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MICROFILMED
FEB 1 1980

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO	I-480-4(25)169	

1 / 392

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
CUY-480-15.81
CUYAHOGA COUNTY
CITY OF INDEPENDENCE, CITY OF CLEVELAND, CITY OF CUYAHOGA HTS. & CITY OF SEVEN HILLS AND VILLAGE OF BROOKLYN HTS.

I-480-4(25)169

LIMITED ACCESS

THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02, REVISED CODE OF OHIO.

CUYAHOGA COUNTY
CUY-480-15.81

Project designation CUY-80-15.81 appearing throughout this plan shall be considered to read CUY-480-15.81.

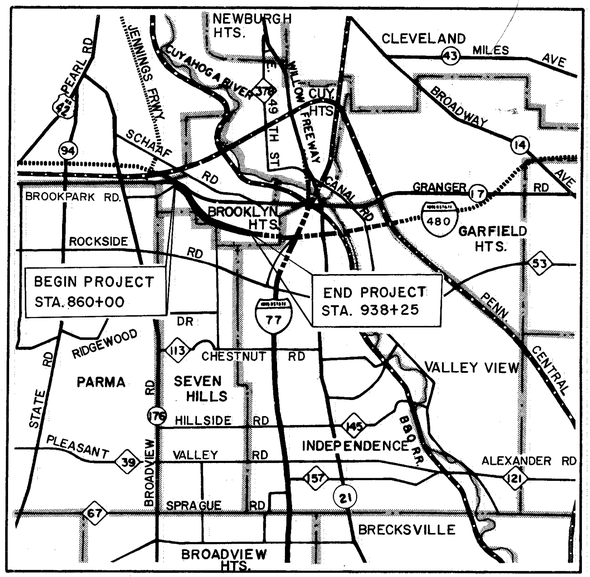
Federal Road Division 2 shall be considered to read F.H.W.A. Region 5

CONVENTIONAL SIGNS

PROPERTY LINE	P
EXISTING RIGHT OF WAY	
SUBDIVISION LINE	
SUBLOT LINE OR EXISTING EASEMENT	Z Z
ORIGINAL TOWNSHIP LOT LINE	
CORPORATION LINE	
LIMITED ACCESS LINE	LA
LIMITED ACCESS LINE AND RIGHT OF WAY LINE	LA & RW
RIGHT OF WAY LINE AND HIGHWAY EASEMENT LINE	R/W
AERIAL EASEMENT LINE	LA & AERIAL
TEMPORARY RIGHT OF WAY	T
SEWER EASEMENT LINE	S S
SLOPE EASEMENT LINE	SL SL
CHANNEL EASEMENT	X X
PARTICIPATION LINE	P P P
CENTER LINE	
FENCE LINE	x x
GUARD RAIL (EXISTING)	
GUARD RAIL (PROPOSED)	
RAILROAD	
POWER POLES	
TELEPHONE POLES	
POWER AND TELEPHONE POLES	
LIGHT POLES	
TREES (EXISTING)	
ELECTRICAL TOWER	
WATER LINE	W W
GAS LINE	G G
TELEPHONE CONDUIT	T T
EXISTING SEWERS (R/W PLANS)	S S
EXISTING STORM SEWER (DRAINAGE PLANS)	
EXISTING SANITARY SEWER (DRAINAGE PLANS)	
OIL LINE	
FIRE HYDRANT (EXISTING)	
FIRE HYDRANT (PROPOSED)	
MANHOLE (EXISTING)	
MANHOLE (PROPOSED STORM)	
MANHOLE (PROPOSED SANITARY)	
CATCH BASIN OR INLET (EXISTING)	
CATCH BASIN (PROPOSED)	
INLET (PROPOSED)	
STORM SEWER (PROPOSED)	
CONSTRUCTION LINE (FILL)	
CONSTRUCTION LINE (CUT)	

INDEX OF SHEETS

Sheets Nº 230, 231, 241 & 379 Deleted



LOCATION MAP

SCALE
0 1 2 3 MILES

PORTION TO BE IMPROVED
STATE ROADS
COUNTY ROADS
OTHER ROADS
FUTURE CONSTRUCTION
UNDER CONSTRUCTION

SCALE:
PLAN 1"=50' PROFILE HOR 1"=100'
CROSS SECTIONS 1"=10' PROFILE VERT 1"=10'

SUPPLEMENTAL SPECIFICATIONS

NUMBER	DATE	NUMBER	DATE
		934	1-7-69
808	1-1-71	941	11-28-73
		942	11-25-70
815	9-20-72	1001	9-20-72
816	9-20-72	948	2-19-74
		S625	1-11-74
		S713	1-11-74
836	1-1-71		
839	11-25-70		

LINE DATA

BEGIN PROJECT		STA. 860+00.00
END PROJECT		STA. 938+25.00
NET LENGTH OF PROJECT		7,825.00 LIN. FT. OR 1.482 MILES
ADD WORK	STA. 858+15.00 TO STA. 860+00.00	185.00 LIN. FT.
	STA. 938+25.00 TO STA. 993+00.00	5475.00 LIN. FT.
GRANGER ROAD	STA: 2+61.00 TO STA. 28+20.29	2,559.29 LIN. FT.
TUXEDO AVENUE	STA. 4+00.00 TO STA. 7+26.19	326.19 LIN. FT.
	STA. 7+94.19 TO STA. 15+86.78 Bk	792.59 LIN. FT.
	STA. 16+32.38 Ahd. TO STA. 16+76.78	44.40 LIN. FT.
PORTAL DRIVE	STA. 3+90.00 TO STA. 9+57.00	567.00 LIN. FT.
I-77 (See Sh. 262A & 262B)	STA. 367+50.00 TO STA. 85+75.00	24,647.19 LIN. FT.
NET LENGTH OF WORK	EQN: STA 555+75.37 Bk. = STA. 27+53.18 Ah. 42,421.66 LIN. FT.	OR 8.034 MILES

STANDARD DRAWINGS

NUMBER	DATE	NUMBER	DATE
AS-1-72	6-30-72	GR-3	11-9-71
BP-1	6-1-65	GR-4	11-9-71
BP-2	12-1-68	GR-5	1-1-71
BP-3	1-1-71	GR-6	1-1-71
BP-4	1-1-71	HL-11,12,16,17A,B	4-6-73
BP-5	6-1-72	HL-2,3	7-27-73
BP-6	6-1-65	HL-1,4,5,6,7	9-6-73
BP-7	1-1-66	HL-8,9,10	9-6-73
BR-2-67	10-15-71	HW-4	1-1-70
BP-9	1-1-71	I-2A	6-6-69
CB-2-2-A B	6-1-65	I-3	1-20-70
CB-3	6-1-65	L-1	6-1-73
CB-3A	6-1-65	MC-1	6-13-69
CB-4	9-1-69	MC-3	6-1-73
CB-5	9-1-69	MC-4	6-13-69
CB-458A	6-6-68	I-2	6-6-67
CB-6	6-1-65	MC-6	6-1-65
F-1	6-1-72	MC-7	10-1-68
		MH-1	10-1-68
F-3	3-10-69	MH-1A	10-1-68
		MH-2	10-1-68
F-5	3-10-69	MH-2A	10-1-68
RB-1-55	2-2-59	MC-9	1-1-74
SD-1-69 Sh 1 & 2	6-12-69	816-12.30	9-19-73
GR-2A	1-1-71	816-20.001	9-19-73
GR-2B	11-9-71	816-20.002	9-19-73

Revised Sheets 34 & 237 12-6-74 A.W.G.
Sheet 364 revised 1-24-75 EBL
Sheets 324, 326, 347, & 350 revised 2-7-75 EBL
Sheet 366 revised 4-30-75 EBL
Sheets 362 thru 365 & 367, 368, 369 revised 7-18-75 WTF
Sheet 354 revised 8-8-75 E.B.L.
Sheet 339 revised 9-26-75 E.B.L.

1973 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.

THE RIGHT OF WAY FOR THIS IMPROVEMENT WILL BE PROVIDED BY THE STATE OF OHIO.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING OF THE HIGHWAY TO TRAFFIC AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FOR ON THE PLANS AND ESTIMATES.

APPROVED DATE 9-11-74	Joseph F. Powell	DISTRICT DEPUTY DIRECTOR OF TRANSPORTATION
APPROVED DATE 9-25-74	Robert B Speijer	ENGINEER, BUREAU OF BRIDGES
APPROVED DATE 9-25-74	E. J. Schaefer	ENGINEER, BUREAU OF ROADWAY DESIGN
APPROVED DATE 9-25-74	William E. Stoll	ASSISTANT DEPUTY DIRECTOR FOR HIGHWAY DESIGN
APPROVED DATE 9-25-74	Julius J. Deewey	ASSISTANT DEPUTY DIRECTOR FOR REAL ESTATE
APPROVED DATE 9-25-74	William Bumbley	ASSISTANT DEPUTY DIRECTOR FOR PROGRAM DEVELOPMENT
APPROVED DATE		CHIEF ENGINEER, DIVISION OF HIGHWAYS
APPROVED DATE 9-25-74	William W. Baker	DEPUTY DIRECTOR, DIVISION OF HIGHWAYS
APPROVED DATE 9-26-74	William P. McKenna	ASSISTANT DIRECTOR, DEPARTMENT OF TRANSPORTATION
APPROVED DATE 9/27/74	Phillip Bradley	DIRECTOR, DEPARTMENT OF TRANSPORTATION

PREPARED AND RECOMMENDED BY

HOWARD NEEDLES TAMMEN & BERGENDOFF

CONSULTING ENGINEERS

CLEVELAND

Browning Crow

BROWNING CROW

FILE NO.	CUYAHOGA COUNTY
	DATE OF LETTING
	CONTRACT NO. 003444

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ENGINEER — DATE

Rev. 10-16-74

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY.-80-15.81

QUANTITY CALCULATIONS
MADE BY G.L. DATE 7-29-70
CHECKED BY R.B.H. DATE 7-30-70

GENERAL NOTES

DRAINAGE

ITEM 604 JUNCTION CHAMBER

The Contractor shall construct the Junction Chamber as detailed on Sheets 122-124 in accordance with applicable provisions of Item 604.

Payment will be made at the contract unit price bid for Item 604, Junction Chamber, which payment shall include full compensation for furnishing all labor, material, tools, equipment and incidentals necessary to complete the work.

PIPE ENDS

All culverts, whether terminating in headwalls or endwalls, shall begin and end with pipe ends as normally fabricated by the manufacturer. Ends shall not be cut to fit either skew or slope. If field cutting is found to be necessary to fit an exact length control, the cut end shall be located at an interior joint and cradle, collar or band shall be provided to assure a stable joint.

Payment for the joint shall be included in the price bid for the pertinent 603 conduit item.

SANITARY FLOW INTO I-480 FREEWAY DRAINAGE SYSTEMS

This plan makes no provision for connecting, nor shall the Engineer or Contractor connect any existing or new drainage into the freeway drainage system when such drains carry flow from any plumbing fixtures including floor drains and sink drains or drains from livestock lots or barns.

Existing pipe carrying flow which comes within the category outlined above shall be plugged with Class C concrete at the right-of-way line. Payment for said plugging shall be included in the unit price bid for Item 203 Excavation, or the pertinent 202 Item.

STREAM CROSSINGS

A quantity of 50 cubic yards of Item 601, Rock Channel Protection Type B has been estimated and included in the General Summary for use in constructing stream crossings at the right-of-way fence. The Rock Channel Protection may not be necessary at all locations shown on the plans and shall be provided only where and as directed by the Engineer.

INTERCEPTOR DRAINS

The following quantities have been included in the general summary and are intended for use as interceptor drains in wet cut slopes as directed by the Engineer:

Item 605, 6" Unclassified Pipe Underdrains, 707.01 Type III or 707.12, as per plan = 3,000 Lin.Ft.
Item 603, 6" Type F Conduit = 500 Lin.Ft.
Item 601, Crushed Aggregate Slope Protection (Using No. 1 Stone) = 3 Sq.Yds.

and necessary bends and branches which shall be included for payment in the pertinent conduit item. None of the above materials shall be ordered by the Contractor until authorized by the Engineer.

ROOF AND FIELD DRAINS

All existing private roof or surface drains which are encountered during construction shall be provided with unobstructed outlets under the direction of the Engineer. The following estimated quantities have been included in the general summary for use as directed by the Engineer, in making the above described connections.

Item 603	6" Type B Conduit	300 Lin.Ft.

EXISTING UNDERDRAINS

Where existing underdrains are encountred and no provision has been made for new underdrains, they shall be connected to new inlet with 6inch Item 605 Unclassified Pipe Underdrains. The following estimated quantity has been included in the general summary for use as directed by the Engineer. The materials shall not be ordered by the Contractor unless prior approval is recieved from the Project Engineer.

Item 605	6" Unclassified Pipe Underdrain	300 Lin Ft.

STANDARD NO. 6 CATCH BASIN, MODIFIED, AS PER PLAN

The Standard No. 6 Catch Basin shall have a 2" additional depression of the grate by warping the shoulder pavement within 5 feet upstream of the basin. Payment for this work shall be included with Item 604 Standard No. 6 Catch Basin, modified as per plan.

6" PIPE UNDERDRAIN, AS PER PLAN

Backfill, above the 6 inches of No.8 Aggregate above the underdrain, shall be restricted to sand, meeting the requirements of Section 703.02 of the Specifications. Payment for the above shall be included in the price bid for Item 605, Pipe Underdrains, as per plan.

COATING CONCRETE PIPE FOR SANITARY SEWERS (SP-12)&(SP-13)

Pipe shall be coated inside with two coats of coal tar pitch paint at a rate of not more than 180 square feet per gallon per coat. Waterproofing material shall consist of "Inertal Standard Thick", "Koppers Super Service", "Pitt.-Chem 103" or an approved equal. Payment to be included in pertinent 603 item.

MANHOLE COVERS

The Contractor shall set the frames for manhole covers at such an elevation and inclination as to place the surface of the cover in the plane of the finished surface except where placed on slopes exceeding 1 on 4.

EXTRA DEPTH CATCH BASINS

Catch basins 4 feet deep and over and having a minimum interior dimension of 2'-8" shall have steps meeting the requirements of Item 604.

Spacing of steps shall be uniform with 12" minimum and 16" maximum.

ITEM SPECIAL - FILL AND PLUG EXISTING CULVERTS

This item shall consist of the construction of bulkheads in the existing culverts and filling the area thus sealed off with sand or other granular material approved by the Engineer.

Bulkheads shall be located at the limits of the area to be filled as indicated on the plans. The bulkheads shall consist of brick or concrete masonry with a minimum thickness of 12 inches.

The fill material shall be pumped into place or placed by some other means approved by the Engineer, so that, after settlement, at least 90 percent of the cross-sectional area of the culvert for its entire length shall be filled. Filling existing culverts may be used as an alternate to removing them.

The footage of filled and plugged culverts shall be the actual number of linear feet measured along the centerline of the culverts. For location of culverts to be removed or filled see E-11, 12 and E-30, sheets 66 and 68.

Payment for all operations described above shall be included in the contract unit price bid per linear foot for Item Special, Fill and Plug Existing Pipe and Box Culverts, which price shall include full compensation for furnishing, hauling and placing all necessary materials and furnishing all labor, equipment, materials and incidentals necessary to complete this item.

RESILIENT AND FLEXIBLE GASKET JOINTS 706.11 AND 706.12

Joint as described above shall be required in all conduit used for sanitary sewer construction on this project.

ITEM 604 STANDARD MANHOLE NO. 1, MODIFIED AS PER PLAN

The frame and grate specified for Standard No. 6 Catch Basin shall be used in lieu of the frame and cover specified from Standard Manhole No. 1.

ITEMS 603 CONDUIT

Subsequent to completion of these plans the permissible pipe materials have been changed on various 603 conduit items. The conduit descriptions are shown correctly in the General Summary even though they may not have been changed through the rest of the plan.

REVIEW OF DRAINAGE FACILITIES

Before any work is started on the project, and again before final acceptance by the State, representatives of the State, the Municipalities and the Contractor shall make a visual inspection of the existing storm, sanitary, and combined sewers within the work limits which are to remain in service and which may be affected by the work. Records of the inspections shall be kept in writing by the State. All new conduits, inlets, catch basins and manholes constructed as a part of the project shall be free of all foreign matter and in a clean condition before the project will be accepted by the State. All existing sewers inspected initially by the above mentioned parties shall be maintained and left in a condition reasonably comparable to that determined by the original inspection. Any change in the condition resulting from the Contractor's operations shall be corrected by the Contractor to the satisfaction of the Engineer.

Payment for all operations described above shall be included in the unit prices bid for the pertinent 603 conduit items of the contract.

ITEM 603, 78" CONDUIT, TYPE C 707.07, AS PER PLAN

Use 78" Type C 707.07, 0.109" thick , asbestos bonded as per Suppl. Spec's. 942, fully coated and paved inverted. At the inlet, use Type A tapered section. Conduits shall be jointed with watertight connections with gaskets and coupling bands which match and mesh with the corrugations of the pipe. The requirements of 603.06 for field testing of joints for infiltration or exfiltration shall be waived.

ITEM 603, 66" CONDUIT, TYPE C 706.02, EPOXY COATED OR 707.13, AS PER PLAN

Use 66" Type C Conduit 706.02 CLY or 707.13, modified as hereinafter stated:

a.) 706.02 CLY Reinforced Concrete Pipe With Joints As Per 706.11
The requirements of 603.06 for field testing of joints for infiltration or exfiltration shall be waived.

The bottom one-half of the interior barrel and joint surface areas of the concrete pipes, P-90 to P-93, shall be prepared so as to remove all forms of oil, laitance and other deleterious materials and then be lined with a high build, polyamide-cured 2 component coal tar epoxy coating (Military Specification MIL-P-23236). The lining compound shall be sprayed so as to obtain a continuous and relatively uniform and smooth lining with a minimum dry film thickness of 0.030 inches. The interior barrel surface shall be thoroughly inspected for holidays, utilizing an electrical instrument specially designed for that purpose. Just prior to installation of each joint of pipe in the field, a fibrated coal tar joint compound shall be applied around the inside corner of the bell or groove in accordance with the manufacturer's recommendations. Coating of the conduit shall be a plant operation and care shall be taken in the field to center the coated portion along the flowline.

b.) 707.13 Corrugated Steel Pipe:
The pipe shall be 0.109" thick, as per 707.02, asbestos bonded as per Suppl. Spec's. 942, fully coated and paved. Conduits shall be jointed with watertight connections with gaskets and coupling bands which match and mesh with the corrugations of the pipe. The requirements of 603.06 for field testing of joints for infiltration or exfiltration shall be waived.

ITEM 603 - 96" CONDUIT, TYPE B 707.03 8-3 GAGE, AS PER PLAN

The Contractor may furnish 0.168" thick stainless steel for the bottom plates, as an alternate to the 0.249" thick galvanized bottom or invert plates.

ITEM 603 - 108" CONDUIT TYPE C 706.03 CLASS V, OR 707.13 (0.168" thick as per 707.02)

The Contractor will not be permitted to construct the 108"ϕ sewer with the use of an open trench in the area under the Relocated Tuxedo Avenue Bridge because of the proximity of the substructure units.

The Contractor shall submit in writing his proposed construction methods to the Director and receive approval before work is started on the construction of the pipe. For the exact limits to which the Contractor cannot open trench, see Sheet 345.

SCALE ____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE G.L. DATE 7-29-70 CONSULTING ENGINEERS
TRCD. ____ DATE ____
CKD. R.B.H. DATE 7-30-70 KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY. 80-15.81

N

MATCH LINE STA 920+00 SEE SHEET 74

MATCH LINE STA. 935+00 SEE SHEET 76

6'-0" Sodding L = 150'
D-33
S-81
D-35
D-30
P-85
6'-0" Sodding L = 150'
F.L. 674.88
S-82
Deep
F.L. 674.93
F.L. 674.86
F.L. 676.67
U-83
P-86
P-87
D-31
9'-0" Sodding L = 150'
S-83
F.L. 676.66
U-86
10' Type F Conduit
Deep
D-32
680
682
678
676
680
690
686
6'-0" Sodding L = 150'
Rip Rap for detail See Sheet 119.
S-88
P-92
LA
Construction Limits
6'-0" Sodding L = 60'
P-93
Existing 15" RCP St.
Exist. Sanitary M.H.
S-89
Temporary Bulkhead
Construction Limits
LA
9'-0" Sodding L = 710'
D-41
U-87
Deep
9'-0" Sodding L = 450'
925
℄ INTERSTATE 80
D-34
S-84
SP-13
P-88
℄ EASTBOUND INNER LANES
℄ EASTBOUND OUTER LANES
Fl. 670.59 924+50
SS-12
Fl. 670.00
3' Sod Flume
D-48
SP-12
D-37
670
666
662
P-108
662
670
6'-0" Sodding L = 170'
Rip Rap For detail See Sheet 120.
S-85
6'-0" Sodding L = 30'
6'-0" Sodding L = 30'
LA
For Outlet Detail See Sheet 103
Temporary Bulkhead
℄ WESTBOUND OUTER LANES
℄ WESTBOUND INNER LANES
3' Sod Flume
F.L. 659.76
F.L. 660.76
640
650
660
P-96
930
D-39
9'-0" Sodding L = 300'
S-91
11'-0" Jute Matting L = 10'
F.L. 662.76
P-95
U-91
S-90
P-89
D-38
664
666
9'-0" Sodding L = 140'
6'-0" Sodding L = 30'
LA
Deep
D-40
9'-0" Sodding L = 290'
6'x1'-6"x 120' Rock Channel Protection Type B
F.L. 690.00
For location detail See Sheet 116
707.01 Type III, or 707.12
U-100
F.L. 688.00
F.L. 651.76
Construction Limits
LA
For Sod Flume See Sheet 113
15" CMP
5'
Std. No. 0 H.W.
2'
Rock Channel Protection as per plan
Section A-A
6'x5'x1.5' Rock Channel Protection Type B
620
630

50 0 50 100 150 200
SCALE IN FEET

Note:
Refer to Cross-Section sheets 187, 188, 192 and 194 for details of Granular Side Slopes.

DRAINAGE LEGEND

- Proposed Ditch Inlet
- Proposed Paved Shoulder Inlet Manhole
- Proposed Paved Shoulder Inlet
- Proposed Median Inlets
- Proposed Pavement Catch Basin
- Proposed Storm Sewer Manhole
- Proposed Sanitary Sewer Manhole
- Proposed Storm or Sanitary Sewer
- Seeding and Jute Matting
- Existing Manhole
- Existing Catch Basin or Inlet
- Existing Storm, Sanitary or Duel Sewer
- Paved Gutter
- Sodding
- Top of Cut Slope
- Toe of Fill Slope
- Rock Channel Protection
- L/A Line
- Granular Material

For Drainage Quantities See Sheet 77

Note:
The Granular Material as shown on this sheet is only approximate. Location should be placed as specified in General Notes. See Sheet 7.

SCALE 1" = 50'
MADE B.H.S. DATE 5-5-70
TRCD T.P.M. DATE 5-6-70
CKD. Q.L. DATE 5-7-70

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

GRADING AND DRAINAGE PLAN STA. 920+00 TO STA. 935+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY.-80-15.81

QUANTITY CALCULATIONS
MADE BY A.H.S. DATE 9-21-70
CHECKED BY G.L. DATE 9-23-70

UNDERDRAINS

Ref. No.	Station From	Station To	Side	605 Deep U.D. 6" Lin.Ft.	605	608 Type F Conduit 6" Lin.Ft.	608	608 Bends and Branches Each	660 Sodding for Ser. Berm & Slope Protection after U.D. Sq.Yds.	660	608 707.01 Type III at 707.12 6" Lin.Ft.
U-75	911+87	915+70	Lt.	386		10		1			
U-79	915+83	919+18	Lt.	335							
U-82	914+50	920+00	Rt.	50							
U-83	920+00	921+40	Lt.	143		10		1			
U-86	920+00	924+50	Rt.	455		20		1	14		
U-87	921+50	930+00	Lt.	870		10		1	7		
U-91	929+00	935+00	Rt.	600							
U-95	935+00	935+95	Rt.	95		10		1			
U-98	936+10	938+25	Rt.	220				2	20		225
U100	932+65	934+90	Rt.								
TOTAL				3154		60			41		225

DRAINAGE

Ref. No.	Station From	Station To	Side	Sewer Profile Sheet No.	604 Std.No. 2-A M.H. Each	604 Std.No. 2-A-8 Inlet Each	604 Std.No. 2-A-20 Inlet Each	604 Std.No. 2-2-A C.B. Each	604 Std.No. 4 C.B. Each	604 Std.No. 5 C.B. Each	604 Std.No. 5-A C.B. Each	604 Std.No. 6 C.B. Mult., as per plan Each
S-74	912+61	To	Lt.	91								
S-75	912+35		Lt.	91								1
S-76	910+50		Rt.	92		1						
S-77	910+95		Lt.	91			1					
S-78	911+15		℄	92					1			
S-79	916+59		Lt.	92						1		
S-80	916+58		℄	92		•		1	1			
S-81	921+45		Lt.	93						1		
S-82	921+45		℄	93					1			
S-83	921+45		℄	93					1			
S-84	928+00		℄	93						1		
S-85	929+00		Rt.	93								1
S-86	916+58		Rt.	92								1
S-87	918+75		Rt.	94								1
S-88	921+45		Rt.	93								1
S-89	924+38		Rt.	120								
S-90	928+00		Rt.	93	1							
S-91	931+00		Rt.	95					1			
S-92	935+76		Rt.	95						1		
S-93	936+00		Rt.	95					1			
S-94	936+40		℄	95								
Totals					1	1	1	1	6	4		1

SANITARY

Ref. No.	Station From	Station To	Side	604 Std.No. 1-A M.H. 708.11 Joints as per plan Each	603 Type B Conduit 706.02 Class II Bituminous Coated 706.11 Joints or A.S.A. Class 5 Mechanical Joint Ductile Iron Pipe Cement Lined 10" Lin.Ft.
SP-12	924+18	935+56	Lt. Rt.	•	175
SS-12	925+56		Rt.	•	
SP-13	925+56	929+00			620
		Total		★ 1	★ 795

★ 100 % State

DRAINAGE

Ref No.	Station From	Station To	Side	Sewer Profile Sheet	602 Concrete Masonry Cu.Yds.	603 Type B 15" Lin.Ft.	603 Type B 18" Lin.Ft.	603 Type B 21" Lin.Ft.	603 Type B 24" Lin.Ft.	603 Type B 706.02 Class II 30" Lin.Ft.	603 Type B 707.03 B-3 Gage * 96" Lin.Ft.	603 Type C 15" Lin.Ft.	603 Type C 706.01 & 706.08 & 706.02, or 707.13 15" Lin.Ft.	603 Type C 706.02 Class IV 15" Lin.Ft.	603 Type C 706.02 or 707.13 Mod. as per plan ⊗66" Lin.Ft.	603 Type C 706.02 or 707.13 Mod. as per plan Radius Pipe 66" Lin.Ft.	603 Type C 706.03 Class V 72" Lin.Ft.	603 Type C 706.03 Class V 84" Lin.Ft.	603 Type F 15" Lin.Ft.	603 Type F 21" Lin.Ft.	603 Bends and Branches 20° Bend 15"	603 Bends and Branches 25° Bend 15"	603 Bends and Branches 20° Bend 21"	603 Bends and Branches 30° Bend 21"
P-78	912+61	912+35	Lt.	91				66																
P-79	912+35	910+95	Lt.	91				137																
P-80	910+50	910+95	Rt.	92		8																		
P-81	910+95	911+15	Lt. ℄	92					102															
P-82	911+15	911+80	℄ Rt.	92	.56					208														
P-83	916+58	916+58	Lt. ℄	92		142																		
P-84	916+58	916+58	℄ Lt.	92			174																	
P-85	921+45	921+45	Lt.	93									59											
P-86	921+45	921+45	Lt. ℄	93			129																	
P-87	921+45	921+45	℄ Rt.	93			146																	
P-88	928+00	928+00	℄ Rt.	93		157																		
P-89	928+00	928+00	Rt.	93								23												
P-90	913+06	916+58	Rt.	94											300		16	28						
P-91	916+58	918+75	Rt.	94											219									
P-92	918+75	921+45	Rt.	94											271									
P-93	921+45	924+65	Rt.	94											61.7	42								
P-95	928+00	931+70	Rt Lt	94	4.4						522													
P-96	933+00	933+00	℄ Rt	95	.27	130													79		1	1		
P-97	935+76	936+00	Rt.	95									83											
P-98	936+00	936+40	Rt ℄	95				135																
P-99	936+40	936+96	℄ Lt	95	.39			132												57			1	1
P108	924+38		Rt.	96										50										
TOTALS					5.52	434	449	470	102	208	522	23	142	50	1407	42	16	28	79	57				

DRAINAGE

Ref. No.	Station From	Station To	Side	601 Rock Channel Protection Type B Cu.Yds.	660 Sodding Sq.Yds.
D-21	911+00	912+60	Lt.		150
D-22	905+00	911+15	℄		150
D-23	907+00	911+15	Rt.		465
D-24	915+08	916+58	Lt.		100
D-25	915+08	916+58	℄		150
D-26	915+08	916+58	Rt.		100
D-27	916+58	918+75	Rt.	✓ 28.9	143
D-28	918+00	920+00	℄		200
D-29	918+75	920+00	Rt.	✓ 8.9	60
D-30	920+00	921+50	Lt.		100
D-31	920+00	921+50	℄		150
D-32	920+00	921+50	Rt.		100
D-33	920+00	921+50	Lt.		100
D-34	923+50	928+00	℄		450
D-35	921+50	923+00	Lt.		100
D-37	926+50	928+00	Rt.		133
D-38	928+00	929+55	Rt.		113
D-39	930+00	933+00	℄		300
D-40	931+50	935+00	Rt.	✓ 53.3	290
D-41	924+00	931+00	Lt.		710
D-42	935+00	936+40	℄		140
D-43	935+00	936+40	Rt.		100
D-44	937+00		Lt.	✓ 4.7	
D-47	911+83		Rt.	✓ 4.4	
D-48	924+05	924+25	Rt.		40
		Totals		100.5	4304.0

⊗ See General Note Sheet 9
✳ See General Note Sheet 9 for Alternate

SCALE No Scale
MADE A.H.S. DATE 9-21-70
TRCD M.A.G. DATE 9-22-70
CKD G.L. DATE 9-23-70
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

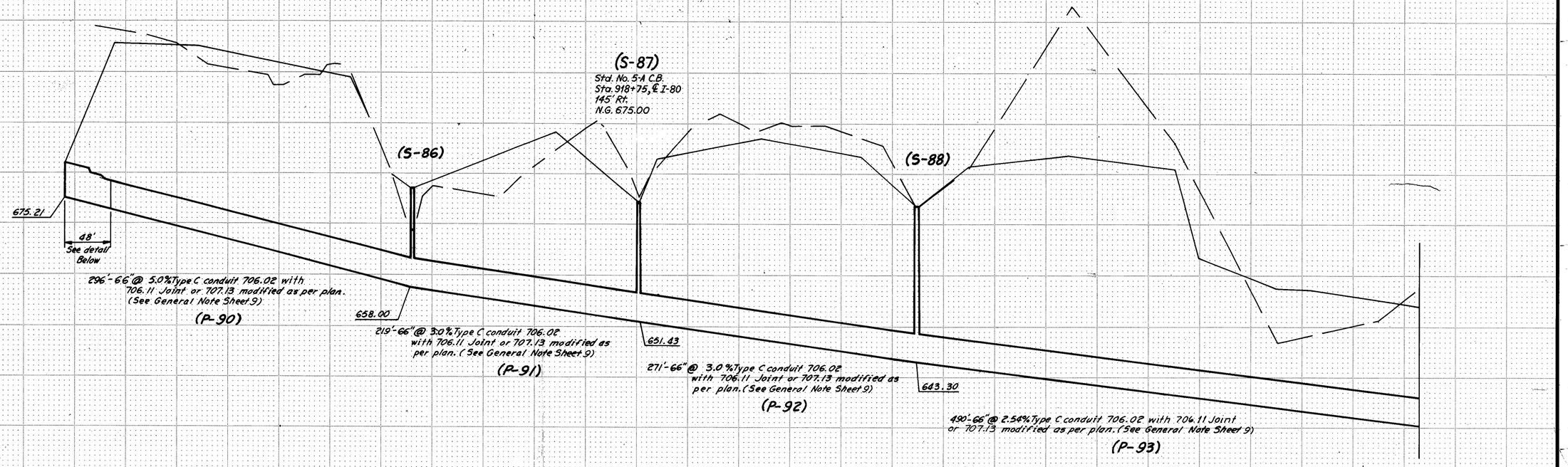
Rev. 10-16-74

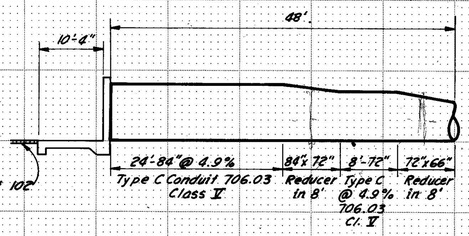
DRAINAGE QUANTITIES

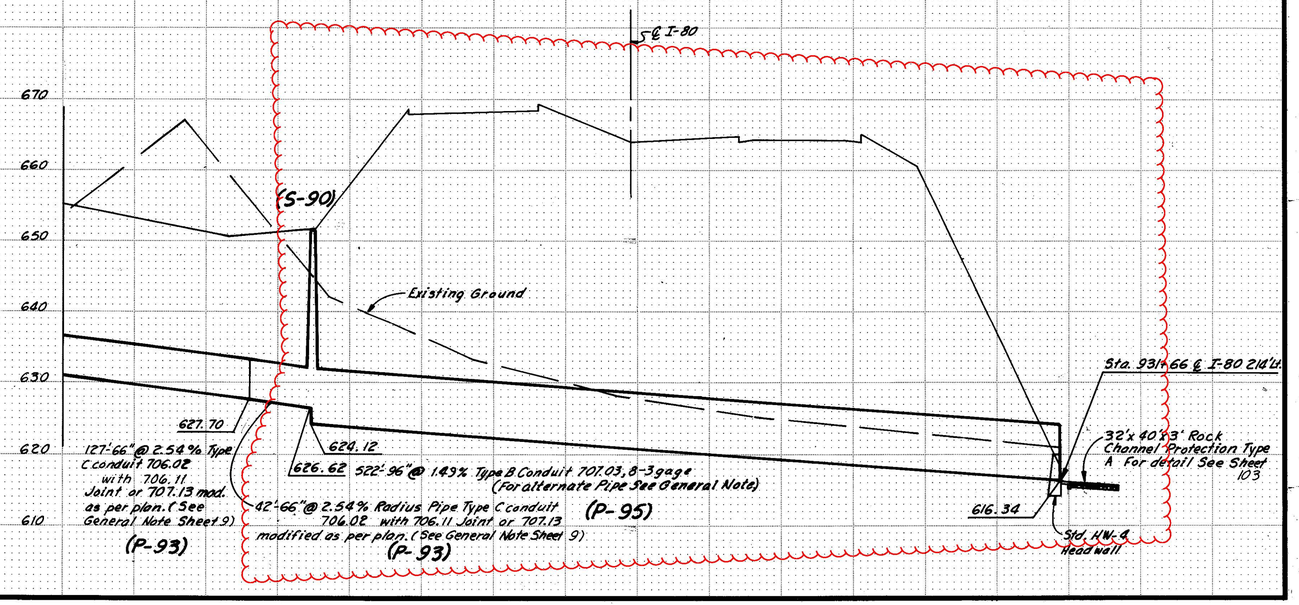
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

94
392

CUYAHOGA COUNTY
CUY.-80-15.81



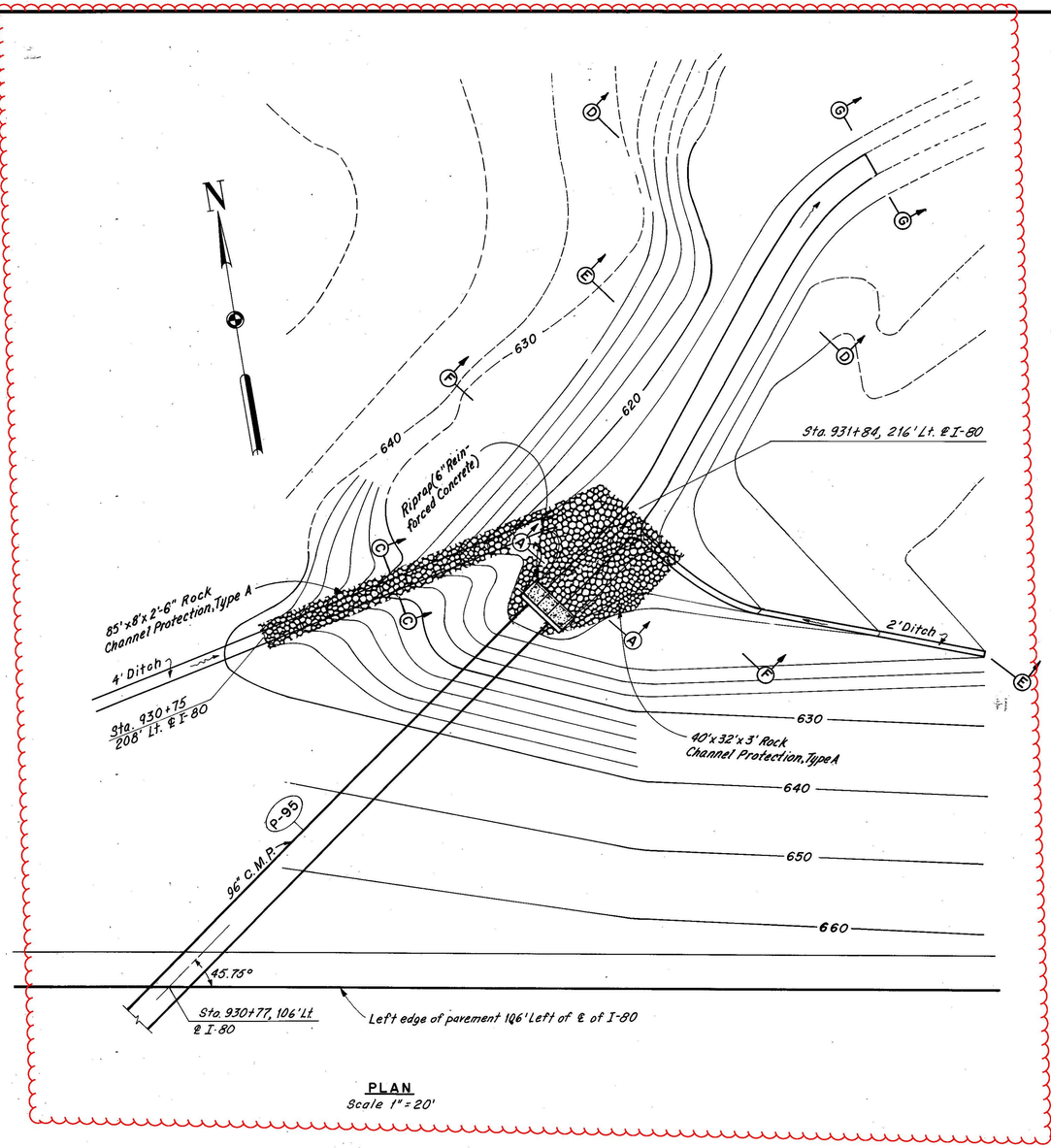




SCALE 1"=10' Vert. 50' Hor.
MADE AHS DATE 9-28-70
TRCD. MAG DATE 9-29-70
CKD. GL DATE 9-29-70

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SEWER PROFILES P-90 TO P-95



PLAN
Scale 1" = 20'

ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
203	Excavation not including Embankment Construction	326.5	Cu. Yds.
203	Embankment	626.6	Cu. Yds.
601	Rock Channel Protection, Type A	243.0	Cu. Yds.
602	Concrete Masonry	4.4	Cu. Yds.
601	Riprap (6" Reinforced Concrete)	5.0	Sq. Yds.

SCALE As Shown
MADE AHS DATE 7/15/70
TRCD. HLP DATE 8/17/70
CKD. GL DATE 8/17/70

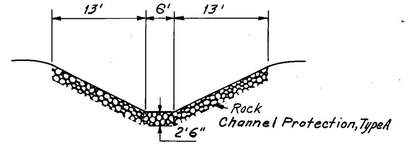
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY · CLEVELAND · NEW YORK

QUANTITY CALCULATIONS
MADE BY AHS DATE 7-15-70
CHECKED BY GL DATE 8-17-70

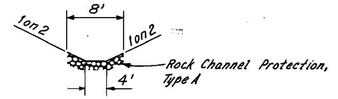
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

103
392

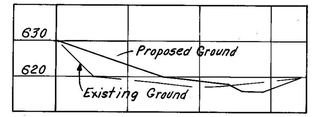
CUYAHOGA COUNTY
CUY.-80-15.81



SECTION A-A

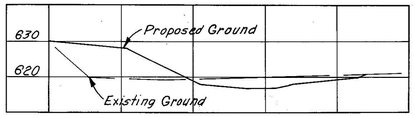


SECTION C-C



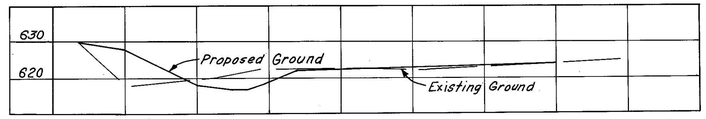
Excavation End Area 36 Sq. Ft.
Embankment End Area 130 Sq. Ft.

SECTION D-D
Horz. Scale 1" = 20'



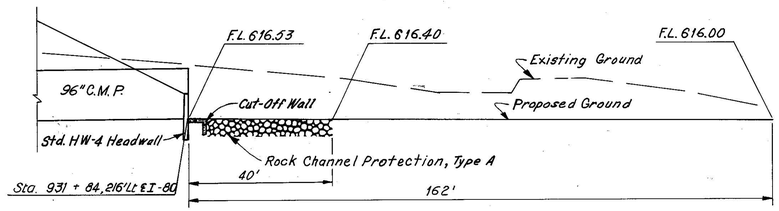
Excavation End Area 104 Sq. Ft.
Embankment End Area 210 Sq. Ft.

SECTION F-F
Horz. Scale 1" = 20'



Excavation End Area 80 Sq. Ft.
Embankment End Area 150 Sq. Ft.

SECTION E-E
Horz. Scale 1" = 20'



PROFILE
Horz. Scale 1" = 20'
Vert. Scale 1" = 10'

Section G-G and D-D
Excavation
$\frac{36+0}{2} \times \frac{45}{27}$ = 30.0 Cu. Yds.
Embankment
$\frac{130+0}{2} \times \frac{45}{27}$ = 108.3 Cu. Yds.

Section D-D and E-E
Excavation
$\frac{36+80}{2} \times \frac{35}{27}$ = 75.2 Cu. Yds.
Embankment
$\frac{130+150}{2} \times \frac{35}{27}$ = 181.5 Cu. Yds.

Section E-E and F-F
Excavation
$\frac{80+104}{2} \times \frac{48}{27}$ = 163.6 Cu. Yds.
Embankment
$\frac{150+210}{2} \times \frac{48}{27}$ = 320.0 Cu. Yds.

Section F-F and Outlet
Excavation
$\frac{104+0}{2} \times \frac{30}{27}$ = 57.7 Cu. Yds.
Embankment
$\frac{210+0}{2} \times \frac{30}{27}$ = 116.8 Cu. Yds.

STORM SEWER OUTLET DETAIL (P-95)