

DESIGN DATA

Traffic	Average Daily	Est. 30th Max. Hr.
Current Traffic (1983)	1575 Pass. 225 Trucks 1800 Total	180
Traffic Forecast (2003)	4900 Pass. 300 Trucks 5200 Total	520
Design Speed	35 MPH	
Traffic Classification "M"		
Minimum Sight Distance (Stopping)	250'	

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

MORTON COUNTY
M-1-806(12)071

GRADE, SURFCING, STORM SEWER
& INCIDENTALS

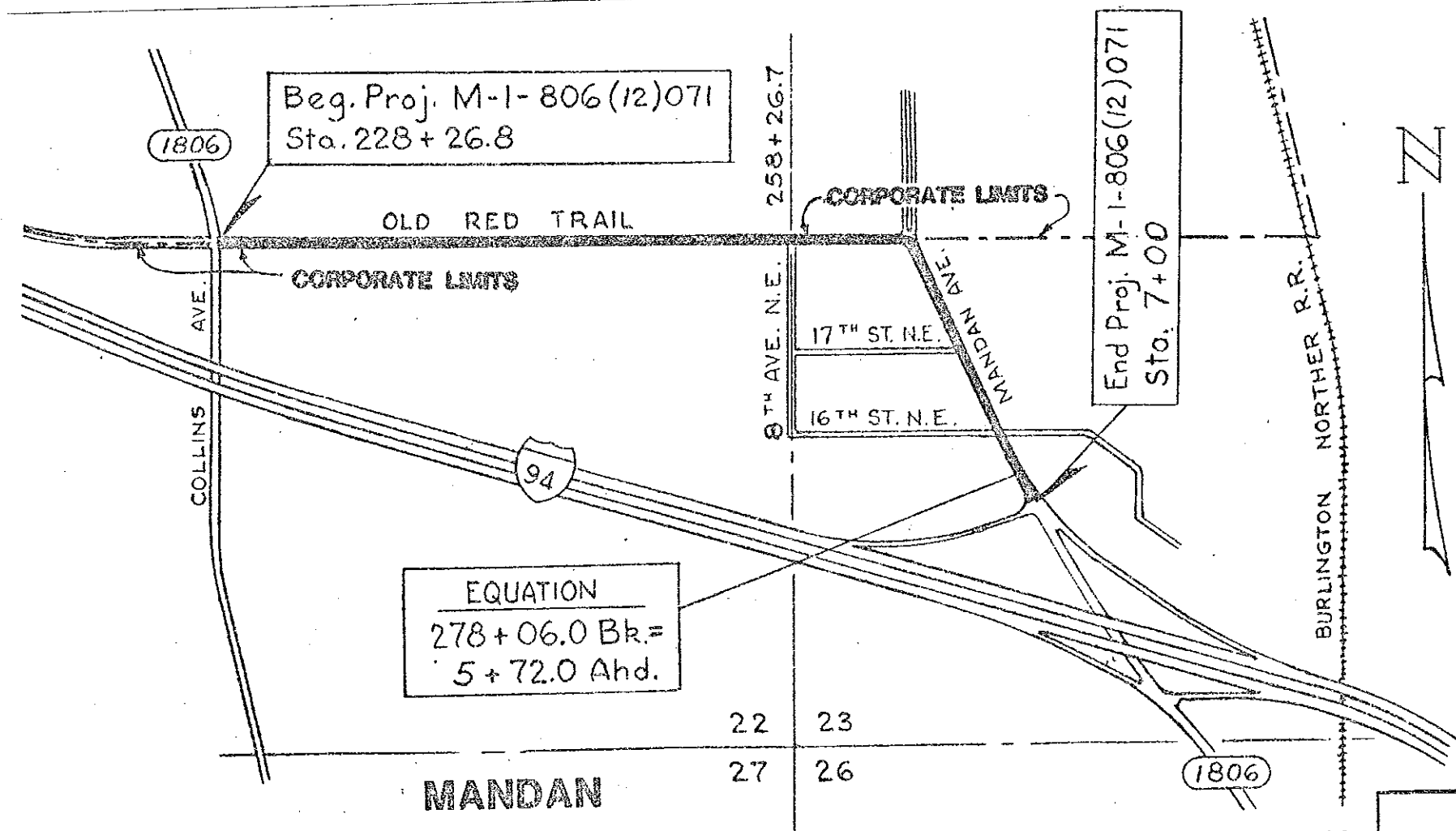
FHWA REGION	STATE	PROJECT	SHEET NO.
8	N.D.	M-1-806(12)071	1

GOVERNING SPECIFICATIONS:

"Standard Specifications adopted by the North Dakota State Highway Department, October, 1976 and approved by the Federal Highway Administration on December 17, 1976 and Supplemental Specifications thereto adopted July 1, 1983 and approved by the Federal Highway Administration and other Contract Provisions submitted herewith."

LENGTH OF PROJECT

Project	Miles-Gross	Miles-Net
M-1-806(12)071	0.967	0.967



EQUATION
278+06.0 Bk.=
5+72.0 Ahd.

22	23
27	26

MANDAN

Twp. 138 N.
Rge. 81 W.

APPROVED DATE 9-9-83

CHIEF ENGINEER
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED **B 14**

DIVISION ENGINEER DATE

GENERAL NOTES

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
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- 100 WORK SCHEDULE: In order to minimize interference with traffic
020 operations, a detailed schedule shall be agreed to prior to beginning work, between the engineer, utility companies, and the contractor and subcontractors, if any.
- 100 GENERAL CONSTRUCTION REQUIREMENTS: It is the intent of the
022 plans, the Standard Specifications of the North Dakota State Highway Department, and the Special Provisions to comply in every respect to the requirements set forth by the National Plumbing Code, the North Dakota State Health Department, and the ordinances established by the city of Mandan, North Dakota. It will be the responsibility of the contractor to insure that the above requirements are met in every respect.
- 100 UNDERGROUND UTILITIES: The contractor shall notify the local
030 utility companies prior to the beginning of construction, so they may stake location and depth of all utilities in the project area. Subcutting or scarifying over utility lines may be eliminated if, in the opinion of the engineer, a hazardous situation exists. Separate plans, if any, showing relocation or adjustment work to be performed by utility companies to accommodate highway construction will be made available to the contractor, upon request to the engineer.
- 100 PROJECT ENGINEER RESPONSIBILITY:
050 (a) USC & G Bench Mark
As soon as it has been determined that a bench mark must be moved, consult your Construction Survey Manual (Sec. 150-4.9), for the proper steps needed to preserve the bench mark.
- (b) All section corners must be monumented and a corner recordation form must be filed with the County Register of Deeds. See Appendix G of the Preliminary Survey Manual for instructions on how to fill out the form.
- 100 DETOURS: The contractor shall maintain the streets used as
060 detours (streets to be designated by the engineer) and repair areas damaged by the detoured traffic. Upon completion of the project, the contractor shall restore the streets to a condition at least equal to that which existed at the time traffic was routed over them. Work shall be as deemed necessary by the engineer. The repair and maintenance of the detours will be paid for in accordance with SP-273 "Haul Road Maintenance." Necessary route markers will be furnished by the State Highway Department and erected and maintained by the contractor as an incidental item.

- 100 CONCRETE PROTECTION: Adjacent concrete shall be protected during
068 the application of all bituminous and asphalt materials to prevent any discoloration of the concrete. Failure to comply will result in the contractor having to clean the concrete at his own expense.
- 100 TREES, SHRUBS, AND NATIVE GRASSES: The contractor shall exercise
130 care in his construction operations to ensure that trees, shrubs, and native grasses within the right of way and outside the construction area are disturbed as little as possible.
- 100 The contractor will be required to conduct the construction
133 activities in such a manner as to comply with the Air Pollution Control Regulations of the state of North Dakota. Water will be used to control dust on the construction site.
- 100 The contractor will be required to comply with the North Dakota
134 State Highway Department's Standard Specifications and any Special Provisions that are considered necessary to control erosion.
- 100 HISTORICAL INFORMATION: If any scientific or historical
140 information is encountered after construction is in progress, the Highway Department will immediately notify the Historical Society, and efforts will be made to protect the material until it has been examined by an archaeologist from the Historical Society. If future activities should result in the discovery of any cultural resources that are eligible for inclusion in the National Register of Historical Places, this will require compliance with Section 106 of the National Historic Preservation Act of 1966 and the Advisory Council on Historic Preservation "Procedures for the Protection of Historic and Cultural Properties" (36, CFR, Part 800).
- 100 UTILITY POLES: Equipment shall work around utility poles within
160 the construction area that are not to be disturbed.
- 100 At the pre-job conference or prior to hauling over the project,
190 the contractor and engineer shall agree on the designated haul roads so as to minimize hauling over the project.

GENERAL NOTES

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- 200 SHRINKAGE: 20 percent additional volume in yardage computed by
010 the end area method is allowed for shrinkage in earth embankment.
- 200 COMPACTION AND DENSITY CONTROL: Compaction and density controls
021 shall be in accordance with Section 203-2.3.3 T-180 of the Standard Specifications, except that, if the subgrade is unstable (as evidenced by sponginess or rutting) when compacted to the required density, it will be necessary to dry the soils to obtain adequate stability. This may require drying below optimum moisture. The cost of such drying will be incidental to the price bid for "Roadway Excavation" (and/or "Borrow," if used).
- 200 SUBCUT, SCARIFY, AND RECOMPACT: Through all cut sections, the
030 entire cut section to a point 1 foot behind the back of the new curb where possible, shall be scarified 1 foot below the proposed subgrade elevations. In sections where the subgrade to 1 foot behind back of new curb cannot be scarified due to footings or other reasons, the engineer shall determine the extent of subgrade to be scarified in the field. Any soft spots or areas containing an inferior quality of soil (as determined by the engineer) shall be subcut and replaced with acceptable backfill. The subcut and scarified areas shall be compacted as specified under compaction and density note. Subcutting will be measured and paid for as common excavation. Cost of scarifying and recompacting to be included in the price bid for "Common Excavation."
- 200 DISPOSAL OF UNSUITABLE MATERIAL: The contractor shall be
070 responsible for the proper disposal of all removed concrete, pavements, foundations, and other unsuitable material. The disposal site shall not be a wetland and shall be a site approved by the engineer.
- 200 SCARIFYING AND RECOMPACTION OF EMBANKMENT AREAS: After removing
090 6" of topsoil from original ground under all roadway embankment areas, an additional one foot shall be scarified and recompacted. All scarifying and recompacting shall be included in price bid for "Common Excavation."
- 200 TOPSOIL: The contractor shall control the grading operation in a
150 manner that allows for the placement of 6" of topsoil on top of all disturbed areas that are to be seeded or sodded. Removal of topsoil from excavation areas will be paid for as "Common Excavation." Removal of topsoil from embankment areas will be included in the price bid for "Clearing and Grubbing." Total topsoil from clearing and grubbing areas is approximately _____ cubic yards. The contractor will be responsible for securing a site off of the right of way to stockpile topsoil.

- 200 WASTE EXCAVATION DISPOSAL: Disposal sites selected by the
250 contractor shall be approved by the engineer. Disposal in wetland areas will not be approved.
- 200 WATER: The cost of applying water for compaction and for use as
301 a dust palliative, as required, shall be included in the price bid for "Water."
- 200 BENCHING ON WIDENING SECTIONS: All inslopes, regardless of rate
450 of slope, shall be benched unless otherwise directed by the engineer. Benches shall be deep enough to provide sufficient width to permit placing, spreading, and compacting equipment to operate and each bench shall be thoroughly compacted before additional embankment is placed. Cost of benching shall be included in the price bid for "Common Excavation, Type A."
- 300 AGGREGATE BASE COURSE, CLASS 5: 1000 tons of aggregate base
010 course have been provided for maintaining traffic. It shall be used as directed by the engineer in the field.
- 400 PRIME, FOG, OR TACK COAT: When directed by the engineer,
010 emulsified asphalt for prime, fog, or tack coat shall be diluted with water prior to application in a 50-50 ratio or other approved proportions. Cost of water shall be included in the price bid for "Emulsified Asphalt for Prime, Fog, or Tack Coat."
- 400 HOT BITUMINOUS PAVEMENT: The temperature of the mix at laydown
040 shall not be less than 210°F, if the air temperature is above 60°F, and shall not be less than 225°F if the air temperature is below 60°F. The actual mixing temperature shall be adjusted as directed by the engineer within the allowable limitations to best suit construction conditions.
- 400 AUTOMATIC BATCHING EQUIPMENT: The automatic batching equipment
050 as specified in Section 406-3.13.5 of the Standard Specifications will not be required on this project.
- 400 DIMENSIONS: Thicknesses shown on the typical sections for
070 surfacing are approximate. It is intended that the plan tonnages provided for by the basis of estimate will be used uniformly throughout the project unless otherwise authorized by the engineer.
- 400 HOT BITUMINOUS PAVEMENT: The 8" hot bituminous pavement
080 shall be laid in three (3) lifts with the top lift having a depth of approximately 2 inches.

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400 120 **COMPACTION OF HOT BITUMINOUS PAVEMENT:** The compaction equipment for mainline paving shall include not less than one approved steel roller or approved vibratory roller and one approved pneumatic tired roller. The initial compaction shall be completed before the mat drops below 170°F, and the specified density shall be obtained before the mat temperature drops below 140°F. The maximum speed of vibratory roller in the vibratory mode shall be 3 mph. The speed of nonvibratory rollers and vibratory rollers in the static mode shall not exceed 4 mph during initial and intermediate rolling prior to obtaining the required density.

400 145 When the contractor must encroach onto the driving lanes, flagpersons and flagperson signs must be provided by the contractor for directing the traffic through the construction area.

400 250 **SEAL COAT:** All loose and excess chips shall be removed from the roadway and intersections by sweeping as soon as practicable after sealing, and no later than 5 days after the seal has been applied.

The sweeping of loose chips from the shoulder onto the new sealed surface will not be permitted.

Measurement and payment for the item "Pilot Car" will be based on hours that the vehicle is actually in use.

400 310 **HOT BITUMINOUS PAVEMENT:** Unless otherwise authorized by the engineer, placement of hot bituminous pavement (top lift only) for mainline surfacing will not be permitted when the temperature of the existing surface is below 40°F.

630 010 **STORM SEWER:** At several locations, the new sewer is to be installed into an existing manhole or inlet barrel. The cost of cutting into the manholes or inlet barrels and grouting of sewer leads shall be included in the price bid for other items.

630 020 **ADJUST WATER AND SEWER LINES:** The exact depth of the existing water and sewer lines under the roadway is unknown. If it is determined in the field that adjustment or relocation of these lines is necessary to facilitate the installation of the new storm sewer, such work shall be done in accordance with Sec. 109-5 of the Standard Specifications, "Extra and Force Account Work."

630 031 **JOINTS FOR SEWER PIPE:** Joints shall be sealed with rubber gaskets or with a sealer approved by the engineer.

630 040 **DRAINAGE:** If the existing drainage facilities become inoperable before the new drainage system is functioning, the contractor shall provide sufficient temporary pumping and drainage facilities to keep the roadway drained to the satisfaction of the engineer. Not a pay item, cost to be incidental to the price bid for other items.

706 010 **UNDERDRAINS:** All materials, (perforated and nonperforated P.V.C. pipe, bends, underdrain granular fill, filter fabric, frames, and lids, etc.) labor, and equipment necessary for construction of cleanouts shall be considered incidental to the price bid for "6-inch Perforated P.V.C. Pipe for Underdrains."

708 010 **CURB AND GUTTER:** The curb and gutter shall be curb and gutter Type I (Section A) in the areas where the water drains toward and along the gutter. Where the water drains away from the gutter (high side of superelevation etc.), the curb and gutter shall be Type I (Section D). Both sections are detailed on the Standard Drawing D-708-1. All curb and gutter shall be paid for under "Curb and Gutter, Type I."

708 020 **CURB ENDS:** On street returns and other locations where the new curb and gutter ends and does not abut existing curb and gutter, the end two (2) feet of the curb shall be tapered from 6" in height to 0". A 1/2" premolded expansion joint which is full depth and the same shape as the curb and gutter shall be installed just ahead of the taper. An 18" tie bar shall be installed across the joint.

708 030 **CLASS OF CONCRETE:** The class of concrete used in the curb and gutter, sidewalks, and driveways shall be Class AE. The contractor shall have the option of using aggregate, Size No. 1, 3, 4, or 5 as defined in Section 806-2 of the Standard Specifications.

708 040 Dowel bars installed at expansion joints in the curb and gutter will not be paid for separately, but shall be included in the price bid for "Curb and Gutter - Type I."

714 010 **ADJUST MANHOLES:** The existing manhole castings that are required to be raised may be brought to their respective elevations by the use of adapter rings of a grade and type approved by the engineer. These castings are encased in concrete and it will be necessary to remove and replace this concrete in the immediate vicinity of the casting. Cost of all materials and labor required to perform the work as noted above, shall be incidental to the price bid for "Adjust Manholes."

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728 SODDING: Sodding quantities have been provided to sod
010 construction areas where the adjacent property has sod
established. Sodding locations will be determined by the
engineer.

762 MAINTAINING ACCESS: The contractor will be responsible for
010 providing access to all residential dwelling and business
establishments adjacent to this project. Final details on
location of access points and construction procedures shall be
worked out with the engineer in the field prior to start of the
project.

762 MAINTAIN TRAFFIC: The Contractor shall maintain local traffic
030 through all construction areas. He shall arrange his work so that
there will be the least amount of hindrance to traffic.

UNDERDRAINS: All perforated PVC pipe used for underdrains shall be encased in Coarse Aggregate which is wrapped with filter fabric. The Coarse Aggregate shall meet the Screen Analysis of Size 1,2,3 or 4 Aggregate in Section 806-2 of the Standard Specifications. The Filter Fabric shall be one of the following:

Dupont Typar Style	3401
Mirafi	1405
Stabilanka	T-80

or an equivalent material approved by the Engineer. The cost of Coarse Aggregate Filter Material and Filter Fabric shall be incidental to the price bid for 6" Perforated PVC Underdrain Pipe.

The price bid for the installation of PVC Underdrain Pipe shall include the cost of trenching, pumping the ground water encountered in the trenches and shoring, if any, required to maintain roadway stability. The cost of the placement of the clay embankment over the underdrain granular fill shall be included in the price bid for underdrain granular fill. The Contractor shall dispose of the excess excavation in a manner approved by the Engineer.

The cost of all fittings required for PVC Underdrain Pipe installation including frame and lids for clean-out tubes shall be included in the price bid for PVC Underdrains.

If necessary, the Engineer will adjust the Underdrain System to insure the capture of the ground water.

B A S I S O F E S T I M A T E - S U R F A C I N G

DESCRIPTION	UNIT	263+50 TO END 51' CURB & GUTTER			BEG. TO 262+50			40' DRIVEWAYS 16 & 17TH ST.		PRIVATE DRIVES	
		QUANTITY PER STA.	DEPTH	WIDTH	QUANTITY PER STA.	DEPTH	WIDTH	QUANTITY PER S.Y.	DEPTH	QUANTITY PER S.Y.	DEPTH
Hot Bituminous Pavement - Class 25 @ 2.0 Ton/C.Y.	Ton	237.04	8"	48'	55.56	3"	28'	.3889	7"	.1667	3"
120 - 150 85 - 100 Asphalt Cement @ 6.9% ⁷ of Hot Bituminous Pavement	Ton	16.36 ⁵⁹	8"	48"	3.83 ⁹	3"	28'	.0268 ⁷²	7"	.0118 ⁷	3"
MC 70, 250, or SP-6 Liq. Asph. @ 0.20 Gal./S.Y. for Prime Coat	Gal.	106.67		48"	8.89		4'				
SS-1h or CSS-1h Emuls. Asph. for Tack Coat @ 0.05 Gal./S.Y.	Gal.	53.33	(2 Coats)	48'	15.56		28'	.05		.05	
AE-150S Emuls. Asph. for Seal Coat @ 0.35 Gal./S.Y.	Gal.	186.67		48'	124.44		32'	.35		.035	
Cover Coat Material Class 43 @ 25 Lbs./S.Y.	Ton	6.67		48'	3.89		29'	.0125		.0125	
Blotter Material, Class 44 @ 6 Lbs./S.Y. (Seal Coat Mtnc.)	Ton	0.80		24'	0.80		24'	.0003		.0003	
Aggregate Base Course - Cl. 5 @ 1.5 Ton/C.Y. +25%	Ton	128.47	4"	54'							

B A S I S O F E S T I M A T E - G R A D I N G

WATER: 10 Gal./C.Y. of Estimated Embankment Quantities and 20 Gal./Ton of Aggregate Base Course. An estimated amount has been included in the quantities for use as a dust palliative.

TOPSOIL: Topsoil (where presently existing) shall be removed and replaced to a minimum depth of 6". Removal of topsoil has been included in the quantities and shall be paid for at the unit price bid for "Common Excavation, Type A."

SEEDING: The entire right of way and easements, except the roadway and other surfaced or sodded areas, shall be seeded (Hydro-Mulch).

M A X I M U M S I Z E O F A G G R E G A T E

Description	Type of Aggregate	Max. Size
Hot Bit. Pymt. Class 25	Crushed	3/4"
Cover Coat Material - Cl. 43		1/2"
Aggregate Base Course - Cl. 5	Crushed	3/4"

QUANTITIES

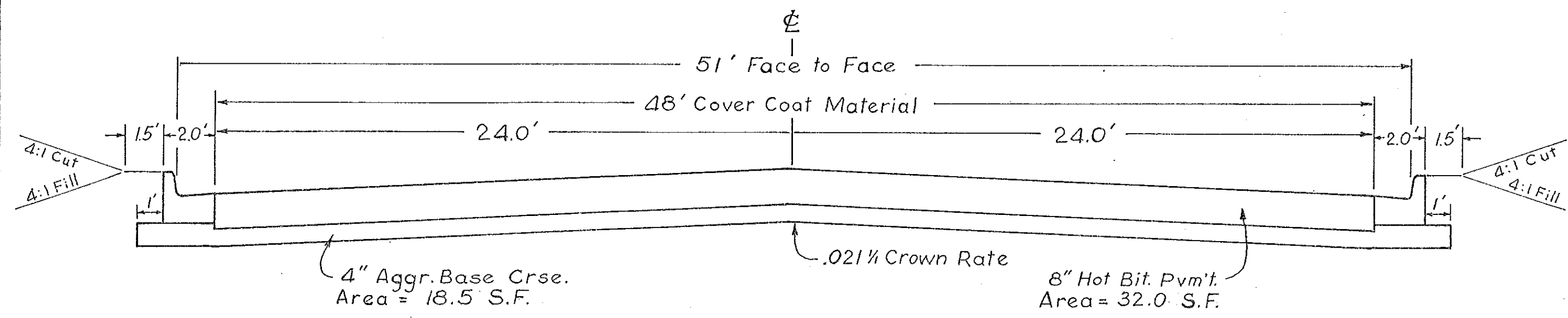
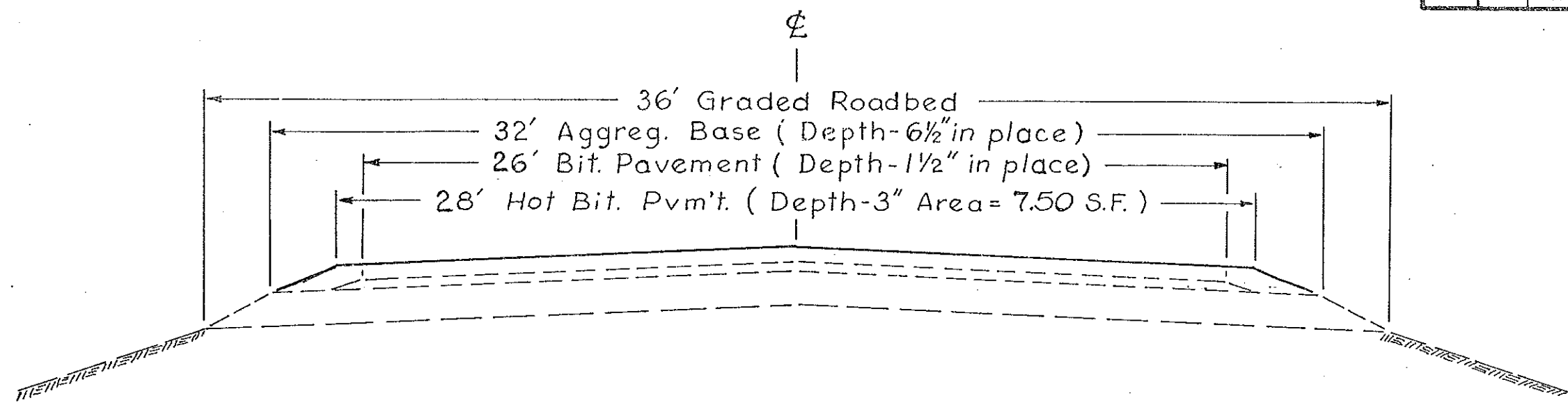
SPEC	CODE	ITEM DESCRIPTION	UNIT	FED	CITY	CITY	STATE	TOTAL
103	0100	Contract Bond	L. Sum	1				1
201	0330	Clearing & Grubbing	L. Sum	1				1
202	0130	Removal of Curb & Gutter	L. Ft.	47				47
203	0101	Common Excavation - Type A	Cu. Yd.	11,300			500	11,800
216	0100	Water	M. Gal.	100			10	110
302	0120	Aggregate Base Course Cl. 5	Ton	4056			50	4116
401	0103	MC-70, 250 or SP-6 Liquid Asphalt	Gal.	2019				2019
401	0152	SS-1h or CSS-1h Emulsified Asphalt	Gal.	2252				2252
406	0190	Hot Bituminous Pavement Class 25	Ton	5738				5738
406	0320 0310	120-150 85-100 Asphalt Cement	Ton	402				402
420	0112	AE-150 S Emulsified Asphalt	Gal.	7342				7342
420	0145	Cover Coat Material Class 43	Ton	243				243
420	0160	Blotter Material Cl. 4A	Ton	41				41
630	0455	18 In. Corrugated Steel Pipe .064 in.	L. Ft. Ea.	6				6
630	221	18 in. Reinf. Conc. Pipe - Sewer - Cl. III	L. Ft.					
630	2296	18 in " " "	L. Ft.	116		300		416
630	2381	24 In. Reinf. Conc. Pipe - Sewer - Cl. III	L. Ft.	309				309
630	2426	27 In. Reinf. Conc. Pipe - Sewer - Cl. III	L. Ft.	1003				1003
630	3460	15 In. Conduit Pipe	L. Ft.	47				47
630	3465 3475	18 24 In. Conduit Pipe	L. Ft.	233				233
702	0132	Loose Rock Riprap	Ton Cy				60	60
705	0100	Mobilization	L. Sum	1				1
706	0110	Underdrain Granular Fill Material	Cu. Yd.	3200				3200
706	0392	6 In. Nonperforated PVC Pipe	L. Ft.	17				17
706	0395	6 In. Perforated PVC Pipe for Underdrains	L. Ft.	1315				1315
630	3310	60" RCES	Ea				4	4
630	3409	Relay 60" RCP	L. Ft.				228	228
630	3415	Relay Conc. Cattle Pipe Inter. Sec	L. Ft.				84	84
630	3425	Relay " " " End Sec	Ea				2	2
630	3435	Inter Sec " " "	LF				20	20

Notes

QUANTITIES

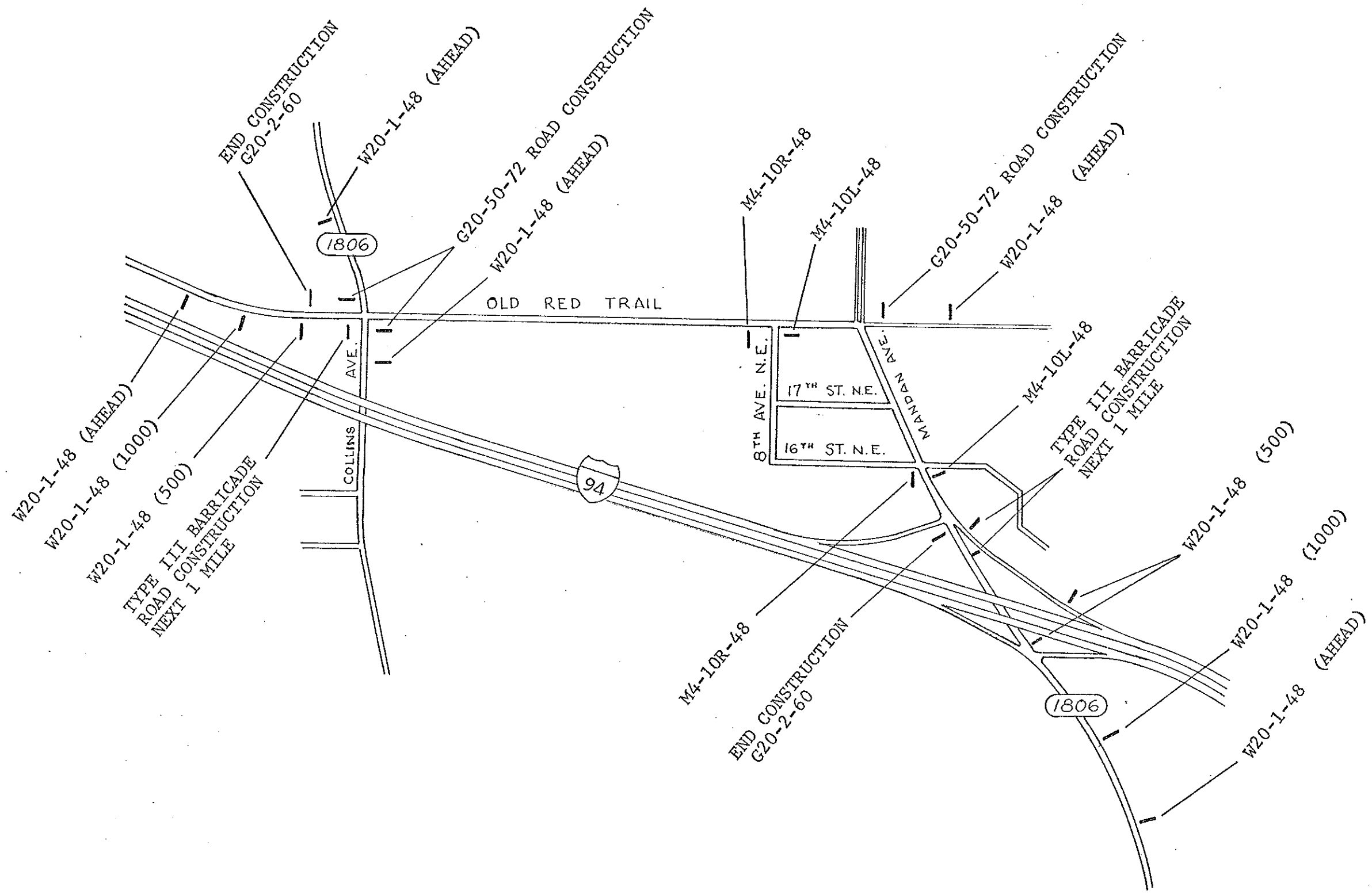
<u>SPEC</u>	<u>CODE</u>	<u>ITEM DESCRIPTION</u>	<u>UNIT</u>	<u>FED</u>	<u>CITY</u>	<u>CITY</u>	<u>TOTAL</u>
708	0296	36 In. Valley Gutter	L. Ft.	290			290
708	0300	Curb & Gutter Type I	L. Ft.	2886			2886
712	0118	8" Conc. Driveway	S. Y.	43			43
714	0110	Manhole Riser - 43 In.	L. Ft.	19			19
714	0115	Manhole Riser - 54 In.	L. Ft.	26			26
714	0130	Inlets	Ea.	7			7
714	0143	Catch Basins	Ea.	1	3		4
714	0134	Double Inlets	Ea.	1			1
714	0135	Triple Inlets	Ea.	1			1
714	0208	Manhole - 48 in.	Ea.	3			3
714	0209	Manhole - 54 in.	Ea.	3			3
716	0110	Adjust Manhole	Ea.	5			5
716	0140	Adjust Utility Appurtenance	Ea.	6			6
726	0320	Hydro Mulch Seeding	Acre	1			1
728	0100	Sodding	Sq. Yd.	100			100
762	3298	Traffic Control	L. Sum	1			1
900	5030	Relocate Hydrant	Ea.	1			1

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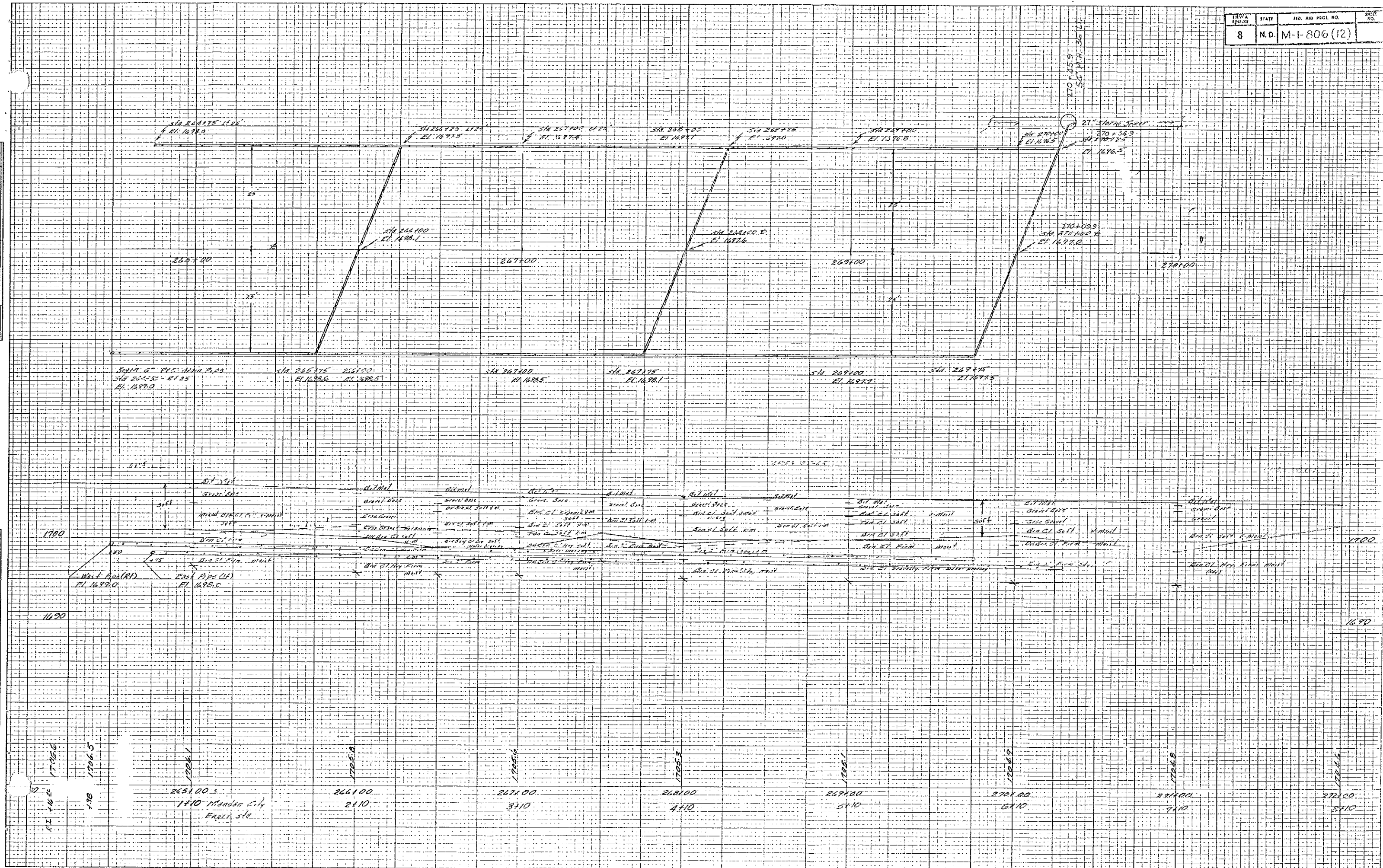


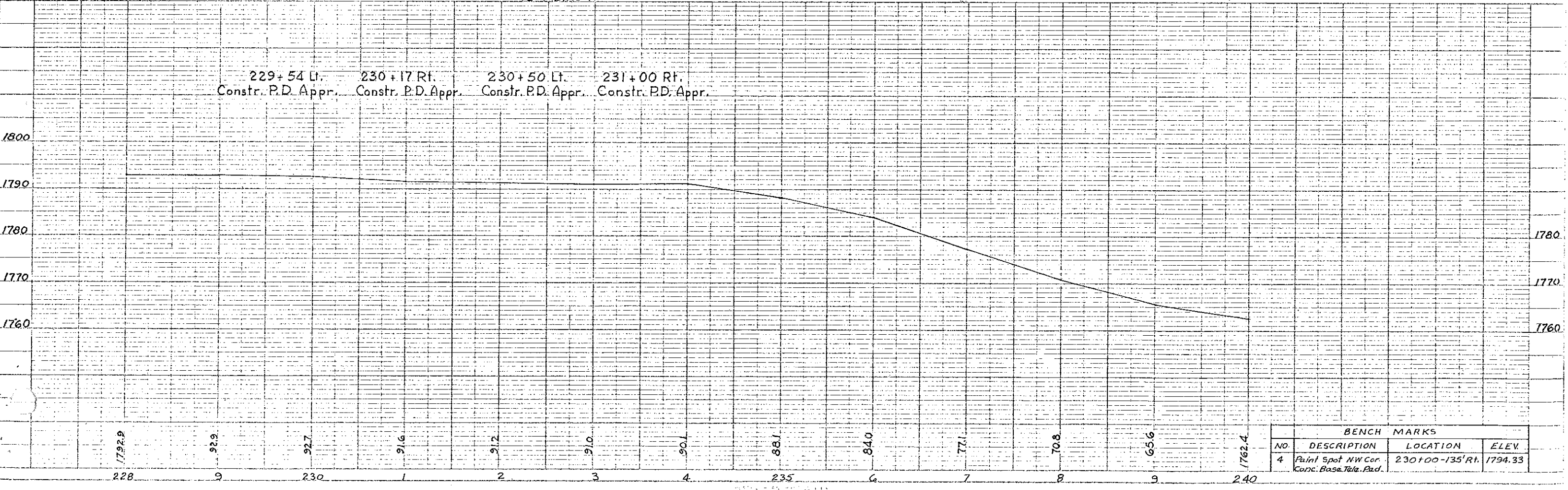
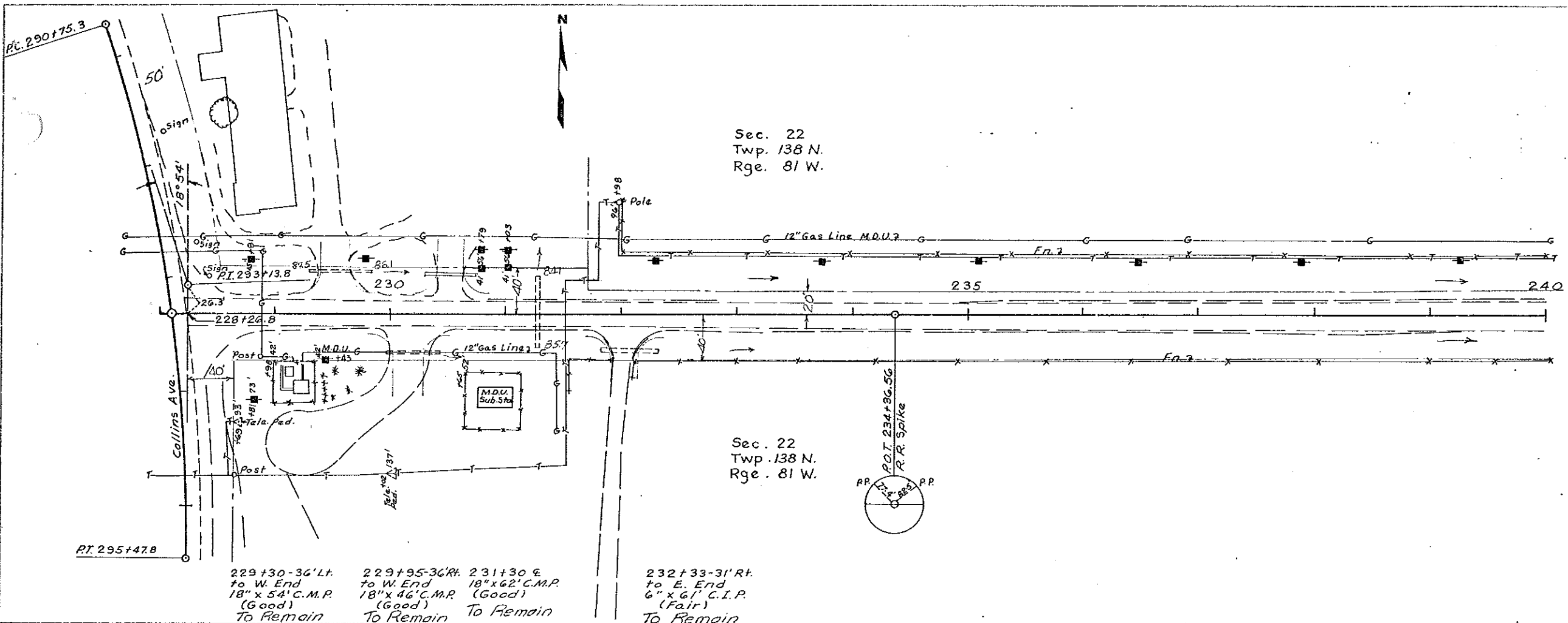
TYPICAL SECTIONS

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
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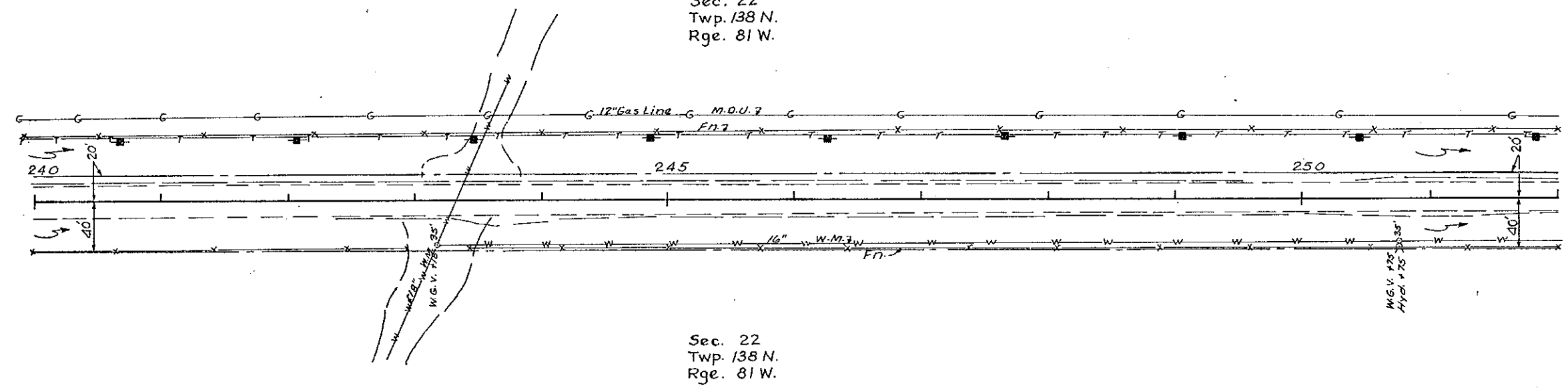
CONSTRUCTION SIGNING



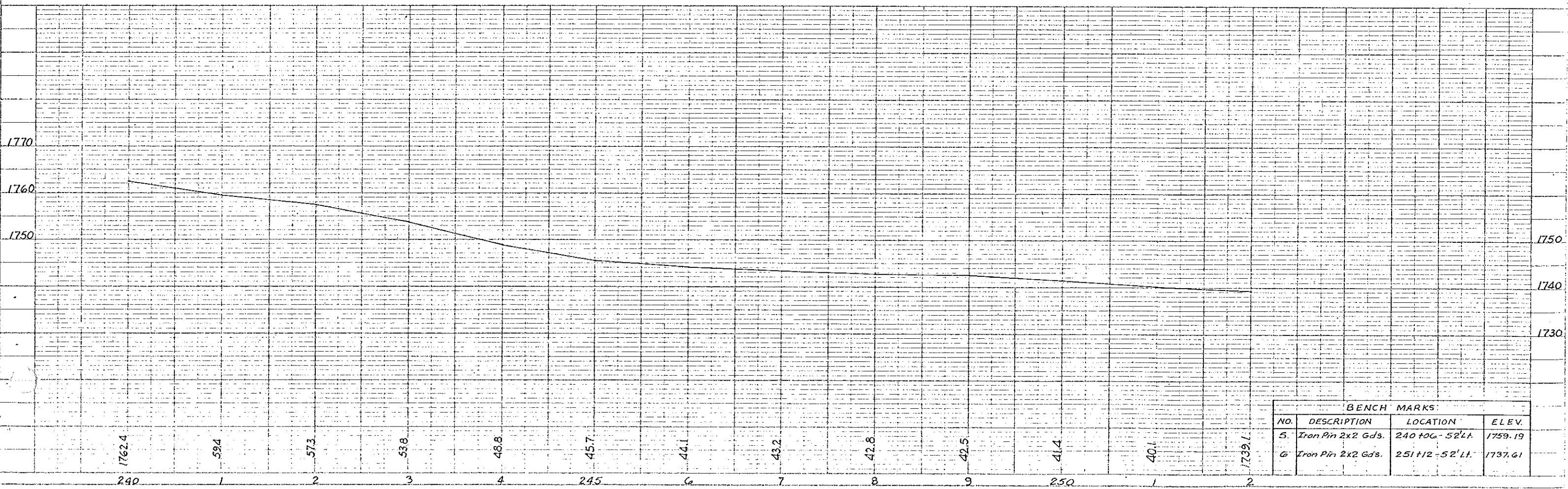


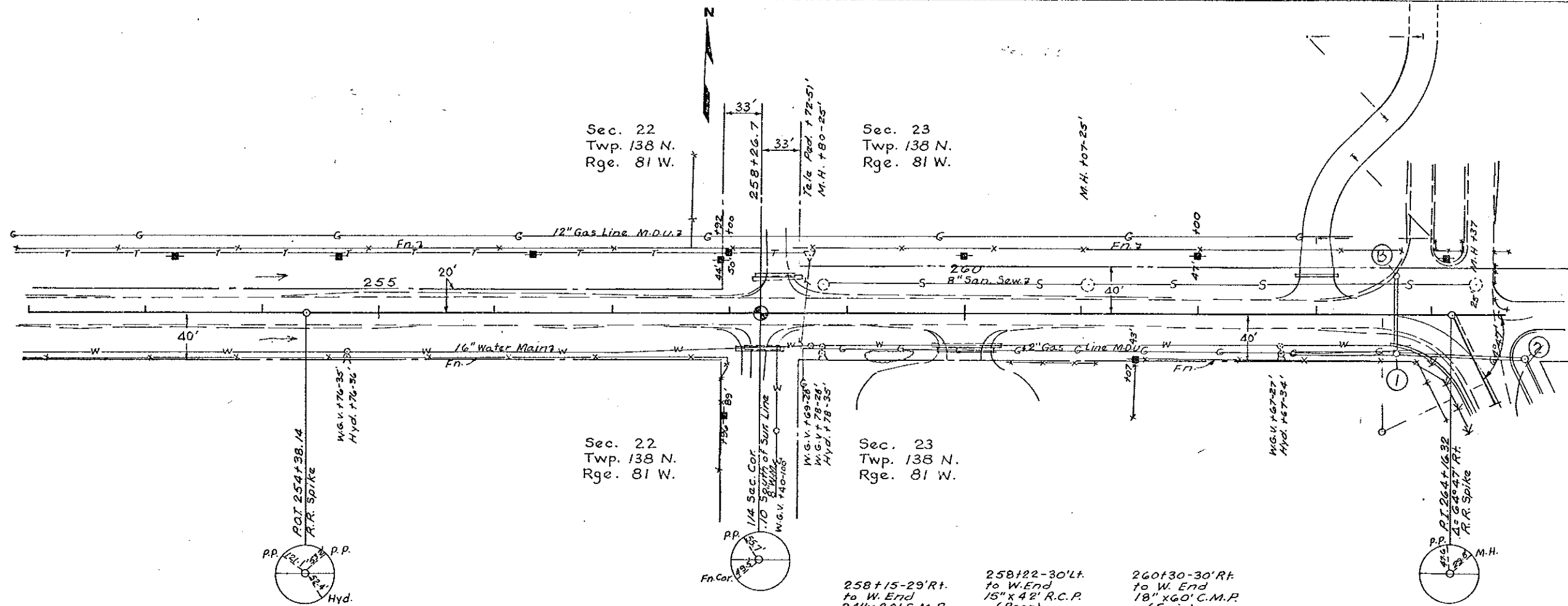
FED. AID DISTRICT	STATE	FED. AID PROJ. NO.	SHEET NO.
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Sec. 22
Twp. 138 N.
Rge. 81 W.



Sec. 22
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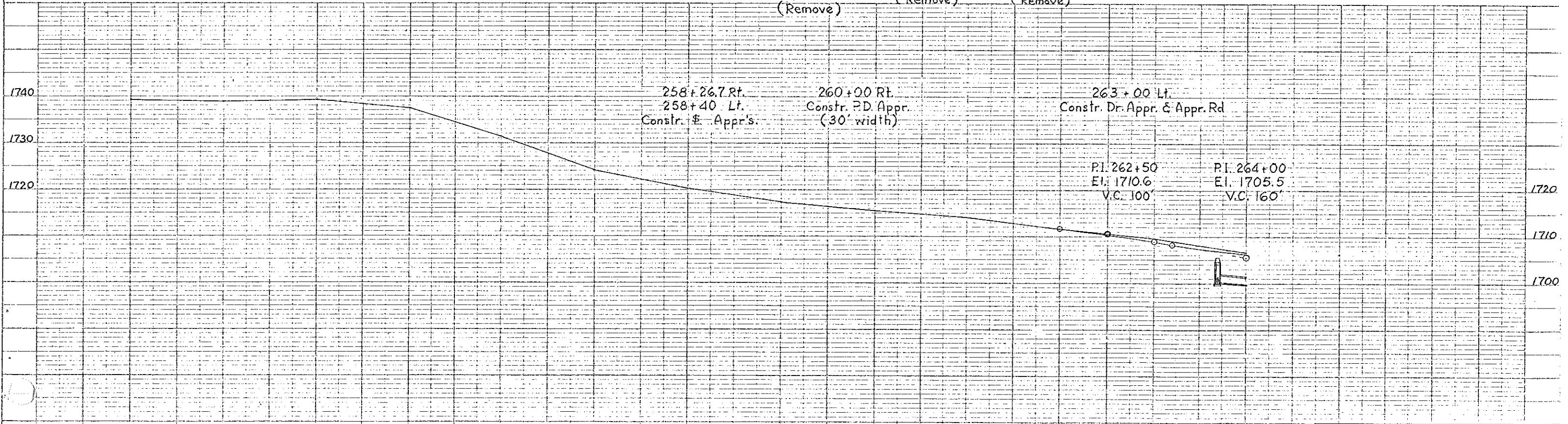




258+15-29' Rt. to W. End 24"x20' C.M.P. (Poor) (Remove)

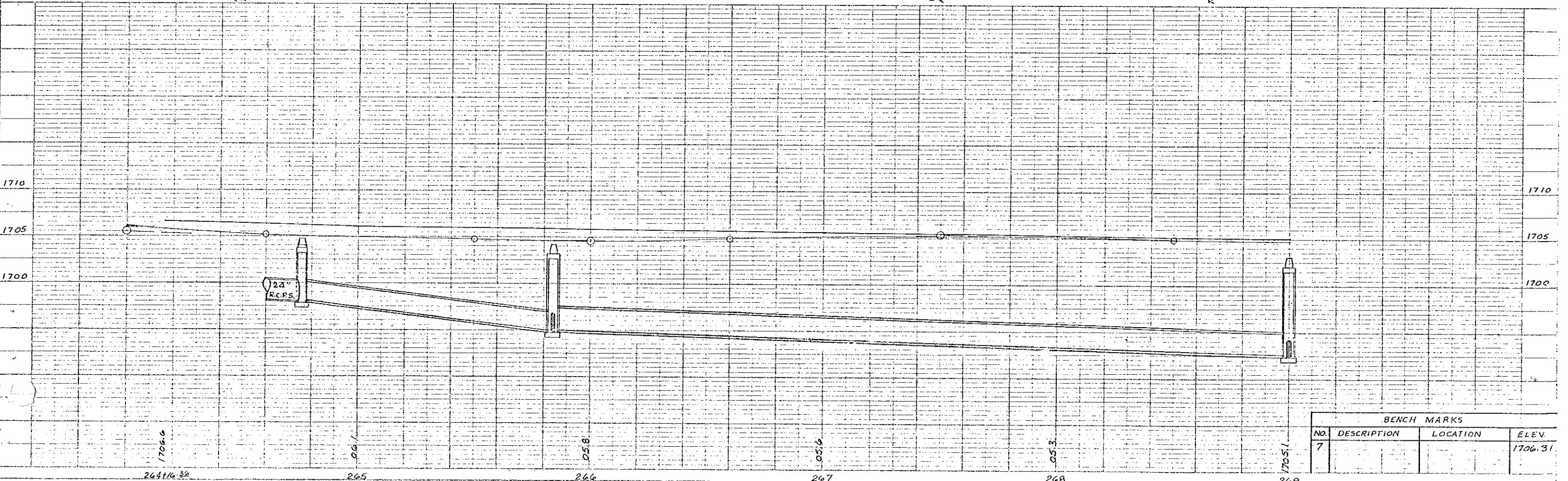
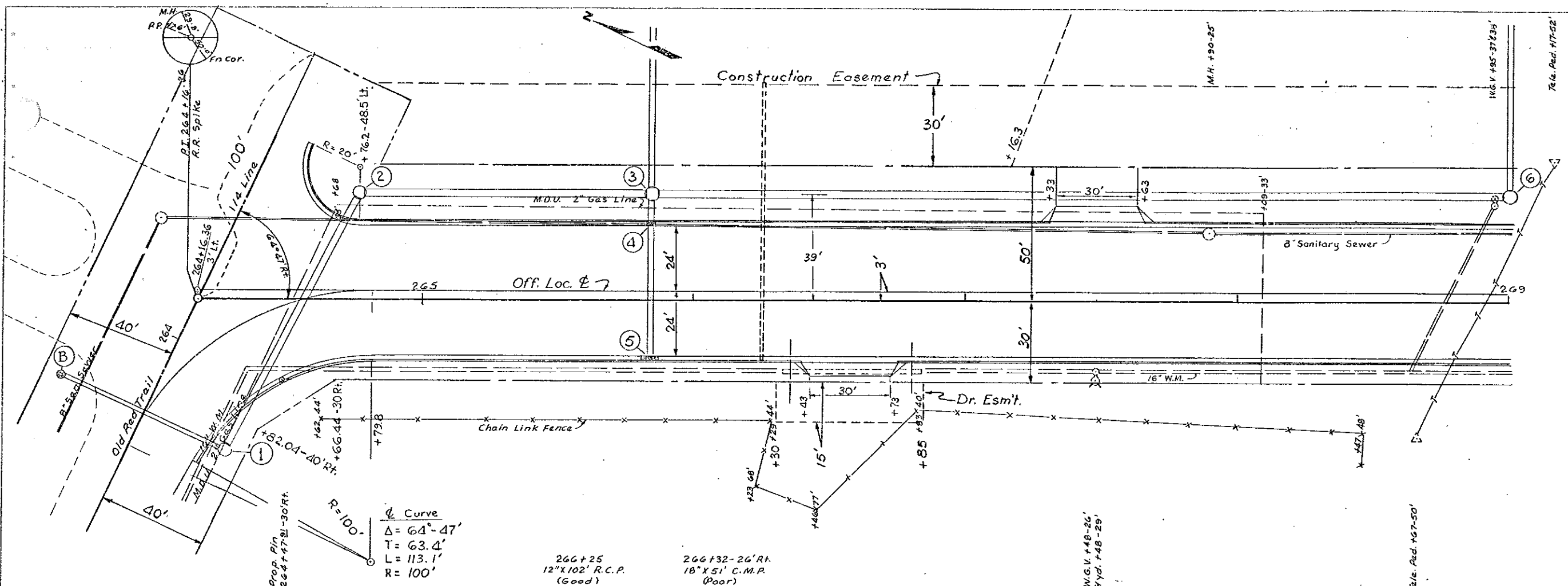
258+22-30' Lt. to W. End 15"x42' R.C.P. (Poor) (Remove)

260+30-30' Rt. to W. End 18"x60' C.M.P. (Fair) (Remove)



STATION	ELEVATION
252	1732.1
3	389
4	392
255	374
6	312
7	24.1
8	20.2
9	172
260	15.5
1	14.1
2	11.5
3	097 08.9
4	1706.6 06.2

BENCH MARK			
NO.	DESCRIPTION	LOCATION	ELEV.
7	Iron Pin 2x2 Gds.	264+12-47' Lt.	1706.31



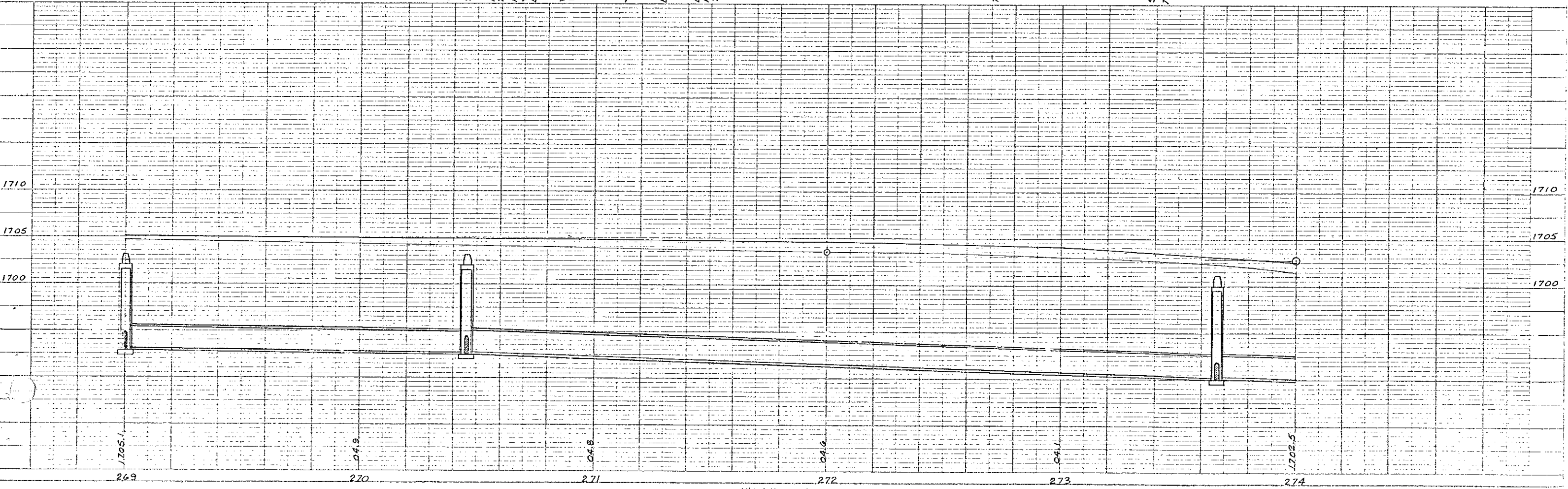
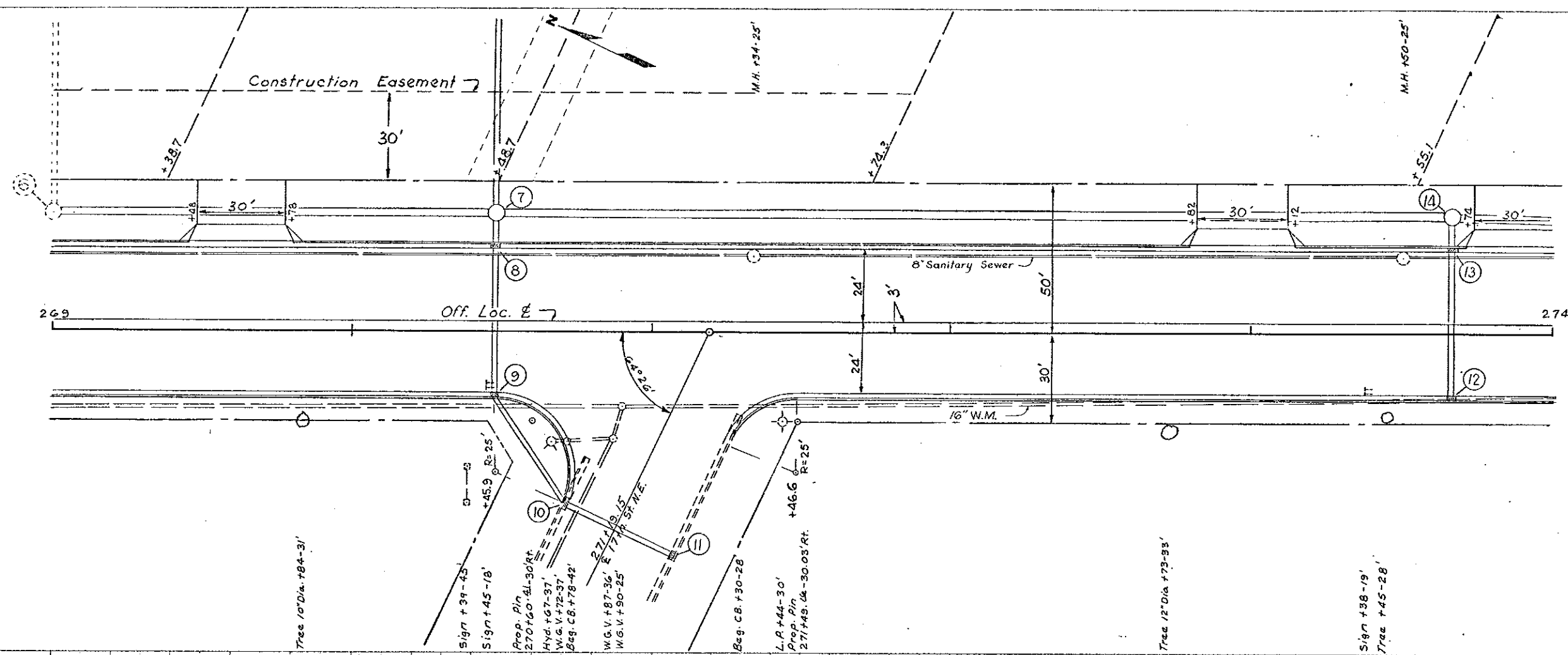
Curve
 $\Delta = 64^{\circ} 47'$
 $T = 63.4'$
 $L = 113.1'$
 $R = 100'$

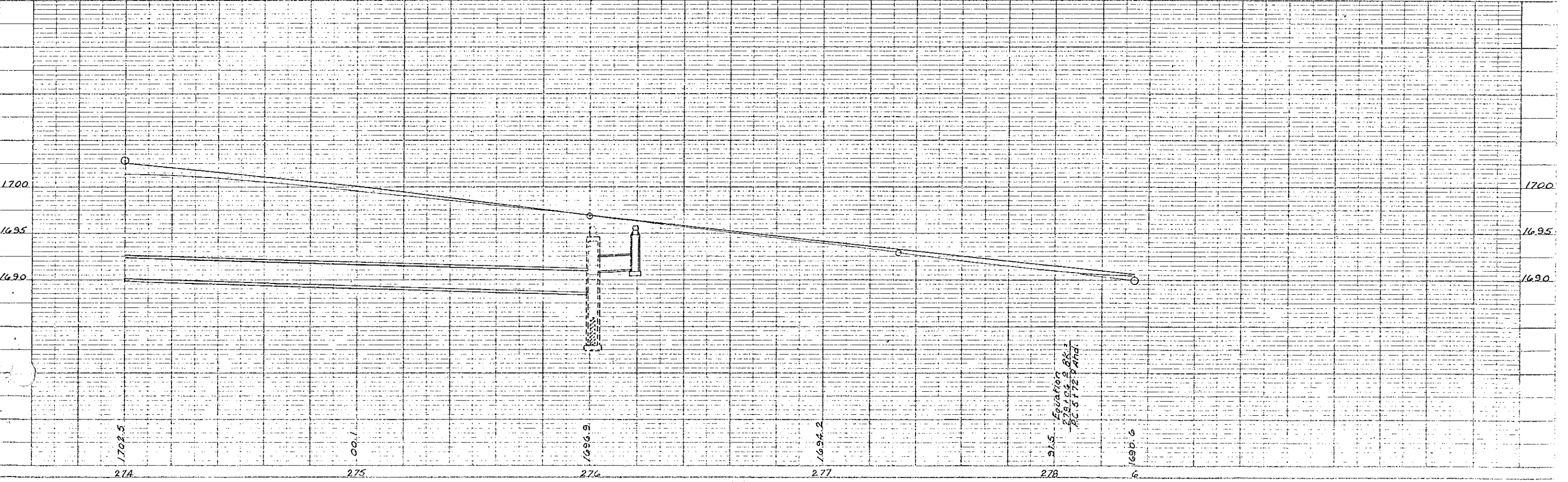
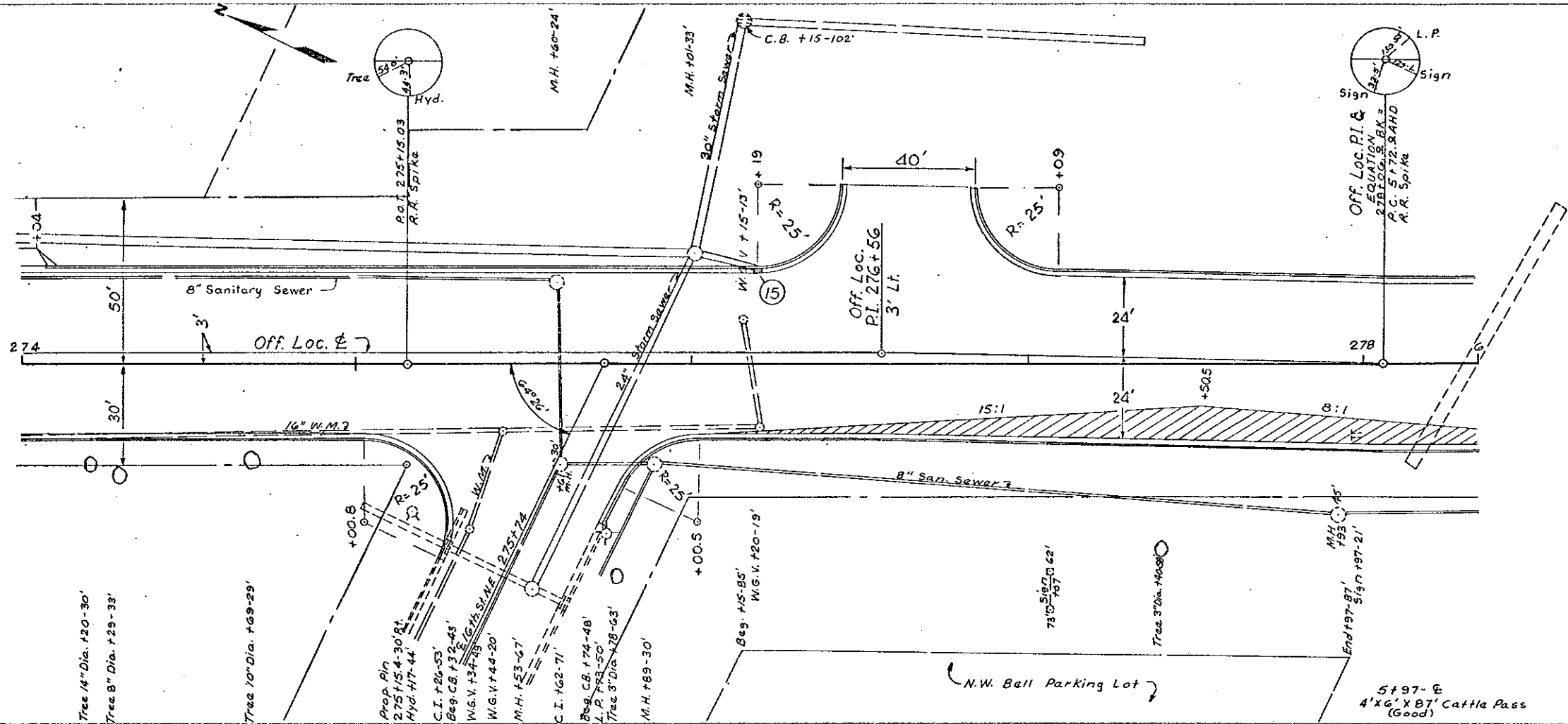
266+25
 12"X102' R.C.P.
 (Good)

266+32-26'
 18"X51' C.M.P.
 (Poor)

BENCH MARKS			
NO.	DESCRIPTION	LOCATION	ELEV.
7			1706.31

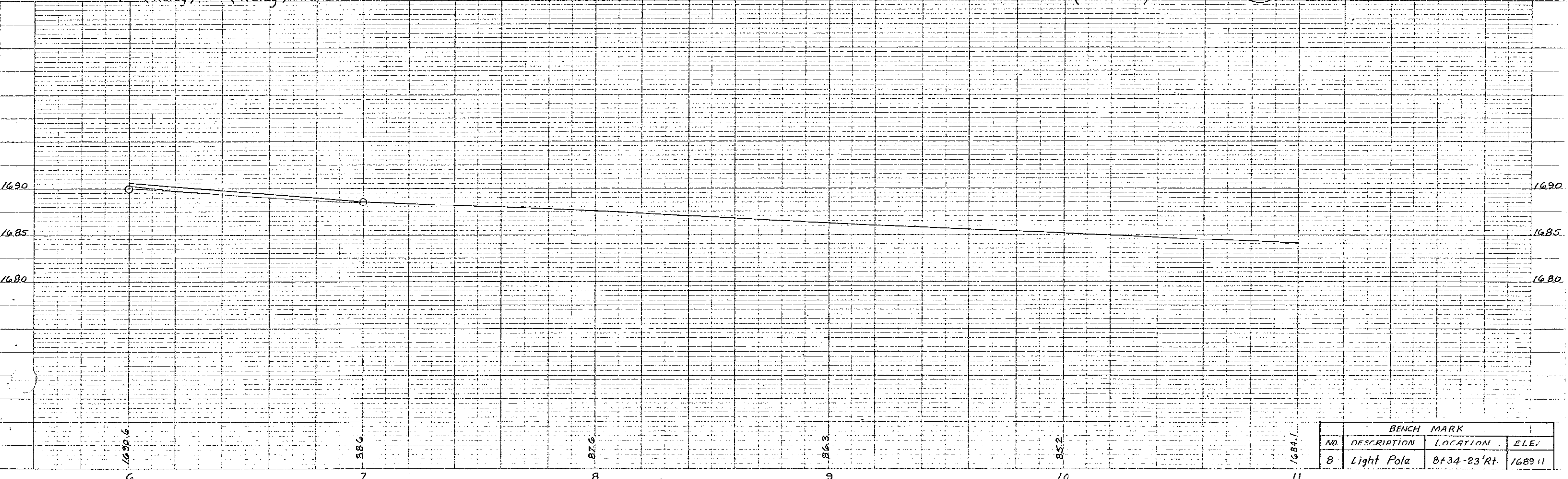
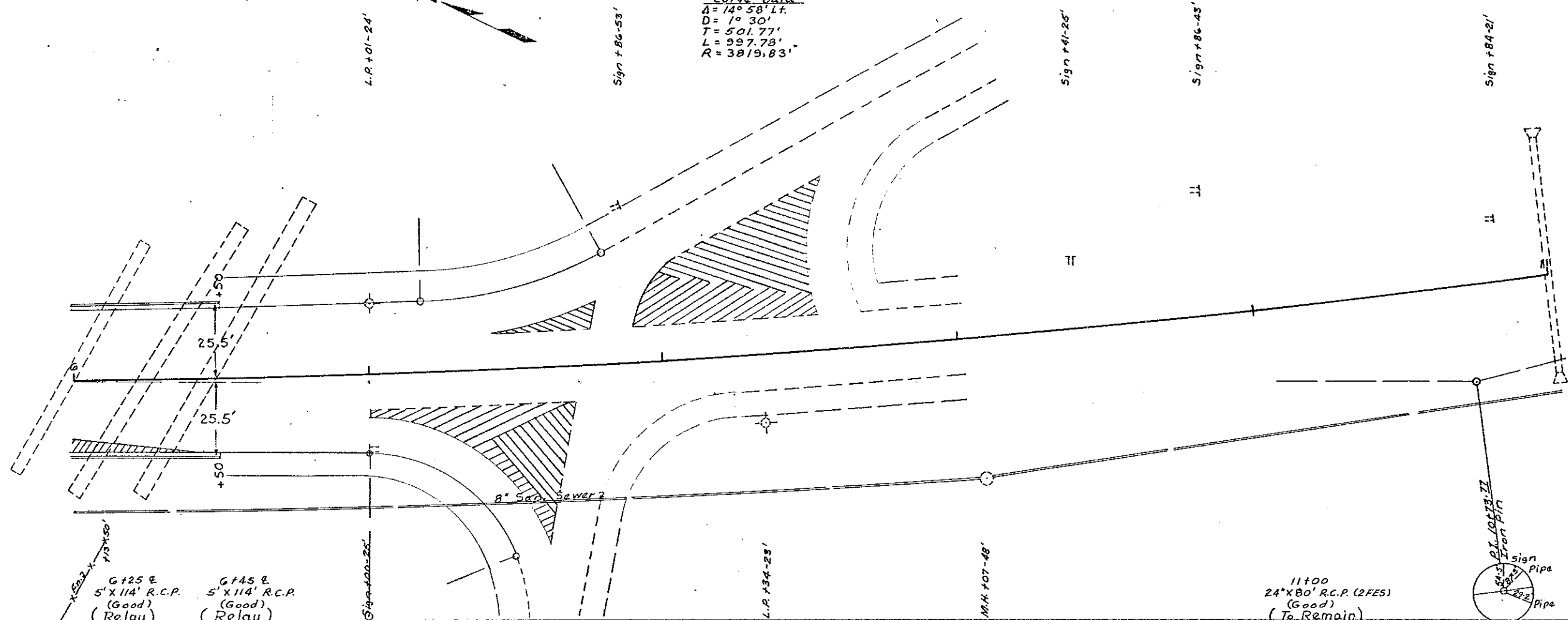
THWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	M-1-806(12)	12



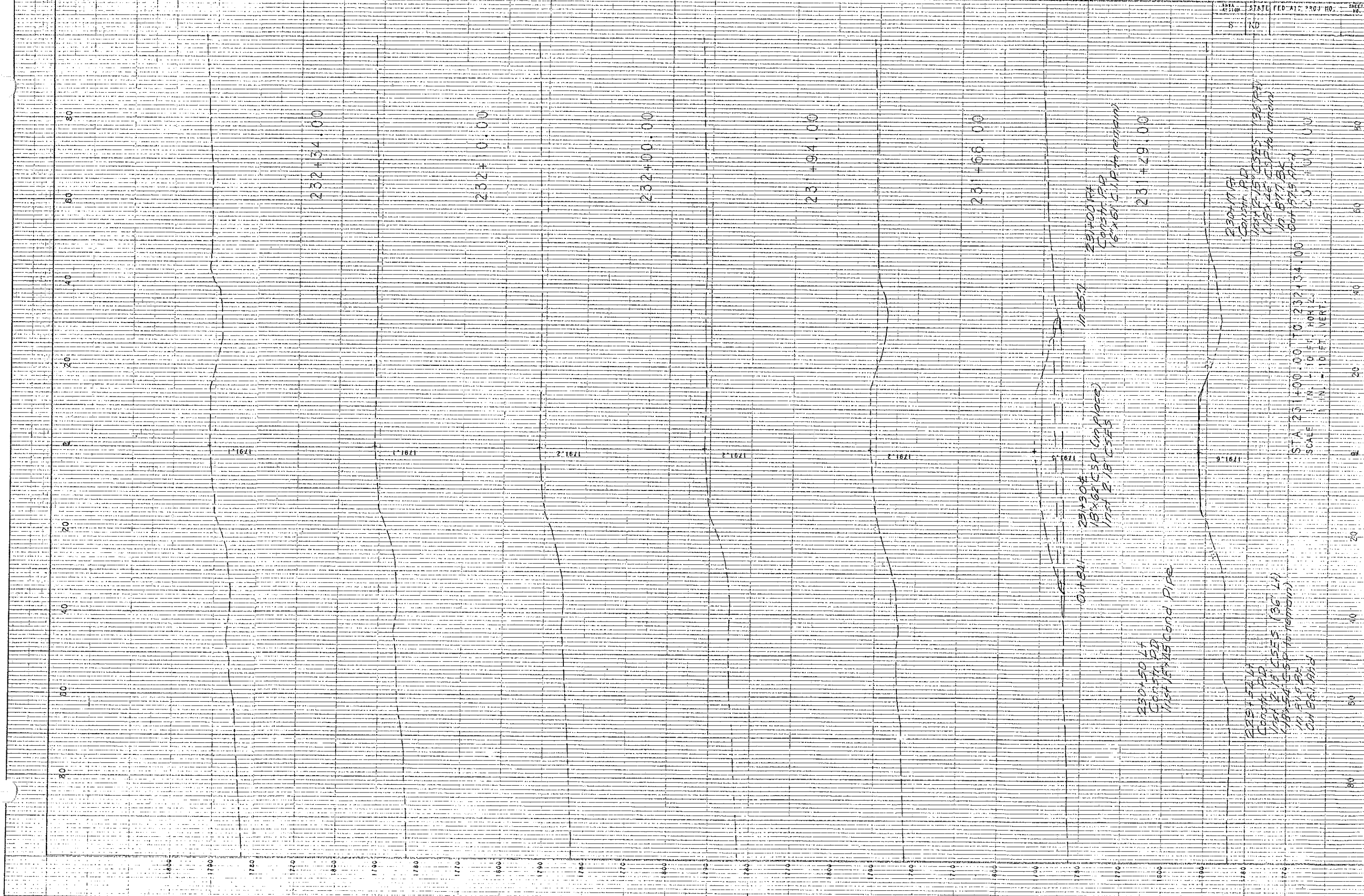


FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	M-1-806(12)	

Curve Data
 $\Delta = 14^{\circ} 58' Lt.$
 $D = 1^{\circ} 30'$
 $T = 501.77'$
 $L = 997.78'$
 $R = 3819.83'$



BENCH MARK			
NO.	DESCRIPTION	LOCATION	ELEV.
8	Light Pole	8+34-23 Rt.	1689.11



232+34.00

232+10.00

232+00.00

231+94.00

231+68.00

231+29.00

1791.1

1791.1

1791.2

1791.2

1791.2

1791.5

1791.6

OUTSIDE
23+30±
18x62 CSP (in place)
1st 2' 18" CSES

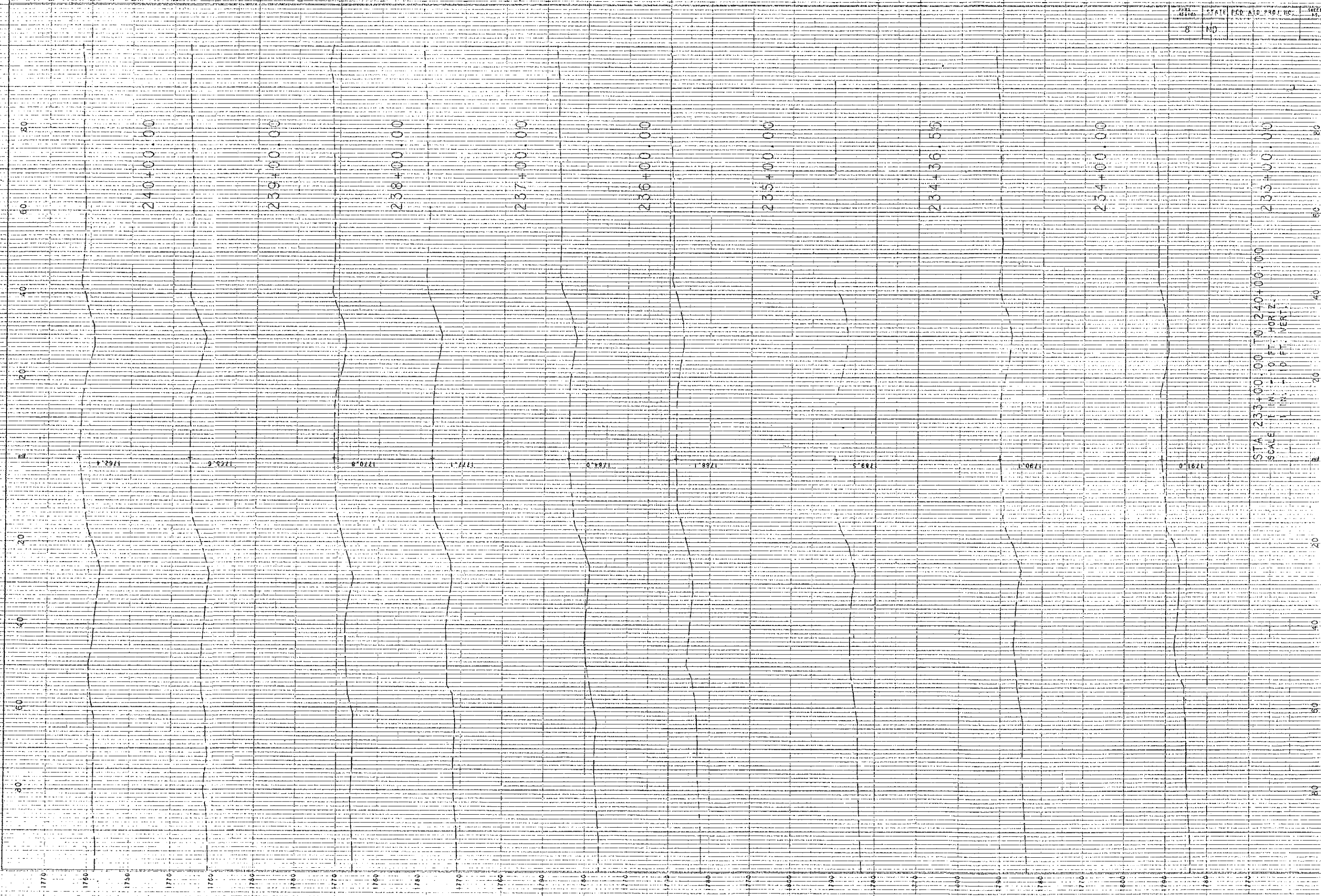
23+00±
CONSTR. PD
15x25" C.I.P. to remain

230+50±
CONSTR. PD
1st 15x15 Cond. Pipe

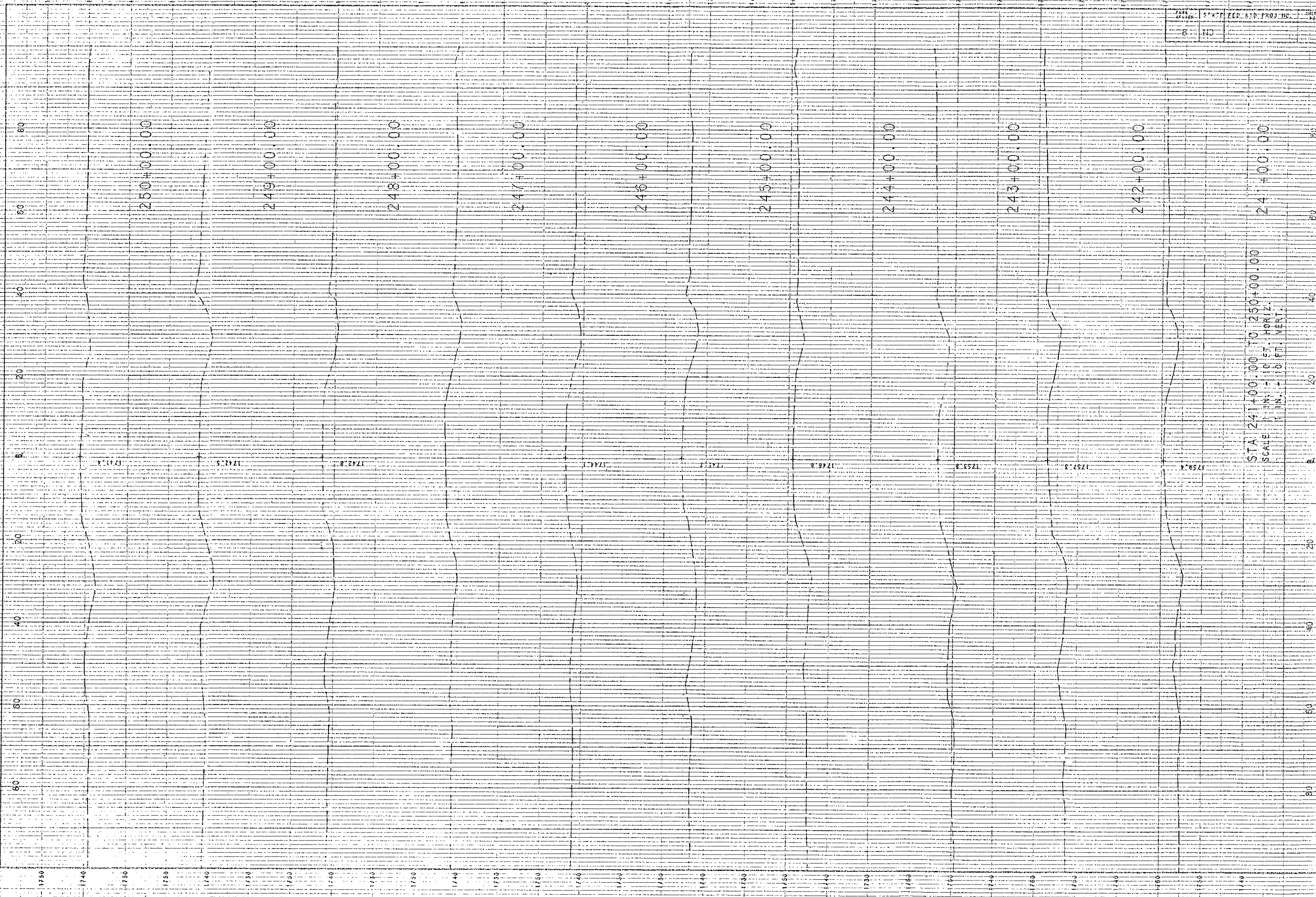
230+50±
CONSTR. PD
1st 2' 18" CSES (36 LH)
18x54 CSP to remain
1st 5' 5" BE
CONSTR. PD

230+17±
CONSTR. PD
1st 2' 18" CSES (36 LH)
18x54 CSP to remain
1st 5' 5" BE
CONSTR. PD

STA 231+00.00 TO 232+34.00
SCALE 1" = 10' HORIZ.
1" = 10' VERT.

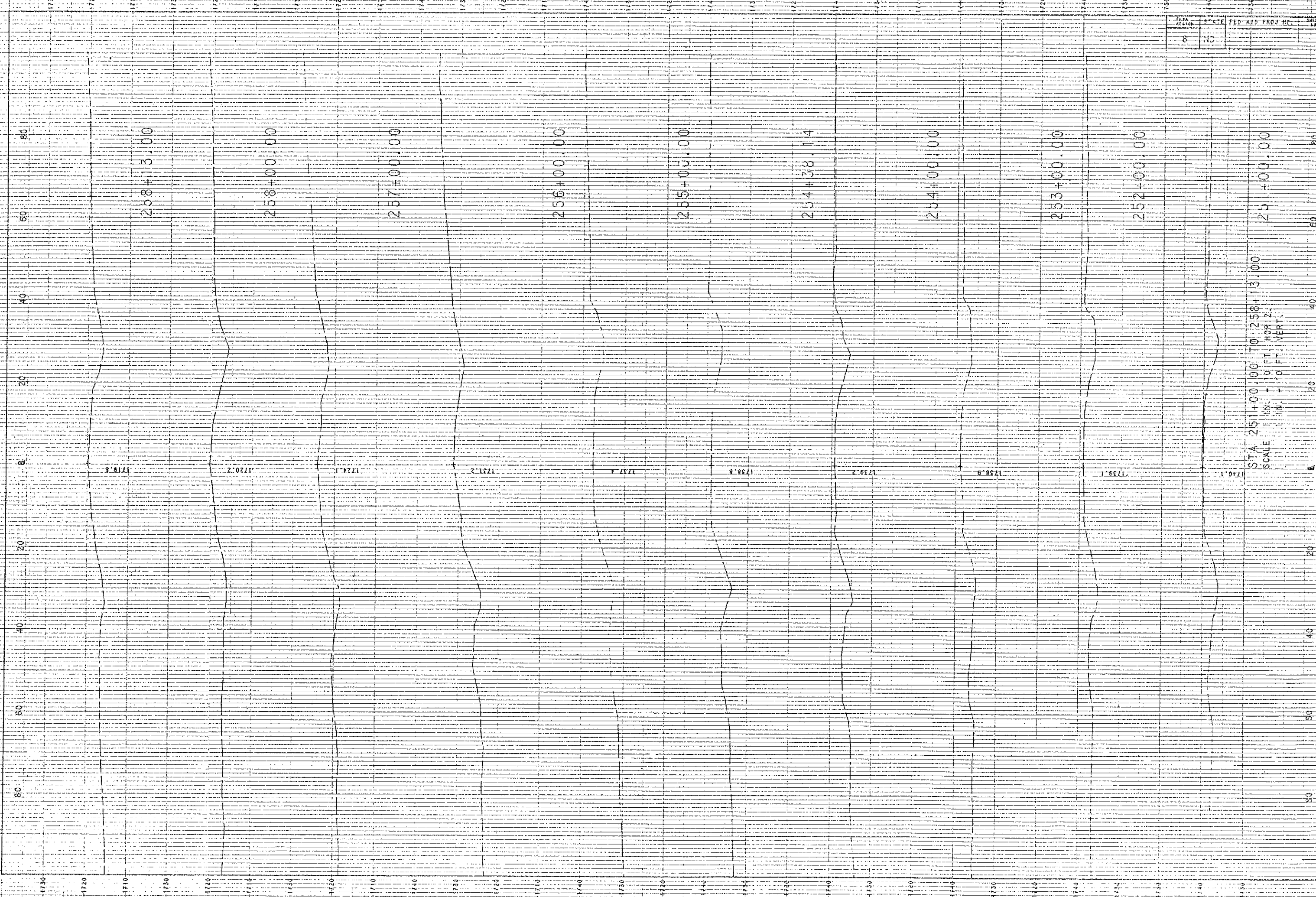


STA 233+00.00 TO 240+00.00
 SCALE 1" = 10' HORIZ. 1" = 10' VERT.

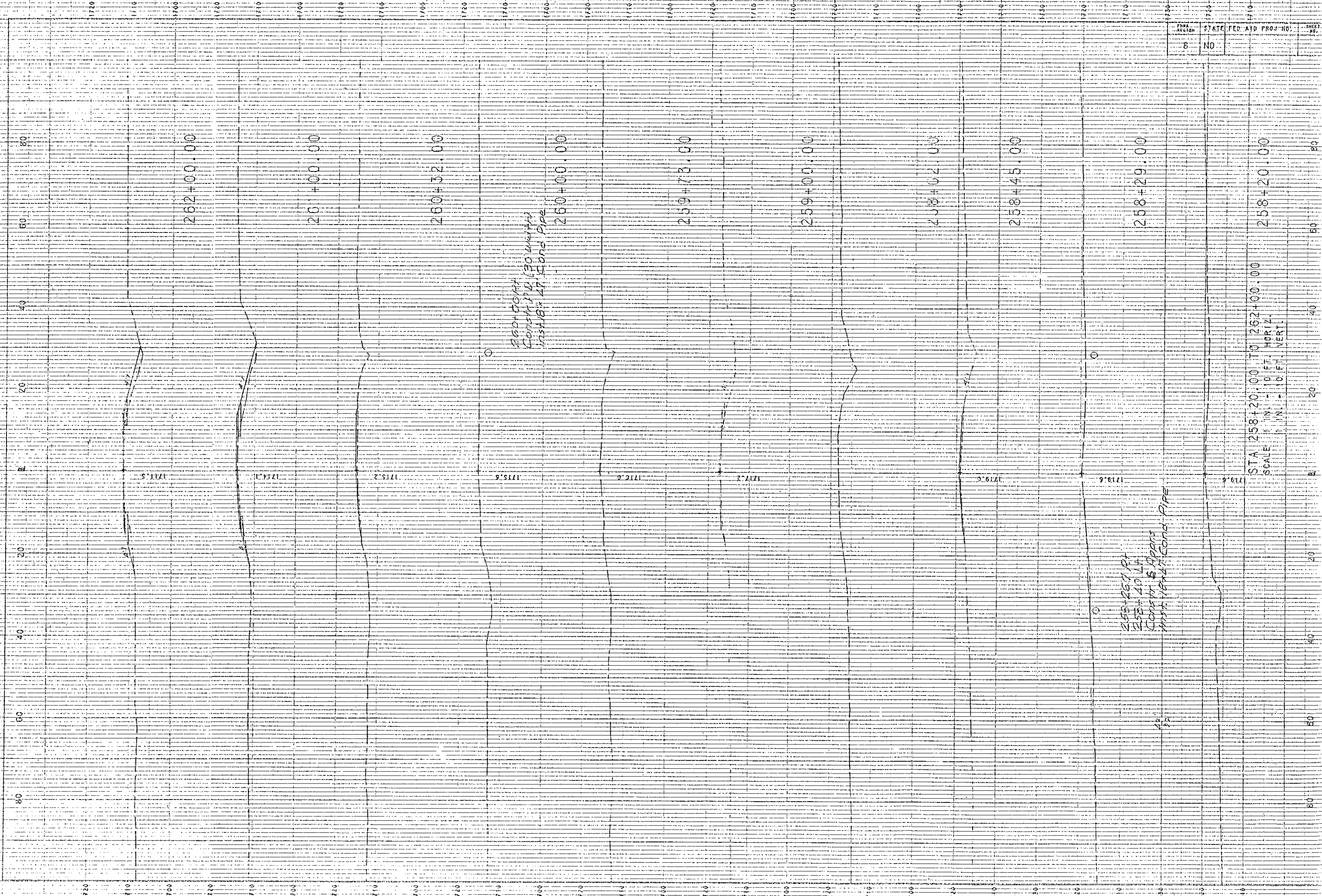


STA. 241+00.00 TO 250+00.00
 SCALE: HORIZ. - 1" = 10 FT. VERT. - 1" = 10 FT.

FSHA ACTION	STATE	FED AID PROJ. NO.	SHEET NO.
8	NC		10



STA 251+00.00 TO 258+13.00
 SCALE HORIZ. = 1" = 10 FT. HORIZ.
 SCALE VERT. = 1" = 10 FT. VERT.



262+00.00

261+00.00

260+32.00

260+00.00

259+73.00

259+00.00

258+02.00

258+45.00

258+29.00

258+20.00

1711.5

1714.1

1715.2

1715.6

1716.8

1717.2

1719.0

1719.6

1719.6

260+00 FT
Const. 17.50 W/40%
SLOPE: 17.50 COND. PIPE

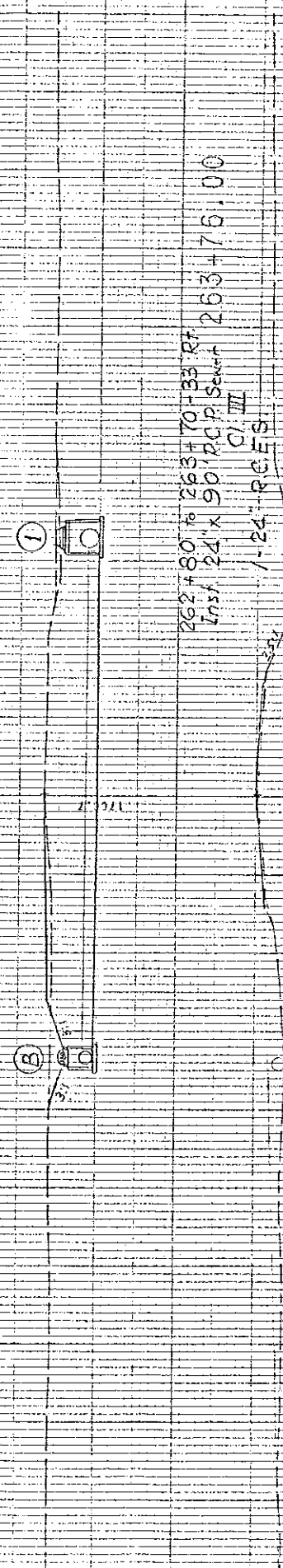
258+29 FT
258+20 FT
Const. 5.00 SLOPE
W/5.00 COND. PIPE

STA 258+20.00 TO 262+00.00
SCALE: HORIZ. - 1" = 10 FT. VERT. - 1" = 10 FT.

M.H. No. & Size	① - 48"	② - 48"	③ - 54"	④ - 54"	⑤ - 54"	⑥ - 54"	⑦ - 54"	⑧ - 48"
Station	263+10 - 33' Rt.	264+76.2 - 36' Lt.	265+64 - 36' Lt.	269+00 - 36' Lt.	270+45.9 - 36' Lt.	270+45.9 - 36' Lt.	273+67 - 36' Lt.	273+67 - 36' Lt.
Top Elev.	1705.60	1704.80	1704.20	1703.10	1703.10	1703.10	1701.10	1701.10
Base Elev.	1700.00	1697.85	1694.78	1692.33	1692.33	1692.33	1690.03	1690.03
Invert Elev.	1700.25	1698.10	1695.00	1693.60	1693.60	1693.60	1690.30	1690.30
Outlet Elev.	1698.30	1695.20	1693.70	1692.90	1692.90	1692.90	1688.60	1688.60
Riser	4.02'	5.37'	7.89'	9.19'	8.99'	8.99'	9.49'	9.49'

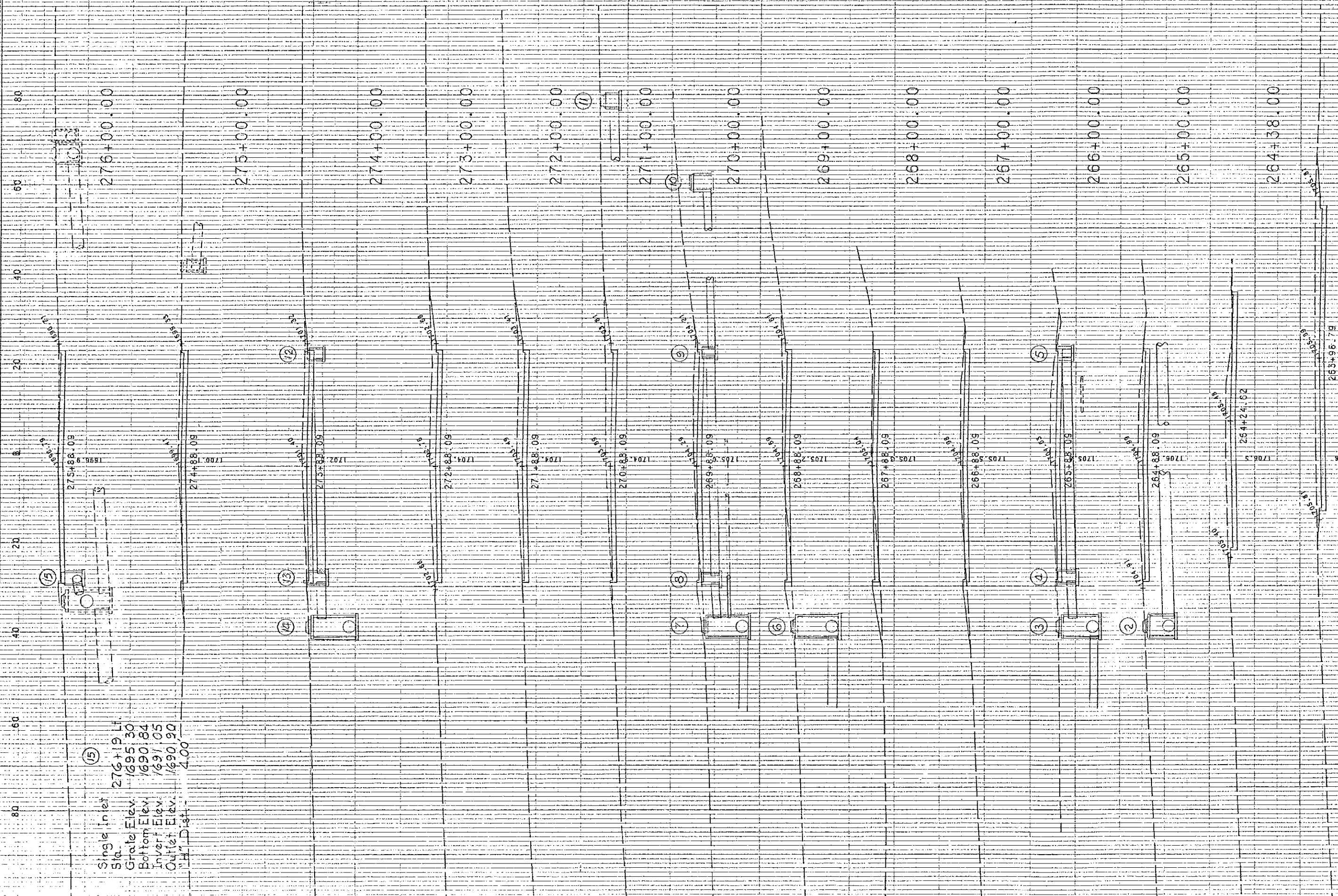
Inlet No.	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬
Single Inlet Sta.	265+84 Lt.	265+64 Rt.	270+45.9 Lt.	270+45.9 Rt.	270+69 - 6.5 Rt.	271.05 - 18.7 Rt.	271.05 - 18.7 Rt.	273+67 Rt.	273+67 Rt.	273+67 Lt.
Grate Elev.	1704.49	1704.49	1703.48	1703.48	1705.42	1705.42	1705.42	1701.67	1701.67	1701.67
Bottom Elev.	1699.90	1701.03	1699.89	1699.89	1700.96	1700.96	1701.96	1697.58	1697.58	1696.58
Invert Elev.	1700.17	1701.24	1700.10	1700.10	1701.17	1701.17	1702.17	1697.79	1697.79	1696.79
Outlet Elev.	1700.00	1700.17	1699.10	1699.10	1700.10	1700.10	1701.17	1696.79	1696.79	1696.70
1/4" Dist.	4.00'	3.00'	3.00'	3.00'	4.00'	4.00'	3.00'	3.00'	3.00'	4.00'

⑬
Special Inlet 6" Beehive Sta. 263+70 - 33.5 Rt.
Grate Elev. 1704.10
Invert Elev. 1700.46
Outlet Elev. 1700.25
1/4" Dist. 3.25'



265+00 L.F.
CONHT. RT. BY BARR RD
INFORM NEXT COND. PIPE

STA 263+00.00 TO 264+17.00
SCALE 1" = 10 FT. HORIZ.
1" = 10 FT. VERT.



Single Inlet
 Sta. 276+19.41
 Grate Elev. 1695.30
 Bottom Elev. 1690.84
 Invert Elev. 1691.05
 Outlet Elev. 1690.90
 "H" Dist. 4.00

STA 264+16.40 TO 276+00.00
 SCALE HORIZ. 1" = 10 FT. VERT. 1" = 10 FT.