

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

FREEDOM VILLAGE STREETS

(C.T.H. "S" AND C.T.H. "E")

C.T.H. "E"

OUTAGAMIE COUNTY

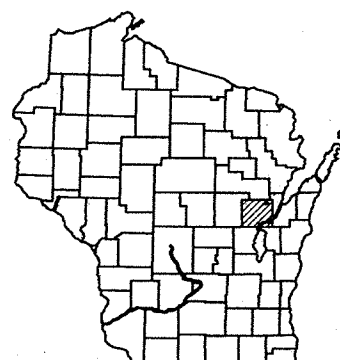
STATE PROJECT NUMBER

6529-03-71

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
6529-03-71	STP 1091(2)	1

Sheet No. 1	Title
Sheet No. 2-2.3	Typical Sections and Details
Sheet No. 3-3.1	Estimate of Quantities
Sheet No. 3A-3B	Miscellaneous Quantities
Sheet No. 4	Right of Way Plat
Sheet No. 5-5.15	Plan and Profile (Includes Erosion Control Plan)
Sheet No. 6-6.11	Standard Detail Drawings
Sheet No. _____	Sign Plates
Sheet No. _____	Structure Plans
Sheet No. _____	Computer Earthwork Data
Sheet No. _____	Cross Sections

TOTAL SHEETS = 38



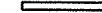
CONSTRUCTION LIMITS
STA. 36+56.88 C.T.H. "S"

BEGIN PROJECT
STA. 46+80 C.T.H. "E"
X = 2,446,800 (± 100')
Y = 205,650 (± 100')

DESIGN DESIGNATION

A.D.T.	(1994)	=	2,565
A.D.T.	(2014)	=	3,130
B.H.V.	(2014)	=	410
D.		=	50%-50%
T.		=	6%
V.		=	35 M.P.H.
ESALS		=	306,600

CONVENTIONAL SIGNS

COUNTY LINE	
CORPORATE LIMITS	
PROPERTY LINE	
LOT LINE	
LIMITED HIGHWAY EASEMENT	
EXISTING RIGHT OF WAY	
NEW RIGHT OF WAY	
REFERENCE LINE	
SLOPE INTERCEPT	
ORIGINAL GROUND	
MARSH OR ROCK PROFILE	
CULVERT IN PLACE	
CULVERT REQUIRED	
CULVERT REQUIRED (Profile)	

COMBUSTIBLE FLUIDS
(UNDER PRESSURE)

UNDERGROUND UTILITIES
GAS
ELECTRIC
TELEPHONE
SERVICE PEDESTAL
CABLE MARKER

POWER POLE

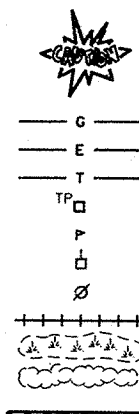
TELEPHONE POLE

RAILROADS

MARSH

WOODED AREA

SILT FENCE



LAYOUT

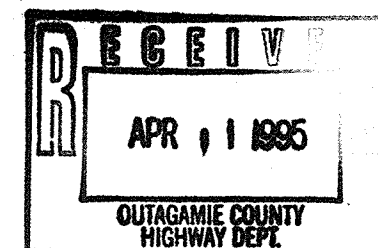
SCALE 0 1 MI.

TOTAL NET LENGTH OF CENTERLINE = C.T.H. "E"=0.790 MILES

END PROJECT
STA.88+50 C.T.H. "E"

CONSTRUCTION LIMITS
STA. 63+68.00 C.T.H. "S"

ALL COORDINATES SHOWN ON THIS PLAN ARE
SCALED FROM U.S.G.S. TOPOGRAPHIC MAP,
FREEDOM, WI., 7.5 MINUTE QUADRANGLE,
CENTRAL ZONE, FOR IDENTIFICATION ONLY.



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ACCEPTED FOR
COUNTY *of* OUTAGAMIE

12/5/54
DATE

Richard A. Mansel
COUNTY HIGHWAY COMMISSIONER

PLANS PREPARED
BY

AYRES
ASSOCIATES

Engineers/Architects
Scientists/Photogrammetrists
Owen Ayres & Associates Inc.
Green Bay, Wisconsin



STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	<u>AYRES ASSOCIATES</u>
Designer	<u>AYRES ASSOCIATES</u>
District Examiner	<u>D.H. CARLSON</u>
District Supervisor	<u>J.C. LAWERS</u>
Project Development Engineer	_____
C.O. Plan Examiner	<u>E.W. BENISCH</u>

APPROVED FOR DISTRICT OFFICE

DATE: 1/5/95 James Lane
(Signature)

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WISDOT/CADDSS SHEET NO.

52-5

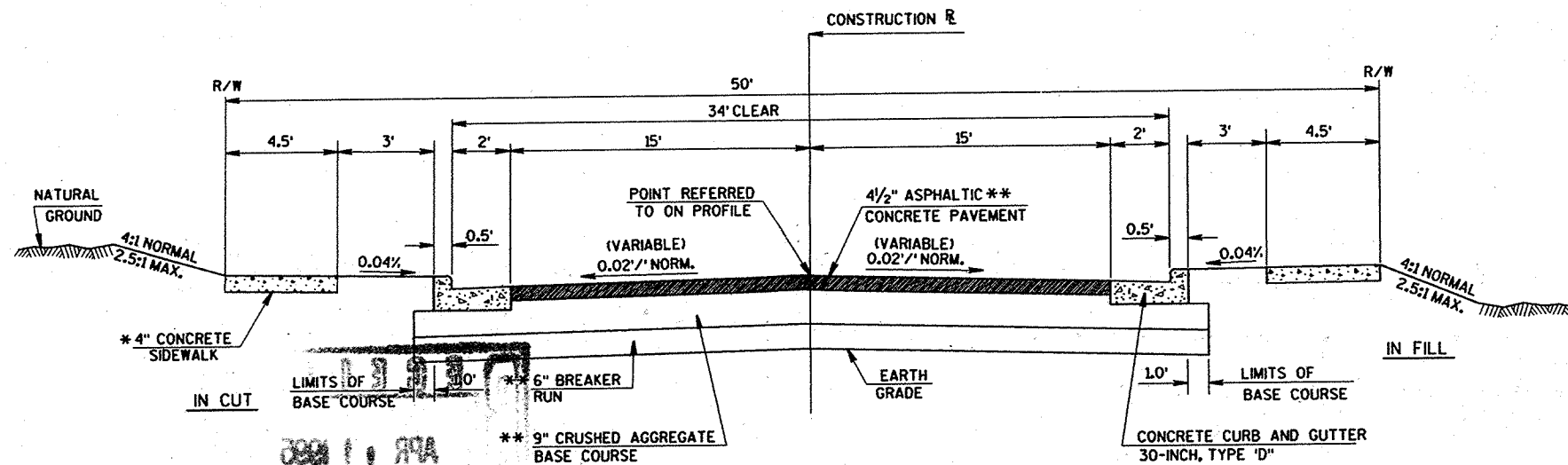
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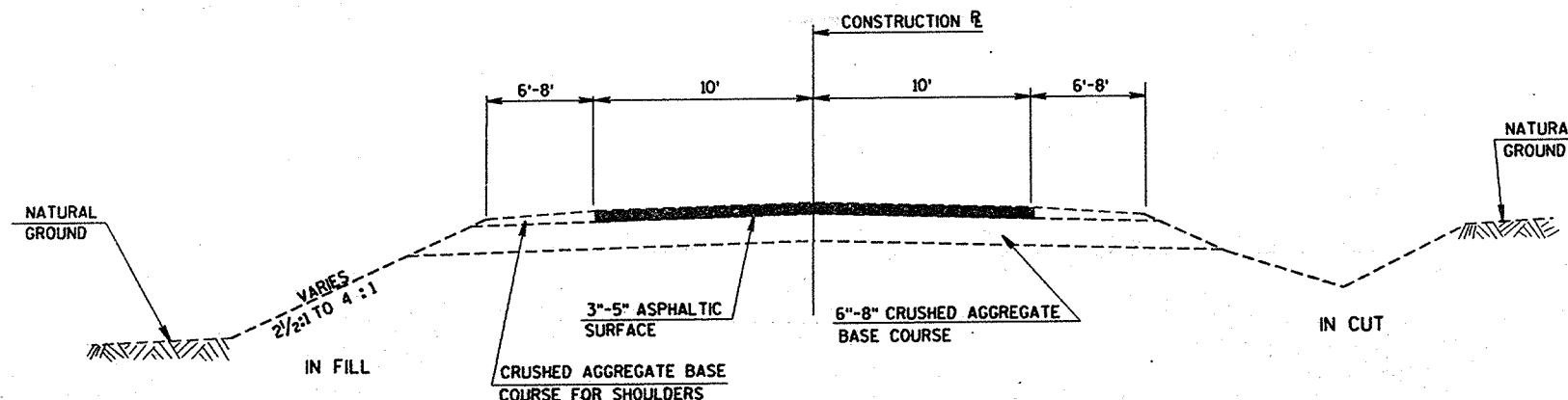
LEVELS ON *

FILE NAME: HDGN:GENERAL.DGN

STATE PROJECT NUMBER
6529-03-71
SHEET NO
2.0
TYPICAL SECTION, GENERAL NOTES, AND
UTILITIES
FOR
C.T.H. "S" AND C.T.H. "E" OUTAGAMIE COUNTY



TYPICAL SECTION FOR C.T.H. "S" AND C.T.H. "E"



EXISTING TYPICAL SECTION FOR C.T.H. "S" AND C.T.H. "E"

UTILITIES

WISCONSIN ELECTRIC POWER COMPANY
800 SOUTH LYNNDALE
P.O. BOX 1699
APPLETON, WISCONSIN 54914
ATTENTION: MR. JIM JACOBS

TELEPHONE 1-414-735-0705

AMERITECH
221 WEST WASHINGTON ST.
P.O. BOX 2159
APPLETON, WISCONSIN 54913
ATTENTION: MR. JOHN STUMPF

TELEPHONE 1-414-735-3250

FREEDOM SANITARY DISTRICT NO. 1
P.O. BOX 1014
FREEDOM, WISCONSIN 54131
ATTENTION: MR. MARK KERKHOFF

TELEPHONE 1-414-788-5763

D.N.R. AREA LIAISON
WISCONSIN DEPARTMENT OF NATURAL RESOURCES
P.O. BOX 10448
1125 N. MILITARY AVE.
GREEN BAY, WISCONSIN 54307-0448
ATTENTION: KELLY O'CONNOR

TELEPHONE 1-414-492-5809

WISCONSIN GAS COMPANY
1921 SOUTH 8th STREET
P.O. BOX 789
WISCONSIN RAPIDS, WISCONSIN 54494
ATTENTION: MR. DENNIS CHERNEY

TELEPHONE 1-715-432-2700



CALL DIGGERS HOTLINE
1-800-242-8511
TOLL FREE
TELEFAX (414) 259-0947
FOR HEARING IMPAIRED 1-800-542-2289
WIS. STATUTE 182.0175 (1974)
REQUIRES MIN. OF 3 WORK DAYS
NOTICE BEFORE YOU EXCAVATE.

GENERAL NOTES

INLET AND DISCHARGE ELEVATIONS FOR DRAINAGE STRUCTURES SHOWN ON THE PLAN SHEETS ARE APPROXIMATE AND SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
THE EXACT LOCATION AND LIMITS OF PRIVATE ENTRANCES SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

ALL DISTANCES SHOWN ON THIS PLAN ARE GROUND DISTANCE.

BEARINGS SHOWN ON THIS PLAN ARE MAGNETIC BEARINGS TO THE NEAREST SECOND.

CURVE DATA IS BASED ON ARC DEFINITION.

ALL TIES ON THIS PLAN ARE HORIZONTAL UNLESS DESCRIBED OTHERWISE.

CURB HEIGHTS AT THE END OF CURB AND GUTTER SHALL BE TAPERED FROM 0 INCHES TO 6 INCHES IN 6 FEET, UNLESS OTHERWISE NOTED.

THE LOCATION OF EXISTING AND PROPOSED UTILITY FACILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY FACILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

ALL RADII SHOWN ARE TO THE FACE OF CURB, UNLESS OTHERWISE NOTED.

CURB CUTS FOR HANDICAPPED RAMPS SHALL BE PROVIDED IN ALL QUADRANTS OF EACH INTERSECTION FOR FUTURE CONSTRUCTION OF SIDEWALK.

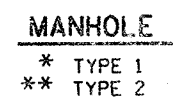
THE WIDTH OF THE ROADWAY AS SHOWN ON THE PLAN AND PROFILE SHEETS IS NOT TO SCALE.

RUNOFF COEFFICIENT FOR DRAINAGE CAN BE FOUND ON FIGURE 2 CHAPTER 10, FDM. RUNOFF COEFFICIENT FOR THIS PROJECT: EXISTING PAVEMENT 0.80, NEW PAVEMENT 0.80. TOTAL PROJECT AREA 7.9 ACRES. TOTAL AREA DISTURBED 7.9 ACRES.

ALL WORK TO DRIVEWAYS AND SIDEWALK BEHIND THE CURB AND GUTTER WILL BE DONE BY OTHERS.

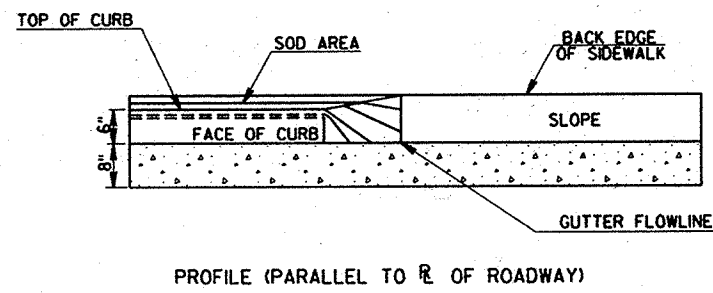
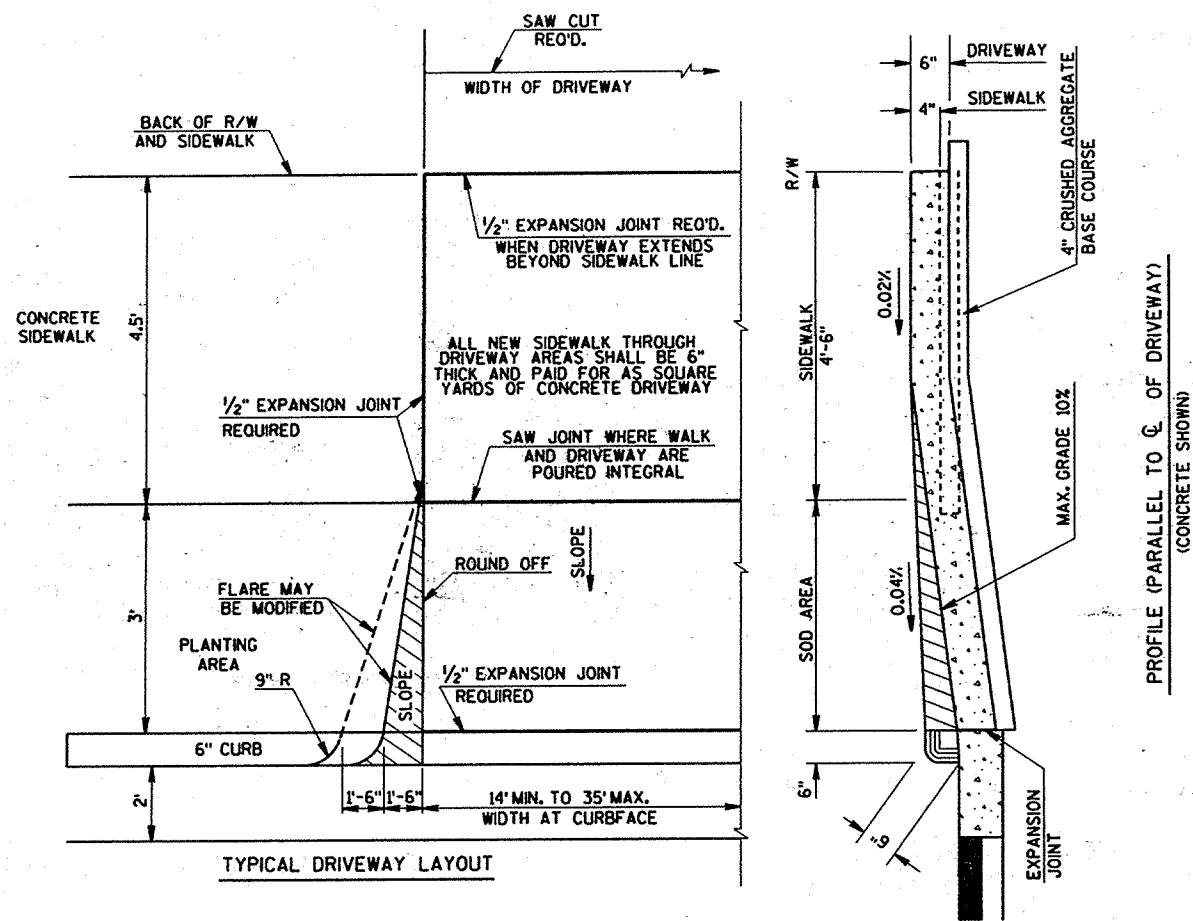
STANDARD DETAIL DRAWINGS

8A5-10a+b	INLET COVERS
8A5-10d	INLET AND MANHOLE COVERS
8B6-3	MANHOLES, TYPE 1
8B7-3	MANHOLES, TYPE 2 AND 3
8C1-5	INLETS, TYPE 1, 2, 3, AND 4
8D1-11	CONCRETE CURB, CONCRETE CURB AND GUTTER, AND PAVEMENT TIES
8D4-3	CONCRETE SURFACE DRAIN AND ASPHALTIC FLUME
8D5-8	CURB RAMPS
8E9-4	SILT FENCE
8F1-11	APRON ENDWALLS FOR CULVERT PIPE
8F2-1	APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE



DATE OF PLOT = 01/04/95
DESIGN FILE IS f:\dgn\5024\detail2.dgn
DGN LEVELS ON = 1-62

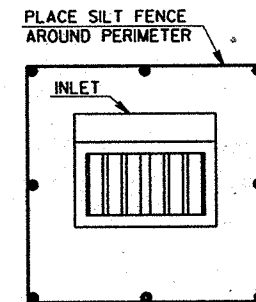
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NOTE: DRIVEWAY DETAIL SHOWN FOR CURB OPENING SIZE ONLY.
CONCRETE DRIVEWAY IS NOT PART OF THIS CONTRACT

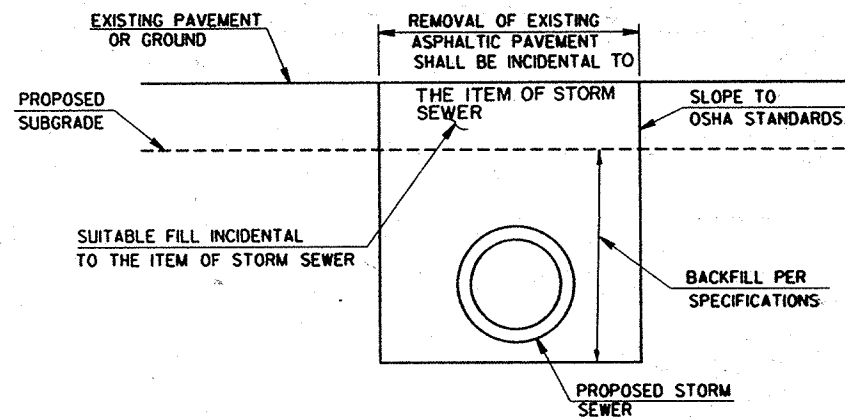
GENERAL NOTES FOR DRIVEWAYS

RESIDENTIAL DRIVEWAY WIDTHS SHALL BE A MAX. OF 24 FEET.
COMMERCIAL DRIVEWAY WIDTHS SHALL BE A MAX. OF 35 FEET.



SILT FENCE INSTALLATION (AT INLETS)

1. ALL SILT FENCE REQ'D. FOR THIS PROJECT SHALL MEET THE REQUIREMENTS FOR SILTY SOILS
2. IMMEDIATELY AFTER CONSTRUCTION OF ANY INLET, CONTRACTOR SHALL CONSTRUCT SILT FENCE AROUND THE INLET IN ACCORDANCE WITH THE DETAIL SHOWN ON THE PLANS TO MINIMIZE SEDIMENTATION IN THE INLET AND STORM SEWER.



STORM SEWER EXCAVATION

DATE 02/22/95

ESTIMATE OF QUANTITIES

ITEM	ITEM DESCRIPTION	UNIT	TOTAL	6529-03-71 QUANTITY
20301	REMOVING OLD CULVERT, STATION 37+42	L.S.	1.00	1.00
20302	REMOVING OLD CULVERT, STATION 10+27	L.S.	1.00	1.00
20303	REMOVING OLD CULVERT, STATION 9+68	L.S.	1.00	1.00
20304	REMOVING OLD CULVERT, STATION 74+85	L.S.	1.00	1.00
20405	REMOVING CURB AND GUTTER	L.F.	40.00	40.00

30413	PRODUCING AND STOCKPILING CRUSHED AGGREGATE BASE COURSE	TON	17,550.00	17,550.00
40501	ASPHALTIC MATERIAL FOR PLANT MIXES	TON	391.00	391.00
41534	CONCRETE SURFACE DRAINS	C.Y.	.70	.70
52260	REINFORCED CONCRETE APRON ENDWALLS FOR CULVERT PIPE, 12-INCH	EACH	2.00	2.00
52266	REINFORCED CONCRETE APRON ENDWALLS FOR CULVERT PIPE, 30-INCH	EACH	1.00	1.00

52363	REINFORCED CONCRETE APRON ENDWALLS FOR HORIZONTAL ELLIP. CULVERT PIPE, 24X38-INCH	EACH	1.00	1.00
60102	CONCRETE CURB, TYPE D	L.F.	261.00	261.00
60133	CONCRETE CURB AND GUTTER, 30-INCH, TYPE D	L.F.	13,695.00	13,695.00
60604	MEDIUM RANDOM RIPRAP	C.Y.	20.00	20.00
60825	REINFORCED CONCRETE PIPE, CLASS III, STORM SEWER, 12-INCH	L.F.	1,841.00	1,841.00

60826	REINFORCED CONCRETE PIPE, CLASS III, STORM SEWER, 15-INCH	L.F.	808.00	808.00
60827	REINFORCED CONCRETE PIPE, CLASS III, STORM SEWER, 18-INCH	L.F.	2,008.00	2,008.00
60828	REINFORCED CONCRETE PIPE, CLASS III, STORM SEWER, 21-INCH	L.F.	182.00	182.00
60829	REINFORCED CONCRETE PIPE, CLASS III, STORM SEWER, 24-INCH	L.F.	1,686.00	1,686.00

SHEET 3

ITEM	ITEM DESCRIPTION	UNIT	TOTAL	6529-03-71 QUANTITY
60830	REINFORCED CONCRETE PIPE, CLASS III, STORM SEWER, 27-INCH	L.F.	421.00	421.00
60831	REINFORCED CONCRETE PIPE, CLASS III, STORM SEWER, 30-INCH	L.F.	462.00	462.00
60850	REINFORCED CONCRETE PIPE, CLASS IV, STORM SEWER, 12-INCH	L.F.	31.00	31.00
60854	REINFORCED CONCRETE PIPE, CLASS IV, STORM SEWER, 24-INCH	L.F.	121.00	121.00
61110	MANHOLES, TYPE 1	EACH	25.00	25.00
61112	MANHOLES, TYPE 3	EACH	8.00	8.00
61121	INLETS, TYPE 1	EACH	1.00	1.00
61122	INLETS, TYPE 3	EACH	51.00	51.00
61151	MANHOLE COVERS, TYPE J	EACH	33.00	33.00
61163	INLET COVERS, TYPE C	EACH	1.00	1.00
61167	INLET COVERS, TYPE H	EACH	51.00	51.00
61910	MOBILIZATION	L.S.	1.00	1.00
62815	SILT FENCE, DELIVERED	L.F.	1,000.00	1,000.00
62816	SILT FENCE, INSTALLED	L.F.	1,000.00	1,000.00
62817	SILT FENCE MAINTENANCE	L.F.	500.00	500.00
64202	FIELD OFFICE, TYPE B	L.S.	1.00	1.00
64505	GEOTEXTILE FABRIC, TYPE R	S.Y.	70.00	70.00
64601	SAVING EXISTING PAVEMENT	L.F.	195.00	195.00
90001	PRODUCING BREAKER RUN STONE	TON	9,000.00	9,000.00
90002	PRODUCING ASPHALTIC CONCRETE PAVEMENT, TYPE MV	TON	6,740.00	6,740.00
90003	REINFORCED CONC. HORIZONTAL ELLIPT. PIPE, CLASS HE-IV, STORM SEWER, 24 X 38-INCH	L.F.	184.00	184.00
90402	QUALITY MANAGEMENT PROGRAM, ASPHALTIC MIXTURE	TON	6,740.00	6,740.00
90999	ON-THE-JOB TRAINING	HRS.	250.00	250.00

SHEET 3.1

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FILE NAME: HDGN\MISC2.DGN

STATE PROJECT NUMBER 6529-03-71	SHEET NO 3 A
MISCELLANEOUS QUANTITIES FOR C.T.H. "E" & "S" OUTAGAMIE COUNTY	

MANHOLES, INLETS AND COVERS

STRUCTURE NUMBER	STATION	LOCATION	STRUCTURE	DISTANCE LT./RT.	TYPE	COVER	GRATE LT./RT.	ELEVATIONS PAVEMENT FLOWLINE	DEPTH (L.F.)	REMARKS
4	48+35	C.T.H. "E"	INLET	16.5' RT.	3	H	LT.	753.08 749.00	3.0	
5	10+62	CONRAD ST.	INLET	13.5' RT.	3	H	RT.	752.56 748.55	3.0	
6	10+25	CONRAD ST.	INLET	13.5' RT.	3	H	LT.	752.65 748.25	3.4	
7	48+90	C.T.H. "E"	MANHOLE	10' LT.	1	J		753.00 748.00	3.8	
8	48+90	C.T.H. "E"	INLET	16.5' LT.	3	H	LT.	752.88 748.50	3.4	
9	50+50	C.T.H. "E"	INLET	16.5' RT.	3	H	LT.	751.96 747.90	3.1	
10	10+59	LIBERTY LN.	INLET	17.5' RT.	3	H	RT.	752.08 748.00	3.1	
11	10+29	LIBERTY LN.	INLET	17.5' LT.	3	H	LT.	751.68 747.60	3.1	
12	51+00	C.T.H. "E"	MANHOLE	10' LT.	3	J		751.78 746.95	3.6	
13	51+00	C.T.H. "E"	INLET	16.5' LT.	3	H		751.66 747.60	3.1	
14	54+25	C.T.H. "E"	INLET	16.5' RT.	3	H	LT.	749.40 745.70	2.7	
15	54+25	C.T.H. "E"	INLET	16.5' LT.	3	H	RT.	749.50 745.70	2.8	
16	54+25	C.T.H. "E"	MANHOLE	10' LT.	1	J		749.62 745.50	2.9	
17	44+68	C.T.H. "S"	INLET	16.5' RT.	3	H	RT.	750.95 746.50	3.5	
18	44+35	C.T.H. "S"	MANHOLE	9' LT.	3	J		750.33 744.50	4.6	
19	45+10	C.T.H. "S"	INLET	16.5' LT.	3	H	LT.	751.67 747.00	3.7	
20	59+45	C.T.H. "E"	INLET	16.5' LT.	3	H	RT.	749.38 745.50	2.9	
21	59+50	C.T.H. "E"	MANHOLE	10' LT.	1	J		749.72 745.21	3.3	
22	60+19	C.T.H. "E"	INLET	16.5' LT.	3	H	LT.	749.20 745.70	2.5	
23	60+20	C.T.H. "E"	MANHOLE	10' LT.	1	J		749.55 745.42	2.9	
24	60+62	C.T.H. "E"	INLET	16.5' RT.	3	H	LT.	750.00 746.00	3.0	
25	63+00	C.T.H. "E"	INLET	16.5' LT.	3	H	LT.	750.93 747.00	3.0	
26	63+00	C.T.H. "E"	MANHOLE	10' LT.	1	J		751.05 746.75	3.1	
27	63+00	C.T.H. "E"	INLET	16.5' RT.	3	H	RT.	750.93 747.00	3.0	
28	69+27	C.T.H. "E"	INLET	16.5' RT.	3	H	LT.	749.62 745.40	3.2	
29	69+50	C.T.H. "E"	MANHOLE	10' LT.	1	H		749.67 745.00	3.4	
30	69+50	C.T.H. "E"	INLET	16.5' LT.	3	J	RT.	749.55 745.40	3.2	
31	73+50	C.T.H. "E"	INLET	16.5' RT.	3	H		747.75 743.75	3.0	
32	73+50	C.T.H. "E"	MANHOLE	10' RT.	1	J	RT.	747.87 742.90	3.7	
33	73+50	C.T.H. "E"	INLET	16.5' LT.	3	H		747.75 743.75	3.0	TEE INTO TRUNKLINE (TEE INCIDENTAL)
36	76+77	C.T.H. "E"	INLET	16.5' LT.	3	H	LT.	746.75 742.75	3.0	
34	77+05	C.T.H. "E"	INLET	16.5' LT.	3	H	RT.	746.70 742.70	3.0	
34A	77+11	C.T.H. "E"	INLET	16.5' RT.	3	H	LT.	746.70 742.90	3.0	TEE INTO TRUNKLINE (TEE INCIDENTAL)
35	77+48	C.T.H. "E"	MANHOLE	10' LT.	3	J	RT.	746.96 742.20	3.5	
36A	77+68	C.T.H. "E"	INLET	16.5' LT.	3	H		746.89 742.85	3.0	
40	81+70	C.T.H. "E"	MANHOLE	10' LT.	1	J		748.23 743.47	3.5	
41	81+73	C.T.H. "E"	INLET	16.5' LT.	3	H	RT.	748.12 744.10	3.0	
42	81+73	C.T.H. "E"	INLET	16.5' RT.	3	H	LT.	748.12 744.10	3.0	
43	85+00	C.T.H. "E"	MANHOLE	10' LT.	1	J		749.22 744.13	3.8	
44	85+00	C.T.H. "E"	INLET	16.5' LT.	3	H	RT.	749.10 745.10	3.0	
45	85+00	C.T.H. "E"	INLET	16.5' RT.	3	H	LT.	749.10 745.10	3.0	
52	37+00	C.T.H. "S"	MANHOLE	9' LT.	1	J		746.34 740.10	5.0	
53	37+00	C.T.H. "S"	ENDWALL	35' LT.				742.50		
55	38+70	C.T.H. "S"	INLET	16.5' LT.	3	H	RT.	745.90 741.90	4.0	
56	38+70	C.T.H. "S"	MANHOLE	9' LT.	1	J		746.04 740.96	3.8	
57	39+72	C.T.H. "S"	MANHOLE	9' LT.	1	J		746.47 741.46	3.8	
58	38+70	C.T.H. "S"	INLET	16.5' RT.	3	H	RT.	745.90 741.90	4.0	
59	40+03	C.T.H. "S"	INLET	16.5' LT.	3	H	LT.	746.72 742.70	4.0	
59A	39+95	C.T.H. "S"	MANHOLE	9' LT.	1	J		746.79 741.62	3.9	
60	41+80	C.T.H. "S"	INLET	16.5' LT.	3	H	LT.	747.78 744.78	4.0	
61	41+80	C.T.H. "S"	MANHOLE	9' LT.	1	J		747.90 742.90	3.8	
62	41+80	C.T.H. "S"	INLET	16.5' RT.	3	H	RT.	747.78 744.78	4.0	
63	48+50	C.T.H. "S"	INLET	16.5' LT.	3	H	RT.	750.10 745.80	3.3	
64	48+50	C.T.H. "S"	MANHOLE	9' LT.	1	J		750.22 745.50	3.5	
65	48+50	C.T.H. "S"	INLET	16.5' RT.	3	H	LT.	750.10 745.80	3.3	
66	51+51	C.T.H. "S"	INLET	16.5' LT.	3	H	RT.	748.31 744.31	3.0	
67	10+39	COFFEY ST.	INLET	17.5' LT.	3	H	LT.	748.41 744.31	3.0	
68	51+68	C.T.H. "S"	MANHOLE	9' LT.	3	J		748.35 743.31	3.8	
69	52+05	C.T.H. "S"	MANHOLE	9' LT.	1	J		748.14 742.95	3.9	
69A	52+30	C.T.H. "S"	MANHOLE	9' LT.	1	J		747.99 742.85	3.9	
70	10+27	COFFEY ST.	INLET	17.5' RT.	3	H	RT.	748.29 744.29	3.0	
71	52+30	C.T.H. "S"	INLET	16.5' LT.	3	H	RT.	747.87 743.87	3.0	
72	52+30	C.T.H. "S"	INLET	16.5' RT.	3	H	LT.	747.87 743.87	3.0	
73	54+03	C.T.H. "S"	INLET	32' RT.	3	H	LT.	748.15 743.50	3.6	
74	54+20	C.T.H. "S"	MANHOLE	9' LT.	1	J		748.29 742.07	5.0	
75	54+38	C.T.H. "S"	INLET	35' RT.	3	H	LT.	748.15 744.00	3.2	

MANHOLES, INLETS AND COVERS

STRUCTURE NUMBER	STATION	LOCATION	STRUCTURE	DISTANCE LT./RT.	TYPE	COVER	GRATE LT./RT.	ELEVATIONS PAVEMENT FLOWLINE	DEPTH (L.F.)	REMARKS
76	57+50	C.T.H. "S"	INLET	16.5' LT.	3	H	RT.	742.50 738.00	3.5	
77	57+50	C.T.H. "S"	MANHOLE	9' LT.	1	J		742.62 737.12	4.3	
78	57+50	C.T.H. "S"	INLET	16.5' RT.	3	H	LT.	742.50 738.00	3.5	
79	60+50	C.T.H. "S"	MANHOLE	9' LT.	1	J		730.86 725.46	4.2	
80	60+50	C.T.H. "S"	INLET	16.5' RT.	3	H	LT.	730.74 726.70	3.0	
79A	60+46	C.T.H. "S"	INLET	28' LT.	1	C		730.50 726.25	3.0	TEE INTO TRUNKLINE (TEE INCIDENTAL)
81	61+38	C.T.H. "S"	INLET	16.5' LT.	3	H	RT.	729.10 725.10	3.0	
82	61+58	C.T.H. "S"	INLET	36' LT.	3	H	LT.	728.60 724.70	2.9	
83	61+95	C.T.H. "S"	INLET	36' LT.	3	H	RT.	728.50 724.90	2.6	
84	61+75	C.T.H. "S"	MANHOLE	9' LT.	1	J		728.76 724.46	3.0	
85	62+43	C.T.H. "S"	INLET	16.5' LT.	3	H	LT.	727.97 723.97	3.0	
86	9+59	MC HUGH RD.	INLET	21.5' LT.	3	H	RT.	727.60 723.90	2.7	
87	63+00	C.T.H. "S"	MANHOLE	32' RT.	3	J		727.93 723.54	3.1	
88	9+47	MC HUGH RD.	ENDWALL	27' LT.				726.10		
89	63+00	C.T.H. "S"	MANHOLE	9' LT.	3	J		727.86 723.79	3.0	
90	9+67	MC HUGH RD.	ENDWALL	33' RT.	1			723.50		
301	1+91	TRALEE LN.	MANHOLE	20' RT.	1	J		745.00 740.00	3.8	
302	3+52	TRALEE LN.	MANHOLE	29' RT.	1	J		736.00 730.85	3.9	PROVIDE CUT OUT FOR FUTURE S.S.
303	5+00	TRALEE LN.	MANHOLE	20' LT.	1	J		735.80 729.52	5.0	PROVIDE CUT OUT FOR FUTURE S.S.
304	7+02	TRALEE LN.	MANHOLE	20' LT.	1	J		733.50 727.71	4.5	PROVIDE CUT OUT FOR FUTURE S.S.
305			MANHOLE		3	J		732.96 727.00	4.7	CONNECT EXIST. PIPES INTO MANHOLE
306			MANHOLE		3	J		730.13 725.07	3.8	

CONCRETE CURB, TYPE "D"

STATION-STATION	LOCATION	QUANTITY L.F.
57+90-60+40RT	C.T.H. "E"	261

CONCRETE CURB AND GUTTER, 30-INCH, TYPE "D"

STATION-STATION	LOCATION	QUANTITY L.F.
35+50-35+90 RT.	C.T.H. "S"	40
36+56.88-39+64 LT	C.T.H. "S"	315
36+56.88-44+37 RT	C.T.H. "S"	720
39+64-44+37 LT	C.T.H. "S"	435
44+37-51+97 LT	C.T.H. "S"	680
44+37-54+20 RT	C.T.H. "S"	950
51+97-61+76 LT	C.T.H. "S"	1175
54+20-62+90 RT	C.T.H. "S"	1050
61+76-63+68 LT	C.T.H. "S"	190
46+40-57+08 LT	C.T.H. "E"	1030
46+40-48+96 RT	C.T.H. "E"	230
48+96-51+09 RT	C.T.H. "E"	190
51+09-57+08 RT	C.T.H. "E"	605
57+08- 65+69 RT	C.T.H. "E"	810
57+08-59+83 LT	C.T.H. "E"	270
59+83- 77+23 LT	C.T.H. "E"	1730
65+69-69+57 RT	C.T.H. "E"	405
69+57-81+26 RT	C.T.H. "E"	1160
77+23-81+26 LT	C.T.H. "E"	400
81+26-87+85 LT	C.T.H. "E"	655
81+26-87+85 RT	C.T.H. "E"	655
TOTAL		13,695

REMOVING CULVERT PIPES (LUMP SUM EACH)

STATION	LOCATION	SIZE (IN. DIA.)	TYPE	LENGTH L.F.
37+42	C.T.H. "S"	24	C.M.P.	58
10+27	PETERSON ST.	18	C.M.P.	48
9+68	MC HUGH RD.	18	C.M.P.	56
74+85	C.T.H. "E"	18	R.C.P.	50

MANHOLE AND INLET TOTALS

MANHOLES	MANHOLE COVERS
TYPE 1 = 25 EACH	TYPE J = 33 EACH
TYPE 3 = 8 EACH	
INLETS	INLET COVERS
TYPE 1 = 1 EACH	TYPE C = 1 EACH
TYPE 3 = 51 EACH	TYPE H = 51 EACH

SILT FENCE DELIVERED, INSTALLED AND MAINTENANCE

LOCATION	DELIVERED AND INSTALLED L.F.	MAINTENANCE L.F.
AT EACH INLET	920	460
UNDISTRIBUTED	80	40
TOTALS	1,000	500

SAVING EXISTING PAVEMENT

STATION-STATION	LOCATION	QUANTITY L.F.
35+50-36+57	C.T.H. "S"	195

REMOVING CURB AND GUTTER

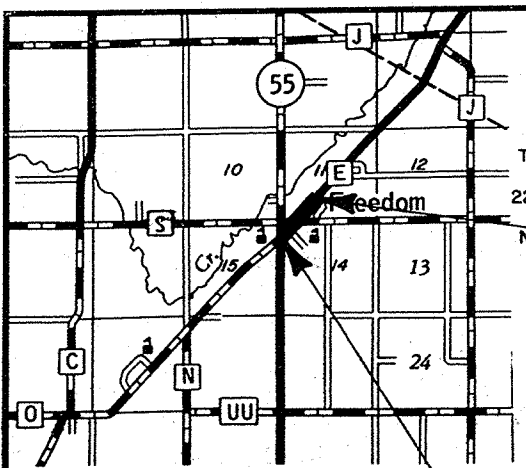
STATION-STATION	LOCATION	QUANTITY L.F.
35+50-35+90 RT.	C.T.H. "S"	40

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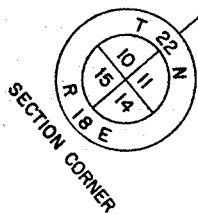
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STORM SEWER SUMMARY							
LOCATION FROM TO	DIAMETER (IN.)	LENGTH (L.F.)	TYPE	ELEVATIONS		REMARKS	
				INLET	DISCHARGE		
4 7	12	58	R.C.P. S.S. CLASS III	749.00	748.50		
5 6	12	44	R.C.P. S.S. CLASS III	748.55	748.25		
6 7	12	36	R.C.P. S.S. CLASS III	748.25	748.00		
8 7	12	5	R.C.P. S.S. CLASS III	748.50	748.20		
7 12	18	206	R.C.P. S.S. CLASS III	748.00	746.95		
9 12	12	54	R.C.P. S.S. CLASS III	747.90	747.30		
10 11	12	42	R.C.P. S.S. CLASS III	748.00	747.60		
11 12	12	44	R.C.P. S.S. CLASS III	747.60	747.20		
13 12	12	5	R.C.P. S.S. CLASS III	747.60	747.40		
12 16	18	321	R.C.P. S.S. CLASS III	746.95	745.50		
14 16	12	23	R.C.P. S.S. CLASS III	745.70	745.50		
15 16	12	5	R.C.P. S.S. CLASS III	745.70	745.50		
16 18	18	283	R.C.P. S.S. CLASS III	745.50	744.70		
25 26	12	5	R.C.P. S.S. CLASS III	747.00	746.75		
27 26	12	23	R.C.P. S.S. CLASS III	747.00	746.75		
26 23	12	276	R.C.P. S.S. CLASS III	746.75	745.42		
24 23	12	46	R.C.P. S.S. CLASS III	746.00	745.70		
22 23	12	5	R.C.P. S.S. CLASS III	745.70	745.60		
23 21	18	66	R.C.P. S.S. CLASS III	745.42	745.21		
20 21	12	5	R.C.P. S.S. CLASS III	745.50	745.40		
21 18	18	234	R.C.P. S.S. CLASS III	745.21	744.50		
52 51	27	157	R.C.P. S.S. CLASS III	740.10	739.30	*51 IS AN EXIST. M.H. TO TAP INTO (INCIDENTAL)	
53 52	12	23	R.C.P. S.S. CLASS III	742.50	740.10	*53 IS A 12-INCH CONC. APRON ENDWALL	
56 52	27	166	R.C.P. S.S. CLASS III	740.10	740.96		
58 56	12	23	R.C.P. S.S. CLASS III	741.90	741.40		
55 56	12	5	R.C.P. S.S. CLASS III	741.90	741.40		
57 56	27	98	R.C.P. S.S. CLASS III	741.46	740.96		
54 57	15	24	R.C.P. S.S. CLASS III	742.22	742.10	FUTURE STUB, BRICK END CLOSED AT *54	
59A 57	24	19	R.C.P. S.S. CLASS III	741.62	741.46		
59 59A	12	8	R.C.P. S.S. CLASS III	742.70	742.20		
61 59A	24	181	R.C.P. S.S. CLASS III	742.90	741.62		
60 61	12	5	R.C.P. S.S. CLASS III	744.78	744.30		
62 61	12	23	R.C.P. S.S. CLASS III	744.78	744.30		
18 61	24	251	R.C.P. S.S. CLASS III	744.50	742.90		
17 18	12	44	R.C.P. S.S. CLASS III	746.50	745.50		
19 17	12	54	R.C.P. S.S. CLASS III	747.00	746.60		
28 29	12	37	R.C.P. S.S. CLASS III	745.40	745.10		
30 29	12	5	R.C.P. S.S. CLASS III	745.40	745.10		
29 32	12	396	R.C.P. S.S. CLASS III	745.00	742.90		
33 32	12	5	R.C.P. S.S. CLASS III	743.75	743.20		
31 32	12	23	R.C.P. S.S. CLASS III	743.75	743.20		
32 35	18	394	R.C.P. S.S. CLASS III	742.90	742.20		
36 TEE	12	5	R.C.P. S.S. CLASS III	742.75	742.60	TEE IS INCIDENTAL	
34 35	12	46	R.C.P. S.S. CLASS III	742.70	742.40		
34A 34	12	3	R.C.P. S.S. CLASS III	742.90	742.80		
44 43	12	5	R.C.P. S.S. CLASS III	745.10	744.40		
45 43	12	23	R.C.P. S.S. CLASS III	745.10	744.40		
43 40	15	326	R.C.P. S.S. CLASS III	744.13	743.47		
41 40	12	5	R.C.P. S.S. CLASS III	744.10	743.70		
42 40	12	23	R.C.P. S.S. CLASS III	744.10	743.70		
40 35	15	418	R.C.P. S.S. CLASS III	743.47	742.20		
36A TEE	12	5	R.C.P. S.S. CLASS III	742.85	742.30	TEE IS INCIDENTAL	
35 301	21	182	R.C.P. S.S. CLASS III	742.20	740.00		
301 302	18	157	R.C.P. S.S. CLASS III	740.00	731.59		
302 303	24	144	R.C.P. S.S. CLASS III	730.85	729.52		
303 304	24	198	R.C.P. S.S. CLASS III	729.52	727.71		
304 305	24	64	R.C.P. S.S. CLASS III	727.71	727.13		
305 306	30	152	R.C.P. S.S. CLASS III	727.00	725.07		
306 307	30	310	R.C.P. S.S. CLASS III	725.07	721.20	*307 IS A 30-INCH CONCRETE APRON ENDWALL	

STORM SEWER SUMMARY									
LOCATION		DIAMETER (IN.)	LENGTH (L.F.)	TYPE	ELEVATIONS		REMARKS		
FROM	TO				INLET	DISCHARGE			
63A	63	12	10	R.C.P. S.S. CLASS III	745.83	745.80	FUTURE STUB, BRICK END CLOSED AT *63A		
63	64	12	5	R.C.P. S.S. CLASS III	745.80	745.50			
65	64	12	23	R.C.P. S.S. CLASS III	745.80	745.50			
64	68	18	314	R.C.P. S.S. CLASS III	745.50	743.31			
66	68	12	16	R.C.P. S.S. CLASS III	744.31	744.00			
67	68	12	25	R.C.P. S.S. CLASS III	744.31	744.00			
68	69	18	33	R.C.P. S.S. CLASS III	743.31	742.95			
70A	69	15	40	R.C.P. S.S. CLASS III	743.10	743.00	FUTURE STUB, BRICK END CLOSED AT *70A		
69	69A	24	21	R.C.P. S.S. CLASS III	742.95	742.85			
70	71	12	20	R.C.P. S.S. CLASS III	744.29	743.87			
71	69A	12	5	R.C.P. S.S. CLASS III	743.87	743.30			
72	69A	12	23	R.C.P. S.S. CLASS III	743.87	743.30			
69A	74	24	186	R.C.P. S.S. CLASS III	742.85	742.07			
75	73	12	32	R.C.P. S.S. CLASS III	744.00	743.60			
73	74	12	42	R.C.P. S.S. CLASS III	743.60	743.00			
74	77	24	326	R.C.P. S.S. CLASS III	742.07	737.12			
76	77	12	5	R.C.P. S.S. CLASS III	738.00	737.70			
78	77	12	23	R.C.P. S.S. CLASS III	738.00	737.70			
77	79	24	296	R.C.P. S.S. CLASS III	737.12	725.46			
80	79	12	23	R.C.P. S.S. CLASS III	726.70	726.20			
79A	79	12	17	R.C.P. S.S. CLASS III	726.25	726.00			
79	84	24	121	R.C.P. S.S. CLASS IV	725.46	724.46			
83	82	12	36	R.C.P. S.S. CLASS III	724.90	724.70			
82	84	12	31	R.C.P. S.S. CLASS III	724.70	724.50			
84	89	24x38	121	R.C.H.E.P. S.S. CLASS IV	724.46	723.79			
89	87	24x38	45	R.C.H.E.P. S.S. CLASS IV	723.79	723.54			
85	87	12	55	R.C.P. S.S. CLASS III	723.97	723.77			
88	86	12	8	R.C.P. S.S. CLASS III	726.10	723.90	*88 IS A 12-INCH CONC. APRON ENDWALL		
86	87	12	31	R.C.P. S.S. CLASS IV	723.90	723.70			
87	90	24x38	18	R.C.H.E.P. S.S. CLASS IV	723.54	723.50	*90 IS A 24x38-INCH CONC. APRON ENDWALL		
STORM SEWER TOTALS									
12-INCH		R.C.P. S.S. CLASS III		1,841 L.F.	CONCRETE ENDWALLS				
12-INCH		R.C.P. S.S. CLASS IV		31 L.F.	12-INCH *2				
15-INCH		R.C.P. S.S. CLASS III		808 L.F.	30-INCH *1				
18-INCH		R.C.P. S.S. CLASS III		2,008 L.F.	24x38-INCH *1				
21-INCH		R.C.P. S.S. CLASS III		182 L.F.					
24-INCH		R.C.P. S.S. CLASS III		1,686 L.F.					
27-INCH		R.C.P. S.S. CLASS III		421 L.F.					
30-INCH		R.C.P. S.S. CLASS III		462 L.F.					
24x38-INCH		R.C.H.E.P. S.S. CLASS IV		184 L.F.					
24-INCH		R.C.P. S.S. CLASS IV		121 L.F.					
PRODUCING BREAKER RUN STONE				MEDIUM RANDOM RIPRAP AND GEOTEXTILE FABRIC					
LOCATION		QUANTITY TONS.		LOCATION		MEDIUM RANDOM RIPRAP C.Y.		GEOTEXTILE FABRIC TYPE "R" S.Y.	
C.T.H. "S"		3,570		S.S. OUTFALL #307		10		35	
C.T.H. "E"		5,430		S.S. OUTFALL #90		10		35	
TOTAL		9,000		TOTALS		20		70	
PRODUCING ASPHALTIC CONCRETE PAVEMENT, TYPE "MV"								PRODUCING CRUSHED AGGREGATE BASE COURSE	
LOCATION		PRODUCING ASPHALTIC CONCRETE PAVEMENT, TYPE "MV" TONS		ASPHALTIC MATERIAL FOR PLANT MIXES FIGURED @ 5.8% TONS		LOCATION		QUANTITY TONS	
C.T.H."S"		2,580		150		C.T.H."S"		7,000	
C.T.H."E"		3,915		227		C.T.H."E"		10,550	
P.E.'s & PARKING LOTS		245		14		TOTAL		17,550	
TOTALS		6,740		391					
CONCRETE SURFACE DRAIN									
STATION		LOCATION		QUANTITY C.Y.					
63+68		C.T.H. "S" LT.		0.7					



R - 18 - E
LAYOUT
SCALE 0 1/2 2 MILES
TOTAL NET LENGTH OF CENTERLINE = 0.4718 MI.

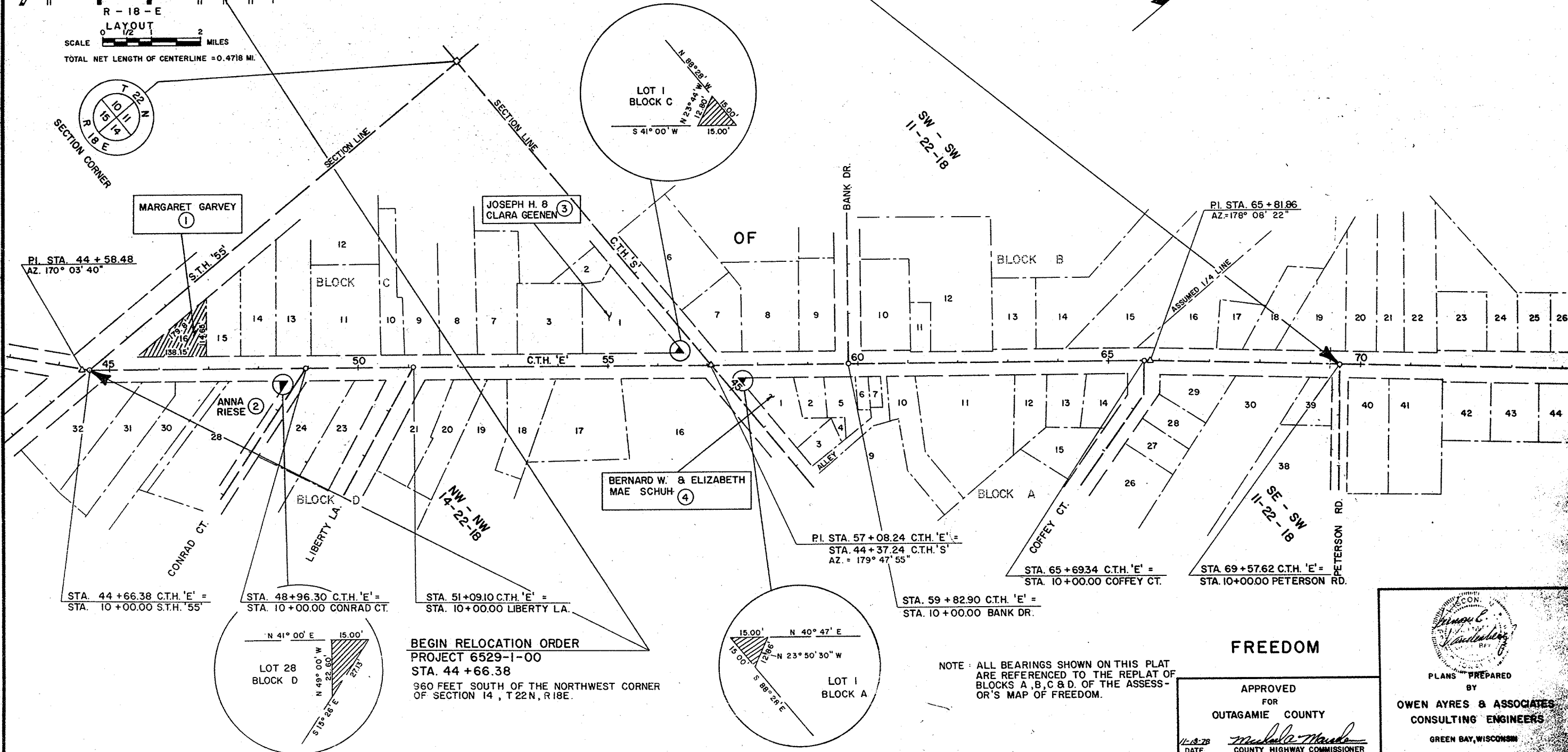


SCHEDULE OF LANDS AND INTERESTS REQUIRED

PARCEL NUMBER	OWNER	INTEREST REQUIRED	L. H. E. ACRES		ACRES REQUIRED			TOTAL REMAINING ACRES	OPERATIONS PROJECT NUMBER
			TEMP.	PERM.	NEW R/W REQUIRED	EXISTING R/W	TOTAL R/W REQUIRED		
1	MARGARET GARVEY	FEE TITLE			0.364	-	0.364		
2	ANNA RIESE	FEE TITLE			0.004	-	0.004		
3	JOSEPH H. & CLARA GEENEN	FEE TITLE			0.002	-	0.002		
4	BERNARD W. & ELIZABETH MAE SCHUH	FEE TITLE			0.002	-	0.002		

REVISION DATE	R/W PROJECT NUMBER 6529-1-00	SHEET NUMBER
	FEDERAL PROJECT NUMBER	
PLAT OF RIGHT OF WAY REQUIRED FOR FREEDOM VILLAGE STREETS		
SCALE 0 100 200 Ft. DATE November 1, 1978		
CONSTRUCTION PROJECT NUMBER		
6529-1-71		4
6529-03-71		4.0

END RELOCATION ORDER
PROJECT 6529-1-00
STA. 69+57.62
AT THE INTERSECTION OF THE C.T.H. 'E' &
AND THE C. OF PETERSON RD.



BEGIN RELOCATION ORDER
PROJECT 6529-1-00
STA. 44+66.38
960 FEET SOUTH OF THE NORTHWEST CORNER
OF SECTION 14, T 22N, R 18E.

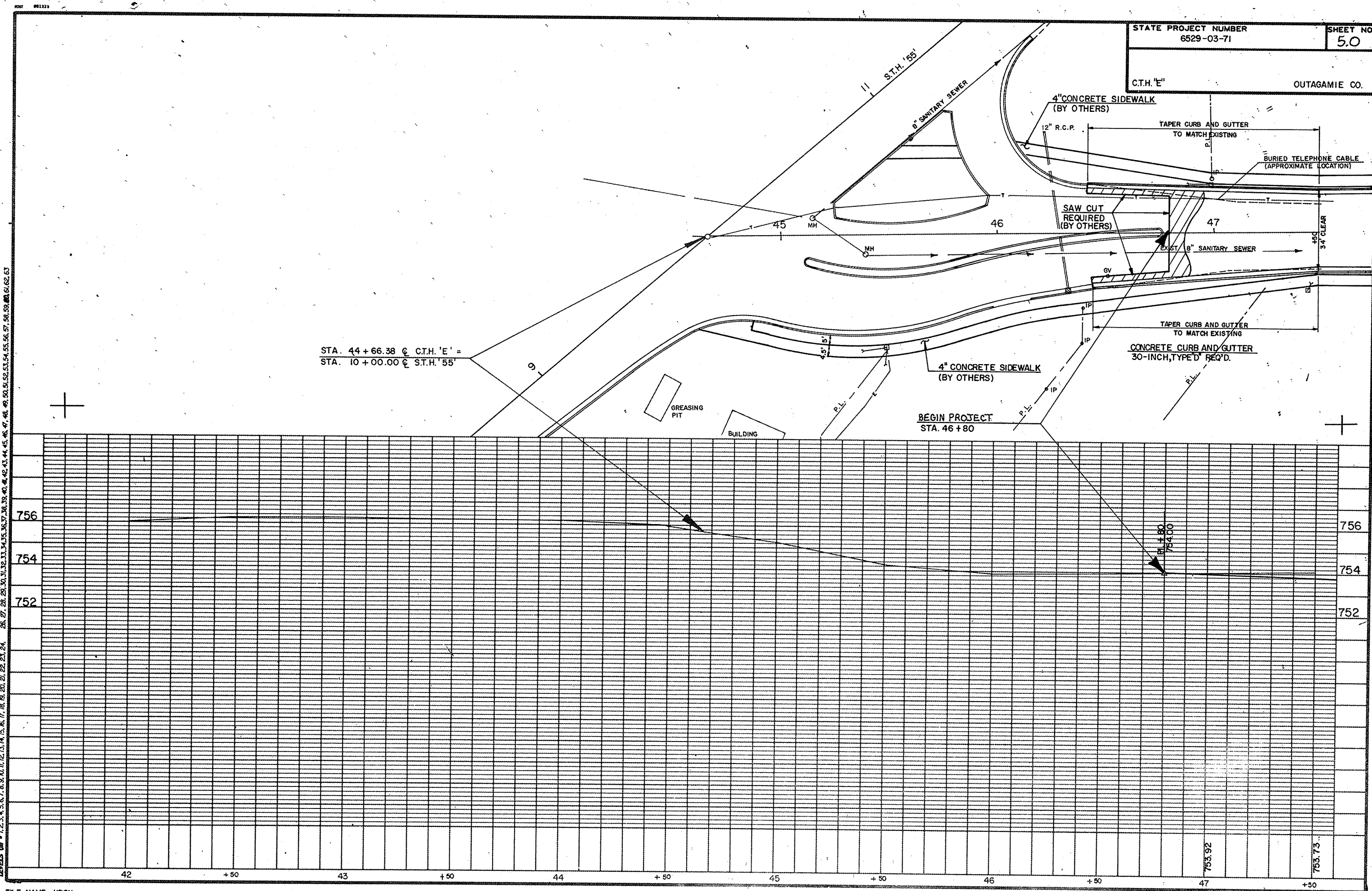
NOTE: ALL BEARINGS SHOWN ON THIS PLAT
ARE REFERENCED TO THE REPLAT OF
BLOCKS A, B, C & D. OF THE ASSESS-
OR'S MAP OF FREEDOM.

FREEDOM

APPROVED
FOR
OUTAGAMIE COUNTY
DATE 11-13-78
COUNTY HIGHWAY COMMISSIONER

PLANS PREPARED
BY
OWEN AYRES & ASSOCIATES
CONSULTING ENGINEERS
GREEN BAY, WISCONSIN

LEVELS ON = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63



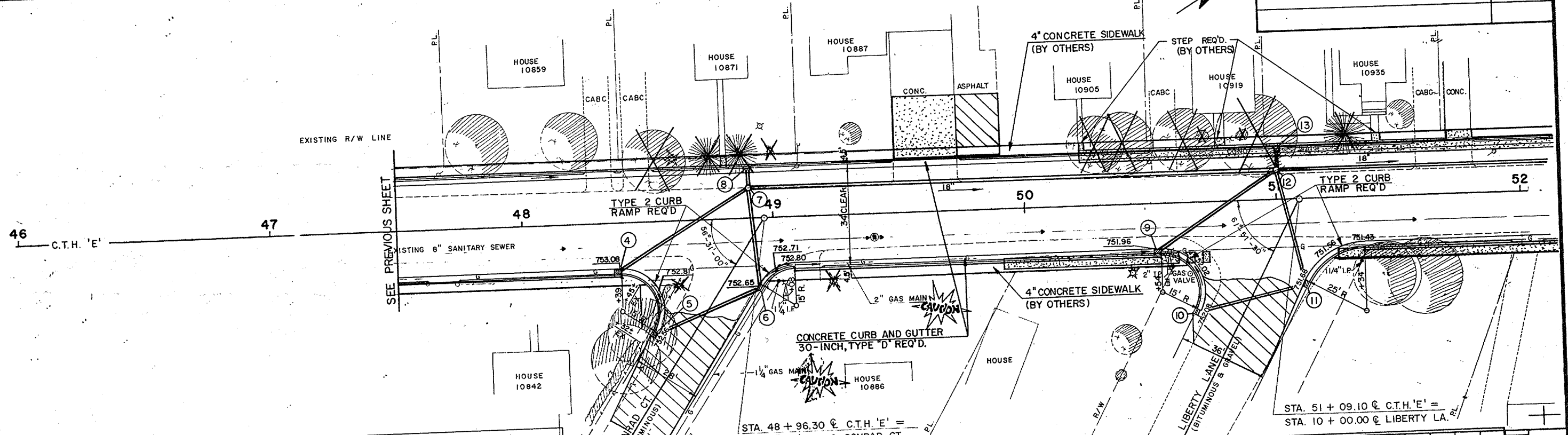
STATE PROJECT NUMBER
6529-03-71

SHEET NO.
5.0

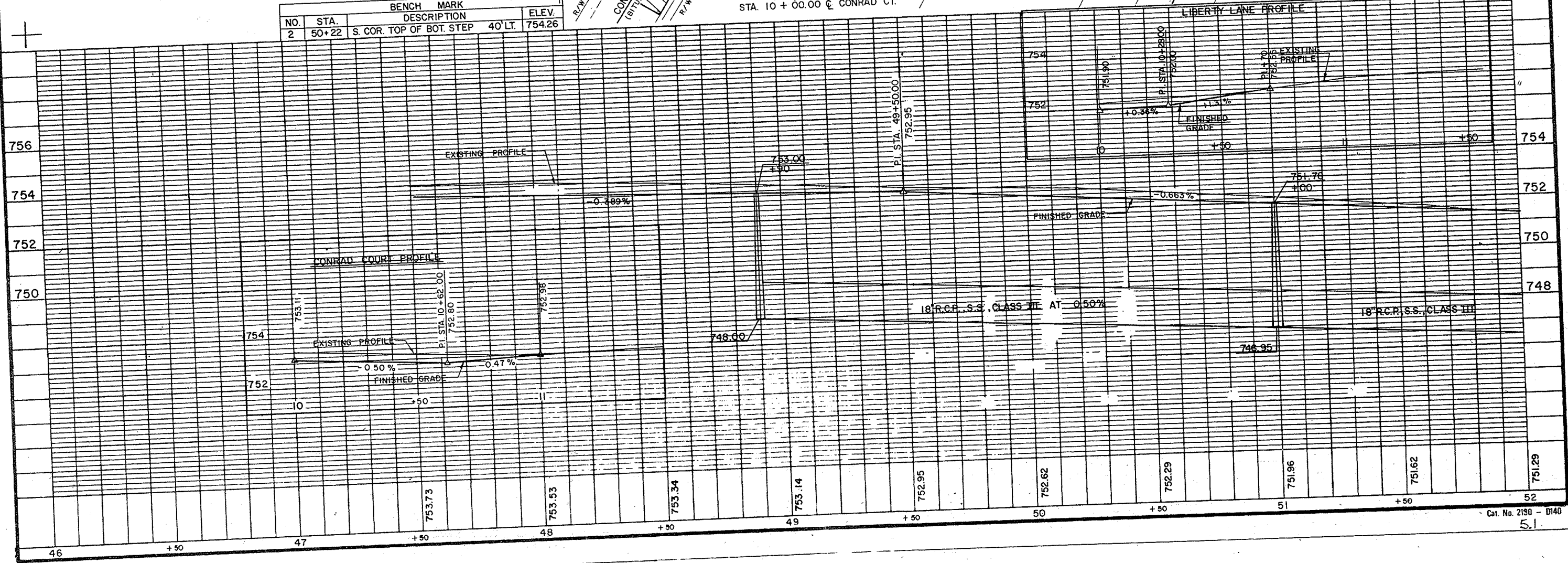
C.T.H. 'E'

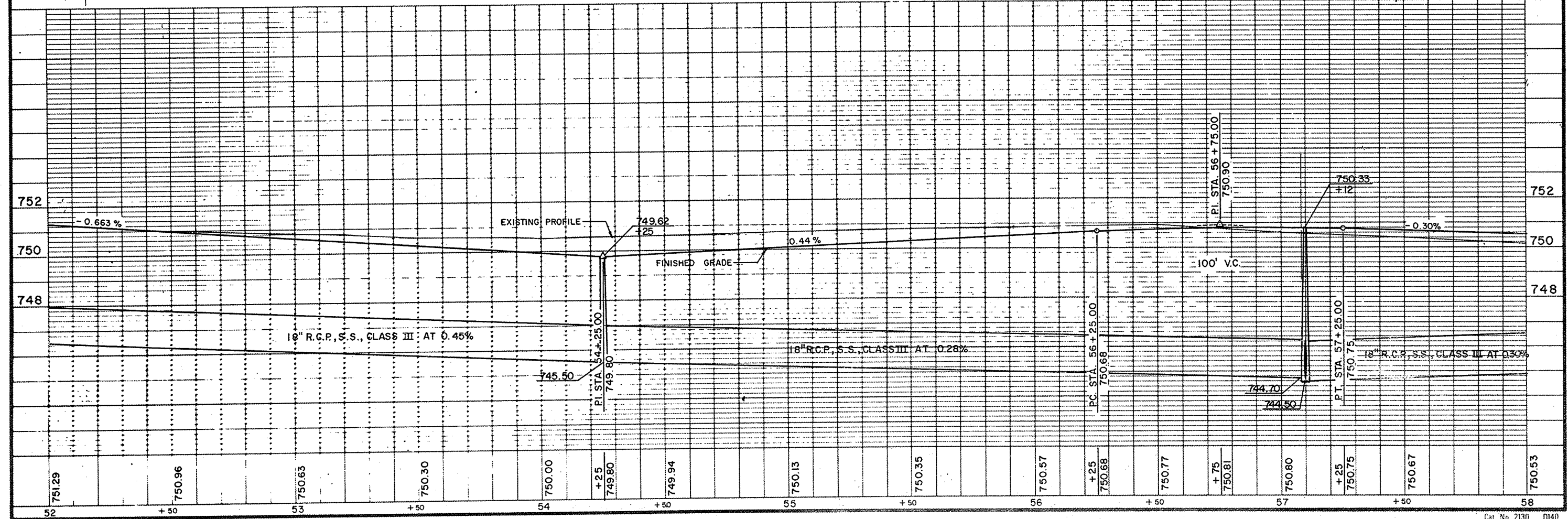
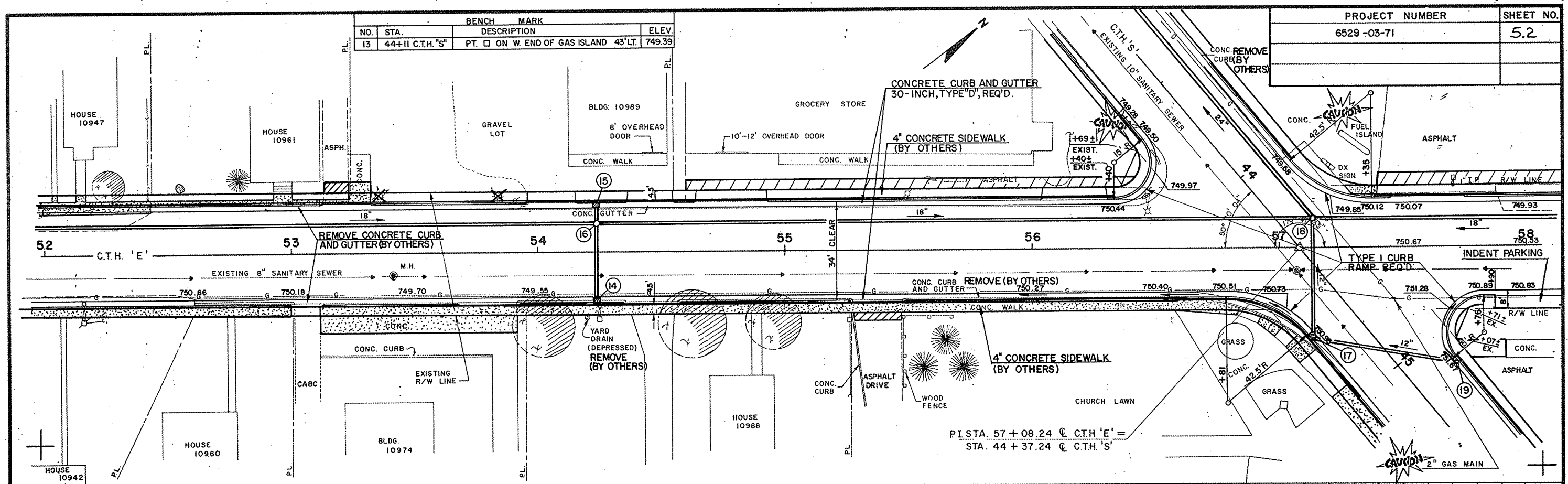
OUTAGAMIE CO.

PROJECT NUMBER	SHEET NO.
6529-03-71	5.1

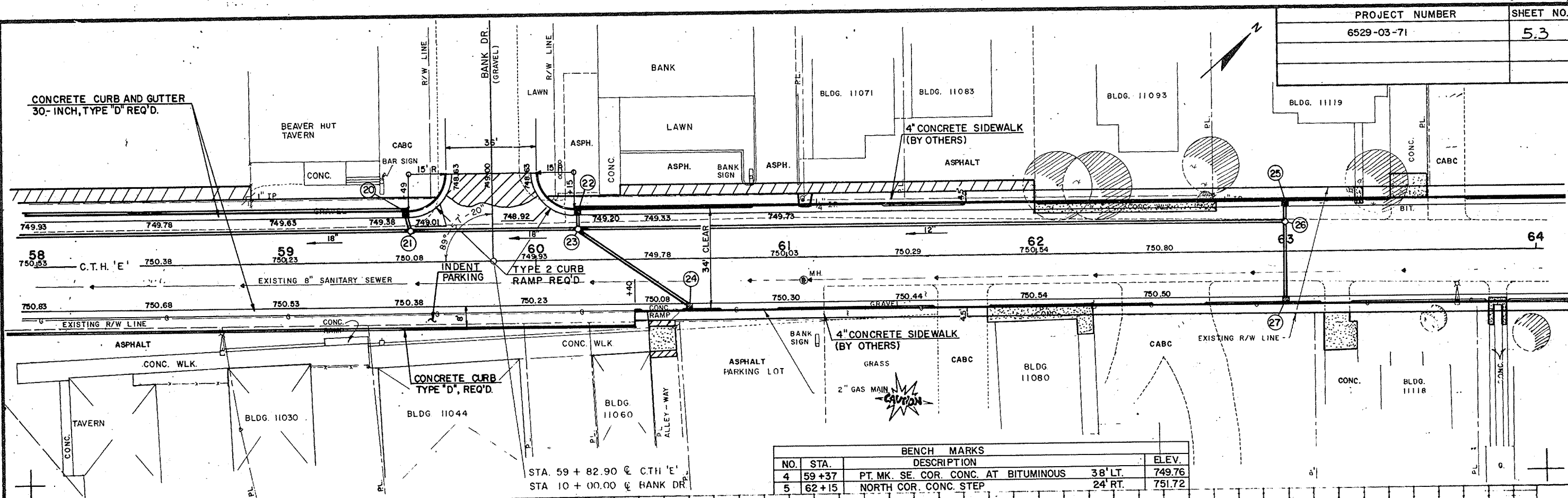


BENCH MARK			
NO.	STA.	DESCRIPTION	ELEV.
2	50+22	S. COR. TOP OF BOT. STEP 40' LT.	754.26

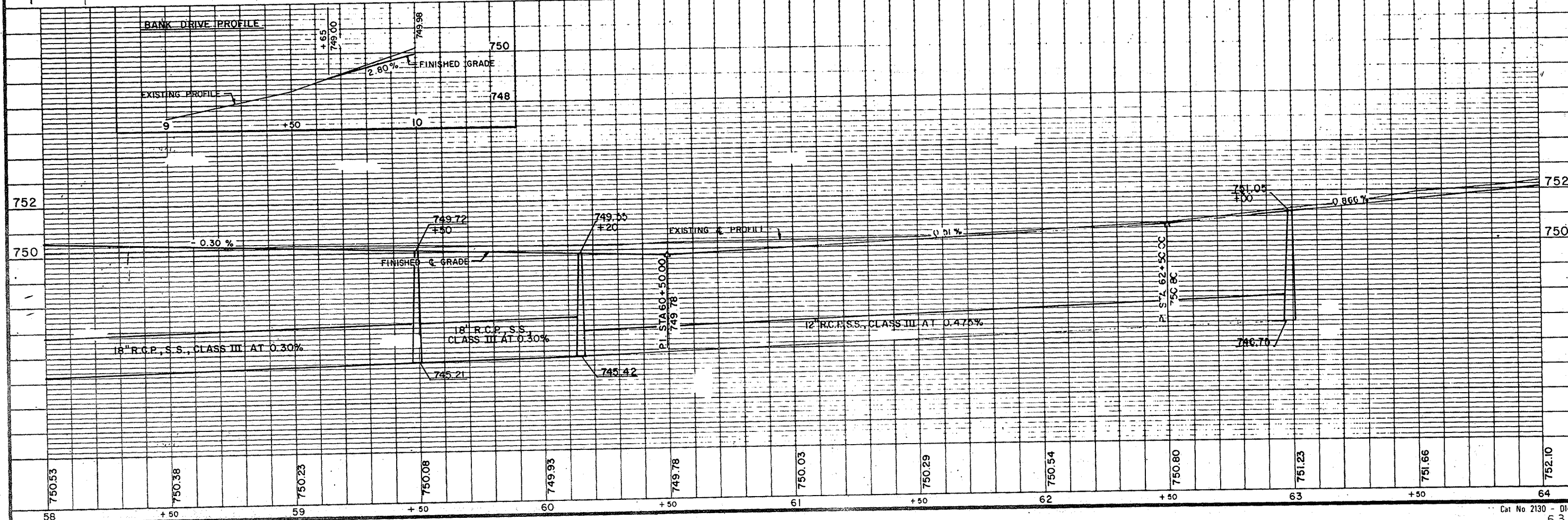


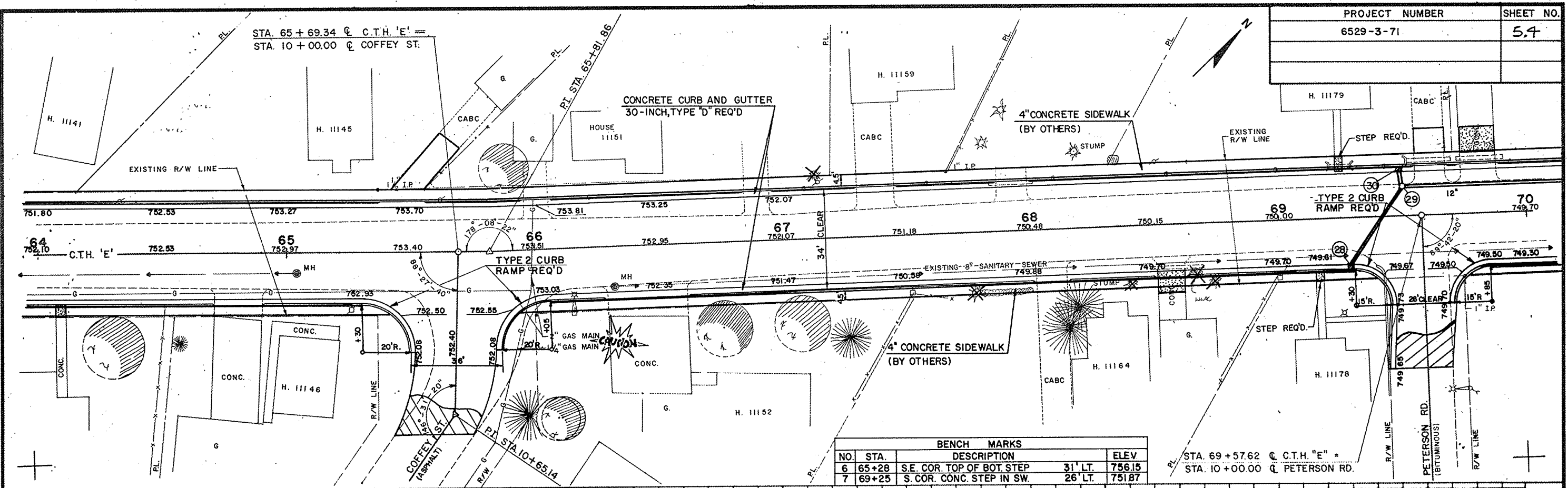


PROJECT NUMBER	SHEET NO.
6529-03-71	5.3



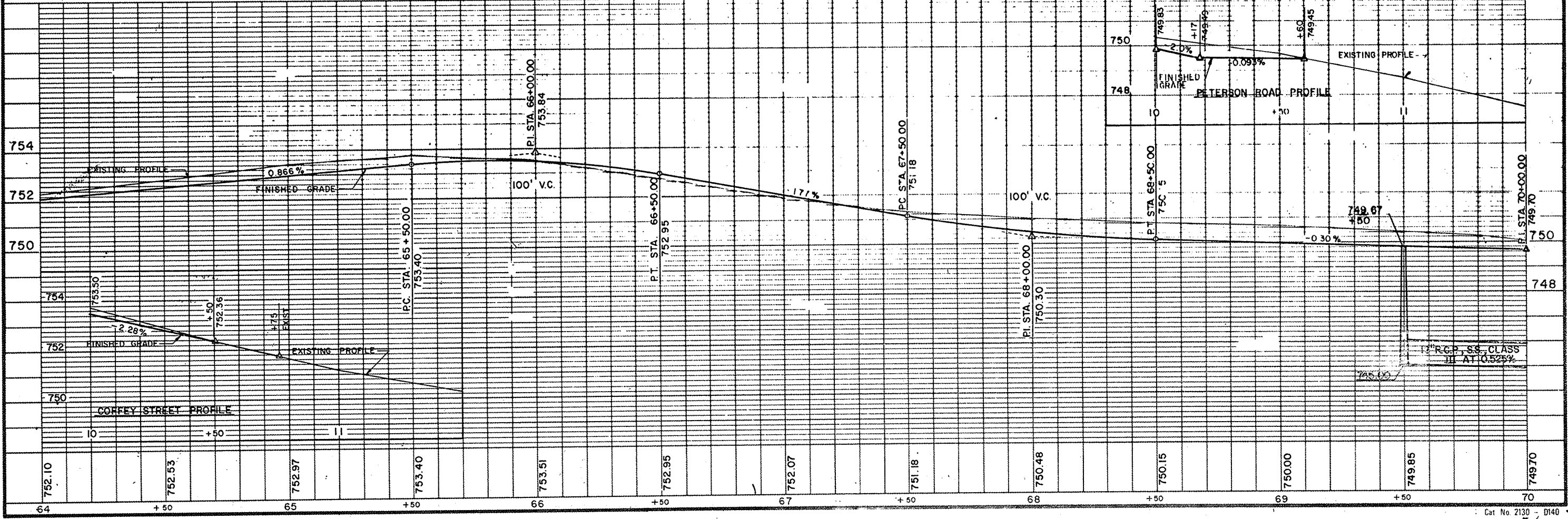
BENCH MARKS				
NO.	STA.	DESCRIPTION		ELEV.
4	59+37	PT. MK. SE. COR. CONC. AT BITUMINOUS	38' LT.	749.76
5	62+15	NORTH COR. CONC. STEP	24' RT.	751.72

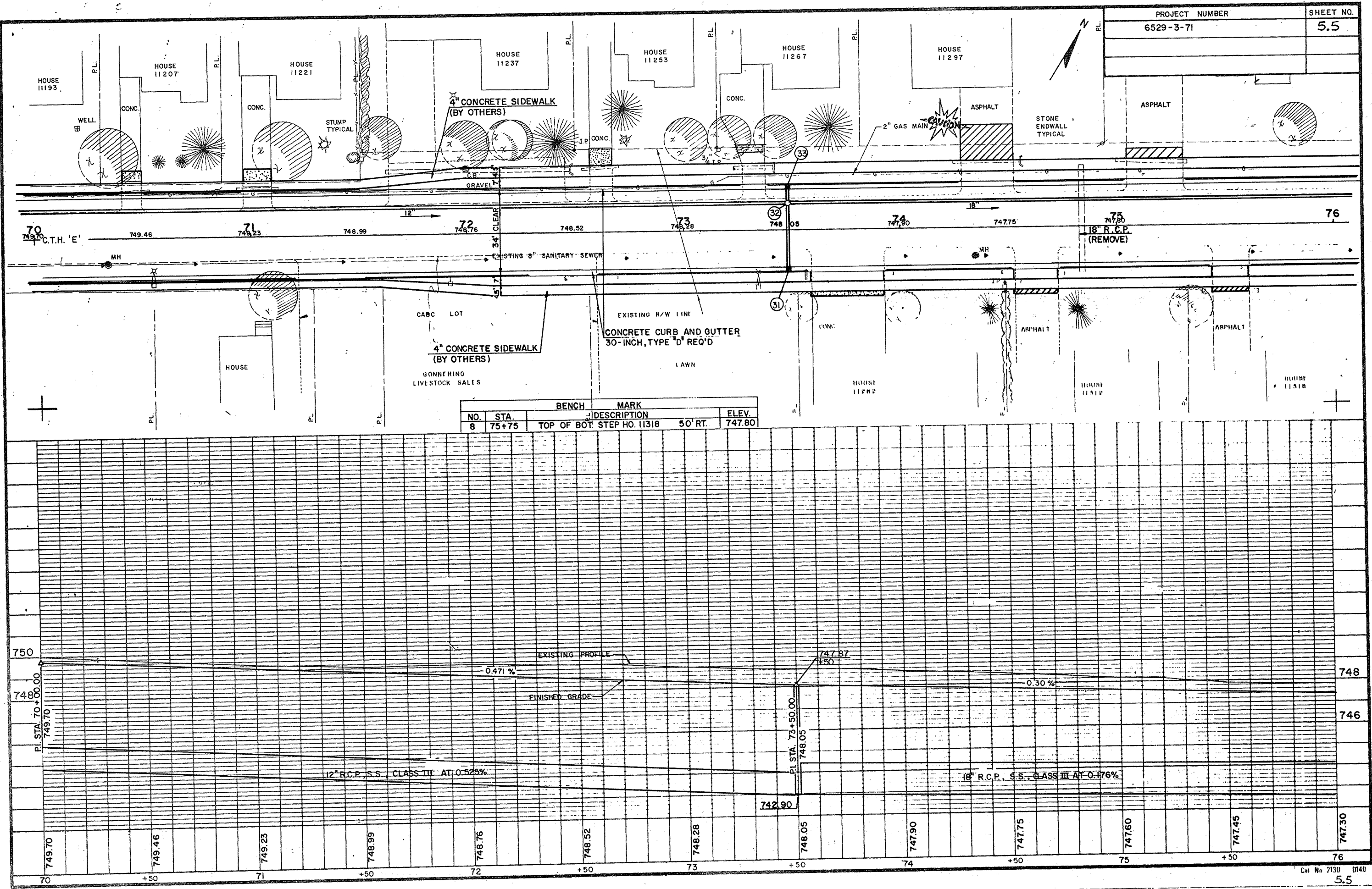




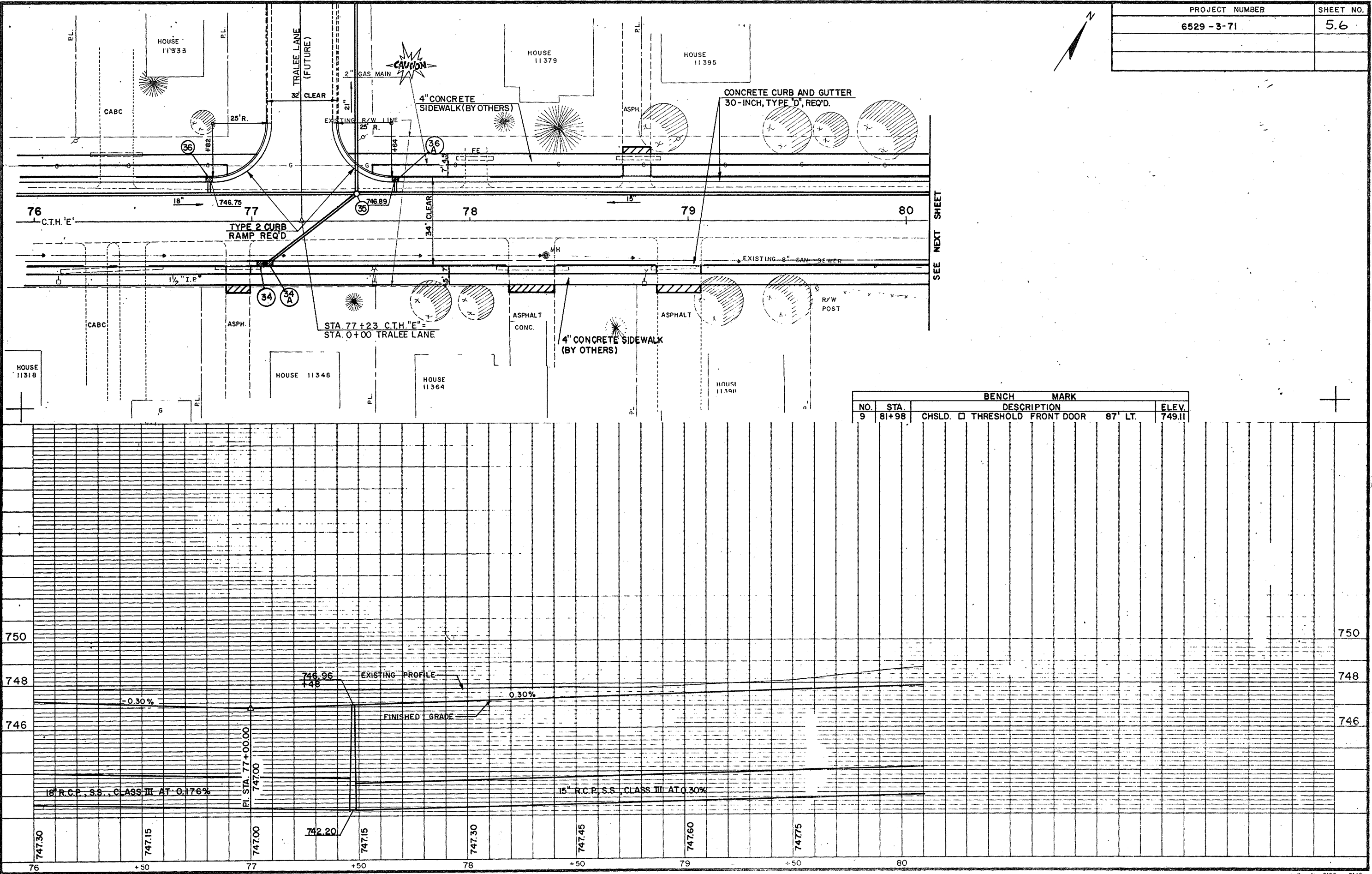
PROJECT NUMBER	SHEET NO.
6529-3-71	5.4

BENCH MARKS				
NO.	STA.	DESCRIPTION		ELEV.
6	65+28	S.E. COR. TOP OF BOT STEP	31' LT.	756.15
7	69+25	S. COR. CONC. STEP IN SW.	26' LT.	751.87

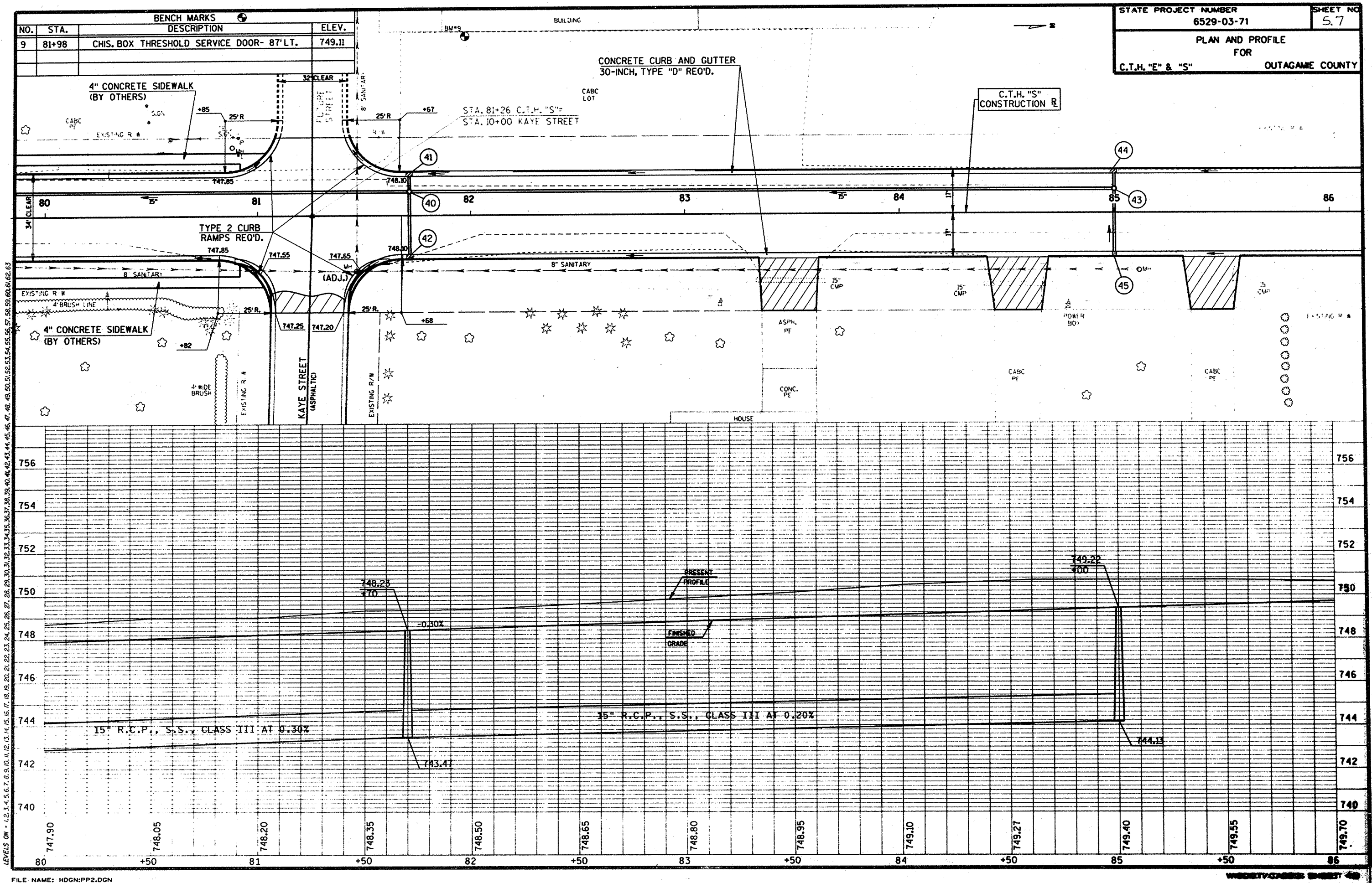




PROJECT NUMBER	SHEET NO.
6529-3-71	5.5

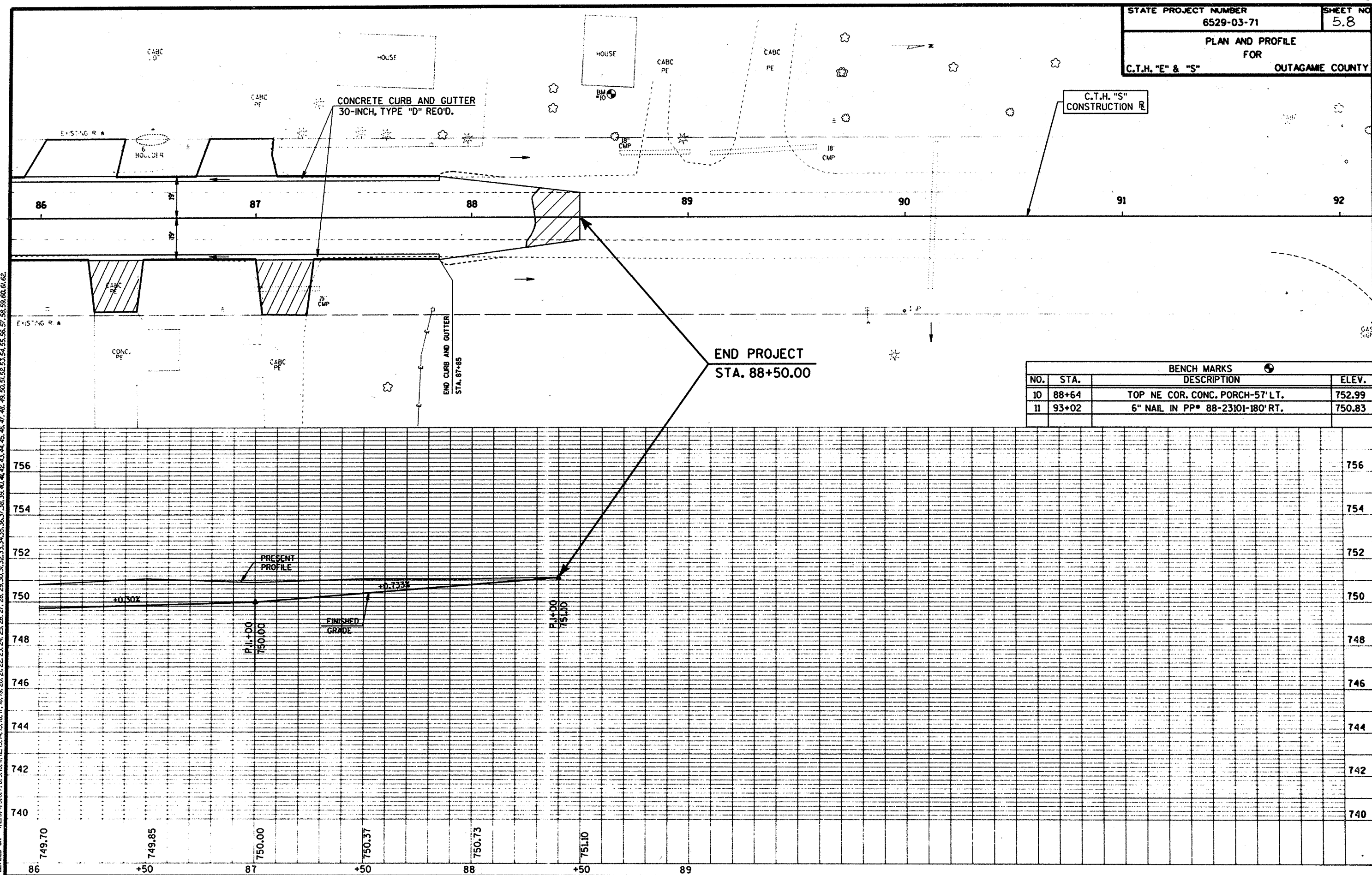


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DGN LEVELS ON = 1:63



DATE OF PLOT = 12/27/94
DESIGN FILE IS f:\dgn\5024\pp3.dgn
DGN LEVELS ON = 1-62

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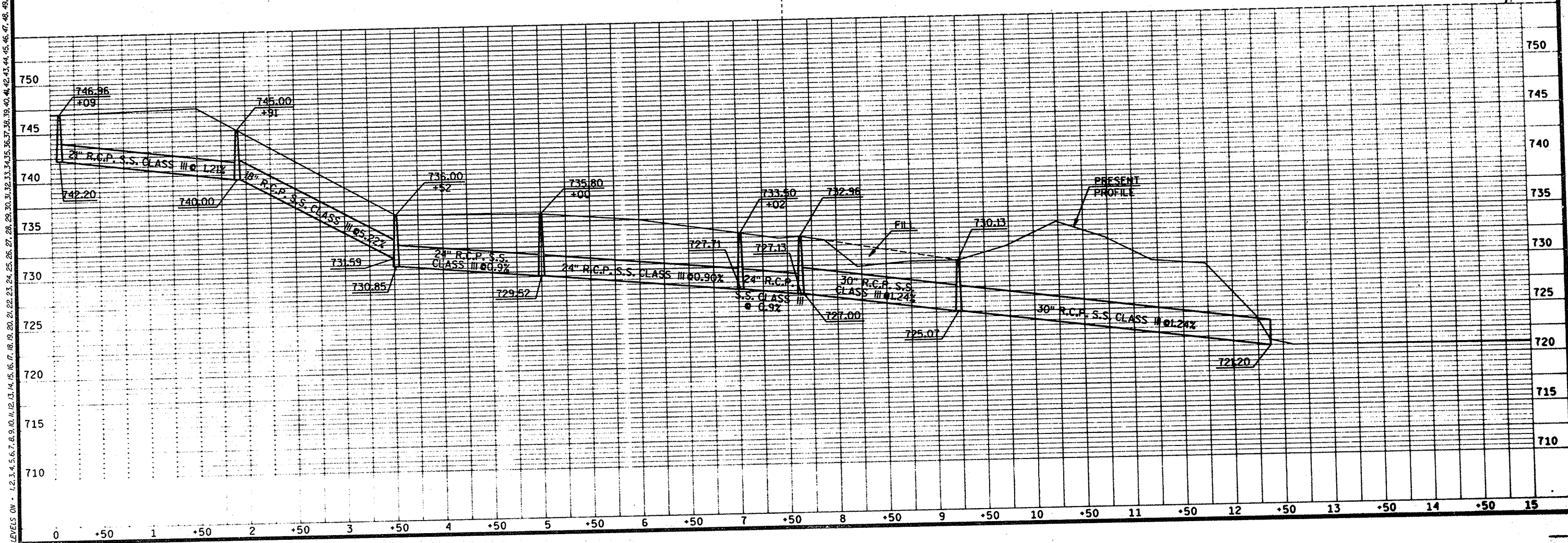
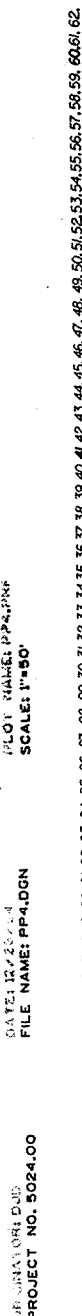


STATE PROJECT NUMBER
6529-03-71

SHEET NO
5.8

PLAN AND PROFILE
FOR
C.T.H. "E" & "S" OUTAGAME COUNTY

BENCH MARKS			
NO.	STA.	DESCRIPTION	ELEV.
10	88+64	TOP NE COR. CONC. PORCH-57' LT.	752.99
11	93+02	6" NAIL IN PP# 88-23101-180' RT.	750.83



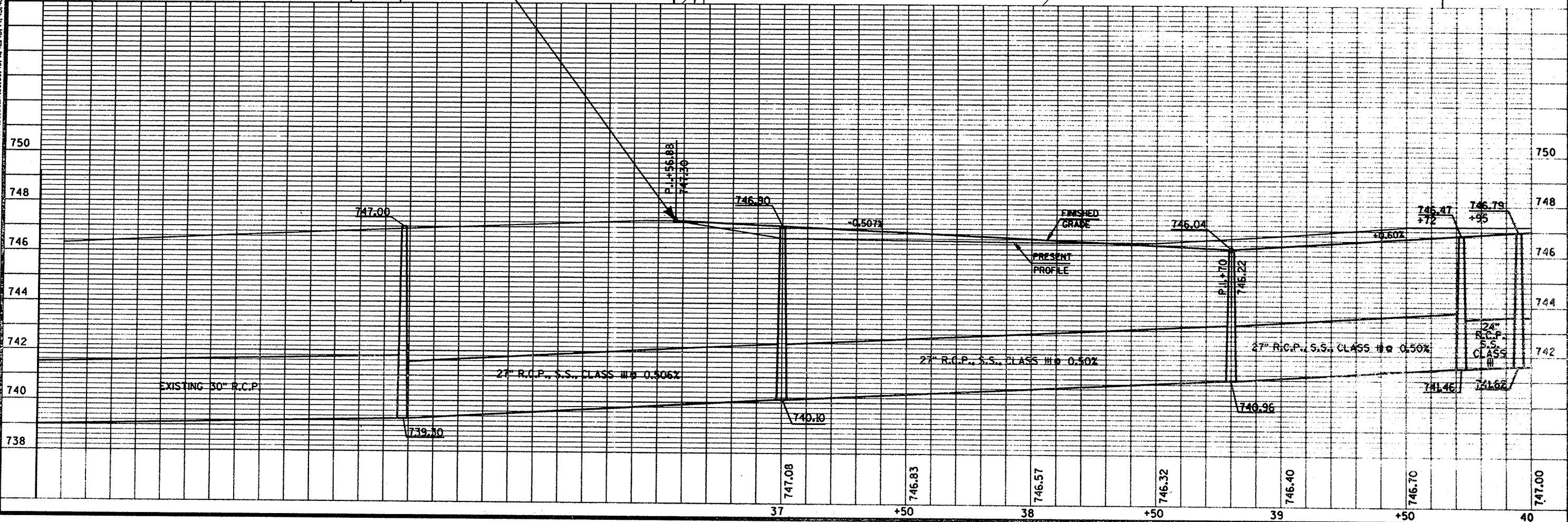
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DATE OF PLOT = 12/22/94
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DGN LEVELS ON = 1-63

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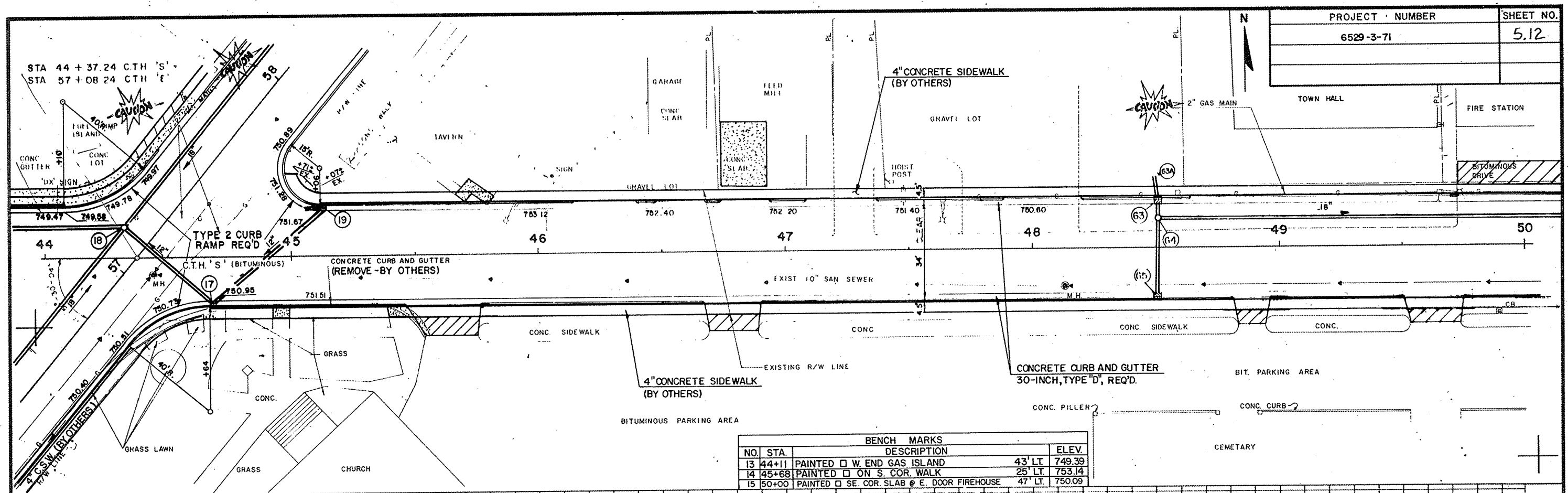
FILE NAME: HDGN15024.ppldgn

STATE PROJECT NUMBER
6529-03-71
SHEET NO.
5.10
PLAN AND PROFILE
FOR
C.T.H.'S' OUTAGAME COUNTY

BENCH MARKS				
NO.	STA.	DESCRIPTION		ELEV.
11	33+25	P.K. IN POWER POLE	33' LT.	749.12
12	41+37	SE. COR. TOP OF BOT. STEP	9' LT.	749.94

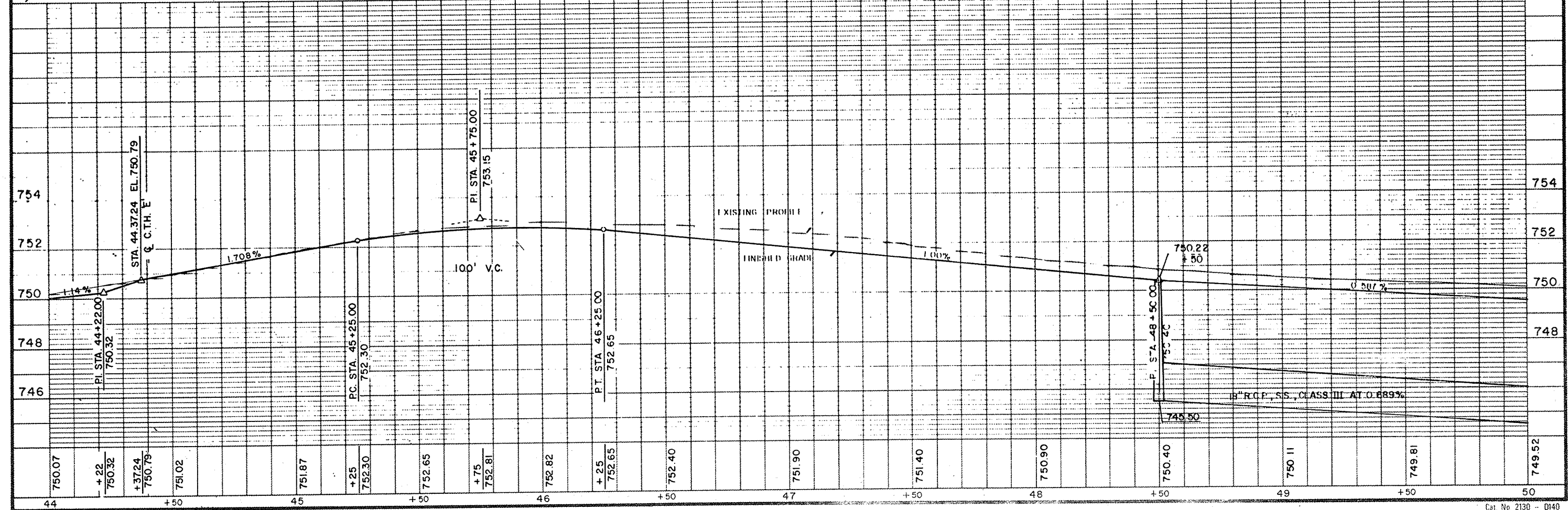


WSDOT/CAD/CADD SHEET 48

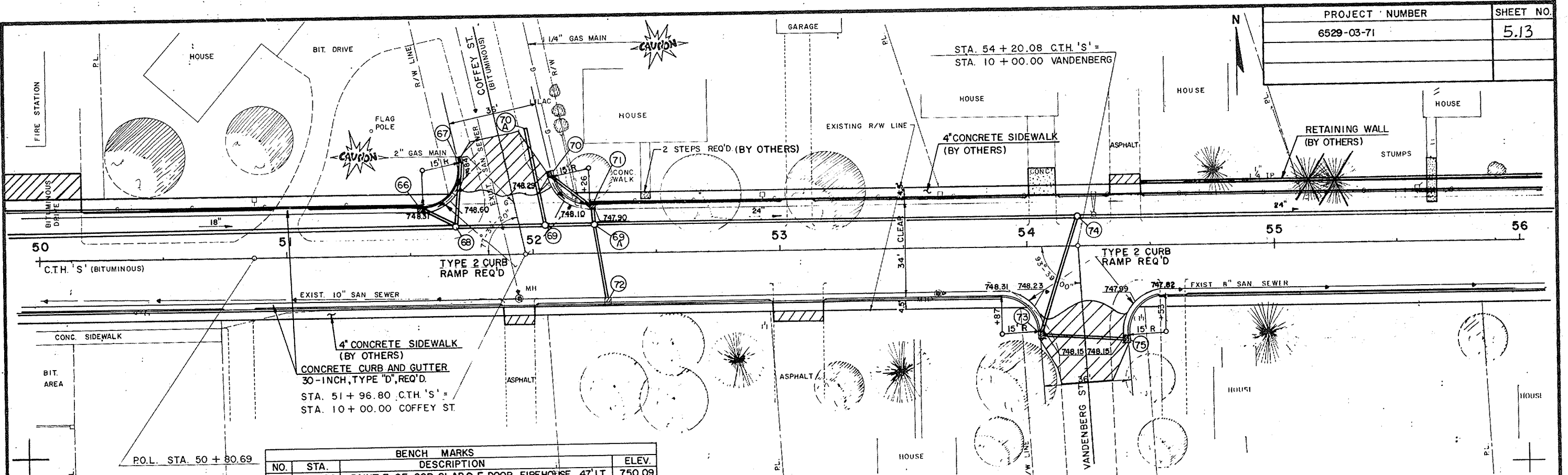


PROJECT NUMBER	SHEET NO.
6529-3-71	5.12

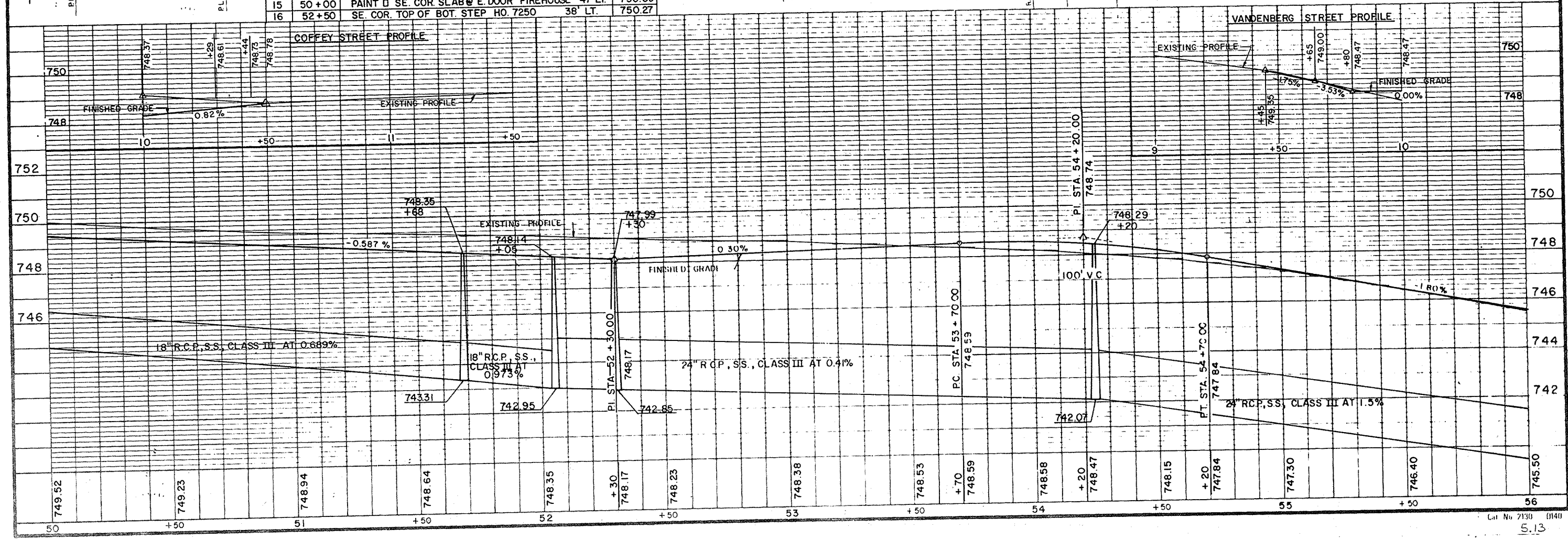
BENCH MARKS		
NO.	STA.	DESCRIPTION
13	44+11	PAINTED □ W. END GAS ISLAND
14	45+68	PAINTED □ ON S. COR. WALK
15	50+00	PAINTED □ SE. COR. SLAB @ E. DOOR FIREHOUSE
		ELEV.
		43' LT. 749.39
		25' LT. 753.14
		47' LT. 750.09



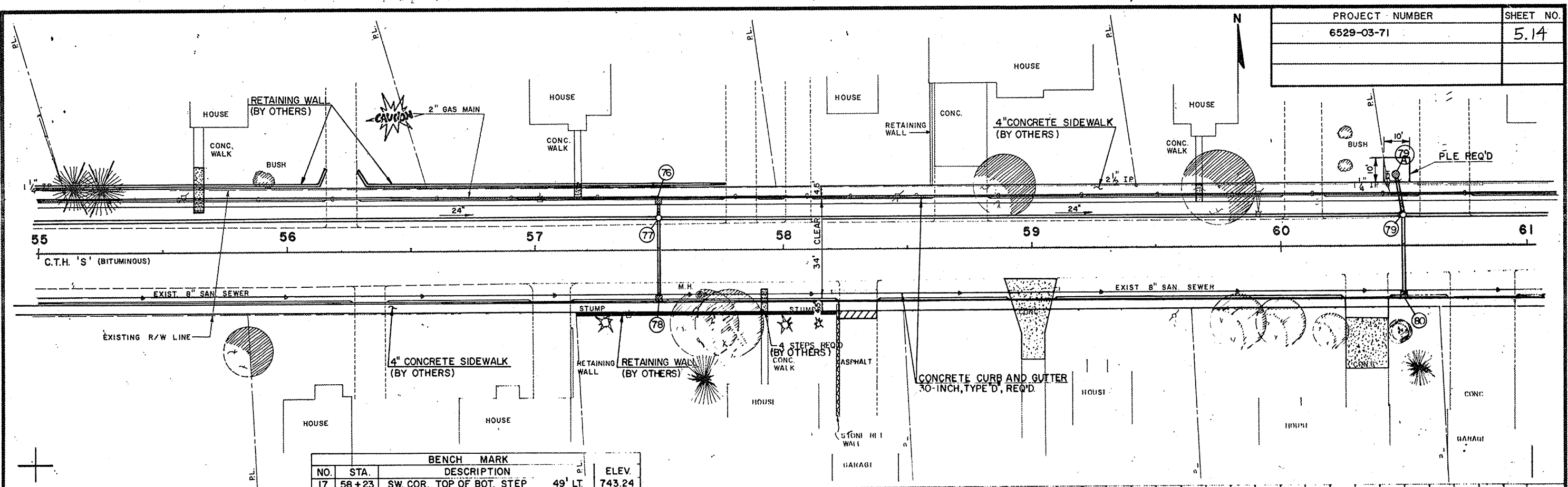
PROJECT NUMBER	SHEET NO.
6529-03-71	5.13



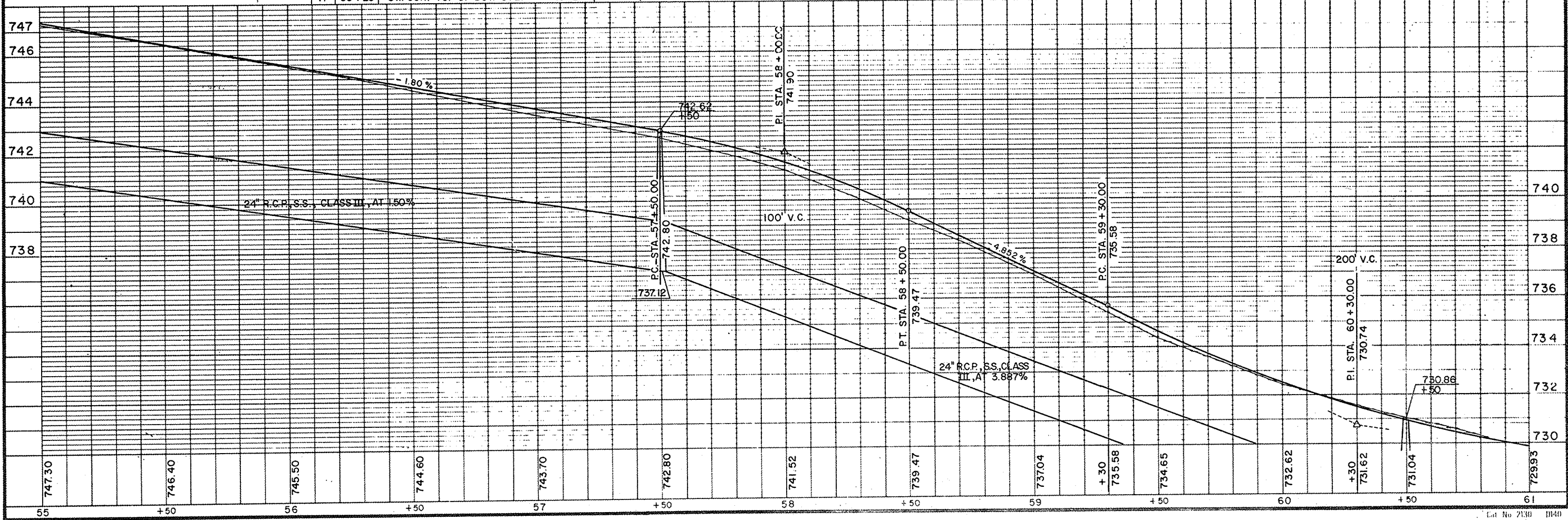
NO.	STA.	DESCRIPTION	ELEV.
15	50+00	PAINT D SE. COR. SLAB @ E. DOOR FIREHOUSE 47' LT.	750.09
16	52+50	SE. COR. TOP OF BOT. STEP HO. 7250 38' LT.	750.27



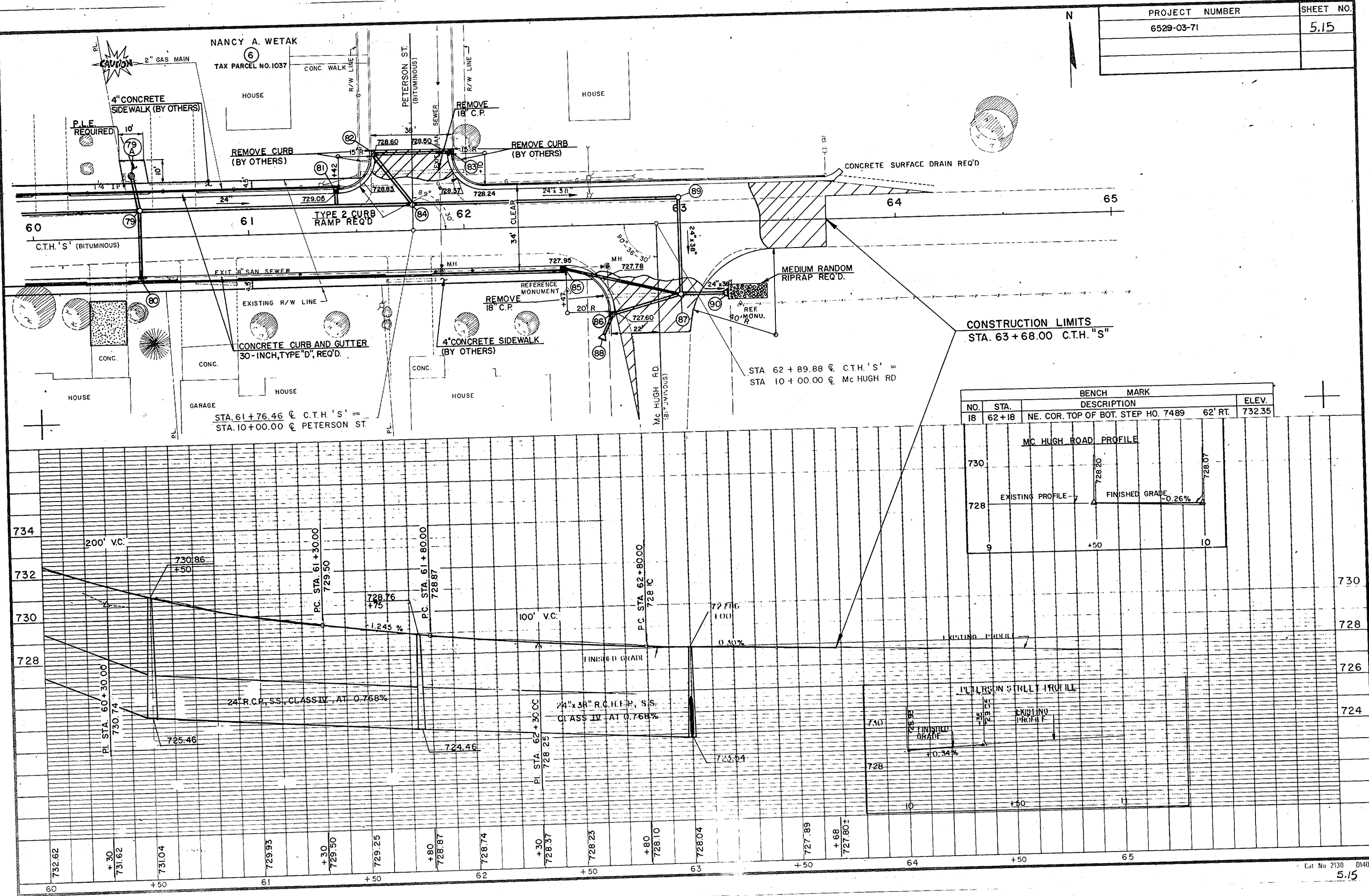
PROJECT NUMBER	SHEET NO.
6529-03-71	5.14



BENCH MARK				
NO.	STA.	DESCRIPTION	PL.	ELEV.
17	58+23	SW. COR. TOP OF BOT. STEP	49' LT.	743.24

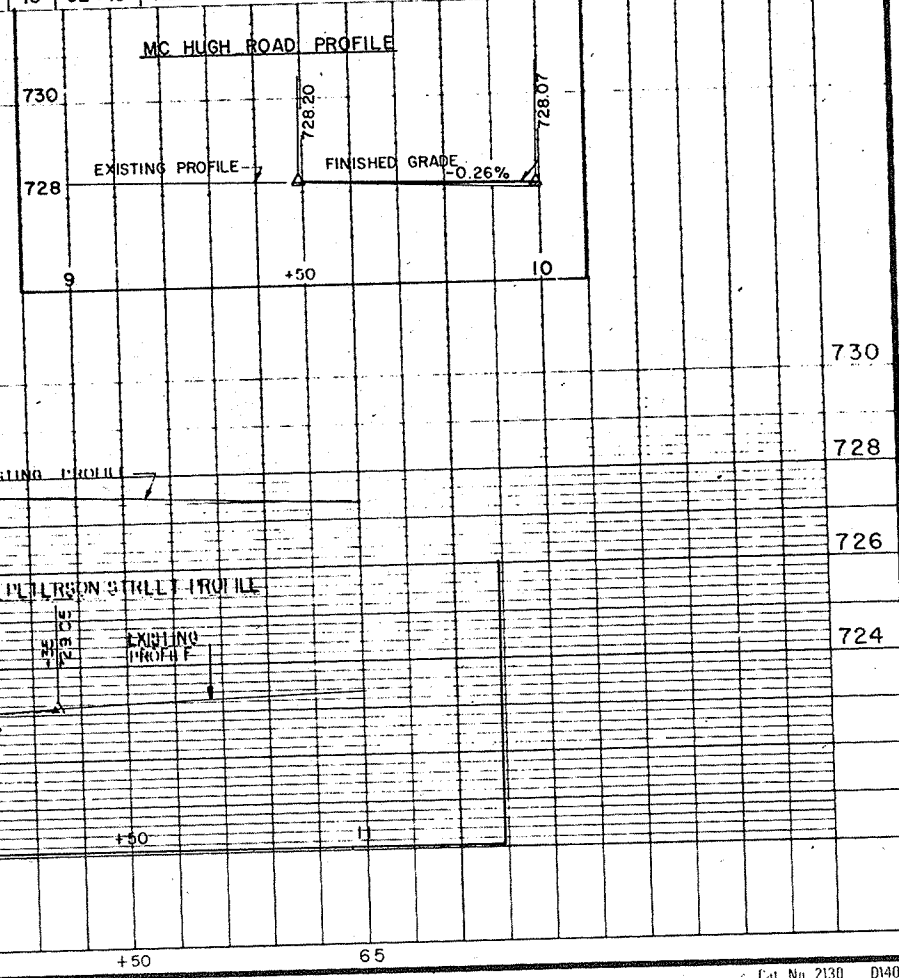


PROJECT NUMBER	SHEET NO.
6529-03-71	5.15



CONSTRUCTION LIMITS
STA. 63+68.00 C.T.H. "S"

NO.	STA.	BENCH MARK DESCRIPTION	ELEV.
18	62+18	NE. COR. TOP OF BOT. STEP HO. 7489 62' RT.	732.35



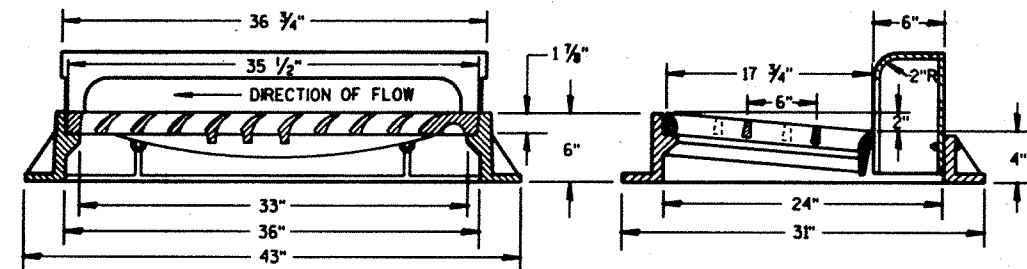
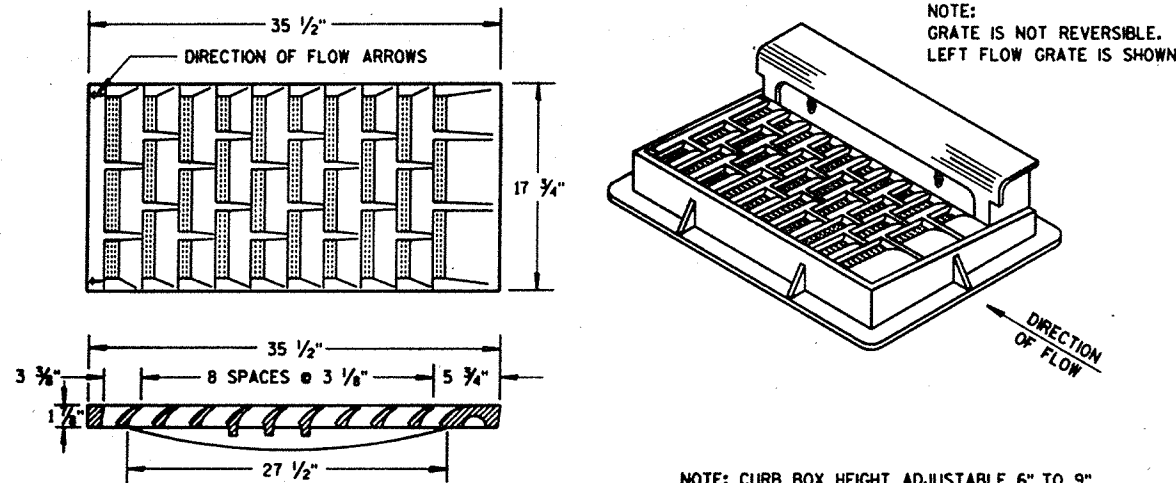
GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

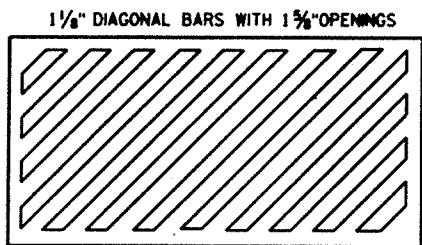
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

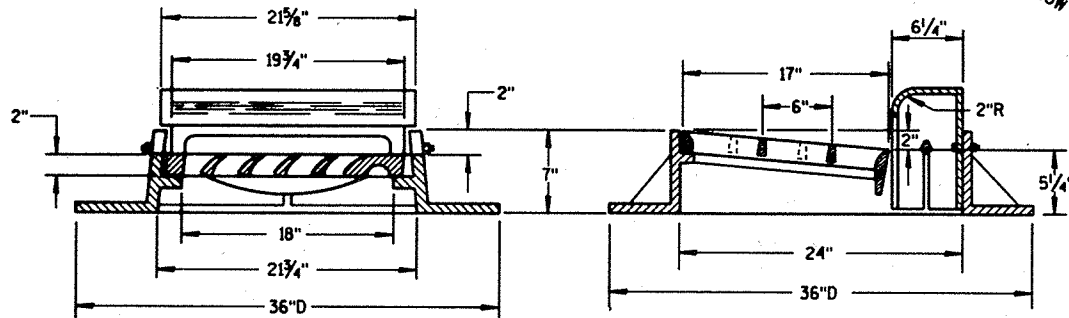
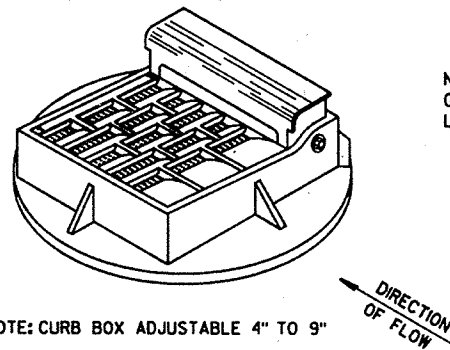
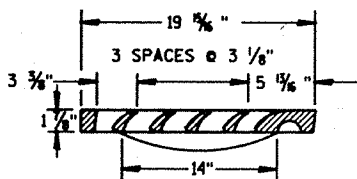
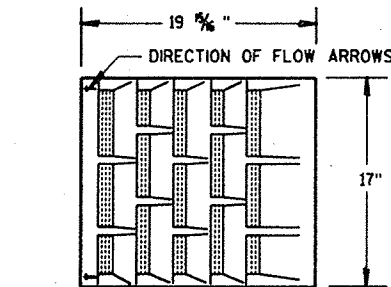
THE ACTUAL WEIGHT OF COVERS MAY VARY WITHIN 5 PERCENT, PLUS OR MINUS, OF THE APPROXIMATE WEIGHT.



TYPE "H"
(APPROXIMATE WEIGHT 145 LBS.)
FRAME..... 195 LBS.
GRATE..... 135 LBS.
CURB BOX..... 115 LBS.



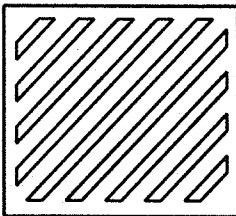
SPECIAL GRATE FOR
TYPE "H" COVER
(MEASURES 35 1/2" X 17 3/4" X 2")
(APPROXIMATE WEIGHT 170 LBS.)
GRATE..... 170 LBS.
(NOTED AS TYPE H-S ON DRAINAGE TABLE)



TYPE "A"
(APPROXIMATE WEIGHT 405 LBS.)
FRAME..... 235 LBS.
GRATE..... 85 LBS.
CURB BOX..... 85 LBS.

NOTE:
GRATE IS NOT REVERSIBLE
LEFT FLOW GRATE IS SHOWN

1" DIAGONAL BARS
WITH 1 1/2" OPENINGS

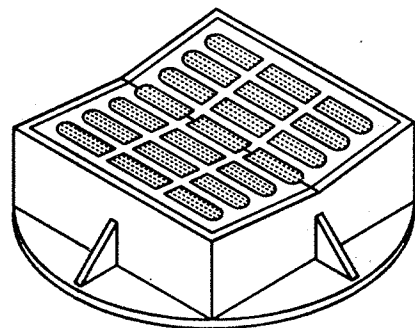
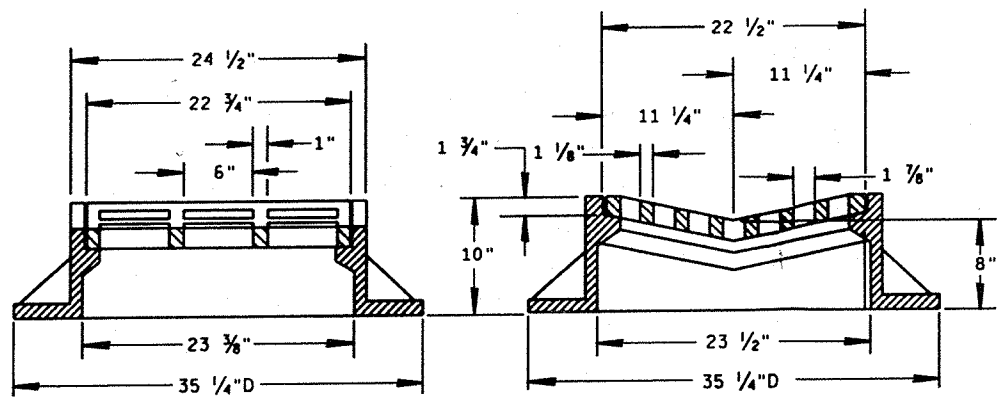


SPECIAL GRATE FOR
TYPE "A" COVER
(MEASURES 19 5/8" X 17" X 1 1/4")
GRATE..... 85 LBS.
(NOTED AS TYPE A-S ON DRAINAGE TABLE)

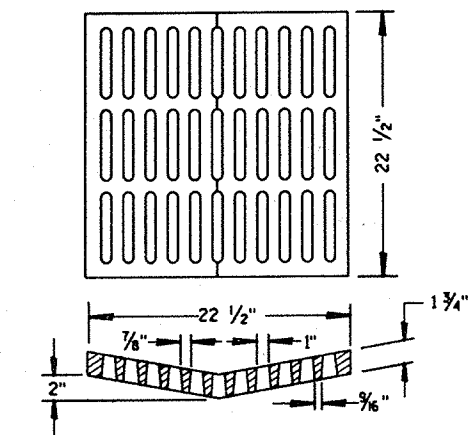
INLET COVERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

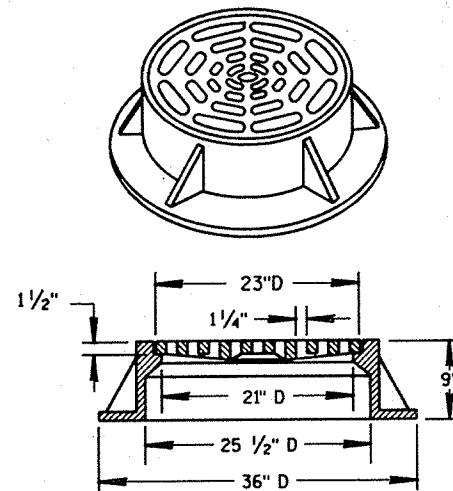
APPROVED
12/19/94
DATE
CHIEF ROADWAY DESIGN ENGINEER
FHWA



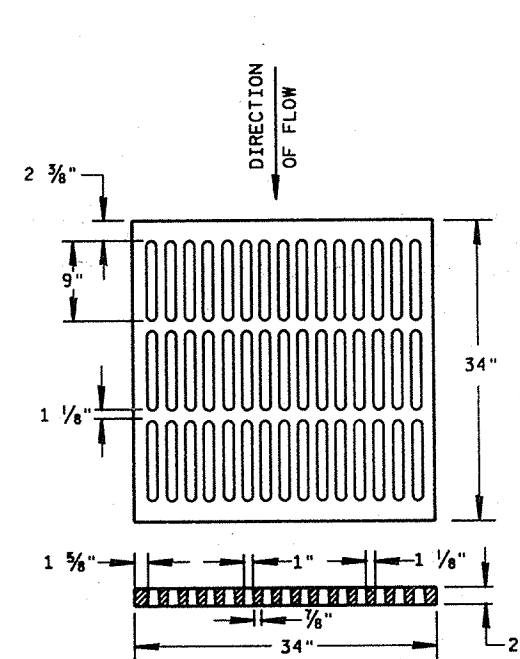
TYPE "B"
(APPROXIMATE WEIGHT 395 LBS.)
FRAME..... 285 LBS.
GRATE..... 110 LBS.



**ALTERNATIVE GRATE FOR
FOR TYPE "B" COVER**
(APPROXIMATE GRATE WEIGHT 125 LBS.)
GRATE..... 125 LBS.
USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS POSSIBLE.
NOTED AS TYPE B-A ON THE DRAINAGE TABLE

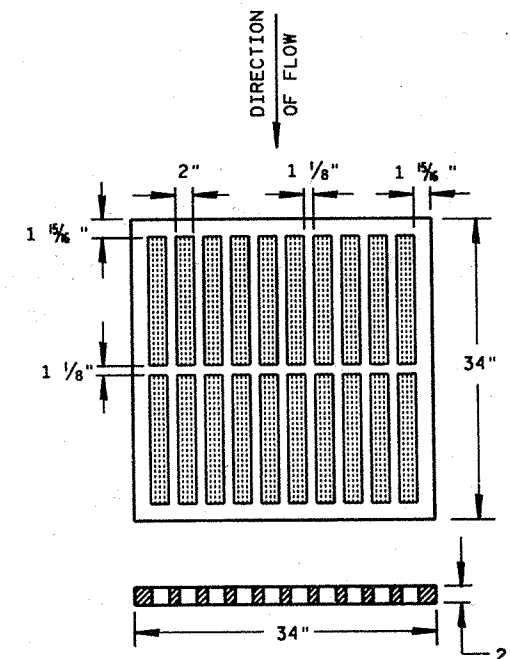


TYPE "C"
(APPROXIMATE WEIGHT 340 LBS.)
FRAME..... 235 LBS.
GRATE..... 105 LBS.

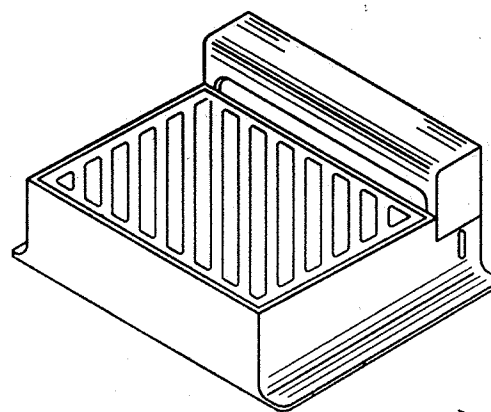


ALTERNATIVE TYPE "MS"
(APPROXIMATE GRATE WEIGHT 365 LBS.)
GRATE..... 365 LBS.

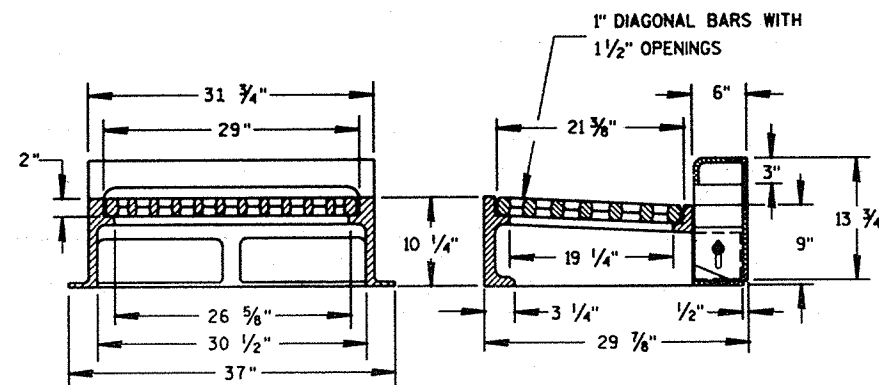
USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS PERMITTED
NOTED AS TYPE MS-A ON THE DRAINAGE TABLE



TYPE "MS"
(APPROXIMATE GRATE WEIGHT 270 LBS.)
GRATE..... 270 LBS.
USE ON FREEWAYS AND EXPRESSWAYS
NOTED AS TYPE MS ON DRAINAGE TABLE



DIAGONAL SLOTS, SHALL BE ORIENTED
TO THE DIRECTION OF FLOW AS ILLUSTRATED.
GRATES ARE MANUFACTURED TO BE REVERSIBLE.



NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"

TYPE "WM"
(APPROXIMATE WEIGHT 670 LBS.)
FRAME..... 360 LBS.
GRATE..... 160 LBS.
CURB BOX..... 150 LBS.

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

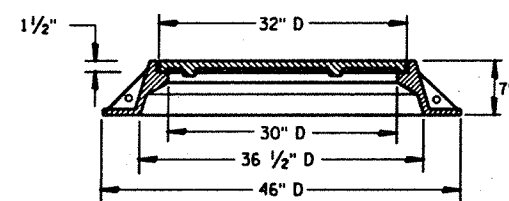
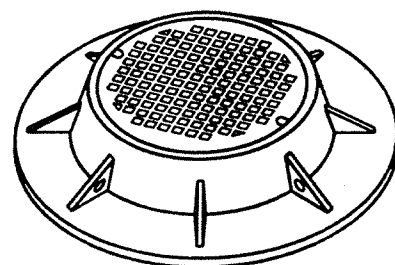
ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

THE ACTUAL WEIGHT OF COVERS MAY VARY WITHIN 5 PERCENT, PLUS OR MINUS, OF THE APPROXIMATE WEIGHT.

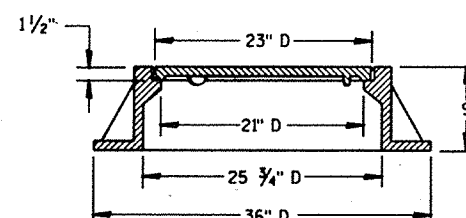
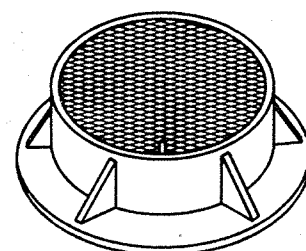
INLET COVERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

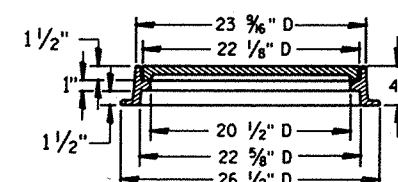
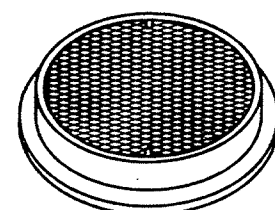
APPROVED
12/19/04
DATE
[Signature]
CHIEF ROADWAY DESIGN ENGINEER
FHWA



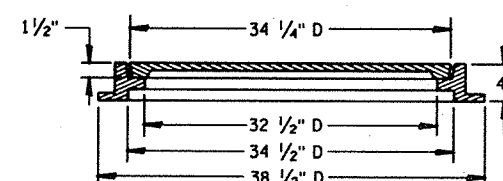
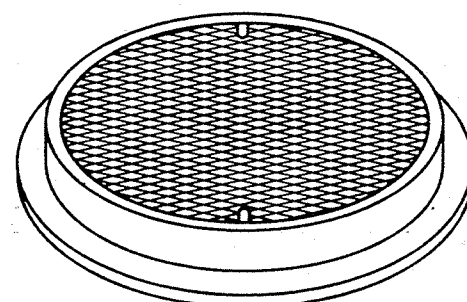
TYPE "K"
(APPROXIMATE WEIGHT 535 LBS.)
FRAME.....330 LBS.
LID.....205 LBS.



TYPE "J"
(APPROXIMATE WEIGHT 315 LBS.)
FRAME.....200 LBS.
LID.....115 LBS.



TYPE "L"
(APPROXIMATE WEIGHT 145 LBS.)
FRAME.....75*
LID.....70*



TYPE "M"
(APPROXIMATE WEIGHT 385 LBS.)
FRAME.....125*
LID.....260*

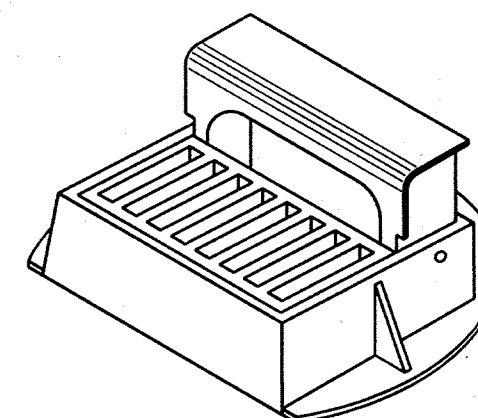
GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

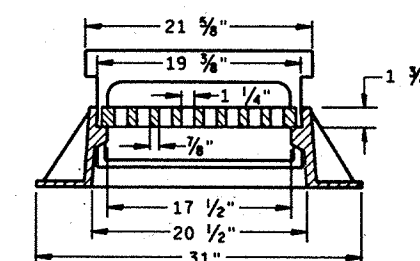
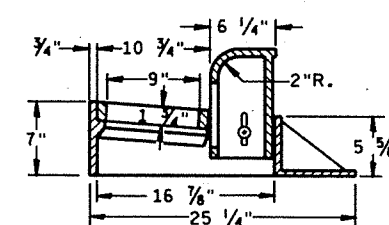
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR MANHOLE COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

THE ACTUAL WEIGHT OF COVERS MAY VARY WITHIN 5 PERCENT, PLUS OR MINUS, OF THE APPROXIMATE WEIGHT.



CURB BOX ADJUSTABLE 4" TO 10"



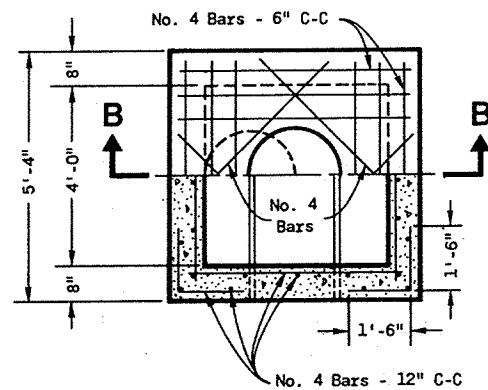
INLET COVER TYPE "Z"

(APPROXIMATE WEIGHT 280 LBS.)
FRAME.....145 LBS.
GRATE.....50 LBS.
CURB BOX.....85 LBS.

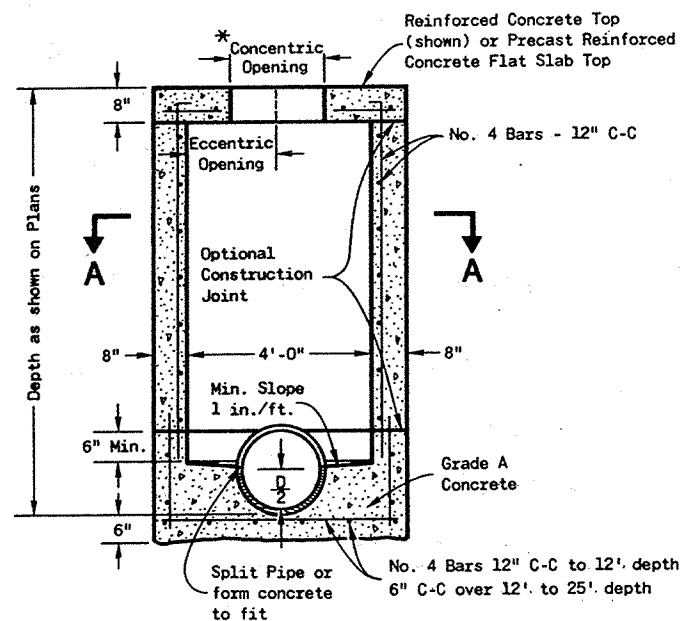
INLET AND MANHOLE COVERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

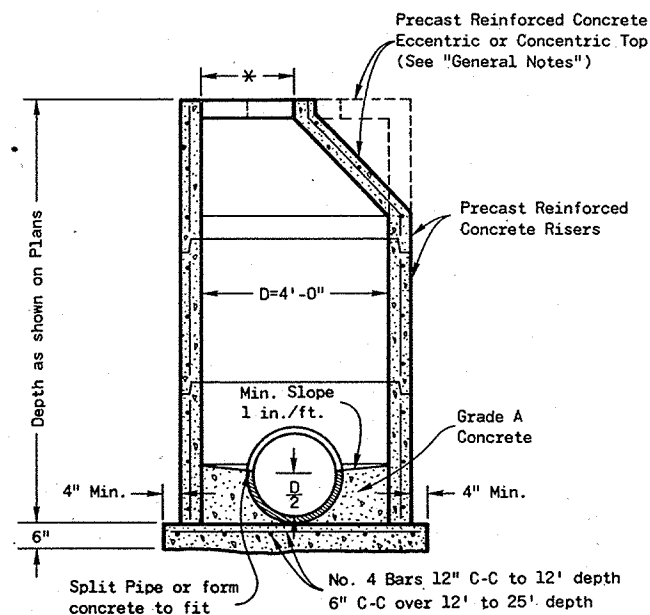
APPROVED
12/19/94
DATE
Roy L. Thompson
CHIEF ROADWAY DESIGN ENGINEER
FHWA



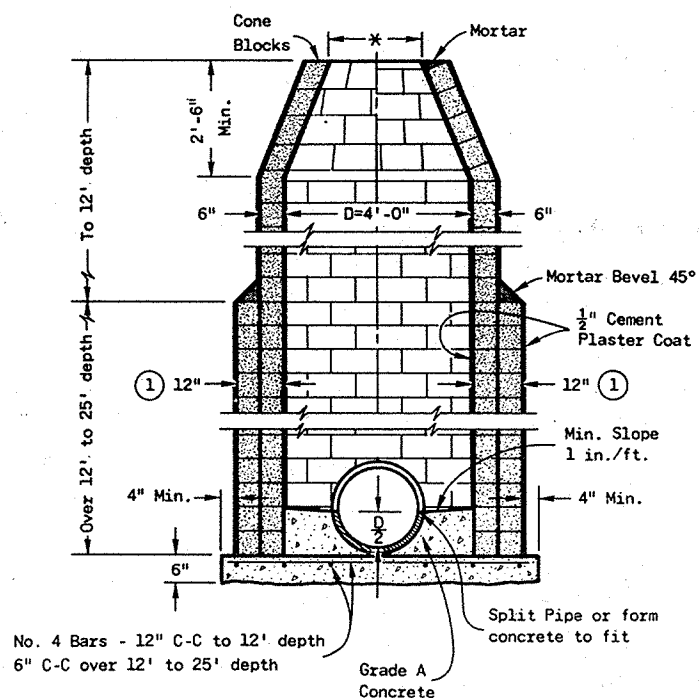
HALF SECTION A-A



SECTION B-B
REINFORCED CONCRETE



PRECAST REINFORCED CONCRETE



CONCRETE BLOCK

GENERAL NOTES

Details of construction, materials and workmanship not shown on this drawing shall conform to the pertinent requirements of the Standard Specifications and the applicable Special Provisions.

Detailed drawings for proposed alternate designs for underground drainage structures shall be submitted to the Engineer for approval providing that such alternate designs make provision for equivalent capacity and strength.

All drainage structures are designated on the plans as "Manholes 1-C", "Catch Basins 1-B", "Inlets 3-H", etc. The first digit designates the masonry portion of the structure, and the following letter designates the type of cover to be used to comprise the complete unit.

Precast Reinforced Bases shall be placed on a bed of material at least 6 inches in depth, which meets the requirements for Granular Backfill. This bedding shall be compacted and provide uniform support for the entire area of the base.

Precast Reinforced Concrete Cone Tops (Eccentric or Concentric) may be used on concrete block structures. The Cone Tops shall be installed on a bed of mortar.

Eccentric Cone Tops may be used on all structures, and Concentric Cone Tops shall be used only on structures 5 feet or less in depth, unless otherwise directed by the Engineer.

Steps meeting the following requirements shall be installed in all structures over 5 feet in depth: 16 inch C-C maximum spacing; project a minimum clear distance of 4 inches from the wall at the point of embedment; minimum length of 10 inches; minimum wall embedment of 3 inches; and be capable of supporting a concentrated load of 300 lbs. Ferrous metal steps not painted or treated to resist corrosion shall have a minimum cross sectional dimension of 1 inch.

Solid Aluminum steps shall have a minimum cross sectional dimension of 0.75 inch. Aluminum surfaces to be embedded in concrete shall be given one coat of suitable quality paint, such as zinc chromate primer conforming to Federal Specification TT-P-645 or equivalent. Steps of approved Polypropylene plastic coated reinforcement bar will be acceptable.

All bar steel reinforcement shall be embedded 2 inches clear unless otherwise shown or noted.

Precast Reinforced Concrete Risers may be placed with tongue up or down.

All Precast Inlet Units shall conform to the pertinent requirements of AASHTO Designation M 199.

* Use 2'-0" diameter opening with Type "C", "L" and "J" covers, or 3'-0" diameter with Type "K" and "M" covers.

① 2 courses 6" block.

MANHOLES TYPE 1

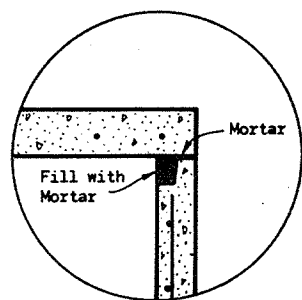
State of Wisconsin
Department of Transportation

APPROVED
4-13-82
DATE

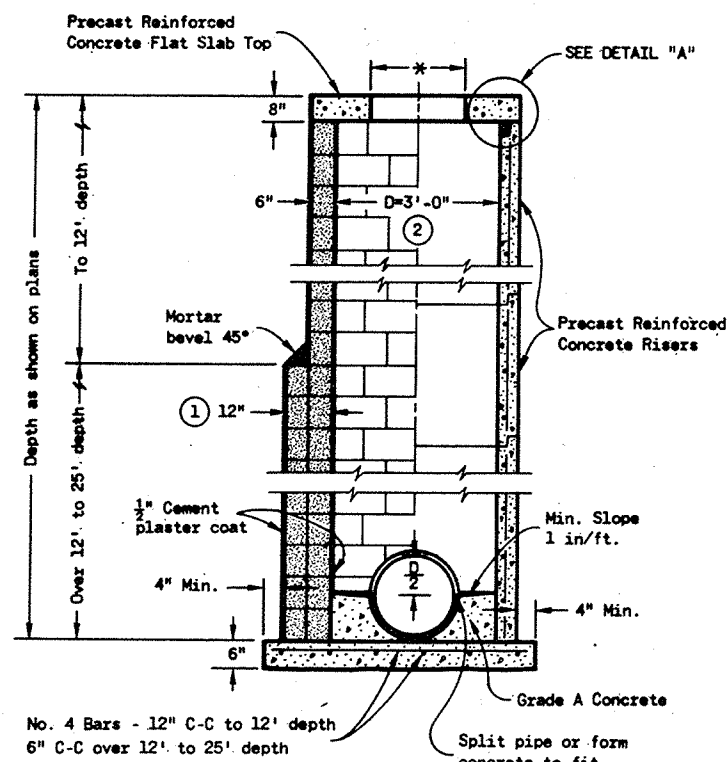
D. J. Strand
CHIEF ENGINEER

FHWA

S.D.D. 8 B 6-3

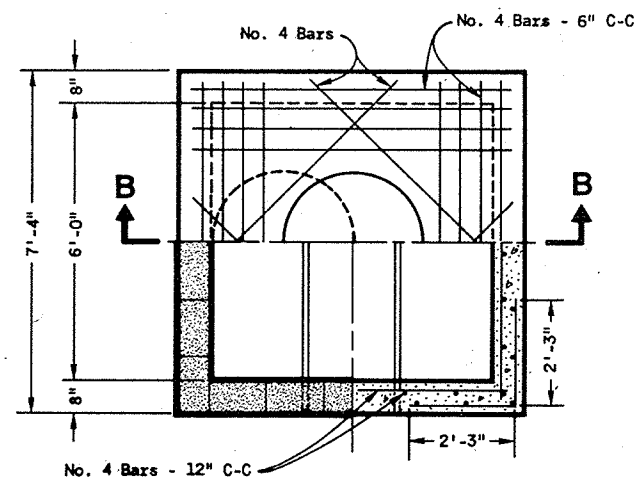


DETAIL "A"

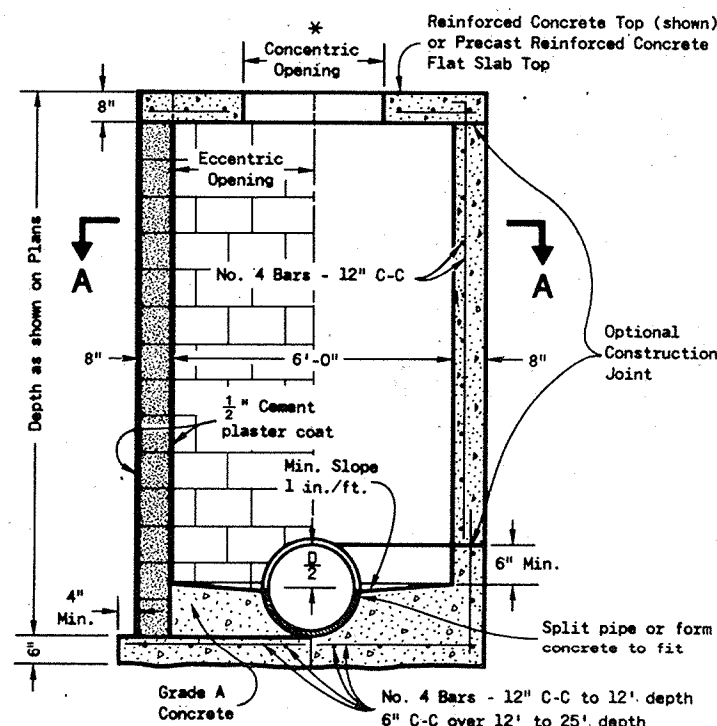


CONCRETE BLOCK
② PRECAST REINFORCED CONCRETE

MANHOLES TYPE 2



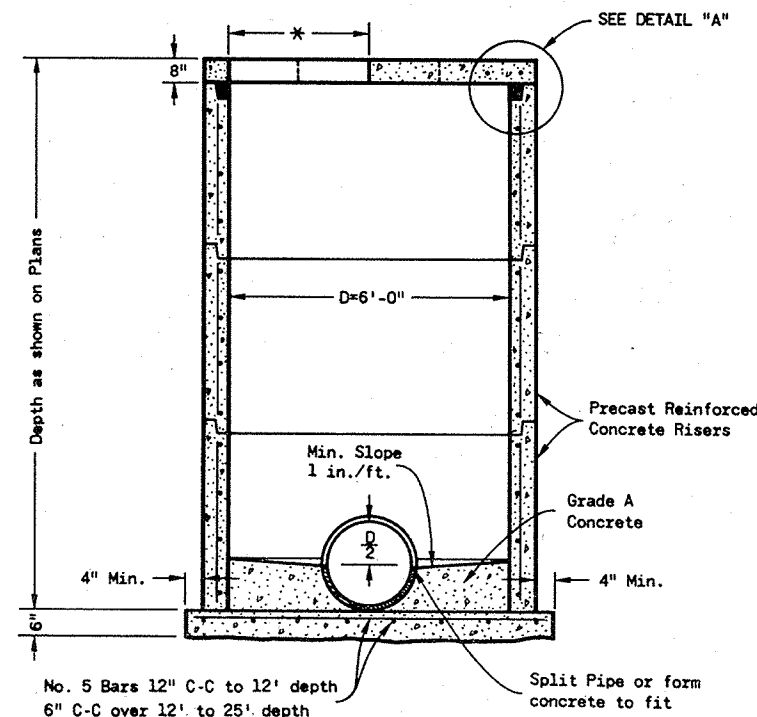
HALF SECTION A-A



SECTION B-B

CONCRETE BLOCK REINFORCED CONCRETE

MANHOLES TYPE 3



PRECAST REINFORCED CONCRETE

GENERAL NOTES

Details of construction, materials and workmanship not shown on this drawing shall conform to the pertinent requirements of the Standard Specifications and the applicable Special Provisions.

Detailed drawings for proposed alternate designs for underground drainage structures shall be submitted to the Engineer for approval providing that such alternate designs make provision for equivalent capacity and strength.

All drainage structures are designated on the plans as "Manholes 1-C", "Catch Basins 1-B", "Inlets 3-H", etc. The first digit designates the masonry portion of the structure, and the following letter designates the type of cover to be used to comprise the complete unit.

Precast Reinforced Bases shall be placed on a bed of material at least 6" in depth, which meets the requirements for Granular Backfill. This bedding shall be compacted and provide uniform support for the entire area of the base.

Steps meeting the following requirements shall be installed in all structures over 5 feet in depth: 16 inch C-C maximum spacing; project a minimum clear distance of 4 inches from the wall at the point of embedment; minimum length of 10 inches; minimum wall embedment of 3 inches; and capable of supporting a concentrated load of 300 lbs. Ferrous metal steps not painted or treated to resist corrosion shall have a minimum cross sectional dimension of 1 inch.

Solid Aluminum steps shall have a minimum cross sectional dimension of 0.75 inch. Aluminum surfaces to be embedded in concrete shall be given one coat of suitable quality paint, such as zinc chromate primer conforming to federal specification TT-P-645 or equivalent. Steps of approved Polypropylene plastic coated reinforcement bar are acceptable.

All bar steel reinforcement shall be embedded 2 inches clear unless otherwise shown or noted.

Precast Reinforced Concrete Risers shall be placed with tongue down.

All precast inlet units shall conform to the pertinent requirements of AASHTO Designation M 199.

* Use 2'-0" diameter opening with type "C", "L", and "J" covers, or 3'-0" diameter with type "K" and "M" covers.

① 2 courses 6" block.

② When connecting pipes are 24" or larger the Precast Manholes may be increased to 42" diameter.

MANHOLES TYPE 2 & 3

State of Wisconsin
Department of Transportation

APPROVED

4-13-82

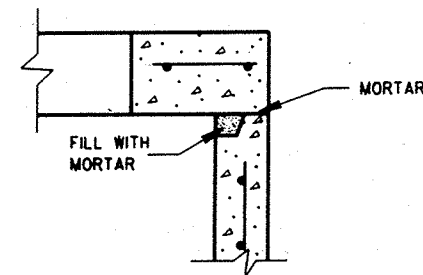
DATE

CHIEF DESIGN ENGINEER

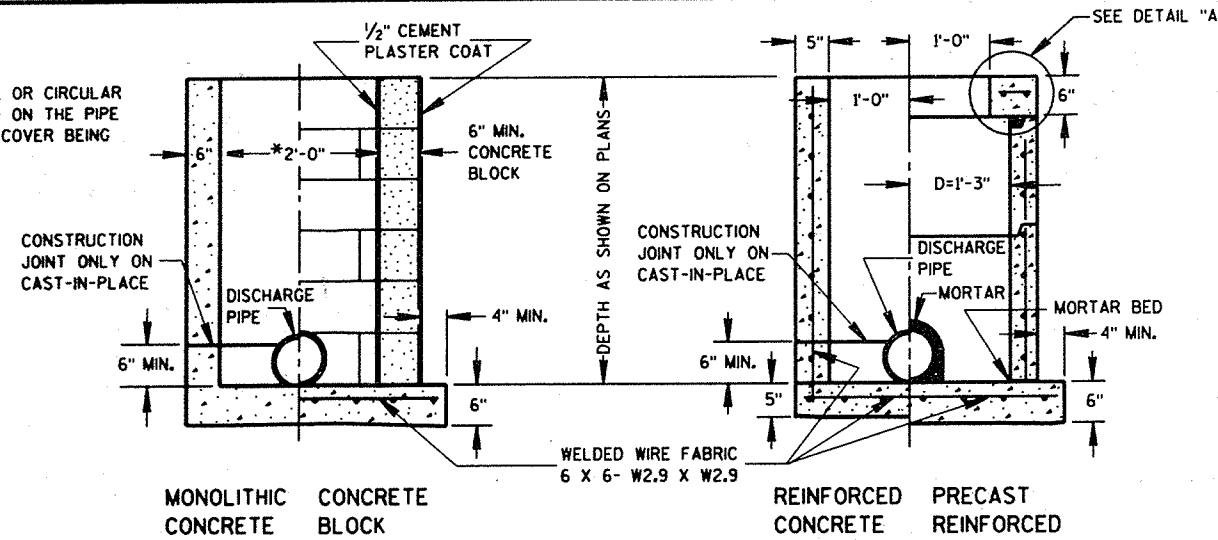
FWHA

S.D.D. 8 B 7-3

*SELECTION OF SQUARE OR CIRCULAR DESIGN WILL BE BASED ON THE PIPE SIZES AND THE INLET COVER BEING UTILIZED



DETAIL "A"



INLETS TYPE 1

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M 199.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 1-C", "CATCH BASINS 1-B", "INLETS 3-H", ETC. THE FIRST DIGIT DESIGNATES THE MASONRY PORTION OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

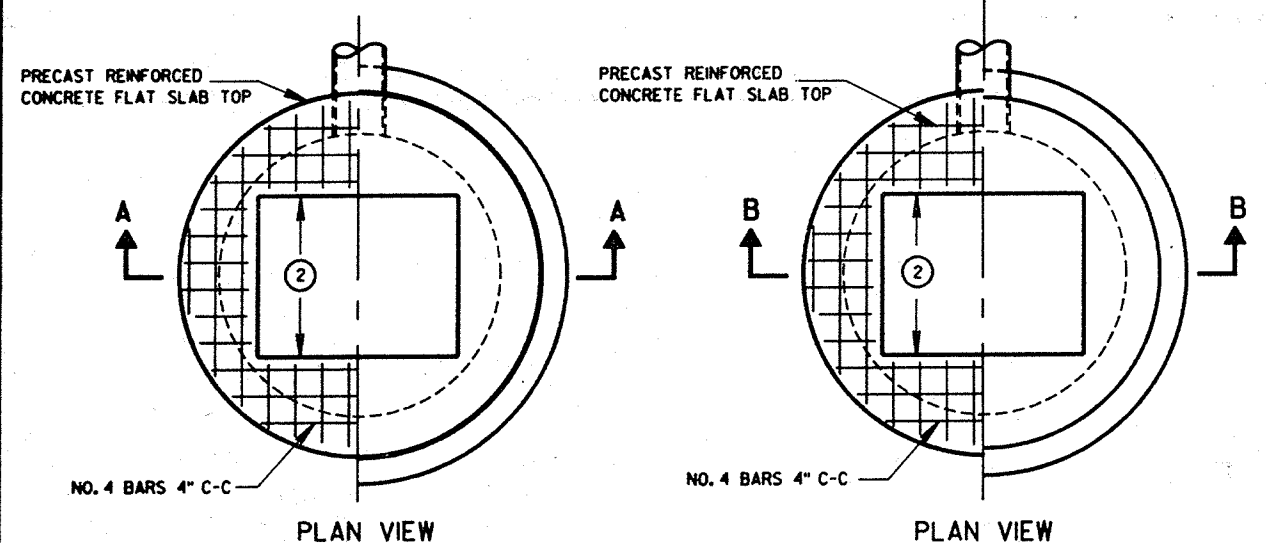
PRECAST REINFORCED BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF GRANULAR BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

PRECAST REINFORCED CONCRETE FLAT SLAB TOPS MAY BE USED ON THE STRUCTURES. THE TOPS SHALL BE INSTALLED ON A BED OF MORTAR.

ALL BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

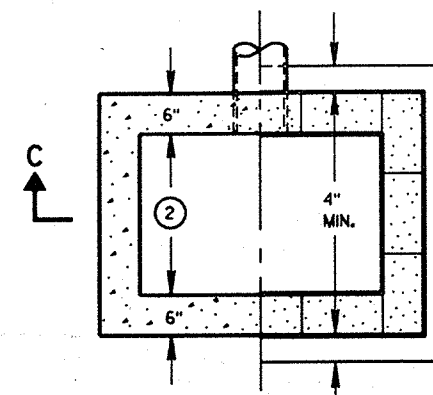
PRECAST REINFORCED CONCRETE RISERS SHALL BE PLACED WITH TONGUE DOWN.

- ① USE 2'-6" OPENING FOR TYPE 2 INLETS, 3'-0" OPENING FOR TYPE 3 INLETS, AND 2'-11" FOR TYPE 4 INLETS.
- ② USE 2'-0" OPENING FOR TYPE 1, 2 & 3 INLETS, 2'-6 1/2" OPENING FOR TYPE 4 INLETS.

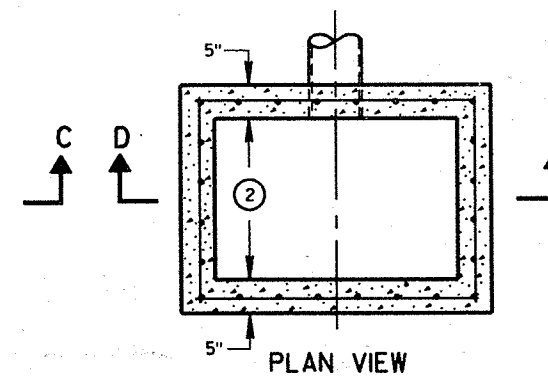


PLAN VIEW

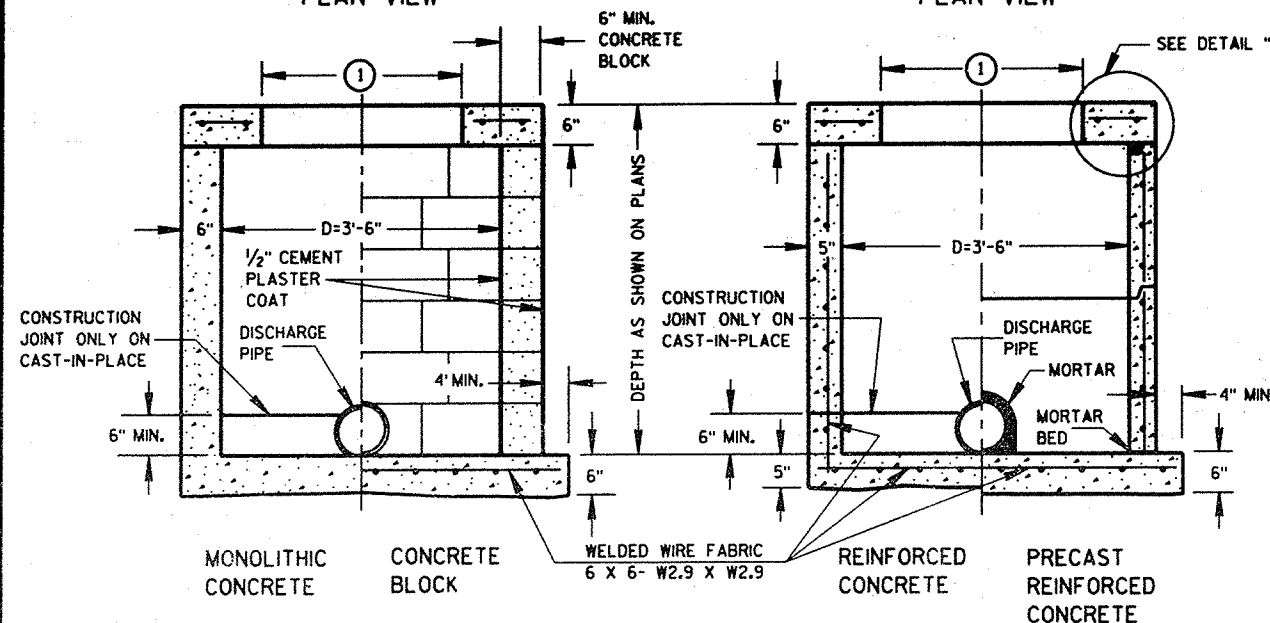
PLAN VIEW



PLAN VIEW



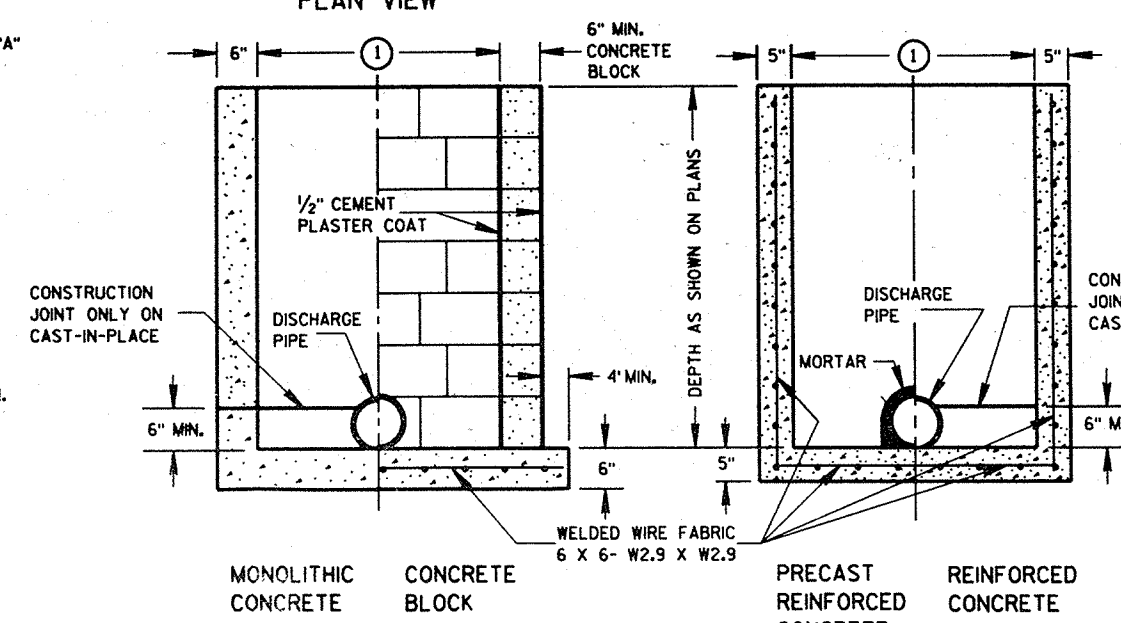
PLAN VIEW



SECTION A-A

SECTION B-B

INLETS TYPE 2, 3 & 4



MONOLITHIC CONCRETE
CONCRETE BLOCK

PRECAST REINFORCED CONCRETE
REINFORCED CONCRETE

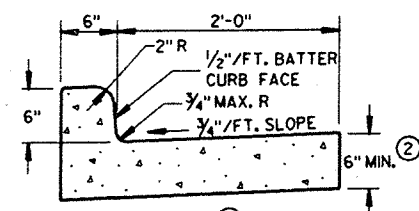
SECTION C-C

SECTION D-D

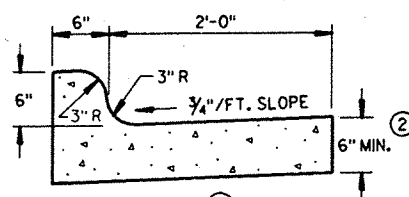
INLETS TYPE 1, 2, 3 & 4

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

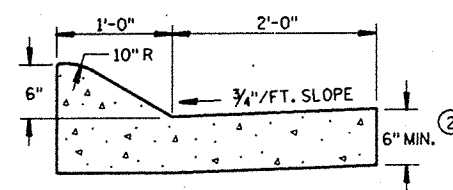
APPROVED
8/26/94
DATE
Roy L. Thompson
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA



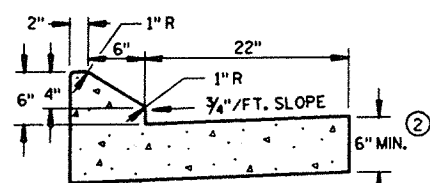
TYPES A & D



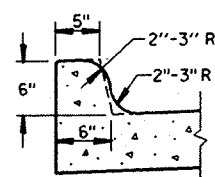
TYPES K & L



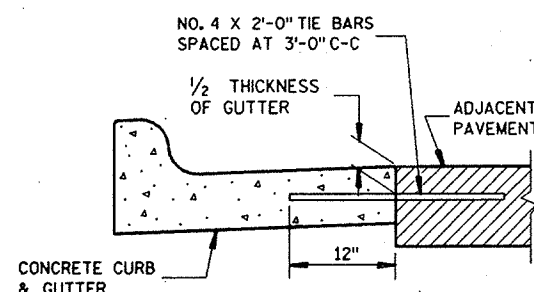
TYPES A & D
CONCRETE CURB & GUTTER 36"



TYPES G & J

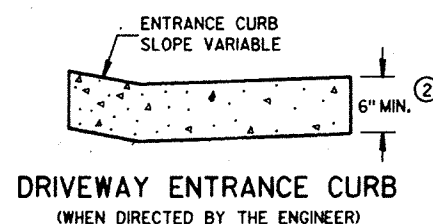


OPTIONAL CURB SHAPE
FOR TYPES K & L

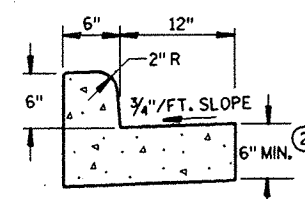


TYPICAL TIE BAR LOCATION

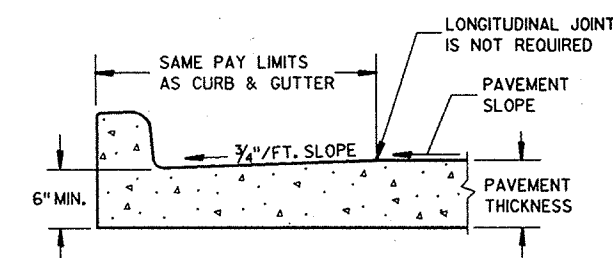
CONCRETE CURB & GUTTER 30"



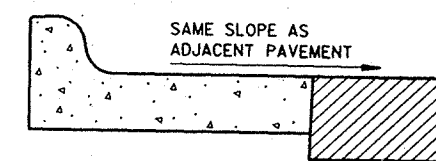
DRIVEWAY ENTRANCE CURB
(WHEN DIRECTED BY THE ENGINEER)



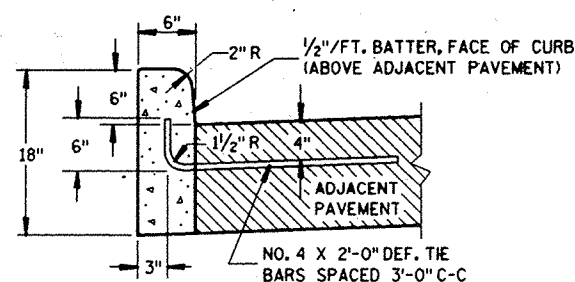
TYPES A & D
CONCRETE CURB & GUTTER 18"



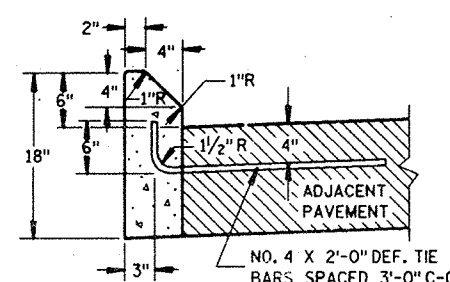
PARTIAL SECTION OF PAVEMENT
WITH INTEGRAL CURB & GUTTER



REVERSE SLOPE GUTTER
(TYPICAL FOR ALL CURB & GUTTER TYPES)



TYPES A & D



TYPES G & J

CONCRETE CURB

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

SEALANT IS NOT REQUIRED IN THE JOINTS OF CONCRETE CURB OR CONCRETE CURB & GUTTER EXCEPT AS REQUIRED FOR INTEGRAL GUTTER.

PAVEMENT TIES ARE REQUIRED, WHEN INCLUDED IN THE CONTRACT, WHERE CONCRETE CURB, CONCRETE CURB AND GUTTER OR CONCRETE PAVEMENT IS PLACED ADJACENT TO EXISTING CONCRETE.

PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.4 OF THE STANDARD SPECIFICATIONS.

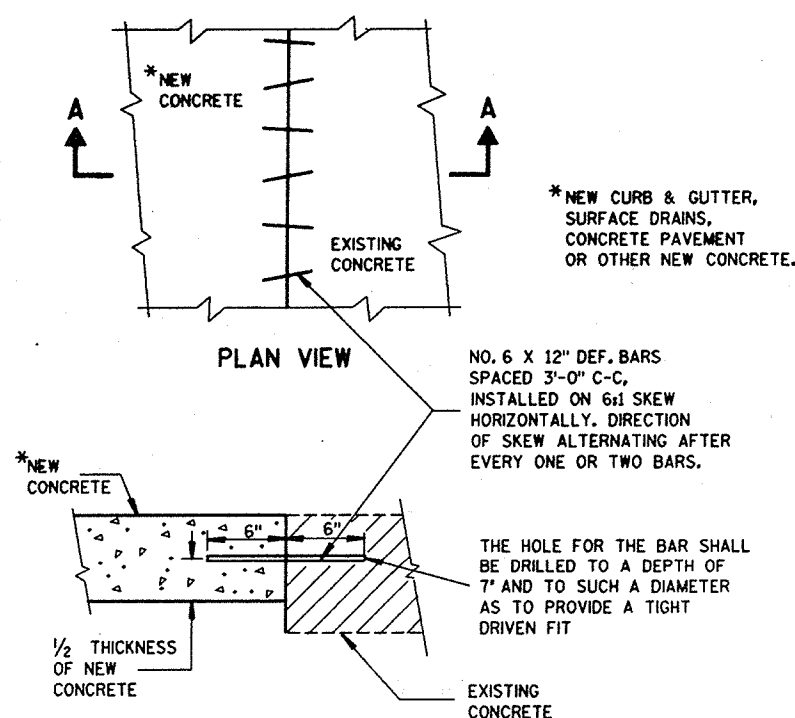
INTEGRAL CURB & GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB & GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE, TIE BARS AND A LONGITUDINAL CONSTRUCTION JOINT ARE NOT REQUIRED WITH THIS ALTERNATE.

PAVEMENT JOINTS SHALL BE EXTENDED THROUGH INTEGRAL CURB & GUTTER. JOINTS IN INTEGRAL GUTTER SHALL HAVE THE SAME DIMENSIONS AS THE JOINTS IN THE ADJACENT PAVEMENT. JOINTS IN INTEGRAL CURB SHALL BE 1/8" WIDE.

JOINTS IN INTEGRAL CURB & GUTTER SHALL BE SEALED TO THE FACE OF CURB WITH THE SAME SEALANT SPECIFIED FOR THE PAVEMENT JOINT. THE COST OF FURNISHING AND INSTALLING THIS SEALANT SHALL BE INCIDENTAL TO THE ITEM CONCRETE CURB & GUTTER.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE COURSE AND UNCLASSIFIED EXCAVATION LIMITS ARE TWO FEET BEHIND THE BACK OF CURBS.

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G AND K.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE COURSE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATIONS WILL BE SHOWN ELSEWHERE IN THE PLAN.



SECTION A-A
PAVEMENT TIES

CONCRETE CURB, CONCRETE
CURB & GUTTER AND
PAVEMENT TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

10-23-86

DATE

FHWA

STATE DESIGN ENGINEER FOR HWYS

GENERAL NOTES

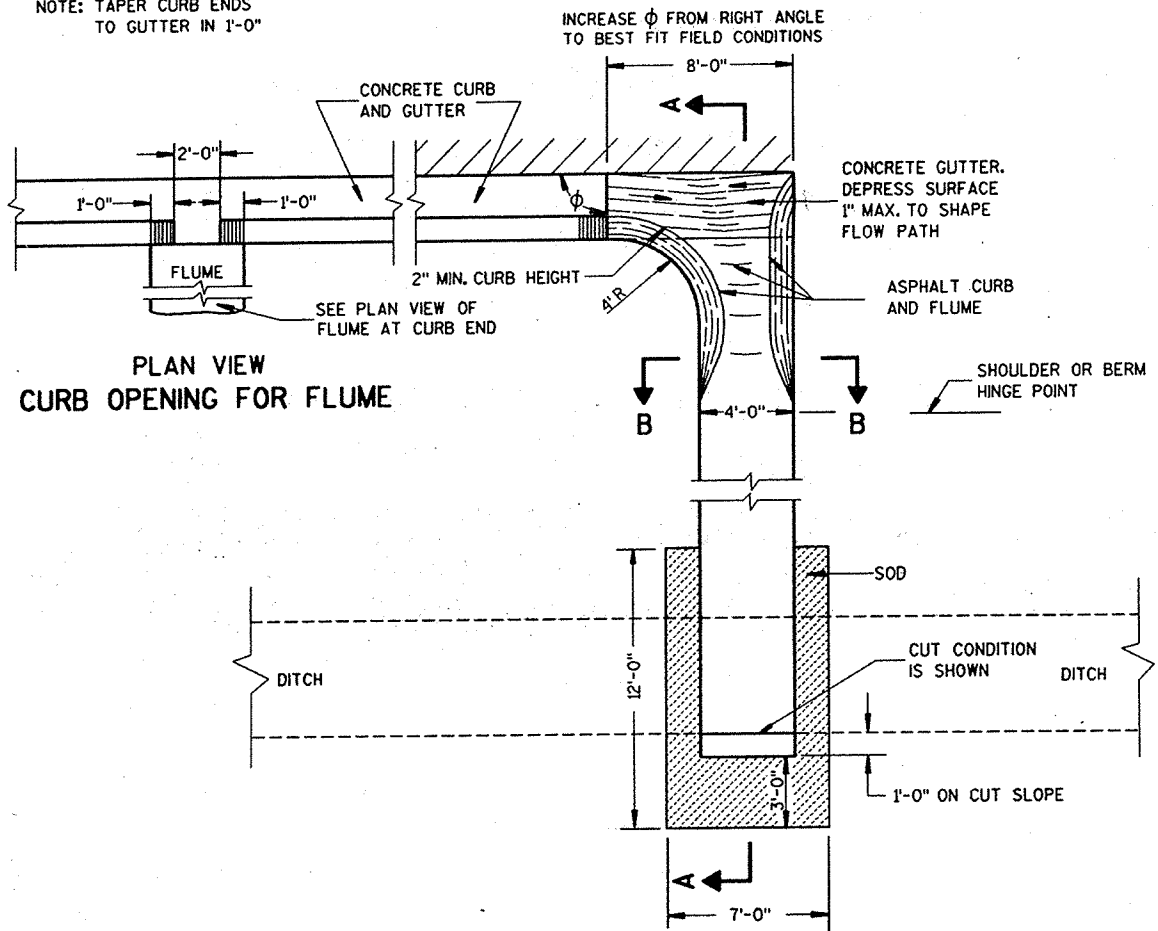
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

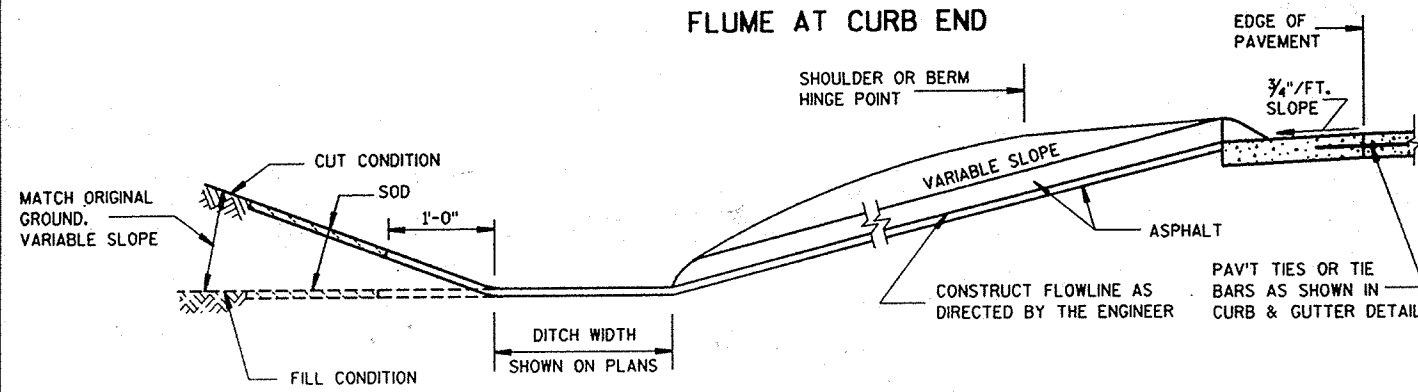
- JOINTS SHALL BE 1/8 TO 1/4 INCH WIDE BY 1 1/2 INCHES DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 4 FEET.
- GEOTEXTILE FABRIC TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.
- CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED

ASPHALTIC FLUME

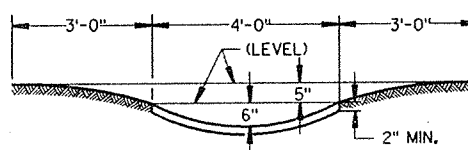
NOTE: TAPER CURB ENDS TO GUTTER IN 1'-0"



PLAN VIEW
FLUME AT CURB END

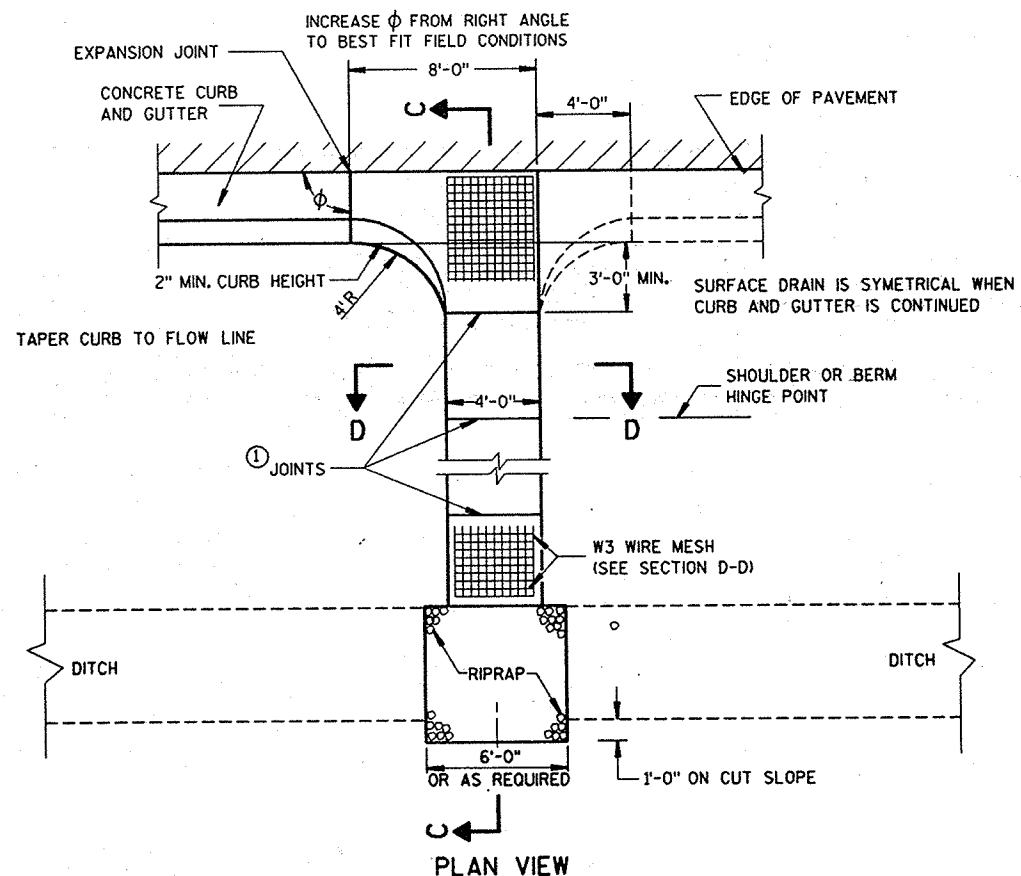


SECTION A-A

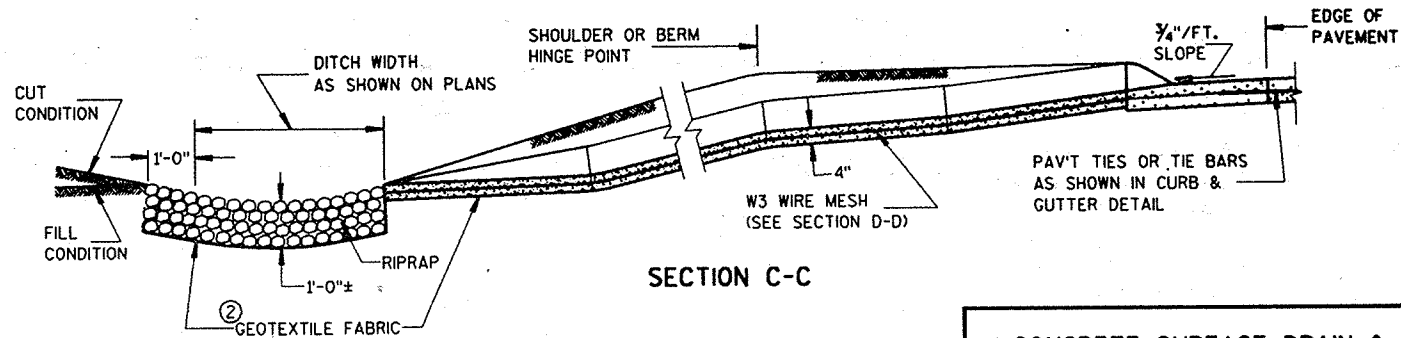


SECTION B-B

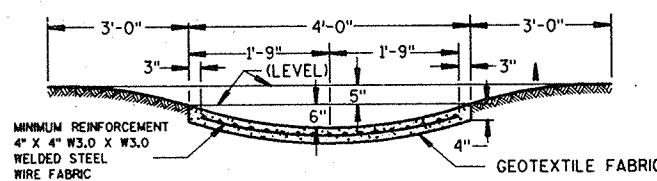
CONCRETE SURFACE DRAIN



PLAN VIEW



SECTION C-C



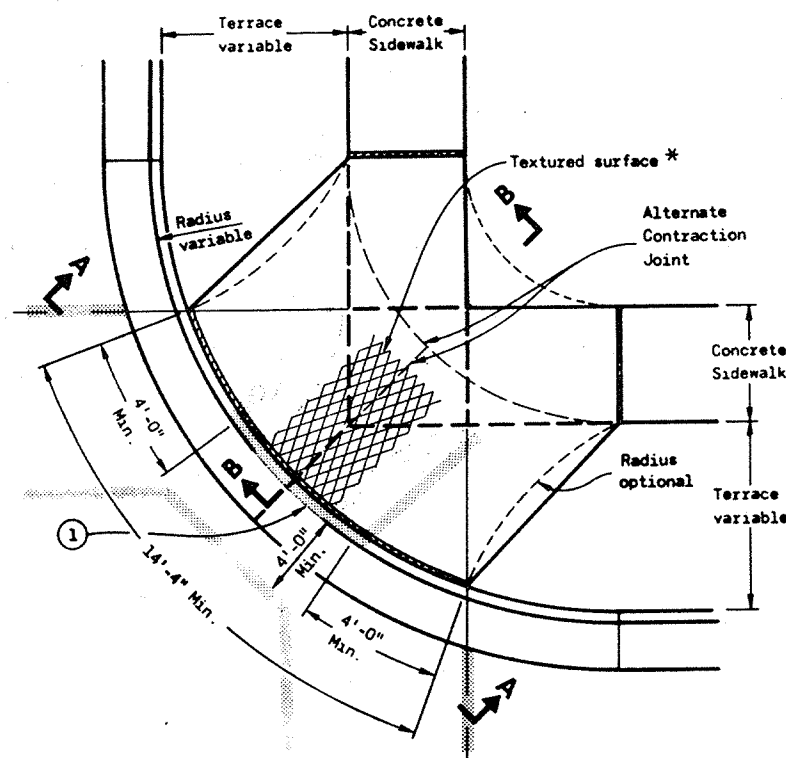
SECTION D-D

CONCRETE SURFACE DRAIN & ASPHALTIC FLUME

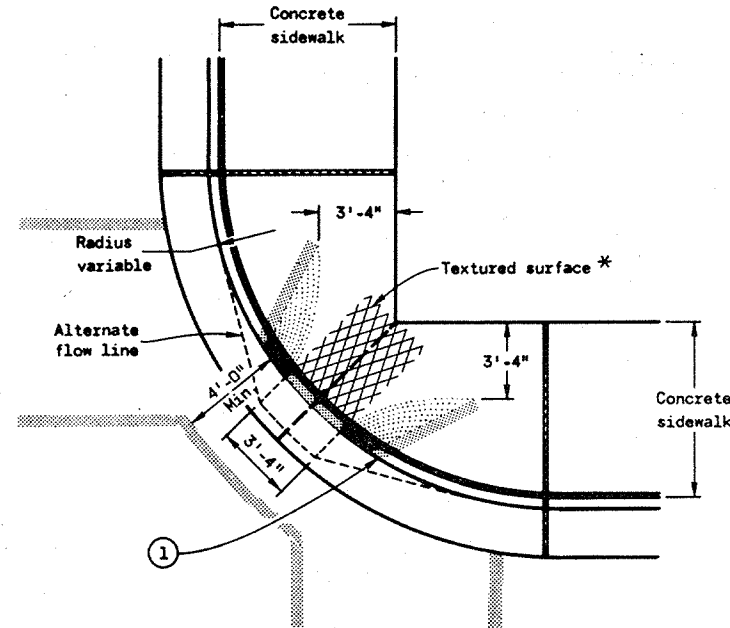
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/23/04
DATE
FHWA

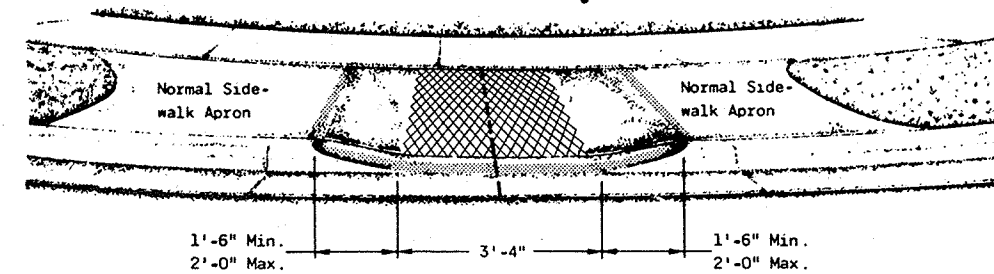
STATE DESIGN ENGINEER FOR HWYS
[Signature]



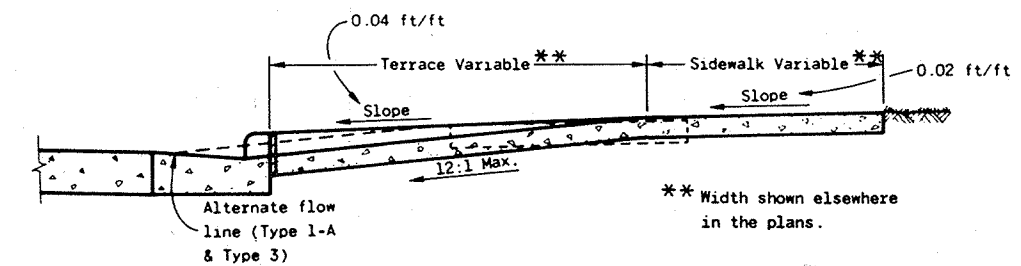
PLAN VIEW
TYPE 1 RAMP
(CENTER OF CORNER RADIUS)



PLAN VIEW
TYPE 1-A RAMP
(NO TERRACE)

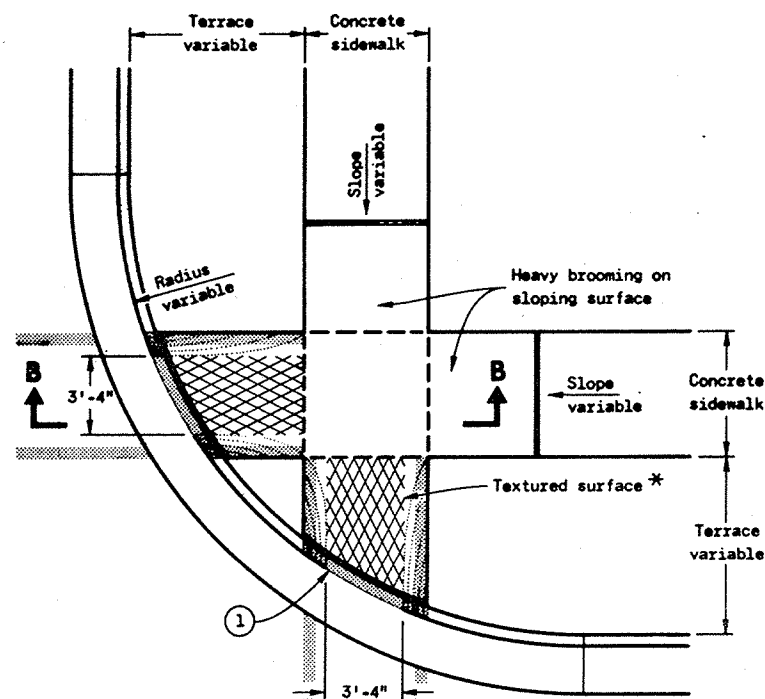


VIEW A-A

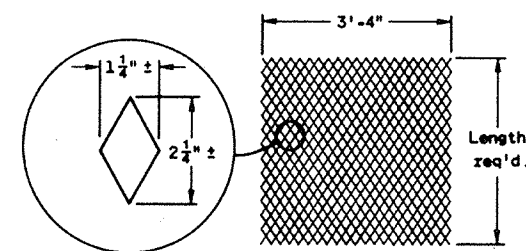


SECTION B-B

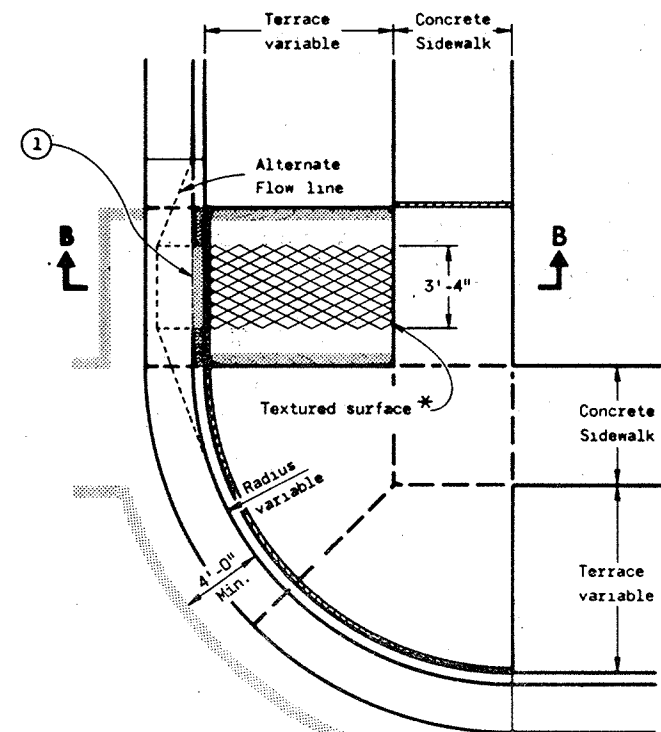
1" EXPANSION JOINTS - SIDEWALK
1/2" CONTRACTION JOINTS
Location of joints may be varied from those shown to better fit site conditions and/or local government preference.



PLAN VIEW
TYPE 2 RAMP
(ON LINE WITH SIDEWALK)



DETAIL OF DIAMOND PATTERN *



PLAN VIEW
TYPE 3 RAMP
(OUTSIDE OF CROSSWALK AREA)

GENERAL NOTES

Details of construction, materials and workmanship not shown on this drawing shall conform to the pertinent requirements of the Standard Specifications and the applicable Special Provisions.

Ramps shall be built at 12:1 or flatter. When necessary, the sidewalk elevation may be lowered to meet the high point on the ramp.

Type 1 or Type 1-A Ramps shall have a normal sidewalk apron and curb on both sides of ramp.

Curb ramps shall be measured and paid for as Concrete Sidewalk and Concrete Curb and Gutter.

Surface texturing shall consist of linear impressions approximately 1/4 inch to 3/8 inch in depth and width, oriented to provide a uniform pattern of diamond shapes measuring approximately 1 1/4 inches in width by 2 1/4 inches in length, with the length being parallel to the direction of pedestrian movement. This surface texture may be achieved by impressing and removing a piece of expanded metal regular industrial mesh into the surface of the ramp while the concrete is in a plastic state.

① The ramp shall be bordered on both sides and on the curb line with a 4 inch wide yellow stripe or with brick of a contrasting color. Normally the paint stripe alternate will be used. The municipality or the department will apply this striping unless otherwise specified in the contract.

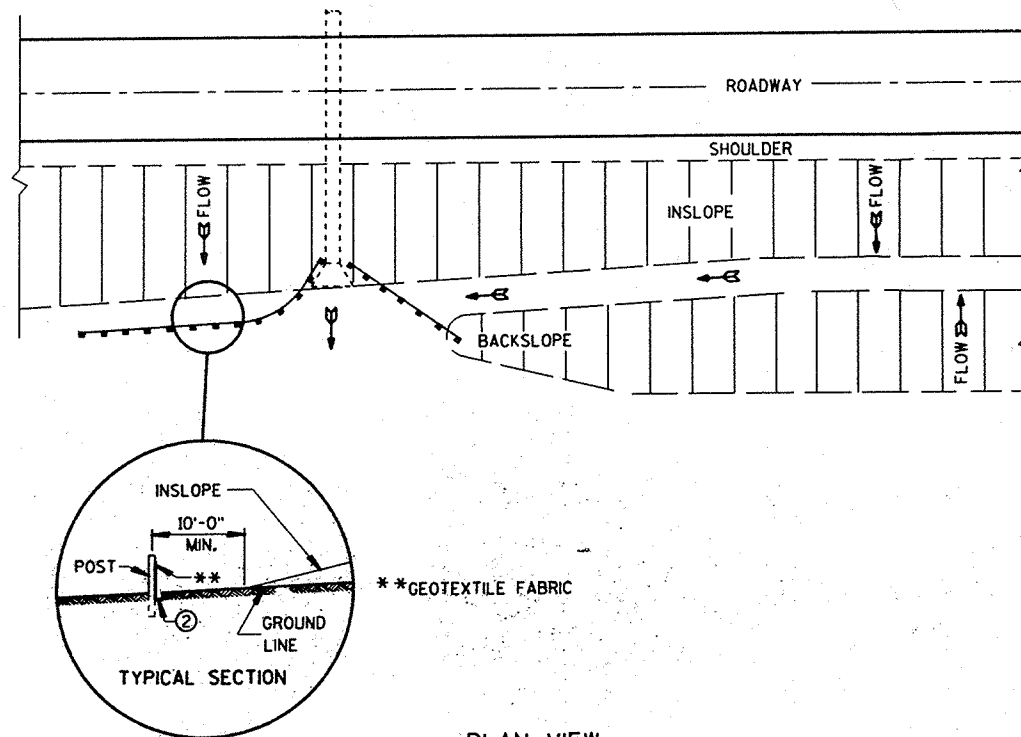
If a municipality requires the brick alternate, special details and provisions are shown elsewhere in the plans.

CURB RAMPS

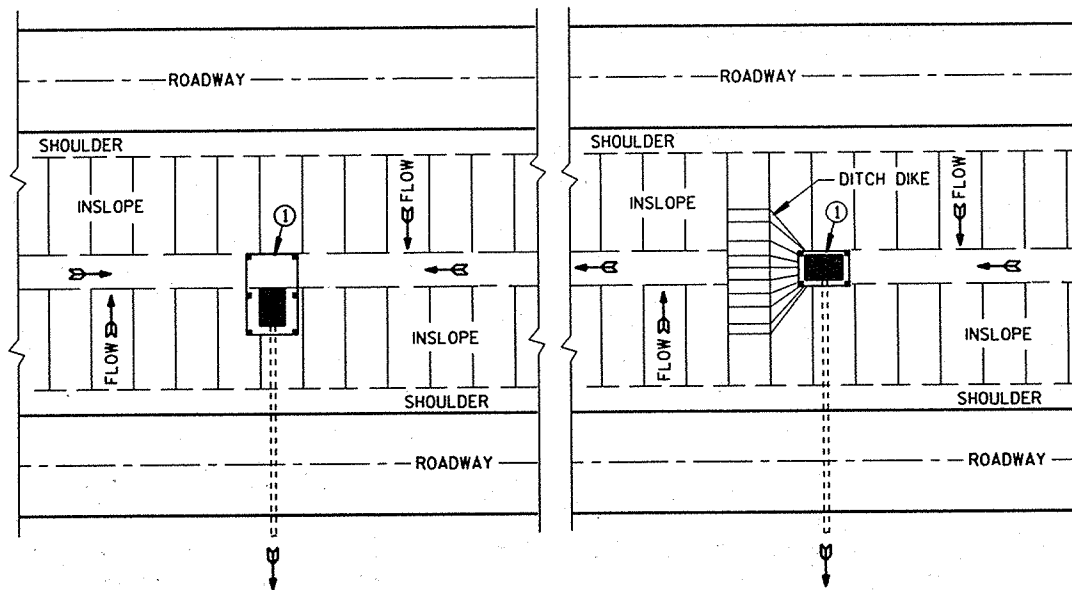
State of Wisconsin
Department of Transportation

APPROVED
10-23-84
DATE
FHWA

CHIEF DESIGN ENGINEER



PLAN VIEW
TYPICAL APPLICATIONS OF SILT FENCE

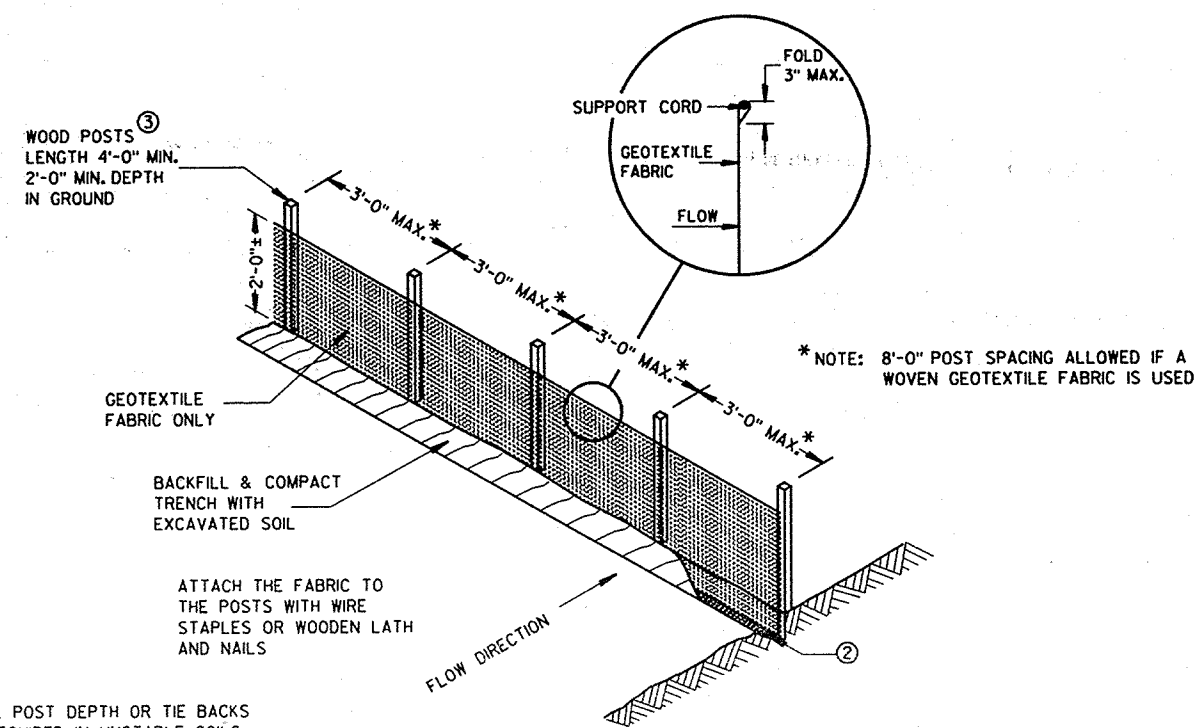


SITUATION 1
SITUATION 2
PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

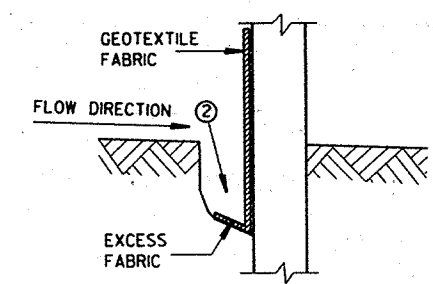
GENERAL NOTES

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

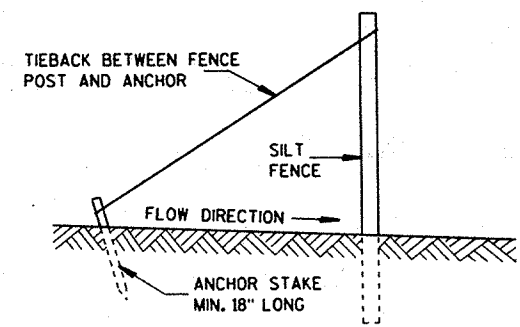
- ① HORIZONTAL BRACE WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS AS DIRECTED BY THE ENGINEER.
- ② TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1 1/8" X 1 1/8" OF OAK OR HICKORY.



SILT FENCE
(NON-REINFORCED)



TRENCH DETAIL



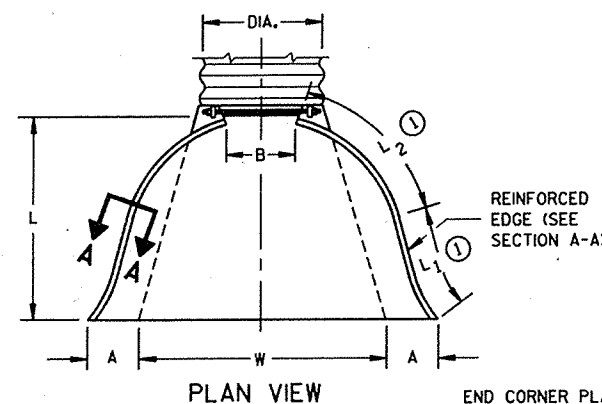
SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS

SILT FENCE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 6/29/94 DATE	<i>Ray E. Shuman</i> CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	

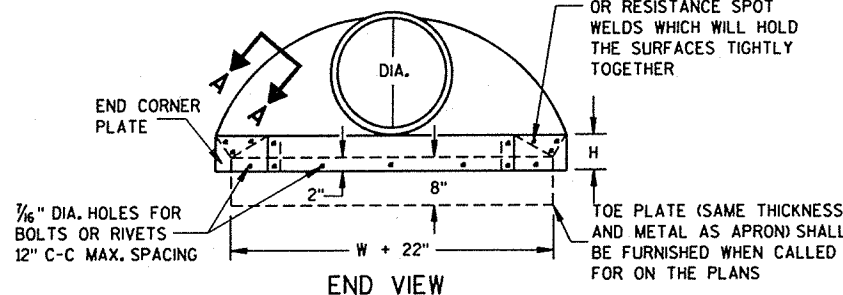
METAL APRON ENDWALLS												
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY	
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L ₁ ①	L ₂ ①	W (±2")			
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.	
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.	
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 1	1 Pc.	
21	.064	.060	9	12	6	36	18	29 5/8	42	2 1/2 to 1	1 Pc.	
24	.064	.075	10	13	6	41	18	37 1/4	48	2 1/2 to 1	1 Pc.	
30	.079	.075	12	16	8	51	18	52 1/4	60	2 1/2 to 1	1 Pc.	
36	.079	.105	14	19	9	60	24	59 3/4	72	2 1/2 to 1	2 Pc.	
42	.109	.105	16	22	11	69	24	75 5/8	84	2 1/2 to 1	2 Pc.	
48	.109	.105	18	27	12	78	24	81	90	2 1/4 to 1	3 Pc.	
54	.109	.105	18	30	12	84	30	85 1/2	102	2 1/4 to 1	3 Pc.	
60	.109x	.105x	18	33	12	87	—	—	114	2 to 1	3 Pc.	
66	.109x	.105x	18	36	12	87	—	—	120	2 to 1	3 Pc.	
72	.109x	.105x	18	39	12	87	—	—	126	2 to 1	3 Pc.	
78	.109x	.105x	18	42	12	87	—	—	132	1 1/2 to 1	3 Pc.	
84	.109x	.105x	18	45	12	87	—	—	138	1 1/2 to 1	3 Pc.	
90	.109x	.105x	18	37	12	87	—	—	144	1 1/2 to 1	3 Pc.	
96	.109x	.105x	18	35	12	87	—	—	150	1 1/2 to 1	3 Pc.	

* EXCEPT CENTER PANEL
SEE GENERAL NOTES

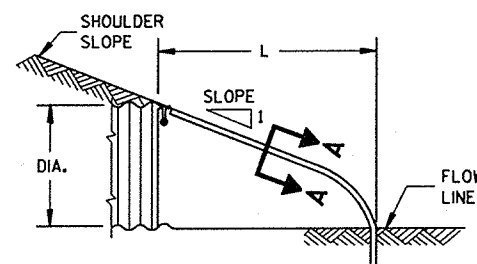


PLAN VIEW

END CORNER PLATES MAY
BE FASTENED TO APRON
PROPER BY BOLTS, RIVETS,
OR RESISTANCE SPOT
WELDS WHICH WILL HOLD
THE SURFACES TIGHTLY
TOGETHER



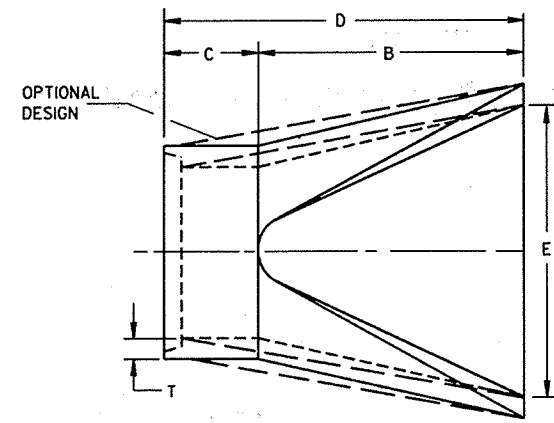
END VIEW



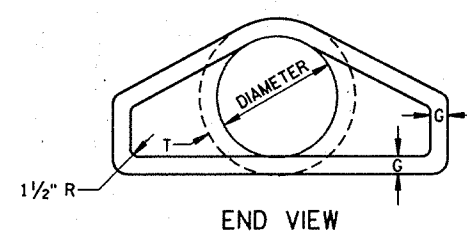
SIDE ELEVATION
METAL ENDWALLS

REINFORCED CONCRETE APRON ENDWALLS								
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE
	T	A	B	C	D	E	G	
12	2	4	24	48 ¹ / ₈	72 ¹ / ₈	24	2	3 to 1
15	2 ¹ / ₄	6	27	46	73	30	2 ¹ / ₄	3 to 1
18	2 ¹ / ₂	9	27	46	73	36	2 ¹ / ₂	3 to 1
21	2 ³ / ₄	9	36	37 ¹ / ₂	73 ¹ / ₂	42	2 ³ / ₄	3 to 1
24	3	9 ¹ / ₂	43 ¹ / ₂	30	73 ¹ / ₂	48	3	3 to 1
27	3 ¹ / ₄	10 ¹ / ₂	49 ¹ / ₂	24	73 ¹ / ₂	54	3 ¹ / ₄	3 to 1
30	3 ¹ / ₂	12	54	19 ³ / ₄	73 ¹ / ₂	60	3 ¹ / ₂	3 to 1
36	4	15	63	34 ³ / ₄	97 ³ / ₄	72	4	3 to 1
42	4 ¹ / ₂	21	63	35	98	78	4 ¹ / ₂	3 to 1
48	5	24	72	26	98	84	5	3 to 1
54	5 ¹ / ₂	27	65	33 ¹ / ₄ - 35	98 ¹ / ₄ - 100	90	5 ¹ / ₂	2 ¹ / ₂ to 1
60	6	30 - 35	60	39	99	96	5	2 to 1
66	6 ¹ / ₂	34 - 36	72 - 78	21 - 27	99	102	5 ¹ / ₂	2 to 1
72	7	34 - 36	78	21	99	108	6	2 to 1
78	7 ¹ / ₂	34 - 36	78	21	99	114	6 ¹ / ₂	2 to 1
84	8	36	90 ¹ / ₂	21	111 ¹ / ₂	120	6 ¹ / ₂	1 ¹ / ₂ to 1
90	8 ¹ / ₂	41	87 ¹ / ₂	24	111 ¹ / ₂	132	6 ¹ / ₂	1 ¹ / ₂ to 1

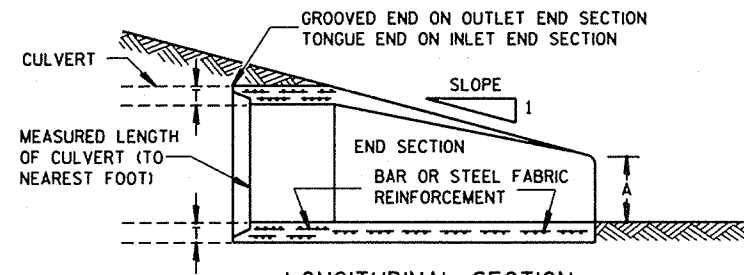
* MINIMUM
** MAXIMUM



PLAN

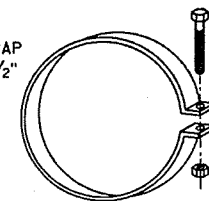


END VIEW

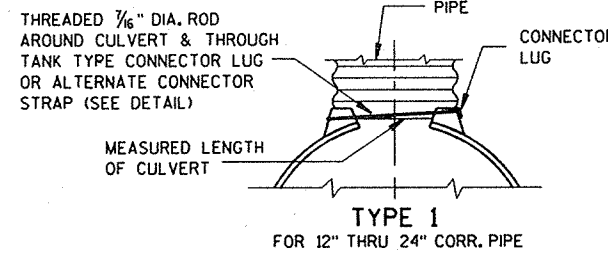


LONGITUDINAL SECTION
CONCRETE ENDWALLS

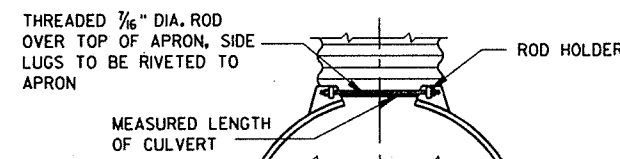
1" WIDE, 12 GA. (0.109"
THICK) GALVANIZED STRAP
WITH STANDARD 6" X 1/2"
BAND BOLT AND NUT



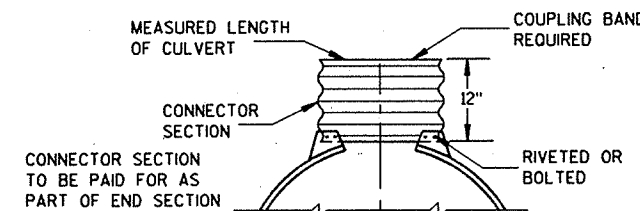
ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



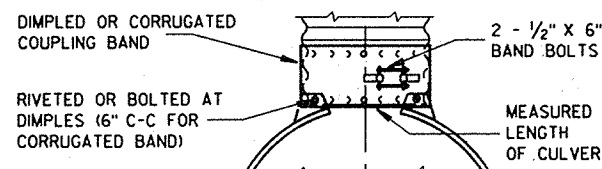
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5

ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

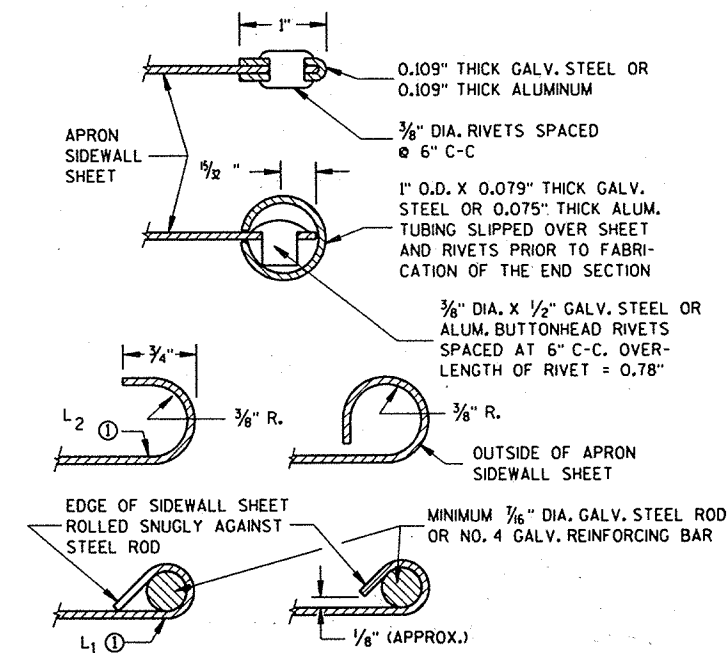
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL,
AND CORRUGATED BAND FITS INSIDE ENDWALL.
DIMPLED BAND MAY BE USED WITH HELICALLY
CORRUGATED PIPE.

FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE
ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5
AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL
CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO
CIRCUMFERENTIAL CORRUGATIONS AT EACH END
USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON
THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE
STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL
OR ALUMINUM CULVERT PIPE OR VISE VERSA. GALVANIZED STEEL OR
ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE
OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND
LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL
THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND
LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH
OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE
PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS
FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS.
FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED
EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH
GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE
ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM
NUTS AND BOLTS FOR ALUMINUM UNITS.

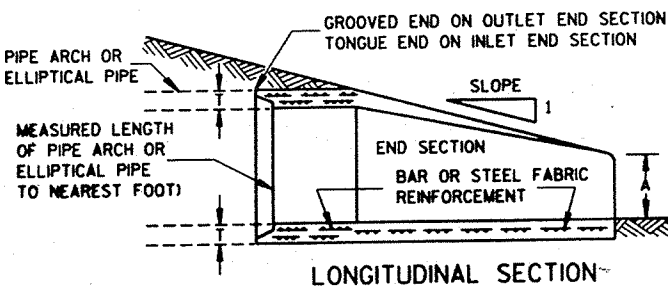
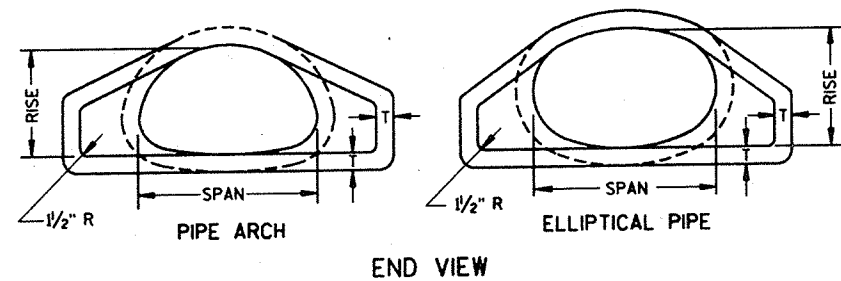
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT
TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT
TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED
INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

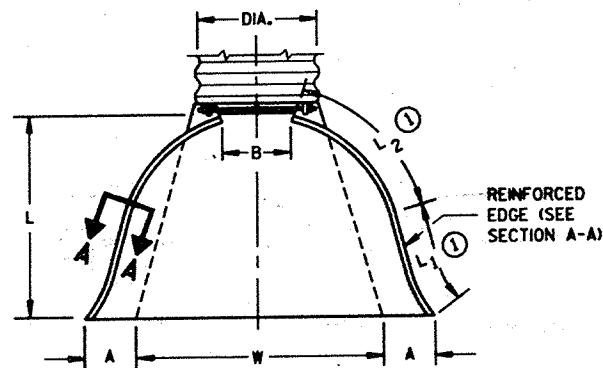
APRON ENDWALLS FOR CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

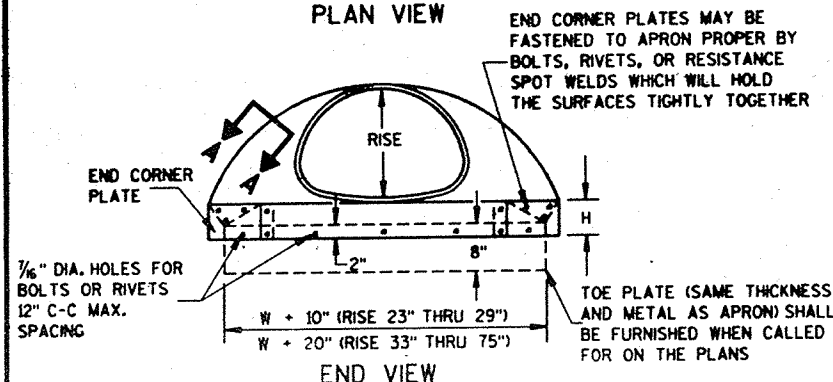
APPROVED
11/30/94
DATE
CHIEF ROADWAY DEVELOPMENT ENGINEER



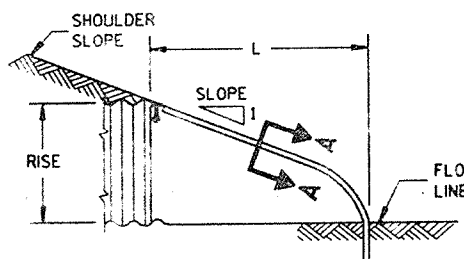
CONCRETE ENDWALLS



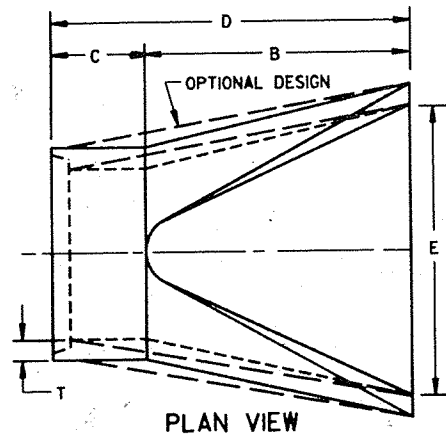
PLAN VIEW



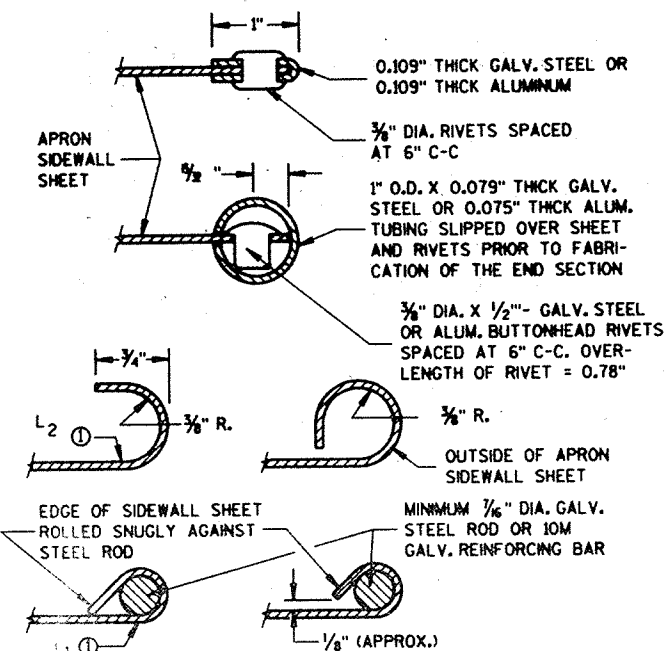
END VIEW



SIDE ELEVATION
METAL ENDWALLS



PLAN VIEW



SECTION A-A

2- 2 2/3" X 1/2" CORRUGATIONS													
EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches)	DIMENSIONS (Inches)							APPROX. SLOPE	BODY	
	SPAN	RISE		A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 (1)	L2 (1)	W (±2")			
15	17	13	.064	.060	7	9	6	19	14	16	30	2 1/2 to 1	1 Pc.
18	21	15	.064	.060	7	10	6	23	14	19 1/2	36	2 1/2 to 1	1 Pc.
21	24	18	.064	.060	8	12	6	28	18	21 1/4	42	2 1/2 to 1	1 Pc.
24	28	20	.064	.060	9	14	6	32	18	27 1/2	48	2 1/2 to 1	1 Pc.
30	35	24	.079	.075	10	16	6	39	18	37 1/2	60	2 1/2 to 1	1 Pc.
36	42	29	.079	.075	12	18	8	46	24	45 1/4	75	2 1/2 to 1	1 Pc.
42	49	33	.109	.105	13	21	9	53	24	54 1/4	85	2 1/2 to 1	2 Pc.
48	57	38	.109	.105	18	26	12	63	24	68	90	2 1/2 to 1	3 Pc.
54	64	43	.109	.105	18	30	12	70	24	72 1/4	102	2 1/2 to 1	3 Pc.
60	71	47	.109*	.105*	18	33	12	77	30	82 1/4	114	2 1/2 to 1	3 Pc.
66	77	52	.109*	.105*	18	36	12	77	—	—	126	2 to 1	3 Pc.
72	83	57	.109*	.105*	18	39	12	77	—	—	138	2 to 1	3 Pc.

3" X 1" CORRUGATIONS													
EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches)	DIMENSIONS (Inches)							APPROX. SLOPE	BODY	
	SPAN	RISE		A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 (1)	L2 (1)	W (±2")			
48	53	41	.109	.105	18	26	12	63	24	72 1/4	90	2 1/2 to 1	2 Pc.
54	60	46	.109	.105	18	30	12	70	30	82 1/4	102	2 to 1	2 Pc.
60	66	51	.109*	.105*	18	33	12	77	—	—	114	1 1/2 to 1	3 Pc.
66	73	55	.109*	.105*	18	36	12	77	—	—	126	1 1/2 to 1	3 Pc.
72	81	59	.109*	.105*	18	39	12	77	—	—	138	2 to 1	3 Pc.
78	87	63	.109*	.105*	22	38	12	77	—	—	148	1 1/2 to 1	3 Pc.
84	95	67	.109*	.105*	22	34	12	77	—	—	162	1 1/2 to 1	3 Pc.
90	103	71	.109*	.105*	22	38	12	77	—	—	174	1 1/2 to 1	3 Pc.
96	112	75	.109*	.105*	24	40	12	77	—	—	174	1 1/2 to 1	3 Pc.

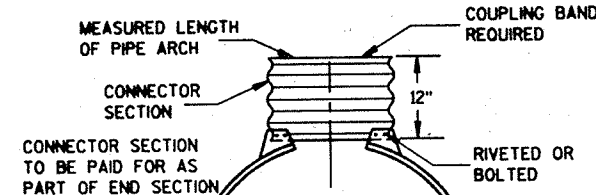
NOTE: ALL SPLICES TO BE LAP RIVETED OR BOLTED.

* EXCEPT CENTER PANEL SEE GENERAL NOTES



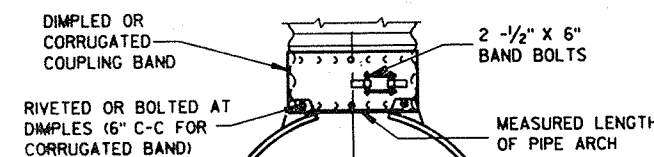
TYPE 2

FOR 17" X 13" THRU 112" X 75" PIPE ARCH



TYPE 3

FOR 64" X 43" THRU 112" X 75" PIPE ARCH



TYPE 5

ALTERNATE FOR:
ALL SIZES CORRUGATED PIPE ARCHES

NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL.

CONNECTION DETAILS

REINFORCED CONCRETE PIPE ARCH

EQUIV. DIA. (Inches)	DIMENSIONS (Inches)									APPROX. SLOPE
	**SPAN	**RISE	T	A	B	C	D	E		
24	29	18	3	8 1/2	39	33	72	48	3 to 1	
30	36	22	3 1/2	9 1/2	50	46	96	60	3 to 1	
36	44	27	4	11 1/8	60	36	96	72	3 to 1	
42	51	31	4 1/2	15 1/8	60	36	96	78	3 to 1	
48	58	36	5	21	60	36	96	84	3 to 1	
54	65	40	5 1/2	25 1/2	60	36	96	90	3 to 1	
60	73	45	6	31	60	36	96	96	3 to 1	
72	88	54	7	31	60	39	99	120	2 to 1	
84	102	62	8	28 1/2	83	19	102	144	2 to 1	

REINFORCED CONCRETE ELLIPTICAL PIPE

EQUIV. DIA. (Inches)	DIMENSIONS (Inches)									APPROX. SLOPE
	**SPAN	**RISE	T	A	B	C	D	E		
24	30	19	3/4	8 1/2	39	33	72	48	3 to 1	
30	38	24	3 3/4	9 1/2	54	18	72	60	3 to 1	
36	45	29	4 1/2	11 1/8	60	24	84	72	2 1/2 to 1	
42	53	34	5	15 1/8	60	36	96	78	2 1/2 to 1	
48	60	38	5 1/2	21	60	36	96	84	2 1/2 to 1	
54	68	43	6	25 1/2	60	36	96	90	2 1/2 to 1	
60	76	48	6 1/2	30	60	36	96	96	2 1/2 to 1	

**NOMINAL SIZE

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

CONCRETE APRON ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR VISE VERSA. GALVANIZED STEEL OR ALUMINUM APRON ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE ARCH PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 77" X 52" THROUGH 112" X 75" APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

① FOR PIPE ARCH SIZES UP TO 73" X 55" A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/30/94
DATE
Roy R. Thompson
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA