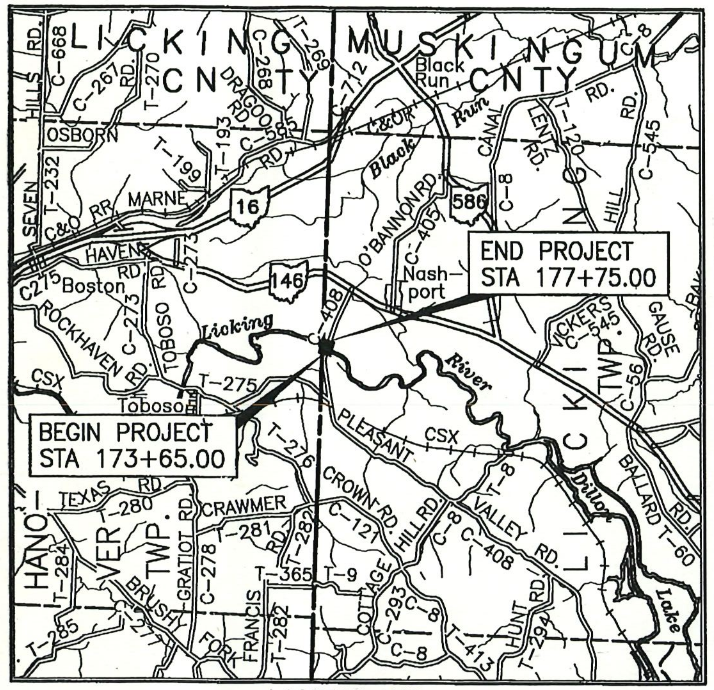


LOCATION MAP

0 1 2 3 4
SCALE IN MILES

N

LATITUDE: N 40° 03' 45"
LONGITUDE: W 82° 11' 30"

PORTION TO BE IMPROVED
STATE & FEDERAL ROUTES
OTHER ROADS

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
MUS - C.R.408 - 8.25
(Pleasant Valley Rd. Bridge)
LICKING TOWNSHIP
MUSKINGUM COUNTY

PROJECT DESCRIPTION

IMPROVEMENT OF 0.08 MILE OF C.R.408 IN LICKING TOWNSHIP, MUSKINGUM COUNTY, BY REPLACING THE BRIDGE SUPERSTRUCTURE OVER THE LICKING RIVER, INCLUDING REHABILITATING THE EXISTING SUBSTRUCTURES. ADDITIONAL REPLACEMENT INCLUDES PIER CAPS, APPROACH SLABS, AND GUARDRAIL ALONG WITH MINIMAL APPROACH WORK.

PROJECT EARTH DISTURBING ACTIVITIES	1.9 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBING ACTIVITIES	2.0 ACRES
NOTICE OF INTENT EARTH DISTURBING ACTIVITIES	4.9 ACRES

DESIGN DESIGNATION

CURRENT ADT (2004)	638
DESIGN YEAR ADT (2024)	766
DESIGN HOURLY VOLUME (2024)	46
DIRECTIONAL DISTRIBUTION	55%
TRUCKS (24 HOUR B&C)	6%
DESIGN SPEED	55 MPH
LEGAL SPEED	55 MPH
DESIGN FUNCTIONAL CLASSIFICATION	RURAL COLLECTOR

DESIGN EXCEPTIONS

	APPROVAL DATE	SHEET NO.
STOPPING SIGHT DISTANCE	12-10-2004	06
BRIDGE WIDTH	12-10-2004	10

INDEX OF SHEETS

Closed ... Temp. GNRL 04

www.dot.state.oh.us

Contracts
Cust - Good for bid

2002 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT DETOURS WILL BE PROVIDED AS INDICATED ON SHEET 4.

WE, THE COMMISSIONERS OF MUSKINGUM COUNTY, IN FORMAL SESSION, HEREBY APPROVE THESE PLANS

[signature] MUSKINGUM COUNTY COMMISSIONER — DATE 12-2-04
Dorothy M. Montgomery — MUSKINGUM COUNTY COMMISSIONER — DATE 12-2-04
R. Edward [signature] — MUSKINGUM COUNTY COMMISSIONER — DATE 12-2-04

APPROVED [signature] 12-2-04
DATE ______ MUSKINGUM COUNTY ENGINEER

APPROVED [signature]
DATE 12/2/04 DISTRICT DEPUTY DIRECTOR

APPROVED [signature]
DATE 5-13-05 DIRECTOR, DEPARTMENT OF TRANSPORTATION

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

STATE OF OHIO
EDWARD P. FERRIS
E-32044
REGISTERED
PROFESSIONAL ENGINEER

BY Ed P. Ferris 12-01-04
Registered Engineer Date

PLAN PREPARED BY :
E.P. FERRIS & ASSOCIATES, INC.
CONSULTING CIVIL ENGINEERS & SURVEYORS
880 KING AVENUE
COLUMBUS, OHIO 43212
614-299-2999 FAX 614-299-2992

* PERMIT NUMBER 200401464

STANDARD CONSTRUCTION DRAWINGS								SUPPLEMENTAL SPECIFICATIONS
BP-3.1 7-28-00								
							AS-1-81 7-19-02	832 4-17-04
GR-1.1 7-16-04	DM-1.1 7-18-03	MT-101.60 10-18-02					DS-1-92 7-18-03	833 2-12-03.
GR-2.1 1-16-04							SICD-1-96 7-19-02	
	DM-4.3 7-19-02	MT-97.10 04-19-02					GSD-1-96 7-19-02	864 7-11-00
GR-3.6 1-16-04	DM-4.4 7-19-02	MT-97.11 04-19-02					TST-1-99 10-17-03	
GR-4.1 4-18-03								
GR-4.2 10-17-03								SPECIAL PROVISIONS *
GR-6.1 4-18-03								NWP#3 & 33
								DATED 12/14/04

FEDERAL PROJECT NO. E035 (424)

PID NO. 75527

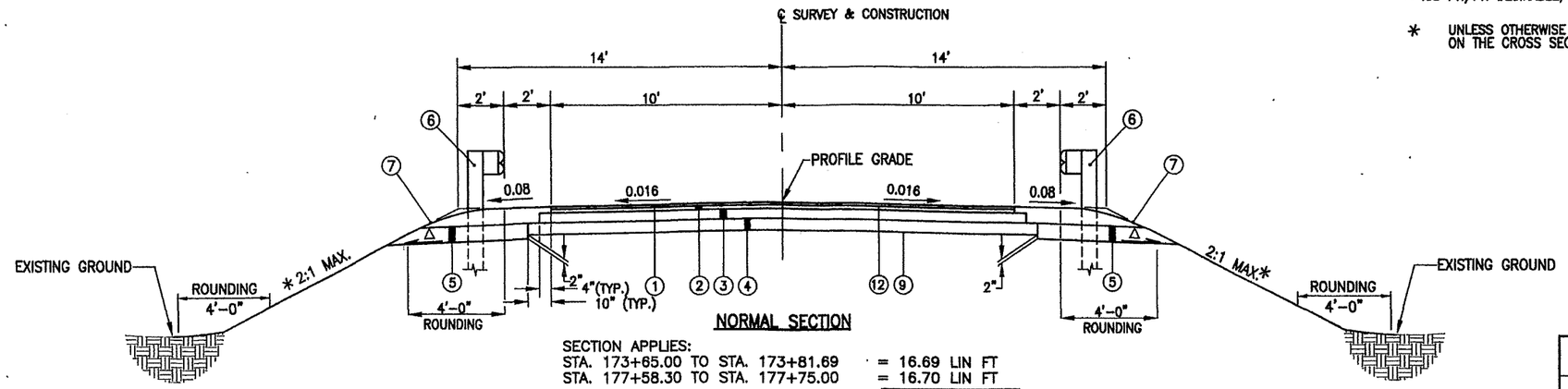
CONSTRUCTION PROJECT NUMBER

RAILROAD INVOLVEMENT NONE

MUS - C.R.408 - 8.25

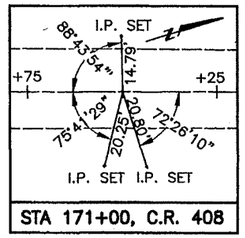
△ .08 FT./FT. DESIRABLE, .04 FT./FT. MINIMUM

* UNLESS OTHERWISE SHOWN ON THE CROSS SECTIONS

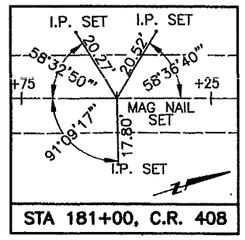


NORMAL SECTION

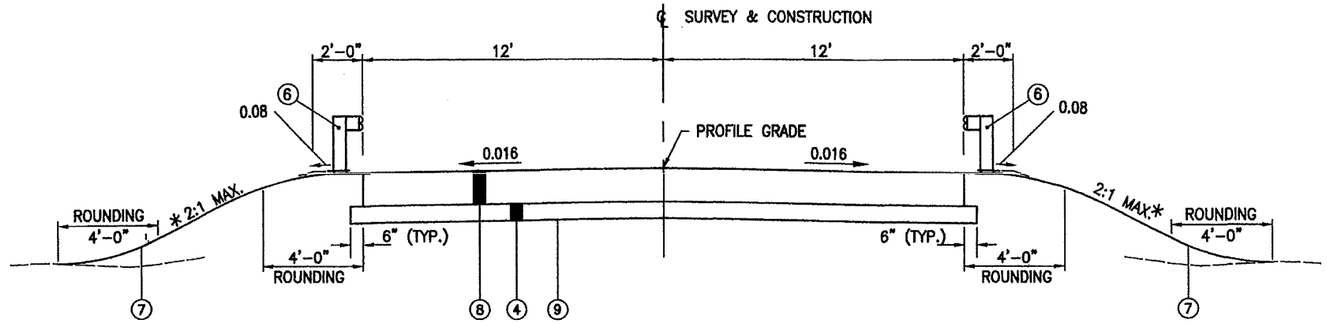
SECTION APPLIES:
STA. 173+65.00 TO STA. 173+81.69 = 16.69 LIN FT
STA. 177+58.30 TO STA. 177+75.00 = 16.70 LIN FT
33.39 LIN FT



STA 171+00, C.R. 408

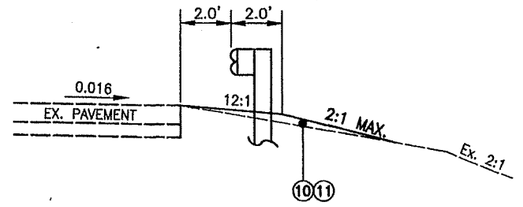


STA 181+00, C.R. 408



APPROACH SLAB SECTION

SECTION APPLIES:
STA. 173+81.69 TO STA. 174+06.69 = 25.00 LIN FT
STA. 177+33.30 TO STA. 177+58.30 = 25.00 LIN FT
50.00 LIN FT

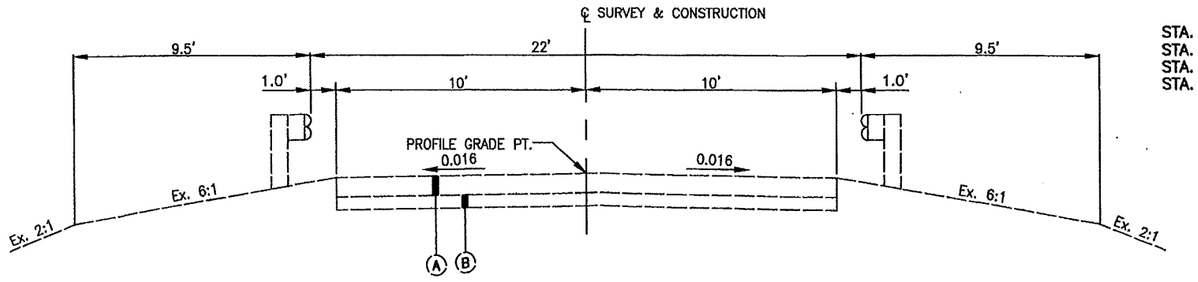


GUARDRAIL TYPICAL

STA. 152+14.00 TO STA. 172+25.00 (LT) = 2011.00 LIN FT
STA. 152+34.00 TO STA. 172+00.00 (RT) = 1966.00 LIN FT
STA. 179+50.00 TO STA. 185+50.00 (LT) = 600.00 LIN FT
STA. 179+50.00 TO STA. 186+55.00 (RT) = 705.00 LIN FT
5282.00 LIN FT

LEGEND:

ITEM	DESCRIPTION
①	448 ~ 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22
②	448 ~ 1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22
③	301 ~ 8" ASPHALT CONCRETE BASE, PG64-22
④	304 ~ 6" AGGREGATE BASE
⑤	605 ~ AGGREGATE DRAINS
⑥	606 ~ GUARDRAIL, TYPE 5
⑦	659 ~ SEEDING AND MULCHING
⑧	526 ~ REINFORCED CONCRETE APPROACH SLABS (T= 15")
⑨	204 ~ SUBGRADE COMPACTION
⑩	209 ~ LINEAR GRADING
⑪	209 ~ BORROW
⑫	407 ~ TACK COAT FOR INTERMEDIATE COURSE



ADJOINING PAVEMENT TYPICAL SECTION
(STA. 173+65 & 177+75)

EX. ADJOINING PAVEMENT

ITEM	DESCRIPTION
Ⓐ	9"± ASPHALT CONCRETE
Ⓑ	6"± CRUSHED AGGREGATE BASE

CALCULATED MLS
CHECKED EPF

SCALE IN FEET
HORZ. 1"=3' VERT. 1"=3'

TYPICAL SECTIONS AND REFERENCES

MUS-C.R.408-8.25

2/23

E.P. FERRIS & ASSOCIATES INC

ROUNDING
THE ROUNDING AT SLOPE BREAKPOINTS SHOWN ON THE TYPICAL SECTIONS APPLY TO ALL CROSS-SECTIONS EVEN THOUGH OTHERWISE SHOWN.

UTILITIES
THERE ARE NO KNOWN UNDERGROUND OR OVERHEAD UTILITIES WITHIN THE PROJECT CONSTRUCTION LIMITS.

ELEVATION DATUM
ALL ELEVATIONS ARE BASED ON PREVIOUS SITE PLAN DATED NOVEMBER 1959.

WORK LIMITS
THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE INSTALLATION AND OPERATION OF ALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED BY THE PLANS SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

CLEARING AND GRUBBING
ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT, A LUMP SUM QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201, CLEARING AND GRUBBING. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING.

STREAM CHANNEL EXCAVATION
THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT ANY INCIDENTAL DISCHARGES ASSOCIATED WITH EXCAVATION AND HAULING OF MATERIAL FROM THE STREAM CHANNEL. THIS PERTAINS TO ANY EXCAVATION OPERATIONS SUCH AS, CHANNEL CLEANOUT, EXCAVATION FOR ROCK CHANNEL PROTECTION AND REMOVAL OF ANY TEMPORARY FILL ASSOCIATED WITH CONSTRUCTION OPERATIONS.

DEMOLITION DEBRIS
THE CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID AND/OR LIMIT DEMOLITION DEBRIS FROM ENTERING THE STREAM. ANY MATERIAL THAT DOES FALL INTO THE STREAM SHALL BE REMOVED AS SOON AS POSSIBLE. THE CONTRACTOR SHALL SUBMIT A DEMOLITION PLAN 10 DAYS PRIOR TO COMMENCING ANY DEMOLITION FOR APPROVAL BY THE ENGINEER. THE SUBMITTAL SHALL BE IN WRITING TO THE DISTRICT CONSTRUCTION ENGINEER WITH A COPY TO THE PROJECT ENGINEER.

IN STREAM WORK
IN STREAM WORK WILL BE LIMITED WHERE PRACTICABLE AND ONLY CLEAN NON-ERODIBLE MATERIAL WILL BE USED FOR FORDS, COFFERDAMS, OR OTHER EQUIPMENT ACCESS PADS. THIS TEMPORARILY PLACED MATERIAL WILL BE REMOVED AND THE STREAM BOTTOM RESTORED TO NEAR NATURAL CONDITIONS WHEN WORK IS COMPLETED. WRITTEN PERMISSION WILL BE OBTAINED FROM THE CHIEF OF ODNR'S DIVISION OF WILDLIFE FOR ANY NECESSARY IN-STREAM BLASTING.

ITEM 605 - AGGREGATE DRAINS
AGGREGATE DRAINS SHALL BE CONSTRUCTED AS SHOWN IN THE TYPICAL SECTIONS AND AT THE LOCATIONS SHOWN IN THE TABLE ON SHEET 5.

EROSION CONTROL
ITEM 601 IS PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE THIS ITEM. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES OF THIS ITEM WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION.

CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL
WHEN IT IS NECESSARY TO SPLICE PROPOSED GUARDRAIL TO EXISTING GUARDRAL, ONLY THE EXISTING GUARDRAIL SHALL BE CUT, DRILLED, OR PUNCHED. THE CONNECTION SHALL BE MADE USING A "W-BEAM RAIL SPLICE" AS SHOWN IN AASHTO M 180. PAYMENT SHALL INCLUDED IN THE CONTRACT PRICE FOR THE RESPECTIVE GUARDRAIL ITEMS.

EXISTING PLANS
EXISTING PLANS ENTITLED "LICKING RIVER, DILLON RESERVOIR PROJECT, RELOCATION OF MUS. CO. ROAD NO. 8, SITE PLAN" MAY BE INSPECTED IN THE MUSKINGUM COUNTY ENGINEER'S OFFICE.

CONTINGENCY QUANTITIES
THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED FOR SUCH ITEMS SHALL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

DUST CONTROL
THE CONTRACTOR SHALL FURNISH AND APPLY WATER FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. THE FOLLOWING CONTINGENCY QUANTITIES HAVE BEEN INCLUDED FOR DUST CONTROL PURPOSES:

ITEM 616 - WATER	5	MGAL.
ITEM 616 - CALCIUM CHLORIDE	1	TON

ITEM 606 - GUARDRAIL
THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER:

606, GUARDRAIL, TYPE 5	300 LIN. FT.
606, GUARDRAIL POST, 9 FEET	50 EACH

DISCREPANCIES BETWEEN CURRENT FIELD AND EXISTING PLANS
A DISCREPANCY OF 0.51' IN OVERALL LENGTH BETWEEN THE TWO ABUTMENTS HAS BEEN FIELD MEASURED. THE PLAN DIMENSION BETWEEN THE CENTERLINE OF BEARINGS IS 322.00' AND FIELD DIMENSION IS 321.49'. PLAN DEVELOPMENT HAS BEEN BASED ON THE 322.00' DIMENSION. SEE STRUCTURAL PLANS FOR NOTE REGARDING POSSIBLE CUTTING OF BEAMS.

THE EXISTING ABUTMENTS APPEAR TO HAVE BEEN CONSTRUCTED 1.05' LOWER THAN THE EXISTING PLANS INDICATE. THERE HAS BEEN AN ASPHALT WEDGE COURSE VARYING FROM 9" TO 0" PLACED ON THE EXISTING BRIDGE SLAB FOR THE FIRST 30' ONTO THE BRIDGE TO ACCOMMODATE THIS ERROR. THE PROPOSED PROFILE AND DATUM HAS BEEN SET BY USING THE EXISTING PROFILE GRADE AND THE PROPOSED GRADE AS SHOWN ON THE ORIGINAL 1959 BRIDGE PLANS. THE PROPOSED GRADE (AS SHOWN ON 1959 PLANS) AT STA. 174+65 & 176+75 (OVER PIER 1 & 4) WERE USED TO ESTABLISH THE DATUM FOR THIS PROJECT.

THE CONTRACTOR AFTER REMOVING THE DECK SHALL VERIFY THE DISTANCE BETWEEN EXISTING PIERS PRIOR TO ORDERING NEW STEEL BEAMS. IN ADDITION, THE CONTRACTOR SHALL VERIFY EXISTING TOP OF PIER ELEVATIONS. ALL COSTS FOR THE ABOVE SHALL BE INCLUDED IN LUMP SUM BID FOR ITEM 202, PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

THE FIELD SURVEY FOR THE PIER LOCATION VERTICALLY AND HORIZONTALLY AND GUARDRAIL LIMITS WERE PROVIDED BY STEPHEN BOWMAN, P.S.

CONSTRUCTION NOTIFICATION
IN ORDER FOR ODOT TO PROPERLY PERMIT OVERSIZE LOADS, PREPARE PROPER SIGNING WHEN REQUIRED AND FURTHER TO NOTIFY THE GENERAL PUBLIC, THE CONTRACTOR SHALL NOTIFY (IN WRITING) THE DISTRICT 5 HIGHWAY MANAGEMENT ADMINISTRATOR WITH COPIES FOR THE DISTRICT 5 ROADWAY SERVICES MANAGER, PROJECT ENGINEER AND PERMIT TECHNICIAN NOT LESS THAN 21 DAYS BEFORE ACTIVATING SUCH CLOSURE OR LANE RESTRICTION.
SEND NOTIFICATION TO:

TOM BRADFORD
DIST. 5 ROADWAY SERVICES MANAGER
P.O. BOX 306
JACKSONTOWN, OHIO 43030
(740) 323-4400/323-5260

TROY RODENISER
DIST. 5 TRAFFIC CONTROL SUPT.
P.O. BOX 306
JACKSONTOWN, OHIO 43030
(740) 323-4400/323-5285

GLORIA TIER
PLANNING
P.O. BOX 306
JACKSONTOWN, OHIO 43030
(740) 323-4400/323-5181

ITEM 659 - SEEDING AND MULCHING
THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

ITEM 659 - SOIL ANALYSIS TEST	2	EACH
ITEM 659 - COMMERCIAL FERTILIZER	1.10	TON
ITEM 659 - LIME	1.64	ACRE
ITEM 659 - WATER	43	MGAL.
ITEM 659 - INTER-SEEDING	397	SQ. YD.
ITEM 659 - REPAIR SEEDING AND MULCHING	397	SQ. YD.

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING ARE BASED ON THESE LIMITS.

LICKING RIVER INFORMATION
THE ORDINARY WATER LEVEL OF THE LICKING RIVER WAS ESTABLISHED IN JULY, 2004 AT ELEVATION 741.7 BY A LOCAL SURVEYOR. ACCORDING TO CLIFTON KILPATRICK, RESOURCE MANAGER AT DILLON LAKE DAM, THE WATER SURFACE LEVEL AT THE DAM INCREASES IN APRIL TO 737 AND IS REDUCED IN NOVEMBER TO 734. MR. KILPATRICK INDICATED THE WATER SURFACE ELEVATION, 742.1 UPSTREAM AT COUNTY ROAD 408 STRUCTURE SEEMED REASONABLE DUE TO SILTATION OVER THE YEARS.

HE ALSO STATED THAT DURING THE MONTHS OF JANUARY TO MARCH AND POSSIBLY APRIL THE POOL LEVEL COULD RAISE UP TO 20'.

MR. KILPATRICK INDICATED IN PAST YEARS A CANOE LIVERY HAS OPERATED UPSTREAM OF THE CR 408 BRIDGE AND CANOES PASS UNDER THE BRIDGE. LAST YEAR THE CANOE LIVERY WAS NOT OPERATIONAL. ROW BOATS ALSO USE THE RIVER AT THIS LOCATION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFE BOAT/CANOE TRAFFIC THROUGH THE PROJECT SITE DURING CONSTRUCTION. ALL COSTS ASSOCIATED WITH THE ABOVE SHALL BE INCLUDED IN LUMP SUM BID, ITEM 614, MAINTAINING TRAFFIC.

MR. KILPATRICK'S ADDRESS IS AS FOLLOWS:

CLIFTON KILPATRICK
RESOURCE MANAGER
DILLON LAKE PROJECT
U.S. CORPS OF ENGINEERS
4969 DILLON DAM RD.
ZANESVILLE, OH 43701
(740) 454-2225

THE CONTRACTOR SHALL CONTACT MR. KILPATRICK PRIOR TO ANY WORK ON THE RIVER.

INDIANA BAT NOTE

Clearing of any trees that have suitable summer brood rearing or roosting habitat for the federally endangered Indiana bat (e.g. trees with exfoliating bark and/or cavities), shall occur before April 15 or after September 15 when the bats would not be using such habitat.

CALCULATED MLS
CHECKED EPF

GENERAL NOTES

MUS-C.R.408-8.25

3
23

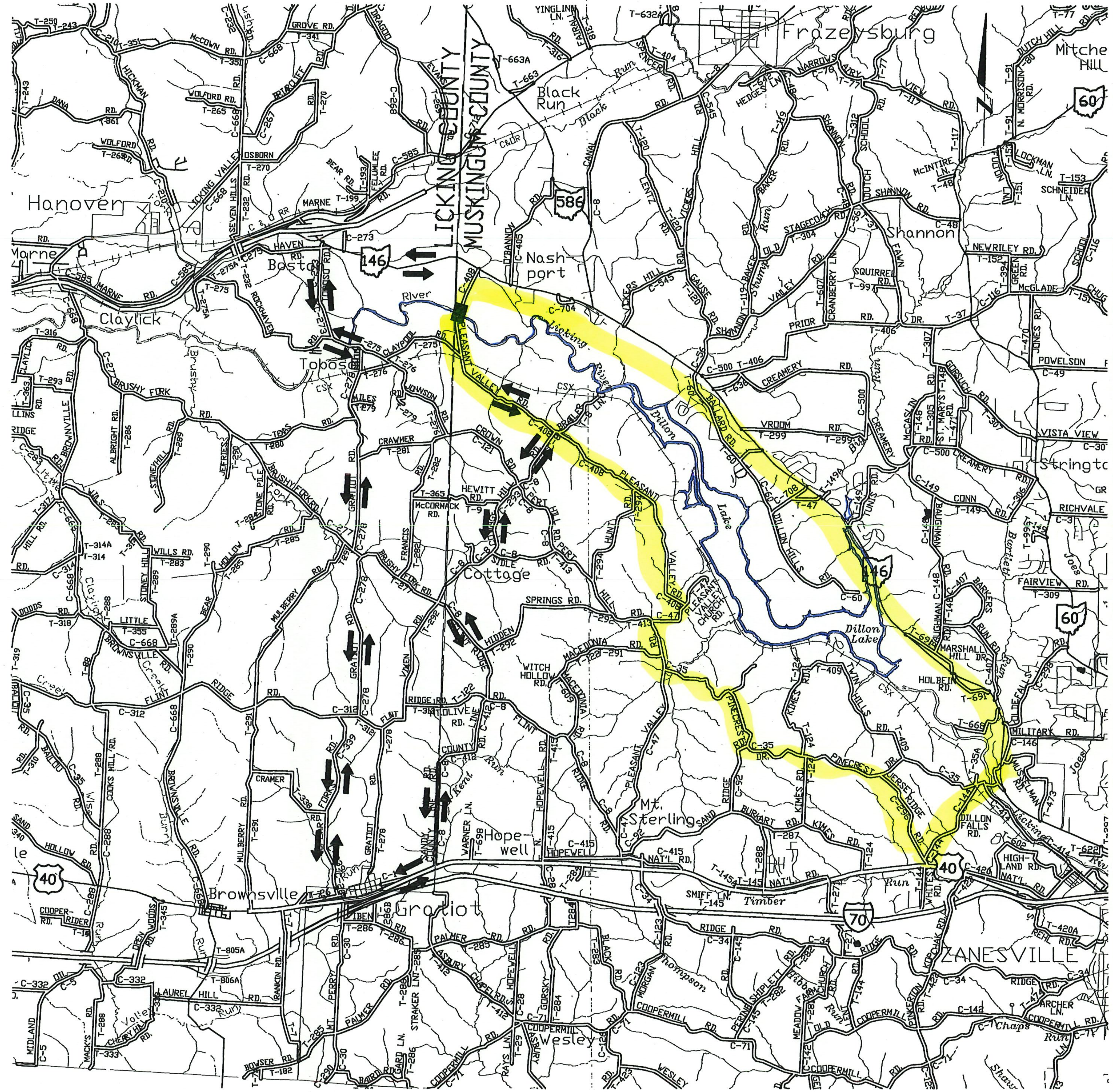
OFFICIAL DETOUR

DETOUR NOTIFICATION

THE CONTRACTOR SHALL ADVISE THE COUNTY EIGHTEEN DAYS IN ADVANCE OF WHEN THE DETOUR ROUTE SHOULD BE IN EFFECT. THE COUNTY SHALL THEN PROVIDE AND INSTALL DEVICES NECESSARY TO DEFINE THE ROUTE OF THE DETOUR AND SHALL MAINTAIN THE SAME THROUGHOUT THE DETOUR LIMITATION DATES. ALL TRAFFIC CONTROL DEVICES REQUIRED, OTHER THAN FOR THE DETOUR, SHALL BE FURNISHED, ERECTED, MAINTAINED, AND SUBSEQUENTLY REMOVED BY THE CONTRACTOR. SEE MT-101.60 FOR LOCATION OF BARRICADES AND ADVANCE WARNING SIGNS. COST FOR THE ABOVE REQUIREMENTS SHALL BE INCLUDED IN ITEM 614, MAINTAINING TRAFFIC.

DETOUR DURATION

THE MAXIMUM LENGTH OF TIME FOR THE DETOUR ROUTE TO BE IN EFFECT SHALL BE ONE HUNDRED (100) CONSECUTIVE CALENDAR DAYS. SEALING OF CONCRETE SURFACES OPERATIONS CAN BE PERFORMED BEYOND THE DETOUR DURATION WITH ONE LANE OF TRAFFIC MAINTAINED DURING DAYTIME USING FLAGGERS. ALL APPROACH CONSTRUCTION AND GUARDRAIL ITEMS SHALL BE IN PLACE PRIOR TO OPENING THE ROADWAY TO TRAFFIC. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SCHEDULE AND PERFORM THE CONSTRUCTION WORK WITHIN THE DETOUR LIMITATION TIME. THE FAILURE OF THE CONTRACTOR TO MEET THE DETOUR LIMITATION DATES WILL CAUSE SEPARATE LIQUIDATED DAMAGES IN ACCORDANCE WITH 108.07 TO BE ASSESSED. THE CONTRACTOR WILL COMPLY WITH ALL PROVISIONS OF 108.07 OF THE DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS.



CALCULATED MLS
CHECKED EPF

DETOUR MAP AND NOTES

MUS-C.R.408-8.25

E.P. FERRIS & ASSOCIATES INC.

PAVEMENT CALCULATIONS

STATION TO STATION FROM	TO	SIDE	LENGTH L	AVERAGE WIDTH W	SURFACE AREA A = LxW	204 SUBGRADE COMPACTION	209 LINEAR GRADING	209 BORROW (*0.5*0.6'/27)	301 ASPHALT CONCRETE BASE, PG64-22 (8")		304 AGGREGATE BASE (6")	407 TACK COAT FOR INTERMEDIATE COURSE (0.05 GAL/S.Y.)	448 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22 (1 1/4")	448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22 (1 3/4")	
FROM	TO	TO	L.F.	L.F.	S.F.	SQ. YD.	STA.	CU. YD.	CU. YD.		CU. YD.	GAL.	CU. YD.	CU. YD.	
152+14.00	172+25.00	LT	2011	10.00	20110		20.11	223.44							
152+34.00	172+00.00	RT	1966	10.00	19660		19.66	218.44							
173+65.00	173+86.69	LT & RT	16.69	20.00	333.80							1.85	1.29	1.80	
		LT & RT	16.69	20.67	344.98				8.52						
		LT & RT	16.69	21.67	361.67						6.70				
		LT & RT	16.69	23.00	383.87	42.65									
173+86.69	174+06.69	LT & RT	25.00	25.00	625.00						11.57				
		LT & RT	25.00	27.00	675.00	75.00									
177+33.30	177+53.30	LT & RT	25.00	25.00	625.00						11.57				
		LT & RT	25.00	27.00	675.00	75.00									
177+53.30	177+75.00	LT & RT	16.70	20.00	334.00							1.86	1.29	1.80	
		LT & RT	16.70	20.67	345.19				8.52						
		LT & RT	16.70	21.67	361.89						6.70				
		LT & RT	16.70	23.00	384.10	42.88									
179+50.00	185+50.00	LT	600	10.00	6000		6.00	66.67							
179+50.00	186+55.00	RT	705	10.00	7050		7.05	78.33							
TOTALS						235.33	52.82	586.88	17.04		36.54	3.71	2.58	3.60	
TOTALS CARRIED TO GENERAL SUMMARY						236	53	587	18		37	4	3	4	

ITEM 642 – PAVEMENT MARKING

LOCATION	ITEM 642 CENTER LINE (DOUBLE YELLOW)	ITEM 642 EDGE LINE
STATION TO STATION	MILE	MILE
173+86 to 177+53	0.07	0.14
TOTALS TO GENERAL SUMMARY:	0.07	0.14

ITEM 203 – EARTHWORK AND ITEM 659 SEEDING AND MULCHING

LOCATION	ITEM 203 EXCAVATION	ITEM 203 EMBANKMENT	ITEM 659 SEEDING AND MULCHING
STATION TO STATION	CU. YD.	CU. YD.	SQ. YD.
171+90 to 179+66	558	835	7942
TOTALS TO GENERAL SUMMARY:	558	835	7942

ITEM 605 AGGREGATE DRAINS

STATION	SIDE	LENGTH L (FT)
174+70.00	RT.	13.0
174+70.00	LT.	13.0
177+70.00	RT.	13.0
177+70.00	LT.	13.0
TOTALS CARRIED TO GENERAL SUMMARY		52

ITEM 659 – WATER

7942 S.Y. X 9 S.F./1 S.Y. X 300 GAL./1000 S.F. X 1M GAL./1000 GAL. X 2 APPLICATIONS =	42.89
TOTALS TO GENERAL NOTES:	43 M GAL.

ITEM 659 – COMMERCIAL FERTILIZER

7942 S.Y. X 30 LBS./1000 S.F. X 9 S.F./1 S.Y. X 1 TON/2000 LBS. =	1.07
TOTALS TO GENERAL NOTES:	1.10 TON

GENERAL SUMMARY

SHEET 3	SHEET 5	SHEET 6	ITEM	EXTENSION	QUANTITY TOTAL	UNIT	DESCRIPTION	SEE SHEET
							ROADWAY	
			201	11000	LUMP		CLEARING AND GRUBBING	
		792	202	38000	792	FT	GUARDRAIL REMOVED	
	558		203	10000	558	CU YD	EXCAVATION	
	835		203	20000	835	CU YD	EMBANKMENT	
	236		204	10000	236	SQ YD	SUBGRADE COMPACTION, 12" DEPTH OR LESS	
	53		209	60200	53	STA	LINEAR GRADING	
	587		209	70000	587	CU YD	BORROW	
300		5812.5	606	13000	6112.5	FT	GUARDRAIL, TYPE 5	
50			606	18500	50	EA	GUARDRAIL POST, 9 FEET	
		3	606	25000	3	EACH	ANCHOR ASSEMBLY, TYPE A	
		1	606	26500	1	EACH	ANCHOR ASSEMBLY, TYPE T	
		4	606	32160	4	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE TST	
							EROSION CONTROL	
2			659	00100	2	EACH	SOIL ANALYSIS TEST	
	7942		659	10000	7942	SQ YD	SEEDING AND MULCHING	
397			659	14000	397	SQ YD	REPAIR SEEDING AND MULCHING	
397			659	15000	397	SQ YD	INTER-SEEDING	
1.10			659	20000	1.10	TON	COMMERCIAL FERTILIZER	
1.64			659	31000	1.64	ACRE	LIME	
43			659	35000	43	M GAL	WATER	
			832	10000	1	EACH	STORM WATER POLLUTION PREVENTION PLAN	
			832	30000	2000	EACH	EROSION CONTROL	
							DRAINAGE	
	52		605	31100	52	FT	AGGREGATE DRAINS	
							PAVEMENT	
	18		301	46000	18	CU YD	ASPHALT CONCRETE BASE, PG64-22	
	37		304	20000	37	CU YD	AGGREGATE BASE	
	4		407	14000	4	GAL	TACK COAT FOR INTERMEDIATE COURSE	
	4		448	46050	4	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22	
	3		448	47020	3	CU YD	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22	
							TRAFFIC CONTROL	
		61	626	00100	61	EACH	BARRIER REFLECTOR, TYPE A	
	0.14		642	00090	0.14	MILE	EDGE LINE	
	0.07		642	00290	0.07	MILE	CENTERLINE (DOUBLE YELLOW)	
							FOR STRUCTURE QUANTITIES, SEE SHEET 13	
							MAINTENANCE OF TRAFFIC	
5			616	10000	5	M GAL	WATER	
1			616	20000	1	TON	CALCIUM CHLORIDE	
			614	11000	LUMP		MAINTAINING TRAFFIC	
			619	16000	5	MONTH	FIELD OFFICE, TYPE A	
			623	10000	LUMP		CONSTRUCTION LAYOUT STAKES	
			624	10000	LUMP		MOBILIZATION	

CALCULATED APW CHECKED MLS

GENERAL SUMMARY, CALCULATIONS, & SUB-SUMMARIES

MUS-C.R.408-8.25

E.P. FERRIS & ASSOCIATES INC

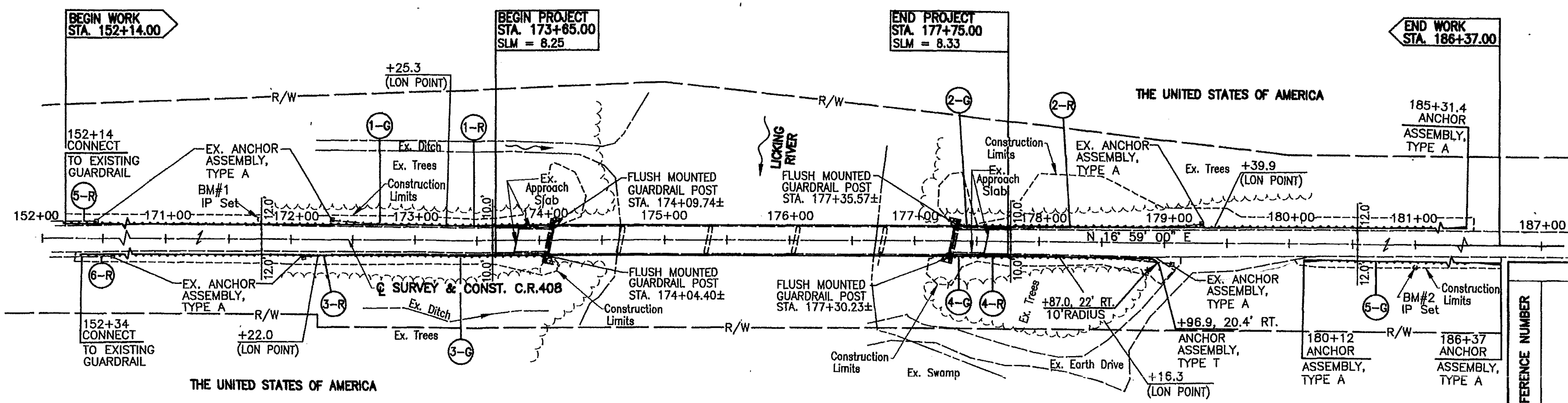
EXISTING STRUCTURE

TYPE: CONTINUOUS STEEL BEAM WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 56'±-70'±-70'±-70±'-56'± C/C BRGS.
ROADWAY: 22'-0"± F/F GUARDRAILS
LOAD FREQUENCY: C.F. (30) 57
WEARING SURFACE: 1/2"± MONOLITHIC WEARING SURFACE
SKEW: 12'00'± L.F.
APPROACH SLABS: AS-1-54 (25'± LONG)
RAILING: I-15.13
ALIGNMENT: TANGENT
DATE BUILT: 1962

PROPOSED STRUCTURE

PROPOSED WORK: NEW SUPERSTRUCTURE WITH CONTINUOUS FULL COMPOSITE A588 STEEL BEAM AND REINFORCED CONCRETE DECK ON MODIFIED ABUT.(SEMI-INTEGRAL), AND MODIFIED PIERS.
SPANS: 56'-10 3/4"±, 70'-0"±, 70'-0"±, 70'-0"±, 56'-10 3/4"± C/C BEARINGS.
ROADWAY: 24'-0" F/F GUARDRAILS.
LOADING: HS20 (CASE II) OR THE ALTERNATE MILITARY LOADING.
WEARING SURFACE: 1" MONOLITHIC CONCRETE.
APPROACH SLABS: AS-1-81 (25' LONG).
ALIGNMENT: TANGENT.
CROWN: 3/16" / FT.
SKEW: 12'± L.F.
LATITUDE: N 40°03'45" LONGITUDE: W 82°11'30"

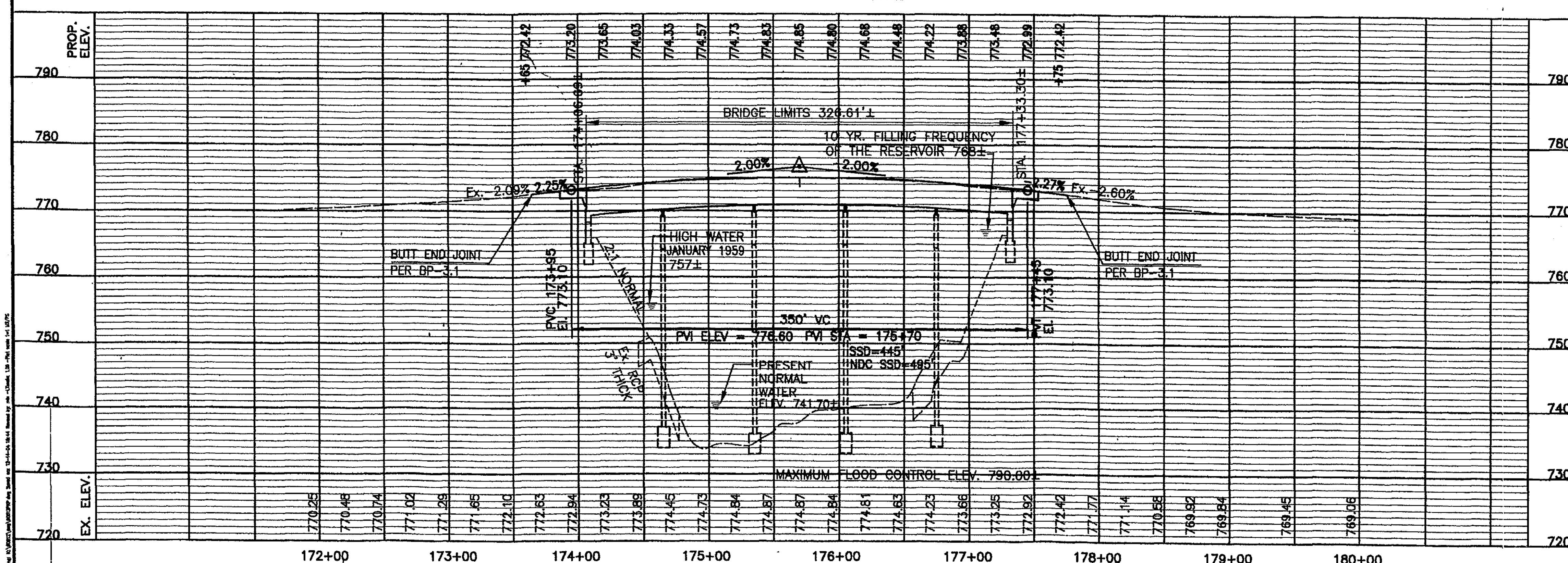
CROSS REFERENCES	
SHEET	DESCRIPTION
2	Centerline References
13	Item 601 RCP, Type B w/ Fabric Filter



BENCH MARK No. 1 ELEV. 768.62
TOP OF IRON PIN SET
STA. 171+75, 15.5' LT.

BENCH MARK No. 2 ELEV. 766.79
TOP OF IRON PIN SET
STA. 181+00, 18.0' RT.

ROCK CHANNEL PROTECTION, TYPE B WITH FABRIC FILTER
SEE SHEET 16 FOR LOCATIONS



REMOVAL				
REFERENCE NUMBER	STATION TO STATION	SIDE	202 GUARDRAIL REMOVED (FT.)	SEE SHEET NO.
1-R	172+34 to 174+09	Lt	175	
2-R	177+34 to 179+30	Lt	196	
3-R	172+10 to 174+04	Rt	194	
4-R	177+29 to 179+06	Rt	177	
5-R	152+14 to 152+39	Lt	25	
6-R	152+34 to 152+59	Rt	25	
TOTALS TO GENERAL SUMMARY			792	

DRAINAGE, EROSION CONTROL, AND PAVEMENT			
REFERENCE NUMBER	STATION TO STATION	SIDE	SEE SHEET NO.
TOTALS TO GENERAL SUMMARY			

GUARDRAIL							
			606				626
REFERENCE NUMBER	STATION TO STATION	SIDE	GUARDRAIL, TYPE 5 (FT.)	ANCHOR ASSEMBLY, TYPE A (EA)	ANCHOR ASSEMBLY, TYPE T (EA)	BRIDGE TERMINAL ASSEMBLY, TYPE TST (EA)	BARRIER REFLECTOR, TYPE A (EA)
1-G	152+14 to 174+09.74	Lt	2168.75			1	22
2-G	177+35.57 to 185+31.4	Lt	768.75			1	8
3-G	152+34 to 174+04.40	Rt	2143.75	1		1	22
4-G	177+30.23 to 178+96.9	Rt	156.25		1	1	3
5-G	180+12 to 186+37	Rt	575	2			6
TOTALS TO GENERAL SUMMARY			5812.50	3	1	4	61

SCALE IN FEET HORIZ. 1"= 50' VERT. 1"= 10'

CALCULATED MLS CHECKED EPF

PLAN AND PROFILE STA. 173+65 TO STA. 177+75

MUS-C.R.408-8.25

F.P. FERRIS & ASSOCIATES, INC.

SEEDING END WIDTH	SEEDING SQ. YDS.	STATION	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
		130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130				
		780				
	28	770			0	3
17		760	0	4		
		750				
	97	780			0	8
		770				
18		760	0	5		
		750				
	103	780			0	12
		770				
19		760	0	8		
		750				
	81	780			0	12
		770				
10		760	0	5		
	6	750			0	1
0		171+90	0	0		
	4877	FOR LINEAR GRADING STA. 152+20 TO 172+15 = 1995 FT. 1995 FT. * 22 FT. / 9 = 4877 S.Y.				
	5192	TOTAL THIS SHEET			0	36

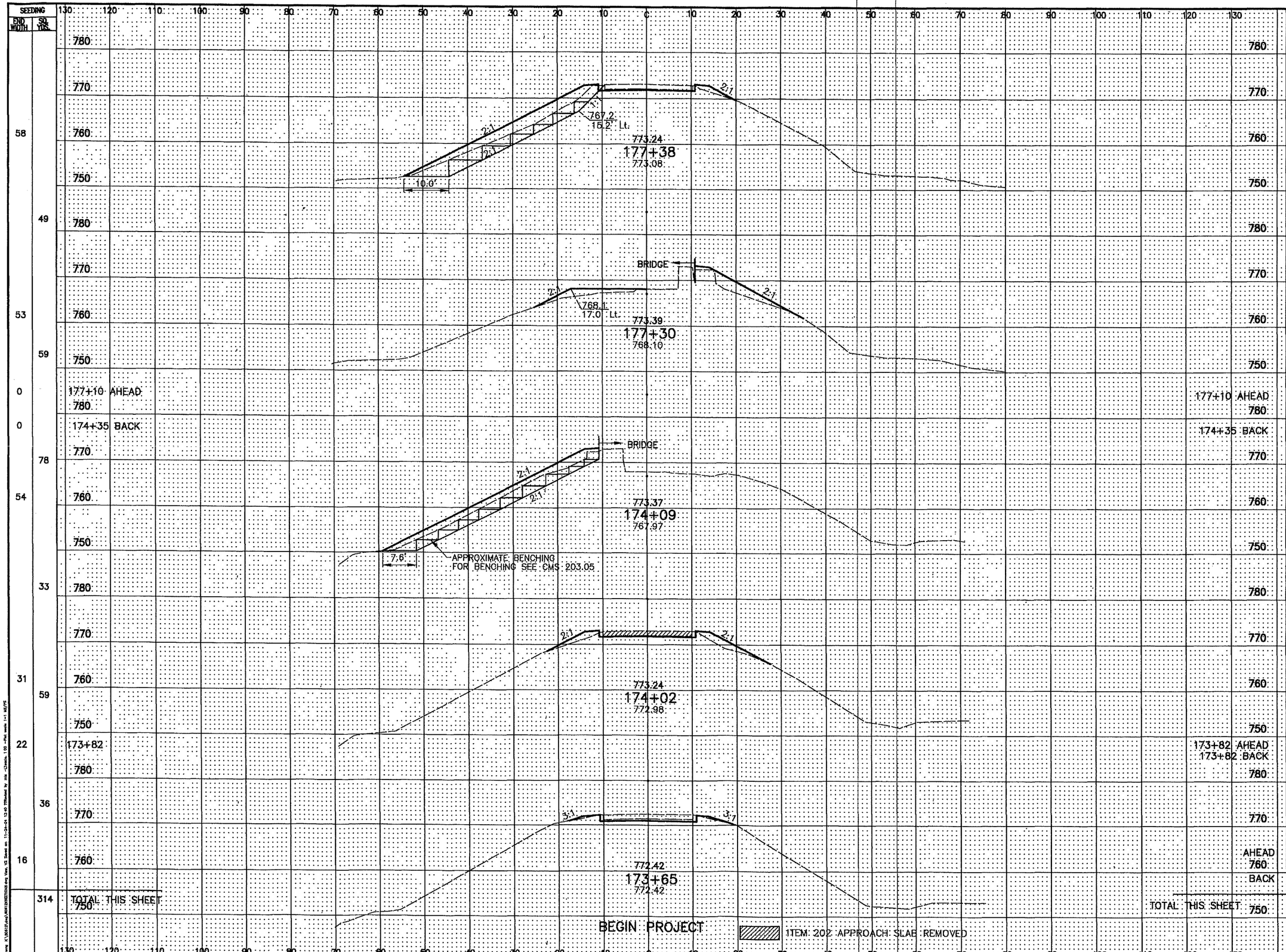
CALCULATED MLS
CHECKED EPF

CROSS SECTIONS
STA. 172+00 TO STA. 173+50

MUS - C.R.408 - 8.25

7/23

SEEDING END WIDTH	SEEDING SQ. YDS.	STATION	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
		780				
		770			25	43
58		760	108	191		
		750				
	49	780			16	36
		770				
53		760	0	50		
	59	750			0	16
0		177+10 AHEAD 780	0	0		
0		174+35 BACK 770	0	0		
	78				48	80
54		760	100	166		
		750				
	33	780			13	25
		770				
31		760	0	30		
	59	750			0	17
22		173+82 780	0	16		
			28	16		
	36	770			18	7
16		760	30	5		
			0	5		
	314	TOTAL THIS SHEET 750			120	224

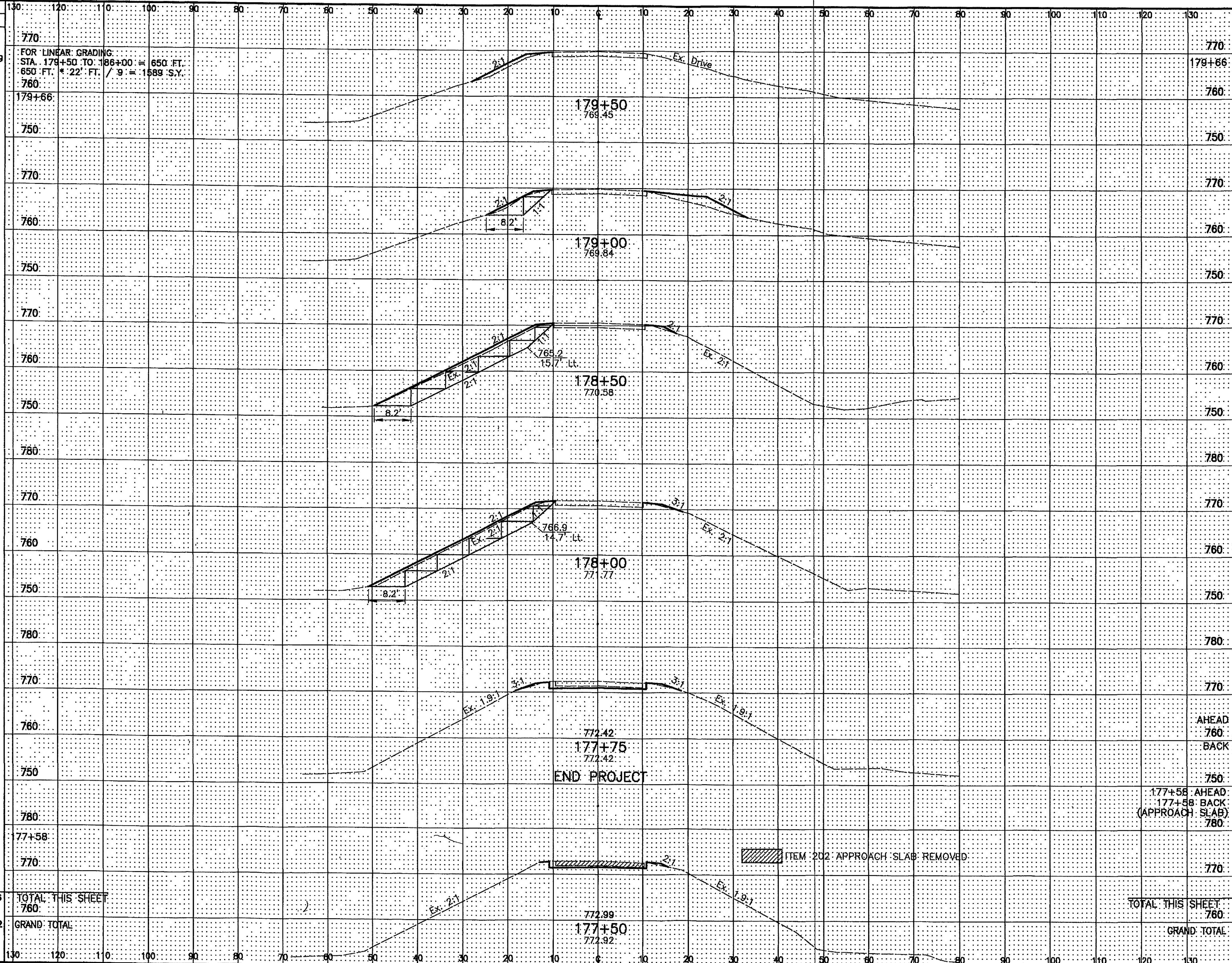


CALCULATED MLS
CHECKED EPF

CROSS SECTIONS
STA. 173+65 TO STA. 177+38

MUS - C.R.408 - 8.25

8
23



SEEDING END WIDTH	SEEDING SQ. YDS.	STATION	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	1589	179+66	0	0		
					0	3
0	0	179+50	0	10		
19						
	164				24	60
40		179+00	26	55		
	258				134	179
53		178+50	119	138		
	297				224	260
54		178+00	123	143		
	97				57	69
16		177+75 AHEAD	0	5		
		177+75 BACK	30	5		
	24				19	3
		177+58 AHEAD	30	5		
9		177+58 BACK (APPROACH SLAB)	6	5		
	7				2	1
7		177+50	6	1		
	2436	TOTAL THIS SHEET			428	575
	7942	GRAND TOTAL			558	835

CROSS SECTIONS
STA. 177+50 TO STA. 179+50

MUS - C.R.408 - 8.25

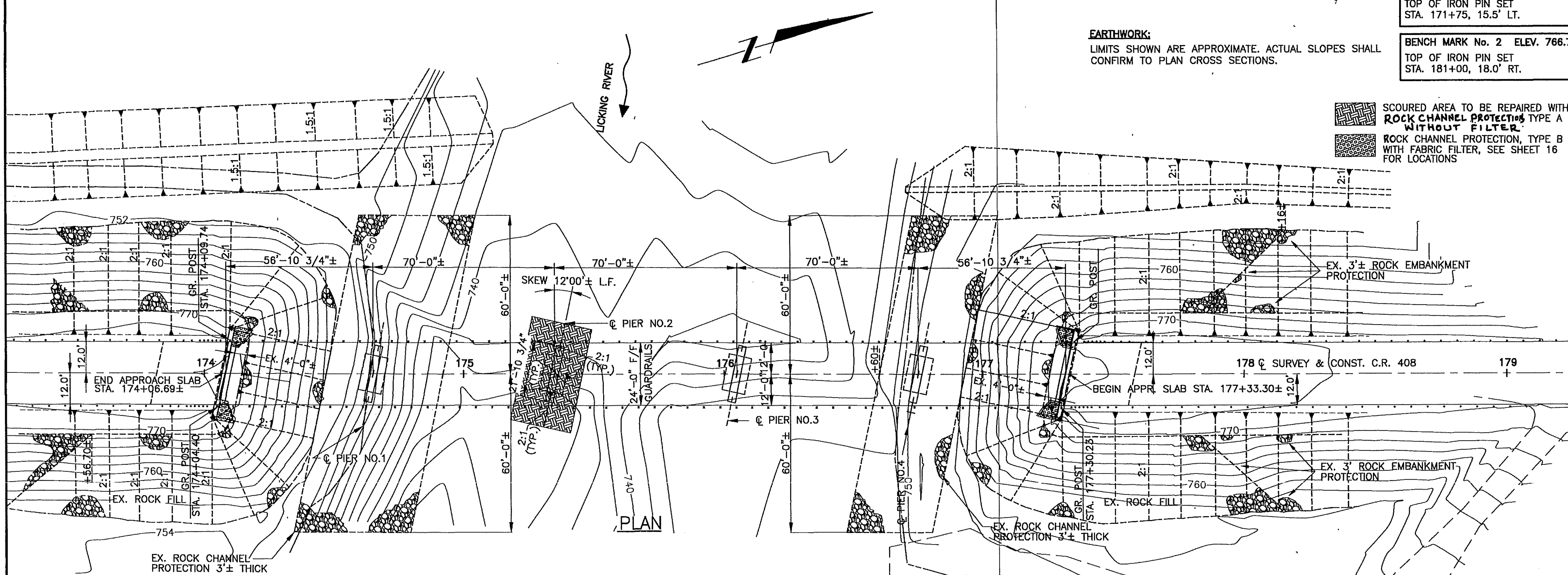
BENCH MARK No. 1 ELEV. 768.62
TOP OF IRON PIN SET
STA. 171+75, 15.5' LT.

BENCH MARK No. 2 ELEV. 766.79
TOP OF IRON PIN SET
STA. 181+00, 18.0' RT.

EARTHWORK:
LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFIRM TO PLAN CROSS SECTIONS.

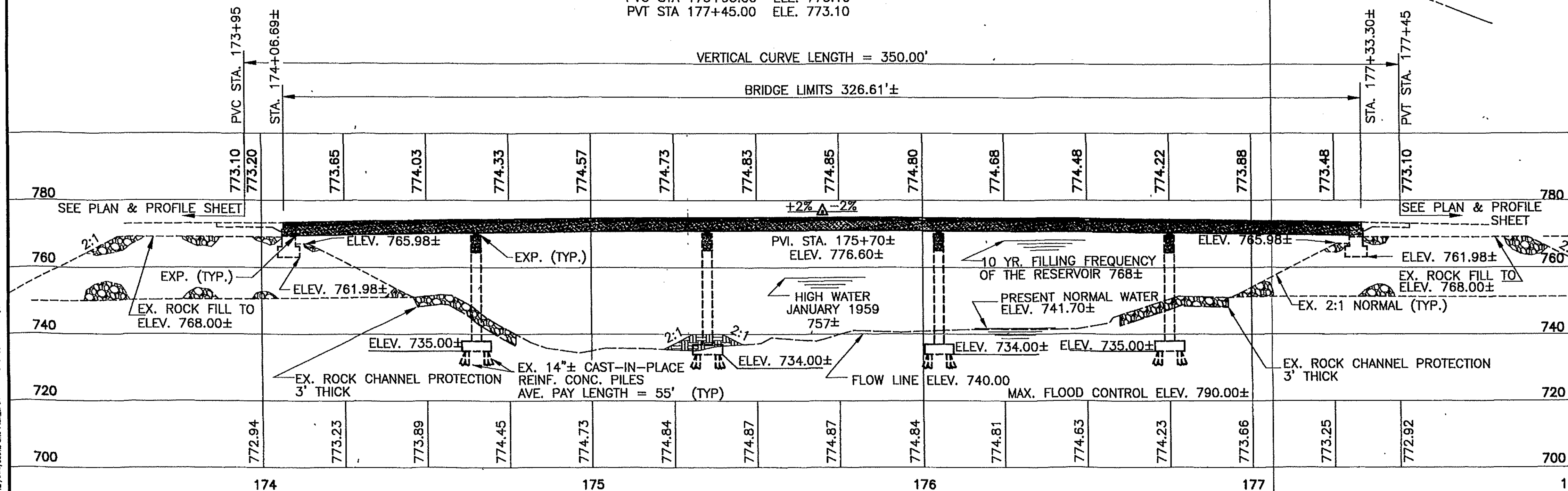
SCOURED AREA TO BE REPAIRED WITH ROCK CHANNEL PROTECTION TYPE A WITHOUT FILTER.

ROCK CHANNEL PROTECTION, TYPE B WITH FABRIC FILTER, SEE SHEET 16 FOR LOCATIONS



EXISTING & PROPOSED VERTICAL CURVE DATA
PVI STA 175+70 ELE. 776.60
G1 = +2.00 %
G2 = −2.00 %
PVC STA 173+95.00 ELE. 773.10
PVT STA 177+45.00 ELE. 773.10

TRAFFIC DATA	
CURRENT ADT(2004)	638
DESIGN ADT(2024)	766
DESIGN ADTT(2024)	46



PROFILE ALONG ℄ SURVEY & CONSTRUCTION C.R. 408

⚠1 N.D.C. = 28' BRIDGE WIDTH

EXISTING STRUCTURE

TYPE: CONTINUOUS STEEL BEAM WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 56'±-70'±-70'±'-56'± C/C BRGS.
ROADWAY: 22'-0"± F/F GUARDRAILS
LOAD FREQUENCY: C.F. (30) 57
WEARING SURFACE: 1/2"± MONOLITHIC WEARING SURFACE
SKEW: 12°00'± L.F.
APPROACH SLABS: AS-1-54 (25'± LONG)
RAILING: I-15.13
ALIGNMENT: TANGENT
DATE BUILT: 1962

PROPOSED STRUCTURE

PROPOSED WORK: NEW SUPERSTRUCTURE WITH CONTINUOUS FULL COMPOSITE A588 STEEL BEAM AND REINFORCED CONCRETE DECK ON MODIFIED ABUT.(SEMI-INTEGRAL), AND MODIFIED PIERS.
SPANS: 56'-10 3/4", 70'-0", 70'-0", 70'-0", 56'-10 3/4" C/C BEARINGS.
ROADWAY: 24'-0" F/F GUARDRAILS. ⚠1
LOADING: HS20 (CASE II) OR THE ALTERNATE MILITARY LOADING.
WEARING SURFACE: 1" MONOLITHIC CONCRETE.
APPROACH SLABS: AS-1-81 (25' LONG).
ALIGNMENT: TANGENT.
CROWN: 3/16" / FT.
SKEW: 12'± L.F.
LATITUDE: N 40°03'45"
LONGITUDE: W 82°11'30"

DESIGN AGENCY
E. P. FERRIS & ASSOCIATES, INC.
Consulting Civil Engineers & Surveyors
880 King Avenue
Columbus, Ohio 43212

DESIGNED	DRAWN	REVIEWED	DATE
RB	JPC	EPF	04/21/04
CHECKED VAD	REVISED	STRUCTURE FILE NUMBER 6042244	

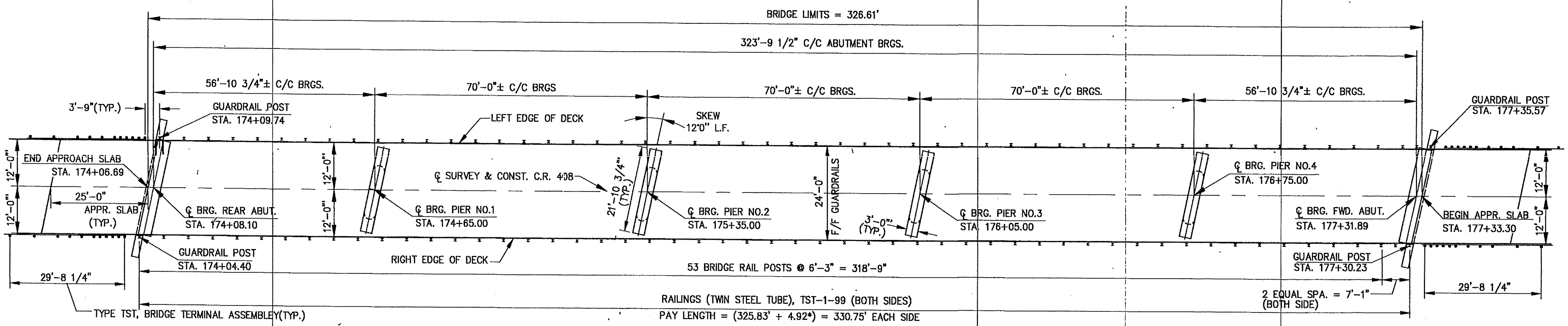
MUSKINGUM COUNTY
STA. 174+06.69
STA. 177+33.30

SITE PLAN
BRIDGE NO. MUS-408-0825
OVER LICKING RIVER

MUS-408-8.25

1/14

E.P. FERRIS & ASSOCIATES INC.



* REFER TO STANDARD DRAWING TST-1-99 FOR METHOD OF MEASUREMENT

PLAN

WORK DESCRIPTION: REPLACEMENT OF DEFICIENT 22'-0" WIDE NON-COMPOSITE EXISTING SUPERSTRUCTURE WITH A NEW 24'-0" WIDE FULL COMPOSITE REINFORCED CONCRETE DECK WITH A588 STEEL BEAMS SUPERSTRUCTURE.
WIDENING AND STRENGTHENING OF PIER CAPS, AS SHOWN ON THE SHEETS 8/14 & 9/14 .
WIDENING AND MODIFICATION OF ABUTMENTS TO SEMI-INTEGRAL, AS SHOWN ON SHEETS 6/14 & 7/14 .

PROPOSED WORK:

1 – REMOVAL OF EXISTING RAILING, CONCRETE DECK AND APPROACH SLABS.
2 – REMOVAL OF EXISTING CROSS FRAMES AND BEAMS.
3 – REMOVAL OF ABUTMENT BACKWALLS, PART OF THE WINGWALLS, PARTIAL DEPTH REMOVAL OF ABUTMENT SEATS, AS SHOWN PER PLANS.
4 – REMOVAL OF ALL BEARING DEVICES FROM THE SUBSTRUCTURE AND ANY ATTACHMENTS TO THE BEAMS.
5 – TOP OF THE PIER CAPS REMOVAL, FOR WIDENING AND STRENGTHENING, AS SHOWN ON THE PLANS.
6 – CONSTRUCTION OF THE TOP PORTION OF PIER CAPS, AS PER PLAN, TO ACCOMMODATE THE NEW BRIDGE SUPERSTRUCTURE.
7 – CONSTRUCTION OF PROPOSED SEMI-INTEGRAL ABUTMENTS TO ACCOMMODATE THE NEW BRIDGE SUPERSTRUCTURE.
8 – INSTALLATION OF NEW ELASTOMERIC BEARINGS AT PIERS AND ABUTMENTS.
9 – INSTALLATION OF NEW STEEL BEAMS AND PLACEMENT OF CONCRETE DECK SLAB & APPROACH SLABS.
10 – INSTALLATION OF RAILING (TWIN STEEL TUBE), TST-1-99, ON THE BRIDGE.
11 – INSTALLATION OF TYPE TST BRIDGE TERMINAL ASSEMBLY.
12 – INSTALLATION OF GUARDRAIL ON APPROCHES.
13 – FULL DEPTH/RESURFACING OF APPROACHES (SEE ROADWAY PLANS)
14 – PLACEMENT AND REMOVAL OF TEMPORARY NONERODABLE MATERIAL ON STREAM, FOR ACCESS TO PIER LOCATION.

DESIGN AGENCY
E. P. FERRIS & ASSOCIATES, INC.
Consulting Civil Engineers & Surveyors
880 King Avenue
Columbus, Ohio 43212

DESIGNED	DRAWN	REVIEWED	DATE
RB	RB	EPF	04/21/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
VAD		6042244	

GENERAL PLAN
BRIDGE NO. MUS-408-0825
OVER LICKING RIVER

MUS.-408-8.25

DESIGN SPECIFICATION
THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2002, AND THE OHIO DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL.

DESIGN LOADING
HS20-44, CASE II AND THE ALTERNATE MILITARY LOADING.
FUTURE WEARING SURFACE(FWS) OF 60 PSF.

DESIGN STRESSES
CONCRETE CLASS HP COMPRESSIVE STRENGTH 4500 PSI (SUPERSTRUCTURE)
CONCRETE CLASS HP COMPRESSIVE STRENGTH 4000 PSI (SUBSTRUCTURE)
REINFORCING STEEL: ASTM A615, OR A996, MINIMUM YIELD
GRADE 60, MINIMUM YIELD STRENGTH 60,000 PSI
NEW STRUCTURAL STEEL ASTM A588-MINIMUM YIELD STRENGTH 50,000 PSI

DECK PROTECTION METHOD
EPOXY COATED REINFORCING STEEL.
2 1/2" CONCRETE COVER
STEEL DRIP STRIP
SEALING OF CONCRETE SURFACES TO LIMITS SHOWN ON PLANS.

MONOLITHIC WEARING SURFACE
MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

AS-1-81	REVISED	7-19-02
DS-1-92	REVISED	7-18-03
SICD-1-96	REVISED	7-19-02
GSD-1-96	REVISED	7-19-02
GR-3.6	REVISED	1-16-04
TST-1-99	REVISED	10-17-03
DM-1.1	DATED	07-18-03

AND TO SUPPLEMENTAL SPECIFICATIONS

NO.		
864	DATED	7-11-00

ITEM 202 PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN:

SUPERSTRUCTURE REMOVED:
THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES AND THAT ARE NOT SEPERATELY LISTED FOR PAYMENT. ITEMS TO BE REMOVED INCLUDE ALL EXISTING MATERIALS BEING REPLACED BY NEW CONSTRUCTION AND MISCELLANEOUS ITEMS THAT ARE NOT SHOWN TO BE INCORPORATED INTO THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE-RAMS WILL NOT BE PERMITTED. THE METHOD OF REMOVAL SHALL BE APPROVED BY THE ENGINEER.

PROTECTION OF TRAFFIC:
PRIOR TO DEMOLITION OF ANY PORTIONS OF THE EXISTING SUPERSTRUCTURE, SUBMIT PLANS FOR THE PROTECTION OF TRAFFIC (VEHICULAR, PEDESTRIAN BOAT, ETC.) ADJACENT TO/OR UNDER THE STRUCTURE TO THE DIRECTOR AT LEAST 30 DAYS BEFORE CONSTRUCTION BEGINS. THESE PLANS SHALL INCLUDE PROVISIONS FOR ANY DEVICES AND STRUCTURES THAT MAY BE NECESSARY TO ENSURE VEHICLE PROTECTION.

SUBSTRUCTURE CUT LINE CONSTRUCTION JOINT PREPARATION:
SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVALS ONE INCH DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. LEAVE THE EXISTING REINFORCING STEEL, IF REQUIRED IN THE PLAN, IN PLACE. INSTALL DOWEL BARS IF SPECIFIED. PRIOR TO CONCRETE PLACEMENT ABRASIVELY CLEAN JOINT SURFACES AND EXISTING EXPOSED REINFORCEMENT TO REMOVE LOOSE AND DISINTEGRATED CONCRETE AND LOOSE RUST. THOROUGHLY CLEAN THE JOINT SURFACE AND EXPOSED REINFORCEMENT OF ALL DIRT, DUST, RUST OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURE, OR OTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. EXISTING REINFORCING STEEL DOES NOT HAVE TO HAVE A BRIGHT STEEL FINISH BUT REMOVE ALL PACKS AND LOOSE RUST. THROUGHLY DRENCH EXISTING CONCRETE SURFACES WITH CLEAN WATER AND ALLOW TO DRY TO A DAMP CONDITION BEFORE PLACING CONCRETE.

SUBSTRUCTURE CONCRETE REMOVAL:
REMOVE CONCRETE BY MEANS OF APPROVED PNEUMATIC HAMMERS EMPLOYING POINTED AND BLUNT CHISEL TOOLS. HYDRAULIC HOE-RAM TYPE HAMMERS WILL NOT BE PERMITTED. THE WEIGHT OF THE HAMMER SHALL NOT BE MORE THAN 35 POUNDS FOR REMOVAL WITHIN 18 INCHES OF PORTIONS TO BE PRESERVED. OUTSIDE THE 18 INCH LIMIT, THE CONTRACTOR MAY USE HAMMERS NOT EXCEEDING 90 POUNDS UPON THE APPROVAL OF THE ENGINEER. DO NOT PLACE PNEUMATIC HAMMERS IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE.

DEMOLITION DEBRIS:
THE CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID AND/OR LIMIT DEMOLITION DEBRIS FROM ENTERING THE STREAM. ANY MATERIAL THAT DOES FALL INTO THE STREAM SHALL BE REMOVED AS SOON AS POSSIBLE.

LOADING LIMITATIONS:
NO PART OF THE STRUCTURE SHALL BE SUBJECTED TO UNIT STRESSES THAT EXCEED 136.5 % OF ALLOWABLE UNIT STRESSES AS DEFINED IN THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DUE EITHER TO DEMOLITION, ERECTION OR CONSTRUCTION METHODS, OR TO THE USE OR MOVEMENT OF DEMOLITION OR ERECTION EQUIPMENT ON OR ACROSS THE STRUCTURE. SUBMIT STRUCTURAL ANALYSIS COMPUTATIONS, BY A OHIO REGISTERED PROFESSIONAL ENGINEER, SHOWING THE ALLOWABLE STRESSES AND THE MAXIMUM STRESSES PRODUCED BY THE REMOVAL METHODS OR EQUIPMENT TO THE DIRECTOR AT LEAST 30 DAYS BEFORE CONSTRUCTION BEGINS.

PAYMENT:
COSTS ASSOCIATED FOR ALL THE ABOVE SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID ITEM 202 "PORTION OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN", WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS, WITH PERTINENT PROVISIONS OF 202, AND TO THE SATISFACTION OF THE ENGINEER.

EXISTING STRUCTURE VERIFICATION
DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05 AND 105.02. BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK SHALL BE BASED UPON ACTUAL DETAILS AND DIMENSIONS WHICH HAVE BEEN VERIFIED IN THE FIELD.

UTILITY LINES:
THE UTILITIES SHALL BORE ALL EXPENSE INVOLVED IN RELOCATING (INSTALLING) THE AFFECTED UTILITY LINES. THE CONTRACTOR AND UTILITIES ARE TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

EXISTING STRUCTURE PLANS:
THE ORIGINAL DESIGN PLANS MAY BE OBTAINED OR VIEWED BY INTERESTED PARTIES AT THE MUSKINGUM COUNTY ENGINEER'S OFFICE LOCATED AT 155 REHL ROAD, ZANESVILLE, OHIO.
PHONE NUMBER: (740)454-0155
FAX NUMBER: (740)455-7180

CONTINGENCY QUANTITIES:
THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK LISTED FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED AT THE ENGINEER'S DISCRETION SHALL BE MADE A MATTER OF RECORD BY INCORPORATING INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

STREAM CHANNEL EXCAVATION:
THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT ANY INCIDENTAL DISCHARGES ASSOCIATED WITH THE EXCAVATION AND HAULING OF MATERIAL FROM THE STREAM CHANNEL. THIS PERTAINS TO ANY EXCAVATION OPERATIONS SUCH AS, FOUNDATION FOR PIER OR ABUTMENT EXCAVATION, CHANNEL CLEAN OUT, EXCAVATION FOR ROCK CHANNEL PROTECTION AND REMOVAL OF ANY TEMPORARY FILL ASSOCIATED WITH CONSTRUCTION OPERATIONS.

ITEM 509 REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN
ANY EXISTING REINFORCING BARS DEEMED BY THE ENGINEER TO BE UNUSABLE BECAUSE OF CORROSION SHALL BE REPLACED WITH NEW REINFORCING STEEL. ANY EXISTING REINFORCING BARS WHICH ARE TO BE INCORPORATED INTO THE NEW WORK AND WHICH ARE MADE UNUSABLE BY THE CONTRACTOR'S CONCRETE REMOVAL OPERATIONS SHALL BE REPLACED WITH NEW EPOXY COATED REINFORCING STEEL OF THE SAME SIZE AT THE CONTRACTOR'S COST. ALL WORK SHALL BE TO THE SATISFACTION OF THE ENGINEER. THE NUMBER OF POUNDS OF REINFORCING STEEL PAID FOR AT CONTRACT PRICES SHALL BE THE ACTUAL POUNDS OF REPLACEMENT REINFORCING STEEL SPECIFIED BY THE ENGINEER DUE TO CORROSION AND SHALL INCLUDE PLACEMENT, DOWELING, BENDING, SUPPORTING, TIE WIRES AND TYING OF THAT SPECIFIC REINFORCEMENT.
PAYMENT: AN ALLOWANCE OF 400 POUNDS IS INCLUDED IN THE UNIT PRICE BID ITEM 509 - "REINFORCING STEEL REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN " TO BE USED AS DIRECTED BY THE ENGINEER.

ITEM 503: UNCLASSIFIED EXCAVATION, AS PER PLAN
UNCLASSIFIED EXCAVATION SHALL BE IN ACCORDANCE WITH 503 EXCEPT THE BACKFILL MATERIAL BEHIND THE ABUTMENTS SHALL BE ITEM 613 LOW STRENGTH MORTAR BACKFILL, TYPE 1 (LSM BACKFILL) WITHIN THE LIMITS OF APPROACH SLAB, AS SHOWN ON SHEET 7/14 THE CONTRACTOR ALSO MAY USE THE LSM BACKFILL TO CONSTRUCT THE SLOPES IN THIS SAME AREA AS LONG AS IT IS COVERED WITH ONE FOOT OF SOIL TO MEET THE FINISHED GRADE(THIS EXCESS BACKFILL SHALL NOT BE INCLUDED IN THE MEASUREMENTS FOR ITEM 613 LOW STRENGTH MORTAR BACKFILL). THE AREA FOR THE POROUS BACKFILL WITH FILTER FABRIC SHALL BE FORMED UP PRIOR TO THE PLACEMENT OF THE LSM BACKFILL. THE FILTER FABRIC, PERFORATED PLASTIC PIPE, AND POROUS BACKFILL SHALL BE PLACED AFTER THE LSM BACKFILL HAS CURED AND THE FORMS HAVE BEEN REMOVED.

PAYMENT: THE COST OF ALL LABOR, EQUIPMENT AND MATERIAL TO PLACE THE LSM BACKFILL AS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 613 " LOW STRENGTH MORTAR BACKFILL (TYPE 1)

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED TO BE USED AS DIRECTED BY THE ENGINEER.

ITEM	DESCRIPTION	QUANTITY
613	LOW STRENGTH MORTAR BACKFILL (TYPE 1)	64 CUBIC YARD

ITEM 503: COFFERDAMS, CRIBS, AND SHEETING, AS PER PLAN
TEMPORARY/PERMANENT SHEETING IS REQUIRED TO SUPPORT THE EXISTING AND PROPOSED EMBANKMENT DURING CONSTRUCTION OF THE STRUCTURE . THE DESIGN OF THE TEMPORARY SHEETING OR SHORING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT HIS PLANS FOR THE TEMPORARY SHEETING OR SHORING TO SUPPORT THE ROADWAY EMBANKMENT DURING CONSTRUCTION. PLANS SHALL BE DESIGNED BY A STATE OF OHIO REGISTERED PROFESSIONAL ENGINEER AND CONFORM WITH 501.05. THE CONTRACTOR SHALL SUBMIT THREE (3) COPIES OF DRAWINGS AND CALCULATIONS TO THE ENGINEER AND CONCURRENTLY, ONE COPY TO THE OFFICE OF STRUCTURAL ENGINEERING, FOR REVIEW AND APPROVAL. CONSTRUCTION OF TEMPORARY AND PERMANENT SHORING SHALL NOT BEGIN UNTIL AFTER WRITTEN APPROVAL HAS BEEN RECEIVED FROM THE ENGINEER.
PORTIONS OF THE TEMPORARY SHORING COMPOSED OF STEEL OR CONCRETE MAY BE LEFT IN PLACE AT THE DISCRETION OF THE ENGINEER. PORTIONS COMPOSED OF OTHER MATERIALS SHALL BE REMOVED PRIOR TO COMPLETION OF THE WORK.
PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 503 " COFFERDAMS, CRIBS AND SHEETING" SHALL INCLUDE ALL NECESSARY LABOR, EQUIPMENT AND MATERIALS NEEDED TO COMPLETE THIS WORK.

ITEM 516 - SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL AS PER PLAN:
INSTALL A 3 FOOT WIDE NEOPRENE SHEET AT LOCATIONS SHOWN IN THE PLANS. SECURE THE NEOPRENE SHEETING TO THE CONCRETE WITH 1 1/4" [32 mm] x #10 GAGE [3 mm] (LENGTH X SHANK DIAMETER) GALVANIZED BUTTON HEAD SPIKES THROUGH A 1 INCH [25 mm] OUTSIDE DIAMETER, #10 GAGE [3 mm] GALVANIZED WASHER. MAXIMUM FASTENER SPACING IS 9 INCHES [225 mm]. USE OF OTHER SIMILAR GALVANIZED DEVICES, WHICH WILL NOT DAMAGE EITHER THE NEOPRENE OR THE CONCRETE, WILL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

CENTER THE NEOPRENE STRIPS ON ALL JOINTS. FOR HORIZONTAL JOINTS SECURE THE HORIZONTAL NEOPRENE STRIP BY USING A SINGLE LINE OF FASTENERS, STARTING AT 6 INCHES [150 mm], ±, FROM THE TOP OF THE NEOPRENE STRIP. FOR THE VERTICAL JOINTS, SECURE THE VERTICAL NEOPRENE STRIP BY USING A SINGLE VERTICAL LINE OF FASTENERS, STARTING AT 6 INCHES [150 mm], ±, FROM THE VERTICAL EDGE OF THE NEOPRENE STRIP NEAREST TO THE CENTERLINE OF ROADWAY. FOR VERTICAL JOINTS, INSTALL 2 ADDITIONAL FASTENERS, AT 6 INCHES [150 mm], CENTER TO CENTER, ACROSS THE TOP OF THE NEOPRENE STRIP ON THE SAME SIDE OF THE VERTICAL JOINT AS THE SINGLE VERTICAL ROW OF FASTENERS IS LOCATED. THE VERTICAL NEOPRENE STRIPS SHALL COMPLETELY OVERLAP THE HORIZONTAL STRIPS. LAP LENGTHS OF THE HORIZONTAL STRIPS THAT ARE NOT VULCANIZED OR ADHESIVE BONDED, SHALL BE AT LEAST 1 FOOT [0.3 METER] IN LENGTH, OR 6 INCHES [150 mm] IN LENGTH IF THE LAP IS VULCANIZED OR ADHESIVE BONDED. NO LAPS ARE ACCEPTABLE IN VERTICALLY INSTALLED NEOPRENE STRIPS.

THE NEOPRENE SHEETING SHALL BE 3/32" [2.5 mm] THICK GENERAL PURPOSE, HEAVY-DUTY NEOPRENE SHEET WITH NYLON FABRIC REINFORCEMENT. THE SHEETING SHALL BE "FAIRPRENE NUMBER NN-0003", BY E.I. DUPONT DE NEMOURS AND COMPANY, INC., "WNGPRENE" BY THE GOODYEAR TIRE AND RUBBER COMPANY, OR AN APPROVED ALTERNATE. THE NEOPRENE SHEETING SHALL CONFORM TO THE FOLLOWING:

DESCRIPTION OF TEST	ASTM METHOD	REQUIREMENT
THICKNESS, INCHES [mm]	D 751	0.094 ± 0.01 [2.5 ± 0.25]
BREAKING STRENGTH, GRAB, LBS [N], MINIMUM (LONG. X TRANS.)	D 751	700x700 [3130 x 3130]
ADHESIVE STRIP, 1" [25mm] WIDE x 2" [50 mm] LONG, LBS [N] MINIMUM	D 751	9 [27]
BURST STRENGTH, PSI [Mpa] MINIMUM	D 751	1400 [9.65]
HEAT AGING, 70 HR, 212°F [100°C], 180° BEND WITHOUT CRACKING	D 2136	NO CRACKING OF COATING
LOW TEMP. BRITTLENESS, 1 HR, -40 °F [-40°C], BEND AROUND 1/4" [6 mm] MANDREL	D 2136	NO CRACKING OF COATING

METHOD OF MEASUREMENT: THE DEPARTMENT WILL MEASURE THE TOTAL LENGTH OF JOINT TO BE SEALED BY THE NUMBER OF FEET.

BASIS OF PAYMENT: THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516, SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL, AS PER PLAN.

DESIGN AGENCY
E. P. FERRIS & ASSOCIATES, INC.
Consulting Civil Engineers & Surveyors
880 King Avenue
Columbus, Ohio 43212

DESIGNED	DRAWN	REVIEWED	DATE
RB	RB	EPF	04/21/04
CHECKED VAD	REVISED	STRUCTURE FILE NUMBER 6042244	

STRUCTURE GENERAL NOTES
BRIDGE NO. MUS-408- 0825
OVER LICKING RIVER

MUS-408-8.25

STRUCTURE ESTIMATED QUANTITIES					STRUCTURAL FILE NUMBER 6042244	DATE: 9-15-04 CALC BY: RB			DATE: 9-17-04 CHKD BY: JPC	
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION		ABUT.	PIER	SUPER	GENL	AS PER PLAN. SEE SHEET NO.
202	11203	LUMP		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN		LUMP	LUMP	LUMP		SEE GENERAL NOTES. SHEET 3/14
202	22900	122	SQ YD	APPROACH SLAB REMOVED				122		
503	11101	LUMP		COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN		LUMP				SEE GENERAL NOTES. SHEET 3/14
503	21301	LUMP		UNCLASSIFIED EXCAVATION, AS PER PLAN		LUMP				SEE GENERAL NOTES. SHEET 3/14
509	10000	69,361	POUND	EPOXY COATED REINFORCING STEEL		5212	6600	57,549		
509	20001	400	POUND	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN			400			SEE GENERAL NOTES. SHEET 3/14
510	10000	268	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT		140	128			
511	50200	40	CU YD	CLASS HP CONCRETE, SUBSTRUCTURE		8	32			
511	51000	309	CU YD	CLASS HP CONCRETE, SUPERSTRUCTURE				309		
511	52500	LUMP		CLASS HP CONCRETE, TESTING		LUMP	LUMP	LUMP		
512	55900	LUMP		TYPE 2 WATERPROOFING				LUMP		
513	10041	LUMP		STRUCTURAL STEEL MEMBERS, LEVEL 2, AS PER PLAN				LUMP		SEE NOTE NO. 7 ON SHEET 7/14
513	20000	2916	EACH	WELDED STUD SHEAR CONNECTORS				2916		
516	13900	32	SQ FT	2" PREFORMED EXPANSION JOINT FILLER		32				
516	14021	49	FT	SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL, AS PER PLAN		49				SEE GENERAL NOTES. SHEET 3/14
516	44001	16	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN. ((18" X 11 1/2" X 2.6782") BEARING WITH (19" X 12 1/2" X 1 1/2") LOAD PLATES)			16			SEE NOTE NO. 3 ON SHEET 13/14
516	44001	8	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN. ((12" X 8 1/2" X 4.1723") BEARING WITH (13 1/4" X 13 1/4" X 1 1/2") LOAD PLATES AND HP SHAPES)		8				SEE NOTE NO. 3 ON SHEET 13/14
517	70000	661.50	FT	RAILING (TWIN STEEL TUBE)				661.50		
518	21230	LUMP		POROUS BACKFILL WITH FILTER FABRIC		LUMP				
SPECIAL	51822300	793	FT	STEEL DRIP STRIP				793		
518	40000	71	FT	6" PERFORATED CORRUGATED PLASTIC PIPE		71				
518	40010	30	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS		30				
526	25000	134	SQ YD	REINFORCED CONCRETE APPROACH SLABS (T=15")				134		
601	34000	125	CU YD	ROCK CHANNEL PROTECTION, TYPE A WITHOUT FILTER					125	
* 601	32104	9	CU YD	ROCK CHANNEL PROTECTION, TYPE B WITH FABRIC FILTER		9				
604	36600	4	EACH	PRECAST REINFORCED CONCRETE OUTLET		4				
613	41250	62	CU YD	LOW STRENGTH MORTAR BACKFILL (TYPE 1)		62				
864	10100	573	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)		73	353	147		

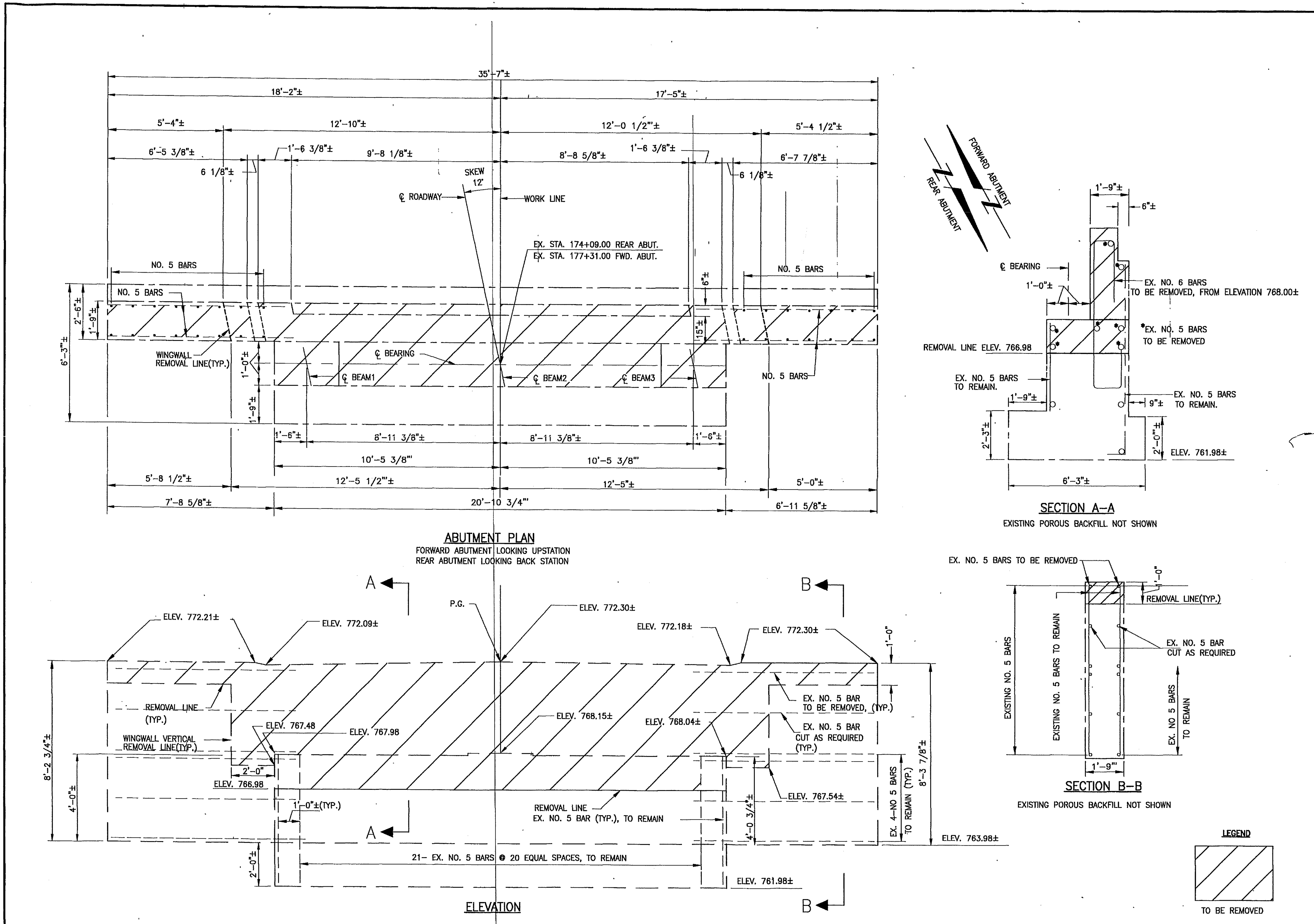
* AS DIRECTED BY THE ENGINEER.

DESIGN AGENCY
E. P. FERRIS & ASSOCIATES, INC.
Consulting Civil Engineers & Surveyors
880 King Avenue
Columbus, Ohio 43212

REVIEWED EPF DATE 04/21/04
STRUCTURE FILE NUMBER 6042244
DRAWN RB REVISED
DESIGNED RB CHECKED VAD

ESTIMATED QUANTITIES
BRIDGE NO. MUS-408-0825
OVER LICKING RIVER

MUS-408-8.25



DESIGN AGENCY
E. P. FERRIS & ASSOCIATES, INC.
Consulting Civil Engineers & Surveyors
880 King Avenue
Columbus, Ohio 43212

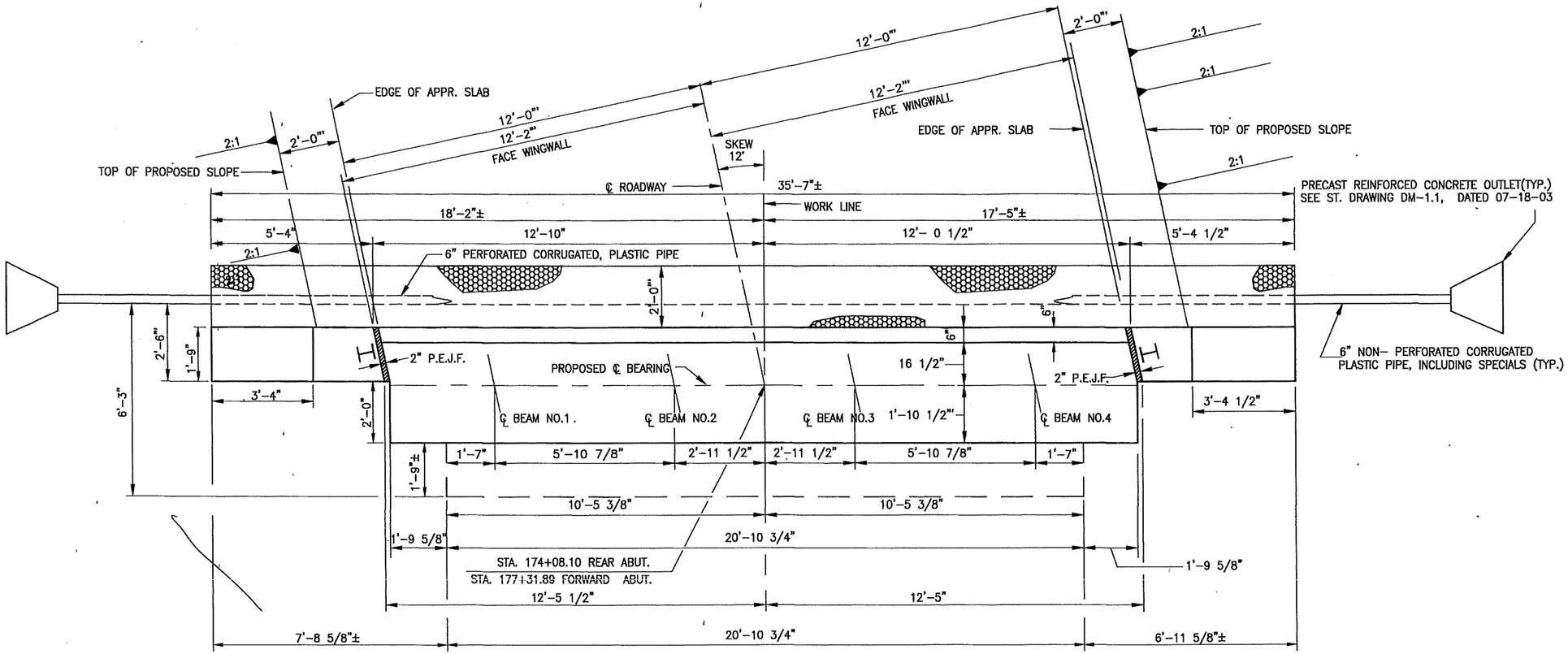
REVIEWED	DATE
EPF	04/21/04
STRUCTURE FILE NUMBER	
6042244	

DRAWN	REVISED
RB	

DESIGNED	CHECKED
RB	VAD

EX. ABUTMENT DEMOLITION PLAN
BRIDGE NO. MUS-408-0825
OVER LICKING RIVER

MUS.-408-8.25

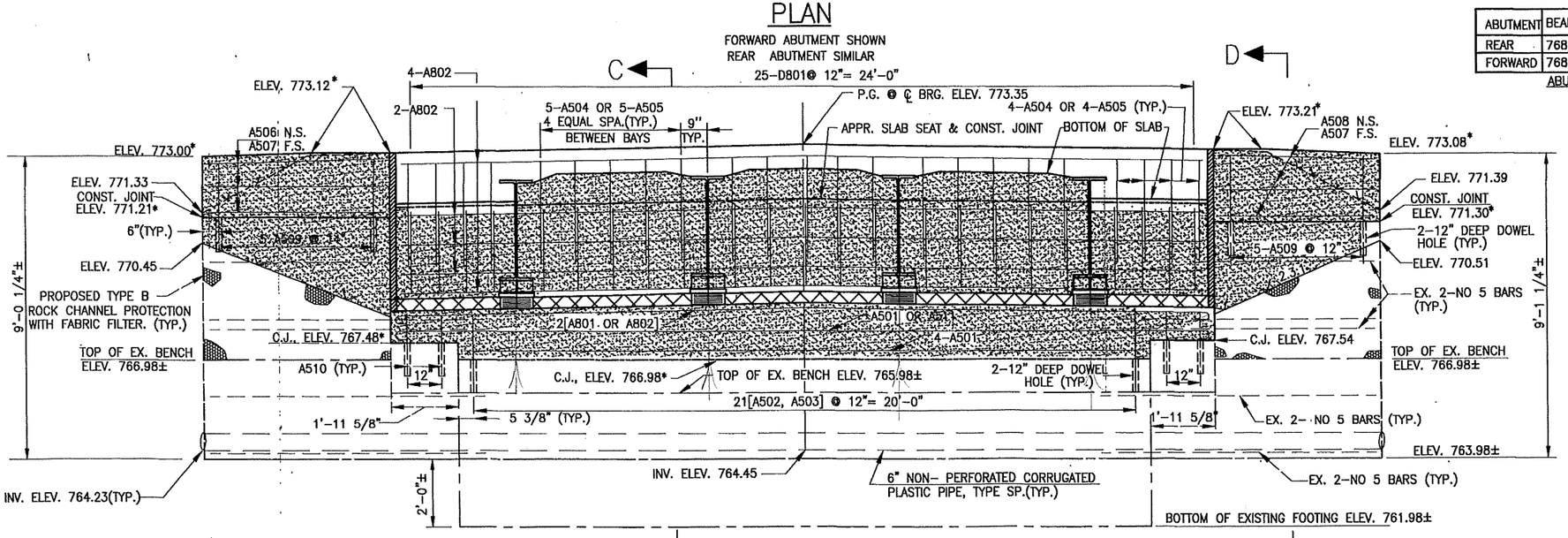


PLAN

FORWARD ABUTMENT SHOWN
REAR ABUTMENT SIMILAR

ABUTMENT	BEAM NO.1	BEAM NO.2	BEAM NO.3	BEAM NO.4
REAR	768.58	768.64	768.62	768.50
FORWARD	768.50	768.62	768.64	768.58

ABUTMENT BEAM SEAT ELEVATIONS



ELEVATION

LEGEND

P.E.J.F. = PREFORMED EXPANSION JOINT FILLER
E.S. = EACH SIDE
N.S. = NEAR SIDE
F.S. = FAR SIDE

* ELEVATIONS ARE ALONG CENTERLINE BEARING.

SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)

NOTES:

1- BEAM SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD 1/8" FOR THE VERTICAL DEFORMATION OF THE BEARINGS.

2- SEALING OF CONCRETE SURFACES SHALL COVER ALL EXPOSED SURFACES OF ABUTMENT, INCLUDING THE FULL LENGTH OF BEAM SEAT AREA, AND WINGWALLS(SEE SECTION D-D). **PAYMENT:** SHALL BE INCLUDED IN ITEM 864, SEALING OF CONCRETE, SURFACES (EPOXY URETHANE)

3- SEE STANDARD DRAWING SICD-1-96, REVISED 07-19-02 FOR ADDITIONAL DETAILS AND NOTES.

4- FOR SECTION C-C & D-D REFER TO SHEET 7/14

5- ABUTMENT BEAM SEAT ELEVATIONS ARE BASED ON THE FOLLOWING DEPTH
DEPTH OF BEAM W36 X 135= 35.55"
DEPTH OF SLAB PLUS HAUNCH= 10 1/2"
DEPTH OF BEARING, LOAD PLATE, AND HP SECTION = 10.1723"
TOTAL DEPTH = 56.2223"=4.6852'

DESIGN AGENCY
E. P. FERRIS & ASSOCIATES, INC.
Consulting Civil Engineers & Surveyors
880 King Avenue
Columbus, Ohio 43212

DESIGNED	DRAWN	REVIEWED	DATE
RB	RB	EPF	04/21/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
VAD		6042244	

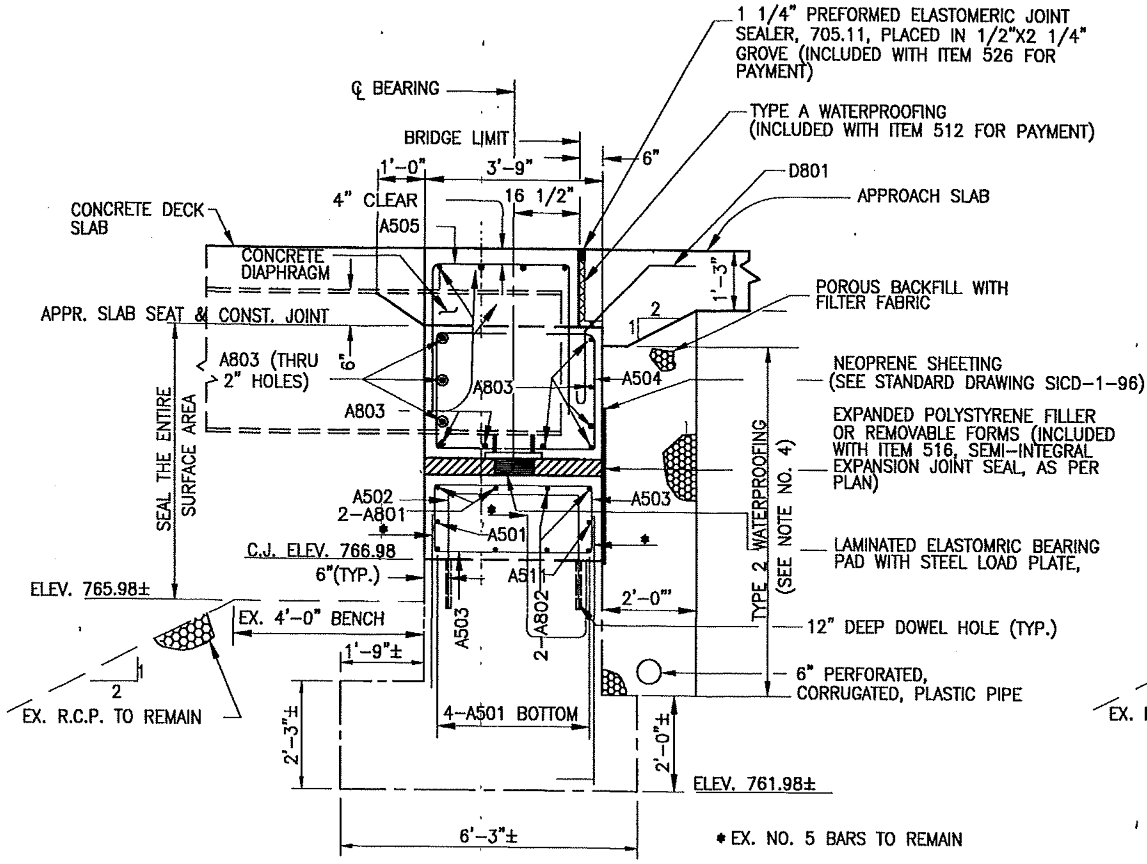
PROPOSED ABUTMENT PLAN
BRIDGE NO. MUS-408-0825
OVER LICKING RIVER

MUS.-408-8.25

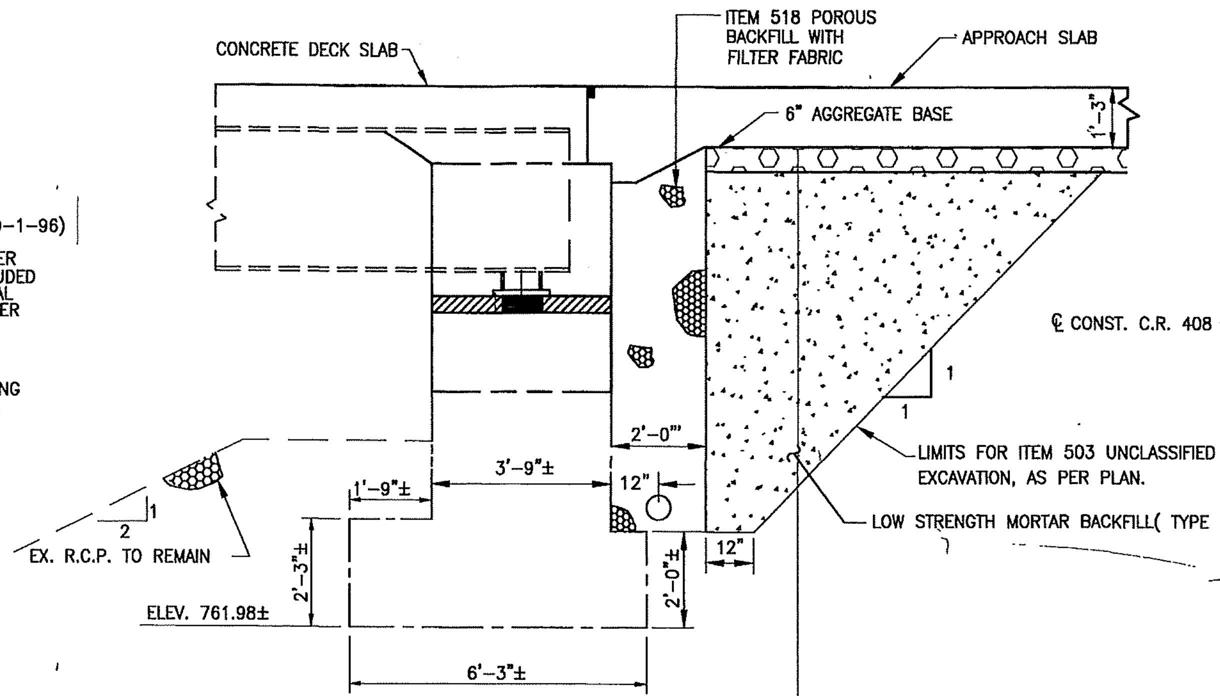
6/14

15/23

E.P. FERRIS & ASSOCIATES, INC.

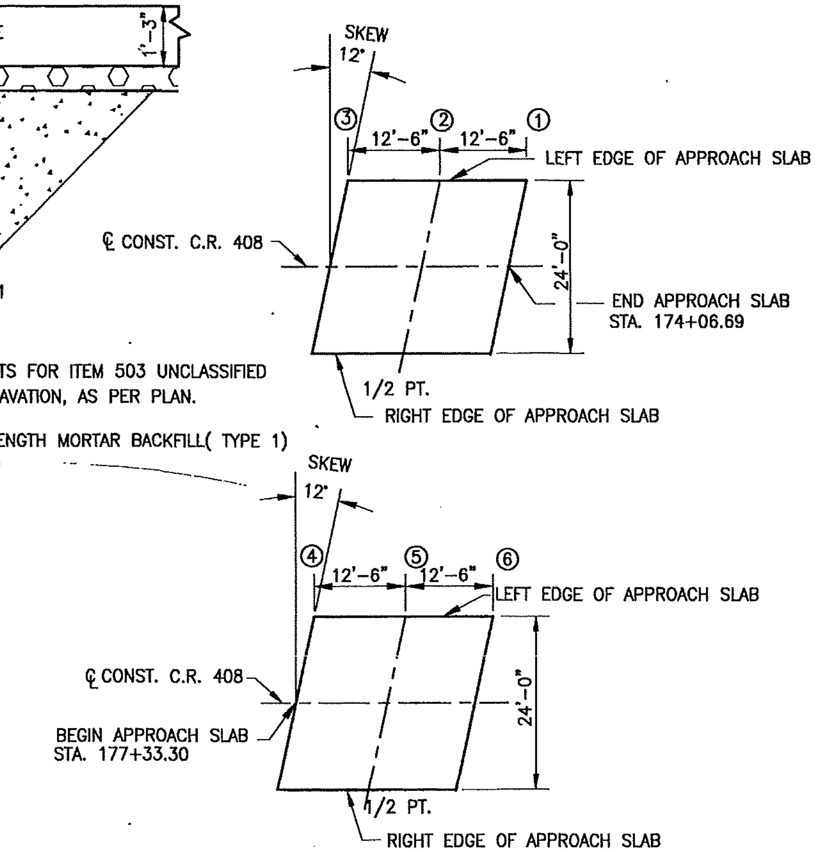


SECTION C-C



EXCAVATION/EMBANKMENT & BACKFILL DIAGRAM

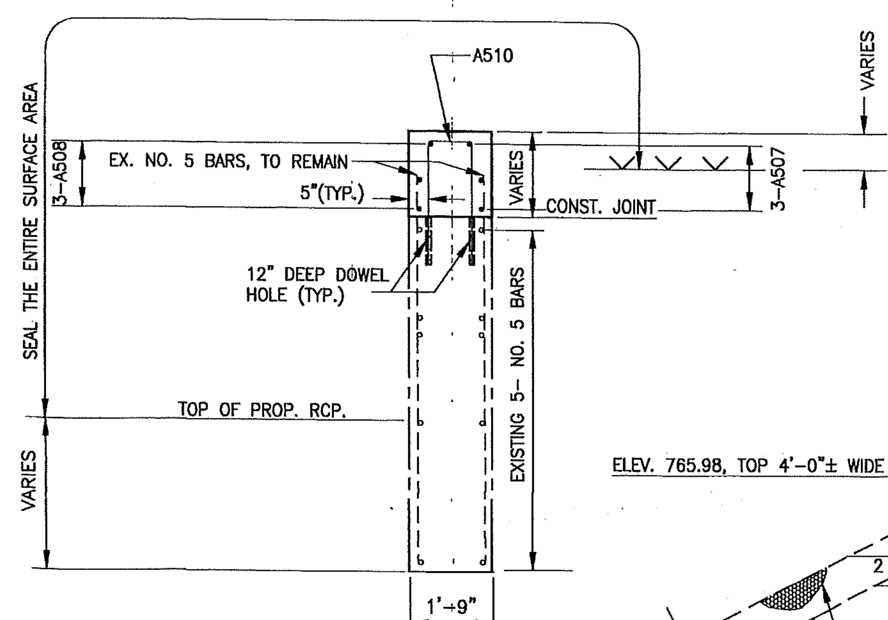
@ FORWARD & REAR ABUTMENT



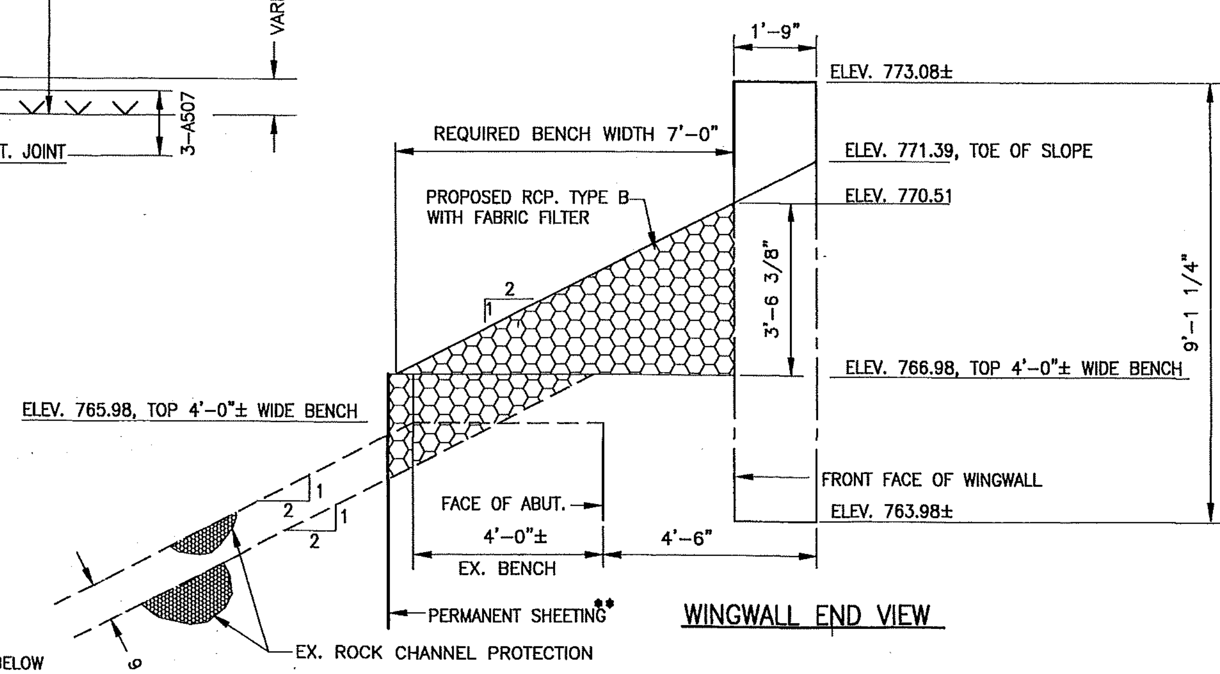
APPROACH SLAB PLANS

LINE NO.	LEFT EDGE ELEV.	LEFT EDGE STATION	℄ ROADWAY ELEV.	℄ ROADWAY STATION	RIGHT EDGE ELEV.	RIGHT EDGE STATION
1	773.19	174+09.28	773.33	174+06.69	773.09	174+04.14
2	772.94	173+96.74	773.08	173+94.19	772.84	173+91.64
3	772.67	173+84.24	772.80	173+81.69	772.55	173+79.14
4	773.09	177+35.88	773.33	177+33.30	773.19	177+30.71
5	772.84	177+48.35	773.08	177+45.80	772.94	177+43.25
6	772.55	177+60.85	772.80	177+58.30	772.67	173+55.75

APPROACH SLAB ELEVATIONS



SECTION D-D



WINGWALL END VIEW

NOTES

1- POROUS BACKFILL WITH FILTER FABRIC, 2 FEET THICK SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE, TO ONE FOOT BELOW THE EMBANKMENT SURFACE, AND LATERALLY TO THE ENDS OF THE WINGWALLS. GEOTEXTILE SHALL CONFORM WITH 712.09, TYPE, A. GEOTEXTILE FABRIC IS INCLUDED WITH POUROUS BACKFILL FOR PAYMENT.

2- ABUTMENT DIAPHRAGM CONCRETE, STEEL SUPERSTRUCTURE: PLACE THE CONCRETE ENCASING THE STRUCTURAL STEEL MEMBERS WITH DECK CONCRETE OR AT LEAST 48 HOURS BEFORE PLACEMENT OF THE DECK CONCRETE.

3- TYPE 2 WATERPROOFING: THE WATERPROOFING SHALL BE PLACED OVER THE TOP OF NEOPRENE SHEETING AND CONCRETE SURFACE PRIOR TO PLACEMENT OF THE FILTER FABRIC AND THE POROUS BACKFILL. THE WATERPROOFING SHALL COVER THE ENTIRE WIDTH AND HEIGHT OF ABUTMENT ON ROADWAY APPROACH BELOW GRADE FROM THE TOP OF THE FOOTER TO THE BOTTOM OF EITHER THE APPROACH SLAB SEAT OR TO MEET GRADE & LIMIT OF SEALING OF CONCRETE SURFACES(EPOXY-UTHRETHANE)

4- SEE STANDARD DRAWING SICD-1-96 FOR MORE DETAIL AND INFORMATION.

5- THE DOWEL HOLE DIAMETER SHALL BE AS SPECIFIED IN CMS SECTION 510. ALL DOWEL HOLES SHALL BE GROUTED WITH NONSHRINK, NONMETALLIC GROUT.

6- SEALING OF BEAM SEATS: IF THE BEAMS SEATS ARE TO BE SEALED WITH AN EPOXY OR NON-EPOXY SEALER PRIOR TO SETTING THE BEARINGS, DO NOT APPLY SEALER TO THE CONCRETE SURFACES UNDER THE PROPOSED BEARING LOCATIONS. IF THESE LOCATIONS ARE SEALED, REMOVE THE SEALER TO THE SATSIFACTION OF ENGINEER PRIOR TO SETTING THE BEARINGS. THE DEPARTMENT WILL NOT PAY FOR THE REMOVAL.

7- IN REFERENCE TO THE DISCREPANCIES NOTE ON PAGE (3/23), IF THE ENDS OF THE BEAMS EXTEND MORE THAN 15"± FROM THE CENTERLINE OF BEARING, THE ADDITIONAL LENGTH NEEDS TO BE CUT. THE COST OF ALL LABOR AND EQUIPMENT FOR THE CUTTING OF THE BEAMS SHALL BE INCLUDED IN THE LUMP SUM FOR ITEM 513 STRUCTURAL STEEL MEMBERS, LEVEL 2, AS PER PLAN.

** PERMANENT SHEET PILING, AS DIRECTED BY THE ENGINEER, TO SUPPORT THE PROPOSED ROCK CHANNEL PROTECTION TOWARD THE END OF THE WINGWALLS.

SHEET PILING DESCRIPRION:

1-MINIMUM SECTION MODULUS 24 IN^3 PER LINEAR FOOT OF WALL

2-TOP ELEVATION 767.00±

3-BOTTOM ELEVATION 758.00

4- LIMITS OF SHORING 3'-0" (MEASURED FROM THE END OF THE WINGWALLS)

5- METHOD OF PAYMENT: PAYMENT SHALL BE MADE AT THE LUMP SUM PRICE BID FOR ITEM 503, COFFERDAMS, CRIBS, AND SHEETING, AS PER PLAN AND SHALL INCLUDE ALL NECESSARY TOOLS, LABOR, EQUIPMENT AND MATERIALS TO COMPLETE THE ITEM OF WORK.

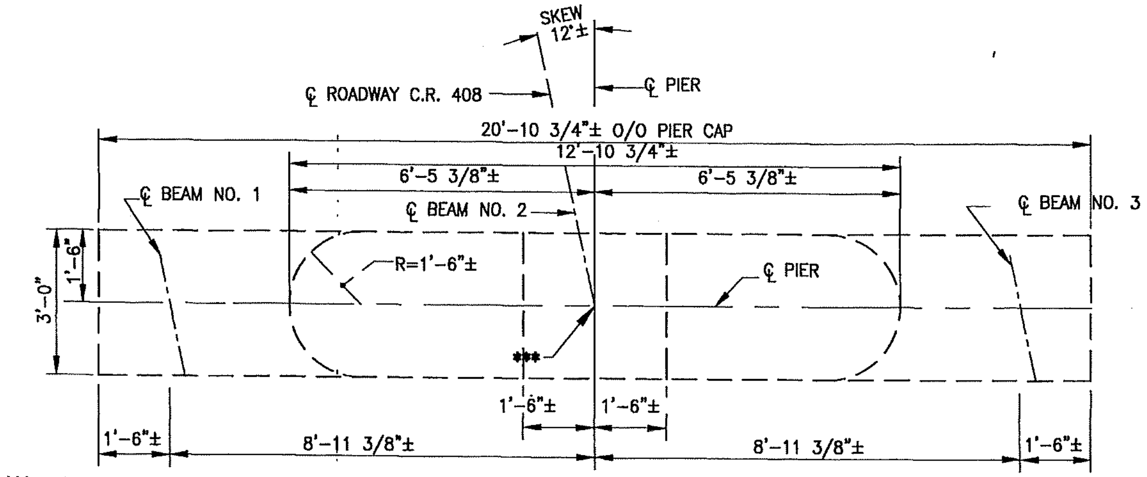
DESIGN AGENCY
E. P. FERRIS & ASSOCIATES, INC.
Consulting Civil Engineers & Surveyors
880 King Avenue
Columbus, Ohio 43212

DESIGNED RB | CHECKED VAD | DRAWN RB | REVISED | REVIEWED EPF | DATE 04/21/04 | STRUCTURE FILE NUMBER 6042244

PROPOSED ABUTMENT DETAILS

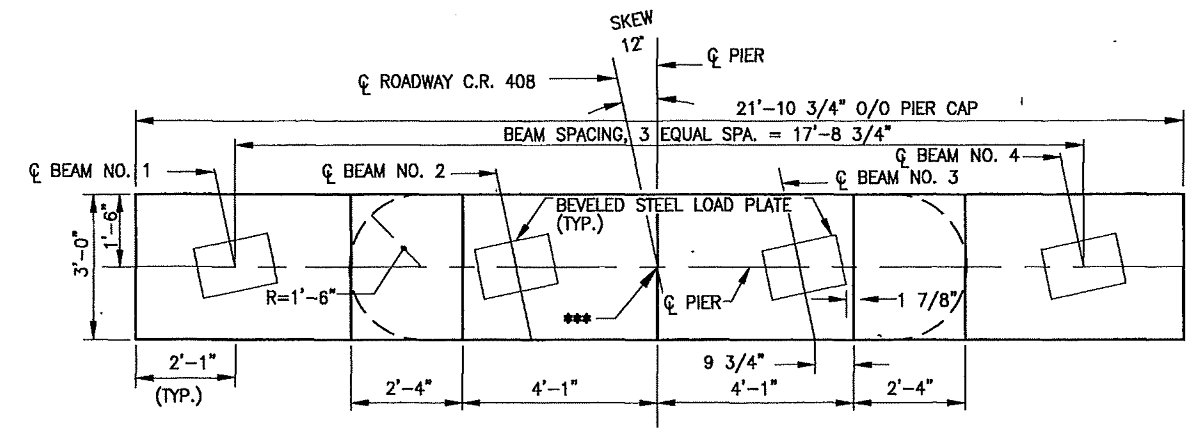
BRIDGE NO. MUS-408-0825
OVER LICKING RIVER

MUS-408-8.25

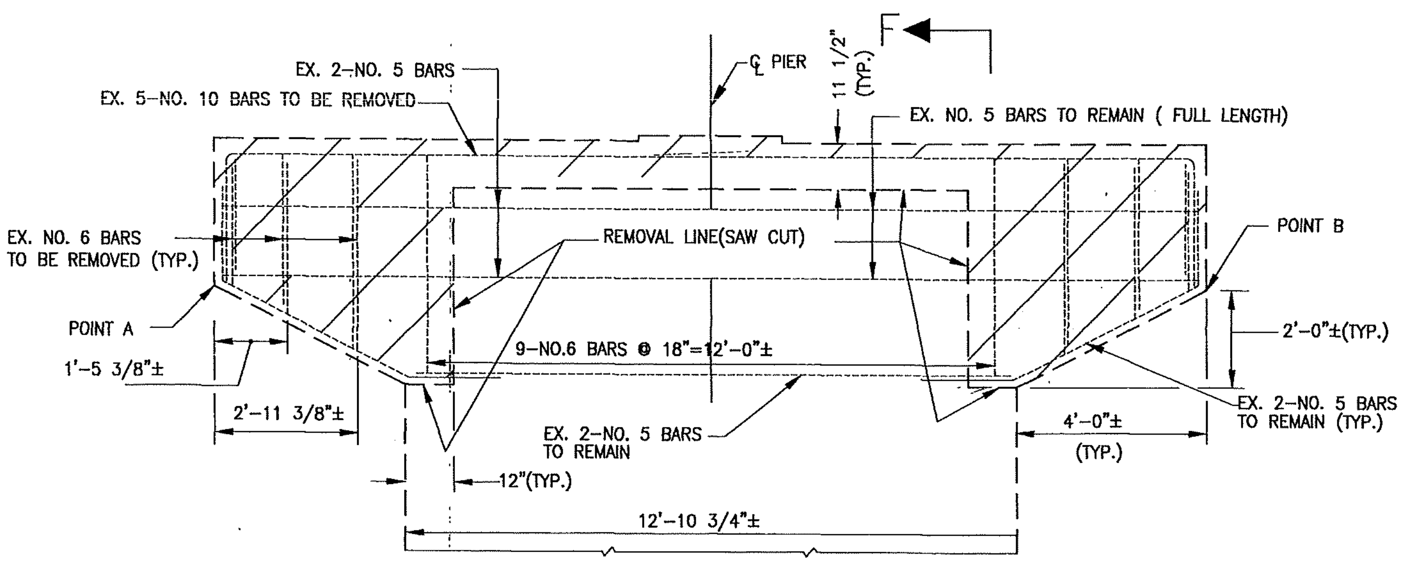


*** STA. 174+65.00 PIER NO.1
STA. 175+35.00 PIER NO.2
STA. 176+05.00 PIER NO.3
STA. 176+75.00 PIER NO.4

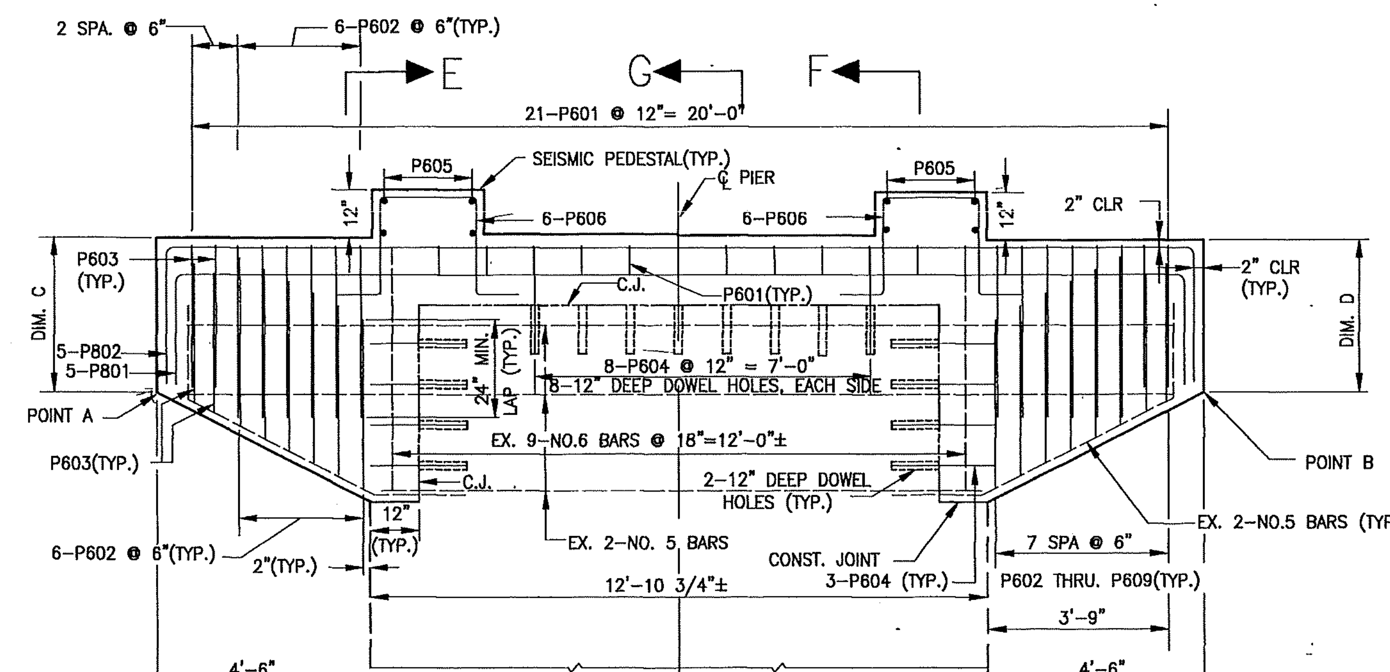
EXISTING PLAN
LOOKING UPSTATION



PROPOSED PLAN
LOOKING UPSTATION



PARTIAL ELEVATION



PARTIAL ELEVATION

E G F

NOTES:

1- PIER BEAM SEAT ELEV. ARE BASED ON THE FOLLOWING DEPTH:
DEPTH OF BEAM W36 X 135= 35.55"
DEPTH OF SLAB PLUS HAUNCH= 10 1/2"
DEPTH OF BEARING, LOAD PLATE, AND HP SECTION = 4.1782"
TOTAL DEPTH = 50.2282"=4.1856'
2- FOR BEAM SEAT ELEVATIONS AND DIMENSIONS, C & D, REFER TO ELEVATION TABLE "B" ON THIS SHEET.
3- REFER TO SHEET 9/14 FOR SECTIONS E-E, F-F AND G-G.
4- BEAM SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD 1/8" FOR THE VERTICAL DEFORMATION OF THE BEARINGS.
5- THE FLEXURAL AND SHEAR STRENGTH OF PIER CANTILEVER ARMS IS BASED ON THE DIMENSIONS SHOWN ON THESE PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE ENGINEER OF ANY ELEVATION DISCREPANCIES.
THE ACTUAL DEPTH OF NEWLY CONSTRUCTED CANTILEVER ARMS AT ANY POINT ALONG THEIR LENGTH SHALL NOT BE, AT MINIMUM, LESS THAN THE DIMENSIONS SHOWN.

BEAM NUMBER	B-1	B-2	B-3
PIER NO.1	769.58±	769.69±	769.54±
PIER NO.2	770.12±	770.25±	770.11±
PIER NO.3	770.11±	770.25±	770.12±
PIER NO.4	769.54±	769.69±	769.58±

EXISTING PIER BEAM SEAT ELEVATIONS

PIER	POINT A	POINT B
NO.1	766.54±	766.54±
NO.2	767.11±	767.11±
NO.3	767.11±	767.11±
NO.4	766.54±	766.54±

EXISTING PIER CAP ELEVATIONS

BEAM NUMBER	B-1	B-2	B-3	B-4
PIER NO.1	769.93	770.00	769.99	769.89
PIER NO.2	770.48	770.56	770.55	770.46
PIER NO.3	770.46	770.55	770.56	770.48
PIER NO.4	769.89	769.99	770.00	769.93

PROPOSED PIER BEAM SEAT ELEVATIONS

DIMENSION	C	D
PIER NO.1	3'-2"	3'-1 1/2"
PIER NO.2	3'-1 3/4"	3'-1/2"
PIER NO.3	3'-1/2"	3'-1 3/4"
PIER NO.4	3'-1 1/2"	3'-2"

PROPOSED PIER DIMENSIONS

PIER	POINT A	POINT B
NO.1	766.76	766.76
NO.2	767.33	767.33
NO.3	767.33	767.33
NO.4	766.76	766.76

PROP. PIER CAP ELEVATIONS

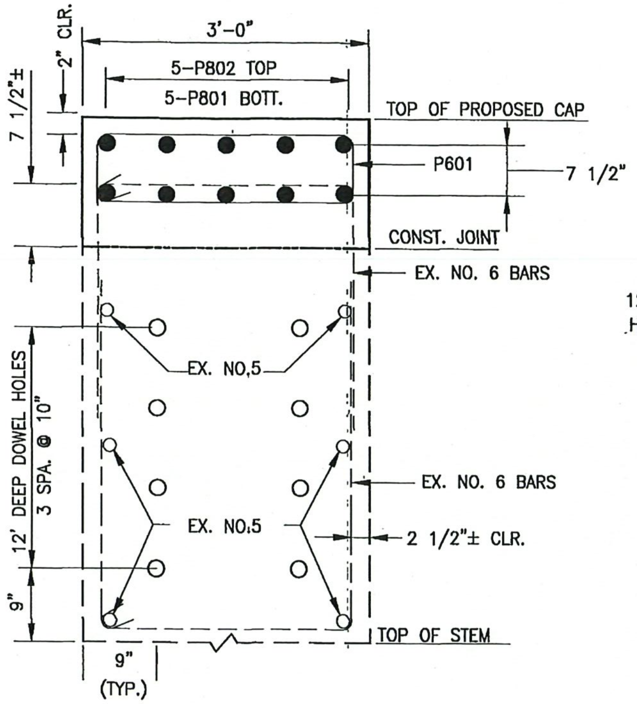
ELEVATION TABLE "B"

DESIGN AGENCY
E. P. FERRIS & ASSOCIATES, INC.
Consulting Civil Engineers & Surveyors
880 King Avenue
Columbus, Ohio 43212

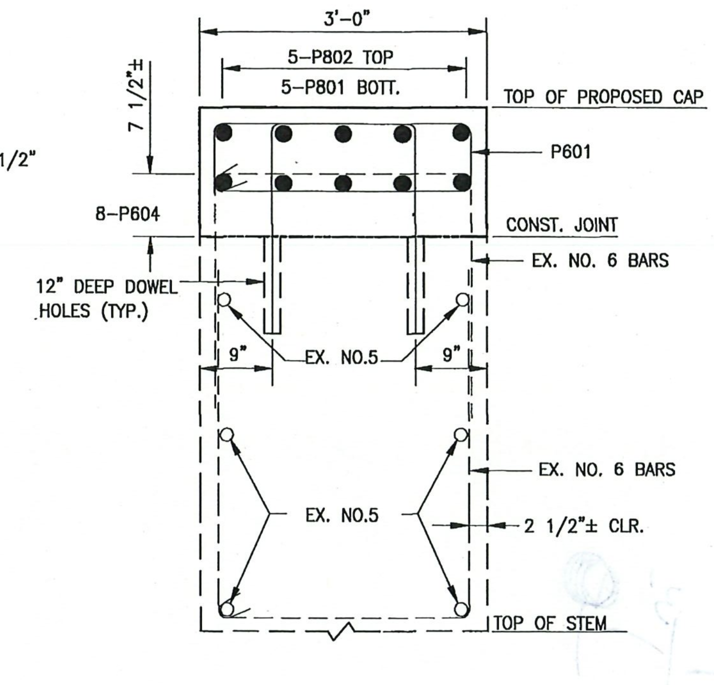
DESIGNED	DRAWN	REVIEWED	DATE
RB	RB	EPF	04/21/04
CHECKED VAD	REVISED	STRUCTURE FILE NUMBER 6042244	

PIER DETAILS
BRIDGE NO. MUS-408-0825 OVER LICKING RIVER

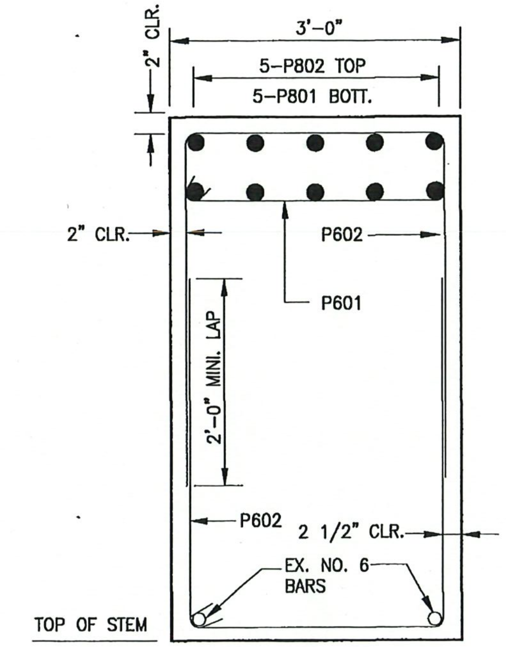
MUS-408-8.25



SECTION F- F
PROPOSED
SEISMIC PEDESTAL NOT SHOWN



SECTION G-G
PROPOSED



SECTION E-E
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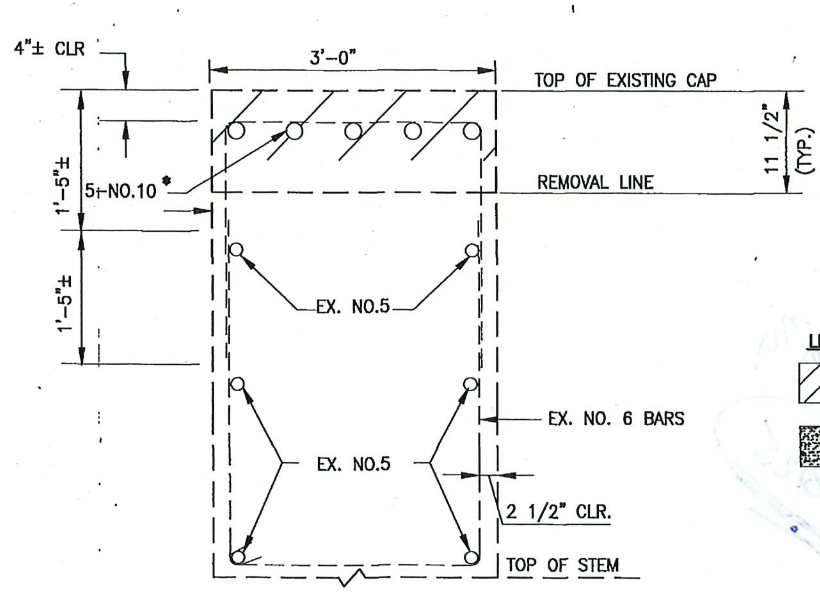
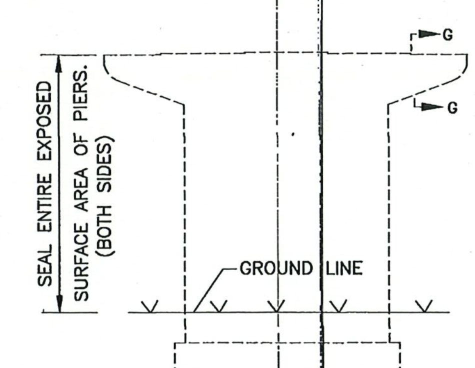


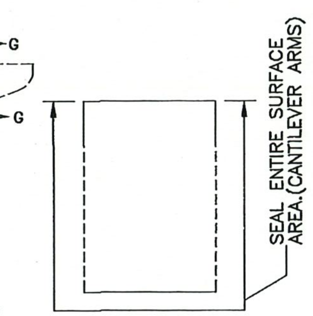
SECTION F- F
EXISTING

LEGEND

- TO BE REMOVED
- NEW CONSTRUCTION
- * EX. BARS TO BE REMOVED



PIER ELEVATION
SEALING OF CONCRETE SURFACES



SECTION G-G

NOTE: FOR ELEVATIONS AND DIMENSIONS REFER TO ELEVATION TABLE "B" ON SHEET 8/14.

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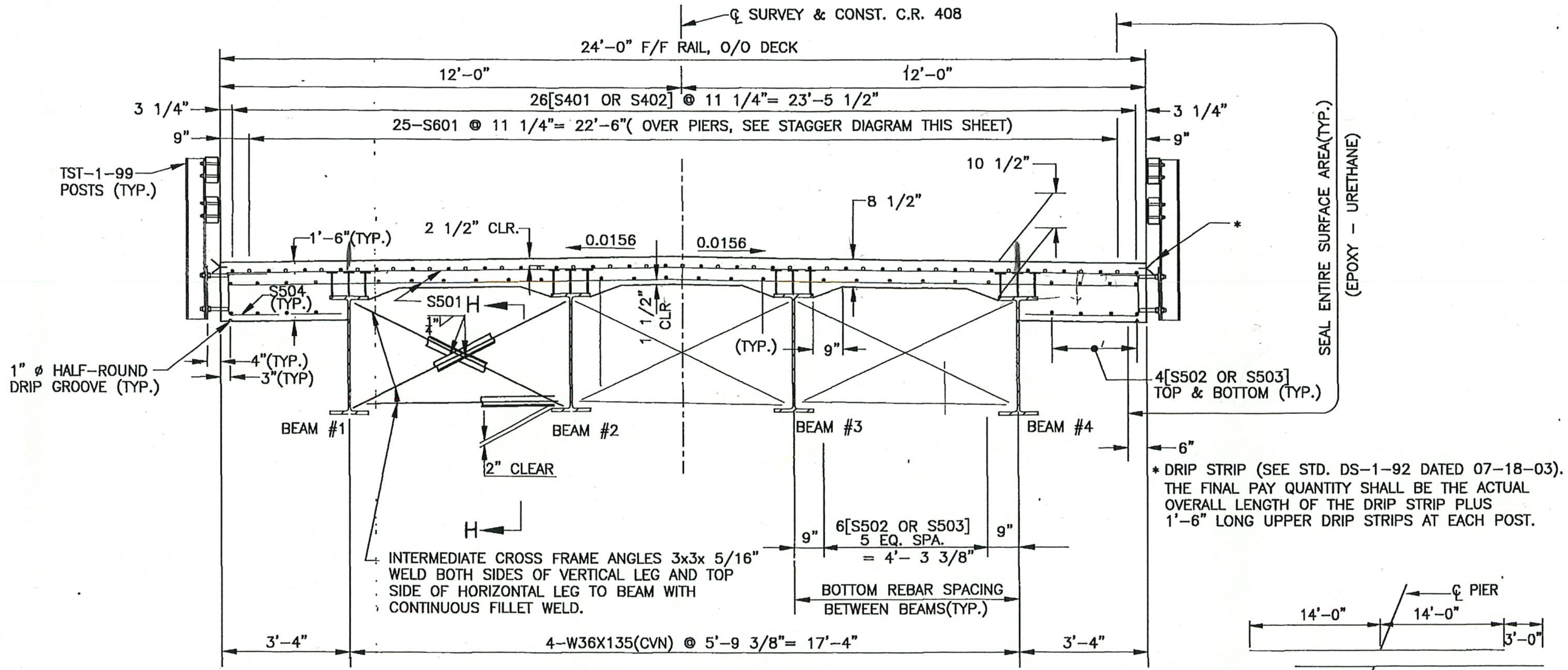
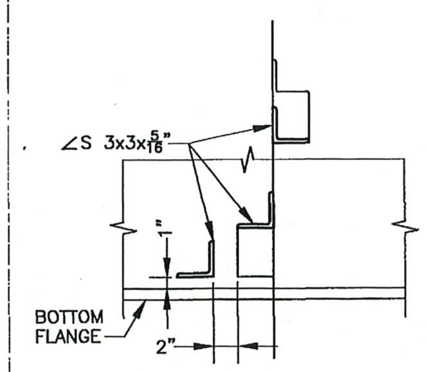
PIER DETAILS
BRIDGE NO. MUS-408-0825
OVER LICKING RIVER

MUS-408-8.25



TRANSVERSE SECTION

LOOKING UPSTATION



SECTION H-H

NOTES:

1. DECK SLAB CONCRETE QUANTITY: THE ESTIMATED QUANTITY OF DECK SLAB CONCRETE IS BASED ON THE CONSTANT DECK SLAB THICKNESS, AS SHOWN, PLUS THE QUANTITY OF CONCRETE THAT FORMS EACH BEAM HAUNCH. THE ESTIMATE ASSUMES A CONSTANT HAUNCH THICKNESS OF 3± INCHES AND A CONSTANT HAUNCH WIDTH OUTSIDE THE EDGE OF EACH BEAM FLANGE OF 9 INCHES. DEVIATE FROM THIS THICKNESS AS NECESSARY TO PLACE THE DECK SURFACE AT THE FINISHED GRADE. THE ALLOWABLE TOLERANCE FOR THE HAUNCH WIDTH OUTSIDE THE EDGE OF EACH BEAM FLANGE IS 3± INCHES.

   THE HAUNCH THICKNESS WAS MEASURED AT THE CENTERLINE OF THE BEAM, FROM THE SURFACE OF THE DECK TO THE BOTTOM OF THE TOP FLANGE MINUS THE DECK SLAB THICKNESS. THE AREA OF ALL EMBEDDED STEEL PLATES HAS BEEN DEDUCTED FROM THE HAUNCH QUANTITY IN ACCORDANCE WITH 511.24.

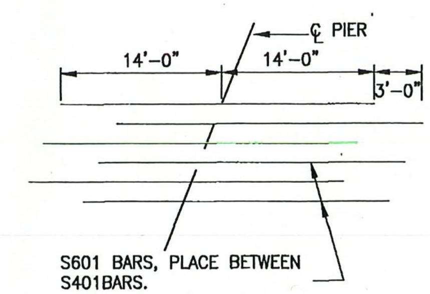
2. DRIP STRIP SHALL TERMINATE 2'-0" FROM THE FACE OF ABUTMENTS.

3. REINFORCING STEEL SPLICES:

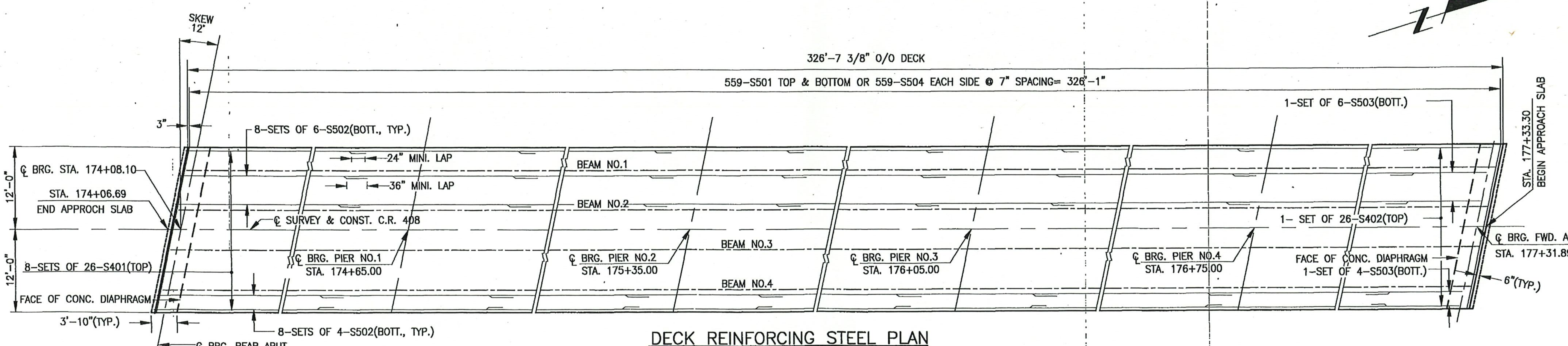
   UNLESS SHOWN OTHERWISE, ALL SPLICES SHALL BE MADE BY OVERLAPPING THE ENDS OF THE BARS NOT LESS THAN SHOWN IN THE FOLLOWING TABLE FOR EPOXY COATED BARS:

BAR SIZE	MINIMUM LAP LENGTH (IN.)
4	24
5	30

4. ALTERNATE THE BAR PLACEMENT TO STAGGER THE SPLICE LOCATION.



STAGGER BAR DIAGRAM



DECK REINFORCING STEEL PLAN

FOR ADDITIONAL DETAILS, SEE TRANSVERSE SECTION AND STAGGER BAR DIAGRAM THIS SHEET.

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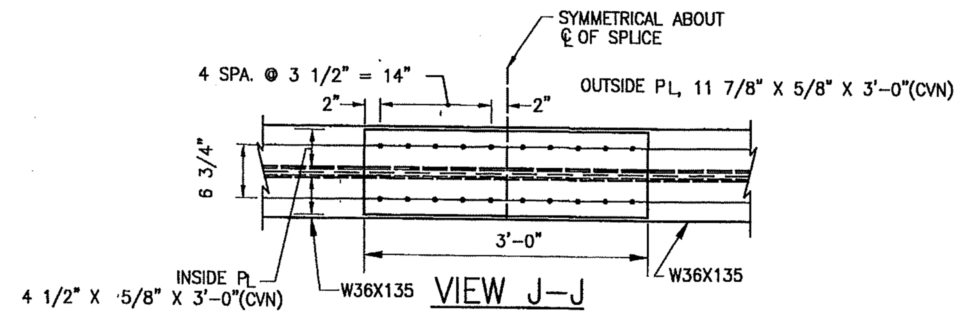
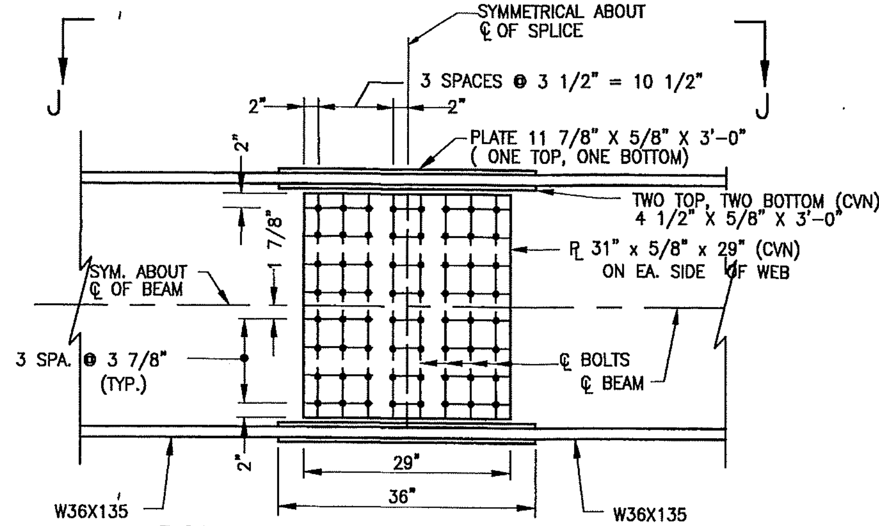
SUPERSTRUCTURE DETAILS

BRIDGE NO. MUS-408-0825
OVER LICKING RIVER

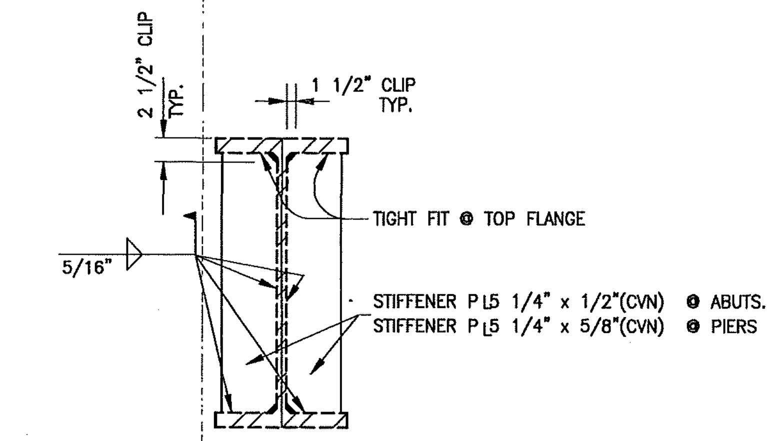
MUS-408-8.25



VIEW J-J

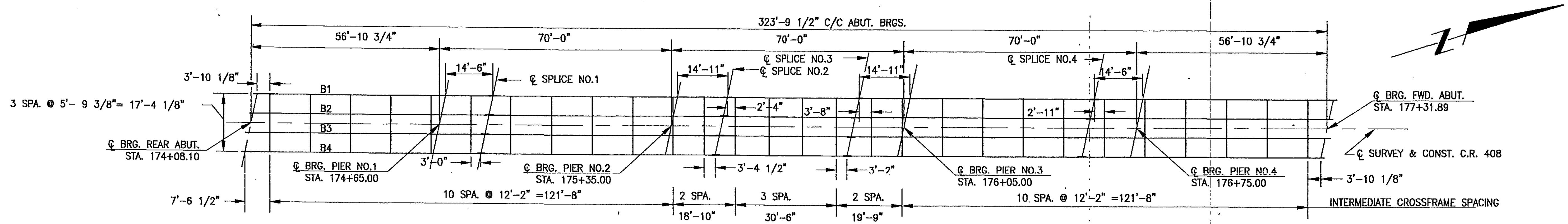


BOLTED FIELD SPLICE DETAIL

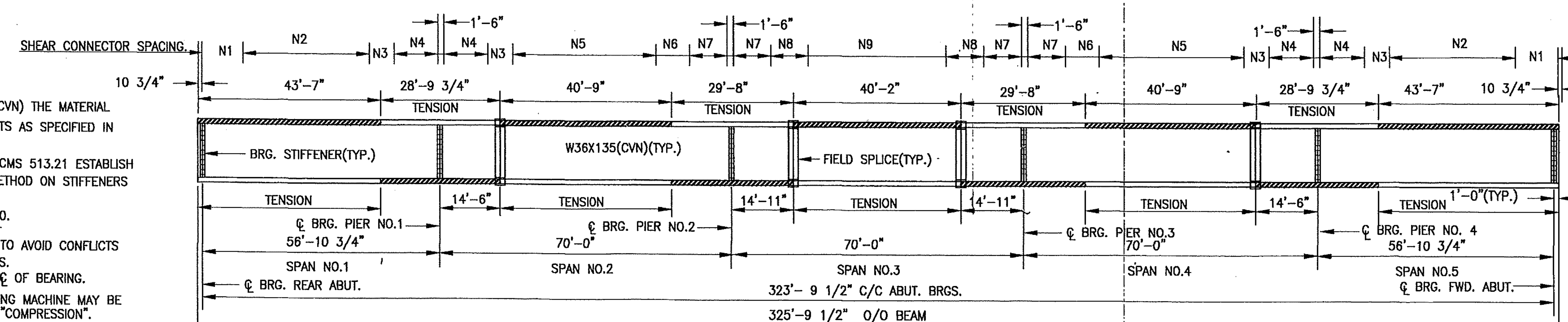


BEARING STIFFENERS

CLIP STIFFENER CORNERS 1 1/2" HORIZONTAL AND 2 1/2" VERTICAL, AS SHOWN, TOP AND BOTTOM AT WEB



STEEL FRAMING PLAN



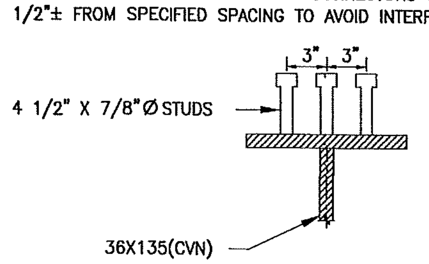
BEAM ELEVATION

NOTES:

1- HIGH STRENGTH BOLTS: SHALL BE 1" DIA. A325, TYPE III.
2- CHARPY V- NOTCH: WHERE A SHAPE OR PLATE IS DESIGNATED (CVN) THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01 OF THE CMS.
3- IN ADDITION TO THE NONDESTRUCTIVE TESTING REQUIREMENTS IN CMS 513.21 ESTABLISH WELD SOUNDNESS USING THE MAGNETIC PARTICLE INSPECTION METHOD ON STIFFENERS WELDS TO BEAMS.
4- STRUCTURAL STEEL AND STEEL PLATES SHALL BE A588-GRADE 50.
5- SHEAR CONNECTOR LOCATION MAY BE ADJUSTED BY A 1 1/2"± TO AVOID CONFLICTS WITH HIGH STRENGTH BOLTS AND EDGES OF FIELD SPLICE PLATES. SHEAR STUD CONNECTORS SHALL BE PLACED PARALLEL TO THE ℄ OF BEARING.
6- WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL NOT BE CLOSER THAN 1" FROM EDGE OF FLANGE, NOT BE MORE THAN 2" LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.
7- THE CONTRACTOR SHALL PLACE THE TRANSVERSE REINFORCING STEEL BARS BEFORE INSTALLING THE WELDED SHEAR STUD CONNECTORS WHICH MAY BE LOCATED 1 1/2"± FROM SPECIFIED SPACING TO AVOID INTERFERENCE.

LEGEND

COMPRESSION FLANGE



SHEAR CONNECTOR DETAIL

SPAN NO. 1 & 5				SPAN NO. 2 & 4					SPAN NO. 3		
SPA. N1 @ 12"	SPA. N2 @ 18"	SPA. N3 @ 12"	SPA. N4 @ 18"	SPA. N3 @ 12"	SPA. N4 @ 18"	SPA. N5 @ 18"	SPA. N6 @ 12"	SPA. N7 @ 18"	SPA. N7 @ 18"	SPA. N8 @ 12"	SPA. N9 @ 18"
10 SPA. = 10'-0"	20 SPA. = 30'-0"	6 SPA. = 6'-0"	7 SPA. = 10'-6"	6 SPA. = 6'-0"	7 SPA. = 10'-6"	23 SPA. = 34'-6"	8 SPA. = 8'-0"	6 SPA. = 9'-0"	6 SPA. = 9'-0"	9 SPA. = 9'-0"	22 SPA. = 33'-0"
NO. OF STUDS PER BEAM= 264				NO. OF STUDS PER BEAM = 306					NO. OF STUDS PER BEAM = 159		

WELDED STUD SHEAR CONNECTOR SPACING TABLE

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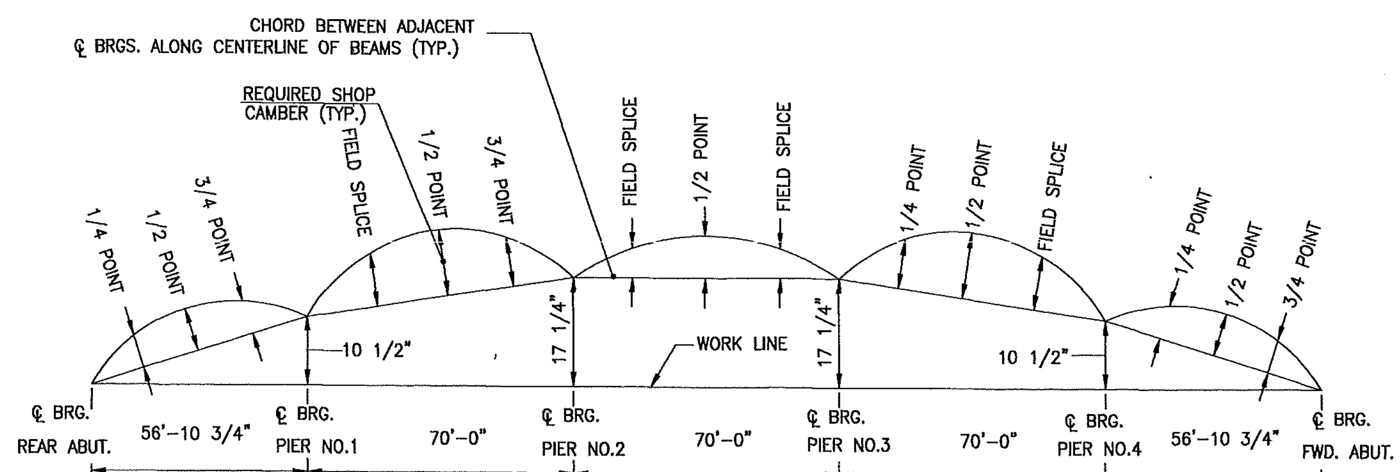
FRAMING PLAN
BRIDGE NO. MUS-408-0825
OVER LICKING RIVER

MUS-408-8.25

BEAM	CAMBER DESCRIPTION	SPAN 1			SPAN 2			SPAN 3			SPAN 4			SPAN 5		
		0.25	0.50	0.75	SPLICE	0.50	0.75	SPLICE	0.50	SPLICE	0.25	0.50	SPLICE	0.25	0.50	0.75
INTERIOR BEAMS	DEFLECTION DUE TO WEIGHT OF STEEL	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	3/16	1/4	1/8	1/8	3/8	3/16	3/16	3/8	3/16	3/16	3/8	1/8	1/8	1/4	3/16
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	3/8	1/2	3/8	9/16	7/8	5/8	9/16	7/8	9/16	5/8	7/8	9/16	3/8	1/2	3/8
	REQUIRED CAMBER	5/8	13/16	9/16	13/16	1 5/16	7/8	13/16	1 5/16	13/16	7/8	1 5/16	13/16	9/16	13/16	5/8
EXTERIOR BEAMS	DEFLECTION DUE TO WEIGHT OF STEEL	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	3/8	7/16	3/16	1/4	1/2	5/16	1/4	1/2	1/4	5/16	1/2	1/4	3/16	7/16	3/8
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	3/8	1/2	3/8	9/16	7/8	5/8	9/16	7/8	9/16	5/8	7/8	9/16	3/8	1/2	3/8
	REQUIRED CAMBER	13/16	1	5/8	7/8	1 7/16	1	7/8	1 7/16	7/8	1	1 7/16	7/8	5/8	1	13/16

DEFLECTION AND CAMBER DATA

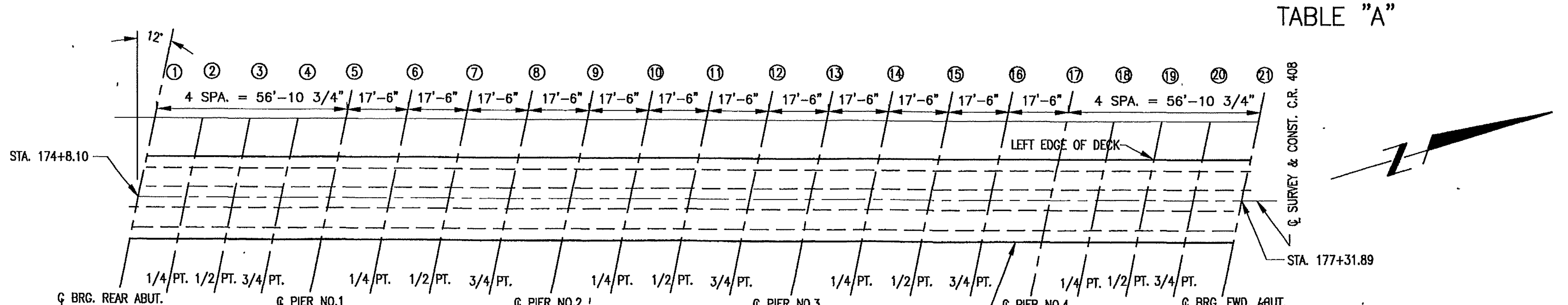


TYPICAL ALL BEAMS

LINE	LEFT DECK FASCIA		BEAM NO. 1		BEAM NO. 2		℄ ROADWAY		BEAM NO.3		BEAM NO. 4		RIGHT DECK FASCIA	
NO.	ELEV.	STATATION	ELEV.	STATATION	ELEV.	STATATION	ELEV.	STATATION	ELEV.	STATATION	ELEV.	STATATION	ELEV.	STATATION
1	773.21	174+10.65	773.25	174+09.94	773.32	174+08.71	773.35	174+08.10	773.29	174+07.48	773.18	174+06.25	773.11	174+05.55
2	773.49	174+24.87	773.53	174+24.17	773.59	174+22.93	773.62	174+22.32	773.57	174+21.70	773.46	174+20.48	773.40	174+19.77
3	773.72	174+39.09	773.76	174+38.39	773.81	174+37.16	773.85	174+36.55	773.79	174+35.93	773.71	174+34.70	773.64	174+33.99
4	773.91	174+53.32	773.95	174+52.61	774.01	174+51.38	774.04	174+50.77	773.99	174+50.16	773.89	174+48.93	773.83	174+48.22
5	774.06	174+67.54	774.10	174+66.83	774.18	174+65.60	774.22	174+64.99	774.16	174+64.38	774.06	174+63.15	774.00	174+62.44
6	774.27	174+85.04	774.31	174+84.33	774.38	174+83.10	774.42	174+82.49	774.37	174+81.88	774.28	174+80.65	774.22	174+79.94
7	774.44	175+02.54	774.49	175+01.83	774.56	175+00.60	774.60	174+99.99	774.55	174+99.38	774.46	174+98.15	774.40	174+97.44
8	774.55	175+20.04	774.60	175+19.33	774.67	175+18.10	774.71	175+17.49	774.66	175+16.88	774.57	175+15.65	774.52	175+14.95
9	774.60	175+37.54	774.65	175+36.83	774.74	175+35.60	774.78	175+34.99	774.73	175+34.38	774.64	175+33.15	774.58	175+32.44
10	774.67	175+55.04	774.72	175+54.33	774.81	175+53.10	774.85	175+52.49	774.80	175+51.88	774.71	175+50.65	774.66	175+49.94
11	774.70	175+72.54	774.75	175+71.83	774.83	175+70.60	774.88	175+69.99	774.83	175+69.38	774.75	175+68.15	774.70	175+67.44
12	774.66	175+90.04	774.71	175+89.33	774.80	175+88.10	774.85	175+87.49	774.81	175+86.88	774.72	175+85.65	774.67	175+84.94
13	774.58	176+07.54	774.64	176+06.83	774.73	176+05.60	774.78	176+04.99	774.74	176+04.38	774.65	176+03.15	774.60	176+02.44
14	774.52	176+25.04	774.57	176+24.33	774.66	176+23.10	774.71	176+22.49	774.67	176+21.88	774.60	176+20.65	774.55	176+19.94
15	774.40	176+42.54	774.46	176+41.83	774.55	176+40.60	774.60	176+39.99	774.56	176+39.38	774.49	176+38.15	774.44	176+37.44
16	774.22	176+60.04	774.28	176+59.33	774.37	176+58.10	774.42	176+57.49	774.38	176+56.88	773.31	176+55.65	774.27	176+54.95
17	774.00	176+77.54	774.06	176+76.83	774.16	176+75.60	774.22	176+74.99	774.18	176+74.38	774.10	176+33.15	774.07	176+72.69
18	773.83	176+91.77	773.89	176+91.06	773.99	176+89.83	774.04	176+89.21	774.01	176+88.60	773.95	176+87.37	773.91	176+86.91
19	773.64	177+05.99	773.71	177+05.28	773.79	177+04.05	773.85	177+03.44	773.81	177+02.82	773.76	177+01.60	773.72	177+01.14
20	773.40	177+20.21	773.46	177+19.51	773.57	177+18.28	773.62	177+17.66	773.59	177+17.05	773.53	177+15.82	773.49	177+15.36
21	773.11	177+34.44	773.18	177+33.73	773.29	177+32.50	773.35	177+31.89	773.32	177+31.28	773.25	177+30.05	773.21	177+29.58

NOTE:
FINISHED PAVEMENT ELEVATIONS: THE ELEVATION SHOWN ARE FINISHED PAVEMENT ELEVATIONS. PROPER ALLOWANCE HAS BE MADE FOR THE DEAD LOAD DEFLECTIONS CAUSED BY THE WEIGHT OF THE CONCRETE.

FINISHED PAVEMENT ELEVATIONS
TABLE "A"



DECK FINISHED PAVEMENT PLAN

SEE TABLE "A" ON THIS SHEET FOR FINISHED PAVEMENT ELEVATIONS

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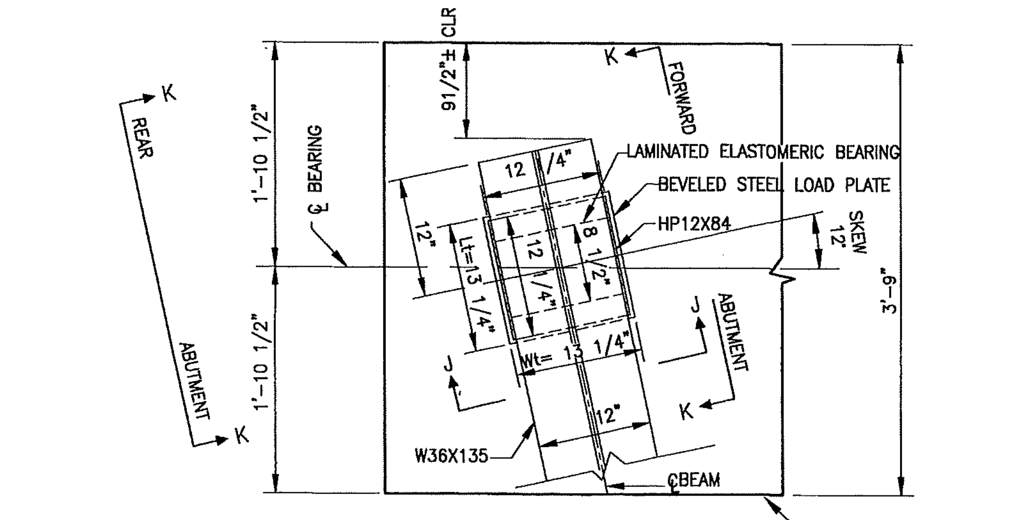
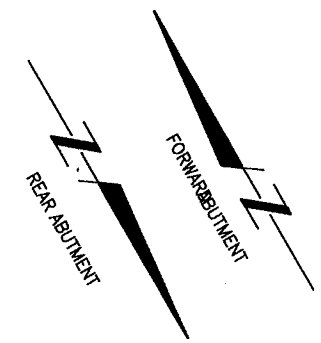
DRAWN RB | REVISED
DESIGNED RB | CHECKED VAD

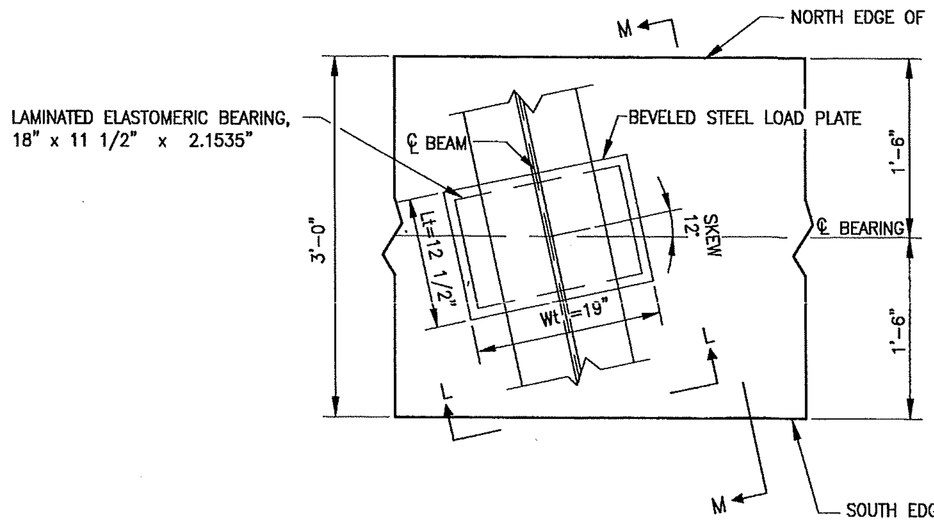
FRAMING PLAN
BRIDGE NO. MUS-408-0825
OVER LICKING RIVER

MUS-408-8.25

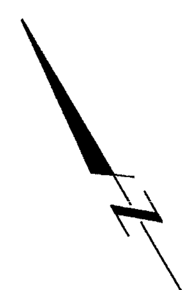


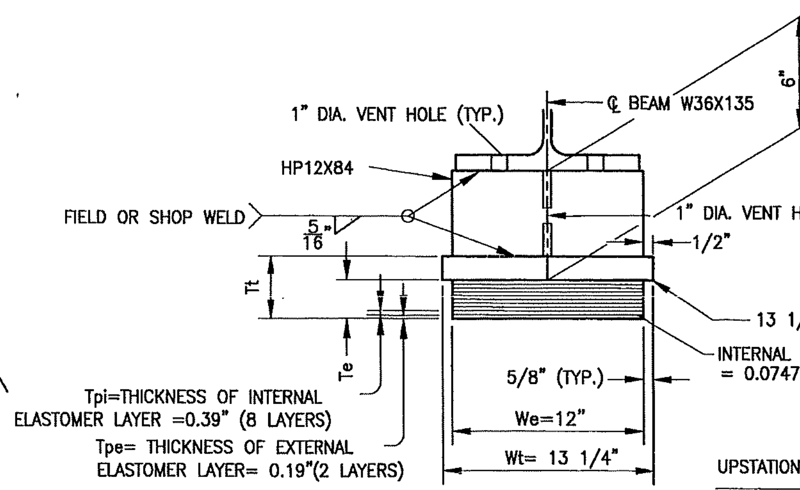
BEARING ORIENTATION PLAN AT ABUTMENTS



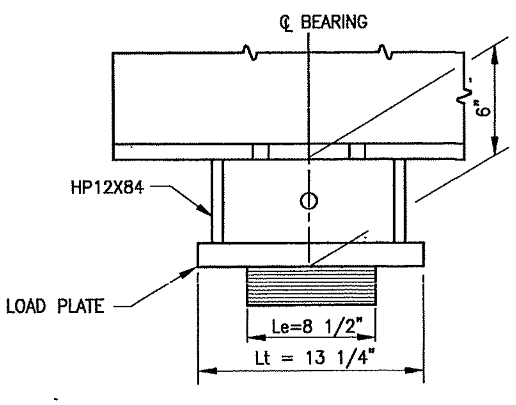


BEARING ORIENTATION PLAN AT PIERS

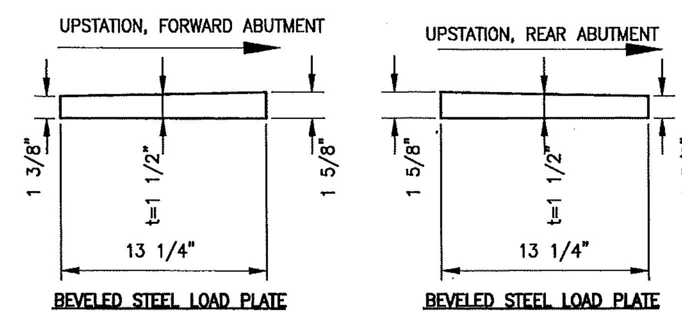




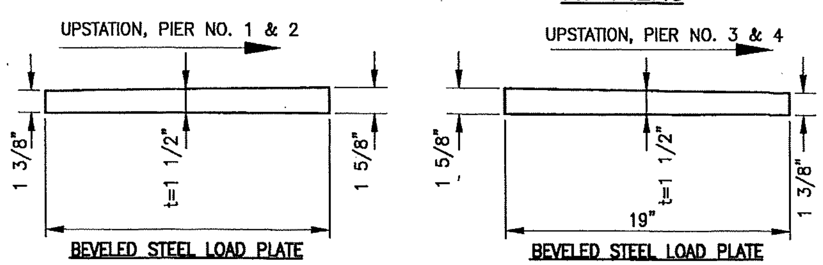
SECTION J-J

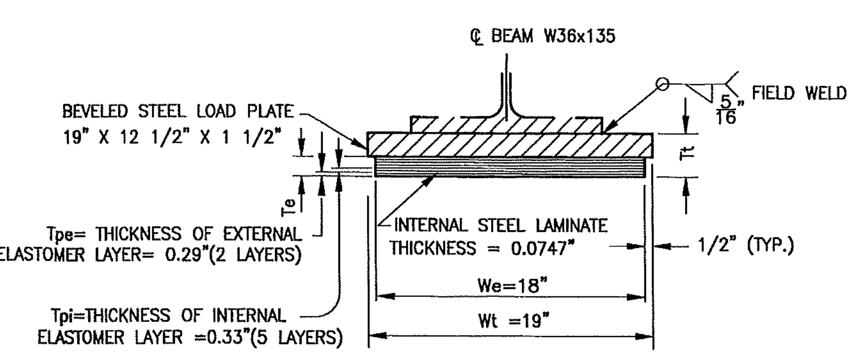


SECTION K-K



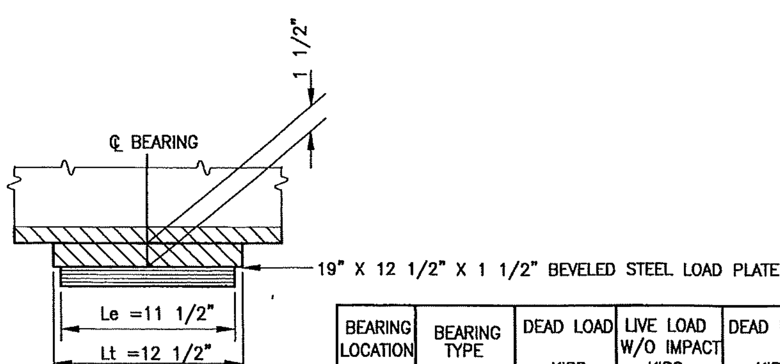
LAMINATED ELASTOMERIC EXPANSION BEARING AT ABUTMENTS





SECTION L-L

LAMINATED ELASTOMERIC EXPANSION BEARING AT PIERS



SECTION M-M

ITEM 516 DESCRIPTION: BEARINGS, AS PER PLAN

1) ELASTOMERIC BEARINGS SHALL COMPLY WITH ITEM 516 AND AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, SECTION 18, BEARING DEVICES, DIVISION II, CONSTRUCTION, ARTICLES 18.4.5.1 AND 18.5.6.2. BEARINGS SHALL BE GRADE 3, 50 DUROMETER ELASTOMER, AND SHALL BE SUBJECTED TO THE LOAD TESTING REQUIREMENTS DEFINED IN ARTICLE 18.7.4.5 OF THE AASHTO DOCUMENT LISTED ABOVE. BEARINGS WERE DESIGNED UNDER SECTION 14.6.5.1 OF SECTION 14, BEARINGS, DIVISION I DESIGN. TESTING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE BEARINGS, EACH.

2) WELDING SHALL BE CONTROLLED SO THAT THE PLATE TEMPERATURE AT THE ELASTOMER BONDED SURFACE DOES NOT EXCEED 300° F AS DETERMINED BY USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.

3) LOAD PLATES AND HP SHAPES: THE STEEL LOAD PLATE, GRADE 50 STEEL, SHALL BE SHOP WELDED AND GALVANIZED IN ACCORDANCE WITH 711.02.

4) THE GALVANIZED STEEL LOAD PLATES AND HP SHAPES SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.

5) BEARING REPOSITIONING: IF THE STEEL IS ERECTED AT AN AMBIANT TEMPERATURE HIGHER THAN 80° F OR LOWER THAN 40° F AND THE BEARING SHEAR DEFLECTION EXCEEDS 1/6 OF THE BEARING HEIGHT AT 60° F (+/-) 10° F, THE BEAMS SHALL BE RAISED TO ALLOW THE BEARINGS TO RETURN TO THEIR UNDEFORMED SHAPE AT 60° F (+/-) 10° F.

6) TOTAL DESIGN LOAD FOR BEARING EQUALS THE SUM OF THE DEAD LOADS AND LIVE LOADS W/O IMPACT AND IS TABULATED IN THE TABLE "C".

BEARING LOCATION	BEARING TYPE	DEAD LOAD KIPS (EXTERIOR BEAMS)	LIVE LOAD W/O IMPACT KIPS (EXTERIOR BEAMS)	DEAD LOAD KIPS (INTERIOR BEAMS)	LIVE LOAD W/O IMPACT KIPS (INTERIOR BEAMS)	Le	We	Tpl	NO. OF Tpl's	Tpe (2 EA.)	NUMBER OF INTERNAL LAMINATES (14 GAGE)	Te	STEEL LOAD PLATE Lt	STEEL LOAD PLATE Wt	STEEL LOAD PLATE t	Tt	FILLET WELD SIZE
PIER	EXPANSION	113.82	55.63	83.71	40.72	11 1/2"	18"	0.33"	5	0.29"	6	2.6782"	12 1/2"	19"	1 1/2"	4.1782"	5/16"
ABUT.	EXPANSION	50.26*	41.02	40.0 *	34.42	8 1/2"	12"	0.39"	8	0.19"	9	4.1723"	13 1/4"	13 1/4"	1 1/2"	5.6723"	5/16"

* INCLUDES WEIGHT DUE TO DIAPHGRAM & 1 KIP/FT FROM APPROACH SLAB

LAMINATED ELASTOMERIC BEARING SCHEDULE

TABLE "C"

DESIGN AGENCY
E. P. FERRIS & ASSOCIATES, INC.
Consulting Civil Engineers & Surveyors
880 King Avenue
Columbus, Ohio 43212

REVIEWED EPF | DATE 04/21/04 | STRUCTURE FILE NUMBER 6042244
DRAWN | REVISED
DESIGNED RB | CHECKED VAD

ELASTOMERIC BEARING DETAIL PLAN

BRIDGE NO. MUS-408-0825
OVER LICKING RIVER

MUS.-408-8.25

13/14

E.P. FERRIS & ASSOCIATES, INC.

ONE ABUTMENT (TYP.)

MARK	NUMBER	LENGTH	WEIGHT	TYPE	DIMENSIONS			
					A	B	C	D
A501	5	20'-6"	107	1	20'-6"			
A502	21	6'-5"	141	3	2'-2"	2'-8"		
A503	21	9'-10"	215	4	3'-4"	1'-4"		
A504	23	11'-10"	284	4	3'-4"	2'-4"		
A505	23	8'-7"	206	3	3'-0"	2'-10"		
A506	3	5'-4"	17	1	5'-4"			
A507	6	5'-0"	31	1	5'-0"			
A508	3	4'-9"	15	1	4'-9"			
A509	10	5'-10"	61	3	2'-7"	0'-11"		
A510	4	4'-4"	18	3	1'-10"	0'-11"		
A511	1	25'-2"	26	2	24'-0"			
A801	2	20'-6"	110	1	20'-6"			
A802	2	25'-10"	138	2	24'-0"			
A803	14	24'-2"	903	1	24'-2"			
D801	25	5'-0"	334	5	1'-0"	1'-4"	1'-4"	1'-6"

SUBTOTAL FOR TWO ABUTMENTS = 2 X 2606= 5212 LBS

SUPERSTRUCTURE

MARK	NUMBER	LENGTH	WEIGHT	TYPE	DIMENSIONS		
					A	B	C
S401	208	40'-0"	5558	1	40'-0"		
S402	26	22'-7"	392	1	22'-7"		
S501	1118	23'-8"	27597	1	23'-8"		
S502	272	40'-0"	13362	1	40'-0"		
S503	34	26'-0"	992	1	26'-0"		
S504	1118	4'-8"	5442	6	2'-11"	1'-0"	1'-0"
S601	100	28'-0"	4206	1	28'-0"		

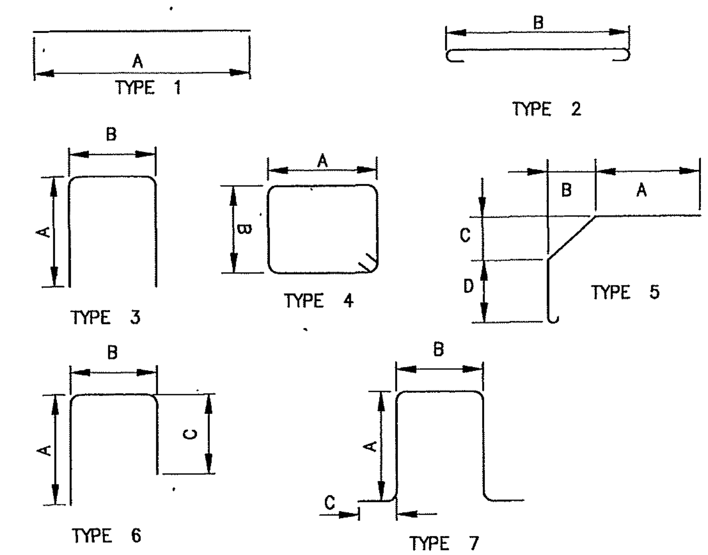
SUBTOTAL = 57,549 LBS

ONE PIER (TYP.)

MARK	NUMBER	LENGTH	WEIGHT	TYPE	DIMENSIONS		
					A	B	C
P601	21	7'-10"	247	4	2'-8"	0'-10"	
P602	24	9'-2"	330	3	3'-5"	2'-8"	
P603	8	7'-6"	90	3	2'-7"	2'-8"	
P604	16	5'-8"	136	3	2'-3"	1'-6"	
P605	8	2'-8"	32	1	2'-8"		
P606	12	7'-8"	138	7	2'-0"	2'-0"	1'-0"
P801	5	24'-2"	328	3	2'-0"	21'-0"	
P802	5	26'-2"	349	3	2'-7"	21'-5"	

SUBTOTAL FOR FOUR PIERS = 6600 LBS

TOTAL = 69,361 LBS



NOTES:

1. BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST LETTER IDENTIFIES THE BAR LOCATION; THE NEXT ONE/TWO DIGITS INDICATE THE BAR SIZE DESIGNATION; AND THE REMAINING DIGITS INDICATE ITS SEQUENCE NUMBER.
2. ALL BARS SHALL BE EPOXY COATED.
3. REFER TO C.M.S. SEC. 509.05 FOR STANDARD BEND DIMENSIONS.
4. ALL DIMENSIONS ARE OUT-TO-OUT.
5. ALL THE REINFORCING BAR DIMENSIONS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ORDERING THE MATERIAL.

DESIGN AGENCY
E. P. FERRIS & ASSOCIATES, INC.
Consulting Civil Engineers & Surveyors
880 King Avenue
Columbus, Ohio 43212

REVIEWED EPF DATE 04/21/04
STRUCTURE FILE NUMBER 6042244
DRAWN RB REVISED
DESIGNED RB CHECKED VAD

REBAR LIST
BRIDGE NO. MUS-408-0825
OVER LICKING RIVER

MUS.-MUS-8.25