

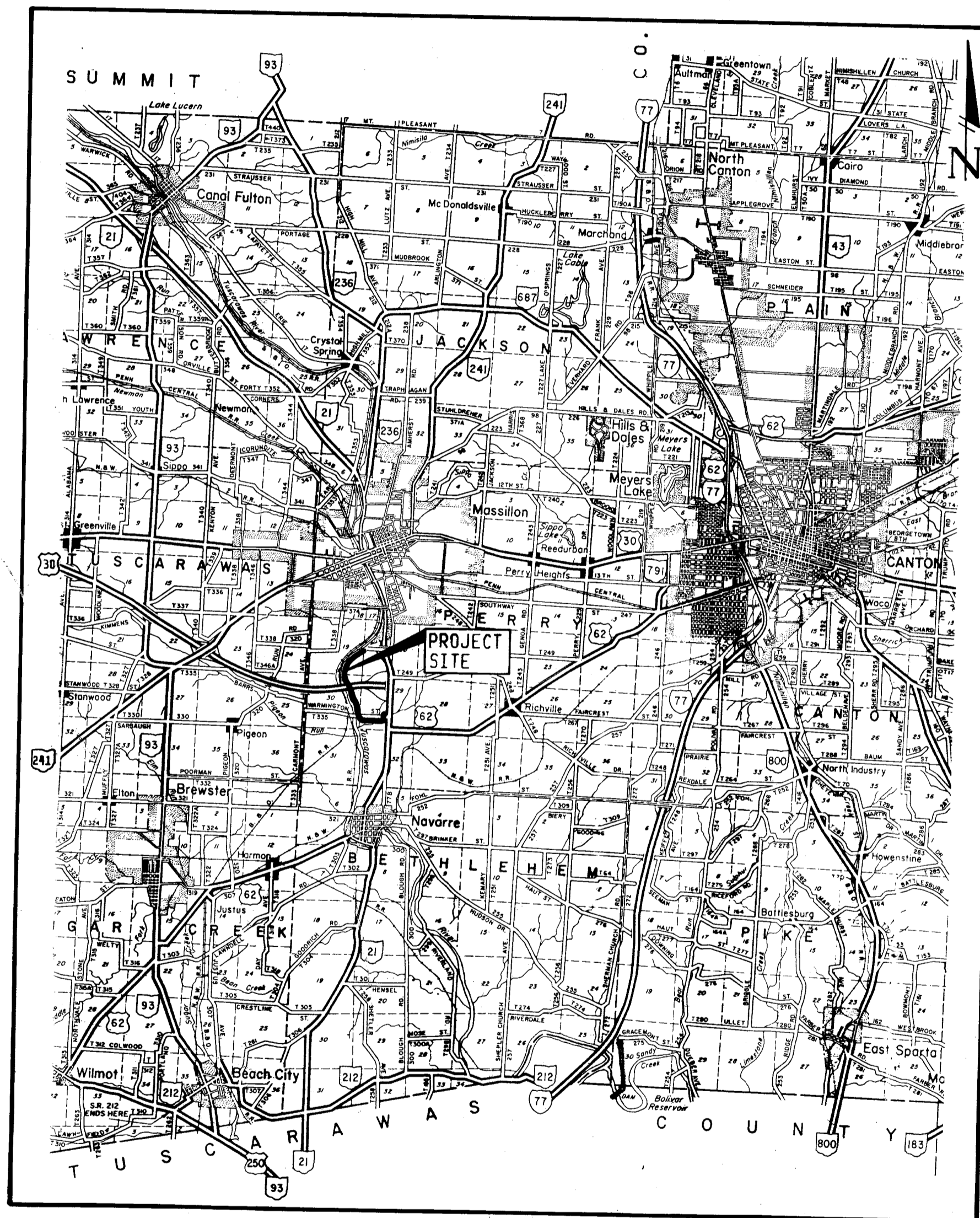
# CITY OF MASSILLON SOUTH MASSILLON SANITARY SEWER

STARK COUNTY, OHIO

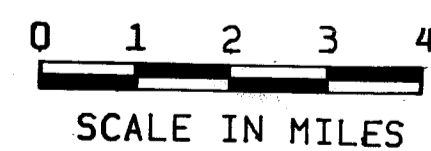
COM. NO.	PROJECT	STATE
86.16	MASSILLON SANITARY SEWER	OHIO

## INDEX OF SHEETS

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SEWER LINE & BENCH MARK LOCATION INDEX -	2
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**LOCATION MAP**



## CITY OFFICIALS

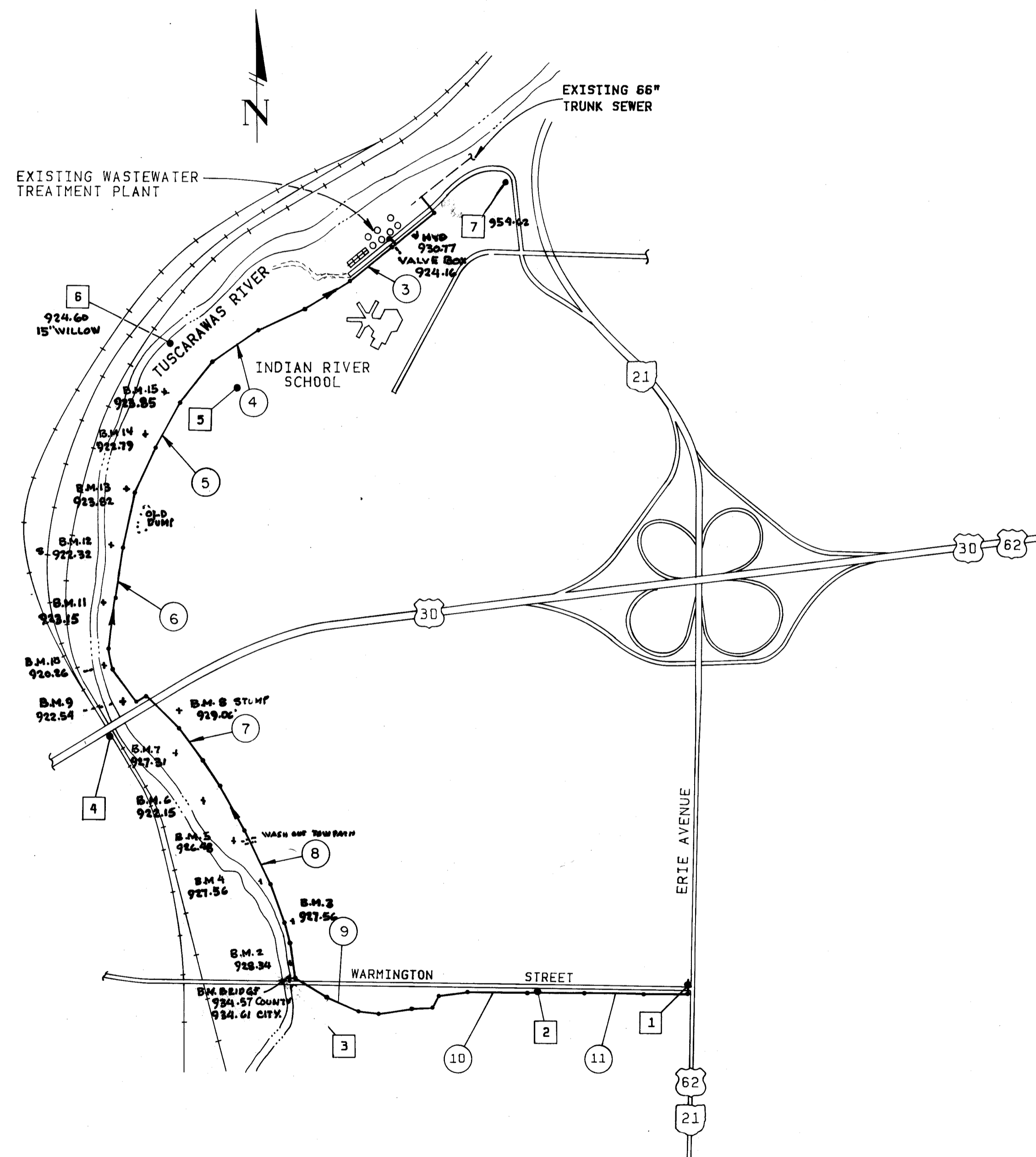
MAYOR -----	FRANCIS H. CICCHINELLI, JR.
COUNCIL -----	TONY EAGLOWSKI - PRESIDENT CHARLES "SONNY" SPIELMAN TOM SEESAN DAVID A. SMITH T. ROY ROBERSON MARK VANVOORHIS TOM BRENNAN LARRY R. KRACKER RICHARD F. MAIER RONALD E. MANG SHARON K. HOWELL - CLERK
AUDITOR -----	HELEN E. MAIER
TREASURER -----	WILLIAM Z. CHRISTOFF
LAW DIRECTOR -----	JOHN D. FERRERO
SAFETY-SERVICE DIRECTOR -	BILL H. HAMIT
CITY ENGINEER/ PLANNING DIRECTOR -----	ROBERT F. WAGONER
WASTEWATER TREATMENT SUPERINTENDENT -----	RONALD HALTER

PREPARED AND RECOMMENDED BY:  
**W.E. QUICKSALL AND ASSOCIATES, INC.**  
CONSULTING ENGINEERS AND ARCHITECTS  
NEW PHILADELPHIA, OHIO

*Joseph S. Bachman*  
JOSEPH S. BACHMAN, P.E.  
OHIO REG. NO. 44188

**BENCH LIST**

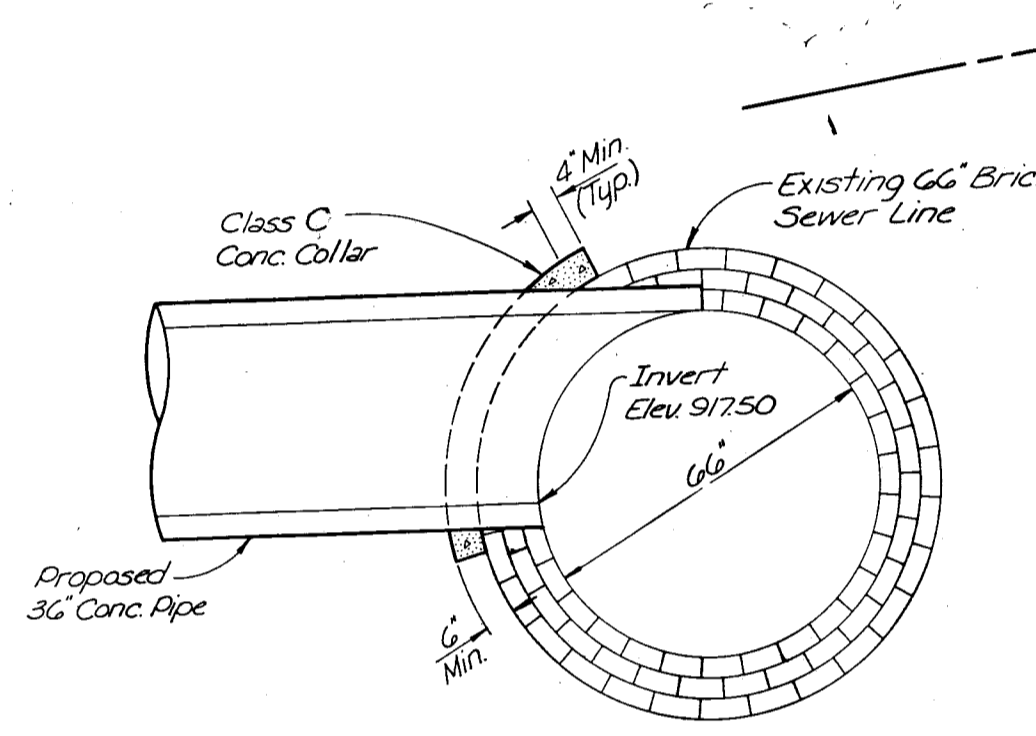
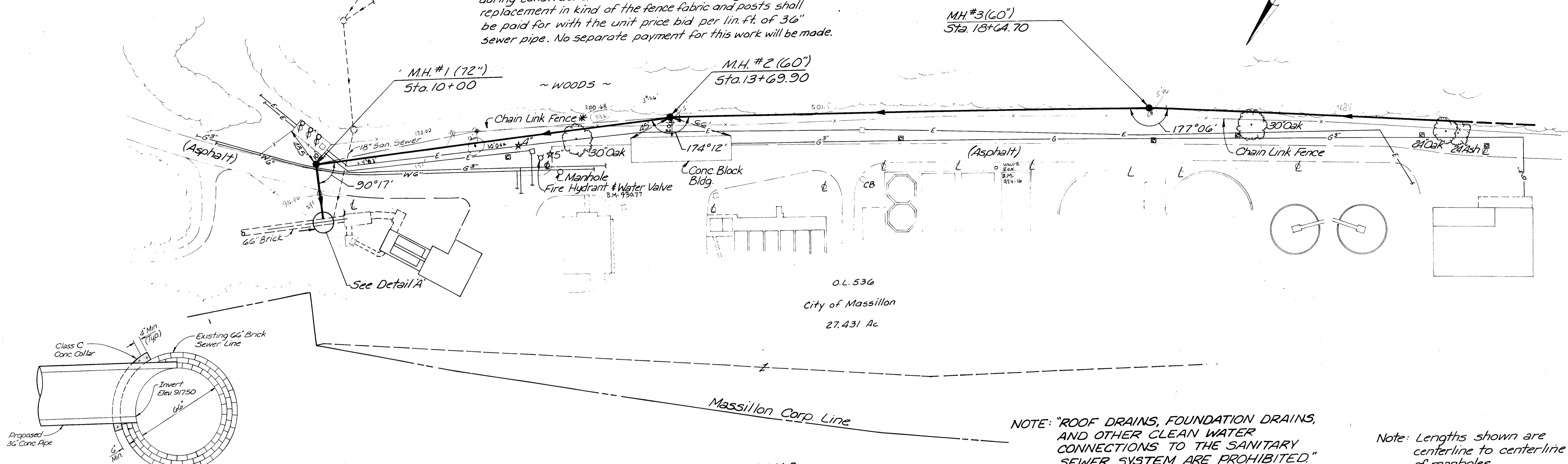
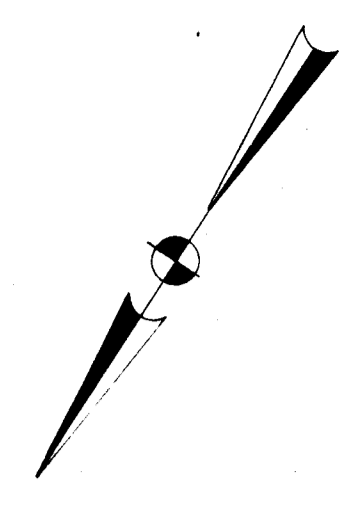
NUMBER	ELEVATION	DESCRIPTION
1	963.57	TOP STARK CO. DISK ON S. END OF SANDSTONE HEADWALL ON CULVERT AT N.W. CORNER OF ERIE AVE. AND WARMINGTON ST.
2	943.65	CHISELED SQ. WEST END OF SOUTH HEADWALL OF BOX CULVERT 1200' WEST OF S.R. 21 ON WARMINGTON ST.
3	934.39	STARK CO. DISK IN SECOND STEP OF WEST END OF EAST ABUTMENT IN BRIDGE OVER TUSC. RIVER.
4	939.62	M.S. IN TELEGRAPH POLE 25' SOUTH OF EAST BOUND U.S. 30 ALONG MOST WESTERLY R.R. TRACK.
5	979.26	TOP OF PAINTED YELLOW 2" PIPE WITH HIGH PRESSURE WATER MAIN SIGN AND AT OPENING TOWARDS RIVER, 300' S.W. OF PRACTICE FIELD FOR INDIAN RIVER SCHOOL.
6	924.43	M.S. IN 15" WILLOW AT WATER LINE CROSSING ON EAST SIDE OF TUSC. RIVER.
7	954.62	CHISELED SQ. ON S.W. CORNER AT END OF CONC. DRAIN 200' EAST OF SEWAGE PLANT ENTRANCE



**LEGEND**

- PLAN AND PROFILE SHEET NUMBER AND APPROXIMATE LOCATION
- BENCH MARK NUMBER AND APPROXIMATE LOCATION
- PROPOSED GRAVITY SEWER

\* Note:  
 The existing fence may be dismantled and stored during construction. The original fence fabric may be reinstalled if not damaged during dismantling or construction. The original fence posts may be used if not removed or damaged during construction. The cost for dismantling, erecting and/or replacement in kind of the fence fabric and posts shall be paid for with the unit price bid per lin. ft. of 36" sewer pipe. No separate payment for this work will be made.

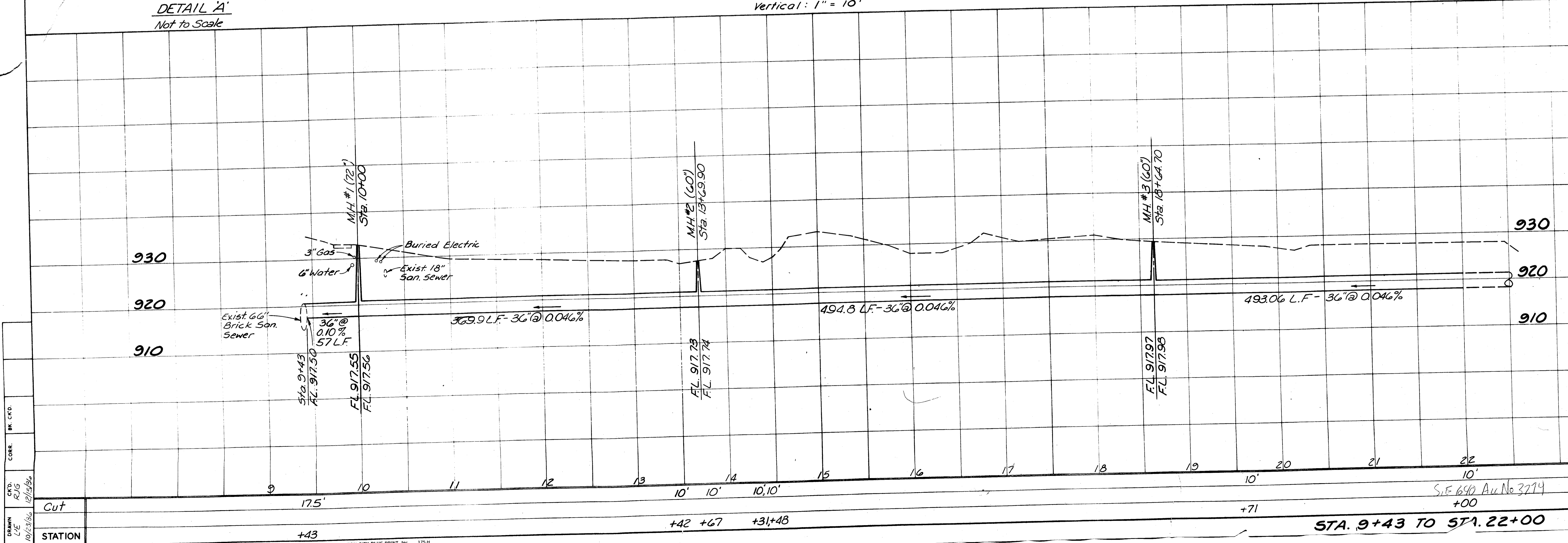


DETAIL A  
 Not to Scale

SCALE  
 Horizontal: 1" = 50'  
 Vertical: 1" = 10'

NOTE: "ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER SYSTEM ARE PROHIBITED."

Note: Lengths shown are centerline to centerline of manholes.

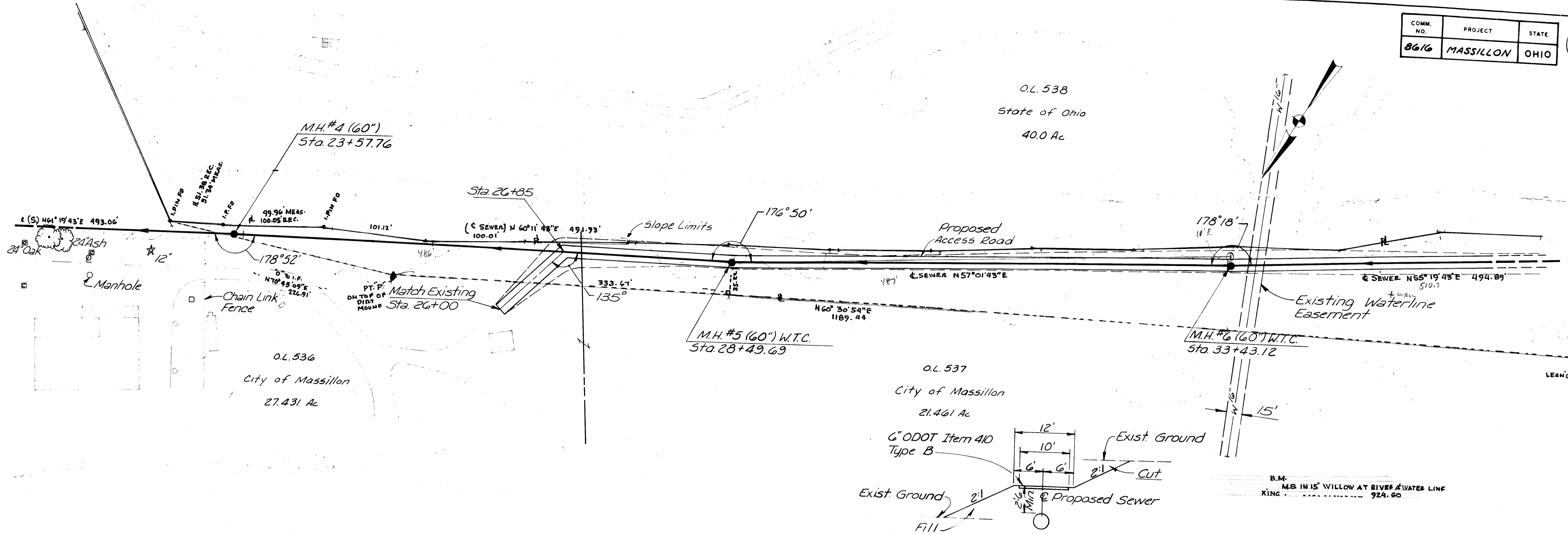


BR. CKD.	
CORR.	
CK'D.	RJG
DATE	12/15/86
DRAWN	LE
DATE	10/23/86

S.E. 690 Av No 3274

STA. 9+43 TO STA. 22+00

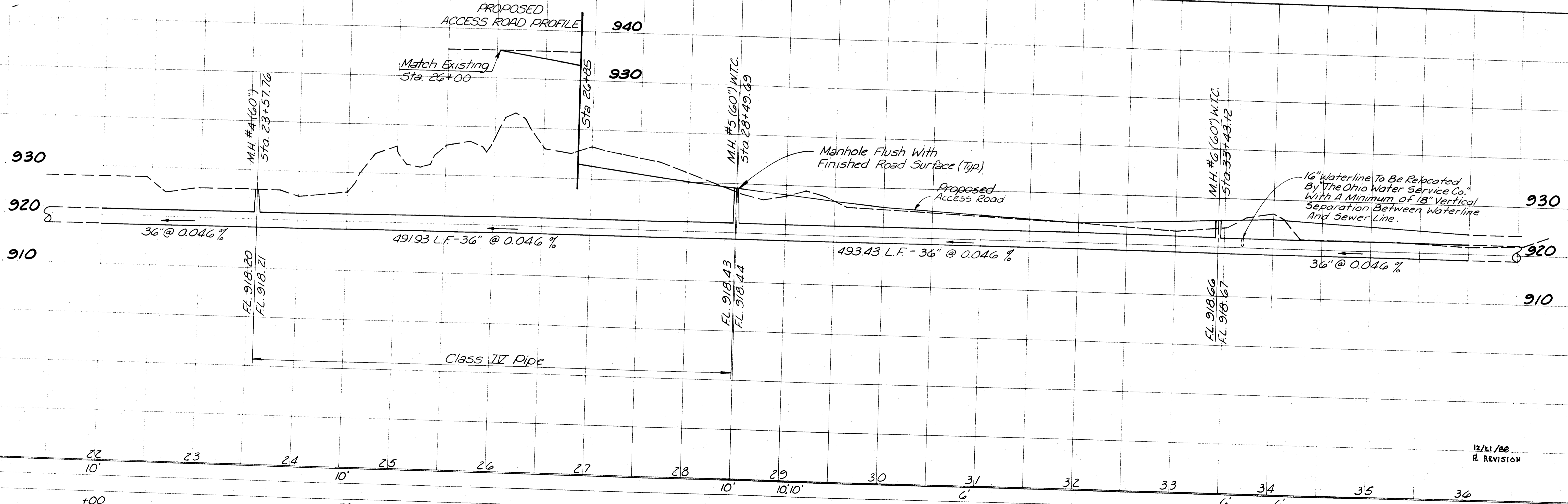




SCALE  
Horizontal: 1" = 50'  
Vertical: 1" = 10'

ACCESS ROAD  
TYPICAL SECTION

Note: Lengths shown are centerline to centerline of manholes.



DATE	BY	CHKD	BR
12/21/08	W.E.	W.E.	W.E.
12/21/08	W.E.	W.E.	W.E.

12/21/08  
R. REVISION

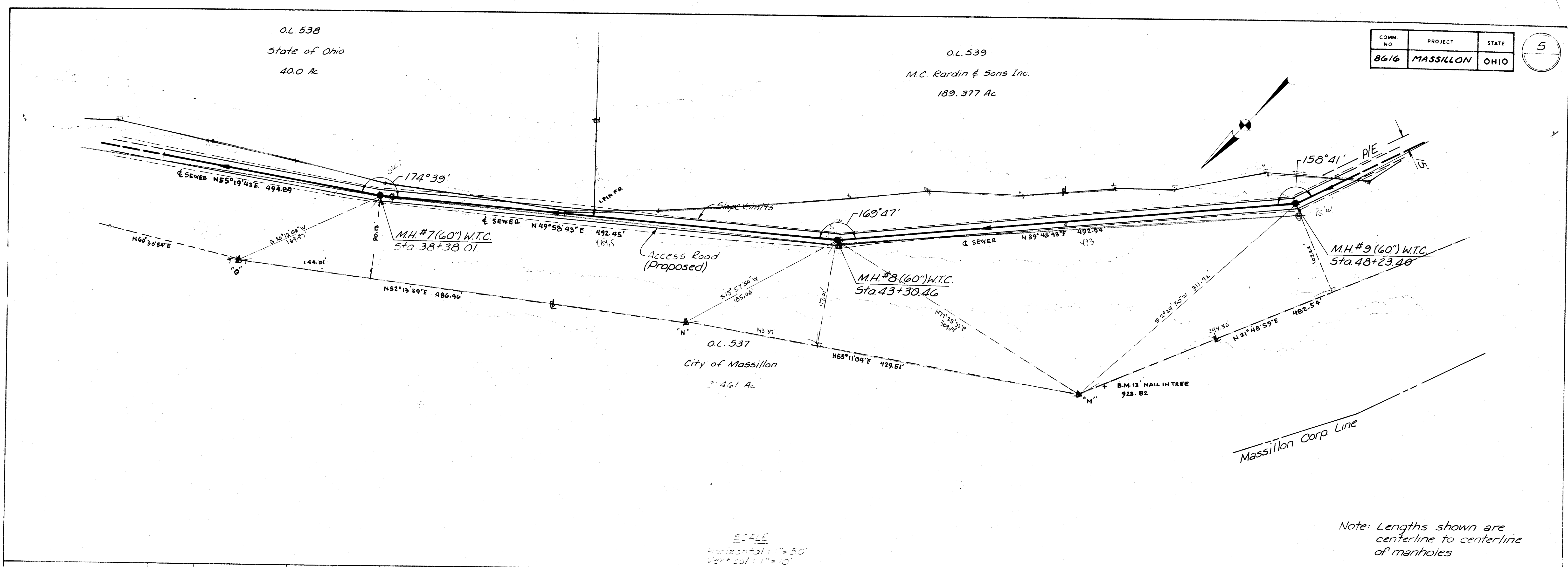


O.L. 538  
State of Ohio  
40.0 Ac

O.L. 539  
M.C. Rardin & Sons Inc.  
189.377 Ac

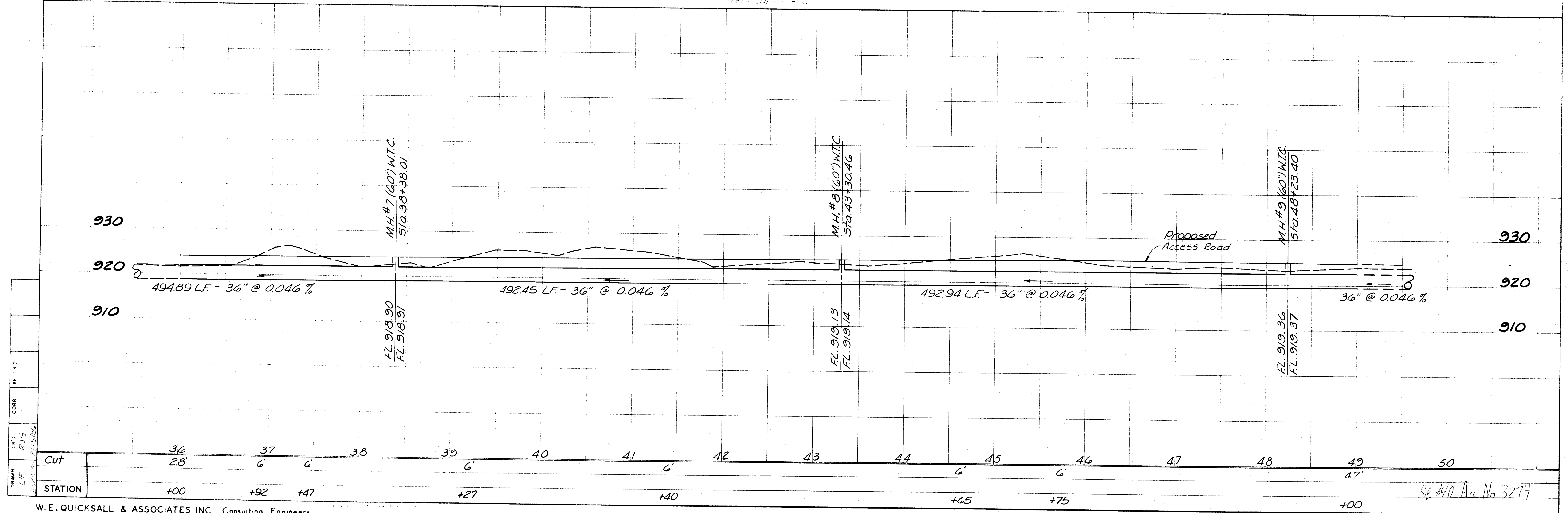
COMM. NO.	PROJECT	STATE
8616	MASSILLON	OHIO

5



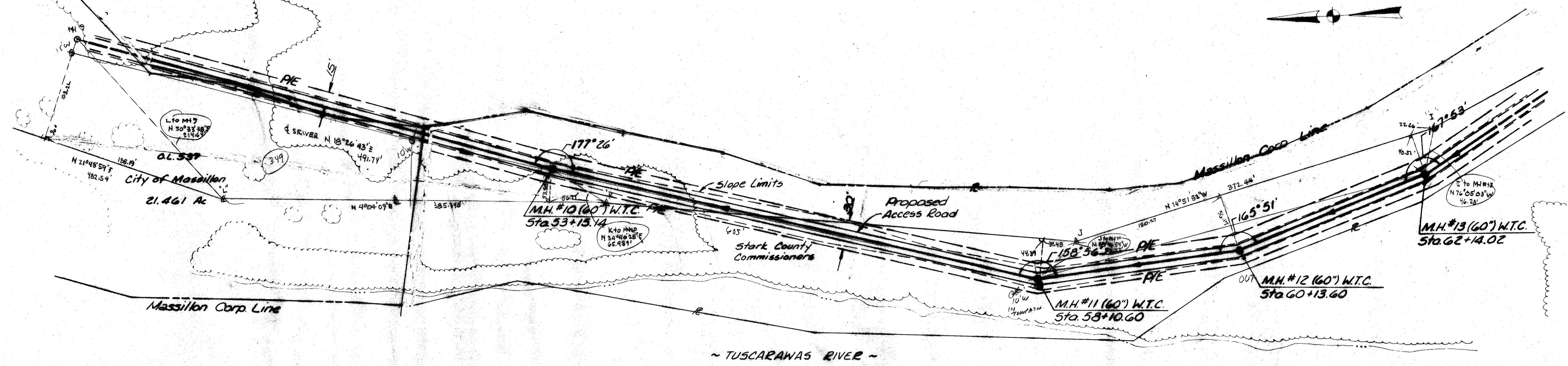
SCALE  
Horizontal: 1" = 50'  
Vertical: 1" = 10'

Note: Lengths shown are centerline to centerline of manholes



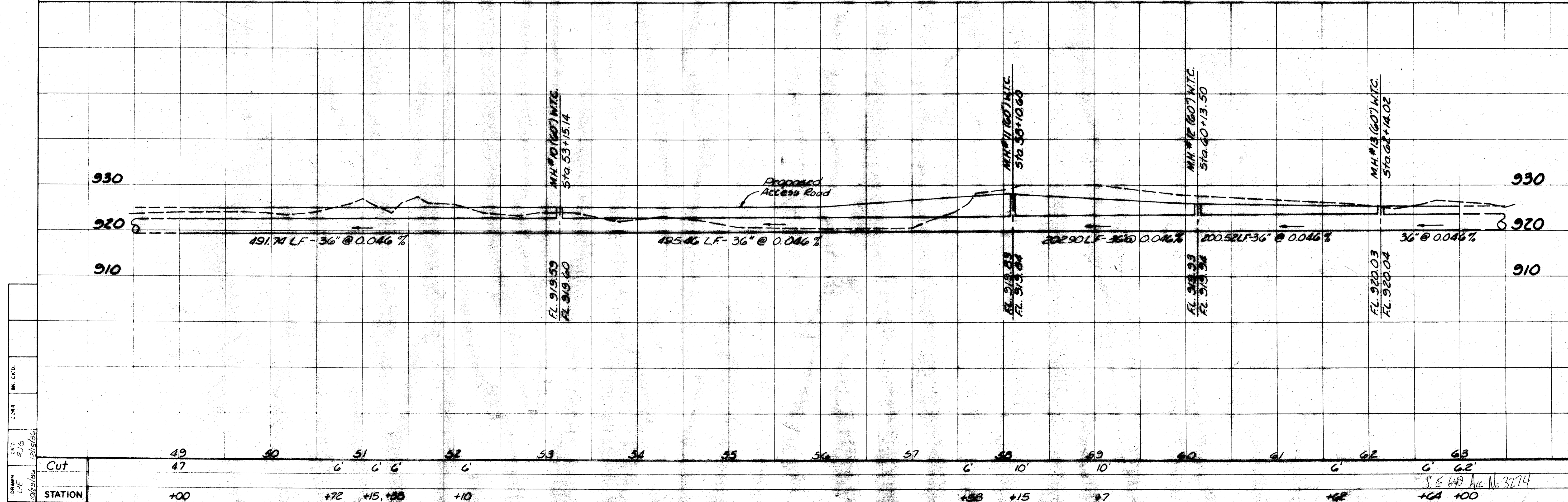


O.L. 539  
M.C. Rardin & Sons Inc.  
189.377 Ac

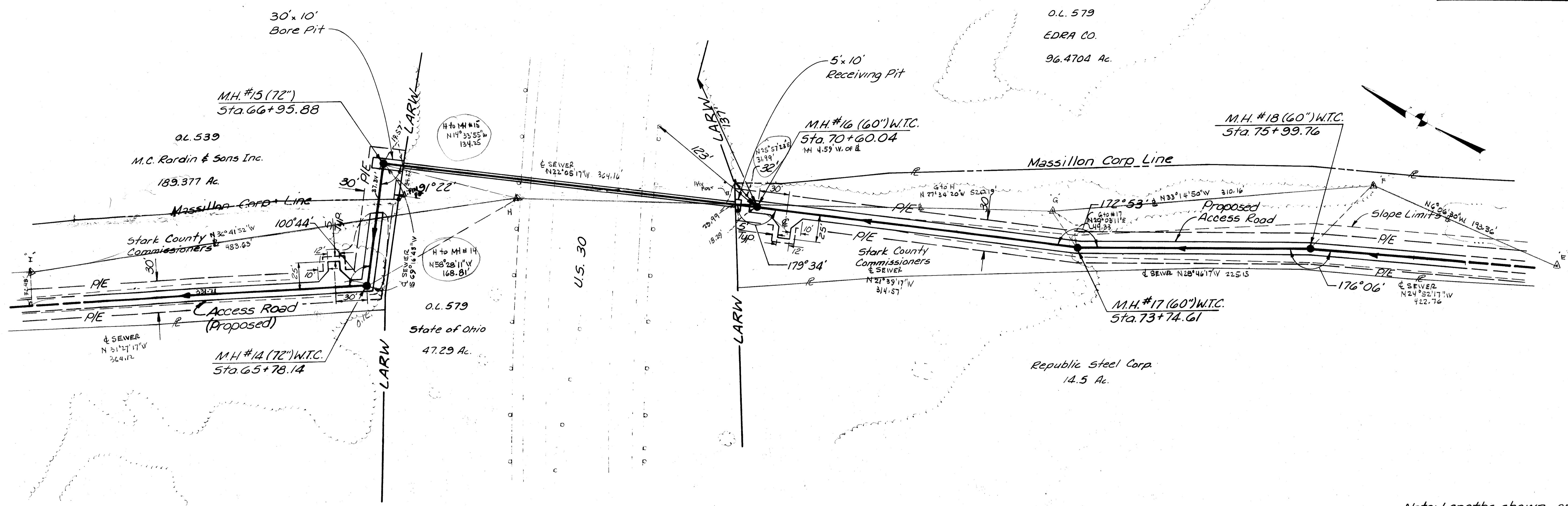


SCALE  
Horizontal: 1" = 50'  
Vertical: 1" = 10'

Note: Lengths shown are centerline to centerline of manholes.

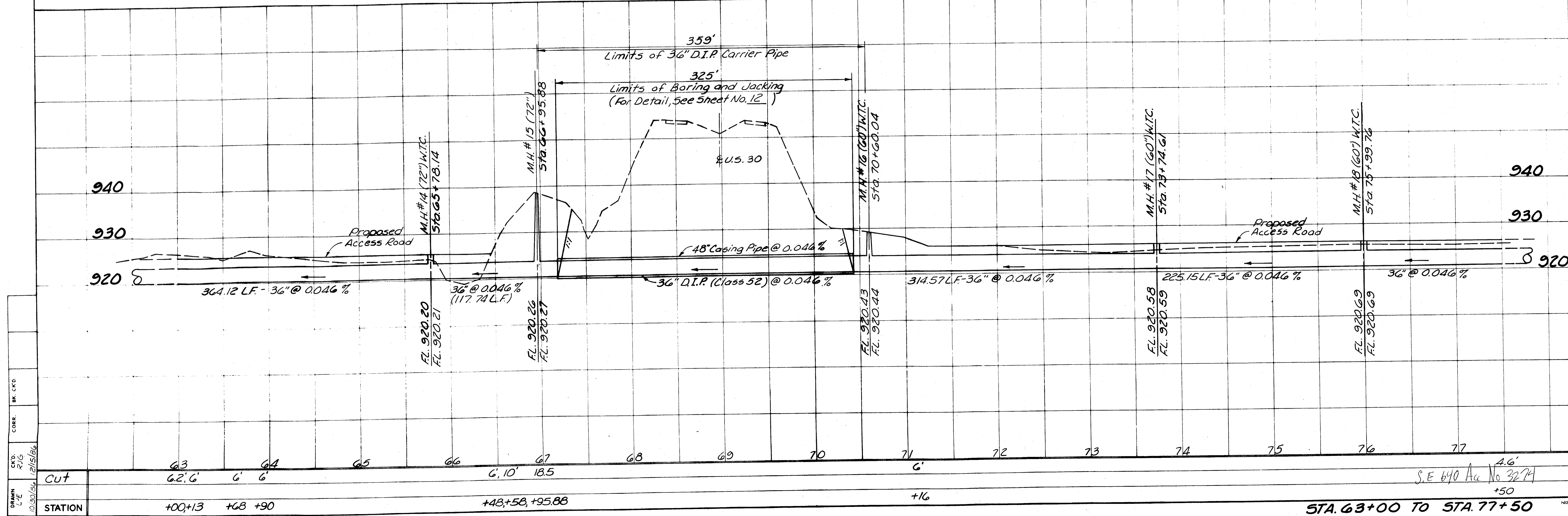






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Vertical: 1" = 10'

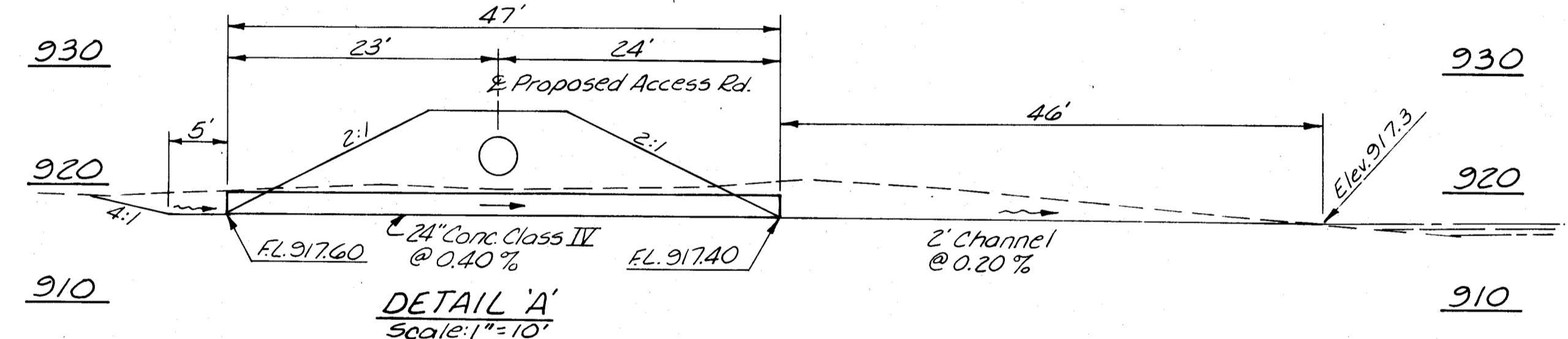
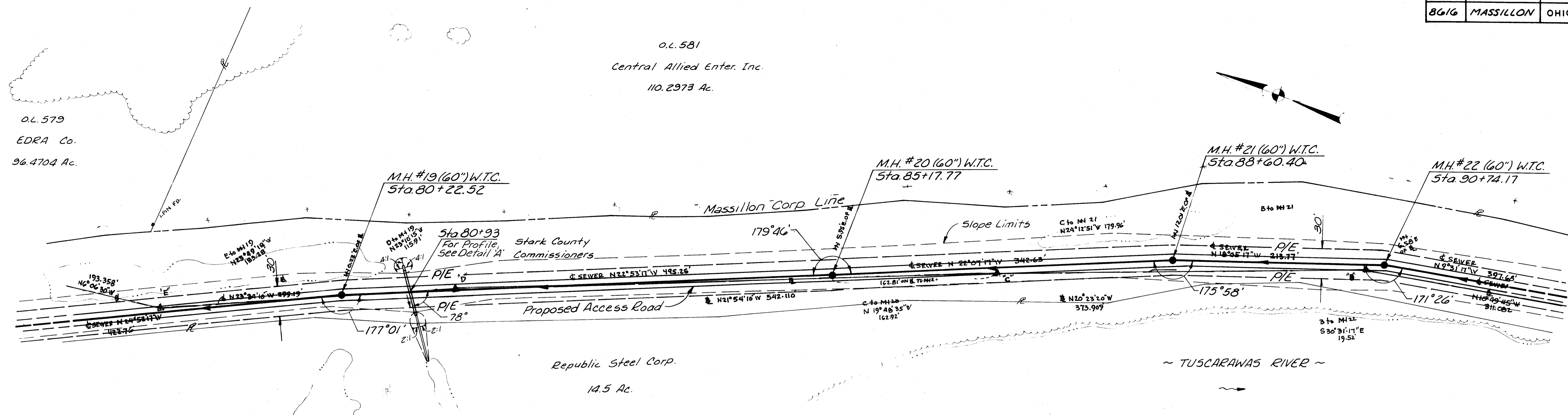
Note: Lengths shown are centerline to centerline of manhole.



DRWN: C.V.E.  
CHKD: R.V.G.  
CORR. BK. CFD.  
DATE: 01/30/06

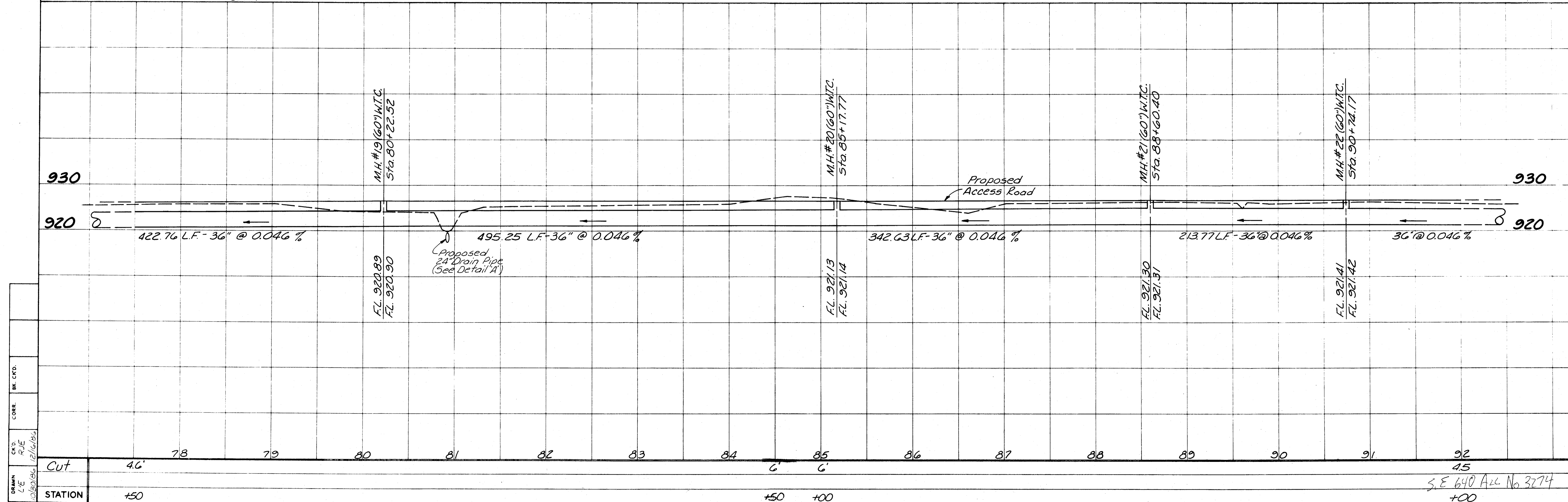
STA. 63+00 TO STA. 77+50  
S.E. 640 Ac No 3274  
+50



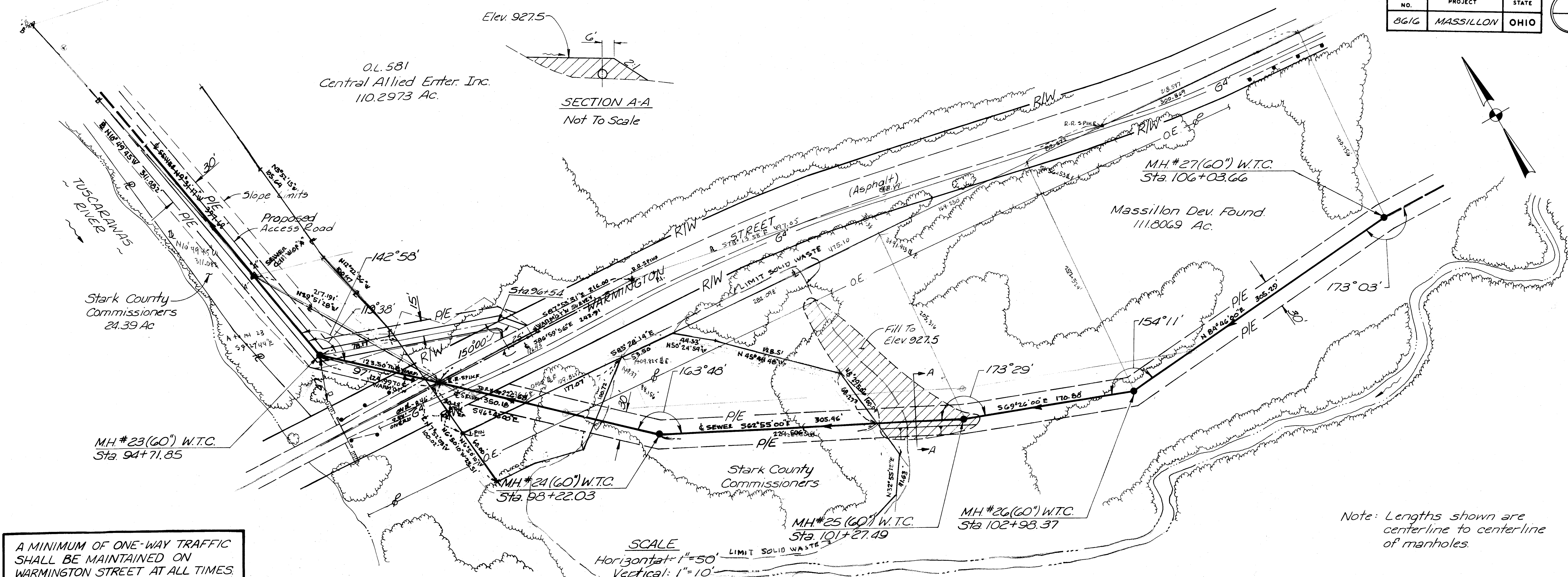


**SCALE**  
Horizontal: 1" = 50'  
Vertical: 1" = 10'

Note: Lengths shown are centerline to centerline of manholes.



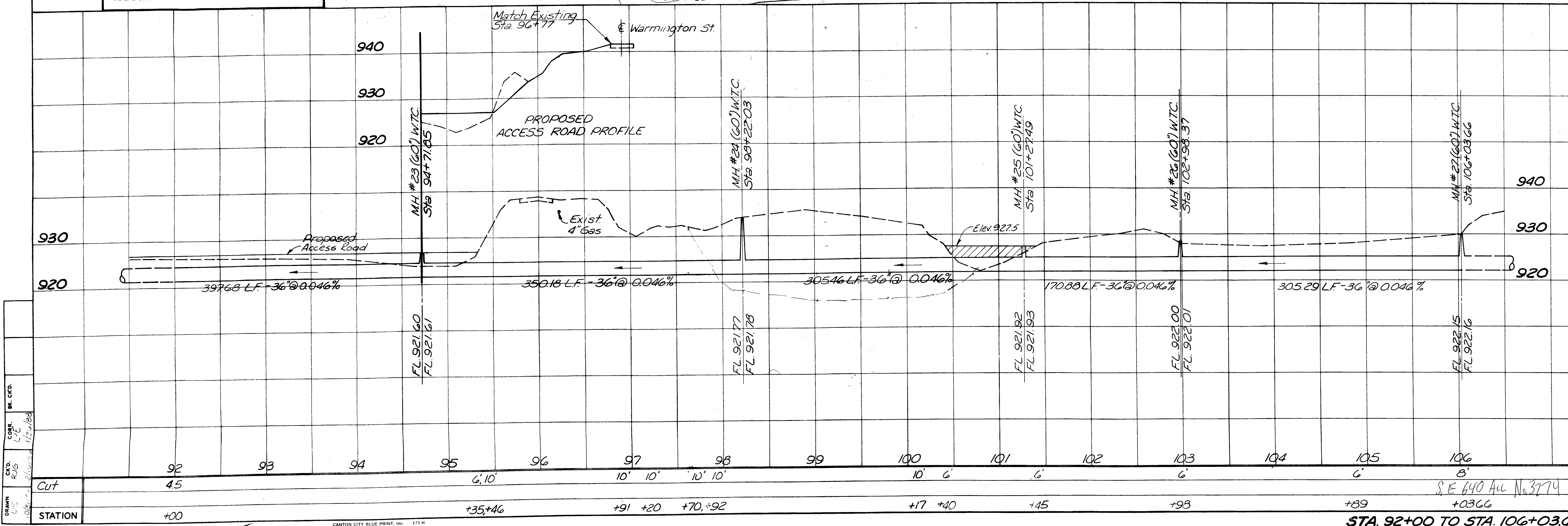
DR. C. F. D.  
COR.  
C. F. D.  
R. J. E.  
12/16/10



A MINIMUM OF ONE-WAY TRAFFIC SHALL BE MAINTAINED ON WARMINGTON STREET AT ALL TIMES.

SCALE  
Horizontal: 1"=50'  
Vertical: 1"=10'

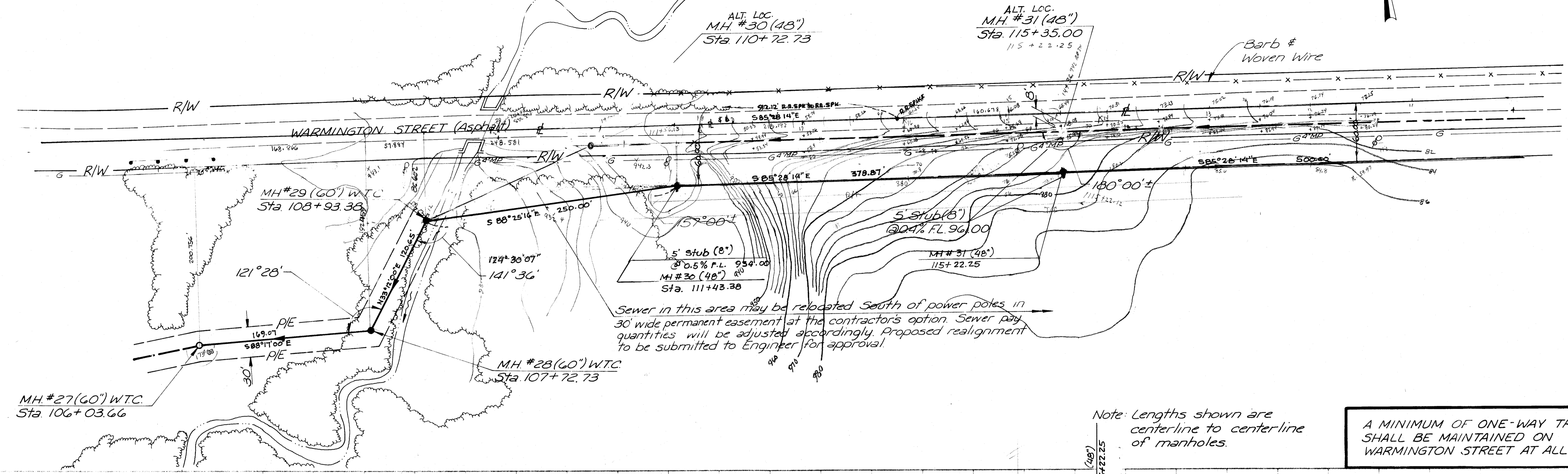
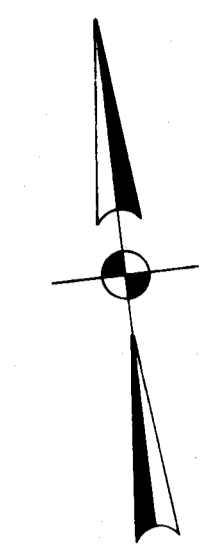
Note: Lengths shown are centerline to centerline of manholes.



DR. C. C. QUICKSALL  
C.E. R. J. G. QUICKSALL  
10/2/03

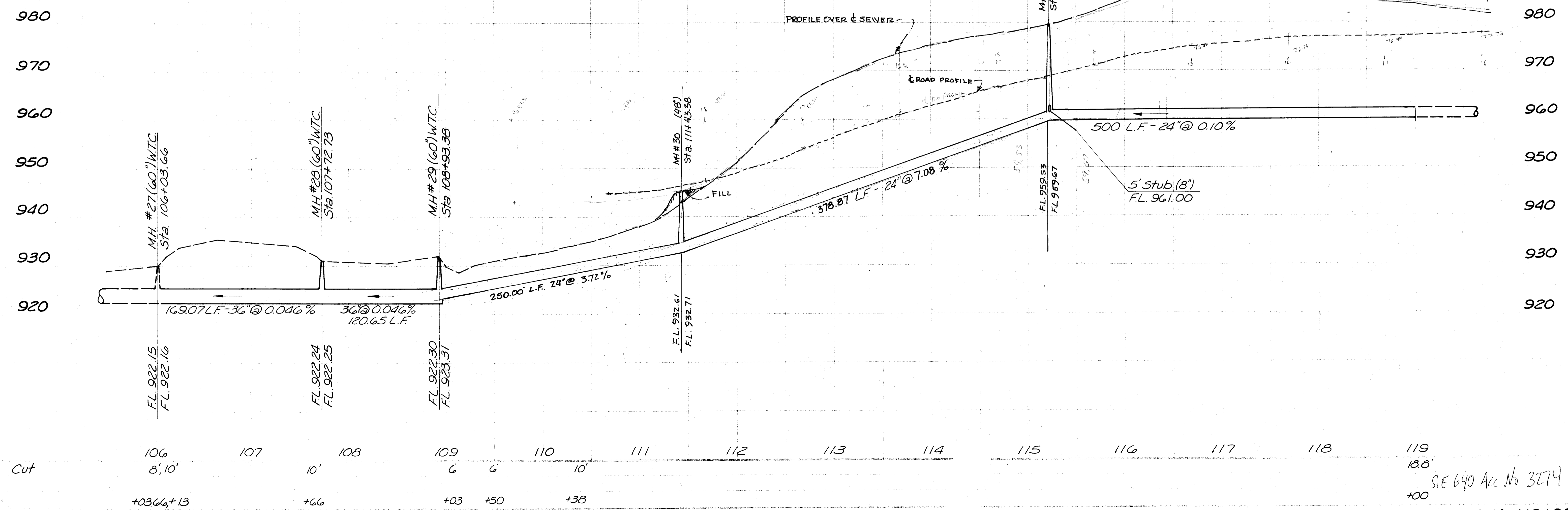


OL. 581  
Central Allied Enter. Inc.  
110.2973 Ac.



Note: Lengths shown are centerline to centerline of manholes.

A MINIMUM OF ONE-WAY TRAFFIC SHALL BE MAINTAINED ON WARMINGTON STREET AT ALL TIMES.

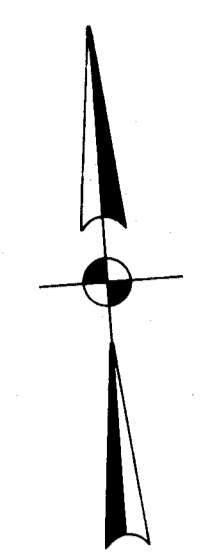
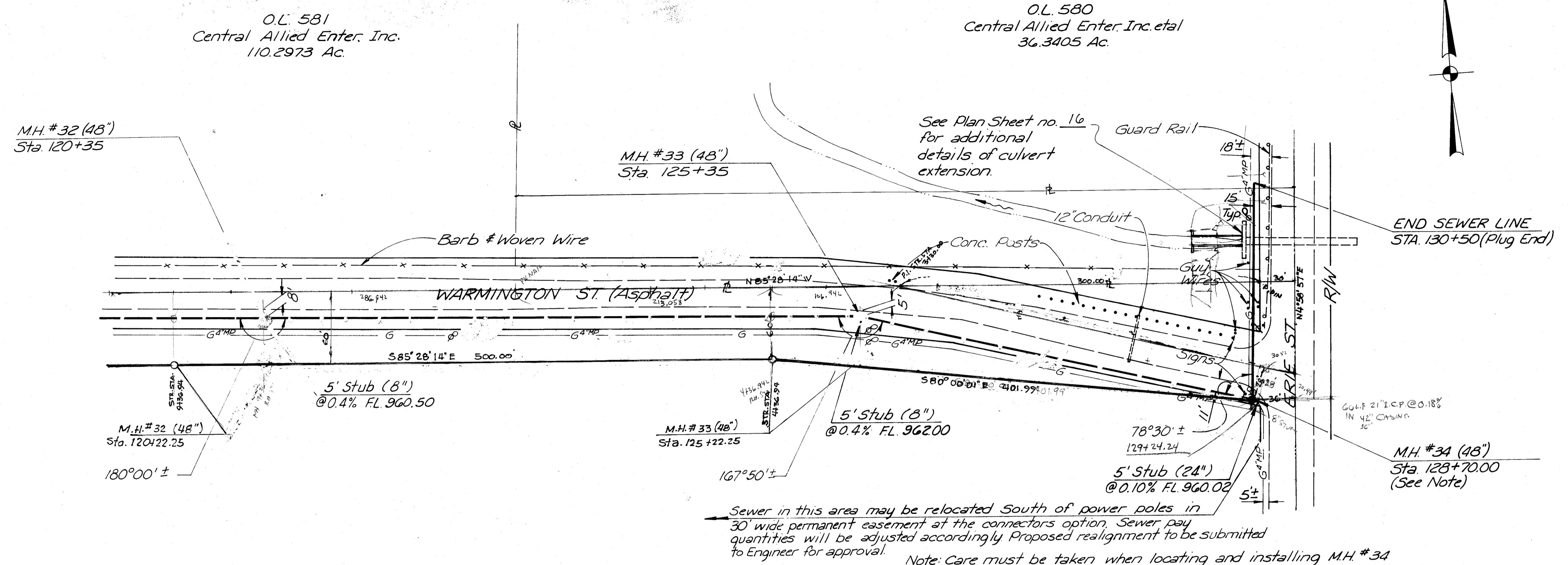


LVE RJS LVE  
1/15/13 2/10/13 12/13/13

SEE 640 Acc No 3274

STA. 106+03.66 TO STA. 119+00



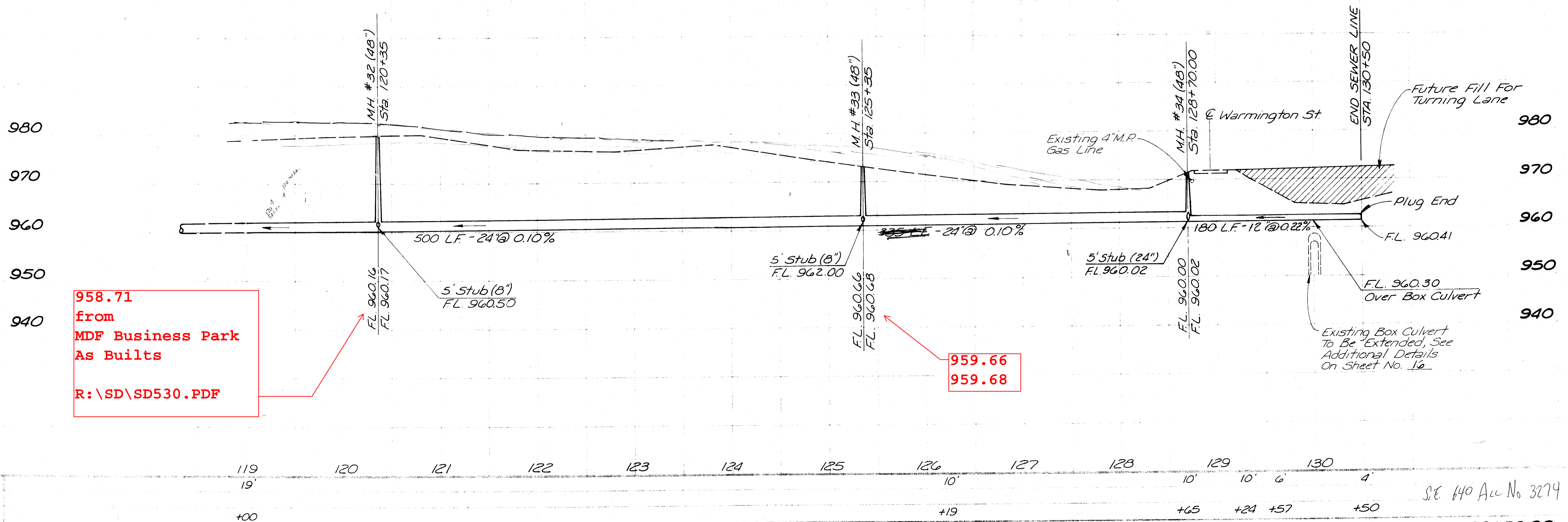


A MINIMUM OF ONE-WAY TRAFFIC SHALL BE MAINTAINED ON WARMINGTON STREET AT ALL TIMES.

Sewer in this area may be relocated south of power poles in 30' wide permanent easement at the connectors option. Sewer pay quantities will be adjusted accordingly. Proposed realignment to be submitted to Engineer for approval.

Note: Care must be taken when locating and installing M.H. #34 so as not to disturb existing 4" p. gas main. Manhole may be shifted slightly to avoid conflict once gas main is located in field.

Note: Lengths shown are centerline to centerline of manholes.



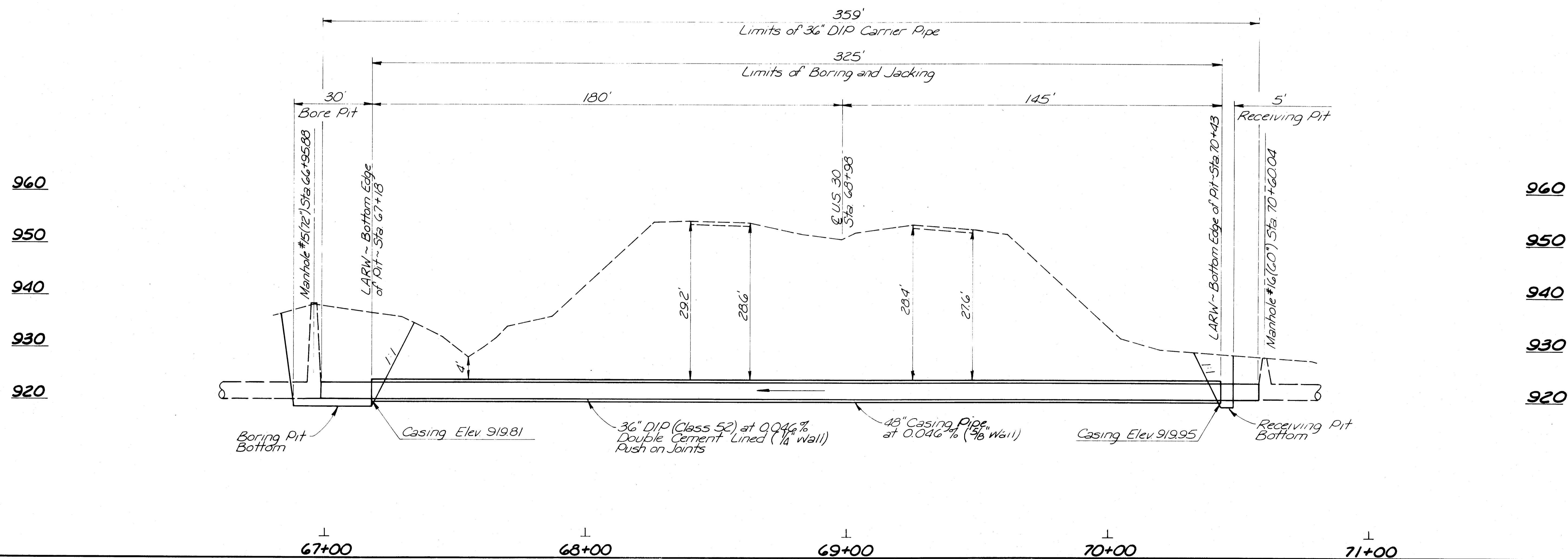
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959.68

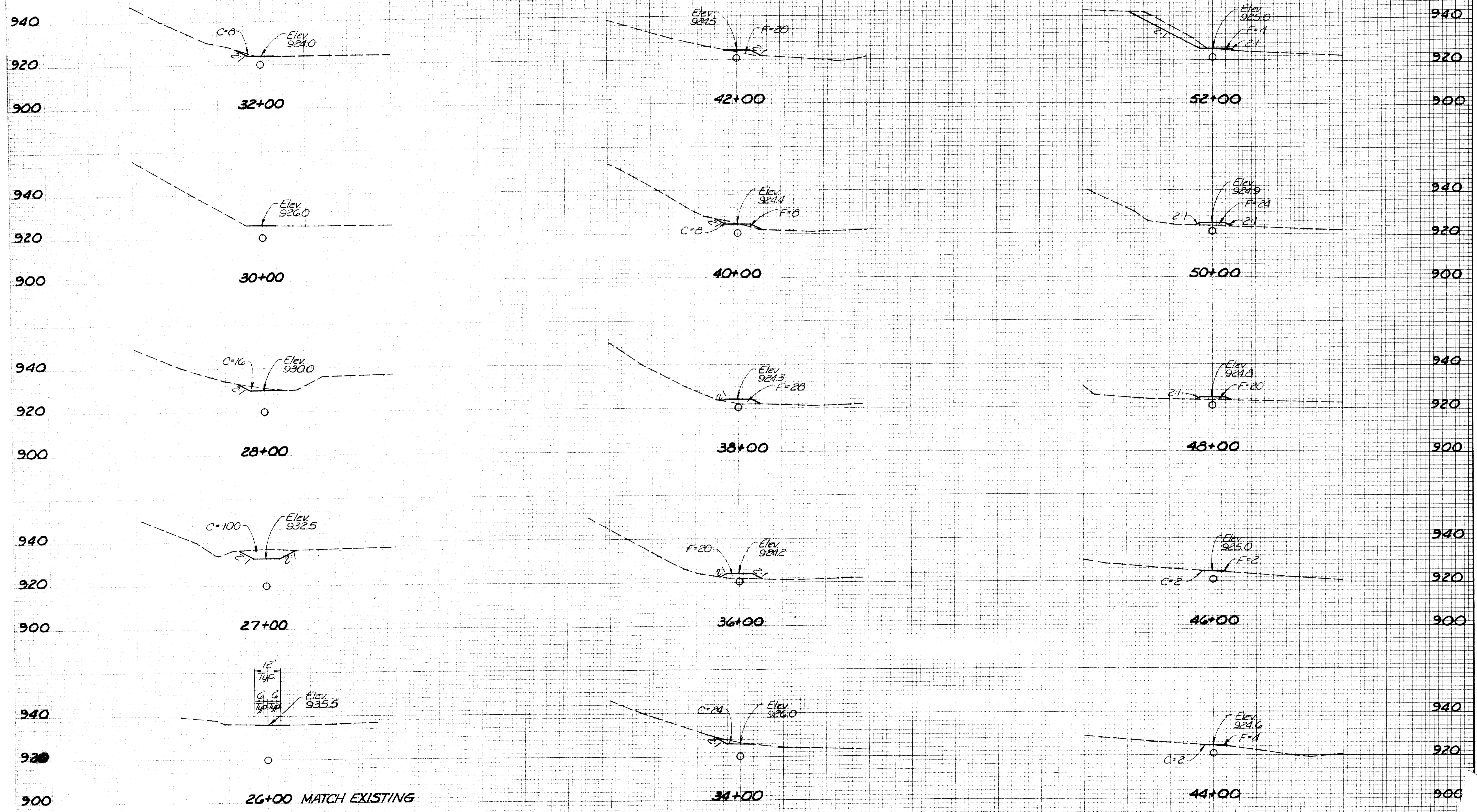
SE 640 Ac No 3274

STA. 119+00 TO STA. 130+50.00

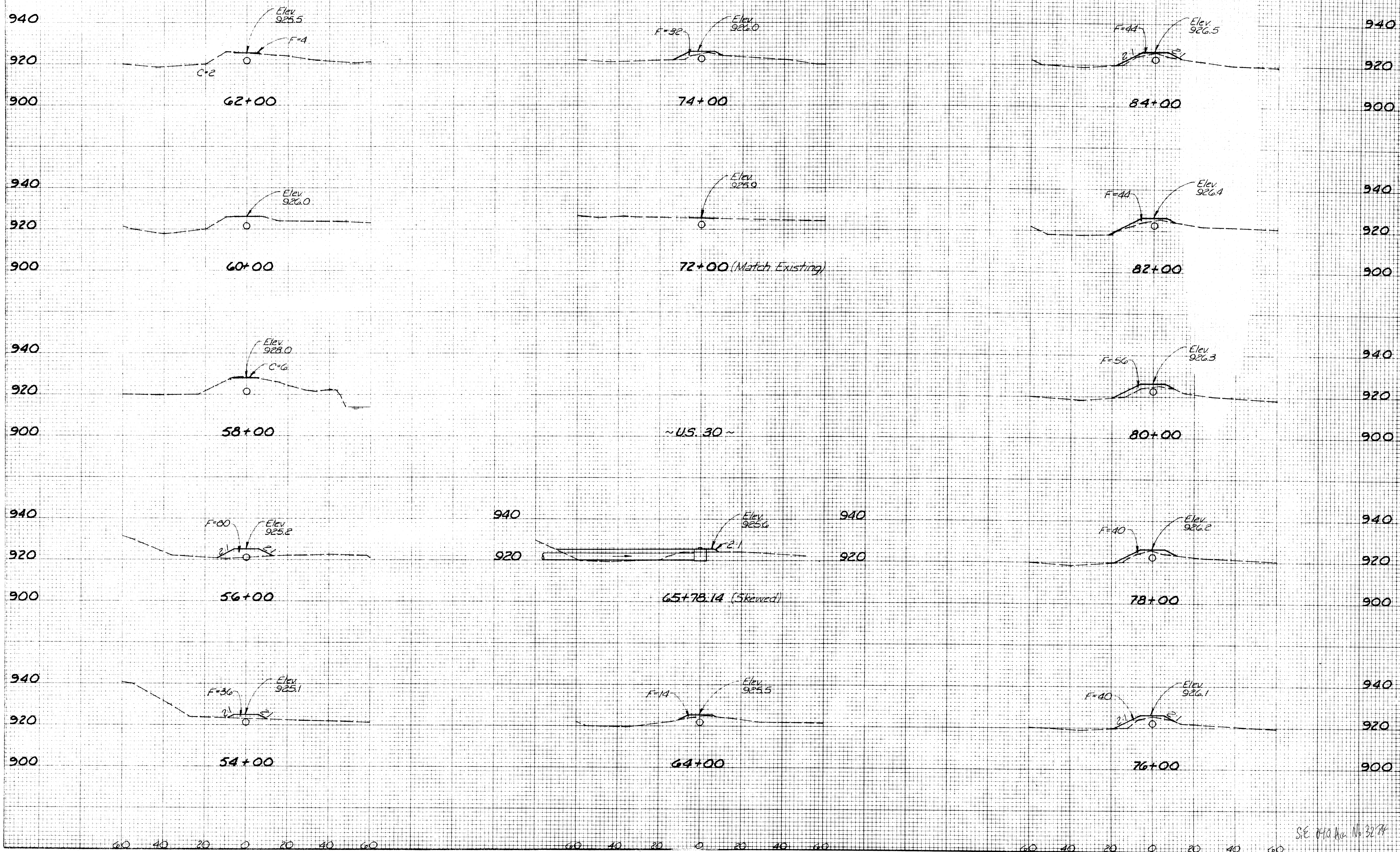
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 TIME: 10:56:18  
 USER: RJS  
 PROJECT: L'E  
 SHEET: 11



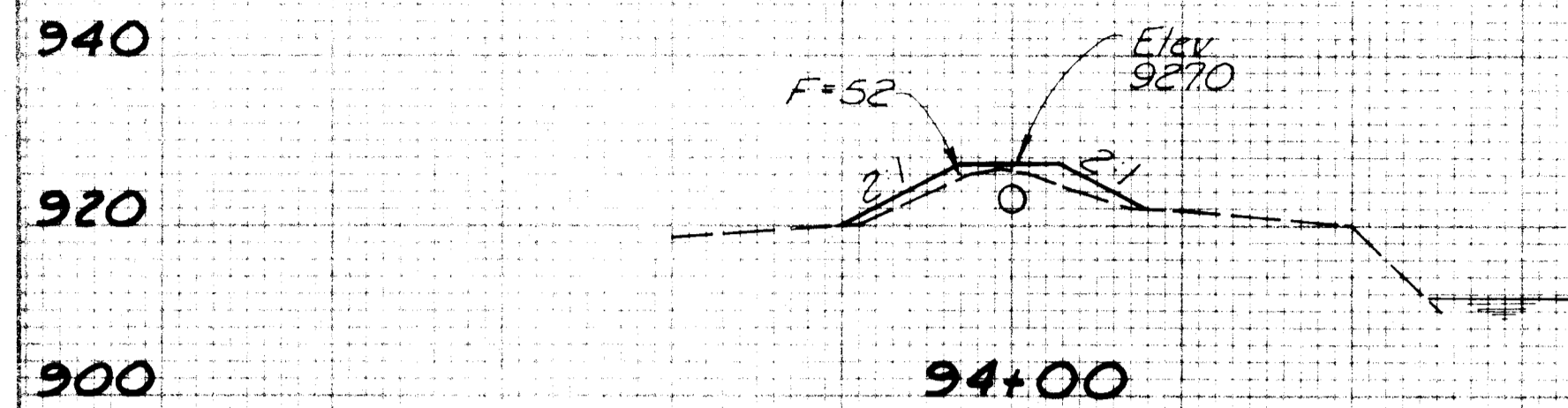




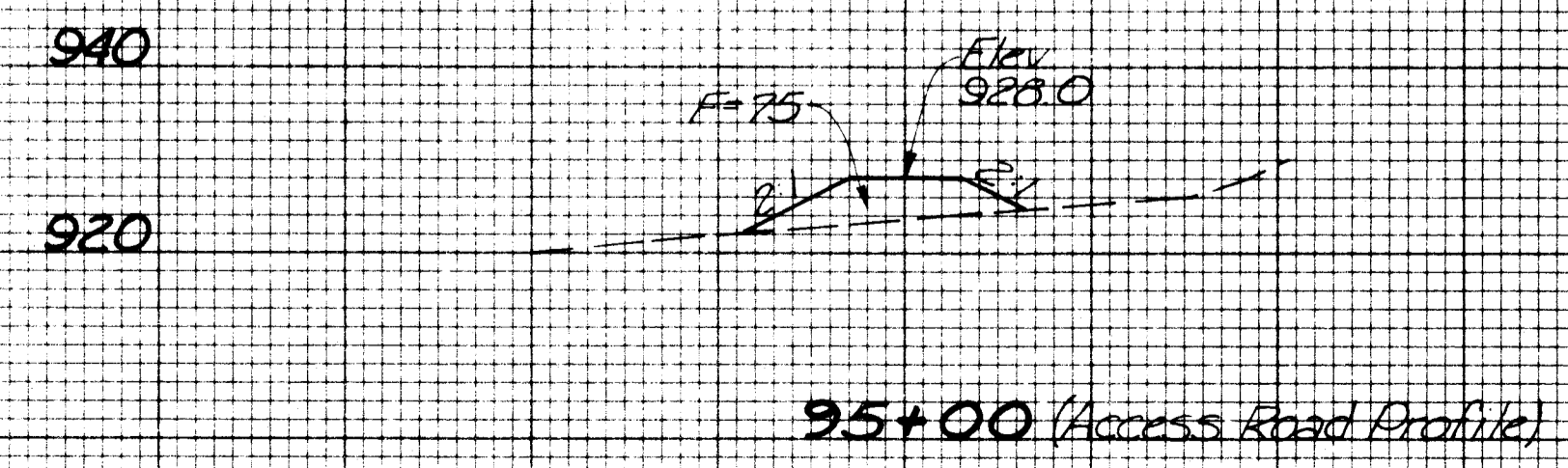
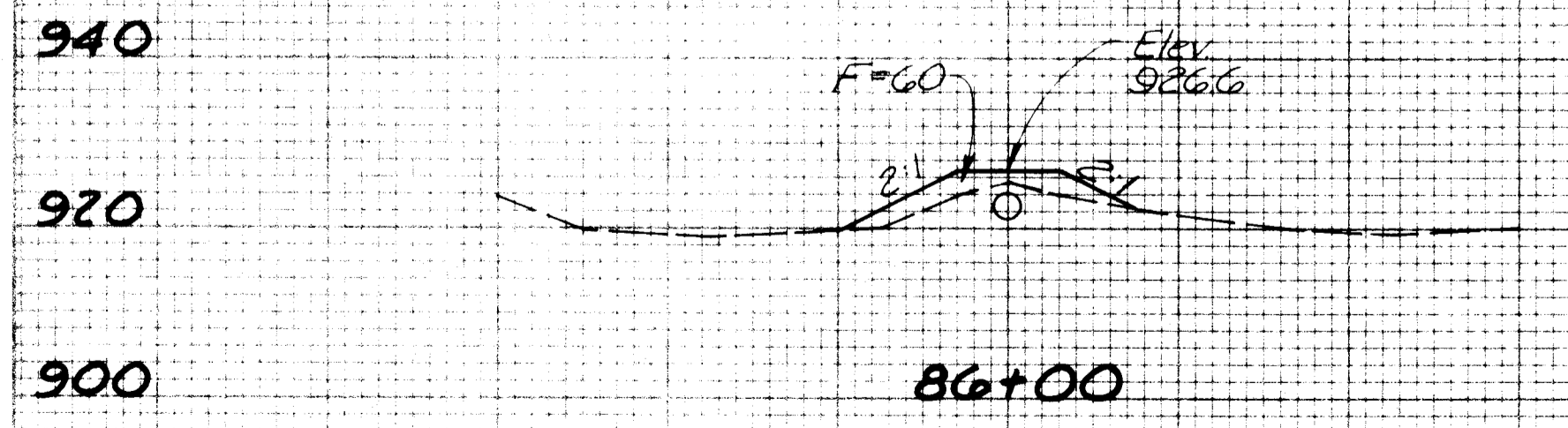
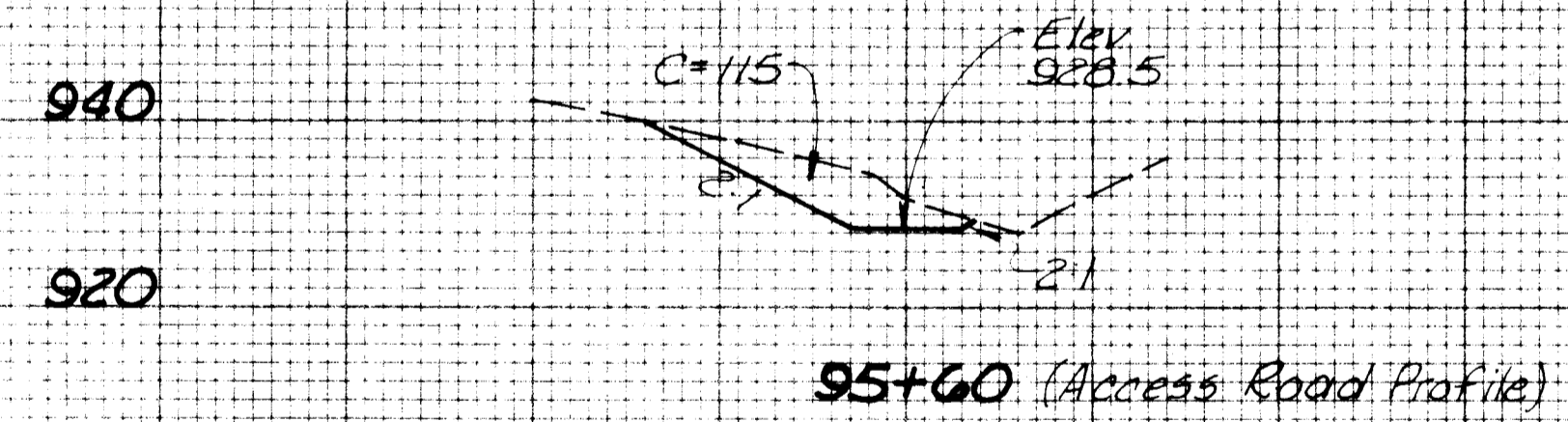
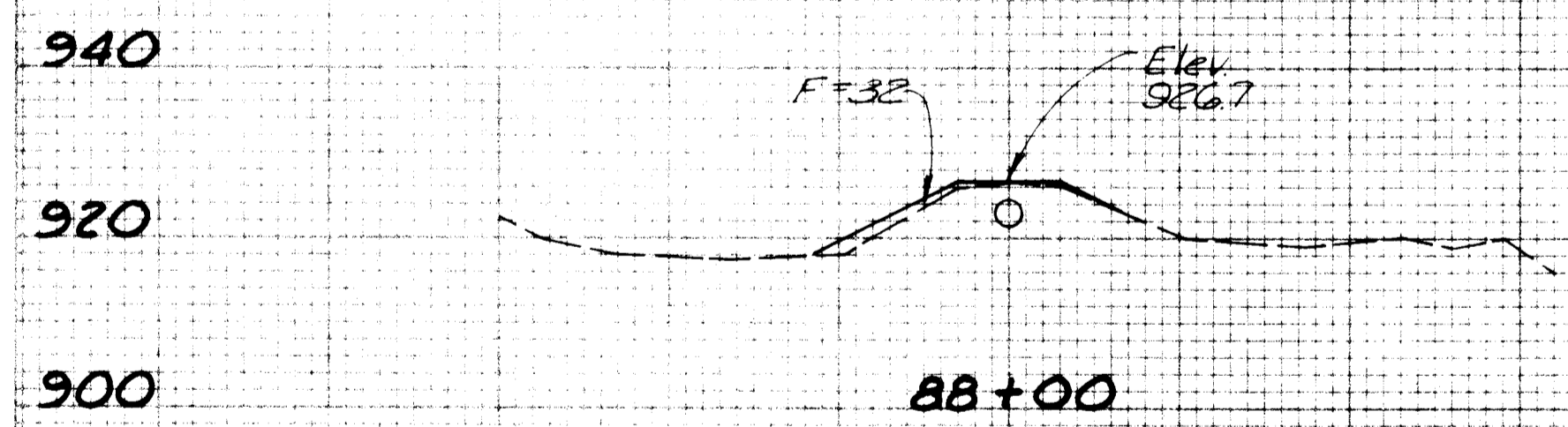
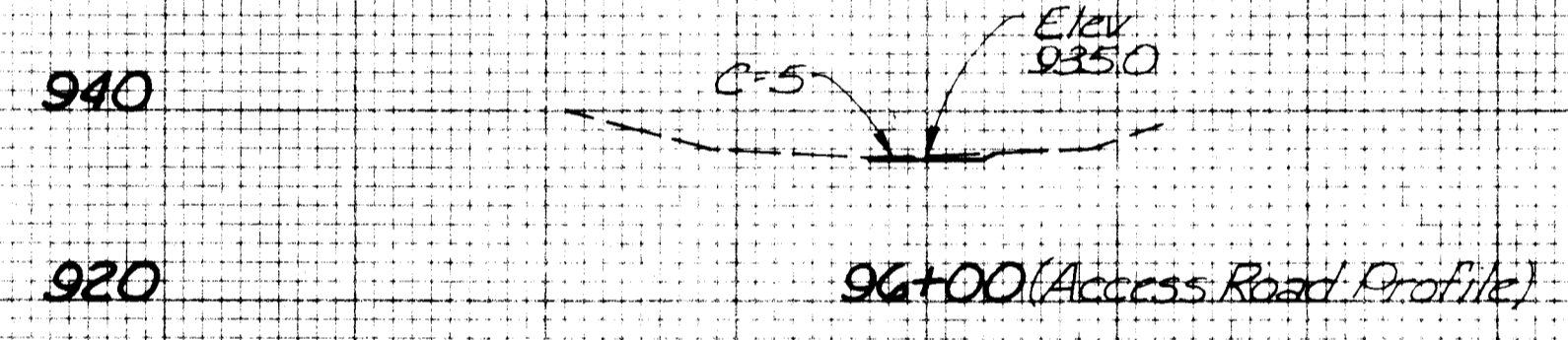
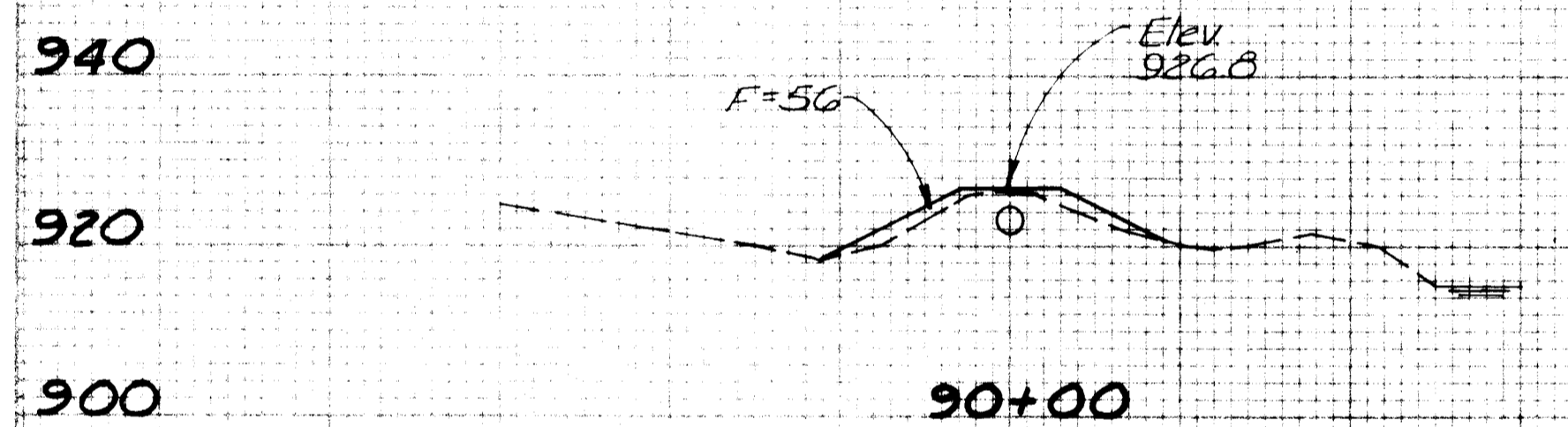
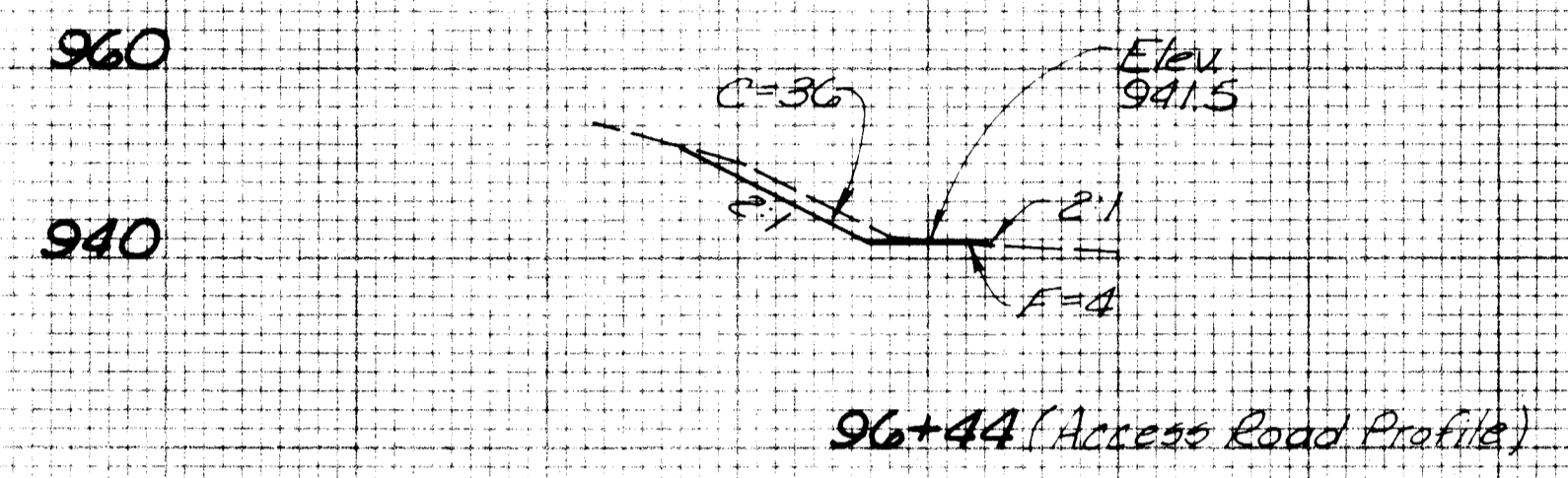
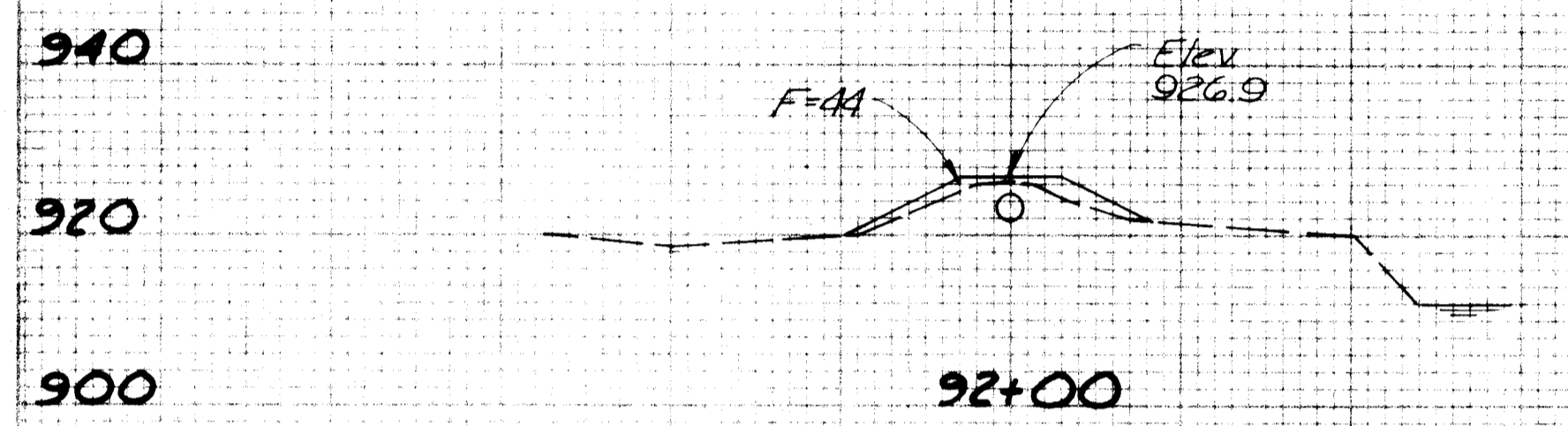








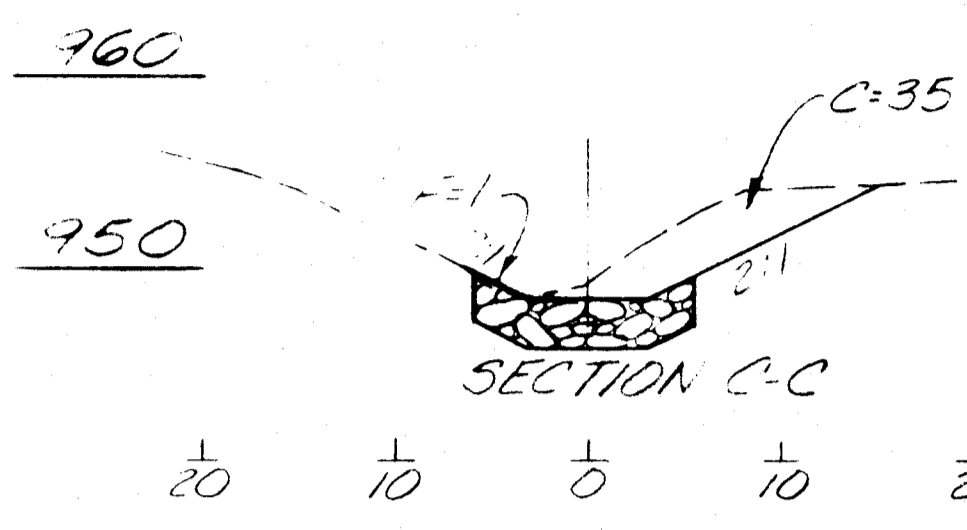
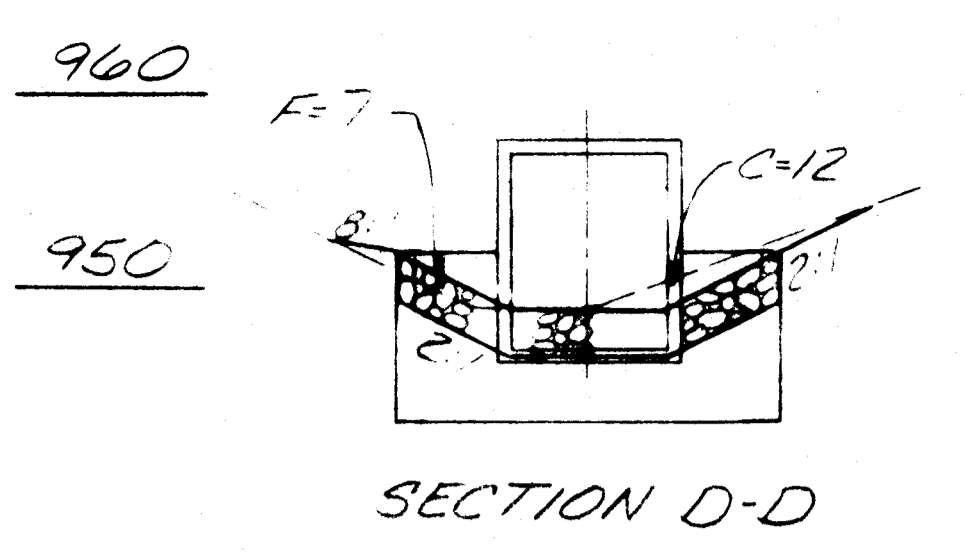
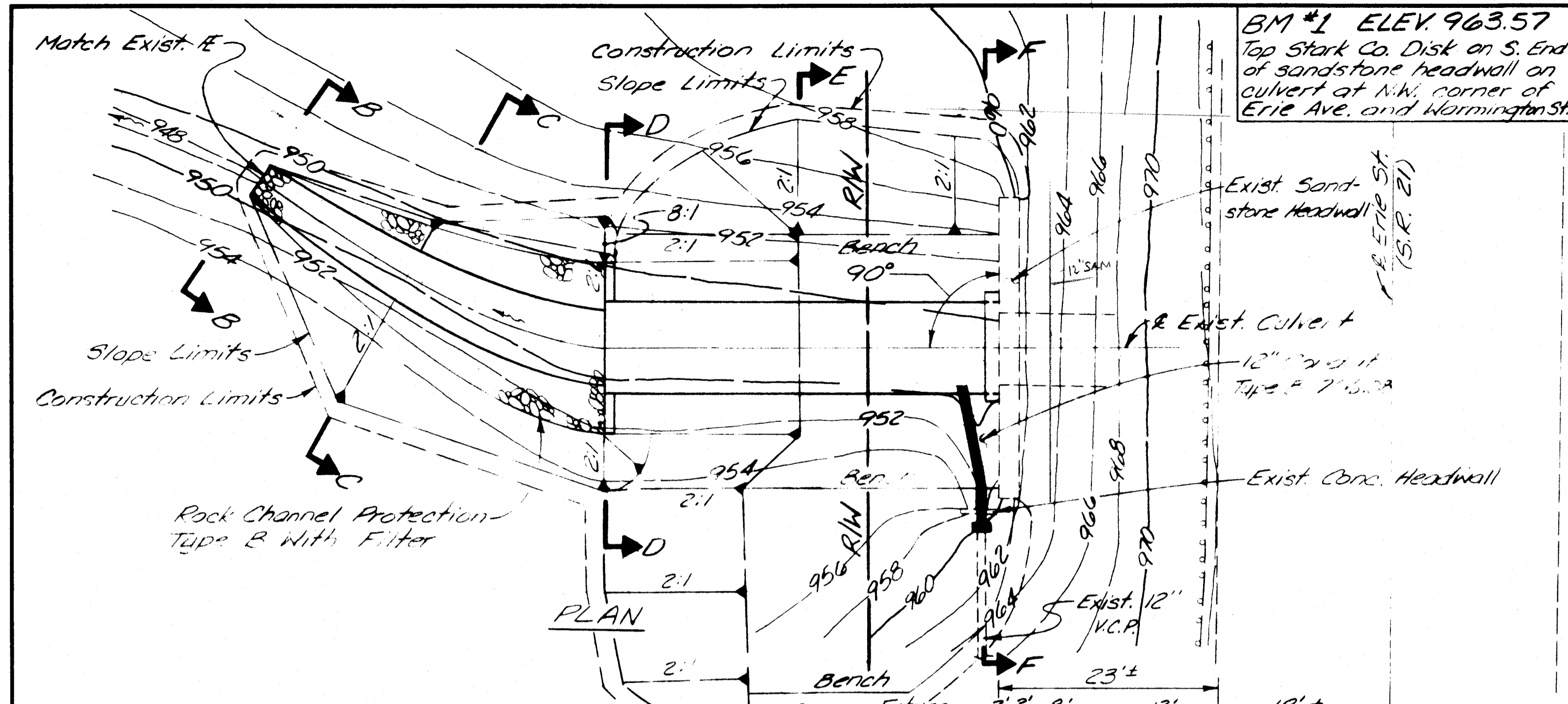
96+77  
(Match Existing  
Edge of Pavement)



60 40 20 0 20 40 60      60 40 20 0 20 40 60

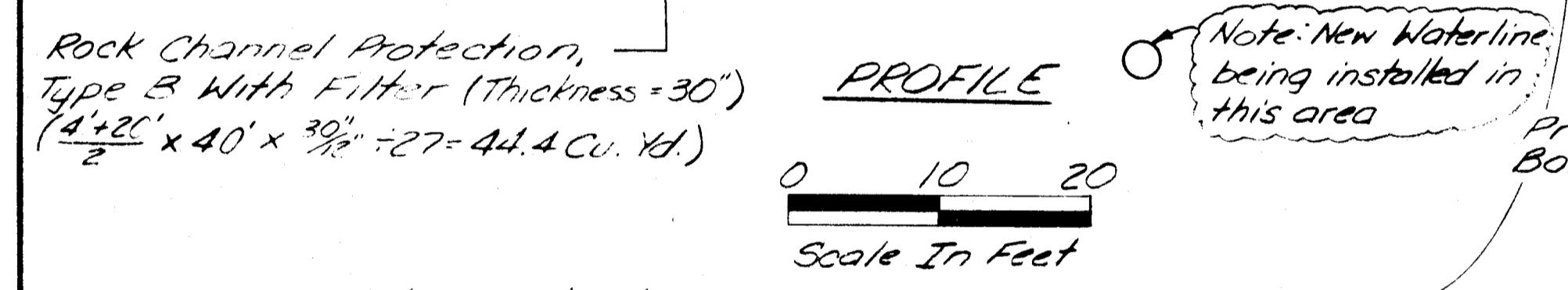
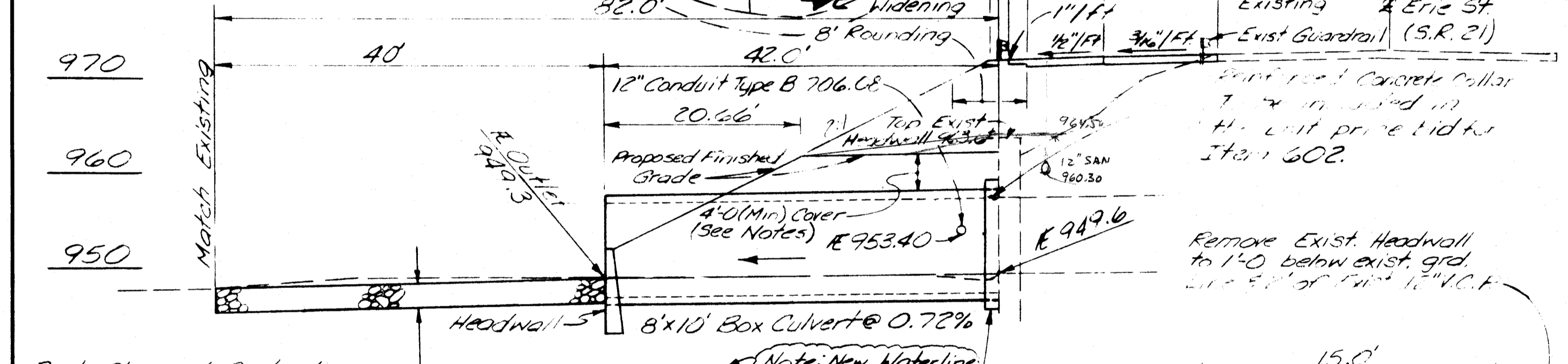
SJE 10/10/14



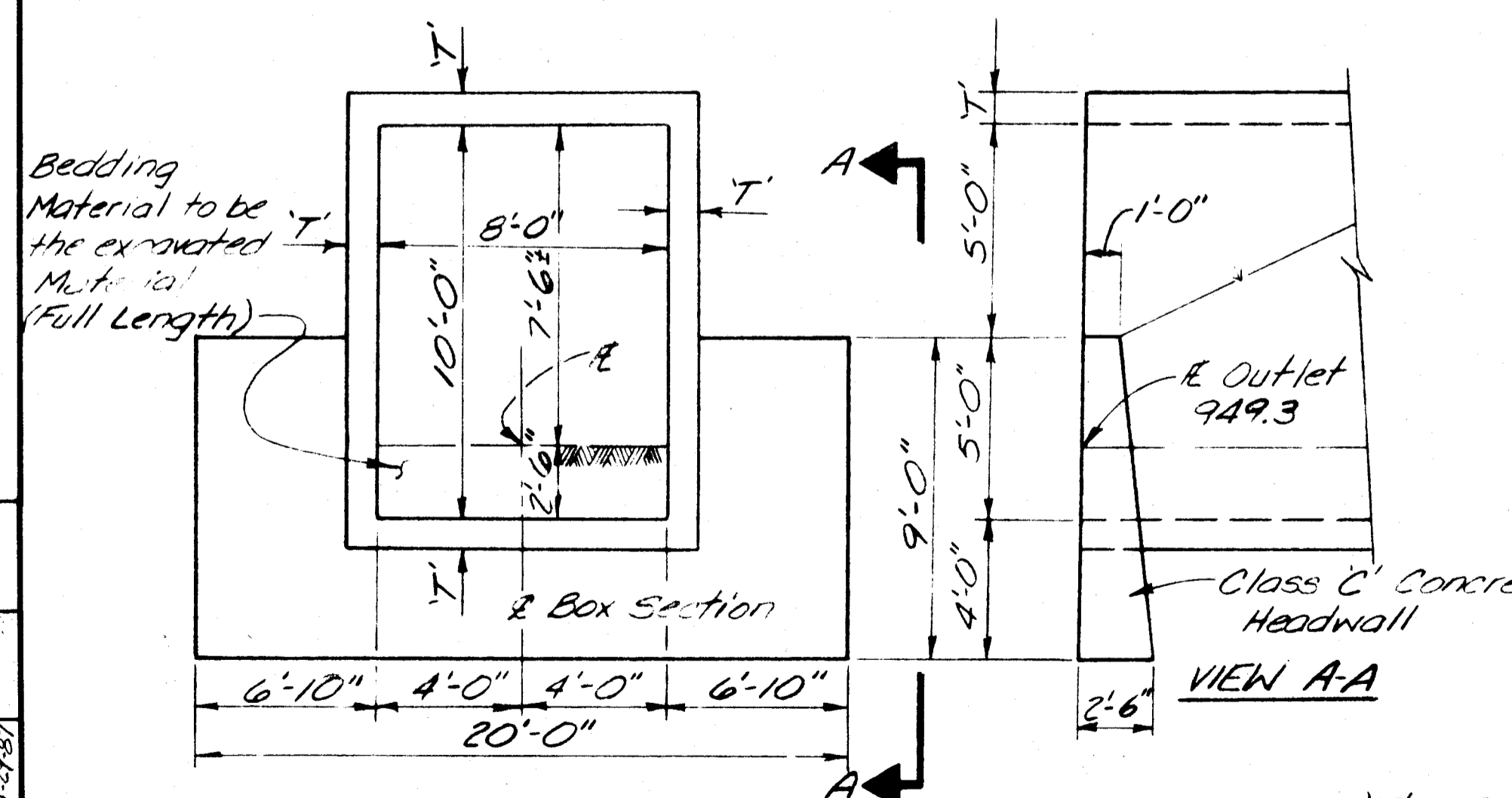


**EARTHWORK AND SEEDING QUANTITIES**

LOCATION	END AREA		VOLUME		SEEDING	
	Cut	Fill	Cut	Fill	End	Area
Section B-B L=18.5'	7	0	12.0	0.3	0	31.9
Section C-C L=19.5'	35	1	19.6	3.3	31	76.3
Section D-D L=20.5'	12	7	4.6	134.9	30	133.3
Section E-E L=19.5'	0	4.0	0	311.3	0	172.3
Section F-F L=5'	0	38.2	0	35.4	2	20.0
Match Existing	0	0	0	0	0	0
<b>TOTALS</b>			<b>36</b>	<b>535</b>		<b>434</b>



Note: Construct base of concrete collar, cure and drill holes in culvert section prior to setting it on the base. Holes must be aligned to match A802 bars (See Reinforced Concrete Collar)

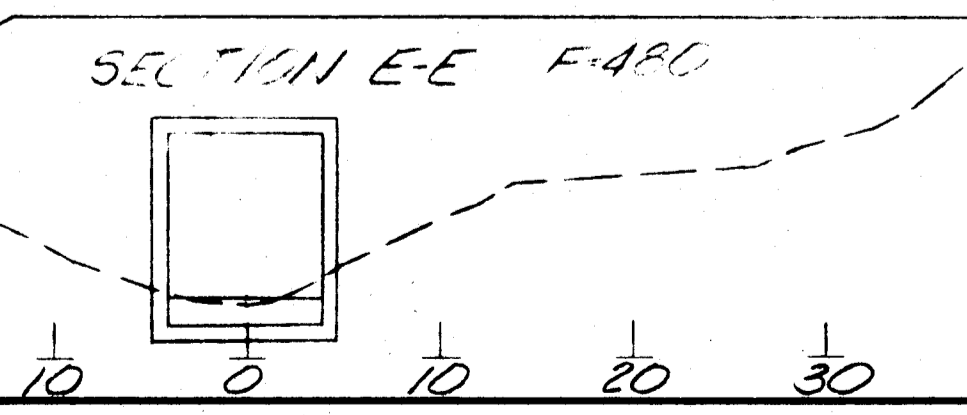
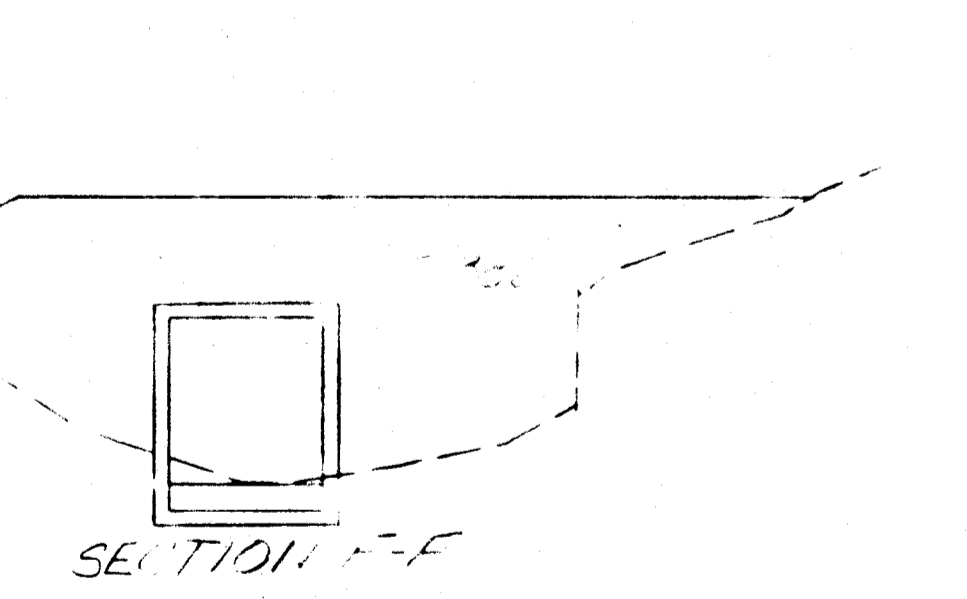


**HEADWALL DETAILS**  
(To be included in the unit price bid for Item 602 Concrete Masonry)

Concrete Collar As Per Std. Dwg MC-4 shall be included with Item 603 12" Conduit for payment.

For Reinforced Concrete Collar Details see Sheet No. 17.

T = Concrete Box Section Slab & Wall thickness as by Design.



**PRECAST REINFORCED CONCRETE BOX SECTIONS**  
DESCRIPTION: THIS ITEM SHALL CONSIST OF FURNISHING AND CONSTRUCTING PRECAST REINFORCED CONCRETE BOX SECTIONS AS PER SUPPLEMENTAL SPECIFICATION 955 AT THE LOCATION INDICATED.

MATERIALS: MATERIAL FOR THE PRECAST REINFORCED CONCRETE BOX SECTIONS SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 955. GRANULAR BEDDING AND BACKFILL MATERIAL SHALL MEET THE REQUIREMENTS OF 603.02 AND FILL MATERIAL, WHEN SPECIFIED, SHALL BE IN ACCORDANCE WITH 203.

INSTALLATION: THE STRUCTURE SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 603 TYPE A CONDUIT; SECTION 603 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS, STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, EXCEPT AS MODIFIED HEREIN.

603.03 WHERE THE BOX SECTION IS TO BE PLACED IN A TRENCH, A MINIMUM TRENCH WIDTH OF 2 FEET ON EACH SIDE OF THE BOX SECTION SHALL BE REQUIRED. WHERE THE BOX SECTION IS TO BE PLACED WITHIN AN EMBANKMENT OR THE BOX SECTION IS ABOVE THE EXISTING GROUND, THE REQUIREMENT THAT THE EMBANKMENT SHALL BE CONSTRUCTED AT LEAST TO THE SPRINGLINE BEFORE TRENCHING IS WAIVED.

603.04 THE BEDDING SHALL CONSIST OF A BED OF GRANULAR MATERIAL HAVING A THICKNESS OF AT LEAST ONE FOOT BELOW THE BOTTOM OF THE BOX SECTION AND EXTENDING 2 FEET ON EACH SIDE OF THE BOX SECTION.

603.06 THE EXTERIOR JOINT GAP ON THE TOP OF THE BOX SHALL BE FILLED WITH PORTLAND CEMENT MORTAR.

SHEAR CONNECTORS AS SPECIFIED AND ILLUSTRATED ON SUPPLEMENTAL SPECIFICATION 955 ARE NOT REQUIRED.

THE UPSTREAM END SHALL BE A RECESSED TYPE JOINT.

603.08 WHEN THE TOP OF THE TRENCH IS ABOVE THE TOP OF THE BOX, BACKFILLING SHALL BE IN ACCORDANCE WITH TYPE A CONDUIT. WHEN THE TOP OF THE BOX SECTION IS ABOVE THE TOP OF THE TRENCH, GRANULAR MATERIAL SHALL BE PLACED AND COMPACTED TO A MINIMUM DEPTH OF 2 FEET OVER THE TOP OF THE BOX SECTIONS (WHERE APPLICABLE) AND FOR A WIDTH OF 4 FEET ON EACH SIDE OF THE BOX SECTION OR AS DIRECTED BY THE ENGINEER. THE REMAINDER OF THE ADJACENT EMBANKMENT MATERIAL SHALL BE FURNISHED, PLACED, AND PAID FOR IN ACCORDANCE WITH 203. BACKFILL AND FILL MATERIAL SHALL BE PLACED UNIFORMLY ON BOTH SIDES OF THE BOX SECTION.

FILL MATERIAL AT THE SIDES OF THE BOX SECTIONS MAY BE COMPACTED BY HEAVY COMPACTION EQUIPMENT, AFTER A COVER OF 4 FEET HAS BEEN PLACED AND COMPACTED OVER THE TOP OF THE BOX CULVERT.

UNSUITABLE OR UNSTABLE MATERIAL: WHERE ENCOUNTERED, BELOW THE ONE FOOT GRANULAR BEDDING SHALL BE REMOVED UNDER THE BOX CULVERT AS DIRECTED BY THE ENGINEER, TO A WIDTH OF 4 FEET ON EACH SIDE OF THE BOX SECTION; FULL LENGTH, AND REPLACED WITH GRANULAR MATERIAL. THE COMPACTION SHALL BE 95 PERCENT OF THE MAXIMUM LABORATORY DRY WEIGHT AS DETERMINED BY AASHTO T99.

DESIGN NOTE: DUE TO THE MODIFIED SPAN TO RISE (8' X 10') THE BOX CULVERT SHALL BE SPECIALLY DESIGNED FOR SIZES AND LOADS OTHER THAN SHOWN IN ASTM C-789 TABLES.

PAYMENT: SHALL BE FULL COMPENSATION FOR ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE INSTALLATION.

SPECIFICATIONS: THE 1985 STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING SUPPLEMENTAL SPECIFICATIONS LISTED SHALL GOVERN THIS IMPROVEMENT.

**BOX CULVERT EXTENSION ESTIMATED QUANTITIES**

Bid Lump Sum Per Bid Schedule

Item 603	12" Conduit Type B, 706.08	15 Lin. Ft.
Item 603	Conduit 8'x10' Precast Reinforced Concrete Box Section (As Per SS 955) C-789 (Modified) As Per Plan (Design Earth Cover 13 Ft.)	40 Lin. Ft.
Item 602	Concrete Masonry	13 Cu. Yd.
Item 601	Rock Channel Protection, Type B With Filter	44 Cu. Yd.
Item 510	Dowel Holes	21 Each
Item 509	Reinforcing Steel Grade 60	1185 Lbs.
Item 203	Excavation Not Including Embankment Constr.	36 Cu. Yd.
Item 203	Embankment	535 Cu. Yd.
Item 202	Portions of Structures Removed	Lump
Item 201	Clearing & Grubbing	Lump
Item 659	Seeding & Mulching	434 Sq. Yd.

Note: Quantities are based on a 'T' Value of (10) inches





# STANDARD SYMBOLS AND ABBREVIATIONS

## GENERAL SYMBOLS

	SECTION OR PLAN	ELEVATION
REINFORCED CONCRETE		
FILL CONCRETE		
CONCRETE BLOCK		
BRICK		
LUMBER		
GLASS		
DOUBLE HUNG WINDOW		
CASEMENT WINDOW		
INSULATION		
METAL - SMALL SCALE		
REINFORCING BARS		
BLOCK WITH CONCRETE FILL		
STONE FILL		
EARTH		
ROCK		
SAND		
WATER AND OTHER LIQUIDS		
PAVEMENT		
GRATING		
EXISTING CONTOURS		
PROPOSED CONTOURS		
TEST HOLE		
TEST PIT		
PROPERTY LINE		
CORPORATION LINE		
RIGHT OF WAY		
PERMANENT EASEMENT		
TEMPORARY EASEMENT		

## ELECTRICAL SYMBOLS (CONTINUED)

GROUND	
TWO WIRE CIRCUIT	
THREE WIRE CIRCUIT	
FOUR WIRE CIRCUIT	
RESISTANCE LOAD	
START-STOP STATION WITH LIGHT	
START-STOP STATION WITHOUT LIGHT	
START-STOP STATION WITHOUT LIGHT	
PUSH BUTTON	
PUSH BUTTON NORMALLY OPEN	
PUSH BUTTON NORMALLY CLOSED	
SELECTOR SWITCH	
TIME DELAY RELAY	
GANGED SWITCH	
PHOTOELECTRIC CONTROL	
WALL SWITCH	
3 WAY WALL SWITCH	
MANUAL MOTOR STARTER	
DUPLEX RECEPTACLE	
TRIPLEX RECEPTACLE	
1 1/2" STOCK RECEPTACLE	
THERMOSTAT	
WIRE CONNECTION	
WIRES CROSS - NOT CONNECTED	
JUNCTION BOX	
DISCONNECT SWITCH	
DISCONNECT SWITCH	
FUSE	
CIRCUIT BREAKER	
CIRCUIT BREAKER	
CONTACTOR	
THERMAL OVERLOAD RELAY	
SINGLE PHASE MOTOR	
THREE PHASE MOTOR	
MOTOR	
GENERATOR	
INSTRUMENT	
TRANSFORMER	
TRANSFORMER	
CONTROLLER	
CONTROLLER	

## ELECTRICAL SYMBOLS

LIGHTING PANEL	
CEILING MOUNTED INCANDESCENT LIGHT	
WALL MOUNTED INCANDESCENT LIGHT	
FLUORESCENT LIGHT	
UNIT HEATER	
CONTROL RELAY	
POWER PANEL	
COIL	
NORMALLY OPEN CONTACT	
NORMALLY CLOSED CONTACT	
CAPACITOR	

## PIPING SYMBOLS

NEW PIPING	
EXISTING PIPING	
FLANGED JOINT	
MECHANICAL JOINT	
BELL AND SPIGOT JOINT	
SLEEVE COUPLING	
GATE VALVE	
CHECK VALVE	
BUTTERFLY VALVE	
PLUG VALVE	
WALL PIPE: FLANGE, MECHANICAL JOINT	
WALL SLEEVE	
SCREWED PIPING	
FIRE HYDRANT	
DRINKING FOUNTAIN	
HOT WATER TANK	
SHOWER STALL	
WATER CLOSET	
SUMP PIT	
FLOOR CLEANOUT	
PIPE CLEANOUT	
TRAP	
PINCH VALVE	
MAGNETIC FLOW METER	

## TOPOGRAPHIC SYMBOLS

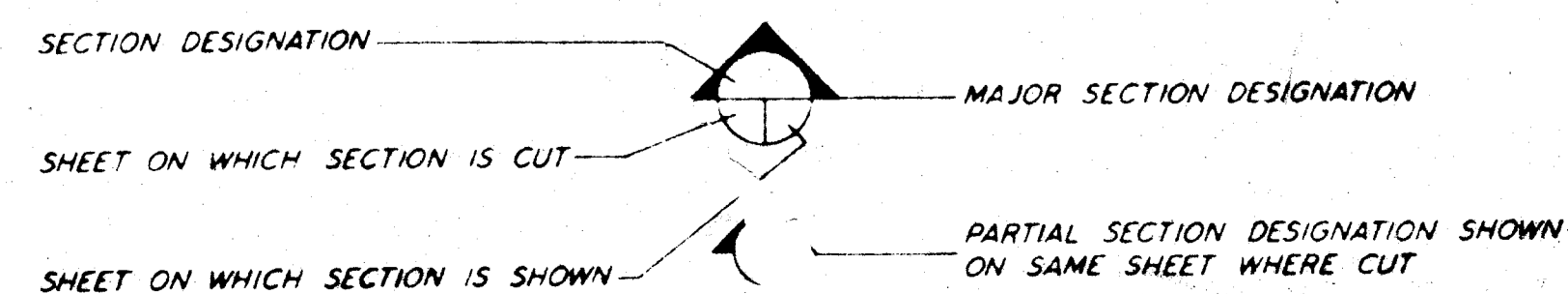
FENCE LINE	
BURIED TELEPHONE CABLE	
GAS LINE	
WATER LINE	
WATER VALVES	
SIGNS	
CATCH BASIN	
MAIL BOX	
BURIED ELECTRIC CABLE	
GUARD RAIL	
TREES & SHRUBS	
UTILITY POLE-POWER	
UTILITY POLE-TELEPHONE	
UTILITY POLE-LIGHT	
BACKWATER VALVE ASSEMBLY	
EXISTING SEPTIC TANK	
TELEPHONE JUNCTION BOX	
GAS VALVES	
SEPTIC TANK	
SEPTIC TANK WITH PUMP	
SURGE TANK	

## PIPING - LINE SYMBOLS

TYPE OF FITTING OR VALVE	FLANGED	MECHANICAL JOINT	SCREWED
ELBOW - 90 DEGREE			
ELBOW - 45 DEGREE			
ELBOW - LONG RADIUS			
REDUCING ELBOW			
TEE			
CROSS			
REDUCER - CONCENTRIC			
REDUCER - ECCENTRIC			
JOINT CONNECTING PIPE			
REDUCING FLANGE			
UNION			
SLEEVE			
LATERAL			
GATE VALVE			
GLOBE VALVE			
HOSE GATE VALVE			
HOSE GLOBE VALVE			
CHECK VALVE - STRAIGHT WAY			
ANGLE CHECK VALVE			
BUTTERFLY VALVE			
PRESSURE RELIEF VALVE			
PLUG VALVE			
PINCH VALVE			
MAGNETIC FLOW METER			

## TOPOGRAPHIC SYMBOLS (CONTINUED)

EXISTING WATER WELL



## ABBREVIATIONS

A.B.	ANCHOR BOLT	LTG.	LIGHTING
ACT.	ACTUAL	MAN.	MANUAL
ADJ.	ADJUSTABLE	MATL.	MATERIAL
AIR COND.	AIR CONDITIONER	MAX.	MAXIMUM
ALT.	ALTERNATE	M.C.C.	MOTOR CONTROL
ALUM.	ALUMINUM	CTR.	CENTER
AUTO.	AUTOMATIC	MECH.	MECHANICAL
@	AT	MFG.	MANUFACTURER
B.	BEAM	MG.	MOTOR
E.	BASELINE		GENERATOR
BKR.	BREAKER	M.G.D.	MILLION GALLONS DAILY
BLDG.	BUILDING		
B.M.	BENCH MARK	M.H.	MAN HOLE
BOX.	BOTTOM	MIN.	MINIMUM
BRE.	BEARING	MR.	MARK
B & S.	BELL AND SPIGOT	M.S.	MOTOR SWITCH
B.S.	BOTH SIDES	MT.	MOUNT
B.T.	BENT	N.F.	NEAR FACE
C.	CONCRETE	N.S.	NEAR SIDE
CAB.	CABINET	N.W.L.	NORMAL WATER LEVEL
C/C.	CENTERLINE TO CENTERLINE	NO.	NUMBER
C.F.M.	CUBIC FEET PER MINUTE	OC	ON CENTER
		OD	OUTSIDE DIAMETER
C.I.P.	CAST IRON PIPE	O.E.	OVERHEAD ELECTRIC
CKT.	CIRCUIT	OFF.	OFFICE
E.	CENTERLINE	OP'G.	OPENING
CL.	CLEAR	OPP.	OPPOSITE
CLO.	CLOSED	OZ.	OUNCE
C.M.P.	CORRUGATED METAL PIPE	P.	POLE
C.O.	CLEAN OUT	PC.	PIECE
COL.	COLUMN	E.	PLATE OR PROPERTY LINE
CONC.	CONCRETE	PL.	PLATE
CONST. JT.	CONSTRUCTION JOINT	PNL.	PANEL
CONT.	CONTINUOUS	POL.	POLISHED
CTR.	CENTER	PR.	PAIR
C.Y.	CUBIC YARD	P.S.I.	POUNDS PER SQUARE INCH
DIA.	DIAMETER	PT.	POINT
DIM.	DIMENSION	PVC.	POLYVINYL CHLORIDE
D.I.P.	DUCTILE IRON PIPE	QUAN.	QUANTITY
DN.	DOWN	R.	RADIUS OR RISER
DR.	DRAIN	R.A.	RETURN AIR
DRW'G.	DRAWING	R.D.	ROOF DRAIN
EA.	EACH	RECP.	RECEPTACLE
E.F.	EACH FACE	REFR.	REFRIGERATOR
EFF.	EFFLUENT	REINF.	REINFORCING
EL.	ELEVATION	REQ'D.	REQUIRED
EQU.	EQUAL	REV.	REVISE
EQUIP.	EQUIPMENT	RM.	ROOM
E.W.	EACH WAY	R/W.	RIGHT OF WAY
EXC.	EXCAVATE	SAN.	SANITARY
EXN.	EXHAUST	SCHED.	SCHEDULE
EXIST.	EXISTING	SECT.	SECTION
EXP. JT.	EXPANSION JOINT	SHT.	SHEET
EXT.	EXTERIOR	S.P.	SEWER PIPE
F.A.	FRESH AIR	SPC.	SPACES
FB.	FREEBOARD	SPEC.	SPECIFICATION
F.D.	FLOOR DRAIN	SPG.	SPACING
FDN.	FOUNDATION	SQ.	SQUARE
F.F.	FAR FACE	S.S.	SOLID SLAB
FIN.	FINISHED	S.T.	SEPTIC TANK
FIX.	FIXTURE	S.T.O.	SEPTIC TANK OUTLET
FL.	FLOOR	STG.	STORAGE
FLB.	FLOORING	STR.	STIRRUP
FLUOR.	FLUORESCENT	STL.	STEEL
F.S.	FAR SIDE	S.STL.	STAINLESS STEEL
FT.	FEET	STR.	STRUCTURAL
FTG.	FOOTING	SW.	SWITCH
G.	GAS	S.Y.	SQUARE YARD
G.A.	GAUGE	SYM.	SYMMETRICAL
GAL.	GALLON	T.	TOP OR TREAD
GALV.	GALVANIZED	T. & B.	TOP AND BOTTOM
G.P.M.	GALLONS PER MINUTE	T. & G.	TONGUE AND GROOVE
G.L.	GROUND LINE	THRU.	THROUGH
HOL.MET.	HOLLOW METAL	T.P.	TOP OF PIPE
HORIZ.	HORIZONTAL	TRANS.	TRANSFORMER
H.P.	HORSE POWER	TYR.	TYPICAL
HTR.	HEATER	URN.	URINAL
ID.	INSIDE DIAMETER	VAC.	VACUUM
INCL.	INCLUDE	VERT.	VERTICAL
INF.	INFLUENT	V.S.P.	VITRIFIED SEWER PIPE
INT.	INTERIOR	VP.	VENT PIPE
INV.	INVERT	W.	WITH
IPS.	IRON-PIPE SIZE	W. T. C.	WATER TIGHT COVER
JOINT.	JOINT	W.H.	WATER HEATER
JCT.	JUNCTION	WI.	WROUGHT IRON
LAB.	LABORATORY	W/O.	WITHOUT
LAV.	LAVATORY	WT.	WEIGHT
LB.	POUND	WF.	WIDE FLANGE
LG.	LENGTH	WP.	WEATHER PROOF
LIN.	LINEAR	XP.	EXPLOSION PROOF