STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
HOL-515-0.51
WALNUTCREEK TOWNSHIP
HOLMES COUNTY

HOL-515-0.51	OHIO	1/23
BRZ-3803 (1)	FHWA REGION 5 / FEDERAL PROJECT	

HOLMES COUNTY
HOL-515-0.51

BRZ-3803 (1)

DESIGN DESIGNATION	
CURRENT ADT (1990)	= 1570
DESIGN YEAR ADT (2010)	= 2752
D.H.V.	= 275
D	= 60%
T	= 8.7%
V	= 55 m.p.h.
LEGAL SPEED	= 55 m.p.h.
FUNCTIONAL CLASSIFICATION	= Collector, Rural

DESIGN EXCEPTIONS : None

CONVENTIONAL SIGNS

County Line
Township Line
Section Line
Corporation Line or
Fence Line (existing) (proposed)
Center Line
Trees, Stumps, (to be removed)
Utility Poles: Telephone, Power, Light.
Limited Access (only) LA
Right of Way (only) RW
Limited Access & Right of Way LA & RW
Existing Right of Way R/W
Property Line (in existing fence)
Railroad or
Guardrail (existing) (proposed)

INDEX OF SHEETS

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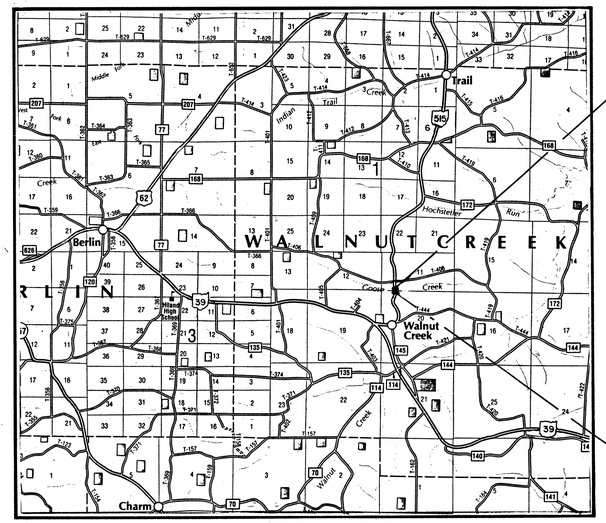


LOCATION MAP

SCALE IN MILES
0 1 2 3 4

Portion to be improved
State & Federal Routes
Other Roads

SCALES

Plan 20 10 0 20
Profile: Horizontal 20 10 0 20, Vertical 10 0 10
Cross Section: Horizontal 10 0 10, Vertical 10 0 10

LINE DATA

BEGIN PROJECT.....STA. 27+00.00
END PROJECT.....STA. 30+00.00
LENGTH OF PROJECT 300.00 L.F.=0.057 Mi.

BEGIN WORK.....STA. 25+50.00
END WORK.....STA. 31+50.00
LENGTH OF WORK 600.00 L.F.= 0.114 Mi.

UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
Call---800-362-2764 (Toll free)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

STRUCTURE PLANS REVIEWED BY:
Burgess & Niple, Limited
Columbus, Ohio

Plan Prepared By: Thomas D.Y. Fok
– THOMAS FOK & ASSOCIATES –
3896 MAHONING AVENUE
YOUNGSTOWN, OHIO
44515

STATE OF OHIO THOMAS D.Y. FOK 24379 REGISTERED PROFESSIONAL ENGINEER

Project: HOL-515-0.51
Date of Letting ____ 19__, Contract No. ____

LD0300 Rev. 1-1-81

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS					
BP-5 10/1/87	MT-96.11 9/9/88	TC-41.20 3/26/79			
	MT-96.25 9/9/88	TC-42.20 3/26/79			
GR-2B 2/5/82	MT-99.10 11/14/86				
	MT-96.20 9/9/88				
GR-4 2/5/82					
	AS-1-81 11/27/81				
MC-9A 1/11/85	DBR-2-73 4/10/73				
MC-11 8/1/78	PSBD-1-81 6/20/89				
GR-1 1/11/85					

SUPPLEMENTAL SPECIFICATIONS		
836	11/12/85	
841	5-16-84	
847	10/17/83	
843	7-29-88	
947	10/17/83	
942	11-27-89	
802	4/13/90	

1989 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 not require the closing to traffic of the highway and that provisions for the maintenance and safety of traffic will be as set forth on plan and estimates.

Approved William P McKenna
Date 5/15/90 District Deputy Director of Transportation

BTN Approved B.D. Henkelmann/WTR
Date 7/11/90 Engineer, Bureau of Bridges and Structural Design

Approved Chandler J. Stitt
Date 9/6/90 Chief Engineer, Planning and Design

Approved Bernard B. Hurst
Date 9/6/90 Director, Department of Transportation

10-13-90

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

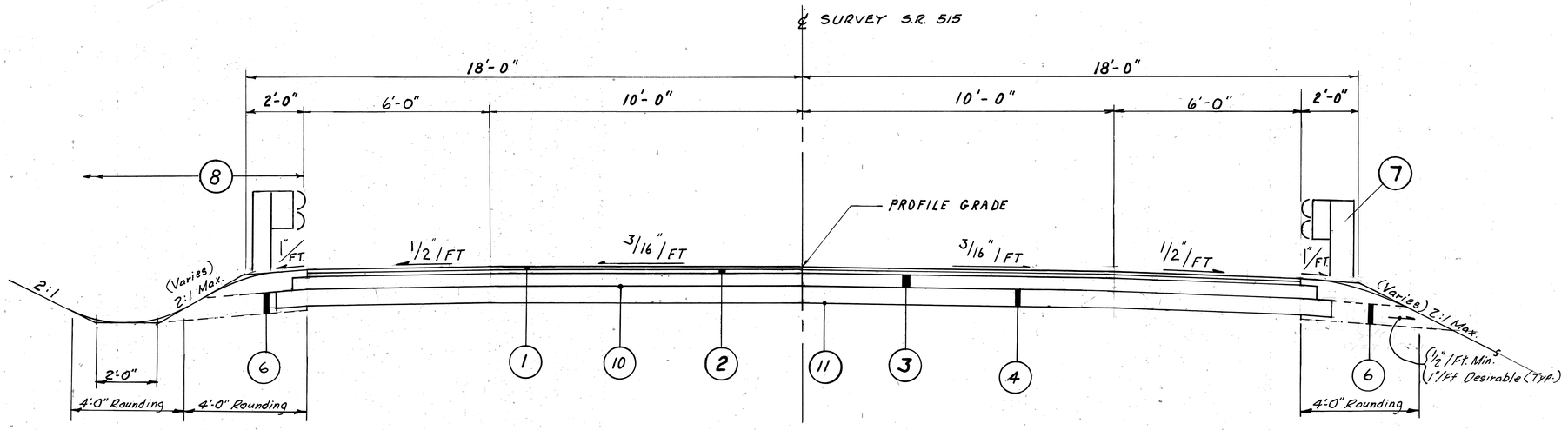
DIVISION ADMINISTRATOR ____ DATE ____

FHWA REGION	STATE	PROJECT		2 / 23
5	OHIO	BRZ-3803 (1)		

HOL-515-0.51

TYPICAL SECTION

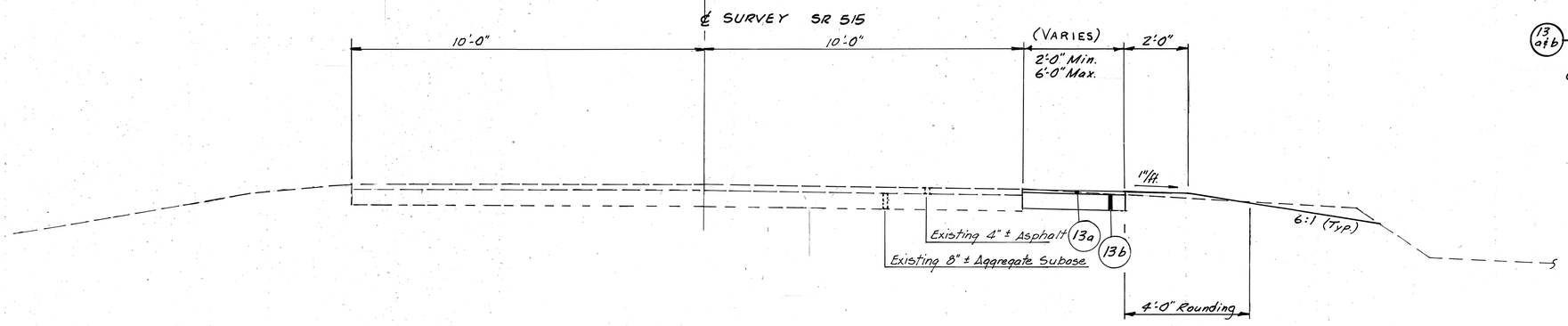
TYPE 404 ON 301



NORMAL SECTION

LIMITING STATIONS

STA. 27+00	TO	STA. 28+30.37	=	130.37 LF
STA. 29+11.53	TO	STA. 30+00.00	=	88.47 LF
				218.84 LF = TOTAL



EXISTING SECTION

LIMITING STATIONS

STA. 26+25.00	-	27+00.00	=	75.00 L.F.
STA. 30+00.00	-	30+75.00	=	75.00 L.F.
			TOTAL=	150.00 L.F.

LEGEND

1 — 404 - 1 1/4" ASPHALT CONCRETE, AC-20

2 — 402 - 1 3/4" ASPHALT CONCRETE, AC-20

3 — 301 - 5" BITUMINOUS AGGREGATE BASE, AC-20

4 — 304 - 6" AGGREGATE BASE, As Per Plan

5 — 407 - TACK COAT

6 — 605 - AGGREGATE DRAINS

7 — 606 - GUARDRAIL, TYPE 5

8 — 659 - SEEDING & MULCHING

9 — 611 - REINFORCED CONCRETE APPROACH SLAB (T=12")

10 — 408 - BITUMINOUS PRIME COAT

11 — 203 - SUBGRADE COMPACTION

12 — 403 - VARIABLE THICKNESS ASPHALT CONCRETE AC-20 (1 3/4" MINIMUM)

13 a & b — 615 - TEMPORARY PAVEMENT, As Per Plan (To Remain in Place)

Course Makeup:

13a — 404 - 1 3/4" Asphalt Concrete, AC-20

13b — 301 - 5" Bituminous Aggregate Base, AC-20

TYPICAL SECTIONS

TYPICAL SECTION

FHWA REGION	STATE	PROJECT		3
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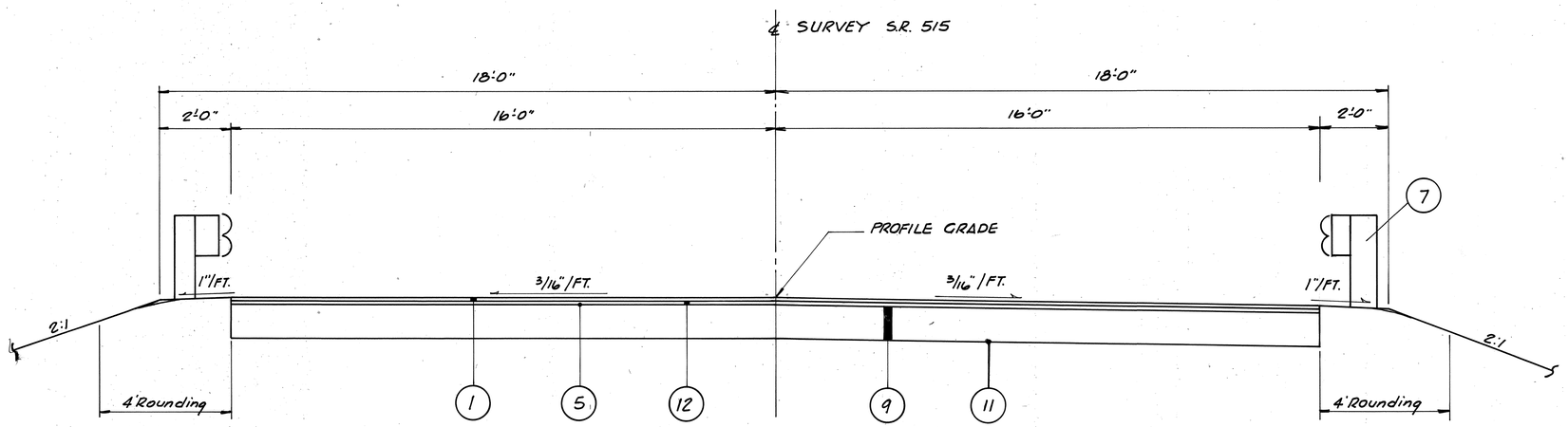

APPROACH SLAB SECTION

LIMITING STATIONS

STA. 28+30.37 TO STA. 28+45.37 = 15.00 LF
STA. 28+96.53 TO STA. 29+11.53 = 15.00 LF
TOTAL = 30.00 LF

LEGEND

(1) — 404 - 1¼" ASPHALT CONCRETE, AC-20
(5) — 407 - TACK COAT
(7) — 606 - GUARDRAIL, TYPE S
(9) — 611 - REINFORCED CONCRETE APPROACH SLAB (T=12")
(11) — 203 - SUBGRADE COMPACTION
(12) — 403 - VARIABLE THICKNESS ASPHALT CONCRETE, AC-20 (1¾" MINIMUM)

TYPICAL SECTIONS

GENERAL NOTES

CALC. BY C.S.K. DATE 2/90
CK. BY R.J.Z. DATE 2/90

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ROADWAY

FIELD OFFICE: THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE HAVING A MINIMUM OF 300 SQ. FT. OF FLOOR SPACE. PAYMENT SHALL BE MADE AT THE LUMP SUM PRICE BID FOR ITEM 619, FIELD OFFICE.

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 LOCATION OF UNDERGROND UTILITIES SHOWN ON THE PLANS ARE AS 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 :

HOLMES-WAYNE
ELECTRIC CO-OP
P.O. BOX 112
MILLERSBURG, OHIO
44654
(216)674-1053

GTE NORTH
715 COMMERCIAL PARKWAY
P.O. BOX 399
DOVER, OHIO 44622
(216)364-0363

COLUMBIA GAS TRANSMISSION
P.O. BOX 943
COLUMBUS, OHIO 43216
(614) 460-2400

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

DUST CONTROL : THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR PROJECT DUST CONTROL :

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

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

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.

ITEM 604 - REFERENCE MONUMENTS, AS PER PLAN:
ALL BREAK POINTS IN THE PROPOSED PERMANENT RIGHT OF WAY LINE, INCLUDING CURVE POINTS, SHALL BE MONUMENTED OR REFERENCED WITH IRON PINS ESTABLISHED AND SET UNDER THE DIRECTION OF AN OHIO REGISTERED SURVEYOR. THE IRON PIN SHALL BE COMPOSED OF A DURABLE MATERIAL HAVING A MINIMUM LENGTH OF THIRTY (30) INCHES AND A MINIMUM CROSS-SECTIONAL AREA OF 0.2 SQUARE INCHES. EACH PIN MUST BE IDENTIFIED WITH A DURABLE MARKER BEARING THE SURVEYOR'S OHIO REGISTRATION NUMBER AND/OR NAME OF COMPANY, AND BE DETECTABLE WITH CONVENTIONAL INSTRUMENTS FOR FINDING FERROUS OR MAGNETIC OBJECTS.

ESTABLISHING RIGHT-OF-WAY CORNERS AND SETTING IRON PINS WILL BE PAID FOR AT THE CONTRACT PRICE FOR ITEM 604 - REFERENCE MONUMENTS, AS PER PLAN, WHICH PRICE SHALL BE FULL COMPENSATION FOR ALL SERVICES, MATERIALS, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM,

FOR LOCATIONS, SEE RIGHT-OF-WAY SHEET 2/2.

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR THIS WORK.

ITEM 604 - REFERENCE MONUMENTS, AS PER PLAN 8 EACH

EROSION CONTROL

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:

ITEM 207 STRAW OR HAY BALES 50 EACH

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

SEEDING : QUANTITIES FOR SEEDING ARE CALCULATED FOR THE SOIL AREAS BETWEEN THE WORK LIMITS, AS SHOWN ON THE CROSS SECTIONS.

WATERING PERMANENT SEEDED AREAS : THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER TO PROMOTE GROWTH AND TO CARE FOR THE PERMANENT SEEDED AREAS, AS PER 659.09 :

ITEM 659 WATER 3 MGAL.

DRAINAGE

ITEM 605 AGGREGATE DRAINS : AGGREGATE DRAINS SHALL BE PLACED AT FIFTY (50) FOOT INTERVALS ON EACH SIDE OF NORMAL CROWNED SECTIONS AND STAGGERED SO THAT EACH DRAIN IS 25 FEET FROM THE ADJACENT DRAIN ON THE OPPOSITE SIDE (SEE TABLE SHEET **7**).

FARM DRAINS:
ALL FARM DRAINS WHICH ARE ENCOUNTERED DURING CONSTRUCTION SHALL BE PROVIDED WITH UNOBSTRUCTED 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 OUTLETTED INTO THE ROADWAY DITCH BY ITEM 603 CONDUIT, TYPE F. THE OPTIMUM OUTLET ELEVATION SHALL BE, IF POSSIBLE, ONE FOOT ABOVE THE FLOWLINE OF THE DITCH. LATERAL TILE FIELDS WHICH CROSS THE ROADWAY SHALL BE INTERCEPTED BY ITEM 603 CONDUIT, TYPE E, 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 B	100 LIN. FT.
ITEM 603	6" CONDUIT, TYPE E	100 LIN. FT.
ITEM 603	8" 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.

PAVEMENT

ITEM 407 TACK COAT : THE RATE OF APPLICATION OF 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT, AS DIRECTED BY THE ENGINEER. PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF 0.075 GALLONS PER SQUARE YARD OF TACK COAT FOR ESTIMATING PURPOSES ONLY.

PART-WIDTH CONSTRUCTION : BECAUSE OF THE NECESSITY OF BUILDING THIS PROJECT UNDER TRAFFIC AND CONSTRUCTING THE FULL PAVEMENT WIDTH IN STAGES, EXTREME CARE SHALL BE TAKEN TO PREVENT THE CONSTRUCTION OF A BUTT JOINT ON CENTERLINE IN BASE COURSES. LONGITUDINAL JOINTS SHALL BE LAPPED AS SHOWN ON STANDARD CONSTRUCTION DRAWING BP-5.

ITEM 304-AGGREGATE BASE, AS PER PLAN:
MATERIALS FURNISHED FOR THIS ITEM SHALL EXCLUDE ALL SLAG EXCEPT GRANULATED SLAG OR CRUSHED AIR-COOLED BLAST FURNACE SLAG.

ROADWAY

EXISTING DEEP BEAM RAILING WITH TUBULAR BACKUP: THE EXISTING DEEP BEAM RAILING WITH TUBULAR BACKUP AND POSTS SHALL BE SALVAGED AND STORED ON SITE FOR REMOVAL BY STATE FORCES. AN ESTIMATED QUANTITY OF 90 L.F. OF ITEM 202 BRIDGE RAILING REMOVED FOR STORAGE HAS BEEN CARRIED TO THE GENERAL SUMMARY.

TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS

REFERENCES TO SUPPLEMENTAL SPECIFICATIONS 857 AND 957 ON THE TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS IN THESE PLANS SHALL BE CONSIDERED TO READ AS RESPECTIVE REFERENCES TO ITEMS 630 AND 730.

FED. RD. DIVISION	STATE	PROJECT		4A 23
5	OHIO			

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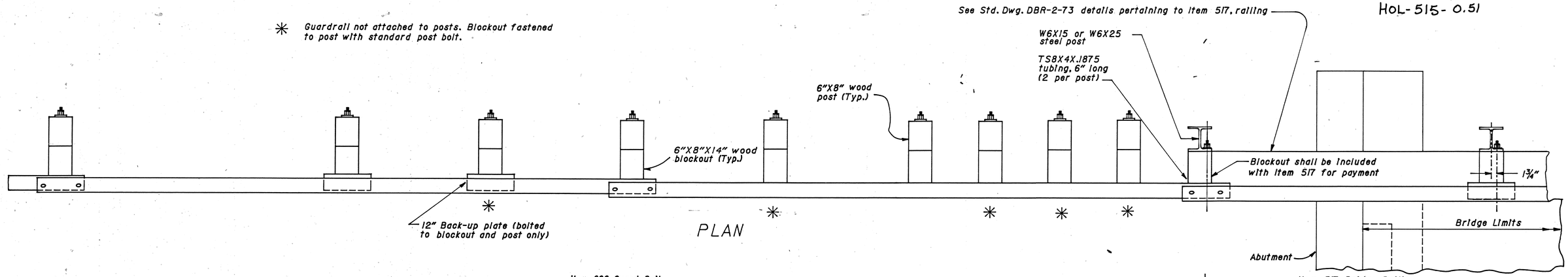

NOTES

GENERAL
For additional details, see Std. Dwg. GR-1 and other Standard Drawings pertaining to design of specific guardrail types.

APPLICATION
The Type B Bridge Terminal Assembly shall be used to connect guardrail runs to bridges having W-beam railing.

DETAIL INFORMATION
The first post off the bridge shall be steel (W6x15 or W6x25). All holes in the off-structure end of the approach panel W-beam rail section that spans the abutment shall be slotted ¾" x 2½" and bolts shall be tightened as specified for expansion joints in 606.05.

POSTS
GENERAL- Posts may be set in drilled holes or driven to grade.

POSTS shall be square-sawed pressure treated wood as per 710.14 and fabricated with square ends. Bolt holes shall be bored and tops of posts trimmed if required, after posts are set

PAYMENT
Payment for Item 606 - Each, Bridge Terminal Assembly, Type B shall include the extra cost, in excess of normal guardrail cost, for additional posts, and other hardware. The TS 8x4 spacers and tubular back-up rail extending to the first post off the bridge shall be included with Item 517 - Railing for payment.

REVISED 10-13-90

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
BUREAU OF LOCATION AND DESIGN

BRIDGE TERMINAL ASSEMBLY TYPE B, AS PER PLAN

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED

GENERAL NOTES

CALC. BY C.S.K. DATE 2/90
CK. BY R.J.Z. DATE 2/90

HOL-515-0.51

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MAINTENANCE OF TRAFFIC

MAINTAINING TRAFFIC : THE CONTRACTOR SHALL MAINTAIN TRAFFIC AT ALL TIMES IN ACCORDANCE WITH THE REQUIREMENTS OF SPEC. 614 AND THE CONSTRUCTION SEQUENCE SHOWN ON SHEET NO. 5A BY CONSTRUCTING THE NEW BRIDGE IN TWO PHASES AS SHOWN ON SHEET NO. 15 . TRAFFIC SHALL BE MAINTAINED AT ALL TIMES BY USE OF THE EXISTING AND NEW PAVEMENT, PORTIONS OF THE EXISTING AND NEW BRIDGES, AND TEMPORARY PAVEMENT AS PER PLAN.

ALTERNATING ONE-WAY TRAFFIC SHALL BE MAINTAINED BY USE OF TEMPORARY SIGNALS AS SHOWN ON SHEET NO. 5A. TRAFFIC SHALL BE SEPARATED FROM THE WORK AREA BY MEANS OF ITEM 622 TEMPORARY CONCRETE BARRIER, AS PER PLAN, AND TEMPORARY DEEP BEAM RAILING.

PAYMENT FOR ALL OF THE ABOVE EXCEPT ITEMS 615 AND 622 SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC.

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

ITEM 614	TEMPORARY RAISED PAVEMENT MARKERS	668 EA.
ITEM 614	BARRIER REFLECTORS, TYPE A2	2 EA.
ITEM 614	BARRIER REFLECTORS, TYPE B2	38 EA.

ITEM 615-TEMPORARY PAVEMENT, AS PER PLAN:
TEMPORARY PAVEMENT COURSE MAKE-UP FOR THIS PROJECT SHALL CONSIST OF THE FOLLOWING :
1 3/4" OF 404 ASPHALT CONCRETE (402.02 COMPOSITION MAY BE USED).
5" OF 301 BITUMINOUS AGGREGATE BASE.
TEMPORARY PAVEMENT SHALL BE CONSTRUCTED AS SHOWN ON SHEET 5A/23. THE TEMPORARY PAVEMENT ON THE RIGHT SIDE BETWEEN STA.26+25 AND STA.30+75 SHALL REMAIN IN PLACE AND BECOME PART OF THE NEW PAVED SHOULDER.
THE FOLLOWING ESTIMATED QUANTITY OF ITEM 615-TEMPORARY PAVEMENT, AS PER PLAN, HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR MAINTAINING TRAFFIC:

PHASE I:	STA.26+25 TO STA.30+75,RT.=	67 S.Y.
PHASE II:	NONE	0
	TOTAL =	67 S.Y.

ITEM 614-BARRIER REFLECTORS:
THESE REFLECTORS AND THEIR MOUNTINGS SHALL CONFORM TO SUPPLEMENTAL SPECIFICATION 802, EXCEPT THAT THEIR SPACING SHALL BE AS SHOWN ON STANDARD DRAWING MT 96.11.

WORK ZONE PAVEMENT MARKINGS AND SIGNS : WORK ZONE PAVEMENT MARKINGS AND SIGNS SHALL BE FURNISHED, INSTALLED, MAINTAINED, AND REMOVED ACCORDING TO ODOT STANDARD CONSTRUCTION DRAWING MT 99.10 AND MT 96.11.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO COVER THIS ITEM OF WORK :

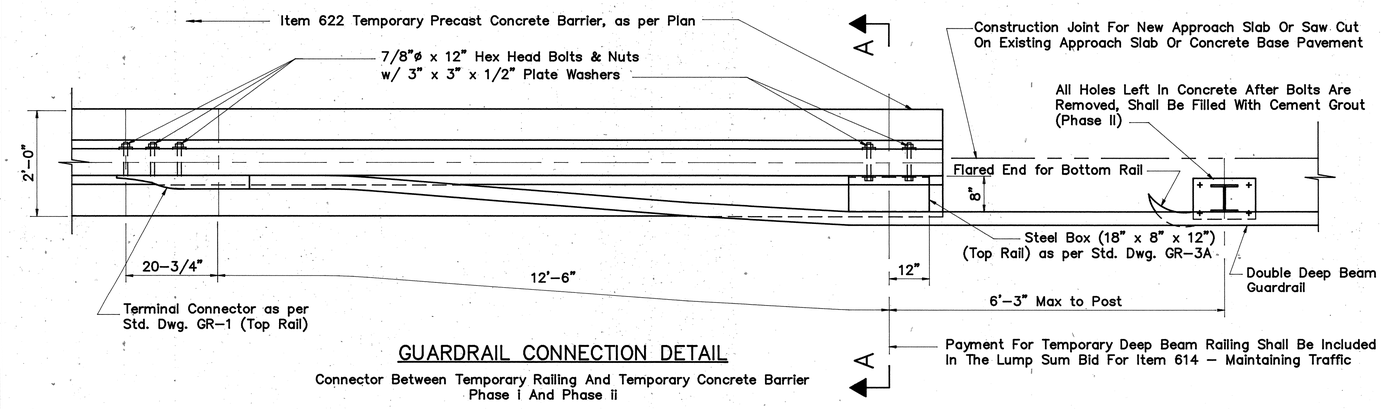
ITEM	UNIT	DESCRIPTION
614	0.06 MI.	TEMPORARY CENTERLINES, CLASS I
614	0.04 MI.	TEMPORARY EDGE LINES, CLASS I
614	20 L.F.	TEMPORARY STOP LINES, CLASS I, 947.03, TYPE C
614	0.06 MI.	TEMPORARY CENTERLINES, CLASS II

ITEM 622 TEMPORARY PRECAST CONCRETE BARRIER, AS PER PLAN :
THIS ITEM SHALL INCLUDE FURNISHING, MAINTAINING, RELOCATING AND SUBSEQUENTLY REMOVING TEMPORARY CONCRETE BARRIER IN ACCORDANCE WITH STANDARD DRAWINGS MC-9A AND MT-96.11 AND CONSTRUCTION SEQUENCE DETAILS SHOWN ON SHEET NO. 5A.

THE QUANTITY SHOWN IS THE MAXIMUM REQUIRED FOR A SINGLE PHASE OF TRAFFIC MAINTENANCE ONLY. THE SAME BARRIER SHALL BE UTILIZED IN BOTH PHASES OF CONSTRUCTION. MOVEMENT OF THE BARRIER BETWEEN PHASES SHALL BE ACCOMPLISHED IN ONE (1) WORKING DAY. FLAGGERS SHALL BE UTILIZED FOR THE PROTECTION OF VEHICULAR TRAFFIC UNTIL MOVEMENT OF THE TEMPORARY BARRIER AND OTHER TRAFFIC CONTROL DEVICES IS COMPLETED AND TRAFFIC IS MAINTAINED AS PER PHASE II.

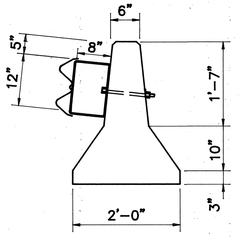
PAYMENT FOR ALL OF THE ABOVE SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 622 TEMPORARY PRECAST CONCRETE BARRIER, AS PER PLAN. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY:

ITEM 622	TEMPORARY PRECAST CONCRETE BARRIER, AS PER PLAN	394 L.F.



GUARDRAIL CONNECTION DETAIL

Connector Between Temporary Railing And Temporary Concrete Barrier Phase I And Phase II



SECTION A-A

NOTE:

1. Cost Of All Material And Installation Of The Connector Between The Temporary Railing And Temporary Concrete Barrier Shall Be Included In The Unit Price Bid For Item 614 - Maintaining Traffic. See Roadway Quantities For Payment.
2. For Details Not Shown, See Std. Dwg. GR-1.
3. For Temporary Double Beam Guardrail, Steel Post and Steel Base-Plate Details, See Bridge Plan Sheet 4/10 .

FHWA REGION	STATE	PROJECT	
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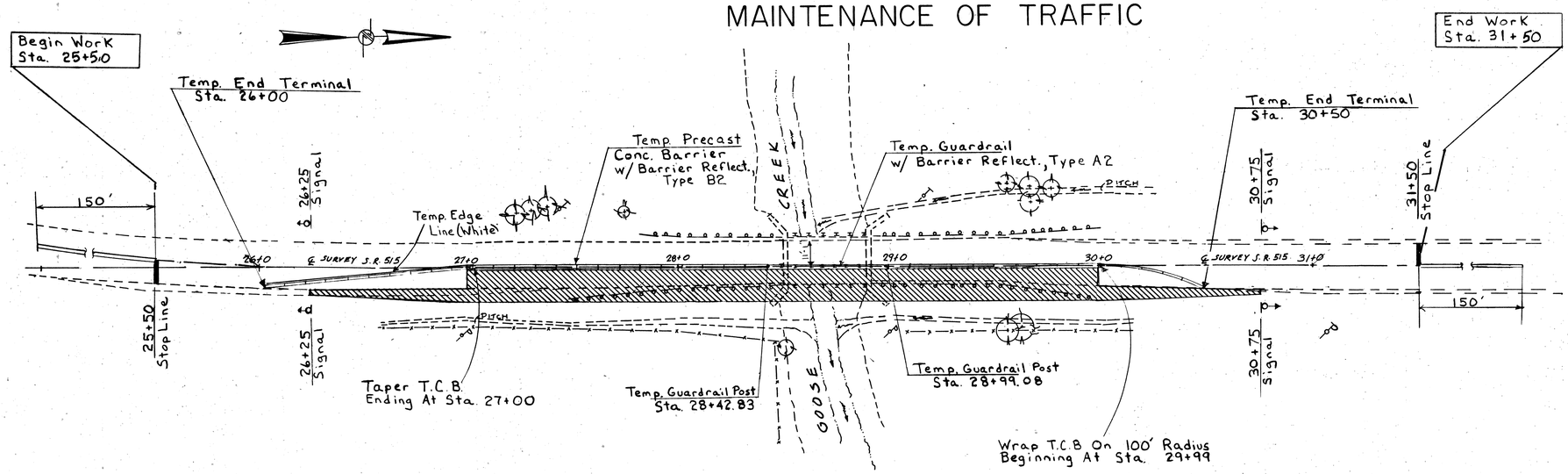
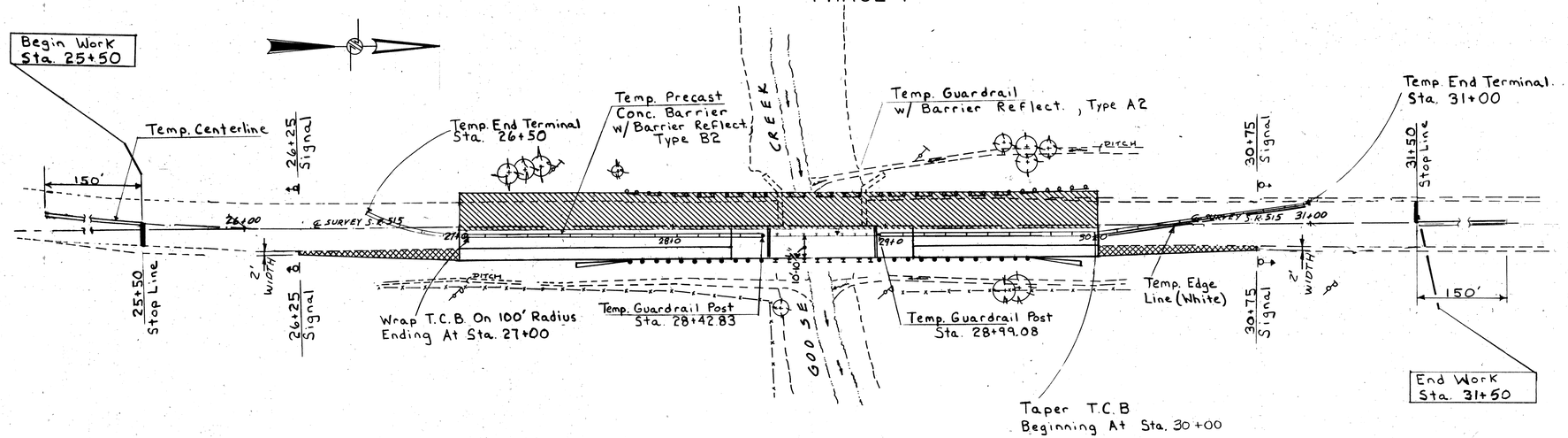
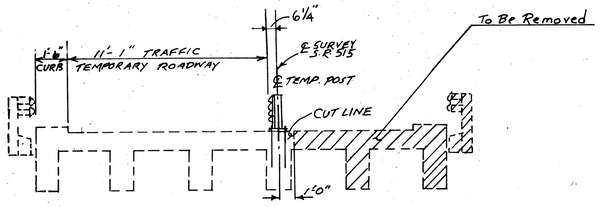
MAINTENANCE OF TRAFFIC



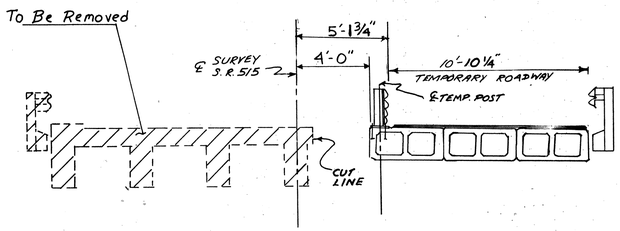
PHASE I



PHASE II



PHASE I



PHASE II

LEGEND

= Construction Area

= Temporary Pavement, as per Plan

CONSTRUCTION SEQUENCE

PHASE I

BEFORE STARTING ANY BRIDGE RECONSTRUCTION WHICH REQUIRES CLOSING EXISTING PAVEMENT TO TRAFFIC, ALL TEMPORARY CONCRETE BARRIER, TEMPORARY DEEP BEAM RAILING, SIGNALS, SIGNS, LIGHTS, AND TEMPORARY PAVEMENT MARKINGS SHOWN FOR PHASE I, SHALL BE FURNISHED AND ERECTED BY THE CONTRACTOR. FLAGGERS SHALL BE UTILIZED FOR PROTECTION OF VEHICULAR TRAFFIC UNTIL ERECTION OF THE TEMPORARY CONCRETE BARRIER, TEMPORARY DEEP BEAM RAILING, SIGNALS, SIGNS, LIGHTS, AND TEMPORARY PAVEMENT MARKINGS IS COMPLETED.

WHEN THE ABOVE REQUIREMENTS HAVE BEEN SATISFIED, THE SOUTHBOUND LANE OF THE EXISTING BRIDGE SHALL BE OPENED FOR TRAFFIC, AND CONSTRUCTION OF THE NORTHBOUND PORTION OF THE BRIDGE AND APPROACH SLABS SHALL PROCEED, IN ACCORDANCE WITH THE SEQUENCE SHOWN ON SHEET 5A AND 15.

COMPLETE PROPOSED ROADWAY, PERMANENT EARTHWORK, GUARDRAIL CONSTRUCTION ON THE RIGHT SIDE, AND TEMPORARY PAVEMENT, AS PER PLAN, REQUIRED FOR TRAFFIC MAINTENANCE DURING PHASE II.

PHASE II

RELOCATE THE TEMPORARY CONCRETE BARRIER, TEMPORARY DEEP BEAM RAILING, SIGNS, AND TEMPORARY PAVEMENT MARKINGS, AS SHOWN FOR PHASE II.
MOVEMENT OF TEMPORARY CONCRETE BARRIER, TEMPORARY DEEP BEAM RAILING, SIGNS, AND TEMPORARY PAVEMENT MARKINGS, BETWEEN PHASES, SHALL BE ACCOMPLISHED IN ONE (1) WORKING DAY. FLAGGERS SHALL BE UTILIZED FOR THE PROTECTION OF VEHICULAR TRAFFIC UNTIL RELOCATION OF THE TEMPORARY CONCRETE BARRIER, TEMPORARY DEEP BEAM RAILING, SIGNS,AND TEMPORARY PAVEMENT MARKINGS IS COMPLETED.

THE COMPLETED PORTION OF THE NEW BRIDGE, APPROACH SLABS, PAVEMENT AND TEMPORARY PAVEMENT SHALL BE OPENED TO TRAFFIC, AND CONSTRUCTION OF THE REMAINING PORTION OF THE BRIDGE AND APPROACH SLABS SHALL PROCEED, IN ACCORDANCE WITH THE SEQUENCE SHOWN ON SHEET 5A AND 15.

COMPLETE ALL REMAINING PROPOSED ROADWAY, PERMANENT EARTHWORK, GUARDRAIL CONSTRUCTION, AND OTHER ITEMS INDICATED IN THE PLANS.

PAYMENT FOR ALL OF THE ABOVE WORK EXCEPT ITEM 622-TEMPORARY PRE-CAST CONCRETE BARRIER, AS PER PLAN AND ITEM 615-TEMPORARY PAVEMENT, AS PER PLAN, SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 614-MAINTAINING TRAFFIC.

NOTE:DETAILS OF TEMPORARY DEEP BEAM RAILING ARE SHOWN ON SHEET NO.15.

DETAILS OF CONNECTION BETWEEN TEMPORARY DEEP BEAM RAILING AND TEMPORARY CONCRETE BARRIER ARE SHOWN ON SHEET NO.5.

QUANTITIES FOR ALL MAINTENANCE OF TRAFFIC ITEMS ARE SHOWN IN GENERAL NOTES, SHEET NO. 5

FOR ADDITIONAL MAINTENANCE OF TRAFFIC DETAILS, SEE THE STANDARD CONSTRUCTION DRAWINGS LISTED BELOW:

MT-96.11, 9/9/88
MT-96.20, 9/9/88
MT-96.25, 9/9/88
MT-99.10, 11/14/86

INTERVAL 1	2	3	4	5	6
TIME: 15 SECONDS	17 SECONDS	3 SECONDS	15 SECONDS	17 SECONDS	3 SECONDS
ALL RED	N.B. GREEN	N.B. YELLOW	ALL RED	S.B. GREEN	S.B. YELLOW

TOTAL: 70 SECONDS

The Signal Interval timing shown above shall be Subject to Adjustment by the Engineer depending upon actual Field Conditions.

30 15 0 30
Scale In Feet

MAINTENANCE OF TRAFFIC

614 TEMPORARY RAISED PAVEMENT MARKERS

REGION	STATE	PROJECT	
5	OHIO	BRZ-3803(1)	

6 / 23

HOL - 515 - 0.51

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING, INSTALLING, MAINTAINING, AND SUBSEQUENTLY REMOVING TEMPORARY RAISED PAVEMENT MARKERS (TRPM'S). THE TRPM'S SHALL BE YELLOW OR WHITE, AS DESCRIBED IN THE PLAN.

MATERIAL

ALL UNITS SHALL BE OF SUFFICIENT STRENGTH AND PROPERLY SHAPED SO AS NOT TO BE DISLODGED OR BROKEN, OR THE REFLECTOR DISLODGED OR BROKEN, OR THE REFLECTOR DISLODGED OR DAMAGED BY IMPACTS FROM VEHICLES TIRES, INCLUDING THOSE OF HIGH PRESSURE TRUCK TIRES LOADED TO 4500 POUNDS.

RETROREFLECTORS SHALL BE PROVIDED IN ONE OR TWO DIRECTIONS ON EACH UNIT AS REQUIRED BY THE USAGE AND SHALL RETURN WHITE OR YELLOW LIGHT AS IS APPROPRIATED FOR THE APPLICATION.

THE REFLECTOR SHALL HAVE AN EFFECTIVE AREA OF 0.35 SQUARE INCH FOR TYPE A OR 3.0 SQUARE INCH FOR TYPE B. ITS BRIGHTNESS OR SPECIFIC INTENSITY (WHEN TESTED AT 0.2 DEGREE ANGLE OF OBSERVATION AND THE FOLLOWING ANGLES OF INCIDENCE) SHALL MEET OR EXCEED THE FOLLOWING:

SPECIFIC INTENSITY

INCIDENCE ANGLE (DEGREES)	TYPE A WHITE	TYPE A YELLOW	TYPE B WHITE	TYPE B YELLOW
0	1.0	0.6	3.0	1.8
20	0.4	0.24	1.2	0.72
45	–	–	0.3	0.2

ANGLE OF INCIDENCE FORMED BY A RAY FROM LIGHT SOURCE TO THE MARKER AND THE NORMAL TO THE LEADING EDGE OF THE MARKER FACE (ALSO HORIZONTAL ENTRANCE ANGLE).

ANGLE OF OBSERVATION FORMED BY A RAY FROM LIGHT SOURCE TO THE MARKER AND THE RETURNED RAY FROM THE MARKER TO THE MEASURING RECEPTOR.

SPECIFIC INTENSITY IS THE MEAN CANDLEPOWER OF THE REFLECTED LIGHT (AT GIVEN INCIDENCE AND DIVERGENCE ANGLES) FOR EACH FOOT-CANDLE AT THE REFLECTOR (ON A PLANE PERPENDICULAR TO THE INCIDENT LIGHT).

TYPE A UNITS ARE INTENDED TO PROVIDE HIGH VISIBILITY BOTH AT NIGHT AND DURING DAYLIGHT. THEIR DAY TIME VISIBILITY SHALL BE ASSURED BY SIZE, SHAPE AND COLOR AS FOLLOWS:

1) THE UNITS SHALL BE A HIGH VISIBILITY YELLOW OR WHITE COLOR WHICH WILL NOT DEGRADE SUBSTANTIALLY DUE TO TRAFFIC WEAR AND WHICH WILL MATCH THE COLOR OF THE REFLECTOR.

2) WHEN VIEWED FROM ABOVE, THE UNITS SHALL HAVE A VISIBLE AREA OF NOT LESS THAN 14 SQUARE INCHES.

3) WHEN VIEWED FROM THE FRONT, PARALLEL TO THE PAVEMENT, AS FROM APPROACHING TRAFFIC, THE UNIT SHALL HAVE A WIDTH OF APPROXIMATELY 4 INCHES AND A VISIBLE AREA OF NOT LESS THAN 1.5 SQUARE INCHES.

TYPE B UNITS ARE INTENDED TO PROVIDE HIGH VISIBILITY AT NIGHT BY RETRO-REFLECTING AUTOMOTIVE HEADLIGHT BACK TO THE DRIVER.

INSTALLATION: THEY SHALL BE ATTACHED TO CLEAN, DRY PAVEMENT BY A BUTYL ADHESIVE PAD, A BITUMINOUS ADHESIVE OR OTHER CONSTRUCTION GRADE ADHESIVES (SUCH AS FRANKLIN PANEL AND METAL ADHESIVE) SUITABLE TO ANCHOR THE UNIT UNDER THE ABOVE CONDITIONS. WHEN IT IS NECESSARY TO ATTACH UNITS TO NEW CONCRETE WITH CURING COMPOUND REMAINING, THE CURING COMPOUND MEMBRANE SHALL BE REMOVED BY SANDBLASTING OR OTHER MECHANICAL CLEANING METHOD. THEY SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL IMMEDIATELY REPLACE, AT HIS COST, ANY UNITS WHICH FAIL (BROKEN HOUSING, HOUSING WORN TO THE EXTENT THAT DAYTIME VISIBILITY IS SIGNIFICANTLY DIMINISHED OR OF AN UNACCEPTABLE COLOR, DETACHED OR BROKEN REFLECTOR, HOUSING DETACHED FROM ADHESIVE).

TRPM'S ARE LIKELY TO BE REMOVED BY SNOW PLOWING OPERATIONS, THUS THEY ARE NOT CONSIDERED SUITABLE FOR USE DURING THE PERIOD FROM OCTOBER 15 UNTIL APRIL 30. THE CONTRACTOR IS ADVISED TO SCHEDULE HIS WORK AND/OR THE USE OF THESE DEVICES TO AVOID THIS PERIOD. SHOULD THE CONTRACTOR CHOOSE TO USE TRPM'S DURING THIS PERIOD AND THEY ARE SUBSEQUENTLY REMOVED OR DESTROYED BY SNOW AND ICE CONTROL ACTIVITIES, THE CONTRACTOR SHALL IMMEDIATELY, AT HIS COST, PROVIDE A SUBSTITUTE TRAFFIC GUIDANCE SYSTEM EFFECTIVE DURING LIGHT AND DARK AND WHICH IS ACCEPTABLE TO THE ENGINEER.

THE UNITS SHALL BE PLACED ACCURATELY TO DEPICT STRAIGHT OR UNIFORMLY CURVING LINES. WHEN USED TO SUPPLEMENT TEMPORARY PAVEMENT MARKINGS, THEY MAY BE PLACED ON OR IMMEDIATELY ADJACENT TO THE PAVEMENT MARKING. LOCATIONS SHALL BE ADJUSTED UP TO ONE FOOT LONGITUDINALLY OR SIX INCHES LATERALLY TO AVOID PLACEMENT ON JOINTS, CRACKED OR DETERIORATED PAVEMENT. THEY SHALL NOT BE PLACED DIRECTLY ON PAVEMENT MARKINGS IF THIS WILL DETRACT FROM THEIR ABILITY TO REMAIN ATTACHED TO THE PAVEMENT.

APPLICATION

1) WHEN REQUIRED TO SUPPLEMENT PAVEMENT MARKING; THEY SHALL BE PLACED AS FOLLOWS:

LINE	TYPE	SPACING
EDGE LINE	A OR B	20' C/C
LANE LINE	A OR B	40' C/C*
CENTER LINE (SINGLE/BROKEN)	A OR B	40' C/C *
CENTER LINE (DOUBLE/SOLID)	A OR B	2 UNITS SIDE BY SIDE 4 INCHES APART 20' C/C
CHANNELIZING LINE (INCLUDES EXIT GORE NOSE)	A OR B	10' C/C

* CENTERED IN GAP

2) WHEN USED TO SIMULATE (REPLACE) PAVEMENT MARKING THEY SHALL BE PLACED AS FOLLOWS:

LINE	TYPE	SPACING
EDGE LINE	A	5' C/C
LANE LINE	A	4@3.33' C/C 30' GAP (40' CYCLE)
CENTER LINE (DOUBLE SOLID)	A	2 UNITS SIDE BY SIDE 5' C/C
CENTER LINE (SINGLE BROKEN)	A	4@3.33' C/C 30' GAP (40' CYCLE)
CHANNELIZING LINE (INCLUDES EXIT GORE NOSE)	A	5' C/C
EDGE LINE (TWO COLOR) (WHITE/YELLOW)	A	BACK TO BACK 5' C/C

YELLOW TRPM'S USED TO SEPARATE OPPOSITE FLOWS OF TRAFFIC (CENTER LINES) SHALL INCLUDE REFLECTIONS FOR BOTH DIRECTIONS. ALL OTHER YELLOW TRPM'S AND WHITE TRPM'S SHALL PROVIDE RETROREFLECTIVITY FOR ONE DIRECTION.

REMOVAL

REMOVAL SHALL BE ACCOMPLISHED IN A MANNER THAT LITTLE OR NONE OF THE ADHESIVE REMAINS ON THE PAVEMENT AND PERMANENT PAVEMENT SURFACES SHALL NOT BE SCARRED, BROKEN OR ROUGHENED SIGNIFICANTLY.

PAYMENT

BASIS OF PAYMENT SHALL BE AT THE CONTRACT UNIT PRICE PER EACH TRPM AND SHALL INCLUDE ALL LABOR, EQUIPMENT, HARDWARE AND INCIDENTALS REQUIRED TO PERFORM THE WORK. IT SHALL ALSO INCLUDE REPLACEMENT AT NO ADDITIONAL COST OF ALL TRPM'S WHICH, IN THE JUDGEMENT OF THE ENGINEER, FAIL FOR ANY REASON, EXCEPT DUE TO FAILURE OF THE PAVEMENT TO WHICH THEY ARE ATTACHED.

ITEM	UNIT	DESCRIPTION
614	EACH	TEMPORARY RAISED PAVEMENT MARKERS

STATIONING (FROM-TO) (SIDE)	SPACING	TYPE A W	TYPE A Y	TYPE A Y/Y		TYPE B W	TYPE B Y	TYPE B Y/Y		REMARKS (LINE TYPE)
PHASE I										
25+50 - 30+00	5'	91	91							EDGE
30+00 - 31+50	5'	30								EDGE
27+00 - 30+00	5'	61	61							EDGE
		182	152							RELOCATE FOR PHASE II
PHASE II										
25+50 - 27+00	5'	30								EDGE
27+00 - 31+50	5'	91	91							EDGE
27+00 - 30+00	5'	61	61							EDGE
		182	152							
TOTALS		668								CARRIED TO GEN. SUM.

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

614 TEMPORARY RAISED PAVEMENT MARKERS

DESIGNED	DRAWN	CHECKED	DATE	REVISED
			5-12-87	

CALCULATIONS AND GENERAL SUMMARY

CALC. BY C.S.K. DATE 3/90	HOL-515-0.51	OHIO	7/23
CHKD. BY R.J.Z. DATE 3/90	BRZ-3803 (1)	FHWA REGION 5 FEDERAL PROJECT	

NORMAL SECTION (LIMITING STATIONS)
STA.27+00.00–STA.28+30.37 = 130.37 L.F.
STA.29+11.53–STA.30+00.00 = 88.47 L.F.
} 218.84 L.F.

APPROACH SLAB SECTION (LIMITING STATIONS)
STA.28+30.37–STA.28+45.37 = 15.00 L.F.
STA:28+96.53–STA.29+11.53 = 15.00 L.F.
} 30.00 L.F.

SHOULDER WORK (LIMITING STATIONS)
STA.26+25.00 – STA.27+00.00 (RT.) = 75 L.F.
STA.30+00.00 – STA.30+75.00 (RT.) = 75 L.F.
} 150.00 L.F.

CALCULATIONS

ITEM 404–ASPHALT CONCRETE, AC–20
[(218.84' x 32') + (30' x 32') x (1.25"/12)] x 1/27 = 30.72
USE 31 C.Y.

ITEM 403–ASPHALT CONCRETE, AC–20
[(30' x 32') x ((1.75" + 2.75" / 2) /12))] x 1/27 = 6.67
USE 7 C.Y.

ITEM 402–ASPHALT CONCRETE, AC–20
[(218.84' x 32') x (1.75"/12)] x 1/27 = 37.82
USE 38 C.Y.

ITEM 301–BITUMINOUS AGGREGATE BASE, AC–20
[(218.84' x 33') x (5"/12)] x 1/27 = 111.45
USE 112 C.Y.

ITEM 304–AGGREGATE BASE
[(218.84' x 34') x (6"/12)] x 1/27 = 137.79
USE 138 C.Y.

ITEM 407–TACK COAT
(15' + 15') x 32'x 1/9 x 0.075 = 8
USE 8 GAL.

ITEM 408–PRIME COAT
(218.84' x 33') x 1/9 x 0.40 = 320.96
USE 321 GAL.

ITEM 203–SUBGRADE COMPACTION
(218.84' x 32') x 1/9 = 778.10
(30' x 32') x 1/9 = 106.67
TOTAL = 884.77
USE 885 S.Y.

ITEM 659–COMMERCIAL FERTILIZER
1281 S.Y. x [(9 S.F. / S.Y.) x (20 LBS. / 1000 S.F.) x (1 TON / 2000 LBS.)] = 0.115
USE 0.12 TON

ITEM 659–AGRICULTURAL LIMING
1281 S.Y. x [(9 S.F. / S.Y.) x (100 LBS. / 1000 S.F.) x (1 TON / 2000 LBS.)] = 0.577
USE 0.58 TON

ITEM 605–AGGREGATE DRAINS

APPROX. LOCATION	AVG. LGTH.
STA.27+00 (LT.)	6 L.F.
STA.27+25 (RT.)	5 L.F.
STA.27+50 (LT.)	6 L.F.
STA.27+75 (RT.)	5 L.F.
STA.28+00 (LT.)	7 L.F.
STA.28+25 (RT.)	5 L.F.
STA.29+25 (LT.)	5 L.F.
STA.29+50 (RT.)	5 L.F.
STA.29+75 (LT.)	6 L.F.
STA.30+00 (RT.)	7 L.F.
TOTAL =	57 L.F.

USE 60 LIN. FT.

ITEM 621–CENTERLINES
(STA.25+50 TO STA.31+50)
600 L.F. x 1 / 5280 = 0.114
USE 0.11 MILE

ITEM 621–EDGE LINES
(STA.26+25 TO STA.30+75) (LT. & RT.)
450 L.F. x 2 / 5280 = 0.170
USE 0.17 MILE

ITEM 611–REINFORCED CONCRETE APPROACH SLAB (T= 12")
(30' x 32') x 1/9 = 106.67
USE 107 S.Y.

ITEM 615–TEMPORARY PAVEMENT, AS PER PLAN
STA. 26+25 TO STA. 27+00 = 75 L.F.
STA. 30+00 TO STA. 30+75 = 75 L.F.
} 150 L.F.
(2+6)/2 x 1/9 x 150 = 66.67
USE 67 S.Y.

EARTHWORK AND SEEDING RE–CAP

FROM STA. TO STA.	203 EMB.	203 EXC.	659 SEED.
ROADWAY 26+00 31+00 (PLAN SHT. 10)	358	717	1143
CHANNEL 9+50 10+50 (PLAN SHT. II)	28	96	138
TOTAL	386	813	1281

TOTAL FROM SHEET NO. 4	5	7	6	8		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION
										ROADWAY
LUMP						201	11000	Lump		Clearing and Grubbing
		813				203	12000	813	C.Y.	Excavation not Including Embankment Construction
		386				203	20000	386	C.Y.	Embankment
		885				203	50000	885	S.Y.	Subgrade Compaction
				375		202	38000	375	L.F.	Guardrail Removed
				287.5		606	13000	287.5	L.F.	Guardrail, Type 5
				4		606	25000	4	Each	Anchor Assembly, Type A
				4		606	30501	4	Each	Bridge Terminal Assembly, Type B, AS PER PLAN
8						604	40501	8	Each	Reference Monuments, As Per Plan (SEE SHT. 4)
90						202	38600	90	L.F.	BRIDGE Railing Removed for Storage
										EROSION CONTROL
50						207	70000	50	Each	Straw or Hay Bales
		1281				659	10000	1281	S.Y.	Seeding and Mulching
3						659	35000	3	M.Gal.	Water
		0.12				659	20000	0.12	Ton	Commercial Fertilizer
		0.58				659	30000	0.58	Ton	Agricultural Liming
				103		601	34300	103	C.Y.	Rock Channel Protection, Type D w/o Filter
				76		670	40000	76	S.Y.	Ditch Erosion Protection
										DRAINAGE
		60				605	31100	60	L.F.	Aggregate Drains
100						603	00900	100	L.F.	6" Conduit, Type B
100						603	01400	100	L.F.	6" Conduit, Type E
100						603	02600	100	L.F.	8" Conduit, Type F
										PAVEMENT
		138				304	20001	138	C.Y.	Aggregate Base, as per Plan (SEE SHT. 4)
		112				301	10002	112	C.Y.	Bituminous Aggregate Base, AC–20
		38				402	20000	38	C.Y.	Asphalt Concrete, AC–20
		7				403	20000	7	C.Y.	Asphalt Concrete, AC–20
		31				404	20000	31	C.Y.	Asphalt Concrete, AC–20
		8				407	10000	8	Gal.	Tack Coat
		321				408	10000	321	Gal.	Bituminous Prime Coat
		107				611	10000	107	S.Y.	Reinforced Concrete Approach Slab (T= 12")
										TRAFFIC CONTROL
				8		802	00100	8	Each	Barrier Reflector, Type A
		0.17				621	00100	0.17	Mi.	Edge Lines
		0.11				621	20100	0.11	Mi.	Centerlines
				14		630	04100	14	L.F.	Ground Mounted Supports, No. 4 Post
				2		630	85100	2	Each	Removal of Ground Mounted Sign and Reerection
				1		630	86002	1	Each	Removal of Ground Mounted Support and Disposal POST
										MAINTENANCE OF TRAFFIC
	0.04					614	22000	0.04	Mi.	Temporary Edge Line, Class I
	0.06					614	21000	0.06	Mi.	Temporary Centerline, Class I
	20					614	26600	20	L.F.	Temporary Stop Line, 947.03, Type C, CLASS I
	0.06					614	21400	0.06	Mi.	Temporary Centerline, Class II
					668	614	12900	668	Each	Temporary Raised Pavement Markers, TYPE A
	2					614	13202	2	Each	Barrier Reflectors, Type A2
	38					614	13302	38	Each	Barrier Reflectors, Type B2
5						616	10000	5	M.Gal.	Water
1						616	20000	1	Ton	Calcium Chloride
		67				615	35001	67	S.Y.	Temporary Pavement, as per Plan (SEE SHT. 5)
	394					622	40001	394	L.F.	Temporary Concrete Barrier, as per Plan (SEE SHT. 5)
										STRUCTURES 20' AND OVER (For Structure Quantities, See Sheet 14/23)
	LUMP					614	11000	LUMP		Maintaining Traffic
LUMP						619	10000	LUMP		Field Office
						623	10000	LUMP		Construction Layout Stakes
						624	10000	LUMP		Mobilization

REVISED 10-13-94

CALCULATED BY J.T. DATE 8-89
CHECKED BY W.S. DATE 10-89

FHWA REGION	STATE	PROJECT	
5	OHIO	BRZ-3803(1)	

8/23

HOL - 515 - 0.51

SLM. 0.51
Begin Project
Sta. 27+00
BRZ-3803 (1)

BEGIN WORK STA. 25+50

REFER TO SHT. 5A/23 FOR ADDITIONAL INFORMATION

BENCHMARK: EL. 1002.47
R.R. SPIKE IN POLE, STA. 26+05, 21' LT.

SLM. 0.57
End Project
Sta. 30+00
BRZ 3803 (1)

END WORK STA. 31+50

REFER TO SHEET 5A/23 FOR ADDITIONAL INFORMATION

S.R. 515

EXIST. PAVEMENT TO REMAIN

6' Paved Shoulder

℄ R/W & SURVEY S.R. 515

90°44'48"

10.00

Const. Limits

EX. R/W

R/W

CHANNEL

G.R. POST STA. 28+42.83 LT. & RT.

G.R. POST STA. 28+99.08 LT. & RT.

MEET EXIST DITCH STA. 29+50

GOOSE CREEK

3-6" ELMS

2" WILLOW

4" ELM

6" ELM

GAS LINE MARKERS

DITCH

TREE CLUMPS

SIGN

BARBED WIRE FENCE

10" OAK

8" OAK

MEET EXIST PAVT STA. 27+05

MEET EXIST DITCH STA. 26+75

MEET EXIST DITCH, PAVED SHOULDER & BEGIN PAVED SHOULDER TAPER, 10' LT. & RT.

BENCHMARK EL. 1001.63
"X" CUT IN N.E. CORNER OF CONC. ABUTMENT BACKWALL STA. 28+90, 11' RT.

N-3°19'10"E

NAIL SET IN POLE No. 1010-17

38.43'

PK SET

68.21'

43.92'

℄ R/W & SURVEY

NAIL SET IN TOP OF 6"ø WOOD FENCE POST

NAIL SET IN POLE

P.O.T. REFERENCE TIE
STA. 26+37.77

NAIL SET IN POLE No. 1010-20

79.89'

PK SET

63.78'

℄ R/W & SURVEY

NAIL SET IN POLE

REFERENCE TIE
STA. 31+61.17

BENCHMARK: EL. 1003.00
U.S.G.S. # 146 FPV 1959
IN CONC HEADWALL, STA. 35+00, 25' RT ±.

630	Removal of Ground Mounted Sign & Re-erection	Ea.														2	2
630	Removal of Ground Mounted Post & Disposal	Ea.														1	1
630	Ground Mounted Support No. 4 Post	L.F.														14.0	14.0
606	Bridge Terminal Assembly, Type B	Ea.													1	1	4
606	Anchor Assembly, Type A	Ea.													1	1	4
606	Guardrail, Type 5	L.F.												68.75	75.00	68.75	287.5
802	Barrier Reflector, Type A	Ea.							4								8
202	Guardrail Removed	L.F.	100	75	100	100			4								375
	SIDE		Lt.	Rt.	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.							Totals
	STATION TO STATION		27+44 - 28+44	27+68 - 28+43	28+96 - 29+96	28+96 - 29+96	27+49.08 - 28+42.83	27+42.83 - 28+42.83	27+49.08 - 29+92.83	27+42.83 - 29+92.83							
	REFERENCE NO.		R-1	R-2	R-3	R-4	GR-5	GR-6	GR-7	GR-8	BR-1	BR-2					S-1

EXISTING STRUCTURE	
TYPE:	SINGLE SPAN CONCRETE BEAM BRIDGE
SPANS:	40'-0" CLEAR
ROADWAY:	19'-7" CURB TO CURB
SKEW:	0°
ALIGNMENT:	TANGENT

PROPOSED STRUCTURE	
TYPE:	PRESTRESSED CONCRETE BOX BEAM ON CAPPED PILE SUBSTRUCTURE
SPANS:	50'-0" c/c BEARING
ROADWAY:	32'-0" f/f GUARDRAIL
SKEW:	0°
DESIGN LOADING:	HS 20-44 AND ALTERNATE MILITARY LOADING
APPROACH SLAB:	15'-0" (AS-1-81)
ALIGNMENT:	TANGENT
SUPERELEVATION:	NONE
WEARING SURFACE:	3" ASP. CONC.
AVG. DAILY TRAFFIC:	1570 (1990) 2752 (2010)

670	Ditch Erosion Protection	S.Y.							26	50	76
601	Rock Channel Protection, Type D w/o Filter	C.Y.							64		103
	SIDE						Lt.	Rt.	Lt.	Rt.	
	STATION TO STATION						28+46 - 28+60		28+70 - 28+95		28+32 - 29+00		29+75 - 29+50		TOTALS
	REFERENCE NO.						E-1		E-2		E-3		E-4		

EX. 1ST. PROFILE ELEV.

PLAN & PROFILE STA. 24+00 TO STA. 33+00

HIGHWAY FEDERAL AID SHEET
PLATE 1-SINGLE PLAN AND PROFILE-FULL LINE
TELEDYNE
PRINTED IN U.S.A.

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO	BRZ-3803(1)	

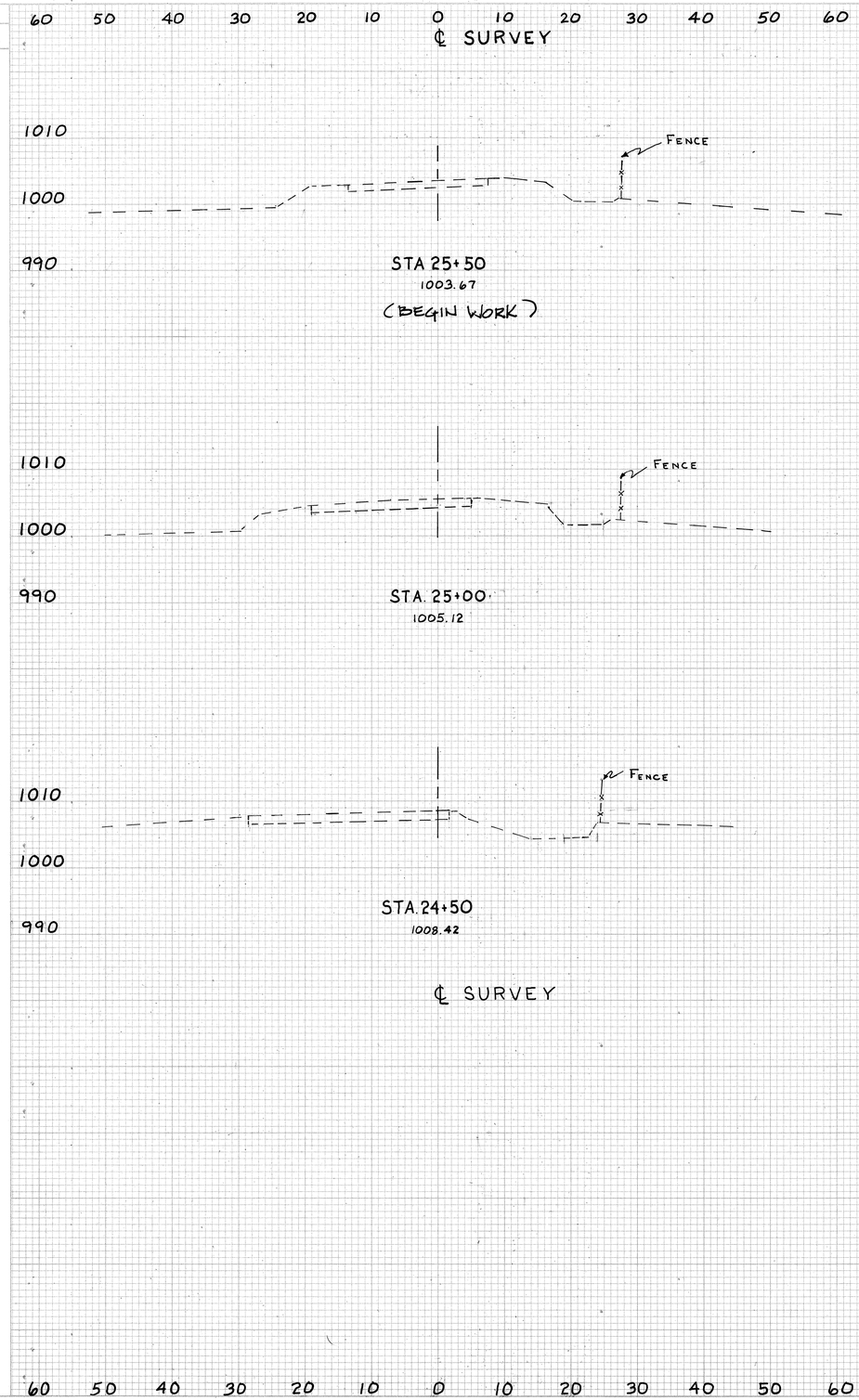
9/23

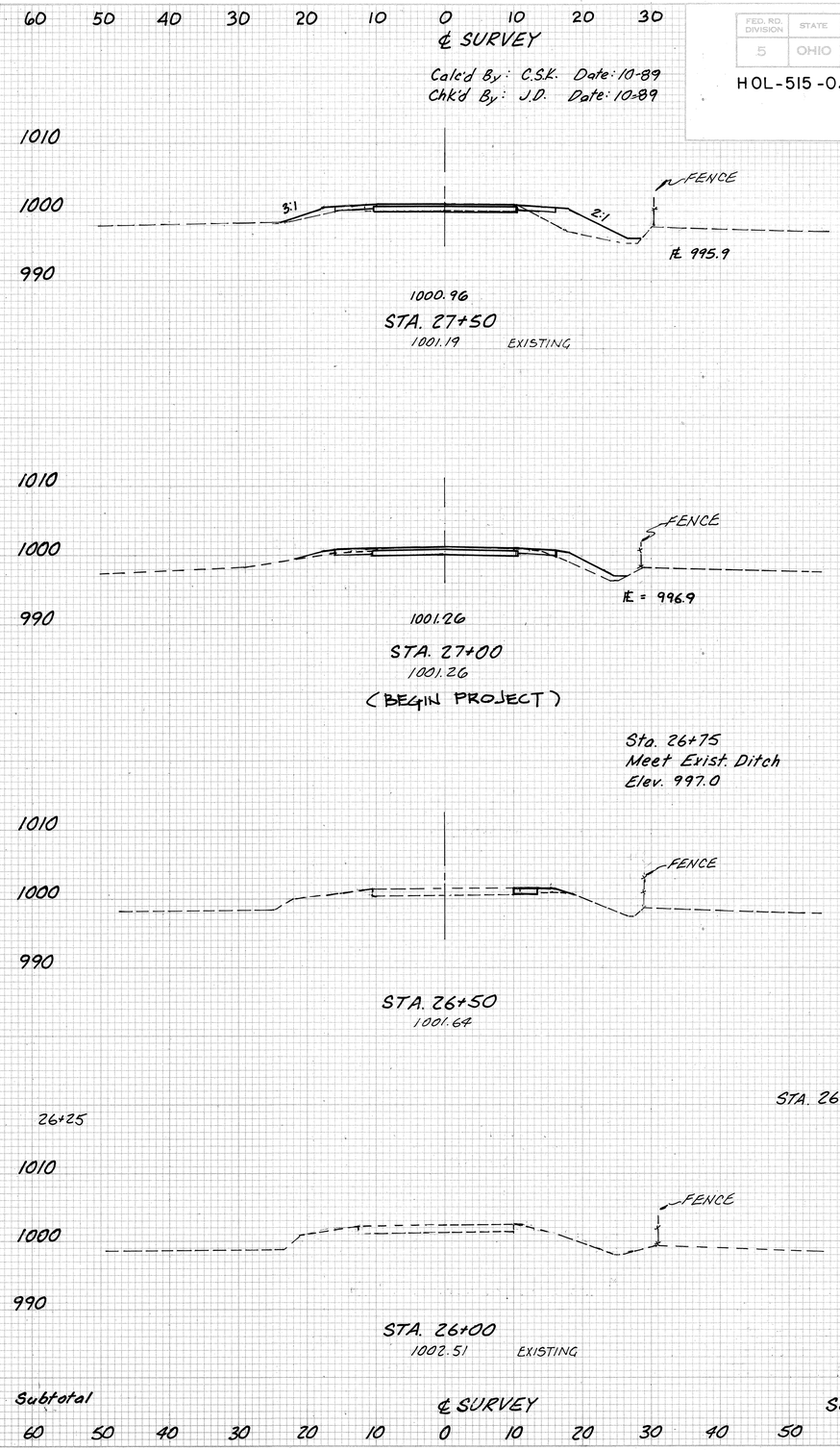
HOL-515-0.51

Calc'd By: C.S.K. Date: 10-89
Chk'd By: J.D. Date: 10-89

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME		SEEDING	
CUT	FILL	CUT	FILL	END WIDTH	SQ. YDS.
				26	
					131
				21	
					92
				12	
					17
				0	
				240	Subtotal





END AREA		VOLUME	
CUT	FILL	CUT	FILL
29	37		
		59	51
AHEAD	35	18	
BACK	10	18	
		13	19
4	2		
		2	2
STA. 26+25, Rt. Ahead	1	2	
		74	72

CROSS SECTIONS STA 24+50 TO STA 27+50

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO	BRZ-3803(1)	

10/23

HOL-515-0.51

Calc'd. By: C.S.K. Date: 10-89
Chk'd. By: J.D. Date: 10-89

SEEDING END WIDTH	SEEDING SQ. YDS.	STATION	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL	SEEDING END WIDTH	SEEDING SQ. YDS.
		℄ SURVEY						
		End Guardrail Sta. 29+92.83						
48		1010 / 1000 / 990 — FENCE, 2:1, 2:1, 2:1, 2:1, ℄ 994.0, 999.76, ℄ = 991.9						
		STA. 29+50						
		1000.23 EXISTING	64	20				
	256				223	86		
68		1010 / 1000 / 990 — FENCE, 2:1, 2:1, 2:1, 2:1, ℄ 991.5, 1000.06, ℄ 991.5						
	26	STA. 29+00						
		1001.26	177	73				
68		Ahead				23	9	
0		Back	0	0				
		BRIDGE LIMIT STA. 28+96.53						
0		Ahead						
44		Back						
		Note: See Sheet 11/23 For Additional Earthwork/Seeding Quantities For Channel Work						
		1010 / 1000 / 990 — BRIDGE LIMIT STA. 28+45.37, FENCE, ℄ 994.6						
	26		Ahead	0	0			
44			Back	89	67			
				89	67	18	13	
	197	1000.42 STA. 28+40 1001.53						
		1010 / 1000 / 990 — FENCE, 2:1, 2:1, ℄ 995.0						
27		1000.66 STA. 28+00 1001.35 EXISTING						
	147			82	32			
		Begin Guardrail Sta. 27+55.33 (Lt. & Rt.)				158	92	
		℄ SURVEY						
		℄ SURVEY						
		1010 / 1000 / 990						
		STA. 31+50						
		999.68 Existing						
		(END WORK)						
		1010 / 1000 / 990						
		STA. 31+00						
		999.41						
0		30+75						
15		1010 / 1000 / 990 — FENCE						
		STA. 30+75, Rt. Back	1	0				
							2	0
						18	13	
11								
							4	0
		STA. 30+50						
		999.18						
67								
							19	0
		1010 / 1000 / 990 — FENCE, 6:1						
13			Ahead	17	0			
			Back	41	4			
169		999.46 STA. 30+00 999.76 EXISTING						
		(END PROJECT)						
		*See Table on Sheet 6/23 For Summation of Embankment, Excavation and Seeding Quantities.						
							97	22
903								
240		* Subtotal Sht. 9						
1143		* Total						
		℄ SURVEY						
		Subtotal Sht. 9					643	286
		* Total					74	72
							717	358

CROSS SECTIONS STA 28+00 TO STA 31+50

Calcd. By: C.S.K. Date: 10-89
Chk'd. By: J.D. Date: 10-89

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO	BRZ-3803(1)	

HOL.-515-0.51

11/23

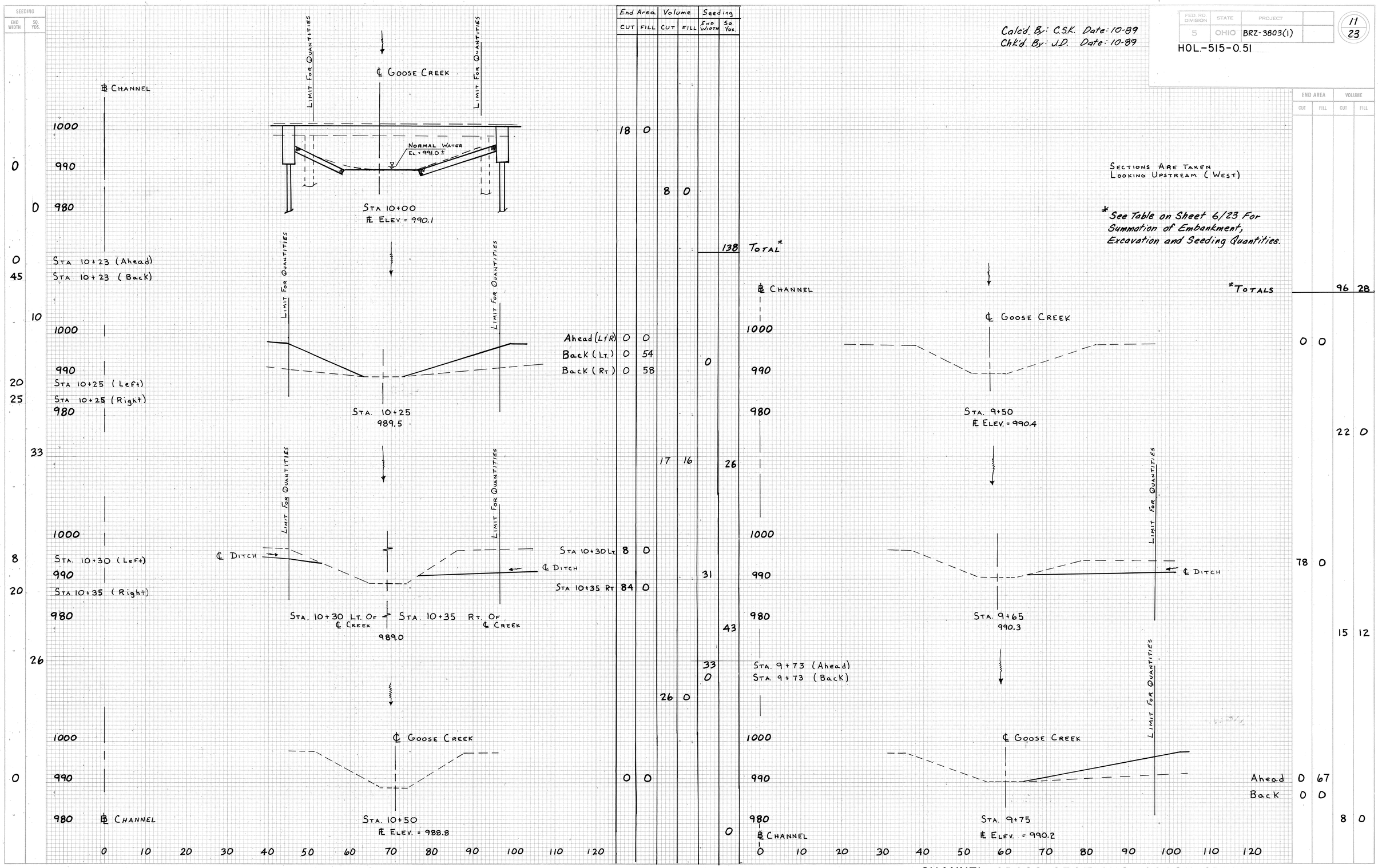
Sections Are Taken Looking Upstream (West)

* See Table on Sheet 6/23 For Summation of Embankment, Excavation and Seeding Quantities.

*Totals

End Area CUT	End Area FILL	Volume CUT	Volume FILL	Seeding End Width	Seeding Sq. Yds.
18	0				
		8	0		
				138	Total*
Ahead (Lt/Rt) 0	0				
Back (Lt.) 0	54			0	
Back (Rt.) 0	58				
Sta 10+30 Lt. 8	0				
Sta 10+35 Rt 84	0				
		17	16		
				31	
		26	0		
				33	
Sta. 9+73 (Ahead)	0			0	
Sta. 9+73 (Back)					
				78	0
Ahead 0	67				
Back 0	0				
		0	0		

End Area CUT	End Area FILL	Volume CUT	Volume FILL
		96	28
		22	0
		15	12
		8	0



CHANNEL CROSS SECTIONS - GOOSE CREEK

REGION	STATE	PROJECT	
5	OHIO		

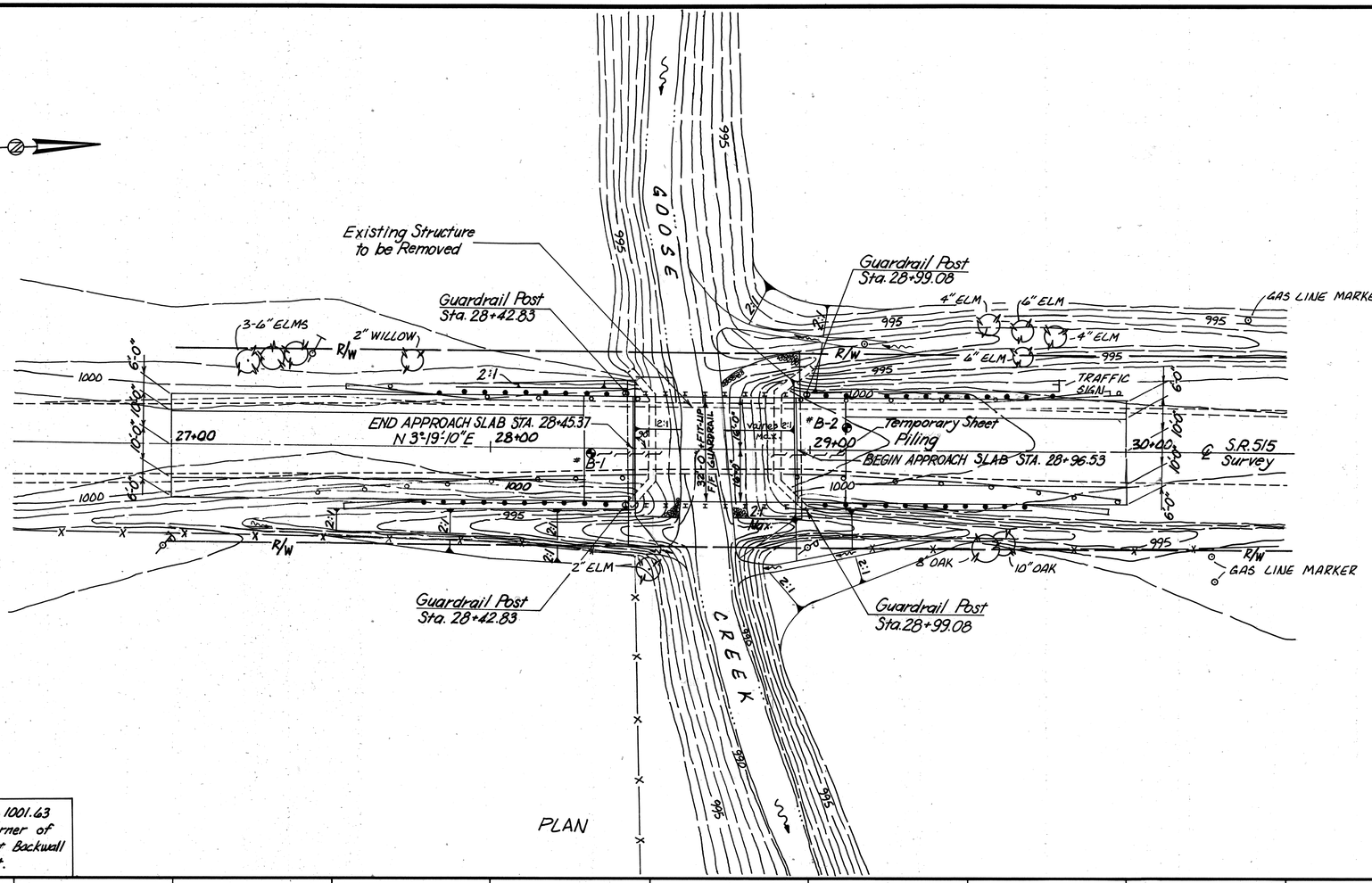
12/23

HOLMES COUNTY
HOL - 515 - 0.51

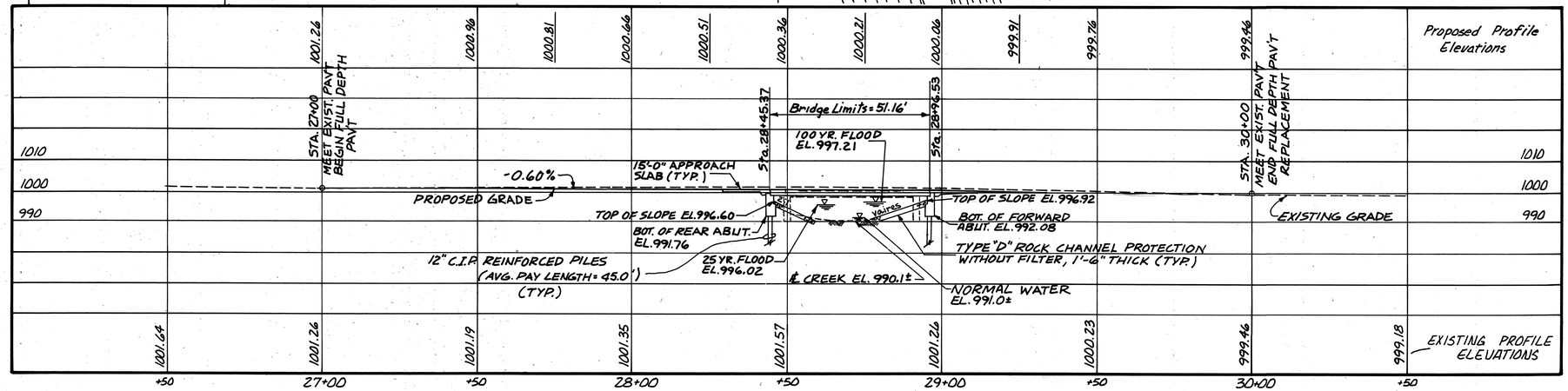
NOTE:

Earthwork Limits Shown are approximate. Actual Slopes shall conform to plan cross-sections.

Boring Location



BENCHMARK EL. - 1001.63
"X" Cut in N.E. Corner of Concrete Abutment Backwall Sta. 28+90, 11' Rt.



PROFILE ALONG ℄ SURVEY S.R. 515

REVIEWED BY BURGESS & NIPLE, LTD.
T. D. T. 9-1-89

HYDRAULIC DATA			
INTERVAL (YEAR)	ELEV. (FT.)	Q (C.F.S.)	V (FT./SEC.)
25	996.02	774	4.48
100	997.21	1100	4.78

DRAINAGE AREA = 4.43 SQ. MI.

EXISTING STRUCTURE

TYPE: SINGLE SPAN CONCRETE SLAB AND BEAMS ON CONCRETE GRAVITY ABUTMENTS
SPANS: 40'-0" ± CLEAR
ROADWAY: 19'-7" ± f/f CURB
SKEW: 0° ±
ALIGNMENT: TANGENT
WEARING SURFACE: BITUMINOUS
STRUCTURE FILE No. 3802558

PROPOSED STRUCTURE

TYPE: PRESTRESSED CONCRETE BOX BEAM ON CAPPED PILE SUBSTRUCTURE
SPANS: 50'-0" c/c BEARINGS
ROADWAY: 32'-0" f/f GUARDRAIL
SKEW: 0°
DESIGN LOADING: HS 20-44 AND ALTERNATE MILITARY LOADING
APPROACH SLAB: AS-1-81 (15'-0")
ALIGNMENT: TANGENT
SUPERELEVATION: NONE
WEARING SURFACE: 2½" ASPHALT CONC. (MIN.)
AVG. DAILY TRAFFIC: 1570 (1989) 2752 (2009)
CROWN: 3/16"/FT.

1 / 10

THOMAS FOK & ASSOCIATES, LIMITED
CONSULTING ENGINEER, SURVEYOR & PLANNER
3896 MAHONING AVE. YOUNGSTOWN, OHIO

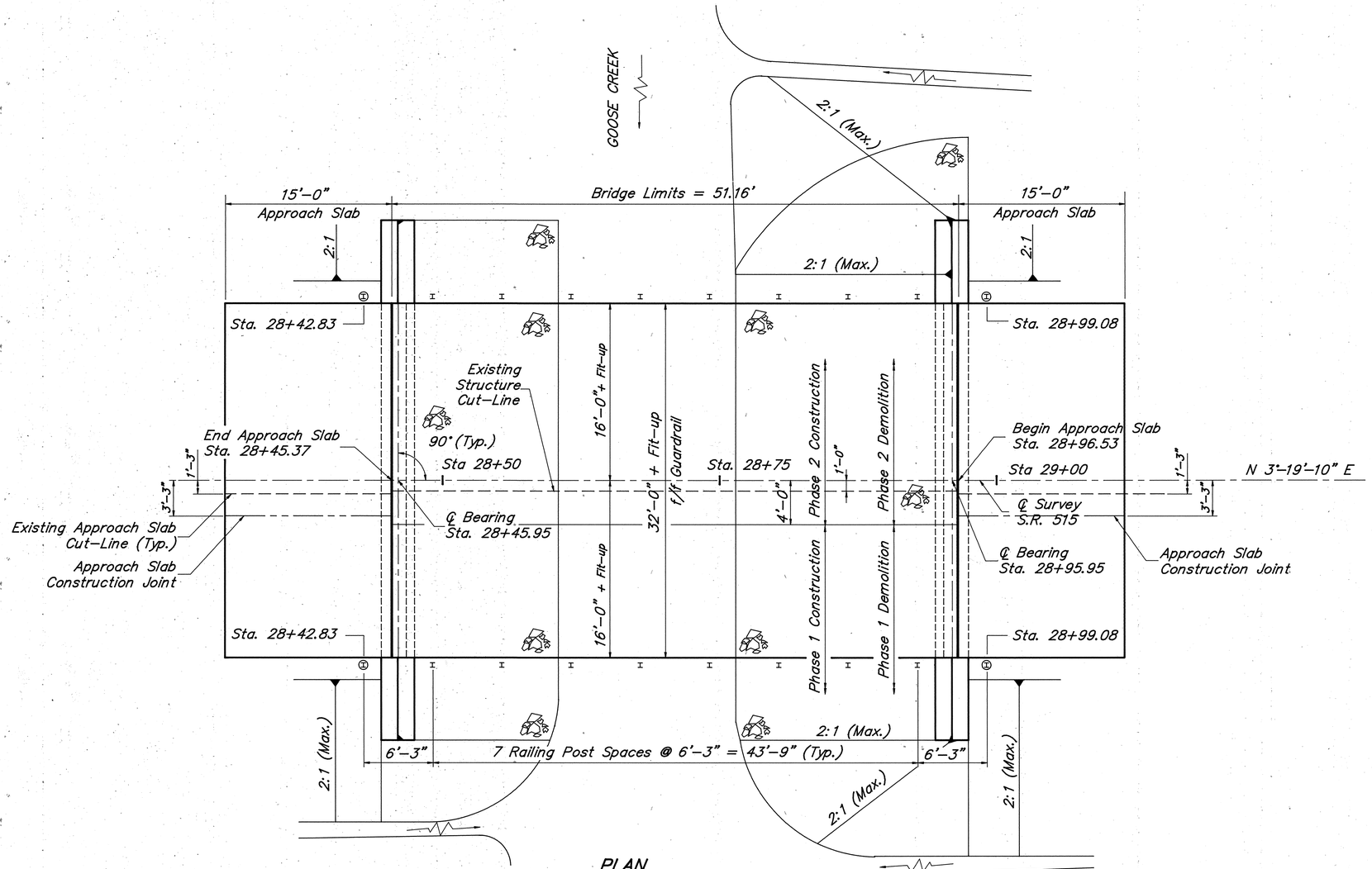
SITE PLAN
BRIDGE NO. HOL-515-0054
OVER GOOSE CREEK
HOLMES COUNTY
STA. 28+45.37
STA. 28+96.53

PRESENT TOPOGRAPHY		PROPOSED WORK			
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
R.I.B 12/88	K.R.M. 1/89	K.R.M. 3/89	K.R.M. 3/89	A.L. 4/89	T.F. 4/89

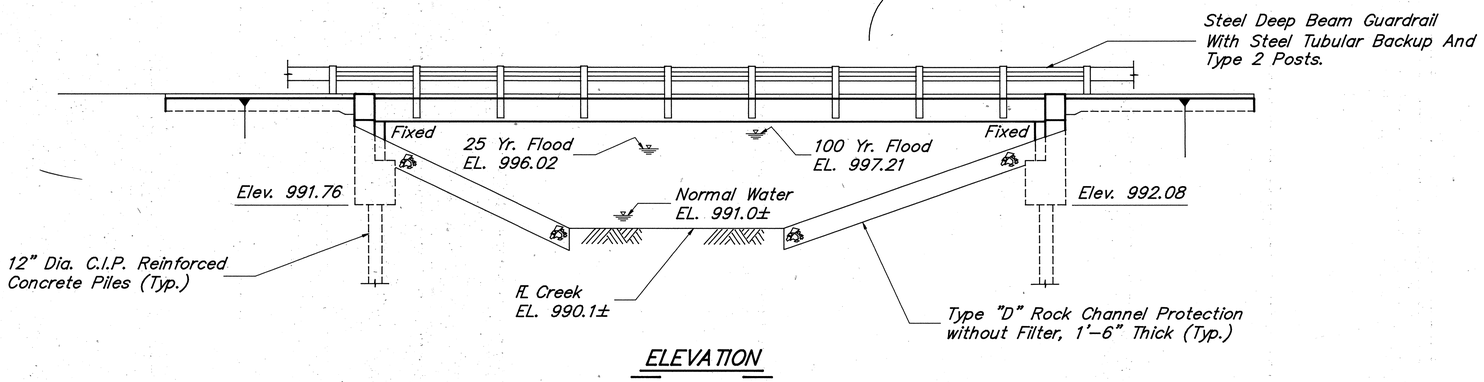
REGION	STATE	PROJECT	
5	OHIO		

13
23

HOLMES COUNTY
HOL-515-0.51



PLAN



ELEVATION

2 | 10

THOMAS FOK & ASSOCIATES, LTD.
CONSULTING ENGINEERS, SURVEYORS & PLANNERS
3896 MAHONING AVE. YOUNGSTOWN, OHIO

GENERAL PLAN

BRIDGE NO. HOL-515-0054
OVER GOOSE CREEK
HOLMES COUNTY OHIO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.F. 7/89	K.R.M. 7/89		F.D.V. 7/89	T.F. 7/89	

REGION	STATE	PROJECT	
5	OHIO		

14/23

HOLMES COUNTY
HOL–515–0.51

CALC. BY J.D.V. CHK'D BY A.L.

ESTIMATED QUANTITIES

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	SUPER.	ABUT.	GEN'L
202	11002	Lump		Structures Removed, OVER 20 FOOT SPAN			Lump
403	20000	10	Cu.Yd.	Asphalt Concrete, AC–20	10		
404	20000	6	Cu.Yd.	Asphalt Concrete, AC–20	6		
503	21100	93	Cu.Yd.	Unclassified Excavation		93	
503	11100	Lump		Cofferdams, Cribs & Sheeting			Lump
505	11100	Lump		Pile Driving Equipment Mobilization			Lump
507	21100	630	Lin.Ft.	12" Dia. Cast–In–Place Reinforced Concrete Piles		630	
509	11500	4023	Lbs.	Reinforcing Steel, Grade 60		4023	
509	15800	1892	Lbs.	Epoxy Coated Reinforcing Steel, Grade 60		1892	
511	43500	56	Cu.Yd.	Class C Concrete, Abutments		56	
512	44400	4	Sq.Yd.	Type B Waterproofing		4	
512	55800	196	Sq.Yd.	Type D Waterproofing	196		
515	54100	8	Each	Prestressed Concrete Bridge Members (B21–48)	8		
				(See Proposal Note)			
516	13600	111	Sq.Ft.	1" Preformed Expansion Joint Filler			111
516	31001	64	Lin.Ft.	2" Deep Joint Sealer, as per Plan (SEE SHT. 21)	64		
516	41500	32	Each	1"x12"x9" Elastomeric Bearing Pads, (60 Durometer)			32
517	72300	112.5	Lin.Ft.	Railing (Deep Beam Rail With Steel Tubular Backup,	112.5		
				Type 2 Steel Posts & Bolts) (See Proposal Note)			
518	21101	20	Cu.Yd.	Porous Backfill, as per Plan (SEE SHT. 16)			20
518	41100	93	Lin.Ft.	6" Perforated Helical Corrogated Steel Pipe, 707.01			93
518	41200	32	Lin.Ft.	6" Non–Perforated Helical Corrogated Steel Pipe,			32
				Including Special, 707.01			
Special	518 22200	79	Sq.Ft.	Steel Drip Strip (SEE SHT. 19)	79		
Special	512 67500	26	Sq.Yd.	Sealing of Concrete Surfaces (See Proposal Note)	26		
Special	512 67502	17	Sq.Yd.	Sealing of Concrete Surfaces (Epoxy) (See Proposal Note)		17	
Special	516 31200	64	Lin.Ft.	Sawing and Sealing Bituminous Concrete Joints (SEE SHT. 21)			64

GENERAL NOTES

DESIGN SPECIFICATION This structure conforms to "Standard Specifications for Highway Bridges" adopted by the American Association of State Highway and Transportation Officials, 1983 including the 1984 through 1989 interim Specifications, and the Ohio "Supplement" to these specifications.

REFERENCE shall be made to standard Drawing(s):

AS–1–81	Dated 11/27/81
DBR–2–73	Dated 4/10/73
PSBD–1–81 Revisions	Dated 6/20/89

And to Supplemental Specifications:

836	Dated 11/12/85

DESIGN LOADING:

Design Loading – HS20–44 and the alternate military loading

DESIGN STRESSES:

Concrete Class C	– Compressive Strength 4000 p.s.i.
Reinforcing Steel	– ASTM A615, A616, or A617 60 minimum yield strength 60,000 p.s.i.
Prestressed strand	– ASTM A416, f_s' = 270,000 p.s.i. Initial Stress = 0.70 f_s'
Prestressed Beam Reinforcing Steel	– ASTM A615, A616, A617 minimum yield strength 40,000 p.s.i.
Concrete for Prestressed Beams	– Unit Stress 2,200 p.s.i. compression, 444 p.s.i. tension.

DECK PROTECTION METHOD Type "D" waterproofing, asphalt concrete overlay, sealing of concrete surfaces, and steel drip strip.

EMBANKMENT CONSTRUCTION: The embankments shall be constructed to the level of the subgrade. Excavation may then be made for the abutments and piles driven.

UTILITY LINES All expenses involved in relocating the affected utility lines shall be borne by the owners. The contractor and owners are requested to cooperate by arranging their work in such a manner that inconvenience to either will be held to a minimum.

ITEM SPECIAL, SEALING OF CONCRETE SURFACES:
A concrete sealer shall be applied to the following concrete surfaces and as shown on the plans. The exposed vertical surface and the first 6 inches of the bottom horizontal surface of the fascia box beams, see sheet 6/10. For sealer limits on abutments, see sheet 7/10. See proposal note for surface preparation requirements, application rates, material requirements and application procedures.

BACKFILL STRUCTURE: No backfill shall be placed behind the abutments until the superstructure has been placed.

Backfill shall be placed in layers not exceeding 6" in compacted thickness. Backfill shall be brought up uniformly so as to keep equal pressure on opposite sides of the structure at all times.

REMOVAL OF EXISTING STRUCTURES:
When no longer needed to maintain traffic the existing structure shall be removed. Suitable waste masonry may be placed as bank protection as directed by the Engineer.

TRAFFIC MAINTENANCE :
Traffic maintenance can be found on project plan sheet 5/23.

PILES:
The design load for the abutment piles is 30 tons per pile.

ABUTMENT PILING:
Abutment piling bending stress may approach, reach or exceed yield stress.

APPROACH SLAB:
Approach slab shall be constructed as per standard drawing AS–1–81. Due to phase construction of the project, provide a minimum lap of 1'–8" or a mechanical connector (per Item 509 of C.M.S.) for the transverse top and bottom bars. If clearances will not permit either of the above, a non–protruding mechanical connector (per Item 509 of C.M.S) shall be provided. Mechanical connectors, if required, shall be included with approach slabs for payment.

MECHANICAL CONNECTORS
An approved type of mechanical connector for reinforcing bars shall be furnished. Installation of connectors shall conform with manufacturer's recommended procedures. Connectors for epoxy coated bars shall be epoxy coated. Coating for both connectors and bars shall conform to the same specification. Coatings which have been damaged or which otherwise do not meet specification with respect to color, continuity and uniformity may be repaired as directed by the Engineer or they shall be replaced with material which meets the specifications. Connectors shall conform with 509 and be included in the bid price per pound for Item 509.

3/10

THOMAS FOK & ASSOCIATES, LTD.
CONSULTING ENGINEERS, SURVEYORS & PLANNERS
3896 MAHONING AVE. YOUNGSTOWN, OHIO

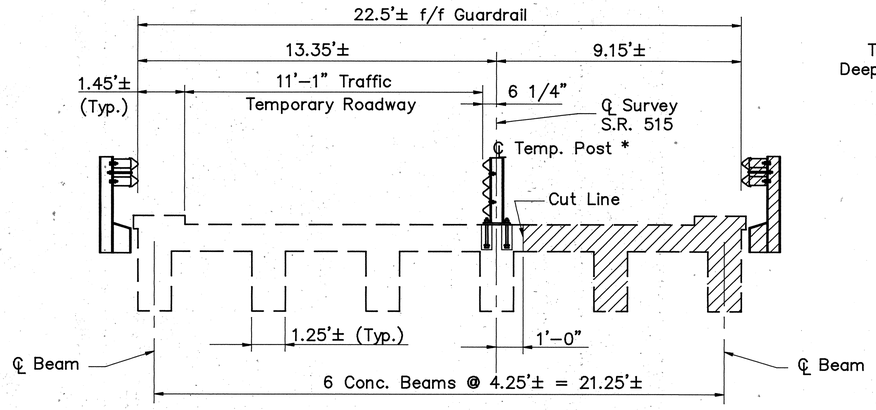
GENERAL NOTES & ESTIMATED QUANTITIES
BRIDGE NO. HOL–515–0054
OVER GOOSE RUN
HOLMES COUNTY OHIO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.L.	K.R.M.		J.D.V.	T.F.	
7/89	7/89		7/89	7/89	

REGION	STATE	PROJECT	
5	OHIO		

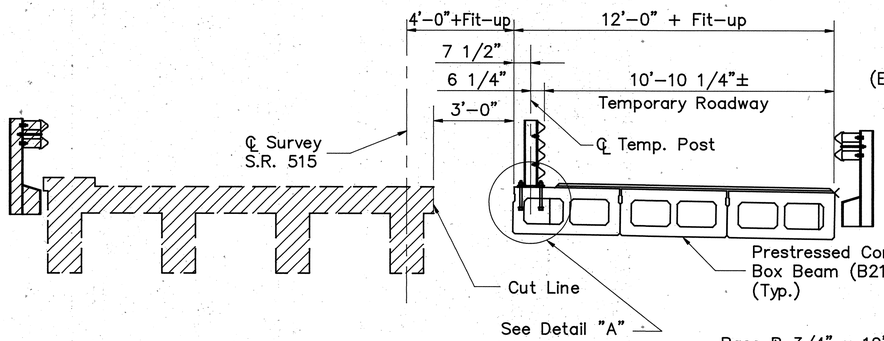
15/23

HOLMES COUNTY
HOL–515–0.51



PHASE 1

* Anchor Detail similar to Detail "A" except 2" Dia. holes to be drilled into existing beam for 7/8" x 1'–3" Bolts. Grout Bolts in place using non–shrinking grout.

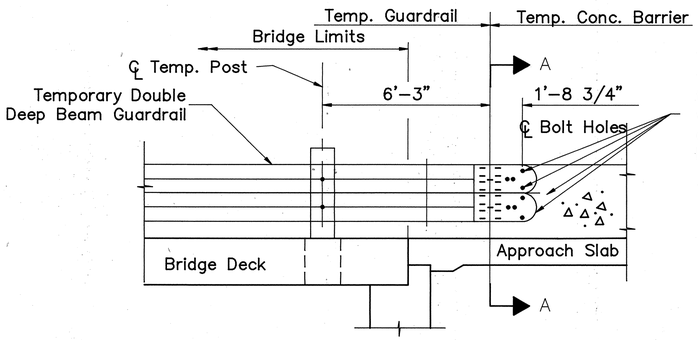


PHASE 2

STRUCTURE TO BE REMOVED

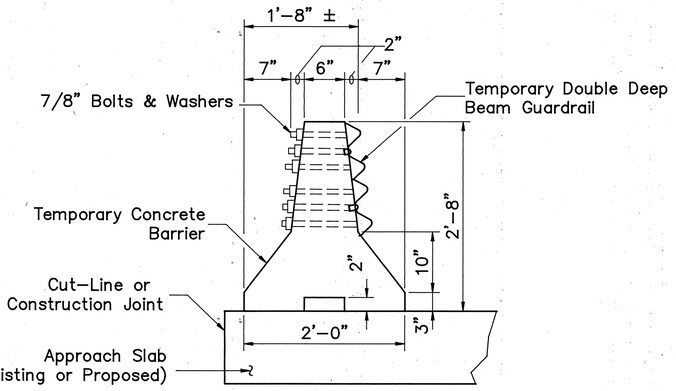
For Additional Details See Maintenance of Traffic Project Plan Sheet 5/23

The Temporary Bridge Railing shall be included in Item 614, Maintaining Traffic (as carried in Roadway Quantities), for payment.

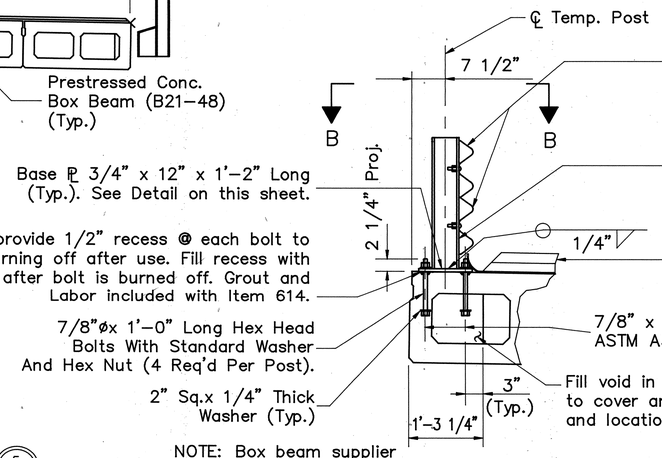


Terminal connector fastened with four–7/8" Dia. hexhead bolts through the Temp. Conc. Barrier with 3"x3"x1/2" plate washers and hex nuts on back of barrier.

TRANSITION DETAIL



SECTION A–A



NOTE: Box beam supplier to clear reinforcing with anchor bolts.

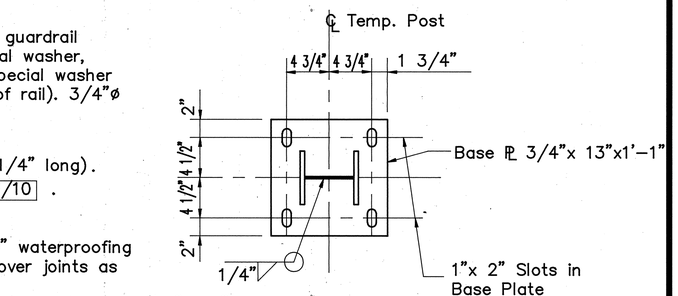
DETAIL "A"

Temporary double deep beam guardrail with 5/8" ø post bolts, special washer, lock washer and nut (place special washer between bolt head and face of rail). 3/4"ø hole in post (Typ.)

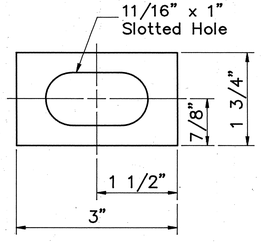
W6x25 Guardrail Posts (2'–5 1/4" long). Space as shown on sheet 6/10 .

Asphalt concrete and type "D" waterproofing (Note: provide waterproofing over joints as per Item 512.07).

NOTE: For box beam reinforcing see box beam detail on sheet 6/10 .



SECTION B–B



SPECIAL WASHER

4/10

THOMAS FOK & ASSOCIATES, LTD.
CONSULTING ENGINEERS, SURVEYORS & PLANNERS
3896 MAHONING AVE. YOUNGSTOWN, OHIO

PHASE CONSTRUCTION
BRIDGE NO. HOL–515–0054
OVER GOOSE CREEK
HOLMES COUNTY OHIO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.F. 7/89	A.F. 7/89	K.R.M. 7/89	F.D.V. 7/89	T.F. 7/89	

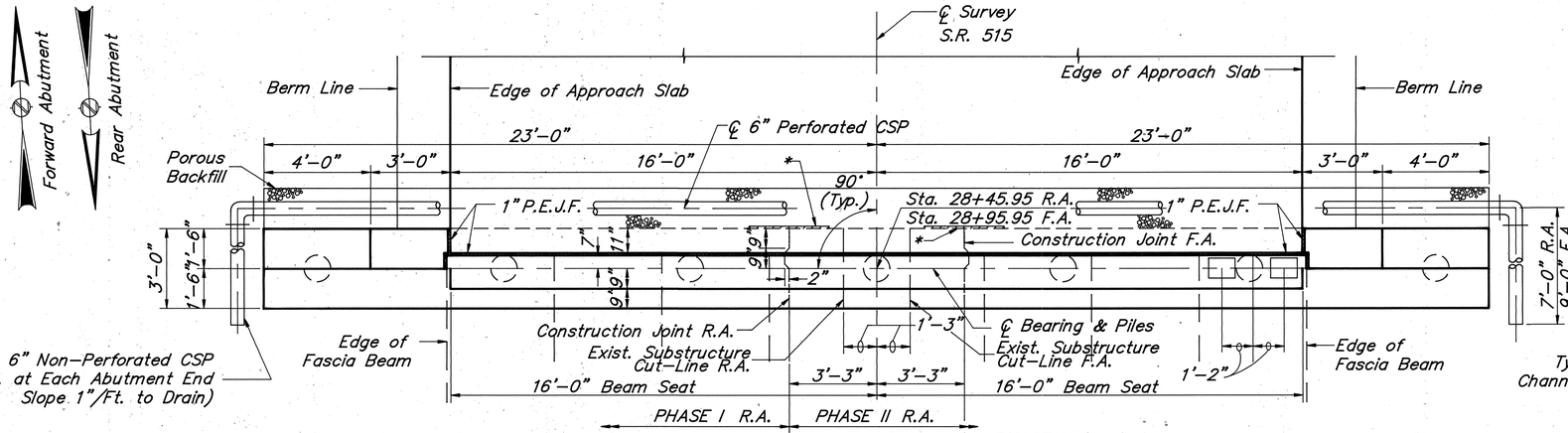
STAGE CONSTRUCTION NOTES:

1. *Install phase 1 traffic control devices.*
2. *Erect temporary guardrail and temporary concrete barrier and route all traffic over West portion of existing structure.*
3. *Drive temporary sheeting as required for excavation and removal of East portion of existing abutments and wingwalls.*
4. *Remove East portion of existing superstructure from cut line, perform excavation and remove East portion of abutments and wingwalls.*
5. *Construct new abutment bridge seats, portions of wingwalls and superstructure for East portion of proposed struture and portion of approach slabs.*
6. *Install phase 2 traffic control devices.*
7. *Erect temporary guardrail and temporary concrete barrier on newly constructed superstructure and route all traffic over new construction.*
8. *Relocate and drive temporary sheeting as required for excavation and remove the remaining West portion of the existing structure.*
9. *Complete construction of the West portion of the proposed abutment bridge seats, portions of wingwalls and superstructure.*
10. *Remove temporary sheeting.*
11. *Complete construction of the approach slabs.*
12. *Remove temporary barrier (temporary guardrail, as per plan) from East portion of new structure, and complete asphalt wearing surface.*
13. *404 surface course shall not be placed until superstructure is completed.*

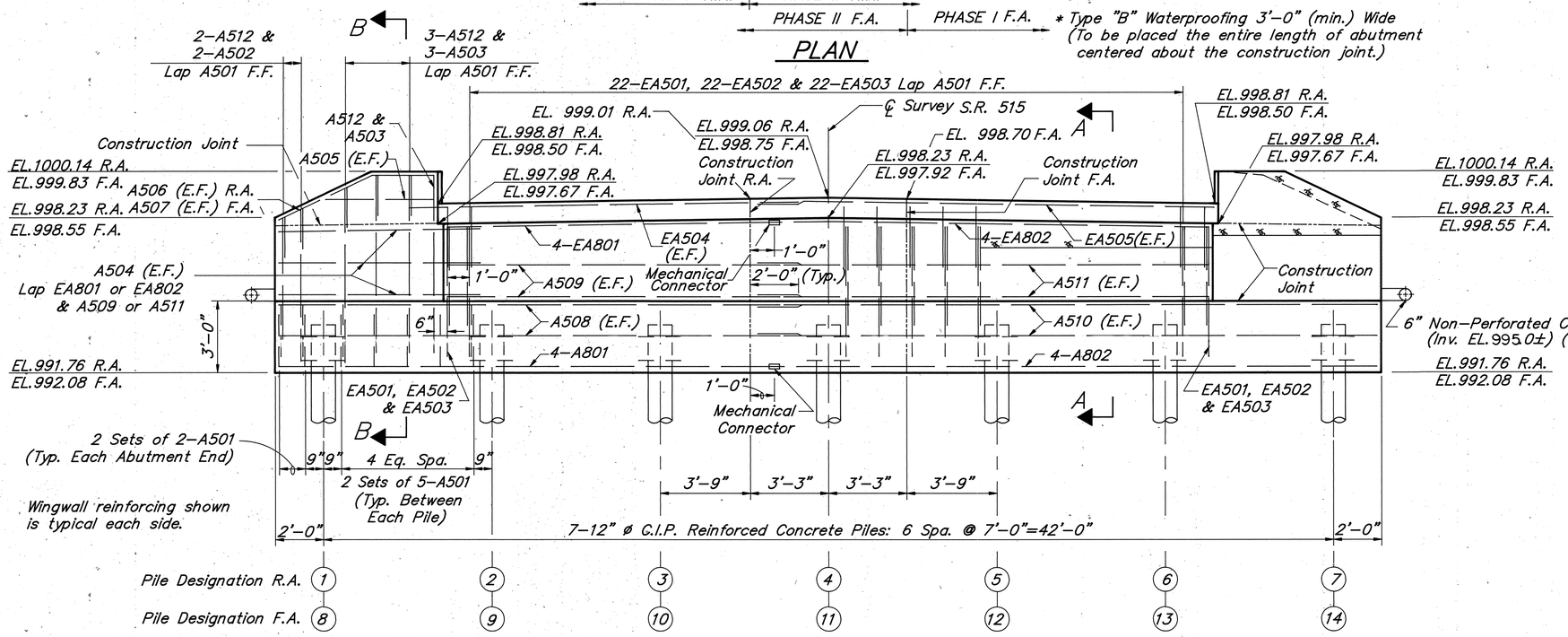
REGION	STATE	PROJECT	
5	OHIO		

16
23

HOLMES COUNTY
HOL-515-0.51

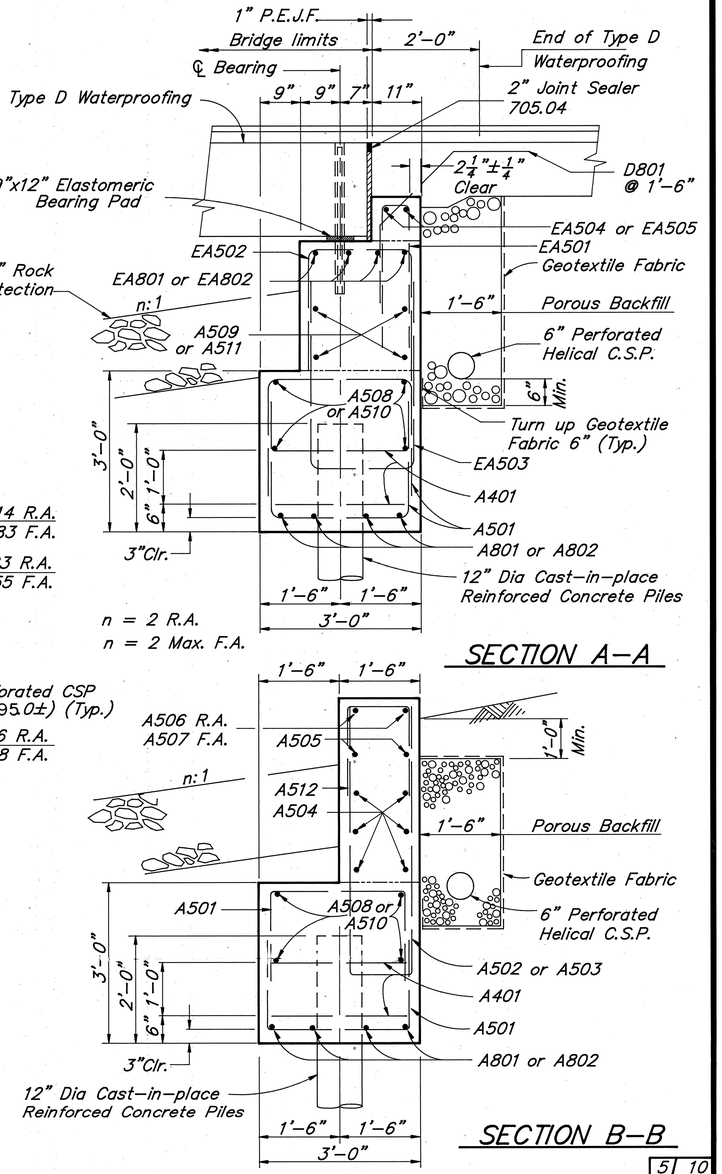


PLAN



ELEVATION

(Rear Abutment Shown Forward Abutment Similar)



SECTION A-A

SECTION B-B

NOTES: POROUS BACKFILL shall extend upward to the plane of the subgrade, to 1'-0" below the embankment surface and laterally to the end of the abutments. The backfill shall be durable gravel and encased in geotextile fabric.

BRIDGE SEAT REINFORCING steel in the vicinity of the bridge seat shall be accurately placed to avoid interference with the drilling of the anchor bar dowel holes.

CONCRETE above the construction joints at the level of bridge seat shall not be placed until the beams have been erected.

GEOTEXTILE FABRIC Type 'A' shall conform to item 712.09 and shall be included with Item 518, Porous Backfill, for payment.

BAR SPLICES: Lap No. 5 Bars 1'-8" min.
Lap No. 8 Bars 3'-3" min.

D801 bars to be placed parallel to ℄ Roadway at 1'-6" c/c measured perpendicular to ℄ Roadway.

LEGEND

N.F. = Near Face
F.F. = Far Face
E.F. = Each Face
R.A. = Rear Abutment
F.A. = Forward Abutment
P.E.J.F. = Preformed Expansion Joint Filler

5 10

THOMAS FOK & ASSOCIATES, LTD.
CONSULTING ENGINEERS, SURVEYORS & PLANNERS
3896 MAHONING AVE. YOUNGSTOWN, OHIO

ABUTMENT DETAILS

BRIDGE NO. HOL-515-0054
OVER GOOSE CREEK

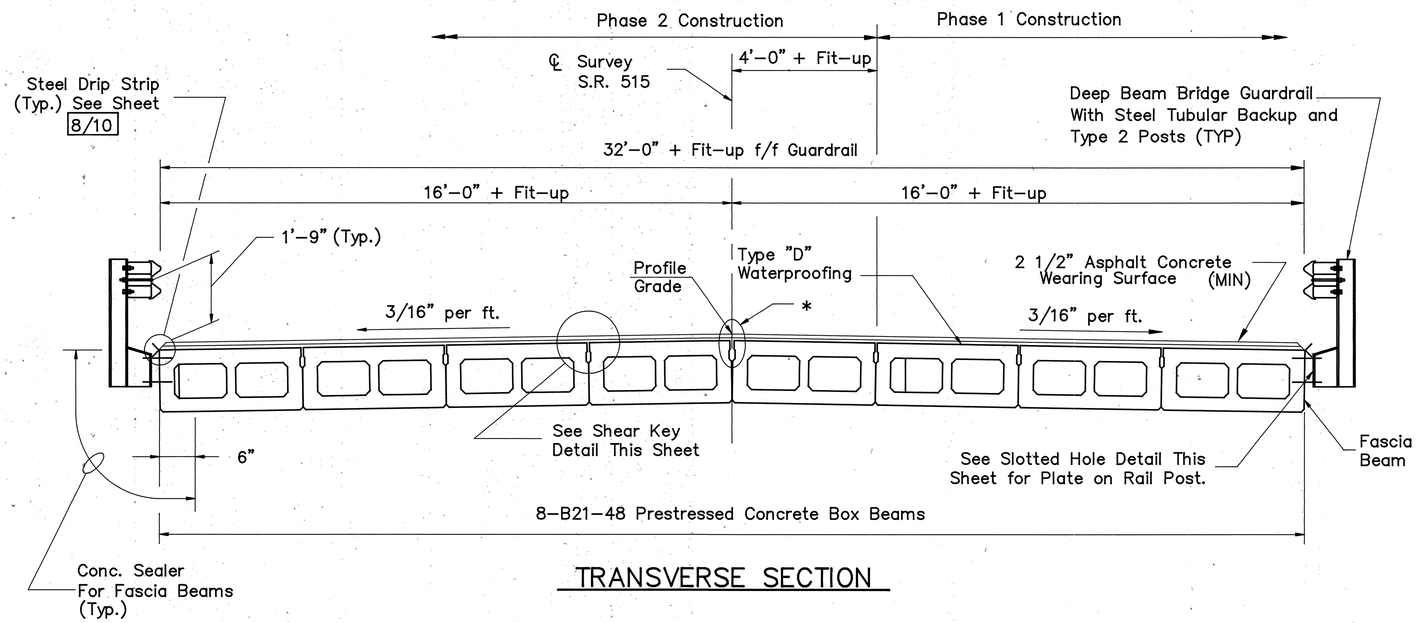
HOLMES COUNTY OHIO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.L. 7/89	A.L. 7/89		J.D.V. 7/89	T.F. 7/89	

REGION	STATE	PROJECT	
5	OHIO		

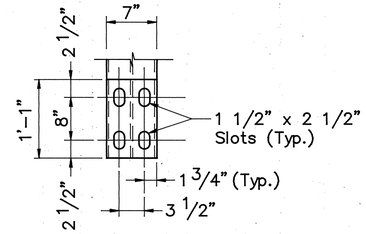
17
23

HOLMES COUNTY
HOL–515–0.51

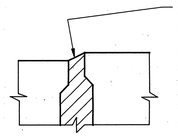


TRANSVERSE SECTION

* Slope sides of beams located at crown point (spread forms at top) to achieve surface contact.

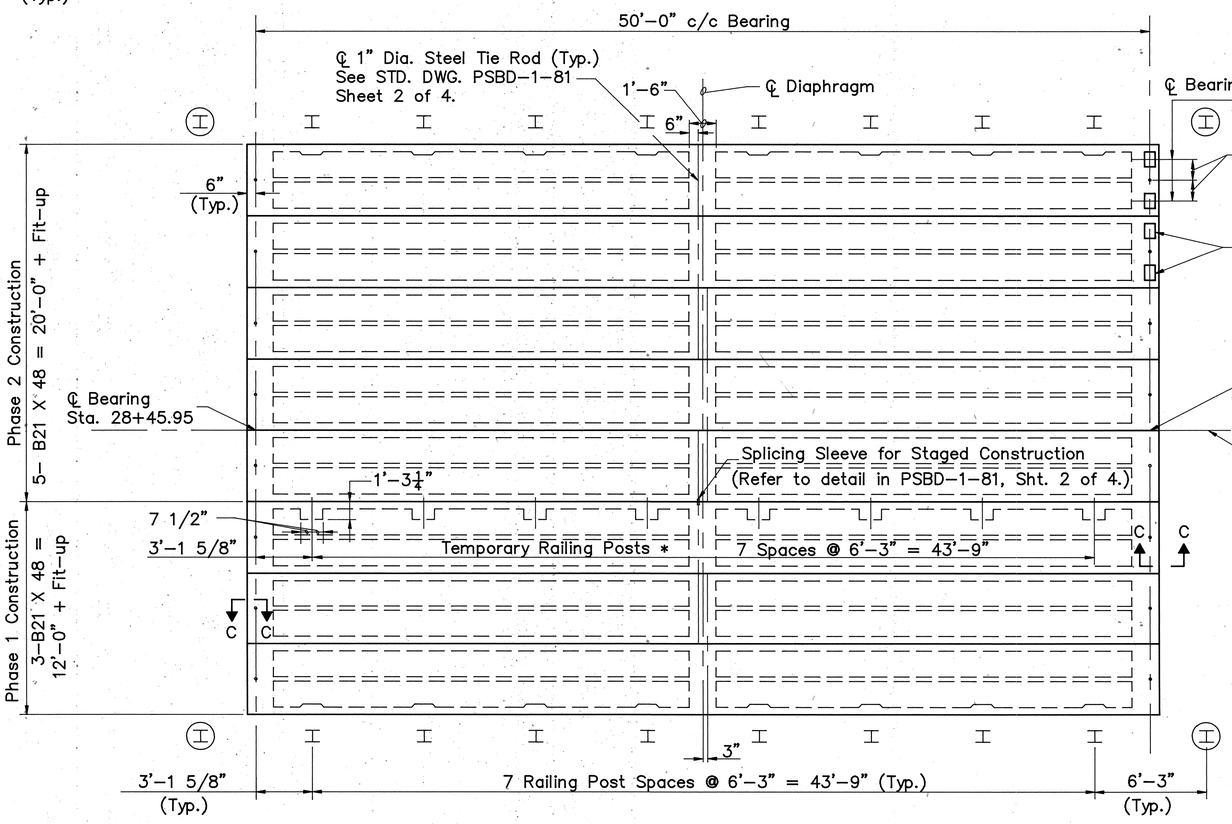


SLOTTED HOLE DETAIL FOR
PLATE ON RAIL POST

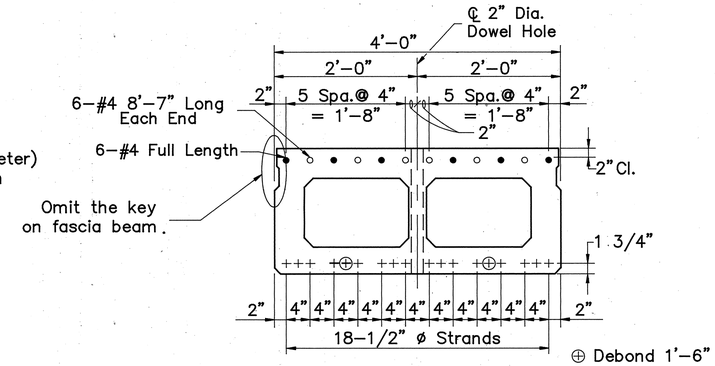


Shear keys shall be mortared on a finished plane between the top edges of the adjacent beams where vertical offset (within tolerance) occurs.

SHEAR KEY DETAIL



PLAN



B21–48 BOX BEAM

* See Sheet 4/10 for Post Attachment Details.

See section C–C on sheet 7/10.
See additional superstructure details on sheet 7/10 and 8/10.

6 / 10

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CONSULTING ENGINEERS, SURVEYORS & PLANNERS
3896 MAHONING AVE. YOUNGSTOWN, OHIO

SUPERSTRUCTURE DETAILS
BRIDGE NO. HOL–515–0054
OVER GOOSE CREEK

HOLMES COUNTY OHIO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.L. 7/89	K.R.M. 7/89		J.D.V. 7/89	T.F. 7/89	

REGION	STATE	PROJECT	
5	OHIO		

HOLMES COUNTY
HOL-515-0.51

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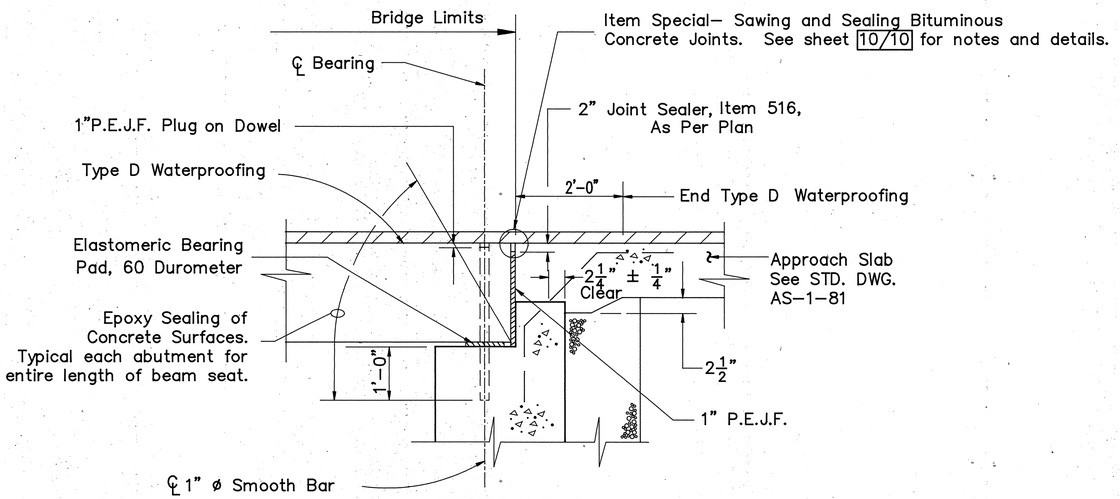
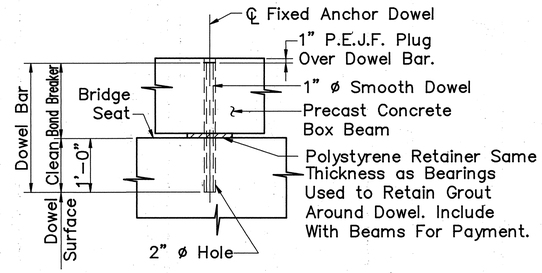
23



SECTION C-C

(See sheet 6/10 .)



FIXED ANCHOR DOWEL DETAIL

ABUTMENTS

PROCEDURE: Place Polystyrene Grout Retainer. Drill and clean dowel holes. Then place non-shrinking grout, dowel, and 1" minimum P.E.J.F. plug.

7/10

THOMAS FOK & ASSOCIATES, LTD.
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3896 MAHONING AVE. YOUNGSTOWN, OHIO

SUPERSTRUCTURE DETAILS
BRIDGE NO. HOL-515-0054
OVER GOOSE CREEK

HOLMES COUNTY *OHIO*

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.L. 7/89	K.R.M. 7/89		F.D.V. 7/89	T.F. 7/89	

REGION	STATE	PROJECT	
5	OHIO		

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HOLMES COUNTY
HOL–515–0.51

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.

ELASTOMERIC BEARING PADS shall be 60 Durometer Hardness.

FABRICATOR is allowed to change the width of beams on bridge, if there is some advantage in doing so. However, the bridge width must remain the same, bearings will be redesigned by a professional engineer and there will be no additional cost to the State. The revised plans must be submitted for approval by the Director.

FASCIA BEAMS: To avoid interference with the anchors for the bridge railing posts, the longitudinal reinforcing bars near the fascia shall be shifted as necessary. Fabricator's shop drawings shall show complete details of the beam reinforcement. The keyway on exterior side of the fascia beams shall be omitted.

The following details from 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.
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" wide non–composite beams. (B21–48)

The following notes from PSBD–1–81 apply to this project:

Sheet 1 of 4: Transverse tie rods, galvanizing, anchor dowels, end of beams, 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.

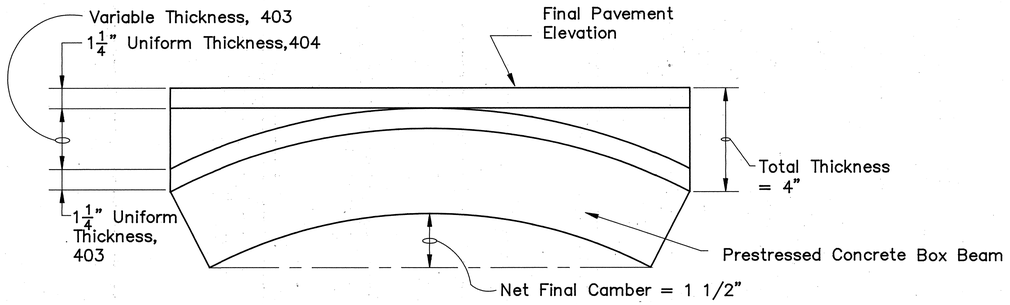
PRESTRESSED CONCRETE BOX BEAM: Beam manufacturer will take extra care in storing beams prior to shipment to site. They shall be stored in the position which shall correspond with their erected position.

The fabricator's shop drawings shall show complete details of the beam reinforcement.

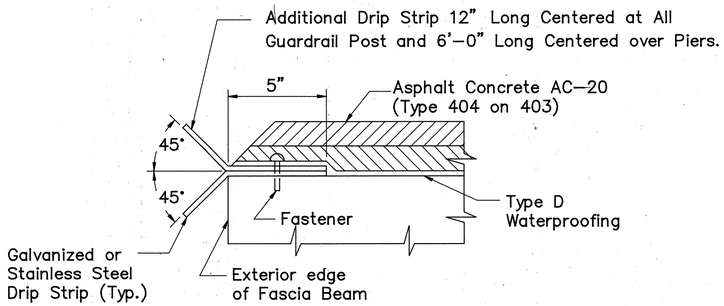
CAMBER: Calculated camber at time of paving, including allowance for camber growth due to creep, is 1 3/4". Calculated deflection due to weight of surface course and railing is 1/4". Net final camber of beam is 1 1/2". This is 1 1/2" in excess of the amount required to place the top of the beam parallel to the profile grade. This excess amount shall be compensated for by thickening the 403 leveling course from 1 1/4" at the center of of spans to 2 3/4"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.

DRIP STRIP : Prior to applying type D waterproofing, a bent drip strip shall be fastened at 1'–6" c/c maximum with 1 1/4" x 5/32" x 1/4" flat head drive pins and washers (length x shank dia. x head dia.) or no.10 galvanized screws and expansion anchors, subject to the approval of the engineer. The strips shall be placed the full length of deck, ending at the face of the wingwall. 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 item 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, sq.ft., steel drip strip, which shall include all materials, labor, tools and incidentals necessary to complete the item.



ASPHALT THICKNESS DIAGRAM
TYPICAL AT EACH SPAN



TYPICAL DRIP STRIP DETAIL

8 10

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SUPERSTRUCTURE DETAILS
BRIDGE NO. HOL–515–0054
OVER GOOSE CREEK
HOLMES COUNTY OHIO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.L. 7/89	A.L. 7/89		J.D.V. 7/89	T.F. 7/89	

REGION	STATE	PROJECT	
5	OHIO		

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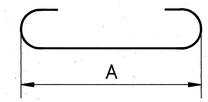
HOL–515–0.51
HOLMES COUNTY

REINFORCING STEEL

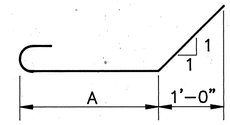
MARK	NUMBER	LENGTH	TYPE	A	B	C	D	INCR.	REAR ABT. NO.	FRWD. ABT NO.	WEIGHT LBS.
ABUTMENTS											
A401	14	8'–8"	9	1'–9"	2'–4¾"				7	7	81
A501	136	6'–9"	2	2'–2"	2'–8"	2'–2"			68	68	957
A502	8	11'–3"	2	5'–2"	1'–2"	5'–2"			4	4	94
A503	16	13'–11"	2	6'–6"	1'–2"	6'–6"			8	8	232
A504	24	8'–8"	ST.						12	12	217
A505	8	4'–6"	ST.						4	4	38
A506	4	6'–10"	17	4'–3½"	2'–6½"	5¾"			4		28
A507	4	6'–7"	17	4'–0½"	2'–6½"	4"				4	27
A508	8	21'–7"	ST.						4	4	180
A509	8	14'–7"	ST.						4	4	121
A510	8	25'–9"	ST.						4	4	215
A511	8	18'–9"	ST.						4	4	157
A512	24	4'–11"	2	2'–0"	1'–2"	2'–0"			12	12	123
* A801	8	20'–7"	ST.						4	4	440
A802	8	25'–1"	ST.						4	4	536
D801	48	4'–6"	15	1'–8"					24	24	577
										TOTAL	4023

EPOXY COATED REINFORCING STEEL

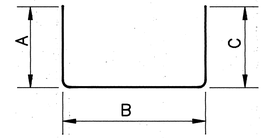
ABUTMENTS											
EA501	48	5'–0"	2	2'–4"	7"	2'–4"			24	24	250
EA502	48	6'–6"	2	2'–5"	1'–11"	2'–5"			24	24	325
EA503	48	9'–10"	2	4'–1"	1'–11"	4'–1"			24	24	492
EA504	4	15'–9"	ST.						2	2	66
EA505	4	19'–11"	ST.						2	2	83
* EA801	8	13'–7"	ST.						4	4	290
EA802	8	18'–1"	ST.						4	4	386
										TOTAL	1892



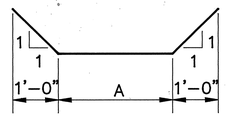
TYPE 1



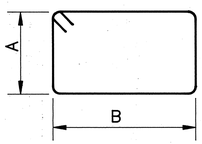
TYPE 12



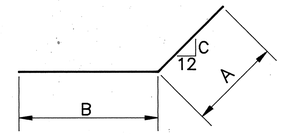
TYPE 2



TYPE 15



TYPE 9



TYPE 17

NOTES :

BAR SIZE : The bar size is indicated in the bar mark. The first digit where three digits are used, and the first two digits where four are used, indicate the bar size number. For example: A506 is No. 5 size bar and P1101 is a No. 11 size bar.

Bars with the prefix E denote epoxy coated bars.
ST. = Straight

* *Provide mechanical connectors.*

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THOMAS FOK & ASSOCIATES, LTD.
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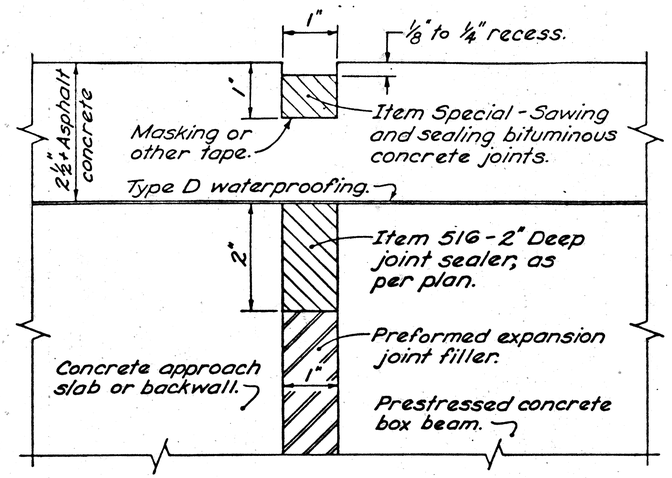
3896 MAHONING AVE. YOUNGSTOWN, OHIO

REINFORCING STEEL LIST

BRIDGE NO. HOL–515–0054
OVER GOOSE CREEK
HOLMES COUNTY OHIO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.L.	A.L.		F.D.V.	T.F.	
6/89	6/89		6/89	6/89	



SEALING OF JOINTS AT ABUTMENTS

ITEM SPECIAL - SAWING AND SEALING BITUMINOUS CONCRETE JOINTS

1) Description:

This work shall consist of cutting and sealing transverse joints on the new bituminous concrete overlay of box beam bridges. Bituminous concrete joints shall be constructed directly over, and in line with, the existing underlying transverse abutment joint of the box beams.

2) Materials:

The joint sealant shall meet the requirements of ASTM Specification D3405, Joint sealants, Hot-poured, for Concrete and Aspalt Pavements. Acceptable alternate materials are:

Roof-Flex 176, polyurethane, as produced by the Carboline Company, 350 Hanley Industrial Court, St. Louis, Missouri 63144 (Roger Zubal, 614-877-3406); a silicone sealant meeting Federal Specifications TT-S-001543A Class A (one-part silicone sealants) and TT-S-00230C Class A (one-component sealants), such as those manufactured by General Electric, Silicone Products Division, 6155 Rockside Rd., Rockside Square I, Independence, Ohio 44131 (John Fromholtz, 216-447-1750) or Dow Corning, 3737 Park East, Beachwood, Ohio 44122 (Robert Ruppel, 216-464-2330); or Sof-Seal, a cold-applied, low-modulus, two-component polymeric compound horizontal sealant as manufactured by W. R. Meadows, Inc., P.O. Box 543, Elgin, Illinois 60121 (Robert Cameron, 312-683-4500). Sealant will be accepted on the basis of the manufacturer's certification that it conforms to the requirements of these specifications.

3) Construction Details:

A) General: The contractor shall conduct his operation so that the cutting, cleaning and sealing of transverse joints is a continuous operation that will be performed as soon as practical after the paving, but no later than four (4) days after placement of the asphalt concrete surface course. Traffic shall not be allowed to knead together or damage the joint cut prior to sealing.

B) Cutting of Transverse Joints: The contractor shall saw or rout transverse joints to the dimensions shown in the details on this sheet. The cut joints shall lie directly above each box beam abutment joint. The joint location shall be marked on the new asphalt surface with a chalk line, or by some other acceptable method, before cutting. Details of the method for locating and accurately marking the proposed cuts shall be subject to the approval of the Engineer prior to starting any surfacing or paving operations.

The blade or blades shall be of such size that the full width and depth of the cut can be made with one pass. Dry or wet cutting will be allowed. Joints shall extend the full width of the bridge.

C) Cleaning Joints: Dry sawed joints shall be thoroughly cleaned with a sufficient amount of compressed air to remove any dirt, dust, or deleterious matter. Wet sawed joints shall be washed clean of all cuttings by flushing with a jet of water and with other tools as necessary. After flushing, the joint shall be blown out with compressed air. When the surfaces are thoroughly clean and dry, and just prior to placing the joint sealer, compressed air having a pressure of at least 90 p.s.i. shall be used to blow out the joint and remove all traces of dust.

In the event freshly cut joints become contaminated before they are sealed, they shall be recleaned of all foreign material by high pressure water jet.

D) Sealing Joints: The joint shall be thoroughly dried before the sealant is placed. After cleaning and drying, a bond-breaker (tape) shall be applied to the bottom of the groove.

Hot-poured joint sealant material shall be heated in a kettle or melter constructed as a double boiler, with the space between the inner and outer shells filled with oil or other heat transfer medium. Positive temperature control and mechanical agitation shall be provided. Heating must be in strict accordance with the manufacturer's recommendation. Joint sealer material shall never be kept heated at the pouring temperature for more than four (4) hours and shall never be reheated. Sealer left in the applicator at the end of a day's work shall be removed and discarded.

Hot-poured sealant shall be applied immediately through a nozzle, which must project into the sawed joint, filling from the bottom up. The seal shall completely fill the joint in such a manner that, after cooling, the level of the sealer will not be higher than 1/8" below the pavement surface. Any depression in the cooled seal greater than 3/16" shall be brought up to the specified limit by further addition of hot-poured sealant. Care shall be taken in the sealing of the joints so that the final appearance will present a neat fine line.

FHWA REGION	STATE	PROJECT	
5	OHIO		

21/23

HOLMES COUNTY
HOL-515-0.51

The cold applied sealant materials (polyurethane, silicone, and polymeric compounds) shall be installed as per manufacturers' recommendations, or as directed by the Engineer. The sealant shall be installed when the ambient temperature is 40 degrees F or higher. Traffic shall not be allowed on the joint for one hour after application of the sealant.

4) Method of Measurement:

The quantity to be paid for under this item will be the number of linear feet of joints sawed and sealed as per the above requirements.

5) Basis of Payment:

The unit price per linear foot for Item Special - "Sawing and sealing bituminous concrete joints" shall include the cost of all labor, materials, and equipment necessary to complete the work, including the furnishing and placing of the joint sealer material.

ITEM 516 - 2" DEEP JOINT SEALER, AS PER PLAN

This item shall meet the material (para. 2) and sealing (para. 3D) specifications of Item Special - Sawing and sealing bituminous concrete joints.

REVISIONS
2-8-84
3-10-87
4-14-87
6-16-87

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGES AND STRUCTURAL DESIGN

10/10

ABUTMENT JOINTS IN BITUMINOUS CONCRETE, BOX BEAM BRIDGES
BRIDGE NO. HOL-515-0054
OVER GOOSE CREEK

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
JEB	MJB		WTF	WJJ	2-2-84

PROPERTY AND UTILITY MAP
HOLMES COUNTY
WALNUT CREEK TOWNSHIP
SEC. 11, 20, T-9-N, R-5-W

FHWA REGION	STATE	STATE PROJECT NUMBER	
5	OHIO	11952(0)	

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23

HOLMES COUNTY
HOL 515 - 0.51

1
2

RIGHT OF WAY PLAN

UTILITY OWNERS

SYMBOL	UTILITY	ADDRESS	TELE. NO.	IDENTIFIER
P	ELECTRIC	HOLMES-WAYNE ELECTRIC CO-OP P.O. BOX 112 MILLERSBURG, OHIO 44654	(216) 674-1053	(E)
T	TELEPHONE	GTE TELEPHONE OPERATIONS, NORTH AREA 715 COMMERCIAL PARKWAY P.O. BOX 399 DOVER, OHIO 44622	(216) 364-0363	(T)
G	GAS	COLUMBIA GAS TRANSMISSION P.O. BOX 943 COLUMBUS, OHIO 43216	(614) 460-2400	(G)

NOTE:

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

SECT. 19 / SECT. 20 — SECT. 12 / SECT. 11 — I.P. FD. & USED — 1014.88' S.E. Cor. of S.E.M. Erb Prop. to Sec. Cor. V. 216 P. 949

SECTION 12 / SECTION 11

T.H. 406

SAM A. AND MIRIAM ERB
63.654 Ac.

SAM A. AND MIRIAM ERB

ESM'T RECORDED - VOL. 181, PG. 261 - DEED, HOLMES COUNTY REC.

CREEK

GOOSE

ESM'T REC. - VOL. 181, PG. 259 - DEED, H.C.R.

1-WD, 2-WD, 3-WD

25+00, 27+00, 29+00, 31+00

BEGIN PROJECT STA. 27+00 BRZ-3803(1)

BEGIN R/W ACQUISITION STA. 27+20

END PROJECT STA. 30+00 BRZ-3803(1)

END R/W ACQUISITION STA. 30+00

Ex. R/W

S.R. 515

TO WALNUT CREEK

TO TRAIL OHIO

0.475 Ac.

2.35 Ac.

SAM A. AND MIRIAM ERB

SECT. 12 / LOT 23 — LOT 23 / LOT 22 — SECT. 11 / LOT 22

10.40 Ac.

2.53 Ac.

① HENRY N. AND MARY MILLER
59.8225 Ac.

③ URA J. & ADA BURKHOLDER

SECTION 20 / SECTION 11

URA J. & ARA BURKHOLDER
83.627 Ac.

T.H. 406

1.398 Ac.

1.00 Ac.

11.00 Ac.

10.63 Ac.

SECT. 11 / LOT 22 — LOT 22 / LOT 21

15.6071 Ac.

20.03 Ac.

MATCH LINE A

MATCH LINE A

SECT. 20 / SECT. 11

200 100 0 200
SCALE IN FEET

REV	DATE	DESCRIPTION
Dist 11	5-7-90	Rev. Record Area For Par. 1

COMPLETION DATE: 3-19-90

PROPERTY AND UTILITY MAP

SUMMARY OF ADDITIONAL RIGHT OF WAY

NOTE: RECORD AREA AFTER OUTSALES, MINUS TOTAL P.R.O., MINUS NET TAKE, EQUALS NET RESIDUE

PARCEL	OWNER	SHEET NO.	OWNERS RECORD BOOK	OWNERS RECORD PAGE	PERM. PARCEL NO.	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUCTURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS AND PERSONALTY	AS ACQUIRED BOOK	AS ACQUIRED PAGE
1-WD	HENRY N. AND MARY MILLER	2	216	71	26-01361	95.4356Ac.	1.122 Ac.	0.259 Ac.	0.173 Ac.	0.086 Ac.	—	94.2276 Ac.		STATE	AREA BEING ACQUIRED IS FROM A 59.8225 Ac. TRACT. (26-01361)		
			155	427	26-00514												
			133	549	26-01359												
2-WD	SAM A. AND MIRIAM ERB, REMAINDERMEN	2	216	919	26-01325	76.584 Ac.	2.907 Ac.	0.177 Ac.	0.092 Ac.	0.085 Ac.	—	73.592Ac.	—	STATE	AREA BEING ACQUIRED IS FROM A 63.6540 Ac. TRACT (26-01325)		
	ALBERT D. AND ELLA ERB, LIFE ESTATE				26-00113												
					26-00115												
3-WD	URA J. AND ADA BURKHOLDER	2	137	365	26-00072	85.977 Ac.	2.149 Ac.	0.204 Ac.	0.121 Ac.	0.083 Ac.	—	—	83.745Ac.	STATE	AREA BEING ACQUIRED IS FROM A 83.827 Ac. TRACT. (26-00072)		
					26-00073												
		2	229	451	26-00271	21.630 Ac.	0	0	0	0	—	—	21.630 Ac.				
					26-00272	107.607 Ac. TOTAL							105.375Ac. TOTAL				

FHWA REGION	STATE	STATE PROJECT NUMBER	
5	OHIO	11952 (0)	

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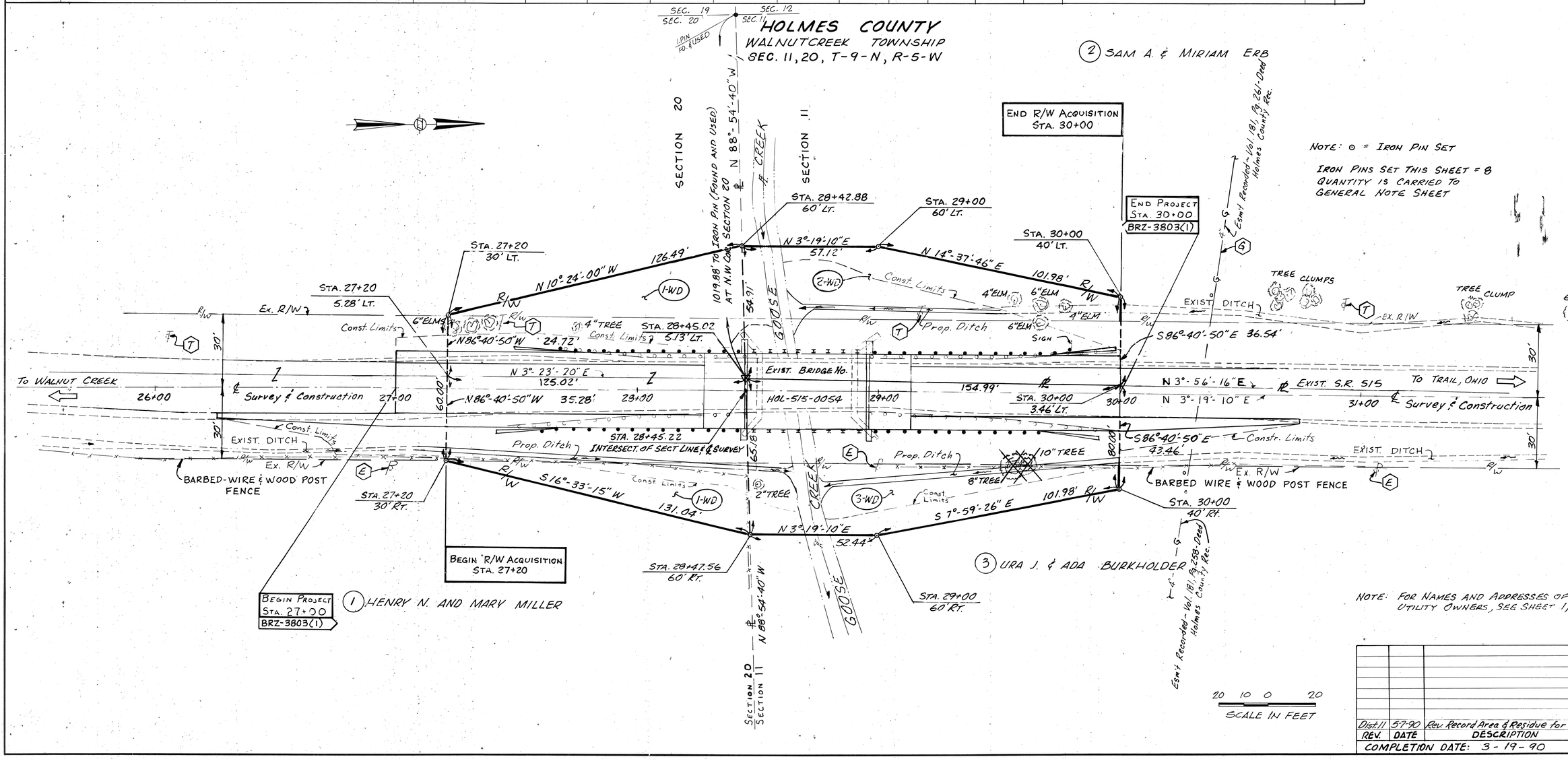
HOL - 515 - 0.51

2
2

RIGHT OF WAY PLAN

TOTAL NUMBER OF
3 OWNERSHIPS
0 TOTAL TAKES
0 OWNERSHIPS WITH STRUCTURES
0 OWNERSHIPS WITH "P" ITEMS



NOTE: ⊙ = IRON PIN SET

IRON PINS SET THIS SHEET = 8
QUANTITY IS CARRIED TO GENERAL NOTE SHEET

NOTE: FOR NAMES AND ADDRESSES OF UTILITY OWNERS, SEE SHEET 1/2.

REV.	DATE	DESCRIPTION
Dist 11	5-7-90	Rev. Record Area & Residue for Par. 1 & 3

COMPLETION DATE: 3-19-90

SUMMARY OF ADDITIONAL RIGHT OF WAY AND DETAIL SHEET

TE-118
600-6-73

BRZ-3803(1)

HOLMES COUNTY
HOL-515-0.51

1/3

GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED IN THE HIGHLY DISSECTED UNGLACIATED PORTION OF THE ALLEGHENY PLATEAU REGION, ON THE RELATIVELY BROAD FLOODPLAIN OF AND OVER GOOSE CREEK, IN AN AREA WHERE RELATIVELY DEEP VALLEY AND ALLUVIAL DEPOSITS OVERLIE BEDROCK, OF MISSISSIPPIAN AGE.

EXPLORATION

THE EXPLORATION CONSISTED OF TWO DRIVE SAMPLE BORINGS MADE BY MEANS OF A MECHANICALLY-POWERED HOLLOW STEM ROTARY AUGER MOUNTED ON A MOBILE PLATFORM, PERFORMED BETWEEN JUNE 14 AND 16, 1988.

INVESTIGATIONAL FINDINGS AND OBSERVATIONS

THE TEST BORINGS ENCOUNTERED INTERVALS OF LOOSE TO MEDIUM DENSE UNSTRATIFIED BASIC SILTS, MODIFIED WITH SANDS AND GRAVELS VARYING AMOUNTS OF EACH OTHER THAT GRADUALLY INCREASE IN DENSITY WITH INCREASE IN DEPTH. TEST BORING NO. B-1 (MADE IN THE GENERAL VICINITY OF THE REAR ABUTMENT) PENETRATED TO A DEPTH OF 51.5 FEET, ELEVATION 949.9 FEET AND WAS TERMINATED AFTER PENETRATING IN EXCESS OF 6.0 FEET OF MATERIAL REQUIRING 27 OR MORE BLOWS PER FOOT IN THE STANDARD PENETRATION TEST IMMEDIATELY PRIOR TO TERMINATION. TEST BORING NO. B-2 (MADE IN THE GENERAL VICINITY OF THE FORWARD ABUTMENT) PENETRATED TO A DEPTH OF 51.5 FEET, ELEVATION 949.9 FEET AND WAS TERMINATED AFTER ENCOUNTERING MATERIAL REQUIRING IN EXCESS OF 59 BLOWS PER FOOT IN THE STANDARD PENETRATION TEST.

FREE WATER WAS ENCOUNTERED IN TEST BORING NO. B-1 AT ELEVATION 984.4 FEET AND IN TEST BORING NO. B-2 AT ELEVATION 981.0 FEET.

ORGANIC MATERIAL WAS ENCOUNTERED IN BOTH BORINGS TO A DEPTH OF 18.0 FEET.

NO TEST PENETRATED TO BEDROCK SURFACE.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y/Z — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  - X = Number of Blows for First 6 inches.
  - Y = Number of Blows for Second 6 inches.
  - Z = Number of Blows for Third 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Mudstone or Claystone
- Mudstone or Claystone
- Weathered Shale
- Shale
- Weathered Siltstone
- Siltstone
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone
- Boulders or Cobbles

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and 5-foot depth intervals, driven by means of a 140-pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 18 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in three 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
12"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE - ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN ON THE STRUCTURE FOUNDATION INVESTIGATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE BUREAU OF TESTS AT 1600 WEST BROAD STREET, THE PAVEMENT AND SOILS SECTION OF THE BUREAU OF LOCATION AND DESIGN OR IN THE BRIDGE BUREAU AT 25 SOUTH FRONT STREET.

Revised 7/31/89

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS — TESTING LABORATORY
1600 WEST BROAD STREET, COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HOL-515-0052
OVER GOOSE CREEK
SEC. HOL-515-0.52

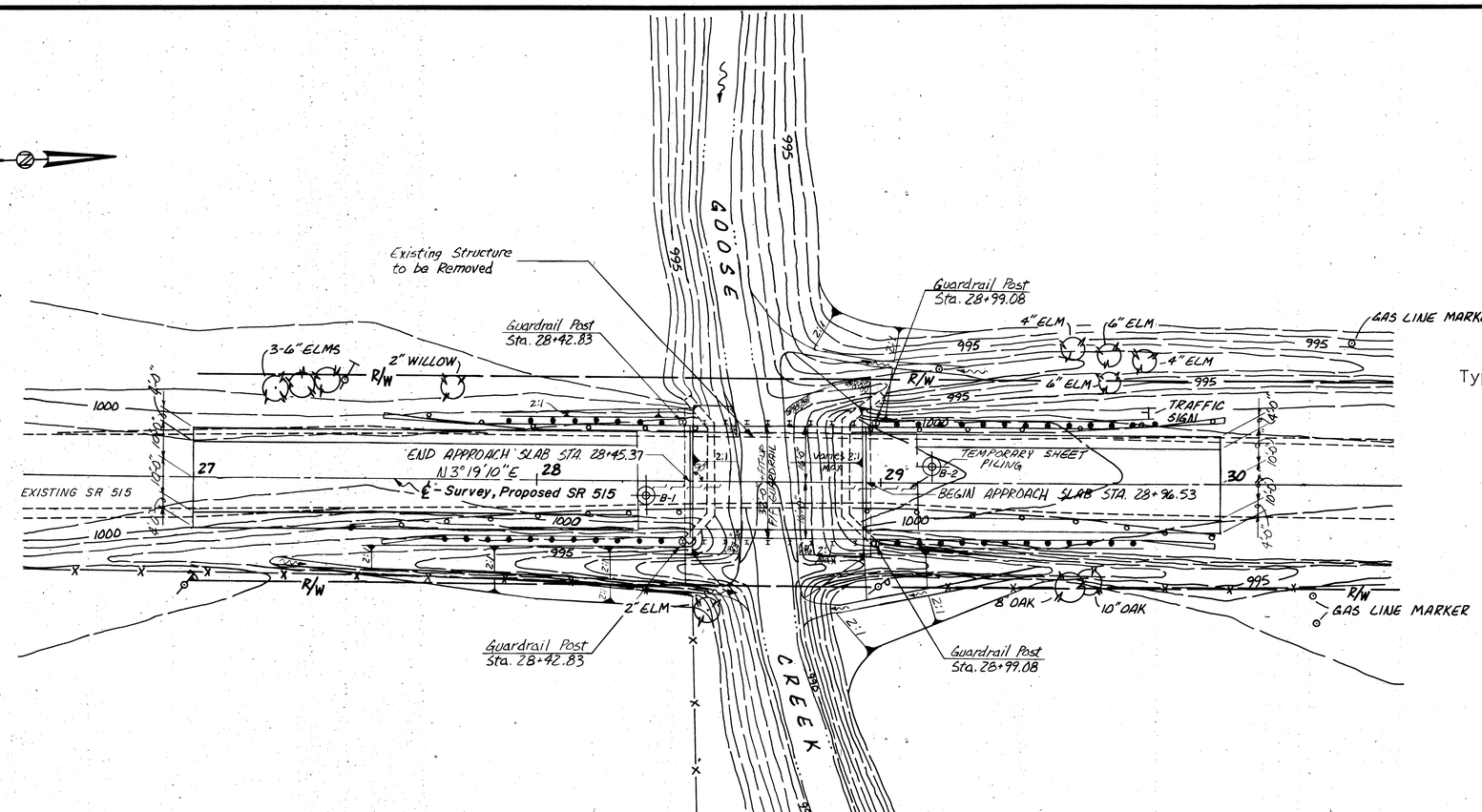
CHECKED BY	REVIEWED BY	DATE
A. E.	R. D. R.	7/22/88

REGION	STATE	PROJECT	
5	OHIO		

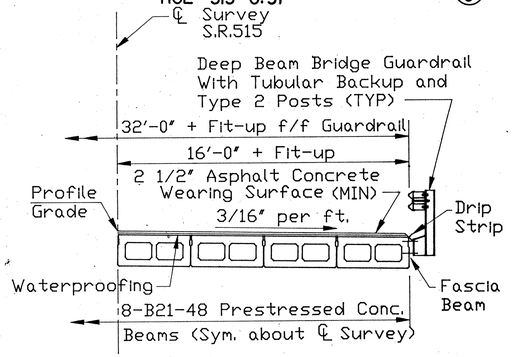
HOLMES COUNTY
HOL - 515 - 0.51

NOTE:
Earthwork Limits Shown are approximate. Actual Slopes Shall conform to plan cross-sections.

Boring Location

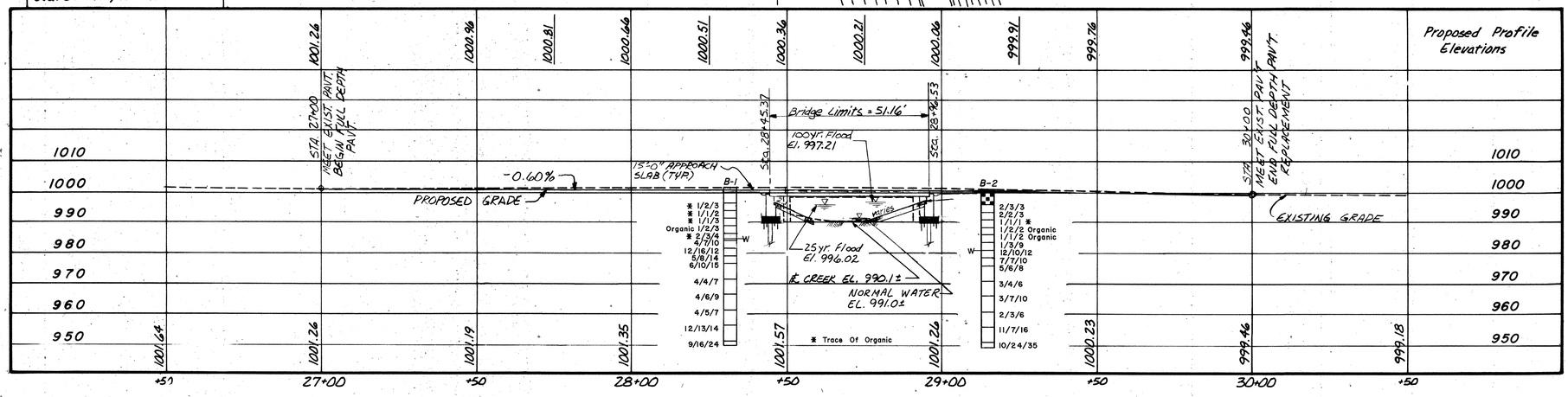


PLAN



HALF TRANSVERSE SECTION

BENCHMARK EL. - 1001.63
"X" Cut in N.E. Corner of Concrete Abutment Backwall
Sta. 28+90, 11' Rt.



PROFILE ALONG ℄ SURVEY S.R. 515

HYDRAULIC DATA

INTERVAL (YEAR)	ELEV. (FT.)	Q (C.F.S.)	V (FT./SEC.)
25	996.02	774	4.48
100	997.21	1100	4.78

DRAINAGE AREA = 4.43 SQ. MI.

EXISTING STRUCTURE

TYPE: SINGLE SPAN CONCRETE SLAB AND BEAMS ON CONCRETE GRAVITY ABUTMENTS
SPANS: 40'-0" ± CLEAR
ROADWAY: 19'-7" ± f/f CURB
SKEW: 0° ±
ALIGNMENT: TANGENT
WEARING SURFACE: BITUMINOUS
STRUCTURE FILE No. 3802558

PROPOSED STRUCTURE

TYPE: PRESTRESSED CONCRETE BOX BEAM ON CAPPED PILE SUBSTRUCTURE
SPANS: 50'-0" c/c BEARINGS
ROADWAY: 32'-0" f/f GUARDRAIL
SKEW: 0°
DESIGN LOADING: HS 20-44 AND ALTERNATE MILITARY LOADING
APPROACH SLAB: AS-1-81 (15'-0")
ALIGNMENT: TANGENT
SUPERELEVATION: NONE
WEARING SURFACE: 2½" ASPHALT CONC. (MIN.)
AVG. DAILY TRAFFIC: 1570 (1989) 2752 (2009)
CROWN: 3/16"/FT.

Revised 7/31/89

OHIO DEPARTMENT OF TRANSPORTATION
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STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HOL-515-0052
OVER GOOSE CREEK
SEC. HOL-515-0.52

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
W.L.C.H.	A.F.	R.D.R.	7/22/88

TE-122
400-12-78

HOL-515-0.51

3/3

LOG OF BORING

Date Started 6/16/88 | Sampler Type SS | Dia 1 3/8" | Water Elev. 984.4'
Date Completed 6/15/88 | Casing: Length | Dia.
Boring No. B-1 | Station & Offset 28+32, 4' RT. (REAR ABUTMENT) | Surface Elev. 1001.4

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
1001.4	0														
1000.4		AUGERED			ASPHALT AND SUBBASE	-	-	-	-	-	-	-	-	-	VISUAL
	2	AUGERED			BROWN SANDY GRAVELLY CLAY (DRILLER'S DESCRIPTION)	-	-	-	-	-	-	-	-	-	VISUAL
996.4	4														
993.9	6	1/2/3			BROWN AND GRAY SANDY CLAY, TRACE OF ORGANIC	1	0	1	24	55	20	41	18	34	A-7-6
991.4	8	1/1/2			BROWN AND GRAY SANDY SILT, TRACE OF ORGANIC	2	0	3	21	46	30	NP	NP	28	A-4A
988.9	10	1/1/3			BROWN AND GRAY SILT, TRACE OF ORGANIC	3	0	1	10	66	23	30	4	35	A-4B
986.4	12	1/2/3			GRAY ORGANIC SILT	4	0	2	7	73	18	NP	NP	26	A-4B
983.9	14	2/3/4			GRAY SANDY SILT, TRACE OF ORGANIC	5	0	22	34	32	12	NP	NP	26	A-4A
981.4	16	4/7/10			GRAY SANDY SILT	6	1	2	32	45	20	NP	NP	21	A-4A
978.9	18	12/16/12			BROWN SILTY GRAVELLY SAND	7	25	14	26	29	6	NP	NP	16	A-2-4
976.4	20	5/8/14			BROWN AND GRAY SANDY SILT	8	7	12	23	44	14	NP	NP	21	A-4A
	22	6/10/15			GRAY SILT	9	5	3	7	61	24	NP	NP	19	A-4B
971.4	24	4/4/7			GRAY SILT	10	0	2	10	72	16	NP	NP	26	A-4B
966.4	26	4/6/9			GRAY SILT	11	1	0	10	69	20	NP	NP	25	A-4B
961.4	28														
	30	4/5/7			GRAY SILT	12	1	3	14	59	23	NP	NP	28	A-4B
956.4	32	12/13/14			GRAY SILTY SAND	13	6	16	39	22	17	NP	NP	23	A-4A
951.4	34														
949.9	36	9/16/24			GRAY SANDY SILT	14	8	8	39	28	17	NP	NP	18	A-4A

BOTTOM OF BORING

LOG OF BORING

Date Started 6/15/88 | Sampler Type SS | Dia 1 3/8" | Water Elev. 981.0'
Date Completed 6/16/88 | Casing: Length | Dia.
Boring No. B-2 | Station & Offset 29+15, 5' LT. (FORWARD ABUTMENT) | Surface Elev. 1001.0'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
1001.0	0														
1000.0		AUGERED			ASPHALT AND SUBBASE	-	-	-	-	-	-	-	-	-	VISUAL
	2	AUGERED			BROWN SANDY CLAY WITH GRAVEL AND COBBLES (DRILLER'S DESCRIPTION)	-	-	-	-	-	-	-	-	-	VISUAL
996.0	4														
993.5	6	2/3/3			BROWN AND GRAY SANDY SILT	1	4	1	20	45	30	NP	NP	28	A-4A
991.0	8	2/2/3			BROWN SANDY SILT	2	0	1	22	52	25	NP	NP	26	A-4B
988.5	10	1/1/1			GRAY SANDY SILT, TRACE OF ORGANIC	3	0	0	22	61	17	NP	NP	30	A-4B
986.0	12	1/2/2			GRAY ORGANIC SILT	4	0	0	5	68	27	NP	NP	26	A-4B
983.5	14	1/1/2			GRAY ORGANIC SILT	5	0	0	8	61	31	NP	NP	34	A-4B
981.0	16	1/3/9			GRAY SANDY SILT	6	12	9	28	38	13	NP	NP	27	A-4A
978.5	18	12/10/12			GRAY SILTY GRAVELLY SAND	7	16	20	28	24	12	NP	NP	12	A-4A
976.0	20	7/7/10			GRAY SILTY SAND	8	6	22	35	26	11	NP	NP	24	A-4A
	22	5/6/8			GRAY SANDY SILT	9	0	4	20	61	15	NP	NP	27	A-4B
971.0	24	3/4/6			GRAY SILT	10	0	0	5	62	33	NP	NP	31	A-4B
966.0	26	3/7/10			GRAY SILT	11	0	0	5	79	16	NP	NP	27	A-4B
961.0	28														
	30	2/3/6			GRAY SILT	12	0	0	7	76	17	NP	NP	40	A-4B
956.0	32	11/7/16			GRAY SILTY SAND	13	10	11	40	28	11	NP	NP	16	A-4A
951.0	34														
949.5	36	10/24/35			BROWN AND GRAY SANDY SILT	14	7	8	28	37	20	NP	NP	18	A-4A

BOTTOM OF BORING

Revised 7/31/89

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STRUCTURE FOUNDATION INVESTIGATION
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OVER GOOSE CREEK
SEC. HOL-515-0.52

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
L.A.S.	A.F.	R.D.R.	7/22/89

93 662 HOL-515-0.51