S-1334(2)

FED. RD DIVISION	STATE	PROJECT	
2	OHIO	S-1334(2)	

COL-518-0.65

1/26

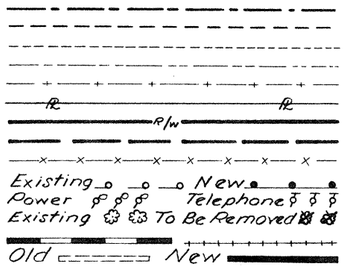
DESIGN DESIGNATION	
Current A.D.T. (1964)	170
Design Year A.D.T. (1984)	338
D.H.V.	41
D (directional distribution)	67%
T (percent B & C Trucks)	17.7%
V (Design Speed)	40 m.p.h.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS

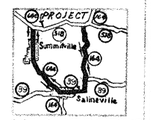
COL-518-0.65
COLUMBIANA COUNTY
FRANKLIN TOWNSHIP

CONVENTIONAL SIGNS

County Line
Township Line
Section Line
Corporation Line
Center Line
Property Line
Right of Way Line
Existing Right of Way Line
Fence Line
Guard Rail
Poles
Trees & Stumps
Railroad
Drain Pipe



INDEX OF SHEETS

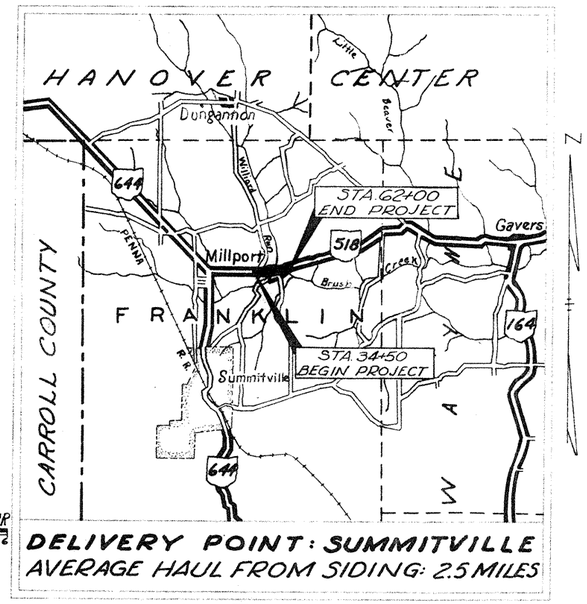


MAP OF DETOUR
Scale: 0 3 6 MILES

LINE DATA

Begin Project Sta. 34+50
End Project Sta. 62+00
No Additions or Deductions
Net Length of Project = 2750 Lin. Ft. or 0.520 Miles

Begin Work Sta. 34+00
End Work Sta. 62+50
Add for Resurfacing of Exist. Pavement-1270 Lin. Ft.
Net Length of Work = 4120 Lin. Ft. or 0.780 Miles



DELIVERY POINT: SUMMITVILLE
AVERAGE HAUL FROM SIDING: 2.5 MILES

LOCATION MAP

SCALE 0 1 2 3 4 MILES

Portion To Be Improved
State Roads
Other Roads

SCALES

Plan
Profile: Horizontal 0 25 50 100
Profile: Vertical
Cross Sections 0 5 10 20

1967 SPECIFICATIONS

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

The right of way for this improvement will be provided by the State of Ohio.

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

Approved: Earl W. Nelson
Date: 4-12-67 Division Deputy Director

Approved: C.A. Altvater
Date: 6-20-67 Engineer of Bridges

Approved: R.E. Gatlin
Date: 6-14-67 Engineer of Location and Design

Approved: R.E. Shultz
Date: 6-14-67 Deputy Director of Design and Construction

Approved: T.N. Borrell
Date: 6-21-67 Deputy Director of Right of Way

Approved: Thomas McMahon
Date: 6-21-67 Deputy Director of Planning and Programming

Approved: F.W. Wilson
Date: 6-21-67 First Assistant Director

Approved: R.E. Mashuta
Date: 6-21-67 Director of Highways

FILE No.	COLUMBIANA COUNTY
	COL-518-0.65
	Date of Letting 196
	Contract No.

STANDARD DRAWINGS

BP-5	6-1-65	HW-E	6-1-65	CS-1-65 (Sh. 1 & 2)	6-1-65
BP-6	6-1-65	L-1	6-1-65		
CB-2-2-A&B	6-1-65	MC-1	6-1-65		
FAC I-1	6-1-65	MC-3	5-1-66		
FAC I-2	6-1-65	MC-4	6-1-65		
GR-1	1-1-67	MC-5	6-1-65		
GR-2A	1-1-67	AS-1-54	8-10-65		
		BP-3	1-10-67		

SUPPLEMENTAL SPECIFICATIONS

808	1-13-67
825	1-1-67
1001	3-21-66

DEPARTMENT OF TRANSPORTATION
BUREAU OF PUBLIC ROADS

APPROVED: _____
DIVISION ENGINEER

DATE

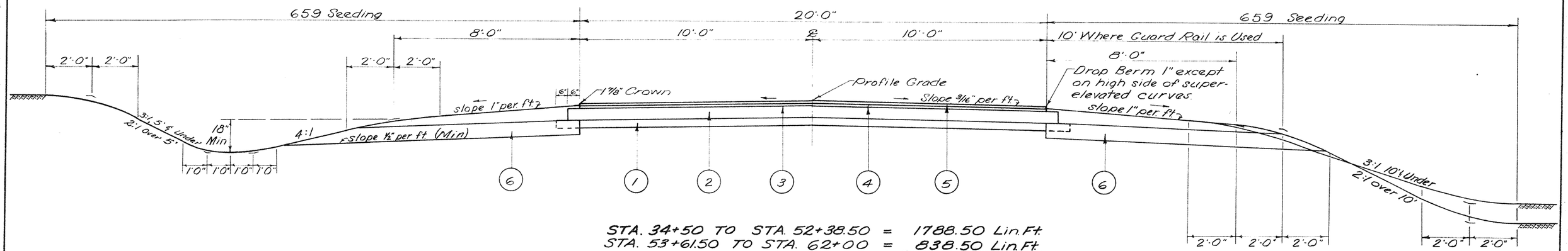
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

2/26

COL-518-0.65

TYPICAL SECTION

TYPE 404 ON 304



STA. 34+50 TO STA. 52+38.50 = 1788.50 Lin. Ft.
STA. 53+61.50 TO STA. 62+00 = 838.50 Lin. Ft.
2627.00 Lin. Ft.

Note: For Superelevation, See Tables on Sheet 9; and for Shoulder treatment on the high side of superelevated curves, See Standard Drawing MC-1.

-KEY-

1. ITEM 310, 4" Subbase
2. ITEM 304, 6" Aggregate Base
3. ITEM 408,* Prime Coat. 702.09, RT-2 or RT-3 applied at the rate of .04 gals. per sq. yd.
4. ITEM 402, 1 1/2" Asphalt Concrete. (85-100)
5. ITEM 404, 1 1/2" Asphalt Concrete (85-100)
6. ITEM 605, Aggregate Drains (See General Notes)

GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

3/26

COL-518-0.65

FIELD OFFICE: The Contractor shall, in addition to the requirements of 105.152, provide a suitable field office having a minimum of 150 sq. ft. of floor space. The Contractor shall have a telephone installed and maintained in this field office during the construction of this project. The Contractor shall also provide and maintain sanitary provisions as per 107.06. All the above is included in the lump sum price bid for Field Office.

ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS: The rounded corners shown on Standard Drawing MC-1, apply to all cross sections, even though otherwise shown on these plans.

ESTIMATED QUANTITIES: Specific locations and usage of estimated quantities set up on this plan to be used as directed by the Engineer "shall be made a matter of record by incorporation into the final change order governing completion of this project.

SUPERELEVATION: Superelevated curves shall be built without crown. The crown shall be worked out of the pavement in the portion between the beginning of the transition and the point where the superelevation equals twice the crown.

REMOVAL OF EXISTING PIPE: The removal of all existing pipe drains which would normally be removed in various excavation items shall be included for payment in the unit prices bid for the respective excavation items, unless otherwise itemized in the plans.

REMOVAL OF TREES AND STUMPS: All trees and stumps specifically marked for removal within the construction limits of this project shall be removed under the lump sum price bid for Item 201, Clearing and Grubbing, except that those trees for which protection and preservation work is indicated elsewhere in these plans shall not be removed.

The following is an approximate estimate of the number of trees and stumps to be removed.

SIZES	No. Trees	No. Stumps
18"	153	6
30"	16	1
48"	3	0
60"	0	0

The above estimate is approximate and the State of Ohio reserves the right to order the removal of additional trees or stumps outside the limits of construction but within the right-of-way or easement lines. Payment for the removal of these additional trees or stumps shall be included in the lump sum price bid for Item 201, Clearing and Grubbing.

SEEDING: Quantities for seeding are calculated for the soil areas between the work limits, as shown on the cross sections.

ITEM 605 AGGREGATE DRAINS: Aggregate drains shall be placed at fifty (50) foot intervals on each side of normal crowned sections and twenty-five (25) foot intervals on the low side only of superelevated sections. An aggregate drain shall be placed at the low point of each sag vertical curve. An estimated quantity of 1500 Lin. Ft. has been included in the General Summary.

EROSION CONTROL: Items 601 and 660 are provided in these plans for erosion control. Rock of a stable nature will not be removed in order to place any of these items. The Engineer shall check and non-perform quantities or adjust locations and quantities for these items where indicated by field conditions during construction.

MAINTENANCE OF SEWER FLOWS: The Contractor shall conduct his operations so as to maintain at all times sewer flows through existing facilities to remain in place and through existing facilities to be replaced until new facilities are completed and placed into use.

Payment for any additional costs involved in maintaining these flows by pumping or by any other means approved by the Engineer shall be included in the unit prices bid for the respective items of 603 conduit.

SOD PROTECTION IN ROADWAY DITCHES: All sod protection in roadway ditches shall be six (6) feet wide except where otherwise shown on plans. See Detail, Sh. 8.

CHANNEL EMBANKMENTS: Portions of the existing channel shall be filled and sloped to drain as called for on the plans and included for payment in the price bid for Item 203 Embankment. The Contractor shall use either suitable or unsuitable material to the extent available for channel embankments.

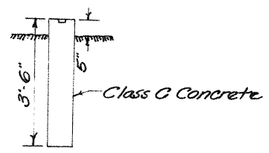
Areas where channel embankments are to be placed shall be cleared but need not to be scalped.

The requirements for moisture, density control, benching and suitable materials shall be waived.

The depth of layers in which the embankments are placed and their compaction shall, in lieu of the requirements of Item 203 conform with acceptable construction practices as determined by the Engineer.

No provision of the specifications shall be waived for embankments which support any portion of the new pavement, berms, or structural members.

RESET U.S.G.S. BENCH MARK: The existing U.S.G.S. Bench Mark, TT30 DCB 1958 located approximately 100' Rt. of ℄ Sta. 37+70 and in the fence line along the east bank of Brush Creek will be destroyed by the construction of this project. The U.S.G.S. Elevation of this bench mark is 1027.229 feet. The Division Location and Design Office will furnish a new bronze tablet which is to be placed in a new concrete post and set in undisturbed ground within the right-of-way about 80' Rt. of ℄ Sta. 37+50. The concrete post shall be set so that the top is about 5 inches above the ground. Accurate levels shall be run between the old and the new bench marks, in two separate runnings. The elevation of the new bench mark shall be established and reported to the Division Location and Design Office on special forms to be furnished for submission to Washington D.C. The old bench mark shall then be removed and the existing bronze tablet returned with the report to the Division Location and Design Office. All costs for this work shall be included in the unit price bid for Item 604, Monument Reset. Monument Details are shown below.



CONCRETE POST FOR RESET BENCH MARK
Scale: ½" = 1'-0"

CONSTRUCTION LAYOUT STAKES: See note in proposal describing the work included in this lump sum pay item.

PAVEMENT REMOVAL OUTSIDE NORMAL CONSTRUCTION LIMITS: After the existing pavement as indicated on the plans has been removed as detailed on Sheets No. 14 & 25 the old roadway shall be graded to the level of the surrounding ground, the old ditches filled and the disturbed areas sloped to drain and left in a neat condition ready for seeding. Seeding shall be measured and paid for in accordance with Item 659 Seeding and Mulching. Payment for all other work required shall be included in the unit price bid for Item 203.

CUT-OFF WALLS FOR RIPRAP: The cut-off walls for Item 601, Riprap using 6" Reinforced Concrete Slab, as per plan shall be included for payment with this 601 Item. See Detail, Sheet 8.

FEDERAL AID CONSTRUCTION IDENTIFICATION SIGNS: The Contractor shall furnish, erect, maintain and subsequently remove Federal Aid construction identification signs at each of the following approximate locations:

1. Sta. 34+00 Rt.
2. Sta. 62+50 Lt.

Sign details shall be as specified on Standard Drawing FACI-1 "Code N-54(1)-96(2)" modified by deleting reference to "Commerce" appearing in the lower left portion of the sign and inserting therein "Transportation."

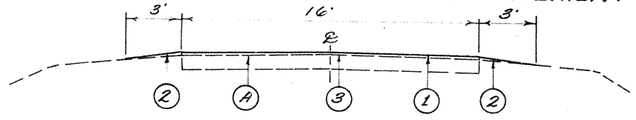
The signs shall be erected in accordance with standard Drawing FACI-2. Additional requirements shall be in accordance with notes in the proposal.

UTILITIES

General Telephone Company of Ohio
1123 Tuscarawas Ave., New Philadelphia, Ohio.

Ohio Edison Co.
47 N. Main St., Akron, Ohio.

RESURFACING OF EXISTING PAVEMENT



RIGHT OF STA. 43+10 TO STA. 54+60 (See Sheets 25 & 26)
(Total length along pavement = 1270 Lin. Ft.)

- (A) Existing Bituminous Macadam Pavement
- (1) Item 404, 1 1/4" Min. Asphalt Concrete (85-100)
- (2) Item 617, Compacted Aggregate
- (3) Item 407, Tack Coat 702.04, MS-2 or RS-1, or 702.02, RC-70 or RC-250, applied at the rate of 0.1 Gal. per sq. yd.

ITEM 407, Tack Coat
1270 x 16 ÷ 9 = 2258 Sq. Yds. x 0.1 = 226 Gals.

ITEM 404, Asphalt Concrete:
1270 x 16 x 0.1042 ÷ 27 = 78.4 Cu. Yds.
Extra Material (Estimated) = 6.6 Cu. Yds.
TOTAL 404 Asphalt Concrete = 85 Cu. Yds.

ITEM 617, Shoulder Preparation
[(1270 x 2) - 50' Rd. Appr. Rt.] x 3 ÷ 9 = 830 Sq. Yds.

ITEM 617, Compacted Aggregate:
830 x 2 ÷ 36 = 46 Cu. Yds.

ITEM 617, Water:
46 x 5 ÷ 1000 = 1 M-Gals.

(Quantities Carried to Sheet 4.)

NOTE: The above resurfacing shall not begin until the new pavement is open to through traffic.

NOTE:
The profile of the proposed Asphalt Concrete Course shall be approximately 1¼ inches above that of the existing pavement.

Quantities Calculated By R.J.S. - 1/30/67
Quantities Checked By REM - 1/31/67

SUMMARY OF QUANTITIES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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COL-518-0.65

-PAVEMENT CALCULATIONS-

ITEM 203, SUBGRADE PREPARATION:-
2627 x 20 ÷ 9 = 5,838 Sq. Yds.
Under Bridge Approach Slabs = 111 Sq. Yds.
TOTAL SUBGRADE PREPARATION = 5,949 Sq. Yds.

ITEM 310 SUBBASE :-
2627 x 2.2 x 0.33 ÷ 27 = 706.4 Cu. Yds.
Under Bridge Approach Slabs = 111 x 0.33 ÷ 3 = 12.2 Cu. Yds.
Transitions 34+00 to 34+50 and 62+00 to 62+50 :
2 (1½ x 6 x 50 x 0.33) ÷ 27 = 3.7 Cu. Yds.
TOTAL SUBBASE = 723 Cu. Yds.

ITEM 304, AGGREGATE BASE :-
2627 (x2) x 0.50 ÷ 27 = 1021.6 Cu. Yds.
Transitions 2 (1½ x 5 x 50 x 0.50) ÷ 27 = 4.6 Cu. Yds.
TOTAL AGGREGATE BASE = 1,027 Cu. Yds.

ITEM 408, BITUMINOUS PRIME COAT :-
(2627 x 2 (1) ÷ 9) x 0.4 = 2,452 Gals.
Transitions: 2 (1½ x 5 x 50 ÷ 9) x 0.4 = 11 Gals.
TOTAL PRIME COAT = 2,463 Gals.

ITEM 402, ASPHALT CONCRETE (85-100):-
2627 x 20 x 0.1042 ÷ 27 = 202.8 Cu. Yds.
Transitions: 2 (1½ x 4 x 50 x 0.1042) ÷ 27 = 0.8 Cu. Yds.
TOTAL 402 ASPHALT CONCRETE = 204 Cu. Yds.

ITEM 404, ASPHALT CONCRETE (85-100):-
2627 x 20 x 0.1042 ÷ 27 = 202.8 Cu. Yds.
Transitions: 2 (18 x 50 x 0.1042) ÷ 27 = 69 Cu. Yds.
TOTAL 404 ASPHALT CONCRETE = 210 Cu. Yds.

ITEM 410, TRAFFIC COMPACTED SURFACE TYPE C :-
for Maintaining Local Traffic - Estimated = 100 Cu. Yds.

ITEM 616, CALCIUM CHLORIDE :-
100 ÷ 50 = 2 Tons

ITEM 616, WATER :-
Estimated = 2 M-Gals

Quantities Calculated By R.J.S. 1-19-67
Quantities Checked By A.L.F. 1-20-67

EARTHWORK AND SEEDING

STATION FROM	STATION TO	Exc. Cu. Yds.	Emb. Cu. Yds.		Seeding Sq. Yds.	Fertilizer Tons	Lime Tons
34+00	62+50	25,692	27,180		28,728	2.59	12.93
Add For Sodded Areas						0.05	0.27
TOTAL		25,692	27,180		28,728	2.64	13.20

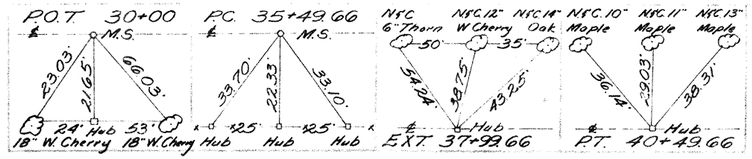
GENERAL SUMMARY Type Code 6201 or as shown

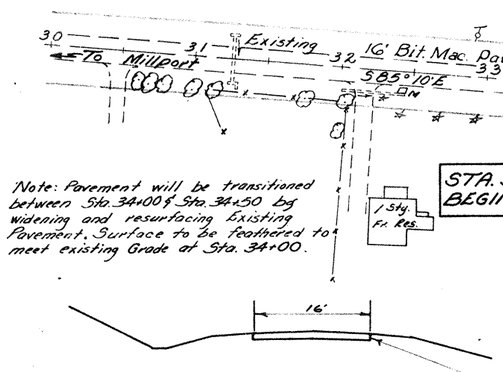
TOTALS FROM SHEETS Nº 3	4	5	6	7	16	17	18	R/W SHEETS	ITEM	QUANTITIES NORMAL PARTICIPATION	100% STATE	TOTAL	UNIT	DESCRIPTION
														-ROADWAY-
Lump					25				201	Lump		Lump	Lump	Clearing and Grubbing.
				17					202	25		25	Lin.Ft.	Pipe Removed, 15" & Under.
		Lump							202	17		17	Lin.Ft.	Pipe Removed, Over 15".
								Lump	X 202	Lump		Lump	Lump	Existing Structures Removed.
	25,692						3		202	Lump		Lump	Lump	Parcel No. 3, Removal of one 2 story Frame Residence.
	27,180								X 203	25,695		25,695	Cu. Yds.	Excavation, Not Including Embankment Construction, as per plan.
	5,949				221	375			X 203	27,180		27,180	Cu. Yds.	Embankment.
	100								X 203	6,545		6,545	Sq. Yds.	Subgrade Preparation.
									410	100		100	Cu. Yds.	Traffic Compacted Surface, Type C.
		3	2	5					604	10		10	Each	Standard Monument Assembly.
1									604	1		1	Each	Monument Reset, as per plan.
		309.52	1000.00	444.48					606	1,754		1,754	Lin.Ft.	Guard Rail, Type 4.
	2								616	2		2	Tons	Calcium Chloride.
	2								616	2		2	M-Gals.	Water.
830									X 617		830	830	Sq. Yds.	Shoulder Preparation.
46									X 617		46	46	Cu. Yds.	Compacted Aggregate.
1									617		1	1	M-Gals.	Water.
														-EROSION CONTROL - Type Code Y-005 -
	28,728								659	28,728		28,728	Sq. Yds.	Seeding and Mulching.
	2.64								659	2.64		2.64	Tons	Commercial Fertilizer (12-12-12).
	13.20								659	13.20		13.20	Tons	Agricultural Liming.
		180		414			4		660	598		598	Sq. Yds.	Sodding.
				10					601	10		10	Sq. Yds.	Riprap, using 6" Reinforced Concrete Slab, as per plan.
		195		24.0					X 601	435		435	Cu. Yds.	Dumped Rock Channel Protection.
							10		601	10		10	Lin.Ft.	Paved Gutter, Std. Type 1-2, as per plan.
														-DRAINAGE-
				0.5			0.3		X 602	0.8		0.8	Cu. Yd.	Concrete Masonry
				3.2					603	32		32	Lin.Ft.	12" Conduit, Type D, 707.01 or 707.02, 14 Ga.
							5.4		603	54		54	Lin.Ft.	15" Conduit, Type B with Class B Bedding
				3.8					603	38		38	Lin.Ft.	30" Conduit, Type D
							1		604	1		1	Each	Standard Nº 2-2 A Catch Basin.
1500									605	1,500		1,500	Lin.Ft.	Aggregate Drains.
														-PAVEMENT-
	1,027	21		31	37	65			X 304	1,181		1,181	Cu. Yds.	Aggregate Base.
	723				26	45			X 310	794		794	Cu. Yds.	Subbase.
	204				7.7	13.0			X 402	225		225	Cu. Yds.	Asphalt Concrete (85-100).
85	210			6.4	7.7	13.0			X 404	237	85	322	Cu. Yds.	Asphalt Concrete (85-100).
226									X 407		226	226	Gals.	Tack Coat 702.04 MS-2 or RS-1; or 702.02, RC-70 or RC-250.
	2,463				89	150			X 408	2,702		2,702	Gals.	Bituminous Prime Coat, 702.09 RT-2 or RT-3.
				111					X 611	111		111	Sq. Yds.	Reinforced Concrete Approach Slabs (T = 13").
									614	Lump		Lump	Lump	Maintaining Traffic
Lump										Lump		Lump	Lump	Field Office.
Lump										Lump		Lump	Lump	Construction Layout Stakes.

-STRUCTURE OVER 20 SPAN-
Bridge Nº COL-518-0104 (For Quantities, See Sheet Nº 22).

COL-518-0.65

Removal Of Existing Bridge Nº COL 518-0070
The existing structure shall be removed and disposed of by the Contractor. Abutments shall be removed at least 2' below the finished ground elevation.



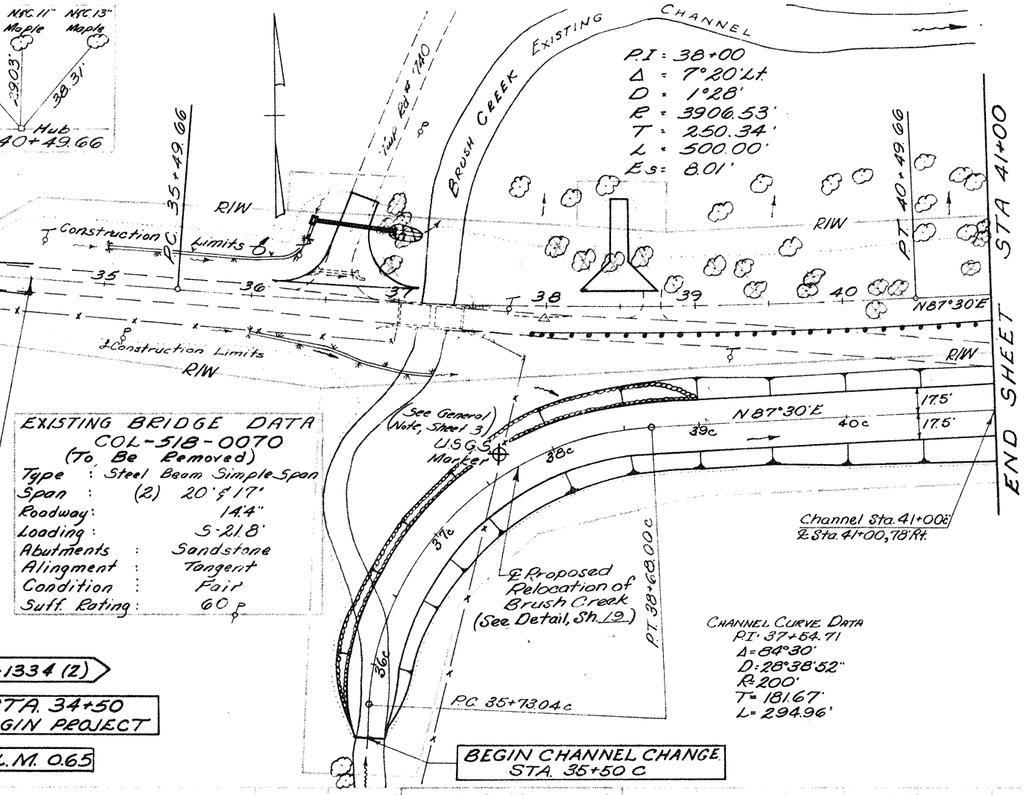


Existing Bituminous Macadam Pavt

TYPICAL SECTION of ADJOINING PAVEMENT

Note: Pavement will be transitioned between Sta. 34+00 & Sta. 34+50 by widening and resurfacing Existing Pavement. Surface to be feathered to meet existing Grade at Sta. 34+00.

STA. 34+00
BEGIN WORK



EXISTING BRIDGE DATA
COL-518-0070
(To Be Removed)

Type	Steel Beam Simple Span
Span	(2) 20'-5"-17'
Roadway	14.4"
Loading	S-21.8'
Abutments	Sandstone
Alingment	Tangent
Condition	Fair
Suff. Rating	60.8

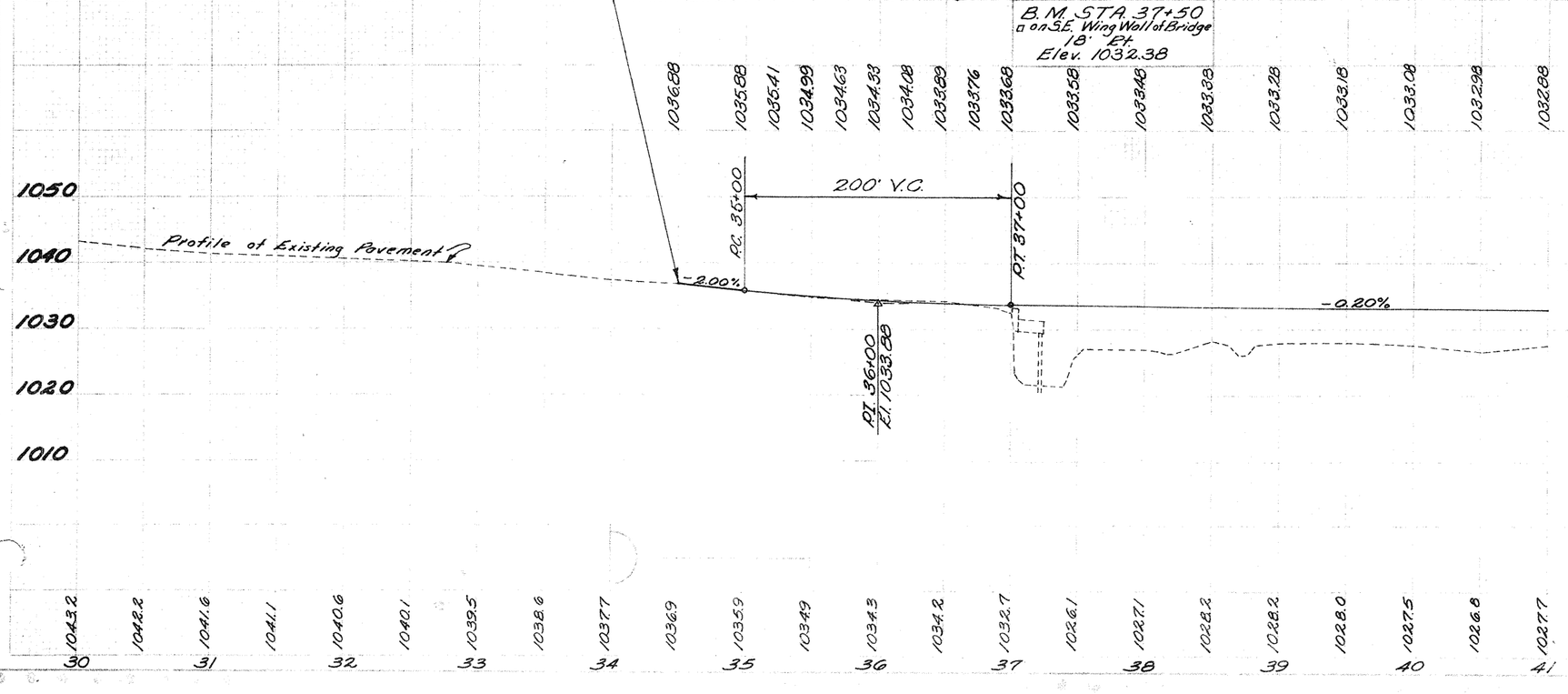
CHANNEL CURVE DATA
P.I. 37+54.71
Δ = 64°30'
D = 28°38'52"
R 200'
T = 181.67'
L = 294.96'

S-1334 (2)

STA. 34+50
BEGIN PROJECT

S.L.M. 0.65

B.M. STA. 37+50
□ on S.E. Wing Wall of Bridge
18' Rt.
Elev. 1032.38



APPROACHES

STATION	Side ℄	See Sheet	Item 304 Aggr. Base Cu. Yds.
36+50	Lt.	16	
38+50	Lt.	11	21
TOTAL			21

DRAINAGE

STATION From	STATION To	Side ℄	See Sheet	Item 603 New Work Type	Size	Length	Item 601 Dumped Rock Channel Protection Cu. Yds.	Item 660 Sodding Sq. Yds.
35+00	36+35	Lt.	5					95
Appr. Sta.	1+45	Lt.	16 5/8	Conduit	15"	54'		
36+00	37+25	Rt.	5					85
Channel Stations 35+50c	39+00c	Lt.	5				195	
TOTAL							195	180

GUARD RAIL

STATION From	STATION To	Side ℄	Item 606 (Type 4) Lin. Ft.
37+91.67	41+00	Rt.	309.52
TOTAL			309.52

MISCELLANEOUS

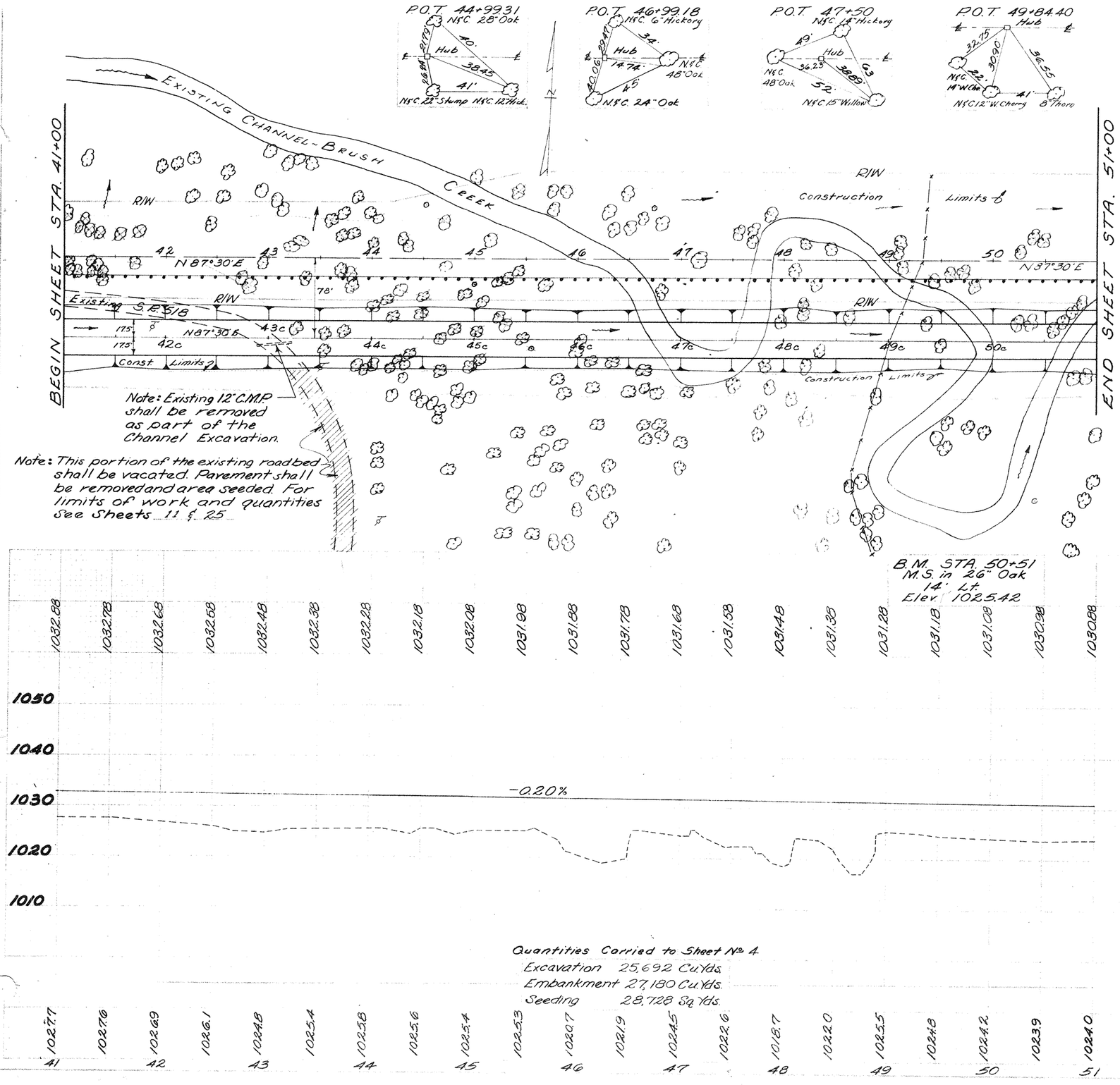
STATION From	STATION To	Side ℄	See Sheet	Item 604 Standard Manhole Assy's Each	Item 202 Exist. Struct. Removed Lump Sum
34+50		℄	5	1	
35+49.66		℄	5	1	
40+49.66		℄	5	1	
36+85	37+65	Rt.	5		Lump
TOTAL				3	Lump

Quantities Calculated By R.J.S. 1-20-67
Quantities Checked By R.E.M. 1-20-67

PUBLIC UTILITIES
General Telephone New Philadelphia
Ohio Edison Co. Akron, Ohio

STA. 30+00 TO STA. 41+00

COL-518-0.65



Quantities Carried to Sheet No. 4.
Excavation 25,692 Cu Yds.
Embankment 27,180 Cu Yds.
Seeding 28,728 Sq Yds.

APPROACHES

STATION From	To	Side & See Sheet	TOTAL

DRAINAGE

Item 603

STATION From	To	Side & See Sheet	New Work Type	Size	Length	Removals Type	Size	Length
TOTAL								

GUARD RAIL

STATION From	To	Side &	Item 606 (Type 4) Lin. Ft
41+00	51+00	Rt	1000.00
TOTAL			1000.00

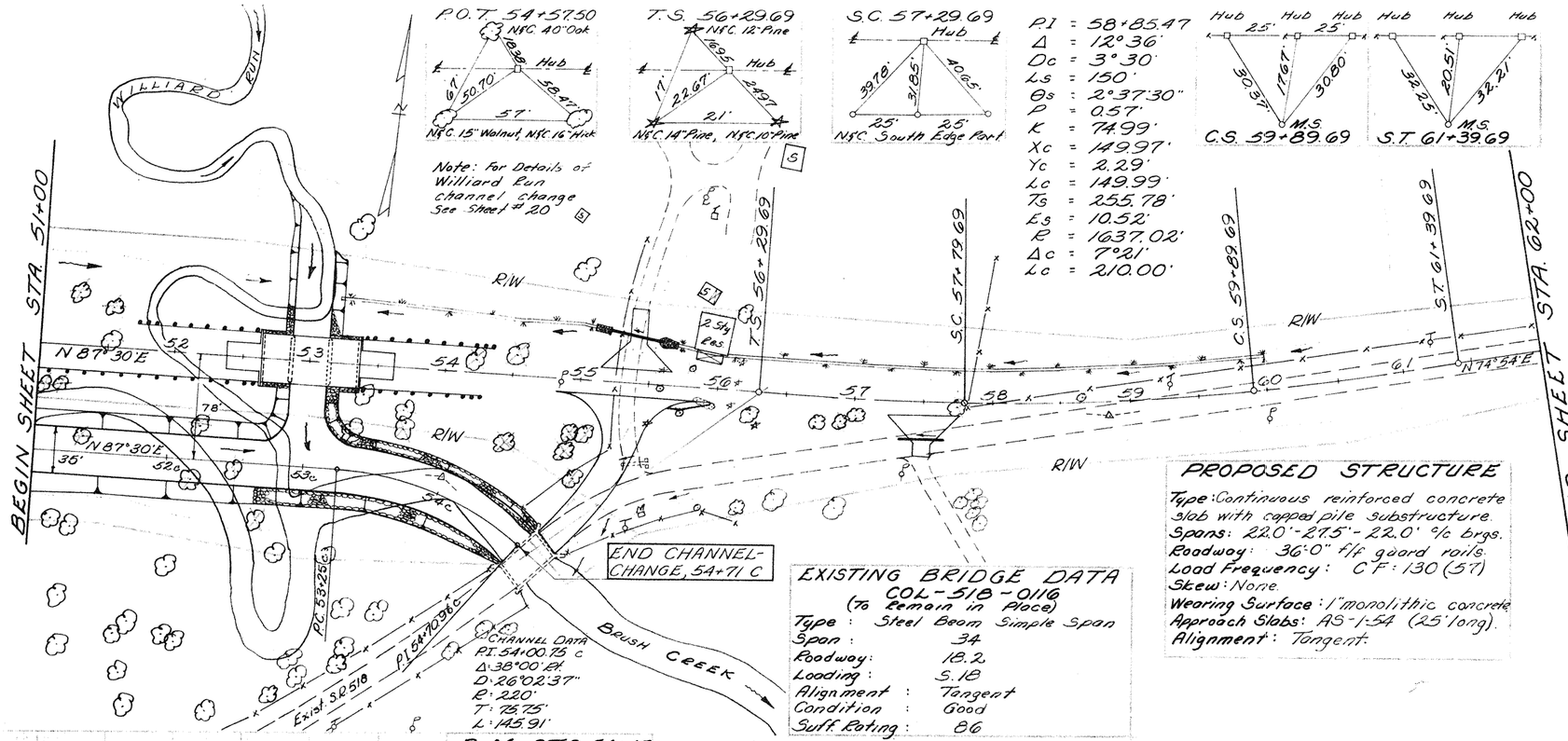
MISCELLANEOUS

STATION From	To	Side &	See Sheet	Item 604 Std. Manh. Ass'y's-Each
45+00		&	6	1
51+00		&	6	1
TOTAL				2

Quantities Calculated by R.J.S. 1/20/67
Quantities Checked by R.E.M. 1/20/67

STA. 41+00 TO STA. 51+00

COL-518-0.65



PI	= 58+85.47
Δ	= 12°36'
Oc	= 3°30'
Ls	= 150'
Θs	= 2°37'30"
P	= 0.57'
K	= 74.99'
Xc	= 149.97'
Yc	= 2.29'
Lc	= 149.99'
Ts	= 255.78'
Es	= 10.52'
R	= 1637.02'
Δc	= 7°21'
Lc	= 210.00'

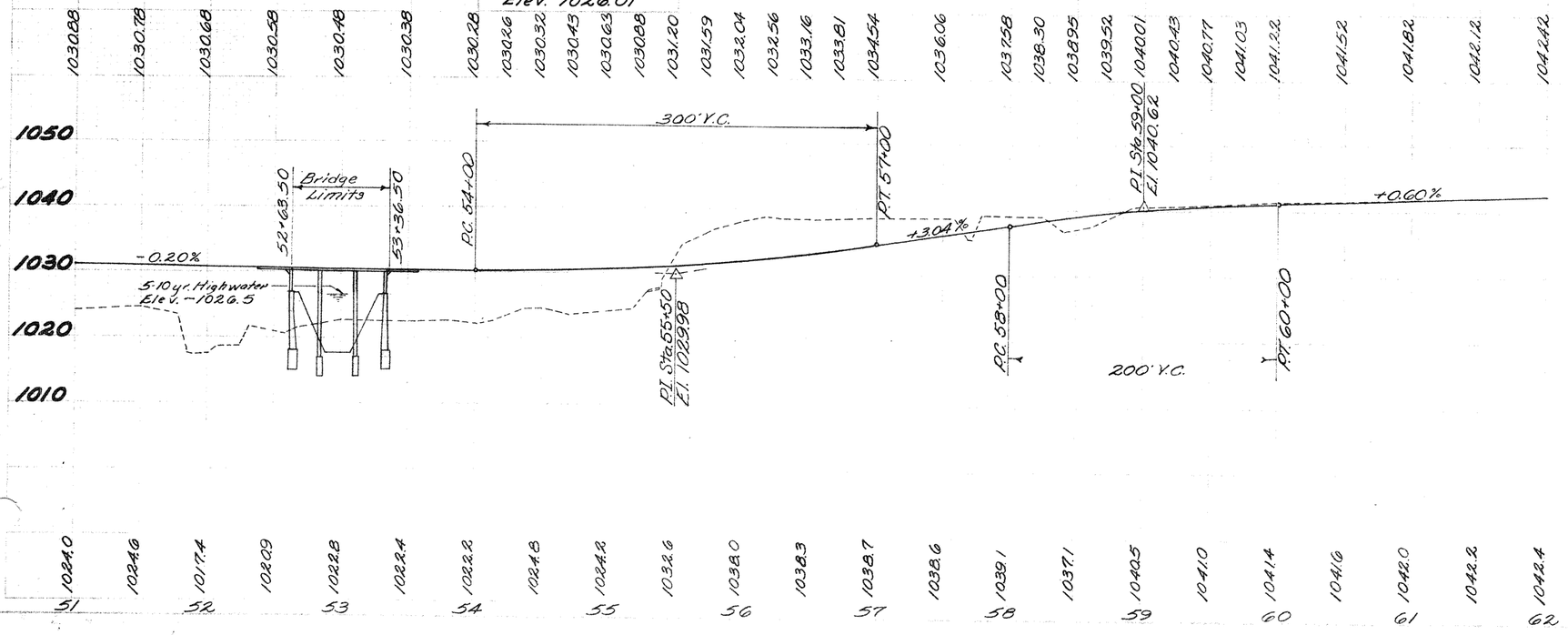
B. M. STA. 54+45
a on S.W. Cor. Wing Wall
145' Rt.
Elev. 102.6.01

EXISTING BRIDGE DATA
COL-518-0116
(To Remain in Place)

Type	Steel Beam Simple Span
Span	34
Roadway	18.2
Loading	S.18
Alignment	Tangent
Condition	Good
Surf. Rating	86

PROPOSED STRUCTURE

Type: Continuous reinforced concrete slab with capped pile substructure.
Spans: 22.0'-27.5'-22.0' ℄ brgs.
Roadway: 36'0" f/f guard rails.
Load Frequency: CF: 130 (S7)
Skew: None.
Wearing Surface: 1" monolithic concrete
Approach Slabs: AS-1-54 (25' long).
Alignment: Tangent.



APPROACHES

STATION	Side &	See Sheet	Item 304 Aggregate Base Cu.Yds.	Item 404 Asphalt Concrete Surface Cu.Yds.	Item 603 30" Conduit Type D Lin.Ft.	Item 603 12" Conduit Type D Lin.Ft.	Item 602 Conc. Masonry Cu.Yds.	Item 601 Dumped Rock Channel Protec. Cu.Yds.	Item 601 Riprap Sq.Yds.
55+40	Lt	14	15	5.8	38		0.5	6	10
55+50	Rt	17							
55+65	Rt	14&17	2	0.6					
57+50	Rt	14	14			32			
TOTAL			31	6.4	38	32	0.5	6	10

DRAINAGE

STATION From	STATION To	Side &	See Sheet	Item 601 Dumped Rock Channel Protection Cu.Yds.	Item 202 Pipe Removed Over 15" Lin.Ft.	Item 660 Sodding Sq.Yds.
52+60	54+50	Rt.	7	120		
52+81	52+86	Lt.	7	6		
53+14	53+24	Lt.	7	6		
53+14	54+75	Rt.	7	102		
55+35	55+52	Rt.	7		17	
53+20	55+08	Lt.	7			127
55+70	60+00	Lt.	7			287
TOTAL				234	17	414

GUARD RAIL

STATION From	STATION To	Side &	Item 606 (Type 4) Lin.Ft.
51+00	54+27.98	Rt.	254.98 *
51+71.73	54+34.23	Lt.	189.50 *
TOTAL			444.48

* 73.00 Lin.Ft. Deducted for Bridge Railing on each side.

MISCELLANEOUS

STATION From	STATION To	Side &	See Sheet	Item 606 Standard Mon. Assy's Each.
56+29.69		℄	7	1
57+79.69		℄	7	1
59+89.69		℄	7	1
61+39.69		℄	7	1
62+00		℄	7	1
TOTAL				5

APPROACH SLABS

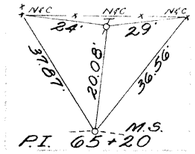
STATION From	STATION To	Side &	See Sheet	Item 611 Reinf. Conc. Appr. Slabs Sq.Yds.
52+38.50	52+63.50	Lt. Rt.	7	55.5
53+36.50	53+61.50	Lt. Rt.	7	55.5
TOTAL				111.0

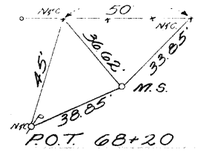
Quantities Calculated by R.J.S. 1/23/67

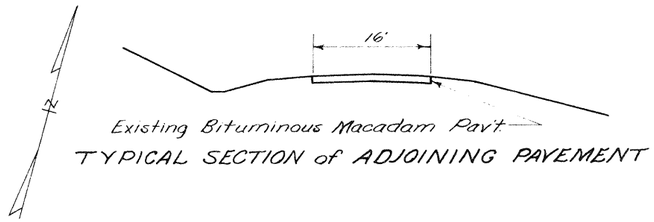
Quantities Checked by R.E.M. 1/23/67

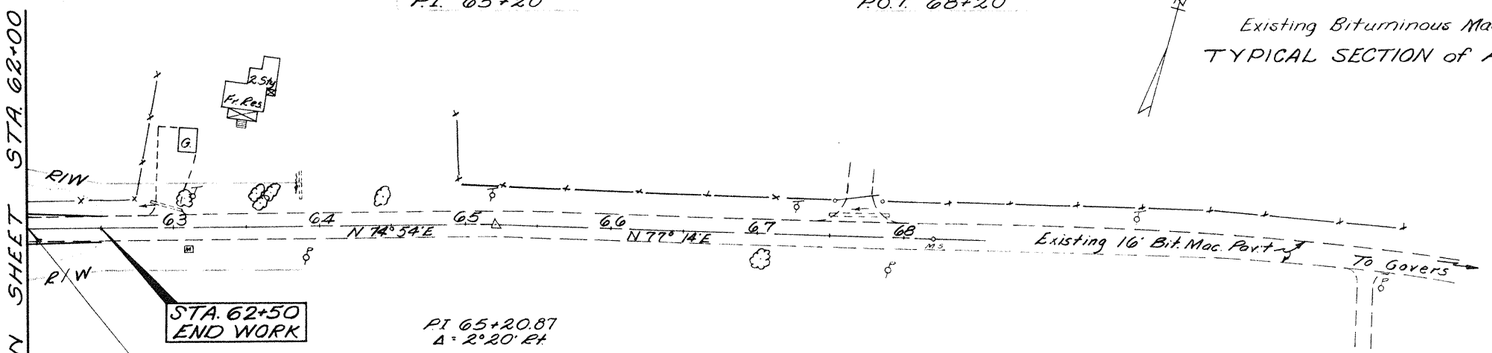
STA. 51+00 TO STA. 62+00

COL-518-0.65









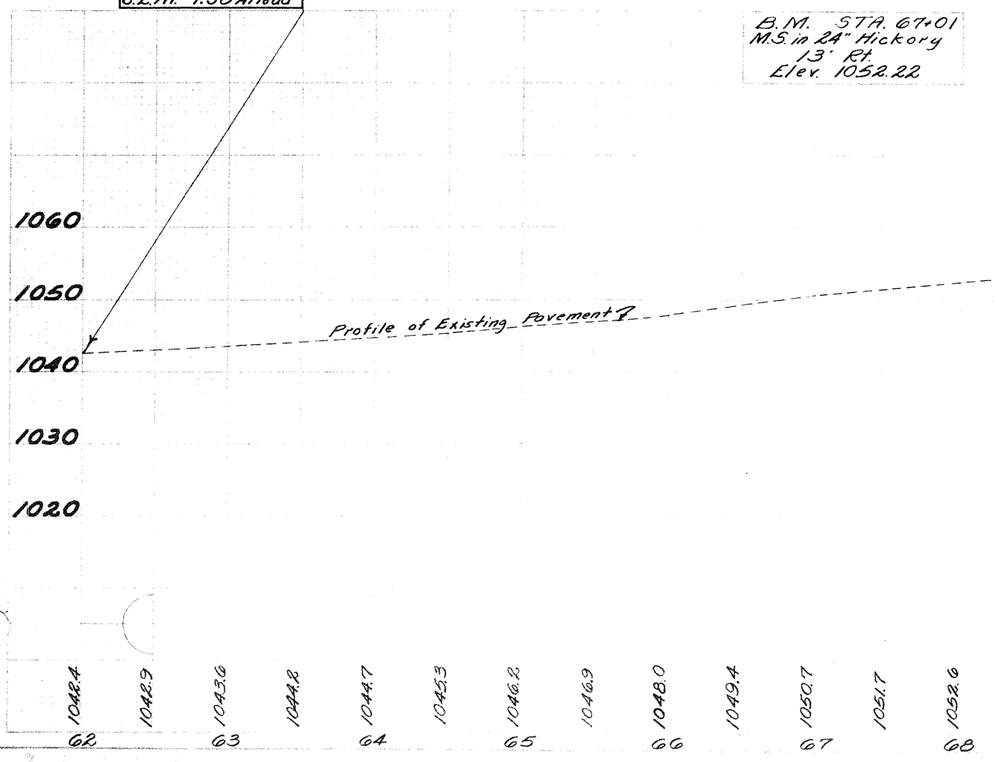
S-1334(2)

STA. 62+00
END PROJECT

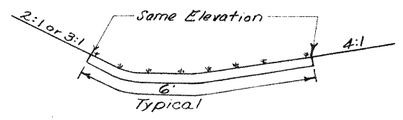
S.L.M. 1.17 Back
S.L.M. 1.30 Ahead

Note: Pavement will be transitioned between Sta 62+00 & Sta 62+50 by widening and resurfacing Existing Pavement. Surface to be feathered to meet existing Grade at Sta. 62+50.

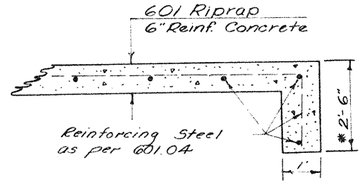
B.M. STA. 67+01
M.S. in 24" Hickory
13' Rt.
Elev. 1052.22



DRAINAGE DETAILS



DETAIL OF SOD DITCH
Not to Scale



*Cut-off wall shall be included for payment in the unit price bid for Item 601 Riprap using 6" Reinforced Concrete Slab, as per plan.

DETAIL - RIPRAP CUT-OFF WALL
Not to Scale

STA. 62+00 TO STA. 68+00

CURVE TABLES

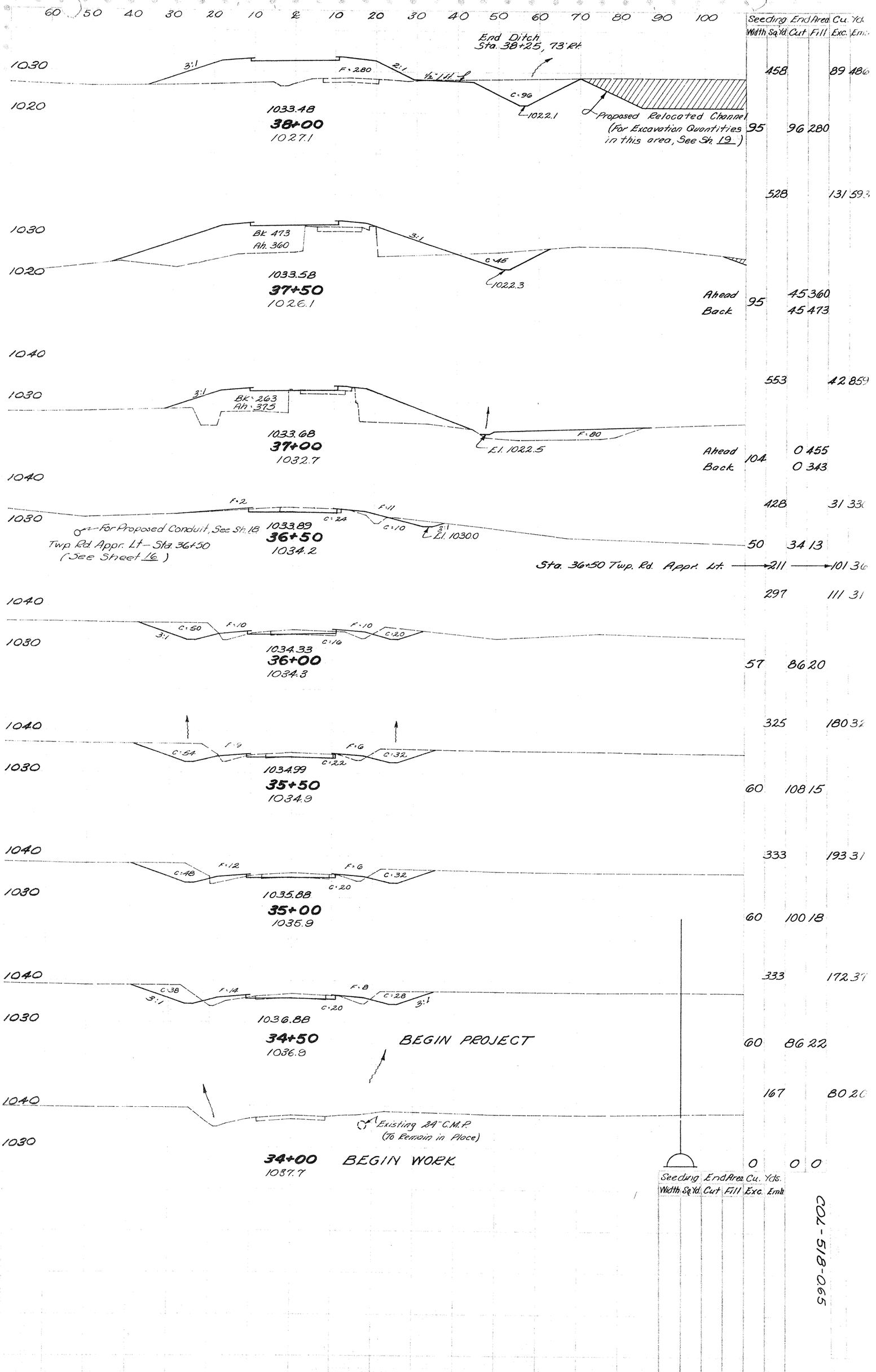
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

9/20

COL-518-0.65

P.C. 35+49.66			Dc=1°28'Lt.		P.T. 40+49.66		
LEFT					RIGHT		
Edge of Pavement	Width	Deduct Crown	℄ STATION	Profile Grade	Add Super	Width	Edge of Pavement
1035.72	10'	0.16	35+00	1035.88	-0.16	10'	1035.72
1035.25			+25	1035.41	Obtained Graphically		1035.32
1034.84			P.C. +49.66	1035.00			1035.00
1034.83			+50	1034.99			1034.99
1034.47			+75	1034.63			1034.73
1034.17			36+00	1034.33			1034.48
1033.92			+25	1034.08	0.32		1034.24
1033.73			+50	1033.89			1034.05
1033.60			+75	1033.76			1033.92
1033.52			37+00	1033.68			1033.84
1033.47			+25	1033.63			1033.79
1033.42			+50	1033.58			1033.74
1033.37			+75	1033.53			1033.69
1033.32			38+00	1033.48			1033.64
1033.27			+25	1033.43			1033.59
1033.22			+50	1033.38			1033.54
1033.17			+75	1033.33			1033.49
1033.12			39+00	1033.28			1033.44
1033.07			+25	1033.23			1033.39
1033.02			+50	1033.18			1033.34
1032.97			+75	1033.13			1033.29
1032.92			40+00	1033.08	0.32		1033.23
1032.87			+25	1033.03	Obtained Graphically		1033.13
1032.82			P.T. +49.66	1032.98			1032.98
1032.82			+50	1032.98			1032.97
1032.77			+75	1032.93			1032.83
1032.72			41+00	1032.88			1032.74
1032.67	10'	0.16	+25	1032.83	-0.16	10'	1032.67

T.S. 56+29.69 S.C. 57+79.69			Dc=3°30'Lt.		C.S. 59+89.69 S.T. 61+39.69		
LEFT					RIGHT		
Edge of Pavement	Width	Deduct Crown	℄ Station	Profile Grade	Add Super	Width	Edge of Pavement
1031.04	10'	0.16	+50	1031.20	-0.16'	10'	1031.04
1031.43			+75	1031.59	Obtained Graphically		1031.46
1031.88			56+00	1032.04			1031.98
1032.40			+25	1032.56			1032.56
1032.51			T.S. +29.69	1032.67			1032.67
1033.00			+50	1033.16			1033.26
1033.65			+75	1033.81			1034.05
1034.38			57+00	1034.54			1034.92
1035.14			+25	1035.30			1035.77
1035.90			+50	1036.06			1036.61
1036.66			+75	1036.82			1037.40
1036.80			S.C. +79.69	1036.96	0.74'		1037.54
1037.42			58+00	1037.58			1038.16
1038.14			+25	1038.30			1038.88
1038.79			+50	1038.95			1039.53
1039.36			+75	1039.52			1040.10
1039.85			59+00	1040.01			1040.59
1040.27			+25	1040.43			1041.01
1040.61			+50	1040.77			1041.35
1040.87			+75	1041.03			1041.61
1040.99			C.S. +89.69	1041.15	0.74'		1041.73
1041.06			60+00	1041.22			1041.79
1041.21			+25	1041.37			1041.91
1041.36			+50	1041.52			1041.98
1041.51			+75	1041.67			1042.02
1041.66			61+00	1041.82			1042.03
1041.81			+25	1041.97			1042.04
1041.90			S.T. +39.69	1042.06			1042.06
1041.96			+50	1042.12			1042.07
1042.11			+75	1042.27			1042.13
1042.26	10'	0.16'	62+00	1042.42	-0.16'	10'	1042.26


60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100
End Ditch
Sta. 38+25, 73' Rt.
1030
1020
3:1
F. 2.80
2:1
½-1/11 ℄
C. 96
1022.1
Proposed Relocated Channel
(For Excavation Quantities in this area, See Sh. 19)
1033.48
38+00
1027.1
1030
1020
Bk. 473
Ah. 360
3:1
C. 45
1022.3
1033.58
37+50
1026.1
1040
1030
3:1
Bk. 263
Ah. 375
F. 80
El. 1022.5
1033.68
37+00
1032.7
1040
1030
F. 2
F. 11
C. 24
C. 10
3:1
El. 1030.0
For Proposed Conduit, See Sh. 18
Twp. Rd. Appr. Lt – Sta 36+50
(See Sheet 16)
1033.89
36+50
1034.2
1040
1030
C. 50
3:1
F. 10
C. 16
F. 10
C. 20
1034.33
36+00
1034.3
1040
1030
C. 54
F. 4
C. 22
F. 6
C. 32
1034.99
35+50
1034.9
1040
1030
C. 48
F. 12
C. 20
F. 6
C. 32
1035.88
35+00
1035.9
1040
1030
C. 38
3:1
F. 14
C. 20
F. 8
C. 28
3:1
1036.88
34+50
1036.9
BEGIN PROJECT
1040
1030
Existing 24" C.M.P.
(To Remain in Place)
34+00
BEGIN WORK
1037.7
STA. 34+00 TO STA. 38+25
60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80
Seeding
Width
End Area
Sq. Yd.
Cu. Yds.
Cut
Fill
Exc.
Emb.
458 89 486
95 96 280
528 131 593
Ahead 95 45 360
Back 45 473
553 42 859
Ahead 104 0 455
Back 0 343
428 31 330
50 34 13
Sta. 36+50 Twp. Rd. Appr. Lt. → 211 → 101 36
297 111 31
57 86 20
325 180 32
60 108 15
333 193 31
60 100 18
333 172 37
60 86 22
167 80 20
0 0 0
Seeding
Width
End Area
Sq. Yd.
Cu. Yds.
Cut
Fill
Exc.
Emb.
COL-518-065
10
26

50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110

Seeding End Area Cu. Yds.

Width Sq. Yd.	Cut	Fill Exc. Emb.

Seed portion of old road bed to be vacated as shown on Sheet Right of Sta. 43+25 to Sta. 44+20 and Existing Pavement Removal → 1618 → 270 0

C=13

Typical Section of Exist. Roadbed in area to be vacated.

Exc: 13x560 ÷ 22 = 270 C.Y.
Seeding 2.6x560 ÷ 9 = 1618 S.Y.

(Quantities Calculated - REM - 1/17/67.)
(" Checked - D.J.S. 1/17/67)

456 627 690

Relocated Channel

1030
1020

3:1 F=400 2:1 ½" per ft ℄ 2:1 C=355 2:1

1032.48
43+00
1024.8

E.l. 1019.67

80 355400

1030
1020

F=289 F=3 C=1 C=356

1032.58
42+50
1026.1

E.l. 1019.85

431 658.641
75 356292

1030
1020

F=255 C=334

1032.68
42+00
1026.9

E.l. 1020.02

419 639506
76 334255

1030
1020

F=242 C=296

1032.78
41+50
1027.6

E.l. 1020.20

428 583460
78 296242

1030
1020

F=262 C=335

1032.88
41+00
1027.7

E.l. 1020.37

450 584467
84 335262

1030
1020

F=300 C=342

1032.98
40+50
1026.8

E.l. 1020.55

461 627524
82 342304

1030
1020

F=275 C=325

1033.08
40+00
1027.5

E.l. 1020.72

442 618536
77 325275

1030
1020

F=272 C=282 2:1

1033.18
39+50
1028.0

E.l. 1020.90

425 562506
76 282272

Relocated Channel

1030
1020

F=278 C=319 2:1

+10% A A

1033.28
39+00
1028.2

E.l. 1021.07

428 556509

Seeding End Area Cu. Yds.

Width Sq. Yd.	Cut	Fill Exc. Emb.
Ahead → 78	→ 319	278
Back → 65	→ 0	278

70 60 50

Channel Quantities
Sta. 35+50 "C" to 39+00 "C" → 963 → 281470 0
(See Sheet 12)

1030
1020

A A +10% 3:1 F=245 2:1 ½"/ft ℄ 2:1

375 0 484

E.l. 1021.25

1033.38
38+50
1028.2

F=70

70 0 245

Sta. 38+50 Type 2 Field Dr. Lt. → 0 71

Sta. 38+50 Type 2 Field Dr. Lt.
62' Long
21 Cu. Yds. 304 Aggregate Base (6" thick)

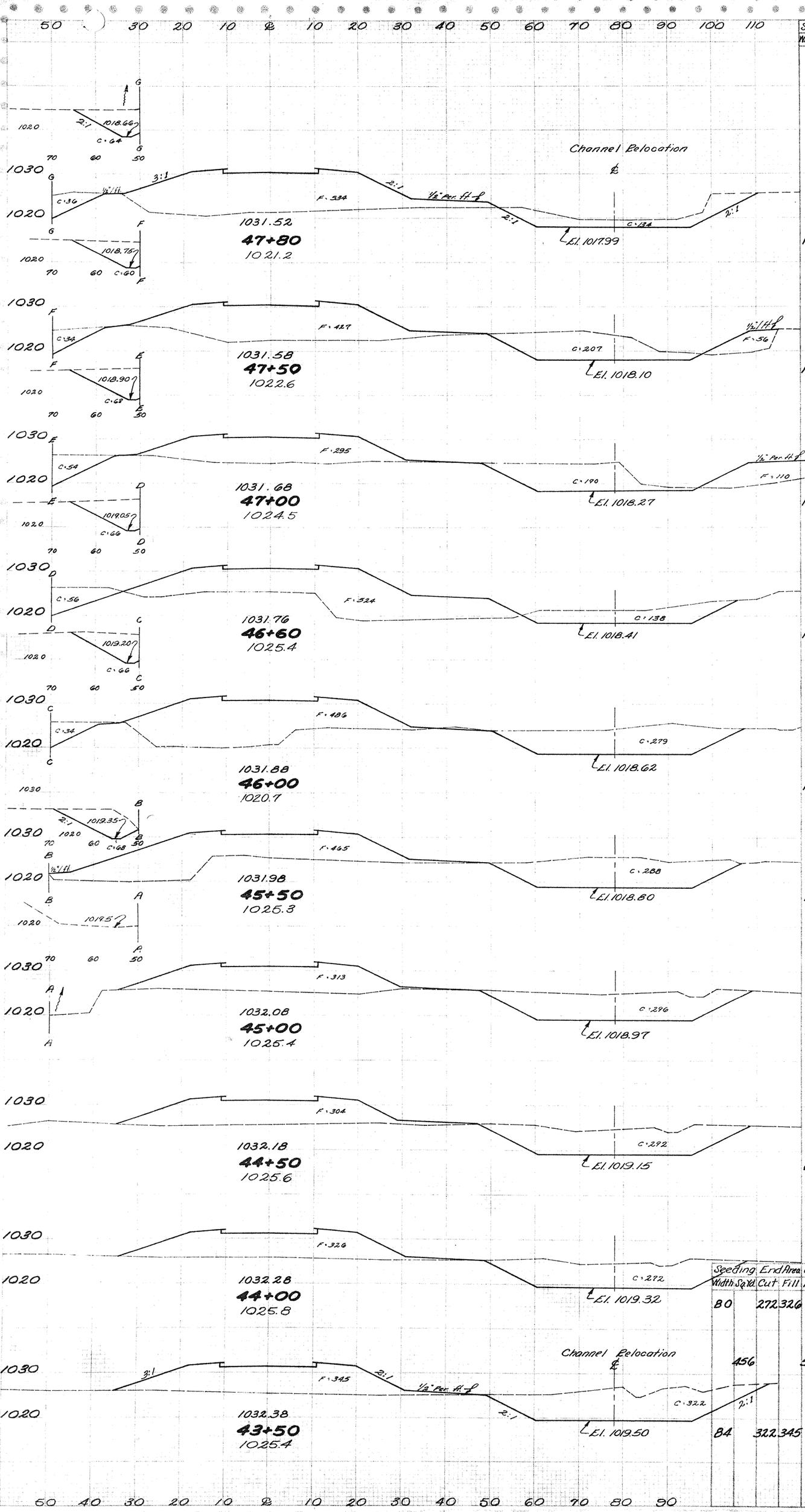
Quantities Calculated REM 1/17/67
Quantities Checked by ALF 1/17/67

50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90

STA. 38+50 TO STA. 43+00

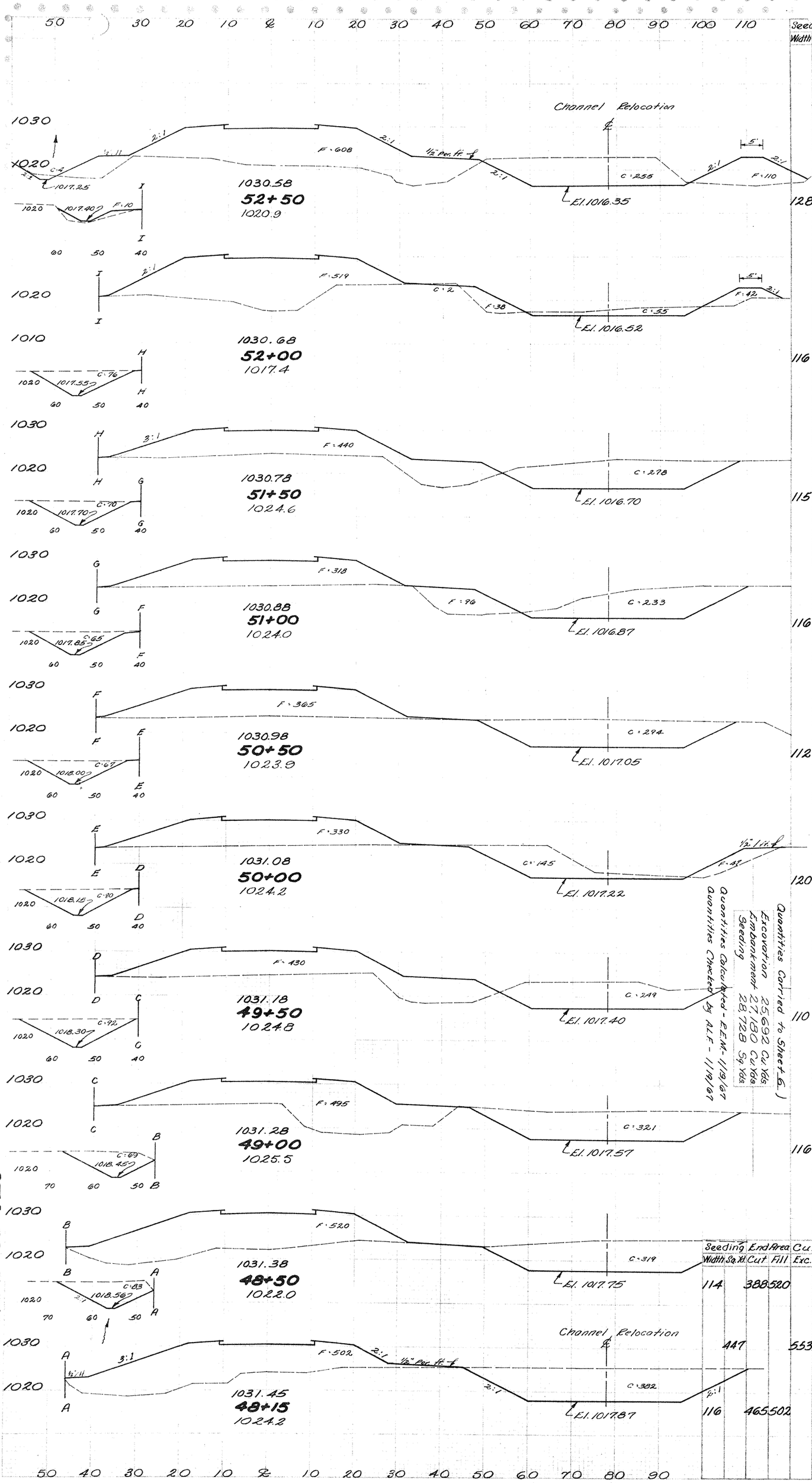
COL-518-065

11
20



Seeding Width	Sq Yd	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
	443			451	671
112		234	534		
	387			297	565
120		301	483		
	711			568	822
136		312	405		
	547			424	688
110		260	524		
	740			713	1122
112		382	486		
	625			683	881
113		356	465		
	536			604	720
80		296	313		
	444			544	571
80		292	304		
	444			522	583
80		272	326		
	456			550	621
84		322	345		

COL - 518-065



Seeding Width Sq. Yd.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
182			126	343
128			259	718
678			293	1229
116			57	609
642			381	971
115			354	440
642			608	791
116			303	414
633			613	721
112			359	365
644			529	687
120			212	377
639			501	747
110			329	430
628			687	856
116			413	495
639			742	940
114			388	520
447			553	662
116			465	502

Quantities Carried To Sheet 6.1

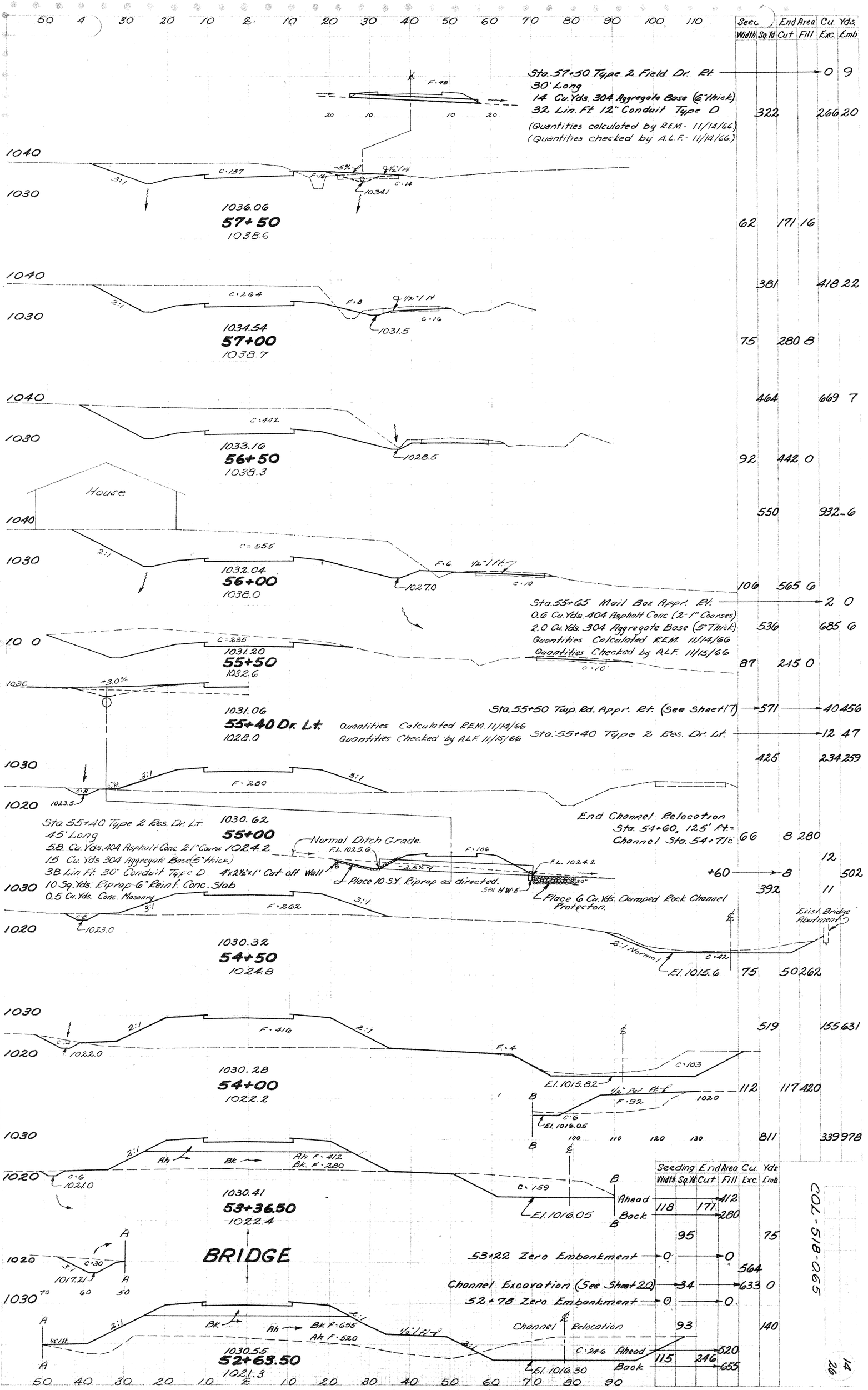
Quantities Calculated - E.E.M. - 11/19/67

Quantities Checked By A.L.F. - 11/19/67

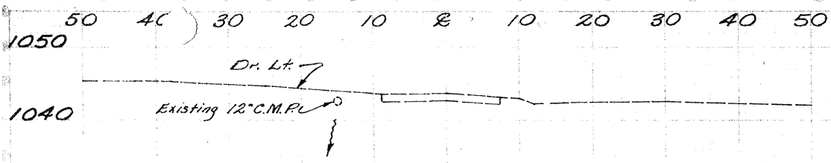
Excavation	255692 Cu. Yds
Embankment	271180 Cu. Yds
Seeding	28,728 Sq. Yds

COL - 518-065

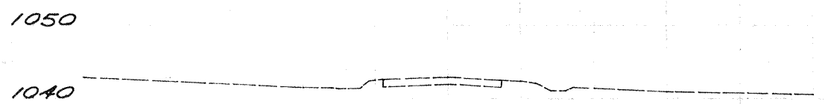
13
26


Sta. 57+50 Type 2 Field Dr. Rt.
30' Long
14 Cu. Yds. 304 Aggregate Base (6" Thick)
32 Lin. Ft. 12" Conduit Type D
(Quantities calculated by REM - 11/14/66)
(Quantities checked by A.L.F. - 11/14/66)
57+50
56+50
House
56+00
Sta. 55+65 Mail Box Appr. Rt.
0.6 Cu. Yds. 404 Asphalt Conc (2-1" Courses)
2.0 Cu. Yds. 304 Aggregate Base (5" Thick)
Quantities Calculated REM. 11/14/66
Quantities Checked by ALF. 11/15/66
55+50
Sta. 55+50 Twp. Rd. Appr. Rt. (See Sheet 17)
55+40 Dr. Lt.
Quantities Calculated REM. 11/14/66
Quantities Checked by ALF. 11/15/66
Sta. 55+40 Type 2 Res. Dr. Lt.
End Channel Relocation
Sta. 54+60, 12.5' Rt. =
Channel Sta. 54+71.6
Sta. 55+40 Type 2 Res. Dr. Lt.
45' Long
5.8 Cu. Yds. 404 Asphalt Conc. 2-1" Courses
15 Cu. Yds. 304 Aggregate Base (5" Thick)
38 Lin. Ft. 30" Conduit Type D
10 Sq. Yds. Riprap 6" Reinf. Conc. Slab
0.5 Cu. Yds. Conc. Masonry
4"x2½"x1' Cut-off Wall
Normal Ditch Grade.
Place 10 S.Y. Riprap as directed.
Place 6 Cu. Yds. Dumped Rock Channel Protection.
Exist. Bridge Abutment
54+50
54+00
53+36.50
BRIDGE
52+63.50
Seeding
Channel Excavation (See Sheet 20)
53+22 Zero Embankment
52+78 Zero Embankment
Channel Relocation
Ahead
Back
Seed. Width
Sq. Yd.
End Area Cut
Fill
Cu. Yds. Exc.
Emb.
STA 52+63.50 TO STA 57+50
COL-518-065
14
26

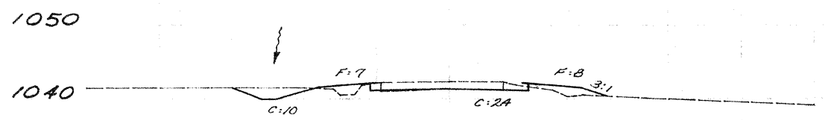
50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110



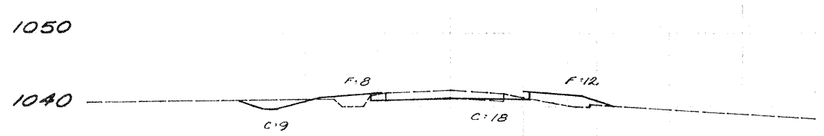
63+00
1043.6



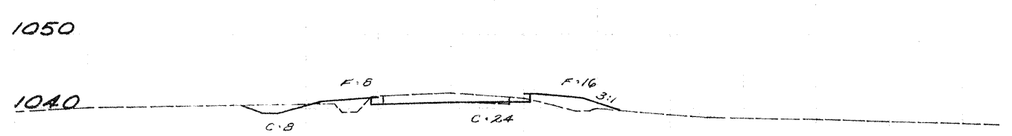
62+50 END WORK
1042.9



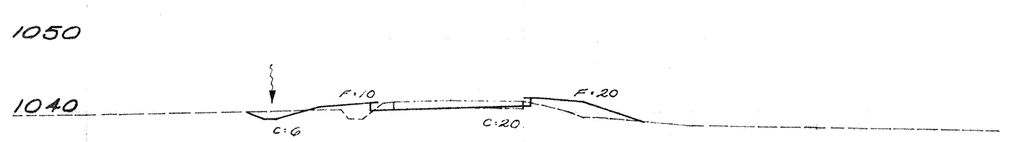
1042.42
62+00 END PROJECT
1042.4



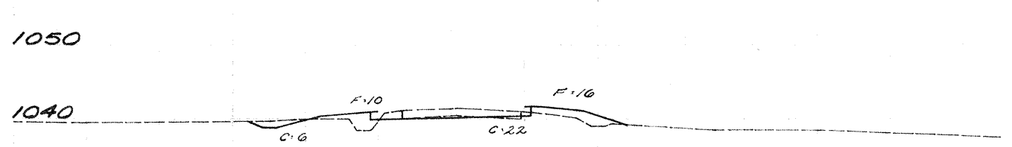
1042.12
61+50
1042.2



1041.82
61+00
1042.0

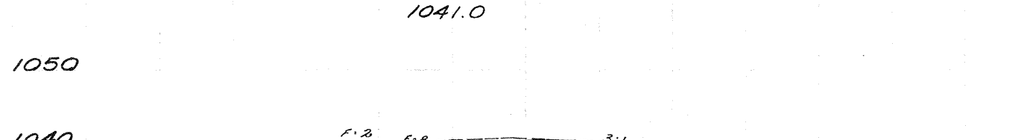


1041.52
60+50
1041.6

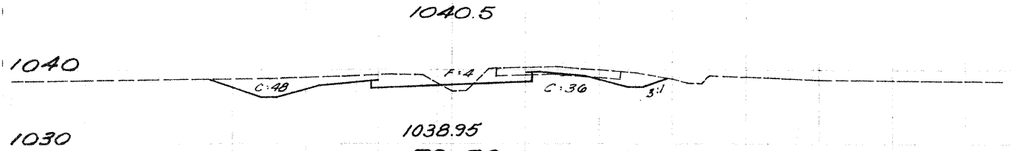


1041.22
60+00
1041.4

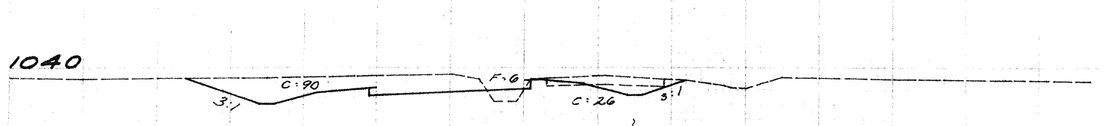
1040.77
59+50
1041.0



1040.01
59+00
1040.5



1038.95
58+50
1037.1



1037.58
58+00
1039.1

50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90

Seedi. Width	Sq.Yd.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
0		0	0		
	100			31	14
36		34	15		
	206			56	32
38		27	20		
	208			55	41
37		32	24		
	214			54	50
40		26	30		
	211			50	52
36		28	26		
	211			54	43
40		30	20		
	222			64	28
40		39	10		
	244			114	13

Seeding Width	Sq.Yd.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
48		84	4		
	283			185	9
54		116	6		

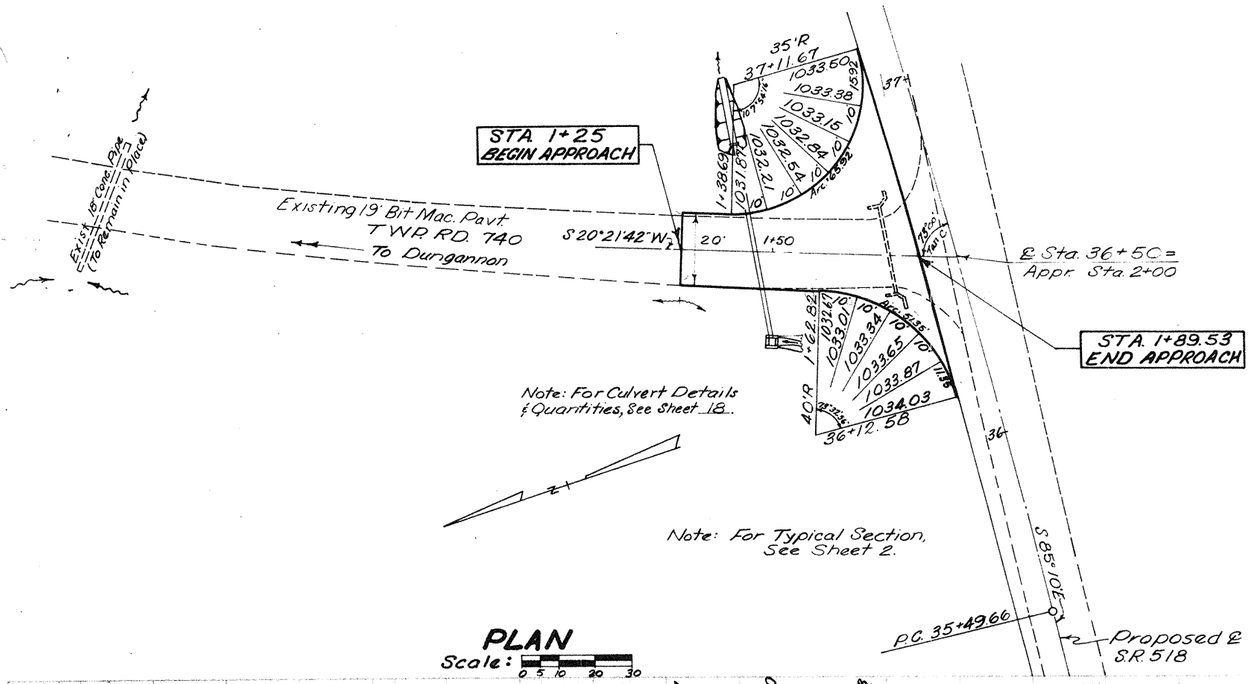
COL-518-0.65

15
26

2	OHIO			

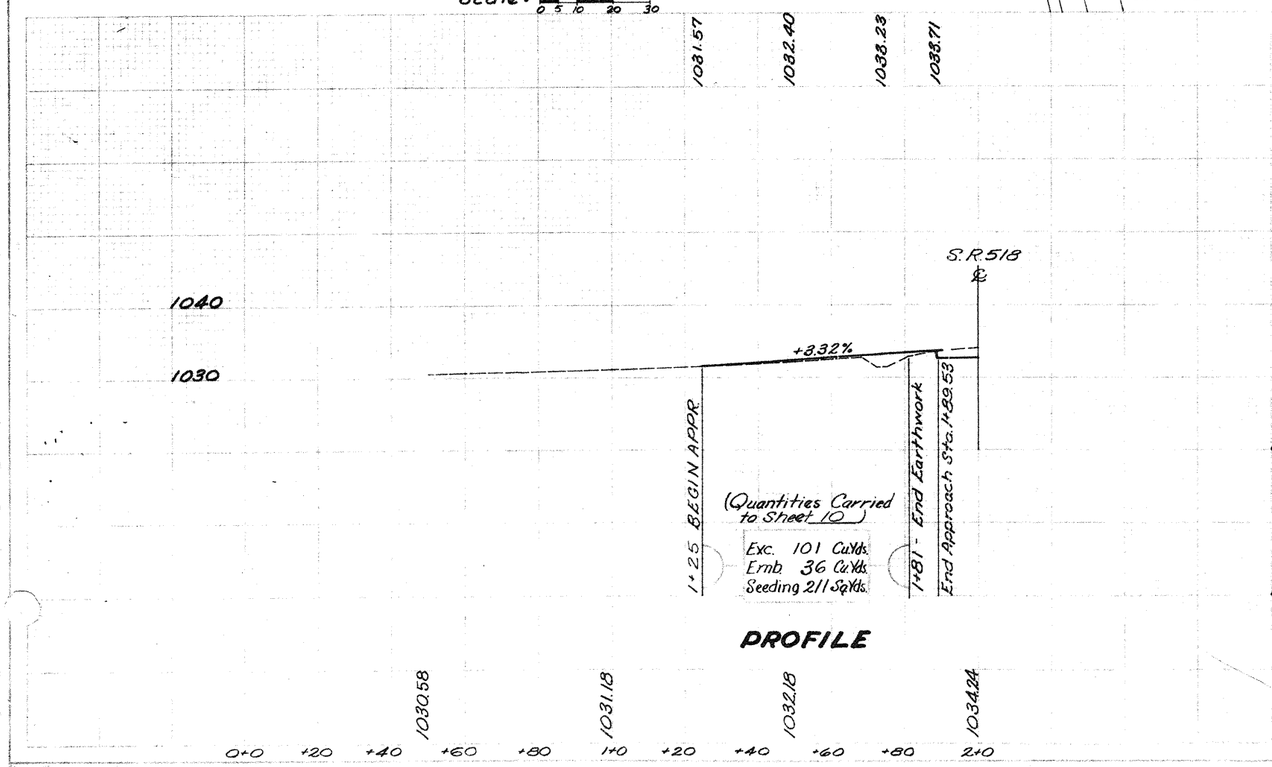
16
26

COL. -518-0.65



PLAN

Scale: 0 5 10 20 30



PROFILE

QUANTITIES

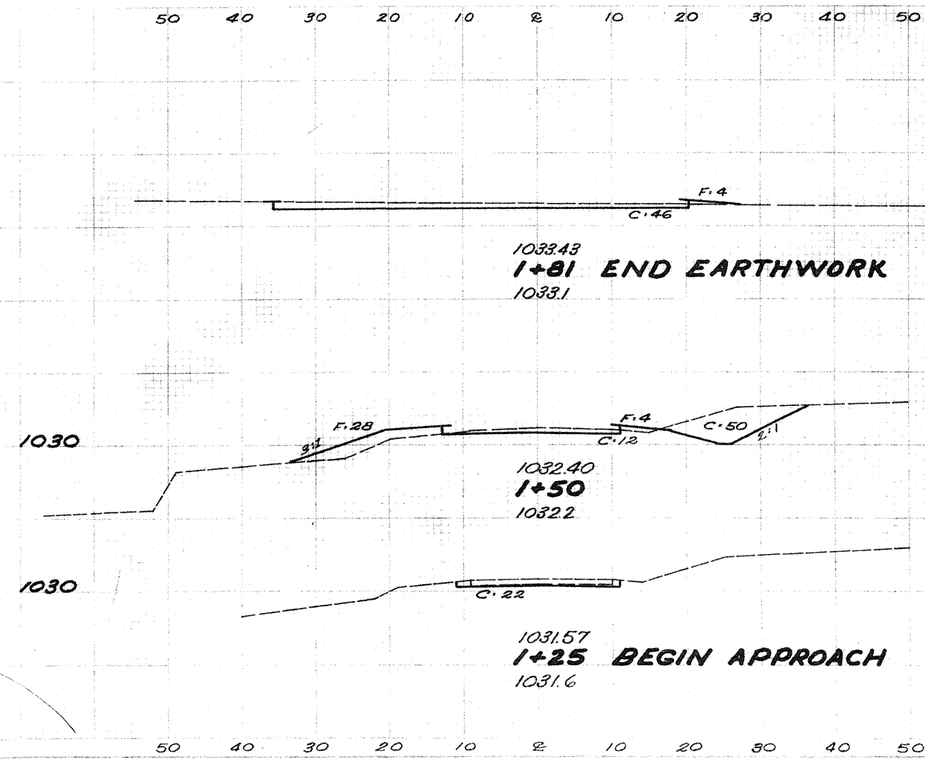
ITEM 310,	4" Subbase	26 Cu. Yds.
ITEM 304,	6" Aggregate Base	37 Cu. Yds.
ITEM 408,	Prime Coat	89 Gals.
ITEM 402,	1 1/4" Asphalt Concrete (85-100)	7.7 Cu. Yds.
ITEM 404,	1 1/4" Asphalt Concrete (85-100)	7.7 Cu. Yds.
ITEM 202,	Pipe Removed (12" CMP)	25 Lin. Ft.
ITEM 203,	Subgrade Preparation	221 Sq. Yds.

(Quantities Carried to Sheet 4)

Quantity Calculations

Approach, Area = (64.53×20) + [.35(48.09-32.96)] + [40(29.90-25.68)] = 1988.95 S.F. Use 1990 Sq. Ft.
ITEM 404: (1990×1.25) ÷ (12×27) = 7.68 Cu. Yds. Use 7.7 Cu. Yds.
ITEM 402: (1990×1.25) ÷ (12×27) = 7.68 Cu. Yds. Use 7.7 Cu. Yds.
ITEM 408: (1990 ÷ 9) × 0.4 = 88.44 Gals. Use 89 Gals.
ITEM 304: [(1990×6) ÷ (12×27)] + 1/27 (65.92+51.35+13.69+37.82-99.09) ×0.5 ÷ 0.5 = 36.20 Cu. Yds. - Use 37 Cu. Yds.
ITEM 310: [(1990×4) ÷ (12×27)] + 1/27 (65.92+51.35+13.69+37.82-99.09) ×1.0×0.33 = 25.42 Cu. Yds. - Use 26 Cu. Yds.
ITEM 203: 1990 ÷ 9 = 221 Sq. Yds.

Quantities Calculated By R.J.S. - 11/14/66.
Quantities Checked By R.E.M. - 1/17/67.



	Seeding Width	Sq Yd.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
1+81 END EARTHWORK	10		46	4		
		112			62	21
1+50	55		62	32		
		99			39	15
1+25 BEGIN APPROACH	16		22	0		

APPROACH LT. - STA 36+50

				17
2	OHIO			26

COL-518-0.65

QUANTITIES

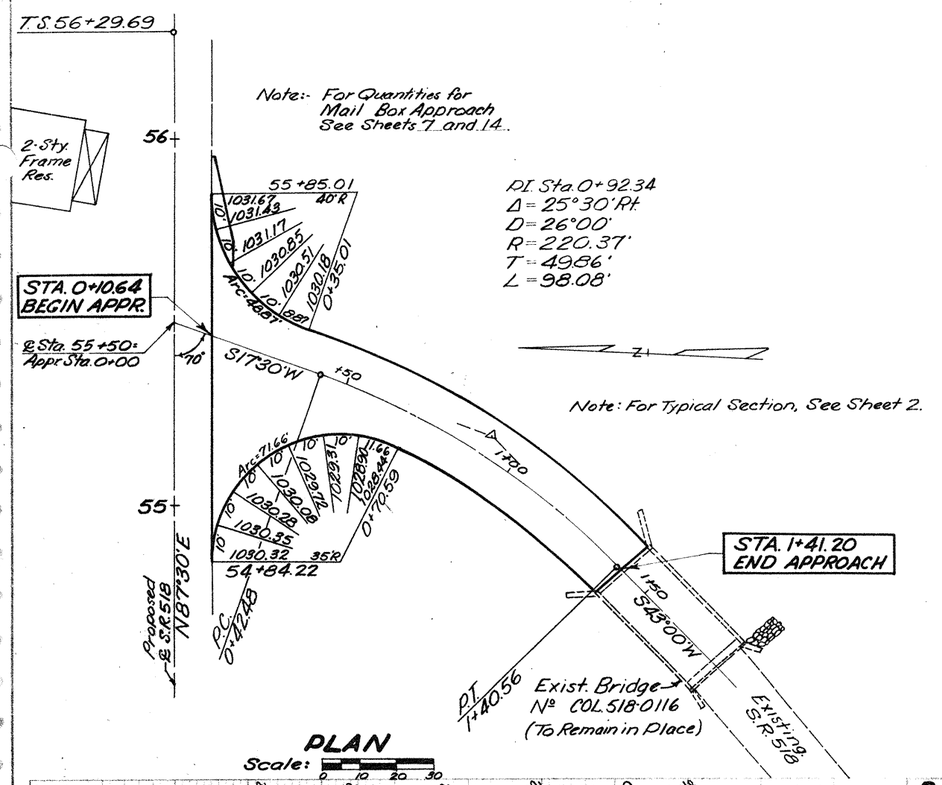
ITEM 304,	6" Aggregate Base.	65 Cu. Yds.
ITEM 310,	4" Subbase	45 Cu. Yds.
ITEM 402,	1¼" Asphalt Concrete (85-100)	130 Cu. Yds.
ITEM 404,	1¼" Asphalt Concrete (85-100)	130 Cu. Yds.
ITEM 408,	Prime Coat	150 Gals.
ITEM 203,	Subgrade Preparation	375 Sq. Yds.

(Quantities Carried to Sheet 4)

Quantity Calculations

Approach Area = (130.56×20) + (142.40) + (622.40) = 3376 Sq. Ft.
Item 404, (3376×1.25) ÷ (12×27) = 13.0 Cu. Yds.
Item 402, (3376×1.25) ÷ (12×27) = 13.0 Cu. Yds.
Item 408, (3376 ÷ 9) × 0.4 = 150.0 Gals.
Item 304, (3376.6) ÷ (12×27) + 1/27 (71.66+48.87+106.19+70.61-100.79)×0.5×0.5 = 64.34 Cu Yds. - Use 65 Cu. Yds.
Item 310, (3376×4) ÷ (12×27) + 1/27 (71.66+48.87+106.19+70.61-100.79)×1.0×0.33 = 44.08 Cu Yds. - Use 45 Cu. Yds.
Item 203, (3376 ÷ 9) = 375 Sq. Yds.

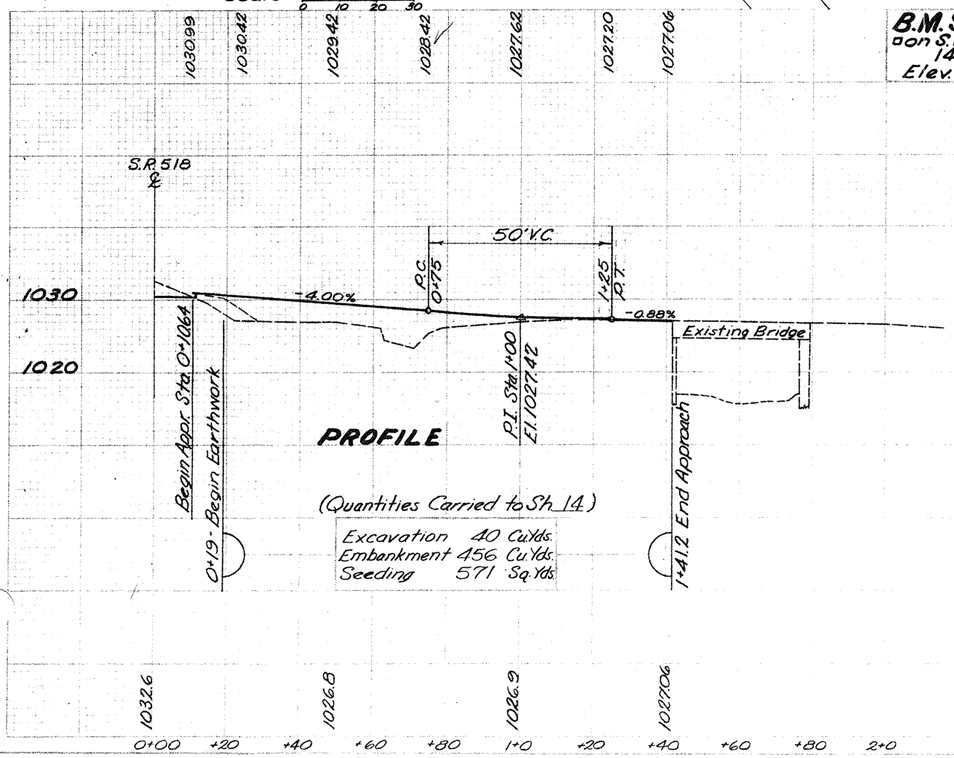
Quantities Calculated by R.J.S. - 11/4/66.
Quantities Checked by R.E.M. - 11/7/66.



PLAN

Scale: 0 10 20 30

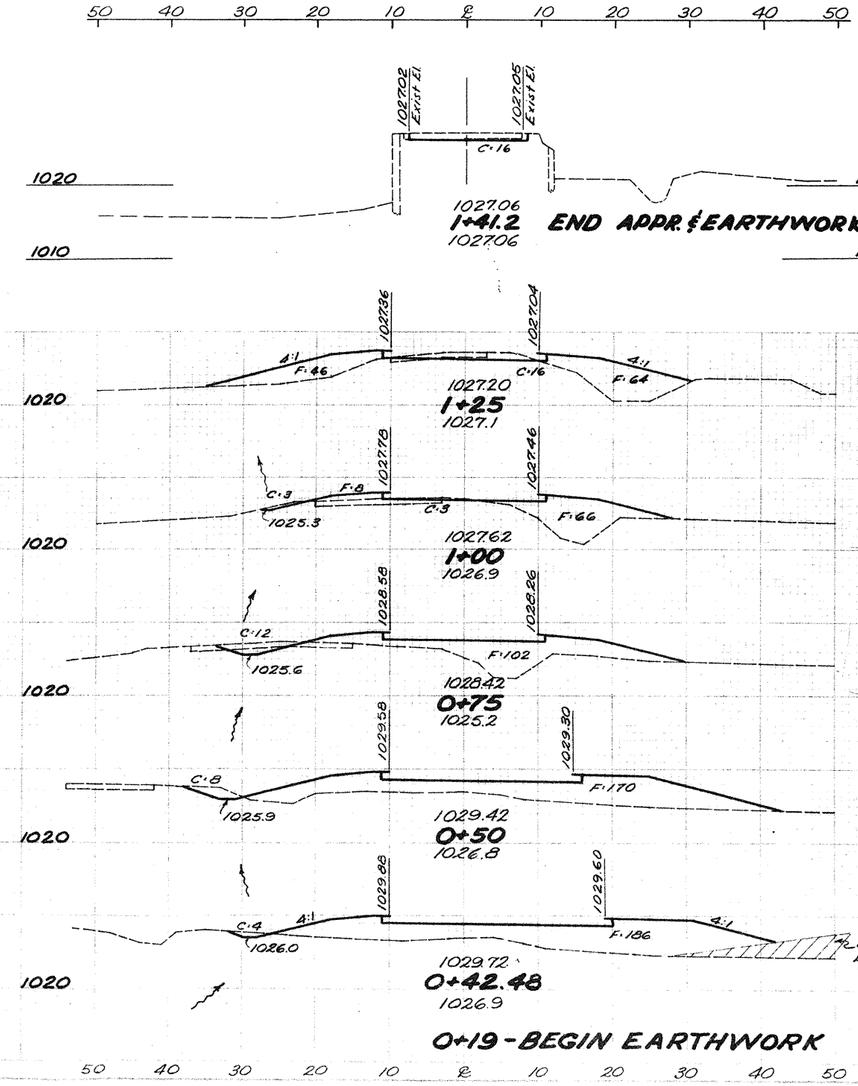
B.M. STA. 54+45
on S.W. Cor. Wing Wall
145' Rt.
Elev. 1026.01



PROFILE

(Quantities Carried to Sh. 14)

Excavation 40 Cu Yds.
Embankment 456 Cu Yds.
Seeding 571 Sq. Yds.



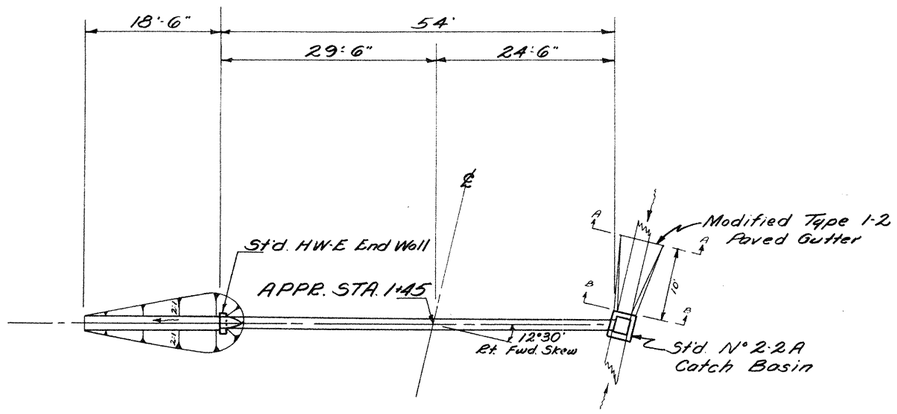
Seeding Width	Seeding Sq Yds	End Area Cut	End Area Fill	Cu Yds. Exc.	Cu Yds. Emb.
4		16	0		
	50		9	33	
52		16	110		
	128		10	85	
40		6	74		
	125		8	81	
50		12	102		
	156		9	126	
62		8	170		
	47		2	50	
50		4	186		
	65		2	81	
0		0	0		

APPROACH PT - STA. 55+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

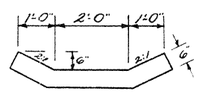
18
26

COL-518-0.65

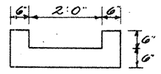


PLAN

Scale: 0 5 10 20



SEC. A-A



SEC. B-B

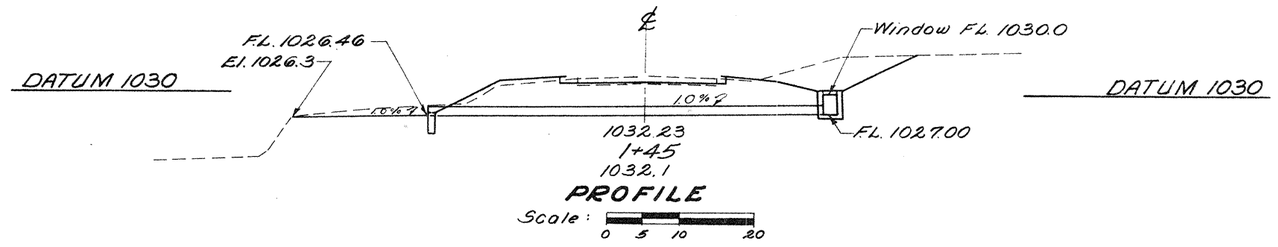
Modification Details for Type 1-2 Paved Gutter
All other provisions shown on Std. Dwg. MC-5 shall apply.

QUANTITIES

Item 603 15" Conduit, Type B	with Class B Bedding	54 Lin. Ft.
Item 602 Concrete Masonry		0.3 Cu. Yd.
Item 604 Standard N° 2.2A Catch Basin		1 Each
Item 601 Paved Gutter, Type 1-2, Modified as per plan		10 Lin. Ft.
Item 660 Sodding 2 x (10 x 1.5) ÷ 9 =		4 Sq. Yds.
Item 203 Excavation (Channel) 18.5 x 4 (Ave End Area) ÷ 27 =		3 Cu. Yds.

Quantities Calculated by R.J.S 11-15-66
Quantities Checked by R.E.M. 11-16-66

Area : 3 Acres
Q 25 6 c.f.s.

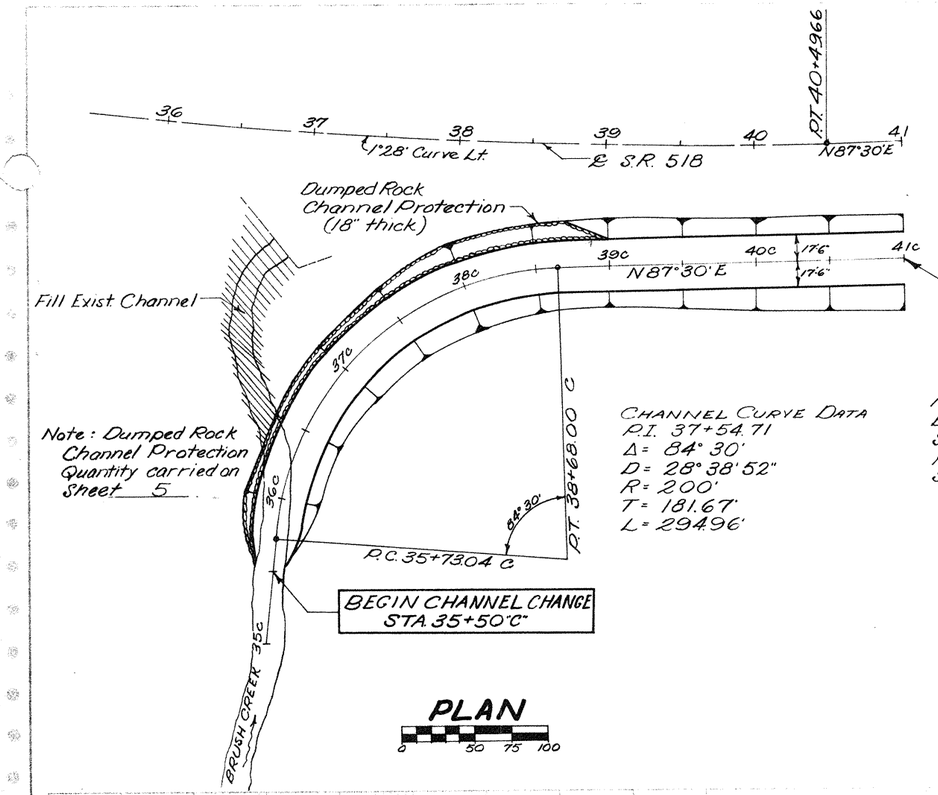


PROFILE

Scale: 0 5 10 20

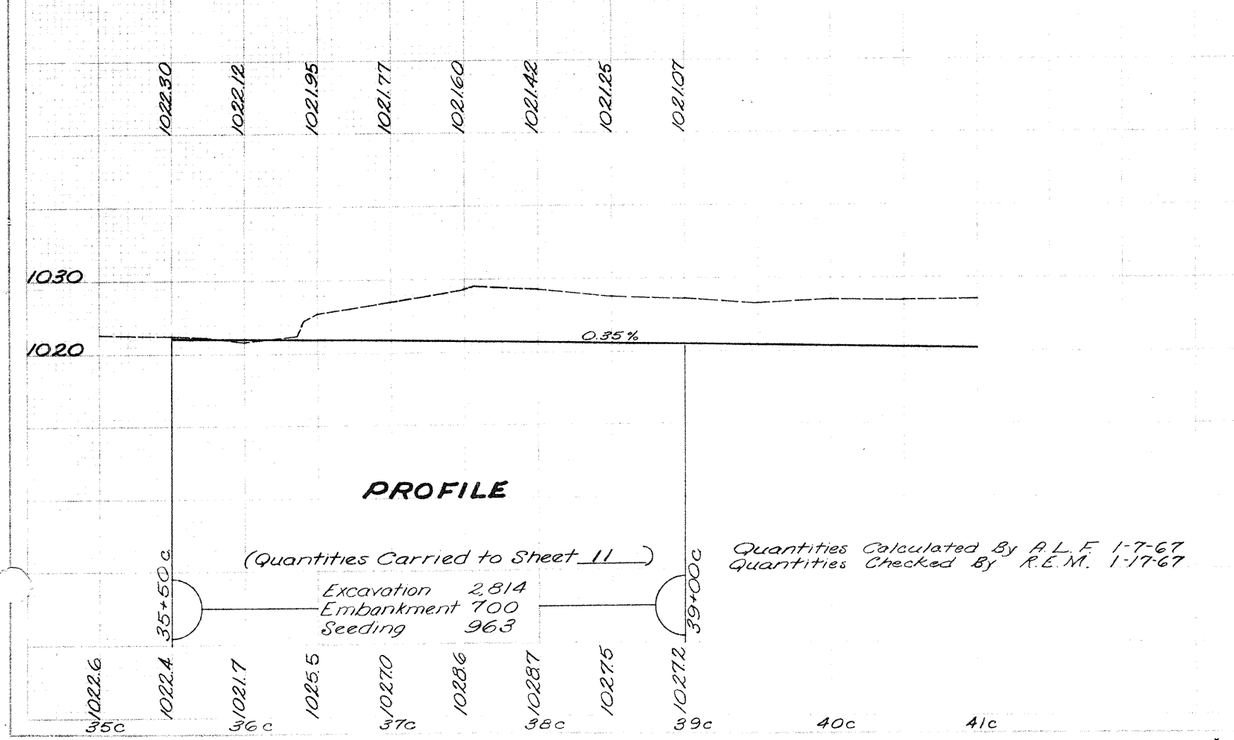
APPROACH STA. 36+50 LT.
APPR. STA. 1+45
15"x54' PIPE CONDUIT

COL-518-0.65

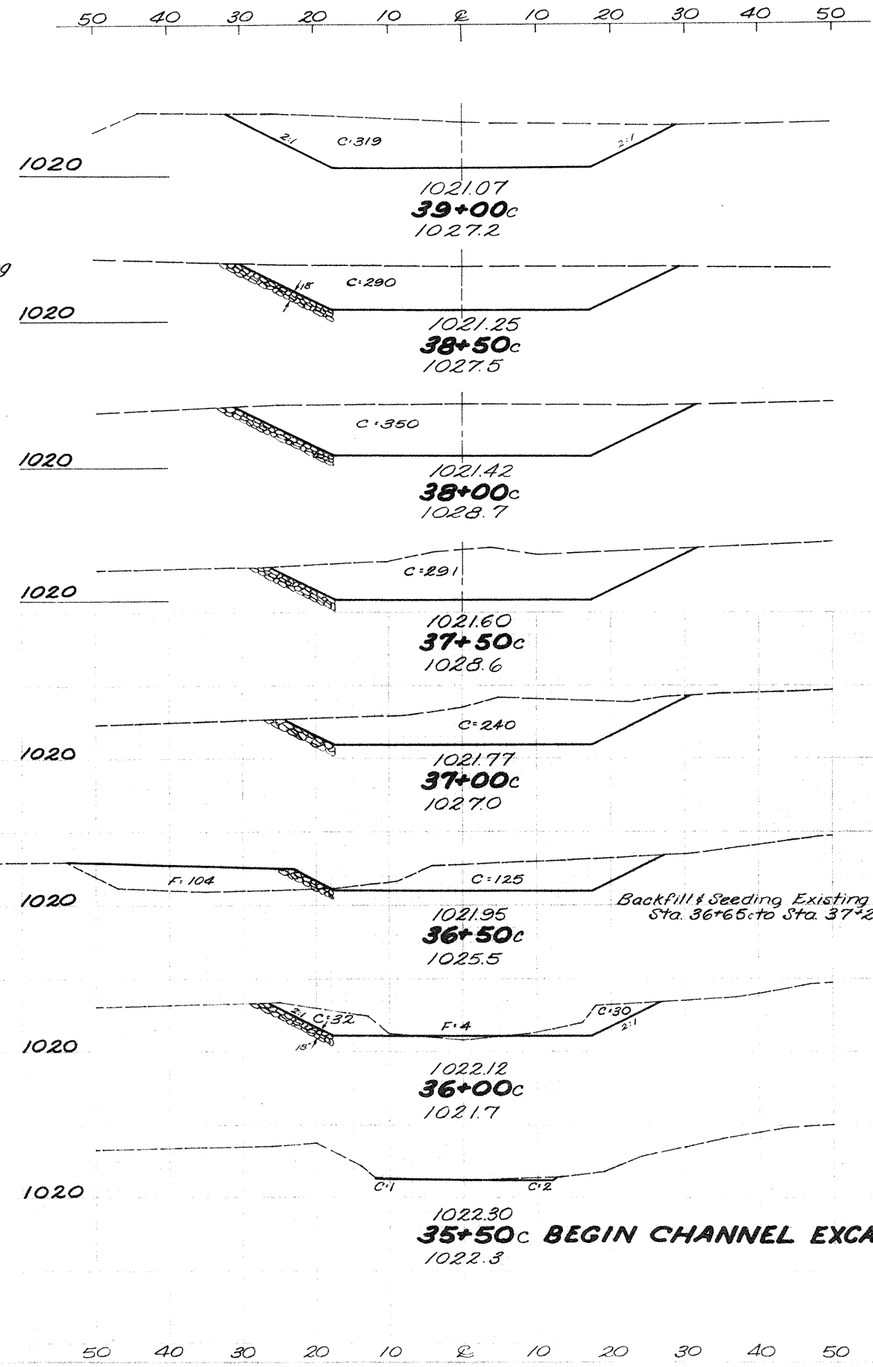


CHANNEL CURVE DATA
P.I. 37+54.71
Δ = 84° 30'
D = 28° 38' 52"
R = 200'
T = 181.67'
L = 294.96'

NOTE: For Channel Excavation between Sta. 39+00 C and Sta. 54+71 C, See Corresponding Roadway Cross Sections, Sheets 11, 12, 13 & 14.



Quantities Calculated By A.L.F. 1-7-67
Quantities Checked By R.E.M. 1-17-67

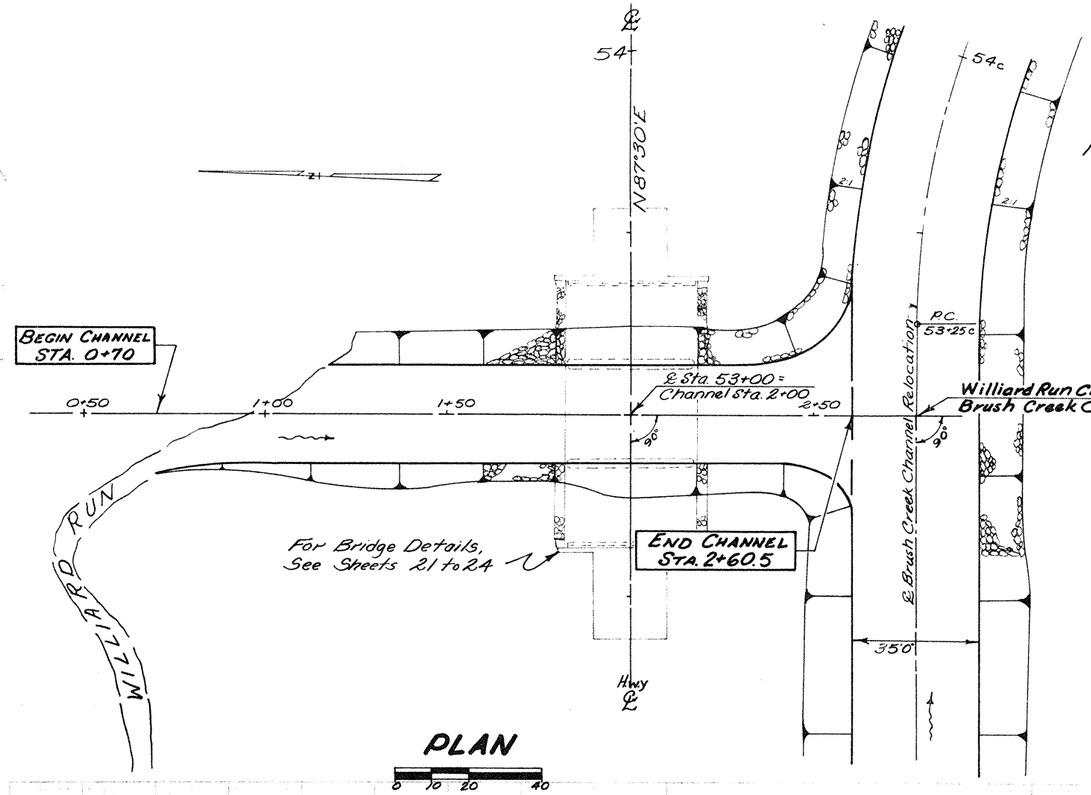


Seeding Width	Seeding Sq.Yd.	End Area Cut	End Area Fill	Cu. Yds. Exc.	Cu. Yds. Emb.
17		319	0		
	94			564	0
17		290	0		
	106			593	0
21		350	0		
	103			594	0
16		291	0		
	81			492	0
13		240	0		
	144			338	96
	260 →		→	0	500
39		125	104		
	142			173	100
12		62	4		
	33			60	4
0		3	0		

Backfill & Seeding Existing Channel Sta. 36+65c to Sta. 37+20c Lt.

PROPOSED CHANNEL CHANGE (BRUSH CREEK)

COL-518-0.65



PLAN

0 10 20 40

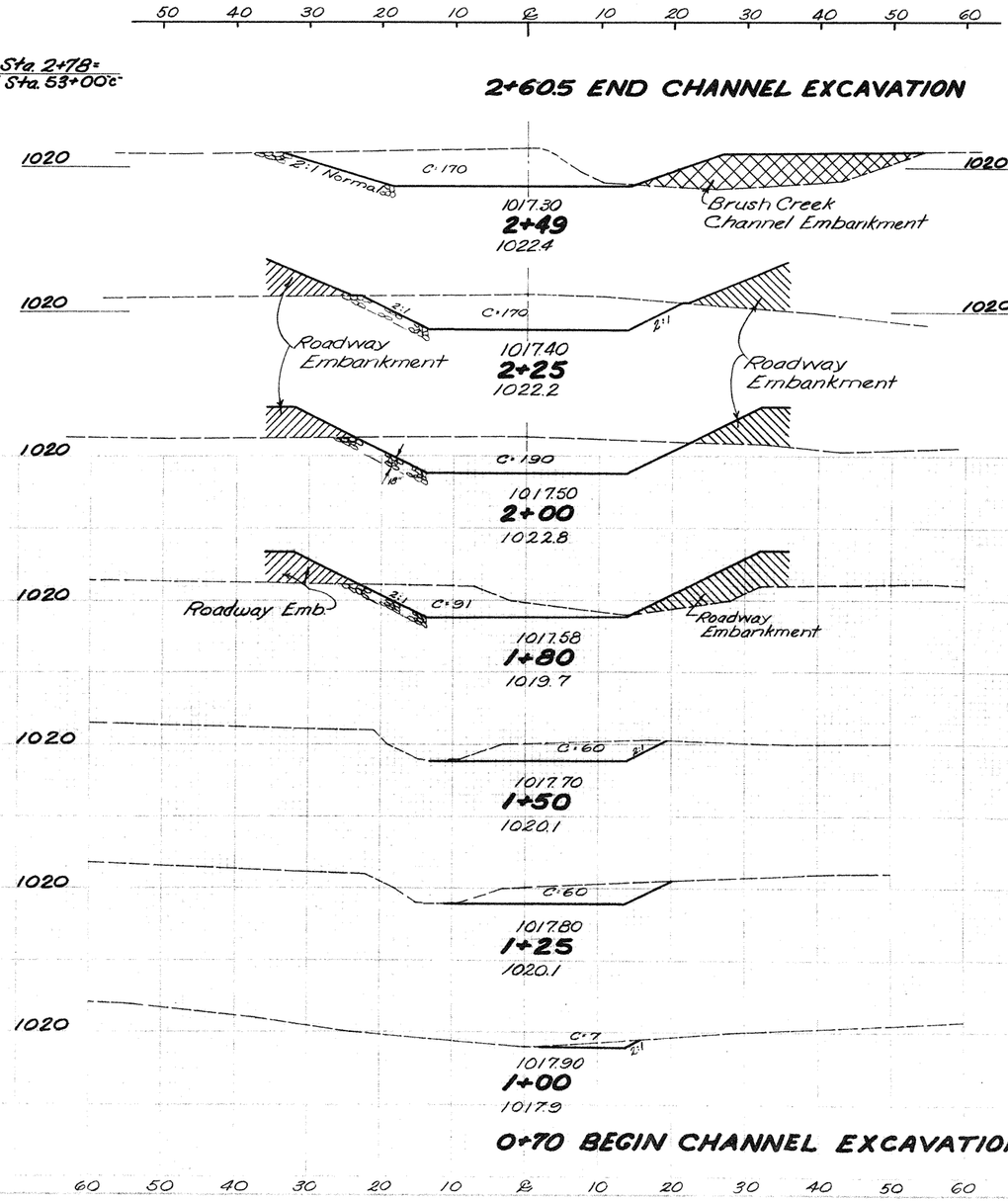
Note: For Dumped Rock Channel Protection Limits and Quantities in this area, See Sheet 7. Slope Protection under Bridge is included in Bridge Quantities.

PROFILE

Quantities Calculated By A.L.F. - 1/19/67
Quantities Checked By R.E.M. 1/20/67

(Quantities Carried to Sheet 14)

Excavation 633 Cu.Yds.
Embankment 0 Cu.Yds.
Seeding 34 Sq.Yds.



Seeding Width	Sq.Yds.	End Area Cut	Fill	Cu. Yds. Exc.	Emb.
0		0	0		
	0			36	0
0		170	0		
	0			151	0
0		170	0		
	0			167	0
0		190	0		
	3			104	0
3		91	0		
	10			84	0
3		60	0		
	10			56	0
4		60	0		
	8			31	0
2		7	0		
	3			4	0
0		0	0		

PROPOSED CHANNEL CHANGE (WILLIARD RUN)

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	S-1334(2)	

2.1
2.6

COL-518-0116
EXISTING BRIDGE DATA

TYPE : Steel Beam Simple Span
SPAN : 34'
ROADWAY : 18.2'
ABUTMENTS : Rear-Stone, Fwd.-Conc.
LOADING : S-18
ALIGNMENT : Tangent
CONDITION : Good
SUFF. RATING : 86
(To Remain in Place)

P.O.T. 51+75
N&C. 22" Hickory
37'
20.59'
Hub
24.18'
40" Oak
69.78'
36"
N&C. 12" W. Cherry

P.O.T. 54+57.50
N&C. 40" Oak
18.38'
Hub
6.1'
50.70'
57'
N&C. 15" Walnut, N&C. 16" Hickory

T.S. 56+29.69
N.&C. 12" Pine
16.95'
Hub
17'
22.67'
21'
N&C. 14" Pine, N&C. 10" Pine

Shed

B.M. STA. 54+45
□ on S.W. Cor. Bridge Wing Wall
145' Rt.
Elev. 1026.01

COL-518-0.65
1.0 Mi. East of Millport

N

WILLIARD RUN

BRUSH CREEK

Fill to Elev. 1020.0 ± and slope to drain

Elev. 1017.7 ±

Begin Appr. Slab Sta. 53+36.50

End Appr. Slab Sta. 52+63.50

Elev. 1017.4 ±

+59.23

+40.48

30' bench

2:1

88°

To Millport

51 52 53 54 55 56

N87°30E

TS 56+29.69

Provide 601.08 Dumped Rock Channel Protection, 18" thick, to limits as shown

For Quantity See Sheet 7

35.0'

℄ Brush Creek Channel Relocation ℄

Clears assumed 5-10 year design high water 2.3' ±

BRIDGE LIMITS = 73.00'

Elev. 1025 ± Annual High water (Brush Creek)

Bridge No. COL-518-0116 To remain in place

B.M.

Bench Elev. 1026.9 ±

Assumed 5-10 yr. design high water elev. 1026.5

Bench Elev. 1026.8 ±

Excavate channel thru structure to Elev. 1017.5 ±

Ftg. El. 1014.0
Ftg. El. 1015.0

Ftg. El. 1014.0
Ftg. El. 1015.0

Proposed Grade Line -0.20%

P.C. 54+00

300' V.C.

V.P.I. Sta. 55+50
Elev. 1029.98
G_2 = +3.04%

Existing S.R. 518

2 Sty. Frame Res.

Fr. Shed

1030.98 1030.88 1030.78 1030.68 1030.58 1030.48 1030.38 1030.28 1030.32 1030.63 1031.20

Sta. 52+63.50 Sta. 53+36.50

PROFILE ON PROPOSED ℄

PROPOSED STRUCTURE

TYPE: Continuous reinforced concrete slab with reinforced concrete substructure
SPANS: 22.0'-27.5'-22.0' c/c brgs.
ROADWAY: 36'-0" b/f guard rails
LOAD FREQUENCY: CF=130 (ST)
SKEW: None
WEARING SURFACE: 1" monolithic concrete
APPROACH SLABS: AS-1-54 (25' long)
ALIGNMENT: Tangent

1984 DESIGN TRAFFIC = 416 A.D.T.

DRAINAGE AREA = 6.4 SQ. MI.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES

SITE PLAN
BRIDGE No. COL-518 0.04
OVER WILLIARD RUN
COLUMBIANA COUNTY S.R. 518

SCALE: 0 10 20

EXISTING TOPO	PROPOSED WORK				
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
Div. Office	Div. Office	D.H.S.	D.H.S.	P.E.S.	P.E.S.

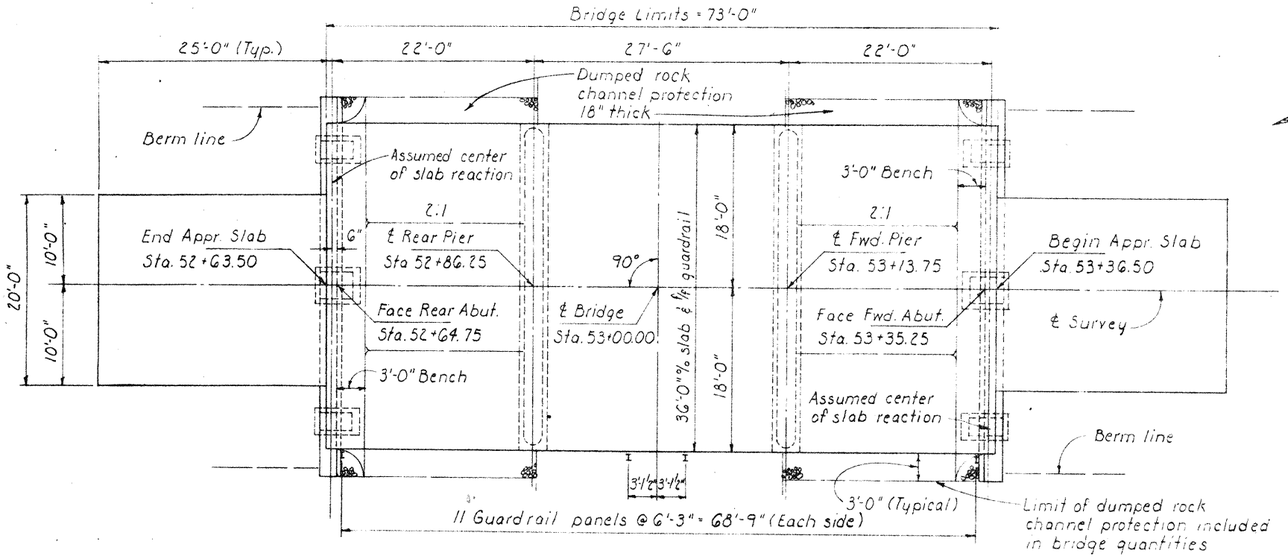
BFG 3-29-67

COL-518-0.04

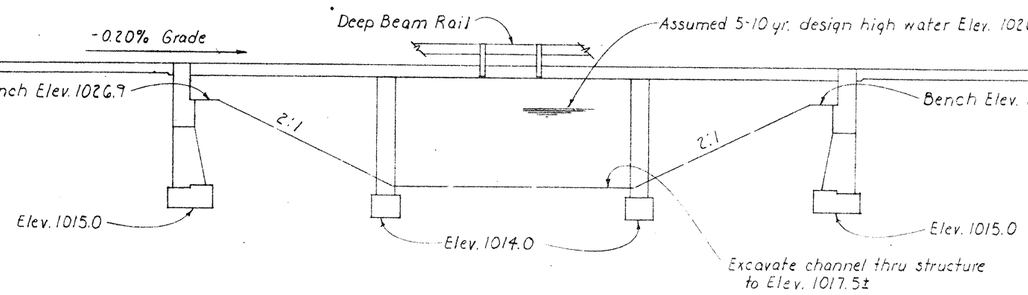
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

22
26

COL-518-0.65



GENERAL PLAN



ELEVATION

GENERAL NOTES

REFERENCE shall be made to Standard Drawing CS-1-65 dated 6-1-65 and to Supplemental Specifications 808 dated 1-13-67 and 825 dated 1-1-67.

DESIGN SPECIFICATIONS: This structure conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, dated 9-1-57, together with current revisions thereof.

DESIGN DATA:
Design Loading - CF 130 (57)
Concrete Class C - basic unit stress 1,333 p.s.i.
Concrete Class E - basic unit stress 1,133 p.s.i.
Structural Steel - ASTM A36 - basic unit stress 20,000 p.s.i.
Reinforcing Steel - ASTM A15, A16, A160, Deformed, Intermediate or Hard Grade. Basic unit stress 20,000 p.s.i.

EXCAVATION QUANTITY includes the removal of fill material between the top of the earth bench and the bottom of the abutment crossbeam.

FOOTINGS shall extend a minimum of 3" into undisturbed rock or to the elevation shown, whichever is lower.

FOUNDATION BEARING PRESSURE: All footings are designed for a maximum bearing pressure of 6 tons per sq. ft.

ESTIMATED QUANTITIES

Item	Total	Unit	Description	Super.	Piers	Abuts.	Gen'l
503	Lump	Sum	Cofferdams, cribs and sheeting				Lump
503	152	Cu. yds.	Unclassified excavation, including rock		51	101	
509	33,819	Lbs.	Reinforcing steel	23,858	4,395	5,566	
511	106	Cu. yds.	Class C concrete, superstructure	106			
511	64	Cu. yds.	Class E concrete, piers above footings		64		
511	50	Cu. yds.	Class C concrete, abutments above footings			50	
511	29	Cu. yds.	Class E concrete, footings		20	9	
516	7	Sq. Ft.	1/2" Preformed expansion joint filler, AASHO M-153				7
517	1460	Lin. Ft.	Railing, (deep beam rail with steel posts and bolts)	1460			
518	32	Cu. yds.	Porous backfill			32	
601	104	Cu. yds.	Dumped rock channel protection				104
808	106	Units	Water-reducing, set-retarding admixture	106			
825	314	Sq. yds.	Concrete surface treatment	314			

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

GENERAL PLAN, ELEVATION
GENERAL NOTES &
ESTIMATED QUANTITIES
BRIDGE NO COL-518-0104
OVER WILLIARD RUN

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HEN	HEN		WSH 2-24-67	BFG	3-29-67	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

23
26

COL-518-0.65

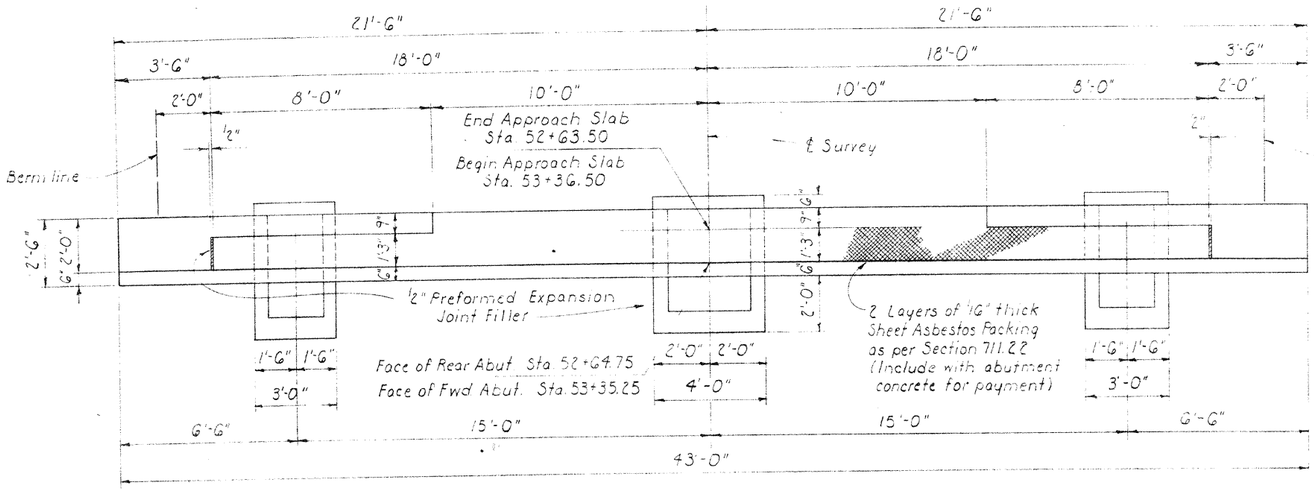
NOTES

FOOTINGS shall extend a minimum of 3" into undisturbed rock or to the elevation shown, whichever is lower.

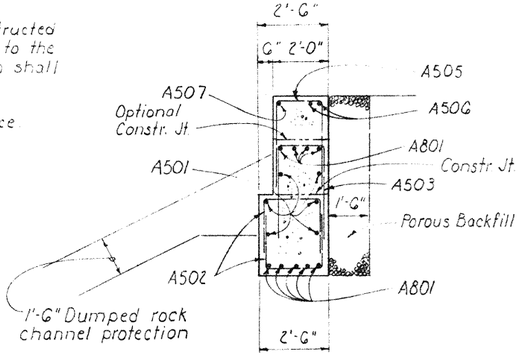
POROUS BACKFILL shall extend upward to the approach slab and to the surface of the earth shoulders, and outward to the surface of the embankment slopes. Excavation therefor, in excess of that required for construction of the abutment shall be considered as paid for in the bid price per cu. yd. paid for porous backfill.

PROCEDURE: After the pedestals have been constructed the earth fill shall be placed and compacted up to the height of the earth bench after which excavation shall be made made for the crossbeam.

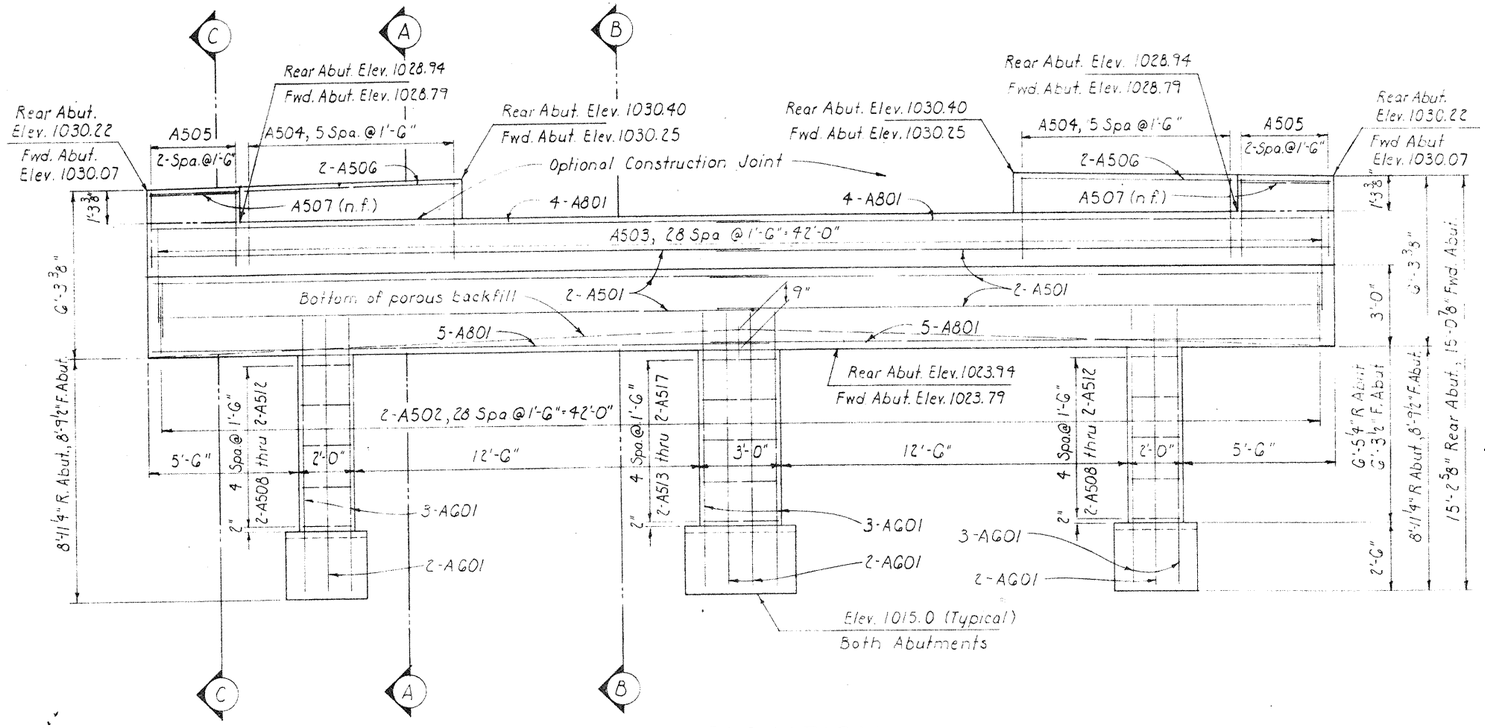
LEGEND: n.f. denotes near face; f.f. denotes far face



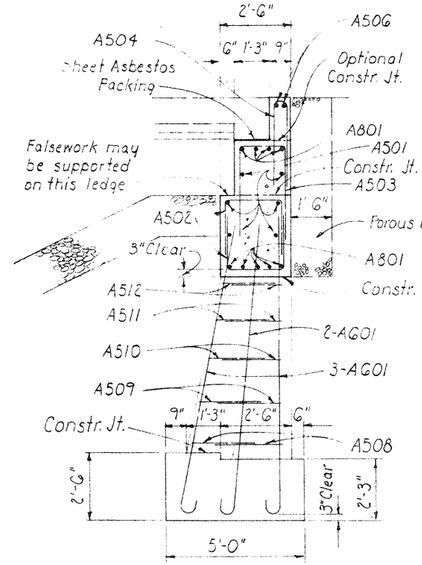
ABUTMENT PLAN



SECTION C-C



ELEVATION



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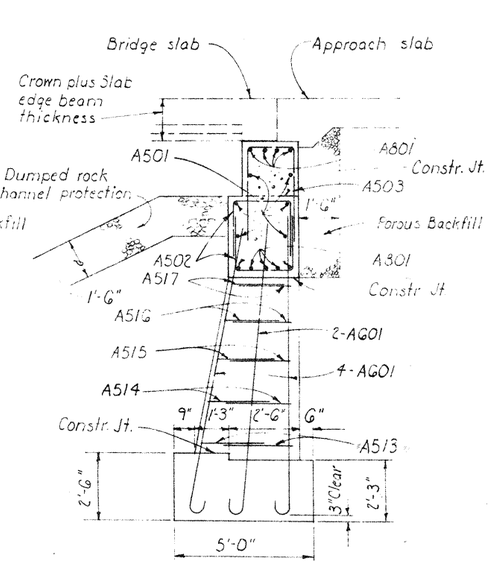


SECTION B-B

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

3

ABUTMENT DETAILS

BRIDGE NO. COL-518-0104
OVER WILLIARD RUN

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HEN	HEN			BFG	3-29-67	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

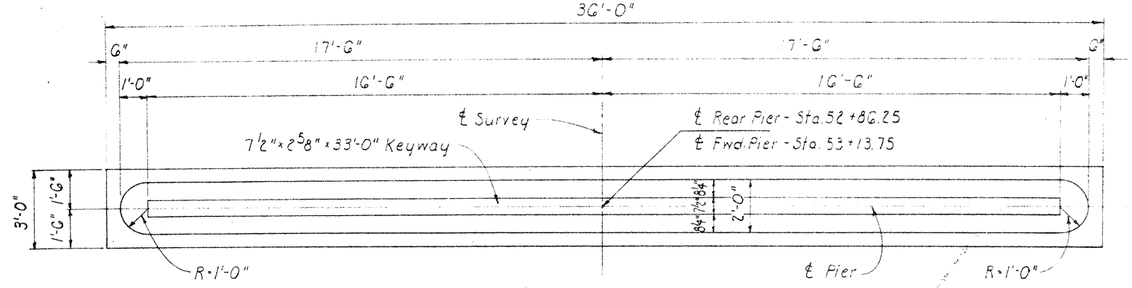
COL-5/8-0.65

24/26

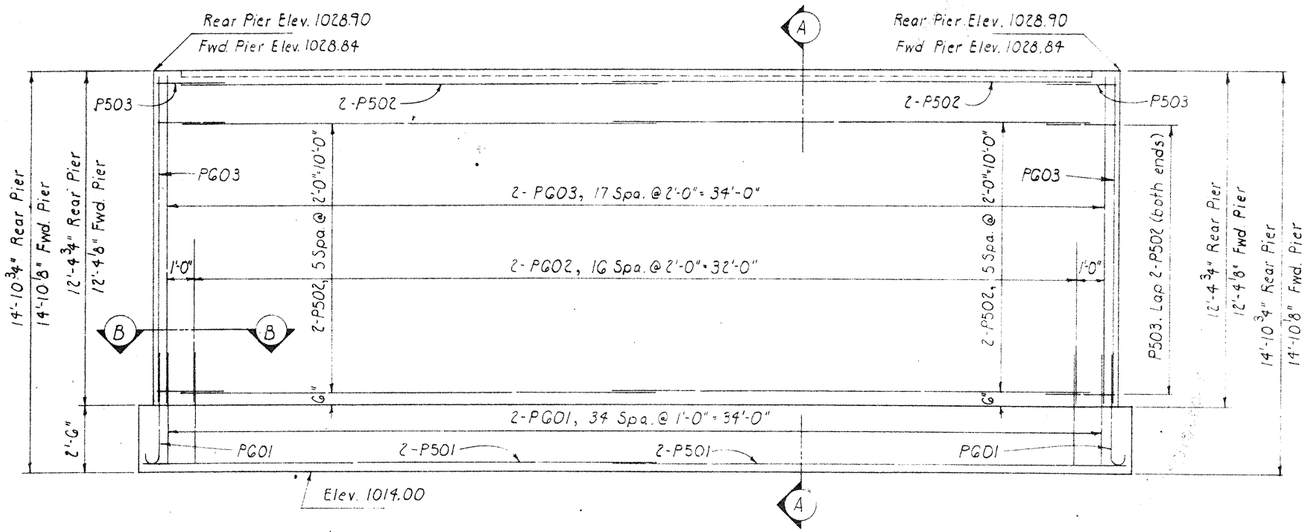
NOTES

REFER TO STANDARD DRAWING CS-1-65 for additional superstructure and railing details

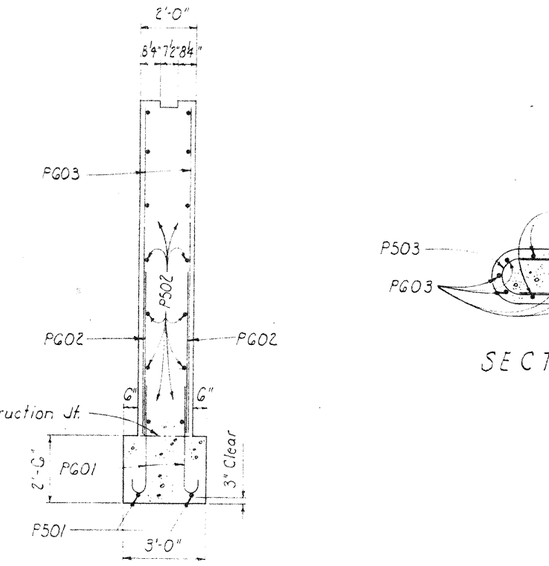
PIER CONCRETE shall be Class E



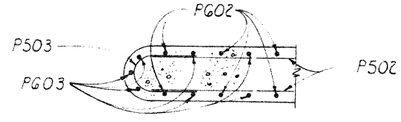
PIER PLAN



PIER ELEVATION



SECTION A-A

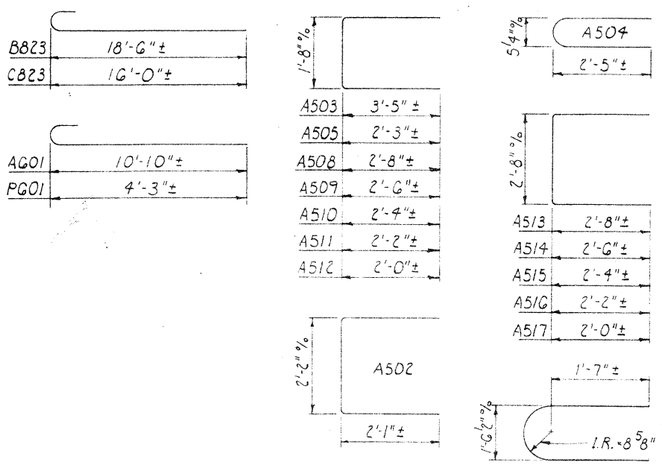


SECTION B-B

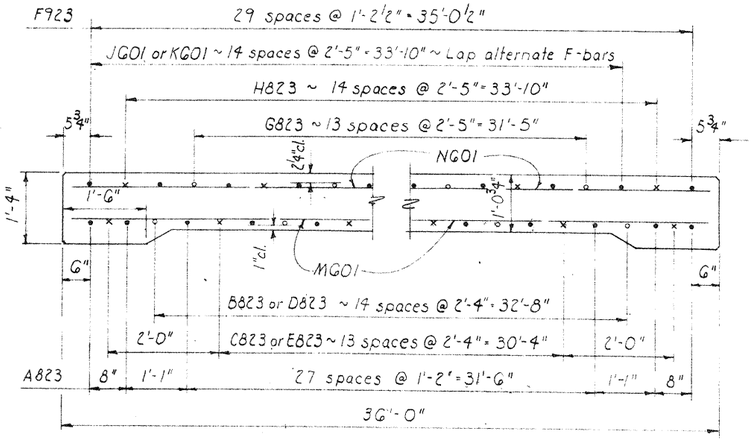
REINFORCING STEEL LIST

Mark	No.	Length	Weight	Shp
Superstructure				
A823	96	25'-11"	6,672	S
B823	30	19'-7"	1,569	B
C823	32	17'-1"	1,460	B
D823	15	18'-2"	728	S
E823	16	14'-4"	612	S
F923	60	19'-0"	3,876	S
G823	28	10'-9"	804	S
H823	30	7'-6"	601	S
JG01	30	14'-4"	646	S
KG01	15	13'-8"	308	S
MG01	74	35'-6"	3,946	S
NG01	50	35'-6"	2,666	S
Abutments				
A801	36	22'-7"	2,171	S
AG01	52	11'-6"	898	B
A501	24	22'-2"	555	S
A502	116	6'-1"	736	B
A503	58	8'-3"	499	B
A504	24	5'-0"	125	B
A505	12	5'-11"	74	B

Bending Diagram



Mark	No.	Length	Weight	Shp
Abutments Cont.				
A506	8	11'-2"	93	S
A507	4	3'-1"	13	S
A508	8	6'-9"	56	B
A509	8	6'-5"	54	B
A510	8	6'-1"	51	B
A511	8	5'-9"	48	B
A512	8	5'-5"	45	B
A513	4	7'-9"	32	B
A514	4	7'-5"	31	B
A515	4	7'-1"	30	B
A516	4	6'-9"	28	B
A517	4	6'-5"	27	B
Piers				
PG01	144	4'-11"	1,063	B
PG02	68	6'-1"	621	S
PG03	76	12'-2"	1,389	S
P501	8	18'-8"	156	S
P502	56	17'-2"	1,003	S
P503	28	5'-7"	163	B
Replacement Bars				
RE901	1	6'-10"	-	S
RE801	1	6'-6"	-	S
REG01	1	5'-11"	-	S
RE501	1	5'-7"	-	S



DECK REINFORCING STEEL DETAIL

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

PIER DETAILS SUPERSTRUCTURE DETAIL & REINFORCING STEEL LIST BRIDGE NO. COL-518-0104. OVER WILLIARD RUN

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HEN	HEN		WHY	BFG	3-29-67	

GENERAL INFORMATION

INTRODUCTION

THE PROJECT CONSISTS OF THE RELOCATION OF 0.52 MILE OF SR 518, BEGINNING APPROXIMATELY 0.5 MILE EAST OF SR 644, EXTENDING EASTWARD AND TERMINATING ON EXISTING SR 518 APPROXIMATELY 700 FEET EAST OF BIG CREEK.

PROPOSED GRADE INDICATES MAXIMUM 7-FOOT CUTS AND MAXIMUM 14-FOOT EMBANKMENTS.

GEOLOGY OF THE PROJECT

THE ALIGNMENT INCEPTS ON THE WEST VALLEY WALL OF BIG CREEK, EXTENDS ALONG THE NARROW VALLEY OF BIG CREEK AND TERMINATES ON THE EAST VALLEY WALL OF BIG CREEK. THE PROJECT IS LOCATED IN AN AREA WHERE SHALLOW ALLUVIUM OVERLIES SANDSTONE BEDROCK, OF THE ALLEGHENY FORMATION, PENNSYLVANIAN AGE.

EXPLORATION

EXPLORATORY BORINGS WERE MADE BY MEANS OF TRUCK-MOUNTED MECHANICAL SOIL AUGER AND HAND AUGER (IN AREAS OF DIFFICULT ACCESS), ON JANUARY 4, 1967.

INVESTIGATIONAL FINDINGS

MATERIALS ENCOUNTERED ON THE PROJECT WERE PREDOMINANTLY COMPRISED OF WET SANDY SILTS (A-4a AND A-4b).

FROST SUSCEPTIBLE SILTS WERE ENCOUNTERED WITHIN THREE FEET BELOW PROPOSED GRADE AT STATIONS 59+00 AND 62+00.

SOME SANDSTONE AND SHALE BEDROCK POSSIBLY WILL BE ENCOUNTERED IN THE EXCAVATION FOR THE PROPOSED CHANNEL RELOCATION.

LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS — 36 SAMPLES TESTED

DESCRIPTION	H.R.B. CLASS	OHIO CLASS	% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
STONE FRAGMENTS	A-1-a(0)	A-1-a	57	11	9	6	7	27	5	11	1
GRAVEL WITH SAND	A-1-b(0)	A-1-b	49	9	22	10	10	NP	NP	20	1
COARSE AND FINE SAND	-----	A-3a	0	16	50	18	16	NP	NP	22	1
SANDY SILT	A-4(4)	A-4a	0	6	38	33	23	26	4	22	17
SILT	A-4(8)	A-4b	0	2	12	55	31	29	6	26	6
SILT AND CLAY	A-6(8)	A-6a	0	3	11	50	36	36	11	26	1
WEATHERED SANDSTONE			VISUAL CLASSIFICATION								6
SHALE			VISUAL CLASSIFICATION								3

TOPSOIL=X'=APPROXIMATE DEPTH.

AUGER BORING-PLAN VIEW.

AUGER BORING PLOTTED TO VERTICAL SCALE ONLY.

WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT.

INDICATES A NON-PLASTIC MATERIAL WITH A HIGH WATER CONTENT.

W — FREE WATER.

B — INDICATES BROKEN ROCK INTERVAL.

NOTE: FIGURES BESIDE BORINGS INDICATE WATER CONTENT IN PERCENT. E.G. 15

SOIL PROFILE

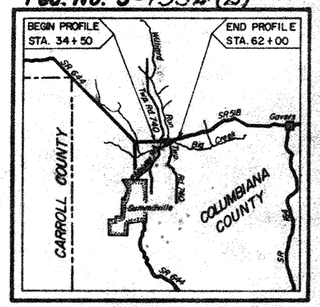
COLUMBIANA COUNTY
COL-518-0.65

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

1/5 — 1/2

NOTE: INFORMATION SHOWN BY THIS SUBGRADE PROFILE WAS OBTAINED SOLELY FOR 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.

Fed. No. S-133A(2)



LOCATION MAP

Recon - J.F.S.-11/28/66-11/29/66
Drilling - T.R.S.- 1/4/67
Drafting - A.D.B.-A.F. - 1/31/67

SUMMARY OF SOIL TEST DATA

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC.
*DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

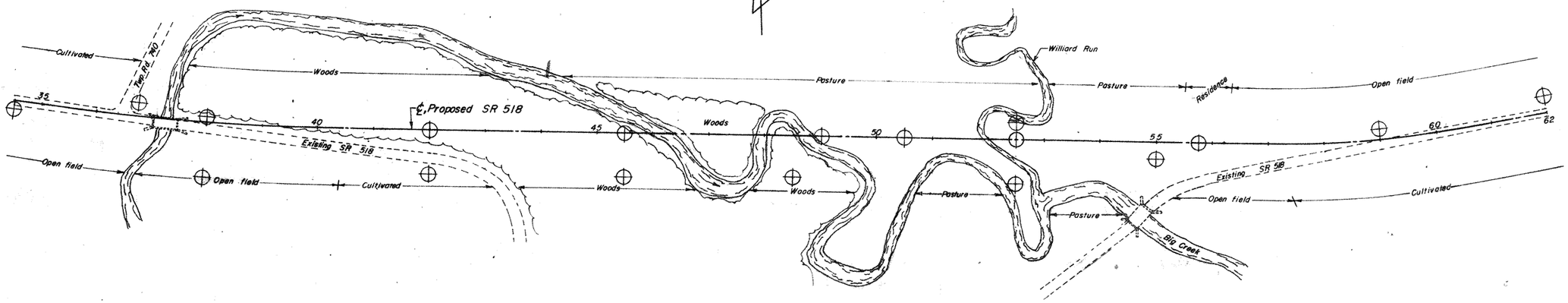
STATION & OFFSET		DEPTH FROM	DEPTH TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
34+50	15'Rt	0.0	6.0	0	22	17	35	26	31	9	14	A-4a*
		6.0	10.0	(57	11	12	10	10	29	7	20)	
		BROWN BROKEN SHALE										VISUAL
36+75	25'Lt	0.0	6.0	67	11	9	6	7	27	5	11	A-1-a*
		6.0	10.0	0	11	48	22	19	20	3	18	A-4a
38+00	10'Lt	0.0	4.0	0	1	14	54	31	27	4	20	A-4b
		4.0	6.0	0	5	44	31	20	21	2	19	A-4a
		6.0	10.0	49	9	22	10	10	NP	NP	20	A-1-b
38+00	100'Rt	0.0	6.0	0	3	43	34	20	NP	NP	21	A-4a
		6.0	8.0	0	18	40	20	22	NP	NP	18	A-4a
		8.0	9.0	0	2	24	45	29	26	7	20	A-4a
		9.0	11.0	(0	8	55	16	21	NP	NP	13)	
		BROWN WEATHERED SANDSTONE										VISUAL
42+00	CL	0.0	5.0	0	4	59	19	18	NP	NP	26	A-4a
		5.0	6.0	(0	17	45	20	18	NP	NP	29)	
		BROWN WEATHERED SANDSTONE										VISUAL
42+00	80'Rt	0.0	4.5	0	16	50	18	16	NP	NP	22	A-3a
		4.5	5.5	(0	10	28	36	26	27	6	18)	
		GRAY WEATHERED SANDSTONE										VISUAL
45+50	CL	0.0	3.0	0	2	25	45	28	28	7	25	A-4a
		3.0	6.5	0	8	44	27	21	25	6	28	A-4a
45+50	80'Rt	0.0	4.0	0	1	12	57	30	NP	NP	27	A-4b
		4.0	6.0	0	1	20	58	21	26	8	27	A-4b
48+50	75'Rt	0.0	5.0	0	0	14	52	34	34	10	29	A-4b
		5.0	6.5	0	4	40	32	24	26	6	22	A-4a
49+00	CL	0.0	6.0	0	1	47	37	15	NP	NP	19	A-4a
		6.0	8.5	(0	6	46	31	17	NP	NP	14)	
		GRAY WEATHERED SANDSTONE										VISUAL
50+50	CL	0.0	6.0	0	3	11	50	36	36	11	26	A-6a
		6.0	7.0	0	1	45	30	24	NP	NP	28	A-4a
		7.0	9.0	(0	14	21	43	22	31	7	16)	
		GRAY BROKEN SHALE										VISUAL
52+50	30'Lt	0.0	4.0	0	1	32	37	30	32	10	25	A-4a
		4.0	6.5	(0	1	65	20	14	NP	NP	22)	
		GRAY WEATHERED SANDSTONE										VISUAL
52+50	CL	0.0	3.0	0	2	51	27	20	23	3	25	A-4a
		3.0	5.5	(0	11	42	25	22	NP	NP	17)	
		GRAY WEATHERED SANDSTONE										VISUAL
52+50	80'Rt	0.0	4.0	0	1	31	42	26	30	8	27	A-4a
		4.0	6.0	(0	7	22	42	29	36	3	14)	
		GRAY BROKEN SHALE										VISUAL
55+00	30'Rt	0.0	5.0	0	9	29	34	28	21	2	18	A-4a
55+75	CL	0.0	6.0	0	9	30	35	26	NP	NP	16	A-4a*
59+00	20'Lt	0.0	4.5	0	7	6	52	35	26	5	26	A-4b*
62+00	30'Lt	0.0	6.0	0	2	5	57	36	33	10	27	A-4b*

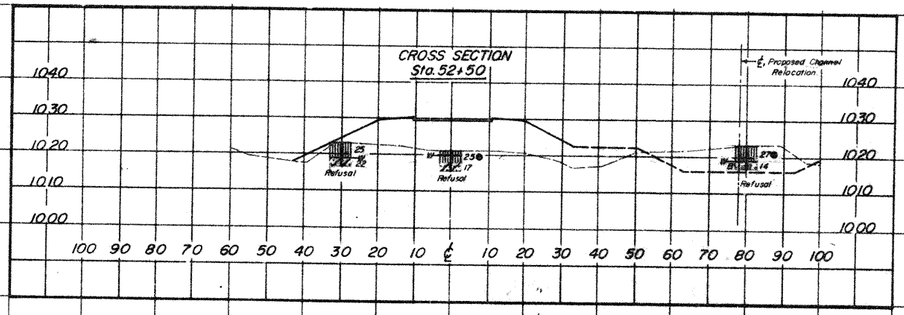
SOIL PROFILE

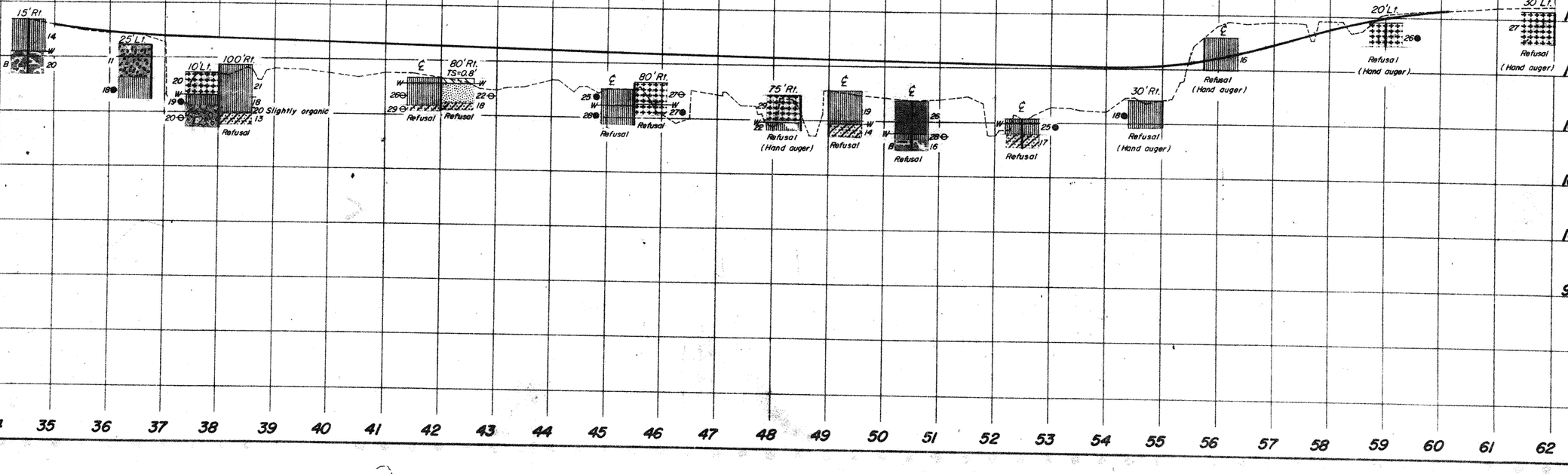
COLUMBIANA COUNTY
COL-518-0.65

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W BROAD ST COLUMBUS 23, OHIO

1/5 2/2







COLUMBIANA COUNTY
COL - 518 - 0.65

3/5/3

GEOLOGY OF THE SITE
THE STRUCTURE SITE IS LOCATED IN A NARROW VALLEY ADJACENT TO THE CONFLUENCE OF BUSH CREEK AND WILLIARD CREEK, IN AN AREA WHERE SHALLOW ALLUVIUM OVERLIES SANDSTONE BEDROCK, OF THE ALLEGHENY FORMATION, PENNSYLVANIAN AGE.

EXPLORATION
THE EXPLORATION CONSISTED OF TWO DRIVE SAMPLE-CORE BORINGS, MADE ON DECEMBER 13 AND 14, 1966, AND FOUR DRIVE ROD PENETRATION TESTS, MADE ON NOVEMBER 14 AND 15, 1966.

INVESTIGATIONAL FINDINGS
THE BORINGS DISCLOSED THAT RELATIVELY FLAT-LYING BEDROCK SURFACE, ENCOUNTERED AT 5 AND 9-FOOT DEPTHS, ELEVATION 1015 FEET, IS OVERLAIN BY LOOSE AND VERY DENSE SILTY SAND, WITH BOULDERS OCCURRING IMMEDIATELY ABOVE BEDROCK SURFACE. THE BORINGS WERE TERMINATED AT 20-FOOT DEPTH, ELEVATIONS 1003 AND 1000 FEET, AFTER PENETRATING 12 AND 15 FEET BELOW BEDROCK SURFACE.

THE ROD SOUNDINGS ENCOUNTERED RAPID INCREASE IN PENETRATION RESISTANCE WITH INCREASE IN DEPTH AND WERE TERMINATED AT 4 TO 9-FOOT DEPTHS, ELEVATIONS 1016 TO 1014 FEET, ON OR SLIGHTLY ABOVE BEDROCK SURFACE, AS REVEALED BY THE BORINGS.

FREE WATER WAS OBSERVED IN THE ROD SOUNDING HOLES AT ELEVATION 1017 FEET.

IF IT IS THE INTENTION TO FOUND SUBSTRUCTURE UNITS ON BEDROCK, IT IS CONSIDERED ADVISABLE THAT THE OPEN EXCAVATIONS BE INSPECTED IN THE FIELD IN ORDER TO INSURE THAT THE EXCAVATIONS HAVE BEEN EXTENDED TO ROCK THROUGHOUT THE ENTIRE FOUNDING AREA.

UNCONFINED COMPRESSION TESTS ON SIMILAR SANDSTONE BEDROCK INDICATES A CRUSHING STRENGTH ON THE ORDER OF 200 TONS PER SQUARE FOOT.

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 — 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.
- 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 Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Cobbles and/or Boulders
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

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 / 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 12 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 two 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
	8" / 3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

LOG OF BORING

Date Started 12-13-66 — Sampler Type SS — Dia 1 3/8" — Water Elev —
Date Completed 12-14-66 — Casing: Length 10' — Dia 3 1/2" — Surface Elev 1020.1'
Boring No B-1 — Station & Offset 52+65, 18' Rt. (Rear Abutment)

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.
1020.1	0														
1017.6	2														
1016.6	4	14/30			Brownish-Gray Silty Sand	1	0	9	54	17	20	NP	NP	22	A-4a
1015.1	6		0.4	1.1	Sandstone boulders.										
	8				TOP OF ROCK										
	10		3.9	1.1											
	12				Sandstone, gray, medium-grained, slightly calcareous, slightly friable, with thin carbonaceous laminae, broken and jointed. Core Loss 11%.										
	14		4.4	0.6											
	16														
	18		5.0	0.0											
1000.1	20				BOTTOM OF BORING										

LOG OF BORING

Date Started 12-14-66 — Sampler Type SS — Dia 1 3/8" — Water Elev —
Date Completed 12-14-66 — Casing: Length — Dia — Surface Elev 1022.8'
Boring No B-8 — Station & Offset 53+36, 18' Lt. (Forward Abutment)

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.
1022.8	0														
1020.3	2														
	4	1/2			Brown Silty Sand	1	0	1	73	12	14	NP	NP	24	A-3a
1017.8															
1016.8	6	10/20			Brownish-Gray Silty Sand	2	0	10	62	15	13	NP	NP	19	A-3a
1014.8	8				Sandstone boulders and cobbles.										
	10		2.6	1.4	TOP OF ROCK										
	12														
	14		4.7	0.3	Sandstone, gray, medium-grained, dense, slightly calcareous, with carbonaceous laminae and 0.2' clay seams at 10.3' and 15.5', broken and jointed. Core Loss 10%.										
	16														
	18		4.1	0.9											
1002.8	20				BOTTOM OF BORING										

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 HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

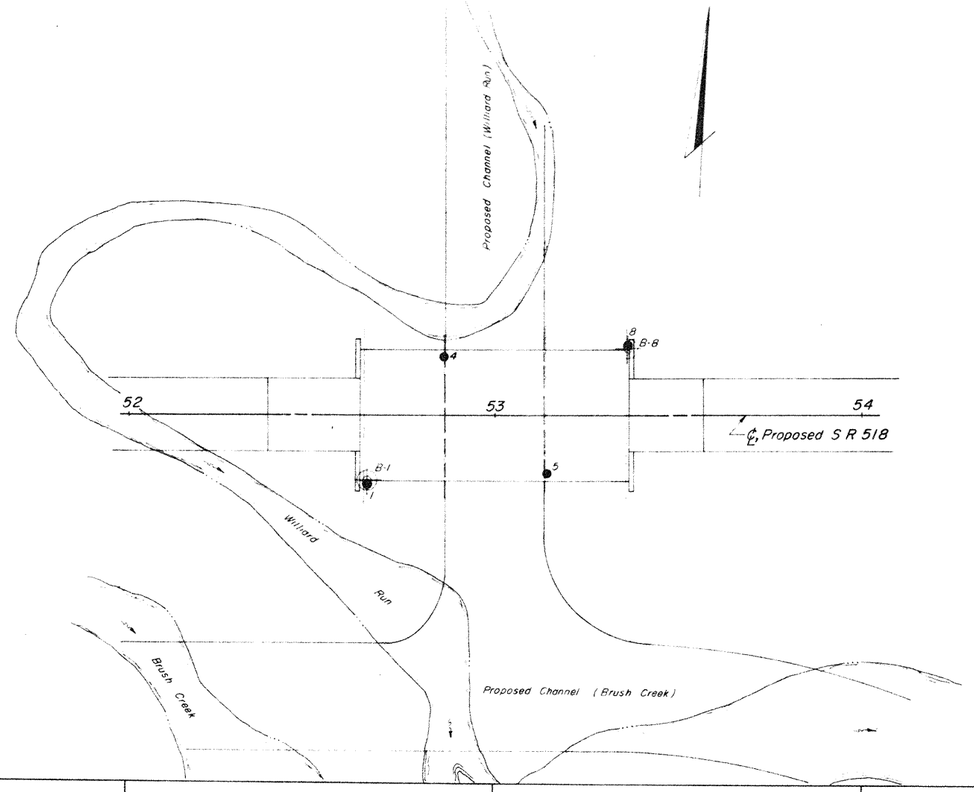
STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. COL - 518 - 0104
OVER WILLIARD RUN
SEC. COL-518 - 0.65

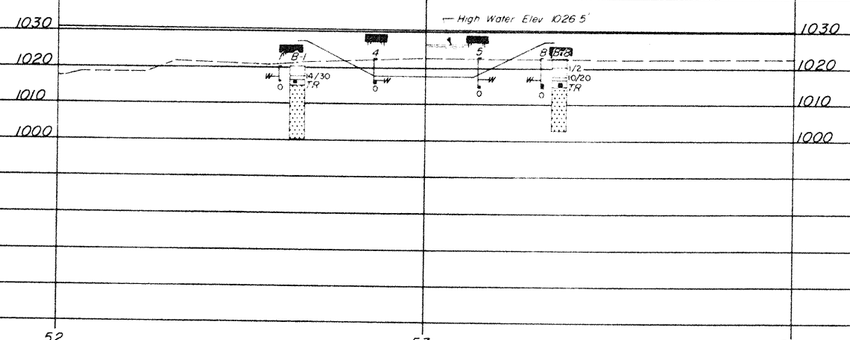
CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	1/4/67

COLUMBIANA COUNTY 4/5

COL - 518 - 0.65

2/3





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS TESTING LABORATORY 1620 WEST BROAD STREET, COLUMBUS 23, OHIO			
STRUCTURE FOUNDATION INVESTIGATION BRIDGE NO. COL - 518 - 0104 OVER WILLIARD RUN SEC COL - 518 - 0.65			
PLAN AND PROFILE			
DRAWN BY R L D	CHECKED BY L N L	REVIEWED BY R D R	DATE 1/4/67

Test Location No.
Station & Offset
Surface Elev. Water Elev.
Piling
Hammer
Formula
Reference
Rod Condition

1027
1023
1019
1015
1011

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No.
Station & Offset
Surface Elev. Water Elev.
Piling
Hammer
Formula
Reference
Rod Condition

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No.
Station & Offset
Surface Elev. Water Elev.
Piling
Hammer
Formula
Reference
Rod Condition

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No.
Station & Offset
Surface Elev. Water Elev.
Piling
Hammer
Formula
Reference
Rod Condition

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 1
Station & Offset 52+65, 9' RT
REAR ABUTMENT
Surface Elev. 1022.2' Water Elev. 1017.2'
Piling
Hammer
Formula
Reference
Rod Condition GOOD

1019
1015
1011

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 4
Station & Offset 52+86, 16' LT
REAR PIER
Surface Elev. 1022.7' Water Elev. 1016.7'
Piling
Hammer
Formula
Reference
Rod Condition GOOD

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 5
Station & Offset 53+14, 16' RT
FORWARD PIER
Surface Elev. 1023.0 Water Elev. 1017.0'
Piling
Hammer
Formula
Reference
Rod Condition GOOD

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 8
Station & Offset 53+36, 9' LT
FORWARD ABUTMENT
Surface Elev. 1023.0 Water Elev. 1017.0'

5/5

COL - 518 - 0 65

3/3

Piling
Hammer
Formula
Reference
Rod Condition GOOD

1019
1015
1011

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. COL - 518 - 0104
OVER WILLIARD RUN
SEC. COL - 518 - 0.65

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	1/4/67