

ASHTABULA COUNTY
ATB - 534 - 11.98

PID - 4434

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

ATB - 534 - 11.98
ASHTABULA COUNTY
TRUMBULL TOWNSHIP

BRF - 568 (5)

All references to Federal Number BRF-568(5) appearing in these plans shall be considered to read BRF-568(5)

1991 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 THE PLANS, SEE SHEET 17

CONVENTIONAL SIGNS

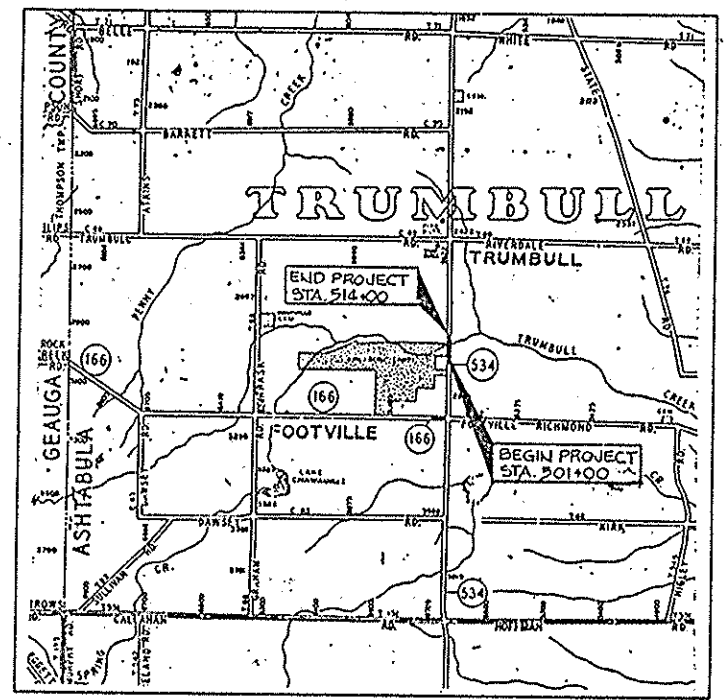
CENTER LINE	---
CORPORATION LINE	---
FENCE LINE	---
GUARD RAIL (EXISTING)	---
GUARD RAIL (PROPOSED)	---
POWER POLES	⊕ ⊕ ⊕
TELEPHONE POLES	⊕ ⊕ ⊕
TREES OR STUMPS (EXISTING)	⊙ ⊙ ⊙
TREES OR STUMPS (TO BE REMOVED)	⊗ ⊗ ⊗
EXISTING R/W LINE	---
PROPOSED R/W LINE	---
PROPERTY LINE	---
EXISTING SANITARY SEWER	8" SAN
EXISTING STORM SEWER	15" STM
PROPOSED SANITARY SEWER	8" SAN
PROPOSED STORM SEWER	15" STM
GAS LINE (EXISTING)	4" GAS
WATER LINE (EXISTING)	6" W.M.
PROPOSED GAS LINE	4" GAS
PROPOSED WATER LINE	6" W.M.
FIRE HYDRANT (EXISTING)	A A A
PROPOSED FIRE HYDRANT	A A A
GAS VALVE (EXISTING)	G.V. G.V.
GAS VALVE (PROPOSED)	G.V. G.V.
MANHOLE (EXISTING)	○ SAN. MH. ○ STM. MH.
MANHOLE (PROPOSED)	● SAN. MH. ● STM. MH.
INLET OR CATCH BASIN (EXISTING)	□ □
INLET OR CATCH BASIN (PROPOSED)	■ ■
WATER VALVE (EXISTING)	W.V. W.V.
WATER VALVE (PROPOSED)	W.V. W.V.

UNDERGROUND UTILITIES
TWO (2) WORKING DAYS BEFORE YOU DIG
CALL-800-362-2764 (TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON MEMBERS MUST BE CALLED DIRECTLY

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DESIGN	DESIGNATION
1990 ADT	1200
2010 ADT	1540
D.M.V.	150
D.	55
T	4%
V	55 MPH
FUNCTIONAL CLASSIFICATION - MAJOR COLLECTOR (RURAL)	
LINE DATA	
BEGIN PROJECT	STA 501+00
END PROJECT	STA. 514+00
LENGTH OF PROJECT	1300 FT. OR 0.246 MI.
BEGIN WORK	STA. 500+60.00
END WORK	STA. 514+50.00
LENGTH OF WORK	1390 FT. OR 0.263 MI.



LOCATION MAP
SCALE 1" = 3,400'

SCALES

PLAN: - - - - -	HORIZONTAL: 1" = 300'	VERTICAL: 1" = 30'
PROFILE: - - - - -	HORIZONTAL: 1" = 50'	VERTICAL: 1" = 5'
CROSS SECTIONS: - - - - -	HORIZONTAL: 1" = 50'	VERTICAL: 1" = 5'

APPROVED: _____
DATE: _____

APPROVED: *David R. Dreyer*
DISTRICT DEPUTY DIRECTOR OF TRANSPORTATION
DATE: 4-26-91

APPROVED: *B.D. Hammel*
ENGINEER, BUREAU OF BRIDGES AND STRUCTURAL DESIGN
DATE: 9/12/91

APPROVED: *Samuel B. ...*
CHIEF ENGINEER, PLANNING AND DESIGN
DATE: 9/23/92

APPROVED: *Samuel B. ...*
DIRECTOR, DEPARTMENT OF TRANSPORTATION
DATE: 9-23-92

PLANS PREPARED AND RECOMMENDED BY:
JOHN DAVID JONES AND ASSOCIATES, INC.
CONSULTING ENGINEERS ARCHITECTS PLANNERS
2162 FRONT ST. CUYAHOGA FALLS, OHIO

STANDARD DRAWINGS		SUPPLEMENTAL SPECIFICATIONS	
BP-31	2-21-92	MC-10	5-1-76
GR-1.1	5-6-91	MC-11	8-1-78
GR-1.2	10-30-92	MC-4	7-26-76
GR-2.1	5-6-91	HW-4A	4-1-80
GR-4.1	5-6-91	GR-3.3	5-6-91
MC-1	6-13-69	MT-99.10	11-14-86
MC-7	10-15-76	STRUCTURAL	
BP-4.1	2-21-92	AS-1-B1	11-27-81
CB-2-3	5-1-79	DBR-2-73	4-10-73
HW-4B	4-1-80	EXJ-3-82	8-1-84
		PSDD-1-B1	6-20-87
		802	4-13-90
		940	6-10-87
		942	3-18-92
		944	3-18-92
		STRUCTURAL	
		836	11-12-85
		849	12-24-85
		949	9-26-86

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATOR
APPROVED: _____
DIVISION ADMINISTRATOR DATE

PROJECT: _____
DATE OF LETTING _____ 19____, CONTRACT No. _____

7-1-93

TYPICAL SECTIONS TYPE 404

FED. ROAD DIST. NO.	STATE	PROJECT
5	OHIO	BRS-568

ASHTABULA COUNTY
ATB-534-11.98.

LEGEND

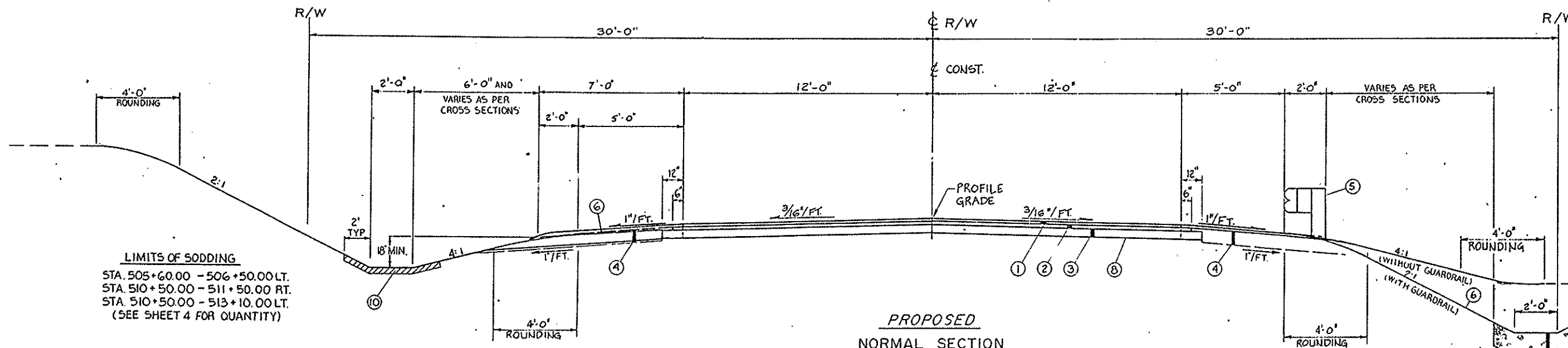
- ① 404 1 1/2" ASPHALT CONCRETE, AC-20
- ② 402 1 3/4" ASPHALT CONCRETE, AC-20
- ③ 301 5" BITUMINOUS AGGREGATE BASE
- ④ 605 AGGREGATE DRAIN
- ⑤ 606 GUARDRAIL, TYPE 5
- ⑥ 659 SEEDING AND MULCHING
- ⑦ 601 ROCK CHANNEL PROTECTION, TYPE C WITH FILTER
- ⑧ 203 SUBGRADE COMPACTION
- ⑨ 407 TACK COAT
- ⑩ 660 SODDING

LIMITS OF ROCK CHANNEL PROTECTION

STA. 506+50.00 - 508+29.00 LT.
STA. 510+50.00 - 508+20.00 RT.
STA. 510+50.00 - 508+71.00 LT.
(SEE SHEET 4 FOR QUANTITY)

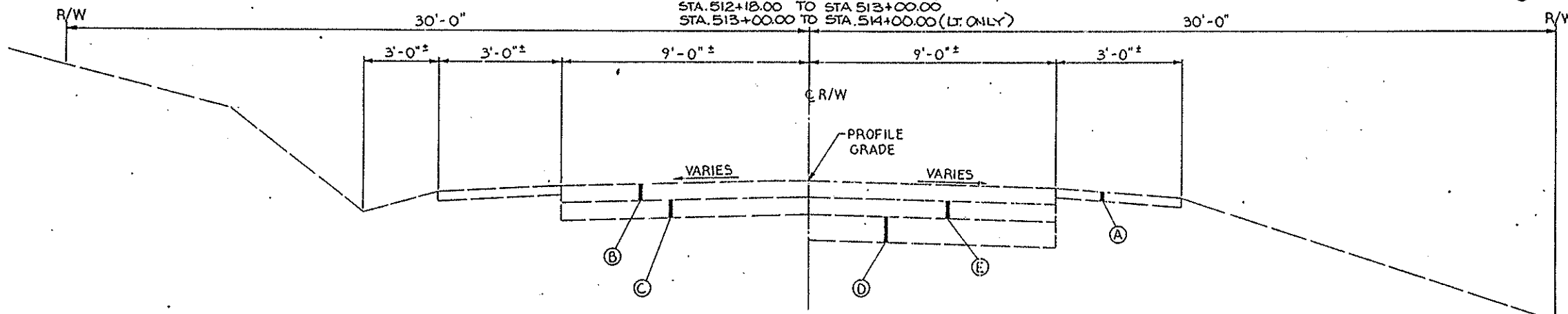
- (A) 16"± EXIST. AGGREGATE BASE
- (B) 8"± EXIST. ASPHALT CONCRETE
- (C) 8"± EXIST. AGGREGATE BASE
- (D) 12"± EXIST. RED BRICK AND PLAIN CONCRETE
- (E) 4"± EXIST. AGGREGATE BASE

NOTE:
REMOVE EXIST. PAVEMENT IN AREAS
OF 3 FEET OF FILL OR LESS.

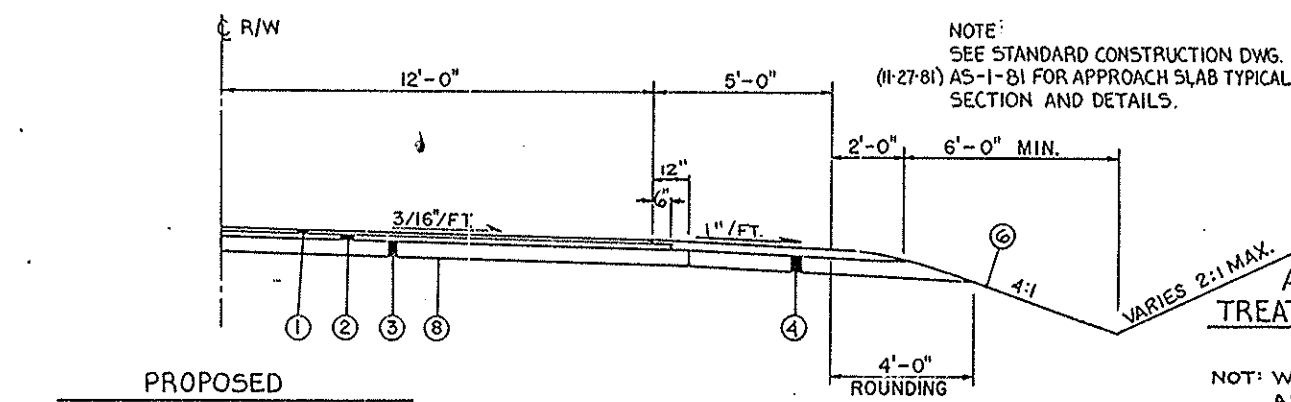


PROPOSED NORMAL SECTION

STA. 501+00.00 TO STA. 507+04.67
STA. 509+52.83 TO STA. 511+50.00
STA. 511+50.00 TO STA. 512+18.00 (LT. ONLY)
STA. 512+18.00 TO STA. 513+00.00
STA. 513+00.00 TO STA. 514+00.00 (LT. ONLY)

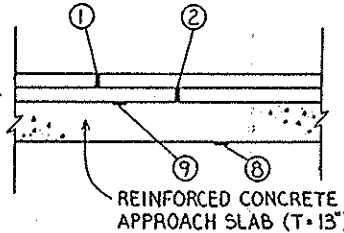


EXISTING NORMAL SECTION



PROPOSED
DITCH ELIMINATION AND 24 FOOT
SURFACE PAVEMENT WIDTH SECTION
STA. 511+50.00 TO STA. 512+18.00 (RT. ONLY)
STA. 513+00.00 TO STA. 514+00.00 (RT. ONLY)

NOTE:
SEE STANDARD CONSTRUCTION DWG.
(11-27-81) AS-1-81 FOR APPROACH SLAB TYPICAL
SECTION AND DETAILS.



ASPHALT CONCRETE SURFACE TREATMENT FOR APPROACH SLABS (TYPICAL)

NOTE: WITHIN STRUCTURAL LIMITS
ASPHALT THICKNESS VARIES
AS SHOWN ON SHT 21 ASPHALT
THICKNESS DIAGRAM.

GENERAL

NOTES

BY DATE	
CALC. BY	1/91
CHECKED BY	2/91

F. H. W. A.	STATE	PROJECT
5	OHIO	BR5-568

3
30

ASHTABULA COUNTY
ATB-534-11.98

ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS - THE ROUNDED CORNERS SHOWN ON THE TYPICAL SECTIONS, APPLY TO ALL CROSS SECTIONS EVEN THOUGH OTHERWISE SHOWN ON THESE PLANS.

UNDERGROUND UTILITIES - THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE OBTAINED FROM THE OWNERS OF THE UTILITY AS REQUIRED BY SECTION "153.64 ORC".

UTILITY OWNERSHIP - THE FOLLOWING UTILITIES AND OWNERS ARE LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT:

TELEPHONE
WESTERN RESERVE TELEPHONE CO.
4616 PARK AVENUE
ASHTABULA, OHIO 44004
ATTN: MR. RICHARD A. PEURA, MGR.
PHONE: (216) 998-5151

ELECTRIC
CLEVELAND ELECTRIC ILLUMINATING CO.
2210 SOUTH RIDGE WEST
P.O. BOX 668
ASHTABULA, OHIO 44004
ATTN: MR. P.R. MULLET, SUPT. SURVEY & COST UNITS
PHONE: (216) 997-6761

REMOVAL OF TREES OR STUMPS - ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS OF THIS PROJECT SHALL BE REMOVED UNDER THE LUMP SUM PRICE BID FOR "ITEM 201, CLEARING AND GRUBBING"; EXCEPT THAT THOSE TREES FOR WHICH PROTECTION AND PRESERVATION WORK IS INDICATED ELSEWHERE IN THESE PLANS SHALL NOT BE REMOVED.

THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED:

SIZES	NO. TREES
12" TO 24"	62
24" TO 36"	14

THE ABOVE ESTIMATE IS APPROXIMATE AND THE STATE OF OHIO RESERVES THE RIGHT TO ORDER THE REMOVAL OF ADDITIONAL TREES OR STUMPS OUTSIDE OF THE LIMITS OF CONSTRUCTION BUT WITHIN THE RIGHT-OF-WAY AND/OR EASEMENT LINES. PAYMENT FOR REMOVAL OF THESE ADDITIONAL TREES OR STUMPS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "ITEM 201, CLEARING AND GRUBBING".

MONUMENTS - MONUMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN ON STANDARD CONSTRUCTION DRAWING "MC-1". FOR LOCATIONS, SEE SHEET NO. 18.

LOCATION OF GUARDRAIL - THE LOCATIONS OF GUARDRAIL RUNS, AS SHOWN IN THESE PLANS, ARE SUBJECT TO ADJUSTMENT PRIOR TO FINAL ACCEPTANCE. THE ENGINEER SHALL BE SATISFIED THAT ALL INSTALLATIONS WILL AFFORD MAXIMUM PROTECTION FOR TRAFFIC.

SEEDING - QUANTITIES FOR SEEDING ARE CALCULATED FOR THE SOIL AREAS BETWEEN TWO (2) FEET OUTSIDE THE WORK LIMITS, AS SHOWN ON THE CROSS SECTIONS, OR TO THE RIGHT-OF-WAY LINE, IF SUCH LINES IS LESS THAN TWO (2) FEET FROM THE WORK LIMITS.

BENCHING OF FOUNDATION SLOPES - ALTHOUGH CROSS SECTIONS ON THIS PLAN INDICATE SPECIFIC WIDTHS AND DEPTHS OF PROPOSED BENCHING OF THE EMBANKMENT FOUNDATION IN CERTAIN AREAS, NO WAIVER OF THE SPECIFICATIONS IS INTENDED, AND ALL OTHER SLOPED FOUNDATION AREAS SHALL BE BENCHING AS SET FORTH IN 203.09. NO ADDITIONAL PAYMENT WILL BE MADE FOR BENCHING REQUIRED BY THE PROVISIONS OF 203.09.

SOLID WASTE REMOVAL AND DISPOSAL - THE MATERIAL REMOVED AND DISPOSED OF UNDER THIS BID ITEM SHALL BE MANAGED AS SOLID WASTE. THE MATERIAL CONSISTS OF GENERAL DOMESTIC DEBRIS (OLD WASH BASINS, WATER CANS, BOTTLES, ETC.) AND IS LOCATED ON THE LEFT SIDE OF EXISTING PAVEMENT FROM APPROXIMATELY STATION 509+00 TO APPROXIMATELY STATION 509+75. THE DEBRIS SHALL BE REMOVED PRIOR TO ANY EARTHWORK WITHIN THE AFFECTED AREA AND DISPOSED OF IN AN APPROVED SOLID WASTE DISPOSAL FACILITY. THE PAYMENT FOR ALL THE WORK DESCRIBED HEREIN SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM SPECIAL SOLID WASTE REMOVAL AND DISPOSAL.

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL - THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER, FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES:

207 TEMPORARY SEEDING AND MULCHING	3000 SY
207 STRAW OR HAY BALES	80 EA
207 TEMPORARY SLOPE DRAINS	115 LF
207 TEMPORARY BENCHES, DAVIS & SEDIMENT BASINS	600 CY
207 FILTER FABRIC FENCE	2000 LF
601 ROCK CHANNEL PROTECTION, TYPE "C", WITHOUT FILTER	5 CY

FARM DRAINS - ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSERVED OUTLETS UNDER THE DIRECTION OF THE ENGINEER. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS, AND WHICH CROSS THE ROADWAY, SHALL BE REPLACED WITHIN THE CONSTRUCTION LIMITS BY ITEM 603 CONDUIT, TYPE "B"; ONE COMMERCIAL SIZE LARGER THAN THE EXISTING CONDUIT.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS, WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF THE ROADWAY DITCHES, SHALL BE OUTLETED INTO THE ROADWAY DITCH BY 603, TYPE "F" CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE, IF POSSIBLE, ONE FOOT ABOVE THE FLOWLINE ELEVATION OF THE DITCH. LATERAL TILE FIELDS, WHICH CROSS THE ROADWAY, SHALL BE INTERCEPTED BY 603, TYPE "E" CONDUIT; AND CARRIED, IN A LONGITUDINAL DIRECTION, TO AN ADEQUATE OUTLET OR ROADWAY CROSSING.

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

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

ITEM 603 6" CONDUIT, TYPE F 100 LIN. FT.

NECESSARY BENDS OR BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEM.

NONE OF THE ABOVE MATERIALS SHALL BE ORDERED BY THE CONTRACTOR UNTIL AUTHORIZED BY THE ENGINEER.

EROSION CONTROL - ITEMS "601", "660" AND "668" ARE PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE WILL NOT BE REMOVED IN ORDER TO PLACE ANY OF THESE ITEMS AND TURF OF A STABLE NATURE WILL NOT BE REMOVED IN ORDER TO PLACE 660 OR 668. THE ENGINEER SHALL CHECK AND NONPERFORM QUANTITIES, OR ADJUST LOCATIONS AND QUANTITIES FOR THESE ITEMS, WHERE INDICATED BY FIELD CONDITIONS, DURING CONSTRUCTION.

HOUSE CONNECTIONS - EXISTING ROOF DRAINS, FOOTER DRAINS OR YARD DRAINS, DISTURBED BY THE PROPOSED WORK, SHALL BE PROVIDED WITH UNOBSERVED OUTLETS BY CONNECTING TO A STORM SEWER, MANHOLE, CATCH BASIN, OR ROADSIDE DITCH.

THE LOCATION, TYPE, SIZE AND GRADE OF REQUIRED REPLACEMENTS WILL BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION.

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

ITEM 603 4" CONDUIT TYPE E, 707.19 100 LF
ITEM 603 6" CONDUIT TYPE F 100 LF

NONE OF THE ABOVE MATERIALS SHALL BE ORDERED BY THE CONTRACTOR UNTIL AUTHORIZED BY THE ENGINEER

CONDUIT END TREATMENT - IMMEDIATELY AFTER PLACEMENT OF ANY CONDUITS, THE CONTRACTOR SHALL CONSTRUCT THE END TREATMENTS REQUIRED BY THE PLANS AT BOTH THE OUTLET AND INLET ENDS. THIS SHALL INCLUDE HEADWALLS, CONCRETE RIPRAP, ROCK CHANNEL PROTECTION, SODDING, ETC.

ITEM 202 - GUARD RAIL REMOVED FOR STORAGE

THE CONTRACTOR SHALL CAREFULLY REMOVE EXISTING GUARDRAIL SECTIONS AND STORE THEM ON THE RIGHT-OF-WAY OUTSIDE WORK LIMITS IN AN AREA WHERE STATE FORCES CAN PICK THEM UP AT THEIR CONVENIENCE.

WATER POLLUTION CONTROL - NOTE THAT WORK LIMITS SHOWN ON THE PLANS PROHIBITS THE CONTRACTOR FROM DISTURBING THE EXISTING STREAM BED. THE CONTRACTOR SHALL NOT ALLOW ANY MATERIAL OR DEBRIS FROM HIS ACTIVITIES TO BE PLACED OR FALL INTO THE STREAM. SHOULD DEBRIS UNAVOIDABLY FALL INTO THE STREAM, IT SHALL BE REMOVED IMMEDIATELY.

MAINTENANCE OF TRAFFIC

DETOUR LIMITATION THE DETOUR SHOWN ON SHEET 17 SHALL NOT BE PLACED INTO EFFECT PRIOR TO APRIL 1, UNLESS OTHERWISE APPROVED BY THE DIRECTOR. UNTIL THE DETOUR IS PLACED INTO EFFECT, TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES.

CONTRACTOR TO NOTIFY ODOT'S DISTRICT 4 TRAFFIC ENGINEER 5 DAYS PRIOR TO ROAD CLOSING.

THE CONTRACTOR SHALL MAINTAIN INGRESS AND EGRESS TO ALL DRIVEWAYS WITHIN THE WORK LIMITS AT ALL TIMES. ANY CONSTRUCTION OPERATION WHICH WOULD BLOCK ACCESS TO DRIVEWAYS SHALL BE HELD TO A MINIMUM; AND, IN ALL CASES, SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER FOR THE MAINTENANCE OF TRAFFIC.

ITEM 410 TRAFFIC COMPACTED SURFACE, TYPE "A" OR "B"	30 CY
ITEM 616 CALCIUM CHLORIDE	10 TONS
ITEM 616 WATER	5 H GALS.

LIGHTS AND SIGNS AT ADJACENT ROAD INTERSECTIONS - THE CONTRACTOR SHALL, IN ADDITION TO THE GENERAL REQUIREMENTS OF ITEM 614, PERFORM THE FOLLOWING:

PROVIDE, ERECT AND MAINTAIN STANDARD "R-76A" 60" X 30" SIZE, "ROAD CLOSED" SIGNS MOUNTED ON TYPE "III" BARRICADES, WITH LIGHTS. THESE SHALL BE USED AT THE FOLLOWING LOCATIONS DURING PERIODS IN WHICH THE AFFECTED ROAD IS CLOSED TO TRAFFIC:

- S.R. 534 JUST SOUTH OF TRUMBULL ROAD INTERSECTION.
- S.R. 166 AT S.R. 534 INTERSECTION

SIGN SUPPORTS AND LIGHTS FOR "ROAD CLOSED" SIGNS SHALL BE AS DETAILED IN THE "OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES". PAYMENT FOR PROVIDING, ERECTING, MAINTAINING, AND REMOVING LIGHTS, SIGNS, AND SIGN SUPPORTS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC.

ITEM 407 - TACK COAT - THE RATE OF APPLICATION OF 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT, AS DIRECTED BY THE ENGINEER. WHEN COVER AGGREGATE IS NEEDED ON THIS PROJECT, IT SHALL BE USED AS DIRECTED BY THE ENGINEER, AND IT SHALL BECOME INCIDENTAL TO AND INCLUDED FOR PAYMENT IN, ITEM 407, TACK COAT. PLAN QUANTITIES INDICATE AVERAGE APPLICATION RATES OF 0.075 GALLONS PER SQUARE YARD OF TACK COAT FOR ESTIMATING PURPOSES ONLY.

CONTINGENCY QUANTITIES - THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR ITEMS SET UP TO BE USED "AS DIRECTED BY THE ENGINEER", UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED AT THE ENGINEER'S DISCRETION SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

DUST CONTROL - AN ESTIMATED QUANTITY OF 5 TONS CALCIUM CHLORIDE AND 50 H GALLONS OF WATER IS PROVIDED IN THE GENERAL SUMMARY FOR DUST CONTROL, AND SHALL BE USED AS DIRECTED BY THE ENGINEER. PAYMENT SHALL BE MADE AT THE UNIT BID PRICE AT "ITEM 616, CALCIUM CHLORIDE" AND "ITEM 616, WATER".

ITEM 304 AGGREGATE BASE, AS PER PLAN - SECTION "304.02" OF MATERIAL SPECIFICATIONS IS MODIFIED FOR THIS PROJECT TO REQUIRE THE USE OF LESTONE FOR THE CONSTRUCTION OF RESIDENTIAL DRIVEWAYS. PAYMENT SHALL BE MADE AT THE UNIT BID PRICE AND SHALL INCLUDE ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO PERFORM THIS WORK.

AGGREGATE DRAINS - AGGREGATE DRAINS SHALL BE PLACED IMMEDIATELY ADJACENT TO THE BRIDGE AND AT FIFTY (50) FOOT INTERVALS ON EACH SIDE OF NORMAL CROWNED SECTIONS, OR AS DETERMINED BY THE ENGINEER. THE MATERIAL SHALL BE IN ACCORDANCE WITH 605.05.

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

ITEM 605 AGGREGATE DRAINS 300 LIN. FT.

ITEM 207 - FILTER FABRIC FENCE

MATERIALS - FILTER FABRIC SHALL MEET THE REQUIREMENTS OF ITEM 207.02

CONSTRUCTION - THE BOTTOM OF THE FENCE SHALL BE BURIED 6" BELOW THE GROUND. THE FENCE SHALL BE HIGH ENOUGH TO RETAIN SEDIMENT-LADEN WATER AND ADEQUATELY SUPPORTED TO PREVENT COLLAPSE OR BURSTING. THE GROUND ELEVATION OF THE FENCE SHALL BE HELD CONSTANT WITH THE EXCEPTION OF THE END ELEVATIONS WHICH SHALL BE RAISED TO PREVENT FLOW AROUND THE END OF THE FENCE.

ITEM SPECIAL - MAILBOX SUPPORT

1. DESCRIPTION

THIS WORK SHALL CONSIST OF FURNISHING AND ERECTING MAILBOX SUPPORT AND ANY ASSOCIATED MOUNTING HARDWARE IN ACCORDANCE WITH PLAN DETAILS, AND ATTACHING AN OWNER-SUPPLIED MAILBOX, AT LOCATIONS SPECIFIED IN THE PLAN, OR OTHERWISE ESTABLISHED BY THE ENGINEER.

2. MATERIALS

WOOD POSTS SHALL BE NOMINAL 4"x4" SQUARE OR 4-1/2" DIAMETER ROUND, AND CONFORM TO 710.14.

STEEL POSTS SHALL BE NOMINAL PIPE SIZE 2" I.D., AND CONFORM TO AASHTO M 181.

HARDWARE (PLATES, SCREWS, BOLTS, ETC.) SHALL BE COMMERCIAL - GRADE GALVANIZED STEEL.

3. SETTING POSTS

POSTS SHALL BE SET PER THE FIRST PARAGRAPH OF 606.03, AND SHALL IN NO INSTANCE BE ENCASED IN CONCRETE.

4. MOUNTING BOXES

SUPPORT HARDWARE SHALL ACCOMMODATE EITHER A SINGLE OR A DOUBLE MAILBOX INSTALLATION, AND NO MORE THAN TWO BOXES MAY BE MOUNTED ON A SINGLE POST.

THE MAILBOX SHALL BE SECURELY AND NEATLY ATTACHED BY THE CONTRACTOR TO THE NEW SUPPORT. THE CONTRACTOR SHALL FURNISH ALL NECESSARY ATTACHMENT HARDWARE (NUTS, BOLTS, PLATES, SPACERS, AND WASHERS) AS NECESSARY TO ACCOMMODATE THE COMPLETE INSTALLATION.

IN THE ABSENCE OF A NEW BOX SUPPLIED BY THE OWNER, THE CONTRACTOR SHALL SALVAGE THE EXISTING BOX AND PLACE IT ON THE NEW SUPPORT. DUE CARE SHALL BE EXERCISED IN SUCH AN OPERATION, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ANY BOX DAMAGED BY IMPROPER HANDLING ON HIS PART, AS JUDGED AND DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE LOCAL POST MASTER REGARDING THE TIMING OF THE MOVEMENT OF ANY MAILBOX TO A NEW LOCATION.

SEE DETAILS ON SHEET NO. 7.

5. BASIS OF PAYMENT

PAYMENT UNDER THIS ITEM SHALL BE LIMITED TO FINAL PERMANENT INSTALLATIONS. TEMPORARY INSTALLATIONS SHALL BE IN ACCORDANCE WITH 107.12. HOWEVER, THE SAME MATERIAL AND SIZE LIMITATIONS AS FOR PERMANENT INSTALLATIONS SHALL APPLY.

MAILBOX SUPPORTS WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH, FOR THE TYPED SPECIFIED, COMPLETE IN PLACE.

PAYMENT WILL BE MADE UNDER:

ITEM	UNIT	DESCRIPTION	QUANTITY
SPECIAL	EACH	MAILBOX SUPPORT, SINGLE	6

MAINTENANCE - THE FILTER FABRIC FENCE SHALL BE MAINTAINED TO BE FUNCTIONAL. THIS SHALL INCLUDE REMOVAL OF TRAPPED SEDIMENT AND REQUIRED CLEANING, REPAIR, AND/OR REPLACEMENT OF THE FILTER FABRIC.

PAYMENT - THE COST OF ALL MATERIALS, CONSTRUCTION, MAINTENANCE AND REMOVAL REQUIRED SHALL BE PAID FOR UNDER ITEM 207 LIN. FT. FILTER FABRIC FENCE.

QUANTITY CALCULATIONS

BY DATE
 CALC. FLK 1-21
 CHECKED PAK 2-21

F.H.W.A. REGION	STATE	PROJECT NO	
5	OHIO	BRS-568(5)	

4
30

ASHTABULA COUNTY
 ATB-534-11.98

ITEM 202 - PAVEMENT REMOVED						
MARK	LOCATION	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ.FT.)	THICK-NESS (FT.)	QUANTITIES (SQ.YD.)
R-14/RT	501+00.00-504+50.00	350	9			350
R-16/RT	507+00.00-507+90.00	90	9			90
R-17/RT	508+56.00-509+50.00	94	9			94
R-15/RT	512+25.00-514+00.00	175	9			175
					TOTAL	709

ITEM 202 - WEARING COURSE REMOVED						
MARK	LOCATION	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ.FT.)	THICK-NESS (FT.)	QUANTITIES (SQ.YD.)
	500+68.75-501+00.00	31.25	18			62.5
	514+00.00-514+31.25	31.25	18			62.5
					TOTAL	125.0

ITEM 203 - SUBGRADE COMPACTION						
MARK	LOCATION	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ.FT.)	THICK-NESS (FT.)	QUANTITIES (SQ.YD.)
	501+00.00-507+04.67	604.67	24			1612.5
	507+04.67-507+24.67	20	34			75.6
	509+32.83-509+52.83	20	34			75.6
	509+52.83-514+00.00	447.17	24			1192.5
					TOTAL	2956.20

ITEM 301 - BITUMINOUS AGGREGATE BASE, AC-20						
MARK	LOCATION	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ.FT.)	THICK-NESS (FT.)	QUANTITIES (CU.YD.)
	501+00.00-507+04.67	604.67	26		0.417	242.6
	509+52.83-514+00.00	447.17	26		0.417	179.4
					TOTAL	422.0

ITEM 402 - ASPHALT CONCRETE AC-20						
MARK	LOCATION	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ.FT.)	THICK-NESS (FT.)	QUANTITIES (CU.YD.)
	501+00.00-507+04.67	604.67	25		0.146	81.6
	507+04.67-507+24.67	20	34		0.146	3.7
	509+32.83-509+52.83	20	34		0.146	3.7
	509+52.83-514+00.00	447.17	25		0.146	60.4
					TOTAL	149.4

ITEM 404 - ASPHALT CONCRETE, AC-20						
MARK	LOCATION	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ.FT.)	THICK-NESS (FT.)	QUANTITIES (CU.YD.)
	500+68.75-507+04.67	636.92	24		0.104	58.8
	507+04.67-507+24.67	20	34		0.104	2.6
	509+32.83-509+52.83	20	34		0.104	2.6
	509+52.83-514+31.25	478.42	24		0.104	44.3
					TOTAL	108.4

ITEM 407 - TACK COAT,						
MARK	LOCATION	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ.YD.)	THICK-NESS (FT.)	QUANTITIES (GAL.)
	500+68.75-501+00.00	31.25	24	83.3		6.3
	507+04.67-507+24.67	20	34	75.6		5.7
	509+32.83-509+52.83	20	34	75.6		5.7
	514+00.00-514+31.25	31.25	24	83.3		6.3
					TOTAL	24

ITEM 601 - ROCK CHANNEL PROTECTION TYPE C, WITH FILTER						
MARK	LOCATION	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ.FT.)	THICK-NESS (FT.)	QUANTITIES (CU.YD.)
LT/RC-1	506+50.00-508+29.00	190	6			63
RT/RC-2	510+50.00-508+20.00	250	6			83
LT/RC-3	510+50.00-508+71.00	210	6			70
					TOTAL	216

ITEM 601 - ROCK CHANNEL PROTECTION						
TYPE	DESCRIPTION	LENGTH (FT.)	WIDTH (FT.)	QUANTITIES (CU.YD.)		
TYPE B	WITH FILTER	PLANIMETER		295	NORTHERLY SLOPE	
	SEE SITE PLAN FOR	PLANIMETER		244	SOUTHERLY SLOPE	
	BRIDGE ATB-534-12.10					
	FOR LOCATION ALONG					
	FILL SLOPE AT CREEK			TOTAL		539
TYPE D	WITHOUT FILTER	72	40	160	NORTHERLY SLOPE	
	(SEE SITE PLAN FOR	63	40	140	SOUTHERLY SLOPE	
	BRIDGE ATB-534-12.10					
	FOR LOCATION ALONG					
	FILL SLOPE AT CREEK			TOTAL		300

ITEM 611 - REINFORCED CONCRETE APPROACH SLAB (T-13")						
MARK	LOCATION	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ.FT.)	THICK-NESS (FT.)	QUANTITIES (SQ.YD.)
A-1	507+04.67-507+24.67	20	34			75.6
A-2	509+32.83-509+52.83	20	34			75.6
					TOTAL	151.2

ITEM 660 - SODDING						
MARK	LOCATION	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ.FT.)	THICK-NESS (FT.)	QUANTITIES (SQ.YD.)
LT/S-1	503+20.00-504+05.00	85	6			57
LT/S-2	504+15.00-506+00.00	245	6			163
RT/S-3	510+50.00-511+50.00	100	6			67
LT/S-4	510+50.00-513+10.00	260	6			173
					TOTAL	460

ITEM 668 - SEEDING AND EXCELSIOR MATTING						
MARK	LOCATION	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ.FT.)	THICK-NESS (FT.)	QUANTITIES (SQ.YD.)
	507+24.67; FILL			6695		74.4
	SLOPE AT CREEK					
	509+32.83; FILL			7330		81.4
	SLOPE AT CREEK					
					TOTAL	155.8

SUMMARY FROM CROSS SECTIONS						
SHEET	LOCATION	203 EXCAVATION NOT INCL. EMB. (CY)	203 EMBANKMENT (CY)	659 SEEDING AND MULCHING (SQ.YD.)		
8	500+00.00-501+00.00	12	12	56		
9	501+50.00-502+50.00	43	318	519		
10	502+66.00-504+00.00	79	899	1023		
11	504+50.00-505+50.00	130	1406	1095		
12	506+00.00-507+00.00	341	3319	1499		
13	507+50.00-509+50.00	1580	7381	2513		
14	510+00.00-511+00.00	524	6726	1594		
15	511+50.00-513+00.00	699	892	1333		
16	513+50.00-514+50.00	767	73	936		
	DEDUCT SODDING			(460)		
	DEDUCT SEEDING & EXCELSIOR MATTING			(1558)		
	TOTAL	4175	20996	8555		

DRIVEWAY AND MAIL BOX APPROACH QUANTITIES								
SIDE	LOCATION	LENGTH (FT.)	WIDTH (FT.)	ITEM 301 T=4" (CU.YD.)	ITEM 404 (ORNGRASS) T=1" (CU.YD.)	ITEM 403 T=3" (CU.YD.)	ITEM 304 AS PER PLAN T=8" (CU.YD.)	
RT/DR-1	501+09	15	(16+16)/2	5.7	1.4		15.8	
		40	16					
LT/DR-2	502+11	15	(14+14)/2	5.3	1.3		1.0	
		3	14					
LT/DR-3	502+66	15	(16+16)/2	5.7	1.4		5.9	
		15	16					
LT/DR-4	503+16	15	(38+8)/2	4.3	1.1		2.0	
		10	8					
LT/DR-6	504+10	15	(38+8)/2	4.3	1.1		2.6	
		13	8					
RT/DR-7	512+24	15	(12+12)/2	5.0	1.2		3.6	
		12	12					
RT/DR-8	513+92	15	(36+6)/2	3.9	1.0		1.2	
		8	6					
RT/DR-9	501+33 - 503-27	162	5			7.5	MAIL BOX APPROACH	
		32	(5+1)/2			0.9		
RT/DR-10	514+08 - 514+50	12	5			0.6		
		30	(5+1)/2			0.8		
				TOTAL	34	9	10	32.1

ITEM 659 - COMMERCIAL FERTILIZER
 18244 YD² (5 FT²/YD²) (20 LBS./1000 FT²) (1 TON/2000 LBS.) = 0.94 TONS

ITEM 659 - WATER
 8886 YD² (5 FT²/YD²) (120 GAL./1000 FT²) (M.GAL./1000 GAL.) x 2 = 18 M.GAL.

ITEM 659 - AGRICULTURAL LIMING
 18244 YD² (5 FT²/YD²) (100 LBS./1000 FT²) (1 TON/2000 LBS.) = 488 TONS

BENCH MARK: "+" CUT SOUTHWEST WINGWALL OF EXIST. BRIDGE ELEV. 950.502.

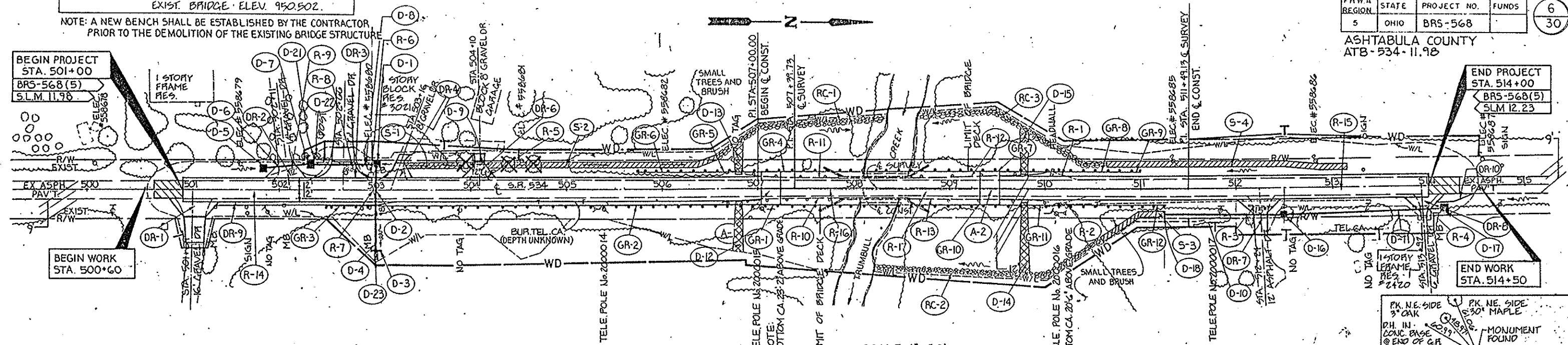
NOTE: A NEW BENCH SHALL BE ESTABLISHED BY THE CONTRACTOR PRIOR TO THE DEMOLITION OF THE EXISTING BRIDGE STRUCTURE

BEGIN PROJECT
STA. 501+00
BRS-568(5)
SLM 11.98

BEGIN WORK
STA. 500+60

END PROJECT
STA. 514+00
BRS-568(5)
SLM 12.23

END WORK
STA. 514+50



EXISTING BRIDGE DATA

TYPE : 1 SPAN PRESTRESSED CONCRETE BOX BEAMS ON STONE WALL TYPE ABUTMENTS
SPAN : 60'-0" CLEAR
ROADWAY : 20'-0" F/F GUARDRAIL
ALIGNMENT : TANGENT
WEARING SURFACE : ASPHALT CONCRETE
CONDITION : FAIR

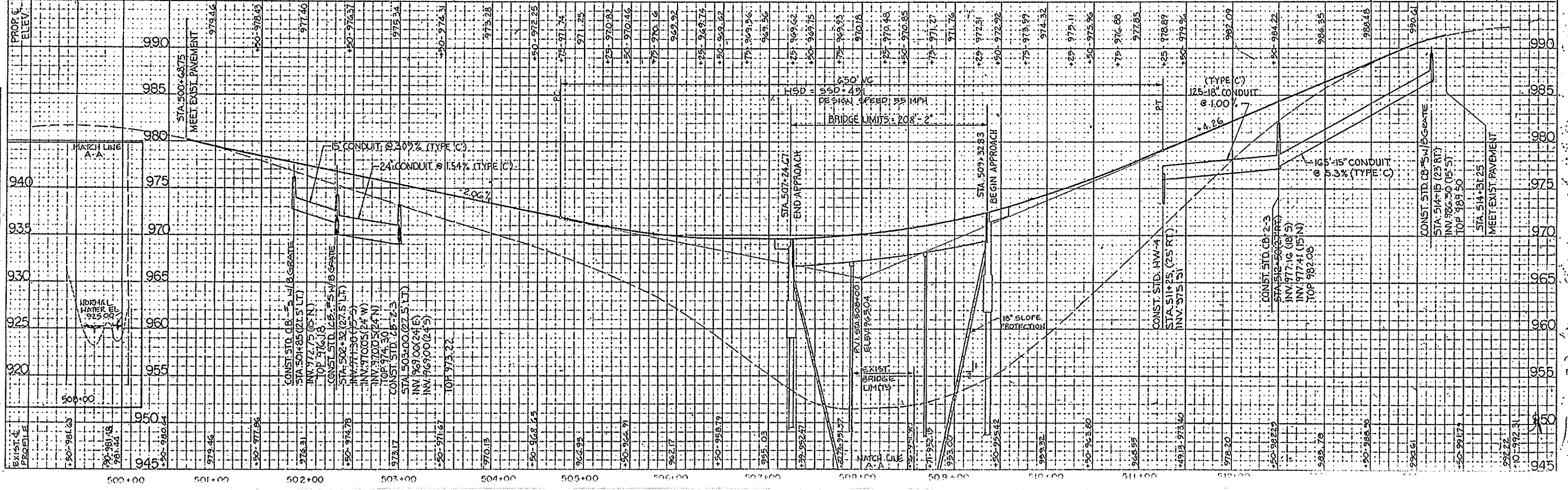
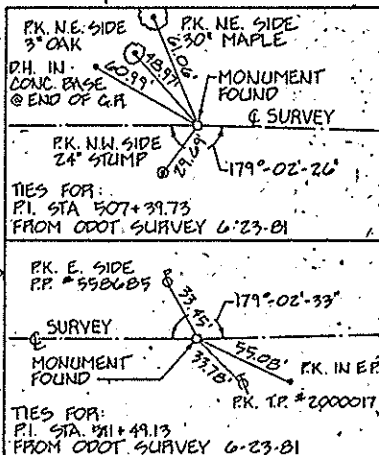
PROPOSED BRIDGE DATA

TYPE : 3 SPAN PRESTRESSED CONCRETE BOX BEAM W/REINF. CONCRETE PIERS AND ABUTMENTS.
SPANS : 67'-0", 67'-0", 67'-0" C/C BEARINGS
ROADWAY : 34'-0" F/F GUARDRAIL
LOADING : HS 20-44 & ALTERNATE MILITARY LOADING
SKEW : NONE
WEARING SURFACE : ASPHALT CONCRETE
APPROACH SLAB : AS-1-81 (20'-0" LONG)
ALIGNMENT : TANGENT
CROWN : 3/16" PER FOOT

SEE SHEET 18, CENTERLINE SURVEY, FOR Q SURVEY VERSUS Q CONSTRUCTION INFORMATION.
SEE SHEET 19 FOR EXISTING AND PROPOSED BRIDGE DATA.

ITEM 202 - WEARING COURSE REMOVED, 31.25' ASPHALT FEATHER, BUTT JOINT PER BP-5.

NOTES:
SEE GENERAL NOTES, SHEET 3, FOR LOCATION OF REQUIRED MAIL BOX SUPPORT POST.
SEE SHEET 4 FOR PLAN QUANTITIES (S, A, DR, RC DESIGNATIONS)
SEE SHEET 7 FOR REMOVAL QUANTITIES, GUARDRAIL QUANTITIES AND DRAINAGE QUANTITIES (R, GR & D DESIGNATIONS)
SEE SHEET 7 FOR DRIVEWAY AND MAILBOX APPROACH CONSTRUCTION DETAILS, AND ALSO FOR MAILBOX SUPPORT POST ANCHORING DETAILS.
SEE CENTERLINE SURVEY FOR LOCATION OF REQUIRED MONUMENTS ASSEMBLES, SHEET 18.
(R-1) AND (R-2) REMOVAL ITEMS REFER TO 10" CULVERTS W/ HEADWALLS.



PLAN QUANTITIES

BY DATE	
CALC.	
CHECKED	

FHWY REGION	STATE	PROJECT	
5	OHIO	BRS-568 ()	

7
30

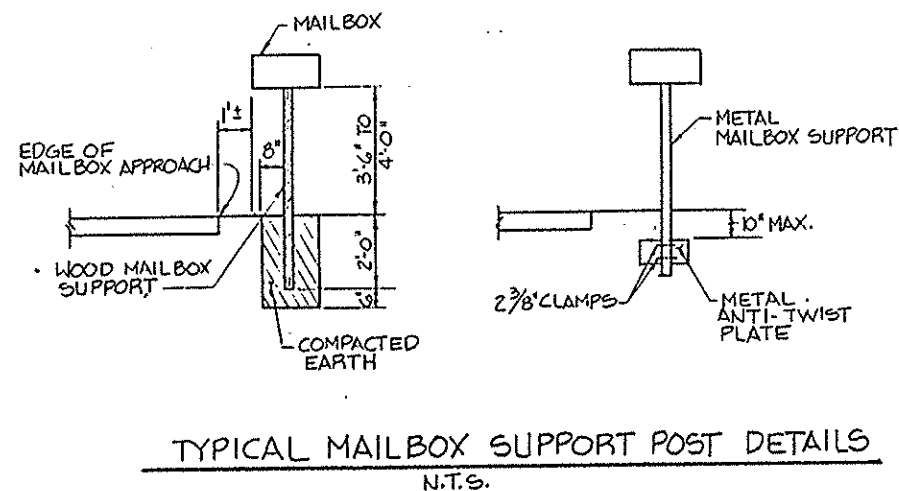
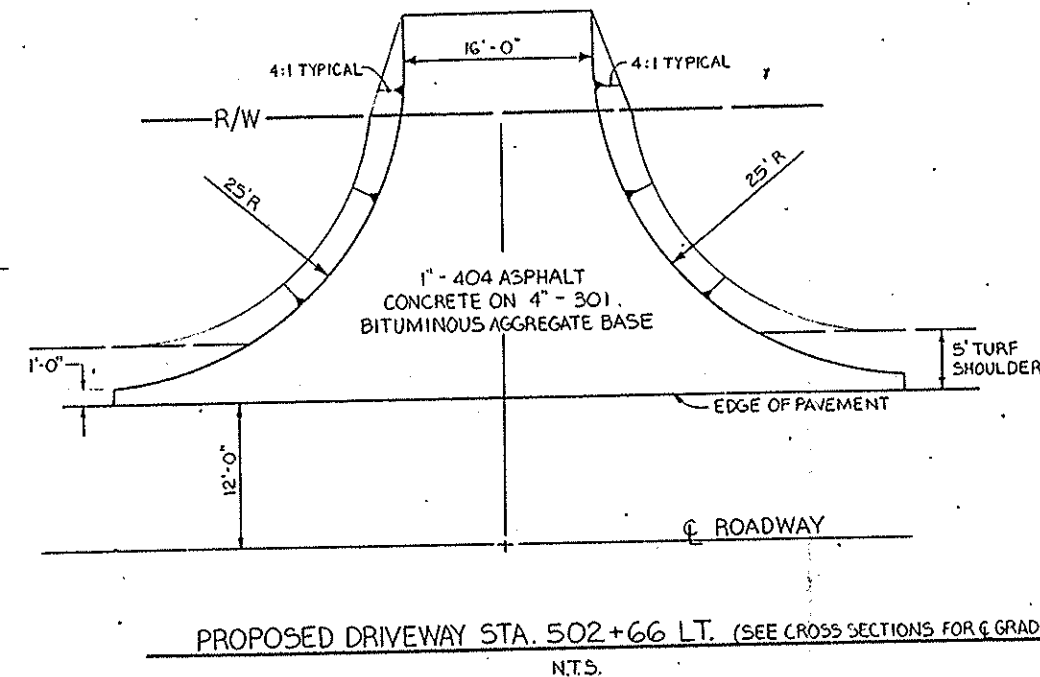
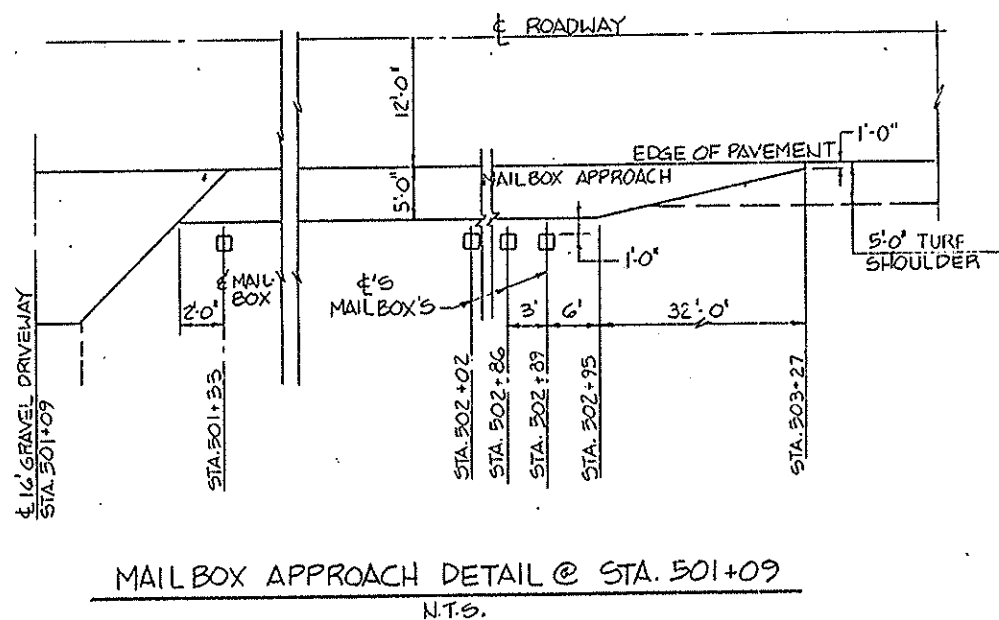
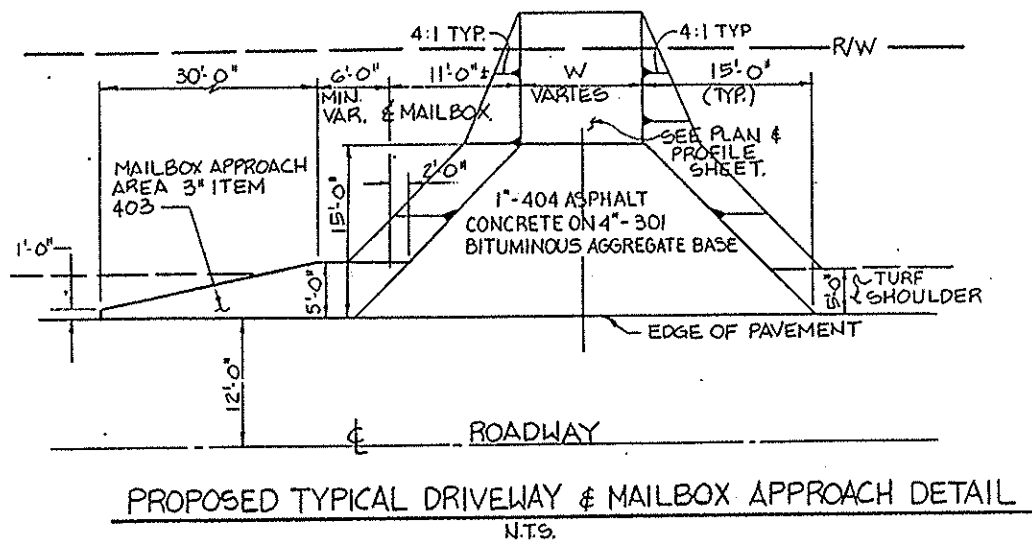
ASHTABULA COUNTY
ATB-534-11.98

MARK	SIDE	STATION		202	202	202		
		FROM	TO	PIPE REMOVED 24" AND UNDER	GUARDRAIL REMOVED FOR STORAGE	CATCH BASIN REMOVED		
				LIN. FT.	LIN. FT.	EACH		
R-1	LT	510+07	510+28	23				
R-2	RT	510+04	510+28	28				
R-3	RT	512+12	512+38	26				
R-4	RT	513+82	514+09	27				
R-5	LT	503+96	504+24	30				
R-6	LT	502+95						
R-7	-	502+95	503+03	52				
R-8	LT	502+95	502+49	49				
R-9	LT	501+92	502+45	56				
R-10	RT	506+63	507+85		123			
R-11	LT	506+87	507+85		97			
R-12	LT	502+60	510+68		147			
R-13	RT	508+60	510+63		145			
C-1	LT	504+25	505+60					
C-2	RT	511+15	513+85					
TOTALS				291	512	1		

MARK	SIDE	STATION		606	606	606	601	802
		FROM	TO	GUARDRAIL TYPE 5	ANCHOR ASSEMBLY TYPE A	BRIDGE TERMINAL ASSEMBLY TYPE B	ROCK CHANNEL PROTECTION TYPE C W/ FILTER	BARRIER REFLECTOR TYPE A
				LIN. FT.	EACH	EACH	CU. YD.	EACH
GR-1	RT	507+22.50						
GR-2	RT	507+22.50	507+72.50	450				
GR-3	RT	502+72.50	502+47.50		1			
GR-4	LT	507+22.50				1		
GR-5	LT	507+22.50	505+97.50	125				
GR-6	LT	505+97.50	503+72.50					
GR-7	LT	504+35.00						
GR-8	LT	504+35.00	510+85.00	150				
GR-9	LT	510+85.00	511+10.00		1			
GR-10	RT	509+35.00						
GR-11	RT	509+35.00	511+10.00	175				
GR-12	RT	511+10.00	511+35.00		1			
D-23	RT	503+00					2	
	RT	502+72.50	511+10.00				9	
	LT	505+97.50	510+85.00				6	
TOTALS				875	4	4	2	15

MARK	SIDE	STATION		604	603	602	603	603	603	603		
		FROM	TO	CATCH BASIN	24" CONDUIT TYPE 'C'	CONCRETE MASONRY	15" CONDUIT TYPE 'C'	18" CONDUIT TYPE 'C'	REINFORCED SODDING	12" CONDUIT TYPE 'C'		
				EACH	LIN. FT.	CU. YD.	LIN. FT.	LIN. FT.	SG. YD.	LIN. FT.		
D-1	LT	503+00		1								
D-2	-	503+00			43	.48						
D-3	RT	503+00				.43						
D-4	LT	503+00			55	.48						
D-5	LT	504+85		1								
D-6	LT	501+85	502+32				47					
D-7	LT	502+32		1								
D-8	LT	502+32	503+00		68					20		
D-9	LT	504+00	504+20					125				
D-10	RT	511+50	512+25				165					
D-11	RT	512+50	514+15						42			
D-12	RT	506+80							27			
D-13	LT	506+80							61			
D-14	RT	509+78							38			
D-15	LT	509+78										
D-16	RT	512+50		1								
D-17	RT	514+15		1								
D-18	RT	511+25				.31						
D-19		NOT USED										
D-20		NOT USED										
D-21	LT	502+32			8							
D-22	LT	502+32				.43						
TOTALS				2	376	49	55	2.13	212	125	168	20

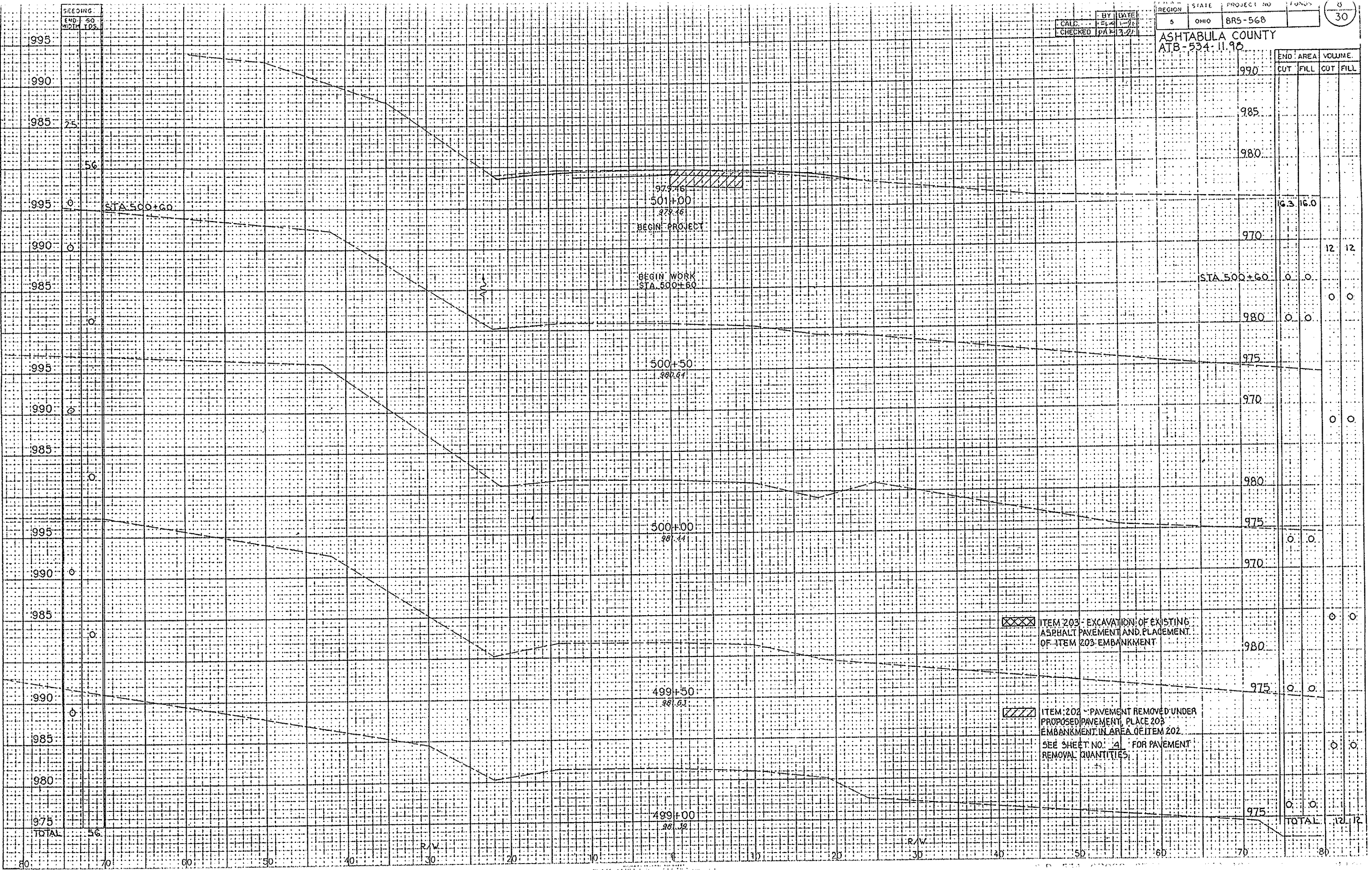
CONSTRUCTION DETAILS



ASHTABULA COUNTY
ATB-534-11.98

CALC. BY DATE
CHECKED PAH 11-27

ELEVATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
990				
985				
980				
975	16.3	16.0		
970			12	12
965				
960				
955				
950				
945				
940				
935				
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70				
TOTAL			12	12

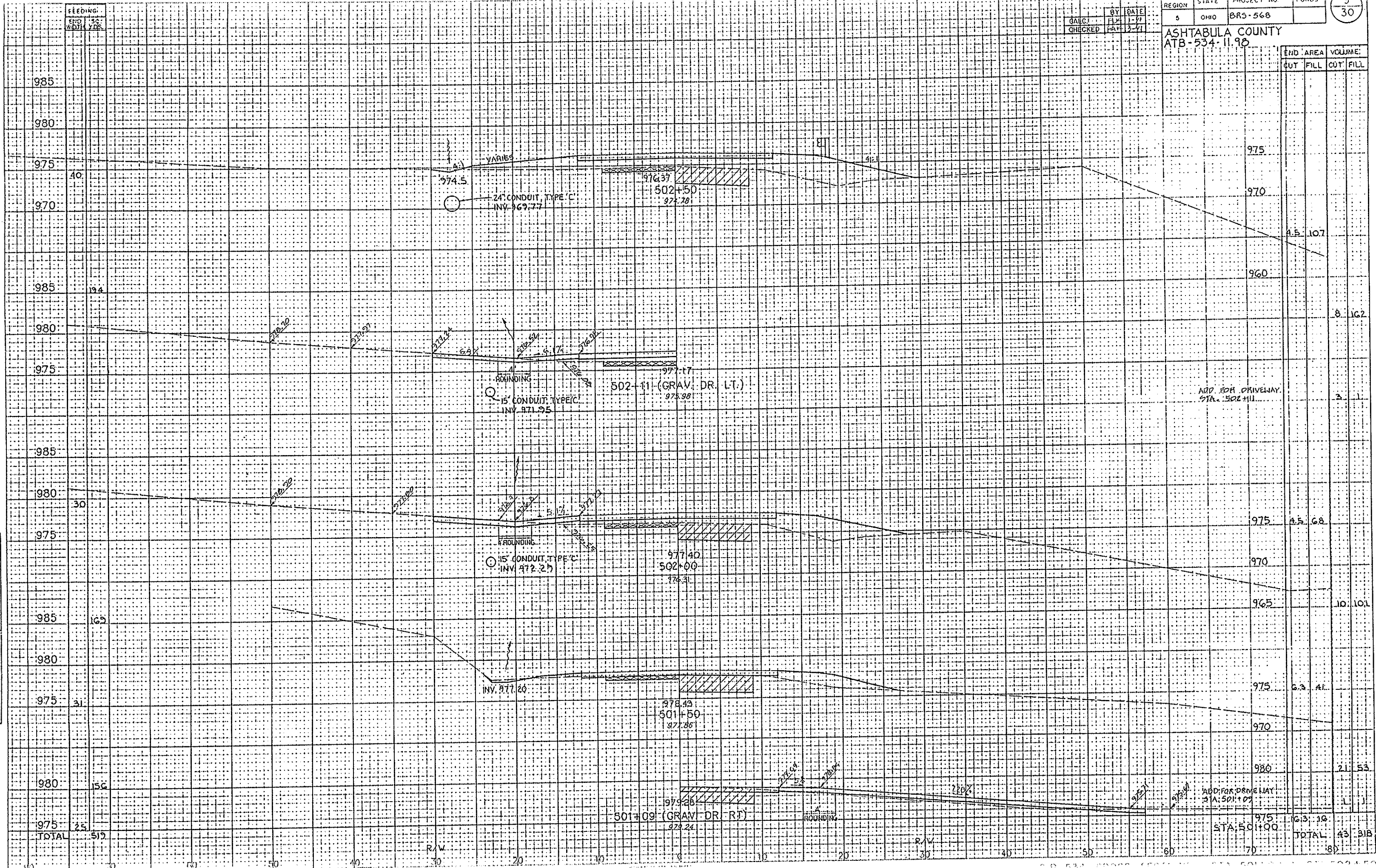


XXXX ITEM 203 - EXCAVATION OF EXISTING ASPHALT PAVEMENT AND PLACEMENT OF ITEM 203 EMBANKMENT

XXXX ITEM 202 - PAVEMENT REMOVED UNDER PROPOSED PAVEMENT, PLACE 203 EMBANKMENT IN AREA OF ITEM 202. SEE SHEET NO. 4 FOR PAVEMENT REMOVAL QUANTITIES.

FINAL SURVEY PLOTTED BY DATE

ORIGINAL SURVEY PLOTTED BY DATE



ORIGINAL SURVEY PLANNED
 SURVEY PLANNED
 WATER PROTECT WORKS
 DATE: 11-11-98
 BY: J. J. JONES
 CHECKED: J. J. JONES

ORIGINAL SURVEY PLANNED
 SURVEY PLANNED
 WATER PROTECT WORKS
 DATE: 11-11-98
 BY: J. J. JONES
 CHECKED: J. J. JONES

ADD FOR DRIVEWAY
STA: 502+11

ADD FOR DRIVEWAY
STA: 501+09

STA: 501+00

R/W

R/W

ROUNDING

INV. 977.20

ROUNDING

ROUNDING

501+09 (GRAV. DR. RT.)

502+11 (GRAV. DR. LT.)

502+50

24" CONDUIT TYPE 'C'
INV. 969.77

15" CONDUIT TYPE 'C'
INV. 972.27

15" CONDUIT TYPE 'C'
INV. 971.95

501+50
977.85

502+00
976.31

502+11
975.98

502+50
972.78

974.5

976.37

977.17

977.40

978.43

979.28

VARIES

6.8%

5.1%

3.7%

2.8%

2.0%

1.5%

1.0%

0.5%

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-7.0%

-7.5%

-8.0%

-8.5%

-9.0%

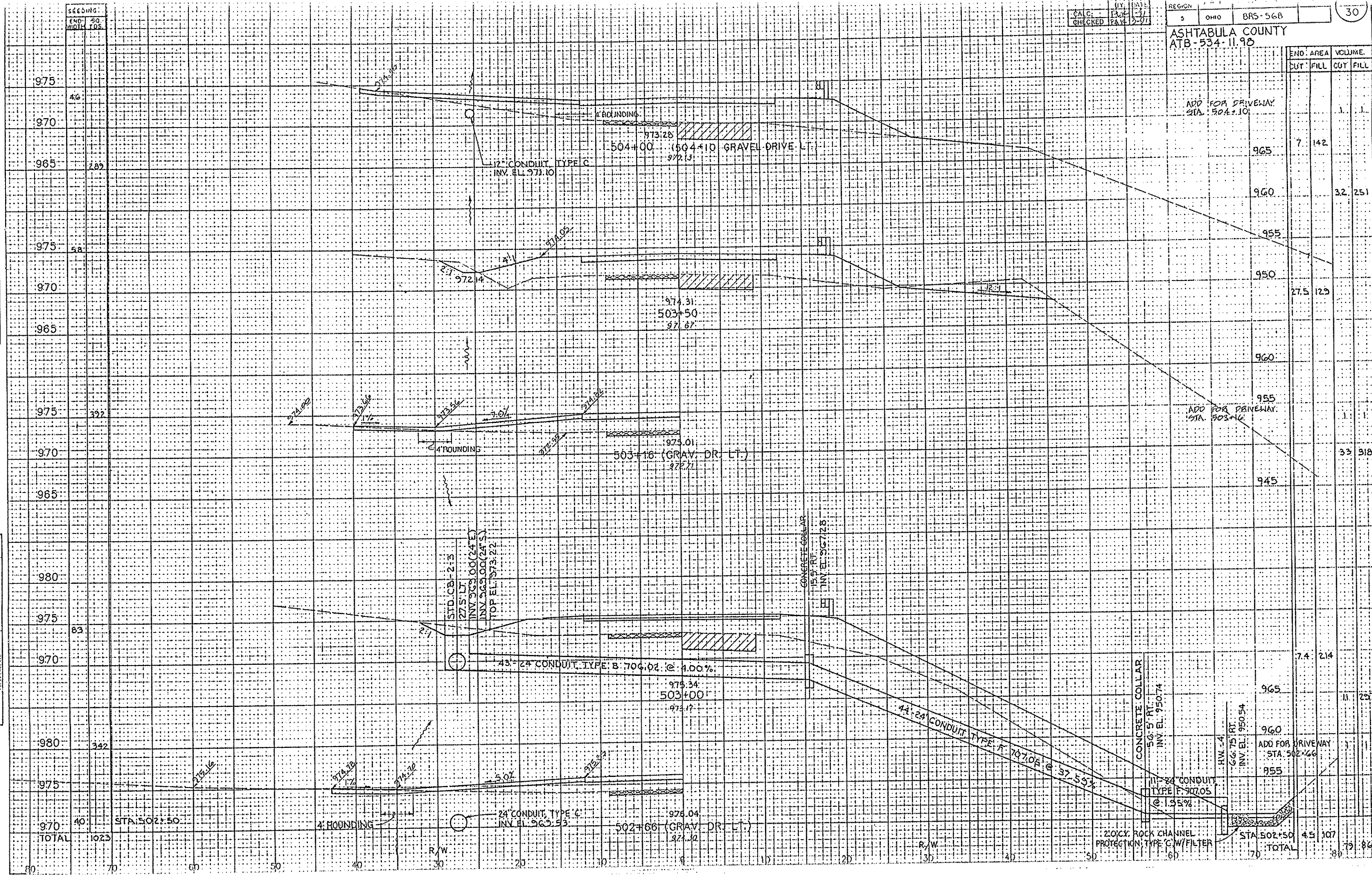
-9.5%

-10.0%

BY DATE 3-17-11
 CALC. CHECKED PAGE 3-11

REGION 5 OHIO BR5-568 30

ASHTABULA COUNTY
 ATB-534-11.98



STA.	END. AREA CUT	END. AREA FILL	VOLUME	
			CUT	FILL
			1	1
504+10	7	142		
503+50		32	251	
503+16	27.5	129		
503+16			33	318
503+00			7.4	214
502+66	4.5	107		
TOTAL	44.5	869		

ADD FOR DRIVEWAY STA. 504+10

ADD FOR DRIVEWAY STA. 503+16

ADD FOR DRIVEWAY STA. 502+66

CONCRETE COLLAR 56' 5" RT. INV. EL. 950.74

2.0% ROCK CHANNEL PROTECTION, TYPE C, W/FILTER

12" CONDUIT, TYPE C
 INV. EL. 971.10

4' ROUNDING

504+00 (504+10 GRAVEL DRIVE LT.)

503+16 (GRAV. DR. LT.)

STD. CB-213
 27.5' LT.
 INV. 969.00 (24'E)
 INV. 969.00 (24'S)
 TOP EL. 973.22

43'-24" CONDUIT, TYPE B, 706.02' @ 4.00%

503+00

44'-24" CONDUIT, TYPE F, 707.05' @ 37.55%

24" CONDUIT, TYPE C
 INV. EL. 965.53

502+66 (GRAV. DR. LT.)

CONCRETE COLLAR
 56' 5" RT.
 INV. EL. 950.74

H.W. -4
 66.75 RT.
 INV. EL. 950.54

11'-24" CONDUIT
 TYPE F, 707.05'
 @ 37.55%

R/W

R/W

TOTAL

79 869

SECTIONING:
 END 50.0
 WIDTH 100.0

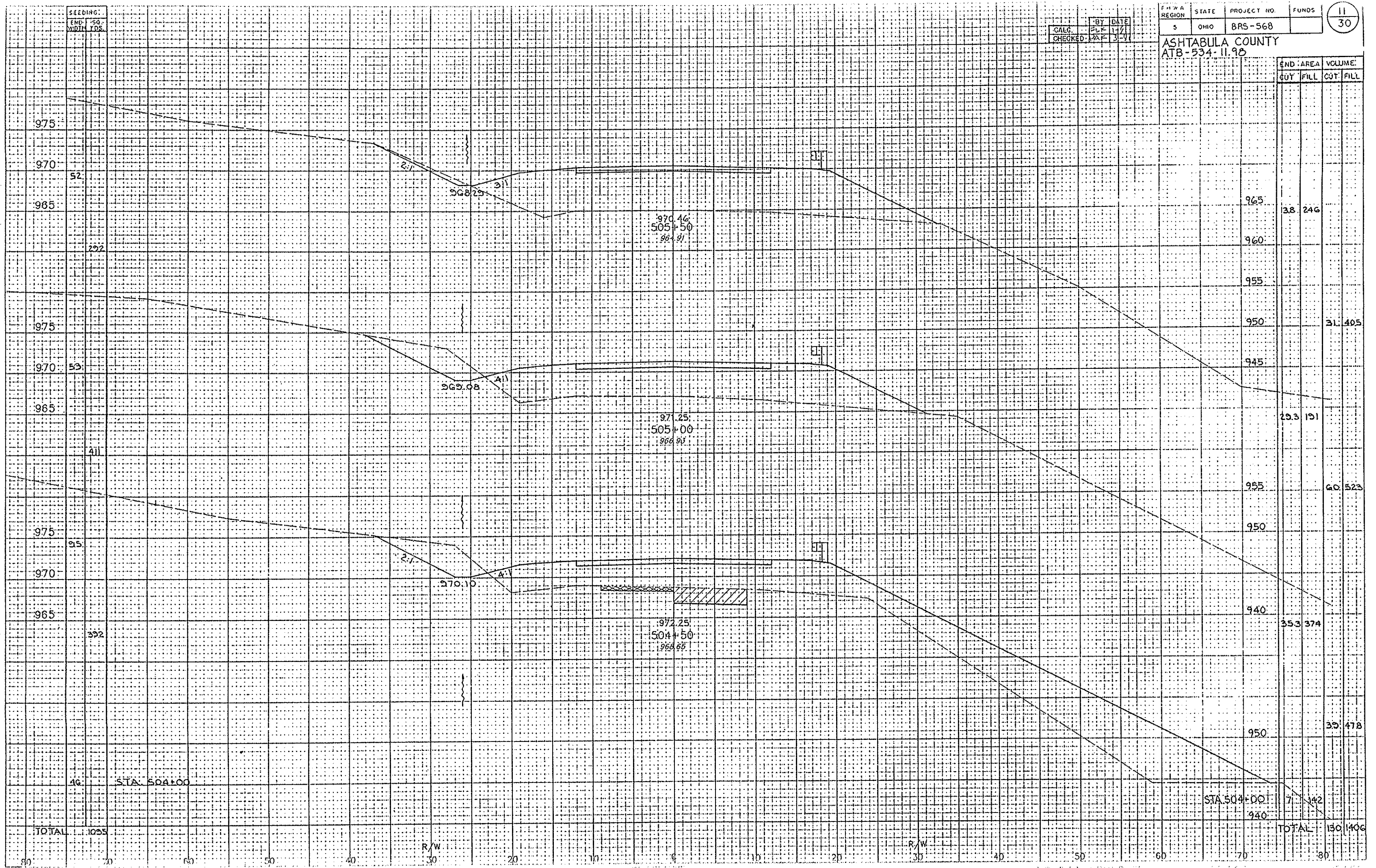
975
970
965
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980
975
970
970
TOTAL

46
289
58
392
83
342
40
1023

ORIGINAL SURVEY MONITOR WHITE PRINT MARK AREA
 SURVEY MONITOR WHITE PRINT MARK AREA
 SURVEY MONITOR WHITE PRINT MARK AREA

ORIGINAL SURVEY MONITOR WHITE PRINT MARK AREA
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 SURVEY MONITOR WHITE PRINT MARK AREA

ASHTABULA COUNTY
ATB-534-11.98



END	AREA		VOLUME	
	CUT	FILL	CUT	FILL
965				
960	38	246		
955				
950			31	405
945				
940	23.3	191		
935				
930			60	523
925				
920				
915				
910				
905				
900				
940	35.3	374		
935				
930				
925				
920				
915				
910				
905				
900				
940	7	142		
TOTAL	130	1406		

FINAL SURVEY
DATE: 11/1/98
BY: [Signature]

ORIGINAL SURVEY
DATE: 11/1/98
BY: [Signature]

SEEDING: [Blank]
END WIDTH: 50
YRS: [Blank]

STA. 504+00

STA. 504+00

R/W

R/W

80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80

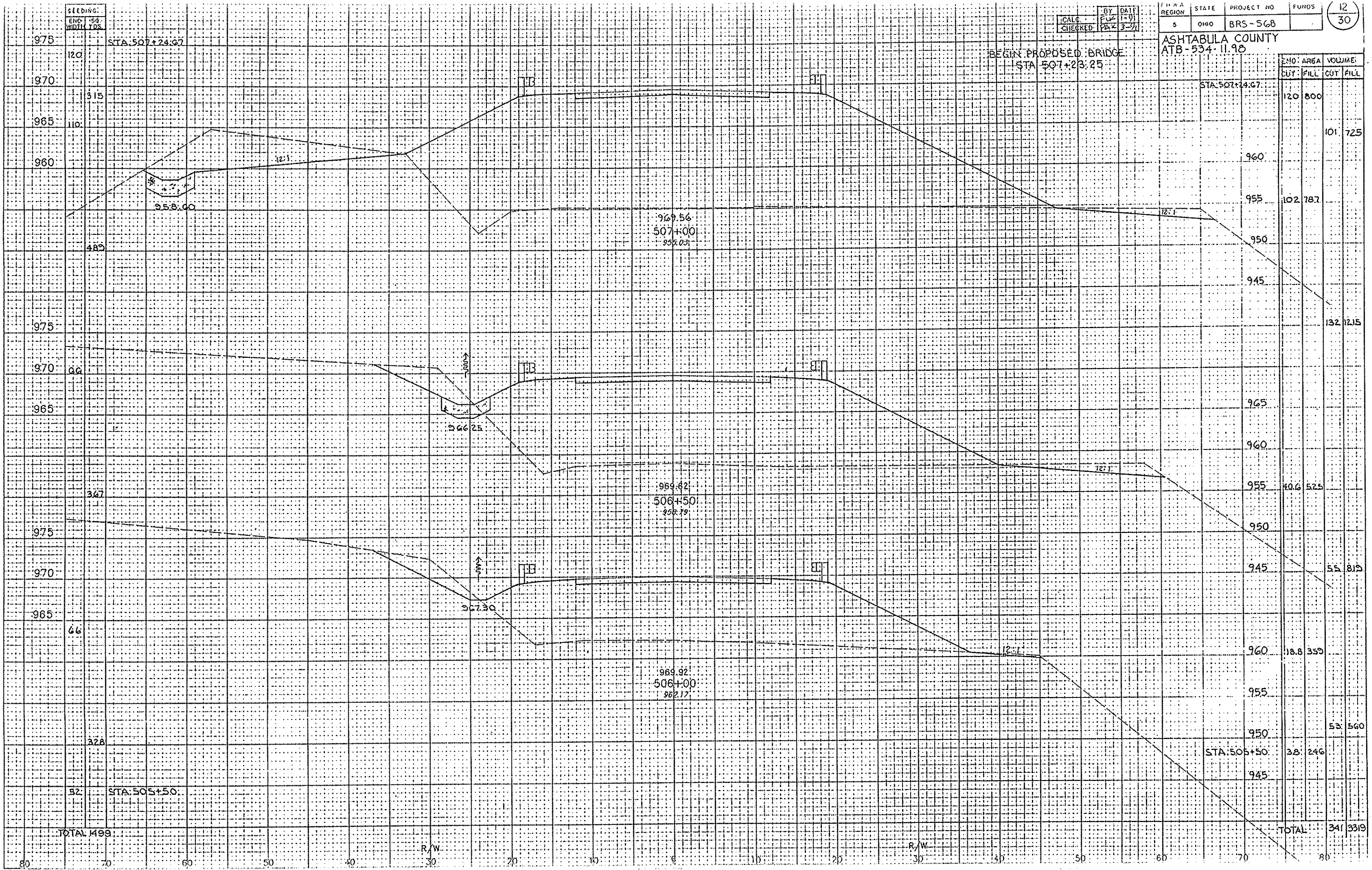
BY DATE
 CALC. 1-91
 CHECKED: PJK 3-91

REGION STATE PROJECT NO. FUNDS
 5 OHIO BRS-568

12
 30

ASHTABULA COUNTY
 ATB-534-11.98

BEGIN PROPOSED BRIDGE
 STA 507+23.25



END AREA	VOLUME
CUT	FILL
120	800
	101 725
102	787
	132 125
106	525
	55 815
18.8	350
	53 560
38	246
TOTAL	341 3319

TOTAL 499

R/W

R/W

BY DATE
 FINA SURVEY
 SURVEY
 DATE
 CHECKED

BY DATE
 ORIGINAL SURVEY
 SURVEY
 DATE
 CHECKED

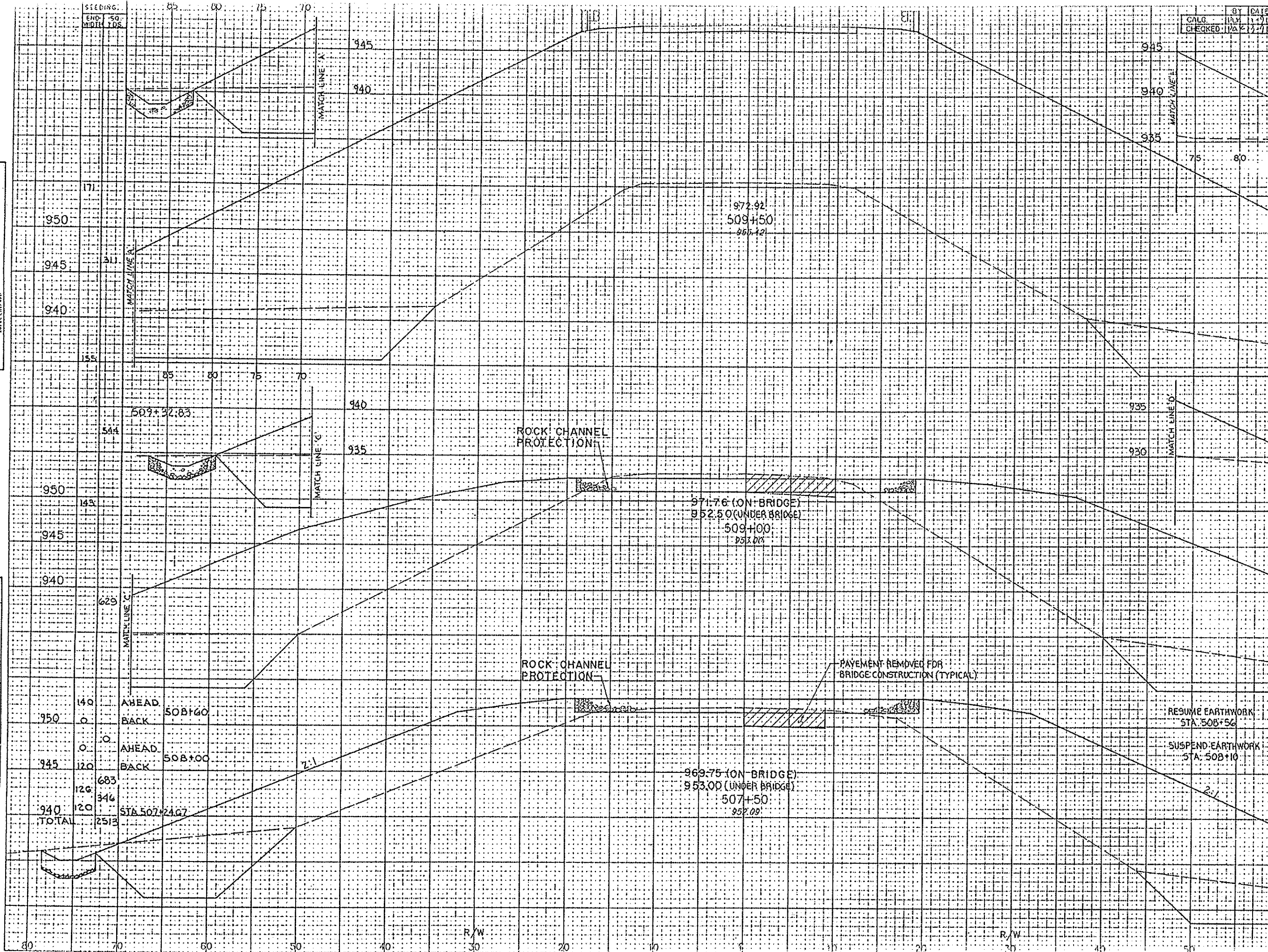
CALC. BY DATE
 CHECKED: [Signature] 12/21/71

FHWA REGION	STATE	PROJECT NO.	FUNDS
5	OHIO	BRS-568	

13
30

ASHTABULA COUNTY
 ATB-534-11.98

END STA	AREA		VOLUME	
	CUT	FILL	CUT	FILL
504		3056		
509		3000		
508		2619		
507		2466		
506		248		581
505		223		883
504		161		789
503		120		800
TOTAL		1580		7381



FINAL SURVEY PLOTTING
 DATE: 12/21/71
 BY: [Signature]

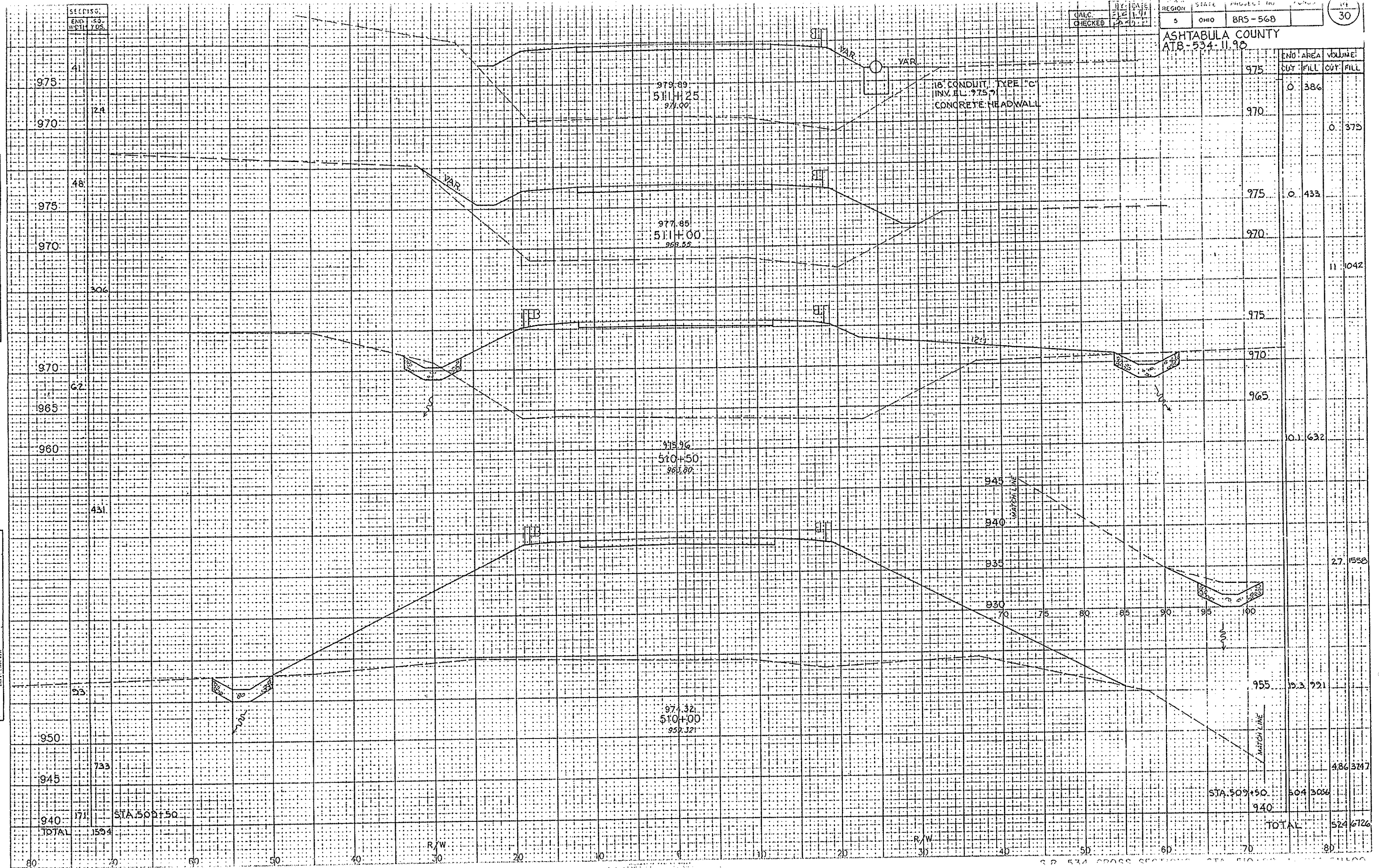
ORIGINAL SURVEY PLOTTING
 DATE: 12/21/71
 BY: [Signature]

R/W

R/W

FINAL SURVEY PLOTTED
 DATE: [] BY: []
 CHECKED: []

ORIGINAL SURVEY PLOTTED
 DATE: [] BY: []
 CHECKED: []



ELEVATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
975	0	386		
970			0	375
975	0	433		
970				11 1042
975				
970				
965				
960	10.1	632		
945				
940				
935				
930				
955	10.3	921		
945				
940				
940				
TOTAL			504	3056
TOTAL			524	6726

R/W

R/W

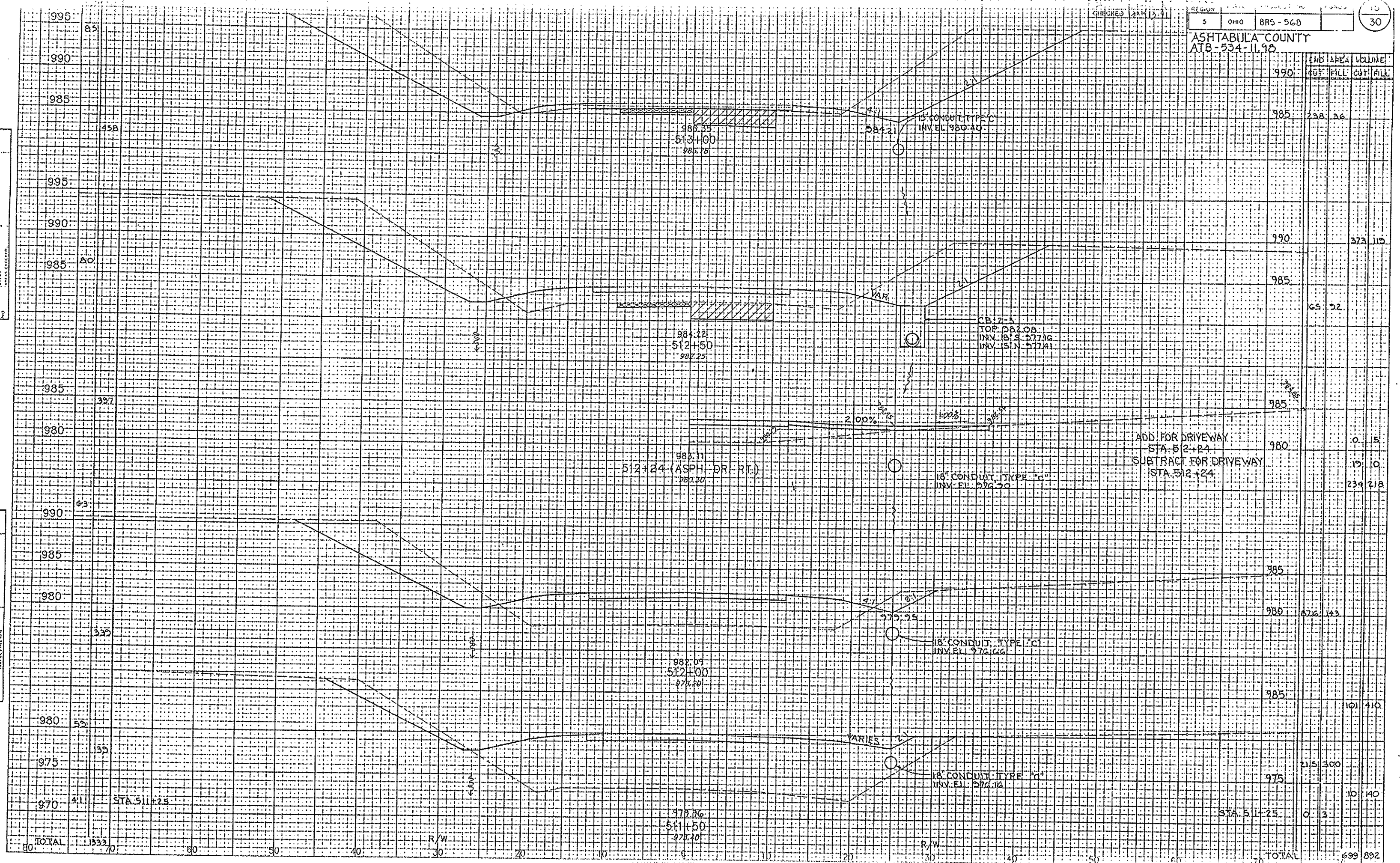
STA. 509+50

TOTAL

ORIGINAL SURVEY PLOTTED
 WHITE INK ON YELLOW PAPER
 NO LAMINATED

ORIGINAL SURVEY PLOTTED
 WHITE INK ON YELLOW PAPER
 NO LAMINATED

ASHTABULA COUNTY
 ATB-534-11.98



ELEVATION	AREA		VOLUME	
	CUT	FILL	CUT	FILL
990				
985	238	36		
990			323	115
985	65	22		
980			0	5
985			19	0
980			234	218
985				
980	672	143		
985			101	410
975			215	300
970			10	40
TOTAL	933	70	699	892

ADD FOR DRIVEWAY
 STA. 512+24
 SUBTRACT FOR DRIVEWAY
 STA. 512+24

STA. 511+25

512+24 (ASPH. DR. RT.)

STA. 511+25

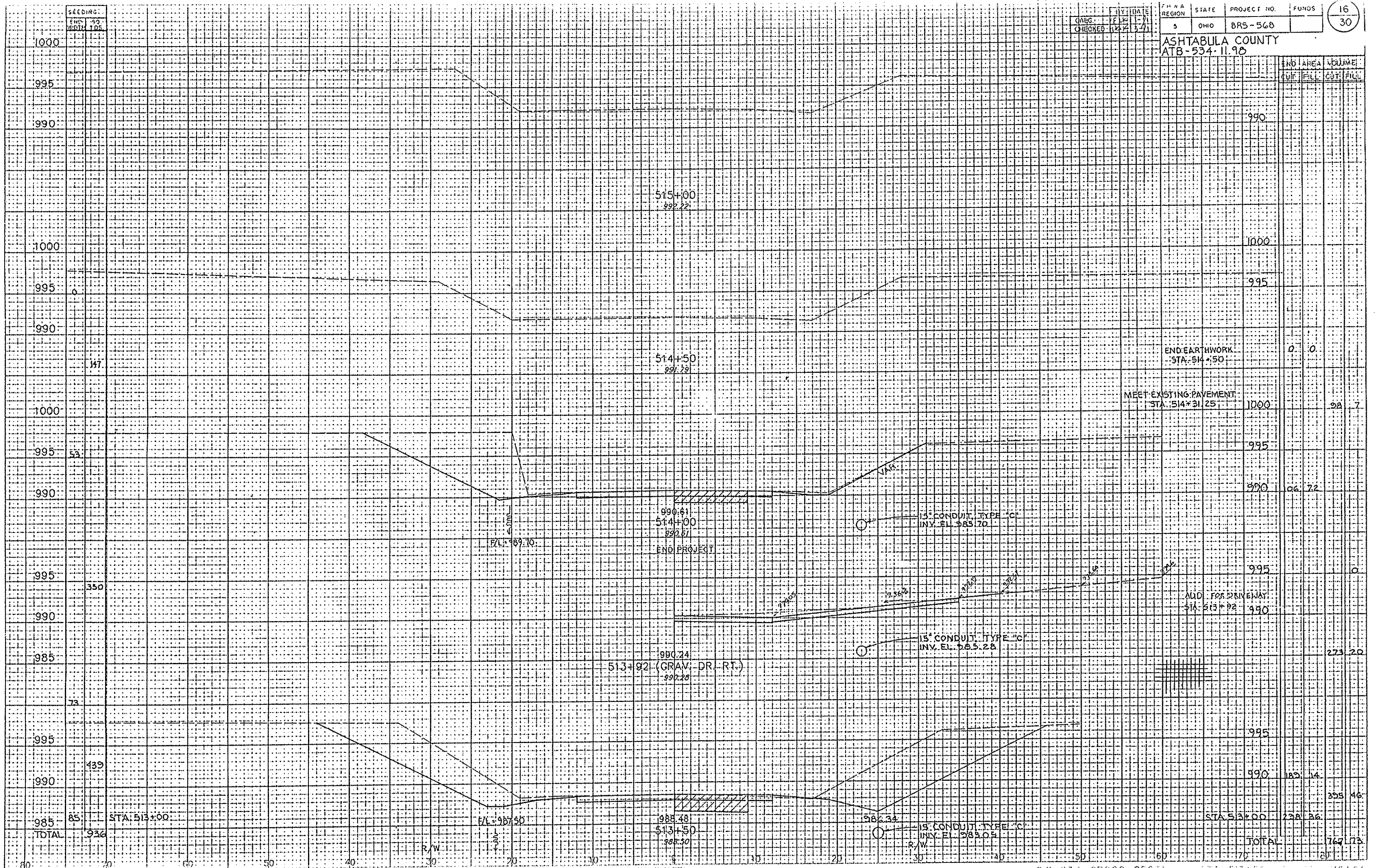
R/W

R/W

TOTAL

TOTAL

ASHTABULA COUNTY
ATB-534-11.98



STATION	END AREA		VOLUME	
	FILL	CUT	FILL	CUT
990				
1000				
995				
990				
END EARTHWORK STA. 514+50	0	0		
MEET EXISTING PAVEMENT STA. 514+31.25	1000		98	7
995				
990	06	72		
995				
990				
ADD FOR DRIVEWAY STA. 513+92				0
985				
985				273
995				
990	185	14		
985				393
STA. 513+00	238	36		
TOTAL				767

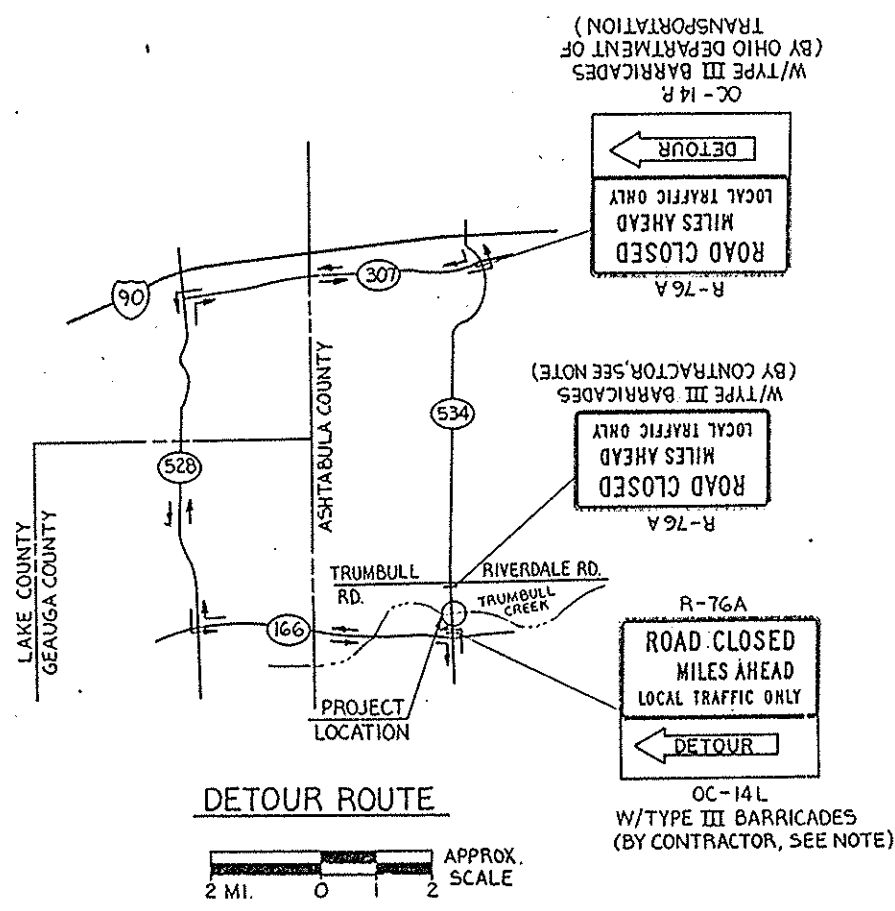
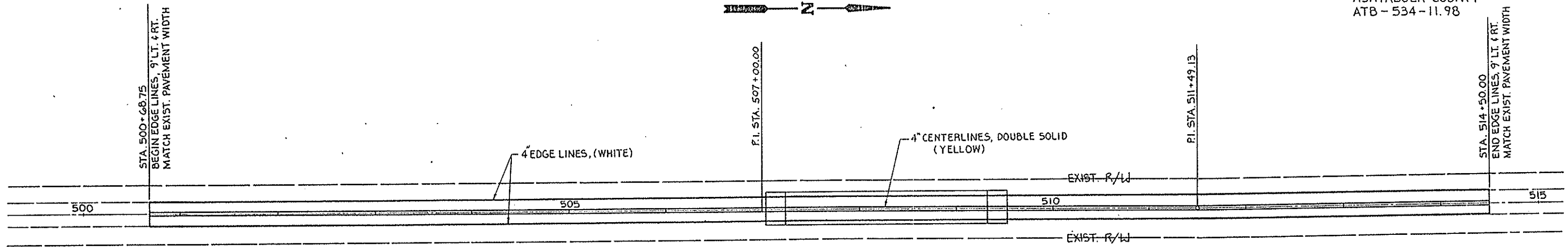
ORIGINAL SURVEY DATA
 SURVEYED BY: [Name]
 DATE: [Date]
 SCALE: 1" = 40'

MAINTENANCE OF TRAFFIC

NO.	DATE	PROJECT	SHEET
5	0110	BRS-568	17

17
30

ASHTABULA COUNTY
ATB - 534 - 11.98



NOTE:
REFER TO GENERAL NOTE "LIGHT AND SIGNS ADJACENT TO ROAD INTERSECTIONS," FOR ADDITIONAL REQUIREMENTS OF THE CONTRACTOR. ALL WORK FOR THE ESTABLISHMENT OF THE DETOUR ROUTE SHOWN SHALL CONFORM TO G14, MAINTAINING TRAFFIC.

PAVEMENT MARKING SUB-SUMMARY

	SIDE	LOCATION	642	642	614
			CENTERLINES SOLID DOUBLE YELLOW LIN.FT/MI.	EDGE LINES WHITE LIN.FT/MI.	Temporary Center Line Class II
	L	500+68-514+50	1382 / 0.262		1382 / 0.262
	LT	500+68-514+50		1382 / 0.262	
	RT	500+68-514+50		1382 / 0.262	
		TOTAL	1382 / 0.262	2764 / 0.524	1382 / 0.262

MONUMENT TABLE
 ATB-534-11.98

R/W CENTERLINE MONUMENT ASSEMBLIES AS PER STANDARD
 DRAWING MC-1 SHALL BE PLACED AT THE FOLLOWING
 LOCATION AFTER CONSTRUCTION:

± STATION	ITEM 604 MONUMENT ASSEMBLY
501+00.00	1
507+00.00	1
511+49.13	1
514+00.00	1
TOTAL	4

CENTER LINE SURVEY

STATE ROUTE 534 S.L.M. (11.98-12.23)

ASHTABULA COUNTY, OHIO

TRUMBULL TOWNSHIP

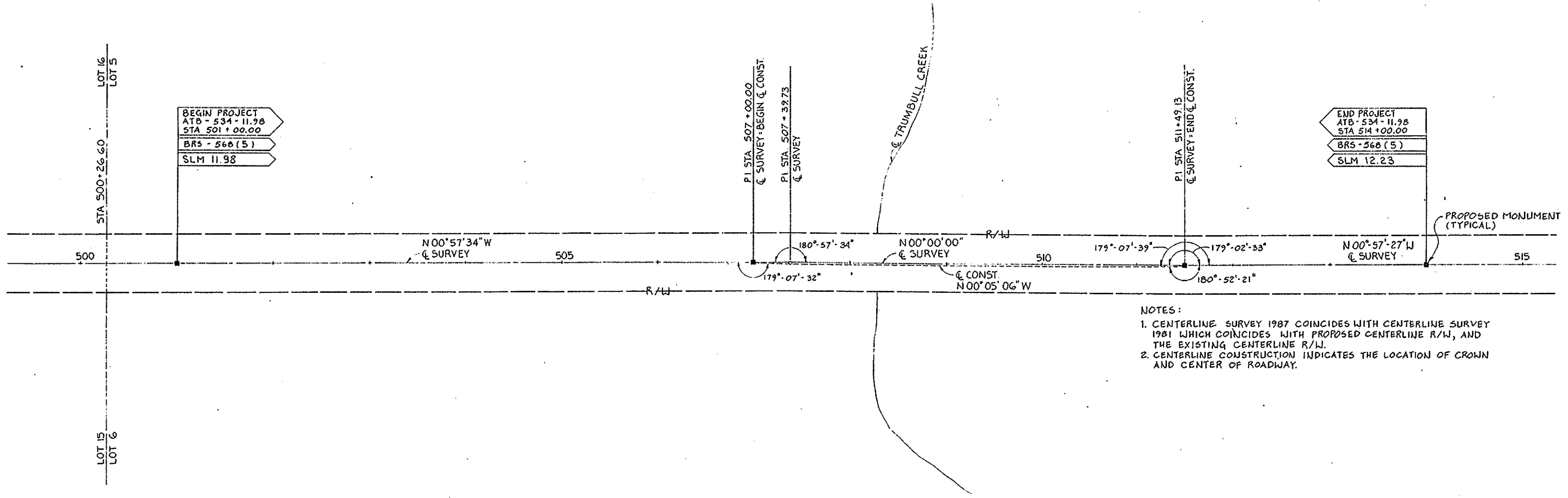
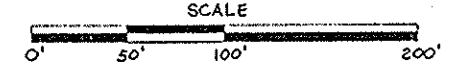
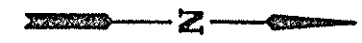
LOTS 15 & 16, 5 & 6

DIVISION 1

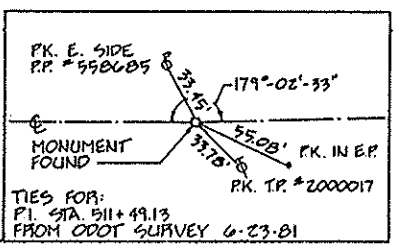
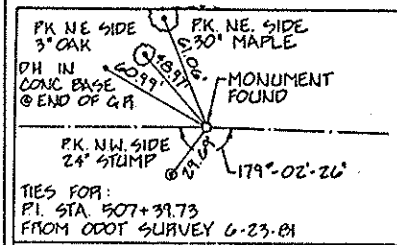
5	21110	BRS-568	
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18
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ASHTABULA COUNTY
 ATB-534-11.98



- NOTES:
- CENTERLINE SURVEY 1987 COINCIDES WITH CENTERLINE SURVEY 1981 WHICH COINCIDES WITH PROPOSED CENTERLINE R/W, AND THE EXISTING CENTERLINE R/W.
 - CENTERLINE CONSTRUCTION INDICATES THE LOCATION OF CROWN AND CENTER OF ROADWAY.



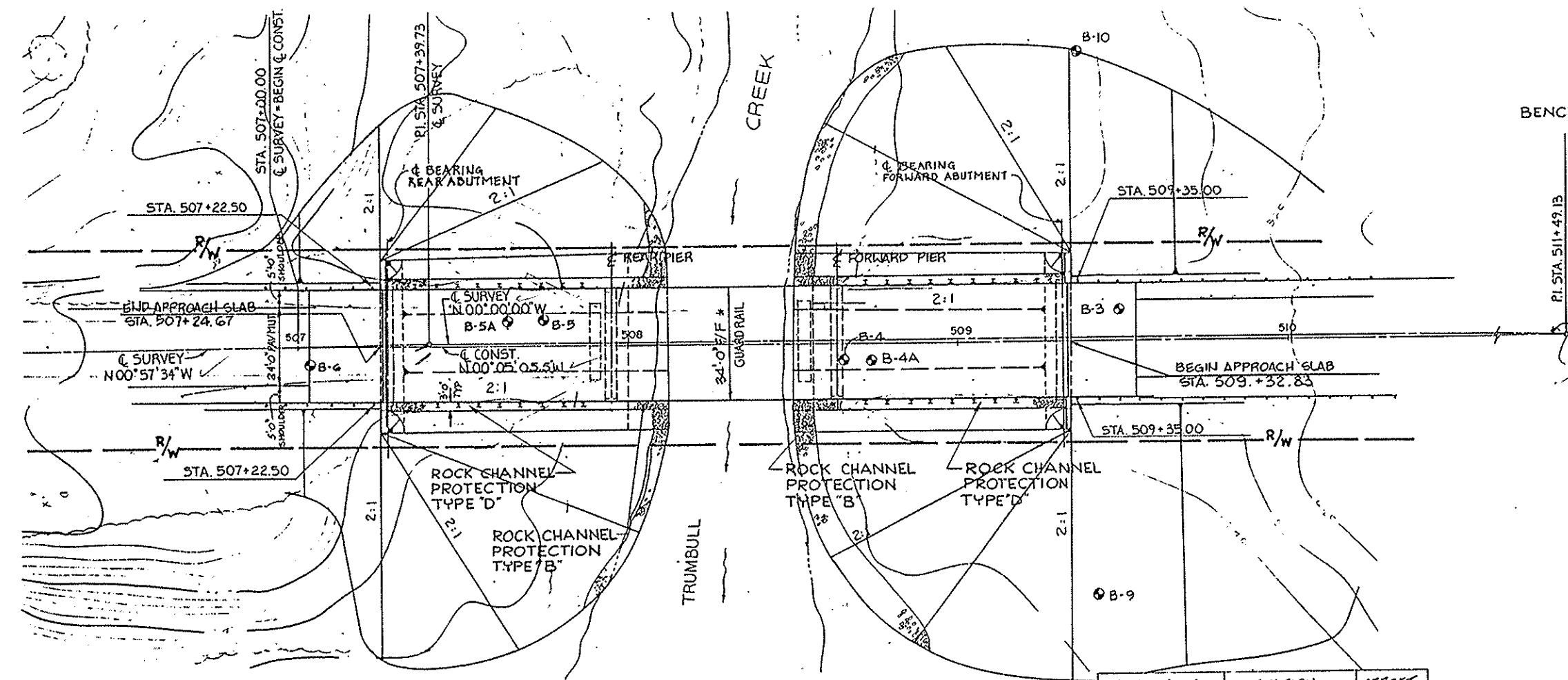
BENCH MARK: * CUT IN TOP OF S.W. WINGWALL OF EXISTING BRIDGE. EL. 950.502. ESTABLISHED BY STATE OF OHIO SURVEY ATB-534, AUG. 26, 1971.

DRAINAGE AREA = 14.1 SQ. MILES
Q25 = 2066 C.F.S. 25 YR. H.W. EL. 929.33
Q100 = 2843 C.F.S. 100 YR. H.W. EL. 930.57
V100 = 9.87 FT./SEC. V25 = 8.79 FT./SEC.

PROPOSED STRUCTURE CLEARS
25 YR. H.W. BY 37.8 FT.

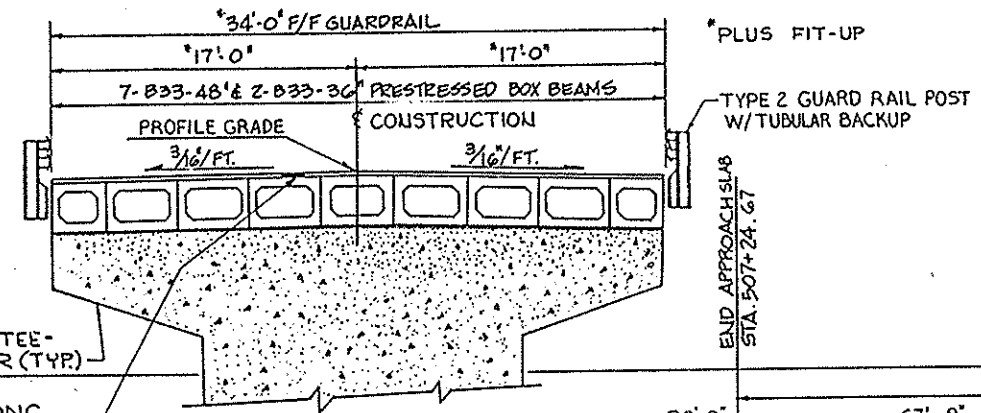
DESIGN DESIGNATION
CURRENT 1990 ADT = 1200
DESIGN YEAR 2010 ADT = 1540
ADTT = 62

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

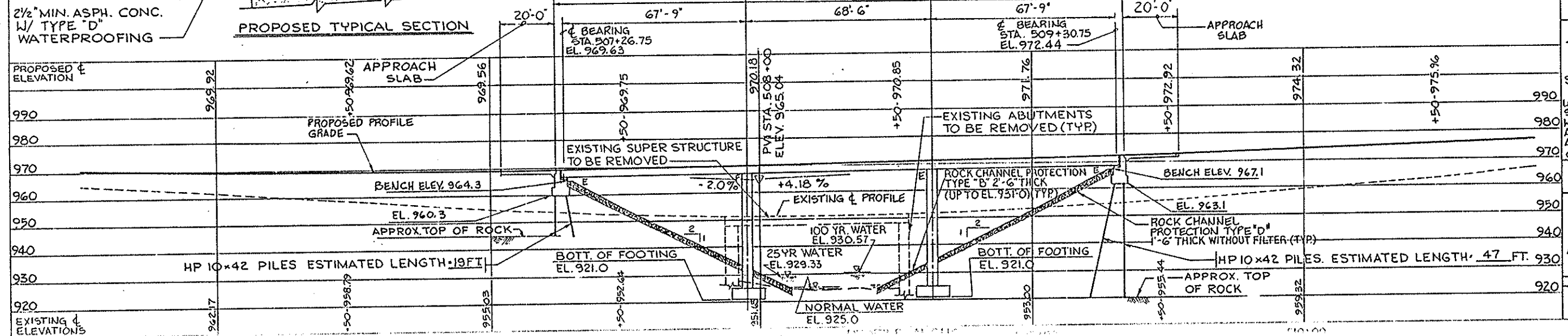


PLAN

BORE HOLE	STATION	OFFSET
B-3	509+49	9'W
B-4	508+64	5'E
B-4A	508+74	5'E
B-5	507+74	7'W
B-5A	507+63	7'W
B-6	507+01	6'E
B-9	509+42	7'E
B-10	509+36	86'W



PROPOSED TYPICAL SECTION



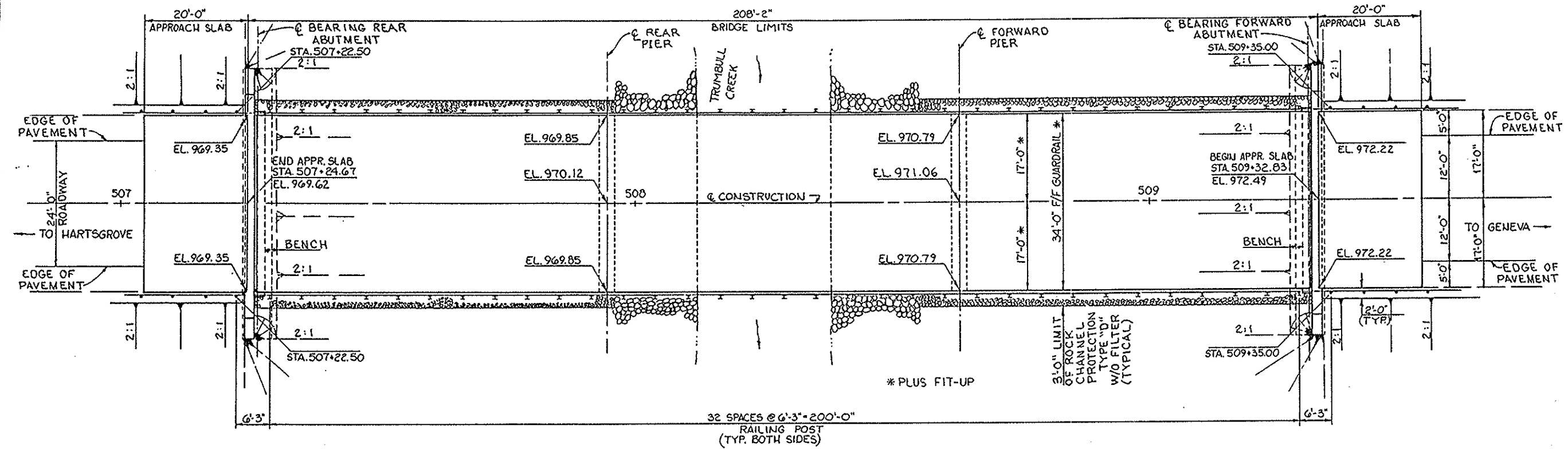
EXISTING STRUCTURE
TYPE: 1 SPAN PRESTRESSED CONCRETE BOX BEAMS ON STONE WALL TYPE ABUTMENTS.
SPAN: 60'-0" CLEAR
ROADWAY: 20'-0" F/F GUARDRAIL
ALIGNMENT: TANGENT
WEARING SURFACE: ASPHALT CONCRETE
CONDITION: FAIR

PROPOSED STRUCTURE
TYPE: 3 SPAN PRESTRESSED CONCRETE BOX BEAM W/ REINFORCED CONCRETE PIERS AND ABUTMENTS.
SPANS: 67'-0", 67'-0", 67'-0" C/C BEARINGS
ROADWAY: 34'-0" F/F GUARDRAIL
LOADING: HS 20-44 ALTERNATE MILITARY LOADING
SKEW: NONE
WEARING SURFACE: ASPHALT CONCRETE
APPROACH SLAB: AS-1-B1 (20'-0" LONG)
ALIGNMENT: TANGENT
CROWN: 3/16" PER FOOT

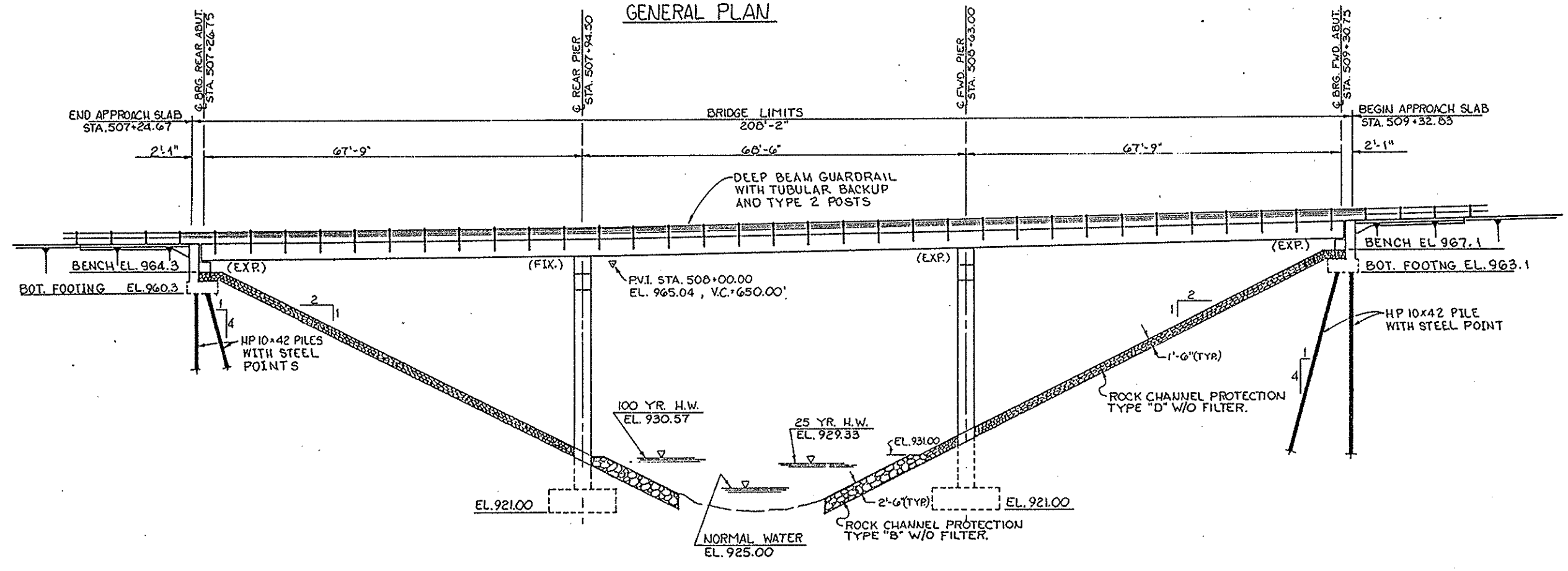
SITE PLAN
BRIDGE NO. ATB-534-12 10
OVER TRUMBULL CREEK
ASHTABULA CO. STA. 507+24.67
TO STA. 509+32.83

DESIGNED BY: EAB
DRAWN BY: BCK
CHECKED BY: JRS
REVIEWED BY: PAK

ASHTABULA COUNTY
ATB-534-11.98



GENERAL PLAN



ELEVATION

JOHN DAVID JONES & ASSOC. INC. 2/8				
2162 FRONT STREET CUYAHOGA FALLS, OHIO 44221				
ENGINEERS	ARCHITECTS	PLANNERS		
GENERAL PLAN AND ELEVATION				
BRIDGE No. ATB-534-1210				
STATE ROUTE 534				
OVER TRUMBULL CREEK				
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
B.C.K.	D.R.K.		J.R.S.	PAK
				5/10/88
				REVISED

GENERAL NOTES

REFERENCE SHALL BE MADE TO STANDARD DRAWING(S):

AS-1-81 DATED (REVISED) 11-27-81

DBR-2-73 DATED (REVISED) 04-10-73

PSBD-1-81 DATED (REVISED) 06-20-89

EXJ-3-82 DATED (REVISED) 08-01-84

AND TO SUPPLEMENTAL SPECIFICATION(S):

- _____ DATED _____
- 836 DATED 11-12-85
- 849 DATED 12-24-85
- _____ DATED _____
- 949 DATED 09-26-86

DESIGN SPECIFICATIONS: THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1989, INCLUDING THE 1990 "INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

DESIGN LOADING - HS20-44 AND THE ALTERNATE MILITARY LOADING.

DESIGN STRESSES

CONCRETE CLASS S - COMPRESSIVE STRENGTH 4500 P.S.I.
 CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 P.S.I.
 REINFORCING STEEL - ASTM A615, A616, A617 - GRADE 60
 MINIMUM YIELD STRENGTH 60,000 P.S.I. (REINFORCING STEEL IN PRESTRESSED BOX BEAMS MAY BE GRADE 40 AS PER CHS 515.)

CONCRETE FOR PRESTRESSED BEAMS -
 UNIT STRESS 2200 P.S.I.
 COMPRESSION, 444 P.S.I. TENSION

PRESTRESSING STRAND ASTM A416
 f's = 270,000 P.S.I.
 INITIAL STRESS = 0.70 f's

DECK PROTECTION METHOD: TYPE D WATERPROOFING ASPHALT CONCRETE OVERLAY, STEEL DRIP STRIP AND SEALING OF CONCRETE SURFACES.

REMOVAL OF EXISTING STRUCTURE: WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC THE EXISTING STRUCTURE SHALL BE REMOVED.

EMBANKMENT CONSTRUCTION: THE EMBANKMENTS SHALL BE CONSTRUCTED TO THE LEVEL OF THE SUBGRADE FOR A MINIMUM DISTANCE OF 200 FEET BACK OF THE ABUTMENTS. EXCAVATION MAY THEN BE MADE FOR THE ABUTMENTS AND FOR THE BENCHES AND FOR PIERS AND PILES DRIVEN.

PILES SHALL BE DRIVEN TO REFUSAL ON BEDROCK. REFUSAL SHALL BE CONSIDERED AS ATTAINED BY PENETRATING SOFT BEDROCK WITH A MINIMUM RESISTANCE OF 20 BLOWS PER INCH, OR REFUSAL SHALL BE CONSIDERED AS ATTAINED AFTER THE PILE HAS CONTACTED HARD BEDROCK AND THE PILE HAS THEN RECEIVED AT LEAST 20 BLOWS.

THE DESIGN LOAD IS 45 TONS PER PILE FOR THE ABUTMENT PILES.

PILE POINTS: STEEL PILE POINTS SHALL BE USED TO PROTECT THE TIPS OF THE PROPOSED PILING. THE STEEL POINTS SHALL BE FURNISHED BY ASSOCIATED PILE AND FITTING CORPORATION, 262 RUTHERFORD BOULEVARD, CLIFTON, NEW JERSEY 07014; INTERNATIONAL CONSTRUCTION EQUIPMENT, INC. 301 WAREHOUSE DRIVE, MATTHEWS, NORTH CAROLINA 28015; DOUGHERTY FOUNDATION PRODUCTS, INC., P.O. BOX 688 FRANKLIN LAKES, NEW JERSEY 07417; VERSA STEEL, INC., 3601 N.W. YEON AVENUE, P.O. BOX 10559, PORTLAND, OREGON 97210 OR BY A MANUFACTURER THAT CAN FURNISH A STEEL POINT THAT IS ACCEPTABLE TO THE DIRECTOR.

FOUNDATION BEARING PRESSURE: PIER FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 4.2 TONS PER SQ. FT.

PIER FOOTINGS SHALL EXTEND A MINIMUM OF 2.5 FEET INTO BEDROCK, TO THE BOTTOM OF EXISTING FOOTING OR TO THE ELEVATION SHOWN, WHICHEVER IS LOWER.

UTILITY LINES: ALL EXPENSE INVOLVED IN RELOCATING THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER. THE CONTRACTOR AND OWNER ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAN INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

ESTIMATED QUANTITIES

CHK'D BY: JRS DATE: 5/11/88
 CAL'D BY: BCK DATE: 5/9/88

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	SUPER	ABUTMENT	PIERS	GENERAL
202	11002	LUMP		STRUCTURES REMOVED, Over 20 Foot Span				LUMP
403	20000	39	CU. YD.	ASPHALT CONCRETE (AC-20)	39			
404	20000	27	CU. YD.	ASPHALT CONCRETE (AC-20)	27			
503	11100	LUMP		COFFER DAMS, CRIBS, AND SHEETING				LUMP
503	21100	310	Cu. Yd.	UNCLASSIFIED EXCAVATION		173	137	
503	31100	54	CU. YD.	SHALE EXCAVATION			54	
505	11100	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION				LUMP
507	11100	740	L.F.	STEEL PILES, HP 10 X 42		740		
507	93300	22	EACH	STEEL POINTS (OR SHOES)		22		
509	12400	29078	LBS.	REINFORCING STEEL, GRADE 60		5330	23748	
511	44100	63	CU. YD.	CLASS C CONCRETE, ABUTMENTS ABOVE FOOTINGS*		63		
511	42000	151	CU. YD.	CLASS C CONCRETE, PIERS ABOVE FOOTINGS*			151	
511	46500	112	CU. YD.	CLASS C CONCRETE, FOOTINGS*		50	62	
511	34002	11	CU. YD.	CLASS S CONCRETE, SUPERSTRUCTURE, HIGH EARLY STRENGTH*	11			
512	55800	782	SQ. YD.	TYPE D WATERPROOFING	782			
515	54300	21	EACH	PRESTRESSED CONCRETE BRIDGE MEMBERS B33-48*	21			
515	51100	6	EACH	PRESTRESSED CONCRETE BRIDGE MEMBERS B33-38*	6			
516	42000	108	EACH	1 1/4" x 10" x 12" ELASTOMERIC BEARING PADS		36	72	
516	10500	69	L.F.	STRUCTURAL EXPANSION JOINTS INCLUDING ELASTOMERIC COMPRESSION SEALS				68.67
517	72300	425.0	L.F.	RAILING (DEEP BEAM GUARDRAIL W/STEEL TUBULAR BACK-UP AND TYPE 2 STEEL POSTS AND BOLTS) *	425.0			
518	21200	35	CU. YD.	POROUS BACKFILL with filter fabric		35		
509	15800	4074	LBS.	EPOXY COATED REINFORCING STEEL, GRADE 60	1048	3026		
SPECIAL	518 22200	322	SQ. FT.	STEEL DRIP STRIP	322			
SPECIAL	512 67502	30	SQ. YD.	SEALING CONCRETE SURFACES (EPOXY) *		30		
SPECIAL	512 67500	175	SQ. YD.	SEALING CONCRETE SURFACES*	150		25	
*SEE PROPOSAL NOTE								

CALCULATED CAMBER AT THE TIME OF PAVING, INCLUDING ALLOWANCE FOR CAMBER GROWTH DUE TO CREEP, IS 1-1/16". CALCULATED DEFLECTION DUE TO WEIGHT OF SURFACE COURSE AND RAILING IS 3/16". NET FINAL CAMBER OF BEAM IS 7/8". THIS IS 7/8" IN EXCESS OF THE AMOUNT REQUIRED TO PLACE THE TOP OF THE BEAM PARALLEL TO PROFILE GRADE. 3/4" IS ADDED TO THIS AMOUNT AT THE END OF EACH SPAN TO COMPENSATE FOR THE SAG VERTICAL CURVE. THIS EXCESS AMOUNT SHALL BE COMPENSATED FOR BY THICKENING THE 403 LEVELING COURSE FROM 1-1/4" AT THE CENTER OF SPANS TO 2-7/8" AT ENDS OF SPANS.

ASPHALT CONCRETE SURFACE COURSE SHALL CONSIST OF A VARIABLE THICKNESS OF 403 AND 1-1/4" THICKNESS OF 404. THE 403 SHALL BE PLACED IN TWO OPERATIONS. THE FIRST COURSE SHALL BE OF 1-1/4" UNIFORM THICKNESS. THE SECOND COURSE SHALL BE FEATHERED TO PLACE THE SURFACE PARALLEL TO AND 1-1/4" BELOW FINAL PAVEMENT SURFACE ELEVATION.

FOR SUPERSTRUCTURE DETAILS SEE SHEETS 7/8 AND 6/8.

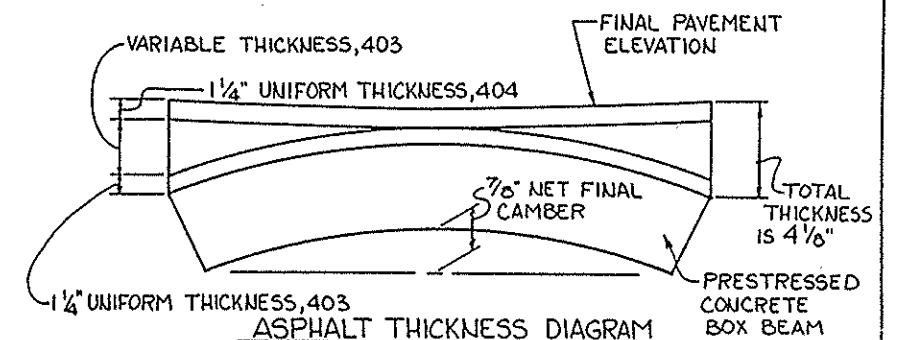
FIXED ANCHOR DOWELS SHALL BE PLAIN ROUND BARS WITH BOND BREAKER APPLIED ABOVE BRIDGE SEAT.

NON-SHRINKING MORTAR: MORTAR OR GROUT FOR KEYWAYS BETWEEN PRESTRESSED CONCRETE BOX BEAMS, FOR TIE ROD RECESSES AND FOR ANCHOR DOWEL HOLES SHALL BE A NON-SHRINKING NON-METALLIC MORTAR HAVING A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 5000 P.S.I. ACCORDING TO THE CORPS OF ENGINEERS SPECIFICATION CRD-C621-83 WHEN PREPARED TO A MODERATE FLUIDITY (124-145% FLOW TABLE FLOW). THE MORTAR OR GROUT SHALL ALSO MEET ALL OTHER REQUIREMENTS OF SPECIFICATION CRD-C621-83. THE MORTAR SHALL BE PREPARED, PLACED AND CURED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AGAINST SURFACES AS SPECIFIED BELOW.

PREPARATION OF CONCRETE SURFACES IN CONTACT WITH NON-SHRINKING MORTAR: THE KEYWAY SURFACES SHALL BE GIVEN A MEDIUM SANDBLAST AT THE PLANT WITHIN FOUR DAYS BEFORE THE BEAMS LEAVE THE PLANT. BEFORE MORTARING, THE KEYWAYS SHALL BE THOROUGHLY CLEAN OF ALL DIRT, DUST AND OTHER FOREIGN MATTER. THE KEYWAY SURFACES SHALL BE WETTED, BUT NO FREE WATER SHALL BE ALLOWED TO REMAIN IN THE KEYWAYS.

THE FABRICATOR MAY PROPOSE A DIFFERENT WIDTH OF BEAM THAN SHOWN. HOWEVER, THE BRIDGE WIDTH MUST REMAIN THE SAME. BEARINGS MUST BE REDESIGNED BY A PROFESSIONAL ENGINEER, AND THERE WILL BE NO ADDITIONAL COST TO THE STATE. THE REVISED PLANS SHALL BE SUBMITTED TO THE DIRECTOR FOR APPROVAL.

FABRICATOR'S SHOP DRAWINGS SHALL COMPLETE DETAILS OF BEAM REINFORCING.

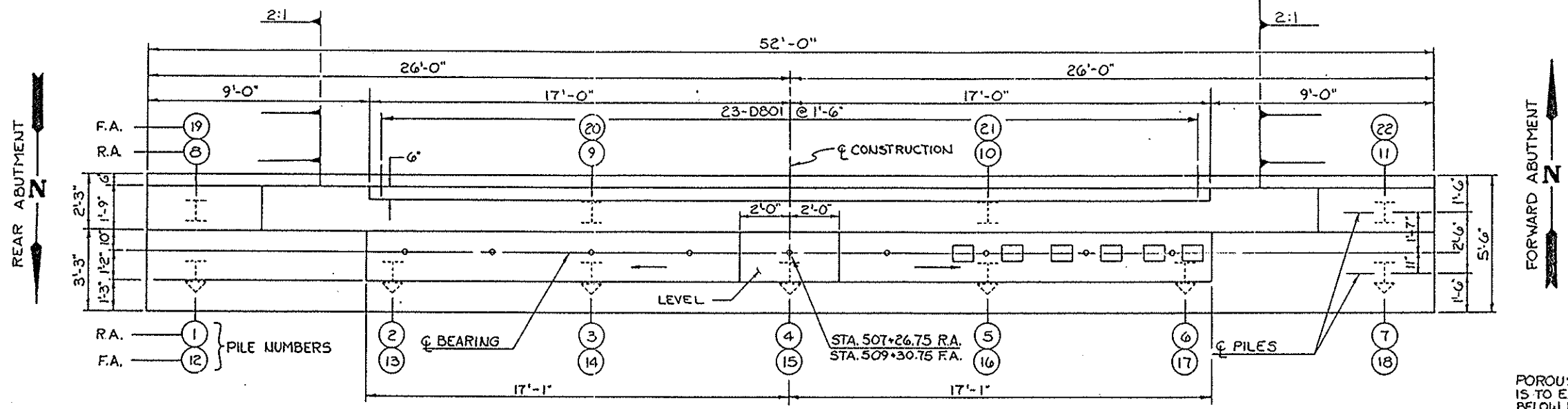


JOHN DAVID JONES & ASSOC., INC. 3/8
 262 FRONT STREET
 CUYAHOGA FALLS, OHIO 44221
 ENGINEERS ARCHITECTS PLANNERS

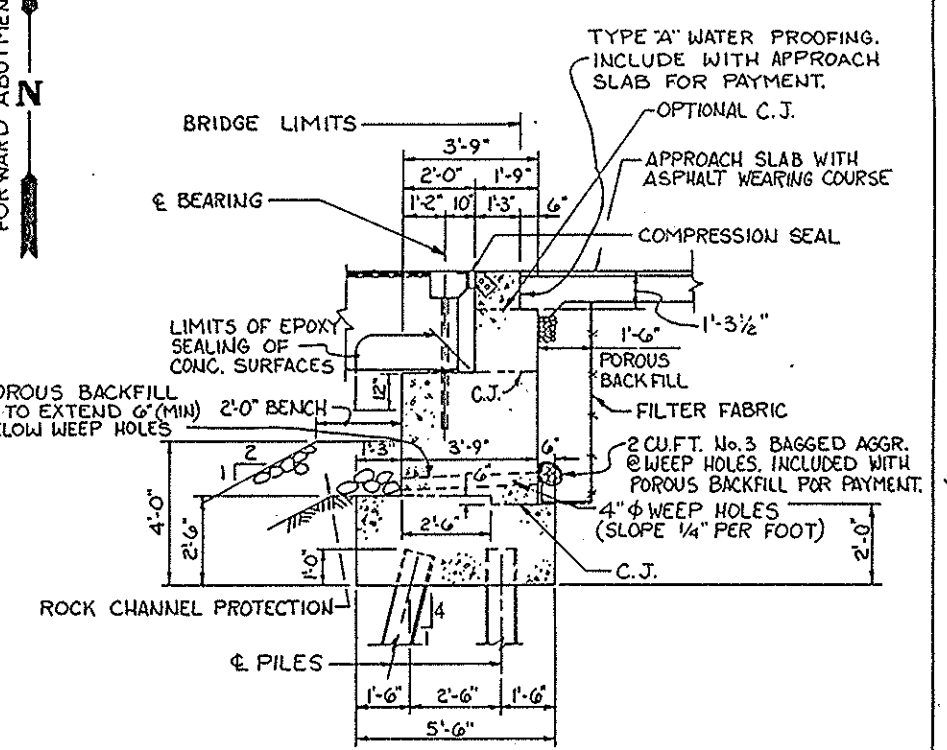
ESTIMATED QUANTITIES
 GENERAL NOTES
 AND DETAIL NOTES
 BRIDGE No. ATB-534-1210
 STATE ROUTE 534
 OVER TRUMBULL CREEK

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
BCK	DRK		JRS	PAK	5/10/88	

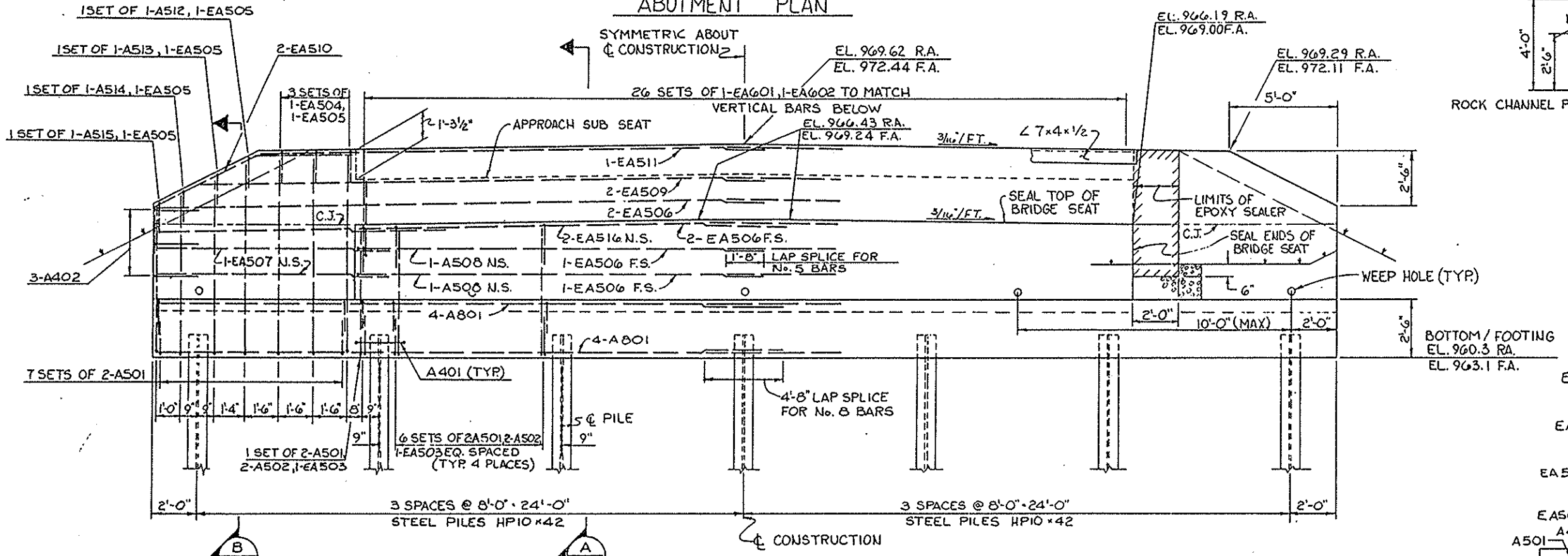
ASHTABULA COUNTY
ATB-534-11.98



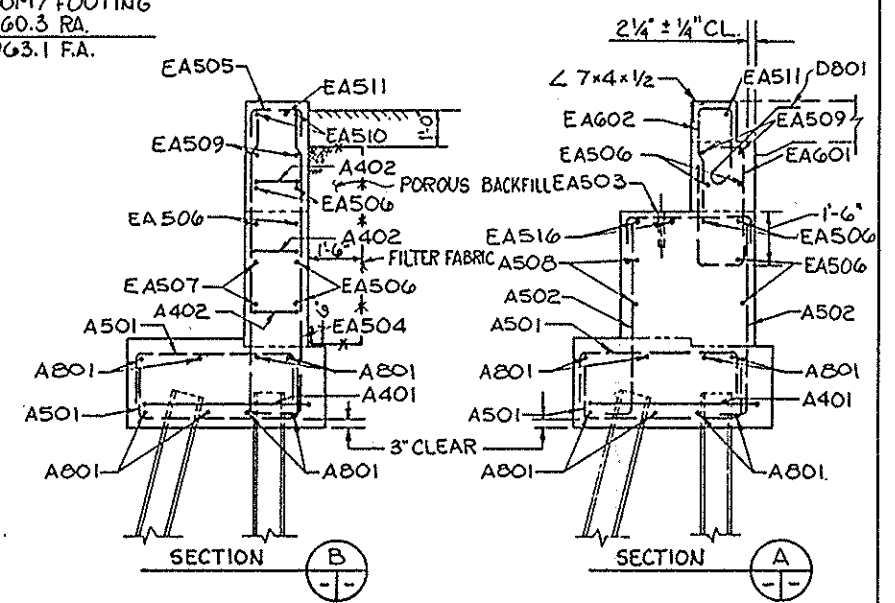
ABUTMENT PLAN



STUB ABUTMENT DETAIL



ABUTMENT ELEVATION



- LEGEND
- R.A. • REAR ABUTMENT
 - F.A. • FORWARD ABUTMENT
 - N.S. • NEAR SIDE
 - F.S. • FAR SIDE
 - ⊕ • INDICATES BATTERED PILES
 - ⊙ • INDICATES PILE NUMBER
 - C.J. • CONSTRUCTION JOINT

POROUS BACKFILL, 1.5 FT. THICK, SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE, 1'-0" FROM FINAL SURFACE ELEVATION AND LATERALLY TO THE ENDS OF THE WING WALLS. PAYMENT FOR FILTER FABRIC CONFORMING TO CMS 712.09 TYPE A SHALL BE INCLUDED WITH ITEM 518 - POROUS BACKFILL.

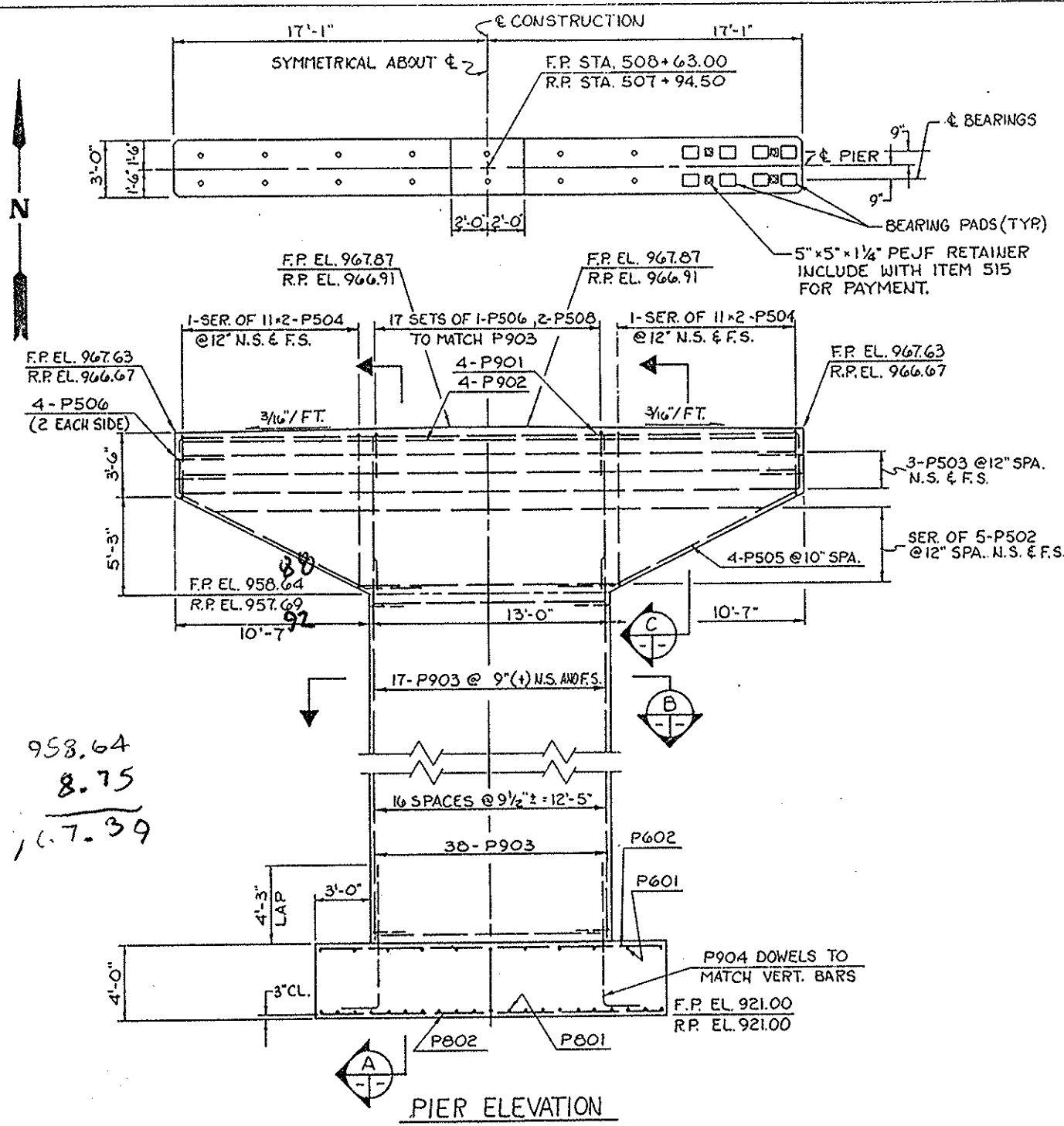
BRIDGE SEAT REINFORCING: REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES.

JOHN DAVID JONES & ASSOC., INC. 4/8			
3162 FRONT STREET CUYAHOGA FALLS, OHIO 44221			
ENGINEERS	ARCHITECTS	PLANNERS	
ABUTMENT DETAILS			
BRIDGE No. ATB-534-1210 STATE ROUTE 534 OVER TRUMBULL CREEK			
DESIGNED	DRAWN	TRACED	CHECKED
BCK	DRK		JRS
REVIEWED	DATE	REVISED	
PAK	5/10/88		

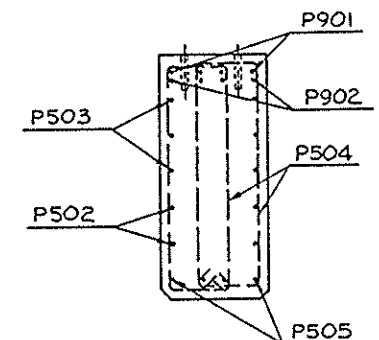
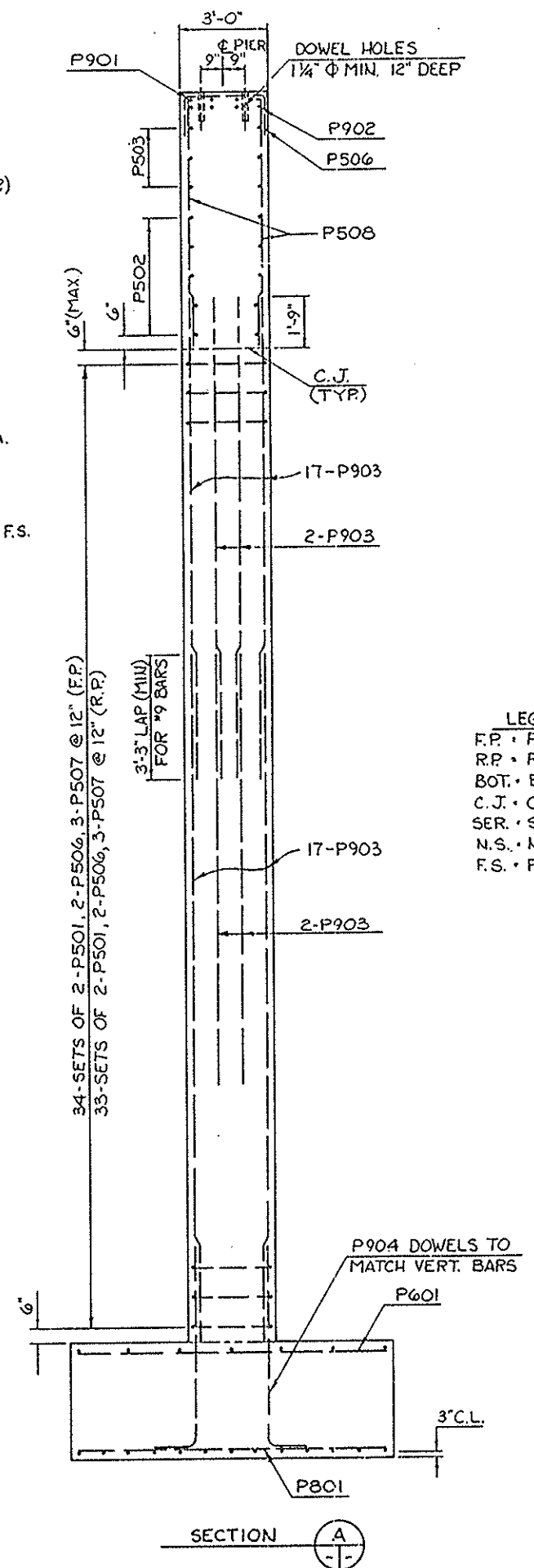
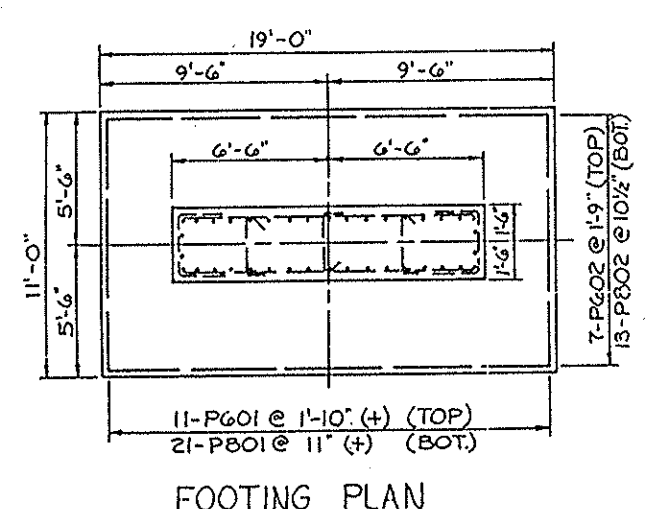
FALVA REGION	STATE	REGION	
5	OHIO		

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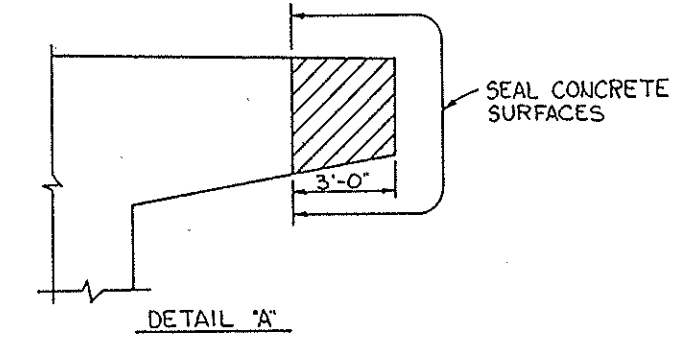
ASHTABULA COUNTY
ATB-534-11.98



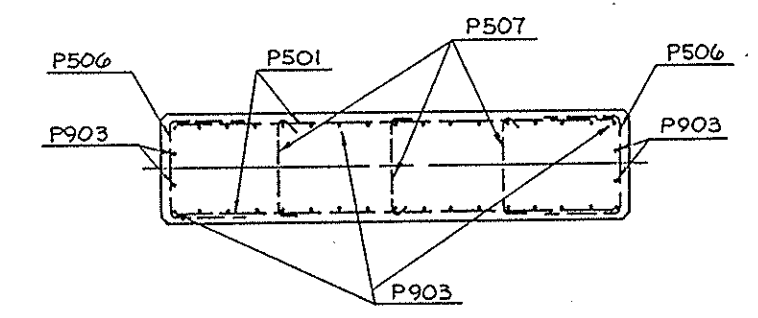
958.64
8.75
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SECTION C



DETAIL 'A'



SECTION B

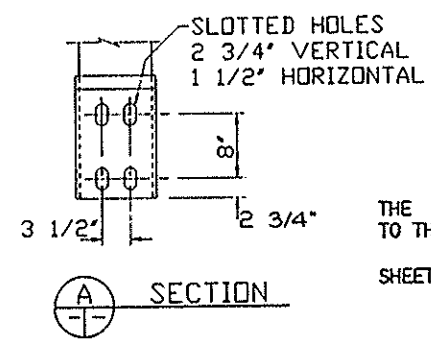
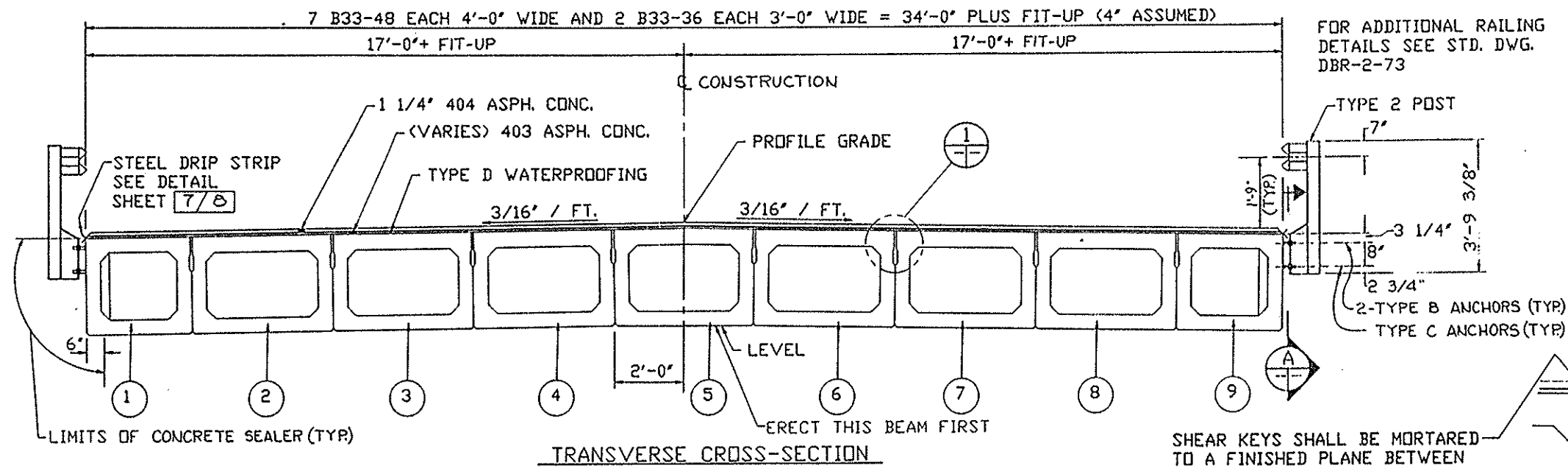
LEGEND
 F.P. • FORWARD PIER
 R.P. • REAR PIER
 BOT. • BOTTOM
 C.J. • CONSTRUCTION JOINT
 SER. • SERIES
 N.S. • NEAR SIDE
 F.S. • FAR SIDE

BRIDGE SEAT REINFORCING: REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES.

BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD 1/16" AT PIERS TO COMPENSATE FOR THE VERTICAL DEFORMATION OF THE BEARINGS.

JOHN DAVID JONES & ASSOC. INC. 5/8 2162 FRONT STREET CUYAHOGA FALLS, OHIO 44221 ENGINEERS ARCHITECTS PLANNERS					
PIER DETAILS BRIDGE No. ATB-534-1210 STATE ROUTE 534 OVER TRUMBULL CREEK					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
BCK	DRK		JRS	PAK	5/10/88

ASHTABULA COUNTY
ATB-534-11.98

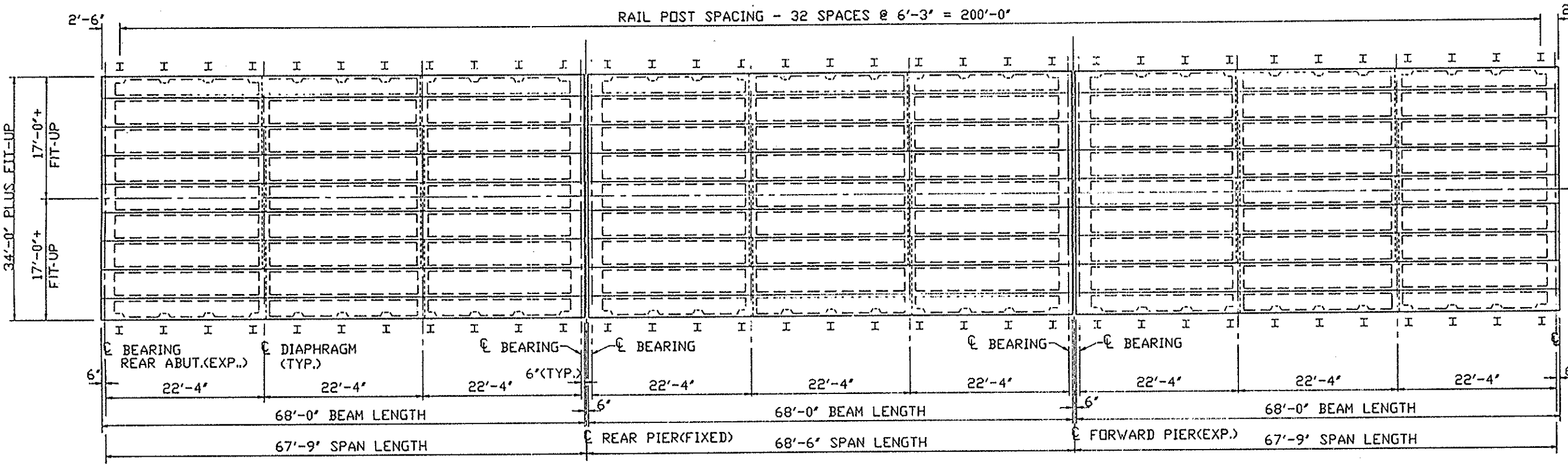


THE FOLLOWING DETAILS FROM STD. DWG. PSBD-1-81 APPLY TO THIS PROJECT:

- SHEET 1 OF 4: BEAM LIFTING INSERTS, WALL THICKENING AT GUARDRAIL ANCHORS, DETAILS AND REINFORCEMENT OF BEAM ENDS, ANCHOR DOWELS, PLAN-FASCIA BEAM WITH NOTCH.
- SHEET 2 OF 4: TYPICAL PLANS OF DIAPHRAGMS AND TRANSVERSE TIE RODS, NORMAL CROWN TREATMENT AT CENTERLINE OF ROADWAY, BEAM DIMENSIONAL TOLERANCES, AND END DETAILS OF TRANSVERSE TIE ROD ANCHORAGE.
- SHEET 3 OF 4: 48-INCH AND 36-INCH WIDE NONCOMPOSITE BEAMS (B33-48, B33-36).

THE FOLLOWING NOTES FROM STD. DWG. PSBD-1-81 APPLY TO THIS PROJECT:

- SHEET 1 OF 4: TRANSVERSE TIE RODS, GALVANIZING, ANCHOR DOWELS, NOTCHES, END OF BEAMS, MORTARING OF SHEAR KEYS AND AS REQUIRED TO SUPPLEMENT APPLICABLE DETAILS.
- SHEET 2 OF 4: AS REQUIRED TO SUPPLEMENT APPLICABLE DETAILS.
- SHEET 3 OF 4: AS REQUIRED TO SUPPLEMENT APPLICABLE DETAILS.



NOTE:
FOR ADDITIONAL NOTES
SEE SHEET 3/8 AND 7/8

JOHN DAVID JONES & ASSOC. INC. 6/8
2162 FRONT STREET
CUYAHOGA FALLS, OHIO 44221
ENGINEERS ARCHITECTS PLANNERS

DECK PLAN AND SECTION
BRIDGE NO. ATB-534-1210
STATE ROUTE 534
OVER TRUMBULL CREEK

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
BCK	RVM		JRS	PAK	5/10/88	

BEAM LAYOUT PLAN

STEEL DEFLECTOR
AT ABUTMENT
(TYP. 4 PLACES)
FOR ADDITIONAL DETAILS
SEE STD. DWG. EXJ-3-82

10"x12"x1 1/4"
ELASTOMERIC BEARING PAD
(70 DURETOMETER NEOPRENE)
(2 PADS PER BEAM END)

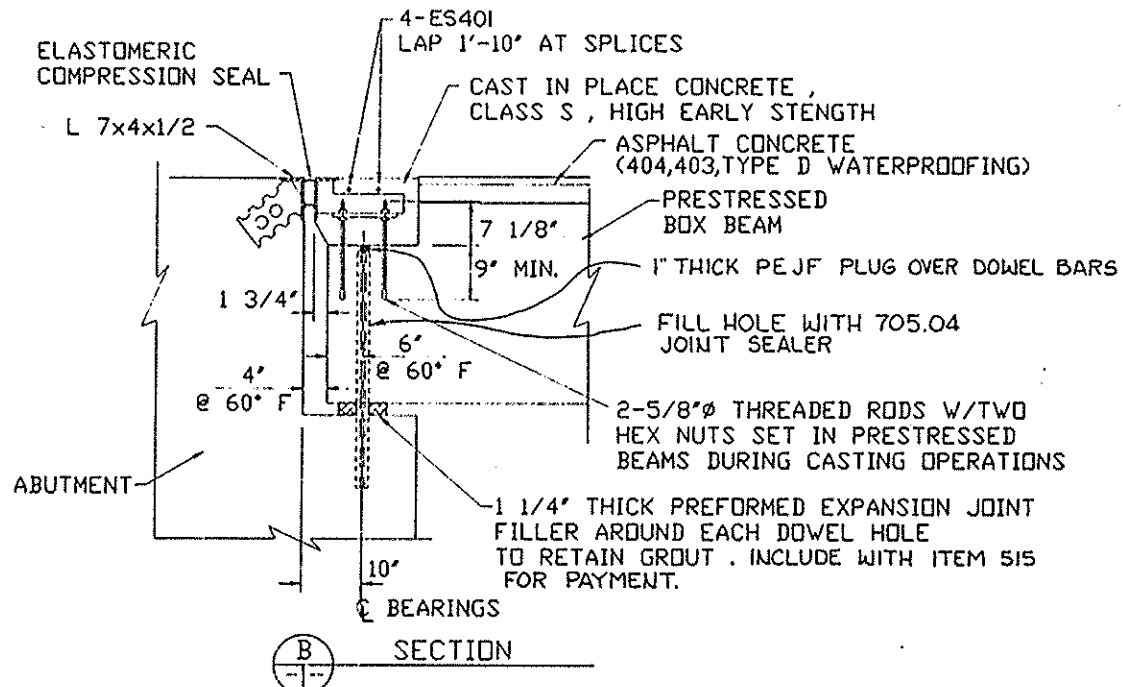
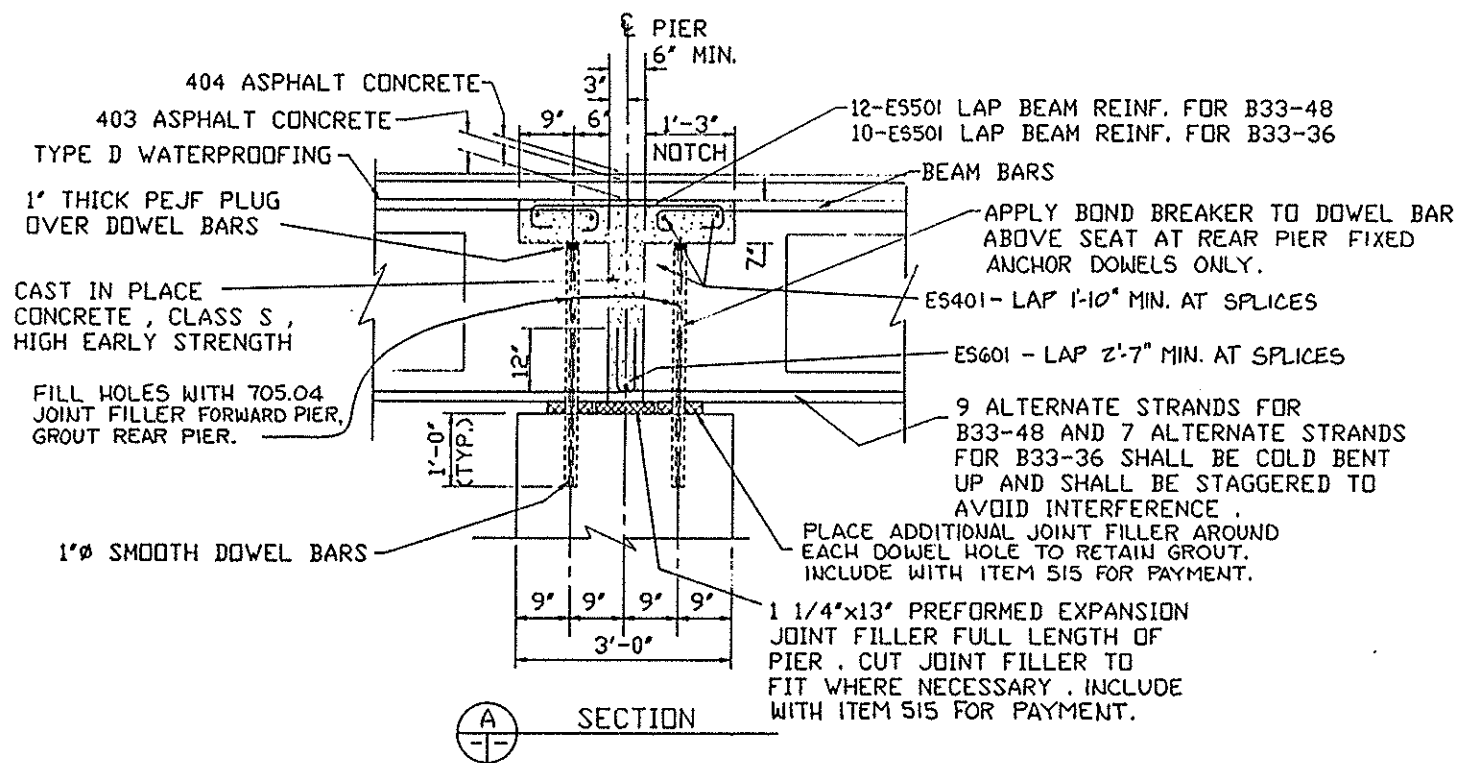
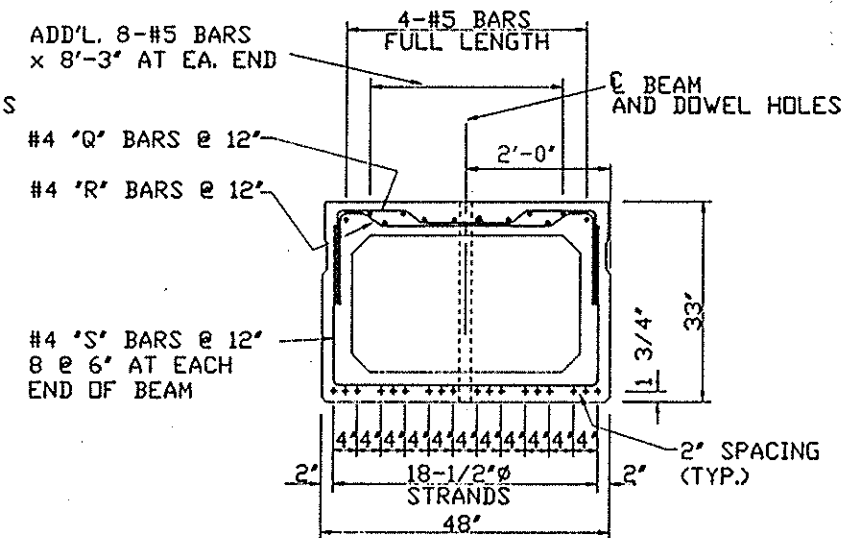
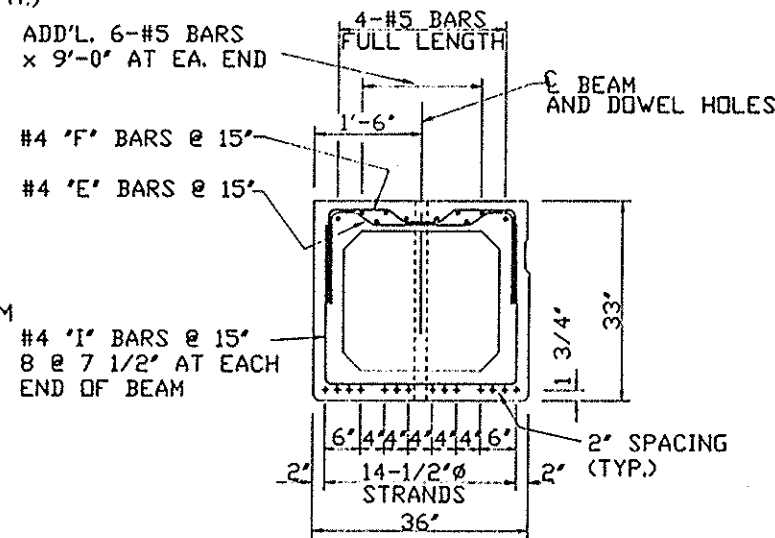
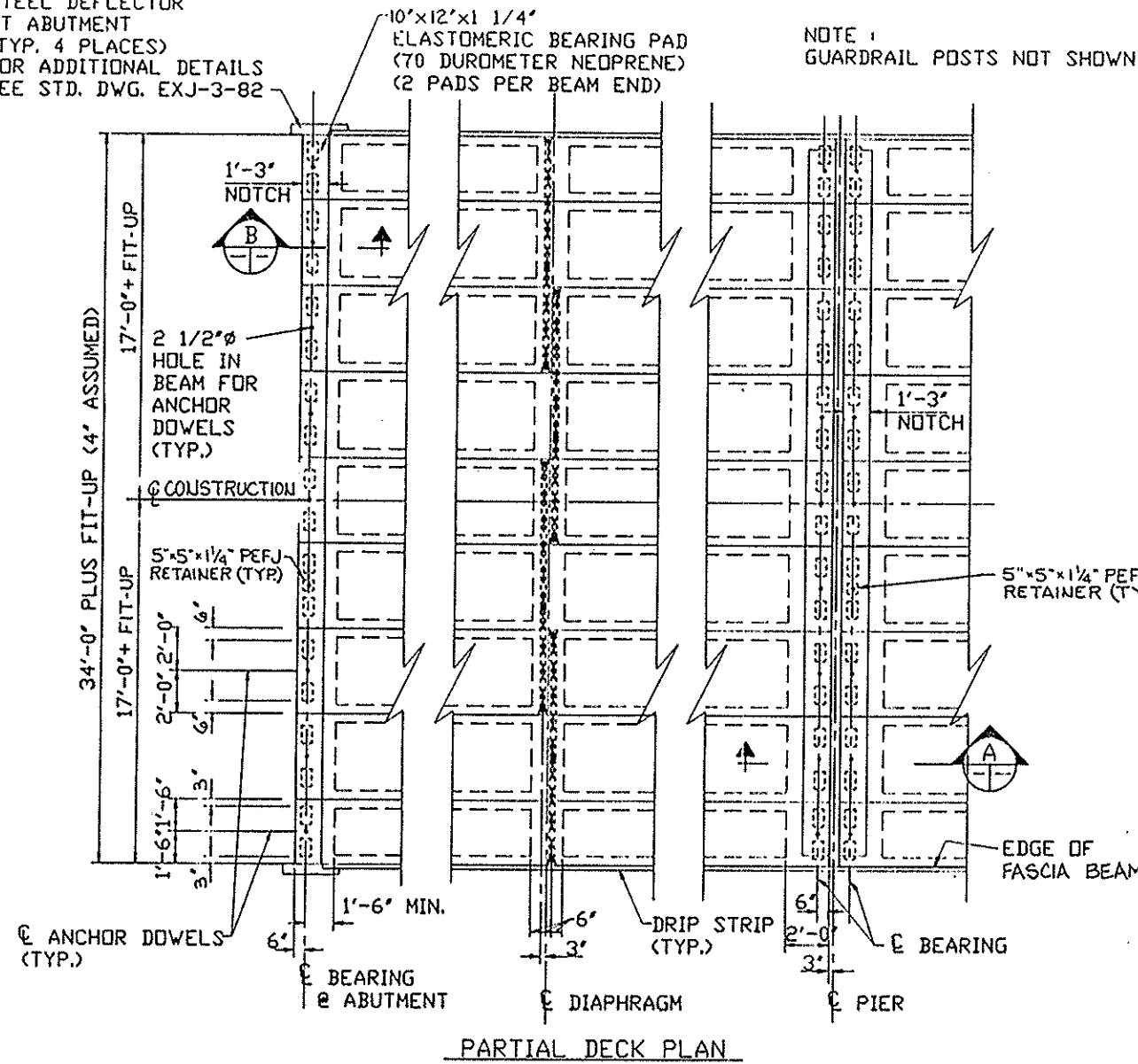
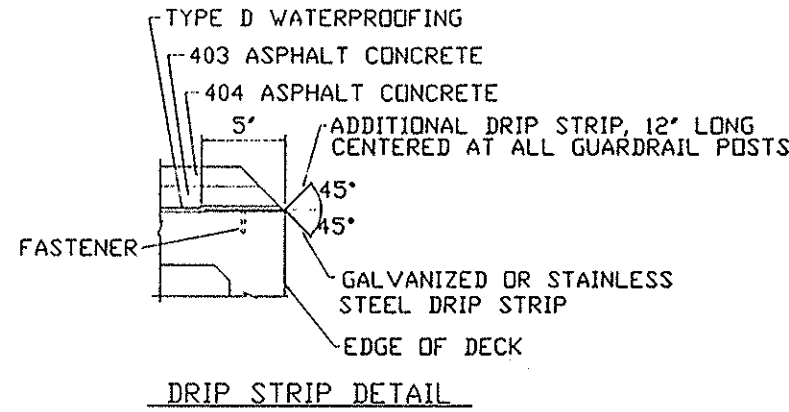
NOTE:
GUARDRAIL POSTS NOT SHOWN

F.H.V.A. REGION	STATE	REGION	
5	OHIO		

25
30

ASHTABULA COUNTY
ATB-534-11.98

DRIP STRIP: PRIOR TO APPLYING TYPE D WATERPROOFING, A BENT DRIP STRIP SHALL BE INSTALLED ALONG THE EDGES OF THE DECK AS SHOWN. THE STRIPS SHALL BE FASTENED AT 1'-6" C/C MAXIMUM WITH 1 1/4" X 5/32" X 1/4" FLAT HEAD DRIVE PIN AND WASHER. (LENGTH X SHANK DIA. X HEAD DIA.) OR # 10 GALVANIZED SCREWS AND EXPANSION ANCHORS, SUBJECT TO THE APPROVAL OF THE ENGINEER. THE STRIPS SHALL BE PLACED THE FULL LENGTH OF THE DECK, ENDING AT THE BOX BEAM NOTCH AT THE ABUTMENTS. WHERE SPLICES ARE REQUIRED A 3" (MIN.) LAP SHALL BE USED WITH A FASTENER THROUGH THE LAP. STEEL FOR GALVANIZED STRIPS SHALL BE 8" X 0.105" AND SHALL MEET THE REQUIREMENTS OF ASTM A568. GALVANIZING SHALL BE IN ACCORDANCE WITH 711.02. STAINLESS STEEL SHALL BE 20 GAUGE ASTM A167, TYPE 304, MILL FINISH. PAYMENT SHALL BE AT THE CONTRACT PRICE BID FOR ITEM SPECIAL STEEL DRIP STRIP, WHICH SHALL INCLUDE ALL MATERIALS, LABOR, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE ITEM.



NOTE:
FOR ADDITIONAL NOTES
SEE SHEET 3/8 AND 6/8

JOHN DAVID JONES & ASSOC., INC. 7/8
2162 FRONT STREET
CUYAHOGA FALLS, OHIO 44221
ENGINEERS ARCHITECTS PLANNERS

DECK
SECTIONS AND DETAILS
BRIDGE NO. ATB-534-1210
STATE ROUTE 534
OVER TRUMBULL CREEK

DESIGNER	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
BCK	RWM		JRS	PAK	5/10/88	

MARK	NUMBER			LENGTH	SER. INCR.	TYPE	WEIGHT	A	B	C	D
	REAR	FWD.	TOTAL								
ABUTMENTS											
A801	16	16	32	28'-2"		STR.	2407				
D801	23	23	46	4'-8"		14	573	2'-4"			
A501	80	80	160	6'-9"		1	1126	4'-8"	1'-2"		
A502	52	52	104	5'-11"		2	642	0"	5'-3"		
A508	4	4	8	21'-1"		2	176	3'-5"	17'-9"		
A512	2	2	4	17'-2"		1	73	1'-5"	8'-0"		
A513	2	2	4	15'-10"		1	66	1'-5"	7'-4"		
A514	2	2	4	14'-4"		1	60	1'-5"	6'-7"		
A515	2	2	4	13'-2"		1	55	1'-5"	6'-0"		
A401	7	7	14	13'-6"		3	126	1'-8"	4'-10"		
A402	6	6	12	3'-3"		1	26	1'-5"	1'-0"		
TOTAL UNCOATED BARS							5330				
EA601	26	26	52	7'-8"		34	509	1'-5"	2'-0"	3'-2"	1'-0"
EA602	26	26	52	5'-7"		7	436	11"	3'-0"	1'-8"	
EA503	26	26	52	6'-10"		1	371	3'-5"	1'-10"		
EA504	6	6	12	18'-2"		1	227	1'-5"	8'-6"		
EA505	14	14	28	4'-2"		1	122	1'-5"	1'-6"		
EA506	12	12	24	26'-8"		STR.	668				
EA507	4	4	8	10'-6"		STR.	88				
EA509	4	4	8	24'-6"		STR.	204				
EA510	4	4	8	8'-0"		4	73	3'-8"	5'-2"	6"	1'-0"
EA511	2	2	4	21'-8"		STR.	90				
EA516	4	4	8	17'-9"		STR.	148				
TOTAL COATED BARS							3026				
PIERS											
P901	4	4	8	38'-10"		2	1057	33'-7"	2'-11"		
P902	4	4	8	16'-6"		STR.	449				
P903	76	76	152	19'-4"		STR.	9991				
P904	38	38	76	9'-4"		2	2412	8'-0"	1'-7"		
P801	21	21	42	10'-6"		STR.	1177				
F802	13	13	26	18'-6"		STR.	1284				
P601	11	11	22	10'-6"		STR.	347				
P602	7	7	14	18'-6"		STR.	389				
P501	68	66	134	12'-8"		STR.	1770				
P502	2 SER. 5	2 SER. 5	4 SER. 5	15'-10" 18'-10"		4'-0"	STR.	455			
P503	6	6	12	33'-8"		STR.	421				
P504	4 SER. 11	4 SER. 11	8 SER. 11	10'-3" 20'-9"		1'-0"	3	1446	1'-9"	3'-4"	8'-4"

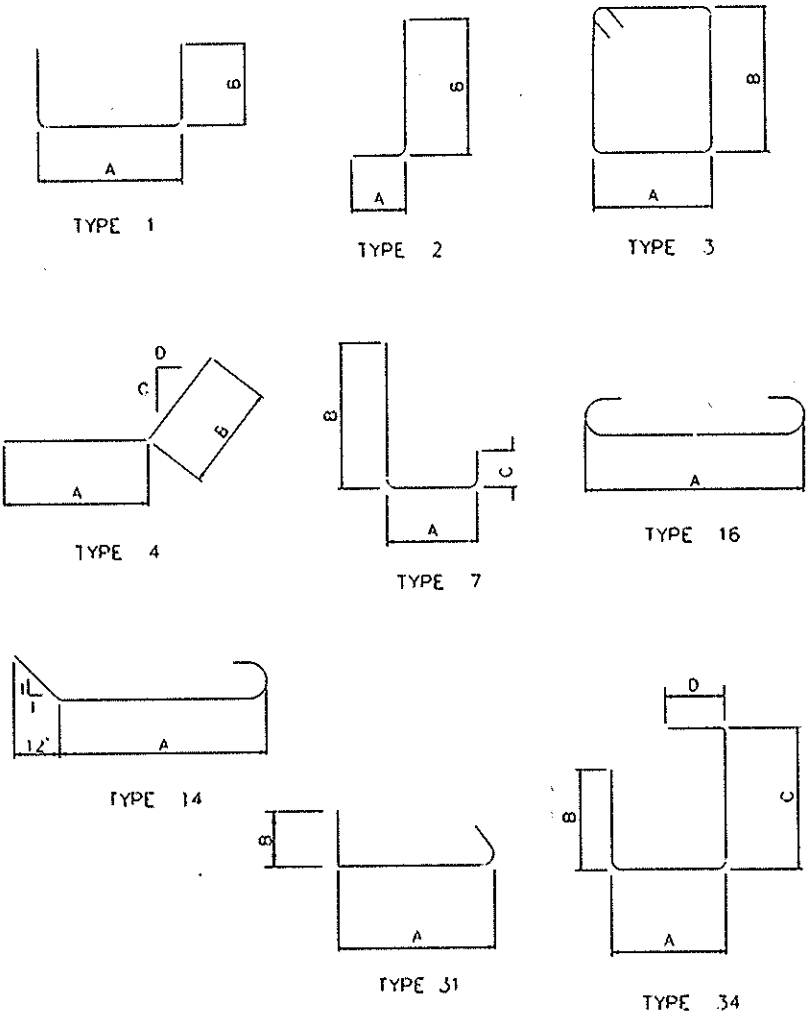
MARK	NUMBER			LENGTH	SER. INCR.	TYPE	WEIGHT	A	B	C	D
	REAR	FWD.	TOTAL								
PIERS (CONT.)											
P505	8	8	16	12'-3"		4	204	10'-10"	1'-6"	6"	1'-0"
P506	80	87	176	5'-1"		1	933	2'-8"	1'-4"		
P507	102	99	201	3'-10"		31	804	2'-8"	10"		
P508	34	34	68	8'-7"		STR.	609				
TOTAL UNCOATED BARS							23748				
SUPERSTRUCTURE (EPOXY COATED)											
ES601			4	18'-0"		STR.	108	2'-6"			
ES501			208	3'-8"		16	796				
ES401			12	17'-11"		STR.	144				
TOTAL COATED BARS							1048				

DESIGNED BCK DATE 5/9/00
CHECKED JRS DATE 5/11/00

FHWA REGION	STATE	PROJECT
5	OHIO	

26
30

ASHTABULA COUNTY
ATB-534-11.98



REINFORCING STEEL SAMPLES
REFER TO CMS SECTIONS 106.03, 700, 709.01 THROUGH 709.05 AND 709.08. SUFFICIENT ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED FOR SAMPLING. RANDOM SAMPLES SHALL BE REPLACED IN STRUCTURES BY THE ADDITIONAL STEEL, SPLICED IN ACCORDANCE WITH 509.08

BAR MARKS WITH THE PREFIX E SHALL BE EPOXY COATED.

JOHN DAVID JONES & ASSOC., INC.		B/E	
ENGINEERS		PLANNERS	
REINFORCING STEEL LIST BRIDGE No. ATB-534-1210 STATE ROUTE 534 OVER TRUMBULL CREEK			
DESIGNED	DRWN	TRACED	CHECKED
BCK	DRK	JRS	PAK
DATE	DATE	DATE	DATE
	5/10/00		

PROPERTY MAP

TELEPHONE
 WESTERN RESERVE TELEPHONE CO.
 4616 PARK AVENUE
 ASHTABULA, OHIO 44004
 ATTN: MR. RICHARD A. PEURA, MGR.
 PHONE: (216) 998-5151

ELECTRIC
 CLEVELAND ELECTRIC ILLUMINATING CO.
 2210 SOUTH RIDGE WEST
 P.O. BOX 668
 ASHTABULA, OHIO 44004
 ATTN: MR. P.R. MULLETT, SUPT. SURVEY & COST UNITS
 PHONE: (216) 997-6761

PROJECT NO.	TOWNSHIP	SECTION	RANGE
	ASHTABULA	BR5-568	12-23

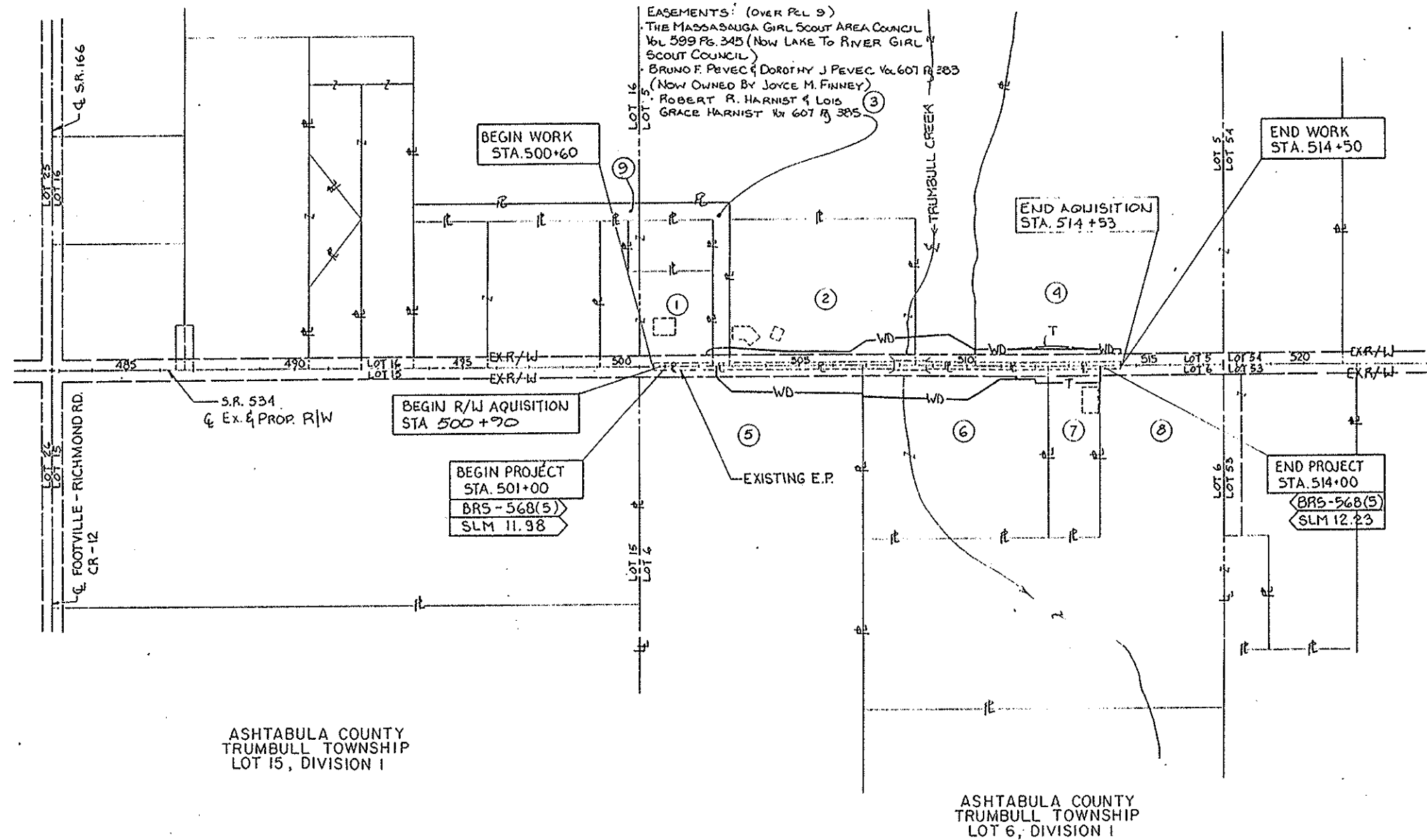
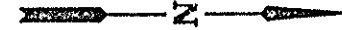
ASHTABULA COUNTY
 ATB-534-11.98
 RIGHT-OF-WAY PLAN

28
 30

1
 3

ASHTABULA COUNTY
 TRUMBULL TOWNSHIP
 LOT 16, DIVISION 1

ASHTABULA COUNTY
 TRUMBULL TOWNSHIP
 LOT 5, DIVISION 1



ASHTABULA COUNTY
 TRUMBULL TOWNSHIP
 LOT 15, DIVISION 1

ASHTABULA COUNTY
 TRUMBULL TOWNSHIP
 LOT 6, DIVISION 1

PARCEL NO.	OWNER
1	JOYCE M. FINNEY
2	DAVID B. KHOPSHIDER
3	LAKE TO RIVER GIRL SCOUT COUNCIL
4	RAY WILLIAMS
5	CARL KEITH & WILMA H. WORTHMAN
6	LAURA D. SIPARI
7	JAMES C. & ROSETTA M. COLVIN
8	DAVE W. & BECKY L. WORTHMAN
9	GLADYS M. BESWICK

FUNDS: STATE

REVISIONS	DATE	BY

PROPERTY MAP STA. 501+00 TO STA 514+00

TOTAL NUMBER OF OWNERSHIPS
 ○ TOTAL TAKES
 ○ OWNERSHIPS WITH STRUCTURES INVOLVED
 ○ OWNERSHIPS WITH "P" ITEMS

SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

CALC	BY DATE	FM	7/98
CHECKED	FK	7/98	

REGION	STATE	PROJECT
5	OHIO	BRS-568

29
30

2
3

PID # 4434
 STATE JOB # 041170

ASHTABULA COUNTY
 ATB - 534-11.98
 RIGHT OF WAY PLAN

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD		RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUC-TURE	NET RESIDUE		TYPE FUNDS	REMARKS AND PERSONALTY	AS ACQUIRED	
			BOOK	PAGE							LEFT	RIGHT			BOOK	PAGE
1S	JOYCE M. FINNEY		079	141	2.04 Ac.	0.231 Ac.	0.207 Ac.		0.007 Ac.		1.009 Ac.		STATE	CONSTRUCT STORM SEWER		
2WD 2T	DAVID B. KNOPSNIDER		OR 42	392	5.05 Ac.	0.378 Ac.	0.607 Ac. 0.052 Ac.	0.378 Ac.	0.229 Ac. 0.052 Ac.		4.443 Ac.			RECONSTRUCT DRIVE		
3WD	LAKE TO RIVER GIRL SCOUT COUNCIL, AN OHIO CORPORATION		655	1109	100.180 Ac.	0.120 Ac.	0.319 Ac.	0.120 Ac.	0.199 Ac.		100.170 Ac.					
4WD 4T	RAY WILLIAMS		OR 45 OR 29	6787 1310	60 Ac.	0.580 Ac.	0.503 Ac. 0.011 Ac.	0.305 Ac.	0.198 Ac. 0.011 Ac.		59.222 Ac.			REGRADE SLOPE		
5WD 5T	CARL KEITH WORTMAN & WILMA M. WORTMAN		472 451	408 182	86 Ac.	0.455 Ac.	0.725 Ac. 0.024 Ac.	0.301 Ac.	0.424 Ac. 0.024 Ac.		85.121 Ac.			RECONSTRUCT DRIVE		
6WD 6T	LAURA D. SIPARI		OR 53	4632	6.80 Ac.	0.395 Ac.	0.929 Ac. 0.039 Ac.	0.395 Ac.	0.534 Ac. 0.039 Ac.		5.871 Ac.			RECONSTRUCT DRIVE		
7T	JAMES C. & ROSETTA M. COLVIN		863	118	1.70 Ac.	0.103 Ac.	0.076 Ac.		0.076 Ac.		1.597 Ac.			REGRADE DRIVE, CONSTRUCT STORM SEWER		
8	DAVE W. & BECKY L. WORTMAN						No TAKE		No TAKE							
9T	GLADYS M. BESWICK		613 391	31 194	1.510 Ac.	0.034 Ac.	0.023 Ac.		0.023 Ac.		1.510 Ac.			RECONSTRUCT DRIVE		

REVISIONS	DATE	BY
REV. PCL. 6-T, DEL. PCL. 7 WA, ADD PCL. 7-T	5-18-92	
REV. NAME PCL. 1-WD, 3-WD, 4-WD, 5-WD, 6-WD REV. OWN. REC. 1-WD, 2-WD, 1-WD, 6-WD	1-6-92	
DEL. PCL. 5-T ADD. PCL. 07, REV. AREA'S PCL. 3-WD	7-16-91	

S.R. 534
 ASHTABULA COUNTY
 TRUMBULL TOWNSHIP
 LOT No. 5, DIVISION I

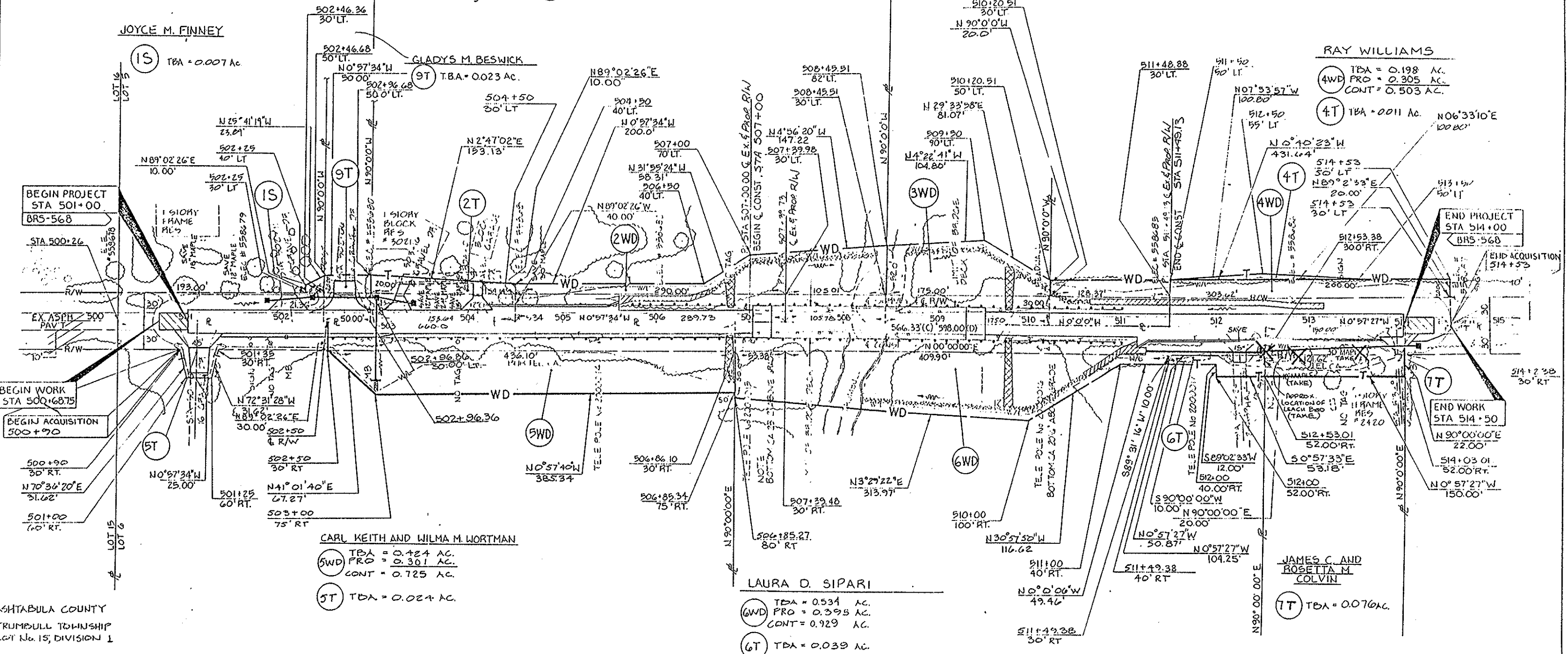
CALC BY E.M.	DATE 5/89	STATE OHIO	PROJECT BR5-568(5)	SHEET 30
CHECKED BY F.R.	DATE 1/90	STATE OHIO	PROJECT BR5-568(5)	SHEET 30

ASHTABULA COUNTY
 ATB-534-11.98
 RIGHT-OF-WAY PLAN

ASHTABULA COUNTY
 TRUMBULL TOWNSHIP
 LOT No. 16, DIVISION 1

EASEMENTS:
 THE MASSASHUGA GIRL SCOUT AREA COUNCIL VOL 599 P. 345 (Now LAKE TO RIVER GIRL SCOUT COUNCIL) (2WD) TBA = 0.229 AC. PRO = 0.378 AC. CONT = 0.607 AC.
 BRUNO F. PEVEC & DOROTHY J. PEVEC VOL 607 P. 383 (Now JOYCE M. FINNEY) (2T) TBA = 0.052 AC.
 ROBERT R. HARNIST & LOS GRACE HARNIST VOL 607 P. 383

LAKE TO RIVER GIRL SCOUT COUNCIL (3WD) TBA = 0.193 AC. PRO = 0.120 AC. CONT = 0.319 AC.

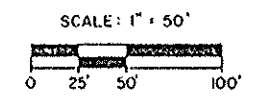


ASHTABULA COUNTY
 TRUMBULL TOWNSHIP
 LOT No. 15, DIVISION 1

ASHTABULA COUNTY
 TRUMBULL TOWNSHIP
 LOT No. 6, DIVISION 1

JAMES C. AND ROSETTA M. COLVIN (7T) TBA = 0.076 AC.

FUNDS: STATE



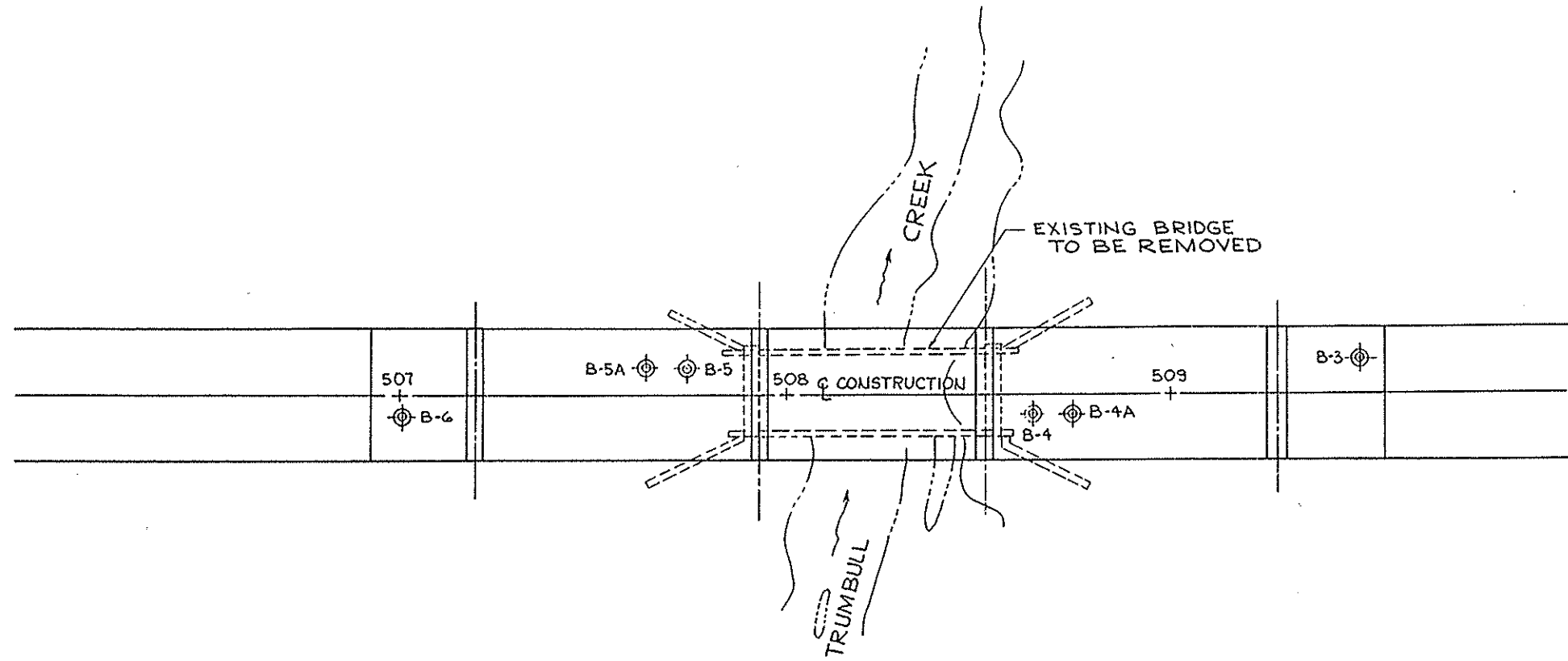
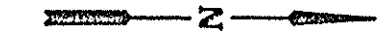
REVISIONS	DATE
ADD LENCH BED TO REL T-T	6-21-92
REV PLAN AND T-T DATE REL TOW APPROV	7-18-92
REV NAME REL 154 W.D. 6 W.D.	

STRUCTURE FOUNDATION INVESTIGATION

F.W.A. REG.	ST/FE	PROJECT	
5	OH-0		

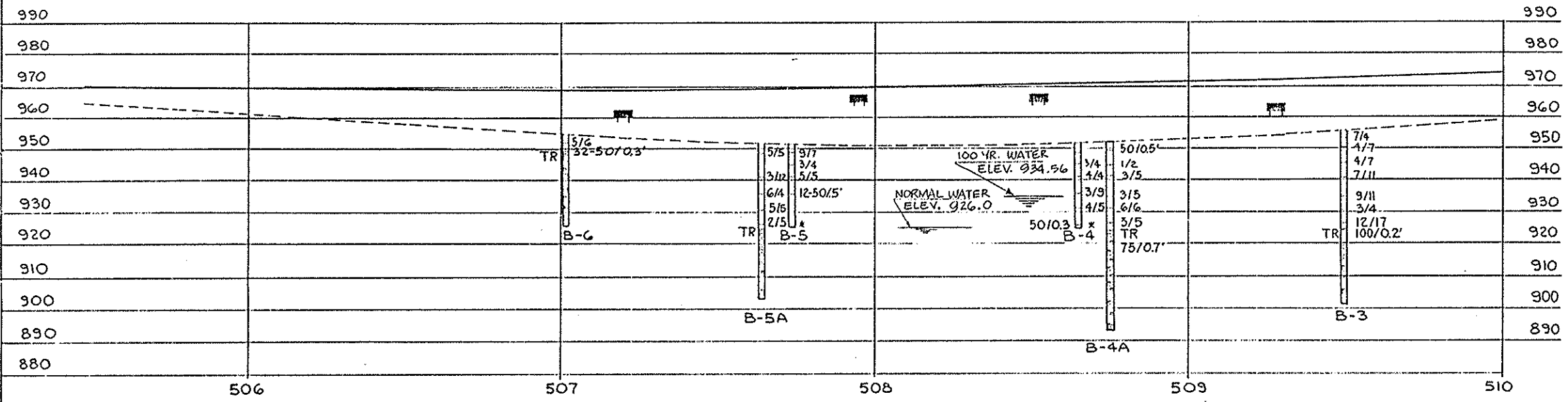
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ASHTABULA COUNTY
ATB-534-11.90
BRF-568(5)



LEGEND

- ⊕ AUGER BORING LOCATION - PLAN VIEW
 - ⊙ DRIVE SAMPLE AND/OR CORE BORING LOCATION - PLAN VIEW
 - TR TOP OF ROCK
 - ▬ CAPPED PILE FOOTING
 - ▬ SPREAD FOOTING
 - ▬ PILE FOOTING
 - ▬ DRILLED SHAFT
- FIGURES BESIDE THE BORING LOG INDICATE THE BLOW COUNT (N) OF THE STANDARD PENETRATION TEST
- W— INDICATES FREE WATER ELEVATION
- * BORING ABANDONED DUE TO AUGER REFUSAL IN WOOD TIMBERS.



JOHN DAVID JONES & ASSOC., INC.			
3100 FOUNTAIN STREET CUYAHOGA FALLS, OHIO 44221			
ENGINEER:	ARCHITECTS:	PLANNERS	
STRUCTURE FOUNDATION INVESTIGATION			
BRIDGE NO.		ATB-534-12.10	
OVER TRUMBULL CREEK			
ASHTABULA CO.		S.R. 534	
SCALE 1 INCH = 20 FEET		STA. 507+27.00 TO STA. 509+33.00	
PLAN AND PROFILE			
DRAWN BY	CHECKED BY	REVIEWED BY	DATE
EB	BCK	PAK	11/10/87

STRUCTURE FOUNDATION INVESTIGATION

CHWA REG.	STATE	PROJECT	2 7
5	OHIO		

ASHTABULA COUNTY
ATB-534-11.98

1. INTRODUCTION

THE STATE OF OHIO PROPOSES TO RECONSTRUCT THE BRIDGE OVER TRUMBULL CREEK ON STATE ROUTE 534 APPROXIMATELY 1/2 MILE NORTH OF STATE ROUTE 166 IN ASHTABULA COUNTY, OHIO. THE REPLACEMENT BRIDGE IS PLANNED APPROXIMATELY 18 FT HIGHER THAN THE EXISTING STRUCTURE, AND THE BRIDGE IS TO BE LENGTHENED TO THREE SPANS. NEW ABUTMENTS AND PIERS ARE PLANNED. 1300 FT OF ROADWAY IS TO BE RAISED, IN CONJUNCTION WITH THE NEW BRIDGE ELEVATION.

THIS REPORT PRESENTS THE RESULTS AND RECOMMENDATIONS OF A GEOTECHNICAL EXPLORATION PROGRAM FOR THE BRIDGE AND ROADWAY. SOIL AND BEDROCK WERE IDENTIFIED BY A FIELD EXPLORATION PROGRAM CONSISTING OF 18 BORINGS, AND SELECTED SAMPLES WERE TESTED IN THE LABORATORY. FIELD AND LABORATORY TEST RESULTS WERE INTERPRETED, RESULTING IN RECOMMENDATIONS FOR STRUCTURE FOUNDATION AND EMBANKMENT DESIGN.

2. GEOLOGY AND OBSERVATIONS OF THE PROJECT SITE

THE SITE IS LOCATED IN A GLACIATED AREA OF THE ALLEGHENY PLATEAU. GLACIAL DEPOSITS IN THE AREA ARE PRIMARILY GROUND MORAINE, COMPOSED OF SILTY CLAY OVERLYING SHALE BEDROCK. SURFACE OR NEAR SURFACE SANDSTONE IS NOT COMMON IN THE AREA.

TRUMBULL CREEK FLOWS EASTERLY THROUGH A RAVINE APPROXIMATELY 1/2 MILE NORTH OF STATE ROUTE 166. A FLOOD PLAIN APPROXIMATELY 10 FT ABOVE CREEK BOTTOM AND 200 FT WIDE IS WOODED. THE CREEK IS 30 TO 40 FT WIDE AT THE EXISTING BRIDGE. THE SIDES OF THE RAVINE ARE RELATIVELY STEEP, WITH GRAY SHALE EXPOSED ON THE SOUTH SLOPE.

THE EXISTING STATE ROUTE 534 DIPS DOWN INTO THE RAVINE, AND CROSSES THE CREEK WITH A SINGLE SPAN CONCRETE BRIDGE. THE TOP OF THE EXISTING BRIDGE DECK IS 20 FT ABOVE THE CREEK BED. THE ROADWAY EMBANKMENT HAS BEEN BUILT UP ABOVE THE RAVINE BOTTOM, AND APPEARS TO HAVE BEEN CUT INTO THE BEDROCK ON THE SOUTH SIDE OF THE CREEK, AND INTO THE SLOPE ON THE NORTH SIDE. THE SIDES OF THE EXISTING ROADWAY EMBANKMENT ARE RELATIVELY STEEP, WITH APPROXIMATE 3:2 SLOPES.

3. EXPLORATION

SUBSURFACE CONDITIONS WERE STUDIED BY AN EXPLORATION PROGRAM CONSISTING OF 18 BORINGS DURING THE PERIOD OF JUNE 24 THROUGH JULY 9, 1987. BORINGS B-1, B-2, AND B-7 THROUGH B-10 WERE INTENDED FOR ROADWAY AND EMBANKMENT DESIGN. BORINGS B-3 THROUGH B-6 WERE STRUCTURE BORINGS, FOR THE PROPOSED BRIDGE FOUNDATIONS. SURFACE ELEVATIONS AND BORING LOCATIONS WERE PROVIDED BY JOHN DAVID JONES AND ASSOCIATES.

BORINGS B-1 THROUGH B-8 WERE ADVANCED WITH A TRUCK-MOUNTED MECHANICAL ROTARY TYPE DRILL RIG USING HOLLOW STEM AUGERS. THE BORINGS WERE DRILLED IN ACCORDANCE WITH ASTM STANDARDS. A TWO INCH O.D. SPLIT-SPOON SAMPLER WAS DRIVEN TO OBTAIN SAMPLES AT SPECIFIED INTERVALS. THE NUMBER OF BLOWS OF A 140 LB HAMMER DROPPING 30 INCHES WAS RECORDED FOR EACH OF THREE, SIX-INCH PENETRATION INTERVALS AT EACH SAMPLE LOCATION. IN ROCK WITH LESS THAN 6 INCHES OF SAMPLER PENETRATION, THE DEPTH OF PENETRATION WAS ALSO MEASURED AND RECORDED.

SANDSTONE BLOCKS WITH CLAY AND GRAVEL BETWEEN THEM, PRESUMABLY PART OF A BRIDGE ABUTMENT, WERE ENCOUNTERED AT BORING B-4. NX CORING OF THIS SANDSTONE WAS ATTEMPTED, WITH POOR RECOVERY. WOOD TIMBERS (WITH GRAIN POSITIONED HORIZONTALLY) WERE ENCOUNTERED BENEATH THE BLOCKS. DUE TO AN INABILITY TO ADVANCE THE HOLE THROUGH THE WOOD, TEST BORING B-4 WAS ABANDONED AND REPLACED WITH B-4A, 10 FT NORTH OF B-4.

AUGERING THROUGH WOOD TIMBERS ENCOUNTERED AT BORING B-5 WAS NOT POSSIBLE, AND B-5 WAS ALSO ABANDONED AND REPLACED WITH B-5A, 11 FT TO THE SOUTH.

SHALE BEDROCK IN BORINGS B-3, B-4A, B-5A, AND B-6 WAS CORED USING AN NX-SIZED DOUBLE-TUBE CORE BARREL WITH A DIAMOND BIT. CORE SAMPLES WERE MEASURED FOR PERCENT RECOVERY, THEN PLACED IN WOODEN CORE BOXES AND MAINTAINED IN A MOIST CONDITION UNTIL EXAMINED, CLASSIFIED, AND TESTED.

DUE TO LIMITED ACCESS TO THE BORING LOCATIONS, BORINGS B-9 AND B-10 WERE SAMPLED WITH HAND-CARRIED EQUIPMENT. A 2 INCH O.D. SPLIT-SPOON SAMPLER WAS DRIVEN BY A 140 LB HAMMER DROPPING 30 INCHES, AND BLOW COUNTS WERE RECORDED. THE SAMPLER WAS RETRIEVED AFTER EACH 18 INCHES OF PENETRATION. BLOW COUNTS ON DEEPER SAMPLES MAY HAVE BEEN AFFECTED BY FRICTION ON THE RODS, SINCE THE HOLE WAS NOT AUGERED BETWEEN SAMPLE INTERVALS.

THREE INCH O.D. THIN-WALL SHELBY TUBE SAMPLES WERE HYDRAULICALLY PRESSED AT THE FOLLOWING LOCATIONS AND DEPTHS:

B-3; 2.5 to 4.5 ft; 19 inch recovery
B-3; 11.5 to 13.5 ft; 16 inch recovery
B-4; 21.5 to 23.5 ft; 7 inch recovery
B-4A; 6.5 to 8.5 ft; 17 inch recovery
B-4A; 20.0 to 22.0 ft; 12 inch recovery

GROUNDWATER DEPTHS WERE OBSERVED AND RECORDED UPON ENCOUNTER. WATER DEPTHS WERE ALSO MEASURED AT THE COMPLETION OF THE ROADWAY BORINGS WHERE BEDROCK WAS NOT CORED. DUE TO THE INTRODUCTION OF WATER IN THE CORING PROCESS, NO GROUNDWATER MEASUREMENTS WERE MADE AFTER ROCK WAS CORED. BORINGS WERE BACKFILLED AT THE COMPLETION OF FIELD TESTING.

THE RESULTS OF THE FIELD EXPLORATION PROGRAM ARE PRESENTED ON THE BORING LOGS.

THIS SUBSURFACE EXPLORATION WAS PERFORMED FOR DESIGN PURPOSES ONLY; ACTUAL SUBSURFACE CONDITIONS MAY BE DIFFERENT AT THE TIME OF CONSTRUCTION.

SOIL AND BEDROCK SAMPLES WERE DELIVERED TO OUR LABORATORY, WHERE THEY WERE EXAMINED AND CLASSIFIED BY A GEOTECHNICAL ENGINEER FOLLOWING ODOT SPECIFICATIONS. SELECTED SOIL AND BEDROCK SAMPLES WERE THEN TESTED FOR MOISTURE CONTENT, PLASTICITY INDEX, GRAIN SIZE, AND UNCONFINED COMPRESSIVE STRENGTH. LABORATORY TEST RESULTS ARE PRESENTED ON THE BORING LOGS, ON ENCLOSED TEST RESULT SHEETS, AND ON A STRENGTH TEST SUMMARY SHEET.

4. INVESTIGATIONAL FINDINGS

THE ROADWAY BORINGS INDICATE THAT THE EXISTING ROADWAY IS CONSTRUCTED ON FILL WITHIN THE ORIGINAL LIMITS OF THE RAVINE. THE OVERBURDEN HAD APPARENTLY BEEN REMOVED, AND FILL WAS PLACED ON TOP OF BEDROCK.

FILL WAS IDENTIFIED AS A MIXTURE OF CLAY, SAND, AND ROCK FRAGMENTS. TRACES OF WOOD AND VEGETATION WERE GENERALLY ENCOUNTERED AT THE BASE OF THE FILL. TIMBER CRIBBING, IDENTIFIED BY ITS HORIZONTAL GRAIN, WAS ENCOUNTERED AT THE BASE OF THE EXISTING BRIDGE AT B-4, B-4A, B-5, AND B-5A. THE WOOD AT B-4A WAS WET, BLACK, AND DECOMPOSED, AND SHREDDED EASILY. A 2 FT THICKNESS OF WOOD, POSSIBLY A FALLEN TREE, WAS ALSO ENCOUNTERED AT B-3.

FILL, INCLUDING THE WOOD AT ITS BASE, AND SHALE BEDROCK ENCOUNTER WERE MEASURED TO THE FOLLOWING ELEVATIONS:

BORING	STATION	BOTTOM OF FILL	TOP OF ROCK	
			(WEATH.)	(FIRM)
B-1	513+44	984.9	-	-
B-2	511+46	971.6	-	-
B-3	509+49	924.4	-	924
B-4A	508+74	924.0	924	916
B-5A	507+63	925.6	-	925
B-6	507+01	951.0	951	949
B-7	504+22	968.1	-	964
B-8	501+47	-	-	968
B-9	509+42 (OFF-ROAD)	-	-	925
B-10	509+36 (OFF-ROAD)	-	927	927

BEDROCK IS GRAY SILTY OR SANDY SHALE, NOT FISSILE, WITH HARD SILTSTONE SEAMS 1/2 TO 4 INCH IN THICKNESS. THE SHALE BENEATH THE EXISTING NORTH BRIDGE PIER IS VERY SOFT, CLAYEY, WEATHERED, AND BROKEN TO ELEVATION 916. FIRM TO HARD SHALE WAS ENCOUNTERED BELOW ELEVATION 916. THE SHALE BENEATH THE SOUTH BRIDGE PIER IS SOFT TO FIRM. HARD SHALE WAS ENCOUNTERED AT B-3 AT ELEVATION 924. SHALE RANGING FROM VERY SOFT TO FIRM WAS ENCOUNTERED AT B-6 BETWEEN ELEVATIONS 951 AND 944, WITH HARD SHALE BELOW 944.

GROUNDWATER WAS ENCOUNTERED NEAR THE BEDROCK SURFACE FROM ELEVATIONS 924 TO 927 AT B-3, B-4A, B-9, AND B-10. GROUNDWATER WAS ENCOUNTERED NEAR ELEVATION 968 AT B-7 AND B-8.

5. ENGINEERING INTERPRETATION

A. PIERS

Bridge piers are planned at the locations of the existing bridge abutments. These abutments would be removed entirely, and pier foundations constructed on the exposed shale bedrock. Each pier has been estimated to support a total dead plus live load of 1000 kips. Preliminary design has each pier supported by two columns.

The higher-elevation shale at B-4A is very soft, and the shale at B-5A is soft. This shale may be used to support the bridge piers on spread footings. An allowable bearing pressures of 20 ksf has been presumptively assigned to the higher-elevation shale at the bridge pier locations.

If the pier foundations are extended to firm or hard shale, readily accessed with a typical caisson rig, to approximate elevation 912 at the bridge pier locations, a higher bearing pressure may be utilized. An allowable net pressure of 50 ksf may be used for design of end bearing drilled piers on hard shale at this site. Hard siltstone seams may be encountered during drilling.

B. ABUTMENTS

Borings B-3 and B-6 were drilled and sampled at the proposed location of the bridge abutments. These locations were calculated based on an embankment with a 2:1 slope in the north and south direction, measured from the base of the existing abutments at the creek.

The north abutment, near B-3, would be located just within the original north side of the ravine, where the existing fill extends to shale near creek elevation. This shale is hard, and contains siltstone seams. It appears that the overburden in this area had been removed down to the shale at creek elevation in order to construct the existing road embankment. The embankment fill is only moderately compacted, less than required by present ODOT specifications, and contains loose, compressible soil with organic matter at its base. This fill is not suitable for structural support, and abutment foundations should extend to the shale below the fill.

Foundations for the north abutment may be constructed as drilled piers bearing in hard shale at approximate elevation 920, with net design bearing pressures of 50 ksf. Alternatively, H piles may also be driven to refusal in the hard shale.

The abutment on the south side of the ravine would be located on the original south ravine slope, near test boring B-6. Weathered shale was measured at elevation 951, with hard shale at 945. Drilled piers bearing on the hard shale could be designed for end bearing pressures of 50 ksf, or H piles could be driven to refusal in the shale.

C. EMBANKMENTS

The existing clay fill generally has a medium to stiff consistency. The base of the fill, however, is loose or soft, and contains some organic material (leaves, wood, etc.). Using Taylor's charts, with $D=0$ and $n=0$, the minimum cohesion for a uniform fill in a 2:1 embankment is approximately 1000 psf. It is likely that the 7 blow per foot material at the base of the existing fill has a lower shear strength than required for calculated slope stability. We conclude that this fill should be removed and replaced with compacted soil free of organic contamination. Fill in the embankments should be compacted according to current ODOT specifications.

A 40 ft high embankment is proposed at the north abutment, and 18 ft high at the south abutment. If the sides are sloped 2:1, then the toes of the slopes at the north abutment would occur in the flood plain of the creek. The 7 to 10 ft of soil above the shale in the ravine bottom, revealed in test borings B-9 and B-10, is alluvial and residual sand and silty clay. These soils have loose to medium consistencies, with estimated shear strengths less than that required for a stable slope. Therefore, the loose soils beneath the proposed embankments, on the sides of the existing embankments, should also be undercut, stockpiled, dried, and recompacted to ODOT specifications.

JOHN DAVID JONES & ASSOC., INC.			
2145 FRONT STREET CUYAHOGA FALLS, OHIO 44221			
ENGINEERS	ARCHITECTS	PLANNERS	
STRUCTURE FOUNDATION INVESTIGATION			
BRIDGE NO. ATB-534-1210		OVER TRUMBULL CREEK	
ASHTABULA CO.		S.R. 534	
SCALE 1" = 20 FEET		STA. 507+27.00 TO STA. 509+33.00	
PLAN AND PROFILE			
DRAWN BY	CHECKED BY	REVIEWED BY	DATE
EB	BCK	PAK	11/19/87

STRUCTURE FOUNDATION INVESTIGATION

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6. RECOMMENDATIONS

A. BRIDGE PIERS

Bridge piers may be supported on spread footings bearing on soft shale near elevation 924. Shallow footings should be designed for a total allowable bearing pressure of 20 ksf on soft shale.

Alternately, straight shaft drilled piers may be constructed to bear on hard shale near elevation 912, with allowable net end bearing pressures of 50 ksf.

B. ABUTMENTS

Drilled pier foundations may be used to support the proposed bridge abutments, bearing in hard shale with net design bearing pressures of 50 ksf. The estimated bearing depth at the north abutment is approximate elevation 920, and at the south abutment at approximate elevation 945.

Alternately, H piles may also be driven to refusal in the hard shale, and designed for a working stress of 12,000 psi on the steel cross section.

C. EMBANKMENTS

The fill in the existing embankments should be removed and replaced with compacted soil free of organic contamination. Fill in the embankments should be compacted according to current ODOT specifications.

The loose soils beneath the proposed embankments, and on the sides of the existing embankments, should also be undercut and recompacted to ODOT specifications.

A 2:1 slope may be used for the embankments if the fill is properly placed and compacted.

D. CONSTRUCTION OBSERVATION and TESTING

Each lift of earth fill should be tested for density and moisture content after it is spread and compacted, to verify compliance with ODOT embankment specifications. Testing should be performed by a qualified soils technician using a nuclear densometer or other approved equipment. A daily report of compaction test results should be prepared by the technician and reviewed by the geotechnical engineer.

A soils technician working under the direct supervision of the project geotechnical engineer should be present during spread footing construction to verify compliance with the recommendations contained in this report.

The technician's duties would include, but not be limited to:

- Identifying proper quality bearing materials.
- Observing the foundation bearing surface and bearing depth, and verifying that excess water, mud, and loose soil has been removed.
- Checking the placement of reinforcement.
- Sampling and testing concrete for compliance with the project specifications.

Drilled piers should be constructed with full-time geotechnical

engineering observation and testing services. The geotechnical engineering representative's duties would include, but not be limited to:

- Identifying proper quality bearing materials.
- Recording diameters and depths of installed piers.
- Verifying that bearing surfaces are adequately cleaned of water, mud, and excess loose cuttings.
- Verifying that concrete is properly placed and temporary casing is properly withdrawn.
- Sampling and testing concrete to verify that it attains design strength.

Piles should be driven with full-time geotechnical engineering observation and testing services. The geotechnical engineering representative's duties would include, but not be limited to:

- Verifying that piles are installed within specified tolerances, and that leads are plumbed with a carpenter's level or other appropriate equipment.
- Maintaining a driving record for at least the last 15 ft of each pile, to verify that driving resistance meets specified criteria.
- Recording installed pile lengths and sizes and determining if changes in length are required due to changing subsurface conditions.
- Providing assistance during dynamic pile testing.
- Verifying that the hammer appears to be operating properly, that visible pile damage is not occurring, and that any mechanical problems are promptly corrected.

E. REMARKS

The recommendations and observations contained in this report are our opinions based upon data which are assumed to be representative of the site studied. Variations in soils may occur below or between the locations tested. These opinions were arrived at in accordance with currently accepted engineering practices at this time and location.

7. SIGNATURES

Louise Palmer Shook
Louise Palmer Shook, P.E.
Project Engineer

Joseph W. Petrus, P.E.
Reviewing Engineer

SOIL AND BEDROCK CLASSIFICATION CHART			
SOIL		BEDROCK	
SYMBOL	CLASSIFICATION	SYMBOL	CLASSIFICATION
	TOPSOIL ORGANIC SOIL ORGANIC CONTAMINATION		SHALE
	SAND, sandy		SANDSTONE
	GRAVEL		CONGLOMERATE
	SILT		LIMESTONE
	silty		DOLOMITE
	CLAY		COAL
	clayey		

BORING LOG TERMINOLOGY

SS 2" O.D. SPLIT-SPOON SAMPLE.
ST 3" O.D. THIN-WALL SHELBY TUBE SAMPLE.
NX 2.125" DIA. CORE SAMPLE FROM DOUBLE TUBE CORE BARREL.

SPLIT-SPOON PENETRATION THE NUMBER OF BLOWS OF A 140 LB. HAMMER FALLING 30 in. REQUIRED TO DRIVE A SPLIT-SPOON SAMPLER THROUGH EACH OF THREE SIX INCH INCREMENTS OF PENETRATION THROUGH SOIL OR ROCK.

ADH-3 (87)

EDP/TRIGGS
Consultants, Inc.

JOHN DAVID JONES & ASSOC., INC. 2142 FRONT STREET CUYAHOGA FALLS, OHIO 44221			
ENGINEERS	ARCHITECTS	PLANNERS	
STRUCTURE FOUNDATION INVESTIGATION			
BRIDGE NO.	ATB-534-1210		
OVER TRUMBULL CREEK			
ASHTABULA CO.	S.R. 534		
SCALE	1 INCH = 20 FEET	STA. 507+27.00	TO STA. 509+33.00
PLAN AND PROFILE			
DRAWN BY	CHECKED BY	REVIEWED BY	DATE
EB	BCK	PAK	11/10/87

STRUCTURE FOUNDATION INVESTIGATION

F.W.A. REG.	STATE	PROJECT	4
5	OHIO		7

ASHTABULA COUNTY
ATB-534-11.90

LOG OF BORING
 Date Started 7/2/87 Sampler Type Split-spoon Water Elev. Immediate none
 Date Completed 7/2/87 After Hours
 Boring No. 5A Station & Offset 507+63 7'W Surface Elev. 951.62
 Project Identification: ATB 12.11
Bridge over Trumbull Creek
Ashtabula County, Ohio
 S.R. 534

Elev.	Depth	Blows/6"	Description	Field No.	Lab. Nos.	Physical Characteristics										SHTL Class.		
						Agg.	C.S.	F.S.	Silt	Clay	LL	PI	W.C.	LL	PI		W.C.	
951.6	0		8" ASPHALT PAVING															
	2		16" Brown coarse SAND & Black CINDERS															
	4	5- 5- 5	Soft to medium brown silty CLAY (FILL)	1														
946.6	4	2- 3- 2		2														17
	6																	
	8																	
941.6	10	2- 3- 2		3													19	
	12																14	
936.6	14	7- 6- 4	Medium brown and gray silty CLAY with sandstone fragments, little sand, and decomposed shale fragments (FILL)	4													13	
	16																	
	18																	
931.6	20	3- 5- 5		5													12	
	22	auger sample	Soft greenish-gray silty CLAY with organic material and rock fragments (FILL) WOOD -----	6													33 10 30	
	24	1- 2- 5		7														23
925.6	26																	
	28	50/0-0	Firm gray SHALE with hard siltstone seams at 29.0'-29.1', 29.5'-29.6', 30.6'-30.9', 32.1'-32.5', 33.3'-33.4', 34.1'-34.2', 35.1'-35.2', 35.6'-35.7', 36.4'-36.5', 44.3'-44.5', 45.8'-46.0'	8														
921.6	30																	
	32	Rec. Loss																
916.6	34	9.8 0.2			9													

LOG OF BORING
 Date Started 6/29/87 Sampler Type Split-spoon Water Elev. Immediate none
 Date Completed 6/29/87 After Hours
 Boring No. 6 Station & Offset 507+ 01 6'E Surface Elev. 955.02
 Project Identification: ATB 12.11
S.R. 534 Bridge over
Trumbull Creek, Ashtabula
County, Ohio

Elev.	Depth	Blows/6"	Description	Field No.	Lab. Nos.	Physical Characteristics										SHTL Class.		
						Agg.	C.S.	F.S.	Silt	Clay	LL	PI	W.C.	LL	PI		W.C.	
955.0	0		8" ASPHALT PAVING + 4" AGG. BASE + 6" RED BRICK + 6" CONCRETE															
	2																	
	4	2- 5- 6	Firm brown clayey SAND, with silty clay, trace rock fragments & veg. (FILL)	1													28 8 15	
951.0	4																20	
	6	16-32-50	Soft gray weathered SHALE	2													7	
949.0	6																	
	8																	
	10		Medium to firm gray SHALE with soft weathered joints avg. 2". Fractured zone 9.9'-10.1'															
945.0	10																	
	12	Rec. Loss	Hard gray SHALE with joints avg. 5" Fractured zones 15.7'-15.8', 16.1'-16.2' Soft clayey SHALE 22.5'-22.6' Siltstone seams (1" thick) at 16.5', 17.8', 18.5', 19.6'															
	14	ft ft																
940.0	16	9.8 0.2			4													
	18																	
	20																	
935.0	20																	
	22																	
	24	10.0 0.0																
930.0	24		Hard gray SHALE interbedded with hard gray SILTSTONE	5														
	26																	
926.5	26																	
	30		Coring stopped at 28.5 ft															
	32																	
	34																	
	36																	

Particle Sizes: Agg. > 2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074mm, Silt = 0.074 - 0.005mm, Clay < 0.005mm

Boring No. 5A Station & Offset 507+ 63 7'W Surface Elev. 951.62 Project: ATB 12.11: S.R. 534

Elev.	Depth	Rec. ft	Loss ft	Description	Field No.	Lab. Nos.	Physical Characteristics										SHTL Class.		
							Agg.	C.S.	F.S.	Silt	Clay	LL	PI	W.C.	LL	PI		W.C.	
	38																		
911.6	40			See page 1/2	10														
	42																		
906.6	44	10.0	0.0																
	46																		
903.1	48																		
	50																		
	52			Coring stopped at 48.5 ft															
	54																		
	56																		
	58																		

JOHN DAVID JONES & ASSOC. INC.

3145 FRONT STREET
CUYAHOGA FALLS, OHIO 44221

ENGINEERS ARCHITECTS PLANNERS

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. ATB-534-1210

OVER TRUMBULL CREEK

ASHTABULA CO. S.R. 534

SCALE 1/4" = 1' TO STA. 507+27.00 TO STA. 509+33.00

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
EB	BCK	PAK	11/10/87

STRUCTURE FOUNDATION INVESTIGATION

F.W.A. REG.	STATE	PROJECT	
5	OHIO		

5
7

ASHTABULA COUNTY
ATB-534-11.90

LOG OF BORING
 Date Started 6/30/87 Sampler Type Split-spoon Water Elev. Immediate 924.0 Project Identification: ATB 12.11
 Date Completed 6/30/87 After Hours - S.R. 534 Bridge over
Trumbull Creek, Ashtabula
County, Ohio
 Boring No. 4A Station & Offset 508+74 5'E Surface Elev. 952.03

Elev.	Depth	Blows/6"	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics										SHTL Class.			
						% Agg.	% C.S.	% F.S.	% Sil	% Clay	LL	PL	W.C.						
952.0	0		8" ASPHALT PAVING + 16" CINDER BASE + 12" RED BRICK	1															
	2	50/0 5'	(FILL)																
947.0	4	2- 1- 2	Soft brown silty CLAY with little sand	2															A-6a
	6		Soft greenish-gray silty CLAY (FILL)																
	8	shelby 17" rec.				15	8	11	34	32	30	11	19						
942.0	10	3- 3- 5	Medium brown silty CLAY with little sand, gravel, and shale fragments (FILL)	4															A-6a
	12																		
	14	4- 3- 5																	
937.0	16																		
	18																		
932.0	20	6- 6- 6 shelby 12" rec.	Medium greenish-brown silty CLAY with little sand, trace rock fragments (FILL)	6															
	22		Soft brown sandy CLAY with wood fragments (FILL)	7								34	14	16					
927.0	24	3- 3- 5																	
	26		WOOD TIMBERS (black, wet, decomposing)																
924 (w)	28		TOP OF ROCK																
922.0	30	15/0.7	Very soft gray clayey SHALE, weathered, broken, with moderately hard shale seams at 1' intervals	9															
	32	Rec. Loss ft ft																	
	34	5.8 4.2																	
917.0	36			10															

Particle Sizes: Agg. > 2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074mm, Silt = 0.074 - 0.005mm, Clay < 0.005mm

LOG OF BORING
 Date Started 6/26/87 Sampler Type Split-spoon Water Elev. Immediate none Project Identification: ATB 12.11
 Date Completed 6/26/87 After Hours - S.R. 534 Bridge over
Trumbull Creek, Ashtabula
County, Ohio
 Boring No. 5 Station & Offset 507+74 7'W Surface Elev. 951.40

Elev.	Depth	Blows/6"	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics										SHTL Class.			
						% Agg.	% C.S.	% F.S.	% Sil	% Clay	LL	PL	W.C.						
951.4	0		8" ASPHALT PAVING + 12" CINDER BASE																
	2	14- 9- 7	See Note A	1															
	4																		
946.4	6	4- 3- 4	Medium brown silty CLAY with little sand, trace gravel and rock fragments (FILL)	2															
	8																		
941.4	10	3- 5- 5																	
	12																		
937.4	14	12-50/7.5																	
	16	Rec. Loss ft ft	SANDSTONE, gray with brown seams, with clay, gravel, rock fragments between sections																
	18																		
931.4	20	3.2 6.8		5															
	22																		
927.4	24		WOOD TIMBERS																
	26		Boring abandoned due to core barrel refusal in wood																
	28																		
	30		Note A: 1.7'-2.5': Loose dark brown coarse SAND with gravel (FILL)																
	32																		
	34																		
	36																		

Particle Sizes: Agg. > 2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074mm, Silt = 0.074 - 0.005mm, Clay < 0.005mm

Boring No. 4A Station & Offset 508+74 5'E Surface Elev. 952.03 Project: ATB 12.11; S.R. 534

Elev.	Depth	Rec. ft	Loss ft	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics										SHTL Class.			
							% Agg.	% C.S.	% F.S.	% Sil	% Clay	LL	PL	W.C.						
912.0	38			Firm gray SHALE with clay-filled joints at 1' intervals																
	40																			
	42																			
907.0	44	9.0	1.0	Hard gray SHALE with joints avg @ 4", broken zones at 42.9', 43.2', 44.0', 44.8', 45.3' Siltstone seam at 58.6'-58.9'	11															
	46																			
	48																			
902.0	50																			
	52																			
	54	8.9	1.1		12															
897.0	56																			
	58																			
893.0	60																			
	62																			
	64																			

← Coring stopped at 59.0 ft

JOHN DAVID JONES & ASSOC., INC.			
2162 FRONT STREET CUYAHOGA FALLS, OHIO 44221			
ENGINEERS	ARCHITECTS	PLANNERS	
STRUCTURE FOUNDATION INVESTIGATION			
BRIDGE NO. <u>ATB-534-1210</u>			
OVER <u>TRUMBULL CREEK</u>			
ASHTABULA CO. S.R. <u>534</u>			
SCALE <u>1" = 20' FEET</u>		STA. <u>507+27.00</u> TO STA. <u>509+33.00</u>	
PLAN AND PROFILE			
DRAWN BY	CHECKED BY	REVIEWED BY	DATE
EB	BCK	PAK	11/10/87

Date Started: 6/25/87
 Date Completed: 6/25/87
 Sampler Type: _____
 After Hours: _____
 S.R. 534 Bridge over Trumbull Creek, Ashtabula County, Ohio

Boring No. 3 Station & Offset: 509+49 9'W Surface Elev. 955.35

Elev.	Depth	Blows/6"	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics										SHTL Class.			
						% Agg.	% C.S.	% F.S.	% Sil	% Clay	LL	Pl	W.C.						
955.4	0		8" ASPHALT PAVING + 7" AGG. BASE																
	2	11-7-4	Stiff brown silty CLAY with trace sand, and trace rock fragments (FILL)	1															
	4	shelby 19" rec.		2															
950.4	6	3-4-7		3															
	8			4															
945.4	10	6-4-7		5															
	12	shelby 16" rec.	6		6	9	14	33	38	34	14	15	A-6a						
940.4	14	5-7-11	7																
	16		8																
935.4	18	7-9-11	9																
	20		10																
930.4	22	2-3-4	11																
	24		12																
	26		13																
	28		14																
924.4	30	7-12-17	15																
(w)	32		16																
920.4	34	100/0.2'	17																
	36		18																

Particle Sizes: Agg. > 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Sil = 0.074-0.005mm, Clay < 0.005mm

Date Started: _____
 Date Completed: _____
 Sampler Type: _____
 After Hours: _____
 S.R. 534 Bridge over Trumbull Creek, Ashtabula County, Ohio

Boring No. 4 Station & Offset: 508+64 5'E Surface Elev. 951.90

Elev.	Depth	Blows/6"	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics										SHTL Class.		
						% Agg.	% C.S.	% F.S.	% Sil	% Clay	LL	Pl	W.C.					
951.9	0		9" ASPHALT PAVING + 9" CINDER BASE + 3" RED BRICK + 11" CONCRETE															
	2	25-50/3'	Loose brown silty fine SAND with trace gravel (FILL)	1														
	4			2														
946.9	6	2-3-4	3															
	8		4															
941.9	10	5-4-4	5															
	12		6															
	14		7															
936.9	16	2-3-9	8															
	18		9															
931.9	20	3-4-5	10															
	22	shelby 7" rec.	11															
	24	2-2-5	12															
	26	50/0.3'	13															
925.4	28		14															
	30		15															
	32		16															

Boring abandoned due to auger refusal in wood timbers

Boring No. 7 Station & Offset: 509+49 9'W Surface Elev. 955.35 Project: ATB 12.11 S.R. 534 Bridge

Elev.	Depth	Rec. ft	Loss ft	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics										SHTL Class.	
							% Agg.	% C.S.	% F.S.	% Sil	% Clay	LL	Pl	W.C.				
915.4	38	10.0	0.0	Hard gray sandy SHALE with siltstone seams at 41.0'-41.1', 43.7'-43.8', 47.0'-47.1', 48.1'-48.2'	11													
	42																	
910.4	44			Soft fissile SHALE at 46.9'-47.0'	12													
	46																	
905.4	48	9.8	0.2															
	50																	
	52																	
901.4	54																	
	56			Coring stopped at 54.0 ft														
	58																	
	60																	
	62																	
	64																	

JOHN DAVID JONES & ASSOC. INC.
 2142 FRONT STREET
 CUYAHOGA FALLS, OHIO 44221
 ENGINEERS ARCHITECTS PLANNERS

STRUCTURE FOUNDATION INVESTIGATION
 BRIDGE NO. ATB-534-1210
 OVER TRUMBULL CREEK
 S.R. 534
 ASHTABULA CO. STA. 507+27.00
 SCALE 1" = 20 FEET TO STA. 509+33.00

PLAN AND PROFILE

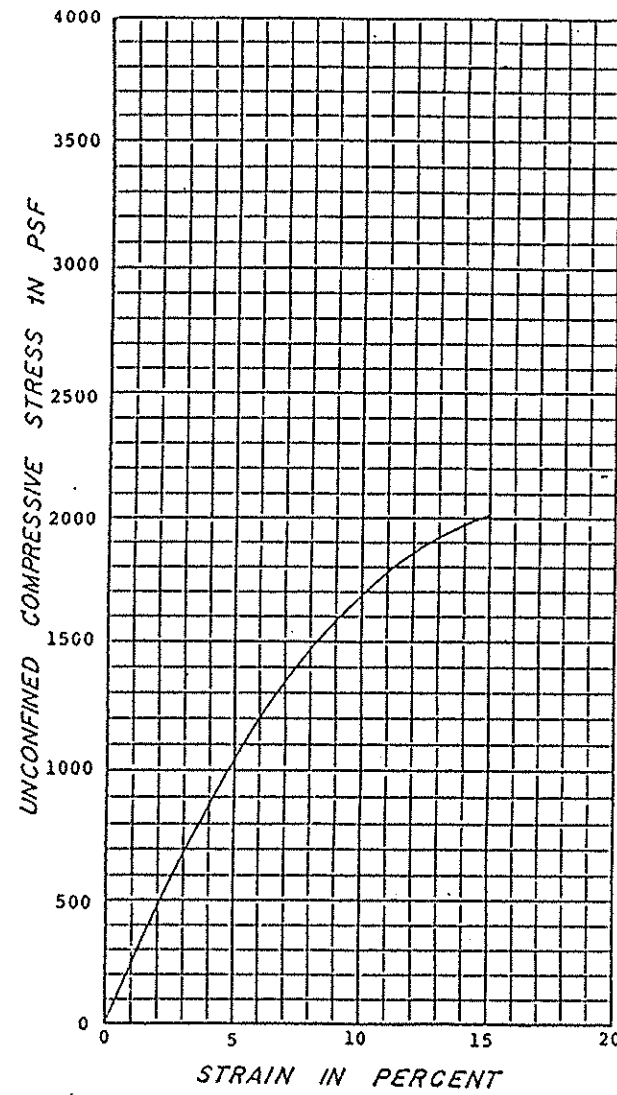
DRAWN BY	CHECKED BY	REVIEWED BY	DATE
EB	BCK	PAK	11/10/87

STRUCTURE FOUNDATION INVESTIGATION

F.H.W.A. REG.	STATE	PROJECT	
5	OHIO		7 7

ASHTABULA COUNTY
ATB-534-11.90

UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS



Project Identification:
S.R. 534 Bridge over
Trumbull Creek

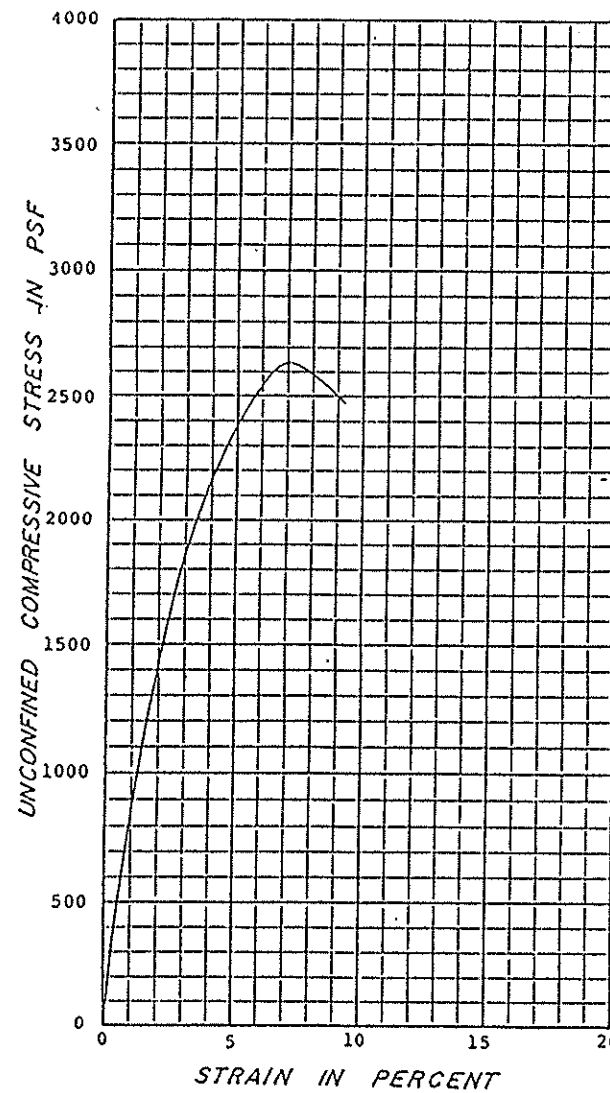
Boring B-3
 Sta. & Offset 509 + 49; 9' w.
 Sample Number 2
 Sample Depth 3.5-4.0'

Specimen Data
 Diameter 2.83"
 Length 5.60"
 Wet Density 137.2 pcf
 Dry Density 118.7 pcf

Visual Description
Brown silty CLAY, trace
sand, trace rock fragments

Physical Characteristics							
% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	PL	W.C.
					26	9	16

UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS



Project Identification:
S.R. 534 Bridge over
Trumbull Creek

Boring B-3
 Sta. & Offset 509 + 49; 9' w.
 Sample Number 5
 Sample Depth 12.5-13.0'

Specimen Data
 Diameter 2.83"
 Length 5.60"
 Wet Density 138.6 pcf
 Dry Density 120.4 pcf

Visual Description
Brown silty CLAY, trace
sand, trace rock fragments

Physical Characteristics							
% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	PL	W.C.
6	9	14	33	38	34	14	15

LABORATORY STRENGTH TEST RESULTS

ATB 534-12.11
 Bridge Over Trumbull Creek
 Ashtabula County, Ohio

I. Unconfined Compressive Strength Test

Boring	Depth	Description	Dry Dens.	wc	LL	PI	Qu
B-3	3.5'-4.0'	Brn CLAY FILL	119 pcf	16%	26%	9%	2010 psf
B-3	12.5'-13.0'	Brn CLAY FILL	120 pcf	15%	34%	14%	2580 psf

II. Uniaxial Compression of Rock Cores

Boring	Depth	Description	Ht/Diam.	Qu
B-3	36.8'-36.3'	Gray SHALE	2.33	5460 psi
B-4A	37.6'-37.9'	Gray SHALE	1.77	360 psi
B-4A	41.8'-42.2'	Gray SHALE	1.87	750 psi
B-5A	31.8'-31.3'	Gray SHALE	1.89	1080 psi
B-6	11.6'-11.9'	Gray SHALE	1.79	2720 psi

EDP/TRIGGS CONSULTANTS, INC.
 Willoughby Hills, Ohio
 July, 1987

JOHN DAVID JONES & ASSOC., INC. 2162 FRONY STREET CUYAHOGA FALLS, OHIO 44221 ENGINEERS ARCHITECTS PLANNERS			
STRUCTURE FOUNDATION INVESTIGATION BRIDGE NO. ATB-534-1210 OVER TRUMBULL CREEK ASHTABULA CO. S.R. 534 SCALE 1" = 20' TO STA. 507+27.00 TO STA. 509+33.00			
PLAN AND PROFILE			
DRAWN BY	CHECKED BY	REVIEWED BY	DATE
EB	BCK	PAK	11/19/87