# STATE OF OHIO
# DEPARTMENT OF TRANSPORTATION

# MED-57-2.71 PART I

## GUILFORD TOWNSHIP
## WADSWORTH TOWNSHIP
## MEDINA COUNTY

| MED-57- 2.71 PART I | OHIO |
|---|---|
| | FHWA REGION 5 |
| STATE | FEDERAL PROJECT |

1/20

PID NO. 7995

FOR PART II, SEE MED-57- 4.24

## CULVERT REPLACEMENT

## 1995 SPECIFICATIONS

The standard specifications of the State of Ohio, Department of Transportation, including changes and supplemental specifications listed in the proposal shall govern this improvement.

I hereby approve these plans and declare that the making of this improvement will require the closing to traffic of the highway and that detours will be provided as indicated on sheet 4.

Approved Phillip A. Hamond
Date 2/22/95 District Deputy Director, Department of Transportation

Approved Brad Fagnell / RLE
Date _____ Engineer, Bureau of Bridges and Structural Design

Approved Randall Howard
Date 1-12-96 Deputy Director, ~~Operations~~ Project Mgt.

Approved _____
Date _____ Director, Department of Transportation

## DESIGN DESIGNATION

| | |
|---|---|
| CURRENT YEAR ADT (1995) | 14120 |
| DESIGN YEAR ADT (2015) | 22300 |
| D. H. V. | 1561 |
| D (DIRECTIONAL DISTRIBUTION) | 51% |
| T (PERCENT B & C TRUCKS) | 7% |
| V (DESIGN SPEED) | 55 M. P. H. |
| LEGAL SPEED | 55 M. P. H. |
| FUNCTIONAL CLASSIFICATION | RURAL MAJOR COLLECTOR |

MICROFILMED
MAY 28 1997

## CONVENTIONAL SIGNS

County Line
Township Line
Section Line
Corporation Line
Fence Line (existing) (proposed)
Center Line
Trees, Stumps, (to be removed)
Utility Poles: Telephone, Power, Light.

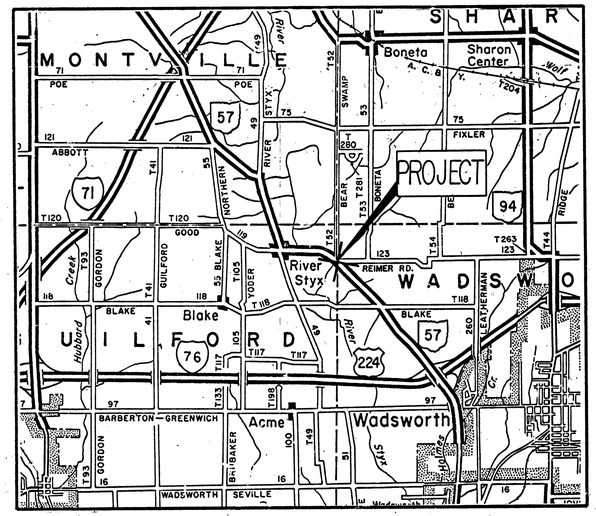
Limited Access (only) LA
Right of Way (only) RW
Limited Access & Right of Way LA&RW
Existing Right of Way
Property Line (in existing fence)
Railroad or
Guardrail (existing) (proposed)

## INDEX OF SHEETS



## LINE DATA

| | |
|---|---|
| BEGIN PROJECT | STA. 142 + 55 |
| END PROJECT | STA. 143 + 10 |
| PROJECT LENGTH | 55.00 LIN. FT. OR 0.0104 MILES |
| BEGIN WORK | STA. 139 + 16.53 |
| END WORK | STA. 147 + 23.67 |
| WORK LENGTH | 807.14 LIN. FT. OR 0.15 MILES |




## LOCATION MAP

SCALE IN MILES

0 1 2

Portion to be improved
State & Federal Routes 301
Other Roads

UNDERGROUND UTILITIES

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

## SCALES

Plan 0 10' 20'
Profile: Horizontal 0 10' 20', Vertical 0 5'
Cross Section: Horizontal 0 5', Vertical 0 5'

| PARTS I & II SUPPLEMENTAL SPECIFICATIONS | | |
|---|---|---|
| 802 | 3-23-95 | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Plan Prepared By:

DISTRICT 3
LOCATION & DESIGN

PARTS I & II
SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BP-3.1 | 2-21-92 | HW-4.8 | 4-1-80 | DBR-2-73 | 4-10-73 | TC-41.10 | 8-29-84 |
| MC-4 | 7-26-76 | | | | | TC-41.20 | 6-21-94 |
| MC-10 | 5-1-76 | | | | | | |
| MC-11 | 8-1-78 | | | MT-99.10 | 11-14-86 | TC-42.20 | 3-26-79 |
| | | | | MT-101.60 | 7-1-92 | | |
| GR-1.1 | 5-6-91 | | | MT-105.10 | 7-1-92 | TC-52.10 | 4-3-79 |
| GR-1.2 | 10-30-92 | | | MT-105.11 | 7-1-92 | TC-52.20 | 4-3-79 |
| GR-2.1 | 5-6-91 | | | LA-1 | 6-1-79 | | |
| GR-2.2 | 10-30-92 | | | | | | |
| GR-3.4 | 5-6-91 | | | PSBD-1-81 | 6-20-89 | | |
| GR-4.1 | 5-6-91 | | | | | | |
| | | | | | | | |
| MC-1 | 6-13-69 | | | | | | |

Project: MED-57-2.71 MEDINA COUNTY

Date of Letting _____199_, Contract No. _____

MED-57-2.71/57-4.24
960258
04-10-96
20/12PGS
DIST. 03

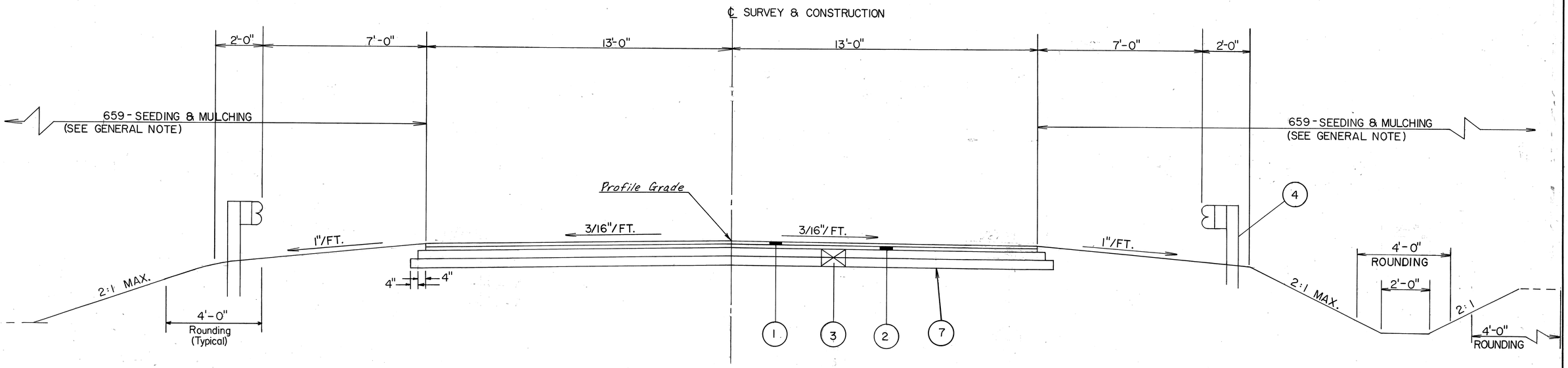
| FHWA REGION | STATE | PROJECT | |
|---|---|---|---|
| 5 | OHIO | | |

2
20

MED-57- 2.71

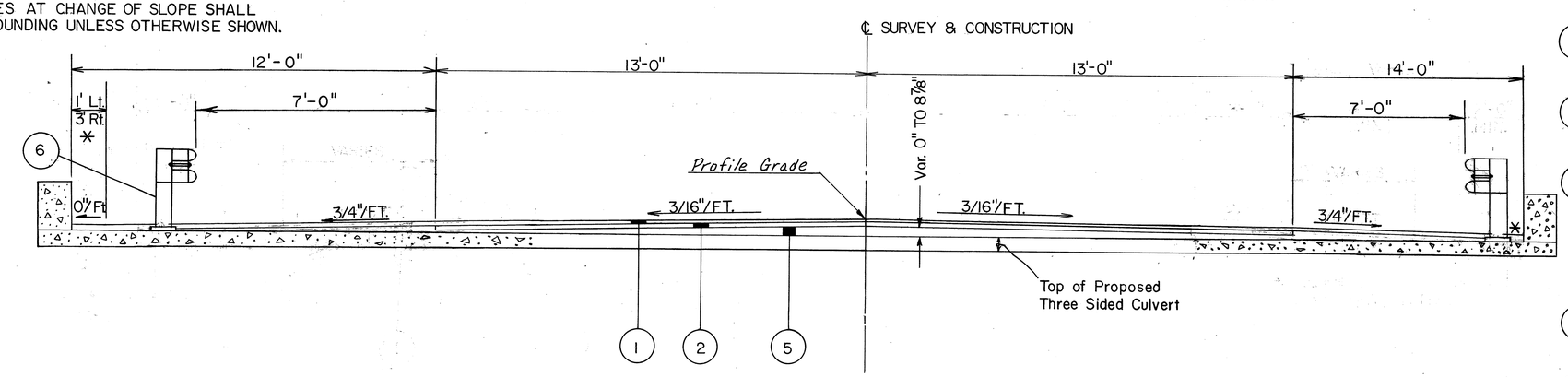
# TYPICAL SECTION

## TYPE 404 ON 301




STA. 142+55 TO STA. 142+68.84 & STA. 142+97.16 TO STA. 143+10 = 26.68 LIN. FT.

NOTE : ALL ANGLES AT CHANGE OF SLOPE SHALL HAVE 2' ROUNDING UNLESS OTHERWISE SHOWN.




STA. 142+68.84 TO STA. 142+97.16 = 28.32 LIN. FT.

* Designates Width of 0"/Ft. Cross Slope

TYPICAL SECTION OVER
THREE SIDED CULVERT

### LEGEND

1. 1-1/4" 404 Asphalt Concrete, AC-20
2. 1-3/4" 402 Asphalt Concrete, AC-20
3. 8" 301 Bituminous Aggregate Base, AC-20
4. Guardrail, Type 5
5. Var. 402 Asphalt Concrete, AC-20
6. Guardrail Type 5, W/ Steel Tubular Backup
7. Subgrade Compaction

TYPICAL SECTION

# GENERAL NOTES

## ROUNDING

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

## CONTINGENCY QUANTITIES

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

## UTILITIES

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

## UTILITY OWNERSHIP

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

| | |
|---|---|
| GAS | EAST OHIO GAS COMPANY<br>4725 SOUTHWAY ST. S.W.<br>CANTON, OHIO 44706<br>PHONE: (216) 478-3142 |
| POWER | OHIO EDISON COMPANY<br>76 SOUTH MAIN STREET<br>AKRON, OHIO 44308<br>PHONE: (216) 384-4631 |
| TELEPHONE | GTE NORTH OPERATIONS<br>6223 NORWALK RD.<br>MEDINA, OHIO 44256<br>PHONE: (216) 722-9587 |

## 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.

## EROSION CONTROL

ITEMS 601 AND 670 ARE PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE ANY OF THESE ITEMS AND TURF OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE 670. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES OF THESE ITEMS WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION. IN ADDITION, THESE ITEMS SHALL MEET THE REQUIREMENT OF 108.04.

## WATERING PERMANENT SEEDED AREAS

THE FOLLOWING ESTIMATED QUANTITY IS TO BE USED AS DIRECTED BY THE ENGINEER TO PROMOTE GROWTH AND TO CARE FOR PERMANENT SEEDED AREAS PER 659.09:

659, WATER 5 M. GAL.

## 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, STRAW OR HAY BALES | 100 | EACH |
| 207, FILTER FABRIC FENCE | 200 | LIN. FT. |

## TEMPORARY PAVEMENT MARKINGS

A QUANTITY OF 0.02 MI. OF ITEM 614 TEMPORARY CENTER LINES,CLASS II HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER. SEE MT-99.10 FOR REQUIREMENTS.

THIS ITEM MAY BE NON-PERFORMED IF THE ITEM 642 PAVEMENT MARKINGS ARE IN PLACE PRIOR TO OPENING THE ROAD TO TRAFFIC.

## REMOVAL OF TREES OR STUMPS

ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS SHALL BE REMOVED UNDER THE LUMP SUM BID FOR ITEM 201, CLEARING AND GRUBBING. THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED

| SIZES | NO. TREES | NO. STUMPS | TOTAL |
|---|---|---|---|
| 18" | 4 | 0 | 4 |
| 30" | 0 | 0 | 0 |
| 48" | 1 | 0 | 1 |
| 60" | 0 | 0 | 0 |

## ITEM 659, SEEDING AND MULCHING

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR ITEM 659, SEEDING AND MULCHING, ARE BASED ON THESE LIMITS.

## ITEM 614, MAINTAINING TRAFFIC

THROUGH TRAFFIC ON S.R. 57 SHALL BE DETOURED AS SHOWN ON SHEET 4. THE DETOUR SHALL BE LIMITED TO A MAXIMUM OF 40 CONSECUTIVE DAYS. ALL DETOUR SIGNING WILL BE PROVIDED BY STATE FORCES, THE CONTRACTOR SHALL NOTIFY THE DISTRICT TRAFFIC ENGINEER FOURTEEN (14) DAYS IN ADVANCE FOR THE PLACEMENT OF DETOUR SIGNING.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, INSTALLING,MAINTAINING AND REMOVING THE GATES AND BARRICADES AT THE APPROXIMATE WORK LIMITS OF THE PROJECT. SEE DETAILS ON STD. DRWG. MT-101.60.

TWO-WAY TRAFFIC TO AND FROM BEAR SWAMP AND REIMER ROADS SHALL BE MAINTAINED AT ALL TIMES.

THE DETOUR PERIOD OF THIS PART SHALL BE CONCURRENT WITH MED-57-4.24 (PART II)

## FARM DRAINS

ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS, AND WHICH CROSS THE ROAD WAY, SHALL BE REPLACED WITHIN THE (RIGHT-OF-WAY) (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 ROADWAY DITCHES, SHALL BE OUTLETTED INTO THE ROADWAY DITCH BY 603 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE ONE FOOT ABOVE THE FLOWLINE ELEVATION OF THE DITCH. LATERAL FIELD TILES 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 REPLACEMENTS SHALL BE DETERMINED BY THE ENGINEER AND PAYMENT SHALL BE MADE ON FINAL MEASUREMENTS.

EROSION CONTROL PADS AND ANIMAL GUARDS SHALL BE PROVIDED AT THE OUTLET END OF ALL FARM DRAINS AS PER STANDARD CONSTRUCTION DRAWING MC-4, EXCEPT WHEN THEY OUTLET INTO A DRAINAGE STRUCTURE. PAYMENT FOR THE EROSION CONTROL PADS AND ANIMAL GUARDS AND ANY NECESSARY BENDS OR BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEM.

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

| | | |
|---|---|---|
| 603, 8" CONDUIT, TYPE B | 50 | LIN. FT. |
| 603, 6" CONDUIT, TYPE E | 40 | LIN. FT. |
| 603, 8" CONDUIT, TYPE F | 20 | LIN. FT. |
| 601, ROCK CHANNEL PROTECTION TYPE C WITH FILTER | 1 | CU.YDS. |

## ITEM 407, TACK COAT

THE RATE OF APPLICATION OF THE 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF 0.10 GALLONS PER SQUARE YARD OF TACK COAT FOR ESTIMATING PURPOSES ONLY.

## ITEM 606, ANCHOR ASSEMBLY, TYPE E

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING AN ET-2000, OPTION "B" GUARDRAIL END TERMINAL AS MANUFACTURED BY SYRO STEEL COMPANY, 1170 N. STATE STREET, GIRARD, OHIO 44420 (TELEPHONE: 216-545-4373).

THE LENGTH OF THE ET-2000 SYSTEM IS CONSIDERED TO BE 50', INCLUSIVE OF TWO 25' LONG RAIL ELEMENTS. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND AT THE LOCATIONS SHOWN IN THE PLANS.

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

## DESIGNATED LOCAL DETOUR ROUTE

IN ADDITION TO THE OFFICIAL, SIGNED DETOUR ROUTE, A LOCAL ROUTE HAS BEEN DETERMINED TO BE THE SECONDARY, UNSIGNED DETOUR ROUTE OR "DESIGNATED LOCAL DETOUR ROUTE". THIS ROUTE IS SHOWN ON SHEET NO. . DURING THE TIME THAT TRAFFIC IS DETOURED, THE CONTRACTOR SHALL MAINTAIN THIS ROUTE IN A CONDITION WHICH IS REASONABLY SMOOTH AND FREE FROM HOLES, RUTS, RIDGES, BUMPS, DUST AND STANDING WATER. ONCE THE DETOUR IS REMOVED AND TRAFFIC RETURNED TO ITS NORMAL PATTERN, THE DESIGNATED LOCAL DETOUR ROUTE SHALL BE RESTORED TO A CONDITION THAT IS EQUIVALENT TO THAT WHICH EXISTED PRIOR TO ITS USE FOR THIS PURPOSE. ALL SUCH WORK SHALL BE PERFORMED WHEN AND AS DIRECTED BY THE ENGINEER.

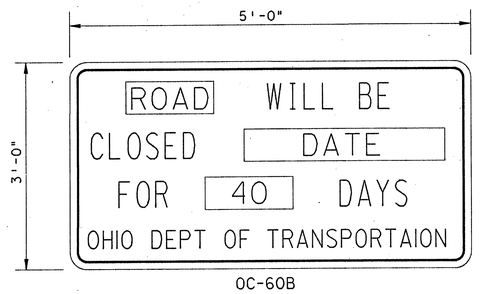
THE FOLLOWING ESTIMATED QUANTITIES ARE PROVIDED FOR USE AS DIRECTED BY THE ENGINEER TO MAINTAIN AND SUBSEQUENTLY RESTORE THE DESIGNATED LOCAL DETOUR ROUTE.

404 BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC 50 CU YD

## NOTICE OF CLOSURE SIGNS

THESE SIGNS SHALL BE ERECTED BY THE CONTRACTOR AT LEAST ONE WEEK IN ADVANCE OF THE SCHEDULED ROAD CLOSURE. THE SIGNS SHALL BE ERECTED ON THE RIGHT HAND SIDE OF THE ROAD FACING TRAFFIC. THEY SHALL BE LOCATED IN THE FIELD SO AS NOT TO INTERFERE WITH ANY PERMANENT SIGNS. ON THIS PROJECT THEY SHOULD BE ERECTED AT THE POINT OF CLOSURE.

PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 MAINTAINING TRAFFIC AND SHALL INCLUDE FURNISHING, ERECTING, MAINTAINING AND REMOVING THE SIGNS INCLUDING SUPPORTS.




OC-60B

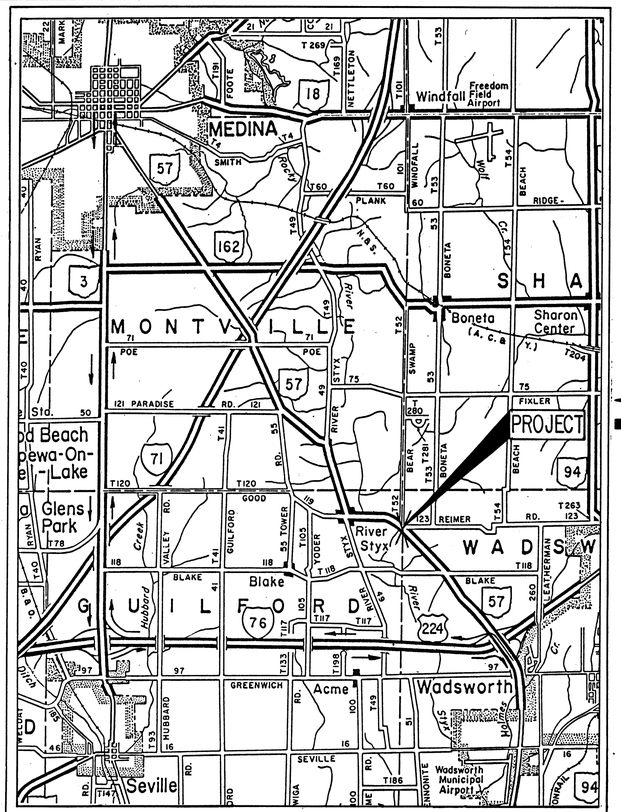
SEE SHEET 16 FOR STRUCTURAL NOTES

| FHWA REGION | STATE | PROJECT | |
|---|---|---|---|
| 5 | OHIO | | |

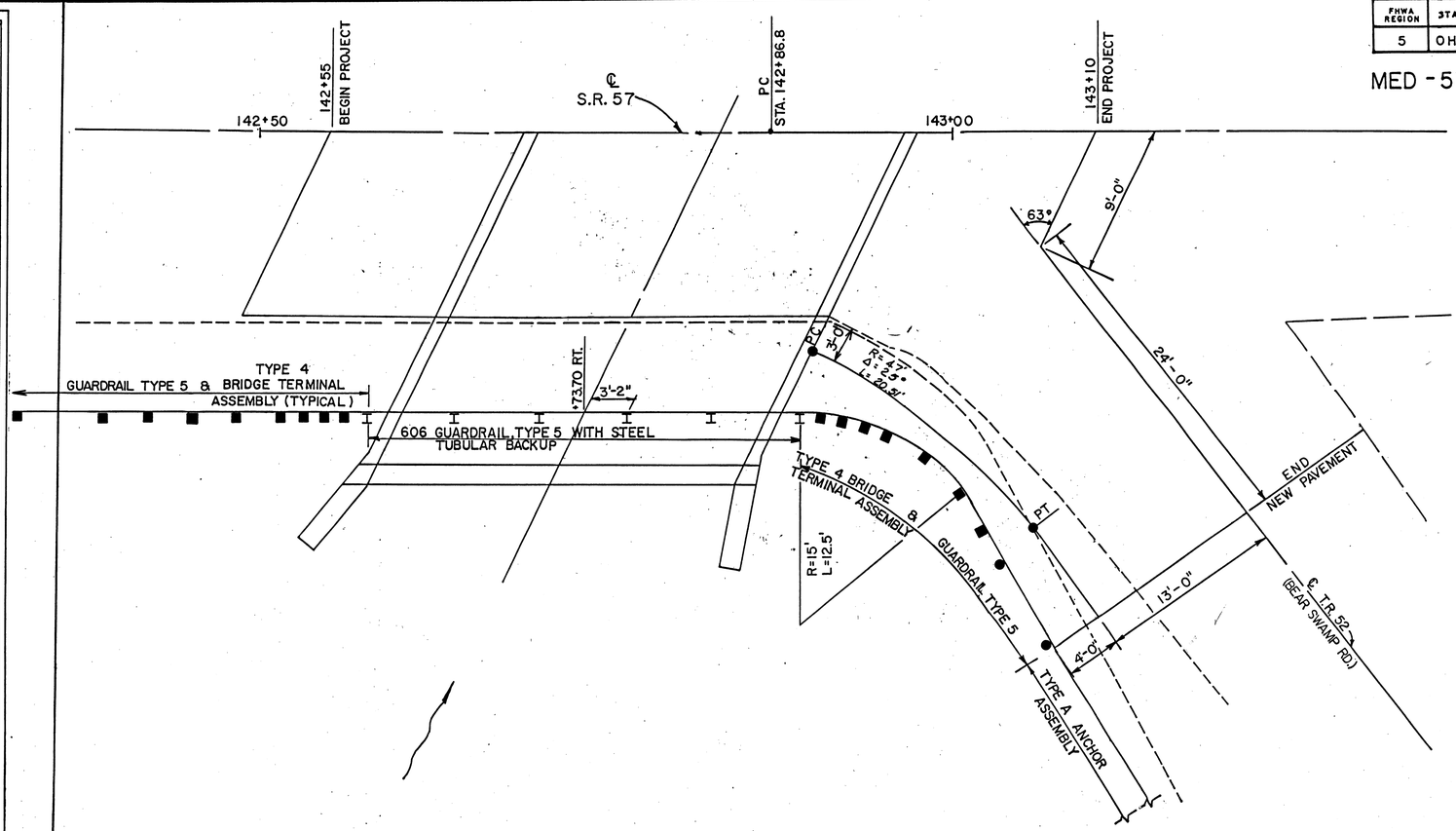
MED - 57 - 2.71

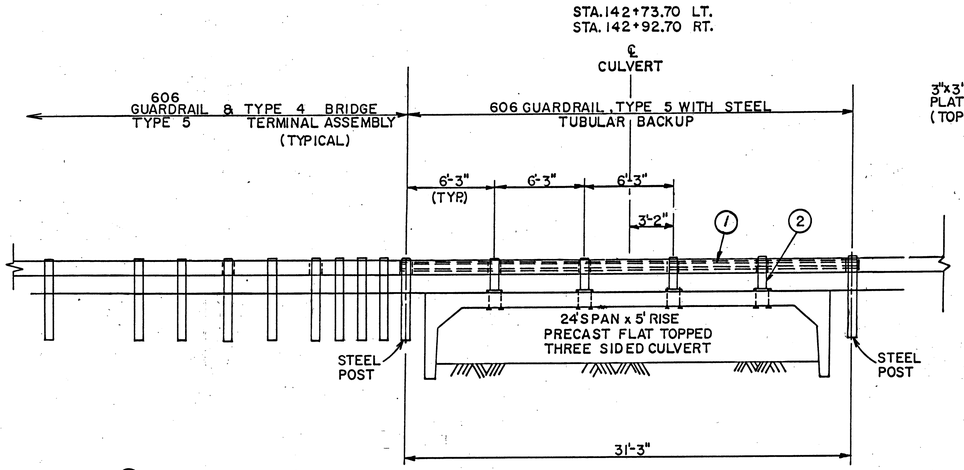
4/20

Calc. by JCR Date 7/90
Chk'd by JRA Date 7/90



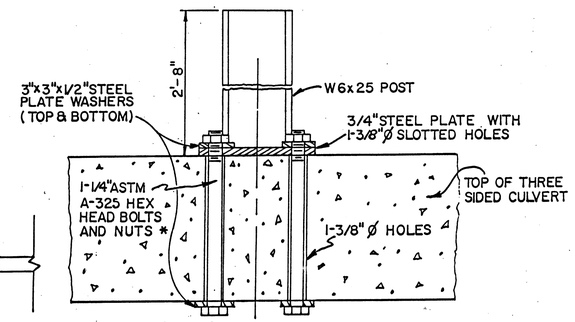

DETOUR MAP




① TUBULAR BACKUP - SEE STD. DRAWING - GR 2.2

② STEEL POST - W6x25




INLET MOUNTED POST DETAILS

* ALTERNATE TO THROUGH BOLTS AS PER STD. DRAWING GR 2.2 USING PARTIAL DEPTH RESIN-BONDED ANCHORING SYSTEM.

DETOUR ROUTE AND CONSTRUCTION DETAILS

# GENERAL SUMMARY

| QUANTITIES | | |
|---|---|---|
| Calc. by | JLB | 7/94 |
| Chk'd by | ADB | 7/94 |

MED-57-2.71



| ITEM | SHEET NUMBER 3 | 6 | 11 | 19 |
|---|---|---|---|---|
| 201 | LUMP | | | |
| 202 | | 116 | | |
| 202 | | 53 | | |
| 203 | | 448 | | |
| 203 | | 60 | | |
| 203 | | 119 | | |
| 604 | | | | 3 |
| 606 | | 331.25 | | |
| 606 | | 62.5 | | |
| 606 | | 1 | | |
| 606 | | 3 | | |
| 606 | | 4 | | |
| 207 | 200 | | | |
| 207 | 100 | | | |
| 601 | | | 39 | |
| 601 | 1 | | | |
| 601 | | | 71 | |
| 659 | | 2379 | | |
| 659 | | 0.21 | | |
| 659 | 5 | | | |
| 670 | | 71 | | |
| 603 | 50 | | | |
| 603 | 40 | | | |
| 603 | 20 | | | |
| 202 | | | LUMP | |
| SPEC. | | | LUMP | |
| 503 | | | LUMP | |
| 503 | | | LUMP | |
| 509 | | | 3931 | |
| 509 | | | 411 | |
| 511 | | | 8.3 | |
| 511 | | | 68.0 | |
| SPEC. | | | 56 | |
| SPEC. | | | 160 | |
| 518 | | | 3 | |
| 603 | | | 54 | |
| 301 | | 27 | | |
| 402 | | 32 | | |
| 404 | | 13 | | |
| 407 | | 12 | | |
| 642 | | 0.04 | | |
| 642 | | 0.02 | | |
| 802 | | 7 | | |
| 404 | 50 | | | |
| 614 | 0.02 | | | |
| 614 | LUMP | | | |
| 619 | | | | |
| SPEC. | | | | |
| 623 | | | | |
| 624 | | | | |

| ITEM | ITEM EXT. | QUANT. | UNIT | DESCRIPTION |
|---|---|---|---|---|
| | | | | **ROADWAY** |
| 201 | 11000 | LUMP | | CLEARING AND GRUBBING |
| 202 | 23500 | 116 | SQ. YD. | WEARING COURSE REMOVED |
| 202 | 38000 | 53 | LIN. FT. | GUARDRAIL REMOVED |
| 203 | 12000 | 448 | CU. YD. | EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION |
| 203 | 20000 | 60 | CU. YD. | EMBANKMENT |
| 203 | 50000 | 119 | SQ. YD. | SUBGRADE COMPACTION |
| 604 | 38501 | 3 | EACH | MONUMENT ASSEMBLY, AS PER PLAN (SEE SHEET 19) |
| 606 | 13000 | 331.25 | LIN. FT. | GUARDRAIL, TYPE 5 |
| 606 | 13010 | 62.5 | LIN. FT. | GUARDRAIL, TYPE 5 WITH TUBULAR BACKUP |
| 606 | 25000 | 1 | EACH | ANCHOR ASSEMBLY, TYPE A |
| 606 | 26100 | 3 | EACH | ANCHOR ASSEMBLY, TYPE E |
| 606 | 35140 | 4 | EACH | BRIDGE TERMINAL ASSEMBLY, TYPE 4 |
| | | | | **EROSION CONTROL** |
| 207 | 30000 | 200 | LIN. FT. | FILTER FABRIC FENCE |
| 207 | 70000 | 100 | EACH | STRAW OR HAY BALES |
| 601 | 32100 | 39 | CU. YD. | ROCK CHANNEL PROTECTION, TYPE B WITH FILTER |
| 601 | 32200 | 1 | CU. YD. | ROCK CHANNEL PROTECTION, TYPE C WITH FILTER |
| 601 | 32204 | 71 | CU. YD. | ROCK CHANNEL PROTECTION, TYPE C WITH FABRIC FILTER |
| 659 | 10000 | 2379 | SQ. YD. | SEEDING AND MULCHING |
| 659 | 20000 | 0.21 | TON. | COMERCIAL FERTILIZER |
| 659 | 35000 | 5 | M.-GAL. | WATER |
| 670 | 40000 | 71 | SQ. YD. | DITCH EROSION PROTECTION |
| | | | | **DRAINAGE** |
| 603 | 01400 | 50 | LIN. FT. | 6" CONDUIT, TYPE E |
| 603 | 02500 | 40 | LIN. FT. | 8" CONDUIT, TYPE E |
| 603 | 02600 | 20 | LIN. FT. | 8" CONDUIT, TYPE F |
| | | | | **STRUCTURE 20 FEET SPAN AND OVER** |
| 202 | 11000 | LUMP | | STRUCTURE REMOVED |
| SPEC. | 20298000 | LUMP | | REMOVAL MISC.: PORTION OF SANDSTONE RETAINING WALL REMOVED AND REBUILT |
| 503 | 11100 | LUMP | | COFFERDAMS, CRIBS AND SHEETING |
| 503 | 21300 | LUMP | | UNCLASSIFIED EXCAVATION |
| 509 | 11400 | 3931 | LB. | REINFORCING STEEL, GRADE 60 |
| 509 | 15800 | 411 | LB. | EPOXY COATED REINFORCING STEEL, GRADE 60 |
| 511 | 46001 | 8.3 | CU. YD. | CLASS C CONCRETE, AS PER PLAN (SEE SHEET 15) |
| 511 | 46501 | 68.0 | CU. YD. | CLASS C CONCRETE, FOOTING, AS PER PLAN (SEE SHEET 15) |
| SPEC. | 51267020 | 56 | SQ. YD. | MEMBRANE WATERPROOFING (SHEET TYPE 2) |
| SPEC. | 51267030 | 160 | SQ. YD. | MEMBRANE WATERPROOFING (SHEET TYPE 3) |
| 518 | 21200 | 3 | CU. YD. | POROUS BACKFILL WITH FILTER FABRIC |
| 603 | 70001 | 54 | LIN. FT. | CONDUIT, TYPE A, PRECAST REINFORCED CONCRETE FLAT-TOPPED THREE-SIDED CULVERT, AS PER PLAN, 24' SPAN X 5' RISE (SEE SHEET 15) |
| | | | | **PAVEMENT** |
| 301 | 10002 | 27 | CU. YD. | BITUMINOUS AGGREGATE BASE, AC-20 |
| 402 | 20000 | 32 | CU. YD. | ASPHALT CONCRETE, AC-20 |
| 404 | 20000 | 13 | CU. YD. | ASPHALT CONCRETE, AC-20 |
| 407 | 10000 | 12 | GAL. | TACK COAT |
| | | | | **TRAFFIC CONTROL** |
| 642 | 00102 | 0.04 | MILE | EDGE LINE, TYPE 2 |
| 642 | 00302 | 0.02 | MILE | CENTER LINE, TYPE 2 |
| 802 | 00100 | 7 | EACH | BARRIER REFLECTOR, TYPE A |
| | | | | **MAINTENANCE OF TRAFFIC** |
| 404 | 35000 | 50 | C.Y. | BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC |
| 614 | 21400 | 0.02 | MILE | TEMPORARY CENTER LINE, CLASS II |
| 614 | 11000 | LUMP | | MAINTAINING TRAFFIC |
| 619 | 15000 | LUMP | | FIELD OFFICE, TYPE A |
| SPEC. | 61925000 | LUMP | | COMPUTER EQUIPMENT FOR TYPE A OFFICE (SEE PROPOSAL NOTE) |
| 623 | 10000 | LUMP | | CONSTRUCTION LAYOUT STAKES |
| 624 | 10000 | LUMP | | MOBILIZATION |

DESIGN FILE: $$$$$.DGNFILESPECIFICATIONS$$$$$
WORKSTATION: $TERMINAL$ DATE: $$$$$DATE$$$$$

| FED. RD. DIVISION | STATE | PROJECT | | 6 / 20 |
|---|---|---|---|---|
| 2 | OHIO | | | |

MED-57- 2.71

Calc. by ADB Date 7/90
Chk'd by DRH Date 7/90

STA. 139+11 BEGIN WORK SEE SHEET 18 FOR DETAIL

Begin Project Sta. 142+55 S.L.M. 2.71

End Project Sta. 143+10 S.L.M. 2.72

PC Sta. 142+86.8

NOTE: DEPTH OF UNDERGROUND TELEPHONE CABLE HAS NOT BEEN PROVIDED BY THE OWNER.

EXIST. CHANNEL EASEMENT

EXIST. BLOCK WALL (SEE SHT. 11)

Pond

DENOTES WEARING COURSE REMOVAL

STA. 147+29 END WORK SEE SHEET 18 FOR DETAIL

R.R. SPIKE P.I. STA. 142+86.80

N+S 989.4' 43.27' 955.7' 857.7' N & S

℄ SURVEY & CONSTR.

℄ REFERENCE TIES

R.R. SPIKE P.I. STA. 147+23.67

30.00' R.W. MON.

46.57' N & S

453.4'

℄ SURVEY & CONSTR.

℄ REFERENCE TIES N & S = NAIL & SHINER

EXIST. R/W

STA. 142+83 ℄ CULVERT

CONST. LIMIT

UNDERGROUND CABLE

SHRUB

N-43°-02'-21" W.

℄ SURVEY & CONSTR. S.R. 57

4" H.P. GAS MAIN

GAS VALVE

BEAR SWAMP ROAD (T.R.52)

REIMER RD. (C.R.123)

R/W 7.5' WIDE

EXIST. R/W

143+00 ℄ S.R. 57 = 0+00 ℄ T.R.52

EXIST. CHANNEL EASEMENT

CONST. LIMIT

72" LILAC

BM: Spike in 1st. Pole N.W. Intersection W. Side C.R.52 Elev. 1006.31

* For Construction Details See Sheet 4

See Sheet 11 For Culvert Details

CURVE DATA

PI = 145+07.67
Δ = 20°49'44" LT.
Dc = 04°46'04"
R = 1,201.73'
L = 436.87'
T = 220.87'
E = 20.13'

ITEM 642 - CALC.

CENTERLINE, SOLID DOUBLE, TYPE 2
143+30 TO 142+35
95÷5280 = 0.18 MI.

EDGE LINE, WHITE, TYPE 2
143+30 TO 142+35
95x2÷5280 = 0.036 MI.

26'-0"±

DENSE GRADED ASPHALTIC CONCRETE

ASPHALTIC CONCRETE WIDENING

STABILIZED BASE

SECTION OF ADJOINING PAVEMENT

| EXCAVATION | 448 | CU. YD. |
|---|---|---|
| EMBANKMENT | 60 | CU. YD. |
| SEEDING | 237.9 | SQ. YD. |
| FERTILIZER | 0.21 | TONS |

20' FEATHER — GRADIENT GRADE — 20' FEATHER

MEET EXISTING

BUTT JOINT AS PER BP-3.1 (TYPICAL)

EXIST. CONC. SLAB TOP

HW100 = 1007.2

HW25 = 1005.9

Rock Channel Protection Type C W/Fabric Filter

PROPOSED 24' X 4' FLAT TOPPED THREE SIDED CULVERT

EXISTING STRUCTURE
TYPE: CONCRETE SLAB
SPAN: 25'
ROADWAY WIDTH: 30'
SKEW: 25° L.F.
LOADING: S-11.1-46
SUB-STRUCTURE: CONC. GRAV.
ALIGNMENT: TANGENT
CONDITION: POOR
DATE BUILT: 1932

PROPOSED STRUCTURE
TYPE: 24' SPAN x 5' RISE PRE-CAST THREE SIDED CULVERT
LENGTH: 54' LIN. FT.
ROADWAY WIDTH: 40' F.F. G.R.
SKEW: 25° L.F.
LOADING: HS20-44 AND ALTERNATE MILITARY
ALIGNMENT: TANGENT

| REF NO. | STATION | SIDE | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 606 | ANCHOR ASSEMBLY TYPE E | | EACH | | | | 1 | 2 | | | | | | 3 |
| 670 | DITCH EROSION PROTECTION | | SQ. YD. | | | | | | 71 | | | | | 71 |
| 802 | BARRIER REFLECTOR TYPE A | | EACH | | | | 3 | 4 | | | | | | 7 |
| 606 | BRIDGE TERMINAL ASSEMBLY TYPE 4 | | | | | | 2 | 2 | | | | | | 4 |
| | ANCHOR ASSEMBLY TYPE A | | | | | | 1 | | | | | | | 1 |
| | GUARD RAIL TYPE 5 W/STEEL TUBULAR BACKUP | | LIN. FT. | | | | 31.25 | 31.25 | | | | | | 62.5 |
| | GUARD RAIL TYPE 5 | | | | | | 100 | 156.25 | | | | | | 256.25 |
| 202 | GUARD RAIL REMOVED | | LIN. FT. | | | 53 | | | | | | | | 53 |
| 202 | WEARING COURSE REMOVED | | SQ. YD. | | | | | | 57.8 | | | | | 115.6 |
| 203 | SUBGRADE COMPACTION | | SQ. YD. | | | | | | | 40 | | 79 | | 119 |
| 407 | TACK COAT @ 0.1 GAL./SQ.YD. | | GAL | | | | | | 5.8 | | 5.8 | | | 11.6 |
| 301 | BITUMINOUS AGGREGATE BASE | 8" | CUBIC YARD | | | | | | | 9.2 | | 18.0 | | 27.2 |
| 404 | ASPHALT CONC. AC-20 | 1¼" | | 5.2 | | | | | 2.0 | 1.4 | 2.0 | 2.7 | 13.3 | |
| 402 | ASPHALT CONC. AC-20 | VARIES | | 25.4 | | | | | | | | | | |
| | ASPHALT CONC. AC-20 | 1¾" | | 4.0 | | | | | | 1.9 | | 3.8 | 35.1 | |
| | | | | | LT. | | | | | | | | | |
| | | | | | | | RT. | | | | | | | |
| | P-1 | | | 142+68.84 to 142+97.16 | | | | | | | | | | |
| | R-1 | | | 141+72 ± to 142+25± | | | | | | | | | | |
| | GR-1 | | | 141+77± to 143+25± | | | | | | | | | | |
| | GR-2 | | | 141+48± to 144+35.5 | | | | | | | | | | |
| | EP-1 | | | 141+67± to 142+52.5± | | | | | | | | | | |
| | F-1 | | | 142+35 to 142+55 | | | | | | | | | | |
| | F-2 | | | 143+10 to 143+30 | | | | | | | | | | |
| | P-2 | | | 142+55 to 142+68.84 | | | | | | | | | | |
| | P-3 | | | 142+97.16 to 143+10 | | | | | | | | | | |
| | TOTAL | | | | | | | | | | | | | |

PLAN & PROFILE STA. 141+00 TO STA. 145+00

| FHWA REGION | STATE | PROJECT | |
|---|---|---|---|
| 5 | OHIO | | |

7
20

MED-57-2.71

Calc. by ADB Date 7/90
Chk'd by MER Date 7-90

| SEEDING | | | END AREA | | VOLUME | |
|---|---|---|---|---|---|---|
| END WIDTH | SQ. YDS. | | CUT | FILL | CUT | FILL |
| 50 | 169 | EXIST. R/W, 010, 005, S, STA 142+00, 1007.88, 3:1, 2:1, 1003.0, R/W, S(141+65± AH.), 1010, 1005 | 10 | 0 | 9 | 3 |
| 37 | | AH. BK. STA. 141+65 | | | | |
| 17 | 28 | 010, 005, S, *48 Type E Anchor, STA 141+50, 1007.88, +77 TYPE E ANCHOR, R/W, 1010, 1005 | 0 | 3 | 0 | 3 |
| 17 | 94 | AH., 010, 005, (AH)S, EXIST. R/W, STA 141+00, 1008.04, 1010, 1005 | 0 | 0 | | |
| | 2379 TOTAL (SQ.YD.) | 010, 005, STA 140+50, 1008.54, 1010, 1005 | | | | |
| | | | TOTAL (CU.YD.) | | 448 | 60 |

70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70

BEGIN WORK STA 139+11

CROSS SECTIONS STA.140+50 TO STA.142+00

| FHWA REGION | STATE | PROJECT | |
|---|---|---|---|
| 5 | OHIO | | |

8
20

MED-57- 2.71

Calc. by ADB
Date 7/90
Chk'd by MER
Date 7-90

SEEDING

| END WIDTH | SQ YDS |
|---|---|
| 17 | 115 |
| | 167 |
| 40 | |
| 0 | |
| | 1315 |
| 0 | |
| 30 | |
| | 63 |
| 30 | |
| -57 | |
| | 222 |
| 50 | |

70 60 50 40 30 20 10 ℄ 10 20 30 40 50

APPROX. LOCATION OF UNDERGROUND TEL. CABLE. (DEPTH HAS NOT BEEN PROVIDED BY THE OWNER)

S R/W

0 1 0
0 0 5

STA. 143 + 50
1007.74

1007.97
STA. 143+30
END FEATHER

1008.23
STA. 143 +10
END PROJECT

ADD FOR BEAR SWAMP ROAD FROM SHEET 10

AH. 42+97.16 (CULVERT LIMIT)
BK.

R/W
S 2:1 (NORMAL)

+10 AHEAD
143+10 BK

2:1 (NORMAL)

EXIST. R/W

1008.32
STA. 142 + 97.16
(SKEW 25° L.F.)
1008.35

ADD FOR CHANNEL WORK FROM SHEET 12

+55 BACK
+55 AHD
2:1 (NORMAL)
2:1 (NORMAL)
24' SPAN x 5' RISE CONDUIT, TYPE A PRECAST REINFORCED CONCRETE FLAT TOPPED THREE SIDED CULVERT

AH. 142+68.84 (CULVERT LIMIT)
BK.

1008.35
STA. 142 + 69
(SKEW 25° L.F.)
1008.35

4" H.P. G.L.
(APPROX. LOCATION AND DEPTH)

EXIST. R/W

STA. 142+55
BEGIN PROJECT

1008.32
STA. 142 +50
1008.32

M/L
2:1
PROPOSED CHANNEL FLOWLINE
1002.5

DEDUCT FOR 670 DITCH PROT., RT.

BEGIN FEATHER
142+35

4" H.P. G.L.
(APPROX. LOCATION AND DEPTH)

STA. 142+00

| | END AREA CUT | END AREA FILL | VOLUME CUT | VOLUME FILL |
|---|---|---|---|---|
| 1010 | | | | |
| 1005 | 0 | 2 | | |
| | | | 0 | 7 |
| ADD FOR BEAR SWAMP ROAD FROM SHEET 10 | | | 4 | 3 |
| AHD. 143+10 | 0 | 8 | | |
| BK. | 24 | 8 | | |
| 1010 | | | | |
| AH. 142+97.16 | 24 | 8 | 12 | 4 |
| BK. | 0 | 0 | | |
| 1000 | | | | |
| ADD FOR CHANNEL WORK FROM SHEET 12 | | | 401 | 3 |
| 1010 | | | | |
| 1005 AH. 142+68.84 | 0 | 0 | | |
| BK. | 27 | 0 | | |
| | | | 13 | 5 |
| AHD | 24 | 19 | | |
| 142+55 BK | 0 | 19 | | |
| 1010 | | | | |
| | | | 0 | 4 |
| 1005 | 0 | 19 | | |
| | | | 9 | 18 |
| 142+00 | 10 | 0 | | |

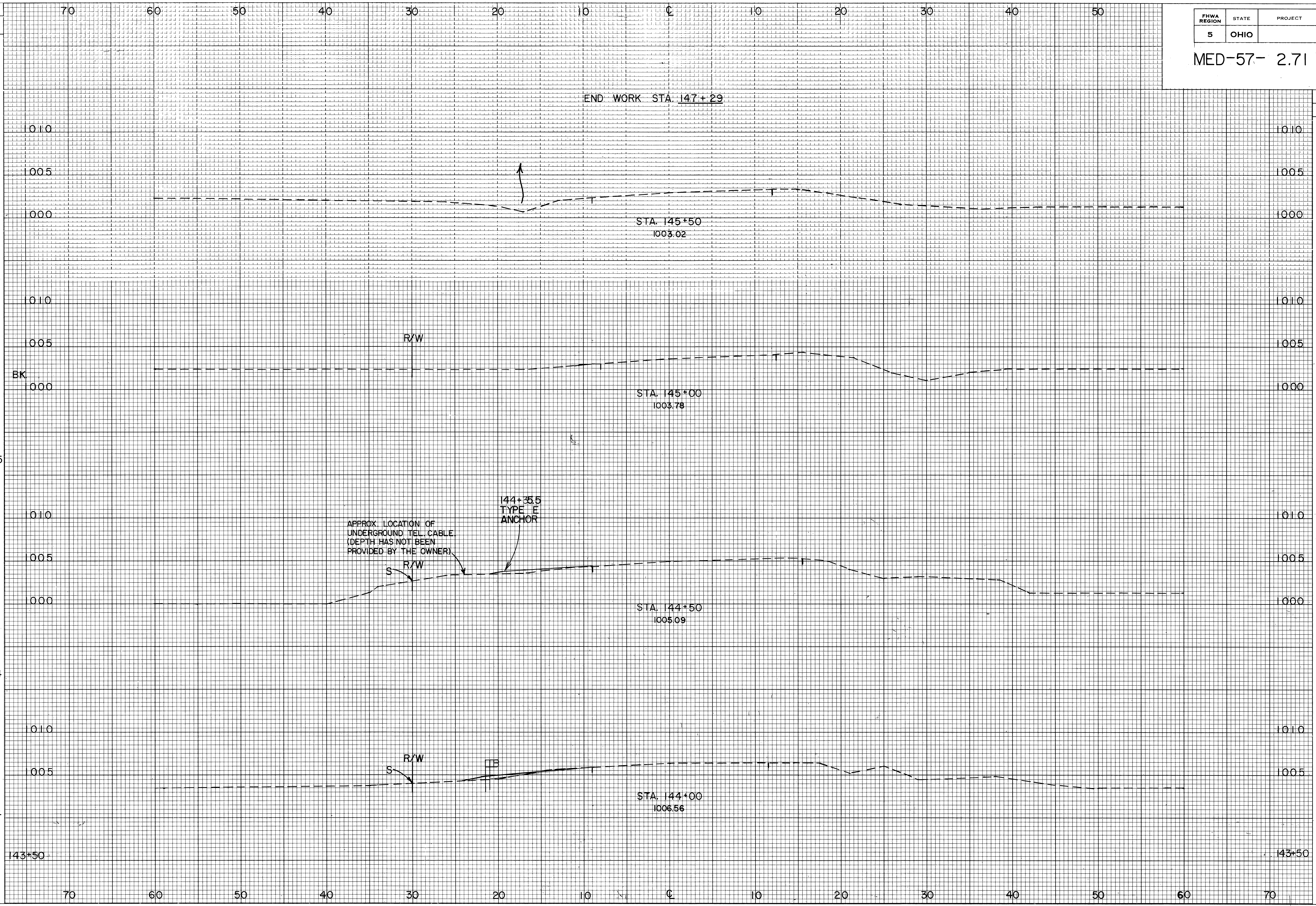
CROSS SECTIONS STA.142+50 TO STA.143+50

| FHWA REGION | STATE | PROJECT |
|---|---|---|
| 5 | OHIO | |

9
20

MED-57- 2.71

Calc. by ADB
Date 7/90
Chk'd by MER
Date 7-90



| SEEDING | |
|---|---|
| END WIDTH | SQ. YDS |
| 10 | |
| | 75 |
| 17 | |
| | 94 |
| 17 | |
| | 94 |
| 17 | |

| END AREA CUT | END AREA FILL | VOLUME CUT | VOLUME FILL |
|---|---|---|---|
| 0 | 0 | | |
| | | 0 | 2 |
| 0 | 2 | | |
| | | 0 | 4 |
| 0 | 2 | | |
| | | 0 | 4 |
| 0 | 2 | | |

CROSS SECTIONS, STA.144+00 TO STA.145+50

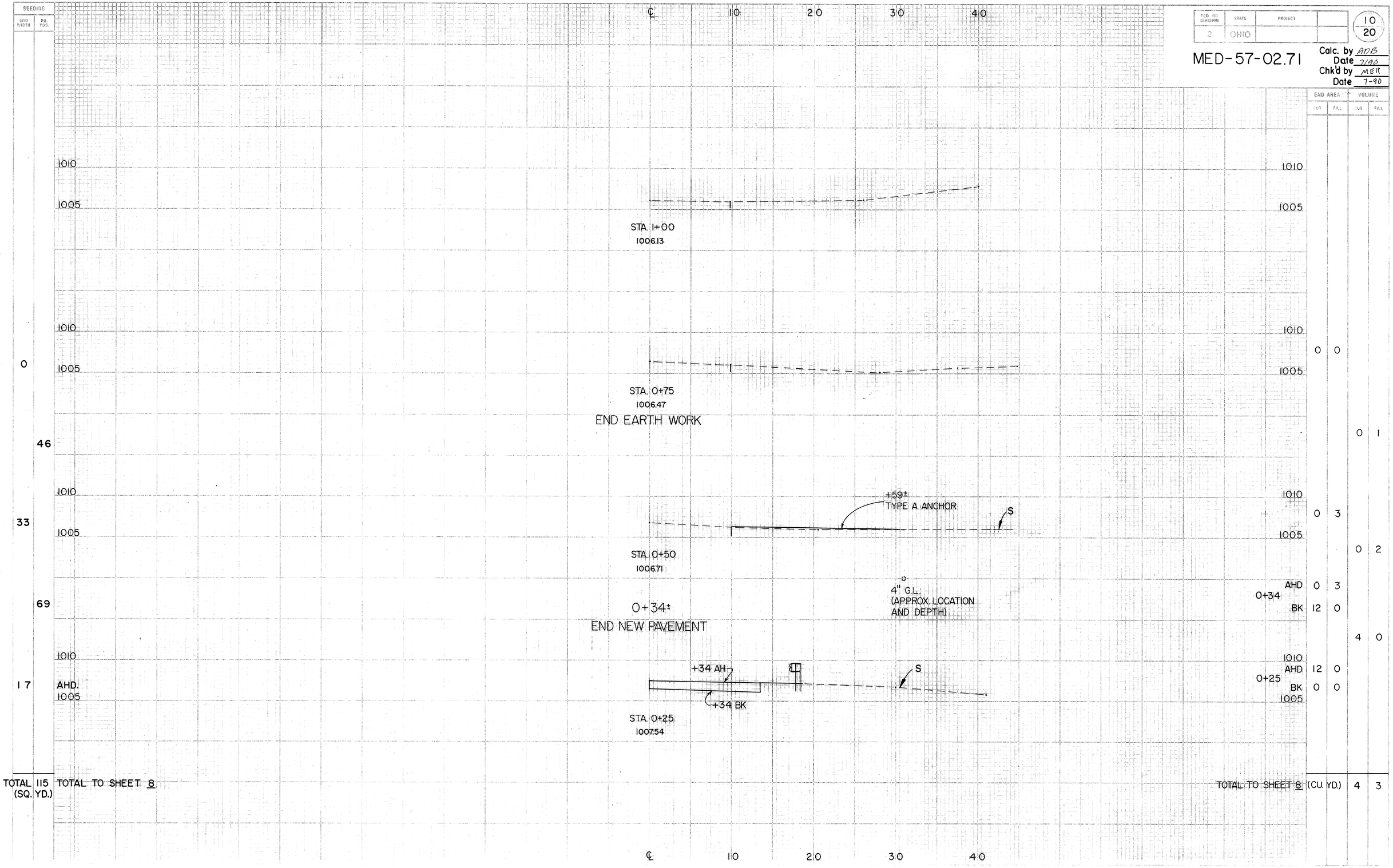
| FED. RD. DIVISION | STATE | PROJECT | |
|---|---|---|---|
| 2 | OHIO | | |

10
20

MED-57-02.71

Calc. by ADB
Date 7/90
Chk'd by MER
Date 7-90

| SEEDING | | END AREA | | VOLUME | |
|---|---|---|---|---|---|
| GRID WIDTH | SQ. YDS. | CUT | FILL | CUT | FILL |
| 0 | | 0 | 0 | | |
| 46 | | | | | 0 1 |
| 33 | | | | 0 3 | |
| | | | | | 0 2 |
| 69 | | | | AHD 0 3 | |
| | | | | 0+34 BK 12 0 | |
| | | | | | 4 0 |
| 17 | | | | AHD 12 0 | |
| | | | | 0+25 BK 0 0 | |
| TOTAL 115 (SQ. YD.) | TOTAL TO SHEET 8 | | | TOTAL TO SHEET 8 (CU. YD.) | 4 3 |



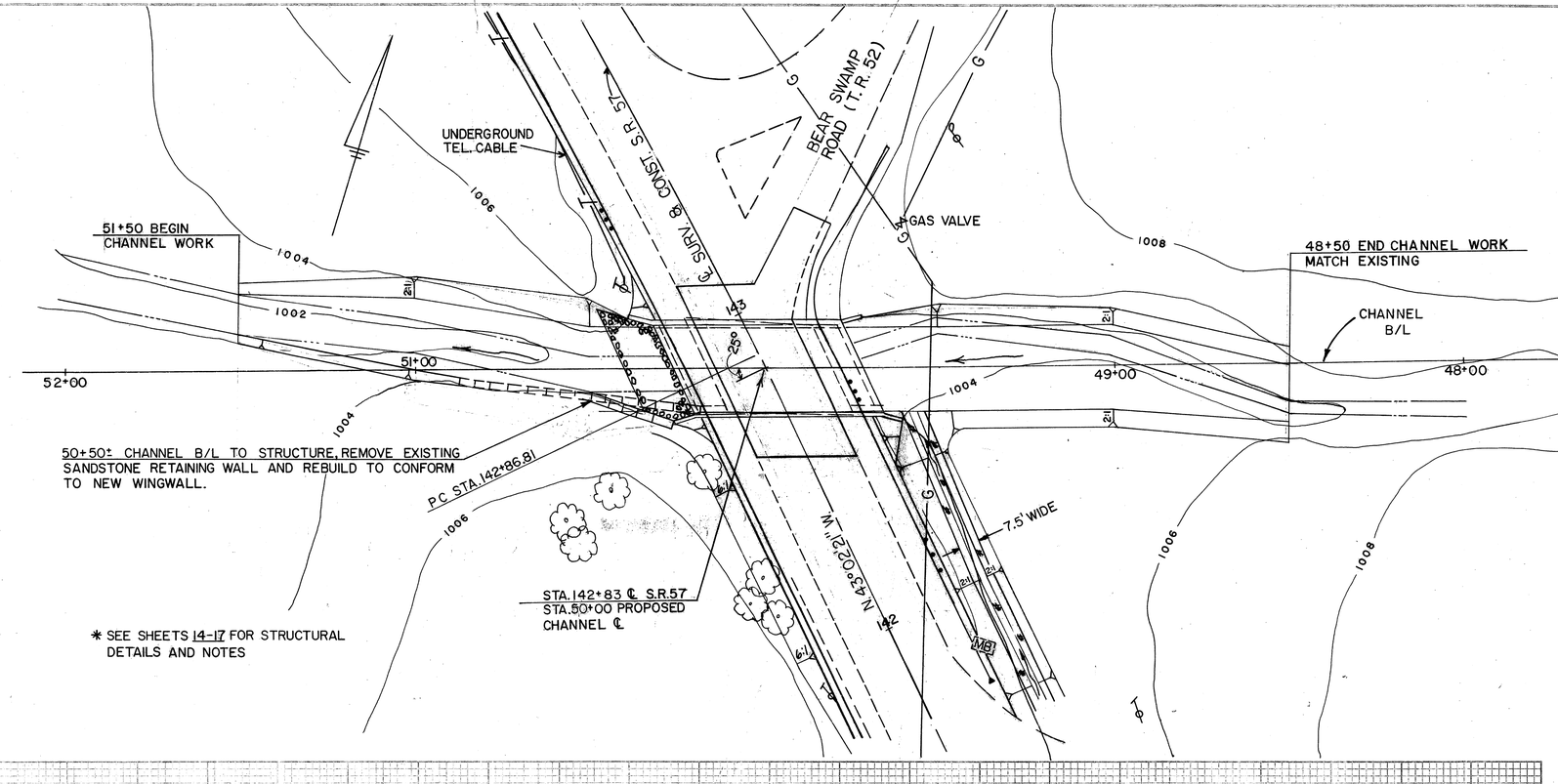

BEAR SWAMP RD. CROSS SECTIONS STA. 0+25 TO STA. 1+00

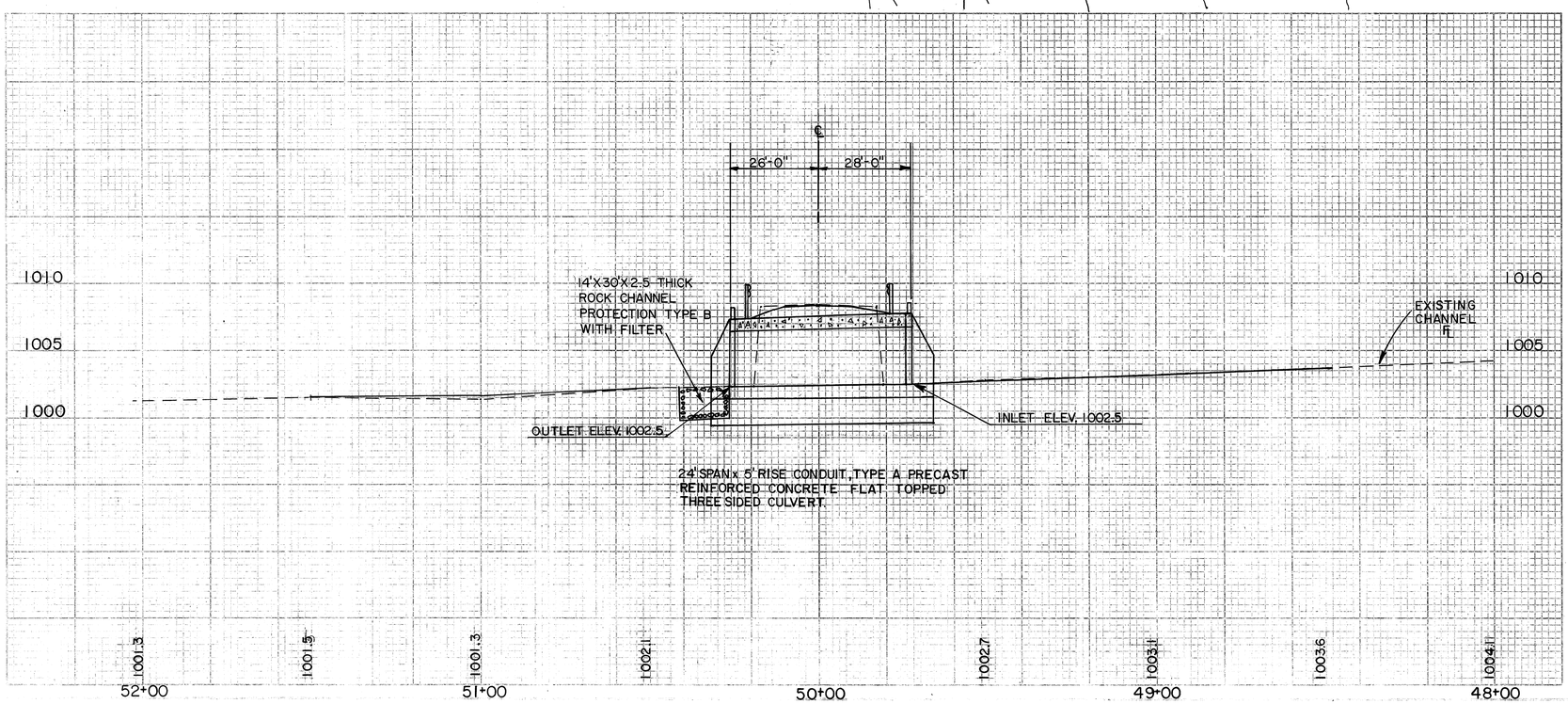
Calc. by ADB
Date 7/90
Chk'd by DRA
Date 7/90

| FED. RD. DIVISION | STATE | PROJECT | | |
|---|---|---|---|---|
| 2 | OHIO | | | |

11
20

MED-57-02.71




## HYDROLOGIAL DATA

DRAINAGE AREA: 808 ACRES

SLOPE: 102 FT./MILE

| | |
|---|---|
| Q 25 = 434 CFS | HW 25 = 1005.9 |
| Q 50 = 531 CFS | HW 50 = 1006.5 |
| Q 100 = 631 CFS | HW 100 = 1007.2 |

## EXISTING STRUCTURE

TYPE: CONCRETE SLAB

SPAN: 25'

ROADWAY WIDTH: 30'

SKEW: 25° L.F.

LOADING: S-11.1-46

SUB-STRUCTURE: CONC. GRAV.

ALIGNMENT: TANGENT

CONDITION: POOR

DATE BUILT: 1932

## PROPOSED STRUCTURE

TYPE: 24' SPAN x 5' RISE PRE-CAST THREE SIDED CULVERT

LENGTH: 54' LIN. FT.

ROADWAY WIDTH: 40' F.F. G.R.

SKEW: 25° L.F.

LOADING: HS20-44 AND ALTERNATE MILITARY

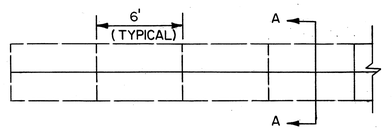
ALIGNMENT: TANGENT

## ESTIMATED QUANTITIES

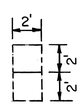
| ITEM | TOTAL | UNIT | DESCRIPTION |
|---|---|---|---|
| 202 | LUMP | | STRUCTURE REMOVED |
| 503 | LUMP | | COFFERDAMS, CRIBS AND SHEETING |
| 603 | 54 | LIN. FT. | 24' SPAN x 5' RISE CONDUIT, TYPE A PRECAST REINFORCED CONCRETE FLAT-TOPPED THREE-SIDED CULVERT, AS PER PLAN |
| 601 | 71 | CU. YD. | ROCK CHANNEL PROTECT. TYPE C W/ FABRIC FILTER |
| 601 | 39 | CU. YD. | ROCK CHANNEL PROTECTION TYPE B W/FILTER |
| 509 | 3931 | LBS | REINFORCING STEEL, GRADE 60 |
| 509 | 411 | LBS | EPOXY COATED REINFORCING STEEL |
| 511 | 68.0 | CU. YD. | CLASS C CONCRETE, FOOTINGS, AS PER PLAN |
| 511 | 83 | CU. YD. | CLASS C CONCRETE, WINGWALLS ABOVE FOOTINGS, AS PER PLAN |
| 518 | 3 | CU. YD | POROUS BACKFILL WITH FILTER FABRIC |
| 503 | LUMP | | UNCLASSIFIED EXCAVATION |
| 512 | 160 | SQ. YD. | MEMBRANE WATERPROOFING (SHEET TYPE 3) |
| SPEC. | LUMP | | REMOVAL MISC.: PORTION OF SANDSTONE RETAINING WALL REMOVED AND REBUILT |
| 512 | 56 | SQ. YD. | MEMBRANE WATERPROOFING (SHEET TYPE 2) |

SEE PLAN/PROFILE SHEET FOR GUARDRAIL QUANTITY ACROSS CULVERT.

* SEE SHEET 16 FOR REINFORCING STEEL SCHEDULE




SANDSTONE RETAINING WALL




SECTION A-A

CULVERT DETAIL

| FHWA REGION | STATE | PROJECT | |
|---|---|---|---|
| 5 | OHIO | | |

12
20

MED-57-02.71

Calc. by AMB
Date 7/90
Chk'd by MER
Date 7-90

| SEEDING END WIDTH | SEEDING SQ. YDS. | |
|---|---|---|
| | 9 | AHD 50+26 BK |
| 64 | | |
| | -47 | DEDUCT FOR R.C.P. TYPE B |
| | 171 | |
| 64 | | |
| | 344 | |
| 60 | | |
| | 167 | |
| 0 | | |
| TOTAL (SQ. YD.) | 1315 | TOTAL TO SHEET 8 |

50+19

1002.5
50+26
(25° SKEW)
1003.3

R.C.P., TYPE C W/FABRIC FILTER

SUSPEND CHANNEL WORK
BEGIN 24' SPAN x 5' RISE
THREE SIDED CULVERT

REMOVE AND REBUILD SANDSTONE BLOCK WALL FROM STA. 50+50± TO THE END OF THE NEW WINGWALL

50+26

S

2:1

1002.1
50+50
1002.3

EXISTING SANDSTONE BLOCK WALL, DO NOT DISTURB FROM STA. 50+50± TO 50+86±

℄
1001.6

51+00
1003.8

℄
1001.5

51+50
1003.1

BEGIN CHANNEL WORK

℄
1001.3

52+00
1002.4

| END AREA CUT | END AREA FILL | VOLUME CUT | VOLUME FILL |
|---|---|---|---|
| 54 | 0 | | |
| | | 39 | 0 |
| 34 | 0 | | |
| | | 59 | 0 |
| 30 | 0 | | |
| | | 28 | 0 |
| 0 | 0 | | |
| TOTAL TO SHEET 8 | | | |
| TOTAL (CU. YD.) | | 401 | 3 |

CHANNEL CROSS SECTIONS STA. 52+00 TO STA. 50+26

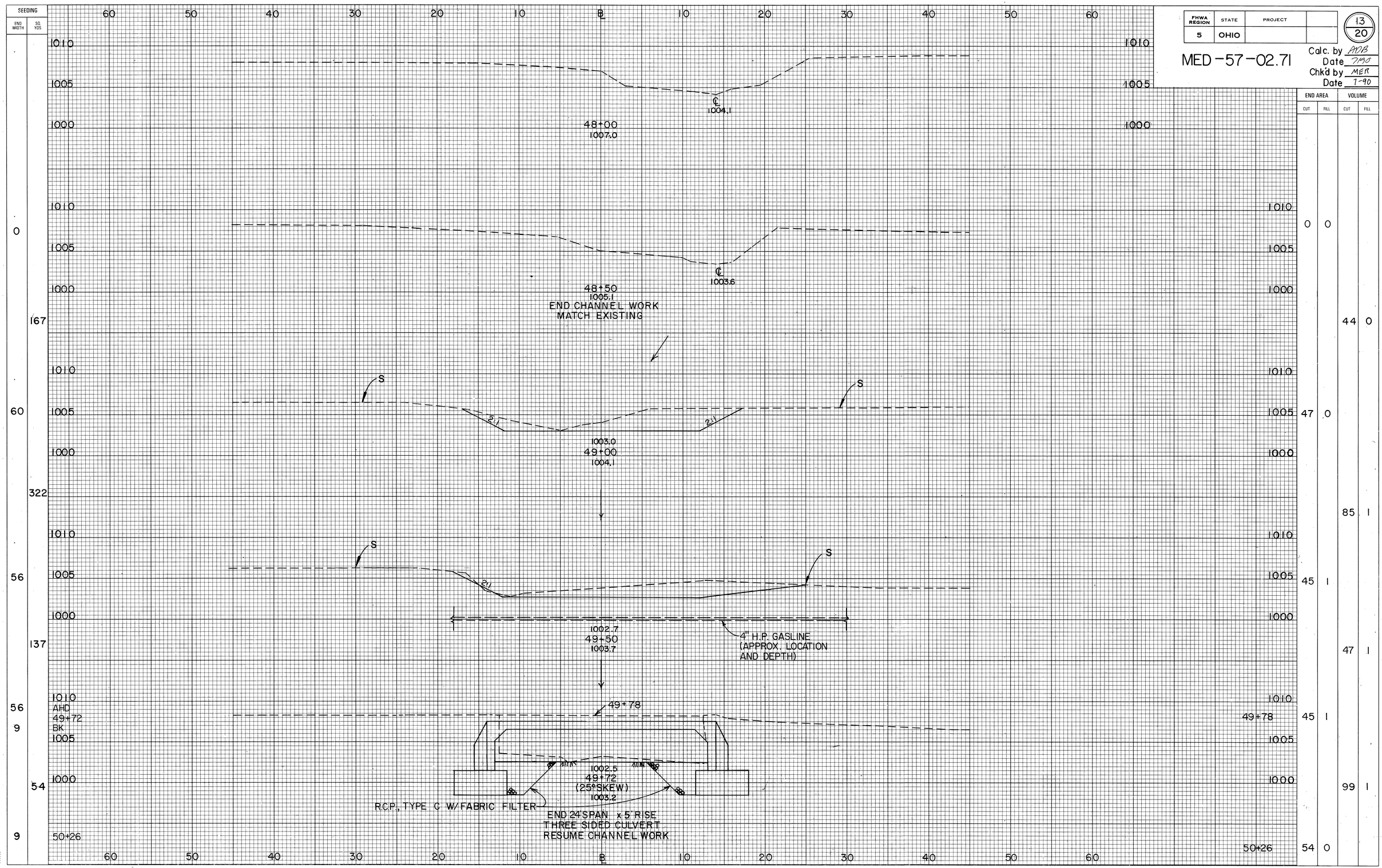
| FHWA REGION | STATE | PROJECT | |
|---|---|---|---|
| 5 | OHIO | | |

13
20

MED-57-02.71

Calc. by AMB Date 7/90
Chk'd by MER Date 7-90

| SEEDING | | END AREA | | VOLUME | |
|---|---|---|---|---|---|
| END WIDTH | SQ. YDS. | CUT | FILL | CUT | FILL |
| 0 | 167 | 0 | 0 | 44 | 0 |
| 60 | 322 | 47 | 0 | 85 | 1 |
| 56 | 137 | 45 | 1 | 47 | 1 |
| 56 | 9 | 49+78 | 45 | 1 | 99 | 1 |
| 54 | | | | | |
| 9 | | 50+26 | 54 | 0 | |

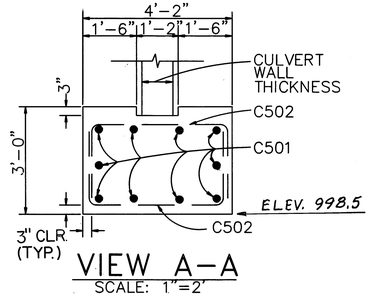



CHANNEL CROSS SECTIONS STA.49+72 TO STA.48+00

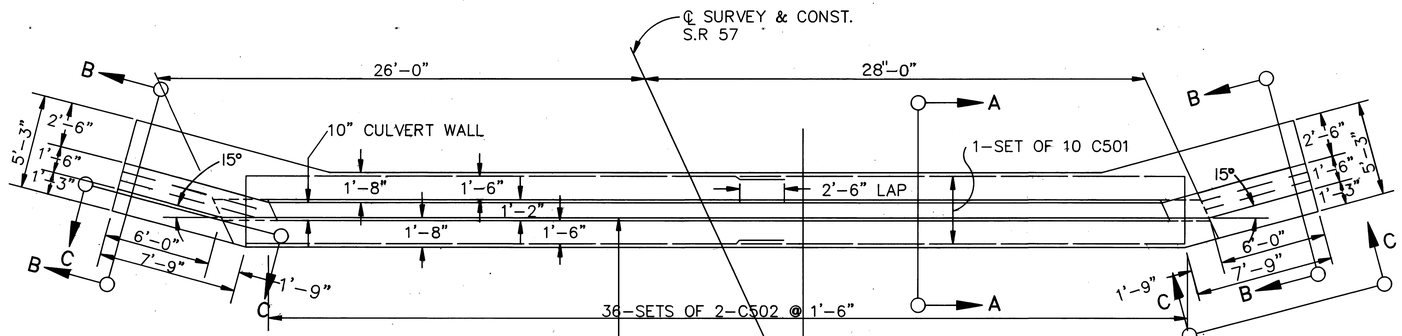
| FHWA REGION | STATE | PROJECT | |
|---|---|---|---|
| 5 | OHIO | | |

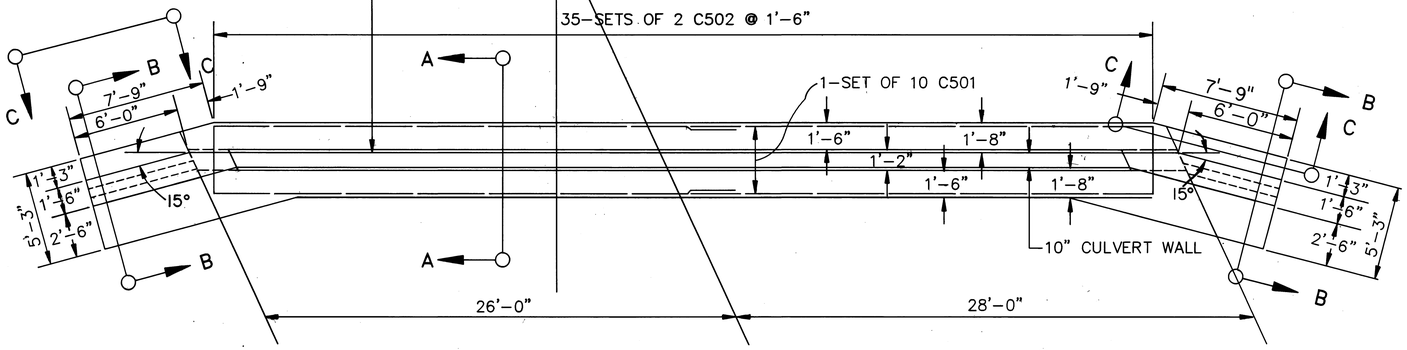
14
20

MED-57-02.71

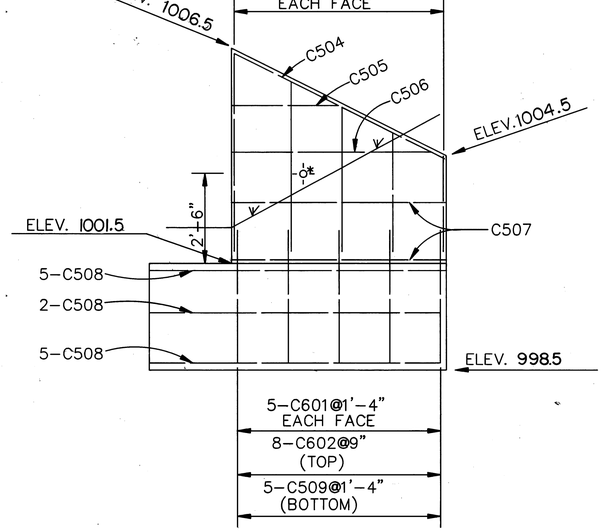



VIEW A-A
SCALE: 1"=2'

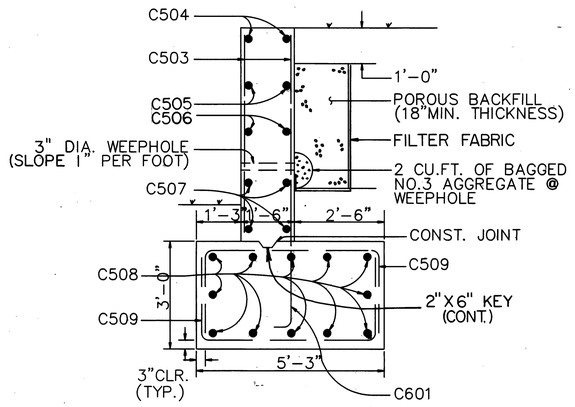



FOOTING & WINGWALL PLAN




VIEW C-C
* 3"DIA. WEEPHOLE
SCALE: 1"=2'



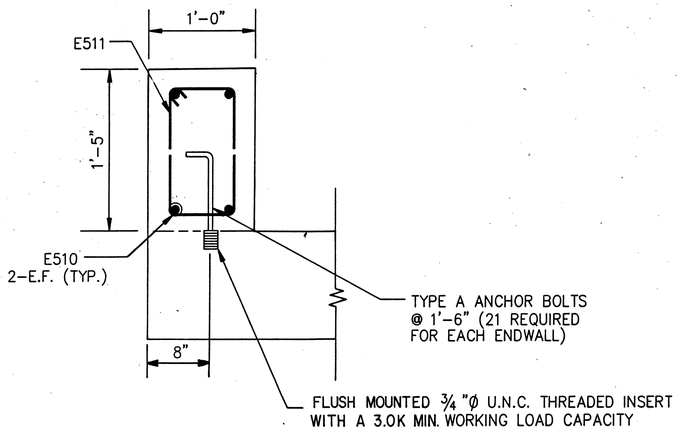

VIEW B-B
SCALE: 1"=2'

* SEE SHEET 11 FOR QUANTITIES

M57/WFDETAIL

WINGWALL & FOOTING DETAILS

Calc. by AMB
Date 7/90
Chk'd by DRH
Date 7/90




SECTION D-D
CAST-IN-PLACE
CONCRETE ENDWALL

## REINFORCING STEEL SCHEDULE

| MARK | NO. REQUIRED | LENGTH | TYPE | DEMENSIONS A | DEMENSIONS B | WEIGHT (LBS) | BENDING DIAGRAM |
|---|---|---|---|---|---|---|---|
| C501 | 40 | 30'-0" | ST | | | 1252 | |
| C502 | 144 | 8'-2" | 1 | 3'-8" | 2'-3" | 1227 | |
| C503 | 40 | 2'-6" TO 4'-6" (AVG 3'-6") | ST. | | | 146 | |
| C504 | 8 | 6'-3" | ST. | | | 52 | |
| C505 | 8 | 2'-6" | ST. | | | 21 | |
| C506 | 8 | 5'-3" | ST. | | | 44 | |
| C507 | 16 | 5'-7" | ST. | | | 93 | |
| C508 | 48 | 7'-10" | ST. | | | 392 | |
| C509 | 48 | 7'-2" | 1 | 4'-8" | 2'-6" | 359 | |
| C601 | 40 | 5'-9" | 2 | 4'-9" | 1'-0" | 345 | |
| | | | | | | | TYPE 1 / TYPE 2 |
| | | TOTAL (NON-EPOXY COATED BARS) | | | | 3,931 | |
| EPOXY COATED REINFORCING STEEL | | | | | | | |
| E510 | 8 | 27'-10" | ST. | | | 232 | |
| E511 | 42 | 4'-1" | 11 | 8" | 1'-1" | 179 | TYPE 11 |
| | | TOTAL (EPOXY COATED BARS) | | | | 411 | |

*QUANTITIES CARRIED TO SHEET 11

## NOTES

POROUS BACKFILL, 1'-6" SHALL EXTEND VERTICALLY FROM 1'-0" BELOW FINISHED GRADE TO 6" BELOW WEEP HOLE AND LATERALLY FROM EDGE OF CULVERT TO END OF WINGWALL.

THE CONTRACTOR SHALL FILL THE GAPS IN THE FOOTING KEY BETWEEN THE CONCRETE CULVERT AND THE FOOTER CONCRETE WITH PORTLAND CEMENT MORTAR. THIS WORK SHALL NOT BE DONE UNTIL AFTER ALL CULVERT SECTIONS HAVE BEEN PLACED AND SHALL BE PAID FOR IN THE BID PRICE FOR ITEM 603.

REMOVAL OF EXISTING STRUCTURE: 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.

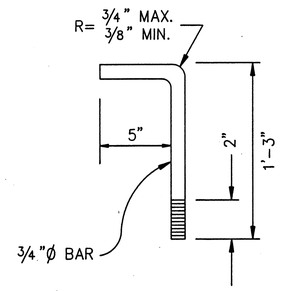
FOUNDATION BEARING PRESSURE: THE THREE SIDED CULVERT AND WINGWALL FOOTINGS AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 1.75 TONS PER SQUARE FOOT.

ANCHOR BOLTS SHALL MEET ASTM A307. THE BOLTS SHALL BE CONNECTED WITH ANCHOR INSERTS CAST PERMANENTLY INTO THE THREE-SIDED CULVERT. ALL ANCHOR BOLTS AND INSERTS SHALL BE INCLUDED IN ITEM 603-24' SPAN X 4' RISE CONDUIT, FOR PAYMENT.

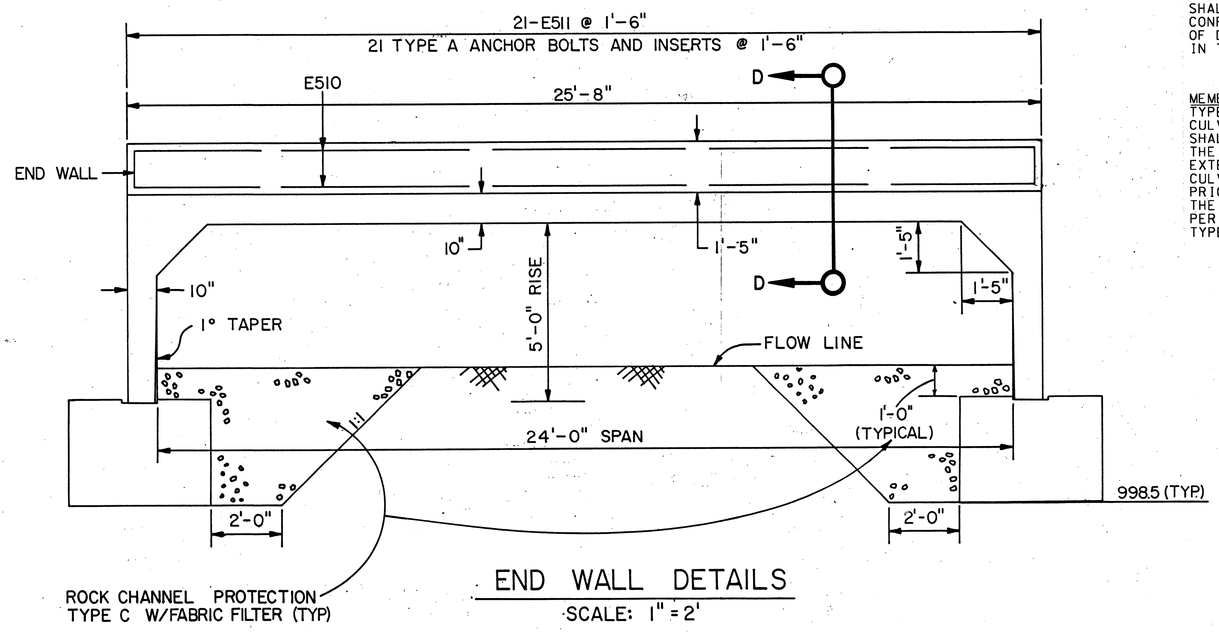
COURSE AGGREGATE FOR THE CLASS C CONCRETE SHALL BE LIMESTONE OR SLAG.

ITEM SPECIAL, REMOVAL, MISCELLANEOUS: PORTION OF SANDSTONE RETAINING WALL REMOVED AND REBUILT. THE CONTRACTOR SHALL REMOVE THE PORTION OF THE SANDSTONE BLOCK RETAINING WALL INDICATED ON SHEET NOS. 11 & 12. THE CONTRACTOR SHALL TAKE GREAT CARE WHILE HANDLING THE SANDSTONE BLOCKS. THE BLOCKS SHALL BE SALVAGED INTACT AND REUSED TO REBUILD THE WALL TO CONFORM TO THE NEW WINGWALL WHEN IT IS COMPLETED. THE COST OF DISPOSING OF ANY EXCESS SANDSTONE BLOCKS SHALL BE INCLUDED IN THE LUMP SUM BID PRICE.

MEMBRANE WATERPROOFING: MEMBRANE WATERPROOFING (SHEET TYPE 3) SHALL BE APPLIED TO THE TOP SURFACE OF THE PRECAST CULVERT SECTIONS AND MEMBRANE WATERPROOFING (SHEET TYPE 2) SHALL EXTEND VERTICALLY DOWN ALL SIDES FOR THE PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL. THE EXTERIOR JOINT GAP ON THE TOP AND SIDES BETWEEN THE PRECAST CULVERT SECTIONS SHALL BE FILLED WITH PORTLAND CEMENT MORTAR PRIOR TO INSTALLING THE MEMBRANE WATERPROOFING. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM SPECIAL-MEMBRANE WATERPROOFING (SHEET TYPE 2 OR 3). SEE PROPOSAL NOTES FOR ADDITIONAL REQUIREMENTS.




TYPE A ANCHOR BOLT
(EPOXY COATED)
(TYPICAL BOTH PRE-CAST AND CAST-IN-PLACE ENDWALLS)




END WALL DETAILS
SCALE: 1" = 2'

M57/NOTE

WINGWALL AND FOOTING DETAILS

| FHWA REGION | STATE | PROJECT | CALC: |
|---|---|---|---|
| 5 | OHIO | | DATE: |
| | | | CHKD: |
| | | | DATE: |



MED-57-02.71

## ITEM 603 - PRECAST REINFORCED CONCRETE FLAT TOPPED THREE-SIDED CULVERTS

### GENERAL DESIGN REQUIREMENTS

WHERE THE PLANS CALL FOR "ITEM 603 PRECAST REINFORCED CONCRETE FLAT TOPPED THREE-SIDED CULVERTS" THE CULVERTS SHALL BE MANUFACTURED TO COMPLY WITH THE FOLLOWING.

THESE CULVERTS SHALL BE FLAT DECK STRUCTURES WITH A MINIMUM CLEAR SPAN (MEASURED NORMAL TO THE STRUCTURE AT THE BOTTOM OF THE HAUNCH) OF 14 FEET AND A MINIMUM OPENING RISE (MEASURED FROM BOTTOM OF LEG TO BOTTOM OF DECK AT THE CENTERLINE OF THE STRUCTURE) OF 4 FEET; AND A MAXIMUM CLEAR SPAN OF 34 FEET AND MAXIMUM OPENING RISE OF 10 FEET. MINIMUM WALL AND DECK THICKNESSES SHALL BE 10 INCHES AND 12 INCHES RESPECTIVELY, MEASURED UNDER THE HAUNCH NORMAL TO THE STRUCTURE AND AT THE CENTERLINE OF THE SPAN MEASURED PERPENDICULAR TO THE STRUCTURE. FOR SKEWED STRUCTURES THE MAXIMUM SKEW SHALL BE 30° WITH A MINIMUM SKEW OF 10°. THE SKEW SHALL BE IN 5° INCREMENTS.

### EXTERNAL DIMENSIONS

TO MAINTAIN CONSTANT WINGWALL, HEADWALL, PAVEMENT BUILD-UP, AND GUARDRAIL ELEVATIONS THE DESIGN IN THE PLAN REFLECTS THE EXTERNAL TOP SLAB ELEVATION OF THE STRUCTURE. THIS FIXES THE TOP OF THE SLAB ELEVATION. IF THE STRUCTURE SUPPLIED HAS A DECK THICKER THAN THE PLAN DESIGN, THE DIFFERENCE BETWEEN THE DESIGN TOP SLAB ELEVATION AND THE SUPPLIED TOP SLAB ELEVATION SHALL BE ACCOMPLISHED BY A REDUCTION IN LEG LENGTH.

THE CLEAR SPAN SHOWN IS THE MINIMUM FOR THE STRUCTURE. THE CLEAR SPAN PROVIDED BY THE MANUFACTURER MAY BE GREATER THAN THAT SHOWN. THE EXACT FOOTER LOCATIONS SHALL BE DETERMINED BASED ON THE MANUFACTURER'S SHOP DRAWINGS. THESE FOOTER LOCATIONS WILL BE SUCH THAT THE CENTERLINE OF THE LEG AT THE BOTTOM OF THE HAUNCH MATCHES THE CENTERLINE OF THE FOOTER.

ALL CHANGES RESULTING FROM DIMENSIONAL CHANGES IN THE STRUCTURE SHALL BE AT NO CHANGE IN COST TO THE PROJECT.

THESE CULVERTS ARE INTENDED TO BE USED FOR THE CONVEYANCE OF STORM WATER, AND WILL BE SUBJECTED TO EARTH AND HIGHWAY LOADINGS. THE CULVERTS ARE DESIGNATED BY CLEAR SPAN, LENGTH, AND OPENING RISE. THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) ITEM 603 TYPE A CONDUIT SHALL APPLY EXCEPT AS MODIFIED HEREINAFTER.

### BASIS OF ACCEPTANCE

ACCEPTABILITY OF THE THREE-SIDED CULVERT PRODUCED IN ACCORDANCE WITH THIS NOTE SHALL BE DETERMINED BY THE RESULTS OF THE CONCRETE COMPRESSIVE STRENGTH TESTS AND AIR CONTENT OF THE HARDENED CONCRETE, BY THE MATERIAL REQUIREMENTS DESCRIBED HEREINAFTER AND BY INSPECTION OF THE FINISHED PRODUCT. THE MANUFACTURER SHALL ALSO SUBMIT SHOP DRAWINGS AND DESIGN CALCULATIONS FOR REVIEW AND APPROVAL.

### SHOP DRAWING REQUIREMENTS

THE MANUFACTURER SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO MANUFACTURE. THE SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING:

1. ALL STRUCTURAL DESIGN AND LOADING INFORMATION
2. ALL MATERIAL SPECIFICATIONS
3. A PLAN VIEW
4. AN ELEVATION VIEW
5. ALL HEADWALL AND WINGWALL ATTACHMENT REQUIREMENTS
6. ALL DIMENSIONS
7. ALL MAINTENANCE OF TRAFFIC PHASES
8. ALL SECTION SIZES

THE SHOP DRAWING SHALL ALSO INCLUDE THE FOLLOWING SPECIAL INFORMATION AS REQUIRED:

1. FOR TOP MOUNTED GUARDRAIL, THE GUARDRAIL PLATE AND BOLT LOCATIONS WILL BE SHOWN IN THE PLAN VIEW. HOLES SHALL BE A MINIMUM OF 6 INCHES FROM A JOINT.

2. FOR SIDE MOUNTED GUARDRAIL, ADDITIONAL REINFORCING DETAILS SHALL BE SHOWN AS PER THE PURCHASER DETAILS.

THE STRUCTURAL DESIGN CALCULATIONS SHALL BE SUBMITTED WITH THE SHOP DRAWINGS FOR APPROVAL FOR ALL PRE-APPROVED MANUFACTURERS. ALL MANUFACTURERS, NOT PRE-APPROVED SHALL SUBMIT A STRUCTURAL DESIGN CRITERIA AND ANALYSIS METHOD PRIOR TO THE PROJECT LETTING FOR APPROVAL. MANUFACTURING SHALL NOT BEGIN UNTIL WRITTEN APPROVAL OF THE SUBMITTED SHOP DRAWINGS AND DESIGN CALCULATIONS HAS BEEN RECEIVED. FOUR WEEKS SHALL BE ALLOWED FOR APPROVAL.

WHERE CIRCUMFERENTIAL REINFORCEMENT IS COMPOSED OF BARS, CRACK CONTROL CRITERIA SHALL BE CHECKED. CALCULATIONS PERFORMED BY A REGISTERED PROFESSIONAL ENGINEER VERIFYING THAT THE PROPOSED BAR SPACINGS MEETS THE CRACK CONTROL CRITERIA SHALL BE SUBMITTED WITH THE SHOP DRAWINGS.

### MATERIALS

ALL MATERIALS SHALL BE TESTED AND APPROVED PRIOR TO INCLUSION INTO THE CULVERT SECTIONS. ANY PIECE MADE WITH UNTESTED OR UNAPPROVED MATERIAL WILL BE SUBJECT TO REJECTION.

CEMENT - PORTLAND CEMENT SHALL CONFORM TO THE REQUIREMENTS OF CMS 701.01, 701.02, 701.04 AND 701.05.

AGGREGATES - FINE AGGREGATES SHALL BE A SAND CONFORMING TO CMS 703.02. COURSE AGGREGATE SHALL HAVE A STANDARD SIZE DESIGNATION FROM A NUMBER 5 TO A NUMBER 8 INCLUSIVE AS SPECIFIED IN CMS 703.01 AND THE QUALITY REQUIREMENTS OF CMS 703.02 SHALL APPLY.

ADMIXTURES - AIR ENTRAINING ADMIXTURES CONFORMING TO CMS 705.10 AND CHEMICAL ADMIXTURES CONFORMING TO CMS 705.12 APPROVED TYPES A, B, D, OR F MAY BE USED.

STEEL REINFORCEMENT - REINFORCEMENT SHALL CONSIST OF WELDED WIRE FABRIC CONFORMING TO CMS 709.10 OR 709.12, OR DEFORMED BILLET STEEL BARS CONFORMING TO CMS 709.01, GRADE 60. ALL REINFORCEMENT SHALL BE EPOXY COATED AS PER CMS 709.00 OR CMS 709.14.

IN LIEU OF EPOXY COATED REINFORCING, A CORROSION INHIBITING CONCRETE ADMIXTURE MAY BE USED.

### DESIGN

THE CULVERT DESIGN SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES. THE CULVERT DIMENSIONS SHALL BE AS SHOWN, SUBJECT TO THE PERMISSIBLE VARIATIONS CONTAINED HEREINAFTER.

MODIFIED AND SPECIAL DESIGNS - THE MANUFACTURER MAY REQUEST APPROVAL BY THE PURCHASER FOR MODIFIED DESIGNS AFTER THE BID.

### REINFORCING DEVELOPMENT, SPLICES, AND SPACING

EXTERIOR CORNER REINFORCEMENT SHALL BE FULLY DEVELOPED AT THE POINT OF PEAK STRESS AND EXTEND 12 INCHES AT A MINIMUM BEYOND THE POINT OF PEAK STRESS. THE DEVELOPMENT LENGTH FOR WELDED WIRE FABRIC (CMS 709.10 OR 709.12) SHALL CONFORM TO AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

SPLICES IN CIRCUMFERENTIAL REINFORCEMENT SHALL BE MADE BY LAPPING AND NOT BY WELDING. LAP LENGTHS SHALL BE AS PER AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

SPACING CENTER TO CENTER OF THE CIRCUMFERENTIAL WIRES IN A FABRIC SHEET SHALL NOT BE LESS THAN 2 INCHES NOR MORE THAN 4 INCHES. THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES OR BARS SHALL NOT BE MORE THAN 8 INCHES.

ALL REINFORCEMENT DESIGN CHANGES FROM THE APPROVED SHOP DRAWINGS SHALL BE SUBMITTED TO THE PURCHASER FOR APPROVAL.

### JOINTS

THE PRECAST REINFORCED CONCRETE FLAT TOPPED THREE-SIDED CULVERT SECTIONS SHALL BE PRODUCED WITH A KEYWAY JOINT IN THE TOP SLAB. THE KEYWAY SHALL PROVIDE A VOID VOLUME EQUIVALENT TO THAT OF 12 IN. PRESTRESSED BEAM AS PER STD. DWG. PSBD-1-81. THE JOINT IN THE LEG SECTIONS SHALL BE OF SUCH DESIGN AS TO PRODUCE A SHEAR KEY OR INTER-LOCKING JOINT. THE NON-ADJOINING OUTSIDE LEGS SHALL BE SMOOTH. THE JOINT SURFACES SHALL BE GIVEN A MEDIUM SANDBLAST, OR 2000 P.S.I. WATER BLAST NO MORE THAN 4 DAYS PRIOR TO SHIPPING. THE CULVERT SHALL BE OF SUCH DESIGN THAT THE SECTIONS WHEN LAID TOGETHER WILL MAKE A CONTINUOUS LINE WITH A SMOOTH INTERIOR FREE OF APPRECIABLE IRREGULARITIES, ALL COMPATIBLE WITH THE PERMISSIBLE VARIATIONS HEREINAFTER.

MORTAR FOR THE JOINTS SHALL BE A NON-SHRINKING NON-METALLIC MORTAR MEETING THE CORPS OF ENGINEERS SPECIFICATION CRD-C621. A LIST OF APPROVED MORTARS IS MAINTAINED BY THE ODOT TEST LABORATORY LOCATED AT 1600 WEST BROAD STREET IN COLUMBUS, OHIO 43223. THE MORTAR SHALL BE PREPARED, PLACED AND CURED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. BEFORE MORTARING THE KEYWAY 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 KEYWAY.

THE JOINT EXTERIOR BEYOND THE LIMITS OF MEMBRANE WATERPROOFING SHALL BE COVERED WITH A MINIMUM OF A 12 IN. WIDE WRAP CENTERED ON THE JOINT. THE EXTERNAL WRAP SHALL BE AS PER PETROTAC AS MANUFACTURED BY PHILLIPS FIBER CORP OR CS 213 AS MANUFACTURED BY CONCRETE SEALANTS, INC. CARE SHALL BE EXERCISED TO KEEP THE JOINT WRAP IN ITS PROPER LOCATION DURING BACKFILLING.

### MANUFACTURE

MIXTURE - AGGREGATES, CEMENT, AND WATER SHALL BE MANUFACTURED AS PER CMS 499.04, 499.05, 499.06 TO PRODUCE A HOMOGENEOUS CONCRETE, MEETING THE STRENGTH REQUIREMENTS AS STATED. THE TEMPERATURE REQUIREMENTS OF CMS 511.06 AND 511.12 SHALL BE MET.

IN NO CASE HOWEVER, SHALL THE PROPORTION OF PORTLAND CEMENT BE LESS THAN 564 LB./C.Y. OF CONCRETE. THE HARDENED CONCRETE SHALL CONTAIN A MINIMUM OF 4 PERCENT ENTRAINED AIR. THE W/C RATIO SHALL NOT EXCEED 0.53. IF A CORROSION INHIBITING ADMIXTURE IS USED, IT SHALL BE ADDED AS AN AQUEOUS SOLUTION. THE WATER IN SUCH SOLUTION SHALL BE COUNTED AS MIXING WATER FOR THE PURPOSE OF DETERMINING THE WATER TO CEMENT RATIO OF THE CONCRETE. THE CORROSION INHIBITING CONCRETE ADMIXTURE MAY BE USED IN CONJUNCTION WITH OTHER COMPATIBLE ADMIXTURES TO CONTROL SETTING TIME AND WORKABILITY OF CONCRETE.

THE CORROSION INHIBITING CONCRETE ADMIXTURE MUST BE ADDED TO THE MIXTURE IMMEDIATELY AFTER THE AIR-ENTRAINING AND OTHER ADMIXTURES HAVE BEEN INTRODUCED TO THE BATCH. FOR APPROVED PRODUCTS AND THEIR MIXTURE RATE, SEE PROPOSAL NOTE 116-83.

### CONSTRUCTION

PLACEMENT OF REINFORCEMENT - THE CONCRETE COVER DIMENSION OVER REINFORCEMENT SHALL BE A MINIMUM OF 2 IN. THE CLEAR DISTANCE OF THE END CIRCUMFERENTIAL WIRES SHALL NOT BE LESS THAN 5/8 IN. NOR MORE THAN 2 IN. FROM THE ENDS OF THE CULVERT. REINFORCEMENT SHALL BE ASSEMBLED UTILIZING ANY COMBINATION OF SINGLE OR MULTIPLE LAYERS (3 MAXIMUM) OF WELDED WIRE FABRIC OR STEEL BARS. THE WELDED WIRE FABRIC SHALL BE COMPOSED OF CIRCUMFERENTIAL AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS HEREINAFTER. THE ENDS OF THE LONGITUDINAL REINFORCEMENT SHALL NOT BE MORE THAN 2 IN. FROM THE ENDS OF THE CULVERT. THE ENDS OF LONGITUDINAL REINFORCEMENT SHALL HAVE A MINIMUM COVER OF 1/2 IN., AND SPACERS USED TO POSITION THE REINFORCEMENT SHALL BE PLASTIC OR EPOXY COATED STEEL REGARDLESS IF A CORROSION INHIBITING ADMIXTURE IS USED.

FORMS - THE FORMS USED SHALL BE SUFFICIENTLY RIGID TO MAINTAIN THE CULVERT DIMENSIONS WITHIN THE PERMISSIBLE VARIATIONS GIVEN. ALL THE CASTING SURFACES SHALL BE OF A SMOOTH MATERIAL. ALL FORMS SHALL BE IN PLACE UNTIL THE DESIGN HANDLING STRENGTH WHICH IS PROVIDED BY THE SHOP DRAWING IS MET. IF THE SHOP DRAWING SHOWS NO DESIGN HANDLING STRENGTH THEN THE MINIMUM HANDLING STRENGTH SHALL BE ASSUMED TO BE 60 PERCENT OF THE DESIGN STRENGTH.

CURING - THE CULVERT SHALL BE CURED IN THE FORMS FOR THE LENGTH OF TIME REQUIRED TO OBTAIN THE SPECIFIED MINIMUM DESIGN HANDLING STRENGTH. THE CURING SHALL THEN CONTINUE UNTIL THE SPECIFIED MINIMUM DESIGN STRENGTH IS MET. ANY ONE OF THE FOLLOWING METHODS OF CURING OR COMBINATIONS THEREOF SHALL BE USED FOR CULVERT SECTIONS:

WATER CURING - THE CULVERT SECTIONS MAY BE WATER CURED IN ACCORDANCE WITH CMS 511.12 AND 511.14 METHOD (A) UNTIL THE REQUIRED MINIMUM DESIGN COMPRESSIVE STRENGTH IS MET.

ACCELERATED CURING - THE CONCRETE SHALL BE GIVEN AN ACCELERATED CURE BY LOW PRESSURE STEAM OR RADIANT HEAT WITHIN A SUITABLE INSULATED ENCLOSURE TO CONTAIN THE LIVE STEAM OR HEAT. THE INITIAL APPLICATION OF THE STEAM OR HEAT SHALL BE FROM TWO TO FOUR HOURS AFTER THE FINAL PLACEMENT OF CONCRETE TO ALLOW THE INITIAL SET TO TAKE PLACE. IF RETARDERS ARE USED, THE WAITING PERIOD SHALL BE INCREASED TO FOUR TO SIX HOURS. AS AN ALTERNATIVE, THE ACTUAL TIME OF INITIAL SET MAY BE DETERMINED IN ACCORDANCE WITH ASTM C403 AND CURING CANNOT BE STARTED UNTIL THE ACTUAL TIME TO INITIAL SET HAS ELAPSED.

DURING THE WAITING PERIOD THE TEMPERATURE WITHIN THE CURING ENCLOSURE SHALL NOT BE LESS THAN 50F (10C).

DURING THE INITIAL APPLICATION OF LIVE STEAM OR RADIANT HEAT, THE AMBIENT TEMPERATURE WITHIN THE CURING ENCLOSURE SHALL INCREASE AT AN AVERAGE RATE NOT EXCEEDING 40F (22C) PER HOUR UNTIL THE CURING TEMPERATURE IS REACHED.

THE MAXIMUM CURING TEMPERATURE SHALL NOT EXCEED 160F (71C). THE DESIGN TEMPERATURE SHALL BE HELD UNTIL THE CONCRETE HAS REACHED THE DESIRED DESIGN STRENGTH. APPLICATION OF LIVE STEAM SHALL NOT BE DIRECTED ON THE CONCRETE FORMS SO AS TO CAUSE LOCALIZED HIGH TEMPERATURES.

### HANDLING AND TRANSPORTATION

LIFTING DEVICES WHICH DO NOT REQUIRE A HOLE THROUGH THE STRUCTURE SHALL BE USED IN EACH CULVERT SECTION FOR THE PURPOSE OF HANDLING. HOWEVER, NOT MORE THAN FOUR MAY BE CAST IN EACH SECTION. LIFTING DEVICES SHALL BE COVERED ON THE EXTERIOR WITH THE JOINT-WRAP MATERIAL IF OUTSIDE THE LIMITS OF THE MEMBRANE WATERPROOFING. THIS WRAP SHALL HAVE A MINIMUM LENGTH AND WIDTH OF 12 IN. NO MEMBERS SHALL BE MOVED BEFORE THE DESIGN HANDLING STRENGTH OF THE CONCRETE IS REACHED, OR SHIPPED BEFORE THE DESIGN STRENGTH OF THE CONCRETE IS REACHED.

### PHYSICAL REQUIREMENTS

THE MINIMUM DESIGN CONCRETE COMPRESSIVE STRENGTH SHALL BE 5000 P.S.I. AT 28 DAYS.

### TESTING

COMPRESSIVE STRENGTH CYLINDERS - CONCRETE COMPRESSIVE STRENGTH SHALL BE DETERMINED USING 6 IN. BY 12 IN. CYLINDERS. FOR EACH SECTION OF THE CULVERT AT LEAST TWO CYLINDERS SHALL BE PRODUCED. THE CYLINDERS AND MATE CULVERT SECTION SHALL BE KEPT TOGETHER TO GUARANTEE THE CYLINDERS ARE MATCHED WITH THE CORRESPONDING CULVERT SECTION. EACH PAIR OF CYLINDERS SHALL HAVE AN AVERAGE STRENGTH OF NOT LESS THAN THE DESIGN STRENGTH AND EACH CYLINDER SHALL NOT HAVE LESS THAN 90 PERCENT OF THE DESIGN STRENGTH. ANY SECTION WHOSE CYLINDERS DO NOT PASS SHALL BE CORED.

AT THE MANUFACTURER'S REQUEST TWO CYLINDERS SHALL BE TESTED FOR EACH SECTION OF THE STRUCTURE AT THE TIME THE MANUFACTURER FEELS THE REQUIRED STRENGTH HAS BEEN MET. IF THESE CYLINDERS FAIL 48 HOURS OF ADDITIONAL CURING FOR THAT SECTION SHALL TAKE PLACE BEFORE ADDITIONAL CYLINDERS ARE TESTED. IF 28 DAYS PASS WITH NO CYLINDERS OR CORES PASSING FOR A SECTION OF THE STRUCTURE THEN THAT SECTION IS REJECTED.

THE INSPECTOR SHALL HAVE THE OPTION OF USING ONLY CORES FOR ACCEPTANCE OF EACH SECTION OR HAVING A SECTION'S CORES REPRESENT THE ENTIRE STRUCTURE. A MAXIMUM OF 4 CORES PER SECTION WILL BE TAKEN.

PRECAST REINFORCED CONCRETE FLAT TOPPED THREE-SIDED CULVERT

| FHWA REGION | STATE | PROJECT | CALC: |
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| 5 | OHIO | | DATE: |
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MED-57-02.71

COMPRESSIVE STRENGTH CORES - CONCRETE COMPRESSIVE STRENGTH SHALL BE DETERMINED FROM COMPRESSION TESTS MADE ON CORES. THE CORES SHALL BE OBTAINED AND TESTED FOR COMPRESSIVE STRENGTH IN ACCORDANCE WITH THE PROVISIONS OF ASTM C 497 SECTION 6 WITH THE FOLLOWING EXCEPTION, SECTION 6.4.2. THE CORES SHALL BE TREATED THE SAME AS THE PIECE IT REPRESENTS. TWO CORES SHALL BE CUT FROM EACH SECTION PER TEST.

THE COMPRESSIVE STRENGTH OF THE CORES TESTED SHALL MEET THE SAME REQUIREMENTS AS THE COMPRESSIVE STRENGTH CYLINDERS.

PLUGGING CORE HOLES - THE CORE HOLES SHALL BE PLUGGED AND SEALED BY THE MANUFACTURER IN A MANNER SUCH THAT THE CULVERT SECTION WILL MEET ALL OF THE TEST REQUIREMENTS OF THIS PROPOSAL. CULVERT SECTIONS SO SEALED SHALL BE CONSIDERED SATISFACTORY FOR USE. THE CONCRETE USED FOR PLUGGING THE CORE HOLES SHALL BE THE SAME AS THAT USED IN THE SECTION AND SHALL BE CURED BY ONE OF THE BEFORE MENTIONED METHODS.

CORING EQUIPMENT - EVERY MANUFACTURER FURNISHING CULVERT SECTIONS UNDER THIS SPECIFICATION SHALL FURNISH EQUIPMENT AND PERSONNEL NECESSARY TO OBTAIN THE CORES.

AIR DETERMINATION - TWO CORES SHALL BE TAKEN FROM EACH 25 FEET OF CULVERT FOR THE DETERMINATION OF AIR CONTENT. A MINIMUM OF 4 CORES SHALL BE TAKEN PER STRUCTURE.

**PERMISSIBLE VARIATIONS**

INTERNAL DIMENSIONS - THE INTERNAL DIMENSIONS (SPAN AND RISE) SHALL VARY NOT MORE THAN 2 IN. FROM THE SHOP DRAWINGS. THE HAUNCH DIMENSIONS SHALL VARY NOT MORE THAN 3/4 IN. FROM THE DIMENSIONS SHOWN ON THE SHOP DRAWINGS.

THE DECK AND WALLS SHALL BE PERPENDICULAR WITH A DIAGONAL DIFFERENCE OF NOT MORE THAN 0.5 PERCENT.

DECK AND WALL THICKNESS - THE DECK AND WALL THICKNESS SHALL NOT BE LESS THAN THAT SHOWN ON THE SHOP DRAWINGS BY MORE THAN 1/2 IN. A THICKNESS MORE THAN THAT REQUIRED SHALL NOT BE CAUSE FOR REJECTION.

LENGTH OF OPPOSITE SURFACES - VARIATIONS IN LAYING LENGTHS OF TWO OPPOSITE SURFACES OF THE CULVERT SECTIONS SHALL NOT BE MORE THAN 1 IN., EXCEPT WHERE BEVELED ENDS FOR LAYING OF CURVES ARE SPECIFIED.

LENGTH OF SECTION - THE LENGTH OF EACH SECTION SHALL BE WITHIN 1/2 IN. MEASURED AT BOTH SIDES AND MIDDLE THEN AVERAGED.

A FIT UP OF ALL OF THE CULVERT SECTIONS IS REQUIRED IN THE MANUFACTURERS YARD PRIOR TO SHIPPING FOR ACCEPTANCE OF ALL OR PART OF THE STRUCTURE.

EVERY MANUFACTURER FURNISHING CULVERT SECTIONS SHALL HAVE THE EQUIPMENT TO PROPERLY HANDLE THE SECTIONS. ALL DAMAGE INCURRED DURING FIT-UP SHALL BE REPAIRED BY THE MANUFACTURER.

POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN THE POSITION OF THE REINFORCEMENT SHALL BE 3/8 IN., EXCEPT THE COVER OVER THE REINFORCEMENT FOR THE EXTERNAL SURFACE OF THE TOP SLAB SHALL NOT BE LESS THAN 2 IN. THE ABOVE TOLERANCES OR COVER REQUIREMENTS DO NOT APPLY TO MATING SURFACES AT THE JOINT.

AREA OF REINFORCEMENT - THE AREAS OF STEEL REINFORCEMENT SHALL BE THE DESIGN STEEL AREAS PER LINEAR FT. STEEL AREAS GREATER THAN THOSE REQUIRED SHALL NOT BE CAUSE FOR REJECTION. THE PERMISSIBLE VARIATION IN DIAMETER OF ANY REINFORCEMENT SHALL CONFORM TO THE TOLERANCES PRESCRIBED IN THE ASTM SPECIFICATION FOR THAT TYPE OF REINFORCEMENT.

**WORKMANSHIP AND FINISH**

THE CULVERTS SHALL BE FREE OF FRACTURES. ALL SURFACES SHALL HAVE A SMOOTH FINISH. THE ENDS SHALL BE NORMAL TO THE WALLS AND CENTER LINE WITHIN THE LIMITS OF VARIATIONS GIVEN, EXCEPT WHERE BEVELED ENDS ARE SPECIFIED.

CULVERTS MAY BE REPAIRED, IF NECESSARY, BECAUSE OF OCCASIONAL IMPERFECTIONS IN MANUFACTURE, HANDLING DAMAGE, OR CONSTRUCTION, WHICH ARE DETERMINED, BY THE PURCHASER, NOT TO BE DETRIMENTAL TO THE FUNCTION OF THE SECTION. REPAIRS SHALL BE MADE IN ACCORDANCE WITH THE PURCHASERS REQUIREMENTS. NO ADDITIONAL PAYMENT WILL BE MADE FOR CULVERT REPAIRS. REPAIRS WILL BE ACCEPTABLE IF IN THE OPINION OF THE PURCHASER THE REPAIRS ARE SOUND, PROPERLY FINISHED AND CURED.

CULVERTS SHALL BE SUBJECT TO REJECTION FOR FAILURE TO CONFORM TO ANY OF THE REQUIREMENTS CONTAINED HEREINABOVE OR ANY OF THE FOLLOWING:

1. FRACTURES OR CRACKS PASSING THROUGH THE SLAB OR WALL.
2. DEFECTS THAT INDICATE IMPERFECT PROPORTIONING, MIXING, AND FORMING.
3. HONEYCOMBED OR OPEN TEXTURE.
4. PRECAST DAMAGED ENDS, WHERE SUCH DAMAGE WOULD PREVENT MAKING A SATISFACTORY JOINT.

**INSPECTION**

THE QUALITY OF MATERIALS, THE PROCESS OF MANUFACTURE, AND THE FINISHED CULVERT SHALL BE SUBJECT TO INSPECTION BY THE PURCHASER.

THE INSPECTION SHALL BE DONE AT THE TIME OF PRODUCTION UNLESS OTHERWISE DIRECTED BY THE PURCHASER OR THE PURCHASER'S TESTING AGENT OR TESTING LABORATORY.

A NOTICE OF PRODUCTION AND A PRODUCTION SCHEDULE WILL BE SUBMITTED TO THE PURCHASER TWO WEEKS PRIOR TO PRODUCTION. A NOTICE OF SHIPPING WILL BE SUBMITTED ONE WEEK PRIOR TO SHIPPING.

**MARKING**

THE FOLLOWING INFORMATION SHALL BE CLEARLY MARKED ON THE INTERIOR OF THE CULVERT 1 FOOT BELOW THE LEG HAUNCH BY INDENTATION, WATERPROOF PAINT, OR OTHER APPROVED MEANS:

CULVERT SPAN AND RISE
DESIGN EARTH COVER
DATE OF MANUFACTURE
NAME OR TRADEMARK OF THE MANUFACTURER

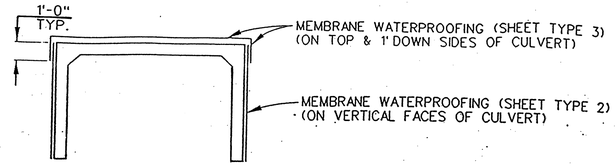
THIS INFORMATION SHALL BE ADDED UPON REMOVAL OF THE FORMS.

THE MANUFACTURER MAY BE REQUIRED TO REPEAT THE ABOVE MARKINGS BEFORE THE PROJECT IS FINAL.

**BASIS OF PAYMENT**

THE ACCEPTED QUANTITY OF CONDUIT OF THE SIZE SPECIFIED WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT, MEASURED ALONG THE CENTERLINE OF THE STRUCTURE COMPLETE IN PLACE. PAYMENT WILL BE MADE UNDER:

| ITEM | UNIT | DESCRIPTION |
|---|---|---|
| 603 | LINEAR FOOT | 24'SPAN X 5' RISE CONDUIT, TYPE A PRECAST REINFORCED CONCRETE FLAT TOPPED THREE-SIDED CULVERT AS PER PLAN. |




DETAIL OF MEMBRANE
(WATERPROOFING ON CULVERT)

PRECAST REINFORCED CONCRETE FLAT TOPPED THREE-SIDED CULVERT

# CENTERLINE SURVEY PLAT

## S.R. 57

MEDINA COUNTY GUILFORD TWP. PT. SEC. 30 T-1N R-14W
MEDINA COUNTY WADSWORTH TWP. PT. LOTS 1&4 TRACT 9 T-1N R-13W

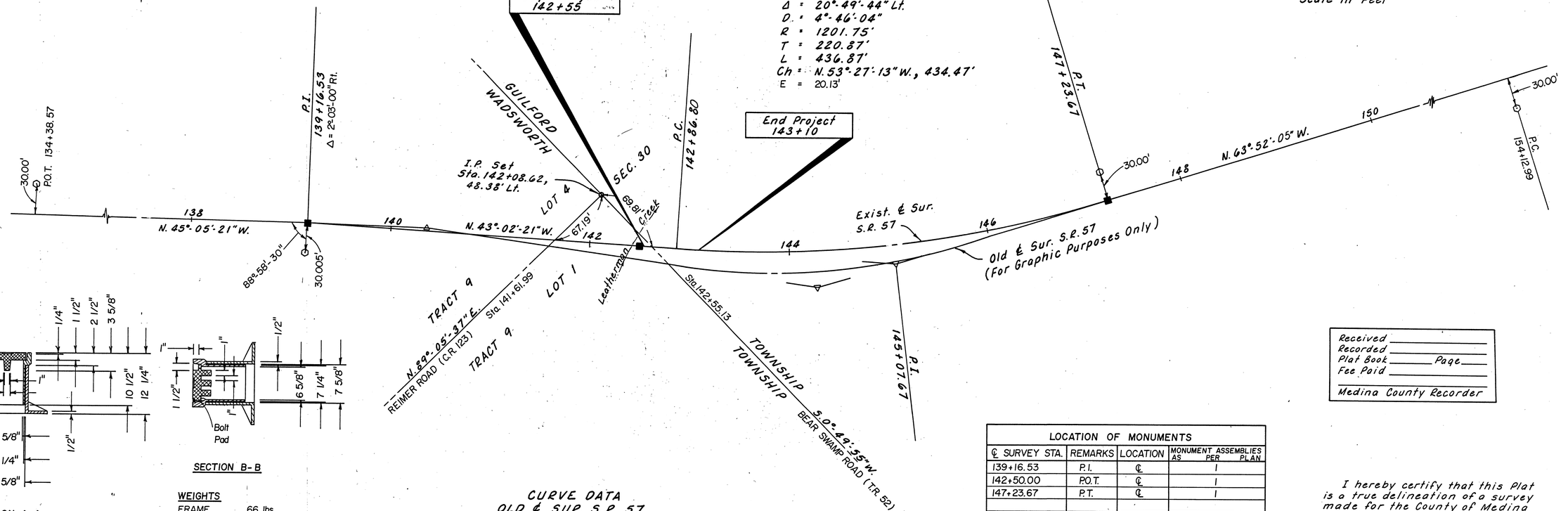
| STATE JOB NUMBER | FHWA REGION | STATE | PROJECT | |
|---|---|---|---|---|
| 630021 | 5 | OHIO | | |

18/20

MED-57-2.71
RIGHT OF WAY PLAN

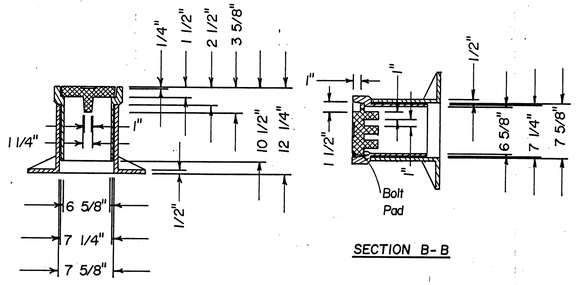
1/3

1/1



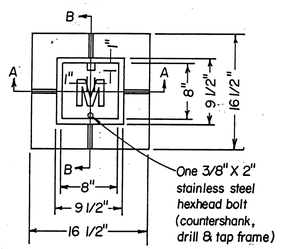

CURVE DATA
EXIST. & SUR. S.R. 57

P.I. Sta. 145+07.67
Δ = 20°-49'-44" Lt.
D = 4°-46'-04"
R = 1201.75'
T = 220.87'
L = 436.87'
Ch = N. 53°-27'-13"W., 434.47'
E = 20.13'




SECTION B-B

SECTION A-A




TOP VIEW

DETAIL OF MONUMENT ASSEMBLY AS PER PLAN

WEIGHTS

| | |
|---|---|
| FRAME | 66 lbs. |
| SLEEVE | 37 lbs. |
| LID | 31 lbs. |
| TOTAL | 134 lbs. |

See MC-1 for details not shown.
Monument Assemblies are shown on standard construction drawing MC-1 (Rev. 6-13-69) of the Department of Transportation. The placing of the monuments shall be under the direction of a registered surveyor and are to be set as shown by the Highway Contractor at the time of construction. Any alterations, with prior approval of O.D.O.T., shall be noted and O.D.O.T. shall be notified of the new locations.

MATERIAL

1. Gray Iron, ASTM A98 Class 30
2. PAINT: one coat black asphalt

CURVE DATA
OLD & SUR. S.R. 57
(As shown on Exist. R/W Plan, 1932)

Δ = 18°-47' Lt.
D = 6°-00'
L = 313.05'
T = 158.0'
R = 955.4'

NOTE: Curve Data for Old & Sur. S.R. 57 does not fit Exist. Curve shown on R/W Plan from 1932. See Medina County S.H. 321 Sec. "f" Br.

| LOCATION OF MONUMENTS | | | |
|---|---|---|---|
| ℄ SURVEY STA. | REMARKS | LOCATION | MONUMENT ASSEMBLIES AS PER PLAN |
| 139+16.53 | P.I. | ℄ | 1 |
| 142+50.00 | P.O.T. | ℄ | 1 |
| 147+23.67 | P.T. | ℄ | 1 |
| | | | |
| | | | |
| TOTAL | | | 3 |

MONUMENT LEGEND

- ⊙ Concrete R/W Monument Found & Used
- ■ Proposed Monument Assemblies
- ○ 3/4" Bar Set With I.D. Cap
- ● Existing Iron Pins
- △ R.R. Spike Set

Received _____
Recorded _____
Plat Book _____ Page _____
Fee Paid _____
Medina County Recorder

I hereby certify that this Plat is a true delineation of a survey made for the County of Medina in 1990 by the Ohio Department of Transportation - District 3.

James E. Kenyon
James E. Kenyon, P.S.
Reg. Surveyor No. 6891

2-11-94
Date

STATE OF OHIO
JAMES E. KENYON
6891
REGISTERED SURVEYOR

Type Funds : State

Plan Completed : 11-7-90

| Rev. Date | Description |
|---|---|
| SAS 1-28-94 | Rev. location of monument |

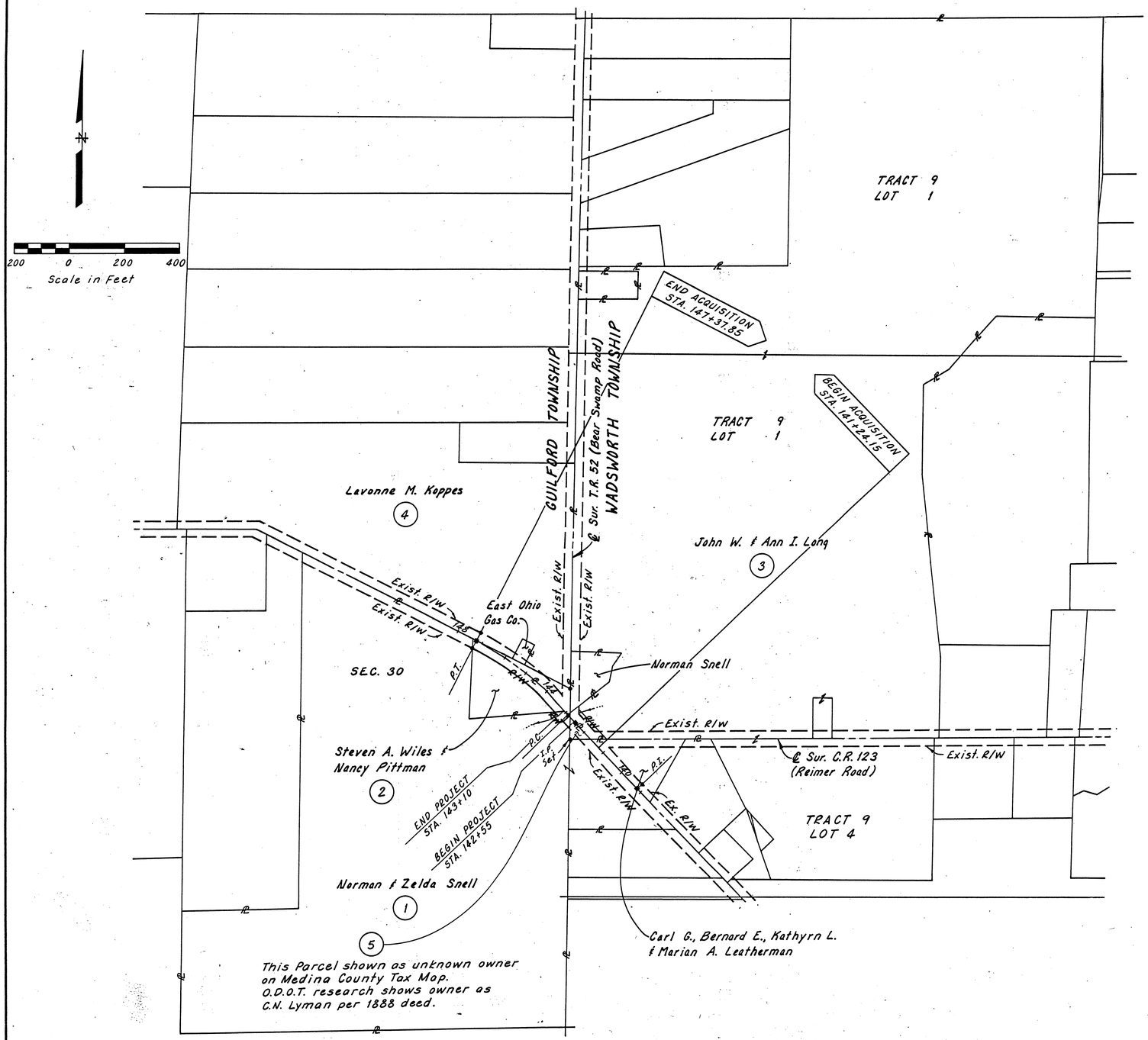
| STATE JOB NUMBER | FHWA REGION | STATE | PROJECT | |
|---|---|---|---|---|
| 630021 | 5 | OHIO | | |

19
20

2
3

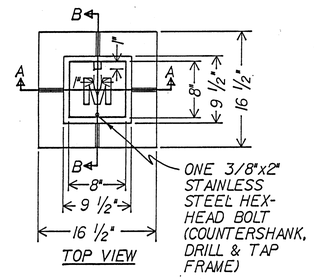
MED-57-2.71
RIGHT OF WAY PLAN

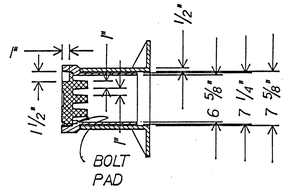
# PROPERTY MAP




MEDINA COUNTY GUILFORD TWP. PART SEC. 30 T-1N R-14W
MEDINA COUNTY WADSWORTH TWP. PART LOTS 1 & 4 TRACT 9 T-1N R-13W

## DETAIL OF MONUMENT ASSEMBLY, AS PER PLAN

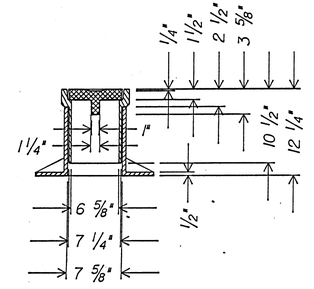



SECTION B-B

WEIGHTS

| | |
|---|---|
| FRAME | 66 LBS. |
| SLEEVE | 37 LBS. |
| LID | 31 LBS. |
| TOTAL | 134 LBS. |




SECTION A-A

MATERIAL
1. GRAY IRON, ASTM A98 CLASS 30
2. PAINT: ONE COAT BLACK ASPHALT

SEE MC-1 FOR DETAILS NOT SHOWN. MONUMENT ASSEMBLIES ARE SHOWN ON STANDARD CONSTRUCTION DRAWING MC-1 (REV. 6-13-69) OF THE DEPARTMENT OF TRANSPORTATION. THE PLACING OF THE MONUMENTS SHALL BE UNDER THE DIRECTION OF A REGISTERED SURVEYOR AND ARE TO BE SET AS SHOWN BY THE HIGHWAY CONTRACTOR AT THE TIME OF CONSTRUCTION. ANY ALTERATIONS, WITH PRIOR APPROVAL OF THE ENGINEER, SHALL BE NOTED AND THE ENGINEER SHALL BE NOTIFIED OF THE NEW LOCATIONS.

| LOCATION OF MONUMENTS | | | |
|---|---|---|---|
| ℄ SURVEY STA. | REMARKS | LOCATION | MONUMENT ASSEMBLIES AS PER PLAN |
| 139+16.53 | P.I. | ℄ | 1 |
| 142+50.00 | P.O.T. | ℄ | 1 |
| 147+23.67 | P.T. | ℄ | 1 |
| | | | |
| | | | |
| | | | |
| TOTAL | | | 3 |

MONUMENT LEGEND (APPLIES TO ℄ SURVEY PLAT & DETAIL SHEET)

- ■ PROPOSED MONUMENT ASSEMBLIES
- ○ 3/4" BAR SET WITH I.D. CAP
- ● EXISTING IRON PINS
- △ R.R. SPIKE SET

Type Funds: State

Plan Completed: 11-7-90

| Rev. | Date | Description |
|---|---|---|
| PWS | 2-25-91 | Added Parcel 5 |
| SAS | 1-31-94 | Rev. location of monument |

| STATE JOB NUMBER | FHWA REGION | STATE | PROJECT | | 20 / 20 |
|---|---|---|---|---|---|
| 630021 | 5 | OHIO | | | 3 / 3 |

# SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

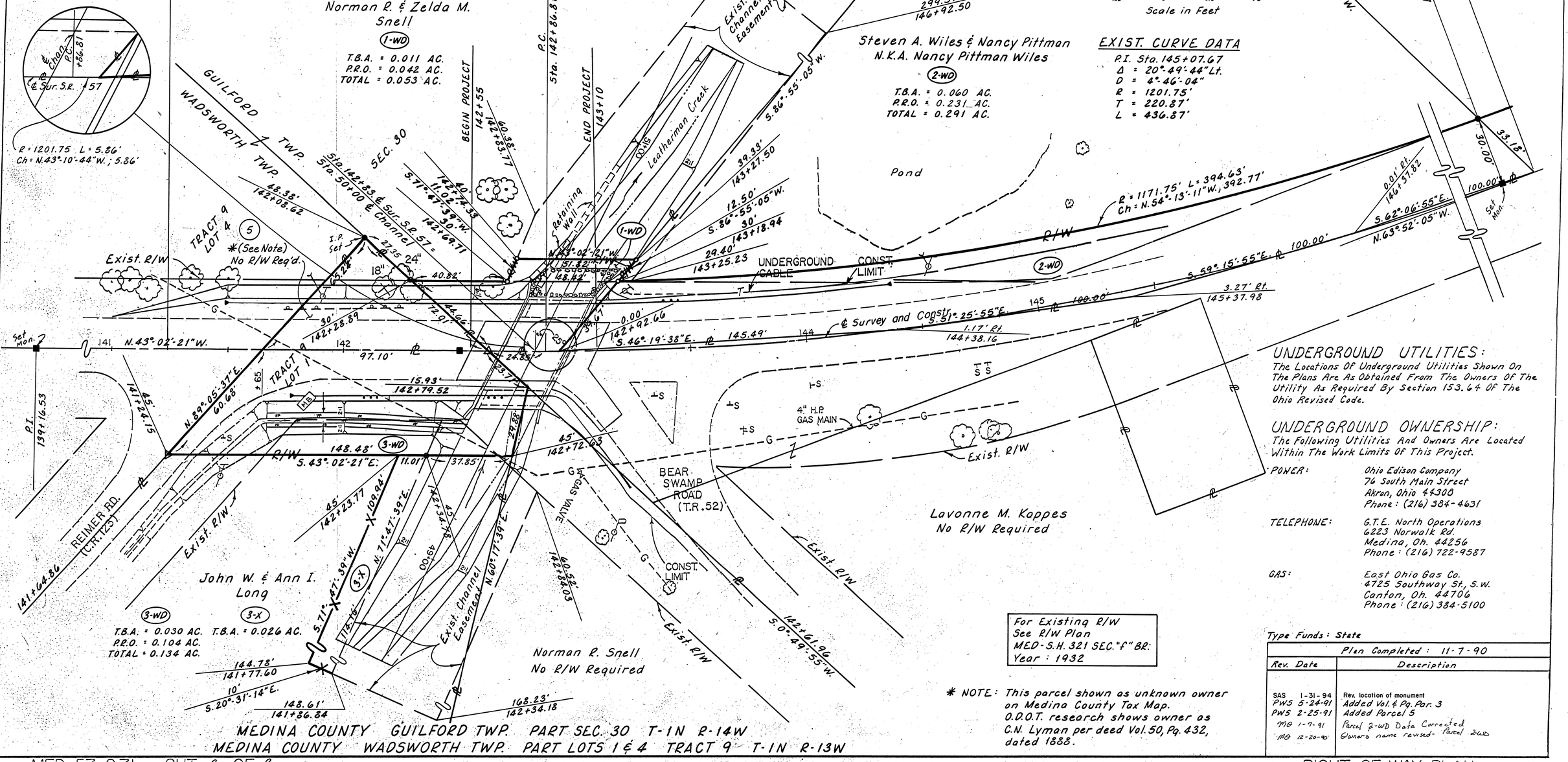
P.I.D No. 7995

No. Property Owners 3 — No. Total Takes 0 — No. Structures 0

| Parcel No. | Type Funds | Owner | Deed Record Vol. | Deed Record Page | Deed Area | Total P.R.O. | Total Take | P.R.O. Intake | Net Take | Net Residue Lt. | Net Residue Rt. | Bldg. | Sheet No. | Remarks | Tax I.D. No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-WD | State | Norman R. & Zelda M. Snell | 475 | 204 | 57.370 | 0.899 | 0.053 | 0.042 | 0.011 | 56.460 | – | No | 1-3 | Net Take within Ex. Chan. Ease. | 009-005-00-011-00 |
| 2-WD | State | Steven A. Wiles & Nancy Pittman, N.K.A. Nancy Pittman Wiles | 515 | 709 | 1.340 | 0.231 | 0.291 | 0.231 | 0.060 | 1.049 | – | No | 1-3 | | 009-005-00-010-00 |
| 3-WD | State | John W. & Ann I. Long | 318 | 210 | 77.389 | 1.873 | 0.134 | 0.104 | 0.030 | – | 75.486 | No | 1-3 | 0.007 Ac. within Ex. Chan. Ease. | 038-17A-06-001 |
| 3-X | State | | 152 | 552 | | | | | 0.026 | | | | | | |
| 4 | | Lavonne M. Koppes | 488 | 535 | 18.390 | | No | R/W | Required | | | | | | 009-005-00-023-00 |
| 5 | State | *(See Note) | 50 | 432 | 0.08 | | No | R/W | Required | | | | | | |

Note: Above areas in acres

MED-57-2.71
RIGHT OF WAY PLAN




## UNDERGROUND UTILITIES:

The Locations Of Underground Utilities Shown On The Plans Are As Obtained From The Owners Of The Utility As Required By Section 153.64 Of The Ohio Revised Code.

## UNDERGROUND OWNERSHIP:

The Following Utilities And Owners Are Located Within The Work Limits Of This Project.

POWER: Ohio Edison Company
76 South Main Street
Akron, Ohio 44308
Phone: (216) 384-4631

TELEPHONE: G.T.E. North Operations
6223 Norwalk Rd.
Medina, Oh. 44256
Phone: (216) 722-9587

GAS: East Ohio Gas Co.
4725 Southway St., S.W.
Canton, Oh. 44706
Phone: (216) 384-5100

For Existing R/W
See R/W Plan
MED-S.H. 321 SEC. "f" BR:
Year: 1932

* NOTE: This parcel shown as unknown owner on Medina County Tax Map. O.D.O.T. research shows owner as C.N. Lyman per deed Vol. 50, Pg. 432, dated 1888.

Type Funds: State

Plan Completed: 11-7-90

| Rev. Date | Description |
|---|---|
| SAS 1-31-94 | Rev. location of monument |
| PWS 5-24-91 | Added Vol. & Pg. Par. 3 |
| PWS 2-25-91 | Added Parcel 5 |
| MB 1-7-91 | Parcel 2-WD Data Corrected |
| MB 12-20-90 | Owners name revised- Parcel 2-WD |

MEDINA COUNTY GUILFORD TWP. PART SEC. 30 T-1N R-14W
MEDINA COUNTY WADSWORTH TWP. PART LOTS 1 & 4 TRACT 9 T-1N R-13W

TE - 118
600 - 6 - 73

MEDINA COUNTY 1/2
MED.-57-2.71

## GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED ON A GLACIATED MODERATELY ROLLING PLAIN AT THE ALLEGHENY ESCARPMENT DIVIDING THE ALLEGHENY PLATEAU REGION FROM THE MISSISSIPPI VALLEY PLAIN REGION, ON THE BROAD FLOODPLAIN OF AND OVER THE TRIBUTARY OF RIVER STYX, IN AN AREA WHERE DEEP GLACIAL-DERIVED MATERIAL 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 ON FEBRUARY 27 AND 28, 1989.

## INVESTIGATIONAL FINDINGS AND OBSERVATIONS

THE TEST BORINGS ENCOUNTERED INTERVALS OF EXTREMELY LOOSE TO EXTREMELY DENSE UNSTRATIFIED BASIC SILTS AND SANDS AND VARYING AMOUNTS OF EACH OTHER THAT GRADUALLY INCREASE (ERRATIC AT TIMES) IN DENSITY WITH INCREASE IN DEPTH. TEST BORING NO. B-1 PENETRATED TO A DEPTH OF 41.5 FEET, ELEVATION 966.8 FEET AND WAS TERMINATED AT THAT POINT AFTER PENETRATING IN EXCESS OF 10.0 FEET OF MATERIAL REQUIRING IN EXCESS OF 23 BLOWS PER FOOT IN THE STANDARD PENETRATION TEST IMMEDIATELY PRIOR TO TERMINATION. TEST BORING NO. B-2 PENETRATED TO A DEPTH OF 41.5 FEET, ELEVATION 967.3 FEET AND WAS TERMINATED AT THAT POINT AFTER PENETRATING IN EXCESS OF 5 FEET OF MATERIAL REQUIRING IN EXCESS OF 30 BLOWS PER FOOT IN THE STANDARD PENETRATION TEST IMMEDIATELY PRIOR TO TERMINATION.

BEDROCK SURFACE WAS NOT ENCOUNTERED IN EITHER OF THE TEST BORINGS PERFORMED.

FREE WATER WAS OBSERVED AND MEASURED IN TEST BORING NO. B-1 AT ELEVATION 983.3 FEET AND IN TEST BORING NO. B-2 AT ELEVATION 997.8 FEET DURING DRILLING OPERATIONS.

## 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
- [illegible]
- Limestone
- Boulders, 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 post 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 / or 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 consolidometry 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) | .42mm (No. 40 sieve) | 0.074mm (No. 200 sieve) | 0.005mm | |

LOG OF BORING

Date Started 9/27/89 — Sampler Type SS — Dia. 1 3/8" — Water Elev. 983.3'
Date Completed 9/27/89 — Casing: Length ____ Dia. ____
Boring No. B-1 — Station & Offset 142+56, 18' LT. (CULVERT) — Surface Elev. 1008.3'

| Elev. | Depth | Std. Pen. (N) | Rec. ft. | Loss ft. | Description | Sample No. | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | SHTL Class. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1008.3 | 0 | | | | | | | | | | | | | | |
| 1007.8 | | AUGERED | | | SOD AND TOPSOIL | | | | | | | | | | VISUAL |
| 1005.8 | 2 | | | | | | | | | | | | | | |
| | 4 | 2/3/5 | | | BROWN SANDY GRAVELLY SILT | 1 | 29 | 7 | 15 | 29 | 20 | 29 | 9 | 25 | A-4A |
| 1003.3 | 6 | | | | | | | | | | | | | | |
| | | 3/4/5 | | | BROWN SANDY SILT | 2 | 13 | 13 | 19 | 37 | 18 | 20 | 4 | 17 | A-4A |
| 1000.8 | 8 | | | | | | | | | | | | | | |
| | | 4/8/9 | | | BROWN GRAVELLY SANDY SILT | 3 | 16 | 8 | 14 | 37 | 25 | 25 | 8 | 14 | A-4A |
| 998.3 | 10 | | | | | | | | | | | | | | |
| | | 10/15/21 | | | BROWN SANDY SILT | 4 | 5 | 7 | 14 | 40 | 34 | 25 | 7 | 12 | A-4A |
| 995.8 | 12 | | | | | | | | | | | | | | |
| | | 8/12/20 | | | GRAY SANDY SILT | 5 | 7 | 6 | 13 | 43 | 31 | 22 | 5 | 17 | A-4A |
| 993.3 | 14 | | | | | | | | | | | | | | |
| | | 5/7/12 | | | GRAY SANDY SILT | 6 | 11 | 11 | 17 | 34 | 27 | 20 | 4 | 13 | A-4A |
| 990.8 | 16 | | | | | | | | | | | | | | |
| | | 5/9/13 | | | GRAY SANDY SILT | 7 | 14 | 12 | 15 | 32 | 27 | 23 | 7 | 18 | A-4A |
| 988.3 | 18 | | | | | | | | | | | | | | |
| | | 6/8/10 | | | GRAY SANDY SILT | 8 | 11 | 9 | 15 | 39 | 26 | 23 | 6 | 13 | A-4A |
| | 22 | | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | |
| 983.3 | 26 | | | | | | | | | | | | | | |
| | | 1/2/5 | | | GRAY SILTY GRAVELLY SAND | 9 | 31 | 19 | 14 | 25 | 11 | NP | NP | 16 | A-4A |
| | 28 | | | | | | | | | | | | | | |
| 978.3 | 30 | | | | | | | | | | | | | | |
| | | 7/12/14 | | | GRAY SANDY SILT | 10 | 7 | 7 | 13 | 37 | 36 | 26 | 8 | 16 | A-4A |
| | 34 | | | | | | | | | | | | | | |
| 973.3 | 36 | | | | | | | | | | | | | | |
| | | 5/8/11 | | | GRAY SANDY SILT | 11 | 6 | 6 | 15 | 40 | 33 | 24 | 7 | 15 | A-4A |
| | 38 | | | | | | | | | | | | | | |
| 968.3 | 40 | | | | | | | | | | | | | | |
| 966.8 | | 13/23/40 | | | GRAY SANDY SILT | 12 | 11 | 14 | 15 | 38 | 22 | 22 | 5 | 17 | A-4A |

BOTTOM OF BORING

LOG OF BORING

Date Started 9/27/89 — Sampler Type SS — Dia. 1 3/8" — Water Elev. 997.8'
Date Completed 9/28/89 — Casing: Length ____ Dia. ____
Boring No. B-2 — Station & Offset 143+28, 19' LT. (CULVERT) — Surface Elev. 1007.8'

| Elev. | Depth | Std. Pen. (N) | Rec. ft. | Loss ft. | Description | Sample No. | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | SHTL Class. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1007.8 | 0 | | | | | | | | | | | | | | |
| 1007.3 | | AUGERED | | | SOD AND TOPSOIL | | | | | | | | | | VISUAL |
| 1005.3 | 2 | | | | | | | | | | | | | | |
| | 4 | 3/3/3 | | | BROWN SANDY SILT | 13 | 9 | 13 | 18 | 37 | 23 | 30 | 9 | 14 | A-4A |
| 1002.8 | 6 | | | | | | | | | | | | | | |
| | | 2/3/3 | | | GRAY SILTY SAND | 14 | 12 | 23 | 28 | 27 | 10 | NP | NP | 41 | A-4A |
| 1000.3 | 8 | | | | | | | | | | | | | | |
| | | 2/6/7 | | | BROWN SANDY SILT | 15 | 11 | 14 | 20 | 33 | 22 | 22 | 3 | 16 | A-4A |
| 997.8 | 10 | | | | | | | | | | | | | | |
| | | 3/8/11 | | | BROWN GRAVELLY SANDY SILT | 16 | 18 | 13 | 17 | 33 | 19 | 23 | 6 | 15 | A-4A |
| 995.3 | 12 | | | | | | | | | | | | | | |
| | 14 | 10/15/19 | | | BROWN SANDY SILT | 17 | 8 | 10 | 24 | 39 | 19 | 25 | 8 | 16 | A-4A |
| 992.8 | 16 | | | | | | | | | | | | | | |
| | | 11/19/24 | | | BROWNISH-GRAY SANDY SILT | 18 | 7 | 8 | 17 | 42 | 26 | 30 | 5 | 12 | A-4A |
| 990.3 | 18 | | | | | | | | | | | | | | |
| | | 10/14/20 | | | GRAY SANDY SILT | 19 | 6 | 7 | 16 | 41 | 30 | 20 | 5 | 13 | A-4A |
| 987.8 | 20 | | | | | | | | | | | | | | |
| | 22 | 45/34/20 | | | GRAY SANDY SILT | 20 | 14 | 10 | 16 | 35 | 25 | 20 | 5 | 12 | A-4A |
| | 24 | | | | | | | | | | | | | | |
| 982.8 | 26 | | | | | | | | | | | | | | |
| | | 7/12/18 | | | GRAY GRAVELLY SAND | 21 | 42 | 29 | 21 | 7 | 1 | NP | NP | 15 | A-1-B |
| | 28 | | | | | | | | | | | | | | |
| 977.8 | 30 | | | | | | | | | | | | | | |
| | 32 | 6/5/5 | | | BROWNISH-GRAY SAND AND GRAVEL | 22 | - | - | - | - | - | - | - | - | VISUAL |
| | 34 | | | | | | | | | | | | | | |
| 972.8 | 36 | | | | | | | | | | | | | | |
| | | 100(0.3) | | | GRAY SILTY GRAVELLY SAND (SAND HEAVED 2.0' IN FLIGHTS) | 23 | 25 | 20 | 26 | 21 | 8 | NP | NP | 12 | A-2-4 |
| | 38 | | | | | | | | | | | | | | |
| 967.8 | 40 | | | | | | | | | | | | | | |
| | | 90(0.5) | | | GRAY SILT | 24 | 0 | 1 | 18 | 52 | 29 | NP | NP | 27 | A-4B |
| 967.3 | | | | | | | | | | | | | | | |

BOTTOM OF BORING

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 4/4/90

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

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

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. MED-57-0271
OVER TRIBUTARY OF RIVER STYZ
SEC. MED.-57-2.71

| CHECKED BY | REVIEWED BY | DATE |
|---|---|---|
| A.F. | R.D.R. | 10/6/89 |

MED-57- 2.71

2/2

Sta.141+00
Begin Work

Begin Project
Sta.142+55
S.L.M. 2.70

End Project
Sta.143+10
S.L.M. 2.71

PC Sta.142+86.8

STA.142+83
℄ CULVERT

18" 24" 18"

Pond

Sta.145+00
End Work

B-1 B-2

N 43° 02' 21" W.

141 142 143 144 ℄ SURVEY & CONSTR. S.R. 57 145

+65

M.B.

24'-0"

15'

BEAR SWAMP ROAD (T.R.52)

REIMER RD. (C.R.123)

BM: Spike in 14" Pole N.W. Intersection W. Side C.R.52 Elev. 1006.31

Scale: 1"= 20'

* For Construction Details See Sheet 4

See Sheet 11 For Culvert Details

CURVE DATA

PI = 145 + 07.67
Δ = 20°49'44" LT.
Dc = 04°46'04"
R = 1,201.73'
L = 436.87'
T = 220.87'
E = 20.13'

B-1

2/3/5
3/4/5
4/8/9
10/15/21
8/12/20
5/7/12
5/9/13
6/8/10
W 1/2/5
7/12/14
5/8/16
13/23/40

B-2

3/3/3
2/3/3
2/6/7
W 3/8/11
10/15/19
11/19/24
10/14/20
45/34/20
7/12/18
6/5/5
100(0.3)
90(0.5)

1007.73 1007.72 1008.27 1006.41 1004.74 1003.63

1005 1000 995 990 985 980 975 970 965 960

141+00 142+00 143+00 144+00 145+00

REVISED 4/4/90

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PLAN AND PROFILE

| DRAWN BY | CHECKED BY | REVIEWED BY | DATE |
|---|---|---|---|
| W.L.C.H. | A.F. | R.D.R. | 10/6/89 |

PLAN & PROFILE STA.141+00 TO STA.145+00