FIRST ORDER OF WORK FOR THE CONTRACTOR IS TO INSTALL SEDIMENT CONTROL STRUCTURES, SILT FENCE, HAY/STRAW BALES, ETC. TO ESTABLISH EROSION CONTROL AT THE EARLIEST POSSIBLE DATE. INITIAL CLEARING AND GRUBBING IS TO ONLY BE WHAT IS NECESSARY IN ORDER TO ACCOMPLISH THESE OPERATIONS.

IN ADDITION, THE CONTRACTOR IS TO NAME AN INDIVIDUAL TO REVIEW THE EROSION CONTROL FEATURES AT A MINIMUM OF ONCE A WEEK DURING PERIODS OF HEAVY PRECIPITATION AND/OR ACTIVE CONSTRUCTION AND ONCE A MONTH DURING WINTER SHUTDOWN TO ASSESS THE SUCCESS OF THE EROSION CONTROL STRUCTURES, REVEGETATION EFFORTS, AND SEE THAT REPLACEMENT, CLEANING, AND/OR INSTALLATION OF ADDITIONAL FEATURES IF NECESSARY ARE CARRIED OUT.

IN ADDITION TO THE ENVIRONMENTAL MONITOR, PERIODICAL INSPECTIONS WILL BE CONDUCTED BY A REPRESENTATIVE OF THE WEST VIRGINIA DIVISION OF THE ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF WATER RESOURCES TO ENSURE THAT THE REQUIREMENTS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT IS BEING FULFILLED. REPRESENTATIVES OF THE OTHER RESOURCE AGENCIES MAY CONDUCT PERIODIC INSPECTIONS THROUGH THE LIFE OF THE CONTRACT.

ALL SEDIMENT TRAPS, SEDIMENT PONDS, AND SEDIMENT DAMES ARE TO BE CLEANED AND LEFT IN PLACE (UNLESS OTHERWISE NOTED) UPON COMPLETION OF THE PROJECT.

WASTE AND BORROW SITES

THE CONTRACTOR SHALL SUBMIT ALL WASTE AND BORROW SITES FOR REVIEW AND APPROVAL TO MR. CHARLES RILING SIMULTANEOUSLY WITH THEIR SUBMISSION TO THE PROJECT ENGINEER. NO WASTE OR BORROW SITES WILL BE PERMITTED WITHIN ANY FLOODPLAIN, WETLANDS, OR HIGHLY SENSITIVE CULTRAL RESOURCES. A MAP WILL BE PROVIDED AT THE PRE-BID CONFERENCE INDICATING THESE AREAS WITHIN THE LIMITS OF THE DESIGN REPORT MAPPING. MR. RILING'S ADDRESS IS AS FOLLOWS:

MR. CHARLES RILING, ENVIRONMENTAL MONITOR
WVDOT, DIVISION OF HIGHWAYS
STATE CAPITOL COMPLEX, BLDG. 5, ROOM A-649
1900 KANAWHA BLVD., EAST
CHARLESTON, WEST VIRGINIA 25305-0430

ELEVATIONS

ALL ELEVATIONS SHOWN REFER TO US COAST & GEODETIC SURVEY BASED ON SEA LEVEL DATUM 1929, REVISED 1981.

HAUL ROADS

IT WILL BE THE BRIDGE CONTRACTORS RESPONSIBILITY TO BUILD HAUL ROADS. IT WILL BE THE CONTRACTORS RESPONSIBILITY TO CONTACT CHARLES RILING OF THE WVDOH, (304)558-2803 THREE DAYS PRIOR TO CLEARING AND GRUBBING FOR THE HAUL ROAD, FOR APPROVAL OF THE CLEARING AND GRUBBING PLAN. THE CONTRACTOR SHOULD BE AWARE THAT A MINIMUM AMOUNT OF CLEARING AND GRUBBING SHOULD BE PERFORMED FOR THE HAUL ROADS AND BRIDGE SITE.

WOODEN POSTS (APPALACHIAN REGION)

ALL GUARDRAIL POST AND BLOCKS SHALL BE PRESSURE TREATED WOOD FROM THE APPALACHIAN REGION IN ACCORDANCE WITH SECTION 607 OF THE SPECIFICATIONS. ALL POSTS AND BRACES FOR RIGHT OF WAY FENCE, FARM FIELD TYPE, SHALL BE PRESSURE TREATED WOOD IN ACCORDANCE WITH SECTION 606 OF THE SPECIFICATIONS.

RUMBLE STRIPS

RUMBLE STRIPS SHALL BE USED ON THIS PROJECT.

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL CONTACT RODNEY DEMOTT (304)558-2885 72 HOURS PRIOR TO CLEARING AND GRUBBING BETWEEN STATIONS 199+040 AND 199+065 TO MAKE ARRANGEMENTS FOR AN ARCHEOLOGISTS TO BE ON SITE FOR THE OPERATION.

WORKING HOURS

THE CONTRACTOR SHALL BE PROHIBITED FROM WORKING WITHIN 200m OF ANY RESIDENCE BETWEEN THE HOURS OF 10:00 PM TO 6:00 AM.

COORDINATES

COORDINATES SHOWN ON THESE PLANS ARE PROJECT DATUM (GROUND COORDINATES) AND ARE NOT WEST VIRGINIA STATE PLANE COORDINATES. GRID FACTORS ARE NOT REQUIRED WHEN MAKING FIELD MEASUREMENTS.

NOTICE TO CONTRACTORS

IT IS TO BE ANTICIPATED THAT OTHER CONTRACTORS WILL BE WORKING IN THIS AREA, AND IT IS IMPERATIVE THAT A STRICT PLAN OF COORDINATION BETWEEN CONTRACTORS BE AGREED ON IN REFERENCE TO WORKING PLANS AND STORAGE AREAS. THIS PLAN OF COORDINATION WILL BE PRESENTED TO THE RESPECTIVE ENGINEER IN WRITING FOR THEIR REVIEW. ACCESS TO THIS PROJECT WILL BE PROVIDED THROUGH OTHER PROJECTS AND THE CONTRACTOR SHALL COORIDINATE CONCERNING ACCESS POINTS

IN ADDITION, THE WVDOH WILL HAVE CONSULTANTS IN THE AREA PERFORMING THE VARIOUS TESTS, TAKING SAMPLES AND OBSERVING CERTAIN OPERATIONS TO ENSURE THAT THE COMMITMENTS AGREED TO DURING THE FINALIZATION OF THE ENVIRONMENT DOCUMENT ARE BEING FOLLOWED.

ALSO REPRESENTATIVES OF THE FOLLOWING STATE AND FEDERAL AGENCIES WILL BE IN THE AREA ON OCCASSION TO OBSERVE AND MONITOR THE CONSTRUCTION:

WEST VIRGINIA DIVISION OF ENVIRONMENTAL PROTECTION
WEST VIRGINIA DIVISION OF NATURAL RESOURCES
WEST VIRGINIA STATE HISTORIC PRESERVATION OFFICE
UNITED STATES FISH & WILDLIFE SERVICE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
UNITED STATES ARMY CORPS OF ENGINEERS
UNITED STATES NATURAL RESOURCES CONSERVATION SERVICE
ADVISORY COUNCIL OF HISTORIC PERSERVATION
UNITED STATE DEPARTMENT OF AGRICULTURE, FOREST SERVICE

ACCESS AVAILABILITY

IT IS NOT ANTICIPATED THAT ACCESS FROM THE (04) SECTION SIDE WILL BE AVAILABLE UNTIL APRIL 2, 2001. ACCESS FROM THE (08) SECTION WILL NOT BE AVAILABLE UNTIL MAY 25, 2001.

PAVEMENT NOTE

PAVEMENT DESIGN ON THIS PROJECT WILL BE BASED ON THE HEAVY TRAFFIC CATEGORY (15 MILLION ESAL's). PG BINDER 70-22 WILL BE USED ON THIS PROJECT

VERIFICATION OF DIMENSIONS

THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF ALL PLAN AND ELEVATION DIMENSIONS PRIOR TO ORDERING MATERIALS FOR THE CONSTRUCTION OF THE VARIOUS BID ITEMS ON THIS PROJECT.

FILTER FABRIC

FILTER FABRIC SHALL BE PLACED AT ALL DUMP ROCK GUTTERS, SCOUR BASINS, RIP RAP CHANNELS, SELECT EMBANKMENT CHANNELS AND GABION CHANNELS UNLESS OTHERWISE NOTED.

TOPSOIL

TOPSOIL WILL BE BLADED AND STOCKPILED AS DIRECTED AS DIRECTED BY THE ENGINEER OR ENVIRONMENTAL MONITOR.

DIV.	NO.	NO.	PROJECT NO.	NO.			
W.V.	5	X316 -H- 101.92 5	APD-0484 (124)CTC	2000	HARDY		

ENVIRONMENTAL MONITOR

THE WVDOH IS UTILIZING A FULL TIME ENVIRONMENTAL MONITOR ON THE CORRIDOR H PROJECTS TO ASSURE THAT MITIGATION COMMITMENTS, DEVELOPED IN THE ENVIRONMENTAL IMPACT STATEMENT AND THE DESIGN PROCESS, ARE CARRIED OUT THROUGH THE CONSTRUCTION PHASE OF THE PROJECT. THE ENVIRONMENTAL MONITOR FOR THE WVDOH IS CHARLES RILING. MR. RILING CAN BE CONTACTED AT (304)558-0601. THE ENVIRONMENTAL MONITOR'S RESPONSIBILITIES ARE , BUT NOT LIMITED TO, THE FOLLOWING:

- REPORT DIRECTLY TO THE STATE HIGHWAY ENGINEER OR HIS DESIGNEE.
- PARTICIPATE IN THE MANDATORY PRE-BID CONFERENCE AND PRE-CONSTRUCTION MEETING WITH CONTRACTORS IN ORDER TO EXPLAIN THE MITIGATION MEASURES AND PERMIT CONDITIONS INCLUDED WITHIN EACH CONSTRUCTION PROJECT.
- ASSURE THAT CONTRACTORS ARE PROPERLY CONSTRUCTING, INSTALLING, AND/OR MAINTAINING REQUIRED MITIGATION MEASURES.
- ASSURE THAT CONTRACTORS ARE PROPERLY CONSTRUCTING, INSTALLING, AND MAINTAINING REQUIRED EROSION AND SEDIMENTATION CONTROL MEASURES.
- CONDUCT MONITORING IN ORDER TO DETERMINE COMPLIANCE WITH STATE WATER QUALITY STANDARDS.
- ASSURE THAT ALL PERMIT CONDITIONS ARE BEING ADHERED TO DURING THE CONSTRUCTION PHASE.
- ADVISE AGENCIES OF MAJOR CONSTRUCTION OPERATIONS WHICH MAY HAVE IMPACT ON WATER QUALITY, NATURAL RESOURCES, CULTURAL RESOURCES AND WILL ATTEND ALL FIELD REVIEWS CONDUCTED WITH THE AGENCIES DURING CONSTRUCTION.
- WILL OVERSEE WATER QUALITY MONITORING, BY INDEPENDENT CONSULTANTS, DURING THE CONSTRUCTION TO ASSURE COMPLIANCE WITH ALL PERMIT CONDITIONS ANC EFFECTIVENESS OF EROSION AND SEDIMENT CONTROL PLANS.

IN ADDITION TO THE ABOVE, THE ENVIRONMENTAL MONITOR HAS THE AUTHORITY TO SHUT DOWN THE CONSTRUCTION PROJECT WHERE ANY OPERATION RESULTS IN CONSTRUCTION IMPACTS TO WATER QUALITY, NATURAL RESOURCES OR CULTURAL RESOURCES. WORK WILL NOT BE PERMITTED TO RESUME UNTIL THE APPROPRIATE CORRECTIVE ACTION HAS BEEN INSTITUTED OR COMPLETED.

WATER QUALITY

THE CONTRACTOR WILL BE RESPONSIBLE FOR WATER QUALITY THROUGHOUT THE DURATION OF CONSTRUCTION. THE ENVIRONMENTAL MONITOR AND/OR PROJECT ENGINEER WILL WORK CLOSELY WITH THE PROJECT SUPERINTENDENT. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE FOLLOWING:

- DEVELOPING AND IMPLEMENTING AN EFFECTIVE EROSION CONTROL PLAN.
- DIRECTING THE CONSTRUCTION, OPERATION, AND DISMANTLING OF TEMPORARY EROSION CONTROL FEATURES.
- IMPLEMENTING REMEDIAL ACTION REQUIRED TO REPAIR FAILING EROSION AND SEDIMENTATION CONTROL FEATURES.
- IMPLEMENTING STORM AND WINTER SHUTDOWN PROCEDURES.
- WILL SHAPE THE EARTHWORK PRIOR TO THE SUSPENSION OF GRADING OPERATIONS EACH DAY IN A MANNER THAT WILL PERMIT STORM RUNOFF WITH A MINIMUM OF EROSION.
- EROSION CONTROL FEATURES INSTALLED BY THE CONTRACTOR WILL BE OPERATED AND MAINTAINED IN AN ACCEPTABLE CONDITION.
- WHEN ANY EROSION OR SEDIMENT CONTROL FEATURE HAS REACHED HALF OF ITS CAPACITY, THE DEVICE IS TO BE CLEANED OUT AND RESTORED TO ITS ORIGINAL CONDITION.

THE CONTRACTOR WILL BE REQUIRED TO PREPARE A SPILL PREVENTION, CONTROL, AND COUNTERMEASURES (SPCC) PLAN THAT ITEMIZES SPECIFIC MEASURES THAT WILL BE IMPLEMENTED TO PREVENT AND CLEAN UP CHEMICAL AND PETROLEUM PRODUCT SPILLS THAT MAY OCCUR DURING ALL PHASES OF PROJECT CONSTRUCTION. FUEL STORAGE, REFUELING ACTIVITIES, EQUIPMENT MAINTENANCE ACTIVITIES, AND EQUIPMENT WASHING WILL BE KEPT AT LEAST 150 METERS AWAY FROM ANY PERENNIAL OR INTERMITTENT WATERCOURSE OR WETLAND.

PAVING FOR GUARDRAIL

THE PAVING REQUIRED FOR INSTALLATION OF GUARDRAIL (DETAIL A3 & E3) WILL NOT HAVE SEASONAL LIMITATIONS AND WILL NOT BE REQUIRED TO MEET COMPACTION REQUIREMENTS.

BENCH MARKS

THE CONTRACTOR SHALL ATTEMPT TO HOLD BENCH MARK LOCATIONS THROUGHT THE LIFE OF THE PROJECT. IN THE EVENT THAT A BENCH MARK IS DISTURBED, THE CONTRACTOR, AS DIRECTED BY THE PROJECT ENGINEER, WILL RELOCATE OR REESTABLISH THE BENCH MARK. NO ADDITIONAL PAYMENT OR COMPENSATION WILL BE MADE FOR THIS WORK.

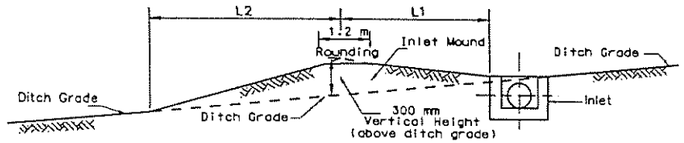
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

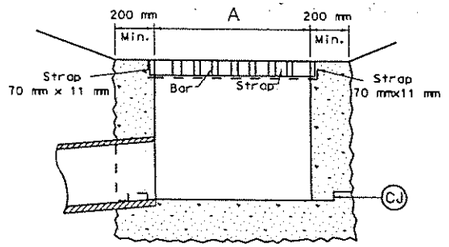
GENERAL NOTES

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	11	146

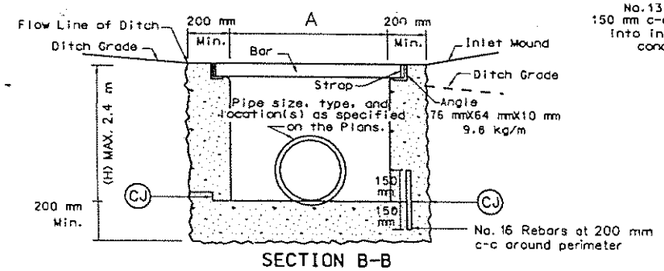
INLET MOUNDING TABLE			
DITCH GRADE (%)		L1, HORIZONTAL LENGTH (m)	L2, HORIZONTAL LENGTH (m)
FROM	TO		
0	3	3.0	4.5
3	5	2.7	6.0
5	7.5	2.4	12.0
7.5	UP	SPECIAL DESIGN	SPECIAL DESIGN



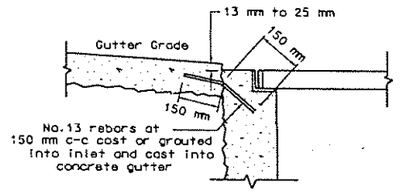
MOUNDING DETAIL
Median and Side Ditches



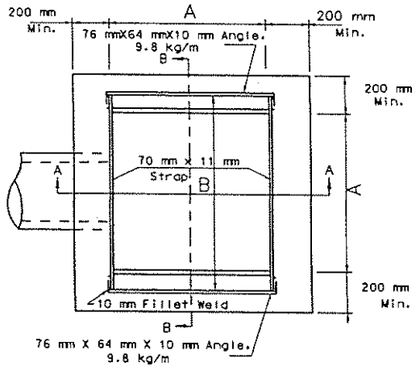
SECTION A-A
(Type 2 Grate Shown)



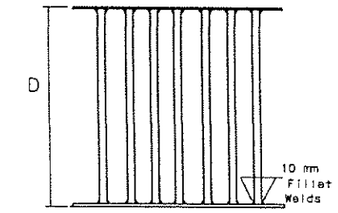
SECTION B-B



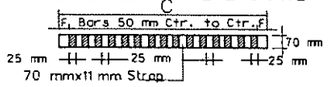
PARTIAL SECTION B-B
(Showing connection of concrete gutter)



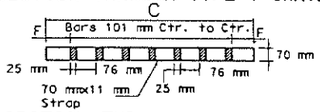
PLAN



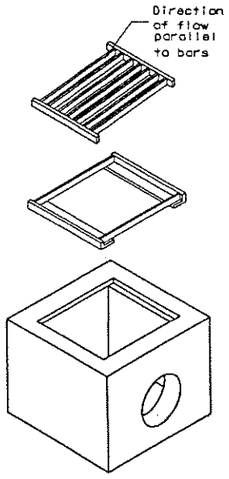
PLAN VIEW-TYPE 2 GRATE



SECTION THROUGH TYPE 1 GRATE



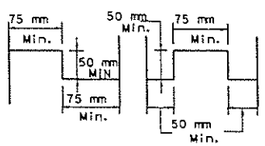
SECTION THROUGH TYPE 2 GRATE



EXPLODED DETAIL

DIMENSIONS (mm)						TYPE 2 GRATE		TYPE 1 GRATE	
Pipe Size	A (mm)	B (mm)	C (mm)	D (mm)	H(mm Min)	F (mm)	Bars	F (mm)	Bars
450	813	965	806	959	610	86	7	40	15
600	813	965	806	959	762	86	7	40	15
750	1067	1219	1060	1213	914	66	10	46	20
900	1219	1372	1213	1365	1067	89	11	44	23
1050	1372	1524	1365	1518	1219	64	13	45	25
1200	1524	1676	1518	1670	1372	39	15	45	29

The following substitutions in dimensions are acceptable for fabricating the grate and frame:
Strap Thickness: 13 mm Strap Depth: 75 mm Bar Depth: 75 mm



CONSTRUCTION JOINT DETAILS

NOTES

Type 2 Grate, a rural and expressway type grate shall be used at all locations unless otherwise specified on the Plans. Type 1 Grate, an urban type grate, shall be used only at specialty designated locations.

The Contractor, at his option, may delete the frame as shown herein if the inlet is cast in a manner which will allow concrete to replace the area shown as occupied by the frame, and the grate supporting ledges do not permit the grate to rock.

The Mounding Detail as shown is not required when an inlet is placed in a vertical sag.

Optional construction joints labeled "CJ" may be keyed or doweled as per the typical details shown herein or as approved by the Engineer.

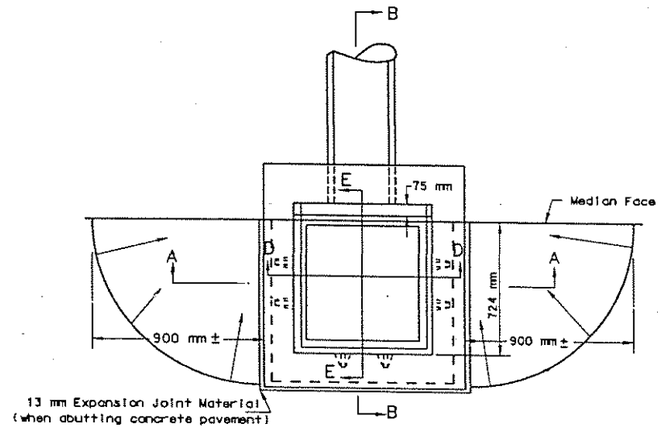
Bar designation number (No.) approximates the number of millimeters in the nominal diameter of the bar.

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

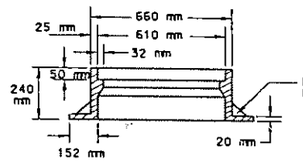
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

TYPE G INLET
SPECIAL DETAIL

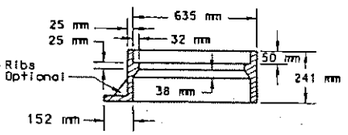
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	12	146



PLAN
(Grate not shown)

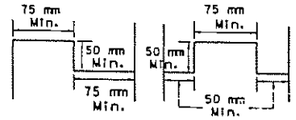


SECTION D-D

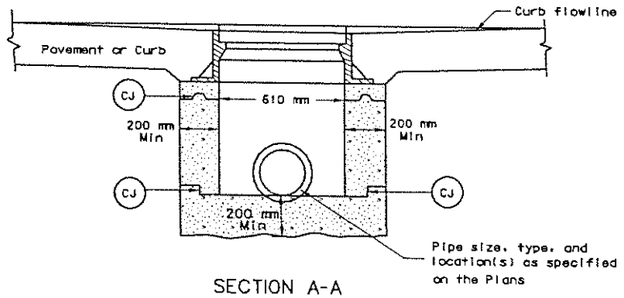


SECTION E-E

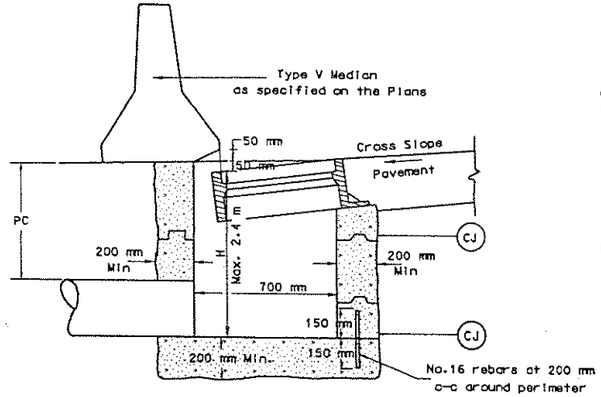
DETAIL OF FRAME



CONSTRUCTION JOINT DETAILS



SECTION A-A



SECTION B-B

NOTES

This inlet is intended for use with a type V Median (concrete barrier median) as specified on the plans.

Optional construction joints labeled "CJ" may be keyed or doweled as per the typical details shown herein, or as approved by the Engineer.

Grate as shown on Standard Sheet DR6M-X to be used with this inlet.

PC (minimum pipe cover) shall be 300 mm below inlet top for pipes placed under sidewalk or grassed area or 600 mm below inlet top for pipes placed under pavement or shoulder.

Bar designation number (No.) approximates the number of millimeters in the nominal diameter of the bar.

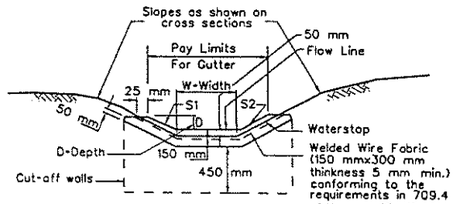
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

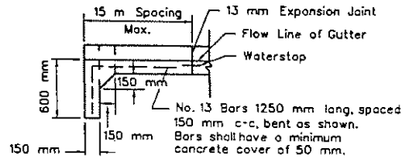
TYPE H INLET

SPECIAL DETAIL

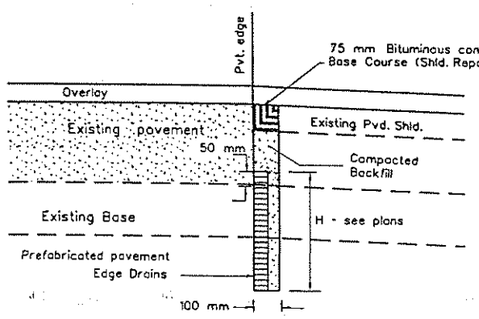
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	Country	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	13	146



CONCRETE GUTTER



CUT - OFF WALL

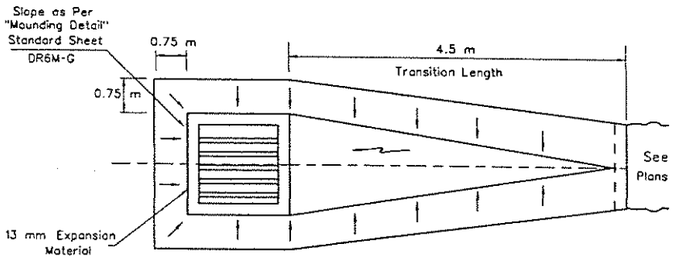


SECTION A-A

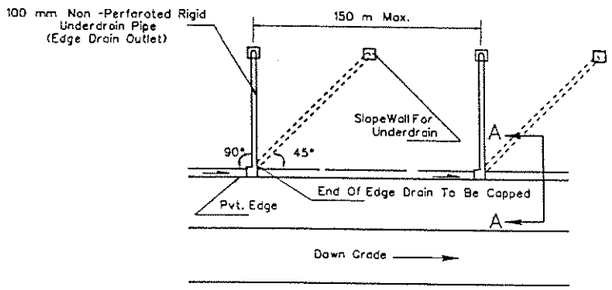
STANDARD CONCRETE GUTTER TYPES

Gutter Type	Gutter Side Slopes S1*	Gutter Side Slopes S2	Gutter Depths and Widths
1	1:2	1:2	Gutter depths shall be specified in 150 mm increments. Gutter widths shall be in 300 mm increments for widths of 0.6 m to 1.8 m and in 600 mm increments for widths of over 1.8 m. A change in width shall be transitioned at the rate of 1:10 each side.
2	1:4	1:2	
3	1:4	1:1-1/2	
4	1:6	1:2	
5	1:6	1:1-1/2	
6	1:5	1:5	
7	1:6	1:6	
8	1:6	1:3	

*Shall be inside gutter slope for roadside ditches, unless otherwise specified.



CONCRETE GUTTER TREATMENT AT INLETS
PLAN VIEW



PLAN

PREFABRICATED EDGE DRAIN

NOTES

Waterstop shall be 125 mm wide min.: web min. thickness 5 mm: and section and / or ribs less than 1.67 web thickness.

The waterstop diagrams are for informational purposes only. All waterstops shall conform to the general shape shown and meet the requirements of Section 708.10 of the Specifications.

Concrete gutter types, depths and widths shall be specified on the plans and shall conform with the table shown. Only one concrete gutter type and depth shall be used in each individual run of gutter.

The "Concrete Gutter Treatment at Inlets" detail as shown is for transitioning a V ditch section to the width of the inlet. The 4.5 m length is to be used to make this transition regardless of the width of the approach ditch.

Cut-off walls for concrete gutter shall be constructed and paid for in accordance with Section 633 of the Specifications.

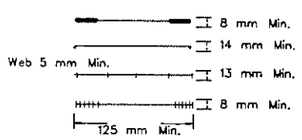
There will be no separate payment for Select Embankment Channel if the material is obtained from the unclassified excavation. If select embankment is not available from unclassified excavation, payment will be made under Section 211 for Rock Borrow Excavation. Unless otherwise specified on the plans, the maximum rock size will be "T" and the minimum rock size will be one-half "T".

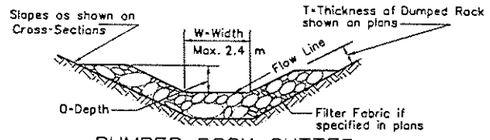
All edge drain outlets are to be equipped with a Slopewall for Underdrain and Vermint Screen as detailed on Standard Sheet DR8M, 3 of 4 or tied to existing inlets or pipes. Underdrain pipe tied to inlets or fastened to culvert pipe by pipe saddle, grouting, cementing, or other means that will provide a secure attachment satisfactory to the engineer shall be included in the cost of the underdrain pipe. The cost of the Slopewall or tie to inlet or pipe will be included in the unit price bid for edge drain.

When edge drain outlets can not be outletted at 90° or 45° to pavement edge as shown, appropriate details as shown for Free Draining Base outlet on Standard Sheet DR8M, 3 of 4 are to be used.

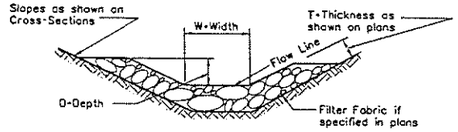
Bar designation number (No.) approximates the number of millimeters in the nominal diameter of the bar.

TYPICAL
WATERSTOPS





DUMPED ROCK GUTTER
(For Maximum Width of 2.4 m)
Stone sizes as per Section 704.4 of the Specifications



SELECT EMBANKMENT CHANNEL
(For Widths Exceeding 2.4 m)

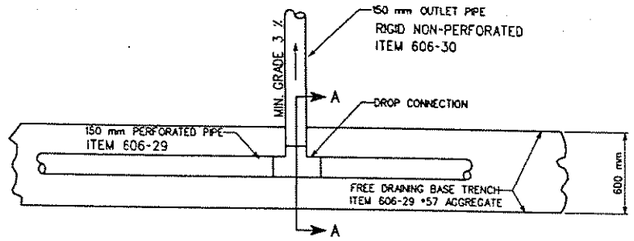
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

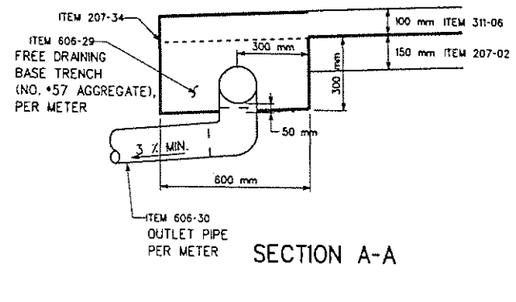
MISCELLANEOUS DRAINAGE

SPECIAL DETAIL

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	19	146



PLAN VIEW



SECTION A-A

NOTE: PAYMENT FOR THE OUTLET PIPE INCLUDES DROP CONNECTIONS IN THE FREE DRAINING BASE TRENCH AND SLOPEWALLS OR CONNECTIONS TO DRAINAGE STRUCTURES AS REQUIRED. MAXIMUM OUTLET SPACING IS TO BE 75 m IN EMBANKMENTS. OUTLETS IN CUT SECTIONS WILL BE MADE TO THE NEAREST DRAINAGE STRUCTURE. SLOPEWALL DETAILS WILL BE IN ACCORDANCE WITH STANDARD DR8M (SHEET 3 OF 4).

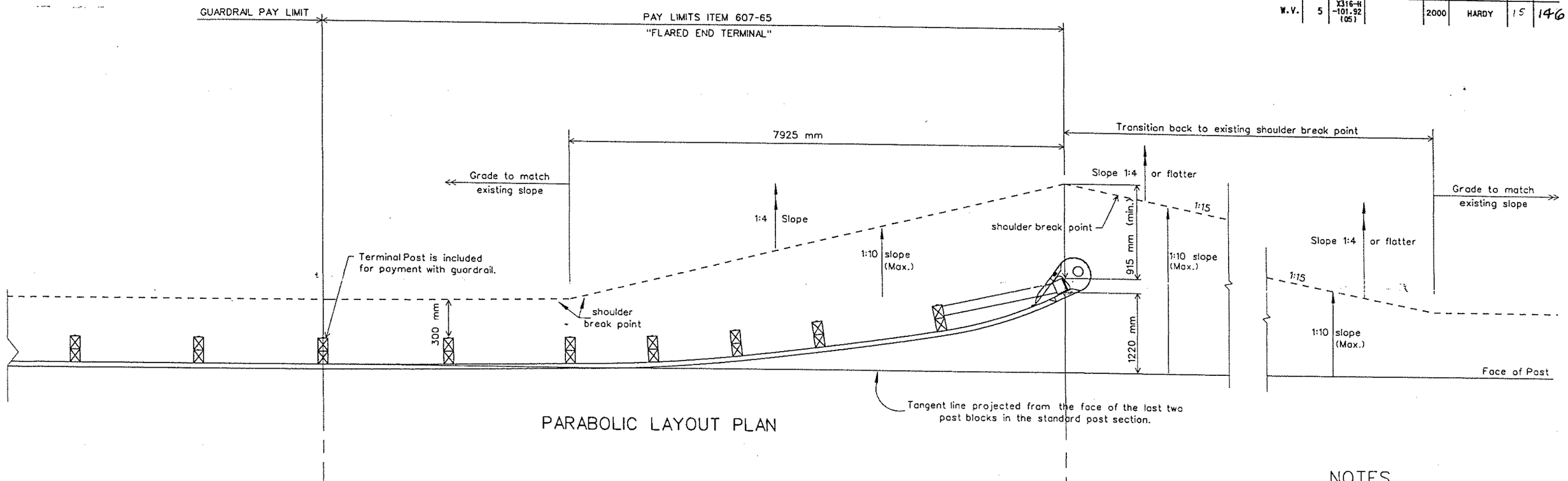
SPECIAL DETAILS

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

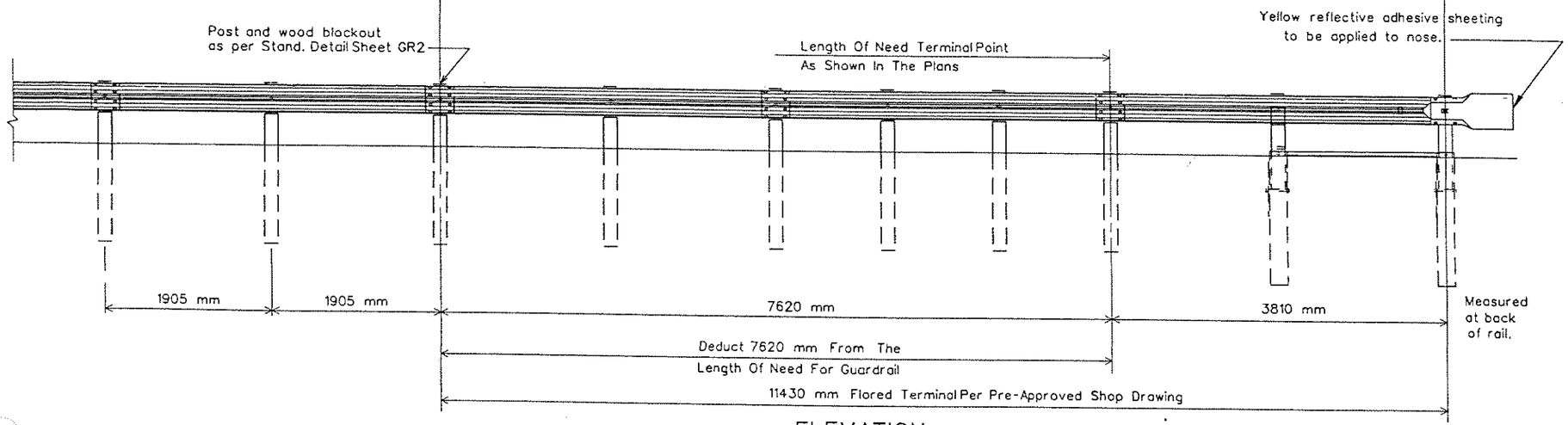
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

FREE DRAINING BASE TRENCH AND OUTLET PIPE DETAIL
SPECIAL DETAIL

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)		2000	HARDY	15	146



PARABOLIC LAYOUT PLAN



ELEVATION

NOTES

For details of Flared End Terminal see pre approved shop drawings.

All materials used shall meet the applicable requirements of Section 607 of the Standard Specifications Road and Bridges.

The post offset dimensions are given to the center of the traffic face of the blockouts: except at the first post, where the dimension is to the center of the traffic face of the post. Offset points are to be located by measurements at the back of rail equal to the nominal post spacings shown on pre-approved shop drawings. Posts are to be set approximately radial to the railing at each location.

When a wood block is used adjacent to a wood post, the block shall be nailed to the post with a galvanized steel common nail (75 mm X 4 mm X 8 mm). The nails to be driven into the center of the top or bottom of the block.

The cost of furnishing and installing the Flared End Terminal, complete with all miscellaneous hardware and parts as detailed on the pre-approved shop drawings , is to be included in the unit price bid for "Flared End Terminal".

Yellow reflective sheeting shall caver the entire nose of those terminals with a flat impact head. Those terminals with a rounded impact head shall be covered with a 300 mm X 900 mm yellow reflective sheet.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SPECIAL DETAIL

PREPARED 10-28-98

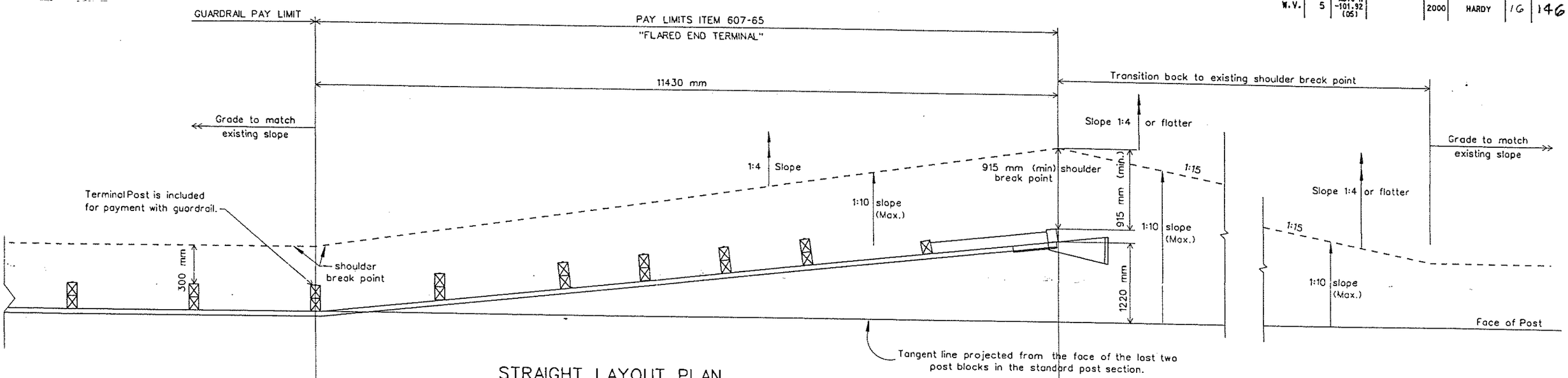
REVISION DATE

FLARED END TERMINAL PARABOLIC LAYOUT

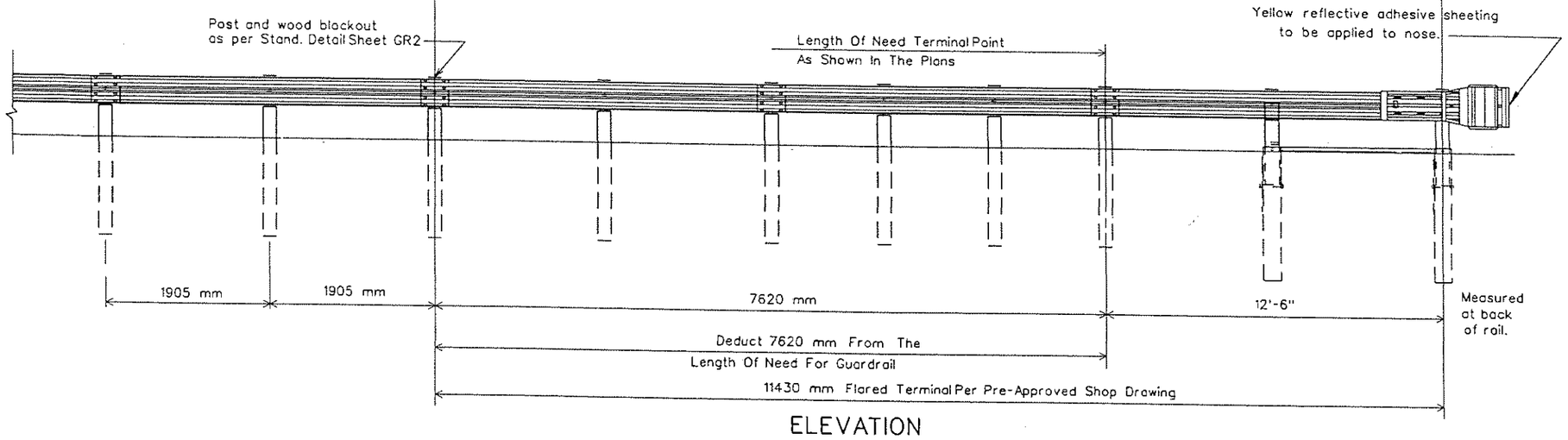
(SHEET 1 OF 2)

SPECIAL DETAIL SHEET GR5M

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)		2000	HARDY	16	146



STRAIGHT LAYOUT PLAN



ELEVATION

NOTES

For details of Flared End Terminal see pre approved shop drawings.

All materials used shall meet the applicable requirements of Section 607 of the Standard Specifications Road and Bridges.

The post offset dimensions are given to the center of the traffic face of the blockouts: except at the first post, where the dimension is to the center of the traffic face of the post. Offset paints are to be located by measurements at the back of rail equal to the naminal post spacings shown on pre-approved shop drawings. Posts are to be set approximately radial to the railing at each location.

When a wood block is used adjacent to a wood post, the block shall be nailed to the post with a galvanized steel common nail (75 mm X 4 mm X 8 mm). The nails to be driven into the center of the top or bottom of the block.

The cost of furnishing and installing the Flared End Terminal, complete with all miscellaneous hardware and parts as detailed on the pre-approved shop drawings , is to be included in the unit price bid for "Flared End Terminal".

Yellow reflective sheeting shall cover the entire nose of those terminals with a flat impact head. Those terminals with a rounded impact head shall be covered with a 300 mm X 900 mm yellow reflective sheet.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SPECIAL DETAIL

PREPARED 10-28-98

REVISION DATE

FLARED END TERMINAL STRAIGHT LAYOUT

(SHEET 2 OF 2)

SPECIAL DETAIL SHEET GR5M

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
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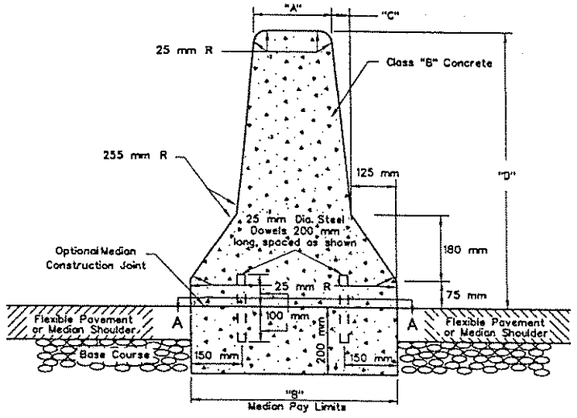
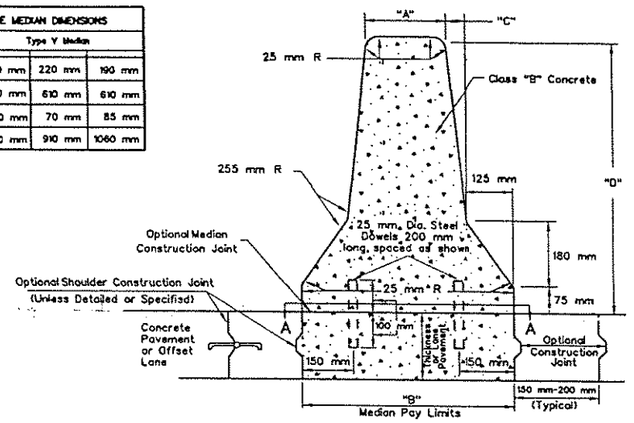


(Adjacent to Bituminous Paving)

F-SHAPE MEDIAN DIMENSIONS			
Designation	Type Y Median		
"A"	240 mm	220 mm	190 mm
"B"	610 mm	610 mm	610 mm
"C"	60 mm	70 mm	85 mm
"D"	810 mm	910 mm	1060 mm



(Adjacent to Concrete Paving)

F-SHAPE

NOTES

The median and footer can be poured monolithically. When the median is poured on existing concrete pavement, the median shall be secured with dowelbars drilled and grouted in the existing concrete pavement, as shown.
When the median and footer are to be poured separately, a median construction joint shall be used.

Where the median is placed over existing pavement contraction joints, median sections shall be separated by open joints having the same width as the pavement joints for the full median height. At all other median contraction joints, a 10 mm wide and 50 mm deep groove shall be sawed or formed across the top and along the sides for the entire height (including footer depth) of the median, or a full depth butt joint shall be formed at approximately 4.5 m- 6.2 m intervals along the length of the median. In addition these grooved or butt joints shall transversely align within a plus or minus 300 mm tolerance with the contraction joints in abutting concrete pavement.

Expansion joints shall be placed in the median at structures when so indicated, opposite expansion joints in abutting concrete pavement, over existing expansion joints in underlying concrete pavement, and at other locations as shown on the Plans or directed by the Engineer. At expansion joints, median sections shall be 20 mm apart and the opening filled for the entire depth of the median with 20 mm preformed joint filler which complies with the requirements of section 610 of the Standard Specifications Roadways and Bridges. The filler shall be recessed 5 mm in from the sides and the top of the median and the completed joint shall recieve no further treatment; e.g., sealing with a waterproof sealer is prohibited.
The median shall be adequately terminated at each end of median installations as shown or specified elsewhere in the Plans.

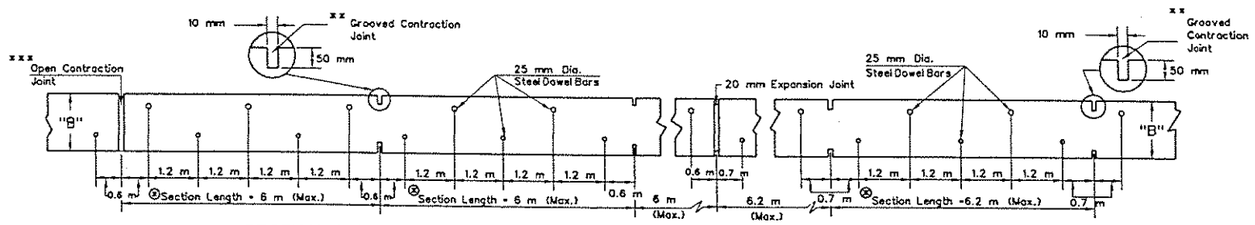
Drainage openings shall be provided in the medians where indicated on the Plans or directed by the Engineer.

Unless otherwise specified, bi-directional delineators meeting the requirements of Section 661 of the Standard Specifications Roads and Bridges and mounted on suitable supports, shall be secured to, and spaced along the length of the median as shown and specified on Standard Sheet TE 11-5 of the Standard Details Book, Volume II. The cost of concrete, steel dowel bars, preformed joint filler, delineators and delineator mountings shall be included in the cost of the median.

Type of surface adjacent to the median, whether normal width or widened pavement, offset lane, median shoulder, etc., shall be specified in the Plans and shall not be included in the cost of the median but shall be paid for separately.

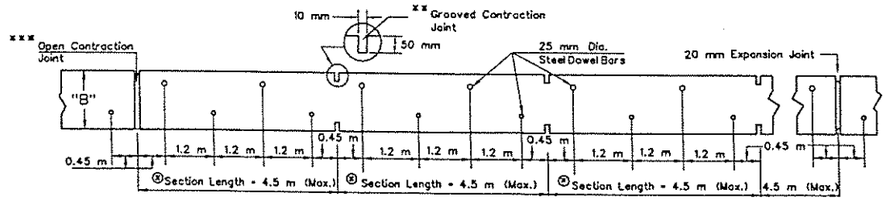
The contractor will have the option to install either the N-J Shape or the F-Shape median unless otherwise specified in the Plans.

For additional dimensions, notes and details see sheet 2 and 3.



SECTION A-A (12 m Joint Spacing)

SECTION A-A (18.5 m Joint Spacing)



SECTION A-A (4.5 m Joint Spacing)

ⓧ center-to-center of Contraction Joints, except where Expansion Joints are Specified.

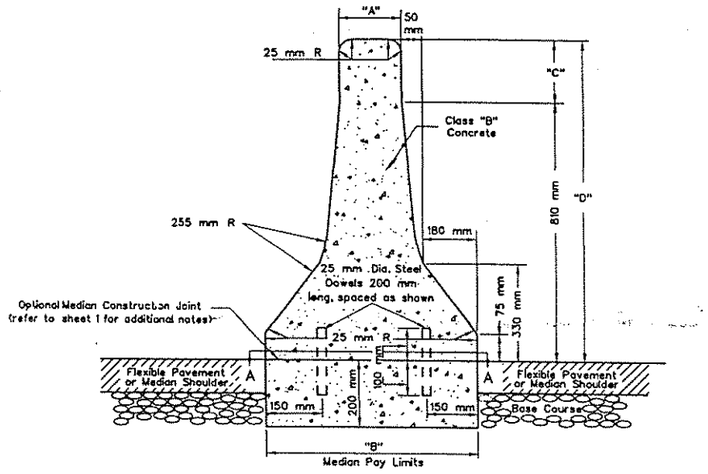
xx formed full-depth butt joint.

xxx open (separated) joint over existing ridged pavement contraction joint. Median joint width equal to pavement joint width.

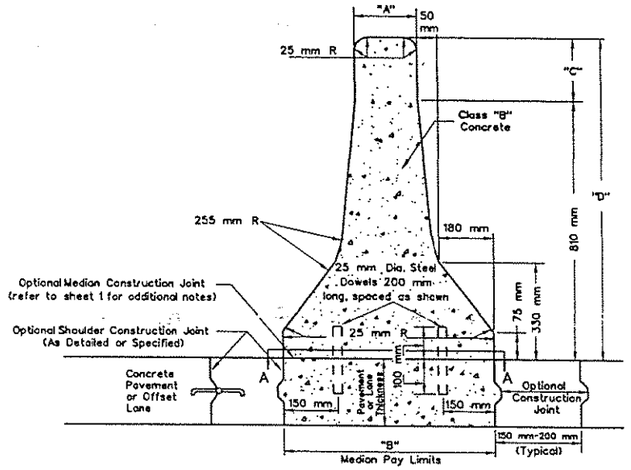
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
TYPE V MEDIAN
F – SHAPE
(SHEET 1 OF 3)
SPECIAL DETAIL

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	18	146



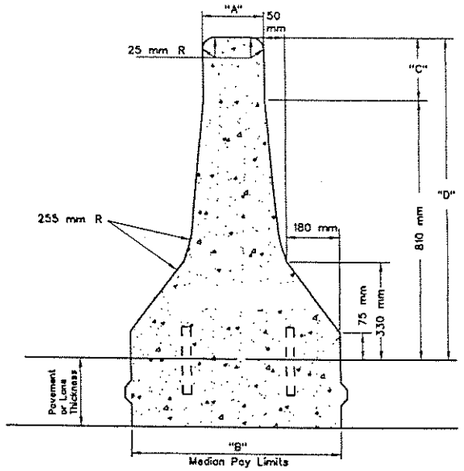
(Adjacent to Bituminous Paving)



(Adjacent to Concrete Paving)

N-J SHAPE

N-J SHAPE MEDIAN DIMENSIONS			
Designation	Type V Median		
"A"	150 mm	150 mm	150 mm
"B"	610 mm	610 mm	610 mm
"C"	-0-	100 mm	250 mm
"D"	810 mm	910 mm	1060 mm



Raised Median

NOTES

Height of the median, dimension "D", shall be included in the Plans.

Additional height of median, dimension "C" shall be vertical.

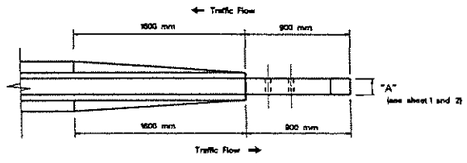
The contractor will have the option to install either the N-J Shape or the F-Shape median unless otherwise specified in the Plans.

For additional dimensions, notes and details, see Sheet 1 and 3.

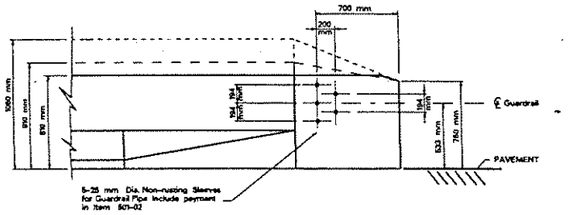
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
TYPE V MEDIAN
N-J SHAPE
(SHEET 2 OF 3)
SPECIAL DETAIL

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H-101.92 (05)	APD-0484 (124)CTC	2000	HARDY	19	146

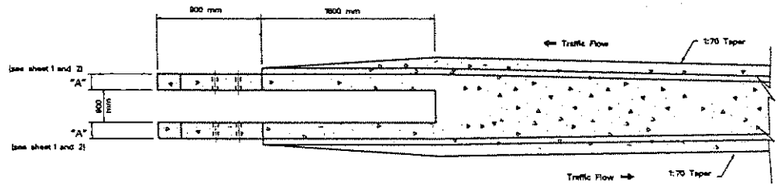


PLAN

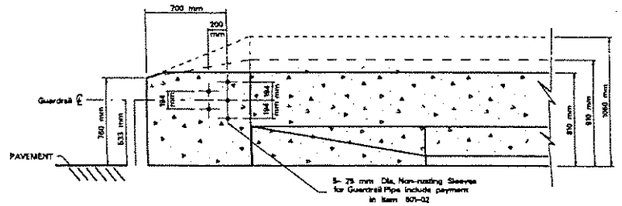


ELEVATION

DOUBLE FACE TRANSITION

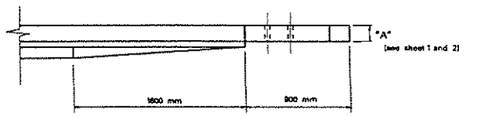


PLAN

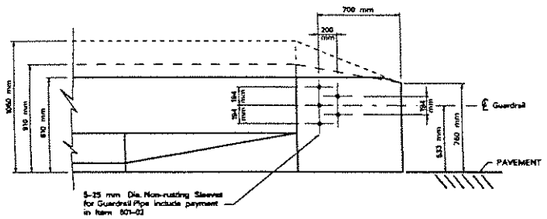


ELEVATION

DOUBLE MEDIAN TRANSITION

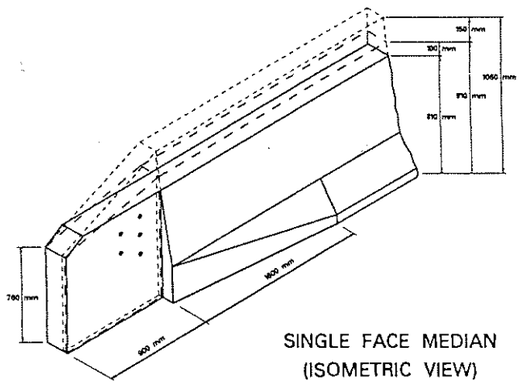


PLAN



ELEVATION

SINGLE FACE TRANSITION



SINGLE FACE MEDIAN
(ISOMETRIC VIEW)

NOTES

The contractor shall have the option to install either the N-J Shape or the F-Shape median unless otherwise specified on the Plans.

For additional dimensions, notes and details see Sheet 1 and 2.

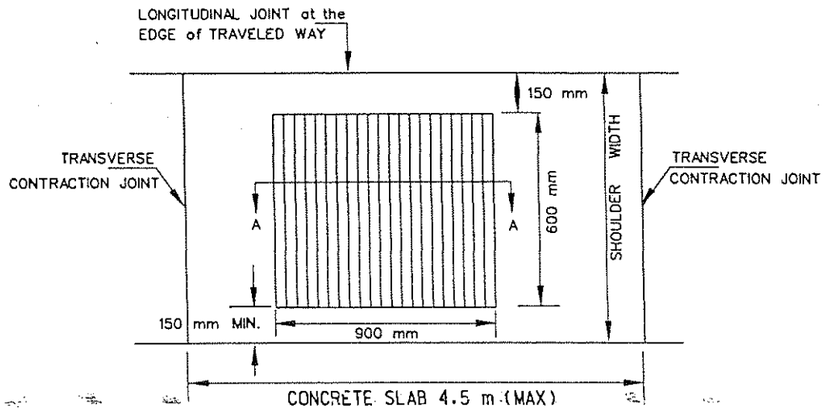
For additional notes and details of the guardrail bolt pattern, see Standard Detail Sheet GR7M, sheet 1 and 2.

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

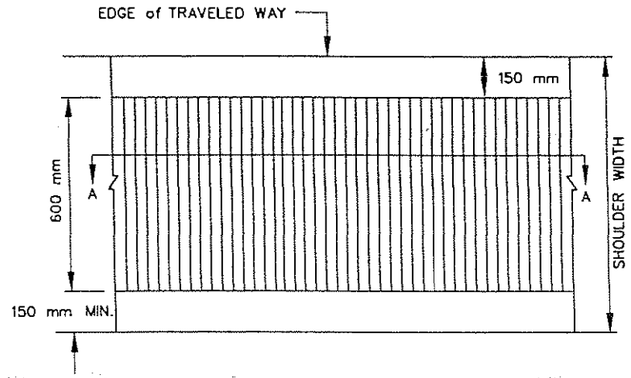
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

TYPE V MEDIAN GUARDRAIL ATTACHMENT F – SHAPE OR N-J SHAPE (SHEET 3 OF 3) SPECIAL DETAIL

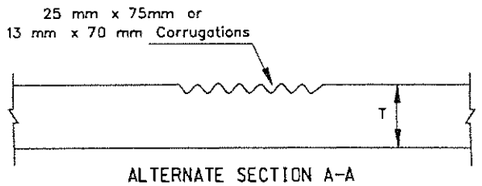
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	20	196



RUMBLE STRIPS FOR PORTLAND CEMENT CONCRETE SHOULDERS

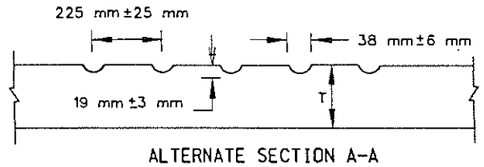


RUMBLE STRIPS FOR HOT MIX ASPHALT SHOULDERS



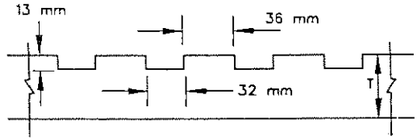
ALTERNATE SECTION A-A

RUMBLE STRIPS FOR PAVED SHOULDERS
(FORMED OR ROLLED IN)



ALTERNATE SECTION A-A

RUMBLE STRIPS FOR PAVED SHOULDERS
(FORMED OR ROLLED IN)



ALTERNATE SECTION A-A

OPTIONAL OR SPECIFIED SAWED RUMBLE STRIP

NOTES

Rumble strip placement will be continuous on hot mix asphalt shoulders and intermittent on portland cement concrete shoulders, except as noted below. Spacing on portland cement shoulders will be 9 m centers except for ramps where spacing will be 4.5 m centers.

Rumble strips shall not be placed at the following areas for non-freeway projects only: on shoulders of narrow climbing lanes that are 1.5 m or less in width, right of traffic flow; in the shoulder transition area, right of traffic flow, between a full paved shoulder width of 3 m and narrow bridge width of 1.2 m.

Rumble strip width is to be 600 mm.

Rumble strips may be formed or sawed unless otherwise indicated. The top of the rumble strips will be no higher than the top surface of the pavement. Any faulty or incorrectly installed rumble strips will be corrected by the contractor at his expense. Payment for rumble strip placement is to be incidental to the applicable paved shoulder bid item.

Other alternate rumble strip details may be approved by the Engineer.

The longitudinal joint as shown on the plan view of the Rumble Strip detail is to be Type E on new construction, unless otherwise indicated. It is to be sawed and sealed as per Standard Sheet PVT1M. The transverse contraction joint, as shown in the Rumble Strip detail, is to line up with the Transverse Joint in the traveled way pavement. This joint is to be sawed and sealed as per the Transverse Contraction Joint detail on Standard Sheet PVT1M. Dowel basket assemblies will not be required for the shoulder transverse contraction joint unless otherwise specified.

The Modified Type E Joint as detailed is not to be used in lieu of the Longitudinal Joint as detailed on Standard Sheet PVT1M. It is to be used when tying new concrete pavement to existing pavement (pavement placed prior to the project in which new pavement is placed) unless otherwise specified. The expansion anchor and the 16 mm hook bolt are to meet the requirements of Section 709.7 of the Specifications. The joint is to be sealed as per the longitudinal joint sealant details on Standard Sheet PVT1M.

Expansion Anchor / Hook Bolt assemblies are to be placed on 750 mm centers unless otherwise specified. All costs involved in the Modified Type E joint is to be included in the unit price bid for the new Concrete.

The Type H Joint is to be used for connecting Portland Cement Concrete Pavement to Bituminous Concrete Pavement. The standard coated dowel bars are to meet the applicable requirements of Standard Sheet PVT4M.

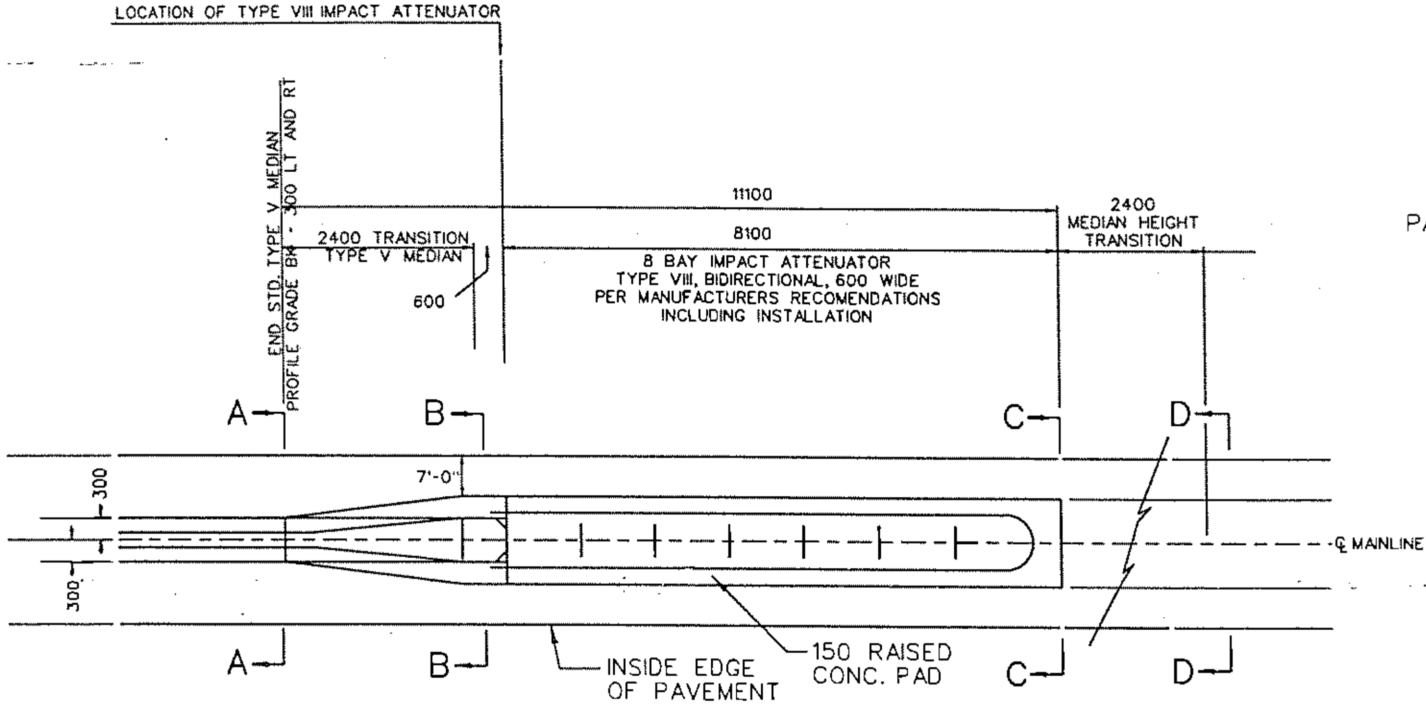
All tie bars and J or Hook Bolt assemblies shall be epoxy coated in accordance with section 709.1 of the Standard Specifications.

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

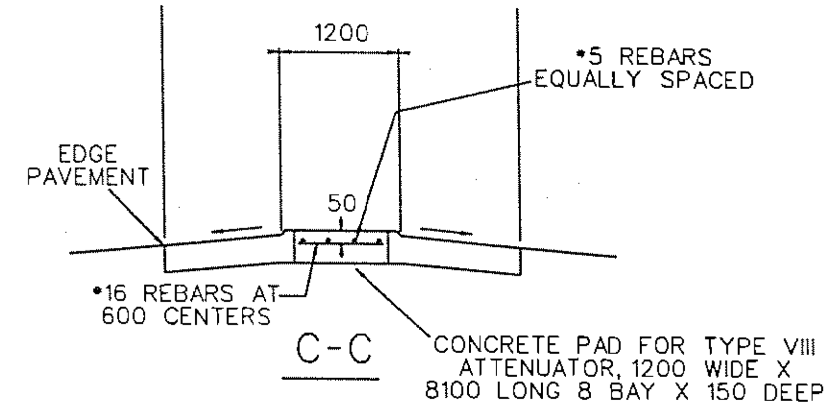
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SHOULDER RUMBLE STRIPS SPECIAL DETAIL

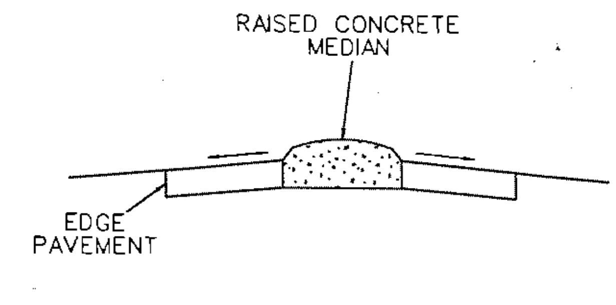
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.	05	X316-H-101.92-05	APD-0484 (124)CTC	2000	HARDY	21	146



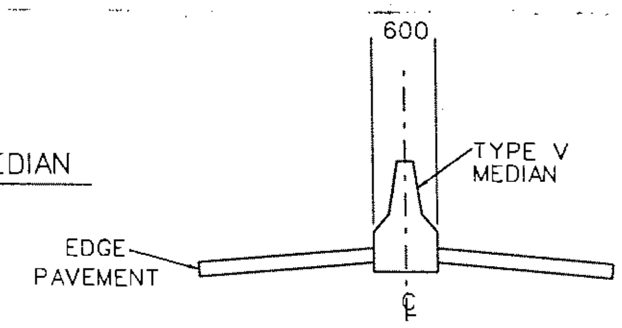
PLAN AT IMPACT ATTENUATOR - TYPE VIII, BI-DIRECTIONAL, 600 WIDE AND END OF STD. TYPE V MEDIAN



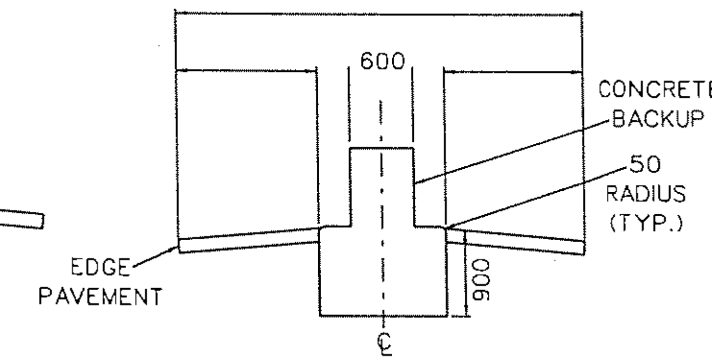
C-C



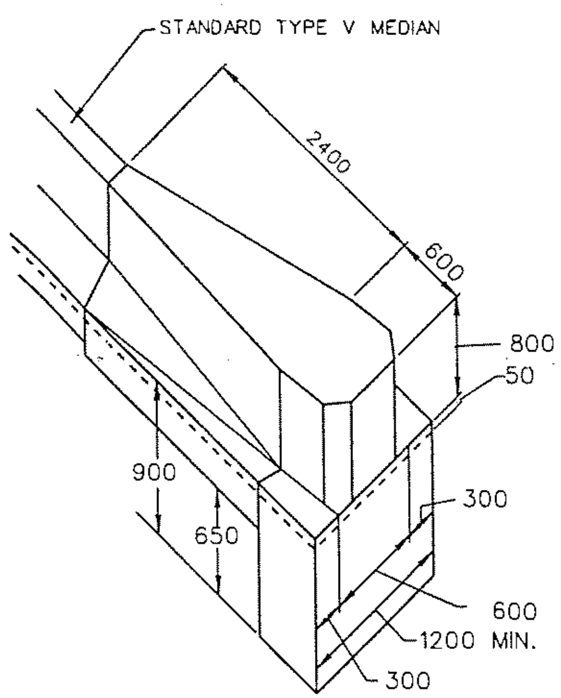
D-D



A-A

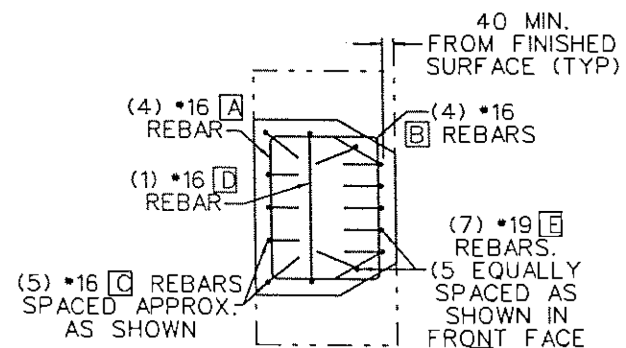


B-B

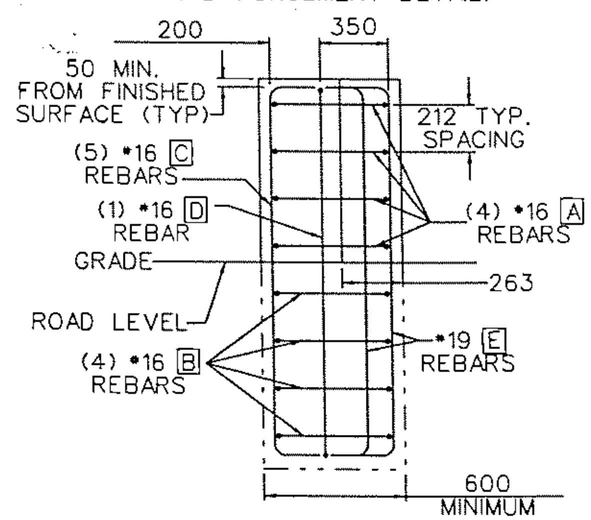


TYPE V MEDIAN BACKUP AND TRANSITION

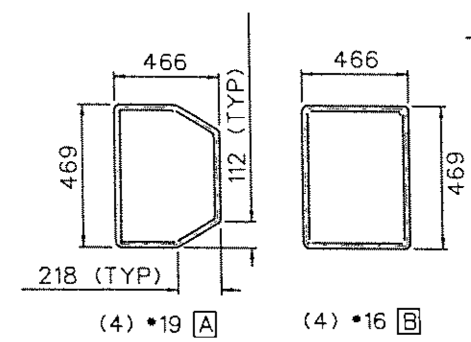
THE TRANSITION SECTION OF TYPE V MEDIAN 3000mm SHALL BE CONSTRUCTED AS SHOWN TO PROVIDE A BACK-UP FOR THE INSTALLATION OF THE IMPACT ATTENUATOR. COSTS FOR TYPE V MEDIAN TRANSITION SECTION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 610-06(V) MEDIAN.



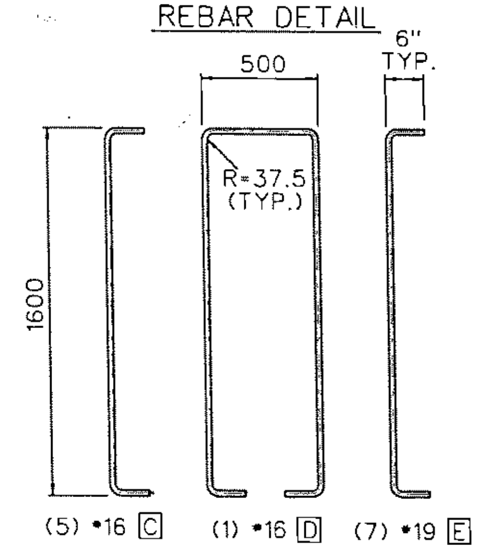
TOP VIEW
(REINFORCEMENT DETAIL)



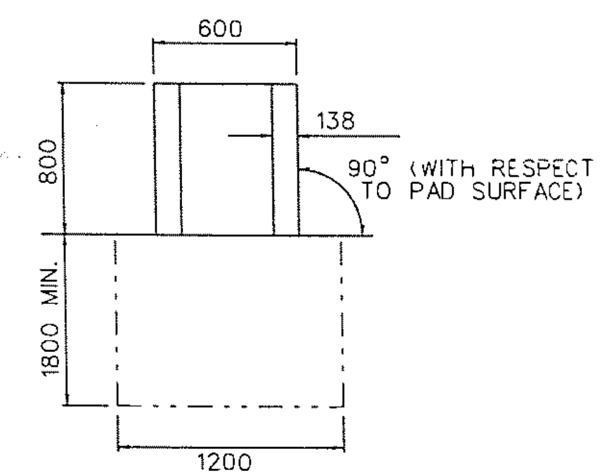
SIDE VIEW
(REINFORCEMENT DETAIL)



REBAR DETAIL



REBAR DETAIL



FRONT VIEW

ALL DIMENSION ARE IN mm UNLESS OTHERWISE NOTED

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

SPECIAL DETAIL
MEDIAN BARRIER TRANSITION

TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.	05	X316 -H-101.42	APD-0184 (124)C	2000	HARDY	22	146

05

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	
		UNIT	TOTAL
657-06S100115	A-441 SUPPORTS, S 100x11.5, GALVANIZED	M	28
657-08	2.98KG CHANNEL POST	M	43
657-10	4.5KG CHANNEL POST	M	11
657-17	CLASS B CONCRETE FOOTING, REINFORCED, ROADSIDE	M3	1.56
661-011	2MM FLAT SHEET SIGNS	M2	4
661-02	EXTRUDED PANEL SIGNS	M2	15
661-041	DELINEATOR, REFLEX REFLECTOR, WHITE SINGLE	EA.	22
661-051	DELINEATOR, REFLEX REFLECTOR, AMBER SINGLE	EA.	18
661-08	DELINEATOR BRACKET, TYPE A	EA.	10
663-0112W	EDGE LINE WHITE TYPE II	M	2 040
663-0112Y	EDGE LINE YELLOW TYPE II	M	2 040
663-0212W	LANE LINE OR CENTERLINE WHITE TYPE II	M	510

SIGNING GENERAL NOTES

GOVERNING SPECIFICATIONS
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS SI METRIC STANDARD SPECIFICATIONS ROADS AND BRIDGES, ADOPTED 1994, AS AMENDED BY THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS SUPPLEMENTAL SPECIFICATIONS DATED JANUARY 1, 1997, THE CONTRACT DOCUMENTS AND THE CONTRACT PLANS ARE THE GOVERNING PROVISIONS APPLICABLE TO THIS PROJECT.

CONSTRUCTION LAYOUT STAKES
CONSTRUCTION LAYOUT STAKES FOR SIGNING WILL BE INCIDENTAL TO THE CONTRACT AMOUNT BID AND INCLUDED IN THE VARIOUS SIGNING ITEMS.

CORNERS
CORNERS OF ALL SHEET ALUMINUM SIGNS SHALL BE ROUNDED: HOWEVER, CORNERS OF ALUMINUM SIGN FACES (EXTRUDED OR OVERLAYS) SHALL NOT BE ROUNDED. FABRICATED SIGNS WITH DIRECT APPLIED COPY (BLUE, GREEN OR BROWN BACKGROUND) SHALL HAVE A 10 MM CORNER RADIUS ON THE ALUMINUM BLANK.

BOLT TIGHTENING
A CALIBRATED DEVICE ACCEPTABLE TO THE ENGINEER SHALL BE PROVIDED BY THE CONTRACTOR TO INSURE THE STIPULATED TORQUE AND/OR TENSION THAT IS SET FORTH BY THE PLANS.

SIGN FABRICATION
ALL SIGNS SHALL BE FABRICATED IN ACCORDANCE WITH THE LATEST EDITION OF THE UNITED STATES DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION "STANDARD HIGHWAY SIGNS". ANY SIGN FABRICATION DETAIL NOT REPRESENTED IN THAT PUBLICATION SHALL BE FABRICATED IN ACCORDANCE WITH THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS "SIGN FABRICATION MANUAL", "DESIGN GUIDE FOR SIGNING", "STANDARD SPECIFICATIONS ROADS AND BRIDGES", LATEST EDITIONS. ALL SIGNS, FLAT SHEET AND EXTRUDED PANEL, ARE TO BE FABRICATED IN SI METRIC UNITS: HOWEVER, THE CONTRACTOR MAY ELECT TO SUPPLY SIGNS FABRICATED IN ENGLISH UNITS. THERE WILL BE NO ADDITIONAL COMPENSATION FOR ANY ADDITIONAL MATERIALS.

SIGN PUNCHING
SIGNS 1500 MM OR MORE IN HEIGHT SHALL HAVE THREE RIBS. THE THIRD RIB SHALL BE MOUNTED ALONG THE HORIZONTAL CENTERLINE AND IN LINE WITH THE OTHER SETS OF HOLES. SIGNS SHALL BE PUNCHED IN ACCORDANCE WITH THE SPECIAL DETAILS INCLUDED IN THE CONTRACT PLANS.

REFLECTIVE SHEETING
ALL BACKGROUND MATERIAL FOR SIGNS IN THIS PROJECT SHALL BE REFLECTIVE SHEETING TYPE II. TYPE IIREFLECTIVE SHEETING SHALL BE REQUIRED IN THIS PROJECT ON SHIELDS FOR GUIDE SIGNS, SEE STANDARD DETAIL TE12-1. ALL SHEETING USED IN THIS PROJECT MUST HAVE SUCCESFULLY COMPLETED 3 YEARS IN THE AASHTO/NTPEP OUTDOOR REFLECTIVE SHEETING PERFORMANCE TESTING PROGRAM.

DEMOUNTABLE COPY AND BORDERS
DEMOUNTABLE COPY AND BORDERS SHALL NOT BE POSITIONED ON ANY SIGN FACE BY MEANS OF TAPE OR GLUE. ALL DEMOUNTABLE COPY AND BORDERS SHALL BE ATTACHED TO THE SIGN FACE USING APPROVED RIVETS ONLY. THE FOLLOWING TYPE OF DEMOUNTABLE COPY SHALL BE USED IN THIS PROJECT: COPY FABRICATED FROM 1 MM THICK ALUMINUM SHEETS CONFORMING TO ASTM B 209 ALLOY 6061-T6 OR 5052-H38 MEETING THE REQUIREMENTS OF SECTION 661 AND COVERED WITH TYPE IIREFLECTIVE SHEETING CONFORMING TO SECTION 715.9.2.3 OF THE SPECIFICATIONS, LATEST EDITION.

EXTRUDED RIBS
EACH FLAT SHEET SIGN ATTACHED TO BREAKAWAY SUPPORTS SHALL HAVE TWO EXTRUDED RIBS PER STANDARD DETAIL TP-A REGARDLESS OF SIGN SIZE, SHAPE, OR NUMBER OF SIGNS IN THE SIGN ASSEMBLY.

IDENTIFICATION CODES AND DECALS
AN IDENTIFICATION CODE SHALL BE PLACED ON ALL SIGNS WITH SCREENED MESSAGES THAT ARE MANUFACTURED FOR THE DIVISION OF HIGHWAYS. THE CODE SHALL CONSIST OF THE LETTERS "WVDH" WITH AN ABBREVIATED FORM OF MONTH AND YEAR OF FABRICATION DIRECTLY BELOW. IT SHALL ALSO INCLUDE AN ABBREVIATED NAME OF THE SHEETING MANUFACTURER AND THE INK MANUFACTURER.

EXAMPLE: WVDH 3M
8/97 A

EACH LINE OF LETTERS OR NUMERALS SHALL BE 6 MM HIGH, NO GREATER THAN 25 MM IN LENGTH AND OF THE SAME COLOR AS THAT BEING SCREENED. THE CODE SHALL BE PLACED ON THE LOWER RIGHT HAND EDGE OF THE SIGN. IF THE SIGN HAS BOTH BORDER AND MARGIN, THE CODE SHALL BE WITHIN THE BORDER, BUT MAY EXTEND INTO THE MARGIN AND/OR SIGN AREA. IF THE SIGN HAS BORDER ONLY, THE CODE SHALL BE WITHIN THE BORDER, BUT MAY EXTEND INTO THE SIGN AREA. A SIGN IDENTIFICATION DECAL SHALL ALSO BE APPLIED TO THE LOWER RIGHT HAND CORNER (FACING BACK OF SIGN) OF ALL FLAT SHEET SIGNS STATING THE MONTH AND YEAR OF INSTALLATION. EXTRUDED PANEL SIGNS AND FABRICATED FLAT SHEET SIGNS WITH DIRECT APPLIED COPY SHAL HAVE TWO SEPARATE DECALS APPLIED TO THE LOWER RIGHT HAND CORNER (FACING BACK OF SIGN), ONE STATING THE MONTH AND YEAR OF INSTALLATION AND THE OTHER STATING THE MANUFACTURER OF THE SHEETING AND YEAR OF FABRICATION. SEE CONTRACT PLANS FOR DECAL DETAILS.

HARDWARE
ON ALL FLAT SHEET SIGNS THE MOUNTING HARDWARE SHALL BE OF A VANDAL-RESISTANT DESIGN. THE FABRICATOR SHALL SUPPLY FIVE (5) PIECES OF MATERIAL TO THE DIVISION OF HIGHWAYS FOR TESTING PRIOR TO THE MANUFACTURE OF SIGNS. THE DIVISION OF HIGHWAYS ALSO RESERVES THE RIGHT TO RANDOM TEST THIS MATERIAL AFTER SHIPMENT TO THE PROJECT.

BOLT: 7.94 MM X 76.2 MM X 457.2. BOLT HEAD TO BE ROUND, DOME WITH ONE-WAY SLOT. BOLT SHALL HAVE A 50 MM MINIMUM THREAD AND BE MANUFACTURED OF STEEL IN ACCORDANCE WITH ASTM A-307.

NUT: CONE SHAPED WITH HEX SHAPED DRIVE HEAD DESIGNED TO SHEAR OFF AT A PREDETERMINED TORQUE OF NO LESS THAN 5.4 NEWTON METER AND NO GREATER THAN 10.8 NEWTON METER WHEN USING MATERIALS, CONTROL, SOILS AND TESTING MP NO. 661.20.00. NUT SHALL BE MANUFACTURED OF STEEL IN ACCORDANCE WITH ASTM A-563, GRADE A.

COATING ON BOTH NUT AND BOLT SHALL BE IN ACCORDANCE WITH ASTM B-766, CLASS 8, TYPE 2 (CADMIUM DICHROMATE). THREAD FIT ON NUT AND BOLT SHALL ALLOW WORKERS TO ASSEMBLE HARDWARE WITH THEIR FINGERS BEFORE TIGHTENING.

POST REMOVAL ITEM 657-18
POST REMOVAL FOR GROUND MOUNTED SIGNS ON EXISTING BREAKAWAY SUPPORTS SHALL INCLUDE THE CUTTING OFF OF THE EXISTING STUB(S) TO MINIMUM OF 150 mm BELOW GROUND AND THE RESTORATION OF THE GROUND TO ITS ORIGINAL CONDITION.

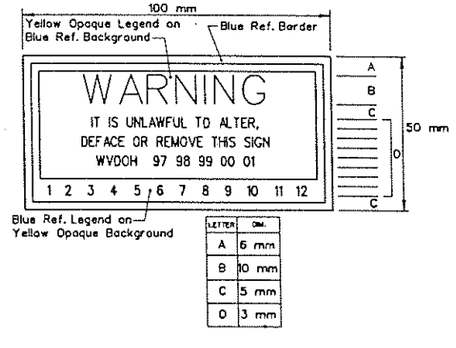
BREAKAWAY SUPPORTS S100X11.5
ON STANDARD DETAIL TE1-3B DELETE DETAIL "A". ON ALL S-SHAPES THE SAW-CUT SHALL BE CUT THE FULL LENGTH OF THE COLUMN. HINGE PLATES SHALL BE FABRICATED AS SHOWN ON THE "HINGE PLATE DETAIL FOR W-SHAPES" SHOWN ON STANDARD DETAILS TE1-3A AND TE1-3B.

POST CLIPS
ALL POST CLIPS SHALL BE PROVIDED WITH A STAINLESS STEEL BOLT WHICH SHALL CONFORM TO STAINLESS STEEL ALLOY 304, ASTM A 193, GRADE B8 OR ASTM A 194, GRADE 8. POST CLIP BOLTS SHALL CONFORM TO THE DIMENSIONS SHOWN ON STANDARD DETAIL TE7-1. HEX LOCK NUTS SHALL CONFORM TO STAINLESS STEEL ALLOY 303, ASTM A 193, GRADE B 8F OR ASTM A 194, GRADE 8F. POST CLIP WASHERS SHALL CONFORM TO STAINLESS STEEL ALLOY 302, ASTM A276. WASHER DIMENSIONS ARE 19 mm DIA X 1.58 mm WITH 10.3 mm DIA HOLE.

PAVEMENT MARKING GENERAL NOTES

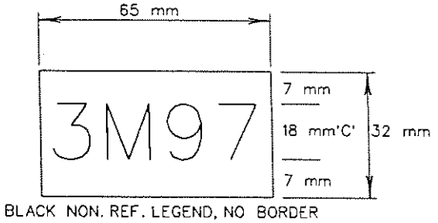
1. ITEM 663-0112 "EDGE LINE", SHALL INCLUDE 100 mm SOLID WHITE AND YELLOW EDGE LINE ON MAINLINE FREEWAY/EXPRESSWAY AND RAMPS. IT SHALL ALSO INCLUDE 200 mm SOLID WHITE EDGE LINES, 100 mm DOTTED WHITE EDGE LINES AND 100 mm BROKEN WHITE EDGE LINES AT GORE AREAS
2. ALL 100 mm SOLID WHITE OR SOLID YELLOW EDGE LINES, LANE LINES, CENTERLINES AND BARRIER LINES SHALL BE TYPE II PAVEMENT MARKING MATERIAL.
3. EDGE LINES SHALL BE CENTERED 150 mm FROM EDGE OF RAMP PAVEMENT OR LANE AS APPLICABLE.
4. ALL MARKINGS SHALL BE CONTINUOUS AND CONSISTENT WITH EXISTING MARKINGS WHERE THEY JOIN.
5. NO MARKINGS SHALL BE PLACED ON EXPANSION JOINTS ON STRUCTURES OR ON LONGITUDINAL CONSTRUCTION JOINTS UNLESS SO DIRECTED BY THE ENGINEER.

SIGN IDENTIFICATION DECAL



LETTER	DIM.
A	6 mm
B	10 mm
C	5 mm
O	3 mm

DECALS FOR FLAT SHEET AND EXTRUDED PANEL SIGNS WILL BE PROVIDED BY THE SIGN FABRICATOR. THE YEAR AND MONTH OF INSTALLATION ARE TO BE PUNCHED OUT BY THE CONTRACTOR. SEE SIGNING GENERAL NOTES.



BLACK NON. REF. LEGEND, NO BORDER
WHITE REF. SHEETING BACKGROUND

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

SIGNING AND MARKINGS SUMMARY OF QUANTITIES GENERAL NOTES

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.	05	X316 -H- 101.42	APD-0484 (179)	2000	HARDY	23	146

05

S-2

SIGNS & SUPPORTS & FOUNDATIONS

ASSEMBLY NUMBER	SIGN NUMBER	PROPOSED LOCATION	EXISTING LOCATION	LAYOUT SHT. NO.	FABRICATION DETAIL SHT. NO.	SIGN DISPOSITION	SIGNS: LENGTH (mm)	SIGNS: HEIGHT (mm)	SIGNS: FLAT SHEET 2 mm (m²)	SIGNS: FLAT SHEET 2 mm OVERLAY (m²)	SIGNS: EXTRUDED PANEL (m²)	SIGNS: INSTALL REVISED SIGN	SUPPORTS & FOUNDATIONS: U-CHANNEL 2.98 (kg/m)	U-CHANNEL 4.50 (kg/m)	U-CHANNEL 5.96 BB (kg/m)	U-CHANNEL 9.0 BB (kg/m)	POST REMOVAL	REUSE EX. SPTS.	A-572, GRADE 50 S100x8.5 (METERS)	A-572, GRADE 50 W150x18 (METERS)	A-572, GRADE 50 W200x26.6 (METERS)	A-572, GRADE 50 W250x32.7 (METERS)	FOOTER DIA. (METERS)	FOOTER DEPTH (METERS)	CLASS B CONC. REINF. (m³)
85	R2-1	198+600		S-3			1200	1500	1.80					5.25											
														5.50											
86	AD1-1	198+650		S-3	S-4		3450	1220			4.209								4.25				0.50	1.30	0.26
																			4.50				0.50	1.30	0.26
87	D2-3	198+730		S-3	S-4		3150	1525			4.804								4.50				0.50	1.30	0.26
																			4.75				0.50	1.30	0.26
88	I3D	198+767		S-3	S-4		1200	750	0.90				4.25												
													4.50												
89	I3D	199+270		S-3	S-4		1200	750	0.90				4.25												
													4.50												
90	D6-3C	199+370		S-3	S-4		3300	1830			6.039								5.00				0.50	1.30	0.26
																			5.25				0.50	1.30	0.26
		TOTAL					3.60		15.322				17.50	10.75					28.25						1.56

DELINEATORS

LOCATION	RADIUS IN METERS (R) OR SPACING (M) OR TANGENT	QUANTITY: SINGLE WHITE	AMBER B-1 2 SIDED	DOUBLE AMBER	3-AMBER (XR-3)	9-AMBER (XR-9)	TYPE OF SUPPORT: U-CHANNEL	TYPE "A" BRACKET	TYPE "B" BRACKET	TYPE "C" BRACKET
- MAINLINE -										
198+530 – 199+550	TAN	22	18				12	10		
TOTAL		22	18				12	10		

NOTE: MEASUREMENT FOR SPACING OF DELINEATORS SHALL BE TAKEN ON THE EDGE OF ROADWAY NEAREST THE LOCATION OF THE DELINEATORS.

12 U-CHANNELS X 2.1 m (TYP.)= 25.2 m OF 2.98 KG U-CHANNELS (ITEM 657-08)

(X) - DENOTES NUMBER OF DOUBLE WHITE INSTALLATIONS.

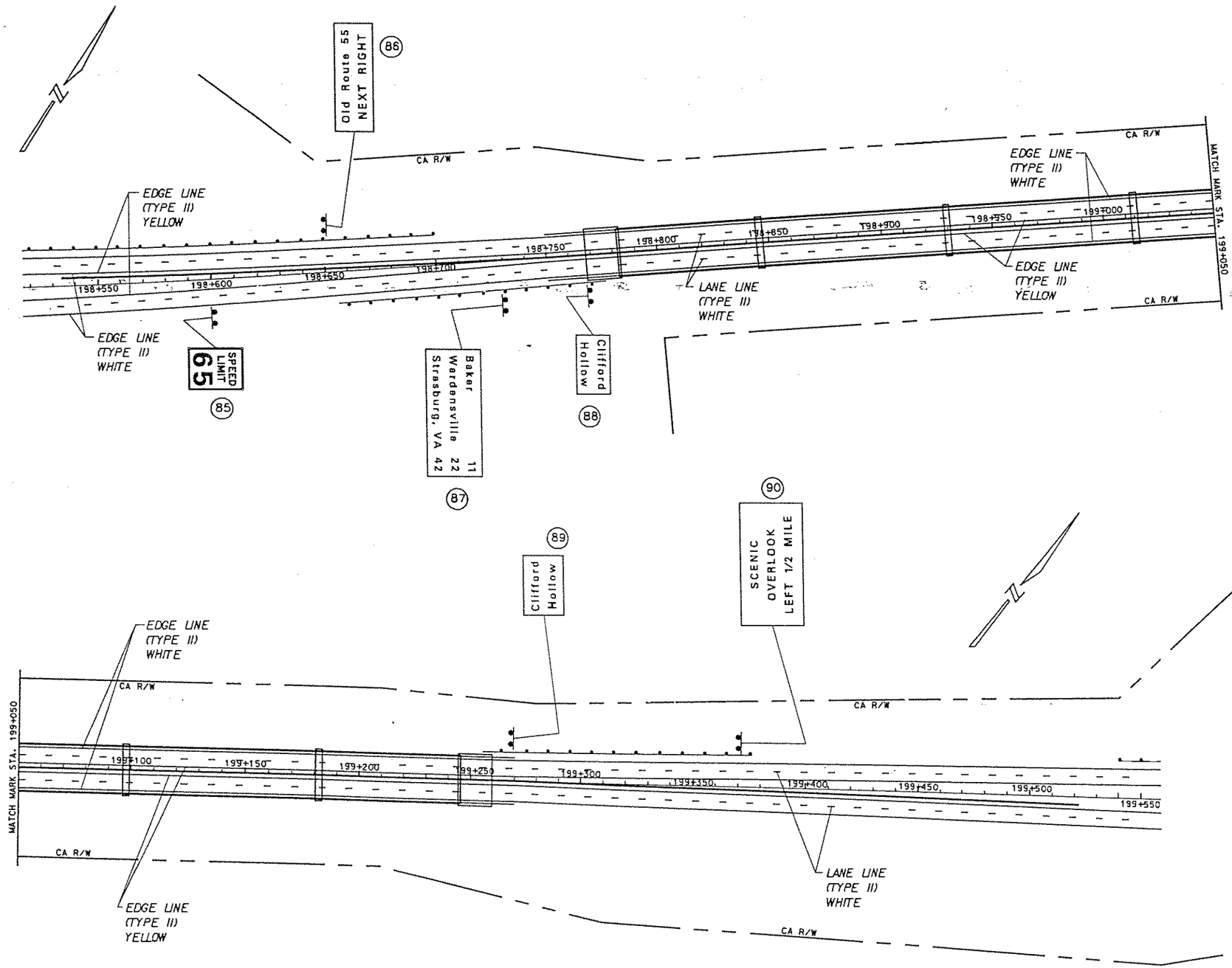
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

SIGNING AND DELINEATOR ESTIMATE OF QUANTITIES

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.	05	X316 -H- 101.42	APD-0484 (124)C	2000	HARDY	29	146

05

S-3



PAVEMENT MARKINGS

ESTIMATE OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	TOTAL
663-0112W	EDGE LINE WHITE TYPE II	M	2040
663-0112Y	EDGE LINE YELLOW TYPE II	M	2040
663-0212W	LANE LINE OR CENTERLINE WHITE TYPE II	M	510
663-0212Y	LANE LINE OR CENTERLINE YELLOW TYPE II	M	
663-0312	BARRIER LINE TYPE II	M	
663-042	TYPE II CHANNELIZING LINE	M	
663-055	TYPE V STOP LINE (500 mm))	M	
663-062	TYPE II CROSSWALK LINE	M	
663-075W	TYPE V STRIPES WHITE	M	
663-075Y	TYPE V STRIPES YELLOW	M	
663-105	TYPE V LANE ARROWS	EA.	
663-115	TYPE V LANE LETTERS	EA.	

SCALE : 0 — 20 m, 1:1000

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

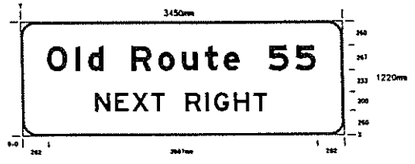
SIGNING AND MARKING LAYOUT
STA. 198+530 to STA. 199+550
CLIFFORD HOLLOW BRIDGE
CORRIDOR 'H', HARDY COUNTY

h:\contract 5\mat\cliff.sgn rscites 23-JUN-2000 14:14 TRAFFIC ENGINEERING DIVISION

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.	05	X316 -H- 101.42	APD-0484 (124)C	2000	HARDY	25	146

05

S-4



ASSY. NO.	88
SIGN NO.	AD1-1
LxH (AREA)	3450x1220 (4.209)
MARGIN/BORDER/RADIUS	0/25/150
MATERIAL	EXTRUDED PANEL
BACKGROUND	HI-INTENSITY
	COLOR: GREEN
LEGEND/BORDER	DEMT. HI-INT
	COLOR: WHITE

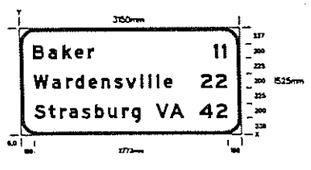
SYMBOL	X	Y	WID	HT

DIMENSIONS IN mm

SPACINGS ARE TO START OF NEXT LETTER

LETTER SPACINGS

Y FONT																			HT LEN
693	O	l	d	R	o	u	t	e	5	5									267
EM	282	315	134	171	300	286	261	247	197	171	300	286	216	282					2887
260	N	E	X	T	R	I	G	H	T										200
E	763	214	191	203	149	300	214	87	214	204	149	763							1925



ASSY. NO.	87
SIGN NO.	D2-3
LxH (AREA)	3150x1525 (4.804)
MARGIN/BORDER/RADIUS	0/50/225
MATERIAL	EXTRUDED PANEL
BACKGROUND	HI-INTENSITY
	COLOR: GREEN
LEGEND/BORDER	DEMT. HI-INT
	COLOR: WHITE

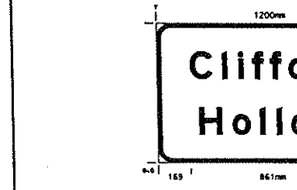
SYMBOL	X	Y	WID	HT

DIMENSIONS IN mm

SPACINGS ARE TO START OF NEXT LETTER

LETTER SPACINGS

Y FONT																			HT LEN
1088	B	a	k	e	r	1	1												200
EM	189	219	206	173	192	1811	112	50	189										2773
663	W	a	r	d	e	n	s	v	i	l	l	e	2	2					200
EM	189	260	206	130	191	192	155	168	206	116	116	101	533	204	162	189			2773
238	S	t	r	a	s	b	u	r	g	V	A	4	2						200
EM	189	205	156	130	165	191	191	206	130	128	225	198	428	229	162	189			2773



ASSY. NO.	88
SIGN NO.	L30
LxH (AREA)	1200 x 750 (0.9)
BORDER/RADIUS	25/75
MATERIAL	FLAT SHEET
BACKGROUND	HI-INTENSITY
	COLOR: GREEN
LEGEND/BORDER	D.A. HI-INT
	COLOR: WHITE

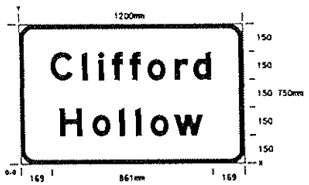
SYMBOL	X	Y	WID	HT

DIMENSIONS IN mm

SPACINGS ARE TO START OF NEXT LETTER

LETTER SPACINGS

Y FONT										HT LEN
450	C	l	i	f	f	o	r	d		150
EM	169	172	87	73	93	96	147	97	96	169	861
150	H	o	l	l	o	w				150
EM	217	174	147	87	75	131	152	217			766



ASSY. NO.	89
SIGN NO.	L30
LxH (AREA)	1200 x 750 (0.9)
BORDER/RADIUS	25/75
MATERIAL	FLAT SHEET
BACKGROUND	HI-INTENSITY
	COLOR: GREEN
LEGEND/BORDER	D.A. HI-INT
	COLOR: WHITE

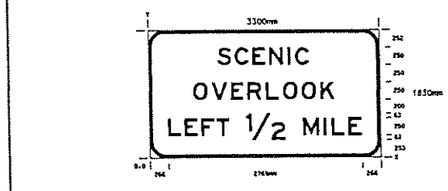
SYMBOL	X	Y	WID	HT

DIMENSIONS IN mm

SPACINGS ARE TO START OF NEXT LETTER

LETTER SPACINGS

Y FONT										HT LEN
450	C	l	i	f	f	o	r	d		150
EM	169	172	87	73	93	96	147	97	96	169	861
150	H	o	l	l	o	w				150
EM	217	174	147	87	75	131	152	217			766



ASSY. NO.	90
SIGN NO.	D6-3C
LxH (AREA)	3300x1830 (6.039)
MARGIN/BORDER/RADIUS	0/50/225
MATERIAL	EXTRUDED PANEL
BACKGROUND	HI-INTENSITY
	COLOR: BLUE
LEGEND/BORDER	DEMT. HI-INT
	COLOR: WHITE

SYMBOL	X	Y	WID	HT

DIMENSIONS IN mm

SPACINGS ARE TO START OF NEXT LETTER

LETTER SPACINGS

Y FONT												HT LEN
1328	S	C	E	N	I	C						250
E	986	255	255	239	268	109	203	986				1328
828	O	V	E	R	L	O	O	K				250
E	633	263	283	239	268	239	263	275	206	633		2034
378	1											250
E	1401	75	1824									75
315	L	E	F	T	/	M	I	L	E			250
E	266	239	239	221	511	726	299	109	239	186	266	2769
253	2											250
E	1749	203	1348									203

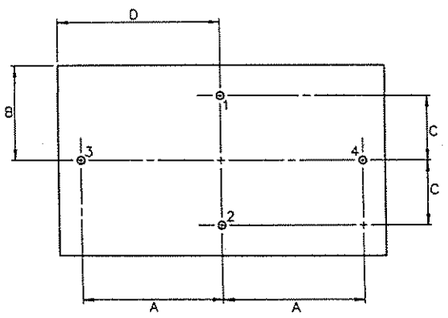
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

SIGN FABRICATION DETAILS

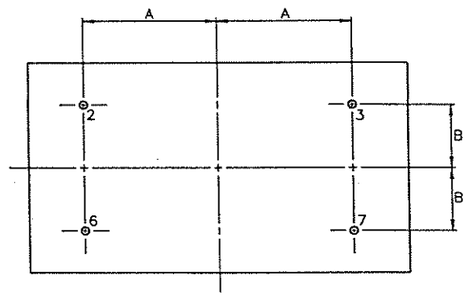
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
WV	05	X316 -H- 101.42	APD-0484 (124)C	00	HARDY	26	146

05

S-5

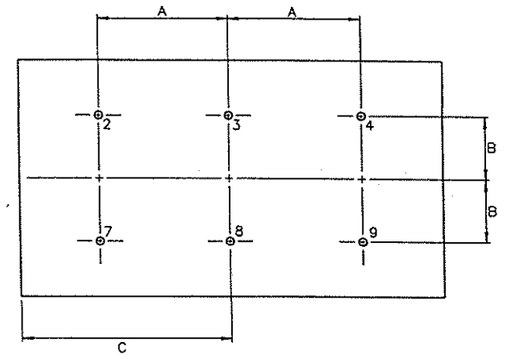


LESS THAN 1050 mm WIDTH



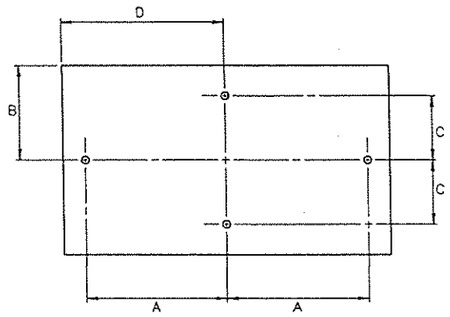
1050 mm – 1800 mm WIDTHS *

* EXCLUDING: (a) D16-1 SIGNS WITH WIDTHS OF 1050 mm – 1200 mm.
(b) "M" SERIES SIGNS WITH 1125 mm WIDTH.

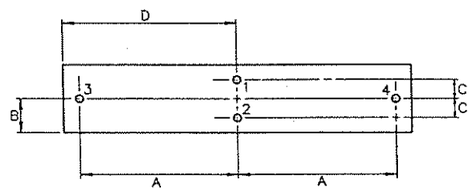


MORE THAN 1800 mm WIDTH

PUNCHING DETAILS FOR HORIZONTAL RECTANGULAR SIGNS



"M" SERIES 1125 mm WIDTHS ONLY



D16-1 1050 mm – 1200 mm WIDTHS ONLY

SIGN SHAPE	SIGN SIZE (mm) HEIGHT	SIGN SIZE (mm) WIDTH	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D
* HORIZONTAL RECTANGLE	150 OR OVER BUT UNDER 600	LESS THAN 1050	WIDTH – 76.2 mm / 2	HEIGHT / 2	HEIGHT – 76.2 mm / 2	WIDTH / 2
	600 OR OVER BUT UNDER 900		WIDTH – 76.2 mm / 2	HEIGHT / 2	HEIGHT – 76.2 mm / 2	WIDTH / 2
	150 OR OVER BUT UNDER 450	1050 to 1800	WIDTH – 152.4 mm / 2	HEIGHT – 76.2 mm / 2	———	———
	450 OR OVER BUT UNDER 750		WIDTH – 152.4 mm / 2	HEIGHT – 152.4 mm / 2	———	———
	750 OR MORE		WIDTH – 304.8 mm / 2	HEIGHT – 304.8 mm / 2	———	———
	UNDER 750	MORE THAN 1800	WIDTH – 609.6 mm / 2	HEIGHT – 152.4 mm / 2	WIDTH / 2	———
	750 OR MORE		WIDTH – 609.6 mm / 2	HEIGHT – 304.8 mm / 2	WIDTH / 2	———

* EXCLUDING: (a) D16-1 SIGNS WITH WIDTHS OF 1050 mm – 1200 mm.
(b) "M" SERIES SIGNS WITH 1125 mm WIDTH.

D16-1	225	1050 – 1200	WIDTH – 76.2 mm / 2	HEIGHT / 2	HEIGHT – 76.2 mm / 2	WIDTH / 2
"M" SERIES	900	1125	WIDTH – 101.6 mm / 2	HEIGHT / 2	HEIGHT – 101.6 mm / 2	WIDTH / 2

NOTES:

1. PUNCHING DETAILS

   1.1 THE SPACING OF THE PUNCHED HOLES WILL BE IN ACCORDANCE WITH THE SIGN SIZE TABLE AND ACCOMPANYING DETAIL DRAWINGS.

   1.2 ALL HOLES WILL BE 9.5 mm DIAMETER, UNLESS OTHERWISE SPECIFIED.

   1.3 ALL HORIZONTAL RECTANGLES DESIGNATED AS D16-1 SIGNS AND HAVING WIDTHS OF 1050 mm OR 1200 mm SHALL BE PUNCHED IN ACCORDANCE WITH THE SIGN SIZE TABLE AND ACCOMPANYING DETAIL DRAWING DESIGNATED "D16-1".

   1.4 ALL HORIZONTAL RECTANGLES DESIGNATED AS A "M" SERIES SIGN WITH A WIDTH OF 1125 mm SHALL BE PUNCHED IN ACCORDANCE WITH THE SIGN SIZE TABLE AND ACCOMPANYING DETAIL DRAWING.

△ CHANGED 9" TO 6"

WEST VIRGINIA DIVISION OF HIGHWAYS

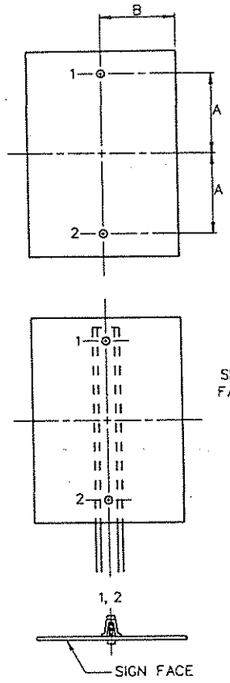
SPECIAL DETAIL PUNCHING DETAILS FOR HORIZONTAL RECTANGULAR SIGNS

PREPARED: 10/01/69

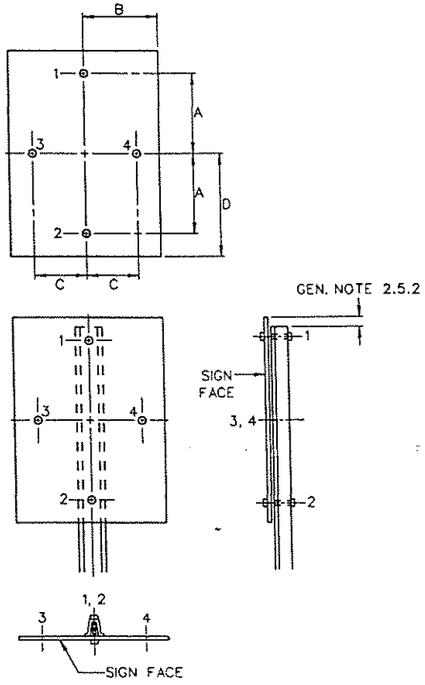
REVISIONS
05-01-70
△ 11-03-76

STANDARD SHEET TP1-3

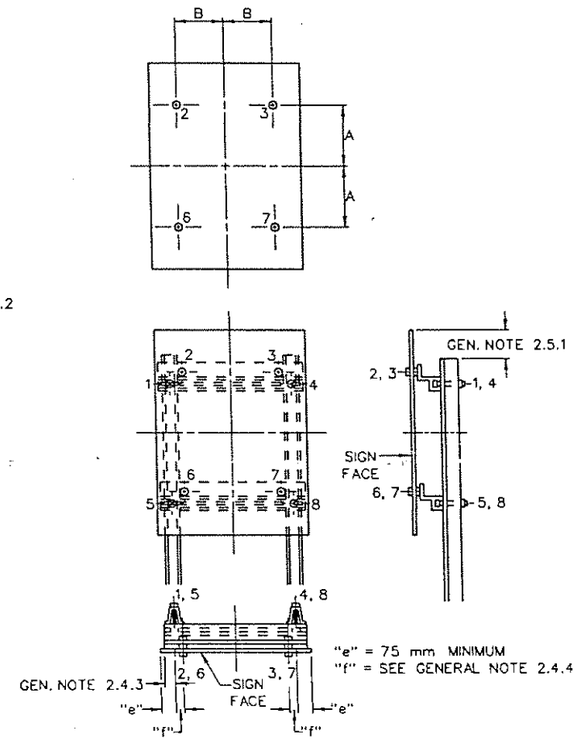
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
WV	05	X316 -H- 101.42 05	APD-0484 (124)C	00	HARDY	27	196



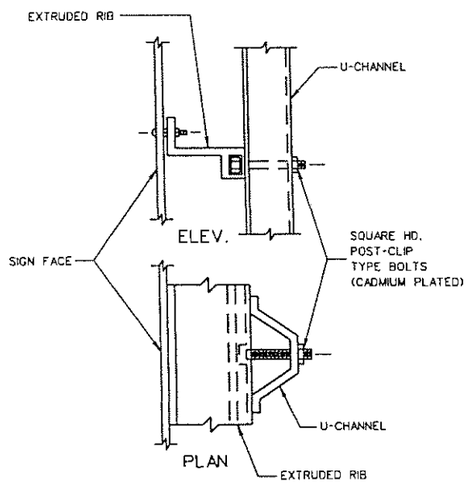
LESS THAN 225 mm WIDTH



225 mm OR OVER, BUT UNDER 900 mm WIDTH



900 mm OR GREATER WIDTH



TYPICAL U-CHANNEL AND RIB ASSEMBLY

SIGN SHAPE	SIGN SIZE (mm)		DIMENSION			
	HEIGHT	WIDTH	A	B	C	D
VERTICAL RECTANGLE	GREATER THAN WIDTH	LESS THAN 225	HEIGHT−25.4 mm / 2	WIDTH / 2	—	—
	LESS THAN 1350	225 OR OVER BUT UNDER 600	HEIGHT−76.2 mm / 2	WIDTH / 2	WIDTH−76.2 mm / 2	HEIGHT / 2
		600 OR OVER BUT UNDER 900	HEIGHT−152.4 mm / 2	WIDTH / 2	WIDTH−152.4 mm / 2	HEIGHT / 2
	1050–1950	900–1650	HEIGHT−304.8 mm / 2	WIDTH−304.8 mm / 2	—	—
	GREATER THAN WIDTH	MORE THAN 1650	HEIGHT−609.6 mm / 2	WIDTH−609.6 mm / 2	—	—

GENERAL NOTES

1. PUNCHING DETAILS

1.1 THE SPACING OF THE PUNCHED HOLES WILL BE IN ACCORDANCE WITH THE ACCOMPANYING TABLE AND DETAILED DRAWINGS.

1.2 ALL PUNCHED HOLES IN THE SIGNS SHALL BE 9.5 mm DIAMETER, UNLESS OTHERWISE SPECIFIED.

2. MOUNTING DETAILS

2.1 SIGNS IN THE SHAPE OF VERTICAL RECTANGLES WILL BE MOUNTED IN ACCORDANCE WITH THE ACCOMPANYING DETAILED DRAWINGS AND TP3-1. THE ASSOCIATED BOLTS, NUTS, WASHERS AND SHIMS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAIL TP-A; SIGN ASSEMBLY BOLTING DETAILS. △

2.2 THE MOUNTING SHOWN FOR THESE SHAPED SIGNS ARE FOR SIGN ASSEMBLIES CONSISTING OF ONLY ONE SIGN.

2.3 ALL BOLTS, NUTS AND WASHERS USED TO MOUNT THE SIGN AND SIGN ASSEMBLY WILL BE 8 mm DIAMETER.

2.4 BRACING ON SIGNS SHOWN WILL CONSIST OF EXTRUDED RIB AS DETAILED ON TP-A.

2.4.1 ON ALL BRACED SIGNS, THE WEB OF THE BRACING SHALL BE IN CONTACT WITH THE BACK OF THE SIGN.

2.4.2 ON ALL BRACED SIGNS, THE FLANGE OF THE BRACING SHALL BE IN CONTACT WITH THE FLANGE OF THE POST SUPPORT.

2.4.3 ON ALL BRACED SIGNS, THE END OF THE OVERHANGING LENGTH OF THE BRACE SHALL BE AT LEAST 44.5 mm FROM THE CENTERLINE OF THE POST SUPPORT, BUT NO CLOSER THAN 25 mm TO THE EDGE OF THE SIGN. THE TWO OVERHANGING SECTIONS OF EACH BRACE SHALL BE EQUAL IN LENGTH.

2.4.4 ON ALL BRACED SIGNS, THE CENTERLINE OF THE POST SHALL BE WITHIN 75 mm (ON EITHER SIDE) OF THE CENTERLINE OF THE SIGN HOLE.

2.5 POST SUPPORT

2.5.1 THE TOP OF THE POST SUPPORT SHALL NOT EXTEND BEYOND THE EDGE OF THE SIGN.

2.5.2 THE TOP OF THE POST SUPPORT SHALL EXTEND 50 mm OR LESS FROM THE EDGE OF THE SIGN, BUT NOT BEYOND ANY EDGE OF THE SIGN.

△ ADDITION OF EXTRUDED RIB
△
△ ADDED TP3-1 REFERENCE

WEST VIRGINIA DIVISION OF HIGHWAYS

SPECIAL DETAIL PUNCHING AND MOUNTING FOR VERTICAL RECTANGULAR SIGNS

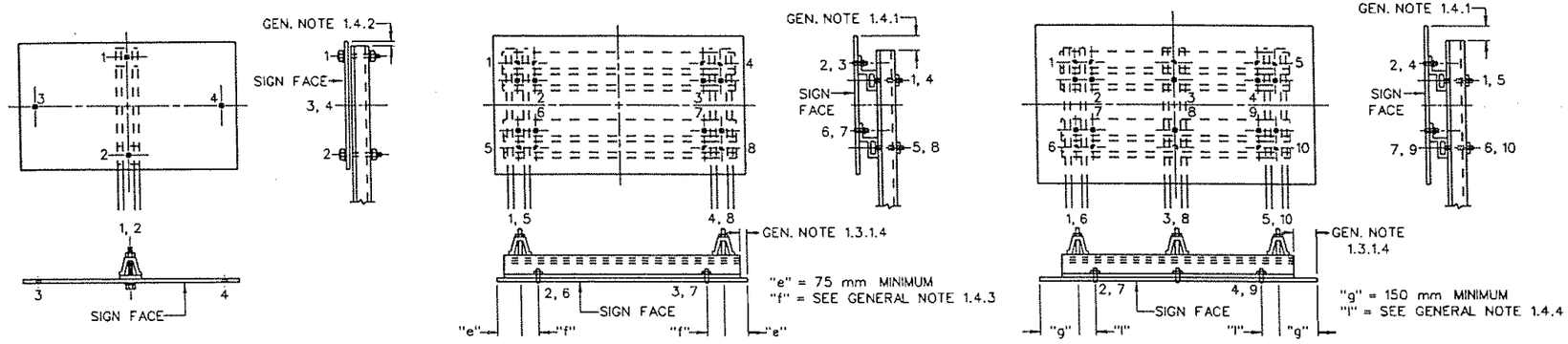
PREPARED: 10/01/69

REVISIONS
△ 05-01-70
△ 12-13-73
△ 06-01-76
△ 09-13-93

STANDARD SHEET TP1-4

MOUNTING DETAILS FOR SINGLE–MOUNTED HORIZONTAL RECTANGULAR SIGNS *

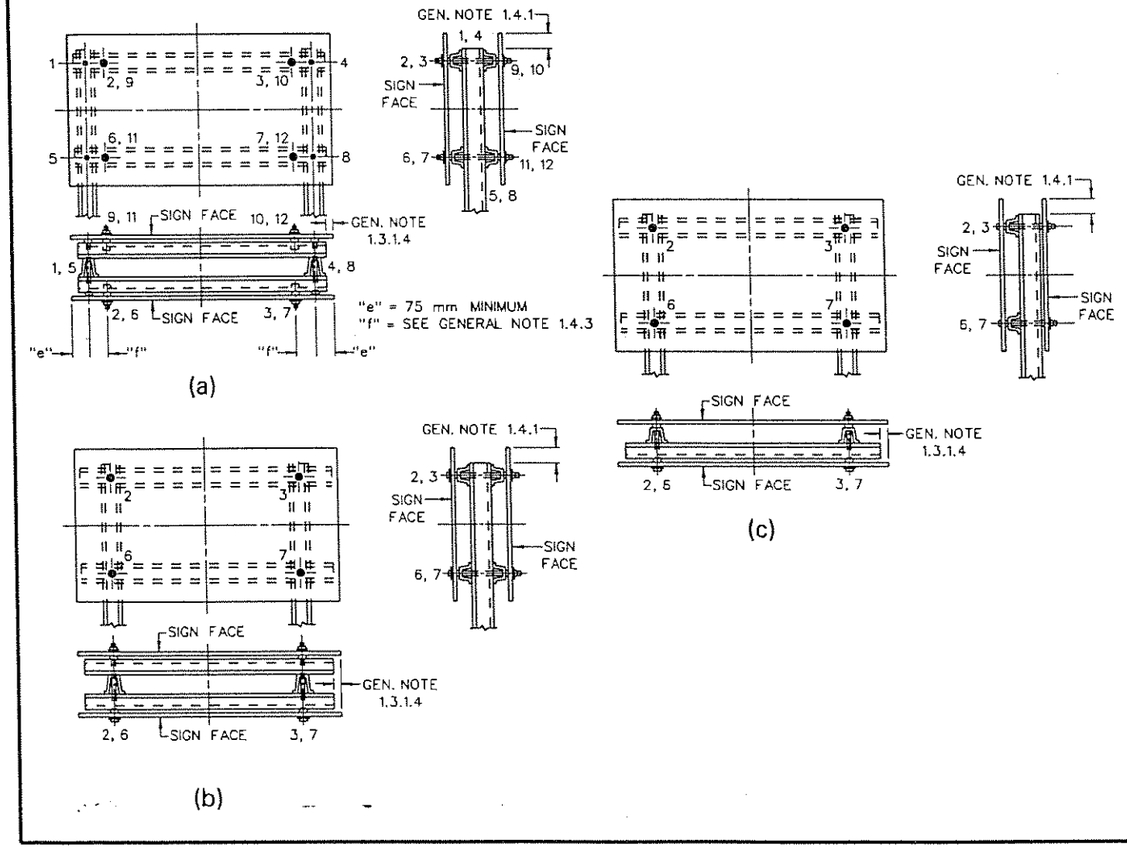
* EXCEPT D16–1 SIGNS (1050 mm – 1200 mm WIDTHS ONLY)



LESS THAN 1050 mm WIDTH | 1050 mm – 1800 mm WIDTHS | MORE THAN 1800 mm WIDTH

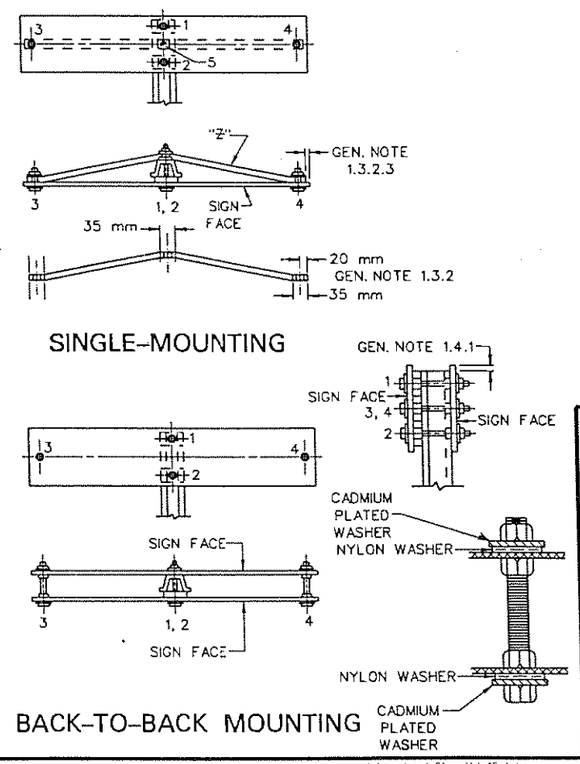
MOUNTING DETAILS FOR BACK–TO–BACK MOUNTED HORIZONTAL RECTANGULAR SIGNS *

* EXCEPT D16–1 SIGNS (1050 mm – 1200 mm WIDTHS ONLY)



EXCEPTIONS TO STANDARD MOUNTING DETAILS

D16–1 SIGNS (1050 mm – 1200 mm WIDTHS ONLY)

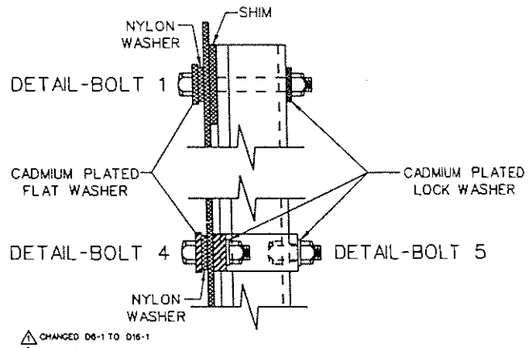


PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
WV	05	X316 -H- 101.42	APD-0484 (124)C	00	HARDY	28	146

05

GENERAL NOTES

1. MOUNTING DETAILS S-7
   - 1.1 HORIZONTAL RECTANGULAR SHAPED SIGNS WILL BE MOUNTED IN ACCORDANCE WITH THE ACCOMPANYING DETAIL DRAWINGS AND TP3-1. THE ASSOCIATED BOLTS, NUTS, WASHERS AND SHIMS FOR SINGLE-MOUNTED SIGN ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAIL TP-A: SIGN ASSEMBLY BOLTING DETAILS.
   - 1.2 SIGN ASSEMBLY
     - 1.2.1 ALL MOUNTINGS SHOWN ARE FOR ASSEMBLIES CONSISTING OF SINGLE-MOUNTED OR BACK-TO-BACK MOUNTED SIGNS.
     - 1.2.2 BACK-TO-BACK MOUNTINGS FOR ALL ASSEMBLIES (EXCEPT D16-1 SIGNS WITH 1050 mm - 1200 mm WIDTHS) AS SHOWN IN DETAIL "A" IS RECOMMENDED. HOWEVER, DETAIL "B" AND/OR "C" MAY BE USED.
     - 1.2.3 MOUNTING DETAILS FOR "M" SERIES SIGNS WITH 1125 mm WIDTH ARE SHOWN ON STANDARD DETAIL SHEET TP4-1A, B, C.
     - 1.2.4 ALL BOLTS, NUTS AND WASHERS USED TO MOUNT THE SIGN AND SIGN ASSEMBLIES WILL BE 8 mm DIAMETER.
   - 1.3 BRACING
     - 1.3.1 SINGLE-MOUNTED AND BACK-TO-BACK MOUNTED HORIZONTAL RECTANGULAR SIGNS, EXCEPT D16-1 SIGNS WITH 1050 mm AND 1200 mm WIDTHS.
       - 1.3.1.1 BRACING ON SIGNS SHOWN WILL CONSIST OF EXTRUDED RIB AS DETAILED ON TP-A EXCEPT BACK-TO-BACK MOUNTINGS WILL CONSIST OF 2.98 KG/M. CHANNEL POST.
       - 1.3.1.2 ON ALL BRACED SIGNS THE WEB OF THE BRACING SHALL BE IN CONTACT WITH THE BACK OF THE SIGN.
       - 1.3.1.3 ON ALL BRACED SIGNS THE FLANGE OF THE BRACING SHALL BE IN CONTACT WITH THE POST SUPPORT.
       - 1.3.1.4 ON ALL BRACED SIGNS THE END OF THE OVERHANGING LENGTH OF THE BRACE SHALL BE AT LEAST 44.5 mm FROM THE CENTERLINE OF THE POST SUPPORT, BUT NO CLOSER THAN 25 mm TO THE EDGE OF THE SIGN. THE TWO OVERHANGING SECTIONS OF EACH BRACE SHALL BE EQUAL IN LENGTH.
     - 1.3.2 D16-1 SIGNS WITH 1050 mm AND 1200 mm WIDTHS.
       - 1.3.2.1 STRAP-BRACING FOR SINGLE-MOUNTED D16-1 SIGN ASSEMBLIES SHALL BE A GALVANIZED STEEL BRACE 6.4 mm x 25 mm x 1029 mm. HOLES IN THE STRAP-BRACING SHALL BE 9.5 mm DIAMETER AND CAN EITHER BE PUNCHED AS SHOWN OR BE PUNCHED AT 25.4 mm INTERVALS.
       - 1.3.2.2 ON ALL SINGLE-MOUNTED D16-1 SIGN ASSEMBLIES THE ENDS OF THE STRAP-BRACING SHALL EXTEND 25 mm OR LESS FROM THE EDGE OF THE SIGN, BUT NOT BEYOND ANY EDGE OF THE SIGN.
   - 1.4 POST SUPPORT
     - 1.4.1 THE TOP OF THE POST SUPPORT SHALL NOT EXTEND BEYOND THE EDGE OF THE SIGN.
     - 1.4.2 THE TOP OF THE POST SUPPORT SHALL EXTEND 50 mm OR LESS FROM THE EDGE OF THE SIGN, BUT NOT BEYOND ANY EDGE OF THE SIGN.
     - 1.4.3 ON ALL BRACED SIGNS, THE CENTERLINE OF THE POST SHALL BE WITHIN 75 mm (ON EITHER SIDE) OF THE CENTERLINE OF THE SIGN HOLE.
     - 1.4.4 ON ALL BRACED SIGNS, THE CENTERLINE OF THE POST SHALL BE WITHIN 150 mm (ON EITHER SIDE) OF THE CENTERLINE OF THE SIGN HOLE.



⚠ CHANGED D6-1 TO D16-1
⚠ ADDED TP3-1 REFERENCE

WEST VIRGINIA DIVISION OF HIGHWAYS

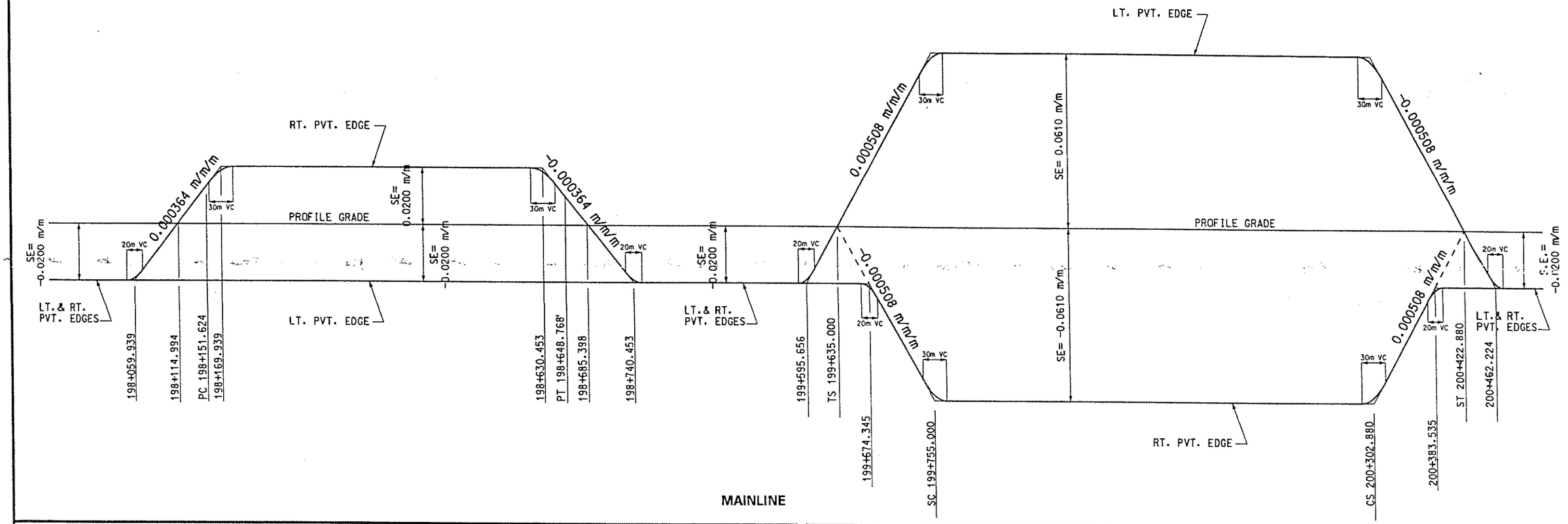
SPECIAL DETAIL MOUNTING DETAILS FOR HORIZONTAL RECTANGULAR SIGNS

PREPARED: 10/01/69

REVISIONS
05-01-70
06-01-70
⚠ 11-03-76
⚠ 09-13-93

STANDARD SHEET TP1–5

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (04)	HDH-0484(123)	1998	HARDY	29	146



MAINLINE

SUPERELEVATION TABLE

P.I. 198+400.616 | TRANS. LENGTH = 55 m | P.T. 198+648.768

P.C. 198+151.624 | RUNOUT = 55.000 m

S.E. = 0.0200 m/m | Rc. = 3495 m

STATION	LEFT LANE - SOUTHBOUND				PROFILE GRADE	RIGHT LANE - NORTHBOUND			
	PVMT. EDGE ELEV.	CORR.	WIDTH	RATE		RATE	WIDTH	CORR.	PVMT. EDGE ELEV.
+050	516.548	-0.144	7.2	-0.0200	516.692	-0.0200	7.2	-0.144	516.548
+059.939	516.476	-0.144	7.2	-0.0200	516.620	-0.0190	7.2	-0.137	516.483
+060	516.475	-0.144	7.2	-0.0200	516.619	-0.0190	7.2	-0.137	516.482
+070	516.386	-0.144	7.2	-0.0200	516.530	-0.0164	7.2	-0.118	516.412
+080	516.282	-0.144	7.2	-0.0200	516.426	-0.0126	7.2	-0.091	516.335
+090	516.163	-0.144	7.2	-0.0200	516.307	-0.0090	7.2	-0.065	516.242
198+100.000	516.027	-0.144	7.2	-0.0200	516.171	-0.0054	7.2	-0.039	516.132
+110	515.877	-0.144	7.2	-0.0200	516.021	-0.0018	7.2	-0.013	516.008
+120	515.711	-0.144	7.2	-0.0200	515.855	0.0018	7.2	0.013	515.868
+130	515.529	-0.144	7.2	-0.0200	515.673	0.0054	7.2	0.039	515.712
+140	515.332	-0.144	7.2	-0.0200	515.476	0.0092	7.2	0.066	515.542
+150	515.120	-0.144	7.2	-0.0200	515.264	0.0128	7.2	0.092	515.356
PC +151.624	515.084	-0.144	7.2	-0.0200	515.228	0.0133	7.2	0.096	515.324
+160	514.892	-0.144	7.2	-0.0200	515.036	0.0163	7.2	0.117	515.153
+169.939	514.650	-0.144	7.2	-0.0200	514.794	0.0186	7.2	0.134	514.928
+170	514.648	-0.144	7.2	-0.0200	514.792	0.0186	7.2	0.134	514.926
+180	514.389	-0.144	7.2	-0.0200	514.533	0.0199	7.2	0.143	514.676
+190	514.123	-0.144	7.2	-0.0200	514.267	0.0200	7.2	0.144	514.411

STATION	LEFT LANE - SOUTHBOUND				PROFILE GRADE	RIGHT LANE - NORTHBOUND			
	PVMT. EDGE ELEV.	CORR.	WIDTH	RATE		RATE	WIDTH	CORR.	PVMT. EDGE ELEV.
+610	502.923	-0.144	7.2	-0.0200	503.067	0.0200	7.2	0.144	503.211
+620	502.656	-0.144	7.2	-0.0200	502.800	0.0199	7.2	0.143	502.943
+630	502.389	-0.144	7.2	-0.0200	502.533	0.0188	7.2	0.135	502.668
+630.453	502.377	-0.144	7.2	-0.0200	502.521	0.0186	7.2	0.134	502.655
+640	502.123	-0.144	7.2	-0.0200	502.267	0.0164	7.2	0.118	502.385
PT +648.768	501.889	-0.144	7.2	-0.0200	502.033	0.0133	7.2	0.096	502.129
+650	501.856	-0.144	7.2	-0.0200	502.000	0.0129	7.2	0.093	502.093
+660	501.589	-0.144	7.2	-0.0200	501.733	0.0093	7.2	0.067	501.800
+670	501.323	-0.144	7.2	-0.0200	501.467	0.0056	7.2	0.040	501.507
+680	501.056	-0.144	7.2	-0.0200	501.200	0.0019	7.2	0.014	501.214
+690	500.789	-0.144	7.2	-0.0200	500.933	-0.0017	7.2	-0.012	500.921
198+700.000	500.523	-0.144	7.2	-0.0200	500.667	-0.0053	7.2	-0.038	500.629
+710	500.256	-0.144	7.2	-0.0200	500.400	-0.0089	7.2	-0.064	500.336
+720	499.989	-0.144	7.2	-0.0200	500.133	-0.0125	7.2	-0.090	500.043
+730	499.723	-0.144	7.2	-0.0200	499.867	-0.0163	7.2	-0.117	499.750
+740	499.456	-0.144	7.2	-0.0200	499.600	-0.0190	7.2	-0.137	499.463
+740.453	499.444	-0.144	7.2	-0.0200	499.588	-0.0190	7.2	-0.137	499.451
+750	499.189	-0.144	7.2	-0.0200	499.333	-0.0200	7.2	-0.144	499.189
+760	498.923	-0.144	7.2	-0.0200	499.067	-0.0200	7.2	-0.144	498.923

SUPERELEVATION TABLE

P.I. 200+038.256 | TRANS. LENGTH = 120 m | C.S. 200+302.880

T.S. 199+635.000 | RUNOUT = 39.344 m | S.T. 200+422.880

S.C. 199+755.000 | Rc. = 875 m

S.E. = 0.0610 m/m

STATION	LEFT LANE - SOUTHBOUND				PROFILE GRADE	RIGHT LANE - NORTHBOUND			
	PVMT. EDGE ELEV.	CORR.	WIDTH*	RATE		RATE	WIDTH*	CORR.	PVMT. EDGE ELEV.
+580	503.221	-0.144	7.2	-0.0200	503.365	-0.0200	7.2	-0.144	503.221
+590	503.749	-0.142	7.2	-0.0197	503.891	-0.0200	7.2	-0.144	503.747
+595.656	504.053	-0.135	7.2	-0.0188	504.188	-0.0200	7.2	-0.144	504.044
199+600.000	504.292	-0.125	7.2	-0.0174	504.417	-0.0200	7.2	-0.144	504.273
+610	504.851	-0.092	7.2	-0.0128	504.943	-0.0200	7.2	-0.144	504.799
+620	505.414	-0.055	7.2	-0.0076	505.469	-0.0200	7.2	-0.144	505.325
+630	505.977	-0.018	7.2	-0.0025	505.995	-0.0200	7.2	-0.144	505.851
TS +635.000	506.259	0.000	7.2	0.0000	506.259	-0.0200	7.2	-0.144	506.115
+640	506.540	0.018	7.2	0.0025	506.522	-0.0200	7.2	-0.144	506.378
+650	507.103	0.055	7.2	0.0076	507.048	-0.0200	7.2	-0.144	506.904
+660	507.665	0.091	7.2	0.0126	507.574	-0.0200	7.2	-0.144	507.430
+670	508.228	0.128	7.2	0.0178	508.100	-0.0204	7.2	-0.147	507.953
+674.345	508.473	0.144	7.2	0.0200	508.329	-0.0213	7.2	-0.153	508.176
+680	508.791	0.165	7.2	0.0229	508.626	-0.0231	7.2	-0.166	508.460
+690	509.354	0.201	7.2	0.0279	509.153	-0.0279	7.2	-0.201	508.952
199+700.000	509.917	0.238	7.2	0.0331	509.679	-0.0331	7.2	-0.238	509.441
+710	510.479	0.274	7.2	0.0381	510.205	-0.0381	7.2	-0.274	509.931
+720	511.042	0.311	7.2	0.0432	510.731	-0.0432	7.2	-0.311	510.420
+730	511.605	0.348	7.2	0.0483	511.257	-0.0483	7.2	-0.348	510.909
+740	512.168	0.384	7.2	0.0533	511.784	-0.0533	7.2	-0.384	511.400
+750	512.725	0.415	7.2	0.0576	512.310	-0.0576	7.2	-0.415	511.895
SC +755.000	512.998	0.425	7.2	0.0590	512.573	-0.0590	7.2	-0.425	512.148
+760	513.269	0.433	7.2	0.0601	512.836	-0.0601	7.2	-0.433	512.403
+770	513.801	0.439	7.2	0.0610	513.362	-0.0610	7.2	-0.439	512.923

STATION	LEFT LANE				PROFILE GRADE	RIGHT LANE			
	PVMT. EDGE ELEV.	CORR.	WIDTH	RATE		RATE	WIDTH	CORR.	PVMT. EDGE ELEV.
+280	540.637	0.439	7.2	0.0610	540.198	-0.0610	7.2	-0.439	539.759
+290	541.164	0.439	7.2	0.0610	540.725	-0.0610	7.2	-0.439	540.286
200+300.000	541.681	0.430	7.2	0.0597	541.251	-0.0597	7.2	-0.430	540.821
CS +302.880	541.827	0.425	7.2	0.0590	541.402	-0.0590	7.2	-0.425	540.977
+310	542.186	0.409	7.2	0.0568	541.777	-0.0568	7.2	-0.409	541.368
+320	542.680	0.377	7.2	0.0524	542.303	-0.0524	7.2	-0.377	541.926
+330	543.169	0.340	7.2	0.0472	542.829	-0.0472	7.2	-0.340	542.489
+340	543.658	0.303	7.2	0.0421	543.355	-0.0421	7.2	-0.303	543.052
+350	544.149	0.267	7.2	0.0371	543.882	-0.0371	7.2	-0.267	543.615
+360	544.638	0.230	7.2	0.0319	544.408	-0.0319	7.2	-0.230	544.178
+370	545.128	0.194	7.2	0.0269	544.934	-0.0269	7.2	-0.194	544.740
+380	545.617	0.157	7.2	0.0218	545.460	-0.0224	7.2	-0.161	545.299
+383.535	545.790	0.144	7.2	0.0200	545.646	-0.0213	7.2	-0.153	545.493
+390	546.106	0.120	7.2	0.0167	545.986	-0.0201	7.2	-0.145	545.841
200+400.000	546.597	0.084	7.2	0.0117	546.513	-0.0200	7.2	-0.144	546.369
+410	547.086	0.047	7.2	0.0065	547.039	-0.0200	7.2	-0.144	546.895
+420	547.576	0.011	7.2	0.0015	547.565	-0.0200	7.2	-0.144	547.421
ST +422.880	547.717	0.000	7.2	0.0000	547.717	-0.0200	7.2	-0.144	547.573
+430	548.065	-0.026	7.2	-0.0036	548.091	-0.0200	7.2	-0.144	547.947
+440	548.554	-0.063	7.2	-0.0087	548.617	-0.0200	7.2	-0.144	548.473
+450	549.045	-0.099	7.2	-0.0138	549.144	-0.0200	7.2	-0.144	549.000
+460	549.540	-0.130	7.2	-0.0181	549.670	-0.0200	7.2	-0.144	549.526
+462.224	549.652	-0.135	7.2	-0.0188	549.787	-0.0200	7.2	-0.144	549.643
+470	550.052	-0.144	7.2	-0.0200	550.196	-0.0200	7.2	-0.144	550.052
+480	550.578	-0.144	7.2	-0.0200	550.722	-0.0200	7.2	-0.144	550.578

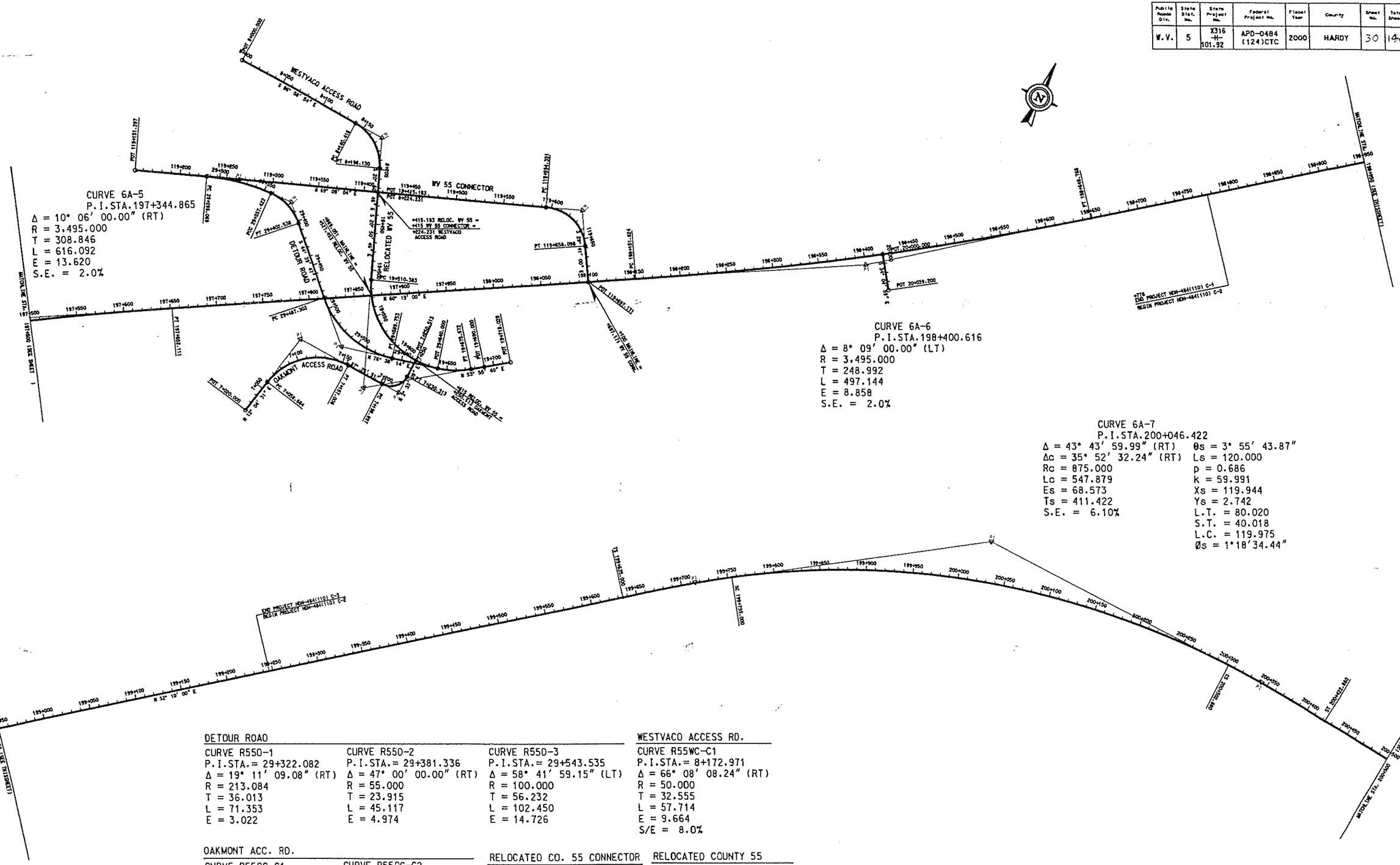
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUPERELEVATION TABLES & DIAGRAMS

ROADWAY DESIGN DIVISION

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 ++ 101.92	APD-0484 (124)CTC	2000	HARDY	30	146



CURVE 6A-5
P.I.STA.197+344.865
Δ = 10° 06′ 00.00″ (RT)
R = 3,495.000
T = 308.846
L = 616.092
E = 13.620
S.E. = 2.0%

CURVE 6A-6
P.I.STA.198+400.616
Δ = 8° 09′ 00.00″ (LT)
R = 3,495.000
T = 248.992
L = 497.144
E = 8.858
S.E. = 2.0%

CURVE 6A-7
P.I.STA.200+046.422

Δ = 43° 43′ 59.99″ (RT)	θs = 3° 55′ 43.87″
Δc = 35° 52′ 32.24″ (RT)	Ls = 120.000
Rc = 875.000	p = 0.686
Lc = 547.879	k = 59.991
Es = 68.573	Xs = 119.944
Ts = 411.422	Ys = 2.742
S.E. = 6.10%	L.T. = 80.020
	S.T. = 40.018
	L.C. = 119.975
	Øs = 1°18′34.44″

DETOUR ROAD

CURVE R55D-1
P.I.STA.= 29+322.082
Δ = 19° 11′ 09.08″ (RT)
R = 213.084
T = 36.013
L = 71.353
E = 3.022

CURVE R55D-2
P.I.STA.= 29+381.336
Δ = 47° 00′ 00.00″ (RT)
R = 55.000
T = 23.915
L = 45.117
E = 4.974

CURVE R55D-3
P.I.STA.= 29+543.535
Δ = 58° 41′ 59.15″ (LT)
R = 100.000
T = 56.232
L = 102.450
E = 14.726

WESTVACO ACCESS RD.

CURVE R55WC-C1
P.I.STA.= 8+172.971
Δ = 66° 08′ 08.24″ (RT)
R = 50.000
T = 32.555
L = 57.714
E = 9.664
S/E = 8.0%

OAKMONT ACC. RD.

CURVE R55OC-C1
P.I.STA.= 7+117.920
Δ = 80° 28′ 38.80″ (RT)
R = 70.000
T = 59.236
L = 98.322
E = 21.700
S/E = 4.0%

CURVE R55OC-C2
P.I.STA.= 7+218.897
Δ = 90° 00′ 00.00″ (LT)
R = 20.000
T = 20.000
L = 31.416
E = 8.284
S/E = 4.0%

RELOCATED CO. 55 CONNECTOR

CURVE R55CN-C1
P.I.STA.= 119+632.897
Δ = 81° 09′ 55.79″ (RT)
R = 45.000
T = 38.546
L = 63.747
E = 14.252
S/E = 8.0%

RELOCATED COUNTY 55

CURVE R55-C1
P.I.STA.= 19+628.154
Δ = 105° 13′ 34.04″ (LT)
R = 90.000
T = 117.771
L = 165.289
E = 58.223
S/E = 8.0%

SCALE: 0 10 m

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOMETRIC LAYOUT

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 -H- 101.92 (05)	APD-0484 (124)CTC	2000	HARDY	30A	146

T.C.E.
198+800.000
140.000 (LT)
198+880.000
140.000 (LT)

T.C.E.
199+000.000
120.000 (LT)
199+226.981
121.990 (LT)
199+280.000
130.000 (LT)

198+690.000
50.000 (LT)

199+000.000
70.000 (LT)

TRACT 7
TRACT 7
TRACT 15

198+550 198+600 198+650 198+700 198+750 198+800 198+850 198+900 198+950 199+000 199+050 199+100 199+150 199+200 199+250 199+300

TRACT 8
T.C.E.

198+970.000
65.000 (RT)
198+890.000
65.000 (RT)

NOTE: ACCESS ALLOWED UNDER STRUCTURE TO REMAINING PROPERTIES BY PERMIT.

198+970.000
100.000 (RT)

199+220.000
42.200 (RT)

TRACT 8
TRACT 14

199+070.000
130.000 (RT)
199+152.722
120.000 (RT)
199+220.00~
130.000 (RT)

198+640.373
194.441 (RT)
198+646.864
185.367 (RT)

TRACT 6

198+685.921
186.260 (RT)
198+649.598
197.298 (RT)

198+578.576
228.151 (RT)
198+619.909
228.151 (RT)

198+622.849
216.974 (RT)

198+586.067
235.190 (RT)

NOTE: THIS SHEET HAS BEEN PROVIDED FOR INFORMATION ONLY SHOWING ADDITIONAL T.C.E. TAKES TO BE ACQUIRED

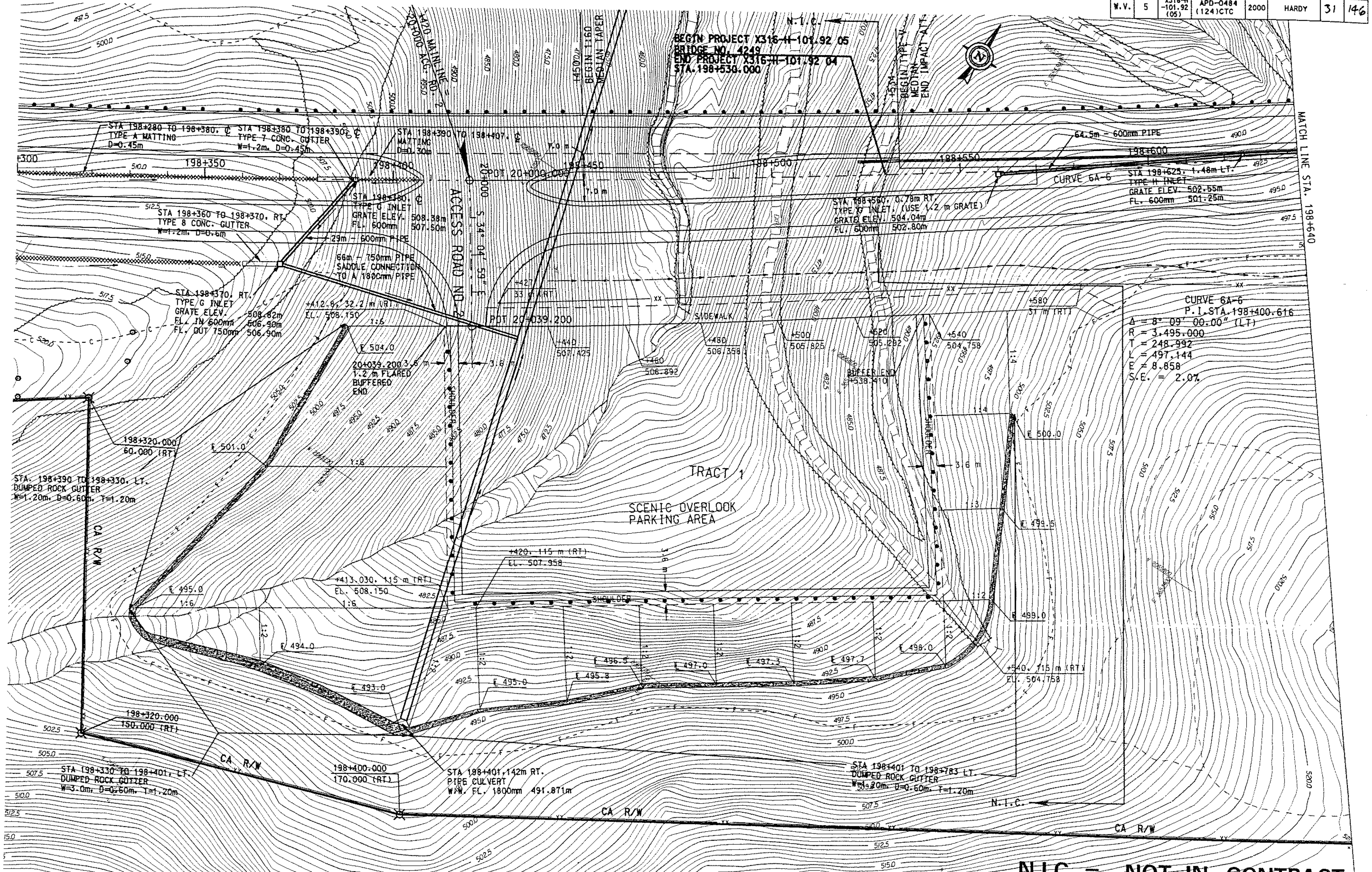
SCALE: 0 40m

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLAN SHEET

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H-101.92 (05)	APD-0484 (124)CTC	2000	HARDY	31	146



BEGIN PROJECT X316-H-101.92 05
BRIDGE NO. 4249
END PROJECT X316-H-101.92 04
STA.198+530.000
N.I.C.
MATCH LINE STA. 198+640
STA 198+280 TO 198+380, ℄ TYPE A MATTING D=0.45m
STA 198+380 TO 198+390 ℄ TYPE 7 CONC. GUTTER W=1.2m, D=0.45m
STA 198+390 TO 198+407, ℄ MATTING D=0.30m
64.5m - 600mm PIPE
STA 198+625, 1.48m LT. TYPE H INLET GRATE ELEV. 502.55m FL. 600mm 501.25m
CURVE 6A-6
STA 198+560, 0.78m RT. TYPE G INLET (USE 1.2 m GRATE) GRATE ELEV. 504.04m FL. 600mm 502.80m
STA 198+380, ℄ TYPE G INLET GRATE ELEV. 508.38m FL. 600mm 507.50m
STA 198+360 TO 198+370, RT. TYPE 8 CONC. GUTTER W=1.2m, D=0.6m
29m - 600mm PIPE
66m - 750mm PIPE SADDLE CONNECTION TO A 1800mm PIPE
ACCESS ROAD NO. 2
S 34° 04' 59" E
POT 20+009.000
POT 20+039.200
STA 198+370, RT. TYPE G INLET GRATE ELEV. 508.82m FL. IN 600mm 506.90m FL. OUT 750mm 506.90m
+412.9, 32.2 m (RT) EL. 508.150
20+039.200 1.2 m FLARED BUFFERED END
SIDEWALK
BUFFER END +538.410
CURVE 6A-6
P.I.STA.198+400.616
Δ = 8° 09' 00.00" (LT)
R = 3,495.000
T = 248.992
L = 497.144
E = 8.858
S.E. = 2.0%
198+320.000 60.000 (RT)
STA. 198+390 TO 198+330, LT. DUMPED ROCK GUTTER W=1.20m, D=0.60m, T=1.20m
TRACT 1
SCENIC OVERLOOK PARKING AREA
SHOULDER
CA R/W
+420, 115 m (RT) EL. 507.958
+413.030, 115 m (RT) EL. 508.150
+540, 115 m (RT) EL. 504.758
198+320.000 150.000 (RT)
STA 198+330 TO 198+401, LT. DUMPED ROCK GUTTER W=3.0m, D=0.60m, T=1.20m
198+400.000 170.000 (RT)
STA 198+401,142m RT. PIPE CULVERT W.W. FL. 1800mm 491.871m
STA 198+401 TO 198+783 LT. DUMPED ROCK GUTTER W=1.20m, D=0.60m, T=1.20m

N.I.C. = NOT IN CONTRACT

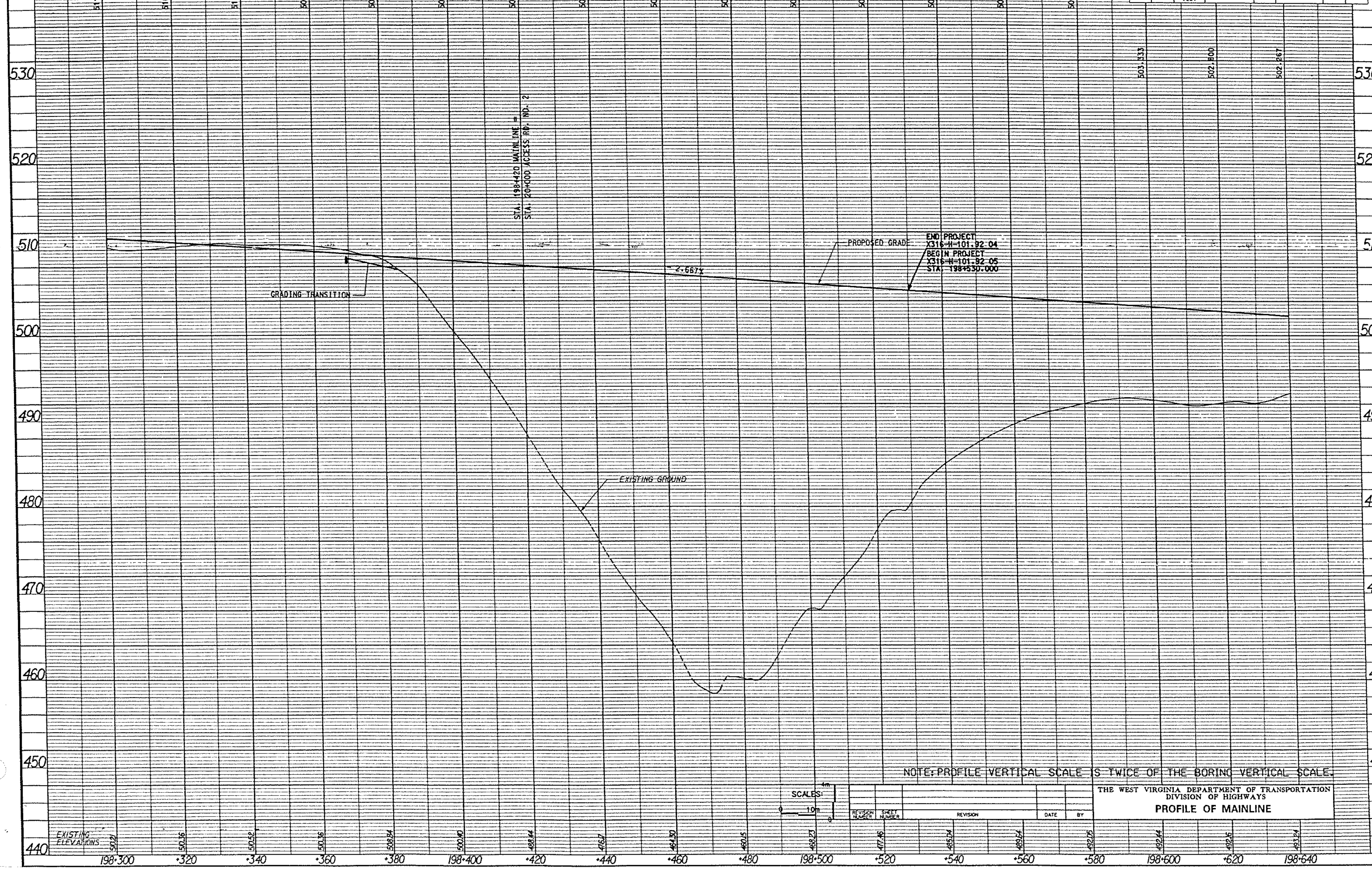
SCALE: 0 10 m

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLAN SHEET

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H-101.92 (05)	APD-0484 (124)CTC	2000	HARDY	32	146



540
530
520
510
500
490
480
470
460
450
440
511.333
510.800
510.267
509.733
509.200
508.667
508.133
507.600
507.067
506.533
506.000
505.467
504.933
504.400
503.867
503.333
502.800
502.267
STA. 198+420 MAINLINE =
STA. 20+000 ACCESS RD. NO. 2
PROPOSED GRADE
END PROJECT
X316-H-101.92 04
BEGIN PROJECT
X316-H-101.92 05
STA. 198+530.000
-2.667%
GRADING TRANSITION
EXISTING GROUND
NOTE: PROFILE VERTICAL SCALE IS TWICE OF THE BORING VERTICAL SCALE.
SCALES:
4m
0
10m
EXISTING ELEVATIONS
502.21
503.6
502.8
503.6
508.84
500.10
488.44
476.7
464.30
460.5
468.23
477.46
485.04
489.64
492.05
492.44
492.6
493.24
198+300
+320
+340
+360
+380
198+400
+420
+440
+460
+480
198+500
+520
+540
+560
+580
198+600
+620
198+640

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROFILE OF MAINLINE

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	33	146

198+650.000
50.000 (LT)

198+766.112
46.314 (LT)
(N.I.C.)

198+800.000
40.000 (LT)

198+750.000
50.000 (LT)

198+775.782
10.926 (LT)
(N.I.C.)

CA R/W

STA 198+680 TO 198+760, LT.
TYPE A MATTING
W=1.2 D=0.45
(N.I.C.)

+661.000
S.T.E.T.

+776.000
BR. CONN.
TIE TO BR.
BARRIER

STA 198+760 to 198+790, LT. (N.I.C.)
DUMPED ROCK GUTTER
W=1.2m D=0.60m, T=0.60m

STA 198+735, 0.35m RT.
TYPE H INLET
GRATE ELEV. 499.68m
FL. 600mm 498.38m

MATCH LINE STA. 198+640
RT 198+646.768

TYPE V MEDIAN

198+650

59.5m - 600mm PIPE

198+700

49.5m - 600mm PIPE

198+750

198+800

198+850

N 52° 10' 00" E

198+900

198+950

MATCH LINE STA. 198+970

STA 198+685, 0.49m LT.
TYPE H INLET
GRATE ELEV 500.98m
FL. 600mm 499.68m

18.5m - 600mm PIPE

+700.000
F.E.T.

+776.000
BR. CONN.
TIE TO BR.
BARRIER

TRACT A

END GRADING WORK
STA. 198+785.000

STA 198+680 TO 198+740, RT.
TYPE A MATTING
W=1.2m, D=0.30m

198+715.782
10.926 (RT)
(N.I.C.)

BEGIN 1:50 PAVED SHOULDER TAPER
+650

END PAVED SHOULDER TAPER
END 1:50 MEDIAN TAPER
+750

+720
40 m (RT)

STA 198+744, 18m RT.
MES FL. 600mm 498.155m

STA 198+740 to 198+780, RT.
DUMPED ROCK GUTTER
W=1.2m, D=0.60m, T=0.60m
(N.I.C.)

198+800.000
40.000 (RT)

CA R/W

198+800.000
200.000 (RT)

N.I.C. = NOT IN CONTRACT

SCALE: 0 10 m

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
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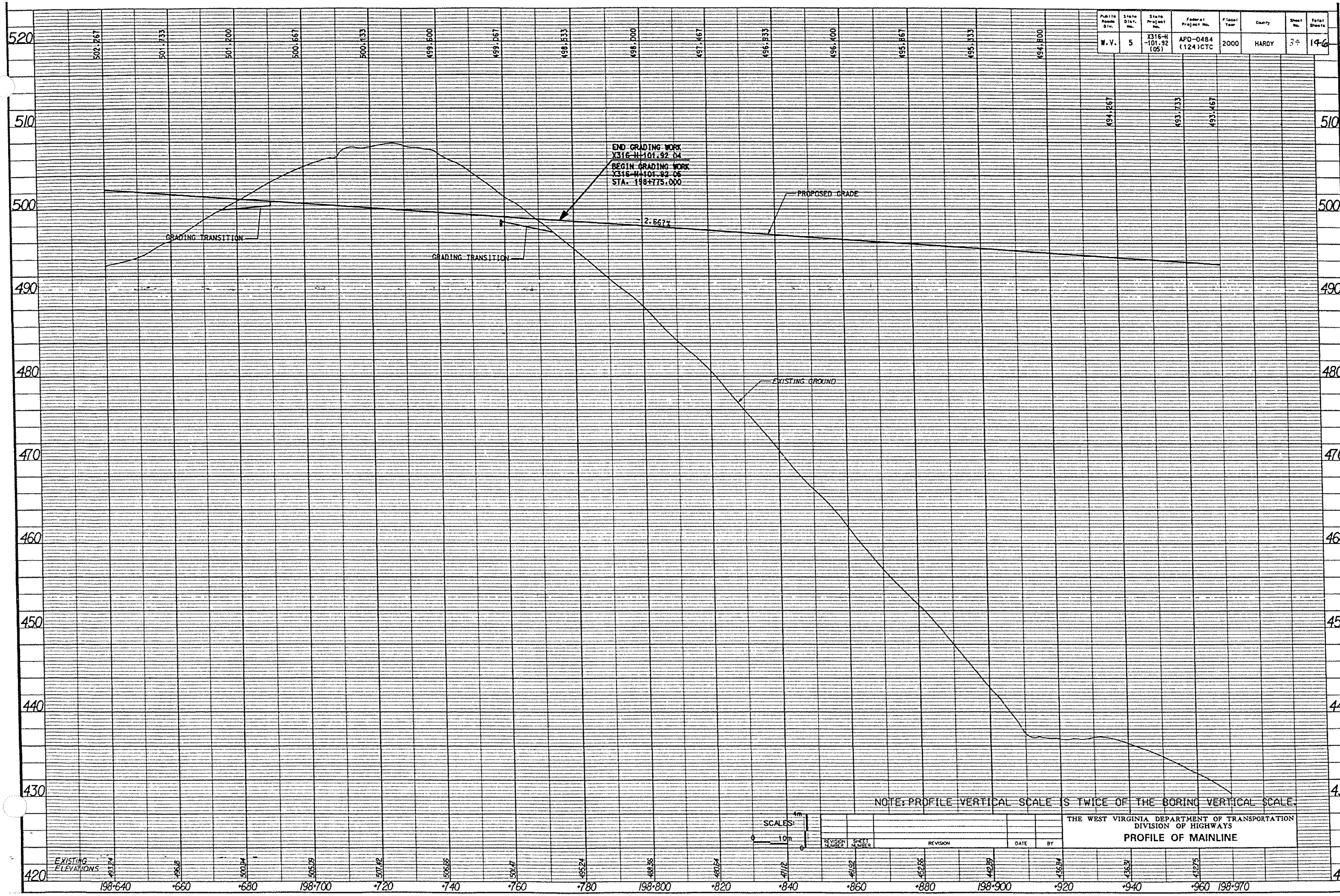
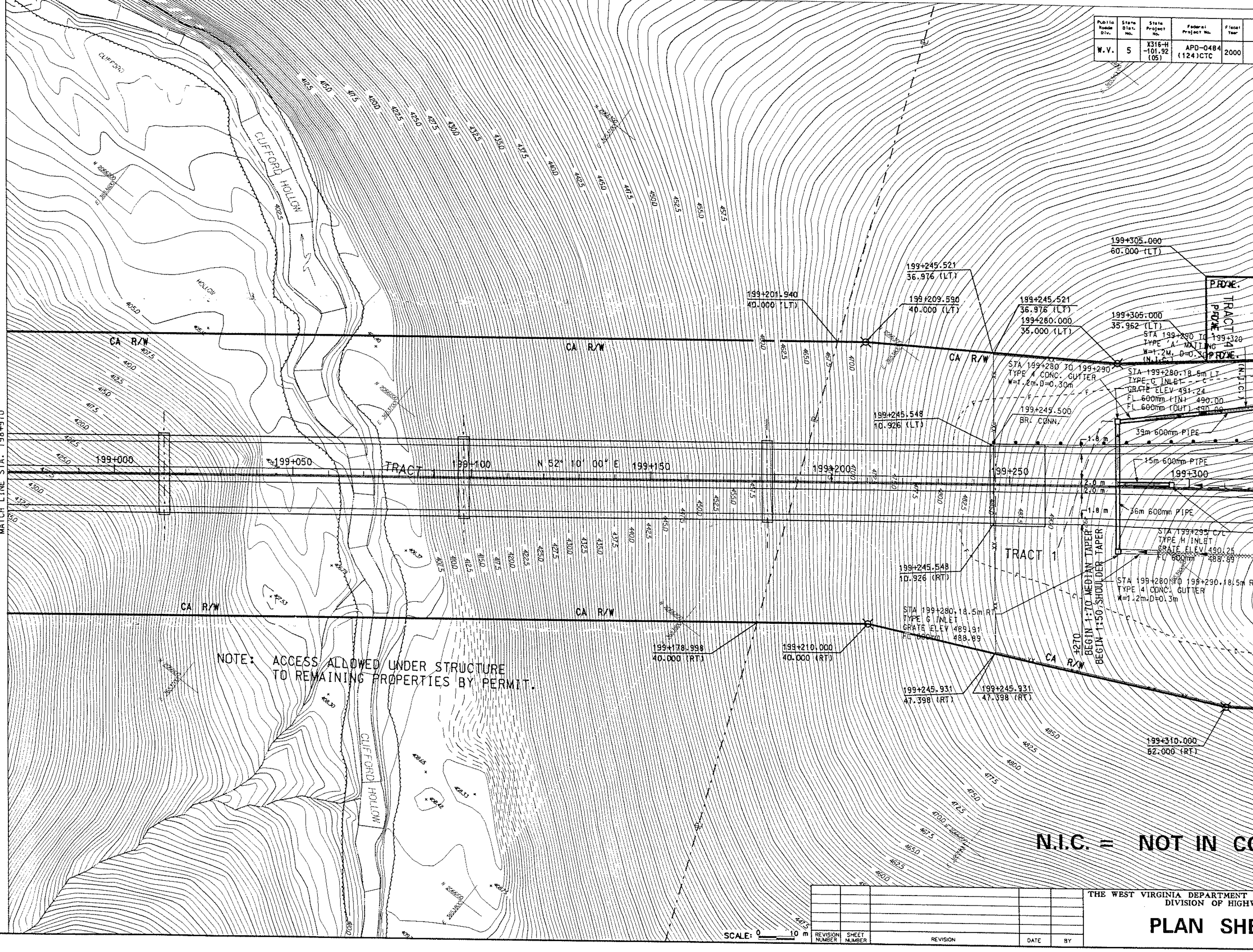
PLAN SHEET

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	34	146



502.267
501.733
501.200
500.667
500.133
499.600
499.067
498.533
498.000
497.467
496.933
496.400
495.867
495.333
494.800
494.267
493.733
493.467
END GRADING WORK X316-H-101.92 04
BEGIN GRADING WORK X316-H-101.92 06 STA. 198+775.000
PROPOSED GRADE
2.667%
GRADING TRANSITION
GRADING TRANSITION
EXISTING GROUND
520
510
500
490
480
470
460
450
440
430
420
NOTE: PROFILE VERTICAL SCALE IS TWICE OF THE BORING VERTICAL SCALE.
SCALES:
4m
10m
0
REVISION NUMBER
SHEET NUMBER
REVISION
DATE
BY
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROFILE OF MAINLINE
EXISTING ELEVATIONS
198+640
+660
+680
198+700
+720
+740
+760
+780
198+800
+820
+840
+860
+880
198+900
+920
+940
+960
198+970

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H-101.92 (05)	APD-0484 (124)CTC	2000	HARDY	35	146



CLIFFORD HOLLOW
CA R/W
MATCH LINE STA. 198+970
MATCH LINE STA. 199+320
199+000
199+050
199+100
199+150
199+200
199+250
199+300
N 52° 10' 00" E
TRACT 1
TRACT 4
P.R/W.
(N.I.C.)
199+201.940
40.000 (LT)
199+209.590
40.000 (LT)
199+245.521
36.976 (LT)
199+280.000
35.000 (LT)
199+305.000
60.000 (LT)
199+305.000
35.962 (LT)
STA 199+290 TO 199+320
TYPE 'A' MATTING
W=1.2M, D=0.30
STA 199+280 TO 199+290
TYPE 4 CONC. GUTTER
W=1.2m,D=0.30m
STA 199+280,18.5m LT
TYPE G INLET
GRATE ELEV 491.24
FL 600mm (IN) 490.00
FL 600mm (OUT) 490.00
199+245.548
10.926 (LT)
199+245.500
BR. CONN.
39m 600mm PIPE
15m 600mm PIPE
36m 600mm PIPE
1.8 m
2.0 m
STA 199+295 C/L
TYPE H INLET
GRATE ELEV 490.25
FL 600mm 488.89
199+245.548
10.926 (RT)
STA 199+280 TO 199+290,18.5m RT
TYPE 4 CONC. GUTTER
W=1.2m,D=0.3m
STA 199+280,18.5m RT
TYPE G INLET
GRATE ELEV 489.91
FL 600mm 488.89
BEGIN 1:70 MEDIAN TAPER
BEGIN 1:50 SHOULDER TAPER
+270
199+178.998
40.000 (RT)
199+210.000
40.000 (RT)
199+245.931
47.398 (RT)
199+310.000
52.000 (RT)
NOTE: ACCESS ALLOWED UNDER STRUCTURE TO REMAINING PROPERTIES BY PERMIT.
SCALE: 0 10 m

N.I.C. = NOT IN CONTRACT

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLAN SHEET

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	36	146

493.467 493.200 492.867 492.533 492.200 491.600 491.167 490.575 490.167 489.842 489.601 489.443 489.369 489.378 489.471 489.647 489.906

199+060 E1 491.167

PROPOSED GRADE

K = 47
380.000 m V.C.

-2.667%

+5.262%

P.I. 199+250 El. 488.000

490.249 490.696 491.186

EXISTING GROUND

EXISTING ELEVATIONS 427.36 433.14 440.79 446.43 455.88 465.87 475.30 485.82 497.71 508.23 518.59 527.74 536.08 543.30 549.22 553.96 557.22 558.63

198+970 +980 199+000 +020 +040 +060 +080 199+100 +120 +140 +160 +180 199+200 +220 +240 +260 +280 199+300 199+320

500 490 480 470 460 450 440 430 420 410 400

NOTE : VERTICAL SCALE ON THIS PROFILE DIFFERS FROM REMAINDER OF PROJECT. VERTICAL SCALE IS TWICE OF THE BOHANNON VERTICAL SCALE.

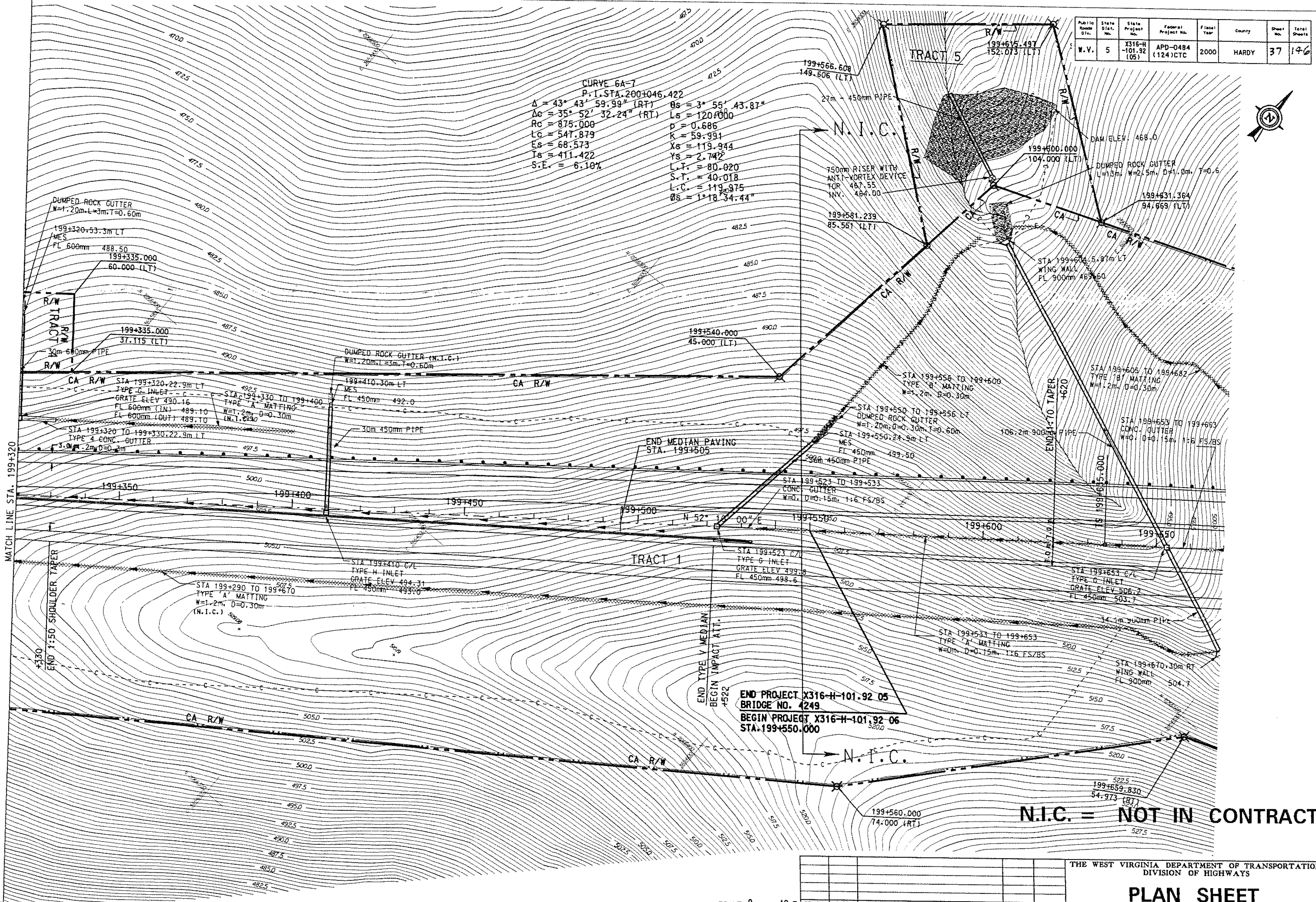
SCALES: 1cm 0 10m 0

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROFILE OF MAINLINE

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	37	146



CURVE 6A-7
P.I.STA.200+046.422
Δ = 43° 43′ 59.99″ (RT)
Δc = 35° 52′ 32.24″ (RT)
Rc = 875.000
Lc = 547.879
Es = 68.573
Ts = 411.422
S.E. = 6.10%
θs = 3° 55′ 43.87″
Ls = 120.000
p = 0.686
k = 59.991
Xs = 119.944
Ys = 2.742
L.T. = 80.020
S.T. = 40.018
L.C. = 119.975
Øs = 1°18′34.44″
TRACT 5
TRACT 1
N.I.C.
DAM ELEV. 468.0
750mm RISER WITH ANTI-VORTEX DEVICE TOP 467.55 INV. 464.00
DUMPED ROCK GUTTER L=13m, W=2.5m, D=1.0m, T=0.6
27m - 450mm PIPE
199+566.608 149.606 (LT)
199+615.497 152.073 (LT)
199+600.000 104.000 (LT)
199+631.364 94.669 (LT)
199+581.239 85.551 (LT)
199+540.000 45.000 (LT)
199+335.000 60.000 (LT)
199+335.000 37.115 (LT)
DUMPED ROCK GUTTER W=1.20m L=3m T=0.60m
199+320 53.3m LT MES FL 600mm 488.50
30m 600mm PIPE
DUMPED ROCK GUTTER (N.I.C.) W=1.20m L=3m T=0.60m
199+410 30m LT MES FL 450mm 492.0
30m 450mm PIPE
STA 199+320 22.9m LT TYPE G INLET GRATE ELEV 490.16 FL 600mm (IN) 489.10 FL 600mm (OUT) 489.10
STA 199+330 TO 199+400 TYPE 'A' MATTING W=1.2m, D=0.30m (N.I.C.)
STA 199+320 TO 199+330 22.9m LT TYPE 4 CONC. GUTTER
END MEDIAN PAVING STA. 199+505
STA 199+556 TO 199+600 TYPE 'B' MATTING W=1.2m, D=0.30m
STA 199+550 TO 199+556 LT DUMPED ROCK GUTTER W=1.20m D=0.30m T=0.60m
STA 199+550 24.9m LT MES FL 450mm 499.50
30m 450mm PIPE
STA 199+523 TO 199+533 CONC. GUTTER W=0, D=0.15m, 1:6 FS/BS
STA 199+604 5.87m LT WING WALL FL 900mm 469.60
STA 199+605 TO 199+682 TYPE 'B' MATTING W=1.2m, D=0.30m
STA 199+653 TO 199+663 CONC. GUTTER W=0, D=0.15m, 1:6 FS/BS
106.2m 900mm PIPE
END 1:10 TAPER +620
STA 199+410 C/L TYPE H INLET GRATE ELEV 494.31 FL 450mm 493.0
STA 199+290 TO 199+670 TYPE 'A' MATTING W=1.2m, D=0.30m (N.I.C.)
STA 199+523 C/L TYPE G INLET GRATE ELEV 499.8 FL 450mm 498.6
STA 199+653 C/L TYPE G INLET GRATE ELEV 506.2 FL 450mm 503.7
34.1m 900mm PIPE
STA 199+533 TO 199+653 TYPE 'A' MATTING W=0m, D=0.15m, 1:6 FS/BS
STA 199+670 30m RT WING WALL FL 900mm 504.7
N 52° 10′ 00″ E
MATCH LINE STA. 199+320
END 1:50 SHOULDER TAPER +330
END TYPE V MEDIAN BEGIN IMPACT ATT. +522
END PROJECT X316-H-101.92 05
BRIDGE NO. 4249
BEGIN PROJECT X316-H-101.92 06
STA. 199+550.000
199+560.000 74.000 (RT)
199+659.830 54.973 (RT)
CA R/W
N.I.C. = NOT IN CONTRACT

SCALE: 0 10 m

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLAN SHEET

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H -101.92 (05)	APD-0484 (124)CTC	2000	HARDY	38	146

491.886 491.779 492.456 493.216 494.060 494.387 495.998 497.050 498.103 499.155 500.207 501.260 502.312 503.365 504.417 505.469 506.522 507.574 508.100

530 520 510 500 490 480

EXISTING GROUND

PROPOSED GRADE

K = 47
380.000 m V.C.

199+440 E. 495.998

+ 5.262%

EXISTING ELEVATIONS: 49.63 50.57 50.79 50.46 50.93 50.38 50.85 50.59 50.68 50.31 50.50 50.59 50.56 50.63 50.14 49.46 49.50 49.26

199+320 +340 +360 +380 199+400 +420 +440 +460 +480 199+500 +520 +540 +560 +580 199+600 +620 +640 +660 199+670

NOTE: PROFILE VERTICAL SCALE IS TWICE OF THE BORING VERTICAL SCALE.

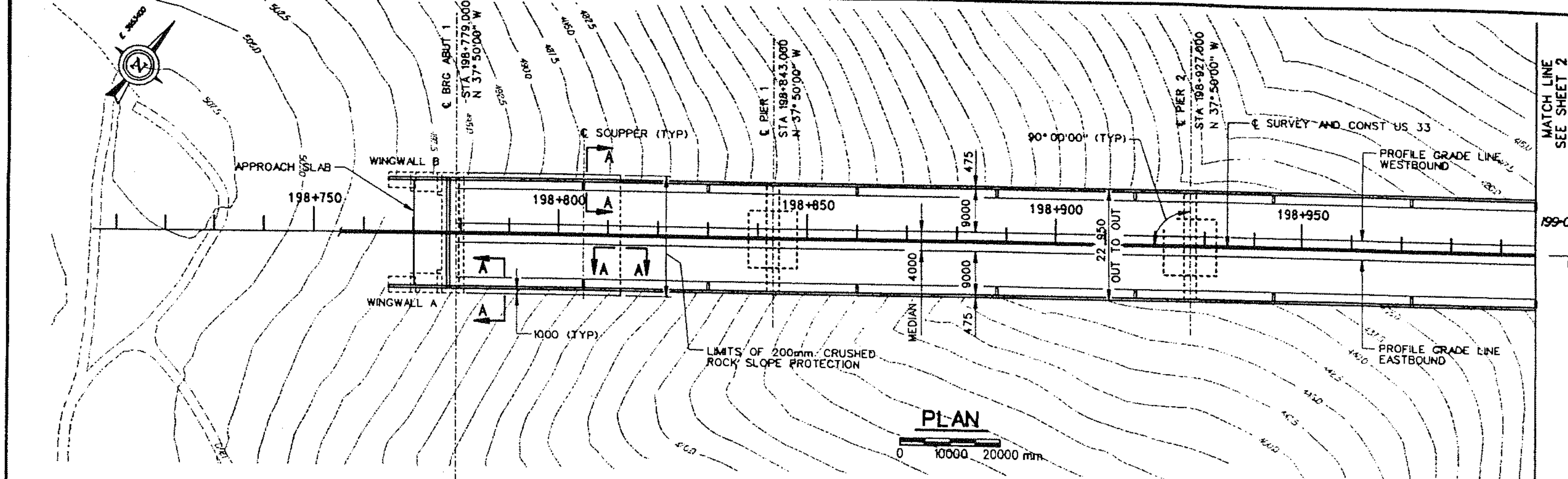
SCALES: 2m, 0, 10m, 0

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

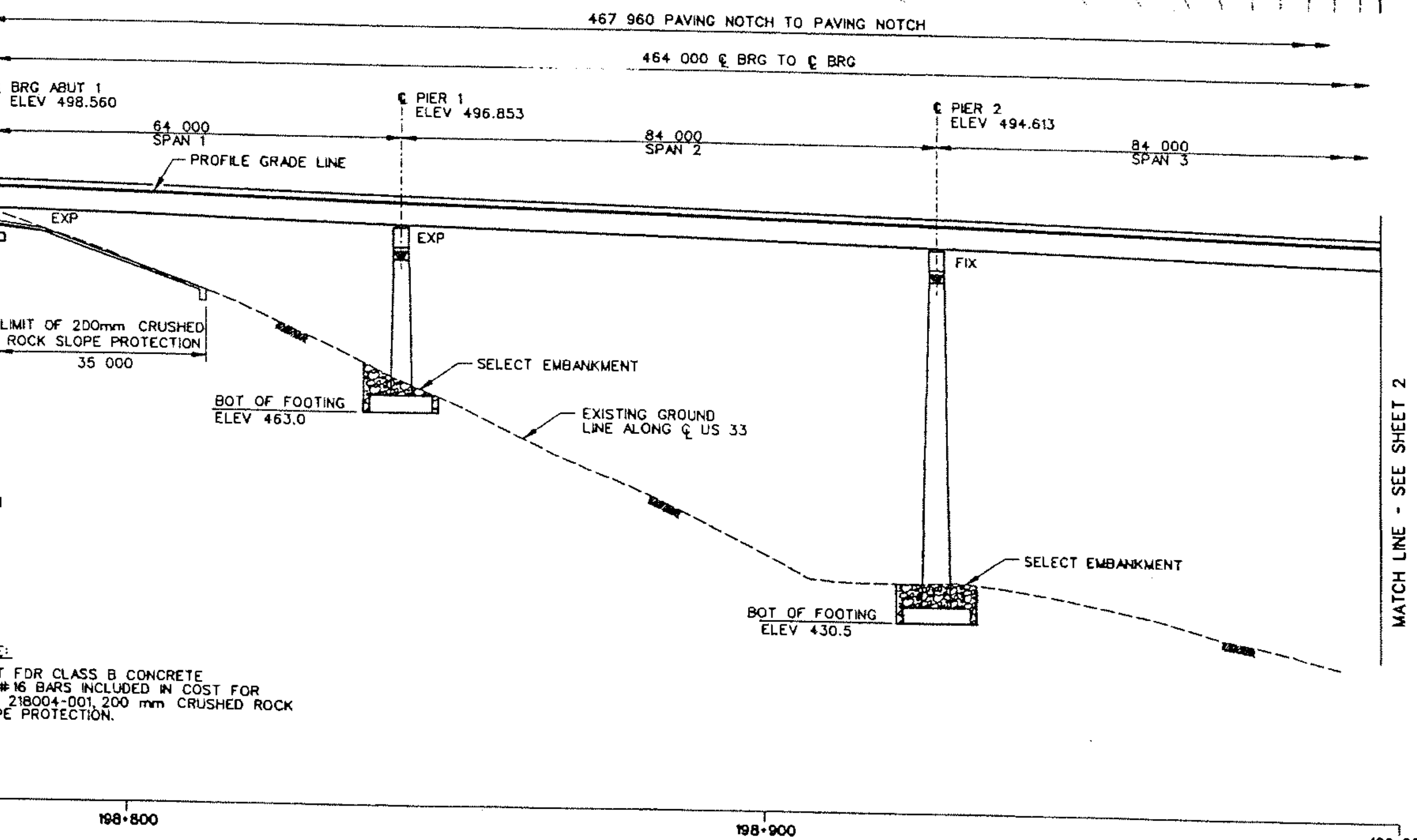
PROFILE OF MAINLINE

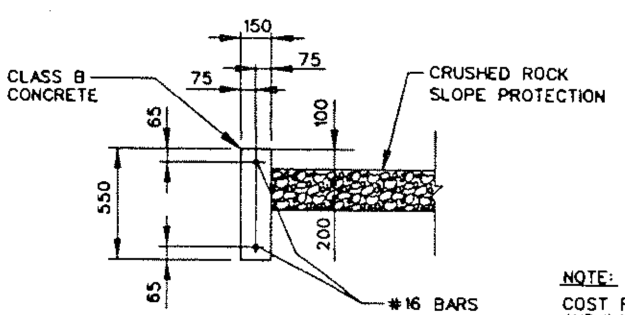
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X318-H-101.62 00	APD-0484(124) CTC	2001	HARDY	39	146



PLAN

0 10000 20000 mm





SECTION A-A

NO SCALE

NOTE:
COST FOR CLASS B CONCRETE AND #16 BARS INCLUDED IN COST FOR ITEM 218004-001, 200 mm CRUSHED ROCK SLOPE PROTECTION.

ELEVATION

0 10000 20000 mm

HYDRAULIC DATA

DRAINAGE AREA = 1066 ha

100 YEAR FLOOD INFORMATION
- MAGNITUDE OF FLOW = 79 m^3/SEC
- VELOCITY OF FLOW = 5.3 m/SEC
- WATER SURFACE LEVEL = 405.8

DESIGN TRAFFIC DATA

ADT (1999) = 8000
ADT (2019) = 14 000
DESIGN SPEED = 100 KM/H

NOTES:
1. FOR GENERAL NOTES SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEET 2.

ALL HORIZONTAL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS AND STATIONS ARE IN METERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

ARTHUR W. HEDGREN, JR. REGISTERED NO. 8534 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Arthur W. Hedgren Jr.
June 21, 2000

PREPARED BY:
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
3 GATEWAY CENTER
PITTSBURGH, PA.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

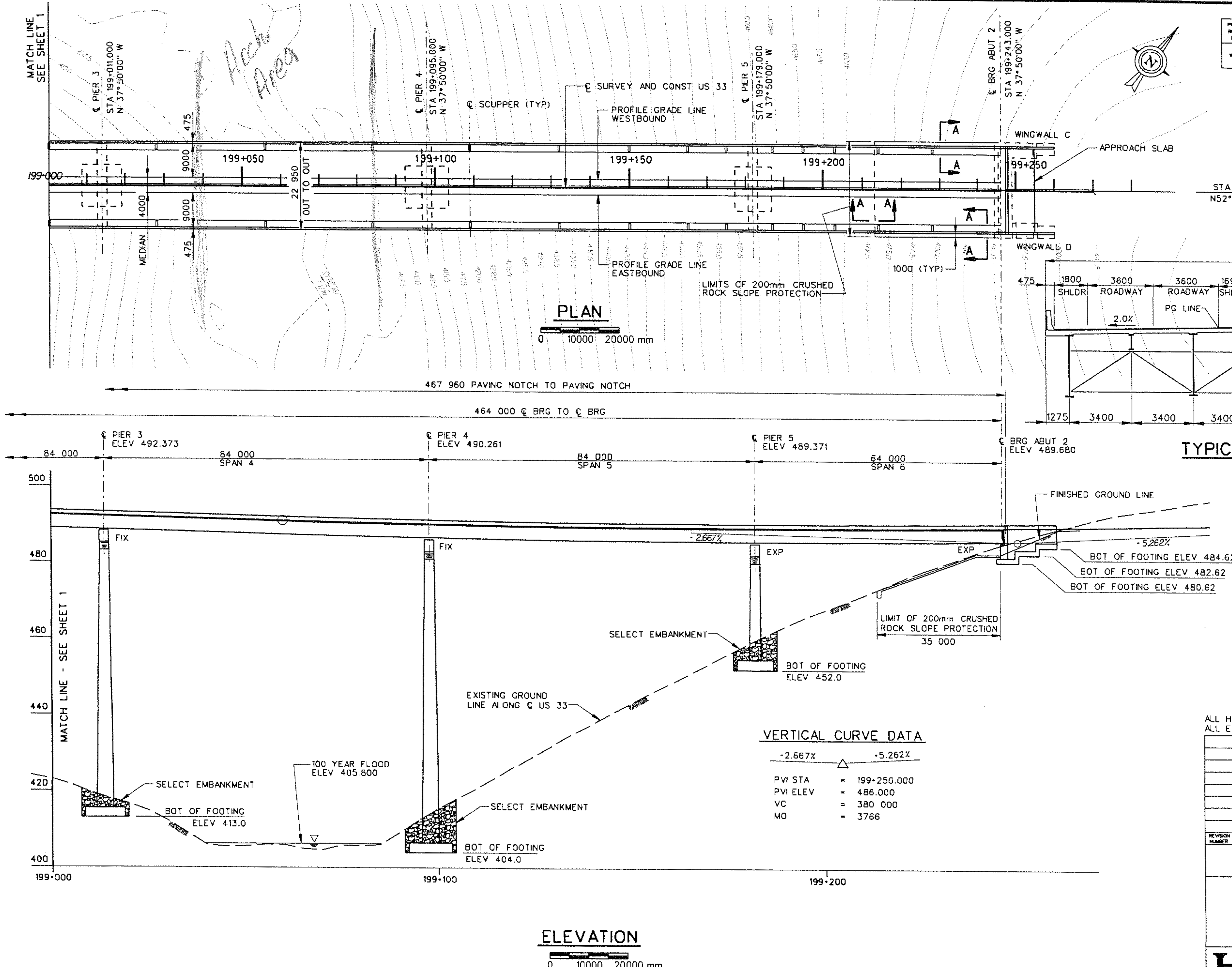
US 33 OVER CLIFFORD HOLLOW

GENERAL PLAN AND ELEVATION

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM	DATE 7-97	CKD KJW	DATE 7-97	BRIDGE NO. 4249
TRCD.	DATE	SCALE AS SHOWN		SHEET NO. 1

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	40	146

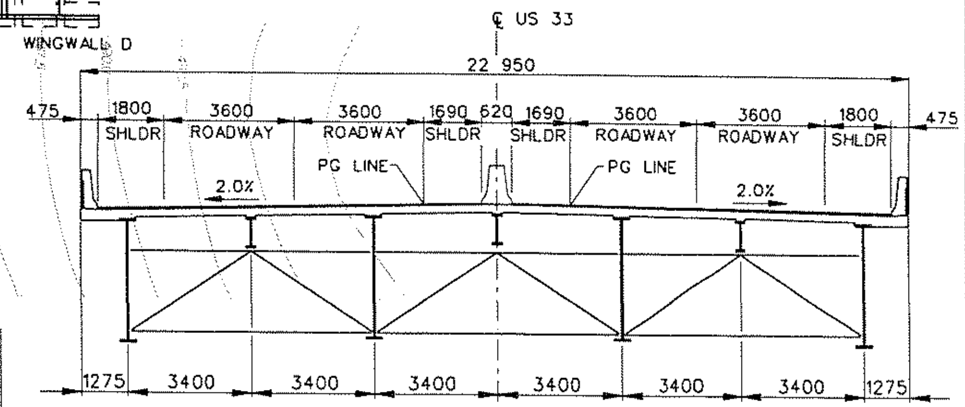


MATCH LINE SEE SHEET 1
℄ PIER 3 STA 199+011.000 N 37°50'00" W
℄ PIER 4 STA 199+095.000 N 37°50'00" W
℄ PIER 5 STA 199+179.000 N 37°50'00" W
℄ BRG ABUT 2 STA 199+243.000 N 37°50'00" W
℄ SCUPPER (TYP)
℄ SURVEY AND CONST US 33
PROFILE GRADE LINE WESTBOUND
PROFILE GRADE LINE EASTBOUND
LIMITS OF 200mm CRUSHED ROCK SLOPE PROTECTION
1000 (TYP)
WINGWALL C
WINGWALL D
APPROACH SLAB
STA AHEAD N52° 10' 00"E
MEDIAN
22 950 OUT TO OUT
PLAN
0 10000 20000 mm
467 960 PAVING NOTCH TO PAVING NOTCH
464 000 ℄ BRG TO ℄ BRG
℄ PIER 3 ELEV 492.373
℄ PIER 4 ELEV 490.261
℄ PIER 5 ELEV 489.371
℄ BRG ABUT 2 ELEV 489.680
84 000 SPAN 4
84 000 SPAN 5
64 000 SPAN 6
FIX
EXP
-2.667%
+5.262%
FINISHED GROUND LINE
BOT OF FOOTING ELEV 484.62
BOT OF FOOTING ELEV 482.62
BOT OF FOOTING ELEV 480.62
LIMIT OF 200mm CRUSHED ROCK SLOPE PROTECTION
35 000
SELECT EMBANKMENT
BOT OF FOOTING ELEV 452.0
EXISTING GROUND LINE ALONG ℄ US 33
100 YEAR FLOOD ELEV 405.800
BOT OF FOOTING ELEV 413.0
BOT OF FOOTING ELEV 404.0
MATCH LINE - SEE SHEET 1
199+000
199+100
199+200
ELEVATION
0 10000 20000 mm

VERTICAL CURVE DATA

-2.667% +5.262%

PVI STA	=	199+250.000
PVI ELEV	=	486.000
VC	=	380 000
MO	=	3766



TYPICAL SECTION

NO SCALE

ALL HORIZONTAL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS AND STATIONS ARE IN METERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

GENERAL PLAN AND ELEVATION

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD ___ DATE ___	SCALE AS SHOWN	SHEET NO. 2

NOTES:
FOR GENERAL NOTES SEE SHEETS 3 AND 4.
WORK THIS SHEET WITH SHEET 1.

LIST OF SHEETS

1	GENERAL PLAN AND ELEVATION
2	GENERAL PLAN AND ELEVATION
3	LIST OF SHEETS AND GENERAL NOTES
4	GENERAL NOTES
5	QUANTITIES
6	STAKE OUT PLAN
7	ABUTMENT 1 PLAN
8	ABUTMENT 1 ELEVATION
9	ABUTMENT 1 SECTIONS
10	ABUTMENT 1 WINGWALLS
11	ABUTMENT 1 WINGWALL SECTIONS
12	ABUTMENT 2 PLAN
13	ABUTMENT 2 ELEVATION
14	ABUTMENT 2 SECTIONS
15	ABUTMENT 2 WINGWALLS
16	ABUTMENT 2 WINGWALL SECTIONS
17	TYPICAL ABUTMENT DETAILS
18	ABUTMENT 1 REINFORCEMENT BAR SCHEDULE
19	ABUTMENT 2 REINFORCEMENT BAR SCHEDULE
20	PIER 1
21	PIER 2
22	PIER 2
23	PIER 3
24	PIER 3
25	PIER 4
26	PIER 4
27	PIER 5
27A	TEMPORARY EXCAVATION MONITORING SYSTEM
28	PIER CAP GEOMETRY
29	PIER CAP REINFORCEMENT DETAILS
30	PIER CAP POST-TENSIONING DETAILS
31	MISCELLANEOUS PIER DETAILS
32	INSPECTION PLATFORM AND LADDER
33	ROCK ANCHORS FOR SLOPE STABILITY
34	REINFORCEMENT BAR SCHEDULE - PIERS 1 AND 2
35	REINFORCEMENT BAR SCHEDULE - PIERS 3 AND 4
35A	REINFORCEMENT BAR SCHEDULE - PIER 5
36	FRAMING PLAN AND GIRDER ELEVATION
37	FRAMING PLAN AND GIRDER ELEVATION
38	SUBSTRINGER AND MODULAR DAM SUPPORT DETAILS
39	TYPICAL GIRDER DETAILS
40	TYPCIAL GIRDER DETAILS
41	TYPICAL GIRDER DETAILS
42	INSPECTION HANDRAIL DETAILS
43	FIELD SPLICE DETAILS
44	CROSSFRAME AND DIAPHRAGM DETAILS
45	EXPANSION BEARING DETAILS
46	EXPANSION BEARING DETAILS
47	FIXED BEARING DETAILS
48	BEARING RESTRAINER DETAILS
49	BEARING AND JACKING DETAILS
50	SCUPPER DETAILS
51	EXPANSION DAM DETAILS
52	EXPANSION DAM DETAILS
53	GIRDER CAMBERS - SPANS 1-3
54	GIRDER CAMBERS - SPANS 4-6
55	DECK ELEVATIONS - SPANS 1-3
56	DECK ELEVATIONS - SPANS 4-6
57	EQUIVALENT LIVE LOAD DISTRIBUTION FACTORS
58	GIRDER SECTION PROPERTIES
59	DECK PAVING PLAN
60	DECK PAVING PLAN
61	DECK PAVING PLAN
62	DECK PAVING PLAN
63	DECK PAVING PLAN
64	TYPICAL DECK CROSS SECTION
65	TYPICAL DECK DETAILS
66	BICYCLE BARRIER RAIL DETAILS
66A	FUTURE REDECKING SEQUENCE
67	APPROACH SLAB
68	DECK & APPROACH SLAB REINFORCEMENT BAR SCHEDULE
69	ARCHITECTURAL TREATMENT
70	ARCHITECTURAL TREATMENT DETAILS
71	ELECTRICAL NOTES AND SYMBOLS
72	ELECTRICAL DETAILS
73	HAUL ROADS AND CLEARING LIMITS
74	HAUL ROADS AND CLEARING LIMITS
75	SOIL TEST BORINGS
76	SOIL TEST BORINGS
77	SOIL TEST BORINGS
78	SOIL TEST BORINGS
79	SOIL TEST BORINGS
80	SOIL TEST BORINGS
81	SOIL TEST BORINGS
82	SOIL TEST BORINGS
83	SOIL TEST BORINGS
84	SOIL TEST BORINGS
85	SOIL TEST BORINGS
86	SOIL TEST BORINGS
87	SOIL TEST BORINGS
88	SOIL TEST BORINGS
89	SITUATION PLAN
90	SITUATION PLAN

GENERAL NOTES

GOVERNING SPECIFICATIONS

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS SI METRIC STANDARD SPECIFICATIONS, ROADS AND BRIDGES, ADOPTED 1994, AS AMENDED BY THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS SI METRIC SUPPLEMENTAL SPECIFICATIONS DATED JULY 1, 1998. THE CONTRACT DOCUMENTS, AND THE CONTRACT PLANS ARE THE GOVERNING PROVISIDNS APPLICABLE TO THIS PROJECT. WELDING TO CONFORM TO ANSI/AASHTO/AWS D1.5-96.

DESIGN

THE DESIGN IS IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SIXTEENTH EDITION 1996;

THE STRUCTURE HAS BEEN DESIGNED FOR A LIVE LOAD CAPACITY OF MS22.5 (AASHTO HS20-44 HIGHWAY LOADING INCREASED BY 25 PERCENT). THE LIVE LOAD DISTRIBUTION WAS DETERMINED BY A REFINED ANALYSIS.

ALL DESIGN WAS PERFORMED BY THE STRENGTH DESIGN METHOD (LOAD FACTOR DESIGN) EXCEPT THAT BRIDGE BEARING DEVICES AND FOUNDATION BEARING PRESSURES WERE COMPUTED BY THE SERVICE LOAD METHOD.

THE ELASTOMERIC BEARING PADS WERE DESIGNED BY AASHTO METHOD B.

FATIGUE WAS CHECKED FOR CASE II. AVERAGE DAILY TRUCK TRAFFIC OF 1820 FOR THE YEAR 2019 (BOTH DIRECTIONS).

THE DESIGN PROVIDES FOR A FUTURE WEARING SURFACE (NOT PART OF THIS CONTRACT) OF 1.2 KILONEWTONS PER SQUARE METER ON THE ROADWAY. THIS FUTURE WEARING SURFACE IS IN ADDITION TO THE 40 mm OVERLAY INDICATED IN THE CONTRACT PLANS.

THE STRUCTURE IS DESIGNED TO SEISMIC PERFORMANCE CATEGORY A.

STAY-IN-PLACE METAL DECK FORMS WERE ASSUMED BETWEEN ALL GIRDERS AND SUBSTRINGERS AT A WEIGHT OF 0.72 KILONEWTONS PER SQUARE METER. THE DECK OVERHANGS WERE ASSUMED TO BE CONSTRUCTED WITH REMOVABLE FORMS.

AN ANALYSIS FOR THE STAGED REDECKING OF THE BRIDGE HAS BEEN CONDUCTED. THE GIRDERS, SUBSTRINGERS AND CROSS FRAMES HAVE BEEN SIZED TO ACCOMMODATE THESE LOADING CONDITIONS.

GENERAL

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL UNLESS NOTED.

ALL SUPERSTRUCTURE DIMENSIONS ARE BASED ON A NORMAL TEMPERATURE OF 20° C.

SEE THE HIGHWAY PLANS FOR HORIZONTAL CONTROL.

SCALES APPLY TO FULL SIZE 560mm x 865mm SHEETS. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS ARE ELEVATIONS ARE IN METERS, UNLESS NOTED.

DESIGN STRENGTHS

CLASS B CONCRETE	f'c = 21 MPa, n = 9
CLASS B CONCRETE, MODIFIED	f'c = 34 MPa, n = 8
CLASS K CONCRETE	f'c = 31 MPa, n = 8

REINFORCING STEEL GRADE 420, Fy = 420 MPa

STRUCTURAL STEEL AASHTO M270 GRADE 250,	Fy = 250 MPa
STRUCTURAL STEEL AASHTO M270 GRADE 345W-T2,	Fy = 345 MPa
STRUCTURAL STEEL AASHTO A709 GRADE HPS 485W-T2,	Fy = 485 MPa

PRESTRESSING STEEL AASHTO M203 GRADE 1860.

CONCRETE

CLASS K CONCRETE, ITEM 601003-001, DECK, MEDIAN BARRIER, ABUTMENT BACKWALLS.

CLASS K CONCRETE, ARCHITECTURAL, ITEM 601003-003, PARAPETS.

CLASS B CONCRETE, ITEM 601002-001, ABUTMENT FOOTINGS, PIER FOOTINGS.

CLASS B CONCRETE, ARCHITECTURAL, ITEM 601002-003, ABUTMENT STEM, RETAINING WALLS BELOW PARAPETS.

MODIFIED CONCRETE, CLASS B, ARCHITECTURAL, 34 MPa, ITEM 601025-001 PIER CAPS, SHAFTS.

WATER REDUCING RETARDING ADMIXTURE IN ACCORDANCE WITH SECTION 601.2 SHALL BE USED IN ALL CLASS K CONCRETE IN THE SUPERSTRUCTURE. COST OF ADMIXTURE IS TO BE INCLUDED IN THE UNIT PRICE BID FOR CLASS K CONCRETE. RETARDER WILL NOT BE REQUIRED FOR TEMPERATURES BELOW 10 DEGREES CELSIUS. THE CONCRETE SHALL BE PLACED IN THE SEQUENCE SHOWN ON THE PLANS. THE CONTRACTOR'S ATTENTION IS CALLED TO THE TEST REQUIREMENTS FOR THE RETARDER ADMIXTURE.

CHAMFER ALL EXPOSED EDGES OF SUBSTRUCTURE CONCRETE 25 x 25 AND SUPERSTRUCTURE CONCRETE 20 x 20 UNLESS NOTED.

WHENEVER CONCRETE IS PLACED USING A CONCRETE PUMP, A STANDBY CONCRETE PUMP SHALL BE PROVIDED AS A BACKUP TO AVOID INTERRUPTION TO THE CONCRETE PLACEMENT CAUSED BY A BREAKDOWN OF THE PUMP.

PARAPETS AND MEDIAN BARRIER SHALL NOT BE PLACED UNTIL THE DECK SLAB ON WHICH AND ADJACENT TO THE SPAN IN WHICH THE PARAPET OR BARRIER IS BEING PLACED HAS BEEN COMPLETED.

STAY-IN-PLACE FORMS MAY BE USED ON THIS PROJECT. THE CONTRACTOR'S FORMING PLAN, FOR THE DECK AND DECK OVERHANGS, SHALL BE SUBMITTED TO THE DEPARTMENT FOR APPROVAL BY THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE. FORMING DESIGN SHALL BE BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF WEST VIRGINIA, WHO SHALL ALSO VERIFY THAT THE DESIGN IS UTILIZED.

DO NOT USE FORM SUPPORT SYSTEMS THAT WILL CAUSE UNACCEPTABLE OVERSTRESS OR DEFORMATION IN PERMANENT BRIDGE MEMBERS. SUPPORT OVERHANG FORMS FROM THE BOTTOM FLANGE OF FASCIA GIRDERS, OR PROVIDE BRACING TO PREVENT WEB BUCKLING DUE TO LOADS FROM WEB-BEARING SUPPORT SYSTEMS.

ABUTMENT BACKWALLS SHALL BE FINISHED TO ROADWAY GRADE AND CROSS SLOPE.

ALL HORIZONTAL CONSTRUCTION JOINTS BETWEEN PLACEMENTS SHALL BE RAKE FINISHED UNLESS NOTED.

REINFORCING STEEL BARS

BARS SHALL CONFORM TO AASHTO M31M GRADE 420.

ALL BARS IN THE SLAB, PARAPETS, MEDIAN BARRIER, APPROACH SLABS, EXPOSED FACES OF ABUTMENTS, AND TO THE EXTENT INDICATED FOR THE BRIDGE SEATS AND BACKWALLS, SHALL BE EPOXY COATED. EPOXY COATED BARS ARE LABELED WITH THE PREFIX 'E'. PAYMENT WILL BE MADE UNDER ITEM 602001-001, REINFORCING STEEL BAR, AND ITEM 602002-001, EPOXY COATED REINFORCING STEEL BAR.

ALL REINFORCEMENT SHALL BE LAPPED A MINIMUM OF 40 BAR DIAMETERS UNLESS SHOWN OTHERWISE ON THE PLANS. EMBEDMENT DIMENSIONS FOR REINFORCING ARE CLEAR DIMENSIONS UNLESS NOTED. BAR SPACING IS GIVEN TO THE CENTERLINE OF THE BAR.

THE CLEAR DISTANCE BETWEEN REINFORCING STEEL AND THE FACE OF CONCRETE SHALL BE AS FOLLOWS UNLESS NOTED:

TOP OF DECK SLAB - 25 TO TOP OF CLASS K CONCRETE
BOTTOM OF SLAB - 25
PARAPETS & MEDIAN BARRIER - 40
FOOTINGS - 75
ALL OTHER LOCATIONS - 50

STRUCTURAL STEEL

THE LUMP SUM BID FOR ITEM 615001-001, STEEL SUPERSTRUCTURE, SHALL INCLUDE ALL STRUCTURAL STEEL AND ANCHOR BOLTS. GALVANIZING AND PAINTING, ALL COMPLETELY IN PLACE.

ALL STRUCTURAL STEEL SHALL CONFORM TO AASHTO M270, GRADE 345W-T2 UNLESS NOTED.

ALL DIAPHRAGMS, CROSSFRAMES, AND GUSSET PLATES ARE CONSIDERED MAIN LOAD CARRYING TENSION MEMBERS AND MUST MEET CVN TESTING REQUIREMENTS.

EXCEPT AS SHOWN ON THE PLANS, ANCHOR BOLTS, NUTS AND WASHERS, AND DECK DRAINAGE COMPONENTS MAY BE MANUFACTURED FROM AASHTD M270, GRADE 250 STEEL.

THE FABRICATOR'S SHOP DRAWINGS SHALL IDENTIFY THE MATERIAL SPECIFICATION AND GRADE FOR EACH ITEM AND ARE SUBJECT TO APPROVAL OF THE ENGINEER.

BEFORE ASSEMBLING THE HIGH STRENGTH BOLTED CONNECTIONS, REMOVE ALL LOOSE AND NONADHERENT RUST THAT MAY HAVE FORMED ON THE CONNECTION AREAS BY HAND OR POWER WIRE BRUSHING. PROVIDE A CLASS B SLIP COEFFICIENT FOR THE CONTACT AREA OF THE BOLTED PARTS.

IF MEMBERS CAN BE FABRICATED, SHIPPED AND ERECTED IN LENGTHS LONGER THAN THE SECTIONS SHOWN ON THE PLANS BY ELIMINATION OF FIELD SPLICES, FIELD SPLICES MAY BE OMITTED AT THE REQUEST OF THE CONTRACTOR SUBJECT TO THE ENGINEER'S APPROVAL. THE CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR SECURING A HAULING PERMIT. APPROVAL FOR THE ELIMINATION OF A FIELD SPLICE AT THE SHOP DRAWING STAGE DOES NOT OBLIGATE THE DEPARTMENT TO ISSUE OR SECURE A HAULING PERMIT.

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	41	146

TEMPORARY FALSEWORK

SUBMIT CALCULATIONS AND DRAWINGS, STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF WEST VIRGINIA A MINIMUM OF THREE WEEKS PRIOR TO COMMENCEMENT OF FALSEWORK CONSTRUCTION.

IF NEW MATERIAL IS USED, A 25 PERCENT ALLOWABLE OVERSTRESS WILL BE PERMITTED.

COST OF FALSEWORK IS INCIDENTAL TO ITEM 615001-001, STEEL SUPERSTRUCTURE.

REVISION HEADER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

LIST OF SHEETS AND GENERAL NOTES

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA (412) 497-6000

MADE SM DATE 7-97	CKD JMY DATE 7-97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE NONE	SHEET NO. 3

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(241) CTC	2001	HARDY	42	146

GENERAL NOTES (CONT.)

WELDING

NO FIELD WELDING WILL BE PERMITTED UNLESS SHOWN ON THE PLANS OR APPROVED BY THE ENGINEER. ALL WELDING, FABRICATION, AND NONDESTRUCTIVE TESTING SHALL CONFORM TO THE ANSI/AASHTO/AWS BRIDGE WELDING CODE D1.5.

FILLET WELDS FOR GRADE HPS - 485 W STEEL MAY BE MADE USING UNDERMATCHED ELECTRODES. SEE SPECIAL PROVISIONS.

THE ELECTROGAS AND ELECTROSLAG WELDING PROCESSES WILL NOT BE PERMITTED.

DO NOT WELD TO THE GIRDER FLANGES IN TENSION ZONES. TRANSVERSE STIFFENER DETAILS TYPE I, II AND III INDICATE THE LOCATIONS OF TENSION FLANGES.

BOLTS

ALL FASTENERS SHALL BE M22 HIGH STRENGTH BOLTS, UNLESS NOTED OTHERWISE ON THE PLANS. THE THREADED ENDS OF BOLTS ARE TO BE PLACED ON THE INSIDE WHERE PRACTICABLE TO PROTECT THE THREADS FROM THE WEATHER.

HIGH STRENGTH BOLTS SHALL MEET SECTION 709.24 AND SHALL BE BLACK (UNCOATED) TYPE 3 (WEATHERING STEEL). THE HIGH STRENGTH FASTENERS USED IN REGIONS OF THE STRUCTURE THAT REQUIRE PAINTING SHALL BE TYPE 1 OR 3 AND SHALL BE MECHANICALLY GALVANIZED.

DIAMETER OF HOLES SHALL BE 2mm LARGER THAN NOMINAL DIAMETER OF FASTENERS.

EXCAVATION

ALL EXCAVATION SHALL BE CLASSIFIED AS STRUCTURE EXCAVATION, ITEM 212001-000, WITH PAY LIMITS AS SHOWN ON THE PLANS.

SUBSTRUCTURE UNITS ARE TO BE PLACED IN THE DRY. SHORING IS REQUIRED FOR ALL PIER EXCAVATIONS. TEMPORARY EXCAVATION BACKSLOPES FOR THE INSTALLATION OF PIERS SHALL BE VERTICAL. FLATTENING OF THESE EXCAVATION BACKSLOPES WILL NOT BE PERMITTED. SHORING DESIGN IS TO BE IN ACCORDANCE WITH FEDERAL, STATE, AND OSHA REGULATIONS AND IS TO BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF WEST VIRGINIA. SHORING WILL BE PAID UNDER ITEM 212004-000, COFFERDAM.

THE SHORING AND BRACING SYSTEM SHALL INCLUDE A MONITORING SYSTEM FOR MEASUREMENTS OF POTENTIAL DEFORMATIONS. THIS MONITORING SYSTEM SHALL BE CONSTRUCTED USING THE EXCAVATION MONITORING SYSTEMS DRAWINGS IN THE PLANS ON SHEET 27A. THE MONITORING DEVICES PLACED ON THE SLOPE ABOVE THE EXCAVATIONS SHALL BE READ IMMEDIATELY AFTER INSTALLATION FOR THE BASE READING AND THEN EVERY OTHER DAY THEREAFTER. THE CORNER POSTS OF THE MONITORING DEVICES SHALL BE SURVEYED ONCE PER WEEK TO VERIFY THAT NO MOVEMENT IS OCCURING OUTSIDE THE LIMITS OF THE EXCAVATION. THE SYSTEM SHALL ALSO INCLUDE SURVEY TARGETS LOCATED ON THE FACE OF THE SHORING SYSTEM ALONG THE CENTERLINE OF THE BRIDGE AT 1.5 METER INTERVALS FROM TOP TO BOTTOM. THESE TARGETS SHALL BE SURVEYED IMMEDIATELY AFTER THEIR INSTALLATION AND THEN ONCE PER WEEK THEREAFTER. DATA FROM THE SURVEY TARGETS SHALL BE RECORDED AND PRESENTED TO THE ENGINEER FOR REVIEW AFTER EACH SET OF READINGS. IF THE ENGINEER DETERMINES THAT MOVEMENTS ARE OCCURING, READINGS OF THE DEVICES AND SURVEY TARGETS SHALL BE PERFORMED EVERY DAY THEREAFTER INCLUDING SURVEY OF THE DEVICE CORNER POSTS. THIS SYSTEM AND ALL NECESSARY MONITORING IS CONSIDERED TO BE INCIDENTAL TO THE COST OF THE SHORING AND BRACING.

CONSTRUCTION EQUIPMENT (I.E. CRANES, ETC) SHOULD BE LOCATED BELOW OR AT THE SIDE OF, BUT NOT ABOVE, THE FOUNDATION EXCAVATIONS.

BOTTOM OF FOUNDATION ELEVATIONS SHALL BE AS SHOWN ON THE PLANS OR A MINIMUM OF 0.6 METERS BELOW THE TOP OF BEDROCK, WHICHEVER IS LOWER.

ALL FOUNDATION EXCAVATIONS MUST BE VISUALLY INSPECTED AND APPROVED BY THE ENGINEER PRIOR TO CONCRETE PLACEMENT. VERIFY THAT THE ANTICIPATED BEARING MATERIALS ARE PRESENT IN THE BOTTOM OF THE FOUNDATION EXCAVATION USING THE BORING LOGS INCLUDED IN THESE PLANS.

BACKFILL

THE CONTRACTOR SHALL BACKFILL AROUND THE SUBSTRUCTURE AS SOON AS POSSIBLE AFTER REMOVAL OF FORMS AND FALSEWORK AND SLOPE SURFACES TO DRAIN IN ACCORDANCE WITH SECTION 212.10. DEWATER EXCAVATION PRIOR TO BACKFILLING.

ITEM 212005-000, SELECT MATERIAL FOR BACKFILLING, SHALL BE PLACED TO THE DIMENSIONS SHOWN ON THE PLANS. NO PAYMENT WILL BE MADE FOR MATERIAL IN EXCESS OF CONTRACT QUANTITIES TO ADJUST IRREGULARITIES IN SLOPE.

SELECT EMBANKMENT

THE MATERIAL PLACED AS BACKFILL AROUND PIER FOOTINGS SHALL BE SELECT EMBANKMENT. SELECT EMBANKMENT MATERIAL SHALL HAVE A MINIMUM AVERAGE STONE DIAMETER OF 300 mm AND SHALL BE UNIFORMILY GRADED AS FOLLOWS:

STONE SIZE	PERCENTAGE OF GRADATION SMALLER THAN:
600mm	100%
450mm	85%
300mm	50%
150mm	15%

THE STONE SHALL BE WELL GRADED THROUGHOUT THE THICKNESS AS DECIDED BY THE ENGINEER BY VISUAL INSPECTION. STONES SMALLER THAN 150 mm CANNOT EXCEED 20% BY WEIGHT. MATERIAL SHALL CONSIST OF ROCK OF A QUALITY SATISFACTORY TO THE ENGINEER. THE USE OF SHALE IS NOT PERMITTED.

PAYMENT FOR SELECT EMBANKMENT SHALL BE INCLUDED IN ITEM 211002-000, ROCK BORROW EXCAVATION.

JOINT FILLERS

JOINT FILLER FOR VERTICAL JOINTS BETWEEN THE APPROACH SLAB AND THE ABUTMENT AND WINGWALLS SHALL BE PREFORMED EXPANSION JOINT FILLER CONFORMING TO SUBSECTION 708.1.2. THE COST OF THE FILLER SHALL BE INCLUDED IN ITEM 502001-012, PORTLAND CEMENT CONCRETE APPROACH SLAB.

PREFORMED JOINT FILLER FOR VERTICAL JOINTS IN SUPERSTRUCTURE SHALL BE SPONGE RUBBER, TYPE I, CONFORMING TO SUBSECTION 708.1.1. THE COST OF THE FILLER SHALL BE INCLUDED IN ITEM 601003-003, "CLASS K CONCRETE, ARCHITECTURAL".

BEARINGS

TEST EACH BEARING IN ACCORDANCE WITH AASHTO DIVISION II, SECTION 18.7 .

THE REINFORCED ELASTOMERIC BEARINGS SHALL BE INSTALLED AT AN AMBIENT TEMPERATURE BETWEEN 4°C AND 27°C. SEE THE BEARING PLAN SHEETS FOR RESETTING OF THE BEARINGS BEFORE FINAL COMPLETION OF THE BRIDGE.

ELASTOMERIC BEARING AND COMPONENT PARTS SHALL MEET THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

BRIDGE SEATS ON ABUTMENTS AND PIERS UNDER BEARING PADS SHALL BE FINISHED TO TRUE PLANES AND ELEVATIONS.

ELEVATIONS

ELEVATIONS SHOWN REFER TO THE U.S. COAST AND GEODETIC SURVEYS BASED ON SEA LEVEL DATUM, 1929, 1957 ADJUSTMENTS.

ANCHOR BOLTS

THE ANCHOR BOLT HOLES SHALL BE FILLED WITH NON-SHRINK GROUT AFTER SETTING THE BOLTS. NOTE THAT CERTAIN ANCHOR BOLTS MAY NEED TO BE PLACED IN THE HOLES BEFORE SETTING OF THE SUPERSTRUCTURE. NON-SHRINK GROUT SHALL CONFORM TO SECTION 715.5 OF THE STANDARD SPECIFICATIONS. COST OF DRILLING AND GROUTING SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 601002-003, CLASS B CONCRETE, ARCHITECTURAL OR ITEM 601025-001, MODIFIED CONCRETE, CLASS B, ARCHITECTURAL, 34 MPa.

GALVANIZING

EXCEPT AS SHOWN ON THE PLANS, DECK DRAINAGE COMPONENTS, ANCHOR BOLTS, NUTS, WASHERS, KEEPER ANGLES AND MASONRY PLATES SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111. COST IS TO BE INCLUDED IN THE PRICE PAID FOR ITEM 615001-001, STEEL SUPERSTRUCTURE, OR ITEM 615003-001, FABRICATED STRUCTURAL STEEL.

PAINT THE OUTSIDE SURFACE OF ALL DECK DRAINAGE COMPONETS BELOW THE BRIDGE DECK TO MATCH THE RUSTED COLOR OF THE WEATHERING STEEL. SELECT A PAINT SYSTEM THAT IS COMPATIBLE WITH THE GALVANIZING.

BLAST CLEANING & PAINTING

UPON COMPLETION OF ALL FABRICATION OPERATIONS IN THE SHOP, AND BEFORE SHIPMENT TO THE PROJECT SITE, ALL WEATHERING STEEL BRIDGE COMPONENTS SHALL BE BLAST CLEANED TO A NEAR WHITE SURFACE CONDITION ACCORDING TO SSPC-SP 10. PRIOR TO THE START OF ANY BLAST CLEANING, ALL OIL, GREASE, CUTTING FLUIDS, OR OTHER FOREIGN MATTER SHALL BE REMOVED FROM THE SURFACES OF THE STEEL BY SOLVENT CLEANING ACCORDING TO SSPC-SP 1.

THE MEMBERS OR PORTIONS OF MEMBERS LISTED BELOW SHALL BE BLAST CLEANED AND SHOP PAINTED ACCORDING TO SUPPLEMENTAL SPECIFICATIONS SECTION 688, PAINTING STEEL STRUCTURES, USING THE INORGANIC ZINC RICH, LOW VOC SYSTEM, SECTION 711.22. APPLY THE FULL PAINT SYSTEM IN THE FABRICATION SHOP, EXCEPT FAYING SURFACES OF HIGH STRENGTH BOLTED CONNECTIONS, WHICH SHALL BE SHOP PAINTED WITH PRIMER ONLY. THE COLOR OF THE FINAL TOP COAT SHALL BE 30045 ACCORDING TO FEDERAL STANDARD 595 AND THE GLOSS AT AN ANGLE OF 60 DEGREES SHALL NOT EXCEED 25.

PAINT THE ENDS OF THE GIRDERS, SUBSTRINGERS, CROSSFRAMES AND ALL STEEL COMPONENTS UNDER THE EXPANSION JOINTS. PAINT THE SUBSTRINGERS AND GIRDERS FOR A LENGTH OF 1.5 TIMES THE GIRDER OR SUBSTRINGER DEPTH OR 3000mm, WHICHEVER IS GREATER.

COMPONENTS SPECIFIED TO BE HOT-DIP GALVANIZED (EXCEPT SCUPPER DOWNSPOUTS AND SUPPORTS) DO NOT REQUIRE PAINTING.

AREAS OF THE SHOP APPLIED PAINT SYSTEM WHICH ARE DAMAGED DURING ERECTION AND HIGH STRENGTH BOLTED CONNECTION AREAS THAT WERE ONLY PRIME PAINTED SHALL BE PROPERLY CLEANED AND PAINTED ACCORDING TO SECTION 688 AND TO THE SATISFACTION OF THE ENGINEER.

AFTER COMPLETION OF ALL TIGHTENING OPERATIONS, MECHANICALLY GALVANIZED FASTENERS SHALL BE SOLVENT CLEANED AND FIELD PAINTED AS SPECIFIED FOR THE STRUCTURAL STEEL.

INCLUDE CLEANING AND PAINTING COSTS IN ITEM 615001-001, STEEL SUPERSTRUCTURE, OR ITEM 615003-001, FABRICATED STRUCTURAL STEEL, AS APPROPRIATE.

IDENTIFICATION MARKING STEEL MEMBERS

ALL STEEL MILL AND FABRICATOR IDENTIFICATION MARKINGS FOR STEEL PLATES, SHAPES, OR FABRICATED MEMBERS SHALL BE BY METAL TAGS, SOAPSTONE, OR SOME OTHER READILY REMOVABLE MATERIAL. MARKING METHODS AND LOCATIONS ARE SUBJECT TO APPROVAL OF THE ENGINEER.

DO NOT USE PAINT OR WAX-BASED CRAYONS FOR MARKING.

HANDLING AND STORING STEEL MEMBERS

STEEL MEMBERS MUST NOT BE GOUGED, SCRATCHED, DENTED, OR ALLOWED TO RUB AGAINST OTHER MEMBERS THAT WOULD RESULT IN DAMAGE TO THE BLAST CLEANED PROFILE OF THE STEEL. MEMBERS SHALL BE HANDLED USING SOFTENERS AND SLINGS INSTEAD OF CHOKERS AND CHAINS.

STORE MEMBERS IN THE FABRICATION SHOP AND ON THE PROJECT SITE IN SUCH A MANNER AS TO BE KEPT FREE AND CLEAN OF ALL FOREIGN SUBSTANCES SUCH AS GREASE, OIL, MORTAR AND CONCRETE, SPLATTER, CHALK AND CRAYON MARKS, PAINT, DIRT, ETC. ALL STORAGE MUST BE ABOVE GROUND AND SLOPED TO ALLOW FREE DRAINAGE OF MELTED SNOW, RAINWATER, AND DEW. IF STORED FOR PERIODS LONGER THAN 3 MONTHS, THE MEMBERS MUST BE PLACED ON METAL SUPPORTS. FOR PERIODS OF STORAGE UP TO 3 MONTHS, MEMBERS MAY BE PLACED ON CLEAN, UNTREATED WOOD TIMBERS. DO NOT ALLOW TREATED LUMBER OR TREATED TIMBER TO CONTACT STEEL MEMBERS. CONTACT WITH CLEAN, UNTREATED LUMBER OR TIMBER WILL NOT DAMAGE THE STEEL MEMBERS.

STORE PLATE GIRDERS AND ROLLED BEAMS WITH THE WEB IN THE UPRIGHT POSITION. THE MEMBERS MAY BE STACKED PROVIDED METAL OR WOOD SUPPORTS, AS NOTED ABOVE, SEPARATE INDIVIDUAL MEMBERS. UNDER NO CIRCUMSTANCES SHALL MEMBERS BE NESTED TOGETHER OR BUNDLED.

FINAL CLEANUP OF STRUCTURAL STEEL SURFACES

UPON COMPLETION OF ALL CONCRETE CURING OPERATIONS, THE CONTRACTOR SHALL CLEAN ALL STEEL SURFACES TO REMOVE ALL GREASE, OIL, CONCRETE RESIDUE, DIRT, AND OTHER FOREIGN SUBSTANCES TO THE SATISFACTION OF THE ENGINEER.

CLEANING MAY BE BY HIGH PRESSURE WATER, POWER OR HAND WIRE BRUSHING, OR BY BRUSH-OFF BLAST CLEANING ACCORDING TO SSPC-SP 7. CLEANING SHALL BE FOLLOWED BY A CLEAN WATER RINSE TO REMOVE ALL RESIDUES OF DETERGENTS AND CLEANERS IF THEY WERE USED. ALL GREASE AND OIL SHALL BE REMOVED PRIOR TO THE CLEAN WATER RINSE BY SOLVENT CLEANING.

DO NOT USE ACIDS TO REMOVE STAINS.

INCLUDE COSTS FOR FINAL CLEANUP OF STEEL SURFACES IN ITEM 615001-001, STEEL SUPERSTRUCTURE.

PROTECTION OF CONCRETE SUBSTRUCTURE

BEFORE PLACING ANY STEEL SUPERSTRUCTURE MEMBERS ON THE CONCRETE SUBSTRUCTURE UNITS, THE CONTRACTOR SHALL COAT ALL EXPOSED AREAS OF THE ABUTMENT, TOPS, SIDES, AND ALL FACES OF PIER CAPS WITH AN APPROVED SILANE-BASED CONCRETE SEALER. PREPARATION OF SURFACES, APPLICATION RATES, AND METHODS SHALL BE AS RECOMMENDED BY THE MANUFACTURER.

THE CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT THE CONCRETE SUBSTRUCTURE FROM RUST STAINING DURING CONSTRUCTION AND CURING OF SUPERSTRUCTURE CONCRETE. WATER RUNOFF FROM RAIN, SNOW AND CONCRETE CURING OPERATIONS SHALL BE DEFLECTED AWAY FROM THE STEEL GIRDERS AND SHALL NOT DRAIN ONTO THE SUBSTRUCTURE CONCRETE AFTER CONTACTING THE WEATHERING STEEL.

UPON COMPLETION OF ALL SUPERSTRUCTURE CONCRETE CURING OPERATIONS, THE CONTRACTOR SHALL REMOVE ALL RUST STAINS FROM SUBSTRUCTURE UNITS USING PROPRIETARY CHEMICAL STAIN REMOVERS OR MILD ACID ETCHING. ABRASIVE BLAST CLEANING MAY BE USED TO SUPPLEMENT THE OTHER CLEANING METHODS IF THE STAINED AREAS ARE SEVERE OR EXTENSIVE. ALL CLEANING METHODS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

RE-COAT SUBSTRUCTURE CONCRETE AT ALL AREAS WHERE RUST STAINS WERE REMOVED, REGARDLESS OF THE CLEANING METHOD USED, WITH AN APPROVED SILANE-BASED CONCRETE SEALER AS SPECIFIED ABOVE.

INCLUDE THE COST OF SILANE-BASED CONCRETE SEALER, PROTECTING, CLEANING, AND RE-COATING THE ABUTMENT UNITS IN ITEM 601002-003, CLASS B CONCRETE, ARCHITECTURAL, AND IN ITEM 601025-001, MODIFIED CONCRETE, CLASS B, ARCHITECTURAL, 34 MPa.

MISCELLANEOUS NOTE

GEOTECHNICAL REPORTS DETAILING AVAILABLE SUBSURFACE INFORMATION ARE AVAILABLE FROM THE DIVISION AT THE CONTRACTOR'S REQUEST.

SEND SHOP DRAWINGS FOR APPROVAL TO:
HDR ENGINEERING, INC.
333 PENCO ROAD, 3 FLOOR
WEIRTON, WV 26062

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

GENERAL NOTES

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM DATE 7-97	CKD JMY DATE 7-97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE NONE	SHEET NO. 4

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	43	146

SUMMARY OF BRIDGE QUANTITIES

ITEM	DECRIPTION	UNIT	ABUT 1	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	ABUT 2	SUPER-STR.	TOTAL QUANTITY
207001-001	UNCLASSIFIED EXCAVATION	m^3	3150	1800	-	-	-	-	-	-	4950
211002-000	ROCK BORROW EXCAVATION	m^3	-	476	694	375	535	315	-	-	2395
212001-000	STRUCTURE EXCAVATION	m^3	1295	888	830	793	1039	704	851	-	6400
212004-000	COFFERDAM	EA	-	1	1	1	1	1	-	-	5
212005-000	SELECT MATERIAL FOR BACKFILLING	m^3	100	-	-	-	-	-	101	-	201
217001-000	SPECIAL ROCK FILL	m^3	3150	1800	-	-	-	-	-	-	4950
218004-001	200 mm CRUSHED ROCK SLOPE PROTECTION	m^2	900	-	-	-	-	-	900	-	1800
218007-000	FABRIC FOR EROSION CONTROL	m^2	2100	1200	-	-	-	-	-	-	3300
601002-001	CLASS B CONCRETE	m^3	225	312	310	289	308	300	226	-	1970
601002-003	CLASS B CONCRETE, ARCHITECTURAL	m^3	323	-	-	-	-	-	344	-	667
601025-001	MODIFIED CONCRETE, CLASS B, ARCHITECTURAL, 34 MPa	m^3	-	449	731	879	948	480	-	-	3488
601003-001	CLASS K CONCRETE	m^3	73	-	-	-	-	-	73	2757	2903
601003-003	CLASS K CONCRETE, ARCHITECTURAL	m^3	9	-	-	-	-	-	9	317	335
601006-001	CLASS D CONCRETE	m^3	24	25	25	-	-	-	24	-	98
602001-001	REINFORCING STEEL BAR	kg	14521	60430	139406	125148	135094	68117	16374	-	559090
602002-001	EPOXY COATED REINFORCING STEEL BAR	kg	11870	-	-	-	-	-	11870	402896	426,636
603003-001	POST TENSIONING STRANDS	kg	-	2178	2178	2178	2178	2178	-	-	10890
615001-001	STEEL SUPERSTRUCTURE	LS	-	-	-	-	-	-	-	-	LS
615003-001	FABRICATED STRUCTURAL STEEL	LS	-	-	-	-	-	-	-	-	LS
615005-001	ROCK ANCHOR, INSTALLED	EA	56	32	-	-	-	-	-	-	88
615007-001	CONSOLIDATION GROUT AND REDRILL	m	423	242	-	-	-	-	-	-	665
615028-001	GUIDED BEARING	EA	4	4	-	-	-	4	4	-	16
615030-001	FIXED BEARING	EA	-	-	4	4	4	-	-	-	12
617003-001	ALUMINUM RAILING	m	27	-	-	-	-	-	27	928	982
627020-001	INSTALL MODULAR EXPANSION JOINT SYSTEM	m	23	-	-	-	-	-	23	-	46
628004-001	EXPLORATORY DRILLING AND SAMPLING	m	40	20	20	20	20	20	40	-	180
631001-001	ELECTRICAL WORK	LS	-	-	-	-	-	-	-	-	LS
639001-001	CONSTRUCTION LAYOUT STAKE	LS	-	-	-	-	-	-	-	-	LS
679006-001	TEST SLAB	LS	-	-	-	-	-	-	-	-	LS
679002-001	SPECIALIZED CONCRETE OVERLAY	m^3	-	-	-	-	-	-	-	398	398

ITEM 615001-001 INCLUDES		
DESCRIPTION	UNIT	QUANTITY *
M270 STEEL, GRADE 345W	kg	1,852,564
ASTM A709 STEEL, GRADE HPS 485W	kg	509137
22 DIAMETER STUD SHEAR CONNECTORS	EA	9300
TOTAL (STEEL FOR SUPERSTRUCTURE) * *	kg	2,361,701

* FOR INFORMATION ONLY

** DOES NOT INCLUDE WEIGHT OF SHEAR STUDS

ITEM 615003-001 INCLUDES		
DESCRIPTION	UNIT	QUANTITY *
SCUPPERS (INCLUDES DOWNSPOUTS AND ATTACHMENTS)	EA	42
PIER ACCESS DOOR (INCLUDES FRAME AND MOUNTING HARDWARE)	EA	5
PIER ACCESS PLATFORM & LADDER	EA	5

ITEM 6D2001-001 REINFORCING STEEL BAR									
SIZE	ABUT 1	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	ABUT 2	SUPER-STR	TOTAL
13	278	343	351	351	380	314	279	-	2296
16	5889	12399	30352	36336	37064	15744	6030	-	143814
19	660	5288	5228	5185	5234	5254	493	-	27342
22	3032	-	-	-	-	-	3601	-	6633
25	3758	343	343	343	343	343	4488	-	9961
29	-	25737	33504	76479	84069	25586	-	-	245375
32	904	8467	15994	4857	-	13512	1483	-	45217
36	-	6712	52492	455	6862	6222	-	-	72743
TOTAL	14521	59289	138264	124006	133952	66975	16374	0	553381

ITEM 602002-001 EPOXY COATED REINFORCING STEEL BAR									
SIZE	ABUT 1	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	ABUT 2	SUPER-STR	TOTAL
13	-	-	-	-	-	-	-	137780	137780
16	6631	-	-	-	-	-	6631	117761	131023
19	31	-	-	-	-	-	31	116614	116676
22	303	-	-	-	-	-	303	13031	13637
25	4905	-	-	-	-	-	4905	17710	27520
29	-	-	-	-	-	-	-	-	0
32	-	-	-	-	-	-	-	-	0
36	-	-	-	-	-	-	-	-	0
TOTAL	11870	0	0	0	0	0	11870	402896	426636

NOTE:

FOR ITEMS INCLUDED IN ITEM 631001-001, ELECTRICAL WORK, SEE SHEET 71.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

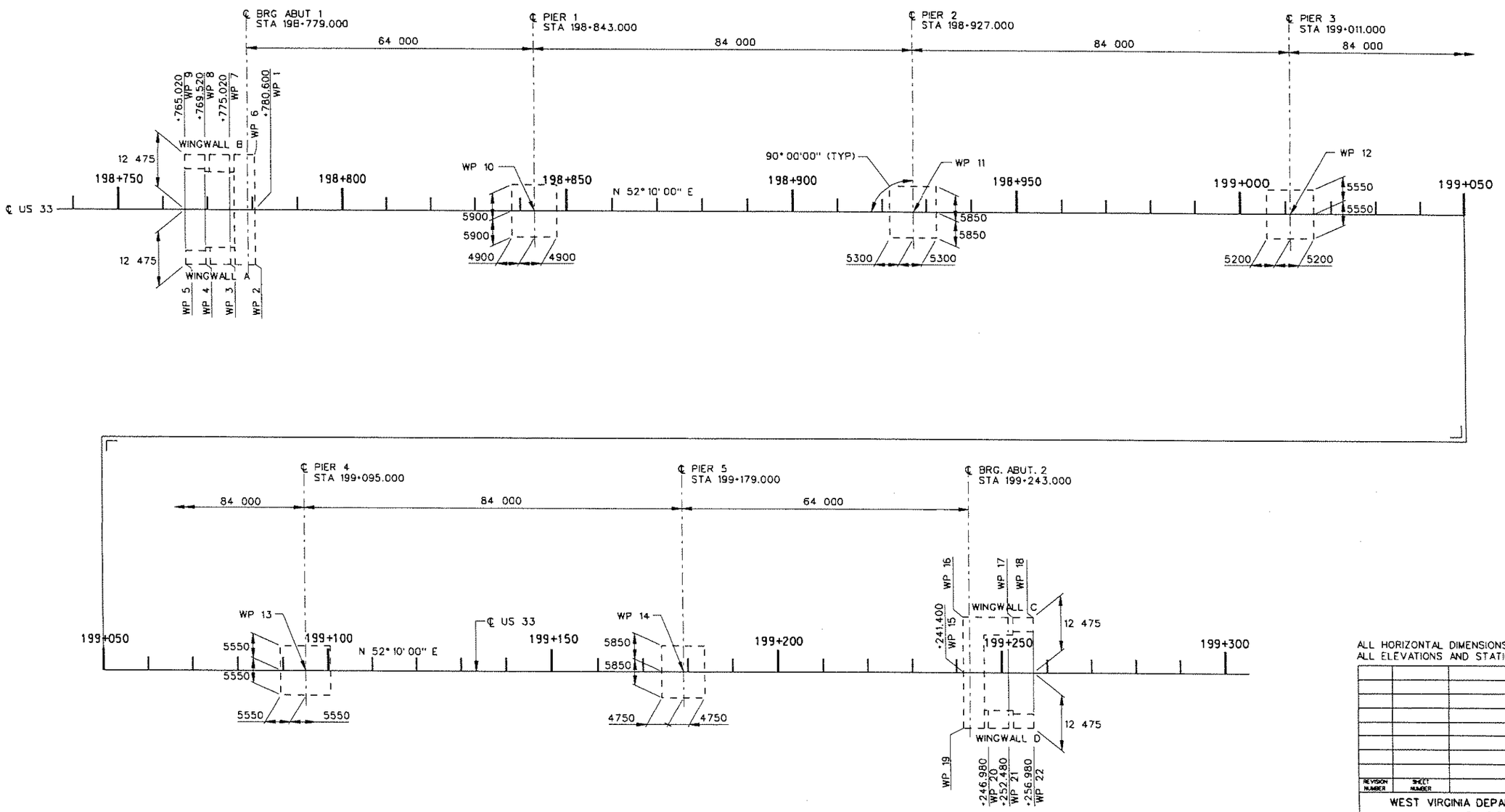
US 33 OVER CLIFFORD HOLLOW

QUANTITIES

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

MADE TNR DATE 7/97	CKD KJW DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE ____	SHEET NO. 5

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 DS	APD-0484(124) CTC	2001	HARDY	44	146



PLAN

0 10000 20000 mm

ALL HORIZONTAL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS AND STATIONING ARE IN METERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

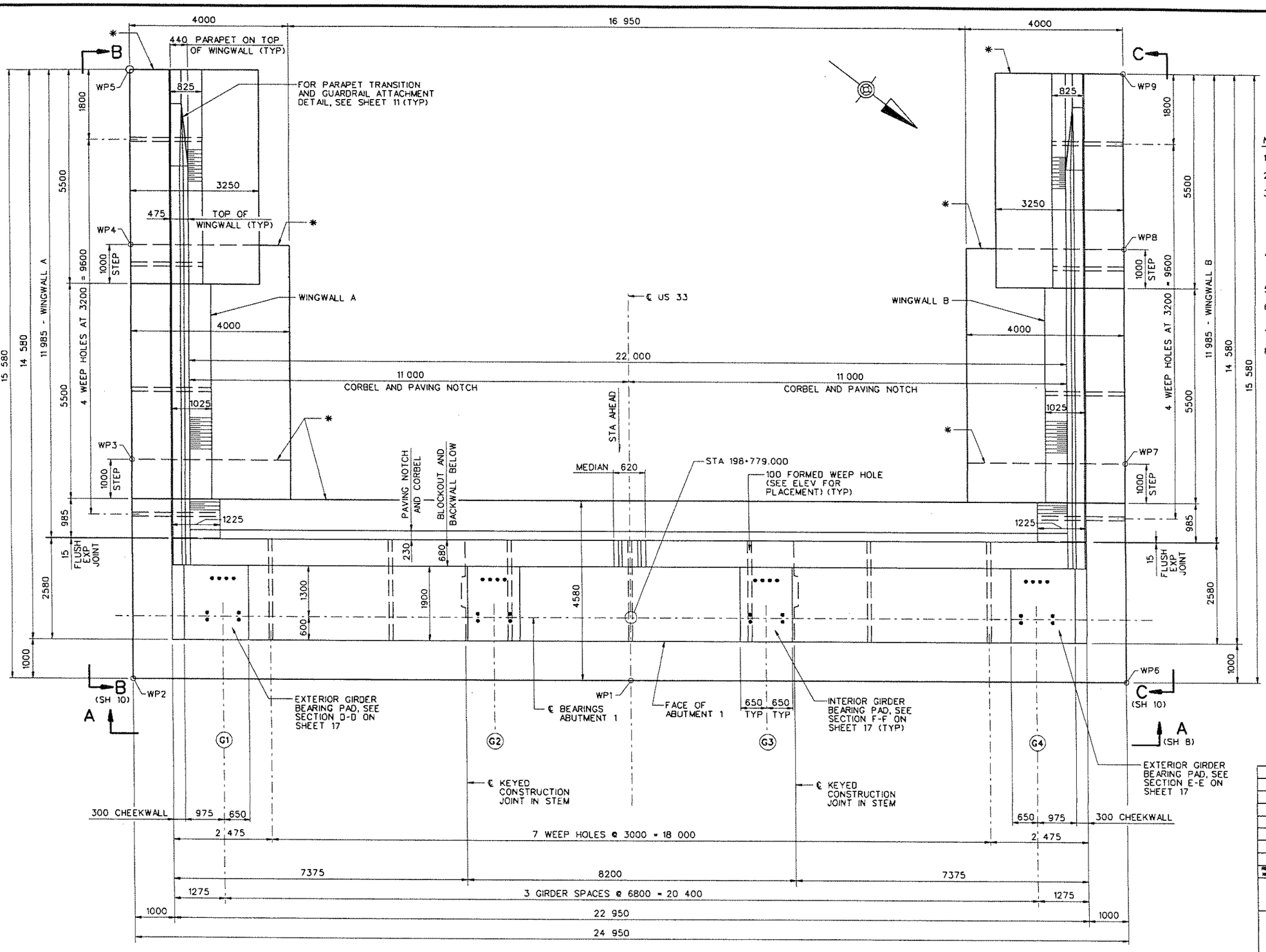
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER CLIFFORD HOLLOW

STAKE OUT PLAN

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM	DATE 7-97	CKD KJW	DATE 7-97	BRIDGE NO. 4249
TRCD	DATE	SCALE AS SHOWN		SHEET NO. 6



PLAN AT ABUTMENT 1

0 1000 2000 mm

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0454(124) CTC	2001	HARDY	45	146

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 8 THRU 11.
3. MAXIMUM DESIGN FOUNDATION PRESSURES ARE AS FOLLOWS:

   ABUTMENT 1 424 kPa
   WINGWALL A AND B 361 kPa
   ALLOWABLE PRESSURE = 860 kPa

4. FOR LOCATIONS AND DETAILS OF ANCHOR BOLTS (FOR TRANSVERSE AND LONGITUDINAL RESTRAINERS), SEE SHEET 17.
5. FOR EXPANSION DAM DETAILS, SEE SHEETS 51 AND 52.
6. FOR ARCHITECTURAL TREATMENTS, SEE SHEETS 69 AND 70.
7. FOR BEARING DETAILS, SEE SHEETS 45 THRU 48.
8. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS AND ELEVATIONS ARE IN METERS.

* CAST THIS FACE AGAINST ROCK (DO NOT FORM). FOOTING AND STEP DIMENSIONS SHOWN ARE MINIMUMS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

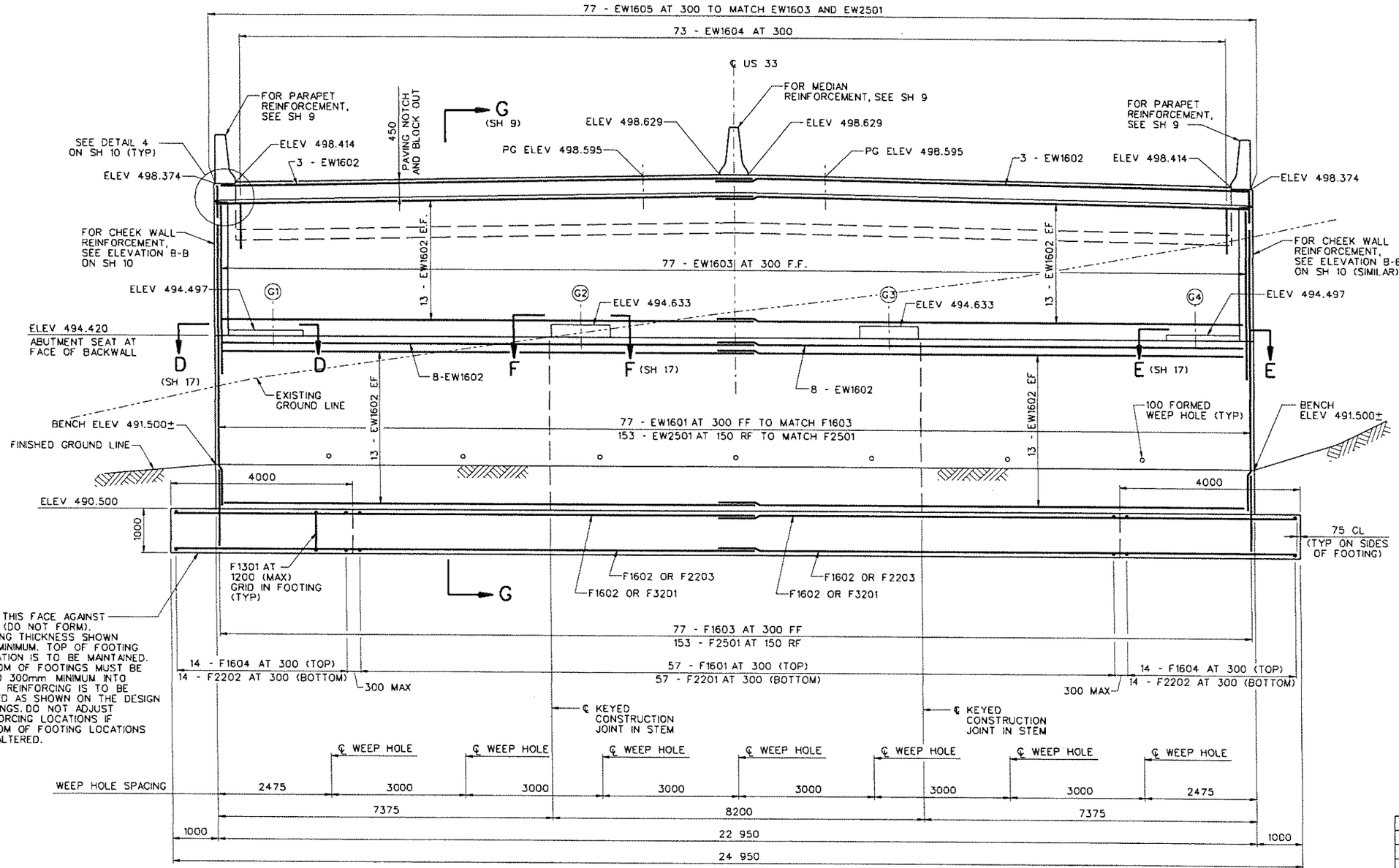
US 33 OVER
CLIFFORD HOLLOW

ABUTMENT 1 PLAN

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SLK	DATE 7/97	CKD MAB	DATE 7/97	BRIDGE NO. 4249
TRCD	DATE	SCALE AS SHOWN		SHEET NO. 7

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X315-H-101.92 05	APD-0484(124) CTC	2001	HARDY	46	146



ELEVATION A-A

0 1000 2000 mm

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 7, 9, 10 AND 11.
3. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS AND ELEVATIONS ARE IN METERS.
4. ALL REINFORCEMENT SPACINGS SHOWN ARE MAXIMUM SPACINGS.

LEGEND:

FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EF DENOTES EACH FACE

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

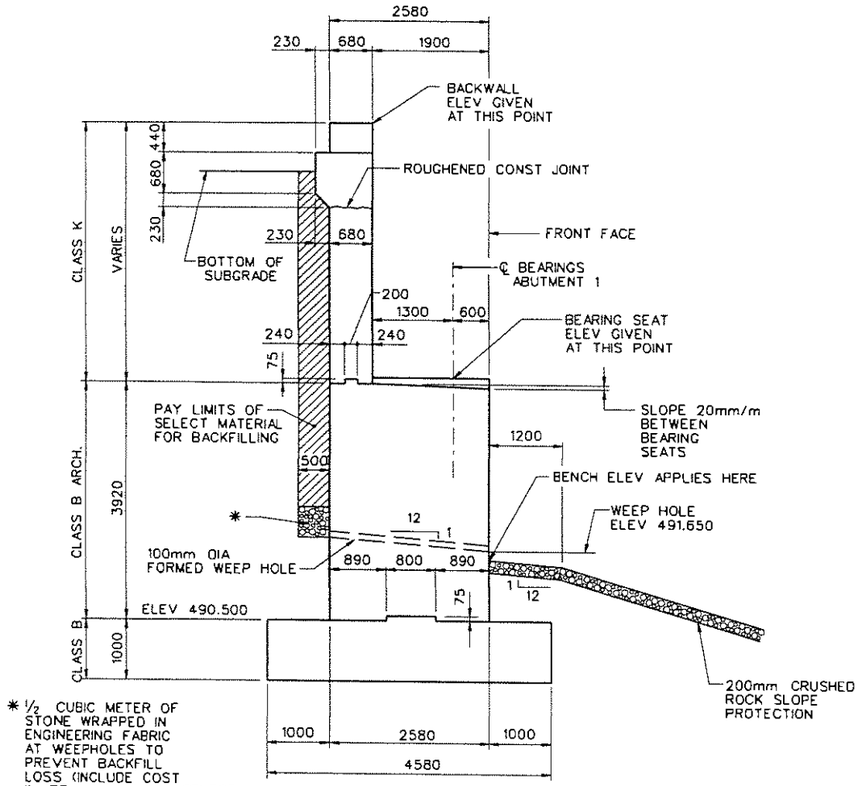
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

ABUTMENT 1 ELEVATION

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

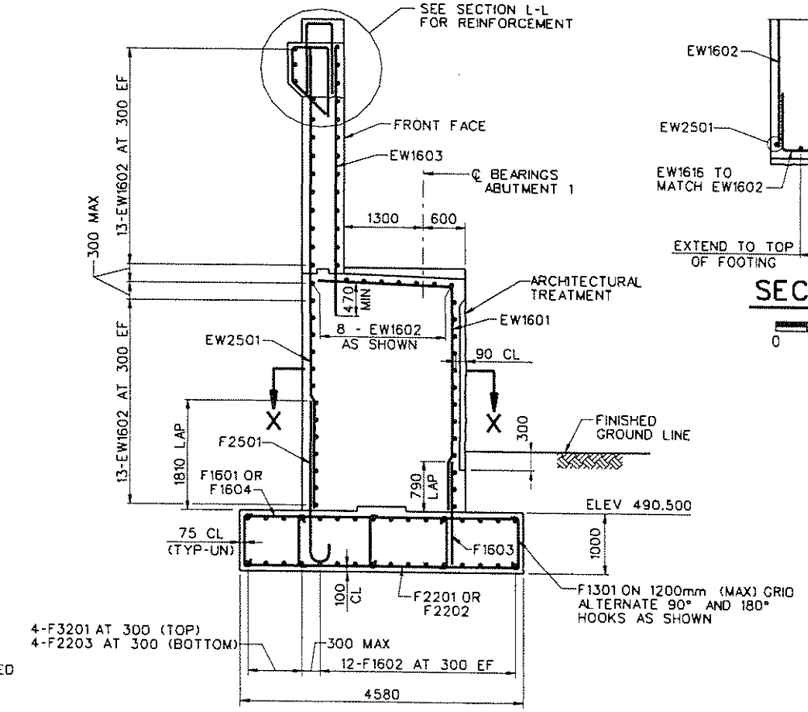
MADE SLK DATE 7/97	CKD MAB DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS SHOWN	SHEET NO. 8



* ½ CUBIC METER OF STONE WRAPPED IN ENGINEERING FABRIC AT WEEPHOLES TO PREVENT BACKFILL LOSS (INCLUDE COST IN ITEM 212005-000, SELECT MATERIAL FOR BACKFILLING)

GENERAL ABUTMENT DETAIL

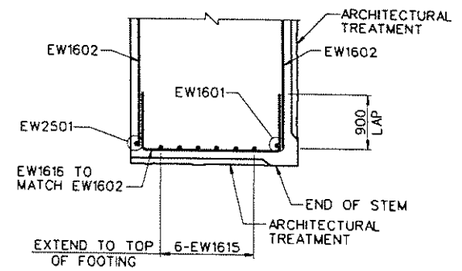
0 1000 2000 mm



SECTION G-G

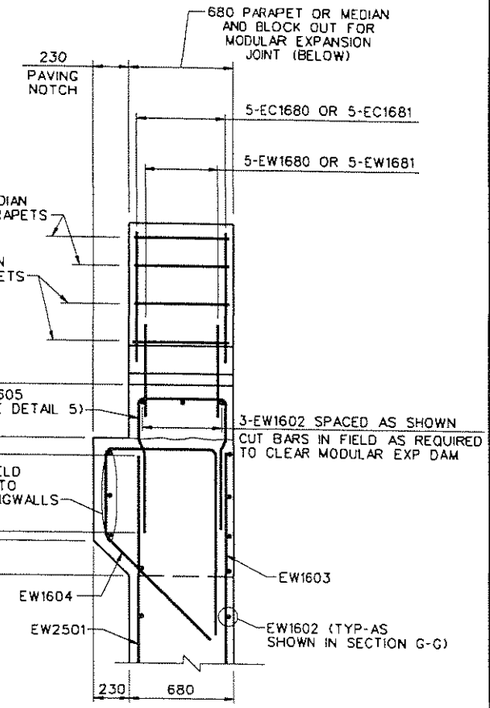
0 1000 2000 mm

FOR DIMENSIONS NOT SHOWN, SEE GENERAL ABUTMENT DETAIL



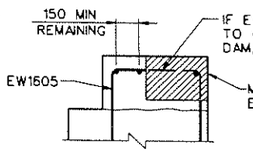
SECTION X-X

0 1 000 2 000 mm



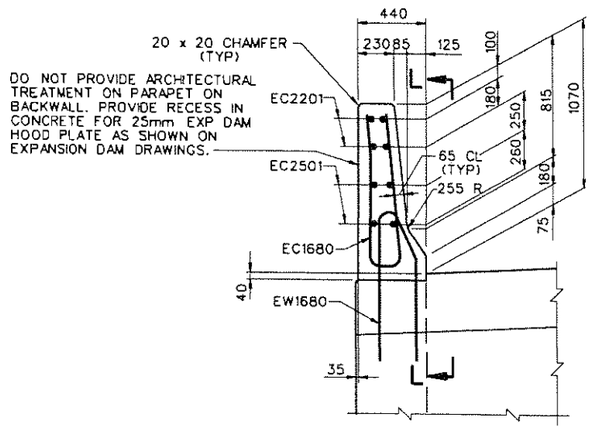
SECTION L-L

0 400 800mm



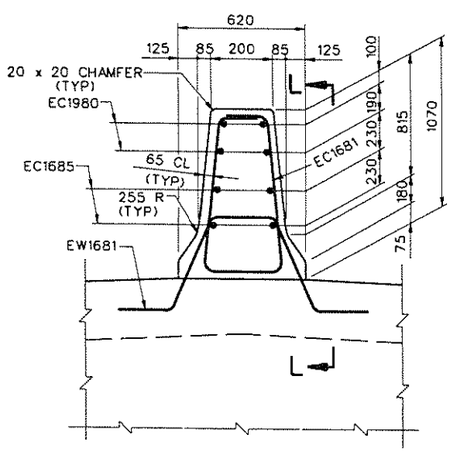
DETAIL 5

0 400 800mm



PARAPET REINFORCEMENT DETAIL

0 400 800mm



MEDIAN REINFORCEMENT DETAIL

NO SCALE

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 7, 8, 10 AND 11.
3. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS AND ELEVATIONS ARE IN METERS.
4. FOR EXPANSION DAM DETAILS, SEE SHEETS 51 AND 52.
5. ALL REINFORCEMENT SPACINGS SHOWN ARE MAXIMUM SPACINGS.

LEGEND:

FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EF DENOTES EACH FACE

QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
212001-000	STRUCTURE EXCAVATION	m^3	1295
212005-000	SELECT MATERIAL FOR BACKFILLING	m^3	100
601002-001	CLASS B CONCRETE	m^3	225
601002-003	CLASS B CONCRETE, ARCHITECTURAL	m^3	323
601003-001	CLASS K CONCRETE	m^3	73
601003-003	CLASS K CONCRETE, ARCHITECTURAL	m^3	9
602001-001	REINFORCING STEEL BAR	kg	14 521
602002-001	EPOXY COATED REINFORCING STEEL BAR	kg	11 870

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X35-H-101.92 05	APD-0484(124) CTC	2001	HARDY	47	146

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

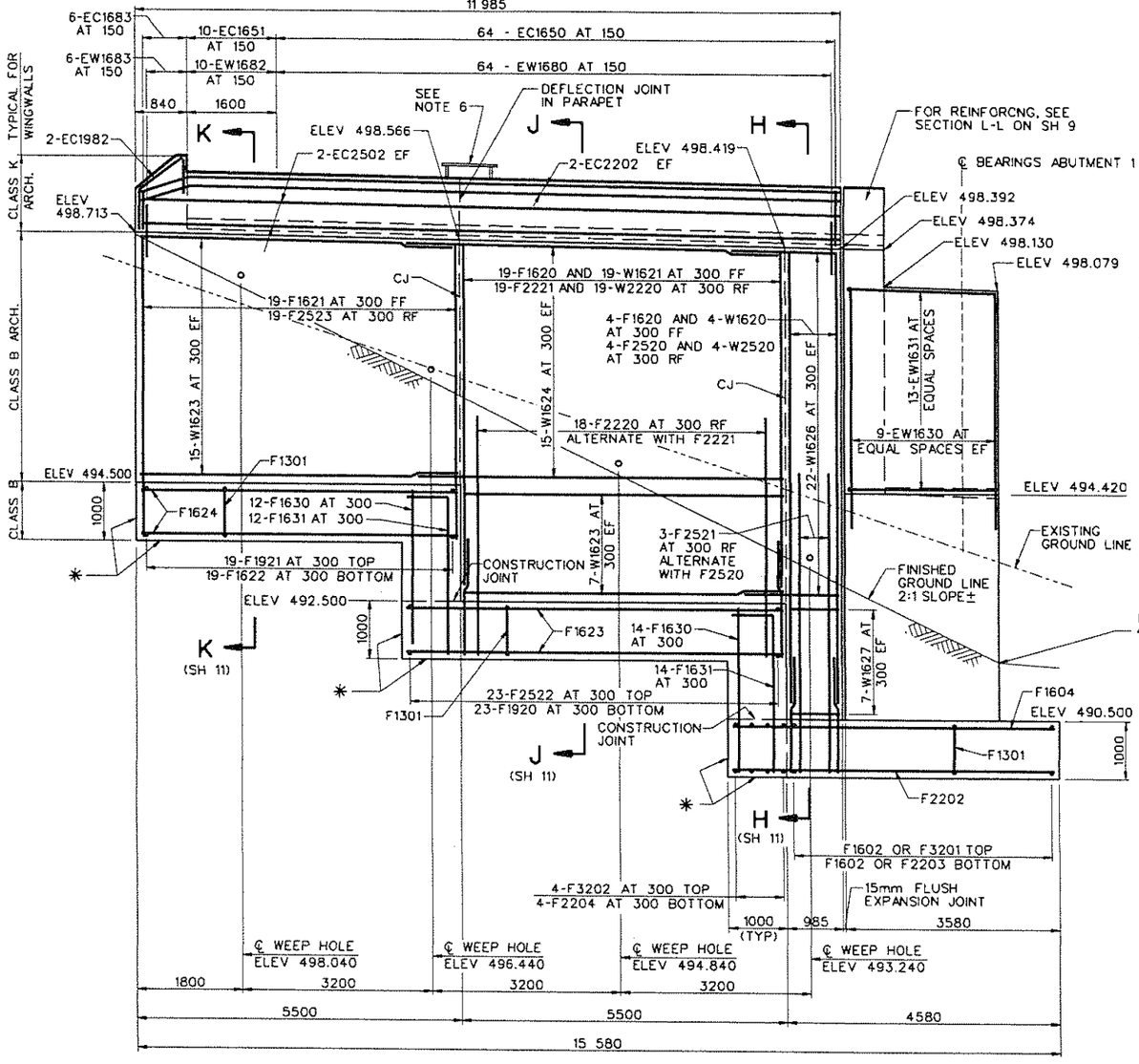
US 33 OVER
CLIFFORD HOLLOW

ABUTMENT 1 SECTIONS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

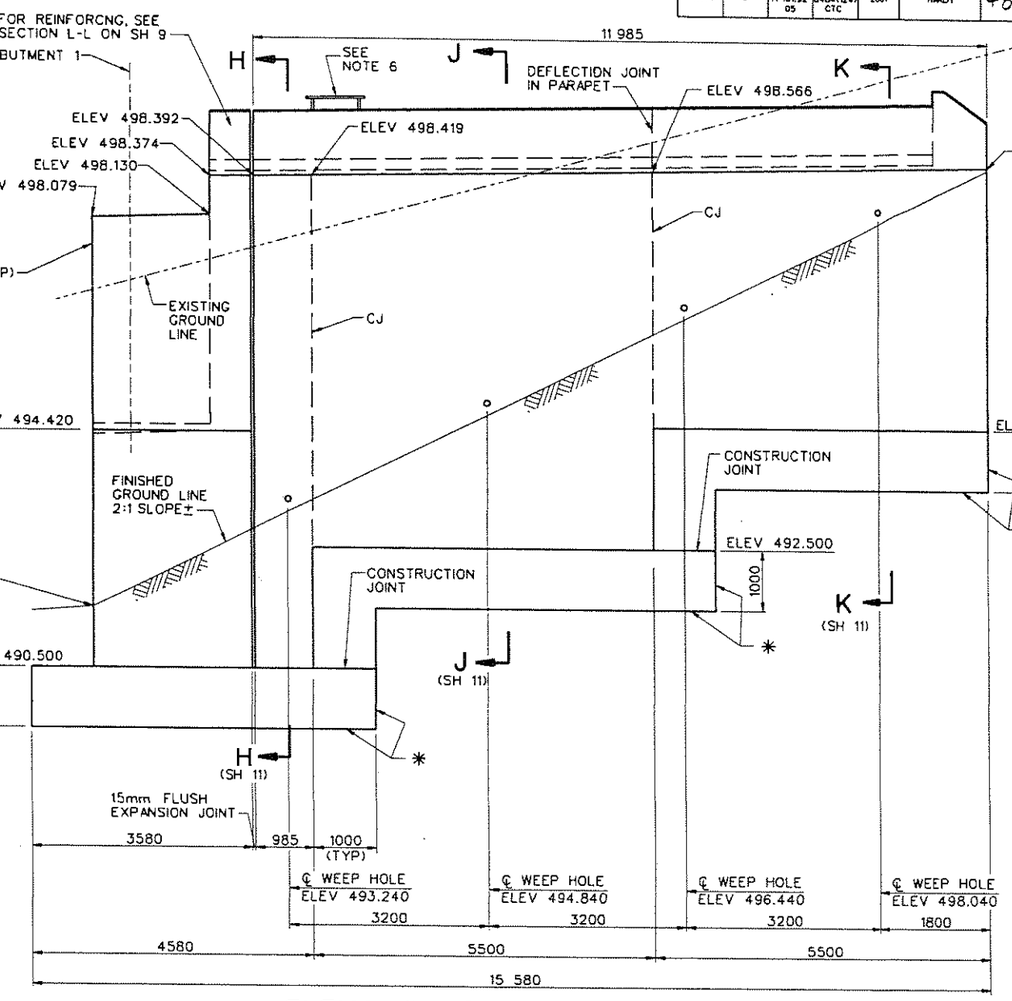
MADE SLK DATE 7/97 | CKD MAB DATE 7/97 | BRIDGE NO. 4249
TRCD DATE | SCALE AS SHOWN | SHEET NO. 9

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	48	146



ELEVATION B-B - WINGWALL A

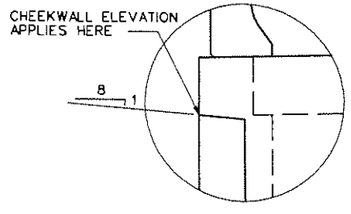
0 1000 2000 mm



ELEVATION C-C - WINGWALL B

FOR REINFORCING, SEE ELEVATION B-B (SIMILAR)

0 1000 2000 mm



DETAIL 4

0 400 800 mm

NOTE:
ELEVATIONS PROVIDED AT TOP OF WALL AT OUTSIDE FACE OF WALL, EXCEPT FOR CHEEK WALL ELEVATIONS.

LEGEND:

FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EF DENOTES EACH FACE

* CAST THIS FACE AGAINST ROCK (DO NOT FORM). FOOTING AND STEP DIMENSIONS SHOWN ARE MINIMUMS. TOP OF FOOTING ELEVATIONS ARE TO BE MAINTAINED. BOTTOM OF FOOTINGS MUST BE KEYED 300mm MINIMUM INTO ROCK. REINFORCING IS TO BE PLACED AS SHOWN ON THE DESIGN DRAWINGS. DO NOT ADJUST REINFORCING LOCATIONS IF STEP OR BOTTOM OF FOOTING LOCATIONS ARE ALTERED.

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 7, 8, 9 AND 11.
3. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS AND ELEVATIONS ARE IN METERS.
4. CJ INDICATES CONSTRUCTION JOINT IN WALL. FOR SECTION THROUGH JOINT, SEE SH 17.
5. FOR DEFLECTION JOINT DETAILS, SEE SHEET 65.
6. FOR RAILING DETAILS, SEE SHEET 66.
7. ALL REINFORCING SPACINGS SHOWN ARE MAXIMUM SPACINGS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

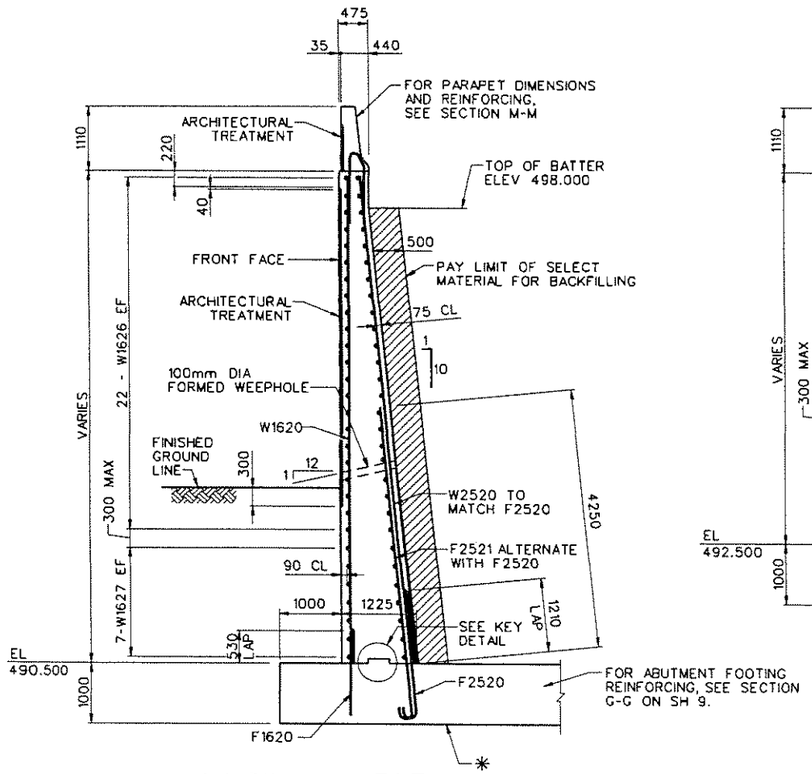
US 33 OVER
CLIFFORD HOLLOW

ABUTMENT 1 WINGWALLS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA (412) 497-6000

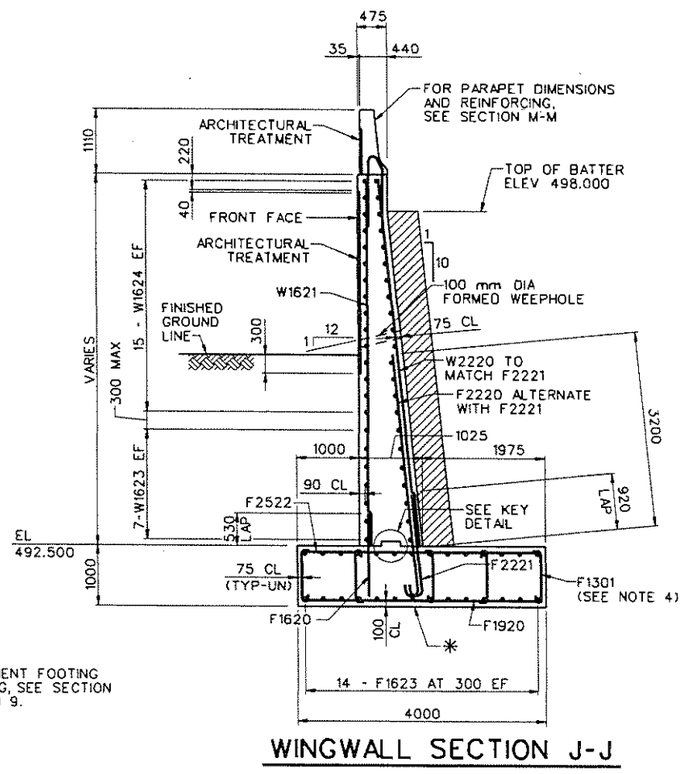
MADE SLK DATE 7/97	CKD MAB DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS SHOWN	SHEET NO. 10

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X318-H-101.92 05	APD-0484(124) CTC	2001	HARDY	49	146



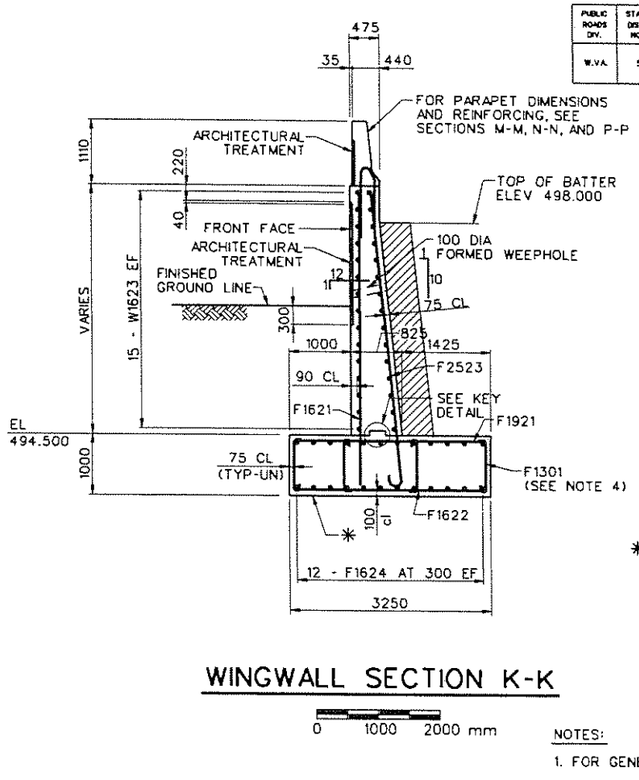
WINGWALL SECTION H-H

0 1000 2000 mm



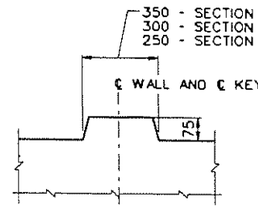
WINGWALL SECTION J-J

0 1000 2000 mm



WINGWALL SECTION K-K

0 1000 2000 mm



KEY DETAIL

NO SCALE

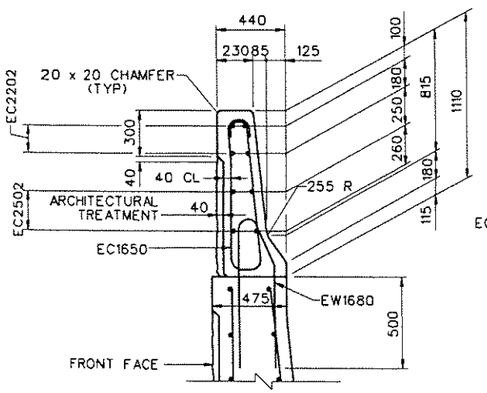
* - CAST THIS FACE AGAINST ROCK (DO NOT FORM). FOOTING THICKNESSES SHOWN ARE MINIMUMS. TOP OF FOOTING ELEVATIONS ARE TO BE MAINTAINED.

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 7 THRU 10.
3. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS AND ELEVATIONS ARE IN METERS.
4. SPACE F1301 STIRRUPS ON 1200 (MAX) GRID. ALTERNATE 90° AND 180° HOOKS AS SHOWN
5. FOR ARCHITECTURAL TREATMENT DETAILS, SEE SHEETS 69 AND 70.
6. ALL REINFORCEMENT SPACINGS SHOWN ARE MAXIMUM SPACINGS.
7. CARRY ARCHITECTURAL TREATMENT A MINIMUM OF 300 BELOW FINISHED GROUND LINE.

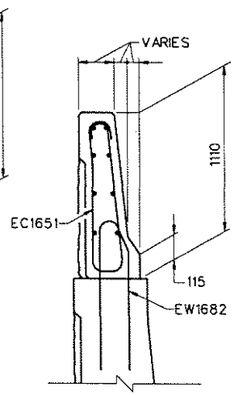
LEGEND:

FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EF DENOTES EACH FACE



SECTION M-M

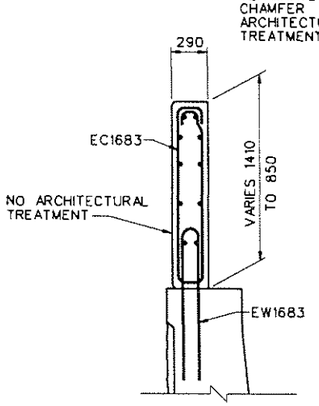
0 400 800mm



SECTION N-N

FOR INFORMATION NOT SHOWN, SEE SECTION M-M

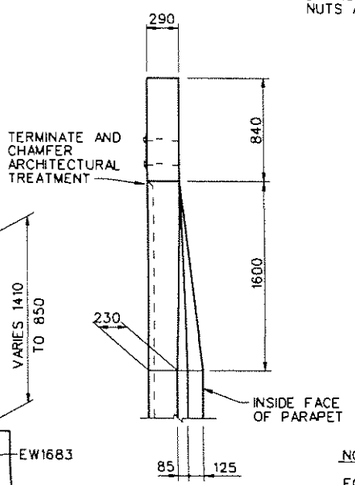
0 400 800mm



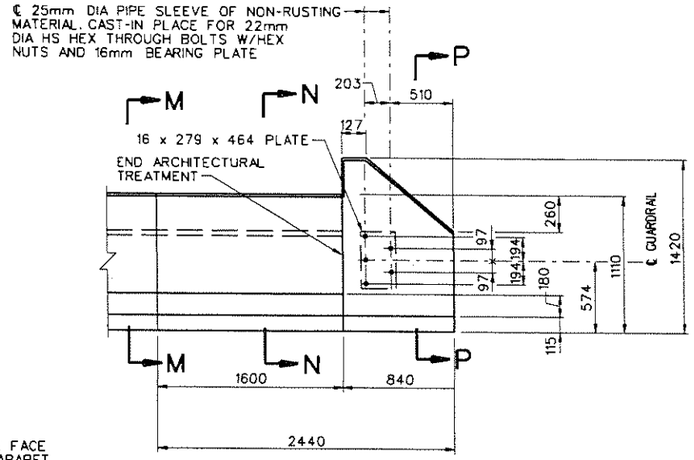
SECTION P-P

FOR INFORMATION NOT SHOWN, SEE SECTION M-M

0 400 800mm



PLAN



ELEVATION

NOTES:

FOR ADDITIONAL DETAILS OF GUARDRAIL ATTACHMENT, SEE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAY STANDARD, VOLUME 1, SHEET GR7M.

ALL COMPONENTS AS DETAILED HEREIN SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 601003-003.

GUARDRAIL ATTACHMENT DETAIL

0 500 1000 mm

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

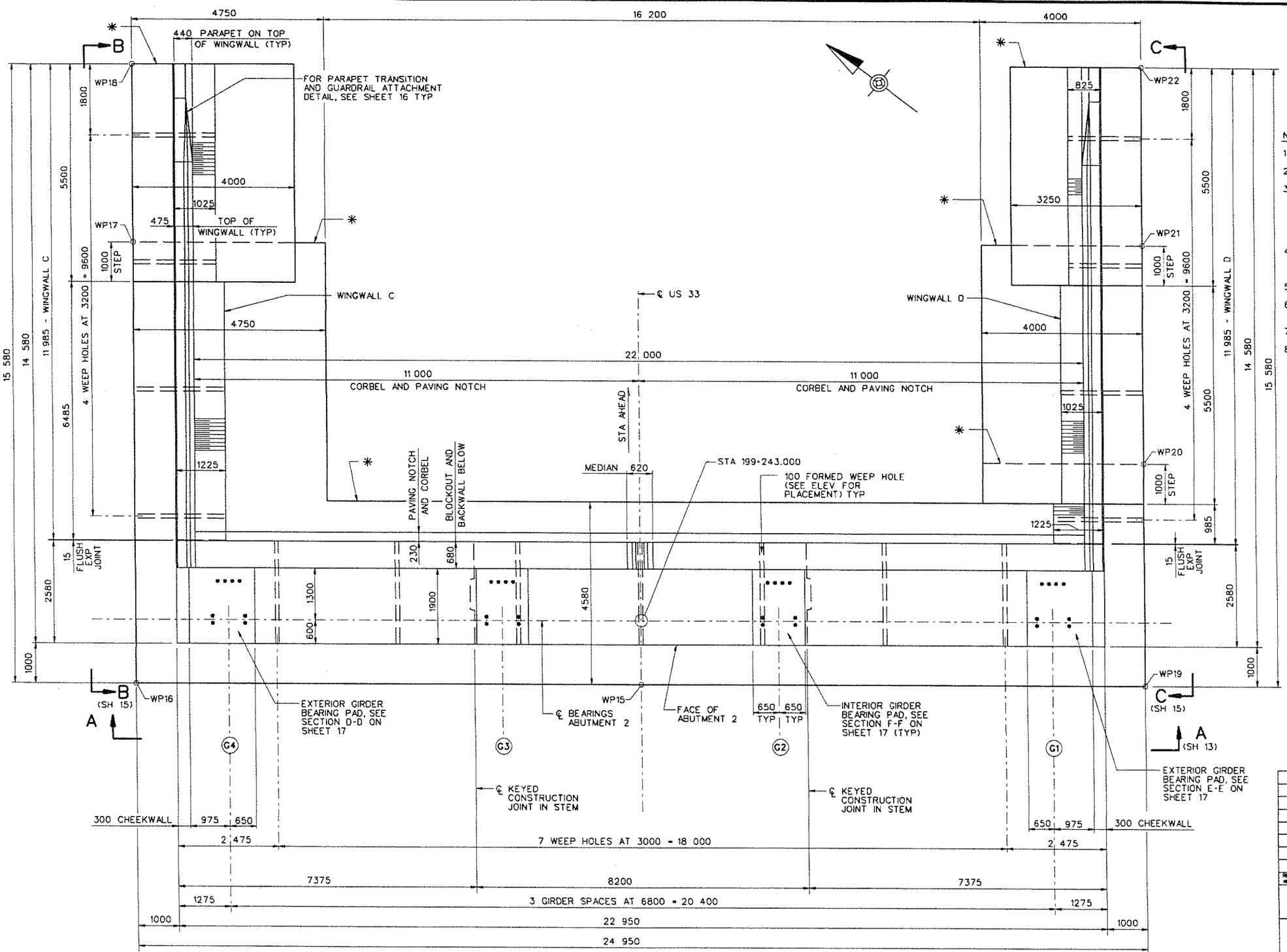
US 33 OVER
CLIFFORD HOLLOW

ABUTMENT 1 WINGWALL SECTIONS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA (412) 497-6000

MADE SLK DATE 7/97	CKD MAB DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS SHOWN	SHEET NO. 11

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X315-H-101,92 05	APD-0484(124) CTC	2001	HARDY	50	146



PLAN AT ABUTMENT 2

0 1000 2000 mm

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 13 THRU 16.
3. MAXIMUM DESIGN FOUNDATION PRESSURES ARE AS FOLLOWS:

   ABUTMENT 2 424 kPa
   WINGWALL C AND D 361 kPa
   ALLOWABLE PRESSURE = 960 kPa

4. FOR LOCATIONS AND DETAILS OF ANCHOR BOLTS (FOR TRANSVERSE AND LONGITUDINAL RESTRAINERS), SEE SHEET 17.
5. FOR EXPANSION DAM DETAILS, SEE SHEETS 51 AND 52.
6. FOR ARCHITECTURAL TREATMENTS, SEE SHEETS 69 AND 70.
7. FOR BEARING DETAILS, SEE SHEET 45 THRU 48.
8. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS AND ELEVATIONS ARE IN METERS.

* CAST THIS FACE AGAINST ROCK (DO NOT FORM). FOOTING AND STEP DIMENSIONS SHOWN ARE MINIMUMS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

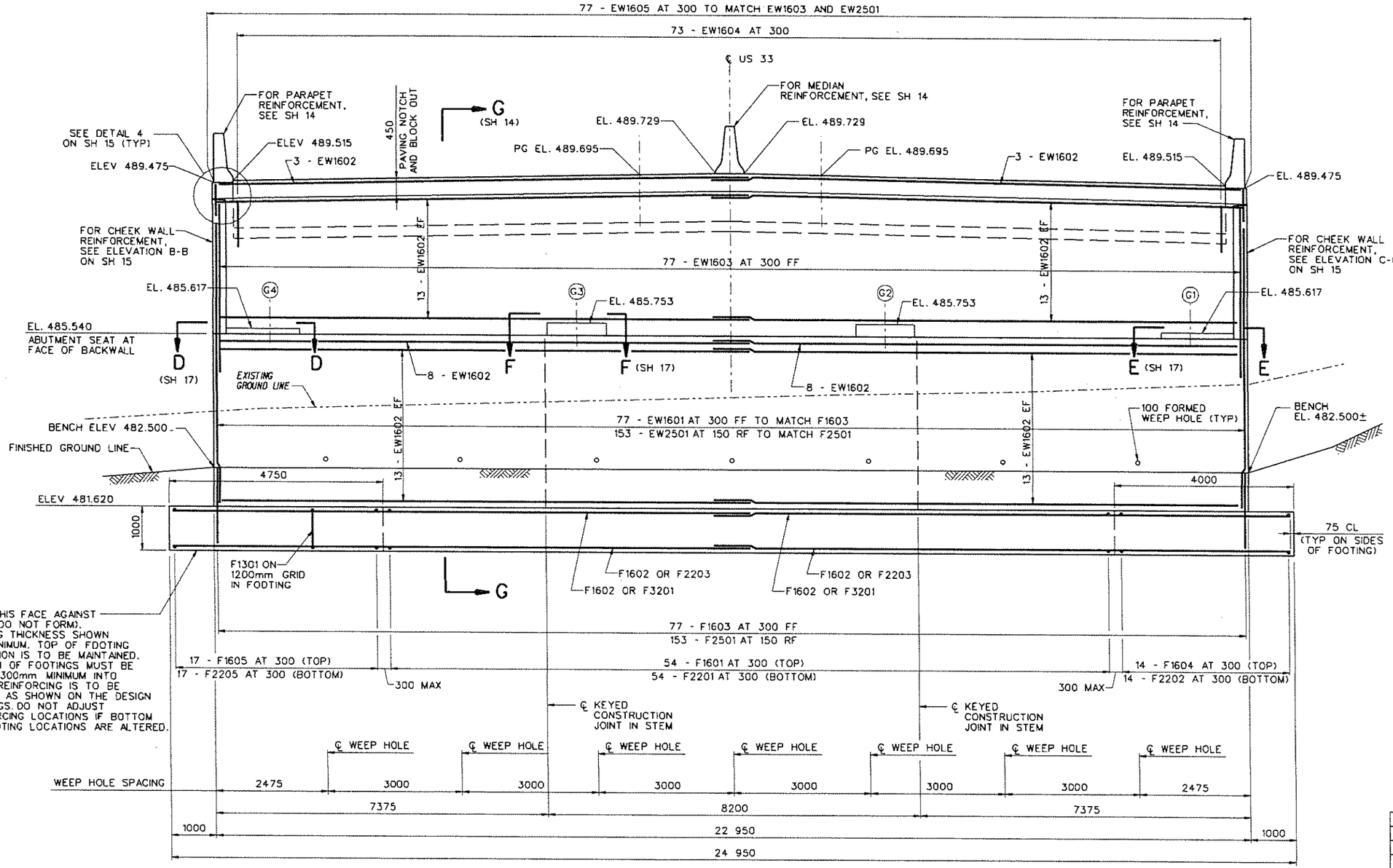
US 33 OVER
CLIFFORD HOLLOW

ABUTMENT 2 PLAN

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SLK DATE 7/97	CKD MAB DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS SHOWN	SHEET NO. 12

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X315-H-101.92 05	APD-0484(124) CTC	2001	HARDY	51	146



ELEVATION A-A

0 1000 2000mm

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 12, 14, 15 AND 16.
3. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS AND ELEVATIONS ARE IN METERS.
4. ALL REINFORCEMENT SPACINGS SHOWN ARE MAXIMUM SPACINGS.

LEGEND:

FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EF DENOTES EACH FACE

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

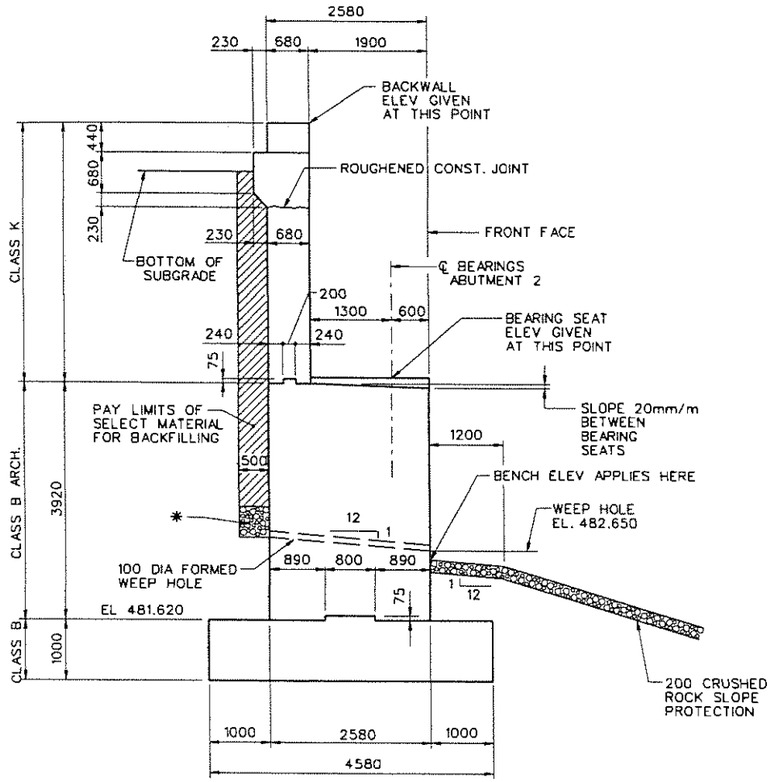
US 33 OVER
CLIFFORD HOLLOW

ABUTMENT 2 ELEVATION

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

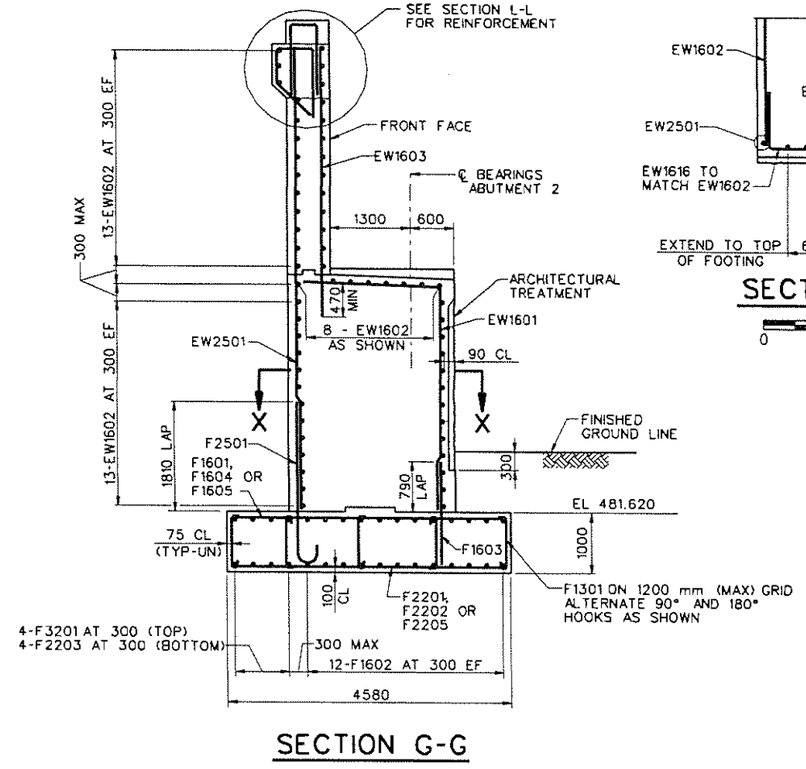
MADE SLK DATE 7/97	CKD MAB DATE 7/97	BRIDGE NO. 4249
TRCD. DATE	SCALE AS SHOWN	SHEET NO. 13

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X315-H-101.92 05	APD-0484(124) CTC	2001	HARDY	52	146



GENERAL ABUTMENT DETAIL

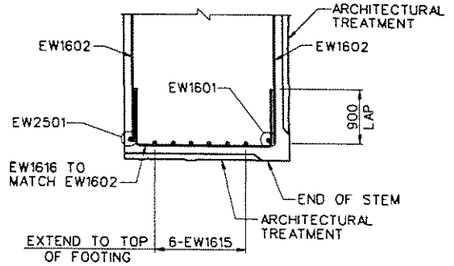
0 1000 2000 mm



SECTION G-G

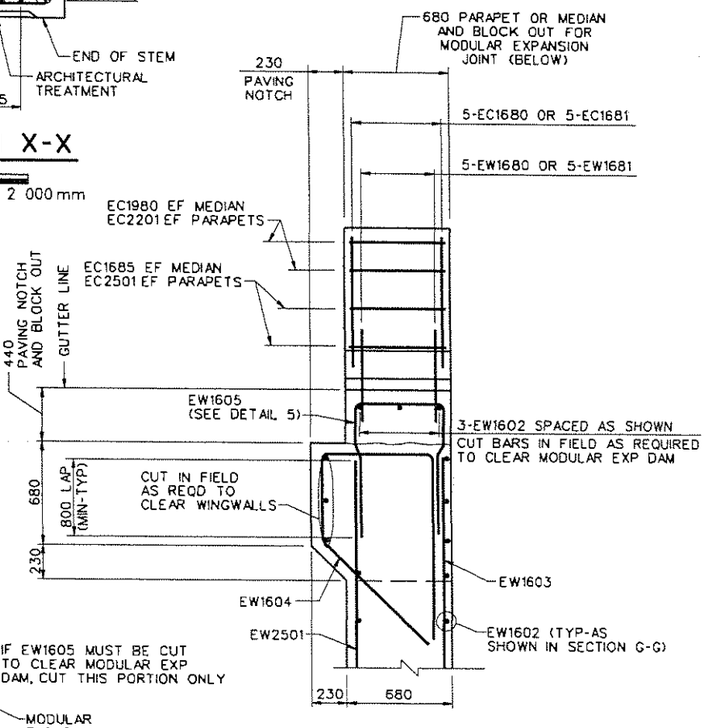
0 1000 2000 mm

FOR DIMENSIONS NOT SHOWN, SEE GENERAL ABUTMENT DETAIL



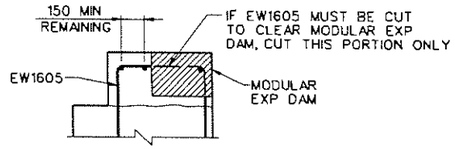
SECTION X-X

0 1 000 2 000 mm



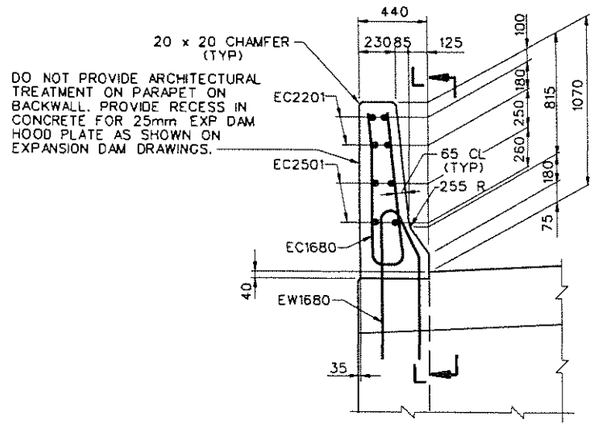
SECTION L-L

0 400 800 mm



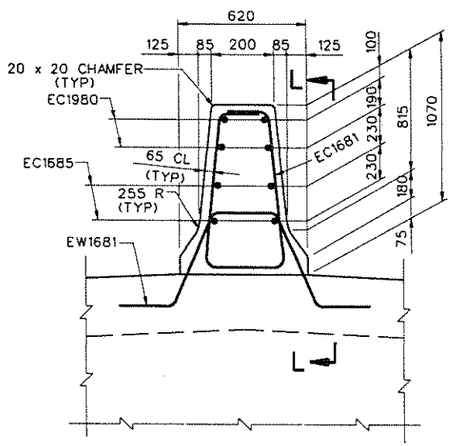
DETAIL 5

0 400 800 mm



PARAPET REINFORCEMENT DETAIL

0 400 800 mm



MEDIAN REINFORCEMENT DETAIL

NO SCALE

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 12, 13, 15 AND 16.
3. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS AND ELEVATIONS ARE IN METERS.
4. FOR EXPANSION DAM DETAILS, SEE SHEETS 51 AND 52.
5. ALL REINFORCEMENT SPACINGS SHOWN ARE MAXIMUM SPACINGS.

LEGEND:

FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EF DENOTES EACH FACE

QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
212001-000	STRUCTURE EXCAVATION	m^3	851
212005-000	SELECT MATERIAL FOR BACKFILLING	m^3	101
601002-001	CLASS B CONCRETE	m^3	226
601002-003	CLASS B CONCRETE, ARCHITECTURAL	m^3	344
601003-001	CLASS K CONCRETE	m^3	73
601003-003	CLASS K CONCRETE, ARCHITECTURAL	m^3	9
602001-001	REINFORCING STEEL BAR	kg	16 374
602002-001	EPOXY COATED REINFORCING STEEL BAR	kg	11 870

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

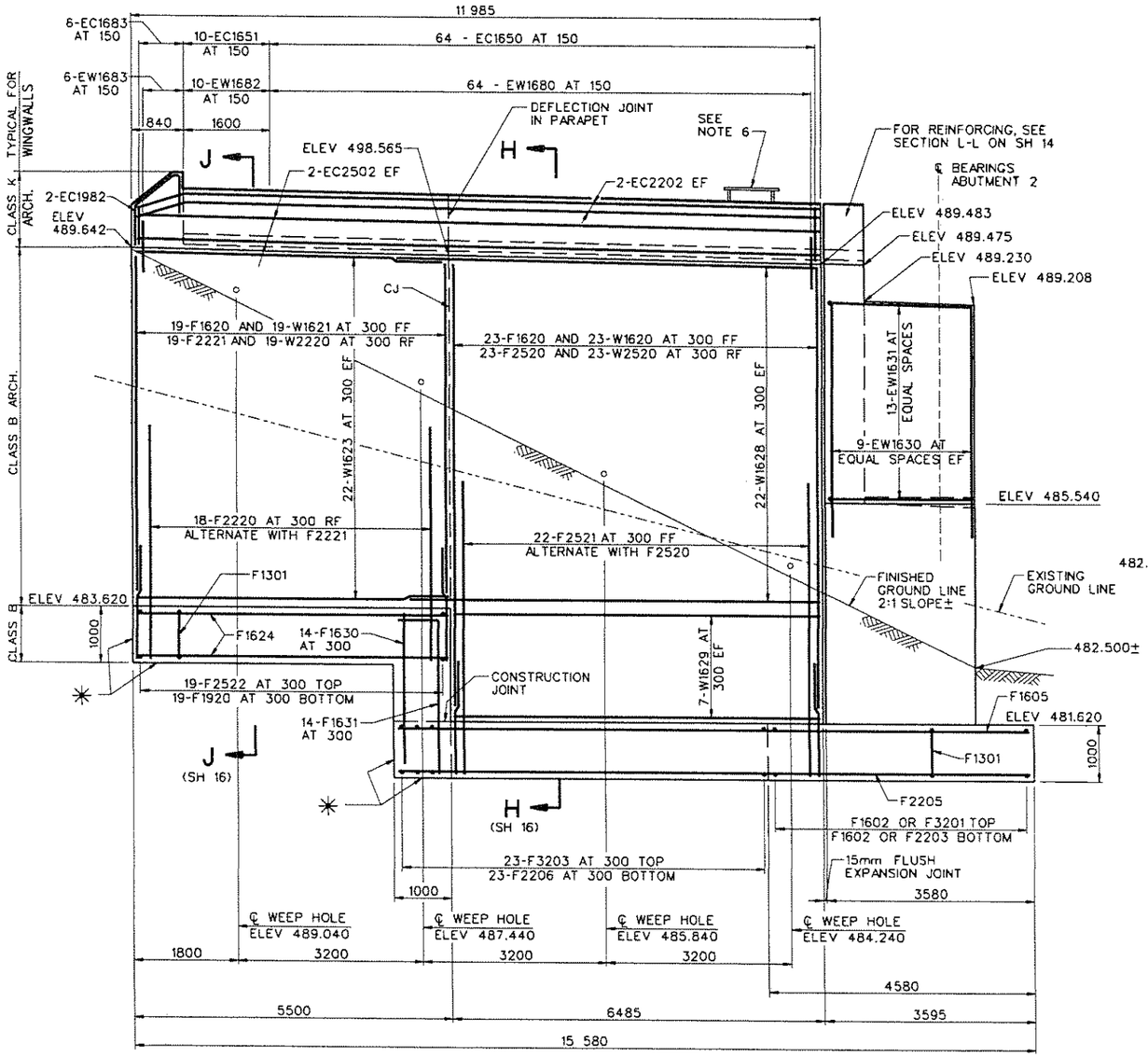
US 33 OVER CLIFFORD HOLLOW

ABUTMENT 2 SECTIONS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

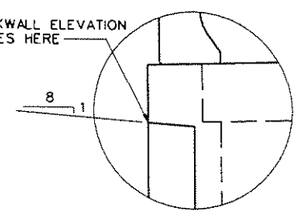
MADE SLK DATE 7/97	CKD MAB DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS SHOWN	SHEET NO. 14

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) C1C	2001	HARDY	53	146



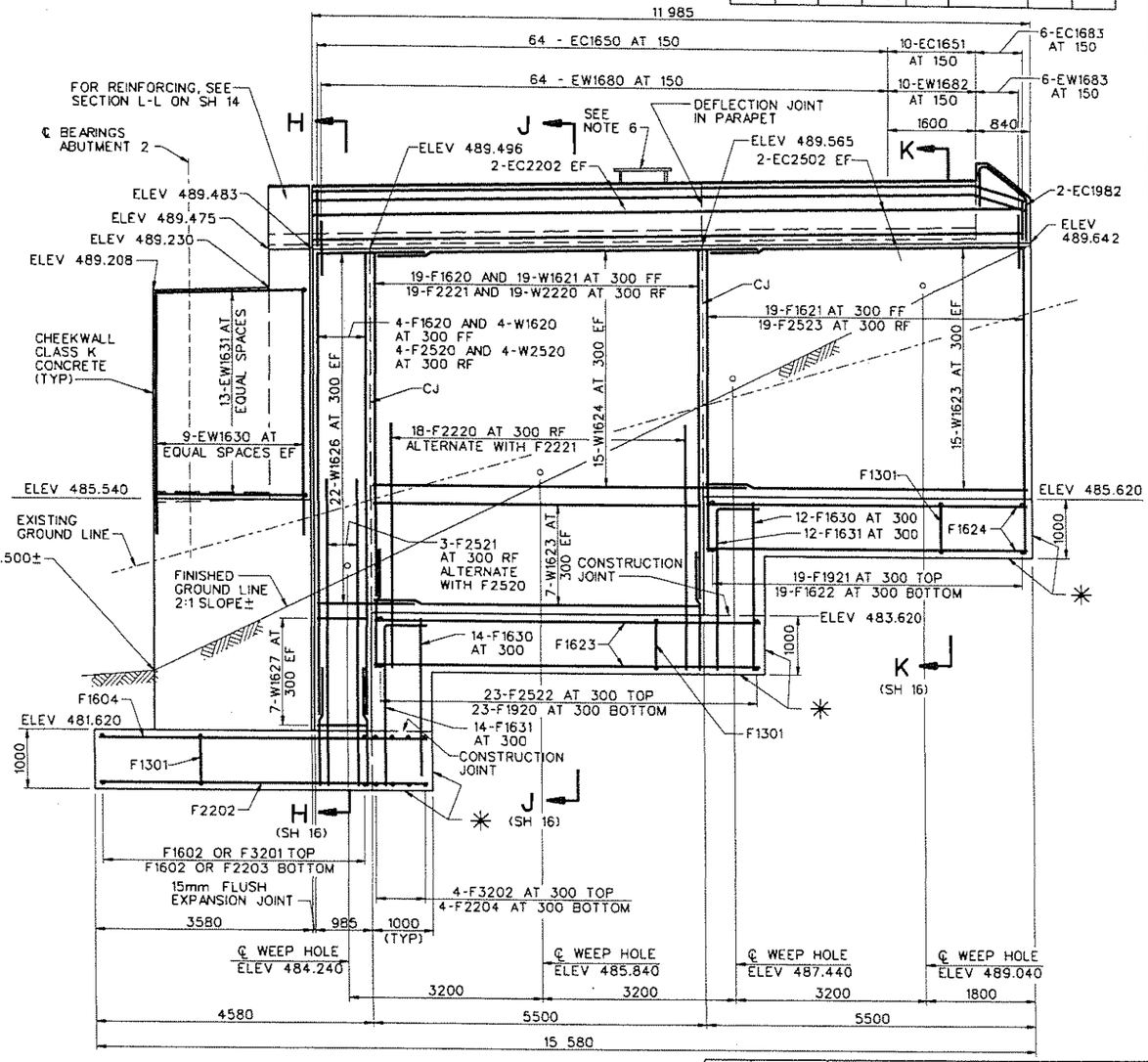
ELEVATION B-B - WINGWALL C

0 1000 2000 mm



DETAIL 4

0 400 800 mm



ELEVATION C-C - WINGWALL D

0 1000 2000 mm

NOTE:
ELEVATIONS PROVIDED AT TOP OF WALL AT OUTSIDE FACE OF WALL, EXCEPT FOR CHEEK WALL ELEVATIONS.

LEGEND:

FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EF DENOTES EACH FACE

✳ CAST THIS FACE AGAINST ROCK (DO NOT FORM). FOOTING AND STEP DIMENSIONS SHOWN ARE MINIMUMS. TOP OF FOOTING ELEVATIONS ARE TO BE MAINTAINED. BOTTOM OF FOOTINGS MUST BE KEYED 300mm MINIMUM INTO ROCK. REINFORCING IS TO BE PLACED AS SHOWN ON THE DESIGN DRAWINGS. DO NOT ADJUST REINFORCING LOCATIONS IF STEP OR BOTTOM OF FOOTING LOCATIONS ARE ALTERED.

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 12, 13, 14 AND 16.
3. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS AND ELEVATIONS ARE IN METERS.
4. CJ INDICATES CONSTRUCTION JOINT IN WALL. FOR SECTION THROUGH JOINT, SEE SH 17.
5. FOR DEFLECTION JOINT DETAILS, SEE SH 65.
6. FOR RAILING DETAILS, SEE SH 66.
7. ALL REINFORCEMENT SPACINGS SHOWN ARE MAXIMUM SPACINGS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

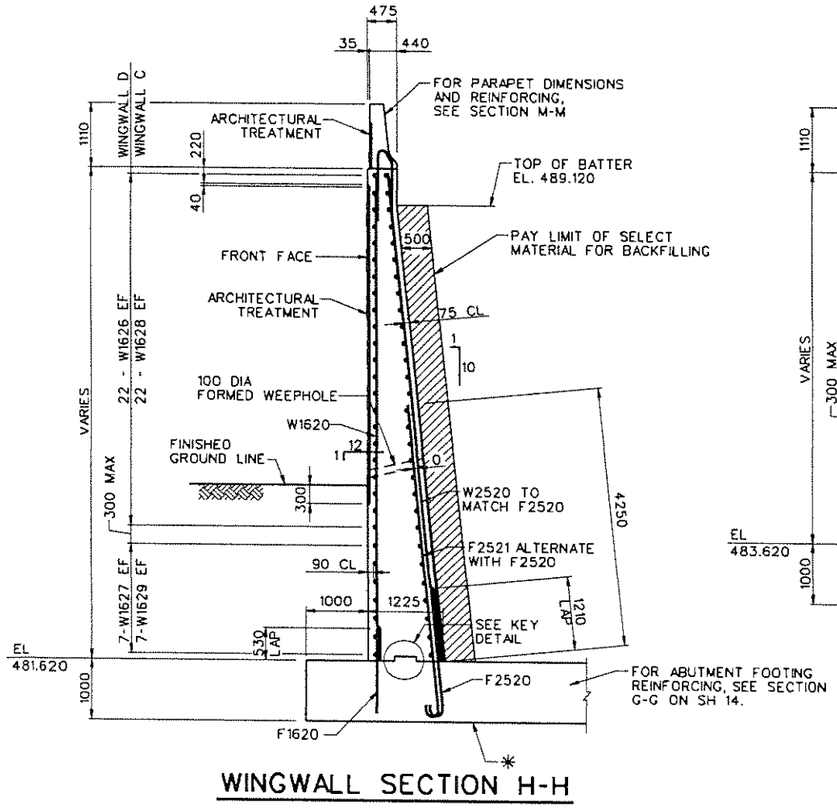
US 33 OVER
CLIFFORD HOLLOW

ABUTMENT 2 WINGWALLS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

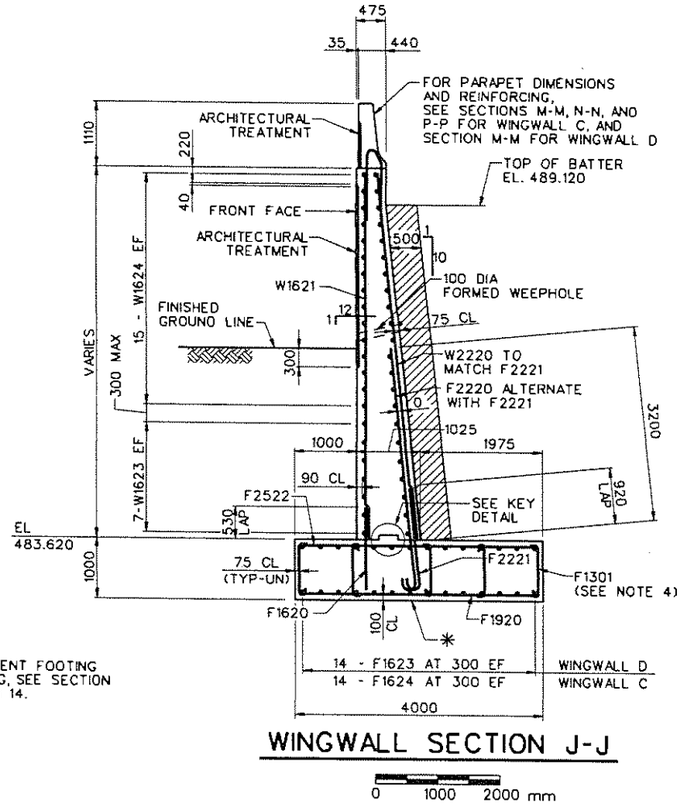
MADE SLK DATE 7/97	CKD MAB DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS SHOWN	SHEET NO. 15

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X315-H-101,92 05	APD-0484(124) CTC	2001	HARDY	54	146



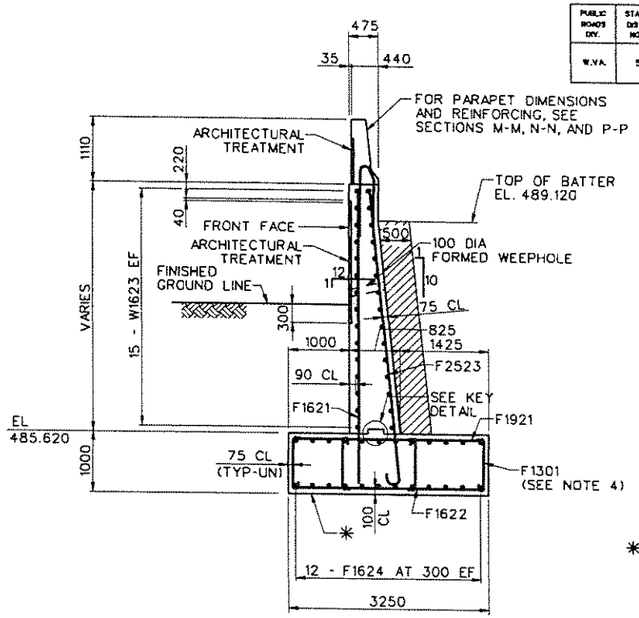
WINGWALL SECTION H-H

0 1000 2000 mm



WINGWALL SECTION J-J

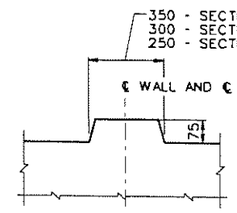
0 1000 2000 mm



WINGWALL SECTION K-K

WINGWALL D ONLY

0 1000 2000 mm



KEY DETAIL

NO SCALE

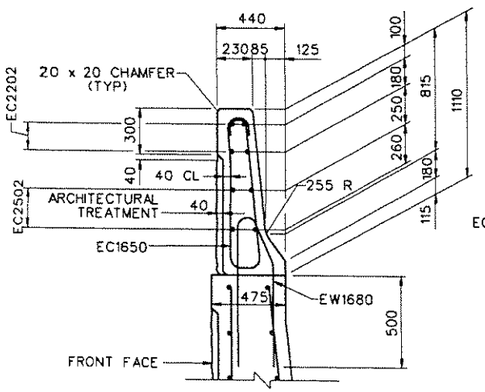
✱ - CAST THIS FACE AGAINST ROCK (DO NOT FORM). FOOTING THICKNESSES SHOWN ARE MINIMUMS. TOP OF FOOTING ELEVATIONS ARE TO BE MAINTAINED.

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 12 THRU 15.
3. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS AND ELEVATIONS ARE IN METERS.
4. SPACE F1301 STIRRUPS ON 1200 (MAX) GRID. ALTERNATE 90° AND 180° HOOKS AS SHOWN.
5. FOR ARCHITECTURAL TREATMENT DETAILS, SEE SH 69 AND 70.
6. ALL REINFORCING SPACINGS SHOWN ARE MAXIMUM SPACINGS.
7. CARRY ARCHITECTURAL TREATMENT A MINIMUM OF 300 BELOW FINISHED GROUND LINE.

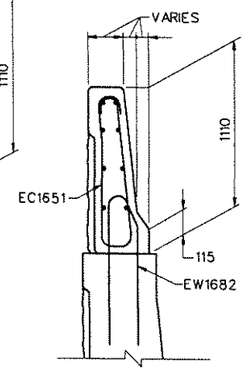
LEGEND:

FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EF DENOTES EACH FACE



SECTION M-M

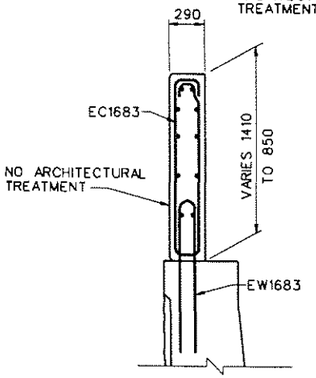
0 400 800mm



SECTION N-N

FOR INFORMATION NOT SHOWN, SEE SECTION M-M

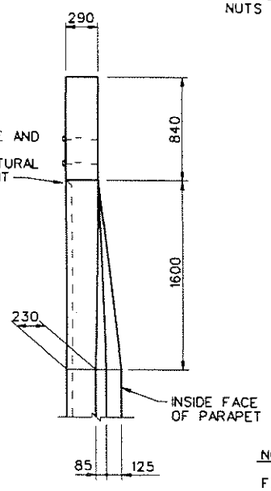
0 400 800mm



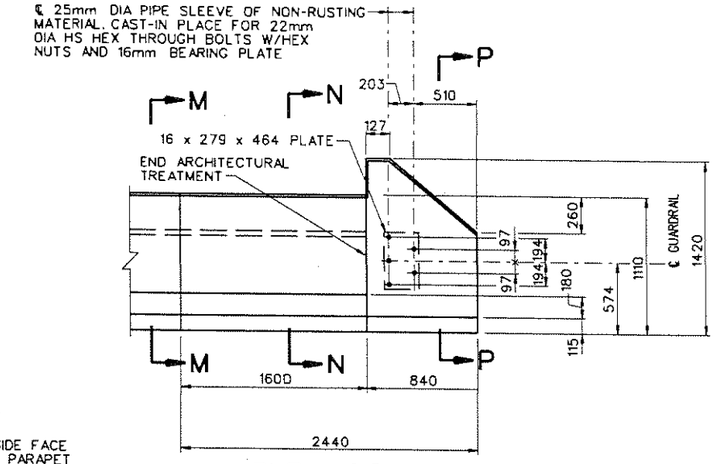
SECTION P-P

FOR INFORMATION NOT SHOWN, SEE SECTION M-M

0 400 800mm



PLAN



ELEVATION

NOTES:

FOR ADDITIONAL DETAILS OF GUARDRAIL ATTACHMENT, SEE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAY STANDARD, VOLUME 1, SHEET GR7M.

ALL COMPONENTS AS DETAILED HEREIN SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 601003-003.

GUARDRAIL ATTACHMENT DETAIL

0 500 1000 mm

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

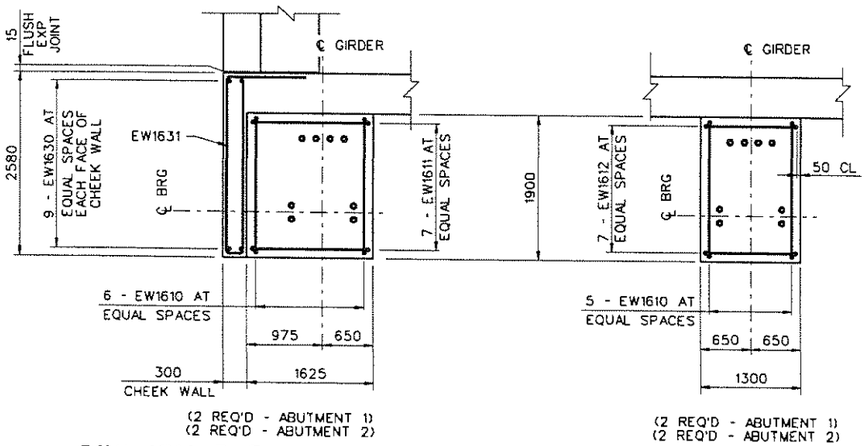
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

ABUTMENT 2 WINGWALL SECTIONS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

MADE SLK DATE 7/97	CKD MAB DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS SHOWN	SHEET NO. 16



(2 REQ'D - ABUTMENT 1)
(2 REQ'D - ABUTMENT 2)

SECTION D-D - AS SHOWN
SECTION E-E - OPP HAND

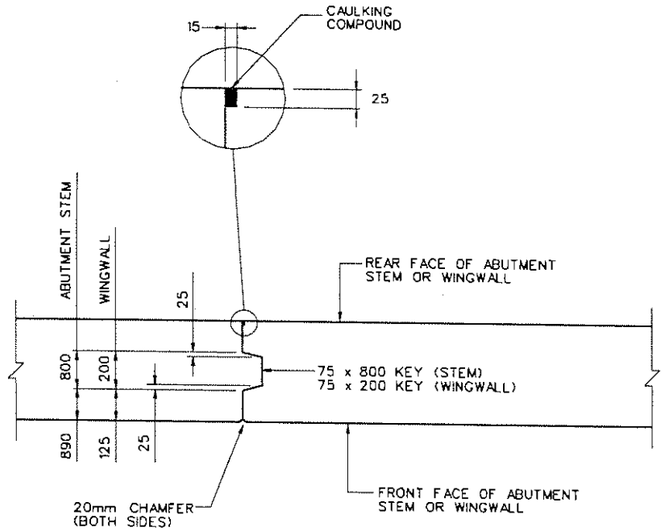
(2 REQ'D - ABUTMENT 1)
(2 REQ'D - ABUTMENT 2)

SECTION F-F

TYPICAL FOR ALL INTERIOR GIRDERS

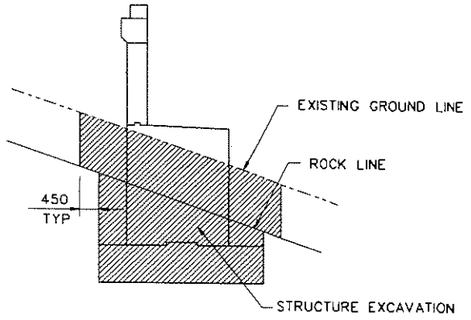
0 1000 2000 mm

FOR ANCHOR BOLT LAYOUT, SEE DETAIL 1



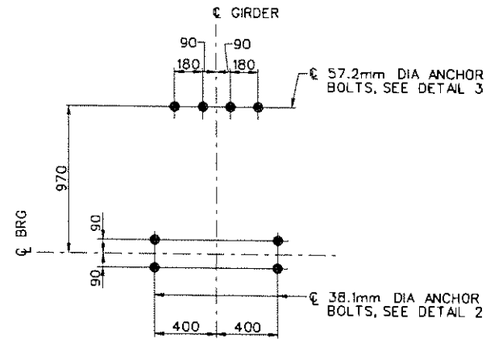
SECTION THROUGH CONSTRUCTION JOINT

NO SCALE



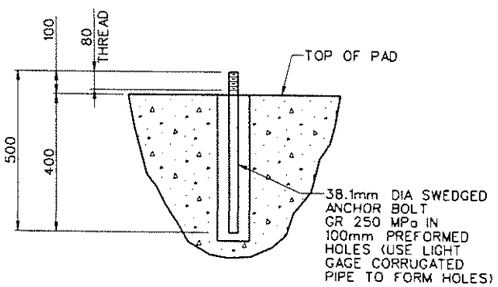
EXCAVATION PAY LIMITS

NO SCALE



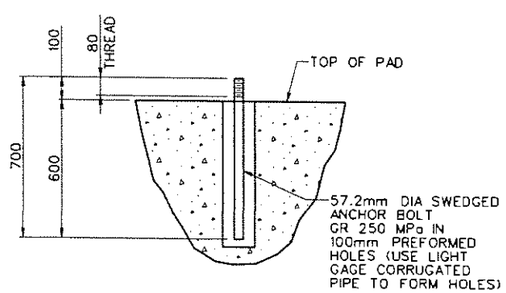
DETAIL 1

NO SCALE



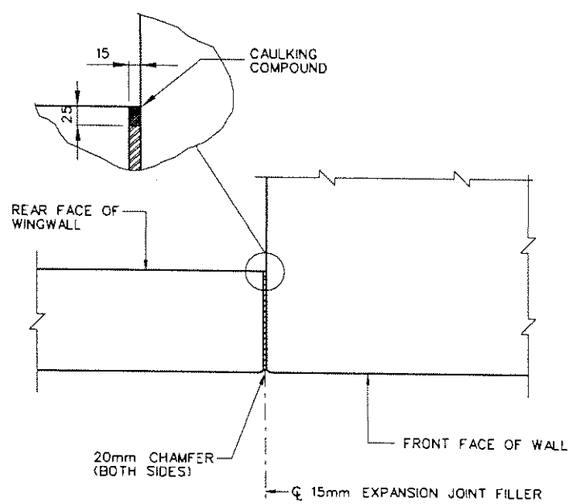
DETAIL 2
TRANSVERSE RESTRAINER ANCHOR BOLTS

NO SCALE



DETAIL 3
LONGITUDINAL RESTRAINER ANCHOR BOLTS

NO SCALE



SECTION THROUGH EXPANSION JOINT

NO SCALE

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS AND ELEVATIONS ARE IN METERS.

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	55	146

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

TYPICAL ABUTMENT DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

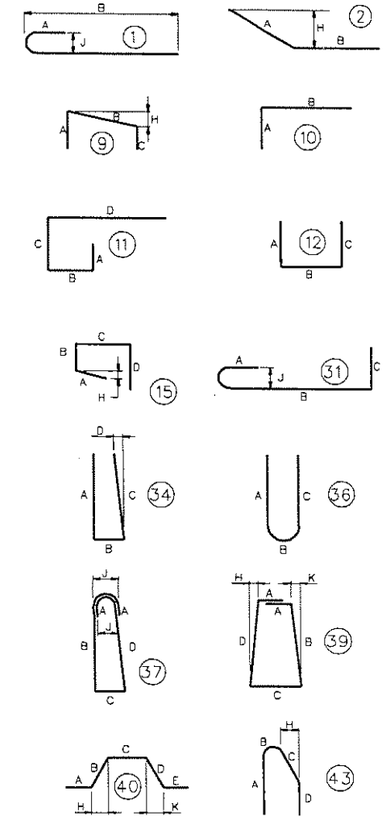
MADE SLK DATE 7/97	CKD MAB DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS SHOWN	SHEET NO. 17

REINFORCEMENT BAR SCHEDULE

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
			ABUTMENT 1													
F1301	13	1175	120	31	150	825	200						105			
F1601	16	4430	57	STR												
F1602	16	12 800	48	STR												
F1603	16	1690	77	STR												
F1604	16	5430	28	STR												
F1620	16	1430	8	STR												
F1630	16	2825	28	STR												
F1631	16	3625	28	10	800	2825										
F2201	22	4430	57	STR												
F2202	22	5430	28	STR												
F2203	22	12 900	8	STR												
F2204	22	3850	8	STR												
F2501	25	2985	153	1	275	2710							205			
F2520	25	2385	8	1	275	2110							205			
F2521	25	5425	6	1	275	5150							205			
F3201	32	13 800	8	STR												
F3202	32	3850	8	STR												
EW1601	16	6190	77	10	2360	3830										
EW1602	16	11 850	126	STR												
EW1603	16	4330	77	STR												
EW1604	16	3655	73	15	1075	530	760	1290				760				
EW1605	16	4150	77	12	1800	550	1800									
EW1610	16	3320	22	12	760	1800	760									
EW1611	16	2765	14	12	620	1525	620									
EW1612	16	2720	14	12	760	1200	760									
EW1615	16	3850	12	STR												
EW1616	16	4190	26	12	900	2390	900									
EW1630	16	4150	36	STR												
EW1631	16	6260	26	11	2480	200	2480	1100								
EW1680	16	1840	10	43	800	160	280	600				125				
EW1681	16	2120	5	40	380	580	200	580	380			260		260		
EW2501	25	7420	153	STR												
EC1685	16	580	4	STR												
EC1680	16	2140	10	34	960	200	980	100								
EC1681	16	2420	5	39	75	1000	270	1000				100		100		
EC1980	19	580	4	STR												
EC2201	22	580	8	STR												
EC2501	25	580	8	STR												
			WINGWALL A													
F1301	13	1175	59	31	150	825	200						105			
F1620	16	1430	19	STR												
F1621	16	4900	19	STR												
F1622	16	3100	19	STR												
F1623	16	6325	28	STR												
F1624	16	5325	24	STR												
F1630	16	2825	12	STR												
F1631	16	3625	12	10	800	2825										
F1920	19	3850	23	STR												
F1921	19	3100	19	STR												
F2220	22	4350	18	1	250	4100							180			
F2221	22	2070	19	1	250	1820							180			
F2522	25	3850	23	STR												
F2523	25	5195	19	1	275	4920							205			
W1620	16	7840	4	STR												
W1621	16	5850	19	STR												
W1623	16	5425	44	STR												
W1624	16	6400	30	STR												
W1626	16	1835	44	STR												
W1627	16	835	14	STR												
W2220	22	5875	19	STR												
W2520	25	7875	4	STR												
EW1680	16	1840	64	43	800	160	280	600				125				
EW1682	16	1760 TO 1840	10	43	800	160	0 TO 280	800 TO				0 TO				VARY C BY 31.
								600				125				D BY 22. H BY 14
EW1683	16	1890	6	36	800	290	800								95	
EC1650	16	2540	64	37	240	920	200	940					130			
EC1651	16	2540 TO 2600	10	37	60	920	200	940					130 TO			
													190			
EC1683	16	1940 TO 3040	6	37	175	700 TO	190	700 TO					130			VARY B AND D
						1250		1250								BY 110
EC1982	19	2930	2	9	1300	930	700					550				
EC2202	22	11 885	4	2	875	11 010						300				
EC2502	25	11 835	4	STR												

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
			WINGWALL B													
F1301	13	1175	59	31	150	825	200						105			
F1620	16	1430	19	STR												
F1621	16	4900	19	STR												
F1622	16	3100	19	STR												
F1623	16	6325	28	STR												
F1624	16	5325	24	STR												
F1630	16	2825	12	STR												
F1631	16	3625	12	10	800	2825										
F1920	19	3850	23	STR												
F1921	19	3100	19	STR												
F2220	22	4350	18	1	250	4100							180			
F2221	22	2070	19	1	250	1820							180			
F2522	25	3850	23	STR												
F2523	25	5195	19	1	275	4920							205			
W1620	16	7840	4	STR												
W1621	16	5850	19	STR												
W1623	16	5425	44	STR												
W1624	16	6400	30	STR												
W1626	16	1835	44	STR												
W1627	16	835	14	STR												
W2220	22	5875	19	STR												
W2520	25	7875	4	STR												
EW1680	16	1840	64	43	800	160	280	600				125				
EW1682	16	1760 TO 1840	10	43	800	160	0 TO 280	800 TO				0 TO				VARY C BY 31.
								600				125				D BY 22. H BY 14
EW1683	16	1890	6	36	800	290	800								95	
EC1650	16	2540	64	37	240	920	200	940					130			
EC1651	16	2540 TO 2600	10	37	60	920	200	940					130 TO			
													190			
EC1683	16	1940 TO 3040	6	37	175	700 TO	190	700 TO					130			VARY B AND D
						1250		1250								BY 110
EC1982	19	2930	2	9	1300	930	700					550				
EC2202	22	11 885	4	2	875	11 010						300				
EC2502	25	11 835	4	STR												

PUBLIC ROADS CNV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X36-H-101.92 05	APD-0484(124) CTC	2001	HARDY	56	146



NOTES:

1. "E" IN BAR MARK INDICATES EPOXY COATED BARS.
2. FIGURES IN CIRCLES SHOW TYPES
3. ALL DIMENSIONS ARE OUT-TO-OUT OF BAR.
4. REINFORCEMENT BAR SCHEDULE IS FOR INFORMATION ONLY. VERIFY SCHEDULE PRIOR TO BIDDING AND FABRICATION.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

ABUTMENT 1
REINFORCEMENT BAR SCHEDULE

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

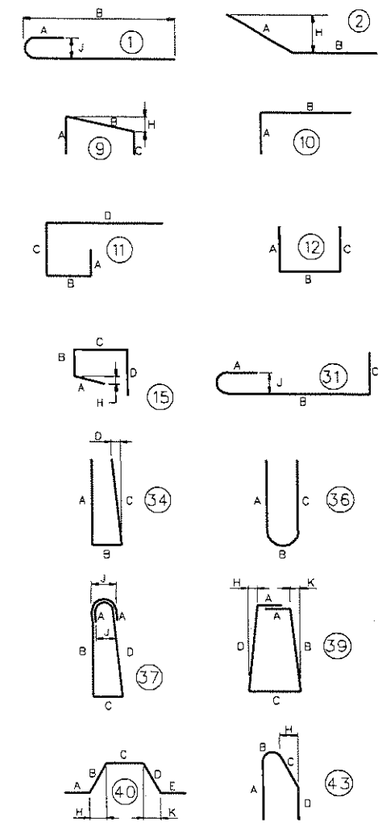
MADE SLK DATE 7/97	CKD MAB DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE NO SCALE	SHEET NO. 18

REINFORCEMENT BAR SCHEDULE

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
			ABUTMENT 2													
F1301	13	1175	150	31	150	825	200						105			
F1601	16	4430	54	STR												
F1602	16	12 800	48	STR												
F1603	16	1690	77	STR												
F1604	16	5430	14	STR												
F1605	16	10 930	17	STR												
F1620	16	1430	27	STR												
F1630	16	2825	28	STR												
F1631	16	3625	28	10	800	2825										
F2201	22	4430	54	STR												
F2202	22	5430	14	STR												
F2203	22	12 900	8	STR												
F2204	22	3850	4	STR												
F2205	22	10 930	17	STR												
F2206	22	4600	23	STR												
F2501	25	2985	153	1	275	2710							205			
F2520	25	2385	27	1	275	2110							205			
F2521	25	5425	25	1	275	5150							205			
F3201	32	13 800	8	STR												
F3202	32	3850	4	STR												
F3203	32	4600	23	STR												
EW1601	16	6190	77	10	2360	3830										
EW1602	16	11 850	126	STR												
EW1603	16	4330	77	STR												
EW1604	16	3655	73	15	1075	530	760	1290				760				
EW1605	16	4150	77	12	1800	550	1800									
EW1610	16	3320	22	12	760	1800	760									
EW1611	16	2765	14	12	620	1525	620									
EW1612	16	2720	14	12	760	1200	760									
EW1615	16	3850	12	STR												
EW1616	16	4190	26	12	900	2390	900									
EW1630	16	4150	36	STR												
EW1631	16	6260	26	11	2480	200	2480	1100								
EW1680	16	1840	10	43	800	160	280	600				125				
EW1681	16	2120	5	40	380	580	200	580	380			260		260		
EW2501	25	7420	153	STR												
EC1685	16	580	4	STR												
EC1680	16	2140	10	34	960	200	980	100								
EC1681	16	2420	5	39	75	1000	270	1000				100		100		
EC1980	19	580	4	STR												
EC2201	22	580	8	STR												
EC2501	25	580	8	STR												
			WINGWALL C													
F1301	13	1175	30	31	150	825	200						105			
F1620	16	1430	19	STR												
F1624	16	5325	28	STR												
F1920	19	3850	19	STR												
F2220	22	4350	18	1	250	4100							180			
F2221	22	2070	19	1	250	1820							180			
F2522	25	3850	19	STR												
W1620	16	7840	23	STR												
W1621	16	5850	19	STR												
W1623	16	5425	44	STR												
W1628	16	7310	44	STR												
W1629	16	6335	14	STR												
W2220	22	5875	19	STR												
W2520	25	7875	23	STR												
EW1680	16	1840	64	43	800	160	280	600				125				
EW1682	16	1760 TO 1840	10	43	800	160	0 TO 280	800 TO				0 TO				VARY C BY 31.
								600				125				D BY 22. H BY 14
EW1683	16	1890	6	36	800	290	800								95	
EC1650	16	2540	64	37	240	920	200	940					130			
EC1651	16	2540 TO 2600	10	37	60	920	200	940					130 TO			
													190			
EC1683	16	1940 TO 3040	6	37	175	700 TO	190	700 TO					130			VARY B AND D
						1250		1250								BY 110
EC1982	19	2930	2	9	1300	930	700					550				
EC2202	22	11 885	4	2	875	11 010						300				
EC2502	25	11 835	4	STR												

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
			WINGWALL D													
F1301	13	1175	59	31	150	825	200						105			
F1620	16	1430	19	STR												
F1621	16	4900	19	STR												
F1622	16	3100	19	STR												
F1623	16	6325	28	STR												
F1624	16	5325	24	STR												
F1630	16	2825	12	STR												
F1631	16	3625	12	10	800	2825										
F1920	19	3850	23	STR												
F1921	19	3100	19	STR												
F2220	22	4350	18	1	250	4100							180			
F2221	22	2070	19	1	250	1820							180			
F2522	25	3850	23	STR												
F2523	25	5195	19	1	275	4920							205			
W1620	16	7840	4	STR												
W1621	16	5850	19	STR												
W1623	16	5425	44	STR												
W1624	16	6400	30	STR												
W1626	16	1835	44	STR												
W1627	16	835	14	STR												
W2220	22	5875	19	STR												
W2520	25	7875	4	STR												
EW1680	16	1840	64	43	800	160	280	600				125				
EW1682	16	1760 TO 1840	10	43	800	160	0 TO 280	800 TO				0 TO				VARY C BY 31.
								600				125				D BY 22. H BY 14
EW1683	16	1890	6	36	800	290	800								95	
EC1650	16	2540	64	37	240	920	200	940					130			
EC1651	16	2540 TO 2600	10	37	60	920	200	940					130 TO			
													190			
EC1683	16	1940 TO 3040	6	37	175	700 TO	190	700 TO					130			VARY B AND D
						1250		1250								BY 110
EC1982	19	2930	2	9	1300	930	700					550				
EC2202	22	11 885	4	2	875	11 010						300				
EC2502	25	11 835	4	STR												

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	57	146



NOTES:

1. "E" IN BAR MARK INDICATES EPOXY COATED BARS.
2. FIGURES IN CIRCLES SHOW TYPES
3. ALL DIMENSIONS ARE OUT-TO-OUT OF BAR.
4. REINFORCEMENT BAR SCHEDULE IS FOR INFORMATION ONLY. VERIFY SCHEDULE PRIOR TO BIDDING AND FABRICATION.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

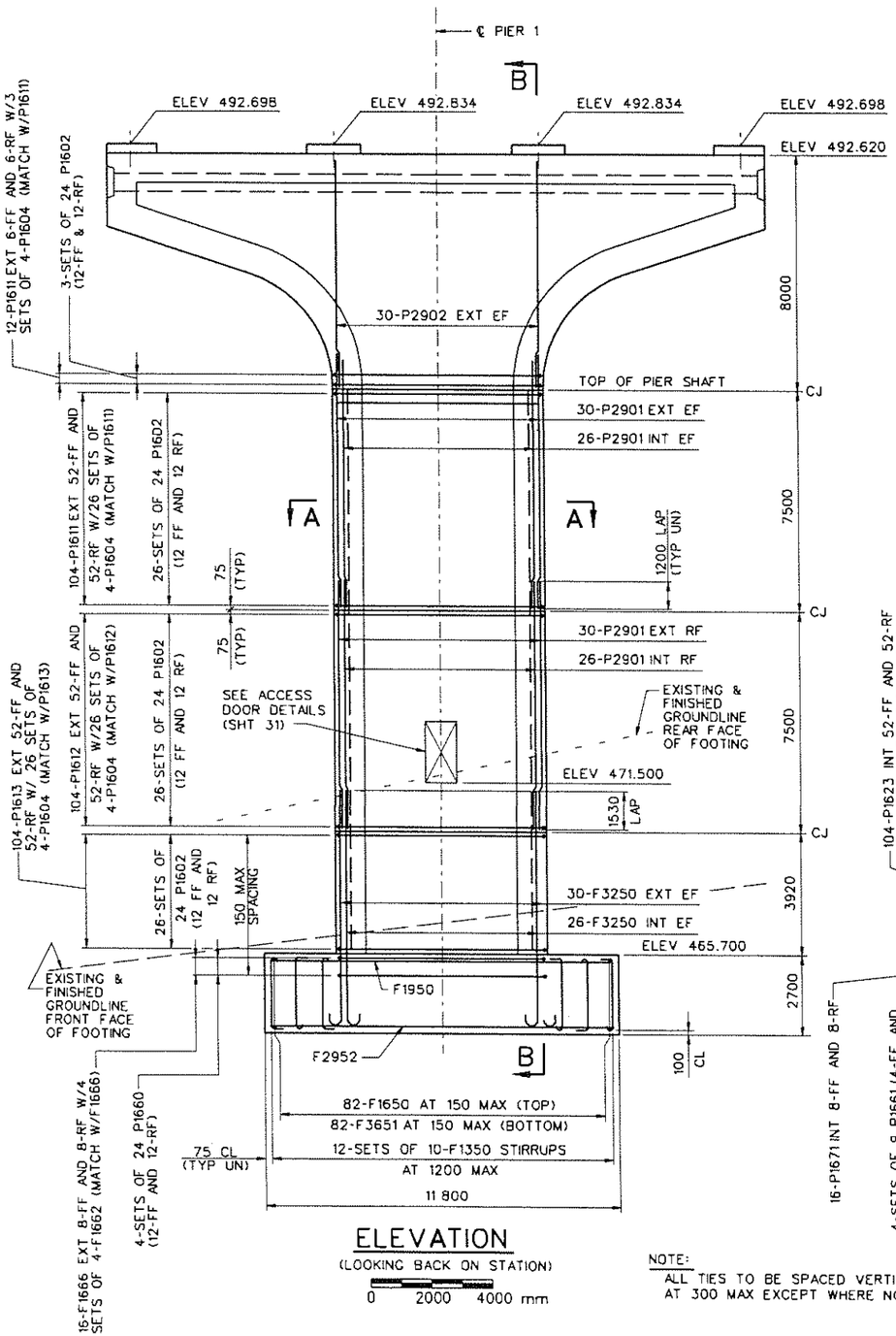
US 33 OVER
CLIFFORD HOLLOW

ABUTMENT 2
REINFORCEMENT BAR SCHEDULE

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SLK DATE 7/97	CKD MAB DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE NO SCALE	SHEET NO. 19

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0464(124) CTC	2001	HARDY	58	146



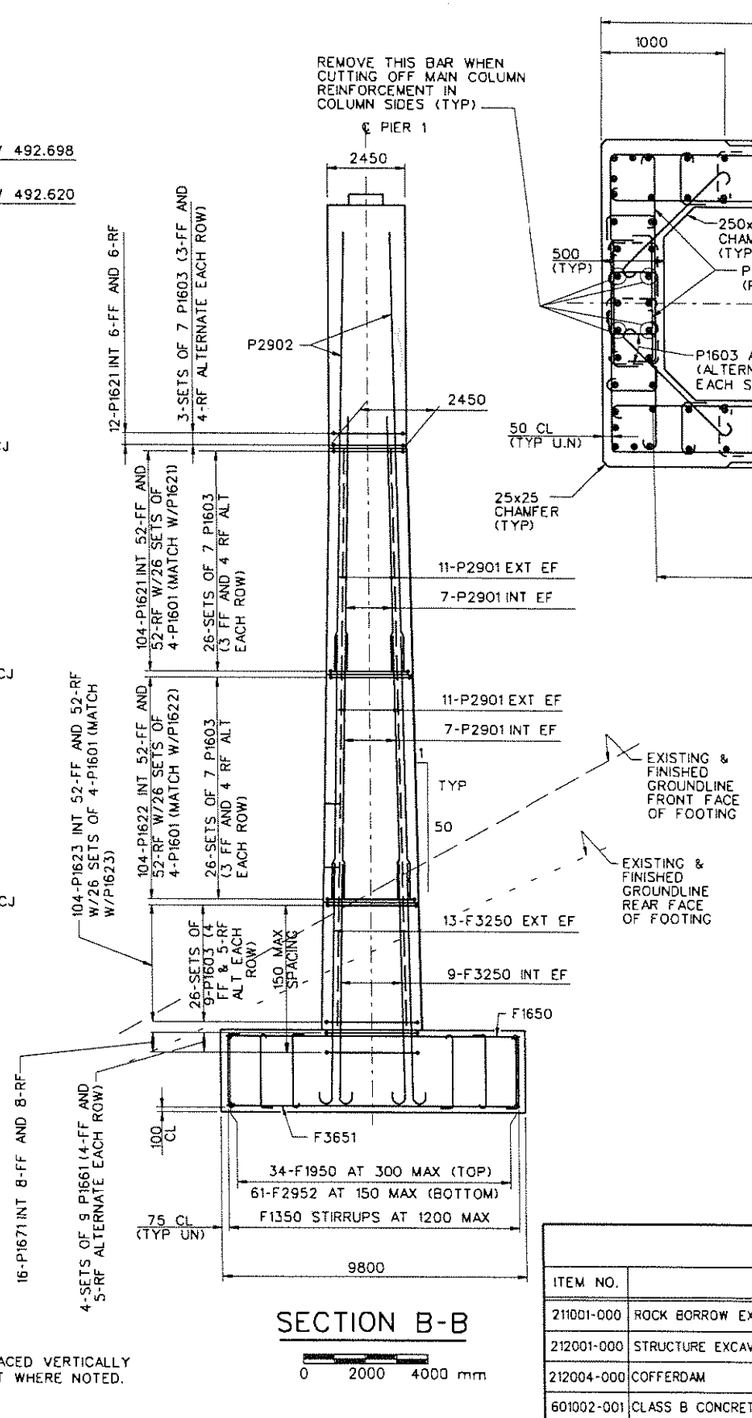
ELEVATION

(LOOKING BACK ON STATION)

0 2000 4000 mm

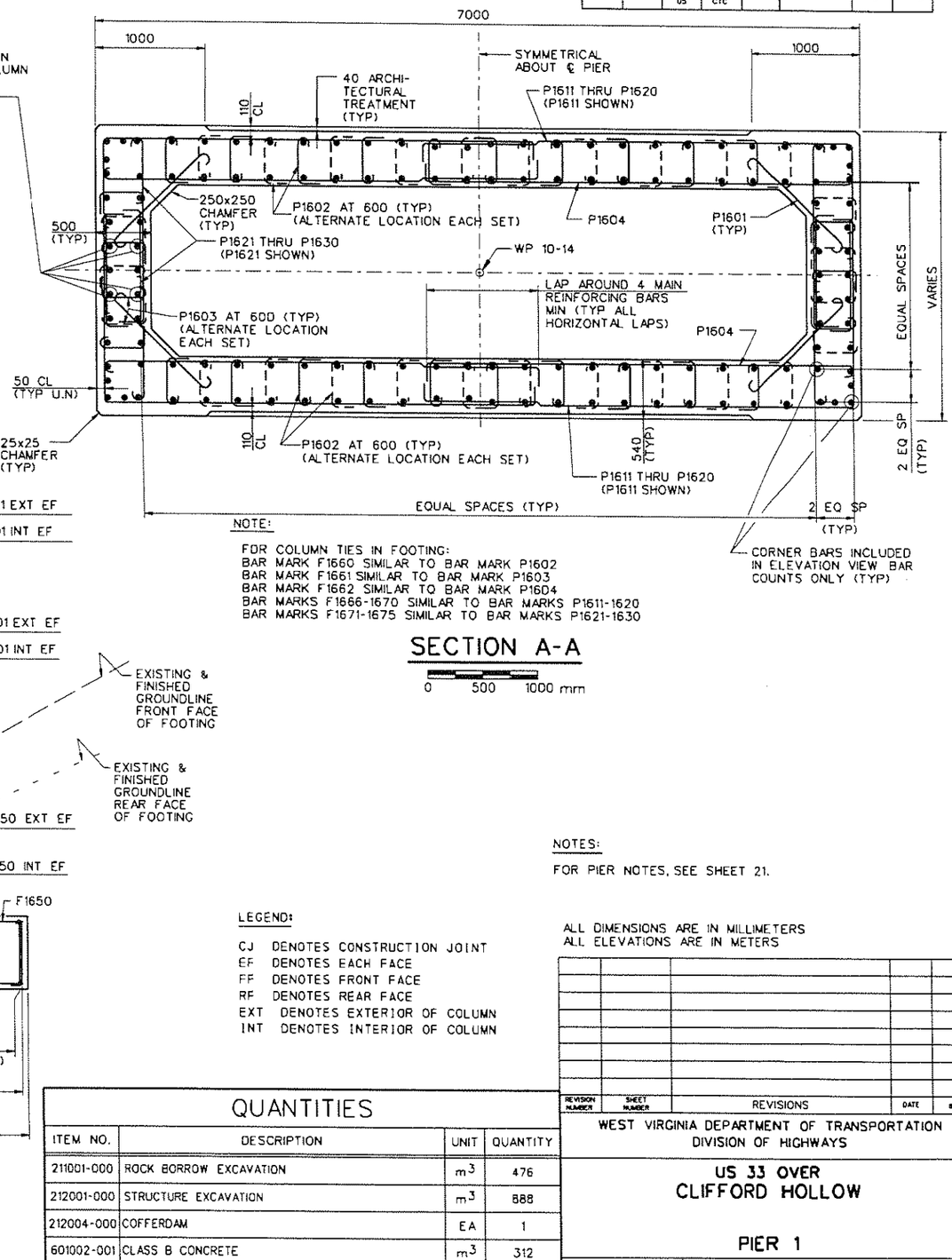
NOTE:
ALL TIES TO BE SPACED VERTICALLY AT 300 MAX EXCEPT WHERE NOTED.

MAX BRG PRESSURE= 918 kPa
ALLOW BRG PRESSURE= 960 kPa



SECTION B-B

0 2000 4000 mm



NOTE:

FOR COLUMN TIES IN FOOTING:
BAR MARK F1660 SIMILAR TO BAR MARK P1602
BAR MARK F1661 SIMILAR TO BAR MARK P1603
BAR MARK F1662 SIMILAR TO BAR MARK P1604
BAR MARKS F1666-1670 SIMILAR TO BAR MARKS P1611-1620
BAR MARKS F1671-1675 SIMILAR TO BAR MARKS P1621-1630

SECTION A-A

0 500 1000 mm

NOTES:

FOR PIER NOTES, SEE SHEET 21.

LEGEND:

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EXT DENOTES EXTERIOR OF COLUMN
INT DENOTES INTERIOR OF COLUMN

ALL DIMENSIONS ARE IN MILLIMETERS
ALL ELEVATIONS ARE IN METERS

QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
211001-000	ROCK BORROW EXCAVATION	m^3	476
212001-000	STRUCTURE EXCAVATION	m^3	888
212004-000	COFFERDAM	EA	1
601002-001	CLASS B CONCRETE	m^3	312
601025-001	MODIFIED CONCRETE, CLASS B, ARCHITECTURAL, 34 MPa	m^3	449
602001-001	REINFORCING STEEL BAR	m^3	60 430
603003-001	POST TENSIONING STRANDS	kg	2178

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

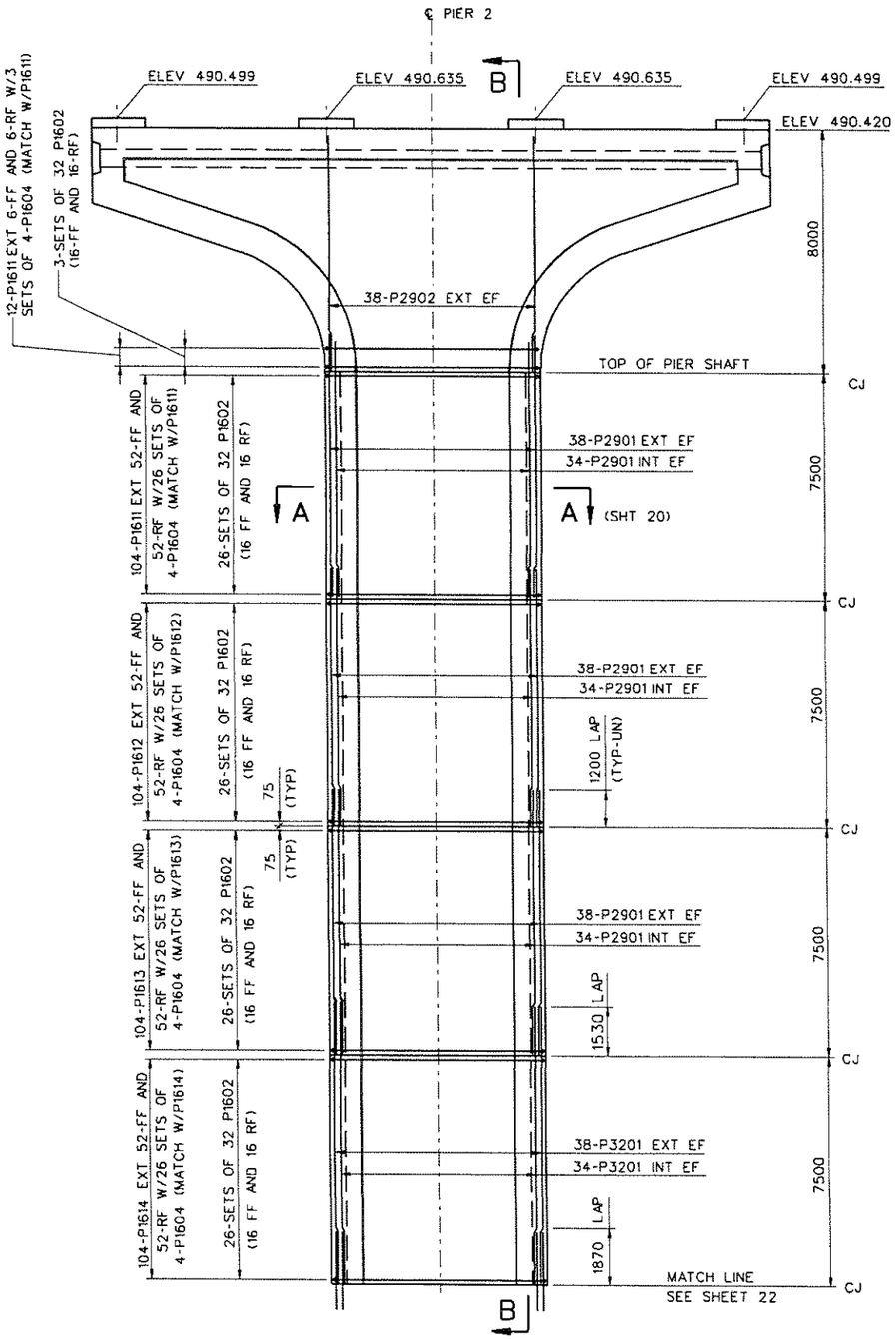
US 33 OVER
CLIFFORD HOLLOW

PIER 1

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-8000

MADE JJW DATE 8/97	CKD JAF DATE 7/97	BRIDGE NO. 4249	
TRCD DATE	SCALE AS NOTED	SHEET NO. 20	

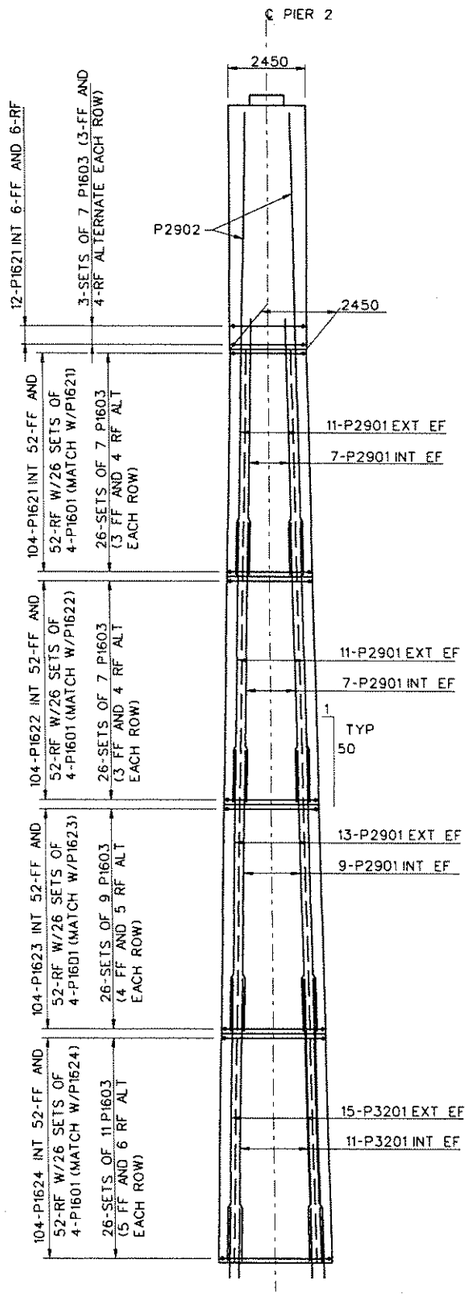
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(024) CTC	2001	HARDY	59	146



ELEVATION

0 2000 4000 mm

NOTE:
ALL TIES TO BE SPACED VERTICALLY AT 300 MAX EXCEPT WHERE NOTED.



SECTION B-B

0 2000 4000 mm

PIER NOTES:

FOR MISCELLANEOUS PIER DETAILS, SEE SHEETS 31 AND 32.

FOR PIER CAP DETAILS, SEE SHEETS 28 TO 30.

CUT OR OMIT PIER SHAFT REINFORCING BARS AS REQUIRED TO CLEAR ACCESS DOOR OPENING.

FOR REINFORCEMENT BAR SCHEDULES, SEE SHEETS 34, 35 AND 35A.

FOR ARCHITECTURAL TREATMENT DETAILS, SEE SHEETS 69 AND 70.

FOR GENERAL NOTES, SEE SHEETS 3 AND 4.

PROVIDE 100mm MINIMUM SPACING OF MAIN REINFORCEMENT IN SIDE FACES.

FOR FOOTING TIES, SEE SECTION A-A, SHEET 20.

FOR EXCAVATION PAY LIMITS, SEE SHEET 22.

FOOTING DIMENSIONS SHOWN ARE MINIMUMS. TOP OF FOOTING ELEVATIONS ARE TO BE MAINTAINED. BOTTOM OF FOOTINGS MUST BE KEYED 300mm MINIMUM INTO ROCK. REINFORCING IS TO BE PLACED AS SHOWN ON THE DESIGN DRAWINGS; DO NOT ADJUST REINFORCING LOCATIONS IF BOTTOM OF FOOTING LOCATIONS ARE ALTERED. CAST UPHILL FACES OF FOOTING AGAINST ROCK (ONLY FORM PORTION ABOVE ROCKLINE)

LEGEND:

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EXT DENOTES EXTERIOR OF COLUMN
INT DENOTES INTERIOR OF COLUMN

WORK THIS SHEET WITH SHEET 22.

ALL DIMENSIONS ARE IN MILLIMETERS
ALL ELEVATIONS ARE IN METERS

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

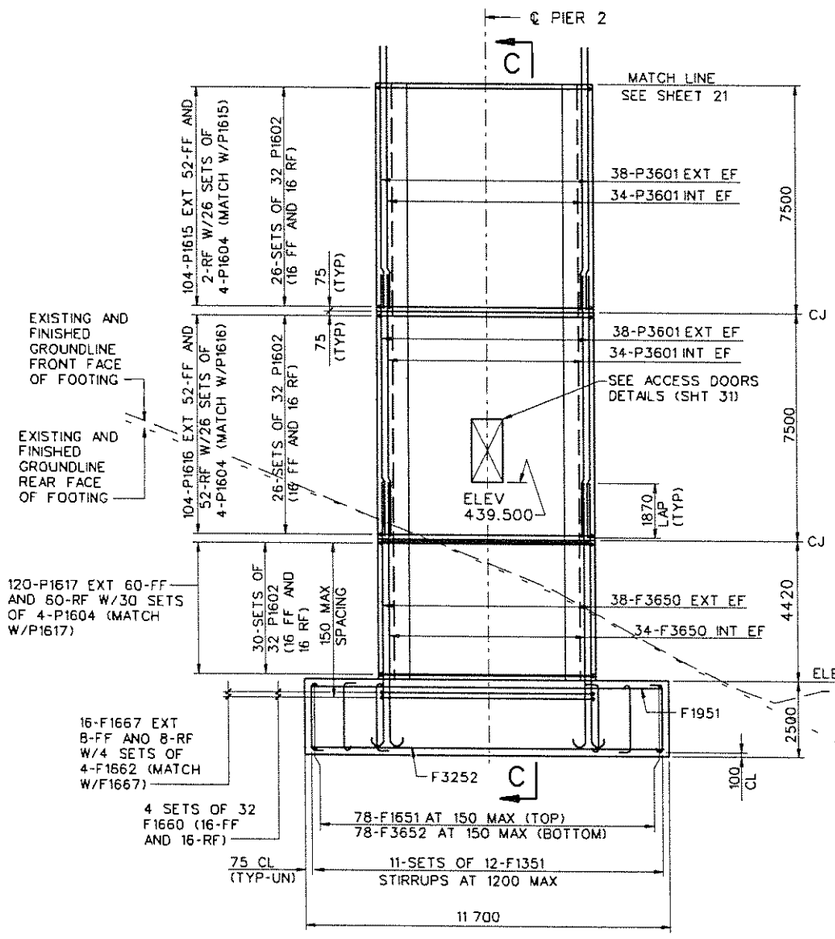
US 33 OVER
CLIFFORD HOLLOW

PIER 2

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

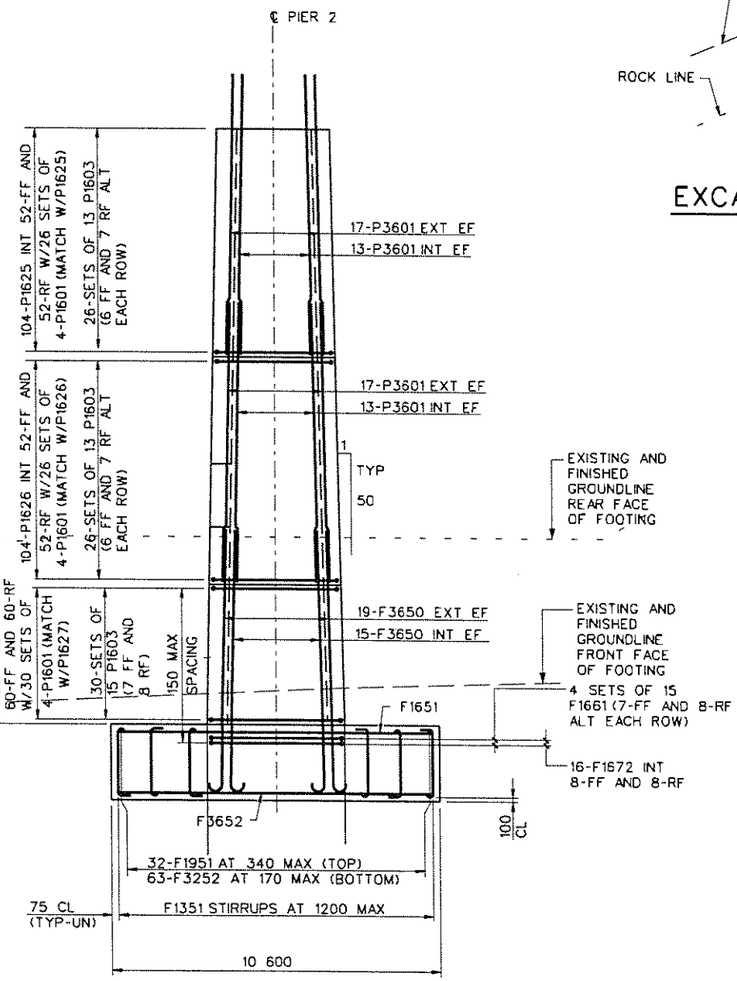
MADE JJW DATE 5/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS NOTED	SHEET NO. 21

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 09	APD-0484(124) C1C	2001	HARDY	60	146



ELEVATION
(LOOKING BACK ON STATION)

0 2000 4000 mm

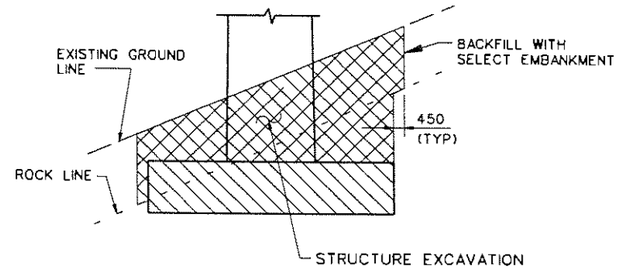


SECTION C-C

0 2000 4000 mm

NOTE:
ALL TIES TO BE SPACED VERTICALLY AT 300 MAX EXCEPT WHERE NOTED.

MAX BRG PRESSURE = 879 kPa
ALLOW BRG PRESSURE = 1150 kPa



EXCAVATION PAY LIMITS
NOT TO SCALE

NOTES:

WORK THIS SHEET WITH SHEET 21.

FOR PIER NOTES, SEE SHEET 21.

LEGEND:

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EXT DENOTES EXTERIOR OF COLUMN
INT DENOTES INTERIOR OF COLUMN

ALL DIMENSIONS ARE IN MILLIMETERS
ALL ELEVATIONS ARE IN METERS

QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
211002-000	ROCK BORROW EXCAVATION	m^3	694
212001-000	STRUCTURE EXCAVATION	m^3	830
212004-000	COFFERDAM	EA	1
601002-001	CLASS B CONCRETE	m^3	310
601025-001	MODIFIED CONCRETE, CLASS B, ARCHITECTURAL, 34 MPa	m^3	731
602001-001	REINFORCING STEEL BAR	kg	139 406
603003-001	POST TENSIONING STRANDS	kg	2178

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

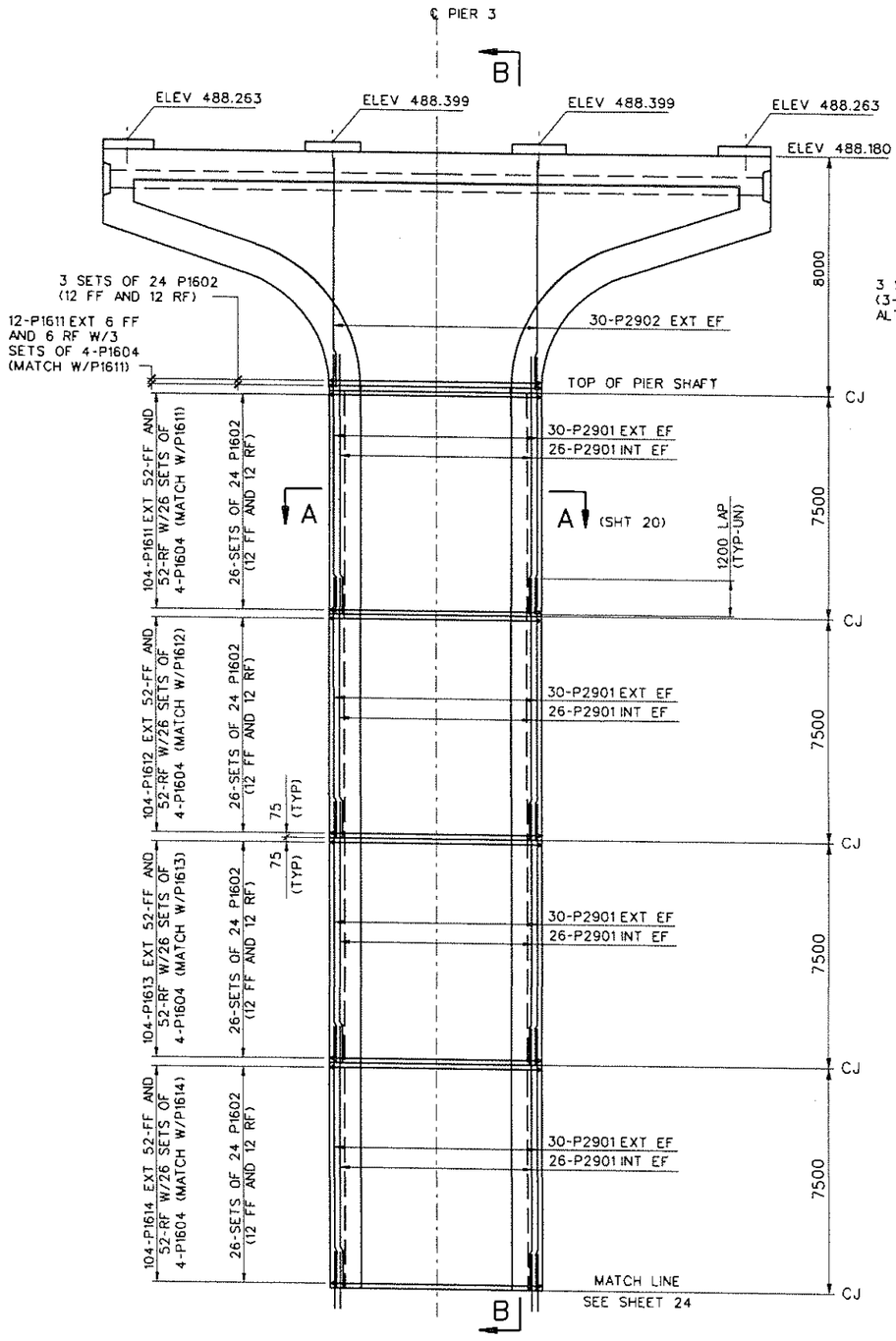
US 33 OVER CLIFFORD HOLLOW

PIER 2

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

MADE JJW DATE 5/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS NOTED	SHEET NO. 22

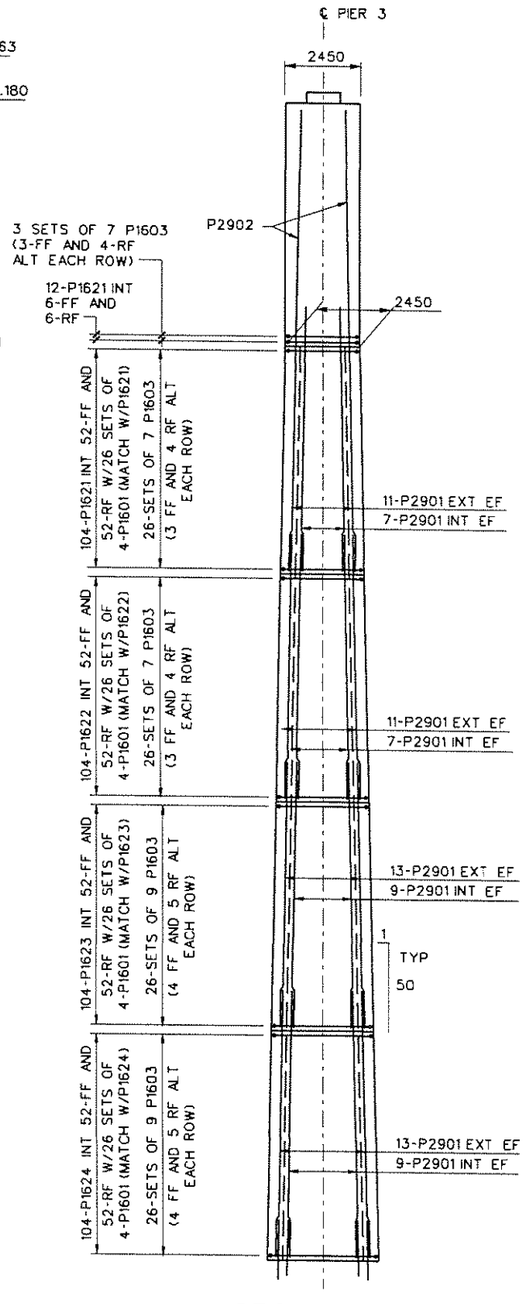
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	61	146



ELEVATION

0 2000 4000 mm

NOTE:
ALL TIES TO BE SPACED VERTICALLY AT 300 MAX EXCEPT WHERE NOTED.



SECTION B-B

0 2000 4000 mm

NOTES:

FOR PIER NOTES, SEE SHEET 21.

WORK THIS SHEET WITH SHEET 24.

LEGEND:

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EXT DENOTES EXTERIOR OF COLUMN
INT DENOTES INTERIOR OF COLUMN

ALL DIMENSIONS ARE IN MILLIMETERS
ALL ELEVATIONS ARE IN METERS

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

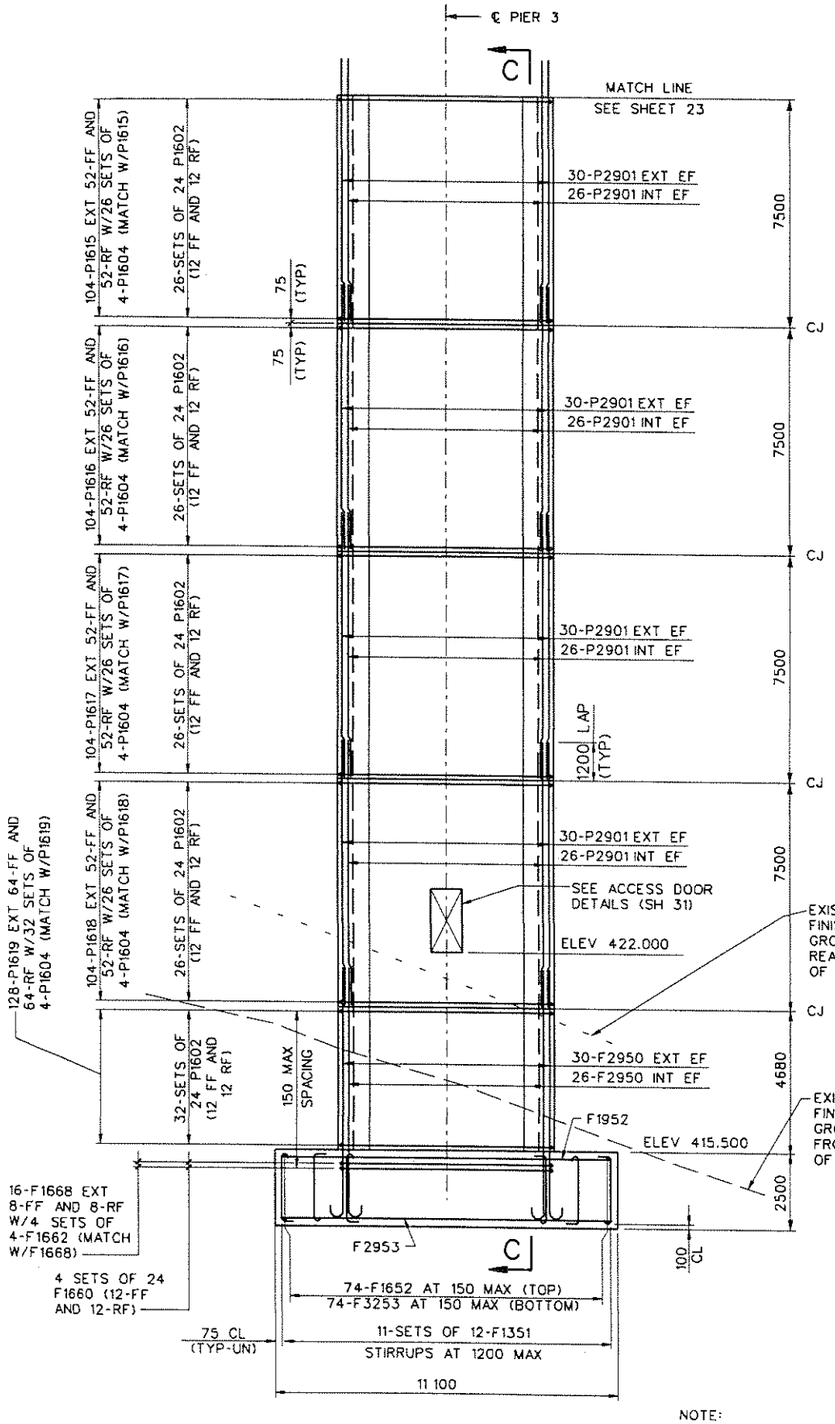
US 33 OVER CLIFFORD HOLLOW

PIER 3

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE JJW DATE 6/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS NOTED	SHEET NO. 23

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X310-H-101.92 05	APD-0484(124) CTC	2001	HARDY	62	146



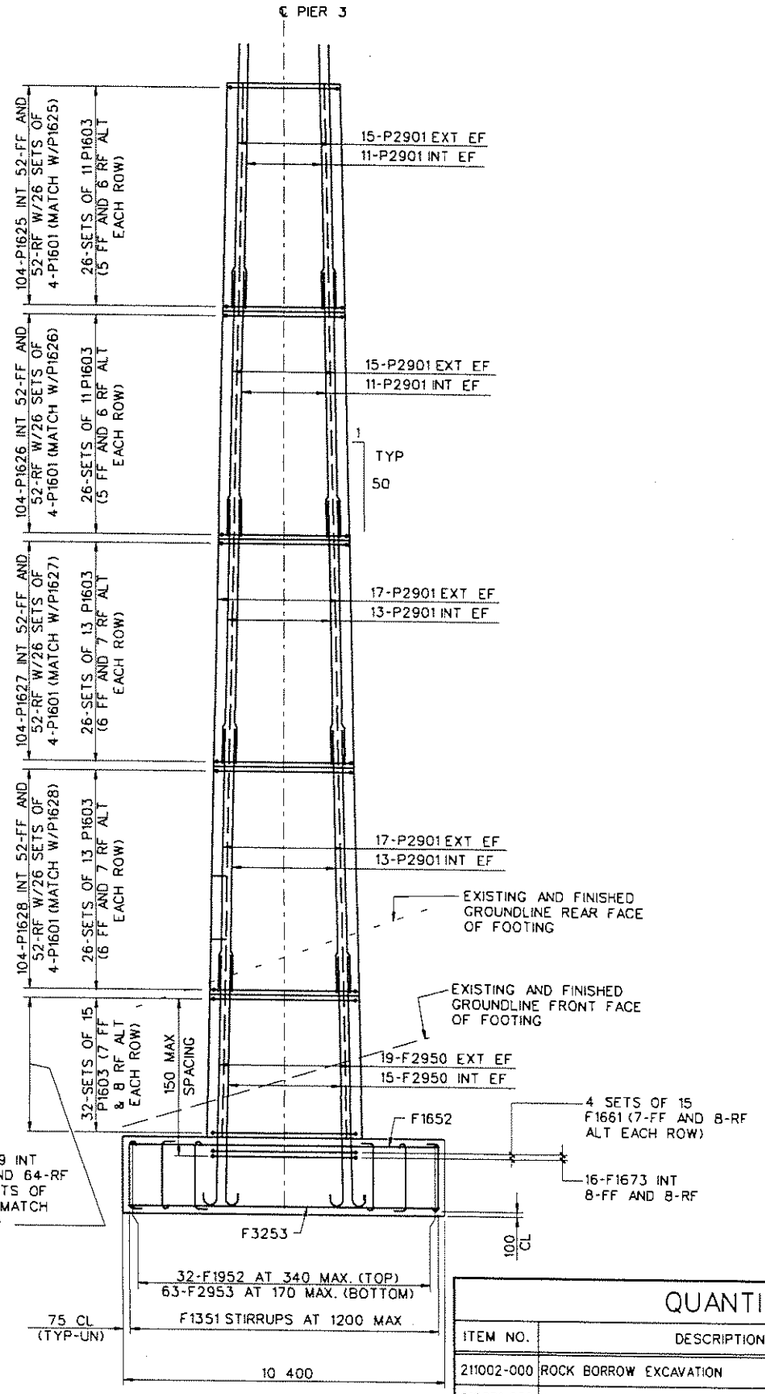
ELEVATION

(LOOKING BACK ON STATION)

0 2000 4000 mm

NOTE:
ALL TIES TO BE SPACED VERTICALLY AT 300 MAX EXCEPT WHERE NOTED.

MAX BRG PRESSURE= 889 kPa
ALLOWABLE BRG PRESSURE= 960 kPa



SECTION C-C

0 2000 4000 mm

NOTES:

FOR PIER NOTES, SEE SHEET 21.

WORK THIS SHEET WITH SHEET 23.

LEGEND:

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EXT DENOTES EXTERIOR OF COLUMN
INT DENOTES INTERIOR OF COLUMN

ALL DIMENSIONS ARE IN MILLIMETERS
ALL ELEVATIONS ARE IN METERS

QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
211002-000	ROCK BORROW EXCAVATION	m^3	375
212001-000	STRUCTURE EXCAVATION	m^3	793
212004-000	COFFERDAM	EA	1
601002-001	CLASS B CONCRETE	m^3	289
601025-001	MODIFIED CONCRETE, CLASS B, ARCHITECTURAL, 34 MPa	m^3	879
602001-001	REINFORCING STEEL BAR	kg	125 148
603003-001	POST TENSIONING STRANDS	kg	2178

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

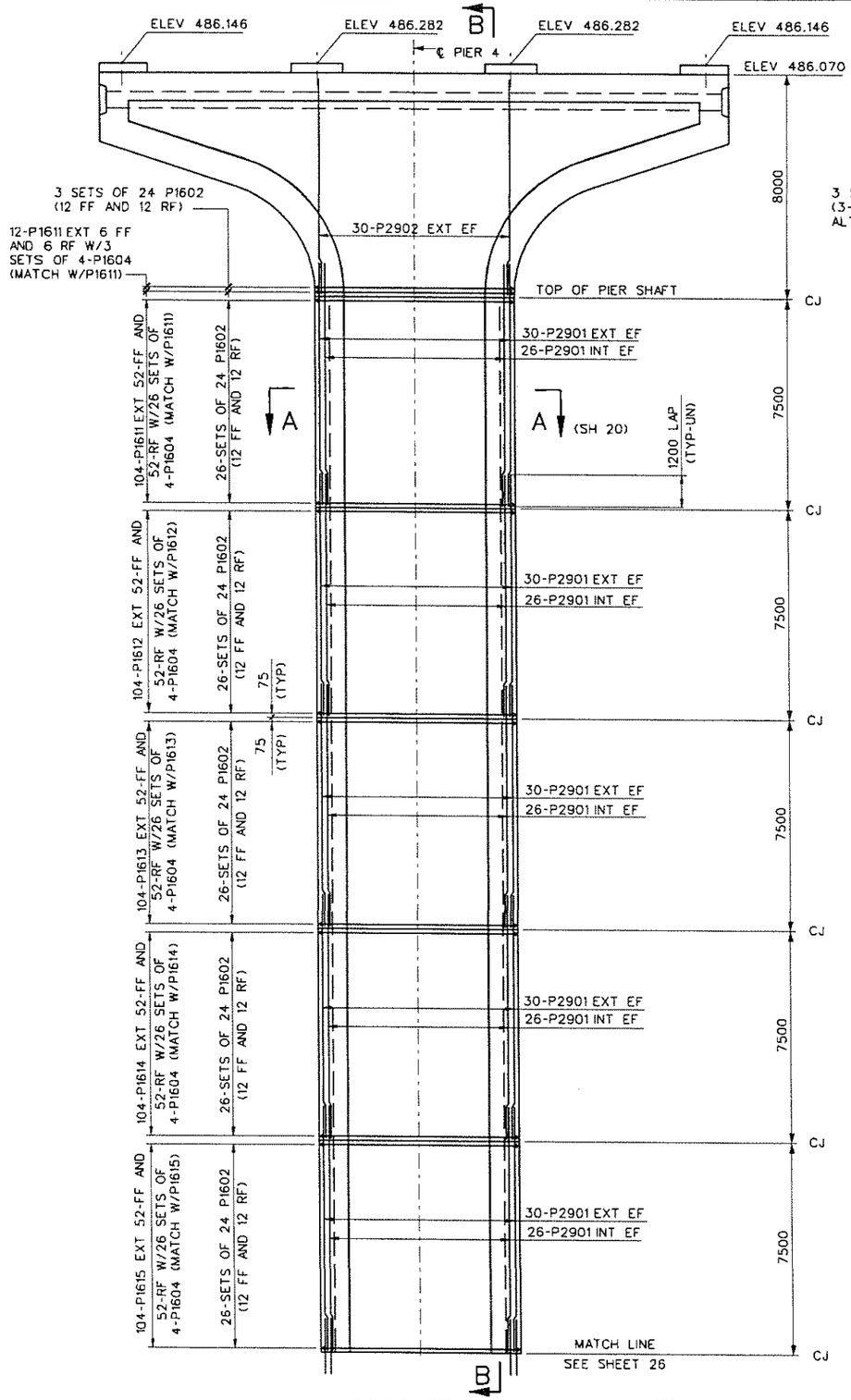
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER CLIFFORD HOLLOW

PIER 3

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

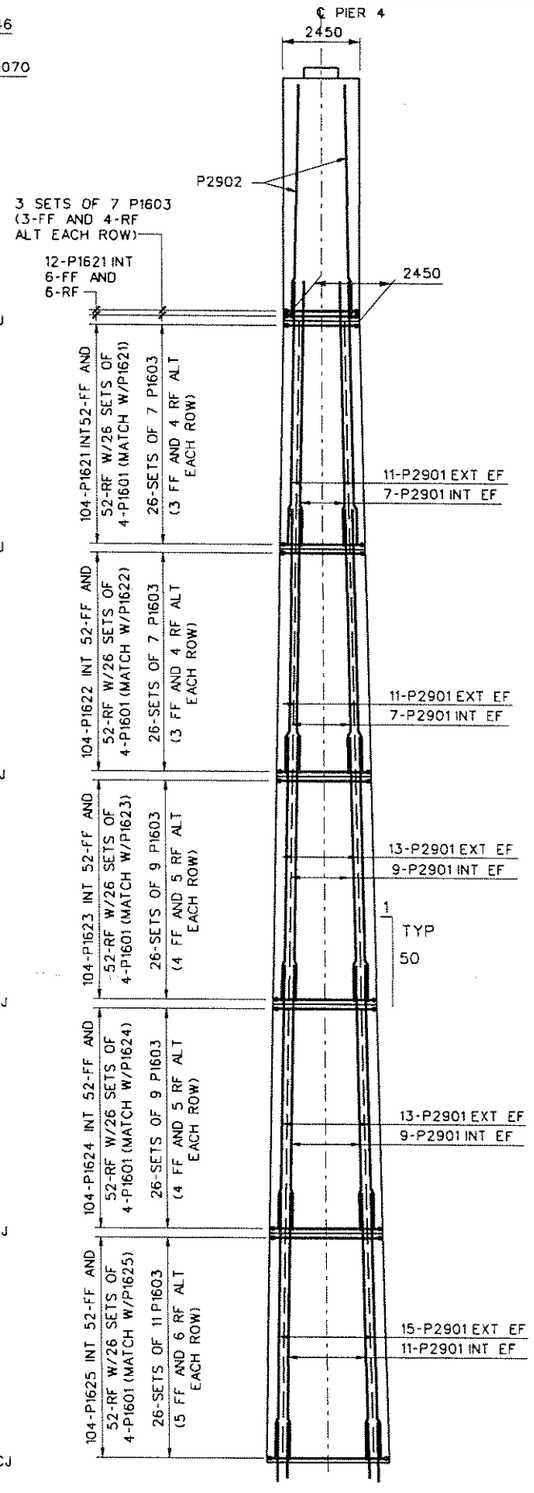
MADE JJW DATE 6/97 | CKD JAF DATE 7/97 | BRIDGE NO. 4249
TRCD ____ DATE ____ | SCALE AS NOTED | SHEET NO. 24



ELEVATION

0 2000 4000 mm

NOTE:
ALL TIES TO BE SPACED VERTICALLY
AT 300 MAX EXCEPT WHERE NOTED.



SECTION B-B

0 2000 4000 mm

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X315-H-101.92 05	APD-0484(124) GTC	2001	HARDY	63	146

NOTES:

FOR PIER NOTES, SEE SHEET 21.

WORK THIS SHEET WITH SHEET 26.

LEGEND:

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EXT DENOTES EXTERIOR OF COLUMN
INT DENOTES INTERIOR OF COLUMN

ALL DIMENSIONS ARE IN MILLIMETERS
ALL ELEVATIONS ARE IN METERS

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

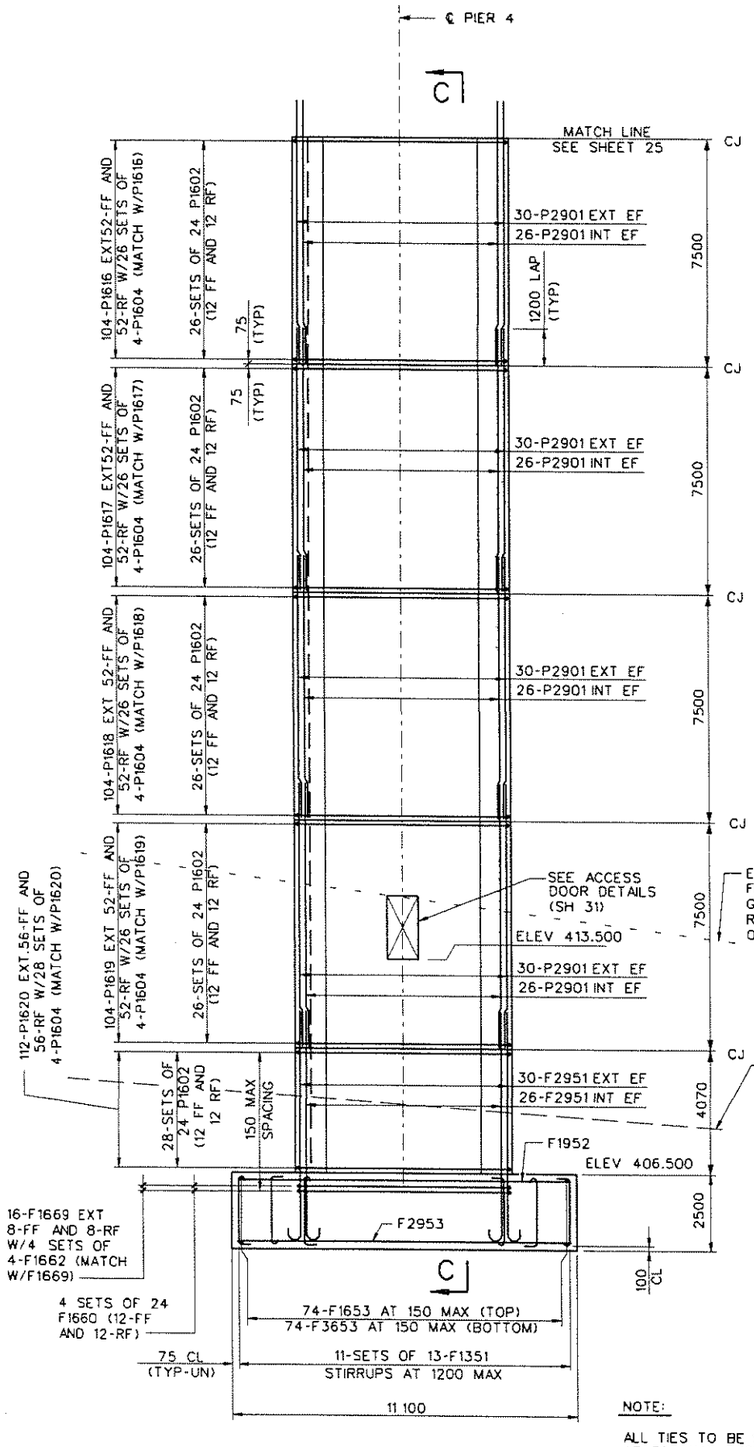
US 33 OVER CLIFFORD HOLLOW

PIER 4

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA (412) 497-6000

MADE JJW DATE 6/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD DATE	SCALE AS NOTED	SHEET NO. 25

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X-316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	64	146



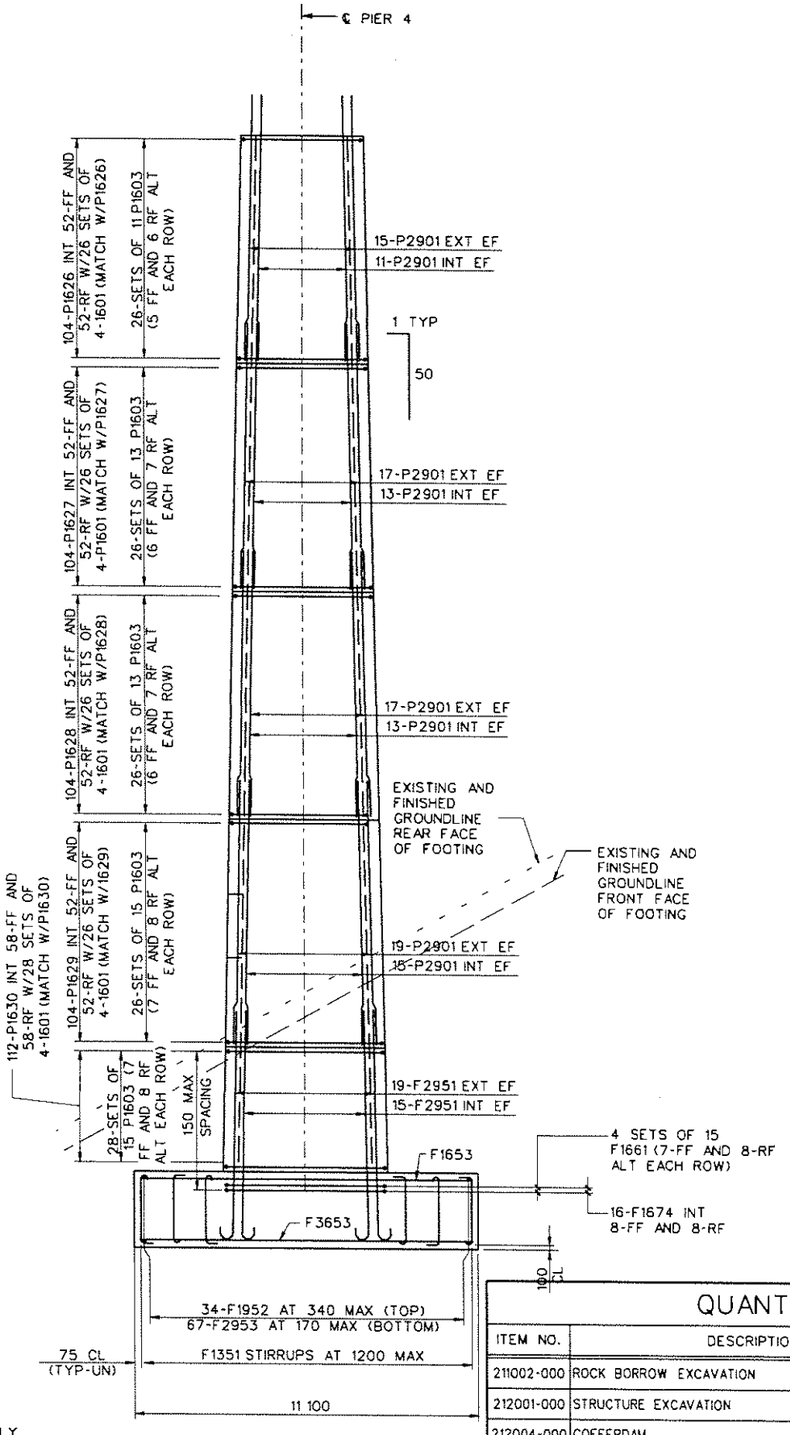
ELEVATION

0 2000 4000mm

NOTE:

ALL TIES TO BE SPACED VERTICALLY AT 300 MAX EXCEPT WHERE NOTED.

MAX BRG PRESSURE= 849 kPa
ALLOWABLE BRG PRESSURE= 960 kPa



SECTION C-C

0 2000 4000 mm

NOTES:

FOR PIER NOTES, SEE SHEET 21.

WORK THIS SHEET WITH SHEET 25.

LEGEND:

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EXT DENOTES EXTERIOR OF COLUMN
INT DENOTES INTERIOR OF COLUMN

ALL DIMENSIONS ARE IN MILLIMETERS
ALL ELEVATIONS ARE IN METERS

QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
211002-000	ROCK BORROW EXCAVATION	m^3	535
212001-000	STRUCTURE EXCAVATION	m^3	1039
212004-000	COFFERDAM	EA	1
601002-001	CLASS B CONCRETE	m^3	308
601025-001	MODIFIED CONCRETE, CLASS B, ARCHITECTURAL, 34 MPa	m^3	948
602001-001	REINFORCING STEEL BAR	kg	135 094
603003-001	POST TENSIONING STRANDS	kg	2178

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

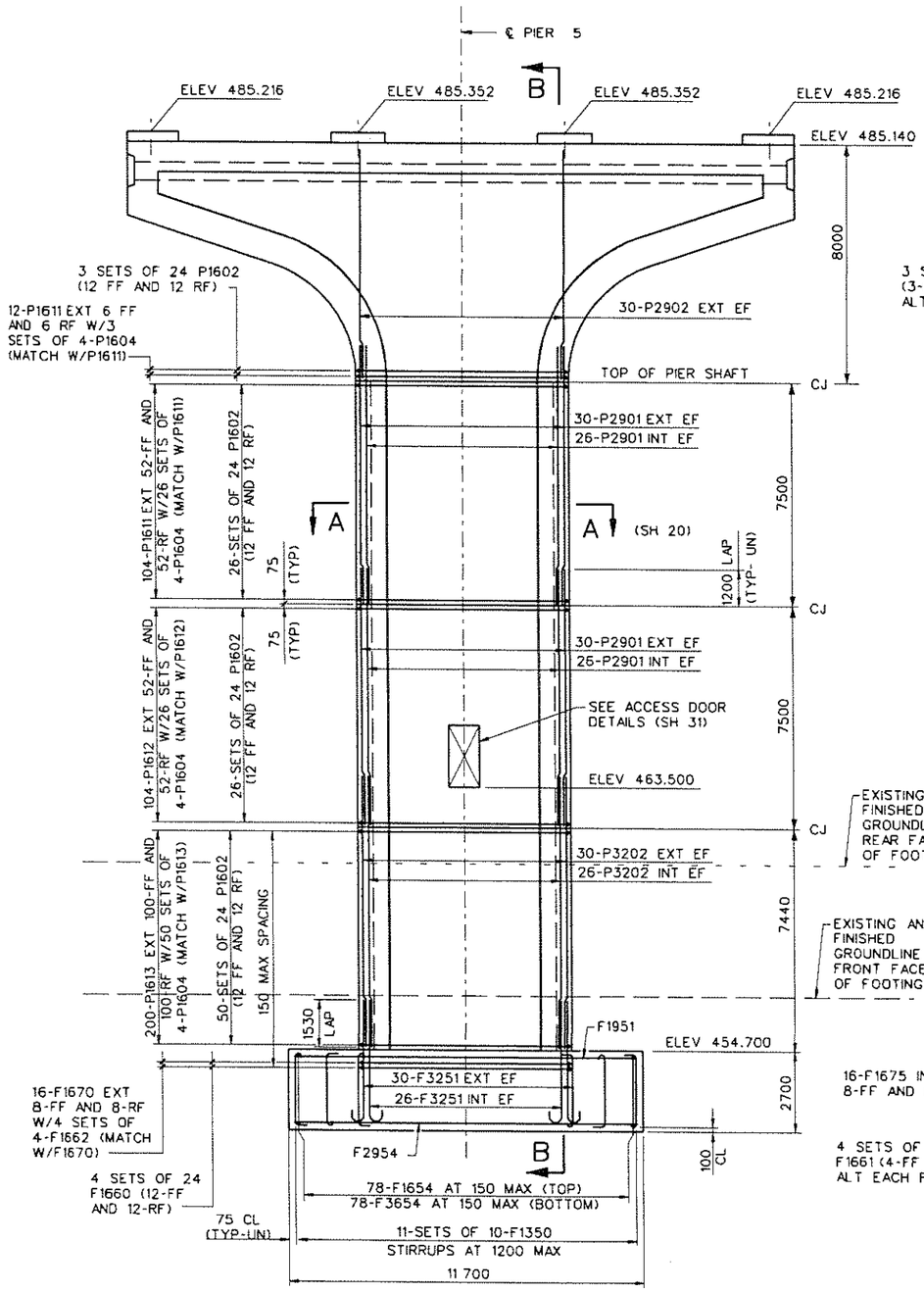
US 33 OVER CLIFFORD HOLLOW

PIER 4

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

MADE JJW DATE 6/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS NOTED	SHEET NO. 26

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X315-H-101.92 05	APD-0484(124) CTC	2001	HARDY	65	145

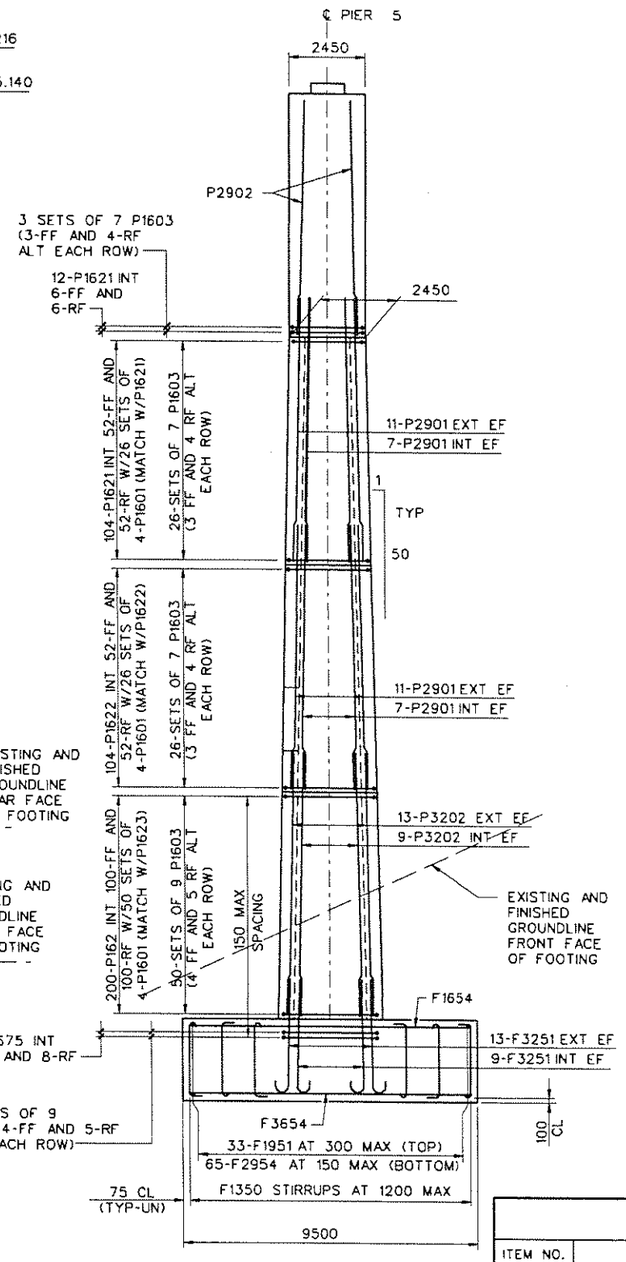


ELEVATION

0 2000 4000 mm

NOTE:
ALL TIES TO BE SPACED VERTICALLY AT 300 MAX EXCEPT WHERE NOTED.

MAX BRG PRESSURE= 960 kPa
ALLOWABLE BRG PRESSURE= 960 kPa



SECTION B-B

0 2000 4000 mm

NOTES:

FOR PIER NOTES, SEE SHEET 21.

LEGEND:

CJ DENOTES CONSTRUCTION JOINT
EF DENOTES EACH FACE
FF DENOTES FRONT FACE
RF DENOTES REAR FACE
EXT DENOTES EXTERIOR OF COLUMN
INT DENOTES INTERIOR OF COLUMN

ALL DIMENSIONS ARE IN MILLIMETERS
ALL ELEVATIONS ARE IN METERS

QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
211002-000	ROCK BORROW EXCAVATION	m^3	315
212001-000	STRUCTURE EXCAVATION	m^3	704
212004-000	COFFERDAM	EA	1
601002-001	CLASS B CONCRETE	m^3	300
601025-001	MODIFIED CONCRETE, CLASS B, ARCHITECTURAL, 34 MPa	m^3	480
602001-001	REINFORCING STEEL BAR	kg	68 117
603003-001	POST TENSIONING STRANDS	kg	2178

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

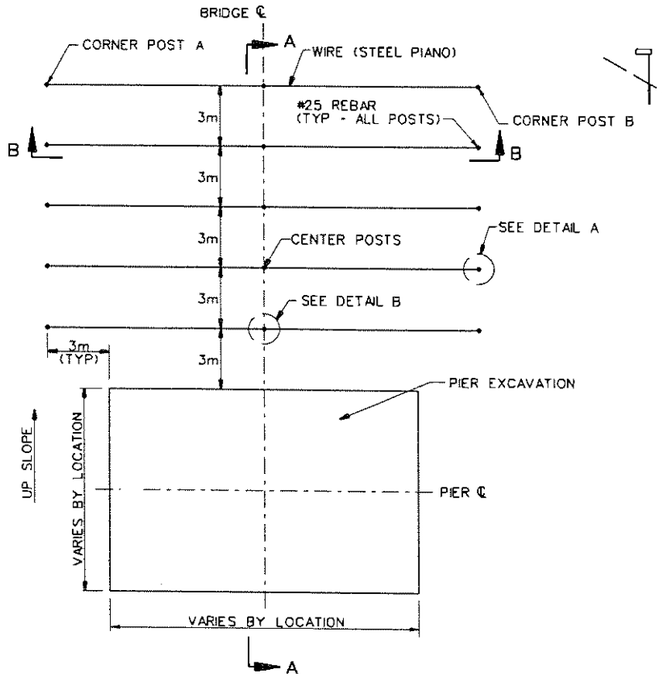
US 33 OVER
CLIFFORD HOLLOW

PIER 5

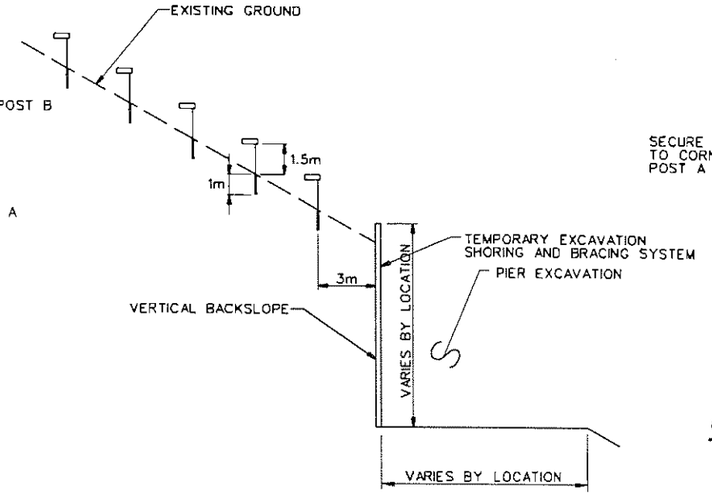
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE JJW DATE 6/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS NOTED	SHEET NO. 27

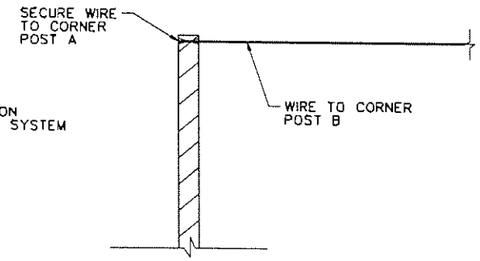
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X318-14-10.92 05	APD-0484(124) CTC	2001	HARDY	66	146



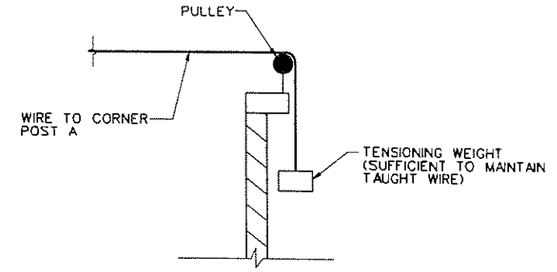
PLAN



SECTION A

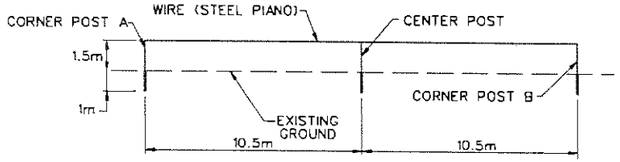


CORNER POST A

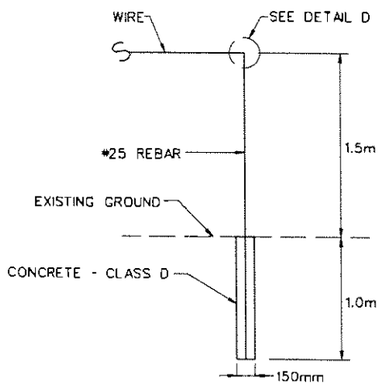


CORNER POST B

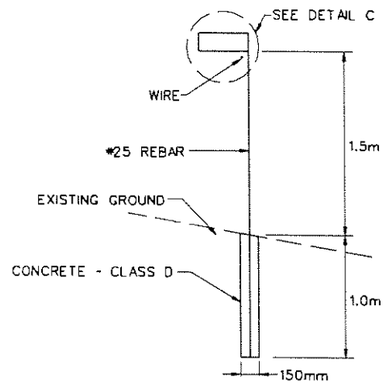
DETAIL D



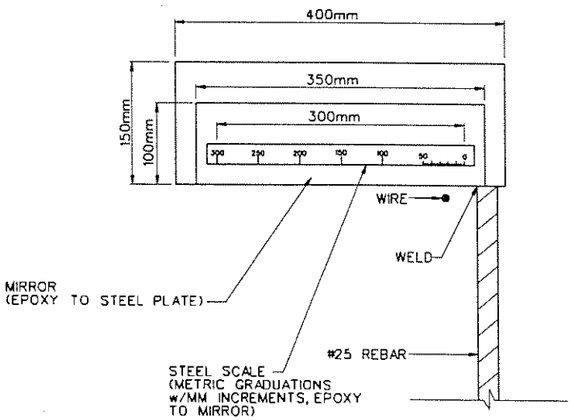
SECTION B



DETAIL A
CORNER POSTS



DETAIL A
CORNER POSTS



DETAIL C

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

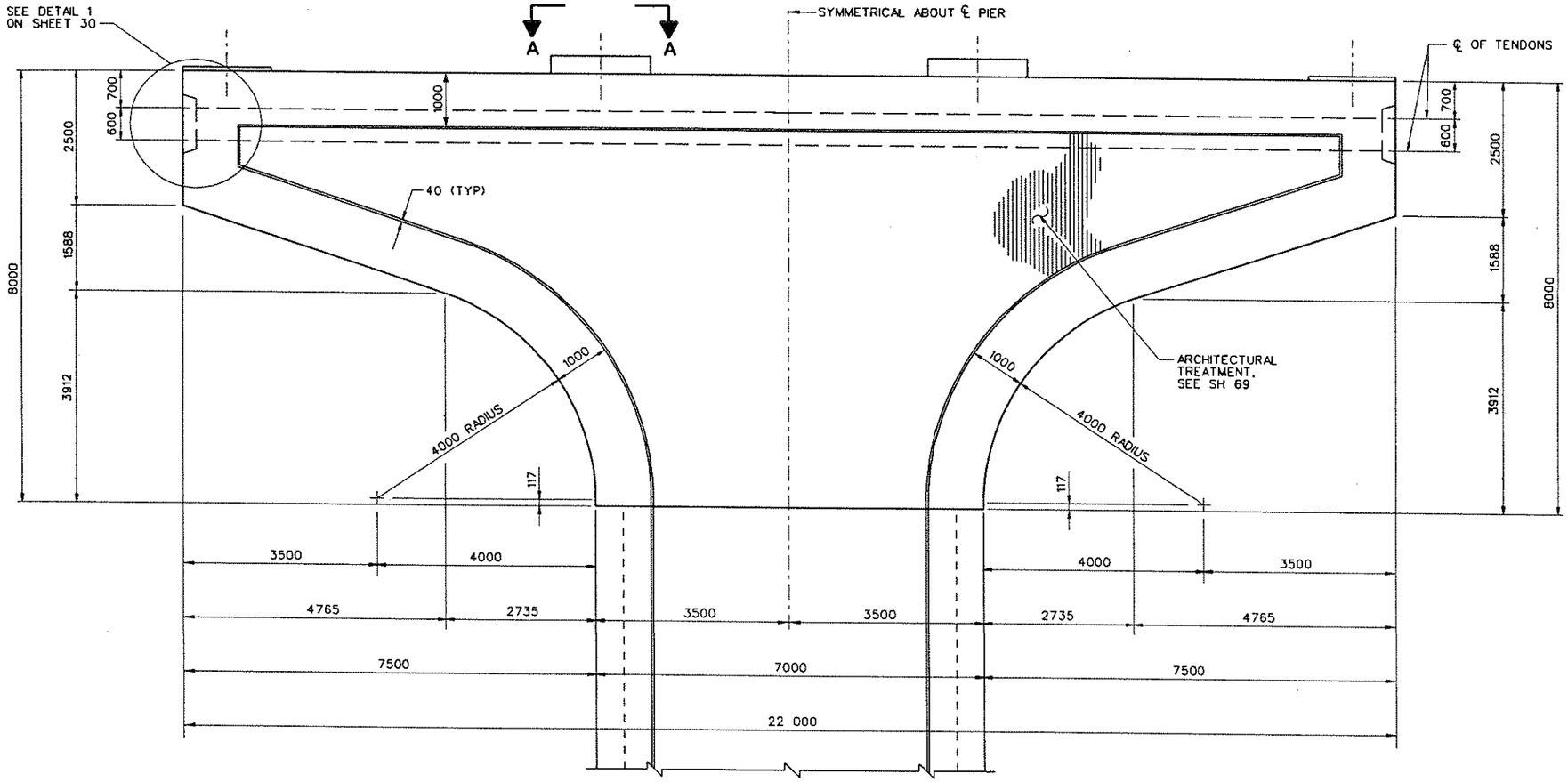
US 33 OVER CLIFFORD HOLLOW

TEMPORARY EXCAVATION MONITORING SYSTEM

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

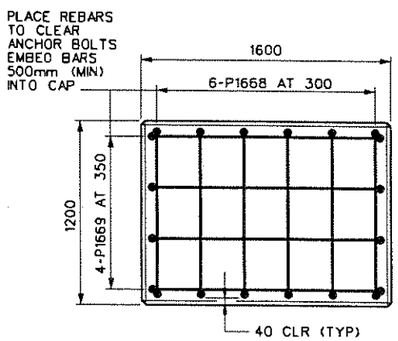
MADE SM DATE 7/97	CKD KJW DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE 1:50	SHEET NO. 27A

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X315-H-101.92 05	APD-0484(124) CTC	2001	HARDY	67	146



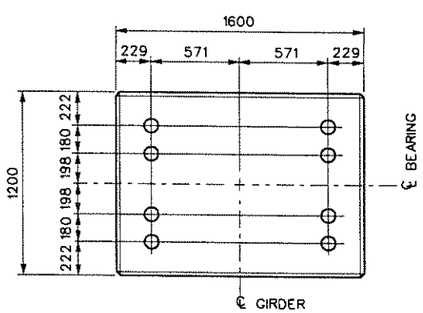
TYPICAL PIER CAP ELEVATION

0 1 000 2 000 mm



PEDESTAL REINFORCEMENT DETAIL

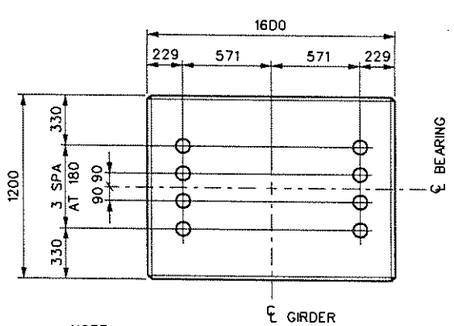
0 400 800 mm



NOTE:
PROVIDE 100mm DIA PREFORMED HOLES WITH 400mm MIN EMBEDMENT FOR SETTING ANCHOR BOLTS.

VIEW A-A
PIERS 2, 3 AND 4 ANCHOR BOLT LAYOUT DETAIL

0 400 800 mm



NOTE:
PROVIDE 100mm DIA PREFORMED HOLES WITH 450mm MIN EMBEDMENT FOR SETTING ANCHOR BOLTS.

VIEW A-A
PIERS 1 AND 5 ANCHOR BOLT LAYOUT DETAIL

0 400 800 mm

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 20 THRU 27 AND 29 THRU 30.
3. EACH TENDON SHALL CONSIST OF 15-15.24 mm DIAMETER SEVEN WIRE LOW RELAXATION STRANDS GRADE 1860 CONFORMING TO AASHTO M203M.
4. INITIAL JACKING FORCE SHALL BE 2978 kN PER TENDON WITH ASSUMED ANCHOR SET OF 13 mm. JACK TENDONS FROM ONE END ONLY.
5. FOR PDST-TENSIONING STRAND DESIGN, THE WOBBLE COEFFICIENT K IS ASSUMED TO BE 0.00492 PER m AND THE FRICTION COEFFICIENT IS ASSUMED TO BE 0.25.
6. ALL PDST-TENSIONING DUCTS SHALL BE GALVANIZED FERROUS METAL. USE DUCTS WITH MINIMUM INSIDE DIA OF 85 mm.
7. MINIMUM CONCRETE STRENGTH AT TRANSFER OF TENDONS SHALL BE 25.5 MPa.
8. POST-TENSIONING SHOULD BE PERFORMED A MINIMUM OF 10 DAYS AFTER COMPLETING CASTING OF THE PIER CAP.
9. CONSTRUCTION SEQUENCE SHALL BE AS FOLLOWS:
   - A.) CAST THE PIER CAP
   - B.) THE STEEL GIRDERS CAN BE ERECTED (WITHOUT THE DECK) BEFORE POST-TENSIONING THE PIER CAPS. (OPTIONAL)
   - C.) INSTALL TENDONS T2 & T5 AND STRESS TO THE REQUIRED JACKING FORCE. ANCHOR AND GROUT IN ACCORDANCE TO THE SPECIAL PROVISIONS.
   - D.) INSTALL TENDONS T1 & T3 AND STRESS TO THE REQUIRED JACKING FORCE. ANCHOR AND GROUT IN ACCORDANCE TO THE SPECIAL PROVISIONS.
   - E.) INSTALL TENDONS T4 & T6 AND STRESS TO THE REQUIRED JACKING FORCE. ANCHOR AND GROUT IN ACCORDANCE TO THE SPECIAL PROVISIONS.
   - F.) FILL THE BLOCKOUTS WITH NON-SHRINK GROUT AFTER STRESSING AND GROUTING OF THE TENDONS IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
   - G.) CONTINUE THE SUPERSTRUCTURE CONSTRUCTION.
10. ANY FALSEWORK REQUIRED FOR FORMING THE PIER CAPS AND THE BUILDING OF WORK PLATFORMS FOR POST-TENSIONING SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER (P.E.) REGISTERED IN WEST VIRGINIA. ALSO, THE P.E. SHALL CERTIFY THAT EACH INSTALLATION IS ERECTED IN ACCORDANCE WITH THE SUBMITTED PLANS.
11. FOR CONVENTIONAL REINFORCEMENT IN PIER CAPS, SEE SHEET 29.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

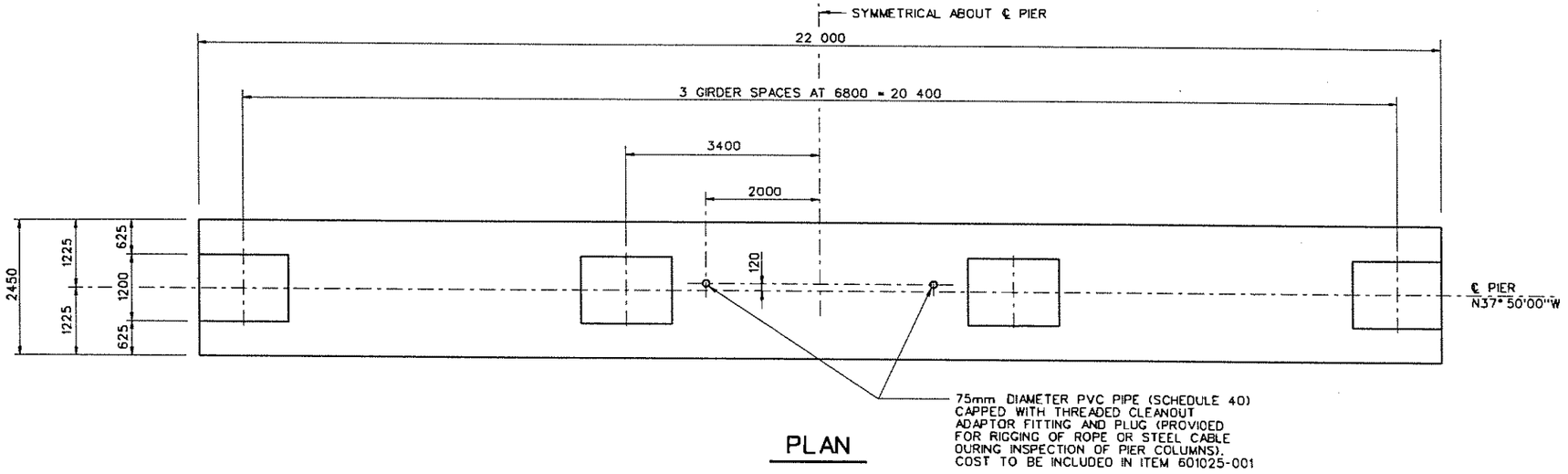
US 33 OVER
CLIFFORD HOLLOW

PIER CAP GEOMETRY

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

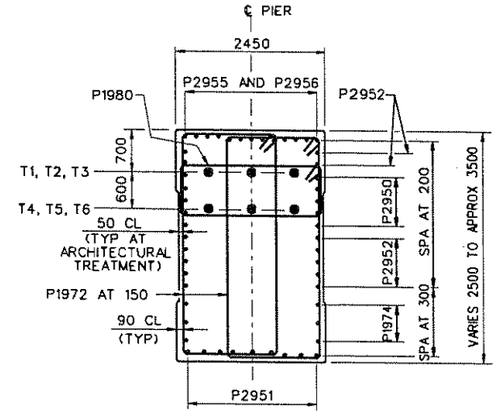
MADE SN DATE 5/97	CKD SSH DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS SHOWN	SHEET NO. 28

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X315-H-101.92 05	APD-0484(124) CTC	2001	HARDY	68	146



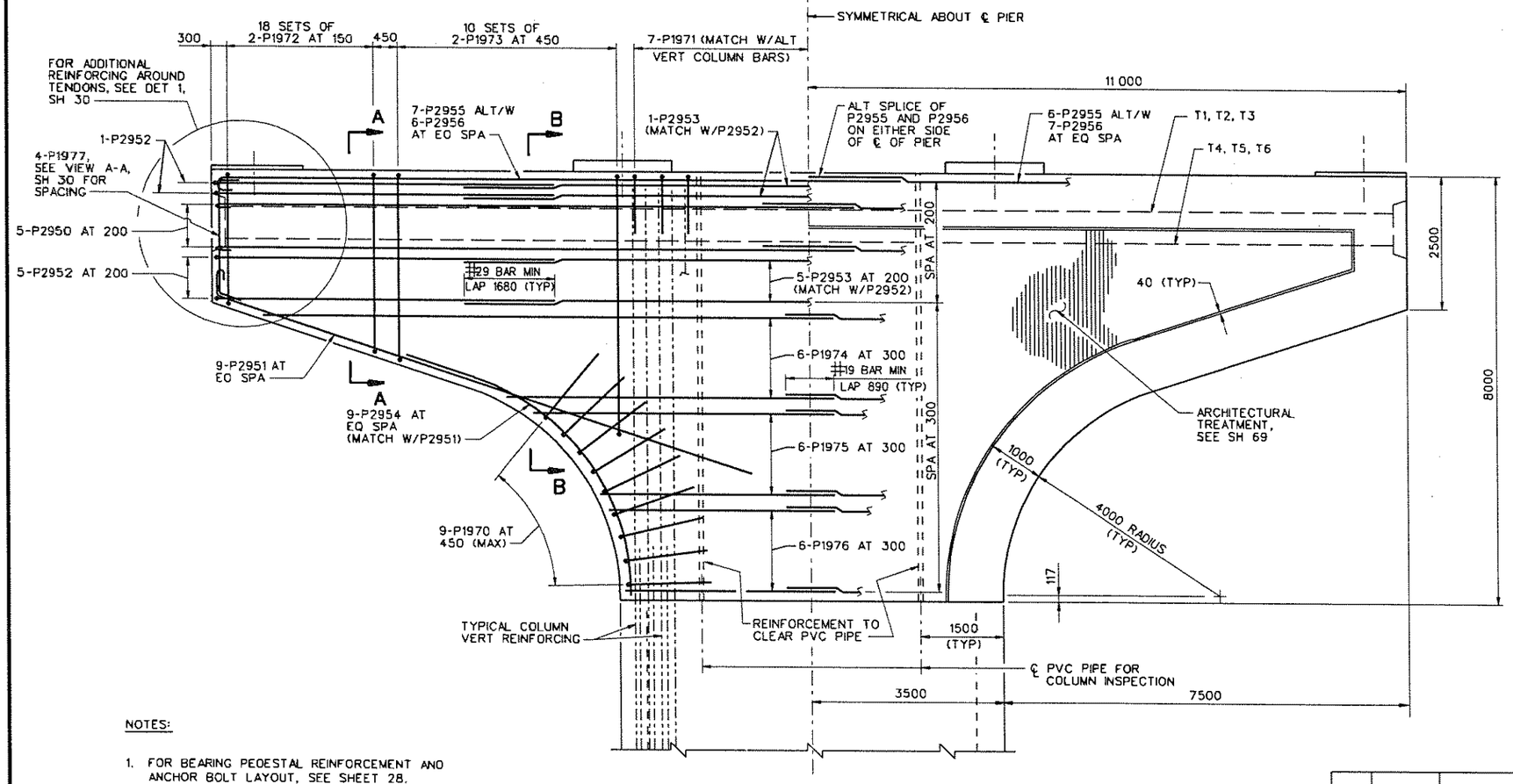
PLAN

0 1000 2000 mm



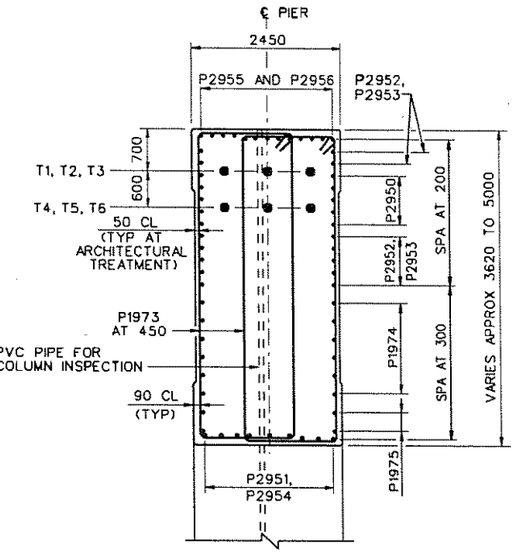
SECTION A-A

0 1000 2000 mm



TYPICAL PIER CAP REINFORCEMENT

0 1000 2000 mm



SECTION B-B

0 1000 2000 mm

ALL DIMENSIONS ARE IN MILLIMETERS.

NOTES:

1. FOR BEARING PEDESTAL REINFORCEMENT AND ANCHOR BOLT LAYOUT, SEE SHEET 28.
2. FOR PIER CAP POST-TENSIONING AND REINFORCING DETAILS, SEE SHEET 30.
3. FOR REINFORCEMENT BAR SCHEDULE, SEE SHEETS 34, 35 AND 35A.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

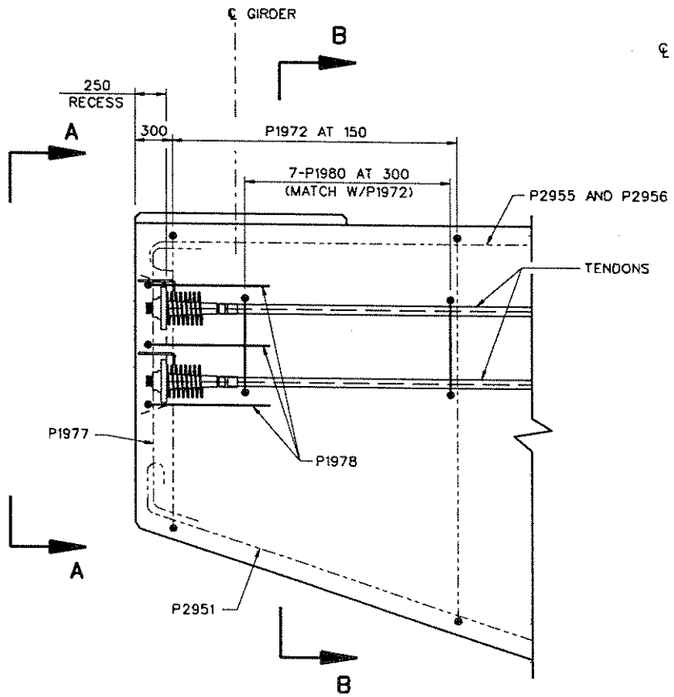
US 33 OVER
CLIFFORD HOLLOW

PIER CAP REINFORCEMENT DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM DATE 5/97	CKD SSM DATE 7/97	BRIDGE NO. 4249	
TRCD ____ DATE ____	SCALE AS SHOWN	SHEET NO. 29	

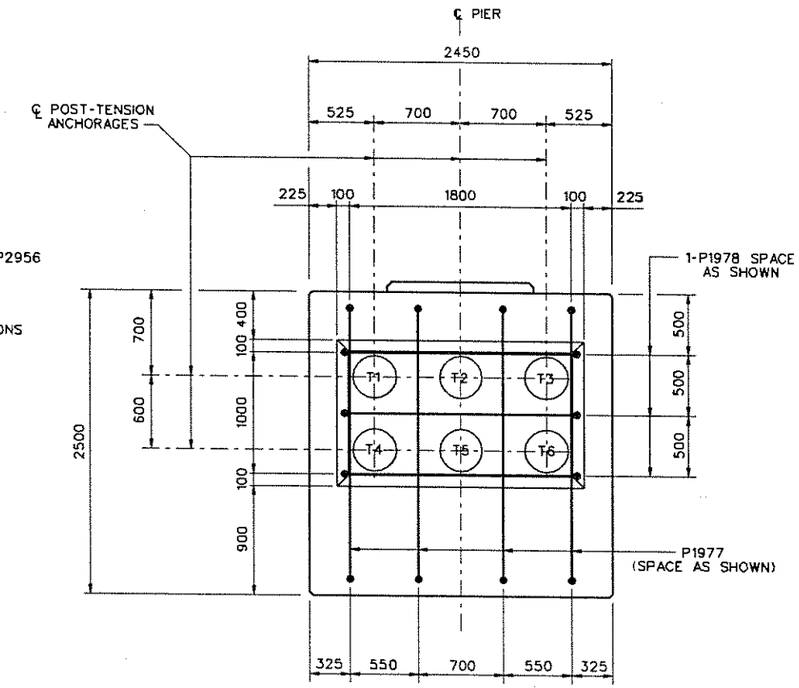
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X310-H-101.92 05	APD-0484(124) CTC	2001	HARDY	69	146



NOTE:
SOME REINFORCING BARS NOT SHOWN FOR CLARITY. SEE "TYPICAL PIER CAP REINFORCEMENT", SH 29.

DETAIL 1

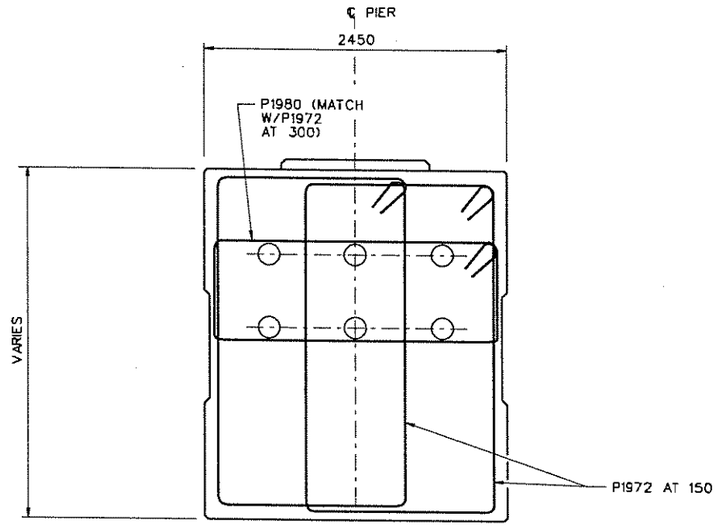
0 500 1000 mm



NOTE:
SOME REINFORCING BARS NOT SHOWN FOR CLARITY. SEE "TYPICAL PIER CAP REINFORCEMENT", SH 29.

VIEW A-A

0 500 1000 mm



NOTE:
SOME REINFORCING BARS NOT SHOWN FOR CLARITY. SEE "TYPICAL PIER CAP REINFORCEMENT", SH 29.

SECTION B-B

0 500 1000 mm

ALL DIMENSIONS ARE IN MILLIMETERS.

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. FOR PEIR CAP NOTES, SEE SHEET 28.
3. FOR PIER CAP REINFORCEMENT, SEE SHEET 29.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

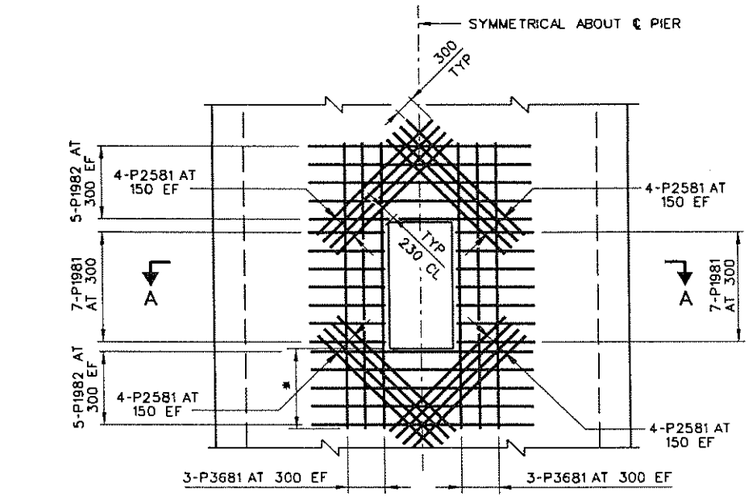
US 33 OVER
CLIFFORD HOLLOW

PIER CAP POST-TENSIONING DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA (412) 497-6000

MADE SM DATE 5/97	CKD SSM DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS SHOWN	SHEET NO. 30

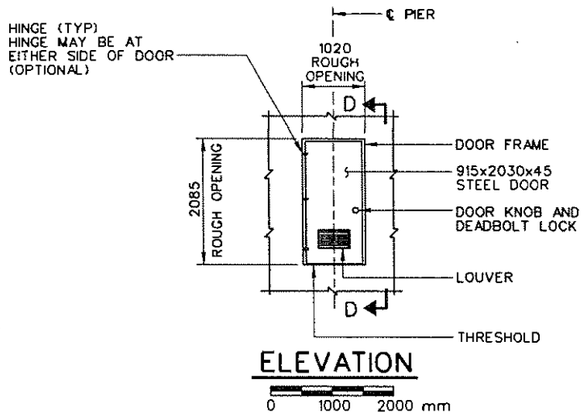
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X316-H-101.92 DS	APD-0484(124) CTC	2001	HARDY	70	146



* 1130 FOR PIERS 1 & 5
1380 FOR PIER 2
890 FOR PIER 3 & 4

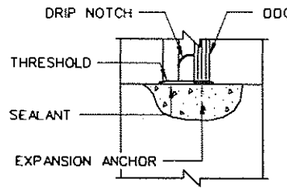
ACCESS DOOR OPENING DETAIL

0 1000 2000 mm



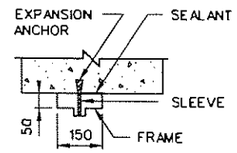
ELEVATION

0 1000 2000 mm



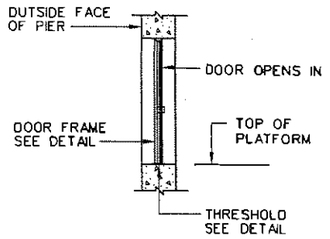
THRESHOLD

0 200 400mm



DOOR FRAME

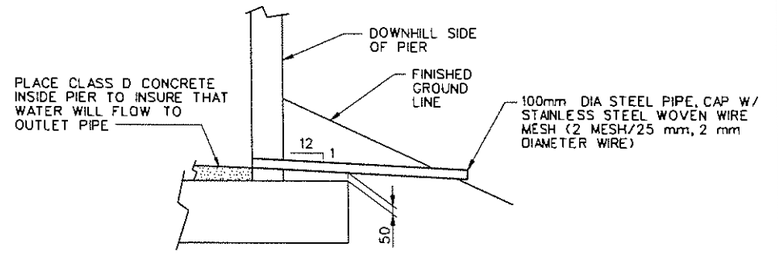
0 200 400mm



SECTION D-D

0 1000 2000 mm

ACCESS DOOR DETAILS



PIER WEEP HOLE DETAIL

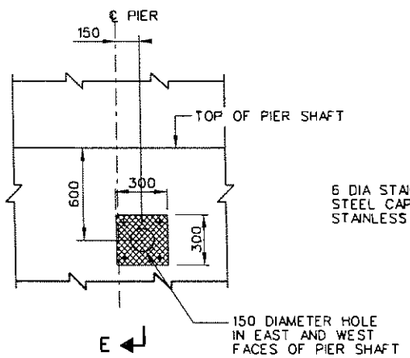
NOTE:
PLACE 2 WEEP HOLES PER PIER IN DOWNHILL CORNERS OF PIERS.

CLASS D CONCRETE AND WEEP HOLE INCIDENTAL TO ITEM 601025-001

SECTION A-A

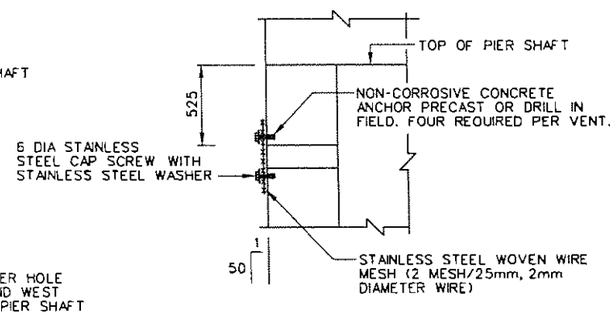
0 1000 2000 mm

E



AIR VENT DETAIL

0 400 800 mm



SECTION E-E

NO SCALE

NOTES:

FOR GENERAL NOTES, SEE SHEETS 3 AND 4.

THE DOOR SHALL BE 915 x 2030 x 45 STANDARD METAL DOOR WITH A 305 x 510 LOUVER. THE CONTRACTOR HAS THE OPTION OF USING DOOR FROM CLINE ALUMINUM DOORS, INC. (800-648-6736), ALUTECH (305-593-2080), U.S. METALS & MANUFACTURING (219-287-1538), OR APPROVED EQUAL.

THE EXPANSION ANCHORS SHALL BE 16 DIA AASHTO M183 COMPLETE WITH NUTS AND WASHERS (GALV).

ALL PIER ACCESS DOORS, FRAMES, LANDING PLATFORMS, GRATING AND ALL INCIDENTAL MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 615 OF THE STANDARD SPECIFICATIONS. THESE ITEMS SHALL BE PAID FOR UNDER ITEM NO. 615003-001, FABRICATED STRUCTURAL STEEL.

PAINT DOORS CONCRETE GREY USING AN APPROVED PAINT SYSTEM. GALVANIZE LANDING PLATFORMS, GRATING, RAILINGS AND ALL INCIDENTAL HARDWARE IN ACCORDANCE WITH AASHTO M111.

CUT OR OMIT PIER SHAFT REINFORCING BARS AS REQUIRED TO CLEAR THE ACCESS DOOR OPENING.

FOR PIER ACCESS DOOR LOCATION SEE SHEETS 20, 22, 24, 26 & 27.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

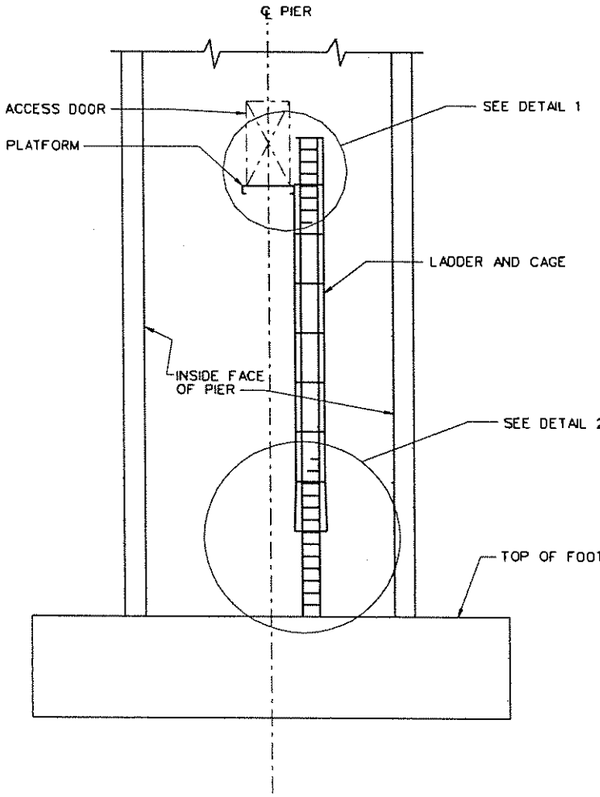
US 33 OVER
CLIFFORD HOLLOW

MISCELLANEOUS PIER DETAILS

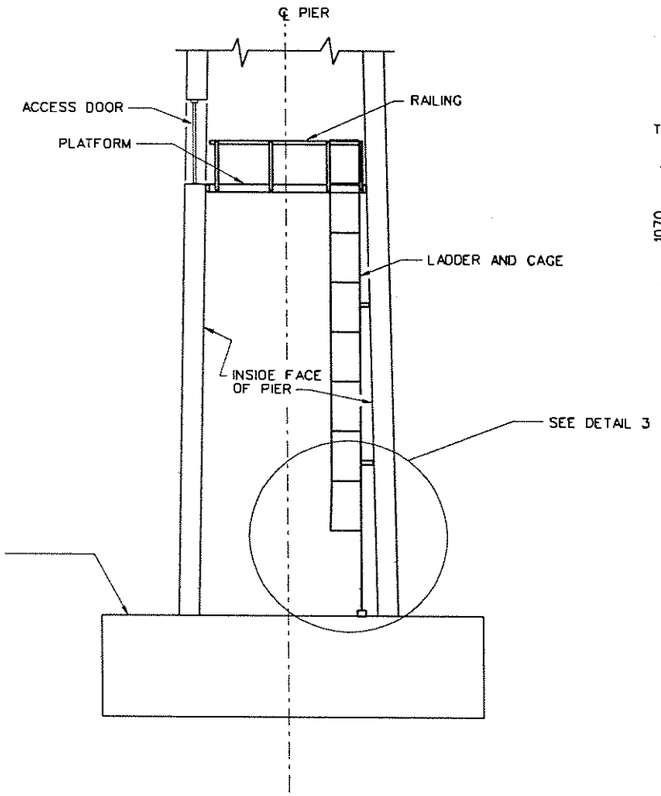
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM DATE 6-97	CKD KJW DATE 6-97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS SHOWN	SHEET NO. 31

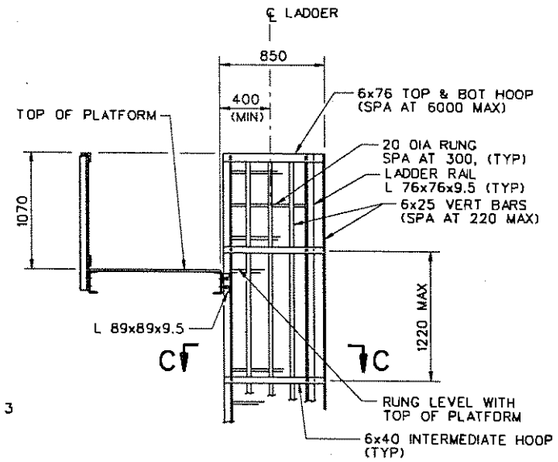
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X315-H-101.92 05	APD-0484(124) CTC	2001	HARDY	71	146



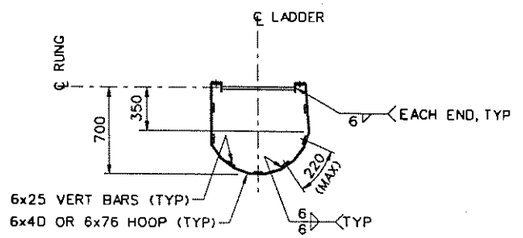
ELEVATION VIEW



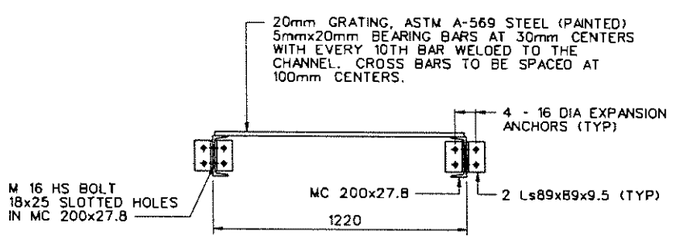
SIDE VIEW



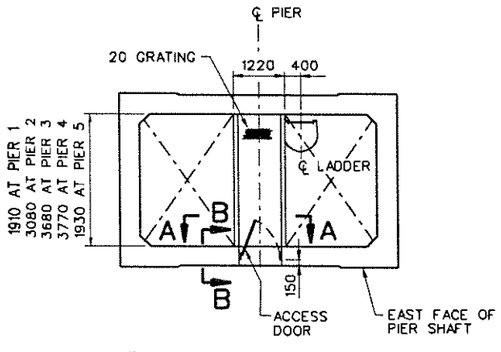
DETAIL 1



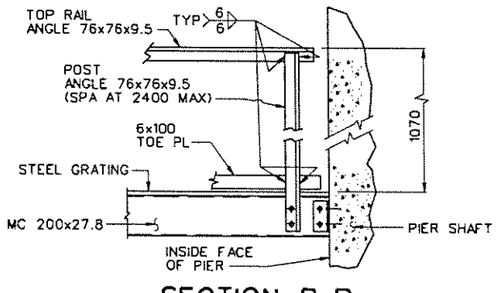
SECTION C-C



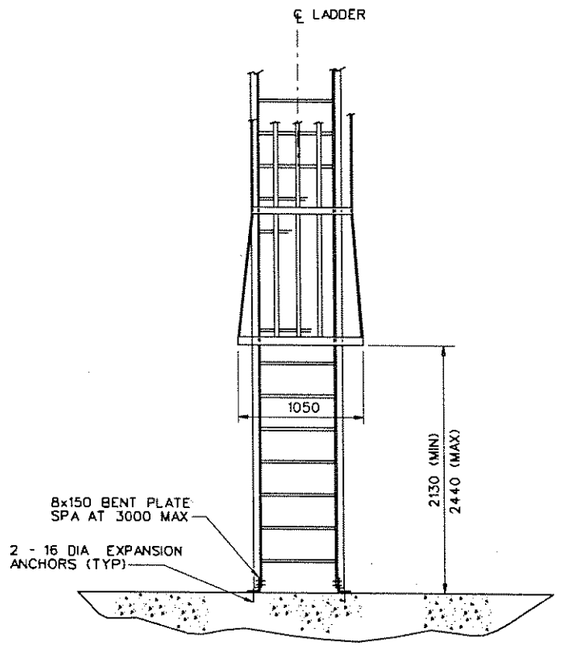
SECTION A-A



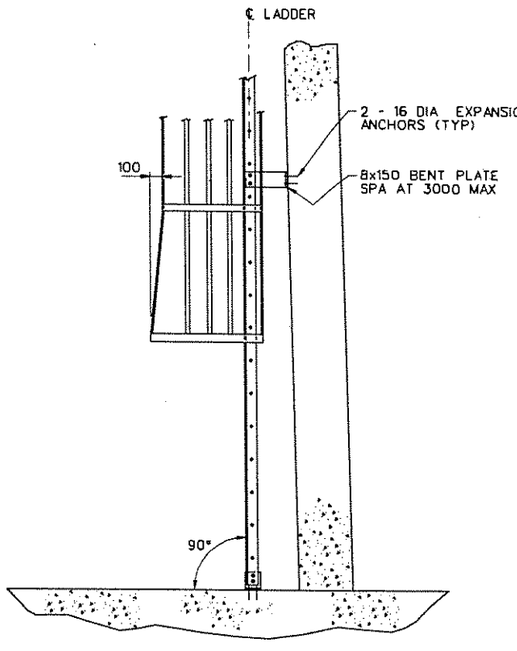
LANDING PLATFORM PLAN



SECTION B-B



DETAIL 2



DETAIL 3

NOTES:

1. ALL PLATFORM, RAILING AND LADDER BOLTED CONNECTIONS TO BE AASHTO M164M, M20 2 BOLT (MIN).

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

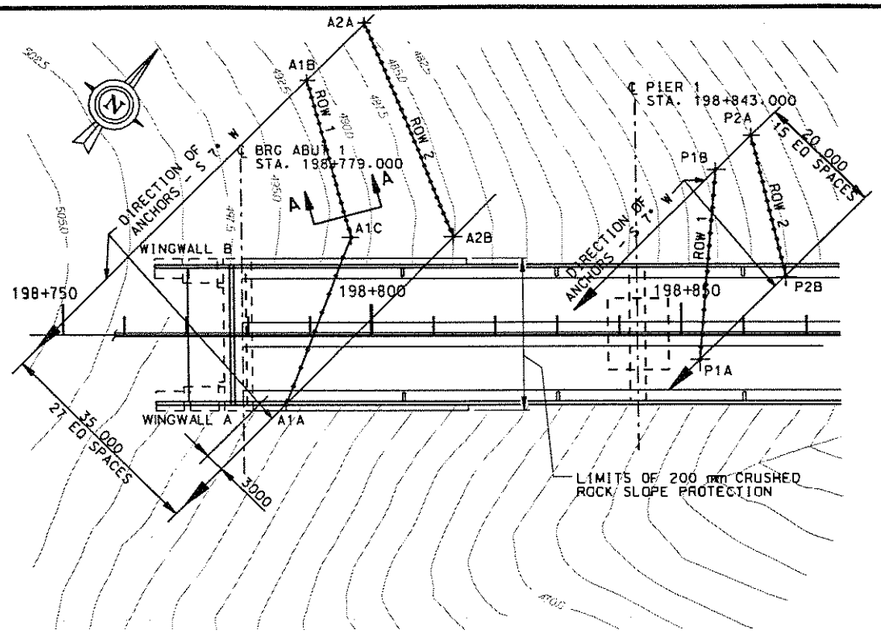
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

INSPECTION PLATFORM AND LADDER

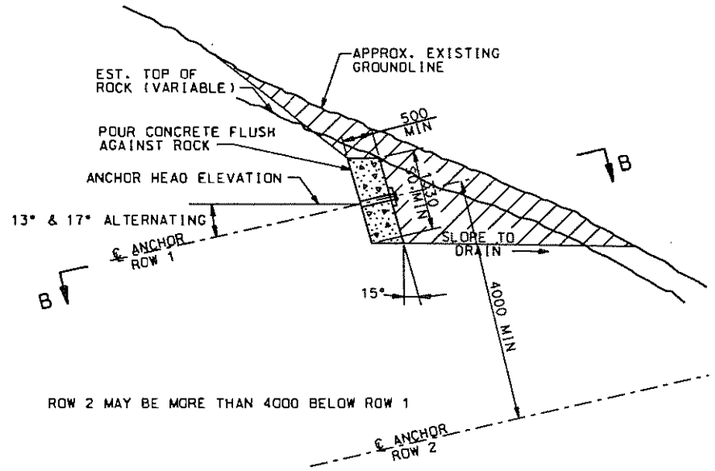
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

MADE SM DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO.	4249
TRCD DATE	SCALE NO SCALE	SHEET NO.	32



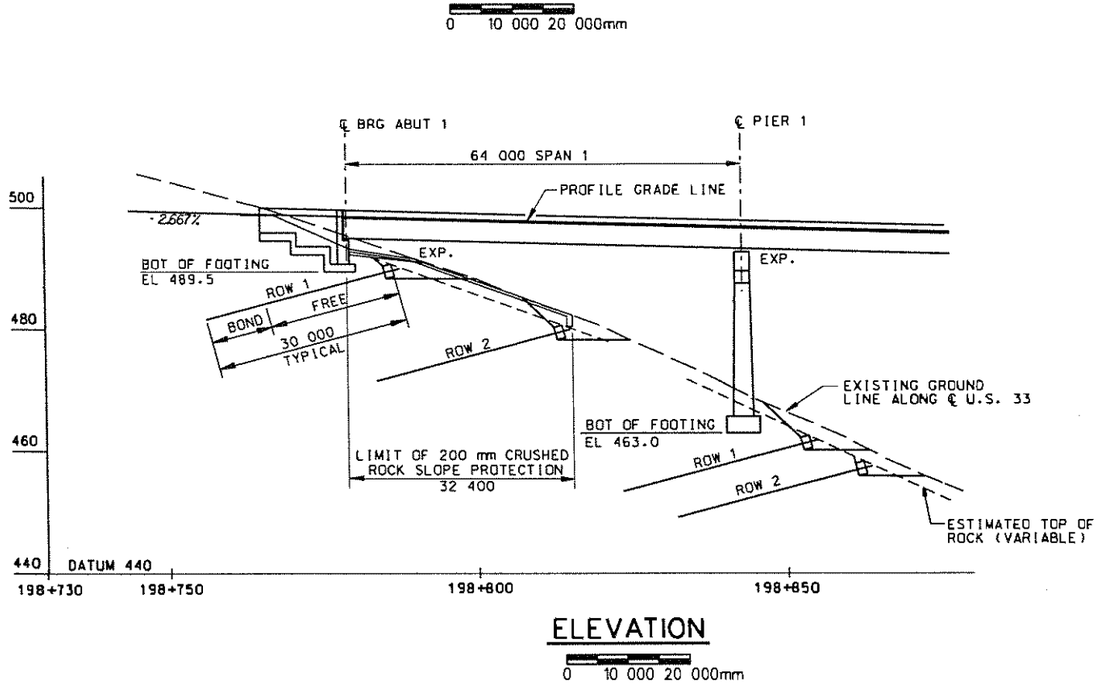
PLAN

0 10 000 20 000mm



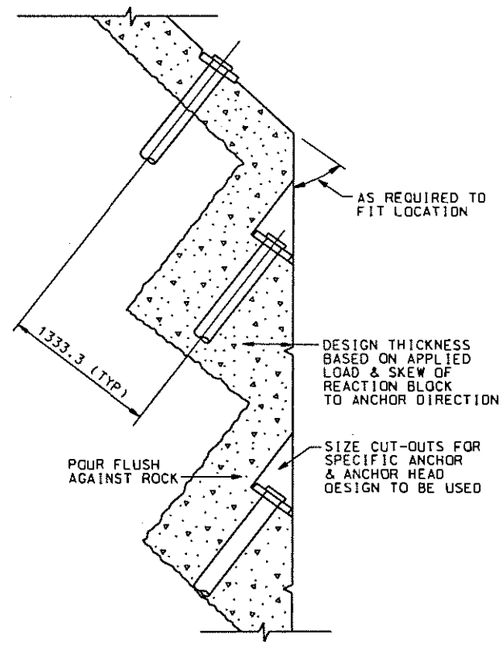
SECTION A-A

NTS



ELEVATION

0 10 000 20 000mm



SECTION B-B

NTS

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	72	146

NOTES

1. DESIGN ANCHOR LOAD = 1470 kN.
2. TOTAL LENGTH OF ANCHOR = 30 000 MINIMUM.
3. ANCHOR HEAD ELEVATION IS DEFINED AS SHOWN ON SECTION A-A. SPECIFIC VALUES GIVEN IN TABLE.
4. POINTS PROVIDED IN TABLE ARE FOR GUIDANCE IN LOCATING ANCHOR ROWS. LOCATIONS OF INDIVIDUAL ANCHORS MAY VARY DUE TO VARIATIONS IN LOCATION OF TOP-OF-ROCK AND OF SUITABLE REACTION BLOCK BEARING MATERIAL.
5. OBTAIN ENGINEER'S ACCEPTANCE OF VARIATIONS IN ANCHOR HEAD ELEVATION AND MODIFICATIONS IN LOCATIONS OF ROWS.
6. MINIMUM DISTANCE BETWEEN BONDING ZONES = 1500.
7. HORIZONTAL SPACING OF ANCHORS TO BE 1333.3. MAINTAIN THIS DISTANCE FOR FIELD ADJUSTMENTS TO ANCHOR LOCATIONS.
8. MAXIMUM LENGTH OF BOND ZONE = 11 000.
9. USE AN ULTIMATE BOND STRESS OF 800 kPa WITH A SAFETY FACTOR OF 3.0 TO DESIGN ANCHORS.
10. ALTERNATE VERTICAL ANGLES OF ADJACENT ANCHORS FROM 13° TO 17° AND REPEAT. IF FIELD MODIFICATIONS TO ANCHOR HEAD ELEVATIONS OR ROW LOCATIONS ARE REQUIRED, DETERMINE THE EFFECT OF THE CHANGE ON THE BOND ZONE SPACING AND ADJUST HORIZONTAL ANCHOR ANGLES TO MAINTAIN 1500 MINIMUM DISTANCE BETWEEN BOND ZONES. OBTAIN ACCEPTANCE OF ENGINEER FOR REQUIRED ADJUSTMENTS.
11. INSURE THAT FALSEWORK SUPPORTS DO NOT INTERFERE WITH ANCHORS.
12. THE ROCK ANCHOR SYSTEM SUPPLIER SHALL DESIGN, SUPPLY AND CONSTRUCT THE REACTION BLOCK SYSTEM TO BE COMPATIBLE WITH THE ANCHORS AND TO MEET ALL REQUIREMENTS OF THE PLANS AND SPECIAL PROVISIONS.
13. HATCHED AREA ON SECTION A-A SHOWS LIMIT OF CRUSHED ROCK SLOPE PROTECTION SPECIAL, EXCEPT THAT THE TOP 200mm IS EXCLUDED IN AREAS TO RECEIVE 200 mm CRUSHED ROCK SLOPE PROTECTION.

POINT NO.	STATION	OFFSET	ANCHOR HEAD ELEVATION
A1A	198+786.0	11.5 RT.	488
A1B	198+789.9	42.0 LT.	488
A1C	198+796.8	16.0 LT.	488
A2A	198+799.4	51.7 LT.	482
A2B	198+813.3	16.1 LT.	482
P1A	198+853.0	4.2 RT.	461
P1B	198+855.8	27.0 LT.	461
P2A	198+861.5	32.7 LT.	457
P2B	198+866.8	9.4 LT.	457

ALL DIMENSIONS ARE IN MILLIMETERS (mm) AND ALL STATIONS AND ELEVATIONS ARE IN METERS (m), EXCEPT AS NOTED.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

ROCK ANCHORS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

MADE ____ DATE ____	CKD RLF DATE 7-97	BRIDGE NO. 4249
TRCD SRC DATE 7-97	SCALE AS SHOWN	SHEET NO. 33

REINFORCEMENT BAR SCHEDULE

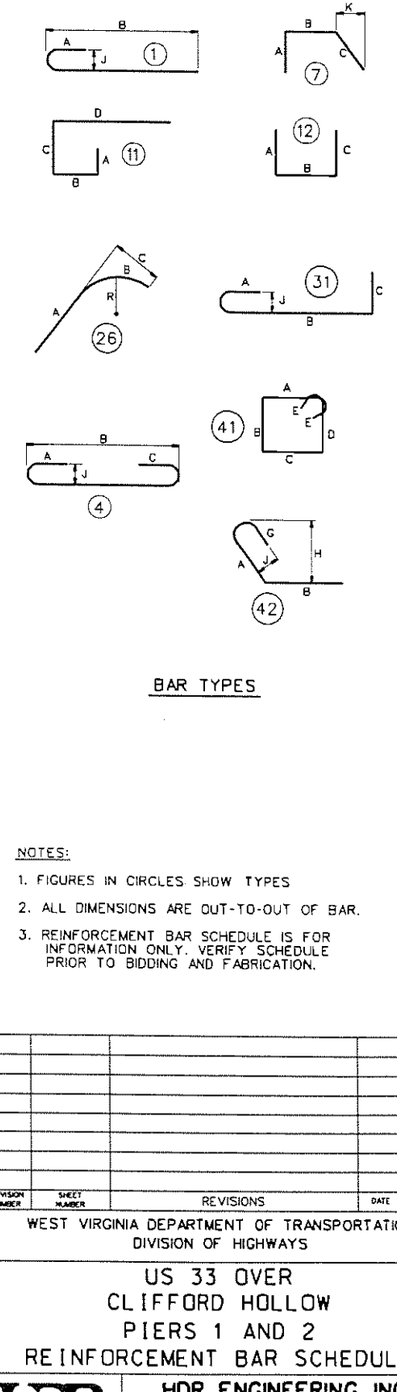
PIER 1

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
P1601	16	1730	312	4	175	1380					175		130			
P1602	16	805	1944	31	175	380	250						130			
P1603	16	825	619	31	175	400	250						130			
P1604	16	4335	324	31	175	3900	250						130			
P1611	16	6250	116	11	250	1850	3900	250								
P1612	16	6400	104	11	250	2000	3900	250								
P1613	16	6550	104	11	250	2150	3900	250								
P1621	16	2275	116	31	175	1850	250						130			
P1622	16	2425	104	31	175	2000	250						130			
P1623	16	2575	104	31	175	2150	250						130			
P1668	16	2480	24	12	680	1120	680									
P1669	16	2880	20	12	680	1520	680									
P1970	19	5260	18	12	1500	2260	1500									
P1971	19	4260	14	12	1000	2260	1000									
P1972	19	8400 TO	72	41	1480	2500 TO	1480	2500 TO	220							4 SETS OF 18
		10 200				3400		3400								VARY B AND D BY 50
P1973	19	10 500 TO	40	41	1480	3550 TO	1480	3550 TO	220							4 SETS OF 10
		13 000				4800		4800								VARY B AND D BY 140
P1974	19	6280 TO	24	STR												4 SETS OF 6
		10 760														VARY BY 896
P1975	19	4400 TO	24	STR												4 SETS OF 6
		5760														VARY BY 272
P1976	19	3940 TO	24	STR												4 SETS OF 6
		4260														VARY BY 64
P1977	19	3140	8	7	400	2340	400							150		
P1978	19	3800	5	12	1000	1800	1000									
P1980	19	6580	14	41	2270	800	2270	800	220							
P1981	19	2780	14	12	1200	380	1200									
P1982	19	3600	20	STR												
P2581	25	2700	32	STR												
P2901	29	8700	296	STR												
P2902	29	7700	60	STR												
P2950	29	12 240	20	1	400	11 840							300			
P2951	29	11 200	18	42	400	10 400					400	300	300			
P2952	29	14 760	14	12	6260	2240	6260									
P2953	29	12 700	14	STR												
P2954	29	6640	18	26	1320	5320	2940								4070	
P2955	29	13 080	13	1	400	12 600							300			
P2956	29	11 400	13	1	400	11 000							300			
P3681	36	4800	12	STR												
F1350	13	2875	120	31	150	2525	200						105			
F1650	16	9650	82	STR												
F1660	16	805	96	31	175	380	250						130			
F1661	16	825	36	31	175	400	250						130			
F1662	16	4335	16	31	175	3900	250						130			
F1666	16	6550	16	11	250	2150	3900	250								
F1671	16	2575	16	31	175	2150	250						130			
F1950	19	11 650	14	STR												
F2952	29	11 650	67	STR												
F3250	32	8475	156	1	425	8050							335			
F3651	36	9650	82	STR												

PIER 2

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
P1601	16	1730	744	4	175	1380					175		130			
P1602	16	805	6048	31	175	380	250						130			
P1603	16	825	2031	31	175	400	250						130			
P1604	16	4335	756	31	175	3900	250						130			
P1611	16	6250	116	11	250	1850	3900	250								
P1612	16	6400	104	11	250	2000	3900	250								
P1613	15	6550	104	11	250	2150	3900	250								
P1614	16	6700	104	11	250	2300	3900	250								
P1615	16	6850	104	11	250	2450	3900	250								
P1616	16	7000	104	11	250	2600	3900	250								
P1617	16	7150	120	11	250	2750	3900	250								
P1621	16	2275	116	31	175	1850	250									
P1622	16	2425	104	31	175	2000	250						130			
P1623	16	2575	104	31	175	2150	250						130			
P1624	15	2725	104	31	175	2300	250						130			
P1625	16	2875	104	31	175	2450	250						130			
P1626	16	3025	104	31	175	2600	250						130			
P1627	16	3175	120	31	175	2750	250						130			
P1668	16	2480	24	12	680	1120	680									
P1669	16	2880	20	12	680	1520	680									
P1970	19	5260	18	12	1500	2260	1500									
P1971	19	4260	14	12	1000	2260	1000									
P1972	19	8400 TO	72	41	1480	2500 TO	1480	2500 TO	220							4 SETS OF 18
		10 200				3400		3400								VARY B AND D BY 50
P1973	19	10 500 TO	40	41	1480	3550 TO	1480	3550 TO	220							4 SETS OF 10
		13 000				4800		4800								VARY B AND D BY 140
P1974	19	6280 TO	24	STR												4 SETS OF 6
		10 760														VARY BY 896
P1975	19	4400 TO	24	STR												4 SETS OF 6
		5760														VARY BY 272
P1976	19	3940 TO	24	STR												4 SETS OF 6
		4260														VARY BY 64
P1977	19	3140	8	7	400	2340	400							150		
P1978	19	3800	5	12	1000	1800	1000									
P1980	19	6580	14	41	2270	800	2270	800	220							
P1981	19	2780	14	12	1200	380	1200									
P1982	19	3600	20	STR												
P2581	25	2700	32	STR												
P2901	29	8700	548	STR												
P2902	29	7700	76	STR												
P2950	29	12 240	20	1	400	11 840							300			
P2951	29	11 200	18	42	400	10 400					400	300	300			
P2952	29	14 760	14	12	6260	2240	6260									
P2953	29	12 700	14	STR												
P2954	29	6640	18	26	1320	5320	2940								4070	
P2955	29	13 080	13	1	400	12 680							300			
P2958	29	11 400	13	1	400	11 000							300			
P3201	32	9030	196	STR												
P3601	36	9370	408	STR												
P3681	36	4800	12	STR												
F1351	13	2675	132	31	150	2325	200						105			
F1651	16	10 450	78	STR												
F1660	16	805	128	31	175	380	250						130			
F1661	16	825	60	31	175	400	250						130			
F1662	16	4335	16	31	175	3900	250						130			
F1667	16	7150	16	11	250	2750	3900	250								
F1672	16	3175	16	31	175	2750	250						130			
F1951	19	11 550	32	STR												
F3252	32	11 550	63	STR												
F3650	36	9195	212	1	475	8690							375			
F3652	36	10 450	78	STR												

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101,92 05	APD-0484(124) CTC	2001	HARDY	73	146



BAR TYPES

NOTES:

1. FIGURES IN CIRCLES SHOW TYPES
2. ALL DIMENSIONS ARE OUT-TO-OUT OF BAR.
3. REINFORCEMENT BAR SCHEDULE IS FOR INFORMATION ONLY. VERIFY SCHEDULE PRIOR TO BIDDING AND FABRICATION.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW
PIERS 1 AND 2
REINFORCEMENT BAR SCHEDULE

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE AVG DATE 7/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD --- DATE ---	SCALE NO SCALE	SHEET NO. 34

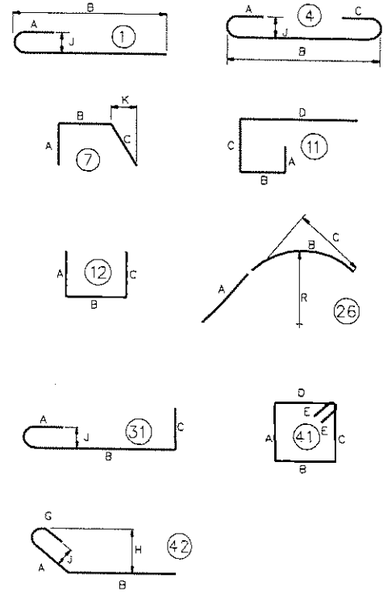
PLOT DATE: 06-15-00 AS-10

REINFORCEMENT BAR SCHEDULE

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
			PIER 3													
P1601	16	1730	960	4	175	1380					175		130			
P1602	16	805	5832	31	175	380	250						130			
P1603	16	825	2581	31	175	400	250						130			
P1604	16	4335	972	31	175	3900	250						130			
P1611	16	6250	116	11	250	1850	3900	250								
P1612	16	6400	104	11	250	2000	3900	250								
P1613	16	6550	104	11	250	2150	3900	250								
P1614	16	6700	104	11	250	2300	3900	250								
P1615	16	6850	104	11	250	2450	3900	250								
P1616	16	7000	104	11	250	2600	3900	250								
P1617	16	7150	104	11	250	2750	3900	250								
P1618	16	7300	104	11	250	2900	3900	250								
P1619	16	7450	128	11	250	3050	3900	250								
P1621	16	2275	116	31	175	1850	250						130			
P1622	16	2425	104	31	175	2000	250						130			
P1623	16	2575	104	31	175	2150	250						130			
P1624	16	2725	104	31	175	2300	250						130			
P1625	16	2875	104	31	175	2450	250						130			
P1626	16	3025	104	31	175	2600	250						130			
P1627	16	3175	104	31	175	2750	250						130			
P1628	16	3325	104	31	175	2900	250						130			
P1629	16	3475	128	31	175	3050	250						130			
P1668	16	2480	24	12	680	1120	680									
P1669	16	2880	20	12	680	1520	680									
P1970	19	5260	18	12	1500	2260	1500									
P1971	19	4260	14	12	1000	2260	1000									
P1972	19	8400 TO	72	41	1480	2500 TO	1480	2500 TO	220							4 SETS OF 18
		10 200				3400		3400								VARY B AND D BY 50
P1973	19	10 500 TO	40	41	1480	3550 TO	1480	3550 TO	220							4 SETS OF 10
		13 000				4800		4800								VARY B AND D BY 140
P1974	19	6280 TO	24	STR												4 SETS OF 6
		10 760														VARY BY 896
P1975	19	4400 TO	24	STR												4 SETS OF 6
		5760														VARY BY 272
P1976	19	3940 TO	24	STR												4 SETS OF 6
		4260														VARY BY 64
P1977	19	3140	8	7	400	2340	400							150		
P1978	19	3800	6	12	1000	1800	1000									
P1980	19	6580	14	41	2270	800	2270	800	220							
P1981	19	2780	14	12	1200	380	1200									
P1982	19	3600	20	STR												
P2581	25	2700	32	STR												
P2901	29	8700	1280	STR												
P2902	29	7700	60	STR												
P2950	29	12 240	20	1	400	11 840							300			
P2951	29	11 200	18	42	400	10 400					400	300	300			
P2952	29	14 760	14	12	6260	2240	6260									
P2953	29	12 700	14	STR												
P2954	29	6640	18	26	1320	5320	2940								4070	
P2955	29	13 080	13	1	400	12 680							300			
P2956	29	11 400	13	1	400	11 000							300			
P3681	36	4800	12	STR												
F1351	13	2675	132	31	150	2325	200						105			
F1652	16	10 250	74	STR												
F1660	16	805	96	31	175	380	250						130			
F1661	16	825	60	31	175	400	250						130			
F1662	16	4335	16	31	175	3900	250						130			
F1668	16	7450	16	11	250	3050	3900	250								
F1673	16	3475	16	31	175	3050	250						130			
F1952	19	10 950	32	STR												
F2950	29	8655	180	1	375	8280							300			
F2953	29	10 950	63	STR												
F3253	32	10 250	74	STR												

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
			PIER 4													
P1601	16	1730	1048	4	175	1380					175		130			
P1602	16	805	6360	31	175	380	250						130			
P1603	16	825	2911	31	175	400	250						130			
P1604	16	4335	1060	31	175	3900	250						130			
P1611	16	6250	116	11	250	1850	3900	250								
P1612	16	6400	104	11	250	2000	3900	250								
P1613	16	6550	104	11	250	2150	3900	250								
P1614	16	6700	104	11	250	2300	3900	250								
P1615	16	6850	104	11	250	2450	3900	250								
P1616	16	7000	104	11	250	2600	3900	250								
P1617	16	7150	104	11	250	2750	3900	250								
P1618	16	7300	104	11	250	2900	3900	250								
P1619	16	7450	104	11	250	3050	3900	250								
P1620	16	7800	112	11	250	3200	3900	250								
P1621	16	2275	116	31	175	1850	250						130			
P1622	16	2425	104	31	175	2000	250						130			
P1623	16	2575	104	31	175	2150	250						130			
P1624	16	2725	104	31	175	2300	250						130			
P1625	16	2875	104	31	175	2450	250						130			
P1626	16	3025	104	31	175	2600	250						130			
P1627	16	3175	104	31	175	2750	250						130			
P1628	16	3325	104	31	175	2900	250						130			
P1629	16	3475	104	31	175	3050	250						130			
P1630	16	3625	112	31	175	3200	250						130			
P1668	16	2480	24	12	680	1120	680									
P1669	16	2880	20	12	680	1520	680									
P1970	19	5260	18	12	1500	2260	1500									
P1971	19	4260	14	12	1000	2260	1000									
P1972	19	8400 TO	72	41	1480	2500 TO	1480	2500 TO	220							4 SETS OF 18
		10 200				3400		3400								VARY B AND D BY 50
P1973	19	10 500 TO	40	41	1480	3550 TO	1480	3550 TO	220							4 SETS OF 10
		13 000				4800		4800								VARY B AND D BY 140
P1974	19	6280 TO	24	STR												4 SETS OF 6
		10 760														VARY BY 896
P1975	19	4400 TO	24	STR												4 SETS OF 6
		5760														VARY BY 272
P1976	19	3940 TO	24	STR												4 SETS OF 6
		4260														VARY BY 64
P1977	19	3140	8	7	400	2340	400							150		
P1978	19	3800	6	12	1000	1800	1000									
P1980	19	6580	14	41	2270	800	2270	800	220							
P1981	19	2780	14	12	1200	380	1200									
P1982	19	3600	20	STR												
P2581	25	2700	32	STR												
P2901	29	8700	1460	STR												
P2902	29	7700	60	STR												
P2950	29	12 240	20	1	400	11 840							300			
P2951	29	11 200	18	42	400	10 400					400	300	300			
P2952	29	14 760	14	12	6260	2240	6260									
P2953	29	12 700	14	STR												
P2954	29	6640	18	26	1320	5320	2940								4070	
P2955	29	13 080	13	1	400	12 680							300			
P2956	29	11 400	13	1	400	11 400							300			
P3681	36	4800	12	STR												
F1351	13	2675	143	31	150	2325	200						105			
F1653	16	10 950	74	STR												
F1660	16	805	96	31	175	380	250						130			
F1661	16	825	60	31	175	400	250						130			
F1662	16	4335	16	31	175	3900	250						130			
F1669	16	7600	16	11	250	3200	3900	250								
F1674	16	3625	16	31	175	3200	250						130			
F1952	19	10 950	34	STR												
F2951	29	8045	180	1	375	7670							300			
F2953	29	10 950	67	STR												
F3653	36	10 950	74	STR												

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-10192 05	APD-0464(124) CTC	2001	HARDY	74	146



NOTES:

1. FIGURES IN CIRCLES SHOW TYPES
2. ALL DIMENSIONS ARE OUT-TO-OUT OF BAR.
3. REINFORCEMENT BAR SCHEDULE IS FOR INFORMATION ONLY. VERIFY SCHEDULE PRIOR TO BIDDING AND FABRICATION.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

PIER 3 AND PIER 4
REINFORCEMENT BAR SCHEDULE

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

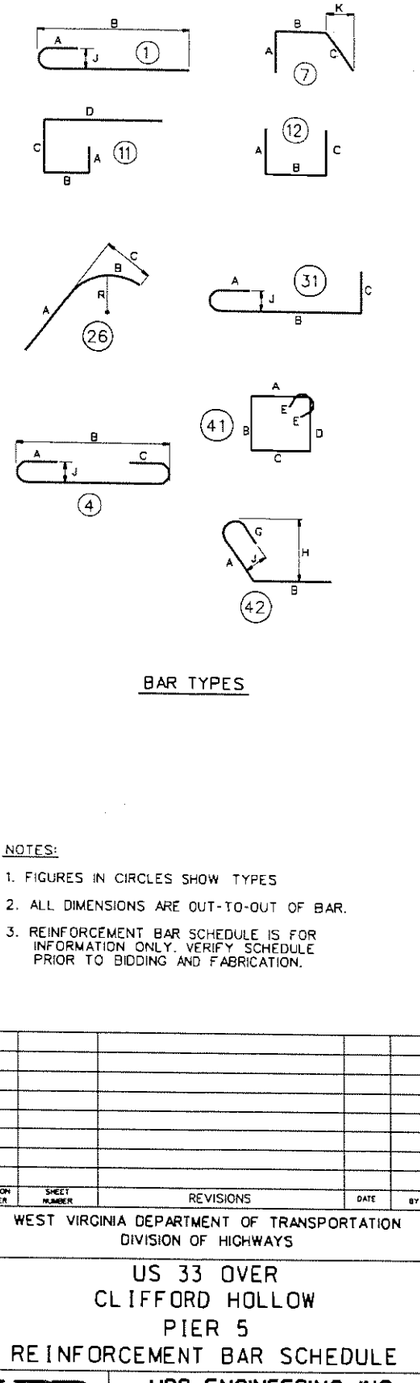
MADE SLK DATE 7/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE NO SCALE	SHEET NO. 35

REINFORCEMENT BAR SCHEDULE

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
			PIER 5													
P1601	16	1730	408	4	175	1380					175		130			
P1602	16	805	2520	31	175	380	250						130			
P1603	16	825	835	31	175	400	250						130			
P1604	16	4335	420	31	175	3900	250						130			
P1611	16	6250	116	11	250	1850	3900	250								
P1612	16	6400	104	11	250	2000	3900	250								
P1613	16	6550	200	11	250	2150	3900	250								
P1621	16	2275	116	31	175	1850	250						130			
P1622	16	2425	104	31	175	2000	250						130			
P1623	16	2575	200	31	175	2150	250						130			
P1668	16	2480	24	12	680	1120	680									
P1669	16	2880	20	12	680	1520	680									
P1970	19	5250	18	12	1500	2260	1500									
P1971	19	4260	14	12	1000	2260	1000									
P1972	19	8400 TO	72	41	1480	2500 TO	1480	2500 TO	220							4 SETS OF 18
		10 200				3400		3400								VARY B AND D BY 50
P1973	19	10 500 TO	40	41	1480	3550 TO	1480	3550 TO	220							4 SETS OF 10
		13 000				4800		4800								VARY B AND D BY 140
P1974	19	6280 TO	24	STR												4 SETS OF 6
		10 760														VARY BY 896
P1975	19	4400 TO	24	STR												4 SETS OF 6
		5760														VARY BY 272
P1976	19	3940 TO	24	STR												4 SETS OF 6
		4260														VARY BY 64
P1977	19	3140	8	7	400	2340	400							150		
P1978	19	3800	6	12	1000	1800	1000									
P1980	19	6580	14	41	2270	800	2270	800	220							
P1981	19	2780	14	12	1200	380	1200									
P1982	19	3600	20	STR												
P2581	25	2700	32	STR												
P2901	29	8700	296	STR												
P2902	29	7700	60	STR												
P2950	29	12 240	20	1	400	11 840							300			
P2951	29	11 200	18	42	400	10 400					400	300	300			
P2952	29	14 760	14	12	8260	2240	6260									
P2953	29	12 700	14	STR												
P2954	29	6640	18	26	1320	5320	2940								4070	
P2955	29	13 080	13	1	400	12 680							300			
P2956	29	11 400	13	1	400	11 000							300			
P3202	32	8970	156	STR												
P3681	36	4800	12	STR												
F1350	13	2875	110	31	150	2525	200						105			
F1654	16	9350	78	STR												
F1660	16	805	96	31	175	380	250						130			
F1661	16	825	36	31	175	400	250						130			
F1662	16	4335	16	31	175	3900	250						130			
F1670	16	6550	16	11	250	2150	3900	250								
F1675	16	2575	16	31	175	2150	250						130			
F1951	19	11 550	33	STR												
F2954	29	11 550	65	STR												
F3251	32	4555	156	1	425	4130							335			
F3654	36	9350	78	STR												

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	75	146



BAR TYPES

NOTES:

1. FIGURES IN CIRCLES SHOW TYPES
2. ALL DIMENSIONS ARE OUT-TO-OUT OF BAR.
3. REINFORCEMENT BAR SCHEDULE IS FOR INFORMATION ONLY. VERIFY SCHEDULE PRIOR TO BIDDING AND FABRICATION.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

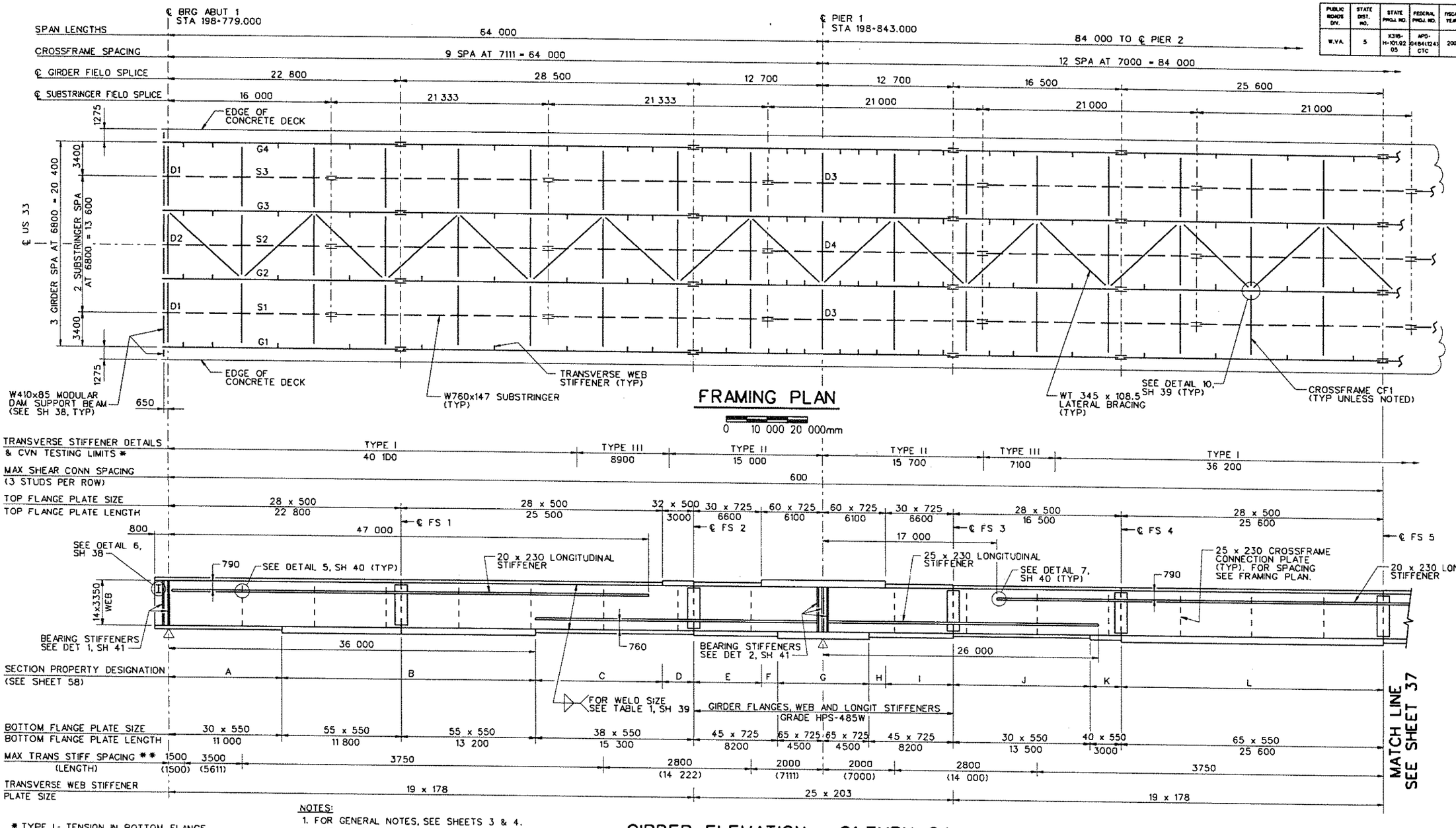
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER CLIFFORD HOLLOW
PIER 5
REINFORCEMENT BAR SCHEDULE

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE AVG DATE 7/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD ---- DATE ---	SCALE NO SCALE	SHEET NO. 35A

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X318-H-101.02 05	APD-0484(124) CTC	2001	HARDY	76	196



* TYPE I - TENSION IN BOTTOM FLANGE

TYPE II - TENSION IN TOP FLANGE

TYPE III - REVERSAL-TENSION TOP OR BOTTOM

** TRANSVERSE STIFFENER SPACINGS NOTED ARE MAXIMUMS. IT IS ANTICIPATED THAT STIFFENERS WILL BE EQUALLY SPACED BETWEEN CROSSFRAMES, BUT SPACINGS MAY BE ADJUSTED WITH APPROVAL OF THE ENGINEER TO ACCOMMODATE SHOP DETAILING.

CROSSFRAME CONNECTION PLATES ARE CONSIDERED TO ACT AS TRANSVERSE STIFFENERS.

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 & 4.
2. WORK THIS SHEET WITH SHEET 37.
3. FOR TYPICAL GIRDER AND SUBSTRINGER DETAILS, SEE SHEETS 38 THRU 41.
4. FOR FIELD SPLICE DETAILS, SEE SHEET 43.
5. FOR BEARING DETAILS, SEE SHEETS 45 THRU 49.
6. FOR CAMBER DIAGRAM, SEE SHEETS 53 AND 54.
7. FOR GIRDER SECTION PROPERTIES, SEE SHEET 58.
8. FOR SCUPPER LOCATIONS AND DRAINAGE DETAILS, SEE SHEET 50.
9. INSPECTION HANDRAILS SHALL RUN FULL LENGTH OF GIRDERS, INSIDE FACE OF G1 AND G4 AND BOTH SIDES OF G2 AND G3. SEE SHEET 42 FOR DETAILS.
10. ALL STRUCTURAL STEEL TO BE AASHTO M 270 GRADE 345W, UNLESS NOTED AS GRADE HPS-485W.
11. FOR GRIP BAR LOCATIONS AND DETAILS, SEE SHEET 41.
12. FOR CROSSFRAME AND DIAPHRAGM DETAILS, SEE SHEET 44.

GIRDER ELEVATION - G1 THRU G4

NO SCALE

NOTE:

DO NOT USE FORM SUPPORT SYSTEMS THAT WILL CAUSE UNACCEPTABLE OVERSTRESS OR DEFORMATION IN PERMANENT BRIDGE MEMBERS. SUPPORT OVERHANG FORMS FROM THE BOTTOM FLANGE OF FASCIA GIRDERS, OR PROVIDE BRACING TO PREVENT WEB BUCKLING DUE TO LOADS FROM WEB-BEARING SUPPORT SYSTEMS.

NOTE:

TRANSVERSE AND LONGITUDINAL STIFFENERS ARE SINGLE SIDED AND SHOULD BE PLACED ON OPPOSITE SIDES OF WEB. SEE FRAMING PLAN FOR PLACEMENT OF TRANSVERSE STIFFENERS.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

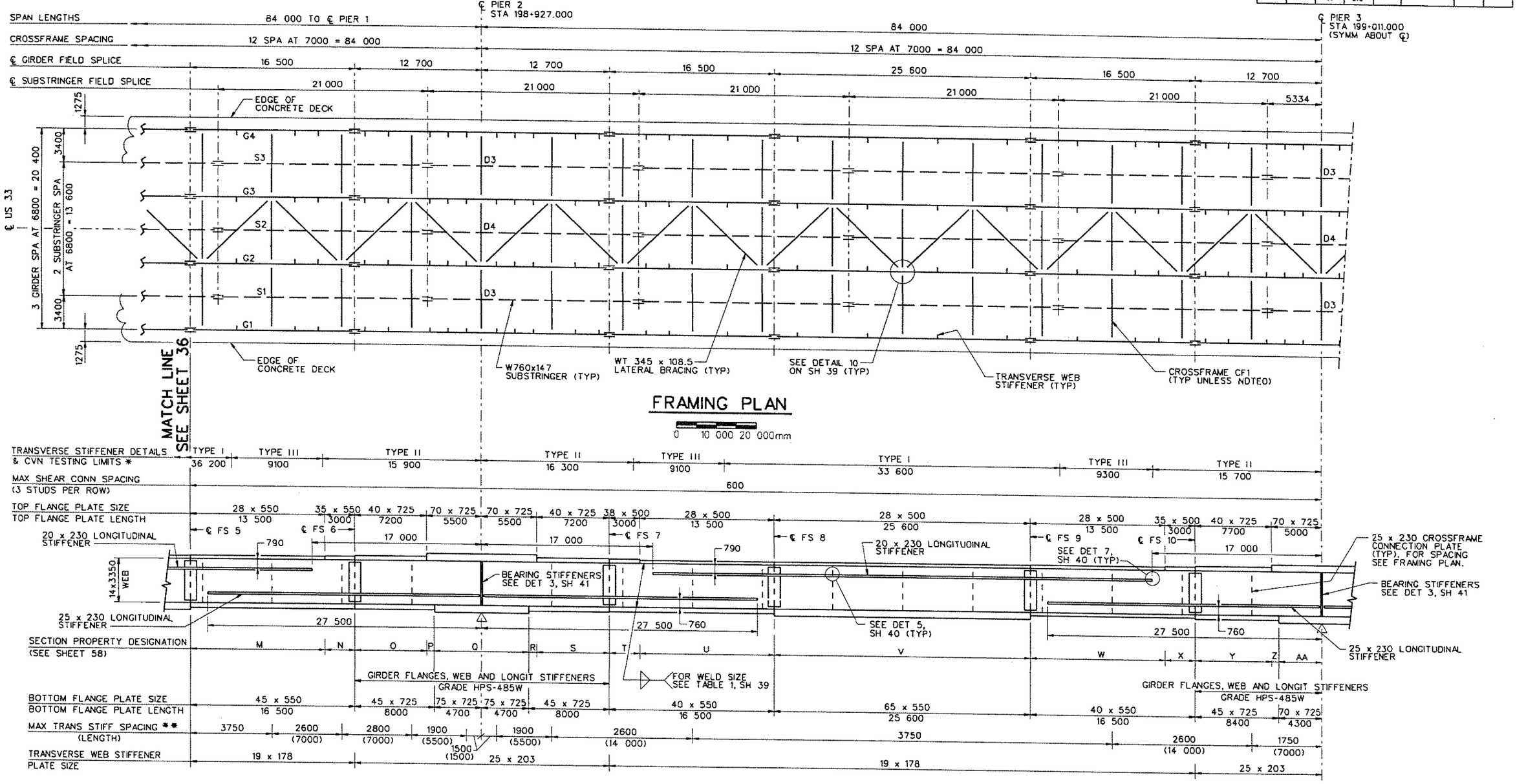
US 33 OVER
CLIFFORD HOLLOW

FRAMING PLAN AND GIRDER ELEVATION

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM DATE 5/97	CKD KJW DATE 5/97	BRIDGE NO.	4249
TRCD DATE	SCALE AS NOTED	SHEET NO.	36

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	77	146



GIRDER ELEVATION - G1 THRU G4

NO SCALE

NOTE:

DO NOT USE FORM SUPPORT SYSTEMS THAT WILL CAUSE UNACCEPTABLE OVERSTRESS OR DEFORMATION IN PERMANENT BRIDGE MEMBERS. SUPPORT OVERHANG FORMS FROM THE BOTTOM FLANGE OF FASCIA GIRDERS, OR PROVIDE BRACING TO PREVENT WEB BUCKLING DUE TO LOADS FROM WEB-BEARING SUPPORT SYSTEMS.

NOTE:

TRANSVERSE AND LONGITUDINAL STIFFENERS ARE SINGLE SIDED AND SHOULD BE PLACED ON OPPOSITE SIDES OF WEB. SEE FRAMING PLAN FOR PLACEMENT OF TRANSVERSE STIFFENERS.

* TYPE I - TENSION IN BOTTOM FLANGE

TYPE II - TENSION IN TOP FLANGE

TYPE III - REVERSAL-TENSION TOP OR BOTTOM

** TRANSVERSE STIFFENER SPACINGS NOTED ARE MAXIMUMS. IT IS ANTICIPATED THAT STIFFENERS WILL BE EQUALLY SPACED BETWEEN CROSSFRAMES, BUT SPACINGS MAY BE ADJUSTED WITH APPROVAL OF THE ENGINEER TO ACCOMMODATE SHOP DETAILING.

CROSSFRAME CONNECTION PLATES ARE CONSIDERED TO ACT AS TRANSVERSE STIFFENERS.

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 & 4.
2. FOR FRAMING PLAN NOTES, SEE SHEET 36.
3. WORK THIS SHEET WITH SHEET 36.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

ALL DIMENSIONS ARE IN MILLIMETERS.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

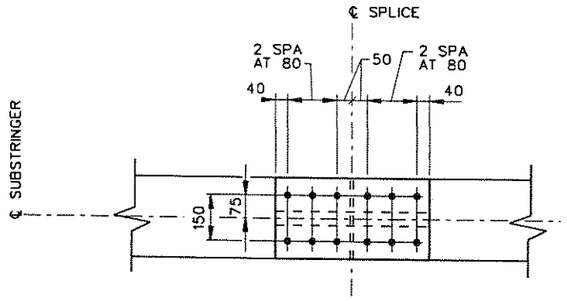
US 33 OVER
CLIFFORD HOLLOW

FRAMING PLAN AND GIRDER ELEVATION

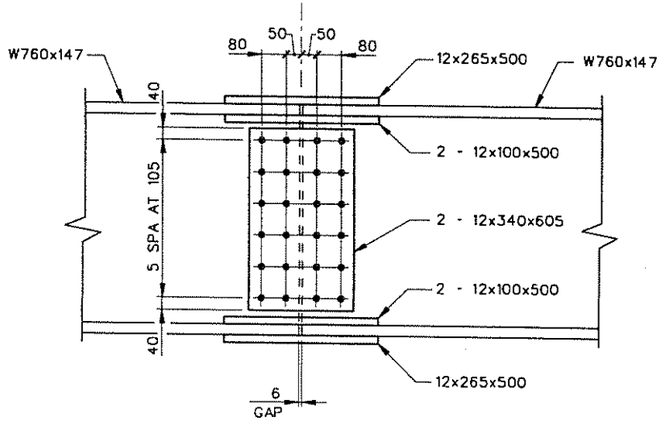
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

MADE SM DATE 5/97	CKD KJW DATE 5/97	BRIDGE NO.	4249
TRCD DATE	SCALE AS NOTED	SHEET NO.	37

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 DS	APD-0464(124) CTC	2001	HARDY	78	146

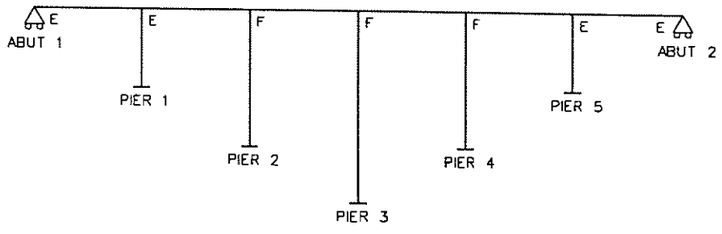


PLAN



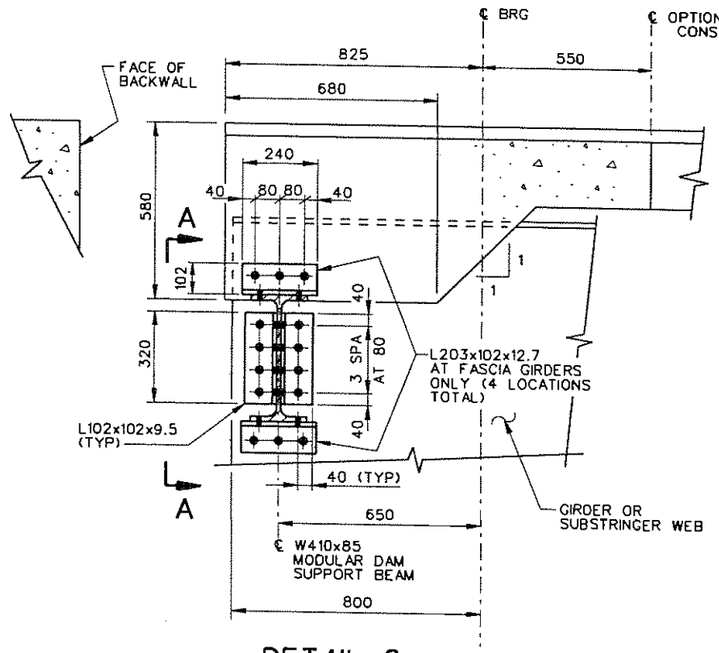
ELEVATION

SUBSTRINGER SPLICE



JACKING TABLE			
PIER	PIER 2	PIER 3	PIER 4
FORCE TO MOVE PIER TOP BY 25mm	280 KN	160 KN	140 KN

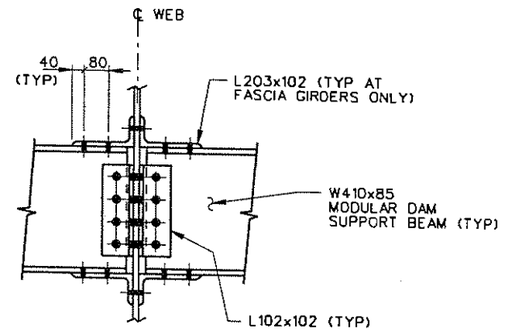
JACKING FOR GIRDER ERECTION



DETAIL 6

MODULAR DAM SUPPORT BEAM CONNECTION

CONNECTION AT FASCIA GIRDER SHOWN,
CONNECTION AT INTERIOR GIRDER AND SUBSTRINGER SIMILAR.



VIEW A-A

NOTES:

ALL BOLTS SHALL BE M22 M164M, TYPE 3, IN 24 DIA HOLES.
EXCLUDE THREADS FROM SHEAR PLANES.

ALL SPLICE PLATES SHALL BE CVN (CHARPY-V-NOTCH) IMPACT TESTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL SPLICE PLATES GRADE 345W.

ERECTION NOTES

1. LONGITUDINAL JACKING OF STRUCTURE MAY BE REQUIRED TO COMPLETE STEEL GIRDER ERECTION AS A RESULT OF PIER FIXITY.
2. SEE TABLE AT LEFT FOR FORCES REQUIRED TO DEFLECT FIXED PIERS.
3. COST FOR ANY REQUIRED JACKING IS INCIDENTAL TO ITEM 615-D1, STEEL SUPERSTRUCTURE.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

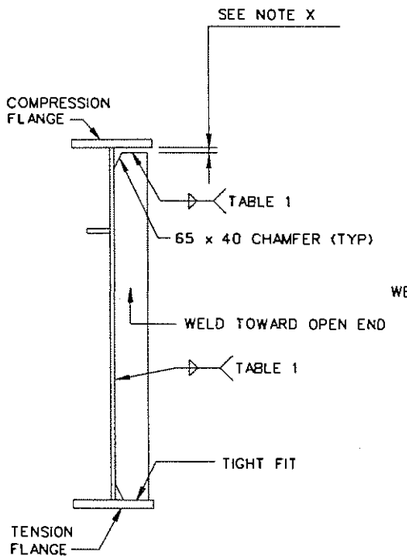
SUBSTRINGER & MODULAR DAM SUPPORT

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

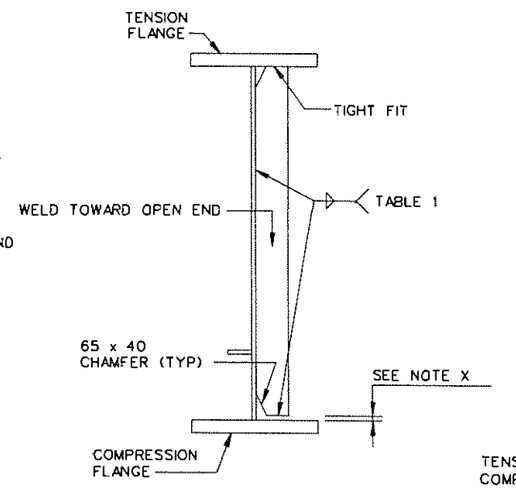
MADE SM DATE 5/97	CKD JDC DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE 1:20	SHEET NO. 38

AS-01
PLOT DATE: 06-13-00
FILE: 0002-095\CLIFSPL02

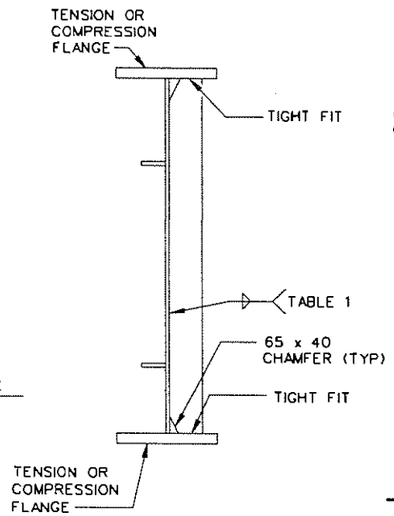
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X318-H-101.92 05	APD-0484(124) CTC	2001	HARDY	79	146



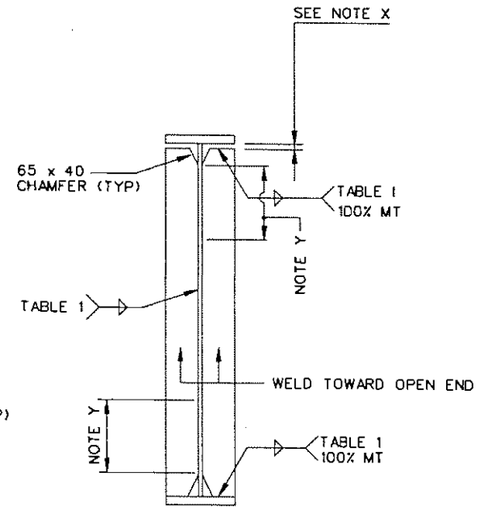
TYPE I



TYPE II



TYPE III



CROSSFRAME CONNECTION PLATE DETAILS

INTERIOR GIRDER SHOWN

NOTE: CONNECTION PLATES REQUIRED ONLY ON INSIDE FACE OF EXTERIOR GIRDERS.

NOTE X: 3mm MAXIMUM CLEAR BEFORE WELDING.

NOTE Y: 100% MT OF CONN PLATE TO WEB WELDS AT ALL CROSSFRAMES TOP AND BOTTOM GUSSET PLATES.

TABLE 1	
MATERIAL THICKNESS OF THICKER PART JOINED	MIN FILLET WELD SIZE
19 OR LESS	6
OVER 19	8

NOTE :
SIZE OF FILLET WELD NEED NOT EXCEED THICKNESS OF THINNER PLATE JOINED

LEGEND:

MT = MAGNETIC PARTICLE TESTING
RT = RADIOGRAPHIC TESTING
UT = ULTRASONIC TESTING

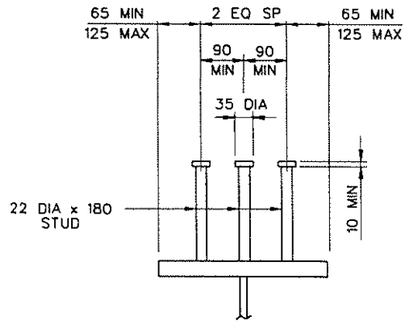
NOTES:

1. FOR GENERAL NOTES SEE SHEETS 3 AND 4.
2. CJP INDICATES COMPLETE JOINT PENETRATION GROOVE WELD.
3. FOR FRAMING PLAN AND GIRDER ELEVATION, SEE SHEETS 36 AND 37.
4. TRANSVERSE STIFFENERS AND CROSSFRAME CONNECTION PLATES MAY BE EITHER VERTICAL OR NORMAL TO TOP FLANGE.
5. TRANSVERSE STIFFENERS ON EXTERIOR GIRDERS TO BE PLACED ON INSIDE FACE OF WEB.

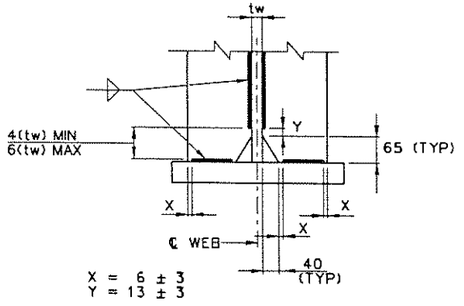
TRANSVERSE STIFFENER DETAILS

CVN (CHARPY V-NOTCH) TESTING REQUIREMENTS
GIRDER FLANGE AND WEB PLATES TO CONFORM TO CVN TEST REQUIREMENTS AS FOLLOWS:

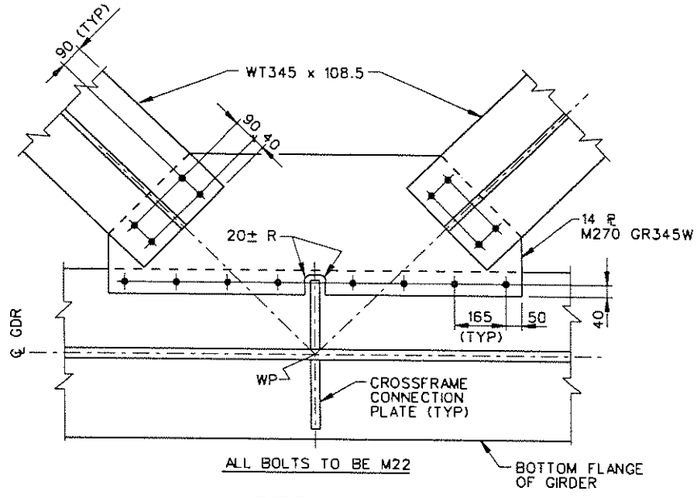
TYPE I - BOTTOM FLANGE AND WEB
TYPE II - TOP FLANGE AND WEB
TYPE III - TOP AND BOTTOM FLANGES AND WEB



SHEAR CONNECTOR DETAIL



TYPICAL FILLET WELD DETAIL



DETAIL 10
TYPICAL LATERAL BRACING CONNECTION

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

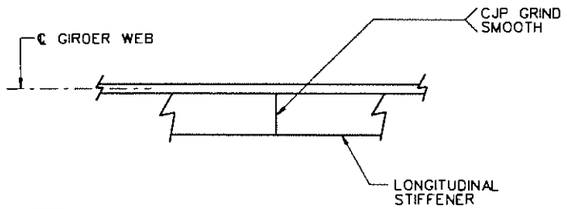
US 33 OVER
CLIFFORD HOLLOW

TYPICAL GIRDER DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

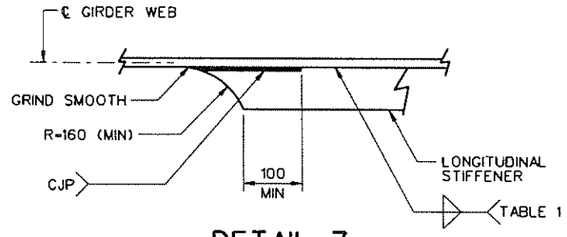
MADE SM DATE 5/97	CKD KJW DATE 5/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE NO SCALE	SHEET NO. 39

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X318-H-101.92 05	APD-0484(124) CTC	2001	HARDY	80	146

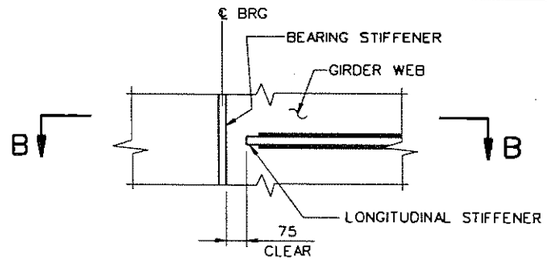


NOTE:
NDT REQUIREMENTS FOR SHOP SPLICES OF LONGITUDINAL STIFFENERS SAME AS THOSE FOR FLANGE SPLICES. PERFORM NDT PRIOR TO ATTACHMENT TO GIRDER WEB.

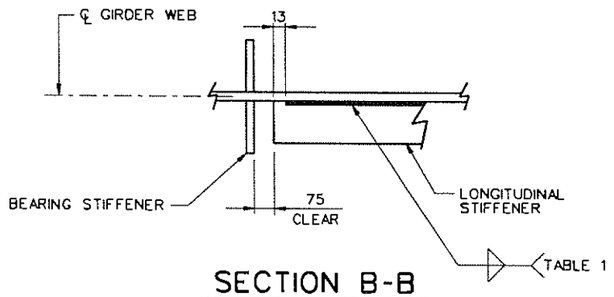
LONGITUDINAL STIFFENER SPLICE DETAILS



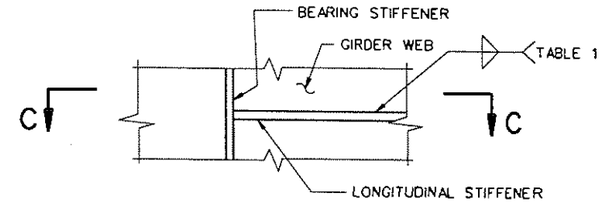
DETAIL 7
LONGITUDINAL STIFFENER TERMINATION DETAILS



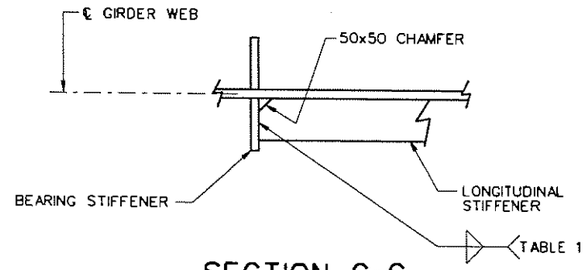
DETAIL 4
LONGITUDINAL STIFFENER TERMINATION AT ABUTMENTS 1 AND 2 & PIERS 2, 3 AND 4



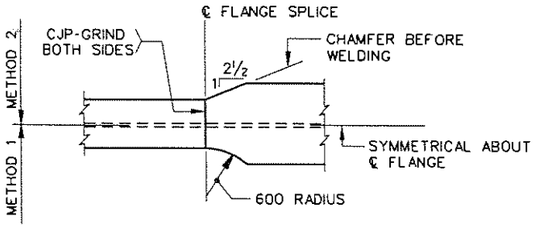
SECTION B-B



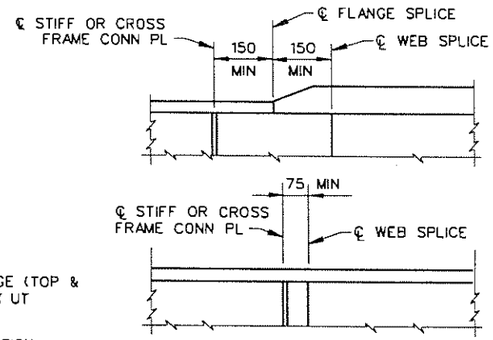
DETAIL 9
LONGITUDINAL STIFFENER TERMINATION AT PIERS 1 AND 5



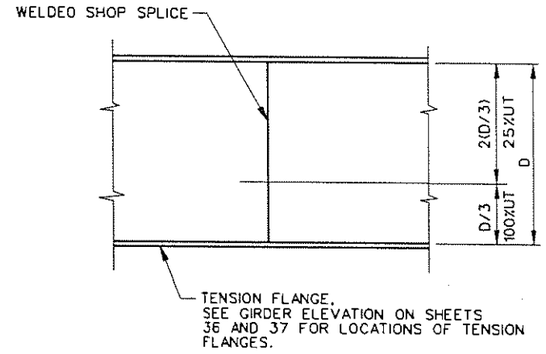
SECTION C-C



PLAN
FLANGE SPLICE DETAILS

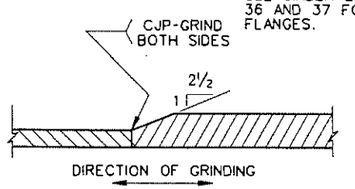


SHOP SPLICE CLEARANCE DETAILS

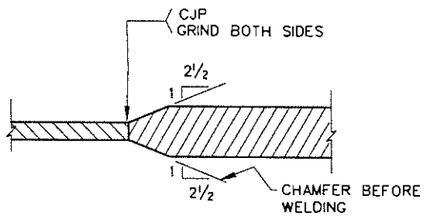


TESTING FOR WELDED SHOP WEB SPLICE

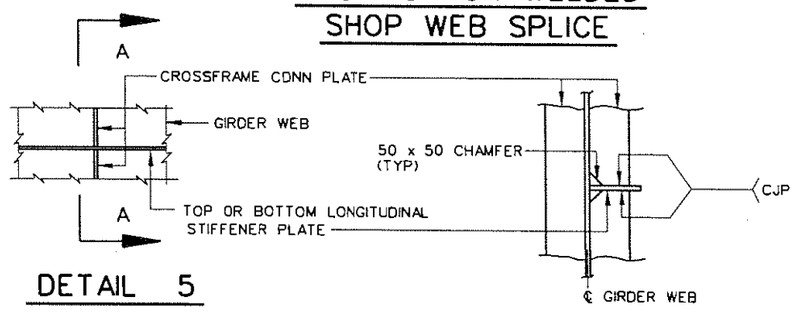
100% UT OR RT FOR TENSION FLANGE (TOP & BOTTOM FLANGE IN TYPE III)-25% UT FOR COMPRESSION FLANGE.
SEE GIRDER ELEVATION ON SHEETS 36 AND 37 FOR LOCATIONS OF TENSION FLANGES.



ELEVATION
FLANGE SPLICE DETAILS



PLAN
WEB SPLICE DETAILS



DETAIL 5

SECTION A-A

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 & 4.
2. WORK THIS SHEET WITH SHEET 39.
3. FOR FRAMING PLAN AND GIRDER ELEVATION, SEE SHEETS 36 AND 37.
4. CJP INDICATES COMPLETE JOINT PENETRATION GROOVE WELD.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

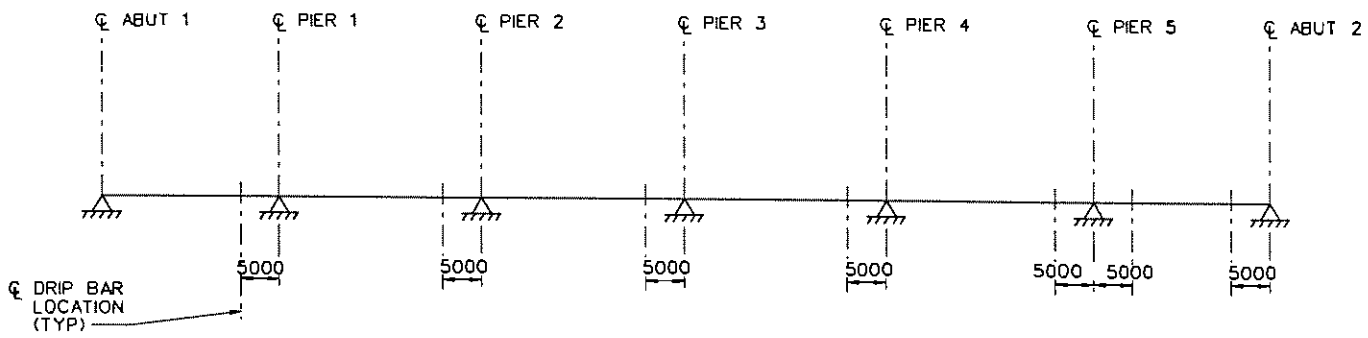
US 33 OVER
CLIFFORD HOLLOW

TYPICAL GIRDER DETAILS

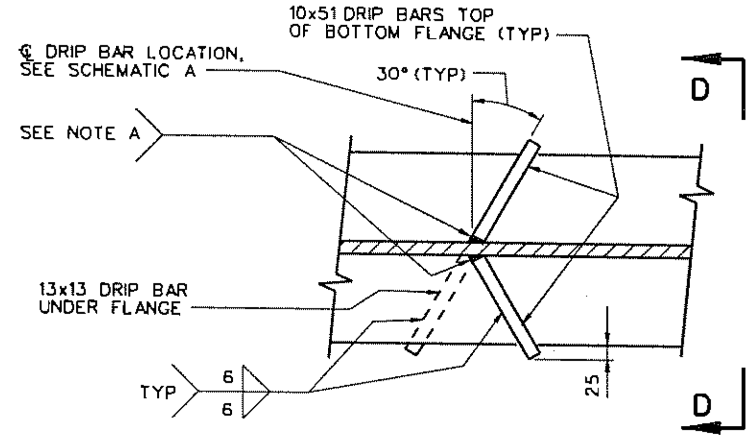
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM DATE 7/97	CKD KJW DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE NO SCALE	SHEET NO. 40

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	81	146



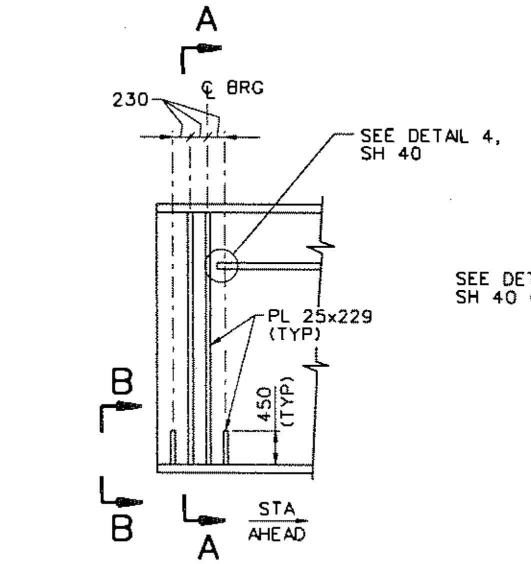
SCHEMATIC A
DRIP BAR LOCATIONS



DRIP BAR DETAILS

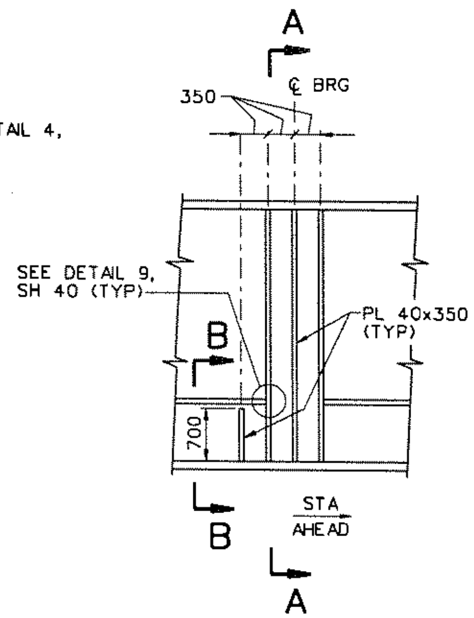
NOTE A:

CAULK AGAINST WEB AND FILLET WELD WITH DARK BROWN CAULKING (TYP).



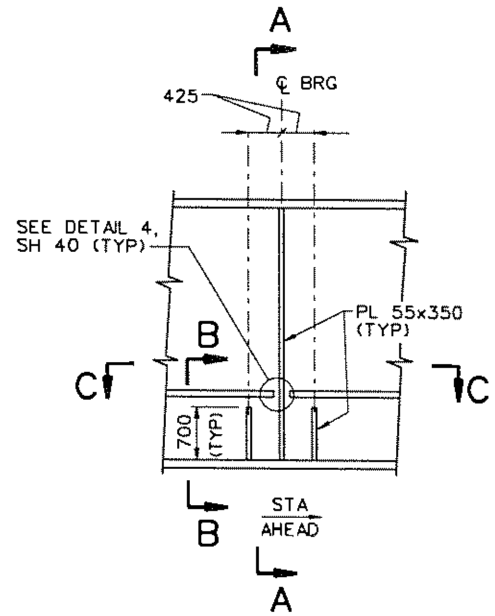
DETAIL 1
BEARING STIFFENERS AT ABUTMENTS

(ABUTMENT 1 SHOWN)
(ABUTMENT 2 OPPOSITE HAND)

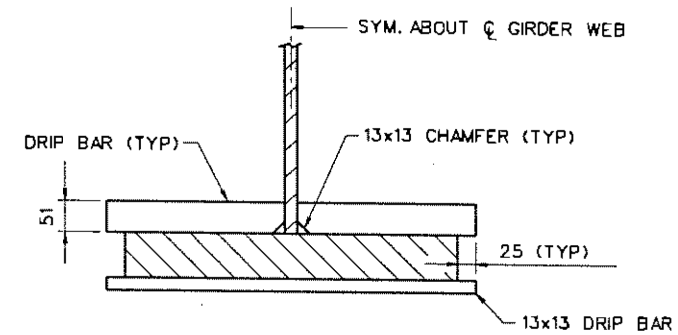


DETAIL 2
BEARING STIFFENERS AT PIERS 1 AND 5

(PIER 1 SHOWN)
(PIER 5 OPPOSITE HAND)



DETAIL 3
BEARING STIFFENERS AT PIERS 2, 3 AND 4

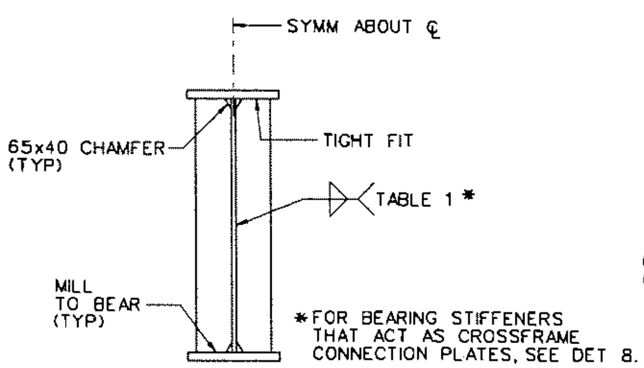


SECTION D-D

NOTES:

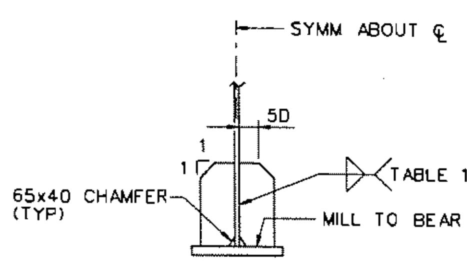
1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEET 39.
3. FOR FRAMING PLAN AND GIRDER ELEVATION, SEE SHEETS 36 AND 37.
4. UNDER FULL DEAD LOAD, BEAM ENDS AND ALL BEARING STIFFENERS SHALL BE VERTICAL TO WITHIN APPLICABLE AASHTO/AWS FABRICATION AND CONSTRUCTION TOLERANCES.

ALL DIMENSIONS ARE IN MILLIMETERS.



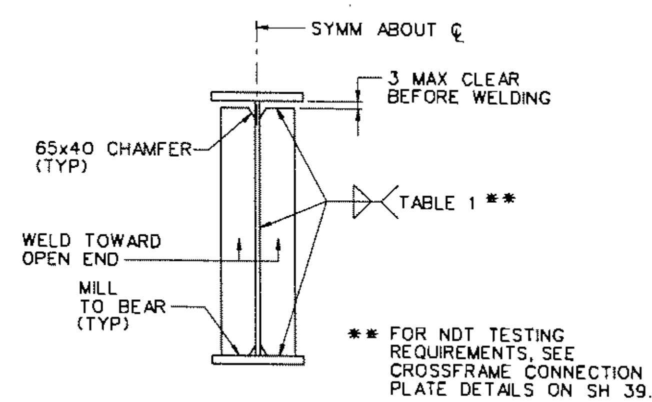
* FOR BEARING STIFFENERS THAT ACT AS CROSSFRAME CONNECTION PLATES, SEE DET 8.

SECTION A-A



SECTION B-B

AUXILIARY BEARING STIFFENER DETAILS



** FOR NDT TESTING REQUIREMENTS, SEE CROSSFRAME CONNECTION PLATE DETAILS ON SH 39.

DETAIL 8
BEARING STIFFENER/CROSSFRAME CONNECTION PLATE DETAILS

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

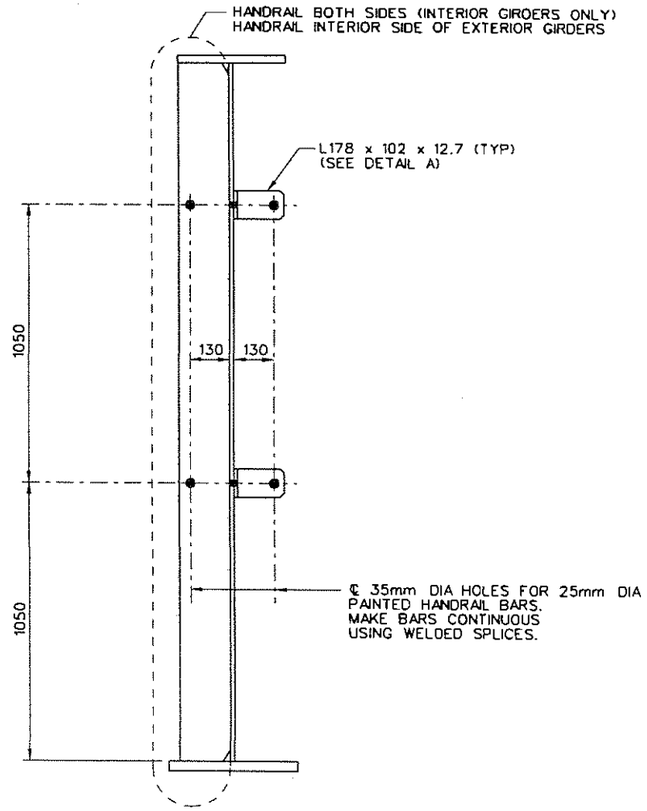
US 33 OVER
CLIFFORD HOLLOW

TYPICAL GIRDER DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

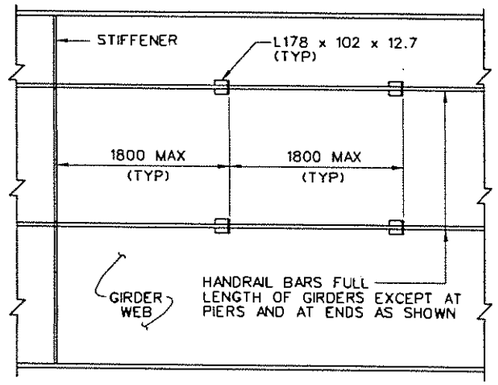
MADE SM DATE 7/97 | CKD KJW DATE 7/97 | BRIDGE NO. 4249
TRCD ____ DATE ____ | SCALE NO SCALE | SHEET NO. 41

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X345-H-101.92 D5	APD-0484(124) CTC	2001	HARDY	82	146



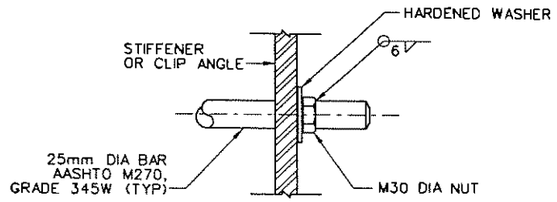
SECTION FOR HANDRAIL INSTALLATION

NO SCALE



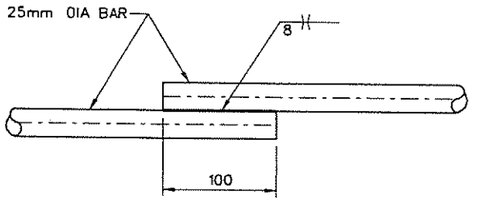
HANDRAIL ELEVATION

NO SCALE



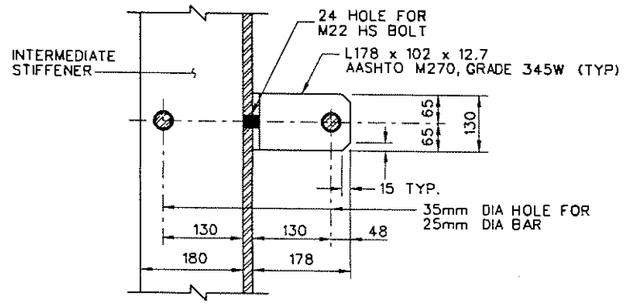
END CONNECTION DETAIL

NO SCALE



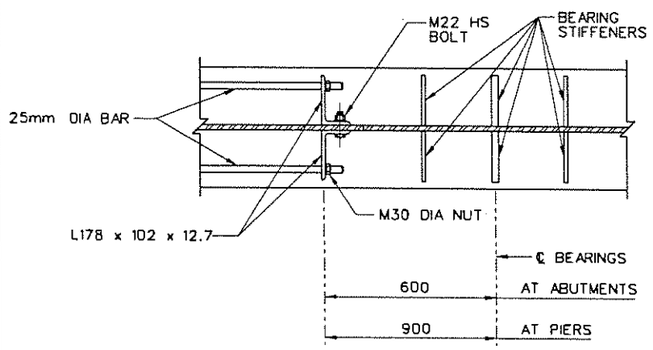
WELDED SHOP SPLICE DETAIL

NO SCALE



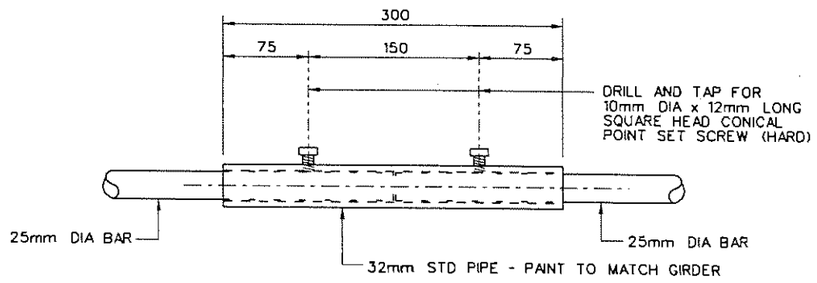
DETAIL A

NO SCALE



HANDRAIL PLAN AT BEARINGS

NO SCALE



BOLTED FIELD SPLICE DETAIL AT GIRDER FIELD SPLICE

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

INSPECTION HANDRAIL DETAILS

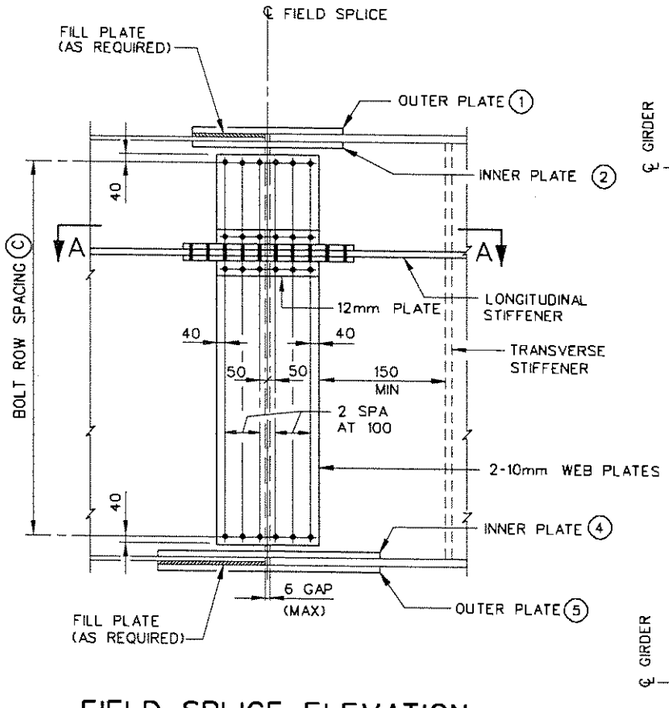
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM DATE 5/97	CKD MAP DATE 5/97		BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE 1:20		SHEET NO. 42

FIELD SPLICE SCHEDULE - G1, G2, G3 & G4

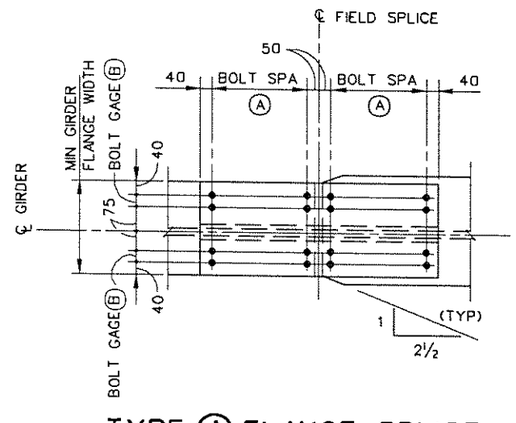
FIELD SPLICE NUMBER	TOP FLANGE SPLICE					WEB SPLICE	BOTTOM FLANGE SPLICE				
	MIN FLG WIDTH/ SPLICE DETAIL	OUTER PLATES ①	INNER PLATES (2 REQUIRED) ②	BOLT SPACING Ⓐ	BOLT GAGE Ⓑ	BOLT ROW SPACING Ⓒ *	MIN FLG WIDTH/ SPLICE DETAIL	INNER PLATES (2 REQUIRED) ④	OUTER PLATES ⑤	BOLT SPACING Ⓐ	BOLT GAGE Ⓑ
1	500/A	14x500x820	16x215x820	4 AT 80	135	24 AT 130	550/B	35x240x1460	32x550x1460	6 AT 80	2 AT 80
2	500/A	20x500x1140	22x215x1140	6 AT 80	135	28 AT 111	550/B	25x240x1140	22x550x1140	4 AT 80	2 AT 80
3	500/A	16x500x980	20x215x980	5 AT 80	135	27 AT 115	550/B	25x240x980	16x550x980	3 AT 80	2 AT 80
4	500/A	14x500x660	16x215x660	3 AT 80	135	24 AT 130	550/B	32x240x1300	28x550x1300	5 AT 80	2 AT 80
5	500/A	14x500x660	16x215x660	3 AT 80	135	24 AT 130	550/B	40x240x1620	35x550x1620	7 AT 80	2 AT 80
6	550/B	22x550x1140	25x240x1140	4 AT 80	2 AT 80	28 AT 111	550/B	28x240x1300	25x550x1300	5 AT 80	2 AT 80
7	500/A	22x500x1300	25x215x1300	7 AT 80	135	27 AT 115	550/B	28x240x1300	25x550x1300	5 AT 80	2 AT 80
8	500/A	14x500x660	16x215x660	3 AT 80	135	24 AT 130	550/B	32x240x1300	28x550x1300	5 AT 80	2 AT 80
9	500/A	14x500x660	16x215x660	3 AT 80	135	24 AT 130	550/B	32x240x1300	28x550x1300	5 AT 80	2 AT 80
10	500/A	22x500x1300	25x215x1300	7 AT 80	135	28 AT 111	550/B	25x240x1300	22x550x1300	5 AT 80	2 AT 80

* ADJUST SPACING AT LONGITUDINAL STIFFENER AS REQUIRED.



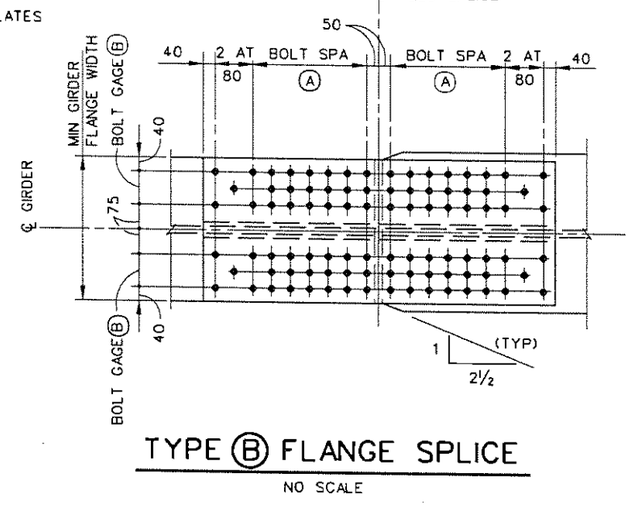
FIELD SPLICE ELEVATION

NO SCALE



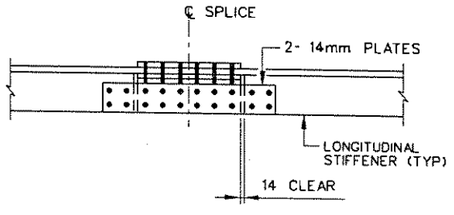
TYPE Ⓐ FLANGE SPLICE

NO SCALE



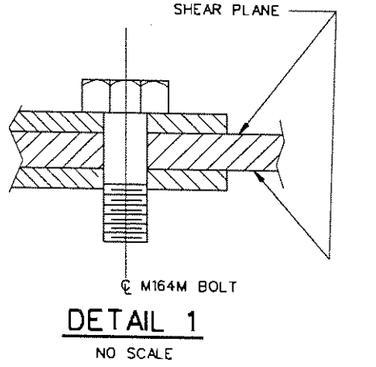
TYPE Ⓑ FLANGE SPLICE

NO SCALE



SECTION A-A

NO SCALE



DETAIL 1

NO SCALE

NOTES:

ALL BOLTS SHALL BE M22 M164M, TYPE 3, IN 24mm DIA HOLES. EXCLUDE THREADS FROM SHEAR PLANES, SEE DETAIL 1.

DO NOT INSTALL STUD SHEAR CONNECTORS ON FLANGE SPLICE PLATES. REDUCE THE SPACING OF THOSE ADJACENT TO THE SPLICE PLATES TO 150mm AND PROVIDE THE SAME NUMBER THAT WOULD BE REQUIRED WITHOUT THE FIELD SPLICE.

ALL SPLICE PLATES SHALL BE CVN (CHARPY-V-NOTCH) IMPACT TESTED IN ACCORDANCE WITH AASHTO M270.

ALL SPLICE PLATES GRADE 345W.

FULL BOLT PATTERNS NOT SHOWN.

ALL DIMENSIONS ARE IN MILLIMETERS.

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X310-H-101.92 05	APD-0484(124) CTC	2001	HARDY	83	146

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

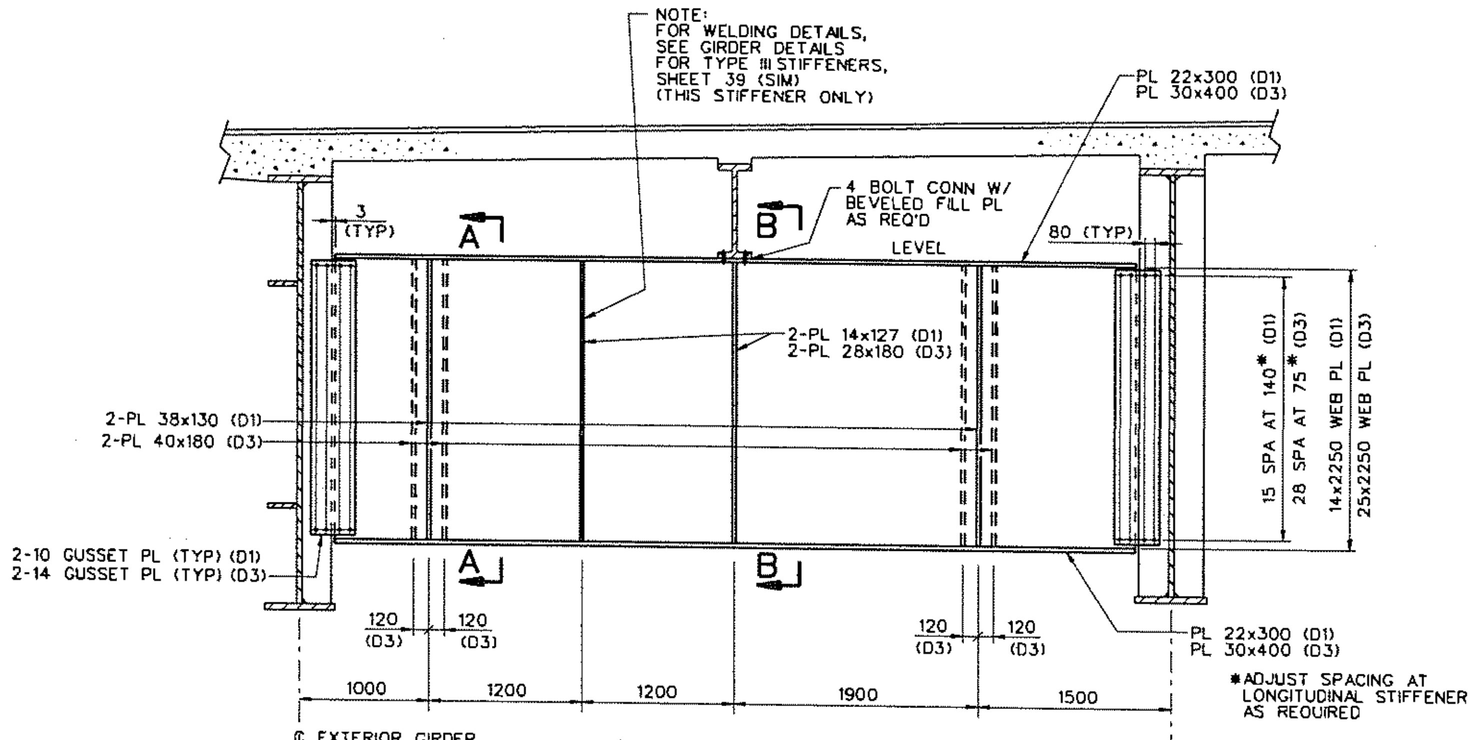
US 33 OVER
CLIFFORD HOLLOW

FIELD SPLICE DETAILS

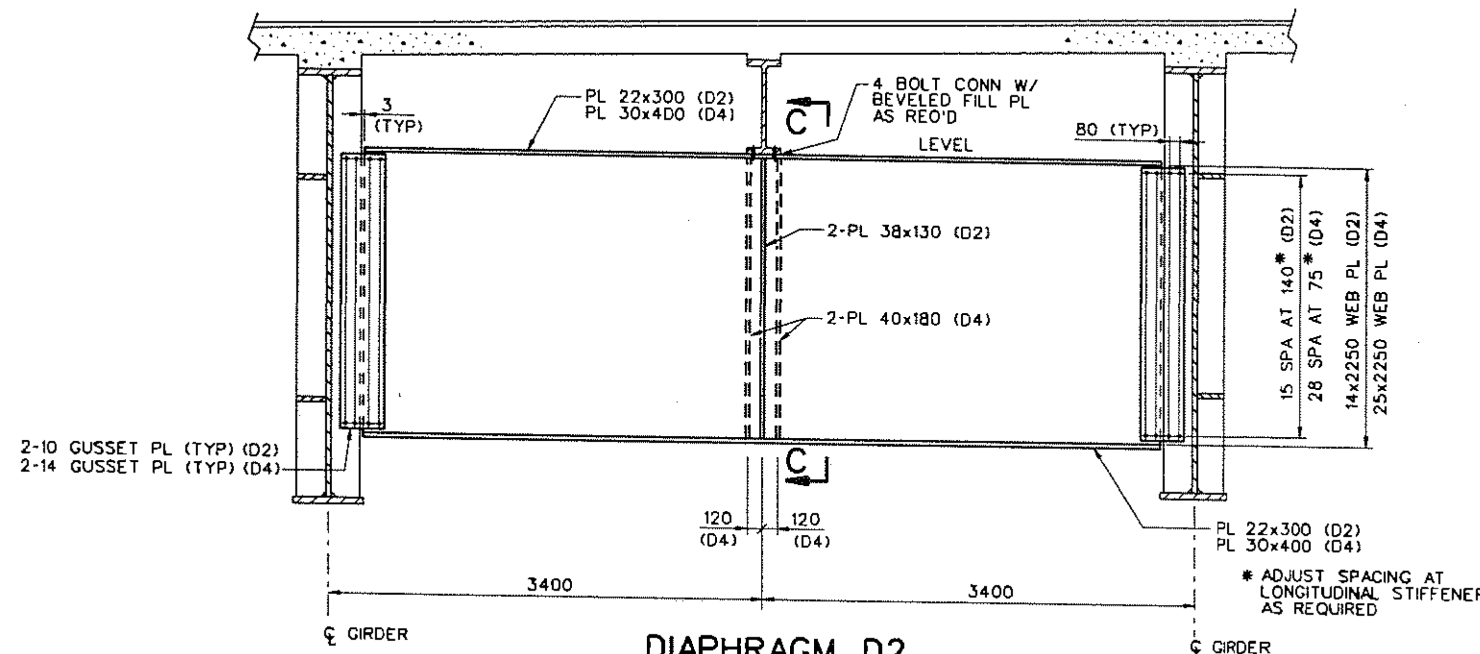
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM DATE 5/97	CKD JDC DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE 1:20	SHEET NO. 43

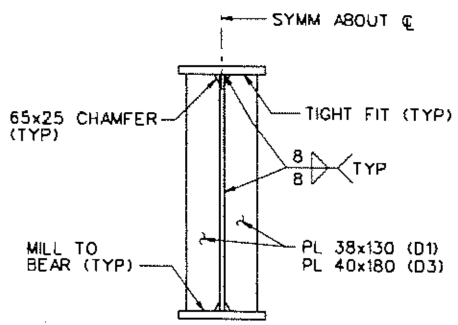
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	84	146



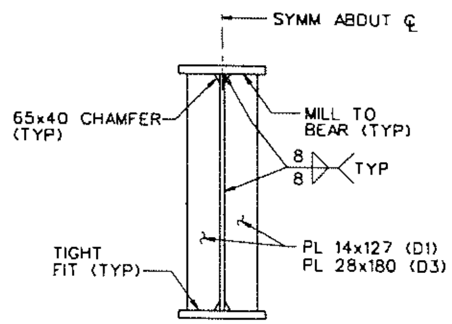
DIAPHRAGM D1
DIAPHRAGM D3



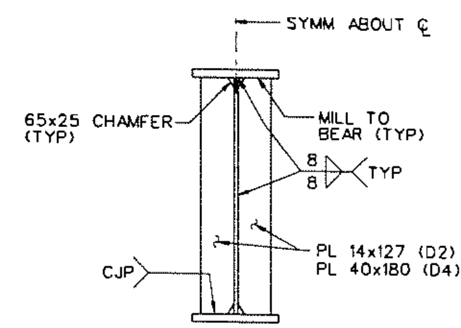
DIAPHRAGM D2
DIAPHRAGM D4



SECTION A-A



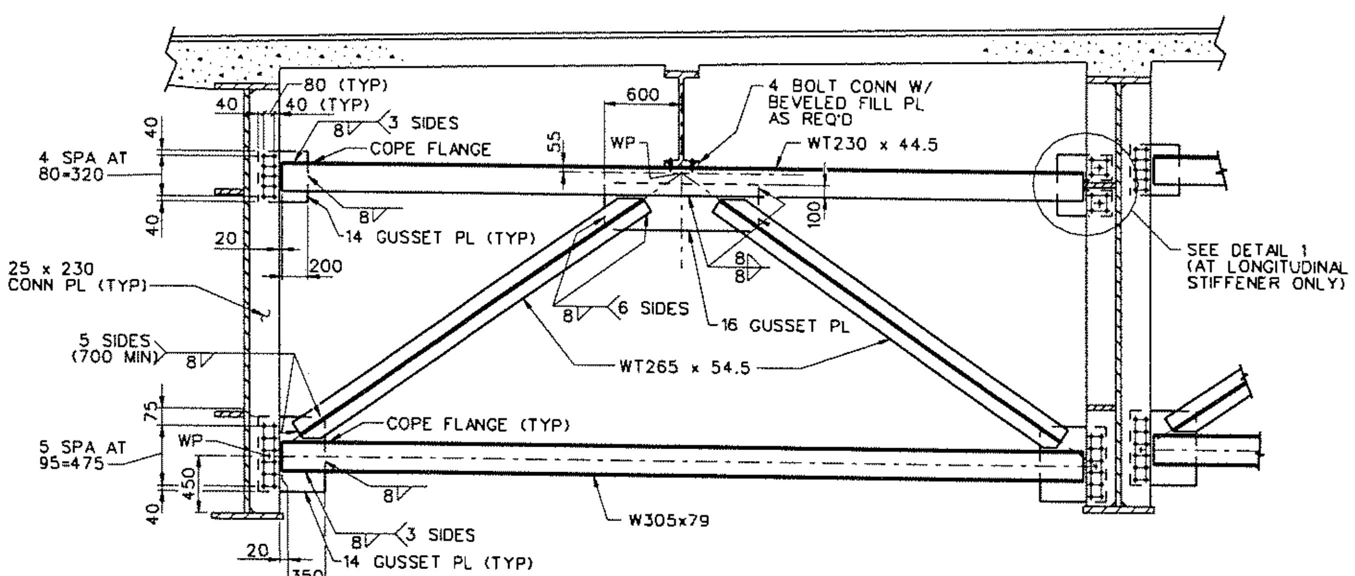
SECTION B-B



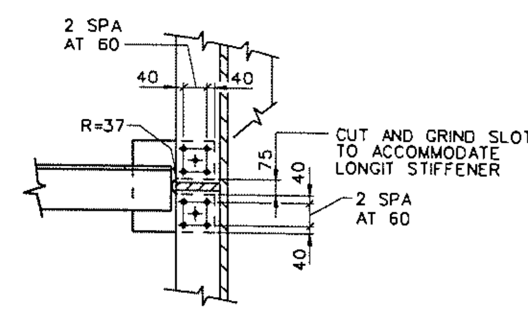
SECTION C-C

NOTE:

ALL MAIN MATERIAL FOR CROSSFRAMES AND DIAPHRAGMS (ROLLED SHAPES, FLANGE AND WEB PLATES, GUSSET PLATES) MUST MEET CVN TESTING REQUIREMENTS.



CROSSFRAME CF1



DETAIL 1

(AT LONGITUDINAL STIFFENER ONLY)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

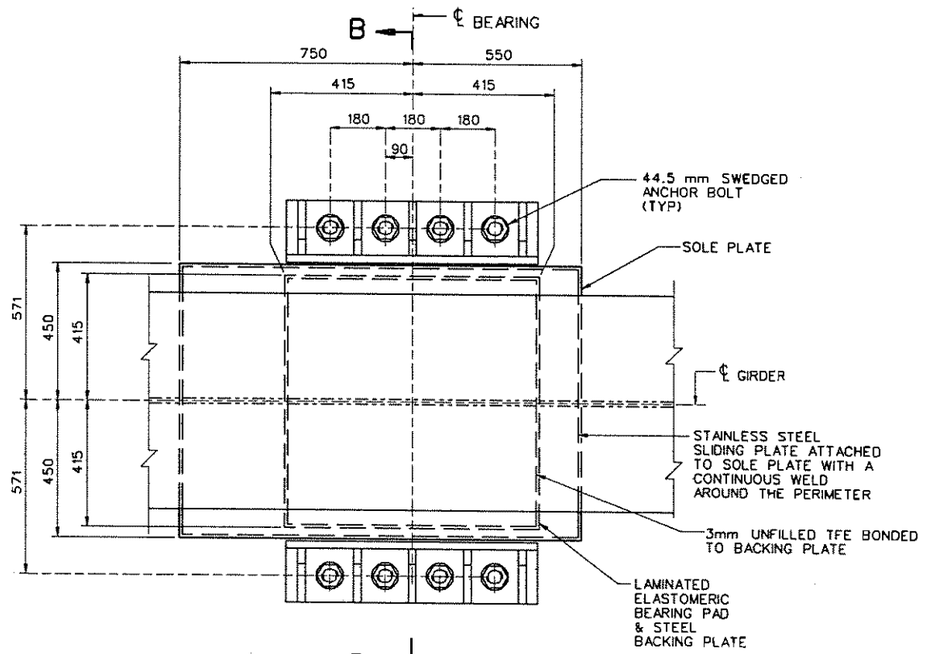
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

CROSSFRAME AND DIAPHRAGM DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

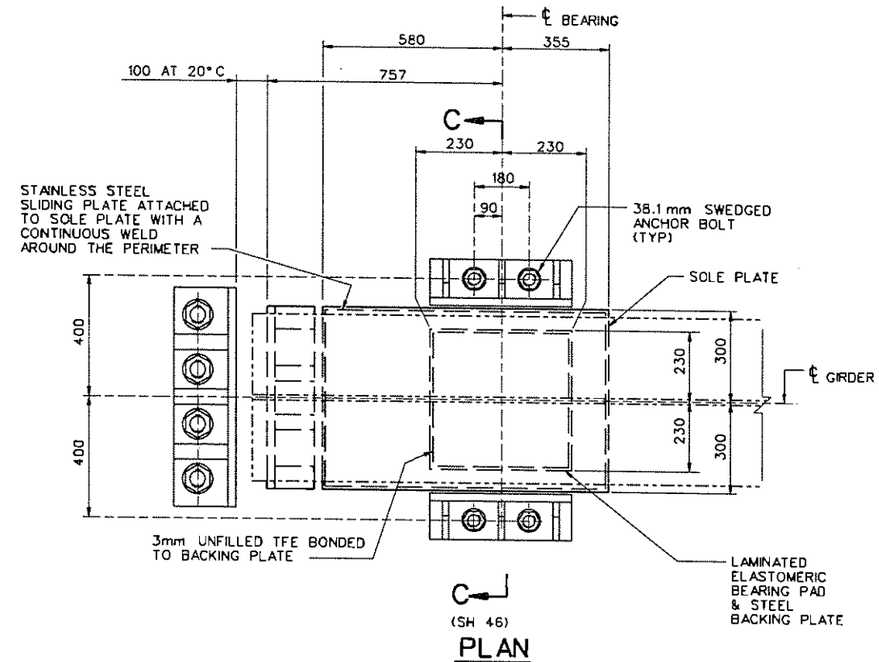
MADE SM DATE 7/97 | CKD JDC DATE 7/97 | BRIDGE NO. 4249
TRCD ___ DATE ___ | SCALE 1:30 | SHEET NO. 44



PLAN

TYPE 2 EXPANSION BEARING
(PIERS 1 & 5)

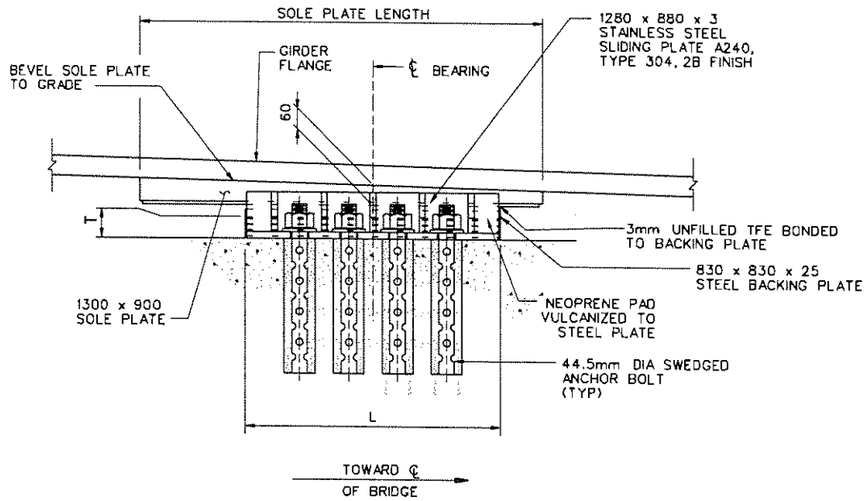
0 200 400mm



PLAN

TYPE 3 EXPANSION BEARING
(ABUTMENTS 1 & 2)

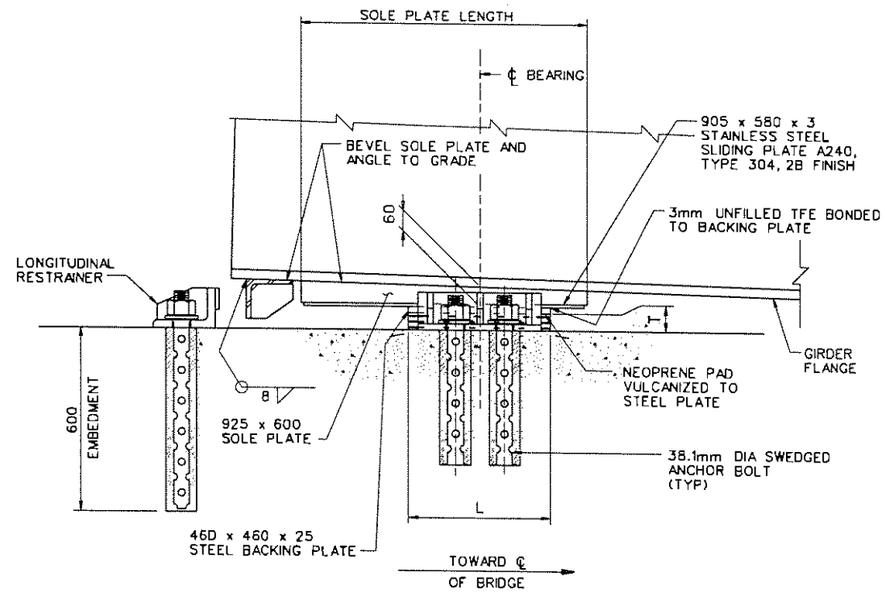
0 200 400mm



ELEVATION

TYPE 2 EXPANSION BEARING
(PIERS 1 SHOWN)
(PIERS 5 SIMILAR)

0 200 400mm



ELEVATION

TYPE 3 EXPANSION BEARING
(ABUTMENT 1 SHOWN)
(ABUTMENT 2 SIMILAR)

0 200 400mm

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-00.92 05	APD-0484(124) CTC	2001	HARDY	85	146

NOTES:

1. FOR ELASTOMERIC BEARING DIMENSIONS, DETAILS AND DUROMETER, SEE SHEET 46.
2. WORK SHEETS 45 THRU 48 TOGETHER.
3. FOR SECTIONS B-B AND C-C, SEE SHEET 46.
4. FOR GENERAL NOTES, SEE SHEETS 3 & 4.
5. FOR RESTRAINER DETAILS, SEE SHEET 48.
6. PROVIDE STEEL FOR BEARINGS AND RESTRAINERS, INCLUDING ANCHOR BOLTS, CONFORMING TO AASHTO M270 GRADE 345W.
7. DRILLING HOLES FOR ANCHOR BOLTS IS NOT PERMITTED. SET ANCHOR BOLTS IN PREFORMED HOLES AS SHOWN. WASH AND DRY PREFORMED HOLES BEFORE FILLING WITH NON-SHRINK GROUT.
8. FILL ANNULAR SPACE BETWEEN ANCHOR BOLT AND ANGLE WITH HIGH STRENGTH GROUT BEFORE PLACING NUTS AND WASHERS.
9. BLAST CLEAN CONCRETE BEARING SURFACES TO ACHIEVE ROUGH TEXTURE.
10. INSTALL ELASTOMERIC BEARINGS IN TRUE LEVEL POSITION.
11. JACK ALL GIRDERS AT ABUTMENTS AND PIERS TO RELIEVE ELASTOMERIC BEARINGS OF TEMPERATURE AND CONSTRUCTION RELATED STRESSES AND STRAINS. PERFORM JACKING WHEN THE AMBIENT TEMPERATURE IS BETWEEN 15°C AND 25°C. PERFORM JACKING NOT BEFORE 60 DAYS AFTER THE COMPLETION OF THE SUPERSTRUCTURE DECK CONCRETE WORK.
12. JACK ALL GIRDERS AT A SUBSTRUCTURE BEARING LINE SIMULTANEOUSLY. THE REQUIRED JACKING LOADS ARE AS SHOWN ON SHEET 49.
13. JACK THE GIRDERS A MAXIMUM OF 10mm TO RELIEVE THE BEARING PAD OF ALL SUPERSTRUCTURE LOADS. PERFORM JACKING AT A SLOW UNIFORM RATE TO AVOID SUDDEN SPRINGING AND DISPLACEMENT OF THE BEARING PADS.
14. SUBMIT CATALOG CUTS FOR PROPOSED JACKS TO THE ENGINEER FOR APPROVAL PRIOR TO START OF THE JACKING OPERATIONS.

ALL DIMENSIONS ARE IN MILLIMETERS

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

EXPANSION BEARING DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE JJW/SM DATE 7/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS NOTED	SHEET NO. 45

ELASTOMERIC BEARING DIMENSIONS

LOCATION	TYPE	ELASTOMERIC PAD DIMENSIONS							SOLE PLATE DIMENSIONS			TOTAL BEARING HEIGHT (A)	TOTAL BEARINGS PER LOCATION
		WIDTH W	LENGTH L	COVER LAYER	INTERNAL LAYER	DUROMETER	NUMBER OF INTERNAL LAYERS	TOTAL THICKNESS T	LENGTH	WIDTH	THICKNESS AT ℄ BRG		
ABUTMENT 1	TYPE 3-EXP	460	460	6	16	70	2	53	925	600	60	144	4
PIER 1	TYPE 2-EXP	830	830	6	16	70	5	110	1300	900	60	201	4
PIER 2	TYPE 1-FIX	850	850	6	16	50	4	91	1050	900	60	151	4
PIER 3	TYPE 1-FIX	850	850	6	16	50	4	91	1050	900	60	151	4
PIER 4	TYPE 1-FIX	850	850	6	16	50	4	91	1050	900	60	151	4
PIER 5	TYPE 2-EXP	830	830	6	16	70	5	110	1300	900	60	201	4
ABUTMENT 2	TYPE 3-EXP	460	460	6	16	70	2	53	925	600	60	144	4

(A) TOTAL FIXED BEARING HEIGHT INCLUDES PAD AND SOLE PL.
TOTAL EXPANSION BEARING HEIGHT INCLUDES PAD, SOLE PL, TFE, TOP PL AND S.S. SLIDING PL.

BEARING DATA TABLE

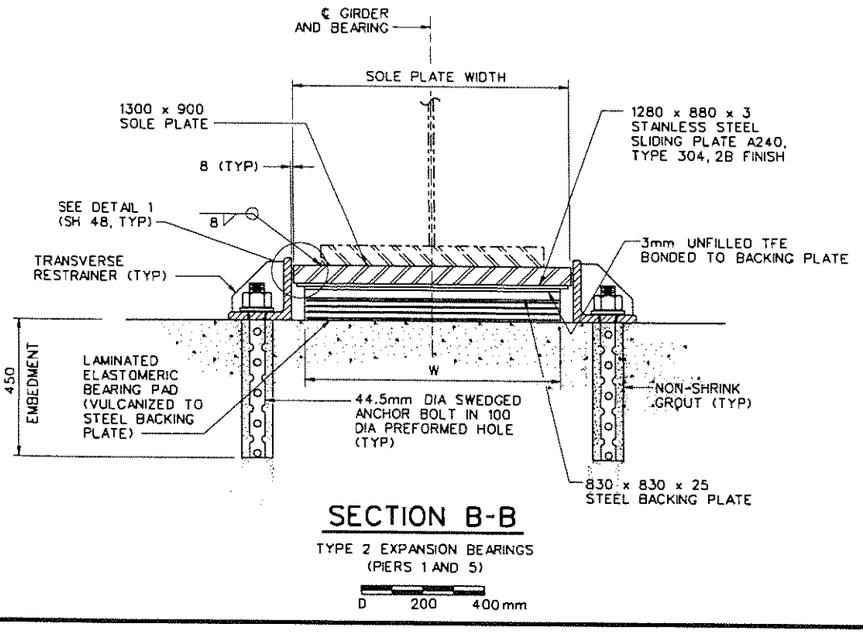
LOCATION	GIRDER	BEARING TYPE	ACTUAL BEARING LOADS (kN)-SERVICE LOADS (E)					DESIGN MOVEMENTS		LONG. SLOPE TOP OF SOLE PL AT ℄ BRG (X)	DESIGN ROTATIONS (RADIANS)	ELEV AT TOP OF CONC PAD
			VERTICAL (C)			HORIZONTAL (B)		LONGITUDINAL				
			DL	LL (D)	TOTAL	TRANS	LONG	EXP	CONTR			
ABUTMENT 1	G1 & G4 G2 & G3	TYPE 3 - EXP TYPE 3 - EXP	1384 1603	639 646	2023 2249	235 235	0 0	100 100	325 325	-2.667 -2.667	0.011 0.011	494.497 494.633
PIER 1	G1 & G4 G2 & G3	TYPE 2 - EXP TYPE 2 - EXP	5056 5980	1535 1563	6591 7543	610 610	0 0	100 100	300 300	-2.667 -2.667	0.009 0.009	492.698 492.834
PIER 2	G1 & G4 G2 & G3	TYPE 1 - FIX TYPE 1 - FIX	5228 6179	1661 1657	6889 7836	193 193	390 390	0 0	0 0	-2.667 -2.667	0.010 0.010	490.499 490.635
PIER 3	G1 & G4 G2 & G3	TYPE 1 - FIX TYPE 1 - FIX	5138 6080	1677 1649	6815 7729	193 193	390 390	0 0	0 0	-2.667 -2.667	0.010 0.010	488.263 488.399
PIER 4	G1 & G4 G2 & G3	TYPE 1 - FIX TYPE 1 - FIX	5228 6179	1661 1657	6889 7836	193 193	390 390	0 0	0 0	-1.937 -1.937	0.010 0.010	486.146 486.282
PIER 5	G1 & G4 G2 & G3	TYPE 2 - EXP TYPE 2 - EXP	5056 5980	1535 1563	6591 7543	610 610	0 0	100 100	300 300	-0.184 -0.184	0.009 0.009	485.216 485.352
ABUTMENT 2	G1 & G4 G2 & G3	TYPE 3 - EXP TYPE 3 - EXP	1384 16D3	639 646	2023 2249	235 235	0 0	100 100	325 325	1.151 1.151	0.011 0.011	485.617 485.753

(B) ABUTMENTS GOVERNED BY MAXIMUM SEISMIC LOAD (AASHTO GR VII LOADING), PIERS GOVERNED BY AASHTO GR II TRANSVERSELY AND AASHTO GR V LONGITUDINALLY.

(C) MAXIMUM LOADS AT UNIT WERE USED TO DESIGN BEARINGS.

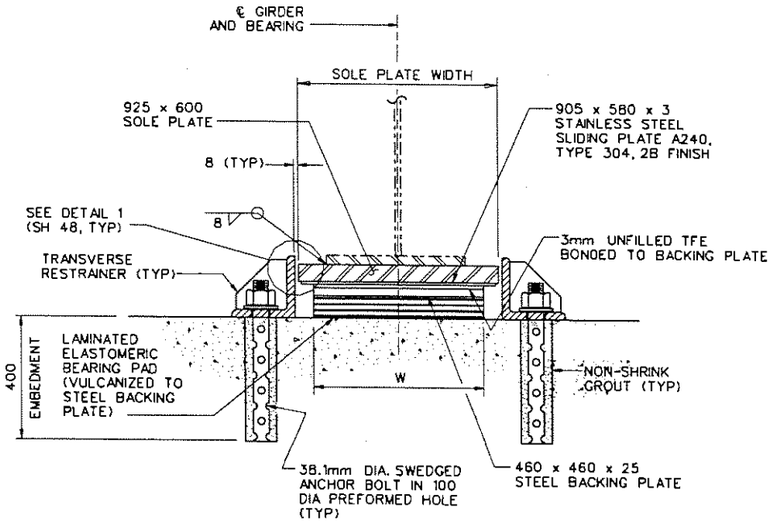
(D) LL DOES NOT INCLUDE IMPACT FOR THE ELASTOMERIC PAD DESIGN PER AASHTO.

(E) LOADS SHOWN ARE NOT REDUCED FOR ALLOWABLE OVERSTRESS.



SECTION B-B

TYPE 2 EXPANSION BEARINGS
(PIERS 1 AND 5)

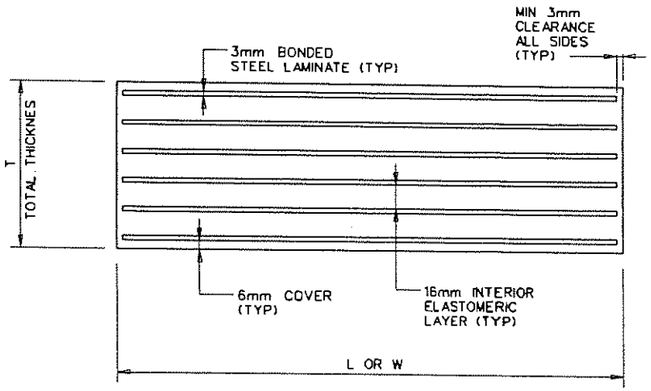


SECTION C-C

TYPE 3 EXPANSION BEARINGS
(ABUTMENTS 1 AND 2)

0 200 400mm

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.02 05	APD-0484(124) CTC	2001	HARDY	86	146



LAMINATED ELASTOMERIC PAD

NOT TO SCALE

NOTES:

1. WORK SHEETS 45 THRU 48 TOGETHER.
2. FOR GENERAL NOTES, SEE SHEETS 3 & 4.
3. FOR BEARING NOTES, SEE SHEET 45.
4. FOR RESTRAINER DETAILS, SEE SHEET 48.

ALL ELEVATIONS ARE IN METERS.
ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

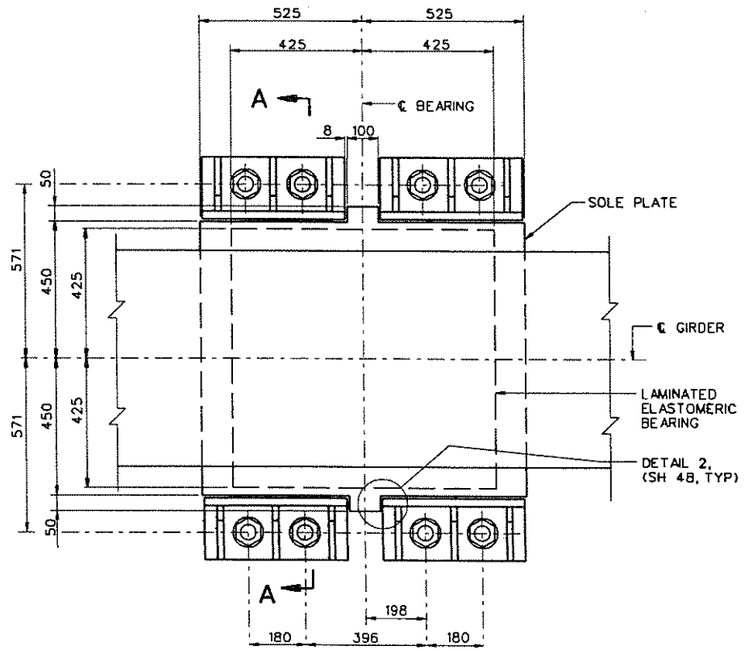
US 33 OVER
CLIFFORD HOLLOW

EXPANSION BEARING DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

MADE JJW/SM DATE 7/97	CKD. JAF DATE 7/97	BRIDGE NO. 4249
TRCD. DATE	SCALE AS NOTED	SHEET NO. 46

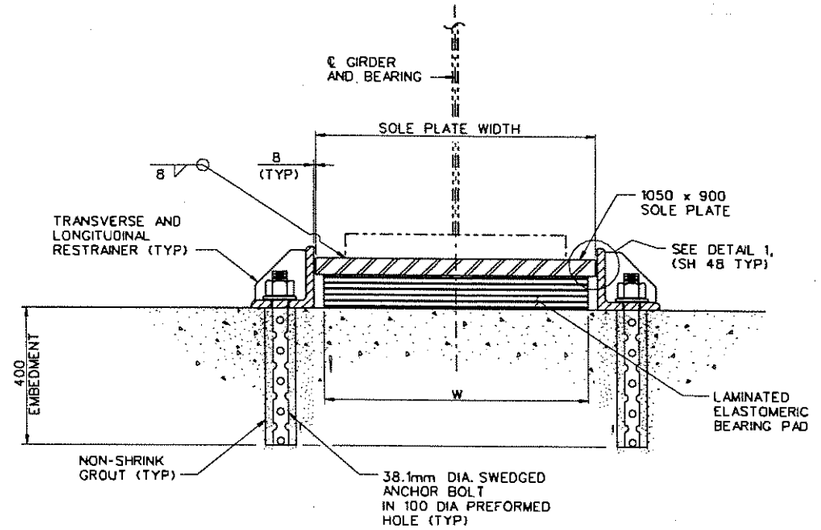
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X345-H-101.92 09	APD-0484(124) CTC	2001	HARDY	87	146



PLAN

TYPE 1 FIXED BEARING
(PIERS 2, 3, AND 4)

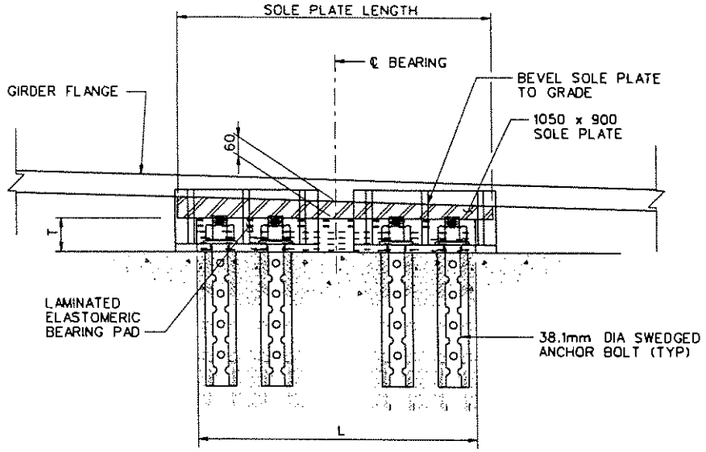
0 200 400mm



SECTION A-A

TYPE 1 FIXED BEARING
(PIERS 2, 3, AND 4)

0 200 400mm



ELEVATION

TYPE 1 FIXED BEARING
(PIERS 2, 3, AND 4)

0 200 400mm

NOTES:

1. WORK SHEETS 45 THRU 48 TOGETHER.
2. FOR GENERAL NOTES, SEE SHEET 3 & 4.
3. FOR BEARING NOTES, SEE SHEET 45.
4. FOR RESTRAINER DETAILS, SEE SHEET 48.

ALL DIMENSIONS ARE IN MILLIMETERS

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

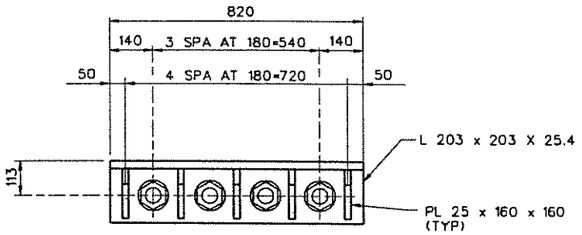
US 33 OVER
CLIFFORD HOLLOW

FIXED BEARING DETAILS

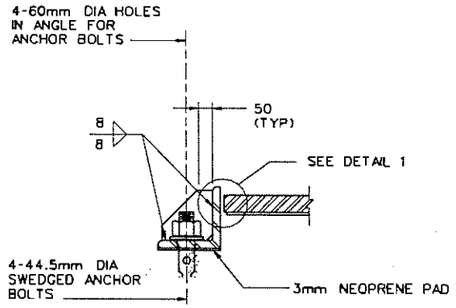
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE JJW/SM DATE 7/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS NOTED	SHEET NO. 47

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X318-H-101.52 05	APD-0464(124) CTC	2001	HARDY	88	146



PLAN

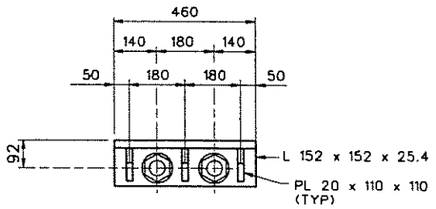


ELEVATION

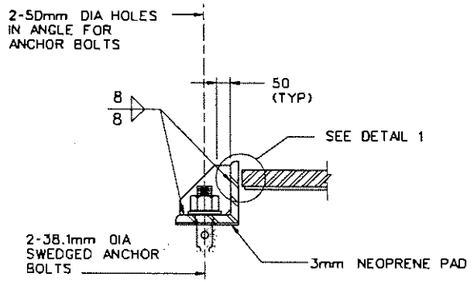
TRANSVERSE RESTRAINERS

TYPE 2 EXPANSION BEARING
AT PIERS 1 AND 5

0 200 400 mm



PLAN

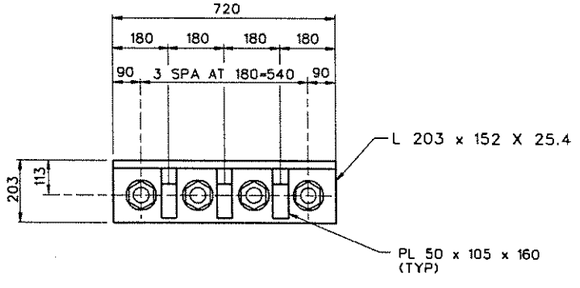


ELEVATION

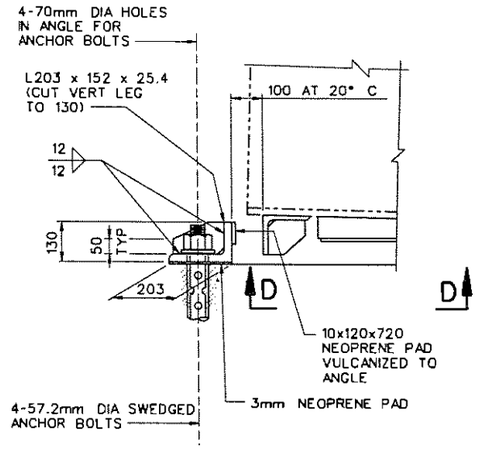
TRANSVERSE RESTRAINERS

TYPE 3 EXPANSION BEARING
AT ABUTMENTS 1 AND 2

0 200 400 mm



PLAN

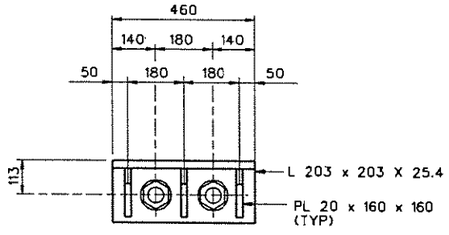


ELEVATION

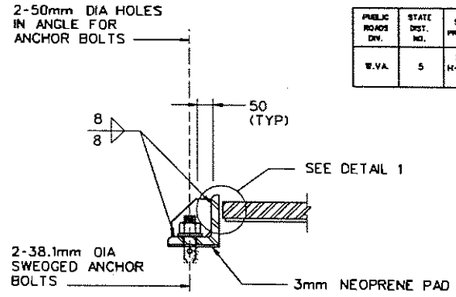
LONGITUDINAL RESTRAINERS

TYPE 3 EXPANSION BEARING
AT ABUTMENTS 1 AND 2

0 200 400 mm



PLAN

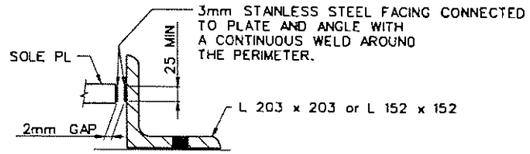


ELEVATION

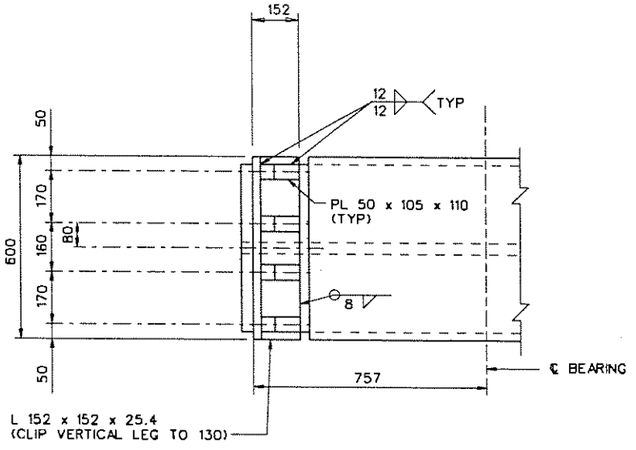
TRANSVERSE AND LONGITUDINAL RESTRAINERS

TYPE 1 FIXED BEARING
AT PIERS 2, 3 AND 4

0 200 400 mm



DETAIL 1
NO SCALE



SECTION D-D

0 200 400 mm

NOTES:

1. WORK SHEETS 45 THRU 48 TOGETHER.
2. FOR GENERAL NOTES, SEE SHEETS 3 & 4.
3. FOR BEARING NOTES, SEE SHEET 45.

ALL DIMENSIONS ARE IN MILLIMETERS

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

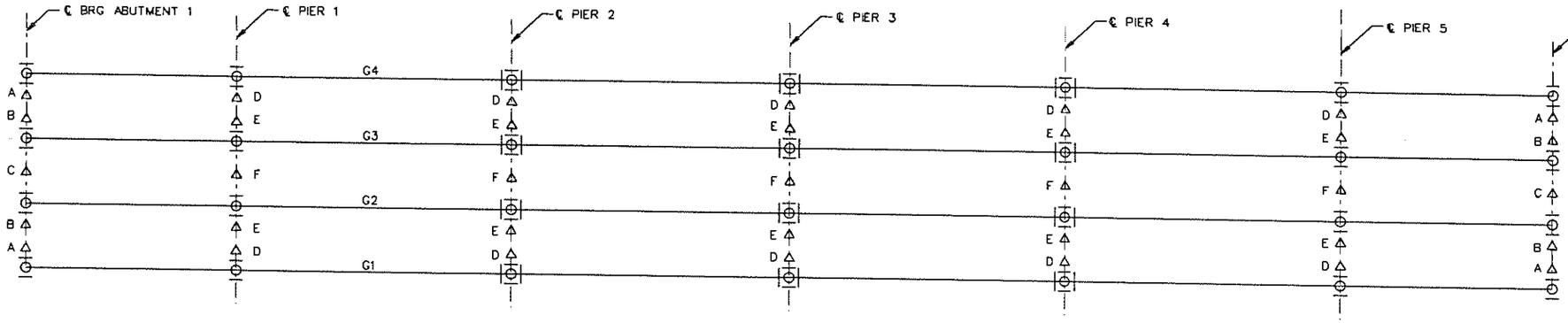
US 33 OVER
CLIFFORD HOLLOW

BEARING RESTRAINER DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-8000

MADE JJW/SM DATE 7/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD. DATE	SCALE AS NOTED	SHEET NO. 48

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	89	146



BEARING ORIENTATION PLAN

NO SCALE

LEGEND

- ⊙ - TRANSVERSELY GUIDED BEARING
- |⊙| - FIXED BEARING
- △ - JACKING LOCATION

MAXIMUM JACKING LOAD TABLE (kN)			
LOCATION	DEAD LOAD	LIVE LOAD + IMPACT	TOTAL
A	1315	726	2041
B	1183	521	1704
C	971	461	1432
D	4940	1854	6794
E	4600	1298	5898
F	3735	1159	4894

JACKING LOADS ARE SERVICE LOADS (NOT FACTORED)

FUTURE JACKING NOTES

SUBMIT THE PROPOSED JACKING AND/OR BEARING REPLACEMENT PROCEDURE TO THE DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO THE COMMENCEMENT OF ANY JACKING OPERATIONS.

JACK THE SUPERSTRUCTURE ONLY AT LOCATIONS SHOWN ON THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING THE JACKS AND THE JACKING PROCEDURES, INCLUDING, BUT NOT LIMITED TO, CHECKING CONCRETE BEARING STRESSES, STABILITY, AND GIRDER AND DETAIL STRESSES. PROVIDE JACKS WITH A MINIMUM SAFE JACKING CAPACITY OF 125 PERCENT OF THE LOAD TO BE JACKED. FOR LOADS, SEE MAXIMUM JACKING LOAD TABLE.

JACK AT ALL POINTS ACROSS THE STRUCTURE WIDTH INDICATED ON THE DRAWINGS SIMULTANEOUSLY AND WITH THE SAME DISPLACEMENT AND RATE OF DISPLACEMENT. PROVIDE HYDRAULIC REGULATING DEVICES AS REQUIRED.

CENTER THE JACKS ON THE CENTERLINE OF THE JACKING DIAPHRAGM WEBS AND THE JACKING STIFFENER PLATES OR AS DETAILED IN THE JACKING PROCEDURE SUBMITTED TO THE DEPARTMENT.

ACCOUNT FOR ANY THERMAL MOVEMENTS AND ANY HORIZONTAL FORCES THAT MAY BE ENCOUNTERED DURING THE PERIOD WHEN THE SUPERSTUCTURE IS BEING JACKED OR IS SHORED ON TEMPORARY SUPPORTS.

TRAFFIC IS PERMITTED ON THE BRIDGE DURING JACKING. ACCOUNT FOR THE EFFECTS OF VIBRATIONS DUE TO TRAFFIC ON THE BRIDGE AND ALSO NEAR THE SUBSTRUCTURE UNIT ON WHICH JACKING IS TAKING PLACE OR WHILE THE SUPERSTRUCTURE IS SHORED ON TEMPORARY SUPPORTS.

WHEN JACKING AT EXPANSION JOINTS, REMOVE THE PARAPET AND MEDIAN HOOD PLATES TO PREVENT DAMAGE TO THE JOINT.

DO NOT DAMAGE THE SUPERSTRUCTURE OR SUBSTRUCTURE WHEN JACKING AND REPLACING THE BEARINGS.

THE MAXIMUM ALLOWABLE JACKING DISPLACEMENT OF THE SUPERSTRUCTURE IS 25mm VERTICAL.

NOTES:

FOR GENERAL NOTES, SEE SHEETS 3 AND 4.

FOR BEARING DETAILS, SEE SHEET 48.

ALL DIMENSIONS ARE IN MILLIMETERS

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

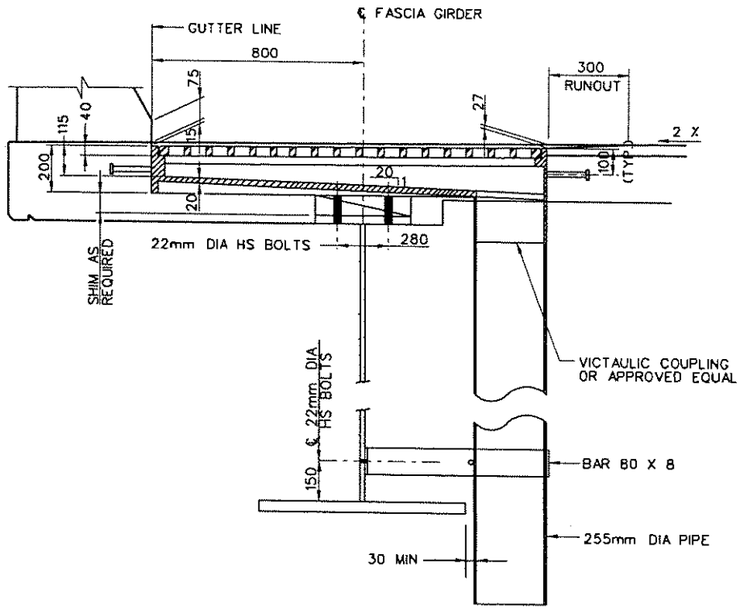
US 33 OVER
CLIFFORD HOLLOW

BEARING AND JACKING DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

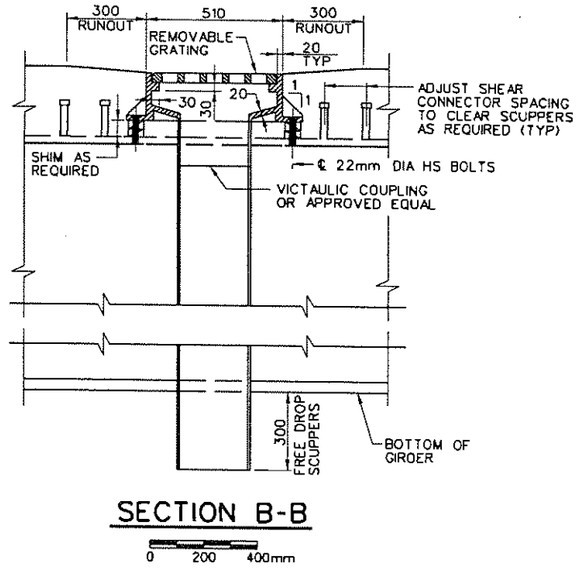
MADE TNR DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE -	SHEET NO. 49

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	90	146



SECTION A-A

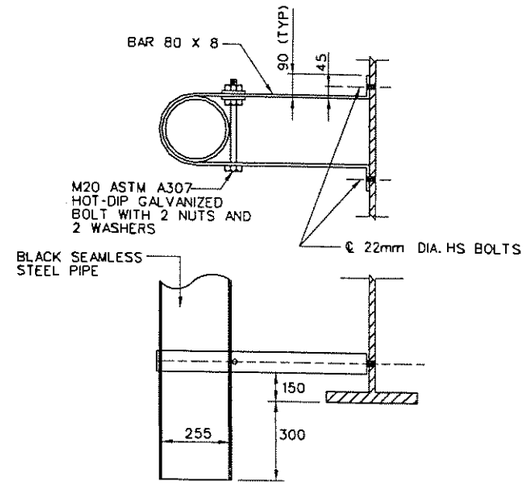
0 200 400mm



SECTION B-B

0 200 400mm

SCUPPER LOCATION TABLE	
SOUTH FASCIA	NORTH FASCIA
STA. 198+805.000	STA. 198+805.000
STA. 198+830.000	STA. 198+830.000
STA. 198+860.000	STA. 198+860.000
STA. 198+888.000	STA. 198+888.000
STA. 198+916.000	STA. 198+916.000
STA. 198+944.000	STA. 198+944.000
STA. 198+972.000	STA. 198+972.000
STA. 199+000.000	STA. 199+000.000
STA. 199+028.000	STA. 199+028.000
STA. 199+056.000	STA. 199+056.000
STA. 199+084.000	STA. 199+084.000
STA. 199+109.000	STA. 199+109.000
STA. 199+132.000	STA. 199+132.000
STA. 199+150.000	STA. 199+150.000
STA. 199+165.000	STA. 199+165.000
STA. 199+175.000	STA. 199+175.000
STA. 199+187.794	STA. 199+187.794
STA. 199+195.000	STA. 199+195.000
STA. 199+203.000	STA. 199+203.000
STA. 199+214.000	STA. 199+214.000
STA. 199+228.000	STA. 199+228.000

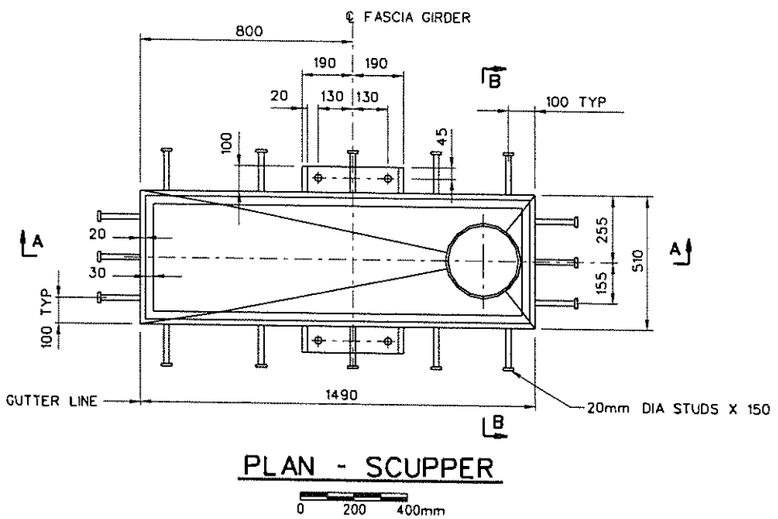


DOWNSPOUT CONNECTION DETAIL

NO SCALE

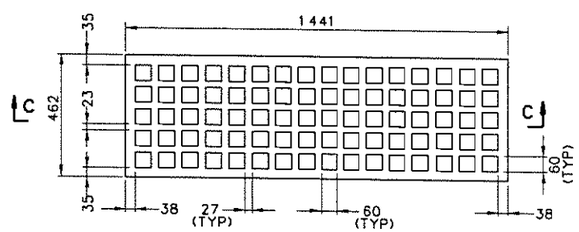
NOTES:

1. ALL FRAMES AND GRATING SHALL BE CAST STEEL IN ACCORDANCE WITH AASHTO M103M GRADE 450-240, MALLEABLE IRON ASTM A47M GRADE 22010 OR NODULAR IRON ASTM A536 GRADE 65-45-12. WELDED CONSTRUCTION MAY BE USED. MATERIAL FOR WELDED CONSTRUCTION SHALL BE AASHTO M270 GRADE 245 STEEL. ALL SCUPPERS AND GRATES SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111 REGARDLESS OF THE FABRICATION METHOD.
2. ALL DRAIN PIPE SHALL BE 255mm DIAMETER STANDARD BLACK STEEL IN ACCORDANCE WITH SECTION 709.17 OF THE STANDARD SPECIFICATIONS AND HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111 OR M232 AS APPLICABLE.
3. FOR REINFORCEMENT AT SCUPPER LOCATIONS SEE SHEET 65.
4. PAINT ALL SCUPPER AND DOWNSPOUT STEEL AND DOWNSPOUT SUPPORT BARS TO MATCH WEATHERING STEEL GIRDERS.



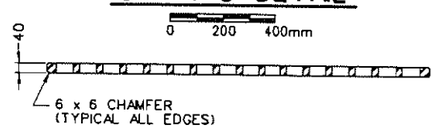
PLAN - SCUPPER

0 200 400mm



GRATING DETAIL

0 200 400mm



SECTION C-C

0 200 400mm

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

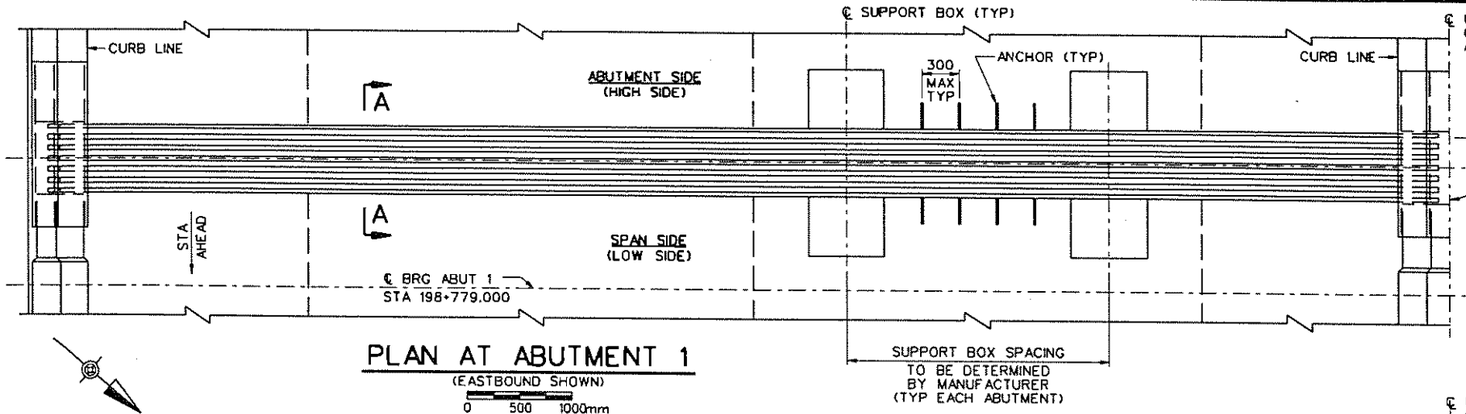
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

SCUPPER DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

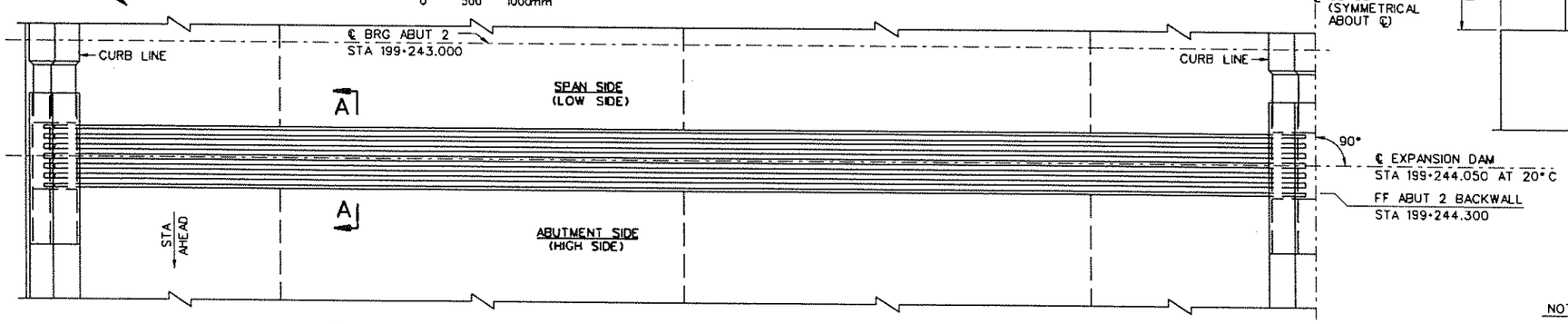
MADE SM DATE 5/97	CKD KJW DATE 5/97	BRIDGE NO. 4249	
TRCD DATE	SCALE AS NOTED	SHEET NO. 50	



PLAN AT ABUTMENT 1

(EASTBOUND SHOWN)

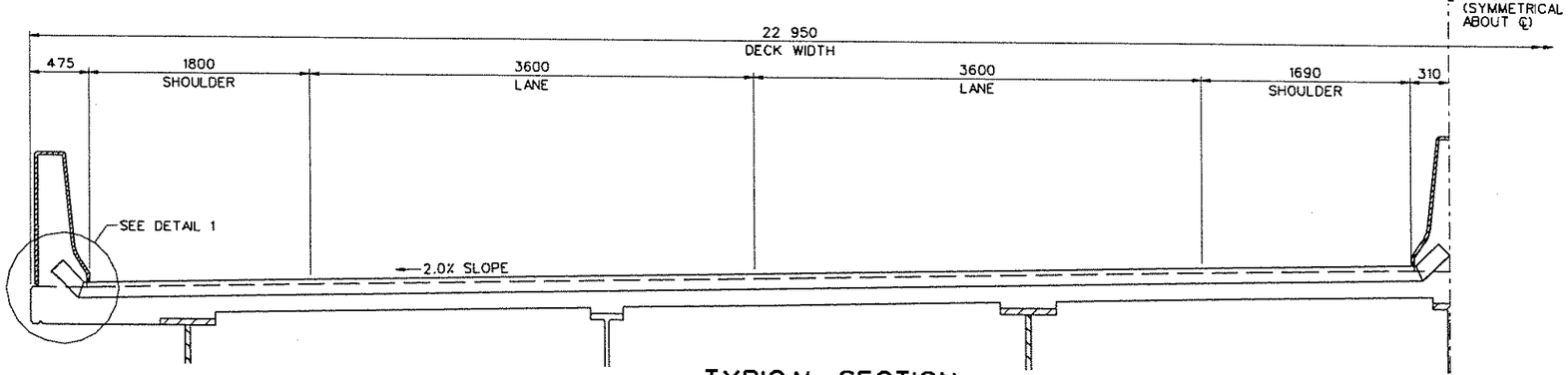
0 500 1000mm



PLAN AT ABUTMENT 2

(EASTBOUND SHOWN)

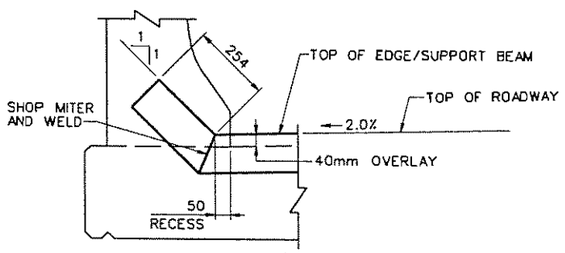
0 500 1000mm



TYPICAL SECTION

LOOKING BACK ON STATION (EASTBOUND SHOWN)

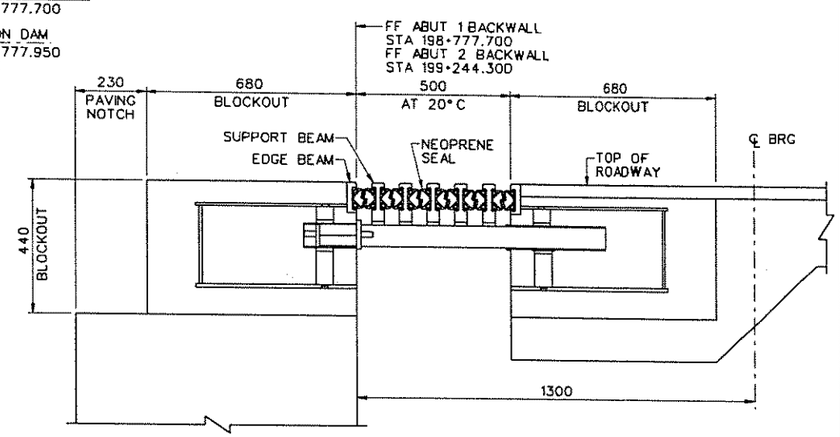
0 500 1000mm



DETAIL 1

NO SCALE

(TYPICAL FOR OUTSIDE PARAPETS AND SIMILAR FOR MEDIAN BARRIER AT ℄ BRIDGE DECK)



SECTION A-A

0 200 400mm

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	91	146

NOTES:

1. USE BOX-TYPE NEOPRENE SEALS.
2. FABRICATION AND MATERIALS SHALL COMPLY WITH THE STANDARD SPECIFICATIONS AS MODIFIED BY THE CONTRACT SPECIAL PROVISIONS.
3. WELDING SHALL COMPLY WITH THE CURRENT ANSI/AASHTO/AWS BRIDGE WELDING CODE D1.5.
4. GALVANIZE ALL STEEL COMPONENTS OF THE MODULAR JOINT ASSEMBLY INCLUDING PARAPET HOOD PLATES IN ACCORDANCE WITH AASHTO M111.
5. THE MODULAR JOINT ASSEMBLY SHALL BE FACTORY ASSEMBLED AND PRESET TO SYSTEM MID-RANGE.
6. THE NEOPRENE SEALS SHALL BE SHOP INSTALLED IN ONE CONTINUOUS PIECE USING SEAL INSTALLATION TOOLS AND APPROPRIATE LUBRICANT/ADHESIVE.
7. THE ENDS OF THE NEOPRENE SEALS SHALL BE CAPPED USING A SPONGE PLUG BONDED IN PLACE.
8. ALL STEEL SHALL BE IN ACCORDANCE WITH AASHTO M270, GRADE 345W.
9. DETAILED SHOP DRAWINGS FOR MODULAR JOINT ASSEMBLY AND SHIPPING DEVICE SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER.
10. MODULAR JOINT SHALL BE MANUFACTURED TO FIT ROADWAY CROSS SLOPES AND GRADES INDICATED ON PLANS AND TO RUN CONTINUOUSLY BETWEEN LIMITS SHOWN. ALL SHOP SPLICES TO BE WELDED AND ALL SURFACES IN CONTACT WITH ROADWAY TRAFFIC OR END CHANNELS SHALL BE GROUND SMOOTH.
11. MODULAR JOINT ASSEMBLY SHALL BE SET IN THE SHOP TO THE PROPER OPENING AND SHIPPED WITH DEVICE FOR MAINTAINING PROPER SPACING AND FIT. SHIPPING DEVICES SHALL BE SPACED BETWEEN SUPPORT BOXES.
12. ALL FLATHEAD COUNTERSUNK SCREWS SHALL CONFORM TO ASTM F738M TYPE 304 (STAINLESS STEEL)
13. BASE DESIGN ON MS22.5 LOADING WITH 100% IMPACT.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL STATIONS ARE IN METERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

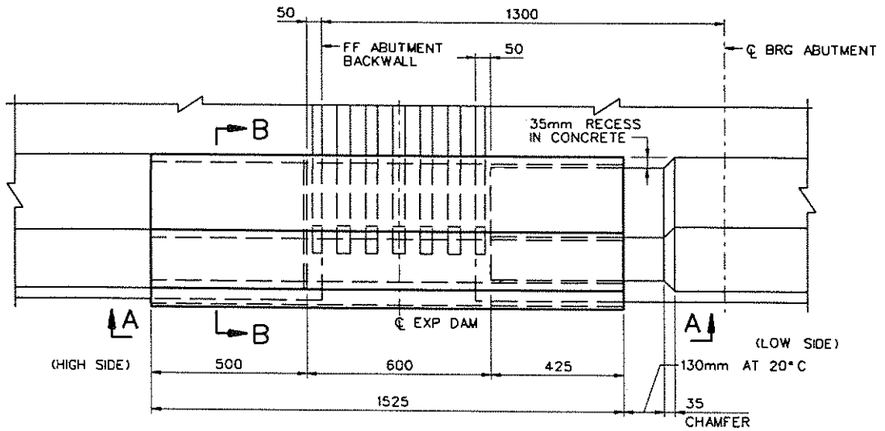
US 33 OVER
CLIFFORD HOLLOW

EXPANSION DAM DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SLK DATE 7/97	CKD JDC DATE 7/97	BRIDGE NO. 4249	
TRCD ____ DATE ____	SCALE 1:25 (UN)	SHEET NO. 51	

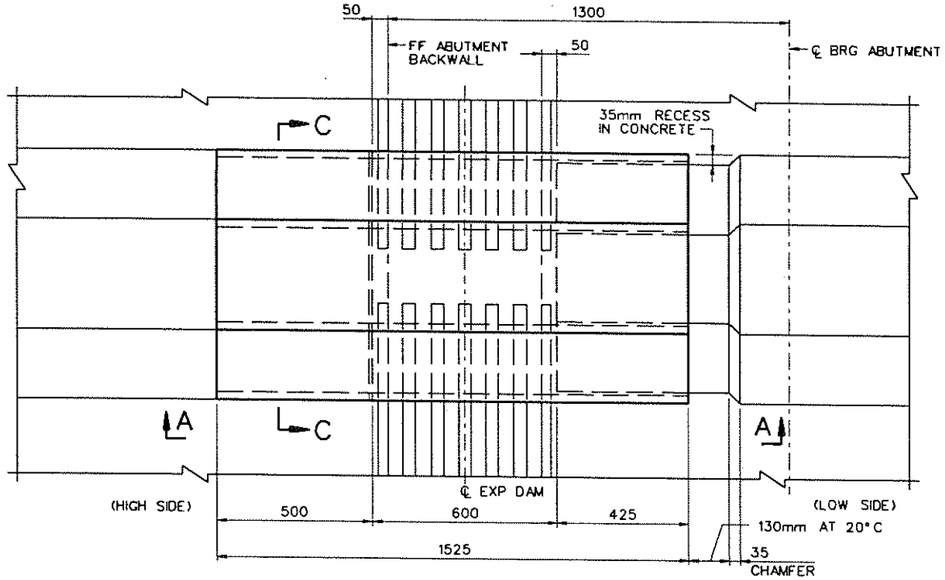
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	92	146



PARTIAL PLAN AT OUTSIDE PARAPETS

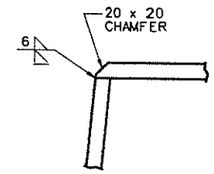
(EASTBOUND AT ABUTMENT 1 AND WESTBOUND AT ABUTMENT 2 SHOWN)
(EASTBOUND AT ABUTMENT 2 AND WESTBOUND AT ABUTMENT 1 SIMILAR, OPPOSITE HAND)

0 200 400mm



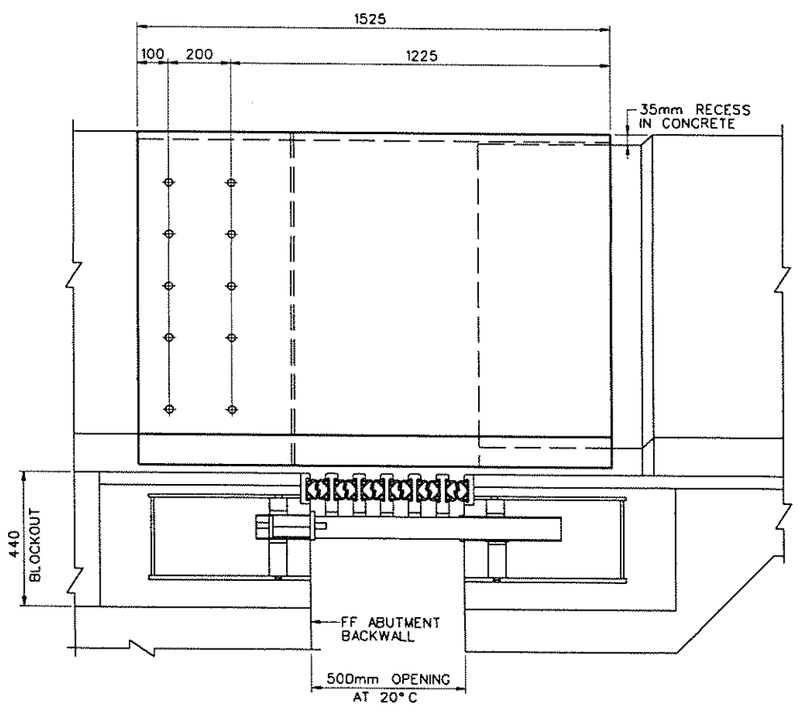
PLAN - MEDIAN BARRIER AT ℄ BRIDGE DECK

0 200 400mm



DETAIL 1

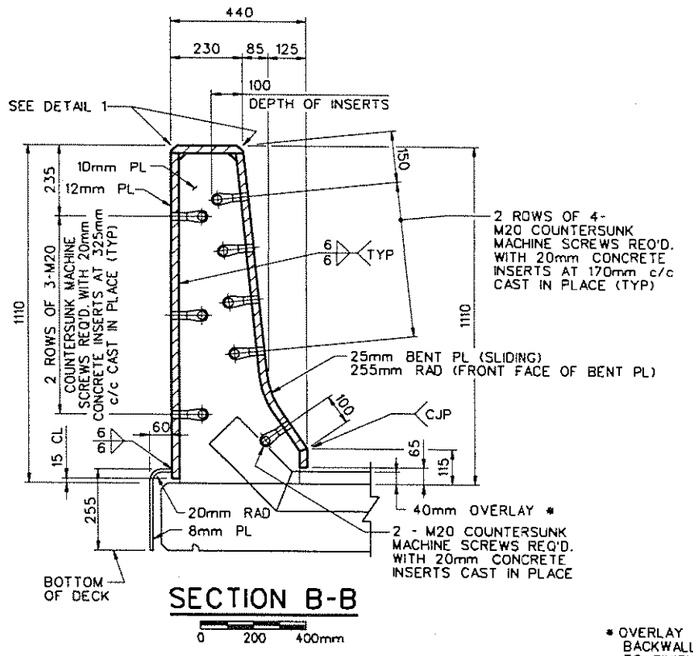
NO SCALE



SECTION A-A

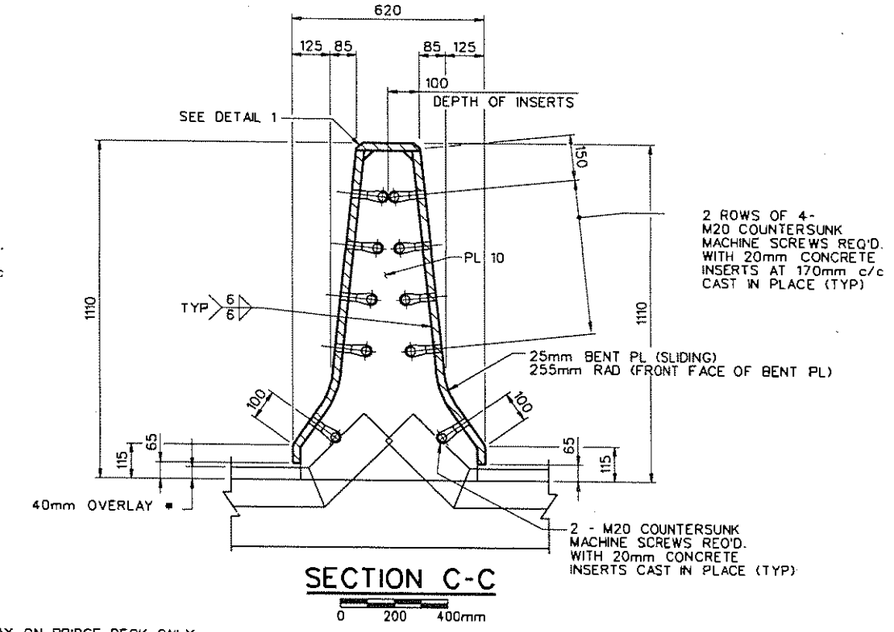
MEDIAN BARRIER SHOWN
PARAPETS SIMILAR

0 200 400mm



SECTION B-B

0 200 400mm



SECTION C-C

0 200 400mm

* OVERLAY ON BRIDGE DECK ONLY. BACKWALL CONCRETE PLACED TO FINISHED GRADE.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER CLIFFORD HOLLOW

EXPANSION DAM DETAILS

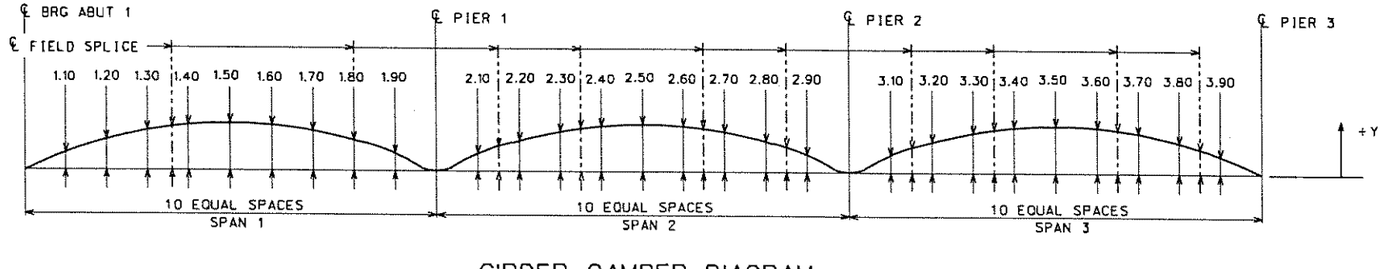
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SLK DATE 7/97	CKD JDC DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS NOTED	SHEET NO. 52

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X33-M-101.92 05	APD-0484(124) CTC	2001	HARDY	93	146

CAMBER ORDINATES "Y" IN MILLIMETERS

		SPAN 1										SPAN 2														SPAN 3											
					FS					FS			FS								FS				FS									FS				FS	
GIRDER	CAMBER	1.10	1.20	1.30	1.36	1.40	1.50	1.60	1.70	1.80	1.90	2.10	2.15	2.20	2.30	2.35	2.40	2.50	2.60	2.65	2.70	2.80	2.85	2.90	3.10	3.15	3.20	3.30	3.35	3.40	3.50	3.60	3.65	3.70	3.80	3.85	3.90
G1	A	8.8	15.7	20.0	20.8	21.3	20.0	16.0	10.7	5.3	1.3	4.5	8.7	12.8	21.9	25.3	28.8	30.9	28.0	24.4	20.8	12.0	8.0	4.0	2.9	6.5	10.1	18.1	21.5	24.8	27.5	25.1	21.9	18.7	10.7	7.1	3.5
	B	35.3	63.5	81.3	84.5	86.6	81.0	65.5	44.2	22.4	6.6	15.2	30.4	45.5	78.7	91.2	103.6	112.0	101.6	88.4	75.2	42.7	28.3	14.0	11.2	24.3	37.3	67.6	79.9	92.2	101.6	93.0	81.2	69.3	38.9	25.7	12.4
	C	4.0	7.0	9.1	9.5	9.8	9.3	7.8	5.4	3.0	0.9	2.5	4.5	6.5	10.6	12.0	13.4	14.3	13.1	11.6	10.1	6.0	4.1	2.2	1.8	3.5	5.3	9.1	10.5	11.9	12.9	12.0	10.7	9.3	5.5	3.8	1.9
	D	2.7	4.9	6.3	6.6	6.8	6.4	5.4	3.8	2.0	0.6	1.7	3.1	4.5	7.3	8.3	9.3	9.9	9.1	8.0	7.0	4.2	2.8	1.5	1.2	2.5	3.7	6.3	7.3	8.3	9.0	8.4	7.4	6.4	3.9	2.6	1.4
	E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	F	50.8	91.1	116.7	121.4	124.5	116.7	94.7	64.1	32.7	9.4	24.0	46.6	69.3	118.5	136.8	155.2	167.2	151.8	132.4	113.0	64.9	43.3	21.6	17.1	36.8	56.5	101.1	119.2	137.2	151.0	138.4	121.1	103.7	58.9	39.1	19.3
G2	A	9.1	16.3	20.8	21.6	22.1	20.8	16.8	11.2	5.6	1.6	4.8	9.1	13.3	22.7	26.1	29.6	32.0	29.1	25.3	21.6	12.5	8.4	4.3	3.2	6.9	10.7	18.9	22.3	25.6	28.3	26.1	22.8	19.5	10.9	7.3	3.7
	B	38.6	69.1	88.1	91.8	94.2	88.4	72.1	49.0	25.4	7.6	16.5	32.9	49.3	84.6	97.7	110.7	119.6	108.7	94.9	81.0	46.5	30.9	15.2	12.7	26.9	41.1	73.4	86.4	99.3	109.2	100.3	87.8	75.2	42.7	28.3	14.0
	C	4.1	7.2	9.2	9.7	10.0	9.5	8.0	5.6	3.1	1.0	2.5	4.6	6.6	10.7	12.2	13.6	14.5	13.3	11.8	10.3	6.1	4.1	2.2	1.9	3.7	5.4	9.3	10.7	12.2	13.2	12.2	10.9	9.5	5.6	3.8	2.1
	D	2.8	5.0	6.4	6.7	6.9	6.6	5.5	3.9	2.1	0.7	1.8	3.2	4.6	7.5	8.5	9.5	10.1	9.3	8.2	7.1	4.3	2.9	1.5	1.3	2.5	3.8	6.4	7.4	8.4	9.2	8.5	7.5	6.6	3.9	2.7	1.4
	E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	F	54.5	97.6	124.5	129.8	133.3	125.2	102.5	69.8	36.2	10.9	25.7	49.7	73.8	125.5	144.5	163.4	176.2	160.4	140.2	120.0	69.4	46.3	23.2	19.1	40.0	61.0	108.1	126.8	145.5	159.9	147.2	129.0	110.7	63.1	42.2	21.2
G3	A	9.1	16.3	20.8	21.6	22.1	20.8	16.8	11.2	5.6	1.6	4.8	9.1	13.3	22.7	26.1	29.6	32.0	29.1	25.3	21.6	12.5	8.4	4.3	3.2	6.9	10.7	18.9	22.3	25.6	28.3	26.1	22.8	19.5	10.9	7.3	3.7
	B	38.6	69.1	88.1	91.8	94.2	88.4	72.1	49.0	25.4	7.6	16.5	32.9	49.3	84.6	97.7	110.7	119.6	108.7	94.9	81.0	46.5	30.9	15.2	12.7	26.9	41.1	73.4	86.4	99.3	109.2	100.3	87.8	75.2	42.7	28.3	14.0
	C	4.1	7.2	9.2	9.7	10.0	9.5	8.0	5.6	3.1	1.0	2.5	4.6	6.6	10.7	12.2	13.6	14.5	13.3	11.8	10.3	6.1	4.1	2.2	1.9	3.7	5.4	9.3	10.7	12.2	13.2	12.2	10.9	9.5	5.6	3.8	2.1
	D	2.8	5.0	6.4	6.7	6.9	6.6	5.5	3.9	2.1	0.7	1.8	3.2	4.6	7.5	8.5	9.5	10.1	9.3	8.2	7.1	4.3	2.9	1.5	1.3	2.5	3.8	6.4	7.4	8.4	9.2	8.5	7.5	6.6	3.9	2.7	1.4
	E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	F	54.5	97.6	124.5	129.8	133.3	125.2	102.5	69.8	36.2	10.9	25.7	49.7	73.8	125.5	144.5	163.4	176.2	160.4	140.2	120.0	69.4	46.3	23.2	19.1	40.0	61.0	108.1	126.8	145.5	159.9	147.2	129.0	110.7	63.1	42.2	21.2
G4	A	8.8	15.7	20.0	20.8	21.3	20.0	16.0	10.7	5.3	1.3	4.5	8.7	12.8	21.9	25.3	28.8	30.9	28.0	24.4	20.8	12.0	8.0	4.0	2.9	6.5	10.1	18.1	21.5	24.8	27.5	25.1	21.9	18.7	10.7	7.1	3.5
	B	35.3	63.5	81.3	84.5	86.6	81.0	65.5	44.2	22.4	6.6	15.2	30.4	45.5	78.7	91.2	103.6	112.0	101.6	88.4	75.2	42.7	28.3	14.0	11.2	24.3	37.3	67.6	79.9	92.2	101.6	93.0	81.2	69.3	38.9	25.7	12.4
	C	4.0	7.0	9.1	9.5	9.8	9.3	7.8	5.4	3.0	0.9	2.5	4.5	6.5	10.6	12.0	13.4	14.3	13.1	11.6	10.1	6.0	4.1	2.2	1.8	3.5	5.3	9.1	10.5	11.9	12.9	12.0	10.7	9.3	5.5	3.8	1.9
	D	2.7	4.9	6.3	6.6	6.8	6.4	5.4	3.8	2.0	0.6	1.7	3.1	4.5	7.3	8.3	9.3	9.9	9.1	8.0	7.0	4.2	2.8	1.5	1.2	2.5	3.7	6.3	7.3	8.3	9.0	8.4	7.4	6.4	3.9	2.6	1.4
	E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	F	50.8	91.1	116.7	121.4	124.5	116.7	94.7	64.1	32.7	9.4	24.0	46.6	69.3	118.5	136.8	155.2	167.2	151.8	132.4	113.0	64.9	43.3	21.6	17.1	36.8	56.5	101.1	119.2	137.2	151.0	138.4	121.1	103.7	58.9	39.1	19.3



GIRDER CAMBER DIAGRAM

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS.

CAMBER ORDINATES LEGEND

A - CAMBER DUE TO DEAD LOAD OF STEEL.
B - CAMBER DUE TO DEAD LOAD OF DECK CONCRETE AND FORMS.
C - CAMBER DUE TO SUPERIMPOSED DEAD LOAD OF CONCRETE PARAPETS, AND MEDIAN BARRIER.
D - CAMBER DUE TO CONCRETE OVERLAY.
E - GEOMETRIC CAMBER.
F - TOTAL CAMBER (A+B+C+D+E).

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEET 54.
3. POSITIVE CAMBER IS UPWARD.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

GIRDER CAMBERS - SPANS 1-3

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SRC DATE 7/97	CKD JPV DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS NOTED	SHEET NO. 53

AS-10
PLOT DATE: 06-15-00
FILE: D002-09S\CLFGRCM1

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	94	146

CAMBER ORDINATES "Y" IN MILLIMETERS

SPAN 4

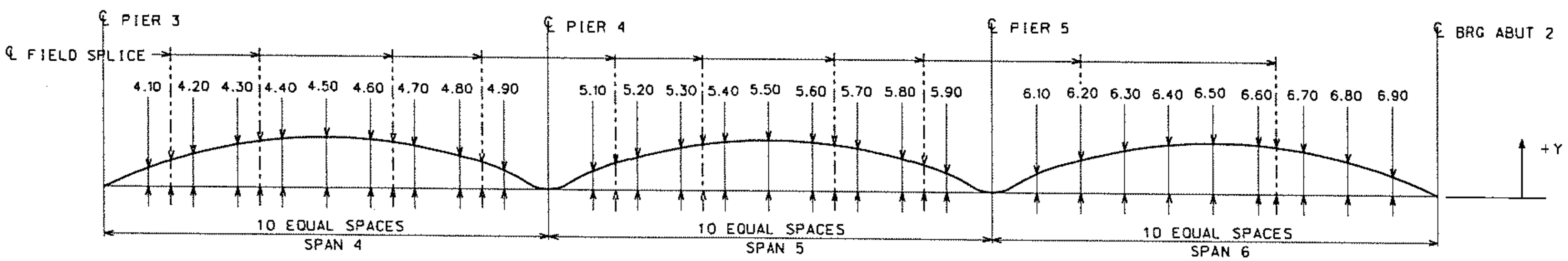
GIRDER	CAMBER	4.10	FS 4.15	4.20	4.30	FS 4.35	4.40	4.50	4.60	FS 4.65	4.70	4.80	FS 4.85	4.90
G1	A	3.5	7.1	10.7	18.7	21.9	25.1	27.2	24.8	21.5	18.1	10.1	6.5	2.9
	B	12.4	25.5	38.6	68.8	80.6	92.5	100.8	91.7	79.5	67.3	37.3	24.3	11.2
	C	1.9	3.8	5.5	9.3	10.6	11.9	12.9	11.9	10.4	9.1	5.3	3.5	1.8
	D	1.4	2.6	3.9	6.4	7.4	8.3	9.0	8.2	7.3	6.3	3.7	2.5	1.2
	E	-12.8	-19.2	-25.6	-38.4	-44.8	-51.2	-64.0	-75.8	-77.2	-78.6	-67.4	-54.3	-41.2
	F	6.5	19.7	33.0	64.8	75.7	86.6	85.9	60.8	41.5	22.2	-10.9	-17.5	-24.1
G2	A	3.7	7.3	10.9	19.5	22.7	25.9	28.3	25.6	22.3	18.9	10.4	6.8	3.2
	B	14.0	28.2	42.4	74.7	87.2	99.8	108.5	98.8	86.0	73.2	41.1	26.8	12.4
	C	2.1	3.8	5.6	9.5	10.9	12.2	13.1	12.2	10.7	9.3	5.4	3.7	1.9
	D	1.4	2.7	3.9	6.6	7.5	8.5	9.1	8.4	7.4	6.4	3.8	2.5	1.3
	E	-12.8	-19.2	-25.6	-38.4	-44.8	-51.2	-64.0	-75.8	-77.2	-78.6	-67.4	-54.3	-41.2
	F	8.4	22.9	37.3	71.8	83.5	95.2	95.0	69.2	49.2	29.2	-6.7	-14.5	-22.4
G3	A	3.7	7.3	10.9	19.5	22.7	25.9	28.3	25.6	22.3	18.9	10.4	6.8	3.2
	B	14.0	28.2	42.4	74.7	87.2	99.8	108.5	98.8	86.0	73.2	41.1	26.8	12.4
	C	2.1	3.8	5.6	9.5	10.9	12.2	13.1	12.2	10.7	9.3	5.4	3.7	1.9
	D	1.4	2.7	3.9	6.6	7.5	8.5	9.1	8.4	7.4	6.4	3.8	2.5	1.3
	E	-12.8	-19.2	-25.6	-38.4	-44.8	-51.2	-64.0	-75.8	-77.2	-78.6	-67.4	-54.3	-41.2
	F	8.4	22.9	37.3	71.8	83.5	95.2	95.0	69.2	49.2	29.2	-6.7	-14.5	-22.4
G4	A	3.5	7.1	10.7	18.7	21.9	25.1	27.2	24.8	21.5	18.1	10.1	6.5	2.9
	B	12.4	25.5	38.6	68.8	80.6	92.5	100.8	91.7	79.5	67.3	37.3	24.3	11.2
	C	1.9	3.8	5.5	9.3	10.6	11.9	12.9	11.9	10.4	9.1	5.3	3.5	1.8
	D	1.4	2.6	3.9	6.4	7.4	8.3	9.0	8.2	7.3	6.3	3.7	2.5	1.2
	E	-12.8	-19.2	-25.6	-38.4	-44.8	-51.2	-64.0	-75.8	-77.2	-78.6	-67.4	-54.3	-41.2
	F	6.5	19.7	33.0	64.8	75.7	86.6	85.9	60.8	41.5	22.2	-10.9	-17.5	-24.1

SPAN 5

GIRDER	CAMBER	5.10	FS 5.15	5.20	5.30	FS 5.35	5.40	5.50	5.60	FS 5.65	5.70	5.80	FS 5.85	5.90
G1	A	4.0	8.0	12.0	20.8	24.4	28.0	30.9	28.8	25.3	21.9	12.8	8.7	4.5
	B	14.0	28.3	42.7	75.2	88.3	101.3	111.8	103.4	90.9	78.5	45.5	30.4	15.2
	C	2.2	4.1	6.0	10.1	11.6	13.1	14.3	13.3	11.9	10.6	6.5	4.5	2.5
	D	1.5	2.8	4.2	7.0	8.0	9.1	9.9	9.3	8.3	7.3	4.5	3.1	1.7
	E	-66.0	-92.0	-118.0	-154.0	-165.5	-177.0	-184.0	-177.0	-166.0	-155.0	-118.0	-92.5	-67.0
	F	-44.4	-48.7	-53.1	-41.0	-33.2	-25.4	-17.1	-22.2	-29.5	-36.8	-48.7	-45.9	-43.0
G2	A	4.3	8.4	12.5	21.6	25.2	28.8	31.7	29.6	26.1	22.7	13.3	9.1	4.8
	B	15.5	31.0	46.5	81.0	94.7	108.5	119.4	110.7	97.7	84.6	49.3	33.0	16.8
	C	2.2	4.1	6.1	10.3	11.8	13.3	14.5	13.6	12.2	10.7	6.6	4.6	2.5
	D	1.5	2.9	4.3	7.1	8.2	9.3	10.1	9.5	8.5	7.5	4.6	3.2	1.8
	E	-66.0	-92.0	-118.0	-154.0	-165.5	-177.0	-184.0	-177.0	-166.0	-155.0	-118.0	-92.5	-67.0
	F	-42.6	-45.6	-48.6	-34.0	-25.6	-17.2	-8.3	-13.6	-21.5	-29.5	-44.2	-42.6	-41.1
G3	A	4.3	8.4	12.5	21.6	25.2	28.8	31.7	29.6	26.1	22.7	13.3	9.1	4.8
	B	15.5	31.0	46.5	81.0	94.7	108.5	119.4	110.7	97.7	84.6	49.3	33.0	16.8
	C	2.2	4.1	6.1	10.3	11.8	13.3	14.5	13.6	12.2	10.7	6.6	4.6	2.5
	D	1.5	2.9	4.3	7.1	8.2	9.3	10.1	9.5	8.5	7.5	4.6	3.2	1.8
	E	-66.0	-92.0	-118.0	-154.0	-165.5	-177.0	-184.0	-177.0	-166.0	-155.0	-118.0	-92.5	-67.0
	F	-42.6	-45.6	-48.6	-34.0	-25.6	-17.2	-8.3	-13.6	-21.5	-29.5	-44.2	-42.6	-41.1
G4	A	4.0	8.0	12.0	20.8	24.4	28.0	30.9	28.8	25.3	21.9	12.8	8.7	4.5
	B	14.0	28.3	42.7	75.2	88.3	101.3	111.8	103.4	90.9	78.5	45.5	30.4	15.2
	C	2.2	4.1	6.0	10.1	11.6	13.1	14.3	13.3	11.9	10.6	6.5	4.5	2.5
	D	1.5	2.8	4.2	7.0	8.0	9.1	9.9	9.3	8.3	7.3	4.5	3.1	1.7
	E	-66.0	-92.0	-118.0	-154.0	-165.5	-177.0	-184.0	-177.0	-166.0	-155.0	-118.0	-92.5	-67.0
	F	-44.4	-48.7	-53.1	-41.0	-33.2	-25.4	-17.1	-22.2	-29.5	-36.8	-48.7	-45.9	-43.0

SPAN 6

GIRDER	CAMBER	6.10	FS 6.20	6.30	6.40	6.50	6.60	FS 6.64	6.70	6.80	6.90
G1	A	1.3	5.3	10.7	15.7	19.7	21.3	20.8	20.0	15.5	8.8
	B	6.4	22.4	43.9	64.5	80.3	86.1	83.9	80.5	63.0	35.3
	C	0.9	3.0	5.4	7.7	9.3	9.7	9.4	9.0	7.0	4.0
	D	0.6	2.0	3.8	5.3	6.4	6.7	6.5	6.2	4.9	2.7
	E	-38.9	-68.8	-89.7	-102.6	-106.5	-102.4	-97.2	-89.3	-68.2	-38.1
	F	-29.7	-36.1	-25.9	-9.3	9.2	21.4	23.4	26.4	22.1	12.7
G2	A	1.6	5.6	11.2	16.5	20.5	22.1	21.6	20.8	16.3	9.1
	B	7.6	25.1	48.8	70.9	87.6	93.5	91.1	87.6	68.8	38.4
	C	1.0	3.1	5.5	7.9	9.5	9.9	9.6	9.2	7.1	4.0
	D	0.7	2.1	3.9	5.5	6.6	6.8	6.7	6.4	4.9	2.7
	E	-38.9	-68.8	-89.7	-102.6	-106.5	-102.4	-97.2	-89.3	-68.2	-38.1
	F	-28.0	-32.9	-20.4	-1.8	17.7	29.9	31.8	34.7	28.9	16.0
G3	A	1.6	5.6	11.2	16.5	20.5	22.1	21.6	20.8	16.3	9.1
	B	7.6	25.1	48.8	70.9	87.6	93.5	91.1	87.6	68.8	38.4
	C	1.0	3.1	5.5	7.9	9.5	9.9	9.6	9.2	7.1	4.0
	D	0.7	2.1	3.9	5.5	6.6	6.8	6.7	6.4	4.9	2.7
	E	-38.9	-68.8	-89.7	-102.6	-106.5	-102.4	-97.2	-89.3	-68.2	-38.1
	F	-28.0	-32.9	-20.4	-1.8	17.7	29.9	31.8	34.7	28.9	16.0
G4	A	1.3	5.3	10.7	15.7	19.7	21.3	20.8	20.0	15.5	8.8
	B	6.4	22.4	43.9	64.5	80.3	86.1	83.9	80.5	63.0	35.3
	C	0.9	3.0	5.4	7.7	9.3	9.7	9.4	9.0	7.0	4.0
	D	0.6	2.0	3.8	5.3	6.4	6.7	6.5	6.2	4.9	2.7
	E	-38.9	-68.8	-89.7	-102.6	-106.5	-102.4	-97.2	-89.3	-68.2	-38.1
	F	-29.7	-36.1	-25.9	-9.3	9.2	21.4	23.4	26.4	22.1	12.7



GIRDER CAMBER DIAGRAM

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS.

CAMBER ORDINATES LEGEND

A - CAMBER DUE TO DEAD LOAD OF STEEL.
B - CAMBER DUE TO DEAD LOAD OF DECK CONCRETE AND FORMS.
C - CAMBER DUE TO SUPERIMPOSED DEAD LOAD OF CONCRETE PARAPETS AND MEDIAN BARRIER.
D - CAMBER DUE TO CONCRETE OVERLAY.
E - GEOMETRIC CAMBER.
F - TOTAL CAMBER (A+B+C+D+E).

NOTES:

1. FOR GENERAL NOTES, SEE SHEETS 3 AND 4.
2. WORK THIS SHEET WITH SHEET 53.
3. POSITIVE CAMBER IS UPWARD.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

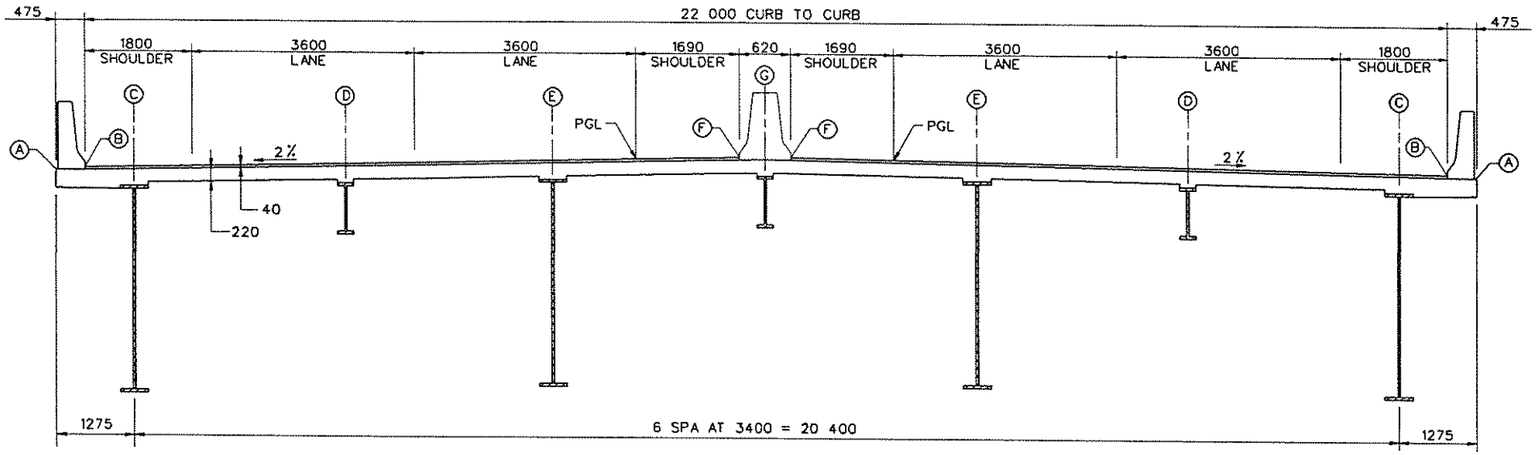
US 33 OVER
CLIFFORD HOLLOW

GIRDER CAMBERS - SPANS 4-6

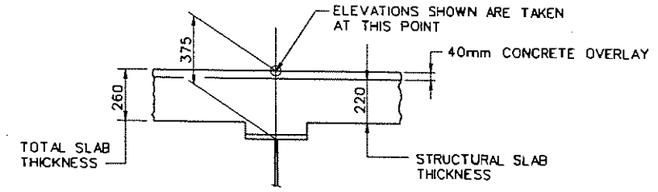
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA (412) 497-6000

MADE SRC DATE 7/97 | CKD JPV DATE 7/97 | BRIDGE NO. 4249
TRCD ____ DATE ____ | SCALE AS NOTED | SHEET NO. 54

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	95	146

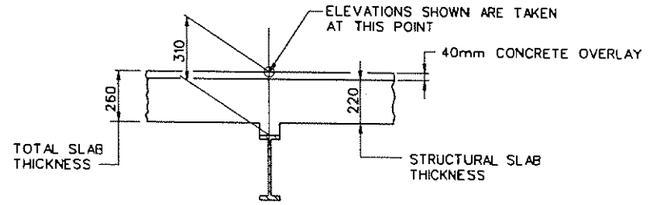


TYPICAL CROSS SECTION



GIRDER HAUNCH DETAIL

NO SCALE



SUBSTRINGER HAUNCH DETAIL

NO SCALE

TENTH POINTS	A ELEVATION	B ELEVATION	C ELEVATION	C DEFLECTION	D ELEVATION	D DEFLECTION	E ELEVATION	E DEFLECTION	P G L ELEVATION	F ELEVATION	G ELEVATION	G DEFLECTION
SPAN 1												
ABUT 1	498.340	498.380	498.396	0.000	498.464	0.000	498.532	0.000	498.560	498.594	498.600	0.000
1	498.169	498.209	498.225	-0.042	498.293	-0.043	498.361	-0.045	498.389	498.423	498.429	-0.045
2	497.999	498.039	498.055	-0.075	498.123	-0.078	498.191	-0.081	498.219	498.252	498.259	-0.081
3	497.828	497.868	497.884	-0.097	497.952	-0.100	498.020	-0.104	498.048	498.082	498.088	-0.104
4	497.657	497.697	497.713	-0.103	497.781	-0.107	497.849	-0.111	497.877	497.911	497.917	-0.111
5	497.487	497.527	497.543	-0.097	497.611	-0.100	497.679	-0.104	497.707	497.740	497.747	-0.104
6	497.316	497.356	497.372	-0.079	497.440	-0.083	497.508	-0.086	497.536	497.570	497.576	-0.086
7	497.145	497.185	497.201	-0.053	497.269	-0.056	497.337	-0.059	497.365	497.399	497.405	-0.059
8	496.975	497.015	497.031	-0.027	497.099	-0.029	497.167	-0.031	497.195	497.228	497.235	-0.031
9	496.804	496.844	496.860	-0.008	496.928	-0.008	496.996	-0.009	497.024	497.058	497.064	-0.009
PIER 1	496.633	496.673	496.689	0.000	496.757	0.000	496.825	0.000	496.853	496.887	496.893	0.000
SPAN 2												
1	496.409	496.449	496.465	-0.019	496.533	-0.020	496.601	-0.021	496.629	496.662	496.669	-0.021
2	496.185	496.225	496.241	-0.057	496.309	-0.058	496.377	-0.060	496.405	496.439	496.445	-0.060
3	495.961	496.001	496.017	-0.097	496.085	-0.100	496.153	-0.103	496.181	496.215	496.221	-0.103
4	495.737	495.777	495.793	-0.126	495.861	-0.130	495.929	-0.134	495.957	495.991	495.997	-0.134
5	495.513	495.553	495.569	-0.136	495.637	-0.140	495.705	-0.144	495.733	495.767	495.773	-0.144
6	495.289	495.329	495.345	-0.124	495.413	-0.128	495.481	-0.131	495.509	495.543	495.549	-0.131
7	495.065	495.105	495.121	-0.092	495.189	-0.095	495.257	-0.098	495.285	495.319	495.325	-0.098
8	494.841	494.881	494.897	-0.053	494.965	-0.055	495.033	-0.057	495.061	495.095	495.101	-0.057
9	494.617	494.657	494.673	-0.018	494.741	-0.019	494.809	-0.019	494.837	494.871	494.877	-0.019
PIER 2	494.393	494.433	494.449	0.000	494.517	0.000	494.585	0.000	494.613	494.647	494.653	0.000
SPAN 3												
1	494.170	494.210	494.226	-0.014	494.294	-0.015	494.362	-0.016	494.390	494.423	494.430	-0.016
2	493.946	493.986	494.002	-0.046	494.070	-0.048	494.138	-0.050	494.166	494.199	494.206	-0.050
3	493.722	493.762	493.778	-0.083	493.846	-0.086	493.914	-0.089	493.942	493.975	493.982	-0.089
4	493.498	493.538	493.554	-0.112	493.622	-0.116	493.690	-0.120	493.718	493.751	493.758	-0.120
5	493.274	493.314	493.330	-0.124	493.398	-0.128	493.466	-0.132	493.494	493.527	493.534	-0.132
6	493.050	493.090	493.106	-0.113	493.174	-0.117	493.242	-0.121	493.270	493.303	493.310	-0.121
7	492.826	492.866	492.882	-0.085	492.950	-0.088	493.018	-0.091	493.046	493.079	493.086	-0.091
8	492.601	492.641	492.657	-0.048	492.725	-0.050	492.793	-0.052	492.821	492.855	492.861	-0.052
9	492.377	492.417	492.433	-0.016	492.501	-0.017	492.569	-0.017	492.597	492.631	492.637	-0.017
PIER 3	492.153	492.193	492.209	0.000	492.277	0.000	492.345	0.000	492.373	492.407	492.413	0.000

NOTES:

DEFLECTIONS SHOWN IN TABLE ARE DUE TO THE CONCRETE SLAB, PARAPETS, MEDIAN BARRIER AND CONCRETE OVERLAY.

AFTER ALL GIRDERS HAVE BEEN ASSEMBLED AND FALSEWORK REMOVED, THE ENGINEER SHALL TAKE ELEVATIONS ALONG THE TOPS OF GIRDERS AT POINTS WHERE THE ELEVATIONS ARE SHOWN IN THE TABLE. THE DIFFERENCE BETWEEN THESE ELEVATIONS AND THE GIVEN TOP OF SLAB ELEVATIONS PLUS THE AMOUNT OF DEFLECTION DUE TO DEAD LOAD OF CONCRETE WILL BE THE TOTAL SLAB THICKNESS OVER THE GIRDERS AT THESE POINTS. THE MINIMUM STRUCTURAL SLAB THICKNESS OVER THE GIRDERS SHALL NOT BE LESS THAN 220mm AT THE CENTER OF THE WEB. IF THE GIRDERS HAVE EXCESSIVE CAMBER AND THIS MINIMUM CAN NOT BE OBTAINED, THE GRADE LINE SHALL BE ADJUSTED TO OBTAIN THE MINIMUM SLAB THICKNESS.

ALL ELEVATIONS AND DEFLECTIONS ARE IN METERS.
ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

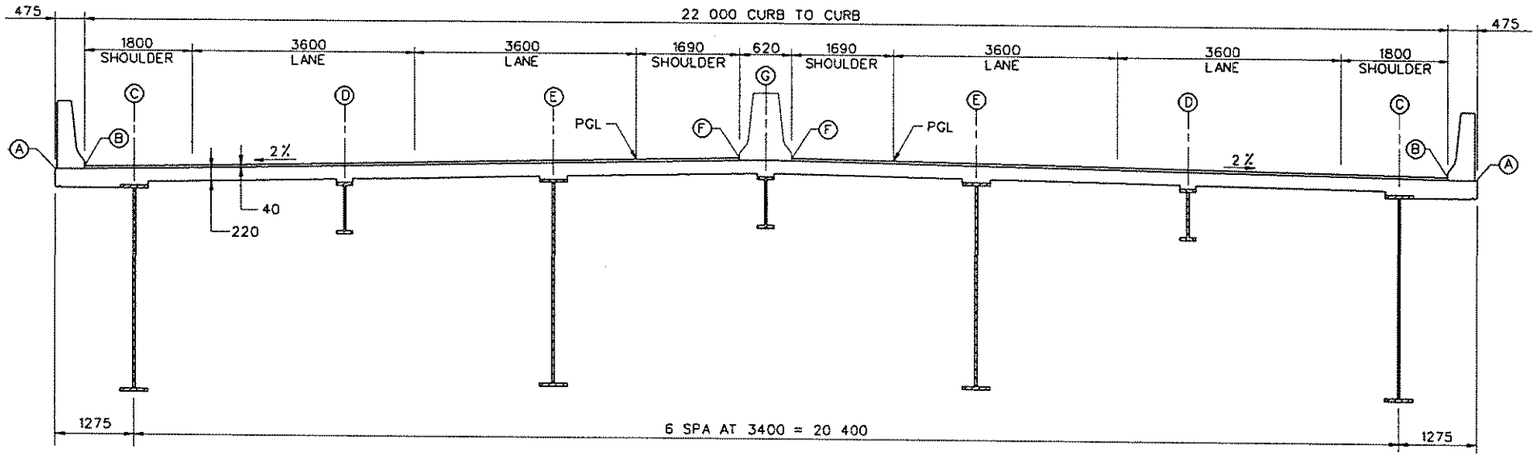
US 33 OVER CLIFFORD HOLLOW

DECK ELEVATIONS - SPANS 1-3

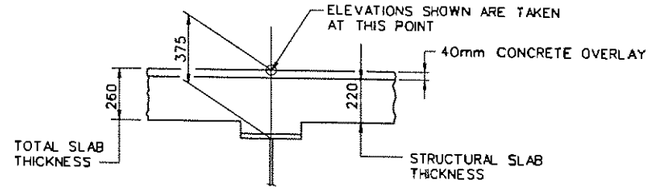
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SRC DATE 7/97	CKD K.W DATE 7/97	BRIDGE NO. 4249
TRCD DATE	SCALE 1:50	SHEET NO. 55

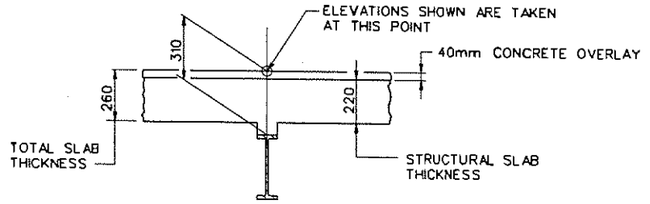
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X-318-H-101.82 05	APD-0484(124) CTC	2001	HARDY	96	146



TYPICAL CROSS SECTION



GIRDER HAUNCH DETAIL



SUBSTRINGER HAUNCH DETAIL

NO SCALE

TENTH POINTS	A ELEVATION	B ELEVATION	C ELEVATION	C DEFLECTION	D ELEVATION	D DEFLECTION	E ELEVATION	E DEFLECTION	P G L ELEVATION	F ELEVATION	G ELEVATION	G DEFLECTION
SPAN 4												
PIER 3	492.153	492.193	492.209	0.000	492.277	0.000	492.345	0.000	492.373	492.407	492.413	0.000
1	491.929	491.969	491.985	-0.016	492.053	-0.043	492.121	-0.017	492.149	492.183	492.189	-0.017
2	491.705	491.745	491.761	-0.048	491.829	-0.078	491.897	-0.052	491.925	491.959	491.965	-0.052
3	491.481	491.521	491.537	-0.085	491.605	-0.100	491.673	-0.091	491.701	491.735	491.741	-0.091
4	491.257	491.297	491.313	-0.113	491.381	-0.107	491.449	-0.121	491.477	491.511	491.517	-0.121
5	491.033	491.073	491.089	-0.123	491.157	-0.100	491.225	-0.131	491.253	491.287	491.293	-0.131
6	490.810	490.850	490.866	-0.112	490.934	-0.083	491.002	-0.119	491.030	491.064	491.070	-0.119
7	490.596	490.636	490.652	-0.083	490.720	-0.056	490.788	-0.089	490.816	490.849	490.856	-0.089
8	490.396	490.436	490.452	-0.046	490.520	-0.029	490.588	-0.050	490.616	490.650	490.656	-0.050
9	490.211	490.251	490.267	-0.014	490.335	-0.008	490.403	-0.016	490.431	490.465	490.471	-0.016
PIER 4	490.041	490.081	490.097	0.000	490.165	0.000	490.233	0.000	490.261	490.295	490.301	0.000
SPAN 5												
1	489.886	489.926	489.942	-0.018	490.010	-0.020	490.078	-0.019	490.106	490.140	490.146	-0.019
2	489.745	489.785	489.801	-0.053	489.869	-0.058	489.937	-0.057	489.965	489.999	490.005	-0.057
3	489.620	489.660	489.676	-0.092	489.744	-0.100	489.812	-0.098	489.840	489.873	489.880	-0.098
4	489.508	489.548	489.564	-0.124	489.632	-0.130	489.700	-0.131	489.728	489.762	489.768	-0.131
5	489.412	489.452	489.468	-0.136	489.536	-0.140	489.604	-0.144	489.632	489.666	489.672	-0.144
6	489.330	489.370	489.386	-0.126	489.454	-0.128	489.522	-0.134	489.550	489.584	489.590	-0.134
7	489.263	489.303	489.319	-0.096	489.387	-0.095	489.455	-0.103	489.483	489.517	489.523	-0.103
8	489.211	489.251	489.267	-0.057	489.335	-0.055	489.403	-0.060	489.431	489.465	489.471	-0.060
9	489.173	489.213	489.229	-0.019	489.297	-0.019	489.365	-0.021	489.393	489.427	489.433	-0.021
PIER 5	489.151	489.191	489.207	0.000	489.275	0.000	489.343	0.000	489.371	486.404	489.411	0.000
SPAN 6												
1	489.143	489.183	489.199	-0.008	489.267	-0.015	489.335	-0.009	489.363	489.397	489.403	-0.009
2	489.144	489.184	489.200	-0.027	489.268	-0.048	489.336	-0.030	489.364	489.398	489.404	-0.030
3	489.154	489.194	489.210	-0.053	489.278	-0.086	489.346	-0.058	489.374	489.408	489.414	-0.058
4	489.172	489.212	489.228	-0.078	489.296	-0.116	489.364	-0.084	489.392	489.426	489.432	-0.084
5	489.199	489.239	489.255	-0.096	489.323	-0.128	489.391	-0.104	489.419	489.452	489.459	-0.104
6	489.234	489.274	489.290	-0.102	489.358	-0.117	489.426	-0.110	489.454	489.488	489.494	-0.110
7	489.278	489.318	489.334	-0.096	489.402	-0.088	489.470	-0.103	489.498	489.531	489.538	-0.103
8	489.330	489.370	489.386	-0.075	489.454	-0.050	489.522	-0.081	489.550	489.584	489.590	-0.081
9	489.391	489.431	489.447	-0.042	489.515	-0.017	489.583	-0.045	489.611	489.645	489.651	-0.045
ABUT 2	489.460	489.500	489.516	0.000	489.584	0.000	489.652	0.000	489.680	489.714	489.720	0.000

NOTES:

DEFLECTIONS SHOWN IN TABLE ARE DUE TO THE CONCRETE SLAB, PARAPETS, MEDIAN BARRIER AND CONCRETE OVERLAY.

AFTER ALL GIRDERS HAVE BEEN ASSEMBLED AND FALSEWORK REMOVED, THE ENGINEER SHALL TAKE ELEVATIONS ALONG THE TOPS OF GIRDERS AT POINTS WHERE THE ELEVATIONS ARE SHOWN IN THE TABLE. THE DIFFERENCE BETWEEN THESE ELEVATIONS AND THE GIVEN TOP OF SLAB ELEVATIONS PLUS THE AMOUNT OF DEFLECTION DUE TO DEAD LOAD OF CONCRETE WILL BE THE TOTAL SLAB THICKNESS OVER THE GIRDERS AT THESE POINTS. THE MINIMUM STRUCTURAL SLAB THICKNESS OVER THE GIRDERS SHALL NOT BE LESS THAN 220mm AT THE CENTER OF THE WEB. IF THE GIRDERS HAVE EXCESSIVE CAMBER AND THIS MINIMUM CAN NOT BE OBTAINED, THE GRADE LINE SHALL BE ADJUSTED TO OBTAIN THE MINIMUM SLAB THICKNESS.

ALL ELEVATIONS AND DEFLECTIONS ARE IN METERS.
ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER CLIFFORD HOLLOW

DECK ELEVATIONS - SPANS 4-6

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SRC DATE 7/97	CKD KJW DATE 7/97	BRIDGE NO. 4249	
TRCD ____ DATE ____	SCALE 1:50	SHEET NO. 56	

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0454(124) CTC	2001	HARDY	97	146

CONVERSION FACTORS FOR REFINED ANALYSIS (CFRA)

		G1		G2		G3		G4	
		+(LL+I)	-(LL+I)	+(LL+I)	-(LL+I)	+(LL+I)	-(LL+I)	+(LL+I)	-(LL+I)
SPAN 1	1.1	0.860	1.482	0.760	0.838	0.760	0.838	0.860	1.482
	1.2	0.854	1.435	0.745	0.840	0.745	0.840	0.854	1.435
	1.3	0.862	1.394	0.733	0.845	0.733	0.845	0.862	1.394
	1.4	0.874	1.349	0.731	0.848	0.731	0.848	0.874	1.349
	1.5	0.870	1.289	0.719	0.849	0.719	0.849	0.869	1.289
	1.6	0.884	1.234	0.725	0.854	0.725	0.854	0.884	1.234
	1.7	0.907	1.183	0.737	0.869	0.737	0.869	0.907	1.183
	1.8	0.964	1.189	0.755	0.944	0.755	0.944	0.964	1.189
	1.9	1.368	1.113	0.981	0.952	0.982	0.952	1.368	1.113
PIER 1	2.0	2.026	1.076	1.072	0.927	1.073	0.927	2.022	1.076
SPAN 2	2.1	1.145	1.273	0.839	1.075	0.840	1.075	1.145	1.274
	2.2	0.816	1.037	0.674	0.780	0.674	0.780	0.816	1.038
	2.3	0.720	1.037	0.591	0.715	0.591	0.715	0.720	1.037
	2.4	0.782	1.108	0.631	0.724	0.631	0.724	0.782	1.108
	2.5	0.801	1.121	0.648	0.739	0.648	0.739	0.801	1.122
	2.6	0.794	1.121	0.647	0.757	0.647	0.757	0.794	1.121
	2.7	0.771	1.090	0.634	0.777	0.634	0.777	0.771	1.090
	2.8	0.913	1.098	0.728	0.833	0.728	0.833	0.913	1.098
	2.9	1.176	1.209	0.838	0.996	0.838	0.996	1.176	1.209
PIER 2	3.0	1.759	1.088	0.989	0.921	0.990	0.921	1.758	1.087
SPAN 3	3.1	1.197	1.214	0.864	1.001	0.865	1.001	1.197	1.214
	3.2	0.880	1.063	0.710	0.806	0.710	0.806	0.880	1.063
	3.3	0.763	1.064	0.617	0.757	0.617	0.757	0.763	1.064
	3.4	0.805	1.110	0.643	0.751	0.643	0.751	0.805	1.110
	3.5	0.816	1.121	0.657	0.751	0.657	0.751	0.816	1.121
	3.6	0.808	1.115	0.649	0.755	0.649	0.755	0.808	1.115
	3.7	0.778	1.076	0.632	0.764	0.632	0.764	0.778	1.076
	3.8	0.910	1.075	0.733	0.812	0.733	0.812	0.910	1.076
	3.9	1.199	1.204	0.877	0.990	0.877	0.990	1.199	1.204
PIER 3	4.0	1.704	1.093	0.996	0.921	0.997	0.921	1.702	1.093
SPAN 4	4.1	1.192	1.174	0.898	0.978	0.898	0.978	1.192	1.174
	4.2	0.832	1.107	0.678	0.847	0.678	0.847	0.832	1.107
	4.3	0.816	1.101	0.659	0.772	0.659	0.772	0.816	1.101
	4.4	0.814	1.110	0.658	0.757	0.658	0.757	0.814	1.110
	4.5	0.819	1.120	0.659	0.751	0.659	0.751	0.819	1.120
	4.6	0.807	1.100	0.653	0.749	0.653	0.749	0.807	1.099
	4.7	0.805	1.079	0.649	0.756	0.649	0.756	0.805	1.079
	4.8	0.809	1.075	0.659	0.824	0.659	0.825	0.809	1.075
	4.9	1.178	1.149	0.879	0.962	0.879	0.962	1.178	1.149
PIER 4	5.0	1.770	1.096	0.996	0.925	0.996	0.925	1.768	1.096
SPAN 5	5.1	1.191	1.160	0.894	0.968	0.894	0.968	1.196	1.161
	5.2	0.832	1.098	0.680	0.844	0.680	0.844	0.834	1.098
	5.3	0.813	1.106	0.657	0.780	0.657	0.780	0.813	1.106
	5.4	0.809	1.114	0.656	0.757	0.656	0.757	0.809	1.114
	5.5	0.805	1.124	0.651	0.740	0.651	0.740	0.805	1.124
	5.6	0.782	1.098	0.638	0.724	0.638	0.724	0.782	1.099
	5.7	0.765	1.069	0.627	0.720	0.627	0.720	0.765	1.069
	5.8	0.732	1.066	0.621	0.819	0.621	0.819	0.732	1.066
	5.9	1.076	1.169	0.843	1.013	0.843	1.014	1.075	1.169
PIER 5	6.0	2.017	1.078	1.070	0.931	1.071	0.931	2.015	1.078
SPAN 6	6.1	1.345	1.108	0.964	0.946	0.964	0.946	1.345	1.108
	6.2	0.941	1.193	0.738	0.940	0.738	0.940	0.941	1.193
	6.3	0.933	1.188	0.757	0.869	0.757	0.869	0.933	1.188
	6.4	0.881	1.225	0.729	0.857	0.729	0.857	0.882	1.226
	6.5	0.862	1.288	0.715	0.848	0.715	0.848	0.862	1.288
	6.6	0.875	1.338	0.733	0.845	0.734	0.845	0.875	1.338
	6.7	0.864	1.386	0.738	0.842	0.738	0.842	0.864	1.387
	6.8	0.852	1.430	0.746	0.839	0.746	0.839	0.852	1.431
	6.9	0.846	1.475	0.752	0.836	0.752	0.836	0.846	1.475

NOTES:

1. GIRDERS G1 THRU G4

THE GIRDERS ARE DESIGNED USING THREE-DIMENSIONAL FINITE-ELEMENT ANALYSIS WITH AASHTO MS22.5 LOADING. CONVERSION FACTORS FOR REFINED ANALYSIS (CFRA) INDICATE THE RELATIONSHIP BETWEEN LIVE LOAD MOMENTS OBTAINED USING A THREE-DIMENSIONAL FINITE-ELEMENT ANALYSIS AND LIVE LOAD MOMENTS OBTAINED USING A STANDARD LINE GIRDER ANALYSIS WITH AASHTO MS22.5 LOADING AND AASHTO SIMPLIFIED LIVE LOAD DISTRIBUTION FACTORS FOR AN INTERIOR GIRDER.

TO OBTAIN MOMENTS FOR OTHER LOADINGS, MULTIPLY THE MOMENTS OBTAINED FROM A LINE GIRDER ANALYSIS OF AN INTERIOR GIRDER BY THE (CFRA) SHOWN IN THE TABLE.

METHOD OF OBTAINING (CFRA)

$$(CFRA) = \frac{M_{\text{3D Analysis}}}{M_{\text{Line Girder Analysis}}}$$

EXAMPLE OF USE OF (CFRA)

EQUIV. $M_{3D} = M_{\text{LINE GIRDER}} \times (CFRA)$

SAY $M_{\text{LINE GIRDER}} = 25000$ kN-m

SAY (CFRA) = 0.821

EQUIV. $M_{3D} = 25000 \times 0.821 = 20525$ kN-m

2. SUBSTRINGERS S1 THRU S3

THE SUBSTRINGERS ARE DESIGNED AS CONTINUOUS BEAMS USING AASHTO MS22.5 LOADING AND AASHTO SIMPLIFIED LIVE LOAD DISTRIBUTION FACTORS. THE SUBSTRINGERS ARE ASSUMED NON-COMPOSITE UNDER ALL LOADS.

3. CROSSFRAMES

THE CROSSFRAMES ARE DESIGNED USING THREE-DIMENSIONAL FINITE-ELEMENT ANALYSIS WITH AASHTO MS22.5 LOADING. CONVERSION FACTORS FOR REFINED ANALYSIS (CFRA) INDICATE THE RELATIONSHIP BETWEEN LIVE LOAD AXIAL FORCES OBTAINED USING THREE-DIMENSIONAL FINITE-ELEMENT ANALYSIS AND LIVE LOAD AXIAL FORCES OBTAINED FROM THE REACTIONS OF A CONTINUOUS BEAM ANALYSIS USING AASHTO MS22.5 LOADING AND AASHTO SIMPLIFIED LIVE LOAD DISTRIBUTION FACTORS.

TO OBTAIN AXIAL FORCES FOR OTHER LOADINGS, MULTIPLY THE AXIAL FORCES OBTAINED FROM THE REACTIONS OF A CONTINUOUS BEAM ANALYSIS BY THE (CFRA) SHOWN BELOW:

$(CFRA)_{\text{DIAGONALS}} = 0.473$

$(CFRA)_{\text{BOT STRUT}} = 0.619$

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

EQUIVALENT LIVE LOAD
DISTRIBUTION FACTORS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SRC DATE 7/97	CKD JPV DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS NOTED	SHEET NO. 57

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	98	146

GIRDER SECTION PROPERTIES (mm^3)

SECTION MARK	GIRDER	MOMENT CASE	NON-COMPOSITE St	NON-COMPOSITE Sb	COMPOSITE (3n=24) St	COMPOSITE (3n=24) Sb	COMPOSITE (n=8) St	COMPOSITE (n=8) Sb
A	G1-G4	POS	63 659 898	75 788 564	163 225 849	96 040 233	390 454 847	106 642 748
	G1-G4	NEG	63 659 898	75 788 564	63 659 898	75 788 564	63 659 898	75 788 564
B	G1-G4	POS	69 755 096	109 681 585	173 148 768	136 980 424	400 345 041	151 354 936
	G1-G4	NEG	69 755 096	109 681 585	69 755 096	109 681 585	69 755 096	109 681 585
C	G1-G4	POS	76 936 500	112 667 046	180 728 955	137 490 672	409 223 876	151 280 023
	G1-G4	NEG	76 936 500	112 667 046	76 936 500	112 667 046	76 936 500	112 667 046
D	G1-G4	POS	72 844 686	89 222 680	174 331 133	109 627 869	402 171 135	121 001 732
	G1-G4	NEG	72 844 686	89 222 680	72 844 686	89 222 680	72 844 686	89 222 680
E	G1-G4	POS	82 301 242	92 229 235	182 247 977	110 261 112	405 363 880	121 022 813
	G1-G4	NEG	82 301 242	92 229 235	89 724 752	94 457 185	104 584 924	98 345 996
F	G1-G4	POS	102 421 648	118 251 938	205 242 327	135 966 707	429 776 195	147 805 266
	G1-G4	NEG	102 421 648	118 251 938	110 024 602	120 393 950	125 403 133	124 032 405
G	G1-G4	POS	162 880 156	129 014 836	264 237 392	139 519 721	482 650 341	148 372 010
	G1-G4	NEG	162 880 156	129 014 836	170 348 321	130 172 665	185 444 816	132 220 049
H	G1-G4	POS	172 608 460	181 458 849	276 949 485	195 522 193	496 775 552	207 564 666
	G1-G4	NEG	172 608 460	181 458 849	180 328 559	183 037 471	196 146 160	185 599 467
I	G1-G4	POS	162 880 156	129 014 836	264 237 392	139 519 721	482 650 341	148 372 010
	G1-G4	NEG	162 880 156	129 014 836	170 348 321	130 172 665	185 444 816	132 220 049
J	G1-G4	POS	102 421 648	118 251 938	205 242 327	135 966 707	429 776 195	147 805 266
	G1-G4	NEG	102 421 648	118 251 938	110 024 602	120 393 950	125 403 133	124 032 405
K	G1-G4	POS	70 379 498	77 981 812	169 109 315	96 376 468	393 732 337	106 624 956
	G1-G4	NEG	70 379 498	77 981 812	77 560 956	80 472 438	92 258 377	84 442 775
L	G1-G4	POS	73 432 284	91 956 408	174 993 406	113 006 758	402 890 106	124 593 863
	G1-G4	NEG	73 432 284	91 956 408	73 432 284	91 956 408	73 432 284	91 956 408
M	G1-G4	POS	78 756 693	126 374 201	183 586 078	153 793 819	411 710 856	169 144 543
	G1-G4	NEG	78 756 693	126 374 201	78 756 693	126 374 201	78 756 693	126 374 201
N	G1-G4	POS	82 783 908	101 625 799	185 198 034	121 802 447	412 556 886	133 614 937
	G1-G4	NEG	82 783 908	101 625 799	82 783 908	101 625 799	82 783 908	101 625 799
O	G1-G4	POS	93 310 167	104 827 224	194 563 312	122 394 171	417 383 774	133 619 928
	G1-G4	NEG	93 310 167	104 827 224	100 776 085	107 007 278	115 927 980	110 643 274
P	G1-G4	POS	124 646 940	132 734 718	227 761 760	148 364 956	451 365 105	159 717 282
	G1-G4	NEG	124 646 940	132 734 718	132 184 181	134 650 304	147 482 573	137 882 491
Q	G1-G4	POS	185 251 014	142 129 761	286 706 309	151 806 491	502 539 606	160 530 785
	G1-G4	NEG	185 251 014	142 129 761	192 802 984	143 137 132	208 010 424	144 960 498
R	G1-G4	POS	196 799 060	205 600 919	300 990 620	219 352 586	519 601 690	231 473 820
	G1-G4	NEG	196 799 060	205 600 919	204 609 104	207 032 106	220 257 426	209 666 324
S	G1-G4	POS	185 251 014	142 129 761	286 706 309	151 806 491	502 539 606	160 530 785
	G1-G4	NEG	185 251 014	142 129 761	192 802 984	143 137 132	208 010 424	144 960 498
T	G1-G4	POS	124 646 940	132 734 718	227 761 760	148 364 956	451 365 105	159 717 282
	G1-G4	NEG	124 646 940	132 734 718	132 184 181	134 650 304	147 482 573	137 882 491
U	G1-G4	POS	91 015 731	97 395 208	191 084 141	114 130 374	413 308 795	124 630 338
	G1-G4	NEG	91 015 731	97 395 208	98 368 983	99 497 808	113 301 236	102 996 753
V	G1-G4	POS	73 432 284	91 956 408	174 115 500	112 790 997	399 219 848	124 478 696
	G1-G4	NEG	73 432 284	91 956 408	80 819 663	94 737 879	95 759 242	99 328 450
W	G1-G4	POS	78 756 693	126 374 201	183 586 078	153 793 819	411 710 856	169 144 543
	G1-G4	NEG	78 756 693	126 374 201	78 756 693	126 374 201	78 756 693	126 374 201
X	G1-G4	POS	73 432 284	91 956 408	174 993 406	113 006 758	402 890 106	124 593 863
	G1-G4	NEG	73 432 284	91 956 408	73 432 284	91 956 408	73 432 284	91 956 408
Y	G1-G4	POS	86 973 330	96 282 195	187 360 909	113 778 764	409 751 631	124 629 486
	G1-G4	NEG	86 973 330	96 282 195	94 385 680	98 461 426	109 321 713	102 185 217
Z	G1-G4	POS	124 646 940	132 734 718	227 761 760	148 364 956	451 365 105	159 717 282
	G1-G4	NEG	124 646 940	132 734 718	132 184 181	134 650 304	147 482 573	137 882 491
AA	G1-G4	POS	185 251 014	142 129 761	286 706 309	151 806 491	502 539 606	160 530 785
	G1-G4	NEG	185 251 014	142 129 761	192 802 984	143 137 132	208 010 424	144 960 498

SECTION PROPERTIES NOTES:

S_t = SECTION MODULUS TOP OF STEEL (mm^3).

S_b = SECTION MODULUS BOTTOM OF STEEL (mm^3).

WORK THIS SHEET WITH SHEETS 36 AND 37.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

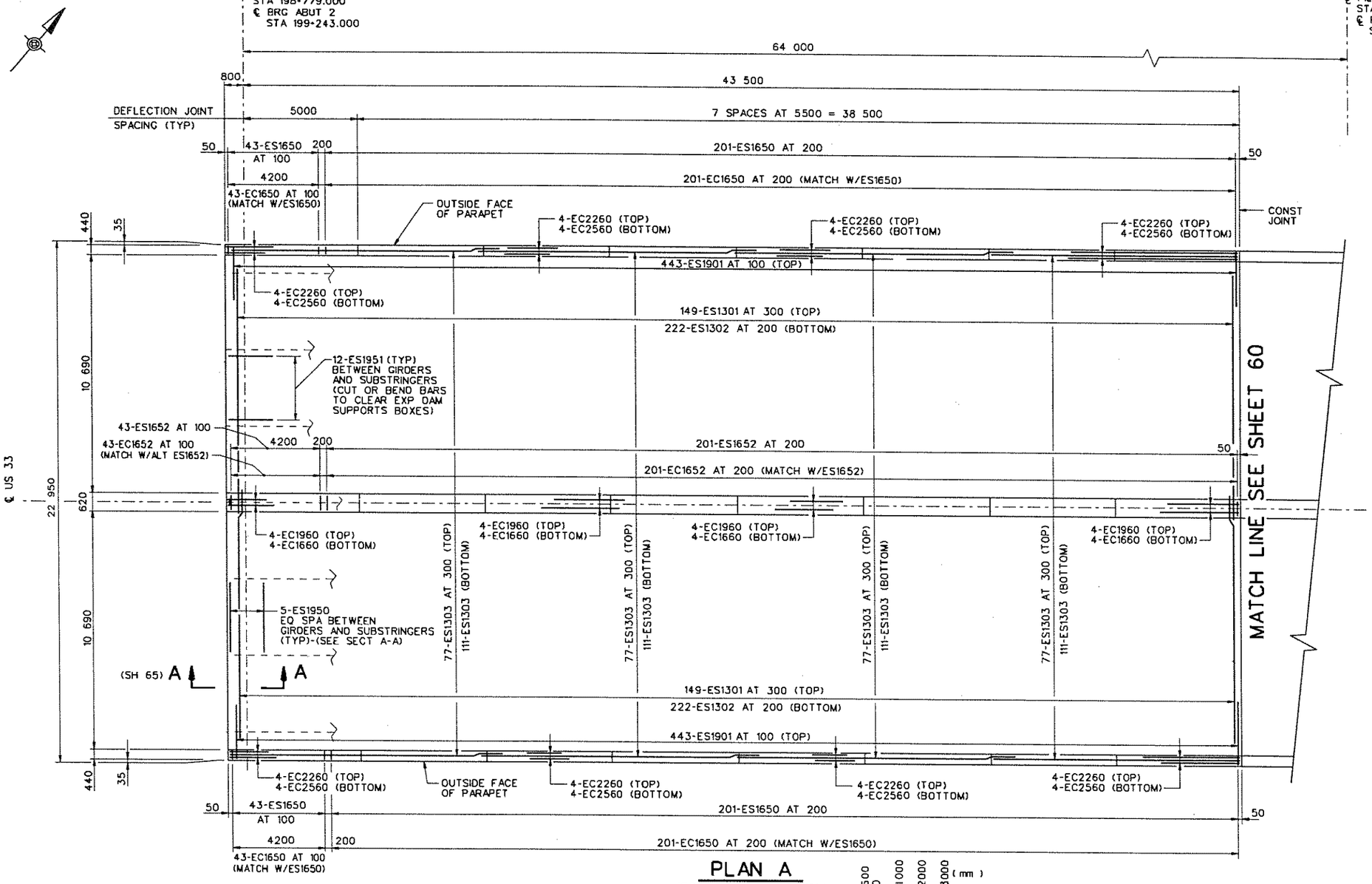
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

GIRDER SECTION PROPERTIES

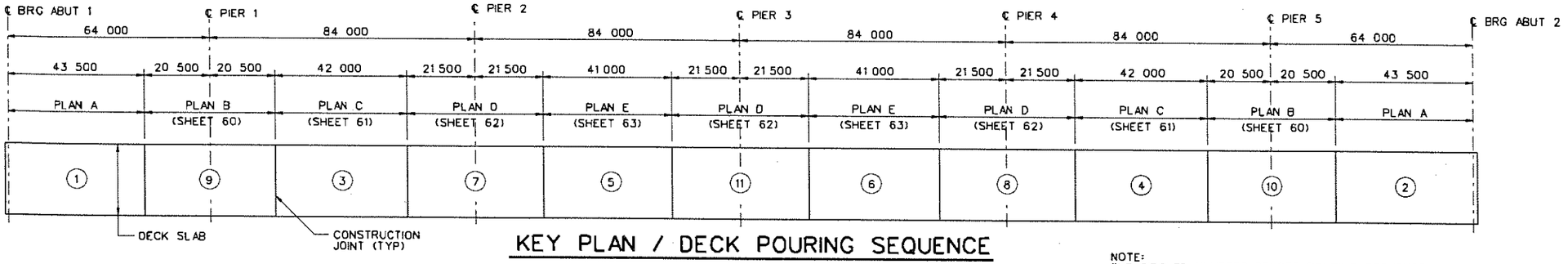
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE JEM DATE 7/97	CKD JPV DATE 7/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE NONE	SHEET NO. 58



PLAN A
(POSITIVE MOMENT REGION)

500 0 1000 2000 3000 (mm)



KEY PLAN / DECK POURING SEQUENCE
NO SCALE

NOTE:
THE CIRCLED NUMBERS DENOTE POURING SEQUENCE.

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X349-H-101.02 05	APD-0484(124) CTC	2001	HARDY	99	146

ITEM	DESCRIPTION	UNIT	QUANTITY
601003-001	CLASS K CONCRETE	m^3	278
601003-003	CLASS K CONCRETE, ARCHITECTURAL	m^3	30
602002-001	EPOXY COATED REINFORCING STEEL BAR	kg	32867

TYPICAL BAR LAPS

BAR SIZE	DECK LAP	PARAPET LAP
#13	610	—
#16	770	1070
#19	920	1270
#22	—	1600
#25	—	2110

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 6D THRU 63.
3. FOR TYPICAL DECK SECTION, SEE SHEET 64.
4. FOR TYPICAL DETAILS, SEE SHEET 65.
5. FOR SCUPPER LOCATIONS, SEE SHEET 50.
6. CUT OR REPOSITION DECK REINFORCING TO CLEAR SCUPPERS.
7. FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 68.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

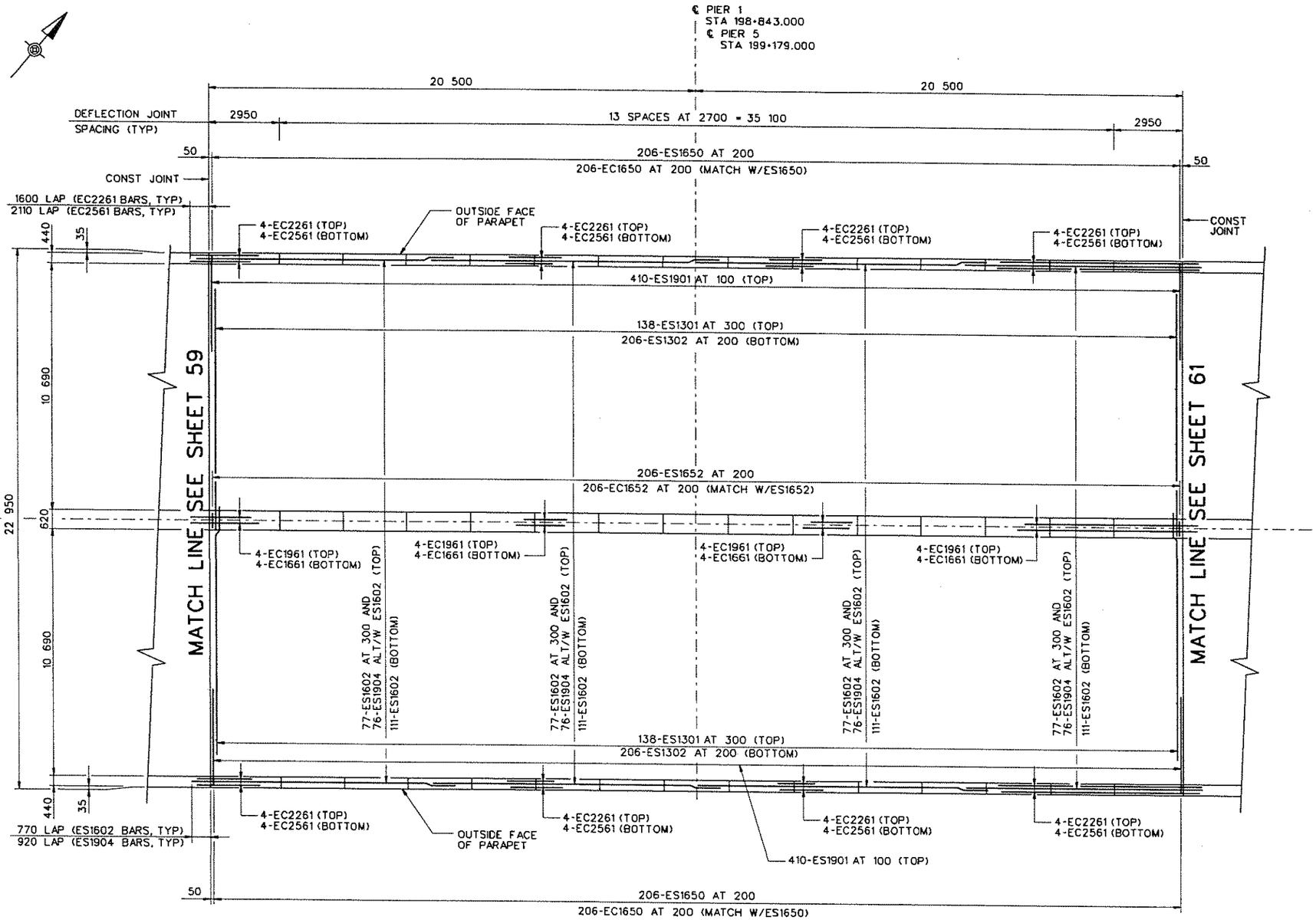
US 33 OVER CLIFFORD HOLLOW

DECK PAVING PLAN

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-8000

MADE SM DATE 5/97	CKD MAP DATE 5/97	BRIDGE NO. 4249	
TRCD DATE	SCALE 1:100	SHEET NO. 59	

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X316-H-101.02 DS	APD-0484(124) CTC	2001	HARDY	100	196



PLAN B

(NEGATIVE MOMENT REGION)

500 0 1000 2000 3000 (mm)

ITEM	DESCRIPTION	UNIT	QUANTITY
601003-001	CLASS K CONCRETE	m^3	251
601003-003	CLASS K CONCRETE, ARCHITECTURAL	m^3	28
602002-001	EPOXY COATED REINFORCING STEEL BAR	kg	42479

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 59 AND 61 THRU 63.
3. FOR TYPICAL DECK SECTION, SEE SHEET 64.
4. FOR DECK PAVING NOTES, SEE SHEET 59.
5. FOR TYPICAL BAR LAPS, SEE TABLE DN SHEET 59.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER CLIFFORD HOLLOW

DECK PAVING PLAN

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

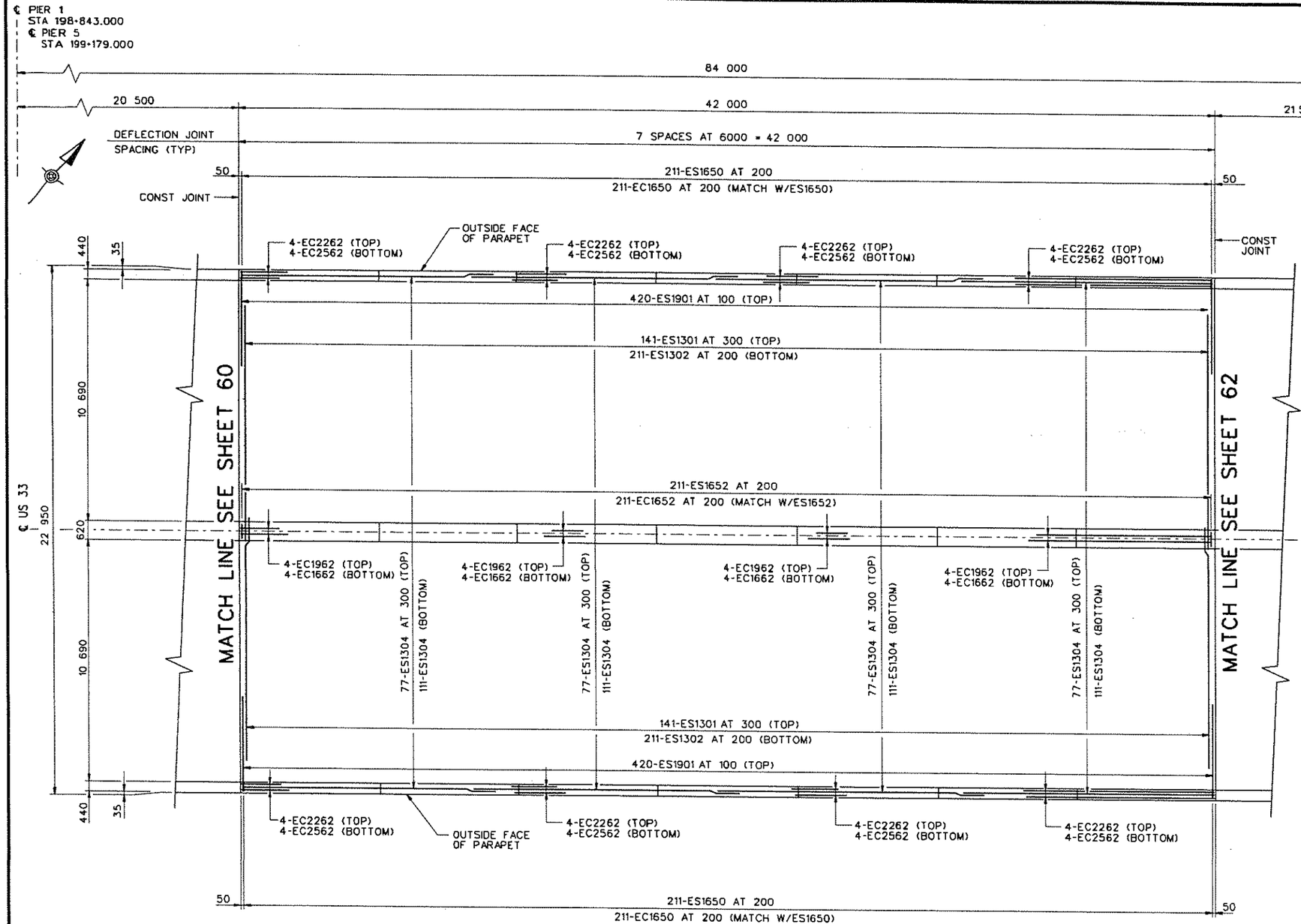
MADE SM DATE 5/97	CKD MAP DATE 6/97	BRIDGE NO. 4249	
TRCD ____ DATE ____	SCALE 1:100	SHEET NO. 60	

℄ PIER 1
STA 198+843.000
℄ PIER 5
STA 199+179.000

℄ PIER 2
STA 198+927.000
℄ PIER 4
STA 199+095.000

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X310-H-101.92 DS	APD-0484(124) CTC	2001	HARDY	101	146

ITEM	DESCRIPTION	UNIT	QUANTITY
601003-001	CLASS K CONCRETE	m^3	257
601003-003	CLASS K CONCRETE, ARCHITECTURAL	m^3	29
602002-001	EPOXY COATED REINFORCING STEEL BAR	kg	30086



PLAN C

(POSITIVE MOMENT REGION)

500 0 1000 2000 3000 (mm)

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 59, 60, 62 AND 63.
3. FOR TYPICAL DECK SECTION, SEE SHEET 64.
4. FOR DECK PAVING NOTES, SEE SHEET 59.
5. FOR TYPICAL BAR LAPS, SEE TABLE ON SHEET 65.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER CLIFFORD HOLLOW

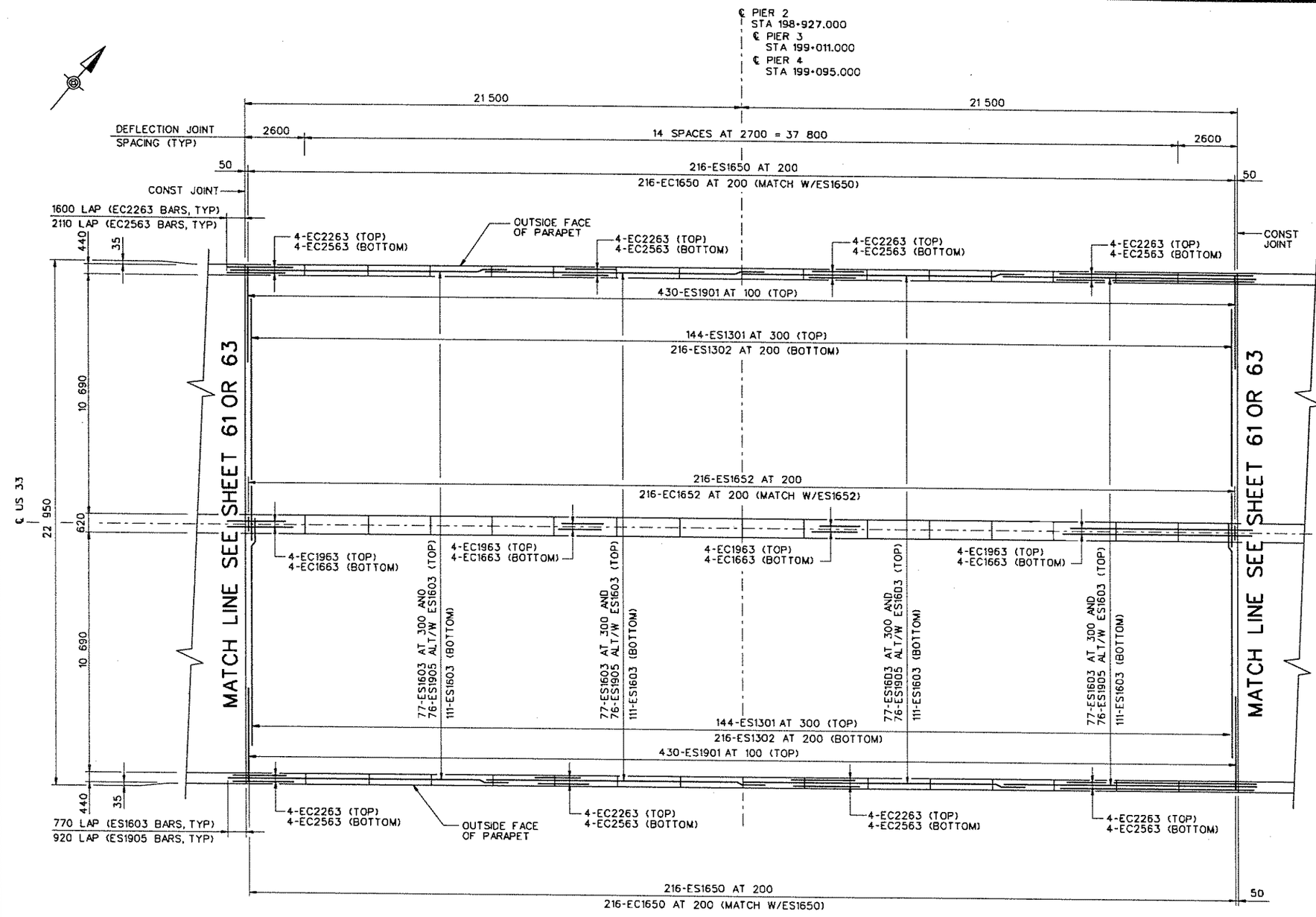
DECK PAVING PLAN

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM DATE 5/97 | CKD MAP DATE 6/97 | BRIDGE NO. 4249
TRCD ____ DATE ____ | SCALE 1:100 | SHEET NO. 61

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X315-H-101.92 05	APD-0484(124) ETC	2001	HARDY	102	146

ITEM	DESCRIPTION	UNIT	QUANTITY
601003-001	CLASS K CONCRETE	m^3	263
601003-003	CLASS K CONCRETE, ARCHITECTURAL	m^3	29
602002-001	EPOXY COATED REINFORCING STEEL BAR	kg	44410



PLAN D

(NEGATIVE MOMENT REGION)

500 0 1000 2000 3000 (mm)

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 59 THRU 61 AND 63.
3. FOR TYPICAL DECK SECTION, SEE SHEET 64.
4. FOR DECK PAVING NOTES, SEE SHEET 59.
5. FOR TYPICAL BAR LAPS, SEE TABLE ON SHEET 59.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

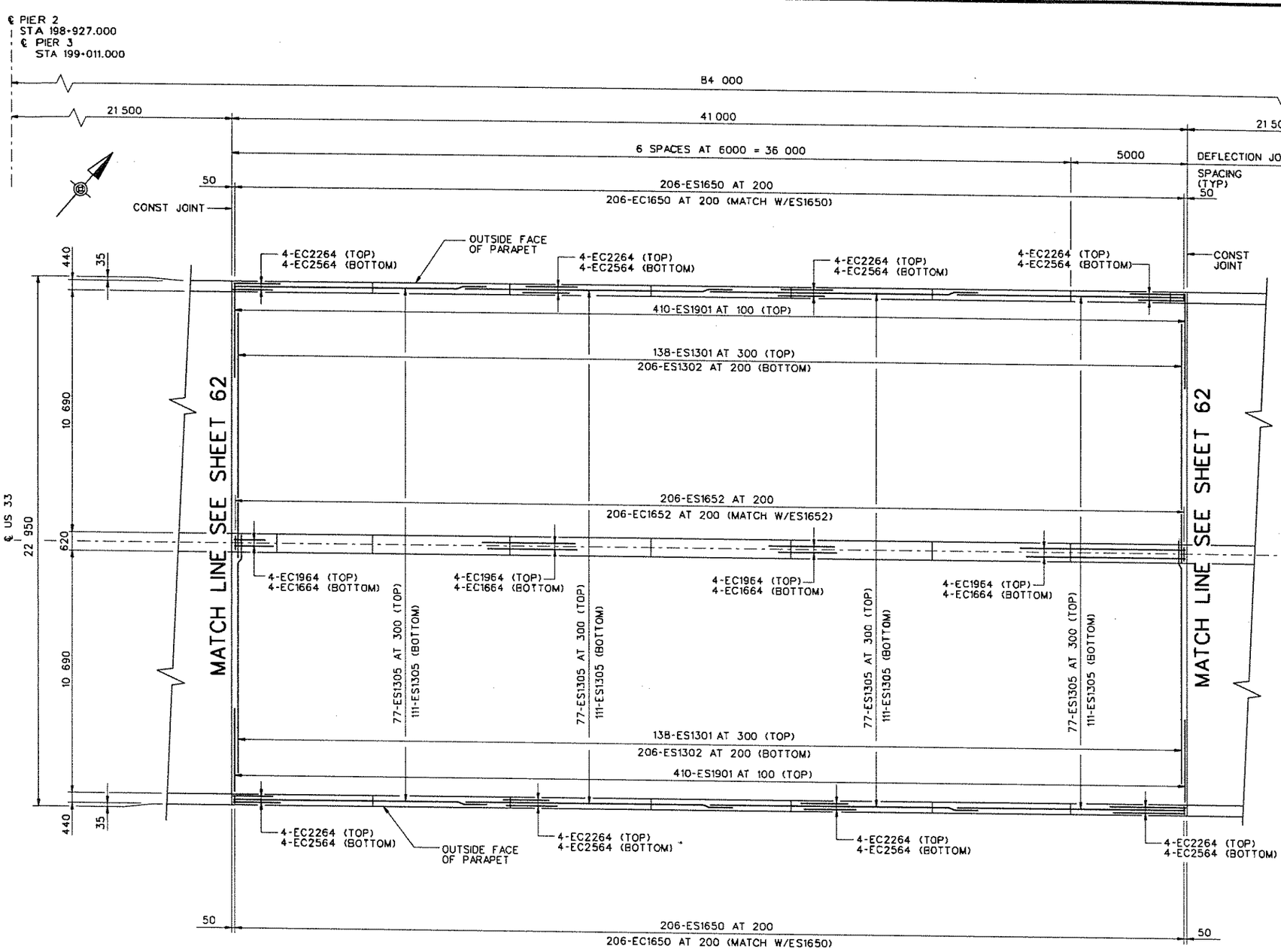
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

DECK PAVING PLAN

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SN DATE 5/97	CKD MAP DATE 5/97	BRIDGE NO. 4249
TRCD DATE	SCALE 1:100	SHEET NO. 62



PLAN E

(POSITIVE MOMENT REGION)

500 0 1000 2000 3000 (mm)

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-M-101.92 05	APD-0484(124) CTC	2001	HARDY	103	146

ITEM	DESCRIPTION	UNIT	QUANTITY
601003-001	CLASS K CONCRETE	m^3	251
601003-003	CLASS K CONCRETE, ARCHITECTURAL	m^3	28
602002-001	EPOXY COATED REINFORCING STEEL BAR	kg	29401

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 59 THRU 62.
3. FOR TYPICAL DECK SECTION, SEE SHEET 64.
4. FOR DECK PAVING NOTES, SEE SHEET 59.
5. FOR TYPICAL BAR LAPS, SEE TABLE ON SHEET 59.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

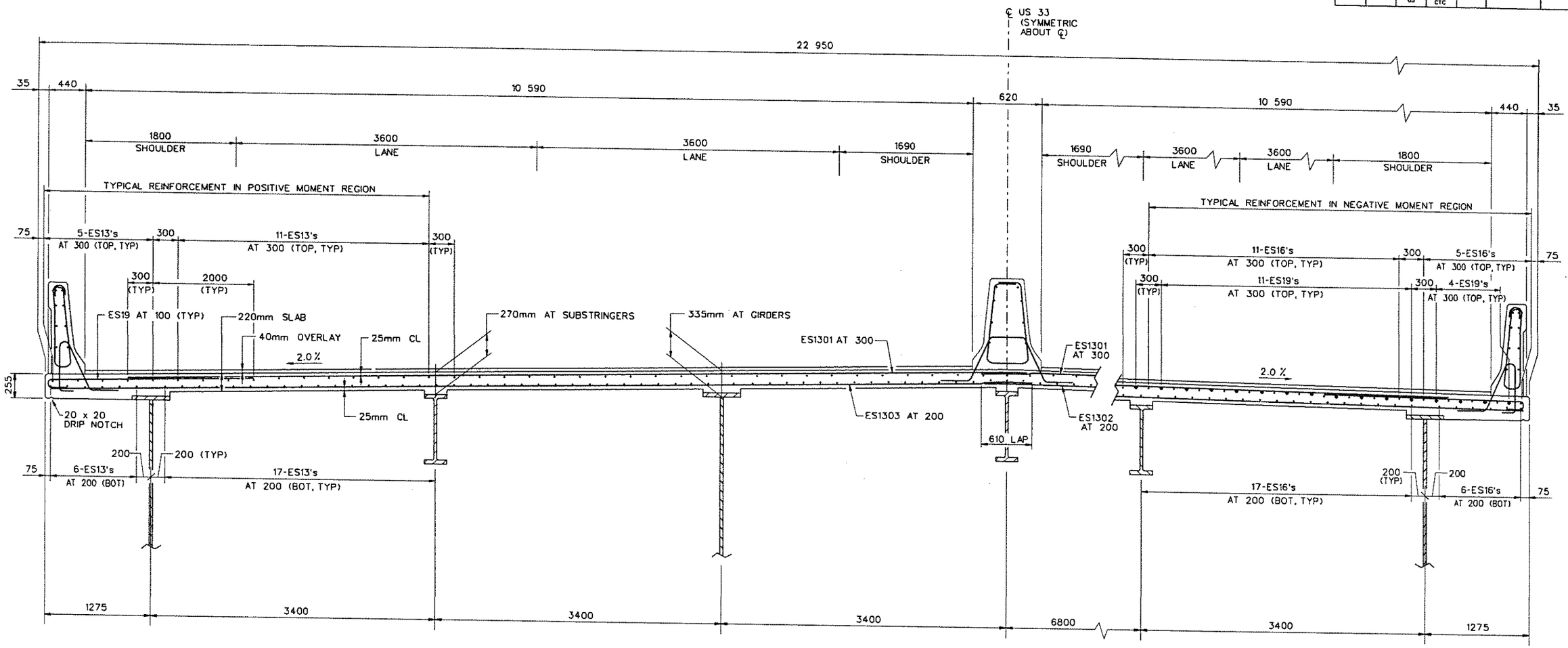
US 33 OVER CLIFFORD HOLLOW

DECK PAVING PLAN

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

MADE SM DATE 5/97	CKD MAP DATE 6/97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE 1:100	SHEET NO. 63

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X315-34-101.92 05	APD-0484(124) CTC	2001	HARDY	104	146



TYPICAL DECK SECTION

500 0 500 mm

ALL DIMENSIONS ARE IN MILLIMETERS.

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 3 AND 4.
2. WORK THIS SHEET WITH SHEETS 59 THRU 63.
3. FOR TYPICAL BAR LAPS, SEE TABLE ON SHEET 59.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

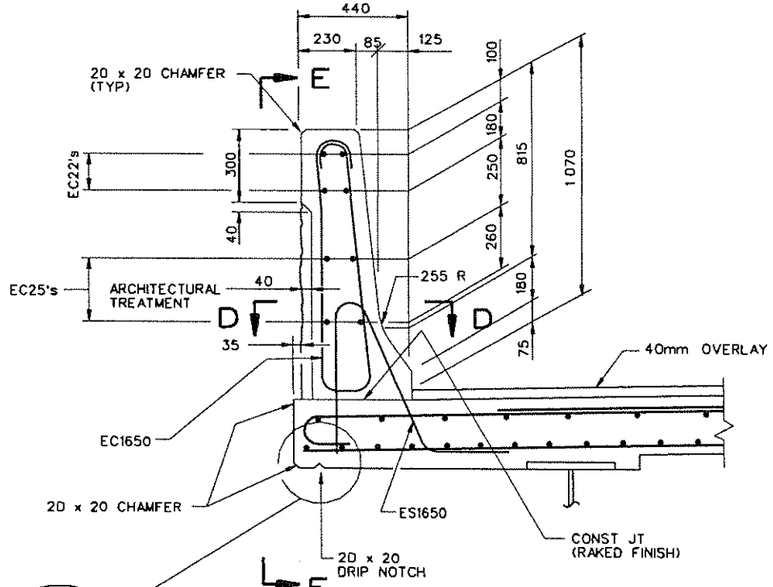
US 33 OVER
CLIFFORD HOLLOW

TYPICAL DECK CROSS SECTION

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

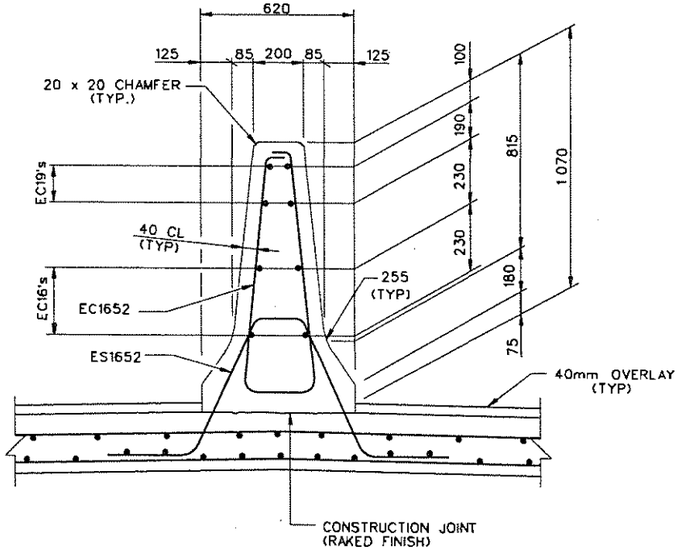
MADE SM DATE 5/97	CKD MAP DATE 5/97	BRIDGE NO.	4249
TRCD ____ DATE ____	SCALE 1:25	SHEET NO.	64

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	105	146



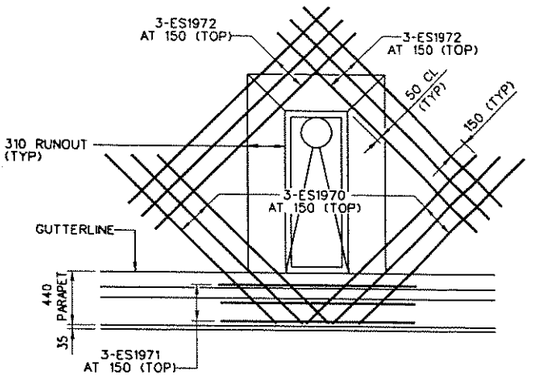
TYPICAL PARAPET REINFORCEMENT DETAIL

0 200 400mm



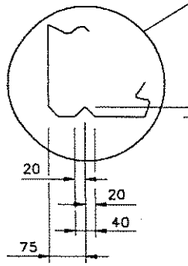
TYPICAL MEDIAN DETAIL

0 200 400mm



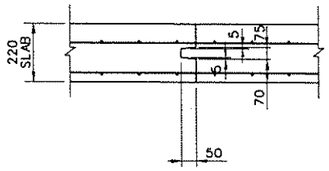
SCUPPER REINFORCEMENT DETAIL

NO SCALE



DRIP NOTCH DETAIL

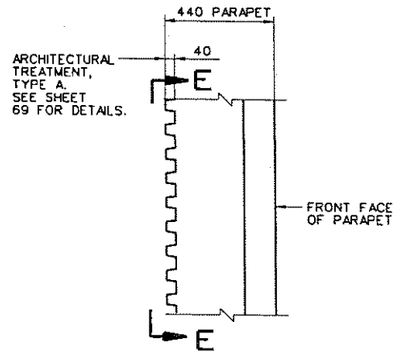
0 200 400mm



CONSTRUCTION JOINT DETAIL

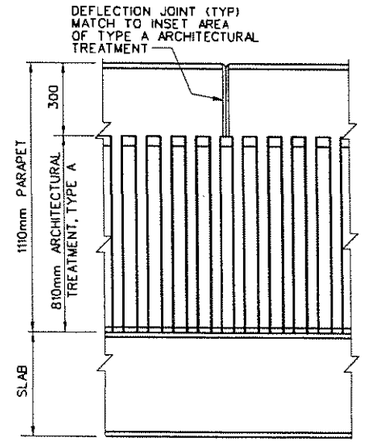
(TRANSVERSE ONLY)

0 200 400mm



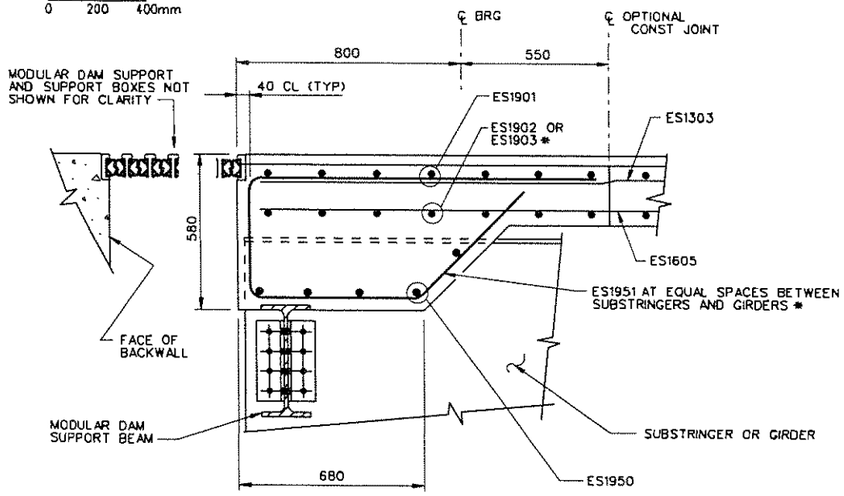
SECTION D-D

0 200 400mm



SECTION E-E

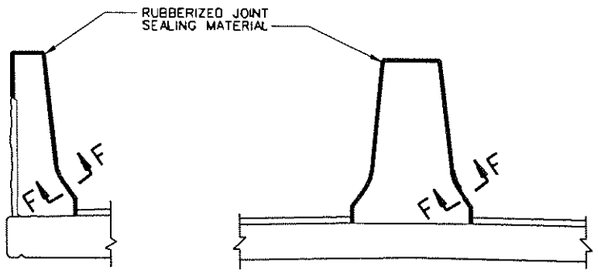
0 200 400mm



* CUT OR BEND REINF BARS TO CLEAR MODULAR DAM SUPPORT BOXES.

SECTION A-A (SH 59)

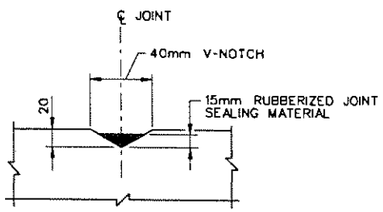
0 400 800mm



PARAPET MEDIAN

DEFLECTION JOINT DETAILS

NO SCALE



SECTION F-F

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

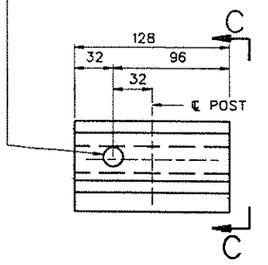
TYPICAL DECK DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

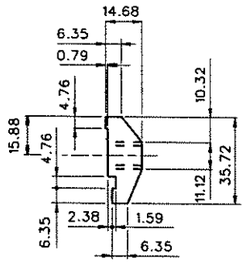
MADE SM DATE 5/97	CKD MAP DATE 5/97	BRIDGE NO. 4249
TRCD. DATE	SCALE AS SHOWN	SHEET NO. 65

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X319-H-101.82 05	APD-0464(124) CTC	2001	HARDY	106	146

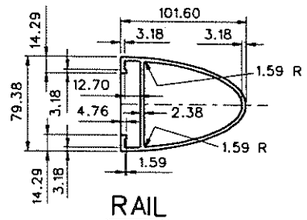
THREADED HOLE FOR 10mm DIA STAINLESS STEEL HEX CAP SCREW WITH ALUMINUM WASHER



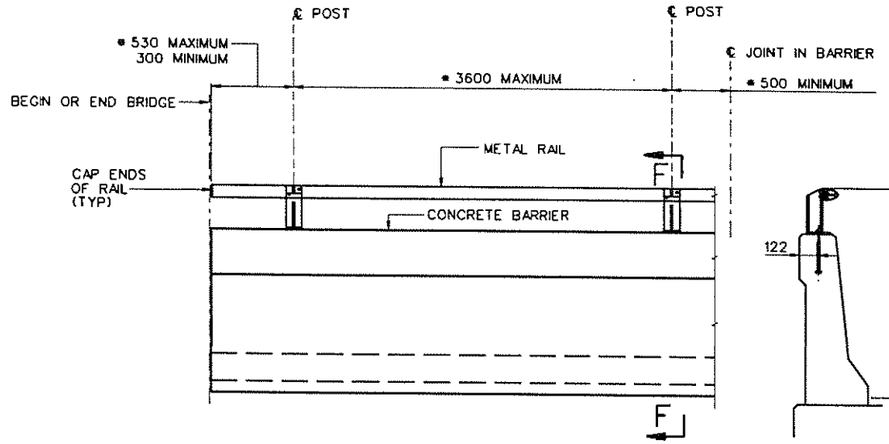
RAIL CLAMP BAR



VIEW C-C



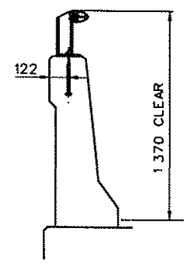
RAIL



ELEVATION ~ BICYCLE BARRIER RAIL

ARCHITECTURAL TREATMENT NOT SHOWN FOR CLARITY

NO SCALE



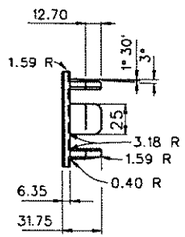
SECTION F-F

* NOTE: POST SPACINGS AND RAIL LENGTHS TO BE SET BY CONTRACTOR AT SHOP DRAWING STAGE.

NOTES:

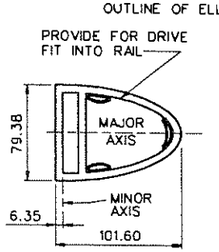
1. THIS RAILING CONFORMS TO THE REQUIREMENTS OF THE AMERICAN WITH DISABILITIES ACT (ADA).
2. EXCEPT AS NOTED, ALL HARDWARE IS ALUMINUM IN ACCORDANCE WITH SECTIONS 709.31 THROUGH 709.41 OF THE STANDARD SPECIFICATIONS.
3. THE ANCHOR BOLTS ARE 20mm DIAMETER, AND CAST IN PLACE. A DRILLED OPTION IS DETAILED ON THE PLANS, WITH CORE DRILLING AS THE ONLY METHOD ALLOWED. THE ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.
4. SET THE RAIL POSTS NORMAL TO THE ROADWAY GRADE. THE RAIL POSTS SHALL BE SEATED ON A 3mm ELASTOMERIC PAD WITH THE SAME DIMENSIONS AS THE POST BASE. THE PADS SHALL MEET THE REQUIREMENTS OF SECTION 715.15.
5. PAYMENT FOR THE BEARING PADS, ANCHOR BOLTS POSTS, RAILS AND HARDWARE IS INCLUDED IN THE UNIT PRICE BID FOR ITEM 617003-001, ALUMINUM RAILING, PER LINEAR METER.

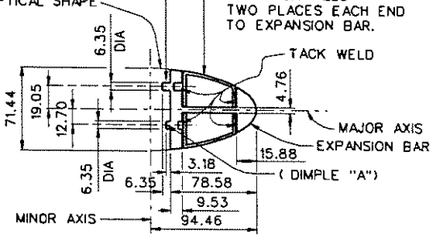
NOTE "A" : ROUGH CUT ENDS AND EDGES OF ALUMINUM RAILS SHALL BE GROUND OR FILED SMOOTH TO REMOVE ALL SHARP EDGES, NICKS OR BURRS THAT WOULD BE INJURIOUS TO THE HUMAN TOUCH.



RAIL END CAP

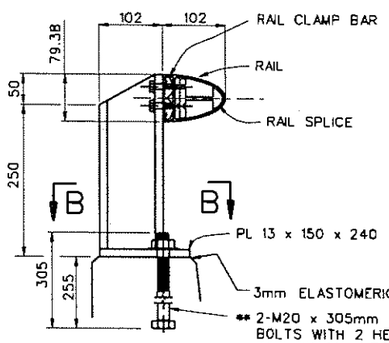
NO SCALE



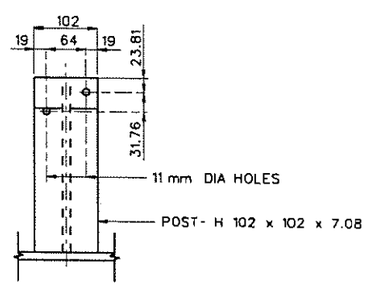


SECTION D-D

NO SCALE

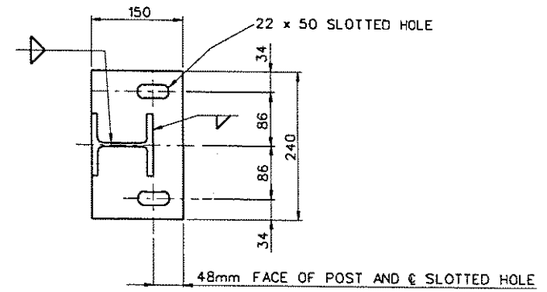


SECTION THRU RAIL

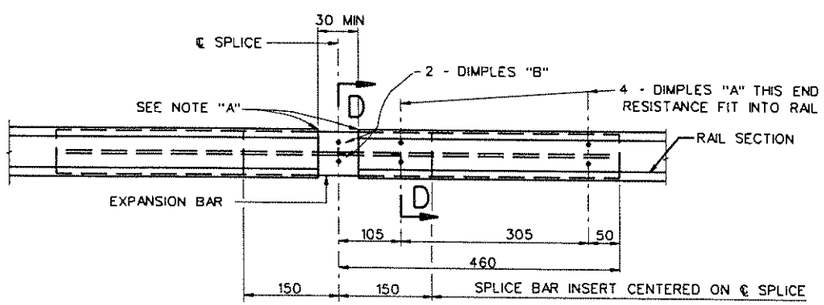


ELEVATION

BICYCLE BARRIER RAIL



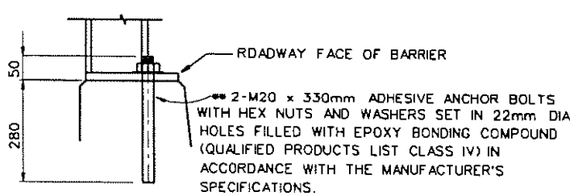
SECTION B-B



RAIL SPLICE

RAIL COMPONENTS

NOTE: RAIL SHALL BE CONTINUOUS OVER A MINIMUM OF THREE POSTS BEFORE SPLICING.



DETAIL A

** NOTE : AFTER NUTS HAVE BEEN TIGHTENED THE THREADS SHALL BE NICKED TO PREVENT REMOVAL OF NUTS.

NOTE:

ALL DIMENSIONS ARE IN MILLIMETERS, EXCEPT AS NOTED.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

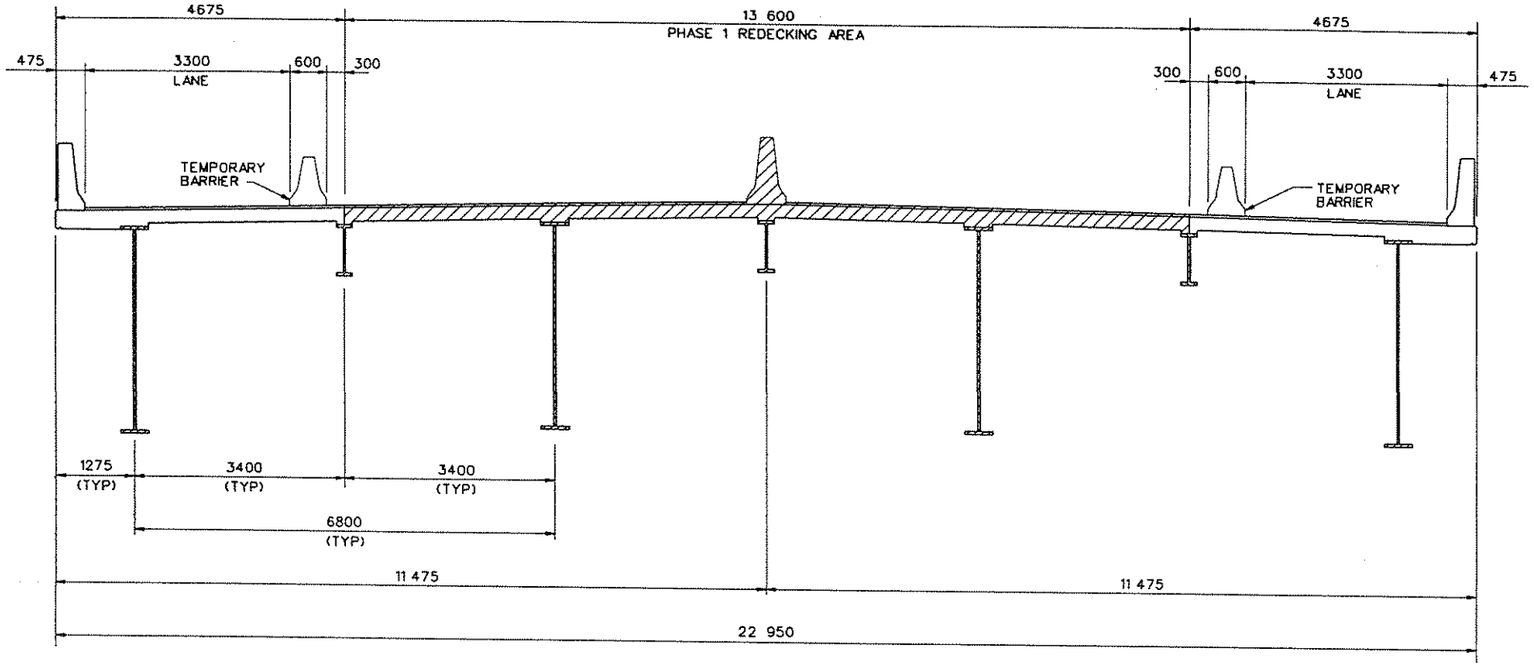
US 33 OVER
CLIFFORD HOLLOW

BICYCLE BARRIER RAIL DETAILS

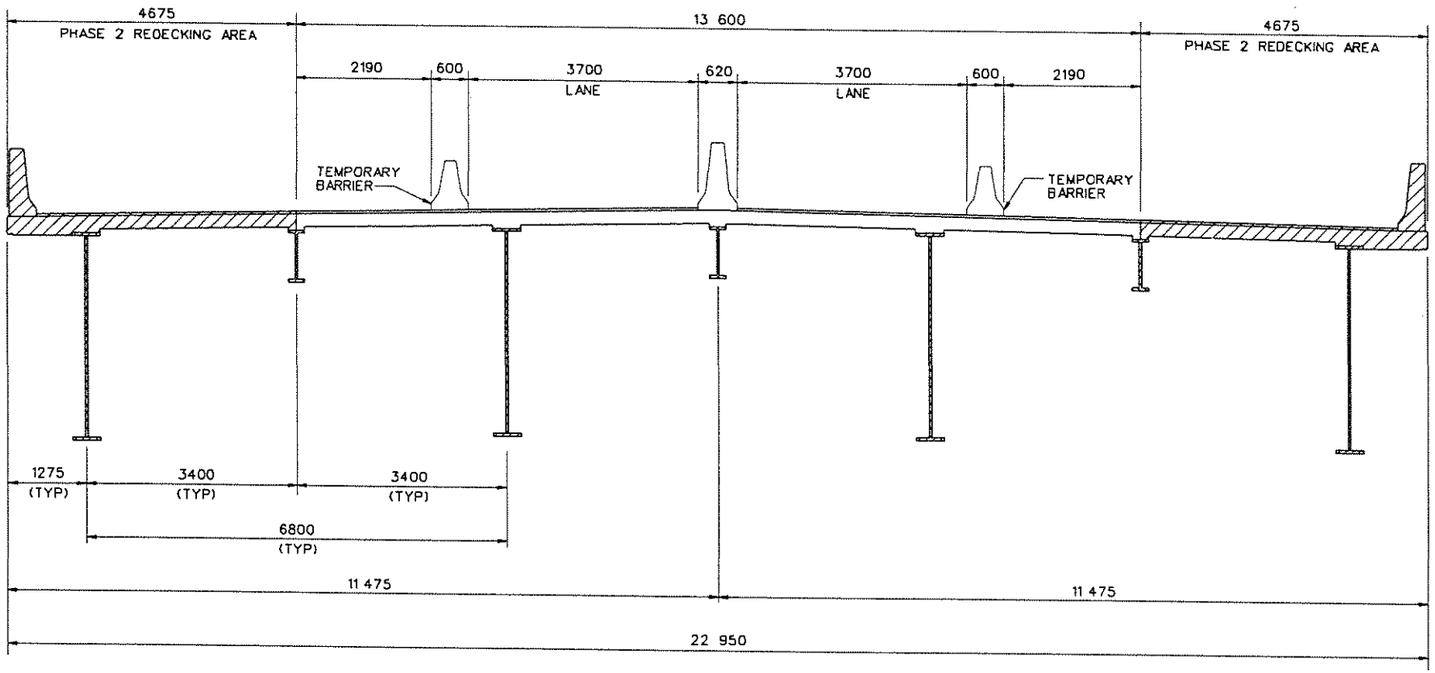
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA (412) 497-6000

MADE AVG DATE 7/97	CKD KJW DATE 7/97	BRIDGE NO. 4249
TRCD ---- DATE ----	SCALE 1:20, UN	SHEET NO. 66

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X315-H-101.92 D3	APD-0484(124) CTC	2001	HARDY	107	146



PHASE I



PHASE II

NOTES:

1. THIS SHEET IS FOR INFORMATION ONLY. PHASED REDECKING IS NOT INCLUDED IN THIS CONTRACT. THE STRUCTURE WAS ANALYZED FOR PHASED REDECKING SHOWN USING 3D-FINITE ELEMENT ANALYSIS. IF ALTERNATE PHASED REDECKING IS USED IN THE FUTURE, A 3D-FEM ANALYSIS SHOULD BE PERFORMED TO VERIFY THE ADEQUACY OF THE STRUCTURE.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

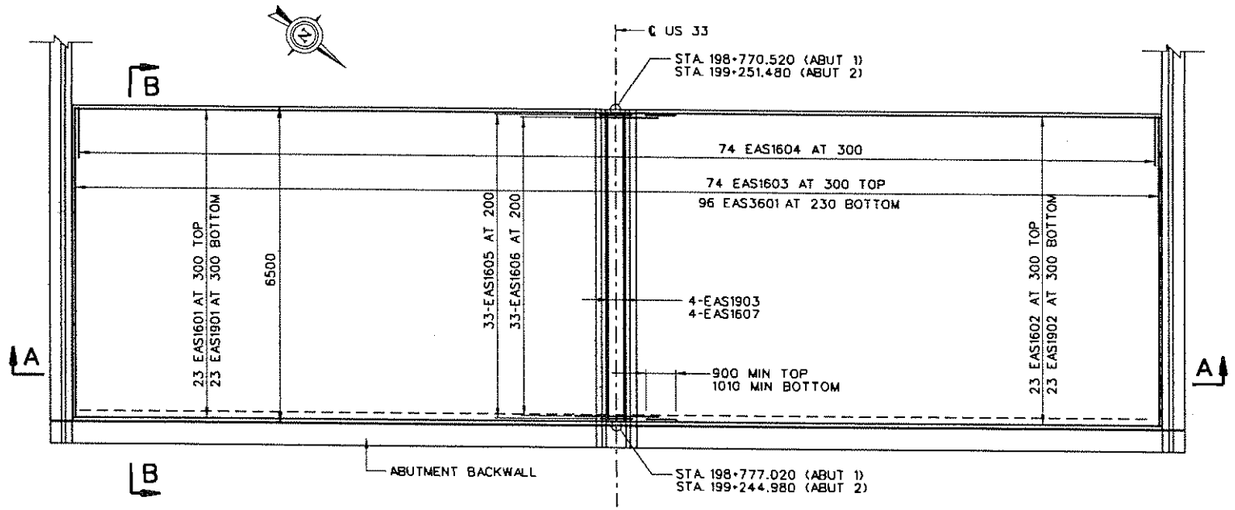
US 33 OVER CLIFFORD HOLLOW

FUTURE REDECKING SEQUENCE

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM DATE 7/97	CKD KJW DATE 7/97	BRIDGE NO. 4249
TRCD. DATE	SCALE 1:50	SHEET NO. 66A

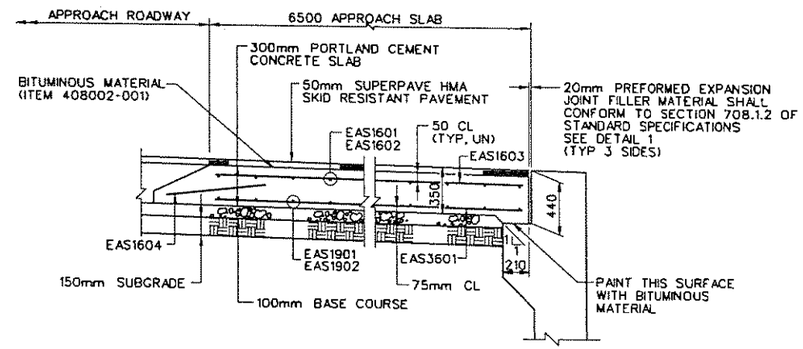
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	108	146



APPROACH SLAB PLAN

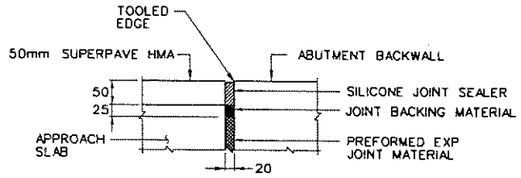
ABUTMENT 1 SHOWN
ABUTMENT 2 SIMILAR

0 1000 2000 mm

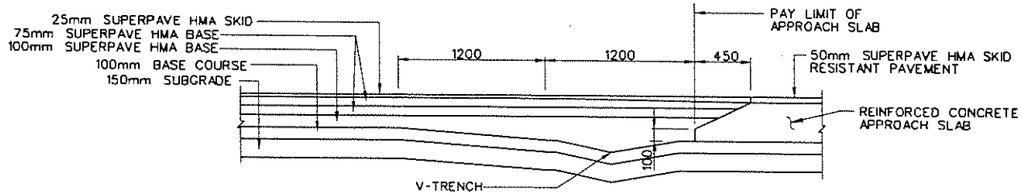


SECTION B-B

0 400 800mm

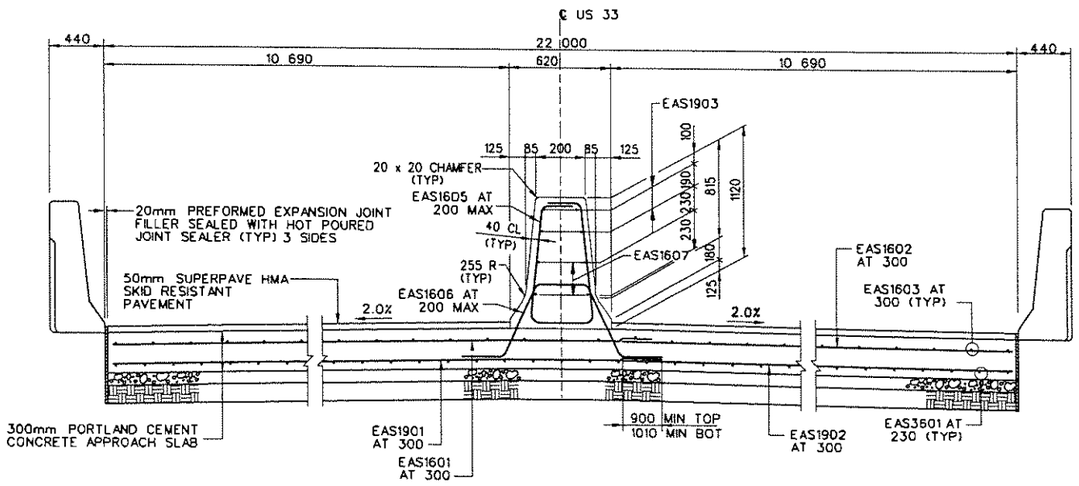


DETAIL 1



TYPE H JOINT

0 400 800mm



SECTION A-A

NO SCALE

QUANTITIES *

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
207002-000	SUBGRADE	m^3	23
311006-001	OPEN GRADED FREE DRAINING BASE COURSE	m^3	15
402001-011	SUPERPAVE HOT-MIX ASPHALT SKID RESISTANT PAVEMENT, STONE OR GRAVEL, WEAR 1	Mgr	16
408002-001	BITUMINOUS MATERIAL	L	210
502001-012	PORTLAND CEMENT CONCRETE APPROACH SLAB, 300mm	m^2	153
	EPOXY COATED REINFORCING BARS	kg	8004
	20mm PREFORMED EXPANSION JOINT FILLER	m^2	18
	SILICONE JOINT SEALER	m	35

* - APPROACH SLAB QUANTITIES PER APPROACH SLAB. PROVIDE TWO APPROACH SLABS.

NOTES:

ALL CONCRETE IN APPROACH SLABS SHALL BE CLASS B, CONFORMING TO SECTION 601 OF THE STANDARD SPECIFICATIONS.

REINFORCING STEEL SHALL CONFORM TO AASHTO M31 GRADE 420 EPOXY COATED.

JOINT FILLER FOR VERTICAL JOINTS BETWEEN THE APPROACH SLAB AND THE ABUTMENT AND WINGWALLS SHALL BE PREFORMED EXPANSION JOINT FILLER CONFORMING TO ARTICLE 708.1.2 OF THE STANDARD SPECIFICATIONS.

THE APPROACH SLAB CONCRETE, REINFORCING STEEL, SILICONE JOINT SEALER AND PREFORMED EXPANSION JOINT FILLER SHALL BE INCLUDED IN ITEM 502001-012 "PORTLAND CEMENT CONCRETE APPROACH SLAB, 300 mm".

THE 100 mm BASE COURSE MATERIAL UNDER THE APPROACH SLAB SHALL BE PAID FOR UNDER ITEM 311006-001 "OPEN GRADED FREE DRAINING BASE COURSE".

FOR ABUTMENT BACKWALL, SEE SHEETS 9 AND 14.

FOR GENERAL NOTES, SEE SHEETS 3 AND 4.

FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 68.

ALL DIMENSIONS ARE IN MILLIMETERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

APPROACH SLAB

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

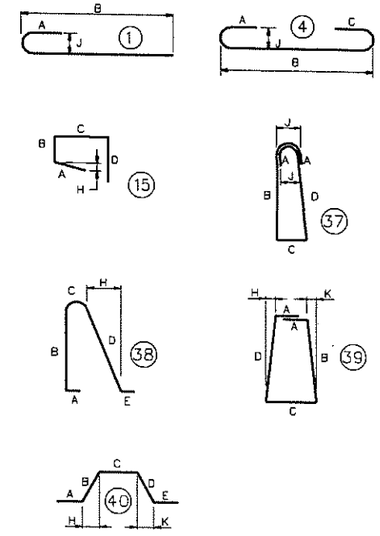
MADE SM DATE 6/97	CKD JAF DATE 7/97	BRIDGE NO. 4249
TRCD. DATE	SCALE 1:10	SHEET NO. 67

REINFORCEMENT BAR SCHEDULE

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
PLAN A (2 TOTAL)																
ES1301	13	10 810	298	STR												
ES1302	13	11 730	444	STR												
ES1303	13	11 540	752	STR												
ES1650	16	1640	488	38	0	540	160	600	340			250				
ES1652	16	2120	244	40	380	580	200	580	380			260		260		
ES1901	19	3400	886	1	200	3200							155			
ES1950	19	3900	30	4	300	3300	300						155			
ES1951	19	2880	72	15	560	600	440	1280				400				
EC1650	16	2460	488	37	180	950	190	960					130			
EC1652	16	2490	244	39	75	1020	300	1020				100		100		
EC1660	16	11 880	16	STR												
EC1960	19	12 030	16	STR												
EC2260	22	12 360	32	STR												
EC2560	25	12 760	32	STR												
PLAN B (2 TOTAL)																
ES1301	13	10 810	276	STR												
ES1302	13	11 730	412	STR												
ES1602	16	11 220	752	STR												
ES1650	16	1640	412	38	0	540	160	600	340			250				
ES1652	16	2120	206	40	380	580	200	580	380			260		260		
ES1901	19	3400	820	1	200	3200							155			
ES1904	19	11 400	304	STR												
EC1650	16	2460	412	37	180	950	190	960					130			
EC1652	16	2490	206	39	75	1020	300	1020				100		100		
EC1661	16	11 590	16	STR												
EC1961	19	11 840	16	STR												
EC2261	22	12 250	32	STR												
EC2561	25	12 890	32	STR												
PLAN C (2 TOTAL)																
ES1301	13	10 810	282	STR												
ES1302	13	11 730	422	STR												
ES1304	13	10 960	752	STR												
ES1650	16	1640	422	38	0	540	160	600	340			250				
ES1652	16	2120	211	40	380	580	200	580	260			380		260		
ES1901	19	3400	840	1	200	3200							155			
EC1650	16	2460	422	37	180	950	190	960					130			
EC1652	16	2490	211	39	75	1020	300	1020	100					100		
EC1662	16	11 300	16	STR												
EC1962	19	11 450	16	STR												
EC2262	22	11 700	32	STR												
EC2562	25	12 090	32	STR												

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
PLAN D (3 TOTAL)																
ES1301	13	10 810	288	STR												
ES1302	13	11 730	432	STR												
ES1603	16	11 720	752	STR												
ES1650	16	1640	432	38	0	540	160	600	340			250				
ES1652	16	2120	216	40	380	580	200	580	380			260		260		
ES1901	19	3400	860	1	200	3200							155			
ES1905	19	11 900	304	STR												
EC1650	16	2460	432	37	180	950	190	960					130			
EC1652	16	2490	216	39	75	1020	300	1020				100		100		
EC1663	16	12 090	16	STR												
EC1963	19	12 340	16	STR												
EC2263	22	12 750	32	STR												
EC2563	25	13 390	32	STR												
PLAN E (2 TOTAL)																
ES1301	13	10 810	276	STR												
ES1302	13	11 730	412	STR												
ES1305	13	10 710	752	STR												
ES1650	16	1640	412	38	0	540	160	600	340			250				
ES1652	16	2120	206	40	380	580	200	580	380			260		260		
ES1901	19	3400	820	1	200	3200							155			
EC1650	16	2460	412	37	180	950	190	960					130			
EC1652	16	2490	206	39	75	1020	300	1020				100		100		
EC1664	16	11 050	16	STR												
EC1964	19	11 200	16	STR												
EC2264	22	11 500	32	STR												
EC2564	25	11 840	32	STR												
ADDITIONAL SCUPPER BARS																
ES1970	19	2175	252	ST												
ES1971	19	1800	126	ST												
ES1972	19	2570	252	ST												
APPROACH SLAB (2 TOTAL)																
EAS1601	16	12 240	23	STR												
EAS1602	16	10 520	23	STR												
EAS1603	16	6400	74	STR												
EAS1604	16	780	74	STR												
EAS1605	16	2490	33	39	75	1020	300	1020				100		100		
EAS1606	16	2120	33	40	380	580	200	580	380			260		260		
EAS1607	16	6400	4	STR												
EAS1901	19	12 350	23	STR												
EAS1902	19	10 520	23	STR												
EAS1903	19	6400	4	STR												
EAS3601	36	6400	96	STR												

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	169	196



NOTES:

1. "E" IN BAR MARK INDICATES EPOXY COATED BARS.
2. FIGURES IN CIRCLES SHOW TYPES.
3. ALL DIMENSIONS ARE OUT TO OUT OF BAR.
4. REINFORCEMENT BAR SCHEDULE IS FOR INFORMATION ONLY. VERIFY SCHEDULE PRIOR TO BIDDING AND FABRICATION.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER CLIFFORD HOLLOW
DECK PAVING AND APPROACH SLAB REINFORCEMENT BAR SCHEDULE

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SLK DATE 7/97	CKD KJW DATE 7/97	BRIDGE NO. 4249	
TRCD. DATE	SCALE AS NOTED	SHEET NO. 68	

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
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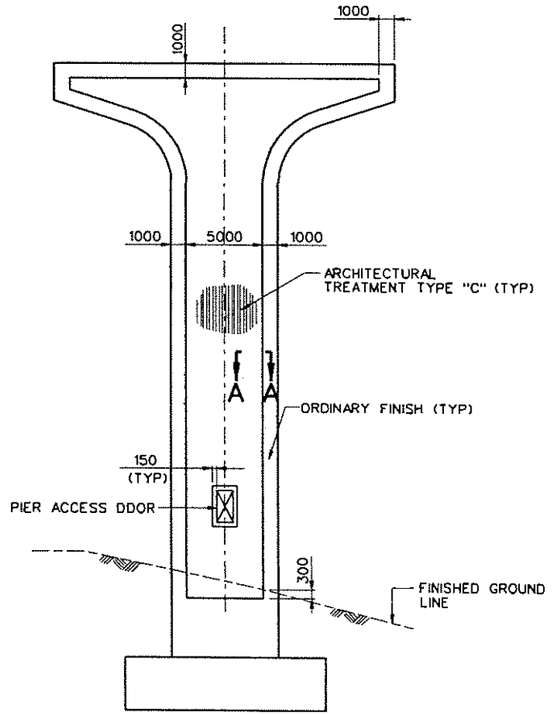
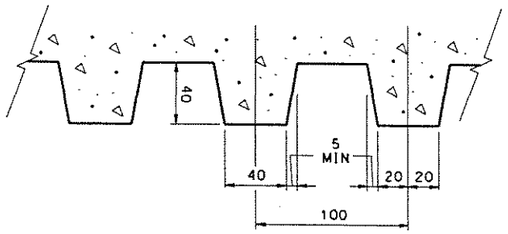


TYPICAL PIER ELEVATION
ARCHITECTURAL TREATMENT TYPE "A"

NO SCALE



ARCHITECTURAL TREATMENT TYPE "A"

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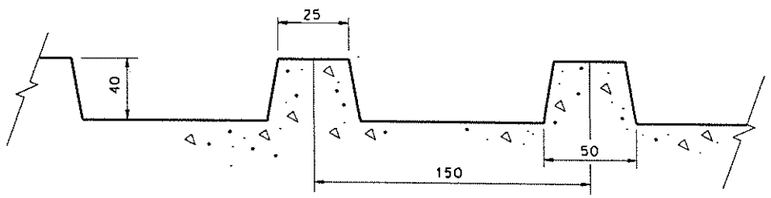
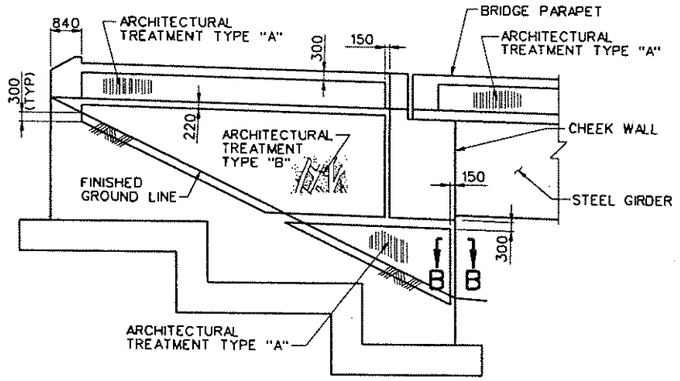


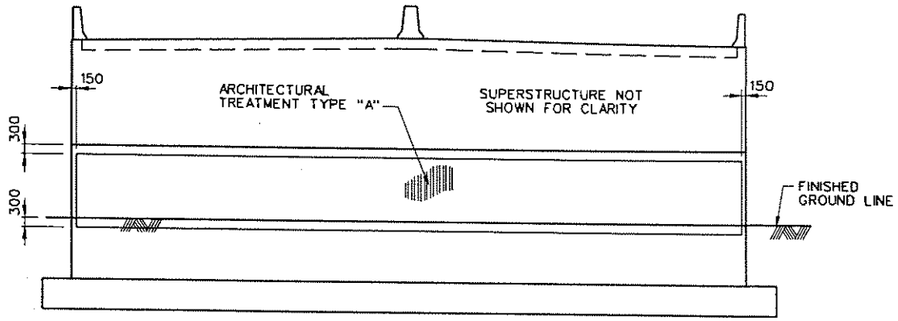
ARCHITECTURAL TREATMENT TYPE "C

NO SCALE



TYPICAL WINGWALL ELEVATION
ARCHITECTURAL TREATMENT LOCATIONS

NO SCALE



TYPICAL FRONT FACE ABUTMENT
ARCHITECTURAL TREATMENT TYPE "A"

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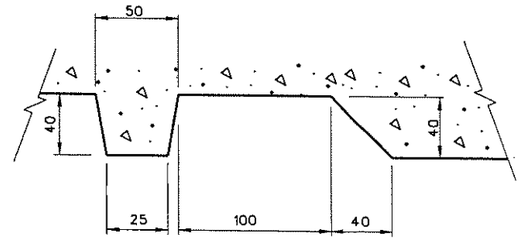
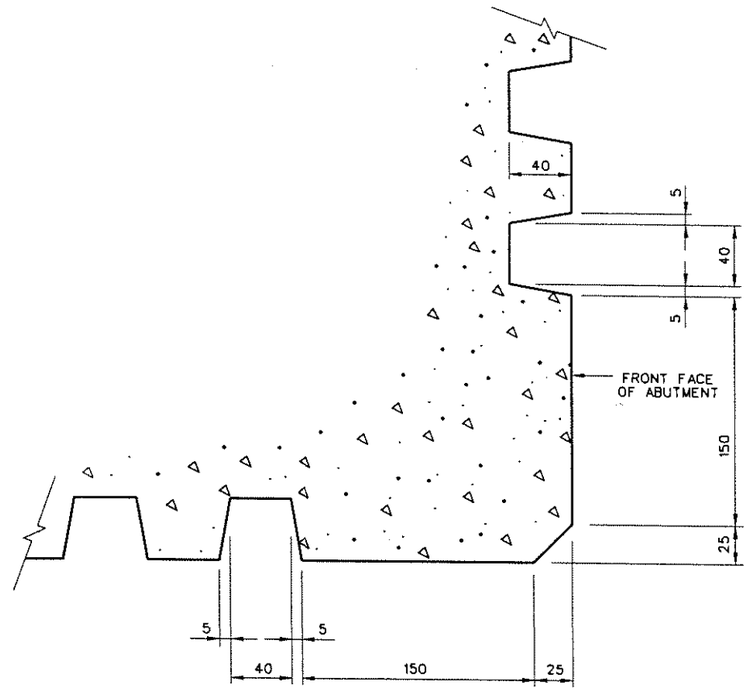


SECTION A-A

NO SCALE



SECTION B-B

0 50 100 mm

NOTES :

ALL AREAS ABOVE GRADE NOT NOTED AS RECEIVING ARCHITECTURAL TREATMENT TYPE "A", SHALL RECEIVE ORDINARY FINISH AS DEFINED IN SECTION 601. REFER TO SECTION 601.8.10 FOR ARCHITECTURAL FORMWORK.

FOR ADDITIONAL PARAPET DETAILS SEE SHEET 11, 16 AND 65.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

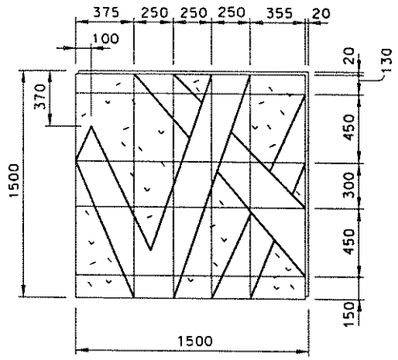
US 33 OVER CLIFFORD HOLLOW

ARCHITECTURAL TREATMENT

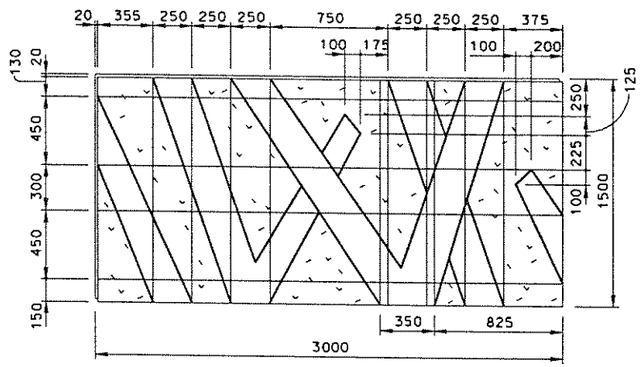
HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SLK DATE 7/97	CKD KJW DATE 7/97		BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE AS NOTED		SHEET NO. 69

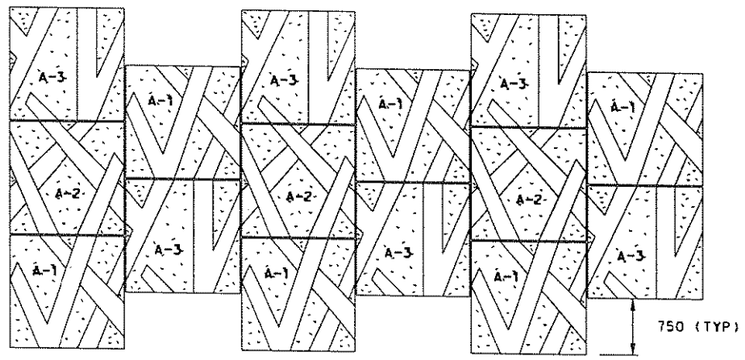
PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	111	146



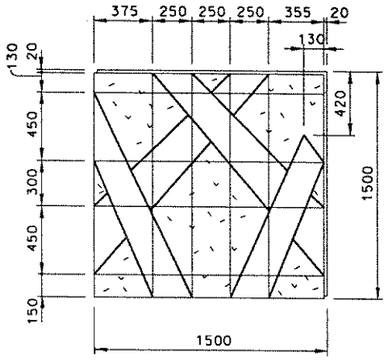
PANEL A-1
NO SCALE



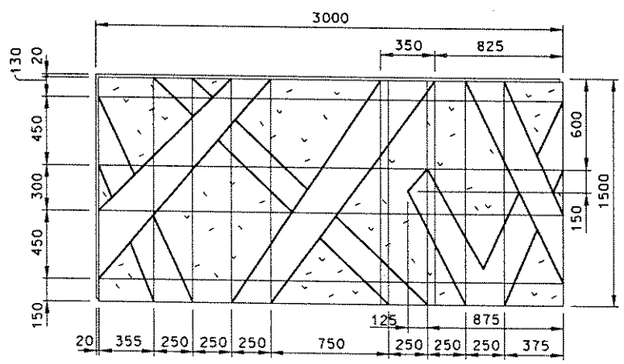
PANEL B-1
NO SCALE



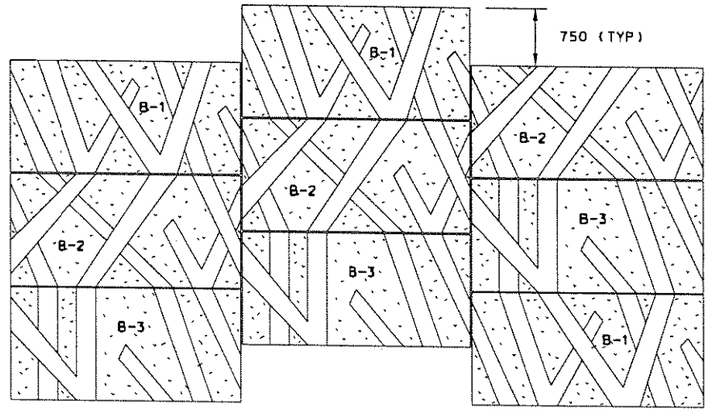
OPTION A MODULE
NO SCALE



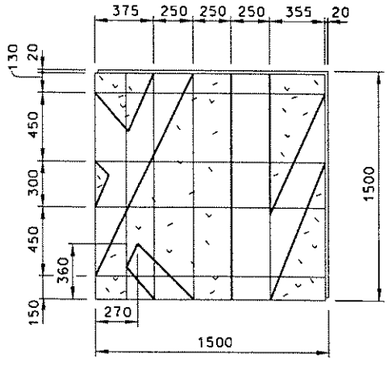
PANEL A-2
NO SCALE



PANEL B-2
NO SCALE

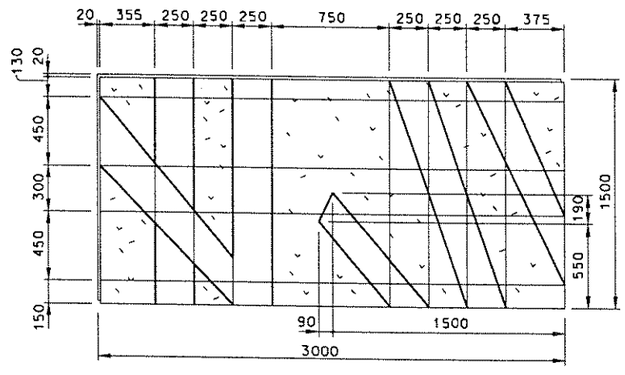


OPTION B MODULE
NO SCALE



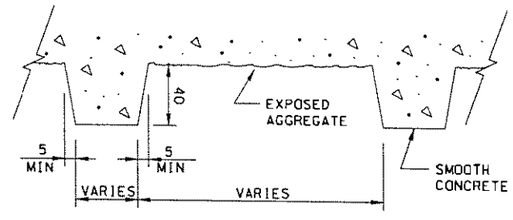
PANEL A-3
NO SCALE

OPTION A



PANEL B-3
NO SCALE

OPTION B



ARCHITECTURAL TREATMENT TYPE "B"
NO SCALE

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

ARCHITECTURAL TREATMENT DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SLK DATE 7/97	CKD KJW DATE 7/97	BRIDGE NO. 4249
TRCD. DATE	SCALE AS NOTED	SHEET NO. 70

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) C1C	2001	HARDY	112	146

ELECTRICAL NOTES

1. THIS WORK INCLUDES FURNISHING ALL OF THE NECESSARY LABOR, MATERIALS, EQUIPMENT, TOOLS AND SERVICES NECESSARY TO PERFORM, COMPLETE AND PLACE INTO SUCCESSFUL OPERATION, IN A WORKMANLIKE MANNER, ALL WORK REQUIRED FOR THE CONSTRUCTION OF THE PROJECT IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS AND AS SHOWN ON THE DRAWINGS.

2. ELECTRICAL COMPONENT STANDARDS: COMPONENTS TO BE UL LABELED AND INSTALLED IN COMPLIANCE WITH NFPA 70 "NATIONAL ELECTRIC CODE" FOR DEVICES AND INSTALLATION.

3. FURNISH AND INSTALL ALL LOAD CENTERS, CIRCUIT BREAKERS, LIGHTING FIXTURES, GFCI RECEPTACLES, ETC. AS SHOWN ON THE DRAWINGS AND ALL CONDUITS, CONDUCTORS, BOXES, ETC. TO MAKE A COMPLETE AND WORKABLE SYSTEM.

4. FIELD CHECK THE INSTALLATION FOR ALL POTENTIAL INTERFERENCES PRIOR TO INSTALLATION. ITEMS WHICH INTERFERE SHALL BE RELOCATED, OR MODIFICATIONS TO THE PROPOSED CONSTRUCTION SHALL BE MADE, AS DETERMINED BY THE OWNER AND THE ENGINEER.

5. VERIFY ALL CATALOG NUMBERS WITH DESCRIPTIONS PRIOR TO MAKING ANY PURCHASES.

6. ANY DAMAGE CAUSED BY THE WORK OF THE CONTRACTOR SHALL BE REPAIRED AND REFINISHED AT THE EXPENSE OF THE CONTRACTOR.

7. SUBMIT 5 SETS OF SHOP DRAWINGS FOR ALL ELECTRICAL EQUIPMENT SUCH AS LIGHTING FIXTURES, DEVICES, DISTRIBUTION EQUIPMENT, ETC. TO THE ENGINEER FOR APPROVAL PRIOR TO MAKING ANY PURCHASES.

8. ALL WIRING FOR LIGHTING AND POWER CIRCUITS SHALL BE SINGLE CONDUCTOR COPPER WITH 600 VOLT, TYPE THHN/THWN INSULATION INSTALLED IN CONDUIT. WIRES SIZED NO. 8 AWG AND LARGER SHALL BE STRANDED, WIRES SIZED NO. 10 AWG AND SMALLER SHALL BE SOLID UNLESS OTHERWISE NOTED. ALL FEEDER AND BRANCH CIRCUITS SHALL HAVE AN INTEGRAL GROUND CONDUCTOR WITHIN THE CONDUIT.

9. ALL CONDUITS INSTALLED SHALL BE RIGID METAL GALVANIZED STEEL (ANSI C80.1). ALL CONDUITS SHALL BE ¾" UNLESS OTHERWISE NOTED ON DRAWINGS. PROVIDE CONDUIT EXPANSION FITTING, OZ GEDNEY TYPE AX (4" LATERAL MOVEMENT) AT ALL STRUCTURAL EXPANSION JOINTS.

10. CONDUIT RUNS ARE SHOWN SCHEMATICALLY. SITE CONDITIONS WILL DETERMINE THE ACTUAL RUNS.

11. PROVIDE JUNCTION, PULL, AND OUTLET BOXES WHERE NECESSARY TO FACILITATE CONDUIT AND CONDUCTOR INSTALLATION. ALL BOXES SHALL BE OF THE CAST WEATHERPROOF TYPE CONSTRUCTION AND PHYSICAL SIZE AS REQUIRED BY THE NATIONAL ELECTRICAL CODE FOR THE NUMBER AND SIZE OF CONDUITS AND CONDUCTORS INSTALLED.

12. PROVIDE LOAD CENTER PANELBOARDS FOR SURFACE MOUNTING WITH THERMAL MAGNETIC, BOLT-ON CIRCUIT-BREAKERS.

    LOAD CENTERS SHALL BE UL LISTED AND SHALL BE IN ACCORDANCE WITH NEMA PBI STANDARDS. THE UNIT SHALL BE AN ENCLOSED DEAD FRONT TYPE AND HAVE CIRCUIT BREAKERS IN THE QUANTITY AND OF THE RATING INDICATED ON THE DRAWINGS. LOAD CENTERS SHALL BE DESIGNED FOR USE ON A 120/240 VOLT, 1 PHASE, 3 WIRE SYSTEM. LOAD CENTERS SHALL BE PROVIDED WITH A NEUTRAL BAR AND A GROUND BUS.

    THE CIRCUIT BREAKERS SHALL BE AMBIENT COMPENSATED AND TRIP FREE ON OVERLOADS. THEY SHALL BE QUICK-MAKE AND QUICK-BREAK TOGGLE MECHANISMS.

    BUS BARS AND ALL CURRENT CARRYING PARTS OF THE LOAD CENTERS EXCLUSIVE OF THE CIRCUIT BREAKERS SHALL BE TIN-PLATED ALUMINUM.

13. ALL 120 VOLT RECEPTACLES SHALL BE GROUND-FAULT CIRCUIT INTERRUPTER TYPE. COMPLY WITH UL STANDARD 943, "GROUND FAULT CIRCUIT INTERRUPTERS", FEED-THROUGH TYPE, WITH INTEGRAL NEMA 5-20 DUPLEX RECEPTACLE.

14. ALL CERTIFICATES OF INSPECTION OR APPROVAL WHICH MAY BE REQUIRED SHALL BE OBTAINED AND PAID FOR BY THE CONTRACTOR AND DELIVERED TO THE OWNER.

15. THE CONTRACTOR SHALL WARRANTY ALL EQUIPMENT AND WORK PERFORMED BY HIM FOR A PERIOD OF ONE YEAR FROM THE DATE OF WRITTEN ACCEPTANCE OF HIS WORK.

ELECTRICAL LEGEND

WALL MOUNTED, DUPLEX TYPE GROUND-FAULT CIRCUIT INTERRUPTER RECEPTACLE. 20 AMPERE, 125 VOLT, 2 POLE, 3 WIRE, NEMA 5-20 WITH WEATHER PROOF PLATE AND COVER.

COMMERCIAL TYPE LOAD CENTER PANELBOARD (NEMA 3R), RATED SERVICE ENTRANCE, SURFACE MOUNTED AS INDICATED. SEE "LOAD CENTER SCHEDULE" FOR NUMBER AND SIZE OF OVERCURRENT DEVICES AND KAIC RATING OF LOAD CENTER/ DEVICES, VOLTAGE AND WIRING.

CONDUIT RUN EXPOSED.

A WALL MOUNTED, TWIST LOCK TYPE SINGLE RECEPTACLE, 30 AMPERE, 250 VOLT, 2 POLE, 3 WIRE, NEMA L6-30 WITH WEATHER PROOF PLATE AND COVER.

B WALL MOUNTED, TWIST LOCK TYPE SINGLE RECEPTACLE, 20 AMPERE, 250 VOLT, 2 POLE, 3 WIRE, NEMA L6-20 WITH WEATHER PROOF PLATE AND COVER.

ITEM 631001-001 ELECTRICAL WORK INCLUDES

DESCRIPTION	UNIT	SUPER STR.	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	TOTAL
120 VOLT, 20A DUPLEX RECEPTACLES	EACH	–	3	4	5	5	3	20
240 VOLT, 30A SINGLE RECEPTACLES	EACH	–	–	–	1	1		2
240 VOLT, 20A SINGLE RECEPTACLES	EACH	5	1	1	–	–	1	8
COMMERCIAL LOAD CENTERS	EACH	–	1	1	1	1	1	5
RIGID METAL CONDUIT, ¾"	METERS	–	10	10	10	10	10	50
RIGID METAL CONDUIT, 1"	METERS	–	45	75	90	95	50	355
OUTLET BOXES	EACH	5	4	5	6	6	4	30
#8 AWG COPPER WIRE	METERS	–	–	20	20	20	–	60
#10 AWG COPPER WIRE	METERS	–	145	235	460	485	180	1505
#12 AWG COPPER WIRE	METERS	–	90	–	–	–	100	190

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

ELECTRICAL NOTES AND SYMBOLS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE NO SCALE	SHEET NO. 71

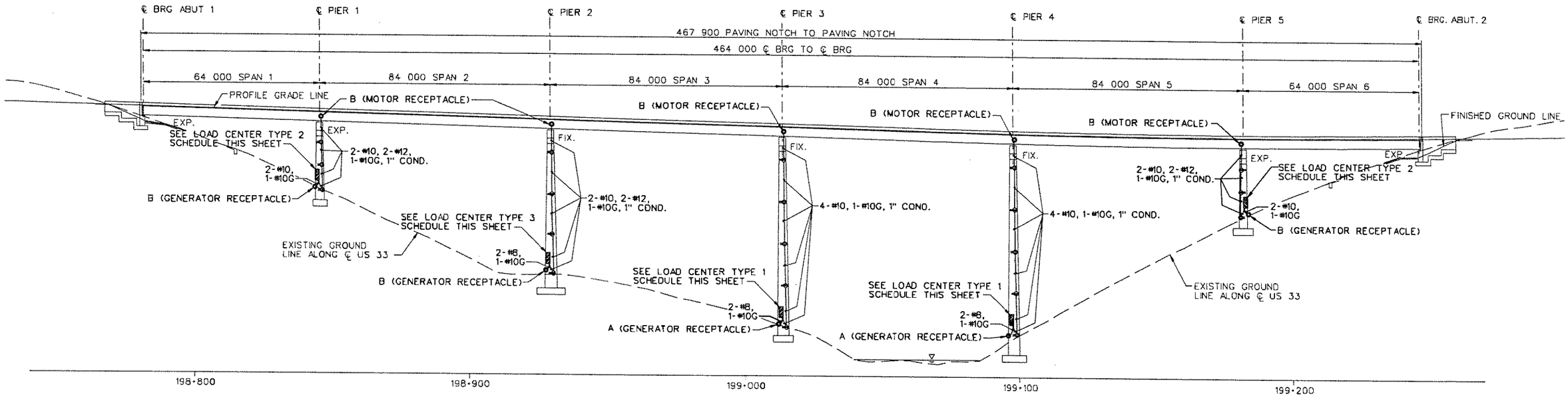
PANEL : TYPE 1		ENTRANCE : TOP		MOUNTING : SURFACE			
SERVICE : 120/240 VOLTS, 1 PHASE, 3 WIRE 100% NEUTRAL				SERVICE ENTRANCE LABEL : YES			
MAIN DEVICE : 30 AMP/2 POLE CB				KAIC INTERRUPTING RATING: 10			
FEEDER SIZE : 2-#8, 1-#10G, ¾" C							
CKT NO	CIRCUIT IDENTIFICATION	CB AMPS	VA PER PHASE A	VA PER PHASE B	CB AMPS	CIRCUIT IDENTIFICATION	CKT NO
1	RECEPTACLE FOR 1 HP MOTOR	20/2	960/900		20/1	GFCI RECEPTACLES	2
3				960/		SPACE	4
	EST. TOTAL VA PER PHASE		1860	960			
	EST. TOTAL AMPS PER PHASE		15.5	8			

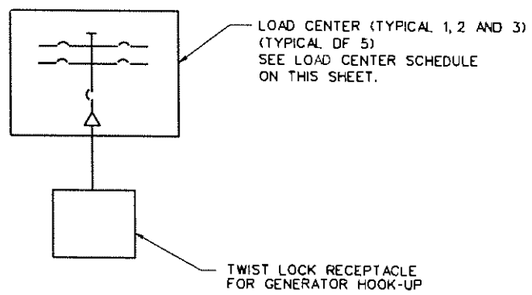
PANEL : TYPE 2		ENTRANCE : TOP		MOUNTING : SURFACE			
SERVICE : 120/240 VOLTS, 1 PHASE, 3 WIRE 100% NEUTRAL				SERVICE ENTRANCE LABEL : YES			
MAIN DEVICE : 20 AMP/2 POLE CB				KAIC INTERRUPTING RATING: 10			
FEEDER SIZE : 2-#10, 1-#10G, ¾" C							
CKT NO	CIRCUIT IDENTIFICATION	CB AMPS	VA PER PHASE A	VA PER PHASE B	CB AMPS	CIRCUIT IDENTIFICATION	CKT NO
1	RECEPTACLE FOR 1 HP MOTOR	20/2	960/540		20/1	GFCI RECEPTACLES	2
3				960/		SPACE	4
	EST. TOTAL VA PER PHASE		1500	960			
	EST. TOTAL AMPS PER PHASE		12.5	8			

PANEL : TYPE 3		ENTRANCE : TOP		MOUNTING : SURFACE			
SERVICE : 120/240 VOLTS, 1 PHASE, 3 WIRE 100% NEUTRAL				SERVICE ENTRANCE LABEL : YES			
MAIN DEVICE : 30 AMP/2 POLE CB				KAIC INTERRUPTING RATING: 10			
FEEDER SIZE : 2-#8, 1-#10G, ¾" C							
CKT NO	CIRCUIT IDENTIFICATION	CB AMPS	VA PER PHASE A	VA PER PHASE B	CB AMPS	CIRCUIT IDENTIFICATION	CKT NO
1	RECEPTACLE FOR 1 HP MOTOR	20/2	960/720		20/1	GFCI RECEPTACLES	2
3				960/		SPACE	4
	EST. TOTAL VA PER PHASE		1680	960			
	EST. TOTAL AMPS PER PHASE		14.0	8			

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X315-H-101.82 D5	APD-0484(124) CTC	2001	HARDY	113	146

NOTE: ATTACH B (MOTOR RECEPTALE) TO PIER CAP (TYP).





GENERATOR SERVICE ENCLOSURE DETAIL (TYPICAL OF 5)

NO SCALE

ELEVATION

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS AND ALL STATIONS AND ELEVATIONS ARE IN METERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

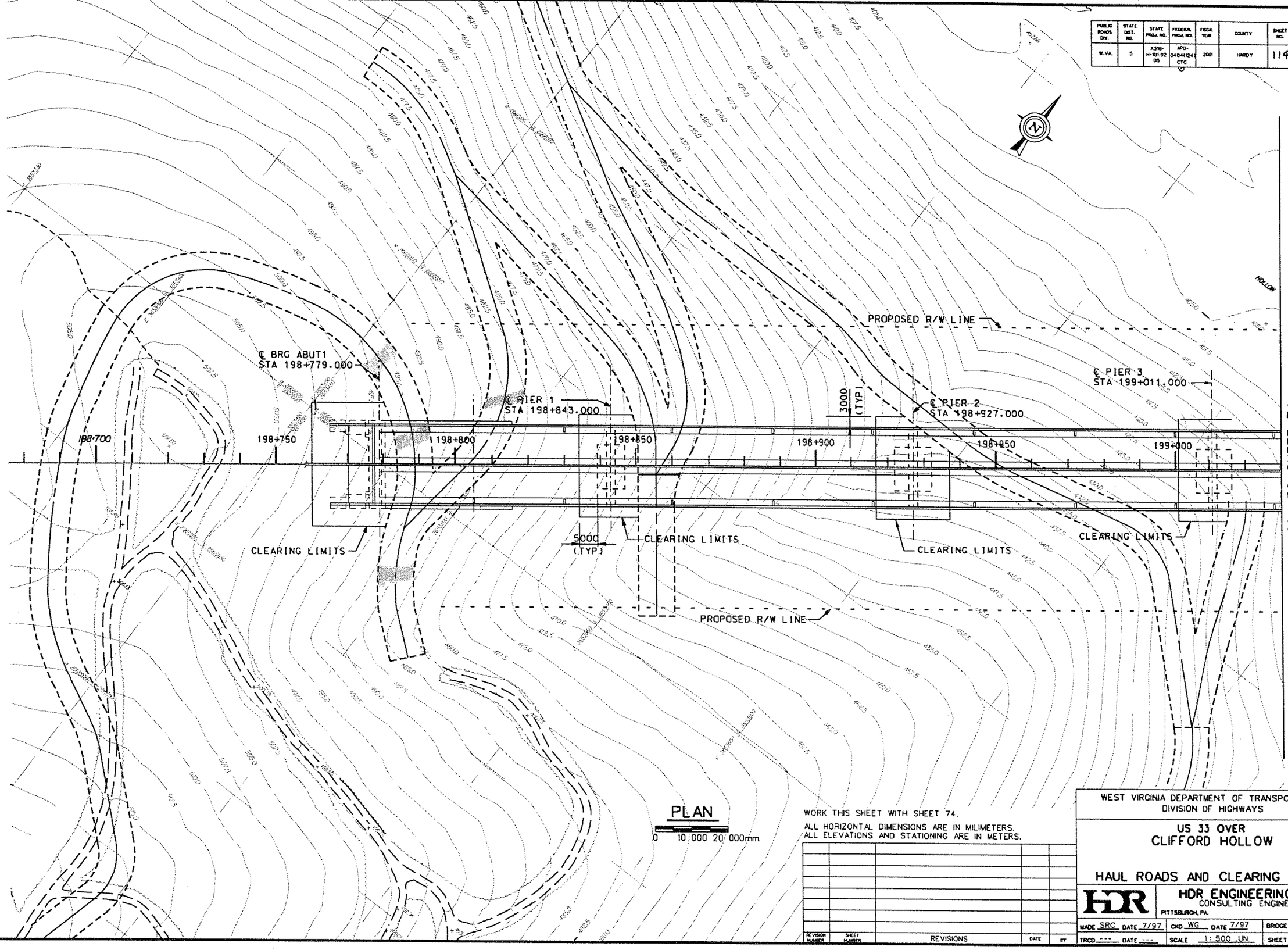
US 33 OVER
CLIFFORD HOLLOW

ELECTRICAL DETAILS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SM DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD DATE	SCALE AS SHOWN	SHEET NO. 72

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X-516-H-101.92 05	APD-0484(124) CTC	2001	HARDY	114	146



PLAN

0 10 000 20 000mm

WORK THIS SHEET WITH SHEET 74.

ALL HORIZONTAL DIMENSIONS ARE IN MILIMETERS.
ALL ELEVATIONS AND STATIONING ARE IN METERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

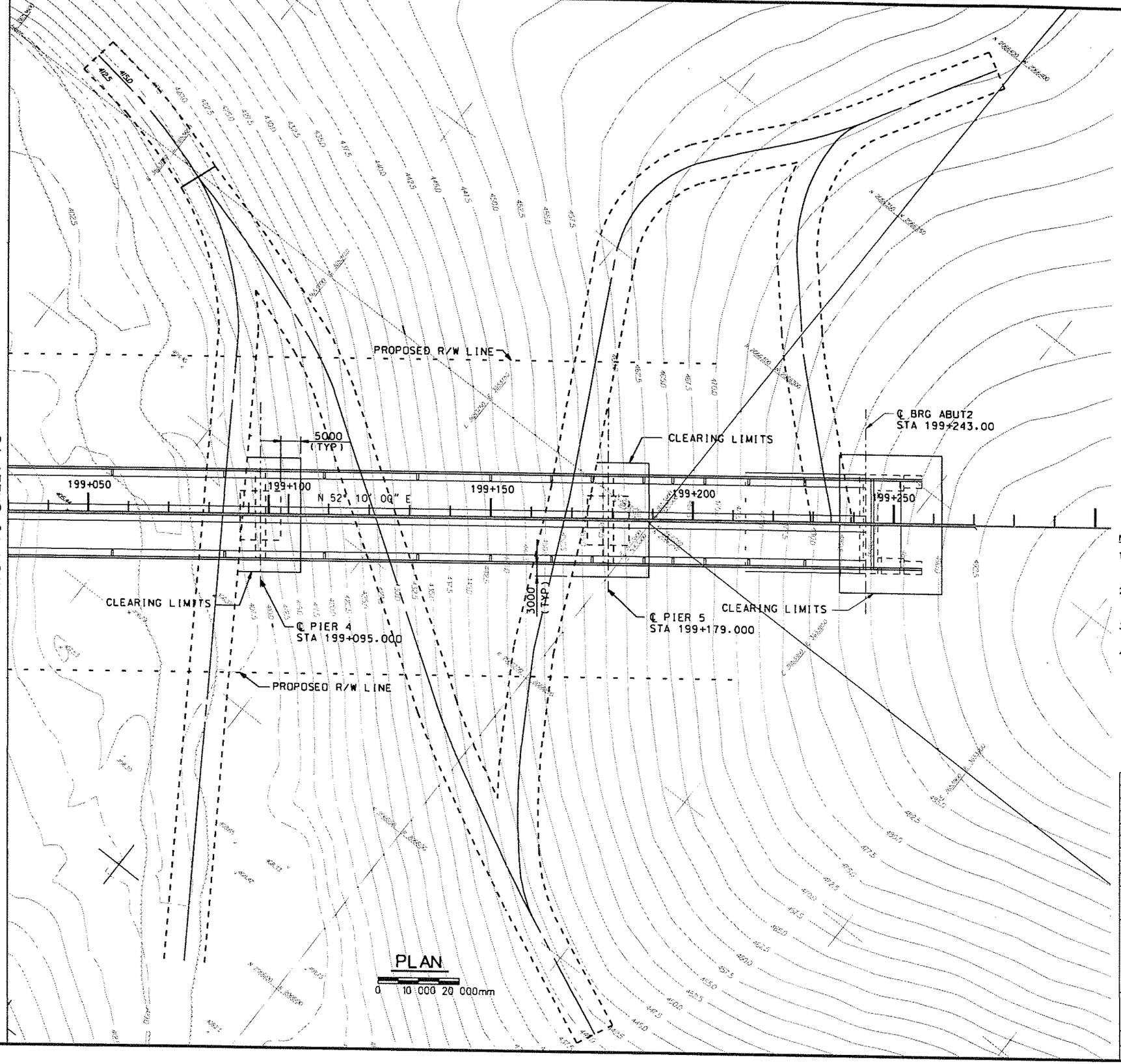
US 33 OVER
CLIFFORD HOLLOW

HAUL ROADS AND CLEARING LIMITS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

MADE SRC DATE 7/97	CKD WG DATE 7/97	BRIDGE NO.	4249
TRCD --- DATE ---	SCALE 1:500 UN	SHEET NO.	73

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X315-H-101.92 05	APD-0484(124) CTC	2001	HARDY	115	196



NOTES:

1. RETURN HAUL ROADS AND CLEARING LIMIT AREAS TO THEIR ORIGINAL GROUND ELEVATIONS AND CONDITION PRIOR TO CONSTRUCTION AS DIRECTED BY THE ENGINEER.
2. REPLACE TREES AND VEGETATION SIMILAR TO THOSE DESTROYED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER.
3. THE CONTRACTOR'S METHOD OF CONSTRUCTION MAY REQUIRE LESS CLEARING.
4. IF ADDITIONAL AREAS NEED TO BE CLEARED FOR GIRDER ERECTION, SUBMIT PROPOSED CLEARING LIMITS TO THE DIVISION FOR APPROVAL. NO ADDITIONAL CLEARING IS PERMITTED WITHOUT PRIOR APPROVAL OF THE DIVISION.

WORK THIS SHEET WITH SHEET 73.

ALL HORIZONTAL DIMENSIONS ARE IN MILIMETERS.
ALL ELEVATIONS AND STATIONING ARE IN METERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

HAUL ROADS AND CLEARING LIMITS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE SRC DATE 7/97	CKD WG DATE 7/97	BRIDGE NO. 4249
TRCD --- DATE ---	SCALE 1:500 UN	SHEET NO. 74

ABUTMENT 1

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-191.92 DS	APD-0484(124) CTC	2001	HARDY	116	196

BB-1

STA. 198+776.0
8M. RT.
G.E. 495.20

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	12	SILT, little clay, little shale fragments, trace sand; light brown; stiff; dry to moist, -PL	494.20
1.50	A-N	SHALE FRAGMENTS; light brown; very dense; dry, NP	
1.60	50/.10		493.60
2.60	58(0)	SHALE, sandy, little to some interbedded siltstone, sandy, trace interbedded sandstone; olive brown; soft to average (2-3); highly weathered to weathered, laminated, RD = 32 deg., closely to moderately fractured, RD = 0 deg. to 32 deg. High angle fracture with clay, RD = 60 deg., from 1.73 (493.47) to 1.80 (493.40)	
3.23	83(16)		
4.90	93(17)	Vertically fractured and broken from 4.70m to 5.02m (490.50 - 490.18)	
6.36	90(16)		
9.00	100(42)		486.20

End of boring at 9.00m (486.20)

489.5 B.O.F.
▼ 5.72 19.5 HRS.

BB-17

STA. 198+784.0
11M. RT.
G.E. 491.49

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	6	SILT, little clay, little shale fragments; orange; medium stiff; moist, -PL	490.49
1.50	A-N	SHALE FRAGMENTS; olive brown; very dense; dry, NP	
1.56	50/.06		489.93
2.56	94(0)	SHALE, sandy, little to some thinly interbedded siltstone; olive brown; soft to average (2-3); highly weathered to weathered, laminated to thinly bedded, RD = 35 deg., closely to moderately fractured, RD = 0 deg. to 35 deg.	
3.02	91(24)		
5.50	100(41)		485.99

End of boring at 5.50m (485.99)

489.5 B.O.F.
▼ 2.32 30 HRS.

BB-2

STA. 198+776.0
8M. LT.
G.E. 497.35

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	12	SILT, trace, shale fragments, trace clay; brown; medium dense; moist, trace organic, NP	495.75
1.50	A-N	SHALE, trace fine sand; brown; soft (2); weathered to highly weathered, laminated bedding, RD = 26 deg., fissle to very closely fractured, RD = 29 deg. to 80 deg.	
1.60	50/.10	SANDSTONE, fine grained, trace clay; brown and gray, soft (2); highly weathered, indistinctly bedded, very closely to closely fractured, RD = 29 deg. to 80 deg.	495.35
2.53	75(0)	SHALE, trace sand, fine grained, trace silty clay; brown; soft (2); weathered, laminated bedding, RD = 26 deg.	494.40
3.13	98(0)	SANDSTONE, trace mica; brown; soft to average (2-3); weathered, indistinctly bedded, RD = 29 deg., very closely to closely fractured, RD = 29 deg. to 90 deg., iron staining	494.29
4.66	100(39)	SHALE, trace siltstone; olive brown; soft to average (2-3); weathered, laminated bedding, RD = 30 deg., very closely to closely fractured, RD = 29 deg. to 110 deg., iron staining High angle fracture from 3.37m - 3.52m	493.69
5.36	100(61)	CLAYEY SILT, trace shale; brown; loose; damp, NP	492.10
6.89	100(48)	SANDSTONE, fine grained; dark gray; average (3); weathered, indistinctly bedded, very closely to closely fractured, RD = 26 deg. High angle fracture from 5.87m - 6.00m, RD = 110 deg.	491.99
8.36	23(0)	SHALE, trace sand, fine grained; brown; soft (2); weathered, laminated bedding, very closely to closely fractured, RD = 26 deg., iron staining	491.30
8.92	54(0)	SANDSTONE, fine grained; dark gray; average (3); weathered, indistinctly bedded High angle fracture from 6.25m 6.40m, RD = 125 deg. to 200 deg., iron staining	491.11
9.52	81(19)	SHALE, trace sand, fine grained; brown; soft to average (2-3); weathered, laminated bedding Relative dip, RD = 28 deg., very closely to closely fractured, iron staining	490.95
10.35	93(40)		488.37
11.25	100(43)	SHALE, trace sand, find grained, little siltstone; olive brown; soft to average (2-3); weathered, laminated bedding, closely fractured Relative dip, RD = 26 deg., iron staining lost water at 12.11m	
12.68	100(73)		
13.50	100(67)		483.85

End of boring at 13.50m (483.85)

489.5 B.O.F.
▼ 12.38 19.5 HRS.

BB-16

STA. 198+784.0
11M. LT.
G.E. 494.79

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	28	SILT, some sand, some sandstone fragments; brown and red; dense, moist, NP	494.19
1.50	A-N	SANDSTONE FRAGMENTS; red brown; very dense, dry, NP	
1.52	50/.02	SANDSTONE, very fine to fine grained; red brown to brown; soft to average (2-3); weathered, indistinctly bedded, closely fractured, RD = 30 deg.	493.27
2.60	69(0)	SHALE, little interbedded sandstone; olive brown; extremely soft to very soft (0-1); decomposed to highly weathered, laminated, broken, RD destroyed	493.02
4.12	79(0)	SANDSTONE, very fine to fine grained, little laminated shale; olive brown and gray; soft to average (2-3); highly weathered, laminated to moderately bedded, RD = 25 deg., very closely to closely fractured and broken, RD = 25 deg. vertical fracture from 3.17m to 3.30 (491.52 - 491.49)	492.39
5.12	98(53)	SHALE; gray to orange; soft to extremely soft (2-0); highly weathered to decomposed, laminated, closely fractured, RD = 25 deg.	491.49
6.50	96(46)	SANDSTONE, fine grained, micaceous; gray and brown; average (3); weathered, indistinctly bedded, closely fractured, RD = 26 deg.	490.87
		SHALE, little interbedded, siltstone; olive gray and brown; soft (2); weathered, laminated, RD = 25 deg., closely to moderately fractured, RD = 0 deg. to 25 deg.	490.69
		SANDSTONE, fine gravel; brown gray; average (3); weathered, indistinctly bedded, closely fractured, RD = 0 deg. to 10 deg.	488.46
			488.29

End of boring at 6.50m (488.29)

▼ 1.50 14 HRS.

489.5 B.O.F.

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 / 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

489.5 / B.O.F. — ELEV. BOTTOM OF FOOTING

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE MJT DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE 1:33.3	SHEET NO. 75

ABUTMENT 1

BB-46

STA. 198+784.0
5.5M. LT.

G.E. 493.86

A	B	VISUAL DESCRIPTION	ELEVATION
		TOPSOIL: black: soft: dry, -PL	493.76
0.45	12	SANDSTONE FRAGMENTS and SAND: brown: medium dense to very dense: dry, NP	
		SHALE FRAGMENTS: olive: very dense, dry, NP	492.86
1.50	A-N	SANDSTONE, very fine to fine grained, micaceous, vertical joint with clay orientation about 210 deg. vertical throughout: olive: soft to average (2-3): highly weathered, laminated to very thinly bedded, RD = 27 deg., very closely to closely fractured with clay RD=27 deg.	
1.72	90/.22		
2.50	A-N		
2.54	50/.04	SHALE, high angle fracture orientation about 270 deg. 50 deg. south: orange brown and gray: very soft to soft (1-2): weathered laminated. RD = 27 deg. closely to moderately fractured, RD = 27 deg.	491.32
3.00	72(0)		490.86
		SANDSTONE, fine grained, micaceous: brown gray: average to hard (3-4): highly weathered, indistinctly bedded, closely fractured, broken high angle fracture throughout orientation about 220 deg. 50 south east	490.46
3.75	87(20)		
		SHALE: olive brown and orange: extremely soft (0): decomposed, laminated (bedding not recognized), poor recovery of this unit SHALE FRAGMENTS and CLAY in S-4	489.56
5.00	29(0)	SHALE, little laminated sandstone: olive brown: very soft to soft (1-2): highly weathered, laminated, RD = 27 deg., very closely to closely fractured, RD = 27 deg. High angle fracture from 6.09m - 6.22m (487.77 - 487.64) orientation 090 deg. 70 deg. north vertical fracture orientation about 215 deg. vertical from 7.15m-7.50m (486.71 - 486.36)	488.80
5.06	50/.06		
6.09	97(0)		
			486.16
		SHALE, little interbedded siltstone, little interbedded sandstone: olive: soft (2): weathered, laminated, RD = 26 deg., very closely to moderately fractured, RD= 26 deg. High angle fracture orientation 225 deg. 50 deg. south east from 8.0m-8.1m (485.86 - 485.76) High angle fracture with clay orientation 200 deg. 85 deg. south east from 9.90m - 10.30m (483.96-483.56) High angle fracture orientation 245 deg. 50 deg. north west from 10.50m-10.60m (483.36 - 483.26) High angle fracture orientation 330 deg. 50 deg. south west from 11.54m - 11.58m (482.32-482.28)	
9.14	100(4)		
12.19	100(8)		481.67

End of boring at 12.19m (481.67)

489.5 B.O.F.

BB-47

STA. 198+790.0
19M. LT.

G.E. 493.29

A	B	VISUAL DESCRIPTION	ELEVATION
		TOPSOIL: dark brown: very soft: moist, -PL	493.19
0.45	8	SILT, little clay, little shale fragments: brown: medium stiff: moist, -PL	
		SHALE FRAGMENTS: olive gray and brown: very dense: dry, NP	492.29
1.50	A-N	SANDSTONE, very fine grained, silty, micaceous: brown: soft to average (2-3): weathered, indistinctly bedded, closely to moderately fractured, RD=0 deg. to 30 deg.	
1.60	50/.1		491.69
		SANDSTONE, very fine to fine grained: red brown: average (3): weathered, indistinctly bedded, closely to moderately fractured, RD = 0 deg. to 30 deg.	491.29
2.56	73(21)	SHALE: olive brown and orange: extremely soft to soft (0-2): decomposed to highly weathered, laminated, RD = 26 deg., very closely to closely fractured, RD = 26 deg.	
3.00	23(0)		490.69
3.10	50/.10		
		SANDSTONE, very fine to fine grained: red brown: average (3): weathered, indistinctly bedded, closely fractured, RD = 0 deg. to 30 deg.	489.74
4.52	81(0)	SANDSTONE, very fine grained: brown: average (3): weathered, indistinctly bedded, closely fractured, RD = 0 deg. to 30 deg.	488.77
		SHALE, little interbedded sandstone: olive brown and orange: soft (2): weathered, laminated, RD = 27 deg., closely fractured, RD = 27 deg.	488.59
5.75	73(0)	SANDSTONE, fine grained: olive brown: average (3): weathered, indistinctly bedded, closely fractured and broken, vertically fractured throughout, RD = 0 deg. to 30 deg.	
6.57	20(0)		486.89
6.57	50/.0	SILTSTONE, sandy: olive brown: soft to average (2-3): weathered, indistinctly bedded, closely to moderately fractured, RD = 0 deg. to 30 deg.	486.39
7.57	81(17)	SANDSTONE, very fine to fine grained, micaceous: brown to gray brown: average (3): weathered, indistinctly bedded, closely fractured, RD = 0 deg. to 30 deg.	485.72
		SHALE: brown: extremely soft (0): decomposed, poor recovery of this unit	485.29
9.10	76(7)	SANDSTONE, very fine to fine grained: olive: average (3): weathered, indistinctly bedded, closely to moderately fractured, RD = 30 deg. Lost water at 9.1m (484.19)	484.69
			484.09
		SHALE: olive brown and orange: extremely soft (0): decomposed, poor recovery of this unit	482.99
		SANDSTONE, fine grained: olive brown: average (3): weathered, indistinctly bedded, closely fractured, RD = 0 deg. to 30 deg.	482.14
12.15	67(7)	SHALE, little to some interbedded sandstone: olive: very soft to soft (1-2), trace average (3): weathered, laminated, RD = 26 deg., very closely to moderately fractured, RD = 26 deg., broken	
13.00	71(0)		
13.62	0(0)		
14.62	72(0)		
15.62	80(0)		477.67

End of boring at 15.62m (477.67)

489.5 B.O.F.

▼ 15.35 19.5 HRS.

BB-48

STA. 198+784.0
12M. LT.

G.E. 494.72

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	21	SILT, some clay, some shale fragments, little sandstone fragments: orange with red: very stiff: dry, -PL	
		SANDSTONE FRAGMENTS: red brown: very dense: dry, NP	
		SANDSTONE, very fine to fine grained: red brown to brown: average (3): weathered, indistinctly bedded, closely fractured, RD = 0 deg. to 30 deg.	493.72
1.50	A-N		493.22
1.50	50/.0		492.92
		SHALE: orange brown and olive: extremely soft (0): decomposed, poor recovery of this unit	
2.50	28(0)	SHALE: olive brown: soft (2): weathered, laminated, RD = 26 deg., closely fractured, RD = 26 deg.	
2.60	50/.10		491.72
3.38	33(0)	SANDSTONE, very fine to fine grained, micaceous: olive brown to gray brown: soft to average (2-3): weathered, indistinctly bedded, very closely to closely fractured and broken, RD = 0 deg. to 30 deg.	491.42
3.38	50/.0		490.97
		SHALE: orange: extremely soft (0): decomposed clay along rock fragments recovered in C-3	
4.38	40(0)		490.32
4.38	50/.0	SHALE: olive brown: very soft to soft (1-2): highly weathered to weathered, laminated, RD = 27 deg., closely fractured, RD = 27 deg.	489.84
5.38	80(0)	SANDSTONE, fine grained, micaceous: gray brown: average (3): weathered, indistinctly bedded, very closely to closely fractured, RD = 26 deg.	489.37
		SHALE: olive brown and orange: very soft to soft (1-2): highly weathered to weathered, laminated, RD = 26 deg., very closely to closely fractured and broken, RD = 26 deg., iron staining	
6.42	76(0)		488.04
		SANDSTONE, fine grained: brown: average (3): weathered, indistinctly bedded, closely to moderately fractured, RD = 0 deg. to 20 deg., vertically fractured with iron stain from 6.68m - 6.86m (488.04-487.86)	487.23
7.82	91(9)	SHALE, little interbedded sandstone: olive brown and orange: extremely soft to soft (0-2): highly weathered, laminated, RD = 26 deg., very closely to closely fractured, RD = 26 deg., broken	
9.47	42(0)		
9.47	50/.0		
10.36	62(0)		484.36
		SHALE: olive brown: soft (2): weathered, laminated, RD = 26 deg., very closely to closely fractured, RD = 26 deg.	
11.36	100(0)		
13.36	100(0)		481.36

End of boring at 13.36m (481.36)

489.5 B.O.F.

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X345-H-101.92 05	APD-0484(124) CTC	2001	HARDY	117	146

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE. OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 / 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

491.5 / B.O.F. — ELEV. BOTTOM OF FOOTING

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE MJT	DATE 7-97	CKD KJW	DATE 7-97	BRIDGE NO. 4249
TRCD ____	DATE ____	SCALE 1:33.3		SHEET NO. 76

AS-33.3
PLOT DATE: 06-15-00
FILE: 0002-095\CLIFTB095

PIER 1

BB-18
STA. 198+841.0
8M. RT.
G.E. 468.65

A	B
0.45	6
1.50	A-N
1.75	90/.25
3.00	A-N
3.02	50/.02
4.02	98(26)
5.62	90(18)
7.22	91(15)
8.82	98(39)
10.42	87(23)
12.00	94(57)

VISUAL DESCRIPTION	ELEVATION
CLAY, some fine sand, some silt: light brown: medium stiff: moist, -PL	467.85
SHALE FRAGMENTS: brown, olive: very dense: dry, NP	465.63
SHALE, little very thinly interbedded siltstone: brown-olive: very soft to soft (1-2): highly weathered to weathered, laminated to very thinly bedded, RD = 25 deg., very closely to moderately fractured, RD = 10 deg. to 50 deg. interbedded light gray sandstone, fine grain 7.45m - 7.53m (461.20 - 461.12)	
SHALE: red brown: soft (2): highly weathered to weathered, laminated bedding, RD = 25 deg., very closely to closely fractured, RD = 5 deg. to 60 deg.	460.11
SANDSTONE, fine to medium grained, trace very thinly interbedded gray shale: light brown: soft to average (2-3): weathered, indistinctly bedded, very closely to moderately fractured, RD = 20 deg. to 30 deg.	459.21
SANDSTONE, fine grained: olive-gray: average to hard (3-4): weathered, very thinly bedded, RD = 25 deg., closely fractured, RD = 20 deg. to 70 deg.	458.35
SANDSTONE, fine grained, trace laminated interbedded gray shale: light brown: average (3): weathered, very thinly bedded, RD = 25 deg., closely fractured, RD = 20 deg. to 70 deg.	458.10
	457.77
SHALE: brown-red: soft (2): slightly weathered to weathered, laminated bedding, RD = 25 deg., moderately fractured, RD = 20 deg. to 30 deg.	456.93
SILTSTONE, sandy, brown-red: soft to average (2-3): slightly weathered to weathered, indistinctly bedded, closely fractured, RD = 20 deg. to 55 deg.	456.65

End of boring at 12.00m (456.65)

▼ 4.11 / 28.5 HRS.
463.0 / B.O.F.

BB-20
STA. 198+851.0
8M. RT.
G.E. 463.80

A	B
0.45	7
1.50	A-N
1.73	80/.23
2.67	53(0)
4.00	83(8)
5.72	84(37)
7.00	100(23)

VISUAL DESCRIPTION	ELEVATION
HUMUS: black: loose: moist, NP	463.73
CLAY, little silt, little shale fragments: brown and red: medium stiff: moist, at PL	463.20
SHALE FRAGMENTS, trace silt: brown-olive: dense to very dense: dry, NP	461.93
SHALE, little very thinly interbedded siltstone: brown-olive: soft (2): highly weathered to weathered, very bedded, thinly, RD = 25 deg., very closely to closely fractured, RD = 25 deg. to 40 deg. High angle fractures from 4.97m - 5.42m (458.83 - 458.38)	458.30
SILTSTONE: brown to brown-red: soft (2): highly weathered to weathered, indistinctly bedded, very closely to closely fractured, RD = 20 deg. to 45 deg.	457.44
SANDSTONE, fine grain, laminated interbedded, shale: light brown-olive: soft to average (2-3): highly weathered to weathered, laminated to very thinly bedded, RD = 25 deg., closely fractured, RD = 10 deg. to 30 deg.	456.80

End of boring at 7.00m (456.80)

463.0 / B.O.F.
▼ 1.88 / 19.5 HRS.

BB-4
STA. 198+842.0
8M. LT.
G.E. 471.29

A	B
0.45	30
1.50	A-N
1.95	61
3.00	A-N
3.10	50/.10
3.87	100(0)
5.39	91(14)
6.91	92(24)
8.43	82(30)
9.95	95(24)
11.00	100(40)

VISUAL DESCRIPTION	ELEVATION
SHALE FRAGMENTS: olive brown: medium dense to very dense: dry, NP hit water at 1.90m (469.39)	468.19
SHALE, some very thinly to thinly interbedded siltstone, trace very thinly interbedded sandstone: olive brown: very soft to soft (1-2): highly weathered to weathered, laminated to very thinly bedded, RD = 20 deg., very closely to moderately fractured, RD = 20 deg. Vertically fractured from 3.10m - 3.25m (468.19 - 468.04) and from 4.30m - 4.46m (466.99 - 466.83) and from 4.63m - 4.77m (466.66 - 466.52)	
SILTSTONE, sandy: red brown: soft (2): highly weathered, indistinctly bedded, broken, iron stained	466.14
	465.83
SHALE, little very thinly interbedded siltstone, trace very thinly interbedded sandstone, very fine grained: olive brown and red brown: soft (2): highly weathered to weathered, laminated to very thinly bedded, RD = 25 deg., closely to moderately fractured, RD = 25 deg. high angle fracture with clay at RD = 42 deg.	464.16
SANDSTONE, very fine to fine grained: red brown: hard (4): weathered, indistinctly bedded, closely to widely fractured, RD = 20 deg. to 45 deg. Lost water at 7.31m (463.98) high angle to vertically fractured and stained from 7.13m - 7.78m (464.16 - 463.51)	462.74
SHALE, little very thinly bedded siltstone, trace very thinly bedded sandstone, very fine grained: red brown and olive brown to olive brown: very soft to soft (1-2): highly weathered to weathered, laminated to very thinly bedded, RD = 25 deg., very closely to moderately fractured, RD = 0 deg. to 35 deg. Vertically fractured from 9.70m - 9.85m (461.59 - 461.44) Extremely soft clay seam at 10.95m (460.34)	460.29

End of boring at 11.00m (460.29)
BOTTOM OF CLASS D CONCRETE (457.0)

463.0 / B.O.F.
▼ 10.92 / 70 HRS.

BB-19
STA. 198+851.0
8M. LT.
G.E. 467.20

A	B
0.45	5
1.50	A-N
1.95	36
3.00	A-N
3.45	47
4.50	A-N
4.60	50/.10
5.50	79(28)
6.25	100(77)
7.00	100(13)

VISUAL DESCRIPTION	ELEVATION
SHALE FRAGMENTS and CLAY, trace silt: light brown: medium stiff: moist, -PL roots	466.20
SHALE FRAGMENTS, some clay, trace silt: light brown: hard: moist to dry, -PL	464.60
CLAY, little silt, little shale fragments: gray and orange: hard: dry to moist, -PL	463.60
SHALE FRAGMENTS, trace silt, trace fine sand: olive-brown: very dense: dry, NP	462.60
SANDSTONE, fine grained: brown-red: average to hard (3-4): slightly weathered to weathered, indistinctly bedded, closely to moderately fractured, RD = 0 deg. to 80 deg. Vertical fracture from 5.73m - 5.94m (461.47 - 461.26)	461.04
SILTSTONE, with very thinly interbedded fine grain sandstone: olive: soft (2): weathered, thinly bedded, RD = 25 deg., closely fractured, RD = 20 deg. to 30 deg. Very close high angle fractures from 6.78m - 6.85m (460.42 - 460.35)	460.20

End of boring at 7.00m (460.20)
BOTTOM OF CLASS D CONCRETE (457.0)

463.0 / B.O.F.
▼ 4.57 / 23 HRS.

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 / 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

463.5 / B.O.F. — ELEV. BOTTOM OF FOOTING

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE MJT DATE 7-97 | CKD KJW DATE 7-97 | BRIDGE NO. 4249
TRCD ____ DATE ____ | SCALE 1:33.3 | SHEET NO. 77

FILE: 0002-09SVCLFTB035 PLOT DATE: 06-15-00 45x33.3

BB-22

STA. 198+865.0
7M. RT.

G.E. 457.69

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	B	CLAY and SILT: red-brown: medium stiff: moist, -PL	457.09
1.50	A-N	SHALE FRAGMENTS, trace silt: brown-olive: dense to very dense: dry, NP	
1.95	52	SHALE FRAGMENTS: brown: very dense: dry, NP SANDSTONE, very fine grained, brown: soft (2): highly weathered, very thinly bedded, RD = 25 deg., very closely to closely fractured, RD = 25 deg.	455.29
3.00	A-N	SANDSTONE: brown: soft to average (2-3): highly weathered, laminated bedding, RD = 25 deg., closely fractured, RD = 10 deg. to 70 deg.	454.63
3.06	50/.06	SANDSTONE, very fine grained, olive-brown: soft to average (2-3): highly weathered to weathered, laminated bedding, RD = 25 deg. closely fractured, RD = 10 deg. to 45 deg. Broken fractures from 4.73m - 5.00m (452.96 - 452.69)	454.18
3.56	80(10)	SANDSTONE, very fine grained, brown: avg. (3) highly weathered to weathered, laminated bedding RD = 25 deg., closely fractured, RD = 25 deg.	453.73
		SANDSTONE, very fine grained, olive-brn: soft to avg. (2-3): weathered, laminated bedded, RD= 25 deg., closely to moderately fractured, RD = 25 deg. High angle fracture 6.60 - 6.67 (451.09 - 451.02) High angle broken fractures from 7.69m - 7.82m (450.00 - 449.87) Red clay in fractures Slickensides at 7.82m (449.87)	452.30
6.00	100(24)	SHALE, trace very fine sand, gray: soft to average (2-3): weathered, indistinct to laminated bedding, RD = 25 deg., closely fractured, RD = 20 deg. to 40 deg.	451.95
		SHALE: olive-brown: soft (2): highly weathered, laminated bedding, RD = 25 deg., fissile to closely fractured, RD = 25 deg.	
		SHALE: gray: soft to average (2-3): highly weathered to weathered, indistinct to laminated bedding, RD = 25 deg., closely fractured, RD = 25 deg.	449.77
9.05	85(38)	SANDSTONE, fine grain: brown: average to hard (3-4): highly weathered to weathered, indistinct bedding, fissile to closely fractured, RD = 15 deg. to 30 deg. Fissile fractures and orange stains at 10.08m (447.61)	448.35
		SANDSTONE and SHALE, interbedded: gray: soft (2): highly weathered to weathered, indistinct bedding, closely fractured, RD = 20 deg. to 30 deg.	448.00 447.63 447.46 ▼ 10.21 19 HRS.
		SHALE: red: soft (2): weathered, laminated bedding: RD = 30 deg., closely to moderately fractured, RD = 25 deg. to 40 deg.	447.30 446.46
		SHALE, sandy: red: average (3): weathered, laminated bedding, RD = 25 deg., moderately fractured, RD = 25 deg.	446.13
12.10	96(49)	SHALE: red: soft to average (2-3): weathered, laminated bedding, RD = 25 deg., closely to moderately fractured, RD = 25 deg. to 70 deg.	445.88 445.59
		SHALE: olive-gray: soft (2): weathered, laminated bedding, RD = 25 deg., closely fractured, RD = 25 deg. Interbedded red shale, sandy from 11.90m to 11.96m (445.79 - 445.73)	445.47 445.30
		SHALE, sandy: gray: soft to average (2-3) weathered, laminated bedding, RD= 25 deg., closely fractured, RD = 25 deg.	
		SHALE: olive: very soft to soft (1-2): highly weathered, laminated bedding, RD = 25 deg., broken to very closely fractured, RD = 25 deg.	
14.00	100(71)	SANDSTONE: gray and dark gray: average (3): slightly weathered to weathered, indistinct to laminated bedding, RD = 25 deg., closely to widely fractured, RD = 0 deg. to 30 deg.	443.69

End of boring at 14.00m (443.69)

BB-21

STA. 198+865.0
7M. LT.

G.E. 460.63

A	B	VISUAL DESCRIPTION	ELEVATION
		HUMUS: black: loose: moist, NP	460.58
0.30	53/.15	CLAY, little silt, little sandstone fragments: light brown: medium stiff: moist, -PL	460.33
1.09	100(25)	SANDSTONE, fine grain: red-brown: average to hard: (3-4) highly weathered, indistinctly bedded, blocky to closely fractured, RD = 25 deg. with high angle fractures	
2.80	28(0)		457.73
2.92	50/.02	SHALE, trace interbedded gray fine grain sandstone: brown-olive: soft (2): highly weathered laminated to very thinly bedded, RD = 28 deg., very closely to closely fractured, RD = 20 deg. to 30 deg. with little high angle fractures Decomposed shale and broken fractures from 5.0m - 5.1m (455.63 - 455.53) High angle and vertical fractures from 5.55m - 6.07m (455.08 - 454.56) Blocky fractures from 6.71m - 7.07m (453.92 - 453.56)	
3.92	88(10)		
5.97	81(5)		
		SANDSTONE: very fine grain, brown-olive, soft to avg. (2-3), highly weathered indistinctly to lam. bedding RD = 28 deg. close fractures RD = 10 deg. to 30 deg.	452.18
		SHALE, trace interbedded sandstone, brn.-olive, soft (2), highly weathered, laminated to very thin bedding, RD = 28 deg. very close to close fractures RD = 20 deg. to 30 deg.	451.73 451.21
9.02	99(18)	SILTSTONE: brown-olive: very soft to soft (1-2): highly weathered, indistinctly bedded, closely fractured, RD = 10 deg. to 30 deg.	▼ 9.75 22.5 HRS.
		SHALE: red-brown: soft (2): highly weathered, laminated bedding, RD = 25 deg., very closely to closely fractured, RD = 25 deg. Vertical fracture from 10.70m - 10.84m (449.93 - 449.79) Broken fractures and decomposed from 11.60m - 11.78m (449.03 - 448.85)	450.03
		SANDSTONE, very fine grained, brown-olive: soft to average, (2-3): weathered, very thinly bedded RD = 25 deg. closely fractured, RD = 30 deg.	448.85 448.72
12.07	92(35)	SANDSTONE CONGLOMERATE, trace clay: olive and orange and clear: average to hard (3-4): highly weathered, indistinctly bedded, blocky fractures	448.56
		SANDSTONE, very fine grained, brown-olive: soft to average (2-3): weathered, laminated bedding RD = 25 deg. closely fractured, RD = 25 deg.	447.75
		SANDSTONE, very fine grained, gray: soft to average (2-3): weathered, very thinly bedded, RD = 25 deg., moderately fractured, RD = 25 deg.	447.46
14.00	100(62)	SANDSTONE, very fine grained, brown-olive: soft to average (2-3): weathered, laminated to very thinly bedded, RD = 25 deg., very closely to moderate fractured, RD = 25 deg.	446.89
		SANDSTONE, very fine grained, gray: soft to average (2-3): weathered, laminated to very thinly bedded, RD = 25 deg., very closely to closely fractured, RD = 25 deg.	446.63

End of boring at 14.00m (446.63)

BB-24

STA. 198+877.0
7M. RT.

G.E. 452.42

A	B	VISUAL DESCRIPTION	ELEVATION
		HUMUS: black: loose	452.32
0.45	20	CLAY, some silt, little sandstone fragments: brown and red-brown: very stiff: moist, -PL	
1.50	A-N		450.92
1.50	50/.0	SANDSTONE, fine grain: olive-brown: average (3): highly weathered to weathered, laminated bedding, RD = 25 deg., closely to moderately fractured, RD = 25 deg. Blocky fractures with clay from 1.69m - 1.92m (450.73 - 450.50) Blocky fractures from 2.24m - 2.36m (450.18 450.06) Vertical fracture from 2.51m - 2.82m (449.91 - 449.60)	
1.92	88(0)		
2.97	89(22)		
		SANDSTONE, fine grain: red-brown: average (3): weathered, indistinct bedding, closely to moderately fractured, RD = 20 deg. to 30 deg. 5mm orange clay seam in fracture at 5.68m (446.74), RD = 50 deg. 3cm clay seam from 5.77m - 5.80m (446.65 - 446.62)	448.12 447.52
6.02	77(56)	SHALE, sandy: brown-olive and orange and gray: soft to average (2-3): highly weathered, laminated to very thinly bedded, RD = 25 deg., very closely to moderately fractured, RD = 20 deg. to 30 deg. Broken fractures from 5.95m-6.02m (446.47 - 446.40) 1.5cm light gray clay seam and decomposed shale from 6.27m - 6.34m (446.15 - 446.08)	445.40
		SHALE, sandy: red: soft to average (2-3): highly weathered to weathered, very thin to laminated bedding, RD = 25 deg., closely to moderately fractured, RD = 0 deg. to 30 deg.	
8.50	97(47)		443.92

End of boring at 8.50m (443.92)

▼ 5.65
18 HRS.

BB-23

STA. 198+877.0
7M. LT.

G.E. 455.05

A	B	VISUAL DESCRIPTION	ELEVATION
		HUMUS: black: loose: moist, NP	455.00
0.45	8	CLAY and SHALE FRAGMENTS, trace fine sand: brown: loose: moist, at PL	454.55
1.10	A-N	SHALE FRAGMENTS, little fine sand, trace clay: olive gray and orange: very dense: moist, NP	453.75
1.30	80/.20		
1.67	89(0)	SHALE: olive brown: soft (2): highly weathered, indistinctly bedded, very closely to closely fractured, RD = 0 deg. to 9 deg.	452.55
2.69	97(11)	SHALE: olive brown: soft (2): highly weathered, indistinctly bedded, broken	452.25
		SHALE, trace interbedded sandstone, trace interbedded siltstone: olive brown: soft (2): weathered, very thinly to thinly bedded, RD = 30 deg., very closely to moderately fractured, RD = 20 deg. to 60 deg. Vertically fractured from 2.91m - 3.15m (452.14 - 451.90)	450.42
		SANDSTONE: olive brown: average to hard (3-4): weathered, laminated, RD = 20 deg., closely fractured, RD = 10 deg. to 30 deg.	449.98
5.74	56(11)	SILTSTONE: olive: soft (2): weathered, indistinctly bedded, closely to moderately fractured, RD = 0 deg. to 60 deg.	447.98
		SHALE: red brown: soft (2): weathered, thinly bedded, RD = 20 deg., very closely to moderately fractured, RD = 15 deg. to 45 deg.	
8.00	88(52)		447.05

End of boring at 8.00m (447.05)

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X318-H-101.92 05	APD-0484(124) CTC	2001	HARDY	119	146

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 / 16.5 HRS. —— WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-8000

MADE MJT DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE 1:33.3	SHEET NO. 78

PIER 2

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0484(124) CTC	2001	HARDY	120	146

BB-7
STA. 198+926.0
8M. RT.
G.E. 439.82

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	20	SILT, some clay, little to some sand, little sandstone fragments; orange; very stiff; dry to moist, -PL, colluvium	▼ 0.30 0 HRS.
		SHALE FRAGMENTS; olive brown; very dense; dry, NP	438.82
1.50	A-N	SHALE; olive brown; very soft to soft (1-2); highly weathered to weathered, laminated, RD = 22 deg., very closely to closely fractured, RD = 0 deg - 22 deg.	
1.70	97/.20	SANDSTONE, very fine to fine grained; gray to brown; average to hard (3-4); weathered, indistinctly bedded, closely fractured, RD = 0 deg. to 25 deg., vertically fractured throughout, iron stained	438.12
2.60	80(10)	SHALE, little interbedded siltstone, sandy; red brown with tan; soft (2); weathered, laminated, RD = 23 deg., closely to moderately fractured, RD = 0 deg. to 35 deg.	437.30
			437.03
		SILTSTONE, sandy, little laminated sandstone, very fine grained; red brown; soft to average (2-3); weathered, indistinctly bedded, closely to moderately fractured, RD = 0 deg. to 40 deg. Vertically fractured and stained throughout	436.82
4.12	100(7)	SHALE, trace laminated sandstone, very fine grained; red brown; soft (2); weathered, laminated, RD = 22 deg., closely fractured	436.08
		SANDSTONE, very fine grained; red brown and green; soft to average (2-3); weathered, indistinctly bedded, closely fractured, iron stained	435.91
5.64	82(49)	SHALE; olive brown; soft to very soft (2-1); highly weathered, laminated, RD = 22 deg., closely fractured, RD = 22 deg., iron stained	435.70
		SANDSTONE, very fine to fine grained, micaceous; gray; hard to very hard (4-5); weathered to slightly weathered, indistinctly bedded, closely to widely fractured, RD = 0 deg. to 15 deg., iron stained along fractures	435.40
7.16	86(42)	SANDSTONE, very fine to fine grained, some interbedded shale with rip up clasts; gray to dark gray; average to hard (2-3); weathered to slightly weathered, indistinctly to laminated bedding, RD = 20 deg., closely fractured, RD = 20 deg.	432.87
			431.95
8.68	76(25)	SANDSTONE, very fine to fine grained; gray; hard (4); slightly weathered, indistinctly bedded, closely to widely fractured, RD = 0 deg. to 30 deg.	430.90
		SHALE; brown gray; extremely soft to very soft (0-1); decomposed to highly weathered, laminated, RD = 23 deg., closely fractured to broken, RD = 23 deg.	430.69
10.20	78(19)	SANDSTONE, very fine to fine grained; olive brown and gray; soft to average (2-3); highly weathered, indistinctly bedded, closely fractured, broken, RD = 0 deg. to 30 deg., vugs, broken	429.94
10.50	100(83)	SANDSTONE, very fine to fine grained, micaceous; gray with brown; hard to very hard (4-5); weathered to slightly weathered, indistinctly bedded, closely to moderately fractured, RD = 0 deg. to 10 deg.	429.32

430.5 B.O.F.

End of boring at 10.50m (429.32)

BB-27
STA. 198+935.0
8M. RT.
G.E. 440.15

A	B	VISUAL DESCRIPTION	ELEVATION
		SILT and SAND, little sandstone fragments; light brown; loose; wet, NP (colluvium)	
0.45	5	SAND and SANDSTONE FRAGMENTS; light brown and orange; very dense; dry to moist, NP, decomposed sandstone	439.15
1.50	A-N	SANDSTONE, very fine to fine grained, trace interbedded shale; brown; soft to average (2-3); weathered to highly weathered, indistinct bedding, very closely to moderately fractured, RD = 28 deg. Strike of fracture parallel to bedding, high angle, RD = 80 deg., to vertically fractured from 5.07c - 5.20c (435.08 - 434.95)	
1.95	93	SILTSTONE, sandy; red brown to light green; average (3); weathered, indistinct bedding, 1 piece	
3.00	A-N		437.09
3.06	50/.06		
		SHALE, sandy; red-brown; soft to average (2-3); weathered, laminated, RD = 26 deg., closely fractured	
4.06	74(10)	SILTSTONE, sandy, little interbedded sandstone; red-brown; soft to average (2-3); weathered, indistinct bedding, closely to moderately fractured, RD=0 deg. to 30 deg. Stained vertical fractured from 5.90m - 6.28m (434.25 - 433.87)	▼ 3.91 13.5 HRS.
5.56	90(47)	SHALE, sandy; red-brown with green; soft (2); weathered, laminated, RD = 28 deg. very closely to closely fractured, RD= 28 deg.	434.75
			434.65
			434.35
			433.67
		SANDSTONE; very fine to fine grained; red-brown; average (3); weathered, 1 piece	433.40
			433.10
7.08	100(11)		433.20
		SHALE; red-brown; soft (2); weathered, laminated, RD = 26 deg., vertically fractured	432.97
			432.80
		SANDSTONE, very fine to fine grained; olive-brown; soft to average (2-3); weathered, indistinct bedding, closely fractured, RD = 0 deg. to 30 deg.	432.65
		SHALE; gray-olive brown; very soft to soft (1-2); highly weathered, laminated, RD=26 deg., very closely to closely fractured, RD = 26 deg.	
8.60	89(49)	SANDSTONE, very fine to fine grained; brown; average (3); weathered, closely fractured, indistinct bedding, fossils, RD = 0 deg. to 30 deg.	431.24
		SANDSTONE, very fine to fine grained; gray; hard (4); weathered to slightly weathered, indistinct bedding, closely to widely fractured, RD = 0 deg. to 45 deg. Vertical fracture stained from 8.25m - 8.44m (431.90 - 431.71)	430.67
10.12	97(36)	SANDSTONE, very fine to fine grained, little interbedded shale; gray; average to hard (3-4); weathered, indistinct bedding, very closely to moderately fractured, RD = 25 deg. to 45 deg.	430.00
11.02	100(33)	SANDSTONE, very fine to fine grained; gray; hard (4); weathered, indistinct bedding, closely to moderately fractured	429.13
		SHALE, little to some laminated to very thinly bedded sandstone; medium gray; average to hard (3-4); weathered, laminated, RD = 26 deg., very closely to moderately fractured, RD = 26 deg.	

430.5 B.O.F.

End of boring at 11.02m (429.13)

BB-25
STA. 198+925.0
8M. LT.
G.E. 432.78

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	6	SILT, little clay, little sand, trace sandstone fragments; brown; medium stiff; moist, -PL	
		SANDSTONE FRAGMENTS, little clay; brown; very dense; dry, NP	431.78
1.50	A-N	SANDSTONE, very fine to fine grained; olive brown and gray; average to hard (3-4); highly weathered, indistinctly bedded, broken	
1.60	50/.10		431.18
		SANDSTONE, very fine grained; red brown; average (3); weathered, indistinctly bedded, closely to moderately fractured, RD = 0 deg. to 30 deg.	430.48
2.60	66(0)	SHALE; red brown; soft to average (2-3); weathered, laminated, RD = 30 deg., closely fractured, RD = 0 deg. to 30 deg.	430.00
		SANDSTONE, very fine to fine grained; light gray, brown; average (3); weathered, indistinctly bedded, closely fractured, RD = 0 deg. to 30 deg., vertically fractured throughout	429.68
			429.48
4.12	66(16)	SHALE; red brown; soft to average (2-3); weathered, laminated, RD = 30 deg., very closely fractured, RD = 30 deg., broken	428.88
		SANDSTONE, very fine to fine grained; red brown to gray brown; average to hard (3-4); highly weathered, indistinctly bedded, closely to moderately fractured, RD = 0 deg. to 30 deg., vugs, fossils	428.50
5.64	100(61)	SANDSTONE, very fine to fine grained; gray; hard (4); weathered to slightly weathered, indistinctly bedded, closely to widely fractured, RD = 0 deg. to 25 deg. Vertically fractured with iron stain from 5.96m - 6.40m (426.82 - 426.38)	426.33
7.16	80(11)	SANDSTONE, very fine to fine grained, some interbedded shale with intraclasts; light gray to medium hard; average to hard (3-4); weathered, laminated to indistinctly bedded, RD = 30 deg., closely fractured, RD = 0 deg. to 30 deg.	
7.50	94(0)		425.28

430.5 B.O.F.

▼ 3.55 17.5 HRS.

End of boring at 7.50m (425.28)

BB-26
STA. 198+935.0
8M. LT.
G.E. 432.12

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	10	SILT, little clay, little sand, little sandstone fragments; light brown; stiff, moist, -PL	431.62
		SANDSTONE FRAGMENTS; olive brown; very dense; dry, NP	
		SANDSTONE, very fine to fine grained; olive brown; average (3); weathered, indistinctly bedded, closely fractured RD = 0 deg to 30 deg.	
1.50	A-N		
1.57	50/.07	SHALE; olive brown and orange; extremely soft (0); decomposed to highly weathered, laminated, broken, RD destroyed	430.55
			430.42
		SHALE; olive; soft (2); highly weathered to weathered, laminated, RD = 30 deg., closely fractured, RD = 30 deg.	429.82
2.57	44(0)	SANDSTONE, very fine to fine grained; olive brown and gray; average to hard (3-4); weathered, indistinctly bedded, closely fractured, RD = 0 deg. to 30 deg.	429.32
2.80	105/.23		
		SILTSTONE, sandy; red brown; average (3); weathered to slightly weathered, indistinctly bedded, closely to moderately fractured, RD = 22 deg.	
3.80	88(0)	SHALE; red brown; soft (2); weathered, laminated, RD = 23 deg., very closely to closely fractured, RD = 23 deg.	428.37
		SANDSTONE, very fine to fine grained; brown gray; average to hard (3-4); weathered, indistinctly bedded, closely fractured, RD = 23 deg.	427.94
			427.84
			427.67
		SHALE; red brown with green; soft (2); weathered, laminated, RD = 23 deg., closely fractured, RD = 23 deg.	427.31
5.32	97(26)	SHALE; olive brown and gray; soft to very soft (2-1); highly weathered to weathered, laminated, RD = 23 deg., closely fractured, RD = 23 deg.	426.85
		SANDSTONE, very fine to fine grained; gray and brown; average to hard (3-4); weathered, indistinctly bedded, closely fractured, RD = 0 deg. to 23 deg. Stained vertical fracture from 5.55m - 5.80m (426.57 - 426.32)	426.32
6.84	93(33)	SANDSTONE, very fine to fine grained; gray; hard (4); weathered to slightly weathered, indistinctly bedded, closely to moderately fractured, RD = 0 deg. to 38 deg. Stained high angle fracture, RD = 70 deg., from 6.26m - 6.50m (425.86 - 425.62)	
7.00	0(0)		425.12

430.5 B.O.F.

▼ 3.46 13.5 HRS.

End of boring at 7.00m (425.12)

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 / 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

430.5 / B.O.F. — ELEV. BOTTOM OF FOOTING

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-5000

MADE MJT DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE 1:33.3	SHEET NO. 79

PIER 3

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X318-H-101.92 05	APD-0484(124) C1C	2001	HARDY	121	196

BB-9

STA. 199+010.0
8M. RT.

G.E. 422.29

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	26	SANDSTONE FRAGMENTS: olive; medium dense to very dense; dry, NP	
1.50	A-N		420.79
1.50	50/.0	SANDSTONE, very fine to fine grained; brown and gray; average to hard (3-4); weathered, indistinctly bedded, closely to moderately fractured, RD = 28 deg.	
3.37	91(6)		418.99
6.42	96(28)	SANDSTONE, very fine to fine grained; gray with brown; average to hard (3-4); weathered to slightly weathered, indistinctly bedded, closely to moderately fractured, iron staining, Vertical fracture with clay from 6.06m - 6.22m (416.23 - 416.07) High angle fracture with iron staining from 6.76m - 7.00m (415.53 - 415.29), RD = 70 deg. Vertical fracture from 7.47m - 7.66m (414.82 - 414.63) and from 7.83m - 8.08m (414.46 - 414.21)	
9.47	90(35)	SANDSTONE, very fine to fine grained, little to some interbedded shale with intraclasts; gray and dark gray; average to hard (3-4); weathered, indistinctly bedded, closely to moderately fractured, RD = 25 deg. Stained vertical fracture from 10.30m - 10.50m (411.99 - 411.79) Clay seam extremely soft from 10.66m - 10.75m (411.63 - 411.54)	412.69
11.50	100(46)	SANDSTONE, very fine to fine grained; gray; hard (4); weathered to slightly weathered, indistinctly bedded, closely to moderately fractured, RD = 25 deg.	411.54
		End of boring at 11.50m (410.79)	410.79

▼ 7.29
0 HRS.

413.0
B.O.F.

BB-30

STA. 199+020.0
7M. RT.

G.E. 417.99

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	10	SILT, little clay, little sand, little sandstone fragments; brown; stiff; moist, -PL	417.29
1.50	A-N	SANDSTONE FRAGMENTS: brown; very dense; dry, NP	416.49
1.50	50/.0	SANDSTONE, very fine to fine grained; olive-brown; average to hard (3-4); weathered, indistinctly bedded, very closely to moderately fractured, RD = 35 deg. Vertical fracture from 1.90m - 2.04m (416.09 - 415.95)	
2.87	99(0)	SANDSTONE, very fine to fine grained; gray with brown; hard (4); weathered to slightly weathered, indistinctly bedded, closely to moderately fractured, RD = 25 deg.	414.39
5.92	99(11)	SANDSTONE, very fine to fine grained; gray; hard to very hard (4-5); slightly weathered, indistinctly bedded, closely to widely fractured, RD = 25 deg.	412.16
7.00	97(94)	SANDSTONE, fine grain; gray-brown; hard (4); highly weathered to weathered, very thinly bedded, RD = 25 deg., closely fractured, RD = 20 deg. to 70 deg. Light brown clay in fracture at 7.55m (410.44)	410.59
9.00	83(24)	SHALE, little laminated interbedded gray sandstone; dark gray; average to hard (3-4); weathered, very thin to laminated bedding, RD = 25 deg., very closely to closely fractured, RD = 25 deg.	410.12
		SANDSTONE, fine grain; gray; hard (4); slightly weathered to weathered, indistinctly bedded, closely to moderately fractured, RD = 15 deg. to 70 deg. Orange brown clay in fractures from 10.07m - 10.47m (407.92 - 407.52)	408.43
12.00	100(56)	SHALE, trace laminated interbedded gray sandstone; dark gray; hard (4); slightly weathered to weathered, very thinly bedded, RD = 25 deg., closely fractured, RD = 25 deg.	406.07
		End of boring at 12.00m (405.99)	405.99

413.0
B.O.F.

▼ 10.62
40 HRS.

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 / 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

413.0 / B.O.F. — ELEV. BOTTOM OF FOOTING

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE MJT DATE 7-97	CKD. KJW DATE 7-97	BRIDGE NO. 4249
TRCD. ____ DATE ____	SCALE 1:33.3	SHEET NO. 80

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X319-H-101.92 05	APD-0484(124) CTC	2001	HARDY	122	146

PIER 3

BB-28

STA. 199+008.0
7M. LT.

G.E. 417.97

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	5	SILT, little clay, little sand, little sandstone fragments: brown: medium stiff: moist to wet, -PL	417.17
1.40	A-N	SANDSTONE FRAGMENTS: brown: very dense: dry, NP	416.57
1.40	50/.0	SANDSTONE, very fine to fine grained: olive brown and brown gray: average to hard (3-4): weathered, indistinctly bedded, very closely to closely fractured, RD = 25 deg. to 30 deg.	
2.34	83(0)		
2.95	69(0)		
			414.42
4.32	98(24)	SANDSTONE, very fine to fine grained, micaceous, trace carbonized plant fragments: gray hard (4): slightly weathered, indistinctly bedded, closely to widely fractured, RD = 25 deg. Vertically fractured from 3.55m - 3.65m (414.42 - 414.32) lost water at 7.0m (410.97)	
6.00	100(60)		
9.00	95(76)		409.02
		SANDSTONE, very fine to fine grained, micaceous, little to some shale intraclasts: gray to medium gray: hard (4): weathered to slightly weathered, indistinctly bedded, very closely to moderately fractured and broken, RD = 0 deg. to 30 deg., highly bioturbated Vertically fractured from 11.32m - 11.46m (406.65 - 406.51) Partial water return at 11.50m (406.47)	
		SHALE, sandy, little interbedded sandstone: medium to dark gray: soft to average (2-3): weathered, laminated, RD = 22 deg., very closely to closely fractured and broken, RD = 0 deg. to 30 deg., clay in fractures	408.43
12.00	93(23)		405.97

End of boring at 12.00m (405.97)

413.0
B.O.F.

▼ 7.01
20 HRS.

BB-29

STA. 199+020.0
7M. LT.

G.E. 414.18

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	6	SILT, little clay, little sand, little sandstone fragments: orange-brown: medium stiff: moist, -PL	413.58
1.10	A-N	SANDSTONE FRAGMENTS: gray-brown: very dense: dry, NP	413.08
1.10	50/.0		
1.48	100(0)	SANDSTONE, very fine to fine grained: olive-gray and gray: average to hard (3-4): weathered, indistinctly bedded, very closely to moderately fractured, RD = 25 deg.	
2.87	86(7)		411.28
		SANDSTONE, very fine to fine grained, micaceous, trace carbonized plant fragments, trace pyrite crystals: gray and olive: hard (4): weathered to slightly weathered, indistinctly bedded, closely to very widely fractured, RD = 25 deg. Vertically fractured from 8.76m - 9.01m (405.42 - 405.17) and 9.26m - 9.44m (404.92 - 404.74)	
5.92	100(76)		
8.50	100(86)		404.63
9.72	100(95)	SANDSTONE, very fine grained, silty, argillaceous, little interbedded shale: gray: average (3): slightly weathered, laminated to thinly bedded, RD = 2.3 deg., closely to moderately fractured, RD = 2.3 deg. High angle fractured RD = 60 deg., centered at 10.12m (404.06)	
10.63	89(29)		403.04
		SANDSTONE, very fine grained, silty, trace carbonaceous laminations: gray: average to hard (3-4): weathered, indistinctly bedded, widely to closely fractured, RD = 15 deg. to 45 deg. Vertically fractured from 11.56m - 11.85m (402.62 - 402.32) Trace pelecypod fossils from 12.0m to bottom of hole Vertically fractured from 14.02m - 14.12m (400.16 - 400.06)	
11.85	95(74)		
13.37	100(93)		
14.18	100(94)		400.00

End of boring at 14.18m (400.00)

413.0
B.O.F.

▼ 4.50
187 HRS.

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 / 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

413.0 / B.O.F. — ELEV. BOTTOM OF FOOTING

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE MJT DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE 1:33.3	SHEET NO. 81

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X318-H-101.82 05	APD-0484(124) CTC	2001	HARDY	123	146

PIER 4

BB-32

STA. 199+103.0
8M. LT.
G.E. 416.91

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	16	SANDSTONE GRAVEL, some sand, little silt, little clay: brown: medium dense to dense: moist, NP (colluvium)	
1.50	A-N		
1.54	50/.04		415.37
		SANDSTONE, fine grained, silty, argillaceous, micaceous: green-gray: average (3): highly weathered, thinly to moderately bedded, RD = 26 deg., broken to closely fractured, RD = 26 deg.	414.61
2.45	81(0)	SHALE, sandy, slightly micaceous, trace interbedded siltstone, trace interbedded sandstone, fine grained, green: soft to extremely soft (1-2): highly weathered, laminated to thinly bedded, RD = 22 deg. to 30 deg., fissile to closely fractured, RD = 20 deg. to 90 deg. Fracture surfaces are iron stained and highly weathered Poor return of water throughout Broken iron stained, multiple irregular fractures from 4.0m - 5.0m (412.91 - 411.91)	
3.97	100(23)		
5.49	100(0)	SHALE: gray: average (3): slightly weathered, laminated, RD = 22 deg. to 25 deg., broken to moderately fractured, RD = 20 deg. to 45 deg. Broken from 7.10m - 7.30m (409.81 - 409.61)	410.71
		SANDSTONE, fine grained: maroon: average (3): slightly weathered, thinly bedded, RD = 22 deg. to 25 deg., vertically fractured	
7.01	100(34)	SHALE, sandy, trace sandstone laminations: gray: average (3): slightly weathered, laminated, RD = 22 deg. to 25 deg., widely fractured, RD = 22 deg. to 25 deg.	409.26
		SANDSTONE, very fine grained, very silty, argillaceous: gray to maroon: average (3): slightly weathered, thinly to very thinly bedded, RD = 22 deg. to 25 deg., closely to moderately fractured, RD = 22 deg. to 25 deg. 10mm very coarse grained sandstone at 8.76m (408.15)	409.11
8.53	99(50)		408.51
		SHALE, sandy, trace sandstone laminations, pyrite in fractures: gray to maroon: soft to average (2-3): weathered, laminated, RD = 23 deg., closely to moderately fractured, RD = 23 deg. Slickensides at 9.5m (407.41) Clay seam at 8.76m (408.15)	408.15
		SANDSTONE, very fine grained, silty, argillaceous: maroon to gray: average (3): slightly weathered, moderately to thickly bedded, RD = 23 deg., closely to widely fractured, RD = 23 deg. Slickenside at 10.09m (406.82)	407.31
10.05	100(80)		406.73
		SHALE, trace sand: gray: soft (2): slightly weathered laminated, RD = 23 deg., closely fractured, RD = 23 deg.	406.44
11.57	100(49)	SANDSTONE, fine to very fine grained: maroon: average (3): slightly weathered, indistinctly bedded, closely to moderately fractured, RD = 10 deg. to 20 deg. 10mm shale lens at 11.0m (405.91 76 deg. fracture at 11.03m (405.88)	404.79
13.00	100(97)	SHALE, little interbedded argillaceous fine grained sandstone: gray: average (3): slightly weathered to fresh, thinly to moderately bedded, RD = 24 deg. to 27 deg., widely fractured, RD = 24 deg. to 27 deg.	403.91

End of boring at 13.00m (403.91) - Lost water at 11.3m (405.61)

7.90 / 38 HRS. (water level)

404.0 B.O.F.

BB-33

STA. 199+103.19
8.57M. RT.
G.E. 416.07

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	5	CLAY, some silt, some shale fragments, trace sandstone fragments: orange: medium stiff: moist, -PL	415.07
		SHALE FRAGMENTS: olive-brown: very dense: dry, NP	
1.52	A-N		
1.69	88/.27		414.38
2.30	49(0)	SHALE, little thinly interbedded sandstone: olive-brown to gray: very soft to soft with average (1-2) (3): highly weathered, laminated to thinly bedded, RD = 49 deg., very closely to closely fractured, RD = 49 deg. Iron staining on fractures Lost water at 2.30m (413.77)	
3.82	38(0)		
5.34	93(0)		409.67
6.86	82(58)	SHALE, trace to little interbedded sandstone: gray: soft to average (2-3): weathered, laminated, RD = 49 deg., closely to moderately fractured, RD = 49 deg. Vertical fracture with staining from 6.90m - 7.02m (409.17 - 409.05)	408.97
		SHALE, trace interbedded sandstone: gray: average (3): weathered to slightly weathered, laminated, RD = 42 deg. to 46 deg. closely to very widely fractured RD = 42 deg. to 46 deg. Very closely fractured and slickensides with pyrite from 12.45m - 12.55m (403.62 - 403.52)	
8.38	94(58)		
9.90	83(72)		
11.42	100(82)		403.52
12.94	97(44)	SANDSTONE, very fine to fine grained: gray: hard (4) to very hard (5): slightly weathered, indistinctly bedded, closely to widely fractured, RD = 48 deg.	401.95
14.46	97(80)	SANDSTONE, very fine to fine grained, little laminated shale: gray: hard to very hard (4-5): slightly weathered, laminated, RD = 48 deg., closely to very widely fractured, RD = 48 deg. Slickensides from 14.22m - 14.25m (401.85 - 401.82) Slickensides at 48 deg. along bedding plane from 14.92m - 14.98m (401.15 - 401.09) Joint with pyrite from 15.45m - 15.59m (400.62 - 400.48) and from 15.88m - 15.98m (400.19 - 400.09)	
15.98	97(90)		400.09

End of boring at 15.98m (400.09)

404.0 B.O.F.

BB-10

STA. 199+094.0
8M. LT.
G.E. 411.98

A	B	VISUAL DESCRIPTION	ELEVATION
		TOPSOIL: black: very soft: moist, NP	411.86
0.45	6	CLAY and SILT, little sand: red brown: medium stiff to stiff: moist, -PL, trace organic roots	411.18
		CLAY and SILT, some siltstone gravel, little sand: brown: very stiff to hard: dry, -PL	
1.50	A-N		
1.95	48		409.68
		SILTSTONE FRAGMENTS and SILT, some clay: brown gray: very dense: dry, NP Auger refusal at 3.62m (408.36)	
3.00	A-N		
3.45	53		
3.62	A-N		408.35
3.63	50/.01	SILTSTONE, slightly argillaceous, slightly sandy: red brown: average to hard (3-4): slightly weathered, indistinctly bedded, widely fractured Fractured at 4.30m (407.68), RD = 75 deg. and 4.57m (407.41), RD = 20 deg.	
4.80	99(99)		
5.11	52(0)		406.90
		SHALE with interbedded argillaceous siltstone: gray: soft (2): slightly weathered to weathered, laminated to thinly bedded, RD = 20 deg. broken to closely fractured, RD = 8 deg. to 90 deg.	
5.91	79(0)		
6.16	68(68)		405.78
		SHALE: gray: extremely soft to soft (0-2): decomposed to weathered, laminated, RD = 18 deg. to 22 deg., broken to closely fractured, RD = 0 deg. to 90 deg., low recovery possibly due to clay seams	
7.00	39(0)		404.98
7.00	50/.0	SHALE: gray: soft (2): weathered, laminated, RD = 20 deg., closely to moderately fractured, RD = 20 deg. to 45 deg., fracture surfaces are slightly iron stained	
8.00	95(40)		403.98

End of boring at 8.0m (403.98)

6.42 / 37 HRS. (water level)

404.0 B.O.F.

BB-31

STA. 199+093.07
8.90M. RT.
G.E. 409.88

A	B	VISUAL DESCRIPTION	ELEVATION
0.38	65/.23	SHALE FRAGMENTS: olive-brown: very dense: dry, NP	409.50
0.99	10(0)	SHALE, trace very thinly interbedded sandstone: olive-brown with gray: extremely soft to very soft (0-1): decomposed, laminated, RD destroyed, broken	
1.16	80/.17		408.72
2.00	88(0)	SHALE, little interbedded siltstone, trace interbedded sandstone: olive: very soft to soft (1-2): highly weathered, laminated to very thinly bedded, RD = 52 deg., very closely to closely fractured with iron stains, RD = 52 deg., very broken	406.53
3.52	100(0)	SANDSTONE, very fine to fine grain, micaceous: gray: hard (4): weathered, indistinctly bedded, broken, iron stains on fractures	405.88
5.04	100(55)	SANDSTONE, very fine to fine grained, trace shale interbedded, micaceous, trace pyrite: light gray: hard to very hard (4-5): weathered to slightly weathered, indistinct to laminated x-beds, RD = 56 deg., closely to widely fractured, RD = 56 deg. Well developed slickensides from 5.73m - 5.80m (404.15 - 404.08)	
6.56	100(88)		403.32

End of boring at 6.56m (403.32)

404.0 B.O.F.

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

5.33 / 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

404.0 / B.O.F. — ELEV. BOTTOM OF FOOTING

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA (412) 497-6000

MADE MJT DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE 1:33.3	SHEET NO. 82

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101.92 05	APD-0454(124) CTC	2001	HARDY	124	146

BB-36

STA. 199+164.0
7M. LT.

G.E. 450.00

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	43	SANDSTONE FRAGMENTS and CLAY, little shale fragments: brown: dense to very dense: moist, NP Auger refusal at 0.91m	
0.91	A-N		449.09
1.84	100(0)	SANDSTONE, fine grained, silty, argillaceous, trace interbedded siltstone, sandy: green to red: soft to average (2-3): highly weathered, very thinly to thinly bedded, RD = 30 deg., broken to closely fractured, RD = 30 deg., Multiple clay lined fractures throughout C-1 +Run blocked off, drilled advance hole an extra	
3.36	100(45)	SANDSTONE, silty, argillaceous, micaceous: green: average (3): highly weathered, indistinctly bedded, cross beds, RD = 22 deg., closely to moderately fractured, RD = 10 deg. to 90 deg. Clay lined 45 deg. fracture at 3.1m Vertically fractured from 3.33m - 3.73m (446.67 - 446.27)	446.62
4.88	100(0)	SANDSTONE, fine grained, silty, micaceous, little interbedded shale: buff to gray: average (3): weathered, laminated to thinly bedded, RD = 30 deg. to 40 deg., closely to moderately fractured RD = 30 deg. to 40 deg. Slickenside at 5.18m (444.82), RD = 40 deg.	445.77
6.40	84(51)	SANDSTONE, fine grained, silty, argillaceous, micaceous: gray: average (3): weathered, thickly bedded, RD = 30 deg. to 40 deg., closely to widely fractured, RD = 30 deg. to 40 deg. 70 deg. fracture, 20mm, clay filled from 6.82m - 7.02m (443.18 - 442.98)	444.30
7.92	91(34)	SHALE, sandy: gray: soft (2): highly weathered, laminated, RD = 22 deg., not fractured	442.98
		SANDSTONE, fine grained, silty, argillaceous, micaceous: gray: average (3): weathered, moderately bedded, RD = 26 deg., closely to moderately fractured, RD = 0 deg. to 90 deg.	442.79
		SHALE, some interbedded silty, argillaceous fine grained sandstone: gray: soft to average (2-3): weathered to slightly weathered, laminated to thinly bedded, RD = 22 deg. to 30 deg., widely fractured, RD = 22 deg. to 30 deg. Slickenside at 9.34m (440.66), RD = 30 deg.	442.36
9.44	100(95)	SANDSTONE, fine grained, silty, argillaceous, slightly micaceous: gray: hard (4): slightly weathered, moderately bedded, RD = 28 deg., not fractured	440.65
		SHALE, some interbedded fine grained, silty, argillaceous, sandstone: gray: soft to average (2-3): slightly weathered, laminated to thinly bedded, RD = 25 deg. to 30 deg., widely fractured, RD = 25 deg. to 30 deg. .3m slipped on C-7 and recovered in C-8, Slickensides with 5mm gouge at 10.12m (439.88)	440.24
10.96	100(86)	SANDSTONE, fine grained, silty, argillaceous: gray to maroon: average to hard (3-4): slightly weathered, thickly bedded, RD = 25 deg. to 30 deg., widely fractured, RD = 25 deg. to 30 deg. C-9 broken during drilling Multiple attempts to retrieve core	439.20
12.33	100(100)		
13.00	85(0)		437.00

End of boring at 13.00m (437.0)

BB-37

STA. 199+164.0
7M. RT.

G.E. 450.00

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	9	CLAY, some sandstone gravel, trace sand: brown: stiff to very stiff: moist, +PL	449.20
1.50	A-N	SANDSTONE FRAGMENTS, some clay, little sand: brown: dense to very dense: moist, NP	
1.55	50/.05		448.45
2.55	58(0)	SANDSTONE, very fine grained, silty, argillaceous: greenish gray: average (3): highly weathered, indistinctly bedded, broken Lost water at 3.35m (445.65)	
2.90	63(0)		
3.43	49(0)	SANDSTONE, fine grained, silty, argillaceous: maroon: average to hard (3-4): highly weathered to weathered, indistinctly bedded, broken to closely fractured, RD = 25 deg. to 65 deg. Fracture surfaces are iron stained and clay lined from 1.5m - 4.43m (448.5 - 445.57)	446.65
5.95	90(5)	SHALE, sandy, and INTERBEDDED SILTSTONE, sandy: green: soft (2): weathered, laminated to thinly bedded, RD = 60 deg., very closely to closely fractured, RD = 60 deg.	444.82
		SILTSTONE, sandy: green: average (3): slightly weathered, indistinctly bedded, closely to moderately fractured, RD = 20 deg. to 50 deg.	444.00
9.00	97(39)	SANDSTONE, silty, argillaceous: maroon: average to hard (3-4): slightly weathered, thickly bedded, RD = 60 deg., closely to moderately fractured, RD = 30 deg. to 60 deg. 5mm clay lined fracture, RD = 45 deg., at 8.15m (441.85)	443.05
		SANDSTONE, silty, argillaceous, and SHALE, sandy: gray: average to soft (2-3): slightly weathered, laminated to very thinly bedded, RD = 58 deg., closely to moderately fractured, RD = 58 deg. Slickenside at 8.45m	441.65
12.05	98(20)	SANDSTONE, silty, argillaceous, fine grained, trace interbedded shale: gray: average to soft (2-3): slightly weathered, laminated to thinly bedded, RD = 40 deg. to 55 deg., fissile to moderately fractured, RD = 40 deg. to 55 deg. Slickenside at 10m and 10.3 m on interbedded shale surface, RD = 55 deg.	441.00
		SHALE and INTERBEDDED SANDSTONE: gray: average (3): slightly weathered, laminated, RD = 35 deg., not fractured	439.70
		SANDSTONE, trace interbedded shale, sandstone is fine grained, silty, argillaceous: gray: average (3): slightly weathered, laminated to moderately bedded, RD = 45 deg. to 55 deg., fissile to moderately fractured, RD = 45 deg. to 55 deg. Multiple slickensides on shale surfaces.	439.55
13.00	100(100)	SHALE: gray: soft to average (2-3): fresh, laminated, RD = 30 deg., widely fractured, RD = 60 deg.	438.00
			437.00

End of boring at 13.00m (437.0)

BB-34

STA. 199+151.0
7M. LT.

G.E. 443.58

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	16	CLAY and SANDSTONE GRAVEL, little sand: brown: very stiff: moist, +PL	
1.05	A-N		442.53
1.95	67(28)	SANDSTONE, very fine grained, silty: red, maroon: hard (4): highly weathered to weathered, indistinctly bedded, closely to moderately fractured, RD = 20 deg. to 55 deg.	441.63
3.47	82(49)	SHALE: green: soft (2): highly weathered, laminated, RD = 30 deg., closely fractured, RD = 20 deg. to 30 deg.	440.78
4.54	67(9)	SANDSTONE, very fine grained to fine grained, silty, argillaceous: maroon: hard (4): weathered, thickly bedded, RD = 30 deg., not fractured	440.11
5.87	100(41)	SHALE, sandy, little interbedded sandstone laminations: green: soft to average (2-3): highly weathered, laminated, RD = 25 deg. to 30 deg., fissile to closely fractured, RD = 25 deg. to 30 deg.	438.34
6.50	100(0)	SANDSTONE, very fine grained, very silty, argillaceous: olive to red: average (3): highly weathered, indistinctly bedded, broken to moderately fractured, RD = 10 deg. to 90 deg., multiple vertical fractures from 5.24m - 6.5m (438.34 - 437.08)	437.08

End of boring at 6.5m (437.08)

BB-35

STA. 199+151.0
7M. RT.

G.E. 443.00

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	4	CLAY and SILT, some sandstone gravel: brown: soft: moist, +PL Auger refusal at .70m	
0.71	A-N		442.29
0.91	100(0)	SANDSTONE, fine grained, silty, argillaceous: maroon to green: average (3): highly weathered to weathered, indistinctly bedded, broken to closely fractured, RD = 10 deg. to 90 deg. Fracture at 1.45m, RD = 70 deg.	
1.52	100(0)	SHALE, sandy and INTERBEDDED SANDY SILTSTONE: green: soft (2): highly weathered, broken	441.42
		SANDSTONE, silty: green: average (2): highly weathered, thinly bedded, closely fractured, RD = 22 deg.	441.18
2.87	82(0)	SHALE, sandy and INTERBEDDED SANDSTONE, little sandy siltstone, green: soft to average (2-3): highly weathered, laminated to thinly bedded, RD = 32 deg., broken to closely fractured, RD = 30 deg. to 45 deg.	441.03
		SANDSTONE, very fine grained, silty, argillaceous: red: average (3): weathered, indistinctly bedded, closely to moderately fractured, RD = 20 deg. to 35 deg. +Joint at 3.1m, az 100 37 deg. S	440.10
4.41	99(49)	SHALE, sandy, some interbedded sandstone: green, gray: soft to average (2-3): highly weathered, laminated, RD = 32 deg., fissile to moderately fractured, RD = 32 deg.	439.40
		SILTSTONE, sandy micaceous, argillaceous: gray: hard (4): slightly weathered, very thinly to thinly bedded, RD = 22 deg., closely to moderately fractured, RD = 22 deg. Vertically fractured from 4.82m - 5.10m (438.18 - 437.90)	438.18
6.00	100(43)		437.00

End of boring at 6.00m (437.0)

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 / 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE MJT DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249	
TRCD ____ DATE ____	SCALE 1:33.3	SHEET NO. 83	

PIER 5

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X318-H-101.92 05	APD-0484(124) CTC	2001	HARDY	125	146

BB-39 — STA. 199+187.0, 8M. LT. — G.E. 460.80

A	B
0.45	8
1.34	A-N
1.69	92/.20
2.86	56(0)
3.56	100(80)
6.61	98(39)
9.66	96(37)
11.50	92(29)

VISUAL DESCRIPTION	ELEVATION
SILT, some clay, little shale fragments: orange with gray and red: stiff: moist, -PL	460.00
SANDSTONE FRAGMENTS: brown: very dense: dry, NP	459.11
SANDSTONE, very fine to fine grained: gray brown to orange: average to extremely soft (3-0): highly weathered to decomposed, indistinct bedding, broken	457.94
SANDSTONE, fine grained: gray and brown: average to hard (3-4): weathered indistinct bedding, closely to moderately fractured, RD = 0 deg. to 50 deg. Clay seam at 3.48m (457.32) High angle fractured, RD = 70 deg., with clay from 3.81m - 3.91m (456.9 - 456.8), abundant iron staining throughout	456.78
SANDSTONE, fine to medium grained with quartz pebbles, crystalline: light to medium gray: hard to very hard (4-5): weathered to slightly weathered, indistinctly bedded, closely to moderately fractured with slickensides, RD = 47 deg. Evidence of open joints, residual clay on bedding, RD = 74 deg. Fracture surfaces are iron stained	452.60
SANDSTONE, medium to coarse grained, trace carbonaceous laminations, trace quartz pebbled, pourous (dissolved shell fragments): gray: very hard (4): weathered, moderately to thickly bedded, RD = 30 deg., high angle cross beds, RD = 60 deg., closely to moderately fractured, RD = 30 deg. to 60 deg. Carbonized slickenside, trending 35 deg. on x bedding surface at 9.93m (450.87) Fracture surfaces are heavily iron stained, partially healed with quartz Slickenside at 11.16m (450.09) Trace shale laminations from 11.0m - 11.5m (450.25 - 449.75)	449.30

▼ 6.70 / 19 HRS.

452.0 / B.O.F.

End of boring at 11.50m (449.30)

BB-40 — STA. 199+187.0, 8M. RT. — G.E. 461.30

A	B
0.45	4
1.37	A-N
1.60	83/.23
2.10	98(66)
3.65	100(95)
6.70	100(49)
9.75	79(14)
11.50	96(24)

VISUAL DESCRIPTION	ELEVATION
SILT, little clay, little sand, trace sandstone fragments: light brown: soft: moist, -PL	460.60
SANDSTONE FRAGMENTS: brown: very dense: dry, NP	459.70
SANDSTONE, fine to medium grained with quartz pebbles: brown-gray to gray: hard to very hard (4-5): weathered to slightly weathered, indistinctly bedded, very closely to widely fractured, RD = 0 deg. to 40 deg. High angle fracture with clay filling from 5.18m - 5.29m (456.12 - 456.01) Clay filled fracture from 6.10m - 6.20m (455.20 - 455.10), RD = 45 deg.	
SANDSTONE, very fine to fine grained: olive-brown and gray: average to hard (3-4): weathered indistinct bedding, very closely to moderately fractured, RD = 20 deg.	454.96
SHALE: olive: soft (2): weathered, laminated, RD - 20 deg., closely fractured, RD - 20 deg.	454.55
SANDSTONE, very fine to fine grained: gray-brown: hard (4) weathered, indistinct bedding, closely fractured, RD indistinct bedding, closely fractured, RD = 30 deg., stained high angle fracture throughout, RD = 45 deg.	454.42
SHALE: olive: soft: weathered, laminated, broken, RD = 20 deg.	453.96
SANDSTONE, very fine to fine grained: olive brown to medium gray: average (3): weathered, indistinct bedding, closely to moderately fractured, RD = 15 deg. to 20 deg., broken, iron staining	453.84
SHALE: olive: soft (2): weathered, laminated, RD = 20 deg., closely fractured, RD = 20 deg.	452.84
SANDSTONE: gray: hard (4): slightly weathered	452.50
SHALE: olive-brown and gray: very soft to soft (1-2): highly weathered to weathered, laminated, RD = 20 deg., broken, no RD, fractured	452.37
SHALE, little to some laminated to thinly interbedded sandstone: olive-brown and gray to medium gray: soft to average (2-3): weathered, laminated to thinly bedded, RD = 20 deg., very closely to moderately fractured, Rd = 30 deg.	451.30
	449.80

▼ 0.34 / 0 HRS.

452.0 / B.O.F.

End of boring at 11.50m (449.80)

BB-12 — STA. 199+178.0, 8M. LT. — G.E. 456.59

A	B
0.31	88/.16
0.64	100(0)
1.40	92(67)
2.06	100(26)
3.28	100(35)
4.21	100(14)
5.92	98(71)
7.41	100(48)

VISUAL DESCRIPTION	ELEVATION
CLAY and SANDSTONE COBBLES: brown: stiff to very hard: moist, -PL	456.28
SANDSTONE, fine grained, pourous (shell casts): gray: hard (4): weathered, indistinctly bedded, broken to moderately fractured, RD = 0 deg. to 75 deg.	453.04
SANDSTONE, medium to fine grained: gray to rust red: average (3): highly weathered, indistinctly bedded, broken, iron stained	452.34
SANDSTONE, medium to fine grained: rust red to gray: average to hard (3-4): highly weathered to weathered, thinly to moderately bedded, RD = 25 deg., closely to moderately fractured, RD = 25 deg. to 90 deg., x bedds, RD = 32 deg. Multiple clay lined high angle fractures, 4.21m to 4.51m (452.38 - 452.08) 10mm clay seam at 5.88m (450.71)	
SHALE, sandy, trace sandstone laminae, fine grained: gray brown: soft (2): weathered, laminated, RD = 24 deg., very closely fractured, RD = 24 deg.	450.38
SANDSTONE, fine grained, micaceous: gray: hard (4): weathered, moderately to thickly bedded, RD = 24 deg., closely to moderately fractured, RD = 24 deg. to 80 deg., x bedds, RD = 32 deg.	450.15
SHALE: gray: extremely soft (1): highly weathered, laminated, RD = 23 deg., broken	449.47
	449.18

▼ 1.00 / 0 HRS.

452.0 / B.O.F.

End of boring at 7.41m (449.18)

BB-38 — STA. 199+177.0, 8M. RT. — G.E. 456.52

A	B
0.45	9
1.37	A-N
1.37	55/.0
1.70	55(0)
1.95	52(0)
2.78	51(0)
3.78	91(62)
5.78	100(19)
7.01	100(37)

VISUAL DESCRIPTION	ELEVATION
HUMUS: black: soft: moist, NP	456.42
CLAY and GRAVEL, some sand, some silt: brown: stiff: moist, +PL	455.15
SANDSTONE, fine grained, micaceous: gray-green: average (3): highly weathered, thinly to moderately bedded, RD = 12 deg., very closely to closely fractured, RD = 12 deg. (cross beds)	453.75
SANDSTONE, medium to fine grained: gray: hard (4): 10cm conglomerate lens at 3.3m, weathered, thickly bedded, RD = 14 deg., closely to moderately fractured, RD = 14 deg. to 30 deg.	452.87
SANDSTONE, silty, argillaceous, little interbedded shale: green-gray: average to soft (2-3): highly weathered, laminated to moderately bedded, RD = 23 deg., fissile to moderately bedded, RD = 10 deg. to 66 deg. 1cm clay seam, RD = 66 deg. at 5.5m (451.02 75 deg. fracture at 6.9m (449.62)	449.51

452.0 / B.O.F.

▼ 5.30 / 0 HRS.

End of boring at 7.01m (449.51)

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 / 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

452.0 / B.O.F. — ELEV. BOTTOM OF FOOTING

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE MJT	DATE 7-97	CKD KJW	DATE 7-97	BRIDGE NO. 4249
TRCD	DATE	SCALE 1:33.3		SHEET NO. 84

ABUTMENT 2

BB-41

STA. 199+255.0
11M. LT.

G.E. 486.46

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	5	SILT, some clay, little shale fragments: light brown and orange: medium stiff: wet, +PL	485.86
1.49 1.52	A-N 50/.30	SANDSTONE FRAGMENTS: brown: very dense: dry, NP	484.94
3.50 3.60	28(0) 50/.00	SANDSTONE, very fine to fine grained: olive brown: average (3): highly weathered, broken	481.26
6.55	61(8)	SANDSTONE, very fine to fine grained: brown gray: average to hard (3-4): weathered, indistinctly bedded, closely to moderately fractured, RD = 0 deg. to 45 deg. Clay filled vertical fractures from 6.00m - 6.34m (480.46 - 480.12)	479.91
9.00	79(28)	SHALE, little interbedded siltstone, trace interbedded sandstone: olive brown: very soft to soft, (1-2): highly weathered, laminated, RD = 45 deg., very closely to moderately fractured, RD = 10 deg. to 45 deg.	478.11
		SANDSTONE, very fine to fine grained: green brown: average to hard (3-4): weathered, indistinctly bedded, very closely to closely fractured, RD = 0 deg. to 30 deg.	477.46

End of boring at 9.00m (477.46)

▼ 0.80
0 HRS.

480.62
B.O.F.

BB-42

STA. 199+256.0
11.8M. RT.

G.E. 488.20

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	6	SILT, some clay, little sand, little shale fragments: light brown: medium stiff: wet, +PL	487.20
1.49	A-N	SANDSTONE FRAGMENTS: brown: very dense: dry, NP	486.51
1.69	82/.20	SANDSTONE, very fine to fine grained: brown: average (3): weathered indistinctly bedded, closely fractured RD = 0 deg. to 35 deg.	486.30
3.14	100(0)	SHALE, little interbedded sandstone: olive brown: soft to very soft (2-1): highly weathered to weathered, laminated to very thinly bedded, RD = 34 deg., very closely to closely fractured, RD = 34 deg.	485.06
6.19 6.29	36(0) 50/.10	SANDSTONE, fine grained: gray brown: hard (4): weathered, indistinctly bedded, closely fractured, RD = 0 deg. to 30 deg.	484.85
6.75	100(0)	SHALE: olive brown extremely soft to soft (0-2): decomposed to highly weathered, laminated, RD = 34 deg., very closely to closely fractured, RD = 34 deg.	481.91
9.81	98(12)	SANDSTONE, very fine grained: reddish brown: average (3): weathered, indistinctly bedded, closely fractured, RD = 35 deg. Vertically fractured throughout	481.69
10.50	74(20)	SHALE: olive brown: soft (2): weathered, laminated, RD = 34 deg., closely fractured, Rd = 34 deg.	481.44
		SANDSTONE, fine grained: brown: average to hard (3-4): weathered, indistinctly bedded, closely fractured, RD = 0 deg. to 40 deg.	481.16
		SHALE, little thinly interbedded siltstone: olive brown: very soft to soft (1-2): highly weathered to weathered, laminated to thinly bedded, RD = 30 deg., very closely to closely fractured, Rd = 30 deg. Stained high angle fracture from 7.76m - 7.82m (480.44 - 480.34), Rd = 50 deg.	477.70

End of boring at 10.50m (477.70)

▼ 1.52
0 HRS.

480.62
B.O.F.

BB-15

STA. 199+244.0
8M. LT.

G.E. 483.81

A	B	VISUAL DESCRIPTION	ELEVATION
		TOPSOIL: brown: loose: humus	483.72
0.45	10	SILT, little clay, little sand, little sandstone fragments: light brown with orange: stiff: moist, NP	482.81
1.50	A-N	SHALE FRAGMENTS: olive brown: very dense: dry, NP	481.96
1.85	97/.20	SHALE, little interbedded siltstone, sandy: olive gray: extremely soft to very soft (0-1): decomposed to highly weathered, laminated to very thinly bedded, RD = 42 deg., fissile to closely fractured, RD = 42 deg., broken and iron stained	480.66
2.85 2.93	32(0) 50/.08	SANDSTONE, fine grained: olive brown: soft to average(2-3): highly weathered to weathered, thinly bedded, RD = 42 deg., very closely to closely fractured, RD = 42 deg., broken	480.31
3.00	A-N		
3.15	100/0	SHALE: olive gray and brown: extremely soft to very soft (0-1): decomposed to highly weathered, laminated, RD = 40 deg., very closely fractured, RD = 40 deg., broken	479.91
3.90	69(0)	SANDSTONE, fine grained: olive brown: soft to average (2-3): highly weathered, thinly bedded, RD = 40 deg., very closely to closely fractured, RD = 40 deg., broken	479.51
4.40	100(0)	SHALE, little interbedded sandstone, fine grained: olive gray and brown: extremely soft to very soft (0-1): decomposed to highly weathered, laminated, RD = 40 deg., fissile to very closely fractured, broken, RD = 40 deg.	479.41
5.00	95(0)	SHALE, little laminated to very thinly bedded sandstone, very fine grained: olive gray and brown: soft to average (2-3): weathered, laminated to very thinly bedded, RD = 32 deg., very closely to moderately fractured, RD = 32 deg.	476.41
6.00	100(28)		
6.75	99(16)		
7.40	100(49)		

End of boring at 7.40m (476.41)

480.62
B.O.F.

BB-14

STA. 199+244.0
8M. RT.

G.E. 484.40

A	B	VISUAL DESCRIPTION	ELEVATION
		TOPSOIL: black: very soft: moist, NP	484.20
0.45	3	CLAY and SILT, little siltstone fragments: brown: soft: moist, +PL	483.70
1.50	A-N	CLAY and SILTSTONE FRAGMENTS: brown: very hard: dry, +PL, decomposed siltstone and shale <Spoon bounce at 1.59m (482.81)	482.81
1.59	50/.09	SANDSTONE, very fine grained, silty green: soft (2): highly weathered, indistinctly bedded, broken	482.40
2.00	100(0)	SANDSTONE, silty, very fine to fine grained: greenish gray: average (3): highly weathered, moderately bedded, RD = 20 deg., broken to closely fractured, RD = 0 deg. to 75 deg.	482.10
2.39	100(33)	SHALE and CLAY SEAMS: greenish brown: extremely soft to soft (0-2): highly weathered, broken, (bedding and fracture indiscernible)	481.51
3.22	67(0)	SANDSTONE, silty, very fine to fine grained: green, gray: average (3): weathered, thickly bedded, very closely to moderately fractured, RD = 10 deg. to 86 deg., cannot determine RD on bedding	480.81
3.96	100(31)	SANDSTONE, green: hard (4): weathered, indistinctly bedded, closely to moderately, fractured, RD = 30 deg. to 50 deg.	480.16
6.00	85(13)	SHALE, trace clay seams: rust brown, green: very soft to soft (1-2): highly weathered, broken to very closely fractured, fracture surfaces are highly iron stained, bedding RD = 60 deg.	478.40
7.00	99(26)	SHALE with some interbedded siltstone: grayish green: very soft (1): weathered, laminated to thinly bedded, RD = 45 deg., closely to moderately fractured, RD = 0 deg. to 45 deg., (slickensides were not observed)	477.40

End of boring at 7.00m (477.40)

▼ 0.45
20 HRS.

480.62
B.O.F.

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 / 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

480.62 / B.O.F. — ELEV. BOTTOM OF FOOTING

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA	5	X316-H-101.92 05	APD-0464(124) CTC	2001	HARDY	136	146

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE MJT DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE 1:33.3	SHEET NO. 85

ABUTMENT 2

BB-43 — STA. 199+249.5, 8.5M. LT. — G.E. 485.22

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	4	CLAY, little silt, trace sandstone fragments: light brown; soft; moist, +PL	
		SANDSTONE FRAGMENTS: light brown; very dense; dry, NP	485.04
1.50	A-N	SANDSTONE, fine grain: olive brown; hard (4); highly weathered, indistinctly bedded, very closely to closely fractured, RD = 20 deg. to 70 deg., orange clay in fractures	
1.67	100/.17		484.07
			483.85
2.50	99(48)	SANDSTONE, fine grained: olive brown; hard (4); weathered, indistinctly bedded, closely to moderately fractured, RD = 10 deg. to 50 deg. Slickensides at 1.91m (483.83) and 2.06m (483.68)	
3.22	50(21)	SHALE, sandy: olive brown; soft (2); highly weathered to weathered, laminated bedding, RD = 40 deg., very closely to moderately fractured, RD = 20 deg. to 40 deg. Vertical fractures from 3.35m-3.75m (482.39 - 481.99)	482.52
		SHALE, sandy: olive brown; soft (2); highly weathered, laminated bedding, RD = 40 deg., very closely to closely fractured, RD = 0 deg. to 40 deg., slickensides throughout, shear zone, possible fault	481.36
			481.11
		SANDSTONE, fine grain: olive brown; hard to very hard (4-5); highly weathered, indistinctly bedded, closely to moderately fractured, RD = 10 deg. to 80 deg. Sandstone, fine grain, red, hard from 4.84m - 4.88m (480.90 - 480.86) Sandstone exhibits brecciated zones	479.99
5.94	87(32)	SANDSTONE, fine grain: olive brown; hard to very hard (4-5); highly weathered, indistinctly bedded, very closely fractured to broken, RD = 0 deg. to 90 deg.	
8.50	25(0)		
		CLAY, some sandstone fragments, little sand; brown; very hard; moist, -PL Poor recovery of this unit, recovered sandstone fragments believed to be from unit at higher elevation	476.84
9.41	34(0)		
10.93	1(0)		
11.07	100/.14		
12.07	6(0)	SHALE, little sandstone fragments: gray; extremely soft (0); decomposed, indistinctly bedded, broken fractures Poor recovery of this unit, sandstone fragments recovered believed to be from unit at higher elevation Driller said he had approximately 0.3m clay seam in run C-10	473.59
12.22	84/.15		
12.83	7(0)		
13.83	6(0)	SANDSTONE, fine grain: olive brown; hard to very hard (4-5); highly weathered, indistinctly bedded, broken to very closely fractured, RD = 0 deg. to 90 deg. Multiple clay seams, fracture surfaces are highly iron stained, some are clay lined	471.91
14.44	49(0)	SHALE, little interbedded sandstone; gray, olive brown; soft to average (2-3); highly weathered, laminated, RD = 52 deg., closely to moderately fractured, RD = 52 deg. Slickenside, RD = 0 deg. at 15.57m (470.17)	
14.94	88(0)		
		SANDSTONE, fine grained; gray; average to hard (3-4); highly weathered, thinly bedded, RD = 50 deg., closely fractured, RD = 30 deg. to 50 deg. Clay seam at 15.94m, RD = 45 deg. Multiple 45 deg. to 65 deg. fractures from 15.68m to 15.94m (470.06 - 469.80)	470.46
15.94	100(10)		470.06
			469.80

End of boring at 15.94m (469.80)

480.62 B.O.F.

▼ 15.00 18 HRS.

BB-44 — STA. 199+244.0 CENTERLINE — G.E. 484.24

A	B	VISUAL DESCRIPTION	ELEVATION
		TOPSOIL, leaves; black; loose; moist, NP	484.14
0.45	15	CLAY and SANDSTONE GRAVEL, little sandstone cobbles, trace sand; brown; very stiff to hard; moist, +PL	
1.50	A-N		
1.50	50/.0	SANDSTONE, very fine grained; brown; soft to average (2-3); decomposed to highly weathered, indistinctly bedded, fractured and broken throughout Rock in retaining ring. No sample at the end of C-1	482.74
		CLAY, some silt, some sand, little gravel; brown; stiff; moist, +PL	481.74
			481.49
3.04	41(0)	SANDSTONE, very fine grained, buff to gray; soft to average (2-3); decomposed to highly weathered, indistinctly bedded, one bedding plane found, RD = 62 deg. Fractured and broken throughout Exhibits crazed healed hairline fractures and brecciated zones throughout	481.20
		SHALE, gray, soft (2), weathered to highly weathered, laminated (RD 60) very closely fractured (RD =60 deg.)	480.10
4.56	41(0)	SANDSTONE, lt. brn. and gray, soft to avg. (2-3), highly weathered, indistinctly bedded bedded very closely fractured RD = 30-60 deg.	479.64
		SHALE, gray; soft to average (2-3); highly weathered, indistinctly bedded, broken to closely fractured, RD = 55 deg. to 60 deg.	478.92
5.93	95(0)	SHALE, sandy, little interbedded sandstone; green, gray; extremely soft to soft (1-2); highly weathered, laminated, RD = 55 deg. to 60 deg., broken to closely fractured, RD = 55 deg. to 60 deg.	478.34
7.00	7(0)	SANDSTONE, fine grained; green, gray; extremely soft to average (1-3); decomposed to highly weathered, indistinctly bedded, broken Recovery is very pourous, iron stained Possible clay seams throughout, brown mud in cuttings, much sand in cuttings	
			476.50
8.00	26(0)	SANDSTONE, fine grained, silty, argillaceous; gray; average (3); weathered, indistinctly bedded, closely fractured, RD = 40 deg.	
8.50	100(0)		475.79
		SHALE, gray, soft (2), highly weathered, laminated, very closely fractured indistinctly bedded very closely fractured	475.69
		SANDSTONE, fine grained, gray, avg. (3), weathered indistinctly bedded, closely fractured (RD = 40 deg.)	475.12
9.57	100(21)	SHALE; gray; extremely soft to soft (0-2); highly weathered, laminated, RD = 40 deg., closely fractured, RD = 40 deg.	474.67

End of boring at 9.55m (474.67)

480.62 B.O.F.

▼ 6.20 21 HRS.

BB-45 — STA. 199+246.75, 8.25M. LT. — G.E. 485.04

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	5	FINE SAND and SILT, little clay; brown; soft; moist, NP, trace organics Spoon bounces at 1.55m	
		SHALE; green gray; extremely soft to soft (0-2); decomposed to highly weathered, bedding is highly distorted and irregular Small scale folds in bedding, broken to closely fractured, RD = 0 deg. to 90 deg.	
1.50	A-N		
1.55	50/.05	SANDSTONE, fine grained; olive; average (3); highly weathered, thinly bedded, closely fractured, RD = 0 deg. to 90 deg.	483.49
2.15	62(0)	SHALE, trace interbedded sandstone, fine grained; green, gray; very soft to average (1-3); decomposed to highly weathered, laminated, bedding is highly distorted, broken to closely fractured, RD = 0 deg. to 90 deg.	482.76
			482.65
			482.24
		SANDSTONE, fine grained; olive; average (3); highly weathered, indistinctly bedded, multiple hairline fractures, multiple 78 deg. fractures	481.54
3.67	79(0)	SANDSTONE, fine grained, and CLAY; brown gray; extremely soft to average (0-3); decomposed to highly weathered, indistinctly bedded, broken	481.24
		SANDSTONE, fine grained, little interbedded clay seams; gray brown; extremely soft to average (0-3); highly weathered, indistinctly bedded, broken to closely fractured, RD = 0 deg. to 90 deg., fractures are open and clay lined, clay is about 1mm-7mm thick, clay is extremely soft, medium stiff	480.15
5.19	41(0)		
5.19	50/.0	SANDSTONE, fine grained, and CLAY; brown gray; extremely soft to average (0-3); highly weathered, indistinctly bedded, broken	479.73
5.69	100(0)		
6.75	94(0)	SANDSTONE, fine grained, argillaceous, trace clay seams; brown, green, black; average (3); highly weathered, indistinctly bedded, broken to closely fractured, RD = 0 deg. to 90 deg., multiple clay lined high angle fractures, RD = 30 deg. to 60 deg. 10mm shale lens, RD = 42 deg. at 5.47m (479.57) Multiple crazed hairline fractures. Sandstone exhibits healed brecciated zones. 80mm shale lens, RD = 55 deg. at 6.24m (478.80) 10cm sandstone and clay lens from 6.45m to 6.55m (478.59 - 478.49)	477.94
		SHALE, trace sandstone; green, gray, brown; very soft to soft (1-2); decompdsed to highly weathered, laminated, RD = 55 deg. 3cm sandstone lens at 8.17m (476.87) closely fractured, RD = 55 deg.	
8.27	82(0)		
9.00	100(0)		476.04

End of boring at 9.00m (476.04)

480.62 B.O.F.

▼ 4.88 23 HRS.

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X318-H-101.92 05	APD-0484(124) CTC	2001	HARDY	127	146

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

480.62 B.O.F. — ELEV. BOTTOM OF FOOTING

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER
CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-6000

MADE MJT DATE 7-97	CKD. KJW DATE 7-97	BRIDGE NO. 4249
TRCD. DATE	SCALE 1:33.3	SHEET NO. 86

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X318-H-101.92 05	APD-0464(124) CTC	2001	HARDY	128	146

ABUTMENT 2

STA. 199+252.0
11M. LT.

BB-49 G.E. 486.07

A	B	VISUAL DESCRIPTION	ELEVATION
0.45	36	CLAY and SANDSTONE FRAGMENTS, trace fine sand: orange and light brown: hard moist, -PL	
		SILT, some clay, trace sandstone fragments: light brown: very hard: dry, -PL	485.07
1.52	A-N	SANDSTONE, very fine to fine grain, micaceous: light brown: soft to average (2-3): weathered, indistinctly bedded, very closely to moderately fractured, RD = 35 deg. to 40 deg.	
1.98	112	SANDSTONE, very fine to fine grain, micaceous: olive brown: average (3): weathered, indistinctly bedded, closely to moderately fractured, RD = 20 deg. to 60 deg., orange clay in fractures	
3.04	A-N	SHALE, little laminated interbedded sandstone: olive brown: soft (2): highly weathered, very thinly bedded, RD = 48 deg., very closely to closely fractured RD = 40 deg. to 60 deg. Slickensides throughout Clay seam from 4.88m to 4.93m (481.19 - 481.14)	483.03
3.04	50/.0		
3.56	73(33)		482.47
		SHALE, trace fine sand: olive brown: soft (2): weathered, laminated bedding, RD = 40 deg., closely to moderately fractured, RD = 40 deg.	
		SANDSTONE, very fine to fine grained: green brown: average (3): weathered to highly weathered indistinctly bedded, closely to moderately fractured, RD = 10 deg. to 50 deg., orange clay in fractures	481.58
5.08	81(28)	SHALE: olive brown: very soft to soft (1-2): highly weathered, laminated bedding, RD = 50 deg., closely fractured, RD = 50 deg.	480.90
			480.62 B.O.F.
		SANDSTONE, very fine grained: olive brown: soft (2): highly weathered, laminated bedding, RD = 65 deg., closely fractured, RD = 20 deg. to 65 deg. 3cm grey clay seam from 6.98m - 7.01m (479.09 - 479.06)	480.04
6.60	97(54)		479.40
			479.09
		SANDSTONE, fine grained: green brown: average (3): highly weathered very thinly bedded, RD = 85 deg., closely fractured, RD =20 deg. to 90 deg., near vertical joint in sandstone, half of recovered core (lengthwise) is gray clay with roots	478.77
8.12	95(14)		478.52
		SHALE, some interbedded sandstone, very fine grained: gray and green brown: very soft to soft (1-2): highly weathered, laminated to very thinly bedded, RD = 85 deg. to 90 deg., very closely to moderately fractured, RD = 0 deg. to 90 deg. 1mm to 5mm light gray, clay seams throughout Roots in clay seams to 8.12m (477.95)	477.25
9.64	100(21)	SHALE, some interbedded sandstone, very fine grained: gray and green brown: very soft to soft (1-2): highly weathered, laminated to very thinly bedded, RD = 40 deg., closely fractured, RD = 0 deg. to 40 deg.	476.62
		SHALE and SANDSTONE: dark gray: average (3): highly weathered, laminated, RD is high angle to distorted, closely fractured, RD = 20 deg. to 50 deg., light brown clay throughout, contact at 9.45m (476.37)	476.37
11.16	53(0)		
		SANDSTONE, fine grained: dark brown gray: hard (4): highly weathered, indistinctly bedded, very closely fractured to broken, excess iron stains, well developed quartz on fractures from 11.07m - 11.16m (450.00- 474.91)	474.47
12.68	89(0)		473.37
		SHALE, little interbedded sandstone fragments, some as previous contact: olive gray: soft to average (2-3): highly weathered, bedding not evident until 12.47m (473.60), laminated, RD = 60 deg., closely fractured to broken, excess iron staining	474.47
12.68	89(0)	SHALE: olive gray and dark gray: soft (2): highly weathered to weathered, very thinly to laminated bedding, RD = 50 deg., closely to moderately fractured, RD = 0 deg. to 50 deg.	473.37
		SANDSTONE, very fine grained, trace laminated interbedded shale: light olive brown: soft to average (2-3): weathered, laminated bedding, RD = 50 deg., closely to moderately fractured, RD = 20 deg. to 50 deg.	472.59
14.20	100(28)	SHALE: light olive brown: soft (2): weathered, laminated, RD = 50 deg., closely fractured, RD = 10 deg. to 50 deg.	472.07
		SANDSTONE, very fine grained, trace laminated interbedded shale: olive brown: soft to average (2-3): weathered, laminated, RD = 50 deg., closely to moderately fractured, RD = 30 deg. to 50 deg.	471.77
15.72	100(51)	SANDSTONE, very fine grained: gray: soft (2): weathered, laminated, RD = 50 deg., closely to moderately fractured, RD = 30 deg. to 50 deg.	471.16
		SHALE, trace very fine sand: dark olive gray: soft (2): weathered, laminated, RD = 50 deg., moderately fractured, RD = 30 deg. to 50 deg.	470.97
17.24	93(31)	SANDSTONE, very fine grained: olive brown soft to average (2-3): weathered, laminated, RD = 50 deg., moderately fractured, RD = 20 deg. to 50 deg.	470.72
		SHALE: dark olive gray and green: soft (2): weathered, laminated, RD = 50 deg., closely fractured, RD = 25 deg. to 50 deg.	470.53
		SANDSTONE, fine grained, trace interbedded laminated siltstone: olive brown and brown gray: average to hard (3-4): weathered, indistinctly to closely bedded, RD = 50 deg., moderately fractured, RD = 40 deg. to 50 deg.	470.35
18.76	89(0)		469.80
		SANDSTONE, fine grained, trace interbedded laminated to very thin shale: brown gray: hard (4): highly weathered, indistinctly bedded, very closely fractured to broken, shale bedding appears to have RD=50 deg. to 60 deg. Quartz crystals on fractures Shale content increases from 17.40m - 18.00m (468.67 - 468.07), broken light brown, soft to average, fine to medium grained sandstone from 18.05m - 18.12m (468.02 - 467.95), broken	467.34
19.00	100(83)	SHALE: dark gray: soft to average (2-3): weathered, laminated bedding, RD = 50 deg., closely to moderately fractured, RD = 15 deg. to 50 deg.	467.07
		End of boring at 19.00m (467.07)	

▼ 11.37 21.5 HRS.

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 / 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

480.62 / B.O.F. — ELEV. BOTTOM OF FOOTING

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-60

MADE MJT DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD. DATE	SCALE 1:33.3	SHEET NO. 87

ABUTMENT 2

BB-50

STA. 199+244.0
11M. RT.

G.E. 484.66

A	B	VISUAL DESCRIPTION	ELEVATION	
0.45	24	SILT, little clay, little sand, trace sandstone fragments: light brown: very stiff: dry, -PL		
		SANDSTONE FRAGMENTS: brown: very dense: dry, NP		
		SANDSTONE, very fine to fine grained: brown to gray brown: average with extremely soft seams: weathered, indistinctly bedded, very closely to moderately fractured and broken, RD = 30 deg. to 60 deg., iron stains and slickensides on fractures Broken from 1.85m - 2.10m (482.81 - 482.56) High angle fracture with staining from 3.00m - 3.10m (481.66 - 481.56)	483.66	▼ 1.07 22 HRS.
1.52	A-N		483.14	
1.52	50/.0			
1.75	57(0)			
		SHALE, little very thinly interbedded sandstone, fine grained: olive brown with orange and gray: very soft to soft (1-2): highly weathered to weathered, laminated to very thinly bedded, RD = 26 deg., closely to moderately fractured, RD = 26 deg. to 40 deg.		
3.27	96(10)		481.39	
		SANDSTONE, fine grained: gray brown: average to hard (3-4): weathered to highly weathered, indistinctly bedded, closely fractured and broken, RD = 0 deg. to 40 deg. Extremely soft shale from 4.10m-4.15m (480.56 - 480.51) High angle fractures from 4.22m - 4.55m (480.44-480.11), RD = 60 deg. Vertically fractured with clay filling from 5.10m - 5.40m (479.56 - 479.26)	480.86	480.62 B.O.F.
4.79	97(8)		479.26	
		SHALE: orange and gray: extremely soft (0): decomposed bedding, deteriorated	478.86	
6.31	89(8)	SHALE, trace interbedded sandstone: orange brown and dark gray: very soft (1): highly weathered, laminated, RD = 64 deg., closely to moderately fractured, RD = 0 deg. to 30 deg., poorly preserved slickensides throughout	478.03	
		SANDSTONE, fine grained: brown: soft to average (2-3): weathered, indistinctly bedded, closely to moderately fractured, RD = 38 deg. to 52 deg.	477.71	
			477.36	
7.83	100(7)	SHALE: gray: soft (2): weathered, laminated, RD = 64 deg., closely fractured, RD = 0 deg. to 64 deg.		
		SANDSTONE, fine grained: light brown: average (3): weathered, indistinctly bedded, closely fractured, RD = 52 deg. to 60 deg., fractures are bi-directional and lined with clay		
		SHALE, little laminated to very thinly interbedded sandstone: olive brown: very soft to soft (1-2): weathered, laminated RD = 36 deg., very closely to moderately fractured, RD = 36 deg.	475.81	
9.35	89(18)			
		SANDSTONE, very fine grained, trace laminated shale: brown gray: soft to average (2-3): weathered, indistinctly bedded to laminated, RD = 32 deg., closely to moderately fractured, RD = 0 deg. to 40 deg.		
		SHALE, trace interbedded sandstone: gray and olive brown: very soft to soft (1-2): weathered, laminated, RD = 32 deg., closely fractured, RD = 32 deg.		
10.87	100(46)		473.79	
		SANDSTONE, very fine grained: gray brown: average (3): weathered, indistinctly bedded, closely to moderately fractured, RD = 0 deg. to 35 deg. to 60 deg.	473.16	
		SHALE, trace sandy: orange brown and olive: very soft (1): highly weathered, laminated, RD = 30 deg., closely to moderately fractured, RD = 30 deg.	472.71	
12.39	100(19)		472.44	
		SHALE, trace to little interbedded sandstone: olive brown and gray: very soft to soft (1-2): weathered, laminated, RD = 31 deg., closely to moderately fractured, RD = 31 deg.	472.06	
		SANDSTONE, fine grained, trace interbedded shale: brown to gray brown: average (3) with soft (2): weathered, indistinctly bedded to laminated, RD = 31 deg., closely to moderately fractured, RD = 0 deg. to 60 deg. High angle fracture with iron staining from 14.07m - 14.22m (470.59 - 470.44), RD = 60 deg.	470.99	
13.91	100(30)		470.44	
		SHALE: orange and brown: extremely soft (0): decomposed, bedding deteriorated	470.16	
		SHALE, trace interbedded siltstone: dark gray and brown gray: very soft to soft (1-2): weathered, laminated, RD = 29 deg., closely to moderately fractured, RD = 29 deg. with iron staining	469.23	
15.43	97(18)			

End of boring at 15.43m (469.23)

BB-51

STA. 199+244.0
4.0M. LT.

G.E. 484.62

A	B	VISUAL DESCRIPTION	ELEVATION	
0.45	12	SANDSTONE FRAGMENTS, little sand, trace silt: red and brown: loose: dry to moist, NP, trace roots	483.62	
		SILT, little sandstone fragments, trace fine sand: light brown: very dense: dry, NP		
1.50	A-N			
1.58	50/.08	SANDSTONE, little silt, little clay: red and light brown and dark gray: hard (4): highly weathered, indistinctly bedded RD destroyed, broken	483.04	
		SHALE FRAGMENTS and CLAY: olive brown and light brown: very hard: wet, +PL, water could be drill water	482.04	
2.58	23(0)			
2.68	50/.10		481.94	
3.02	71(0)	SANDSTONE, fine grained, little shale fragments: dark gray and olive brown: hard (4): highly weathered, very thinly bedded, RD = 50 deg., very closely fractured to broken, RD = 50 deg. Spoon bounces at 4.02m (480.60)		
4.02	25(0)		480.60	480.62 B.O.F.
4.02	50/.0	SANDSTONE, fine grained: dark gray brown: hard (4): highly weathered, very thinly bedded, RD destroyed, broken Trace poorly developed quartz crystals in fractures		
5.02	17(0)		479.60	
5.02	50/.0	SHALE, trace to little interbedded siltstone: light gray and olive gray and orange: very soft to soft (1-2): highly weathered to weathered, laminated to very thinly bedded, RD = 50 deg., very closely to moderately fractured, RD = 0 deg to 50 deg. Laminated sandstone interbeds from 6.57m - 6.67m (478.05 - 477.95)		
6.07	100(25)		477.95	
		SANDSTONE, very fine to fine grained, trace gray shale interclasts: olive brown to gray: soft to average (2-3): highly weathered, indistinctly to laminated bedding, RD = 55 deg., very closely to closely fractured, RD = 0 deg. to 65 deg.		
9.12	74(0)		475.38	
		SANDSTONE, very fine to fine grained, trace gray shale interclasts: gray: soft to average (2-3): highly weathered, laminated bedding, RD = 55 deg., broken fractures, RD = 0 deg. to 90 deg. Approximately 3cm of very soft gray shale and gray clay in end of run, possible contact at higher elevation		
12.17	19(0)			▼ 11.89 15.5 HRS.
12.23	50/.06		472.39	
		SHALE: olive gray: very soft to soft (1-2): highly weathered to weathered, laminated to very thinly bedded, RD = 60 deg. Gray very fine grained sandstone with bi-directional fractures from 13.06m - 13.12m (471.58 - 471.50)		
13.23	94(23)			
		SANDSTONE, fine grained: olive brown: average to hard (3-4): highly weathered, indistinctly bedded, very closely to moderately fractured, RD = 0 deg. to 60 deg.	470.88	
			470.38	
		SHALE, trace interbedded sandstone, very fine grained: gray and olive brown: soft to average (2-3): weathered, laminated to very thinly bedded, RD = 60 deg., closely to moderately fractured, RD = 30 deg. to 60 deg.		
15.23	81(38)		469.39	

End of boring at 15.23m (469.39)

NOTES

COLUMN "A" DENOTES DEPTH OF LOWER LIMIT OF SPOON SAMPLE, OR BOTTOM OF CORE RUN IN METERS.

COLUMN "B" DENOTES BLOWS FOR LAST .30 METERS ON SPLIT SPOON SAMPLER, OR PERCENT CORE RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
A-N DENOTES AUGER ADVANCED BORING, NO SAMPLE.
W-N DENOTES BOREHOLE CUTTINGS WASHED, NO SAMPLE.

ALL ELEVATIONS, STATIONS AND OFFSETS ARE IN METERS.

RD DENOTES RELATIVE DIP

ROCK HARDNESS BASED ON FIELD DETERMINATION IN ACCORDANCE WITH HCSI SYSTEM.

GE DENOTES GROUND ELEVATION.

▼ 5.33 / 16.5 HRS. — WATER LEVEL OBSERVED AT 5.33 METER DEPTH, 16.5 HOURS AFTER COMPLETION OF THE BORING.

480.62 / B.O.F. — ELEV. BOTTOM OF FOOTING

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO.	FEDERAL PROJ. NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.VA.	5	X316-H-101,92 05	APD-0484(124) CTC	2001	HARDY	129	146

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

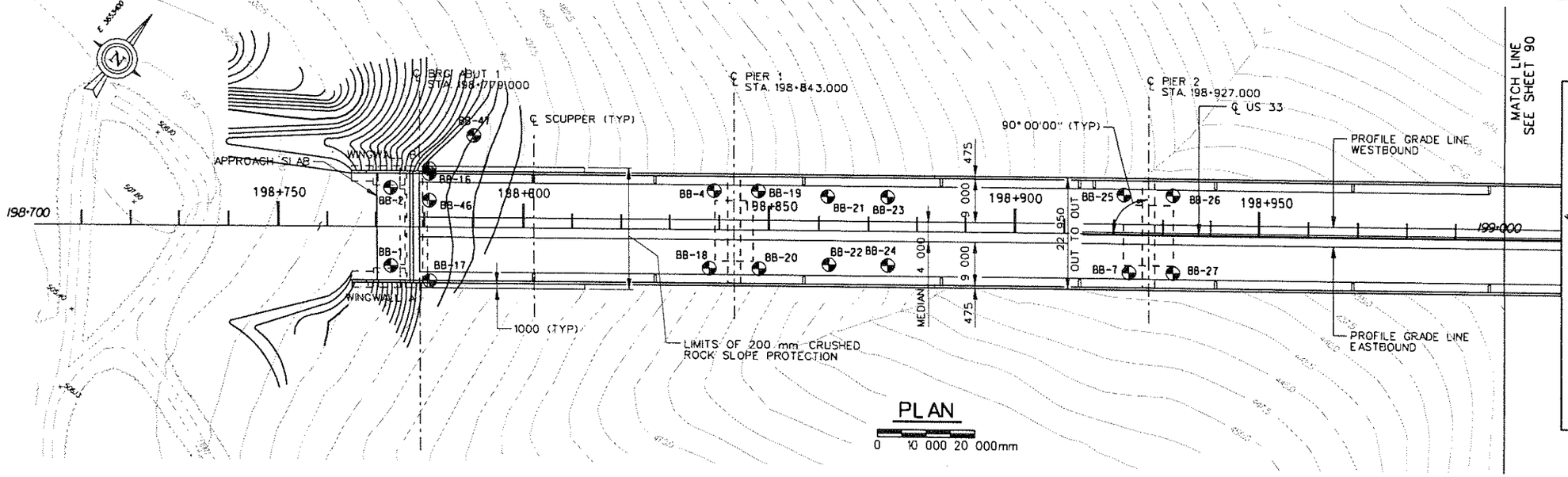
US 33 OVER
CLIFFORD HOLLOW

SOIL TEST BORINGS

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-60

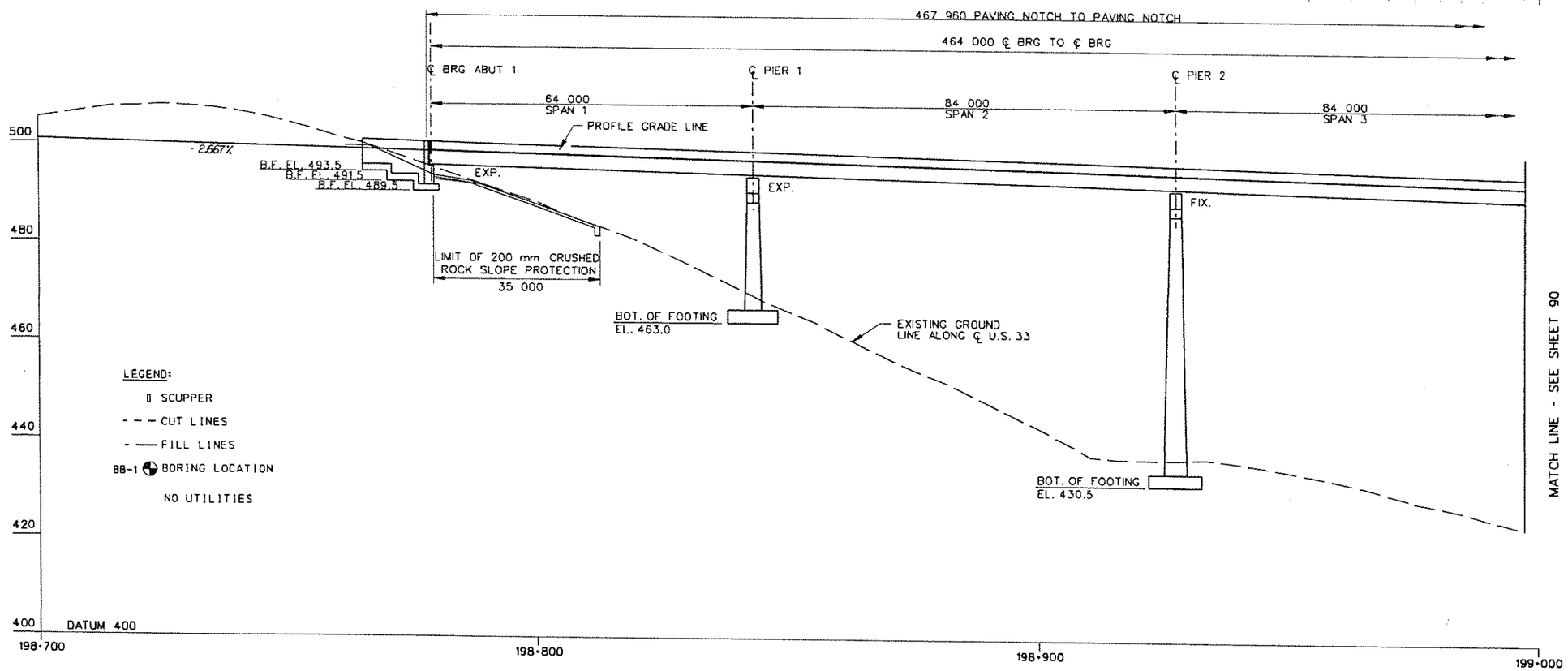
MADE MJT DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD ____ DATE ____	SCALE 1:33.3	SHEET NO. 88

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO	FEDERAL PROJ. NO	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.A.	5	X315-H-101.92 05	APD-0484(124) CTC	2001	HARDY	130	146



PLAN

0 10 000 20 000mm



LEGEND:

- ▯ SCUPPER
- - - - CUT LINES
- ——— FILL LINES
- BB-1 ⊕ BORING LOCATION

NO UTILITIES

ELEVATION

0 10 000 20 000mm

ALL HORIZONTAL DIMENSIONS ARE IN MILIMETERS.
ALL ELEVATIONS AND STATIONING ARE IN METERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

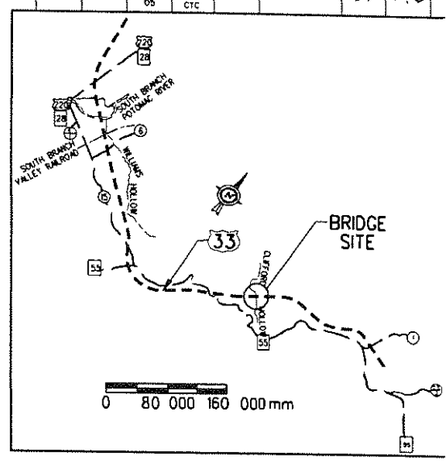
US 33 OVER CLIFFORD HOLLOW

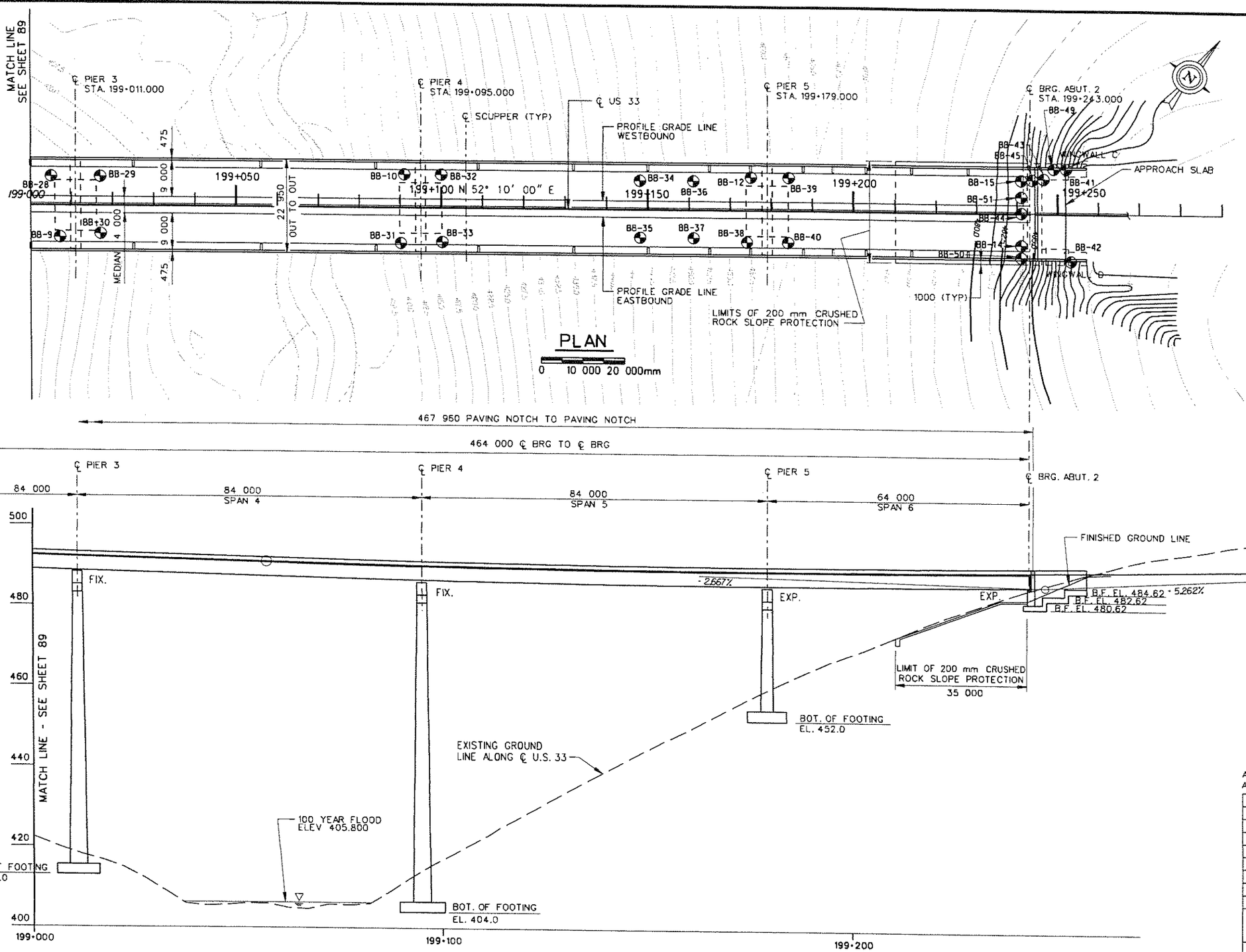
SITUATION PLAN

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-500

MADE SM	DATE 7-97	CKD KJW	DATE 7-97	BRIDGE NO. 4249
TRCD.	DATE	SCALE AS SHOWN		SHEET NO. 89

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJ. NO	FEDERAL PROJ. NO	FISCAL YEAR	COUNTY	SHEET NO	TOTAL SHEETS
W.VA.	5	X348-H-101.92 00	APD-0484(124) CTC	2001	HARDY	131	146





LEGEND:

- ℄ SCUPPER
- - - - CUT LINES
- —— FILL LINES
- 88-1 BORING LOCATION
- NO UTILITIES

ALL HORIZONTAL DIMENSIONS ARE IN MILIMETERS.
ALL ELEVATIONS AND STATIONING ARE IN METERS.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

US 33 OVER CLIFFORD HOLLOW

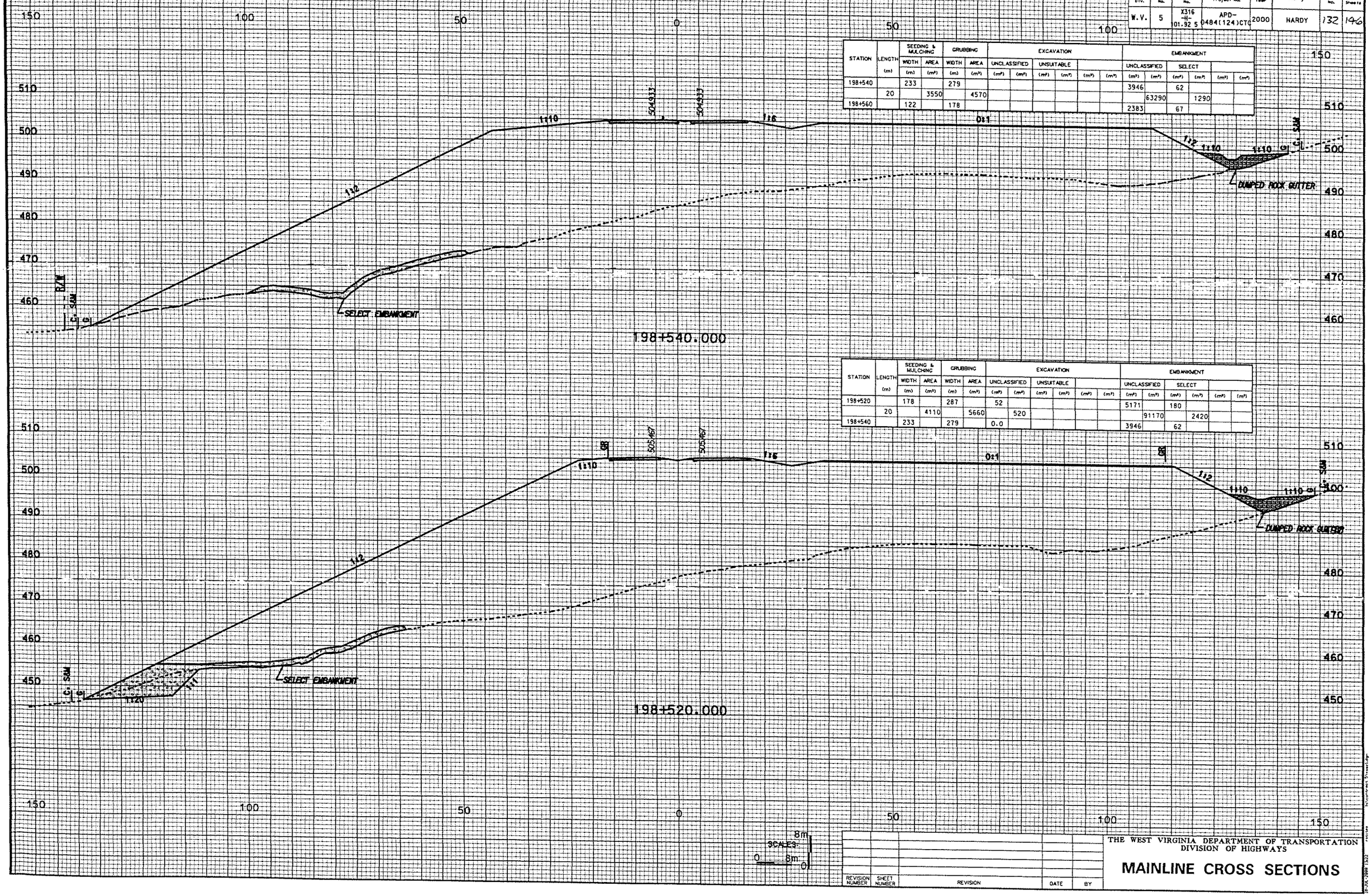
SITUATION PLAN

HDR ENGINEERING, INC.
CONSULTING ENGINEERS
PITTSBURGH, PA. (412) 497-800

MADE SM DATE 7-97	CKD KJW DATE 7-97	BRIDGE NO. 4249
TRCD DATE	SCALE AS SHOWN	SHEET NO. 90

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 H 101.92 S	APD-0484(124)CTC	2000	HARDY	132	146

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	GRUBBING WIDTH (m)	GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION (m³)	UNSUITABLE (m³)	(m³)	(m³)	(m³)	EMBANKMENT UNCLASSIFIED (m³)	(m³)	SELECT (m³)	(m³)	(m³)	(m³)
198+540		233		279								3946		62			
	20		3550		4570								63290		1290		
198+560		122		178								2383		67			



STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	GRUBBING WIDTH (m)	GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION (m³)	UNSUITABLE (m³)	(m³)	(m³)	(m³)	EMBANKMENT UNCLASSIFIED (m³)	(m³)	SELECT (m³)	(m³)	(m³)	(m³)
198+520		178		287		52						5171		180			
	20		4110		5660		520						91170		2420		
198+540		233		279		0.0						3946		62			

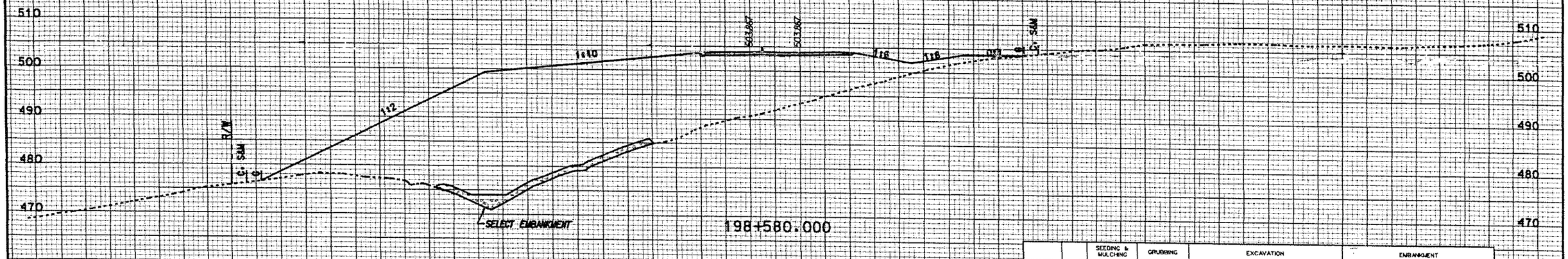
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

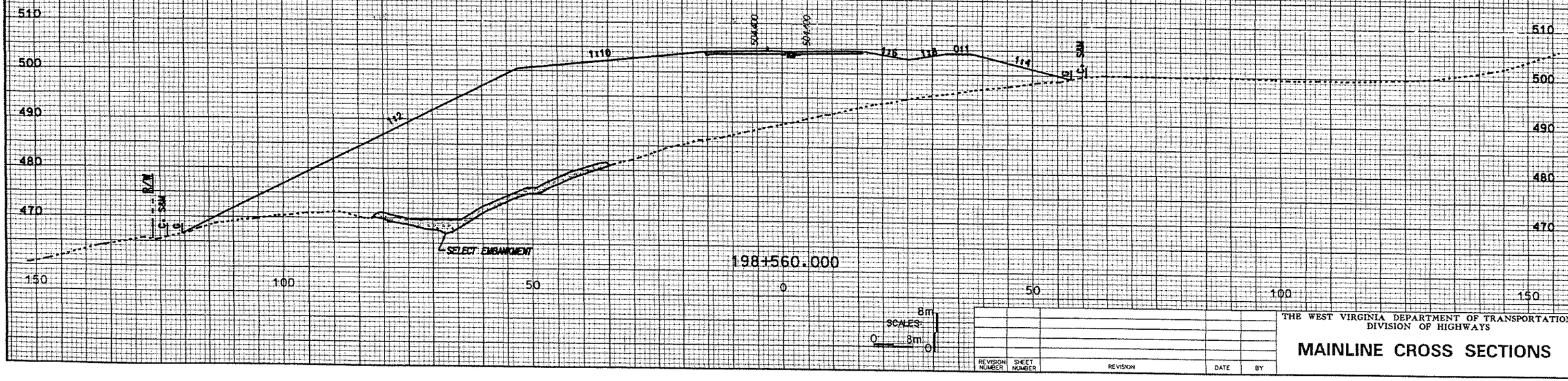
MAINLINE CROSS SECTIONS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 -H- 01-92 5	APD- 0484(124)CTC	2000	HARDY	133	196

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	GRUBBING WIDTH (m)	GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m²)	EXCAVATION UNSUITABLE (m³)	(m²)	(m³)	EMBANKMENT UNCLASSIFIED (m²)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m²)	EMBANKMENT SELECT (m³)	(m²)	(m³)
198+580		101		154								1813		62			
	20		1710		2680								32340		1390		
198+600		70		114								1421		77			



STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	GRUBBING WIDTH (m)	GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m²)	EXCAVATION UNSUITABLE (m²)	(m²)	(m³)	EMBANKMENT UNCLASSIFIED (m²)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m²)	EMBANKMENT SELECT (m³)	(m²)	(m³)
198+560		122		178						2383		67			
	20		2230		3320						41960		1290		
198+580		101		154						1813		62			



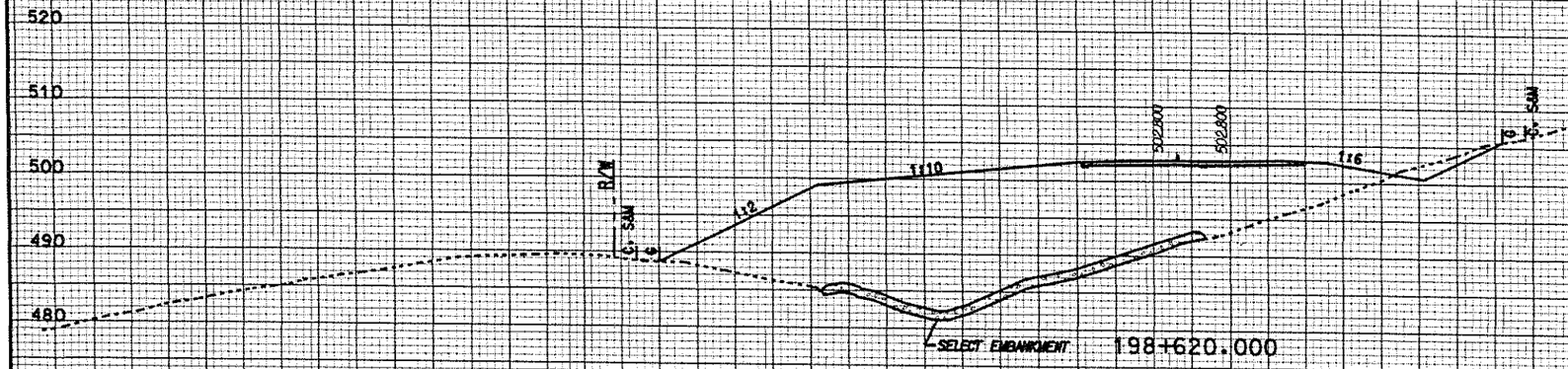
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

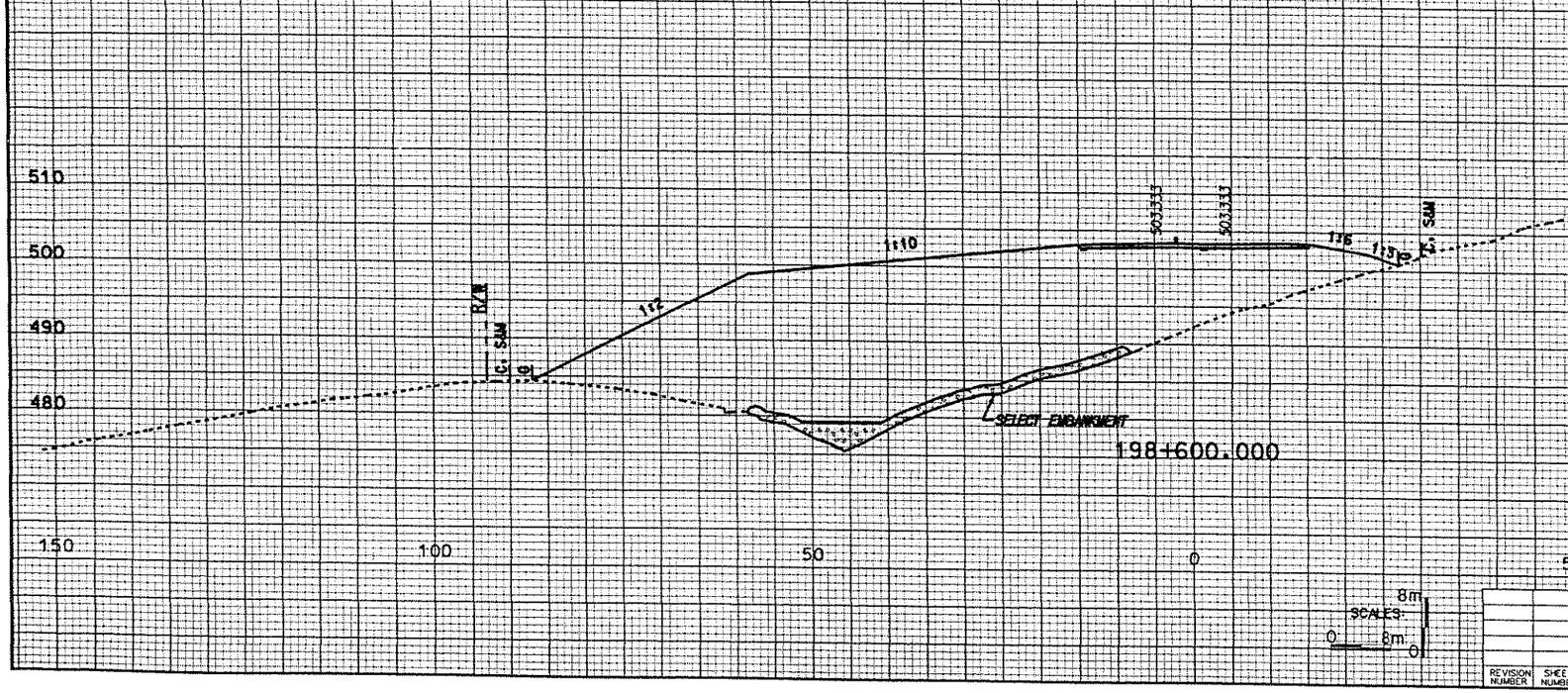
MAINLINE CROSS SECTIONS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 -H- 101.92 S	APD-0484(124)CTC	2000	HARDY	137	196

STATION	LENGTH	SEEDING & MULCHING		GRUBBING		EXCAVATION						EMBANKMENT					
		WIDTH	AREA	WIDTH	AREA	UNCLASSIFIED		UNSUITABLE				UNCLASSIFIED		SELECT			
	(m)	(m)	(m²)	(m)	(m²)	(m³)	(m²)	(m³)	(m²)	(m³)	(m²)	(m³)	(m²)	(m³)	(m²)	(m³)	(m²)
198+620		64		111		15.0						1012		62			
	20		1320		2110		420						15580		1040		
198+640		68		100		27.0						546		42			



STATION	LENGTH	SEEDING & MULCHING		GRUBBING		EXCAVATION						EMBANKMENT					
		WIDTH	AREA	WIDTH	AREA	UNCLASSIFIED		UNSUITABLE				UNCLASSIFIED		SELECT			
	(m)	(m)	(m²)	(m)	(m²)	(m³)	(m²)	(m³)	(m²)	(m³)	(m²)	(m³)	(m²)	(m³)	(m²)	(m³)	(m²)
198+600		70		114		0.0						1421		77			
	20		1340		2250		150						24330		1390		
198+620		64		111		15.0						1012		62			



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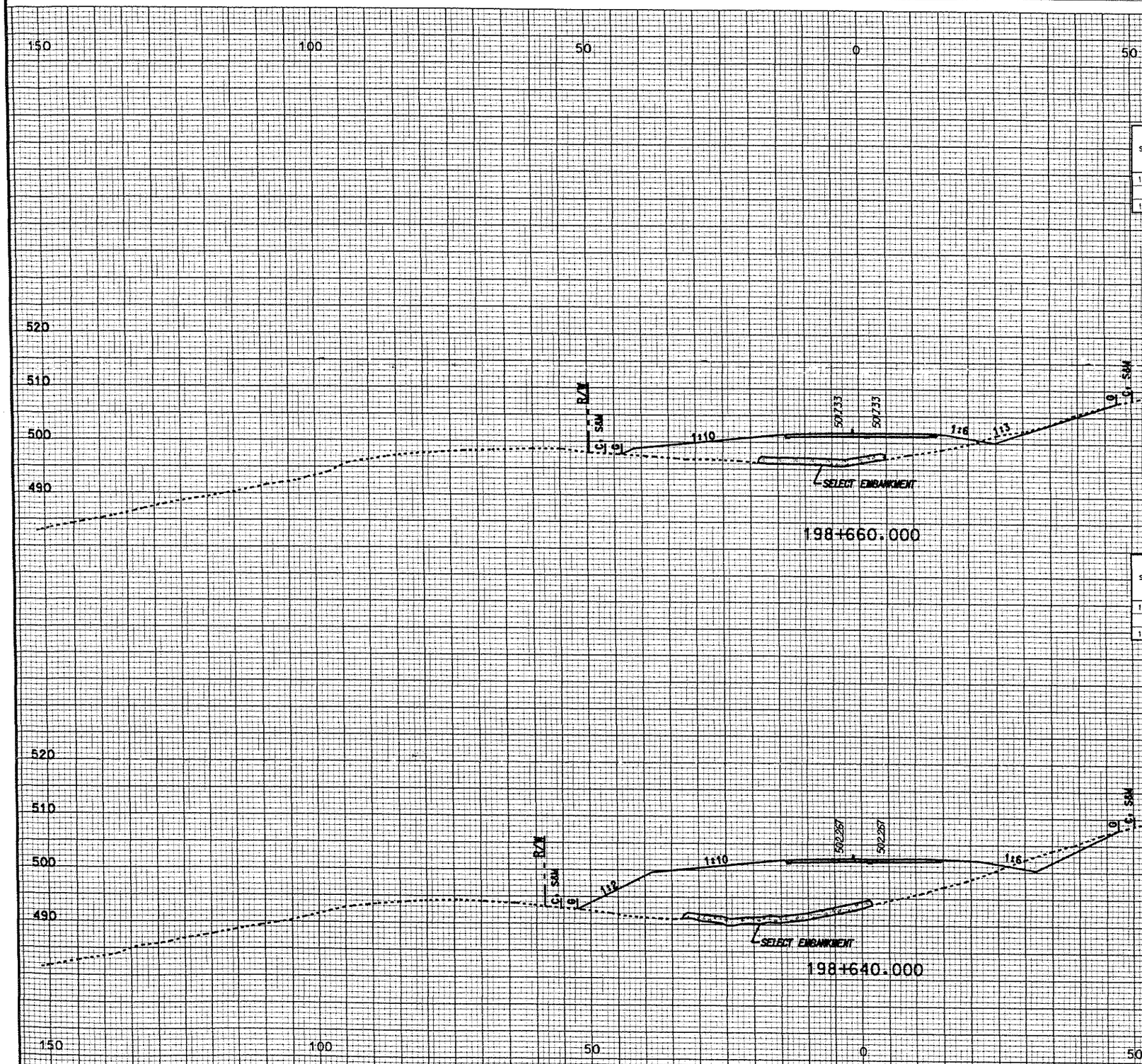
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MAINLINE CROSS SECTIONS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 -H- 01.92 5	APD-0484(124)CTC	2000	HARDY	135	146



STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	GRUBBING WIDTH (m)	GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	(m³)	(m³)	(m³)	(m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	(m²)	(m²)
198+660		64		91		11.0						211		28			
	20		1090		1530		690						2110		280		
198+680		45		62		58.0						0		0			

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	GRUBBING WIDTH (m)	GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	(m³)	(m³)	(m³)	(m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	(m²)	(m²)
198+640		68		100		27.0						546		42			
	20		1320		1910		380						7570		700		
198+660		64		91		11.0						211		28			

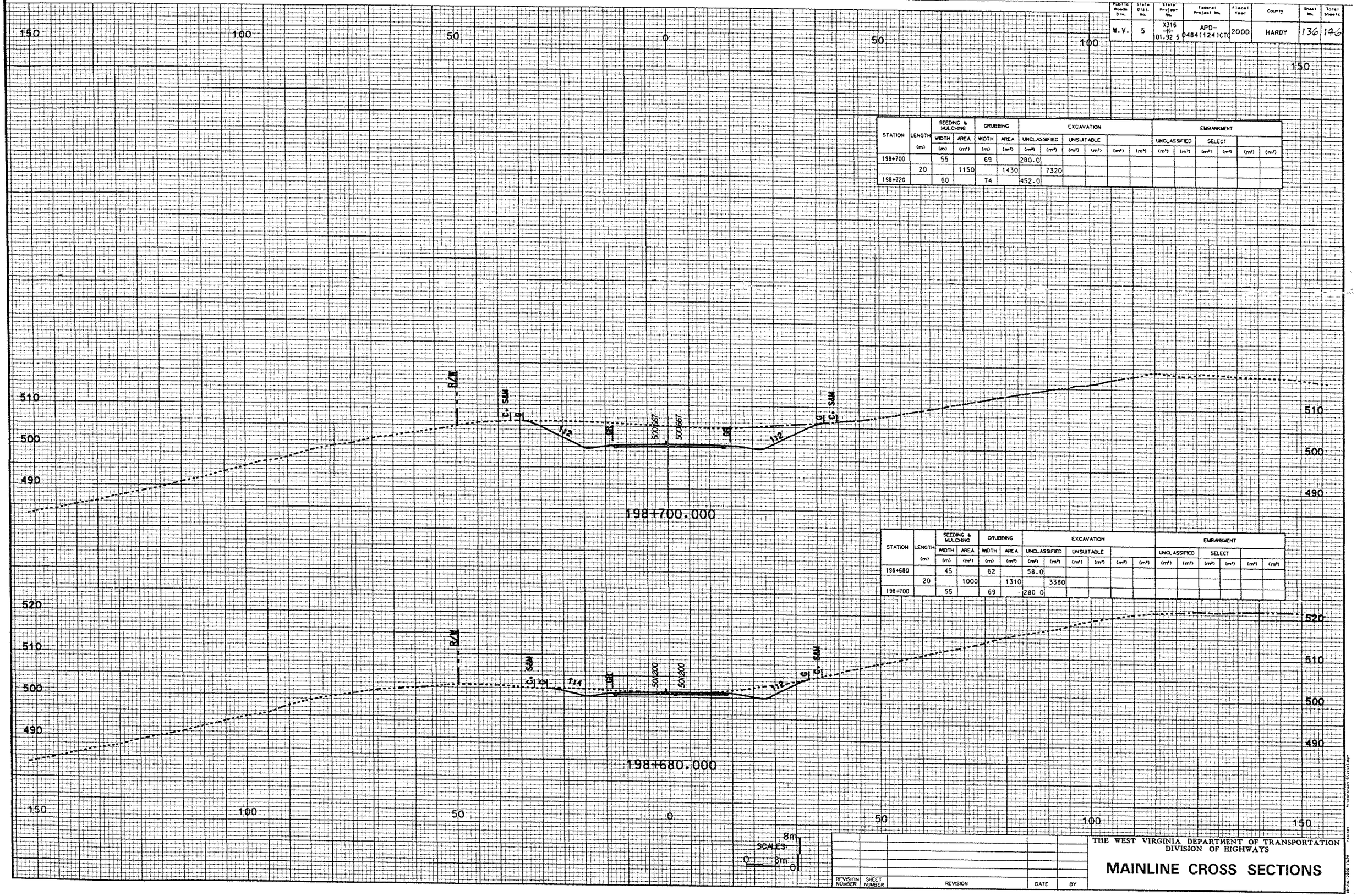
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MAINLINE CROSS SECTIONS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H-101.92 S	APD-0484(124)CTC	2000	HARDY	136	146

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	GRUBBING WIDTH (m)	GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	(m³)	(m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	(m³)	(m³)
198+700		55		69		280.0											
	20		1150		1430		7320										
198+720		60		74		452.0											



STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	GRUBBING WIDTH (m)	GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	(m³)	(m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	(m³)	(m³)
198+680		45		62		58.0											
	20		1000		1310		3380										
198+700		55		69		280.0											

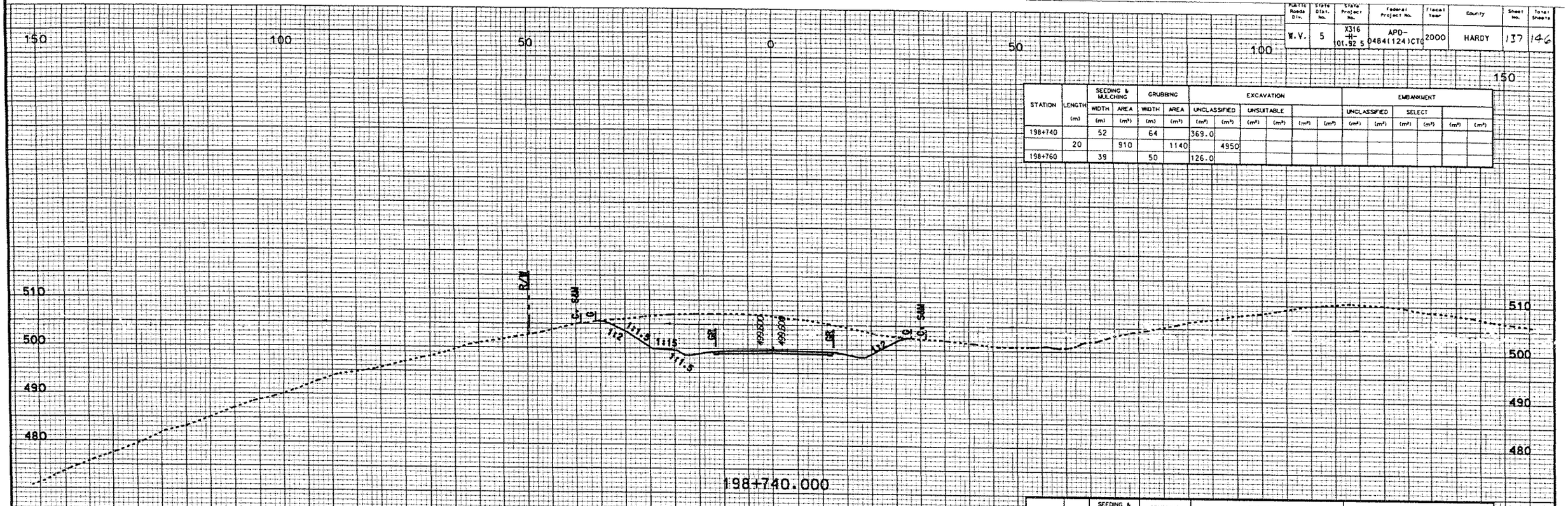
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

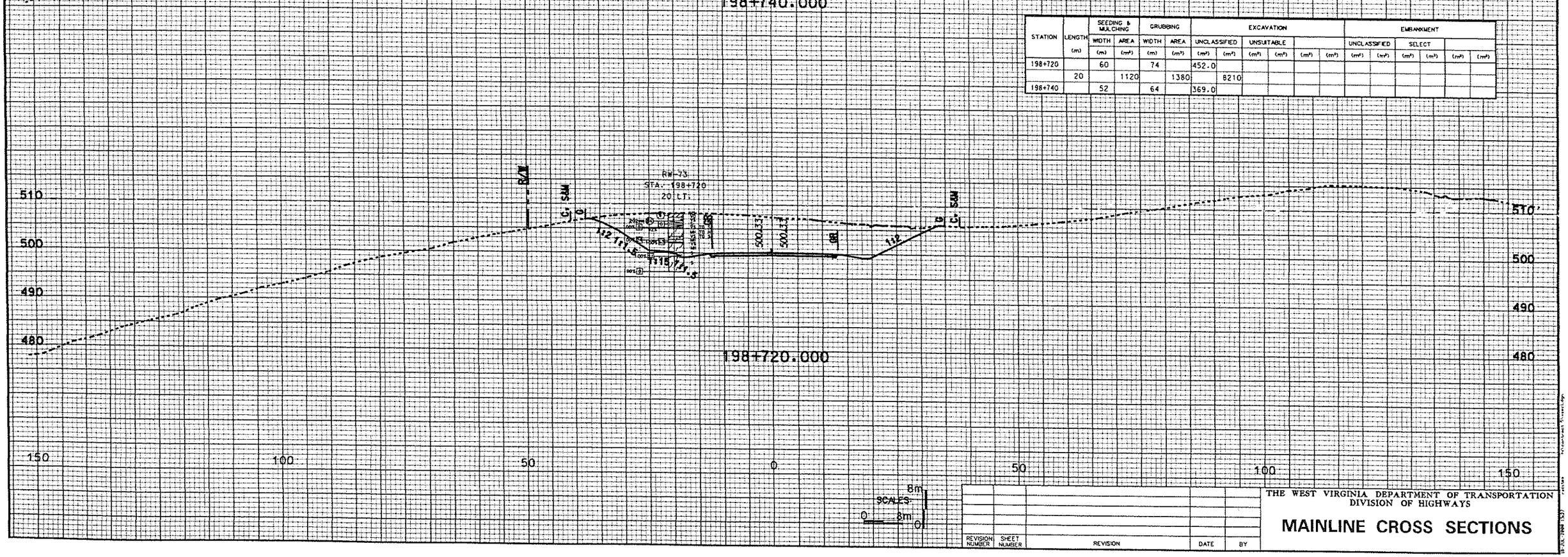
MAINLINE CROSS SECTIONS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H-01.92 5	APD-0484(124)CTC	2000	HARDY	137	146

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	GRUBBING WIDTH (m)	GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m²)	EXCAVATION UNSUITABLE (m³)	EXCAVATION (m²)	EXCAVATION (m³)	EMBANKMENT UNCLASSIFIED (m²)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m²)	EMBANKMENT SELECT (m³)	EMBANKMENT (m²)	EMBANKMENT (m³)
198+740		52		64		369.0											
	20		910		1140		4950										
198+760		39		50		126.0											



STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	GRUBBING WIDTH (m)	GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m²)	EXCAVATION UNSUITABLE (m³)	EXCAVATION (m²)	EXCAVATION (m³)	EMBANKMENT UNCLASSIFIED (m²)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m²)	EMBANKMENT SELECT (m³)	EMBANKMENT (m²)	EMBANKMENT (m³)
198+720		60		74		452.0											
	20		1120		1380		8210										
198+740		52		64		369.0											



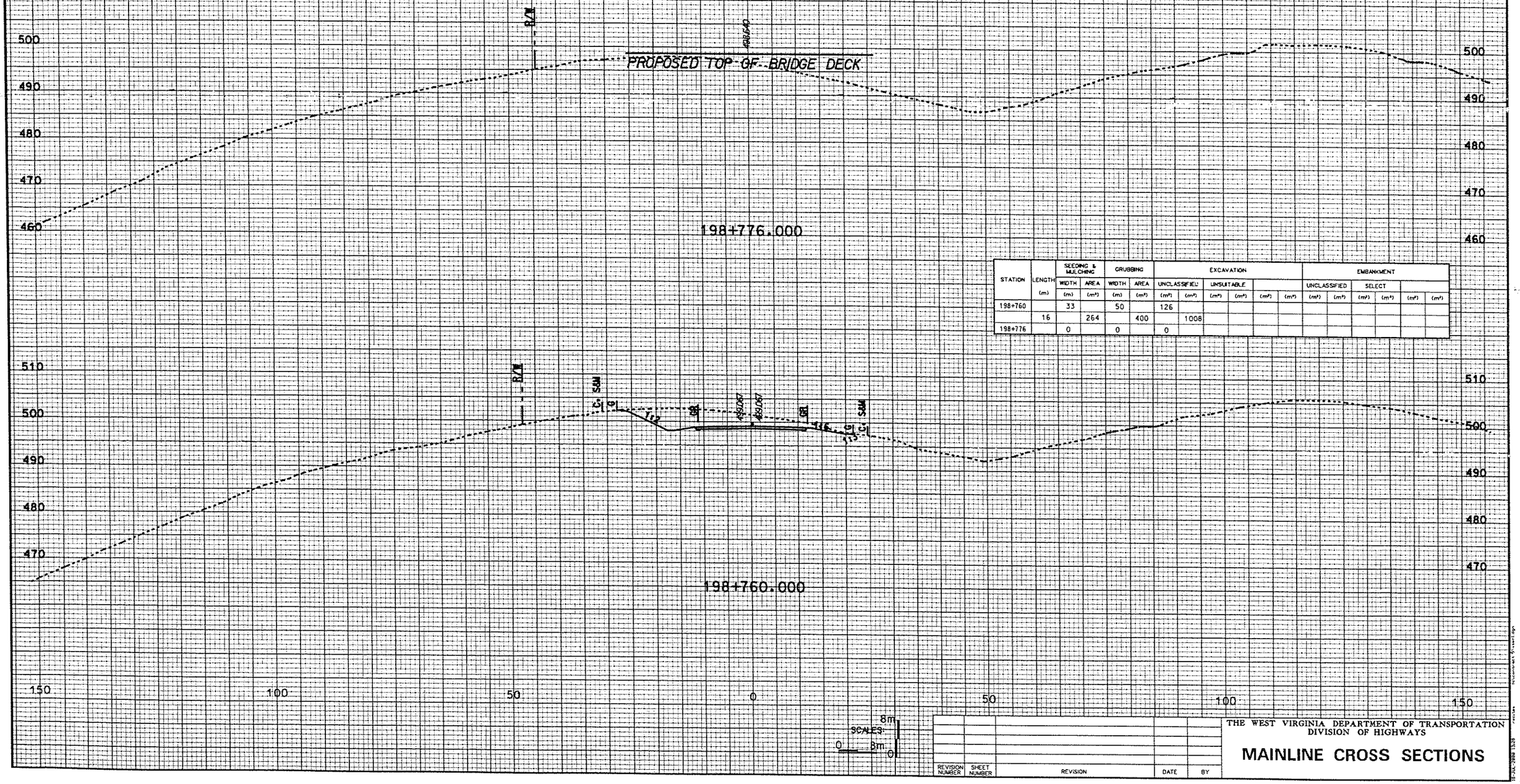
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MAINLINE CROSS SECTIONS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 -H 101.92 5	APD-0484(124)CTC	2000	HARDY	138	146

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	GRUBBING WIDTH (m)	GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	(m³)	(m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	(m³)	(m³)
198+776																	
	33																
198+809																	



STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	GRUBBING WIDTH (m)	GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	(m³)	(m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	(m³)	(m³)
198+760		33		50		126											
	16		264		400		1008										
198+776		0		0		0											

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THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
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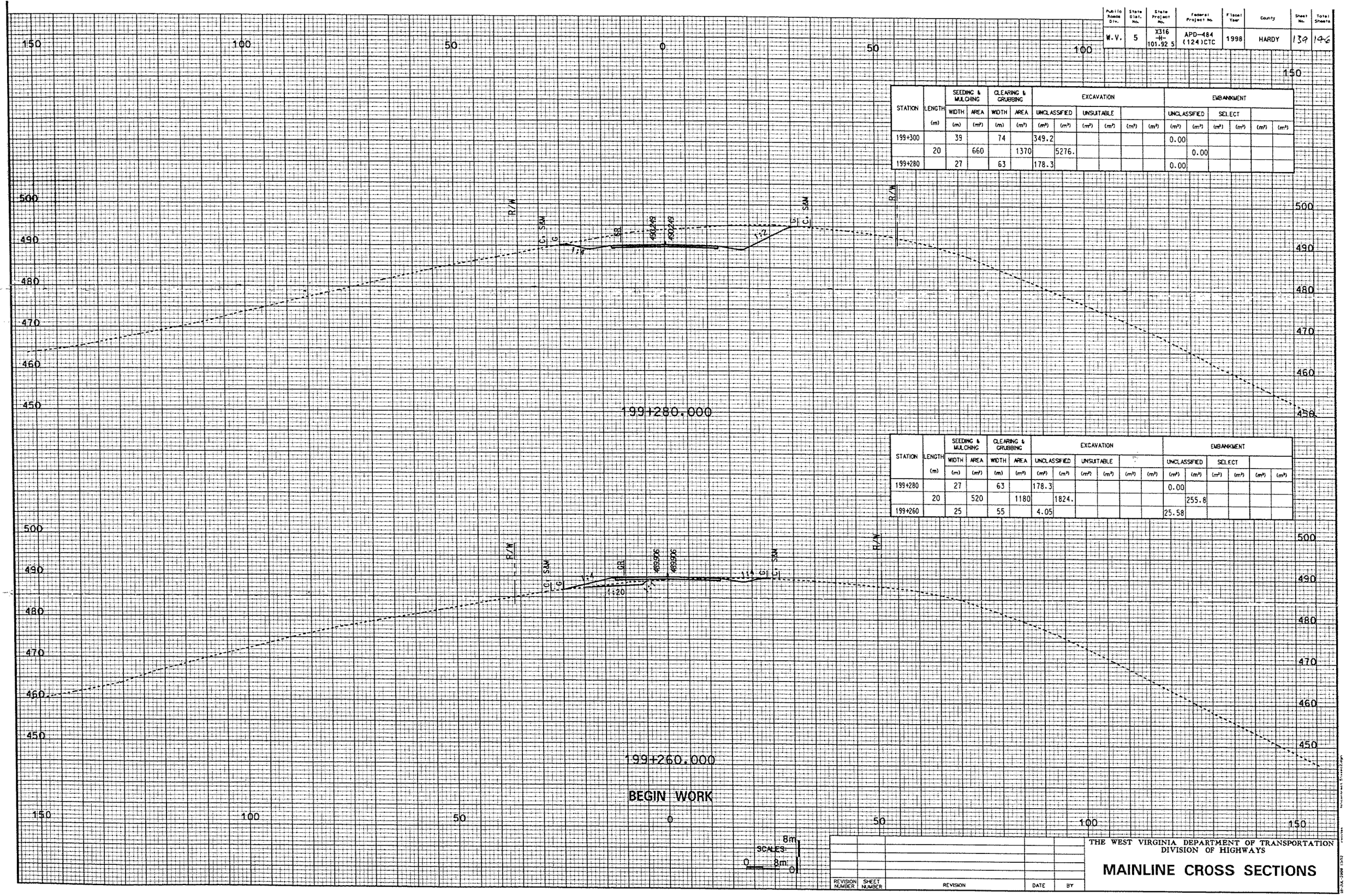
MAINLINE CROSS SECTIONS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316-H-101.92 S	APD-484 (124)CTC	1998	HARDY	139	146



STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION (m³)	EXCAVATION (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT (m³)	EMBANKMENT (m³)
199+300		39		74		349.2						0.00					
	20		660		1370		5276.						0.00				
199+280		27		63		178.3						0.00					

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION (m³)	EXCAVATION (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT (m³)	EMBANKMENT (m³)
199+280		27		63		178.3						0.00					
	20		520		1180		1824.						255.8				
199+260		25		55		4.05						25.58					

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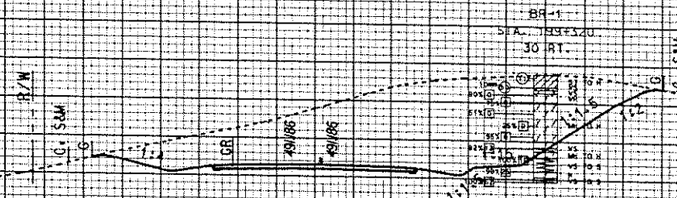
MAINLINE CROSS SECTIONS

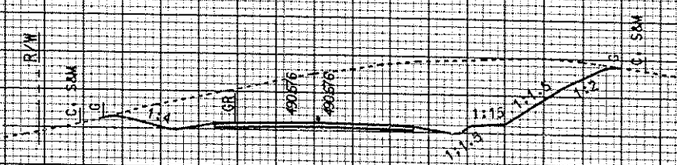
Public Roads Div.	State Distr. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 -H- 101.92 5	APD-484 (124)CTC	1998	HARDY	149	156

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	(m³)	(m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	(m³)	(m³)
199+340		48		83		577.0						0.00					
	20		950		1630		10512						0.00				
199+320		47		80		474.1						0.00					



199+320.000

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	(m³)	(m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	(m³)	(m³)
199+320		47		80		474.1						0.00					
	20		860		1540		8234.						0.00				
199+300		39		74		349.2						0.00					



199+300.000

SCALES: 8m 0 8m 0

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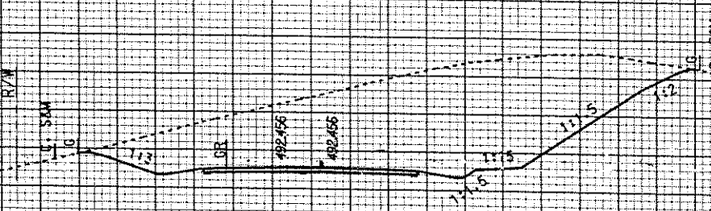
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MAINLINE CROSS SECTIONS

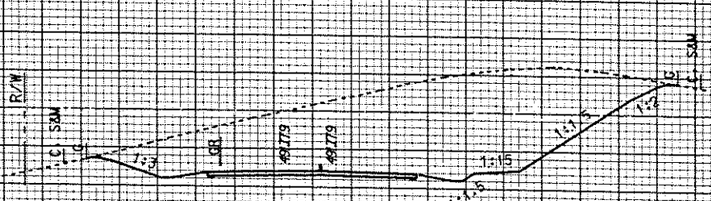
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 -H- 101.92 5	APD-484 (124)CTC	1998	HARDY	141	146

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	(m³)	(m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	(m³)	(m³)
199+380		52		86		645.3						0.00					
	20		1050		1730		12920						0.00				
199+360		53		87		646.6						0.00					



199+360.000

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	(m³)	(m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	(m³)	(m³)
199+360		53		87		646.6						0.00					
	20		1010		1700		12237						0.00				
199+340		48		83		577.0						0.00					



199+340.000

SCALES: 8m 0 8m 0

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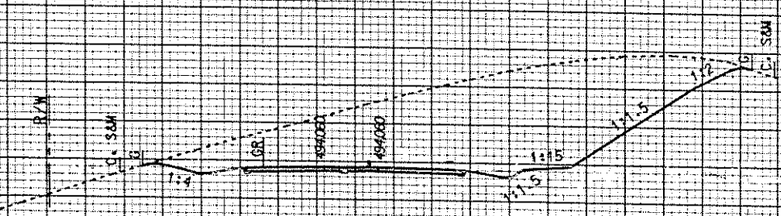
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MAINLINE CROSS SECTIONS

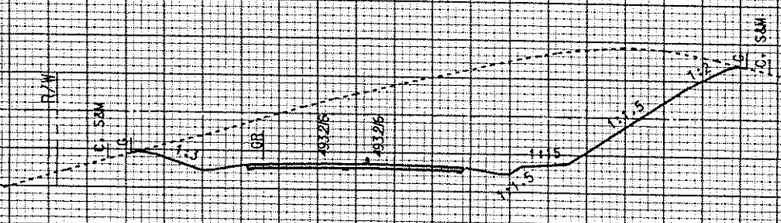
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 -H- 101.92 S	APD-484 (124)CTC	1998	HARDY	142	146

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION (m³)	EXCAVATION (m³)	EXCAVATION (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT (m³)	EMBANKMENT (m³)	EMBANKMENT (m³)
199+420		53		89		503.6						0.00					
	20		1050		1740		10181						0.00				
199+400		52		85		514.5						0.00					



199+400.000

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION (m³)	EXCAVATION (m³)	EXCAVATION (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT (m³)	EMBANKMENT (m³)	EMBANKMENT (m³)
199+400		52		85		514.5						0.00					
	20		1040		1710		11599						0.00				
199+380		52		86		645.3						0.00					



199+380.000

SCALES: 8m 0 8m 0

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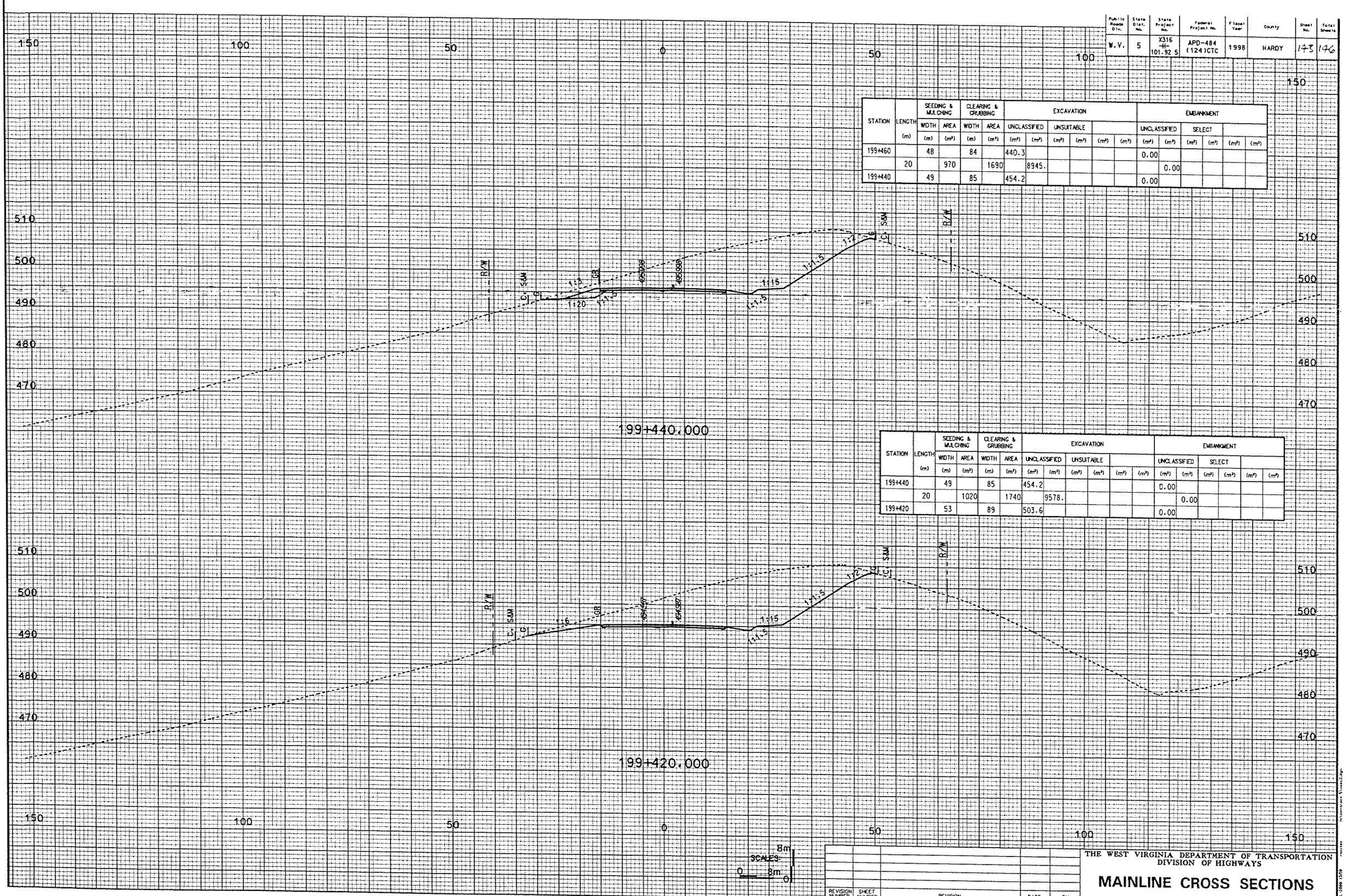
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MAINLINE CROSS SECTIONS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 H-101.92 5	APD-484 (124)CTC	1998	HARDY	143	146

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION (m³)	EXCAVATION (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT (m³)	EMBANKMENT (m³)
199+460		48		84		440.3						0.00					
	20		970		1690		8945.						0.00				
199+440		49		85		454.2						0.00					



STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION (m³)	EXCAVATION (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT (m³)	EMBANKMENT (m³)
199+440		49		85		454.2						0.00					
	20		1020		1740		9578.						0.00				
199+420		53		89		503.6						0.00					

SCALES: 8m 0 8m 0

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THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
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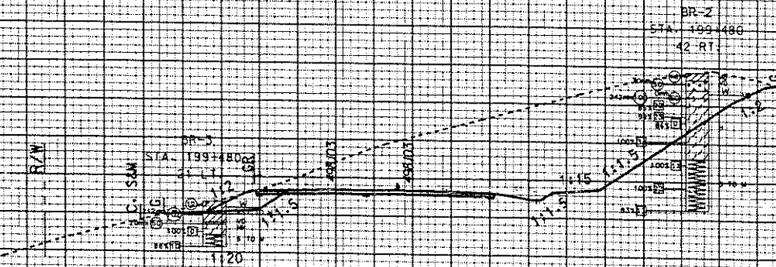
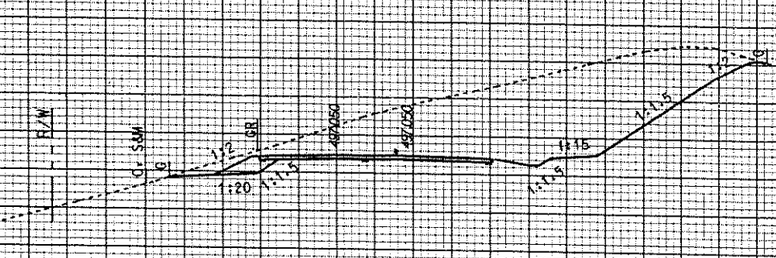
MAINLINE CROSS SECTIONS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 -H- 101.92 5	APD-484 (124)CTC	1998	HARDY	144	146

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m²)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m²)	EXCAVATION (m³)	EXCAVATION (m²)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m²)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m²)	EMBANKMENT (m³)	EMBANKMENT (m²)
199+500		59		94		467.5						0.00					
	20		1090		1810		8767.						0.00				
199+480		50		87		409.2						0.00					



STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m²)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m²)	EXCAVATION (m³)	EXCAVATION (m²)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m²)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m²)	EMBANKMENT (m³)	EMBANKMENT (m²)
199+480		50		87		409.2						0.00					
	20		980		1710		8496.						0.00				
199+460		48		84		440.3						0.00					



SCALES: 8m 0 8m 0

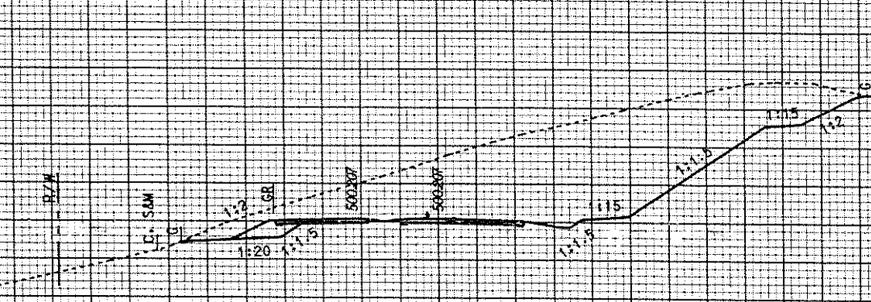
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MAINLINE CROSS SECTIONS

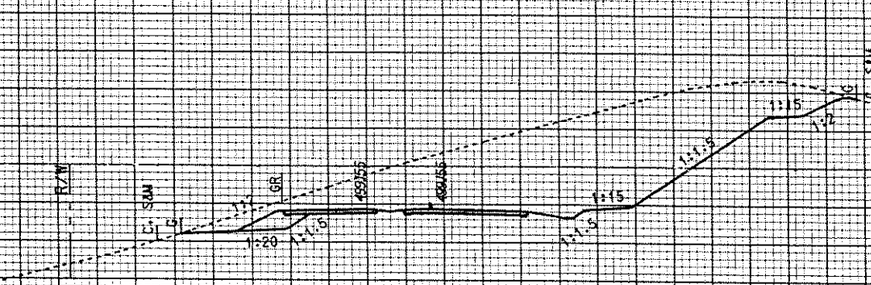
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 -H- 101.92 S	APD-484 (124)CTC	1998	HARDY	145	146

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION (m³)	EXCAVATION (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT (m³)	EMBANKMENT (m³)
199+540		66		99		469.6						0.00					
	20		1280		1950		9739						0.00				
199+520		62		96		504.2						0.00					



199+520.000

STATION	LENGTH (m)	SEEDING & MULCHING WIDTH (m)	SEEDING & MULCHING AREA (m²)	CLEARING & GRUBBING WIDTH (m)	CLEARING & GRUBBING AREA (m²)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNCLASSIFIED (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION UNSUITABLE (m³)	EXCAVATION (m³)	EXCAVATION (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT UNCLASSIFIED (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT SELECT (m³)	EMBANKMENT (m³)	EMBANKMENT (m³)
199+520		62		96		504.2						0.00					
	20		1210		1900		9717.						0.00				
199+500		59		94		467.5						0.00					



199+500.000

SCALES: 8m 0 8m 0

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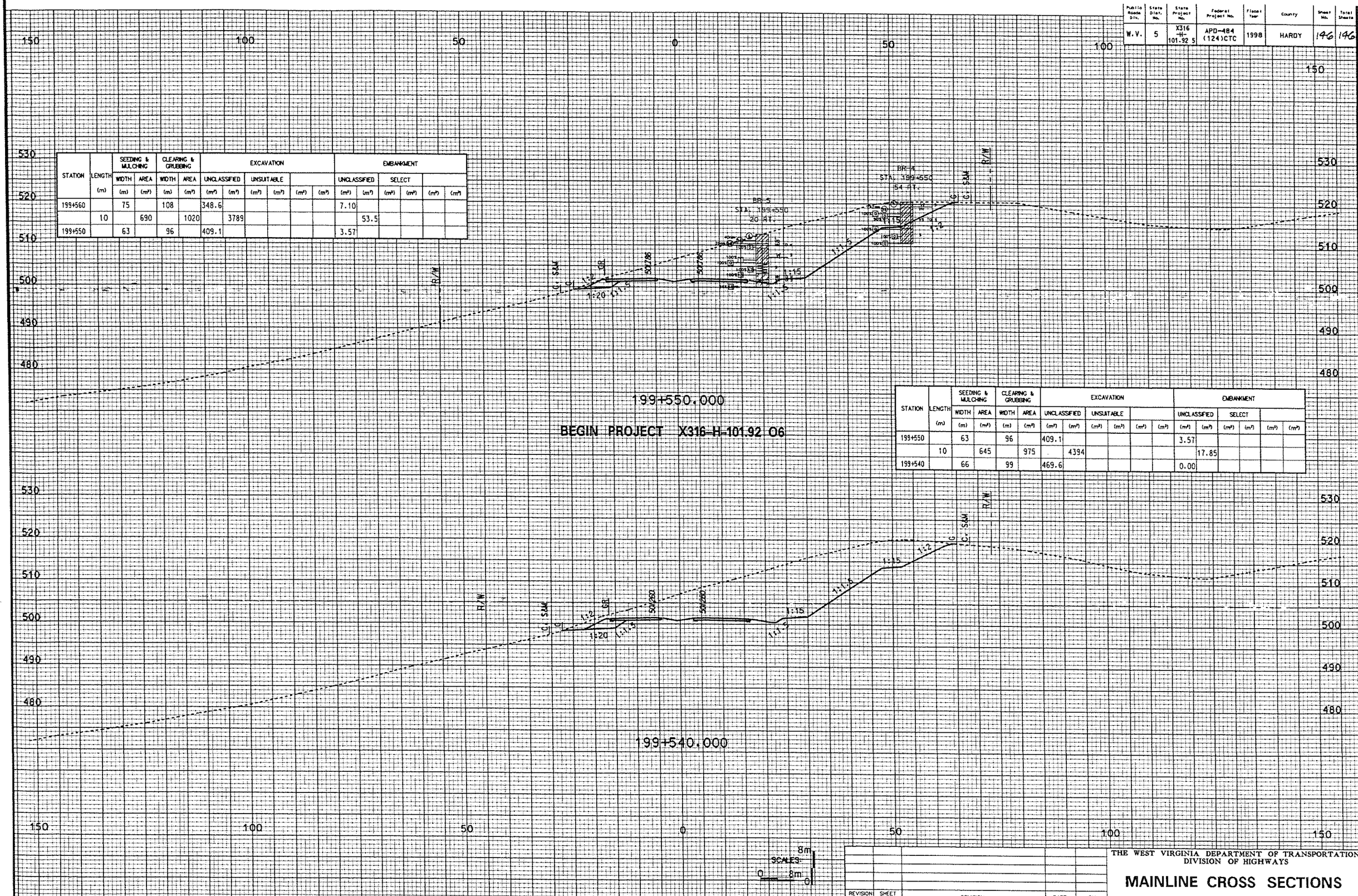
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MAINLINE CROSS SECTIONS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	5	X316 -H- 101.92 5	APD-484 (124)CTC	1998	HARDY	196	196

STATION	LENGTH	SEEDING & MULCHING		CLEARING & GRUBBING		EXCAVATION						EMBANKMENT					
		WIDTH	AREA	WIDTH	AREA	UNCLASSIFIED		UNSUITABLE				UNCLASSIFIED		SELECT			
	(m)	(m)	(m²)	(m)	(m²)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)
199+560		75		108		348.6						7.10					
	10		690		1020		3789						53.5				
199+550		63		96		409.1						3.57					



STATION	LENGTH	SEEDING & MULCHING		CLEARING & GRUBBING		EXCAVATION						EMBANKMENT					
		WIDTH	AREA	WIDTH	AREA	UNCLASSIFIED		UNSUITABLE				UNCLASSIFIED		SELECT			
	(m)	(m)	(m²)	(m)	(m²)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)	(m³)
199+550		63		96		409.1						3.57					
	10		645		975		4394						17.85				
199+540		66		99		469.6						0.00					

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