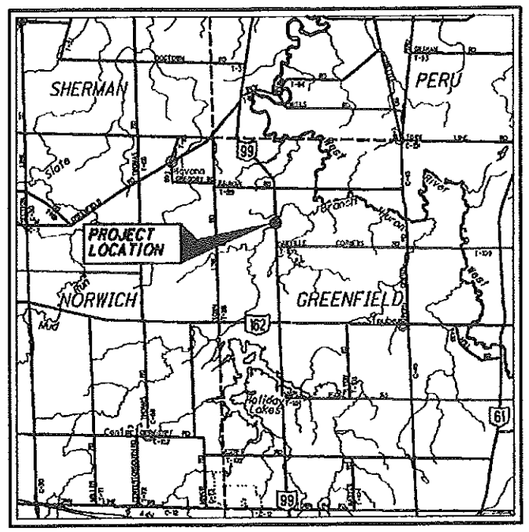
HUR - SR 99-05.82 (PART 1 AND 2)
170492 PID - 88856
Dist 3 8/24/2017

Conformed Set

Contract Proposal Available @
www.contracts.dot.state.oh.us/home



LOCATION MAP

LATITUDE: 41° 07' 29" LONGITUDE: 82° 43' 12"

SCALE IN MILES
0 1 2 3 4

N

PORTION TO BE IMPROVED
INTERSTATE HIGHWAY
FEDERAL ROUTES
STATE ROUTES
COUNTY & TOWNSHIP ROADS
OTHER ROADS

DESIGN DESIGNATION

CURRENT ADT (2016)	2100
DESIGN YEAR ADT (2036)	2400
DESIGN HOURLY VOLUME (2036)	220
DIRECTIONAL DISTRIBUTION	0.53
TRUCKS (24 HOUR B&C)	0.12
DESIGN SPEED	55 MPH
LEGAL SPEED	55 MPH
DESIGN FUNCTIONAL CLASSIFICATION: RURAL MAJOR COLLECTOR	
NHS PROJECT	NO

DESIGN EXCEPTIONS

NONE REQUIRED

UNDERGROUND UTILITIES
CONTACT BOTH SERVICES
CALL TWO WORKING DAYS
BEFORE YOU DIG
CALL
1-800-362-2764
(TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY
OIL & GAS PRODUCERS UNDERGROUND
PROTECTION SERVICE CALL: 1-800-925-0988

PLAN PREPARED BY:

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320
CINCINNATI • AKRON • TALLAHASSEE • ORLANDO

O:\ODOT\HUR\88856\roadway\sheets\88856GT

STATE OF OHIO

DEPARTMENT OF TRANSPORTATION

HUR-99-5.82
PART 1
GREENFIELD TOWNSHIP
HURON COUNTY
FOR PART 2 (SEE HUR-99-10.46)

PROJECT DESCRIPTION

REPLACMENT OF EXISTING SUPERSTRUCTURE ON BRIDGE HUR-99-0586 WITH MINIMAL APPROACH WORK. EXISTING BOX BEAMS AND ASPHALT WEARING SURFACE WILL BE REPLACED WITH NEW BOX BEAMS AND COMPOSITE CONCRETE DECK ON MODIFIED EXISTING SUBSTRUCTURE. RESURFACING OF ROADWAY APPROACHES AND REPLACEMENT OF EXISTING TYPE 5 GUARDRAIL WITH TYPE MGS GUARDRAIL.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA:	0.3 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	0.7 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA:	4.9 ACRES

INDEX OF SHEETS:

2016 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 5.

APPROVED _____
DATE 3/2/17 DISTRICT DEPUTY DIRECTOR

APPROVED _____
DATE 6-5-17 DIRECTOR, DEPARTMENT OF TRANSPORTATION

ENGINEERS SEAL:
STRUCTURES: SHEETS 19-28
STATE OF OHIO MATTHEW LEWIS JOHNSON E-69618 REGISTERED PROFESSIONAL ENGINEER
SIGNED: _____
DATE: 12-19-2016

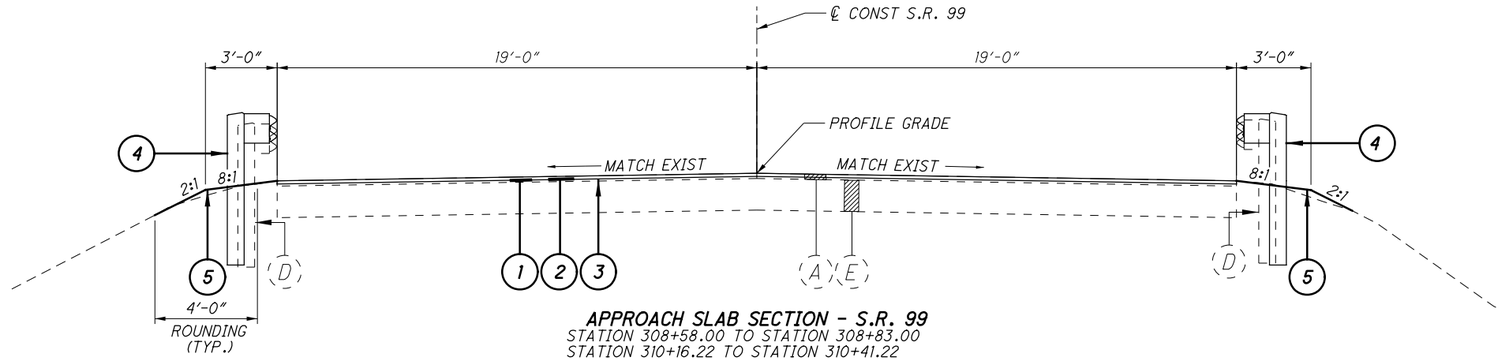
ENGINEERS SEAL:
SHEETS 1-18
STATE OF OHIO DANIEL P. FISHER E-83318 REGISTERED PROFESSIONAL ENGINEER
SIGNED: _____
DATE: 12/19/16

STANDARD CONSTRUCTION DRAWINGS

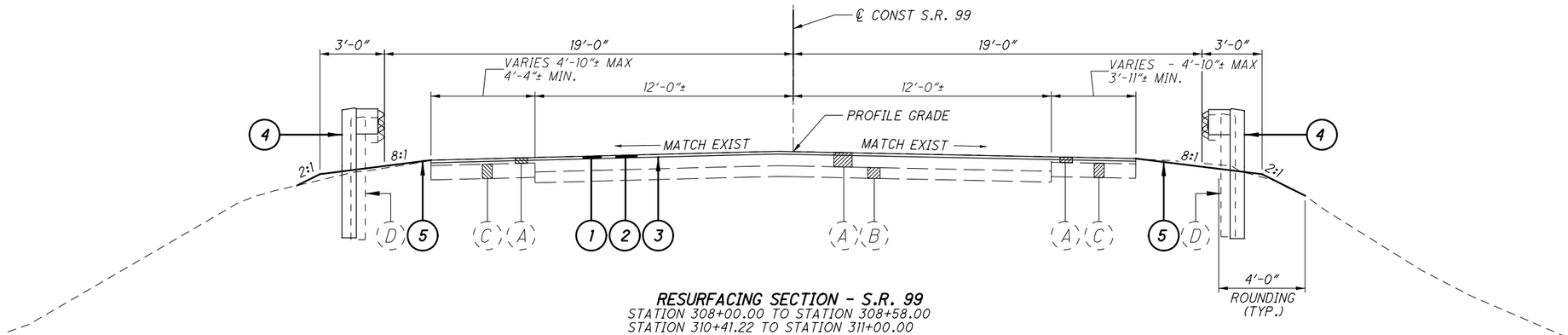
BP-3.1	7/18/14	MT-97.10	7/18/14	OS-1-92	7/18/03				
DM-4.1	1/15/16	MT-101.60	7/19/13	PSBD-2-07	1/21/11				
DM-4.3	1/15/16	MT-105.10	7/19/13	TST-1-99	7/15/16				
DM-4.4	1/15/16								
		TC-41.20	10/18/13						
MGS-1.1	7/19/13	TC-42.20	10/18/13						
MGS-2.1	7/19/13	TC-52.10	10/18/13						
MGS-3.1	7/18/14	TC-52.20	7/15/16						
MGS-4.2	7/19/13	TC-61.30	7/18/14						
MGS-4.3	1/18/13	TC-65.10	1/17/14						
MGS-4.5	1/18/13	TC-65.11	7/15/16						
MGS-5.2	7/15/16								
MGS-5.3	7/15/16								

SUPPLEMENTAL SPECIFICATIONS		SPECIAL PROVISIONS	
800-2016	4/21/17	WPC	3/2/15
832	1/17/14		
836	1/18/13		

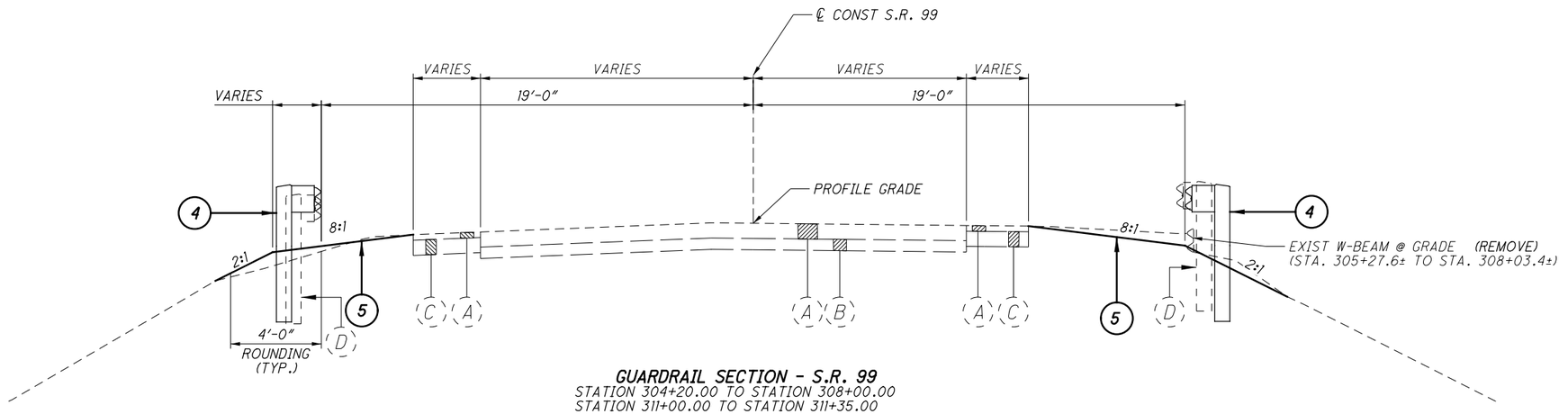
FEDERAL PROJECT NO. E130 (351)
PID NO. 88856
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT NONE
HUR-99-05.82
1/28



APPROACH SLAB SECTION - S.R. 99
STATION 308+58.00 TO STATION 308+83.00
STATION 310+16.22 TO STATION 310+41.22
(BRIDGE HUR-99-0582 - STATION 308+83.00 TO STATION 310+16.22)



RESURFACING SECTION - S.R. 99
STATION 308+00.00 TO STATION 308+58.00
STATION 310+41.22 TO STATION 311+00.00



GUARDRAIL SECTION - S.R. 99
STATION 304+20.00 TO STATION 308+00.00
STATION 311+00.00 TO STATION 311+35.00

PROPOSED LEGEND

1. ITEM 441 - 1½" ASPHALT CONCRETE, SURFACE COURSE, TYPE 1, (448), PG 64-22
2. ITEM 254 - 1½" PAVEMENT PLANING, ASPHALT CONCRETE
3. ITEM 407 - TACK COAT
4. ITEM 606 - GUARDRAIL, TYPE MGS WITH LONG POSTS
5. ITEM 659 - SEEDING AND MULCHING

EXISTING LEGEND

- (A) ASPHALT CONCRETE, UNKNOWN DEPTH
- (B) STABILIZED AGGREGATE BASE
- (C) 8" AGGREGATE BASE
- (D) GUARDRAIL, TYPE 5
- (E) RENFORCED CONCRETE APPROACH SLAB, 15" THICK

TYPICAL SECTIONS

HUR-99-05.82

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

ROUNDING

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

UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

OHIO EDISON COMPANY
JIM ROHRBACHER
2508 WEST PERKINS AVE.
SANDUSKY, OHIO 44870
419-627-6881

FRONTIER COMMUNICATIONS
JIM SAUBER
1534 S.R. 511 SOUTH
ASHLAND, OHIO 44805
419-282-6551

NORTHERN OHIO RURAL WATER
BRYAN PUDER
P.O. BOX 96
COLLINS, OHIO 44826
419-668-7213

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 O.R.C.

EXISTING PLANS

EXISTING PLANS ENTITLED HUR-61-3.82/HUR-99-5.85 MAY BE INSPECTED IN THE ODOT DISTRICT 3 OFFICE IN ASHLAND.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

SEEDING AND MULCHING

QUANTITIES PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS ARE SHOWN ON SHEET 7.

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.

CLEARING AND GRUBBING

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

SURVEYING PARAMETERS

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS. SEE THIS SHEET FOR A TABLE CONTAINING PROJECT CONTROL INFORMATION.

USE THE FOLLOWING PROJECT CONTROL, VERTICAL POSITIONING, AND HORIZONTAL POSITIONING PARAMETERS FOR ALL SURVEYING:

PROJECT CONTROL

POSITIONING METHOD: ODOT VRS
MONUMENT TYPE: B

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD88
GEOID: GEIOD12A

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD83 (2011)
ELLIPSOID: GRS80
MAP PROJECTION: LAMBERT CONFORMAL CONIC
COORDINATE SYSTEM: OHIO STATE PLANE - NORTH ZONE (GRID)
COMBINED SCALE FACTOR: 0.99990490
ORIGIN OF COORDINATE
SYSTEM: 0,0

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH CMS 623 - CONSTRUCTION LAYOUT STAKES AND SURVEY MONUMENTS.

UNITS ARE IN U.S. SURVEY FEET. USE THE FOLLOWING CONVERSION FACTOR: 1 METER = 3.280833333 U.S. SURVEY FEET.

ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY OF THE GUARDRAIL END TERMINALS FOR TYPE MGS GUARDRAIL AS LISTED ON ROADWAY ENGINEERING'S WEB PAGE UNDER ROADSIDE SAFETY DEVICES FOR APPROVED GUARDRAIL END TREATMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE FACE OF THE TYPE E IMPACT HEAD SHALL BE COVERED WITH A SHEET OF TYPE G REFLECTIVE SHEETING, PER CMS 730.19.

REFER TO THE MANUFACTURER'S INSTRUCTIONS REGARDING THE INSTALLATION OF, AND THE GRADING AROUND THE FOUNDATION TUBES AND GROUND STRUT. THE TOP OF ANY FOUNDATION TUBE SHOULD BE LESS THAN 4 INCHES ABOVE THE GROUND. THE PLACEMENT OF THE FOUNDATION TUBES SHOULD BE AN APPROPRIATE DEPTH BELOW THE LEVEL LINE IN ORDER TO MAINTAIN THE FINISHED GUARDRAIL HEIGHT OF 31 INCHES FROM THE EDGE OF THE SHOULDER.

ON-SITE GRADING IS REQUIRED IF THE TOP OF THE FOUNDATION TUBES OR TOP OF THE GROUND STRUT DOES PROJECT MORE THAN 4 INCHES ABOVE THE GROUND LINE.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, ANCHOR ASSEMBLY, MGS TYPE E, EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL RELATED TRANSITIONS, REFLECTIVE SHEETING, HARDWARE, GRADING, EMBANKMENT AND EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

REMOVAL MISC.: THRIE BEAM GUARDRAIL SECTIONS AT GRADE

SECTIONS OF THRIE BEAM GUARDRAIL EXIST AT GRADE ALONG A PORTION OF THE EAST SIDE OF S.R. 99, SOUTH OF STRUCTURE. THIS GUARDRAIL IS IN PLACE APPROXIMATELY TEN FEET FROM THE EDGE OF PAVEMENT TO PREVENT WASHOUT OF GRAVEL IN THAT AREA. THE CONTRACTOR SHALL REMOVE ALL THRIE BEAM GUARDRAIL SECTIONS AS SHOWN IN THE PLANS.

REFER TO SHEET 7 FOR QUANTITIES RELATED TO THIS ITEM.

ENVIRONMENTAL COMMITMENTS

1. THIS PROJECT IS WITHIN THE KNOWN SUMMER BREEDING RANGE OF THE FEDERAL ENDANGERED INDIANA BAT AND NORTHERN LONG-EARED BAT. UNAVOIDABLE CUTTING OF TREES DEFINED AS POTENTIAL HABITAT FOR BOTH BAT SPECIES (I.E. LIVING OR STANDING DEAD TREES OR SNAGS WITH EXFOLIATING, PEELING OR LOOSE BARK, SPLIT TRUNKS AND/OR BRANCHES, OR CAVITIES) WILL BE PERFORMED ONLY BETWEEN OCTOBER 1 AND MARCH 31

2.THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO AVOID AND/OR LIMIT INCIDENTAL DEBRIS FROM ENTERING STREAMS. ANY DEBRIS THAT DOES FALL INTO STREAMS SHALL BE REMOVED AS SOON AS POSSIBLE. IMPACTS TO THE STREAM WILL BE AVOIDED, MINIMIZED, AND/OR MITIGATED WHERE REASONABLE OR PRACTICABLE.

3. WATERWAY PERMIT DETERMINATION (404/401) - ODOT PROJECTS: ALL PROJECTS INVOLVING JURISDICTIONAL WATERS OF THE UNITED STATES (STREAMS, RIVERS, NON-ISOLATED WETLANDS) AND/OR ISOLATED WETLANDS ARE SUBJECT TO REGULATION UNDER SECTIONS 404 AND 401 OF THE CLEAN WATER ACT, AND POSSIBLY OHIO EPA ISOLATED WETLAND LAW. A PERMIT FOR THIS PROJECT WILL HAVE BEEN OBTAINED BY ODOT FOR THIS PROJECT. HOWEVER, THIS PERMIT DETERMINATION WILL NOT INCLUDE THE USE OF TEMPORARY CONSTRUCTION ACCESS FILLS THAT MAY BE REQUIRED FOR CONSTRUCTION (I.E. CAUSEWAY STREAM CROSSINGS, CONSTRUCTION ACCESS PADS, COFFERDAMS, ETC.). THE CONTRACTOR SHOULD BE AWARE THAT THE USE OF TEMPORARY FILLS BELOW THE ORDINARY HIGH WATER MARK (OHWM), WHICH IS THE USACE'S JURISDICTIONAL LIMITS, HAS NOT BEEN PERMITTED AND IS NOT ALLOWED.

Freshwater mussels are known to occur within the West Branch Huron River. A mussel survey and relocation is scheduled to be performed prior to the start of construction. Prior to starting in-stream work: contact the District 3 Environmental Coordinator to confirm that the mussel survey has been completed and that the Ohio Department of Natural Resources has approved the survey results.

USACE DEFINITION OF OHWM - THE ORDINARY HIGH WATER MARK IS THE LINE ON THE SHORES ESTABLISHED BY THE FLUCTUATIONS OF WATER AND INDICATED BY PHYSICAL CHARACTERISTICS SUCH AS A CLEAR, NA TUR 'AL LINE IMPRESSED ON THE BANK; SHEL VING; CHANGES IN THE CHARACTER OF THE SOIL; DESTRUCTION OF TERRESTRIAL VEGETATION; THE PRESENCE OF LITTER AND DEBRIS; OR THE APPROPRIA TE MEANS THAT CONSIDER THE CHARACTERISTICS OF THE SURROUNDING AREAS.

PROJECT CONTROL POINTS

NO#	DESCRIPTION	ORTHOMETRIC HEIGHT (ELEV.)	GRID COORDINATES (US SURVEY FEET)		GROUND COORDINATES (US SURVEY FEET)	
			NORTHING	EASTING	NORTHING	EASTING
CP1	PRIMARY PROJECT CONTROL POINT	839.343	530195.939	1907918.750	530246.365	1908100.210
AZ1	AZIMUTH		532426.111	1907820.878	532476.750	1908002.329

BENCHMARKS

NO#	DESCRIPTION	STATION	OFFSET	ELEV	GRID COORDINATES (US SURVEY FEET)		GROUND COORDINATES (US SURVEY FEET)	
					NORTHING	EASTING	NORTHING	EASTING
BM1	IRON PIN SET - 5/8" REBAR WITH PLASTIC CAP STAMPED BENCHMARK	303+65.32	16.35 RT.	816.71	530699.824	1907904.687	530750.298	1908086.146
BM2	IRON PIN SET - 5/8" REBAR WITH PLASTIC CAP STAMPED BENCHMARK	311+52.68	28.44 LT.	802.09	531485.368	1907834.984	531535.917	1908016.436
BM-DISK	BRASS DISK ON ABUTMENT	308+86.49	21.61 RT.	800.04	531220.893	1907893.444	531271.417	1908074.902

CALCULATED CML CHECKED DPF

GENERAL NOTES

HUR-99-05.82

3
28

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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ITEM 614, MAINTAINING TRAFFIC

A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES, EXCEPT FOR A PERIOD NOT TO EXCEED 60 CONSECUTIVE CALENDAR DAYS, WHEN THROUGH TRAFFIC MAY BE DETOURED AS SHOWN ON SHEET 5. LIQUIDATED DAMAGES SHALL BE ASSESSED IN ACCORDANCE WITH 108.07 FOR EACH CALENDAR DAY THE ROADWAY REMAINS CLOSED TO TRAFFIC BEYOND THE SPECIFIED LIMIT.

THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN GATES AND BARRICADES AND ADVANCE WARNING SIGNS AT EACH END OF THE PROJECT AS PER DETAILS ON STANDARD CONSTRUCTION DRAWING MT-101.60.

THE CONTRACTOR SHALL ALSO NOTIFY, IN WRITING, THE FOLLOWING AGENCIES AT LEAST FOURTEEN (14) DAYS PRIOR TO THE TIME WHEN THE DETOUR WILL BE IMPLEMENTED:

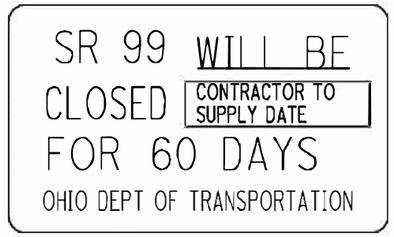
-LOCAL FIRE DEPARTMENT(S)
- •HURON RIVER JOINT FIRE DDISTRICT
- •WILLARD, NORTH CENTRAL EMS

-WILLARD AND MONROEVILLE SCHOOL DISTRICTS
-HURON COUNTY SHERIFF
-VILLAGE OF MONROEVILLE
-CITY OF NORWALK
-PERU TOWNSHIP TRUSTEES

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH CMS 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MA TERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

NOTICE OF CLOSURE SIGNS

NOTICE OF CLOSURE SIGNS, AS DETAILED IN THESE PLANS, SHALL BE ERECTED BY THE CONTRACTOR AT LEAST ONE WEEK IN ADVANCE OF THE SCHEDULED ROAD OR RAMP CLOSURE. THE SIGNS SHALL BE ERECTED ON THE RIGHT-HAND SIDE OF THE ROAD/RAMP FACING TRAFFIC. THEY SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF ANY OTHER TRAFFIC CONTROL SIGNS. ON ROADWAYS, THEY SHOULD BE ERECTED AT THE POINT OF CLOSURE. THE SIGNS MAY BE ERECTED ANYWHERE ON RAMPS AS LONG AS THEY ARE VISIBLE TO THE MOTORISTS USING THE RAMP. ON ENTRANCE RAMPS, THE SIGN SHALL BE ERECTED WELL IN ADVANCE OF THE MERGE AREA TO AVOID DISTRACTING MOTORISTS.



W20-H14-60

DUST CONTROL

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

ITEM 616, WATER 1 M. GAL

MAINTENANCE OF LOCAL DETOUR ROUTE

A LOCAL DETOUR ROUTE, OTHER THAN THE OFFICIAL SIGNED ODOT DETOUR ROUTE AS NOTED ON SHEET 5, WILL BE SELECTED BY AGREEMENT BETWEEN ODOT AND LOCAL GOVERNMENTAL AGENCIES PRIOR TO THE HIGHWAY CLOSURE. DURING THE TIME THAT TRAFFIC IS DETOURED, THE CONTRACTOR SHALL MAINTAIN THIS ROUTE IN A CONDITION WHICH IS REASONABLY SMOOTH AND FREE FROM HOLES, RUTS, RIDGES, BUMPS, DUST, AND STANDING WATER. ONCE THE DETOUR IS REMOVED AND TRAFFIC RETURNED TO ITS NORMAL PATTERN, THE DESIGNATED LOCAL DETOUR ROUTE SHALL BE RESTORED TO A CONDITION THAT IS EQUIVALENT TO THAT WHICH EXISTED PRIOR TO ITS USE FOR THIS PURPOSE, ALL SUCH WORK SHALL BE PERFORMED WHEN AND AS DIRECTED BY THE ENGINEER. THE DESIGNATED LOCAL DETOUR ROUTE IS TO BE REVIEWED AND REPAIRED PRIOR TO THE ASPHALT CONTRACTOR OR SUBCONTRACTOR LEAVING THE PROJECT.

PAYMENT FOR THE WORK NECESSARY TO REPAIR THESE LOCAL ROADS WILL BE PERFORMED BY CHANGE ORDER.

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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CALCULATED CML
CHECKED DPF

MAINTENANCE OF TRAFFIC GENERAL NOTES

HUR-99-05.82

Ⓐ

W20-2-36

Ⓑ

M4-8-24
M3-1-24
M1-5-2-24
M5-1R-21

Ⓒ

M4-8-24
M3-1-24
M1-5-2-24
M6-1R-21

Ⓓ

M4-8-24
M3-1-24
M1-5-2-24
M5-1L-21

Ⓔ

M4-8-24
M3-1-24
M1-5-2-24
M6-1L-21

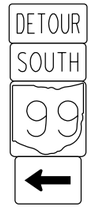
Ⓕ

M4-8-24
M3-1-24
M1-5-2-24
M6-3-21

Ⓖ

M4-8-24
M3-3-24
M1-5-2-24
M5-1L-21

Ⓗ



M4-8-24
M3-3-24
M1-5-2-24
M6-1L-21

Ⓘ

M4-8-24
M3-3-24
M1-5-2-24
M5-1R-21

Ⓙ

M4-8-24
M3-3-24
M1-5-2-24
M6-1R-21

Ⓚ

M4-8-24
M3-3-24
M1-5-2-24
M6-3-21

Ⓛ

M4-8-24
M3-3-24
M1-5-2-24
M5-2R-21

Ⓜ

M4-8a-24
M3-1-24
M1-5-2-24

Ⓝ

M4-8a-24
M3-3-24
M1-5-2-24

Ⓞ

R11-3-60

MOUNTED ON TYPE 3 BARRICADE

Ⓟ

PART 1 = 1.4 MI
PART 2 = 5.7 MI

MOUNTED ON TYPE 3 BARRICADE

R11-3a-60
M4-10R-48

Ⓠ

PART 1 = 9.0 MI
PART 2 = 4.7 MI

MOUNTED ON TYPE 3 BARRICADE

R11-3a-60
M4-10L-48

LEGEND

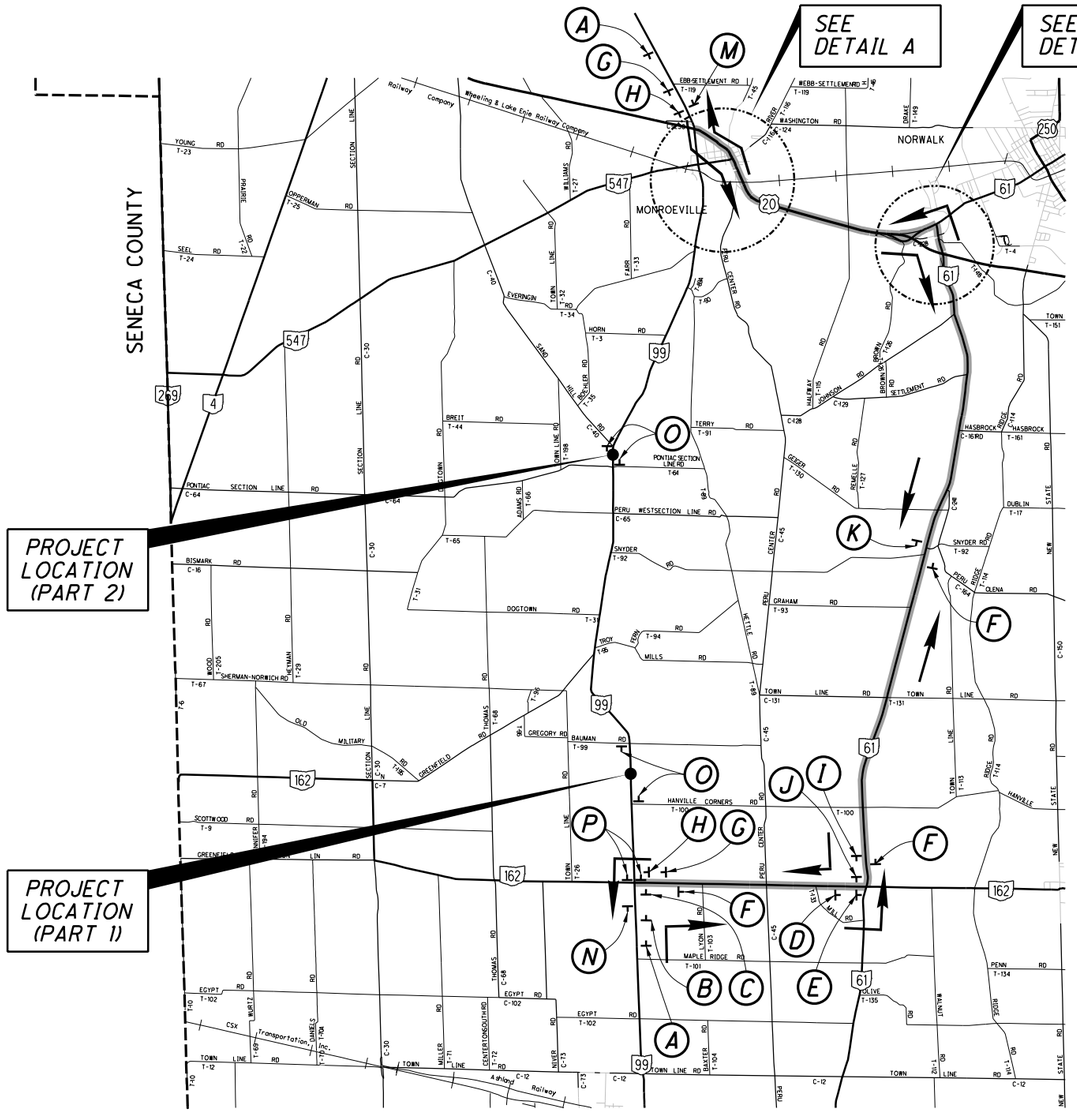
SIGNED DETOUR ROUTE →

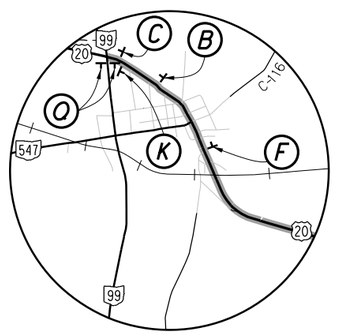
NOTE: INSTALL TYPE 3 BARRICADES WITH TYPE B WARNING LIGHTS AND LEAD-IN SIGNING PER MT-101.60 AT THE CLOSURE LOCATION.

ROAD CLOSED SIGNS FOR PART 1 AND PART 2 SHALL NOT BE INSTALLED AT THE SAME TIME.

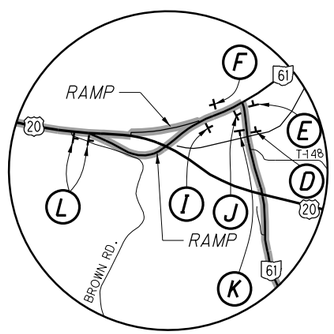
THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED FOR SIGNAGE OF THE DETOUR ROUTE:

ITEM 614, DETOUR SIGNING LS





DETAIL A



DETAIL B

DETOUR MAP

HUR-99-05.82/10.46

5
28

SHEET NUMBER								PARTICIPATION					ALT.	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
3	4	5	7	18			OFFICE CALC					01/STR/BR	(X)						
																		ROADWAY	
LS												LS		201	11000	LS		CLEARING AND GRUBBING	
			1070									1070		202	38000	1070	FT	GUARDRAIL REMOVED	
			2									2		202	42206	2	EACH	ANCHOR ASSEMBLY REMOVED	
			4									4		202	47000	4	EACH	BRIDGE TERMINAL ASSEMBLY REMOVED	
			275									275		202	98200	275	FT	REMOVAL MISC.: THRIE BEAM GUARDRAIL SECTIONS AT GRADE	3
			26									26		203	10000	26	CY	EXCAVATION	
			29									29		203	20000	29	CY	EMBANKMENT	
			812.5									812.5		606	15100	812.5	FT	GUARDRAIL, TYPE MGS WITH LONG POSTS	
			125									125		606	15400	125	FT	MGS GUARDRAIL, TYPE 8	
			1									1		606	17500	1	EACH	POST END ANCHOR (OR CONCRETE BLOCK END ANCHOR)	
			1									1		606	26150	1	EACH	ANCHOR ASSEMBLY, MGS TYPE E	3
			2									2		606	26550	2	EACH	ANCHOR ASSEMBLY, MGS TYPE T	
			4									4		606	35002	4	EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	
																		EROSION CONTROL	
			13									13		601	32100	13	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER	
			2									2		659	00100	2	EACH	SOIL ANALYSIS TEST	
			92									92		659	00300	92	CY	TOPSOIL	
			833									833		659	10000	833	SY	SEEDING AND MULCHING	
			42									42		659	14000	42	SY	REPAIR SEEDING AND MULCHING	
			42									42		659	15000	42	SY	INTER-SEEDING	
			0.11									0.11		659	20000	0.11	TON	COMMERCIAL FERTILIZER	
			0.17									0.17		659	31000	0.17	ACRE	LIME	
			4									4		659	35000	4	MGAL	WATER	
												LS		832	15000	LS		STORM WATER POLLUTION PREVENTION PLAN	
							7000					7000		832	30000	7000	EACH	EROSION CONTROL	
																		PAVEMENT	
							659					659		254	01000	659	SY	PAVEMENT PLANING, ASPHALT CONCRETE	
							49					49		407	10000	49	GAL	TACK COAT	
							27					27		441	50000	27	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	
																		TRAFFIC CONTROL	
				5								5		621	00100	5	EACH	RPM	
				16								16		626	00100	16	EACH	BARRIER REFLECTOR	
				11								11		630	02100	11	FT	GROUND MOUNTED SUPPORT, NO. 2 POST	
				1								1		630	85100	1	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
				1								1		630	86002	1	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
				0.12								0.12		646	10000	0.12	MILE	EDGE LINE, 4"	
				0.06								0.06		646	10200	0.06	MILE	CENTER LINE	
																		STRUCTURE 20' SPAN AND OVER (HUR-99-0586)	
																		FOR STRUCTURE HUR-99-0586 GENERAL SUMMARY	21
																		MAINTENANCE OF TRAFFIC	
		LS										LS		614	12420	LS		DETOUR SIGNING	
	1											1		616	10000	1	MGAL	WATER	
												LS		614	11000	LS		MAINTAINING TRAFFIC	
												4		619	16000	4	MNTH	FIELD OFFICE, TYPE A	
												LS		623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
												LS		624	10000	LS		MOBILIZATION	

CALCULATED CML
CHECKED DPF

GENERAL SUMMARY

HUR-99-05.82

6
28

PALMER ENGINEERING
460 WHITE POND DR. - SUITE 300
ENGINEERING AKRON, OHIO 44320

SHEET NO.	STATION		203		659
			EXCAVATION	EMBANKMENT	SEEDING AND MULCHING
	FROM	TO	CY	CY	SY
11	303+50.00	304+50.00	1	0	15
12	305+00.00	306+00.00	12	6	250
13	306+50.00	307+50.00	10	12	286
14	308+00.00	308+75.00	3	7	179
15	310+25.00	311+00.00	0	4	103
16	311+50.00	312+00.00	0	0	0
17	312+50.00	313+00.00	0	0	0
COLUMN TOTALS			26	29	833

TOTALS CARRIED TO GENERAL SUMMARY		
203 - EXCAVATION	26	CY
203 - EMBANKMENT	29	CY
659 - SEEDING AND MULCHING	833	SY
659- REPAIR SEEDING AND MULCHING	42	SY
659- INTER-SEEDING	42	SY
659 - TOPSOIL	92	CY
659 - SOIL ANALYSIS TEST	2	EACH
659 -COMMERCIAL FERTILIZER	0.11	TON
659 - LIME	0.17	ACRE
659 - WATER	4	MGAL

REF. NO.	SHEET NO.	STATION		SIDE	202				606						601
					GUARDRAIL	REMOVAL, MISC.: THRIE BEAM GUARDRAIL AT GRADE	BRIDGE TERMINAL ASSEMBLY REMOVED	ANCHOR ASSEMBLY REMOVED	GUARDRAIL, TYPE MGS, WITH LONG POSTS	ANCHOR ASSEMBLY, MGS TYPE T	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	MGS GUARDRAIL, TYPE 8 BURIED IN BACKSLOPE	POST END ANCHOR (OR CONCRETE BLOCK END ANCHOR)	ANCHOR ASSEMBLY, MGS TYPE E	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER, 30" THICK
		FROM	TO		FT	FT	EACH	EACH	FT	EACH	EACH	FT	EACH	EACH	CY
R1	9	304+36.0	308+87.0	RT	451		1	1							
R2	9	304+84.0	308+79.0	LT	395		1	1							
R3	9	305+28.0	308+03.0	RT		275									
R4	10	310+14.0	311+14.0	LT	109		1								
R5	10	310+21.0	311+34.0	RT	115		1								
GR1	9	304+21.6	308+59.1	RT					312.5		1	125	1		
GR2	9	305+14.7	308+52.2	LT					337.5		1			1	
GR3	10	310+39.9	311+11.4	LT					75.0	1	1				
GR4	10	310+46.8	311+32.0	RT					87.5	1	1				
EC1	9-10	309+19.0	309+40.0	RT/LT											13
TOTALS CARRIED TO GENERAL SUMMARY					1070	275	4	2	812.5	2	4	125	1	1	13

CALCULATED CML CHECKED DPF

ESTIMATED QUANTITIES

HUR-99-05.82

7
28

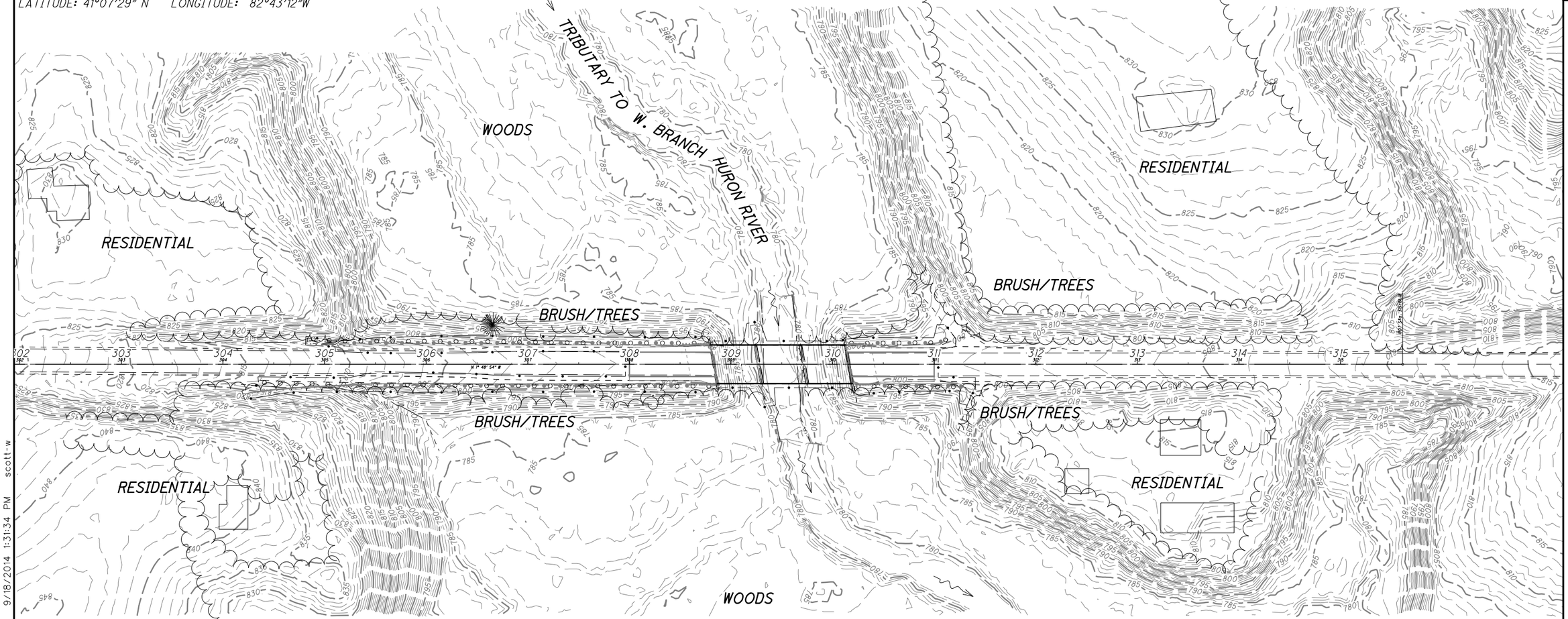
Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

PROJECT DESCRIPTION

REPLACEMENT OF EXISTING SUPERSTRUCTURE ON BRIDGE (HUR-99-0586) OVER TRIBUTARY TO WEST BRANCH OF HURON RIVER WITH MINIMAL APPROACH WORK. EXISTING BOX BEAMS AND ASPHALT WEARING SURFACE WILL BE REPLACED WITH NEW BOX BEAMS AND COMPOSITE CONCRETE DECK ON MODIFIED EXISTING SUBSTRUCTURE. RESURFACING OF ROADWAY APPROACHES AND REPLACEMENT OF EXISTING TYPE 5 GUARDRAIL WITH TYPE MGS GUARDRAIL.

USGS QUADRANGLES - WILLARD, MONROEVILLE

LATITUDE: 41°07'29" N LONGITUDE: 82°43'12"W



PROJECT DATA	
TOTAL AREA (RIGHT OF WAY)	2.1 Ac.
PROJECT EARTH DISTURBED AREA	0.3 Ac.
ESTIMATED CONTRACTOR DISTURBED AREA	0.7 Ac.
NOTICE OF INTENT EARTH DISTURBED AREA	4.9 Ac.
IMPERVIOUS PAVED AREA FOR PRE-CONSTRUCTION SITE	0.56 Ac.
IMPERVIOUS PAVED AREA FOR POST-CONSTRUCTION SITE	0.56 Ac.
RUNOFF COEFFICIENT FOR PRE-CONSTRUCTION SITE	0.60
RUNOFF COEFFICIENT FOR POST-CONSTRUCTION SITE	0.60

SOIL AND WATER CONSERVATION MAPS	HURON COUNTY SOIL SURVEY
IMMEDIATE RECEIVING WATERS	TRIBUTARY OF WEST BRANCH HURON RIVER
SUBSEQUENT RECEIVING WATERS	WEST BRANCH HURON RIVER

HORIZONTAL SCALE IN FEET
0 25 50 100

PROJECT SITE PLAN

HUR-99-05.82

8
28

Palmer ENGINEERING
ENGINEERING, AKRON, OHIO 44320
460 WHITE POND DR - SUITE 300

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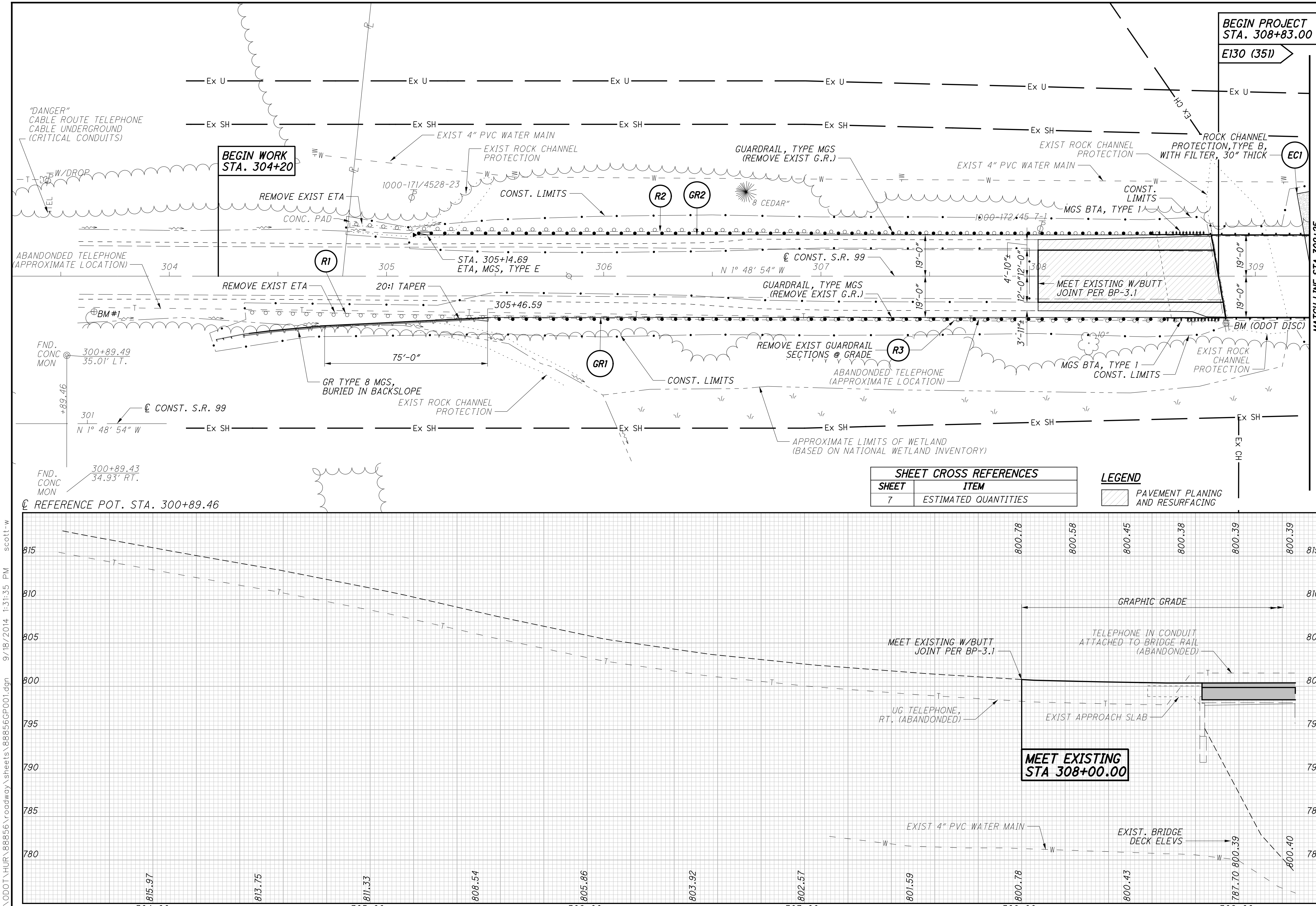

BEGIN PROJECT STA. 308+83.00
E130 (351)
BEGIN WORK STA. 304+20
"DANGER" CABLE ROUTE TELEPHONE CABLE UNDERGROUND (CRITICAL CONDUITS)
EXIST 4" PVC WATER MAIN
EXIST ROCK CHANNEL PROTECTION
1000-171/4528-23
CONST. LIMITS
REMOVE EXIST ETA
CONC. PAD
GUARDRAIL, TYPE MGS (REMOVE EXIST G.R.)
8" CEDAR
ROCK CHANNEL PROTECTION, TYPE B, WITH FILTER, 30" THICK
MGS BTA, TYPE 1
1000-172/45 7-1
ABANDONDED TELEPHONE (APPROXIMATE LOCATION)
STA. 305+14.69 ETA, MGS, TYPE E
℄ CONST. S.R. 99
N 1° 48' 54" W
MEET EXISTING W/BUTT JOINT PER BP-3.1
20:1 TAPER
305+46.59
BM #1
BM (ODOT DISC)
MATCH LINE STA 309+25
FND. CONC MON
300+89.49 35.01' LT.
300+89.43 34.93' RT.
75'-0"
GR TYPE 8 MGS, BURIED IN BACKSLOPE
REMOVE EXIST GUARDRAIL SECTIONS @ GRADE
APPROXIMATE LIMITS OF WETLAND (BASED ON NATIONAL WETLAND INVENTORY)
℄ REFERENCE POT. STA. 300+89.46
GRAPHIC GRADE
TELEPHONE IN CONDUIT ATTACHED TO BRIDGE RAIL (ABANDONDED)
UG TELEPHONE, RT. (ABANDONDED)
EXIST APPROACH SLAB
MEET EXISTING STA 308+00.00
EXIST. BRIDGE DECK ELEVS
815.97 813.75 811.33 808.54 805.86 803.92 802.57 801.59 800.78 800.43 787.70 800.39
800.78 800.58 800.45 800.38 800.39 800.39 800.40
304+00 305+00 306+00 307+00 308+00 309+00

SHEET CROSS REFERENCES

SHEET	ITEM
7	ESTIMATED QUANTITIES

LEGEND

PAVEMENT PLANING AND RESURFACING

HORIZONTAL SCALE IN FEET

CALCULATED CML CHECKED DPF

PLAN AND PROFILE
STATE ROUTE 99 STA. 303+50 TO STA. 309+25

HUR-99-05.82

PALMER ENGINEERING 460 WHITE POND DR - SUITE 300 AKRON, OHIO 44320

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END PROJECT
STA. 310+16.22
E130 (351)

END WORK
STA. 311+35

BRANCH OF HURON RIVER

Ex U — Ex SH — Ex CH

EXIST ROCK CHANNEL PROTECTION

EXIST 4" PVC WATER MAIN

CONST. LIMITS

GR3

GUARDRAIL, TYPE MGS (REMOVE EXIST G.R.)

MGS BTA, TYPE 1

STA 311+02.63

1000-173

9'-0" R

FIELD DRIVE

GRAVEL APRON

BM#2

POT Sta. 315+61.18

FND. RR SPIKE

315

N 1° 48' 54" W

℄ CONST. S.R. 99

℄ REFERENCE POT STA. 315+61.18

W/DROP

APPROXIMATE LOCATION UG

MATCH LINE STA 309+25

19'-0"

19'-0"

310

R4

MEET EXISTING ETA, T W/BUTT JOINT PER BP-3.1

EX. TELEFOC CARRIED ON BRIDGE

12'-0"

12'-0"

4'-10½"

4'-4½"

311

GR4

312

313

314

N 1° 48' 54" W

℄ CONST. S.R. 99

STA 311+22.04

ABANDONED TELEPHONE (ATTACHED TO BRIDGE RAILING)

EC1

CONST. LIMITS

EXIST ROCK CHANNEL PROTECTION

ROCK CHANNEL PROTECTION, TYPE B, WITH FILTER, 30" THICK

EX. 6" CMP

ETA, T

R5

MGS BTA, TYPE 1

GUARDRAIL, TYPE MGS (REMOVE EXIST G.R.)

CONST. LIMITS

10'-0" R

FIELD DRIVE

EX. 6" VSP

ABANDONED TELEPHONE (APPROXIMATE LOCATION)

POSSIBLE UNDERGROUND TELEPHONE OLD MARKINGS

APPROXIMATE LIMITS OF WETLAND (BASED ON NATIONAL WETLAND INVENTORY)

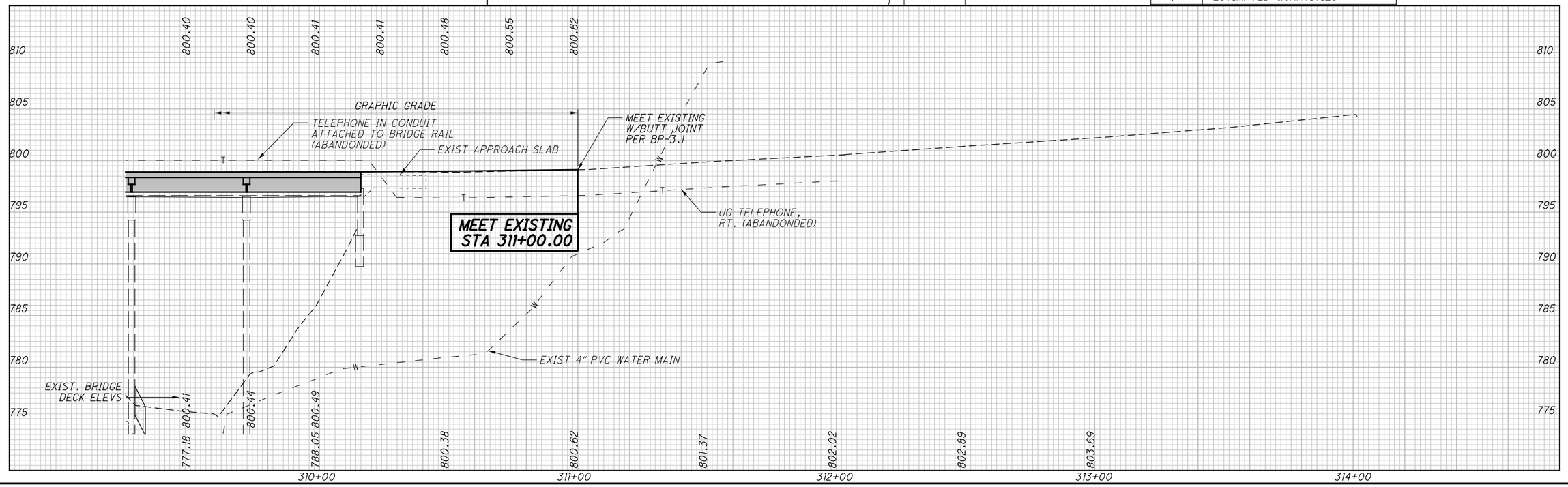
BRANCH OF HURON RIVER

Ex CH

SHEET CROSS REFERENCES	
SHEET	ITEM
7	ESTIMATED QUANTITIES

LEGEND

PAVEMENT PLANING AND RESURFACING



PLAN AND PROFILE
STATE ROUTE 99 STA. 303+50 TO STA. 309+25

HUR-99-05.82

10
28

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED CML
CHECKED DPF

Palmer ENGINEERING
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460 WHITE POND DR • SUITE 300
AKRON, OHIO 44320

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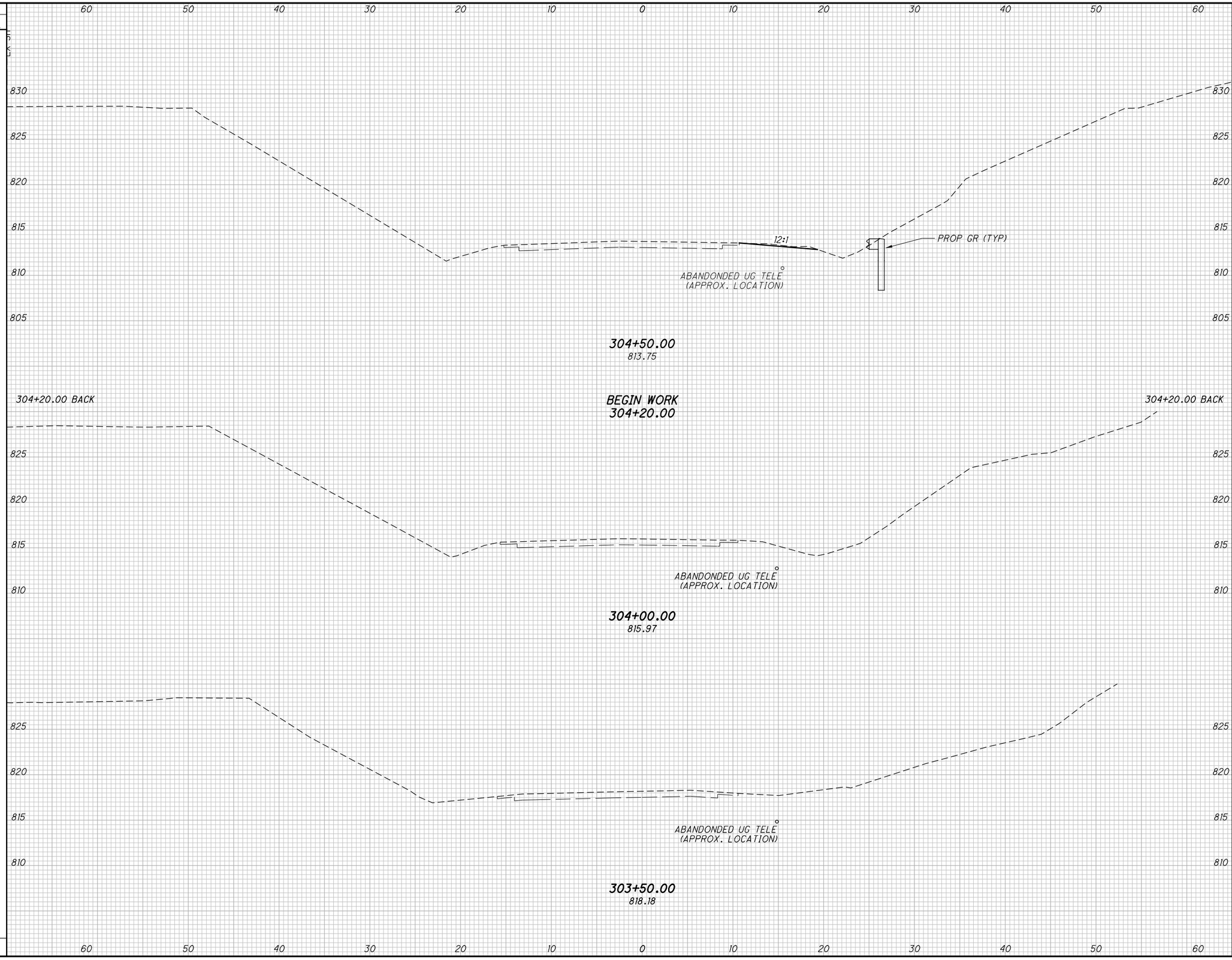
SEEDING	
END WIDTH	SQ. YDS.
9	15
0	
	15

END AREA	
CUT	FILL
1	0
0	0

VOLUME	
CUT	FILL
1	0
1	0

CALCULATED DPF

CHECKED MAM



CROSS SECTIONS STATE ROUTE 99
STA. 303+50.00 TO STA. 304+50.00

HUR-99-05.82

11
28

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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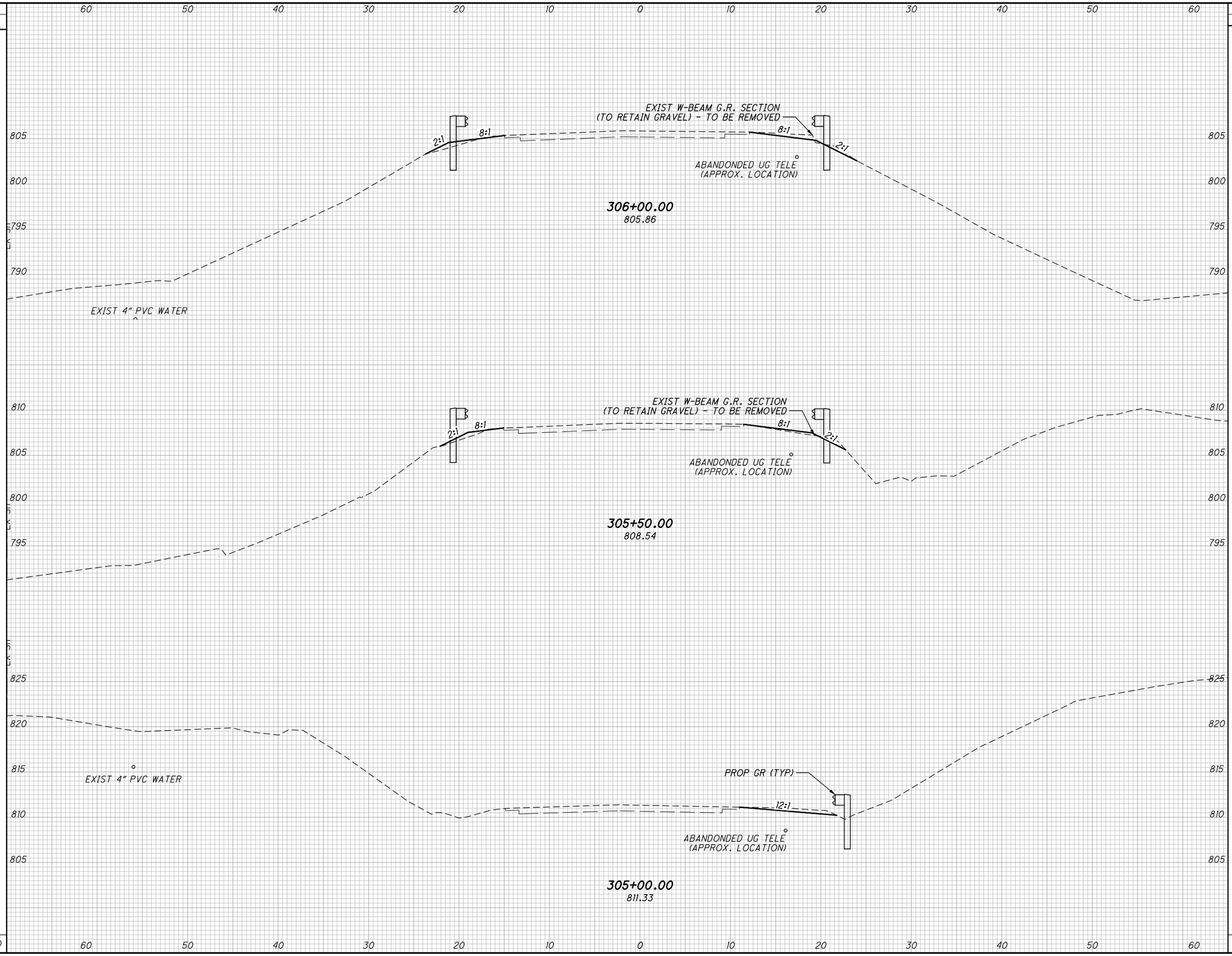
SEEDING END WIDTH	SEEDING SQ. YDS.
21	111
19	83
11	56
	250

60 50 40 30 20 10 0 10 20 30 40 50 60



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
3	2	4	4
1	2	4	2
3	0	4	0
		12	6

CALCULATED DPF | CHECKED MAM

CROSS SECTIONS STATE ROUTE 99
STA. 305+00.00 TO STA. 306+00.00

HUR-99-05.82

12
28

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460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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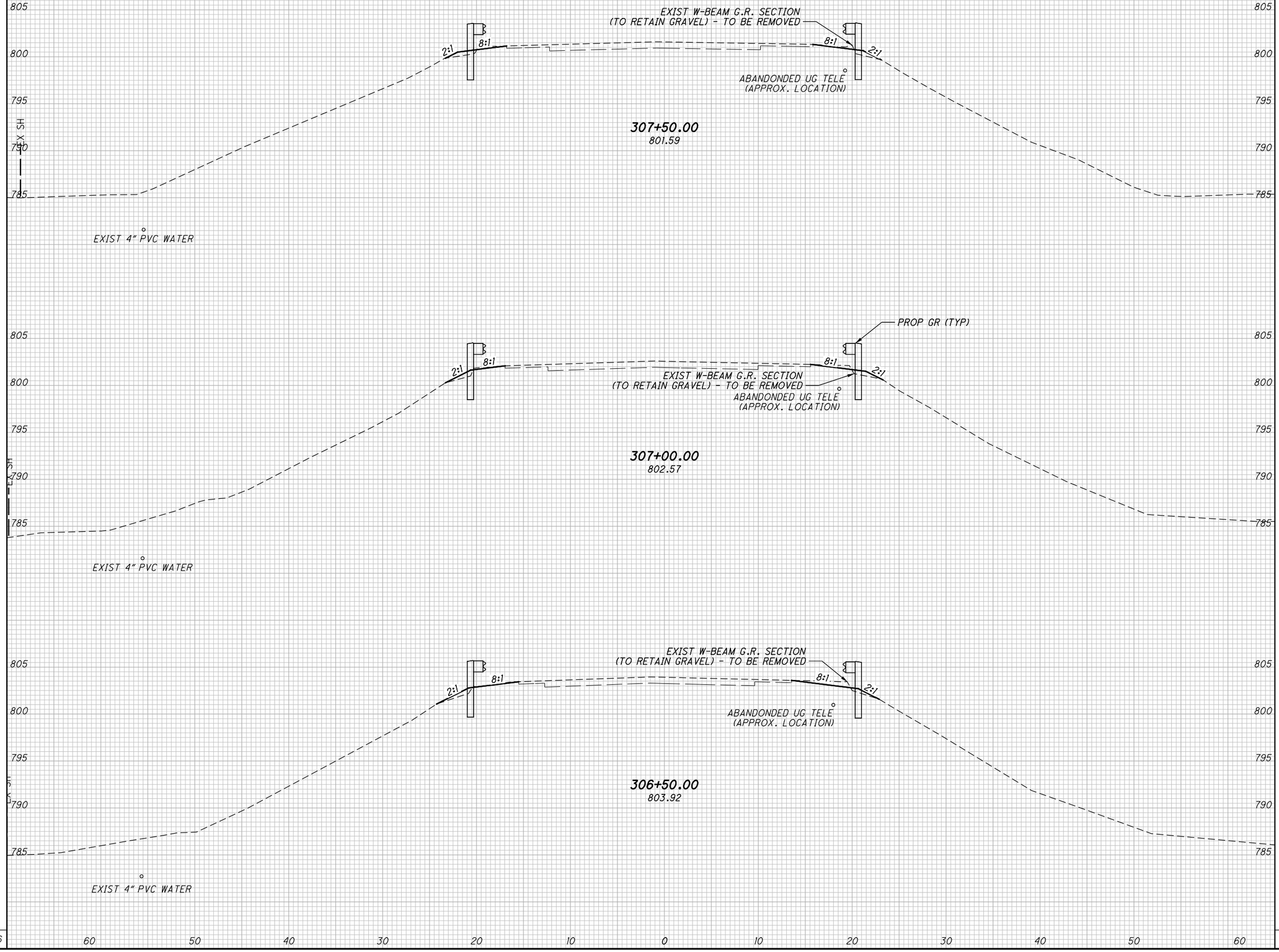
SEEDING END WIDTH	SEEDING SQ. YDS.
14	81
15	94
19	111
	286

60 50 40 30 20 10 0 10 20 30 40 50 60



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
1	2		
1	2		
1	2	2	4
1	2	3	4
2	2	5	4
		10	12

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS STATE ROUTE 99
STA. 306+50.00 TO STA. 307+50.00

HUR-99-05.82

13
28

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460 WHITE POND DR • SUITE 300
AKRON, OHIO 44320

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SEEDING END WIDTH	SEEDING SQ. YDS.
0	
	4
10	
	31
12	
	69
13	
	75
	179

60 50 40 30 20 10 0 10 20 30 40 50 60

308+83 BACK

BEGIN PROJECT
308+83.00

308+83 BACK

800
795
790
785
805
800
795
790
785
805
800
795
790
785

2:1 8:1 8:1 2:1

EXIST APPROACH SLAB

ABANDONDED UG TELE (APPROX. LOCATION)

800.38
308+75.00
800.41

EX SH

EXIST 4" PVC WATER

PROP GR (TYP)

8:1 8:1

ABANDONDED UG TELE (APPROX. LOCATION)

800.45
308+50.00
800.43

EX SH

EXIST 4" PVC WATER

EXIST W-BEAM G.R. SECTION (TO RETAIN GRAVEL) - TO BE REMOVED

2:1 8:1 8:1

ABANDONDED UG TELE (APPROX. LOCATION)

800.78
308+00.00
800.78

MEET EXISTING PAVEMENT

EX SH

EXIST 4" PVC WATER

60 50 40 30 20 10 0 10 20 30 40 50 60

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0	0		
		0	1
0	2		
		0	1
0	1		
		1	2
1	1		
		2	3
		3	7

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS STATE ROUTE 99
STA. 308+00.00 TO STA. 308+75.00

HUR-99-05.82

14
28

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ENGINEERING AKRON, OHIO 44320

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SEEDING	
END WIDTH	SQ. YDS.
0	
	12
6	
	50
12	
	35
13	
	6
0	
	103

60 50 40 30 20 10 0 10 20 30 40 50 60

END WORK
311+35.00

311+35.00 BACK

EX SH

800
795
790
785

EXIST 4" PVC WATER

2:1

ABANDONDED UG TELE
(APPROX. LOCATION)

800.62
311+00.00
800.62
MEET EXISTING PAVEMENT

311+35.00 BACK

805
800
795
790
785

8:1

2:1

ABANDONDED UG TELE
(APPROX. LOCATION)

800.48
310+50.00
800.38

EX SH

EXIST 4" PVC WATER

PROP GR (TYP)

EXIST APPROACH SLAB
ABANDONDED UG TELE
(APPROX. LOCATION)

800.41
310+25.00
800.44

END PROJECT
310+16.22

310+16.22 AHEAD

EXIST 4" PVC WATER

310+16.22 AHEAD

END AREA	
CUT	FILL
0	0
0	0
0	1
0	2
0	3
0	1
0	0

VOLUME	
CUT	FILL
0	0
0	1
0	1
0	4

CALCULATED DPF
CHECKED MAM

CROSS SECTIONS STATE ROUTE 99
STA. 310+25.00 TO STA. 311+00.00

HUR-99-05.82

15
28

Palmer ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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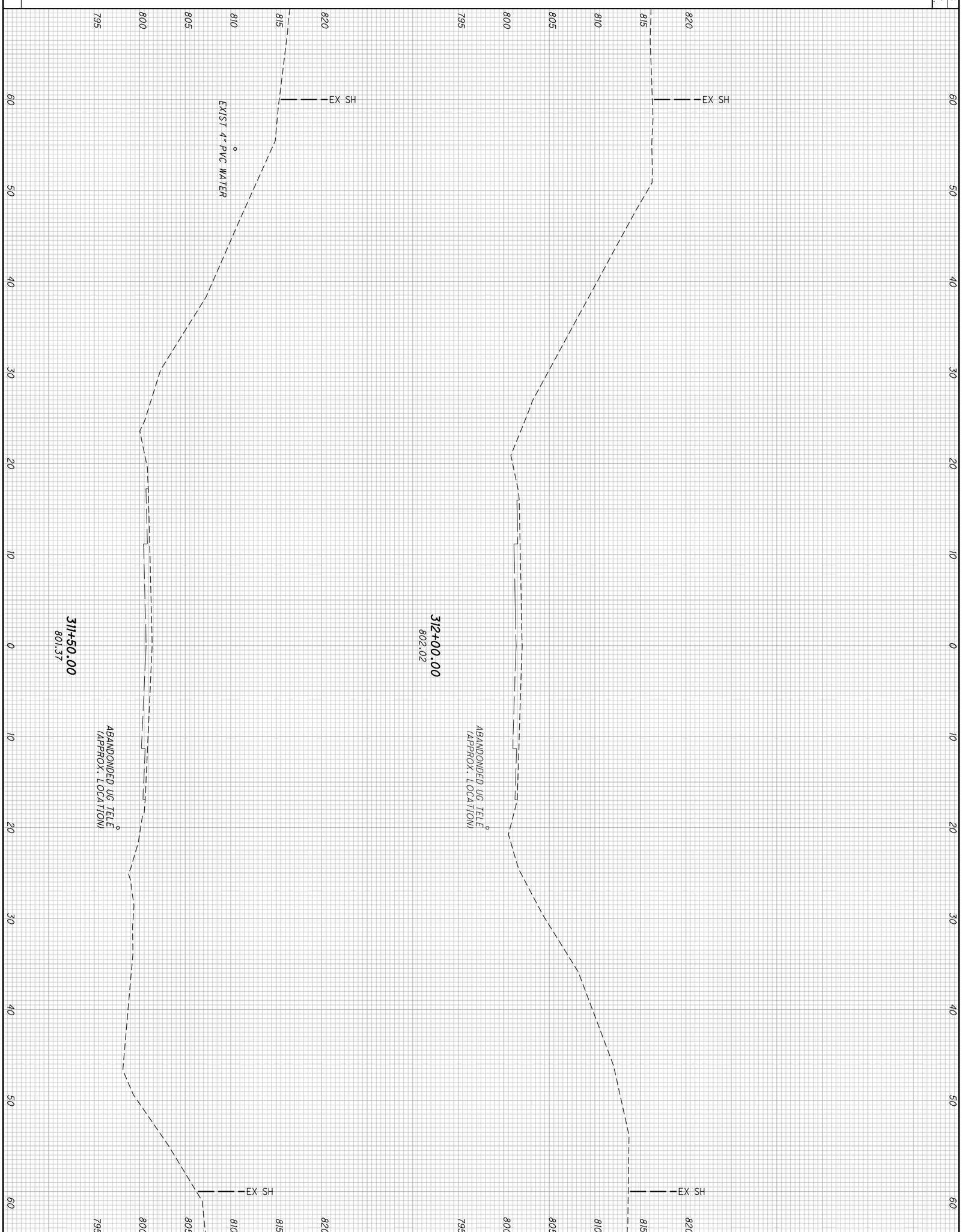
SEEDING
END WIDTH
SQ. YDS.



END AREA
CUT
FILL

VOLUME
CUT
FILL

HUR-99-05.82

CROSS SECTIONS STATE ROUTE 99
STA. 311+50.00 TO STA. 311+50.00

CALCULATED DPF
CHECKED MAM

PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

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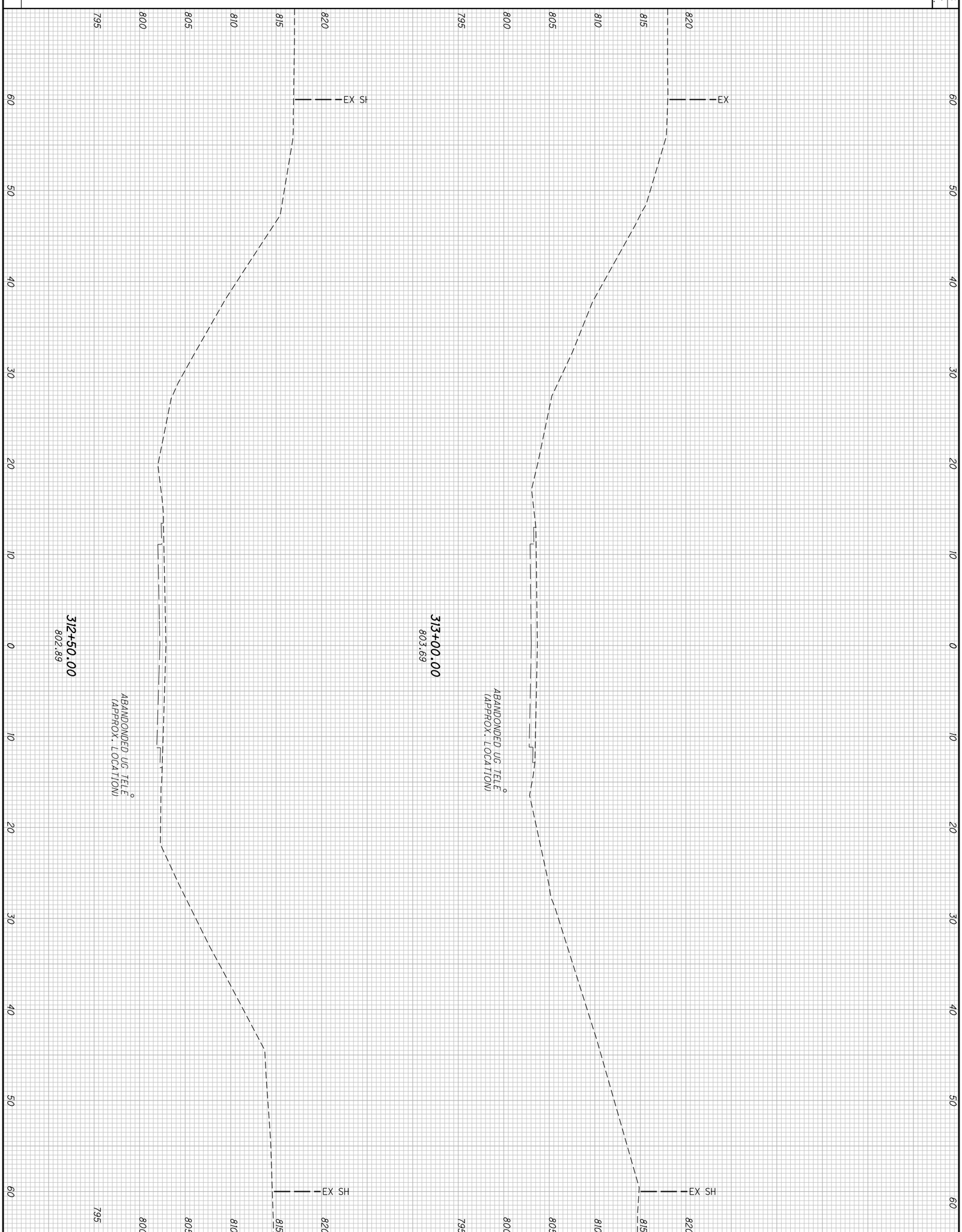
SEEDING
END WIDTH | SQ. YDS.



END AREA
CUT | FILL

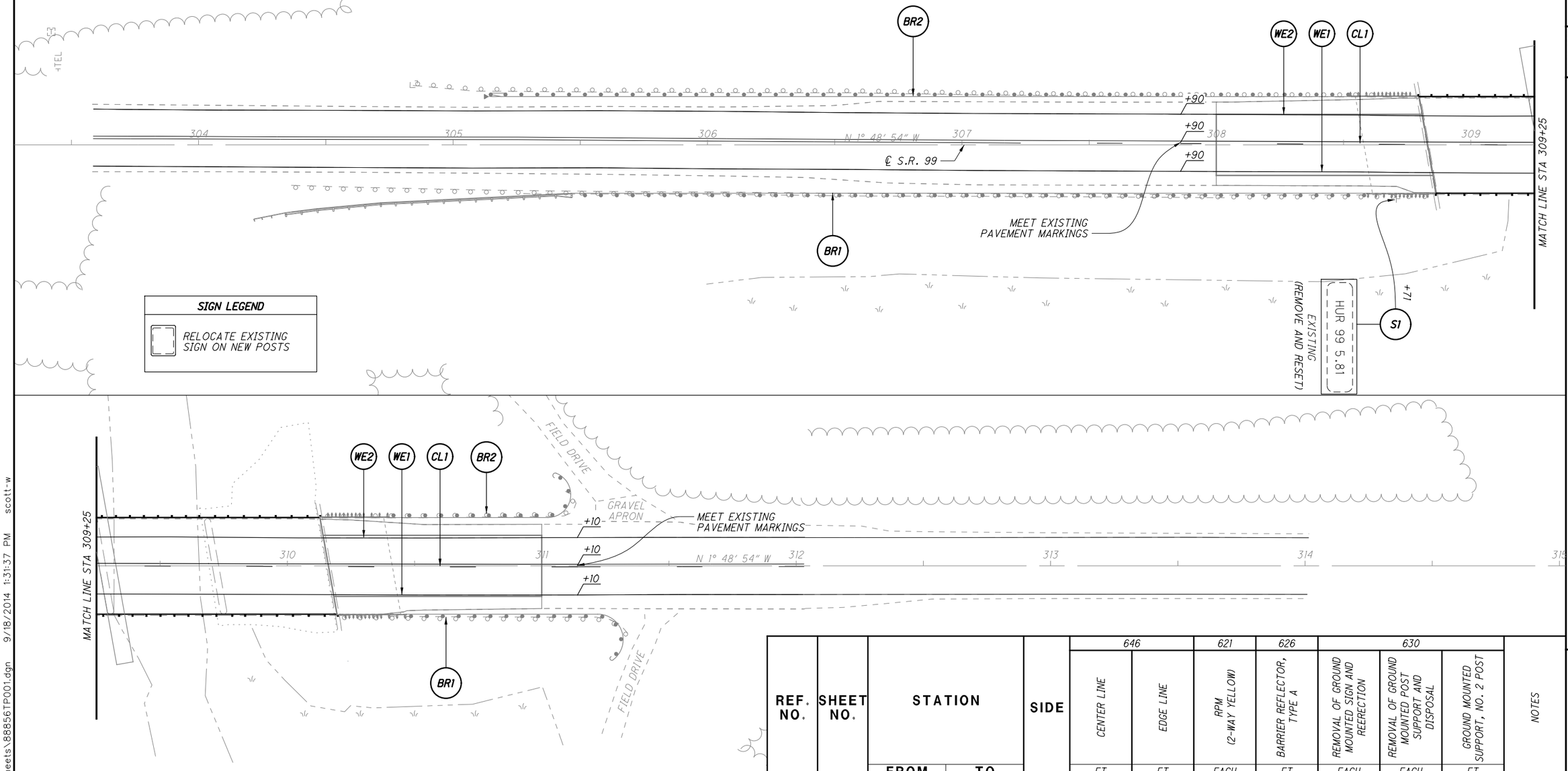
VOLUME
CUT | FILL

17 / 28	HUR-99-05.82	CROSS SECTIONS STATE ROUTE 99 STA. 312+50.00 TO STA. 313+00.00

CALCULATED DPF
CHECKED MAM

ITEM 646	ODOT LINE SPECIFICATIONS		
CL	CENTER LINE, DASHED & SOLID DOUBLE 4"	WE	WHITE EDGE LINE

NOTE:
INSTALL BARRIER REFLECTOR, TYPE A AT 100' INTERVALS ON ALL GUARDRAIL AND BRIDGE RAILING.



REF. NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	646 CENTER LINE FT	646 EDGE LINE FT	621 RPM (2-WAY YELLOW) EACH	626 BARRIER REFLECTOR, TYPE A FT	630 REMOVAL OF GROUND MOUNTED SIGN AND REERECTION EACH	630 REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL EACH	630 GROUND MOUNTED SUPPORT, NO. 2 POST FT	NOTES
WE1	18	307+90.0	311+10.0	RT		0.061						
WE2	18	307+90.0	311+10.0	LT		0.061						
CL1	18	307+90.0	311+10.0	℄	0.061		5					80' c/c
S1	18	308+71.0		RT					1	1	11.3	
BR1	18	304+71.6	311+32.0	RT				9				
BR2	18	305+14.7	311+11.4	LT				7				
TOTALS CARRIED TO GENERAL SUMMARY					0.06	0.12	5	16	1	1	11	

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED CML
CHECKED DPF

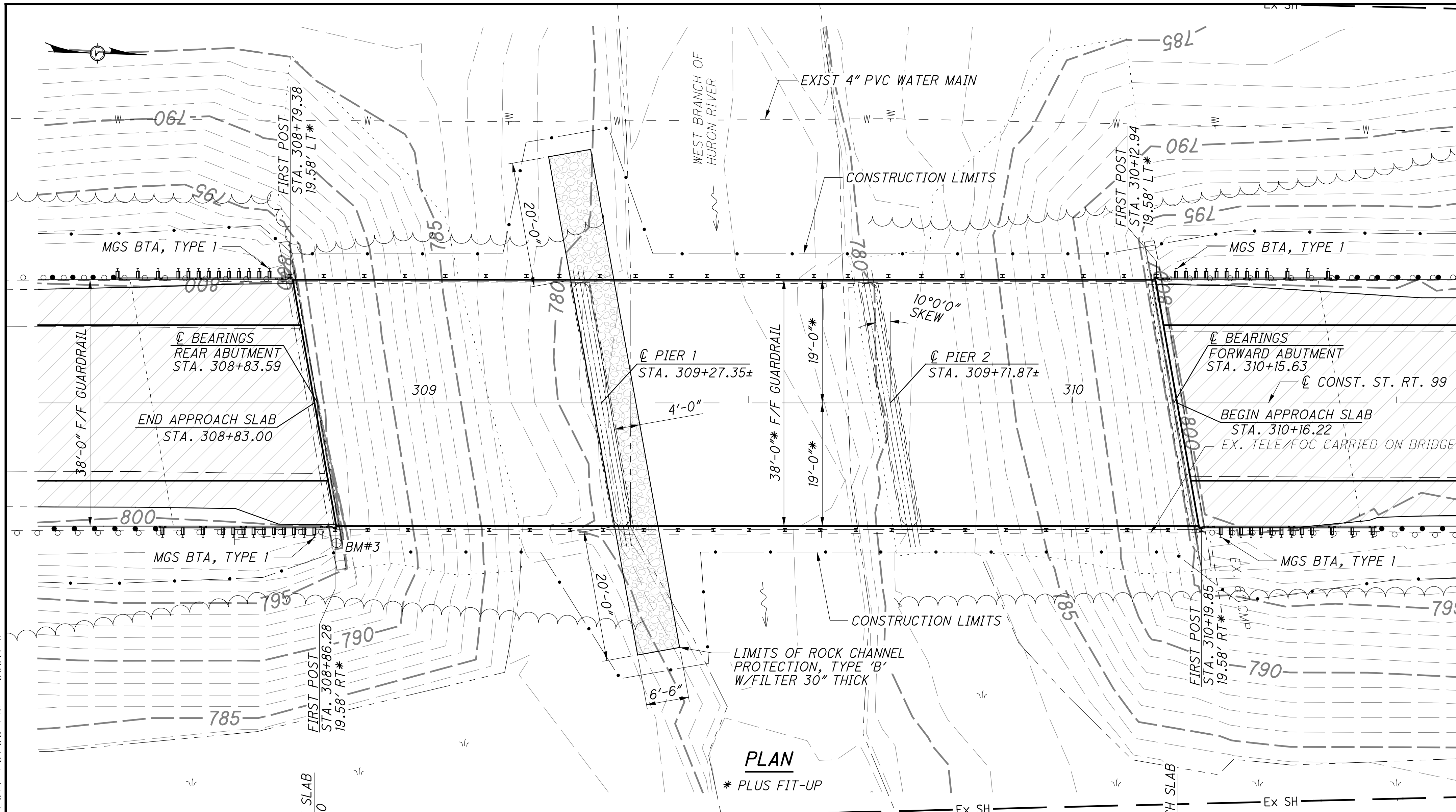
SIGN AND PAVEMENT MARKING PLAN

HUR-99-05.82

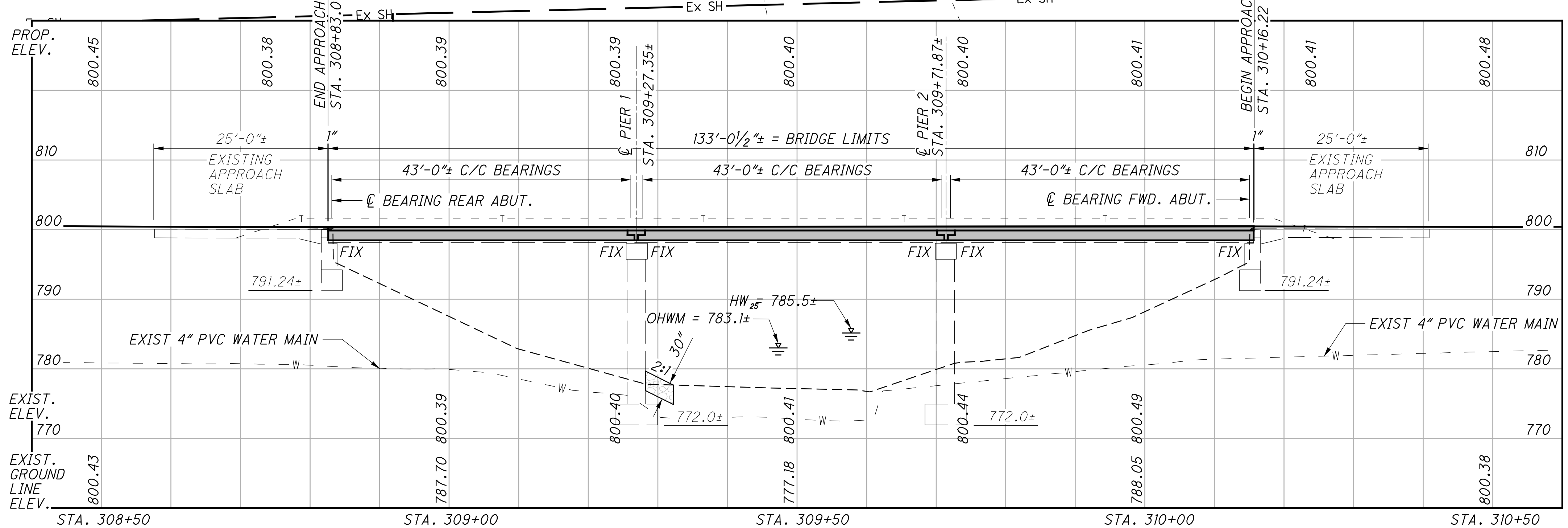
18
28

Palmer ENGINEERING
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320

O:\ODOT\HUR\88856\traffic\sheets\88856TP001.dgn 9/18/2014 1:31:37 PM scott-w



PLAN
* PLUS FIT-UP



PROFILE ALONG ℄ OF STATE ROUTE 99

BENCHMARK DATA

BM #1 STA. 303+65.32, ELEV. 816.71, OFFSET 16.35, RT.
BM #2 STA. 311+52.68, ELEV. 802.09, OFFSET 28.44, LT.
BM #3 STA. 308+86.49, ELEV. 800.04, OFFSET 21.61, RT.

FOR ADDITIONAL BENCHMARK INFORMATION. SEE ROADWAY PLAN SHEET 3/28

NOTES

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

DESIGN TRAFFIC:
2016 ADT = 2100 2016 ADTT = 250
2036 ADT = 2400 2036 ADTT = 290

PROPOSED WORK

1) REMOVE PORTIONS OF WINGWALLS ADJACENT TO BOX BEAMS.
2) REMOVE EXISTING BOX BEAMS, BEARINGS AND ASPHALT WEAR. SURF.
3) INSTALL NEW BOX BEAMS, ELASTOMERIC BEARINGS AND COMPOSITE CONCRETE DECK.
4) REPAIR WINGWALLS AND INSTALL NEW TST RAILING.
5) SEAL CONCRETE SURFACES.
6) PLACE ROCK CHANNEL PROTECTION AT PIER 1.

HYDRAULIC DATA

DRAINAGE AREA = 21 SQ. MILES
Q (25) = 2660 CFS V (25) = 4.9 FT/S EL. 785.5**
Q (100) = 3630 CFS V (100) = 5.7 FT/S EL. 786.5**
STRUCTURE CLEARS THE 25 YEAR DESIGN HW BY 12.3 FEET.

**ELEVATIONS SHOWN ARE TAKEN FROM THE ORIGINAL 1979 CONSTRUCTION PLANS, WITH DATUM ADJUSTMENT.

EXISTING STRUCTURE

TYPE: PRESTRESSED CONCRETE BOX BEAMS ON CAPPED PILE ABUTMENTS AND WALL PIERS
SPANS: 3 @ 43' C/C BRGS, 43.76'-44.52'-43.76 C/C SUBSTRUCT.
ROADWAY: 38'-0" F/F GUARDRAIL
LOADING: HS20-44 AND ALTERNATE MILITARY LOADING
SKEW: 10° R.F.
WEARING SURFACE: 5" ASPHALT CONCRETE
APPROACH SLABS: AS-1-72, 25' LONG
ALIGNMENT: TANGENT
CROWN: 3/16 IN/FT
STRUCTURE FILE NUMBER: 3902366
DATE BUILT: 1979
DISPOSITION: SUPERSTRUCTURE TO BE REPLACED

PROPOSED STRUCTURE

TYPE: NEW PRESTRESSED CONCRETE BOX BEAMS WITH COMPOSITE CONCRETE DECK ON EXISTING REINFORCED CONCRETE SUBSTRUCTURE.
SPANS: 3 @ 43' C/C BRGS, 43.76'-44.52'-43.76 C/C SUBSTRUCT.
ROADWAY: 38'-0" F/F GUARDRAIL
LOADING: HS25 AND ALTERNATE MILITARY LOADING W/60 PSF FWS
SKEW: 10° R.F.
WEARING SURFACE: 1" MONOLITHIC CONCRETE
APPROACH SLABS: AS-1-72, 25' LONG (EXISTING)
ALIGNMENT: TANGENT
CROWN: .016 FT/FT
COORDINATES: LATITUDE 41° 07' 29"
LONGITUDE: 82° 43' 12"

DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	4/15/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		3902366	

STA. 308+83.00
STA. 310+16.22

SITE PLAN
BRIDGE NO. HUR-99-0586
OVER WEST BRANCH OF THE HURON RIVER

HUR-99-05.82
PID No. 88856

EMERGENCY SERVICES

EMERGENCY SERVICES FACILITIES SHALL BE NOTIFIED OF THE PROJECT A MINIMUM OF 14 DAYS PRIOR TO ANY ROAD CLOSURE.

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWINGS:

TST-1-99	REVISED	07-15-16
PSBD-2-07	REVISED	01-21-11
DS-1-92	REVISED	07-18-03

AND THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

832	DATED	01-17-14

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO STANDARD SPECIFICATIONS ADOPTED BY THE AMERICAN BRIDGES ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 17TH EDITION AND THE ODOT BRIDGE DESIGN MANUAL, 2004.

DESIGN LOADING:

HS25 AND THE ALTERNATE MILITARY LOADING
FUTURE WEARING SURFACE (FWS) OF 60 PSF

DESIGN DATA:

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4500 PSI (SUPERSTRUCTURE)

CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4000 PSI (SUBSTRUCTURE)

REINFORCING STEEL - MINIMUM YIELD STRENGTH 60,000 PSI

CONCRETE FOR PRESTRESSED BEAMS:
COMPRESSIVE STRENGTH (FINAL) = 7000 PSI

COMPRESSIVE STRENGTH (RELEASE) = 5000 PSI

PRESTRESSING STRAND

AREA = 0.167 sq in

ULTIMATE STRENGTH = 270 KSI

INITIAL STRESS = 202.5 KSI (LOW RELAXATION STRAND)

DECK PROTECTION METHOD:

EPOXY COATED REINFORCING STEEL
2½" CONCRETE COVER
STEEL DRIP STRIP

MONOLITHIC WEARING SURFACE:

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

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 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 BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

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

THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES AND THAT ARE NOT SEPARATELY LISTED FOR PAYMENT. ITEMS TO BE REMOVED INCLUDE ALL EXISTING MATERIALS, EXCEPT FOR WEARING COURSE REMOVAL, 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 AND THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE THE EXISTING REINFORCING STEEL TO BE PRESERVED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 90-POUND CLASS. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS 501.05.

THIS ITEM SHALL INCLUDE ALL NECESSARY WORK REQUIRED FOR WINGWALL MODIFICATIONS SHOWN ON THESE DRAWINGS INCLUDING REMOVAL, EXCAVATION OF FILL, TEMPORARY SUPPORT OF APPROACH SLAB FILL, AND PLACEMENT OF NEW FILL AS REQUIRED. IN ADDITION, THIS ITEM SHALL INCLUDE ALL NECESSARY WORK REQUIRED FOR REMOVAL OF THE EXISTING COMMUNICATIONS LINE ATTACHED TO THE RIGHT (EAST) GUARDRAIL OF THE BRIDGE.

THE EXISTING ANCHOR DOWELS AT THE ABUTMENTS AND PIERS SHALL BE CUT AND GROUND DOWN TO 1" BELOW THE BEAM SEAT. THE RECESS SHALL BE FILLED FLUSH TO THE BEAM SEAT WITH NON-SHRINK GROUT.

ITEM 515, PRESTRESSED CONCRETE BOX BEAM BRIDGE MEMBERS LEVEL 1, AS PER PLAN

THE SHEAR KEYWAY GROUT FOR BOTH THE CB17-36 AND CB17-48 BOX BEAMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ALTERNATE 2 SHOWN ON SHEET 1/4 OF STANDARD BRIDGE DRAWING PSBD-2-07. IN ADDITION, THE GROUT SHALL OBTAIN A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AND A MINIMUM CURE PERIOD OF 5 DAYS SHALL ELAPSE BEFORE CONSTRUCTION OR VEHICULAR TRAFFIC IS ALLOWED ON THE BRIDGE.

BEARING PAD SHIMS

PLACE ⅛" THICK PREFORMED BEARING PAD SHIMS, PLAN AREA 10" X 5" (CB17-36) OR 12" X 5" (CB17-48), UNDER THE ELASTOMERIC BEARING PADS WHERE REQUIRED FOR PROPER BEARING. FURNISH TWO SHIMS PER BEAM. THE DEPARTMENT WILL MEASURE THIS ITEM BY THE TOTAL NUMBER SUPPLIED. THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516 - ⅛" PREFORMED BEARING PADS. ANY UNUSED SHIMS WILL BECOME THE PROPERTY OF THE STATE.

DESIGN AGENCY
PALMER ENGINEERING
460 WHITE POND DR - SUITE 300
AKRON, OHIO 44320
WINCHESTER ■ NASHVILLE ■ LOUISVILLE ■ CINCINNATI ■ AKRON ■ HURRICANE ■ ORLANDO

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	4/15/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		3902366	

GENERAL NOTES
BRIDGE NO. HUR-099-0586
OVER WEST BRANCH OF THE HURON RIVER

HUR-99-05.82
PID No. 88856

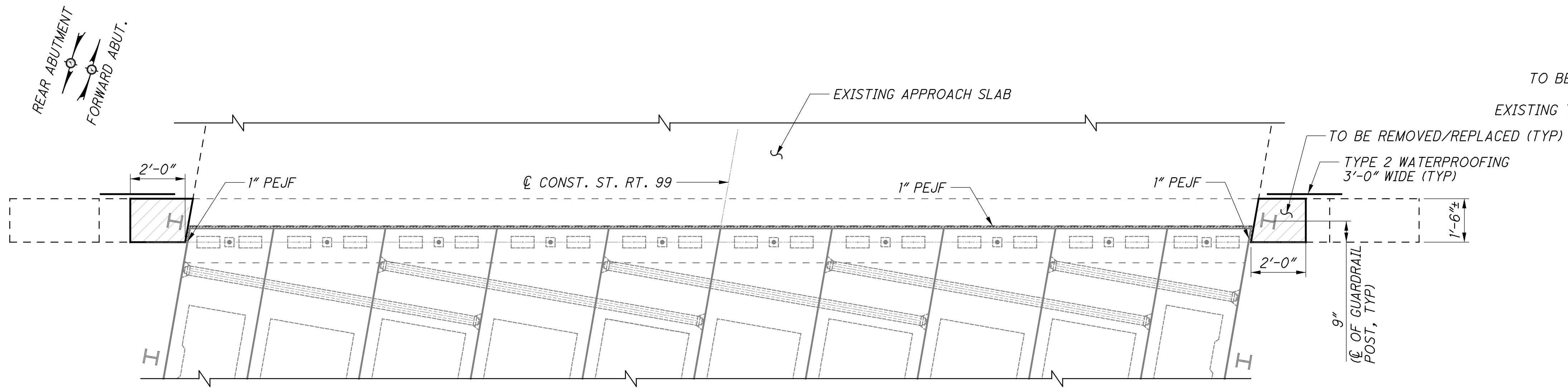
CALC: TES R. ABUT	DATE: 7/8/2014 F. ABUT	CHECK: HJS PIERS	DATE: 7/10/2014 SUPER.	GENERAL	PARTICI-PATION 01/STR/BR	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SHEET REF.
										STRUCTURES 20' SPAN AND OVER (HUR-99-0586)	
				LS	LS	202	11203			PORTIONS OF STRUCTURE REMOVED, OVER 20' SPAN, AS PER PLAN	2/10
			562		562	202	23500	562	SY	WEARING COURSE REMOVED	
			23862		23862	509	10000	23862	LB	EPOXY COATED REINFORCING STEEL	
10	10	40			60	510	10000	60	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	
			144		144	511	31610	144	CY	CLASS QC2 CONCRETE, SUPERSTRUCTURE	
1	1				2	511	45710	2	CY	CLASS QC1 CONCRETE, ABUTMENT	
20	20	68	79		187	512	10100	187	SY	SEALING OF CONCRETE SURFACES (EPOXY URETHANE)	
2	2				4	512	33000	4	SY	TYPE 2 WATERPROOFING	
			13		13	512	44400	13	SY	TYPE B WATERPROOFING	
			6		6	515	12021	6	EACH	PRESTRESSED CONCRETE COMPOSITE BOX BEAM BRIDGE MEMBERS, LEVEL 1, CB17-36, AS PER PLAN, 44'-0 1/8" LONG	2/10
			24		24	515	12031	24	EACH	PRESTRESSED CONCRETE COMPOSITE BOX BEAM BRIDGE MEMBERS, LEVEL 1, CB17-48, AS PER PLAN, 44'-0 1/8" LONG	2/10
86	86				172	516	13600	172	SF	1" PREFORMED EXPANSION JOINT FILLER	
3	3	75			81	516	13800	81	SF	1-1/2" PREFORMED EXPANSION JOINT FILLER	
39	39				78	516	31010	78	FT	2" DEEP JOINT SEALER	
			60		60	516	41100	60	EACH	1/8" PREFORMED BEARING PAD	
			24		24	516	43100	24	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE), (10" X 5" X 1.474")	
			96		96	516	43100	96	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE), (12" X 5" X 1.474")	
			277		277	517	70000	277	FT	RAILING (TWIN STEEL TUBE)	
			332		332	SPECIAL	51822300	332	FT	STEEL DRIP STRIP	
		39			39	601	32100	39	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER	

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. SUITE 300
AKRON, OHIO 44320

DATE 4/15/14
REVIEWED BJF
STRUCTURE FILE NUMBER 3902366
DRAWN SDW
REVISED
DESIGNED MLJ
CHECKED CEJ

ESTIMATED QUANTITIES
BRIDGE NO. HUR-099-0586
OVER WEST BRANCH OF THE HURON RIVER

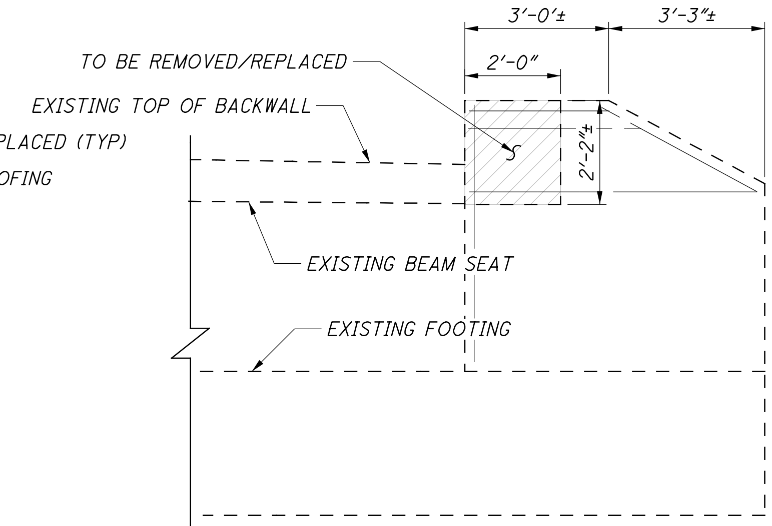
HUR-99-05.82
PID No. 88856



ABUTMENT PLAN

NOTE:

1) ABUTMENT WINGWALL CONCRETE:
DO NOT PLACE THE ABUTMENT CONCRETE ABOVE THE BRIDGE SEAT CONSTRUCTION JOINT UNTIL THE PRESTRESSED CONCRETE BOX BEAMS HAVE BEEN ERECTED.



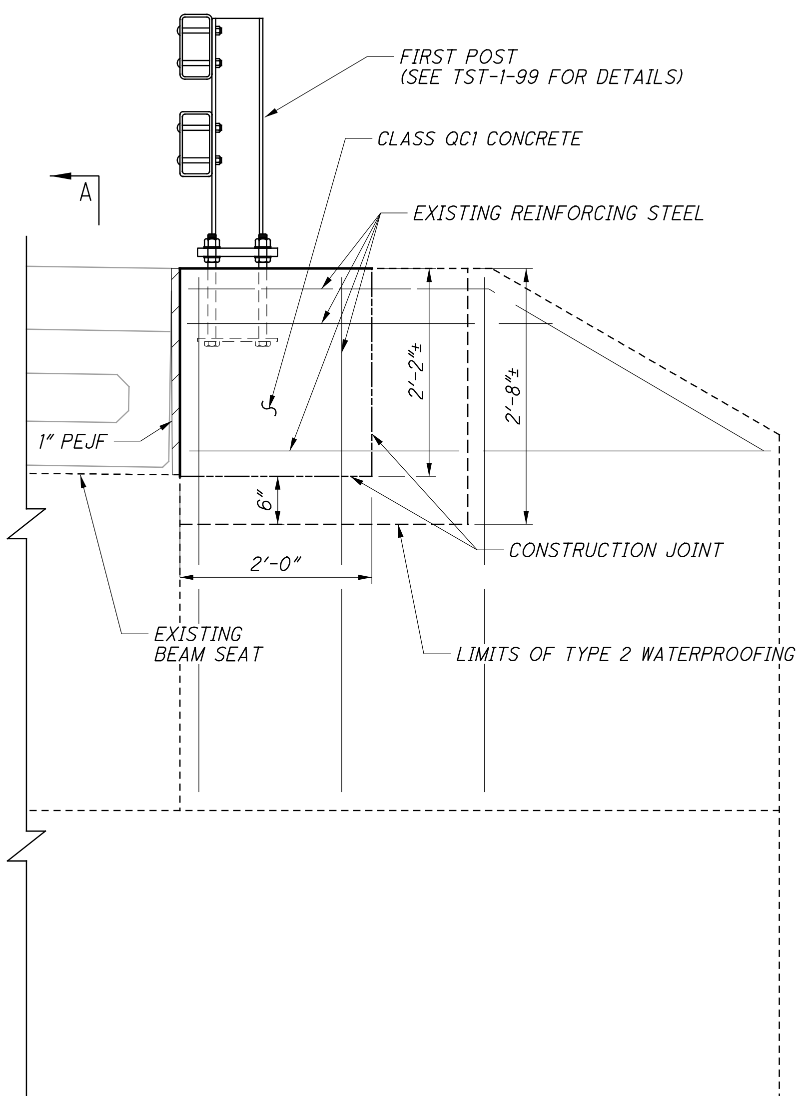
WINGWALL REMOVAL DETAIL

TYPICAL ALL WINGWALLS

PORTION OF WINGWALL TO BE REMOVED (ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20' SPAN, AS PER PLAN)

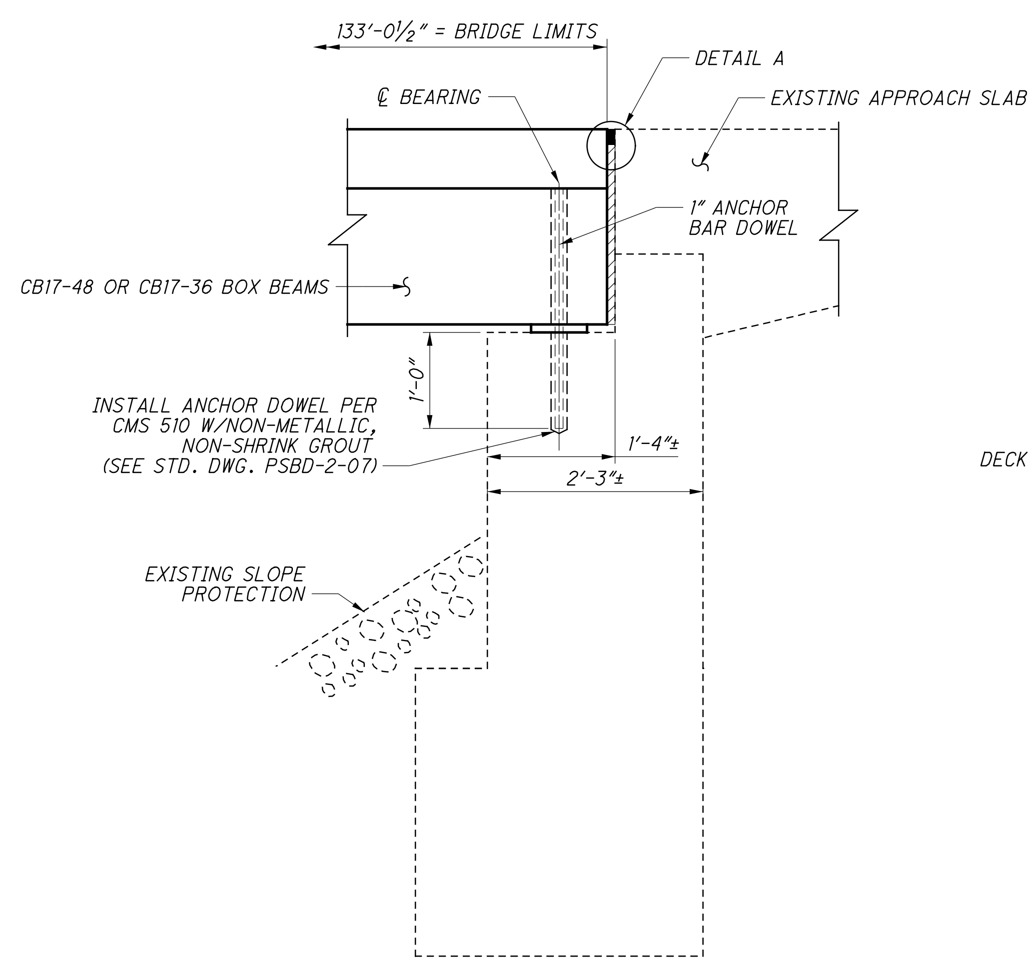
NOTE:

EXISTING REINFORCING STEEL TO REMAIN. EXERCISE EXTREME CAUTION DURING CONCRETE REMOVAL TO AVOID DAMAGE TO EXISTING EMBEDDED REINFORCING STEEL.

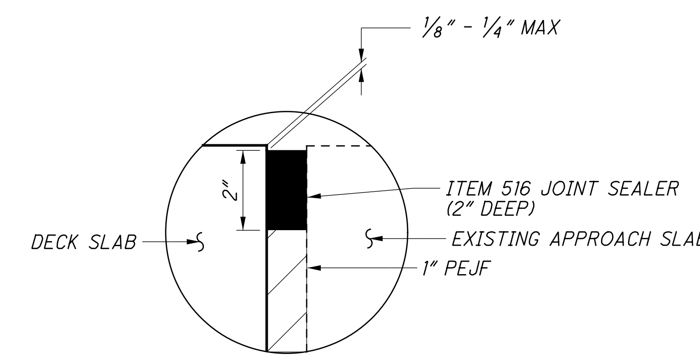


PARTIAL WINGWALL ELEVATION

TYPICAL ALL WINGWALLS



SECTION A-A, PARTIAL ABUTMENT ELEVATION



DETAIL 'A'

NOTE:

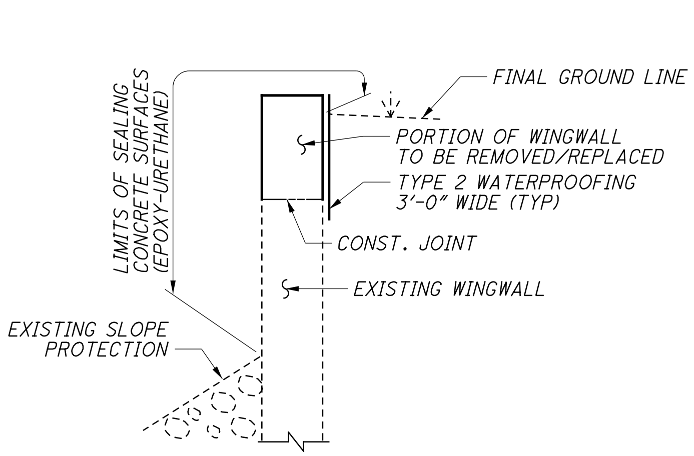
1) FOR SLAB THICKNESS SEE SHEET 8/10.

ABUTMENT/WINGWALL/BEARING DETAILS
BRIDGE NO. HUR-099-0586
OVER WEST BRANCH OF THE HURON RIVER

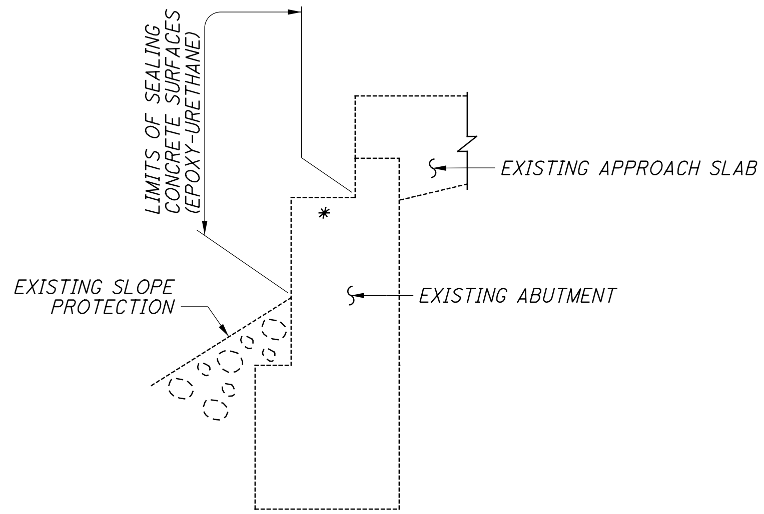
DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	4/15/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		3902366	

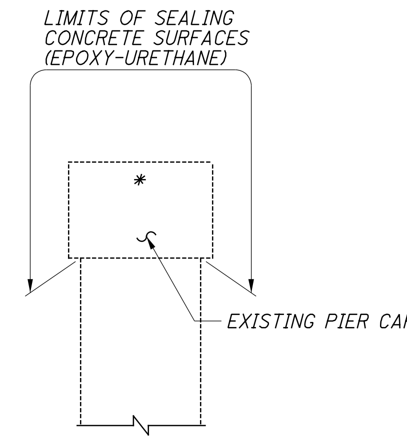
HUR-99-05.82
PID No. 88856



WINGWALL SEALING DETAIL



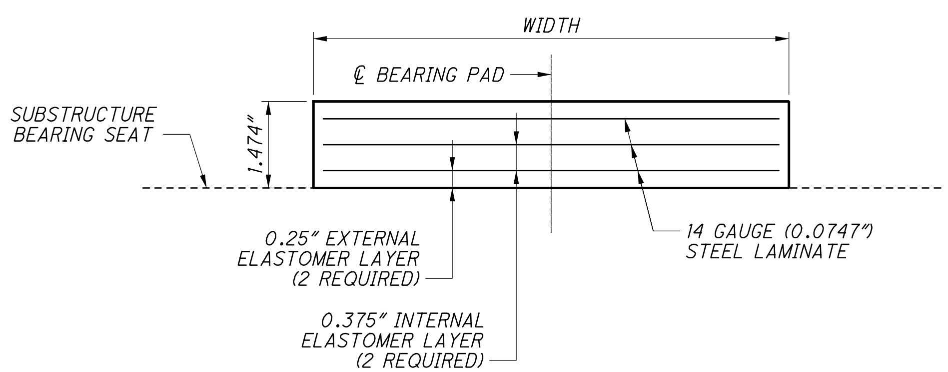
ABUTMENT SEALING DETAIL



PIER SEALING DETAIL

NOTE:

* THE AREA ON THE BEAM SEATS UNDERNEATH THE FOOTPRINT OF THE BEARING PADS SHALL NOT BE SEALED.



ELASTOMERIC BEARINGS

LOCATION		UNFACTORED LOAD (KIPS)			DIMENSION (IN)					NO. OF †i	NO. OF STEEL LAMINATES (14 GAUGE)	NUMBER REQUIRED
		DL	LL*	TOTAL	WIDTH	LENGTH	THICKNESS	†i	†e			
ABUTMENTS	CB17-36	11.4	8.8	20.2	10	5	1.474	0.375	0.25	2	3	8
	CB17-48	14.4	11.8	26.2	12	5	1.474	0.375	0.25	2	3	32
PIERS	CB17-36	12.2	5.60	17.8	10	5	1.474	0.375	0.25	2	3	16
	CB17-48	15.2	10.50	25.7	12	5	1.474	0.375	0.25	2	3	64

*IMPACT NOT INCLUDED

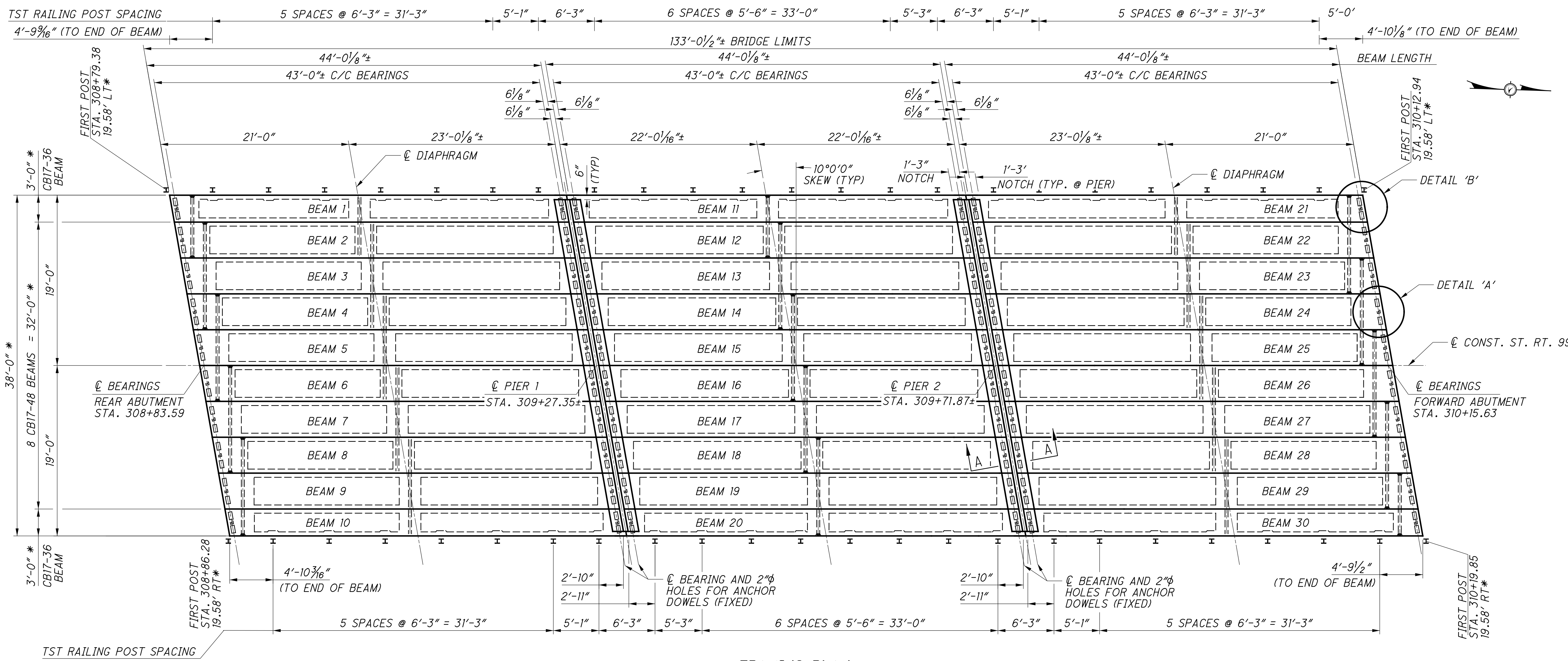
NOTE:

1) ELASTOMERIC BEARINGS: THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED UNDER DIVISION 1, SECTION 14.6.6 (METHOD A) OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

DESIGN AGENCY
PALMER ENGINEERING
AKRON, OHIO 44320
DESIGNED MLJ | DRAWN SDW | REVIEWED BJF | DATE 4/15/14
CHECKED CEJ | REVISED | STRUCTURE FILE NUMBER 3902366

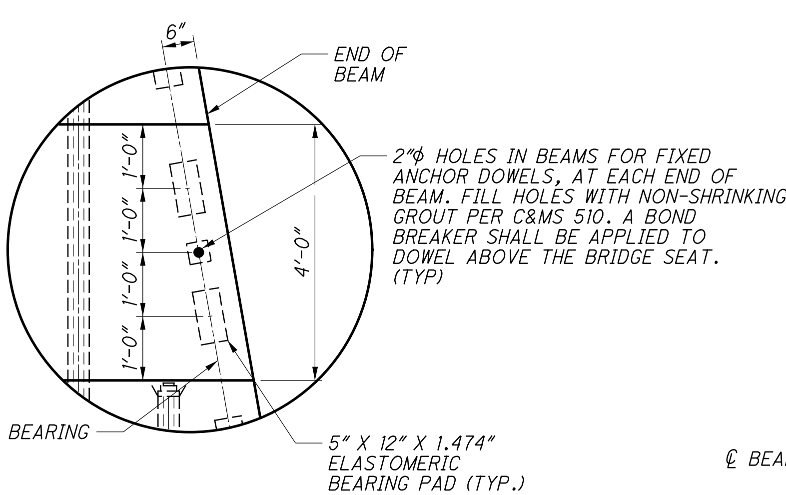
SEALING DETAILS AND BEARING DETAILS
BRIDGE NO. HUR-099-0586
OVER WEST BRANCH OF THE HURON RIVER

HUR-99-05.82
PID No. 88856



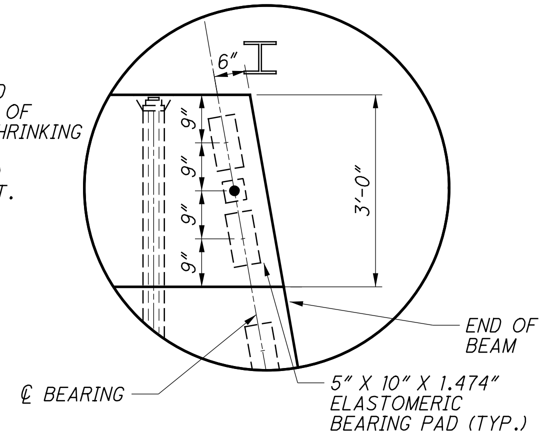
FRAMING PLAN

* PLUS FIT-UP



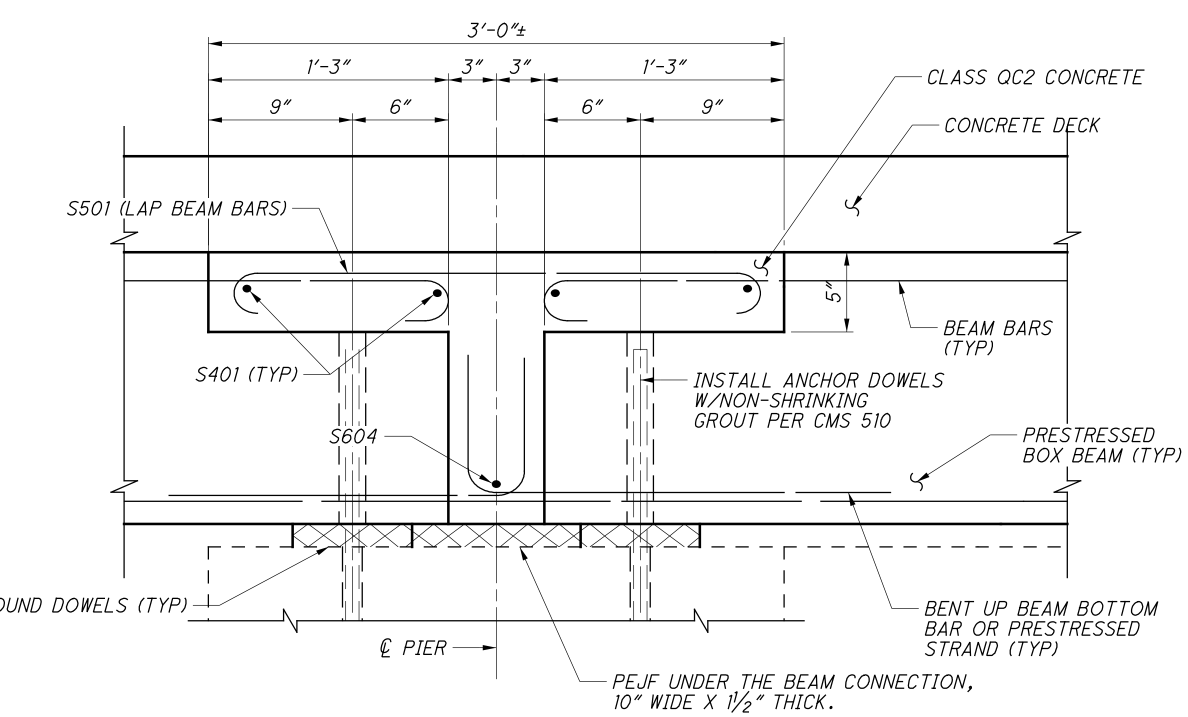
DETAIL 'A'

TYPICAL CB17-48



DETAIL 'B'

TYPICAL CB17-36



SECTION A-A

NOTE:

1) REFERENCE STD. DWG. PSBD-2-07 FOR ADDITIONAL DETAILS, INCLUDING BEAM NOTCHING AND CONTINUITY DIAPHRAGMS AT THE PIERS.

2) SEAL ABUTMENT END OF BEAMS WITH ITEM 512 TYPE B WATERPROOFING PER STD. DWG. PSBD-2-07.

3) THE CONTRACTOR SHALL FIELD VERIFY PIER AND ABUTMENT LOCATIONS AND REQUIRED BEAM LENGTHS PRIOR TO ORDERING.

LEGEND

PEJF = PREFORMED EXPANSION JOINT FILLER

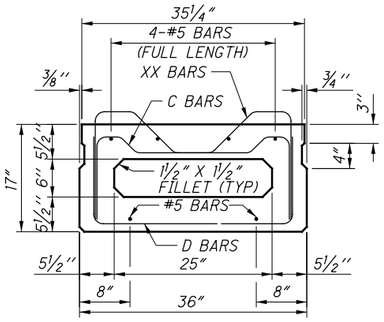
DESIGN AGENCY: PALMER ENGINEERING, AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	4/15/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		3902366	

FRAMING PLAN
BRIDGE NO. HUR-099-0586
OVER WEST BRANCH OF THE HURON RIVER

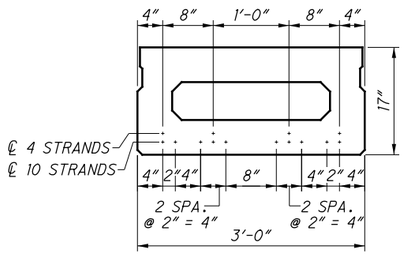
HUR-99-05.82
PID No. 88856

6 / 10



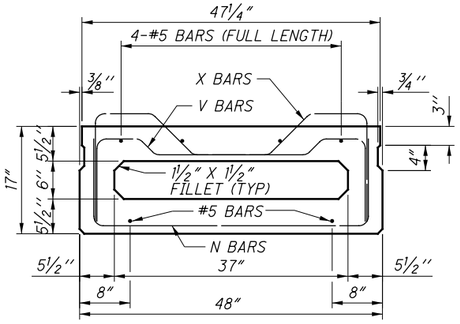
CB17-36

MILD REINFORCING



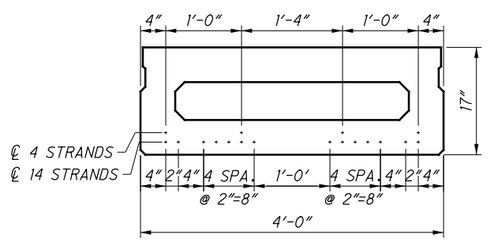
CB17-36

STRAND PATTERN



CB17-48

MILD REINFORCING

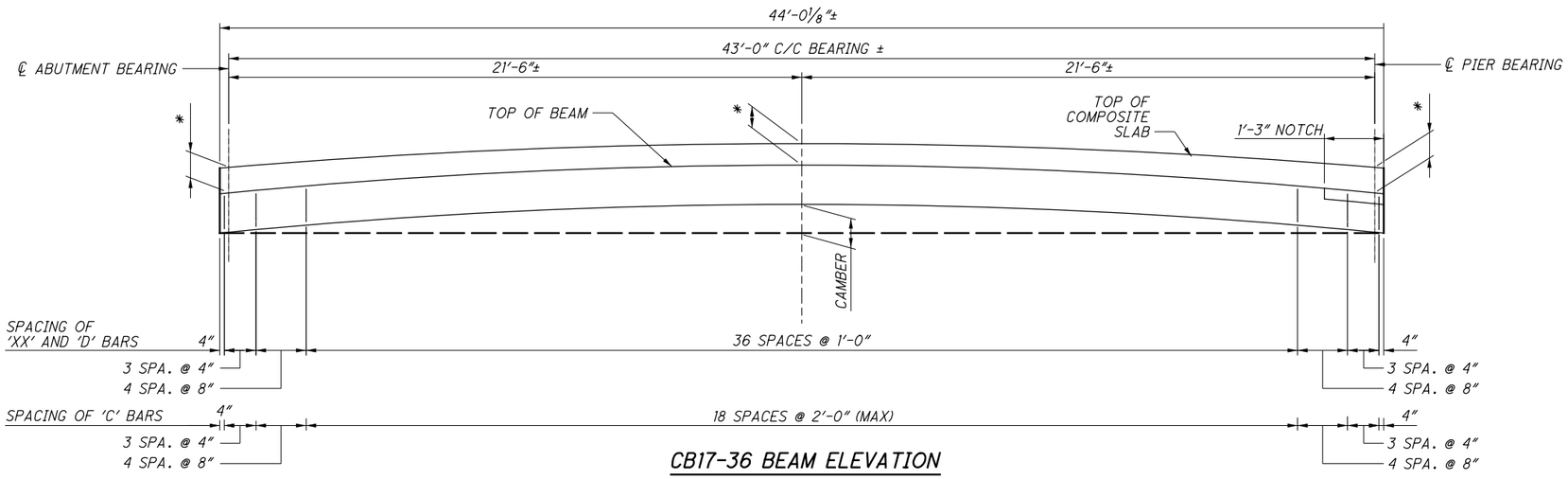


CB17-48

STRAND PATTERN

NOTE:

1) 'X' AND 'XX' BARS SHALL BE EPOXY COATED.



CB17-36 BEAM ELEVATION

ALONG ℄ OF BEAM

NOTES FOR CB17-36 BEAMS:

1) ESTIMATED CAMBER AT DAY 0 (D_0) IS 0.83".

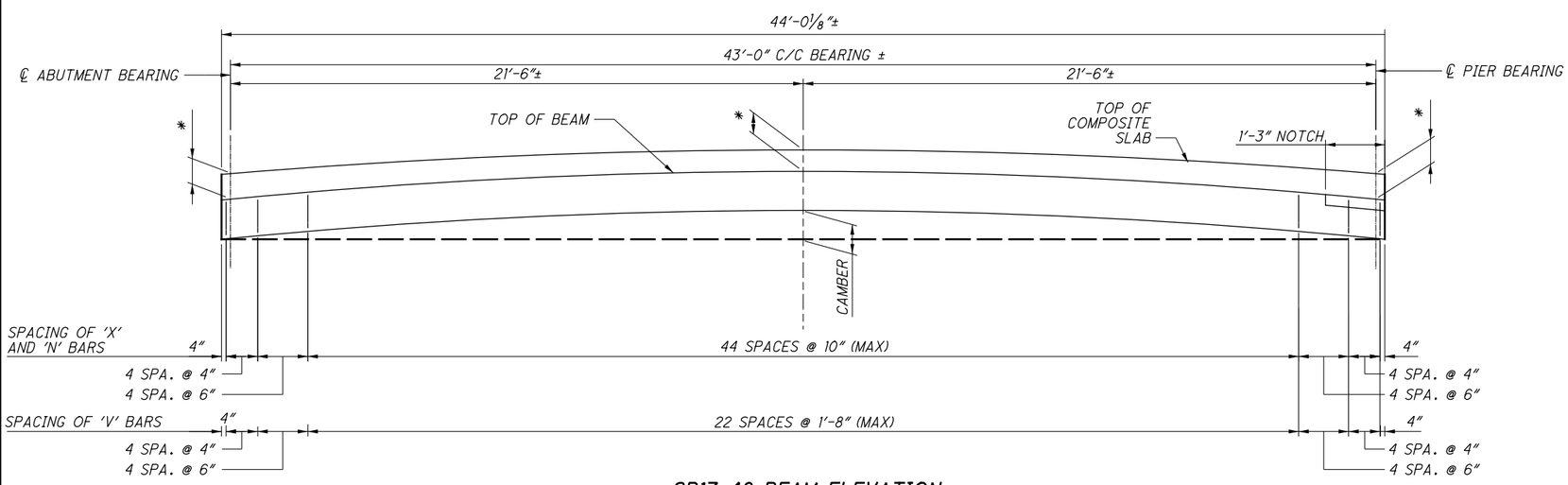
2) ESTIMATED CAMBER AT DAY 30 (D_{30}) IS 1.41".

3) DEFLECTION DUE TO REMAINING DEAD LOAD (CONCRETE DECK, DIAPHRAGMS, RAILING, ETC.) IS 0.37".

4) THE TOPPING THICKNESSES SHOWN ASSUME ESTIMATED CAMBER D_{30}.

5) ALL STIRRUPS WITHIN 9" OF BEAM ENDS (MEASUREMENT ALONG THE CENTERLINE OF THE BEAM) SHALL BE SKEWED TO MATCH THE BEAM ENDS. AFTER 9" STIRRUPS SHALL TRANSITION TO PERPENDICULAR TO THE CENTERLINE OF THE BEAM.

6) PROVIDE 5 - #4 VERTICAL BARS AT EACH END OF BEAM PER STD. DWG. PSBD-2-07.



CB17-48 BEAM ELEVATION

ALONG ℄ OF BEAM

NOTES FOR CB17-48 BEAMS:

1) ESTIMATED CAMBER AT DAY 0 (D_0) IS 0.84".

2) ESTIMATED CAMBER AT DAY 30 (D_{30}) IS 1.42".

3) DEFLECTION DUE TO REMAINING DEAD LOAD (CONCRETE DECK, DIAPHRAGMS, RAILING, ETC.) IS 0.37".

4) ALL STIRRUPS WITHIN 9" OF BEAM ENDS (MEASUREMENT ALONG THE CENTERLINE OF THE BEAM) SHALL BE SKEWED TO MATCH THE BEAM ENDS. AFTER 9" STIRRUPS SHALL TRANSITION TO PERPENDICULAR TO THE CENTERLINE OF THE BEAM.

5) PROVIDE 7 - #4 VERTICAL BARS AT EACH END OF BEAM PER STD. DWG. PSBD-2-07.

** VARIES: SEE SHEET 8/10 FOR DECK THICKNESS*

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. SUITE 300
AKRON, OHIO 44320

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	4/15/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		3902366	

BEAM DETAILS
BRIDGE NO. HUR-099-0586
OVER WEST BRANCH OF THE HURON RIVER

HUR-99-05.82
PID No. 88856

7 / 10

25
28

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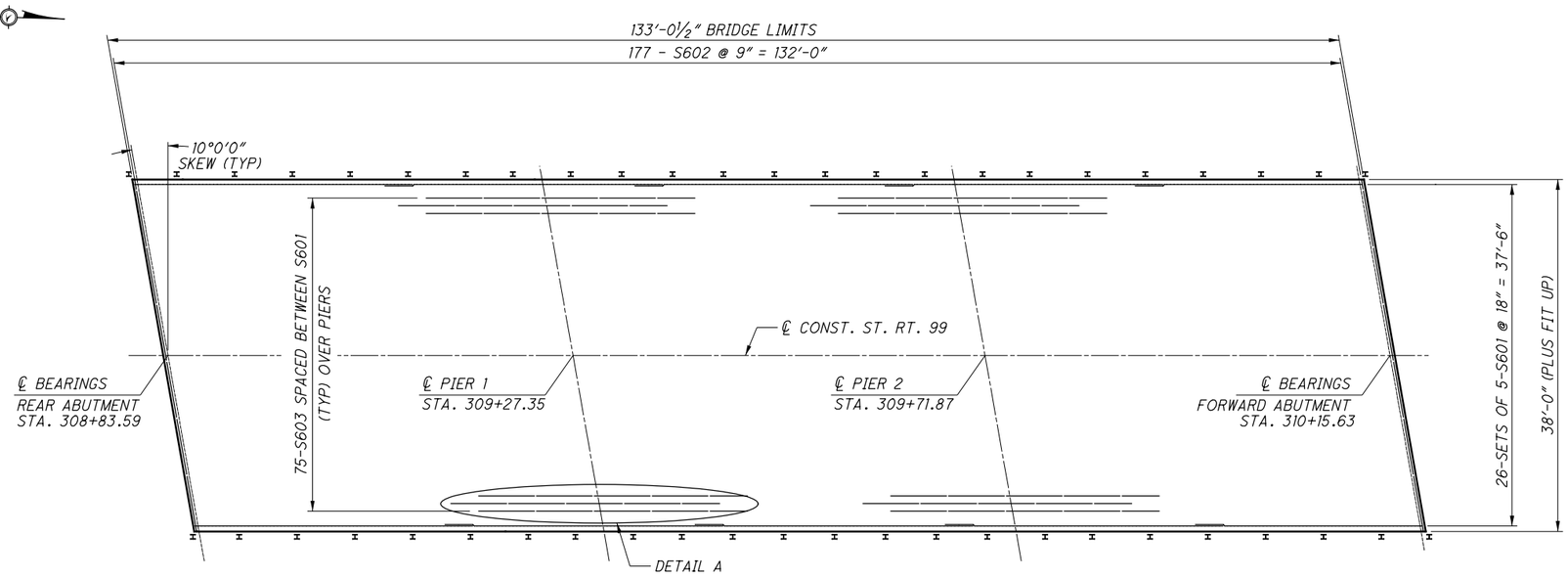
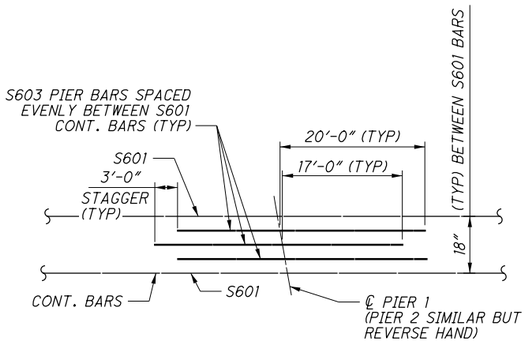


DECK PLAN

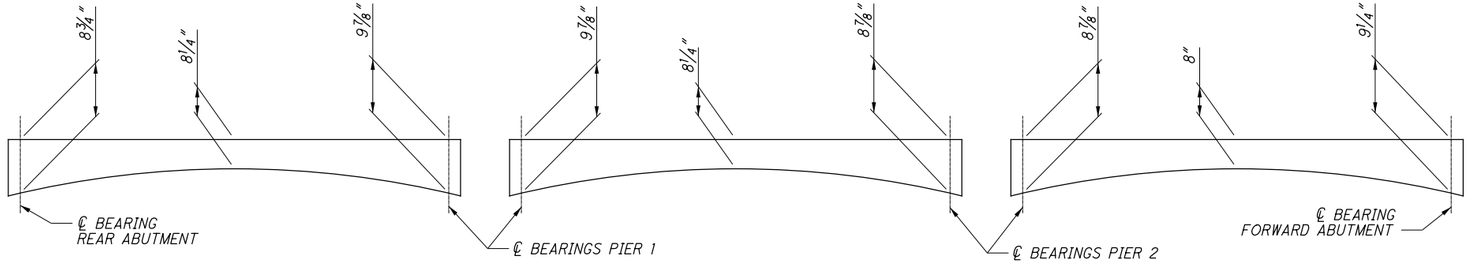
LAP LENGTH

#6 BARS = 3'-10" (MIN.)



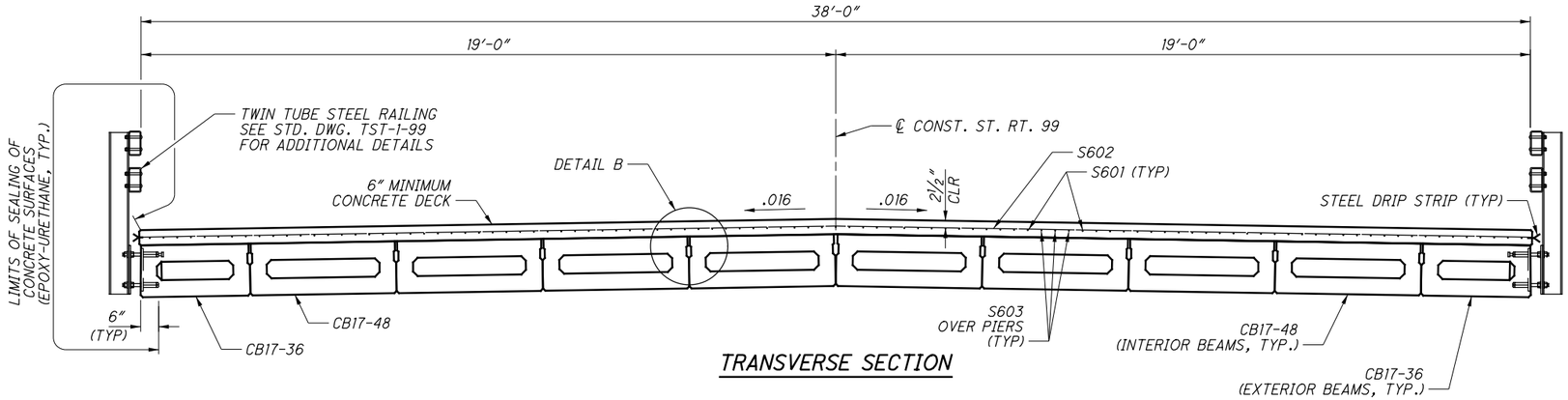
DETAIL 'A'

SPACING OF PIER BARS



CONCRETE TOPPING THICKNESS DIAPHRAGM

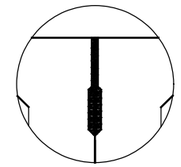
ALONG ℄ STATE ROUTE 99
(INCLUDES 6" DECK AND VARIABLE HAUNCH)



TRANSVERSE SECTION

DECK SLAB THICKNESS FOR CONCRETE QUANTITY

THE ESTIMATED QUANTIY OF DECK CONCRETE IS MEASURED ACCORDING TO C&MS 511. IN ADDITION TO THE DESIGN SLAB THICKNESS, THE QUANTITY INCLUDES A VARIABLE HAUNCH THICKNESS THAT PROVIDES AN ALLOWANCE FOR VERTICAL GRADE ADJUSTMENT, BEAM CAMBER AND ADDITIONAL SACRIFICIAL HAUNCH THICKNESS.



DETAIL 'B'

SHEAR KEYWAYS SHALL BE MORTARED TO A FINISHED PLANE BETWEEN THE TOP EDGES OF THE ADJACENT BEAMS WHERE VERTICAL OFFSET OCCURS WITHIN TOLERANCES. THE SHEAR KEYWAY GROUT SHALL OBTAIN A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AND A MINIMUM CURE PERIOD OF 5 DAYS SHALL ELAPSE BEFORE CONSTRUCTION OR VEHICULAR TRAFFIC IS ALLOWED ON THE BRIDGE.

NOTES:

1) FOR NOTES REGARDING PRESTRESSED CONCRETE BOX BEAM DETAILS AND FOR ADDITIONAL DETAILS, SEE STD. DWG. PSBD-2-07.

2) FOR GENERAL NOTES, SEE SHEET 2/10.

3) ALL DECK REINFORCING STEEL SHALL BE EPOXY CODATED.

4) SEE GENERAL NOTES SHEET 2/10 FOR SHEAR KEYWAY GROUT REQUIREMENTS.

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. SUITE 300
AKRON, OHIO 44320

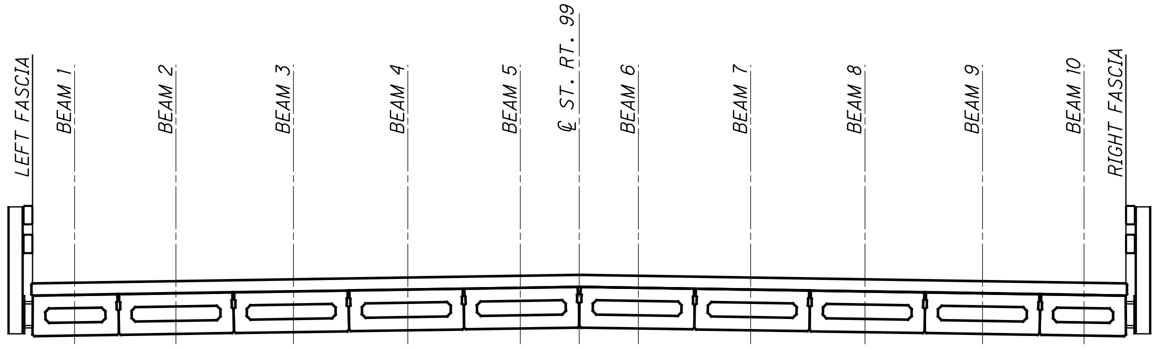
DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	4/15/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		3902366	

DECK PLAN
BRIDGE NO. HUR-099-0586
OVER WEST BRANCH OF THE HURON RIVER

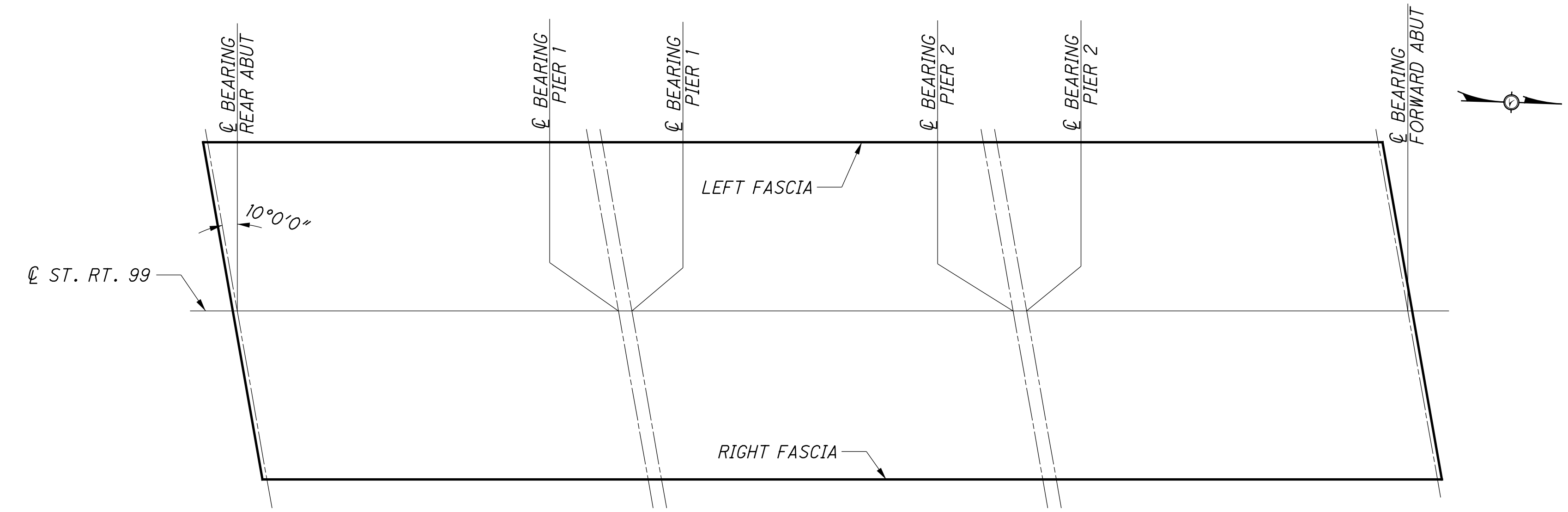
HUR-99-05.82
PID No. 88856

8 / 10

26 / 28



TRANSVERSE SECTION
LOOKING AHEAD STATION



DECK PLAN SCHEMATIC

FINAL DECK SURFACE ELEVATIONS

LOCATION		SPAN 1 ℄ BEARING REAR ABUT	SPAN 1 L/4	SPAN 1 MID SPAN	SPAN 1 3L/4	SPAN 1 ℄ BEARING PIER 1	SPAN 2 ℄ BEARING PIER 1	SPAN 2 L/4	SPAN 2 MID SPAN	SPAN 2 3L/4	SPAN 2 ℄ BEARING PIER 2	SPAN 3 ℄ BEARING PIER 2	SPAN 3 L/4	SPAN 3 MID SPAN	SPAN 3 3L/4	SPAN 3 ℄ BEARING FWD ABUT
LEFT FASCIA	STATION	308+80.24	308+90.99	309+1.74	309+12.49	309+23.24	309+24.76	309+35.51	309+46.26	309+57.01	309+67.76	309+69.28	309+80.03	309+90.78	310+1.53	310+12.28
	FINAL DECK ELEVATION	800.08	800.08	800.09	800.09	800.09	800.09	800.09	800.10	800.10	800.10	800.10	800.10	800.11	800.11	800.11
℄ BEAM 1	STATION	308+80.50	308+91.25	309+2.00	309+12.75	309+23.5	309+25.02	309+35.77	309+46.52	309+57.27	309+68.02	309+69.54	309+80.29	309+91.04	310+1.79	310+12.54
	FINAL DECK ELEVATION	800.11	800.11	800.11	800.11	800.12	800.12	800.12	800.12	800.12	800.13	800.13	800.13	800.13	800.13	800.14
℄ BEAM 2	STATION	308+81.12	308+91.87	309+2.62	309+13.37	309+24.12	309+25.64	309+36.39	309+47.14	309+57.89	309+68.64	309+70.16	309+80.91	309+91.66	310+2.41	310+13.16
	FINAL DECK ELEVATION	800.16	800.16	800.17	800.17	800.17	800.17	800.17	800.18	800.18	800.18	800.18	800.18	800.19	800.19	800.19
℄ BEAM 3	STATION	308+81.83	308+92.58	309+3.33	309+14.08	309+24.83	309+26.35	309+37.1	309+47.85	309+58.6	309+69.35	309+70.87	309+81.62	309+92.37	310+3.12	310+13.87
	FINAL DECK ELEVATION	800.22	800.23	800.23	800.23	800.23	800.23	800.24	800.24	800.24	800.24	800.24	800.25	800.25	800.25	800.25
℄ BEAM 4	STATION	308+82.53	308+93.28	309+4.03	309+14.78	309+25.53	309+27.05	309+37.80	309+48.55	309+59.3	309+70.05	309+71.57	309+82.32	309+93.07	310+3.82	310+14.57
	FINAL DECK ELEVATION	800.29	800.29	800.29	800.29	800.30	800.30	800.30	800.30	800.30	800.31	800.31	800.31	800.31	800.31	800.32
℄ BEAM 5	STATION	308+83.24	308+93.99	309+4.74	309+15.49	309+26.24	309+27.76	309+38.51	309+49.26	309+60.01	309+70.76	309+72.28	309+83.03	309+93.78	310+4.53	310+15.28
	FINAL DECK ELEVATION	800.35	800.35	800.35	800.36	800.36	800.36	800.36	800.36	800.37	800.37	800.37	800.37	800.37	800.38	800.38
℄ STATE ROUTE 99	STATION	308+83.59	308+94.34	309+05.09	309+15.84	309+26.59	309+28.11	309+38.86	309+49.61	309+60.36	309+71.11	309+72.63	309+83.38	309+94.13	310+04.88	310+15.63
	FINAL DECK ELEVATION	800.38	800.38	800.38	800.39	800.39	800.39	800.39	800.39	800.40	800.40	800.40	800.40	800.40	800.41	800.41
℄ BEAM 6	STATION	308+83.94	308+94.69	309+5.44	309+16.19	309+26.94	309+28.46	309+39.21	309+49.96	309+60.71	309+71.46	309+72.98	309+83.73	309+94.48	310+5.23	310+15.98
	FINAL DECK ELEVATION	800.35	800.35	800.35	800.36	800.36	800.36	800.36	800.36	800.37	800.37	800.37	800.37	800.37	800.38	800.38
℄ BEAM 7	STATION	308+84.65	308+95.4	309+6.15	309+16.9	309+27.65	309+29.17	309+39.92	309+50.67	309+61.42	309+72.17	309+73.69	309+84.44	309+95.19	310+5.94	310+16.69
	FINAL DECK ELEVATION	800.29	800.29	800.29	800.29	800.30	800.30	800.30	800.30	800.30	800.31	800.31	800.31	800.31	800.31	800.32
℄ BEAM 8	STATION	308+85.35	308+96.1	309+6.85	309+17.6	309+28.35	309+29.87	309+40.62	309+51.37	309+62.12	309+72.87	309+74.39	309+85.14	309+95.89	310+6.64	310+17.39
	FINAL DECK ELEVATION	800.22	800.23	800.23	800.23	800.23	800.23	800.24	800.24	800.24	800.24	800.24	800.25	800.25	800.25	800.25
℄ BEAM 9	STATION	308+86.06	308+96.81	309+7.56	309+18.31	309+29.06	309+30.58	309+41.33	309+52.08	309+62.83	309+73.58	309+75.1	309+85.85	309+96.6	310+7.35	310+18.1
	FINAL DECK ELEVATION	800.16	800.16	800.17	800.17	800.17	800.17	800.17	800.18	800.18	800.18	800.18	800.18	800.19	800.19	800.19
℄ BEAM 10	STATION	308+86.68	308+97.43	309+8.18	309+18.93	309+29.68	309+31.2	309+41.95	309+52.7	309+63.45	309+74.2	309+75.72	309+86.47	309+97.22	310+7.97	310+18.72
	FINAL DECK ELEVATION	800.11	800.11	800.11	800.11	800.12	800.12	800.12	800.12	800.12	800.13	800.13	800.13	800.13	800.13	800.14
RIGHT FASCIA	STATION	308+86.94	308+97.69	309+8.44	309+19.19	309+29.94	309+31.46	309+42.21	309+52.96	309+63.71	309+74.46	309+75.98	309+86.73	309+97.48	310+8.23	310+18.98
	FINAL DECK ELEVATION	800.08	800.09	800.09	800.09	800.09	800.09	800.10	800.10	800.10	800.10	800.10	800.11	800.11	800.11	800.11

NOTES:

1) SCREED ELEVATIONS SHOWN REPRESENT THE THEORETICAL DECK SURFACE LOCATION PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.

2) FINAL DECK SURFACE ELEVATIONS SHOWN REPRESENT THE DECK SURFACE LOCATION AFTER ALL ANTICIPATED DEAD LOAD DEFLECTIONS HAVE OCCURRED.

SCREED ELEVATIONS

LOCATION		SPAN 1 ℄ BEARING REAR ABUT	SPAN 1 L/4	SPAN 1 MID SPAN	SPAN 1 3L/4	SPAN 1 ℄ BEARING PIER 1	SPAN 2 ℄ BEARING PIER 1	SPAN 2 L/4	SPAN 2 MID SPAN	SPAN 2 3L/4	SPAN 2 ℄ BEARING PIER 2	SPAN 3 ℄ BEARING PIER 2	SPAN 3 L/4	SPAN 3 MID SPAN	SPAN 3 3L/4	SPAN 3 ℄ BEARING FWD ABUT
LEFT FASCIA	STATION	308+80.24	308+90.99	309+1.74	309+12.49	309+23.24	309+24.76	309+35.51	309+46.26	309+57.01	309+67.76	309+69.28	309+80.03	309+90.78	310+1.53	310+12.28
	ANTICIPATED DEAD LOAD DEFLECTION	0.00	0.02	0.03	0.02	0.00	0.00	0.02	0.03	0.02	0.00	0.00	0.02	0.03	0.02	0.00
	FINAL DECK ELEVATION	800.08	800.08	800.09	800.09	800.09	800.09	800.09	800.10	800.10	800.10	800.10	800.10	800.11	800.11	800.11
	SCREED ELEVATION	800.08	800.11	800.12	800.11	800.09	800.09	800.12	800.13	800.12	800.10	800.10	800.13	800.14	800.13	800.11
℄ STATE ROUTE 99	STATION	308+83.59	308+94.34	309+05.09	309+15.84	309+26.59	309+28.11	309+38.86	309+49.61	309+60.36	309+71.11	309+72.63	309+83.38	309+94.13	310+04.88	310+15.63
	ANTICIPATED DEAD LOAD DEFLECTION	0.00	0.02	0.03	0.02	0.00	0.00	0.02	0.03	0.02	0.00	0.00	0.02	0.03	0.02	0.00
	FINAL DECK ELEVATION	800.38	800.38	800.38	800.39	800.39	800.39	800.39	800.39	800.40	800.40	800.40	800.40	800.40	800.41	800.41
	SCREED ELEVATION	800.38	800.40	800.42	800.41	800.39	800.39	800.41	800.43	800.42	800.40	800.40	800.42	800.44	800.43	800.41
RIGHT FASCIA	STATION	308+86.94	308+97.69	309+8.44	309+19.19	309+29.94	309+31.46	309+42.21	309+52.96	309+63.71	309+74.46	309+75.98	309+86.73	309+97.48	310+8.23	310+18.98
	ANTICIPATED DEAD LOAD DEFLECTION	0.00	0.02	0.03	0.02	0.00	0.00	0.02	0.03	0.02	0.00	0.00	0.02	0.03	0.02	0.00
	FINAL DECK ELEVATION	800.08	800.09	800.09	800.09	800.09	800.09	800.10	800.10	800.10	800.10	800.10	800.11	800.11	800.11	800.11
	SCREED ELEVATION	800.08	800.11	800.12	800.11	800.09	800.09	800.12	800.13	800.12	800.10	800.10	800.13	800.14	800.13	800.11

DESIGN AGENCY
Palmer ENGINEERING
PALMER ENGINEERING
AKRON, OHIO 44320

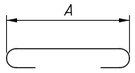
DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	4/15/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		3902366	

SCREED ELEVATIONS
BRIDGE NO. HUR-099-0586
OVER WEST BRANCH OF THE HURON RIVER

HUR-99-05.82
PID No. 88856

REINFORCING STEEL LIST

MARK	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
SUPERSTRUCTURE											
S401	8	38'-3"	204	STR.							
S501	80	3'-8"	306	17	2'-6"						
S601	130	30'-0"	5,858	STR.							
S602	177	38'-3"	10,169	STR.							
S603	150	32'-0"	7,210	STR.							
S604	2	38'-3"	115	STR.							
SUPERSTRUCTURE TOTAL			**23,862**								



TYPE-17

DESIGN AGENCY
PALMER ENGINEERING
480 WHITE POND DR. SUITE 300
AKRON, OHIO 44320

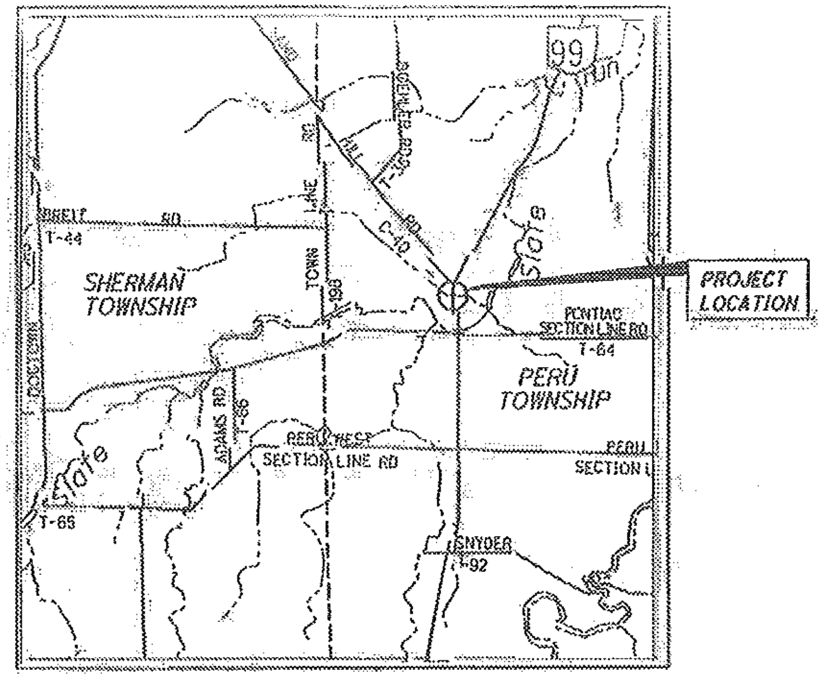
DESIGNED	DRAWN	REVIEWED	DATE
MLJ	SDW	BJF	4/15/14
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ		3902366	

REINFORCING STEEL LIST
BRIDGE NO. HUR-099-0586
OVER WEST BRANCH OF THE HURON RIVER

HUR-99-05.82
PID No. 88856

10 / 10

28
28



LOCATION MAP

LATITUDE: 41° 11' 20" N   LONGITUDE: 82° 43' 30" W

SCALE IN MILES

0 ½ 1 1½ 2

N

PORTION TO BE IMPROVED
INTERSTATE & DIVIDED HIGHWAY
UNDIVIDED STATE & FEDERAL ROUTES ... 99
OTHER ROADS ... C-1100

DESIGN DESIGNATION

CURRENT ADT (2016)	2100
DESIGN YEAR ADT (2036)	2400
DESIGN HOURLY VOLUME (2036)	220
DIRECTIONAL DISTRIBUTION	53%
TRUCKS (24 HOUR B&C)	12%
DESIGN SPEED	55 MPH
LEGAL SPEED	55 MPH
DESIGN FUNCTIONAL CLASSIFICATION:	
RURAL MAJOR COLLECTOR	
NHS PROJECT	NO

DESIGN EXCEPTIONS

NONE

UNDERGROUND UTILITIES
CONTACT BOTH SERVICES
CALL TWO WORKING DAYS
BEFORE YOU DIG
CALL
1-800-362-2764
(TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY
OIL & GAS PRODUCERS PROTECTIVE
SERVICE CALL: 1-800-925-0988

PLAN PREPARED BY:

RICHLAND ENGINEERING LIMITED
20 NORTH PARK STREET
MANSFIELD OHIO 44902
PHONE: (419) 524-0074   FAX: (419) 524-1812

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
HUR-99-10.46
PART 2
PERU TOWNSHIP
HURON COUNTY
FOR PART 1 (SEE HUR-99-5.82)

INDEX OF SHEETS:

* SEE PART 1 (SHEET 5)

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF THE REPLACEMENT OF A STRUCTURALLY DEFICIENT EXISTING 107" x 71" ARCH CULVERT WITH MINIMAL ROADWAY WORK ON EXISTING HORIZONTAL AND VERTICAL ROADWAY ALIGNMENT.

PROJECT LENGTH = 0.02 MILES.

PROJECT EARTH DISTURBED AREA:	0.83 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	0.15 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA:	N/A (NOT REQUIRED)

2016 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 7

STANDARD CONSTRUCTION DRAWINGS	SUPPLEMENTAL SPECIFICATIONS
SEE PART 1 FOR STANDARD CONSTRUCTION DRAWINGS	
	SPECIAL PROVISIONS

ENGINEERS SEAL:

STATE OF OHIO
PATRICK SCISWAN
61571
REGISTERED
PROFESSIONAL ENGINEER

SIGNED: [signature]
DATE: 2-28-17

APPROVED [signature]
DATE 3/1/17 DISTRICT DEPUTY DIRECTOR

APPROVED [signature]
DATE 6-5-17 DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO. E130(351)

PID NO. 88856

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT CSX TRANSPORTATION

HUR-99-10.46

1/33

GENERAL NOTES

THE PROJECT CONSISTS OF THE REPLACEMENT OF A STRUCTURALLY DEFICIENT EXISTING 107" x 71" ARCH CULVERT WITH MINIMAL ROADWAY WORK ON EXISTING HORIZONTAL AND VERTICAL ROADWAY ALIGNMENT.

THE EXISTING SITE CAN BE DESCRIBED AS RURAL.

USGS QUADRANT: MONROEVILLE, OHIO NO. 41082-B6-TF-024

*LONGITUDE AND LATITUDE TO APPROXIMATE CENTER OF PROJECT.

*LATITUDE 41°11'20" N
*LONGITUDE 82°43'30" W

INTERMEDIATE RECEIVING WATERS - SLATE RUN

SUBSEQUENT RECEIVING WATERS - WEST BRANCH HURON RIVER

SOIL DATA - SEE SOIL SURVEY OF HURON COUNTY.

LEGEND

DRAINAGE DIVIDE LINE

℄ CONST. STATE ROUTE 99 CURVE DATA

P.I.= Sta. 555+21.00
Δ = 27° 54' 20" (RT)
Dc = 5° 00' 00"
R = 1,145.92'
Ls = 300.00'
θs = 7° 30' 00"
LT = 200.18'
ST = 100.16'
x = 299.49'
y = 13.07'
k = 149.91'
p = 3.27'
Δc = 12° 54' 20" (RT)
Lc = 258.11'
Ts = 435.43'
Es = 38.21'
C = 257.57'
C1=C2 = 299.77'
C.B.1 = N 2° 25' 52" E
C.B. = N 13° 53' 04" E
C.B.2 = S 25° 20' 15" W

EX. 7'x6' CULVERT (DO NOT DISTURB)

0.11 Ac.
C = 0.39

832.0± Ac.
TO CULVERT

END PROJECT
STA. 552+60
E130(351)

1.70 Ac.
C = 0.38

℄ R/W RR CSX TRANS. INC.
N 17°40'51" E

℄ R/W SAND HILL RD.
N 42°26'40" W

BEGIN WORK
STA. 549+95

POT Sta. 1545+00.00

N 0° 46' 52" W

N 0° 04' 06" W

POT Sta. 549+79.67

TS Sta. 550+85.57

SC Sta. 551+50.57

BEGIN PROJECT
STA. 551+95
E130(351)

0.44 Ac.
C = 0.39

1.10 Ac.
C = 0.39

CS Sta. 553+85.57

ST Sta. 553+77.37

END WORK
STA. 555+15

PC Sta. 555+43.81

PT Sta. 557+52.66

ST Sta. 559+43.68

℄ R/W STATE ROUTE 99 CURVE DATA

P.I.= Sta. 1551+77.54
D = 7° 29' 56" (RT)
Dc = 3° 45' 01"
R = 1,527.73'
T = 100.12'
L = 199.95'
E = 3.28'
C = 199.81'
C.B. = N 2° 59' 06" E

℄ R/W STATE ROUTE 99 CURVE DATA

P.I.= Sta. 1554+13.69
D = 13° 34' 05" (RT)
Dc = 5° 00' 00"
R = 1,145.92'
T = 136.32'
L = 271.36'
E = 8.08'
C = 270.73'
C.B. = N 13° 31' 07" E

℄ R/W STATE ROUTE 99 CURVE DATA

P.I.= Sta. 1556+48.85
D = 7° 29' 56" (RT)
Dc = 3° 45' 01"
R = 1,527.73'
T = 100.12'
L = 199.95'
E = 3.28'
C = 199.81'
C.B. = N 24° 03' 07" E

DESIGN EXCEPTIONS:

NONE REQUIRED

(CRASH FREQUENCY LESS THAN THRESHOLDS SO EXISTING CONDITION ADEQUATE)

DESIGN FEATURE:	PROVIDED VALUE:	NORMAL DESIGN CRITERIA (NDC):
LANE WIDTH	10'	12'
SUPER ELEVATION RATE	0.048LT 0.078RT	0.078

PROJECT DATA

TOTAL AREA (EXISTING RIGHT-OF-WAY):	0.80 ACRES		
PROJECT EARTH DISTURBED AREA:	0.83 ACRES	RUNOFF COEFFICIENT FOR PRE-CONSTRUCTION SITE:	0.41
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	0.15 ACRES	RUNOFF COEFFICIENT FOR POST CONSTRUCTION SITE:	0.47
NOTICE OF INTENT EARTH DISTURBED AREA:	N/A ACRES	ALSO SEE SOIL SURVEY OF HURON CO.	
IMPERVIOUS (PAVED) AREA FOR PRE-CONSTRUCTION SITE:	0.15 ACRES		
IMPERVIOUS (PAVED) AREA FOR POST CONSTRUCTION SITE:	0.17 ACRES		

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MAF
CHECKED PRS

SCHEMATIC / PROJECT SITE PLAN

HUR-99-10.46

2
33

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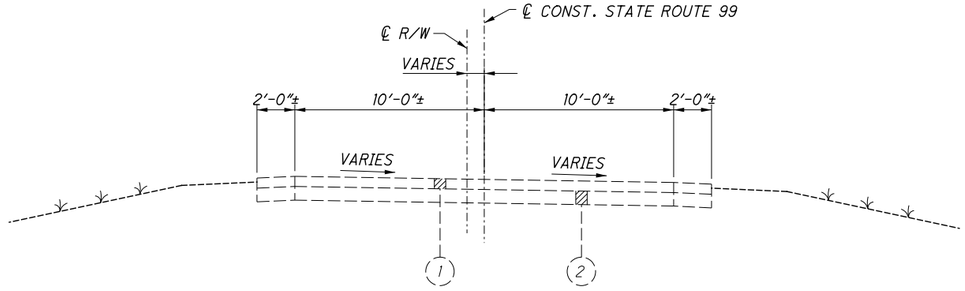
EXISTING LEGEND

(1) ASPHALT SURFACE COURSE

(2) 6"± SOIL-CEMENT BASE COURSE



EXISTING TYPICAL SECTION - STATE ROUTE 99

PROPOSED LEGEND

(1) ITEM 441 1 ¼" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22

(2) ITEM 407 TACK COAT (FOR NEW ASPHALT) (SEE GENERAL NOTES FOR APPLICATION RATE)

(3) ITEM 441 1 ¾" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)

(4) ITEM 301 8" ASPHALT CONCRETE BASE, PG64-22 (TWO LIFTS)

(5) ITEM 304 6" AGGREGATE BASE

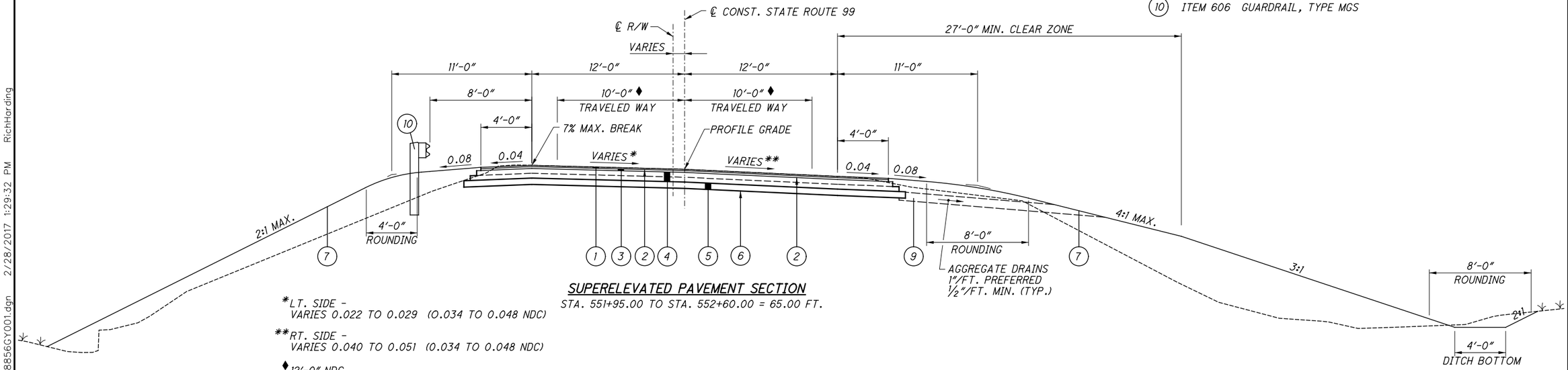
(6) ITEM 204 SUBGRADE COMPACTION

(7) ITEM 659 SEEDING AND MULCHING

(8) NOT USED

(9) ITEM 605 AGGREGATE DRAIN

(10) ITEM 606 GUARDRAIL, TYPE MGS



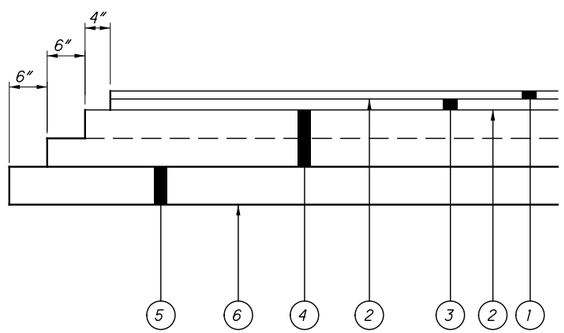
*LT. SIDE -
VARIES 0.022 TO 0.029 (0.034 TO 0.048 NDC)

**RT. SIDE -
VARIES 0.040 TO 0.051 (0.034 TO 0.048 NDC)

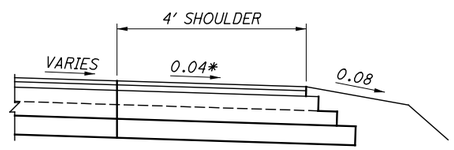
♦12'-0" NDC

SUPERELEVATED PAVEMENT SECTION

STA. 551+95.00 TO STA. 552+60.00 = 65.00 FT.

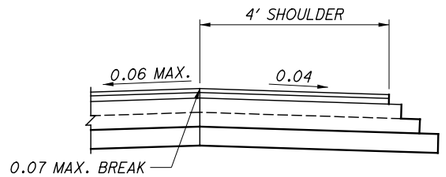


EDGE COURSE DETAIL

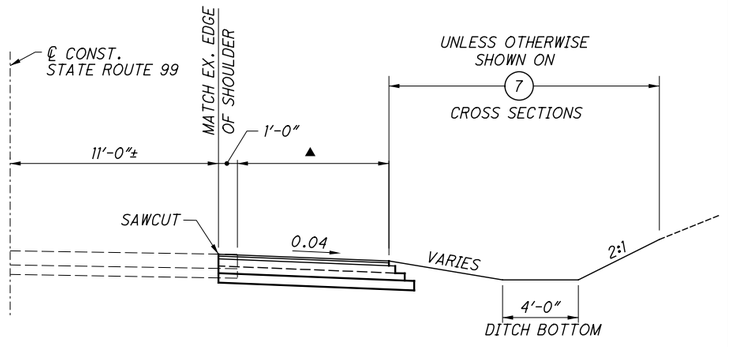


LOW SIDE OF SUPERELEVATED SECTIONS

* OR RATE OF SUPER IF GREATER



HIGH SIDE OF SUPERELAVATED SECTION



▲ VARIES FROM 4'-0" TO 1'-2"

PAVED SHOULDER TAPER SECTION DETAIL

SEE PLAN SHEET 14 FOR LIMITS

CALCULATED MAF
CHECKED PRS

TYPICAL SECTIONS

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CALCULATED MAF
CHECKED PRS

GENERAL NOTES

UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT AREA TOGETHER WITH THEIR RESPECTIVE OWNERS:

COMMUNICATIONS

FRONTIER COMMUNICATIONS
83 TOWNSEND AVENUE
NORWALK, OHIO 44857
(440)-744-3613
ATTN.: SCOTT WETZEL

CABLE

TIME WARNER CABLE
5520 WHIPPLE AVE. NW
CANTON, OHIO 44720
(330)-494-9200
ATTN.: RON FERDINAND

ELECTRIC

OHIO EDISON COMPANY
2508 W. PERKINS AVE.
SANDUSKY, OHIO 44870
(419)-627-6881
ATTN.: JIM ROHRBACHER

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 O.R.C.

THE CONTRACTOR SHALL VERIFY OWNERSHIP AND LOCATION PRIOR TO THE START OF CONSTRUCTION.

OVERHEAD ELECTRIC LINES NOT MOVED OR DE-ENERGIZED DURING CONSTRUCTION MUST HAVE PROPER CLEARANCE MAINTAINED DURING CONSTRUCTION. THE CONTRACTOR MUST TAKE MEASURES TO ENSURE THAT THE APPROPRIATE CLEARANCE IS PROVIDED AT ALL TIMES.

THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE UTILITY COMPANIES FOR ALL AERIAL AND UNDERGROUND UTILITY WORK PERFORMED CONCURRENT WITH THE PROPOSED WORK. THE CONTRACTOR SHALL OBSERVE ALL OSHA RULES AND REGULATIONS, AND PROTECT THE SAFETY OF ALL PERSONNEL AND PROPERTY AT ALL TIMES. A MINIMUM OF 10 FEET OF CLEARANCE SHALL BE PROVIDED FOR THE DISTRIBUTION LINES.

THE CONTRACTOR SHALL EXERCISE CAUTION WHEN WORKING IN PROXIMITY OF UTILITIES.

PROJECT BEARINGS

BEARINGS WERE TRANSFERRED BY RTK GLOBAL POSITIONING TRAVERSE ORIGINATING ON THE ODOT CORS VRS NETWORK, AND ARE BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM, NAD83(2011), NORTH ZONE.

HORIZONTAL DATUM

NAD83(2011), THE OHIO STATE PLANE COORDINATE SYSTEM, NORTH ZONE.
PROJECT ADJUSTMENT FACTOR = 1.00008965.

VERTICAL DATUM

ELEVATIONS WERE TRANSFERRED TO THE PROJECT BY ODOT D-3, AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988.

ROUNDING

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

EXISTING PLANS

EXISTING PLANS TITLED WILLARD VENICE ROAD, HUR-99 (10_35-12.55) MAY BE INSPECTED IN THE ODOT DISTRICT 3 OFFICE IN ASHLAND.

MONUMENT ASSEMBLIES

CONSTRUCT MONUMENT ASSEMBLIES IN ACCORDANCE WITH THE DETAILS SHOWN ON THE STANDARD CONSTRUCTION DRAWING AND AT THE LOCATIONS ON SHEET NO. 30. A QUANTITY OF 2 EACH HAS BEEN CARRIED TO THE GENERAL SUMMARY.

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS. SEE BELOW FOR A TABLE CONTAINING PROJECT CONTROL INFORMATION.

USE THE FOLLOWING PROJECT CONTROL, VERTICAL POSITIONING, AND HORIZONTAL POSITIONING PARAMETERS FOR ALL SURVEYING:
PROJECT CONTROL ESTABLISHED BY O.D.O.T. D-3.

PROJECT CONTROL

POSITIONING METHOD: RTK VRS GPS
MONUMENT TYPE: B

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD 88
GEOID: 12A

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD83(2011)
ELLIPSOID: GRS80
MAP PROJECTION: LAMBERT CONIC CONFORMAL
COORDINATE SYSTEM: OHIO STATE PLAN NORTH ZONE
COMBINED SCALE FACTOR: 0.999910358
PROJECT ADJUSTMENT FACTOR 1.00008965
ORIGIN OF COORDINATE SYSTEM: X=0, Y=0

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH CMS 623.

UNITS ARE IN U.S. SURVEY FEET.

EXISTING ROADWAY SUPERELEVATION SURVEY ELEVATIONS

DESCRIPTION	STATION	LEFT E.O.P. ELEVATION	CROSS SLOPE	LANE WIDTH	PROFILE GRADE ELEVATION	LANE WIDTH	CROSS SLOPE	RIGHT E.O.P. ELEVATION
T.S.	550+85.57	759.43±	0.009	10	759.34±	10	-0.023	759.11±
	551+00.00	759.67±	0.009	10	759.59±	10	-0.026	759.33±
	551+25.00	760.08±	0.006	10	760.02±	10	-0.029	759.73±
	551+50.00	760.54±	0.014	10	760.41±	10	-0.032	760.09±
	551+75.00	760.99±	0.021	10	760.78±	10	-0.034	760.44±
	552+00.00	761.33±	0.022	10	761.11±	10	-0.041	760.70±
	552+25.00	761.69±	0.026	10	761.43±	10	-0.046	760.96±
	552+50.00	762.09±	0.028	10	761.81±	10	-0.050	761.30±
	552+75.00	762.52±	0.034	10	762.19±	10	-0.054	761.65±
	553+00.00	762.94±	0.036	10	762.58±	10	-0.058	762.00±
	553+25.00	763.36±	0.040	10	762.96±	10	-0.061	762.35±
	553+50.00	763.73±	0.041	10	763.32±	10	-0.060	762.72±
	553+75.00	764.08±	0.043	10	763.66±	10	-0.060	763.05±
S.C.	553+85.57	764.22±	0.043	10	763.79±	10	-0.062	763.17±

PROJECT CONTROL

CL OF CONSTRUCTION STATE ROUTE 99		PROJECT GROUND COORDINATES PAF = 1.00008965		PROJECT GRID COORDINATES NAD83(2011) DATUM		
STATION	OFFSET	NORTH (Y) U.S. FT.	EAST (X) U.S. FT.	NORTH (Y) U.S. FT.	EAST (X) U.S. FT	DESCRIPTION
PROJECT CONTROL STATE ROUTE 99						
550+59.45	20.46 LT.	554221.8091	1906766.0949	554172.1276	1906595.1686	5/8" REBAR WITH YELLOW PLASTIC CAP STAMPED "ODOT CONTROL"
552+45.82	18.70' RT.	554407.5095	1906807.0206	554357.8113	1906636.0907	5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
554+16.09	19.07' RT.	554574.6976	1906822.4298	554524.9844	1906651.4985	5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
555+64.98	26.41' LT.	554730.2777	1906810.9129	554680.5506	1906639.9826	3/4" IRON PIN WITH 3" ALUMINUM CAP STAMPED "ODOT CONTROL"
EXISTING CENTERLINE STATE ROUTE 99						
551+68.40	2.57' LT.	554330.8128	1906784.1329	554281.1215	1906613.2050	CALPT BY ODOT D-3 PC
553+68.03	2.58' LT.	554530.3490	1906794.5376	554480.6399	1906623.6088	CALPT BY ODOT D-3 PCC
556+42.86	1.66' LT	554797.3046	1906859.2091	554747.5715	1906688.2745	CALPT BY ODOT D-3 PCC
558+42.60	1.46' LT.	554979.4803	1906941.2761	554929.7308	1906770.3341	CALPT BY ODOT D-3 PT
CENTERLINE CONSTRUCTION STATE ROUTE 99						
549+79.67	℄	554142.0572	1906786.6517	554092.3828	1906615.7236	SPI10
555+21.00	℄	554683.3872	1906786.0053	554633.6643	1906615.0773	PISCS
550+85.57	℄	554247.9544	1906786.5252	554198.2705	1906615.5971	TS
553+85.57	℄	554547.4562	1906799.2415	554497.7455	1906628.3123	SC
556+43.68	℄	554797.4969	1906861.0480	554747.7638	1906690.1132	CS
559+43.68	℄	555068.4313	1906989.3352	555018.6739	1906818.3889	ST
564+03.63	℄	555475.1531	1907204.1126	555425.3592	1907033.1471	SPI20

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ESTIMATED 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.

WORK LIMITS

THE CONSTRUCTION LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

PROTECTION OF RIGHT-OF-WAY LANDSCAPING AREAS

PRIOR TO BEGINNING WORK, THE CONTRACTOR, THE PROJECT ENGINEER, AND A REPRESENTATIVE OF THE MAINTAINING AGENCY WILL REVIEW AND RECORD ALL LANDSCAPING ITEMS WITHIN THE RIGHT OF WAY (BOTH WITHIN AND OUTSIDE THE CONSTRUCTION LIMITS) A RECORD OF THIS REVIEW WILL BE KEPT IN THE PROJECT ENGINEER'S FILES. PRIOR TO FINAL ACCEPTANCE, A FINAL REVIEW OF LANDSCAPING ITEMS WILL BE MADE.

CONSTRICT ALL ACTIVITIES, EQUIPMENT STORAGE, AND STAGING TO WITHIN THE CONSTRUCTION LIMITS. UNLESS OTHERWISE IDENTIFIED IN THE PLANS OR PROPOSAL, THE CONSTRUCTION LIMITS ARE IDENTIFIED.

SUBMIT A WRITTEN REQUEST TO THE PROJECT ENGINEER TO USE ANY AREA OUTSIDE THESE LIMITS. THE DOCUMENT SUBMITTED MUST CLEARLY IDENTIFY THE AREA AND EXPLAIN THE PROPOSED USE AND RESTORATION OF THE AREA. USE OF THESE AREAS FOR DISPOSAL OF WASTE MATERIAL AND CONSTRUCTION DEBRIS, EXCAVATION OF BORROW MATERIAL AND PLACEMENT OF PORTABLE PLANTS IS PROHIBITED. THE REQUEST MUST BE APPROVED, IN WRITING, BEFORE THE CONTRACTOR HAS PERMISSION TO USE THE AREA.

ANY ITEMS DAMAGED BEYOND THE CONSTRUCTION LIMITS AS DEFINED ABOVE WILL BE REPLACED IN KIND OR AS APPROVED BY THE PROJECT ENGINEER.

BENCHING OF FOUNDATION SLOPES

ALTHOUGH CROSS-SECTIONS INDICATE SPECIFIC DIMENSIONS FOR PROPOSED BENCHING OF THE EMBANKMENT FOUNDATIONS IN CERTAIN AREAS, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. BENCH ALL OTHER SLOPED EMBANKMENT AREAS AS SET FORTH IN 203.05. NO ADDITIONAL PAYMENT WILL BE MADE FOR BENCHING REQUIRED UNDER THE PROVISIONS OF 203.05.

ITEM 201 - CLEARING AND GRUBBING

WHERE VISIBLE INDIVIDUAL TREES AND STUMPS HAVE BEEN MARKED FOR REMOVAL. IN WOODED/BRUSH AREAS INDIVIDUAL TREES AND STUMPS HAVE NOT BEEN MARKED. UNLESS SPECIFICALLY DESIGNATED AS "DO NOT DISTURB" IN THE PLANS, REMOVE ALL TREES AND STUMPS WITHIN THE CONSTRUCTION LIMITS UNDER THE LUMP SUM BID FOR ITEM 201 CLEARING AND GRUBBING.

ANY ITEMS DAMAGED BEYOND THE CONSTRUCTION LIMITS AS DEFINED ABOVE WILL BE REPLACED IN KIND OR AS APPROVED BY THE PROJECT ENGINEER.

ALL COSTS INCLUDING LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS TO PERFORM THIS WORK AS APPROVED BY THE ENGINEER SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 201 - CLEARING AND GRUBBING.

CONSTRUCTION LAYOUT STAKES AND SURVEYING

PRIOR TO BEGINNING WORK, THE CONTRACTOR AND THE PROJECT ENGINEER WILL REVIEW AND RECORD THE PROJECT LIMITS. THE CONTRACTOR SHALL VIDEOTAPE THE PROJECT LIMITS.

ITEM 203 EXCAVATION AND EMBANKMENT

THERE MAY BE ITEMS DELINEATED ON THE PLANS OR IN THE FIELD BY THE ENGINEER FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT NEEDED FOR CONSTRUCTION OF THE IMPROVEMENTS. ALL PROVISIONS AS SET FORTH IN THE ODOT SPECIFICATIONS UNDER ITEM 201 AND 203 IN ADDITION TO THE REMOVAL AND PROPER DISPOSAL OF MISCELLANEOUS OBSTRUCTIONS INCLUDING FENCE, FENCE POSTS, SIGN POSTS, POLES, MISCELLANEOUS CONCRETE PADS, LANDSCAPE ROCKS, PAVERS, ETC. WITHIN THE PROJECT LIMITS AND AS APPROVED BY THE ENGINEER SHALL BE INCIDENTAL TO ITEM 203

ITEM 659 - SEEDING AND MULCHING

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES AND WITHIN THE CONSTRUCTION LIMITS. QUANTITY CALCULATIONS FOR ITEM 659, SEEDING AND MULCHING, ARE BASED ON THESE LIMITS AND QUANTITIES ARE CARRIED ON THE CROSS SECTIONS.

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS.

659, SEEDING AND MULCHING	3376	SQ. YD.
659, TOPSOIL	379	CU. YD.
659, COMMERCIAL FERTILIZER	0.50	TON
659, LIME	0.71	ACRE
659, WATER	19	M. GAL.
659, REPAIR SEEDING AND MULCHING	169	SQ. YD.
659, SOIL ANALYSIS TEST	2	SQ. YD.
659, INTER - SEEDING	169	SQ. YD.

CALCULATIONS FOR THE ABOVE QUANTITIES SHOWN ON SHEET NO. 12

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 THESE ITEMS WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION.

BMP EROSION CONTROL

THE CONDITIONS OF THE NPDES CONSTRUCTION STORM WATER GENERAL PERMIT (SEE PERMIT) SHALL BE MET DURING ALL STAGES OF CONSTRUCTION. THE LOCATION AND TIMING OF ALL EROSION AND SEDIMENT CONTROL ITEMS SHALL BE FIELD ADJUSTED TO PREVENT SIGNIFICANT IMPACTS ON RECEIVING WATERS. IMPLEMENTATION OF EROSION CONTROL ITEMS SHALL CONTINUE THROUGHOUT THE DURATION OF THE PROJECT OR UNTIL SUCH TIME THAT THE UPSLOPE DISTURBED AREAS ARE STABILIZED.

INSTALLATION OF SEDIMENT BASINS/DAMS, PERIMETER FILTER FABRIC FENCE, AND DITCH CHECKS SHALL BE AS PER CONSTRUCTION AND MATERIAL SPECIFICATION 207.03.

ALL REASONABLE ATTEMPTS SHALL BE MADE TO MINIMIZE THE TOTAL AREA OF DISTURBED LAND.

AREAS TO REMAIN DORMANT FOR MORE THAN 14 DAYS SHOULD BE IMMEDIATELY STABILIZED WITH CONSTRUCTION SEEDING AND MULCHING, EROSION CONTROL MATTING OR OTHER APPROPRIATE EROSION CONTROL MEASURES.

PRIOR TO CONSTRUCTION, THE CONTRACTOR IS TO IDENTIFY APPROPRIATE LOCATIONS FOR EROSION CONTROL ITEMS.

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

832, EROSION CONTROL	10000	EACH

ADDITIONAL SOIL INFORMATION

THE SOIL PROFILE AND STRUCTURE FOUNDATION INVESTIGATION SHEETS CONTAIN ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN.

TOPSOIL

TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE EXCAVATED OR FILLED. ADDITIONAL SUITABLE MATERIAL REQUIRED TO FILL THE TOPSOIL STRIP AREA IN EMBANKMENT AREAS, TOPSOIL STRIPPING AND ANY STOCKPILING INCLUDING ALL LABOR, EQUIPMENT, AND MATERIAL SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT BID ITEM 203 - EXCAVATION OR ITEM 203 - EMBANKMENT. NO ADDITIONAL COMPENSATION WILL BE PROVIDED.

EARTHWORK FOR PROJECT TRANSITION

A ESTIMATED QUANTITY OF ITEM 203 EMBANKMENT AND ITEM 203 EXCAVATION IS BEING PROVIDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER TO TAPER THE EARTHWORK INTO THE EXISTING AT THE BEGIN/END OF THE PROJECT.

203, EXCAVATION	50	CU. YD.
203, EMBANKMENT	50	CU. YD.

UNRECORDED STORM WATER DRAINAGE

FURNISH A CONTINUANCE FOR ALL UNRECORDED STORM WATER DRAINAGE, SUCH AS ROOF DRAINS, FOOTER DRAINS, OR YARD DRAINS, DISTURBED BY THE WORK. FURNISH AN UNOBSTRUCTED CONTINUANCE BY CONNECTING A CONDUIT INTO THE ROADSIDE DITCH AT A LOCATION TO PROVIDE POSITIVE DRAINAGE. THE LOCATION, TYPE, SIZE AND GRADE OF THE NEEDED CONDUIT TO REPLACE OR EXTEND AN EXISTING DRAIN WILL BE DETERMINED BY THE ENGINEER. ALL SUCH CONTINUANCE REQUIRES A RIGHT OF WAY USE PERMIT.

THE FOLLOWING CONDUIT TYPES MAY BE USED: 707.33, 707.41 NON-PERFORATED, 707.42, 707.43, 707.45, 707.46, 707.47, 707.51, 707.52 SDR35.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

611, 12" CONDUIT, TYPE B, FOR DRAINAGE CONNECTION	25	FT.
611, 12" CONDUIT, TYPE C, FOR DRAINAGE CONNECTION	25	FT

UNRECORDED UNTREATED NON-STORMWATER DRAINAGE

FURNISH NO CONTINUANCE FOR ANY UNRECORDED UNTREATED NON-STORMWATER DRAINAGE SUCH AS UNTREATED SEPTIC, UNTREATED WASTEWATER, UNTREATED CURTAIN/GRADIENT DRAINS, AND UNTREATED FOUNDATION FLOOR DRAINS DISTURBED BY THE WORK. PLUG ANY UNRECORDED UNTREATED NON-STORMWATER DRAINAGE WITH CONCRETE AT THE RIGHT OF WAY LINE. PAYMENT FOR PLUGGING SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 202 OR 203 ITEM.

CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEM.

FARM DRAINS

ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS, WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF ROADWAY DITCHES, SHALL BE OUTLETTED INTO THE ROADWAY DITCH BY 603 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE 12" ABOVE THE FLOWLINE ELEVATION OF THE DITCH.

THE LOCATION, TYPE, SIZE AND GRADE OF REPLACEMENTS SHALL BE DETERMINED BY THE ENGINEER AND PAYMENT SHALL BE MADE ON FINAL MEASUREMENTS.

EROSION CONTROL PADS AND ANIMAL GUARDS SHALL BE PROVIDED AT THE OUTLET END OF ALL FARM DRAINS AS PER STANDARD CONSTRUCTION DRAWING DM-1.1, EXCEPT WHEN THEY OUTLET INTO A DRAINAGE STRUCTURE. PAYMENT FOR THE EROSION CONTROL PADS AND ANIMAL GUARDS AND ANY NECESSARY BENDS OR BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEMS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

611, 8" CONDUIT, TYPE E	25	FT.
611, 12" CONDUIT, TYPE E	25	FT.
601 ROCK CHANNEL PROTECTION TYPE C WITH FILTER	5	CU. YD.

CALCULATED MAF
CHECKED PRS

GENERAL NOTES

HUR-99-10.46

EXISTING UNDERDRAINS

PROVIDE UNOBSTRUCTED OUTLETS FOR ALL EXISTING UNDERDRAINS ENCOUNTERED DURING CONSTRUCTION. PROVIDE AN OUTLET PER STANDARD CONSTRUCTION DRAWING DM-1.1 FOR ALL UNDERDRAINS THAT OUTLET TO A SLOPE. UNDERDRAINS THAT CAN BE CONNECTED TO THE NEW OR EXISTING UNDERDRAINS AT THE END OF THE PROJECT LIMITS AS WELL AS ALL NECESSARY BENDS OR BRANCHES REQUIRED FOR CONNECTION ARE INCLUDED IN THE BASIS OF PAYMENT FOR UNCLASSIFIED PIPE UNDERDRAINS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY:

611, 6" CONDUIT, TYPE F FOR UNDERDRAIN OUTLETS, 707.33 OR 707.41 — 25 FT.

605, 6" UNCLASSIFIED PIPE UNDERDRAINS — 25 FT.

ITEM SPECIAL - PIPE CLEANOUT

THIS WORK SHALL CONSIST OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING DRAINAGE CONDUITS WITHIN THE CONSTRUCTION LIMITS. ALL MATERIALS REMOVED SHALL BE DISPOSED OF AS PER 105.16 AND 105.17. ALL PIPES SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER.

CLEANOUT OF THE PIPE SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM SPECIAL-PIPE CLEANOUT. THIS PRICE SHALL INCLUDE THE COST FOR MATERIAL, EQUIPMENT, LABOR, AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CLEANOUT.

IN ADDITION TO QUANTITIES LISTED IN THE PLANS, THE FOLLOWING QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE BY THE ENGINEER FOR THE ABOVE NOTED WORK FOR ADDITIONAL SITUATIONS ENCOUNTER DURING CONSTRUCTION.

SPECIAL, PIPE CLEANOUT, 24" AND UNDER — 50 FT.

ITEM 202 - PIPE REMOVED, OVER 24", AS PER PLAN

IN ADDITION TO CMS 202 THE EXISTING CULVERT AND FOOTINGS SHALL BE REMOVED ADEQUATELY TO ALLOW FOR THE INSTALLATION OF THE PROPOSED CONDUIT PER ODOT CMS 611.

ITEM 209 - DITCH CLEANOUT, AS PER PLAN

THIS WORK SHALL CONSIST OF REESTABLISHING THE CROSS SECTION ON AN EXISTING DITCH. SURPLUS OR UNSUITABLE MATERIAL, AS DETERMINED BY THE ENGINEER, SHALL BE DISPOSED OF. EMBANKMENT REQUIRED FOR ERODED CONDITIONS SHALL MEET THE REQUIREMENTS OF 203.02R EXCEPT THAT THE COMPACTION REQUIREMENTS ARE WAIVED. ALSO INCLUDED IN THIS ITEM SHALL BE ALL MATERIALS, LABOR AND INCIDENTALS NECESSARY TO SEED AND MULCH THE CLEANED OUT DITCH AS PER CMS ITEM 659 SEEDING AND MULCHING UNLESS OTHER PERMANENT EROSION CONTROL MEASURES HAVE BEEN PROVIDED IN THE PLANS. THE CONTRACTOR SHALL RESTORE, TO THE SATISFACTION OF THE ENGINEER, ANY DISTURBED AREAS CAUSED BY CONSTRUCTION OF THIS ITEM AT NO ADDITIONAL COST TO THE STATE.

MEASUREMENT OF THE DITCH CLEANOUT SHALL BE THE FEET MEASURED ALONG THE CENTERLINE OF THE DITCH.

PAYMENT FOR ALL THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 209, DITCH CLEANOUT, AS PER PLAN. IN ADDITION TO THE ESTIMATED QUANTITIES IN THE DRAINAGE SUBSUMMARY, THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AT LOCATIONS DETERMINED BY THE ENGINEER.

209, DITCH CLEANOUT, AS PER PLAN — 50 FT.

ITEM 601 - RIPRAP, TYPE D, AS PER PLAN

IN ADDITION TO CMS 601, CONSTRUCT INLET AND OUTLET RIPRAP TO THE DIMENSIONS SHOWN ON THE PLANS. CONSTRUCT A MINIMUM 4'-0" CUT-OFF WALL FROM THE HEADWALL AROUND THE PERIMETER OF THE SLAB. BASED UPON GEOTECHNICAL INVESTIGATION ROCK MAY NEED TO BE REMOVED TO CONSTRUCT THIS ITEM COMPLETE. ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS TO CONSTRUCT THIS ITEM COMPLETE TO THE SATISFACTION OF THE ENGINEER SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THIS ITEM.

ITEM 602 - CONCRETE MASONRY, AS PER PLAN

IN ADDITION OF CMS 602, CONSTRUCT INLET AND OUTLET HEADWALLS TO A MINIMUM 4'-0" DEPTH. AN ADDITIONAL 1.00 CU. YD. PER HEADWALL HAS BEEN CALCULATED AND CARRIED TO THE CALCULATION SHEET 13. BASED UPON GEOTECHNICAL INVESTIGATION ROCK MAY NEED TO BE REMOVED TO CONSTRUCT THIS ITEM COMPLETE. ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS TO CONSTRUCT THIS ITEM COMPLETE TO THE SATISFACTION OF THE ENGINEER SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THIS ITEM.

ITEM 611 - 84" CONDUIT, TYPE A, 706.02 OR 96" CONDUIT, TYPE A, 707.02 (0.138), FIELD PAVED PER ITEM 611.11, AS PER PLAN

IF THE 96" CONDUIT, 707.02 CONDUIT OPTION IS UTILIZED IT SHALL BE FIELD PAVED IN ACCORDANCE WITH CMS 611. THE COST OF FIELD PAVING IS INCLUDED IN THE PRICE BID FOR THE 96" CONDUIT, TYPE A, 707.02 CONDUIT, (0.138), FIELD PAVED PER ITEM 611.11, AS PER PLAN.

ITEM 407 - TACK COAT

THE RATE OF APPLICATION OF THE ITEM 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. ITEM 407 - TACK COAT (FOR MILLED ASPHALT SURFACE) IS TO BE USED ON THE WEARING COURSE REMOVED AREA. ITEM 407 - TACK COAT (FOR NEW ASPHALT) IS TO BE USED ON THE INTERMEDIATE COURSE AND ON THE 301. FOR ESTIMATING PURPOSES ONLY, PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF:

407, TACK COAT (FOR MILLED ASPHALT SURFACE) — 0.09 GAL/SQ. YD.

407, TACK COAT (FOR NEW ASPHALT) — 0.06 GAL/SQ. YD.

PAVEMENT RESTORATION FOR MONUMENT ASSEMBLY INSTALLATIONS

THE FOLLOWING QUANTITIES ARE PROVIDED FOR PAVEMENT RESTORATION FOLLOWING INSTALLATION OF ITEM 623, MONUMENT ASSEMBLIES.

301, ASPHALT CONCRETE BASE, PG64-22 — 0.33 CU. YD.

THE ABOVE QUANTITY IS BASED ON A 301 THICKNESS OF 8 INCHES AND A WIDTH OF TWO FEET AROUND THE PERIMETER OF THE MONUMENT ASSEMBLIES.

441, ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22 — 0.05 CU. YD.

THE ABOVE QUANTITY IS BASED ON A 441 THICKNESS OF 1 1/4 INCHES AND A WIDTH OF TWO FEET AROUND THE PERIMETER OF THE MONUMENT ASSEMBLIES.

441, ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448) — 0.07 CU. YD.

THE ABOVE QUANTITY IS BASED ON A 441 THICKNESS OF 1 3/4 INCHES AND A WIDTH OF TWO FEET AROUND THE PERIMETER OF THE MONUMENT ASSEMBLIES.

QUANTITIES CARRIED TO CALCULATIONS SHEET 10 .

PROVIDE ANY MATERIALS USED OUTSIDE THE LIMITS STATED ABOVE AT NO ADDITIONAL COST.

ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY OF THE GUARDRAIL END TERMINALS FOR TYPE MGS GUARDRAIL AS LISTED ON ROADWAY ENGINEERING'S WEB PAGE UNDER ROADSIDE SAFETY DEVICES FOR APPROVED GUARDRAIL END TREATMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE FACE OF THE TYPE E IMPACT HEAD SHALL BE COVERED WITH A SHEET OF TYPE G REFLECTIVE SHEETING, PER CMS 730.19.

REFER TO THE MANUFACTURER'S INSTRUCTIONS REGARDING THE INSTALLATION OF, AND THE GRADING AROUND THE FOUNDATION TUBES AND GROUND STRUT. THE TOP OF ANY FOUNDATION TUBE SHOULD BE LESS THAN 4 INCHES ABOVE THE GROUND. THE PLACEMENT OF THE FOUNDATION TUBES SHOULD BE AN APPROPRIATE DEPTH BELOW THE LEVEL LINE IN ORDER TO MAINTAIN THE FINISHED GUARDRAIL HEIGHT OF 31 INCHES FROM THE EDGE OF THE SHOULDER. ON-SITE GRADING IS REQUIRED IF THE TOP OF THE FOUNDATION TUBES OR TOP OF THE GROUND STRUT DOES PROJECT MORE THAN 4 INCHES ABOVE THE GROUND LINE.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, ANCHOR ASSEMBLY, MGS TYPE E, EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL RELATED TRANSITIONS, REFLECTIVE SHEETING, HARDWARE, GRADING, EMBANKMENT AND EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

ENVIRONMENTAL COMMITMENTS

1. THIS PROJECT IS WITHIN THE KNOWN SUMMER BREEDING RANGE OF FEDERAL ENDANGERED INDIANA BAT AND NORTHERN LONG-EARED BAT. UNAVOIDABLE CUTTING OF TREES DEFINED AS POTENTIAL HABITAT FOR BOTH BAT SPECIES (I.E. LIVING OR STANDING DEAD TREES OR SNAGS WITH EXFOLIATING, PEELING OR LOOSE BARK, SPLIT TRUNKS AND/OR BRANCHES, OR CAVITIES) WILL BE PERFORMED ONLY BETWEEN OCTOBER 1 AND MARCH 31.

2. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO AVOID AND/OR LIMIT INCIDENTAL DEBRIS FROM ENTERING STREAMS. ANY DEBRIS THAT DOES FALL INTO STREAMS SHALL BE REMOVED AS SOON AS POSSIBLE. IMPACTS TO STREAM WILL BE AVOIDED, MINIMIZED, AND/OR MITIGATED WHERE REASONABLE AND PRACTICABLE.

3. Freshwater ωussels are known to occur within the West Branch Huron River. A ωussel survey and relocation is scheduled to be perforωed prior to the start of construction. Prior to starting in-streaω work, contact the District 3 Environωental Coordinator to confirω that the ωussel survey has been coωpleted and that the Ohio Departωent of Natural Resources has approved the survey results.

ITEM 503 - SHALE EXCAVATION

BASED UPON GEOTECHNICAL INVESTIGATION SHALE MAY BE ENCOUNTERED DURING CONSTRUCTION OF THE PROPOSED IMPROVEMENT. AN ESTIMATED QUANTITY OF ITEM 503 SHALE EXCAVATION HAS BEEN PROVIDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER.

503, SHALE EXCAVATION — 10 CU. YD.

ITEM 204 - PROOF ROLLING

THE FOLLOWING QUANTITY IS PROVIDED IN THE GENERAL SUMMARY TO ADDRESS LOCATIONS REQUIRING PROOF ROLLING. SEE PLAN SHEET NO. 10 FOR ADDITIONAL INFORMATION.

204, PROOF ROLLING — 1 HOURS

CALCULATED MAF CHECKED PRS

GENERAL NOTES

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SHEET NUMBER												PARTICIPATION		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
			4-6	7	10-13	20	21	27				02/STR/CV							
																		ROADWAY	
			LS									LS		201	11000	LS		CLEARING AND GRUBBING	5
							2					2		202	20010	2	EACH	HEADWALL REMOVED	
							100					100		202	35201	100	FT	PIPE REMOVED, OVER 24", AS PER PLAN	6
			50									50		SPECIAL	20270110	50	FT	PIPE CLEANOUT, 24" AND UNDER	6
			50			1978		43				2071		203	10000	2071	CY	EXCAVATION	
			50			2848		10				2908		203	20000	2908	CY	EMBANKMENT	
					438							438		204	10000	438	SY	SUBGRADE COMPACTION	
					1							1		204	45000	1	HOUR	PROOF ROLLING	
			50									50		209	10001	50	FT	DITCH CLEANOUT, AS PER PLAN	6
												LS		503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
			10									10		503	31120	10	CY	SHALE EXCAVATION	
					343.75							343.75		606	15050	343.75	FT	GUARDRAIL, TYPE MGS	
					1							1		606	26150	1	EACH	ANCHOR ASSEMBLY, MGS TYPE E	
					1							1		606	26550	1	EACH	ANCHOR ASSEMBLY, MGS TYPE T	
			2									2		623	38500	2	EACH	MONUMENT ASSEMBLY	
																		EROSION CONTROL	
							65					65		601	11001	65	SY	RIPRAP, TYPE D, AS PER PLAN	6
							226					226		601	32010	226	CY	ROCK CHANNEL PROTECTION, TYPE A WITH AGGREGATE FILTER	
							58					58		601	32110	58	CY	ROCK CHANNEL PROTECTION, TYPE B WITH AGGREGATE FILTER	
			5		2							7		601	32200	7	CY	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	
			2									2		659	00100	2	EACH	SOIL ANALYSIS TEST	
			379									379		659	00300	379	CY	TOPSOIL	
			3376									3376		659	10000	3376	SY	SEEDING AND MULCHING	
			169									169		659	14000	169	SY	REPAIR SEEDING AND MULCHING	
			169									169		659	15000	169	SY	INTER-SEEDING	
			0.50									0.50		659	20000	0.50	TON	COMMERCIAL FERTILIZER	
			0.71									0.71		659	31000	0.71	ACRE	LIME	
			19									19		659	35000	19	MGAL	WATER	
					36							36		670	00710	36	SY	DITCH EROSION PROTECTION MAT, TYPE A	
			10000									10000		832	30000	10000	EACH	EROSION CONTROL	
					56							56		836	10000	56	SY	SEEDING AND EROSION CONTROL WITH TURF REINFORCING MAT, TYPE 1	
																		DRAINAGE	
					0.21							0.21		602	20000	0.21	CY	CONCRETE MASONARY	
							10.80					10.80		602	20001	10.80	CY	CONCRETE MASONRY, AS PER PLAN	6
			25									25		605	13300	25	FT	6" UNCLASSIFIED PIPE UNDERDRAINS	
					42							42		605	31100	42	FT	AGGREGATE DRAINS	
			25									25		611	00510	25	FT	6" CONDUIT, TYPE F FOR UNDERDRAIN OUTLETS, 707.33 OR 707.41	
			25									25		611	02500	25	FT	8" CONDUIT, TYPE E	
			25									25		611	04400	25	FT	12" CONDUIT, TYPE B	
			25									25		611	04600	25	FT	12" CONDUIT, TYPE C	
					54							54		611	04900	54	FT	12" CONDUIT, TYPE D, 707.01 OR 707.02	
			25									25		611	05100	25	FT	12" CONDUIT, TYPE E	
							115					115		611	28001	115	FT	84" CONDUIT, TYPE A, 706.02 OR 96" CONDUIT, 707.02, (0.138), FIELD PAVED PER ITEM 611.11, AS PER PLAN	6
																		PAVEMENT	
					74							74		254	01000	74	SY	PAVEMENT PLANING, ASPHALT CONCRETE (1¼" THICK)	
					89							89		301	46000	89	CY	ASPHALT CONCRETE BASE, PG64-22	
					72							72		304	20000	72	CY	AGGREGATE BASE	
					52							52		407	10000	52	GAL	TACK COAT	
					16							16		441	50000	16	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	
					18							18		441	50300	18	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)	

CALCULATED MAF
CHECKED TJF

GENERAL SUMMARY

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SHEET NUMBER												PARTICIPATION		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
			4-6	7	10-13	20	21	27				QQ/STR/CV							
																		TRAFFIC CONTROL	
					2							2		621	00100	2	EACH	RPM	
					2							2		621	54000	2	EACH	RAISED PAVEMENT MARKER REMOVED	
					10							10		626	00100	10	EACH	BARRIER REFLECTOR	
					0.08							0.08		642	00100	0.08	MILE	EDGE LINE, 4", TYPE 1	
					0.02							0.02		642	00300	0.02	MILE	CENTER LINE, TYPE 1	
																		MAINTENANCE OF TRAFFIC	
				10								10		410	12000	10	CY	TRAFFIC COMPACTED SURFACE, TYPE A OR B	
				5								5		616	10000	5	MGAL	WATER	
																		INCIDENTALS	
												LS		623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
												LS		624	10000	LS		MOBILIZATION	

CALCULATED MAF
CHECKED TJF

GENERAL SUMMARY

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LINE	DESCRIPTION	CALCULATION		QUANTITY
	PAVEMENT AREAS			
1	STA. 550+95.00 TO STA. 551+95.00 LT= 100.00 FT. X ((3.9 FT. + 5 FT) / 2)	=	445.00	SQ. FT.
2	STA. 551+45.00 TO STA. 551+95.00 RT= 50.00 FT. X ((2.8 FT. + 5 FT) / 2)	=	195.00	SQ. FT.
3	STA. 551+95.00 TO STA. 552+60.00 CT= 65.00 FT. X ((32 FT. + 32 FT) / 2)	=	2080.00	SQ. FT.
4	STA. 552+60.00 TO STA. 553+55.00 RT= 95.00 FT. X ((5 FT. + 3.8 FT) / 2)	=	418.00	SQ. FT.
5	STA. 552+60.00 TO STA. 553+00.00 LT= 40.00 FT. X ((5 FT. + 3.7 FT) / 2)	=	174.00	SQ. FT.
6	SUM LINES 1 TO 5 350.00 FT.	=	3312.00	SQ. FT.
	ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE			
7	STA. 551+80.00 TO STA. 551+95.00 = 15.00 FT. X 22 FT.	=	330.00	SQ. FT.
8	STA. 552+60.00 TO STA. 552+75.00 = 15.00 FT. X 22 FT.	=	330.00	SQ. FT.
9	SUM LINES 7 TO 8	=	660.00	SQ. FT.
10	LINE 9, (660.00 SQ. FT. / 9)	=	73.33	SQ. YD.
		TOTAL CARRIED TO GENERAL SUMMARY =	**74**	**SQ. YD.**
	ITEM 407 - TACK COAT (FOR MILLED ASPHALT SURFACE)			
11	LINE 9, (660.00 SQ. FT. / 9) X 0.09 GAL. / SQ. YD.	=	6.60	GAL.
		TOTAL CARRIED TO GENERAL SUMMARY =	**7**	**GAL.**
	ITEM 441 - 1¼" ASPHALT CONCRETE SERFACE COURSE, TYPE 1, (448), PG64-22			
12	SUM LINES 6 AND 9 = 3972.00 SQ. FT. X (1 1/4 IN. / 12) / 27)	=	15.32	CU. YD.
13	QUANTITY FOR MONUMENT ASSEMBLY = 960 SQ. IN. X 1 1/4 IN. / 1728 CU. IN. / 27 X 2	=	0.05	CU. YD.
14	SUM LINES 12 TO 13	=	15.37	CU. YD.
		TOTAL CARRIED TO GENERAL SUMMARY =	**16**	**CU. YD.**
	ITEM 407 - TACK COAT (FOR NEW ASPHALT)			
15	LINE 6 = 3312 SQ. FT. X 2 / 9) X 0.06 GAL. / SQ. YD.	=	44.16	GAL.
		TOTAL CARRIED TO GENERAL SUMMARY =	**45**	**GAL.**
	ITEM 441 - 1¾" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)			
16	LINE 6 = 3312.00 SQ. FT. X (1 3/4 IN / 12) / 27	=	17.89	CU. YD.
17	QUANTITY FOR MONUMENT ASSEMBLY = 960 SQ. IN. X 1 3/4 IN. / 1728 CU. IN. / 27 X 2	=	0.07	CU. YD.
18	SUM LINES 16 TO 17	=	17.96	CU. YD.
		TOTAL CARRIED TO GENERAL SUMMARY =	**18**	**CU. YD.**
	ITEM 301 - 8" ASPHALT CONCRETE BASE, PG64-22 (TWO LIFTS)			
19	LINE 6, (3312.00 SQ. FT. X (8 IN / 12) / 27	=	81.78	CU. YD.
20	LINE 3 AND 6 (65 FT. + 350 FT.) X 0.33 FT. X (4 IN. / 12) / 27)	=	1.69	CU. YD.
21	LINE 3 AND 6 (65 FT. + 350 FT.) X 0.83 FT. X (4 IN. / 12) / 27)	=	4.25	CU. YD.
22	QUANTITY FOR MONUMENT ASSEMBLY = 960 SQ. IN. X 8 IN. / 1728 CU. IN. / 27 X 2	=	0.33	CU. YD.
23	SUM LINES 19 TO 22 =	=	88.05	CU. YD.
		TOTAL CARRIED TO GENERAL SUMMARY =	**89**	**CU. YD.**
	ITEM 304 - 6" AGGREGATE BASE			
24	LINE 6, (3312.00 SQ. FT. X (6 IN / 12) / 27	=	61.33	CU. YD.
25	LINE 3 AND 6 (65 FT. + 350 FT.) X 1.33 FT. X (6 IN. / 12) / 27)	=	10.22	CU. YD.
26	SUM LINES 24 TO 25 =	=	71.55	CU. YD.
		TOTAL CARRIED TO GENERAL SUMMARY =	**72**	**CU. YD.**
	ITEM 204 - SUBGRADE COMPACTION			
27	LINE 6, 3312.00 SQ. FT. / 9	=	368.00	SQ. YD.
28	SUM LINES 3 AND 6 (65 FT. + 350 FT.) X 1.5 FT. / 9)	=	69.17	SQ. YD.
29	SUM LINES 27 TO 28 =	=	437.17	SQ. YD.
		TOTAL CARRIED TO GENERAL SUMMARY =	**438**	**SQ. YD.**
	ITEM 204 - PROOF ROLLING			
30	LINE 29 437.17 SQ. YD. X (1 HOUR / 2000 SQ. YD.)	=	0.22	HOUR
		TOTAL CARRIED TO GENERAL SUMMARY =	**1**	**HOUR**

CALCULATED MAF CHECKED TJF

CALCULATIONS

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LINE	DESCRIPTION	CALCULATION		QUANTITY
	ITEM 642 - CENTER LINE			
31	STA. 551+80.00 TO STA. 552+75.00		=	95 FT.
32	LINE 31 95.00 FT. / 5280 FT. / MILE		=	0.02 MILES
		TOTAL CARRIED TO GENERAL SUMMARY	=	**0.02 MILES**
	ITEM 642 - EDGE LINE			
33	STA. 550+95.00 LT TO STA. 553+00.00 LT		=	205.00 FT.
34	STA. 551+45.00 RT TO STA. 553+55.00 RT		=	210.00 FT.
35	SUM LINES 33 TO 34 =		=	415.00 FT.
36	LINE 35 415.00 FT. / 5280 FT. / MILE		=	0.08 MILES
		TOTAL CARRIED TO GENERAL SUMMARY	=	**0.08 MILES**
	ITEM 606 - GUARD RAIL, MGS			
37	STA. 550+50.00 LT TO STA. 550+62.50 LT ON RADIUS		=	18.75 FT.
38	STA. 550+75.00 LT TO STA. 554+00.00 LT		=	325.00 FT.
39	SUM LINES 37 TO 38 =		=	343.75 FT.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**343.75 FT.**
	ITEM 606 - ANCHOR ASSEMBLY, TYPE E			
40	STA. 554+00.00 LT TO STA. 554+50.00 LT	**TOTAL CARRIED TO GENERAL SUMMARY**	=	**1 EA.**
	ITEM 606 - ANCHOR ASSEMBLY, TYPE T			
41	STA. 550+62.50 LT TO STA. 550+75.00 LT	**TOTAL CARRIED TO GENERAL SUMMARY**	=	**1 EA.**
	ITEM 605 - AGGREGATE DRAINS			
42	STA. 551+95.00 RT		=	14.00 FT.
43	STA. 552+20.00 RT		=	14.00 FT.
44	STA. 552+45.00 RT		=	14.00 FT.
45	SUM LINES 42 TO 44 =		=	42.00 FT.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**42 FT.**
	ITEM 611 - 12" CONDUIT, TYPE D, 707.01 OR 707.02			
46	STA. 554+00.00 RT TO STA. 554+50.00 RT		=	54.00 FT.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**54 FT.**
	ITEM 601 - ROCK CHANNEL PROTECTION, TYPE C WITH FILTER			
47	STA. 553+95.00 RT TO STA. 554+0.00 RT = (5 FT. X 4 FT. X 1.5 FT) / 27		=	1.11 CU. YD.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**2 CU. YD.**
	ITEM 670 - DITCH EROSION PROTECTION MAT, TYPE A			
48	STA. 551+50.00 LT TO STA. 551+75.00 LT = (27 FT. X 7.5 FT.)		=	202.50 SQ. FT.
49	STA. 552+25.00 RT TO STA. 552+36.00 RT = (16 FT. X 7.5 FT.)		=	120.00 SQ. FT.
50	SUM LINES 48 TO 49 =		=	322.50 SQ. FT.
51	LINE 50 322.50 FT. / 9		=	35.83 SQ. YD.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**36 SQ. YD.**
	ITEM 836 - SEEDING AND EROSION CONTROL WITH TURF REINFORCING MAT, TYPE 1			
52	STA. 551+75.00 LT TO STA. 551+93.00 LT = (24 FT. X 7.5 FT.)		=	180.00 SQ. FT.
53	STA. 552+27.00 LT TO STA. 552+50.00 LT = (23 FT. X 7.5 FT.)		=	172.50 SQ. FT.
54	STA. 552+53.00 RT TO STA. 552+75.00 RT = (20 FT. X 7.5 FT.)		=	150.00 SQ. FT.
55	SUM LINES 52 TO 54 = 502.50 FT. / 9		=	55.83 SQ. YD.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**56 SQ. YD.**
	ITEM 621 - RPM, LOW PROFILE, YELLOW/YELLOW			
56	LINE 31 (95.00 FT. / 80 FT.) + 1		=	2.00 EA.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**2 EA.**
	ITEM 621 - RAISED PAVEMENT MARKER REMOVED			
57	LINE 31 (95.00 FT. / 80 FT.) + 1		=	2.00 EA.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**2 EA.**
	ITEM 626 - BARRIER REFLECTORS - TYPE A2			
58	LINE 39 343.75 FT. + 50 FT. + 12.5 FT.		=	406.25 FT.
59	LINE 58 406.25 FT. / 50 FT. + 1		=	9.13 EA.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**10 EA.**

CALCULATED MAF
CHECKED TJF

CALCULATIONS

HUR-99-10.46

LINE	DESCRIPTION	CALCULATION		QUANTITY
	ITEM 659 SEEDING AND MULCHING			
1	TOTAL SEEDING FROM SHEET 20 AND 21		=	3412.00 SQ. YD.
2	DEDUCT EROSTION CONTROL MATS		=	36.00 SQ. YD.
3	LINE 1 LINE 2		=	3376.00 SQ. YD.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**3376 SQ. YD.**
	ITEM 659 COMMERCIAL FERTILIZER			
4	LINE 1, (3412 SQ. YD. X 9) / 1000 X (30 / 2000)		=	0.47 TON
		TOTAL CARRIED TO GENERAL SUMMARY	=	**0.50 TON**
	ITEM 659 WATER			
5	LINE 1, (3412 SQ. YD. X 9) / 1000 X (300 X (2 / 1000)		=	18.42 MGAL
		TOTAL CARRIED TO GENERAL SUMMARY	=	**19 MGAL**
	ITEM 659 TOPSOIL			
6	LINE 1, (3412 SQ. YD. X (111 CU. YD. / 1000 YD.)		=	378.73 CU. YD.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**379 CU. YD.**
	ITEM 659 REPAIR SEEDING AND MULCHING			
7	LINE 3, 3376 SQ. YD. X 5 %		=	168.80 SQ. YD.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**169 SQ. YD.**
	ITEM 659 LIME			
8	LINE 1, (3412 SQ. YD. X 9) / 43560		=	0.71 ACRE
		TOTAL CARRIED TO GENERAL SUMMARY	=	**0.71 ACRE**
	ITEM 659 SOIL ANALYSIS TEST			
9	LINE 6 (378.73 CU. YD. X 1 TEST / 10000 CU. YD. TOPSOIL		=	0.04 EA.
10	MINIMUM REQUIRED		=	2 EA.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**2 EA.**
	ITEM 659 INTER-SEEDING			
11	LINE 3, 3376 SQ. YD. X 5 %		=	168.80 SQ. YD.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**169 SQ. YD.**

CALCULATED MAF
CHECKED TJF

CALCULATIONS - EROSION CONTROL

HUR-99-10.46

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33

LINE	DESCRIPTION	CALCULATION		QUANTITY
	ITEM 601 - RIPRAP, TYPE D, AS PER PLAN			
1	STA. 19+15.57 TO STA. 19+47.56	= 32 FT. LONG X 15.50 FT. WIDE	=	495.85 SQ. FT.
2	LINE 1,	495.85 SQ. FT. / 9	=	55.09 SQ. YD.
3	STA. 20+62.57 TO STA. 20+68.32	= 5.75 FT. LONG X 15.50 FT. WIDE	=	89.13 SQ. FT.
4	LINE 2,	89.13 SQ. FT. / 9	=	9.90 SQ. YD.
5	SUM LINES 2 AND 4	=	=	64.99 SQ. YD.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**65 SQ. YD.**
	ITEM 601 - ROCK CHANNEL PROTECTION, TYPE A WITH AGGREGATE FILTER			
6	STA. 18+90.00 TO STA. 19+47.57	= 57.57 FT. LONG X 35 FT. WIDE	=	2014.95 SQ. FT.
7	DEDUCT AREA OF RIPRAP LINE 1 (SEE ABOVE)		=	-495.85 SQ. FT.
8	SUM LINES 6 AND 7	=	=	1519.10 SQ. FT.
9	LINE 8	1519.10 SQ. FT. X 4.0 FT DEEP) / 27	=	225.05 CU. YD.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**226 CU. YD.**
	ITEM 601 - ROCK CHANNEL PROTECTION, TYPE B WITH AGGREGATE FILTER			
10	STA. 20+68.32 TO STA. 21+00.32	= (32 FT. LONG X 7 FT. WIDE X 2.5 FT DEEP) + (2 X 32 FT. LONG X 5.5 FT. WIDE X 1.12 X 2.5 FT DEEP) / 27	=	57.24 CU. YD.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**58 CU. YD.**
	ITEM 602 - CONCRETE MASONRY, AS PER PLAN (CULVERT)			
11	STA. 19+47.56 (INLET)	= 4.4 CU. YD. + 1.0 CU. YD.	=	5.40 CU. YD.
12	STA. 20+61.57 (OUTLET)	= 4.4 CU. YD. + 1.0 CU. YD.	=	5.40 CU. YD.
13	SUM LINES 11 TO 12	=	=	10.80 CU. YD.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**10.80 CU. YD.**
	ITEM 602 - CONCRETE MASONARY		=	0.21 CU. YD.
14	STA. 554+00.00 RT	**TOTAL CARRIED TO GENERAL SUMMARY**	=	**0.21 CU. YD.**
	ITEM 611 - 84" CONDUIT, TYPE A 706.02 OR 96" CONDUIT, TYPE A, 707.02 ALUMINUM COATED, (0.138), FIELD PAVED PER ITEM 611.11, AS PER PLAN			
15	STA. 19+47.57 TO STA. 20+62.57	=	=	115.00 FT.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**115 FT.**
	ITEM 202 - PIPE REMOVED, OVER 24", AS PER PLAN			
16	STA. 552+16.00 LT TO STA. 552+43.00 RT		=	100.00 FT.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**100 FT.**
	ITEM 202 - HEADWALL REMOVED			
17	STA. 19+52.00 CT		=	1.00 EA.
18	STA. 20+53.00 CT		=	1.00 EA.
		TOTAL CARRIED TO GENERAL SUMMARY	=	**2 EA.**

CALCULATED MAF
CHECKED TJF

CALCULATIONS - CULVERT

HUR-99-10.46

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GUARDRAIL LEGEND

(T) ANCHOR ASSEMBLY, TYPE T (12.5')

(E) ANCHOR ASSEMBLY, TYPE E (50')

LEGEND

CONSTRUCTION LIMITS

PLANING AND RESURFACING (1¼" THICK)

PAVEMENT MARKING LEGEND

(A) 642, CENTER LINE: DOUBLE, SOLID

(B) 642, EDGE LINE

621, RPM, YELLOW/YELLOW (80')

CROSS REFERENCES	
3	TYPICAL SECTIONS
10-13	CALCULATIONS
15-20	CROSS SECTIONS
21-27	CULVERT DETAIL

℄ CONST. STATE ROUTE 99 CURVE DATA

P.I.= Sta. 555+21.00
Δ = 27° 54' 20" (RT)
Dc = 5° 00' 00"
R = 1,145.92'
Ls = 300.00'
θs = 7° 30' 00"
LT = 200.18'
ST = 100.16'
x = 299.49'
y = 13.07'
k = 149.91'
p = 3.27'
Δc = 12° 54' 20" (RT)
Lc = 258.11'
Ts = 435.43'
Es = 38.21'
C = 257.57'
C1=C2 = 299.77'
C.B.1 = N 2° 25' 52" E
C.B. = N 13° 53' 04" E
C.B.2 = S 25° 20' 15" W

DRAINAGE LEGEND

DITCH EROSION PROTECTION MAT, TYPE A (670)

SEEDING AND EROSION CONTROL WITH TURF REINFORCING MAT, TYPE 1 (836)

BEGIN WORK STA. 549+95

BEGIN PROJECT STA. 551+95

END PROJECT STA. 552+60

END WORK STA. 555+15

POT Sta. 549+79.67

B.M. #1

B.M. #2

EX. EROSION CONTROL

EX. 7' (HIGH)x 6' (WIDE) CULVERT (DO NOT DISTURB)

48" ROCK

LIMESTONE DR.

MEET EXISTING

℄ R/W STATE ROUTE 99

℄ R/W RR CSX TRANS. INC.

N 17°40'51" E

℄ R/W SAND HILL RD.

N 42°26'40" W

℄ CONST. STATE ROUTE 99

5:1 (TYP.)

SAW CUT

ASPHALT

TO BE RELOCATED BY OTHERS

PAVEMENT SAWCUT 11'± FROM ℄ CONST. (TYP.)

3'x5' 12" CONC. RUBBLE

4'x2' CONC. RUBBLE

54' - PROP 12" TYPE D, 707.01 OR 707.01 @ 6.4%

EX. 12" CMP

MASONRY COLLAR AS PER DM-1.1

ROCK CHANNEL PROTECTION TYPE C WITH FILTER

GRASS & GRAVEL DR.

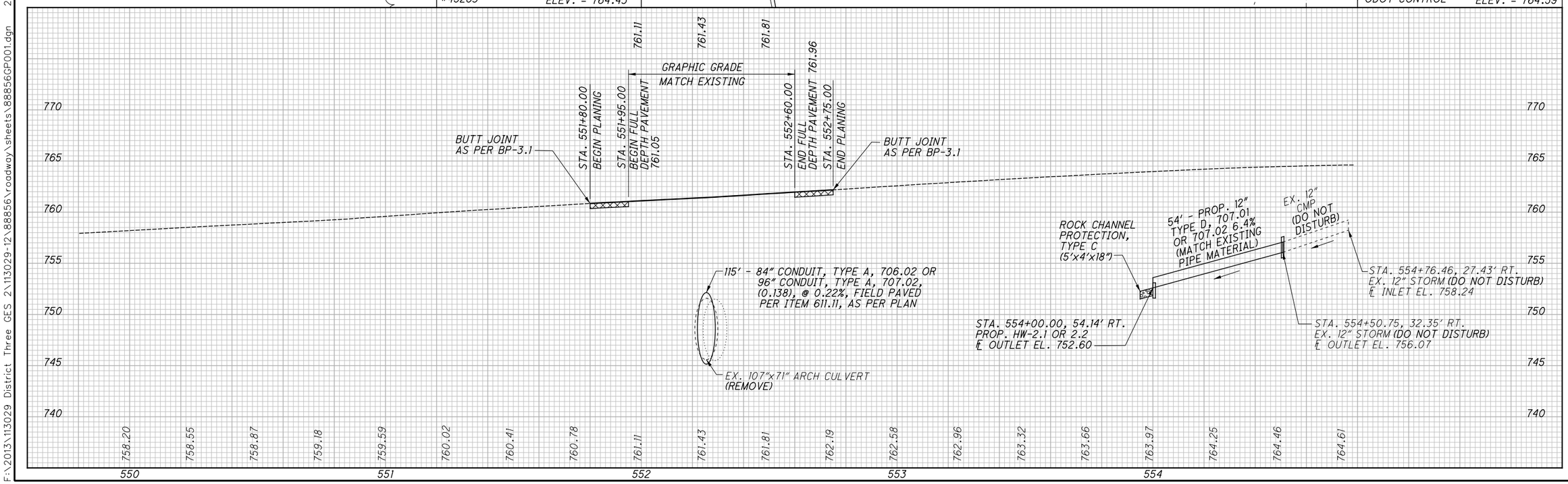
6"x8" WOOD

RR TIE

STA. 552+25.44 ℄ CONST. STATE ROUTE 99
STA. 20+00.00 ℄ CULVERT

B.M. #1: STA. 551+36.47, 63.54' LT.
℄ CONST. STATE ROUTE 99
BOAT SPIKE IN POWER POLE #45263 ELEV. = 764.43

B.M. #2: STA. 555+64.98, 26.41' LT.
℄ CONST. STATE ROUTE 99
¾" IRON PIN WITH 3" ALUMINUM ODOT CONTROL CAP STAMPED "ODOT CONTROL" ELEV. = 764.59



HORIZONTAL SCALE IN FEET (0, 10, 20, 40)

CALCULATED MAF | CHECKED PRS

PLAN AND PROFILE

STA. 549+00 TO STA. 554+50

HUR-99-10.46

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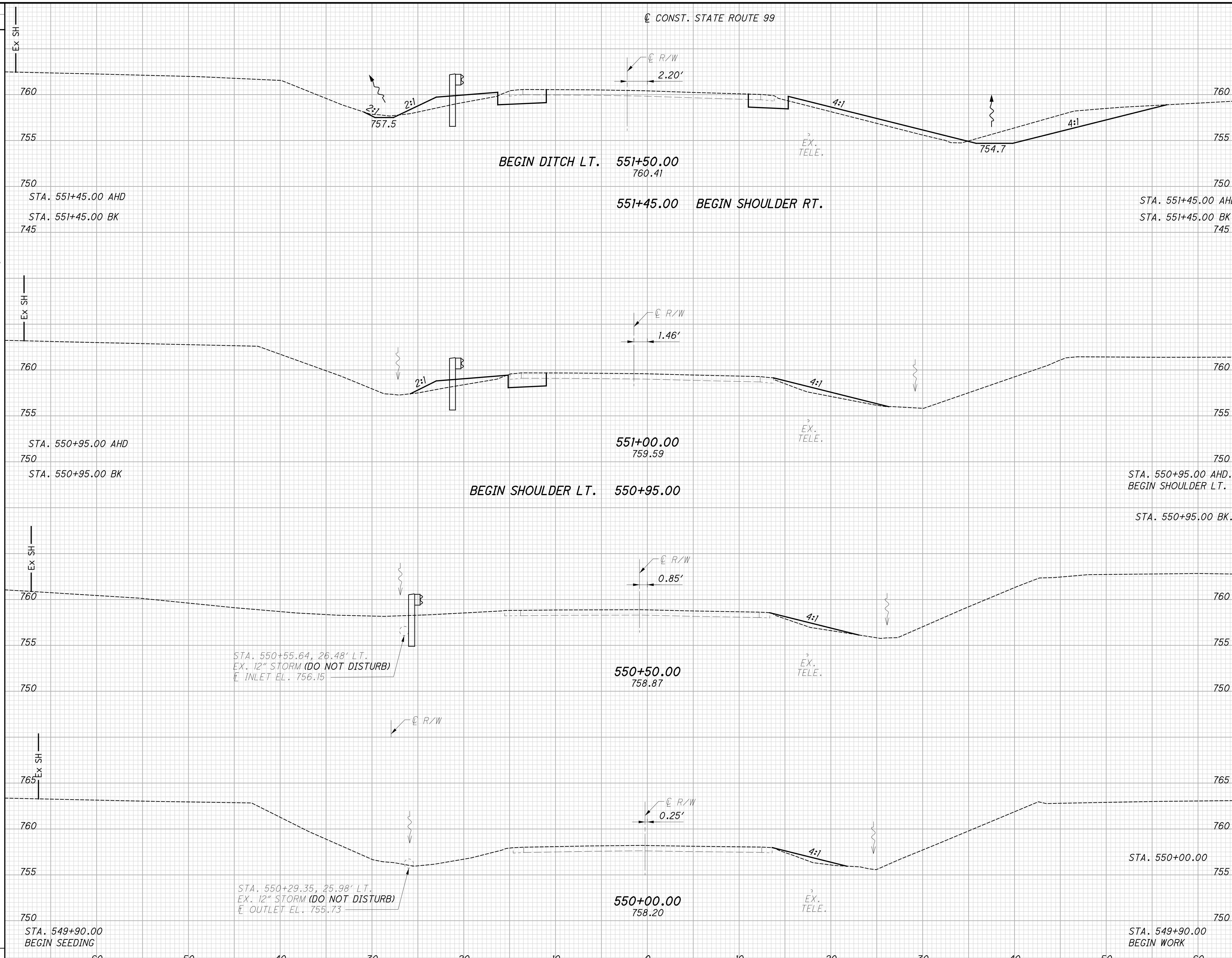

SEEDING END WIDTH	SEEDING SQ. YDS.
65	
	37
65	
61	
	228
30	
	17
30	
15	
	68
12	
	64
11	
	7
0	
·	421

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
40	18		
		8	4
40	18		
34	16		
		35	23
7	11		
		2	3
7	11		
0	5		
		0	7
0	3		
		0	6
0	3		
		0	1
0	0		
·	·	45	44

CALCULATED MAF
CHECKED TJF

CROSS SECTIONS
STA. 550+00 TO STA. 551+50

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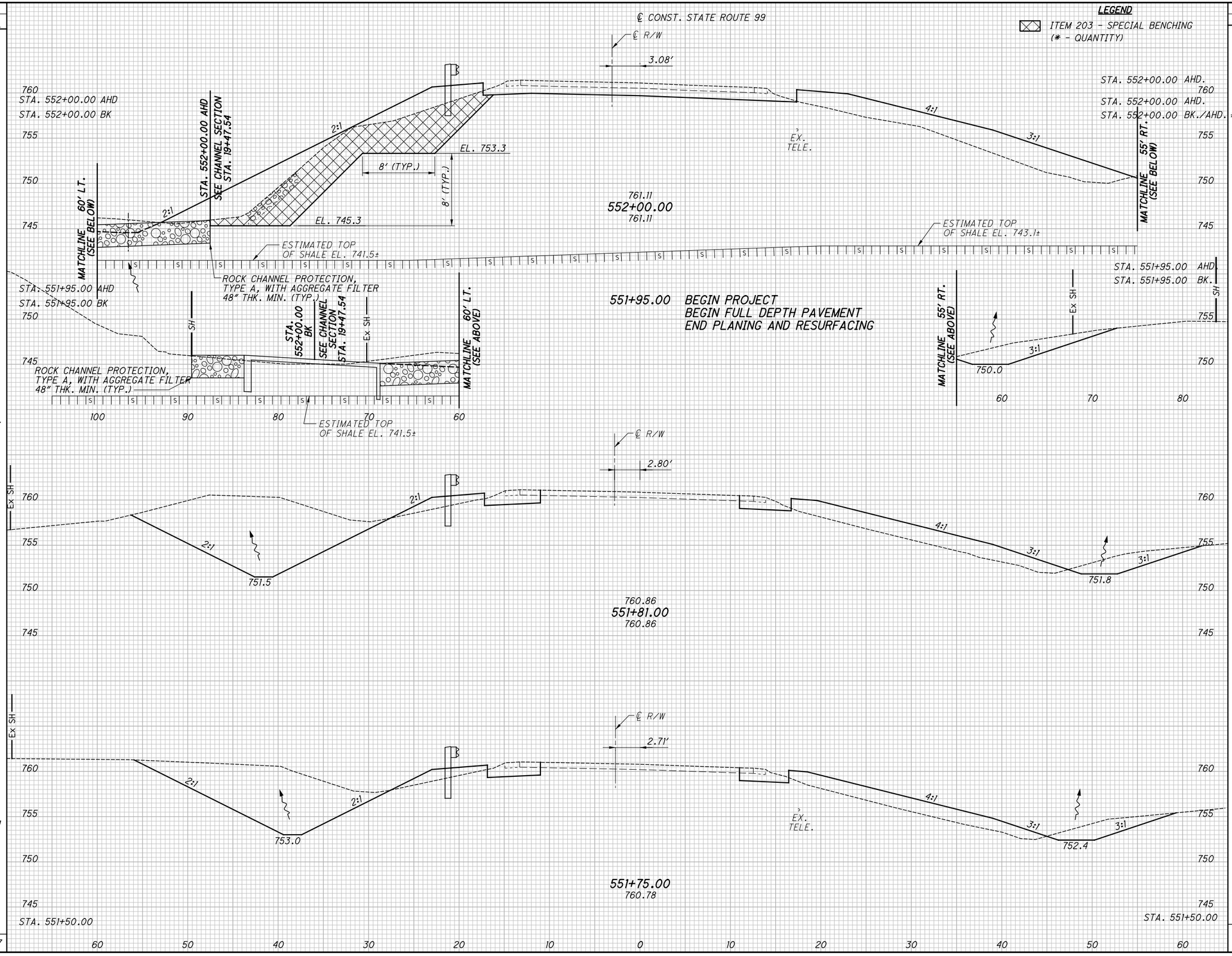

SEEDING END WIDTH	SEEDING SQ. YDS.
98	
127	
	65
104	
104	
	157
97	
	64
94	
	221
65	
·	507

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
68	132		
86	138		
*107	*107		
		15	26
68	138		
32	138		
		*38	*38
		52	51
168	57		
*0	*0		
		34	12
135	48		
		82	31
40	18		
·	·	183	120
		*38	*38

CALCULATED MAF
CHECKED TJF

CROSS SECTIONS
STA. 551+75 TO STA. 552+00

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16
33

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SEEDING END WIDTH	SEEDING SQ. YDS.
	94
	94
	113
	109
	95
	277
	104
	100
	275
	98
·	665

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
28	139		
59	139		
		20	55
45	154		
53	138		
*211	*211		
53	139		
*211	*211		
		55	129
		*205	*205
		64	130
		*157	*157
68	132		
*107	*107		
·	·	139	314
		*362	*362

CALCULATED MAF
CHECKED TJF

CROSS SECTIONS
STA. 552+25 TO STA. 552+50

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17
33

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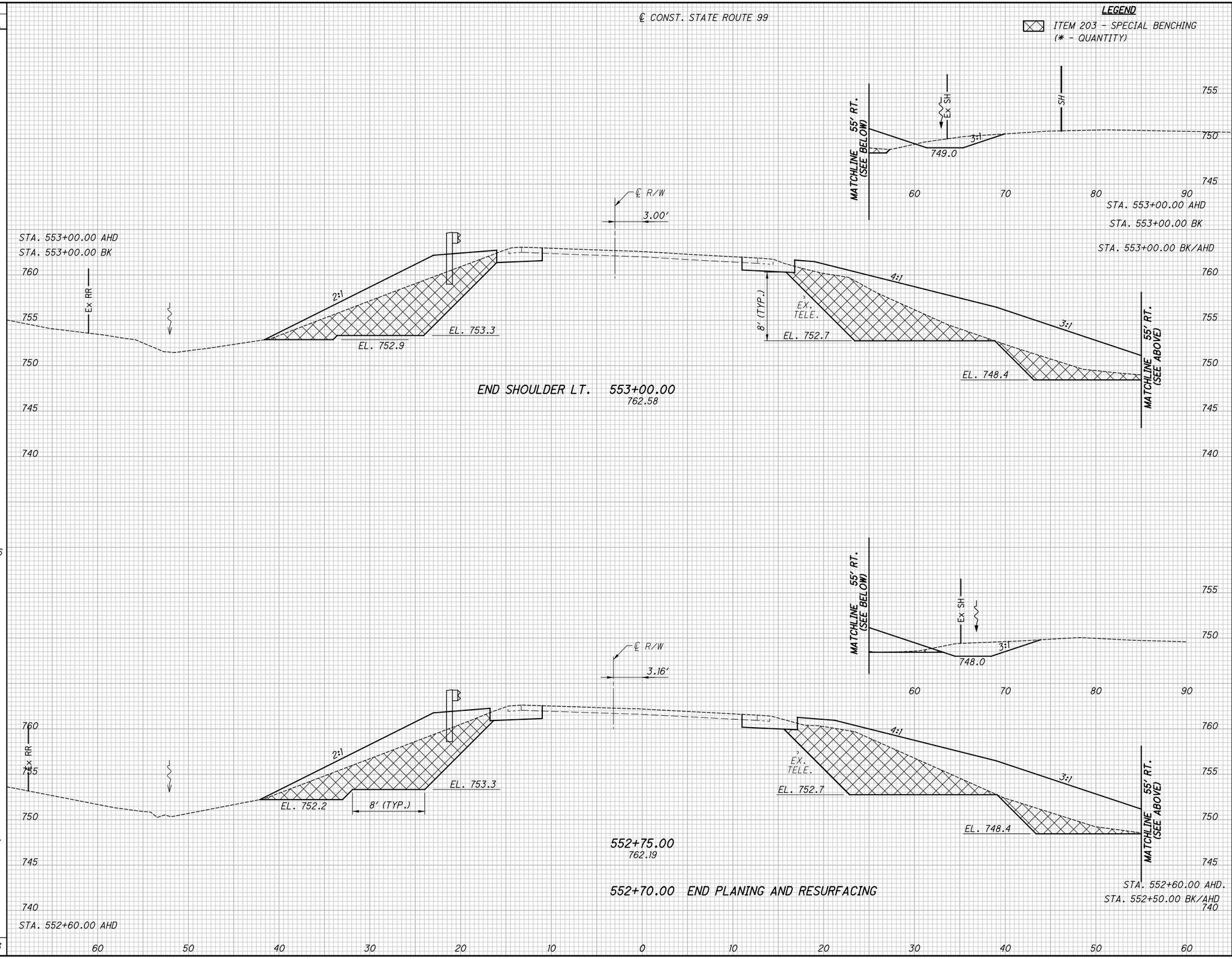
SEEDING END WIDTH	SEEDING SQ. YDS.
90	
90	
	256
94	
	157
94	
·	413



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
12	145		
22	141		
*179	*179		
		24	130
		*169	*169
28	139		
*184	*184		
		16	78
		*183	*183
28	139		
*211	*211		
		40	208
		*352	*352
·	·		

CALCULATED MAF
CHECKED TJF

CROSS SECTIONS
STA. 552+75 TO STA. 553+00

HUR-99-10.46

18
33

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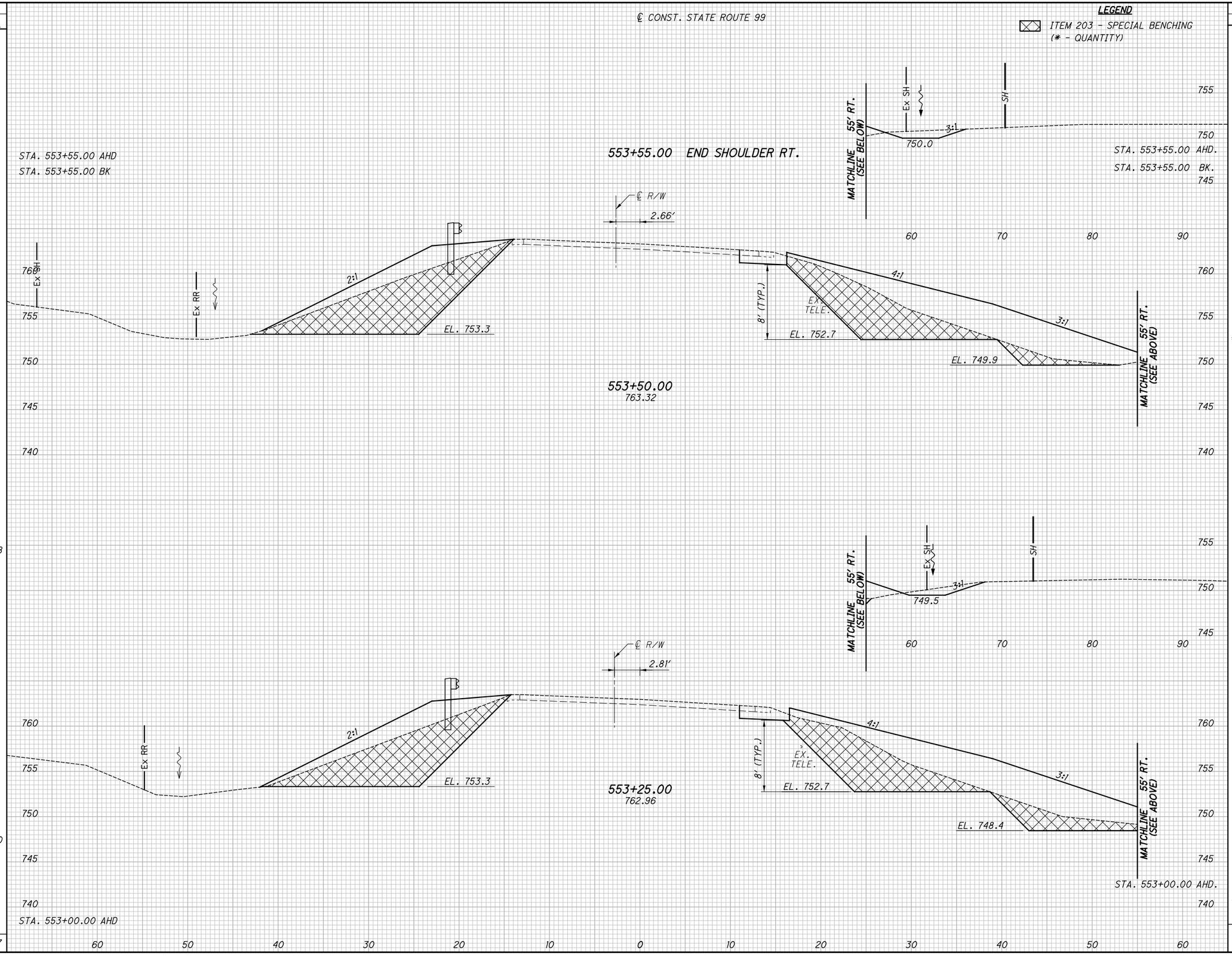

SEEDING END WIDTH	SEEDING SQ. YDS.
76	
88	49
88	
90	248
90	250
90	
·	547

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
6	94		
13	136		
13	136	3	26
*180	*180		
		13	131
		*168	*168
13	145		
*181	*181		
		12	135
		*167	*167
12	145		
*179	*179		
·	·	28	292
		*335	*335

CALCULATED MAF
CHECKED TJF

CROSS SECTIONS
STA. 553+25 TO STA. 553+50

HUR-99-10.46

19
33

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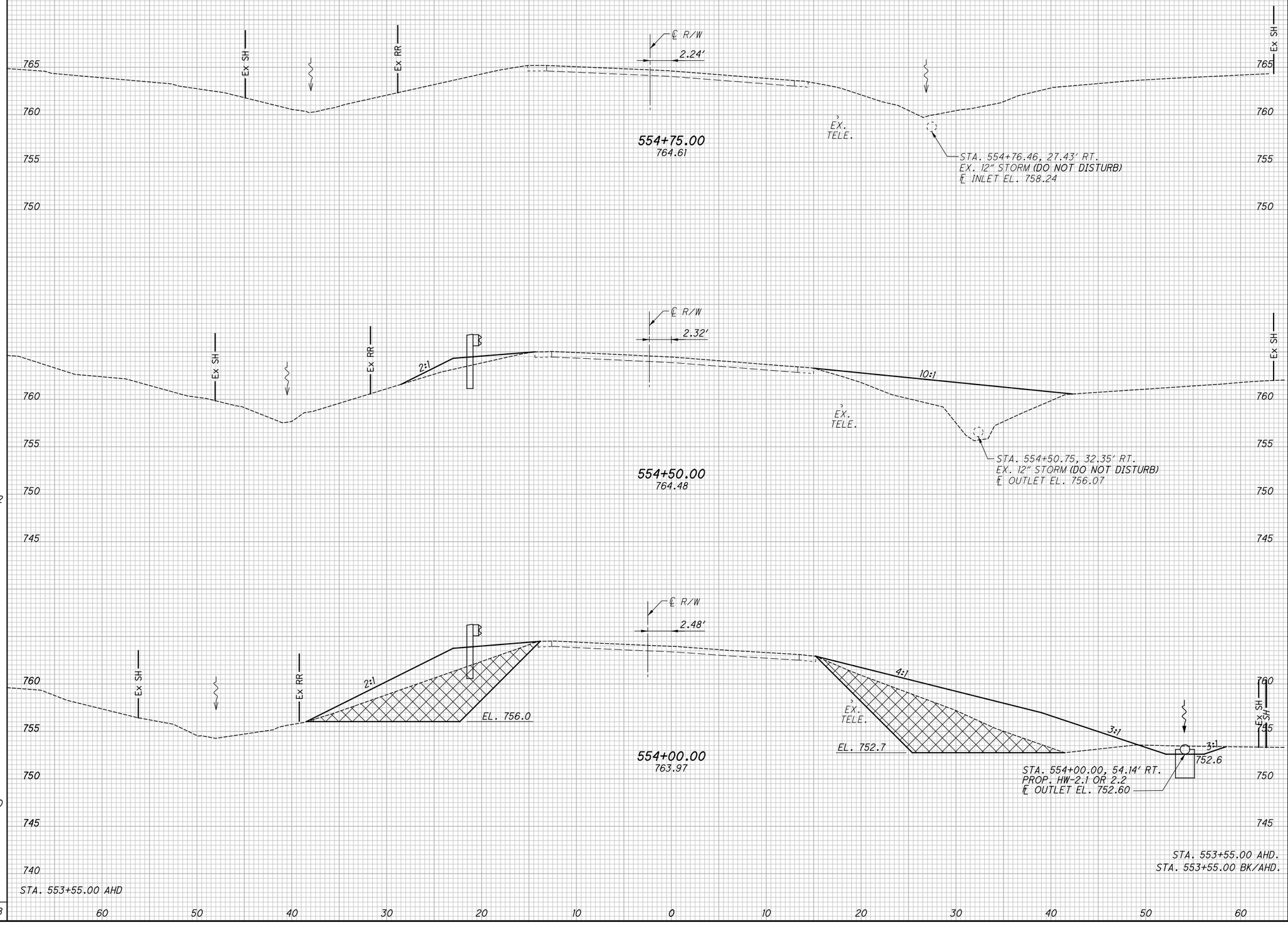
SEEDING END WIDTH	SEEDING SQ. YDS.
	3341
0	
	66
47	
	342
76	
	380
76	
.	788

SEEDING TOTAL CARRIED TO EROSION CONTROL CALCULATION SHEET 12

LEGEND

ITEM 203 - SPECIAL BENCHING
(* - QUANTITY)

EARTHWORK TOTALS CARRIED TO GENERAL SUMMARY SHEET 8



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
		451	1321
		*1527	*1527
0	0		
		0	33
0	71		
*0	*0		
6	94	6	153
*147	*147	*137	*137
		10	157
		*303	*303
6	94		
*180	*180		
.	.	16	343
		*440	*440

CALCULATED MAF
CHECKED TJF

CROSS SECTIONS
STA. 554+00 TO STA. 554+75

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20
33

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DRAINAGE LEGEND

SEEDING AND EROSION CONTROL WITH TURF REINFORCING MAT, TYPE A

SEEDING AND EROSION CONTROL WITH TURF REINFORCING MAT, TYPE 1

℄ CULVERT DETAIL

STA. 19+19.27

LEGEND

CONSTRUCTION LIMITS

PLANING AND RESURFACING (1¼" THICK)

HYDRAULIC DATA

DRAINAGE AREA = 832 ACRES	
Q_{25} = 333 cfs	V_{25} = 11.8 ft/s
Q_{100} = 445 cfs	V_{100} = 13.6 ft/s
EX. HW_{25} = 752.7	EX. HW_{100} = 754.9
HW_{25} = 753.2	HW_{100} = 754.7
PH = 7.5-8.5	
DESIGN SERVICE LIFE = 75 YEARS	

ESTIMATED QUANTITIES

ITEM	QUANTITY	UNIT	DESCRIPTION
202	100	FT	PIPE REMOVED, OVER 24", AS PER PLAN
202	2	EACH	HEADWALL REMOVED
601	65	SQ YD	RIPRAP, TYPE D, AS PER PLAN
601	226	CU YD	ROCK CHANNEL PROTECTION, TYPE A WITH AGGREGATE FILTER
601	53	CU YD	ROCK CHANNEL PROTECTION, TYPE B WITH AGGREGATE FILTER
602	10.80	CU YD	CONCRETE MASONRY, AS PER PLAN
611	115	FT	84" CONDUIT, TYPE A, 706.02 OR 96" CONDUIT, TYPE A, 707.02, (0.138), FIELD PAVED PER ITEM 611.11, AS PER PLAN

STA. 552+25.44 ℄ CONST. STATE ROUTE 99 = STA. 20+00.00 ℄ CULVERT

ROCK CHANNEL PROTECTION, TYPE A, WITH AGGREGATE FILTER (48" THK.)

RIPRAP, TYPE D, AS PER PLAN

EX. 7' (HIGH) x6' (WIDE) CULVERT (DO NOT DISTURB)

EX. EROSION PROTECTION

EX. EROSION PROTECTION

℄ CONST. STATE ROUTE 99

℄ R/W STATE ROUTE 99

R = 1552

552

EX. 107"x71" CMP (REMOVE)

15° R.F.

115' - 84" CONDUIT, TYPE A, 706.02 OR 96" CONDUIT, TYPE A, 707.02, (0.138), @ 0.22%, FIELD PAVED PER ITEM 611.11, AS PER PLAN

RIPRAP, TYPE D, AS PER PLAN

ROCK CHANNEL PROTECTION, TYPE B, WITH AGGREGATE FILTER (32' x 18' x 30" THK.)

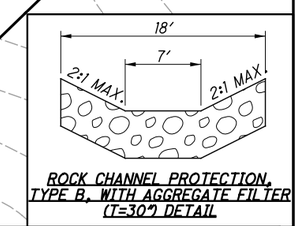
℄ CHANNEL

0.1'DEPTH EL. 746.11

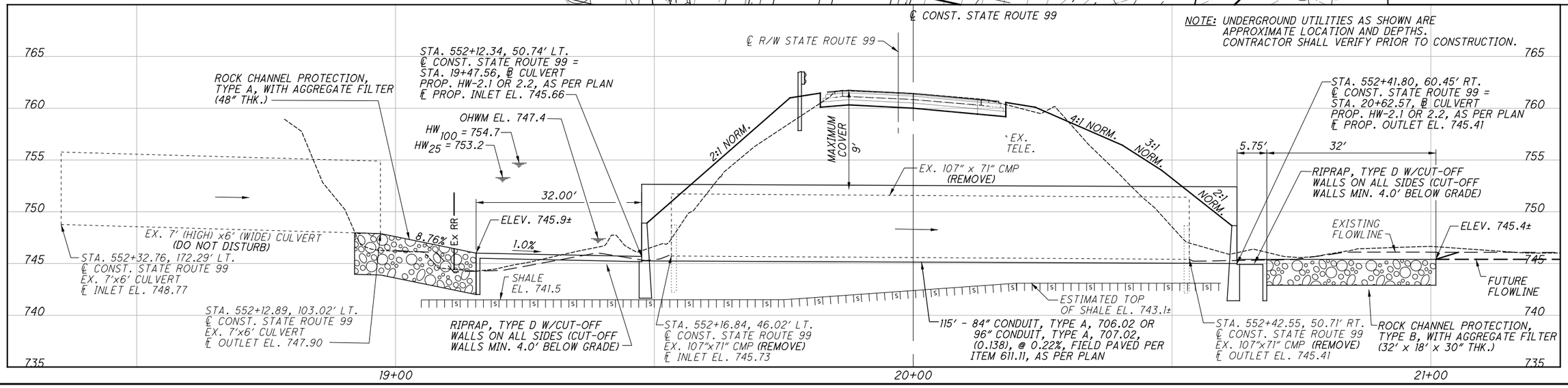
0.3'DEPTH EL. 745.86

1.0'DEPTH EL. 745.38

Sta. 1550+77.42



ROCK CHANNEL PROTECTION, TYPE B, WITH AGGREGATE FILTER (T=30") DETAIL



HORIZONTAL SCALE IN FEET

CALCULATED MAF

CHECKED PRS

CULVERT DETAIL STA. 552+25.44

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33

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SEEDING	
END WIDTH	SQ. YDS.
4	5
4	5
4	
.	10

℄ CHANNEL

760 / 755 / 750 / 745 / 740 / 735

SH

2.2:1 — 50:1 — 50:1 — 2.2:1

ROCK CHANNEL PROTECTION,
TYPE A, WITH AGGREGATE FILTER
48" THK. MIN. (TYP.)

746.88
19+10.00
744.49

755 / 750 / 745 / 740

10'

3:1 — 3.3:1

EX. EROSION CONTROL

ROCK CHANNEL PROTECTION,
TYPE A, WITH AGGREGATE FILTER
48" THK. MIN. (TYP.)

747.73
19+00.00
746.20

755 / 750 / 745 / 740

EX. 7' (HIGH) x
6' (WIDE) CULVERT
(DO NOT DISTURB)

STA. 552+12.89, 103.02' LT.
℄ CONST. STATE ROUTE 99
STA. 18+93.24 @ CHANNEL
EX. 7'x6' CULVERT
℄ OUTLET EL. 747.90

ROCK CHANNEL PROTECTION,
TYPE A, WITH AGGREGATE FILTER
48" THK. MIN. (TYP.)

18+90.00 BEGIN ROCK CHANNEL PROTECTION
750.36 BEGIN GRADING

60 50 40 30 20 10 0 10 20 30 40 50 60

END AREA	
CUT	FILL
1	0
0	0
17	0
.	.

VOLUME	
CUT	FILL
1	0
4	0
5	0

CALCULATED MAF
CHECKED PRS

CHANNEL CROSS SECTIONS
STA. 18+90 TO STA. 19+10

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33

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SEEDING END WIDTH	SEEDING SQ. YDS.
4	
	3
0 4	
	5
4	
.	8

℄ CHANNEL

STA. 19+30.00 AHD
SEE ROADWAY SECTION
STA. 552+25.00

STA. 19+30.00 AHD
SEE ROADWAY SECTION
STA. 552+00.00

760
755
750
745
740
735

ES/RR

Ex SH

15.5′
4.25′ 7.0′ 4.25′

1.6:1 50:1 2:1 2:1 50:1

ROCK CHANNEL PROTECTION,
TYPE A, WITH AGGREGATE FILTER
48″ THK. MIN. (TYP.)

ROCK CHANNEL PROTECTION,
TYPE A, WITH AGGREGATE FILTER
48″ THK. MIN. (TYP.)

RIPRAP, TYPE D W/CUT-OFF WALLS ON ALL SIDES
(CUT-OFF WALLS MIN. 4.0′ BELOW GRADE)

746.07
19+30.00
745.60

760
755
750
745
740
735

STA. 19+20.00 AHD
STA. 19+20.00 BK

STA. 19+20.00 AHD
SEE ROADWAY SECTION
STA. 552+25.00

STA. 19+20.00 AHD
SEE ROADWAY SECTION
STA. 552+00.00

STA. 19+20.00 BK
SEE ROADWAY SECTION
STA. 551+81.00

Ex SH

ES/RR

15.5′
4.25′ 7.0′ 4.25′

2.1:1 50:1 50:1 9:1 2.2:1

ROCK CHANNEL PROTECTION,
TYPE A, WITH AGGREGATE FILTER
48″ THK. MIN. (TYP.)

ROCK CHANNEL PROTECTION,
TYPE A, WITH AGGREGATE FILTER
48″ THK. MIN. (TYP.)

RIPRAP, TYPE D W/CUT-OFF WALLS ON ALL SIDES
(CUT-OFF WALLS MIN. 4.0′ BELOW GRADE)

746.31
19+20.00
744.54

STA. 19+10.00

60 50 40 30 20 10 0 10 20 30 40 50 60

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0	4		
		0	3
STA. 19+20.00 AHD 0	12		
STA. 19+20.00 BK 0	12		
		1	3
STA. 19+10.00 1	0		
.	.	1	6

CALCULATED MAF
CHECKED PRS

CHANNEL CROSS SECTIONS
STA. 19+20 TO STA. 19+30

HUR-99-10.46

23
33

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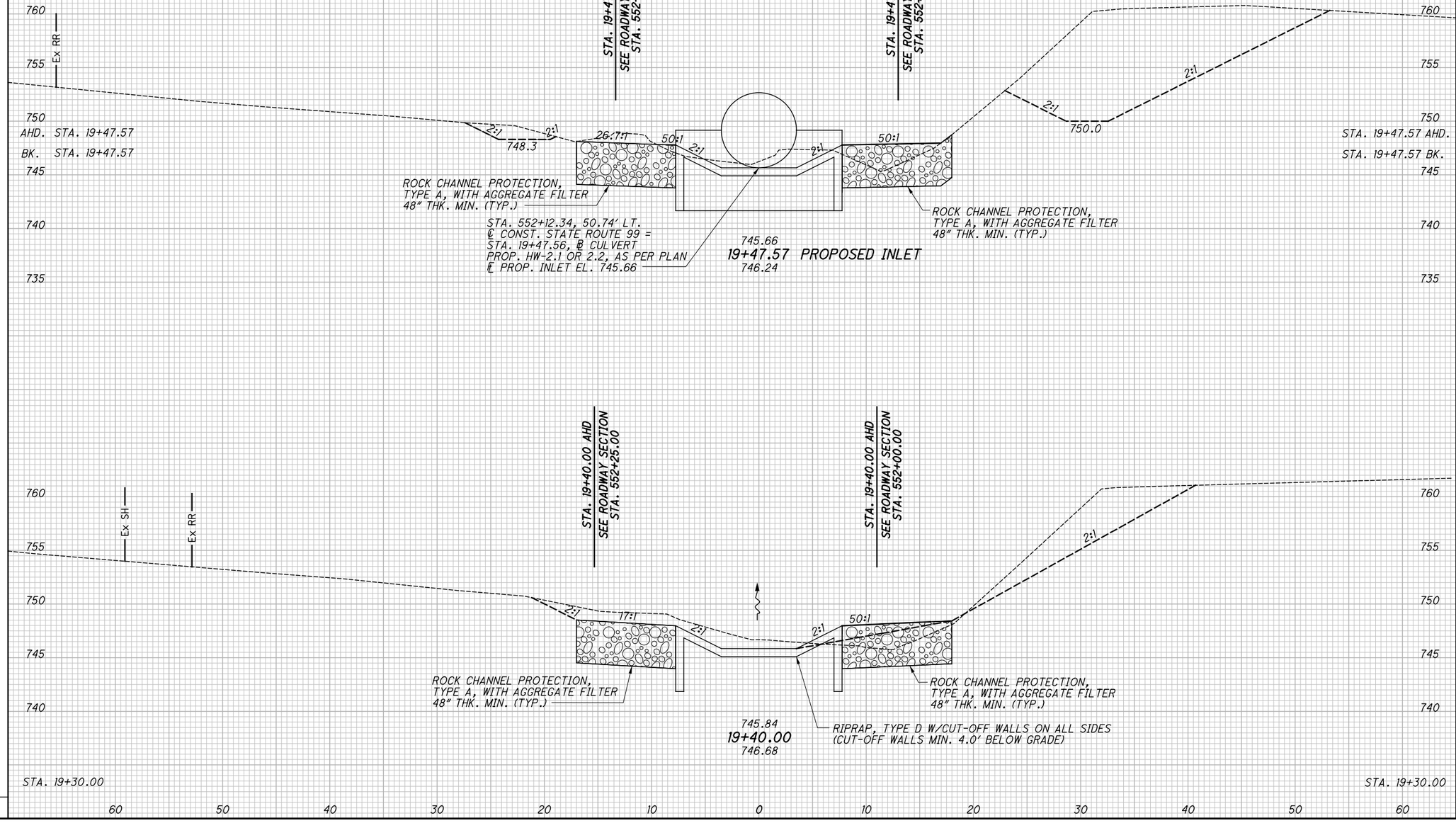
SEEDING	
END WIDTH	SQ. YDS.
0	
0	
0	
3	
4	
.	3

℄ CHANNEL



END AREA		VOLUME	
CUT	FILL	CUT	FILL
0	0		
12	0		
19	1		
0	4		
.	.	9	2
		4	1
		5	1

CALCULATED MAF
CHECKED PRS

CHANNEL CROSS SECTIONS
STA. 19+40 TO STA. 19+47.57

HUR-99-10.46

SEEDING	
END WIDTH	SQ. YDS.
14	
	12
13	
0	
	0
·	12

℄ CHANNEL

STA. 20+70.00 AHD
SEE ROADWAY SECTION
STA. 552+50.00

STA. 20+70.00 AHD
SEE ROADWAY SECTION
STA. 552+25.00

15.5′
4.25′ 7.0′ 4.25′
Ex SH
SH
7:1
2:1
2:1
747.1
745.41
20+70.00
745.88
RIPRAP, TYPE D W/CUT-OFF WALLS ON ALL SIDES
(CUT-OFF WALLS MIN. 4.0′ BELOW GRADE)

STA. 20+62.57 AHD
SEE ROADWAY SECTION
STA. 552+50.00

STA. 20+62.57 AHD
SEE ROADWAY SECTION
STA. 552+25.00

Ex SH
SH
AHD. STA. 20+62.57
BK. STA. 20+62.57
8.9:1
2:1
2:1
2:1
748.0
STA. 552+42.89, 64.34′ RT.
℄ CONST. STATE ROUTE 99 =
STA. 20+66.60, ℄ CULVERT
PROP. HW-2.1 OR 2.2, AS PER PLAN
℄ PROP. OUTLET EL. 745.41
RIPRAP, TYPE D W/CUT-OFF WALLS ON ALL SIDES
(CUT-OFF WALLS MIN. 4.0′ BELOW GRADE)
745.41
20+62.57 PROPOSED OUTLET
746.04

760 755 750 745 740 735

60 50 40 30 20 10 0 10 20 30 40 50 60

END AREA		VOLUME	
CUT	FILL	CUT	FILL
24	0		
		7	0
STA. 20+62.57 AHD.	23	0	
STA. 20+62.57 BK.	0	0	
		0	0
·	·	7	0

CALCULATED MAF
CHECKED PRS

CHANNEL CROSS SECTIONS
STA. 20+62.57 TO STA. 20+70

HUR-99-10.46

25
33

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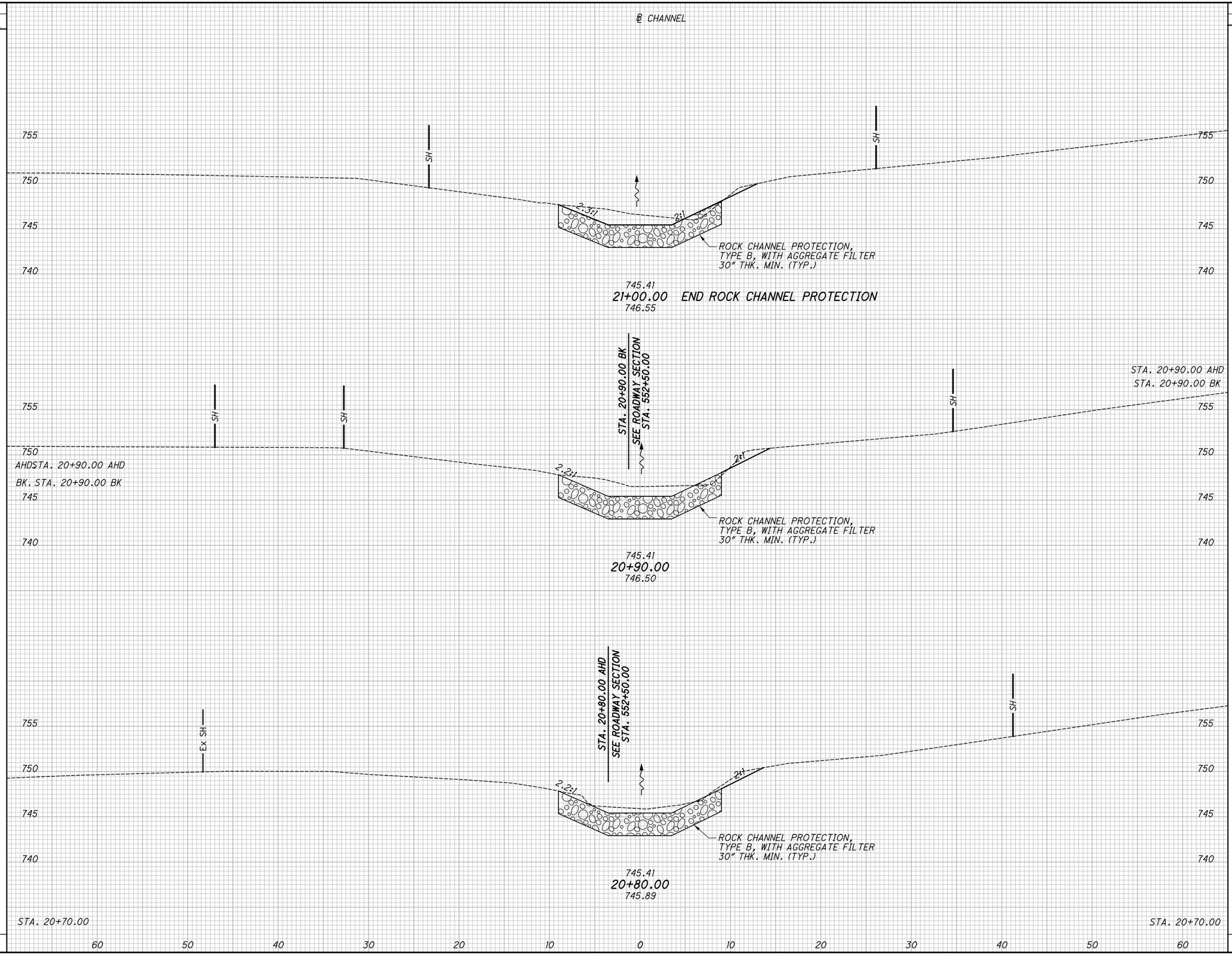
SEEDING END WIDTH	SEEDING SQ. YDS.
9	11
10	8
8	9
8	13
14	
·	33



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
16	0		
		7	1
19	1		
10	1		
		4	1
9	0		
		7	0
24	0		
·	·	18	2

CALCULATED MAF
CHECKED PRS

CHANNEL CROSS SECTIONS STA. 20+80 TO STA. 21+00

HUR-99-10.46

26
33

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℄ CHANNEL

SEEDING TOTAL CARRIED TO EROSION CONTROL CALCULATION SHEET 12

EARTHWORK TOTALS CARRIED TO GENERAL SUMMARY SHEET 8

SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	71			43	10
		0	0		
0					
	5			3	0
9		16	0		
.	5	.	.	3	0

CALCULATED MAF

CHECKED PRS

CHANNEL CROSS SECTIONS
STA. 21+10 TO STA. 21+30

HUR-99-10.46

27
33

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RIGHT OF WAY LEGEND SHEET

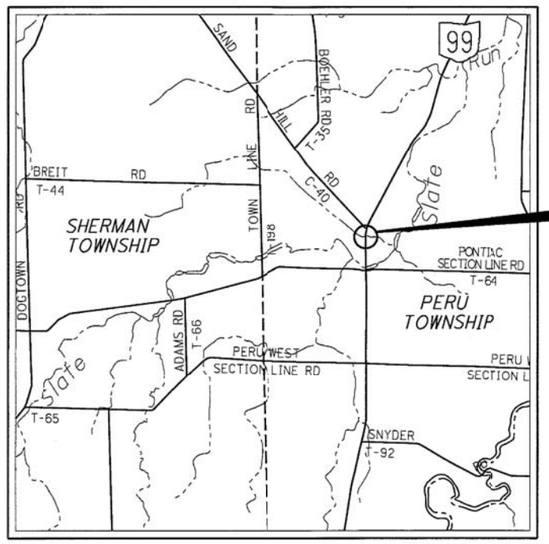
HUR-99-10.46

HURON COUNTY

PERU TOWNSHIP

SECTION 3, TOWNSHIP 3 NORTH, RANGE 23 WEST

PT. LOT 5 & 10 ENOS T. THROOP TRACT



LOCATION MAP

UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT AREA TOGETHER WITH THEIR RESPECTIVE OWNERS:

COMMUNICATIONS

FRONTIER COMMUNICATIONS
83 TOWNSEND AVENUE
NORWALK, OHIO 44857
(440)-744-3613
ATTN.: SCOTT WETZEL

CABLE

TIME WARNER CABLE
1575 LEXINGTON AVENUE
MANSFIELD, OHIO 44901
(419)-756-6091
ATTN.: DAVE ROUSH

ELECTRIC

OHIO EDISON COMPANY
2508 WEST PERKINS AVE.
SANDUSKY, OHIO 44870
(419)-627-6881
ATTN.: JIM ROHRBACHER

NOTES: THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE OBTAINED FROM THE OWNER OF THE UTILITIES AS REQUIRED BY SECTION 153.64 O.R.C.

CONVENTIONAL SYMBOLS

County Line
Township Line
Section Line
Corporation Line or
Fence Line (Ex) (Pr)
Center Line
Right of Way (Ex) Ex R/W
Right of Way (Pr) R/W
Standard Highway Ease.(Ex) Ex SH
Temporary Right of Way TMP
Channel Ease. (Pr) CH
Utility Ease. (Ex) Ex U
Railroad or
Guardrail (Ex) (Pr)
Construction Limits
Edge of Pavement (Ex)
Edge of Pavement (Pr)
Edge of Shoulder (Ex)
Edge of Shoulder (Pr)

Ditch / Creek (Ex)
Ditch / Creek (Pr)
Tree Line (Ex)
Ownership Hook Symbol , Example
Property Line Symbol , Example
Break Line Symbol , Example
Tree (Pr) , Tree (Ex) , Shrub (Ex)
Tree (Remove) , Shrub (Remove)
Evergreen (Ex) , Stump
Evergreen (Remove) , Stump (Remove)
Wetland (Pr) , Grass (Pr) , Aerial Target
Post (Ex) , Mailbox (Ex) MB , Mailbox (Pr) MB
Light (Ex) , Telephone Marker (Ex) TEL
Fire Hydrant (Ex) , Water Meter (Ex) WM
Water Valve (Ex) , Utility Valve Unknown (Ex.)
Telephone Pole (Ex) , Power Pole (Ex)
Light Pole (Ex)

INDEX OF SHEETS:

STRUCTURE KEY

RESIDENTIAL
COMMERCIAL
OUT-BUILDING

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF THE REPLACEMENT OF A STRUCTURALLY DEFICIENT EXISTING 107" X 71" ARCH CULVERT WITH MINIMAL ROADWAY WORK ON EXISTING HORIZONTAL AND VERTICAL ROADWAY ALIGNMENT.

PROJECT LENGTH: 0.02 MILES

PROJECT CONTROL

STATE PLANE GRID NAD 83(2011)
PROJECT ADJUSTMENT FACTOR 1.00008965

PLANS PREPARED BY:

FIRM NAME : RICHLAND ENGINEERING LIMITED
R/W DESIGNER: BRIAN BESECKER
R/W REVIEWER: ROBERT J. MCAULEY
FIELD REVIEWER: BRIAN BESECKER
PRELIMINARY FIELD REVIEW DATE: 11/13/14
TRACINGS FIELD REVIEW DATE: 5/19/15
OWNERSHIP UPDATED BY: BRIAN BESECKER
DATE COMPLETED: 5/18/15
PLAN COMPLETION DATE: 5/20/15

BASIS FOR BEARINGS:

ALL BEARINGS SHOWN ARE FOR PROJECT USE ONLY. BEARINGS WERE TRANSFERRED BY RTK GLOBAL POSITIONING TRAVERSE BY ODOT DISTRICT 3, ORIGINATING ON THE ODOT CORS VRS NETWORK, AND ARE BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM, NAD83(2011) NORTH ZONE.

TYPES OF TITLE LEGEND

SH = STANDARD HIGHWAY EASEMENT
CH = CHANNEL EASEMENT

MONUMENT LEGEND

- PROPOSED R/W MONUMENT BOX
- O I.R.F. IRON PIN FOUND
- ⊙ I.R.F. IRON PIN FOUND W/ ID CAP
- ● I.R.S. IRON PIN SET W/ ID CAP
- • M.N.S. 2" MAG NAIL SET
- ○ 5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"

I, RAYMOND W. FOOS, P. S. HAVE CONDUCTED A SURVEY OF THE EXISTING CONDITIONS FOR THE OHIO DEPARTMENT OF TRANSPORTATION ON DECEMBER 2014. THE RESULTS OF THAT SURVEY ARE CONTAINED HEREIN. THE HORIZONTAL COORDINATES EXPRESSED HEREIN ARE BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM NORTH ZONE ON NAD 83(2011) DATUM. THE PROJECT COORDINATES (US SURVEY FEET) ARE RELATIVE TO STATE PLANE GRID COORDINATES (US SURVEY FEET) BY A PROJECT ADJUSTMENT FACTOR OF 1.00008965. AS A PART OF THIS PROJECT I HAVE ESTABLISHED THE PRIMARY PROJECT CONTROL, THE EXISTING CENTERLINE OF RIGHT OF WAY, AND EXISTING RIGHT OF WAY LINES. ALL OF MY WORK CONTAINED HEREIN WAS CONDUCTED IN ACCORDANCE WITH OHIO ADMINISTRATIVE CODE 4733-37 COMMONLY KNOWN AS "MINIMUM STANDARDS FOR BOUNDARY SURVEYS IN THE STATE OF OHIO" UNLESS NOTED. THE WORDS I AND MY AS USED HEREIN ARE TO MEAN EITHER MYSELF OR SOMEONE WORKING UNDER MY DIRECT SUPERVISION.

RAYMOND W. FOOS
PROFESSIONAL LAND SURVEYOR NO. 7812

DATE:

SURVEYORS SEAL

I, ROBERT J. MCAULEY P. S. HAVE CONDUCTED A SURVEY OF THE EXISTING CONDITIONS FOR THE OHIO DEPARTMENT OF TRANSPORTATION ON JULY 2014. THE RESULTS OF THAT SURVEY ARE CONTAINED HEREIN. THE HORIZONTAL COORDINATES EXPRESSED HEREIN ARE BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM NORTH ZONE ON NAD 83(2011) DATUM. THE PROJECT COORDINATES (US SURVEY FEET) ARE RELATIVE TO STATE PLANE GRID COORDINATES (US SURVEY FEET) BY A PROJECT ADJUSTMENT FACTOR OF 1.00008965. AS A PART OF THIS PROJECT I HAVE REESTABLISHED THE LOCATIONS OF THE EXISTING PROPERTY LINES FOR PROPERTY TAKES CONTAINED HEREIN. AS A PART OF THIS PROJECT I HAVE ESTABLISHED THE PROPOSED PROPERTY LINES, CALCULATED THE GROSS TAKE, PRESENT ROADWAY OCCUPIED (PRO), NET TAKE AND NET RESIDUE; AS WELL AS PREPARED THE LEGAL DESCRIPTIONS NECESSARY TO ACQUIRE THE PARCELS AS SHOWN HEREIN. AS A PART OF THIS WORK I HAVE SET RIGHT OF WAY MONUMENTS AT THE PROPERTY CORNERS, PROPERTY LINE INTERSECTION, POINTS ALONG THE RIGHT OF WAY AND/OR ANGLE POINTS ON THE RIGHT OF WAY, SECTION CORNERS AND OTHER POINTS AS SHOWN HEREIN. ALL OF MY WORK CONTAINED HEREIN WAS CONDUCTED IN ACCORDANCE WITH OHIO ADMINISTRATIVE CODE 4733-37 COMMONLY KNOWN AS "MINIMUM STANDARDS FOR BOUNDARY SURVEYS IN THE STATE OF OHIO" UNLESS NOTED. THE WORDS I AND MY AS USED HEREIN ARE TO MEAN EITHER MYSELF OR SOMEONE WORKING UNDER MY DIRECT SUPERVISION.

ROBERT J. MCAULEY
PROFESSIONAL LAND SURVEYOR NO. 7209

DATE: 20 May 2015

SURVEYORS SEAL

STATE OF OHIO
ROBERT J. McAULEY
7209
REGISTERED
PROFESSIONAL SURVEYOR

FEDERAL PROJECT NO. E130(151)
PID NO. 88856
CALCULATED BB
CHECKED RM

RIGHT OF WAY LEGEND SHEET

HUR-99-10.46

1 / 6

28
33

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MONUMENT LEGEND

- ▣ PROPOSED R/W MONUMENT BOX
- ○I.R.F. IRON PIN FOUND
- ●I.R.S. IRON PIN SET

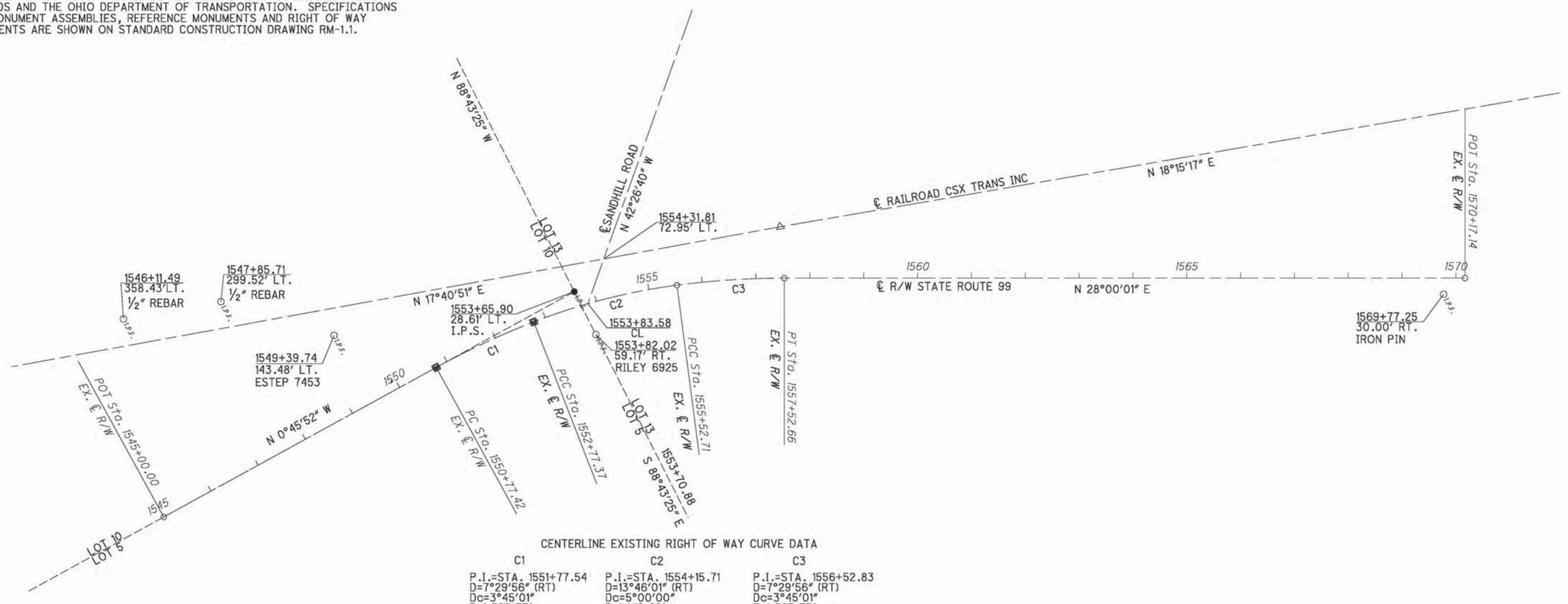
SETTING OF ALL MONUMENTS SHALL BE PERFORMED BY A SURVEYOR REGISTERED IN THE STATE OF OHIO. THE MONUMENT ASSEMBLIES AND REFERENCE MONUMENTS WILL BE INSTALLED BY THE CONTRACTOR AT THE TIME OF CONSTRUCTION. THE IRON PIN AND CAP (WHEN REQUIRED) ARE TO BE INSTALLED BY THE CONTRACTOR'S SURVEYOR.

CHANGES OR ALTERATIONS TO THE LOCATION OF ANY MONUMENTS SHOWN IN THIS TABLE, REQUIRE PRIOR APPROVAL FROM THE DISTRICT REAL ESTATE ADMINISTRATOR OF THE OHIO DEPARTMENT OF TRANSPORTATION. IN THE EVENT THAT CHANGES OR ALTERATIONS ARE APPROVED, A REVISED CENTERLINE PLAT WITH THE NEW LOCATIONS SHALL BE RECORDED IN THE APPLICABLE COUNTY RECORDS AND THE OHIO DEPARTMENT OF TRANSPORTATION. SPECIFICATIONS FOR MONUMENT ASSEMBLIES, REFERENCE MONUMENTS AND RIGHT OF WAY MONUMENTS ARE SHOWN ON STANDARD CONSTRUCTION DRAWING RM-1.1.

HURON COUNTY

PERU TOWNSHIP
SECTION 3, TOWNSHIP 3 NORTH, RANGE 23 WEST
PT. LOT 5 & 10 ENOS T. THROOP TRACT

NOTE: THE EXISTING R/W WIDTH AND LOCATION WERE DETERMINED BY ODOT DISTRICT 3 AND WERE CALCULATED FROM PLAN INFORMATION FOUND IN PLAN HUR-99-(10.35-12.53). SURVEYS TO THE NORTH OF SAND HILL ROAD WERE HELD FOR THE NORTH TANGENT AND CALCULATED THE CURVE INFORMATION TO MATCH THE BRIDGE SOUTH OF THIS PROJECT.



CENTERLINE EXISTING RIGHT OF WAY CURVE DATA

C1	C2	C3
P.I.=STA. 1551+77.54	P.I.=STA. 1554+15.71	P.I.=STA. 1556+52.83
D=7°29'56" (RT)	D=13°46'01" (RT)	D=7°29'56" (RT)
Dc=3°45'01"	Dc=5°00'00"	Dc=3°45'01"
R=1,527.73'	R=1,145.92'	R=1,527.73'
T=100.12'	T=138.34'	T=100.12'
L=199.95'	L=275.34'	L=199.95'
E=3.28'	E=8.32'	E=3.28'
C=199.81'	C=274.68'	C=199.81'
C.B.=N 2°59'06" E	C.B.=N 13°37'04" E	C.B.=N 24°15'03" E

BASIS FOR BEARINGS:

ALL BEARINGS SHOWN ARE FOR PROJECT USE ONLY. BEARINGS WERE TRANSFERRED BY RTK GLOBAL POSITIONING TRAVERSE BY ODOT DISTRICT 3, ORIGINATING ON THE ODOT CORS VRS NETWORK, AND ARE BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM, NAD83(2011) NORTH ZONE.

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RAYMOND W. FOOS
PROFESSIONAL LAND SURVEYOR NO. 7812

DATE:

SURVEYORS SEAL

RECEIVED _____, 20____
RECORDED _____, 20____
BOOK _____ PAGE _____
COUNTY RECORDER

HORIZONTAL SCALE IN FEET: 0, 50, 100, 200

PID NO. 88856

R/W DESIGNER BB
R/W REVIEWER RMC

CENTERLINE PLAT

HUR-99-10.46

2 / 6

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33

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MONUMENT TABLE

℄ of RIGHT OF WAY SR ROUTE 99 PER HUR-99-10.46		PROJECT GROUND COORDINATES PAF = 1.00008965		PROJECT GRID COORDINATES NAD83(2011) DATUM		MONUMENTS TO BE SET DURING CONSTRUCTION		R/W MON. EXPECTED TO BE DISTURBED	
STATION	OFFSET	NORTH (Y) U.S. FT.	EAST (X) U.S. FT.	NORTH (Y) U.S. FT.	EAST (X) U.S. FT	MON. ASSY.	REF. MON.	R/W MON.	DESCRIPTION
PROJECT CONTROL									
1545+88.64	21.22' LT.	553841.7941	1906769.4322	553792.1466	1906598.5056				5/8" REBAR WITH YELLOW PLASTIC CAP STAMPED "ODOT CONTROL"
1549+64.79	153.67' LT.	554216.1389	1906631.9771	554166.4579	1906461.0629				BOAT SPIKE SET
1549+68.67	19.49' LT.	554221.8091	1906766.0949	554172.1276	1906595.1686				5/8" REBAR WITH YELLOW PLASTIC CAP STAMPED "ODOT CONTROL"
1551+17.50	375.79' RT.	554366.0471	1907159.8817	554316.3526	1906988.9201				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1551+30.57	55.05' LT.	554385.1374	1906729.3071	554335.4412	1906558.3841				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1551+32.11	57.29' RT.	554384.2161	1906841.6569	554334.5200	1906670.7239				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1551+40.03	128.13' LT.	554396.9533	1906656.5024	554347.2561	1906485.5860				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1551+49.52	258.86' RT.	554394.1452	1907043.5854	554344.4482	1906872.6343				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1551+54.95	21.97' RT.	554407.5095	1906807.0206	554357.8113	1906636.0907				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1551+64.87	203.91' LT.	554427.1918	1906581.7557	554377.4919	1906410.8460				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1551+81.89	149.17' RT.	554427.0326	1906935.2575	554377.3327	1906764.3161				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1552+39.45	107.94' LT.	554502.6300	1906683.0856	554452.9233	1906512.1668				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1552+87.50	382.06' LT.	554588.5580	1906416.7616	554538.8436	1906245.8667				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1552+91.99	84.33' LT.	554555.8121	1906712.7337	554506.1006	1906541.8122				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1553+25.60	21.50' RT.	554574.6976	1906822.4298	554524.9844	1906651.4985				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1553+43.04	76.69' LT.	554608.6514	1906728.5861	554558.9352	1906557.6632				5/8" REBAR WITH CAP STAMPED "REL TRAVERSE PT"
1554+58.96	138.61' LT.	554746.0221	1906696.6404	554696.2936	1906525.7204				MAG NAIL SET
1554+74.62	24.48' LT.	554730.2777	1906810.9129	554680.5506	1906639.9826				3/4" IRON PIN WITH 3" ALUMINUM CAP STAMPED "ODOT CONTROL"
EXISTING CENTERLINE S.R. 99									
1545+00.00	CL	553753.4442	1906791.8372	553703.8047	1906620.9086				CALPT BY ODOT D-3 POT
1550+77.42	CL	554330.8128	1906784.1329	554281.1215	1906613.2050	1			CALPT BY ODOT D-3 PC - MONUMENT ASSEMBLY SET
1552+77.37	CL	554530.3490	1906794.5376	554480.6398	1906623.6088	1			CALPT BY ODOT D-3 PCC - MONUMENT ASSEMBLY SET
1555+52.71	CL	554797.3046	1906859.2091	554747.5715	1906688.2745				CALPT BY ODOT D-3 PCC
1557+52.66	CL	554979.4803	1906941.2761	554929.7308	1906770.3341				CALPT BY ODOT D-3 PT
1570+17.14	CL	556095.9523	1907534.9201	556046.1028	1907363.9249				CALPT BY ODOT D-3 POT
EXISTING SURVEY MARKERS FOUND									
1546+11.49	358.43' LT.	553860.1396	1906431.9472	553810.4905	1906261.0509				IPIN 1/2" REBAR
1547+85.71	299.52' LT.	554035.1329	1906488.5313	553985.4681	1906317.6299				IPIN 1/2" REBAR
1549+39.74	143.48' LT.	554191.2313	1906642.5032	554141.5525	1906471.5880				IPIN ESTEP7453
1553+82.02	59.17' RT.	554621.3044	1906869.4141	554571.5871	1906698.4786				IPIN RILEY6925
1559+44.99	1440.60' LT.	555825.6254	1905759.5971	555775.8001	1905588.7611				IPIN 1/2" REBAR
1560+61.81	1769.51' LT.	556083.1863	1905524.0333	556033.3379	1905353.2184				IPIN
1569+77.25	30.00' RT.	556046.6469	1907542.6809	555996.8018	1907371.6850				IPIN 5/8" IRON PIN RIELY6925 CAP
PROPOSED SURVEY MARKERS SET									
1550+75.00	70.86' RT.	554329.3384	1906855.0137	554279.6472	1906684.0794				SURVEY MARKER SET - 3/4 INCH IRON BAR WITH 2 INCH DIAMETER ALUMINUM CAP STAMPED "ODOT R/W RICHLAND ENG 7209"
1550+75.00	66.61' LT.	554327.5042	1906717.5581	554277.8132	1906546.6362				SURVEY MARKER SET - 3/4 INCH IRON BAR WITH 2 INCH DIAMETER ALUMINUM CAP STAMPED "ODOT R/W RICHLAND ENG 7209"
1550+75.00	CL	554328.3930	1906784.1653	554278.7019	1906613.2374				MAG NAIL SET
1550+84.12	95.21' LT.	554336.6553	1906688.8510	554286.9634	1906517.9317				SURVEY MARKER SET - 3/4 INCH IRON BAR WITH 2 INCH DIAMETER ALUMINUM CAP STAMPED "ODOT R/W RICHLAND ENG 7209"
1551+40.00	110.00' RT.	554390.3491	1906894.5377	554340.6524	1906723.5999				SURVEY MARKER SET - 3/4 INCH IRON BAR WITH 2 INCH DIAMETER ALUMINUM CAP STAMPED "ODOT R/W RICHLAND ENG 7209"
1551+65.32	69.58' LT.	554421.7602	1906715.9802	554372.0608	1906545.0584				SURVEY MARKER SET - 3/4 INCH IRON BAR WITH 2 INCH DIAMETER ALUMINUM CAP STAMPED "ODOT R/W RICHLAND ENG 7209"
1551+69.16	2.76' LT.	554422.6533	1906782.9075	554372.9538	1906611.9797				MAG NAIL SET
1551+80.00	105.00' RT.	554427.7060	1906891.0556	554378.0060	1906720.1182				SURVEY MARKER SET - 3/4 INCH IRON BAR WITH 2 INCH DIAMETER ALUMINUM CAP STAMPED "ODOT R/W RICHLAND ENG 7209"
1552+00.00	85.00' RT.	554447.6343	1906872.2237	554397.9325	1906701.2879				SURVEY MARKER SET - 3/4 INCH IRON BAR WITH 2 INCH DIAMETER ALUMINUM CAP STAMPED "ODOT R/W RICHLAND ENG 7209"
1553+20.10	19.71' LT.	554575.7237	1906780.8650	554526.0104	1906609.9374				SURVEY MARKER SET - 3/4 INCH IRON BAR WITH 2 INCH DIAMETER ALUMINUM CAP STAMPED "ODOT R/W RICHLAND ENG 7209"
1553+35.00	63.12' RT.	554576.8458	1906864.9602	554527.1324	1906694.0250				SURVEY MARKER SET - 3/4 INCH IRON BAR WITH 2 INCH DIAMETER ALUMINUM CAP STAMPED "ODOT R/W RICHLAND ENG 7209"
1553+65.90	28.61'LT.	554623.3135	1906780.2299	554573.5960	1906609.3074				SURVEY MARKER SET - 3/4 INCH IRON BAR WITH 2 INCH DIAMETER ALUMINUM CAP STAMPED "ODOT R/W RICHLAND ENG 7209"
PROPOSED CENTERLINE OF CONSTRUCTION									
1548+88.65	CL	554142.0572	1906786.6517	554092.3828	1906615.7236				SPI10 549+79.67 CL CONSTRUCTION
1549+94.54	1.29' RT.	554247.9544	1906786.5252	554198.2706	1906615.5971				TS 550+85.57 CL CONSTRUCTION
1552+94.95	2.53' RT.	554547.4562	1906799.2415	554497.7455	1906628.3123				SC 553+85.57 CL CONSTRUCTION
1555+53.53	1.65' RT.	554797.4969	1906861.0480	554747.7638	1906690.1132				CS 556+43.68 CL CONSTRUCTION
1558+53.76	0.67' RT.	555068.4313	1906989.3352	555018.6738	1906818.3890				ST 559+43.68 CL CONSTRUCTION
1563+13.71	0.64' LT.	555475.1531	1907204.1126	555425.3592	1907033.1471				SPI20 564+03.63 CL CONSTRUCTION
					TOTAL	2			

STATIONS AND OFFSETS ARE BASED ON
THE EXISTING CENTERLINE OF RIGHT OF WAY
AS SHOWN ON O.D.O.T PLAN HUR-99-10.46
AS PROVIDED BY O.D.O.T. DISTRICT 3

REV. BY	DATE	DESCRIPTION
DATE COMPLETED	5/20/15	

FEDERAL PROJECT NO. E130(151)
PID NO. 88856
STATE JOB NO. 438265
R/W DESIGNER BB
R/W REVIEWER RMC

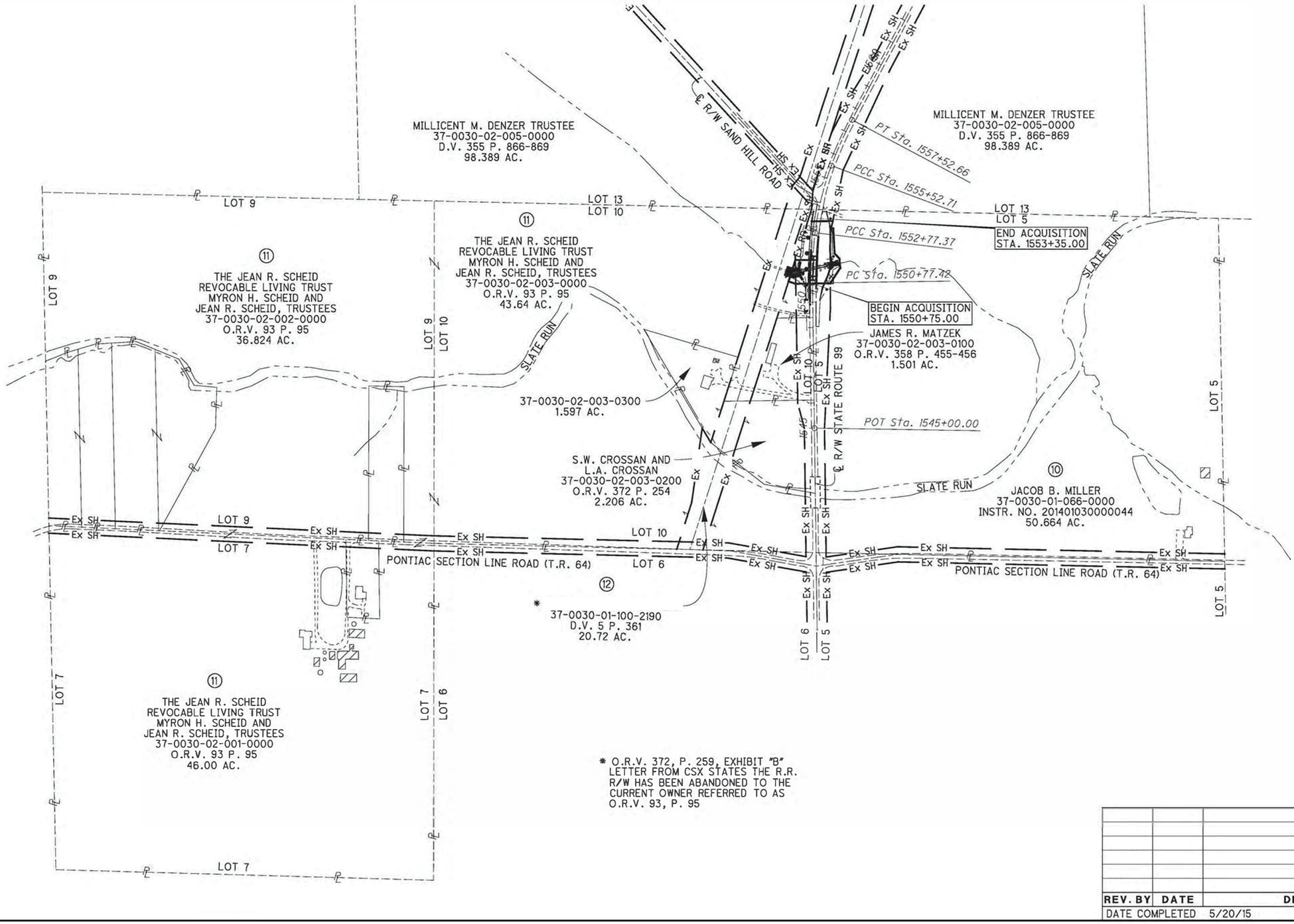
MONUMENT TABLE

HUR-99-10.46

3 / 6

30 / 33

HURON COUNTY
PERU TOWNSHIP
SECTION 3, TOWNSHIP 3 NORTH, RANGE 23 WEST
PT. LOT 5, 7, 9, 10 & 11 ENOS T. THROOP TRACT



* O.R.V. 372, P. 259, EXHIBIT "B" LETTER FROM CSX STATES THE R.R. R/W HAS BEEN ABANDONED TO THE CURRENT OWNER REFERRED TO AS O.R.V. 93, P. 95

REV. BY	DATE	DESCRIPTION
DATE COMPLETED	5/20/15	

HORIZONTAL SCALE IN FEET
0 100 200 400

PID NO. 88856

R/W DESIGNER BB
R/W REVIEWER RMC

PROPERTY MAP

HUR-99-10.46

4 / 6

31 / 33

F:\2013\113029 District Three GES 2\113029-12\88856\row\sheets\88856RM001.dgn 5/19/2015 8:37:45 AM BrianBesecker

TOTAL NUMBER OF :

3 OWNERSHIPS 0 TOTAL TAKES

3 PARCELS 0 OWNERSHIPS W/ STRUCTURES INVOLVED

NET RESIDUE = RECORD AREA - TOTAL PRO - NET TAKE

ALL AREAS IN ACRES

GRANTEE:

ALL RIGHT OF WAY ACQUIRED IN THE NAME OF
THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION
UNLESS OTHERWISE SHOWN.

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD	AUDITOR'S PARCEL	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUCTURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS	AS ACQUIRED BOOK	AS ACQUIRED PAGE
1-9	NOT USED															
10-SH	JACOB B. MILLER		IN. NO. 201401030000044	37-0030-01-066-0000	50.664	2.6834	0.5242	0.4153	0.1089			47.8717	STATE	50.6644 AC. DEED, SEC. 3, LOT 5, 19 TREES REMOVED		
11-SH	THE JEAN R. SCHEID REVOCABLE LIVING TRUST		O.R.V. 93 PAGE 95	37-0030-02-003-0000	43.64	1.6824	0.1754	0.1445	0.0309					49 AC. DEED, SEC. 3, LOT 10, 5 TREES REMOVED		
	MYRON H. SCHEID AND JEAN R. SCHEID, TRUSTEES		O.R.V. 93 PAGE 95	37-0030-02-002-0000	36.824	0.6503								48.21 AC. DEED, SEC. 3, LOT 9		
			O.R.V. 93 PAGE 95	37-0030-02-001-0000	46.00	0.9658								47 AC. DEED, SEC. 3, LOT 7		
	TOTAL				126.464	3.2985	0.1754	0.1445	0.0309		123.1346					
12-CH	UNKNOWN HEIRS		D.V. 5 PAGE 362	37-0030-01-100-2190	20.72		0.0277		0.0277		20.72					

TYPES OF TITLE LEGEND:
SH = STANDARD HIGHWAY EASEMENT
CH = CHANNEL EASEMENT

NOTE: ALL TEMPORARY PARCELS TO BE OF 12 MONTH DURATION.

NOTE: UNDER NO CIRCUMSTANCES ARE TEMPORARY EASEMENTS TO BE USED FOR STORAGE OF MATERIAL OR EQUIPMENT BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

* DENOTES RIGHT OF WAY ENCROACHMENT

REV. BY	DATE	DESCRIPTION
DATE COMPLETED	5/20/15	

FEDERAL PROJECT NO. E130(151)

PID NO. 88856

STATE JOB NO. 438265

R/W DESIGNER BB

R/W REVIEWER RMC

SUMMARY OF ADDITIONAL RIGHT OF WAY

HUR-99-10.46

HURON COUNTY
PERU TOWNSHIP
SECTION 3, TOWNSHIP 3 NORTH, RANGE 23 WEST
PT. LOT 5 & 10 ENOS T. THROOP TRACT

PARCEL 11-SH
L1 - S 00°45'52" E 94.27'
L2 - S89°14'08" W 66.61'
L3 - N 72°19'09" W 30.13'
L4 - N 17°40'51" E 89.32'
L5 - N 89°14'08" E 66.93'
L6 - N 00°57'33" W 94.27'

PARCEL 12-CH
L18-S17°40'51"W 27.55'
L19-S17°40'51"W 49.63'
L20-N65°31'19"W 25.85'
L21-N17°53'58"E 44.77'
L22-S76°22'19"E 25.56'

1547+85.71
299.52' LT.

JAMES R. MATZEK
1651 N. ST. RT. 99
MONROEVILLE, OHIO 44847
37-0030-02-003-0100
O.R.V. 358 P. 455-456
1.501 AC.

⑫ UNKNOWN HEIRS
37-0030-01-100-2190
D.V. 5 P. 361
20.72 AC.

1551+05.00
115.00' LT.
1550+95.00
91.46' LT.
1550+84.12
95.21' LT.
1551+40.03
128.13' LT.
1551+45.00
102.00' LT.
1551+40.00
77.00' LT.
1551+65.32
69.58' LT.
1552+39.45
107.94' LT.
1552+91.99
84.33' LT.
1553+43.04
76.69' LT.
1552+28.60
75.60' LT.

12-CH
11-SH
10-SH

WOODS

MILLICENT M. DENZER TRUSTEE
1830 SANDHILL ROAD
MONROEVILLE, OHIO 44847
37-0030-02-005-0000
D.V. 355 P. 866-869
98.389 AC.

END ACQUISITION
STA. 1553+35.00

6"x8" WOOD

1549+39.73
66.15' LT.

LIMESTONE DR.

⑪ THE JEAN R. SCHEID REVOCABLE LIVING TRUST
MYRON H. SCHEID AND JEAN R. SCHEID, TRUSTEES
1651 N. ST. RT. 99
MONROEVILLE, OHIO 44847
37-0030-02-003-0000
O.R.V. 93 P. 95
43.64 AC.

1549+68.67
19.49' LT.

POT Sta. 549+79.67

48" ROCK

1550+75.00
66.61' LT.

1551+69.16
2.76' LT.

1553+20.10
19.71' LT.

N.W. COR. LOT 5
N.E. COR. LOT10
1553+65.90
28.61' LT.
I.P.S.

RR TIE

ASPHALT

S0°45'52"E
N 0° 04' 06" W
N0°45'52"W

℄ R/W STATE ROUTE 99
℄ CONST. STATE ROUTE 99

LOT 10
LOT 5
LOT 13
LOT 10

S88°43'25"E

1549 550 1550 551 1551 552 1552 553 1553 554 1554 555

1550+75.00
CL

1553+70.88
CL
1553+83.58
CL

1554+74.62
24.48' LT.

BEGIN WORK
STA. 550+45

BEGIN ACQUISITION
STA. 1550+75.00

Is Sta. 550+85.57

PC Sta. 1550+77.44

PC Sta. 1552+77.37

SC Sta. 1553+85.57

1549+77.37
70.00' RT.

1550+75.00
70.86' RT.

STA. 552+25.44 ℄ CONST. STATE ROUTE 99
STA. 20+00.00 ℄ CULVERT

1551+54.95
21.97' RT.

1552+77.37
60.00' RT.

1553+25.60
21.50' RT.

EX. 12" CMP

1553+82.02
59.17' RT.

END WORK
STA. 555+15

1553+35.00
63.12' RT.

1553+82.93
63.61' RT.

1551+32.11
57.29' RT.

1551+40.00
110.00' RT.

1551+80.00
105.00' RT.

1552+00.00
85.00' RT.

1551+81.89
149.17' RT.

3'x5' CONC. RUBBLE
4'x2' CONC. RUBBLE

GRASS & GRAVEL DR.

⑩ WOODS

JACOB B. MILLER
3588 PONTIAC SECTION LINE ROAD
MONROEVILLE, OHIO 44847
37-0030-01-066-0000
INSTR. NO. 201401030000044
50.664 AC.

MILLICENT M. DENZER TRUSTEE
1830 SANDHILL ROAD
MONROEVILLE, OHIO 44847
37-0030-02-005-0000
D.V. 355 P. 866-869
98.389 AC.

PARCEL 10-SH
L7 - N 89°14'08" E 84.10'
L8 - S 03°13'03" E 129.42'
L9 - S 43°22'48" E 27.42'
L10 - S 05°19'31" E 37.52'
L11 - S 32°56'10" W 72.69'
L12 - S 89°14'08" W 70.85'
L13 - N 00°45'52" W 247.35'
L14 - N 00°15'46" W 193.98'
L15 - N 11°26'37" E 54.62'
L16 - S 00°45'52" E 47.60'
L17 - S 00°45'52" E 200.68'

℄ CONST. STATE ROUTE 99 CURVE DATA

P.I.= Sta. 555+21.00
Δ = 27° 54' 20" (RT)
Dc = 5° 00' 00"
R = 1,145.92'
Ls = 300.00'
θs = 7° 30' 00"
LT = 200.18'
ST = 100.16'
x = 299.49'
y = 13.07'
k = 149.91'
p = 3.27'
Δc = 12° 54' 20" (RT)
Lc = 258.11'
Ts = 435.43'
Es = 38.21'
C = 257.57'
C1=C2 = 299.77'
C.B.1 = N 2° 25' 52" E
C.B. = N 13° 53' 04" E
C.B.2 = S 25° 20' 15" W

℄ R/W STATE ROUTE 99 CURVE DATA

P.I.= Sta. 1551+77.54
D = 7° 29' 56" (RT)
Dc = 3° 45' 01"
R = 1,527.73'
T = 100.12'
L = 199.95'
E = 3.28'
C = 199.81'
C.B. = N 2° 59' 06" E

P.I.= Sta. 1554+15.71
D = 13° 46' 01" (RT)
Dc = 5° 00' 00"
R = 1,145.92'
T = 138.34'
L = 275.34'
E = 8.32'
C = 274.68'
C.B. = N 13° 37' 04" E

BY.		DESCRIPTION
DATE COMPLETED	5/20/15	

RIGHT OF WAY PLAN
STA. 1549+00 TO STA. 1554+50

HUR-99-10.46

PID NO. 88856

R/W DESIGNER BB
R/W REVIEWER RMC

HORIZONTAL SCALE IN FEET
0 10 20 40

6 / 6
33 / 33

F:\2013\113029 District Three GES 21\113029-12\88856\row\sheets\88856RD001.dgn 5/19/2015 8:39:59 AM BrianBesecker

PROJECT DESCRIPTION

IT IS PROPOSED TO REPLACE THE EXISTING CULVERT (STRUCTURE NO. HUR-99-10.46) LOCATED ON STATE ROUTE 99 IN HURON COUNTY SOUTH OF SANDHILL ROAD AS PART OF THE HUR-99-10.46 PROJECT. THE NEW STRUCTURE WILL BE EITHER AN 84- OR 96-INCH DIAMETER CONDUIT BUILT IN THE SAME LOCATION AS THE EXISTING CULVERT WITH NO CHANGES TO EITHER THE VERTICAL OR HORIZONTAL ALIGNMENT OF THE EXISTING ROAD. THE PROPOSED ROADWAY SECTION WILL MATCH THE EXISTING PAVEMENT SECTION. THE ROADWAY WILL LIKELY BE CLOSED DURING CULVERT REPLACEMENT. PAVEMENT WORK LENGTH LIMITS ARE ANTICIPATED TO BE LESS THAN 100 FEET.

HISTORIC RECORDS

NO USEFUL HISTORIC GEOTECHNICAL BORING INFORMATION WAS AVAILABLE FOR THIS PROJECT.

GEOLOGY

THE PROJECT SITE IS LOCATED IN A PREVIOUSLY GLACIATED PORTION OF THE STATE NEAR THE BORDER OF THE CENTRAL OHIO CLAYEY TILL PLAIN AND THE ERIE LAKE PLAIN PHYSIOGRAPHIC REGION OF OHIO. NATURAL SOILS BENEATH THE ROADWAY AT THE SITE CONSIST OF GROUND MORAINE OR WAVE-PLANED GROUND MORAINE DEPOSITS FROM THE WISCONSINAN GLACIAL EVENT. LAKE BED DEPOSITS MAY ALSO BE PRESENT AT OR NEAR THIS AREA. THESE SOIL DEPOSITS ARE INDICATED TO OVERLIE DEVONIAN AGE SHALE AND SILTSTONE, WITH SOME SANDSTONE. BEDROCK TOPOGRAPHY MAPS SUGGEST ROCK WILL BE PRESENT NEAR ELEVATION EL. 740, ROUGHLY 10 TO 30 FEET BELOW THE GROUND SURFACE.

A REVIEW OF THE ODNR "OHIO KARST AREAS" MAP AND THE "ABANDONED UNDERGROUND MINES OF OHIO" MAP REVEAL THAT NO MAPPED KARST DEPOSITS OR MAPPED ABANDONED UNDERGROUND MINES ARE PRESENT IN THE VICINITY OF THE SITE. A REVIEW OF THE ODNR "LANDSLIDES" MAP REVEALS THAT THE SITE IS IN AN AREA OF THE STATE NOT SUBJECT TO SEVERE SLOPE FAILURE.

RECONNAISSANCE

A SITE RECONNAISSANCE VISIT WAS MADE BY S&ME PERSONNEL ON JULY 18, 2014, TO OBSERVE THE EXISTING STRUCTURE AND PROJECT VICINITY. IN GENERAL, THE EXISTING PAVEMENT OF S.R. 99 IN THE PROJECT AREA WAS IN GOOD CONDITION, ALTHOUGH A FEW LONGITUDINAL CRACKS WERE OBSERVED IN THE EXISTING PAVEMENT. WATER WAS OBSERVED IN THE EXISTING CHANNEL.

SUBSURFACE EXPLORATION

ON AUGUST 5, 2014, THREE (3) BORINGS DESIGNATED AS B-001-0-14 THROUGH B-003-0-14 WERE PERFORMED TO INVESTIGATE THE EXISTING SOILS FOR THE REPLACEMENT STRUCTURE. BORING B-001-0-14 WAS ADVANCED TO A DEPTH OF 8.0 TO INVESTIGATE EXISTING ROADWAY SUBGRADE. BORINGS B-002-0-14 AND B-003-0-14 WERE ADVANCED TO DEPTHS OF 24.9 AND 22.8 FEET, RESPECTIVELY, TO INVESTIGATE THE EXISTING SUBSURFACE CONDITIONS NEAR THE EDGES OF THE EXISTING EMBANKMENT.

THE BORINGS WERE DRILLED WITH AN ATV-MOUNTED DRILL RIG USING 3¼-INCH O.D. CONTINUOUS FLIGHT AUGERS AND 3¼-INCH I.D. HOLLOW-STEM AUGERS. IN BORING B-001-0-14, FOUR (4) CONTINUOUS SPT SAMPLES WERE TAKEN BENEATH THE EXISTING PAVEMENT. BORINGS B-002-0-14 AND B-003-0-14 WERE SAMPLED CONTINUOUSLY AT THE APPROXIMATE STREAM BED ELEVATION FOR SCOUR SAMPLES. BEDROCK WAS ALSO CORED IN THOSE BORINGS.

IN GENERAL ACCORDANCE WITH ODOT REQUIREMENTS, DISTURBED BUT REPRESENTATIVE SOIL SAMPLES WERE PROCURED AT REGULAR INTERVALS BY LOWERING A 2-INCH O.D. SPLIT-BARREL SAMPLER TO THE BOTTOM OF THE BORING AND THEN DRIVING THE SAMPLER INTO THE SOIL WITH BLOWS FROM A 140-POUND HAMMER FREELY FALLING 30 INCHES (ASTM D 1586-STANDARD PENETRATION TEST, SPT). AS REQUIRED BY THE ODOT SGE, THE HAMMER SYSTEM ON THE DRILLING RIG HAS BEEN CALIBRATED IN ACCORDANCE WITH ASTM D 4633 TO DETERMINE THE DRILL ROD ENERGY RATIO (84%). BEDROCK AND SPT SAMPLES WERE EXAMINED IMMEDIATELY AFTER RECOVERY AND REPRESENTATIVE PORTIONS WERE PRESERVED IN COMPARTMENTAL STORAGE BOXES OR AIRTIGHT GLASS JARS, AS APPLICABLE.

EXPLORATION FINDINGS

THE PAVEMENT CORE CONSISTED OF THIRTEEN (13) INCHES OF ASPHALT. NO GRANULAR BASE WAS FOUND UNDERLYING THE PAVEMENT. THE PAVEMENT WAS PLACED ON TOP OF A COHESIVE SOIL.

SOILS IDENTIFIED AS FILL OR POSSIBLE FILL WERE ENCOUNTERED IN ALL THREE BORINGS NEAR THE EXISTING GROUND SURFACE. THE FILL CONSISTED PRIMARILY OF VERY-STIFF TO HARD SANDY SILT (A-4a), SILT AND CLAY (A-6a) AND SILTY CLAY (A-6b) SOILS. IN BORING B-002-0-14 POSSIBLE FILL WAS IDENTIFIED TO APPROXIMATELY 8½ FEET. IN BORING B-003-0-14 FILL WAS IDENTIFIED TO A DEPTH OF 5 FEET.

UNDERLYING THE FILL OR POSSIBLE FILL SOILS IN BORING B-002-0-14 AND B-003-0-14 WERE GENERALLY ZONES OF VERY-STIFF SILT AND CLAY (A-6a) OR DENSE TO VERY-DENSE GRAVEL WITH SAND (A-1-b) OR GRAVEL WITH SAND AND SILT (A-2-4). PORTIONS OF THE SOIL HAD STRUCTURE SIMILAR TO WEATHERED SHALE.

MORE COMPETENT SHALE BEDROCK WAS ENCOUNTERED IN B-002 AND B-003 AT DEPTHS OF 16.5 AND 17 FEET. THE BEDROCK WAS COMPOSED OF DARK GRAY SHALE WHICH WAS SLIGHTLY TO MODERATELY WEATHERED.

LEGEND

DESCRIPTION	ODOT CLASS	CLASSIFIED MECH.	CLASSIFIED VISUAL
GRAVEL WITH SAND	A-1-b	1	1
GRAVEL WITH SAND AND SILT	A-2-4	1	4
SANDY SILT	A-4a	-	2
SILT AND CLAY	A-6a	1	3
SILTY CLAY	A-6b	2	2
	TOTAL	5	12
SHALE	VISUAL		
PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	VISUAL		
SOD AND TOPSOIL = X = APPROXIMATE THICKNESS	VISUAL		

BORING LOCATION - PLAN VIEW

DRIVE SAMPLE AND/OR ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.

WC INDICATES WATER CONTENT IN PERCENT.

N_{60} INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.

* INDICATES A SAMPLE TAKEN WITHIN 3 FT OF PROPOSED GRADE.

SS INDICATES A SPLIT SPOON SAMPLE, STANDARD PENETRATION TEST.

TR INDICATES TOP OF BEDROCK.

EXPLORATION FINDINGS (CONTINUED)

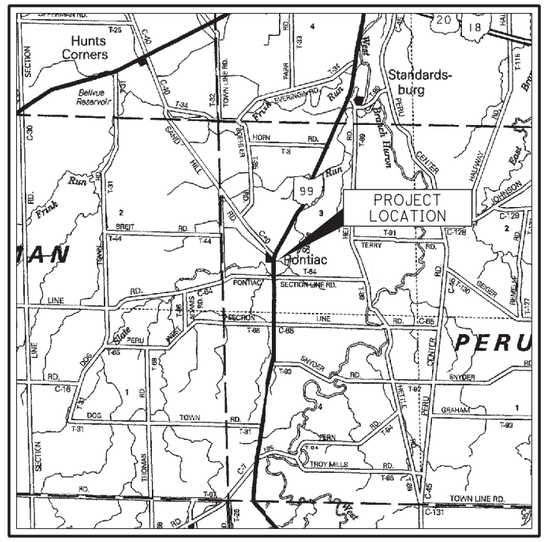
GROUNDWATER WAS NOT ENCOUNTERED IN ANY OF THE BORING DURING DRILLING. AS WATER WAS ADDED TO BORINGS B-002 AND B-003 FOR ROCK CORING PURPOSES, REPRESENTATIVE GROUNDWATER MEASUREMENTS AT THE COMPLETION OF DRILLING COULD NOT BE OBTAINED.

SPECIFICATIONS

THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, UPDATED AUGUST 2013.

AVAILABLE INFORMATION

ALL AVAILABLE SOIL AND BEDROCK INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE GEOTECHNICAL EXPLORATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL EXPLORATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF GEOTECHNICAL ENGINEERING OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET.



LOCATION MAP
SCALE IN MILES
0 1 2 3 4

N

PARTICLE SIZE DEFINITIONS

12"		3"	2.0 mm	0.42 mm	0.074 mm	0.005 mm
BOULDERS	COBBLES	GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY
		No. 10 SIEVE	No. 40 SIEVE	No. 200 SIEVE		

SUMMARY OF D_{50} SOIL PARTICLE SIZES

BORING NO.	SAMPLE NO.	SAMPLE DEPTH	SAMPLE ELEVATION	D_{50} (mm)
B-002-0-14	SS-4	11.5' - 13.0'	747.0 - 745.5	0.7218
	SS-5	13.0' - 14.0'	745.5 - 744.5	1.6342
	SS-6	14.5' - 16.0'	744.0 - 742.5	1.4852
	SS-7	16.0' - 17.0'	742.5 - 741.5	1.7373
B-003-0-14	SS-3	8.5' - 10.0'	751.1 - 749.6	0.0177
	SS-4	13.5' - 15.0'	746.1 - 744.6	2.0032
	SS-5	15.0' - 16.5'	744.6 - 743.1	1.2794
	SS-6	16.5' - 17.5'	743.1 - 742.1	2.1730

RECON. - NDA (7/18/2014)
DRILLING - S&ME (8/5/2014)
DRAWN - ZWA (10/24-27/2014)
REVIEWED - NDA (6/5/2014)

STATE OF OHIO
NATHAN DANIEL ABELE
E-76734
REGISTERED
PROFESSIONAL ENGINEER

DESIGN AGENCY S&ME

PID NO. 88856

STRUCTURE FOUNDATION EXPLORATION
CULVERT NO. HUR-99-10.46 UNDER SR 99

HUR-99-10.46

HORIZONTAL SCALE IN FEET
0 10 20

DRAWN ZWA
CHECKED NDA

STRUCTURE FOUNDATION EXPLORATION
CULVERT NO. HUR-99-10.46 UNDER S.R. 99

HUR-99-10.46

2 / 4

PROJECT: HUR-99-10.46
TYPE: CULVERT REPLACEMENT
PID: 88856 BR ID: N/A
START: 8/5/14 END: 8/5/14

DRILLING FIRM / OPERATOR: S&ME / M. WOLF
SAMPLING FIRM / LOGGER: S&ME / M. WOLF
DRILLING METHOD: 4.5" CFA
SAMPLING METHOD: SPT

DRILL RIG: S&ME ATV 550X (AW)(13)
HAMMER: CME AUTOMATIC
CALIBRATION DATE: 8/2/13
ENERGY RATIO (%): 84

STATION / OFFSET: 552+45.0, 7.0 RT
ALIGNMENT: HUR-99 CENTER LINE
ELEVATION: 761.4 (MSL) EOB: 8.0 ft.
LAT / LONG: 41.188056 N, 82.724799 W

EXPLORATION ID B-001-0-14
PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 761.4	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ASPHALT – 13 INCHES	760.3																	
FILL: Very-stiff to hard brown mixed with gray SILTY CLAY, some fine to coarse sand, trace fine gravel, contains few coal or cinder fragments, damp.	757.1	1–4	2 3 4	10	100	SS-1	4.0–4.5	7	10	15	34	34	37	21	16	18	A-6b (9)	
		4–5	2 2 4	8	53	SS-2	2.0–3.5	7	12	20	30	31	39	17	22	18	A-6b (10)	
POSSIBLE FILL: Very-stiff to hard brown and dark-brown SANDY SILT, some clay, trace fine gravel, damp.	753.4	5–6	2 3 3	8	94	SS-3	2.0–2.5	–	–	–	–	–	–	–	–	15	A-4a (V)	
	EOB	7–8	3 4 5	13	100	SS-4	3.5–4.5	–	–	–	–	–	–	–	–	16	A-4a (V)	

– No seepage encountered during drilling.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; 1 BAG BENTONITE; PLASTIC HOLE PLUG; SOIL CUTTINGS; PAVEMENT PATCH

PROJECT: HUR-99-10.46
TYPE: CULVERT REPLACEMENT
PID: 88856 BR ID: N/A
START: 8/5/14 END: 8/5/14

DRILLING FIRM / OPERATOR: S&ME / M. WOLF
SAMPLING FIRM / LOGGER: S&ME / M. WOLF
DRILLING METHOD: 4.5" CFA / NQ2
SAMPLING METHOD: SPT

DRILL RIG: S&ME ATV 550X (AW)(13)
HAMMER: CME AUTOMATIC
CALIBRATION DATE: 8/2/13
ENERGY RATIO (%): 84

STATION / OFFSET: 551+80.0, 25.0 LT
ALIGNMENT: HUR-99 CENTER LINE
ELEVATION: 758.5 (MSL) EOB: 24.9 ft.
LAT / LONG: 41.187880 N, 82.724920 W

EXPLORATION ID B-002-0-14
PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 758.5	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ROOTMAT – 3 INCHES	758.2																	
POSSIBLE FILL: Hard brown mottled with gray, SILTY CLAY, some fine to coarse sand, trace fine gravel, damp.	750.0	1–2	2 4 8	17	100	SS-1	4.5	–	–	–	–	–	–	–	–	13	A-6b (V)	
		5–6	7 10 12	31	100	SS-2	4.5	–	–	–	–	–	–	–	–	14	A-6b (V)	
Dense to very-dense brown becoming gray GRAVEL WITH SAND AND SILT, trace to little clay, similar in structure to severely weathered shale, damp.	741.5	9–10	4 8 14	31	67	SS-3	–	–	–	–	–	–	–	–	–	14	A-2-4 (V)	
	TR	12–13	14 25 30	77	100	SS-4	–	34	25	15	13	13	26	19	7	7	A-2-4 (0)	
		13–14	25 50	–	100	SS-5	–	47	23	10	9	11	–	–	–	7	A-2-4 (V)	
		15–16	23 30 40	98	100	SS-6	–	45	25	11	9	10	–	–	–	6	A-2-4 (V)	
		16–17	14 50	–	100	SS-7	–	48	22	11	8	11	–	–	–	7	A-2-4 (V)	
SHALE, dark gray, slightly weathered, moderately strong to strong, thickly-bedded, carbonaceous, pyritic, slightly fractured to fractured.		18–19	16 25 31	78	100	SS-8	–	–	–	–	–	–	–	–	–	7	Rock (V)	
– From 20.2' – 20.7' Unconfined Compression Test = 5,135 psi.	733.6	20–24	72		94	NQ2-9											CORE	
	EOB																	

– No seepage encountered.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 2 BAGS BENTONITE; PLASTIC HOLE PLUG; SOIL CUTTINGS

HUR-99-10.46

STRUCTURE FOUNDATION EXPLORATION
LOGS OF BORINGS B-001-0-14 & B-002-0-14

DRAWN ZWA
CHECKED NDA

PROJECT: HUR-99-10.46	DRILLING FIRM / OPERATOR: S&ME / M. WOLF	DRILL RIG: S&ME ATV 550X (AW)(13)	STATION / OFFSET: 552+26.0, 20.0 RT	EXPLORATION ID B-003-0-14
TYPE: CULVERT REPLACEMENT	SAMPLING FIRM / LOGGER: S&ME / M. WOLF	HAMMER: CME AUTOMATIC	ALIGNMENT: HUR-99 CENTER LINE	
PID: 88856 BR ID: N/A	DRILLING METHOD: 4.5" CFA	CALIBRATION DATE: 8/2/13	ELEVATION: 759.6 (MSL) EOB: 22.8 ft.	PAGE 1 OF 1
START: 8/5/14 END: 8/5/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	LAT / LONG: 41.188003 N, 82.724755 W	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N60	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ROOTMAT – 2 INCHES	759.4																	
FILL: Stiff to very-stiff brown and dark brown SILT AND CLAY, some fine to coarse sand, little fine to coarse gravel, damp.			2 2 3	7	56	SS-1	2.0–3.0	–	–	–	–	–	–	–	–	16	A-6a (V)	
	754.6		1	–	100	SS-2A	1.0–3.5	–	–	–	–	–	–	–	–	16	A-6a (V)	
Very-stiff brown mottled with gray SILT AND CLAY, little to some fine to coarse sand, trace fine gravel, damp.			2 2	6	50	SS-2B	2.0	–	–	–	–	–	–	–	–	19	A-6a (V)	
			1 2 4	8	100	SS-3	2.5–3.5	8	9	16	32	35	35	22	13	17	A-6a (8)	
	746.1																	
Dense to very-dense dark gray GRAVEL WITH SAND, trace to little silt, trace clay, similar in structure to severely weathered shale bedrock, damp.			4 9 19	39	100	SS-4	–	50	23	12	9	6	–	–	–	9	A-1-b (V)	
	743.1		13 25 22	66	100	SS-5	–	43	24	13	11	9	25	19	6	8	A-1-b (0)	
SHALE, dark gray, moderately weathered, moderately strong to strong, thickly-bedded, carbonaceous, fractured to moderately fractured.		TR	15 50/5"	–	100	SS-6	–	53	24	10	7	6	–	–	–	5	Rock (V)	
– From 20.2' to 20.7': Unconfined Compression Test = 6,184 psi.			48		100	NQ2-7											CORE	
– Vertical fracture from 21.6' to 22.8'.	736.8	EOB																

– No seepage encountered.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 2 BAGS BENTONITE; PLASTIC HOLE PLUG; SOIL CUTTINGS

SPECIAL PROVISIONS

WATERWAY PERMITS CONDITIONS

C-R-S: HUR-99-5.82

PID: 88856

Date: 03/02/2015

1. Waterway Permit Time Restrictions:

Regional General Permit (RGP) Section B (Maintenance) is authorized for HUR-99-5.82 PID 88856. A copy of the RGP shall be kept at the work site at all times and made available to all contractors and subcontractors. The permit is effective starting: **March 02, 2015**. The permit expires: **October 24, 2019.**

For permitted work in aquatic resources (including, but not limited to: streams, wetlands, jurisdictional ditches, captured streams, lakes, ponds), the Department will consider the Contractor's submission of a reauthorization to the waterway permit end date based on project constraints. In order to be considered, the Contractor must submit a justification to the Engineer at least 90 days prior to the waterway permit end date. The Engineer will submit the request for a time extension to ODOT-OES-WPU for consideration and coordination with the U.S. Army Corps of Engineers (USACE), Ohio Environmental Protection Agency (OEPA), U.S. Coast Guard (USCG), U.S. Fish and Wildlife Service (USFWS), and Ohio Department of Natural Resources (ODNR).

2. Deviations From Permitted Construction Activities

No deviation from the requirements for work in aquatic resources depicted in the plans, Special Provisions, and/or working drawings may be made unless a modification has been submitted to ODOT-OES-WPU and approved by the appropriate agencies (i.e., USACE, OEPA, USCG, ODNR, and USFWS).

For emergency situations resulting in unanticipated impacts to aquatic resources, provide notification (verbal or written) to the Engineer as soon as possible following discovery of the situation. Written notification to the Engineer and notification to the ODOT-OES-WPU (614-466-7100) must be made within 24 hours.

For non-emergency situations, notify the Engineer in writing for submission to the ODOT-OES-WPU (614-466-7100) for consideration and coordination with the appropriate agencies. Notification must be made at least 90 days prior to planned, non-permitted activities. Consideration of the requested deviation is at the discretion of the Director and must be coordinated with the appropriate regulatory agencies.

3. In-Stream Work Restrictions

Work in the following aquatic resources is further restricted as follows:

Stream Name /Description	Location	Work restriction dates (No in-stream work permitted)
UNT to Slate Run	SLM 10.46	None
Holiday Tributary**	SLM 5.82	April 15-June 30

UNT = unnamed tributary stream

In-stream work has been defined as the placement and/or removal of fill materials (temporary or permanent) below ordinary high water of a stream. Examples of "fill" include, but are not limited to: bridge piers, abutments, culverts, rock channel protection, scour protection and temporary work pads**.

****NOTE: temporary impacts are not authorized in Holiday Tributary for SLM 5.82. Additional permitting is required if temporary impacts are necessary.**

Fills placed within a stream identified in the above table (outside of the work restriction dates) can continue to be worked from during the work restriction dates, but cannot be expanded, removed, or otherwise modified (below ordinary high water) until once again outside of the work restriction dates.

The Engineer must submit a request for an "in-water work restriction waiver" to ODOT-OES-WPU (614-466-7100) for consideration and coordination with the USACE, OEPA, and ODNR if in-stream work needs to occur within restricted dates.

4. Materials:

Materials utilized in or adjacent to aquatic resources on this project for temporary or permanent fill or bank protection shall consist of suitable material free from toxic contaminants in other than trace quantities. Broken asphalt is specifically excluded. Chromated Copper Arsenate (CCA), creosote, and other pressure treated lumber shall not be used in structures that are placed in aquatic resources.

5. Cultural Resources

If archeological sites or human remains are discovered, cease all work in the immediate area and notify the Engineer who will immediately contact the ODOT-District Environmental Coordinator and ODOT-OES-Cultural Resource Section at 614-466-7100. In the event of human remains are identified by OES-Cultural Resources Section the Engineer shall also contact the Huron County Sheriff's Office at (419) 668-6912.

6. Aquatic Resource Demarcation:

All aquatic resources indicated on the plans shall be demarcated in the field as per SS 832 prior to site disturbance. Specifically, only 210 feet of UNT to Slate Run can be impacted permanently and 12 feet of UNT to Slate Run can be impacted temporarily, and 75 feet of Holiday Tributary can be impacted permanently (no temporary impacts are authorized for Holiday Tributary). The remainder of the aquatic resources must be demarcated as to ensure avoidance. The fence shall remain in place and be maintained throughout the construction process. Following the completion of the project, the fence and posts shall be removed.

7. Spill containment:

Provide and Maintain an Oil Spill Kit with a minimum capacity of 65 gallons. The Spill Kit shall contain:

- 6 - 3 in. X 8 ft. Oil only socks
- 4 - 18 in. X18 in. Oil only pillows
- 2 - 5 in. X 10ft. Booms
- 50 - 16in. X 20 in. Oil only pads
- 10- Disposable Bags
- 1- 65 Gallon drum with lid
- 25 pounds of Granular Oil Absorbent

The Oil Spill Kit shall be located within 150 feet of any equipment working in a stream or wetland. The oil Spill Kit shall be maintained for the life of the contract. Any materials utilized during the project will be replaced within 48 hours. All costs associated with furnishing and maintaining the above referenced spill containment kit is incidental to work.

8. Blasting:

State law requires notification to the Ohio Department of Natural Resources should blasting be required within or near stream channels (See ORC 1533.58 & CMS 107.09). Notify Engineer, in writing, for submission to ODOT-OES-WPU (614-466-7100) for coordination with ODNR.

9. Bridge Inspection:

Prior to the removal of bridge structures, the underside must be carefully examined for the presence of birds and bats. Should any birds or bats be found roosting on the underside of the bridge, the Contractor is required to notify the Engineer for coordination with ODOT-OES-WPU (614-466-7100).

10. Project Inspection:

Inspection of Work may include inspection by representatives of other government agencies or railroad corporations that pay a portion of the cost of the Work or regulate the Work through State and Federal law. Comments from the representatives of these agencies shall be directed to the Engineer. Please forward a copy to ODOT-OES-WPU (614-466-7100).

11. Temporary Access Fills (Stream and River Crossings and Fills)

Special Provisions Notes:
Regional General Permit (RGP) for the State of Ohio Department of Transportation

Definitions:

Hydraulic Opening
The cross sectional area allowing an unimpeded discharge equal to twice the highest monthly flow without producing a rise in the backwater above the Ordinary High Water Mark (OHWM)*.

Standard Temporary Discharge
The hydraulic opening providing a capacity for a discharge equal to twice the *highest monthly flow* without producing a rise in the backwater above the OHWM shall be known as the Standard Temporary Discharge. The U.S. Geologic Service publication "Techniques for estimating Selected Streamflow Characteristics of Rural Unregulated Streams in Ohio" provides equations that estimate monthly flow for Ohio Waterways These flows are also available in a web application by USGS StreamStats, (http//water.usgs.gov/osw/streamstat/ohi.html).

Average Monthly Flow
The average monthly flow represents the estimated "normal" flow.

Temporary Access Fills (TAFs)
In Streams and Rivers may include, but are not limited to, causeways, cofferdams (as described by other items of work), access pads, temporary bridges, etc. The Contractor will make every attempt minimize disturbance to water bodies, stream banks, stream beds, and approach sections during the construction, maintenance, and removal of the TAFs. Fording of streams and rivers is prohibited. Construct TAFs in such a manner that will maintain flows, minimize upstream flooding, and avoid overtopping the TAF on a regular basis. ***TAFs shall be designed and constructed so that the hydraulic opening provides capacity for a discharge equal to twice the highest monthly flow without producing a rise in the backwater above the Ordinary High Water Mark (OHWM)*.***

Requirements
21 calendar days prior to the initiation of any in-stream work, provide the Engineer with working drawings that include:

- Plan view drawing (200 scale or less) showing the location of all jurisdictional temporary fill proposed for use on the project.
- Scaled Cross section and profile drawing showing the OHWM and the proposed compliant hydraulic opening.

- A description of the installation and staging of all temporary jurisdictional fill over the life of the contract.
- A description of the removal of all jurisdictional temporary fill and restoration of the channel and all areas impacted by the jurisdictional temporary fill.
- A schedule outlining the timing of the placement and removal of all TAF.
- Have an Ohio Registered Engineer prepare, sign, seal, and date the working drawings. Have a second Ohio Registered Engineer check, sign, and seal and date the working drawings. The preparer and checker are two different Engineers. Include the following statement on the working drawings:
  "These working drawings were prepared in compliance with the terms of the Regional General Permit and all contract documents."
- Include supporting hydraulic calculations developed by the engineer(s) who sealed the working drawings.
- Do not begin in-stream work until the Engineer has accepted the working drawings.

If the OHWM is not shown on the plans, the Department will establish the OHWM based on the definition of OHWM (as defined in SS 832) or the peak discharge from the 2 year event, using the method described in the most current version of the Department's Location and Design Manual Volume II.

If the Contractor proposes a TAF which does not provide for the Standard Temporary Discharge (discharge equal to twice the highest monthly flow without producing a rise in the backwater), the Contractor is required to coordinate the request for the contractor's proposed TAF with the Engineer and the ODOT Office of Environmental Services (OES). The Department makes no guarantee to grant the request. The contractor's proposed TAF request will be coordinated by OES with the USACE and the OEPA, as appropriate.

In addition to the requirements described in SS 832, supply the Engineer/OES with the following:

1. A plan and profile showing the temporary access fill(s) with the OHWM.
2. Cross section showing the hydraulic opening and the anticipated discharge flow.
3. A restoration plan for the area affected by the temporary access fill(s).
4. A schedule outlining the timing of the placement and removal of the temporary access fill(s).

The time frame allowed for the coordination of the contractor's proposed TAF will be a minimum of 60 days. Installation of any jurisdictional fill without a 404 Permit authorized by the USACE is strictly prohibited. All direct coordination with the USACE and/or OEPA will be performed through OES.

TAFs Construction and Payment

Begin planning and installing causeways and access fills as early in construction as possible to avoid conflicts with 404/401 permits or other environmental commitments that have been included in the construction plans.

TAFs in Streams and Rivers may include, but are not limited to, causeways, cofferdams, access pads, temporary bridges, etc. Make every attempt minimize disturbance to water bodies, stream banks, stream beds, and approach sections during the construction, maintenance, and removal of the TAFs. Make every attempt to minimize disturbance to water bodies during construction, maintenance, and removal of the causeway and access fills. Construct the causeway and access fills as narrow as practical. Install in-stream conduits parallel to the stream banks. Make the causeway and access fills in shallow areas rather than deep pools where possible. Minimize clearing, grubbing, and excavation of stream banks, bed, and approach sections. Construct the causeway and access fills as to not erode stream banks or allow sediment deposits in the channel.

Prior to the initiation of any in-stream work, establish a monument upstream of proposed temporary crossing or temporary construction access fill to visually monitor the water elevation in the waterway where the fill is permitted. Maintain the monument throughout the project. Provide a visual mark on the monument that identifies the elevation 1 foot above the OHWM. If the OHWM is not shown on the plans, the Department will establish the OHWM based on the definition of OHWM (SS 832.02) or the peak

discharge from the 2 year event, using the method described in the most current version of the Department's Location and Design Manual Volume II.

Ensure that the monument can be read from the bank of the waterway. Have this elevation set and certified by an Ohio Registered Surveyor.

TAFs placed by the contractor above the OHWM are not subject to the 404/401 permit constraints. All costs associated with furnishing and maintaining the above referenced monument is incidental to the work.

Should the water elevation of the waterway, exceed the elevation 1 foot above OHWM, the Department will compensate the Contractor for repair of any resulting damage to the permitted temporary access fill up to the elevation of 1 foot above the OHWM, except as noted. Follow the requirements in Item 502 for Structures for Maintaining Traffic and in Item 503 for Cofferdams and any modifications to these items as shown in the plans. The Department will not pay for repair and maintenance of temporary access structures that are related to the construction access fill.

Should the water elevation of the waterway exceed the elevation shown on the monument, the Department will recognize this event as an excusable, non-compensable delay in accordance with Section 108.06 of the Construction & Materials Specifications.

Construct the causeway and fills, not including cofferdams and temporary bridges, to a water elevation at least 1 foot (0.3 m) above the OHWM. If more than one-third the width of the stream is filled, then use culvert pipes to allow the movement of aquatic life. Ensure that any ponding of water behind the causeway and access fills will not damage property or threaten human health and safety.

The following minimum requirements apply to TAFs where culverts are used.

A. Furnish culverts on the existing stream bottom.
B. Avoid a drop in water elevation at the downstream end of the culvert.
C. Furnish a sufficient number of culverts in addition to stream openings to providing a discharge equal to twice the highest monthly flow without producing a rise in the backwater above the OHWM.
D. Furnish culverts with a minimum diameter of 18 inches (0.5 m).

For all fill and surface material placed in the channel, around the culverts, or on the surface of the causeway and access fills furnish clean, non-erodible, nontoxic dumped rock fill, Type B, C, or D, as specified in C&MS 703.19.B. Extend rock fill up the slope from original stream bank for 50 feet (10 m) to catch and remove erodible material from equipment.

When the work requiring the TAFs is complete all portions of the TAF (including all rock and culverts) will be removed in its entirety. The material will not be disposed in other waters of the US or isolated wetland. The stream bottom affected by the causeway and access fills will be restored to its pre-construction elevations. The TAF will not be paid as a separate item but will be included by the Contractor as part of the total project cost.

Unless specific TAFs compensation is included in the plans, all environmental protection and control associated with the 404/401 permit activities, including but not limited to TAFs, are incidental to the work within the boundaries of the 404/401 permit or as otherwise identified in the 404/401 permit application.

12. Excavation Activities:

Excavated material will be placed at the upland site and disposed of in such a manner that sediment and runoff to streams and other waters is controlled and minimized. If any changes to the proposed work are deemed necessary, you must notify and coordinate with the ODOT-OES-WPU (614-466-7100).

13. Bridge Demolition Debris:

Demolition debris from bridge removal activities is considered a fill activity by the USACE and Ohio EPA and placement must not exceed 72 hours within waters of the US. If removal of debris material cannot be achieved within 72 hours, please contact ODOT- Office of Environmental Services - Waterway Permits Unit at 614-466-7100.