JOB #

FHWA REGION	STATE	PROJECT	SHEET NO.
8	N.D.	F-RRS-1-006 (004)067	1

NORTH DAKOTA

STATE HIGHWAY DEPARTMENT

MORTON COUNTY
F-RRS-1-006(004)076
GRADING, SURFACING, SEWER, LIGHTING, SIGNALS & INCIDENTALS

DESIGN DATA

Main Street

Traffic	Average Daily			Est. 30th Max. Hr.
Current Traffic (1988)	7290 Pass.	510 Trucks	7800 Total	780
Traffic Forecast (2010)	14,440 Pass.	1010 Trucks	15,450 Total	1545

Hwy. #6

Current Traffic (1988)	**5820 Pass.**	**280 Trucks**	**6100 Total**	**610**
Traffic Forecast (2010)	**7630 Pass.**	**370 Trucks**	**8000 Total**	**800**

Design Speed 35 MPH
Traffic Classification "M"
Minimum Sight Distance (Stopping) 250'
Bridge Hs 25

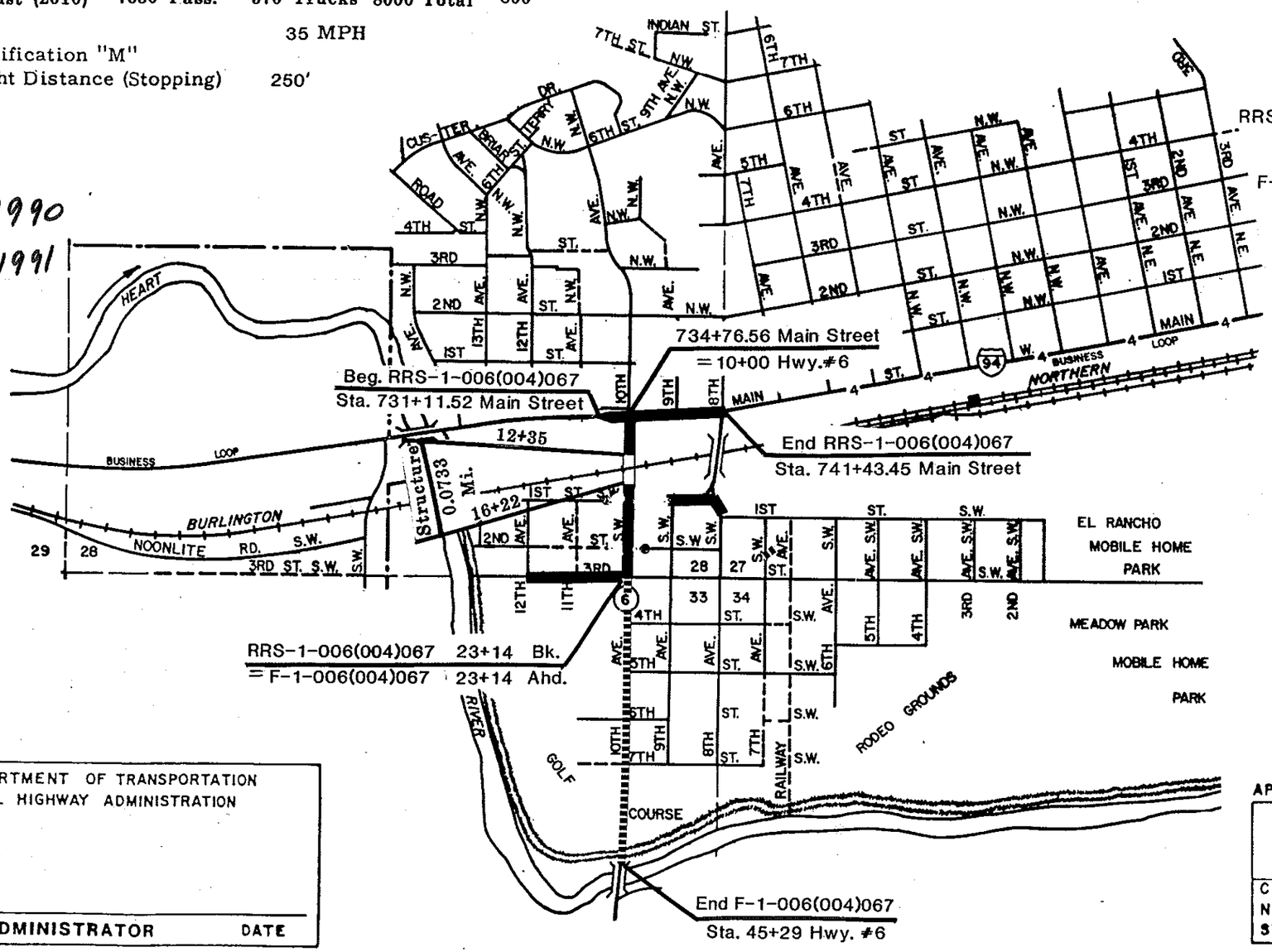
Construction:
Bridge – 1990
Roadway – 1991

GOVERNING SPECIFICATIONS

Standard Specifications adopted by the North Dakota State Highway Department, November 1986. Standard Drawings currently in effect, and other Contract Provisions submitted herein.

LENGTH OF PROJECT

	Miles-Gross	Miles-Net
RRS-1-006 (004)067	0.6877	0.6144
F-1-006 (004)067	0.4195	0.4195



MANDAN

Section 28,
Twp. 139 N.
Rge. 81 W.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR DATE

APPROVED DATE

CHIEF ENGINEER
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

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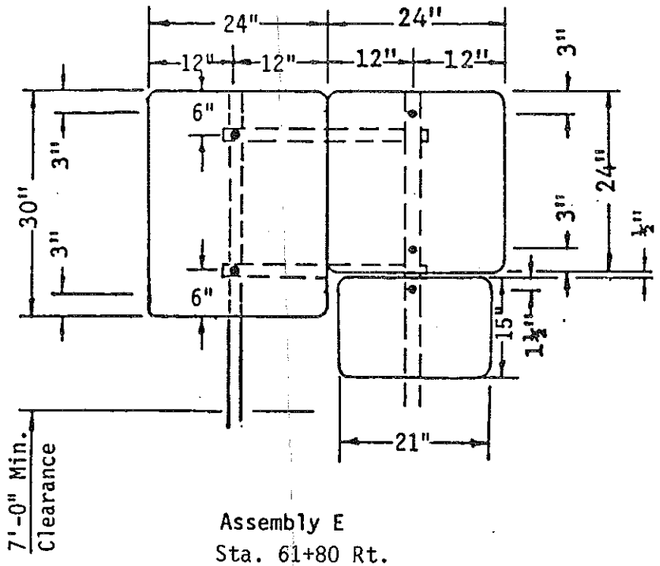
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	F-1-806(015)069	87



Assembly E
Sta. 61+80 Rt.
Area: 11.19 Sq. Ft.

TRAFFIC CONTROL SYSTEM

Sign Detail Sheet

ND 1806 Hwy.

Mandan, N.D.

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
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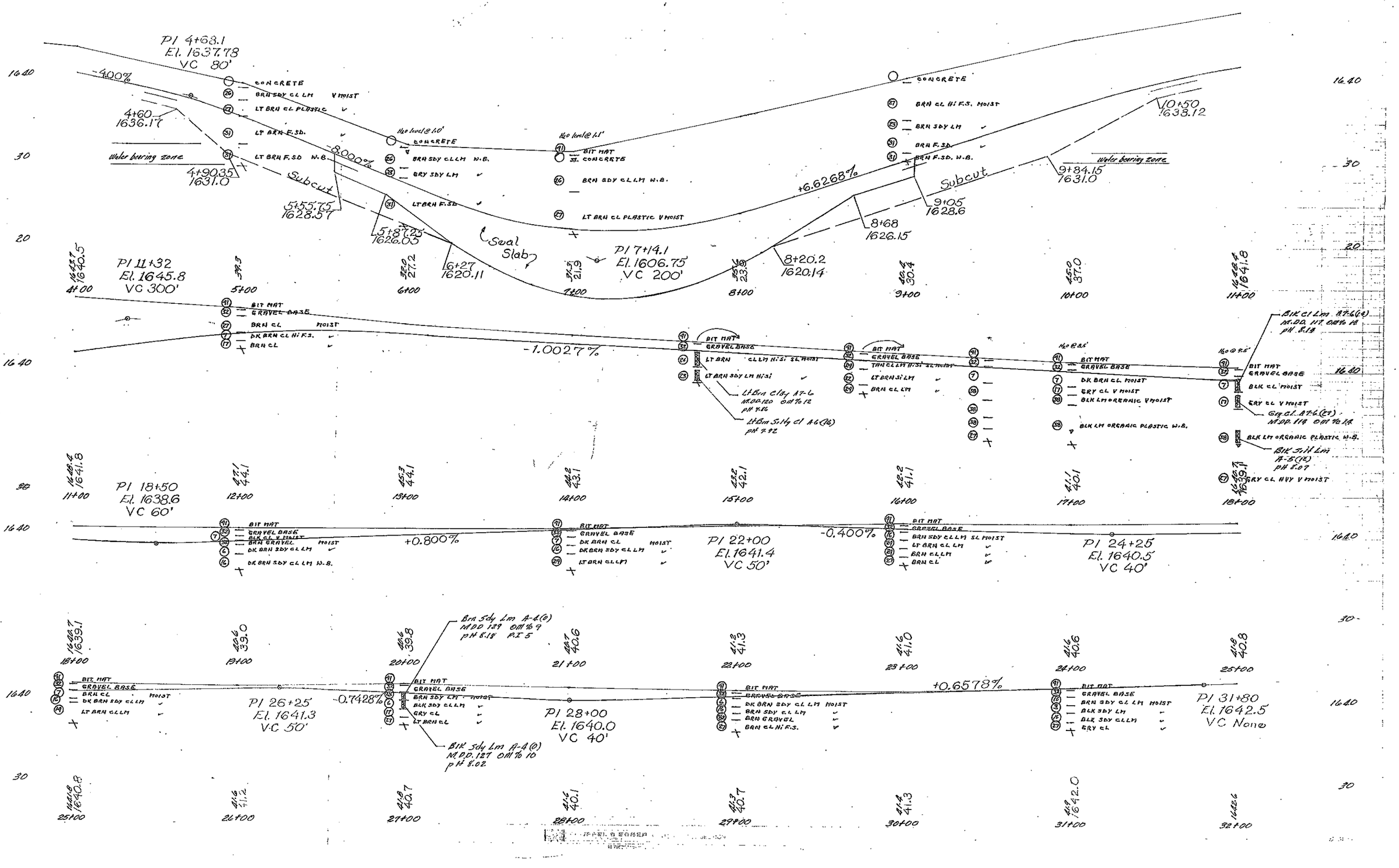
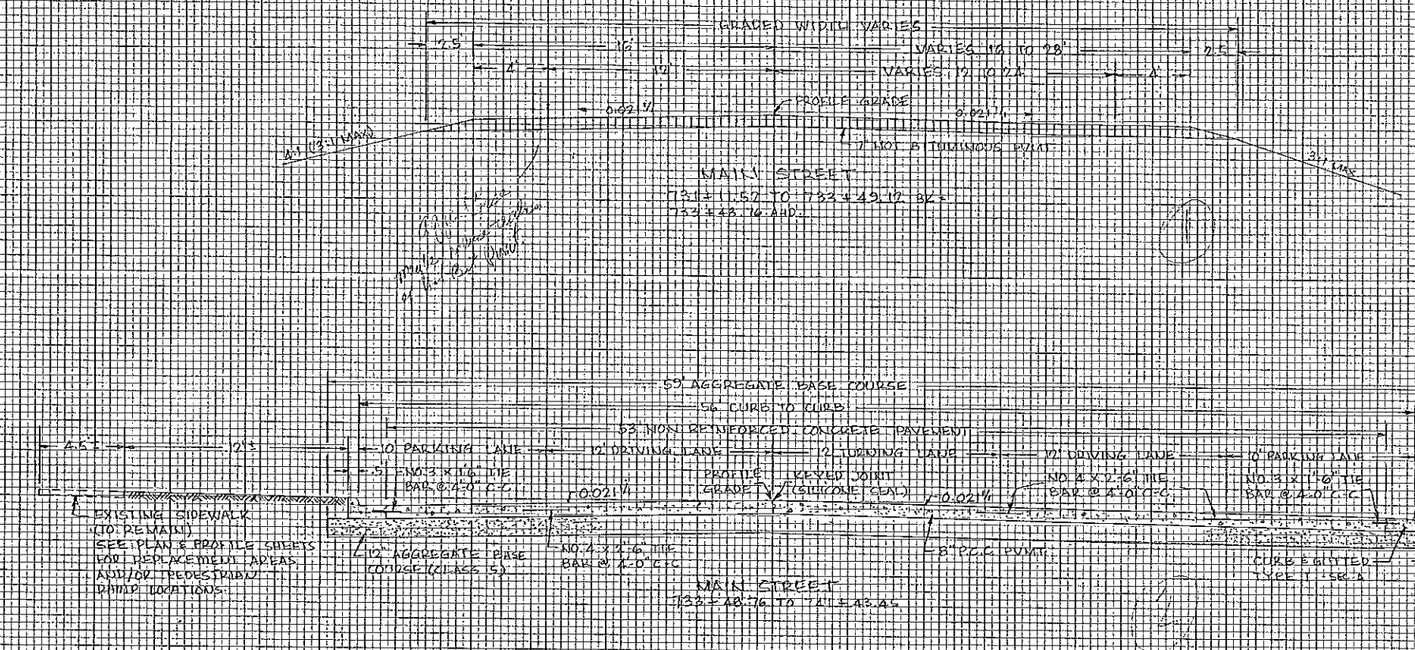
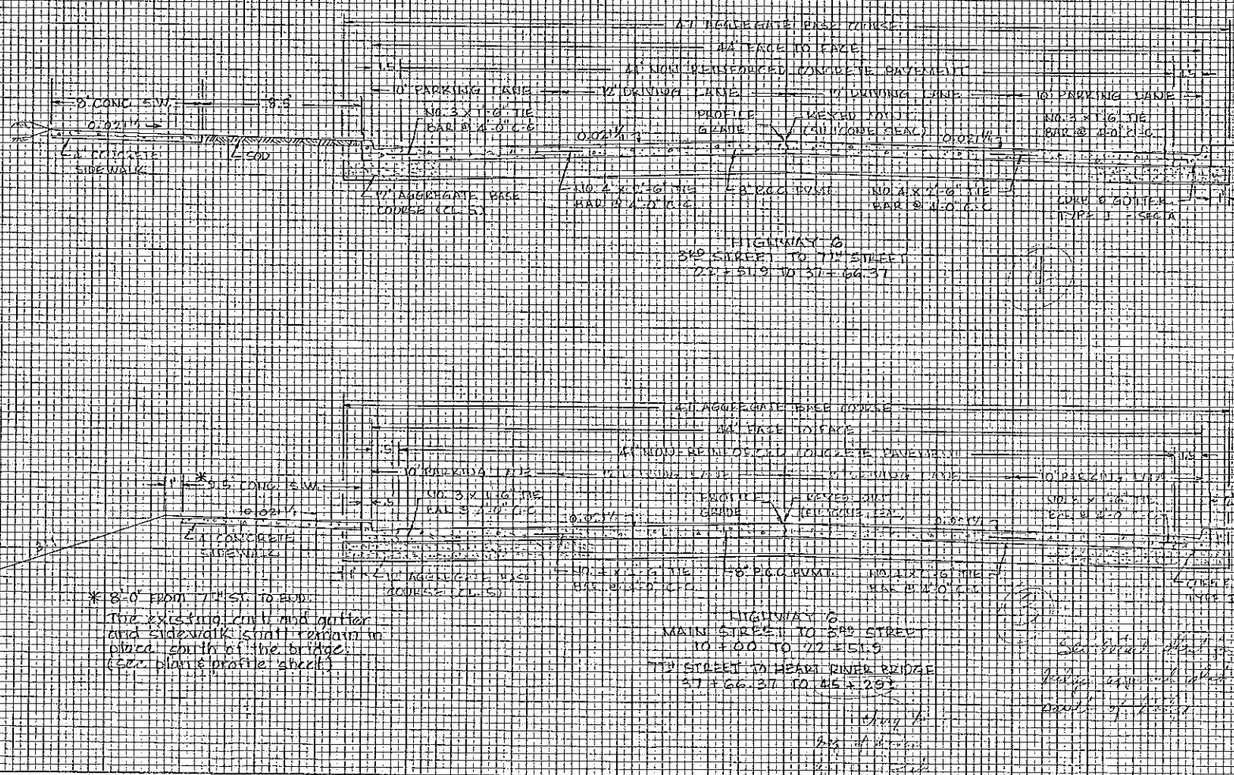
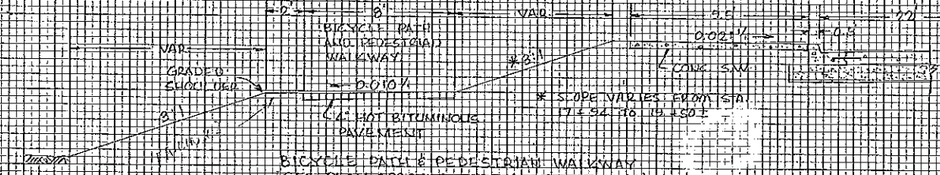
Soils Profile on 1806 From Main St. South to Heart River Bridge



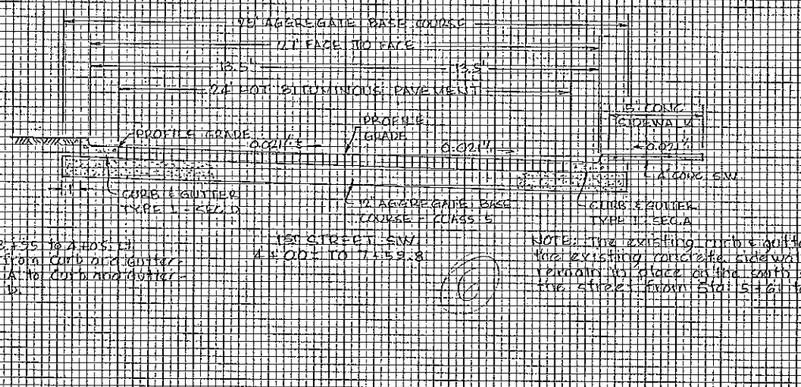




The existing curb and gutter and sidewalk shall remain in place south of the bridge. (See plan & profile sheet)



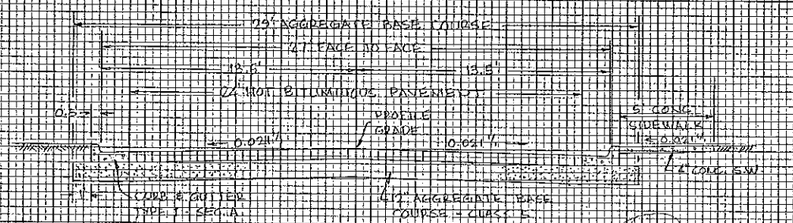
BICYCLE PATH & PEDESTRIAN WALKWAY
(SEE PLAN & PROFILE SHEETS FOR LOCATIONS)



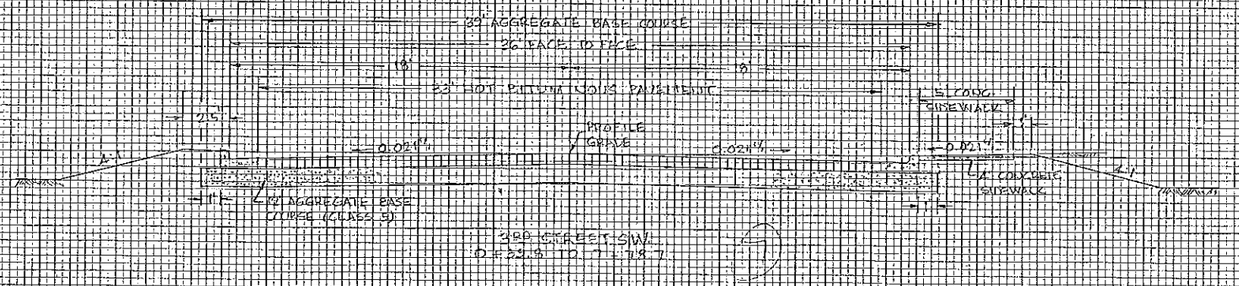
NOTE: Sta. 2+55 to 4+05: Transition from curb and gutter type II - sec. b to curb and gutter type I - sec. b.

1ST STREET S.W.
4+00± TO 7+59.8

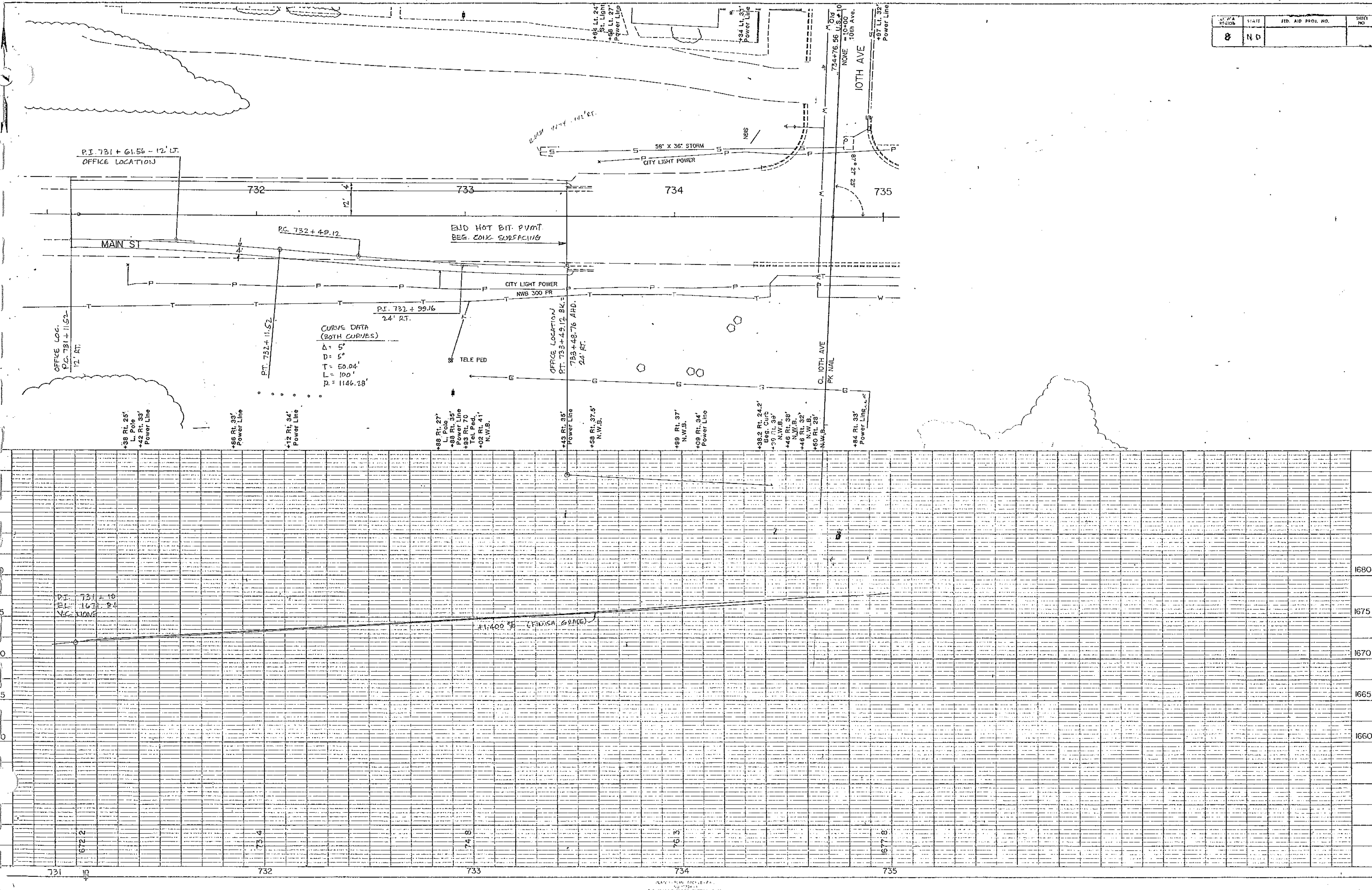
NOTE: The existing curb & gutter and the existing concrete sidewalk shall remain in place on the south side of the street from Sta. 5+61 to 6+14 and S.W.



1ST STREET S.W.
11+80.5 TO 14+00±



3RD STREET S.W.
0+25.9 TO 1+78.7



8
N D
FED. AID PROJ. NO.
10TH AVE
56" X 36" STORM
CITY LIGHT POWER
P.I. 731 + 61.56 - 12' LT.
OFFICE LOCATION
732
733
734
735
MAIN ST
P.C. 732 + 49.12
END HOT BIT. PVMT.
BEG. CONC. SURFACING
CITY LIGHT POWER
NWB 300 PR
P.I. 732 + 99.16
24' RT.
CURVE DATA
(BOTH CURVES)
Δ = 5°
D = 5°
T = 50.04'
L = 100'
R = 1146.28'
TELE PED
OFFICE LOC.
P.C. 731 + 11.52
12' RT.
P.T. 732 + 11.52
OFFICE LOCATION
P.T. 733 + 49.12 BK. = 733 + 48.76 AHD.
24' RT.
CL 10TH AVE
PK NAIL
734+76.56
NONE
+38 Rt. 25' L. Pole
+42 Rt. 33' Power Line
+86 Rt. 33' Power Line
+12 Rt. 34' Power Line
+88 Rt. 27' L. Pole
+88 Rt. 35' Power Line
+93 Rt. 70 Tel. Ped.
+02 Rt. 41' N.W.B.
+45 Rt. 35' Power Line
+58 Rt. 37.5' N.W.B.
+99 Rt. 37' N.W.B.
+09 Rt. 34' Power Line
+38.2 Rt. 24.2' Beg. Curb
+46 Rt. 38' N.W.B.
+46 Rt. 32' N.W.B.
+50 Rt. 28' N.W.B.
+84 Rt. 33' Power Line
+97 Lt. 32' Power Line
P.I. 731 + 10
EL. 1671.84
V.C. NONE
+1.400 % (FINISH GRADE)
1680
1675
1670
1665
1660
672.2
73.4
74.8
76.3
1677.8
731
732
733
734
735

STATE	STATE	FED. AID PROJ. NO.	SHEET NO.
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9TH AVE

MAIN ST

CITY LIGHT POWER

NWB 300 FR

WALL

735 736 737 738 739

Δ= 87°28'51"
T= 20.24'
L= 32.38'
R= 21.33'

Δ= 92°36'09"
T= 18.84'
L= 29.09'
R= 18'

92° 36' 09"

738+56.73

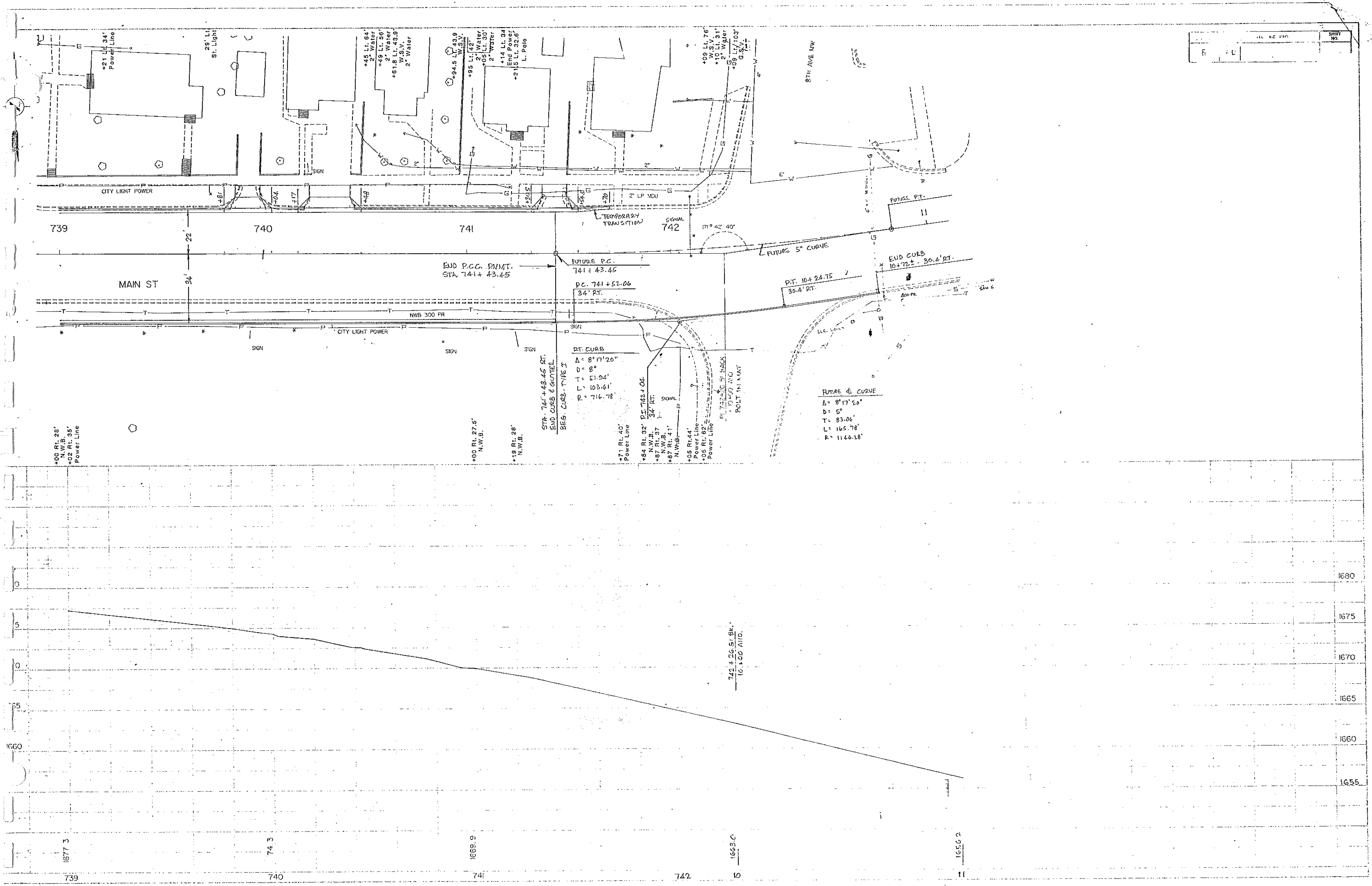
D.T. 739+00
El. 1683.0
V.C. 600'

+1.40%

-6.25%

1685 1680 1675 1670 1665

1677.8 79.1 79.8 79.2 1677.3



MAIN ST
8TH AVE NW
CITY LIGHT POWER
NWB 300 PR
739
740
741
742
11
SIGN
SIGNAL
TEMPORARY TRANSITION
FUTURE 5° CURVE
FUTURE P.T.
END P.C.C. PVMT.
STA 741+ 43.45
FUTURE P.C.
741+ 43.45
P.C. 741+52.06
34' RT.
P.T. 10+ 24.75
30.4' RT.
END CURB
10+72± - 30.4' RT.
RT. CURB
Δ= 8°17'20"
D= 8°
T= 51.94'
L= 103.61'
R= 716.78'
FUTURE ℄ CURVE
Δ= 8°17'20"
D= 5°
T= 83.06'
L= 165.78'
R= 1146.28'
STA 741+43.45 RT.
END CURB & GUTTER
BEG. CURB - TYPE I
P.I. 742+04
34' RT.
171° 42' 40"
2" LP WOU
742 + 26.51 BK.
10 + 00 AHD.
1680
1675
1670
1665
1660
1655
1677.3
74.3
1669.9
1663.0
1656.2
10

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
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58" X 36" STORM

4" LP

4" MDU

2" LP

RETAINING WALL

WALL

12" SAN

4" LP MDU

SIGN

LT POLE-52.9

36.5 SIGN

49.2 FIRE HYD

Δ= 92°22.35"
T= 16.77'
L= 28.99'
R= 17.95'

PI 10+00.00
PK NAIL
0° 03' 00" RT

87° 27' 25"

Δ= 87°27'25"
T= 48.70'
L= 45.79'
R= 30'

58" X 36" STORM

CITY LIGHT POWER

MAIN ST.

1344.76.56 MAIN ST.
10 00 HWY. 6

NWB 300 FR

734+81.30

11+04.15
109.57' Lt.

③ Δ= 79°24'25"
T= 62.27'
L= 103.54'
R= 75'

④ Δ= 17°28'11.8"
T= 15.36'
L= 30.49'
R= 100'

9.5' S.W.

733+78.46

39°39'50.6"

12°15'18.6"

11+81.16

① Δ= 92°35'35"
T= 104.03'
L= 161.61'
R= 100'

② Δ= 10°50'26.8"
T= 11.86'
L= 22.65'
R= 12.5'

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STORAGE BIN

LEFT C&G.
Δ = 8°
D = 10°
T = 40.12'
L = 80'
R = 573.69'

P.T. 12+28.5 - 22' LT.
OFF LOC.

BEG. STRUCTURE
STA. 12+35

9.5' CONC S.W.

55.49'

RADIUS

P.C.

ASPHALT

MDU 3" IP

P.I. 11+88.38 - 22' LT.
OFFICE LOC.

C MDU

79° 48' 15"

22'

R. 11+31.16

OL GRAVEL STREET

10' SAN

FPL COMMUNICATION LINE

BEL COMMUNICATION LINES

11

12

13

14

15

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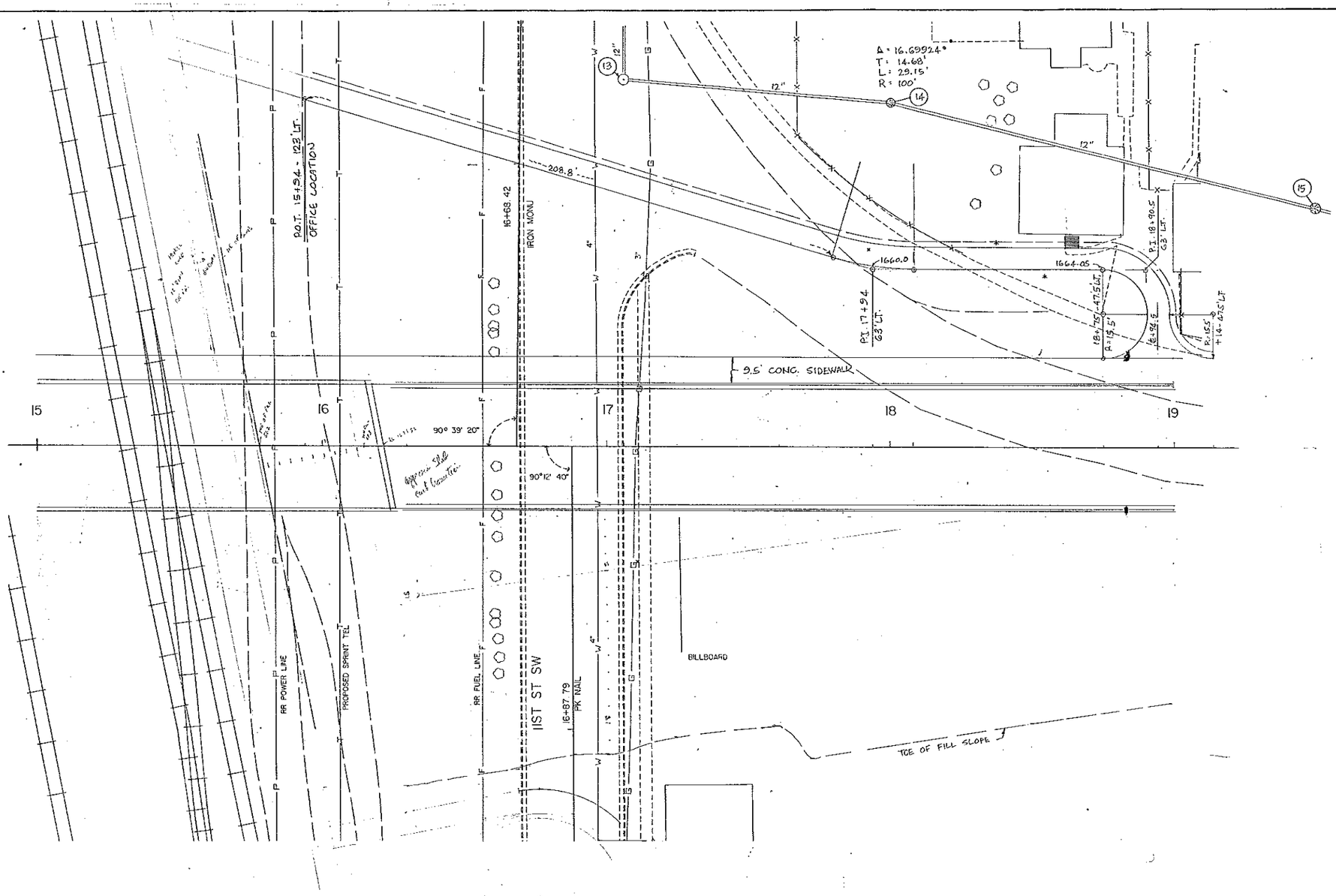

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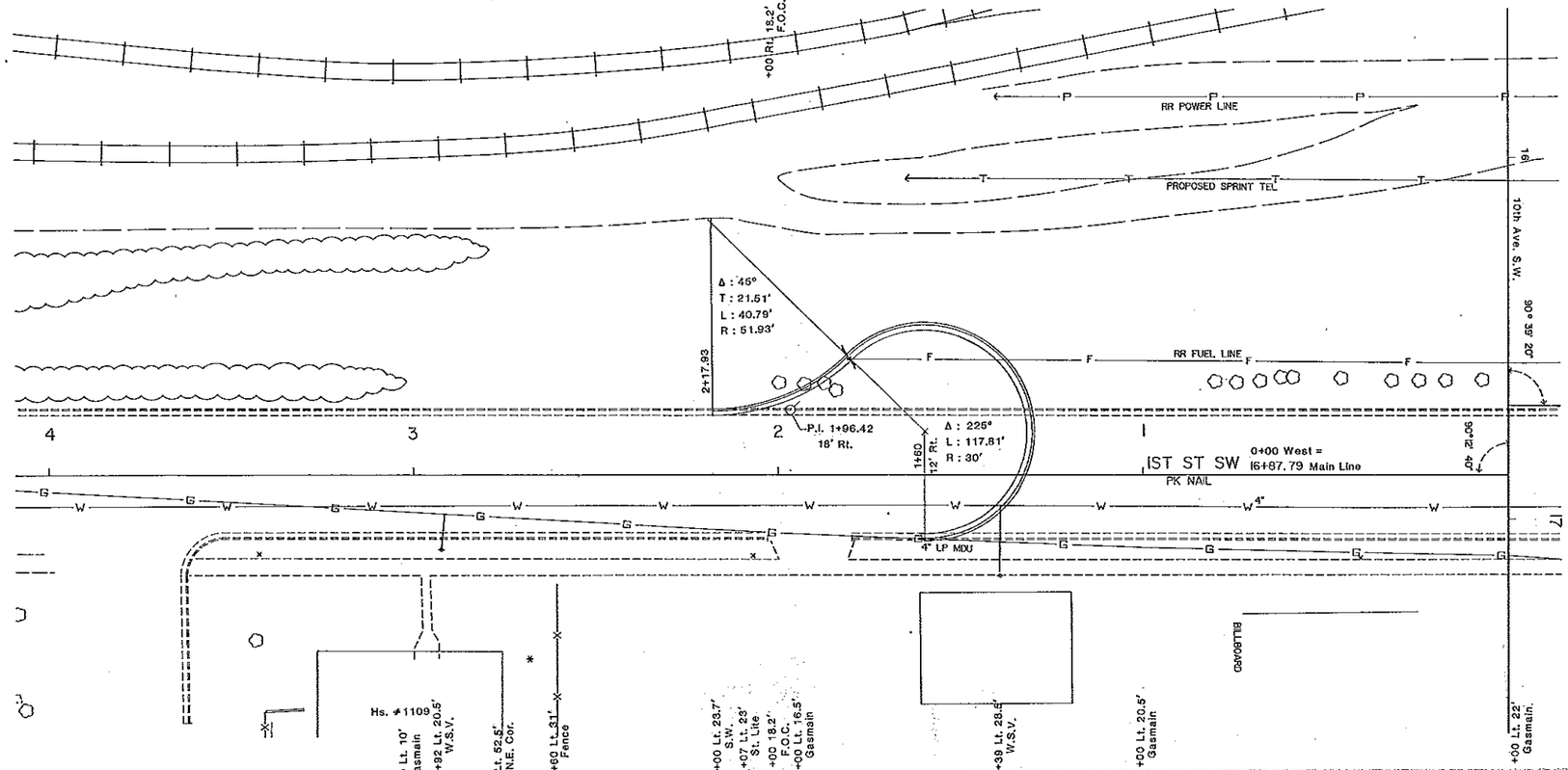
8	N. D.	F-1-006 (004)067	



Gradients on New Curb & Gutter shall be established in the field as required to drain West.

1650
1645
1640
1635

1645.7 46.1 46.7 47.2 1647.4

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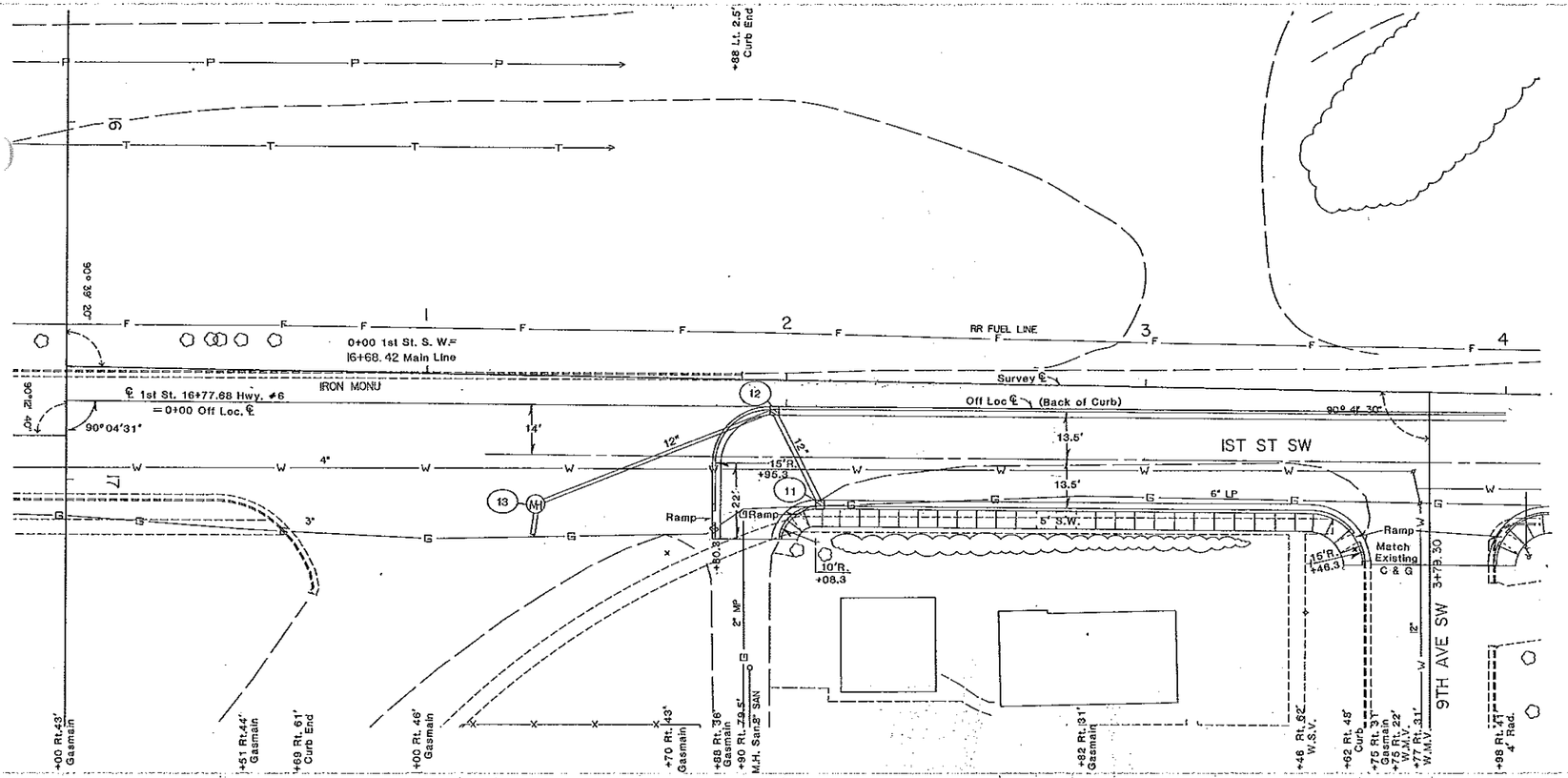
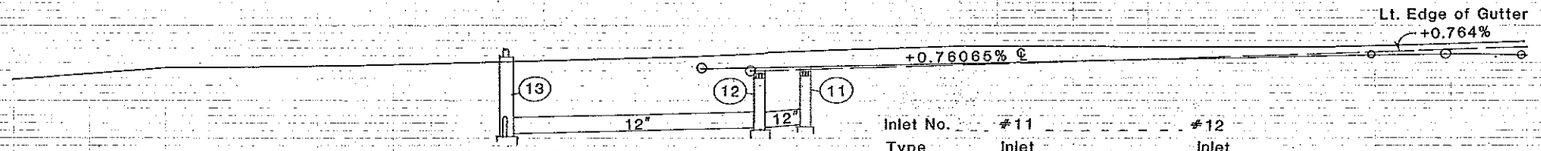


P.I. 1+81.8 ℄
(Edge of Gutter)
El. 1647.1
V.C. None

P.I. 3+79 ℄
El. 1648.6
V.C. 40'



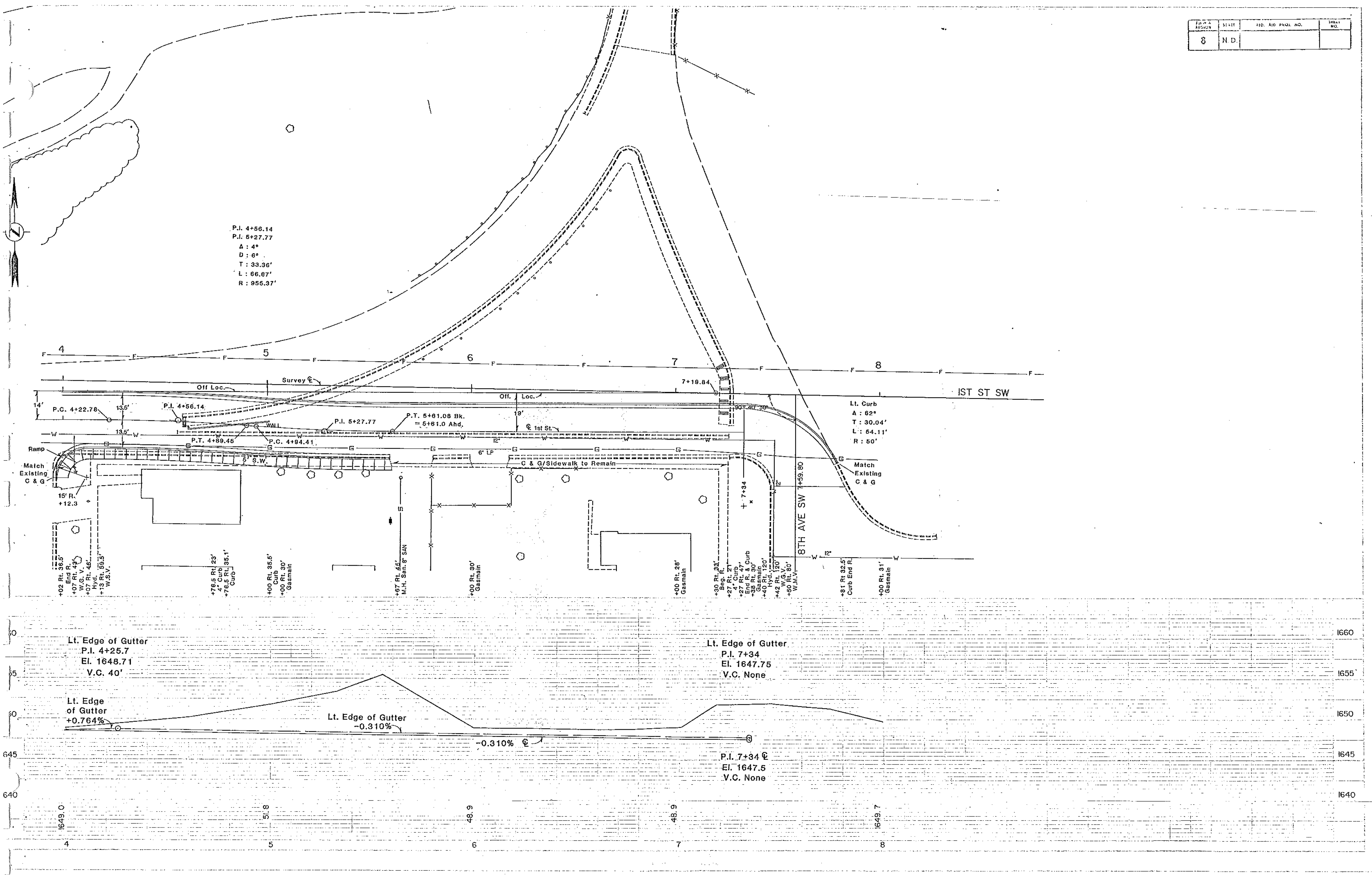
Lt. Edge of Gutter
P.I. 1+95.3
El. 1646.95
V.C. None

Inlet No.	#11	#12
Type	Inlet	Inlet
Station	2+09.3 Rt. Gutter	1+96.3 Lt. Gutter
Grate	1646.97	1646.87
Base	1643.28	1643.08
Invert	1643.45	1643.25
Outlet	1643.25	1642.79
"H"	3.1'	3.2'

1655 1650 1645 1640

1646.5 47.4 48.2 48.6 1649.0

0 1 2 3 4



8
N.D.
P.I. 4+56.14
P.I. 5+27.77
Δ : 4°
D : 6°
T : 33.36'
L : 66.67'
R : 955.37'
IST ST SW
Survey ℄
Off Loc.
7+19.84
P.C. 4+22.78
P.I. 4+56.14
P.T. 4+89.45
P.C. 4+94.41
P.I. 5+27.77
P.T. 5+61.08 Bk. = 5+61.0 Ahd.
℄ 1st St.
Lt. Curb
Δ : 62°
T : 30.04'
L : 54.11'
R : 50'
Ramp
Match Existing C & G
15' R. +12.3
5' S.W.
6' LP
C & G/Sidewalk to Remain
8TH AVE SW 7+59.80
+ 7+34
Match Existing C & G
Lt. Edge of Gutter
P.I. 4+25.7
El. 1648.71
V.C. 40'
Lt. Edge of Gutter
P.I. 7+34
El. 1647.75
V.C. None
Lt. Edge of Gutter +0.764%
Lt. Edge of Gutter -0.310%
-0.310% ℄
P.I. 7+34 ℄
El. 1647.5
V.C. None
1660
1655
1650
1645
1640
1649.0
51.8
48.9
48.9
1649.7
4
5
6
7
8

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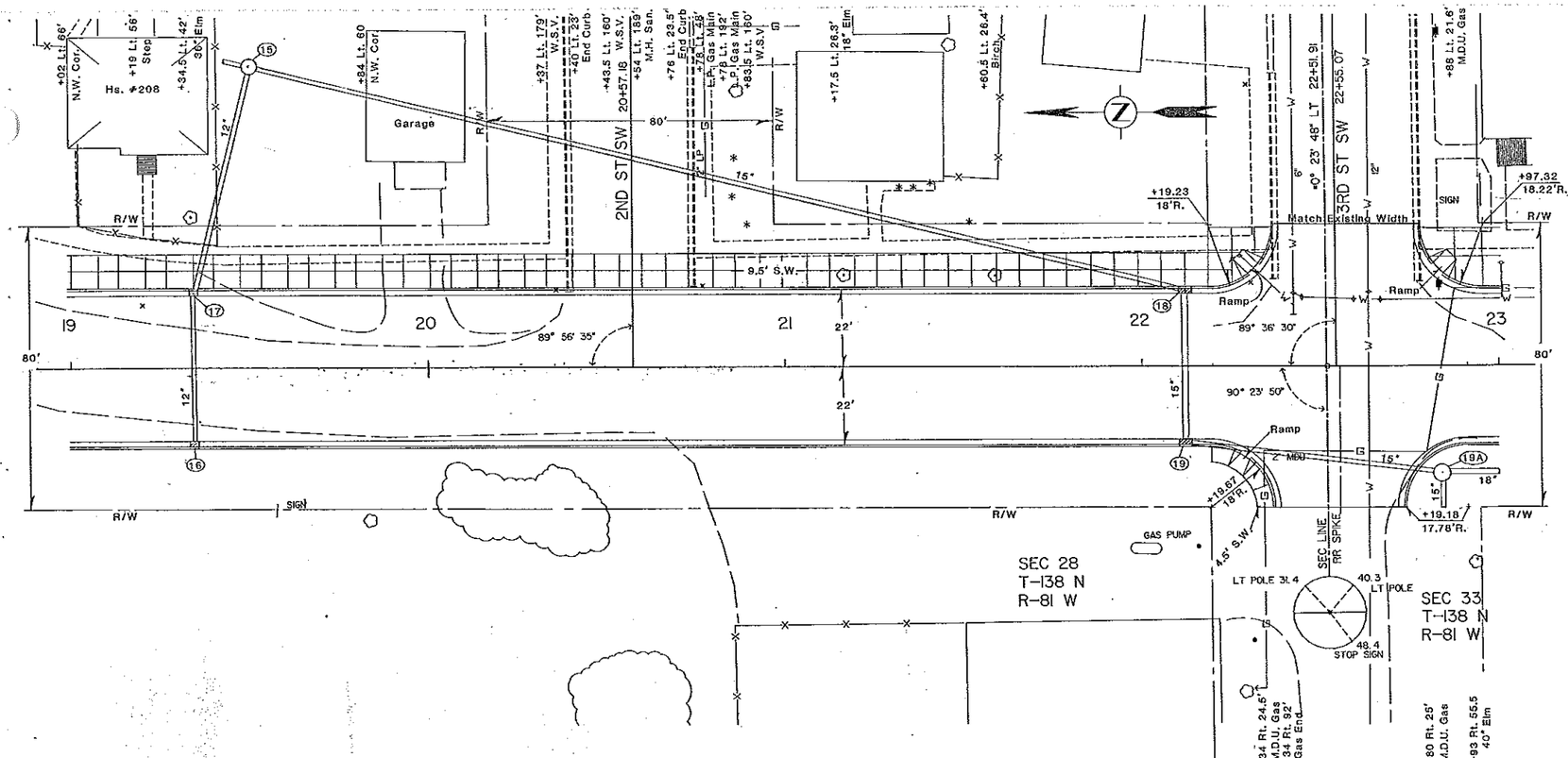

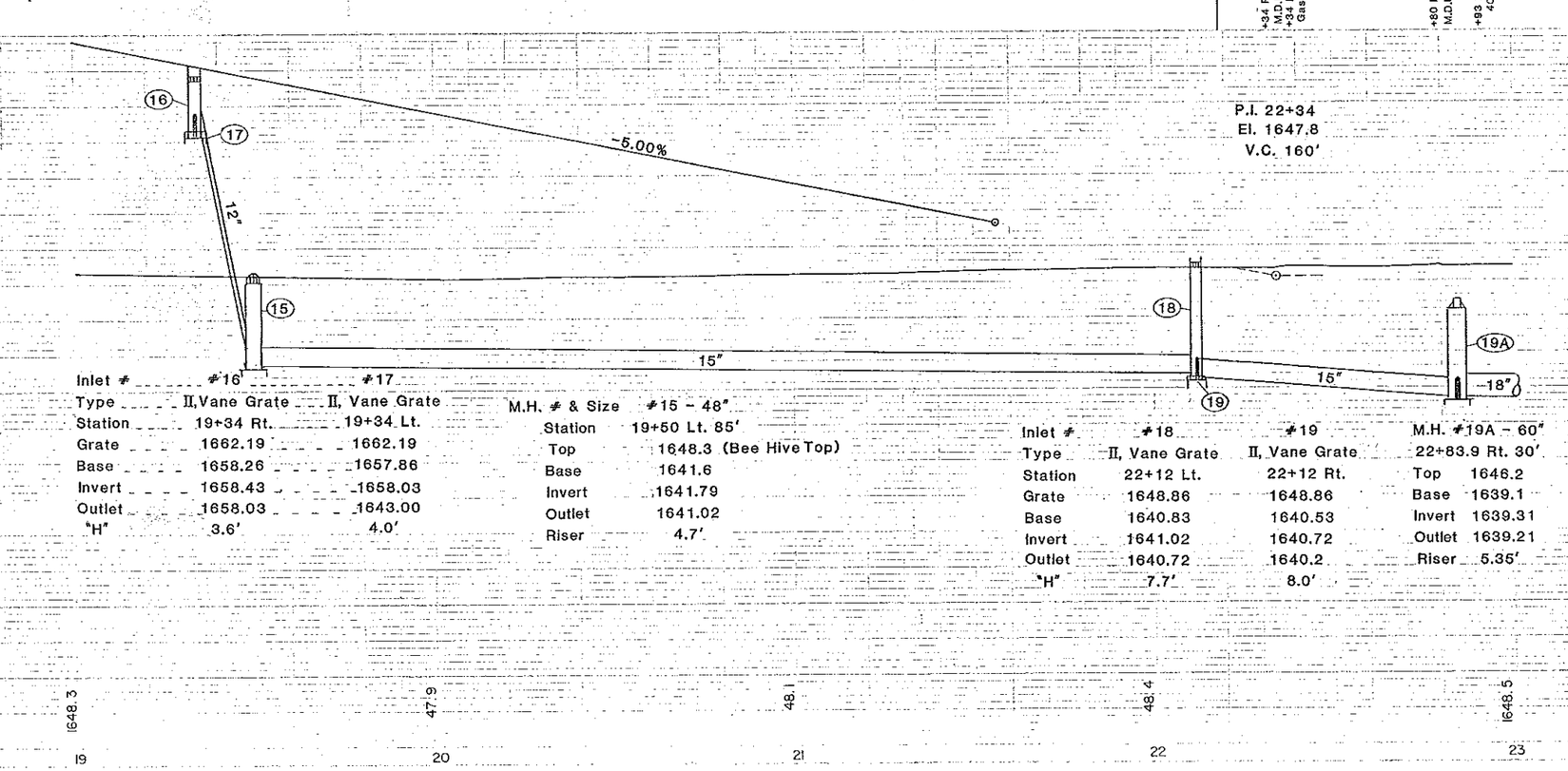

Inlet #	#16	#17
Type	II, Vane Grate	II, Vane Grate
Station	19+34 Rt.	19+34 Lt.
Grate	1662.19	1662.19
Base	1658.26	1657.86
Invert	1658.43	1658.03
Outlet	1658.03	1643.00
"H"	3.6'	4.0'

M.H. # & Size	#15 - 48"
Station	19+50 Lt. 85'
Top	1648.3 (Bee Hive Top)
Base	1641.6
Invert	1641.79
Outlet	1641.02
Riser	4.7'

Inlet #	#18	#19
Type	II, Vane Grate	II, Vane Grate
Station	22+12 Lt.	22+12 Rt.
Grate	1648.86	1648.86
Base	1640.83	1640.53
Invert	1641.02	1640.72
Outlet	1640.72	1640.2
"H"	7.7'	8.0'

M.H. #19A - 60"	
22+83.9 Rt. 30'	
Top	1646.2
Base	1639.1
Invert	1639.31
Outlet	1639.21
Riser	5.35'

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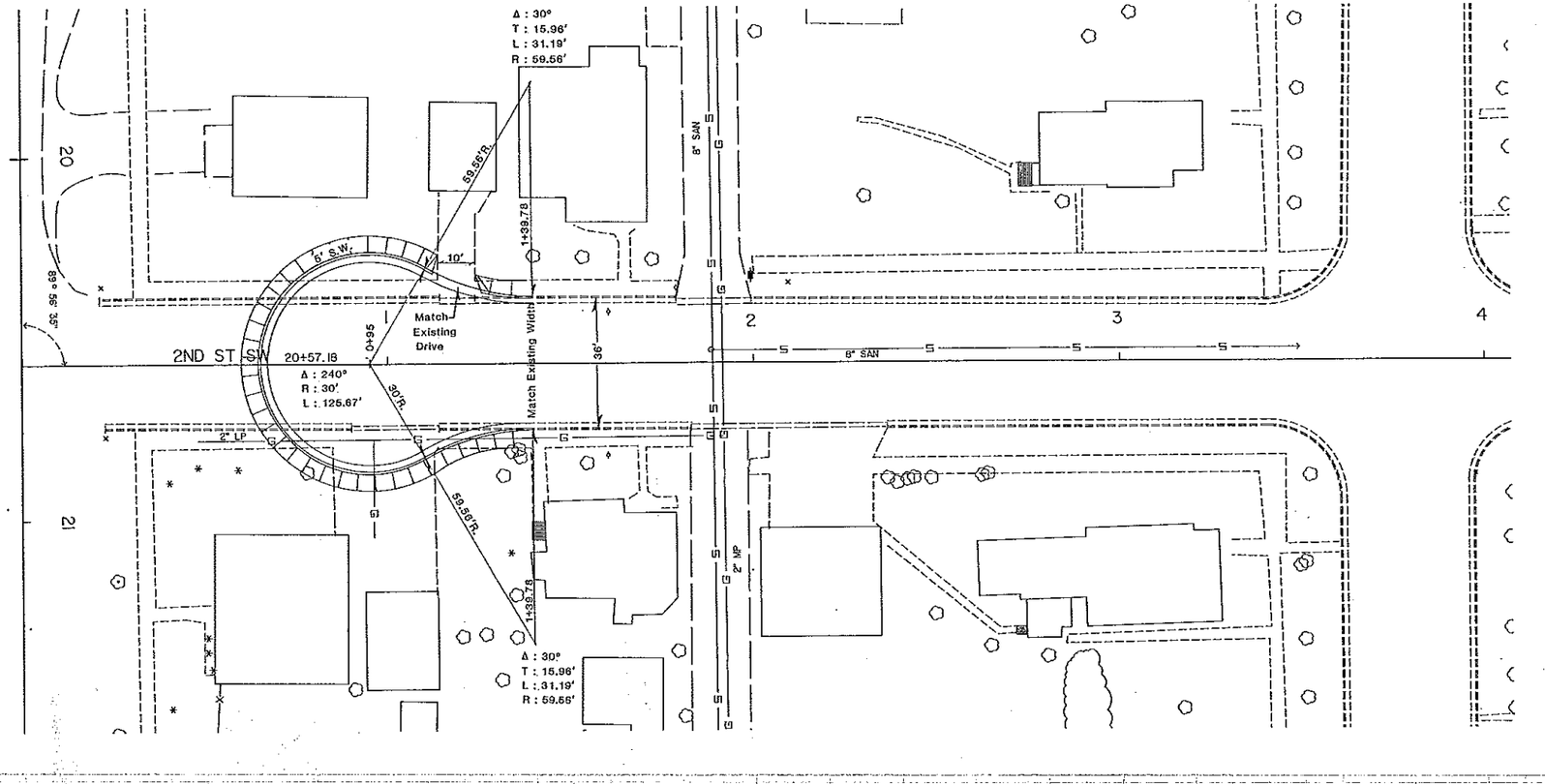

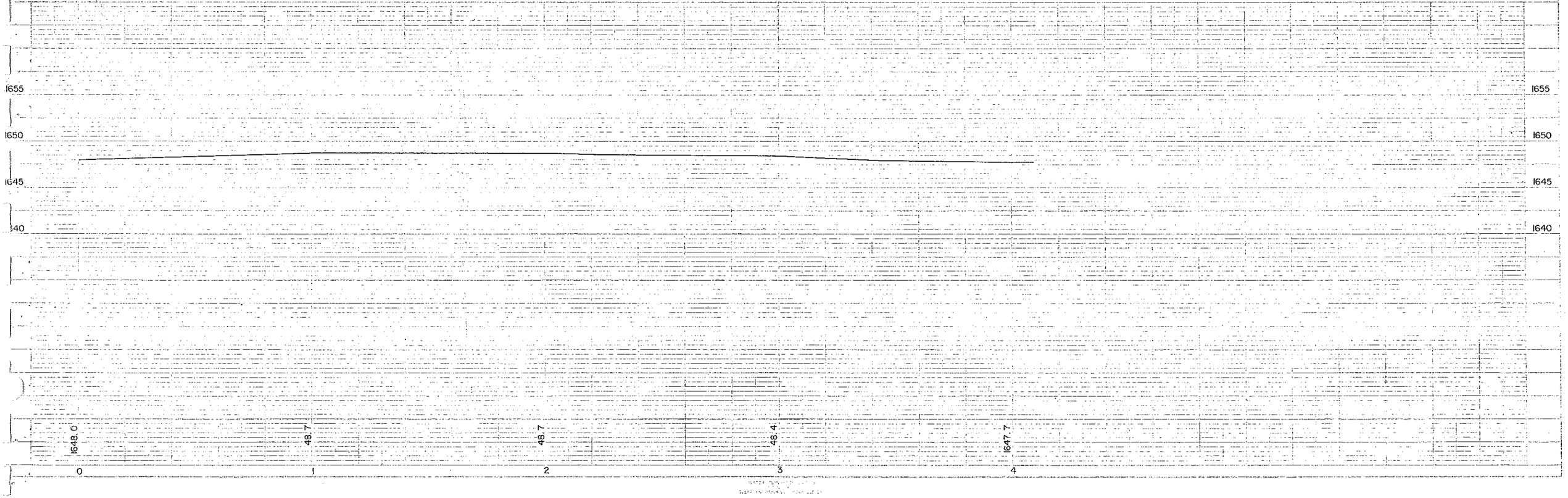

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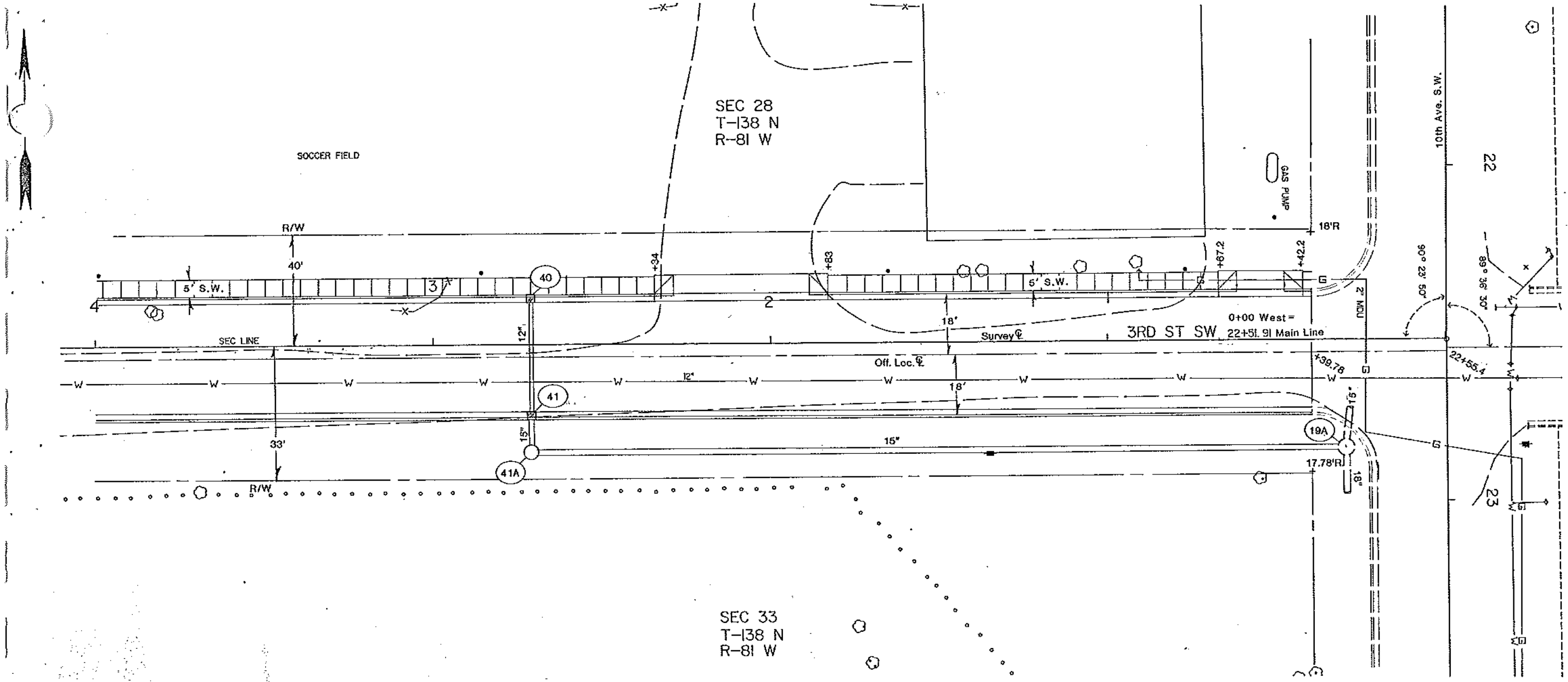

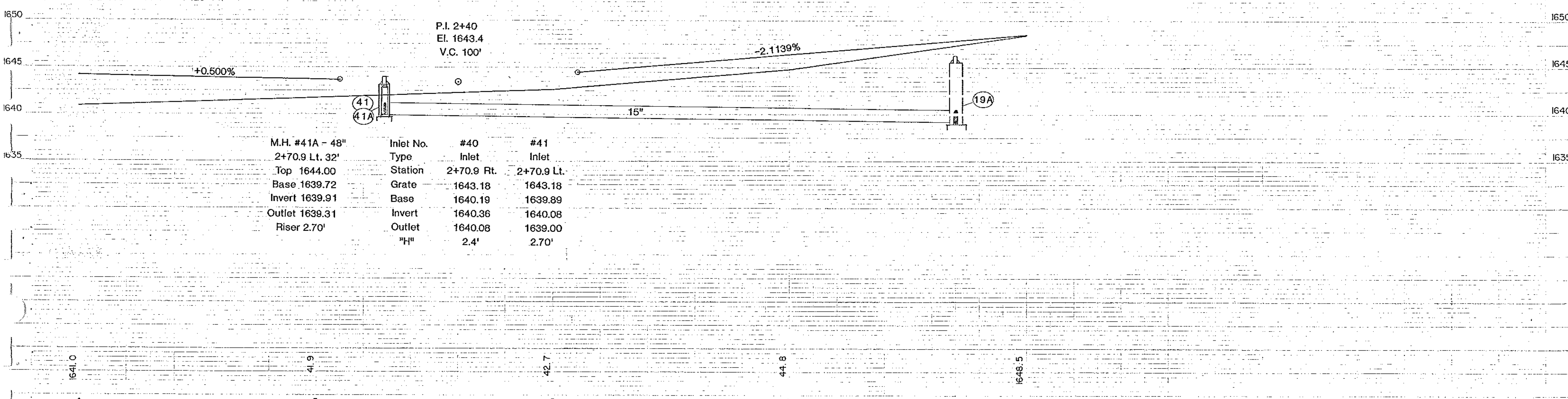

M.H. #41A - 48"	
2+70.9 Lt. 32'	
Top	1644.00
Base	1639.72
Invert	1639.91
Outlet	1639.31
Riser	2.70'

Inlet No.	#40	#41
Type	Inlet	Inlet
Station	2+70.9 Rt.	2+70.9 Lt.
Grate	1643.18	1643.18
Base	1640.19	1639.89
Invert	1640.36	1640.08
Outlet	1640.08	1639.00
"H"	2.4'	2.70'

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+81 3.5' N.W.B.
+76.7 Rt. 8.5' End Curb
+64 Rt. 100' N.W.B.
+70 Rt. 4.5' N.W.B.
+67 Rt. 8.5' N.W.B.
7+38.92 N.W.B.
+64 Rt. 15.2' N.W.B.
+40.7 Rt. 7.5' End Curb
+61 Rt. 3' G.V.

12TH AVE SW

NWB

PATIO

WALL

SEC 28
T-138 N
R-81 W

Off.Loc. Curves
P.I. 4+45.95
P.I. 5+20.46
Δ : 5°
D : 7°
T : 35.75'
L : 71.43'
R : 819.02'

Δ : 90°12'30"
T : 18.07'
L : 28.34'
R : 18'
+22.8±

Match Existing C & G

R/W

New R/W

5' Temp. Esm't.

33'

6' S.W.

89° 47' 30"

SEC LINE

15'

Survey ℄

3RD ST SW

P.I. 4+45.95 Off. Loc.
3.5' Lt. of Survey ℄

P.C. 4+10.2

P.T. 4+81.86

P.C. 4+84.71

P.I. 5+20.46 Off. Loc.
10' Lt. of Survey ℄

P.T. 5+56.14 Bk.
= 5+56 Ahd.

Off. Loc. ℄

18'

40'

End Hot Bit. Pvm't.
(Exact Limits to be Determined in the Field)

P.T. 7+78.71

P.I. 7+35.92 Off. Loc.
28' Lt. of Survey ℄

P.C. 6+93

P.I. 7+35.92
Off. Loc.
Δ : 6°
D : 7°
T : 42.92'
L : 85.71'
R : 819.02'

+44 Lt. 6 W.M.V.
+39 Lt. 10' W.M.V.
+20 Lt. 4' W.G.V.
+20 Lt. 1' Hyd.

SEC 33
T-138 N
R-81 W

P.I. 7+58.9
El. 1647.5
V.C. None

P.I. 5+20
El. 1644.8
V.C. 40'

+1.130 18%

+0.500%

Right Curb

P.I. End of 18' Radius
El. 1648.3
V.C. None

P.I. 7+00
El. 1646.9
V.C. None

+2.738%

Top of Curb

+1.130%

51.14'

Normal Curb Elev.
(0.07' Above ℄ Elev.)

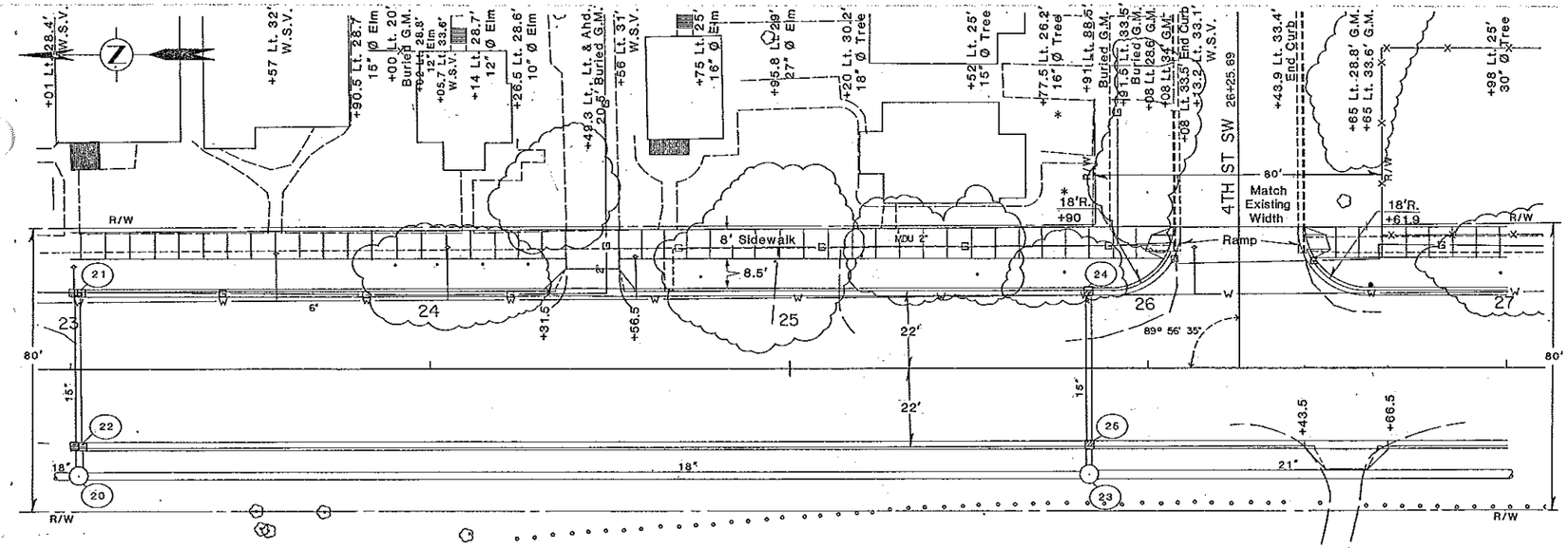
1655
1650
1645
1640
1635

1649.2 | 46.1 | 44.1 | 41.3 | 1641.0

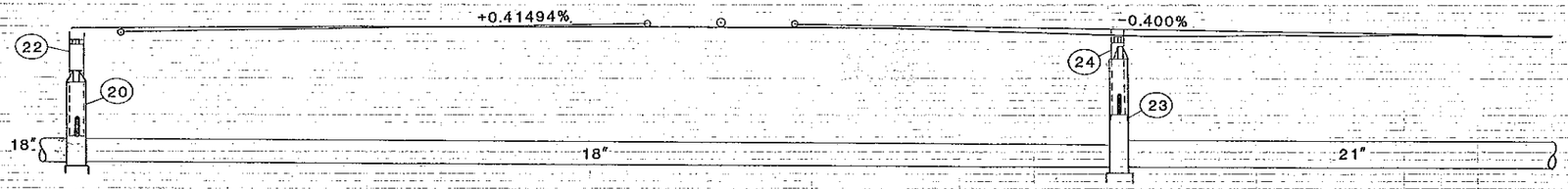
8 7 6 5 4

STATE	FED. AID PROJ. NO.	SHEET NO.
N. D.	F-1-006(004)067	

8



P.I. 24+75
El. 1648.8
V.C. 40'



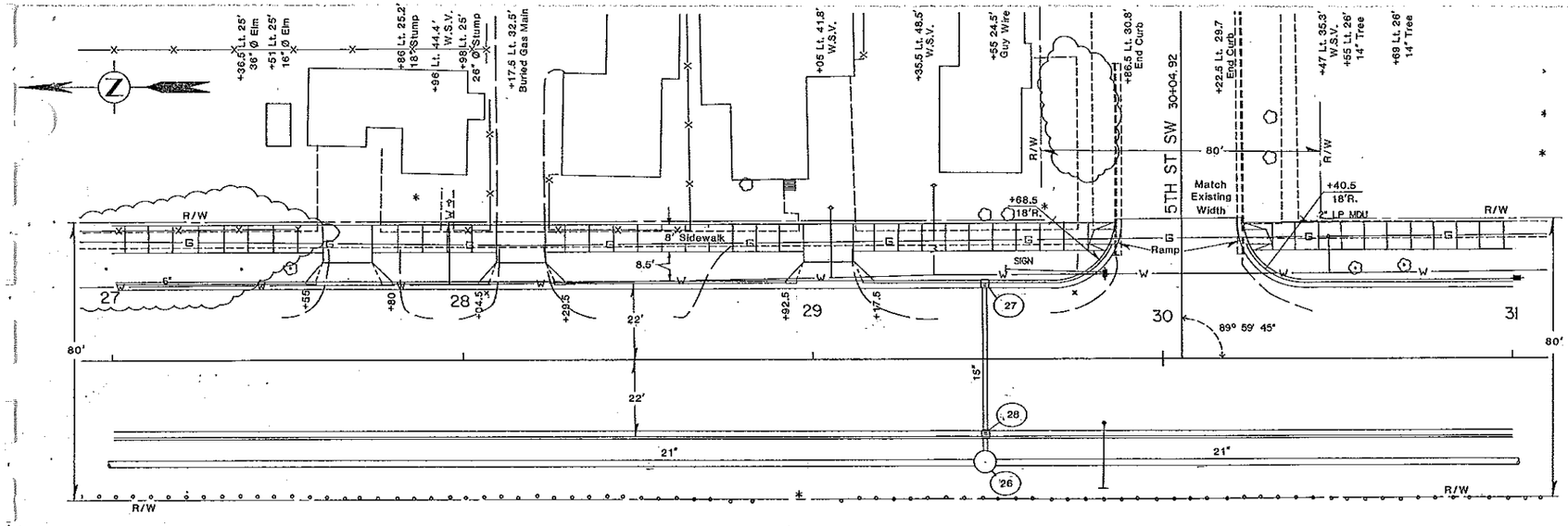
Inlet No.	#21	#22	M.H. #20 – 60"
Type	Double	Double	23+02 Rt. 30'
Station	23+02 Lt.	23 +02 Rt.	Top 1645.5
Grate	1647.6	1647.6	Base 1639.0
Base	1642.14	1641.14	Invert 1639.21
Invert	1642.33	1641.33	Outlet 1638.52
Outlet	1641.33	1641.0	Riser 4.75'
"H"	5.0'	6.0'	

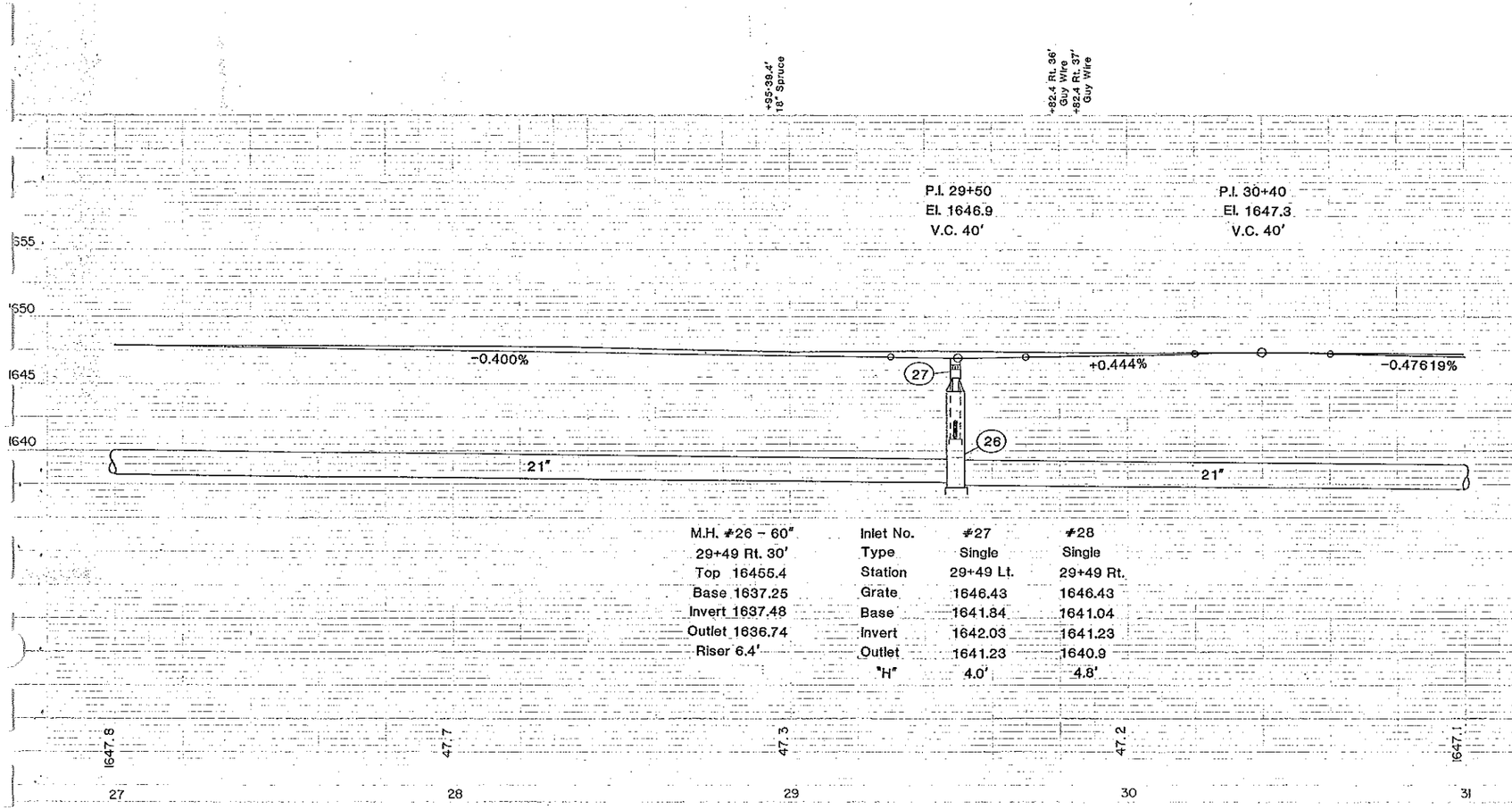
Inlet No.	#24	#25	M.H. #23 – 60"
Type	Inlet, Vane Grate	Inlet, Vane Grate	25+83 Rt. 30'
Station	25+83 Lt.	25+83 Rt.	Top 1647.2
Grate	1647.86	1647.86	Base 1638.29
Base	1643.27	1642.77	Invert 1638.52
Invert	1643.46	1642.96	Outlet 1637.67
Outlet	1642.96	1642.6	Riser 7.16'
"H"	4.0'	4.5'	

1648.5 48.6 48.5 47.9 1647.8

23 24 25 26 27

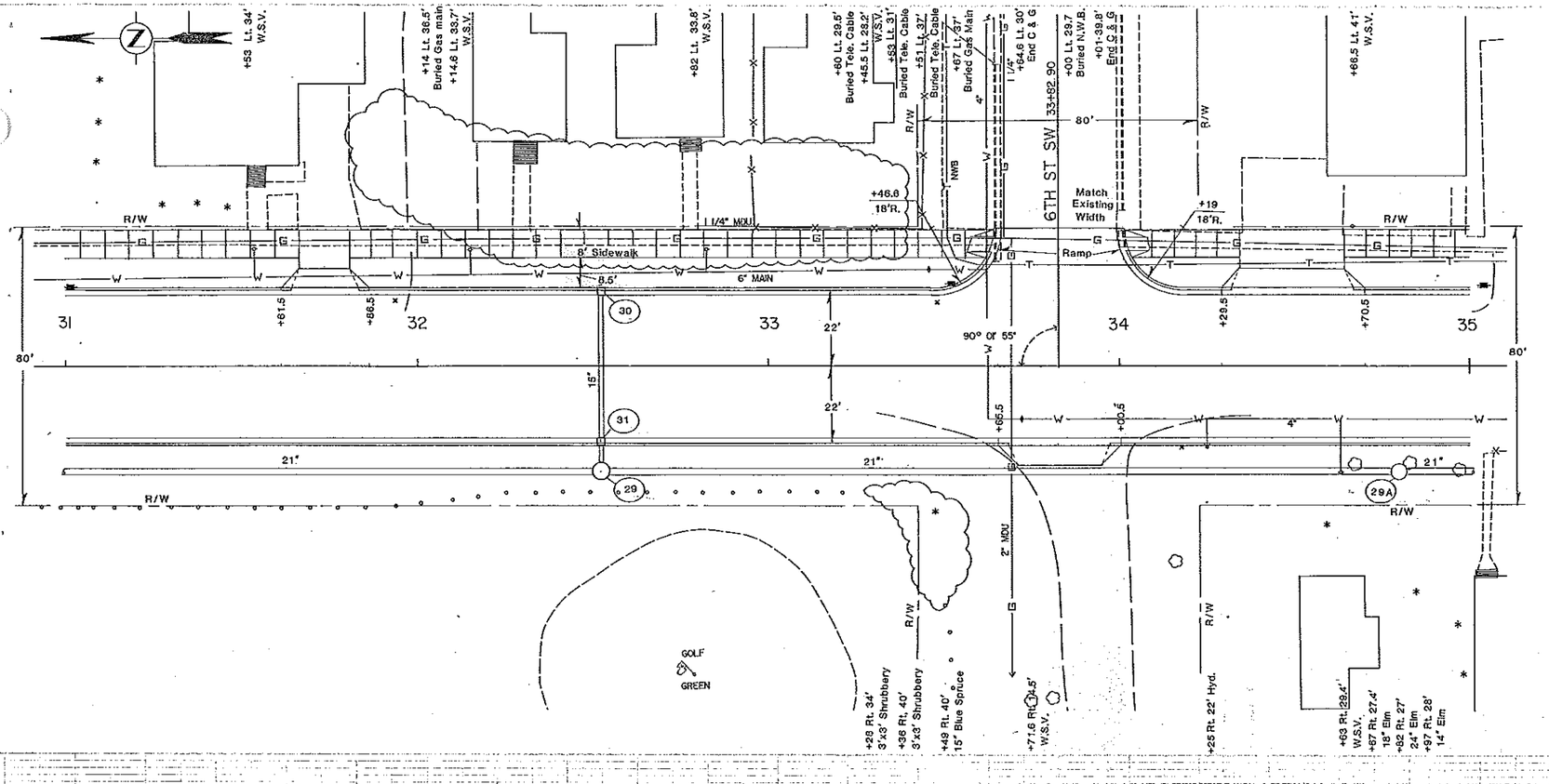
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	F-1-006(004)067	

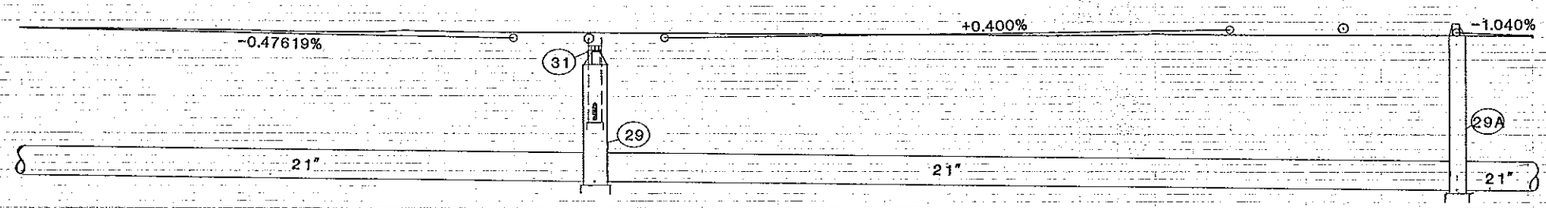




M.H. #26 – 60"	Inlet No.	#27	#28
29+49 Rt. 30'	Type	Single	Single
Top 16455.4	Station	29+49 Lt.	29+49 Rt.
Base 1637.25	Grate	1646.43	1646.43
Invert 1637.48	Base	1641.84	1641.04
Outlet 1636.74	Invert	1642.03	1641.23
Riser 6.4'	Outlet	1641.23	1640.9
	"H"	4.0'	4.8'

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N. D.	F+1-006(004)067	

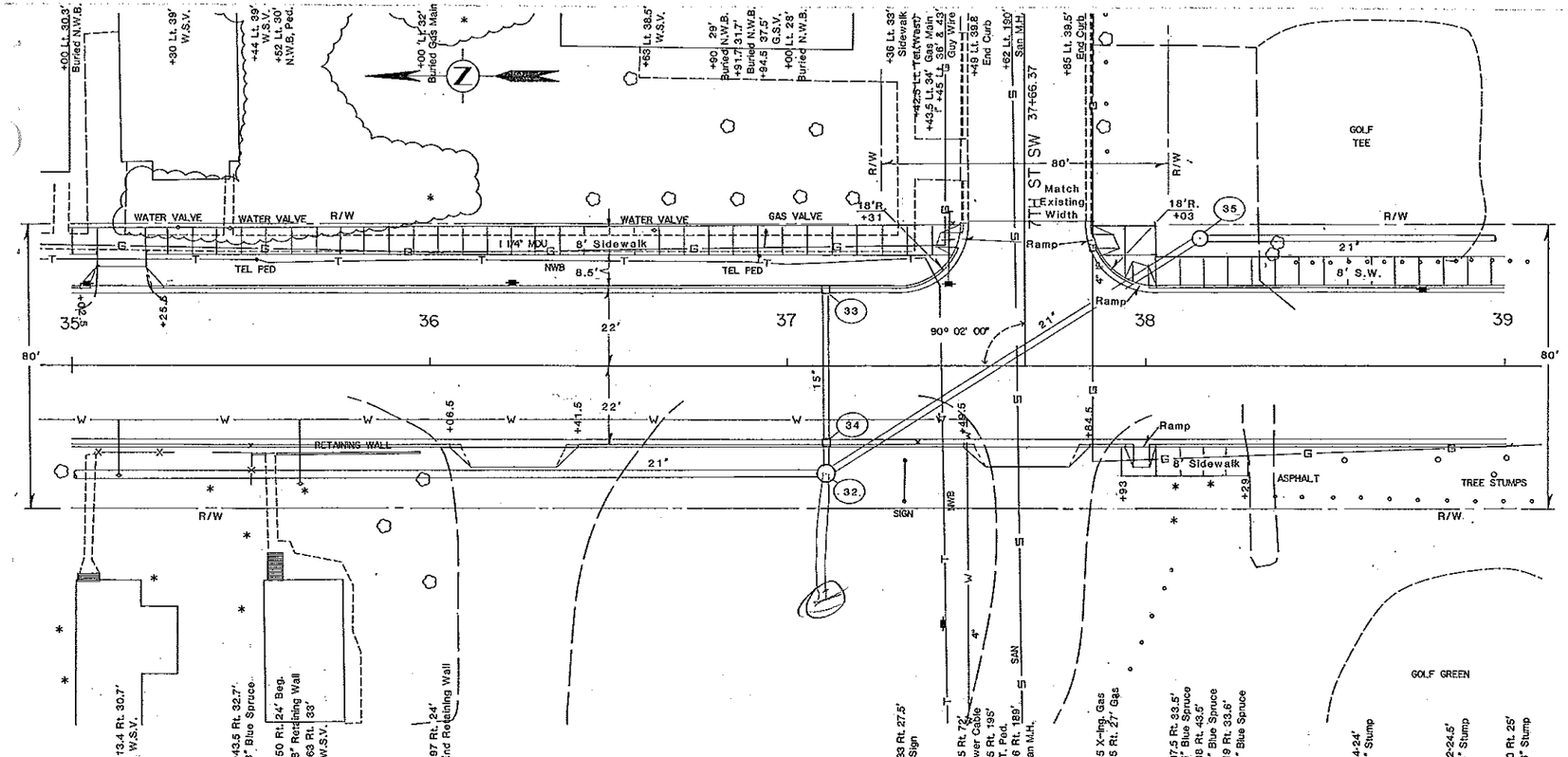


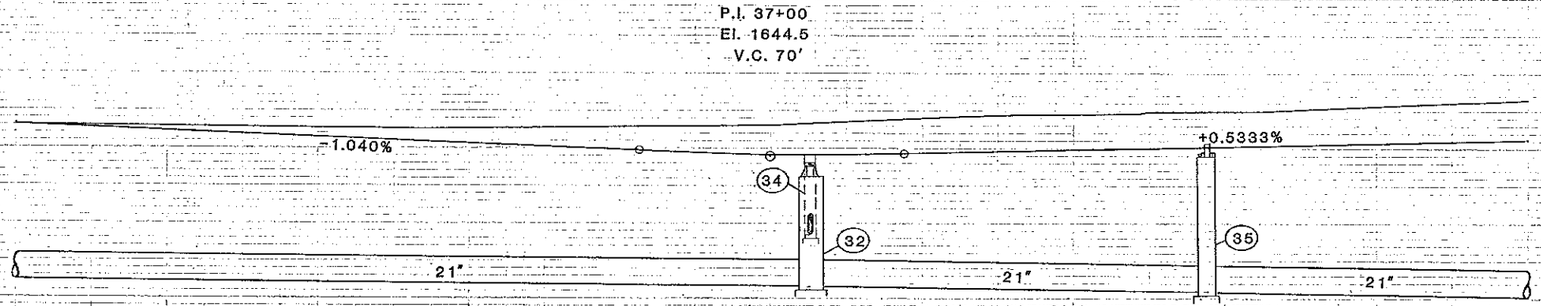


Inlet No.	#30	#31
Type	Single	Single
Station	32+52 Lt.	32+52 Rt.
Grate	1645.83	1645.83
Base	1641.24	1640.74
Invert	1641.43	1640.93
Outlet	1640.93	1640.6
"H"	4.0'	4.5'

M.H. No. - Size	#29 - 60"	#29A - 48"
Station	32+52 Rt. 30'	34+80 Rt. 30'
Top	1645.46	1647.40
Base	1636.6.51	1636.01
Invert	1636.74	1636.24
Outlet	1636.24	1635.74
Riser	7.2'	9.81'

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N. D.	F-1-006(004)067	





Inlet No.	#33	#34
Type	Single	Single
Station	37+11 Lt.	37+11 Rt.
Grate	1644.11	1644.11
Base	1639.52	1639.02
Invert	1639.71	1639.21
Outlet	1639.21	1639.00
"H"	4.0'	4.5'

M.H. No. – Size	#32 – 60"	#35 – 48"
Station	37+11 Rt. 30'	38+15 Lt. 36'
Top	1644.90	1645.30
Base	1635.51	1635.20
Invert	1635.74	1635.43
Outlet	1635.40	1634.74
Riser	7.64'	8.52'

FED. AID PROJ. NO.	STATE	NO. AND PROJ. NO.	SHEET NO.
8	N. D.	F-1-006 (004)067	

GOLF GREEN

GOLF GREEN

+05 18.5' M.D.U. Gas

SIGN 29.5

STOP SIGN 43.5

66.8 LT POLE

+79 Lt. 23' Sign

+85 Lt. 41' Guy Wire

+00 Lt. 28' Guy Wire

PI 41+99.43 BOLT

R/W (Bk. Tang.)

SIGN

21'

8' Sidewalk

24'

36

38

39

40

41

42

43

80'

22'

15'

22'

+46.5

+87.5

37

4" MDU

STUMPS

STUMP

R/W

PC 40+80.92 PK NAIL

PP 42.9

36.1 STUMP

42.9 STUMP

PT 43+17.89 PK NAIL

PP 44.5

101.8 PP

ARC DEFINITION
Δ= 4° 44' 30" RT
D= 2° 00' 00"
R= 2864.79
T= 118.61
L= 237.08

+19 Rt. 25' 24" Stump

+38 Rt. 25' 28" Stump

+00 Rt. 18.5' Gas

+74 Rt. 30' 22" Stump

+05 Rt. 40' 14" Blue Spruce

+14 Rt. 46' & 52' 14" Blue Spruce

+53 Rt. 42' M.D.U. Gas

+45 Rt. 73' M.D.U. Gas

P.I. 40+75
El. 1646.5
V.C. 170'

+3.94286%

-0.5333%

38

36

21"

24"

M.H. #36 – 60"	Inlet No.	#37	#38
41+00 Lt. 36'	Type	II – Vane Grate	II – Vane Grate
Top 1646.40	Station	41+00 Rt.	41+00 Lt.
Base 1634.30	Grate	1647.24	1647.24
Invert 1634.55	Base	1642.91	1641.91
Outlet Lift Station	Invert	1643.10	1642.10
Riser 10.45'	Outlet	1642.10	1641.70
	"H"	4.0'	5.0'

1660 1655 1650 1645 1640

1648.2 49.1 50.8 53.3 1656.0

39 40 41 42 43