

DESIGN DESIGNATION
 CURRENT ADT (1981) = 24,520
 DESIGN YEAR ADT(2000)= 21,700
 D.H.V. = 2,170
 D. = 56%
 T. = 35%
 V. = 50 MPH

STATE OF OHIO **PROJ. - 221-82**
 DEPARTMENT OF TRANSPORTATION M - IA10 (2)

FHWA REGION	STATE	PROJECT
5	OHIO	M - IA10(2)

62

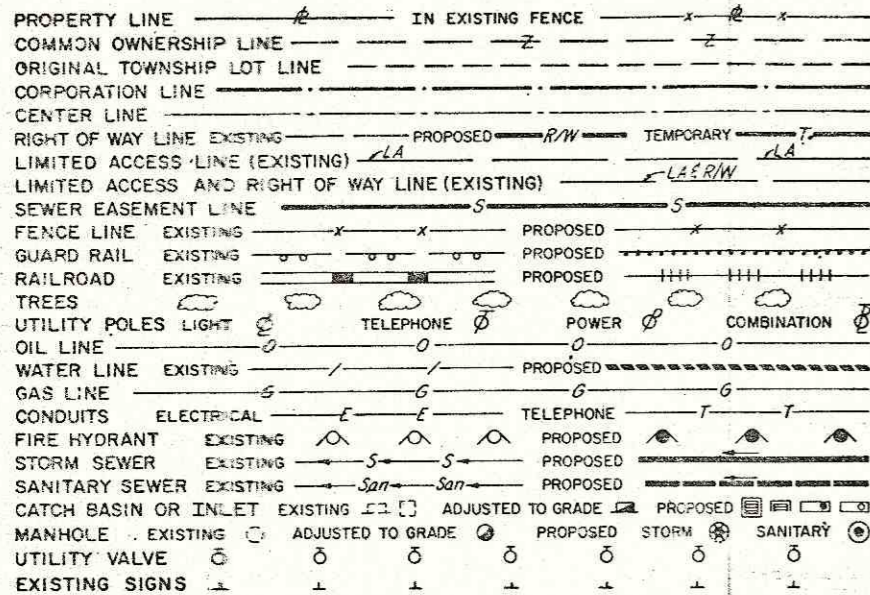
CUYAHOGA COUNTY
 EAST NINTH STREET

EAST NINTH STREET BRIDGE

RECONSTRUCTION OF EXISTING SEPARATED
 CROSSING WITH CONRAIL

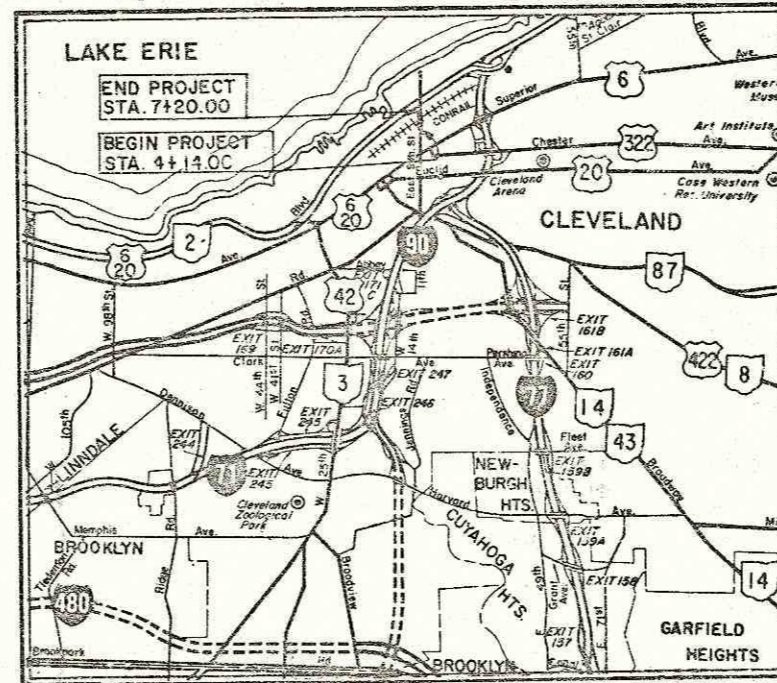
CITY OF CLEVELAND
 CUYAHOGA COUNTY

CONVENTIONAL SIGNS



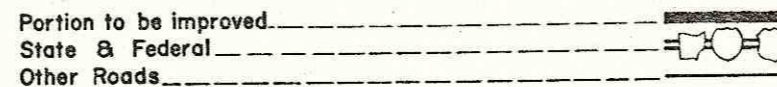
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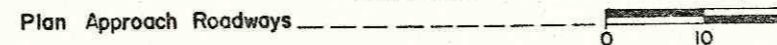


LOCATION MAP

SCALE IN MILES



SCALES



SUPPLEMENTAL SPECIFICATIONS			
NUMBER	DATE	NUMBER	DATE
953	8-21-80	849	10-19-81
836	3-12-75	927	10-19-81
845	3-2-81	921	12-4-72
853	6-26-78		
956	6-26-78		
1001	1-3-77		
839	11-25-70		

1981 SPECIFICATIONS

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

I hereby approve these plans and declare that the making of this improvement will not require the closing to traffic of the highway and that provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

Approved: *Frank L. Thomas*
 Date 12/2/81 Director of Public Service, City of Cleveland

Approved: *Thomas M. Trull*
 Date 11-30-81 District Deputy Director of Transportation

Approved: *Robert B. Clift*
 Date 1-8-82 Engineer, Bureau of Bridges and Structural Design

Approved: *Edward S. Nelson*
 Date 2-3-82 Chief Engineer, Planning and Design

Approved: *David L. Main*
 Date 2-3-82 Director, Department of Transportation

RECD. L & D 2-24-82
 T. M. K.
 R. J. B.
 R/W
 CONST. 7 SETS
 UTIL.

LINE DATA

BEGIN PROJECT STA. 4+14.00
 END PROJECT STA. 7+20.00
 NET LENGTH OF PROJECT-306.0 LIN. FT. OR 0.057 MILES

BEGIN WORK STA. 3+96.00
 END WORK STA. 7+54.00
 NET LENGTH OF WORK = 358 LIN. FT. OR 0.067 MILES

Plan Prepared By:
 Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO

HNTB

Browning Crow
 BROWNING CROW

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS

DRWG.	DATE	DRWG.	DATE	DRWG.	DATE
BP-4	7-16-81	MC-11	8-1-78		
BP-5	7-16-81	SD-1-69	6-12-69		
BP-7	12-6-76	(5h 1 of 4)		HL-1	9-6-73
BP-10	1-3-75	AS-1-72	6-30-72	HL-2	7-27-73
BP-11	1-3-75	(5h 1 and 2)		HL-5	9-6-73
BP-12	7-7-81	FS B-1-62	1-15-63	HL-7	7-21-76
F-1	5-1-76			HL-9	3-22-77
GR-1	12-6-76	TC-41 20	3-26-79	HL-10	6-1-79
MC-3	6-1-73	TC-41 40	6-18-79	HL-11	6-1-79
MC-4	7-26-76	TC-42 20	3-26-79	HL-12	4-6-73
MC-9	11-1-77	TC-52 10	4-3-79		
MC-9 A	5-1-81	TC-52 20	4-3-79		

Project: _____
 Date of Letting: 19____ Contract No. _____

DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR

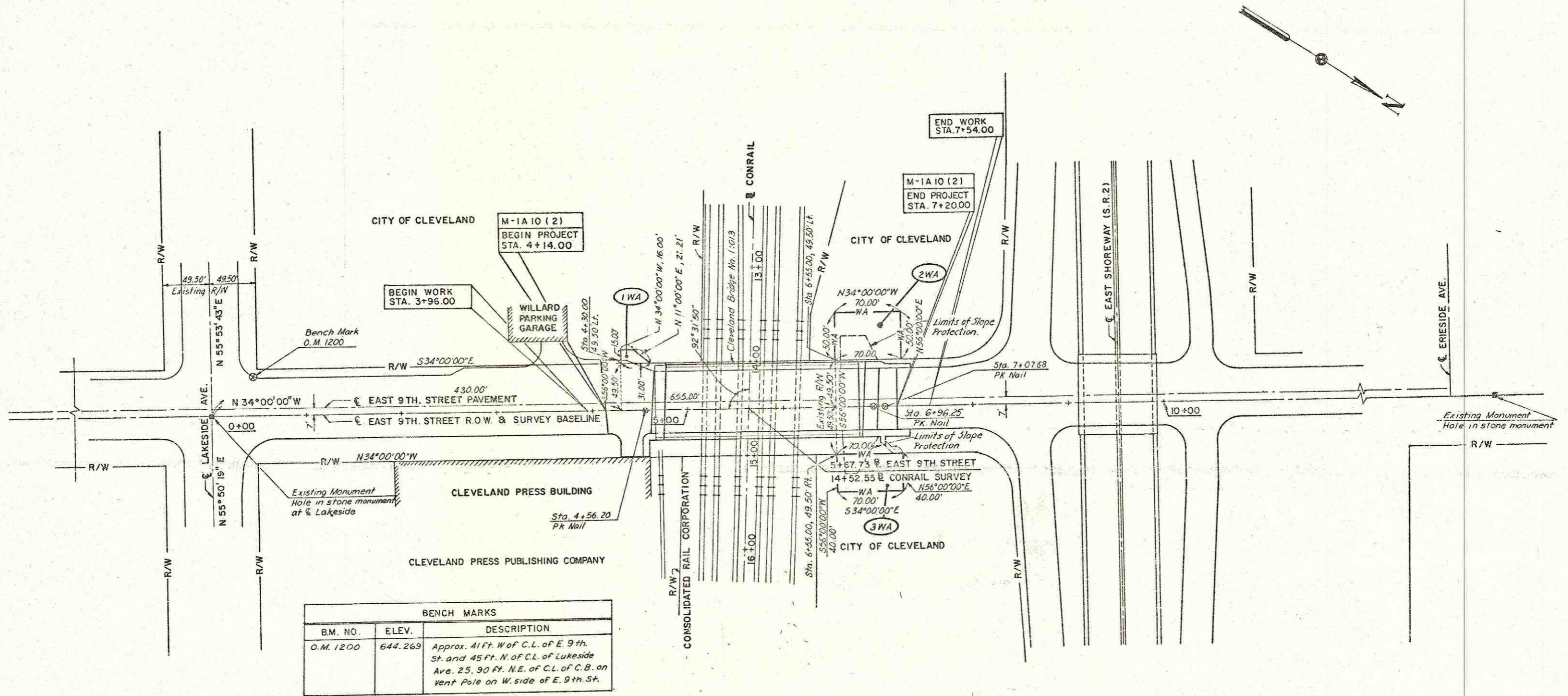
DATE

SCHEMATIC PLAN

FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10 (2)

2
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CUYAHOGA COUNTY
EAST NINTH STREET



BENCH MARKS		
B.M. NO.	ELEV.	DESCRIPTION
O.M. 1200	644.269	Approx. 41 ft. W of C.L. of E. 9th St. and 45 ft. N. of C.L. of Lakeside Ave. 25.90 ft. N.E. of C.L. of C.B. on Vent Pole on W. side of E. 9th St.

50 0 50 100 150 200
SCALE IN FEET

MADE J.A.G. DATE 7-22-81
TRACED J.D. DATE 7-24-81
CHECKED O.D. DATE 7-27-81
SCALE 1"=50'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

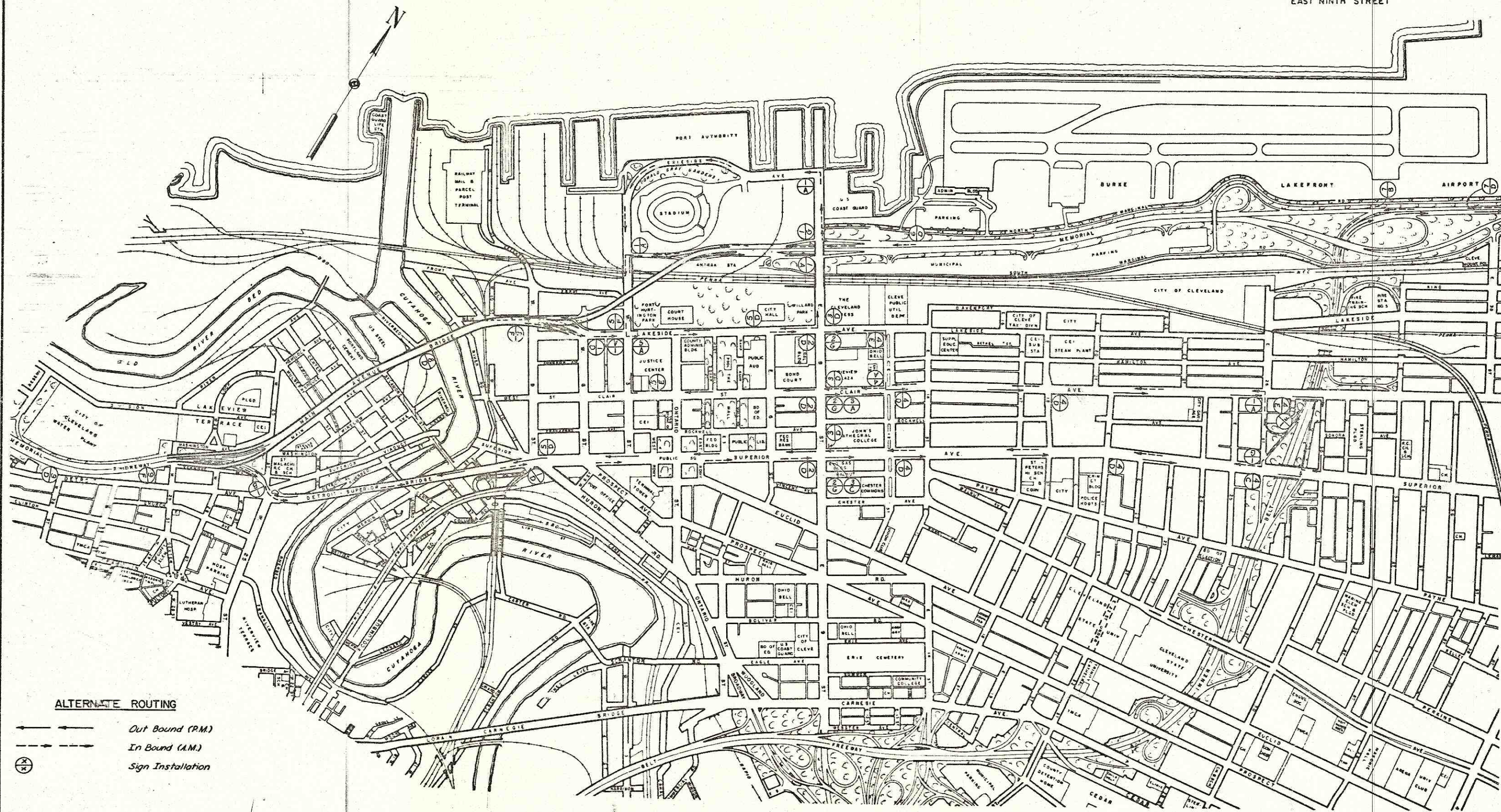
SCHEMATIC PLAN
GEOMETRIC PLAN - PROPERTY MAP

ALTERNATE ROUTE SIGNING PLAN

FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10 (2)

3
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CUYAHOGA COUNTY
EAST NINTH STREET



MADE C.D. DATE 2-27-81
 TRACED J.D. DATE 1-1-81
 CHECKED W.J.S. DATE 2-1-81
 SCALE AS SHOWN

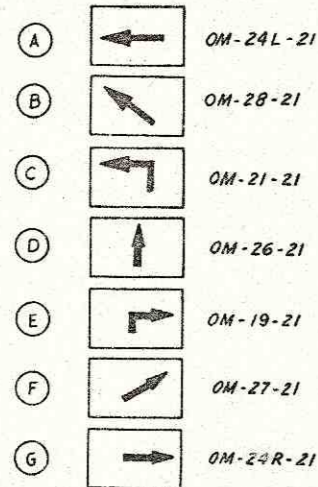
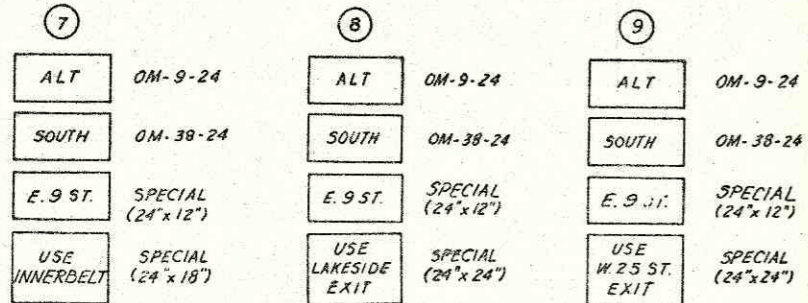
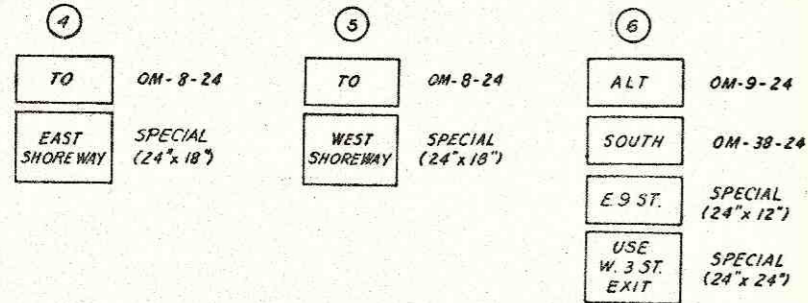
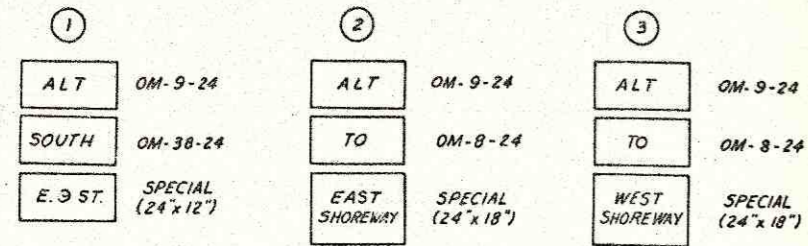
Howard, Needles, Tammen & Bergendoff
 CONSULTING ENGINEERS
 CLEVELAND, OHIO

HNTB

500 0 500 1000 1500 2000
 SCALE IN FEET

ALTERNATE ROUTE SIGNING PLAN

ALTERNATE ROUTE SIGN LAYOUTS



MAINTENANCE OF TRAFFIC NOTES

QUANTITY CALCULATIONS
 MADE BY CD DATE 7-22-81
 CHECKED BY AHS DATE 7-24-81

FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10 (2)

CUYAHOGA COUNTY
 EAST NINTH STREET

GENERAL

TWO WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES BY THE USE OF EXISTING PAVEMENT AND THE PROPOSED PAVEMENT AS SHOWN ON SHEETS 5-7, AND IN THE BRIDGE PLANS.

IF THE CONTRACTOR SO ELECTS, HE MAY SUBMIT ALTERNATE METHODS FOR THE MAINTENANCE OF TRAFFIC. NO ALTERNATE PLAN SHALL BE PLACED INTO EFFECT UNTIL APPROVAL HAS BEEN GRANTED, IN WRITING, BY THE DIRECTOR.

ALL REQUIRED DETOUR SIGNS SHALL BE IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND SHALL BE PROVIDED, ERECTED, MAINTAINED AND REMOVED BY THE CONTRACTOR.

THE CONTRACTOR SHALL MAINTAIN SAFE AND SATISFACTORY ACCESS TO ADJUTING PROPERTIES AND INTERSECTING STREETS AT ALL TIMES DURING CONSTRUCTION OF THE IMPROVEMENT, INCLUDING THE CONSTRUCTION AND REMOVAL, IF NECESSARY OF TEMPORARY BY-PASSES AND DRIVEWAYS.

THE CONTRACTOR SHALL FURNISH, ERECT, MAINTAIN, AND REMOVE ALL NECESSARY SAFEGUARDS SUCH AS BARRICADES, LIGHTING, FLAGMEN, TEMPORARY GUARD RAIL, TEMPORARY CONCRETE BARRIERS, AND SUCH OTHER TRAFFIC CONTROL DEVICES AS PROVIDED IN ITEM 614, MAINTAINING TRAFFIC, SO AS TO AVOID DAMAGE, AND/OR INJURY TO VEHICLES AND PERSONS DURING CONSTRUCTION.

PERMANENT PAVEMENT MARKINGS

THE CONTRACTOR SHALL REMOVE TEMPORARY STRIPING AND BARRIERS IN COORDINATION WITH CITY OF CLEVELAND FORCES TO PROVIDE FOR PLACEMENT OF PERMANENT PAVEMENT MARKINGS. PERMANENT PAVEMENT MARKING TO BE FURNISHED AND INSTALLED BY CITY OF CLEVELAND.

REPLACEMENT SIGNS

FLAT SHEET SIGNS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER. PAYMENT FOR THE NEW SIGNS SHALL BE MADE AT THE BID PRICE PER SQUARE FOOT FOR ITEM SPEC. REPLACEMENT SIGNS AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF THE DAMAGED SIGNS, HARDWARE AND SUPPORTS, AND PROVIDING NECESSARY REPLACEMENT HARDWARE, SUPPORTS, ETC. REPLACEMENT SIGNS SHALL BE NEW BUT OTHER MATERIALS MAY BE USED, SUBJECT TO APPROVAL BY THE ENGINEER.

AN ESTIMATED QUANTITY OF ITEM SPECIAL, REPLACEMENT SIGNS HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM SPECIAL REPLACEMENT SIGNS 250 SQ.FT.

REPLACEMENT DRUMS

DRUMS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER AND PAID FOR UNDER ITEM SPECIAL, REPLACEMENT DRUMS. PAYMENT FOR EACH NEW DRUM SHALL INCLUDE (1) THE COST OF REMOVING AND DISPOSING OF THE DAMAGED DRUM AND (2) PROVIDING, MAINTAINING AND REMOVING NEW DRUMS IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS FOR THE ORIGINAL DRUMS.

AN ESTIMATED QUANTITY OF ITEM SPECIAL, REPLACEMENT DRUMS HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM SPECIAL REPLACEMENT DRUMS 150 EACH

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE IN MAINTAINING TRAFFIC:

- ITEM 404 - BITUMINOUS CONCRETE, FOR MAINTAINING TRAFFIC 20 CU. YDS.
- ITEM 606 - GUARDRAIL, TYPE 6 2,730 LIN. FT.
- ITEM 607 - TEMPORARY FENCE, TYPE CLT 300 LIN. FT.
- ITEM 621 - REMOVAL OF PAVEMENT MARKINGS 3,000 LIN. FT.
- ITEM 622 - TEMPORARY CONCRETE BARRIER 2,490 LIN. FT.

THE WORK LOCATIONS ASSOCIATED WITH THE ABOVE QUANTITIES ARE SHOWN ON SHEETS 5-7 OF THE PLANS.

MAINTENANCE OF TRAFFIC FOR TEMPORARY UTILITY RELOCATIONS

PRIOR TO IMPLEMENTATION OF THE MAINTENANCE OF TRAFFIC PLAN FOR STAGE 1 CONSTRUCTION, AS SHOWN ON SHEET 5 OF THE PLANS, THE CONTRACTOR SHALL COMPLETE THE INSTALLATION OF TEMPORARY UTILITY FACILITY. SPECIFIC MAINTENANCE OF TRAFFIC REQUIREMENTS AND GUIDELINES FOR THE TEMPORARY WATER MAIN CONSTRUCTION ARE SHOWN ON SHEET 24 THE SPECIFIC MAINTENANCE OF TRAFFIC REQUIREMENTS FOR THE TEMPORARY M&P DUCT BANK CONSTRUCTION ARE SHOWN ON SHEET 35. THE PROJECT MAINTENANCE OF TRAFFIC PLANS, AND NOTES ARE SHOWN ON SHEETS 4 THROUGH 7 OF THE PLANS.

PAYMENT

PAYMENT FOR ALL OF THE ABOVE EXCEPT:
 ITEM 404 BITUMINOUS CONCRETE, ITEM 606 - TEMPORARY BEAM RAIL, ITEM 607 - TEMPORARY FENCE, TYPE CLT, ITEM 621 - REMOVAL OF EXISTING PAVEMENT MARKINGS, ITEM 622 - TEMPORARY CONCRETE BARRIERS, ITEM SPECIAL - REPLACEMENT SIGNS AND ITEM SPECIAL - REPLACEMENT DRUMS, SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 - MAINTAINING TRAFFIC.

TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS

References to Supplemental Specifications 857, 858, 859, 957, 958 and 959 on the Traffic Control Standard Construction Drawings in these plans shall be considered to read as respective references to Items 630, 631, 632, 730, 731 and 732.

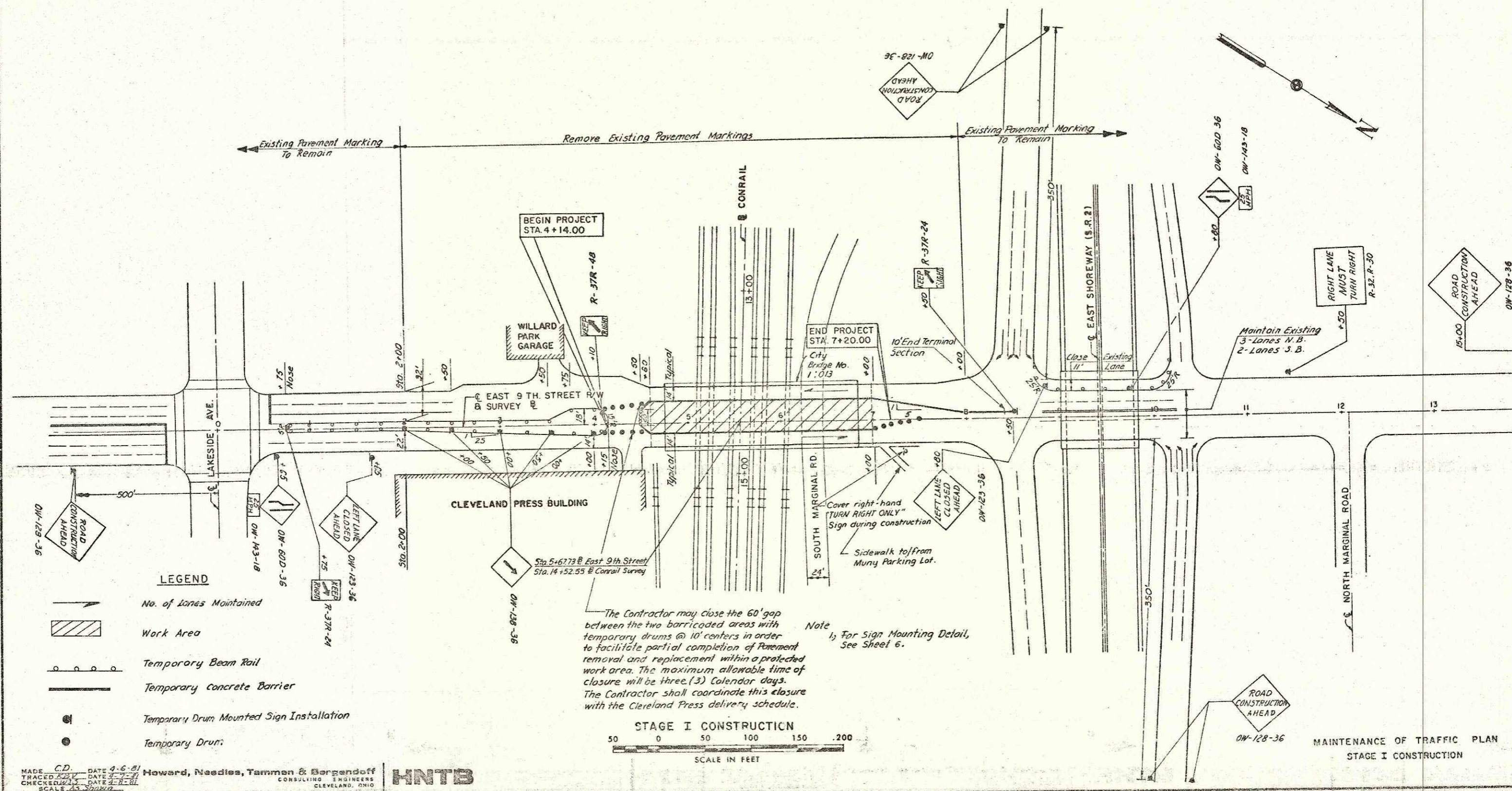
DESCRIPTION	CODE	NUMBER	UNIT	QUANTITY
<i>Signs, Flatsheet</i>				
ALT	OM-9-24	29	Sq. Ft.	58.0
TO	OM-8-24	24		48.0
SOUTH	OM-38-24	18		54.0
<i>E. 9th St.</i>				
	Special	18		36.0
<i>East Shoreway</i>				
		14		42.0
<i>West Shoreway</i>				
		10		30.0
<i>Use W. 3 St. Exit</i>				
		1		4.0
<i>Use Innerbelt</i>				
		2		6.0
<i>Use Lakeside Exit</i>				
		2		8.0
<i>Use W. 25th St. Exit</i>				
	Special	2		8.0
	OM-19-21	3		6.6
	OM-21-21	2		4.4
	OM-24L-21	8		17.6
	OM-24R-21	4		8.8
	OM-26-21	19		41.8
	OM-27-21	4		8.8
	OM-28-21	2	Sq. Ft.	4.4
			Total	387
<i>Sign Support Assembly Pole Mounted</i>				
		167	Each	167
			Total	167
<i>Ground Mounted Sign</i>				
		5	Lin. Ft.	70
			Total	70



FRWA REGION	STATE	PROJECT	
5	OHIO	M-1A10 (2)	

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CUYAHOGA COUNTY
EAST NINTH STREET

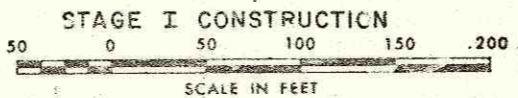


LEGEND

- No. of Lanes Maintained
- Work Area
- Temporary Beam Rail
- Temporary Concrete Barrier
- Temporary Drum Mounted Sign Installation
- Temporary Drum

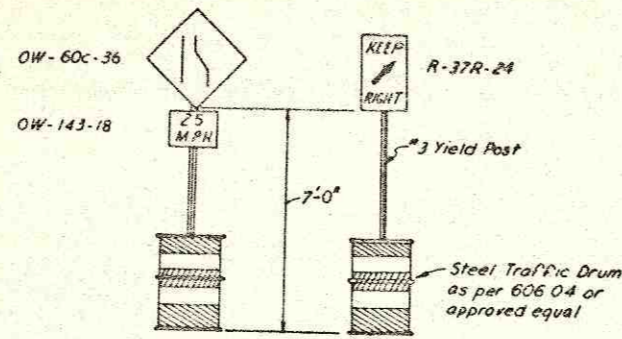
The Contractor may close the 60' gap between the two barricaded areas with temporary drums @ 10' centers in order to facilitate partial completion of Pavement removal and replacement within a protected work area. The maximum allowable time of closure will be three (3) Calendar days. The Contractor shall coordinate this closure with the Cleveland Press delivery schedule.

Note 1, For Sign Mounting Detail, See Sheet 6.

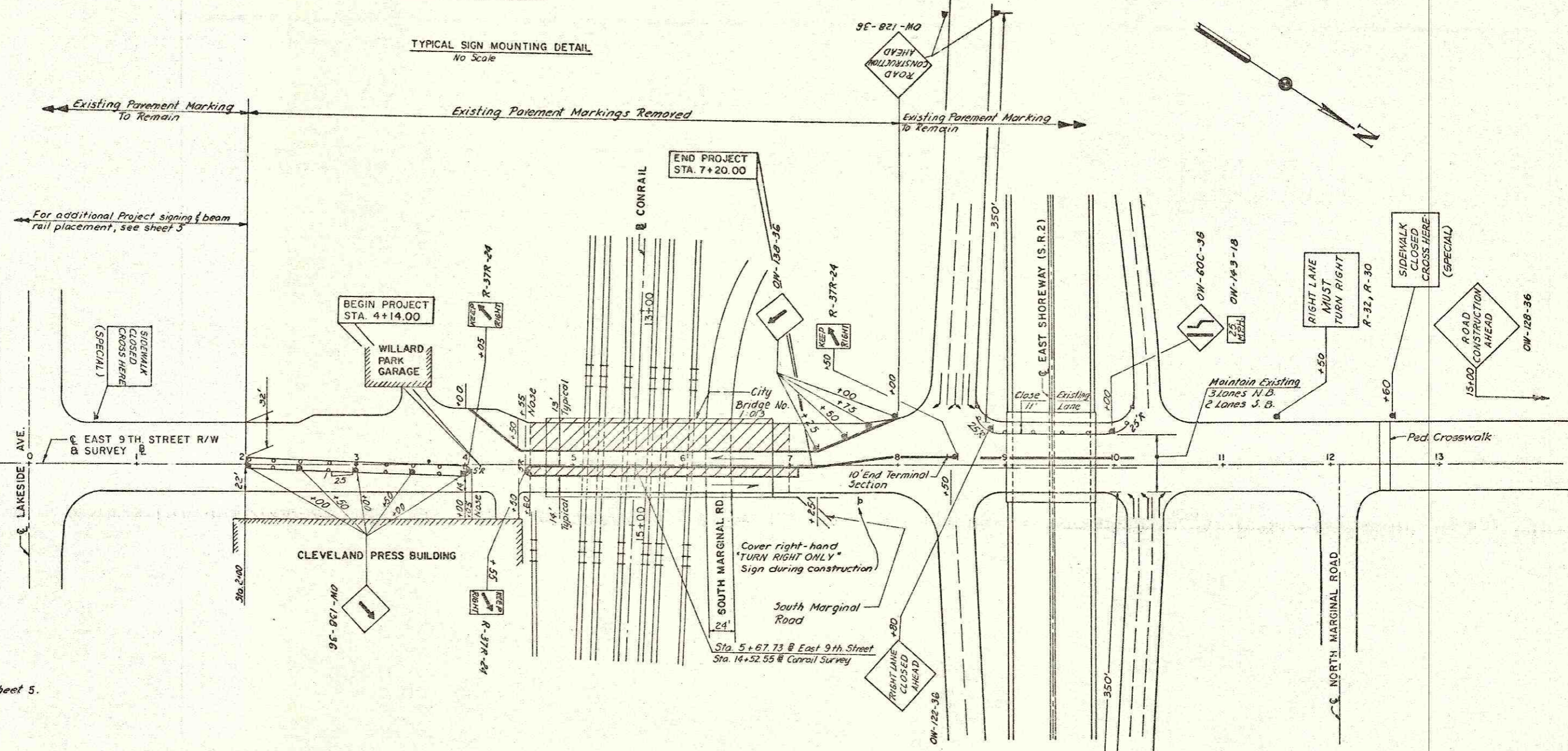


FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10 (2)

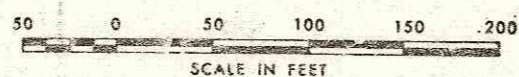
CUYAHOGA COUNTY
EAST NINTH STREET



TYPICAL SIGN MOUNTING DETAIL
No Scale



STAGE II CONSTRUCTION



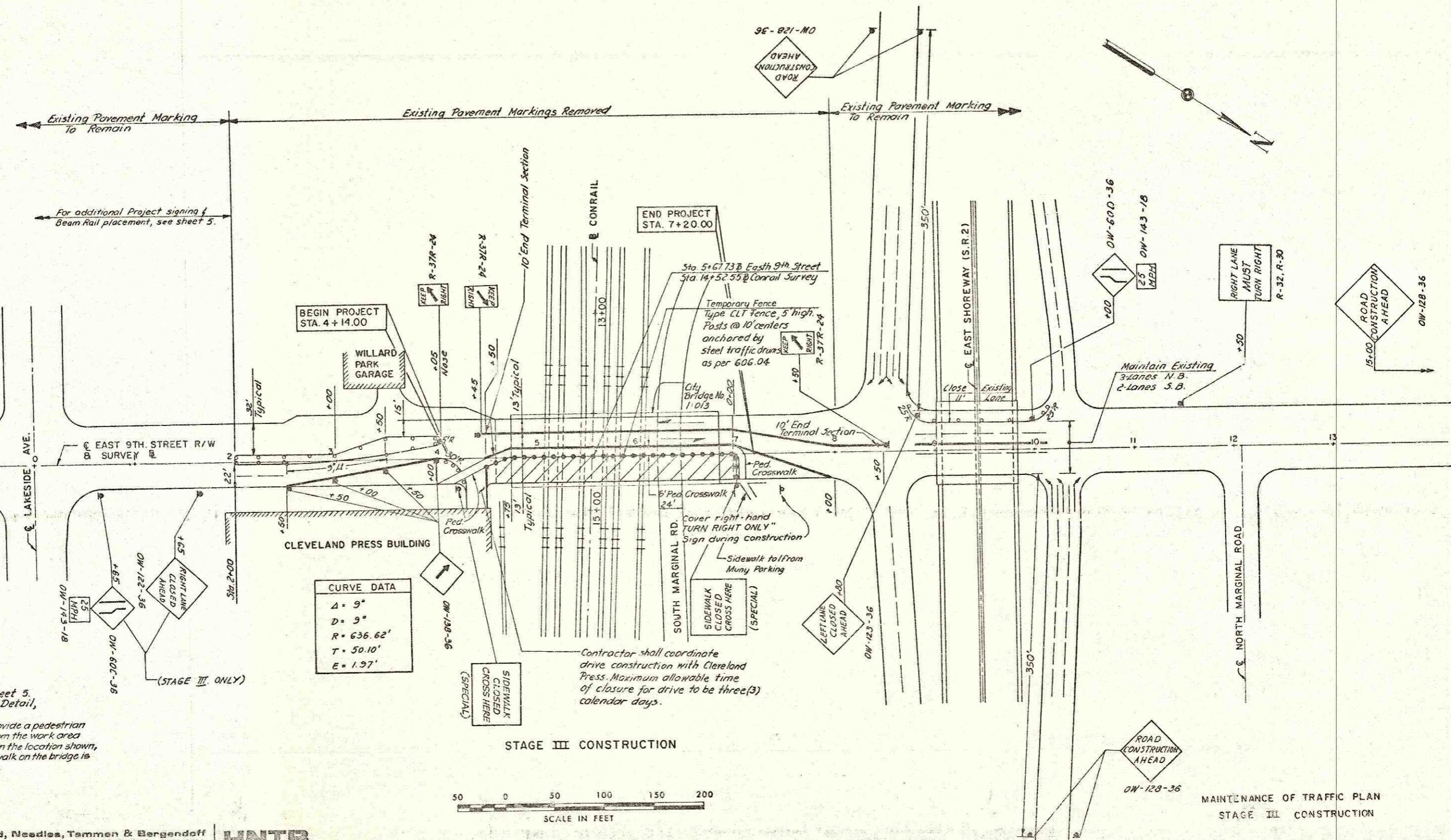
Notes:
1) For Legend, See Sheet 5.

MADE CD DATE 4-7-81
TRACED BY DATE 8-7-81
CHECKED WTS DATE 4-9-81
SCALE AS SHOWN
Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO



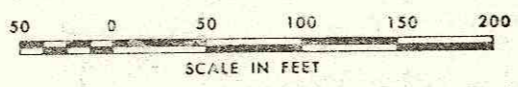
MAINTENANCE OF TRAFFIC PLAN
STAGE II CONSTRUCTION

CUYAHOGA COUNTY
EAST NINTH STREET



CURVE DATA	
Δ	9°
D	9°
R	$636.62'$
T	$50.10'$
E	$1.97'$

STAGE III CONSTRUCTION



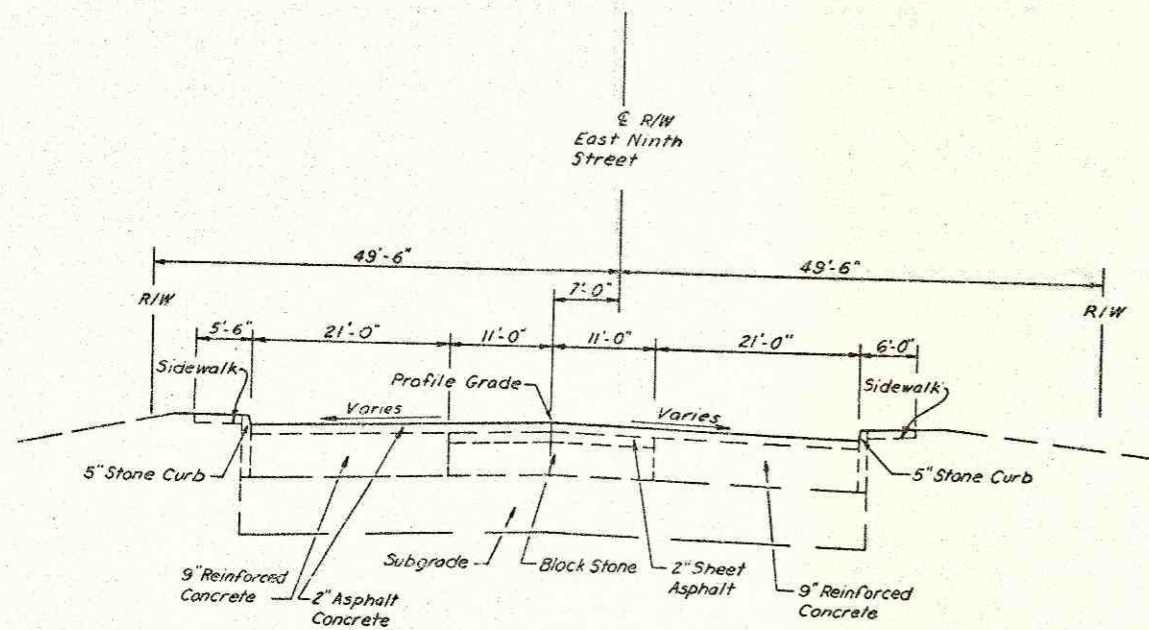
- Notes:
- 1) For Legend, See Sheet 5.
 - 2) For Sign Mounting Detail, See Sheet 6.
 - 3) The contractor shall provide a pedestrian sidewalk, protected from the work area by a 5' high CLT fence in the location shown, whenever the east sidewalk on the bridge is closed for construction.

Contractor shall coordinate drive construction with Cleveland Press. Maximum allowable time of closure for drive to be three(3) calendar days.

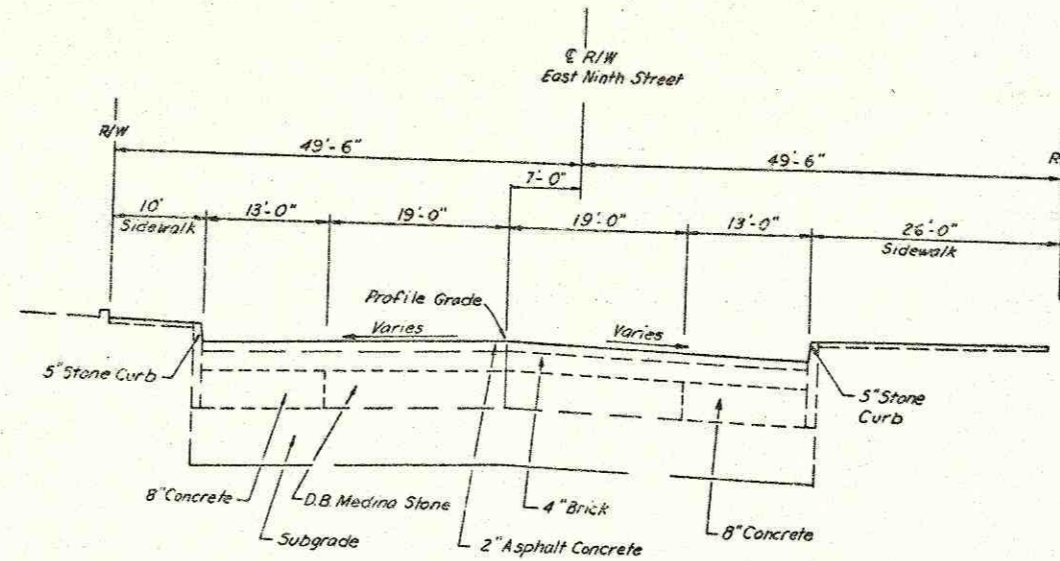
FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10 (2)

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CUYAHOGA COUNTY
EAST NINTH STREET



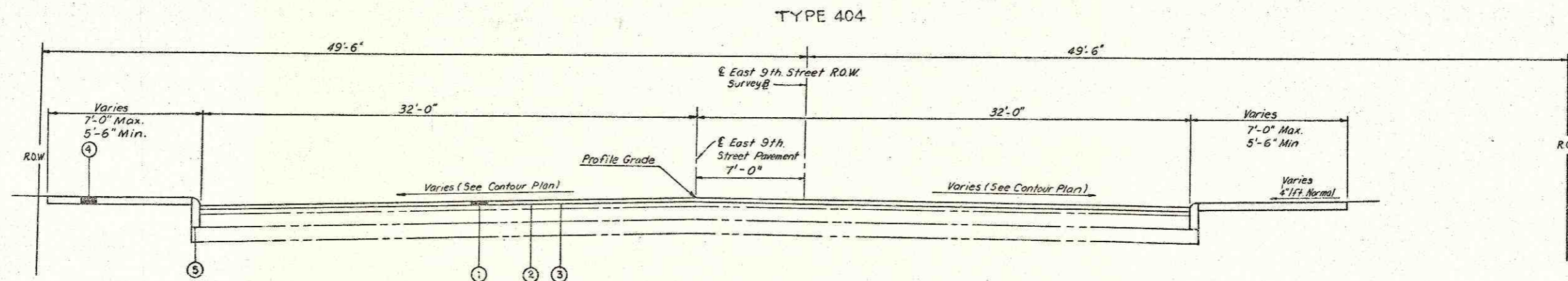
EXISTING TYPICAL SECTION
(North of Bridge)



EXISTING TYPICAL SECTION
(South of Bridge)

LEGEND

- ① ITEM 404 1 1/4" ASPHALT CONCRETE, AC-20
- ② ITEM 407 TACK COAT
- ③ ITEM 407 COVER AGGREGATE, 703.06
- ④ ITEM 608 4" CONCRETE WALK
- ⑤ ITEM 609 CURB STD. TYPE 6 MODIFIED, AS PER PLAN



TYPICAL SECTION - APPROACH ROADWAY
(Phantom lines indicate existing roadway)

STA. 4+14.00 TO STA. 4+61.31
STA. 6+99.31 TO STA. 7+20.00

GENERAL

Mobilization, as per plan

THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE HAVING A MINIMUM OF 400 SQ. FT. OF FLOOR SPACE WHICH SHALL BE IN ACCORDANCE WITH 619.01 AND 619.02. PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 624 MOBILIZATION, AS PER PLAN

PROJECT DATUM

ALL ELEVATIONS SHOWN ARE BASED ON CLEVELAND REGIONAL GEODETIC SURVEY (CRGS) DATUM PLANE. ELEVATIONS AND DESCRIPTIONS OF PERTINENT CRGS MONUMENTS ALONG THE PROJECT ARE SHOWN ON THE PLANS.

UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS HAVE BEEN ATTAINED BY DILIGENT FIELD CHECKS AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT, BUT THE STATE OF OHIO DOES NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS.

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. ESTIMATED QUANTITIES OF MATERIALS SHALL NOT BE ORDERED FOR DELIVERY TO THE PROJECT UNLESS AUTHORIZED BY THE ENGINEER.

EXISTING UTILITIES

CLEVELAND ELEC. ILLUMINATING CO.
55 PUBLIC SQ.,
CLEVELAND, OH 44113
622-9800

MUNICIPAL ELECTRIC LIGHT & POWER CO.
1201 LAKESIDE AVENUE
CLEVELAND, OH 44114
664-2000

EAST OHIO GAS CO.
1201 E. 55 ST.
CLEVELAND, OH 44130
361-2753

CITY OF CLEVELAND
DIVISION OF WATER AND HEAT
1201 LAKESIDE AVE.,
CLEVELAND, OH 44114
664-3346

OHIO BELL TELEPHONE CO.
820 WEST SUPERIOR AVE.
CLEVELAND, OH 44113
822-6241

CONRAIL
1528 WALNUT STREET
PHILADELPHIA, PA 19102
(215)596-2927

CITY OF CLEVELAND DIVISION OF WATER
POLLUTION CONTROL
1825 LAKESIDE AVENUE
CLEVELAND, OH. 44114
664-2750

EXISTING TYPICAL SECTIONS

EXISTING TYPICAL SECTIONS HAVE BEEN TAKEN FROM RECORDS AND ARE BELIEVED TO REPRESENT THE EXISTING PAVEMENT, BUT THE STATE OF OHIO DOES NOT GUARANTEE THEIR ACCURACY.

TRAFFIC MAINTENANCE

FOR TRAFFIC MAINTENANCE NOTES SEE SHEET 4.

UTILITIES COORDINATION

THE CONTRACTOR IS ADVISED THAT THROUGHOUT THIS PROJECT THE UTILITY COMPANIES ARE REQUIRED TO PERFORM WORK NECESSARY TO PROVIDE FOR CONTINUOUS SERVICE. THE CONTRACTOR SHALL COOPERATE WITH THE UTILITY COMPANIES AND ARRANGE SUITABLE WORK SCHEDULES TO PROVIDE FOR TEMPORARY AND PERMANENT RELOCATION OF THEIR FACILITIES AND NECESSARY CONSTRUCTION DELAYS BETWEEN STAGES IN ORDER TO COMPLETE THESE FUNCTIONS, SUBJECT TO APPROVAL OF THE ENGINEER.

COMPENSATION FOR THE ABOVE COOPERATION SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS INCLUDED WITHIN THIS CONSTRUCTION CONTRACT.

GENERAL NOTES

ROADWAY

REMOVAL AND/OR PROTECTION OF TREES

THIS PLAN DOES NOT CALL FOR ANY TREES OR SHRUBS TO BE REMOVED, SHOULD ANY BE DESTROYED, THEY SHALL BE REPLACED TO THE SATISFACTION OF THE ENGINEER AT NO COST TO THE PROJECT.

CUTTING PAVEMENT

WHENEVER THE REMOVAL OF EXISTING PAVEMENT, BASE, DRIVE APRON OR SIDEWALK NECESSITATES CUTTING INTO THE SLAB PRIOR TO REMOVAL, THE CUTTING SHALL BE EFFECTED BY USING A SUITABLE CONCRETE POWER SAW WHICH WILL PRODUCE A STRAIGHT AND SMOOTH FINISH ALONG THE SAWED EDGE. THE DEPTH OF CUTTING SHALL BE SUCH THAT NO DAMAGE WILL RESULT TO THE REMAINING SLAB AFTER REMOVAL OF THE DESIGNATED PORTION. THE PAYMENT FOR CUTTING PAVEMENT SHALL BE INCLUDED WITH ITEM 202-PAVEMENT REMOVED.

ITEM 609 - TYPE 6 CURB, MODIFIED, AS PER PLAN

TYPE 6 CURB SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING BP-7 EXCEPT THE HEIGHT ABOVE THE GUTTER LINE SHALL BE 5-IN. INSTEAD OF 6-IN.

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

THE FOLLOWING ESTIMATED QUANTITY IS TO BE USED AS DIRECTED BY THE ENGINEER FOR EROSION AND SEDIMENT CONTROL MEASURES:

ITEM 207 STRAW OR HAY BALES 50 EACH

ITEM 517 - RAILING, PIPE, AS PER PLAN, 707.08

WHERE CALLED FOR IN THE PLANS, THE CONTRACTOR SHALL REMOVE A PORTION OF THE EXISTING HANDRAIL ADJACENT TO THE MUNICIPAL PARKING LOT SIDEWALK, AND REPLACE IT WITH A SECTION OF NEW PIPE RAILING AS SPECIFIED IN THESE PLANS. IT IS THE INTENT OF THIS PROPOSED WORK TO PROVIDE FOR THE REMOVAL AND REPLACEMENT OF PIPE HANDRAIL REQUIRED DUE TO THE SIDEWALK RECONSTRUCTION AT THE NORTHEAST END OF THE BRIDGE.

RAILING AND POST SHALL BE FABRICATED FROM NOMINAL SIZE 2-IN., 0.145 IN. WALL THICKNESS STEEL PIPE MEETING THE REQUIREMENTS OF ITEM 707.08 AS WELL AS ITEM 517 OF THE SPECIFICATIONS.

SPLICES FOR RAILING SHALL BE FIELD WELDED. ALL FIELD PAINTING OF THE HANDRAIL SHALL BE AS APPROVED BY THE ENGINEER. THE INSTALLED HANDRAIL SHALL BE FREE FROM BURRS OR SHARP PROJECTION.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR REQUIRED TO CONSTRUCT THE PIPE RAILING SHOWN IN THE PLANS INCLUDING: REMOVAL OF EXISTING RAILING AND FOUNDATIONS; EXCAVATION AND PROPOSED CONCRETE FOUNDATIONS FOR NEW HANDRAIL; FIELD WELDING AND PAINTING; AND ANY MISCELLANEOUS HARDWARE REQUIRED TO PROVIDE A SUITABLE INSTALLATION.

EXISTING BARRELS WITH GUARDRAIL

EXISTING BARRELS WITH GUARDRAIL TO BE REMOVED AND STORED FOR PICK UP BY THE CITY. PAYMENT SHALL BE INCLUDED WITH ITEM 614 - MAINTAINING TRAFFIC.

QUANTITY CALCULATIONS

MADE BY C.D. DATE 7-14-81
CHECKED BY A.H.S. DATE 7-17-81

FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10(2)

9
62

CUYAHOGA COUNTY
EAST NINTH STREET

PAVEMENT

ITEM 611 - REINFORCED CONCRETE APPROACH SLAB, MODIFIED, AS PER PLAN

THE CONTRACTOR SHALL PROVIDE BOTH THE NORTH AND SOUTH APPROACH SLAB WITH THE CONCRETE BARRIER CURB AS SHOWN ON SHEET 14. THE APPROACH SLABS SHALL BE PLACED AS REQUIRED BY THE STAGED CONSTRUCTION AND SHALL CONFORM WITH THE STANDARD BRIDGE DRAWING AS-1-72 WITH THE EXCEPTION OF THE CONCRETE BARRIER CURB SHOWN IN THESE PLANS AND THE SPLICING OF THE TRANSVERSE REINFORCING STEEL (501 BARS) AS REQUIRED BY THE STAGED CONSTRUCTION. THE CLEARANCE OF TOP REINFORCING BARS SHALL BE 3-IN. INSTEAD OF 2-IN. JACKING HOLES AS SHOWN ON AS-1-72, SHALL BE OMITTED.

REPAIR OF THE EXISTING CONCRETE CRIB WALL

THE CONTRACTOR SHALL REPAIR THE MOST EASTERN PANEL OF THE EXISTING CONCRETE CRIB WALL LOCATED IN THE SOUTH END SLOPE. REPAIRS SHALL CONSIST OF IN-KIND REPLACEMENT OF THE TOP FOUR STRETCHER AND SPACER PIECES OF THE FRONT WALL. REPLACEMENT PIECES MAY BE OBTAINED FROM PORTIONS OF THE CRIB WALL THAT ARE SCHEDULED FOR REMOVAL AS APPROVED BY THE ENGINEER. METHOD OF REPAIR SHALL BE AS PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

REPAIR OF THE EXISTING CONCRETE CRIB WALL WILL BE MEASURED AS A UNIT AND SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID FOR ITEM SPECIAL, REPAIR OF EXISTING CONCRETE CRIB WALL. THIS PRICE SHALL BE PAYMENT IN FULL FOR FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND INCIDENTALS TO COMPLETE THE WORK AS SPECIFIED.

PAVEMENT REPAIR

REPAIR OF PAVEMENT SHALL BE AS SHOWN IN DETAIL ON SHEET 19.

ITEM 407 TACK COAT

THE TACK COAT AND COVER AGGREGATE OPERATION SHALL BE AS DETERMINED AT A PRE-CONSTRUCTION CONFERENCE AS PER 407.05. PLAN QUANTITIES INDICATE AVERAGE APPLICATION RATES OF 0.10 GALLONS PER SQUARE YARD OF TACK COAT AND 7 POUNDS PER SQUARE YARD OF COVER AGGREGATE.

GENERAL SUMMARY

QUANTITY CALCULATIONS

MADE BY CD DATE 7-14-81
 CHECKED BY KBY DATE 7-27-81

FHWA REGION	STATE	PROJECT
8	OHIO	M-1410 (2)

10
62

CUYAHOGA COUNTY
EAST NINTH STREET

SHEET NUMBER										TOTAL QUANT.	UNIT	ITEM	DESCRIPTION
4	10	11	14	15	16	17	48						
		173								473	SQ. YD.	202	PAVEMENT REMOVED
		34								34	LIN. FT.	202	GUARDRAIL REMOVED
		1145								1145	SO. FT.	202	WALK REMOVED
			150							150	LIN. FT.	202	GUTTER REMOVED
		119								119	LIN. FT.	202	CURB REMOVED
		277								277	SO. YD.	202	WEARING COURSE REMOVED
				70	149					219	CU. YD.	203	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION
				130	155					285	CU. YD.	203	EMBANKMENT
		5								5	LIN. FT.	517	RAILING, PIPE, AS PER PLAN, 707.08
			69							69	LIN. FT.	607	FENCE, TYPE CLT, AS PER PLAN
		1148								1148	SO. FT.	608	CONCRETE WALK, 4"
		2								2	EACH	608	CURB RAMP, STD, TYPE 2
20										20	CU. YD.	404	BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC
			Lump Sum				40			LUMP	LUMP	SPECIAL	REPAIR OF EXISTING CONCRETE CURB WALL
										40	LIN. FT.	SPECIAL	10" CASING INSTALLED ONLY (100% EAST OHIO GAS CO.)
		55								55	CU. YD.	310	SUBBASE, TYPE II
		17								17	CU. YD.	404	ASPHALT CONCRETE, AC-20
		49								49	GAL.	407	TACK COAT
		1.7								1.7	TON	407	COVER AGGREGATE
		283								283	SO. YD.	452	9" PLAIN PORTLAND CEMENT CONCRETE PAVEMENT
		227								227	SO. YD.	611	REINFORCED CONCRETE APPROACH SLAB, MODIFIED, AS PER PLAN
		80								80	LIN. FT.	SPECIAL	PRESSURE RELIEF JOINT, TYPE C
		123								123	LIN. FT.	609	CURB, TYPE 6, MODIFIED, AS PER PLAN
													TRAFFIC CONTROL
		2730								2,730	LIN. FT.	606	GUARDRAIL, TYPE 6
		300								300	LIN. FT.	607	TEMPORARY FENCE, TYPE CLT, AS PER PLAN
		3000								3,000	LIN. FT.	621	REMOVAL OF PAVEMENT MARKINGS
		2490								2,490	LIN. FT.	622	TEMPORARY CONCRETE BARRIER
		250								250	SO. FT.	SPECIAL	REPLACEMENT SIGNS
		150								150	EACH	SPECIAL	REPLACEMENT DRUMS
		387								387	SO. FT.	630	SIGNS, FLATSHEET
		167								167	EACH	630	SIGN SUPPORT ASSEMBLY, POLE MOUNTED
		70								70	LIN. FT.	630	GROUND MOUNTED SIGN SUPPORT, #4 DRIVE POST
													DRAINAGE
		3								3	EACH	604	CATCH BASIN ADJUSTED TO GRADE
		39								39	LIN. FT.	605	6" SHALLOW PIPE UNDERDRAINS
													EROSION CONTROL
		50								50	EACH	207	STRAW OR HAY BALES
				0.01						0.01	TON	658	COMMERCIAL FERTILIZER
				0.05						0.05	TON	659	AGRICULTURAL LIME
				101						101	SO. YD.	660	SODDING
													STRUCTURES
													SEE SHEET 45
													LIGHTING
													SEE SHEET 34
													WATERWORK
													SEE SHEET 18
													MELP
													SEE SHEET 43
										LUMP	LUMP	614	MAINTAINING TRAFFIC
										LUMP	LUMP	623	CONSTRUCTION LAYOUT STAKES
										LUMP	LUMP	624	MOBILIZATION, AS PER PLAN

MADE CD DATE 11-8-81 Howard, Needles, Tammen & Bergendoff
 TRACED KBY DATE 11-13-81 CONSULTING ENGINEERS
 CHECKED KBY DATE 11-3-81 CLEVELAND, OHIO
 SCALE _____



COMPUTATIONS AND SUB SUMMARIES

FRWA REGION	STATE	PROJECT
5	OHIO	M-1A10 (2)

CUYAHOGA COUNTY
EAST NINTH STREET.

QUANTITY CALCULATIONS
MADE BY CD DATE 7-14-81
CHECKED BY AHS DATE 7-16-81

STATION		SIDE	LENGTH (LIN. FT.)
FROM	TO		
4+16	4+19	Rt.	3
4+49	4+66	Lt.	19
4+55	4+66	Rt.	11
6+77	7+20	Rt.	43
6+77	7+20	Lt.	43
TOTAL			119

STATION		SIDE	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ. FT.)	REMARK
FROM	TO					
4+18.8	4+28.8	Rt.	31	Varies	95	
4+49	4+66	Lt.	Planimeter	Planimeter	265	
4+50	4+66	Rt.	Planimeter	Planimeter	96	
6+77	6+92	Rt.	15	4.5	67.5	
6+77	6+92	Lt.	15	4.5	67.5	
6+92	7+00	Rt.	18.5	4.5	83.25	Municipal Lot
6+92	7+35	Rt.	43	6	258	
6+92	7+35	Lt.	43	5.5	236.5	
TOTAL					1144.5	

STATION		SIDE	AREA (SQ. FT.)	RATE (GAL./SQ. YD.)	QUANTITY (GAL.)
FROM	TO				
4+14	4+61.31	Lt. & Rt.	3104	0.1	34.5
6+99.31	7+20	Lt. & Rt.	1312	0.1	14.6
TOTAL					49.1

STATION		SIDE	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ. FT.)
FROM	TO				
4+49	4+78	Lt.	Planimeter		300
4+51	4+75.3	Rt.	Planimeter		200
6+83.11	6+98.39	Rt.	15.28	6	91.7
6+85.81	7+00.75	Lt.	14.34	6	83.6
6+98.39	7+06.5	Rt.	8.1	7	56.8
7+01.82	7+06.5	Rt.	Planimeter		40.0
7+06.5	7+35	Rt.	28.5	6	171
7+00.75	7+04.82	Lt.	4.07	7	28.5
7+04.82	7+09.82	Lt.	5.0	7	31.25
7+09.82	7+35	Lt.	25.18	5.5	138.5
TOTAL					1147.5

* Sidewalk to Municipal Lot.

STATION		SIDE	LENGTH (LIN. FT.)
FROM	TO		
4+58	4+66	Rt.	8
6+77	7+03	Rt.	26
TOTAL			34

STATION		SIDE	AREA (SQ. FT.)	DEPTH (IN.)	VOLUME (CU. YD.)
FROM	TO				
4+24.0	4+64	Lt.	1232	4"	15.2
4+61.31	4+76.31	Lt. & Rt.	1564	6"	17.8
6+84.31	6+99.31	Lt. & Rt.	1564	6"	17.8
6+99.31	7+20	Lt.	672	2"	4.1
TOTAL					54.9

* Average Depth

STATION		SIDE	AREA (SQ. FT.)	RATE (LBS./SQ. YD.)	QUANTITY (TON)
FROM	TO				
4+14	4+61.31	Lt. & Rt.	3104	7	1.21
6+99.31	7+20	Lt. & Rt.	1312	7	0.51
TOTAL					1.72

STATION		SIDE	LENGTH (LIN. FT.)
FROM	TO		
4+16	4+28	Rt.	34
4+49	4+62.75	Lt.	16
4+50.5	4+60.39	Rt.	32
6+98.38	7+20	Rt.	21.6
7+00.75	7+20	Lt.	19.25
TOTAL			123

STATION		SIDE	LENGTH (FT.)	WIDTH (FT.)	AREA (SQ. YD.)
FROM	TO				
4+15.0	4+24.0	Lt. & Rt.	10*	64	71.1
4+24.0	4+61.31	Lt. & Rt.	37*	32	131.6
6+99.31	7+20	Lt. & Rt.	21	32	74.7
TOTAL					277.4

* Average Length

STATION		SIDE	AREA (SQ. FT.)	AREA (SQ. YD.)	REMARK
FROM	TO				
4+24.0	4+64	Lt.	1232	136.3	
4+18.8	4+59.5	Rt.	620	68.9	Apron
4+45	4+62.5	Lt.	53	5.9	Apron
6+99.31	7+20	Lt.	640	71.7	
Total				282.8	

STATION		SIDE	AREA (SQ. FT.)	DEPTH (IN.)	VOLUME (CU. YD.)
FROM	TO				
4+14	4+61.31	Lt. & Rt.	485*64+3104	1.25	12.0
6+99.31	7+20	Lt. & Rt.	205*64+1312	1.25	5.1
TOTAL					17.1

* Average length

STATION		SIDE	LENGTH (LIN. FT.)	REMARK
FROM	TO			
7+01		Rt.	5	Connection from northeast corner of wingwall to existing railing @ Sta. 7+01.39' (?) Rt.
Total			5	

STATION		SIDE	QUANTITY (EACH)
FROM	TO		
4+26.55		Rt.	1
4+52.00		Rt.	1
Total			2

STATION		SIDE	AREA (SQ. FT.)	AREA (SQ. YD.)	REMARK
FROM	TO				
4+19	4+56.7	Rt.	603	67	Planimeter
4+45	4+62.5	Lt.	52.5	5.8	"
TOTAL					73

STATION		SIDE	AREA (SQ. YD.)	REMARK
FROM	TO			
4+61.31	4+76.31	Lt. & Rt.	113.3	(15x60) ÷ 9
6+84.31	6+99.31	Lt. & Rt.	113.3	(15x60) ÷ 9
Total			227	

STATION		SIDE	AREA (SQ. FT.)	AREA (SQ. YD.)	REMARK
FROM	TO				
4+24.0	4+64	Lt.	1232	136.9	38.5' x 32'
4+61.31	4+66	Lt. & Rt.	283.52	31.5	4.15' x 64'
6+77	6+99.31	Lt. & Rt.	1440	160	(24x60) x 64'
6+99.31	7+20	Lt.	640	71.1	
TOTAL					399.5

* Average length

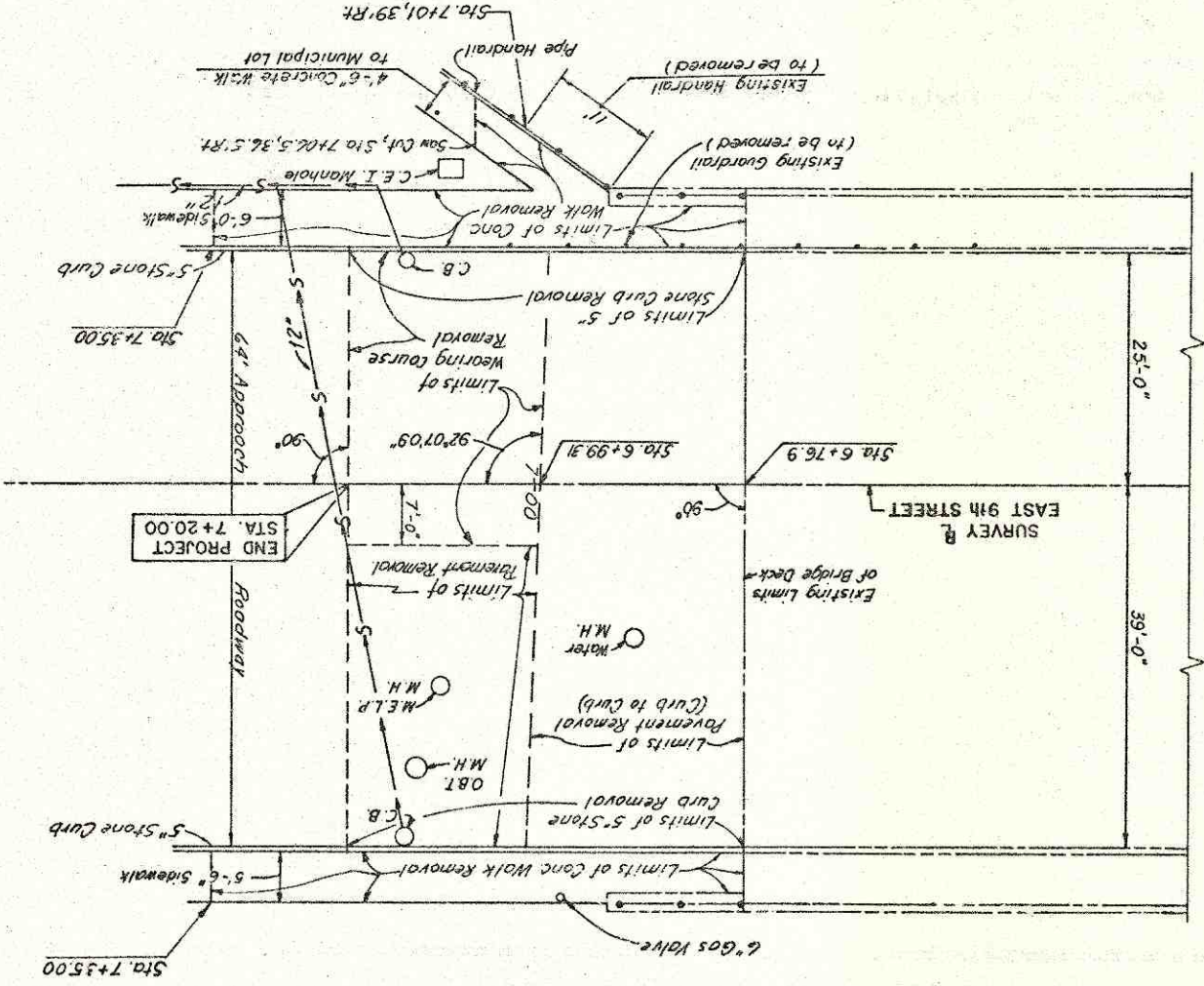
STATION		SIDE	LENGTH (LIN. FT.)
FROM	TO		
4+12	4+36	Lt.	24
4+17	4+32	Rt.	15
TOTAL			39

STATION		SIDE	NORMAL GUTTER ELEV.		EACH
FROM	TO		EXISTING	PROPOSED	
4+32.7		Rt.	629.02	629.00	1
7+14.0		Rt.	617.64	617.80	1
7+14.5		Lt.	617.67	617.83	1
Total					3

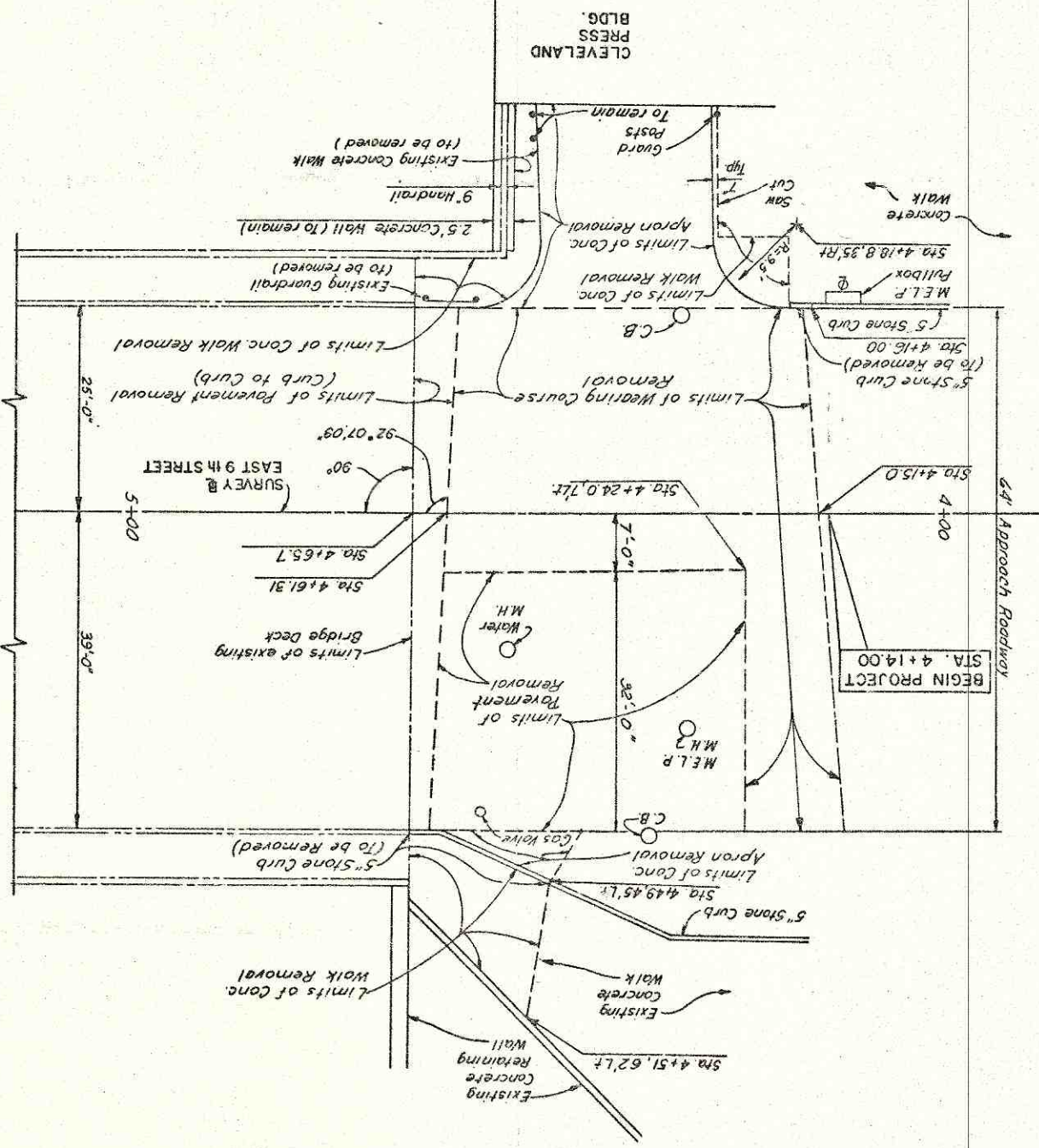
STATION		SIDE	LENGTH (LIN. FT.)
FROM	TO		
4+12	4+17	Lt. & Rt.	80
TOTAL			80

12	PROJECT	STATE	5	OHIO	M-1A10 (2)
62	REGION	CUYAHOGA COUNTY			

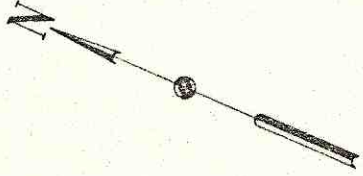
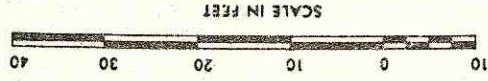
EAST NINTH STREET
CUYAHOGA COUNTY



NORTH APPROACH PLAN
EXISTING CONDITIONS



SOUTH APPROACH PLAN
EXISTING CONDITIONS



Notes:
Indicates structure removal details of which are shown elsewhere in these plans.
For existing and proposed typical sections of approach roadways, see sheet B.
The asphalt wearing course shall be removed within the limits shown to a depth 1/2" below the proposed contours as shown on Sheet 13.
For proposed work see sheet 13.

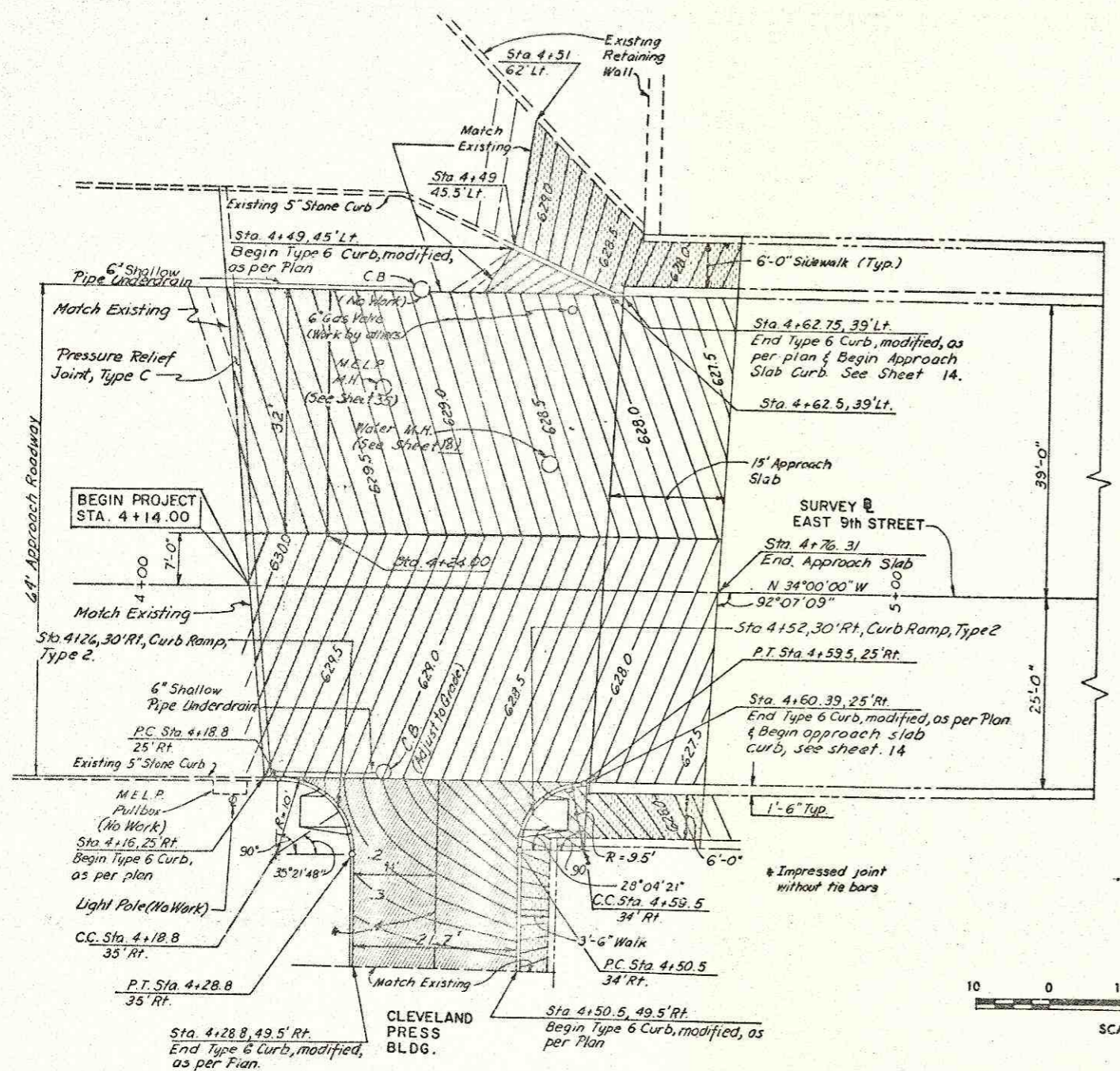
HNTB

MADE IN U.S.A.
DATE 1-15-81
CHECKED BY DATE 1-17-81
TRACED BY DATE 1-17-81
CONSULTING ENGINEERS
HOWARD, NEEDLES, TAMMEN & BERGENDORFF
CLEVELAND, OHIO

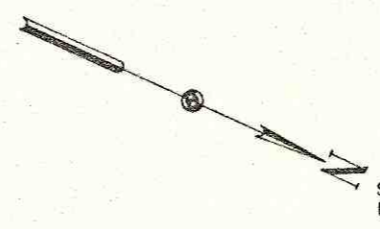
FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10 (2)

13
62

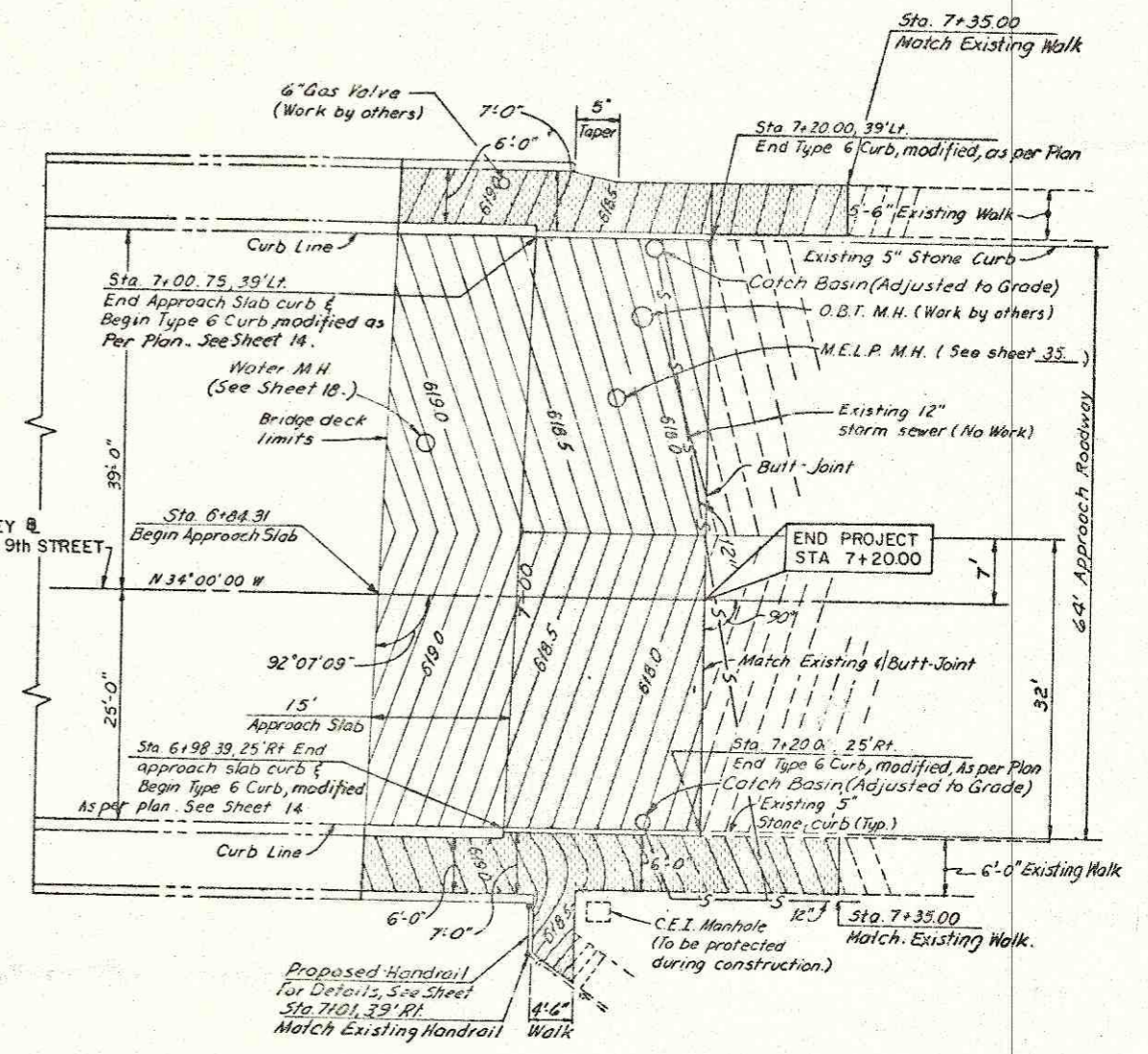
CUYAHOGA COUNTY
EAST NINTH STREET



SOUTH APPROACH PLAN
PROPOSED WORK



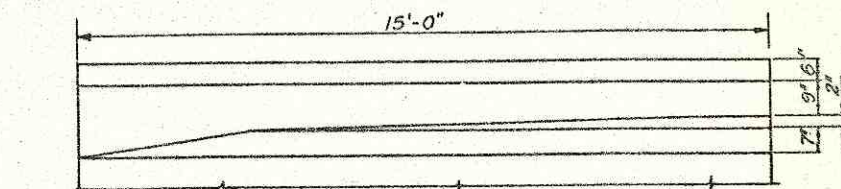
- LEGEND**
- 9" Plain Portland Cement Concrete Pavement
 - Sidewalk
 - 1 1/2" Asphalt Concrete + 9" Plain Portland Cement Concrete Pavement + 4" Subbase
 - 1 1/2" Asphalt Overlay



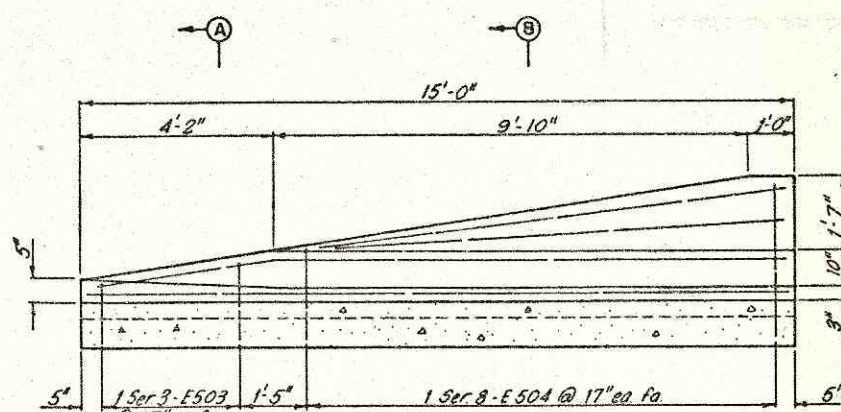
NORTH APPROACH PLAN
PROPOSED WORK

- Notes:**
- Indicates new construction, details of which are shown in Structure Plans.
 - - - Indicates existing
 - Indicate proposed work
 - For proposed section of the approach roadways see sheet 9.
 - For Approach Slab Curb details see sheet 14.
 - For Relocated Water Main details see sheet 13.
 - For Relocated M.E.L.P. line details see sheet 35.
 - For Type 6 curb as per plan, see note on sheet 9.
 - See Bridge Site plan sheet for locations of existing utilities.
 - For approach roadway removal plan see sheet 12.
- For details of Pressure Relief Joint and 6" Shallow Pipe Underdrains See Standard Construction Drawings Bp-10 & Bp-11. Proposed overlay to match existing pavement at southern edge of Pressure Relief Joint, Type C.

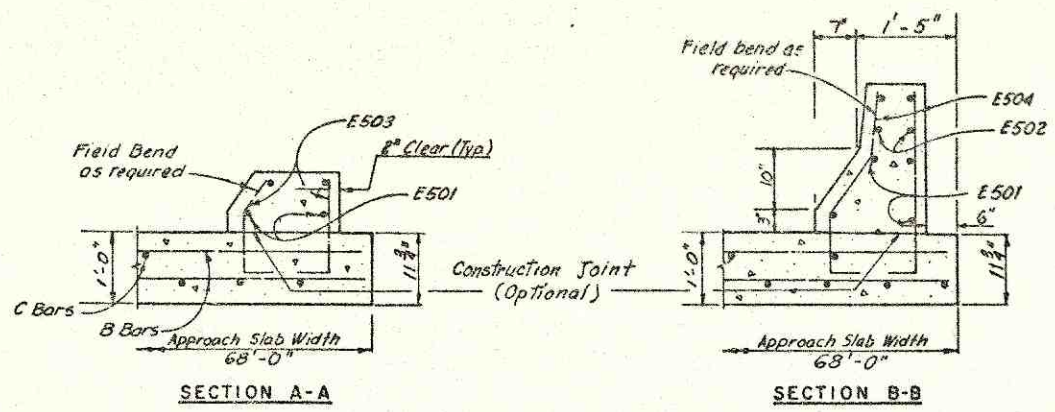




PLAN

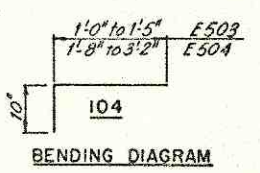


ELEVATION



Note:
For additional details of Approach Slabs,
see Ohio Standard Drawing AS-1-72

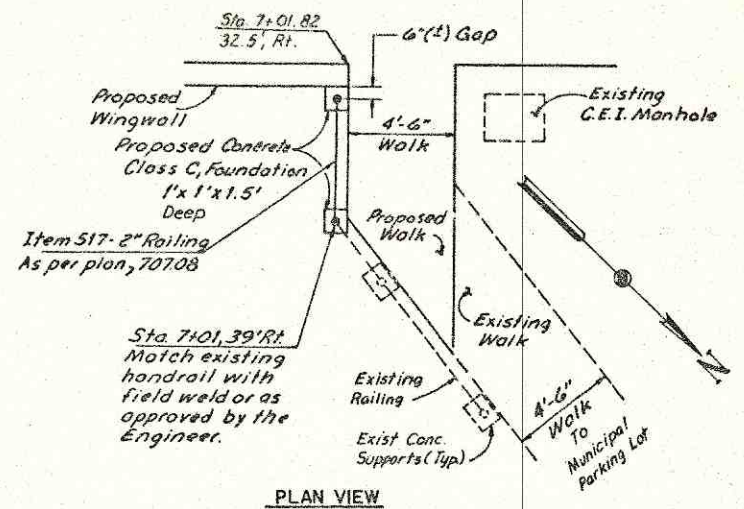
REINFORCING STEEL # - CURB AREA (FOR ONE APPROACH SLAB)					
MARK	NO REQ'D	LENGTH	TYPE	SER. INC.	
E501	8	14'-6"	5Tr.		
E502	8	10'-6"	5Tr.		
E503	4 Ser. 3	1'-9"	10A	2 1/2"	
E504	4 Ser. 8	2'-5"	10A	2 1/2"	



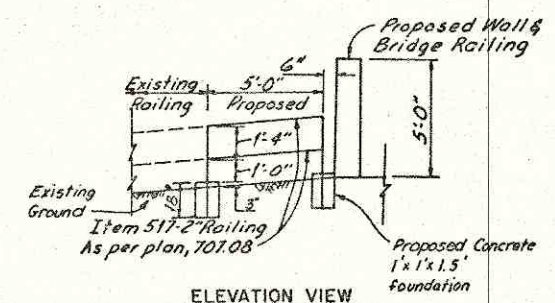
* For Information Only

APPROACH SLAB CONCRETE BARRIER CURB DETAILS

CUYAHOGA COUNTY
EAST NINTH STREET



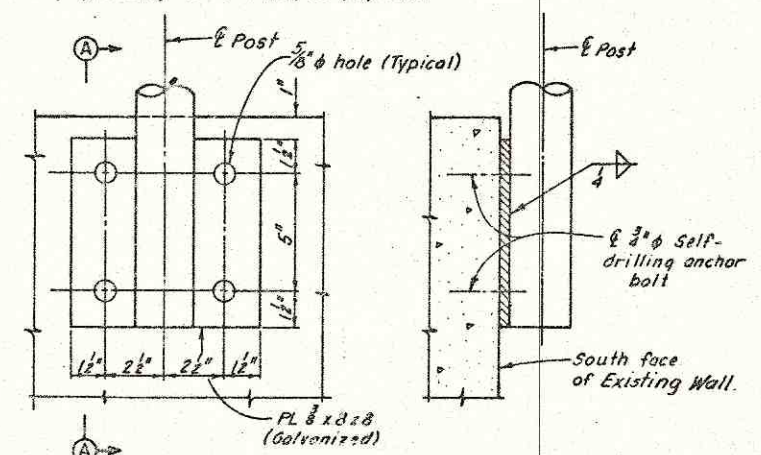
PLAN VIEW



ELEVATION VIEW
Looking South

RAILING DETAIL

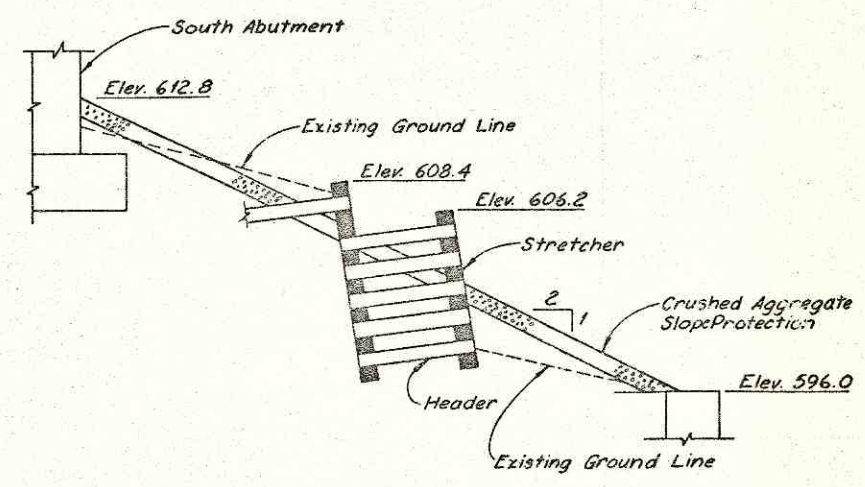
Note:
Galvanizing shall be in accordance
with 71102 and included with Item 607,
Fence, Type CLT, As Per Plan, for payment.



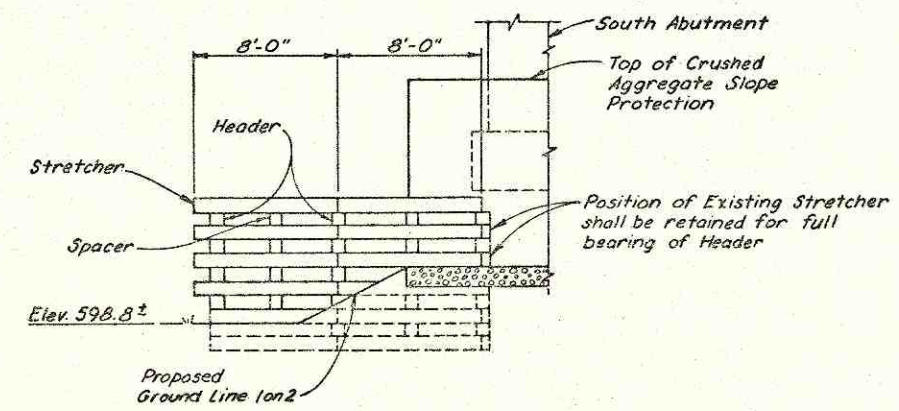
ELEVATION

SECTION A-A

FENCE POST ATTACHMENT DETAIL



SECTION A-A



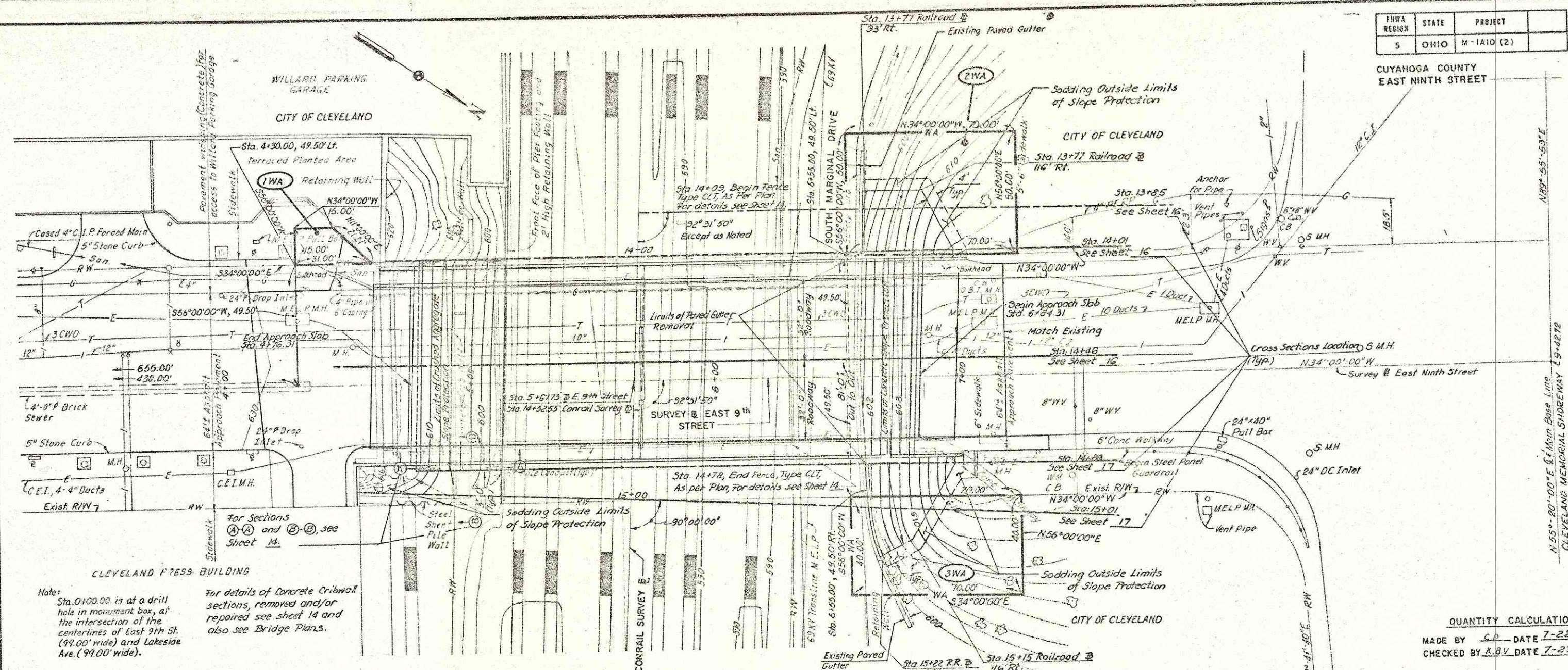
SECTION B-B

(Back face of crib wall not shown)

CRIBWALL REPAIR DETAILS

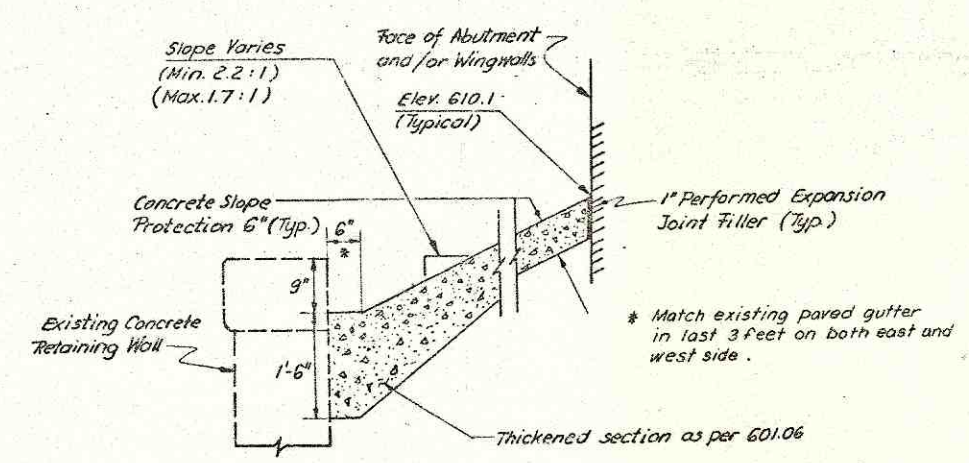
For locations of above cribwall
sections see sheet 15

CUYAHOGA COUNTY
EAST NINTH STREET



Note: Sta. 0+100.00 is at a drill hole in monument box, at the intersection of the centerlines of East 9th St. (99.00' wide) and Lakeside Ave. (99.00' wide).

For details of Concrete Cribwall sections, removed and/or repaired see sheet 14 and also see Bridge Plans.



CONCRETE SLOPE PROTECTION AT WALL
Scale 3/4" = 1'-0"
Sta. 13+77 @ Conrail to Sta. 15+22 @ Conrail (Looking West)

Note: Existing 4" pipe in 6" casing to be removed within limits of structure and bulkheaded at approximately Sta. 4+43 and Sta. 6+95, left. See Sheet 30 for location of the pipe on structure. Bulkhead to be constructed in substantial conformance to the detail for *Plugging Abandoned Temporary Watermain* shown on sheet 20. All labor and material necessary to remove the pipe and place the bulkheads shall be included in the cost of Item 202 - Portions of Structures Removed.

STATION FROM	STATION TO	SIDE	LENGTH LIN. FT.
13+77	15+27	Lt.	150
TOTAL			150

101 x 9 x 100	= 0.05 Tons
1000 x 2000	

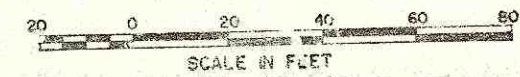
101 x 9 x 20	= 0.01 Tons
1000 x 2000	

STATION FROM	STATION TO	SIDE	AREA SQ. YD.	REMARK
13+73	14+01	Lt.	25*	Planimeter
14+88	15+01	Rt.	50	Planimeter
14+88	15+31	Lt.	26*	Planimeter
TOTAL			101	

STATION FROM	STATION TO	SIDE	LENGTH LIN. FT.
14+09	14+78	Lt.	69
TOTAL			69

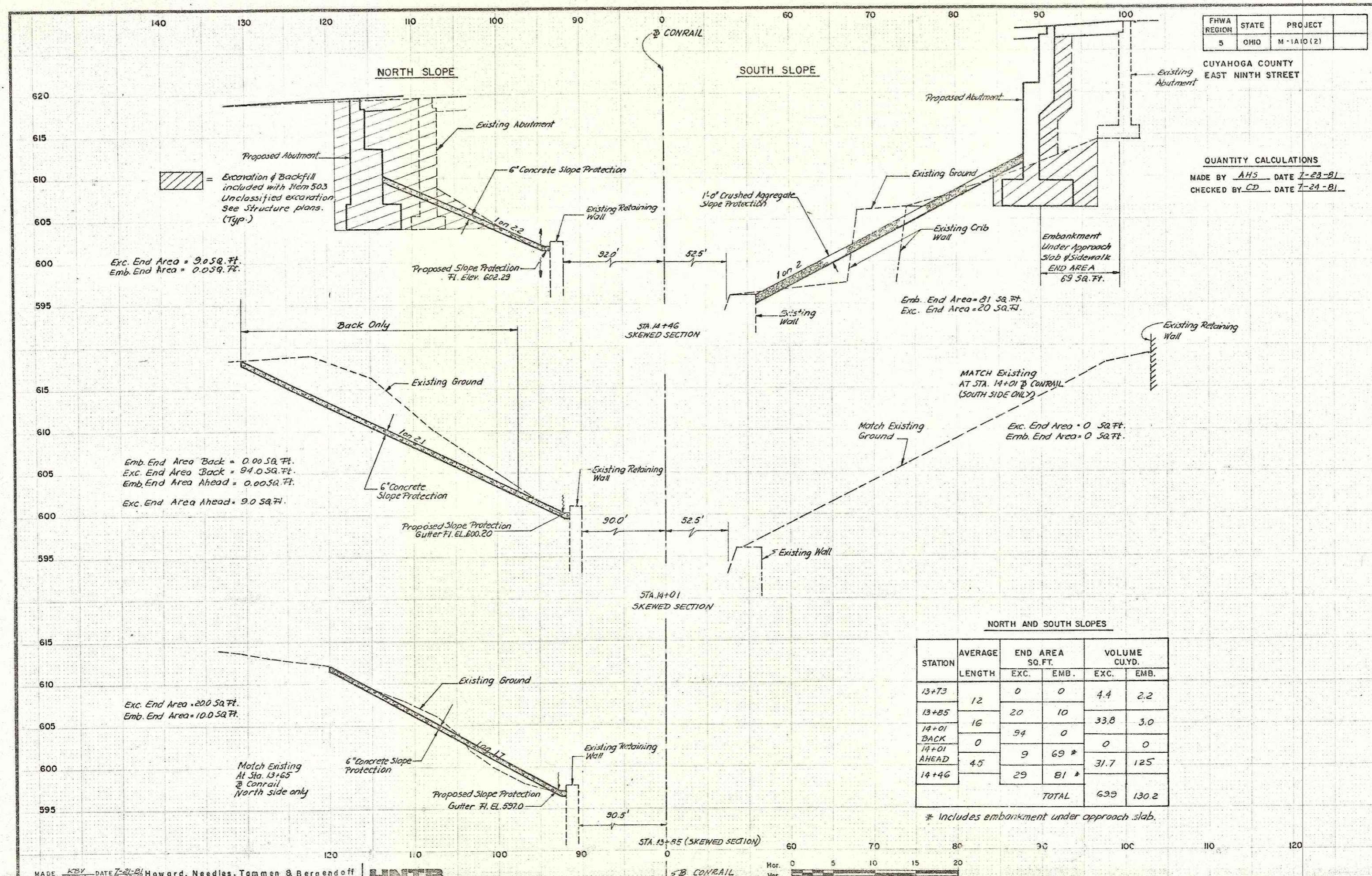
PARCEL NO.	OWNER	GROSS TAKE SQ. FT.	REMARKS
1 WA	City of Cleveland	352	Replace Existing Sidewalk
2 WA	City of Cleveland	3500	Regrade Existing Slope
3 WA	City of Cleveland	2800	Regrade Existing Slope

* Sodding required to match existing grass area adjacent to Item 601 Concrete Slope Protection.



CUYAHOGA COUNTY
EAST NINTH STREET

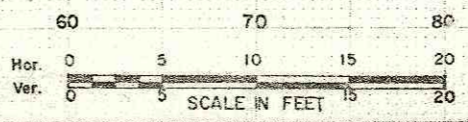
QUANTITY CALCULATIONS
MADE BY AHS DATE 7-23-81
CHECKED BY CD DATE 7-24-81



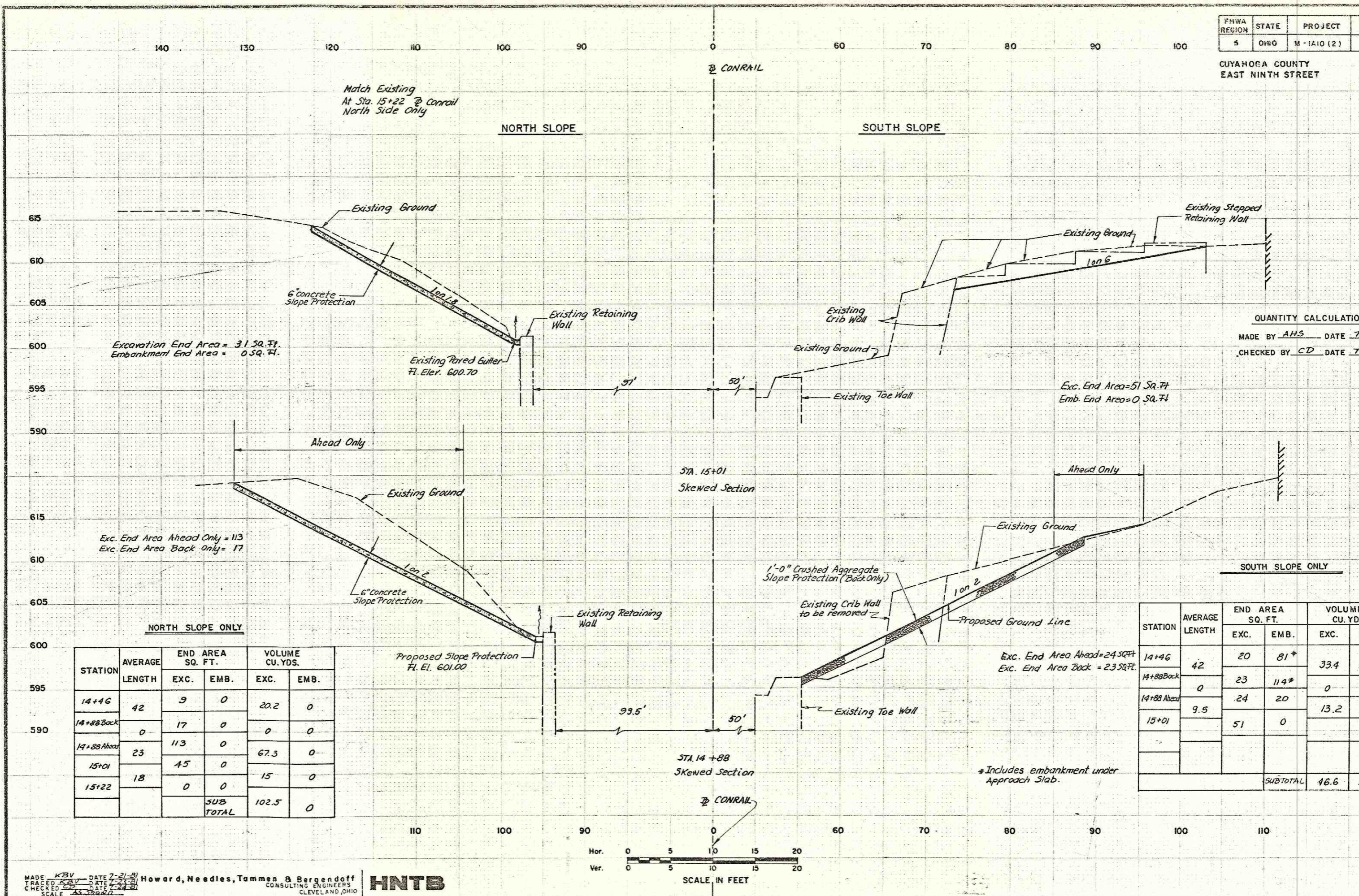
NORTH AND SOUTH SLOPES

STATION	AVERAGE LENGTH	END AREA SQ. FT.		VOLUME CU. YD.	
		EXC.	EMB.	EXC.	EMB.
13+73	12	0	0	4.4	2.2
13+85	16	20	10	33.8	3.0
14+01 BACK	0	94	0	0	0
14+01 AHEAD	4.5	9	69 *	31.7	125
14+46		29	81 *		
TOTAL				69.9	130.2

* Includes embankment under approach slab.



CUYAHOGA COUNTY
EAST NINTH STREET



QUANTITY CALCULATIONS
 MADE BY AHS DATE 7-23-81
 CHECKED BY CD DATE 7-24-81

Exc. End Area Ahead Only = 113
 Exc. End Area Back Only = 17

Excavation End Area = 31 SQ. FT.
 Embankment End Area = 0 SQ. FT.

Exc. End Area = 51 SQ. FT.
 Emb. End Area = 0 SQ. FT.

Exc. End Area Ahead = 24.5 SQ. FT.
 Exc. End Area Back = 23.5 SQ. FT.

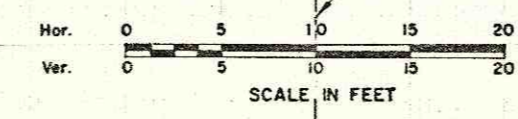
NORTH SLOPE ONLY

STATION	AVERAGE LENGTH	END AREA SQ. FT.		VOLUME CU. YDS.	
		EXC.	EMB.	EXC.	EMB.
14+46	42	9	0	20.2	0
14+88 Back	0	17	0	0	0
14+88 Ahead	23	113	0	67.3	0
15+01	18	45	0	15	0
15+22		0	0		
				SUB TOTAL	0
				102.5	

SOUTH SLOPE ONLY

STATION	AVERAGE LENGTH	END AREA SQ. FT.		VOLUME CU. YDS.	
		EXC.	EMB.	EXC.	EMB.
14+46	42	20	81*	33.4	151.7
14+88 Back	0	23	114*	0	0
14+88 Ahead	9.5	24	20	13.2	3.5
15+01		51	0		
				SUBTOTAL	155.2
				46.6	

*Includes embankment under Approach Slab.

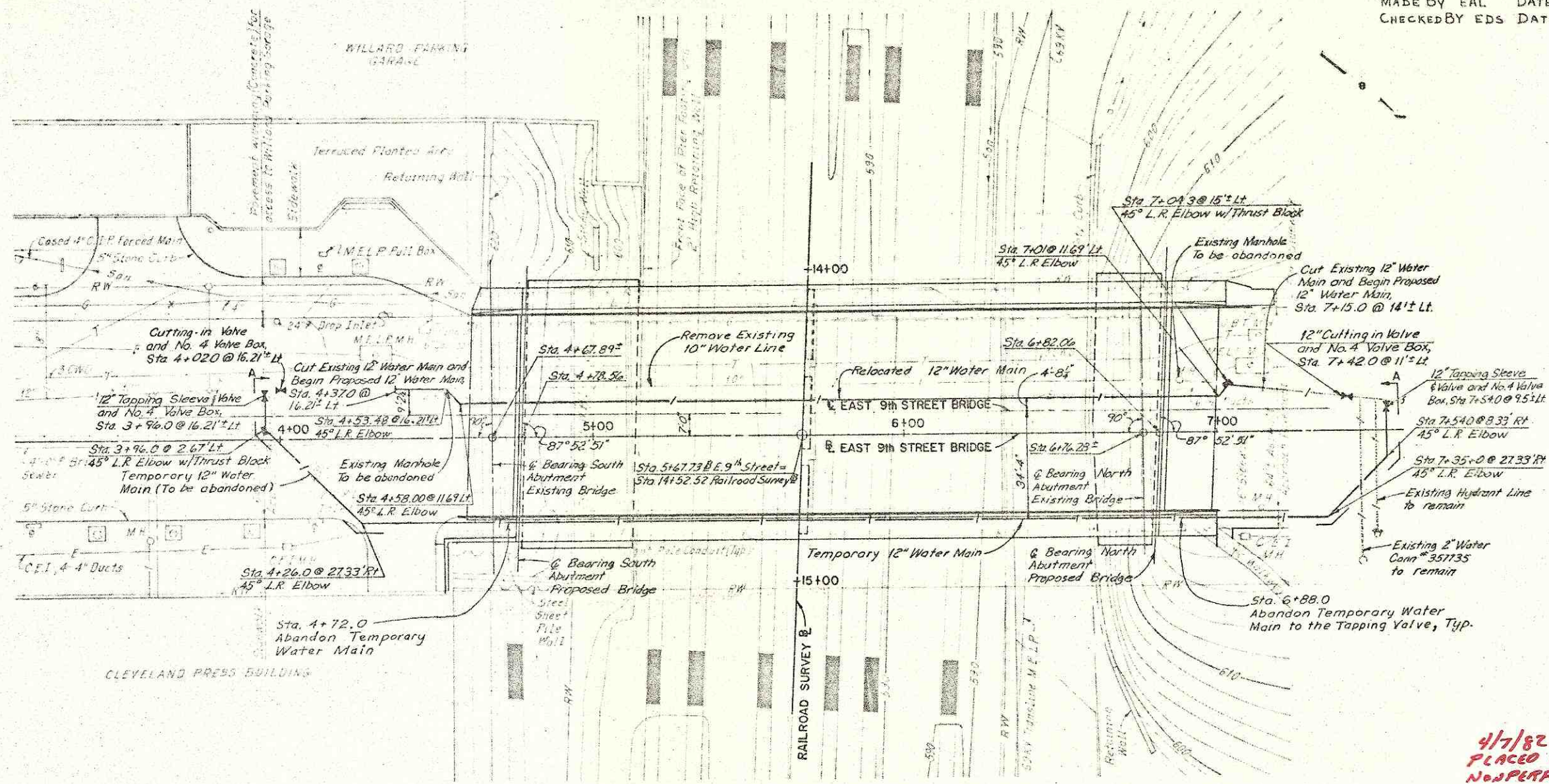


QUANTITY CALCULATIONS
MADE BY EAL DATE 11-3-81
CHECKED BY EDS DATE 11-17-81

FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10 (2)

18
62

CUYAHOGA COUNTY
EAST NINTH STREET



PLAN
Scale: 1"=20'

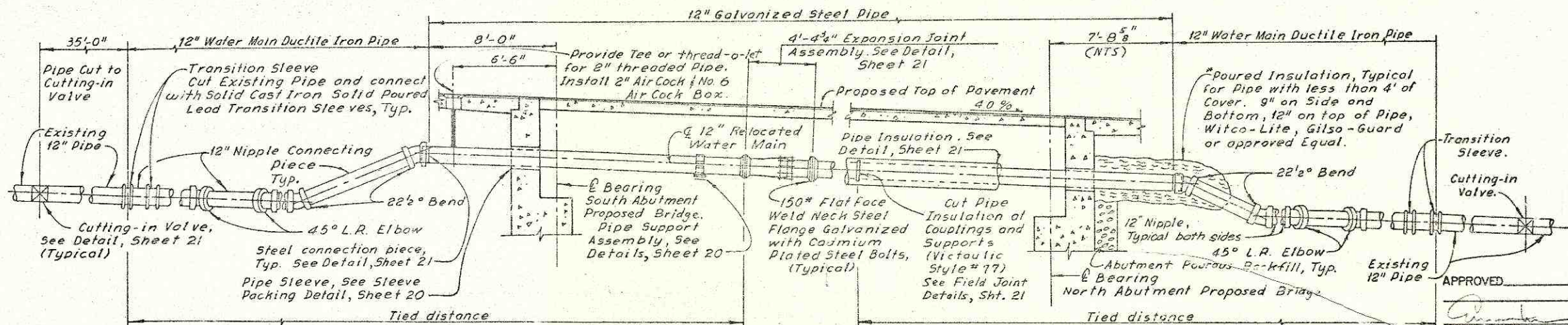
NOTES

- THE CONTRACTOR SHALL NOTIFY THE UTILITIES PROTECTION SERVICE AT LEAST TWO DAYS PRIOR TO EXCAVATION. TELEPHONE 1-800-362-2764
- THE CONTRACTOR SHALL NOTIFY THE DIVISION OF LIGHT AND POWER (MELP) CITY OF CLEVELAND AT LEAST TWO DAYS PRIOR TO EXCAVATION. TELEPHONE 651-0700
- THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND DEPTH OF EXISTING UNDERGROUND UTILITIES, EXISTING WATER MAINS, AND THE EXISTING HYDRANT AND WATER SERVICE LINES AT THE NORTH END OF THE BRIDGE.
- TEMPORARY AND RELOCATED WATER MAINS SHALL BE INSTALLED AT A MINIMUM 6-FT-0-IN. COVER BELOW ESTABLISHED GRADE, EXCEPT WHERE CROSSING THE BRIDGE. DEPTH OF INSTALLATION SHALL BE INCREASED AS REQUIRED TO CLEAR OBSTRUCTIONS AND TO TIE-IN WITH EXISTING WATER MAINS.
- AT WATER MANHOLE - STA. 4+55+, EXISTING WATER MAIN PIPE COVER IS 7.6-FT. AT WATER MANHOLE - STA. 6+89+, EXISTING WATER MAIN PIPE COVER IS 8.6-FT.
- FOR LOCATION OF MELP WORK, SEE SHEET 42.
- SECTION A-A SHOWN ON SHEET 19.
- SEE SHEET 25 FOR WATERWORK CONSTRUCTION SEQUENCE.

TYPE CODE Y060

ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QTY.	UNIT
SPECIAL	12" TEMPORARY WATER MAIN DUCTILE IRON PIPE A.S.T.M. CLASS 57, CEMENT LINED	185	L.F.
SPECIAL	TAPPING SLEEVE AND VALVE, COMPLETE	2	EACH
SPECIAL	CUTTING-IN-VALVE, COMPLETE	2	EACH
SPECIAL	2" AIR COCK AND BOX, COMPLETE	2	EACH
SPECIAL	PLUGGING EXISTING WATER MAINS AND TAPPING VALVES	4	EACH
SPECIAL	PLUGGING ABANDONED TEMPORARY WATER MAIN	1	EACH
SPECIAL	12" RELOCATED WATER MAIN DUCTILE IRON PIPE A.S.T.M. CLASS 57, CEMENT LINED	65	L.F.
SPECIAL	12" TEMPORARY WATER MAIN GALVANIZED STEEL PIPE A.S.T.M. A-53, GRADE B	230	L.F.
SPECIAL	12" RELOCATED WATER MAIN GALVANIZED STEEL PIPE A.S.T.M. A-53, GRADE B	220	L.F.

4/7/82
PLACED BY CLEV.
NO PERFORM.



PROFILE OF 12" RELOCATED WATER MAIN
Scale: 1/4"=1'-0"

*Witco-Lite by the Pioneer Division of Witco Chemical, Gilso-Guard by the American Gilsonite Company, or approved equal. Include in Price Bid "Item Special" Temporary and Relocated Water Mains.

APPROVED _____ DATE Dec 2, 1981
DIRECTOR OF PUBLIC UTILITIES
ENGINEER OF WATER AND HEAT
ENGINEER OF DESIGN REVIEW

B-2478

LOW SERVICE DISTRICT

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND HNTB

WATER PLAN
EAST 9th STREET OVER CONRAIL
CITY OF CLEVELAND BR. N. 1:013

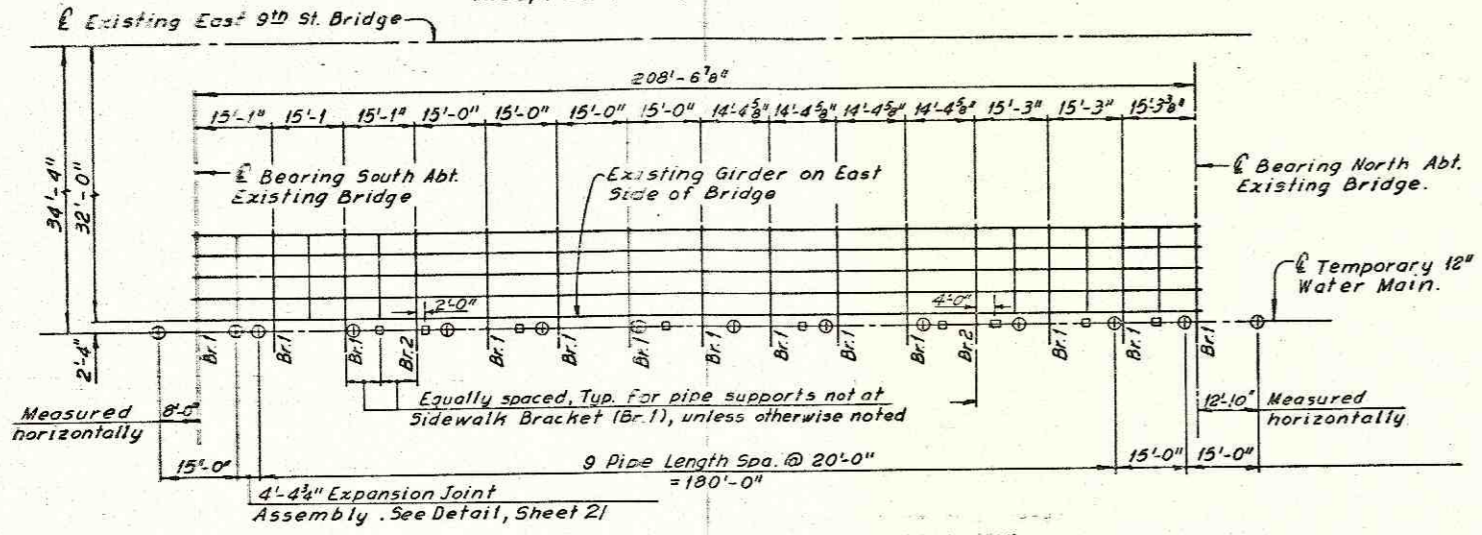
SCALE: AS SHOWN

DRAWN E.D.S. DATE 8-11-81	TRACED E.A.L. DATE 8-12-81	CHECKED J.M.M. DATE 11/20/81	REVIEWED F.A.M. DATE 11/23/81	REVISED
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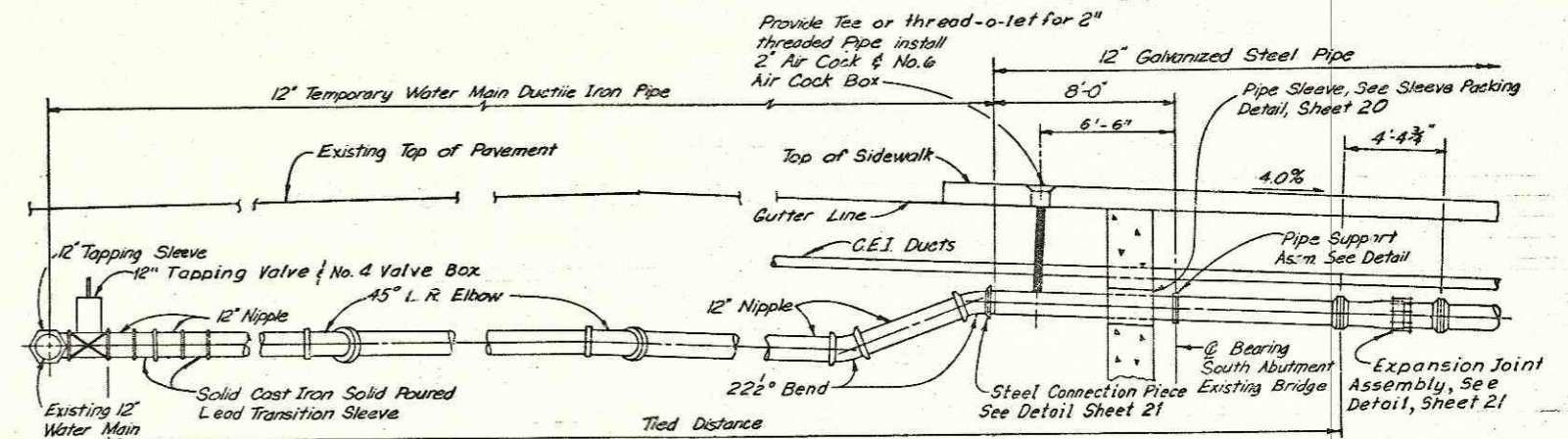
CLEVELAND CUYAHOGA COUNTY GRID
SHEET 1 / 4

CUYAHOGA COUNTY
EAST NINTH STREET

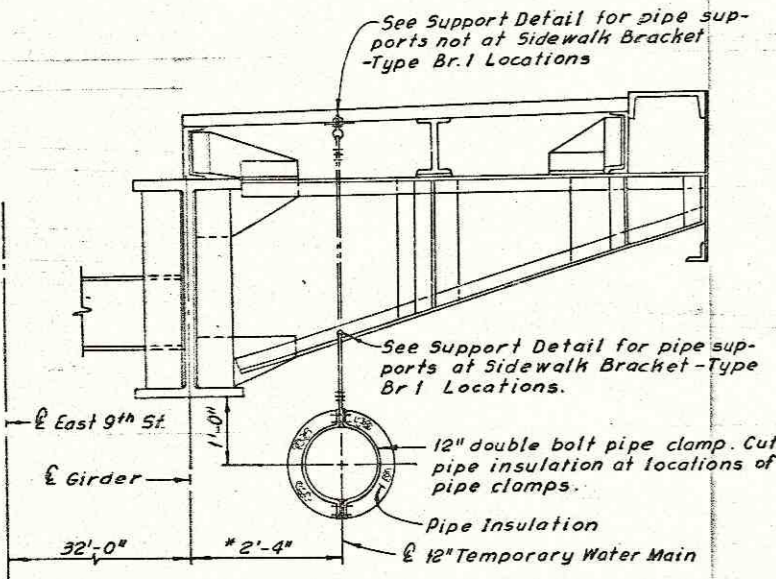
Notes:
 Each Sidewalk Bracket Type Br.1 has a Water Main Support.
 — denotes Location of other Supports.
 ⊕ denotes End of Pipe.
 All longitudinal dimension are give along \bar{E} 12" Pipe, except as noted.



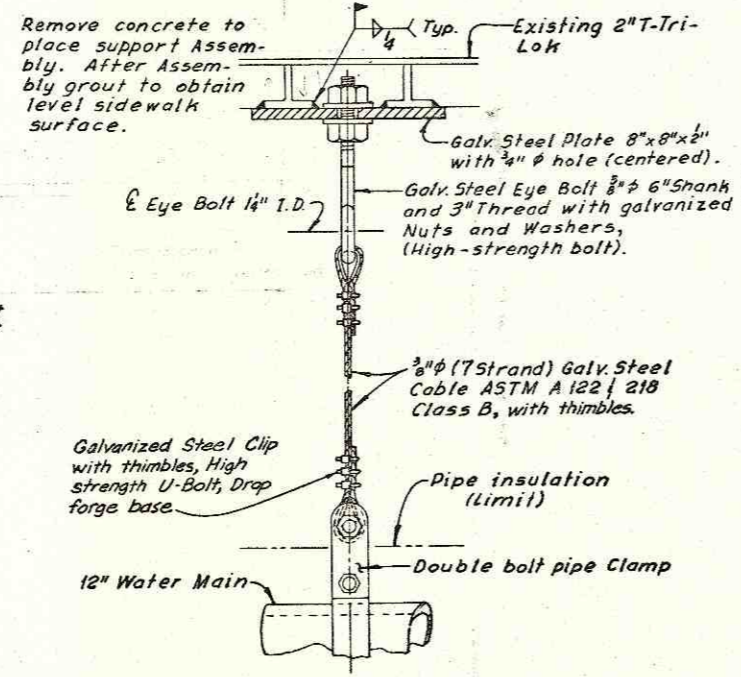
TEMPORARY WATER MAIN
SUPPORT LOCATIONS AND PIPE LAYOUT



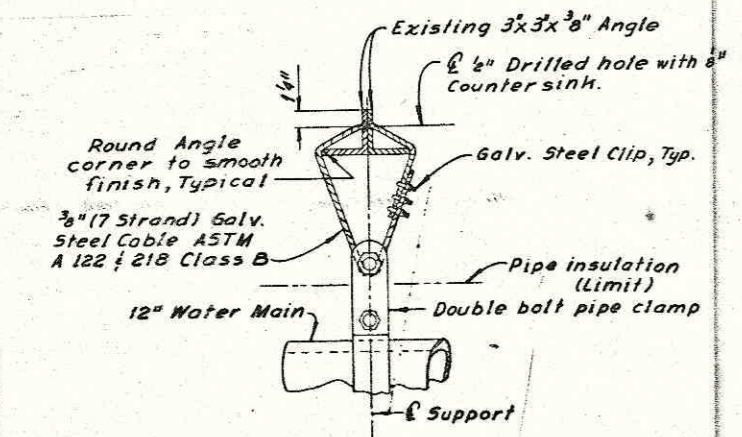
Note: For additional notes and details, refer to Profile of 12" Relocated Water Main.



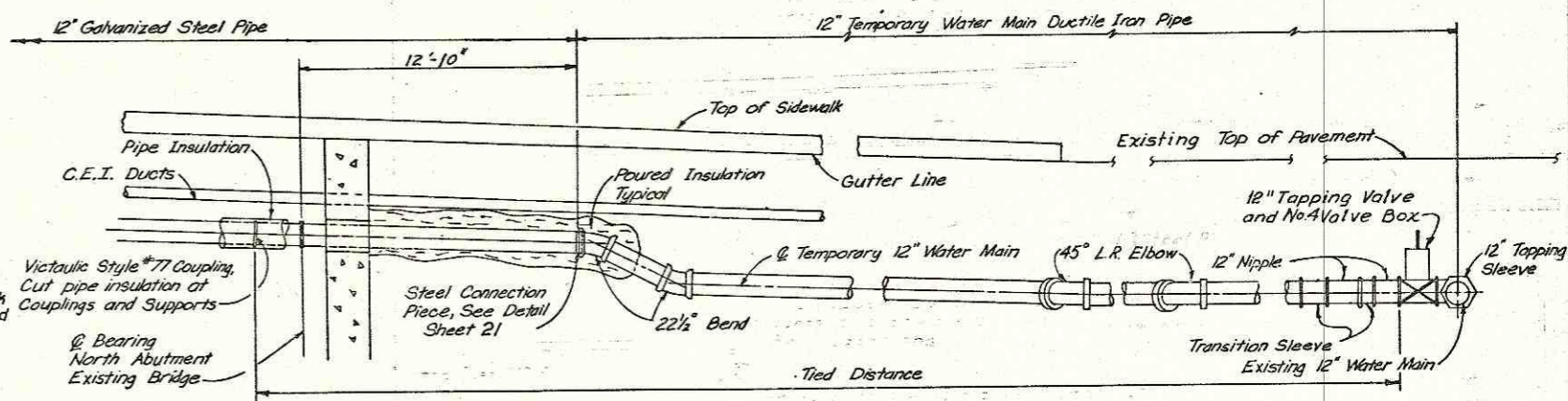
TEMPORARY 12" WATER MAIN SUPPORT



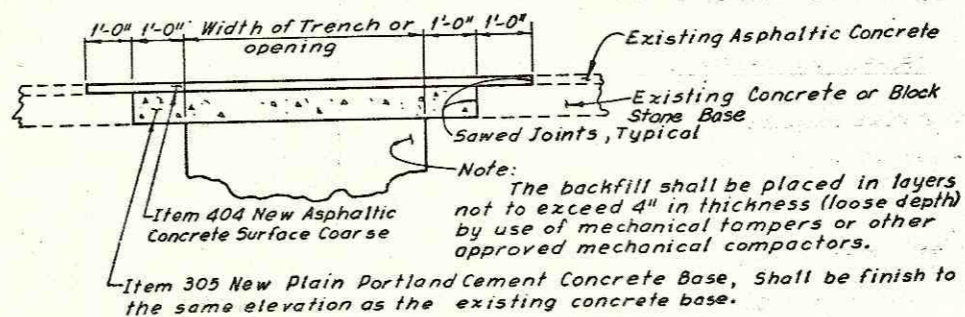
TEMPORARY 12" WATER MAIN
SUPPORT DETAIL
(At other Locations)



TEMPORARY 12" WATER MAIN
SUPPORT DETAIL
(At Sidewalk Bracket, Type Br.1)



12" TEMPORARY WATER MAIN
SECTION A-A



PAVEMENT REPAIR DETAIL

Notes:
 This Standard is applicable to existing concrete pavement or existing pavement with concrete base surfaced with asphalt.
 Existing joints shall be preserved or restored.

APPROVED _____ DATE Dec 2, 1981

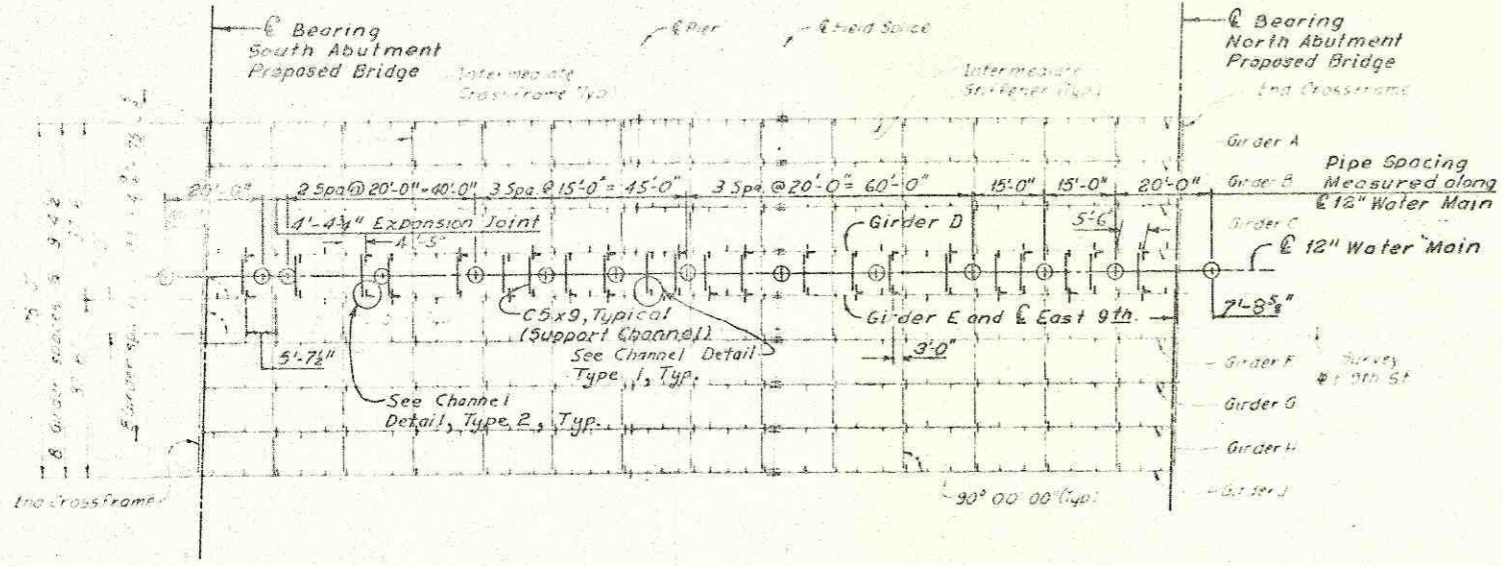
William J. ...
ENGINEER OF DESIGN REVIEW

B-2478-A

LOW SERVICE DISTRICT			
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			
HNTB			
WATERWORK DETAILS			
EAST 9th STREET OVER CONRAIL			
CITY OF CLEVELAND BR. NO. 1:013			
SCALE: AS SHOWN			
CLEVELAND CUYAHOGA COUNTY OHIO			
DRAWN E.D.S. DATE: 12-2-81	TRACED E.A.L. DATE: 12-15-81	CHECKED J.H.M. DATE: 11-20-81	REVIEWED F.A.M. DATE: 11-23-81
			SHEET 2 / 4

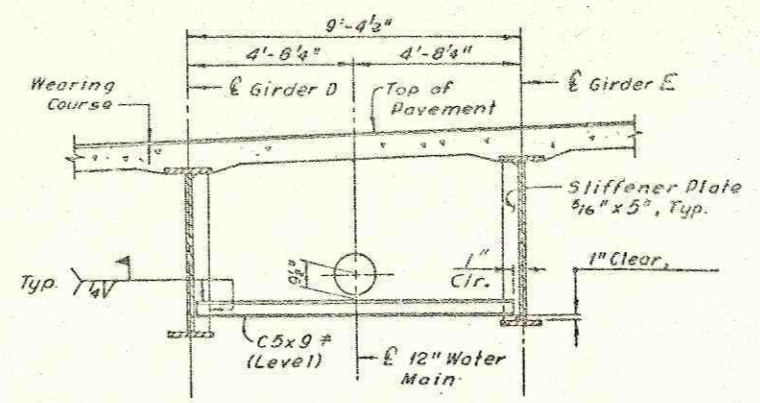
FHWA REGION	STATE	PROJECT	20 62
5	OHIO	M-1A10 (2)	

CUYAHOGA COUNTY
EAST NINTH STREET



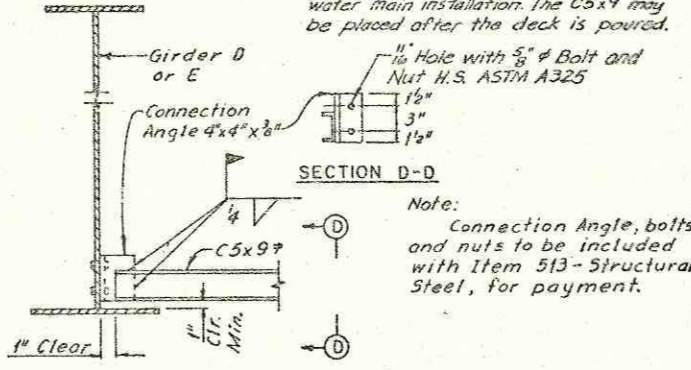
SUPPORT CHANNEL LOCATION AND PIPE LAYOUT
Scale: 1" = 20'-0"

Note: All dimension given horizontally except as noted.
⊙ denotes End of Pipe



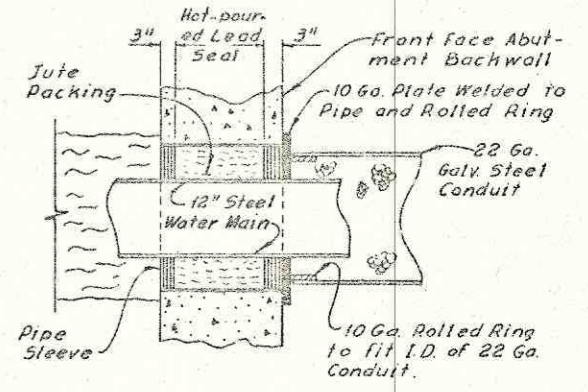
CHANNEL DETAIL TYPE 1
(Crossframes not shown)
Scale: 3/8" = 1'-0"

* Coordinate placement of C5x9 with water main installation. The C5x9 may be placed after the deck is poured.

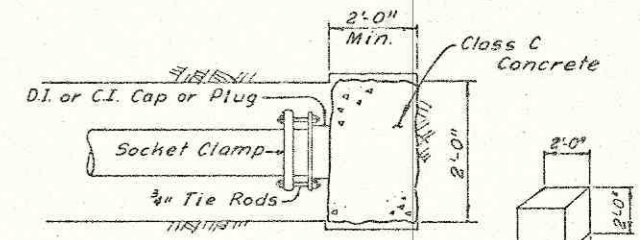


CHANNEL DETAIL - TYPE 2
(Crossframe not shown)
No Scale

Note: Connection Angle, bolts and nuts to be included with Item 513 - Structural Steel, for payment.



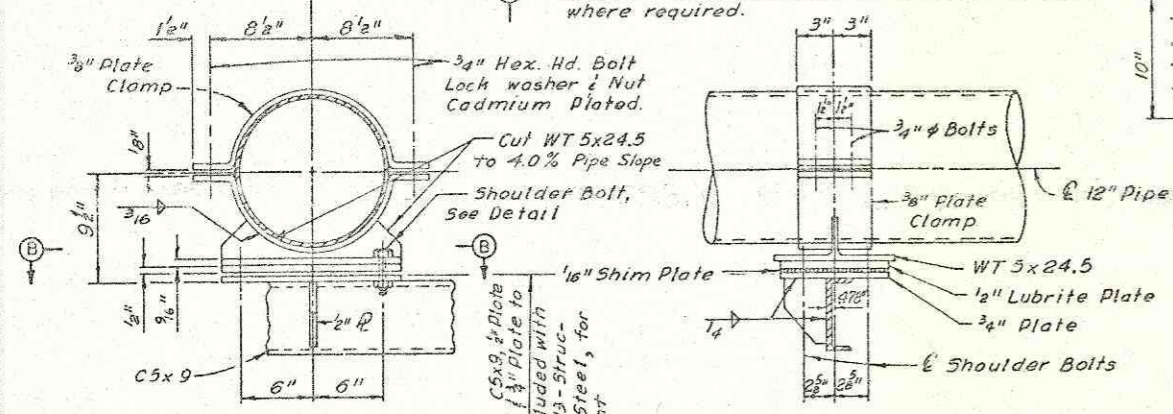
SLEEVE PACKING DETAIL
No Scale



PLUGGING EXISTING WATER MAIN AND TAPPING VALVE
No Scale

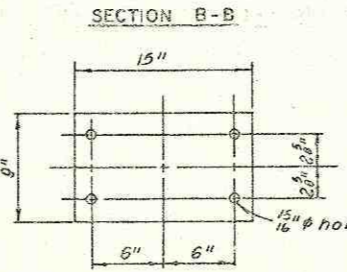
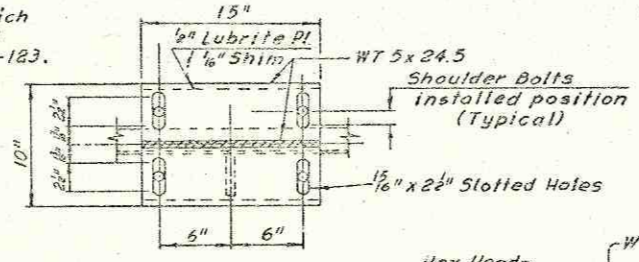
Note: Insulation @ Water Main Supports is not shown, see sheet 21 for field joint details.

Note: Except for bolts, lock washers and nuts which are Cadmium plated entire assembly, including shims, is to be hot dipped galvanized, ASTM A-123. Shims to be installed (or deleted) in field where required.



TYPICAL SECTION AT SUPPORTS

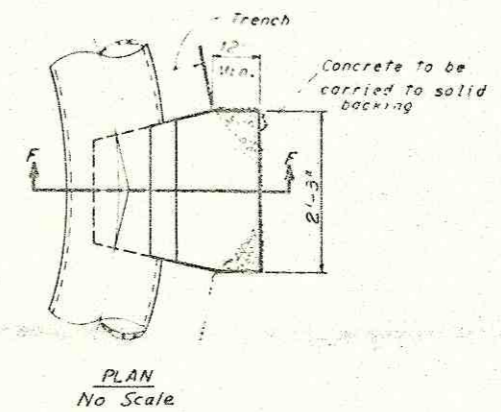
PART SECTION A-A



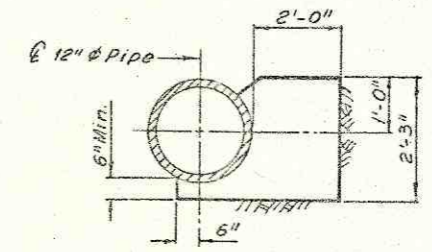
1/2" LUBRITE PLATE AND 1/16" SHIM PLATE (STEEL)

CADMIUM PLATED SHOULDER BOLT DETAIL

RELOCATED WATER MAIN SUPPORT DETAILS
No Scale

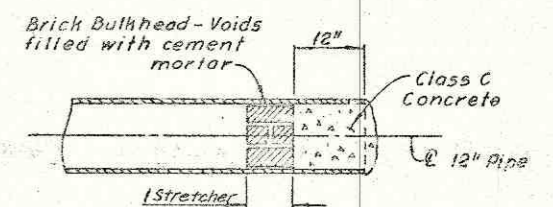


PLAN
No Scale



SECTION F-F
No Scale

THRUST BLOCK DETAILS



PLUGGING ABANDONED TEMPORARY WATER MAIN
No Scale

APPROVED _____ DATE Dec 2, 1981
ENGINEER OF DESIGN REVIEW

B-2478B

LOW SERVICE DISTRICT
HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

WATERWORK DETAILS
EAST 9TH STREET OVER CONRAIL
CITY OF CLEVELAND BR. NO. 1:013

SCALE: AS SHOWN
CLEVELAND CUYAHOGA COUNTY OHIO

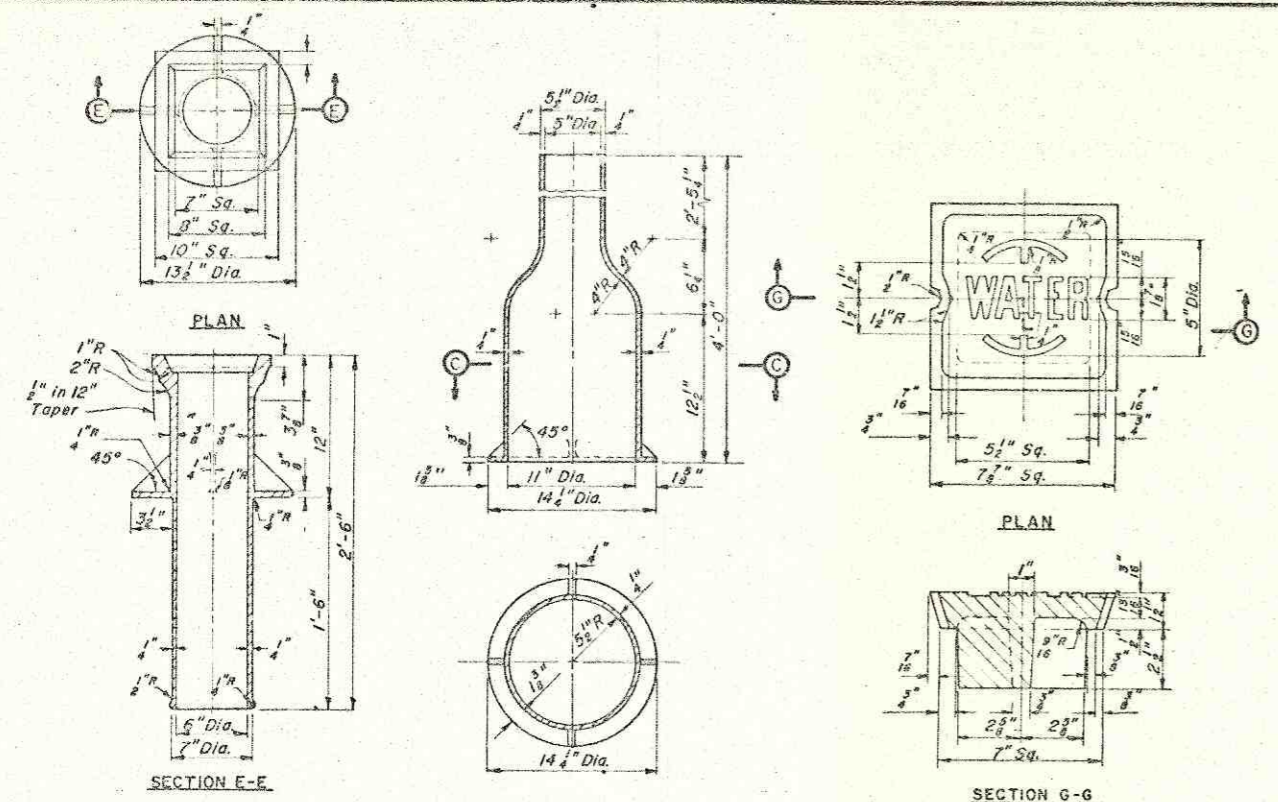
DESIGNED EDS	CHECKED CAL	DATE 0-18-81	REVIEWED J.M.M.	DATE 11-20-81	DATE 11-23-81
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SHEET 3 4

FHWA REGION	STATE	PROJECT	
5	OHIO	M-1A10 (2)	

21
62

CUYAHOGA COUNTY
EAST NINTH STREET

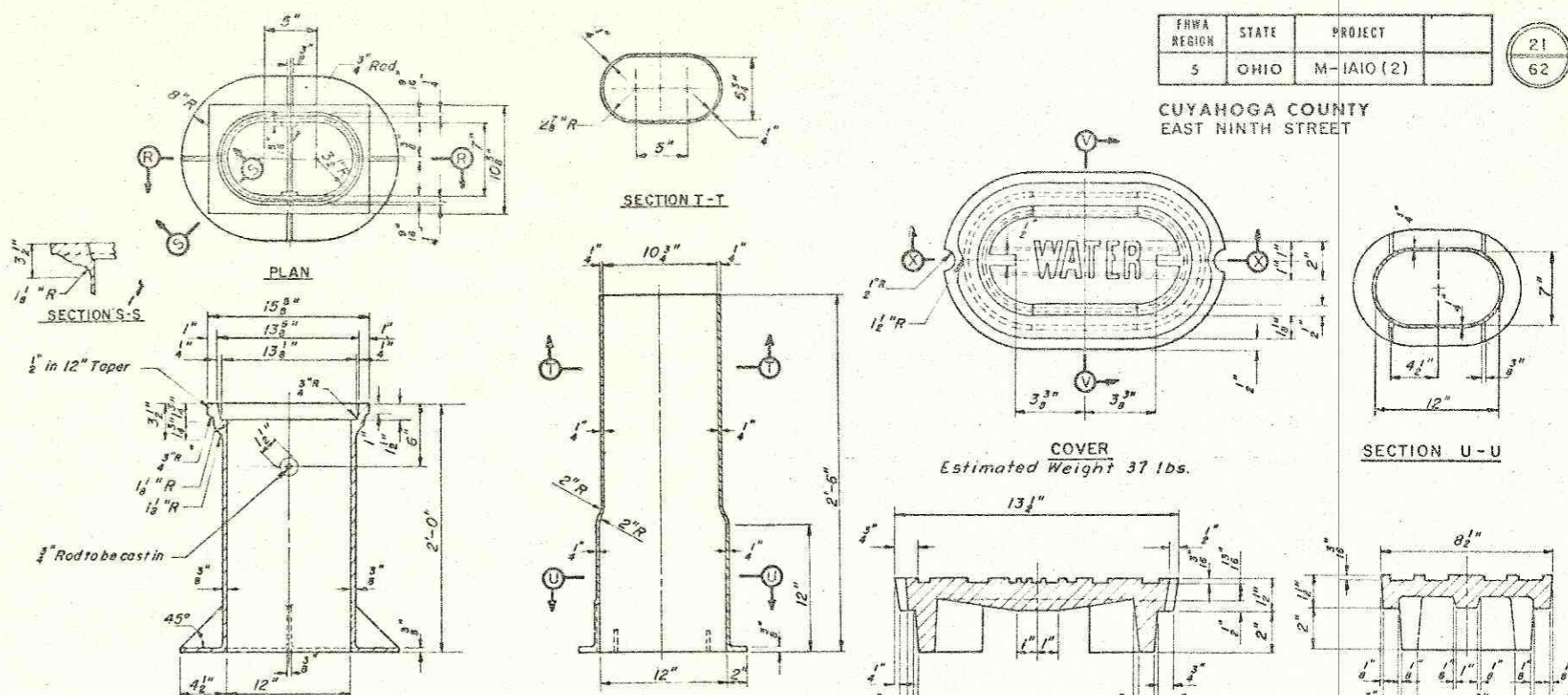


TOP WITH SQUARE HEAD No. 4
Estimated Weight 85 lbs.

BASE No. 4
Estimated Weight 79 lbs.

SQUARE COVER FOR No. 4 TOP
Estimated Weight 23 lbs.

STANDARD DETAILS - VALVE BOX No. 4

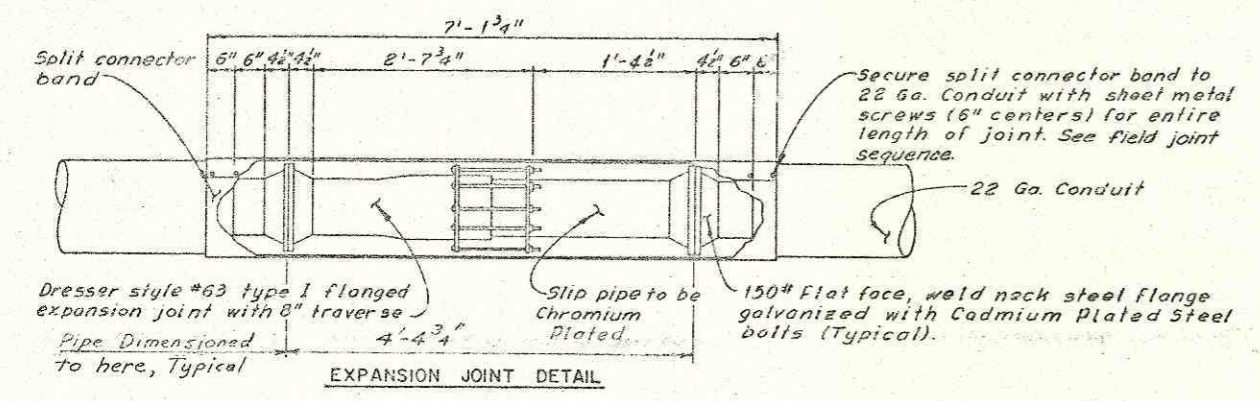


TOP
Estimated Weight 120 lbs.

BASE
Estimated Weight 70 lbs.

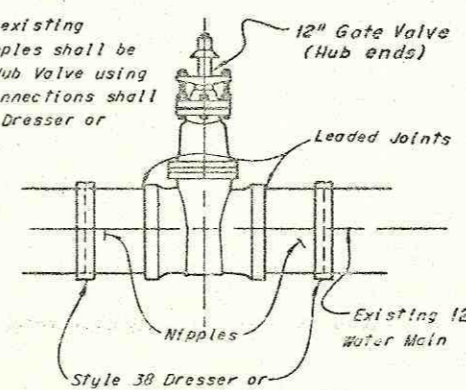
COVER
Estimated Weight 37 lbs.

STANDARD DETAILS - AIR COCK BOX No. 6

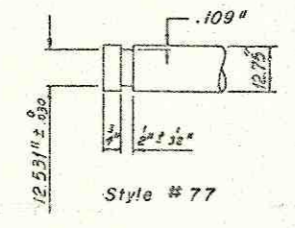


EXPANSION JOINT DETAIL

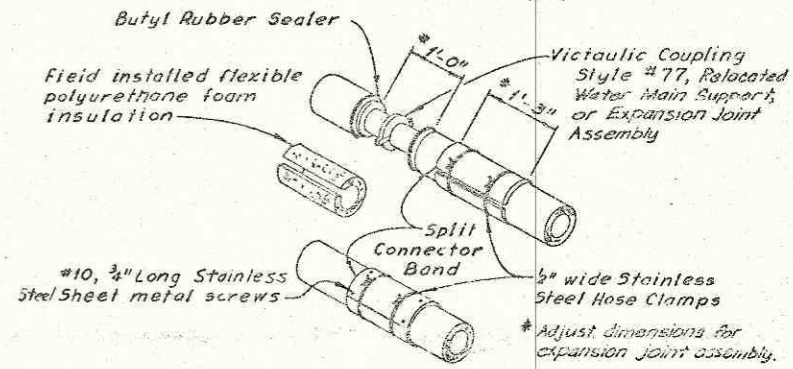
Note: Before cutting existing Water Main the two nipples shall be connected to the 12 inch Hub Valve using lead joints. Final connections shall be made with Style 38 Dresser or Rockwell Couplings.



DETAIL OF CUTTING-IN VALVE

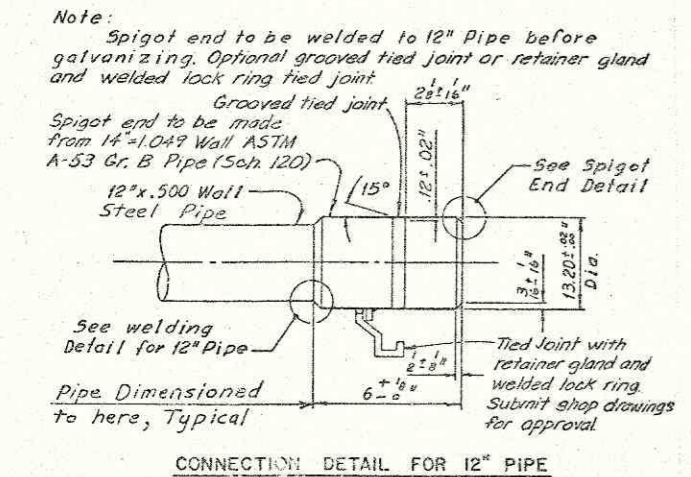


VICTAULIC GROOVING DETAIL FOR 12" PIPE

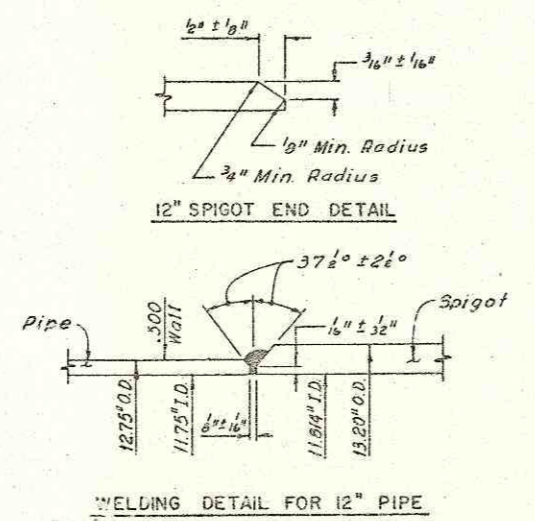


- FIELD JOINT SEQUENCE
- 1.) Slide split connector band on to unit. Make joint and test.
 - 2.) Wrap Flexible Polyurethane foam around expose pipe and coupling and tape into place.
 - 3.) Apply Butyl Rubber Sealer to both sides of joint.
 - 4.) Center split connector band over joint and draw down tight with hose clamps. Secure Split Connector Band to jacket with Sheet metal screws (4 screws per end).

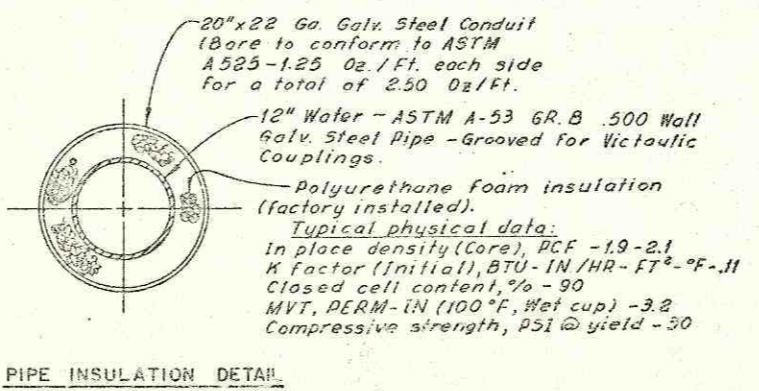
FIELD JOINT DETAILS



CONNECTION DETAIL FOR 12" PIPE



WELDING DETAIL FOR 12" PIPE



PIPE INSULATION DETAIL

MISCELLANEOUS DETAILS
No Scale

APPROVED: _____ DATE Dec 2, 1981

ENGINEER OF DESIGN REVIEW

B-2478-C

LOW SERVICE DISTRICT

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND HNTB

WATERWORK DETAILS

EAST 9th STREET OVER CONRAIL

CITY OF CLEVELAND BR. NO. 1-013

SCALE: AS SHOWN

CLEVELAND CUYAHOGA COUNTY OHIO

DATE: 12/2/81

SHEET 4/4

WATERWORK NOTES

FHWA REGION	STATE	PROJECT	
5	OHIO	M-1A10 (2)	

22
62

CUYAHOGA COUNTY
EAST NINTH STREET

GENERAL

SCOPE OF WORK

- (A) THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, AND SUPERVISION NECESSARY TO COMPLETE THE WATERWORK AS SPECIFIED HEREIN, AS SHOWN ON THE PLANS OR AS REQUIRED. THE WORK SHALL INCLUDE THE FURNISHING, INSTALLING, TESTING AND PLACING INTO SERVICE, DUCTILE IRON AND STEEL TEMPORARY AND RELOCATED WATER MAINS WITH ALL APPURTENANCES NECESSARY FOR OR INCIDENTAL TO COMPLETION OF THE WORK;

STANDARDS AND SPECIFICATIONS

- (A) ALL STANDARDS AND SPECIFICATIONS REFERENCED HEREIN APPLY TO THE MOST RECENT EDITION, UNLESS NOTED OTHERWISE.

WORK TO BE DONE BY THE CITY OF CLEVELAND

- (A) THE CLEVELAND WATER DEPARTMENT WILL INSTALL ALL BRANCH SLEEVES AND VALVES, BUT THE CONTRACTOR SHALL SUPPLY THE BRANCH SLEEVES AND VALVE LEAD, AND DO ALL THE NECESSARY EXCAVATION, BACKFILLING AND REPAVING REQUIRED THEREFORE, THE CONTRACTOR SHALL FURNISH ALL AIR COMPRESSORS REQUIRED FOR THE WORK.

THESE SPECIFICATIONS REQUIRE THE CITY OF CLEVELAND DIVISION OF WATER TO PERFORM CERTAIN DEFINED WORK, UNLESS SPECIFICALLY STATED OTHERWISE, ALL MATERIAL WILL BE FURNISHED BY THE CONTRACTOR, ALTHOUGH THE CITY MAY DO THE ACTUAL WORK OR INSTALLATION. THE CONTRACTOR IS TO INCLUDE THE MATERIAL IN THE APPROPRIATE BID ITEM. THE LABOR, TOOLS, EQUIPMENT, AND INCIDENTALS FURNISHED BY THE CITY WILL BE AT NO EXPENSE TO THE CONTRACTOR.

EXCAVATION

- (A) THE CONTRACTOR SHALL REMOVE ALL EXISTING STRUCTURES, ROADWAYS, DRIVEWAYS, AND OTHER SIMILAR MATERIALS AND MAKE ALL EXCAVATION NECESSARY FOR THE PROPER CONSTRUCTION OF THE WATER MAIN, PIPE CONNECTIONS AND APPURTENANT STRUCTURES. THE EXCAVATION SHALL INCLUDE THE REMOVAL, HANDLING, REHANDLING AND DISPOSAL OF MATERIALS ENCOUNTERED IN THE WORK AND SHALL INCLUDE ALL PUMPING, BAILING, DRAINING, SHEETING AND BRACING. MOREOVER, THE CONTRACTOR MUST ASSUME ALL RESPONSIBILITY FOR ANY ADDED EXPENSE OR OTHER LIABILITY WHICH MAY ARISE BY MEANS OF QUICKSAND, OBSTACLES OR CONDITIONS FORESEEN OR UNFORESEEN AND ENCOUNTERED IN THE WORK OF THIS CONTRACT.
- (B) TRENCHES SHALL IN EVERY CASE BE OF SUFFICIENT WIDTH TO PERMIT SOLID PACKING OF REFILL UNDER AND AROUND PIPES. SATISFACTORY CONSTRUCTION OF ALL APPURTENANCES AND FOR SUCH SHEETING AND SHORING, PUMPING AND DRAINING AS MAY BE NECESSARY.
- (C) THE TRENCH SHALL BE DUG TO THE ALIGNMENT AND DEPTH REQUIRED AND ONLY SO FAR IN ADVANCE OF PIPE LAYING AS THE ENGINEER SHALL PERMIT. THE TRENCH SHALL BE SO BRACED AND DRAINED THAT WORKMEN MAY WORK THEREIN SAFELY AND EFFICIENTLY. IT IS ESSENTIAL THAT THE DISCHARGE FROM PUMPS BE LED TO NATURAL DRAINAGE CHANNELS, TO DRAINS, OR TO SEWERS.
- (D) THE TRENCH WIDTH MAY VARY WITH AND DEPEND UPON THE DEPTH OF TRENCH AND THE NATURE OF THE EXCAVATED MATERIAL ENCOUNTERED, BUT IN ANY CASE SHALL BE OF AMPLE WIDTH TO PERMIT THE PIPE TO BE LAID AND JOINED PROPERLY AND FOR THE BACKFILL TO BE PLACED AND COMPACTED PROPERLY. THE MINIMUM WIDTH OF UNSHEETED TRENCH SHALL BE EIGHTEEN (18) INCHES. THE MAXIMUM CLEAR WIDTH OF TRENCH SHALL BE NOT MORE THAN TWO (2) FEET GREATER THAN THE OUTSIDE PIPE DIAMETER. WHEN SHEETING AND BRACING IS USED, THE TRENCH WIDTH SHALL BE INCREASED ACCORDINGLY;

- (E) THE TRENCH, UNLESS OTHERWISE SPECIFIED, SHALL HAVE A FLAT BOTTOM CONFORMING TO THE GRADE TO WHICH THE PIPE IS TO BE LAID. THE PIPE SHALL BE LAID UPON SOUND SOIL CUT TRUE AND EVEN, SO THAT THE BARREL OF THE PIPE WILL HAVE A BEARING FOR ITS FULL LENGTH.
- (F) ANY PART OF THE TRENCH EXCAVATED BELOW GRADE SHALL BE CORRECTED WITH APPROVED MATERIAL, THOROUGHLY COMPACTED.
- (G) WHEN THE UNCOVERED TRENCH BOTTOM AT SURGRADE IS SOFT AND IN THE OPINION OF THE ENGINEER CANNOT SUPPORT THE PIPE, A FURTHER DEPTH AND OR WIDTH SHALL BE EXCAVATED AND REFILLED TO PIPE FOUNDATION GRADE AS REQUIRED OR OTHER APPROVED MEANS SHALL BE ADOPTED TO ASSURE A FIRM FOUNDATION FOR THE PIPE.
- (H) LEDGE ROCK, BOULDERS, LARGE STONES, AND SHALE SHALL BE REMOVED TO PROVIDE A CLEARANCE OF AT LEAST SIX (6) INCHES BELOW ALL PARTS OF THE PIPE, VALVES, OR FITTINGS, AND TO A CLEAR WIDTH OF NINE (9) INCHES ON EACH SIDE OF ALL DUCTILE IRON PIPE.
- (I) EXCAVATIONS BELOW SURGRADE IN ROCK, SHALE OR IN BOULDERS SHALL BE REFILLED TO SURGRADE WITH APPROVED MATERIAL, THOROUGHLY COMPACTED.
- (J) BELL HOLES OF AMPLE DIMENSIONS SHALL BE DUG TO EARTH TRENCHES AT EACH JOINT TO PERMIT THE JOINTING TO BE MADE PROPERLY. ADEQUATE CLEARANCE FOR PROPERLY JOINTING PIPE LAID IN ROCK SHALL BE PROVIDED AT BELL HOLES.
- (K) THE USE OF EXCAVATING MACHINERY WILL BE PERMITTED EXCEPT IN PLACES WHERE OPERATION OF SAME WILL CAUSE DAMAGE TO TREES, BUILDINGS, OR EXISTING STRUCTURES ABOVE OR BELOW GROUND, IN WHICH CASE HAND METHODS SHALL BE EMPLOYED.
- (L) HYDRANTS UNDER PRESSURE, VALVE COVERS, VALVE BOXES, CURB STOP BOXES, FIRE OR POLICE CALL BOXES, OR OTHER UTILITY CONTROLS SHALL BE LEFT UNOBSERVED AND ACCESSIBLE DURING THE CONSTRUCTION PERIODS.
- (M) THE CONTRACTOR SHALL MAINTAIN ALL EXCAVATIONS IN GOOD ORDER DURING THE CONSTRUCTION, SO AS NOT TO HINDER OR INJURE THE PIPE LAYING, MASONRY OR OTHER WORK; HE SHALL TAKE ALL REASONABLE PRECAUTIONS TO PREVENT MOVEMENT OF THE SIDES OF SUCH EXCAVATION; AND SHALL REMOVE AT HIS OWN EXPENSE ANY MATERIAL SLIDING INTO THE EXCAVATION.

SHEETING AND BRACING

- (A) THE CONTRACTOR SHALL FURNISH AND PUT IN PLACE SUCH SHEETING AND BRACING AS MAY BE REQUIRED TO SUPPORT THE SIDES OF TRENCHES OR OTHER EXCAVATION AND SHALL REMOVE SUCH SHEETING AND BRACING, AS THE TRENCH OR EXCAVATION IS FILLED UP, UNLESS THE ENGINEER SHALL ORDER IT LEFT IN PLACE, IN WHICH CASE, THE CONTRACTOR SHALL CUT THE PLANK OFF AT A HEIGHT AS ORDERED BY THE ENGINEER, OR AS CALLED FOR ON THE CONTRACT DRAWINGS. NO PAYMENT WILL BE MADE FOR WASTED ENDS.
- (B) WHENEVER THE EXCAVATIONS FOR THE WORK HEREIN TO BE DONE ARE IMMEDIATELY ADJACENT TO OTHER SUBSURFACE STRUCTURES THE CONTRACTOR SHALL FURNISH AND PLACE SHEETING AND BRACING AND AS MAY BE NECESSARY MINIMIZE THE POSSIBILITY OF DAMAGING THE ADJACENT STRUCTURES.
- (C) IF THE ENGINEER IS OF THE OPINION THAT AT ANY POINT SUFFICIENT OR PROPER SUPPORTS, SHEETING, OR BRACING HAVE NOT BEEN PROVIDED, HE MAY ORDER ADDITIONAL SUPPORTS, SHEETING OR BRACING, AT THE EXPENSE OF THE CONTRACTOR, AND THE COMPLIANCE WITH SUCH ORDERS BY THE CONTRACTOR SHALL NOT

APPROVED _____ DATE Dec 2, 1981

William J. Bennett
ENGINEER OF DESIGN REVIEW

LOW SERVICE DISTRICT			
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB
WATERWORK NOTES			
EAST 9th STREET OVER CONRAIL			
CITY OF CLEVELAND BR. NO. 1:013			
CLEVELAND		CUYAHOGA COUNTY	
OHIO			
DRAWN DATE	CHECKED DATE	REVIEWED DATE	REVISED DATE
E.A.L.	J.M.M.	P.A.M.	SHEET

WATERWORK NOTES

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RELIEVE OR RELEASE HIM FROM HIS RESPONSIBILITY FOR SUFFICIENCY OF SUCH SUPPORTS.

REMOVAL OF EXCAVATED MATERIAL

- (A) ALL SURPLUS MATERIAL AND SUCH OTHER MATERIAL AS THE ENGINEER MAY DEEM UNFIT FOR USE AS BACKFILL, SHALL BE DISPOSED OF BY THE CONTRACTOR SO AS TO GIVE A MINIMUM OF INCONVENIENCE TO THE PUBLIC. IN CASE OF SETTLEMENT AFTER BACKFILL, THE CONTRACTOR SHALL SUPPLY SUFFICIENT MATERIAL SATISFACTORY TO THE ENGINEER TO MAKE UP FOR THE DEFICIENCY.
- (B) IN THE STORING OF EXCAVATED MATERIAL WHICH IS TO BE USED AS A BACKFILL, THE CONTRACTOR SHALL EXERCISE CARE SO AS TO AVOID INCONVENIENCING THE PUBLIC. IF, IN THE OPINION OF THE ENGINEER, IT IS NECESSARY TO REMOVE THIS EXCAVATED MATERIAL FROM THE STREETS OR LOTS, THE CONTRACTOR SHALL BE REQUIRED TO DO SO.
- (C) ANY MATERIAL WHICH MAY SPILL OR DRIP FROM VEHICLES BY HAULING IN THE STREETS, SHALL BE REMOVED AND THE STREETS CLEANED BY THE CONTRACTOR, TO THE SATISFACTION OF THE DIRECTOR OF PUBLIC SERVICE, OF THE CITY OF CLEVELAND.
- (D) WHEN SO DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL IMMEDIATELY REMOVE ALL EXCAVATED MATERIALS FROM THE SITE.

CHLORINATION

- (A) BEFORE BEING PLACED IN SERVICE, ALL DIRT AND FOREIGN MATTER SHALL BE REMOVED FROM THE TEMPORARY OR RELOCATED WATER MAIN OR EXTENSIONS TO EXISTING MAINS BY A THOROUGH FLUSHING THROUGH THE HYDRANTS OR BY OTHER APPROVED MEANS. EACH VALVED SECTION OF NEWLY LAID PIPE SHALL BE FLUSHED INDEPENDENTLY. THIS SHALL BE DONE AFTER THE PRESSURE TEST AND MAY BE DONE BEFORE OR AFTER THE TRENCH SHALL HAVE BEEN BACKFILLED.
- (B) FOLLOWING PRELIMINARY FLUSHING, THE WATER PIPE SHALL BE CHLORINATED. THE PROCESS OF CHLORINATING, THE METHOD OF PROCEDURE, THE CHLORINATING AGENT, AND THE RATE OF APPLICATION SHALL BE DETERMINED BY THE ENGINEER. THE CITY WILL FURNISH THE NECESSARY LABOR AND MATERIAL REQUIRED FOR SUCH CHLORINATION AND INSTALL THE NECESSARY TAPS AT THE END OF THE WATER MAIN SECTIONS TO BE CHLORINATED.
- (C) FOLLOWING CHLORINATION, ALL TREATED WATER SHALL BE THOROUGHLY FLUSHED FROM THE NEWLY LAID PIPE AT ITS EXTREMITIES UNTIL THE REPLACEMENT WATER THROUGHOUT ITS LENGTH SHALL, UPON TEST, BOTH CHEMICALLY AND BACTERIOLOGICALLY, BE PROVEN EQUAL TO THE WATER QUALITY SERVED THE PUBLIC FROM THE EXISTING WATER SUPPLY SYSTEM.
- (D) NO SEPARATE PAYMENT SHALL BE MADE FOR CHLORINATION BUT THE COST THEREOF SHALL BE INCLUDED IN THE CONTRACT PRICE BID PER LINEAL FOOT FOR TEMPORARY AND RELOCATED WATER MAINS.

LAYING PIPE

- (A) PROPER IMPLEMENTS, TOOLS, AND FACILITIES, SATISFACTORY TO THE ENGINEER SHALL BE PROVIDED AND USED BY THE CONTRACTOR FOR THE SAFE AND CONVENIENT PROSECUTION OF THE WORK. ALL PIPE, FITTINGS, AND VALVES SHALL BE CAREFULLY LOWERED INTO THE TRENCH PIECE BY PIECE BY MEANS OF DERRICK, PROPER SLINGS, AND OTHER SUITABLE TOOLS OR EQUIPMENT, IN SUCH MANNER AS TO PREVENT DAMAGE TO PIPE OR COATING. UNDER NO CIRCUMSTANCES SHALL PIPE OR ACCESSORIES BE DROPPED OR DUMPED INTO THE TRENCH. IF ANY DEFECTIVE PIECE BE DISCOVERED WHILE PIPE IS SUSPENDED OR AFTER BEING LAID, A NEW PIECE SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR AT THE SITE OF THE WORK.
- (B) ALL FOREIGN MATTER OR DIRT SHALL BE REMOVED FROM THE INSIDE OF THE PIPE BEFORE IT IS LOWERED INTO ITS POSITION IN THE TRENCH, AND IT SHALL BE KEPT CLEAN BY APPROVED MEANS DURING AND AFTER LAYING.
- (C) AT TIMES WHEN PIPE LAYING IS NOT IN PROGRESS, THE OPEN ENDS OF PIPE SHALL BE CLOSED BY APPROVED MEANS, AND NO TRENCH WATER SHALL BE PERMITTED TO ENTER THE PIPE. NO PIPE SHALL BE LAID IN WATER, OR WHEN THE TRENCH CONDITIONS OR THE WEATHER IS UNSUITABLE FOR SUCH WORK.
- (D) WHEREVER NECESSARY TO DEFLECT PIPE FROM A STRAIGHT LINE, EITHER IN THE VERTICAL OR HORIZONTAL PLANE TO AVOID OBSTRUCTIONS, TO PLUMB STEMS, OR FOR OTHER REASONS, THE DEGREE OF DEFLECTION SHALL BE APPROVED BY THE ENGINEER.
- (E) BEFORE LAYING DUCTILE IRON PIPE, ALL LUMPS, BLISTERS AND EXCESS COAL TAR COATING SHALL BE REMOVED FROM THE BELL AND SPIGOT ENDS OF EACH PIPE, THE PIPE ENDS SHALL THEN BE KEPT CLEAN UNTIL JOINTS ARE MADE.

FLOATING

- (A) THE CONTRACTOR SHALL TAKE EVERY PRECAUTION AGAINST THE FLOATING OF THE PIPE DUE TO WATER COMING INTO THE TRENCH, OR THROUGH CAVING IN, FLUSHING OR PUDDLING. IN CASE OF SUCH FLOATING THE CONTRACTOR SHALL REPLACE THE PIPE AT HIS OWN EXPENSE, AND MAKE WHOLLY GOOD ANY INJURY OR DAMAGE WHICH MAY HAVE RESULTED.

TESTING MAINS

- (A) ALL PIPES, VALVES, FITTINGS, ETC., SHALL BE LAID IN SUCH A MANNER AS TO LEAVE ALL JOINTS WATERTIGHT. AFTER THE PIPE IS LAID, AND BEFORE BACKFILLING IS PLACED AROUND THE JOINTS, SUCH LENGTHS OF THE WATER MAIN AS THE ENGINEER MAY DETERMINE SHALL BE TESTED UNDER A HYDROSTATIC PRESSURE OF SEVENTY-FIVE (75) POUNDS PER SQUARE INCH ABOVE THE MAXIMUM STATIC PRESSURE PREVAILING AT SITE, BUT NOWHERE LESS THAN 100 PSI.
- (B) THE TEST SHALL BE UNDER THE DIRECTION OF THE DIRECTOR OF PUBLIC UTILITIES OR HIS DESIGNATE. THE CONTRACTOR MAY OBTAIN WATER FOR TESTING BY OBSERVING THE RULES AND REGULATIONS ENFORCED IN THE MUNICIPALITIES OR TOWNSHIPS IN WHICH THE WORK IS BEING DONE. THE CITY WILL FURNISH A PRESSURE GAGE FOR MEASURING THE PRESSURE ON THE WATER MAIN, BUT THE CONTRACTOR SHALL FURNISH A SUITABLE PUMP, PIPES, TEST HEADS, AND ALL APPLIANCES, LABOR, FUEL AND OTHER APPURTENANCES NECESSARY TO MAKE THESE TESTS.
- (C) THE TEST PRESSURE SHALL BE MAINTAINED FOR A SUFFICIENT LENGTH OF TIME TO ALLOW FOR A THOROUGH EXAMINATION OF JOINTS AND ELIMINATION OF LEAKAGE WHERE NECESSARY. THE PIPE LINES SHALL BE MADE ABSOLUTELY TIGHT UNDER THE TEST PRESSURE.

- (D) AFTER A SECTION OF THE WATER MAIN HAS BEEN TESTED, THE CONTRACTOR SHALL DRAIN SAME. IN CASE THE DRAINS ARE CONNECTED TO VALVE OR DRAIN VAULTS, THEN THE CONTRACTOR SHALL, WITHIN A REASONABLE TIME AFTER THE TEST HAS BEEN COMPLETED, PUMP ALL WATER OUT OF THE VAULTS.
- (E) IN COLD WEATHER IMMEDIATELY AFTER TESTING A SECTION OF THE WATER MAIN, THE CONTRACTOR IS TO OPEN ALL VALVES, AIR COCKS, BYPASSES AND DRAINS AND PROPERLY DRAIN BONNETS OF ALL VALVES IN THE SECTION OF THE WATER MAIN, AND TAKE ALL OTHER PRECAUTIONS NECESSARY TO PREVENT INJURY TO WATER MAIN AND APPURTENANCES DUE TO FREEZING.
- (F) NO SEPARATE PAYMENT SHALL BE MADE FOR TESTING, BUT THE COST THEREOF SHALL BE INCLUDED IN THE CONTRACT PRICE BID PER LINEAL FOOT FOR TEMPORARY AND RELOCATED WATER MAINS.

CLOSING VALVES

- (A) THE CLOSING OF ALL GATE VALVES ON WATER MAINS FOR MAKING CONNECTIONS, TESTS, OR FOR ANY OTHER CAUSE, SHALL BE DONE BY THE CITY AND SUFFICIENT NOTICE SHALL BE GIVEN TO THE CITY, BY THE CONTRACTOR, SO THAT THE WORK MAY BE DONE WITH A MINIMUM OF INCONVENIENCE TO THE PUBLIC AND DELAY TO THE CONTRACTOR.

BACKFILLING

- (A) THIS WORK INCLUDES ALL BACKFILLING, TOGETHER WITH RAMMING, PUDDLING, AND ROLLING, AS REQUIRED; THE REGRADING OF GROUNDS, THE REPLACING OF SURFACE AND SUBSURFACE STRUCTURES; THE PLACING AND MAINTAINING OF TEMPORARY SIDEWALKS AND DRIVEWAYS; THE FURNISHING OF SUITABLE MATERIAL FOR BACKFILL, RESEEDING LAWNS AND REPLACING TREES AND SHRUBBERY DAMAGED BY THE CONTRACTOR; AND ALL APPURTENANT WORK INCIDENTAL THERETO. PAVEMENTS, CURBS, SIDEWALKS AND DRIVEWAYS WITHIN THE LIMITS OF THE WORK SHALL BE TEMPORARILY SURFACED, MAINTAINED AND FINALLY REPLACED OR REPAVED AS SET FORTH UNDER "ROAD SURFACES, SIDEWALKS, DRIVEWAYS, AND CURBING."
- (B) BACKFILL, UNLESS OTHERWISE SPECIFIED, MAY BE MADE WITH MATERIAL EXCAVATED FROM THE TRENCHES, PROVIDING IT IS SATISFACTORY TO THE ENGINEER. IF, IN THE OPINION OF THE ENGINEER, THE MATERIAL EXCAVATED IS UNSATISFACTORY, THEN THE CONTRACTOR SHALL FURNISH AT HIS OWN EXPENSE OTHER MATERIAL SUITABLE FOR BACKFILL. ALL BACKFILL SHALL BE FREE FROM SLAG, CINDERS, RUBBISH AND OTHER OBJECTIONABLE MATERIAL.
- (C) BEFORE LAYING THE PIPE, THE BOTTOM OF THE TRENCH SHALL BE BROUGHT TO THE GRADE OF THE PIPE, EXCEPT AT FIELD JOINTS. WHEREVER THE BOTTOM OF THE TRENCH HAS BEEN EXCAVATED BELOW THE BOTTOM OF THE PIPE, THE CONTRACTOR SHALL PLACE SAND, OR OTHER MATERIAL SATISFACTORY TO THE ENGINEER TO BRING THE BOTTOM OF THE TRENCH TO THE GRADE OF THE BOTTOM OF THE PIPE. THIS BED SHALL BE THOROUGHLY TAMPED BEFORE THE PIPE IS LAID.
- (D) UNLESS OTHERWISE SPECIFIED, THE BACKFILL UNDER, AROUND AND TO A DEPTH OF ONE (1) FOOT ABOVE THE TOP OF ALL PIPE, SHALL BE MADE WITH MATERIAL SATISFACTORY TO THE ENGINEER, WHICH MATERIAL SHALL BE FREE FROM STONE AND OTHER OBJECTIONABLE MATERIAL NOTED ABOVE. THE CONTRACTOR MUST USE SPECIAL CARE IN PLACING THIS PORTION OF THE BACKFILL, SO AS TO AVOID INJURING, DISTORTING OR MOVING THE PIPE WHEN COMPACTING SAME. ABOVE THIS LEVEL THE BACKFILL SHALL BE MADE WITH MATERIAL SATISFACTORY TO THE ENGINEER. HOWEVER, WHERE SPECIFIED, SAND SHALL BE USED FOR THE ENTIRE PORTION OF THE BACKFILL. SEE BELOW.

APPROVED _____ DATE Dec. 2, 1981

William J. ...
ENGINEER OF DESIGN REVIEW

LOW SERVICE DISTRICT			
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB
WATERWORK NOTES			
EAST 9th STREET OVER CONRAIL CITY OF CLEVELAND BR. NO. 1.018			
CLEVELAND		CUYAHOGA COUNTY OHIO	
DRAWN E.D.S.	TRACED P.L.K.	CHECKED J.M.H.	REVIEWED R.A.M.
DATE: 12/2/81	DATE: 12/2/81	DATE: 12/2/81	DATE: 12/2/81
			SHEET

WATERWORK NOTES

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- (E) BACKFILLING AS NOTED IN PARAGRAPH D; SHALL BE TAMPED IN THIN LAYERS; SIMULTANEOUSLY ON EACH SIDE OF THE PIPE; AND THOROUGHLY COMPACTED AS TO PROVIDE A SOLID BACKING AGAINST THE EXTERNAL SURFACE OF THE PIPE.
- (F) ONLY AFTER THE BACKFILL PREVIOUSLY MENTIONED HAS BEEN SATISFACTORILY COMPACTED, MAY WORK PROCEED IN PLACING THE REMAINING BACKFILL WHICH MUST BE CAREFULLY PLACED AND COMPACTED BY TAMPING, PUDDLING, OR ROLLING. ALL PRECAUTIONS MUST BE TAKEN TO ELIMINATE FUTURE SETTLEMENT. THE NUMBER OF MEN TAMPING SHALL BE NOT LESS THAN THE NUMBER BACKFILLING, AND ADDITIONAL MEN SHALL BE KEPT IN THE TRENCH TO SPREAD THE MATERIAL.
- (G) BACKFILLING SHALL NOT BE DONE IN FREEZING WEATHER, EXCEPT BY PERMISSION OF THE ENGINEER, AND IT SHALL NOT BE MADE WITH FROZEN MATERIAL, NOR SHALL ANY FILL BE MADE WHERE THE MATERIAL ALREADY IN THE DITCH IS FROZEN.
- (H) THE ENTIRE BACKFILL SHALL BE MADE WITH SAND WHERE PERMANENT PAVEMENTS; CURBS, DRIVEWAYS, OR SIDEWALKS, HAVE BEEN OPENED FOR OR UNDERCUT BY THE EXCAVATION, WHERE ORDERED BY THE ENGINEER.
- (I) ALL SAND TO BE USED FOR BACKFILL SHALL BE 703.05 OHIO DEPT. OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS.
- (J) SPECIAL TREATMENT OF THE TRENCH WILL BE REQUIRED WHERE CINDER OR ACTIVE SULPHUR BEARING SHALE OR CLAYS EXCAVATION EXCEEDING ONE FOOT MEASURED FROM THE TOP SURFACE IS ENCOUNTERED. BEFORE LAYING THE PIPE, THE BOTTOM OF THE TRENCH SHALL BE DUG BELOW GRADE AND THEN BROUGHT TO THE GRADE OF THE PIPE IN THE FOLLOWING MANNER. A FOUR (4) INCH LAYER OF CRUSHED LIME STONE SHALL BE PLACED ON THE ENTIRE WIDTH OF THE BOTTOM OF THE TRENCH, FOLLOWED BY A FILLER OF HYDRATED LIME AND A LAYER OF THREE (3) INCHES OF SAND. THE CRUSHED LIME STONE SHALL BE WELL GRADED FROM FINE TO COARSE, AND FREE FROM SLAG, CINDERS, ASHES, RUBBISH OR OTHER OBJECTIONABLE MATERIAL. ALL LIME STONE MUST BE CAPABLE OF BEING PASSED THROUGH A 3/4 INCH SIEVE. ON TOP OF THIS LAYER OF CRUSHED STONE, HYDRATED LIME SHALL BE SUPPLIED IN THE AMOUNT OF 3/8 OF A POUND PER SQUARE FOOT OF TRENCH. THIS BED OF CRUSHED LIME STONE SHALL BE THOROUGHLY TAMPED BEFORE THE 3 INCH LAYER OF SAND IS PLACED. THE BACKFILL AROUND AND TO THE DEPTH OF 3 INCHES ABOVE THE TOP OF THE PIPE SHALL BE MADE WITH SAND. THE CONTRACTOR MUST USE SPECIAL CARE IN PLACING THIS PORTION OF THE BACKFILL SO AS TO AVOID INJURING OR MOVING THE PIPE WHEN COMPACTING SAME. ON TOP OF THE SAND THE CONTRACTOR SHALL PLACE ANOTHER LAYER OF CRUSHED LIME STONE FIVE (5) INCHES THICK ON THE ENTIRE WIDTH OF THE TRENCH. ON TOP OF THE COMPACTED LAYER OF LIME STONE HYDRATED LIME SHALL BE THEN APPLIED IN THE AMOUNT OF 3/4 OF A POUND PER SQUARE FOOT OF TRENCH. THE REMAINING BACKFILL SHALL BE MADE WITH SAND, CAREFULLY PLACED AND COMPACTED BY TAMPING, PUDDLING, OR ROLLING. ALL PRECAUTIONS SHALL BE TAKEN TO ELIMINATE FUTURE SETTLEMENT. THE TREATMENT OF THE TRENCH BOTTOM, PREVIOUSLY DESCRIBED, MAY BE OMITTED WHERE THE CINDER DEPTH, MEASURED FROM THE TOP SURFACE DOES NOT EXCEED 2'-6"

SEEDING AND SODDING

- (A) SEEDING AND SODDING SHALL BE DONE IN ACCORDANCE WITH THE APPROPRIATE SECTIONS OF THE OHIO DEPT. OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS.

MAINTENANCE OF TRAFFIC FOR TEMPORARY WATER MAIN

- (A) INSTALLATION OF THE TEMPORARY 12-IN. WATER MAIN WILL REQUIRE TRENCHING AND PIPE INSTALLATION ACROSS ACTIVE NORTHBOUND TRAFFIC LANES, BETWEEN STA. 3+96 TO 4+60 AND STA. 7+35 TO 7+54. CONSTRUCTION OF TEMPORARY WATER LINE

WITHIN THE ABOVE LIMITS SHALL BE RESTRICTED TO HOURS 6:30 P.M. TO 6:30 A.M. THE ACTUAL DAY(S) ON WHICH THE WORK IS PERFORMED SHALL BE APPROVED IN WRITING BY THE CITY OF CLEVELAND, DIVISION OF TRAFFIC ENGINEERING, PRIOR TO COMMENCING WORK.

THE TRAVELLED PAVEMENT SHALL BE KEPT OPEN, WITHOUT RESTRICTIONS DURING ALL TIMES OTHER THAN THE ABOVE WORK HOURS. ALL LANE AND LOAD RESTRICTIONS ENFORCED BY THE CITY OF CLEVELAND SHALL BE MAINTAINED IN ANY CASE.

- (B) DURING THE TEMPORARY WATER MAIN CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN ONE FULL 11-FT TRAFFIC LANE IN THE NORTHBOUND DIRECTION DURING THE ABOVE WORK HOURS. THE SOUTHBOUND LANE SHALL NOT BE SUBJECT TO ANY WIDTH RESTRICTIONS, OTHER THAN THOSE PRESENTLY IN FORCE BY THE CITY OF CLEVELAND, DURING THE COURSE OF THE TEMPORARY WATER LINE CONSTRUCTION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING TEMPORARY WATERLINE CONSTRUCTION WITH TRUCK DELIVERIES UTILIZING THE DRIVEWAY AT STA. 4+40± SO THAT ACCESS TO THE PRESS BUILDING IS MAINTAINED AT ALL TIMES.

THE PROPOSED METHOD OF ACCOMPLISHING THE ABOVE MAINTENANCE OF TRAFFIC REQUIREMENTS SHALL BE SUBMITTED TO THE CITY OF CLEVELAND, DIVISION OF TRAFFIC ENGINEERING, FOR REVIEW, 7 DAYS BEFORE ACTUAL BEGIN WORK IS ANTICIPATED. WRITTEN APPROVAL FROM THE CITY OF CLEVELAND, COMMISSIONER OF TRAFFIC AND PARKING SHALL BE REQUIRED BEFORE ANY TRAFFIC MAINTENANCE PLAN IS IMPLEMENTED.

- (C) THE CONTRACTOR IN COORDINATION WITH CITY OF CLEVELAND FORCES SHALL FURNISH, INSTALL, MAINTAIN AND SUBSEQUENTLY REMOVE ALL TRAFFIC CONTROL DEVICES REQUIRED FOR MAINTAINING TRAFFIC DURING THE INSTALLATION OF THE TEMPORARY WATER LINE. PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 614 - MAINTAINING TRAFFIC.

ROAD SURFACES, SIDEWALKS, DRIVEWAYS, AND CURBING

- (A) THIS WORK INCLUDES REMOVAL AND REPLACEMENT OF ALL PAVEMENTS, ROAD SURFACES, SIDEWALKS, DRIVEWAYS, OR CURBS WITHIN THE LINES OF EXCAVATION, OR AS REQUIRED FOR ANY OTHER REASON WHICH MAY BE ATTRIBUTED TO WORK WHICH HAS BEEN DONE BY THE CONTRACTOR. UPON INSTALLATION OF THE TEMPORARY WATER MAIN, THE CONTRACTOR SHALL REPLACE ALL PAVEMENTS, ROAD SURFACES, DRIVEWAYS, AND CURBS REMOVED, DAMAGED, OR DISPLACED DUE TO TEMPORARY WATER MAIN CONSTRUCTION. FOR CONSTRUCTION OF THE RELOCATED WATER MAIN, THE CONTRACTOR SHALL COORDINATE PAVEMENT AND ROAD SURFACE REPLACEMENT WITH THE PROPOSED PAVEMENT APPROACH WORK. SEE ROADWAY PLANS, SHEET 13.

- (B) ALL FINAL PAVING OF ROAD SURFACES SHALL BE DONE BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER AND IN CONFORMITY TO THE STATE OF OHIO "CONSTRUCTION MATERIAL SPECIFICATIONS AND STANDARDS". THE CONTRACTOR SHALL BEAR THE ENTIRE COST OF THE WORK. THE BASE OF PAVEMENT OF CONCRETE SHALL BE INSTALLED ON A CAREFULLY PREPARED BED (LEVEL WITH THE BOTTOM OF THE ABUTTING BASE) OVER DISTURBED AREAS AND SHALL BE OF THE THICKNESS SPECIFIED, BUT IN NO CASE LESS THAN 7-IN. THICK. WHERE PAVEMENT OR BASE OF PAVEMENT HAS BEEN DAMAGED BY CAVE-IN, OR BY TRENCH CUT LEAVING A PORTION OR PORTIONS OF PAVEMENT 18-IN. OR LESS IN WIDTH (BETWEEN SUCH CUT OR DAMAGE) TO CURB OR OTHER SUBSTRUCTURE, THAT REMAINING PORTION OF PAVEMENT SHALL BE REMOVED AND RESTORED MONOLITHIC WITH THE TYPE AND KIND OF PAVEMENT SPECIFIED FOR THE ADJACENT TRENCH AREA. THE WEARING COURSE OVER TRENCH OR OTHER DISTURBED AREAS SHALL BE RESTORED TO MATCH EXISTING PAVEMENT UNLESS OTHERWISE SPECIFIED. ASPHALTIC CONCRETE WEARING COURSE OVER SUCH AREAS SHALL BE NEATLY AND SQUARELY CUT.

- (C) ALL DAMAGED OR DISPLACED CURB SHALL BE RENEWED OR RESET TO THE SATISFACTION OF THE ENGINEER. NO FAULTY CURB OR CURB LESS THAN 30-IN. LONG WILL BE PERMITTED FOR REUSE.

- (D) THE CONTRACTOR SHALL RESTORE THE SAME TYPE OF PAVEMENT AS ENCOUNTERED.

- (E) IF PRIOR TO THE EXPIRATION OF THIS CONTRACT ANY OF THE PAVEMENTS OR ROAD SURFACES WITHIN THE LINES OF EXCAVATION OR ADJACENT THERETO, SHALL HAVE BEEN DAMAGED OR INJURED, DUE TO UNDERMINING, OR FOR ANY OTHER CAUSE WHICH MAY BE ATTRIBUTED TO THE WORK WHICH IS BEING DONE BY THE CONTRACTOR, THEN THE CONTRACTOR SHALL REMOVE SUCH DAMAGED OR INJURED PAVEMENTS OR ROAD SURFACES, FOUNDATIONS OF SAME AND ALL LOOSE EARTH. HE SHALL THEN BACKFILL WITH SAND PROPERLY RAMMED AND REPLACE THE FINAL PAVEMENT OR ROAD SURFACE.

- (F) IF ANY SIDEWALKS, DRIVEWAYS OR CURBS, ARE REMOVED OR INJURED BY THE CONTRACTOR IN THE COURSE OF MAKING EXCAVATION OR HANDLING MATERIALS, OR FOR ANY OTHER REASON WHICH MAY BE ATTRIBUTED TO WORK WHICH HAS BEEN DONE BY THE CONTRACTOR, THEN HE SHALL RELAY SAME AFTER ALL WORK, INCLUDING BACKFILLING HAS BEEN COMPLETED. IF ANY STONE SIDEWALKS, DRIVEWAYS, OR CURBS WHICH HAVE BEEN REMOVED OR INJURED, ARE UNFIT TO BE RELAID, THEN THE CONTRACTOR SHALL FURNISH AND RELAY NEW MATERIAL. ALL CONCRETE OR CEMENT SIDEWALKS, DRIVEWAYS OR CURBS, WHICH ARE REMOVED OR INJURED BY THE CONTRACTOR SHALL BE BROKEN UP BY HIM AND HE SHALL FURNISH ALL LABOR AND MATERIALS AND CONSTRUCT NEW SIDEWALKS, DRIVEWAYS OR CURBS, TO REPLACE THOSE REMOVED OR DAMAGED. AT INTERSECTING WALKS, DRIVES, ETC., ADDITIONAL CONCRETE SLABS BEYOND THE EXCAVATION LIMITS SHALL BE REMOVED AND REPLACED WITH NEW MATERIAL. IN ORDER TO AVOID HAVING MORE JOINTS THAN IN THE ORIGINAL WORK. ALL SLABS REPLACED SHALL BE OF FULL WIDTH. THE CONTRACTOR SHALL FURNISH, PLACE AND MAINTAIN, WHEREVER THE SIDEWALK HAS BEEN REMOVED OR DAMAGED BY HIM, A TEMPORARY SIDEWALK SO AS TO PROVIDE A SAFE AND PASSABLE SIDEWALK UNTIL SUCH TIME AS THE FINAL SIDEWALK IS COMPLETED.

UNLESS OTHERWISE CALLED FOR, WALKS SHALL BE FOUR (4) INCHES IN DEPTH, WHERE DRIVEWAY CROSSES SIDEWALK, THIS SECTION SHALL BE SIX (6) INCHES THICK. WHEN DRIVEWAY APRONS FROM THE CURB TO THE SIDEWALK ARE CALLED FOR, THEY SHALL BE SIX (6) INCHES THICK. UNLESS OTHERWISE DIRECTED, THE SURFACE OF THE WALK SHALL HAVE A TRANSVERSE SLOPE EQUAL TO THAT OF THE SIDEWALK WHICH WAS REPLACED.

EXPANSION JOINT FILLER ONE-HALF (1/2) INCH THICK SHALL BE INSTALLED BETWEEN THE WALK AND ANY FIXED STRUCTURE, EXTENDING THE FULL DEPTH OF THE WALK.

- (G) ALL PAVEMENTS, ROAD SURFACES, SIDEWALKS, DRIVEWAYS, OR CURBS, WHICH THE CONTRACTOR IS REQUIRED TO REPLACE OR TO HAVE REPLACED, SHALL, AT THE EXPIRATION OF THE PERIOD OF MAINTENANCE, BE IN AT LEAST AS GOOD CONDITION AS AT THE TIME OF AWARDED THE CONTRACT.

- (H) ALL WORK WHICH THE CONTRACTOR MAY DO IN CONNECTION WITH THE OPENING UP OR REPLACING OF PAVEMENTS, ROAD SURFACES, SIDEWALKS, DRIVEWAYS, OR CURBS, AS WELL AS THE FINAL REPAVING, SHALL BE DONE AT HIS EXPENSE, IN ACCORDANCE WITH THE RULES AND REQUIREMENTS OF THE STREET OR SIDEWALK DEPARTMENTS OF THE CITY OF CLEVELAND AND IN ACCORDANCE WITH THE ADDITIONAL REQUIREMENTS OF THESE SPECIFICATIONS. THE CONTRACTOR SHALL FURNISH EVIDENCE TO THE ENGINEER THAT THE WORK HAS BEEN COMPLETED TO THEIR SATISFACTION.

- (I) THE CONTRACTOR SHALL MAKE ALL PAVEMENT CUTS BY CHANNELING MACHINE, HAND-OPERATED PNEUMATIC TOOLS OR BY SUCH OTHER METHODS AS WILL FURNISH A CLEAN CUT IN THE PAVEMENT AND PAVEMENT BASE WITHOUT UNDUE SHATTERING. THE USE OF BALL OR WEIGHT TO BREAK THE PAVEMENT WILL NOT BE PERMITTED.

APPROVED _____ DATE Dec 2, 1981

William J. Howard
ENGINEER OF DESIGN REVIEW

LOW SERVICE DISTRICT			
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB
WATERWORK NOTES			
EAST 9th STREET OVER CONRAIL			
CITY OF CLEVELAND BR. NO. 1.013			
CLEVELAND		CUYAHOGA COUNTY	
OHIO			
DRAWN EDS DATE 11/21/81	PLK DATE 11/17/81	REVIEWED DATE 11/25/81	REVISIONS DATE 11/25/81

WATERWORK NOTES

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(J) THE CONTRACTOR SHALL MAINTAIN TWO WAY TRAFFIC AND LOCAL ACCESS AT ALL TIMES, IN ACCORDANCE WITH ITEMS 104.04 AND 107.10 OF THE OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS. THE CONTRACTOR SHALL MAINTAIN SAFE AND SATISFACTORY ACCESS TO ABUTTING PROPERTIES AND INTERSECTING STREETS AT ALL TIMES DURING CONSTRUCTION, INCLUDING PLACEMENT AND REMOVAL, IF NECESSARY OF TEMPORARY BYPASSES AND DRIVEWAYS.

(K) NO SPECIFIC OR SEPARATE PAYMENT WILL BE MADE FOR ALL OF THIS WORK, BUT THE COST THEREOF SHALL BE INCLUDED IN THE PRICES BID FOR THE VARIOUS ITEMS OF THE WORK TO BE DONE UNDER THIS CONTRACT.

LISTS AND INVOICES

(A) THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH A LIST, IN DUPLICATE, OF PIECES IN EACH SHIPMENT OF PIPE AND SPECIALS, GIVING THE SERIAL NUMBER AND DESIGNATION OF EACH PIPE AND SPECIAL SENT AT THAT TIME.

REMOVED ITEMS

(A) ALL MATERIALS CONSISTING OF PIPE AND FITTINGS, MANHOLE FRAMES, AND COVERS, VALVES, VALVE BOXES, AND COVERS WHICH ARE INDICATED FOR REMOVAL BY THE CONTRACTOR SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE REMOVED AND DISPOSED OF BY HIM.

MANHOLES TO BE ABANDONED

(A) WHERE MANHOLES ARE INDICATED ON THE PLANS TO BE ABANDONED, THE CONTRACTOR SHALL REMOVE MANHOLE FRAME AND COVER, AND MANHOLE WALLS TO A MINIMUM 1-FT BELOW THE FINISHED SUBGRADE, AND THEN FILL THE MANHOLE WITH COMPACTED SAND BACKFILL. PAVEMENT REPLACEMENT SHALL BE COORDINATED WITH PROPOSED PAVEMENT APPROACH WORK.

WATERWORK CONSTRUCTION SEQUENCE

(A) THE CONTRACTOR SHALL NOTIFY THE DIVISION OF WATER AND HEAT, INSPECTION AND ENFORCEMENT THREE WEEKS PRIOR TO THE START OF WATERWORK. WRITTEN AUTHORIZATION MUST BE OBTAINED FROM THE DIVISION OF WATER AND HEAT FOR TIME OF SHUT-DOWN FOR EXISTING E. 9TH ST. WATER MAIN. SHUT-DOWN DURING PEAK DEMAND PERIODS WILL NOT BE ALLOWED. TELEPHONE: 664-3065. WRITTEN AUTHORIZATION MUST BE OBTAINED FROM CITY OF CLEVELAND STREET AND TRAFFIC DEPARTMENT FOR TIME OF WATERWORK CONSTRUCTION ACROSS E. 9TH ST. TRAFFIC LANES. CONSTRUCTION SHALL BE SCHEDULED AT TIMES OF MINIMUM TRAFFIC.

1. INSTALL 12-IN. TEMPORARY WATER MAIN TO POINTS NEAR THE 12-IN. TAPPING VALVES. BACKFILL AND COMPLETE ROADWORK AS REQUIRED TO MAINTAIN VEHICULAR AND PEDESTRIAN TRAFFIC.
2. INSTALL 12-IN. TAPPING SLEEVES AND VALVES. CLOSE VALVES AND MAKE FINAL CONNECTIONS TO TEMPORARY WATER MAINS.
3. TEST AND CHLORINATE TEMPORARY WATER MAIN. TAPS FOR CHLORINATION ARE TO BE PROVIDED AFTER THE WORK HAS BEGUN. CLEVELAND DIVISION OF WATER WILL DETERMINE THE LOCATION AND PERFORM NECESSARY TAPS. THE CONTRACTOR SHALL PROVIDE A 6-FT X 6-FT I.D. PLYWOOD OR BOXED SHEETED CHLORINATION PIT AT LOCATIONS AS SPECIFIED BY THE CITY OF CLEVELAND.
4. CONTACT CLEVELAND DIVISION OF WATER TO TEMPORARILY SHUT-DOWN EXISTING WATER MAIN FOR INSTALLATION OF CUTTING-IN VALVES. INSTALL AND CLOSE 12-IN. CUTTING-IN VALVES. OPEN TAPPING VALVES AND RESUME SERVICE THROUGH TEMPORARY WATER MAIN.

5. CUT EXISTING WATER MAIN AND PLUG.
6. REMOVE EXISTING WATER MAIN AND INSTALL NEW RELOCATED 12-IN. WATER MAIN TO POINTS NEAR THE CUT POINT, BACKFILL AND COMPLETE ROADWORK AS REQUIRED.
7. TEST AND CHLORINATE NEW WATER MAIN AS INDICATED IN STEP 3. INSTALL TEMPORARY PLUGS AND PROPER BACKUP FOR TESTING.
8. REMOVE ALL PLUGS, CONNECT NEW WATER MAIN TO EXISTING WATER MAIN, AND OPEN CUTTING-IN VALVES.
9. CLOSE TAPPING VALVES, PLUG, AND REMOVE TAPPING VALVE BOXES. REMOVE AIR COCK VALVE BOX ON TEMPORARY WATER MAIN. REMOVE TEMPORARY WATER MAIN BENEATH THE EXISTING BRIDGE TO POINTS BEHIND THE PROPOSED BRIDGE ABUTMENTS. ABANDON TEMPORARY WATER MAIN AND PLUG BOTH ENDS. RESTORE ALL AREAS DISTURBED DURING CONSTRUCTION.

APPROVED _____ DATE Dec. 3, 1981

William J. ...
ENGINEER OF DESIGN REVIEW

LOW SERVICE DISTRICT			
HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB
WATERWORK NOTES			
EAST 9th STREET OVER CONRAIL			
CITY OF CLEVELAND BR. NO. 1'013			
CLEVELAND	CUYAHOGA COUNTY	OHIO	
DESIGNED E.D.S.	DRAWN P.J.H.	CHECKED J.M.M.	REVISION F.A.M.
DATE 8-13-81	DATE 8-17-81	DATE 9-21-81	DATE 10-27-81
			SHEET 1

WATERWORK NOTES

FHWA REGION	STATE	PROJECT	
5	OHIO	M-1A10 (2)	

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CUYAHOGA COUNTY
EAST NINTH STREET

ITEM SPECIAL-TEMPORARY AND RELOCATED WATER MAINS

WORK INCLUDED

(A) THE CONTRACTOR SHALL FURNISH ALL THE MATERIALS FOR AND SHALL PROPERLY CONSTRUCT AND CONNECT IN PLACE AT THE LOCATIONS SHOWN ON THE DRAWINGS OR AS DIRECTED, ALL DUCTILE IRON PIPE AND FITTINGS, GALVANIZED STEEL PIPE AND FITTINGS, INCLUDING ALL EXCAVATION WORK, THE CUTTING INTO AND REMOVAL OF EXISTING PIPE, STEEL PIPE FLANGES, COUPLINGS, EXPANSION JOINT ASSEMBLIES, FASTENINGS, PIPE SUPPORT ASSEMBLIES FOR TEMPORARY AND RELOCATED WATER MAINS, FASTENINGS, APPURTENANCES, PIPING INSULATION AND APPURTENANCES, SLEEVE PACKING THRU ABUTMENT WALLS, BACKFILLING, SAND BACKFILL, AND REPAVING, ALL AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK.

DUCTILE IRON PIPE AND FITTINGS

(A) ALL DUCTILE IRON PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI A21.50- AND ANSI A21.51- , AWWA C1150- AND C151- RESPECTIVELY. ALL DUCTILE IRON FITTINGS SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI A21.10- OR AWWA C110- DUCTILE IRON SHALL HAVE A MINIMUM OF 60,000 PSI ULTIMATE TENSILE STRENGTH, 40,000 PSI YIELD STRENGTH AND 10% ELONGATION. THE CHEMICAL ANALYSIS SHALL BE AS FOLLOWS: CARBON 3% MINIMUM; PHOSPHOROUS .08% MAXIMUM; AND SILICON 2.75% MAXIMUM. THE THICKNESS OF THE CENTRIFUGALLY CAST DUCTILE IRON PIPE SHALL CONFORM TO THE FOLLOWING:

SIZE	WORKING PRESSURE	STANDARD THICKNESS	CLASS
12"	350 PSI	.52"	57 WITH ZERO MINUS TOLERANCE

- (B) ALL FITTINGS, SUCH AS BENDS, TEES, ETC. SHALL HAVE BELL AND BELL OR BELL AND SPIGOT ENDS WITH BOLTLESS RESTRAINED SLIP-ON TYPE JOINT WITH COMPRESSED RUBBER RING INSERTS.
- (C) ALL PIPE SHALL HAVE BELL AND SPIGOT ENDS FOR BOLTLESS RESTRAINED SLIP-ON TYPE JOINT WITH COMPRESSED RUBBER RING INSERTS UNLESS OTHERWISE SHOWN. ALL PIPE AND FITTINGS SHALL BE CEMENT LINED.
- (D) GASKETS SHALL BE OF RUBBER OR OTHER EQUALLY EFFECTIVE PROTECTION AGAINST UNEVEN DISTORTION OF THE GASKET.
- (E) WHERE FITTINGS ARE SHOWN WHICH ARE NOT COVERED BY THE ABOVE SPECIFICATIONS, THEY IN SUCH PARTICULARS AS ARE LACKING THEREON SHALL CONFORM TO THE DIMENSIONS AND OTHERWISE MEET THE SPECIFICATIONS FOR THE RESPECTIVE TYPE WHICH ARE CARRIED IN THE LATEST REVISIONS TO THE CURRENT EDITION OF THE "HANDBOOK OF CAST IRON PIPE" BY THE CAST IRON PIPE RESEARCH ASSOCIATION OR WHICH ARE OTHERWISE SHOWN ON THE CONTRACT DRAWINGS.
- (F) WHEREVER CHANGES IN LINE AND GRADES OF THE MAIN AS SHOWN ON THE DRAWINGS ARE NOT STANDARD FITTING DEFLECTIONS, THE CONTRACTOR WILL BE PERMITTED TO SUBMIT DETAILS USING COMBINATIONS OF STANDARD FITTINGS AND SMALL DEFLECTIONS (NOT TO EXCEED A MAXIMUM OF ONE-HALF (1/2) INCH JOINT OPENING) IN THE ADJOINING LENGTHS OF PIPE. PIPE TO BE INSTALLED WITH AIR COCKS OR DRAINS SHALL BE CAST WITH BOSSES THEREON, AND DRILLED AND TAPPED FOR TWO (2) INCH CONNECTIONS, AND PLUGGED IN THE SHOP WITH CAST IRON THREADED PLUGS, BEFORE SHIPMENT.
- (G) PLUGS FOR BELL AND SPIGOT PIPE AND CAPS FOR LUGGED PIPE SHALL BE FURNISHED WITH TWO (2) PLUGGED TWO (2") INCH TAPS FOR DRAIN AND AIR COCK CONNECTIONS.

- (H) CLOSURE PIECES SHALL BE ACCURATELY MEASURED AND CUT IN THE FIELD AND INSTALLED USING SOLID TYPE PATTERN SLEEVES AS SHOWN OR AS REQUIRED.
- (I) TESTS, INSPECTION, REPORTS AND ANALYSES OF TESTS OF SAMPLES FOR ALL MATERIALS SHALL BE FURNISHED AS SET FORTH ELSEWHERE IN THESE SPECIFICATIONS.
- (J) BITUMASTIC COATING SHALL BE APPLIED ON THE EXTERIOR OF ALL DUCTILE IRON PIPE AND FITTINGS IN ACCORDANCE WITH AWWA SPECIFICATIONS.

GALVANIZED STEEL PIPE ON BRIDGE STRUCTURES

- (A) GALVANIZED STEEL PIPE SHALL BE 12.75" O.D. X .50" WALL ASTM A-53 GRADE B.
- (B) FLANGED JOINTS SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS. FLANGES SHALL BE EITHER CAST STEEL, FORGED OR ROLLED STEEL, OR PROPERLY WELDED AND MACHINE FABRICATED STEEL PLATES, WELDED TO PIPE WITH TWO CONTINUOUS WELDS. THEY SHALL HAVE PLAIN FACES AND SHALL BE FACED TRUE AND SMOOTH AT RIGHT ANGLES TO THE AXIS OF THE PIPE AND SHALL BE SPOT FACED ON THE BACK. DRILLING SHALL CONFORM TO "AMERICAN 1928 STANDARD" DRILLING 150 POUND TEMPLATE. EACH BLIND FLANGE SHALL BE CAST IRON AND HAVE BOSSES TAPPED AT TOP AND BOTTOM FOR TWO (2) INCH STANDARD PIPE AND FURNISHED WITH PLUGS. ALL BOLTS FOR FLANGES AND OTHER TYPES OF BOLTING SHALL CONFORM TO THE "TENTATIVE SPECIFICATIONS FOR STEEL MACHINE BOLTS AND NUTS AND TAP BOLTS, ASTM DESIGNATION A 307-63T" GRADE A, EXCEPT WHERE ONE OR BOTH FLANGES ARE CAST IRON, IN WHICH CASE BOLTS SHALL BE GRADE B.

(C) VICTAULIC TYPE COUPLINGS

WHERE SHOWN ON THE DRAWINGS OR WHERE REQUIRED, THE CONTRACTOR SHALL FURNISH AND INSTALL VICTAULIC TYPE COUPLINGS STYLE-77 FOR CONNECTION OF STEEL PIPES. STEEL PIPE SHALL BE FABRICATED AND GROOVED AS INDICATED ON THE DRAWINGS.

COUPLINGS SHALL BE COMPOSED OF MALLEABLE IRON HOUSINGS HELD TOGETHER WITH STEEL BOLTS, HEAT TREATED AND WITH A CONTINUOUS HOLLOW, MOLDED RUBBER SEALING RING, OF SUCH TYPE THAT THE SEAL BECOMES TIGHT AS THE PRESSURE WITHIN THE PIPE INCREASES. THE JOINTS SHALL BE CONSTRUCTED AND INSTALLED AND BE EQUAL IN ALL RESPECTS TO THOSE MANUFACTURED BY THE VICTAULIC COMPANY OF AMERICA. MALLEABLE HOUSING SHALL CONFORM TO THE "STANDARD SPECIFICATIONS FOR MALLEABLE IRON CASTINGS, ASTM DESIGNATION: A 47." BOLTS SHALL BE MANUFACTURED BY THE COUPLING MANUFACTURER AND SHALL BE CADMIUM PLATED STEEL BOLTS HAVING 100,000 PSI TENSILE STRENGTH.

ALL METAL PARTS OF THE COUPLINGS SHALL BE COATED AT THE SHOP WITH ONE COAT OF BITUMINOUS PRIMER FURNISHED BY THE SAME MANUFACTURER WHO FURNISHED THE COATINGS AS SPECIFIED UNDER "PAINTING".

(D) EXPANSION JOINT ASSEMBLY

THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL OF THE EXPANSION JOINT ASSEMBLY.

THE JOINT ASSEMBLY SHALL BE "DRESSER STYLE 63 TYPE 1" SLIP TYPE WITH AN 8-IN. TRAVERSE OR APPROVED EQUAL. THE JOINT ASSEMBLY SHALL INCLUDE ALL MATERIALS, CADMIUM PLATED BOLTS, NUTS AND WASHERS; WELDED NECK FLANGES A.S.A. 150# AND GASKETS. NO FIELD WELDING OF GALVANIZED STEEL PIPE WILL BE PERMITTED.

PIPE SUPPORT ASSEMBLIES

- (A) THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL OF THE PIPE SUPPORT ASSEMBLIES.
- (B) PIPE SUPPORT ASSEMBLIES SHALL BE COMPLETE INCLUDING ALL MATERIALS, CADMIUM PLATED SHOULDER AND CLAMP BOLTS, WASHERS AND NUTS. THE SUPPORT ASSEMBLY CLAMP, SEAT PLATE AND SHIMS SHALL ALL BE HOT DIPPED GALVANIZED AFTER FABRICATION PER ASTM A-123 LATEST REVISIONS. NO FIELD WELDING OF GALVANIZED STEEL PIPE WILL BE PERMITTED.

INSULATION, APPURTENANCES AND FASTENINGS

- (A) THE CONTRACTOR SHALL FURNISH AND INSTALL INSULATION SLEEVE PACKING, APPURTENANCES AND FASTENINGS AS CALLED FOR ON THE WATERWORK DETAIL PLANS.
- (B) THE VOID BETWEEN THE PIPE SLEEVE AND THE WATERMAIN THROUGH THE BRIDGE ABUTMENTS SHALL BE FILLED WITH JOINT PACKING AND SEALED AT BOTH ENDS WITH THREE (3") INCHES OF HOT POURED LEAD.

CEMENT LINING

- (A) ALL DUCTILE IRON PIPE AND FITTINGS, SHALL BE GIVEN A CEMENT MORTAR LINING AT THE POINT OF MANUFACTURE. THE LINING SHALL CONFORM TO THE AMERICAN NATIONAL STANDARD ANSI A21.4 (AWWA C104) AND ALL SUBSEQUENT AMENDMENTS THERETO.

MARKING

- (A) ALL PIPE AND FITTINGS SHALL BE SUITABLY MARKED TO DENOTE THE MANUFACTURER, CLASS, DATE, WEIGHT, AND OTHER ELEMENTS OF IDENTIFICATION.

INSTALLING PIPE

- (A) PROPER AND SUITABLE TOOLS AND APPLIANCES FOR THE SAFE AND CONVENIENT HANDLING AND INSTALLATION OF THE PIPES AND FITTINGS SHALL BE USED. GREAT CARE SHALL BE TAKEN TO PREVENT THE PIPE COATING AND FITTINGS FROM BEING DAMAGED PARTICULARLY ON THE INSIDE OF THE PIPES AND FITTINGS AND ANY SUCH DAMAGE SHALL BE REMEDIED AS DIRECTED. ALL PIPES AND FITTINGS SHALL BE CAREFULLY EXAMINED BY THE CONTRACTOR FOR DEFECTS JUST BEFORE LAYING AND NO PIPE OR FITTING SHALL BE LAID WHICH IS KNOWN TO BE DEFECTIVE.
- (B) IF ANY DEFECTIVE PIPE IS DISCOVERED AFTER HAVING BEEN INSTALLED, IT SHALL BE REMOVED AND REPLACED WITH A SOUND PIPE OR FITTING IN A SATISFACTORY MANNER, BY THE CONTRACTOR AT HIS OWN EXPENSE. ALL PIPES AND FITTINGS

APPROVED _____ DATE Dec. 2, 1981

William J. ...
ENGINEER OF DESIGN REVIEW

LOW SERVICE DISTRICT			
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB
WATERWORK NOTES			
EAST 9th STREET OVER CONRAIL			
CITY OF CLEVELAND BF NO. 1.013			
CLEVELAND		CUYAHOGA COUNTY OHIO	
DRAWN E.B.S.	CHECKED R.J.K.	DATE 12-2-81	SHEET 1

WATERWORK NOTES

FHWA REGION	STATE	PROJECT	
5	OHIO	M-1A10 (2)	

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CUYAHOGA COUNTY
EAST NINTH STREET

ITEM SPECIAL - TEMPORARY AND RELOCATED WATER MAINS

SHALL BE THOROUGHLY CLEANED BEFORE THEY ARE INSTALLED, SHALL CONFORM TO THE LINES AND GRADES GIVEN BY THE ENGINEER. OPEN ENDS OF PIPES SHALL BE KEPT PLUGGED WITH A BULKHEAD DURING CONSTRUCTION.

- (C) PIPE LAID IN TRENCH SHALL BE LAID TO A FIRM AND EVEN BEARING FOR ITS FULL LENGTH. PRECAUTIONS SHALL BE TAKEN AGAINST FLOATING.
- (D) IT IS THE INTENTION OF THESE SPECIFICATIONS TO SECURE FIRST CLASS WORKMANSHIP IN THE PLACING OF PIPE AND ACCESSORIES. IN SUCH DETAILS AS ARE NOT SPECIFICALLY MENTIONED HEREIN OR CALLED FOR ON THE DRAWINGS, THE CONTRACTOR WILL BE REQUIRED TO CONFORM WITH THE APPLICABLE SECTIONS OF THE LATEST "STANDARD SPECIFICATIONS FOR LAYING CAST IRON PIPE" AS ADOPTED BY THE AMERICAN WATER WORKS ASSOCIATION.

CUTTING PIPE

- (A) WHENEVER THE PIPES REQUIRE CUTTING TO FIT INTO THE LINES, THE WORK SHALL BE DONE IN A SATISFACTORY MANNER SO AS TO LEAVE A SMOOTH END AT RIGHT ANGLES TO THE AXIS OF THE PIPE. IN NO EVENT SHALL FLAME CUTTING BE USED. WHEN A PIECE OF PIPE IS CUT TO FIT INTO THE LINE, NO PAYMENT WILL BE MADE FOR THE PORTION CUT OFF AND NOT USED IN THE LINE.

DUCTILE IRON PIPE JOINTS

- (A) FOR ANY REQUIRED LEAD JOINTS, THE JOINT SHALL BE MADE WITH SUITABLE YARNING MATERIAL AND SOFT PIG LEAD IN CONFORMITY TO THE REQUIREMENTS OF AWWA C601. THE PACKING SHALL BE TWISTED AND THOROUGHLY DRIVEN INTO THE BELL SO THAT THE LEAD, AFTER HAVING BEEN CAULKED, SHALL HAVE A DEPTH OF 2-1/2-IN.

THE FURNACE AND MELTING POT SHALL BE KEPT NEAR THE JOINT TO BE POURED AND EACH JOINT SHALL BE MADE WITH ONE POURING. DROSS SHALL NOT BE ALLOWED TO ACCUMULATE IN THE MELTING POT. THE JOINTS SHALL BE THOROUGHLY CAULKED BY COMPETENT PIPE JOINERS AND IN SUCH MANNER AS WILL SECURE A TIGHT JOINT WITHOUT OVERSTRAINING THE IRON OF THE BELL.

- (B) WHERE REQUIRED, THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, USE COMPRESSION TYPE JOINTS. COMPRESSION JOINTS SHALL CONFORM TO THE DIMENSIONS AND REQUIREMENTS OF THE ANSI SPECIFICATIONS A21.11 AS THEY APPLY TO PUSH-ON JOINTS.
- (C) WHERE "TIED DISTANCES" ARE INDICATED ON THE PLANS FOR DUCTILE IRON PIPE, THE CONTRACTOR SHALL USE BOLTLSS RESTRAINED PUSH-ON JOINTS WITH COMPRESSED RUBBER RING INSERTS. THE COMPRESSION JOINTS SHALL CONFORM TO REQUIREMENTS STATED IN PARAGRAPH B ABOVE.

PAINTING

- (A) AFTER INSTALLATION, ALL DAMAGED COATINGS AND ALL BOLTS SHALL BE CLEANED AND PAINTED WITH THREE (3) FIELD COATS OF INERTOL 66 OR BITUMASTIC 50 OR EQUIVALENT, APPLIES TO UNDERGROUND CONSTRUCTION ONLY.

DRAWINGS

- (A) THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL FOUR PRINTS OF ALL SHOP DRAWINGS FOR PIPE AND FITTINGS AND MISCELLANEOUS DETAILS WHICH ARE NOT STANDARD CONSTRUCTION, AND ARE NOT MENTIONED IN THE REGULAR CATALOGUE OF THE COMPANY FURNISHING THE PIPE. NO WORK SHALL BE DONE IN THE SHOP UNTIL AFTER THE DRAWINGS HAVE BEEN APPROVED.

- (B) THE APPROVAL OF THE DRAWINGS BY THE ENGINEER SHALL NOT RELIEVE THE CONTRACTOR OF ANY OF HIS OBLIGATIONS IN CONNECTION WITH THIS CONTRACT.

- (C) TWO PRINTS OF EACH OF THE DRAWINGS SUBMITTED WILL BE RETURNED WITH THE CRITICISMS OR APPROVAL OF THE ENGINEER. IN CASE THE DRAWINGS ARE NOT APPROVED, THE CONTRACTOR SHALL AGAIN SEND FOR APPROVAL, DUPLICATE REVISED PRINTS OF THE DRAWINGS TO TAKE CARE OF THE CRITICISMS NOTED, AND AFTER THE DRAWINGS HAVE BEEN FINALLY APPROVED, THE CONTRACTOR SHALL FURNISH TO THE ENGINEER THREE (3) MYLAR OR REPRODUCIBLE CLOTH TRACINGS OF EACH DRAWING. NO WORK SHALL BE DONE IN THE SHOP UNTIL AFTER THE DRAWINGS HAVE BEEN FINALLY APPROVED.

EXPERIENCE QUALIFICATIONS

- (A) ALL BIDDERS WILL BE REQUIRED TO SHOW TO THE SATISFACTION OF THE ENGINEER THAT THE TYPE AND SIZE OF PIPE AND FITTINGS HE PROPOSES TO FURNISH WILL BE MADE BY A MANUFACTURER WHOSE PIPE HAS BEEN SUCCESSFULLY USED FOR LIKE WORK OUTSIDE OF THE BIDDERS WORKS FOR A PERIOD OF NOT LESS THAN FIVE YEARS.

MEASUREMENT

- (A) THE NUMBER OF LINEAR FEET OF PIPE AND CONNECTIONS TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF LINEAR FEET FURNISHED AND PLACED IN ACCORDANCE WITH THESE SPECIFICATIONS AS MEASURED ALONG THE AXIS OF THE PIPING INCLUDING FITTINGS AND VALVES CONNECTED UP IN PLACE. FOR CONNECTIONS BETWEEN NEW AND EXISTING MAINS, MEASUREMENT SHALL BE THE DISTANCE FROM CENTERLINE TO CENTERLINE OF MAINS AND THE ACTUAL LENGTH OF EXISTING MAIN ORDERED TO BE REMOVED TO MAKE THE CONNECTION.

PAYMENT

- (A) THE FOOTAGE MEASURED AS PROVIDED ABOVE SHALL BE PAID FOR AT THE CONTRACT PRICE BID PER LINEAL FOOT FOR "ITEM SPECIAL - TEMPORARY AND RELOCATED WATER MAIN" CLASSIFIED AS TO SIZE AND TYPE, FOR WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR EXCAVATION; FOR FURNISHING, HAULING, PLACING, CUTTING INTO AND CONNECTING THE PIPE AND PIPE BENDS; FOR FURNISHING AND INSTALLING THRUST BLOCKS, SHEETING AND BRACING, PIPE SUPPORT ASSEMBLIES, SAND BACKFILL AND INCIDENTAL CONCRETE; FOR CHLORINATION AND WATER USED FOR COMPACTION; FOR THE REMOVAL OF ALL SURPLUS EXCAVATION AND DISCARDED MATERIAL, SEEDING, AND REPAVING; AND FOR ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM EXCEPT FOR THE ITEMS SPECIFICALLY LISTED AS SEPARATE PAY ITEMS.

APPROVED _____ DATE Dec 2, 1981

William J. ...
ENGINEER OF DESIGN REVIEW

LOW SERVICE DISTRICT			
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB
WATERWORK NOTES			
EAST 9th STREET OVER CONRAIL			
CITY OF CLEVELAND B.P. NO. 1:0:13-4			
CLEVELAND		CUYAHOGA COUNTY	
OHIO			
DRAWN	CHECKED	REVIEWED	DESIGNED
DATE 11-15-81	DATE 11-15-81	DATE 11-15-81	DATE 11-15-81
BY EDS	BY RJA	BY J.M.H.	BY F.H.H.
			SHEET 1

WATERWORK NOTES

FHWA REGION	STATE	PROJECT
3	OHIO	M-1A10 (2)

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CUYAHOGA COUNTY
EAST NINTH STREET

ITEM SPECIAL PLUGGING EXISTING WATER MAINS AND TAPPING VALVES

WORK INCLUDED

- (A) THE WORK INCLUDED UNDER THIS ITEM SHALL CONSIST OF PLUGGING WATER MAINS AND BRANCHES, AND PLUGGING TAPPING VALVE CONNECTIONS AT THE LOCATIONS SHOWN ON THE DRAWINGS OR AS ORDERED, INCLUDING CAST IRON PLUGS OR CAPS WITH CLAMPS AND CONCRETE PIERS; ALL EXCAVATING, SHEETING AND BRACING, CONCRETE, SAND BACKFILL, BACKFILL, TEMPORARY REPAVING AND PERMANENT REPAVING, ALL AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK.
- (B) WHEN INDICATED ON THE PLANS OR AS ORDERED, THE CONTRACTOR SHALL MAKE PIPE CUTS, REMOVE PIPE AND FITTINGS AND SHALL PLUG OR CAP MAINS, PLUG CONNECTIONS OF MAINS, BRANCHES OR TAPPING VALVES, SHALL DO ALL THE EXCAVATING, BACKFILLING AND REPAVING, ALL AS REQUIRED.

MEASUREMENT

- (A) THE WATER MAINS AND BRANCHES PLUGGED WHICH ARE TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF EACH LISTED AND ESTIMATED SEPARATELY, COMPLETED AND ACCEPTED.

PAYMENT

- (A) THE UNIT PRICE STIPULATED FOR EACH (B) "ITEM SPECIAL - PLUGGING EXISTING WATER MAINS AND TAPPING VALVES" SHALL CONSTITUTE FULL COMPENSATION FOR PERFORMING ALL THE REQUIREMENTS OF THIS ITEM INCLUDING FURNISHING ALL NECESSARY MATERIALS, LABOR, TOOLS, EQUIPMENT AND INCIDENTALS TO MAKE THIS A COMPLETE ITEM OF WORK.

ITEM SPECIAL CUTTING - IN - VALVE COMPLETE

WORK INCLUDED

- (A) THE DIVISION OF WATER WILL SET THE TIME OF INSTALLATION AND THE CONTRACTOR WILL DO ALL PIPE CUTTING AND INSTALLING UNDER THE SUPERVISION OF THE DIVISION OF WATER AND HEAT. THE CONTRACTOR SHALL FURNISH AND HAUL TO THE PROPER LOCATION THE HUB VALVE, STANDARD NO. 38 DRESSER COUPLING OR ROCKWELL COUPLING, OR APPROVED EQUAL, CAST IRON PIPE AND LEAD FOR THE INSTALLATION. THE CONTRACTOR SHALL EXCAVATE, PROVIDE SHEETING AND BRACING AS NECESSARY AND BACKFILL AND REPAVE AS NECESSARY.
- (B) THE VALVES SHALL COMPLY WITH THE REQUIREMENTS OF THE ITEM "VALVES" OF THESE NOTES, INsofar AS THEY APPLY.

PAYMENT

- (A) THE WORK INCLUDED IN THIS ITEM SHALL BE PAID FOR AT THE UNIT PRICE BID FOR EACH ITEM SPECIAL "CUTTING IN VALVE COMPLETE" CLASSIFIED AS TO SIZE. THE PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR PERFORMING ALL EXCAVATION, SHEETING, BRACING, BACKFILLING AND REPAVING AND FURNISHING AND HAULING TO THE PROPER LOCATION AT THE JOB SITE, AND FURNISHING OF ALL MATERIALS.

ITEM SPECIAL TAPPING SLEEVE AND VALVE COMPLETE

WORK INCLUDED

- (A) THE CONTRACTOR SHALL FURNISH THE TAPPING SLEEVE AND VALVE AND ARRANGE FOR ITS INSTALLATION BY THE CITY OF CLEVELAND, DIVISION OF WATER AND HEAT AT THE LOCATION SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THE WORK SHALL INCLUDE ALL NECESSARY EXCAVATING, BACKFILLING, REPAVING, FURNISHING AND INSTALLING THE TAPPING SLEEVE AND VALVE AND ALL OTHER WORK NECESSARY FOR A COMPLETE INSTALLATION.
- (B) THE ACTUAL INSTALLATION WILL BE PERFORMED BY THE DIVISION OF WATER AND HEAT AS DESCRIBED IN THE "GENERAL" WATERWORK NOTES.

QUALITY OF VALVES AND SLEEVES

- (A) THE VALVES SHALL COMPLY WITH THE REQUIREMENTS OF THE ITEM "VALVES" OF THESE NOTES, INsofar AS THEY APPLY.
- (B) THE SLEEVES SHALL BE OF SIZE AS SHOWN AND SHALL CONFORM TO THE REQUIREMENTS AS DESCRIBED IN THE "TEMPORARY AND RELOCATED WATER MAINS" WATERWORK NOTES, INsofar AS THEY APPLY.

PAYMENT

- (A) THE UNIT PRICE STIPULATED FOR EACH "ITEM SPECIAL - TAPPING SLEEVE AND VALVE COMPLETE" CLASSIFIED AS TO SIZE SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING TAPPING SLEEVE AND VALVE AND PERFORMING EXCAVATING, SHEETING AND SHORING, BACKFILLING AND SAND BACKFILLING, SEEDING AND REPAVING, AS REQUIRED, AND FOR FURNISHING ALL LABOR, MATERIALS, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED.

ITEM SPECIAL 2" AIR COCK AND BOX COMPLETE

WORK INCLUDED

- (A) THE CONTRACTOR SHALL FURNISH THE 2-IN. PIPE AND FITTINGS AND THE 2-IN. AIR COCK VALVE AND INSTALL THE 2-IN. AIR COCK ASSEMBLY INCLUDING THE VALVE BOX COMPLETE AS SHOWN IN THE "WATERWORK DETAILS" AND AT THE LOCATIONS SHOWN IN THE PLANS.

PAYMENT

- (A) THE WORK INCLUDED IN THIS ITEM WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR EACH "ITEM SPECIAL - 2" AIR COCK AND BOX COMPLETE" WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR THE FURNISHING OF ALL LABOR, MATERIALS, SMALL TOOLS AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK IN PLACE.

ITEM SPECIAL PLUGGING ABANDONED TEMPORARY WATER MAIN

WORK INCLUDED

- (A) THE WORK INCLUDED IN THIS ITEM SHALL CONSIST OF PLUGGING ABANDONED TEMPORARY WATER MAINS AT FOUR LOCATIONS, REMOVING THE GALVANIZED STEEL TEMPORARY WATER MAIN, AND REMOVING VALVE BOXES AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER, THE WORK SHALL INCLUDE ALL EXCAVATING, BACKFILLING, REPAVING, INCIDENTAL CONCRETE AND OTHER MATERIALS, ALL AS REQUIRED FOR PROPER COMPLETION OF THE WORK.

PAYMENT

- (A) THE WORK INCLUDED IN THIS ITEM WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR "ITEM SPECIAL - PLUGGING ABANDONED TEMPORARY WATER MAIN" WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR THE FURNISHING OF ALL LABOR, MATERIALS, TOOLS, AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

LOW SERVICE DISTRICT
HOWARD, NEEDLES TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND HNTB

WATERWORK NOTES
EAST 9th STREET OVER CONRAIL
CITY OF CLEVELAND BR. NO. 1:013

APPROVED _____ DATE Dec 2, 1981

William A. Howard
ENGINEER OF DESIGN REVIEW

CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN E.D.S.	CHECKED P.J.K.	REVIEWED J.M.W.
DATE 11-13-81	DATE 11-19-81	DATE 11-23-81
SHEET		1

WATERWORK NOTES

FHWA REGION	STATE	PROJECT	
5	OHIO	M-1A10 (2)	

CUYAHOGA COUNTY
EAST NINTH STREET

ITEM SPECIAL-VALVES

WORK INCLUDED

(A) THE CONTRACTOR SHALL FURNISH ALL MATERIALS FOR AND SHALL PROPERLY SET IN PLACE AND CONNECT AT THE LOCATIONS SHOWN ON THE DRAWINGS OR AS DIRECTED. ALL AIR COCKS AND CUTTING-IN GATE VALVES OF THE VARIOUS SIZES AND TYPES SPECIFIED OR ORDERED, ALL AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT. THE CONTRACTOR SHALL FURNISH ALL THE MATERIALS FOR TAPPING GATE VALVES OF THE VARIOUS SIZES AND TYPES SPECIFIED OR ORDERED, ALL AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT. IN GENERAL, THIS WORK SHALL INCLUDE THE FURNISHING, PLACING, TESTING, AND PAINTING OF THE AIR COCKS AND GATE VALVES, OPERATING NUTS, AND OTHER ACCESSORIES AND APPURTENANCES, AND THE FURNISHING OF ALL LABOR, TOOLS AND APPLIANCES NECESSARY TO COMPLETE THE WORK AS SPECIFIED OR AS SHOWN.

GATE VALVES

- (A) TYPE OF VALVES: THE GATE VALVES SHALL BE MANUFACTURED IN FULL COMPLIANCE WITH THE STANDARD SPECIFICATIONS FOR GATE VALVES FOR ORDINARY WATER WORKS SERVICE OF THE AMERICAN WATER WORKS ASSOCIATION AWWA C-500- OR LATEST REVISION THEREOF AND IN ADDITION SHALL COMPLY WITH THE FOLLOWING SUPPLEMENTARY REQUIREMENTS. ALL GATE VALVES SHALL BE OF THE NON-REVOLVING DOUBLE DISC PARALLEL SEAT BOTTOM WEDGE OR SIDE WEDGE TYPE. IN OPENING OR CLOSING THE VALVE, THE GATES SHALL BE FORCED TO ASCEND OR DESCEND BY REASON OF THE THRUST EXERTED UPON THEM DIRECTLY BY THE VALVE STEM NUT; THIS THRUST BEING GENERATED BY THE ROTATION OF THE VALVE STEM. IN CLOSING THE VALVE, THE DISCS WHEN OPPOSITE THE PORTS, SHALL BE PRESSED FIRMLY AGAINST THE BODY SEATS BY WEDGES OR SOME OTHER DEVICE EQUALLY SUITABLE TO THE ENGINEER.
- (B) VALVES WITH STATIONARY STEMS: ALL GATE VALVES, UNLESS OTHERWISE ORDERED, SHALL BE MADE WITH SINGLE, NON-RIISING STEMS.
- (C) HUB ENDS: THE DIMENSIONS OF THE BELLS ON VALVES UP TO AND INCLUDING 24-INCHES IN DIAMETER SHALL CONFORM TO THOSE FOR CLASS D PRESSURE FITTINGS, AS REQUIRED BY AWWA C100.
- (D) MARKING: ALL GATE VALVES 3-INCHES AND OVER SHALL HAVE THE IDENTITY OF MAKER, SIZE AND THE YEAR WHEN MADE AND ALSO THE LETTERS "C. W. D." CAST UPON ITS BODY OR DOME IN RAISED LETTERS.
- (E) STIFFING BOXES: THE STIFFING BOX ON EACH GATE VALVE 3-INCHES OR OVER, MUST BE SEPARATE FROM THE DOME AND FASTENED TO IT BY BOLTS. VALVES 16-INCHES AND SMALLER, SHALL BE FURNISHED WITH "O" RING TYPE SEAL PLATE. THE SEAL PLATE SHALL FITTED WITH AT LEAST TWO (2) "O" RINGS, THE LOWER "O" RING SERVING AS THE PRESSURE SEAL AND THE UPPER "O" RING AS A COMBINED DIRT AND MOISTURE SEAL. THE "O" RINGS SHALL BE PRECISION RUBBER CORP. QUALITY COMPOUND NO. 122-70, OR APPROVED EQUAL.
- (F) SEAT AND GATE RINGS: DIMENSIONS OF THE BRONZE SEAT AND GATE RINGS SHALL BE PROPORTIONED TO FIT THE TEST PRESSURE REQUIRED, AND SHALL MEET THE APPROVAL OF THE ENGINEER. THE RINGS SHALL BE FIRMLY SECURED IN PLACE BY AN APPROVED DEVICE, WHICH WILL PREVENT THEM FROM WORKING LOOSE, PARTICULARLY WHEN THE VALVE IS LEFT PARTLY OPEN. DIMENSIONS OF THE BRONZE SEAT AND GATE RINGS FOR GATE VALVES SHALL BE NOT LESS THAN THAT SPECIFIED IN THE FOLLOWING TABLES. BODY SEAT RINGS SHALL BE MADE OF GRADE ONE BRONZE. GATE SEAT RINGS SHALL BE MADE OF GRADE FIVE BRONZE.

BODY AND GATE RINGS (DIMENSIONS IN INCHES)							
BODY RINGS				GATE RINGS			
BOTTOM WEDGE							
THICKNESS							
VALVE SIZE	FACE	DEPTH	AT BASE OF THREADS	FACE THICKNESS	FACE	FACE THICKNESS	DEPTH
12	3/4	5/8	7/32	7/32	13/16	5/32	11/32
SIDE WEDGE							
12	5/8	13/16	3/8	5/16	13/16	5/32	21/64

(G) VALVE STEM: ALL GATE VALVES SHALL BE OF THE SINGLE SCREW TYPE. THE STEMS SHALL BE OF GRADE THREE BRONZE. THREADS OF STEMS AND STEM NUTS SHALL BE OF ACME, MODIFIED ACME OR ONE-HALF V TYPE. THE LENGTH OF THE FLAT ON THE VALVE STEM SHALL BE EQUAL TO THE HEIGHT OF THE OPERATING NUT. IF REQUESTED, A MANUFACTURER'S CERTIFICATE OF TEST SHALL BE FURNISHED WITH ALL BRONZE STEMS. ALL STEM COLLARS SHALL BE CAST INTEGRAL WITH STEMS. THE DIAMETERS OF STEMS AT THE BASE OF THE THREAD SHALL BE NOT LESS THAN THOSE SHOWN BELOW. THE STEM SHALL BE OF SUFFICIENT LENGTH TO ALLOW THE REMOVAL OF PACKING WITHOUT NECESSITATING THE REMOVAL OF THE OPERATING NUT. THE STEM OPENING AND THRUST-BEARING RECESS SHALL BE GRADE ONE, BRONZE BUSHED WITH TWO (2) "O" RING SEALS LOCATED ABOVE THE THRUST COLLAR OR HAVE AN "O" RING LOCATED ABOVE THE THRUST COLLAR AND ONE BELOW FORMING A LUBRICANT CHAMBER. THE NUMBER OF THREADS PER INCH SHALL BE AS GIVEN BELOW.

SIZE OF VALVE INCHES	MINIMUM TENSILE STRENGTH	DIA. OF STEM AT BASE OF THREAD-IN.	MAXIMUM NOMINAL YIELD	NO. OF THREADS PER IN.	NO. ELONG.
12	60,000 PSI	1.188	35,000 PSI	3	15%

THE MANUFACTURER SHALL SUPPLY DATA CONCERNING TORQUE AND END PULL OR PUSH AT THE REQUEST OF THE ENGINEER.

- (H) WRENCH CAPS: THE WRENCH CAPS AND RETAINING NUTS ON HEADS OF VALVE STEMS AND PINION SHAFTS SHALL BE OF BRONZE OR DUCTILE IRON SPECIFICATION A 536, ON VALVES 4-IN. TO 20-IN. INCLUSIVE. THEY SHALL BE 1-3/4-IN. SQUARE ON TOP, 1-7/8-IN. SQUARE AT BASE, AND 1-3/4-IN. DEEP. MACHINED WRENCH CAPS FOR VALVES 3-IN. TO 48-IN. INCLUSIVE SHALL BE FITTED TO A MACHINED SQUARE STEM OR PINION SHAFT AND HELD IN PLACE BY A RETAINING NUT OF GRADE THREE BRONZE. WRENCH CAPS SHALL HAVE A CUT-AWAY SKIRT TO PERMIT EASY ACCESS TO GLAND BOLTS.
- (I) VALVES TO OPEN CLOCKWISE: ALL GATE VALVES 3-IN. AND OVER, INCLUDING BYPASS VALVES, SHALL BE MADE TO OPEN BY TURNING IN A CLOCKWISE DIRECTION. ALL VALVES TO BE MADE SO THAT THEY CAN BE EASILY OPERATED.
- (J) FACING OF GATES: ALL DISCS OR GATES AND THREADS FOR SEAT RINGS IN THE BODY SHALL BE MACHINED TRUE AND A GROOVE OR GROOVES SHALL BE MACHINED IN EACH DISC OR GATE FOR THE RECEPTION OF THE FACE RING. THE DISC AND SEAT RINGS SHALL BE SECURELY AND RIGIDLY ATTACHED TO THE DISCS OR BODY SEATS IN A MANNER APPROVED BY THE ENGINEER, AND THE RINGS ARE TO BE FINISHED TO A TRUE SURFACE.
- (K) BRONZE PARTS: THE STEMS, STEM NUTS, OPERATING NUTS, RETAINING NUTS, DISC AND SEAT RINGS, SHALL BE OF SOLID BRONZE. OTHER PARTS SUCH AS WEDGES, GLANDS, THRUST BEARINGS, GEAR SPINDLES, ROLLERS, SCRAPERS AND TRACKS, AND ALL OTHER PARTS COMING TOGETHER IN OPERATION, SHALL BE OF BRONZE OR SUBSTANTIALLY LINED WITH BRONZE OR STAINLESS STEEL OF A THICKNESS NO LESS THAN 1/4 OF AN INCH AND AS SHOWN ON DRAWINGS SUBMITTED AND APPROVED.

(L) CAST IRON PARTS: THE BODIES, COVERS, FRAMES, ETC., OF ALL GATE VALVES 3-INCHES AND OVER, SHALL BE OF CAST IRON.

(M) WATERWAY OPENING: WITH THE VALVE OPEN, AN UNOBSTRUCTED WATERWAY SHALL BE AFFORDED, THE DIAMETER OF WHICH IS NOT TO BE LESS THAN THE FULL NOMINAL DIAMETER OF THE VALVE.

MATERIAL SPECIFICATIONS

- (A) STRENGTH OF VALVES: THE GATE VALVE SHALL BE DESIGNED FOR 150 LB. WORKING PRESSURE AND SHALL WITHSTAND AN INTERNALLY APPLIED HYDROSTATIC PRESSURE AT ALL POINTS OF AT LEAST 300 LBS. PER SQUARE INCH. A FACTOR OF SAFETY OF NOT LESS THAN 10 SHALL BE USED ON THE DESIGN. SHOULD TESTS DEVELOP ANY WEAKNESS, THE VALVES FROM THAT DESIGN SHALL BE REJECTED AND A NEW DESIGN MADE.
- (B) REINFORCEMENT AT FLANGES: ALL VALVE FLANGES SHALL BE REINFORCED BY FILLETS IN ACCORDANCE WITH THE MANUFACTURER'S PRACTICE PROVEN SATISFACTORY IN ACTUAL SERVICE.
- (C) JOINTS: ALL JOINTS OF THE VALVES SHALL BE FACED TRUE IN A LATHE OR PLANER, AND PUT TOGETHER WITH A GASKET OF SOME MATERIAL ACCEPTABLE TO THE ENGINEER.
- (D) BOLT HOLES: ALL BOLT HOLES SHALL BE ACCURATELY DRILLED FROM TEMPLATES AND SPACED EQUAL DISTANCES APART.
- (E) BOLTS AND NUTS: ALL BOLTS AND NUTS SHALL BE MADE OF SILICONE BRONZE (ASTM B 98, ALLOY A) OR STAINLESS STEEL (ASTM A 276- , TYPE 302).
- (F) PARTS TO BE INTERCHANGEABLE: ALL PARTS OF VALVES OF THE SAME SIZE AND MAKE MUST BE PERFECTLY INTERCHANGEABLE AND ALL WORK BE DONE IN A THOROUGH AND WORKMANLIKE MANNER.
- (G) CASTINGS: ALL CASTINGS, WHETHER OF BRONZE, IRON OR STEEL, SHALL BE SOUND AND SMOOTH WITHOUT COLD SHITS, SWELLS, LUMPS, SCABS, BLISTERS, SAND HOLES OR OTHER IMPERFECTIONS, AND SHALL BE MADE IN ACCORDANCE WITH THE BEST MODERN FOUNDRY PRACTICE TO OBTAIN CASTINGS OF THE BEST QUALITY AND OF UNIFORM THICKNESS. NO WELDING, PLUGGING OR FILLING OF HOLES OR OTHER DEFECTS WILL BE PERMITTED. FOR PARTS WHOSE THICKNESS IS LESS THAN ONE (1") INCH, CASTING BEING THINNER THAN THE SPECIFIED THICKNESS BY .06 INCH OR MORE SHALL BE REJECTED, AND FOR PARTS WHOSE THICKNESS IS ONE (1") INCH OR MORE, CASTINGS, BEING THINNER THAN SPECIFIED BY .08 INCH OR MORE SHALL BE REJECTED.
- (H) BRONZE PARTS:
 (1) BRONZE FOR PARTS, OTHER THAN THOSE LISTED BELOW SHALL BE GRADE ONE OR APPROVED EQUIVALENT.
 (2) VALVE STEMS, PINION SHAFTS, STEM NUTS, WRENCH CAPS AND RETAINING NUTS SHALL BE MADE OF GRADE THREE BRONZE.
 (3) DISC RINGS SHALL BE MADE OF GRADE FIVE BRONZE.
- (I) TESTS OF BRONZE:
 (1) IF DEMANDED, A MANUFACTURER'S CERTIFICATE OF TEST SHALL BE FURNISHED WITH ALL BRONZE STEMS.
 (2) ALL STEMS OF 16-INCH GATE VALVES AND OVER, SHALL HAVE A PROLONGATION ON ONE END OF EACH STEM, OF THE SAME DIMENSIONS AND CROSS SECTION AS THE STEM, AND OF SUFFICIENT LENGTH TO ENABLE THE CUTTING OF SPECIMENS PARALLEL WITH LONGITUDINAL AXIS OF THE STEM. SPECIMENS SHALL BE CUT

APPROVED _____ DATE Dec 2, 1967

M. Williams
ENGINEER OF DESIGN REVIEW

LOW SERVICE DISTRICT

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

WATERWORK NOTES

EAST 9th STREET OVER CONRAIL
CITY OF CLEVELAND RR. NO. 11015

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN E.D.S.	CHECKED P.S.K.	DESIGNED J.M.F.	REVISED F.A.M.
DATE: 11/28/67	DATE: 8/2/67	DATE: 11/28/67	DATE: 11/28/67

SHEET _____

WATERWORK NOTES

FHWA REGION	STATE	PROJECT	
5	OHIO	M-1A10 (2)	

30
62

CUYAHOGA COUNTY
EAST NINTH STREET

ITEM SPECIAL - VALVES (CONT.)

- FROM PROLONGATIONS ONE-HALF WAY BETWEEN SURFACE AND CENTRAL AXIS. OTHER METHODS OF TEST WILL BE CONSIDERED BY THE ENGINEER BUT MUST BE SUBMITTED IN DETAIL WITH THE BID.
- (3) FOR ALL STEMS OF GATE VALVES SMALLER THAN 16-INCHES, NOT LESS THAN TWO TEST PIECES SHALL BE CAST FROM THE MOLTEN METAL OF EACH HEAT, FROM WHICH VALVE STEMS ARE BEING MADE.
 - (4) ALL STEMS MADE FROM BRONZE SHOWING LESS STRENGTH, ELONGATION AND OR DUCTILITY THAN ABOVE REQUIRED SHALL BE REJECTED.
 - (5) TESTS OF VALVE STEMS, OR THE VARIOUS PARTS OF ANY VALVE MAY BE MADE AT ANY TIME BEFORE OR AFTER DELIVERY, AND IF FOUND TO BE DEFICIENT IN STRENGTH OR UNSATISFACTORY TO THE ENGINEER, THE WHOLE LOT OR SHIPMENT MAY BE REJECTED.
- (J) **CAST IRON:**
- (1) **QUALITY - CAST IRON SHALL CONFORM TO ASTM SPECIFICATIONS A 126, CLASS B, OR LATEST REVISION THEREOF. ALL IRON CASTINGS SHALL BE TOUGH AND WITHOUT BRITTLENESS, SUCH AS MAY BE CUT DRILLED AND CHIPPED BY HAND WITH DUE EASE. A BLOW FROM A HAMMER SHALL PRODUCE AN INDENTATION ON THE EDGE OF THE CASTING WITHOUT FLAKING THE METAL.**
 - (2) **TESTS - BARS FROM THE MOLTEN METAL FROM WHICH THE VALVES ARE BEING MADE SHALL BE TESTED AT SUCH TIME AND IN SUCH MANNER AS THE ENGINEER MAY REQUIRE. THE REQUIREMENTS OF ASTM SPECIFICATIONS A 126 SHALL GOVERN TESTING PROCEDURES TO DETERMINE THE PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE IRON CASTINGS. SHOULD THE RESULT OBTAINED FROM THE BAR TESTED FAIL TO SHOW THE CAST IRON MEETS THE REQUIREMENTS HEREIN SPECIFIED, THE ENTIRE MELT WILL BE REJECTED. TEST BARS, HOWEVER, WHOSE FAILURE IS DUE TO INHERENT DEFECTS SHALL NOT BE CONSIDERED. ALL VALVES MADE FROM IRON SHOWING LESS STRENGTH THAN CALLED FOR IN THE ASTM SPECIFICATIONS SHALL BE REJECTED.**
- (K) **QUALITY OF WROUGHT IRON: ALL WROUGHT IRON SHALL BE TOUGH, FIBROUS, AND UNIFORM IN CHARACTER; SPECIMENS CUT FROM BARS AND BROKEN IN A TESTING MACHINE SHALL SHOW A TENSILE STRENGTH OF NOT LESS THAN 45,000 PSI WITH AN ELONGATION OF 18 PERCENT IN EIGHT DIAMETERS.**
- (L) **QUALITY OF MATERIALS:**
- (1) GRADE ONE CAST BRONZE SHALL CONFORM TO THE PROPERTIES OF ASTM B 62.
 - (2) GRADE TWO CAST BRONZE SHALL CONFORM TO THE PROPERTIES OF ASTM B 584, ALLOY 864.
 - (3) GRADE THREE CAST BRONZE SHALL CONFORM TO THE PROPERTIES OF ASTM B 584, ALLOY 867.
 - (4) GRADE FOUR ROLLED BRONZE SHALL CONFORM TO THE PROPERTIES OF ASTM B 21, ALLOY 464.
 - (5) GRADE FIVE BRONZE SHALL BE SUFFICIENTLY MALLEABLE TO CONFORM TO DOVE-TAILED GROOVES WHEN PEENED OR ROLLED, AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH, WITHOUT DEFORMATION, OF 4,000 PSI, AND SHALL HAVE THE FOLLOWING CHEMICAL COMPOSITION:
- | | |
|-----------------|------|
| COPPER, PERCENT | 91.0 |
| TIN, PERCENT | 0.0 |
| ZINC, PERCENT | 5.0 |
| LEAD, PERCENT | 4.0 |
- (6) **SILICON BRONZE - THIS BRONZE SHALL CONFORM TO ASTM SPECIFICATIONS B 98, ALLOY 655.**

- (M) **STAINLESS STEEL: THE STAINLESS STEEL SHALL CONFORM TO ASTM SPECIFICATIONS A-276, TYPE 302.**
- (N) **CAST IRON: THE CAST IRON SHALL CONFORM TO ASTM SPECIFICATIONS A 126, CLASS B, OR LATEST REVISION THEREOF.**
- (O) **OTHER MATERIALS: ALL OTHER MATERIALS USED IN THE MANUFACTURE OF THESE VALVES AND NOT SPECIFIED IN THE SPECIFICATIONS, SHALL BE OF THE BEST QUALITY OF THEIR RESPECTIVE KINDS, AND SUBJECT TO INSPECTION, TESTS, AND APPROVAL BY THE ENGINEER.**
- (P) **CHEMICAL ANALYSIS: CHEMICAL ANALYSIS OF THE MATERIAL USED SHALL BE FURNISHED BY THE CONTRACTOR WHENEVER REQUIRED BY THE ENGINEER.**
- (Q) **CLEANING OF CASTINGS: ALL IRON CASTINGS SHALL BE THOROUGHLY CLEANED ON THE OUTSIDE AND INSIDE SURFACES AND PROTECTED FROM RAIN OR MOISTURE UNTIL THEY ARE PAINTED.**
- (R) **HYDROSTATIC TESTS AT SHOP: ALL GATE VALVES SHALL BE TESTED IN THE SHOP BY HYDROSTATIC PRESSURE, BY CLOSING THE VALVE AND APPLYING THE REQUIRED TEST PRESSURE IN THE BODY AND DOME OF THE VALVE AS SPECIFIED BELOW.**

THIS IS MODIFICATION OF SECTION 29 OF THE "STANDARD SPECIFICATIONS AWWA DESIGNATION C-500-71". ALL LEAKS, FLAWS OR OTHER DEFECTS DEVELOPED IN MAKING THESE TESTS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER OR THE ENTIRE PIECE SHALL BE REJECTED. AFTER TESTING, ALL VALVES SHALL BE THOROUGHLY DRAINED. ALL EQUIPMENT FOR TESTING AND ALL TESTS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE.
- (S) **PERFORMANCE TESTS: EACH VALVE SHALL BE OPERATED IN THE POSITION THAT IT WILL ASSUME IN SERVICE AND FOR THE FULL LENGTH OF GATE TRAVEL IN BOTH DIRECTIONS, TO DEMONSTRATE THE FREE AND PERFECT FUNCTIONING OF ALL PARTS IN THE INTENDED MANNER. ANY DEFECTS OF WORKMANSHIP SHALL BE CORRECTED AND THE TEST REPEATED UNTIL SATISFACTORY PERFORMANCE IS DEMONSTRATED.**

PLACING AND TESTING

- (A) ALL VALVES SHALL BE SET ACCURATELY AND CAREFULLY TO THE LINES AND GRADES GIVEN. ALL CONNECTIONS TO THE PIPE SHALL HAVE THE NECESSARY FLANGE, LEAD, SCREWED, VICTUALIC OR SOLDERED ENDS AS REQUIRED.
- (B) AFTER THE VALVES ARE SET IN PLACE AND READY TO OPERATE, THE CONTRACTOR SHALL TEST THEM UNDER WORKING PRESSURE AND CONDITIONS HEREIN SPECIFIED; AND ANY VALVE FOUND TO LEAK SHALL BE MADE WATERTIGHT AND, IF FOUND TO BE OF FAULTY DESIGN, SHALL BE SATISFACTORILY REPAIRED OR REPLACED BY THE CONTRACTOR.

PAINTING

- (A) IRON BODY VALVES SHALL EITHER BE DIPPED IN ASPHALT PAINT AND ALL BRONZE PARTS CLEANED, OR ALL IRON CASTINGS SHALL BE PAINTED INSIDE, BEFORE ASSEMBLING, WITH TWO (2) COATS OF APPROVED PAINT, AND, AFTER PASSING THE HYDRAULIC TEST, SHALL BE GIVEN AT LEAST TWO (2) COATS OF APPROVED PAINT OUTSIDE.
- (B) AFTER ERECTION, ALL EXPOSED METAL SURFACES OF VALVES EXCEPT BRASS OR BRONZE SHALL BE PAINTED WITH (2) FIELD COATS OF COAL TAR PITCH PAINT EQUAL TO INTERTOL 66 OR KOPPERS BITUMASTIC 50, OR APPROVED EQUAL.

DRAWINGS

- (A) PRIOR TO THE MANUFACTURE OF ANY VALVES, THE CONTRACTOR SHALL SUBMIT FOR THE APPROVAL OF THE ENGINEER AND DIRECTOR OF PUBLIC UTILITIES OF THE CITY OF CLEVELAND COMPLETE WORKING, DETAIL, AND DIMENSION DRAWINGS SHOWING THICKNESSES AND KINDS OF MATERIAL, AND SIMILAR INFORMATION.
- (B) TWO PRINTS EACH OF THE DRAWINGS SUBMITTED WILL BE RETURNED WITH THE CRITICISMS OR APPROVAL OF THE ENGINEER. IN CASE THE DRAWINGS ARE NOT APPROVED, THE CONTRACTOR SHALL AGAIN SEND FOR APPROVAL DUPLICATE REVISED PRINTS OF THE DRAWINGS TO TAKE CARE OF THE CRITICISMS NOTED, AND AFTER THE DRAWINGS HAVE BEEN FINALLY APPROVED, THE CONTRACTOR SHALL FURNISH TO THE ENGINEER THREE (3) SETS OF MYLAR OR REPRODUCIBLE CLOTH, ONE OF WHICH SHALL BE FURNISHED TO THE DIRECTOR OF PUBLIC UTILITIES OF THE CITY OF CLEVELAND AND ONE SET RETURNED TO THE CONTRACTOR. NO WORK SHALL BE DONE IN THE SHOP UNTIL AFTER THE DRAWINGS HAVE BEEN FINALLY APPROVED.

PAYMENT

- (A) THE UNIT PRICE STIPULATED FOR EACH "ITEM SPECIAL - VALVES" CLASSIFIED AS TO SIZE AND TYPE, SHALL INCLUDE THE FURNISHING, PLACING, TESTING AND PAINTING OF THE AIR COCK, DRAIN VALVES, GATE VALVES, CHECK VALVES AND INSERTING VALVES, INCLUDING BY-PASS VALVES, OPERATING NUTS AND OTHER ACCESSORIES AND APPURTENANCES AND THE FURNISHING OF ALL MATERIALS, LABOR, TOOLS AND APPLIANCES NECESSARY TO COMPLETE THE WORK AS SPECIFIED OR AS SHOWN.

APPROVED _____ DATE Dec 2, 1981

William J. ...
ENGINEER OF DESIGN REVIEW

LOW SERVICE DISTRICT			
HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB
WATERWORK NOTES			
EAST 9th STREET OVER CONRAIL			
CITY OF CLEVELAND BR. NO. 1:013			
CLEVELAND		CUYAHOGA COUNTY	
OHIO			
DRAWN EDS DATE: 10/14/81	TRACED RJK DATE: 10/20/81	CHECKED JAM DATE: 11/23/81	REVIEWED FJM DATE: 11/23/81
			REVISIONS SHEET

WATERWORK NOTES

FWWA REGION	STATE	PROJECT
5	OHIO	M-1A10 (2)

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62

CUYAHOGA COUNTY
EAST NINTH STREET

ITEM SPECIAL-MISCELLANEOUS METAL WORK

WORK INCLUDED

- (A) THE CONTRACTOR SHALL FURNISH AND INSTALL ALL MISCELLANEOUS METAL WORK WHICH IS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT AND IS NOT SPECIFICALLY INCLUDED UNDER THE OTHER ITEMS OF THESE SPECIFICATIONS.
- (B) IN GENERAL, THIS WORK SHALL INCLUDE FURNISHING AND INSTALLING OF VALVE BOXES AND COVERS, STRUCTURAL MEMBERS, BRONZE BOLTS, AND OTHER SIMILAR ITEMS REQUIRED FOR THE PROPER COMPLETION OF THE WATER WORK.

MATERIALS

- (A) ALL CASTINGS SHALL CONFORM TO THE REQUIREMENTS OF ITEM 604 OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, "CONSTRUCTION AND MATERIALS SPECIFICATIONS," EXCEPT THAT:

MANHOLE FRAME AND COVERS CAST IRON SHALL CONFORM TO ASTM DESIGNATION 48, CLASS NO. 30.

VALVE BOXES AND COVERS SHALL BE GRAY IRON CASTINGS, IN WHICH APPEARANCE AND DIMENSION TOLERANCES ARE PRIMARY CONSIDERATIONS AND STRENGTH IS NOT A PRIMARY OR MAJOR CONSIDERATION. VALVE BOXES AND COVERS SHALL BE ASTM DESIGNATION A 43 WITH NO SPECIFIC REQUIREMENT AS TO CLASS. CHEMICAL COMPOSITION SHALL NOT BE CONSIDERED, BUT THE MATERIAL SHALL BE OF GOOD QUALITY AND OF SUCH CHARACTER AS SHALL MAKE THE METAL OF THE CASTINGS STRONG, TOUGH, AND OF EVEN GRAIN. THE METAL SHALL BE MADE WITHOUT ANY ADMIXTURE OF CINDER IRON OR OTHER INFERIOR METAL.

WORKMANSHIP AND FINISH SHALL CONFORM SUBSTANTIALLY TO THE DIMENSIONS ON THE CONTRACT DRAWINGS OR FURNISHED DRAWINGS. THE CASTINGS SHALL BE FREE FROM INJURIOUS DEFECTS, CRACKS, GAS HOLES, FLAWS, AND EXCESSIVE SHRINKAGE. ADDITIONAL INSPECTION MAY BE MADE AT THE PROJECT OR WORK SITE. INSPECTION SHALL BE VISUAL INSPECTION FOR APPEARANCES AND SURFACE SMOOTHNESS IN COMPARISON WITH SAMPLES ACCEPTED AS STANDARD.

SAMPLE CASTINGS FROM EACH PATTERN, WHEN REQUIRED BY THE ENGINEER, SHALL BE SUBMITTED BY THE MANUFACTURER FOR THE PURPOSE OF ESTABLISHING STANDARDS OF APPEARANCE AND DIMENSIONAL TOLERANCES. THE MANUFACTURER SHALL CERTIFY THAT HIS PRODUCT CONFORMS TO THESE SPECIFICATIONS. EACH CERTIFICATION SO FURNISHED SHALL BE SIGNED BY AN AUTHORIZED AGENT OF THE MANUFACTURER.

- (B) ALL STEEL SHALL MEET THE REQUIREMENTS OF THE "SPECIFICATIONS FOR STRUCTURAL STEEL," SERIAL DESIGNATION A 36- , ADOPTED BY THE AMERICAN SOCIETY FOR TESTING AND MATERIALS.
- (C) WHERE IRON OR STEEL IS SHOWN GALVANIZED, CADMIUM PLATED, PARKERIZED OR OTHERWISE TREATED, OR IS SO ORDERED, NO ADDITIONAL ALLOWANCE WILL BE MADE FOR SUCH TREATMENT. ALL METAL TO BE GALVANIZED SHALL BE THOROUGHLY CLEANED, BY IMMERSION IN PICKLING LIQUORS. GALVANIZING SHALL BE PERFORMED BY DIPPING IN HOT ZINC BATH AND KEEPING THE METAL IMMersed UNTIL THE TEMPERATURE OF THE METAL HAS OBTAINED THE SAME TEMPERATURE AS THAT OF THE BATH. CADMIUM PLATING SHALL BE BY AN APPROVED PROCESS AND PLATING SHALL BE FROM 0.0003 TO 0.0005 INCH THICK.
- (D) ALUMINUM, EXCEPT AS OTHERWISE REQUIRED, SHALL BE ALUMINUM ALLOY EQUIVALENT TO SPECIFICATION 6063. RIVETS AND SCREWS SHALL BE 2017 ALLOY ALUMINUM

PLATE AND STRUCTURAL SHAPES SHALL BE 6061-T6 AND EXTRUDED SHAPES SHALL BE 6063-T5.

- (E) BRASS SHALL BE OF A COMMERCIAL GRADE CONFORMING TO THE "STANDARD SPECIFICATIONS FOR BRASS PLATE, SHEET, STRIP, AND ROLLED BAR," ASTM DESIGNATION B 36- , ALLOY NO. 3.
- (F) BRONZE FOR BOLTS, NUTS, AND ANCHOR BOLTS SHALL BE TOBIN OR MANGANESE BRONZE OR OF SIMILAR APPROVED MATERIAL.
- (G) COPPER-SILICON ALLOY SHALL CONFORM TO THE "STANDARD SPECIFICATIONS FOR COPPER-SILICON ALLOY PLATE, SHEET, STRIP AND ROLLED BAR FOR GENERAL PURPOSES," ASTM DESIGNATION B 97- , TYPE B.
- (H) STAINLESS STEEL RODS AND FASTENERS SHALL CONFORM TO THE REQUIREMENTS OF "SPECIFICATIONS FOR HOT ROLLED AND COLD-FINISHED STAINLESS AND HEAT-RESISTANT BARS," ASTM DESIGNATION A 276- , TYPE 304.

CLEANING AND TESTING

- (A) ALL CASTINGS SHALL BE THOROUGHLY CLEANED AND SUBJECTED TO A CAREFUL HAMMER TEST. NO CASTINGS SHALL BE COATED UNLESS CLEAN AND FREE FROM RUST, AND APPROVED IN THESE RESPECTS BY THE ENGINEER OR HIS AUTHORIZED INSPECTOR IMMEDIATELY BEFORE BEING DIPPED.

COATING

- (A) EACH CASTING SHALL BE SPRAYED OR BRUSHED INSIDE AND OUT WITH ONE COAT OF ASPHALTIC COMPOUND VARNISH. THE VARNISH SHALL BE MADE OF HIGH GRADE ASPHALT FLUXED AND BLENDED WITH PROPERLY TREATED DRYING OILS AND THINNED TO A PROPER CONSISTENCY WITH A VOLATILE SOLVENT. OTHER METHODS OF COATING AND TYPES OF COATING MATERIALS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

INSPECTION

- (A) THE ENGINEER OR HIS AUTHORIZED ASSISTANT, SHALL HAVE THE RIGHT TO INSPECT THE MATERIAL AND WORK DONE. SUCH INSPECTION SHALL NOT RELIEVE THE CONTRACTOR FROM ANY OBLIGATION TO PERFORM SAID WORK STRICTLY IN ACCORDANCE WITH THE SPECIFICATIONS, OR ANY MODIFICATION THEREOF, AS HEREIN PROVIDED, AND WORK NOT SO CONSTRUCTED SHALL BE REMOVED AND MADE GOOD BY THE CONTRACTOR, AT HIS OWN EXPENSE.

VALVE BOXES AND COVERS

- (A) THE CONTRACTOR SHALL FURNISH AND INSTALL, OVER EACH VERTICALLY SET VALVE AT THE LOCATIONS SHOWN ON THE DRAWINGS, OR AS REQUIRED, VALVE BOXES AND COVERS OF THE TYPES AND SIZES INDICATED ON THE CONTRACT PLANS. THESE SHALL BE CAREFULLY LOCATED OVER THE VALVE NUTS, AND SHALL BE SET PLUMB AND TRUE, TO ELEVATION AS REQUIRED.

DETAILED DRAWINGS

- (A) COMPLETE DETAILED DRAWINGS OF MISCELLANEOUS METAL WORK SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL, PRIOR TO THE MANUFACTURE OF ANY WORK TO BE FURNISHED UNDER THIS ITEM, IN ACCORDANCE WITH THESE SPECIFICATIONS.

PAINTING

- (A) ALL MISCELLANEOUS METAL WORK NOT GALVANIZED SHALL BE THOROUGHLY CLEANED AND GIVEN THREE (3) FIELD COATS OF COAL TAR PITCH, INERTOL 66 OR BITUMASTIC 50, OR APPROVED EQUAL.

PAYMENT

- (A) PAYMENT FOR MISCELLANEOUS METAL WORK SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE OTHER ITEMS OF WORK AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.

APPROVED _____ DATE Dec 2, 1961

William A. Bassett
ENGINEER OF DESIGN REVIEW

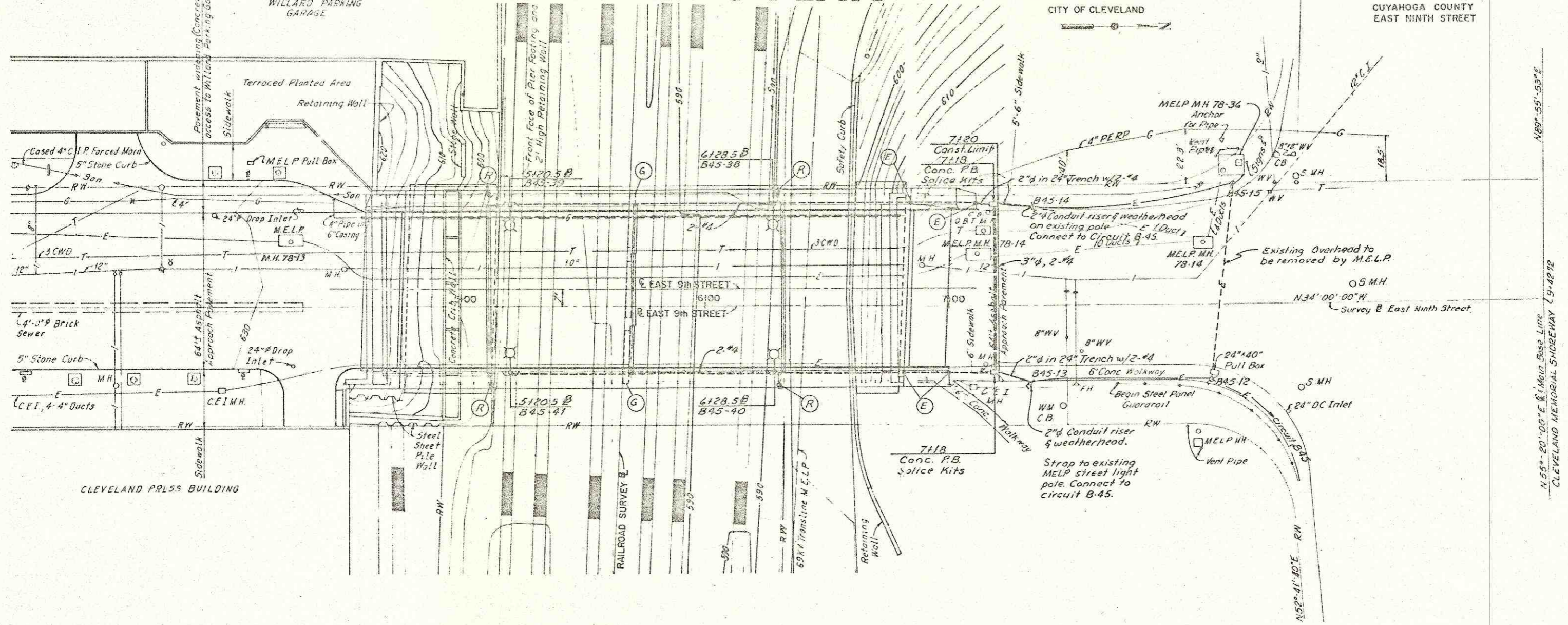
LOW SERVICE DISTRICT			
HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB
WATERWORK NOTES			
EAST 9th STREET OVER CONRAIL			
CITY OF CLEVELAND BR. NO. 1:013			
CLEVELAND	CUYAHOGA COUNTY	OHIO	
DRAWN E.D.S.	TRACED P.L.K.	CHECKED J.M.M.	REVIEWED F.A.W.
DATE 12-2-61	DATE 12-2-61	DATE 12-2-61	DATE 12-2-61
SHEET			1

LIGHTING PLAN

FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10(2)

32
62

CUYAHOGA COUNTY
EAST NINTH STREET



- LEGEND**
- 400W HPS LAMP
TYPE III LUMINAIRE
 - EXISTING LIGHT POLE
 - CONCRETE PULL BOX
 - 2" CONDUIT (713.04)
 - 3" CONDUIT (713.04), CONCRETE ENCASED
(PER HL-12) IN 24" DEEP TRENCH
 - EXISTING OVERHEAD LINE (NO WORK)
 - LIGHT POLE TO BE REMOVED, AS PER PLAN
 - EXPANSION FITTING (PER HL-5)
 - STRUCTURE GROUNDING SYSTEM (PER HL-7)

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB
LIGHTING PLAN EAST 9th STREET OVER CONRAIL CITY OF CLEVELAND BR. NO. 1:013		
SCALE: 1" = 20'		
CLEVELAND CUYAHOGA COUNTY OHIO		
DRAWN EFJ DATE 8/18/81	TRACED RDJ DATE 8/18/81	CHECKED DATE REVIEWED EFJ DATE 11/18/81
		SHEET 2-1

LIGHTING NOTES

FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10 (2)

33
62

CUYAHOGA COUNTY
EAST NINTH STREET

CONCRETE LIGHTING STANDARDS AND BRACKET SPECIFICATIONS

SPECIFICATIONS

THESE NOTES ARE SUPPLEMENTAL TO ITEMS 625 AND 713 OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS.

REFERENCE SHALL BE MADE TO STANDARD CONSTRUCTION DRAWINGS LISTED ON THE TITLE SHEET OF THESE PLANS.

GENERAL

THIS PROJECT HAS BEEN DESIGNED ON THE BASIS OF FULL LIGHTING WITH AN AVERAGE ILLUMINATION OF 5.0 FT-CD. (MAINT.) AND A MAXIMUM UNIFORMITY RATIO OF 2.0 TO 1.

THIS PROJECT HAS BEEN DESIGNED ON THE BASIS OF A 5% MAXIMUM VOLTAGE DROP WITH 480-VOLT, TWO-WIRE, CONTROLLED SECONDARY SERVICE, ONE SIDE GROUNDED, BEING SUPPLIED BY:

CITY OF CLEVELAND
DIVISION OF LIGHT AND POWER (MELP)
1201 LAKESTREET AVENUE
CLEVELAND, OHIO 44114

202 - REMOVAL OF EXISTING LIGHTING SYSTEM

THE CONTRACTOR SHALL CAREFULLY REMOVE THE EXISTING LIGHTING UNITS FROM THE BRIDGE. ALL MATERIAL, INCLUDING POLES, BRACKET ARMS, LUMINAIRES, LAMPS, BASES, AND OTHER SALVAGEABLE ITEMS SHALL BE CAREFULLY PACKED AND DELIVERED TO:

CITY OF CLEVELAND
DIVISION OF LIGHT AND POWER
2490 W. 41ST STREET
CLEVELAND, OHIO 44113
ATTN: MR. LEO MCINTYRE (664-4200)

BASIS OF PAYMENT SHALL BE AT UNIT BID PRICE PER EACH, ITEM 202 "REMOVAL OF EXISTING LIGHTING UNITS", COMPLETE, AS SPECIFIED HEREIN, AND APPROVED BY THE ENGINEER.

625.07 - 713.11 LUMINAIRES

STYLE C LUMINAIRES SHALL HAVE SINGLE RATED 480 VOLT, 400 WATT, INTEGRAL REGULATOR BALLASTS FOR USE WITH HIGH PRESSURE SODIUM LAMPS AND SHALL BE GENERAL ELECTRIC M-400A, WESTINGHOUSE OV-25 TUDOR, IIT AMERICAN 400 OR EQUAL APPROVED BY THE ENGINEER.

THE HIGH PRESSURE SODIUM BALLAST, INCLUDING STARTING AIDS, MUST PROTECT ITSELF AGAINST NORMAL LAMP FAILURE MODES. THE BALLAST SHALL BE CAPABLE OF OPERATION WITH THE LAMP IN AN OPEN OR SHORT CIRCUIT CONDITION FOR SIX MONTHS WITHOUT SIGNIFICANT LOSS OF BALLAST LIFE.

THE LUMINAIRE MANUFACTURER SHALL SUPPLY BALLAST ELECTRICAL DATA AND LAMP OPERATING VOLT-WATT TRACES FOR NOMINAL AND PLUS OR MINUS TEN PERCENT (+ 10%) RATED LINE VOLTAGE TO VERIFY BALLAST PERFORMANCE AND COMPLIANCE WITH LAMP SPECIFICATIONS, FOR THE RATED LIFE OF THE LAMP.

713.14 LAMPS

HIGH PRESSURE SODIUM LAMPS SHALL BE GENERAL ELECTRIC "LUCALOX" WESTINGHOUSE "CERAMALUX", SYLVANIA "LUMALUX", OR EQUAL APPROVED BY ENGINEER.

CONNECTOR KITS

TYPE IX CABLE CONNECTIONS MAY NOT BE SUBSTITUTED WHERE TYPE II OR III CABLE CONNECTIONS ARE SPECIFIED IN HAND HOLES OR TRANSFORMER BASES OF LIGHT POLES.

ITEM 625 - CABLE SPLICING KIT

THIS ITEM SHALL CONSIST OF PROVIDING AND INSTALLING AN APPROVED CABLE SPLICING KIT AS DESCRIBED IN PARAGRAPH 5 OF SECTION 713.15 OF THE DOT CONSTRUCTION AND MATERIAL SPECIFICATIONS. THE COST OF ALL MATERIALS, LABOR, AND EQUIPMENT NECESSARY FOR THIS ITEM SHALL BE INCLUDED IN THE UNIT PRICE BID FOR EACH "ITEM 625 - CABLE SPLICING KIT."

THESE SPECIFICATIONS APPLY ONLY TO THE MANUFACTURE OF MACHINE-MADE CONCRETE LIGHTING STANDARDS TO BE USED FOR THE SUPPORT OF LIGHTING UNITS. THE STANDARDS TO BE FURNISHED UNDER THESE SPECIFICATIONS SHALL BE OF THE DESIGN AND DIMENSIONS AS SHOWN ON THE DETAILED DRAWING OF LIGHTING STANDARD SHOWN ON SHEET 33.

AGGREGATE - ALL AGGREGATES SHALL BE GRADED FROM 3/8" TO #100 SIEVE, WITH NOT MORE THAN 5% PASSING THE #100 SIEVE - UNLESS OTHERWISE SPECIFIED. AGGREGATES SHOULD BE SOUND, DURABLE AND FREE FROM CHERT. A MINIMUM OF 20% OF THE TOTAL AGGREGATE SHALL BE CRUSHED BLACK GRANITE. THE CONTRACTOR SHALL BE REQUIRED TO FURNISH SAMPLES OF THE AGGREGATE FOR APPROVAL OF COLOR AND TEXTURE.

CEMENT - THE HIGH EARLY STRENGTH CEMENT USED IN THE MANUFACTURE OF THESE STANDARDS SHALL CONFORM TO CURRENT AMERICAN SOCIETY FOR TESTING MATERIALS SPECIFICATION C-150.

WATER CEMENT RATIO - THE WATER USED SHALL BE FREE FROM ACIDS, ALKALIES, OIL, OR VEGETABLE MATTER. THE MAXIMUM QUANTITY OF GALLONS OF WATER PER SACK OF CEMENT SHALL BE IN PROPORTION REQUIRED TO PRODUCE A CONCRETE WITH A MINIMUM 24-HOUR COMPRESSIVE STRENGTH OF 3,500 PSI, UNDER STEAM CURING AS SPECIFIED, BEFORE PRESTRESSING IS RELEASED.

REINFORCEMENT - THE HIGH TENSILE PRESTRESSING STEEL USED SHALL HAVE AN ULTIMATE STRENGTH OF AT LEAST 250,000 PSI, AND SHALL BE PRESTRESSED TO NOT MORE THAN 70% OF THE ULTIMATE STRENGTH. THE PRIMARY REINFORCING SHALL BE IN ACCORDANCE WITH ASTM DESIGNATION A416-57T OR A421-58T. SPACER RINGS WITH NON-FERROUS STUDS SHALL BE SECURELY ATTACHED TO THE REINFORCEMENT TO INSURE A MINIMUM COVERAGE OF 1/2-IN. OF CONCRETE. WHERE THE MINIMUM COVERAGE CANNOT BE MAINTAINED NEXT TO A CABLE ENTRANCE, HANDHOLE, OR WIRE INLET, THE REINFORCING SHALL BE PROTECTED BY MEANS OF A NON-CORROSIVE SLEEVE. SPIRAL WRAPPING OF A DIAMETER NOT LESS THAN .105 INCHES SHALL BE SPACED ON 2-1/2-IN. PITCH FROM THE TOP OF THE POLE FOR A DISTANCE OF NOT LESS THAN 5-FT., AND BE SECURELY TIED TO THE REINFORCEMENT BY AN APPROVED METHOD.

METHOD OF MANUFACTURE - POLES SHALL BE PRESTRESSED CONCRETE OF THE DESIGN AND DIMENSIONS SHOWN ON THE PLANS, AND SHALL BE MACHINE MADE IN STEEL MOLDS BY THE CENTRIFUGAL PROCESS TO INSURE MAXIMUM DENSITY, A SMOOTH FINISH PROPER EMBEDMENT OF THE REINFORCING STEEL AND PROVIDE THAT FLEXURAL CRACKING SHALL NOT OCCUR DURING HANDLING OR UNDER DESIGNED LOADS. THE CROSS SECTION OF THE POLE SHALL CONTAIN A RACEWAY FOR THE CABLES, HAVING A MINIMUM OPENING OF 1-1/2-IN. AND NOT MORE THAN 2-IN. AT THE TOP OF THE POLE. THIS RACEWAY SHALL BE PRODUCED BY THE CENTRIFUGAL PROCESS AND SHALL EXTEND THROUGHOUT THE LENGTH OF THE POLE. THE RACEWAY SHALL BE ENLARGED TO 2-1/2-IN. AT THE BASE FOR EASY ENTRANCE OF THE CONDUIT. ALL CORED HOLES FOR HANDHOLES OR BRACKET OPENINGS SHALL BE IN ACCORDANCE WITH THE LOCATION AND SIZES SHOWN ON THE PLANS, AND BE FREE FROM SHARP EDGES FOR PASSAGE OF THE ELECTRICAL WIRING.

CURING - FOLLOWING THE CASTING OPERATION, THE CONCRETE SHALL BE CURED WITH LOW TEMPERATURE STEAM. FOLLOWING THE STEAM CURING, THE STANDARDS SHALL BE KEPT MOIST DURING THE EARLY DAYS OF CURING AND SHALL NOT BE SUBJECT TO SEVERE TEMPERATURE CHANGES DURING THE CURING PERIOD.

FINISHING - THE STANDARDS SHALL HAVE A SMOOTH SURFACE OBTAINED BY MEANS OF A WATER-CARRBORUNDUM MECHANICAL PROCESS WHICH SHALL REMOVE THE LAITANCE AND SURFACE CEMENT, THEREBY REVEALING THE AGGREGATE USED.

BOLT-DOWN BASE - BOLT-DOWN TYPE OF POLES SHALL HAVE A CAST STEEL ANCHOR BASE OF ASTM DESIGNATION A27 GRADE 70-36 WHICH SHALL BE SECURED TO THE PRIMARY REINFORCEMENT OF THE POLE IN SUCH A MANNER AS TO DEVELOP SUFFICIENT STRENGTH TO TRANSMIT THE REQUIRED LOADS TO THE ANCHOR BOLTS. THE CONNECTION BETWEEN THE BOLT-DOWN BASE AND PRIMARY POLE REINFORCEMENT SHALL BE ENTIRELY EMBEDDED WITHIN THE CONCRETE POLE.

MAST ARMS - (ALUMINUM MAST ARMS) THE MAST ARM SHALL BE MANUFACTURED FROM ALUMINUM ALLOY OF THE FOLLOWING SPECIFICATIONS. THE DRAWN SEAMLESS TUBE USED SHALL BE IN ACCORDANCE WITH ASTM SPECIFICATION B210-58T, 6810A-T6. WHERE PIPE IS USED, IT SHALL BE IN ACCORDANCE WITH ASTM SPECIFICATION B241-58T, 6810A-T6. THE EXTERIOR SURFACES OF THE MAST ARMS SHALL BE FREE OF ALL PROTRUSIONS, DENTS, CRACKS OR OTHER IMPERFECTIONS. THE MAST ARM POLE FITTINGS SHALL BE HEAT TREATED ALUMINUM CASTINGS AND SHALL BE FREE OF ALL PROTRUSIONS, DENTS, CRACKS OR OTHER IMPERFECTIONS TO INSURE AN EVEN GRIP ON THE POLE AND PROVIDE EASY MOUNTING OF THE MAST ARMS. ALUMINUM FOR THE MAST ARM POLE FITTINGS SHALL BE ALUMINUM ALLOY MADE FROM VIRGIN ALUMINUM METAL AND CONFORM IN ALL RESPECTS TO ASTM SPECIFICATIONS S5A-F OR S670A-T6 AND ASTM SPECIFICATIONS B26-50T.

TESTING - RESULTS OF TESTS MADE BY INDEPENDENT AND RECOGNIZED TESTING LABORATORIES OR APPROVED TESTING METHODS OF THE SUPPLIER SHALL BE MADE AVAILABLE TO THE ENGINEER ON HIS REQUEST TO COVER ANY OF THE MATERIALS BEING FURNISHED AS PART OF THE LIGHTING STANDARDS.

APPROVAL - IN ADDITION TO THE REQUIREMENTS OF ART. 625.07, THE CONTRACTOR SHALL SUBMIT THREE (3) COPIES OF DRAWINGS OF LIGHTING EQUIPMENT HE PROPOSES TO UTILIZE TO THE ENGINEER FOR APPROVAL BY THE CITY OF CLEVELAND, BUREAU OF STREET LIGHTING.

ITEM SPECIAL - ANCHOR BOLTS FOR LIGHT POLE

ANCHOR BOLTS FOR MOUNTING LIGHT POLES ON BRIDGES AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF 713.01 AND DETAILS SHOWN ON THE PLANS AND STANDARD DRAWINGS, OR THE APPROVED SHOP DRAWINGS, FOR THE RESPECTIVE POLES TO BE PLACED THEREON.

PAYMENT SHALL BE MADE AT THE UNIT PRICE BID FOR EACH SET OF THE SIZE REQUIRED TO INSTALL ONE POLE. THIS PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING AND PLACING THE BOLTS.

CONDUIT ON STRUCTURE

EXPANSION FITTINGS FOR CONDUIT ON STRUCTURES SHALL BE JZ TYPE AX, CROUSH-HINDS TYPE XJ-4, APPLETON TYPE XJ-4, OR EQUAL APPROVED BY THE ENGINEER, AND ARE INCLUDED IN BID PRICE FOR CONDUIT. EACH EXPANSION FITTING SHALL HAVE A COPPER EXTERNAL BONDING JUMPER.

ITEM SPECIAL - CONCRETE PULL BOX

CONCRETE PULL BOXES AND COVERS SHALL BE MELP DESIGN 13-STL.63.

CONDUIT RISER AND WEATHERHEAD

CONTRACTOR SHALL PROVIDE RISER CONDUIT AS SPECIFIED IN 713.04 WITH A RAIN TIGHT GALVANIZED STEEL SERVICE ENTRANCE HEAD (WEATHERHEAD) THREADED TO FIT THE SPECIFIED SIZE OF CONDUIT AND PROVIDED WITH A COMPOSITION COVER FOR 2-WIRE SERVICE.

CONDUIT SHALL BE GROUNDED IN ACCORDANCE WITH 625.10.

A COATING OF AN APPROVED CREOSOTE BASE PAINT SHALL BE LIBERALLY APPLIED TO ALL HOLES FIELD BORED IN TREATED POLES.

THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS WITH THE SUPPLYING AGENCY FOR CONNECTIONS TO ESTABLISH ELECTRICAL SERVICE.

BASIS OF PAYMENT SHALL BE MEASURED AS A LUMP SUM FOR EACH INSTALLATION SPECIFIED, INCLUDING ALL MATERIALS EQUIPMENT AND INCIDENTALS, COMPLETE IN PLACE.

HIGH VOLTAGE TEST

A HIGH VOLTAGE DIRECT CURRENT TEST, AS DESCRIBED IN SUPPLEMENTAL SPECIFICATION R39, SHALL BE PERFORMED ON ALL DISTRIBUTION CABLE AND DUCT CABLE SYSTEMS TO BE INSTALLED ON THIS PROJECT. THE TEST SHALL NOT BE PERFORMED UNTIL AFTER ALL NEW CONSTRUCTION, SUCH AS GUARDRAIL, FENCE, DELINEATOR POSTS, SIGN SUPPORTS, ETC., IN THE IMMEDIATE VICINITY OF THE LOCATION OF THE CABLE RUN BEING TESTED, HAS BEEN COMPLETED.

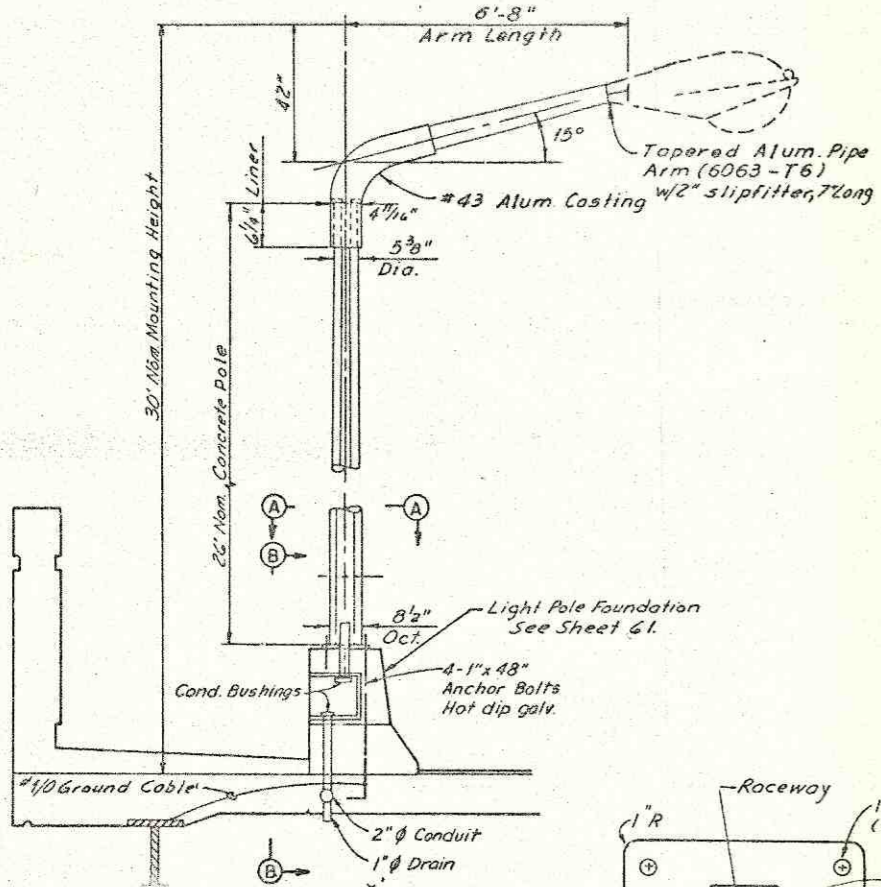
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB	
LIGHTING NOTES EAST 9th STREET OVER CONRAIL CITY OF CLEVELAND BR. NO. 1:013			
CLEVELAND	CUYAHOGA COUNTY	OHIO	
DRAWN E.F.J. DATE 8/8/81	TRACED E.D.J. DATE 9/2/81	CHECKED E.F.J. DATE	REVIEWED E.F.J. DATE 11/1/81
		SHEET L-2	

LIGHTING DETAILS

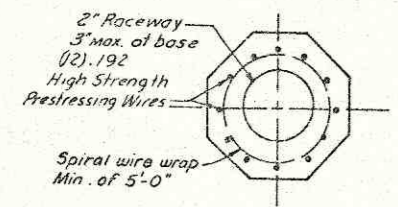
QUANTITY CALCULATIONS
 MADE BY R.P.J. DATE 11-17-81
 CHECKED BY E.F.J. DATE 11-18-81

FHWB REGION	STATE	PROJECT	
5	OHIO	M-1A10(2)	34 62

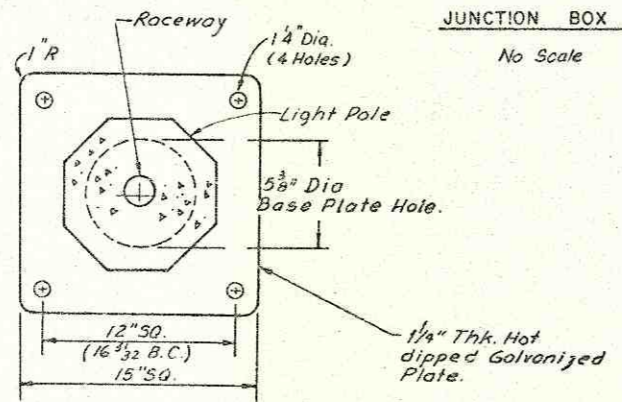
CUYAHOGA COUNTY
 EAST NINTH STREET



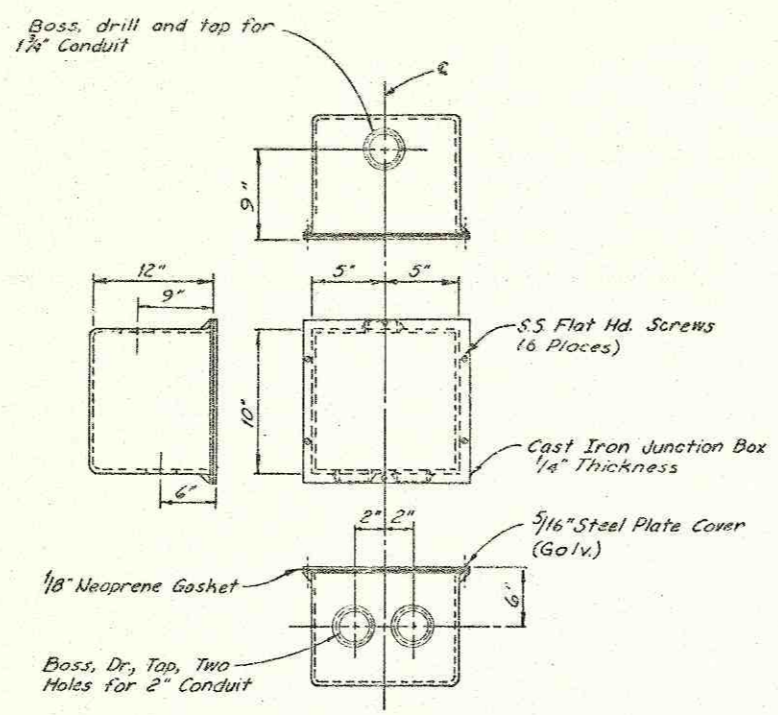
LIGHT POLE INSTALLATION
 (NO SCALE)



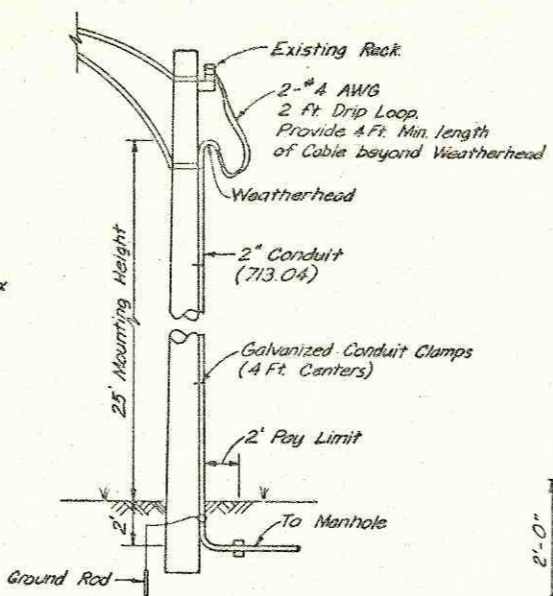
LIGHT POLE CROSS-SECTION



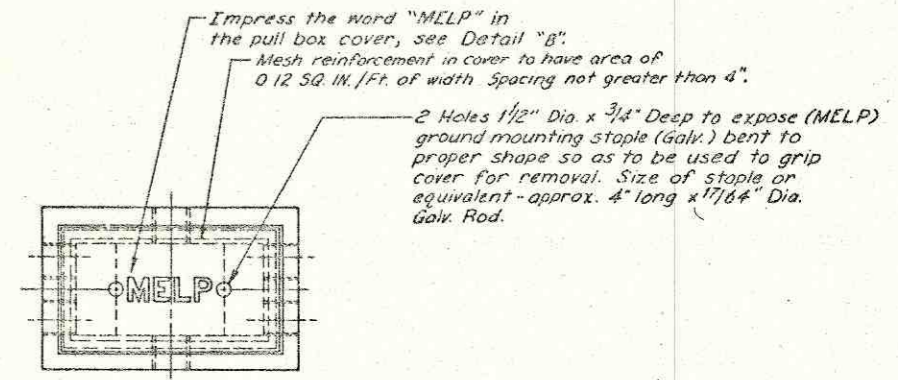
PLAN OF BASE
 DETAIL "A"



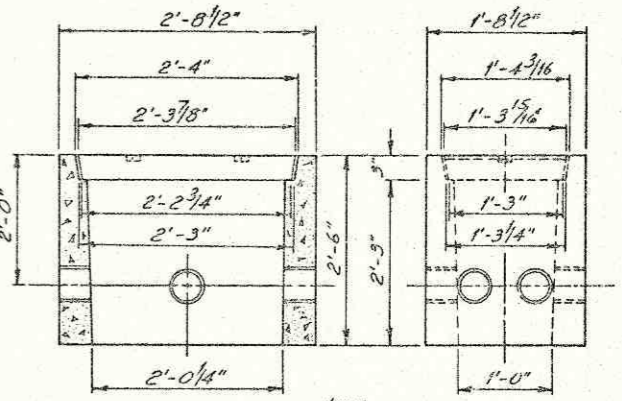
JUNCTION BOX DETAIL
 No Scale



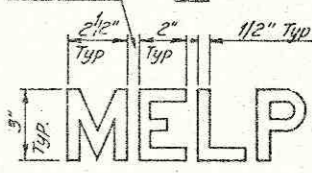
CONDUIT RISER & WEATHERHEAD
 EXISTING STREET LIGHTING POLE
 No Scale



PLAN



SECTION



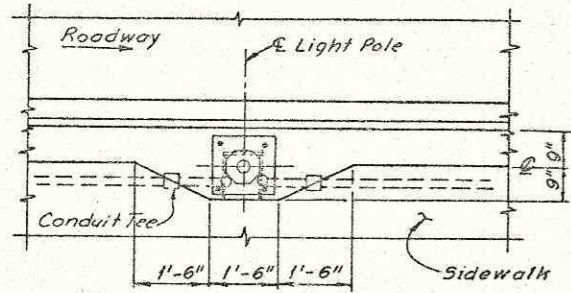
DETAIL B

LIGHTING QUANTITIES

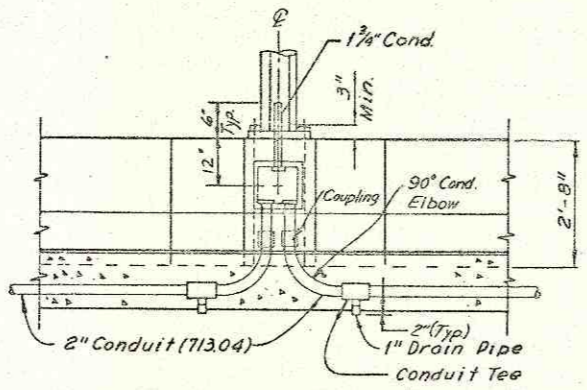
TOTAL QUANT	UNIT	ITEM	DESCRIPTION	
4	Each	202	Removal of Existing Lighting Units, As per plan	1
4	Each	625	Light Pole, Concrete, As per plan	2
4	Each	625	Luminaire, STYLE C, TYPE III 400W HPS, 713.11	3
4	Each	625	Connector Kit, Type II	4
4	Each	625	Connector Kit, Type III	5
4	Each	625	Cable Splicing Kit	6
2	Each	625	Ground Rod	7
4	Each	625	Junction Box, As per plan	8
2	Each	Special	Pull Box, Concrete	9
2	Each	625	Conduit Riser and Weatherhead, As per plan	10
450	L.F.	625	Conduit 2", 713.04	11
70	L.F.	625	Conduit 3", 713.04, Concrete Encased	12
120	L.F.	625	Trench, 24" Deep	13
1250	L.F.	625	No. 4 AWG, 5000 Volt Distribution Cable	14
280	L.F.	625	No. 10 AWG, Pole and Bracket Cable	15
1	Each	625	Structure Grounding System	16
Lump	Lump	839	High Voltage Test	17
4	Set	Special	Light Pole Anchor Bolts, 1" x 48"	18

PRECAST CONCRETE PULLBOX
 (M.E.L.P. Standard 13-57L 63).

Note: Place Pullbox on 6 in. granular fill French drain per HL-10 Groat conduits to pullbox.



SECTION A-A
 Scale: 1/2" = 1'-0"



SECTION B-B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND HNTB

LIGHTING DETAILS
 EAST 9th STREET OVER CONRAIL
 CITY OF CLEVELAND BR. NO. 1:013

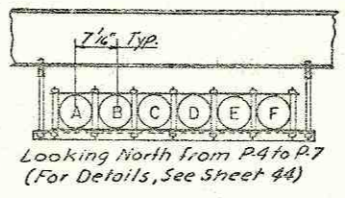
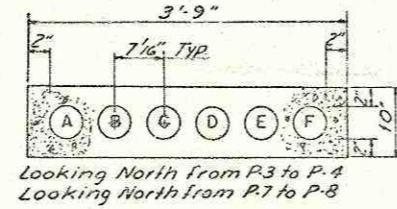
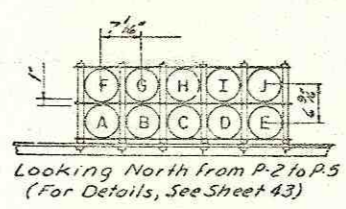
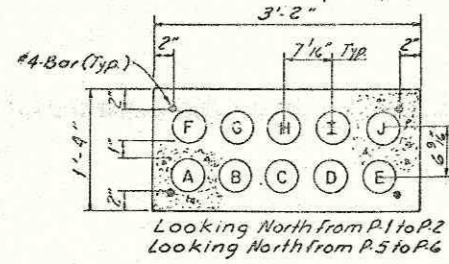
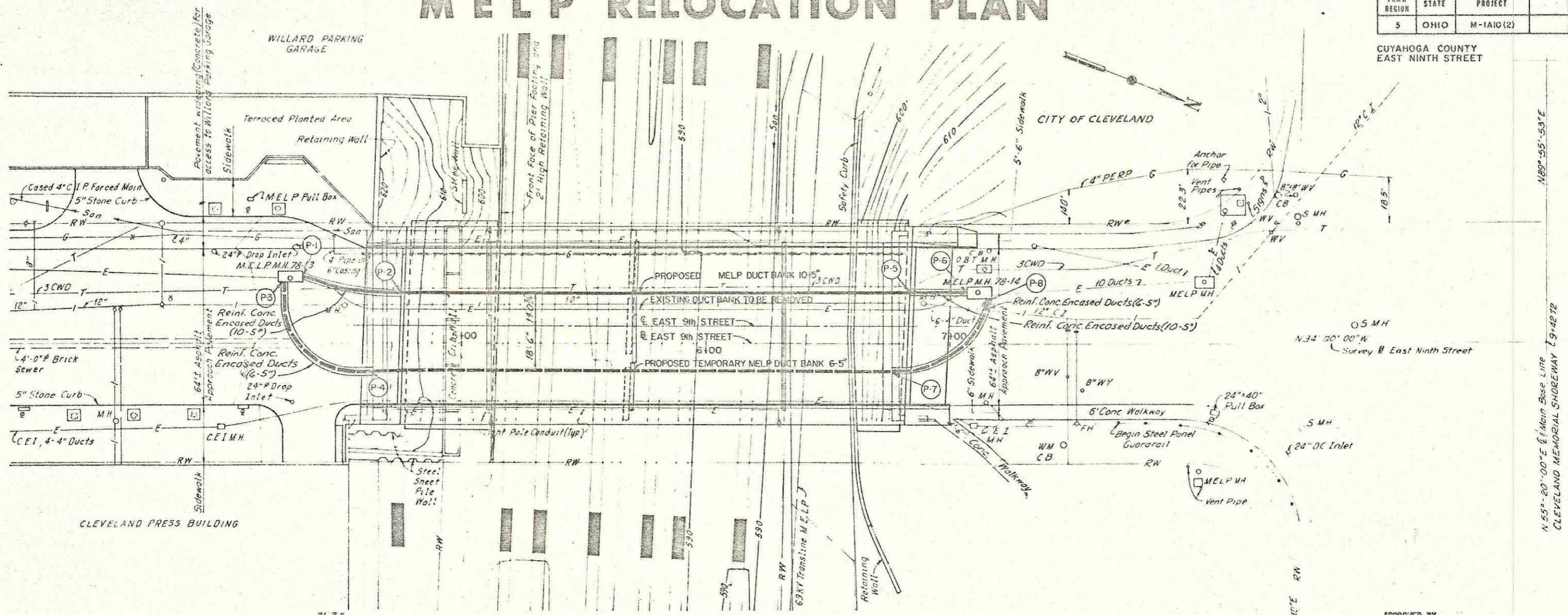
CLERK	TRACED	CHECKED	REVIEWED
E.F.J.	R.D.J.	E.F.J.	E.F.J.
DATE: 11/17/81	DATE: 11/17/81	DATE: 11/18/81	DATE: 11/18/81

MELP RELOCATION PLAN

FRWA REGION	STATE	PROJECT
5	OHIO	M-1A10(2)

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CUYAHOGA COUNTY
EAST NINTH STREET



LEGEND

DUCT	CIRCUIT NO.	CABLE
A	B-1105	3/C #4/0 15KV PIL
B	B-1106	3/C #4/0 15KV PIL
C	B-260	3/C #4/0 5KV XLP
D	B-261	3/C #4/0 5KV PIL
E	B-256	3/C #4 5KV PIL
F	SPARE	1/C #10 600V THW
G		
H		
I		
J	SPARE	1/C #10 600V THW

LIST OF DRAWINGS

7116-1	MELP RELOCATION PLAN (PROPOSED AND TEMPORARY)
7116-2 TO 7	GENERAL NOTES
7116-8	MELP DUCTS IN ROADWAY, PLAN & PROFILE
7116-9	DETAILS OF PROPOSED 10-MELP DUCT
7116-10	EXISTING FRAMING PLAN AND DETAILS OF TEMPORARY 6-MELP DUCT

APPROVED BY: *[Signature]* DATE: 11/25/81
 DIRECTOR OF PUBLIC UTILITIES
 COMMISSIONER OF LIGHT & POWER
 DEPUTY COMMISSIONER OF LIGHT & POWER
 ENGINEER OF DESIGN

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

REVISION	DATE	DESCRIPTION	BY	APP'D
DIVISION OF LIGHT & POWER CITY OF CLEVELAND				
MELP RELOCATION PLAN (PROPOSED AND TEMPORARY)				
DRAWN BY: R.D.J.	SCALE: 1"=20'			
CHK'D BY: E.F.J.	DATE: 8-17-81	7116-1		

GENERAL NOTES

FHWA REGION	STATE	PROJECT	
5	OHIO	M-1A10(2)	

36
62

CUYAHOGA COUNTY
EAST NINTH STREET

ITEM 65 GENERAL SPECIFICATIONS

GS.01 SCOPE OF WORK

- A. THE CONTRACTOR SHALL RELOCATE OR REMOVE ALL MHP FACILITIES AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE PROPERLY COMPLETED, INCLUDING INCIDENTALS, AS SHOWN ON THE DRAWINGS AND HEREINAFTER SPECIFIED.
- B. ALL WORK IN THIS CONTRACT SHALL CONFORM TO THE LATEST NATIONAL ELECTRIC SAFETY CODE AND OSHA, EXCEPT WHERE LOCAL REGULATIONS ARE MORE STRINGENT, IN WHICH CASE LOCAL REGULATIONS SHALL GOVERN.
- C. THE MAJOR ITEMS TO BE FURNISHED AND INSTALLED BY THIS CONTRACTOR SHALL BE AS FOLLOWS:
 1. UNDERGROUND DUCT BETWEEN EXISTING MHP MANHOLE AND THE STRUCTURE.
 2. A TEMPORARY DUCT SYSTEM ON THE BRIDGE.
 3. A PERMANENT DUCT SYSTEM.
 4. PLACING AND SPLICING OF POWER CABLE IN THE DUCT SYSTEMS.
- D. THE CONSTRUCTION SEQUENCE NECESSARY TO ACCOMPLISH THE REQUIRED SCOPE OF WORK IS:
 1. PRIOR TO CONSTRUCTION STAGE 1, INSTALL SIX TEMPORARY UNDERGROUND CONCRETE ENCASED 5-IN. PVC DUCTS BETWEEN THE EXISTING MHP MANHOLES AND THE EXISTING BRIDGE BACKWALLS (P3 TO P4 AND P7 TO P8). PROVIDE A WINDOW THROUGH THE BACKWALLS FOR THE DUCTS TO CONNECT TO SIX 5-IN. FRP BETWEEN P4 AND P7. INSTALL NEW POWER CABLE IN THE DUCTS AND SPLICE TO EXISTING CIRCUITS IN MANHOLES. ONLY ONE EXISTING MHP CIRCUIT IS TO BE DISCONNECTED AT A TIME.
 2. DURING CONSTRUCTION STAGE 1, REMOVE EXISTING MHP DUCT BANK AND CABLE BETWEEN P1 AND P8.
 3. DURING CONSTRUCTION STAGE 2, INSTALL 10 UNDERGROUND CONCRETE ENCASED 5-IN. PVC DUCTS BETWEEN P1 AND P2 AND BETWEEN P5 AND P6. INSTALL CONDUIT HANGERS ON THE PROPOSED BRIDGE SECTION AND INSTALL TEN 5-IN. FRP DUCTS BETWEEN P2 AND P5. INSTALL NEW POWER CABLES IN THE DUCTS AND SPLICE TO EXISTING CIRCUITS IN MANHOLES. ONLY ONE MHP CIRCUIT IS TO BE DISCONNECTED AT A TIME.
 4. DURING CONSTRUCTION STAGE 3, THE EXISTING AND TEMPORARY MHP EMPTY DUCT BANKS IN THE ROADWAY ARE TO BE ABANDONED, AND THE MANHOLE WALLS ARE TO BE FULLY RESTORED.

GS.02 MAINTAINING VEHICULAR TRAFFIC

- A. IT IS THE INTENTION TO PERFORM THE REQUIRED WORK WITH THE LEAST INCONVENIENCE TO, AND THE MAXIMUM SAFETY OF THE TRAVELING PUBLIC AND THE CONTRACTOR, EXCEPT AS MODIFIED BELOW OR AS SHOWN IN THE MAINTENANCE OF TRAFFIC PLANS. THE REQUIREMENTS FOR MAINTAINING TRAFFIC AS INDICATED IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS, AND PERTINENT ITEMS OF SPECIFICATION AND PROPOSAL SHALL APPLY.
 - B. BEFORE WORK BEGINS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE NAMES AND TELEPHONE NUMBERS OF AT LEAST TWO PERSONS WHO CAN BE CONTACTED 24 HOURS PER DAY BY THE OHIO DEPARTMENT OF TRANSPORTATION AND ALL INTERESTED POLICE AGENCIES. THESE PERSONS SHALL BE RESPONSIBLE FOR PLACING OR REPLACING NECESSARY TRAFFIC CONTROL DEVICES TO MAINTAIN THE TRAVELED PAVEMENT SAFELY.
 - C. TRAFFIC SHALL BE MAINTAINED WITHOUT INTERRUPTION DURING CONSTRUCTION OF THE WORK EXCEPT AS OTHERWISE APPROVED BY THE ENGINEER OR SPECIFIED IN THESE NOTES OR PLANS.
 - D. DURING NON-WORKING PERIODS, OPEN EXCAVATIONS SHALL BE COVERED WITH STEEL PLATES AND DELINEATED WITH WARNING FLASHERS AND/OR OTHER APPROVED DEVICES AS DEEMED APPROPRIATE BY THE ENGINEER.
 - E. NO STOPPAGE OF TRAFFIC OR LANE RESTRICTIONS SHALL OCCUR DURING WORK HOURS WITHOUT LAW ENFORCEMENT PERSONNEL AT EACH LOCATION TO DIRECT TRAFFIC.
 - F. DURING OVERHEAD CONSTRUCTION THE CONTRACTOR SHALL PROVIDE, IF DEEMED NECESSARY BY THE ENGINEER, SAFETY NETS AND/OR OTHER SAFETY DEVICES UNDER THE STRUCTURES TO PROTECT TRAFFIC OR PROPERTY IN THE AREA OF CONSTRUCTION.
 - G. INSTALLATION OF TEMPORARY MHP DUCT BANK UNDER ROADWAY PAVEMENT SECTIONS P-3 TO P-4 AND P-7 TO P-8, SHALL BE RESTRICTED TO THE NIGHTTIME HOURS 6:30 P.M. TO 5:30 A.M. THE ACTUAL DAY(S) ON WHICH THE WORK IS PERFORMED SHALL BE APPROVED IN WRITING BY THE CITY OF CLEVELAND DIVISION OF TRAFFIC ENGINEERING, PRIOR TO COMMENCING WORK.
- THE TRAVELED PAVEMENT SHALL BE KEPT OPEN, WITHOUT RESTRICTIONS DURING ALL TIMES OTHER THAN THE ABOVE WORK HOURS. ALL LANE AND LOAD RESTRICTIONS ENFORCED BY THE CITY OF CLEVELAND SHALL BE MAINTAINED IN ANY CASE.
- H. DURING THE TRENCHING AND INSTALLATION OF CONDUIT THE CONTRACTOR SHALL MAINTAIN ONE FULL 11-FT TRAFFIC LANE, AS MEASURED FROM THE FACE OF CURB, IN EACH DIRECTION. THE METHOD OF ACCOMPLISHING THE ABOVE MAINTENANCE OF TRAFFIC REQUIREMENT SHALL BE SUBMITTED TO THE CITY OF CLEVELAND, DIVISION OF TRAFFIC ENGINEERING, FOR REVIEW, 7 DAYS BEFORE ACTUAL BEGIN WORK IS ANTICIPATED. WRITTEN APPROVAL FROM THE CITY OF CLEVELAND, COMMISSIONER OF TRAFFIC AND PARKING SHALL BE REQUIRED BEFORE ANY TRAFFIC MAINTENANCE PLAN IS IMPLEMENTED.
 - I. THE CONTRACTOR, IN COORDINATION WITH CITY OF CLEVELAND FORCES, SHALL FURNISH, INSTALL, MAINTAIN AND SUBSEQUENTLY REMOVE ALL TRAFFIC CONTROL DEVICES REQUIRED FOR MAINTAINING TRAFFIC DURING THE INSTALLATION OF THE TEMPORARY MHP DUCT BANK. PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 614 - MAINTAINING TRAFFIC.

GS.03 UTILITIES

AT LEAST TWO (2) WEEKS BEFORE BREAKING GROUND THE CONTRACTOR SHALL NOTIFY ALL PUBLIC OR PRIVATE UTILITIES HAVING WIRE POLES, PIPES, CONDUITS, MANHOLES OR OTHER STRUCTURES WHICH MAY BE AFFECTED BY HIS OPERATIONS, INCLUDING ANY SERVICES OR STRUCTURES WHICH ARE AFFECTED BUT NOT SHOWN ON THESE PLANS. HE SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER AS TO AVOID DAMAGES TO ANY AND ALL UTILITIES.

FOLLOWING IS A LIST OF THE KNOWN UTILITIES WITHIN THE LIMITS OF CONSTRUCTION:

CITY OF CLEVELAND

DEPARTMENT OF PUBLIC UTILITIES DIVISION OF WATER AND HEAT 1201 LAKESIDE AVENUE CLEVELAND, OHIO 44114	DEPARTMENT OF PUBLIC SERVICE CITY HALL - ROOM 227 601 LAKESIDE AVENUE CLEVELAND, OHIO 44114
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DIV. OF WATER POLLUTION CONTROL 1825 LAKESIDE AVENUE CLEVELAND, OHIO 44114	EAST OHIO GAS CO. 1201 EAST 55TH STREET CLEVELAND, OHIO 44114
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DIV. OF LIGHT AND POWER 1201 LAKESIDE AVENUE CLEVELAND, OHIO 44114	CLEVELAND ELEC. ILLUMINATING CO. 55 PUBLIC SQUARE CLEVELAND, OHIO 44113
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DEPARTMENT OF PUBLIC SAFETY POLICE & FIRE COMMUNICATION SYST. 310 CARNEGIE AVENUE CLEVELAND, OHIO 44114	OHIO BELL TELEPHONE CO. 100 ERIEVIEW PLAZA CLEVELAND, OHIO 44114
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DIV. OF TRAFFIC ENG. & PARKING 2001 PAYNE AVE. - 3RD FLOOR CLEVELAND, OHIO 44114	UTILITY PROTECTION SERVICE 1(800) 362-2764
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UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS HAVE BEEN OBTAINED BY DILIGENT FIELD CHECKS AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT, BUT THE STATE OF OHIO OR MHP MAKES NO GUARANTEE AS TO THEIR ACCURACY OR COMPLETENESS.

GS.04 FEEDER SHUTDOWN

- A. A FEEDER SHUTDOWN SCHEDULE WITH DATES AND APPROXIMATE SHUTDOWN TIMES IS TO BE SUBMITTED TO THE CITY OF CLEVELAND, DIVISION OF LIGHT & POWER, FOR APPROVAL TWO (2) WEEKS BEFORE A FEEDER SHUTDOWN IS REQUIRED. DUE TO THE NATURE OF THE LOADING OF THE FEEDERS AND THE SEASON OF THE YEAR, IT MAY BE NECESSARY TO HAVE SOME OF THE FEEDER SHUTDOWNS ON OFF-PEAK DAYS, OR OFF-HOURS. THIS DETERMINATION WILL BE MADE BY MR. SESLER TITUS, SYSTEM OPERATING ENGINEER OF THE DIVISION OF LIGHT & POWER.
- B. ALL FEEDER SHUTDOWNS SHALL BE CONFIRMED BY THE CONTRACTOR ONE DAY IN ADVANCE OF ALL SCHEDULED JOBS WITH THE SYSTEMS OPERATING ENGINEER. ALL SWITCHING WILL BE DONE BY THE CITY OF CLEVELAND DIVISION OF LIGHT & POWER.

GS.05 CABLE MARKING

- A. FEEDER CABLE LOCATION IN CONDUIT BANK TO BE ASSIGNED BY MHP. EACH CABLE UPON ENTERING AND LEAVING MANHOLES SHALL BE MARKED WITH METAL TAGS, INDICATING THE FEEDER NUMBER AND CABLE SIZE. THE LETTER SHALL BE 1/4-IN. HIGH.

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GS.06 SUBMITTALS

- A. IN ADDITION TO THE REQUIREMENTS OF 105 THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON THE FOLLOWING ITEMS OF EQUIPMENT:

CABLE
CABLE SPLICES
DUCT HANGERS
PVC AND FRP DUCTS

GS.07 DEFINITIONS

- A. WHENEVER IN THESE SPECIFICATIONS OR IN ANY DOCUMENTS OR INSTRUCTIONS IN CONSTRUCTION WHERE THESE SPECIFICATIONS GOVERN, THE FOLLOWING TERMS ARE USED, (OR PROMOTIONS IN PLACE OF THEM), THE INTENT AND MEANING SHALL BE INTERPRETED AS FOLLOWS:

THE CITY, OR THE CITY OF CLEVELAND - THE CITY, OR THE CITY OF CLEVELAND, IS THE DIRECTOR, DEPARTMENT OF PUBLIC UTILITY, OF THE CITY OF CLEVELAND.

GS.08 STATUS OF CITY INSPECTOR

- A. INSPECTORS AS DESIGNATED BY THE CITY OF CLEVELAND SHALL BE AUTHORIZED TO INSPECT ALL WORK DONE AND MATERIALS FURNISHED. SUCH INSPECTING MAY EXTEND TO ALL OR ANY PART OF THE WORK, AND TO THE PREPARATION OR MANUFACTURE OF THE MATERIALS TO BE USED IN THE WORK. THE CITY INSPECTOR AS DESIGNATED BY THE DIRECTOR OF PUBLIC UTILITIES SHALL MAKE WORK INSTRUCTIONS THROUGH THE PROJECT ENGINEER.

GS.09 TIE INTO EXISTING MANHOLES

- A. WHEN A NEW DUCTBANK IS CONNECTED INTO AN EXISTING MANHOLE, PART OF THE WALL SHALL BE CAREFULLY BROKEN TO RECEIVE NEW DUCTBANK. AFTER NEW DUCTBANK HAS BEEN INSTALLED, EXISTING MANHOLE SHALL BE REPAIRED, PATCHED AND SEALED. CABLES SHALL BE PROTECTED DURING THIS WORK WITH EXTREME CARE. ANY DAMAGE TO EXISTING CABLES SHALL BE REPAIRED. THIS WORK SHALL BE ACCOMPLISHED UNDER THE DIRECT SUPERVISION OF THE DIVISION OF LIGHT AND POWER.

GS.10 ADDITIONAL WORK

- A. ATTENTION IS CALLED TO THE FACT THAT THE WORK OF THIS CONTRACT INCLUDES CERTAIN PERFORMANCES AS INCIDENTAL TO THE ITEMIZED REQUIREMENTS HEREOF, THOUGH NOT EXCLUSIVE, AS FOLLOWS: TO PERFORM ALL EXCAVATION, BACKFILLING, SHEETING, SHORING, TEMPORARY AND FINAL REPAVING. SAND BACKFILL SHALL CONFORM TO THE STATE OF OHIO DEPARTMENT OF HIGHWAY CONSTRUCTION AND MATERIAL SPECIFICATIONS AND SHALL BE PLACED UNDER EXISTING AND PROPOSED PAVEMENT AND SIDEWALK. FOR THE PERFORMANCES HEREIN DESCRIBED AND FOR OTHER INCIDENTAL PERFORMANCES OF LIKE NATURE, THE STATE WILL MAKE NO SPECIFIC OR SEPARATE PAYMENT OR ALLOWANCE, BUT THE COST THEREOF SHALL BE INCLUDED IN THE PRICES STIPULATED TO BE PAID FOR THE VARIOUS ITEMS OF THE WORK TO BE DONE UNDER THIS CONTRACT.

GS.11 STRUCTURES ENCOUNTERED

- A. IN ADDITION TO THE CONDITIONS OF 105 THE CONTRACTOR SHALL NOTIFY IN WRITING, COMPANIES, OWNERS, OR OTHERS IN RESPONSIBLE CHARGE OF ANY STRUCTURES THAT MAY BE AFFECTED BY HIS OPERATIONS, AND SUCH NOTICE SHALL BE GIVEN IN AMPLE TIME TO PERMIT SUCH COMPANIES, OWNERS OR OTHERS TO TAKE PROPER PROTECTION MEASURES BEFORE SUCH STRUCTURES ARE IN ANY WAY ENDANGERED BY THE WORK UNDER THIS CONTRACT. THE CONTRACTOR SHALL NOT HINDER OR INTERFERE WITH ANY SUCH COMPANIES, OWNERS OR OTHERS IN MOVING, SUPPORTING, OR OTHERWISE PROTECTING THEIR PROPERTY AND STRUCTURES, BUT SHALL AFFORD THEM EVERY REASONABLE FACILITY IN TAKING SUCH PROTECTIVE MEASURES AS MAY BE NECESSARY.

GS.12 TESTS, INSPECTION AND REPORTS

- A. IN ADDITION TO THE REQUIREMENTS OF 106.04 FOR TESTS AND INSPECTION TO BE MADE AT THE PLACE OF MANUFACTURE OR FABRICATION, AND REPORTS REQUIRED ON TESTS AND INSPECTION OF FABRICATION AND WORKMANSHIP, THE SPECIFIC REQUIREMENTS OF ITEMS UC.CA, IS AND RR ARE APPLICABLE.

GS.13 REMOVAL

- A. PAYMENT FOR SEALING OF EXISTING AND TEMPORARY DUCTBANKS BETWEEN MANHOLES NO. 78-13 AND 78-14 AND THE ADJUSTMENTS SHALL BE INCLUDED IN THE PRICE BID FOR THAT SECTION OF NEW TEN 5-IN. DUCTBANK. ALL OTHER MEMP OWNED MATERIALS ON THE STRUCTURE WHICH ARE TO BE REMOVED AS PART OF THIS PROJECT SHALL BE INCLUDED WITH STRUCTURE REMOVAL FOR PAYMENT.

ITEM UC

UNDERGROUND CONSTRUCTION SPECIFICATION

UC.01 SCOPE OF WORK

- A. THE WORK TO BE DONE UNDER THIS PART OF THE CONTRACT COMPRISES THE FURNISHING AND INSTALLING OF THE FOLLOWING ELECTRICAL CONDUIT BANKS, MANHOLES AND CABLES.

1. REINFORCED, CONCRETE ENCASED CONDUIT BANKS, AS PER PLAN.
2. CABLE RUNS.

UC.02 EXCAVATION

- A. THE CONTRACTOR SHALL MAKE TO THE LINES AND GRADES GIVEN, ALL EXCAVATION NECESSARY FOR THE PROPER CONSTRUCTION OF THE CONTRACT WORK. THE EXCAVATION SHALL INCLUDE THE REMOVAL, HANDLING, REHANDLING AND DISPOSAL OF MATERIALS ENCOUNTERED IN THE WORK AND SHALL INCLUDE ALL PUMPING, BAILING, DRAINING, SHEETING AND BRACING. MOREOVER, THE CONTRACTOR MUST ASSUME ALL RESPONSIBILITY FOR ANY ADDED EXPENSE OF OTHER LIABILITIES WHICH MAY ARISE BY MEANS OF QUICKSAND, OBSTACLES OR CONDITIONS FORESEEN OR UNFORESEEN AND ENCOUNTERED IN THE WORK OF THIS CONTRACT. PAVEMENT REMOVAL SHALL BE IN ACCORDANCE WITH THE DETAILS FOR REPAVING OVER SEWER AND UTILITY TRENCHES SHOWN IN THE CONSTRUCTION ROADWAY PLANS.

- B. TRENCHES SHALL BE OF SUFFICIENT WIDTH TO PERMIT A SOLID PACKING OF REFILL UNDER AND AROUND THE CONDUIT, AND SATISFACTORY CONSTRUCTION OF ALL APPURTENANCES AND FOR SUCH SHEETING AND SHORING, PUMPING AND DRAINING AS MAY BE NECESSARY.

- C. ANY DAMAGE IN WORKING AREA CAUSED BY THIS CONTRACTOR AS PART OF THE WORK OR AS AN ACCIDENT SHALL BE REPAIRED AND AREA SHALL BE RESTORED FOR NEAT APPEARANCE AS REQUIRED.

- D. THE TRENCH SHALL BE DIG TO THE ALIGNMENT AND DEPTH REQUIRED AND ONLY SO FAR IN ADVANCE OF LAYING OF THE CONDUIT LINE AS THE PROJECT ENGINEER SHALL PERMIT. THE TRENCH SHALL BE SO BRACED AND DRAINED THAT WORKMEN MAY WORK THEREIN SAFELY AND EFFICIENTLY. IT IS ESSENTIAL THAT THE DISCHARGE FROM PUMPS BE LED TO NATURAL DRAINAGE CHANNELS, TO DRAINS, OR TO SEWERS.

- E. THE TRENCH WIDTH MAY VARY WITH AND DEPEND UPON THE DEPTH OF TRENCH AND THE NATURE OF THE EXCAVATED MATERIAL ENCOUNTERED; BUT IN ANY CASE SHALL BE OF AMPLE WIDTH TO PERMIT THE CONDUIT LINE TO BE LAID AND JOINTED PROPERLY AND THE BACKFILL TO BE PLACED AND COMPACTED PROPERLY. THE MINIMUM WIDTH OF TRENCH SHALL BE AS SHOWN IN THE PLANS TO ACCOMMODATE THE DUCT BANK REQUIRED. WHEN SHEETING AND BRACING IS USED, THE TRENCH WIDTH SHALL BE INCREASED ACCORDINGLY.

- F. THE TRENCH, UNLESS OTHERWISE SPECIFIED, SHALL HAVE A FLAT BOTTOM CONFORMING TO THE REQUIRED GRADE.

- G. ANY PART OF THE TRENCH EXCAVATED BELOW GRADE SHALL BE CORRECTED WITH APPROVED MATERIAL, THOROUGHLY COMPACTED.

- H. WHEN THE SURGRADE IS SOFT AND IN THE OPINION OF THE PROJECT ENGINEER CANNOT SUPPORT THE INSTALLATION, A FURTHER DEPTH AND/OR WIDTH SHALL BE EXCAVATED AND REFILLED TO GRADE AS REQUIRED AT CONTRACTOR'S EXPENSE.

- I. LEDGE ROCK, BOULDERS, LARGE STONES, DEBRIS AND SHALE SHALL BE REMOVED TO PROVIDE A CLEARANCE OF AT LEAST 6-IN. BELOW CONDUIT LINES OR OTHER PARTS OF THE WORK AND TO CLEAR WIDTH OF 6-IN. AT CONTRACTOR'S EXPENSE.

- J. EXCAVATIONS BELOW SUBGRADE IN ROCK, SHALE OR IN BOULDERS SHALL BE REFILLED TO SURGRADE WITH APPROVED MATERIAL, THOROUGHLY COMPACTED.

- K. THE USE OF EXCAVATING MACHINERY WILL BE PERMITTED EXCEPT IN PLACES WHERE OPERATION OF SAME WILL CAUSE DAMAGE TO TREES, BUILDING, OR EXISTING STRUCTURES ABOVE OR BELOW GROUND, IN WHICH CASE HAND METHODS SHALL BE EMPLOYED.

- L. HYDRANTS UNDER PRESSURE, VALVE PIT COVERS, VALVE BOXES, CURB STOP BOXES, FIRE OR POLICE CALL BOXES, OR OTHER UTILITY CONTROL SHALL BE LEFT UNOBSERVED AND ACCESSIBLE DURING THE CONSTRUCTION PERIOD.

- M. TREES, FENCES, POLES AND ALL OTHER PROPERTY SHALL BE PROTECTED UNLESS THEIR REMOVAL IS AUTHORIZED; AND ANY PROPERTY DAMAGED SHALL BE SATISFACTORILY RESTORED BY THE CONTRACTOR.

- N. THE CONTRACTOR SHALL MAINTAIN ALL EXCAVATIONS IN GOOD ORDER DURING THE CONSTRUCTION, SO AS NOT TO HINDER OR INJURE THE CONDUIT LAYING, MASONRY OR OTHER WORK; HE SHALL TAKE ALL REASONABLE PRECAUTIONS TO PREVENT MOVEMENT OF THE SIDES OF SUCH EXCAVATION, AND SHALL REMOVE AT HIS OWN EXPENSE ANY MATERIAL SLIDING INTO THE EXCAVATION.

- O. BEFORE LAYING THE CONDUIT LINE, THE BOTTOM OF THE TRENCH SHALL BE BROUGHT TO THE REQUIRED GRADE. WHEREVER THE BOTTOM OF THE TRENCH HAS BEEN EXCAVATED BELOW THE GRADE, THE CONTRACTOR SHALL PLACE THE SAND OR GRIT BACKFILL TO BRING THE BOTTOM OF THE TRENCH TO THE GRADE OF THE BOTTOM OF THE CONDUITS. THIS BED SHALL BE THOROUGHLY TAMPED BEFORE THE CONDUIT IS LAID. THE BALANCE OF THE SELECTED BACKFILL AS DETAILED ON DRAWINGS SHALL BE THOROUGHLY COMPACTED BY TAMPING AND NETTING AS REQUIRED FOR THE MATERIAL USED.

IF TRENCH BOTTOM IS UNACCEPTABLE AS DETERMINED BY THE ENGINEER, ADDITIONAL MATERIAL SHALL BE ADDED AT THE CONTRACTOR'S EXPENSE.

UC.03 SHEETING AND BRACING

- A. THE CONTRACTOR SHALL FURNISH AND PUT IN PLACE SUCH SHEETING AND BRACING AS MAY BE REQUIRED TO SUPPORT THE SIDES OF TRENCHES OR OTHER EXCAVATION AND SHALL REMOVE SUCH SHEETING AND BRACINGS, AS THE TRENCH OR EXCAVATIONS IS FILLED UP, UNLESS THE PROJECT ENGINEER SHALL ORDER IT LEFT IN PLACE, IN WHICH CASE, THE CONTRACTOR SHALL CUT THE PLANK OFF AT A HEIGHT AS ORDERED BY THE PROJECT ENGINEER, OR AS CALLED FOR ON THE CONTRACT DRAWINGS.

- B. WHENEVER THE EXCAVATIONS FOR THE WORK HEREIN TO BE DONE ARE IMMEDIATELY ADJACENT TO OTHER SUBSURFACE STRUCTURES, THE CONTRACTOR SHALL FURNISH AND PLACE SHEETING AND BRACING WHERE NOTED ON CONTRACT DRAWINGS AND AS MAY BE NECESSARY, SO AS TO REDUCE TO A MINIMUM THE POSSIBILITY OF INJURING OR DAMAGING THE SAME.

- C. IF THE PROJECT ENGINEER IS OF THE OPINION THAT AT ANY POINT SUFFICIENT OR PROPER SUPPORTS, SHEETINGS, OR BRACINGS HAVE NOT BEEN PROVIDED, HE MAY ORDER SUPPORTS, SHEETING OR BRACING AT THE EXPENSE OF THE CONTRACTOR, AND THE COMPLIANCE WITH SUCH ORDERS BY THE CONTRACTOR SHALL NOT RELIEVE OR RELEASE HIM FROM HIS RESPONSIBILITY FOR SUFFICIENCY OF SUCH SUPPORTS.

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UC.04 REMOVAL OF EXCAVATED MATERIAL

- A. ALL SURPLUS MATERIAL AND SUCH OTHER MATERIAL AS THE PROJECT ENGINEER MAY DEEM UNFIT FOR USE AS BACKFILL, SHALL BE DISPOSED OF BY THE CONTRACTOR SO AS TO GIVE A MINIMUM OF INCONVENIENCE TO THE PUBLIC. IN CASE OF SETTLEMENT AFTER BACKFILL, THE CONTRACTOR SHALL SUPPLY SUFFICIENT MATERIAL SATISFACTORY TO THE PROJECT ENGINEER TO MAKE UP FOR THE DEFICIENCY.
- B. IN THE STORING OF EXCAVATED MATERIAL, WHICH IS TO BE USED AS A BACKFILL, THE CONTRACTOR SHALL EXERCISE CARE SO AS TO AVOID INCONVENIENCING THE PUBLIC. IF, IN THE OPINION OF THE PROJECT ENGINEER, IT IS NECESSARY TO REMOVE THIS EXCAVATED MATERIAL FROM THE STREETS OR LOTS, THE CONTRACTOR SHALL BE REQUIRED TO DO SO.
- C. ANY MATERIAL WHICH MAY SPILL OR DRIP FROM VEHICLES BY HAULING IN THE STREETS, SHALL BE REMOVED AND THE STREETS CLEANED BY THE CONTRACTOR, TO THE SATISFACTION OF THE MUNICIPALITY OR TOWNSHIP IN WHICH THE WORK IS BEING DONE.
- D. WHEN SO DIRECTED BY THE PROJECT ENGINEER, THE CONTRACTOR SHALL IMMEDIATELY REMOVE ALL EXCAVATED MATERIALS FROM THE SITE AND DISPOSE OF THE SAME.

UC.05 BACKFILLING

- A. BACKFILL SHALL BE IN ACCORDANCE WITH SECTION 625.12 AND PAYMENT SHALL BE INCLUDED IN THE COST OF THE RESPECTIVE ITEM.

UC.06 ROAD SURFACES, SIDEWALKS, DRIVEWAYS AND CURBING

- A. THE CONTRACTOR SHALL REMOVE ALL PAVEMENT AND ROAD SURFACES WITHIN THE LINES OF EXCAVATION. AFTER THE CONDUIT LINE HAS BEEN LAID, ALL APPURTENANT WORK CONSTRUCTED AND BACKFILL COMPLETED, HE SHALL FURNISH, PLACE AND MAINTAIN, WHEREVER THE PAVEMENT OR ROAD SURFACE HAS BEEN REMOVED OR DAMAGED BY HIM, A TEMPORARY PAVEMENT IN THE PAVED PORTION OF STREETS, OR A TEMPORARY ROAD SURFACE IN THE UNPAVED PORTION OF STREETS, SO AS TO PROVIDE A SAFE AND PASSABLE ROADWAY UNTIL SUCH TIME AS THE FINAL PAVEMENT OR ROAD SURFACE IS COMPLETED.
- B. WHEN ONLY A PORTION OF THE STREET IS PAVED AND THE LINES OF EXCAVATION ARE IN THE UNPAVED PORTION OF SAME, THE CONTRACTOR SHALL USE THE UTMOST CARE IN PREVENTING INJURY TO THE PAVEMENT. IF IN MAKING THE EXCAVATION, OR FOR ANY OTHER CAUSE, THE PAVEMENT IS REMOVED OR INJURED BY THE CONTRACTOR, HE SHALL FURNISH, PLACE AND MAINTAIN A TEMPORARY PAVEMENT WHEREVER THE PAVEMENT HAS BEEN REMOVED OR DAMAGED, SO AS TO PROVIDE A SAFE AND PASSABLE ROADWAY UNTIL SUCH TIME AS THE FINAL PAVEMENT IS COMPLETED.
- C. ALL FINAL PAVING OF ROAD SURFACES, SHALL BE DONE BY THE CONTRACTOR TO THE SATISFACTION OF THE CITY AND THE ENGINEER AND SHALL CONFORM TO THE DETAILS FOR REPAVING OVER SEWER OR UTILITY TRENCHES SHOWN IN THE CONSTRUCTION ROADWAY PLANS. THE CONTRACTOR SHALL BEAR THE ENTIRE COST OF THIS WORK. WHERE PAVEMENT HAS BEEN DAMAGED BY CAVING IN OR BY TRENCH CUT LEAVING A PORTION OR PORTIONS OF PAVEMENT 18-IN. OR LESS IN WIDTH (BETWEEN SUCH CUT OR DAMAGE) TO CURB OR OTHER SUBSTRUCTURE, THAT REMAINING PORTION OF PAVEMENT SHALL BE REMOVED AND RESTORED MONOLITHIC WITH THE TYPE AND KIND OF PAVEMENT SPECIFIED FOR THE ADJACENT TRENCH AREA. THE SURFACE COURSE OVER TRENCH OR OTHER DISTURBED AREAS SHALL BE RESTORED TO MATCH EXISTING PAVEMENT UNLESS OTHERWISE SPECIFIED. ASPHALTIC CONCRETE SURFACE COURSE OVER SUCH AREAS SHALL BE NEATLY AND SQUARELY CUT, NOT LESS THAN 3-FT WIDE, BEFORE THE INSTALLATION OF A CAREFULLY TOOTHED-IN-TO ADJACENT PAVEMENT, UNLESS OTHERWISE SPECIFIED.
- D. ALL DAMAGED OR DISPLACED CURB SHALL BE RENEWED OR RESET TO THE SATISFACTION OF THE ENGINEER AND/OR CITY. NO FAULTY CURB OR CURB LESS THAN 30-IN. LONG WILL BE PERMITTED FOR REUSE.

- E. LOCATION OF WORK: EXISTING PAVEMENT AS SHOWN ON CITY RECORDS, AND RESTORATION ACCEPTABLE, ARE GIVEN ON THE ROADWAY CONSTRUCTION PLANS.
- F. AT LOCATIONS NOT SPECIFICALLY MENTIONED THE CONTRACTOR SHALL RESTORE THE SAME TYPE OF PAVEMENT ENCOUNTERED. IF THE THICKNESS OF THE CONCRETE BASE IS GREATER THAN THE RECORD CALLS FOR THE CONTRACTOR SHALL RESTORE THE THICKNESS GIVEN IN THE RECORD.
- G. IF PRIOR TO THE EXPIRATION OF THE PERIOD OF MAINTENANCE, ANY OF THE PAVEMENTS OR ROAD SURFACES WITHIN THE LINES OF EXCAVATION OR ADJACENT THERETO SHALL HAVE BEEN DAMAGED OR INJURED, DUE TO UNDERMINING, OR FOR ANY OTHER CAUSE WHICH MAY BE ATTRIBUTED TO THE WORK WHICH IS BEING DONE BY THE CONTRACTOR, THEN THE CONTRACTOR SHALL REMOVE SUCH DAMAGED OR INJURED PAVEMENTS OR ROAD SURFACES, FOUNDATIONS OF SAME AND ALL LOOSE EARTH. HE SHALL THEN BACKFILL WITH SAND PROPERLY RAMPED AND REPLACE THE FINAL PAVEMENT OR ROAD SURFACE.
- H. IF ANY SIDEWALKS, DRIVEWAYS OR CURBS, ARE REMOVED OR INJURED BY THE CONTRACTOR IN THE COURSE OF MAKING EXCAVATION OR HANDLING MATERIALS, OR FOR ANY OTHER REASON WHICH MAY BE ATTRIBUTED TO WORK WHICH HAS BEEN DONE BY THE CONTRACTOR, THEN HE SHALL RELAY SAME AFTER ALL WORK, INCLUDING BACKFILLING, HAS BEEN COMPLETED. IF ANY STONE SIDEWALKS, DRIVEWAYS OR CURBS WHICH HAVE BEEN REMOVED OR INJURED, ARE UNFIT TO BE RELAID, THEN THE CONTRACTOR SHALL FURNISH NEW MATERIAL AND RELAY SAME. ALL CONCRETE OR CEMENT SIDEWALKS, DRIVEWAYS OR CURBS, WHICH ARE REMOVED OR INJURED BY THE CONTRACTOR SHALL BE BROKEN UP BY HIM AND HE SHALL FURNISH ALL LABOR AND MATERIALS AND CONSTRUCT NEW SIDEWALKS, DRIVEWAYS OR CURBS, TO REPLACE THOSE REMOVED OR INJURED. AT INTERSECTING WALKS, DRIVES, ETC., ADDITIONAL CONCRETE SLABS BEYOND THE EXCAVATION LIMITS SHALL BE REMOVED AND REPLACED WITH NEW MATERIAL. IN ORDER TO AVOID HAVING MORE JOINTS THAN IN THE ORIGINAL WORK, ALL SLABS REPLACED SHALL BE OF FULL WIDTH. THE CONTRACTOR SHALL FURNISH, PLACE AND MAINTAIN, WHEREVER THE SIDEWALK HAS BEEN REMOVED OR DAMAGED BY HIM, A TEMPORARY SIDEWALK SO AS TO PROVIDE A SAFE AND PASSABLE SIDEWALK UNTIL SUCH TIME AS THE FINAL SIDEWALK IS COMPLETED.
- I. ALL PAVEMENTS, ROAD SURFACES, SIDEWALKS, DRIVEWAYS, OR CURBS, WHICH THE CONTRACTOR IS REQUIRED TO REPLACE OR TO HAVE REPLACED, SHALL AT THE EXPIRATION OF THE PERIOD OF MAINTENANCE, BE IN AT LEAST AS GOOD CONDITION AS AT THE TIME OF AWARDED THE CONTRACT.
- J. ALL WORK WHICH THE CONTRACTOR MAY DO IN CONNECTION WITH THE OPENING UP OR REPLACING OF PAVEMENT ROAD SURFACES, SIDEWALKS, DRIVEWAYS, OR CURBS, AS WELL AS THE FINAL REPAVING, SHALL BE DONE AT HIS EXPENSE, IN ACCORDANCE WITH THE ROADWAY CONSTRUCTION PLANS AND WITH THE ADDITIONAL EVIDENCE TO THE PROJECT ENGINEER THAT THE WORK HAS BEEN COMPLETED TO THEIR SATISFACTION.
- K. TUNNELING WILL NOT BE PERMITTED.
- L. THE CONTRACTOR SHALL MAKE ALL PAVEMENT CUTS BY CHANNELING MACHINE, HAND-OPERATED PNEUMATIC TOOLS OR BY SUCH OTHER METHODS AS WILL FURNISH A CLEAN CUT IN THE PAVEMENT AND PAVEMENT BASE WITHOUT UNDUE SHATTERING. THE USE OF BALL OR WEIGHT TO BREAK THE PAVEMENT WILL NOT BE PERMITTED.
- M. NO SPECIFIC OR SEPARATE PAYMENT WILL BE MADE FOR ALL OF THIS WORK, BUT THE COST THEREOF SHALL BE INCLUDED IN THE PRICES BID FOR THE VARIOUS ITEMS OF THE WORK TO BE DONE UNDER THIS CONTRACT.
- N. TEMPORARY REPAVING SHALL CONSIST OF 3-IN. OF EITHER COLD MIXED, COLD LAID ASPHALTIC CONCRETE MEETING THE STATE OF OHIO SPECIFICATION 405 OR HOT MIXED ASPHALTIC CONCRETE MEETING THE STATE OF OHIO SPECIFICATION 404.

UC.07 LAYING CONDUIT

- A. PROPER IMPLEMENTS, TOOLS, AND FACILITIES, SATISFACTORY TO THE PROJECT ENGINEER SHALL BE PROVIDED AND USED BY THE CONTRACTOR FOR THE SAFE AND CONVENIENT PROSECUTION OF THE WORK. ALL CONDUITS AND FITTINGS SHALL BE CAREFULLY LOWERED INTO THE TRENCH PIECE BY PIECE, IN SUCH MANNER AS TO PREVENT DAMAGE TO CONDUIT, AND UNDER NO CIRCUMSTANCES SHALL CONDUIT OR ACCESSORIES BE DROPPED OR DUMPED INTO THE TRENCH. IF ANY DEFECTIVE CONDUIT OR MATERIAL BE DISCOVERED WHILE CONDUIT IS BEING LAID, A NEW PIECE SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR AT THE SITE OF THE WORK.
- B. ALL FOREIGN MATTER OR DIRT SHALL BE REMOVED FROM THE INSIDE OF THE CONDUIT BEFORE IT IS LOWERED INTO ITS POSITION IN THE TRENCH, AND IT SHALL BE KEPT CLEAN BY APPROVED MEANS DURING AND AFTER LAYING.
- C. WHEREVER NECESSARY TO DEFLECT CONDUIT FROM A STRAIGHT LINE, EITHER IN THE VERTICAL OR HORIZONTAL PLANE TO AVOID OBSTRUCTIONS, OR FOR OTHER REASONS, THE DEGREE OF DEFLECTION SHALL BE APPROVED BY THE PROJECT ENGINEER.
- D. NO CONDUIT SHALL BE LAID IN WATER, OR WHEN THE TRENCH CONDITIONS OR THE WEATHER IS UNSUITABLE FOR SUCH WORK, EXCEPT BY PERMISSION OF THE PROJECT ENGINEER.

UC.08 FLOATING

- A. THE CONTRACTOR SHALL TAKE EVERY PRECAUTION AGAINST THE FLOATING OF THE CONCRETE, ENCASED CONDUIT LINE DUE TO WATER COMING INTO THE TRENCH, OR THROUGH CAVING IN, FLUSHING OR PUDDLING. IN CASE OF SUCH FLOATING THE CONTRACTOR SHALL REPLACE THE CONCRETE ENCASED CONDUIT LINE AT HIS OWN EXPENSE, AND MAKE WHOLLY GOOD ANY INJURY OR DAMAGE WHICH MAY HAVE RESULTED.

UC.09 INSPECTION

- A. INSPECTIONS CONDUCTED UNDER 105 AND 106 SHALL NOT RELIEVE THE CONTRACTOR FROM ANY OBLIGATION TO PERFORM SAID WORK STRICTLY IN ACCORDANCE WITH THE SPECIFICATIONS, OR ANY MODIFICATIONS THEREOF AS HEREIN PROVIDED, AND WORK NOT SO CONSTRUCTED SHALL BE REMOVED AND MADE GOOD BY THE CONTRACTOR AT HIS OWN EXPENSE. ALL MATERIAL MUST BE SOUND AND SHALL CONFORM TO THESE SPECIFICATIONS, AND ANY DEFECTIVE MATERIAL WHICH MAY HAVE PASSED THE INSPECTOR AT THE WORKS, OR ELSEWHERE, SHALL BE AT ALL TIMES LIABLE TO REJECTION WHEN DISCOVERED, UNTIL THE DATE OF FINAL PAYMENT UNDER THIS CONTRACT.

UC.10 PLAIN AND REINFORCED CONCRETE MASONRY

- A. THE MATERIAL FURNISHED BY THE CONTRACTOR FOR THE VARIOUS KINDS OF PLAIN AND REINFORCED MASONRY CONSTRUCTION TO BE PERFORMED, SHALL CONFORM TO 602.

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UC.11 NON-REINFORCED AND REINFORCED CONCRETE ENCASED CONDUIT BANKS AND DUCT CLEANING

A. WORK INCLUDED

THE CONTRACTOR SHALL FURNISH ALL MATERIALS FOR AND SHALL PROPERLY CONSTRUCT AND CONNECT TO MANHOLES AND TO PULL BOXES AS SHOWN ON DRAWINGS OR AS DIRECTED. ALL NON-REINFORCED AND REINFORCED CONCRETE ENCASED PVC CONDUIT BANKS AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT. TERMS OF SECTIONS UC.01 THROUGH AND INCLUSIVE OF UC.11 SHALL GOVERN THIS SECTION. TERMS AND STIPULATIONS THEREIN SHALL BE UNDERSTOOD AS PART OF THIS SECTION.

B. CONDUIT AND FITTINGS

POLYVINYL CHLORIDE (PVC) SCHEDULE 40 CONDUIT SHALL CONFORM TO UL651 STANDARDS AND SHALL BE 5-IN. INSIDE DIAMETER TYPE ER WITH CONCRETE ENCASEMENT AS DETAILED ON CONTRACT DRAWINGS. COUPLINGS SHALL BE SOCKET TYPE. END BELLS AT MANHOLE ENTRANCE, 5° ANGLE COUPLINGS, STANDARD COUPLINGS, VARIOUS WEDGE SWEEPS, 11-1/4" TO 90°, INCLUDING FIELD BENDS, AND PLUGS OR CAPS TO CLOSE UNUSED CONDUITS SHALL BE MADE OF THE SAME MATERIAL AS THE CONDUIT. CONDUIT SPACERS MAY BE MADE OF PLASTIC, STYRENE, POLYVINYL CHLORIDE OR POLYETHYLENE. CONCRETE BLOCK SPACERS WILL NOT BE ACCEPTED.

C. CONCRETE

CONCRETE USED FOR ENCASEMENT OF CONDUITS SHALL CONFORM TO STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, CONSTRUCTION AND MATERIAL SPECIFICATIONS ITEM 499 CLASS C, USING NO. 8 SIZE AGGREGATE.

D. INSTALLATION

CONDUIT SHALL BE INSTALLED BY THE BUILT-UP METHOD WITH JOINTS IN ADJACENT DUCTS STAGGERED. NECESSARY SPACERS SHALL BE PLACED AT NOT GREATER THAN 5-FT INTERVALS TO HOLD DUCTS IN THE CONFIGURATION DESIRED. WITH THE DUCT-BANK BRACED SECURELY TO KEEP FROM SHIFTING AND FLOATING WHILE CONCRETE IS POURED. EACH SECTION OF CONDUIT SHALL HAVE AN APPLICATION OF A JOINT SEALER COMPOUND FURNISHED BY THE CONDUIT MANUFACTURER AND BE TAPPED SECURELY INTO PLACE IN THE PREVIOUS COUPLING TO SET UP THE JOINTS TIGHT AND LEAKPROOF.

- CONCRETE SHALL BE WORKED INTO THE SPACES BETWEEN DUCTS SO THAT THE CONDUIT BANK IS EFFECTIVELY ENCASED IN CONCRETE WITHOUT VOIDS OR EMPTY SPACES. REINFORCING RODS SHALL BE INSTALLED AS SHOWN ON DRAWINGS.
- CONDUIT WHICH IS CUT TO FIT SHORT SECTIONS SHALL BE REQUIRED ON THE DUCT END AND THE END OF THE BELL REAMED IN THE INSIDE DIAMETER FOR EACH ENTRY OF THE DUCT INTO THE COUPLING TO PRODUCE THE SAME JOINTING CONDITIONS AS PROVIDED BY FACTORY MADE CONDUIT SECTIONS.
- THE END BELLS SHALL BE INSTALLED WITH THE EDGE OF THE FLARED ENDS FLUSH WITH THE INSIDE WALL OF THE MANHOLES.
- ALL END BELLS SHALL BE GROUTED IN PLACE.

E. DUCT CLEANING

AFTER CONDUITS HAVE BEEN INSTALLED THE CONTRACTOR SHALL CLEAN ALL THE DUCTS BY PULLING THROUGH A MANDREL TO REMOVE SOLID OBSTRUCTIONS, FOLLOWED BY A CIRCULAR WIRE BRUSH TO REMOVE ANY DIRT, SAND OR CONCRETE WHICH MAY HAVE BEEN INTRODUCED DURING CONSTRUCTION, LEAVING A CLEAN CONDUIT FREE FROM OBSTRUCTIONS OR FOREIGN MATTER.

F. MEASUREMENT

THE NUMBER OF LINEAR FEET OF CONDUIT BANK TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF LINEAR FEET FURNISHED AND PLACED AND CLEANED IN ACCORDANCE WITH THESE SPECIFICATIONS AS MEASURED ALONG THE AXIS OF THE CONDUIT LINE INCLUDING FITTINGS.

6. PAYMENT

THE FOOTAGE MEASURED AS PROVIDED ABOVE SHALL BE PAID FOR AT THE CONTRACT PRICE BID PER LINEAL FOOT UNDER "ITEM UC.13 NON-REINFORCED CONCRETE ENCASED CONDUIT BANKS AND DUCT CLEANING" CLASSIFIED AS TO SIZE AND TYPE, WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR EXCAVATING AND FOR FURNISHING, HAULING, PLACING, THE CONDUIT, FITTINGS, CAPPING SPACERS, CONCRETE, REINFORCING STEEL, SHEETING AND BRACING, BACKFILL, WATER USED FOR COMPACTION, INCIDENTAL CONCRETE AND DUCT CLEANING, THE REMOVAL OF ALL SURPLUS EXCAVATION AND DISCARDED MATERIAL, REPAVING, SEEDING AND FOR ALL LABOR, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM.

THESE ITEMS AS MEASURED AND PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
UC.13	LN.FT.	NON-REINFORCED CONCRETE ENCASED, SIX-5 IN. PVC CONDUIT BANK (TEMPORARY)
UC.15	LN.FT.	REINFORCED CONCRETE ENCASED, TEN-5 IN. PVC CONDUIT BANK (PERMANENT)

ITEM CA CABLE

CA.01 POWER CABLE

A. WORK INCLUDED

THE CONTRACTOR SHALL FURNISH ALL NECESSARY LABOR, MATERIALS, TOOLS AND EQUIPMENT FOR INSTALLING AND SPLICING ALL POWER CABLES, COMPLETE, INCLUDING RACKING, BONDING, FIREPROOFING AND OTHER APPURTENANT WORK, ALL AS SPECIFIED, REQUIRED OR SHOWN ON THE CONTRACT DRAWINGS.

B. 15 KV AND 5 KV PIL CABLE

- PAPER INSULATED CABLE SHALL CONFORM TO AEC SPECIFICATIONS FOR "SOLID-TYPE, IMPREGNATED-PAPER INSULATED, LEAD COVERED CABLE," LATEST EDITION, AND ALL APPLICABLE IPCEA SPECIFICATIONS EXCEPT AS OTHERWISE SPECIFICALLY NOTED.

CONDUCTOR SIZE & TYPE	VOLTAGE CLASS	RESISTANCE PER 1000 FT @25°C.	STRANDING AND CROSS SECTION
#4/0, 3/C, PILCH	15 KV UNGRD.	0.051	BELTED 37 STRANDS COMPACT
#4/0, 3/C, PILC	5 KV UNGRD.	0.051	BELTED 19 STRANDS ROUND
#4, 3/C PILC	5 KV GRD.	0.258	BELTED 7 STRANDS ROUND

- PAPER INSULATED CABLE SHALL BE BELTED TYPE.

(A) THICKNESS OF INSULATION ON CONDUCTORS SHALL BE 155 MILS FOR 15 KV, AND 85 MILS FOR 5 KV CABLE.

(B) THICKNESS OF BELT SHALL BE 155 MILS FOR 15 KV AND 85 MILS FOR 5 KV CABLE.

- LEAD SHEATH SHALL BE AN ARSENICAL LEAD ALLOY DESIGNED FOR MAXIMUM RESISTANCE FROM BEND CREEP, ABRASION AND CORROSION; COPPER, IF PRESENT, SHALL BE IN MINIMUM TRACES.

- THE LEAD SHEATH ON 15 KV CABLE SHALL BE COVERED WITH A REINFORCED POLYMERIZED CHLOROBUTADIENE JACKET 110 MILS THICK WITH THE POLYMERIZED CHLOROBUTADIENE BOND TO THE SHEATH. THICKNESS OF LEAD SHALL BE REDUCED AS PER AEC SPECIFICATIONS, 10TH EDITION TABLE IX.

THICKNESS OF LEAD SHEATH ON 5 KV CABLE SHALL BE FOR THE APPROPRIATE CORE DIAMETER, AS SPECIFIED IN AEC SPECIFICATIONS, 10TH EDITION TABLE IX.

- LEAD SHEATH SHALL HAVE THE FOLLOWING PHYSICAL REQUIREMENTS:

(A) TENSILE STRENGTH MINIMUM PSI	2400
(B) ELONGATION IN 2-IN. GAUGE MINIMUM %	25
(C) IPCEA BENDS MINIMUM	30
(D) ARSENIC CONTENT OF 0.15% NOMINAL	

- CABLE SHALL CONTAIN IMMEDIATELY UNDER THE SHEATH AND ALONG THE CORE A MARKER OR IDENTIFYING TAPE SHOWING THE MANUFACTURER'S NAME, THE YEAR OF MANUFACTURE, AND A CONSECUTIVE SERIAL NUMBER FOR IDENTIFICATION PURPOSES. ALL TO APPEAR AT INTERVALS OF APPROXIMATELY 1-FT. THE PRINTED MATTER ON THE MARKER OR IDENTIFYING TAPE SHALL BE LEGIBLE WHEN THE TAPE IS REMOVED FROM THE COMPLETED CABLE.

- THE CONTRACTOR SHALL FURNISH CERTIFIED COPIES OF THE RESULTS OF ALL TESTS ON SAMPLES OF THE CABLE WHICH HE PROPOSED TO FURNISH MADE IN ACCORDANCE WITH THE PROVISIONS OF AEC SPECIFICATIONS FOR "SOLID-TYPE IMPREGNATED-PAPER-INSULATED LEAD COVERED CABLE," 10TH EDITION, FOR PAPER INSULATED CABLE.

- THE CONTRACTOR SHALL FURNISH AS PART OF HIS PROPOSAL THE PERCENTAGE OF EACH ELEMENT CONTAINED IN THE LEAD SHEATH ALLOY HE PROPOSES TO SUPPLY. THIS DATA SHALL BE ON THE CABLE MANUFACTURER'S FORMS.

5 KV, XLP CABLE

- COPPER, CROSS-LINKED POLYETHYLENE INSULATED CABLE SHALL BE AS SPECIFIED BELOW.

CONDUCTOR SIZE & TYPE	VOLTAGE CLASS	RESISTANCE PER 1000 FT @25°C.	STRANDING AND CROSS SECTION
#4/0, 3/C, XLP	5 KV UNGRD.	0.051	19 STRANDS ROUND

- CROSS LINKED POLYETHYLENE INSULATED CABLE SHALL CONFORM TO INTERIOR STANDARD #1 TO IPCEA PUB. NO. S-66-524, LATEST DATE. THE WIRE BEFORE STRANDING OF ANY CONDUCTOR SHALL MEET THE REQUIREMENTS OF THE AMERICAN SOCIETY FOR TESTING METALS SPECIFICATIONS FOR SOFT OR ANNEALED COPPER WIRE ASTM-B-3-54T.

- THE CABLE SHALL BE STRANDED, WITH WIRE STRAND SHIELD, RATED 5 KV UNGROUNDED NEUTRAL SERVICE WITH A 90°C. COPPER TEMPERATURE RISE. A SEMI-CONDUCTING EXTRUDED STRAND SHIELD SHALL BE APPLIED IMMEDIATELY OVER EACH BAR CONDUCTOR. THE 3/C CABLES SHALL BE WITHOUT GROUND WIRES IN THE INTERSTICES.

- THE INSULATION SHALL BE NON-CARBON FILLED CHEMICALLY CROSS-LINKED THERMOSETTING POLYETHYLENE, NOT LESS THAN 90 MILS THICK. THE 3/C CABLES SHALL HAVE A COLOR CODED INSULATING TAPE APPLIED OVER THE INDIVIDUAL CONDUCTORS WHICH ARE THEN ASSEMBLED WITH FILLERS AND BINDER TAPES OVERALL.

- THE OVERALL JACKET SHALL BE POLYVINYLCHLORIDE COMPOUND, NOT LESS THAN 110 MILS THICK WITH A PERMANENT MARKER TAPE INDICATING THE YEAR OF MANUFACTURE AND SEQUENTIAL FOOTAGE NUMBER REPEATED EACH FOOT, SHALL BE INSERTED UNDER THE COPPER WIRE SHIELD OR OUTER JACKET. THE JACKET SURFACE SHALL BE PRINTED WITH THE MANUFACTURER'S NAME, CABLE TYPE, VOLTAGE RATING AND THE CONDUCTOR SIZE.

600 V. RHW CABLE

- THE CABLE SHALL BE #10 AWG ALUMINUM, INSTALLED TO PROVIDE A PULLING CABLE FOR FUTURE INSTALLATION.
- CABLE SHALL BE SECURED IN EACH VAULT AND MARKED "SPARE" ON A METAL TAG AT EACH END.

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NEW CABLE SHALL BE DEFINED AS ALL CABLE INSTALLED BY CONTRACTOR EITHER TEMPORARY OR PERMANENT.

EXISTING CABLE SHALL BE DEFINED AS MELP CABLE TO WHICH CONTRACTOR HAS MADE SPLICES TO EXISTING FEEDER CABLES. COPIES OF ALL TEST DATA RESULTS SHOULD BE SENT TO:

MR. SESLER TITUS
SYSTEM OPERATING ENGINEER
DIVISION OF LIGHT AND POWER
2490 W. 41ST STREET
CLEVELAND, OHIO 44113

L. MEASUREMENT

THE NUMBER OF LINEAR FEET OF CABLE TO BE PAID FOR SHALL BE THE DISTANCE FROM CENTER OF MANHOLE TO CENTER OF MANHOLE PLUS 10'-0" AT ENDS IN MANHOLES.

M. PAYMENT

THE FOOTAGE MEASURED AS PROVIDED ABOVE SHALL BE PAID FOR AT THE CONTRACT BID PRICE PER LINEAR FOOT FOR "ITEM CA.01 POWER CABLE" CLASSIFIED AS TO SIZE AND TYPE, WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING CABLE, SPLICING KITS, FIREPROOFING MATERIALS, CABLE GUARDS, CABLE LUBRICANT AND FOR PULLING, TRAINING, SPLICING, RACKING, BONDING, FIREPROOFING AND INSTALLING OF CABLES AND FOR ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM.

ITEM	UNIT	DESCRIPTION
CA.01	LN.FT.	3/C 15 KV #4/0 PIL CABLE
CA.01	LN.FT.	3/C 5 KV #4/0 PIL CABLE
CA.01	LN.FT.	3/C 5 KV #4/0 XLP CABLE
CA.01	LN.FT.	3/C 5 KV #4 PIL CABLE
CA.01	LN.FT.	1/C 600V #10 RHW (AL.) (PULL WIRE FOR SPARE DUCTS)
CA.01	LN.FT.	FIREPROOFING

C. CABLE SPLICES

- SPLICES SHALL BE MADE UP FROM UNIT PACKAGE SPLICING KITS FOR 30-4/0, 15 KV PAPER-INSULATED CABLES. SPLICING KITS SHALL BE AS MANUFACTURED BY PLM CO., G.E., OR APPROVED EQUAL.
- THE CONTRACTOR SHALL FURNISH AS PART OF HIS PROPOSAL THE SPLICE KIT MANUFACTURER'S DRAWINGS SHOWING THE SPLICE INCLUDING ALL DETAILS WHICH HE PLANS TO USE.

D. CABLE LUBRICANT

THE LUBRICANT SHALL BE GREASE OR SOAPSTONE OR A COMBINATION OF THESE TWO (2) INGREDIENTS.

E. BONDING WIRE

BONDING WIRE SHALL BE NO. 2 AWG COPPER BARE WIRE.

F. FIREPROOFING

IRVINGTON ELECTRIC ARC AND FIREPROOFING TAPE 7700 OR EQUAL AND CEMENT SHALL BE USED AS REQUIRED IN MANHOLES. FIREPROOFING SHALL BE MADE AS SHOWN ON PLAN OR DIRECTED BY ENGINEER. PAYMENT SHALL BE THE LINEAR FEET OF CABLE FIREPROOFED.

G. CABLE PULLING

- BEFORE STARTING CABLE INSTALLATION, THE DUCTS TO BE OCCUPIED SHOULD BE SELECTED THROUGHOUT THE ENTIRE LENGTH OF THE RUN AND THE DUCTS SELECTED MUST BE CHECKED TO SEE THAT THEY ARE CLEAN AND FREE FROM ALL OBSTRUCTIONS.
- IF REELS ARE LEFT IN THE STREET, WARNING LIGHTS SHALL BE PLACED AROUND THEM.
- LUBRICANT SHALL BE APPLIED TO THE CABLE JUST BEFORE IT ENTERS THE FEEDING TUBE. A COATING ABOUT 1/16-IN. THICK IS AMPLE.

NO LUBRICANT SHALL BE APPLIED TO THE FIRST AND LAST 5-FT OF CABLE FOR CONVENIENCE AND CLEANLINESS IN SPLICING.
- THE REEL OF CABLE MUST BE PROPERLY PLACED AT THE FEEDING END TO CAUSE MINIMUM FLEXING OF THE CABLE. IT SHOULD ALWAYS BE LOCATED ON THE SIDE OF THE MANHOLE TOWARD WHICH THE CABLE IS PULLED.
- WHERE THERE IS A BEND IN THE DUCT LINE THE PULLING SET UP, WHEREVER POSSIBLE, SHOULD BE PLANNED FOR FEEDING-IN AT THE MANHOLE NEAREST THE BEND.
- THE AMOUNT OF SLACK IN THE CABLE AT THE FEEDING END SHALL BE REGULATED BY MEN STATIONED AT THE CABLE REEL SO THAT THE CABLE PASSES FREELY INTO THE FEEDING TUBE WITHOUT BEING LOOSE ON THE REEL AND WITHOUT SCRAPING THE MANHOLE FRAME.
- THE CABLE SHALL BE DRAWN INTO THE DUCT JUST FAST ENOUGH TO KEEP THE CABLE AND REEL MOVING SMOOTHLY AND SO IT CAN BE PROPERLY INSPECTED AND LUBRICATED.
- EYES OR SEALS DAMAGED DURING PULLING SHALL BE REPAIRED UNLESS SPLICING FOLLOWS IMMEDIATELY.
- WHEN THE CABLE IS OUT, UNLESS SPLICING IS TO BE DONE IMMEDIATELY, THE ENDS SHALL BE PROPERLY SEALED BY AN APPROVED METHOD FOR PREVENTING OIL FROM SEEPING OUT AND MOISTURE ENTERING CABLE. ALL SEALED ENDS SHOULD BE RACKED HIGH.

- THE MEN IN THE PULLING GANG SHOULD PLACE THE CABLE IN THE MANHOLES ON THE CABLE RACKS WITHOUT TRYING TO TRAIN IT INTO ITS FINAL POSITION AND SHALL TIE THE CABLE TO THE SUPPORTS TO PREVENT IT FROM FALLING. THE ENDS SHALL BE TRAINED AS HIGH AS POSSIBLE TO KEEP THEM OUT OF ANY WATER. DYNAMOMETER READING SHALL BE AVAILABLE THROUGHOUT CABLE PULLING PROCESS. PULLING TENSION SHALL NOT EXCEED MANUFACTURER'S RECOMMENDATIONS.

H. SPLICING

SPLICING OF CABLES SHALL BE DONE IN AN APPROVED MANNER, USING PLM, GE OR OTHER APPROVED SPLICING KITS AND ACCORDING TO THE SPLICING KIT MANUFACTURER'S INSTRUCTION.

I. CABLE RACKING AND TRAINING

- PAPER INSULATED CABLE SHALL NOT BE BENT WHEN TEMPERATURE IS BELOW 14°F. UNLESS CABLE IS HEATED SO THAT IT IS WARM ALL THE WAY THROUGH.
- AT LEAST 6-IN. OF STRAIGHT CABLE OUT OF THE DUCT SHALL BE ALLOWED BEFORE STARTING THE OFFSET BEND IN MANHOLES.
- BENDING RADIUS OF CABLE SHALL BE MINIMUM OF EIGHT (8) TIMES OVERALL CABLE DIAMETER.
- CABLES SHALL BE SUPPORTED IN SUCH A WAY AS TO LEAVE A SPLICING AREA FOR ANY FUTURE CABLE FROM OTHER DUCTS.
- AT LEAST 6-IN. OF STRAIGHT CABLE SHOULD EXTEND BEYOND EACH END OF THE SPLICE TO PROVIDE SPACE FOR RESTING ON THE SADDLES OF THE SUPPORTING RACKS.
- ALL CABLES AND JOINTS SHALL BE SO RACKED IN THE MANHOLE THAT THEY ARE NOT DIRECTLY UNDER THE MANHOLE COVER.

J. BONDING

- ALL SOLDERING CONNECTIONS MUST BE WELL MADE, ON CLEAN SURFACES, TO ACHIEVE MINIMUM RESISTANCE POSSIBLE BUT CARE MUST BE TAKEN NOT TO INJURE THE LEAD SHEATH WITH HOT SOLDER.
- BOND WIRES ATTACHED DIRECTLY TO THE CABLE SHEATH SHOULD FORM A 60° BEND WITH THE SHEATH AT THE POINT OF SOLDERING.
- BOND WIRES SHALL BE CLAMPED AND CONNECTED FIRMLY TO GROUND ROD IN MANHOLE.

K. TESTING

THE PROJECT ENGINEER OR HIS AUTHORIZED INSPECTOR SHALL HAVE THE RIGHT TO ORDER CONTRACTOR TO PERFORM DURING AND AFTER CABLE RUN INSTALLATION HIGH VOLTAGE TESTS IN ACCORDANCE WITH AEC SPECIFICATIONS FOR "SOLID TYPE IMPREGNATED-PAPER INSULATION LEAD COVERED CABLE," FOR PAPER INSULATED CABLE AT THE FOLLOWING TEST VOLTAGES AND TIME LIMITATIONS, ACCORDING TO AEC 10TH EDITION.

15 KV PAPER INSULATED CABLE

NEW CABLE 50 KV 5 MINUTES
EXISTING CABLE 30 KV 5 MINUTES

5 KV PAPER INSULATED CABLE

NEW CABLE 22 KV 5 MINUTES
EXISTING CABLE 12 KV 5 MINUTES

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ITEM RR
BRIDGE CONSTRUCTION SPECIFICATIONS

RR.01 EXPOSED FRP CONDUIT BANK SUPPORTED ON STRUCTURAL STEEL

NON-ENCASED, BRIDGE-SUPPORTED 5-IN. FRP CONDUIT.

A. WORK INCLUDED

THE CONTRACTOR SHALL FURNISH ALL MATERIALS FOR AND SHALL PROPERLY INSTALL AND CONNECT TO EXPANSION COUPLINGS AS SHOWN ON THE DRAWINGS OR AS DIRECTED. ALL NON-ENCASED, BRIDGE-SUPPORTED FRP CONDUIT AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT. ALL APPLICABLE SECTIONS OF ITEM UC SHALL BE UNDERSTOOD AS PART OF THIS SECTION.

B. FRP CONDUIT AND FITTINGS

FIBERGLASS REINFORCED PIPE (FRP) SHALL BE FIBERGLASS EPOXY DUCT COMPRISED OF CLASS E GLASS FIBER REINFORCEMENT COMBINED WITH AN EPOXY RESIN COATING. THE GLASS FIBER CONTENT SHALL NOT BE LESS THAN 60% BY WEIGHT OF THE REINFORCED WALL THICKNESS. THE CONDUIT EXTERIOR SHALL HAVE A 5 MIL THICK RESIN COATING. FRP DUCT SHALL BE MANUFACTURED TO STEEL PIPE OUTSIDE DIAMETERS.

FRP DUCT SHALL HAVE THE FOLLOWING PHYSICAL PROPERTIES MEETING APPLICABLE ASTM TEST SPECIFICATIONS:

OUTSIDE DIAMETER	5-9/16 IN.
INSIDE DIAMETER	5.3 IN.
WALL THICKNESS	.12 IN. ±10%
WEIGHT	1.4 LB/FT
ULTIMATE AXIAL LOAD	40,000 LB.
5% DEFLECTION LOAD	175 LB/FT
MAXIMUM DEFLECTION	12° PER 20 FT
THERMAL EXPANSION	0.008 IN/100 FT/°F (D696)
TENSILE STRENGTH	30,000 PSI (D2105)

THREADED ADAPTERS SHALL BE CONSTRUCTED OF ADHESIVE BONDED REINFORCED THERMOSETTING RESIN, AND HAVE A MODIFIED ACME THREAD WITH A 5.00 PITCH.

C. STRUCTURAL STEEL FOR DUCTRANK SUPPORT

ALL STEEL COMPONENTS SHALL BE EITHER HOT DIP GALVANIZED OR ASTM A588. ELEMENTS IN CONTACT WITH FRP DUCT SHALL BE PVC COATED.

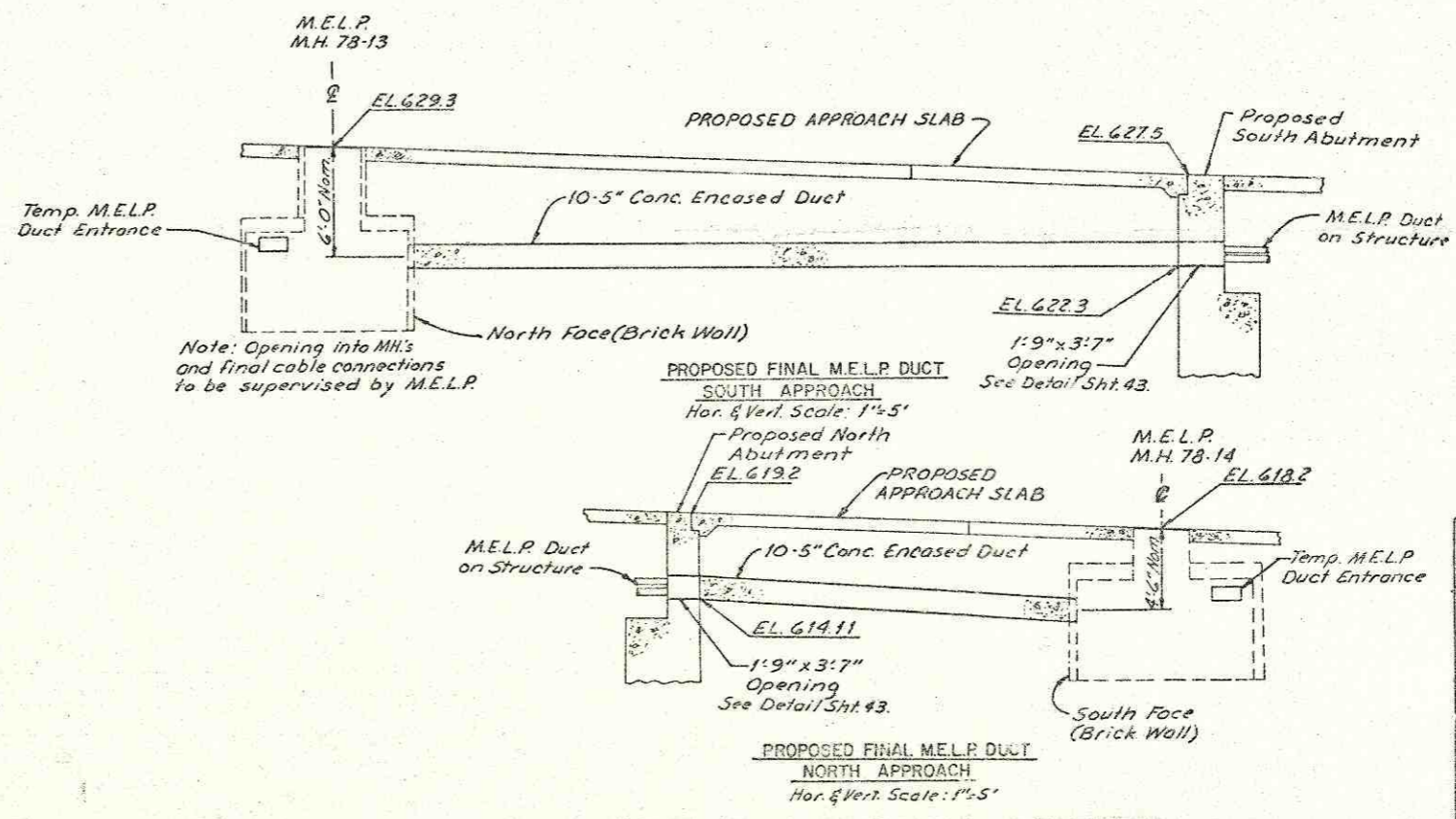
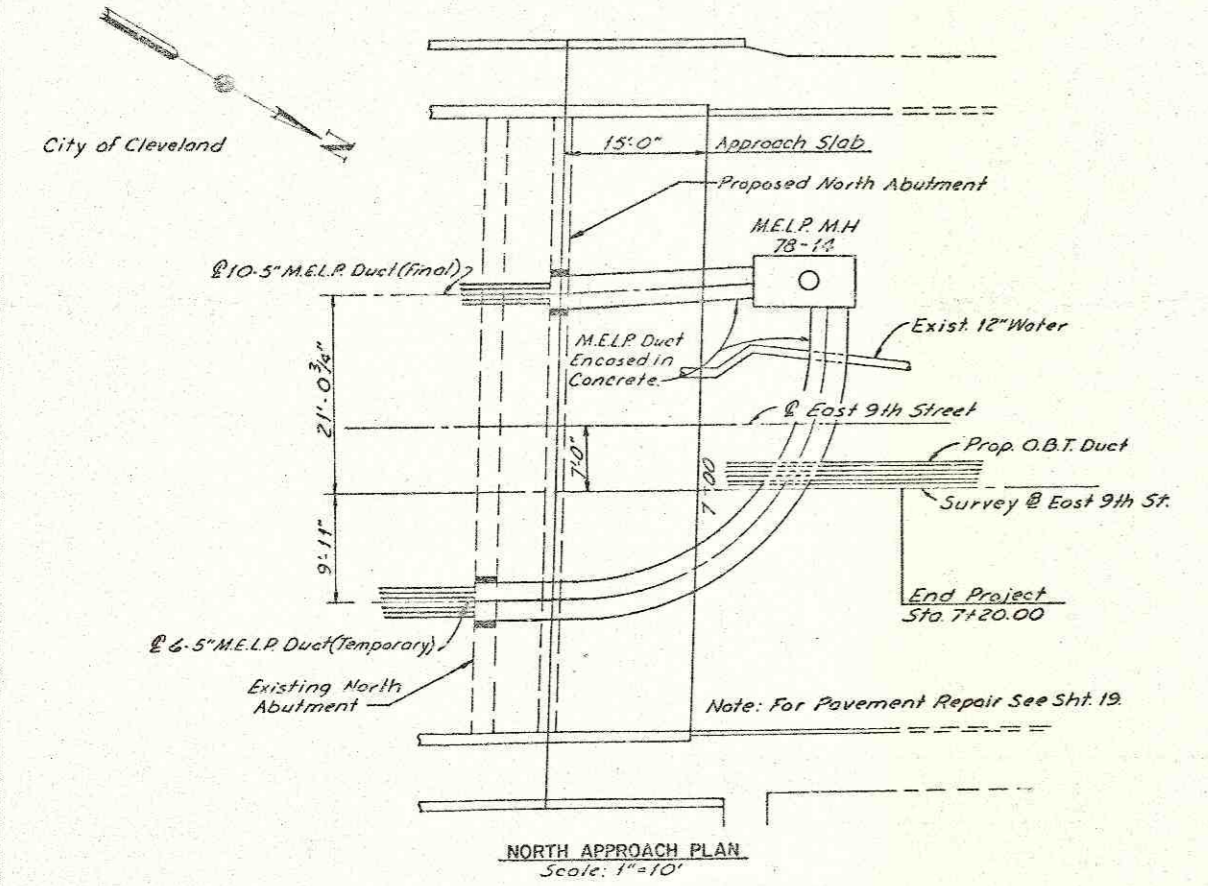
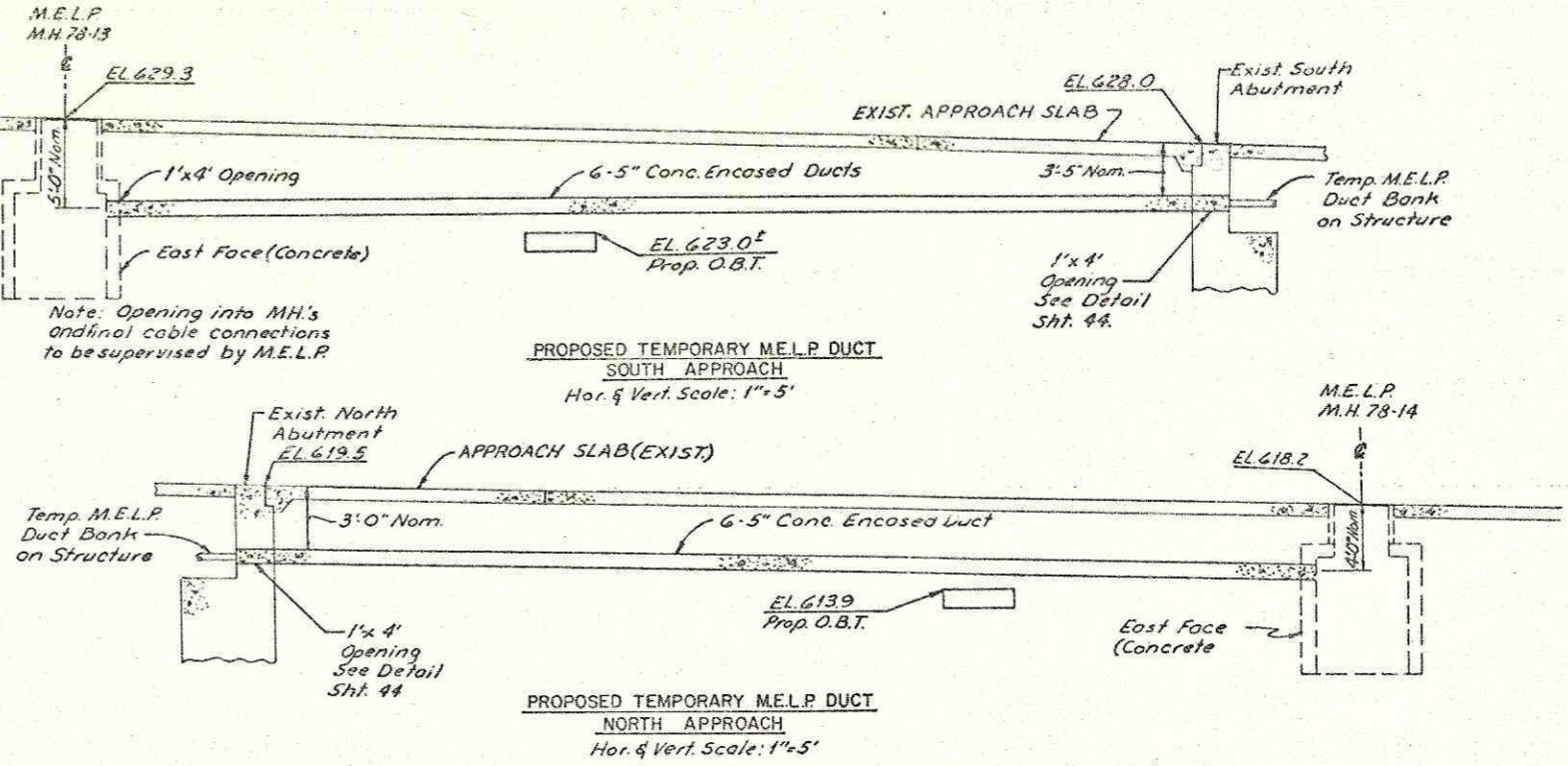
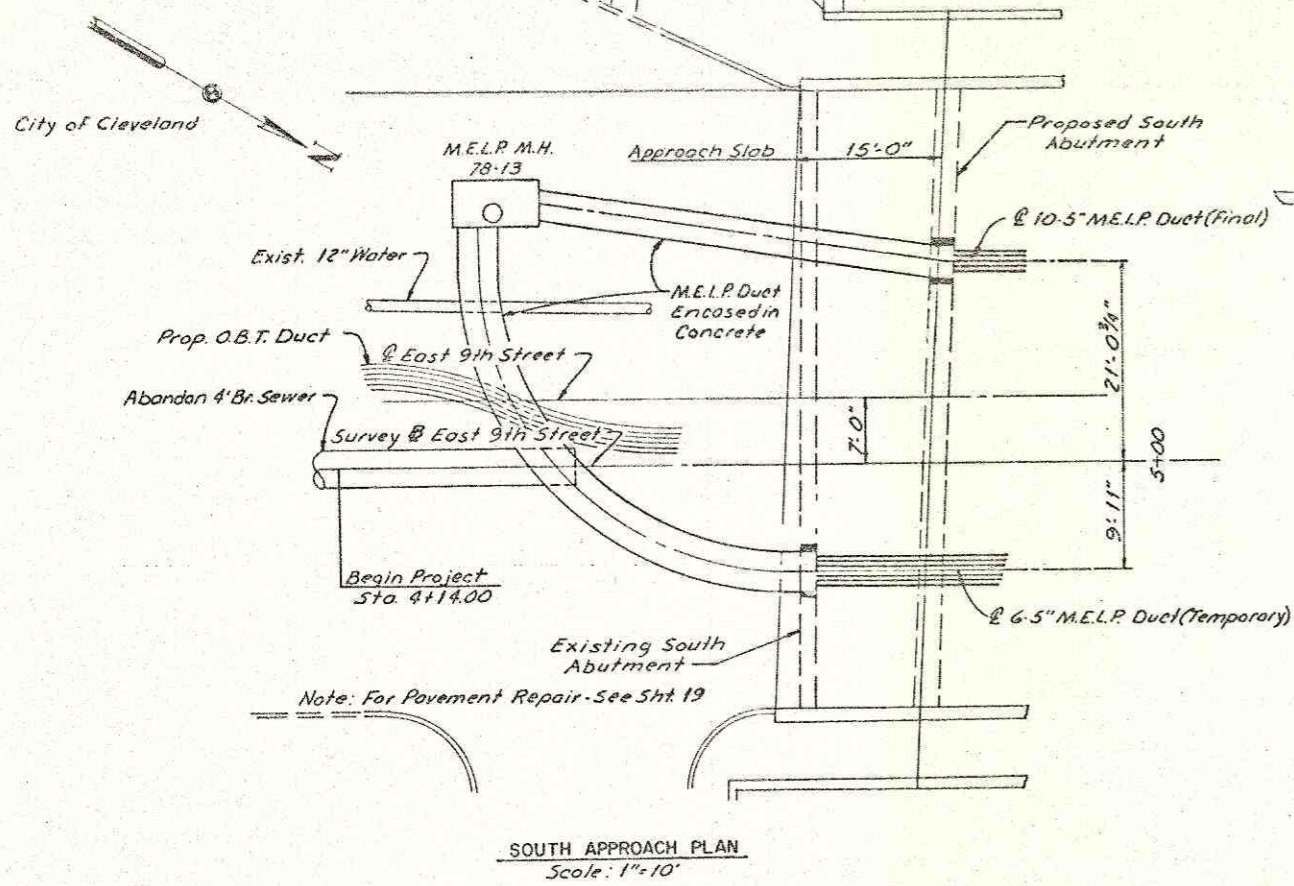
D. MEASUREMENT

THE NUMBER OF LINEAR FEET OF CONDUIT BANK TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF LINEAR FEET FURNISHED AND PLACED IN ACCORDANCE WITH THESE SPECIFICATIONS AS MEASURED ALONG THE AXIS OF THE CONDUIT LINE INCLUDING FITTINGS.

E. PAYMENT

THE FOOTAGE MEASURED AS PROVIDED ABOVE SHALL BE PAID FOR AT THE CONTRACT PRICE BID PER LINEAL FOOT FOR "ITEM RR.01 - NON-ENCASED, BRIDGE-SUPPORTED CONDUIT BANK" CLASSIFIED AS TO SIZE AND TYPE, WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING, HAULING AND PLACING THE CONDUIT, FITTINGS, SPACERS, SUPPORT BRACKETS, PROTECTIVE HOOD, STRUCTURAL STEEL, AND FOR ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM. THESE ITEMS AS MEASURED AND PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT
RR.01	LIN. FT. NON-ENCASED, BRIDGE-SUPPORTED SIX 5-IN. FRP CONDUIT BANK
RR.01	LIN. FT. NON-ENCASED, BRIDGE-SUPPORTED TEN 5-IN. FRP CONDUIT BANK



REVISION	DATE	DESCRIPTION	BY	APP'D

DIVISION OF LIGHT & POWER
CITY OF CLEVELAND

M.E.L.P. DUCTS IN ROADWAY
PLAN AND PROFILE

DRAWN BY: R.O.J.	SCALE: None	7116-9
CH'GD BY: E.F.J.	DATE: 8-17-81	

QUANTITY CALCULATIONS

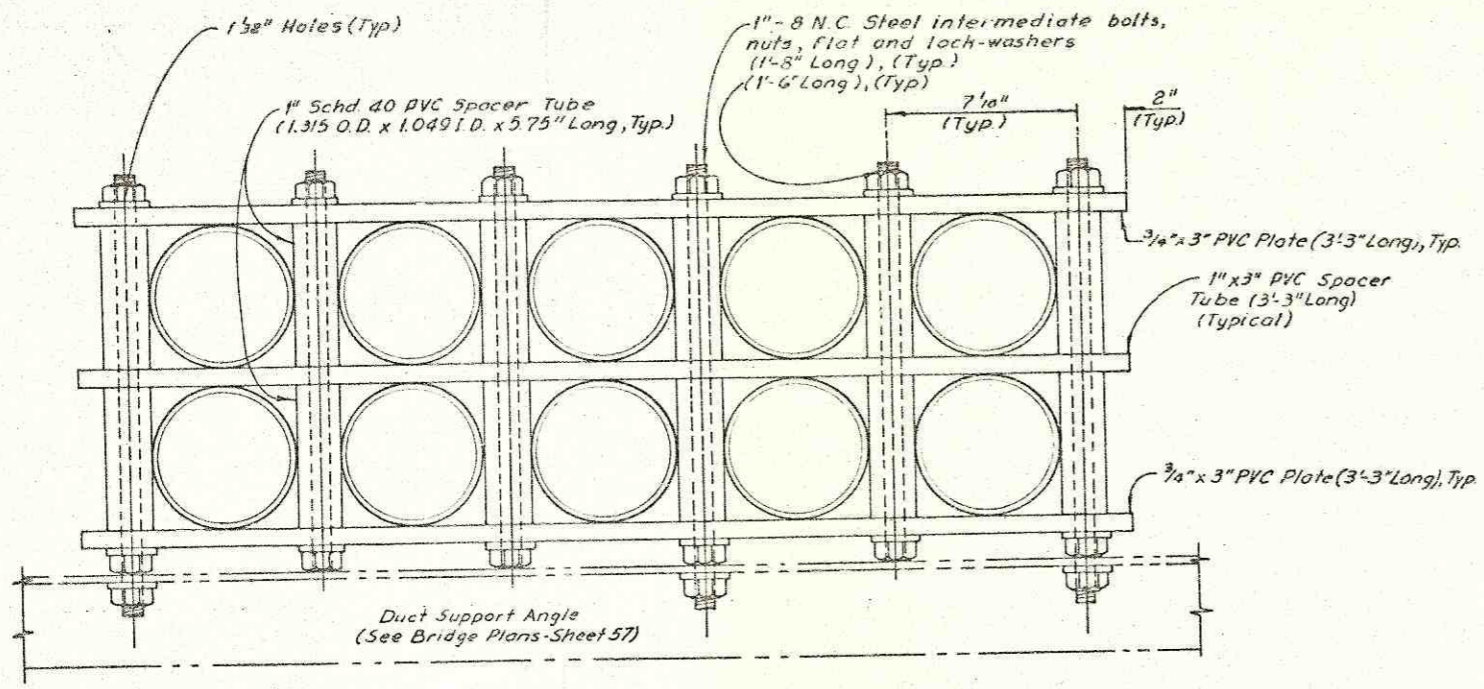
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CHECKED BY E.F.J. DATE 11-18-81

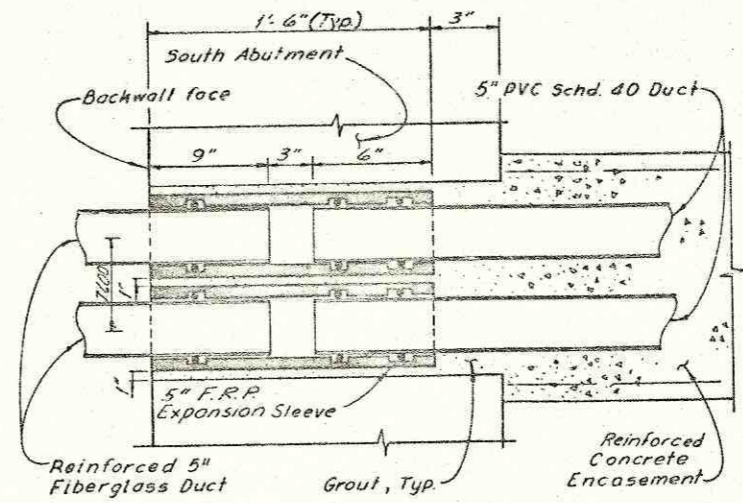
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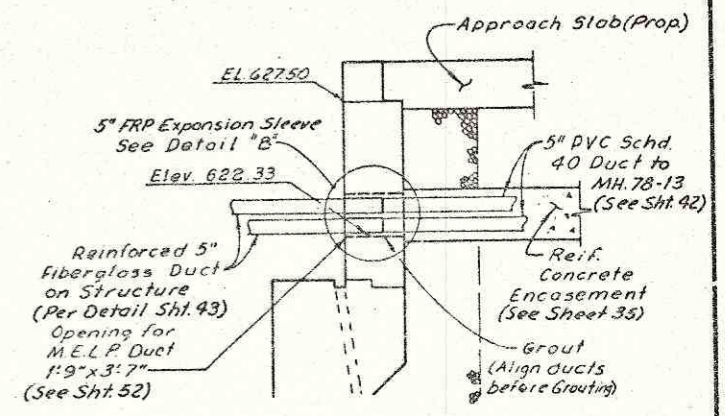
CUYAHOGA COUNTY
EAST NINTH STREET



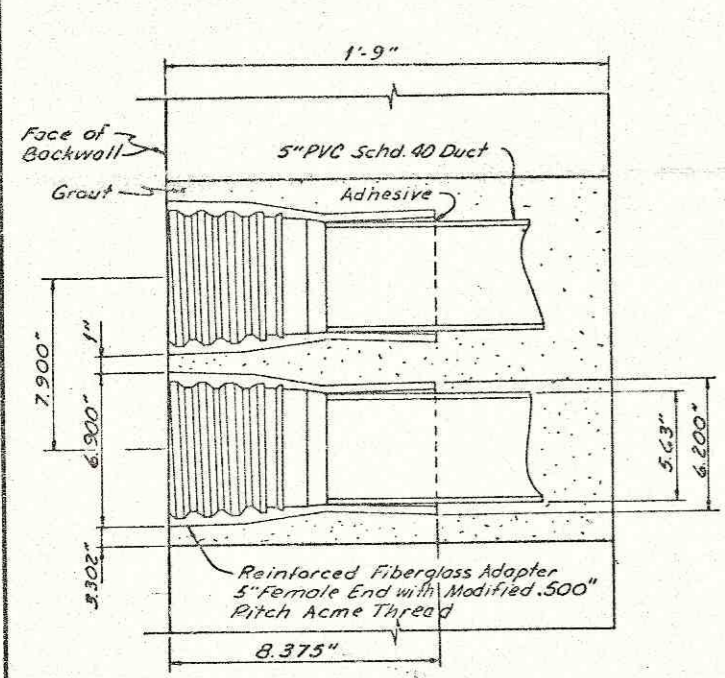
DUCT SUPPORT & BRACKET ASSEMBLY (BR-01)



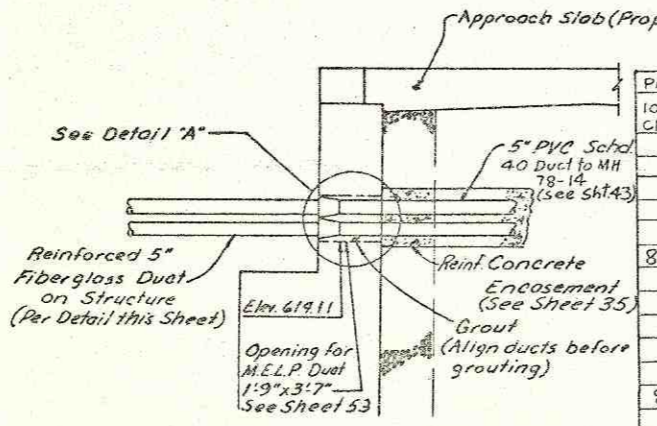
DETAIL "B"



PROPOSED SOUTH ABUTMENT



DETAIL "A"



PROPOSED NORTH ABUTMENT

M.E.L.P. RELOCATION QUANTITIES

PARTICIPATION	TOTAL	UNIT	ITEM	DESCRIPTION	Project	MELP	
100% CITY	QUANT.				PART.	SPEC. NO.	
84.4%	1300	L.F.	Special	Cable 3/C 15KV #4/0 PIL	1300	CA-01	
10.8%	650	L.F.	Special	Cable 3/C 5KV #4/0 PIL	650	CA-01	
	650	L.F.	Special	Cable 3/C 5KV #4/0 XLP	650	CA-01	
	650	L.F.	Special	Cable 3/C 5KV #4 PIL	650	CA-01	
84.0	1850	L.F.	Special	Cable 1/C 600V #14 RHW(AL)	1010	CA-01	
	200	L.F.	Special	Fire proofing	200	CA-01	
115	115	L.F.	Special	Non-Reinforced, Conc. Enc. 6-5" PVC Conduit Bank, As Per Plan		UC-13	
65	65	L.F.	Special	Reinforced, Conc. Enc. 10-5" PVC Conduit Bank, As Per Plan		UC-13	
	212	L.F.	Special	Non-Encased, Bridge Supported 6-5" FRP Conduit Bank		BR-01	
84	126	210	L.F.	Special	Non-Encased, Bridge Supported 10-5" FRP Conduit Bank		BR-01

REVISION DATE DESCRIPTION BY APPR.

DIVISION OF LIGHT & POWER
CITY OF CLEVELAND

DETAILS OF PROPOSED IOMELP DUCT AND QUANTITIES

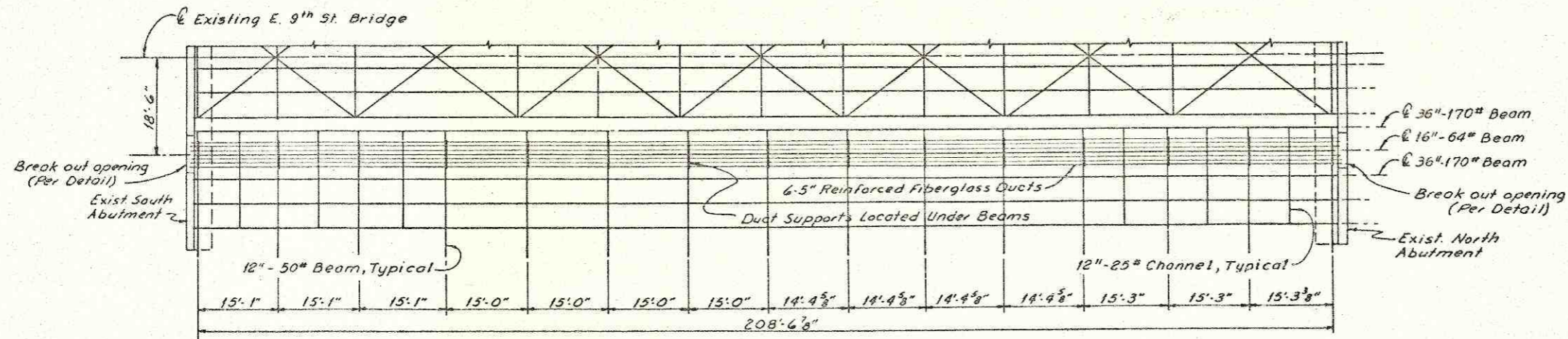
DRAWN BY R.D.J. SCALE None
CHECKED BY E.F.J. DATE 8-17-81

7116-9

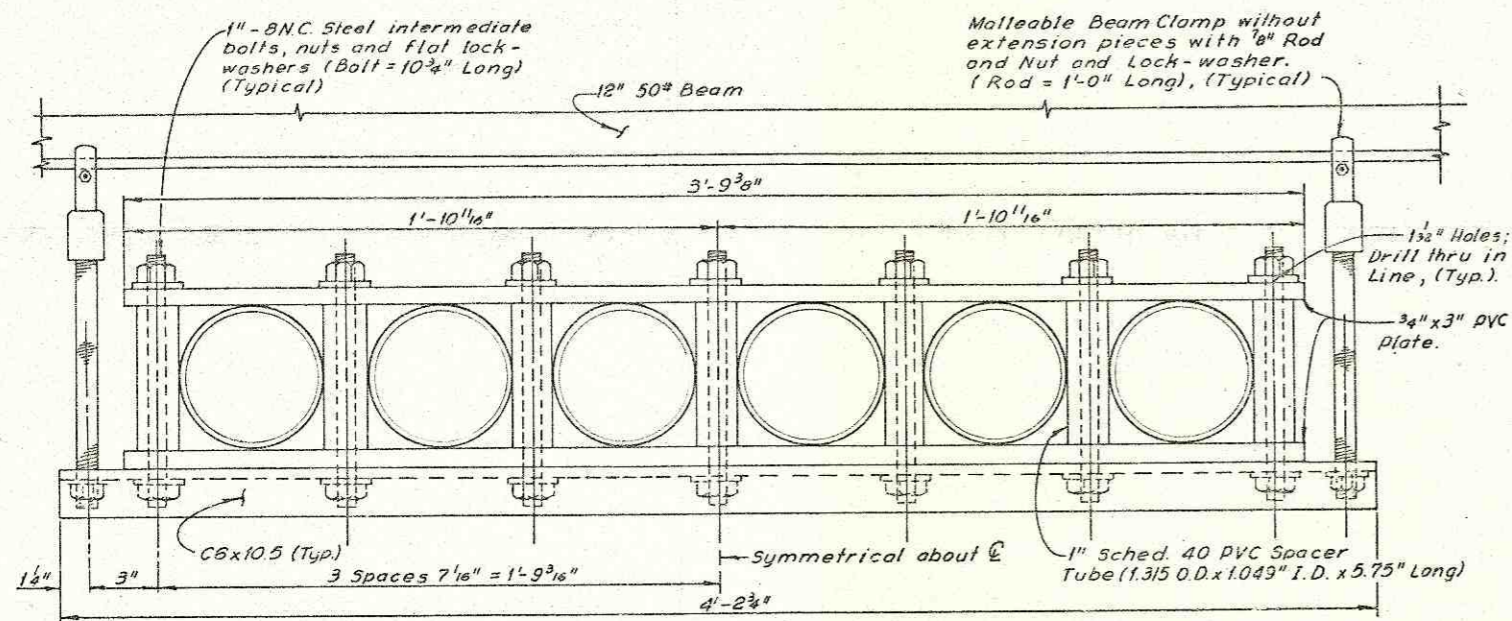
FRWA REGION	STATE	PROJECT
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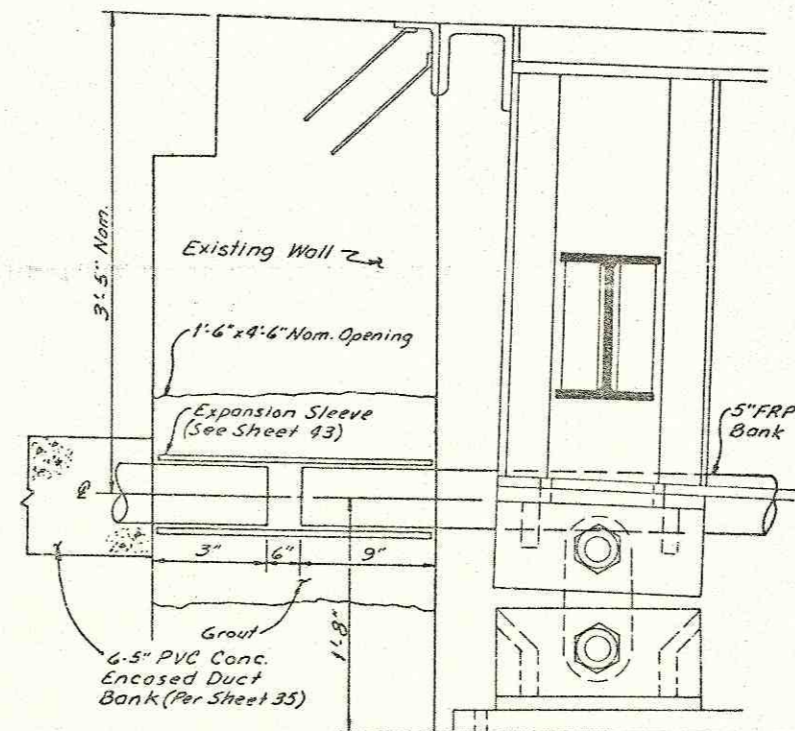
CUYAHOGA COUNTY
EAST NINTH STREET



EXISTING FRAMING PLAN FOR
LOCATION OF DUCTS & DUCT SUPPORTS
No Scale

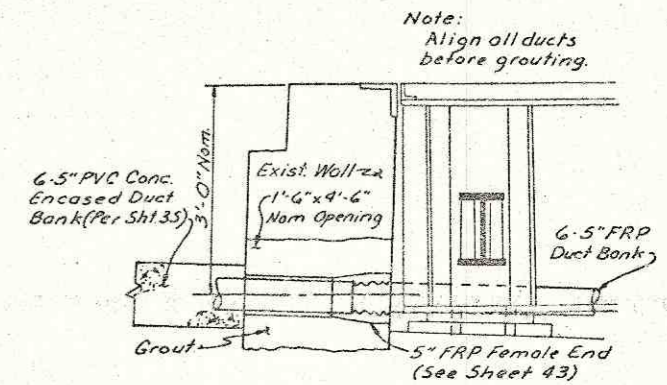


6-5" FRP DUCT
TEMPORARY DUCT SUPPORT & BRACKET ON STRUCTURE
No Scale



Note: Align all ducts before grouting.

DUCT OPENING THROUGH EXISTING SOUTH ABUTMENT WALL
No Scale



Note:
Align all ducts
before grouting.

DUCT OPENING THROUGH EXISTING NORTH ABUTMENT WALL
No Scale

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

REVISION	DATE	DESCRIPTION	BY	APP'D

DIVISION OF LIGHT & POWER
CITY OF CLEVELAND

EXISTING FRAMING PLAN AND
DETAILS OF TEMPORARY 6 M.E.L.P. DUCT

DRAWN BY: R.D.J. SCALE: None
CHECKED BY: E.F.J. DATE: 8-18-81 7116-10

GENERAL NOTES - STRUCTURES OVER 20 - FT SPAN

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CUYAHOGA COUNTY
EAST NINTH STREET

ESTIMATED QUANTITIES									
ITEM	TOTAL	UNIT	DESCRIPTION	ABUTMENT	PIER	SUPERSTR.	GENERAL		
202	Lump Sum	Lump Sum	Portions Of Structures Removed				Lump Sum		
503	Lump Sum	Lump Sum	Cofferdams, Cribb And Sheeting				Lump Sum		
503	995	Cu. Yd.	Unclassified Excavation	825	170		Lump Sum		
505	Lump Sum	Lump Sum	Test Pile				Lump Sum		
506	Lump Sum	Lump Sum	Pile, Test Load				Lump Sum		
506	1	Each	Subsequent Pile Test Load				Lump Sum		
507	4240	Lin. Ft.	12"Ø Cast-In-Place Reinforced Concrete Piles	4240					
507	3060	Lin. Ft.	14"Ø Cast-In-Place Reinforced Concrete Piles		3060				
509	105,757	Lb.	Reinforcing Steel, Grade 60	29,537	26,026	50,194			
510	113	Each	Dowel Holes, As Per Plan	113					
511	546	Cu. Yd.	Class S Concrete, Superstructure			546			
511	110	Cu. Yd.	Class C Concrete, Piers Above Footings		110				
511	257	Cu. Yd.	Class C Concrete, Abutments Above Footings	257					
511	213	Cu. Yd.	Class C Concrete, Footings	148	65				
512	18	Sq. Yd.	Type B Waterproofing	18					
513	470,500	Lb.	Structural Steel, AISC Category III (A588 Unpainted, Except As Noted)			470,500			
513	3,564	Each	Welded Stud Shear Connectors			3,564			
517	501	Lin. Ft.	Rolling, As Per Plan			470,500			
518	154	Cu. Yd.	Porous Backfill	74		410	17		
518	153	Lin. Ft.	6"Ø Perforated Helical C.S.P. (707.01)	153					
518	72	Lin. Ft.	6"Ø Non-Perforated Helical C.S.P. Including Specials (707.01)	72					
523	3	Hour	Dynamic Test Pile				3		
601	378	Sq. Yd.	Crushed Aggregate Slope Protection				378		
601	436	Sq. Yd.	Concrete Slope Protection				436		
849	158	Lin. Ft.	Elastomeric Compression Seals for Structural Steel Joints, 4" in width			158			
845	1,453	Sq. Yd.	Latex Modified Concrete Overlay (1 1/2" thick) (See Proposal Note)			1,453			
Spec.	90,449	Lb.	Epoxy Coated Reinforcing Steel (See Proposal Note)			90,449			
Spec.	418	Sq. Yd.	Protective Coating Of Concrete Surface	139	279				
Spec.	Lump Sum	Lump Sum	Structural Survey and Monitoring Of Vibrations				Lump Sum		

1. DESIGN SPECIFICATIONS

STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, DATED 1977, INCLUDING THE 1978, 1979 AND 1980 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS. THE DESIGN LOADING IS HS-20-44 CASE II AND THE ALTERNATE MILITARY LOADING.

THE CLASSES OF CONCRETE AND THE GRADES OF STRUCTURAL STEEL AND REINFORCING STEEL, TOGETHER WITH THE STRENGTH FOR EACH ARE AS FOLLOWS:

- CONCRETE CLASS S - COMPRESSIVE STRENGTH 4,500 PSI FOR SUPERSTRUCTURE
- CONCRETE CLASS C - UNIT STRESS 1,333 PSI FOR SUBSTRUCTURE
- STRUCTURAL STEEL - ASTM A588 - UNIT STRESS 27,000 PSI
- REINFORCING STEEL - ASTM A615, A616, A617 - GRADE 60, UNIT STRESS 24,000 PSI

2. SUPPLEMENTATION SPECIFICATIONS

REFERENCE SHALL BE MADE TO SUPPLEMENTAL SPECIFICATIONS 836 DATED 3-12-75, 845 DATED 3-2-81, 849 DATED 10-19-81, 853 DATED 6-26-78, 927 DATED 10-19-81, 953 DATED 8-21-80 AND 956 DATED 6-26-78.

3. REFERENCE DRAWINGS

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS AS-1-72, DATED 6-30-72 (SHEETS 1 AND 2), FSB-1-62, REVISED 1-15-63, SD-1-69, DATED 6-12-69 (SHEET 1 OF 4) AND TO HL-7, DATED 1-21-76.

4. EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND/OR FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02 AND 513.02.

CONTRACT BID PRICES SHALL BE BASED UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, ALL PROJECT WORK SHALL BE BASED UPON ACTUAL DETAILS AND DIMENSIONS WHICH HAVE BEEN VERIFIED BY THE CONTRACTOR IN THE FIELD.

ITEM 513 - STRUCTURAL STEEL (UTILITIES)			
UTILITY OWNER	WT. A (Lbs.)	WT. B (Lbs.)	TOTAL (Lbs.)
East Ohio Gas Company	1,235	380	1,615
Ohio Bell Telephone Company	3,000		3,000
Cleveland Electric Illuminating Co.	1,920	1,890	3,810
Total	6,155	2,270	8,425
City of Cleveland-Div. of Light & Power	3,825	1,269	5,094

*1274 Lbs. is 100% City of Cleveland Participation

Note:

The 470,500 pounds of structural steel shown in the Table of Estimated Quantities includes 8,425 pounds of structural steel which is to be paid for by the utilities as shown in the table, Item 513 - Structural Steel (Utilities). Weight A is that portion of the girder flange weight added to structurally support the added weight of the utility. Weight B is the weight of structural members added to the bridge superstructure and included in this contract to support the utility. The 470,500 pounds also includes 5,094 pounds for support of City of Cleveland-Division of Light and Power duct System. 1274 pounds of this quantity is 100% City of Cleveland Participation.

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND				HNTB	
ESTIMATED QUANTITIES AND GENERAL NOTES EAST 9th STREET OVER CONRAIL CITY OF CLEVELAND BR. NO. 1.013					
CLEVELAND	CUYAHOGA COUNTY	OHIO			
DATE: 8/20/81	DATE: 8/20/81	DATE: 8/20/81	DATE: 8/20/81	DATE: 8/20/81	DATE: 8/20/81
CAB	CAB	CAB	CAB	CAB	CAB
					REVISION
					SHEET 1 / 18

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5. UTILITIES

INFORMATION SHOWN IN THE PLANS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.

THE FOLLOWING UTILITY FACILITIES ARE CARRIED ON THE EXISTING BRIDGE AS SHOWN IN THE EXISTING BRIDGE SECTION ON SHEET NO. 6 OF 18.

- ONE - 10-IN. CITY OF CLEVELAND WATERLINE.
- SIX - 4-IN. MUNICIPAL ELECTRIC LIGHT AND POWER (MELP) DUCTS.
- FOUR - 4-IN. CLEVELAND ELECTRIC ILLUMINATING COMPANY (CEI) DUCTS.
- THREE - 4-IN. OHIO BELL TELEPHONE COMPANY (OBT) DUCTS.
- ONE - 4-IN. EAST OHIO GAS COMPANY (EOG) DUCT.
- ONE - 4-IN. AMTRAK FORCE MAIN.

THESE FACILITIES SHALL BE RELOCATED, MODIFIED AND CARRIED ON THE PROPOSED BRIDGE AS SHOWN IN THE PROPOSED BRIDGE SECTION ON SHEET NO. 13 OF 18. EACH UTILITY MUST MAINTAIN SERVICE DURING CONSTRUCTION. THE CONTRACTOR AND UTILITY ARE REQUESTED TO COOPERATE BY SCHEDULING THEIR OPERATIONS IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO ALLOW UTILITY OWNER'S ACCESS TO THEIR FACILITY AT ALL TIMES IN CASE AN EMERGENCY SHOULD ARISE. WORK ADJACENT TO OR OVER AN ACTIVE UTILITY SHALL NOT BE COMMENCED UNTIL ALL ARRANGEMENTS NECESSARY FOR THEIR PROTECTION HAVE BEEN MADE. THE CONTRACTOR'S PROVISIONS FOR PROTECTION MUST BE ACCEPTABLE TO THE UTILITY OWNER AND APPROVED BY THE ENGINEER. ANY PROTECTIVE MEASURE CONSIDERED BY THE ENGINEER TO BE ADDITIONAL TO NORMAL PROTECTIVE MEASURES WILL BE AT THE EXPENSE OF THE UTILITY OWNER. NO SEPARATE PAYMENT WILL BE MADE FOR NORMAL PROTECTIVE MEASURES.

SUPPORTS FOR EACH RELOCATED UTILITY AS SHOWN IN THE BRIDGE PLANS ARE INCLUDED UNDER THIS CONTRACT, EXCEPT FOR O.B.T. DUCT SUPPORTS, WHICH SHALL BE INSTALLED BY THE O.B.T. CONTRACTOR. THE WEIGHT OF STRUCTURAL STEEL ATTRIBUTABLE TO SUPPORTING PRIVATELY OWNED UTILITIES ON THE PROPOSED BRIDGE AND INCLUDED UNDER THIS CONTRACT IS NOTED IN THE ESTIMATED QUANTITIES AND WILL BE PAID FOR BY THE PRIVATELY OWNED UTILITY. PAYMENT FOR SUPPORTING PUBLICLY OWNED UTILITIES WILL BE PAID FOR AS PART OF THIS PROJECT.

6. MAINTENANCE OF TRAFFIC

TWO LANES OF TRAFFIC SHALL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD. FOR TRAFFIC CONTROL DETAILS, SEE SHEET 6 OF 18 AND ROADWAY PLANS.

7. SPECIAL RAILROAD REQUIREMENTS

A. GENERAL

THE CONTRACTOR SHALL COOPERATE AT ALL TIMES WITH THE OFFICIALS OF THE RAILROAD COMPANY. HE SHALL USE ALL REASONABLE CARE AND DILIGENCE IN THE WORK IN ORDER TO AVOID ACCIDENTS, DAMAGE OR INTERFERENCE WITH THE TRAINS OR THE PROPERTY OF THE RAILROAD. THE CONTRACTOR SHALL NOTIFY THE RAILROAD PRIOR TO STARTING WORK THAT MAY AFFECT RAILROAD PROPERTY AND FACILITIES AND SHALL PAY THE RAILROAD COMPANY THE COST OF FLAGMEN FURNISHED BY THE RAILROAD COMPANY AND MADE NECESSARY BECAUSE OF ANY OF THE CONTRACTOR'S OPERATIONS OVER OR ADJACENT TO THE TRACKS.

B. CONSTRUCTION ADJACENT TO TRACKS

CONSTRUCTION CLEARANCE OF 21-FT-0-IN. VERTICALLY ABOVE THE TOP OF THE RAILROAD RAILS AND 8-FT-0-IN. HORIZONTALLY FROM THE CENTER OF TRACKS SHALL BE MAINTAINED AT ALL TIMES EXCEPT BETWEEN TRACKS B AND C DURING THE REMOVAL OF THE EXISTING PIER AND CONSTRUCTION OF THE PROPOSED PIER. THE EDGE OF THE FOOTING FOR THE PROPOSED PIER IS LOCATED ABOUT 6-FT HORIZONTALLY FROM THE CENTER OF TRACKS B AND C. REMOVAL OF THE EXISTING PIER FOOTING AND CONSTRUCTION OF THIS PROPOSED PIER FOOTING WILL REQUIRE SPECIAL ATTENTION. THE CONTRACTOR SHALL PREPARE DETAILED PROCEDURES AND PLANS FOR THIS WORK. THIS DATA SHALL FULLY DEFINE THE PROPOSED REMOVAL AND CONSTRUCTION METHOD, SEQUENCE OF OPERATION, EQUIPMENT, SHEETING AND DURATION OF WORK AND SHALL BE APPROVED BY THE RAILROAD COMPANY BEFORE BEING SUBMITTED TO THE DIRECTOR FOR APPROVAL.

C. COMMUNICATION AND SIGNAL POLE LINE LOCATED ADJACENT TO TRACK NO. 4

THE CONTRACTOR SHALL USE ALL PRECAUTIONS NECESSARY TO INSURE THAT THE COMMUNICATION AND SIGNAL LINE IS NOT DISTURBED DURING CONSTRUCTION OPERATIONS.

8. REMOVAL

A. GENERAL

THE CONTRACTOR SHALL REMOVE THE DESIGNATED PORTIONS OF THE EXISTING BRIDGE TO THE LIMITS SHOWN ON THE PLANS OR TO THE LIMITS DIRECTED BY THE ENGINEER. PARTS DESIGNATED BY THE PLANS FOR REMOVAL MAY BE REMOVED BY METHODS OF THE CONTRACTOR'S SELECTION AS APPROVED BY THE ENGINEER. NO PART SHALL BE PERMITTED TO DROP TO THE GROUND.

B. REMOVAL AT THE SOUTHEAST AND SOUTHWEST WINGWALLS

CONCRETE SHALL BE REMOVED BY MEANS OF APPROVED PNEUMATIC HAMMERS EMPLOYING POINTED AND BLUNT CHISEL TOOLS. THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. EXISTING REINFORCEMENT WITHIN THE REMOVAL LIMITS SHALL BE REMOVED AND DISPOSED OF. REMOVAL SHALL BE TO A NEAT LINE AS SHOWN IN THE PLANS.

C. DISPOSAL OF REMOVED MATERIAL

ALL CONCRETE, STEEL, REINFORCING STEEL, I BEAM LOK DECK, ETC., REMOVED FROM THE STRUCTURE SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED BY HIM FROM THE SITE.

UNDER NO CIRCUMSTANCES SHALL THE MATERIAL BE PERMITTED TO REMAIN ON THE PREMISES, RIGHT-OF-WAY OR STREETS PENDING DISPOSAL OF SAME OR FOR ANY OTHER PURPOSES, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

9. DIMENSIONS

DIMENSIONS GIVEN ARE MEASURED HORIZONTALLY AT 60°F UNLESS OTHERWISE NOTED.

10. SPECIAL PILING CONSIDERATIONS

PREBORING THROUGH THE MISCELLANEOUS FILL OR CHANGING PILE TYPE MAY BE NECESSARY TO AVOID DAMAGING THE PILES DURING DRIVING AND/OR TO CONTROL VIBRATIONS TO EXISTING STRUCTURES. ANY ADDITIONAL COSTS DUE TO SUCH ADJUSTMENTS SHALL BE BORNE BY THE CONTRACTOR.

11. REINFORCING STEEL

ALL BARS ARE DESIGNATED ON THE PLANS BY BAR NUMBERS. THE BAR SIZE IS DESIGNATED BY THE FIRST DIGIT OF THREE-DIGIT NUMBERS AND BY THE FIRST TWO DIGITS OF FOUR-DIGIT NUMBERS.

THE CLEAR DISTANCE BETWEEN REINFORCING STEEL AND FACE OF CONCRETE SHALL BE 3-IN. FOR ALL BARS IN FOOTINGS, 2-1/2-IN. AT BAR MATS UNDER SHOES AND 2-IN. ELSEWHERE UNLESS OTHERWISE SHOWN ON THE PLANS.

ALL BAR DIMENSIONS ARE GIVEN OUT TO OUT.

ALL BARS OF A SERIES SHALL VARY BY A CONSTANT INCREMENT.

12. CONCRETE DECK

THE FINAL SURFACE OF THE ROADWAY SHALL CONFORM TO THE ELEVATIONS SHOWN ON THE PLANS. TO COMPENSATE FOR DEFLECTIONS DUE TO DEAD LOAD OF THE CONCRETE, THE SCREENS USED TO STRIKE OFF THE SURFACE OF THE CONCRETE TO THE FINAL DESIRED GRADE LINE SHALL BE ADJUSTED BY AMOUNTS EQUAL TO DEFLECTIONS SHOWN FOR THIS DEAD LOAD. SCREENS MAY REQUIRE FURTHER ADJUSTMENTS DUE TO IRREGULARITIES IN THE FABRICATED STEEL. THE THEORETICAL TOP OF PAVEMENT ELEVATIONS AT THE GUTTER LINES BEFORE THE DEFLECTIONS FROM THE CONCRETE HAVE OCCURRED ARE TABULATED ON THE PLANS.

13. BONDING NEW CONCRETE TO EXISTING CONCRETE

POLYSULFIDE-EPOXY RESIN ADHESIVE SHALL BE USED FOR BONDING AT ALL LOCATIONS WHERE NEW CONCRETE IS PLACED IN CONTACT WITH EXISTING CONCRETE EXCEPT BETWEEN THE PROPOSED DECK AND WEARING COURSE. THE ADHESIVE SHALL BE DURAL 109 AS MANUFACTURED BY DURAL INTERNATIONAL CORP., DEERPARK, NEW YORK; THIOROND NO. 100 AS MANUFACTURED BY STEELCOAT MANUFACTURING, ST. LOUIS, MO.; CEILCOAT 348 ADHESIVE, AS MANUFACTURED BY THE CEILCOAT COMPANY, BERFA, OHIO; RESIFELD R-7689-G AS MANUFACTURED BY THE H.R. FULLER COMPANY OR ADHESIVE MEETING THE REQUIREMENTS OF AASHTO M-235-73. IN THE EVENT OF APPLICATION AT LESS THAN 60°F OR MORE THAN 104°F, IT MAY BE NECESSARY TO OBTAIN A SLIGHTLY MODIFIED MATERIAL DEPENDING ON THE RECOMMENDATIONS OF THE MANUFACTURER.

PREPARATION OF THE SURFACE OF THE EXISTING CONCRETE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. JUST PRIOR TO APPLICATION, THE PREPARED SURFACE SHALL BE WASHED WITH WATER TO REMOVE ALL DUST. WHEN THE SURFACE IS DAMP OR DRY, THE ADHESIVE SHALL BE APPLIED BY THOROUGH BRUSHING ONTO THE SURFACE TO A THICKNESS OF NOT LESS THAN 15 MILS WITH THE COVERAGE AVERAGING AT LEAST ONE GALLON PER 100 SQ.FT. CONCRETE PLACED ON THE ADHESIVE SHALL BE PLACED WHILE THE ADHESIVE IS TACKY. IF THE ADHESIVE SETS AND IS NO LONGER TACKY, A SECOND COAT SHALL BE APPLIED. THE ADHESIVE SHALL BE THOROUGHLY MIXED AND HEALTH PRECAUTIONS OBSERVED, ALL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

NO SEPARATE PAYMENT WILL BE MADE FOR BONDING NEW CONCRETE TO OLD USING POLYSULFIDE-EPOXY RESIN ADHESIVE, BUT THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT CONCRETE ITEM. THIS PRICE SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT INCLUDING CLEANING AND PREPARING OF THE EXISTING SURFACE.

14. STRUCTURAL SURVEY AND MONITORING OF VIBRATIONS

THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF OHIO, HAVING EXPERTISE IN PREPARING STRUCTURAL SURVEYS AND ASSESSING POSSIBLE CLAIMS FOR STRUCTURAL DAMAGE. A STRUCTURAL SURVEY REPORT SHALL BE PREPARED THAT WILL COVER ALL STRUCTURES ADJACENT TO AND IN AN AREA DETERMINED BY THE CONTRACTOR'S EXPERT THAT COULD BE AFFECTED BY THE CONSTRUCTION OF THE PROPOSED BRIDGE AND TO ESTABLISH WHATEVER CONTROLS ARE NECESSARY TO BE ABLE TO MONITOR THE EFFECTS OF THE PROPOSED CONSTRUCTION ON THE EXISTING STRUCTURES.

THE CONTRACTOR'S ENGINEER SHALL CONDUCT THIS STRUCTURAL SURVEY IN THE PRESENCE OF THE ENGINEER AND THE OWNER AND TENANTS OF THE SURVEYED STRUCTURES OR THEIR DELEGATED REPRESENTATIVES, AND A REPRESENTATIVE OF THE CITY OF CLEVELAND. A COPY OF THE STRUCTURAL SURVEY REPORT SHALL BE SUBMITTED TO THE ENGINEER FOR HIS REVIEW AND ACCEPTANCE PRIOR TO THE START OF ANY CONSTRUCTION. THE STRUCTURAL SURVEY REPORT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING:

- A DETAILED ON-SITE INSPECTION OF THE INTERIOR AND EXTERIOR OF BUILDINGS AND STRUCTURES LOCATED ADJACENT TO THE PROPOSED BRIDGE. THE INSPECTION SHALL BE DOCUMENTED BY ONE-HALF INCH SONY BETA MAX CASSETTE COLOR AUDIO-VIDEO TAPING TAKEN BY AN ELECTROGRAPHER. ORIGINAL TAPES AT ALL TIMES SHALL REMAIN IN THE EXCLUSIVE POSSESSION OF THE ELECTROGRAPHER.
- LOCATION AND ELEVATION OF CONTROL POINTS.
- THE REPORT SHALL NOTE ALL CRACKS AND OTHER STRUCTURAL DEFICIENCIES AND PROVIDE DETAILS PERTINENT TO EACH AS TO LOCATION, LENGTH, SIZE, THICKNESS, TYPE, ETC.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB	
GENERAL NOTES			
EAST 9th STREET OVER CONRAIL			
CITY OF CLEVELAND BR. NO. 1:013			
CLEVELAND	CUYAHOGA COUNTY	OHIO	
DRAWN CKB	TRACED CAB	CHECKED CAB	REVIEWED CAB
DATE: 6-30-77	DATE: 6-30-77	DATE: 7-1-77	DATE: 8-21-77
			SHEET 2 OF 18

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15. STRUCTURAL SURVEY AND MONITORING OF VIBRATIONS (CONTINUED)

THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A VIBRATION AND ACOUSTICS CONSULTANT TO MEASURE AND RECORD THE VIBRATION AND SOUND LEVELS CAUSED BY THE PILE DRIVING OPERATION AND BY TRAIN MOVEMENTS. THE VIBRATIONS SHALL BE MEASURED WITH A SEISMOGRAPH AND IF THE PARTICLE VELOCITY REACHES 2 IN. PER SECOND AT ANY STRUCTURE, THE ENGINEER SHALL SUSPEND THE PILE DRIVING OPERATIONS AND A DETERMINATION SHALL BE MADE BY THE DIRECTOR AS TO WHAT MODIFICATIONS MAY BE NECESSARY.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY CORRECTIONS IF ANY DAMAGES ARE EXPERIENCED AS A RESULT OF THE PILE DRIVING OPERATION.

AFTER THE COMPLETION OF THE CONSTRUCTION OF THE SUBSTRUCTURE AND PRIOR TO THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL SUPPLY THE ENGINEER WITH A SUPPLEMENT TO THE STRUCTURAL SURVEY REPORT CONTAINING A COPY OF ALL MEASUREMENTS TAKEN AND ANY CHANGES IN THE CONDITION OF THE SURVEYED STRUCTURES.

THIS ITEM SHALL BE PAID FOR IN A LUMP SUM AS PER ITEM SPECIAL - STRUCTURAL SURVEY AND MONITORING OF VIBRATIONS.

16. PROTECTIVE COATING OF CONCRETE SURFACE

ALL VISIBLE SURFACES OF THE PIERS AND ABUTMENTS WHICH WILL BE EXPOSED TO RUST-LADEN WATER FROM CORROSION RESISTANT STEEL DURING INITIAL WEATHERING SHALL RECEIVE A CLEAR VINYL RESIN COATING TO PROTECT AGAINST ABSORPTIVE STAINING. THE COATING SHALL BE APPLIED AFTER THE CONCRETE HAS RECEIVED A FINAL SURFACE FINISH INCLUDING ANY GROUT CLEANING OR RUBBING AND BEFORE THE ERECTION OF THE STRUCTURAL STEEL.

WATERPROOF MEMBRANE CURING COMPOUND AND CONCRETE CURING AND PROTECTIVE MEMBRANE, SUPPLEMENTAL SPECIFICATION 836, SHALL NOT BE USED ON THE SURFACES COATED WITH CLEAR PROTECTIVE COATING. SUCH SURFACES SHALL BE WATER CURED OR, AT THE CONTRACTOR'S OPTION, TWO FULL COATS OF CLEAR PROTECTIVE COATING, EACH APPROXIMATELY 1-1/3 MILS DRY FILM THICKNESS, MAY BE APPLIED TO ACT AS A COMBINATION CURING COMPOUND AND ANTISTAINING AGENT.

THE AGENT SHALL BE APPLIED BY BRUSH OR ROLLER, OR BY SPRAYING, SO THAT THE SURFACE OF THE CONCRETE IS COMPLETELY AND UNIFORMLY COATED AT THE RATE OF ONE GALLON PER 200 SQUARE FEET. THIS RATE OF APPLICATION WILL PROVIDE A DRY FILM THICKNESS OF 1-1/3 MILS. IF RUNNING OR SAGGING OCCURS, THE MATERIAL SHALL BE APPLIED IN TWO OR MORE COATS OF APPROXIMATELY EQUAL THICKNESS. NOT LESS THAN 10 MINUTES SHALL ELAPSE BETWEEN APPLICATIONS. WHEN APPLIED BY SPRAYING, THE COATING MATERIAL MAY BE THINNED WITH NOT MORE THAN 10% TOLUENE.

THE COMPOSITION OF THE CLEAR PROTECTIVE COATING SHALL BE AS FOLLOWS:

	PERCENT BY WEIGHT
*VINYL RESIN	25.0 MIN.
METHYL ETHYL KETONE SOLVENT	37.0 MIN.
TOLUENE SOLVENT	37.0 MIN.

*THE RESIN SHALL BE A VINYL CHLORIDE-ACETATE COPOLYMER CONTAINING 86% VINYL CHLORIDE AND 14% VINYL ACETATE. THE VISCOSITY OF 22% BY WEIGHT SOLUTION OF RESIN IN A SOLVENT, CONSISTING OF EQUAL PARTS OF METHYL ISOBUTYL KETONE AND TOLUENE, SHALL BE 250-500 CENTIPOISES AT 77°F. THE RESIN SHALL BE UNION CARBIDE'S VYHH GRADE, OR APPROVED EQUAL.

COATING PROPERTIES: WEIGHT PER GALLON AT 77°F., LB.	7.6 MIN.
CONSISTENCY, VISCOSITY AT 77°F., KU	60-70
COLOR	CLEAR AND COLORLESS
DRYING TIME, HR.	1/2 MAX.

PROTECTIVE COATING OF CONCRETE SURFACE WILL BE MEASURED BY AREA, IN SQUARE YARDS, BASED ON PLAN DIMENSIONS AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM SPECIAL, PROTECTIVE COATING OF CONCRETE SURFACE. THIS PRICE SHALL BE PAYMENT IN FULL FOR FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND INCIDENTALS TO COMPLETE THE WORK AS SPECIFIED.

17. ITEM 510, DOWEL HOLES, AS PER PLAN

DRILLING OF HOLES INTO CONCRETE AND THE FURNISHING AND PLACING GROUT INTO THE HOLES SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 853 AND SUPPLEMENTAL SPECIFICATION 956 EXCEPT FOR THE BASIS OF PAYMENT. DRILLING DOWEL HOLES, FURNISHING AND PLACING NONSHRINKING EPOXY MORTAR AND SETTING STRUCTURAL ELEMENT WILL BE MEASURED AS A UNIT AND PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM 510, DOWEL HOLES, AS PER PLAN. THIS PRICE SHALL BE PAYMENT IN FULL FOR ALL MATERIAL, EQUIPMENT, LABOR AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

18. LATEX MODIFIED CONCRETE WEARING COURSE

THE NEWLY CONSTRUCTED 8-IN. CONCRETE DECK SHALL BE OVERLAID WITH A 1-1/4-IN. LATEX MODIFIED CONCRETE WEARING SURFACE. THE LATEX MODIFIED CONCRETE MATERIAL SHALL BE AS SPECIFIED IN ITEM 845 INCLUDING PLACING, FINISHING, AND CURING. NOT MORE THAN 24 HOURS PRIOR TO PLACING THE OVERLAY, ALL SURFACES TO WHICH THE OVERLAY IS TO BOND, INCLUDING THE WORK FACE OF A PREVIOUSLY PLACED OVERLAY, AND THE FACES OF CURBS, BARRIERS, ETC. UP TO A HEIGHT OF AT LEAST 1 IN. ABOVE THE PROPOSED OVERLAY SURFACE, SHALL BE CLEANED BY ABRASIVE BLASTING OR AN APPROVED METHOD OF WATERBLASTING. THESE SURFACES SHALL BE MADE FREE OF SPALLS, LANTANCE, AND ALL TRACES OF FOREIGN MATERIAL. IF NECESSARY, DETERGENT CLEANING SHALL PRECEDE BLAST CLEANING TO INSURE THE REMOVAL OF CONTAMINANTS DETRIMENTAL TO ACHIEVING AN ADEQUATE BOND. THE DECK SURFACE WHICH WILL CONTACT THE OVERLAY SHALL BE CLEANED WITH AN AIR BLAST, WETTED AND KEPT WET BUT FREE OF STANDING WATER FOR AT LEAST ONE HOUR PRIOR TO PLACING THE OVERLAY. A THIN COATING OF THE OVERLAY MIXTURE SHALL BE THOROUGHLY SCRUBBED ONTO THIS DAMP SURFACE TO BOND THE OVERLAY. COARSER PARTICLES OF THE MIXTURE WHICH CANNOT BE SCRUBBED INTO INTIMATE CONTACT WITH THE SURFACE OF THE DECK SHALL BE REMOVED AND DISPOSED OF IN A MANNER APPROVED BY THE ENGINEER. THE BONDING GROUT SHALL BE APPLIED ONLY FOR A SHORT DISTANCE IN ADVANCE OF THE PLACEMENT OF THE OVERLAY AND IT SHALL NOT BE ALLOWED TO DRY PRIOR TO BEING COVERED WITH OVERLAY.

LATEX MODIFIED CONCRETE WEARING COURSE WILL BE MEASURED BY AREA, IN SQUARE YARDS, BASED ON PLAN DIMENSIONS AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM SPECIAL, LATEX MODIFIED CONCRETE WEARING COURSE. THIS PRICE SHALL BE PAYMENT IN FULL FOR FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND INCIDENTALS TO COMPLETE THE WORK AS SPECIFIED.

19. CONCRETE PILES

12-INCH PRECAST PRESTRESSED CONCRETE PILES MAY BE SUBSTITUTED FOR THE 12-INCH CAST-IN-PLACE REINFORCED CONCRETE PILES SHOWN ON THESE PLANS. DRAWINGS SHOWING DETAILS OF AND SPECIFICATIONS FOR PRESTRESSED CONCRETE PILES ARE AVAILABLE FROM THE DIRECTOR (BUREAU OF BRIDGES). IF THE PRESTRESSED PILE ALTERNATE IS CHOSEN, THE METHOD OF MEASUREMENT AND BASIS OF PAYMENT SHALL BE THE SAME AS FOR CAST-IN-PLACE REINFORCED CONCRETE PILES PER 507.

20. ITEMS NOT INCLUDED IN BRIDGE PLANS

THE FOLLOWING ITEMS ARE NOT INCLUDED IN THE BRIDGES PLANS. SEE ROADWAY PLANS FOR DETAILS.

- (1) EMBANKMENT AND EXCAVATION AT END SLOPES, GRADING, APPROACH PAVEMENT, APPROACH SLABS AND APPROACH SIDEWALKS.
- (2) RELOCATION OR REMOVAL OF EXISTING UTILITIES.
- (3) LIGHTING.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

GENERAL NOTES
EAST 9th STREET OVER CRRAIL
CITY OF CLEVELAND BR. NO. 1.C.3

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN C.A.B.	TRACED C.A.B.	CHECKED C.A.B.	REVIEWED C.A.B.	REVISED
DATE 5-30-89	DATE 5-30-89	DATE 7-1-89	DATE 7-8-89	SHEET 3/18

CUYAHOGA COUNTY
EAST NINTH STREET

EXISTING STRUCTURE

LOCATION: East 9th Street - 567.73' North of Lakeside Avenue.
 TYPE: Deck - Concrete filled 3 inch steel I Beam Lok.
 Superstructure:
 Center bridge - Four simple spans, riveted steel deck girders with floor system.
 Outer bridges - Four span continuous rolled steel beams with floor system.
 Substructure:
 Piers - Steel Column Bents.
 Abutments - Reinforced Concrete
 SPANS: 43'-6", 50'-3 1/2", 61'-1 1/2" and 43'-6" along East 9th Street.
 ROADWAY: 54'-0" face to face of curbs with two 6'-0" sidewalks.
 SKEW: None
 LOADING: Unknown.
 YEAR BUILT: Center Bridge - 1914
 Outside Bridges - 1939

PROPOSED STRUCTURE

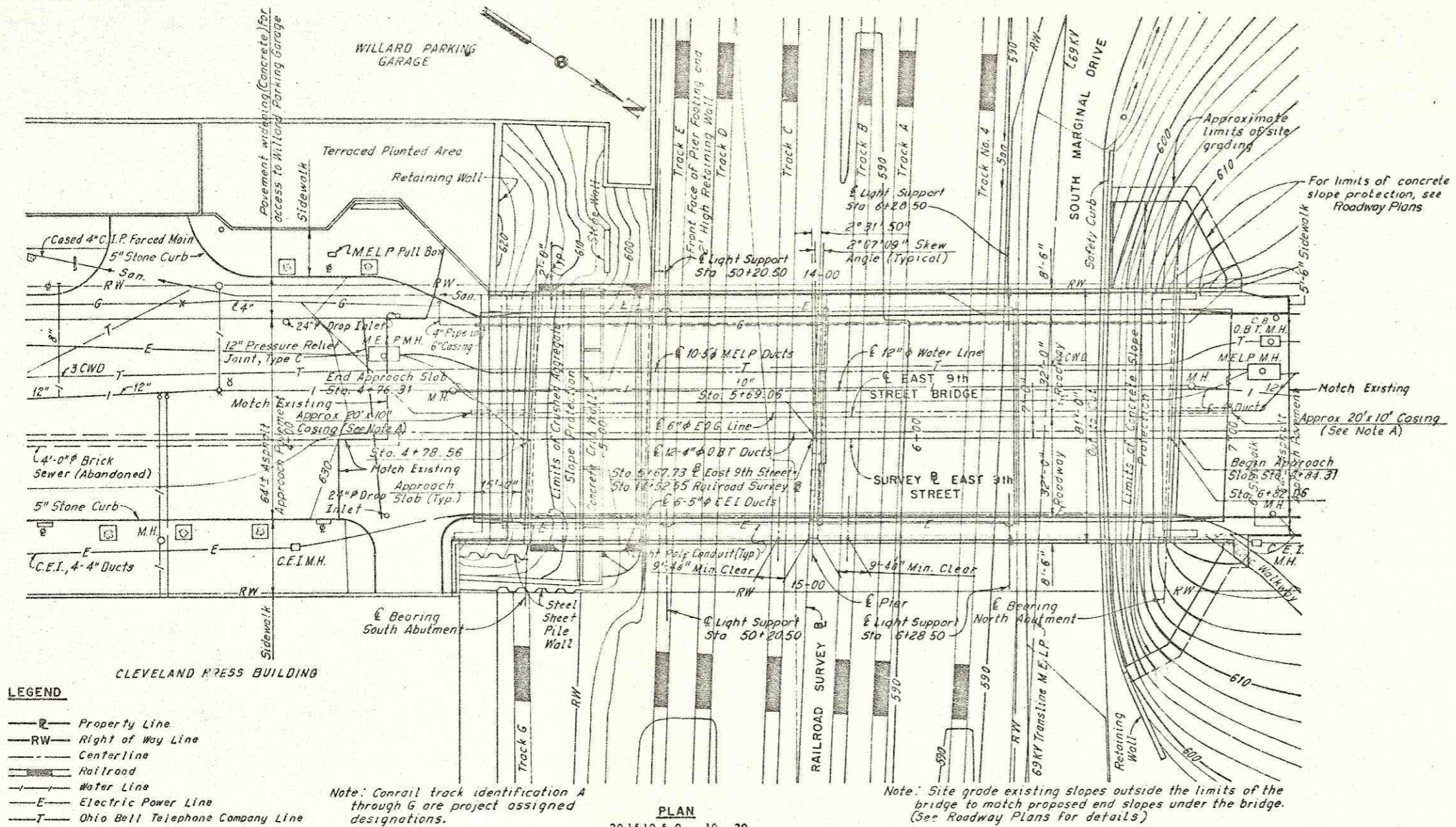
TYPE: Continuous composite welded steel girders with reinforced concrete deck and substructure.
 SPANS: 90'-6" and 113'-0"
 ROADWAY: 64'-0" face to face of barrier curbs with two 6'-0" sidewalks.
 LOADING: HS20-44, Case II and the Alternate Military Loading
 SKEW: 2° 07' 09" left forward.
 WEARING SURFACE: 1 1/2" Modified Latex Concrete.
 APPROACH SLABS: A5-1-72 (15' Long).
 ALIGNMENT: Tangent.
 SUPERELEVATION: None

FOUNDATION DATA:

The abutments shall be founded on 12 inch cast-in-place reinforced concrete piles driven to a minimum bearing capacity of 50 tons per pile and having an estimated average pay length of 80 feet per pile.
 The pier shall be founded on 14 inch cast-in-place reinforced concrete piles driven to a minimum bearing capacity of 70 tons per pile and having an estimated average pay length of 90 feet per pile.

TRAFFIC DATA: (2000)

21,700 A.D.T.



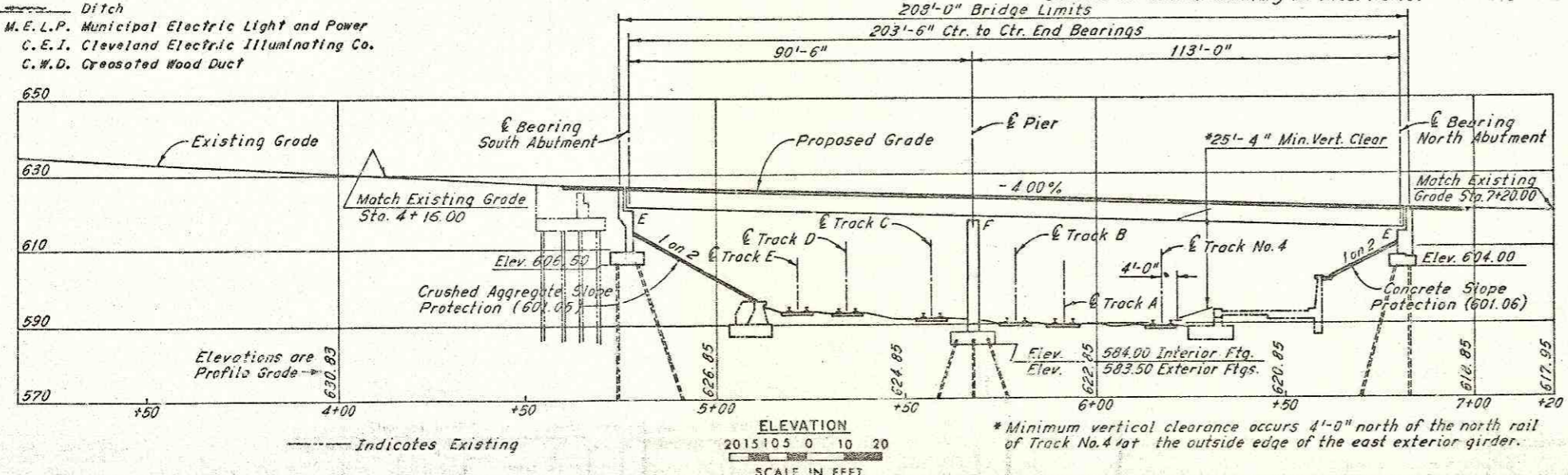
- LEGEND**
- P — Property Line
 - RW — Right of Way Line
 - C — Centerline
 - R — Railroad
 - W — Water Line
 - E — Electric Power Line
 - T — Ohio Bell Telephone Company Line
 - G — Gas Line
 - — Manhole (Existing)
 - ⊙ — Light Pole
 - ⊠ — R. R. Signal Box
 - ⊙ — R. R. Signal Pole
 - — — — — Ditch
 - M.E.L.P. Municipal Electric Light and Power
 - C.E.I. Cleveland Electric Illuminating Co.
 - C.W.D. Creosoted Wood Duct

Note: Conrail track identification A through G are project assigned designations.

Note: Site grade existing slopes outside the limits of the bridge to match proposed end slopes under the bridge. (See Roadway Plans for details)

Note A: The 10" casing shall be supplied by The East Ohio Gas Company and installed by the Contractor. Ifem Special, 10" casing installed only - 40 Lin. Ft. Carried to General Summary on Sheet No. 10.

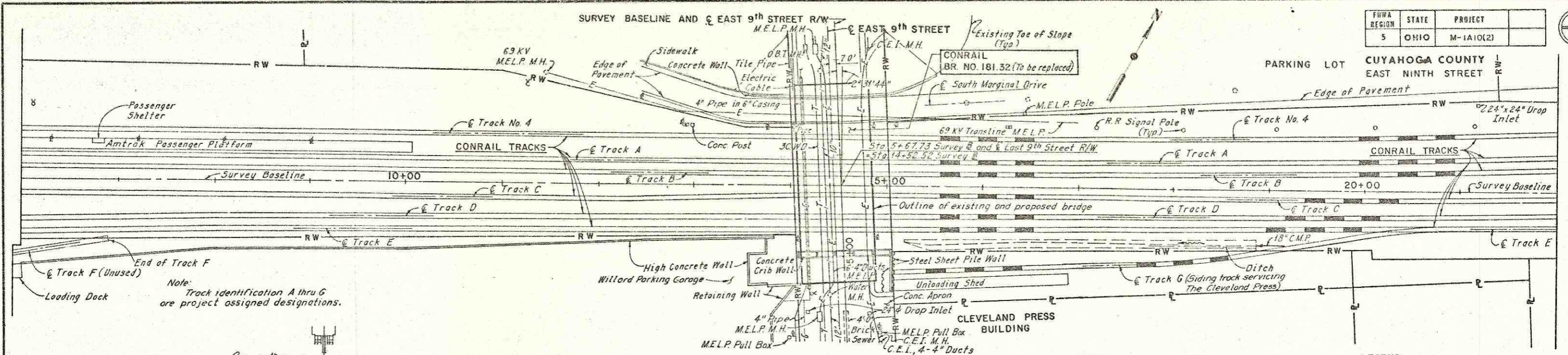
PLAN
20 15 10 5 0 10 20
SCALE IN FEET



* Minimum vertical clearance occurs 4'-0" north of the north rail of Track No. 4 at the outside edge of the east exterior girder.

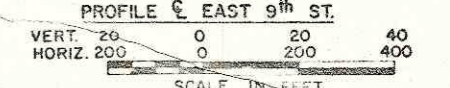
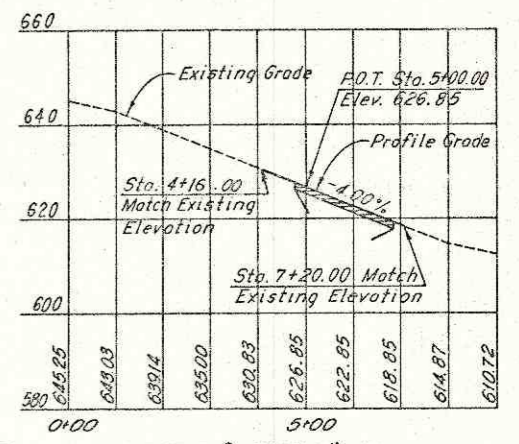
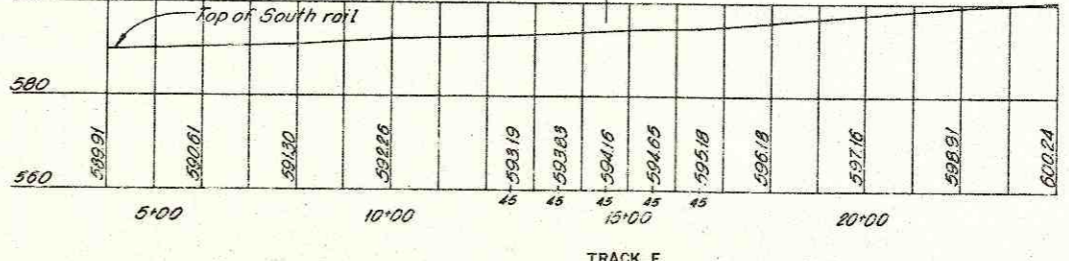
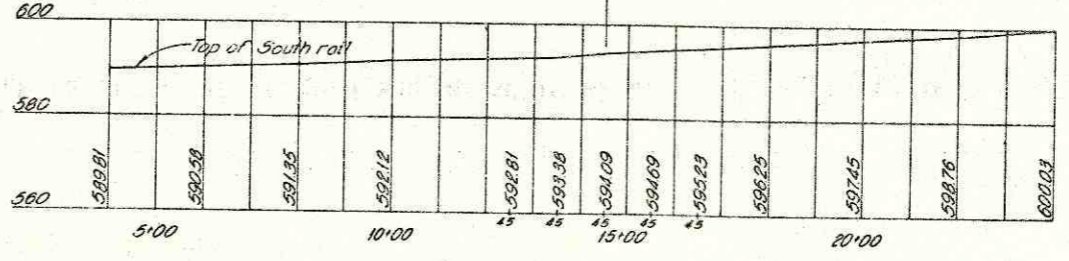
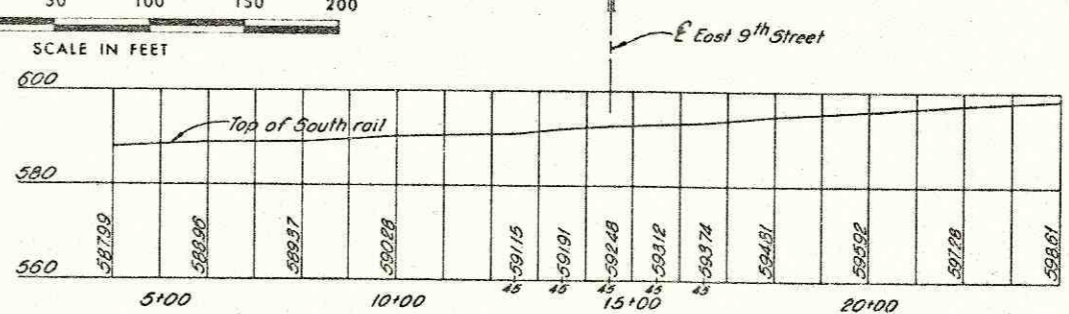
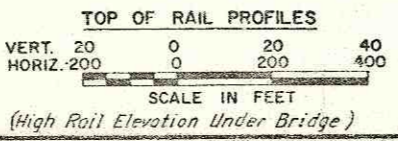
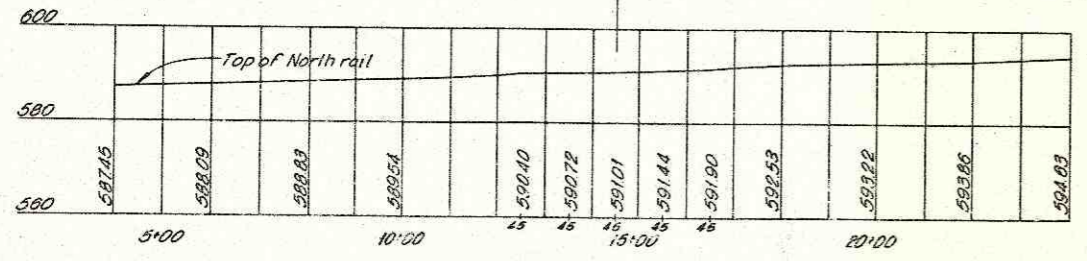
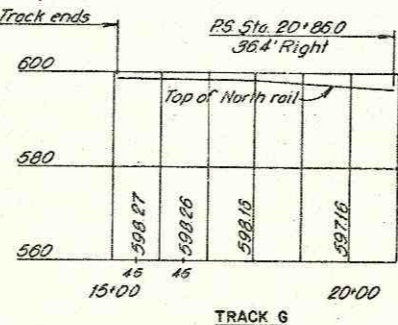
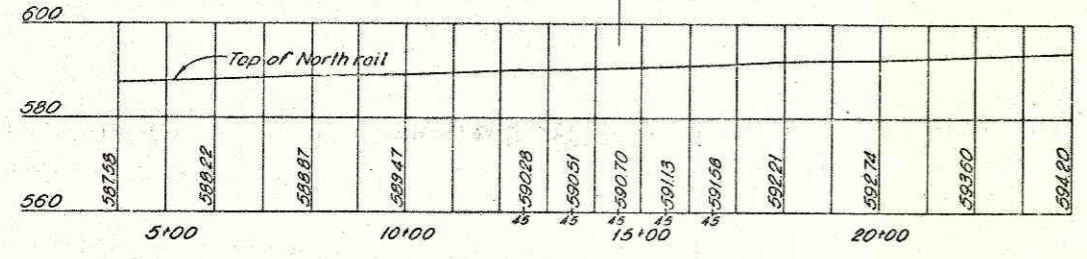
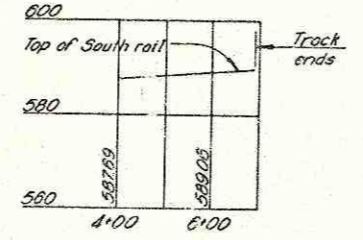
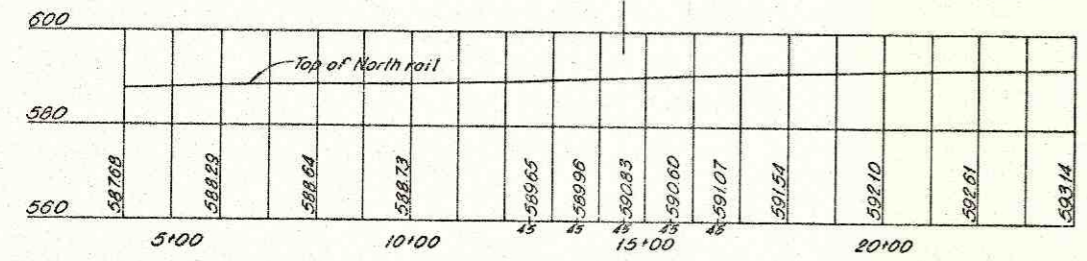
ELEVATION
20 15 10 5 0 10 20
SCALE IN FEET

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB
SITE PLAN			
EAST 9TH STREET OVER CONRAIL			
CITY OF CLEVELAND BR. NO. 1:013			
CLEVELAND	CUYAHOGA COUNTY	OHIO	
DRAWN: CAB	TRACE: JLA	REVIEWED: JCB	REVISOR: CAB
DATE: 1278	DATE: 1278	DATE: 1278	DATE: 1278
			SHEET 4/18



Note: Track identification A thru G are project assigned designations.

- LEGEND**
- P — Property Line
 - RW — Right of Way Line
 - Centerline
 - Railroad
 - Water Line
 - E — Electric Power Line
 - T — Ohio Bell Telephone Company Line
 - G — Gas Line
 - Manhole (Existing)
 - ⊕ Light Pole
 - ⊙ R. R. Signal Box
 - ⊙ R. R. Signal Pole
 - Ditch
 - M.E.L.P. Municipal Electric Light and Power
 - C.E.I. Cleveland Electric Illuminating Co.
 - C.W.D. Creosoted Wood Duct



HOWARD, NEEDLES, TAMMEN & BERGEN
CONSULTING ENGINEERS
CLEVELAND

GENERAL PLAN AND PROFILES
EAST 9th STREET OVER CONRAIL
CITY OF CLEVELAND BR. NO. 1:013

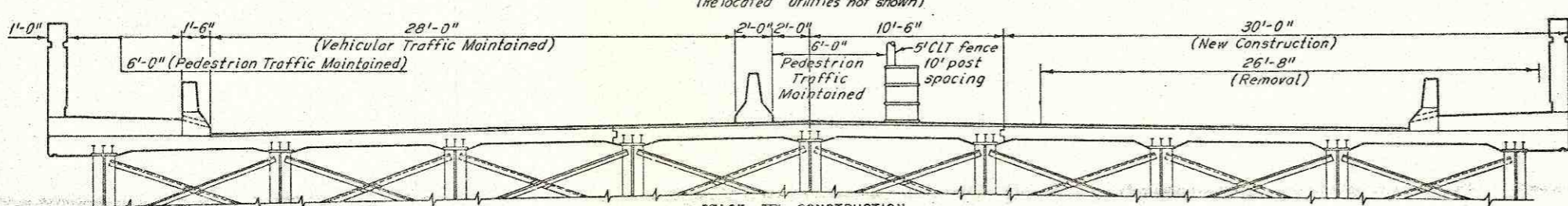
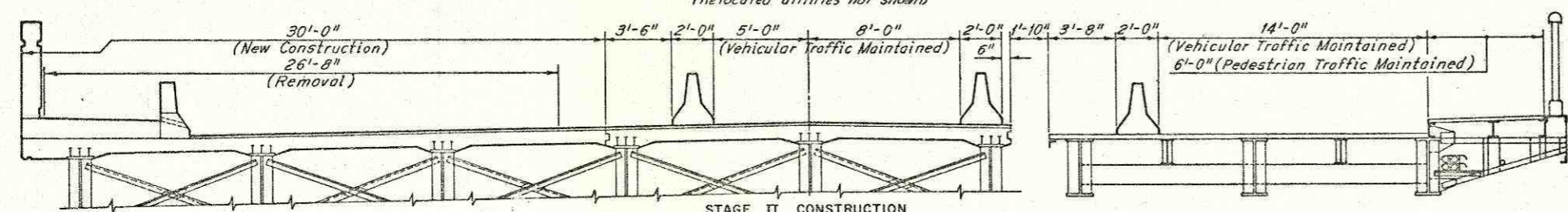
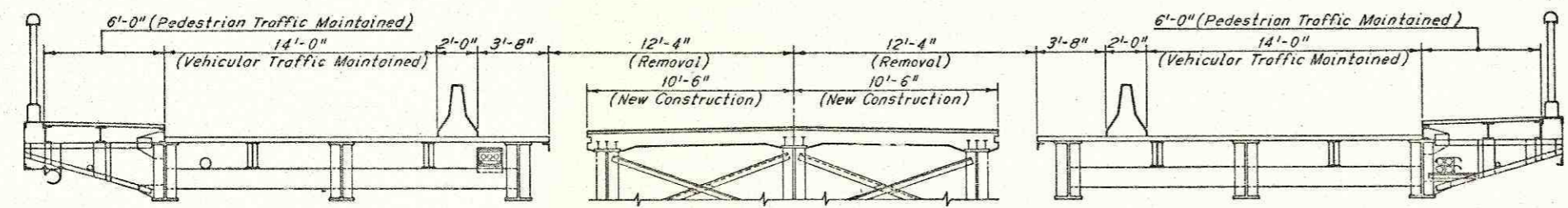
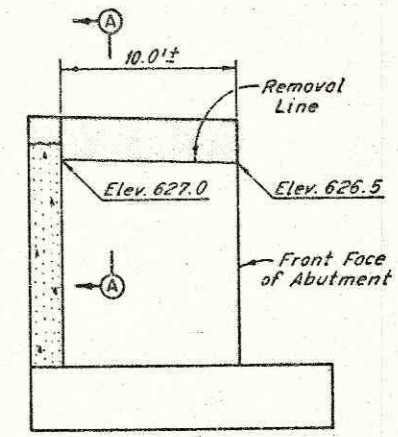
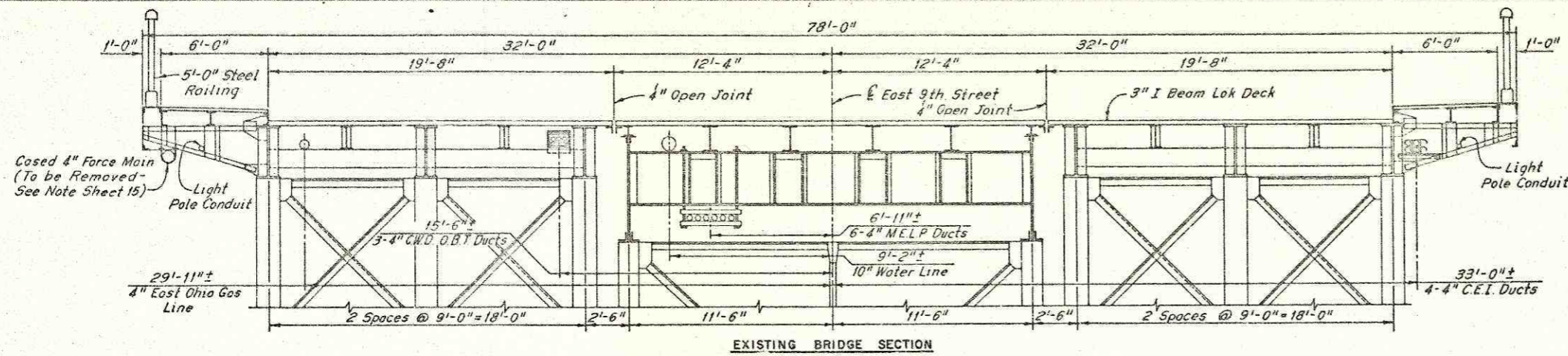
CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN E.D.S.	TRACED C.P.T.M.	CHECKED C.A.B.
DATE 2-1-80	DATE 2-5-80	DATE 2-21-80

HNTB

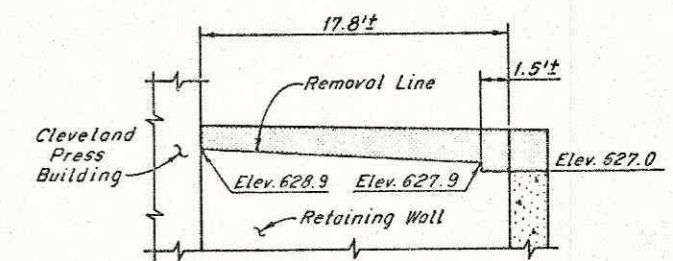
FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10(2)

50
62

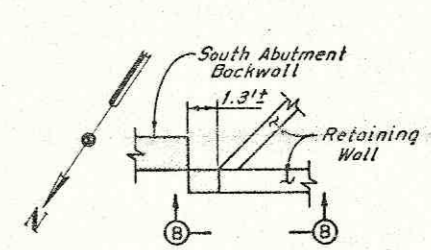
CUYAHOGA COUNTY
EAST NINTH STREET



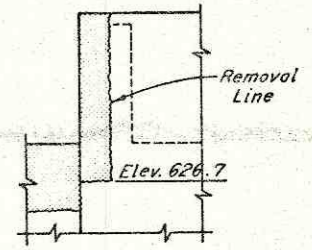
STAGE CONSTRUCTION AND MAINTENANCE OF TRAFFIC



ELEVATION A-A



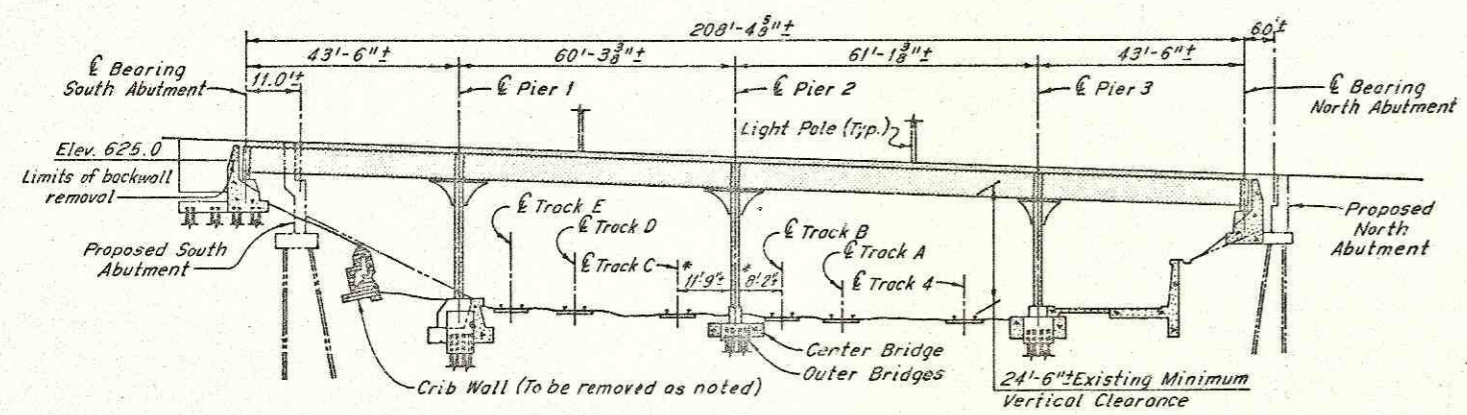
PART PLAN AT SOUTHWEST WINGWALL



ELEVATION B-B

REMOVAL DETAILS AT THE SOUTH ABUTMENT

indicates removal



GENERAL ELEVATION - EXISTING STRUCTURE
(Proposed end slopes and abutments shown thus for information)
* Minimum horizontal clearances
indicates removal - see Notes

Notes:
Removal of Portions of Structures shall include the following elements:

- 1.) The entire superstructure including all attachments.
- 2.) Piers 1 and 3 to the top of footing.
- 3.) Pier 2 including the footings to the limits of the proposed footings. Existing piling shall be removed to 3" above the bottom of the proposed footings.
- 4.) The entire North Abutment, including wingwalls.
- 5.) Portions of the South Abutment and adjacent retaining walls as indicated in the Plans.
- 6.) The crib wall in the south end slope, except the last two panels at the east end of the wall (See Roadway Plans).
- 7.) All brick slope protection at the north end slope.
- 8.) 4" pipe in 6" casing.

The removal shall include the following approximate quantities:

3-in. I-Beam Lok Deck	15,850 Sq. Ft.
Railing	420 Lin. Ft.
Concrete	500 Cu. Yds.
Structural Steel	760,000 Lbs.
Crib Wall	1,000 Sq. Ft.
Brick Slope Protection	230 Sq. Yds.

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STAGE CONSTRUCTION, MAINTENANCE OF TRAFFIC AND REMOVAL DETAILS
EAST 9TH STREET OVER CONRAIL
CITY OF CLEVELAND BR. NO. 1:013

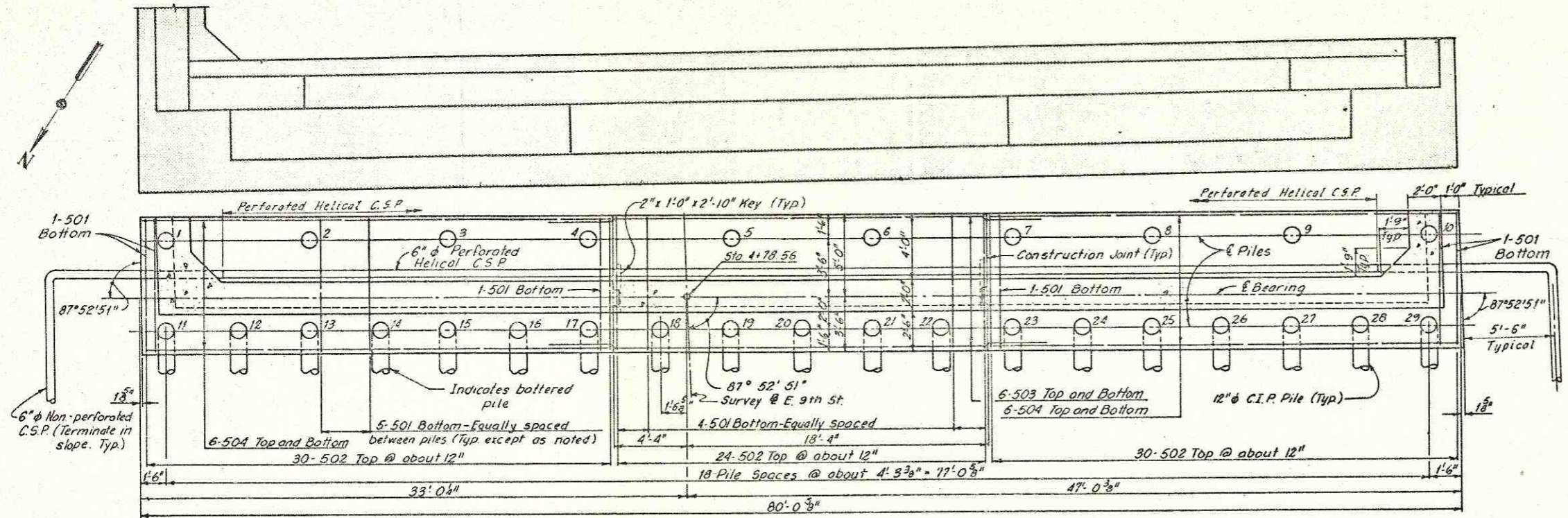
CLEVELAND	CUYAHOGA COUNTY	OHIO
DATE 1-27-80	DATE 1-27-80	DATE 7-8-80
DRW'G CAB	TRACED DLR	FORW'G CKB
REVIEWED CAB	REVIEWED CAB	REVIEWED CAB
SHEET 6		19

**CUYAHOGA COUNTY
EAST NINTH STREET**

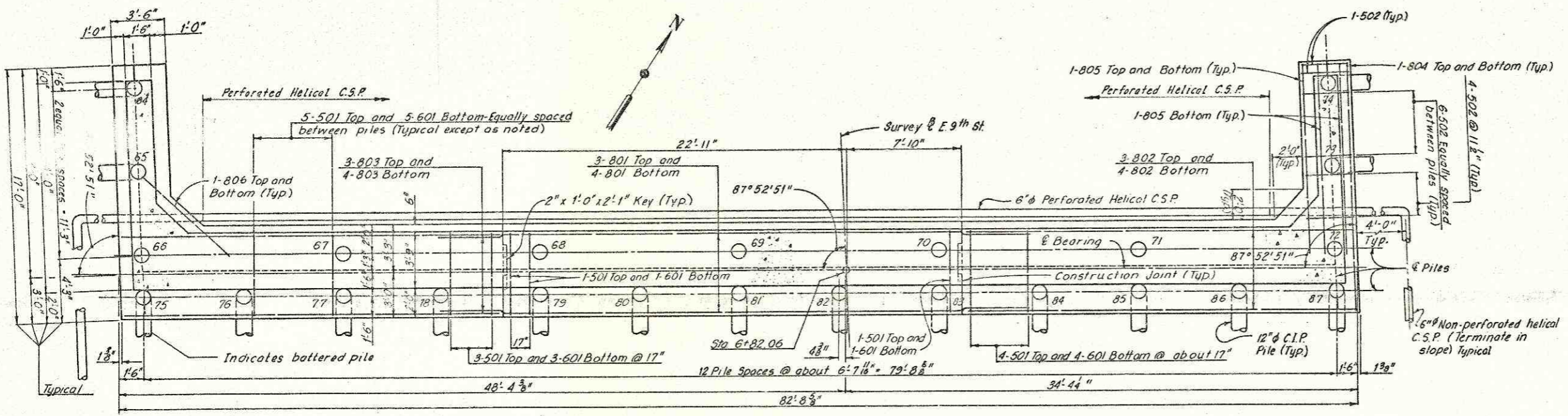
ABUTMENT CONSTRUCTION NOTE:

The Contractor shall submit his proposed method and sequence including sheeting plans and calculations for the stage construction of the proposed abutments to the Director for approval. The abutment construction shall consider the following special requirements:

1. Before each stage of the proposed South Abutment is constructed the existing crib wall shall be removed as specified and the new embankment shall be placed to the bottom of the slope protection for a minimum distance equal to the limits of the proposed abutment construction.
2. The existing end slope in front of any portion of the existing North Abutment shall not be disturbed until after that portion of the abutment has permanently been taken out of service.
3. In addition to the provisions of 511.08, for each construction stage the backwall concrete above the optional construction joint of the approach slab seat shall not be placed until after the deck concrete has been placed.



SOUTH ABUTMENT Indicates existing South Abutment



NORTH ABUTMENT

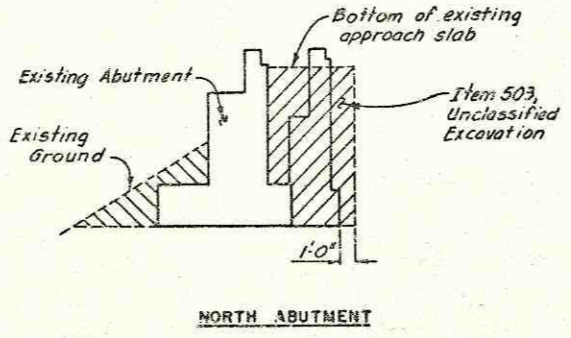
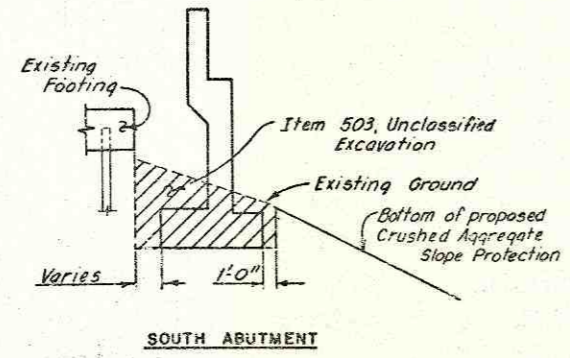
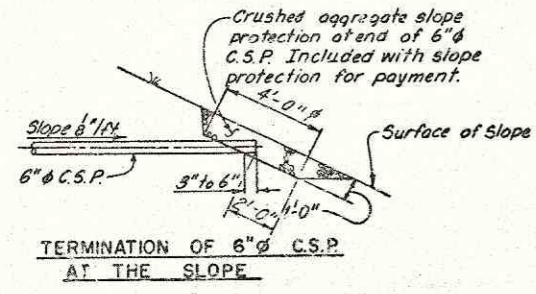
Notes:

- Shear keys at construction joints shall be centered between front and back faces and between top and bottom of footings.
- All piles are 12" ϕ cast-in-place reinforced concrete.
- Pile dimensions are measured along the bottom of the footing.
- All battered piles are battered 3 in 12.
- For reinforcement schedule see Sheet 18/18.
- The following abbreviations are used:

Typ. = Typical
C.S.P. = Corrugated Steel Pipe

REQUIRED LAP LENGTH
No. 5 bar = 2'-5" minimum
No. 8 bar = 4'-9" minimum

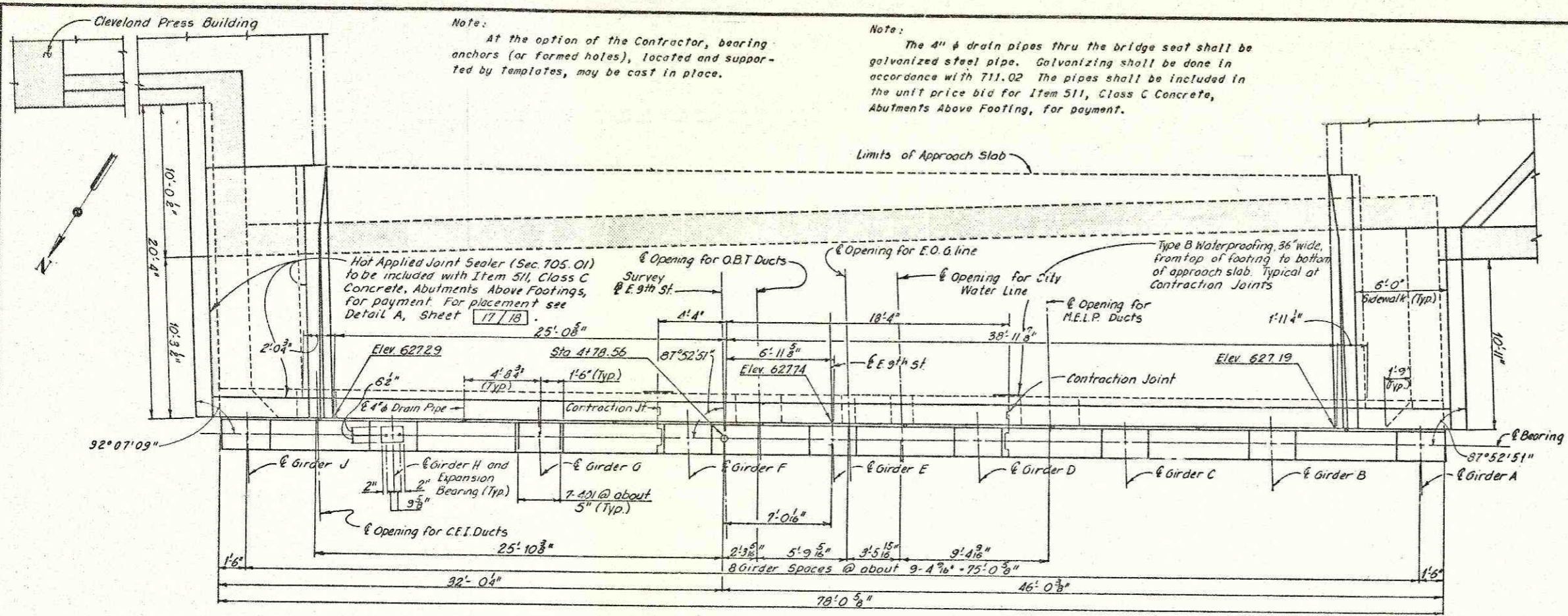
Note:
Reinforcing Bar Marks shall be prefixed as follows:
North Abutment = NA
South Abutment = SA



TYPICAL SECTIONS USED TO DETERMINE UNCLASSIFIED EXCAVATION

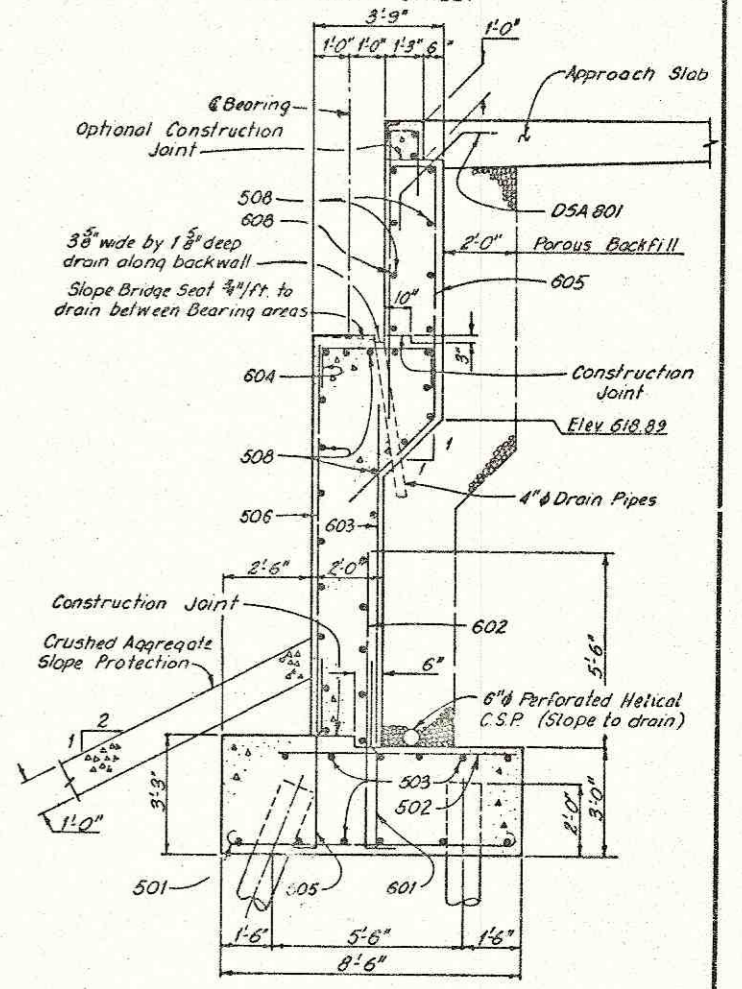
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB
ABUTMENT FOOTINGS			
EAST 9TH STREET OVER CONRAIL			
CITY OF CLEVELAND BR. NO. 1-013			
CLEVELAND	CUYAHOGA COUNTY	OHIO	
DESIGNED DRJ	DRAWN DRJ	CHECKED CKB	REVIEWED CAB
DATE 6-9-81	DATE 6-16-81	DATE 6-25-81	DATE 7-8-81
			SHEET 7/18

**CUYAHOGA COUNTY
EAST NINTH STREET**



Note: At the option of the Contractor, bearing anchors (or formed holes), located and supported by templates, may be cast in place.

Note: The 4" ϕ drain pipes thru the bridge seat shall be galvanized steel pipe. Galvanizing shall be done in accordance with 711.02. The pipes shall be included in the unit price bid for Item 511, Class C Concrete, Abutments Above Footing, for payment.

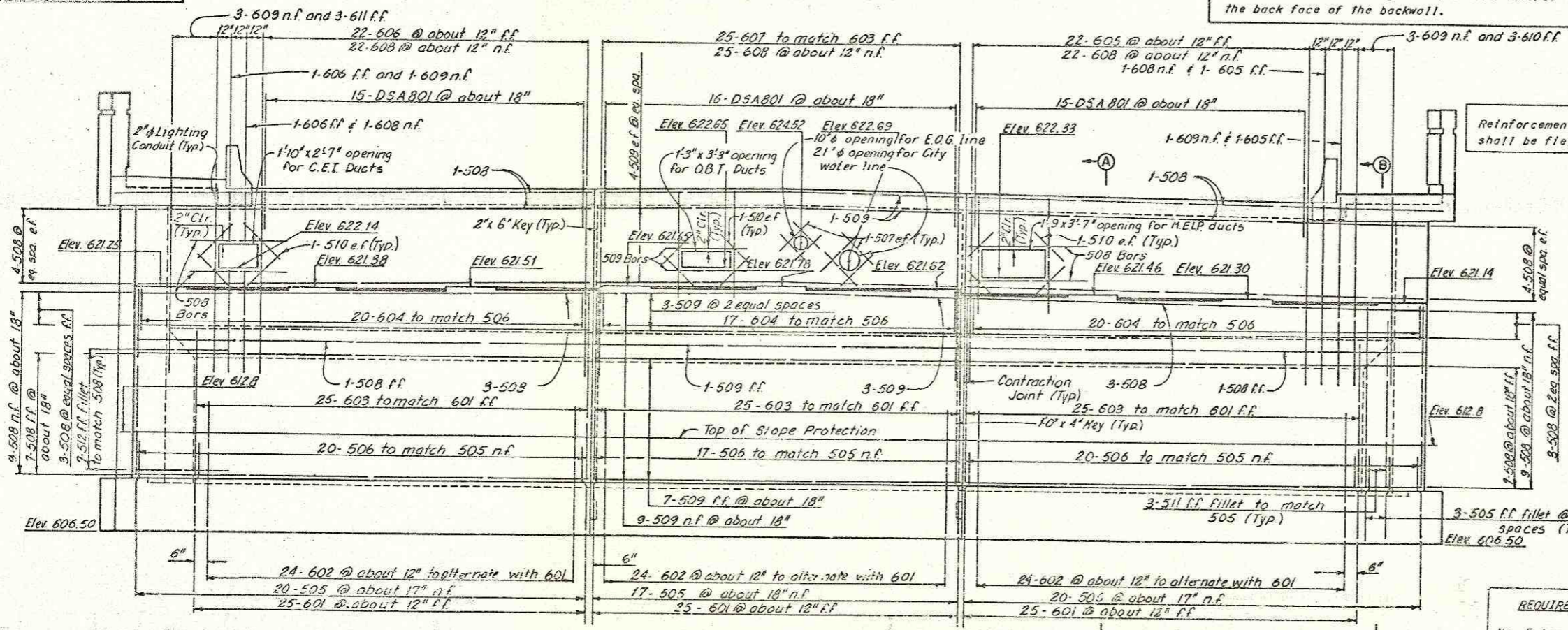


Notes:

- Shear keys at contraction joints shall be centered between front and back faces.
- Special care shall be taken during placing of reinforcement under bearing plates to avoid interference with anchor bolts.
- For barrier detail, see Sheet 9/18.
- For reinforcement schedule see Sheet 18/18.
- The following abbreviations are used:
 - Typ. = Typical
 - n.f. = near face
 - f.f. = far face
 - e.f. = each face
 - eq. spa. = equal spaces
 - C.S.P. = Corrugated Steel Pipe

Note: All reinforcing bar marks shall be prefixed; SA

Note: Elevations at the utility openings are given at the front face of backwall. Openings shall slope upward at 1/2 inch per foot towards the back face of the backwall.



REQUIRED LAP LENGTH

No. 5 bar = 1'-4" minimum
No. 6 bar = 1'-5" minimum

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

SOUTH ABUTMENT
EAST 9th STREET OVER CONRAIL
CITY OF CLEVELAND BR. NO. 1:013

CLEVELAND CUYAHOGA COUNTY OHIO

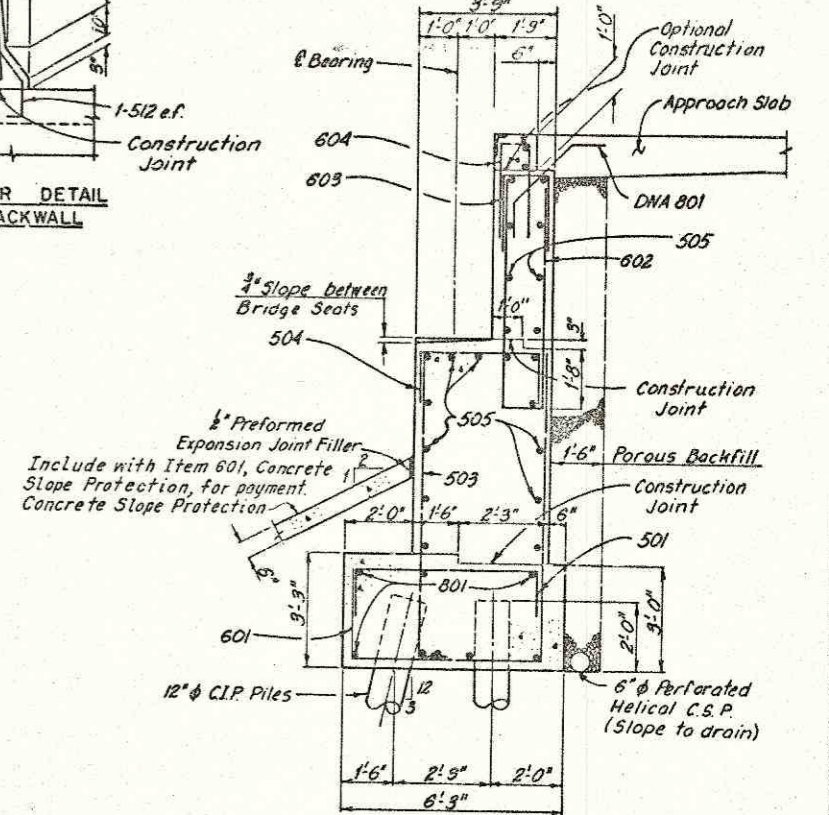
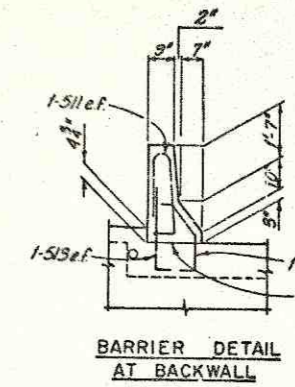
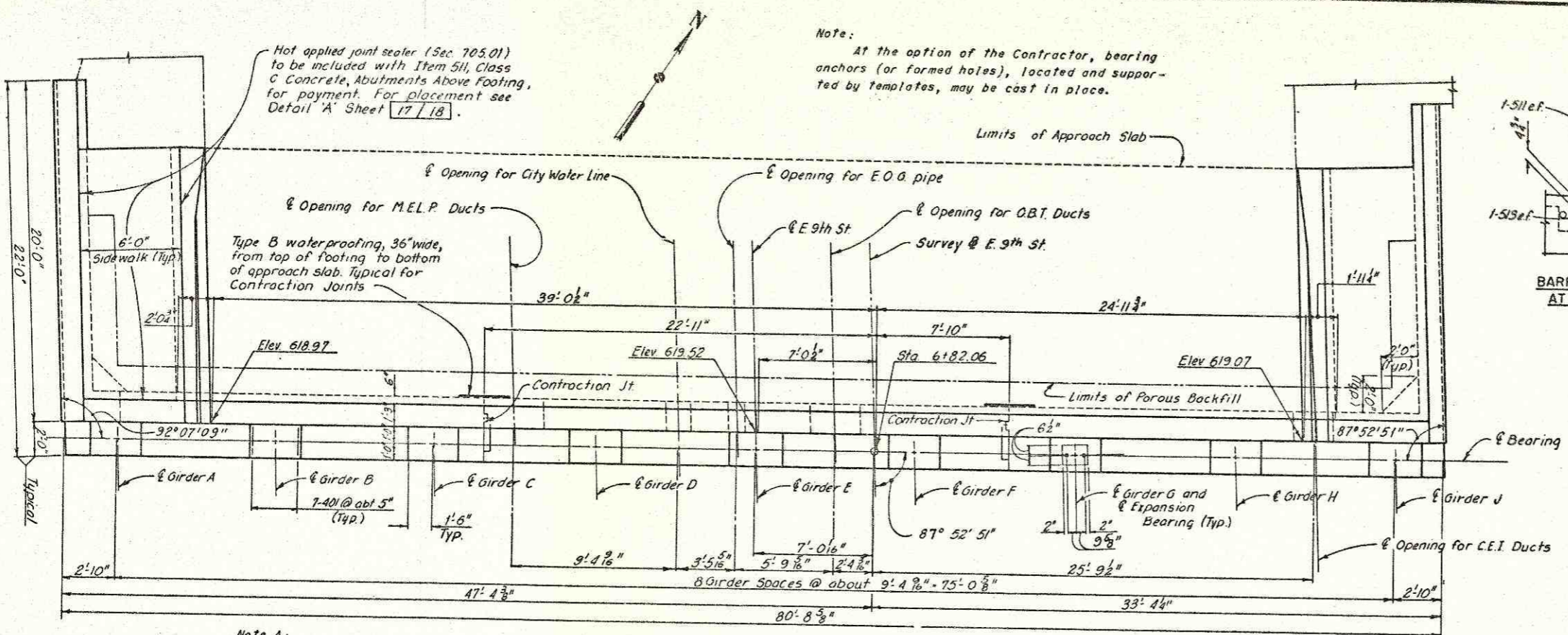
DRAWN	TRACED	CHECKED	REVIEWED
DRJ	DRJ	CHB	CAB
DATE 6-18-62	DATE 6-25-62	DATE 7-1-62	DATE 7-9-62

SHEET 8/13

FHWA REGION	STATE	PROJECT	
5	OHIO	M-1A10(2)	

53
62

CUYAHOGA COUNTY
EAST NINTH STREET



Note A:

The Type B Waterproofing shall be placed from the top of footing to the bottom of opening and from the top of opening to the bottom of approach slab. After the M.E.L.P. Ducts are grouted into place, the area shall be sealed with Type A Waterproofing. Includes with the unit price bid for Item 512, Type B Waterproofing, for payment.

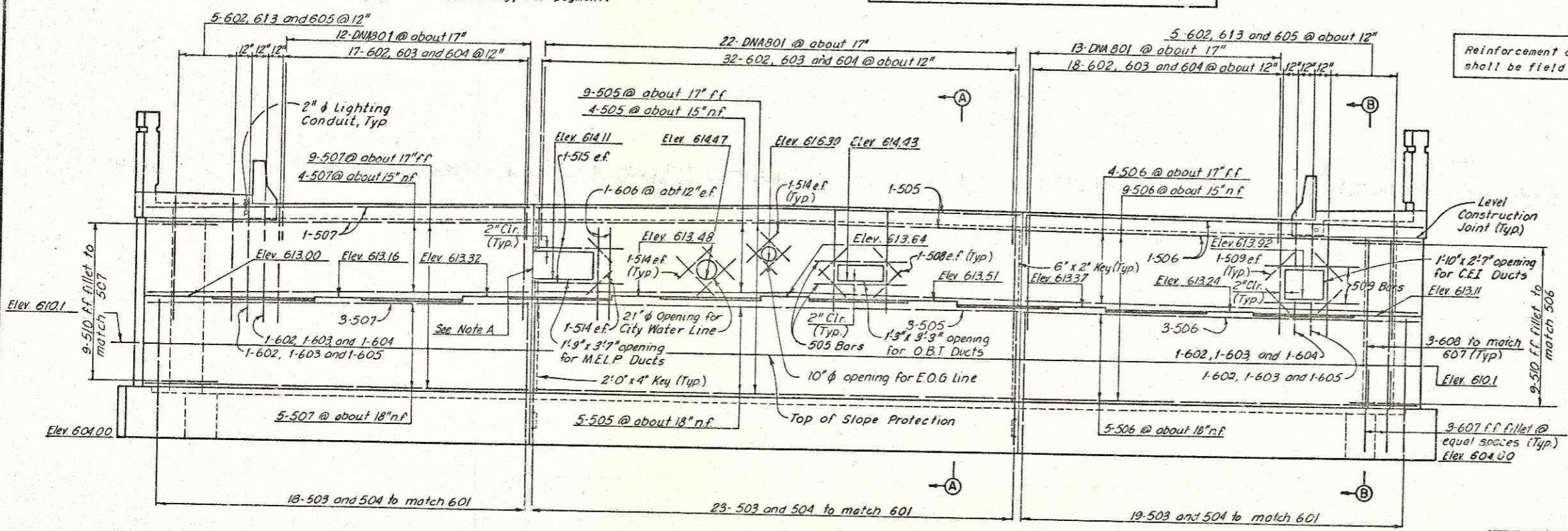
PLAN

Note:

Elevations of the utility openings are given at the front face of backwall. Openings shall slope downward at 1/4 inch per foot towards the backface of the backwall.

Note:

All reinforcing bar marks shall be prefixed: NA



ELEVATION
(Piles not shown)

REQUIRED LAP LENGTH
 No. 5 bar = 1'-4" minimum
 No. 6 bar = 1'-5" minimum

HOWARD NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND **HNTB**

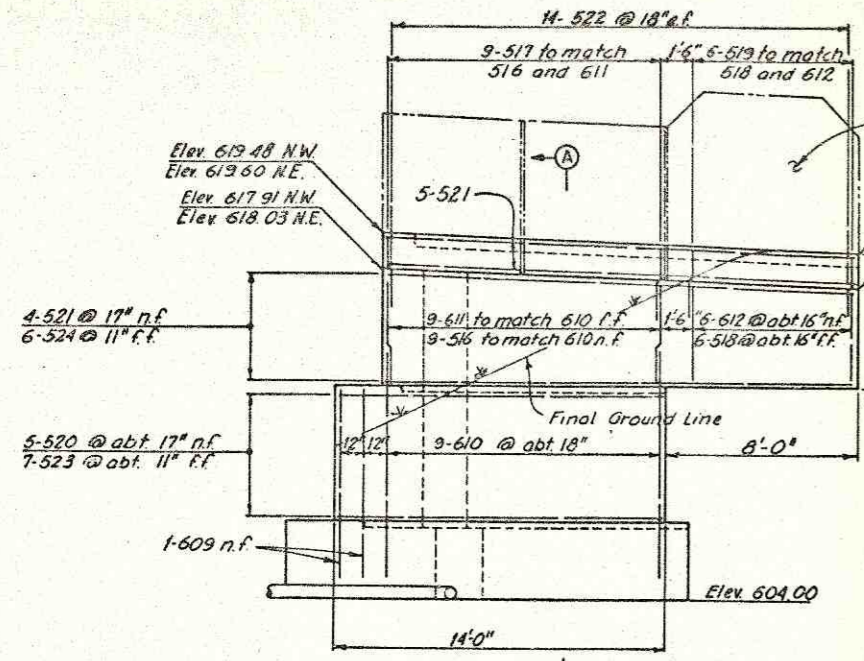
NORTH ABUTMENT
EAST 9TH STREET OVER CONRAIL
CITY OF CLEVELAND BR. NO. 1:013

CLEVELAND CUYAHOGA COUNTY OHIO

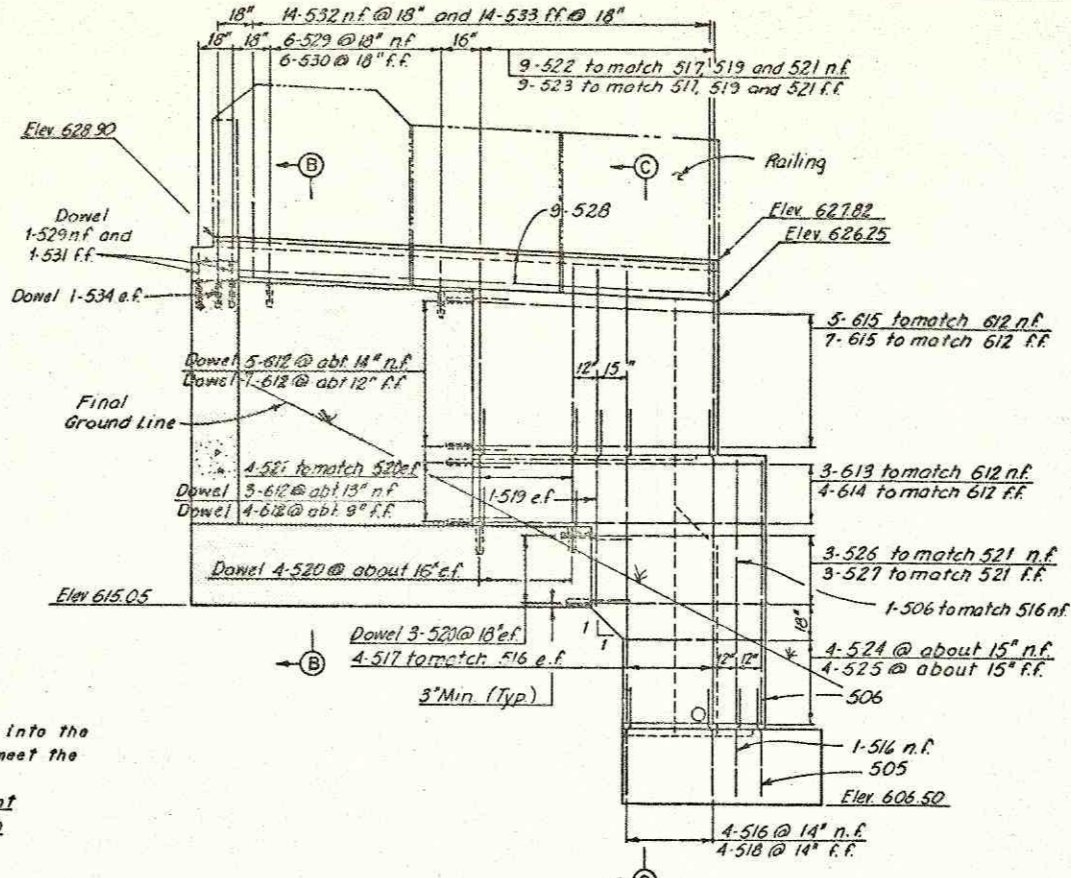
GRAPHED	TRACED	CHECKED	REVIEWED
DRJ	DRJ	CNB	CAB
DATE 5/11/81	DATE 6/17/81	DATE 7/22/81	DATE 7/28/81

SHEET 9/18

CUYAHOGA COUNTY
EAST NINTH STREET



NORTHEAST
(Northwest Similar)
(Piles not shown)

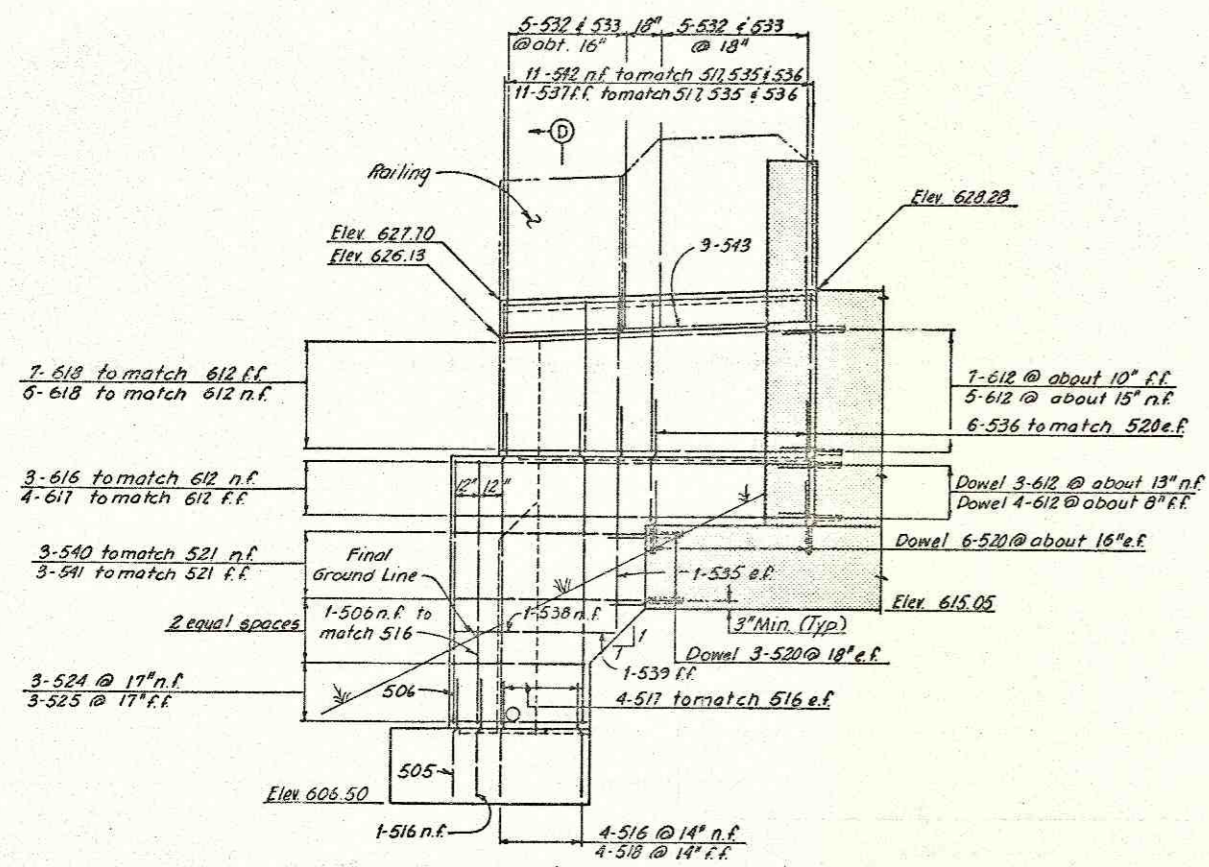


SOUTHEAST
(Piles not shown)
Indicates existing structure.

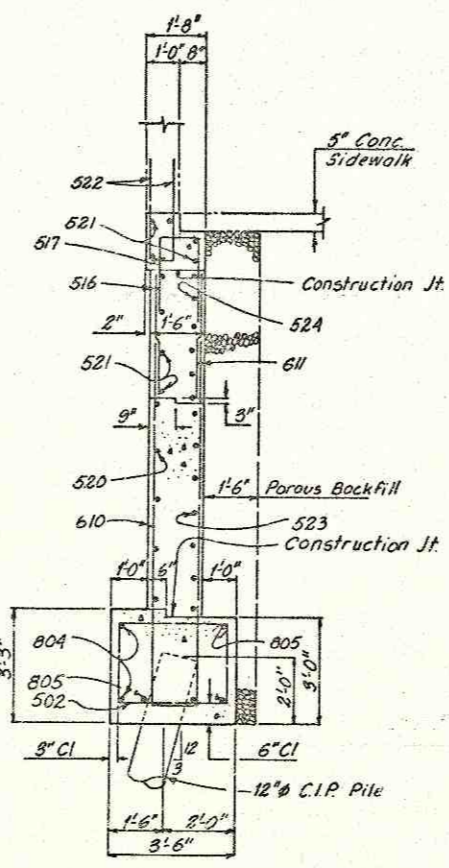
Notes:

Bars shown as dowled into the existing structure shall meet the following requirement.

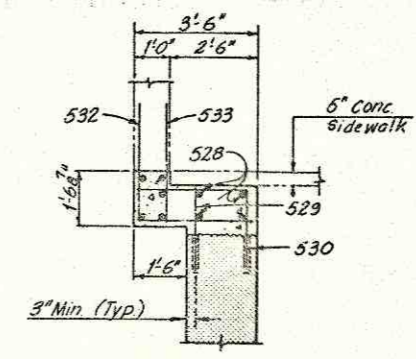
Bar size	Embedment Length
5	1'-0"
6	1'-2"



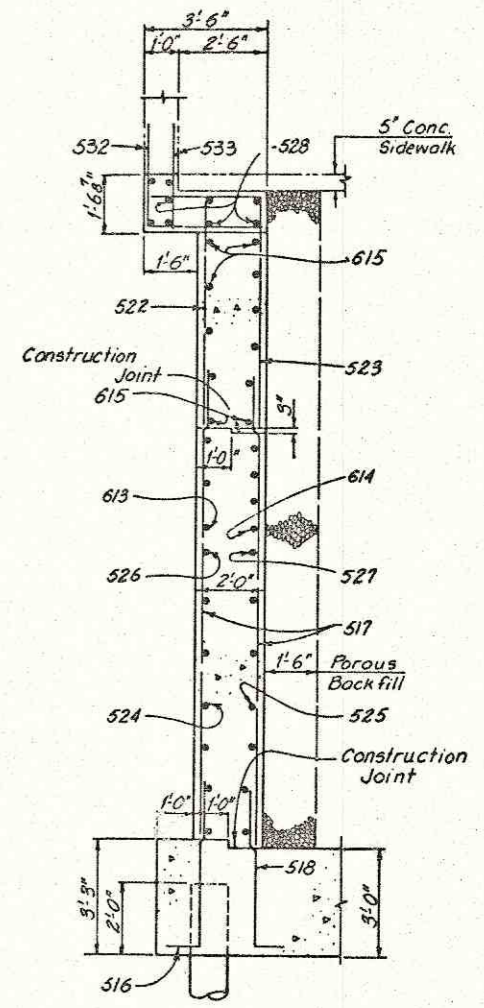
SOUTHWEST
(Piles not shown)
Indicates existing structure.



SECTION A-A



SECTION B-B



SECTION C-C
(Section D-D Similar)

Notes:

For railing details, see Sheet 16/18.

For sidewalk details and payment, see Roadway Plans

For reinforcement schedule, see Sheet 18/18.

The following abbreviations are used:

Typ. = Typical Conc. = Concrete
e.f. = each face Jt. = Joint
n.f. = near face
f.f. = far face

Note:

Reinforcing Bar Marks shall be prefixed as follows:

North Abutment = NA
South Abutment = SA

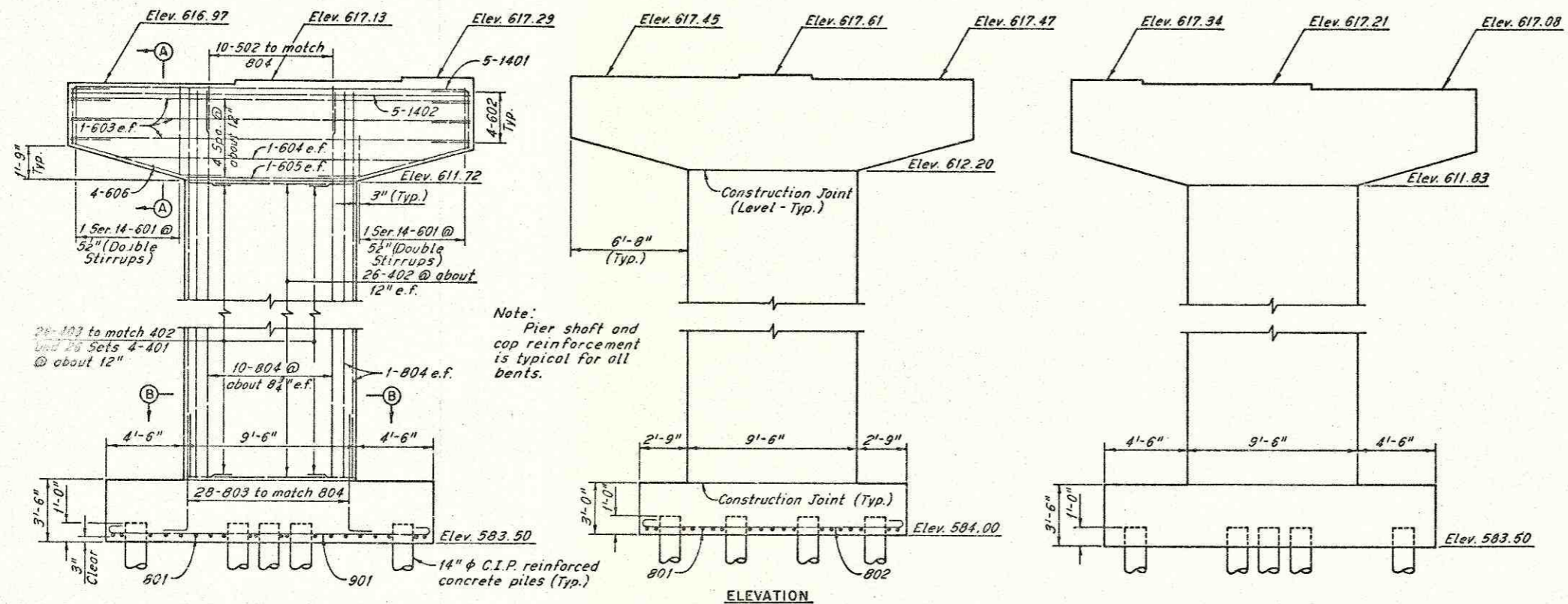
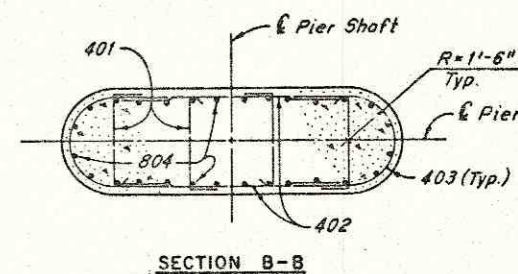
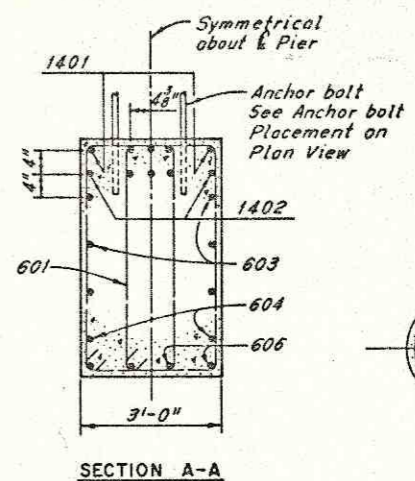
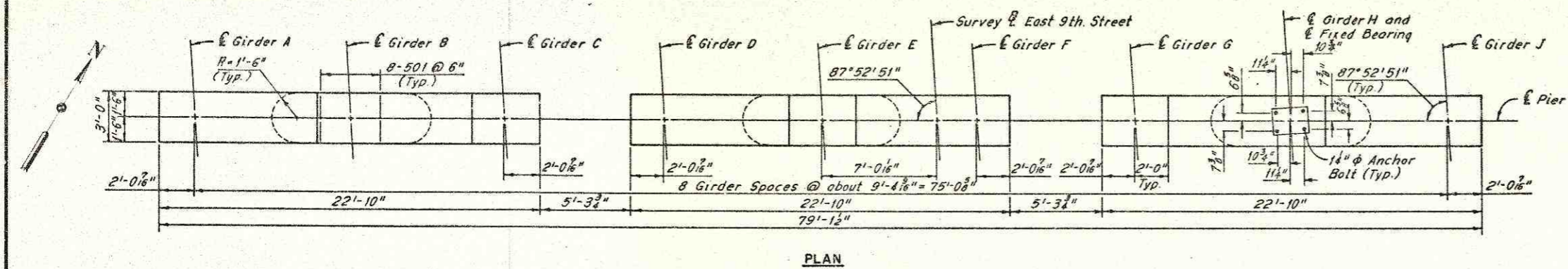
HOWARD, NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB
WINGWALL DETAILS EAST 9th STREET OVER CONRAIL CITY OF CLEVELAND BR. NO. 1:013			
CLEVELAND	CUYAHOGA COUNTY	OHIO	
DRAWN D.P.J.	TRACED D.P.J.	CHECKED C.K.B.	REVIEWED C.A.B.
DATE 6-22-01	DATE 6-22-01	DATE 7-2-01	DATE 7-2-01
SHEET 10			18

FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10(2)

55
62

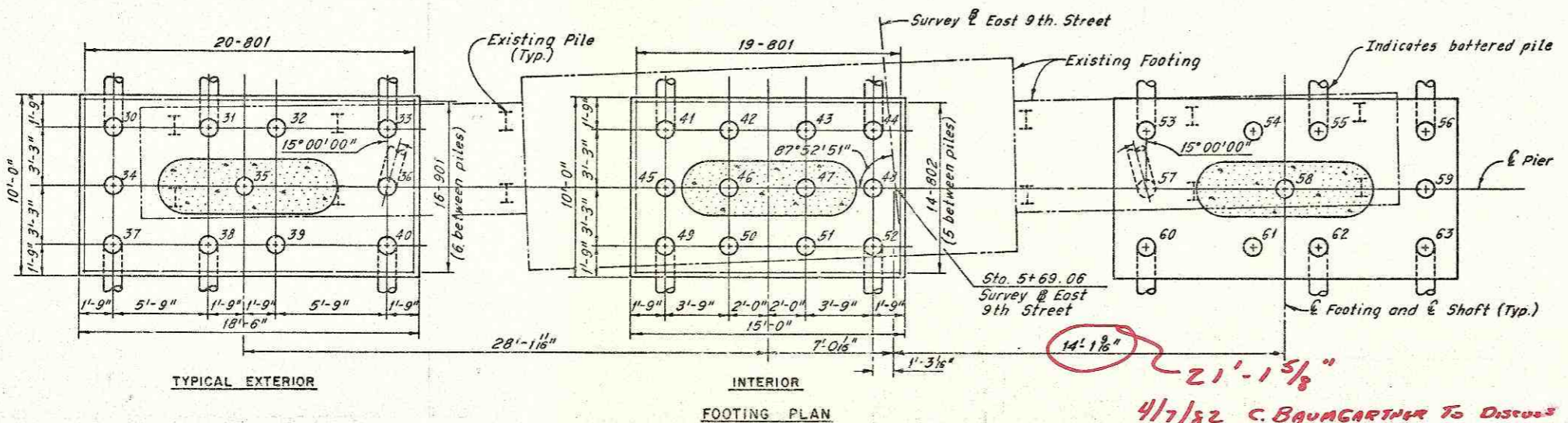
CUYAHOGA COUNTY
EAST NINTH STREET

Note:
All reinforcing bar marks shall be prefixed R.



Note:
Pier shaft and cap reinforcement is typical for all bents.

Notes:
The minimum clearance between the proposed piling and the plan location of the existing piling is approximately 1.3 feet measured at the bottom of footing. If the existing piling is not in plan location and would interfere with the proposed piling, the proposed piling shall be moved from plan locations, as directed by the Engineers, just enough to clear the existing piling. A hole may be drilled through the relocated piling to facilitate placement of the footing. Perforating the proposed piling shall be included with the unit price bid for Item 507, 14" ϕ Cast-in-Place Reinforced Concrete Piling, for payment.
All piles are 14" ϕ C.I.P. reinforced concrete, with a design load of 70 tons per pile.
All battered piles are battered 3 in 12 in the direction shown.
Pile spacings are measured along the bottom of footing.
At the option of the Contractor, bearing anchors (or formed holes) located and supported by templates, may be cast in place.
For reinforcement schedule, see Sheet 18/18.
The following abbreviations are used:
Typ. = Typical
e.f. = each face

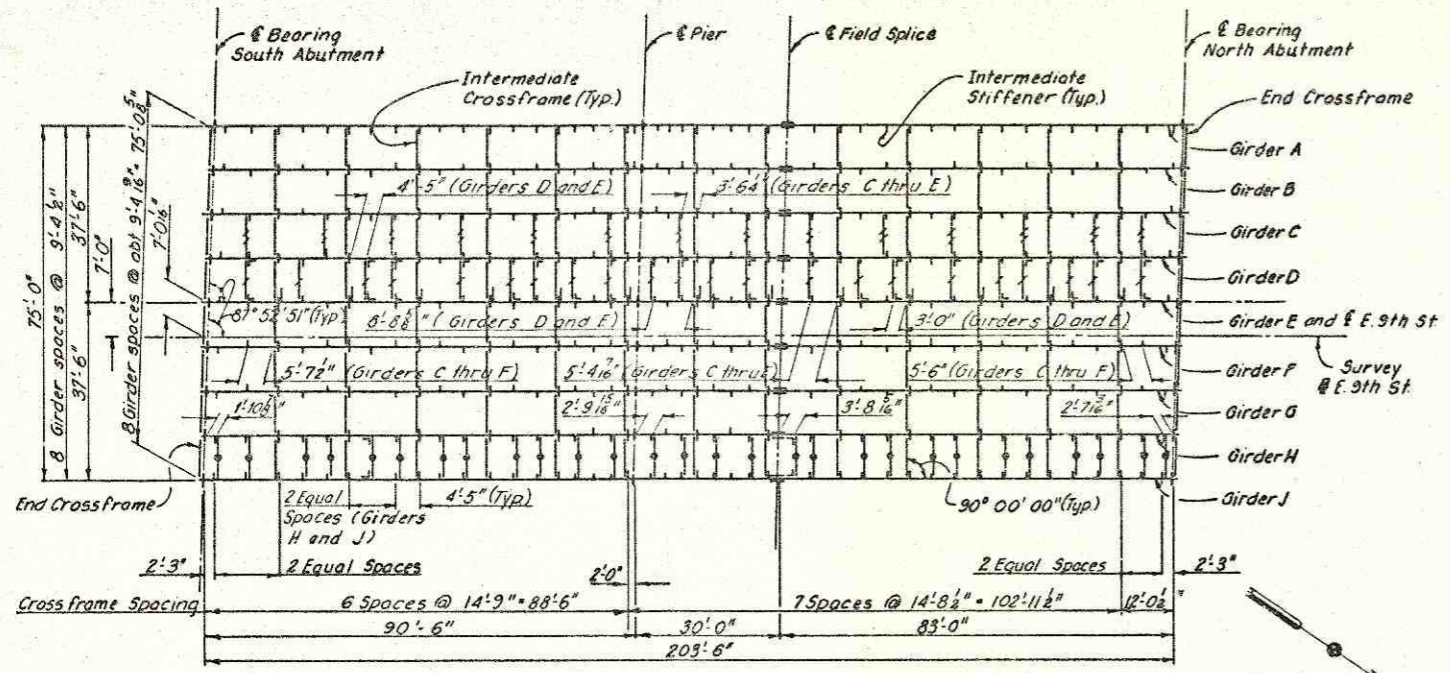


REQUIRED LAP LENGTH
No. 4 bar = 1'-4" minimum
No. 5 bar = 1'-8" minimum
No. 6 bar = 2'-0" minimum

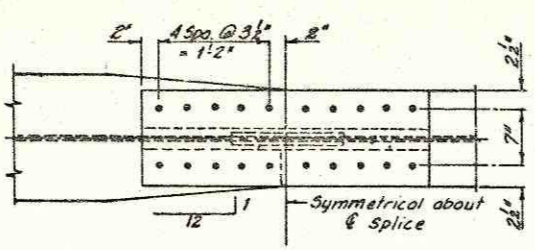
4/7/82 C. BAUGARTNER TO DISCUSS
W/C.O. BRIDGES FOR REG-LINE
CHANGE.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB
PIER EAST 9th STREET OVER CONRAIL CITY OF CLEVELAND BR. NO. 1:013		
CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN AN DATE 6/20/81	CHECKED DLR DATE 6/23/81	REVIEWED CAB DATE 7/9/81
		SHEET 11/18

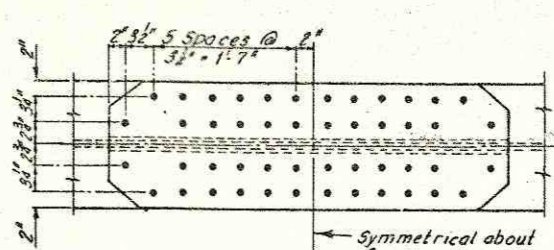
CUYAHOGA COUNTY
EAST NINTH STREET



FRAMING PLAN
(Utilities not shown)



GIRDER TOP FLANGE SPLICE

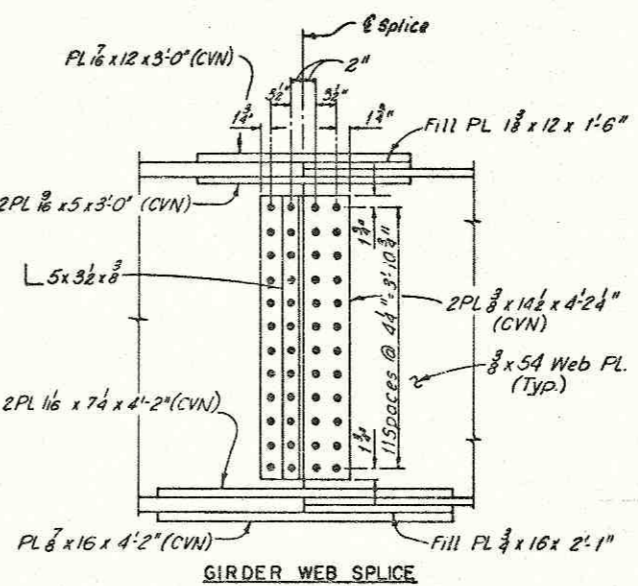


GIRDER BOTTOM FLANGE SPLICE

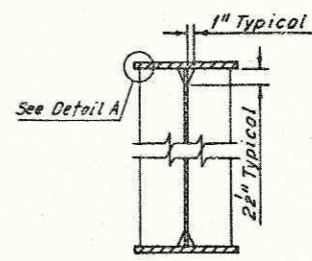
- FRAMING PLAN LEGEND
- denotes C.E.I. Ducts support (28 required)
 - denotes Water Line support (22 required)
 - denotes M.E.L.P. Ducts support (14 required)
 - denotes E.O.G. Pipe support at Girder E (13 required, 1 at each intermediate crossframe)

GIRDER NOTES:

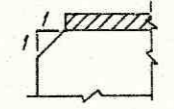
All structural steel is ASTM A588 (Unpainted). The girders shall be fabricated to lines parallel to profiles formed by top of pavement elevations directly over girders, plus the camber required to compensate for dead load deflection. The web plates may be shop spliced as required by available plate length. The location of web shop splices shall be submitted to the Director for approval prior to ordering of material. Where a shape or plate is labeled "CVN", the material shall meet minimum notch toughness requirements in accordance with 711.01. The Fabricator shall submit to the Director a procedure designed for positive identification of material through all phases of fabrication. No material shall be fabricated until the Director has approved the procedure. Grinding of butt welds is not required. All bolts used in girder splice shall be 1" ϕ ASTM A325 High Strength bolts. Bearing stiffeners shall be placed in pairs on all girders and shall be set vertical with full bearing on the bottom flange and a tight fit at the top flange. Intermediate stiffeners shall be 3/4" x 5" plates placed singly, except at crossframes of interior girders where the stiffeners shall be placed in pairs. All intermediate stiffeners shall be welded to the web with 3/8" continuous fillet welds on both sides of the stiffeners and singly placed stiffeners shall be welded to the compression flange with fillet welds of the same size as the web to flange weld at the same location. The intermediate stiffeners shall be placed normal to the girder flange as shown on the Framing Plan, equally spaced between crossframes or crossframes and bearing stiffeners at pier or crossframes and splices, or crossframe and stiffener adjacent to abutments, or as noted.



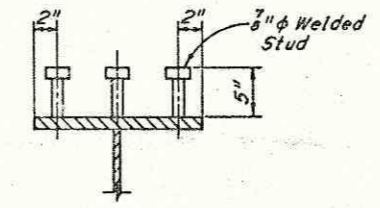
GIRDER WEB SPLICE



INTERMEDIATE AND BEARING STIFFENER

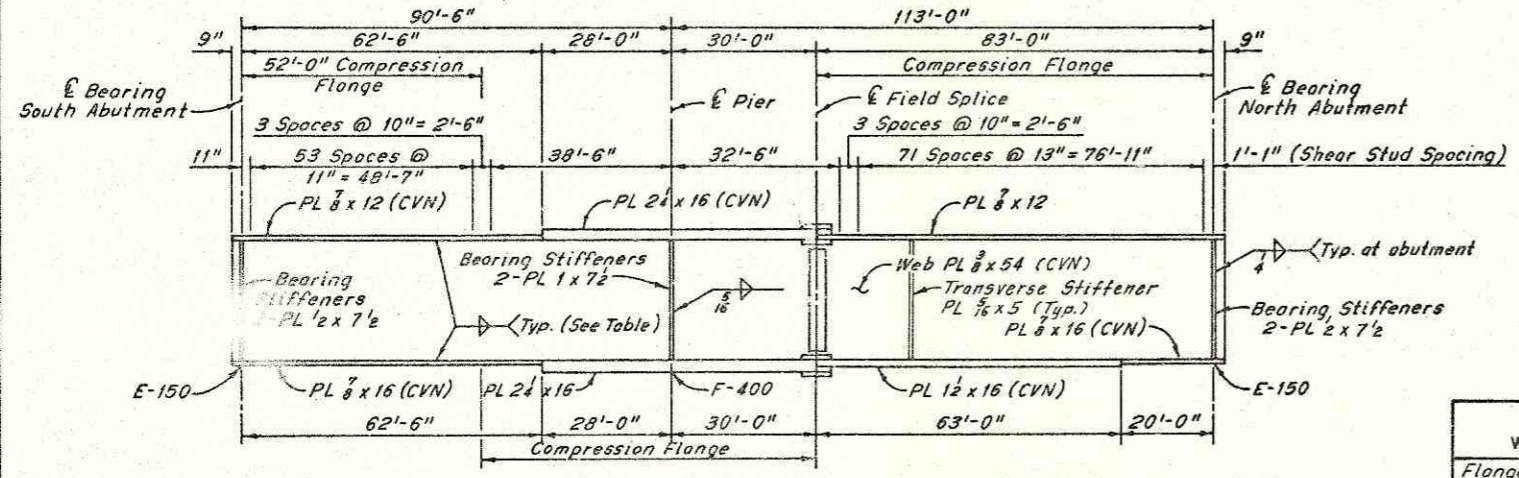


DETAIL A
(At Abutments)

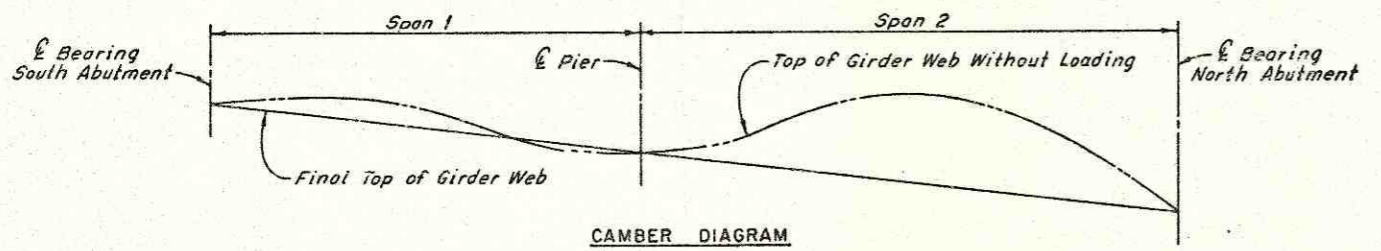


SHEAR STUD DETAIL

WELD SIZE	
WEB TO FLANGE	
Flange Plate Thickness	Fillet Weld Size
8" and 12"	3/8"
24"	1/2"



TYPICAL GIRDER ELEVATION



CAMBER DIAGRAM

Girder	DEAD LOAD DEFLECTION AND CAMBER																
	Span 1								Span 2								
	.2		.4		.6		.8		.2		.4		.6		.8		
Stl.	Rem. D.L.	Tot.	Stl.	Rem. D.L.	Tot.	Stl.	Rem. D.L.	Tot.	Stl.	Rem. D.L.	Tot.	Stl.	Rem. D.L.	Tot.	Stl.	Rem. D.L.	Tot.
A & J	16	2	18	16	9	25	0	25	16	1	17	16	5	21	2	3	25
B & H	16	3	19	16	2	18	0	18	16	1	17	16	5	21	2	3	25
C thru G	16	3	19	16	2	18	0	18	16	1	17	16	5	21	2	3	25

Notes:

Negative values for deflections indicate deflections above chord line. Deflections are given to the nearest 1/4 inch.

The following abbreviations are used:

Stl. = Dead load deflection due to the weight of steel

Rem. D.L. = Remaining dead load deflection

Tot. = Total required camber

Notes:

For crossframe details, see Sheet 13/18.

For utility locations, see Sheet 13/18.

For details of fixed and sliding bearings see Ohio Standard Drawing FSB-1-62, revised 1-15-63.

The following abbreviation is used:
Typ. = Typical

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

FRAMING PLAN AND GIRDER DETAILS

EAST 9th STREET OVER CONRAIL

CITY OF CLEVELAND BR. NO. 1:0:3

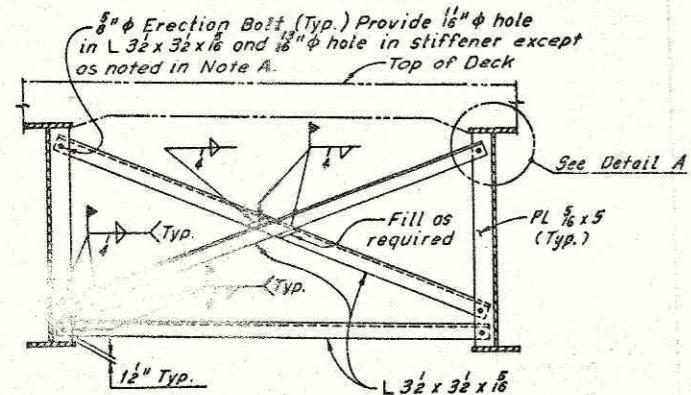
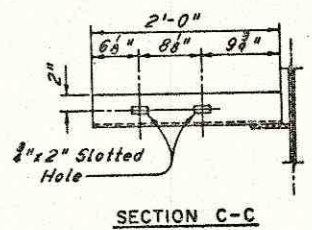
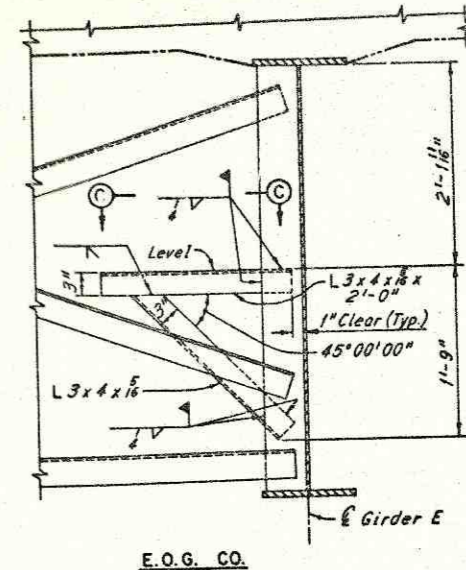
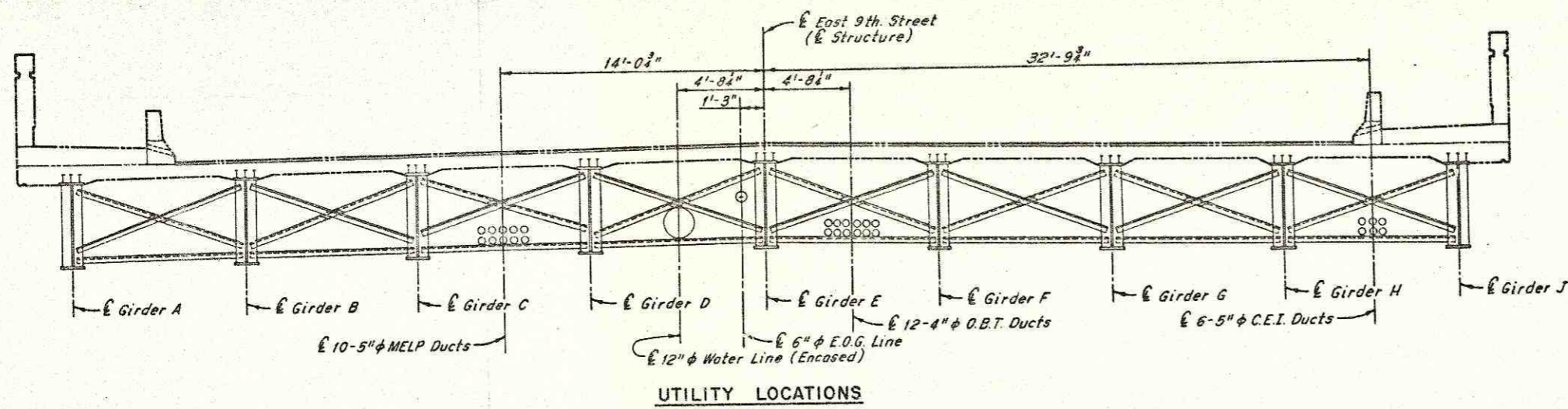
CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN	TRACED	CHECKED
CKB	DIR	AN
DATE: 11-81	DATE: 6-12-81	DATE: 6-30-81
REVIEWED	REVISOR	DATE
CAB	CAB	7-8-81

SHEET 12/18

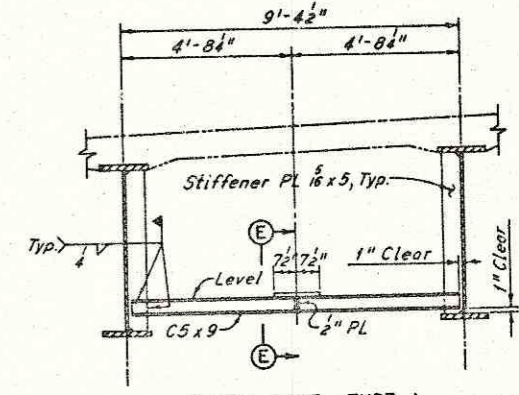
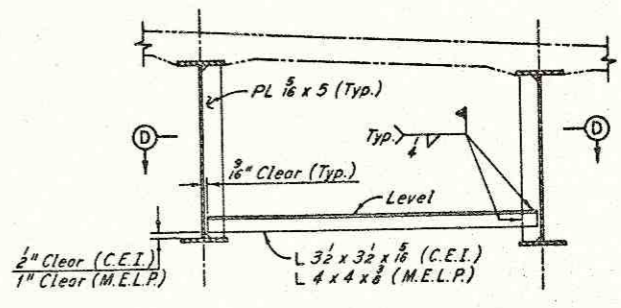
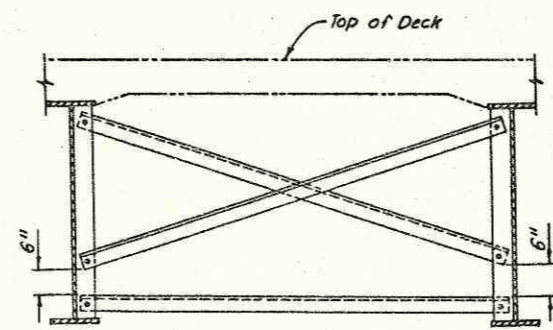
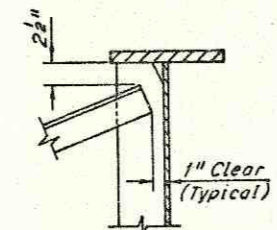
FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10(2)

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62

CUYAHOGA COUNTY
EAST NINTH STREET



Note A: 1/2" x 1 1/2" vertical slotted holes shall be provided in the stiffeners along the inside faces of Girders C, D, F and G at the connections for the crossframe members. The crossframe members shall be placed so that the erection bolts have loose fit in the slotted hole and sufficient slot shall remain above the bolt to accommodate at least 1/2 of the differential deflection between Girders C and D, Girders D and E, Girders E and F and Girders F and G due to the weight of concrete. The crossframe members at the slotted holes shall not be permanently field welded to the stiffeners until the deck has been placed above Girders C and G respectively.



TYPICAL (EXCEPT AS SHOWN)

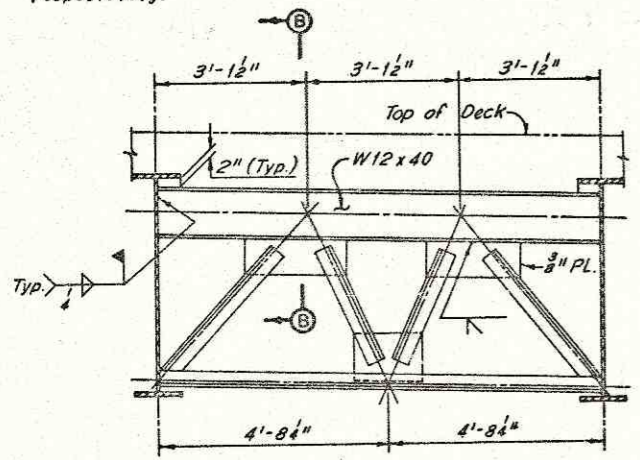
DETAIL A

GIRDER C TO GIRDER D
GIRDER D TO GIRDER E

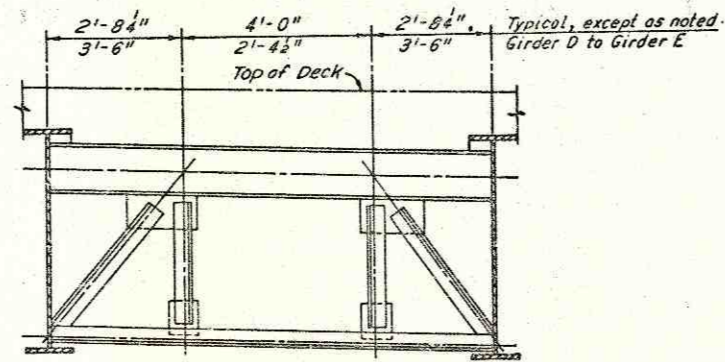
C.E.I. CO. AND M.E.L.P. - TYPE 1
(Crossframes not shown)

WATER LINE - TYPE 1
(Crossframes not shown)

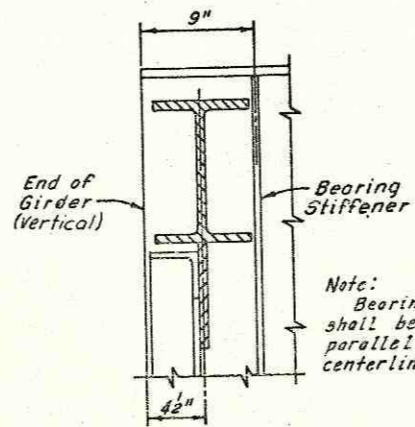
INTERMEDIATE CROSSFRAMES



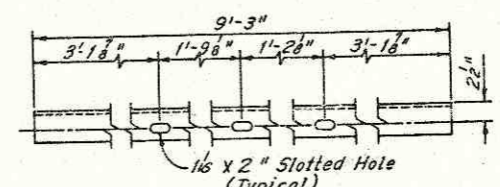
TYPICAL (EXCEPT AS SHOWN)
(For additional details see Ohio Standard Drawing SD-1-69 Sheet 1 of 4.)



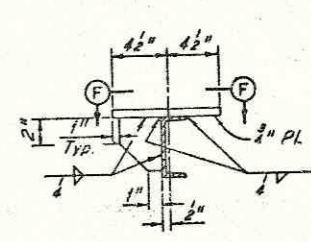
GIRDER C TO GIRDER D
GIRDER D TO GIRDER E
GIRDER E TO GIRDER F
GIRDER H TO GIRDER J



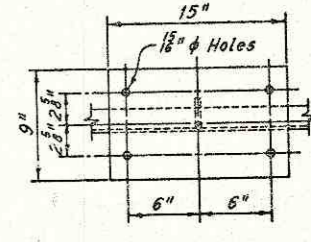
SECTION B-B
(Deck and Deck Joint not shown)



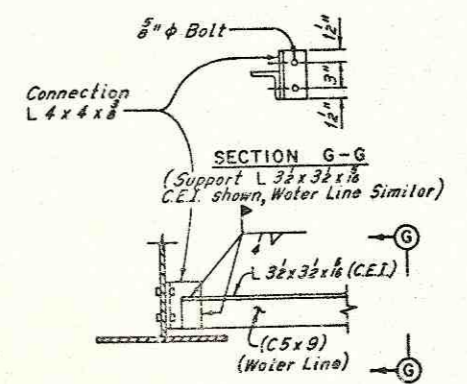
SECTION D-D
(M.E.L.P. only)



SECTION E-E



VIEW F-F



C.E.I. CO. AND WATER LINE - TYPE 2

Notes:
Type 1 connections are made at intermediate stiffeners and Type 2 connections are made at clip angles.
The Contractor shall coordinate placement of the deck and the installation of the water line supports with the Utility.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

UTILITY DETAILS AND CROSSFRAME DETAILS
EAST 9th STREET OVER CONRAL
CITY OF CLEVELAND BR. NO. 1:013

CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN C.R.B.	TRACED D.L.P.	CHECKED A.N.
DATE: 12-81	DATE: 6-81	DATE: 7-81

UTILITY SUPPORTS

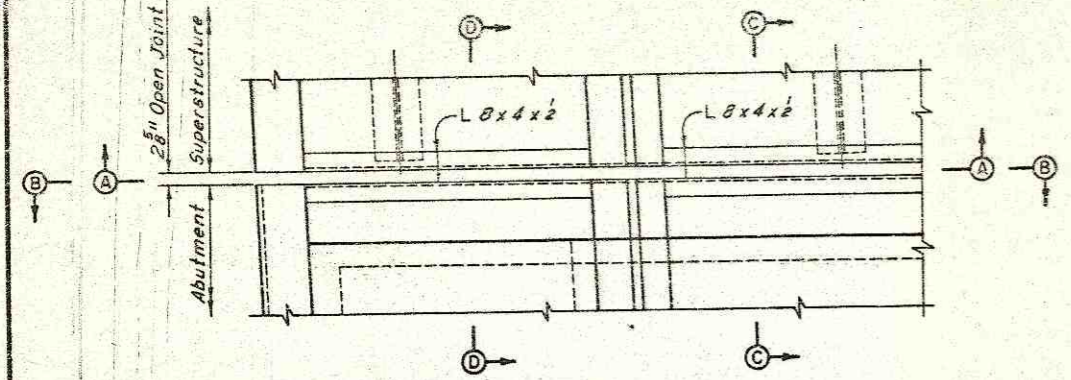
END CROSSFRAMES

FHWA REGION	STATE	PROJECT
5	OHIO	M-1A10(2)

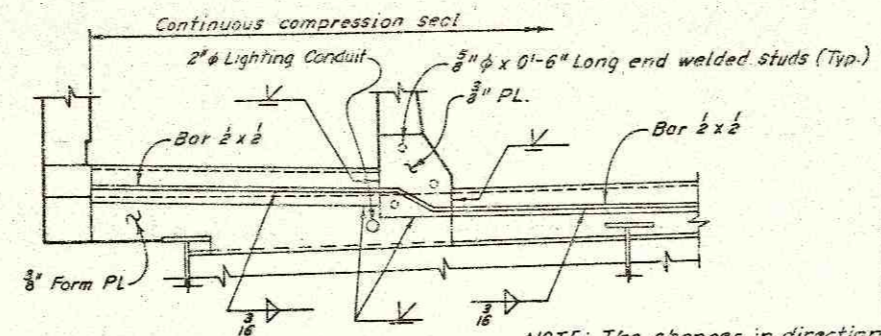
58
62

CUYAHOGA COUNTY
EAST NINTH STREET

Note:
The 4" legs of the L 8 x 4 x 1/2 shall be bent to set parallel to grade.

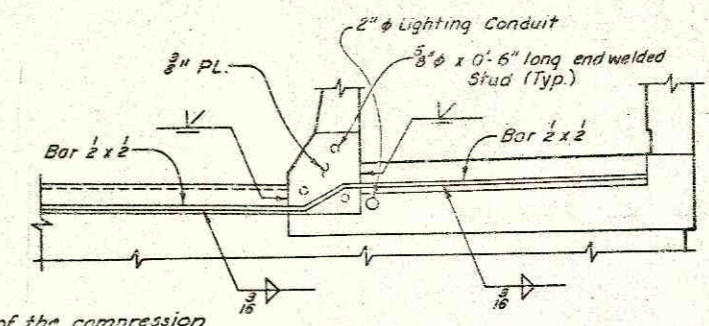


PART PLAN
(Armor support and anchor studs not shown)

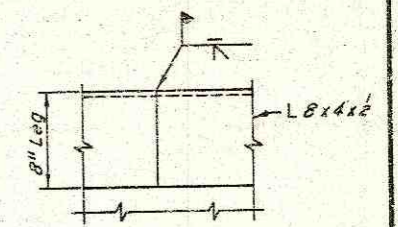


SECTION A-A

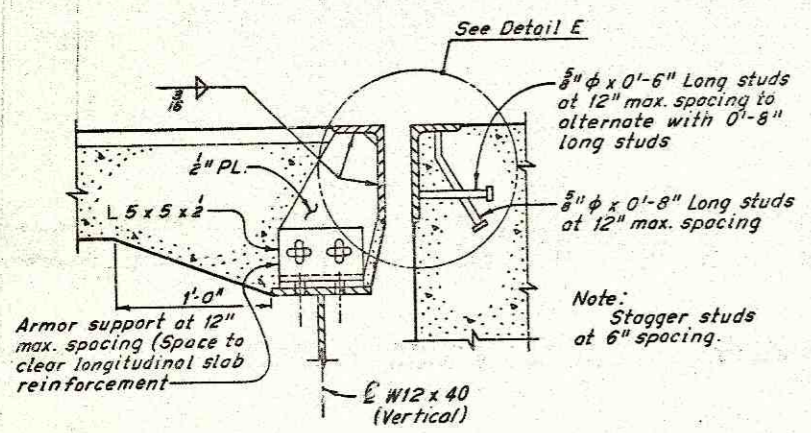
NOTE: The changes in direction of the compression seal, between the sidewalk and roadway, shall be made by mitering and splicing, as described in Suppl. Spec. 849 for joints having sharp changes in alignment.



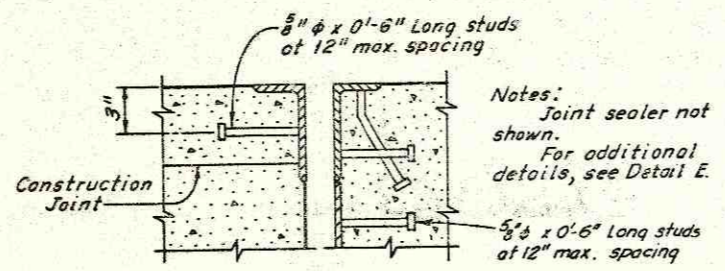
SECTION B-B



SPlice DETAIL

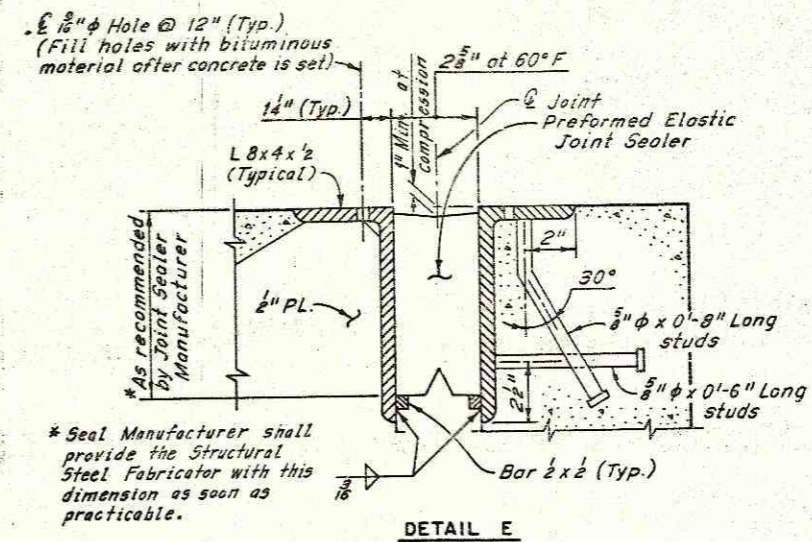


SECTION C-C

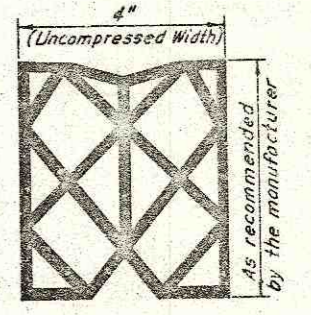


SECTION D-D

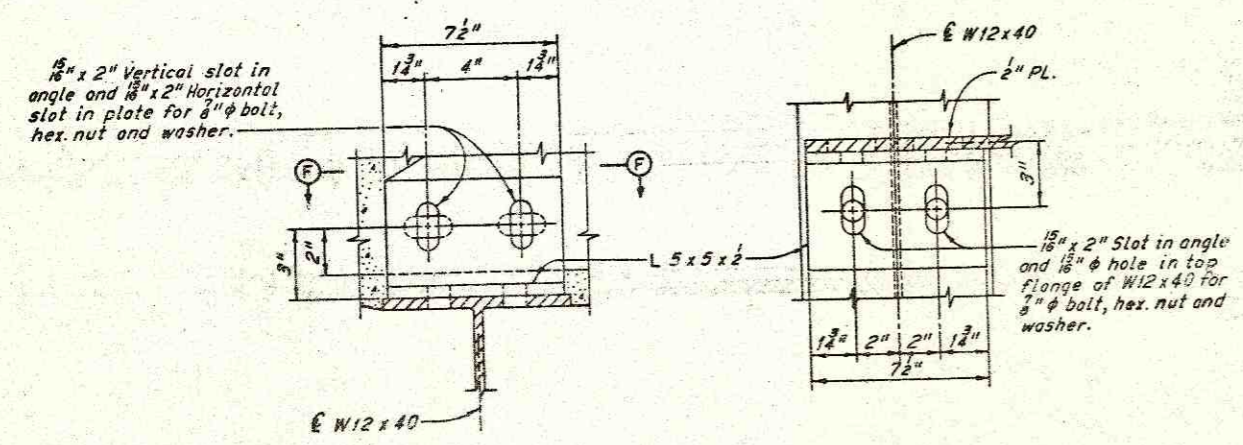
Notes:
Joint sealer not shown.
For additional details, see Detail E.



DETAIL E



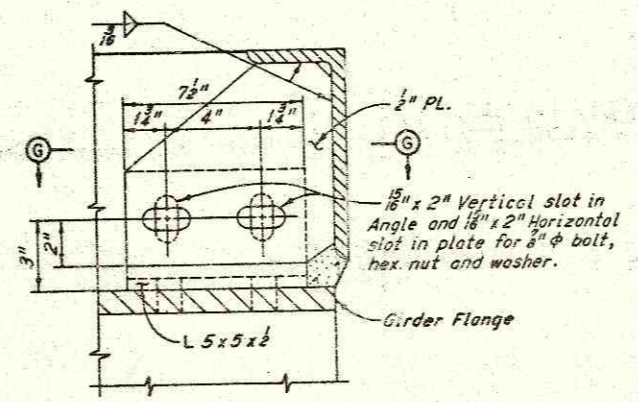
PREFORMED ELASTIC JOINT SEALER



TYPICAL SECTION

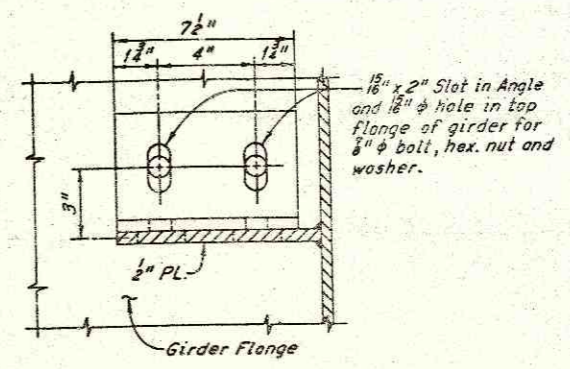
SECTION F-F

ARMOR SUPPORT DETAILS AT W12 x 40



TYPICAL SECTION

ARMOR SUPPORT DETAILS AT GIRDERS



SECTION G-G

Notes:
Portions of the steel joint not encased in concrete, not in contact with a compression seal, and not covered by adhesives shall be cleaned and painted in conformance with Item 514, Field Painting of New Structural Steel, System A. Include with the unit price bid for Item 849, Elastomeric Compression Seats for Structural Steel Joints, 4" in width, for payment.
Armor angles, support members, studs and other anchors are included with Item 513, Structural Steel, for payment.

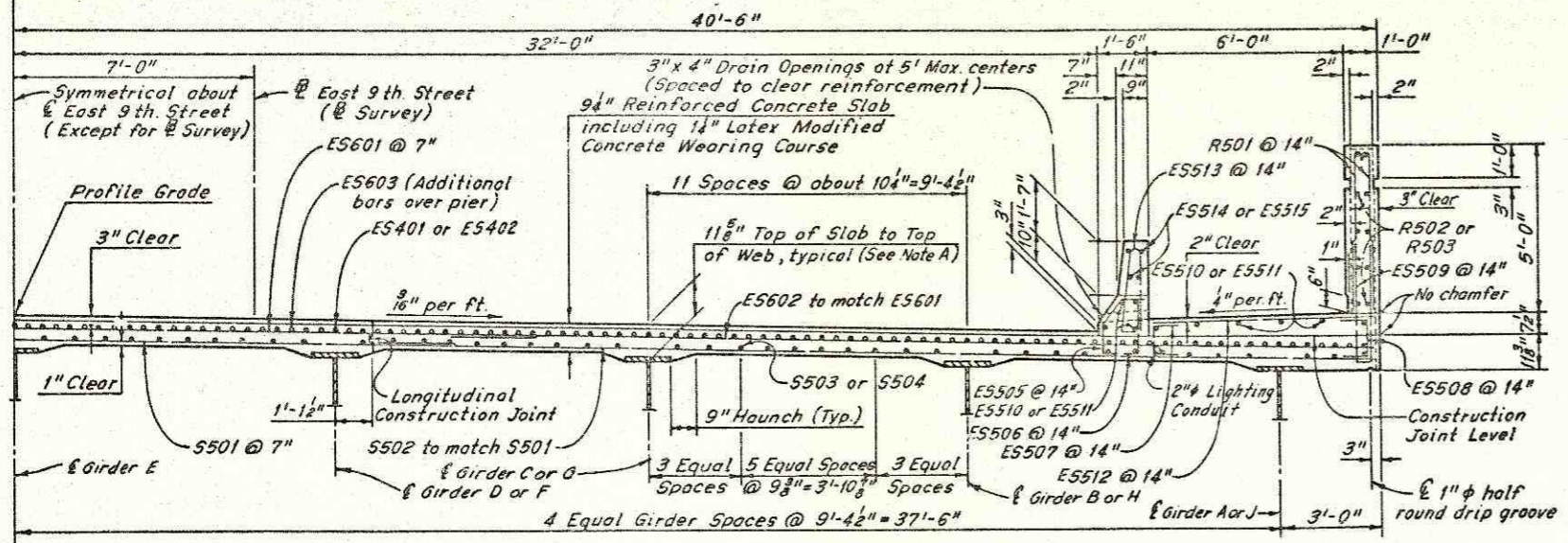
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND HNTB

DECK JOINT DETAILS
EAST 9th STREET OVER CONRAIL
CITY OF CLEVELAND BR. NO. 1:013

DATE	BY	CHECKED	REVIEWED	REVISED
12/1/82	AM	CA	AM	7-11-82
DATE	BY	DATE	DATE	SHEET
12/1/82	AM	12/1/82	12/1/82	12/1/82

**CUYAHOGA COUNTY
EAST NINTH STREET**

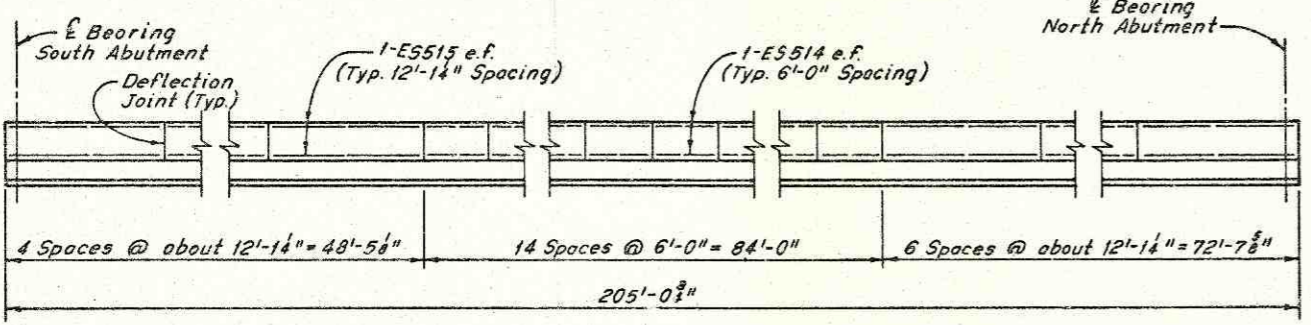
Note A:
This is a nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension less the 1/4" wearing course, even though deviation from it may be necessary because the top flange of the girder may not have the exact camber or conformation required to place it parallel to the finished grade. Deduction shall be made for volume of encased steel plates as per Sec. 511.18 of the Construction and Materials Specifications.



Note: Field bending of the ES601 bars may be required due to interference of the existing deck slab with their placement. Include with Item 509, Reinforcing Steel, Grade 60, for payment.

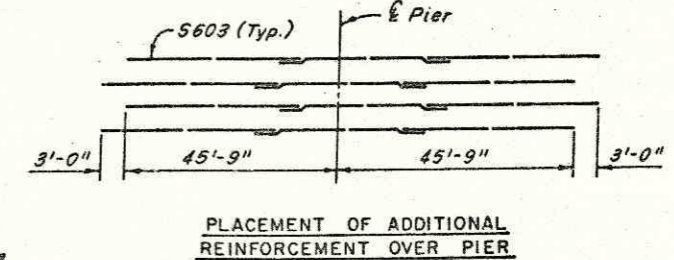
TYPICAL CROSS SECTION
(Shear studs not shown)

	S. ABUT.	.2	.4	.6	.8	PIER	.2	F.S.	.4	.6	.8	N. ABUT.
W. Gutter	627.15	626.46	625.74	625.00	624.25	623.53	622.70	622.43	621.88	621.01	620.05	619.01
Girder A	627.06	626.33	625.61	624.89	624.16	623.44	622.53	622.24	621.63	620.73	619.82	618.92
Girder B	627.22	626.49	625.77	625.05	624.32	623.60	622.69	622.40	621.79	620.89	619.98	619.08
Girder C	627.38	626.65	625.93	625.21	624.48	623.76	622.85	622.56	621.95	621.05	620.14	619.24
Girder D	627.54	626.81	626.09	625.37	624.64	623.92	623.01	622.72	622.11	621.21	620.30	619.40
Girder E	627.70	626.97	626.25	625.53	624.80	624.08	623.17	622.88	622.27	621.37	620.46	619.56
Girder F	627.57	626.84	626.12	625.39	624.67	623.95	623.04	622.75	622.14	621.23	620.33	619.43
Girder G	627.43	626.71	625.98	625.26	624.54	623.81	622.91	622.61	622.00	621.10	620.20	619.29
Girder H	627.30	626.58	625.85	625.13	624.40	623.68	622.78	622.48	621.87	620.97	620.06	619.16
Girder J	627.17	626.44	625.72	625.00	624.27	623.55	622.64	622.35	621.74	620.84	619.93	619.03
E. Gutter	627.24	626.55	625.83	625.09	624.34	623.62	622.79	622.53	621.98	621.10	620.14	619.10



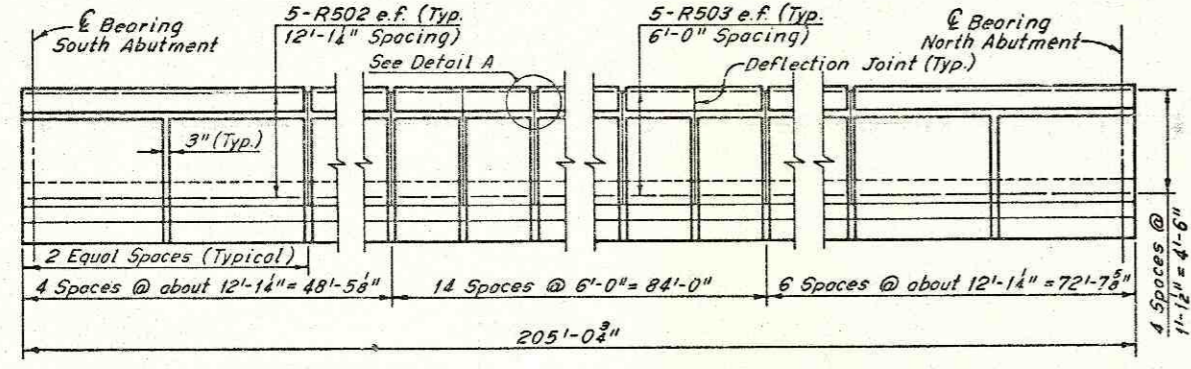
CONCRETE BARRIER ELEVATION

Notes:
Elevations shown for Girders A and J are to the extended top of wearing surface. The gutterline elevations shown have been adjusted for dead load deflections due to the weight of the concrete and wearing course, and are the elevations required before the concrete deck is placed.



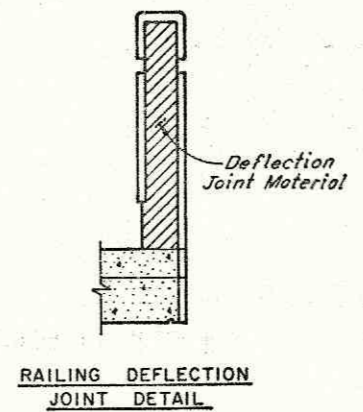
PLACEMENT OF ADDITIONAL REINFORCEMENT OVER PIER

Bar Mark	Number of Bars
ES401	95 Lines of 7
ES402	95 Lines of 1
S501	351
S502	702
S503	86 Lines of 7
S504	86 Lines of 1
ES505	336
ES506	336
ES507	352
ES508	352
ES509	704
ES510	20 Lines of 7
ES511	20 Lines of 1
ES512	352
ES513	336
ES514	112
ES515	80
ES601	352
ES602	704
ES603	94 Lines of 3



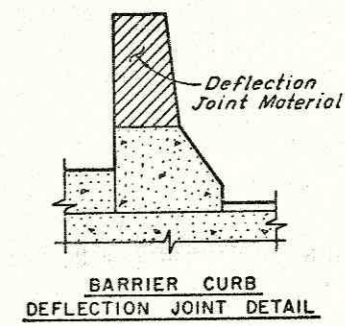
CONCRETE RAILING ELEVATION

Notes:
The deflection joints in the barrier curb and railing may be either 1/2" gray sponge rubber or 1/2" gray cellular polyvinyl chloride (PVC) sponge. Either material shall meet the requirements of AASHTO M-153, Type 1, except the density of the FCV sponge shall be not less than 20 lb. per cu. ft. Barrier curbs and railings shall be placed in alternate sections by the use of bulkheads. Closing sections shall be placed after the removal of bulkheads and after placement of sponge filler. The filler shall be attached to the face of the concrete on one side, flush with the surface of concrete and exposed edges shall be free of mortar. In barrier curbs, include with Item 511, Class S Concrete, Superstructure, for payment, and in railings, include with Item 517, Railing, As Per Plan, for payment.



LONGITUDINAL CONSTRUCTION JOINT

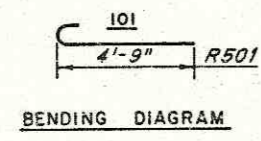
RAILING DEFLECTION JOINT DETAIL



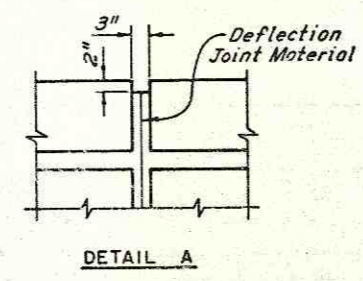
BARRIER CURB DEFLECTION JOINT DETAIL

Notes:
For railing notes, see Sheet 16/18.
For light support details, see Sheet 17/18.
For reinforcement schedule, see Sheet 18/18.
The following abbreviations are used:
Typ. = Typical e.f. = each face
F.S. = Field Splice
S. = South N. = North

MARK	NO.	LENGTH	TYPE	WEIGHT (LBS.)
R501	704	5'-4"	101	3916
R502	200	11'-9"	Str.	2451
R503	280	5'-9"	Str.	1679
Total =				8046



BENDING DIAGRAM



DETAIL A

No. 4 Bar = 1'-4" minimum
No. 5 Bar = 1'-8" minimum
No. 6 Bar = 1'-11" minimum

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

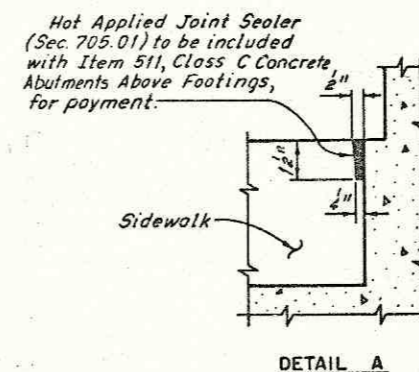
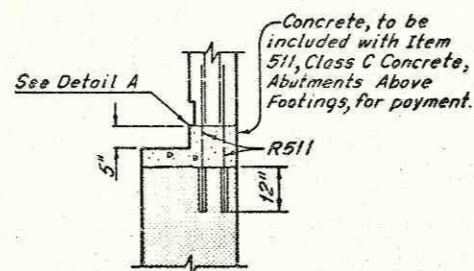
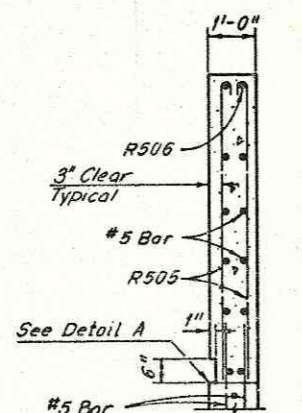
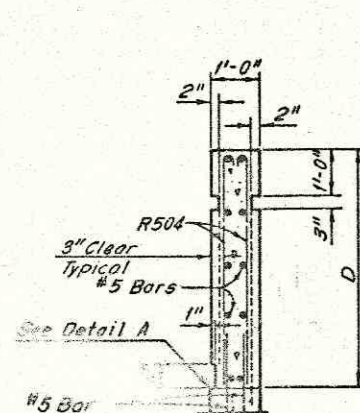
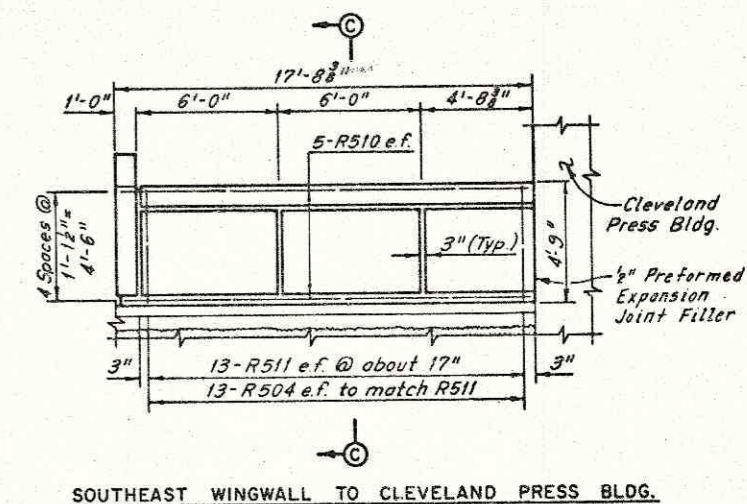
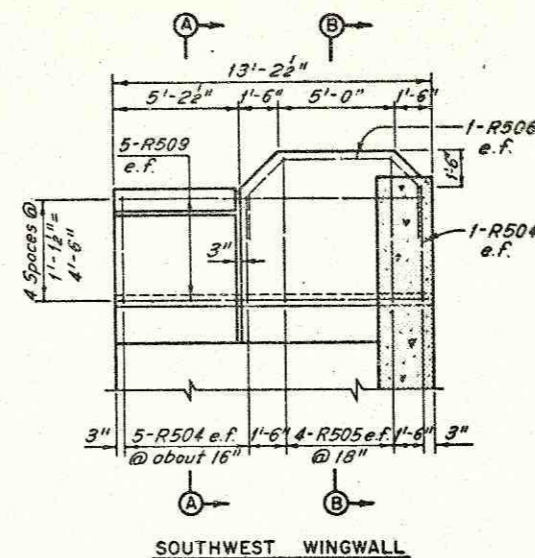
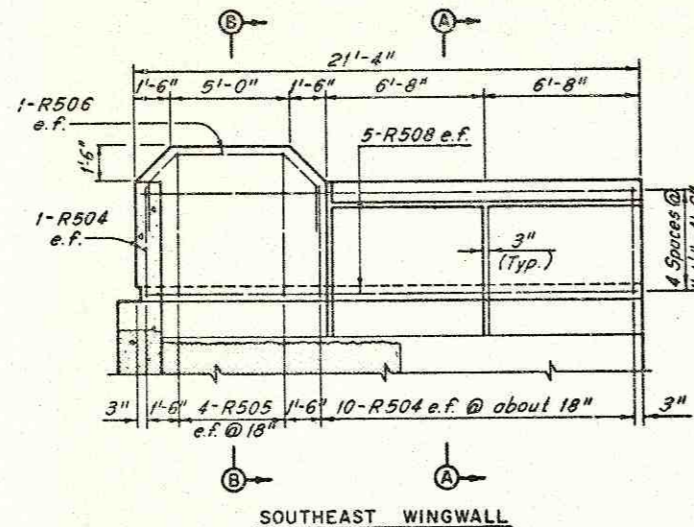
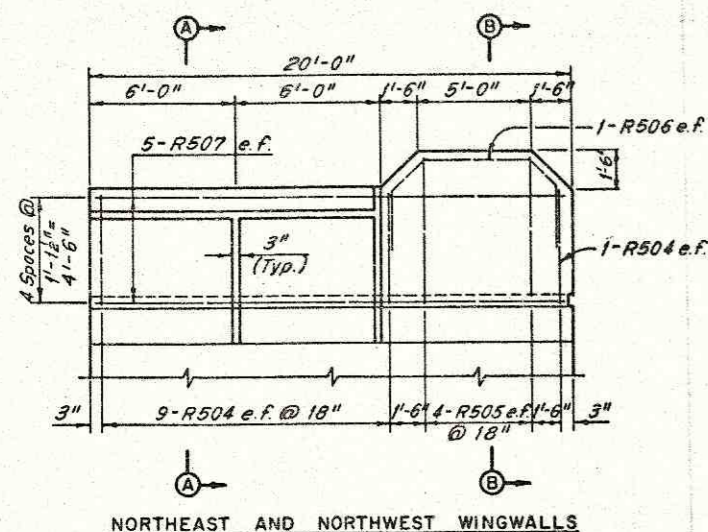
HNTB

DECK AND RAILING DETAILS
EAST 9th STREET OVER CONRAIL
CITY OF CLEVELAND BR. NO. 1:013

CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN D.L.R.	TRACED D.L.R.	CHECKED C.K.B.
DATE 6-10-81	DATE 6-11-81	DATE 6-19-81
REVIEWED C.A.B.	DATE 7-8-81	

SHEET 15 / 19

CUYAHOGA COUNTY
EAST NINTH STREET

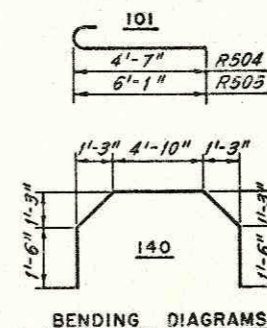


█ Indicates existing structure.

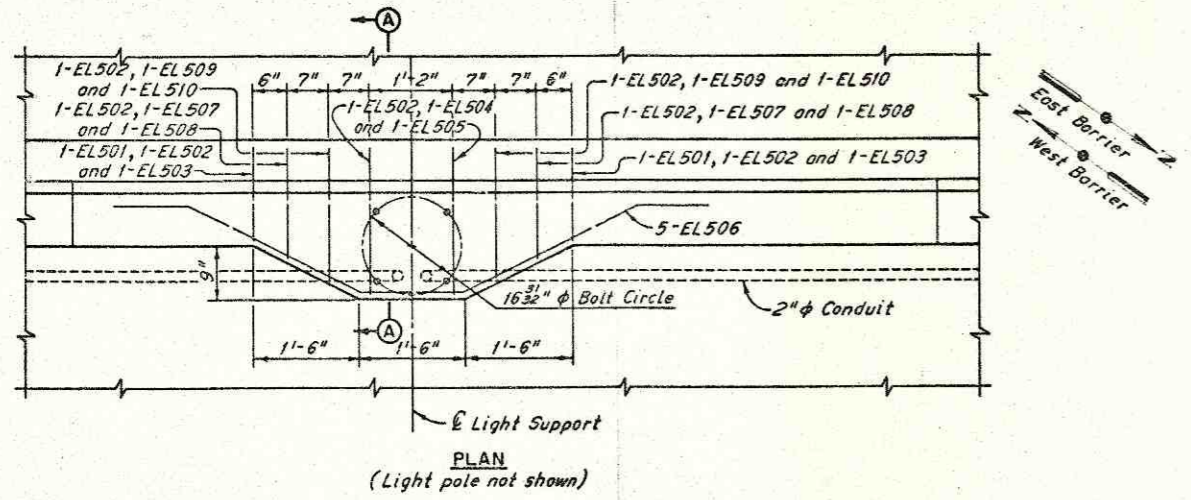
Notes:
Payment for the railing shall be made at the unit price bid for Item 517, Railing, As Per Plan. Payment length shall be the overall length of the railings. All reinforcing steel that does not extend into the sidewalk shall be included with Item 517 for payment. Reinforcing steel extending from the sidewalk is included with Item 509, Reinforcing Steel, for payment.
Dowel holes in the wall between the Southeast Wingwall and the Cleveland Press Building are included in Item 510, Dowel Holes, As Per Plan, for payment.
The 1/2" preformed expansion joint filler shall be included in the unit price bid for Item 517, Railing, As Per Plan, for payment.
The following abbreviation is used:
e.f. = each face

LOCATION	AT DECK JOINT	END OF RAILING
NE and NW Wingwalls	5'-0"	5'-0"
SE Wingwall	5'-0"	4'-9"
SW Wingwall	5'-0"	4'-11 1/2"

MARK	NO.	LENGTH	TYPE	WEIGHT (LBS.)
R504	100	5'-2"	101	539
R505	32	6'-8"	101	223
R506	8	11'-2"	140	93
R507	10	19'-6"	Str.	203
R508	10	21'-0"	Str.	219
R509	10	12'-9"	Str.	133
R510	10	17'-3"	Str.	180
R511	26	3'-6"	Str.	95
Total =				1685

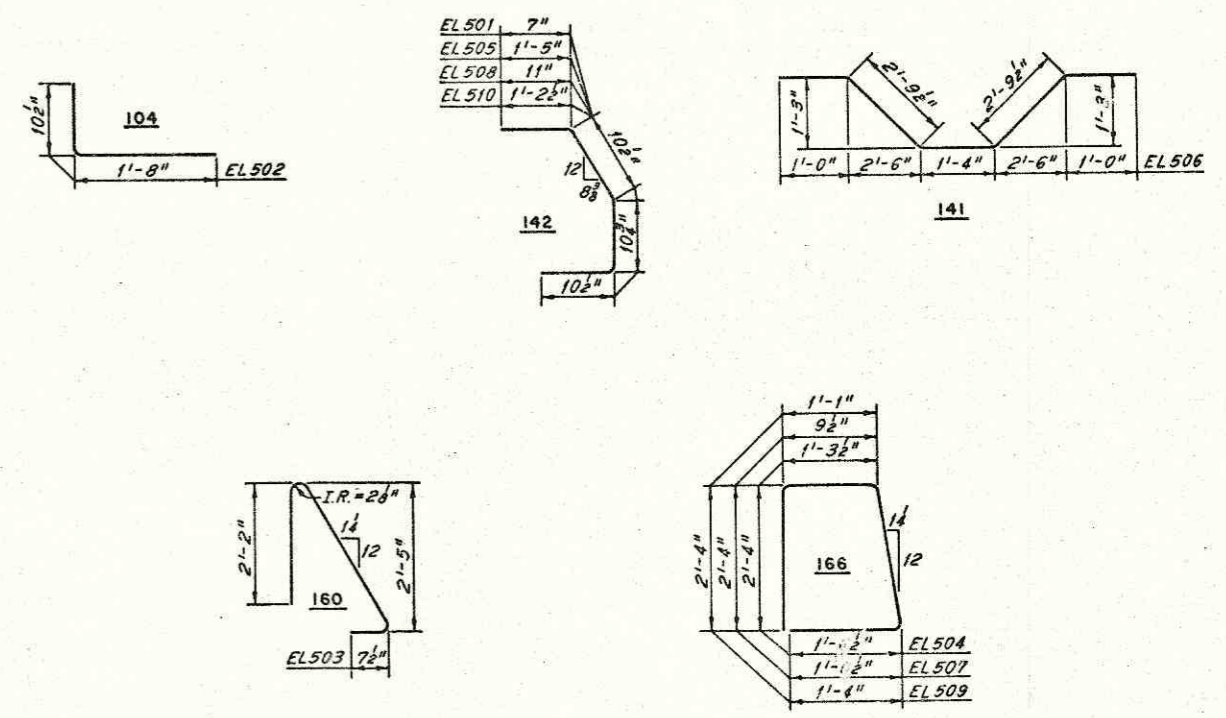


HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB
RAILING DETAILS			
EAST 9th STREET OVER CONRAIL			
CITY OF CLEVELAND BR. NO. 1:13			
CLEVELAND		OHIO	
DRAWN CKB	TRACED DLR	CHECKED DRJ	REVIEWED CAB
DATE 6-22-50	DATE 6-24-50	DATE 7-10-50	DATE 7-8-50
			SHEET 16 18

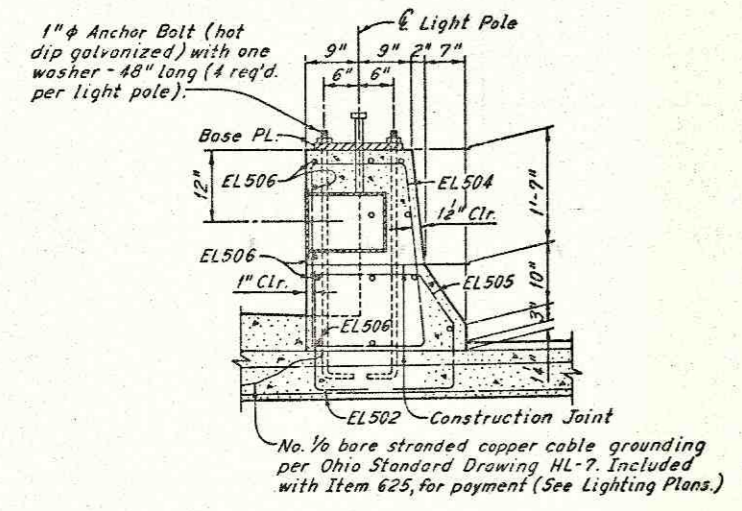


REINFORCING SCHEDULE LIGHT STANDARD SUPPORT					
MARK	NO.	LENGTH	TYPE	SER INCR	WEIGHT
EL501	2	3'-0"	142		6
EL502	8	2'-5"	104		20
EL503	2	5'-3"	160		11
EL504	2	7'-3"	166		15
EL505	2	3'-11"	142		8
EL506	5	8'-8"	141		45
EL507	2	6'-3"	166		13
EL508	2	3'-5"	142		7
EL509	2	6'-10"	166		14
EL510	2	3'-9"	142		8
For one Light Standard Support					
Total Weight =					147

BAR BENDING DIAGRAMS



Note: All reinforcing bars shall be epoxy coated.



SECTION A-A
(Typical slab reinforcement and 2" φ Conduit not shown)
• Denotes normal longitudinal barrier reinforcement.

Notes:
For location of conduit in structures, additional lighting details and lighting quantities, see Lighting Plans.
For light standard locations, see Sheet 4/18.
Light standard support reinforcement is included for payment with slab reinforcement; see Sheet 18/18 for weight summary.
Normal parapet reinforcement not shown; normal longitudinal reinforcement is continuous through light support except as noted.
Transverse reinforcing bars EL501 thru EL510 replaced normal barrier transverse reinforcing bars ES505, ES506 and ES513.
The 1" x 48" anchor bolts, nuts, base plate and junction box shall be included with Item 625 for payment. (See Lighting Plans.)
All structural steel shall be galvanized according to 711.02. Galvanizing of steel, except base plate, 1" anchor bolts and junction box shall be included with Item 513, Structural Steel, for payment. Galvanizing of base plate, 1" anchor bolts and junction box shall be included with Item 625 for payment. (See Lighting Plans.)
The concrete required at the light pole support shall be included with Item 511, Class S Concrete, Superstructure, for payment.
For additional notes and details, see Ohio Standard Drawing HL-7.
The following abbreviation is used:
Clr. = Clearance

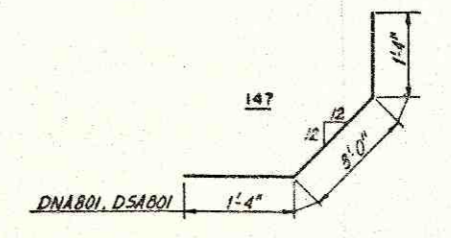
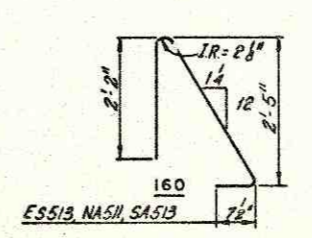
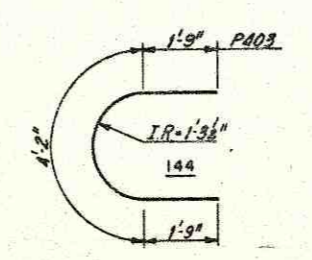
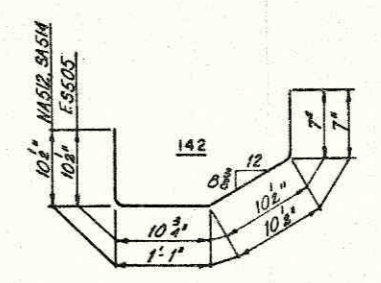
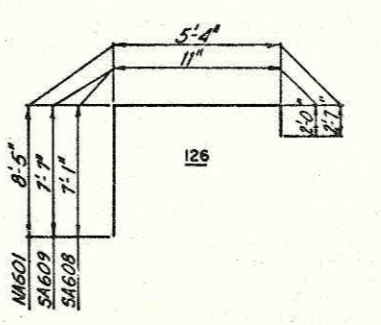
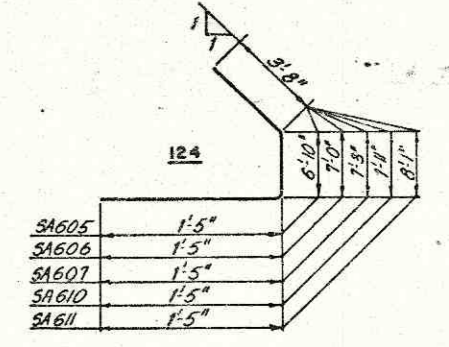
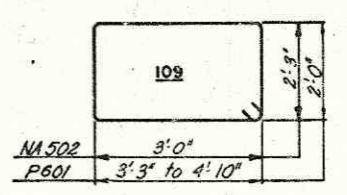
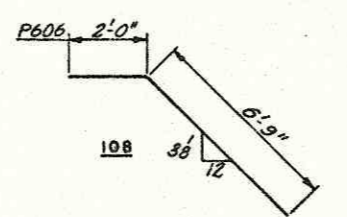
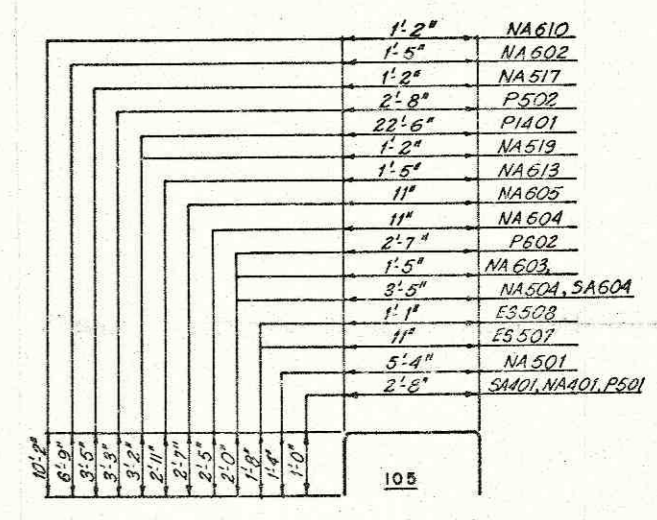
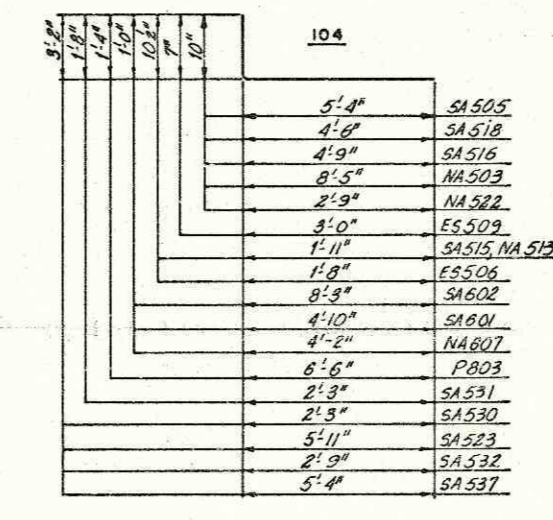
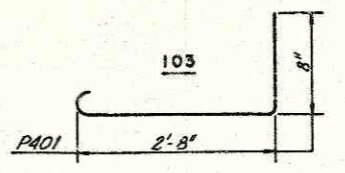
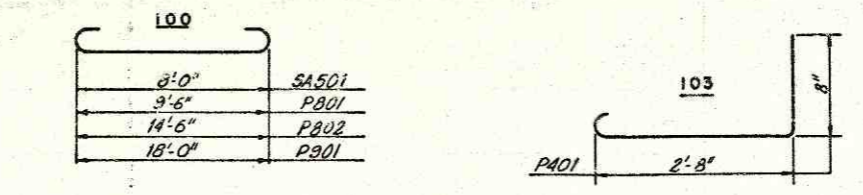
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB	
LIGHT SUPPORT DETAILS			
EAST 9th STREET OVER CONRAIL			
CITY OF CLEVELAND BR. NO. 1:013			
CLEVELAND		OHIO	
DRAWN A.N.	TRACED D.L.R.	CHECKED R.H.W.	ENGINEERED C.A.B.
DATE 10-16-81	DATE 10-16-81	DATE 10-21-81	DATE 10-23-81
			SHEET 17 / 18

CUYAHOGA COUNTY
EAST NINTH STREET

MARK	NO.	LENGTH	TYPE	SER. INCR	WEIGHT (LBS.)
SOUTH ABUTMENT					
SA401	63	4'-6"	105		189
SA501	94	9'-2"	100		899
SA502	84	7'-0"	Str.		613
SA503	12	28'-0"	Str.		350
SA504	24	28'-3"	Str.		707
SA505	63	6'-1"	104		400
SA506	59	11'-3"	Str.		692
SA507	16	3'-0"	Str.		50
SA508	66	27'-6"	Str.		1893
SA509	33	22'-3"	Str.		766
SA510	24	2'-6"	Str.		63
SA511	6	10'-6"	Str.		66
SA512	14	5'-6"	Str.		80
SA513	4	5'-3"	160		22
SA514	4	3'-2"	142		13
SA515	4	2'-8"	104		11
SA516	10	5'-6"	104		57
SA517	16	13'-6"	Str.		225
SA518	8	5'-3"	104		44
SA519	2	8'-0"	Str.		17
SA520	32	2'-9"	Str.		92
SA521	8	5'-0"	Str.		42
SA522	9	6'-0"	Str.		56
SA523	9	9'-0"	104		84
SA524	7	5'-6"	Str.		40
SA525	7	3'-3"	Str.		24
SA526	3	7'-0"	Str.		22
SA527	3	4'-6"	Str.		14
SA528	9	21'-0"	Str.		197
SA529	7	2'-3"	Str.		16
SA530	6	5'-0"	104		31
SA531	2	3'-10"	104		8
SA532	24	5'-10"	104		146
SA533	24	2'-9"	Str.		69
SA534	2	4'-2"	Str.		9
SA535	2	9'-0"	Str.		19
SA536	12	4'-9"	Str.		59
SA537	11	8'-5"	104		97
SA538	1	6'-9"	Str.		7
SA539	1	4'-0"	Str.		4
SA540	3	8'-0"	Str.		25
SA541	3	5'-6"	Str.		17
SA542	11	6'-3"	Str.		72
SA543	9	10'-6"	Str.		99
SA601	75	5'-8"	104		638
SA602	72	9'-1"	104		982
SA603	75	8'-9"	Str.		986
SA604	57	7'-1"	105		606
SA605	24	11'-7"	124		418
SA606	24	11'-9"	124		424
SA607	25	12'-0"	124		451
SA608	71	9'-8"	126		1031
SA609	8	10'-2"	126		122
SA610	3	12'-8"	124		57
SA611	3	12'-10"	124		58
SA612	38	3'-3"	Str.		185
SA613	3	12'-0"	Str.		54
SA614	4	10'-6"	Str.		63
SA615	12	10'-0"	Str.		180
SA616	3	15'-0"	Str.		68
SA617	4	12'-6"	Str.		75
SA618	12	12'-9"	Str.		230
DSAB01	46	5'-4"	142		655
TOTAL WEIGHT = 15,689					
NORTH ABUTMENT					
NA401	63	4'-6"	105		189

MARK	NO.	LENGTH	TYPE	SER. INCR	WEIGHT (LBS.)
NA501	60	7'-10"	105		490
NA502	24	11'-2"	109		280
NA503	60	9'-2"	104		574
NA504	60	7'-3"	105		454
NA505	23	30'-6"	Str.		732
NA506	23	25'-0"	Str.		600
NA507	23	24'-0"	Str.		576
NA508	8	2'-6"	Str.		21
NA509	8	2'-6"	Str.		21
NA510	18	5'-9"	Str.		108
NA511	4	5'-3"	160		22
NA512	4	3'-2"	142		13
NA513	4	2'-8"	104		11
NA514	20	3'-0"	Str.		63
NA515	4	5'-9"	Str.		24
NA516	18	4'-0"	Str.		75
NA517	18	7'-10"	105		147
NA518	12	3'-9"	Str.		47
NA519	12	7'-4"	105		92
NA520	10	13'-6"	Str.		141
NA521	8	19'-6"	Str.		163
NA522	56	3'-6"	104		204
NA523	14	9'-0"	Str.		131
NA524	12	17'-0"	Str.		213
NA601	60	16'-0"	126		1442
NA602	81	14'-7"	105		1774
NA603	71	5'-1"	105		542
NA604	69	5'-5"	105		561
NA605	12	5'-9"	105		104
NA606	4	4'-9"	Str.		29
NA607	6	5'-0"	104		45
NA608	6	10'-9"	Str.		97
NA609	4	8'-6"	Str.		51
NA610	18	21'-2"	105		572
NA611	18	4'-0"	Str.		108
NA612	12	3'-9"	Str.		68
NA613	10	6'-11"	105		104
DNAB01	47	5'-4"	142		669
TOTAL WEIGHT = 13,848					
PIER					
P401	312	3'-9"	103		782
P402	156	6'-6"	Str.		677
P403	156	7'-8"	144		799
P501	72	4'-6"	105		339
P502	30	9'-0"	105		282
P601	12 Ser 14	11'-1" to 14'-3"	109	26'	3196
P602	24	6'-3"	105		225
P603	18	22'-6"	Str.		608
P604	6	16'-6"	Str.		149
P605	6	9'-6"	Str.		86
P606	24	8'-9"	108		315
P801	59	11'-4"	100		1785
P802	14	16'-4"	100		611
P803	84	7'-8"	104		1719
P804	84	28'-9"	Str.		6448

MARK	NO.	LENGTH	TYPE	SER. INCR	WEIGHT (LBS.)
P901	32	20'-6"	100		2230
P1401	15	27'-10"	105		3194
P1402	15	22'-6"	Str.		2582
TOTAL WEIGHT = 26,026					
SUPERSTRUCTURE					
EPOXY COATED					
ES401	665	30'-0"	Str.		13,327
ES402	95	4'-6"	Str.		286
ES505	336	3'-0"	142		1051
ES506	336	2'-5"	104		847
ES507	352	4'-1"	105		1499
ES508	352	4'-3"	105		1560
ES509	704	3'-6"	104		2570
ES510	140	30'-0"	Str.		4381
ES511	20	6'-9"	Str.		141
ES512	352	6'-9"	Str.		2478
ES513	336	5'-3"	160		1840
ES514	112	5'-9"	Str.		672
ES515	80	11'-9"	Str.		990
ES601	352	30'-0"	Str.		15,861
ES602	704	27'-3"	Str.		28,814
ES603	282	32'-0"	Str.		13,554
4 Light Standard Supports = 588					
TOTAL WEIGHT = 90,449					
NON-EPOXY COATED					
S501	351	24'-5"	Str.		8969
S502	702	29'-9"	Str.		21,783
S503	602	30'-0"	Str.		18,837
S504	86	6'-9"	Str.		605
TOTAL WEIGHT = 50,194					



REINFORCING STEEL SAMPLES

Refer to CMS Sections 106.03, 700, 709.01 through 709.05 and 709.08. Sufficient additional reinforcing steel shall be provided for sampling. Random samples shall be replaced in the structures by the additional steel, spliced in accordance with 509.08.

Note:
For light standard support reinforcement schedule and bending diagrams, see Sheet 17/18.

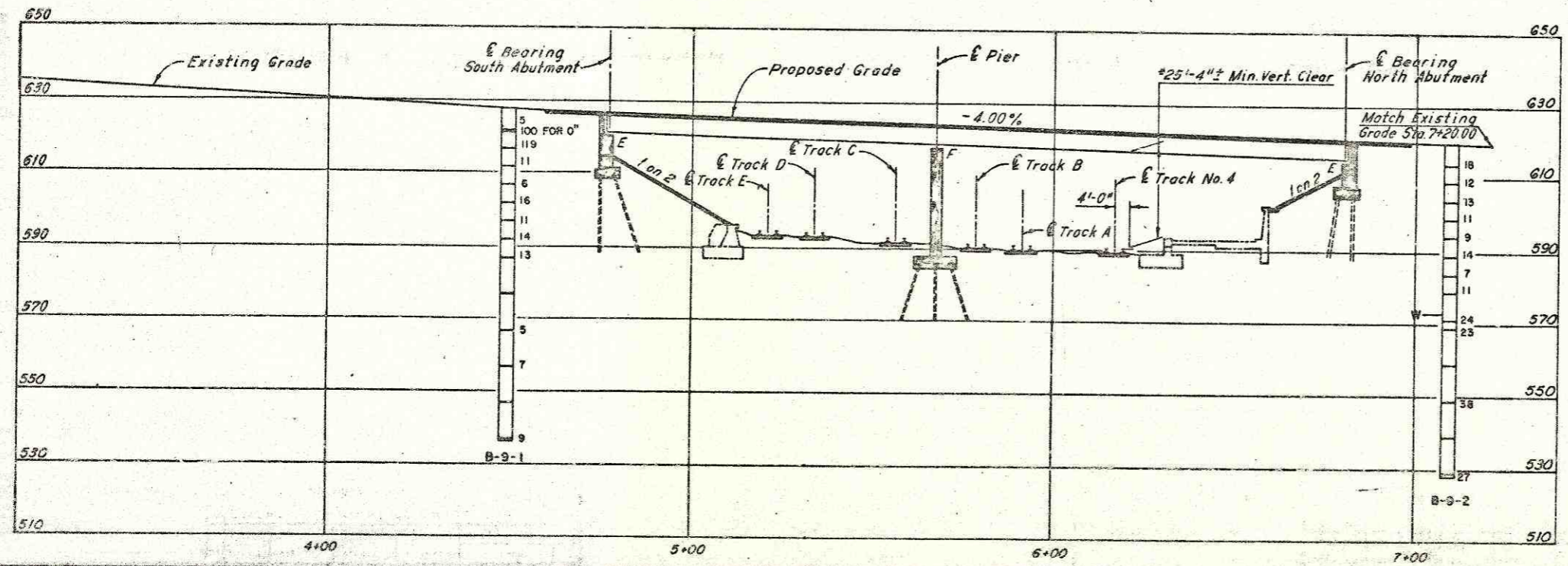
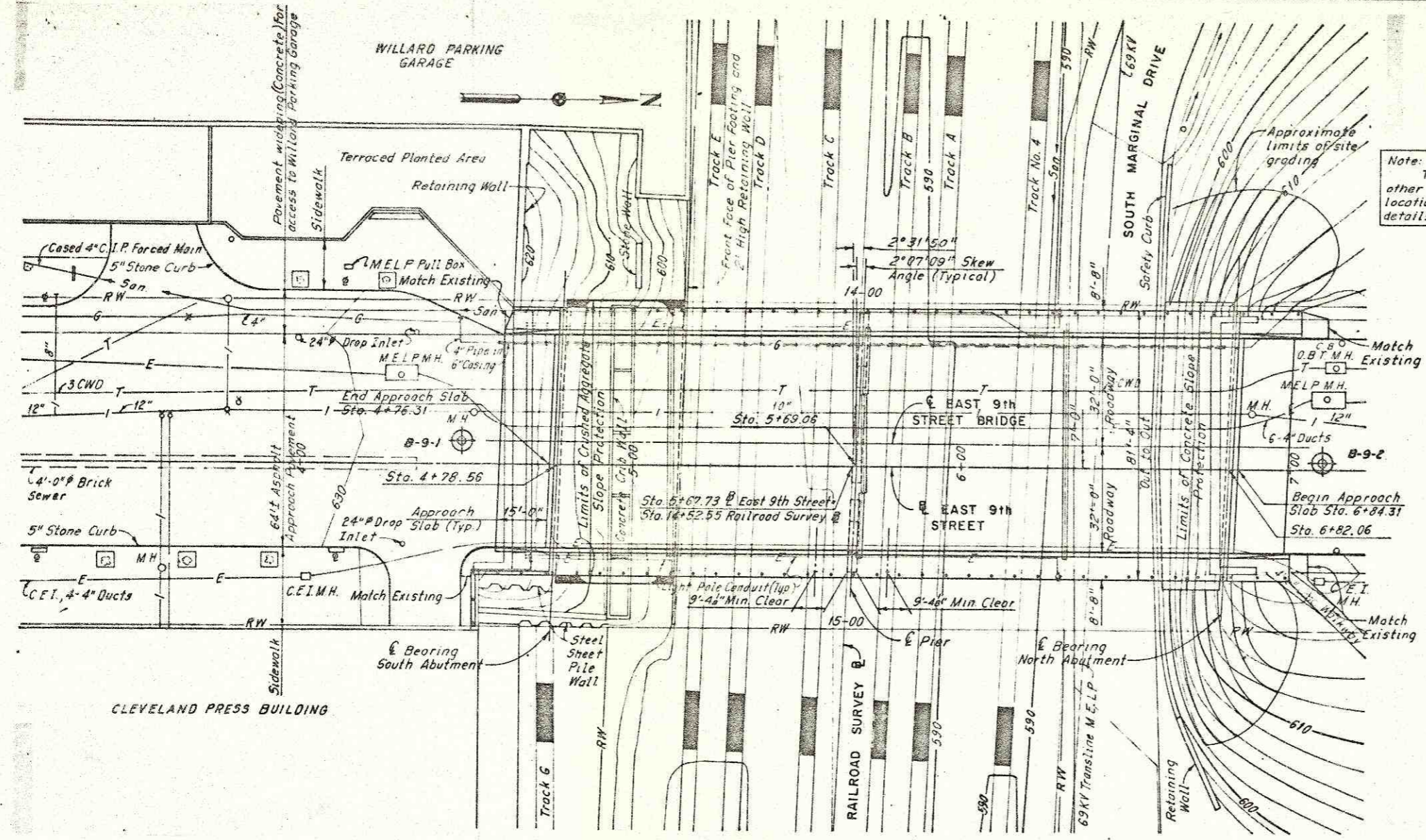
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND			HNTB		
REINFORCEMENT SCHEDULE					
EAST 9th STREET OVER CONRAIL					
CITY OF CLEVELAND BR. NO. 1:013					
CLEVELAND		CUYAHOGA COUNTY		OHIO	
DRAWN DRJ	TRACED DRJ	CHECKED CEP	REVIEWED CAB	DATE 7.6.81	DATE 7.7.81
				DATE 7.8.81	DATE 7.8.81
					SHEET 18 / 18

FHWA REGION	STATE	PROJECT
5	OHIO	



CUYAHOGA COUNTY

Note: The information shown in the plan view, other than the substructure units and borings locations, is not guaranteed to be accurate. For details see Roadway Plans.



Note: Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and is not to be construed as part of the plans governing construction of the project.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB
STRUCTURE FOUNDATION INVESTIGATION		
EAST 9th STREET OVER CONRAIL		
CITY OF CLEVELAND BR. NO. 1:013		
SCALE: AS SHOWN		
CLEVELAND CUYAHOGA COUNTY		OHIO
DRAWN CGL	TRACED WAD	CHECKED WAD
DATE: 1-15-81	DATE: 1-10-81	DATE: 1-12-81
REVIEWED GDJ		REVISED
DATE: 1-15-81		SHEET

Geology of the Site

The structure site is located in the Eastern Lake Section of the Central Lowlands Physiographic Province. The terrain is relatively flat, rising gradually to the southeast in a series of steps formed by beach ridges. Deep glacial lake deposits consisting of clay silt and fine sand overlies shale bedrock. Bedrock was not encountered during the exploration program. A review of geologic literature indicates Devonian Age Chagrin Shale may be encountered at depths of from 150 feet to 200 feet.

Exploration

















The exploration consisted of two drive-press sample borings, B-9-1 and B-9-2 made March 3 and 6, 1981. Drive rod soundings were not taken.

Investigational Findings

The borings disclosed 30 to 50 feet of silty to clayey sand with trace of gravel, cinders, and bricks (Miscellaneous Fill), overlying medium to stiff silty clay with silt seams. The borings were terminated at 91.5 foot depths. Elevations 537.2± and 527.3±, without encountering bedrock. Chagrin shale of Devonian Age is estimated to be at a depth of 150 to 200 feet below the surface.

Ground water was encountered in Boring B-9-2 at a depth of 46.5 feet, elevation 572.3±. Boring B-9-1 was reported as dry to a depth of 40.0 feet, elevation 578.8±, where casing and rotary drilling methods were started. The depth of water after casing removal in Boring B-9-1 was 42.2 feet, elevation 596.5± and 46.5 feet, elevation 572.3±, in Boring B-9-2.

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
-  H 12 Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
-  Drive Rod Penetration Resistance Sounding Log - Profile
-  Casing
-  Resistance "R" 10,000 lbs.
-  Resistance "R" 10,000 lbs.
-  Z Indicates Final Measurement of Penetration, in Inches.
-  W Indicates Free Water Elevation
-  Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

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

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R," in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highway, 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.

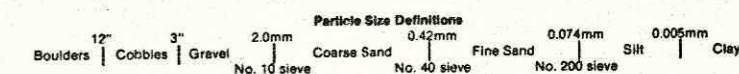
Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1 1/4" 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 1/4" 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.

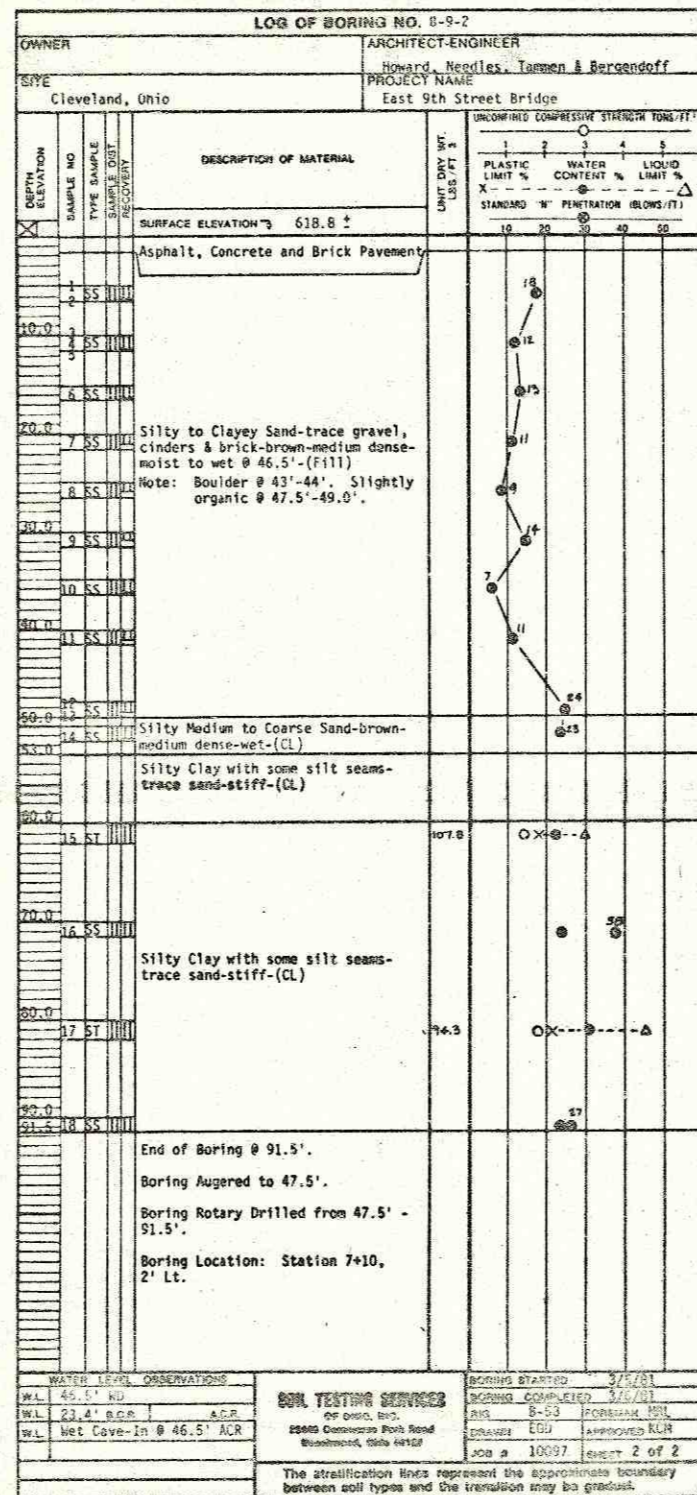
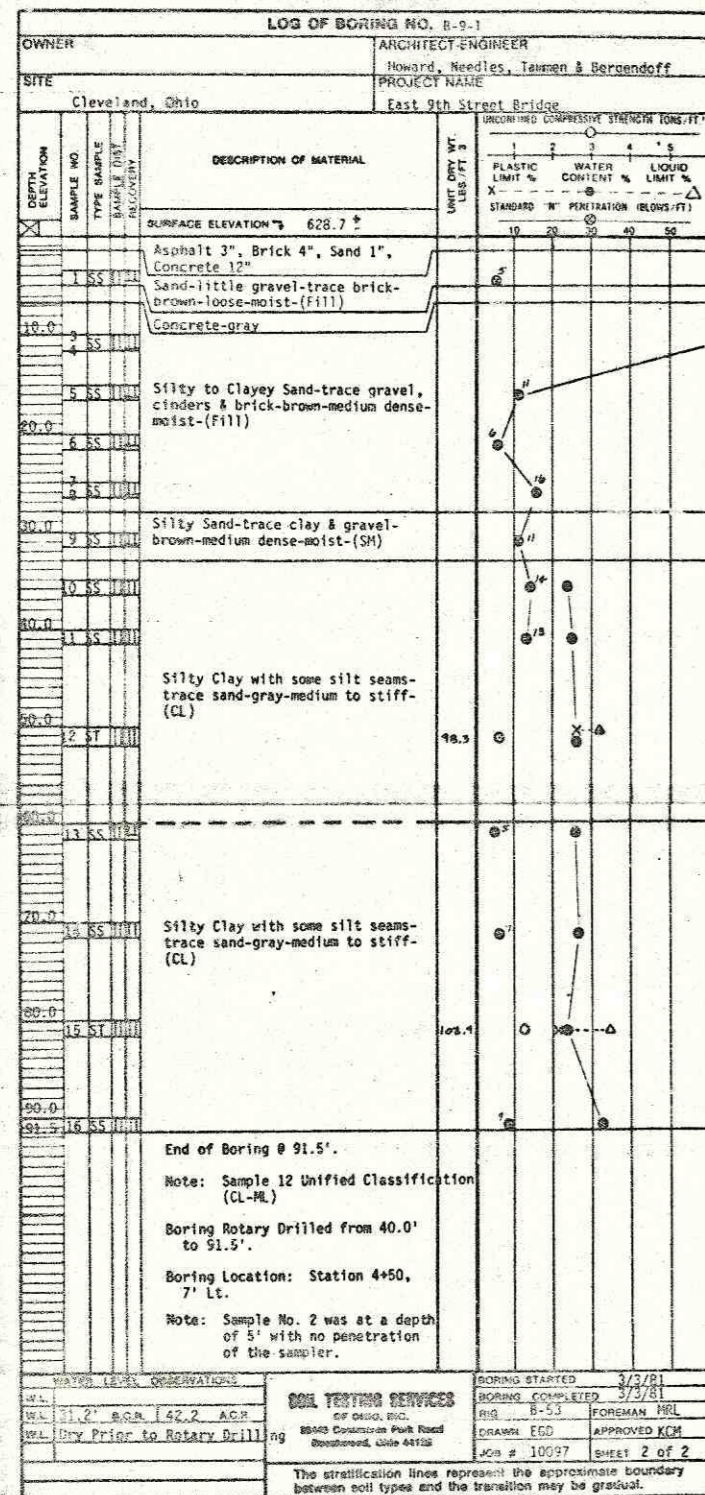
The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - 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.



NOTE:
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HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND		HNTB
STRUCTURE FOUNDATION INVESTIGATION		
EAST 9th STREET OVER CONRAIL		
CITY OF CLEVELAND BR. NO. 1:013		
SCALE: AS SHOWN		
CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN CGL	TRACED WAD	CHECKED GDI
DATE 2-81	DATE 10-81	DATE 12-81
		REVISIONS
		SHEET 1



LAB DATA SUMMARY

Boring No.	Sample No.	Depth Ft.	Description	Soil Type USCS*	WC %	γ _d PCF	Cohesion UU TEST TSF	Unconfined Strength		Atterberg Limit			Gradation		
								Q _u TSF	Op TSF	LL	PL	PI	GR	SA	ST
B-9-1	10	35.0-36.5	Silty Clay With Some Silt Seams, Gray	CL	23.0										
	11	40.0-41.5	Same	CL	25.1					28	19	9			
	12	50.0-52.0	Same	CL-ML	26.5	98.3	0.7			32	27	5	0	1	50
	13	60.0-61.5	Same	CL	25.8										
	14	70.0-71.5	Same	CL	27.3										
	15	80.0-81.7	Silty Clay With Some Silt Seams, Trace Sand and Shale Fragments, Gray	CL	22.9	103.9	1.2			34	21	13	0	3	36
	16	90.0-91.5	Same	CL	31.6										
B-9-2	15	60.0-62.0	Silty Clay With Some Silt Seams, Gray	CL	21.8	107.8	1.4			30	18	12	0	1	46
	16	70.0-71.5	Same	CL	23.1										
	17	80.0-82.0	Same	CL	30.8	94.3	1.8			45	21	24	0	1	16
	18	90.0-91.5	Same	CL	24.1										

*USCS - Unified Soil Classification System

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 CONSULTING ENGINEERS
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STRUCTURE FOUNDATION INVESTIGATION
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SCALE: AS SHOWN

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DRAWN: CGL TRACED: WAD CHECKED: GDJ REVISION: []
 DATE: 3-8-81 DATE: 4-10-81 DATE: 5-12-81 SHEET: 1