CONTRACTOR: WM. BEAUDOIN & SONS, INC

SUB-CONTRACTOR: JAMES CAPE & SONS CO.
CURB & GUTTER
STORM SEWER
SURFACE DRAINS

LINNAN CONSTRUCTION & ENGINEERING CO
B-67-143
C-67-39
C-67-38

EDGERTON CONTRACTORS INC
GRADING
METAL PIPE CULVERTS
CLEARING & GRUBBING

Sheet Number	Total Sheets
1	120

APPROVED FOR: Village of Menomonee Falls

4/27/70 Date — Village Commissioner Title

EDWARD KRAMER & SONS, INC
GRAVEL

STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED

SUSSEX - MENOMONEE FALLS RD.

S.T.H. 74

WAUKESHA COUNTY

PROJECT IDENTIFICATION NUMBER	PROJECT DESIGNATION
2321-1-71	T0168 (9)

Index of Sheets

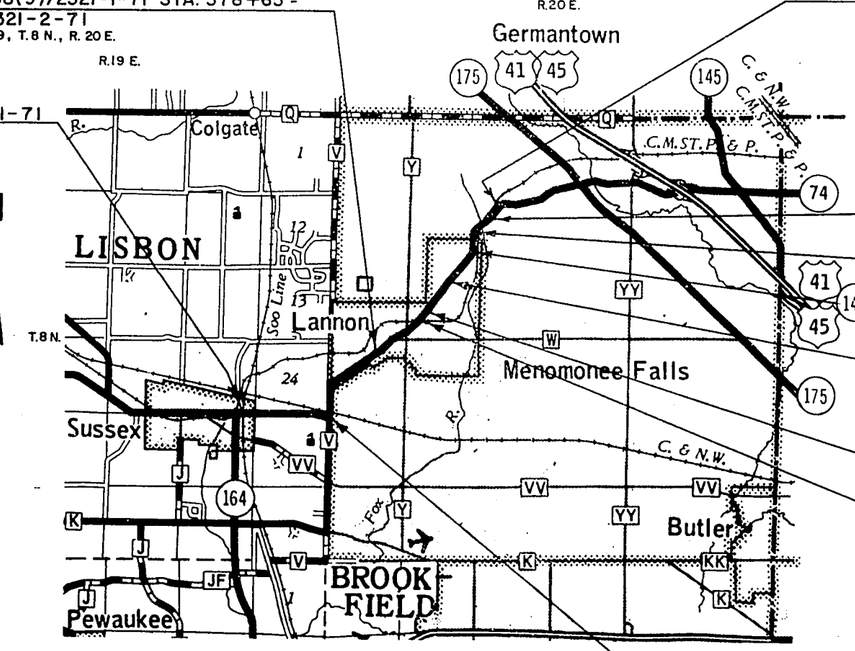
Sheet No.	1	Title
Sheet No.	2-2.8	Typical Cross Sections
Sheet No.	3	Estimate of Quantities
Sheet No.	3A	Miscellaneous Quantities
Sheet No.	4	Right of Way Plat
Sheet No.	5-15	Plan and Profile
Sheet No.	16-16.13	Standard Details
Sheet No.	17-26	Drainage Structures
Sheet No.	27-120	Cross Sections



Scales { Plan 1in. = 100 ft. / Profile Hor. 1in. = 100 ft. Vert. 1in. = 10 ft / Cross Sections Hor 1in. = Vert 1in. =

END SECTION 1, PROJECT T0168(9)/2321-1-71 STA. 578+65 =
STA. 578+65 BEG. PROJ. I.D. 2321-2-71
1043' S. OF & 619' E. OF N. 1/4 COR. SEC. 19, T. 8 N., R. 20 E.
N. 422,777 (±200')
E. 2,487,932 (±200')

BEGIN SECTION 1, PROJECT T0168(9)/2321-1-71
STA. 454+82.9
852' W. OF S.E. COR. SEC. 23, T. 8 N., R. 19 E.
N. 418,337.9 (±200')
S. 2,478,412 (±200')



N

END SECTION 2, PROJECT T0168(9)/2321-1-71
STA. 720+50 =
STA. 720+50 END PROJ. I.D. 2321-3-71
1577' N. OF & 1498' W. OF CEN. SEC. 9, T. 8 N., R. 20 E.
N. 433,632 (±200')
E. 2,496,390 (±200')

EQUATION P.T. 706+43.23 ℄ & ℄ BK. =
STA. 706+50.30 ℄ AHD.

EQUATION STA. 692+40.15 ℄ BK. =
P.C. 692+76.09 ℄ AHD.

EQUATION STA. 685+92.73 ℄ BK. =
STA. 685+92.56 ℄ AHD.

EQUATION STA. 654+07.72 ℄ BK. =
STA. 654+11.54 ℄ AHD.

EQUATION STA. 620+87.74 BK. =
STA. 620+87.64 AHD.

BEGIN SECTION 2, PROJECT T0168(9)/2321-1-71
STA. 616+99.1
±1310' N. OF & 872' E. OF S.W. COR. SEC. 17, T. 8 N., R. 20 E.
N. 425,197 (±200')
E. 2,490,840 (±200')

EQUATION STA. 516+89.60 ℄ BK. =
STA. 515+96.03 ℄ AHD.

PROJECT ENGINEER - GERALD WAELTI P.E. L.S.

PROJECT PERSONNEL - DIARY 11L PAGE 3

START : JUNE 11, 70

SUSPEND: —

FINISH : NOV 16, 1970

DIARY - 11L
NO M BOOKS
BENCH MARKS PAGE 147
CONTROL POINTS PAGE 145.

Design Designation

A.D.T.	(1970)	4300-7000
A.D.T.	(1990)	5500-7000 *
D.H.V.		800
D.		60-40
T.		10-12%
V.		60 M.P.H.

* 9000 AFTER BELT FREEWAY CONSTRUCTION

Conventional Signs

State Line
County Line
Township or Range Line
Section Line
New Right of Way Line
Present Right of Way Line
Wire Fence { Woven / Barbed
Lot Line
Corporate or City Limits
Property Line
Traveled Way or P.E.
Railroads
Base or Survey Line

Culverts in Place
Culverts Required
Drop Inlet
Power Pole
Telephone or Telegraph Pole
Right of Way Markers
Reference Stake for Hubs Only
Marsh
Hedge
Trees
Ground Elevation — Datum Line
Grade Elevation — Datum Line

Layout
Scale 0 1 MI.

Net Length of Centerline =
4.316 Mi. Total
0.161 Mi. Mcpl.
1.413 Mi. Rural
2.742 Mi. Urban

SCALED FROM U.S.G.S. TOPOGRAPHIC MAP (SUSSEX) WISCONSIN, QUADRANGLE FOR IDENTIFICATION ONLY.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Surveyor G. REITER — District Checker D. BAUMANN
Designer R. RYAN — C O Checker

Correct:

Date 3/18/70 — District Engineer

Recommended for Approval:

Date 3/23/70 — Chief Design Engineer

Approved:

Date 3/24/70 — State Highway Engineer

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
BUREAU OF PUBLIC ROADS
REGION 4 — WISCONSIN DIVISION

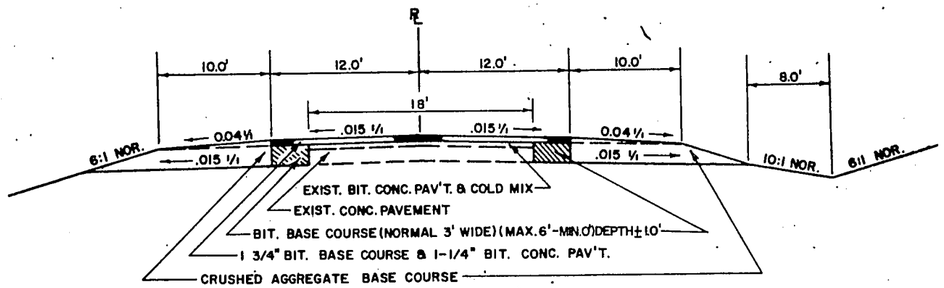
Approved:

Date — Division Engineer

T0168(9)

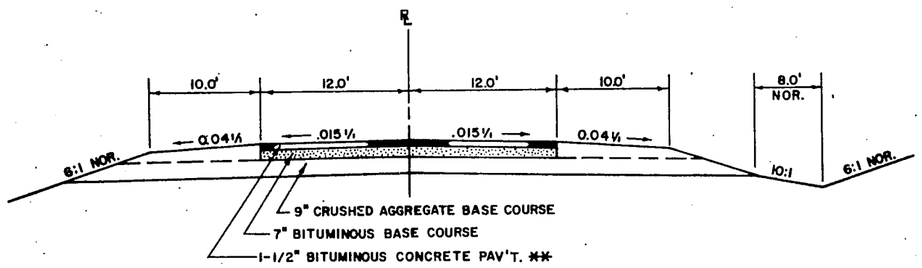
PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	2	120
PROJECT DESIGNATION T0168(9)		

TYPICAL CROSS SECTIONS FOR S.T.H. 74 WAUKESHA CO.



TYPICAL NORMAL RURAL WIDENING SECTION

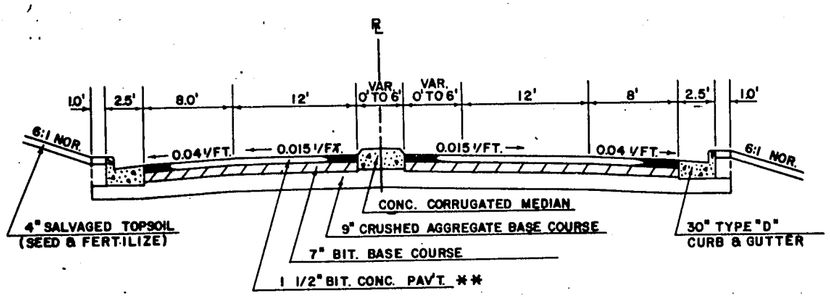
Sta. 460+00	To 502+00	Sta. 650+00	To 656+50
Sta. 520+50	To 526+50	Sta. 668+25	To 681+00
Sta. 545+85	To 576+00	Sta. 685+45	To 693+00
Sta. 616+99.1	To 619+00	Sta. 704+00	To 705+00
Sta. 625+00	To 630+00	Sta. 708+00	To 717+00



TYPICAL NORMAL RURAL RECONSTRUCTION SECTION

Sta. 454+82.9	To 460+00	Sta. 656+50	To 668+25
Sta. 502+00	To 519+27 AHD.	Sta. 693+00	To 704+00
Sta. 576+00	To 578+65	Sta. 705+00	To 708+00
Sta. 619+00	To 625+00	Sta. 717+00	To 720+50
Sta. 630+00	To 650+00		

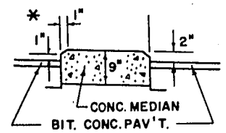
CTH "V" South Sta. 18+00 To 19+70

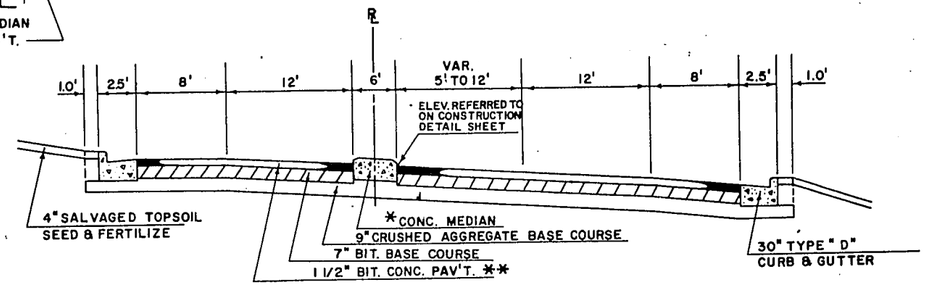


TYPICAL RECONSTRUCTION SECTION

Sta. 534+00 To 536+00
Sta. 540+00 To 543+50

NOTE: For Detail Layout See Construction Details

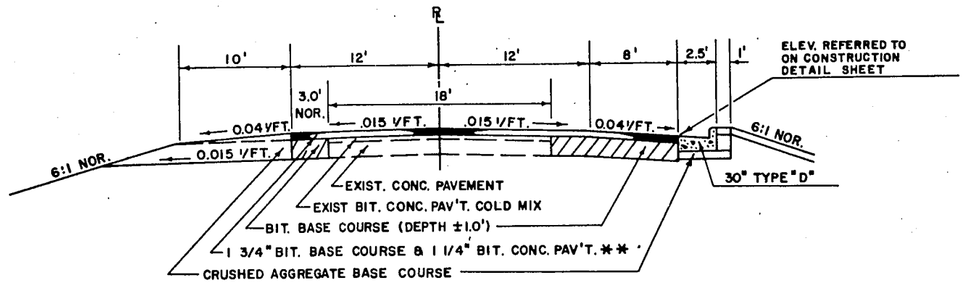




TYPICAL RECONSTRUCTION SECTION

Sta. 536+00 To 540+00

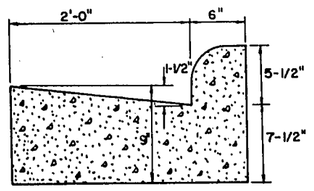
NOTE: For Detail Layout See Construction Details



TYPICAL NORMAL RURAL WIDENING SECTION

Sta. 519+27	To 520+50	-	Curb Rt.
Sta. 526+50	To 534+00	-	Curb Rt.
Sta. 543+50	To 545+85	-	Curb Lt.
Sta. 681+00	To 685+45	-	Curb Lt.

NOTE: For Detail Layout See Construction Details

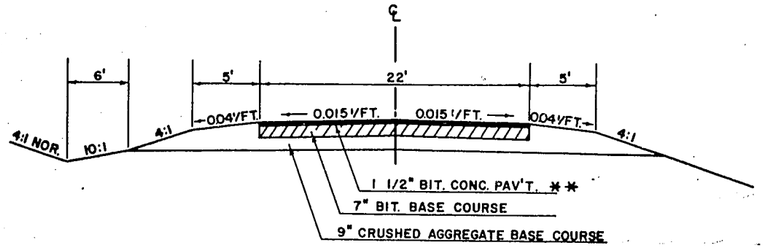


CONCRETE CURB & GUTTER
30-INCH. TYPE D

** WHERE 1 1/4" & 1 1/2" BITUMINOUS CONCRETE PAVEMENT IS INDICATED IT SHALL CONSIST OF SURFACE COURSE MATERIAL.

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71		
PROJECT DESIGNATION T0168(9)	2.1	120

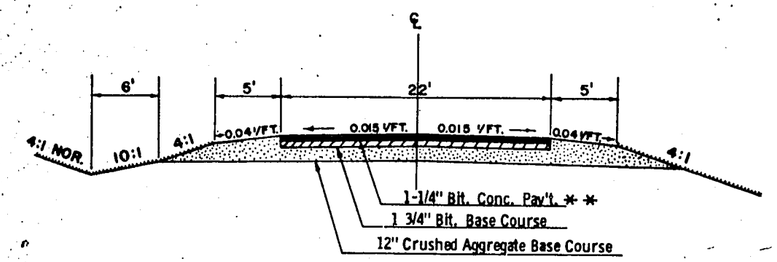
TYPICAL CROSS SECTIONS
FOR
S.T.H. 74 WAUKESHA CO.



TYPICAL NORMAL SECTION SIDE ROADS.

Mill Road Sta. 10+06.96 To 10+38
CTH "V" North Sta. 10+28 To 12+00

NOTE: For Detail Layout See Construction Details



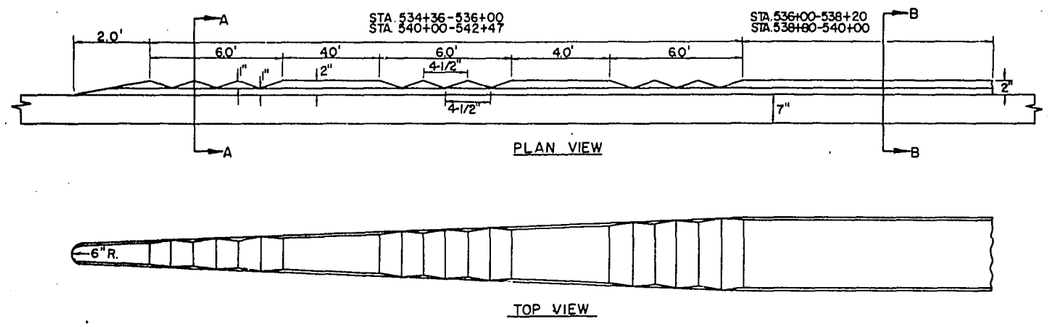
TYPICAL NORMAL SECTION SIDE ROADS

C.T.H. "V" South Sta. 15+00 To 18+00
Sullivan Rd., Edgewood Dr., Custer La.,
Menomonee Ave. & Maple Road

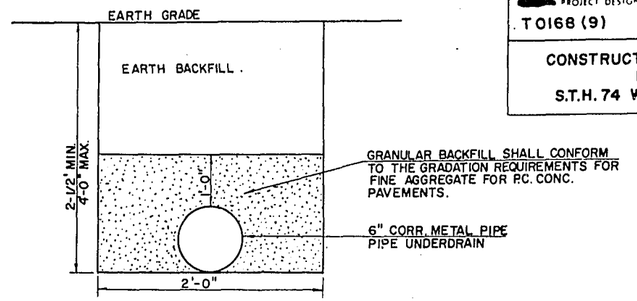
** WHERE 1 1/4" & 1 1/2" BITUMINOUS CONCRETE PAVEMENT IS INDICATED IT SHALL CONSIST OF SURFACE COURSE MATERIAL.

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	2.2	120
PROJECT DESIGNATION T0168 (9)		

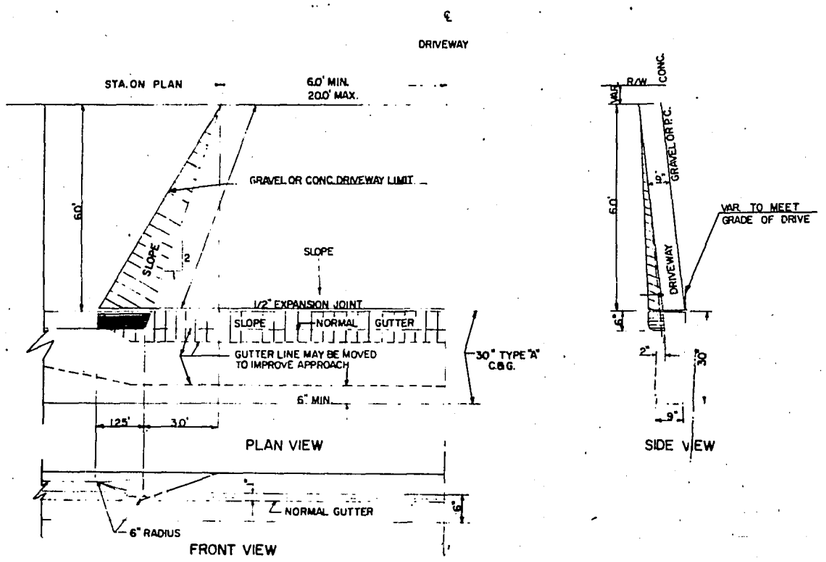
CONSTRUCTION DETAILS FOR S.T.H. 74 WAUKESHA CO.



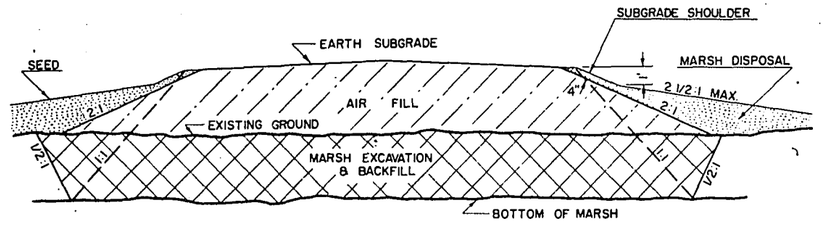
CONCRETE CORRUGATED MEDIAN



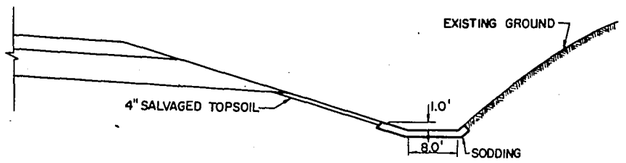
UNDERDRAIN DETAIL



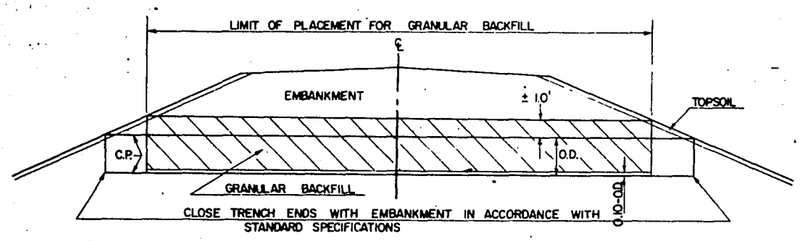
DRIVEWAY DETAIL



MARSH EXCAVATION DETAIL



TYPICAL SODDING DETAIL



GRANULAR BACKFILL *– CUBIC YARDS PER FOOT												
PIPE SIZE"	12	15	18	24	30	36	42	48	54	60	66	72
CONCRETE	0.18	0.21	0.24	0.31	0.45	0.53	0.62	0.71	0.80	1.00	1.13	1.25
METAL	0.15	0.17	0.20	0.25	0.37	0.44	0.51	0.58	0.66	0.74	0.93	1.02

* THE GRANULAR BACKFILL DEPTH IS ASSUMED TO BE APPROXIMATELY ONE FOOT ABOVE THE TOP OF THE PIPE OR AS DIRECTED BY THE ENGINEER IN THE FIELD. TRENCH WIDTH IS ASSUMED TO BE IN ACCORD WITH THE STANDARD SPECIFICATIONS.

CULVERT BACKFILL DETAIL

UTILITY COMPANIES

Wisconsin Telephone Co. (Aerial & buried)
Wisconsin Electric Power Co. (Aerial)
Wisconsin Gas & Electric Co. (Buried)
Michigan - Wis. Pipe Line Co. (Buried)
C. M. St. P. & P. Railroad
Chicago & Northwestern Railway
Soo Line Railroad

STANDARD DETAIL DRAWINGS

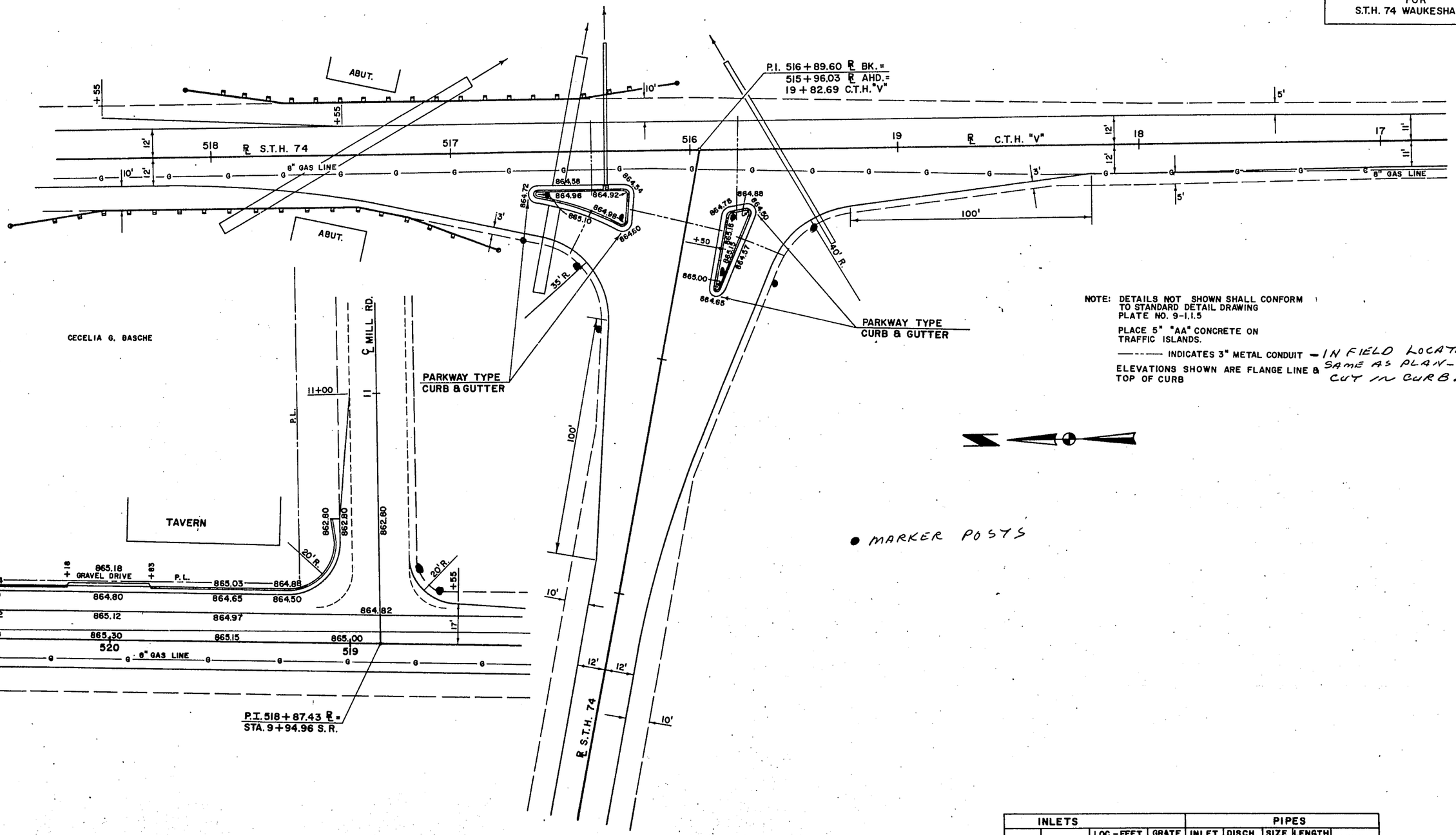
1-1.1.2	Marsh Excavation
3-1.1.7	Concrete Curb, Gutter, Combination Curb & Gutter, Surface Drain
2-2.1.12	Pavement Details For Railroad Approach.
5-6.1.1	Manholes Type 1 & Manhole Covers
5-7.1.2	Inlets Type 1 & 2 and Inlet Covers
6-2.4.3	Mortar Rubble Masonry or Riprap for Culvert and Cattle Pass Endwalls
6-2.6.8	Apron Endwalls for Culvert Pipe and Pipe Arch
6-5.3.2	Structural Plate Pipe Arch & Corrugated Metal Pipe Arch
7-1.3.5	Marker Post & Marker Posts for Right of Way
7-2.4.13	Steel Plate Beam Guard & Steel Beam Median Guard
7-4.1.5	Construction Barricade
8-5.1.6	Metal Conduit & Fiber Conduit
9-1.1.5	Design and Layout Details for Side Road at Grade Intersections
12-1.1.3	Landmark Reference Monuments

GENERAL NOTES

1. No trees or shrubs are to be removed unless they have been marked for removal by the Engineer.
2. Under the item of clearing & grubbing, an X indicates that no such work is anticipated. Should clearing or grubbing be required in the area so marked, payment will be made under the item checked.
3. Salvaged topsoil shall be placed on all cut and fill slopes to an approximate depth of 4" at the time of placing, except that no topsoil will be required in areas of marsh waste disposal.
4. The exact location of private entrances is to be determined in the field by the Engineer.
5. The thickness of the various courses of bituminous surfacing shall be as shown on typical cross sections.
6. All co-ordinates shown on this plan are referenced to the Wisconsin Co-ordinate System south zone.
7. When the quantity of items of base or surface course is measured for payment by the ton or cubic yard, the depth or thickness of the course shown on the plan is approximate, and the actual thickness will depend on the distribution of the material directed by the Engineer.
8. All curves are computed on the basis of R=5729.58.
9. Details of construction not shown shall be in accordance with the pertinent requirements of the Standard Specifications.
10. Unless otherwise authorized, the contractor shall not order or deliver the pipe culverts required for the project until a corrected list of sizes and lengths is furnished him by the Engineer.
11. The use of broken concrete pavement meeting the size requirements of the Standard Specifications will be permitted in the construction of "Riprap".
12. **All Side Road Intersections Shall Be Type "C" Unless Otherwise Shown On Plans.**

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	2.3	120
~~PROJECT~~ DESIGNATION T0168 (9)		

CONSTRUCTION DETAILS
FOR
S.T.H. 74 WAUKESHA CO.



NOTE: DETAILS NOT SHOWN SHALL CONFORM TO STANDARD DETAIL DRAWING PLATE NO. 9-1.1.5

PLACE 5" "AA" CONCRETE ON TRAFFIC ISLANDS.

——— INDICATES 3" METAL CONDUIT – IN FIELD LOCATION SAME AS PLAN – ARROWS CUT IN CURB.

ELEVATIONS SHOWN ARE FLANGE LINE & TOP OF CURB

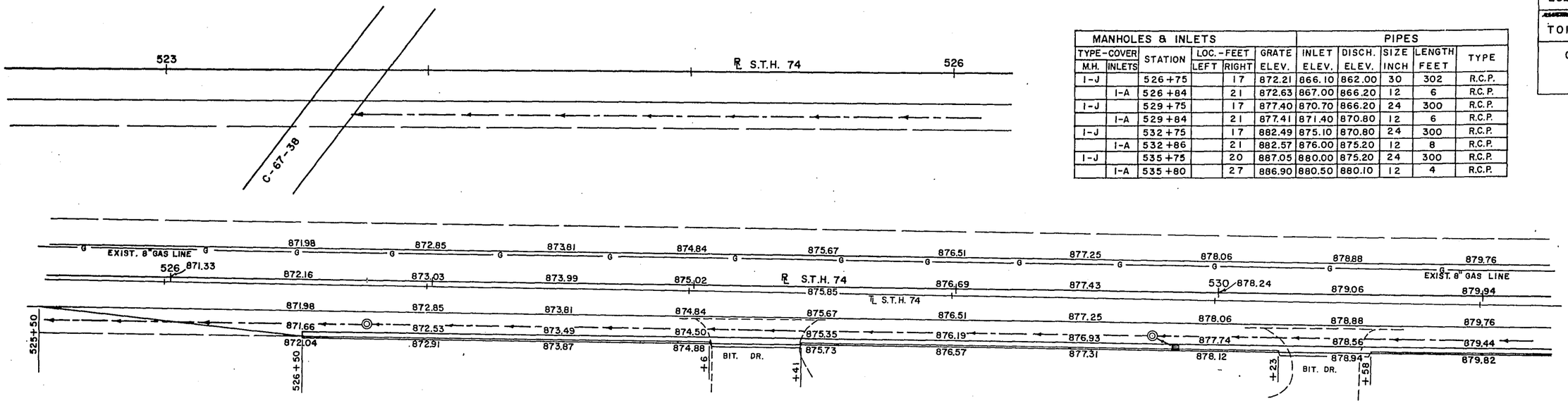
• MARKER POSTS

INLETS					PIPES				
TYPE	STATION	LOC.-FEET LEFT	LOC.-FEET RIGHT	GRATE ELEV.	INLET ELEV.	DISCH. ELEV.	SIZE INCH	LENGTH FEET	TYPE
1A	516+35	15		864.32	~~859.9~~ 861.00	~~858.0~~ 858.00	18	~~50~~ 54	CL. ~~II~~ III C.P.

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	2.4	120
PROJECT DESIGNATION T0168 (9)		

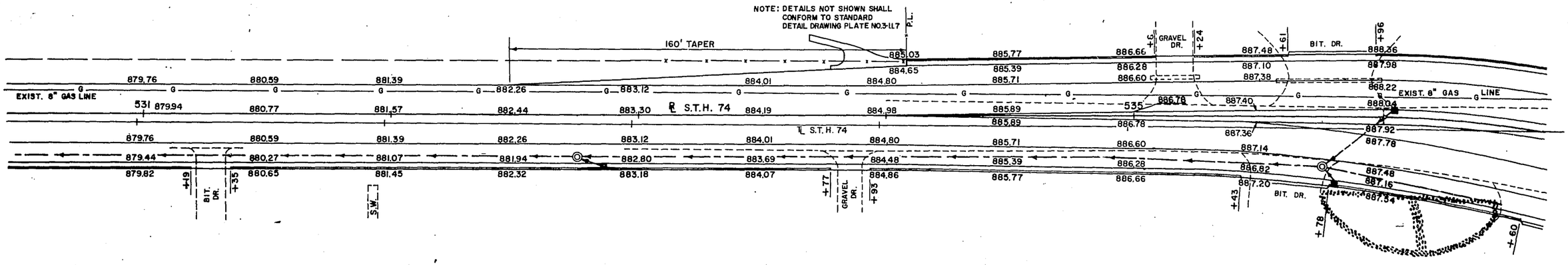
CONSTRUCTION DETAILS FOR S.T.H. 74 WAUKESHA CO.

MANHOLES & INLETS						PIPES				
TYPE-COVER		STATION	LOC.-FEET		GRATE	INLET	DISCH.	SIZE	LENGTH	TYPE
M.H.	INLETS		LEFT	RIGHT	ELEV.	ELEV.	ELEV.	INCH	FEET	
I-J		526+75		17	872.21	866.10	862.00	30	302	R.C.P.
	I-A	526+84		21	872.63	867.00	866.20	12	6	R.C.P.
I-J		529+75		17	877.40	870.70	866.20	24	300	R.C.P.
	I-A	529+84		21	877.41	871.40	870.80	12	6	R.C.P.
I-J		532+75		17	882.49	875.10	870.80	24	300	R.C.P.
	I-A	532+86		21	882.57	876.00	875.20	12	8	R.C.P.
I-J		535+75		20	887.05	880.00	875.20	24	300	R.C.P.
	I-A	535+80		27	886.90	880.50	880.10	12	4	R.C.P.



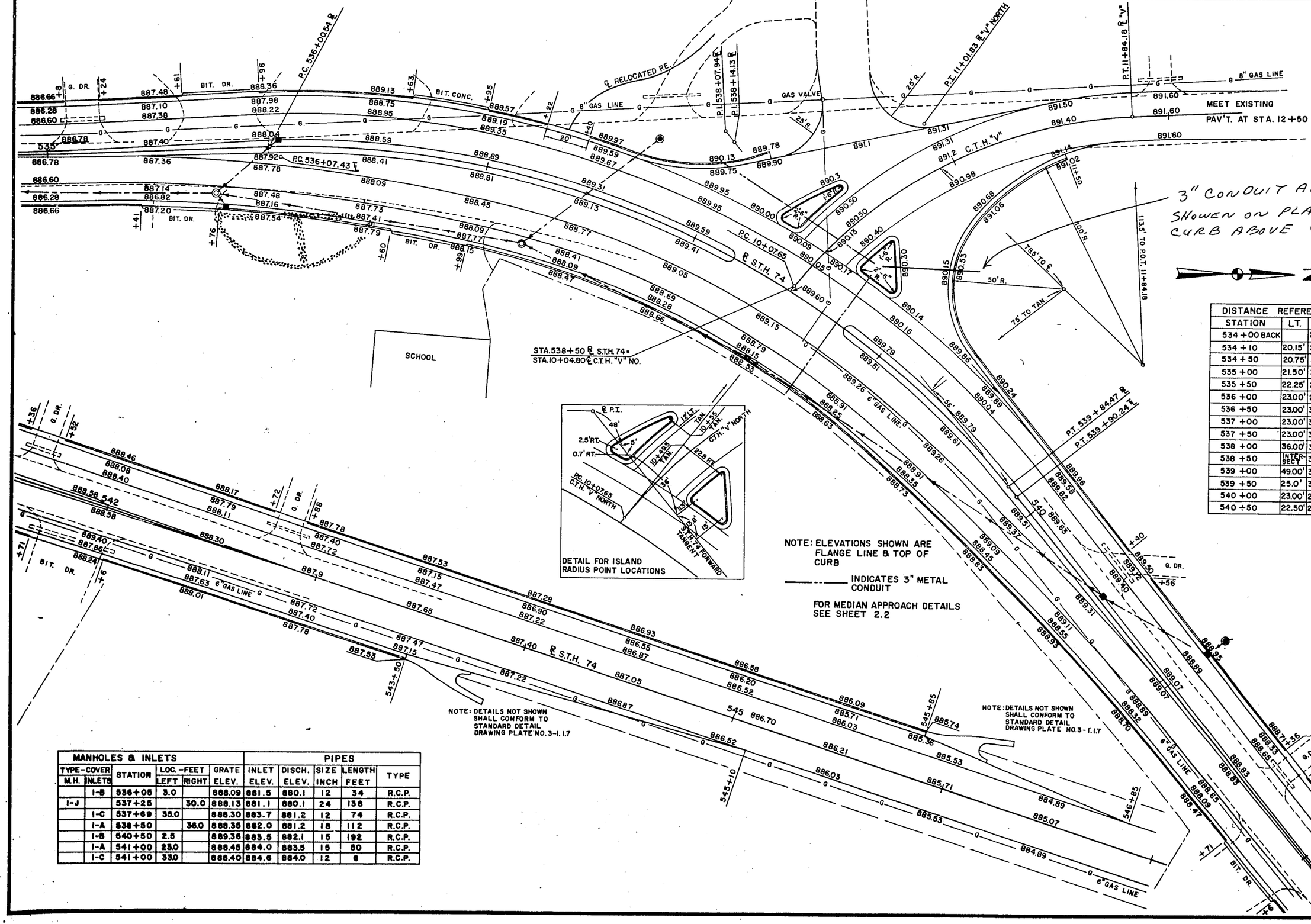
NOTE: ELEVATIONS SHOWN ARE FLANGE LINE & TOP OF CURB.

NOTE: FOR MEDIAN APPROACH DETAILS SEE SHEET 2.2



PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	2.5	120
PROJECT DESIGNATION T0168 (9)		

CONSTRUCTION DETAILS FOR S.T.H. 74 WAUKESHA CO.



DISTANCE REFERENCE LINE TO FLANGE LINE					
STATION	LT.	RT.	STATION	LT.	RT.
534+00 BACK		20.0'	541+00	22.00'	22.00'
534+10	20.15'	20.15'	541+50	21.50'	21.50'
534+50	20.75'	20.75'	542+00	21.00'	21.00'
535+00	21.50'	21.50'	542+50	20.50'	20.50'
535+50	22.25'	22.25'	543+00 AHD.	20.00'	20.00'
536+00	23.00'	28.50'	TO 545+85	20.00'	
536+50	23.00'	33.00'	C.T.H. "V"		
537+00	23.00'	34.80'	10+39	47.5'	—
537+50	23.00'	35.00'	11+00	—	26'
538+00	36.00'	35.00'	11+50	—	13'
538+50	INTER-SECT	35.00'			
539+00	49.00'	34.50'			
539+50	25.0'	33.50'			
540+00	23.00'	29.00'			
540+50	22.50'	24.50'			

DETAIL FOR ISLAND RADIUS POINT LOCATIONS

NOTE: ELEVATIONS SHOWN ARE FLANGE LINE & TOP OF CURB

——— INDICATES 3" METAL CONDUIT

FOR MEDIAN APPROACH DETAILS SEE SHEET 2.2

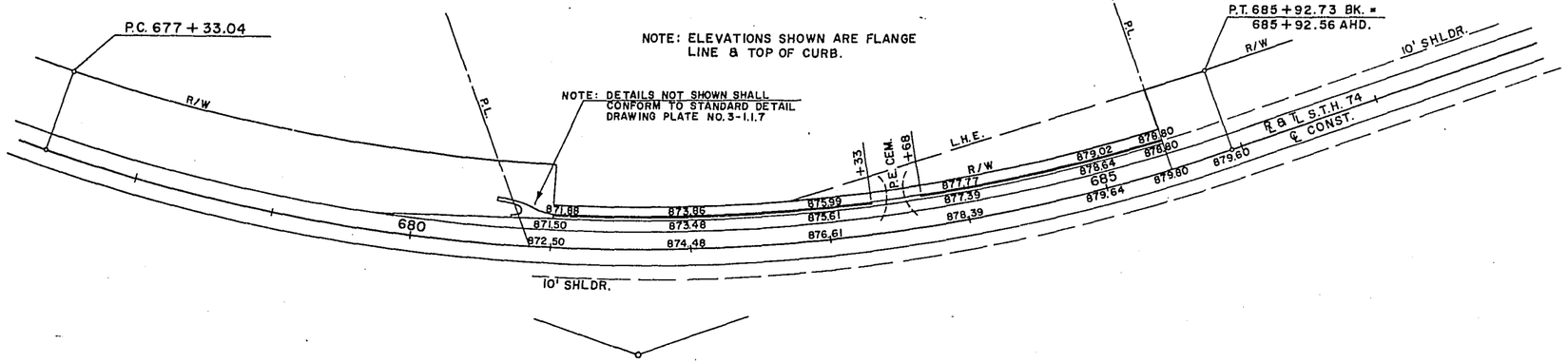
NOTE: DETAILS NOT SHOWN SHALL CONFORM TO STANDARD DETAIL DRAWING PLATE NO. 3-1.1.7

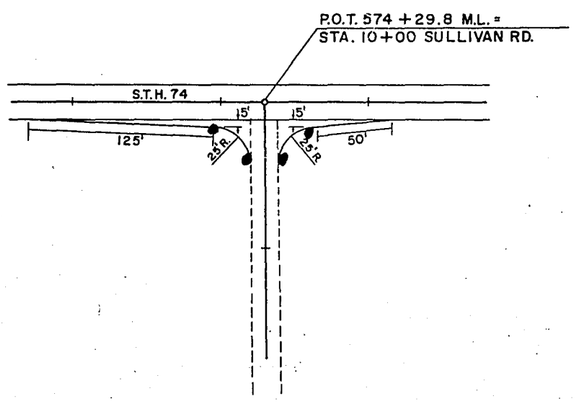
NOTE: DETAILS NOT SHOWN SHALL CONFORM TO STANDARD DETAIL DRAWING PLATE NO. 3-1.1.7

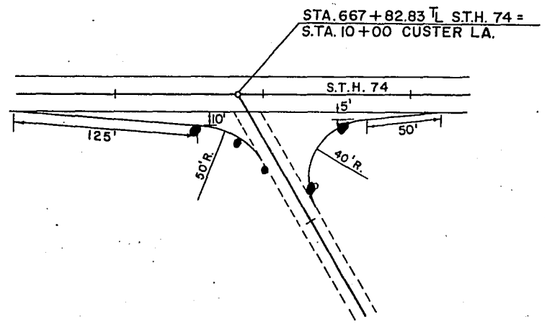
MANHOLES & INLETS						PIPES				
TYPE-COVER		STATION	LOC.-FEET		GRATE	INLET	DISCH.	SIZE	LENGTH	TYPE
M.H.	INLETS		LEFT	RIGHT	ELEV.	ELEV.	ELEV.	INCH	FEET	
	I-B	536+05	3.0		888.09	881.5	880.1	12	34	R.C.P.
I-J		537+25		30.0	886.13	881.1	880.1	24	138	R.C.P.
	I-C	537+69	35.0		888.30	883.7	881.2	12	74	R.C.P.
	I-A	538+50		36.0	888.35	882.0	881.2	18	112	R.C.P.
	I-B	540+50	2.5		889.36	883.5	882.1	15	192	R.C.P.
	I-A	541+00	23.0		888.45	884.0	883.5	15	50	R.C.P.
	I-C	541+00	33.0		888.40	884.6	884.0	12	6	R.C.P.

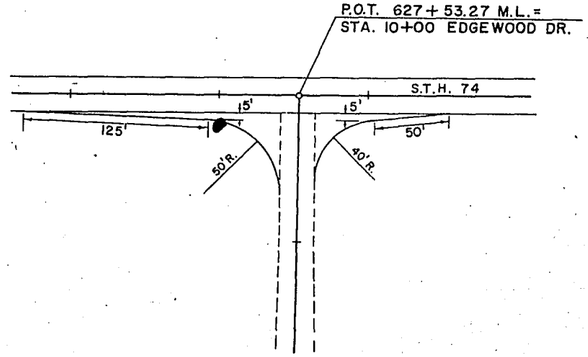
PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71		
PROJECT DESIGNATION T 0168 (9)	2.6	120

CONSTRUCTION DETAILS
FOR
S.T.H. 74 WAUKESHA CO.

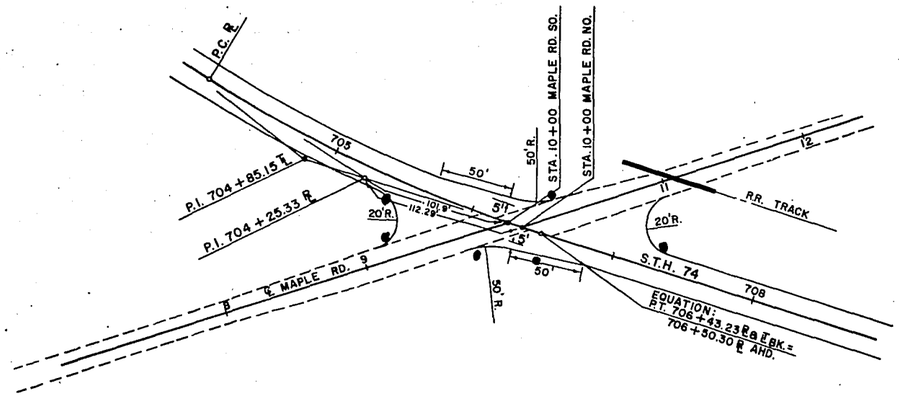


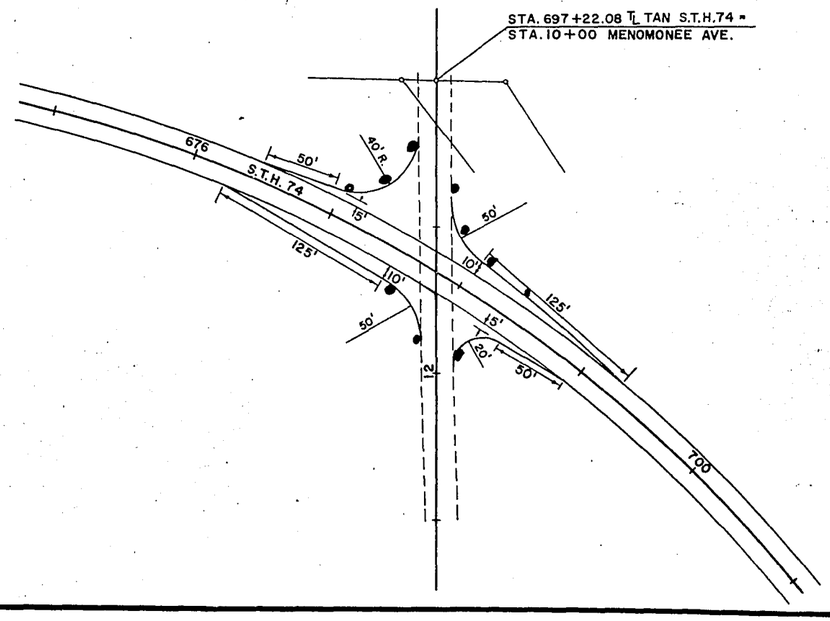






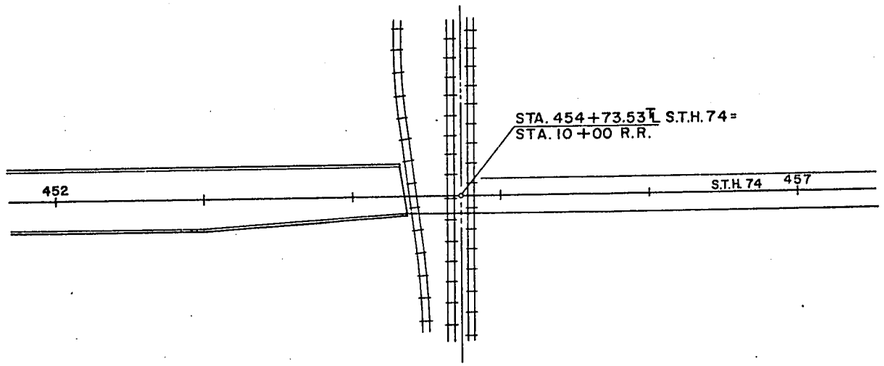
• MARKER POSTS

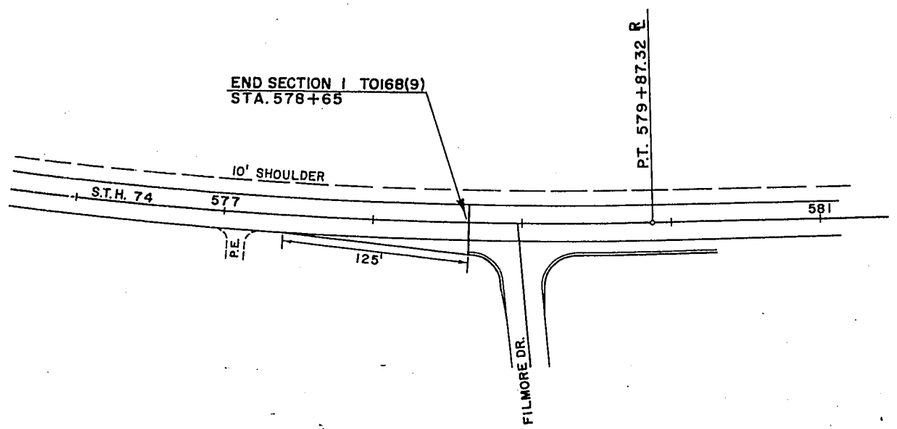


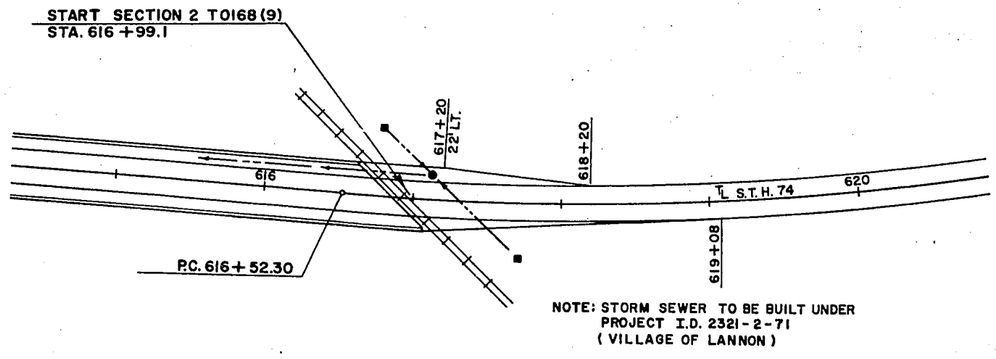


PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71		
~~ADDENDA~~ PROJECT DESIGNATION T 0168 (9)	2.7	120

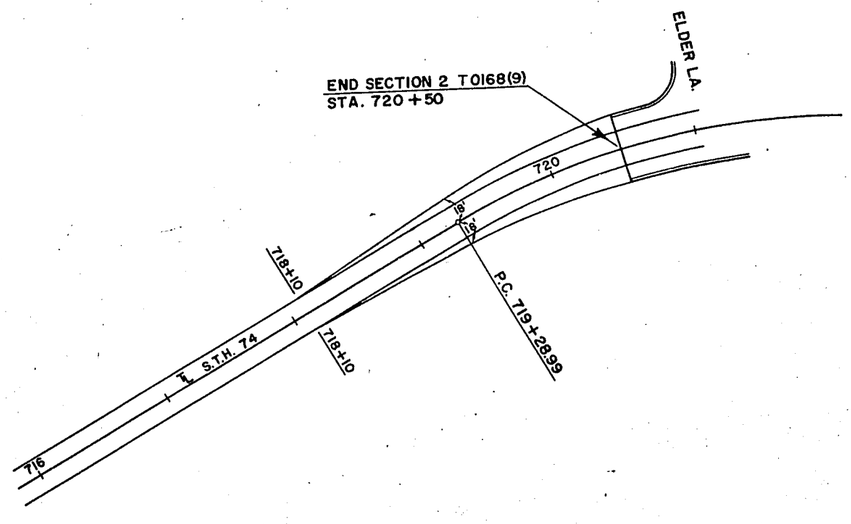
CONSTRUCTION DETAILS
FOR
S.T.H. 74 WAUKESHA CO.



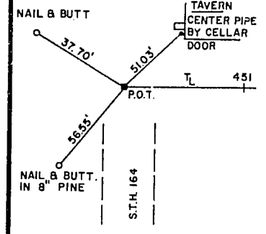




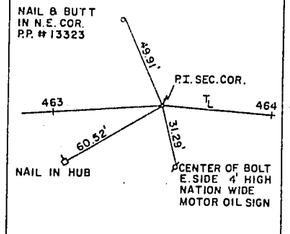
NOTE: STORM SEWER TO BE BUILT UNDER
PROJECT I.D. 2321-2-71
(VILLAGE OF LANNON)



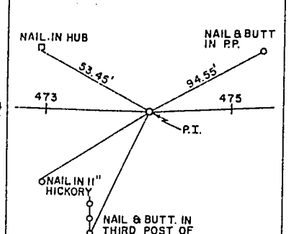
P.O.T. 450 + 22.43



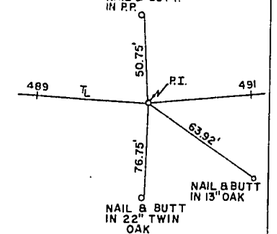
P.O.T. 463 + 34.60 =
N.E. COR. SEC. 26 R19E, T8N



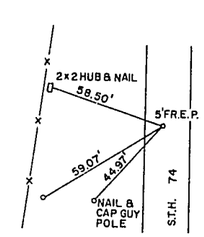
P. I. 474 + 00.31



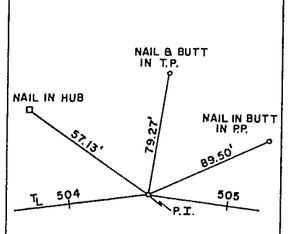
P.I. 489 + 93.61



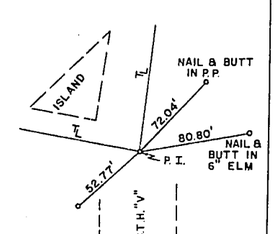
P.I. 503 + 70.42 ℞



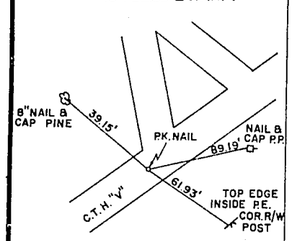
P. I. 504 + 48.86 ℄



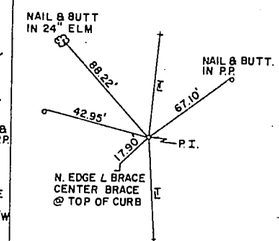
P.I. 516 + 94.39 ℄ BK. =
516 + 14.53 ℄ AH.



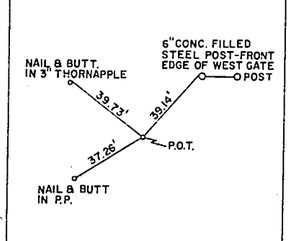
P.I. 516 + 89.60 ℞ BK. =
515 + 96.03 ℞ AH. =
19 + 82.69 ℄ C.T.H. "V"



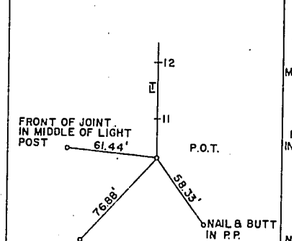
P.I. 524 + 00 ℄



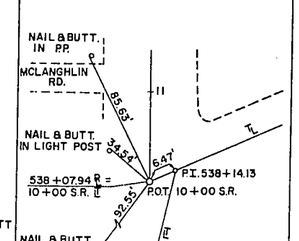
P.O.T. 21 + 94.60
MILL RD.



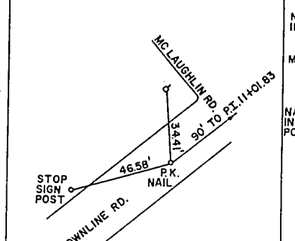
P.O.T. 10 + 00
C.T.H. "V" SOUTH



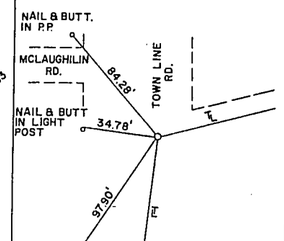
P.O.T. 10 + 00 ℄
C.T.H. "V" NORTH



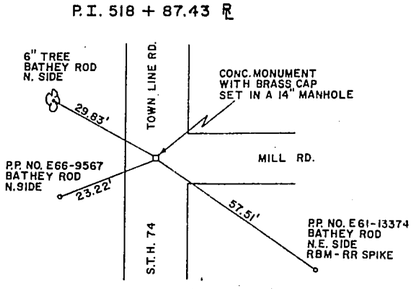
P.I. 538 + 07.94 ℞



P.I. 538 + 14.13 ℄



P.I. 518 + 87.43 ℞



P.I. 11 + 01.83 ℞
C.T.H. "V" NORTH

P.O.T. 557 + 62.50

P.O.T. 570 + 92.79 =
SEC. LINE

P.O.T. 5 + 94.80
SULLIVAN RD.

P.I. 578 + 78.40

P.I. 596 + 21.79

P. I. 605 + 49.85

P.I. 618 + 70.97

P.I. 630 + 00 ℞

P.I. 634 + 02.94 ℄ BK. =
634 + 06.40 ℄ AH.

P.O.T. 636 + 00 ℞

P.I. 641 + 00 ℄

P.I. 652 + 21.20 ℄ =
652 + 17.46 ℞

P.O.T. 666 + 01.36

P. I. 681 + 80.00

P. T. 685 + 92.73 BK. =
685 + 92.56 AH.

P.I. 697 + 32.83 ℞

P.I. 697 + 68.21

P.I. 704 + 85.15 ℄

P.I. 705 + 25.33 ℞

P.I. 721 + 88.35 ℄

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71		
PROJECT DESIGNATION	2.8	120
T0168(9)		

LAND AND CONSTRUCTION TIES FOR S.T.H. 74 WAUKESHA CO.

ESTIMATE OF QUANTITIES

THIS PROJECT IS TO BE EXECUTED UNDER THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE WISCONSIN DIVISION OF HIGHWAYS—EDITION OF 1969, AND SPECIAL PROVISIONS AS ATTACHED TO PROPOSALS.

CONTRACT NO.1 2321-1-71
GRADING, BASE, BITUMINOUS SURFACING & STRUCTURES

B.P.R. REGION	PROJECT	SHEET NO.	TOTAL SHEETS
4	T 0168(9)	3	120

SEC. NO.	STATION TO STATION	NET LENGTH OF CENTER LINE	CLEARING		GRUBBING		REMOVING OLD CULVERTS		REMOVING OLD BRIDGE		REMOVING PAVEMENT	REMOVING BUILDING STA. 706+30 RT.	ABANDONING WELL	STONE PILES AND STONE FENCES	EXCAVATION			GRANULAR BACKFILL	TEST ROLLING	PREP FOUNDATION FOR BITUM. PAVING		GRANULAR SUBBASE COURSE	FINISHING ROADWAY	OBLITERATING OLD ROAD	REMOVING SEPTIC TANK		BASE PATCHING	CRUSHED AGGREGATE BASE COURSE		BITUM. BASE COURSE	BITUM. MAT FOR BASE COURSE	BITUM. MAT. FOR PRIME COAT BASE COURSE	BITUMINOUS CONCRETE PAVEMENT	BITUM. MAT. FOR SURFACE COURSE	CONCRETE PAVEMENT		CONCRETE DRIVEWAY	CONCRETE HEADER	CONCRETE SURFACE DRAINS	CONCRETE CORRUGATED MEDIAN
	ITEM NO.		20101	20102	20104	20105	20330		20351		20401	20418	20444	20504	20503	20505	20801	20901	21001	21101		2120	21301	21401	20417		30801	30404	30	30601	30602	4020	40701	40702	409	409	40931	40933	40934	62001
	UNIT	LIN. FT.	STA.	IN. DIA.	STA.	IN. DIA.	EACH		L.S.		S.Y.	L.S.	EACH	C.Y.	C.Y.	C.Y.	C.Y.	C.Y.	L.S.	L.S.			L.S.	STA.	EACH		S.Y.	TON		TON	TON	S.Y.	TON	TON	S.Y.	S.Y.	S.Y.	S.Y.	C.Y.	S.F.
A	453+82.9 – 463+34.6	851.70	1	5	1	17									1426																								
B	463+34.6 – 537+00	7,458.97	13	338	13	421	3				4060				22,515			211									150	20,620		7600	345		1730	104				5	132.3
C	537+00 – 578+65 & 616+99.1 – 690+60	11,522.35	76	337	76	473	6				5330			406	33,045	700		221		1			1				136	35,350		11,510	520		2640	160				15	244.7
D	690+60 – 720+50	2,952.99	9	40	9	154	2				1700	1	1		14,012	3500		65						6	1		24	11,110		2925	135		765	46					
	TOTAL	22,786.01	99	720	99	1065	11				11,090	1	1	406	71,000	4200		497		1			1	6	1		310	70,000		22,800	1035		5310	321				20	377

BRIDGES (STRUCTURES OVER 20 FT. SPAN)

SEC. NO.	STRUCTURE NO.	EXCAVATION FOR STRUCTURES	GRANULAR BACKFILL	CONCRETE MASONRY	PRESTRESSED GIRDER		BAR STEEL REINF	STRUCTURAL CARBON STEEL	REMOVE OLD BRIDGE STA. 702+56	LUBRICATED BRONZE PLATES	SHEET ZINC	BEARING PADS	TR'T'D LUMBER AND TIMBER	UNTR'D TIMBER TEST PILING	UNTREATED TIMBER PILING		TREATED TIMBER PILING		CAST IN PLACE CONC TEST PILING	CAST-IN-PLACE CONCRETE PILING		RAILING	FLOOR DRAINS		DOWNSPOUT 6"	SLOPE PAVING CONCRETE	RIP-RAP
															DELIVERED	DRIVEN	DELIVERED	DRIVEN		DELIVERED	DRIVEN		TYPE	TYPE			
		20601	20901	50201	503	503	50501	50601	20351 702+56	50614	50616	5062	50702	50801	50810	50813	50816	50820	51001	51010	51015	513	5140	5140	51426	60404	6060
		C.Y.	C.Y.	C.Y.	L.F.	L.F.	LB.	LB.	L.S.	LB.	LB.	S.F.	M.B.M.	L.S.	L.F.	L.F.	L.F.	L.F.	L.S.	L.F.	L.F.	L.F.	EACH	EACH	L.F.	S.F.	C.Y.
B																											
C																											
D	B-67-143	129		148			22,570	770	1																		
		129		148			22,570	770	1																		

CULVERTS (STRUCTURES 20 FT. SPAN & ~~UNDER~~) ADD ITEMS

SEC. NO.	STRUCTURE NO.	REMOVE OLD CULV'T STA.	EXCAVATION FOR STRUCTURES	GRANULAR BACKFILL	CONCRETE MASONRY	BAR STEEL REINF	STRUCTURAL CARBON STEEL	TR'T'D LUMBER AND TIMBER	UNTR'D TIMBER TEST PILING	TREATED TIMBER PILING		FLOOR DRAINS TYPE	RIP-RAP	TWIN 72" AP x 54" CMPA	RE-MOVING BUILDING STATION 516 to RT	OVER-HAUL
										DELIVERED	DRIVEN					
		20301	20502	20901	50401	50502	50601	50702	50801	50816	50820	5140	6060	9000	2049	20511
		L.S.	C.Y.	C.Y.	C.Y.	LB.	LB.	M.B.M.	L.S.	L.F.	L.F.	EACH	C.Y.	L.S.	L.S.	STA.Yd.
B	C-67-38		430	40	131	22,010	730									
C	C-67-39		460	40	96.6	13,970										
			890	80	227.6	35,980	730							1	1	300,000

SEC. NO.	CULVERT PIPE CLASS III						CORRUGATED METAL PIPE ARCH						APRON ENDWALLS FOR CULVERT PIPE					
	18 INCH	24 INCH	30 INCH	36 INCH	42 INCH	48 INCH		25X16 INCH	36X22 INCH	43X27 INCH	50X31 INCH	58X36 INCH	18 INCH	24 INCH	30 INCH	36 INCH	42 INCH	
	52003	52005	52007	52009	52010	52011	52	52137	52139	52140	52141	52142	52061	52063	52065	52067	52068	52
	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	EACH	EACH	EACH	EACH	EACH	EACH
A	96												6					
B	512	88									94	220	29	2				
C	966		156		74	144		186			178		60		10		2	
D	74	52	54	60					68	114			4	2	2	2		
	1648	140	210	60	74	144		186	68	114	272	220	99	4	12	2	2	

SEC. NO.	APRON ENDWALLS FOR PIPE ARCH						METAL APRON ENDWALLS FOR PIPE ARCH						CONCRETE CURB AND GUTTER 30-INCH TYPE "D"	CONCRETE CURB AND GUTTER 30-INCH TYPE "J"	CONCRETE SIDEWALK 5 INCH	RIPRAP	STORM SEWER REINFORCED CONCRETE PIPE CLASS III						MANHOLES TYPE I	INLETS TYPE I	Mult. C.H. 6270?	MANHOLE COVERS TYPE J	INLET COVERS TYPE A	INLET COVERS TYPE B	INLET COVERS TYPE C	METAL CONDUIT 3 INCH	FIELD OFFICE TYPE B	FIELD LABORATORY	PIPE UNDER DRAIN 6 INCH	STEEL PLATE BEAM GUARD CLASS A	ANCHORAGES FOR STEEL PLATE BEAM GUARD	MAINTENANCE AND REPAIR OF HAUL ROADS	LANDMARK REFERENCE MONUMENTS	MARKER POSTS	SALVAGED TOPSOIL	FERTILIZER	SEEDING	SODDING	EROSION MAT
	25X16 INCH	36X22 INCH	43X27 INCH	50X31 INCH	58X36 INCH		25X16 INCH	36X22 INCH	43X27 INCH	50X31 INCH	58X36 INCH						12 INCH	15 INCH	18 INCH	24 INCH	30 INCH																				
	52163	52165	52166	52167	52168	52	52163	52165	52166	52167	52168		60133	60151	60205	60601	60825	60826	60827	60829	60831	6110	61111	61121		61151	61161	61162	61163	61303	64202	64210	61201	61408	61406	61801	62101	61421	62505	62901	63002	63101	62802
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	L.F.	L.F.	S.F.	C.Y.	L.F.	L.F.	L.F.	L.F.	L.F.	EACH	EACH	EACH	S.Y.	EACH	EACH	EACH	EACH	L.F.	L.S.	L.S.	L.F.	L.F.	EACH	L.S.	EACH	EACH	S.Y.	CWT	L.D.	S.Y.	S.Y.
A																									S.Y.													2600	3	54		
B				2	4								1515	178	510		58			900	302		4	5		4	4	1		154			500	848	8	1	12	18	32,100	39	699	33	33
C													2000	135	333	13	80	242	112	138			1	5		1	2	1	2	169	1	1	2800	310	2			28	39,600	46	833	4266	4266
D							8	2	2	4	4		3515	313	843	13	138	242	112	1038	302		5	10	1500	5	6	2	2	323	1	1	3300	1596	14	1	12	78	90,000	105	1890	4299	4299

DETAIL SUMMARY SHEET OF MISCELLANEOUS QUANTITIES

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	3A	120
FEDERAL PROJECT DESIGNATION: TO168(9)		

STATION	CLEARING IN. DIA.	CLEARING STA.	GRUBBING IN. DIA.	GRUBBING STA.
454+00 - 457+00	X		X	
457+00 - 458+00	5		17	
458+00 - 459+00		1		1
459+00 - 464+00	X		X	
464+00 - 471+00		7		7
471+00 - 472+00	12		24	
472+00 - 473+00	X		X	
473+00 - 474+00	10		10	
474+00 - 476+00	X		X	
476+00 - 477+00	13		13	
477+00 - 484+00	X		X	
484+00 - 485+00	12		12	
485+00 - 486+00		1		1
486+00 - 487+00	36		36	
487+00 - 490+00	X		X	
490+00 - 491+00	18		18	
491+00 - 492+00	48		48	
492+00 - 493+00	X		X	
493+00 - 494+00	40		40	
494+00 - 498+00	X		X	
498+00 - 499+00	12		12	
499+00 - 500+00	14		46	
500+00 - 501+00	X		X	
501+00 - 502+00	X		15	
502+00 - 515+00	X		X	
515+00 - 516+00	16		16	
516+00 - 517+00	40		40	
517+00 - 519+00	X		X	
519+00 - 520+00	8		8	
520+00 - 522+00		2		2
522+00 - 523+00	X		X	
523+00 - 524+00	12		12	
524+00 - 526+00		2		2
526+00 - 529+00	X		X	
529+00 - 530+00		1		1
530+00 - 531+00	X		24	
531+00 - 532+00	11		11	
532+00 - 533+00	24		24	
533+00 - 534+00	4		4	
534+00 - 535+00	8		8	
535+00 - 538+00	X		X	
538+00 - 544+00		6		6
544+00 - 545+00	X		X	
545+00 - 555+00		10		10
555+00 - 556+00	39		39	
556+00 - 557+00	X		X	
557+00 - 558+00	18		18	
558+00 - 559+00	16		16	
559+00 - 560+00	X		X	
560+00 - 561+00	25		25	
561+00 - 562+00	13		13	
562+00 - 563+00		1		1
563+00 - 564+00	30		30	
564+00 - 565+00	X		X	
565+00 - 566+00		1		1
566+00 - 567+00	14		37	
567+00 - 569+00		2		2
569+00 - 570+00	X		22	
570+00 - 575+00		5		5
575+00 - 576+00	X		X	
576+00 - 577+00		1		1
577+00 - 578+00	X		45	
578+00 - 617+00	Project I.D. 2321-2-71			
617+00 - 618+00	X		X	
618+00 - 619+00		1		1
619+00 - 620+00	30		30	
620+00 - 621+00	X		X	
621+00 - 622+00	12		12	
622+00 - 626+00		4		4
626+00 - 629+00	X		X	
629+00 - 637+00		8		8
637+00 - 638+00	12		12	
638+00 - 640+00	X		X	
640+00 - 641+00	14		14	
641+00 - 642+00		1		1
642+00 - 643+00	X		X	
643+00 - 644+00	10		38	
644+00 - 645+00	10		10	
645+00 - 646+00	43		43	
646+00 - 647+00	25		25	
647+00 - 661+00		14		14
661+00 - 662+00	X		18	
662+00 - 684+00		22		22
684+00 - 685+00	14		14	
685+00 - 686+00	12		12	
686+00 - 693+00	X		X	
693+00 - 694+00	X		14	
694+00 - 695+00	X		X	
695+00 - 696+00	30		30	
696+00 - 697+00	X		36	
697+00 - 701+00	X		X	
701+00 - 702+00	X		40	
702+00 - 705+00		3		3
705+00 - 706+00	X		X	
706+00 - 709+00		3		3
709+00 - 710+00	4		4	
710+00 - 711+00	6		6	
711+00 - 716+00	X		X	
716+00 - 717+00	X		24	
717+00 - 718+00	X		X	
718+00 - 721+00		3		3
CTH "V" South				
15+00 - 18+00	X		X	
Mill Road				
10+00 - 11+00	X		X	
CTH "V" North				
10+00 - 12+50	X		X	
Sullivan Road				
9+00 - 10+00	X		X	
Edgewood Drive				
9+00 - 10+00	X		X	
Custer Lane				
10+00 - 12+00	X		X	
Menomonee Ave.				
10+00 - 12+50	X		X	
Maple Road				
8+00 - 11+00	X		X	

NOTE: X indicates no clearing or grubbing is expected in this area. If there is, it will be paid for by the unit checked.

REMOVING PAVEMENT

STATION - STATION	SQ. YD.
502+00 - 519+30	3460
534+00 - 543+50	1900
576+00 - 578+65	530
630+00 - 642+00	2400
662+75 - 668+25	1100
693+00 - 694+50	300
700+50 - 704+00	700
717+00 - 720+50	700

STEEL PLATE BEAM GUARD - CLASS A

LOCATION	LIN. FT.	ANCHORAGES
516+05 - 518+10 Rt.	205	2
516+78 - 518+83 Lt.	205	2
C-67-38 Lt. & Rt.	438	4
620+80 - 623+90 Lt.	310	2
B-67-143 Lt. & Rt.	438	4

LANDMARK REFERENCE MONUMENTS

LOCATION	DESCRIPTION	NO.
463+34.60	S. W. 1/4 Cor. 24-8-19	4
489+91.81	S. 1/4 Cor. 24-8-19	4
518+87.43	S.E. 1/4 Cor. 24-8-19	4

MARKER POSTS

STATION	LOCATION	EACH
463+34.60 - 537+00	"V" South & STH 74	8
	Mill Rd.	4
	Islands "V" S. & STH 74	6
537+00 - 578+65	Sullivan Rd.	6
& 616+99.1 - 690+60	Islands "V" North	6
	Edgewood Drive	8
	Custer Lane	8
690+60 - 720+50	Menomonee Ave.	16
	Maple Rd.	16

REMOVING SEPTIC TANKS

STATION	LOCATION	PARCEL	EACH
706+30	Rt.	84	1

BITUMINOUS CONCRETE PAVEMENT

BITUMINOUS BASE COURSE

GRAVEL OR CRUSHED STONE BASE COURSE

LOCATION	TONS BASE	TONS SHL'D.	TONS	TONS
454+83 - 463+34.60 Incl. 3 P.E.'s @ 40	2360	560	765	175
463+34.60 - 537+00 Incl. Mill Rd. CTH "V" South 21 P.E.'s @ 40	17900	2720	7600	1730
537+00 - 578+65 & 616+99.1 - 690+60 Incl. CTH "V" N. Sullivan Rd. Edgewood Dr. Custer La. 51 P.E.'s @ 40	30100	5250	11510	2640
690+60 - 720+50 Incl. Menomonee Rd. Maple Rd. 2 P.E.'s @ 40	9120	1990	2925	765

CONCRETE CURB & GUTTER

STATION - STATION	LOCATION	TYPE "J" LIN. FT.	TYPE "D" LIN. FT.
516+50 BK (Island)	Lt.	95.0	
516+50 BK (Island)	Rt.	83.0	
519+00 - 520+50	Rt.		175.0
526+50 - 537+00	Rt.		1050.0
534+10 - 537+00	Lt.		290.0
537+00 - 543+50	Rt.		650.0
537+00 - 545+85	Lt.		905.0
CTH "V" North			
10+30 (Island)	Lt.	70.0	
10+30 (Island)	Rt.	65.0	
681+00 - 685+45	Lt.		445.0

REMOVING OLD CULVERTS

STATION	LOCATION	SIZE	EACH
506+66	STH 74	3' x 2' x 28'	1
516+52 AHD	STH 74	3' x 3' x 96'	1
523+92	STH 74	10' x 6' x 32'	1
557+64	STH 74	4' x 2' x 28'	1
571+56	STH 74	6' x 4' x 26'	1
629+92	STH 74	3' x 2' x 28'	1
647+25	STH 74	5' x 4' x 28'	1
660+49	STH 74	3' x 3' x 28'	1
672+96	STH 74	4' x 3' x 28'	1
697+30	STH 74	3' x 2' x 36'	1
715+58	STH 74	2' x 2' x 30'	1

PIPE UNDERDRAIN, 6-INCH

STATION	LIN. FT.
520+00 - 525+00	500
553+00 - 578+65	2000
639+00 - 643+00 Lt.	600
640+00 - 642+00 Rt.	200

ABANDONING WELLS

STATION	LOCATION	PARCEL	EACH
706+30	Rt.	84	1

OBLITERATING OLD ROAD

STATION - STATION	LOCATION	STA.
694+50 - 700+50	Lt.	6

STONE PILES & STONE FENCE

STATION - STATION	LOCATION	C. Y.
539+86 - 541+64	Rt.	182
542+13 - 544+13	Rt.	21
544+49 - 548+53	Rt.	63
548+93 - 556+00	Rt.	94
565+67 - 565+82	Lt.	2
566+00 - 567+00	Lt.	9
568+17 - 569+24	Lt.	11
666+06 - 667+70	Rt.	24

PIPE CULVERTS

STATION	DIAMETER INCHES	LENGTH LIN. FT.	TYPE	CLASS	APRON ENDWALLS EACH	RIP RAP	GRANULAR BACKFILL C. Y.
Cross Drain Pipe							
507+63	50" x 31"	94	CMPA		2		43
516+35 AHD	18"	58	CP	III	1		11
516+52 AHD	58" x 36"	100	CMPA		2		60
517+44	58" x 36"	120	CMPA		2		72
557+64	50" x 31"	58	CMPA		2		26
647+25	2 @ 48"	72	CP	III		8	109
660+49	42"	74	CP	III	2		38
672+96	2 @ 50" x 31"	60	CMPA			5	48
705+50	43" x 27"	114	CMPA		2		44
715+58	36" x 22"	68	CMPA		2		21
Major Side Roads & P. E.							
CTH "V" South							
19+50	24"	88	CP	III	2		25
2-P.E.'s @ 28'	18"	56	CP	III	4		
CTH "V" North							
1-P.E. @ 36'	18"	36	CP	III	2		
Minor Side Roads, C.E. & P.E. Pipe							
455+54 Rt.	18"	40	CP	III	2		
463+58 Lt.	18"	44	CP	III	2		
490+04 Rt.	18"	40	CP	III	2		
500+00 Rt.	18"	40	CP	III	2		
514+75 Rt.	18"	42	CP	III	2		
569+82 Lt.	18"	42	CP	III	2		
571+33 Lt.	30"	28	CP	III	2		
571+64 Lt.	30"	28	CP	III	2		
572+03 Lt.	30"	30	CP	III	2		
573+23 Lt.	30"	30	CP	III	2		
576+96 Lt.	30"	40	CP	III	2		
620+00 Rt.	25" x 16"	40	CMPA		2		
623+96 Rt.	25" x 16"	40	CMPA		2		
625+87 Rt.	25" x 16"	46	CMPA		2		
24 P.E.'s @ 28'	18"	672	CP	III	48		
6 P.E.'s @ 32'	18"	192	CP	III	12		
6 P.E.'s @ 36'	18"	216	CP	III	12		
3 P.E.'s @ 42'	18"	126	CP	III	6		
Sullivan Road							
9+53 ℄	18"	44	CP	III	2		
Edgewood Drive							
10+62 ℄	25" x 16"	60	CMPA		2		
Menomonee Avenue							
10+79 ℄	36"	60	CP	III	2		
Maple Road							
9+30 ℄	24"	52	CP	III	2		
10+65 ℄	30"	54	CP	III	2		

EROSION MAT

STATION - STATION	LOCATION	WIDTH	SQ. YD.
623+00 - 629+00	Ditch Rt.	12'	800
635+00 - 643+00	Ditch Rt.	12'	1067
635+00 - 642+00	Ditch Lt.	12'	933
650+00 - 655+00	Ditch Lt. & Rt.	12'	1333
578+15 - 578+65	Ditch Lt.	6'	33
4 @ 50' Concrete Surface Drains		6'	133

SODDING

STATION - STATION	LOCATION	SQ. YD.
623+00 - 629+00	Ditch Rt.	800
635+00 - 643+00	Ditch Rt.	1067
635+00 - 642+00	Ditch Lt.	933
650+00 - 655+00	Ditch Lt. & Rt.	1333
578+15 - 578+65	Ditch Lt.	33
4 @ 50' Concrete Surface Drains		133

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	5	120
~~SEDERAL~~ PROJECT DESIGNATION T0168 (9)		

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
1	453+50	SE COR. OF LUMBER CO. YARD OFFICE, TOP STEP	914.75
2		R.R. SPIKE 36" OAK	906.93
1A		SPIKE IN 42" OAK	906.88
2A	471+75	R.R. SPIKE IN P.P. 8' RT. EG1-13317	899.14



NET LENGTH OF CENTERLINE STA. 454+82.9 TO STA. 463+34.6 = 851.7 LIN. FT.

NET LENGTH OF CENTERLINE STA. 463+34.6 TO STA. 478+00 = 1465.4 LIN. FT.

BEGIN SECTION 1 PROJECT T0168(9) / 2321-1-71
STA. 454+82.9

YARDAGE SUMMARY
STA. 454+89.9 TO STA. 463+34.6

UNCLASSIFIED	= 1420 C.Y.
FILL	= 124 C.Y.
SHRINKAGE	= ± 30 %
WASTE	= 1268 C.Y.

PLAN PROFILE

920
910
900
890

PROFILE FINISHED GRADE ON ℄
PROFILE ON PRESENT GRADE ON ℄
ELEVATIONS FINISHED GRADED ON ℄

913.50 913.50 912.82 912.11 911.39 910.67 909.70 908.84 908.23 907.35 906.59 905.78 904.88 904.17 903.46 902.80 902.06 901.27 900.60 899.81 898.99 898.27

450 1 2 3 4 455 6 7 8 9 460 1 2 3 4 465 6 7 8 9 470 1 2 3 4 475 6

BRUNING NO 42 161

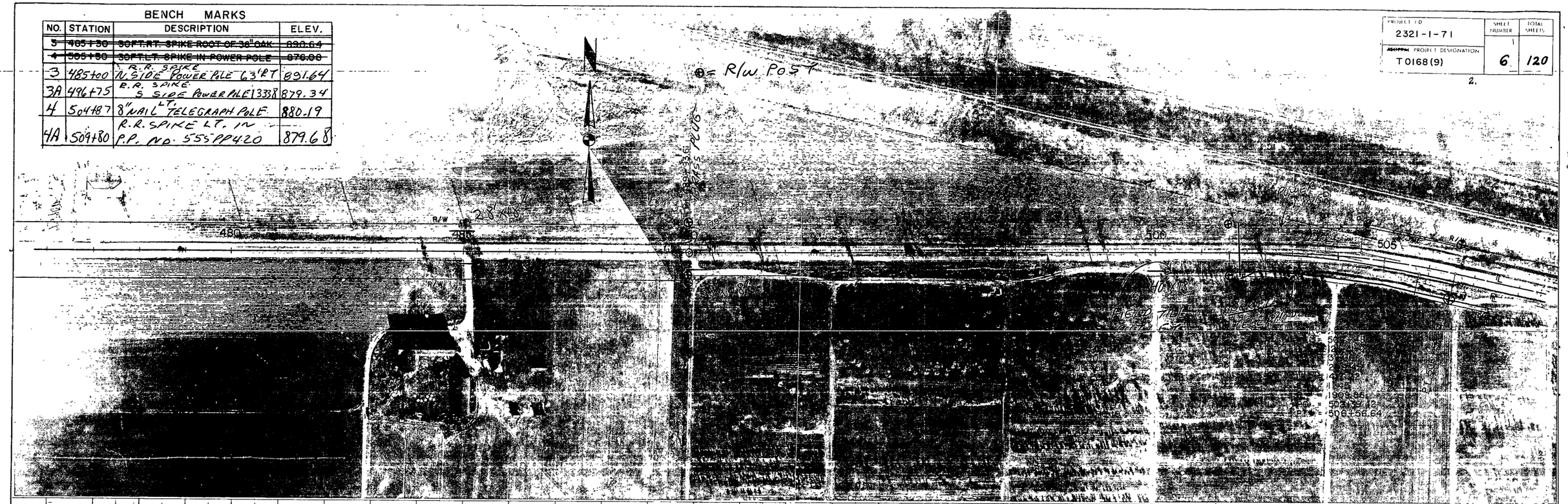
PLATE 1—PLAN—PROFILE O F R B R E
MADE AND PRINTED IN U.S.A.
CHARLES BRU

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	1	
~~STATE~~ PROJECT DESIGNATION: T0168(9)	6	120

2.

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
~~3~~	~~485+50~~	~~30FT.RT. SPIKE ROOT OF 36" OAK~~	~~890.64~~
~~4~~	~~505+50~~	~~30FT.LT. SPIKE IN POWER POLE~~	~~876.00~~
3	485+00	R.R. SPIKE N. SIDE POWER POLE 63'RT	891.64
3A	496+75	R.R. SPIKE S SIDE POWER POLE 13338	879.34
4	504+87	8" NAIL LT. TELEGRAPH POLE	880.19
4A	509+80	R.R. SPIKE LT. IN P.P. NO. 555PP420	879.68



NET LENGTH OF CENTERLINE STA 478+00 TO STA 507+00 = 2,900 LIN. FT.

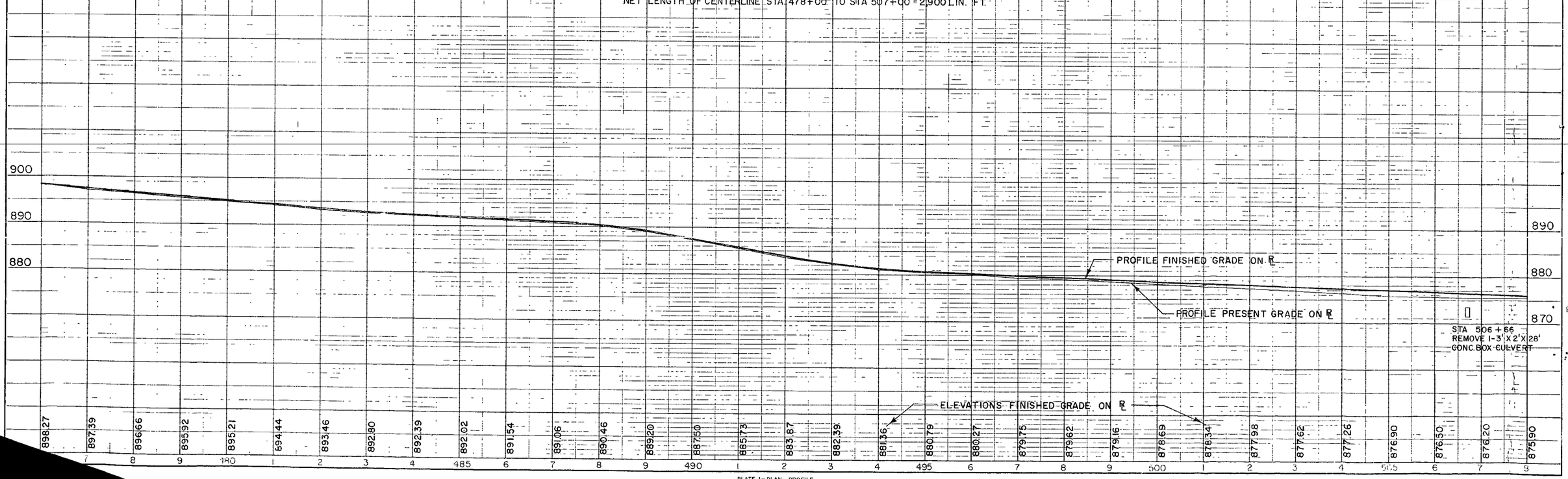


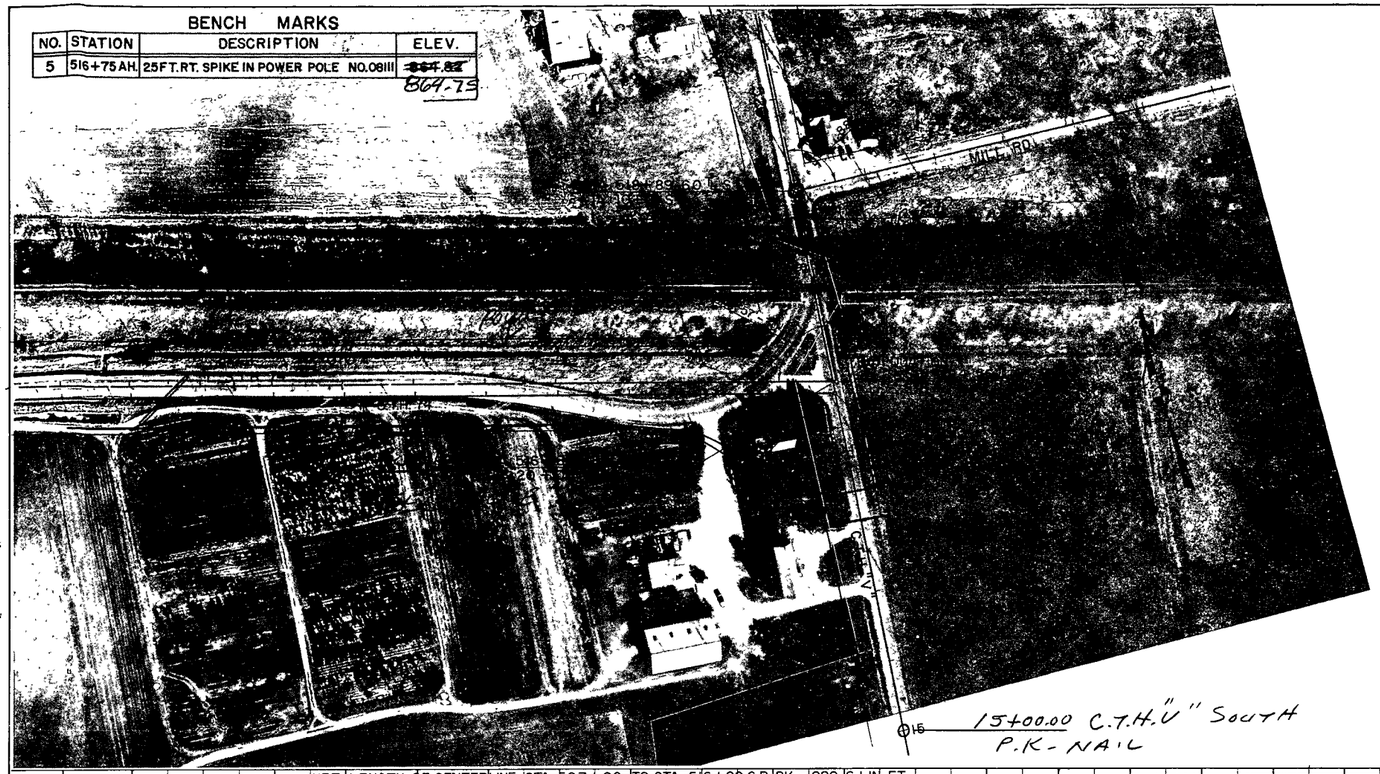
PLATE 1—PLAN—PROFILE
MADE AND PRINTED ON U.S.A.
CHARLES BRUNING COMPANY, INC.

PROJECT I D	SHEET NUMBER	TOTAL SHEETS
2321-1-71		
~~FEDERAL~~ PROJECT DESIGNATION	7	120
T0168(9)		

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
5	516+75 AH.	25 FT. RT. SPIKE IN POWER POLE NO. 08111	~~884.82~~ 869.75

D = R/W POST



NET LENGTH OF CENTERLINE STA 507+00 TO STA 516+89.6 R BK = 989.6 LIN. FT

880
870
860

PROFILE FINISHED GRADE ON ℄

PROFILE EXISTING GRADE ON ℄

STA. 507+63 ~~L~~ R 102
1-50" X 31" X 9" C.M.P.A. REQ'D.
INLET - ~~871.5~~ 870.0
DISCH. - ~~870.0~~ 870.0
SKEW 45° L.H.F.

ELEVATIONS FINISHED GRADE ON ℄

876.20	875.90	875.60	875.30	875.00	873.90	871.70	869.10	866.30	865.00	864.90
876.50										

6 7 8 9 510 1 2 3 4 515 6

PLATE 1—PLAN—PROFILE G P R A R E
MADE AND PRINTED IN U.S.A.
CHARLES BR

BRUNING SO 42 161

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	8	120
PROJECT DESIGNATION T0168 (9)		

4

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
1	524+99	SET R.R. KEEL MARK N.E. CORNER BASE	897.99
2	525+55	R.R. SPIKE IN LIGHT POLE	892.46
3	526+10	R.R. SPIKE IN SIDE FACE OF POLE	870.39
4	528+29	R.R. SPIKE LIGHT POLE 0.8FT. ON 60FT. CHORD	874.47

47' S.W. OF P.I. ON AH. TAN. EXT.
STA. 10+00 S.R.

℄ = R/W POST

C.T.H. "V"
P.I. 516+89.60 R. BK.
STA. 96.03 R. AHD.

R.S.T.H. 74
L.S.T.H. 74

P.C. 536+97.87
P.I. 538+14.00
P.T. 539+84.47 R
P.I. 539+90.08 T

CURVE DATA
P.I. = STA. 538+14.00
I = 49°25'
Δ = 49°25'
D = 38°

NET LENGTH OF CENTERLINE STA. 515+96.03 R AHD. TO STA. 537+00 = 2103.97 LIN. FT.

STA. 19+73 C.T.H. "V" SOUTH
REMOVE 1-12" X 66' C.M.P.

STA 516+62 R AHD.
REMOVE 1-3' X 3' X 96' CONC. BOX CULVERT
WITH A 30" X 8' C.M.P. EXTENSION
1-58" X 36" X ~~166'~~ C.M.P.A. REQ'D 86'
INLET ~~859.0~~ LT. DISCH. ~~859.0~~ LT.
SKEW = 11° L.H.F.
INLET 859.30 LT. DISCH 857.80 RT.

19+82.69 C.T.H. "V" AHD.
515+96.03

STA 520+00 TO 525+00
500' 6" PIPE UNDERDRAIN REQ'D.

YARDAGE SUMMARY
STA. 463+34.6 TO STA 537+00

UNCLASSIFIED	=	22,515 C.Y.
FILL	=	8,273 C.Y.
SHRINKAGE	=	± 30%
WASTE	=	14,361 C.Y.

℄ C.T.H. "V" NORTH

ROCK LT.

ROCK

PROFILE FINISHED GRADE ON ℄

℄ MILL RD.

DISCH. 30" R.C.C.P.

ROCK

PROFILE EXISTING GRADE ON ℄

STA. 523+74.50 ~~67~~-38 REQ'D.
2 CELL 8'-6' CONC. BOX CULVERT
SEE DRAWINGS X42463
TO X42466

STA. 517+52 R AHD.
REMOVE 1-30" X 90' C.M.P.

STA 517+44 R ~~130'~~
1-58" X 36" X ~~166'~~ C.M.P.A. REQ'D.
SKEW 60° L.H.F.
INLET 860.0 ±
DISCH 859.0 ±

STA 517+86 R 16' LT.
REMOVE 1-24" X 130' C.M.P.

STA. 523+92
REMOVE 10' X 6' X 32' CONC. BOX CULVERT

℄ S.T.H. 74

PROFILE PRESENT GRADE ON ℄

PROFILE MILL ROAD

℄ S.T.H. 74

PROFILE PRESENT GRADE ON ℄

PROFILE FINISHED GRADE ON ℄

PROFILE C.T.H. "V" SOUTH

PROFILE C.T.H. "V" NORTH

STA. 19+50 C.T.H. "V" SOUTH
1-24" X 88' CL. III C.P. REQ'D.
INLET ~~860.7~~ LT. 860.3
DISCH ~~859.2~~ RT. 859.0
SKEW 30° R.H.F.

ELEVATIONS FINISHED GRADE ON ℄

INTERSECTION

| | | |

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71		
FEDERAL PROJECT DESIGNATION T 0168(9)	9	120

5.

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
~~-8~~	~~538+88~~	40' I. RT. SPIKE IN T. POLE	~~877.33~~
7B	550+50	R.R. SPIKE T.P. E63T4501	877.86
8A	569+60	R.R. SPIKE IN S. SIDE Q/V AT	874.07

Ø = R/w POST

6.42' S.W. OF P.I. ON AH. TAN. EXT.
STA. 10+00 C.T.H. 'V'

P.C. 536+00.54 R
CHISEL X IN CONC. MEDIAN

P.I. 538+10.94
P.I. 538+18.18
P.I. 538+14.07
P.T. 539+64.47
P.T. 539+96.83

C.T.H. 'V' R/W

R.S.T.H. 74
L.S.T.H. 74

536+07.53 T.

233°-33'-25"
55°-45'-15"
R.C. 0+07.65

C = DATA
R = 538+14.07
Δ = 233°-33'-25"
D = 95.54'

BURIED GAS LINE

P.O.T. 550+59.58
P.R.N.A.C.

36"Ø

540

550

555

560

565

18"x24"

62.50

28"x18"

PIPE UNDERDRAIN, 6 INCH

HIGH POINT

POWER LINE

NET LENGTH OF CENTERLINE STA. 537+00 TO STA. 567+00 = 3000 LIN. FT.

YARDAGE SUMMARY
STA. 537+00 TO STA. 578+65

UNCLASSIFIED	= 11,726 C.Y.
FILL	2,013 C.Y.
SHRINKAGE	= ± 30 %
WASTE	9,109 C.Y.

PROFILE FINISHED GRADE ON ℄

PROFILE PRESENT GRADE ON ℄

ROCK

ELEVATIONS FINISHED GRADE ON ℄

| | | |

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
9	576+80	100FT. RT. N.W. COR. TOP STEP OF HOUSE HOUSE NO. N 70 W 21049	880.14

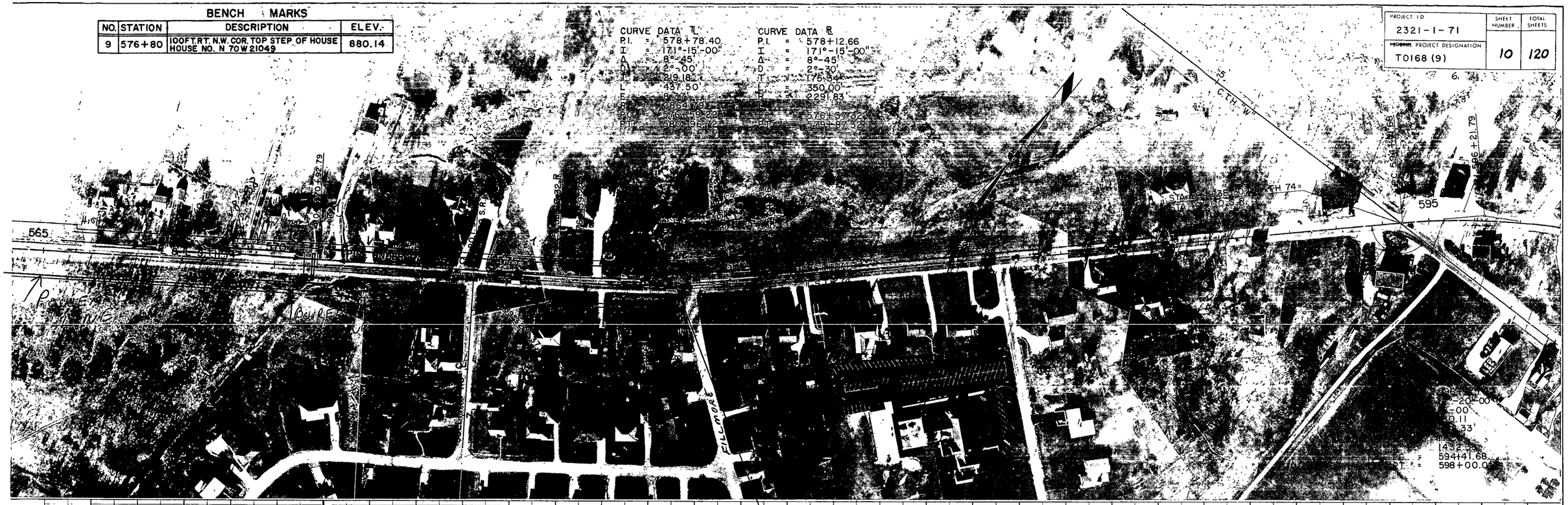
PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71		
PROJECT DESIGNATION T0168 (9)	10	120

CURVE DATA ℄

P.I. = 578+78.40
I = 171°-15'-00"
Δ = 8°-45'
D = 2°-00'
T = 219.18'
L = 437.50'
E = 8.34'
R = 2864.79'
P.C. = 576+59.22
P.T. = 580+96.72

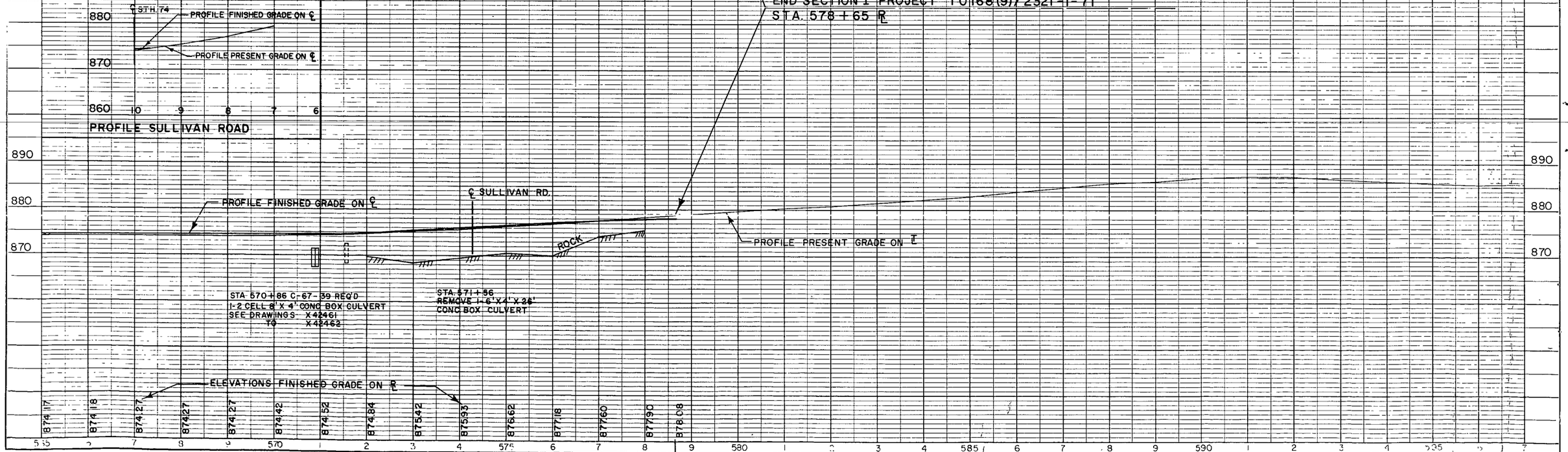
CURVE DATA ℞

P.I. = 578+12.66
I = 171°-15'-00"
Δ = 8°-45'
D = 2°-30'
T = 175.34'
L = 350.00'
E = 5.34'
R = 2291.83'
P.C. = 576+37.32
P.T. = 579+87.32



NET LENGTH OF CENTERLINE STA. 567 + 00 TO STA. 578 + 65 = 1165 LIN. FT.

END SECTION 1 PROJECT T0168(9)/2321-1-71
STA. 578 + 65 ℞



BRUNING NO 42 161

PLATE 1-PLAN-PROFILE O F B & R E
MADE AND PRINTED IN U.S.A.

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	11	120
~~FEDERAL~~ PROJECT DESIGNATION T 0168(9)		

CURVE DATA
P.I. = 605+49.85
I = 168°-48'-45"
A = 11°-11'-15"
D = 3°-00'
T = 187.05'
L = 372.62'
E = 9.14'
R = 1909.86'
P.C. = 603+62.80
P.T. = 607+35.42 BK
607+35.42 AH

CURVE DATA
P.I. = 618+70.97
I = 166°-56'-13"
A = 13°-03'-47"
D = 3°-00'
T = 218.57'
L = 435.44'
E = 12.48'
R = 1909.86'
P.C. = 616+52.80
P.T. = 620+27.74 BK
620+88.24 AH

LAKE ST. 15
VINE ST. 15
106.91' E. OF P.I. STA 10+00 S.R.
P.I. 595+21.79
P.T. 598+00.01
C.T.H. "W"
ELEVATION 872.88 ON C.T.H. "T" 607+35.42 AH
STA 607+35.42 TAN. T. C.T.H. "T"
STA 10+00 S.R.
T.L.S.T.H.
595
600
605
610
615
620
625
BEAM GUARD
42"x16" 7"
42"x16" 7"
POWER LINE
GAS LINE
T.L. SOUTH
TOWN SIGN BASE 8.21

NET LENGTH OF CENTERLINE STA 616+99.1 TO STA. 627+00 = 1001 LIN FT.

BEGIN SECTION 2 PROJECT T0168(9)/2321-1-71
STA. 616+99.1

PROFILE FINISHED GRADE ON T.L.
PROFILE PRESENT GRADE ON T.L.

ELEVATIONS FINISHED GRADE ON T.L.
874.72
876.65
878.58
880.51
882.44
884.37
886.40
888.60
891.05
893.82
896.88

890
880
870
900

595 6 7 8 9 600 1 2 3 4 605 6 7 8 9 610 1 2 3 4 615 6 7 8 9 620 1 2 3 4 625 6 7

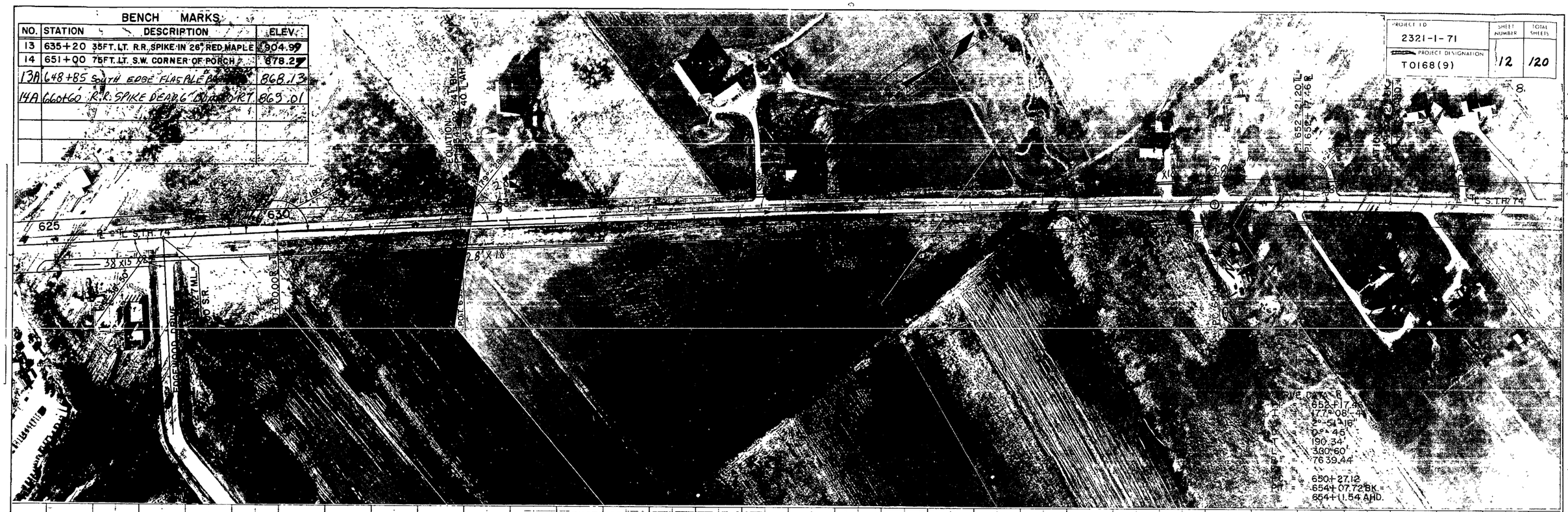
PLATE 1—PLAN—PROFILE

BRUNING NO 42 161

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	12	120
PROJECT DESIGNATION: T0168(9)		

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
13	635+20	35FT. LT. R.R. SPIKE IN 26" RED MAPLE	904.99
14	651+00	75FT. LT. S.W. CORNER OF PORCH	878.27
13A	648+85	SOUTH EDGE FLAGPOLE BASE	868.13
14A	660+60	R.R. SPIKE DEAD 6" IN ROOT	865.01

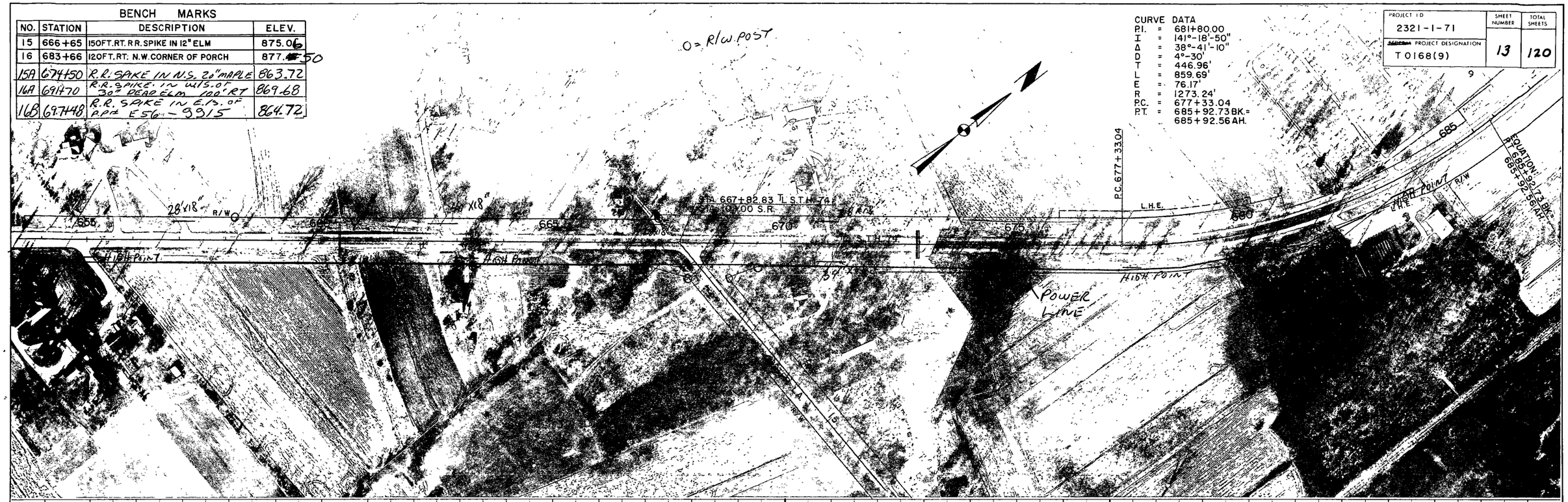


PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	13	120
PROJECT DESIGNATION T 0168(9)		

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
15	666+65	150FT. RT. R.R. SPIKE IN 12" ELM	875.06
16	683+66	120FT. RT. N.W. CORNER OF PORCH	877.50
15A	674+50	R.R. SPIKE IN N.S. 20" MAPLE	863.72
16A	691+70	R.R. SPIKE IN W15.0' F 30" READ ELM 120' RT	869.68
16B	697+48	R.R. SPIKE IN E.13.0' F APP. ES6-9915	864.72

CURVE DATA
P.I. = 681+80.00
I = 141°-18'-50"
Δ = 38°-41'-10"
D = 4°-30'
T = 446.96'
L = 859.69'
E = 76.17'
R = 1273.24'
P.C. = 677+33.04
P.T. = 685+92.73 BK. = 685+92.56 AH.



NET LENGTH OF CENTERLINE STA. 657+00 TO STA. 685+92.73 P.B.K. = 2892.73 LIN. FT.

℄ S.T.H. 74 — PROFILE PRESENT GRADE ON ℄

PROFILE CUSTER LANE

PROFILE FINISHED GRADE ON ℄

PROFILE PRESENT GRADE ON ℄

℄ CUSTER LANE

RAISE FINISH PROFILE DUE TO ROCK

STA 660+49
REMOVE 1-3'X3'X28' CONC. BOX CULVERT
1-42"X74' CL. III CP REQ'D.
INLET ~~869.0~~ 869.0
DISCH. ~~867.8~~ 867.6

STA 672+96
REMOVE 1-4'X3'X28'
CONC. BOX CULVERT
2-50"X31"X60' CM P.A REQ'D.
INLET ~~860.2~~ 859.90
DISCH ~~860.0~~ 859.85

ELEVATIONS FINISHED GRADE ON ℄

890.20 880.60 879.24 877.68 877.00 876.54 876.00 875.45 874.87 874.30 873.73 873.16 872.59 872.02 871.21 869.20 867.28 866.02 865.15 864.64 864.50 864.80 865.90 867.13 868.35 869.59 870.81 872.50 874.48 876.61 878.39 879.64 879.80 879.60

4 635 6 7 8 9 660 1 2 3 4 665 6 7 8 9 670 1 2 3 4 675 6 7 8 9 680 1 2 3 4 685+50 6

890 880 870 860

10 11 12 13

BRUNING NO 42 151

PLATE 1-PLAN-PROFILE
MADE AND PRINTED IN U.S.A.
CHARLES BF

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71		
~~LOCATION~~ PROJECT DESIGNATION	14	120
T0168(9)		

CURVE DATA
P.I. = 681+80.00
I = 141°-18'-50"
A = 38°-41'-10"
D = 4°-30'
T = 446.96'
L = 859.85'
E =
R = 1273.24'
P.C. = 677+33.04
P.T. = 685+92.73 BK
685+92.56 AH

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
16	683+66	120 FT. R. NW. COR. OF PORCH	877.47
~~17~~ FX-A-3	~~702+50~~	~~CROSS MARK ON TOP OF CONC. COL. ON NE. COR. OF BRIDGE~~	~~861.03~~
~~17~~ FX-A-4	~~15+50~~ MEN. AVE.	~~CROSS MARK ON TOP OF CONC. COL. ON NE. COR. OF BRIDGE~~	~~861.10~~
17	702+50	S. CUT	862.26
17A	705+40	R.	868.14
17B	712+42	R.R.	879.93

EQUATION:
P.I. 685+92.73 BK.
685+92.56 AH.

PC 677+33.84

PROJECT DESIGNATION

CURVE DATA

CURVE DATA

PROFILE MENOMONEE AVE.

PROFILE FINISHED GRADE ON ℄

PROFILE PRESENT GRADE ON ℄

℄ S.T.H. 74

℄ MENOMONEE AVE.

APPROXIMATE MARSH BOTTOM

OBLITERATE OLD ROAD
694+50 TO 700+50

NET LENGTH OF CENTERLINE STA. 685+92.56 AND TO STA. 690+60 = 467.44 LIN. FT.
NET LENGTH OF CENTERLINE STA. 690+60 TO STA. 702+00 = 1104.06 LIN. FT.

EQ. 692+40.15 BK. =
692+76.09 AHD.

CHANGE TO MAINLINE
~~STA. 10+60~~ 697+10
~~+ 36"X60' CL III REQ'D~~
43"X27"X96"

YARDAGE SUMMARY
STA. 690+60 TO STA. 720+50

UNCLASSIFIED	=	14,012 C.Y.
FILL	=	3,521 C.Y.
SHRINKAGE	=	± 30%
MARSH EXC.	=	3,500 C.Y.
SHRINKAGE	=	± 30%
WASTE	=	4885 C.Y.

STA. 702+56 ℄
REMOVE 1-16'X6'X30'
CONC. BOX CULVERT

STA. 702+49 ℄ B-67-143
2 CELL 9'X8' CONC. BOX CULVERT REQ'D.
SEE DRAWINGS X 42467
TO X 42470

STA 697+30 ℄
REMOVE 1-3'X2'X36'
CONC. BOX CULVERT

ELEVATIONS FINISHED GRADE ON ℄

8	9	680	1	2	3	4	685+50	6	7	8	9	690	1	2	3	4	695	6	7	8	9	700	1	2	3	4
868.35	869.59	870.81	872.50	874.48	876.61	878.39	879.64	879.80	879.60	878.30	876.40	874.80	872.80	871.20	869.70	868.50	866.80	865.00	863.50	862.60	862.10	861.80	861.70	861.60	861.50	861.40

BRUNING NO 42 151

PLATE 1—PLAN—PROFILE OF ROADS
MADE AND PRINTED IN U.S.A.
CHARLES BRUNING COMPANY INC

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	15	120
JACKSON PROJECT DESIGNATION T0168(9)		

11

CURVE DATA ℄
P.I. = 704+85.15
I =
Δ = 19°-53'-30"
D = 6°-00'
T = 167.45'
L = 331.53'
E = 14.57'
R = 954.93'
P.C. = 703+17.70
P.T. = 706+49.23 BK. = 706+50.30 AH.

CURVE DATA ℄
P.I. = 705+25.33
I =
Δ = 14°57'13"
D = 6°-00'
T = 119.07'
L = 236.91'
E = 7.39'
R = 954.93'
P.C. = 704+00.00
P.T. = 706+49.23 BK. = 706+50.30 AHD.

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
~~17 = FX-A-3~~	~~702+50~~	~~CROSS CHISELED ON N.E. COR. OF BRIDGE DECK~~	~~861.03~~
~~17A = FX-A-4~~	~~15+50~~ MEN. AVE.	~~CROSS CHISELED ON N.E. COR. OF BRIDGE DECK~~	~~862.18~~
18	721+50	110 FT. LT. R.R. SPIKE IN 24" ELM	871.68

CURVE DATA ℄
P.I. = 697+68.21
I =
Δ = 56°03'40"
D = 9°-00'
T = 338.93'
L = 622.90'
E = 84.60'
R = 636.62'
P.C. = 694+29.28
P.T. = 700+52.18

CURVE DATA ℄
P.I. = 697+30.93
I =
Δ = 51°47'20"
D = 6°-00'
T = 456.74'
L = 852.05'
E = 103.61'
R = 954.93'
P.C. = 692+76.09 AHD.
P.T. = 692+40.15 BK.
P.T. = 701+28.14

STA. 10+27
REMOVE 1-24" X 46' C.M.C.P.

STA. 9+70
REMOVE 1-24" X 38" C.M.C.P.

STA 9+30
30" I-~~24~~" X ~~62~~ CL. III C.P. REQ'D. 80'
INLET ~~861.5~~ DISCH. ~~861.6~~
SKEW 50° R.H.F.

STA 10+65
1-30" X ~~54~~' CL. III C.P. REQ'D. 70'
INLET ~~861.4~~
DISCH. ~~860.0~~
SKEW 54° L.H.E.

STA 705+02
REMOVE 1-18" X 38' C.M.C.P.

STA 705+50
1-43" X 27" X ~~114~~" REQ'D 38'
SKEW 45° L.H.E.
INLET ~~859.5~~ 858.8
DISCH. ~~859.0~~ 858.5

STA. 715+58
REMOVE 1-2' X 2' X 30'
CONC. BOX CULVERT
1-36" X 22" X 68' CMPA. REQ'D.
INLET ~~864.4~~ 864.4
DISCH. ~~864.1~~ 864.1

NET LENGTH OF CENTERLINE STA. 702+00 ℄ TO STA. 720+50 = 1848.93 LIN. FT.

END SECTION 2 PROJECT T0168(9)/2321-1-71
STA. 720+50

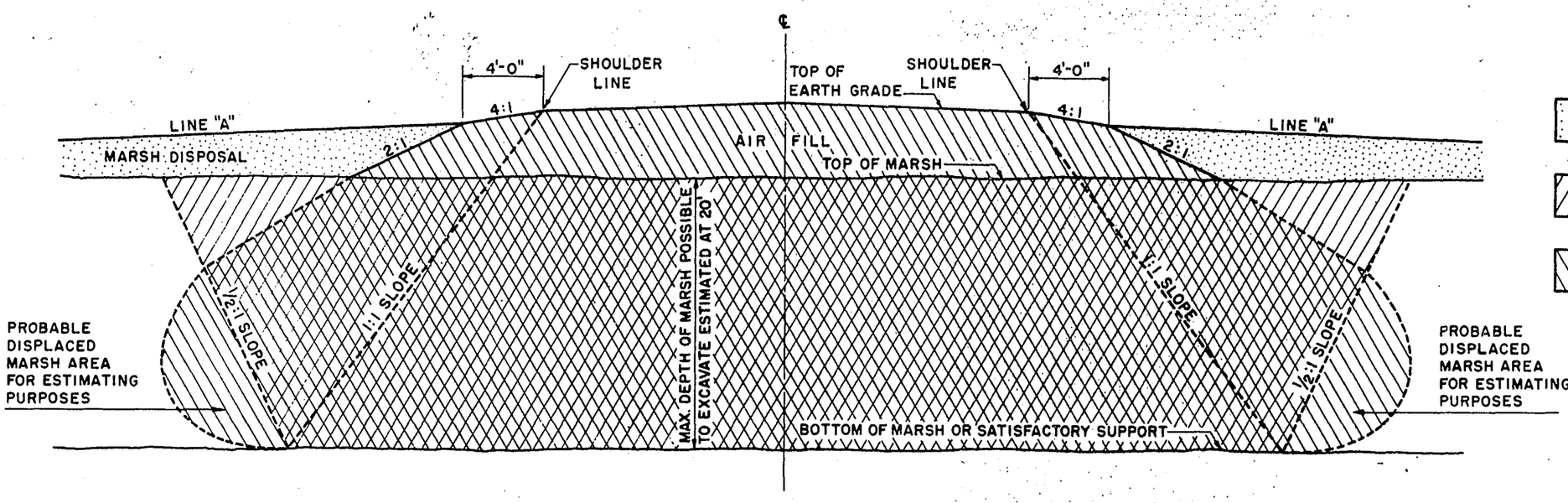
PROFILE MAPLE RD.

PROFILE FINISHED GRADE ON ℄
PROFILE PRESENT GRADE ON ℄
℄ MAPLE RD.
℄ STH 74
RR TRACKS

ELEVATIONS FINISHED GRADE ON ℄

| | | |

16-120



COMPLETE MARSH EXCAVATION

MARSH DISPOSAL PERMITTED IN THIS AREA UNLESS OTHERWISE PROVIDED IN THE CONTRACT

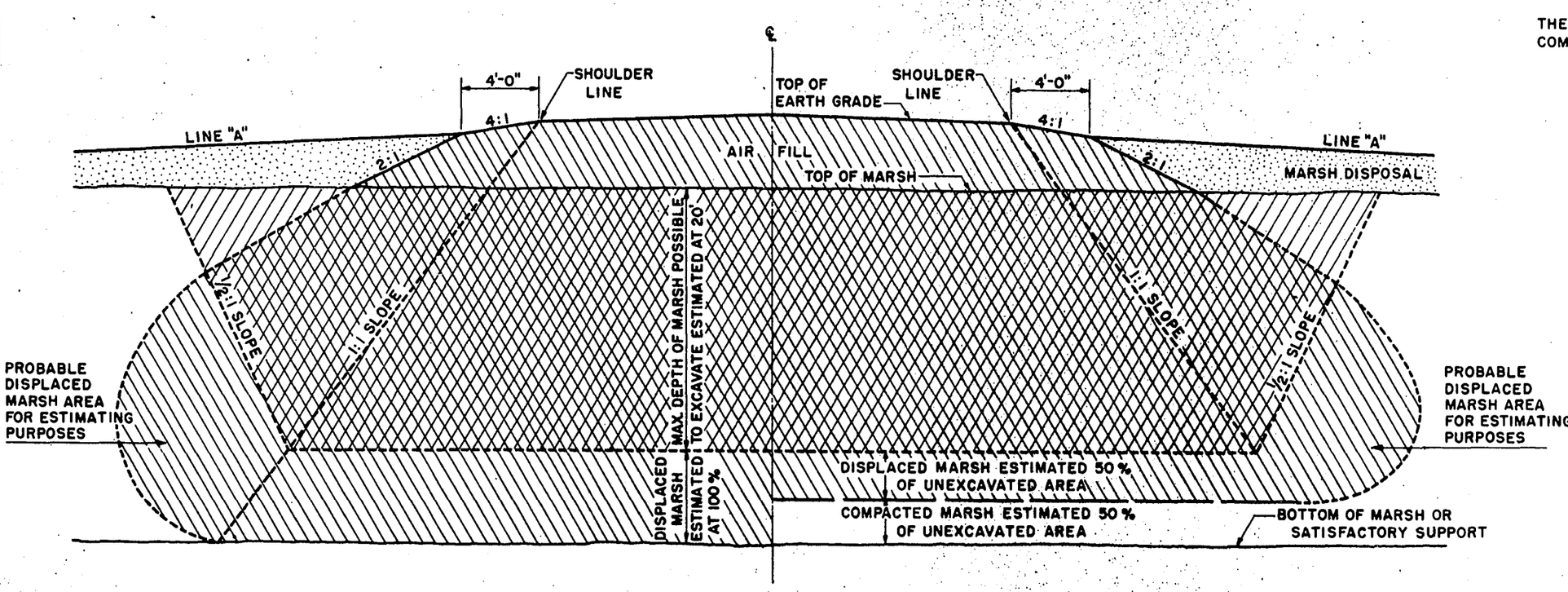
EXCAVATION

BACKFILL

GENERAL NOTES

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

ANY MATERIAL TEMPORARILY PLACED ABOVE THE LINE MARKED "LINE A" IS TO BE REMOVED UPON COMPLETION OF THE AIR FILL.



PARTIAL EXCAVATION
PLUS 100% DISPLACEMENT

PARTIAL EXCAVATION
PLUS 50% DISPLACEMENT

MARSH EXCAVATION

STATE HIGHWAY COMMISSION OF WISCONSIN

RECOMMENDED FOR APPROVAL:

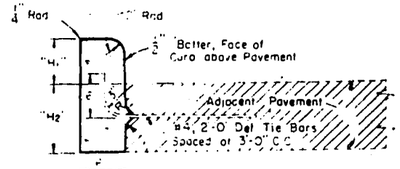
DATE 2/11/52 — CONSTRUCTION ENGINEER

APPROVED:

DATE 2/11/52 — STATE HIGHWAY ENGINEER

DRAWN LJO
CHECKED

1-1.1.2

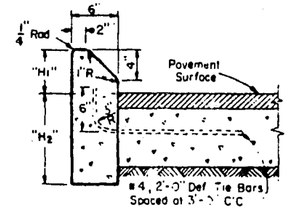


Tie Bar recess positioned in reverse when Concrete Curb is constructed first

"H1" = 9" max. and 3 1/2" min. and shall be 6" unless otherwise shown on the plans
"H2" = Same as adjacent pavement thickness for rigid pavement
"H2" = 12" For other than rigid pavement (Tie Bars Omitted)

TYPE "A" (Including Tie Bars) TYPE "D" (Excluding Tie Bars)

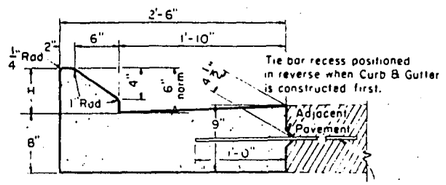
CONCRETE CURB



"H1" = 9" Max. and 4" min. and shall be 6" unless otherwise shown on plans
"H2" = Same as adjacent pavement thickness for rigid pavement and 12" for other than rigid pavement (Tie Bars Omitted)

TYPE "G" (Including Tie Bars) TYPE "J" (Excluding Tie Bars)

CONCRETE CURB
(Mountable Type)



"H" = 9" max. and 4" min. & shall be 6" unless otherwise shown on the plans.

#4, 2'-0" Def. Tie Bars or alternate Bolt Type instal. may be used, spaced at 3'-0" C.C.

TYPE "G" (Including Tie Bars) TYPE "J" (Excluding Tie Bars)

CONCRETE CURB AND GUTTER
(Mountable Type)

GENERAL NOTES

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

JOINTS –

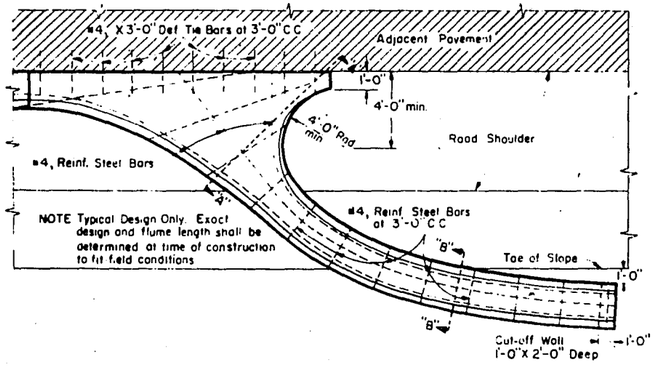
Joints shall not be sealed in concrete curb, concrete gutter, concrete curb and gutter, or concrete surface drains.

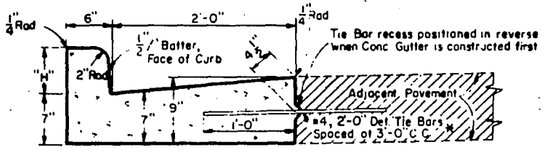


* Alternate Tie Bars or Bolt Type installations may be used as shown for Longitudinal Joints.

TYPE "A" (Including Tie Bars) TYPE "D" (Excluding Tie Bars)

CONCRETE GUTTER



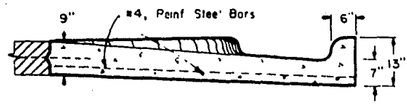


"H" = 9" Max., 3 1/2" Min. and shall be 6" unless otherwise shown on the plans

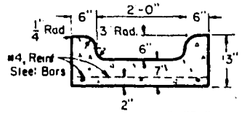
* Alternate Tie Bars or Bolt Type installations may be used as shown for Longitudinal Joints

TYPE "A" (Including Tie Bars) TYPE "D" (Excluding Tie Bars)

CONCRETE CURB AND GUTTER
(Barrier Type)



SECTION "A"–"A"



SECTION "B"–"B"

CONCRETE INLET OR DISCHARGE FOR CURB AND GUTTER SURFACE DRAIN

CONCRETE CURB, CONCRETE GUTTER CONCRETE CURB AND GUTTER AND CONCRETE SURFACE DRAINS

STATE HIGHWAY COMMISSION OF WISCONSIN

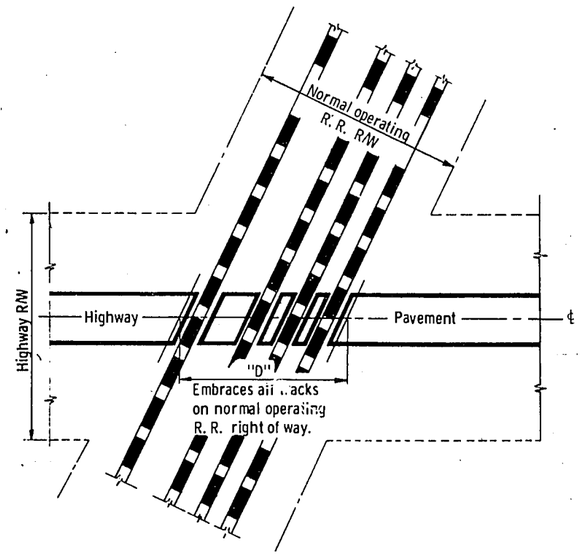
RECOMMENDED FOR APPROVAL

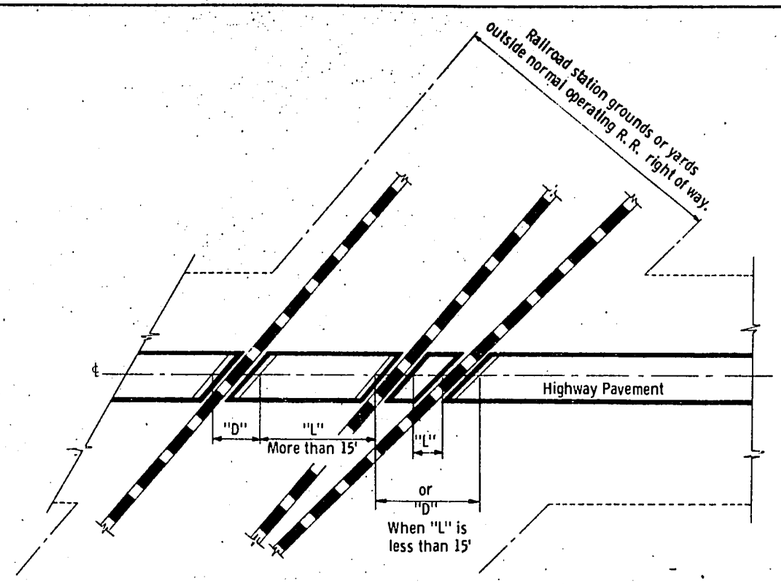
2-5-63 DATE — J. S. Piff ENGINEER OF DESIGN

APPROVED:

2/6/63 DATE — E. C. Rathlyn STATE HIGHWAY ENGINEER

PLATE NO. 3-1.1.7



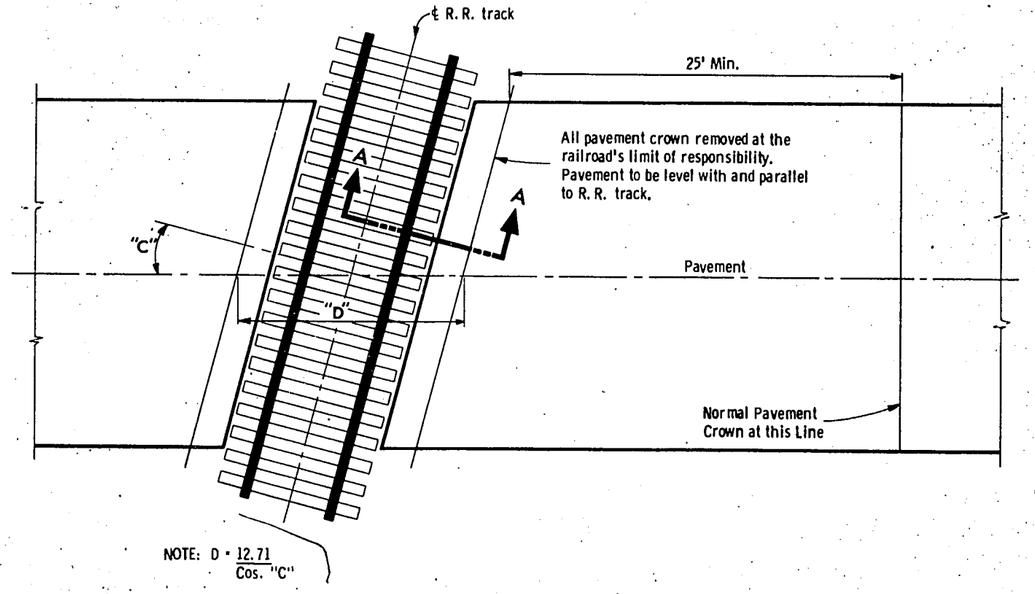


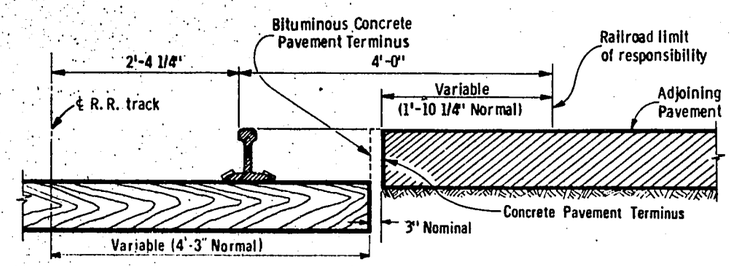
TYPICAL TYPES OF RAILROAD GRADE CROSSINGS SHOWING THE RAILROAD'S LIMIT OF RESPONSIBILITY AND MEASUREMENT DETAILS

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.

"D" = Exception to net length of ℄. Paving or surfacing and shoulder material within limits designated by "D" to be at expense of railroad company. Trackage to industrial sites to be treated same as for trackage to R. R. station grounds or yards outside of normal operating R/W.





SECTION "A-A"

RAILROAD APPROACH CONSTRUCTION DETAILS

PAVEMENT DETAILS FOR RAILROAD APPROACH

State of Wisconsin
Department of Transportation
Division of Highways

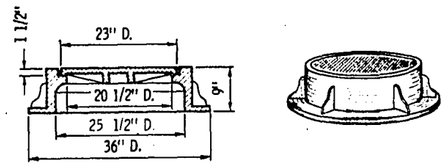
RECOMMENDED FOR APPROVAL:
3/3/69 DATE — CHIEF DESIGN ENGINEER

APPROVED:
3/27/69 DATE — STATE HIGHWAY ENGINEER

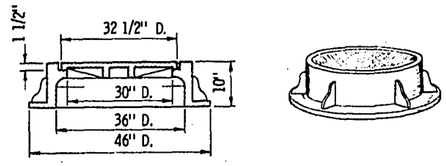
Plate No. 2-21.12

Plate No. 2-21.12

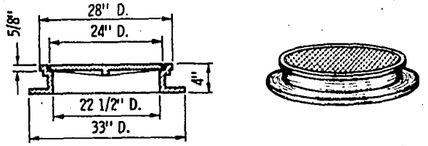
163-120



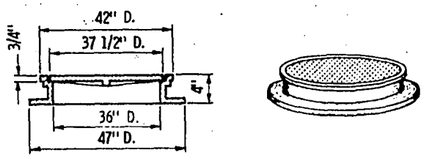
TYPE "J"- (Approximate Weight 400 Lbs.)



TYPE "K"- (Approximate Weight 750 Lbs.)

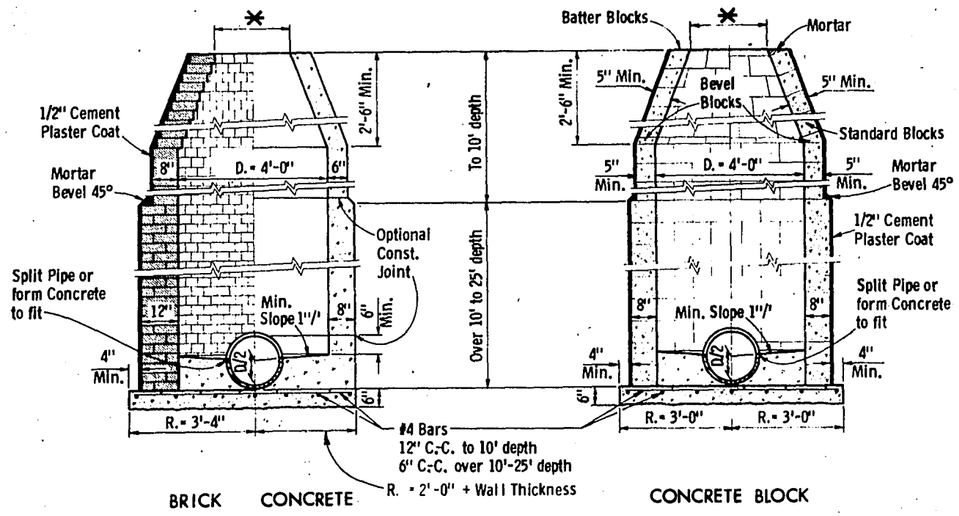


TYPE "L"- (Approximate Weight 210 Lbs.)



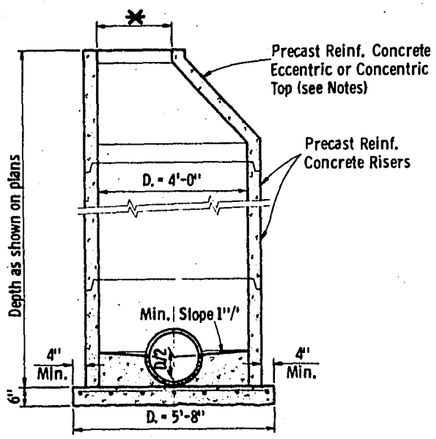
TYPE "M"- (Approximate Weight 475 Lbs.)

MANHOLE COVERS



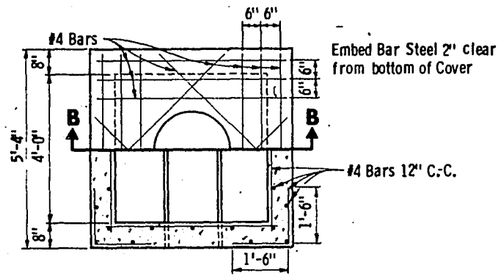
BRICK CONCRETE

CONCRETE BLOCK

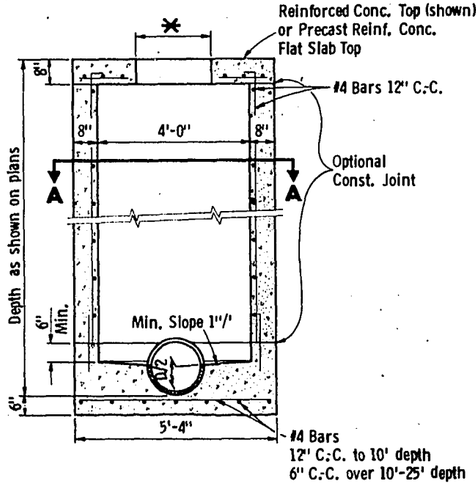


PRECAST REINFORCED CONCRETE

HALF PLAN VIEW



HALF SECTION A-A



SECTION B-B
REINFORCED CONCRETE

GENERAL NOTES

1. 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.

2. Detailed drawings for proposed alternate designs for Manholes and Manhole Covers shall be submitted to the Engineer for approval providing that such alternate designs make provision for equivalent capacity and strength.

3. All Manholes are designated on the Plans As "Manholes, 1-J", 1-L, etc. This designation is interpreted to mean that the number, or first digit, designates the masonry portion of the structure, and the following letter, designates the type of cover or iron casting to be used therewith to comprise the complete unit "Manhole" in place.

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

5. Precast Reinforced Bases may be used in lieu of cast-in-place bases. When Precast Bases are used, they shall be placed on a bed of material at least 6 inches in depth, which meets the requirements for Granular Backfill. This bedding material shall be compacted and provide uniform support for the entire area of the base.

6. All Precast Reinforced Concrete Risers, Grade Rings, and Flat Slab Tops shall conform to AASHO Designation M 199. Precast Reinforced Concrete Bases shall conform to the Flat Slab Top requirements of AASHO Designation M 199.

7. Adjustment of the cover to grade may be accomplished by the use of mortar and brick or by a Precast Reinforced Concrete Grade Ring. Maximum adjustment shall be 8 inches.

8. Alternate Precast Reinforced Concrete Cone Tops (Eccentric or Concentric) may be used on brick, concrete, or concrete block Manholes. Attachment of the Precast Reinforced Concrete Cone Top shall be made on a bed of mortar.

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

10. Precast Reinforced Concrete Risers may be placed with tongue or "D" joint ends either up or down.

11. Steps shall be installed in all Manholes over 5 feet in depth. Steps shall be installed 5 inches clear from the wall at the center of the step. Steps used in the work shall conform to the requirements of the Standard Specifications for Gray Iron Castings, ASTM Designation A48. Steps shall have a minimum width of 9 inches out to out of casting.

12. All Manhole Covers which are placed in vehicular traffic areas shall be "Non-Rocking" type so as to prevent all cover noise under traffic.

13. Strike all joints for brick or block construction.

✱ Use 2'-0" diameter opening with Type "J" and "L" Manhole Covers, or 3'-0" diameter opening with Type "K" and "M" Manhole Covers.

MANHOLES TYPE 1

MANHOLES TYPE 1 & MANHOLE COVERS

State of Wisconsin
Department of Transportation
Division of Highways

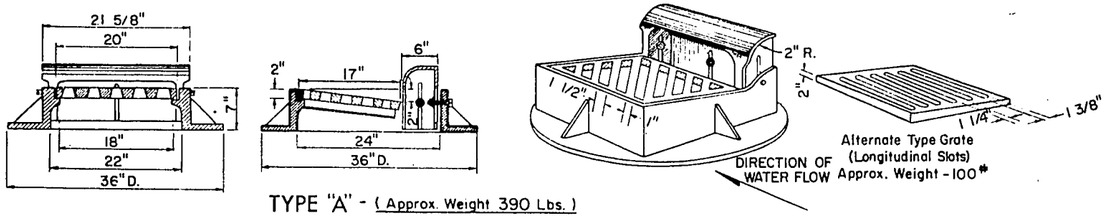
RECOMMENDED FOR APPROVAL:
4/25/69 DATE — E. J. Bykit CHIEF DESIGN ENGINEER

APPROVED:
4/25/69 DATE — H. J. Lauenstein STATE HIGHWAY ENGINEER

Plate No. 5-611

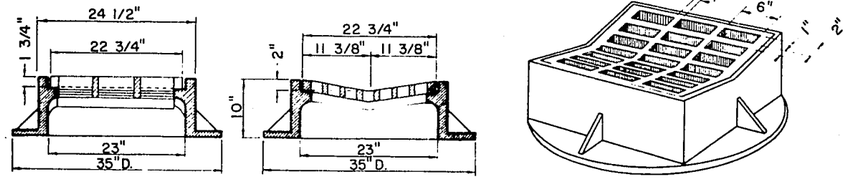
Plate No. 5-6.1.1

16.4-120



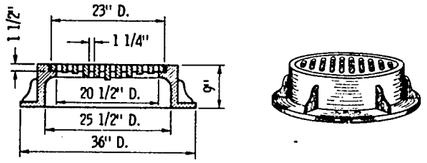
TYPE "A" - (Approx. Weight 390 Lbs.)

Frame Weight - 250#
Grate " - 90#
Box " - 50#



TYPE "B"- (Approx. Weight 414 Lbs.)

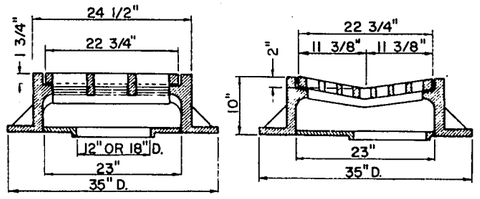
Frame Weight - 275 #
Grate " - 139#



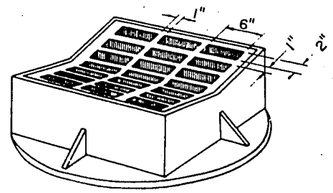
TYPE "C"- (Approx. Weight 370 Lbs.)

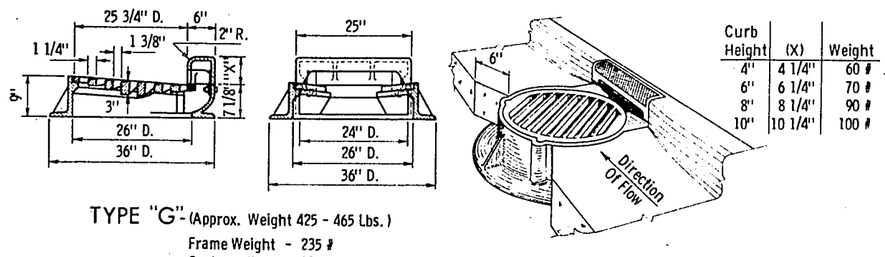
Frame Weight Type "C" & Type "D" - 255 #
Slotted Grate Weight - 115 #
Solid Cover Weight - 150 #

(Note: Frame for Type "C" same as for Type "D")



TYPE "S" - (Approx. Weight 450 Lbs.)

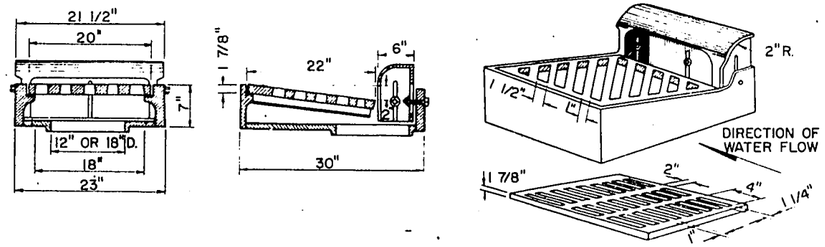




Curb Height	(X)	Weight
4"	4 1/4"	60 #
6"	6 1/4"	70 #
8"	8 1/4"	90 #
10"	10 1/4"	100 #

TYPE "G"- (Approx. Weight 425 - 465 Lbs.)

Frame Weight - 235 #
Grate " - 130 #
Box - See Table

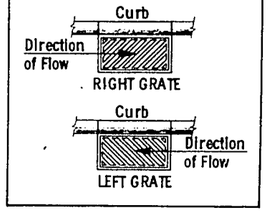


TYPE "R"- (Approx. Weight 450 Lbs.)

SPECIAL NOTE

Diagonal Slots shall be oriented to the direction of flow as shown hereon. Hence RIGHT and LEFT Grates shall be furnished depending on direction of flow. (See Sketch Below)

Longitudinal slot type grates may be used ONLY where bicycles are prohibited.



GENERAL NOTES

1. 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.

2. Detailed drawings for proposed alternate designs for Inlets shall be submitted to the Engineer for approval providing that such alternate designs make provision for equivaleht capacity and strength.

3. All Inlets are designated on the Plans as "Inlets, 1-A", 2-R, etc. This designation is interpreted to mean that the number, or first digit, designates the masonry portion of the structure, and the following letter, designates the type of cover or iron casting to be used therewith to comprise the complete unit "Inlet" in place.

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

5. Precast Reinforced Bases may be used in lieu of cast-in-place bases. When Precast Bases are used, they shall be placed on a bed of material at least 6 inches in depth, which meets the requirements for Granular Backfill. This bedding material shall be compacted and provide uniform support for the entire area of the base.

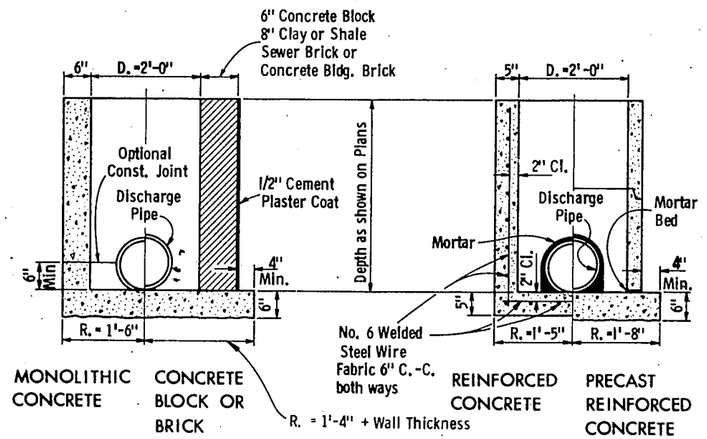
6. All Precast Reinforced Concrete Risers, Grade Rings, and Flat Slab Tops shall conform to AASHO Designation M 199. Precast Reinforced Concrete Bases shall conform to the Flat Slab Top requirements of AASHO Designation M 199.

7. Adjustment of the cover to grade may be accomplished by the use of mortar and brick. Maximum adjustment shall be 8 inches.

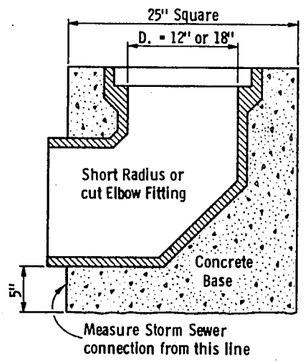
8. Precast Reinforced Concrete Risers may be placed with tongue or "D" joint ends either up or down.

9. Strike all joints for brick or block construction.

INLET COVERS



INLET TYPE 1



INLET TYPE 2

INLETS TYPE 1 & 2 AND INLET COVERS

State of Wisconsin
Department of Transportation
Division of Highways

RECOMMENDED FOR APPROVAL:
5/7/69 DATE — E.J. Bobit, CHIEF DESIGN ENGINEER

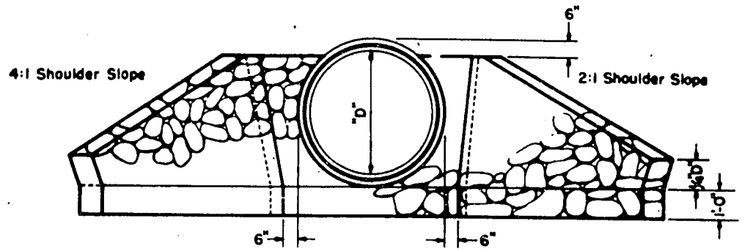
APPROVED:
5/12/69 DATE — H.J. Tennessen, STATE HIGHWAY ENGINEER

Plate No. 5-7.1.2

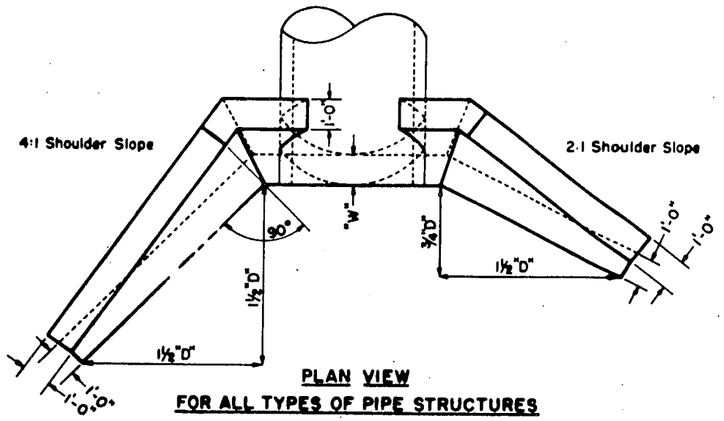
Plate No. 5-7.1.2

8

16.5-120



END ELEVATION
SHOWING CONCRETE CIRCULAR PIPE INCL. CATTLE PASS



PLAN VIEW
FOR ALL TYPES OF PIPE STRUCTURES

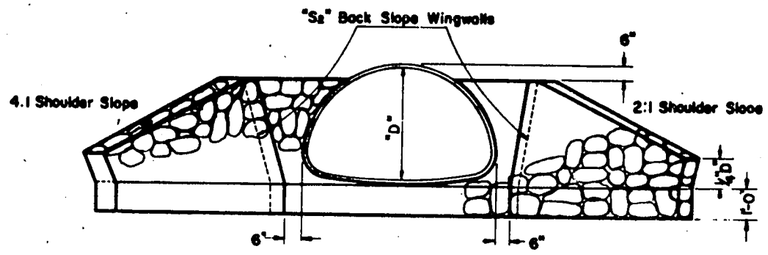
CIRCULAR PIPE		Cu Yds Mortar Rubble Masonry or Riprap per Endwall		"A" (Feet)	"B" (Feet)	Front Slope "S1"	Back Slope "S2"	Width of Footing at "W" (Feet)
Size of Pipe	Type of Pipe	4:1 Slope	2:1 Slope	4:1 Slope	2:1 Slope			
24"	R.C.C.P.	1.2	1.0	3.4	0.8	½:1	½:1	1.0
	C.M.C.P.	1.0	0.8	2.8	0.6	"	"	"
30"	R.C.C.P.	1.5	1.3	5.1	1.5	"	"	"
	C.M.C.P.	1.3	1.0	4.6	1.3	"	"	"
36"	R.C.C.P.	2.0	1.6	6.9	2.3	"	"	"
	C.M.C.P.	1.7	1.3	6.3	2.1	"	"	"
42"	R.C.C.P.	2.6	2.1	8.9	3.1	"	"	"
	C.M.C.P.	2.2	1.7	8.1	2.9	"	"	"
48"	R.C.C.P.	3.2	2.6	10.7	3.9	"	"	"
	C.M.C.P.	2.8	2.2	9.8	3.6	"	"	"
60"	R.C.C.P.	8.4	6.9	14.5	5.5	"	¼:1	2.38
	C.M.C.P.	6.9	5.9	13.3	5.2	"	"	2.20
72"	R.C.C.P.	12.4	9.9	18.3	7.1	"	"	2.68
	C.M.C.P.	10.0	8.0	16.8	6.2	"	"	2.40

PIPE ARCH

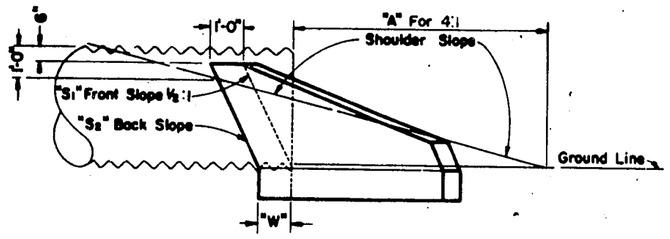
29"x18"	C.M.C.P.	1.0	0.8	1.1	0.3	½:1	½:1	1.0
36"x22"	"	1.3	1.0	2.2	0.5	"	"	"
43"x27"	"	1.7	1.2	3.7	1.0	"	"	"
50"x31"	"	1.9	1.4	4.9	1.5	"	"	"
58"x36"	"	2.1	1.7	6.3	2.1	"	"	"
65"x40"	"	2.5	2.0	7.5	2.6	"	"	"
72"x44"	"	2.9	2.4	8.6	3.1	"	"	"

CATTLE PASS

72"	ALTERNATE	12.4	9.9	18.3	7.1	"	"	2.68



END ELEVATION
SHOWING CORRUGATED METAL PIPE ARCH



SIDE ELEVATION

GENERAL NOTES

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

CONCRETE MASONRY SUBSTITUTE

All items shown hereon may be constructed of Class "A" Concrete in which case all sizes and dimensions shown shall obtain. Concrete masonry substitute work shall conform to the pertinent requirements of the Standard Specifications.

MORTAR RUBBLE MASONRY OR RIPRAP FOR CULVERT & CATTLE PASS ENDWALLS

STATE HIGHWAY COMMISSION OF WISCONSIN

RECOMMENDED FOR APPROVAL:

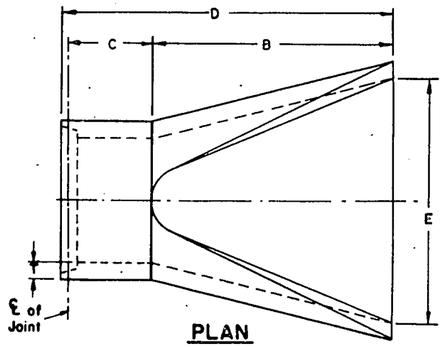
DATE 2-5-63 — J. S. Pilf, ENGINEER OF DESIGN

APPROVED:

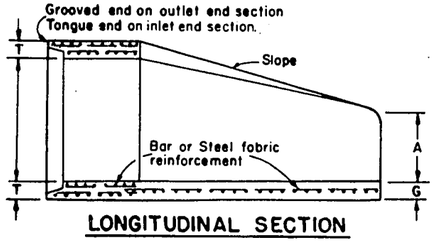
DATE 2/6/63 — E. C. Rostinger, STATE HIGHWAY ENGINEER

PLATE NO. 6-2.4.3

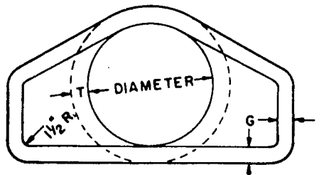
1616-720



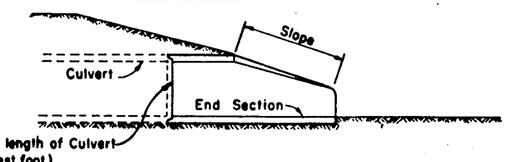
PLAN



LONGITUDINAL SECTION



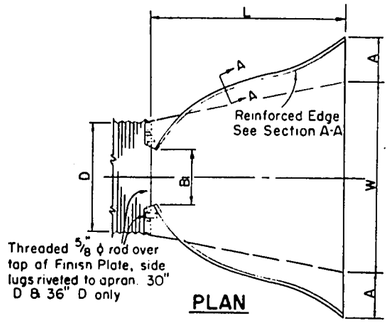
END VIEW



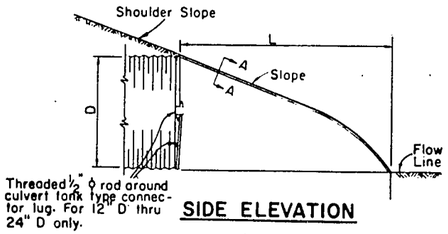
SLOPE DETAIL

DIA.	APPROX. WEIGHT/ SECTION	APPROX SLOPE	T	A	B	C	D	E	G
12"	530	3 to 1	2"	4"	24"	48 7/8"	72 7/8"	24"	2"
15"	740	3 to 1	2 1/4"	6"	27"	46"	73"	30"	2 1/4"
18"	990	3 to 1	2 1/2"	9"	27"	46"	73"	36"	2 1/2"
21"	1280	3 to 1	2 3/4"	9"	36"	37 1/2"	73 1/2"	42"	2 3/4"
24"	1520	3 to 1	3"	9 1/2"	43 1/2"	30"	73 1/2"	48"	3"
27"	1930	3 to 1	3 1/4"	10 1/2"	49 1/2"	24"	73 1/2"	54"	3 1/4"
30"	2190	3 to 1	3 1/2"	12"	54"	19 3/4"	73 3/4"	60"	3 1/2"
36"	4100	3 to 1	4"	15"	63"	34 3/4"	97 3/4"	72"	4"
42"	5380	3 to 1	4 1/2"	21"	63"	35"	98"	78"	4 1/2"
48"	6550	3 to 1	5"	24"	72"	26"	98"	84"	5"
54"	8040	2 5/8 to 1	5 1/2"	27"	65"	33 1/2" min 35 max	98" min 100 max	90"	5"
60"	8730	2 to 1	6"	30" min 33" max	60"	39"	99"	96"	5"
66"	10,630	2 to 1	6 1/2"	24" min 30" max	72" min 78" max	21" min 27" max	99"	102"	5 1/2"
72"	12,520	2 to 1	7"	24" min 36" max	78"	21"	99"	108"	6"
78"	14,430	2 to 1	7 1/2"	24" min 36" max	78"	21"	99"	114"	6 1/2"
84"	18,160	1 1/2 to 1	8"	36"	90 1/2"	21"	111 1/2"	120"	6 1/2"

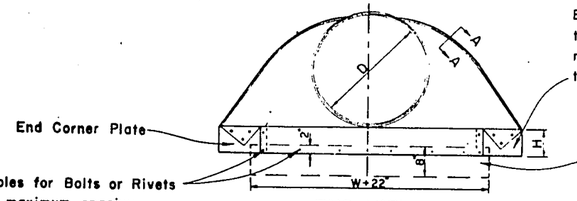
REINFORCED CONCRETE APRON ENDWALLS



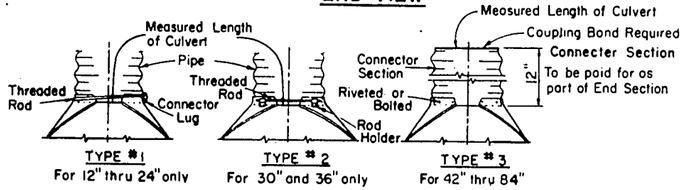
PLAN



SIDE ELEVATION



END VIEW



TYPE # 1 For 12" thru 24" only

TYPE # 2 For 30" and 36" only

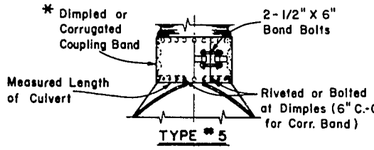
TYPE # 3 For 42" thru 84"

CONNECTION DETAILS

D Pipe Diam.	Gage Min.	Dimensions A ± 1"	B Max.	H ± 1"	L ± 1½"	W ± 2"	Approx. Slope
12"	16	6"	6"	6"	21"	24"	2½ to 1
15"	16	7"	8"	6"	26"	30"	"
18"	16	8"	10"	6"	31"	36"	"
21"	16	9"	12"	6"	36"	42"	"
24"	16	10"	13"	6"	41"	48"	"
30"	14	12"	16"	8"	51"	60"	"
36"	14	14"	19"	9"	60"	72"	"
42"	12	16"	22"	11"	69"	84"	"
48"	12	18"	27"	12"	78"	90"	2¼ to 1
54"	12	18"	30"	12"	84"	102"	2 to 1
60"	12	18"	33"	12"	87"	114"	1¾ to 1
66"	12	18"	36"	12"	87"	120"	1½ to 1
72"	12	18"	39"	12"	87"	126"	1⅓ to 1
78"	12	18"	42"	12"	87"	132"	1¼ to 1
84"	12	18"	45"	12"	87"	138"	1⅛ to 1

Note: All splices to be lap riveted or bolted.

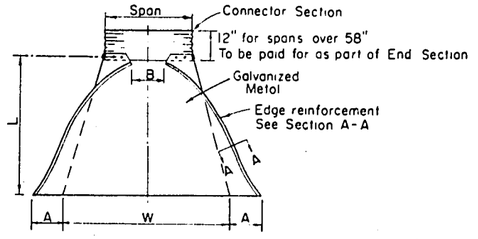
METAL APRON ENDWALLS



TYPE # 5

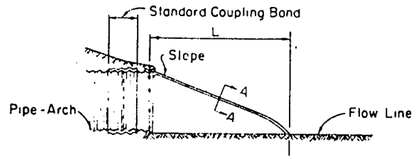
Alternate for All sizes Corrugated Pipe and Pipe Arch

*NOTE: Dimpled Band fits over Outside of Endwall, and Corr. Band fits Inside Endwall. Dimpled Band may be used with Helically Corrugated Pipe.

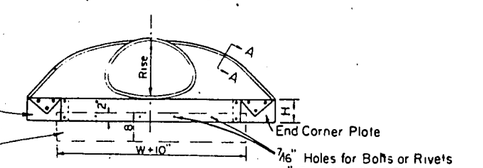


PLAN

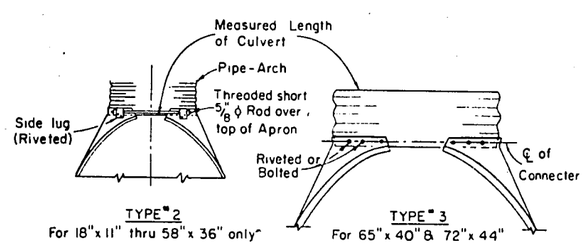
showing alternate type with connector section



SIDE ELEVATION



END VIEW



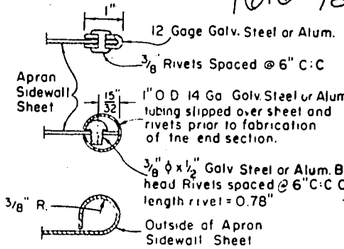
TYPE # 2 For 18"x11" thru 58"x36" only

TYPE # 3 For 65"x40" & 72"x44"

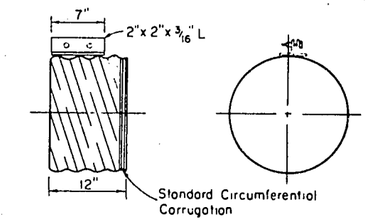
CONNECTION DETAILS

Pipe-Arch Dimensions Span	Rise	Gage Min.	Dimensions A ± 1"	B Max.	H ± 1"	L ± 1½"	W ± 2"	Approx. Slope
18"	11"	16	7"	9"	6"	19"	30"	2½ to 1
22"	13"	16	7"	10"	6"	23"	36"	"
25"	16"	16	8"	12"	6"	28"	42"	"
29"	18"	16	9"	14"	6"	32"	48"	"
36"	22"	14	10"	16"	6"	39"	60"	"
43"	27"	14	12"	18"	8"	46"	75"	"
50"	31"	12	13"	21"	9"	53"	85"	"
58"	36"	12	18"	26"	12"	63"	90"	"
65"	40"	12	18"	30"	12"	70"	102"	2¼ to 1
72"	44"	12	18"	33"	12"	77"	114"	"

Note: All splices to be lap riveted or bolted



SECTION A-A



END SECTION CONNECTION

For 12" thru 21" Diameter Helically Corrugated Metal Pipe

GENERAL NOTES

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

NOTE

Variations of the dimensions and designs shown hereon will be permitted providing equivalent capacity and structural integrity are attained, and prior approval of the Engineer is obtained.

Reinforced concrete apron endwalls shall be used with concrete pipe culvert installations, steel apron endwalls shall be used with corrugated steel pipe culvert installations, and aluminum apron endwalls shall be used with corrugated aluminum pipe culvert installations, except that steel apron endwalls may be used on corrugated aluminum pipe culverts when a non-metalic insulation material is placed between the steel and aluminum. The non-metalic insulation material shall be so placed between the two metals so as to prohibit galvanic action from occurring.

When two or more pipes or pipe arches with apron endwalls are to be laid adjacent to each other, they shall be separated by the following amount:

Pipes: Total width of apron endwall less the diameter of pipe plus 6 inches.

Pipe Arches: Total width of apron endwall less the span dimension of the pipe arch plus 6 inches.

APRON ENDWALLS FOR CULVERT PIPE & PIPE ARCH

State of Wisconsin
Department of Transportation
Division of Highways

RECOMMENDED FOR APPROVAL: 12/9/69 DATE — E. J. Bydal, CHIEF DESIGN ENGINEER

APPROVED: 12/30/69 DATE — W. J. Hammister, STATE HIGHWAY ENGINEER

APRON ENDWALLS FOR CULVERT PIPE

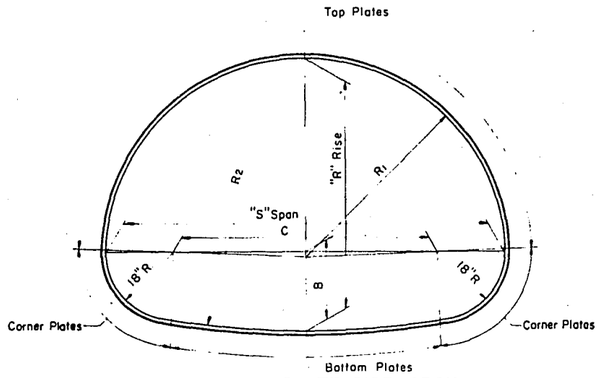
APRON ENDWALLS FOR PIPE ARCH

Plate No 6-2 6 8

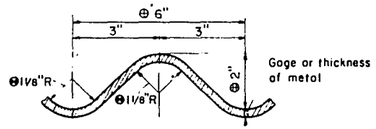
Plate No 6-2 6 8

6

16.7-120



STRUCTURAL PLATE PIPE ARCH



DETAIL OF METAL CORRUGATIONS

CORRUGATION DIMENSION TOLERANCES

⊖-Tol. 1/4"
⊕-Tol. ± 1/8"
⊖-Min. 11/16"

GENERAL NOTES

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

TOLERANCES

Pipe Arch size dimensions are subject to manufacturing tolerances and the ratio of rise (R) to span (S) shall not exceed a tolerance of 5% plus or minus.

Metal corrugation dimension tolerances shall not exceed pertinent dimensions shown elsewhere on this drawing.

EMBANKMENT—Minimum for ℄ Culverts

For Flexible Type Pavement, the minimum depth of embankment or cover over top of Pipe Arch (finished construction) shall be "S"/10 or 1'-0" minimum.

For Rigid Type Pavement, the minimum depth of embankment over top of Pipe Arch shall be "S"/14 or a minimum of 6" cushion between pipe and pavement.

EMBANKMENT—Maximum for ℄ Culverts

The maximum depth of embankment shall be 15 feet (finished construction).

Adequate cover protection for Pipe Arches shall be provided at all times during construction operations to preclude any damage to structures.

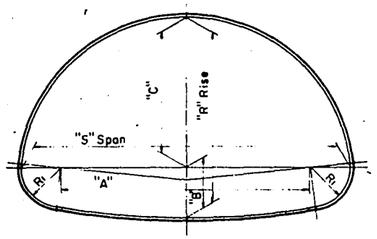
Strutting of Pipe Arches will not be required during construction unless specifically called for on the plans or the applicable Special Provisions.

TABLE OF PROPERTIES
STRUCTURAL PLATE PIPE ARCH

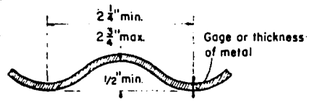
SPAN Nominal Size	Dimensions taken from inside crests of corrugations							Table of Metal Gages — Minimum Acceptable																
	Fabricators Size Min. Acceptable	R/S Ratio	Area Sq.Ft.	B In.	C In	R1 In	R2 In	H-20 LOADING Depth of Embankment in Feet																
	"S" Span — "R" Rise							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
6 Feet	6'-1" x 4'-7"	.75	22	21.0	37.0	36.7	76.4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12		
7 "	7'-0" x 5'-1"	.73	28	21.4	48.0	42.3	104.5	10	12	12	12	12	12	12	12	12	12	12	12	12	10	10		
8 "	7'-11" x 5'-7"	.70	35	21.7	59.0	47.7	138.4	10	10	10	12	12	12	12	12	12	12	12	10	10	10	10		
9 "	8'-10" x 6'-1"	.69	43	21.8	70.0	53.0	179.2	10	10	10	10	10	10	10	10	10	10	10	10	10	8	8		
10 "	9'-9" x 6'-7"	.67	52	21.9	81.0	58.3	228.0	8	8	10	10	10	10	10	10	10	10	10	8	8	8	7		
11 "	10'-11" x 7'-1"	.65	61	25.1	95.0	65.8	180.8	8	8	8	10	10	10	10	10	10	8	8	8	7	7	5		
12 "	11'-10" x 7'-7"	.64	71	25.2	106.0	71.1	217.0	7	8	8	8	8	8	8	8	8	8	8	7	5	5	3		
13 "	12'-10" x 8'-4"	.65	85	24.0	118.0	77.2	315.2	5	7	8	8	8	8	8	8	7	7	5	5	3	1			
14 "	13'-11" x 8'-7"	.62	93	28.9	131.0	84.4	220.8	5	5	7	7	8	8	8	7	7	5	5	3	3	1	1		
15 "	14'-10" x 9'-1"	.61	105	28.9	142.0	89.5	254.9	3	5	5	7	7	7	7	5	3	3	1	1	–	–			
16 "	15'-10" x 9'-10"	.62	122	27.4	154.0	95.4	339.1	1	3	5	5	7	7	7	5	3	3	1	1	–	–	–		
16.5 "	16'-7" x 10'-1"	.61	131	28.7	163.0	99.8	333.8	–	1	3	3	5	5	5	3	1	1	1	–	–	–	–		

Note: For sizes of Structural Plate Pipe Arch between those shown in the table, the gage shall be interpolated (based on table data) where possible ; otherwise the gage of the next larger size shown in the table shall be used.

STRUCTURAL PLATE PIPE ARCH



CORRUGATED METAL PIPE ARCH
(Riveted)



DETAIL OF METAL CORRUGATIONS

GENERAL NOTES

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

TOLERANCES

Tolerance from the dimensions detailing size and shape will be permissable providing equivalent capacity and strength are attained.

EMBANKMENT—Minimum for ℄ Culverts

For Flexible Type Pavement, the minimum depth of embankment or cover over top of Pipe Arch (finished construction) shall be "S"/10 or 9" minimum.

For Rigid Type Pavement, the minimum depth of embankment over top of Pipe Arch shall be "S"/14 or a minimum of 3" cushion between pipe and pavement.

EMBANKMENT—Maximum for ℄ Culverts

The maximum depth of embankment shall be 10 feet (finished construction).

Adequate cover protection for Pipe Arches shall be provided at all times during construction operations to preclude any damage to structures.

TABLE OF DIMENSIONS
CORRUGATED METAL PIPE ARCH

CORRUGATED METAL PIPE ARCH									Round Pipe of Approx. Equal Periphery	
Gage (Min. Acceptable)	"S" Span Inches	"R" Rise Inches	"A" Inches	"B" Inches	"C" Inches	R1 Inches	R/S Ratio	Area Sq.Ft.	Area Sq.Ft.	Diam. Inches
16	18	11	10	4 1/2	6 1/2	3 1/2	.61	1.1	1.23	15
16	22	13	14	4 3/4	8 1/4	4	.59	1.6	1.77	18
16	25	16	17	5 1/4	10 3/4	4	.64	2.2	2.41	21
14	29	18	20	5 1/2	12 1/2	4 1/2	.62	2.8	3.14	24
14	36	22	26	6 1/4	15 3/4	5	.61	4.4	4.91	30
12	43	27	32	7	20	5 1/2	.63	6.4	7.07	36
12	50	31	38	8	23	6	.62	8.7	9.62	42
12	58	36	44	9 1/4	26 3/4	7	.62	11.4	12.57	48
12	65	40	49	10 1/2	29 1/2	8	.62	14.3	15.90	54
10	72	44	54	11 3/4	32 1/4	9	.61	17.6	19.64	60

NOTE: All Dimensions measured from inside crest of corrugations.

CORRUGATED METAL PIPE ARCH

STRUCTURAL PLATE PIPE ARCH
CORRUGATED METAL PIPE ARCH

STATE HIGHWAY COMMISSION OF WISCONSIN

RECOMMENDED FOR APPROVAL

2-5-63
DATE

ENGINEER OF DESIGN

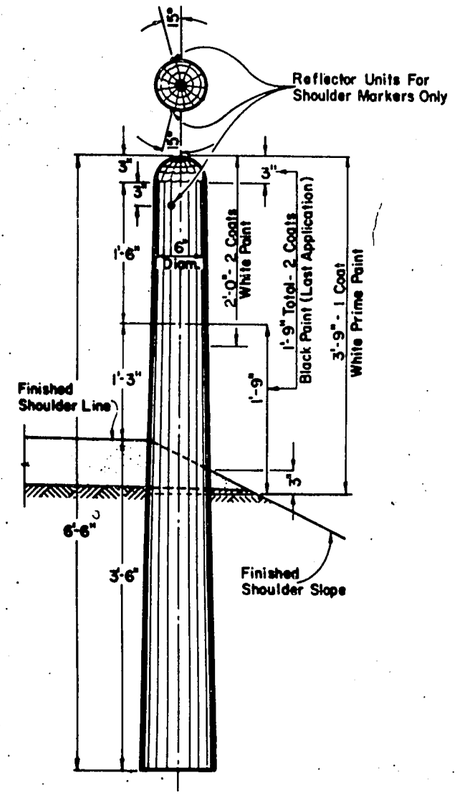
APPROVED:

2/12/63
DATE

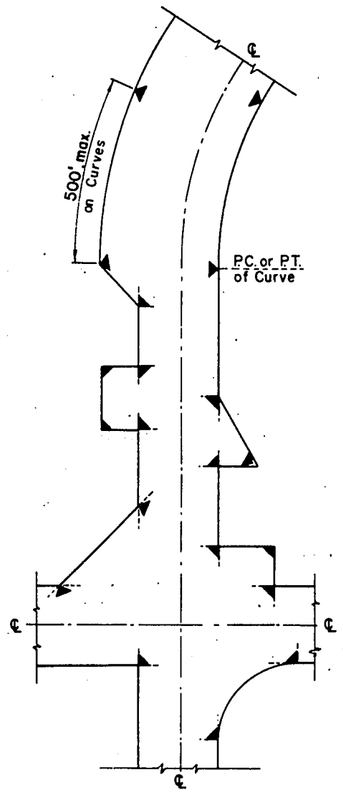
STATE HIGHWAY ENGINEER

PLATE NO. 6-5.3.2

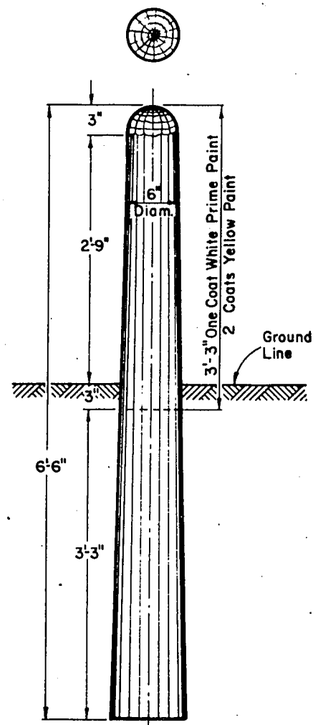
168-120



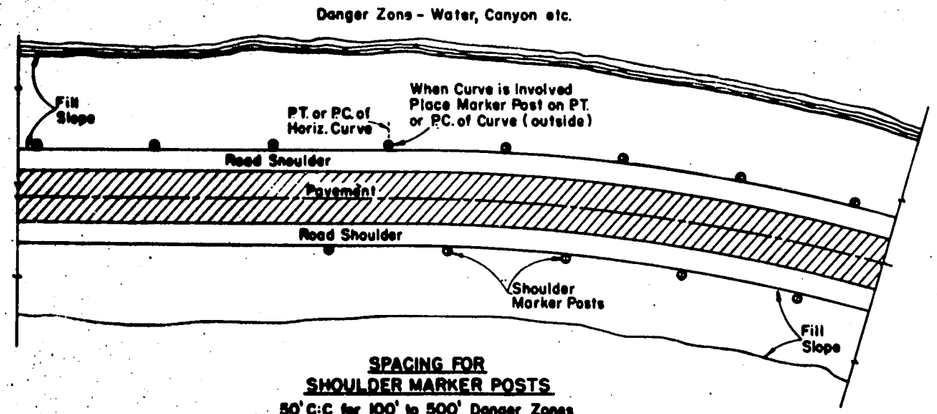
MARKER POST FOR ROAD SHOULDERS



LOCATION DIAGRAM SHOWING TYPICAL LOCATIONS OF MARKER POSTS FOR RIGHT OF WAY



MARKER POST FOR RIGHT OF WAY



SPACING FOR SHOULDER MARKER POSTS

50' C:C for 100' to 500' Danger Zones
100 C:C for Over 500' Danger Zones

LOCATION DIAGRAM SHOWING RELATIVE LOCATIONS OF SHOULDER MARKER POSTS

MARKER POSTS FOR ROAD SHOULDERS

MARKER POST FOR RIGHT OF WAY

GENERAL NOTES

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

MARKER POSTS FOR RIGHT OF WAY

Right of Way Marker Posts shall be erected in advance of grading operations. Posts shall be placed at the outer limits of the highway Right of Way, but entirely within the Right of Way, and shall be so placed that the outer edge of the posts shall be tangent to the Right of Way line or lines extended. The exact location of all Right of Way posts will be staked in the field by the Engineer.

REFLECTOR UNITS

Reflector Units shall be installed in road shoulder marker posts only. Reflector Units shall have plastic crystal lens 7/8" in diameter. Unit assembly shall be a minimum of 7/8" in length. Reflector Units shall be furnished with flared expanding metal clips for wood mounting. Units shall be mounted in tightest fit possible and securely stayed in posts.

MARKER POSTS & MARKER POSTS FOR RIGHT OF WAY

State Highway Commission of Wisconsin

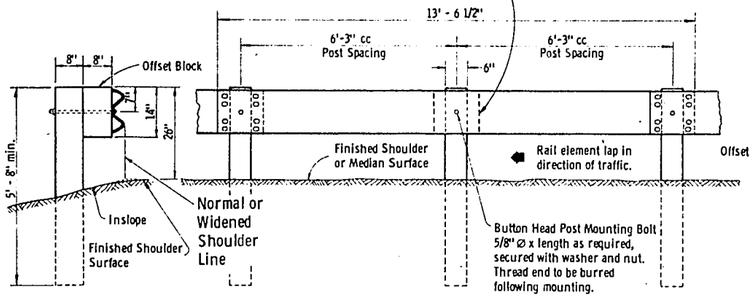
RECOMMENDED FOR APPROVAL:
7/6/66 DATE — E. J. Bobst CHIEF DESIGN ENGINEER

APPROVED:
7/5/66 DATE — H. L. Timmerman STATE HIGHWAY ENGINEER

Plate No. 7-1.3.5

16.9-120

One foot long section of rail element, with a 3/4" slotted hole for mounting, shall be placed behind the continuous rail element at the intermediate posts.

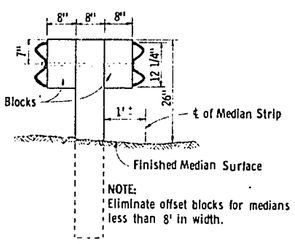


END ELEVATION

FRONT ELEVATION

STEEL PLATE BEAM GUARD

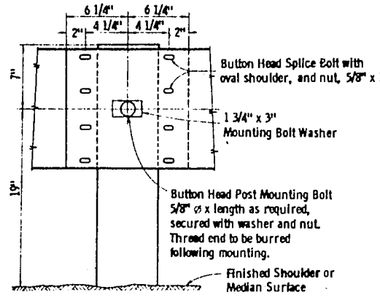
Sawed treated timber posts 6" x 8" x 6'-0" and sawed treated timber offset blocks 6" x 8" x 14" shall be furnished and placed in accordance with Standard Specifications.



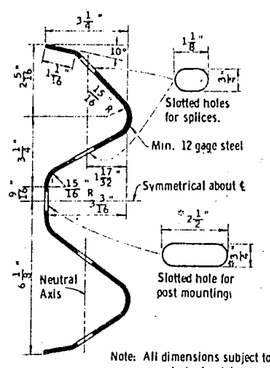
END ELEVATION

STEEL PLATE BEAM MEDIAN GUARD

STEEL PLATE BEAM GUARD OR STEEL PLATE BEAM MEDIAN GUARD



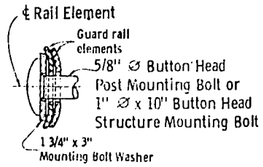
RAIL ELEMENT SPLICING AND POST MOUNTING DETAILS



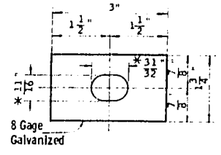
Note: All dimensions subject to manufacturing tolerance.

SECTION THRU RAIL ELEMENT

* Holes for Structure Mounting shall be 1 1/16" dia.



MOUNTING BOLT DETAIL



MOUNTING BOLT WASHER

* Hole in Structure Mounting Bolt Washer to be 1 1/16" dia.

GENERAL NOTES

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

The exact location of the beginning and end of each Guardrail installation shall be as shown on the plans or as directed by the engineer.

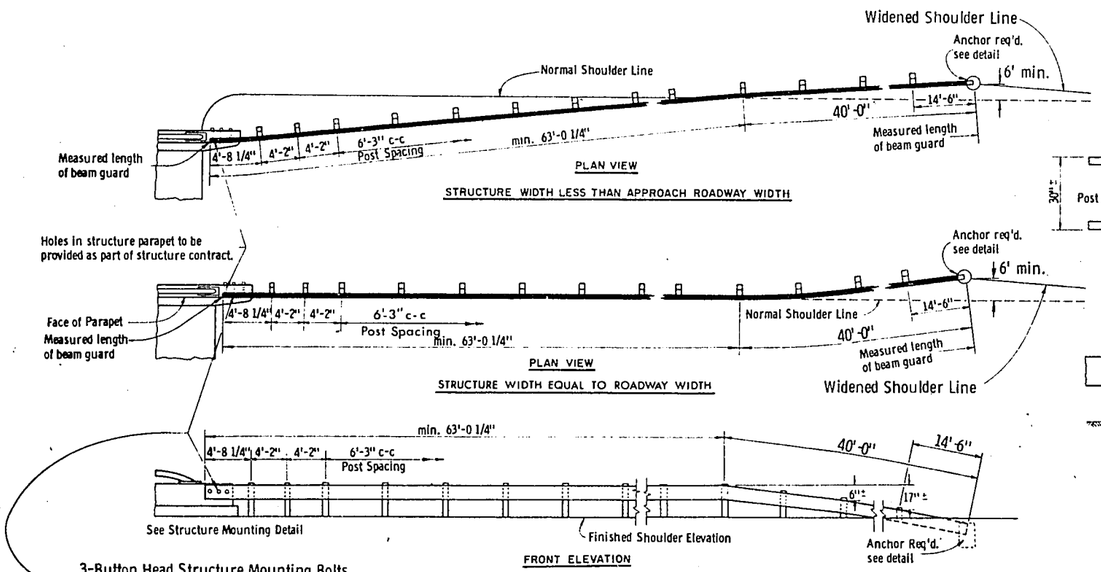
TERMINATION AT STRUCTURES NOT PROVIDED WITH A NOTCH
For those structures where a notch is not provided, the Guardrail will be terminated as directed by the engineer.

POST-FOOTING DETAIL AT PIERS
The Post-Footing Details shall be used when guard-rail posts are over structure footings and less than 3' 6" of earth is provided over the top of the footing.

STEEL PLATE BEAM MEDIAN GUARD
Eliminate offset blocks for medians less than 8 foot in width.

ALTERNATE ANCHORS
Square anchors will be permitted. Square anchors shall be a minimum of 24 inches x 24 inches.

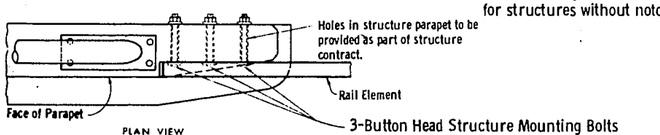
SHOULDER WIDENING
The shoulder widening to accommodate the anchored end of the Guardrail shall be accomplished at a rate of widening not to exceed 50 to 1.

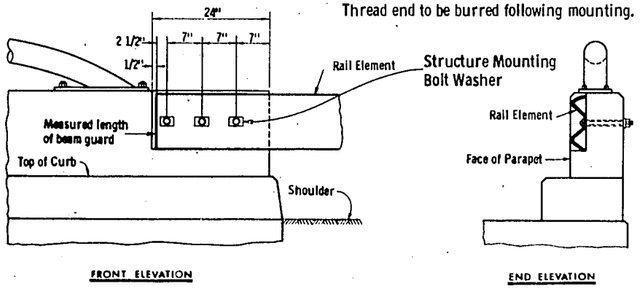


3-Button Head Structure Mounting Bolts 1"Ø x 10" secured with washer and nut. Thread end to be burred following mounting.

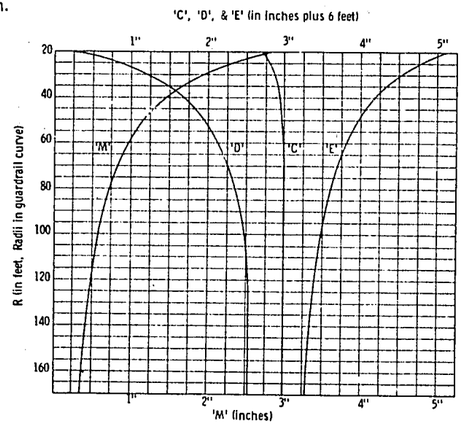
TYPICAL INSTALLATION AT STRUCTURES

For structures constructed with notch to receive beam guard. See General Notes for structures without notch.

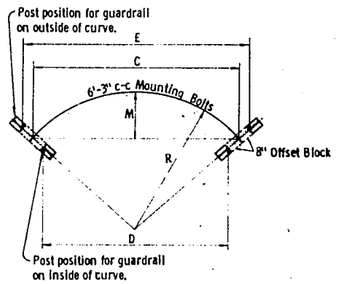




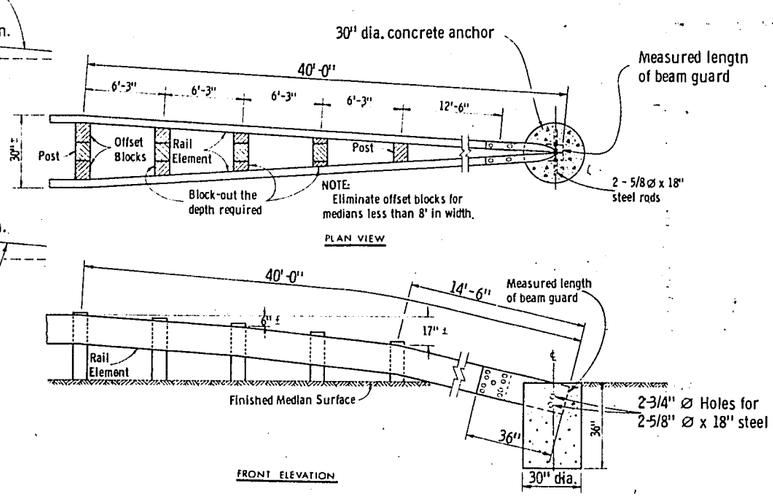
STRUCTURE MOUNTING DETAIL



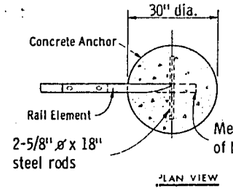
CURVE DATA FOR POST SPACING AND BEAM CURVING

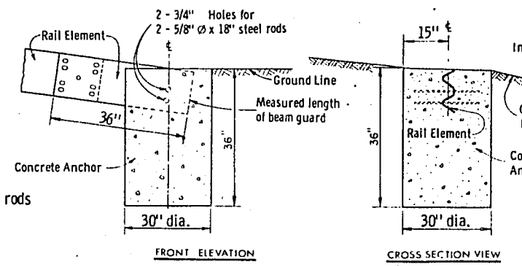


Chord lengths for post spacing and middle ordinates for beam curving

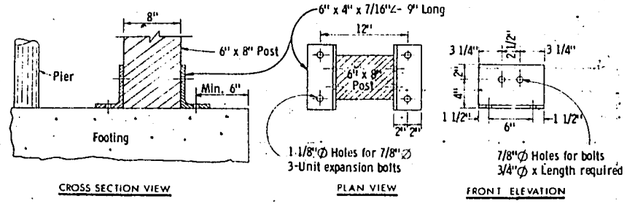


ANCHOR DETAIL FOR DOUBLE RAIL ELEMENT INSTALLATION

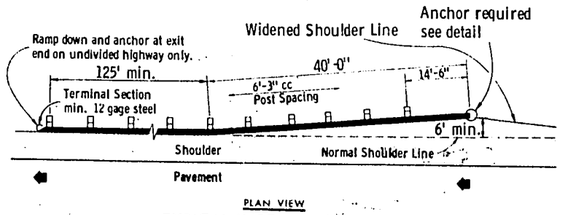




ANCHOR DETAIL FOR SINGLE RAIL ELEMENT INSTALLATION



POST-FOOTING DETAIL AT PIERS



TYPICAL INSTALLATION AT LOCATIONS OTHER THAN STRUCTURES

STEEL PLATE BEAM GUARD & STEEL PLATE BEAM MEDIAN GUARD

State of Wisconsin
Department of Transportation
Division of Highways

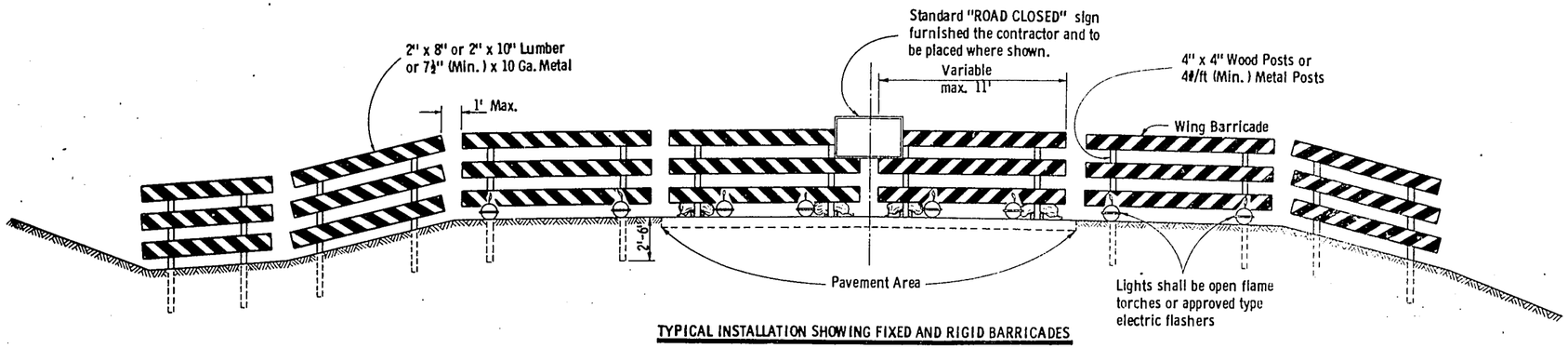
RECOMMENDED FOR APPROVAL:
1/25/68 DATE — E. J. Bykit, CHIEF DESIGN ENGINEER

APPROVED:
2/8/68 DATE — L. J. Lucci, STATE HIGHWAY ENGINEER

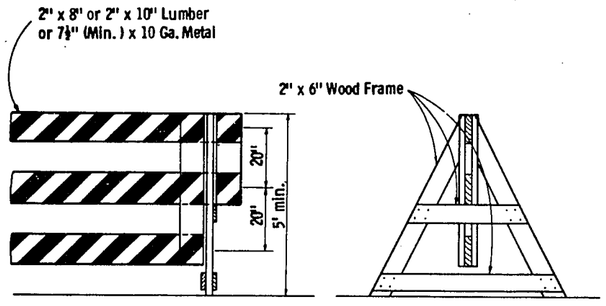
Plate No. 7-2.4.13

Plate No. 7-2.4.13

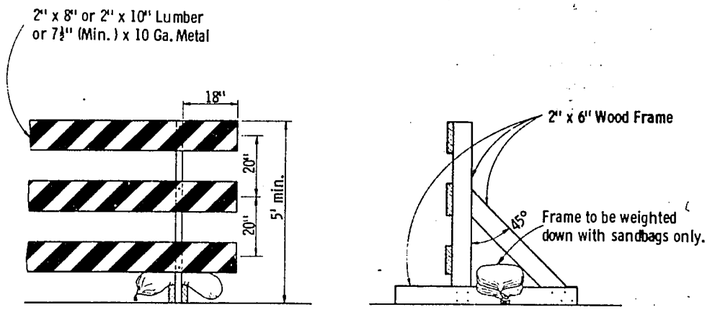
16.10-120



TYPICAL INSTALLATION SHOWING FIXED AND RIGID BARRICADES

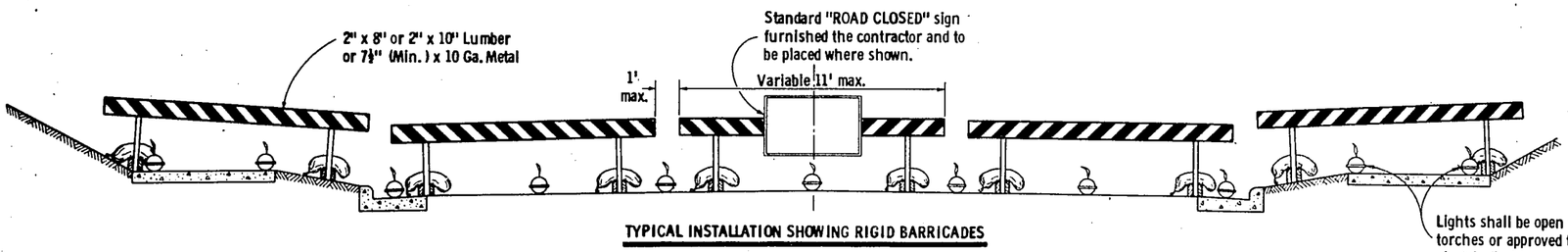


ALTERNATE TYPE INSTALLATION (DEMOUNTABLE)

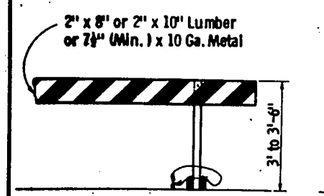


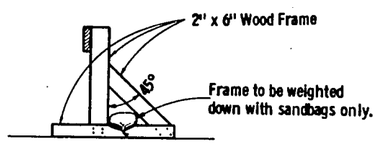
ALTERNATE TYPE INSTALLATION (RIGID)

CLASS I BARRICADES

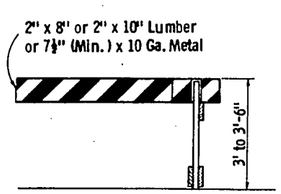


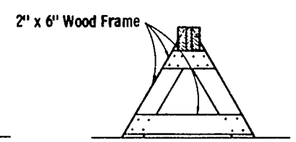
TYPICAL INSTALLATION SHOWING RIGID BARRICADES



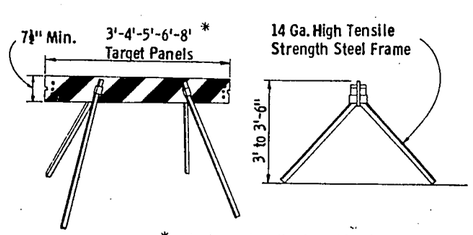


ALTERNATE TYPE INSTALLATION (RIGID)





ALTERNATE TYPE INSTALLATION (DEMOUNTABLE)



* Maximum length of combination panels 16'

ALTERNATE TYPE INSTALLATION (DEMOUNTABLE)

CLASS II BARRICADES

GENERAL NOTES

The contractor shall construct, place and maintain barricades as shown on the drawing and as required by the Standard Specifications or applicable Special Provisions.

CLASS 1 BARRICADE:

Class 1 Barricades shall be of variable length as indicated, and long barricades shall be assembled from these units. The Class 1 Barricade is the type normally required for major operations, where the barricade will remain in place for extended periods. Class 1 Barricades shall be used at points where the road is closed to traffic. Gates or movable sections of a barricade shall be provided when necessary, for access of equipment or other authorized vehicles.
Wing Barricades are Class 1 Barricades erected on the shoulder on one or both sides of the pavement to give Traffic the perceptive effect of a narrowing or restricted roadway. The ends closest to traffic of all three members of a wing barricade shall be in a vertical line. If used in a series, they should start at the outer edge of the shoulder and be brought progressively closer to the pavement. Wing Barricades may be used as a mounting for the advance warning or guide signs or for flashers. When used on two-way roadways, the back of the wing barricade shall be painted reflectorized white.

CLASS 11 BARRICADE:

Class 11 Barricades may be used only where the hazard to traffic is relatively small, and for the more or less continuous delimiting of a restricted roadway, or for temporary daytime use.

MATERIAL & FABRICATION:

Lumber shall be of a grade structurally sound and sufficiently rigid to satisfactorily support and maintain the purpose and intent of a barricade facility.
Metal shall be sufficiently rigid to satisfactorily support and maintain the purpose and intent of a barricade facility.
The fabrication of the barricade shall be in accord with good pertinent woodworking and metalworking practices.
All lumber or timber dimensions stated are nominal.

PAINTING:

All barricades shall be painted in alternate 4" or 6" black and white stripes at a 45° angle. The width of stripe shall be consistent for each complete barricade installation.
Black stripes shall be painted with weather resistant and durable black paint. White stripes shall be primed, followed by two coats of white reflectorized paint or reflective wide angle sheeting.

DIRECTION OF DIAGONAL STRIPES:

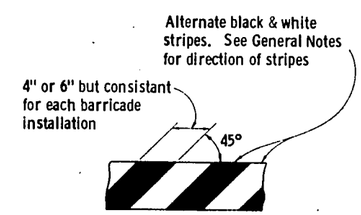
Where a barricade extends entirely across the roadway with no vehicle access provision, the stripes shall slope downward toward the highway centerline.
Where vehicle access is permitted, the stripes shall slope downward in the direction toward which vehicles must turn in detouring.
Where both right and left turns are provided for, the stripes shall slope downward in both directions from the center.
The stripes on wing barricades shall point downward toward the roadway.

LIGHTING:

Lighting devices for barricades shall conform to the requirements of the Standard Specifications.

MEASUREMENT & PAYMENT:

All barricades, unless otherwise provided for in the plans and/or special provisions shall be furnished, placed, and maintained as noted above, and no additional compensation will be allowed but shall be construed to be included in the price bid for other items.



TYPICAL DIAGONAL STRIPES

Applies to all Classes & Types of Barricades

CONSTRUCTION BARRICADE

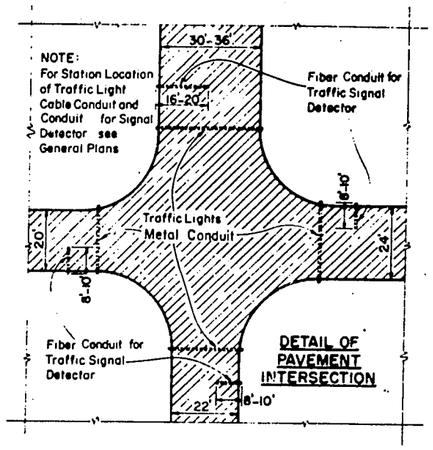
State Highway Commission of Wisconsin

RECOMMENDED FOR APPROVAL:
1/11/67 (DATE) — CHIEF DESIGN ENGINEER
APPROVED:
1/13/67 (DATE) — STATE HIGHWAY ENGINEER

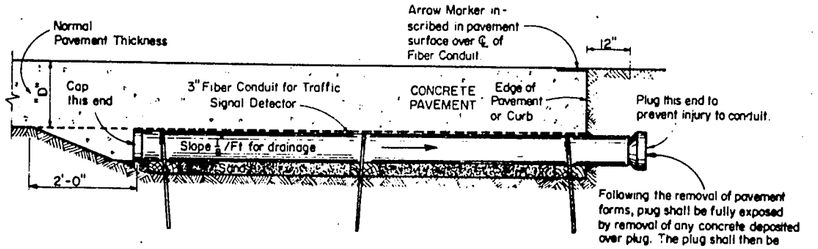
Plate No. 7-41.5

Plate No. 7-41.5

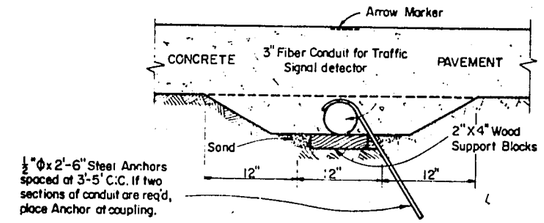
16.11-120



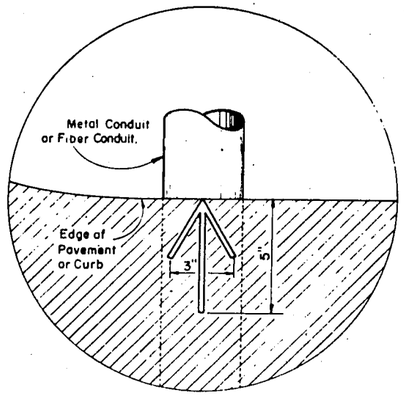
PLAN VIEW
SHOWING RELATIVE POSITION OF
TRAFFIC LIGHT CONDUITS AND
TRAFFIC SIGNAL DETECTOR CONDUITS
AT UNDIVIDED HIGHWAY INTERSECTIONS



TRAFFIC SIGNAL DETECTOR FOR
UNDIVIDED HIGHWAYS

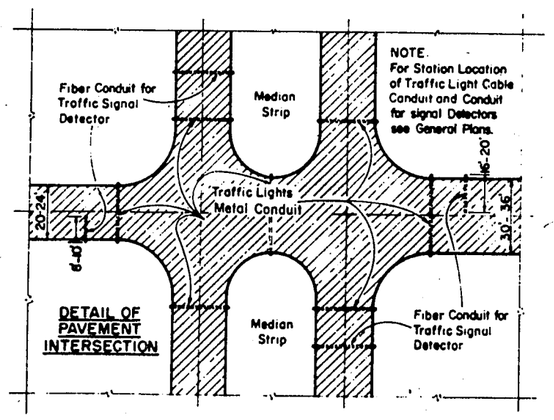


SIDE & END ELEVATIONS
- SHOWING PLACEMENT DETAILS
FOR TRAFFIC SIGNAL DETECTOR CONDUIT

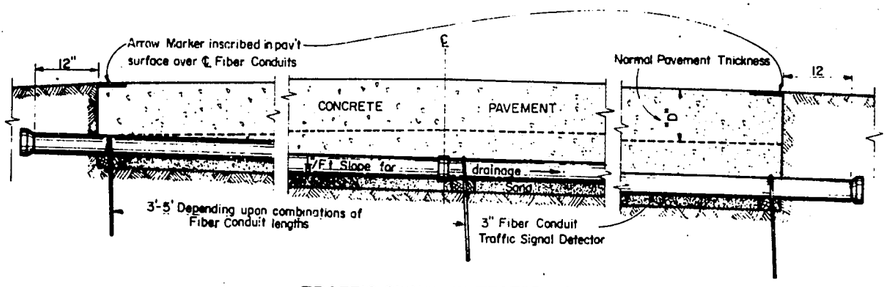


Arrow Marker to be inscribed in fresh concrete and/or bituminous surfacing ¼" to ⅜" deep at each location where pipe conduit or fiber cond ore placed under rigid surfacing.

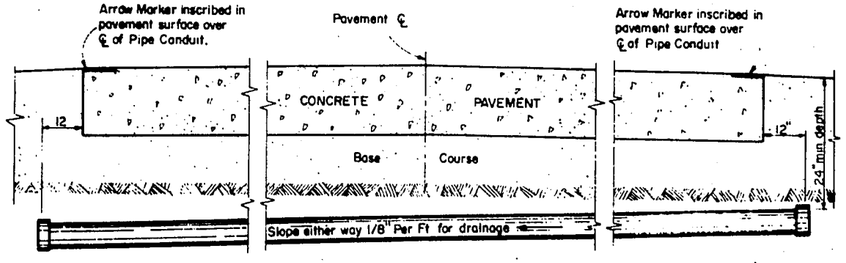
PLAN VIEW - ARROW MARKER



PLAN VIEW
SHOWING RELATIVE POSITION OF
TRAFFIC LIGHT CONDUITS AND
TRAFFIC SIGNAL DETECTOR CONDUITS
AT DIVIDED HIGHWAY INTERSECTIONS



TRAFFIC SIGNAL DETECTOR FOR
DIVIDED HIGHWAYS



ELEVATION ON CENTERLINE
SHOWING PLACEMENT DETAILS
FOR TRAFFIC SIGNAL CONDUIT

GENERAL NOTES

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

MATERIALS

Metal Conduit shall be furnished and placed as shown hereon and in accord with the Standard Specifications.

Fiber Conduit shall be furnished and placed as shown hereon and in accord with the Standard Specifications.

MEASUREMENT & PAYMENT

The item of Fiber Conduit shall be measured and paid for by the linear foot complete in place and in accord with Standard Specifications

CONDUIT SIZE

Unless shown or required otherwise on the plans, Metal Conduit shall be 2" I.D.

METAL CONDUIT & FIBER CONDUIT

STATE HIGHWAY COMMISSION OF WISCONSIN

RECOMMENDED FOR APPROVAL:

4-3-63
DATE

J. S. Pilf
ENGINEER OF DESIGN

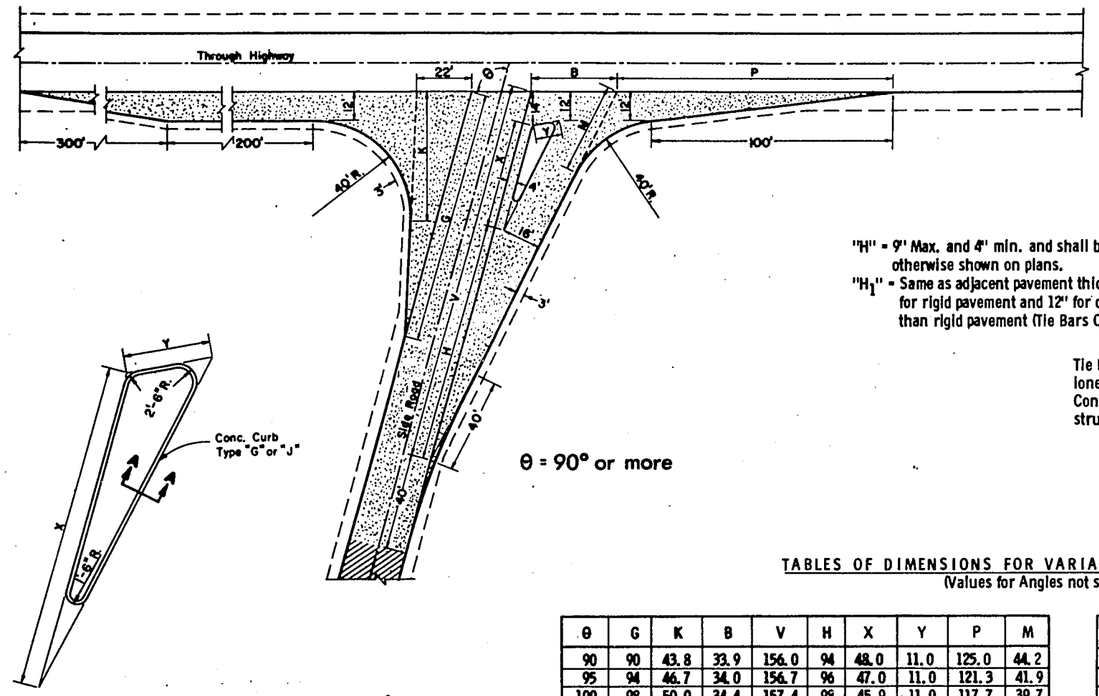
APPROVED:

4/5/63
DATE

E. L. Ruettiger
STATE HIGHWAY ENGINEER

PLATE NO. 8-5.1.6

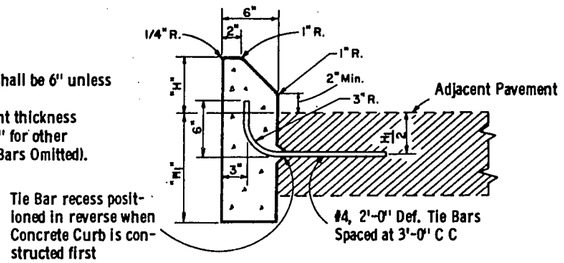
1612-120



θ = 90° or more

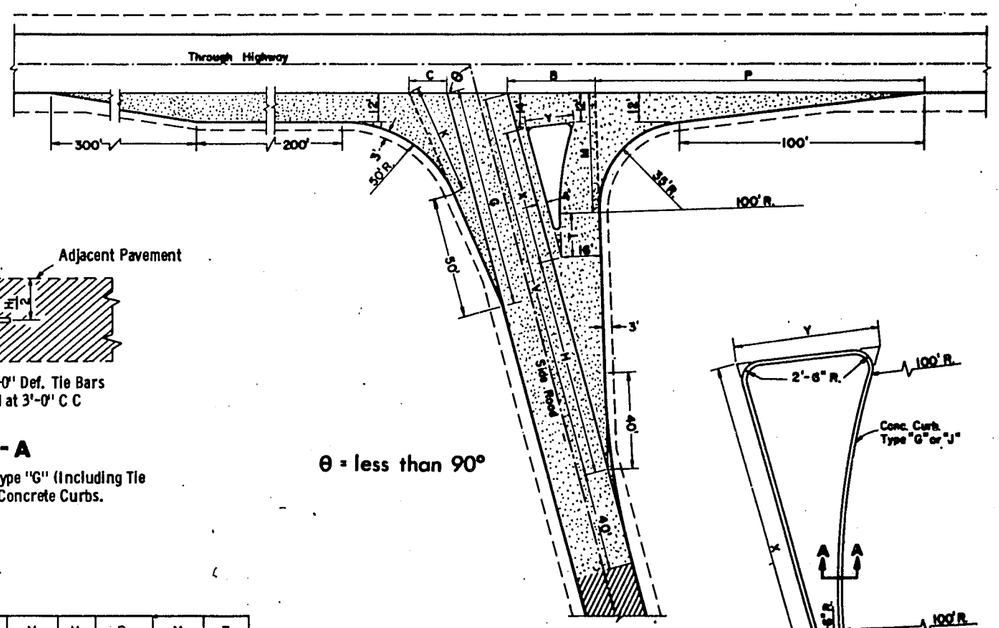
"H" = 9" Max. and 4" min. and shall be 6" unless otherwise shown on plans.

"H_1" = Same as adjacent pavement thickness for rigid pavement and 12" for other than rigid pavement (Tie Bars Omitted).



SECTION A - A

Note: To be measured and paid for as Type "G" (Including Tie Bars) or Type "J" (Excluding Tie Bars) Concrete Curbs.



θ = less than 90°

TABLES OF DIMENSIONS FOR VARIABLE SIDE ROAD INTERSECTION ANGLES

(Values for Angles not shown shall be interpolated)

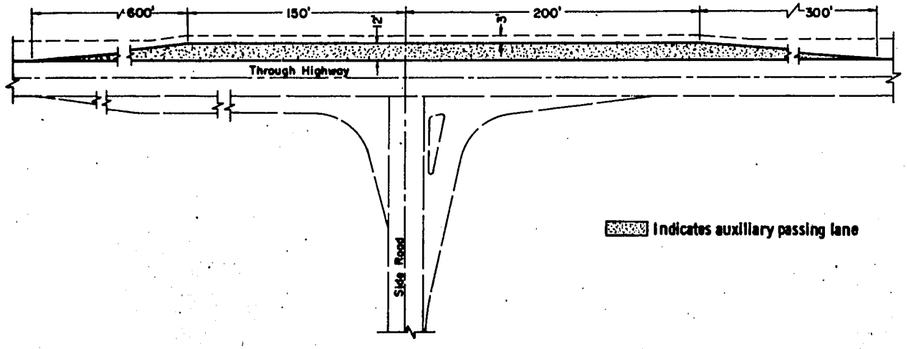
θ	G	K	B	V	H	X	Y	P	M
90	90	43.8	33.9	156.0	94	48.0	11.0	125.0	44.2
95	94	46.7	34.0	156.7	96	47.0	11.0	121.3	41.9
100	98	50.0	34.4	157.4	98	45.9	11.0	117.7	39.7
105	102	53.8	35.2	158.3	100	44.9	11.2	114.2	37.8
110	106	58.2	36.4	159.2	102	43.7	11.4	110.6	36.2
115	110	63.4	38.4	161.8	104	42.6	11.7	107.1	34.8
*120	114	69.4	40.1	161.2	106	41.4	12.2	103.4	33.7

*Maximum angle of intersection

θ	C	G	K	B	V	X	Y	H	P	M	T
*60	19.7	76.3	38.6	41.5	169.9	67.4	29.3	84	144.5	58.8	21.6
65	17.8	82.6	40.6	39.4	166.9	63.6	25.0	86	141.2	54.9	20.7
70	15.8	87.2	43.1	37.4	164.1	59.7	21.9	88	136.8	51.4	19.2
75	15.7	90.9	45.6	35.7	161.4	55.9	19.3	90	132.7	48.2	17.4
80	15.9	94.9	48.3	34.4	158.9	51.9	17.0	92	128.8	45.3	14.9
85	16.2	99.3	51.4	33.4	156.4	48.0	15.0	94	125.2	42.7	10.4

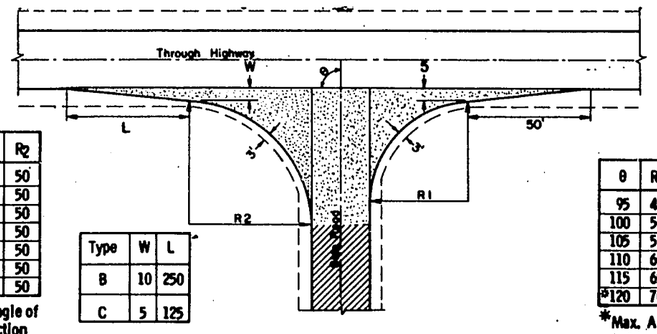
*Desirable Minimum angle of intersection

TYPE "A" SIDE ROAD INTERSECTION DETAILS



Indicates auxiliary passing lane

PASSING LANE DETAIL



θ	R1	R2
*60	40	50
65	40	50
70	40	50
75	40	50
80	40	50
85	40	50
90	40	50

*Min. Angle of Intersection

Type	W	L
B	10	250
C	5	125

θ	R1	R2
95	45	49
100	50	48
105	55	47
110	60	46
115	65	45
*120	70	44

*Max. Angle of Intersection

TYPE "B" & "C" SIDE ROAD INTERSECTION DETAILS

GENERAL NOTES

Designs may be used interchangeably in combination or separately for any one complete intersection depending upon intersection angle and surfacing of each approach roadway.

Details on this drawing are for minimum design only, and not applicable to special conditions, as shown elsewhere on the plans.

SIDE ROAD SURFACING NOTE

If the side road is not presently paved, pavement shall be placed to the limits shown. In the case where the construction limits are beyond the paving limits, gravel or crushed stone surfacing shall be placed between the paving limits and construction limits.

If the side road is presently paved, new pavement shall be placed to the limits of design as shown and beyond, if necessary, to meet existing pavement.

If side road is the construction project, the intersection surfacing shall be the same as for the project.

New Pavement

Existing Surface

LAYOUT DETAILS FOR AT-GRADE SIDE ROAD INTERSECTIONS

State Highway Commission of Wisconsin

RECOMMENDED FOR APPROVAL:

8/9/67 DATE — E. J. Bobel, STATE HIGHWAY ENGINEER

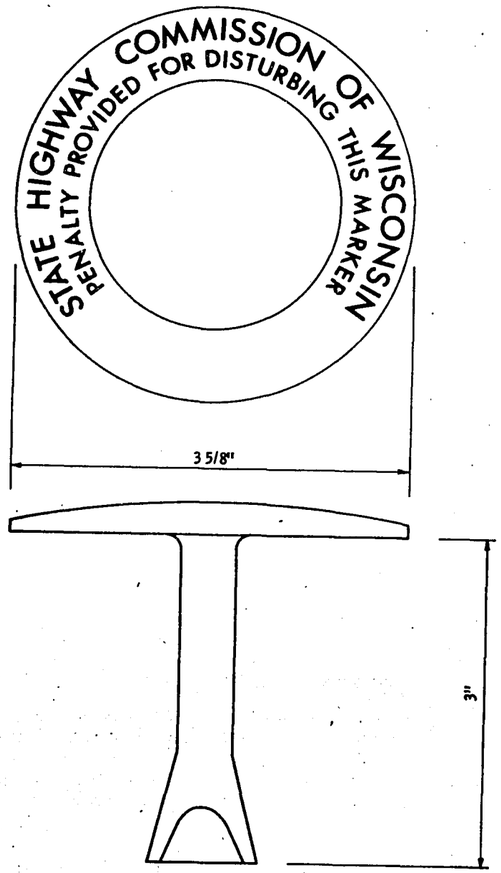
APPROVED:

8/9/67 DATE — STATE HIGHWAY ENGINEER

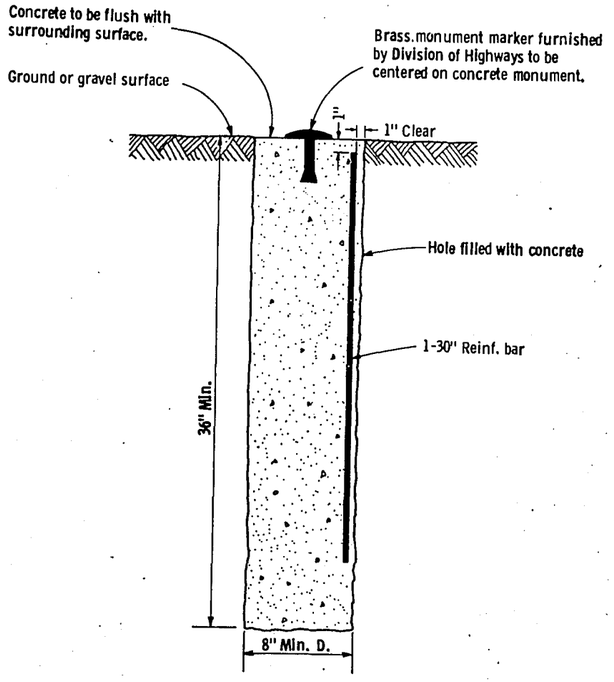
Plate No. 9-1.1.5

Plate No. 9-1.1.5

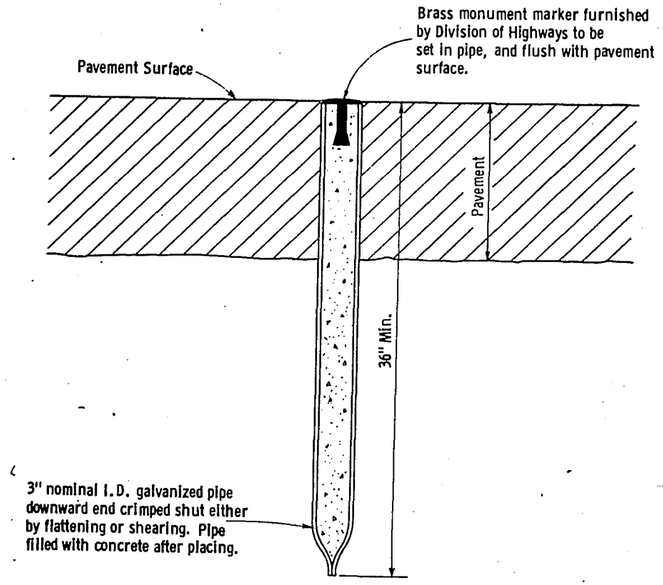
16.13-120



BRASS
MONUMENT MARKER
To be furnished to contractor by Division of Highways



TYPE "A"
To be used only when monument is required outside of pavement surface.



TYPE "B"
To be used only when monument is required to be located within the limits of a pavement surface.

GENERAL NOTES

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

Monuments conforming to Type "A" or Type "B", as shown hereon, shall be placed at the direction of the engineer.

LANDMARK REFERENCE MONUMENTS

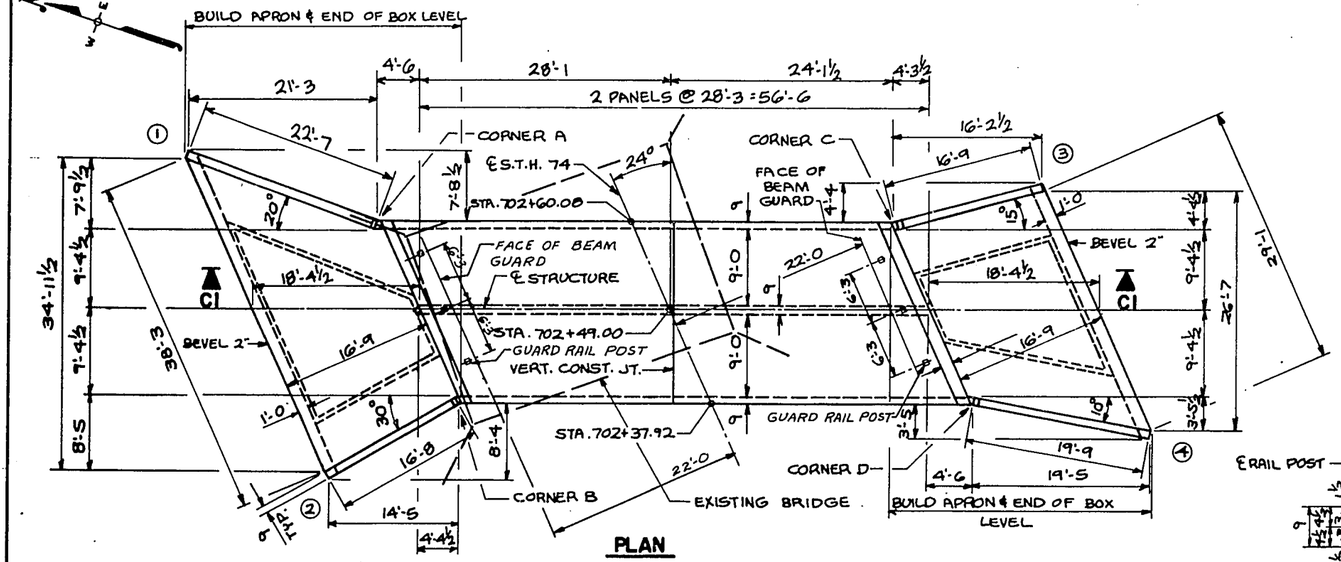
State of Wisconsin
Department of Transportation
Division of Highways

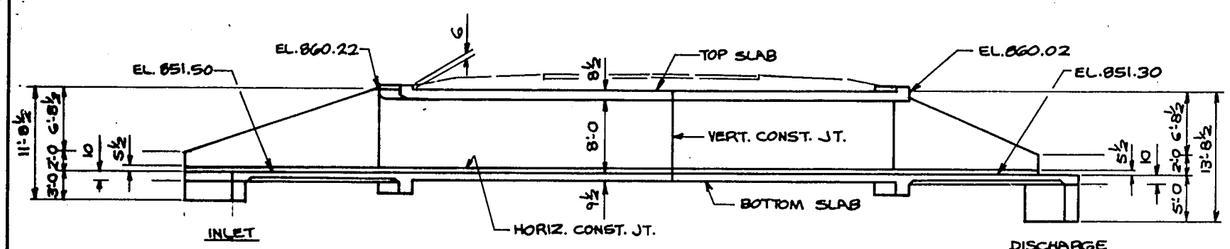
RECOMMENDED FOR APPROVAL:
1-25-68 DATE — E. J. Burkit CHIEF DESIGN ENGINEER

APPROVED:
2/8/68 DATE — K. H. Romnes STATE HIGHWAY ENGINEER

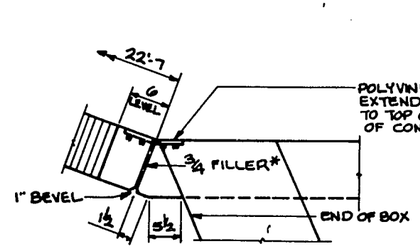
Form E 8-11-69

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	17	120
PROJECT DESIGNATION ~~STH 100-0 000~~ T.O.168(9)		

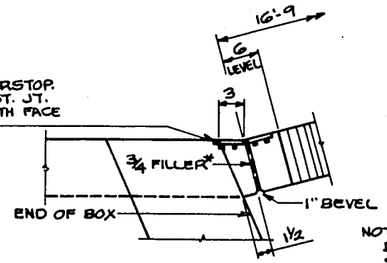




SECTION C1



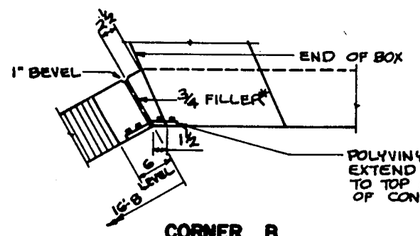
CORNER A



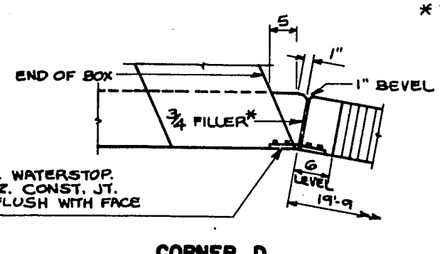
CORNER C

NOTE:
DO NOT RUN ANY BAR STEEL REINFORCEMENT THRU JOINT FILLER.

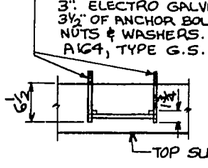
* TO EXTEND FROM HORIZONTAL CONST. JOINT TO TOP OF WING.

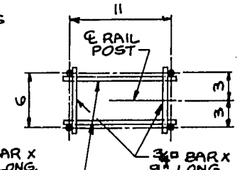


CORNER B



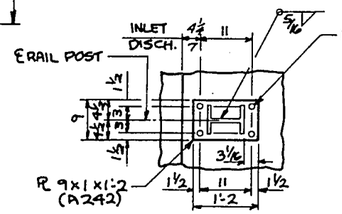
CORNER D



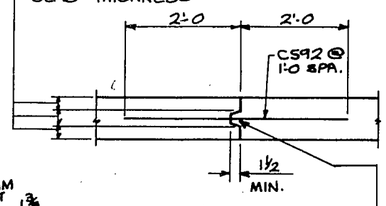


NOTE: PLACE ANCHOR BOLTS VERTICAL.

ANCHOR BOLT DETAILS



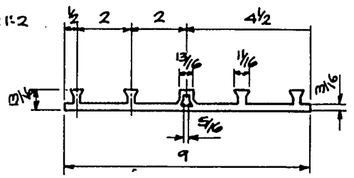
SECTION B



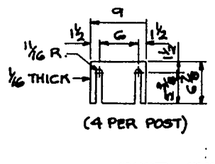
VERT. CONST. JOINT

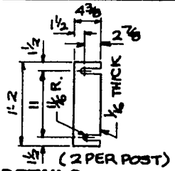
SURFACED, BEVELED KEYWAY

TYP. SECTION THRU RAILING



POLYVINYL CHLORIDE WATERSTOP





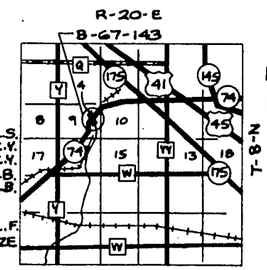
POST SHIM DETAILS

TOTAL ESTIMATED QUANTITIES

BID ITEMS		
REMOVING OLD BRIDGE, STA. 702+56	1	L.S.
EXCAVATION FOR STRUCTURES	129	C.Y.
CONCRETE MASONRY	148	C.Y.
BAR STEEL REINFORCEMENT	22,570	LB.
STRUCTURAL CARBON STEEL	770	LB.
NON BID ITEMS		
POLYVINYL CHLORIDE WATERSTOP	33	L.F.
FILLER	¾"	SIZE

TRAFFIC VOLUME

A.D.T. = 9,000
D.H.V. = 1,350



LAYOUT

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.
BAR STEEL REINFORCEMENT SHALL BE IMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED.
BEVEL EXPOSED EDGES OF CONCRETE 1" UNLESS SHOWN OR NOTED OTHERWISE.
THE FLOW LINE WAS USED AS THE UPPER LIMITS OF EXCAVATION FOR THE COMPUTATION OF EXCAVATION QUANTITIES.
JOINT FILLER SHALL CONFORM TO A.A.S.H.O. M 153 OR M 213.

NOTES

STEEL RAIL POSTS SHALL BE SET NORMAL TO GRADE.
STEEL SHIMS SHALL BE USED UNDER POSTS WHERE REQUIRED FOR ALIGNMENT.
CAULK EXPOSED OPENINGS BETWEEN SHIMS WITH LEAD WOOL.
POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.
BASE PLATES SHALL BE MADE FROM MATERIAL CONFORMING TO A.S.T.M. DESIGNATION A 242.
SHIMS SHALL BE MADE FROM MATERIAL CONFORMING TO A.S.T.M. DESIGNATION A 242 OR A 36. IF A 36 IS USED IT SHALL BE GALVANIZED ACCORDING TO A.S.T.M. DESIGNATION A 123.
ANCHOR BOLTS SHALL BE MADE FROM MATERIAL CONFORMING TO A.S.T.M. DESIGNATION A 307.
A.S.T.M. DESIGNATION A 242 STEEL SHALL HAVE A CORROSIVE RESISTANCE OF FOUR OR MORE TIMES THAT OF A 36 STEEL.
POSTS, BASE PLATES, SHIMS & ANCHOR BOLT ASSEMBLIES SHALL BE PAID FOR AS STRUCTURAL CARBON STEEL.

HYDRAULIC DATA

DRAINAGE AREA = 1,600 ACRES
HIGH WATER EL. = 859.2
Q50 = 700 C.F.S.
V = 10 F.P.S.

DESIGN DATA

LIVE LOAD : HS 20
EARTH LOAD :
DESIGNED FOR 1.5' OF FILL.

ALLOWABLE DESIGN STRESSES

CONCRETE MASONRY, GRADE 'AA' f_c = 1,400 P.S.I.
BAR STEEL REINFORCEMENT f_s = 20,000 P.S.I.

LIST OF DRAWINGS

1. DETAILS — X42467
2. DETAILS — X42468
3. DETAILS & BILL OF BARS — X42469
4. SUBSURFACE EXPLORATION — X42470

No.	Date	Revision	By

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-67-143

S.T.H. 74 OVER BRANCH OF FOX RIVER

County WAUKESHA		City, Village MENOMONEE FALLS	
Design Spec. A.A.S.H.O. '69		Load HS 20	Const. Spec. 1969
Designed By COMP.	Design Checked COMP.	Drawn By DB	Plans Checked FO'M

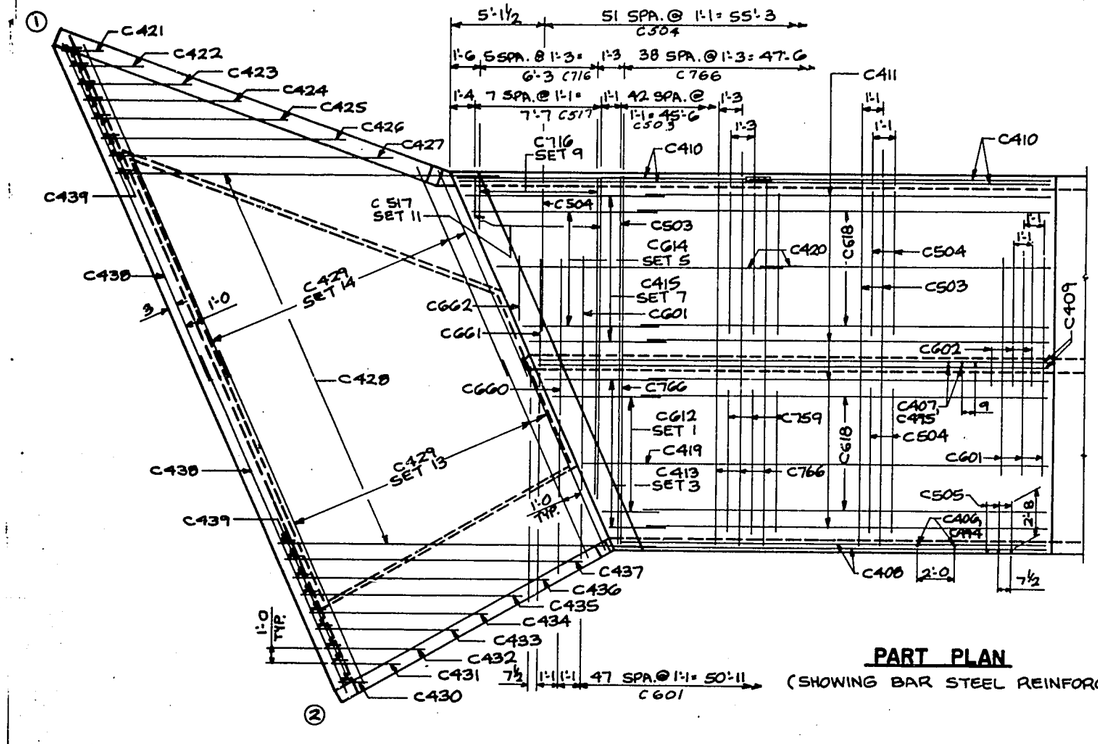
Approved W. A. Klein (A) — Chief Bridge Engineer — 3-18-70 — Date

DETAILS

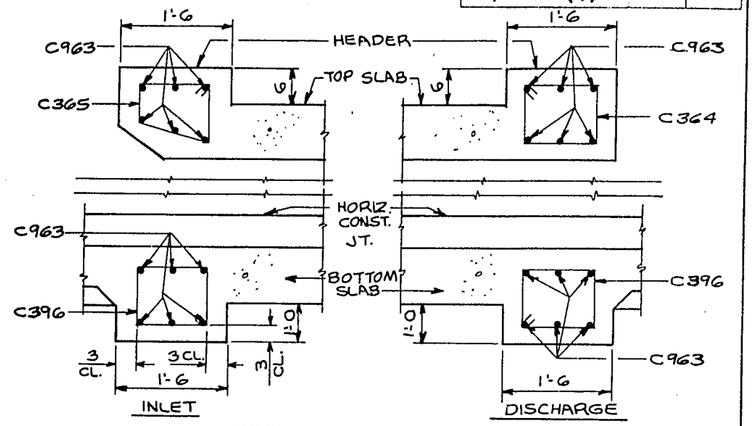
SHEET 1 OF 4

X 42467

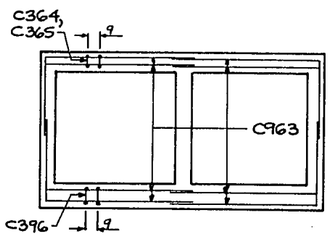
PROJECT ID	SHEET NUMBER	TOTAL SHEETS
2321-1-71	18	120
PROJECT DESIGNATION T0168 (9)		



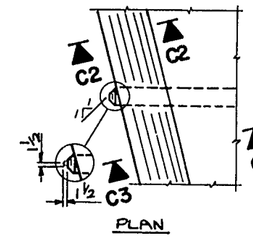
PART PLAN
(SHOWING BAR STEEL REINFORCEMENT)

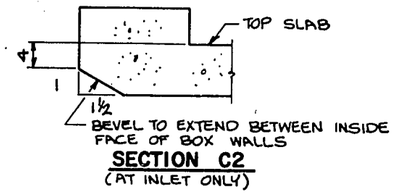


HEADER DETAILS
(SECTION AT RT. ∠'S. TO HEADER)

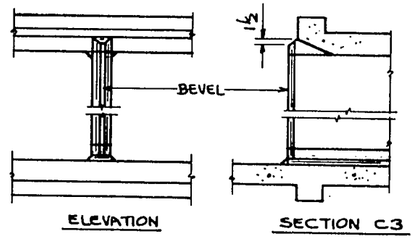


SECTION A

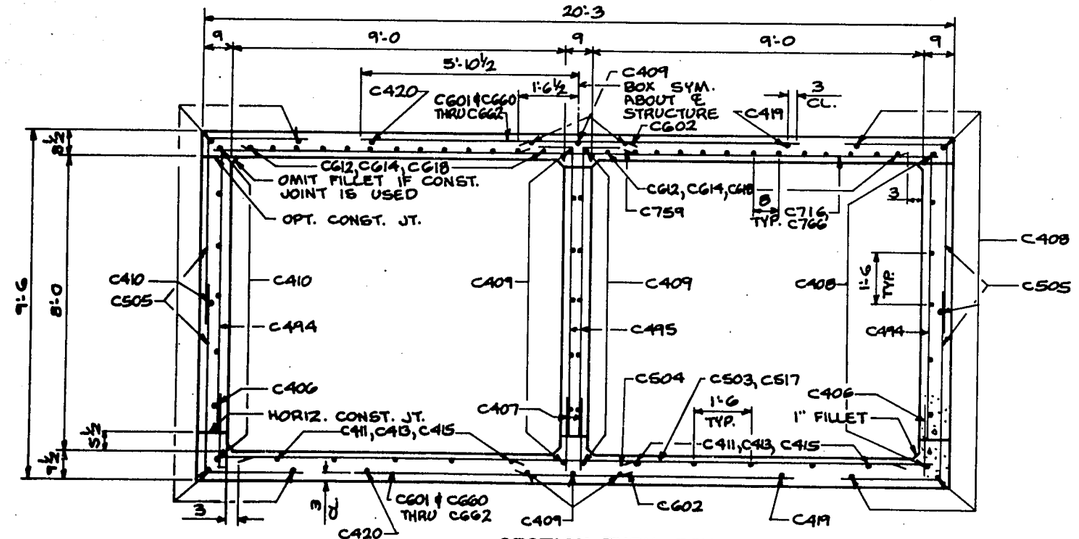




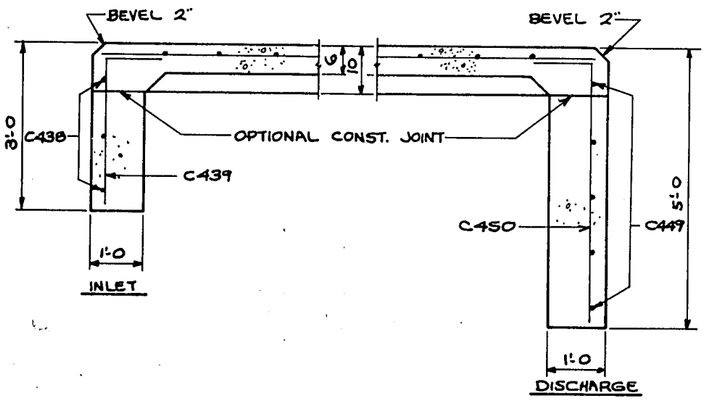
SECTION C2
(AT INLET ONLY)



INLET NOSE CENTERWALL DETAILS



SECTION THRU BOX
(NORMAL TO ℄ STRUCTURE)



CUT OFF WALL DETAILS
(SECTION NORMAL TO CUT OFF WALLS)

No.	Date	Revision	By

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-67-143

Const. Spec.	Drawn By	Plans Checked
1969	DB	F.O'M

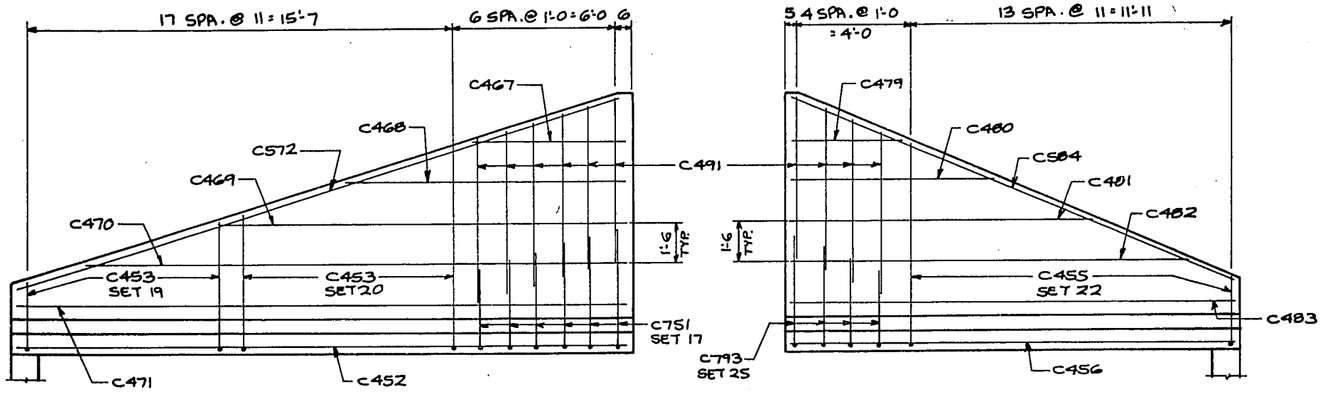
DETAILS

SHEET 2 OF 4

X 42468

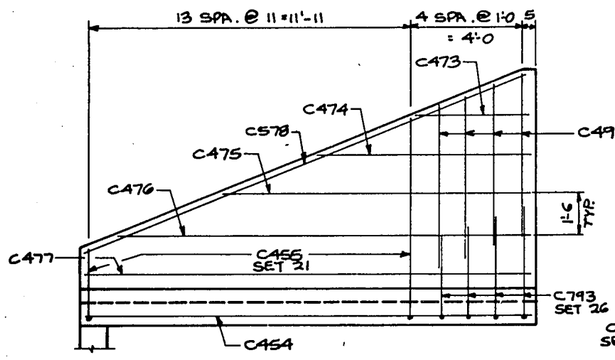
Form E-B-12-69

PROJECT ID	SHEET NUMBER	TOTAL SHEETS
2321-1-71	19	120
PROJECT DESIGNATION T0168(9)		

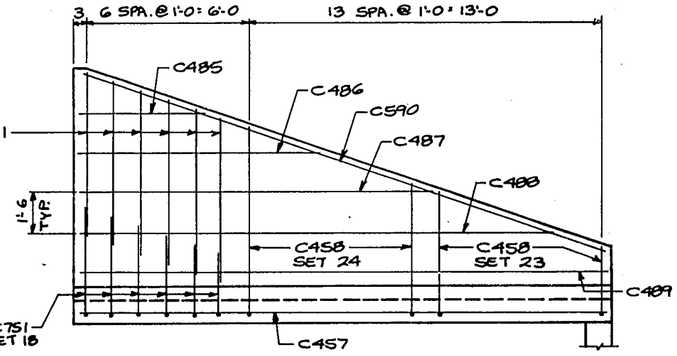


WING 1

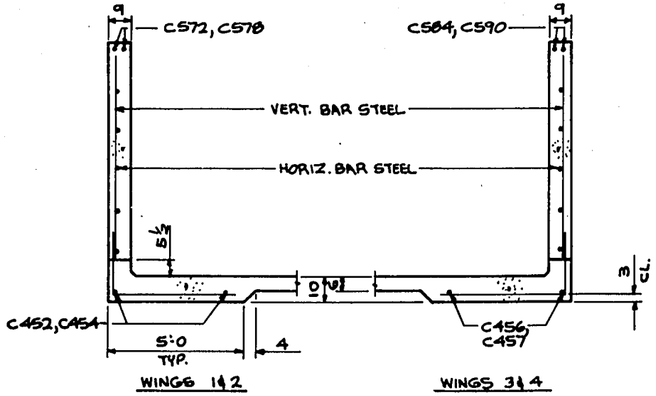
WING 3



WING 2



WING 4



SECTION THRU WINGS
(AT RT. ∠'s TO WING WALLS)

BILL OF BARS

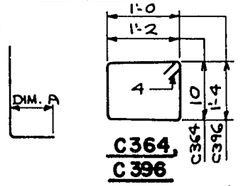
MARK	NO.	LENGTH	BENT	CUT DIA.	LOCATION
C601	96	11-9			BOTTOM & TOP SLAB
C602	102	3-1			BOTTOM & TOP SLAB
C503	43	19-6			BOTTOM SLAB
C504	104	7-9			BOTTOM SLAB
C505	360	7-11	X		BOTTOM & TOP SLAB & WALLS
C406	58	2-0			WALLS - EXTERIOR
C407	150	2-0			WALLS - INTERIOR
C408	24	23-3			WALLS
C409	40	27-6			WALLS
C410	48	16-8			WALLS
C411	20	22-5			BOTTOM SLAB
C612	13	9-7		X	TOP SLAB - SET 1 & 2
C413	5	8-9		X	BOTTOM SLAB - SET 3 & 4
C614	13	18-3		X	TOP SLAB - SET 5 & 6
C415	5	17-5		X	BOTTOM SLAB - SET 7 & 8
C716	6	19-6		X	TOP SLAB - SET 9 & 10
C517	8	21-6		X	BOTTOM SLAB - SET 11 & 12
C618	52	22-0			TOP SLAB
C419	4	25-2			BOTTOM & TOP SLAB
C420	8	15-9			BOTTOM & TOP SLAB
C421	1	2-3			APRON - INLET
C422	1	4-6			APRON - INLET
C423	1	6-9			APRON - INLET
C424	1	9-3			APRON - INLET
C425	1	11-6			APRON - INLET
C426	1	13-9			APRON - INLET
C427	1	16-0			APRON - INLET
C428	20	20-3			APRON - INLET
C429	16	31-0		X	APRON - INLET - SET 13 & 14
C430	1	1-3			APRON - INLET
C431	1	3-6			APRON - INLET
C432	1	5-6			APRON - INLET
C433	1	7-9			APRON - INLET
C434	1	10-0			APRON - INLET
C435	1	12-0			APRON - INLET
C436	1	14-3			APRON - INLET
C437	1	16-6			APRON - INLET
C438	6	19-6			CUT OFF WALL - INLET
C439	35	3-6	X		CUT OFF WALL - INLET
C440	1	3-3			APRON - DISCHARGE
C441	1	7-3			APRON - DISCHARGE
C442	1	11-6			APRON - DISCHARGE
C443	1	15-9			APRON - DISCHARGE
C444	20	20-3			APRON - DISCHARGE
C445	8	51-3		X	APRON - DISCHARGE - SET 15 & 16
C446	1	4-6			APRON - DISCHARGE
C447	1	9-9			APRON - DISCHARGE
C448	1	15-0			APRON - DISCHARGE
C449	5	29-6			CUT OFF WALL - DISCHARGE
C450	27	5-6	X		CUT OFF WALL - DISCHARGE
C751	6	16-9	X	X	APRONS & WINGS 1 & 4 - SET 17 & 18
C452	2	22-9			APRON - WING 1
C453	9	18-6	X	X	APRON & WING 1 - SET 19 & 20
C454	2	16-9			APRON - WING 2
C455	14	18-6	X	X	APRON & WINGS 2 & 3 - SET 21 & 22
C456	2	17-0			APRON - WING 3
C457	2	19-9			APRON - WING 4
C458	7	18-3	X	X	APRON & WING 4 - SET 23 & 24
C759	90	7-9			TOP SLAB
C660	4	9-3			BOTTOM & TOP SLAB
C661	4	6-10			BOTTOM & TOP SLAB
C662	4	4-5			BOTTOM & TOP SLAB
C963	48	18-0			HEADER
C364	28	4-7	X		HEADER
C365	28	4-3	X		HEADER
C766	39	19-6			TOP SLAB
C467	1	5-6			WING 1
C468	1	10-6			WING 1
C469	1	15-6			WING 1
C470	1	20-3			WING 1
C471	1	22-0			WING 1
C572	2	23-0			WING 1
C473	1	4-0			WING 2
C474	1	7-6			WING 2
C475	1	11-3			WING 2
C476	1	14-9			WING 2
C477	1	16-0			WING 2
C578	2	17-3			WING 2
C479	1	4-0			WING 3
C480	1	7-6			WING 3
C481	1	11-3			WING 3
C482	1	15-0			WING 3
C483	1	16-3			WING 3
C584	2	17-6			WING 3
C485	1	4-9			WING 4
C486	1	9-0			WING 4
C487	1	13-3			WING 4
C488	1	17-9			WING 4
C489	1	19-0			WING 4
C590	2	20-3			WING 4
C491	20	6-0			WINGS
C592	64	4-0			VERT. CONST. JOINT
C793	4	16-9	X	X	APRON & WINGS 2 & 3 - SET 25 & 26
C494	58	8-0			WALLS - EXTERIOR
C495	150	9-0	X		WALLS - INTERIOR
C396	56	5-3	X		HEADER

MARK		C	D	E	F	G	H	SETS REQ'D.
C612	SET 1	3-0	—	9-7	—	6-7	13	1
	SET 2	—	6-7		3-0	—		1
C413	SET 3	3-0	—	8-9	—	5-9	5	1
	SET 4	—	5-9		3-0	—		1
C614	SET 5	7-5	—	18-3	—	10-10	13	1
	SET 6	—	10-10		7-5	—		1
C415	SET 7	7-5	—	17-5	—	10-0	5	1
	SET 8	—	10-0		7-5	—		1
C716	SET 9	2-9	—	19-6	—	16-9	6	1
	SET 10	—	16-9		2-9	—		1
C517	SET 11	2-3	—	21-6	—	19-3	8	1
	SET 12	—	19-3		2-3	—		1
C429	SET 13	11-6	—	31-0	—	19-6	16	1
	SET 14	—	19-6		11-6	—		1
C445	SET 15	21-9	—	51-3	—	25-6	8	1
	SET 16	—	29-6		25-9	—		1
C751	SET 17	7-6	—	16-9	—	9-3	6	1
	SET 18	—	9-3		7-6	—		1
C453	SET 19	6-9	—	18-6	—	9-2	7	1
	SET 20	—	11-9		9-4	—		1
C455	SET 21	6-9	—	18-6	—	11-9	14	1
	SET 22	—	11-9		6-9	—		1
C458	SET 23	6-9	—	18-3	—	9-0	7	1
	SET 24	—	11-6		9-3	—		1
C793	SET 25	7-6	—	16-9	—	9-3	4	1
	SET 26	—	9-3		7-6	—		1

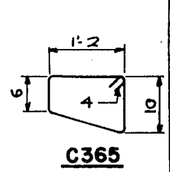
NOTES:

THE FIRST DIGIT OF A BAR MARK SIGNIFIES THE BAR SIZE.

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT.

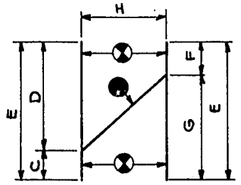


C364
C396



C365

MARK	DIM. A
C505	2-8
C439	1-0
C450	1-0
C751	4-6
C453	4-6
C455	4-6
C458	4-6
C963	5-9
C793	4-6
C495	1-0



H IS NUMBER OF BARS BEFORE CUTTING.

CUTTING DIAGRAM

⊠ BUNDLE AND MARK CUT BARS WITH BAR AND SET NUMBER. BENT BARS USED IN A CUTTING DIAGRAM SHALL BE BENT AFTER CUTTING.

● MARK AND CUT ALL BARS ALONG THIS LINE. MAKE ALL CUTS NORMAL TO BAR AXIS.

No.	Date	Revision	By

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-67-143

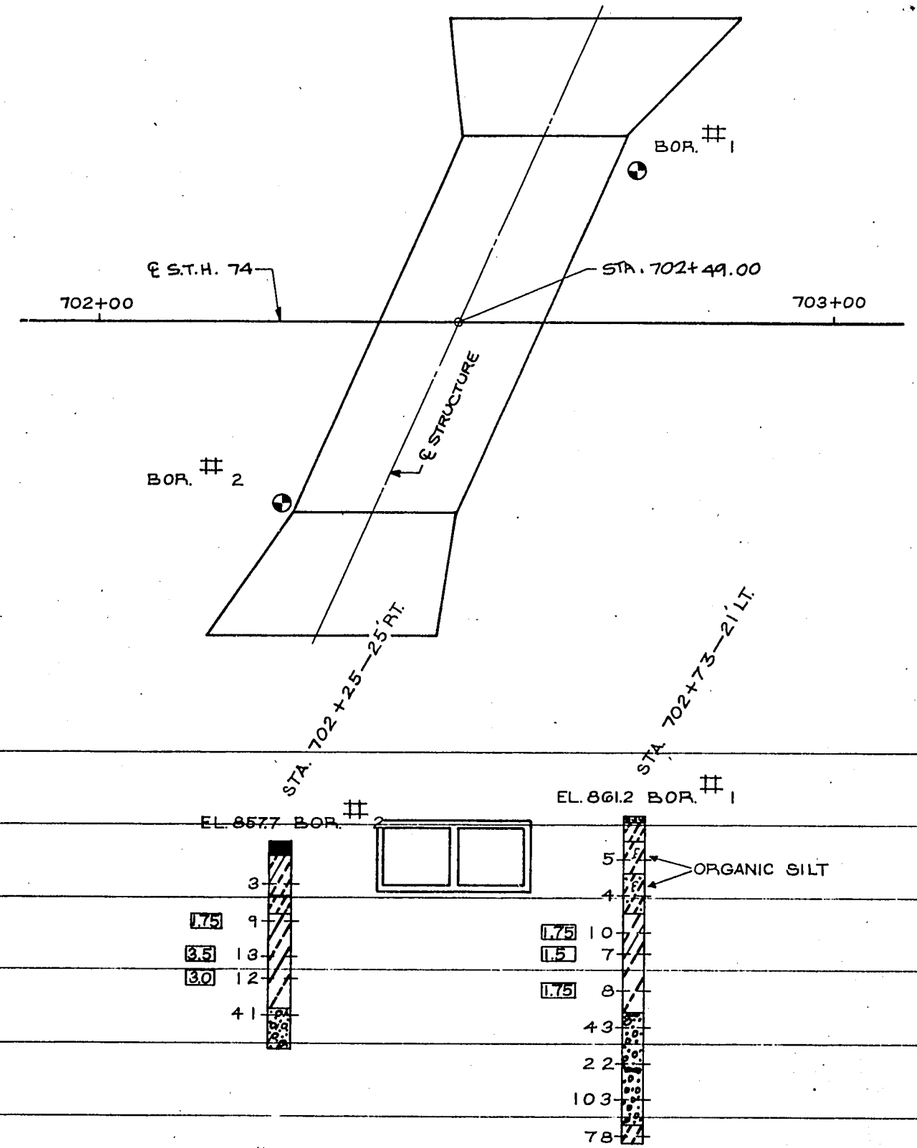
Const. Spec.	Drawn By	Plans Checked
1969	DB	F O'M

DETAILS AND BILL OF BARS

SHEET 3 OF 4

X 42469

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	20	120
PROJECT DESIGNATION: T 0168 (9)		



SCALE: 1" = 10'

ABBREVIATIONS

F — Fine M — Medium C — Coarse
Ws — Weathered Se — Sound

MATERIAL SYMBOLS

Topsoil, Silt, Sandstone
Sand, Peat, Limestone
Gravel, Clay, Igneous Rock

LEGEND OF PROBING

Probing No.
Sta.
Elevation
7 Average Blows Per Foot
Refusal 95 6

95/6=95 Blows for 6" Penetration
Probing taken with a 350# wt. Falling 18" on a 2" O. D. Point.

LEGEND OF BORING

Boring No.
Elev. Sta.
Unconfined Strength — 7.7
Blows Per Ft. Using 140# Wt. Falling 30" — 7
Wash Sample
Shelby Tube — S. T.
Ground Water Elevation
No Ground Water Observed Above This Elevation
Sandy Gravel
F.
Boulders or Cobbles
Sand
Silty Clay
So
Limestone

Unless otherwise specified, the blows per foot at the locations indicated are based on driving a 2" O. D. x 1.4" I. D. split spoon sampler with a 140# hammer having a free fall of 30". The blow count is taken in undisturbed soil immediately below a cased or open hole eliminating side friction on the drive pipe.

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

To obtain relative data concerning the character of material in and upon which the foundation might be built, borings and/or soundings were made at points approximately as indicated on this drawing. The data presented herein represents the findings of the subsurface explorations made. However, because the depths investigated are limited and the area of the borings and/or soundings is very small in relation to the entire area, the Division of Highways does not warrant conditions below the depths investigated or that the classification of material encountered in these investigations is necessarily typical of the entire site.

No.	Date	Revision	By

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-67-143

Const. Spec.	Drawn By	Plans Checked
1969	W.T.W.	F.O'M

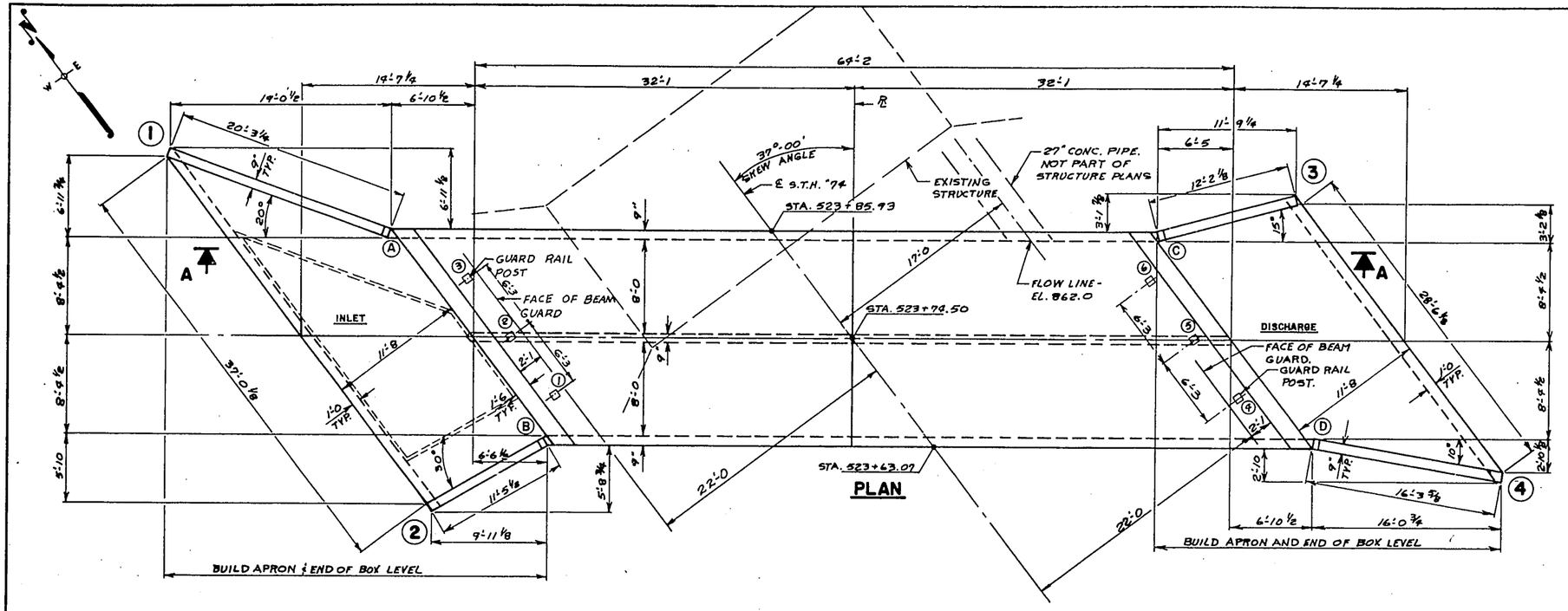
SUBSURFACE EXPLORATION

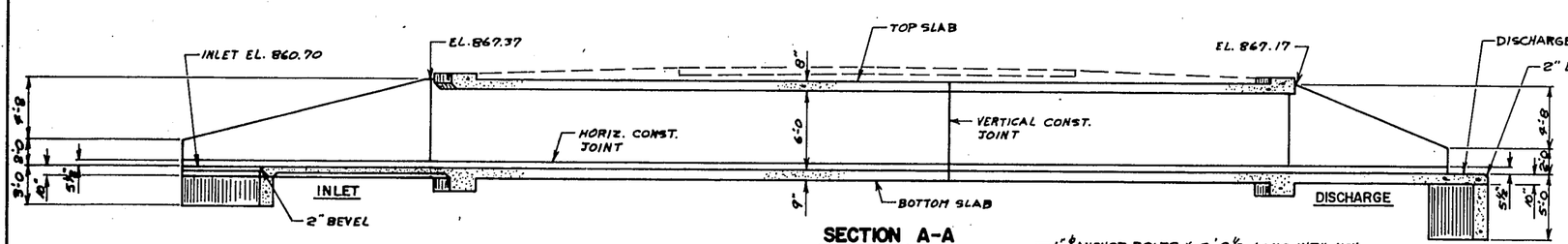
SHEET 4 OF 4

X 42470

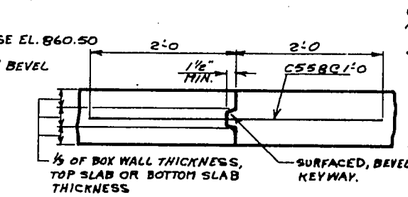
Form F B-11-69

PROJECT ID	SHEET NUMBER	TOTAL SHEETS
2321-1-71	21	120
PROJECT DESIGNATION T0168(9)		





SECTION A-A



VERTICAL CONST. JOINT

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

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

BEVEL ALL EXPOSED EDGES OF CONCRETE 1" UNLESS SHOWN OR NOTED OTHERWISE.

THE EXISTING GROUNDLINE WAS USED AS THE UPPER LIMITS OF EXCAVATION FOR THE COMPUTATION OF EXCAVATION QUANTITIES.

WITHIN THE LENGTH OF BOX ALL SPACES EXCAVATED AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACK-FILLED WITH GRANULAR BACKFILL TO THE ELEVATION AND SECTION EXISTING PRIOR TO EXCAVATION. PAYMENT WILL BE MADE ONLY FOR MATERIAL ACTUALLY PLACED WITHIN THE LIMITS SPECIFIED FOR EXCAVATION FOR STRUCTURES.

JOINT FILLER SHALL CONFORM TO A.A.S.H.O DESIGNATION M153 OR M213.

NOTES

STEEL RAIL POSTS SHALL BE SET NORMAL TO GRADE.

STEEL SHIMS SHALL BE USED UNDER POSTS WHERE REQUIRED FOR ALIGNMENT.

CAULK EXPOSED OPENINGS BETWEEN SHIMS WITH LEAD WOOL.

POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.

BASE PLATES SHALL BE MADE FROM MATERIAL CONFORMING TO A.S.T.M. DESIGNATION A252.

SHIMS SHALL BE MADE FROM MATERIAL CONFORMING TO A.S.T.M. DESIGNATION A283 OR A36. IF A36 IS USED IT SHALL BE GALVANIZED ACCORDING TO A.S.T.M. DESIGNATION A123.

ANCHOR BOLTS SHALL BE MADE FROM MATERIAL CONFORMING TO A.S.T.M. DESIGNATION A307.

AS.T.M. DESIGNATION A283 STEEL SHALL HAVE A CORROSIVE RESISTANCE OF FOUR OR MORE TIMES THAT OF A36 STEEL.

POSTS, BASE PLATES, SHIMS & ANCHOR BOLT ASSEMBLIES SHALL BE PAID FOR AS STRUCTURAL CARBON STEEL.

DESIGN DATA

LIVELOAD : HS 20

EARTH LOAD: DESIGNED FOR 1:0 OF FILL.

ALLOWABLE DESIGN STRESSES:

CONCRETE MASONRY, GRADE "AA" f_c = 1,400 P.S.I.

BAR STEEL REINFORCEMENT f_s = 20,000 P.S.I.

TRAFFIC VOLUME

A.D.T. = 9000

D.H.V. = 1,350

HYDRAULIC DATA

DRAINAGE AREA = 1,390 ACRES

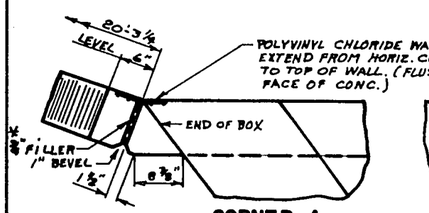
HIGH WATER EL. = 866.8

Q_{50} = 700 C.F.S.

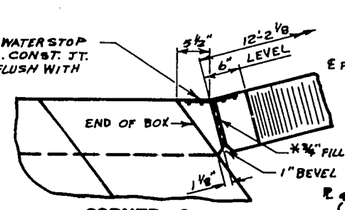
V = 9.0 F.P.S.

LIST OF DRAWINGS

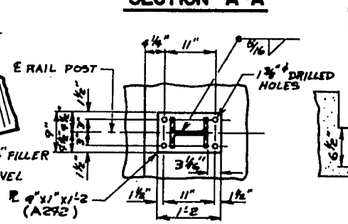
1. DETAILS — X42463
2. DETAILS — X42464
3. DETAILS — X42465
4. SUBSURFACE EXPLORATION — X42466



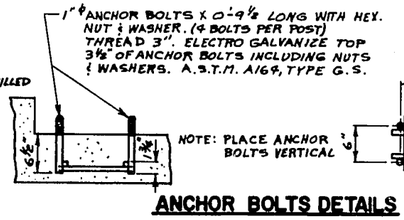
CORNER A



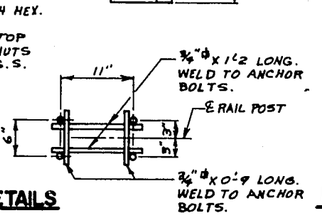
CORNER C

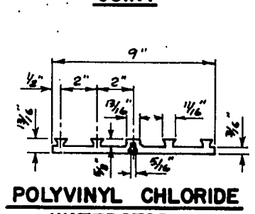


SECTION B-B



ANCHOR BOLTS DETAILS

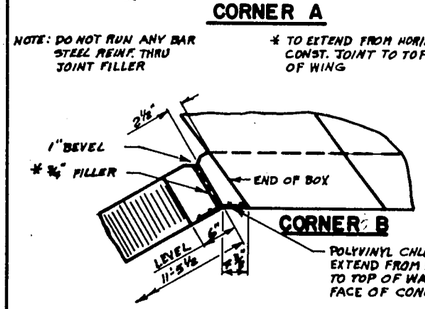




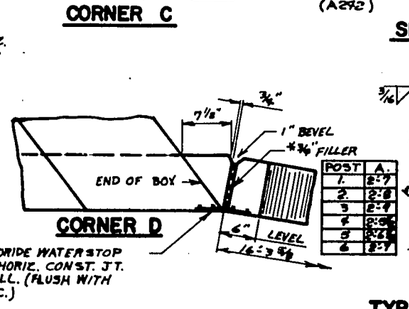
POLYVINYL CHLORIDE WATERSTOP

NOTE: DO NOT RUN ANY BAR STEEL REINF. THRU JOINT FILLER

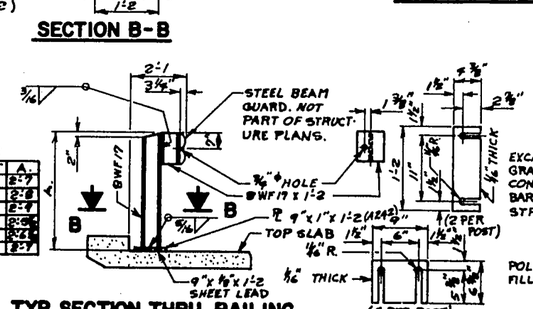
* TO EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WING



CORNER B



CORNER D



TYP. SECTION THRU RAILING

POST SHIM DETAILS

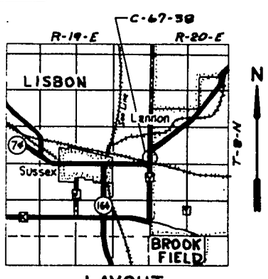
TOTAL ESTIMATED QUANTITIES

BID ITEMS

EXCAVATION FOR STRUCTURES	930	C.Y.
GRANULAR BACKFILL	60	C.Y.
CONCRETE MASONRY	131	C.Y.
BAR STEEL REINFORCEMENT	22,010	LB.
STRUCTURAL CARBON STEEL	730	LB.

NON-BID ITEMS

POLYVINYL CHLORIDE WATERSTOP	25	L.F.
FILLER 1/4" SIZE		



LAYOUT

No	Date	Revision	By

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE C-67-38

S.T.H. 74 OVER WILLOW SPRINGS CREEK

County WAUKESHA		City TN. OF LISBON Village OF MENOMONEE FALLS	
Design Spec. A.A.S.H.O. 69		Load HS20	Const. Spec. 1969
Designed By COMP.	Design Checked	Drawn By B.W.	Plans Checked FO'M

Approved W. A. Kline (M) Chief Bridge Engineer — Date 3-18-70

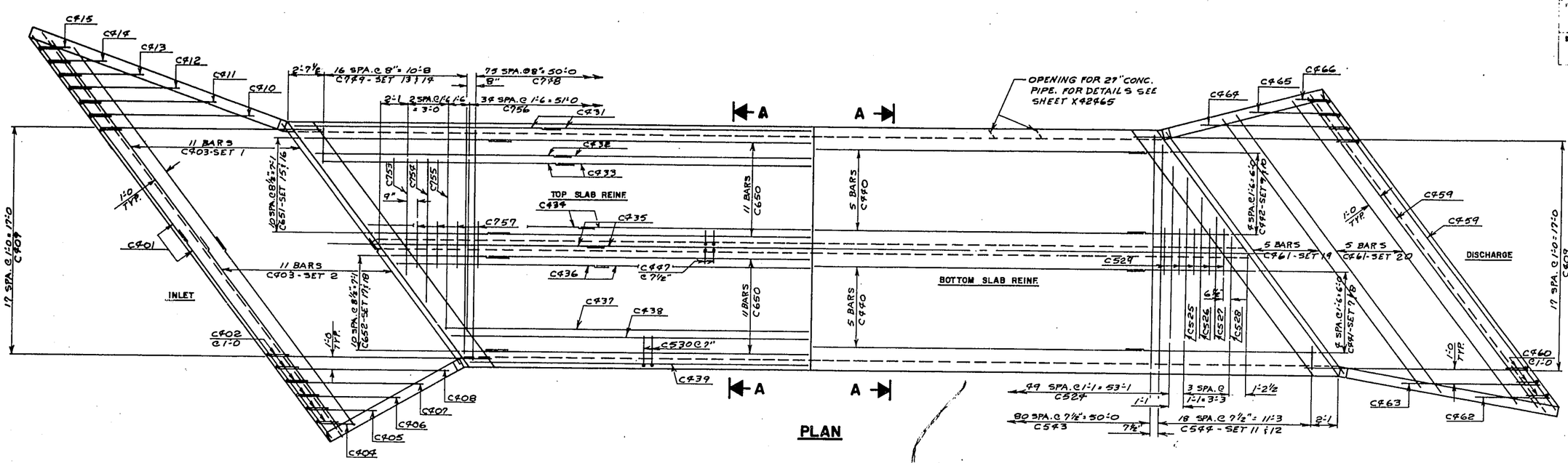
DETAILS

SHEET 1 OF 4

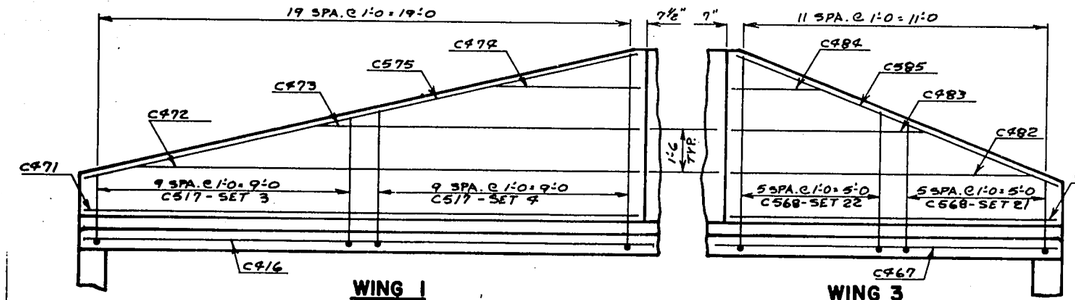
X42463

Form C B 12-69

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
2321-1-71	22	120
PROJECT DESIGNATION T 0168(9)		

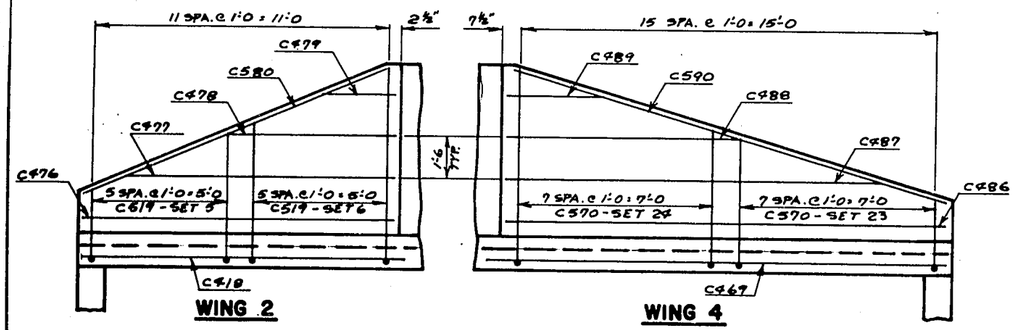


PLAN



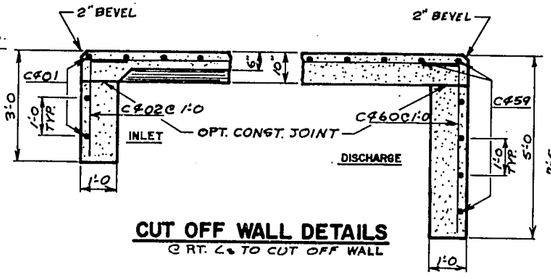
WING 1

WING 3



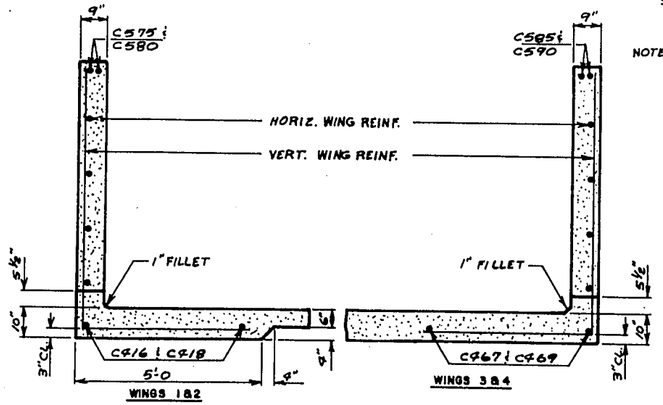
WING 2

WING 4



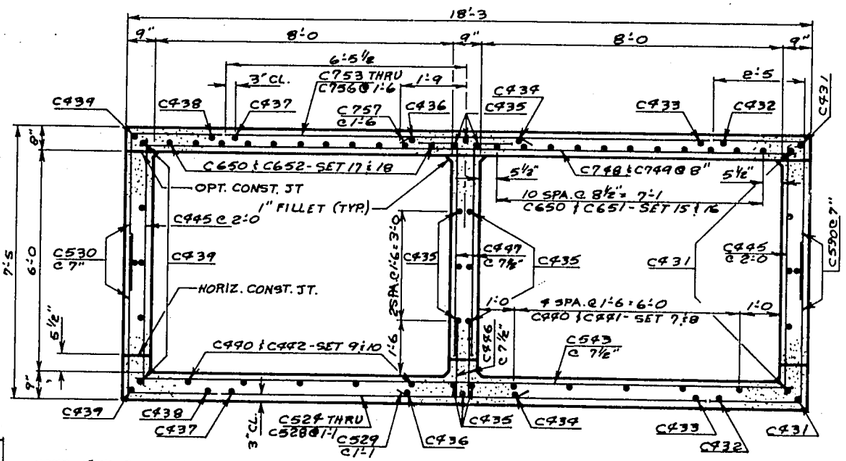
CUT OFF WALL DETAILS

@ RT. ∠s TO CUT OFF WALL



SECTION THRU WINGS

@ RT. ∠s TO WINGWALLS



NOTE: 1" FILLET WILL BE ELIMINATED IF OPT. CONST. JT. IS USED IN TOP SLAB.

SECTION A-A

No.	Date	Revision	By

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE C-67-38

Const. Spec. 1969	Drawn By B.W.	Plans Checked F.O'M

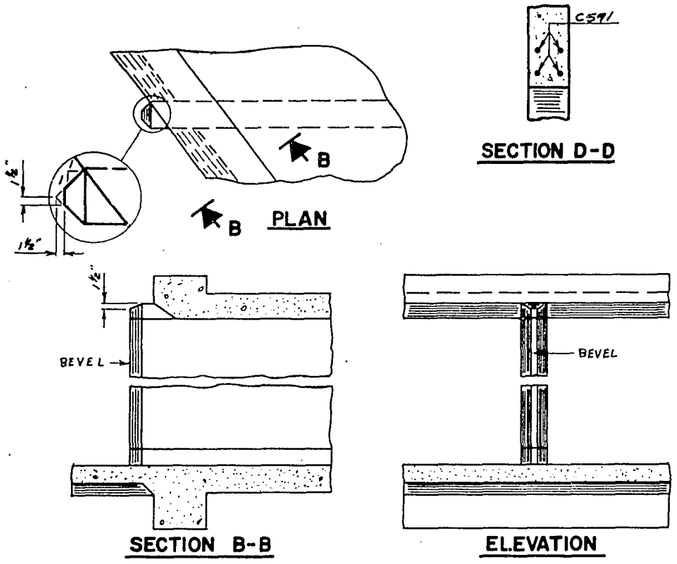
DETAILS

SHEET 2 OF 4

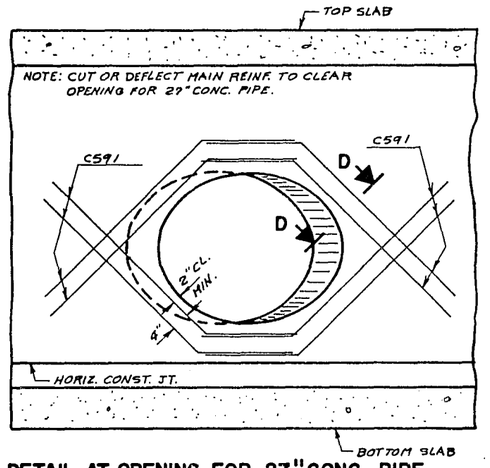
X42464

Form E-B-12-69

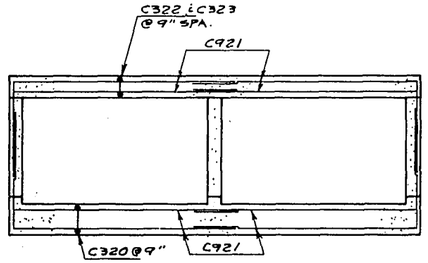
PROJECT	SHEET NUMBER	TOTAL SHEETS
2321-1-71		
PROJECT DESIGNATION: T 0168(9)	23	120



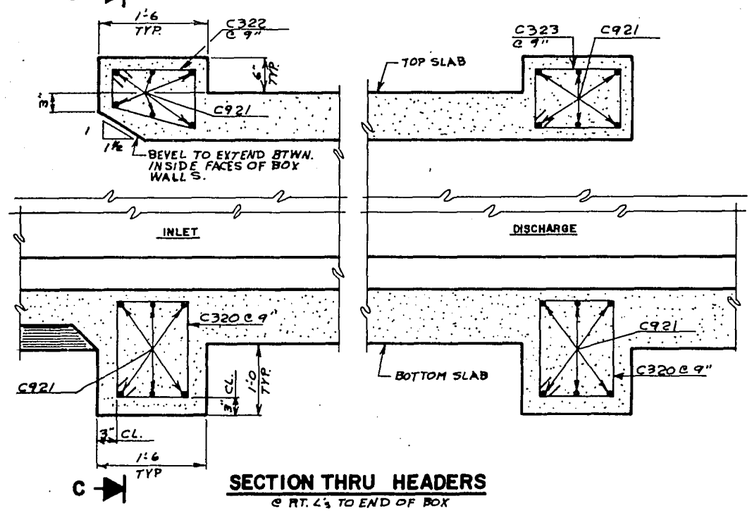
INLET NOSE CENTERWALL DETAILS



DETAIL AT OPENING FOR 27" CONC. PIPE



SECTION C-C



SECTION THRU HEADERS
@ RT. ∠'s TO END OF BOX

BILL OF BARS 22,010#

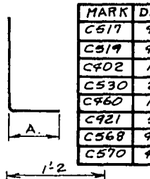
MARK	NO. REQ'D.	LENGTH	BENT	CUT DIA.	LOCATION
C401	6	18:9			CUT OFF WALL - INLET
C402	29	3:6	X		" " " - "
C403	11	30:6		X	APRON - INLET - HORIZ.
C404	1	2:6			" - " - "
C405	1	5:0			" - " - "
C406	1	7:6			" - " - "
C407	1	10:0			" - " - "
C408	1	12:6			" - " - "
C409	36	16:6			" - " & DISCH. - HORIZ.
C410	1	12:3			" - INLET - HORIZ.
C411	1	10:3			" - " - "
C412	1	8:3			" - " - "
C413	1	6:3			" - " - "
C414	1	4:3			" - " - "
C415	1	2:3			" - " - "
C416	2	20:6			" - " - WING 1
C517	10	18:3	X	X	" - " - " 1
C418	2	11:6			" - " - " 2
C519	6	18:3	X	X	" - " - " 2
C320	56	5:3	X		HEADERS - BOTTOM SLAB
C421	48	18:0	X		" - ". & TOP SLAB
C322	28	4:3	X		" - TOP SLAB - INLET
C323	28	4:7	X		" - " " - DISCH.
C524	50	12:11			BOTTOM SLAB - HORIZ. - TRAN.
C525	2	11:10			" " - " - "
C526	2	10:5			" " - " - "
C527	2	9:0			" " - " - "
C528	2	7:7			" " - " - "
C529	57	3:6			" " - " - "
C530	440	6:8	X		" & TOP SLAB - VERT.
C431	32	19:9			" & " " - LONG.
C432	8	18:11			" & " " - "
C433	8	8:9			" & " " - "
C434	8	17:0			" & " " - "
C435	48	16:4			" & " " - "
C436	8	15:8			" & " " - "
C437	4	26:9			" & " " - "
C438	4	26:5			" & " " - "
C439	16	24:9			" & " " - "
C440	20	24:3			" SLAB - LONG.
C441	5	23:9	X		" " - "
C442	5	10:7	X		" " - "
C543	81	17:6			" " - TRAN.
C544	19	18:8	X		" " - "

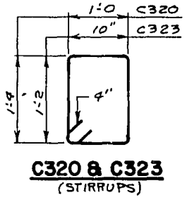
BILL OF BARS (CONT'D.)

MARK	NO. REQ'D.	LENGTH	BENT	CUT DIA.	LOCATION
C445	64	6:9			BOTTOM SLAB - VERT. - OUTSIDE WALLS
C446	206	2:0			" " - " - CENTER WALL
C447	206	6:10			INSIDE WALL - VERT.
C748	76	17:6			TOP SLAB - TRAN.
C749	17	19:5		X	" " - "
C650	44	23:10			" " - LONG.
C651	11	28:7		X	" " " - "
C652	11	11:5		X	" " " - "
C753	2	8:9			" " - TRAN.
C754	2	10:9			" " - "
C755	2	12:9			" " - "
C756	33	12:11			" " - "
C757	40	3:6			" " - "
C558	54	4:0			VERT. CONST. JOINT.
C459	6	29:0			CUT OFF WALL - DISCH.
C460	23	5:6	X		" " " - "
C461	5	50:9		X	APRON - DISCH. - HORIZ.
C462	1	6:3			" - " - "
C463	1	11:3			" - " - "
C464	1	11:6			" - " - "
C465	1	7:0			" - " - "
C466	1	2:6			" - " - "
C467	2	12:3			" - " - WING 3
C568	6	18:3	X	X	" - " - " 3
C469	2	16:6	X		" - " - " 4
C570	8	18:3		X	" - " - " 4
C471	1	19:9			WING 1 - HORIZ.
C472	1	17:9			" 1 - "
C473	1	11:3			" 1 - "
C474	1	5:0			" 1 - "
C575	2	20:3			" 1 - "
C476	1	10:9			" 2 - "
C477	1	9:6			" 2 - "
C478	1	6:0			" 2 - "
C479	1	2:6			" 2 - "
C580	2	11:9			" 2 - "
C481	1	11:6			" 3 - "
C482	1	10:3			" 3 - "
C483	1	6:6			" 3 - "
C484	1	2:9			" 3 - "
C585	2	12:6			" 3 - "
C486	1	15:9			" 4 - "
C487	1	14:0			" 4 - "
C488	1	9:0			" 4 - "
C489	1	3:9			" 4 - "
C590	2	16:3			" 4 - "
C591	16	5:9	X		OPENING FOR 27" CONC. PIPE

MARK		C.	D.	E.	F.	G.	H.	SETS REQ'D.
C403	SET 1	11:9	—	30:6	—	18:9	11	1.
	" 2	—	18:9		11:9	—		1.
C517	" 3	6:9	—	18:3	—	9:0	10	1.
	" 4	—	11:6		9:3	—		1.
C519	" 5	6:9	—	18:3	—	9:0	6	1.
	" 6	—	11:6		9:3	—		1.
C441	" 7	9:8	—	23:9	—	18:1	5	1.
	" 8	—	14:1		9:8	—		1.
C442	" 9	3:0	—	10:7	—	7:7	5	1
	" 10	—	7:7		3:0	—		1
C544	" 11	1:11	—	18:8	—	16:9	19	1
	" 12	—	16:9		1:11	—		1
C449	" 13	2:8	—	19:5	—	16:9	17	1
	" 14	—	16:9		2:8	—		1
C651	" 15	9:8	—	28:7	—	18:11	11	1
	" 16	—	18:11		9:8	—		1
C652	" 17	3:0	—	11:5	—	8:5	11	1
	" 18	—	8:5		3:0	—		1
C461	" 19	22:6	—	50:9	—	25:3	5	1
	" 20	—	28:3		25:6	—		1
C568	" 21	6:9	—	18:3	—	9:0	6	1
	" 22	—	11:6		9:3	—		1
C570	" 23	6:9	—	18:3	—	9:0	8	1
	" 24	—	11:6		9:3	—		1

MARK	DIM. 'A'
C617	4:6
C519	4:2
C402	1:0
C530	2:5
C460	1:0
C921	5:5
C568	4:6
C570	4:6

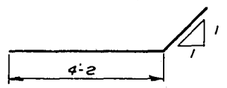




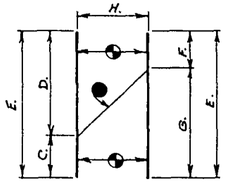
C320 & C323
(STIRRUPS)



C322
(STIRRUP)



C591



CUTTING DIAGRAM

● MARK & CUT ALL BARS ALONG THIS LINE. MAKE ALL CUTS NORMAL TO BAR AXIS.

◔ BUNDLE & MARK CUT BARS WITH BAR & SET NUMBERS. "H" IS THE NUMBER OF BARS IN A CUTTING DIAGRAM BEFORE CUTTING. BENT BARS USED IN A CUTTING DIAGRAM SHALL BE BENT AFTER CUTTING.

NOTE: THE FIRST DIGIT OF A MARK SIGNIFIES THE BAR SIZE. ALL BAR BENDING DIMENSIONS ARE OUT TO OUT OF BAR.

No.	Date	Revision	By

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE C-67-38

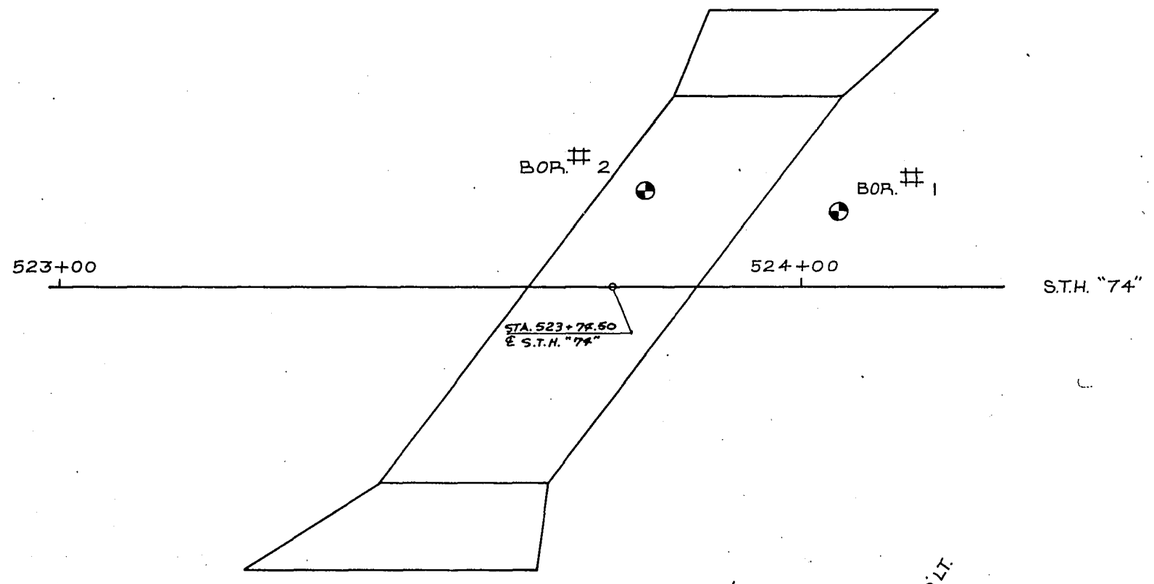
Const Spec. 1969	Drawn By B.W.	Plans Checked F.O'M

DETAILS

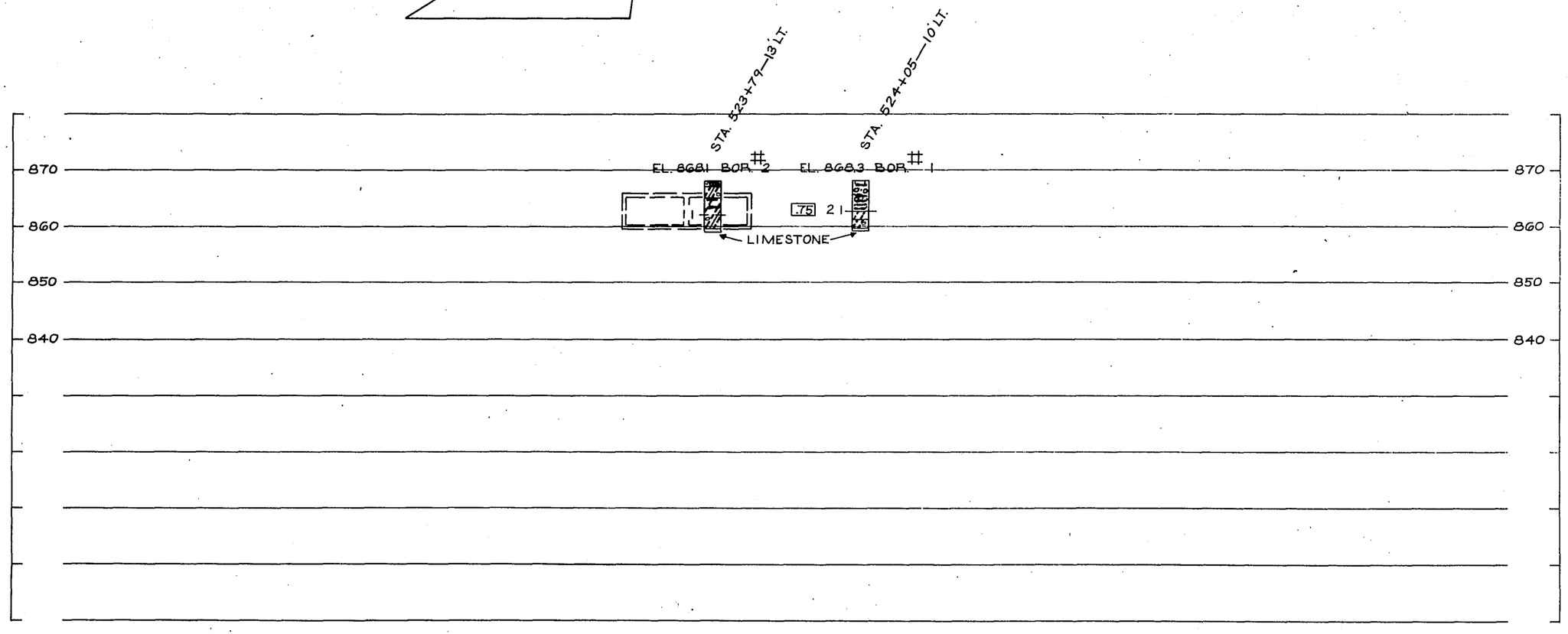
SHEET 3 OF 4

X42465

PROJECT ID	SHEET NO.	TOTAL SHEETS
2321-1-71	24	120
T 0168 (9)		



SCALE: 1" = 10'



ABBREVIATIONS

F — Fine M — Medium C — Coarse
Ws — Weathered Sd — Sound

MATERIAL SYMBOLS

Topsoil, Silt, Sandstone
Sand, Peat, Limestone
Gravel, Clay, Igneous Rock

LEGEND OF PROBING

95/6=95 Blows for 6" Penetration
Probing taken with a 350# wt. Falling 18" on a 2" O. D. Point.

Probing No.
Sta.
Elevation
7 Average Blows Per Foot
Refusal 95 6

LEGEND OF BORING

Unconfined Strength — 7.7 7
Blows Per Ft. Using 140# Wt. Falling 30"
Wash Sample
Shelby Tube — S. T.
Ground Water Elevation
No Ground Water Observed Above This Elevation

Boring No.
Elev.
Sta.
Sandy Gravel
F.
Boulders or Cobbles
Sand
Silty Clay
So
Limestone

Unless otherwise specified. the blows per foot at the locations indicated are based on driving a 2" O. D. x 1.4" I. D. split spoon sampler with a 140# hammer having a free fall of 30". The blow count is taken in undisturbed soil immediately below a cased or open hole eliminating side friction on the drive pipe.

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

To obtain relative data concerning the character of material in and upon which the foundation might be built, borings and/or soundings were made at points approximately as indicated on this drawing. The data presented herein represents the findings of the subsurface explorations made. However, because the depths investigated are limited and the area of the borings and/or soundings is very small in relation to the entire area, the Division of Highways does not warrant conditions below the depths investigated or that the classification of material encountered in these investigations is necessarily typical of the entire site.

No.	Date	Revision	By

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE C-67-38

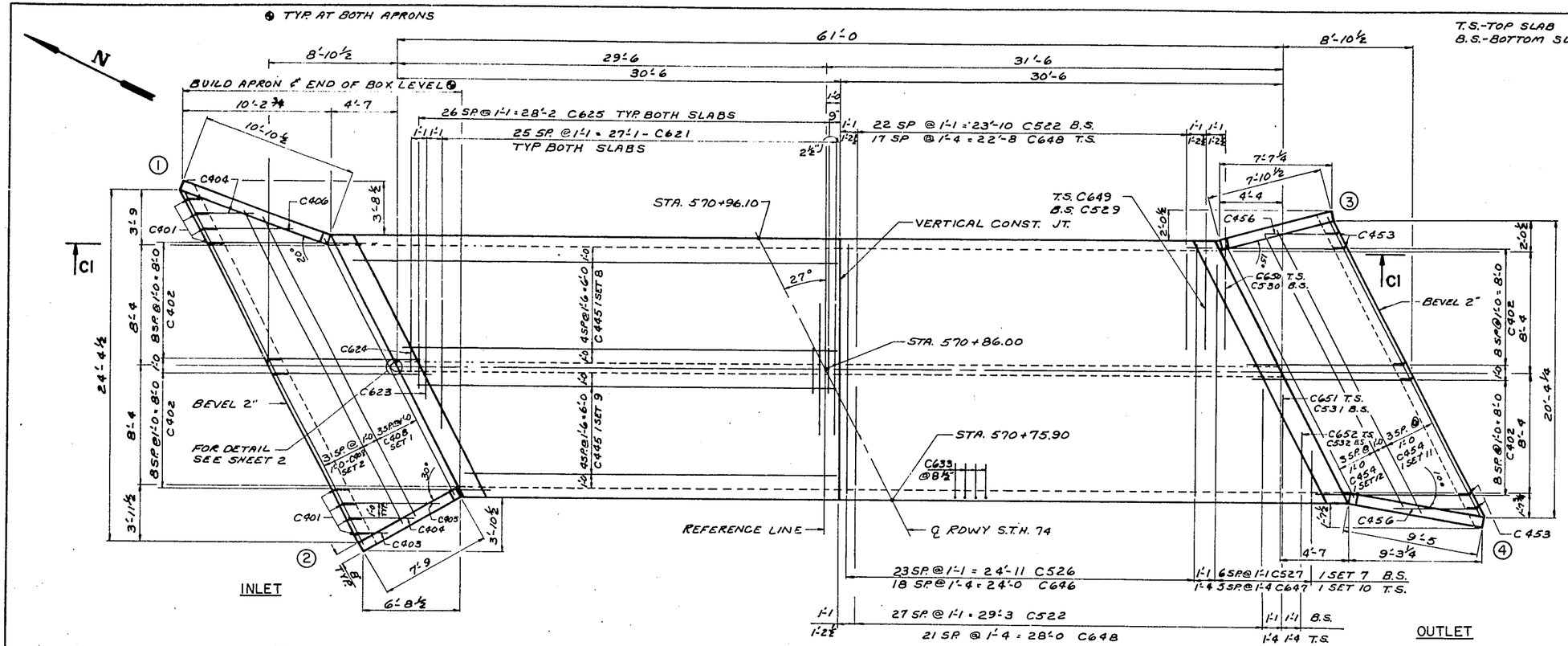
Const Spec	Drawn By	Plans Checked
1969	B.W.	F.O'M.

SUBSURFACE EXPLORATION

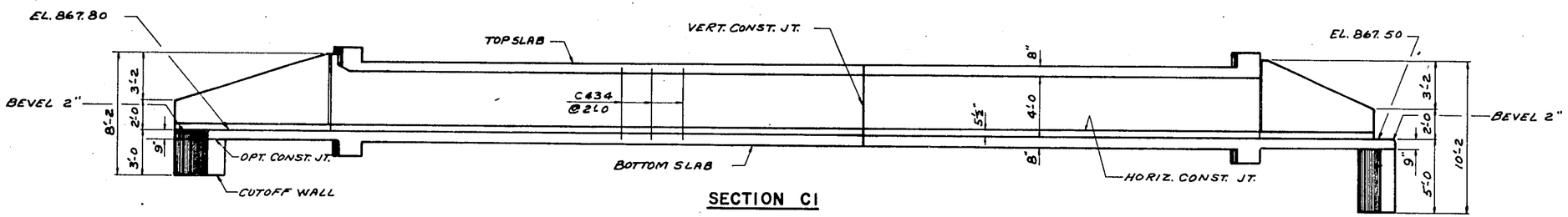
SHEET 4 OF 4

X42466

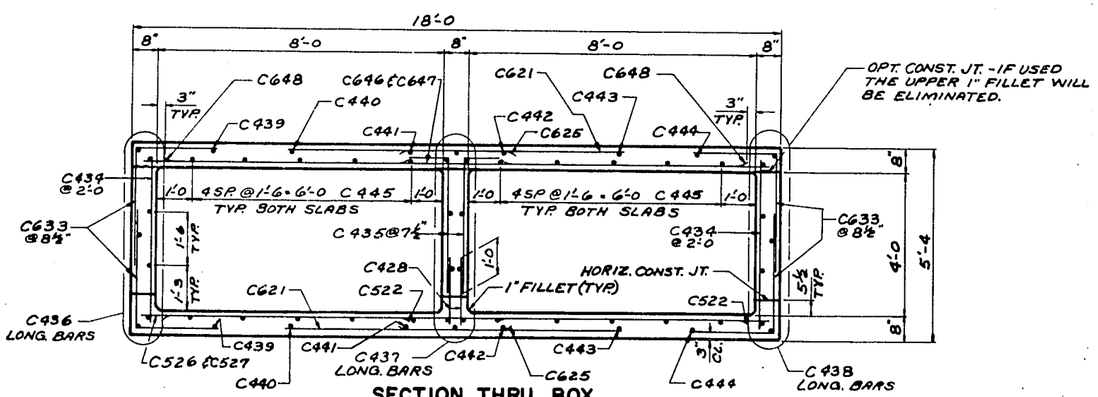
PROJECT ID	SHEET NUMBER	TOTAL SHEETS
2321-1-71		
PROJECT DESIGNATION		
T0168(9)	25	120



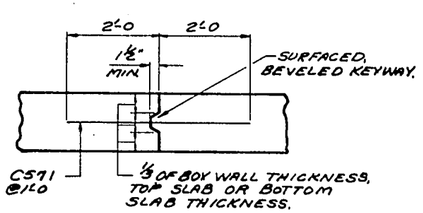
PLAN



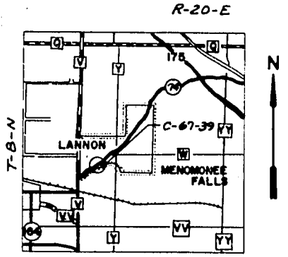
SECTION CI



SECTION THRU BOX



VERTICAL CONST. JT.



LAYOUT

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.
BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED.
THE EXISTING GROUND LINE WAS USED AS THE UPPER LIMITS OF EXCAVATION FOR THE COMPUTATION OF EXCAVATION QUANTITIES.
WITHIN THE LENGTH OF THE BOX ALL SPACES EXCAVATED AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH GRANULAR BACKFILL TO THE TOP OF THE BOX. PAYMENT WILL BE MADE ONLY FOR MATERIAL ACTUALLY PLACED WITHIN THE LIMITS OF "EXCAVATION FOR STRUCTURES" BUT NOT HIGHER THAN THE TOP OF THE BOX.
JOINT FILLER SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.O. DESIGNATION M153 OR M213.

TOTAL ESTIMATED QUANTITIES

BID - ITEMS

EXCAVATION FOR STRUCTURES	460 C.Y.
GRANULAR BACKFILL	40 C.Y.
CONCRETE MASONRY	96.6 C.Y.
BAR STEEL REINFORCEMENT	13,970 LB.

NON-BID ITEMS

FILLER	¾" SIZE
POLYVINYL CHLORIDE WATERSTOP	19 L.F.

DESIGN DATA

LIVE LOAD	H.S. 20
EARTH LOAD - STRUCTURE DESIGNED FOR 2.3 FEET OF FILL	
CONCRETE MASONRY	F_c = 1,400 P.S.I.
BAR STEEL REINFORCEMENT	F_s = 20,000 P.S.I.

HYDRAULIC DATA

DRAINAGE AREA	380 ACRES
HIGH WATER ELEVATION	872.1
Q_{50}	400 C.F.S.
V.	9.5 F.P.S.

LIST OF DRAWINGS

LAYOUT	X 42461
DETAILS AND BILL OF BARS.	X 42462

No	Date	Revision	By

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE C-67-39

UNDER STATE HWY 74

County WAUKESHA		City, Village MENOMONEE FALLS & LANNON	
Design Spec. A.A.S.H.O. '65'		Load H.S. 20	Const. Spec. 1969
Designed By COMP	Design Checked	Drawn By R.J. JONES	Plans Checked BMW

Approved W. A. Kline — Chief Bridge Engineer — 3-12-70 — Date

LAYOUT

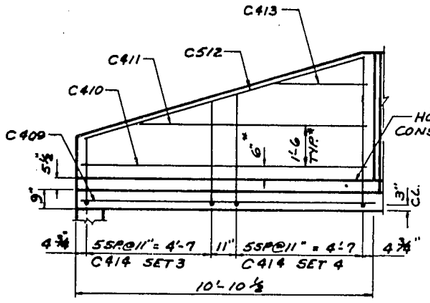
SHEET 1 OF 2

X 42461

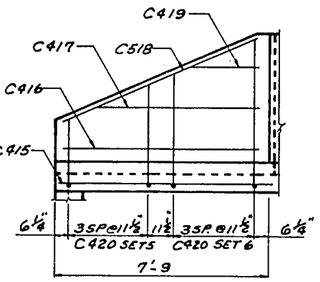
NOTE: THE FIRST DIGIT OF A THREE DIGIT MARK SIGNIFIES THE BAR SIZE.

2321-1-71 | 26 | 120

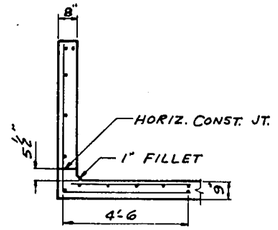
T0168 (9)



WING 1



WING 2

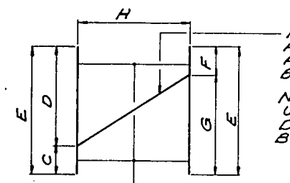


SECTION THRU WINGS

TYP. ALL WINGS

MARK		C	D	E	F	G	H	SETS REQ'D
C408	SET 1		23-3	47-7	20-0		4	1
	SET 2	24-4				27-7		1
C414	SET 3	6-9		16-7		8-2	6	1
	SET 4		9-10		8-5			1
C420	SET 5		8-1	16-7	6-9		4	1
	SET 6	8-6				9-10		1
C527	SET 7	2-0	14-10	16-10	2-0	14-10	7	2
C445	SET 8	30-2		59-0		33-4	5	4
	SET 9		28-10		25-8			4
C647	SET 10	2-10	15-10	18-8	2-10	15-10	6	2
C454	SET 11	21-11		43-4		23-6	4	1
	SET 12		21-5		19-10			1
C462	SET 13	6-10		16-9		8-2	4	1
	SET 14		9-11		8-7			1
C468	SET 15	6-10		16-9		8-2	4	1
	SET 16		9-11		8-7			1

CUTTING DIAGRAM



MARK AND CUT ALL BARS ALONG THIS LINE. MAKE ALL CUTS NORMAL TO BAR AXIS.

NOTE: BENT BARS, IF USED IN CUTTING DIAGRAM SHALL BE BENT AFTER CUTTING.

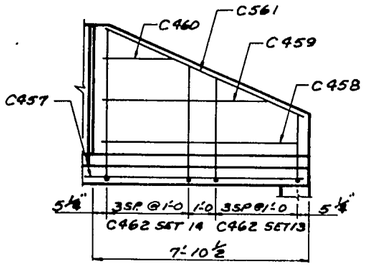
"H" IS THE NO. OF BARS REQ'D BEFORE CUTTING.

CUT, BUNDLE AND MARK. (MARK WITH BAR NO. AND SET. NO.)

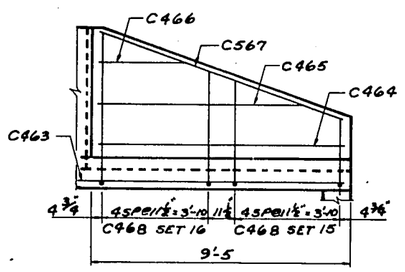
BILL OF BARS

13,970 LBS

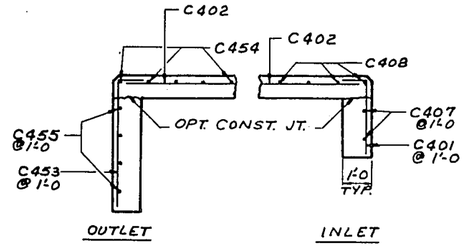
MARK	NO. REQ'D	LEN.	BENT	CUT	LOCATION
C401	24	3-6	X		INLET CUTOFF WALL
C402	36	10-9			BOTH APRONS
C403	1	2-3			INLET APRON
C404	2	4-3			" "
C405	1	6-9			" "
C406	1	6-3			" "
C407	2	27-0			@ " CUTOFF WALL
C408	4	47-7		X	" APRON
C409	2	11-0			APRON @ WING 1
C410	1	10-3			WING 1
C411	1	8-3			" "
C512	2	10-9			" "
C413	1	3-6			" "
C414	6	16-7	X	X	" "
C415	2	7-9			APRON @ WING 2
C416	1	7-0			WING 2
C417	1	5-9			" "
C518	2	7-9			" "
C419	1	2-3			" "
C420	4	16-7	X	X	" "
C621	104	9-3			BOX - BOTH SLABS
C522	102	6-9			" - BOTTOM SLAB
C623	4	7-3			BOX - BOTH SLABS
C624	4	5-0			" " "
C625	108	3-0			" " "
C526	48	17-4			" - BOTTOM SLAB
C527	7	16-10		X	" " "
C428	196	2-0			CENTER WALLS - DOWELS
C529	2	5-9			BOX - BOTTOM SLAB
C530	2	3-7			" " "
C531	2	4-6			" " "
C532	2	2-4			" " "
C633	344	5-6	X		CORNERS
C434	62	4-9			OUTSIDE WALLS
C435	196	4-9	X		INSIDE WALLS
C436	14	25-5			SHORT WALL - LONG.
C437	20	30-0			CENTERWALL - LONG.
C438	28	17-10			LONG WALL - LONG.
C439	4	26-7			BOTH SLABS - "
C440	4	27-8			" " "
C441	4	29-3			" " "
C442	8	15-11			" " "
C443	8	16-9			" " "
C444	8	17-3			" " "
C445	20	59-0		X	BOTH SLABS "
C646	38	17-4			TOP SLAB
C647	6	18-8		X	" "
C648	80	6-9			" "
C649	2	5-0			" "
C650	2	3-7			" "
C651	2	6-3			" "
C652	2	3-8			" "
C453	20	5-6	X		OUTLET CUTOFF WALL
C459	4	43-4		X	" APRON
C455	4	22-8			" CUTOFF WALL
C456	2	5-5			" APRON
C457	2	8-0			APRON @ WING 3
C458	1	7-3			WING 3
C459	1	5-9			" "
C460	1	2-3			" "
C561	2	8-0			" "
C462	4	16-9	X	X	" "
C463	2	9-6			APRON @ WING 4
C464	1	8-9			WING 4
C465	1	7-3			" "
C466	1	3-0			" "
C567	2	9-3			" "
C468	5	16-9	X	X	" "
C669	16	19-9			HEADER
C370	104	5-6	X		" - BEND IN FIELD
C571	46	4-0			VERTICAL CONST. JT.



WING 3

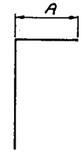


WING 4



CUTOFF WALLS

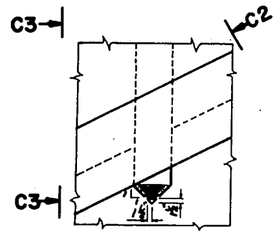
NORMAL TO CUTOFF WALLS.

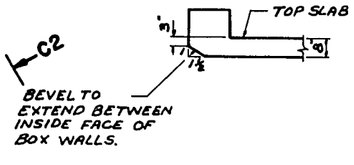


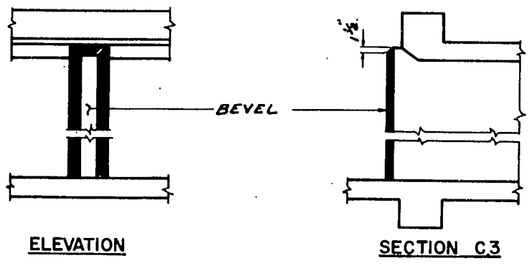
MARK	A
C401	1-0
C414	4-6
C420	4-6
C633	2-4
C435	1-0
C453	1-0
C462	4-6
C468	4-6

BAR BENDING DETAILS

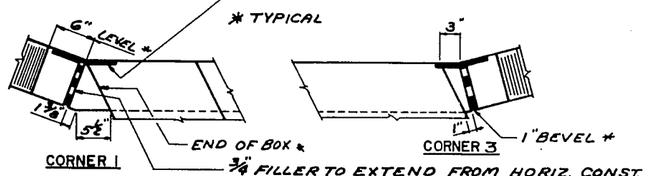
ALL DIMENSIONS ARE OUT TO OUT OF BAR.

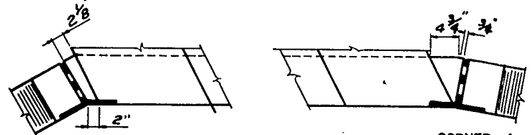




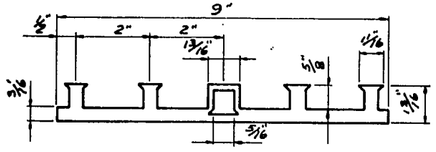


INLET NOSE CENTERWALL DETAILS

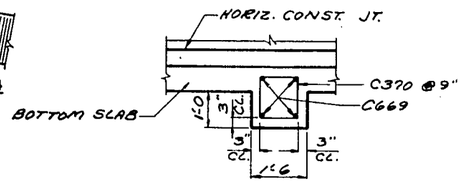




CORNER DETAILS



POLYVINYL CHLORIDE WATERSTOP



HEADER DETAILS

TYP. AT INLET AND OUTLET EXCEPT AS NOTED.

No.	Date	Revision	By

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE C-67-39

Const. Spec. 1969 | Drawn By R.J. JONES | Plans Checked BMW

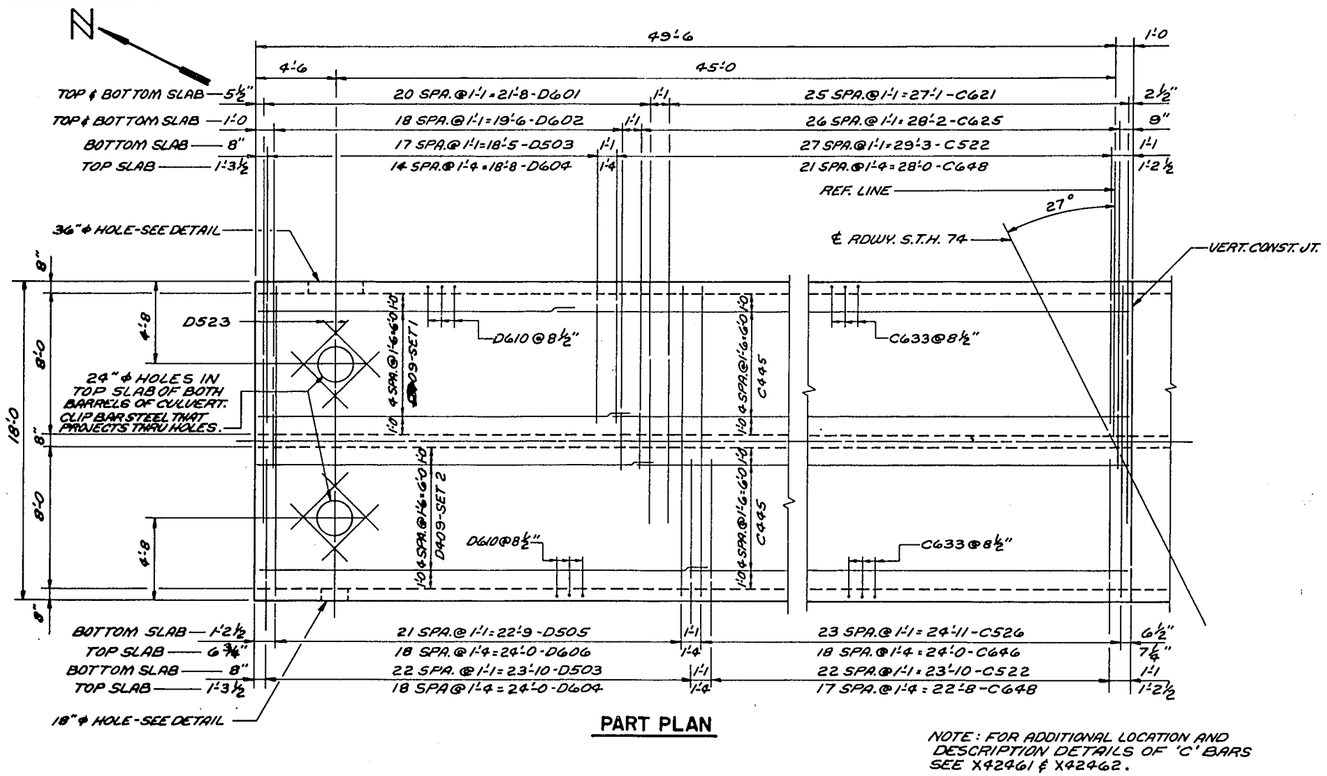
DETAILS & BILL OF BARS

SHEET 2 OF 2

X 42462

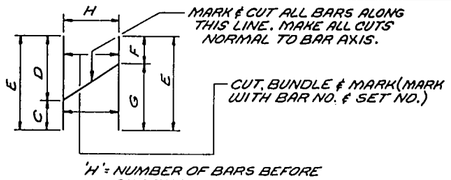
Form E-B-12-69

PROJECT I.D.	SHEET NUMBER	TOTAL SHEETS
FEDERAL PROJECT DESIGNATION		



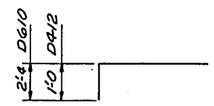
PART PLAN

NOTE: FOR ADDITIONAL LOCATION AND DESCRIPTION DETAILS OF 'C' BARS SEE X42461 & X42462.



MARK		C	D	E	F	G	H	SETS REQ'D.
D409	SET 1	17-10		43-4		21-0	10	2
	SET 2		25-6		22-4			2

CUTTING DIAGRAM



BILL OF BARS

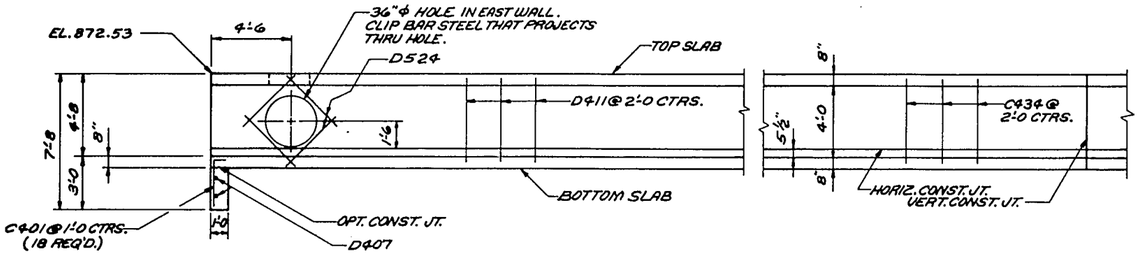
4,570 LBS.

MARK	NO.	LENGTH	BENT	CUT DIAG.	LOCATION
D601	42	9-3			BOTH-SLABS
D602	38	3-0			" "
D503	41	6-9			BOTTOM SLAB
D604	34	6-9			TOP "
D505	22	17-4			BOTTOM "
D606	19	17-4			TOP "
D407	2	17-6			INLET CUTOFF WALL
D508	8	4-4			@ 18" HOLE IN WEST WALL
D409	10	43-4		X	BOTH SLABS
D610	116	5-6	X		CORNERS
D411	19	4-9			SIDE WALLS
D412	64	4-9	X		CENTER WALL
D413	64	2-0			" " -DOWELS
D414	7	17-10			SIDE WALL
D415	10	21-9			CENTER WALL
D416	7	25-8			SIDE WALL
D417	2	18-2			BOTH SLABS-LONG.
D418	2	19-4			" " "
D419	2	20-10			" " "
D420	2	22-5			" " "
D421	2	23-10			" " "
D422	2	24-10			" " "
D523	16	4-6			@ 24" HOLES IN TOP SLAB
D524	8	4-9			@ 36" HOLE IN EAST WALL

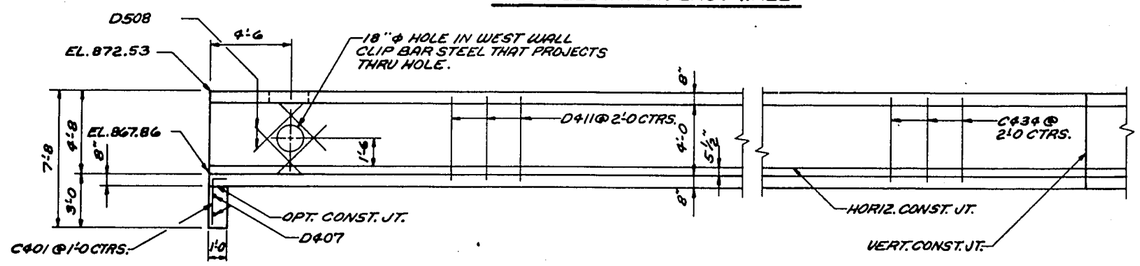
ALL DIMENSIONS ARE OUT TO OUT OF BAR.
THE FIRST DIGIT OF A THREE DIGIT MARK SIGNIFIES THE BAR SIZE.

ADDITIONAL ESTIMATED QUANTITIES

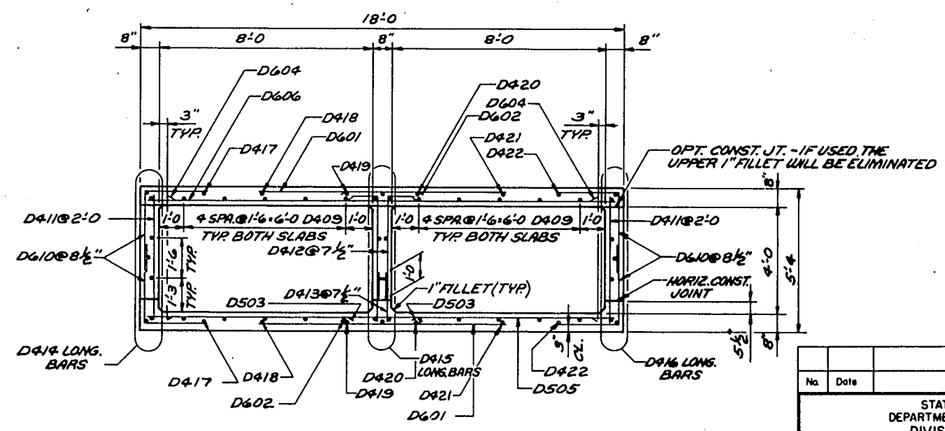
CONCRETE MASONRY	11.3 C.Y.
GRANULAR BACKFILL	10 C.Y.
BAR STEEL REINFORCEMENT	4,570 LBS.



PART ELEVATION EAST WALL



PART ELEVATION WEST WALL



SECTION THRU BOX

LOOKING SOUTH

No.	Date	Revision	By

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE C-67-39

Const. Spec.	Drawn By	Plans Checked
1969	LOY	BMW

REVISED DETAILS

SHEET 2A OF 3

X42462A

NOTE BOOK | TEMPLATE | AREAS CHECKED | NO.

B.P.R. REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS.	TOISE(1)	27	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.				FILL
15+00						
	100	30				44
16+00						
	100	91				106
17+00						

50 50

℄

12W

86325

860

FE-L
17+05
860

86332

4:1 4:1

60'

T 8" GAS LINE

17+00
860

867.7

4:1

60'

T

16+00
860

Meet Existing Pav't. 15+00

T 8" GAS LINE

15+00
860

SCALE
Hor. 1"=10'
Ver. 1"=5'

SHEET TOTAL 121 150

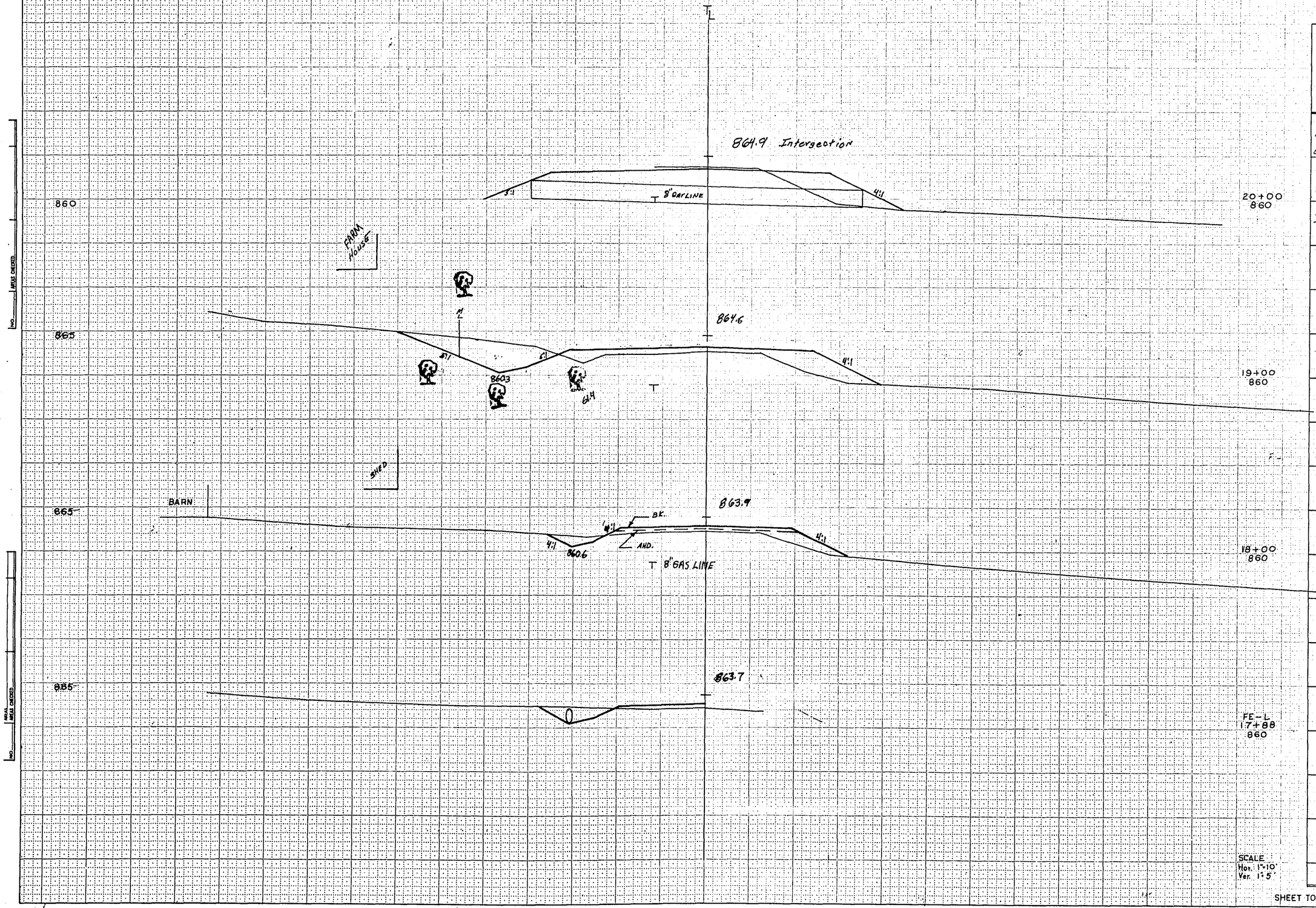
NOTE BOOK TEMPLATE LEVEL MEAS CHECKED NO.

FUNCTIONAL CROSS SECTION - OPEN DITCH
CHARLES BRUNING COMPANY, INC.

S.T.H. 74 - TOWN LINE RD. STA. 15+00 - 17+05

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS.	TO168(9)	28	120

STATION	DISTANCE	YARDAGE EXCAVATION				YARDAGE FILL
17 + 00	100	76				139
18 + 00	100	144				267
19 + 00						



SHEET TOTAL 220 406

FUNCTIONAL CROSS SECTION - OPEN DITCH
CHARLES BRUNING COMPANY, INC.

STH 75 - TOWN LINE RD S. STA 17+00 - 20+00

B.P.R. REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS.	T0161 (9)	29	120

MEET EXIST. PAVT. AT 12+50

MEET EXIST PAVT AT 12+50

House

12+00
890

T 8"

11+50
890

T 8"

11+00
890

Valve
10±67

6" Line

Match Line
337+00 14"

10+50
890

T 8"

T 6"

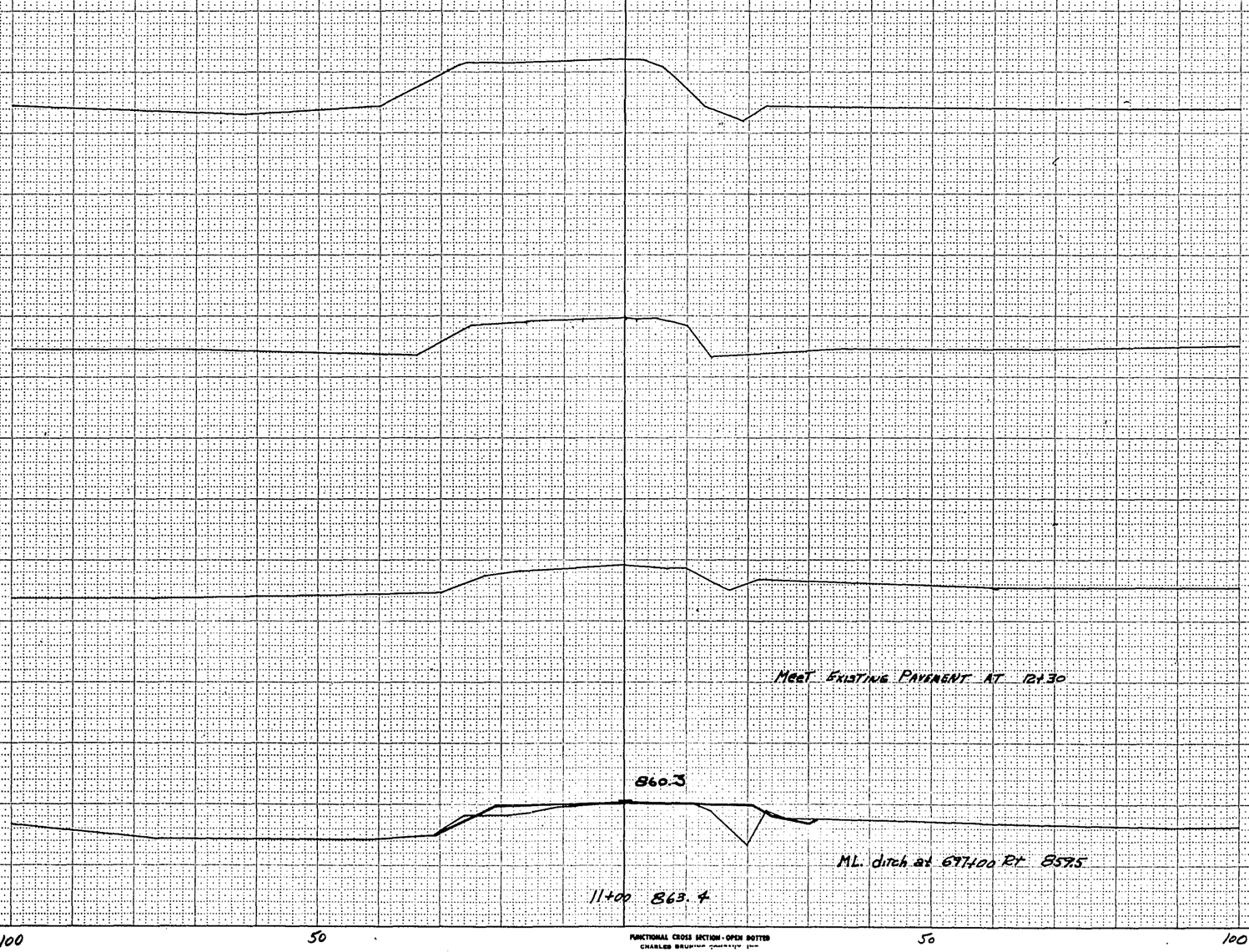
STATION	DISTANCE	YARDAGE EXCAVATION UNCL.	FILL
10+50			
	50	446	0
11+00			
	50	256	0
+50			
	50	93	0
12+00			
SHEET TOTAL		795	0

NOTE BOOK | UNIT ACC. MEAS. | AREAS CHECKED | NO.

100 50 FUNCTIONAL CROSS SECTION - OPEN DITCH CHARLES BRUNING COMPANY, INC. 50 100

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS.	T0168(9)	30	120

STATION	DISTANCE	YARDAGE EXCAVATION	YARDAGE FILL
15+00	860		
14+00	860		
13+00	860		
12+00	860		
11+00	863.4		



SCALE
HOR. 1" = 10
VERT. 1" = 5

SHEET TOTAL

AREAS CHECKED
NO.

FUNCTIONAL CROSS SECTION - OPEN DITCH
CHARLES BRUNING COMPANY, INC.

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS.	T0168(9)	31	120

11+00 863.4 FINISH GRADE

10+00
865

36" C.P. CL III AT 10+80

M.L. DITCH AT 698+00 LT

M.L. Ditch at 697+00 LT

MEET EXIST PAV'T at 10+00

9+00
870

8+82
870

8+00
870

SCALE
HOR. 1"=10'
VERT. 1"=5'

SHEET TOTAL

STATION	DISTANCE	YARDAGE EXCAVATION	YARDAGE FILL

NOTE BOOK | TEMPLATE AREA | AREA CHECKED | NO.

FUNCTIONAL CROSS SECTION - OPEN DITCH
CHARLES DRAINAGE COMPANY, INC.

50 ℄ 50

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS.	T0168 (9)	32	120

STATION	DISTANCE	YARDAGE EXCAVATION (rock)	EXCAVATION	EXCAVATION	EXCAVATION	FILL
8+00						
	100	213				0
9+00						
	50	426				0
9+50						

10+00
865

9+62
865

9+00
865

8+00
865

7+00
865

864.6

865.5

864.8

Exist. Str. 1A

+7%/80

HOUSE

+4%/60

6:1

R/W

BARN

+15/69

Meas Exist. Grade at 8+00

SCALE
HOR. 1" = 10'
VERT. 1" = 5'

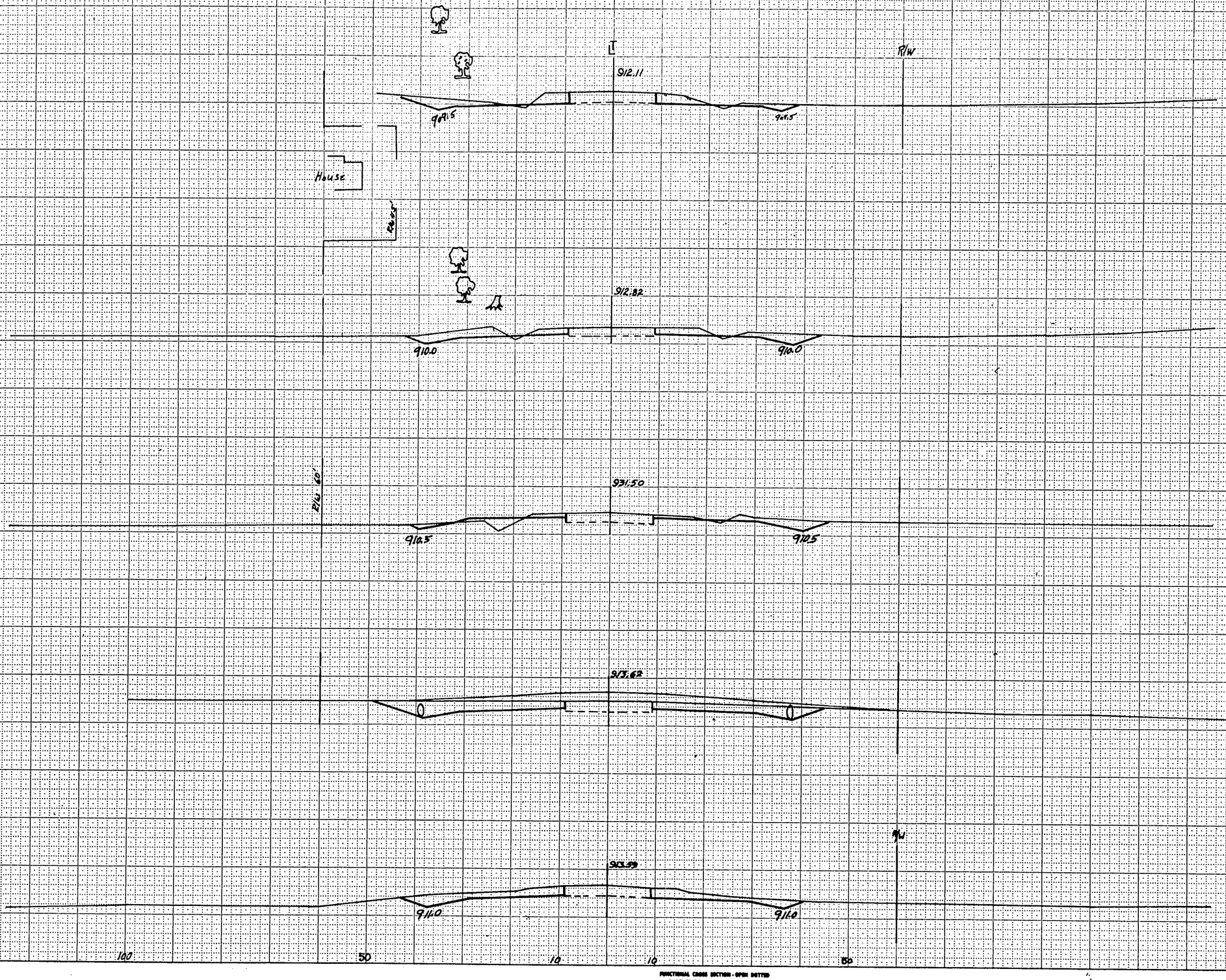
Maple Rd.
7+00 — 9+62 ℄

SHEET TOTAL 639 0

FUNCTIONAL CROSS SECTION - OPEN DITCH
CHARLES BRUNING COMPANY, INC.

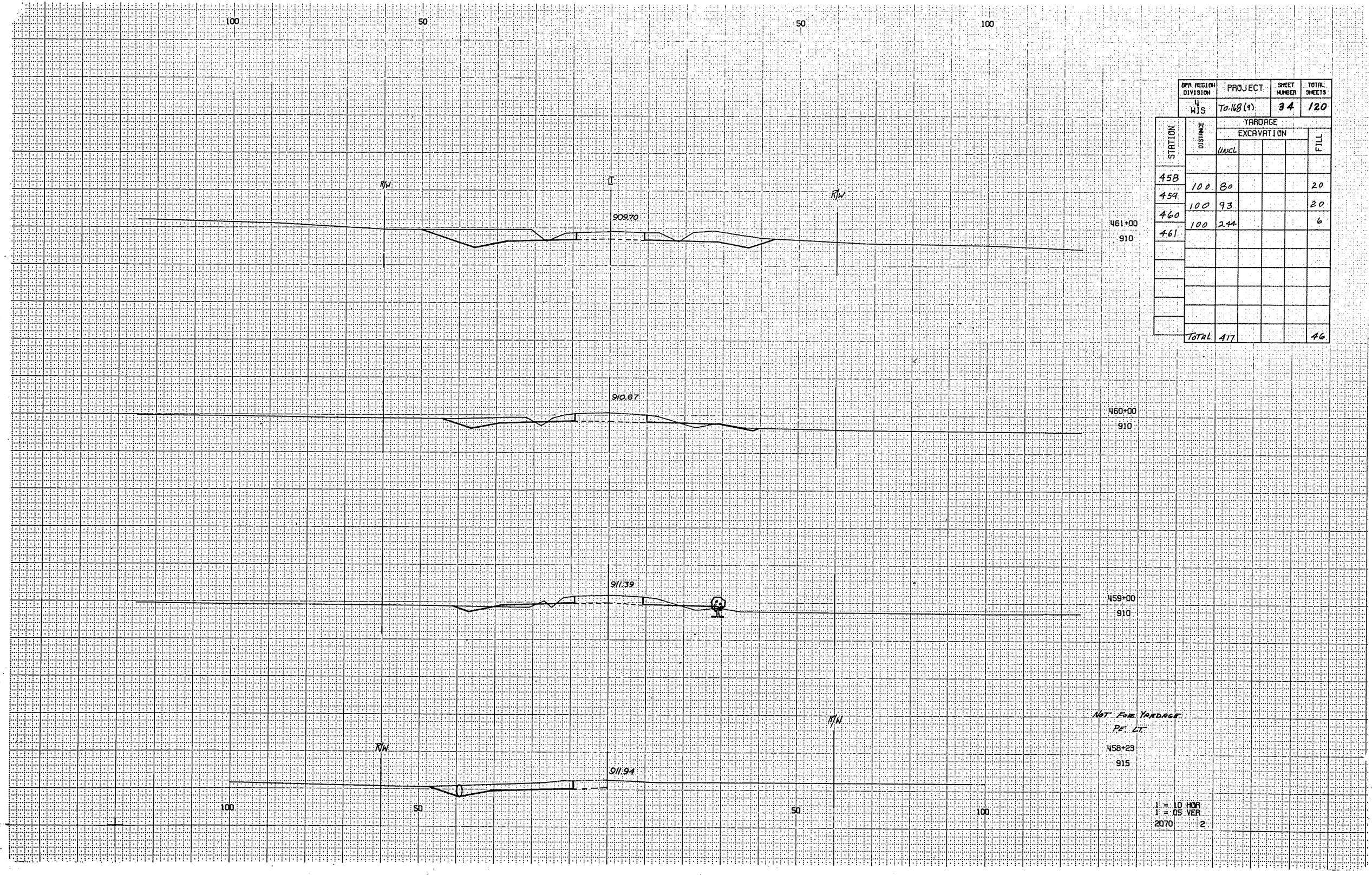
BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS.	T0169(9)	33	12

NOTE BOOK REFERENCE
NO. | AREA MEAS DESCRIBED



STATION	DISTANCE	YARDAGE EXCAVATION UNCL.	FILL
458+00			
910			
454 + 83			
	17	17	0
455			
	100	141	15
456			
	100	122	18
457			
457+00	100	135	9
915			
458			
456+00			
915			
455+54			
915			
455+00			
915			
	100		
	50		
	10		
	10		
	80		
SHEET TOTAL		415	42

FUNCTIONAL CROSS SECTION - OPEN DITTED
CHARLES BRUNING COMPANY, INC.



BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	To-168(1)	34	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL	FILL
458			
	100	80	20
459			
	100	93	20
460			
	100	244	6
461			
	TOTAL	417	46

DPT. REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
WIS	Todd (9)	35	120

STATION	DISTANCE	TAPEAGE EXCAVATION UNCL.	FILL
461			
	100	289	4
462			
	100	193	15
463			
	100	124	17
464			
Total	596		36

100 50 50 100

RW

℄

907.35

RW

464+00
905

NOT FOR YARDAGE
FT. LT. FT. RT.

907.75

463+55
910

908.23

463+00
905

RW

908.84

RW

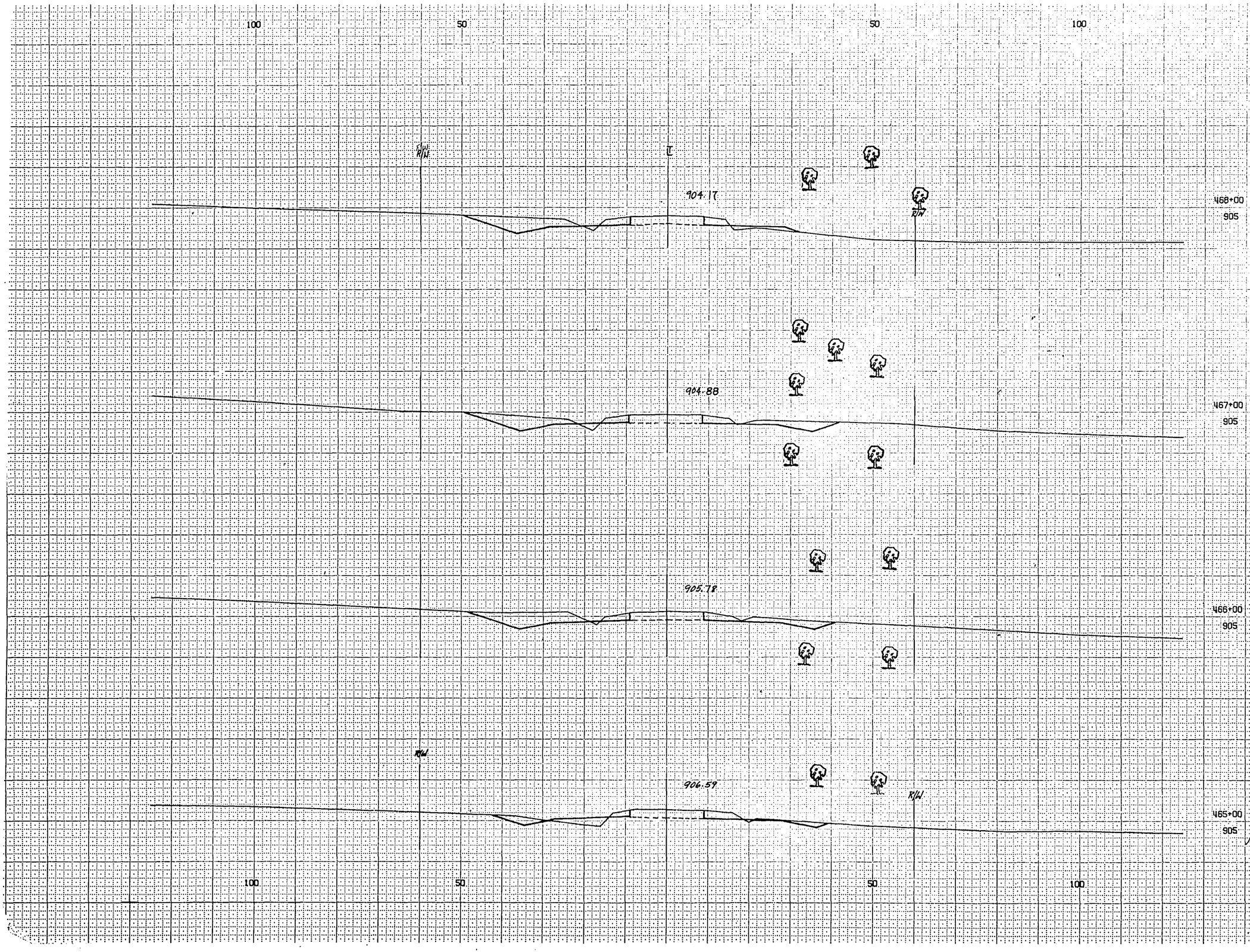
462+00
910

100 50 50 100

1 = 10 HOR
1 = 05 VER
2070 9

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	To 148 (9)	36	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
464						
	100	96				24
465	100	154				18
466	100	209				11
467	100	181				24
468						
	Total	640				77



1 = 10 HOR
1 = 05 VER
2070 4

100 50 50 100

RW

901.27

902.06

902.80

903.49

R/W

R/W

472+00
900

471+00
900

470+00
900

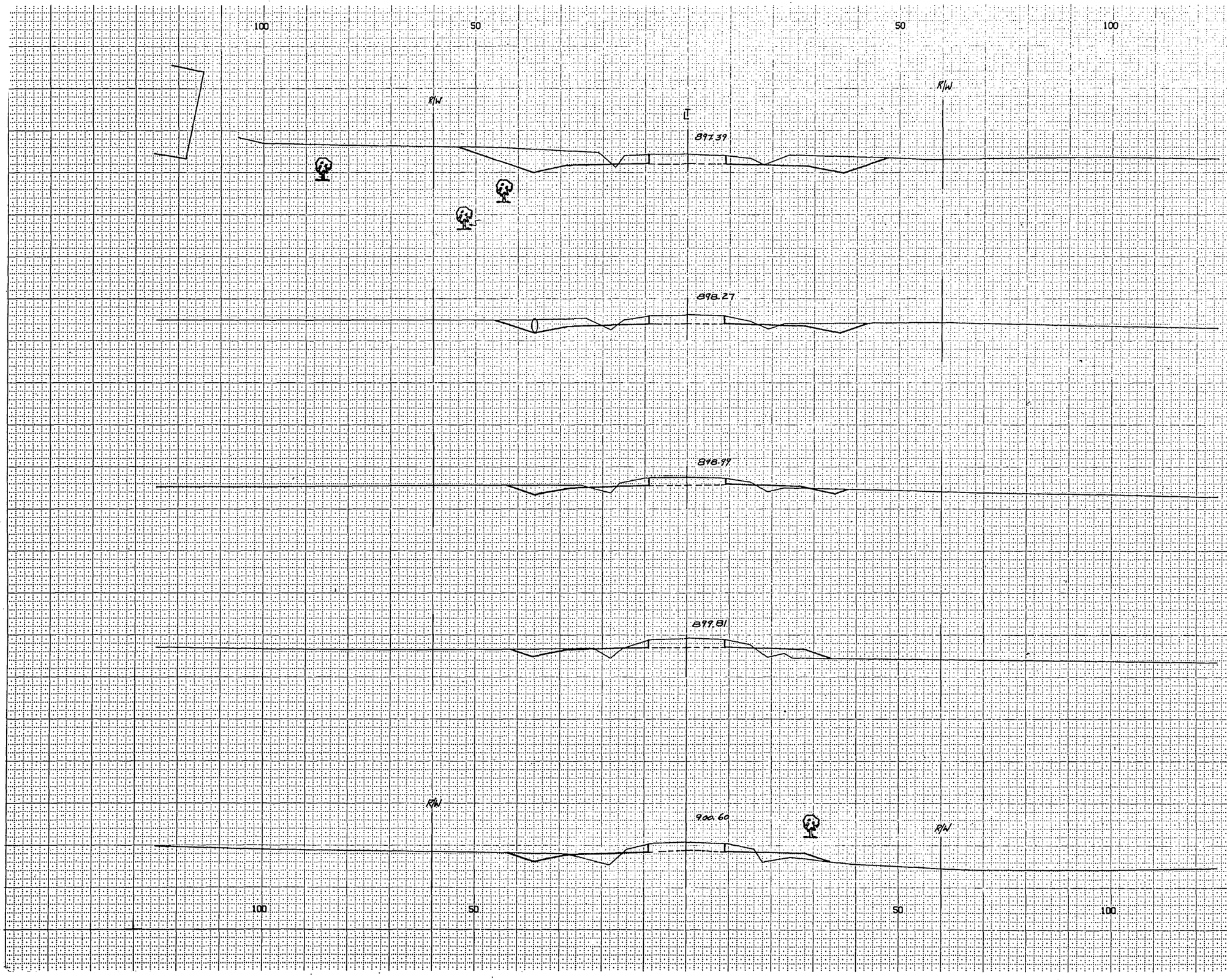
469+00
900

DPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	To 168 (7)	37	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.	FILL
468			
	100	172	30
469			
	100	191	37
470			
	100	185	44
471			
	100	128	61
472			
TOTAL		676	172

100 50 50 100

1 = 10 HOR
1 = 05 VER
2070 5



477+00
900

476+00
900

475+00
900

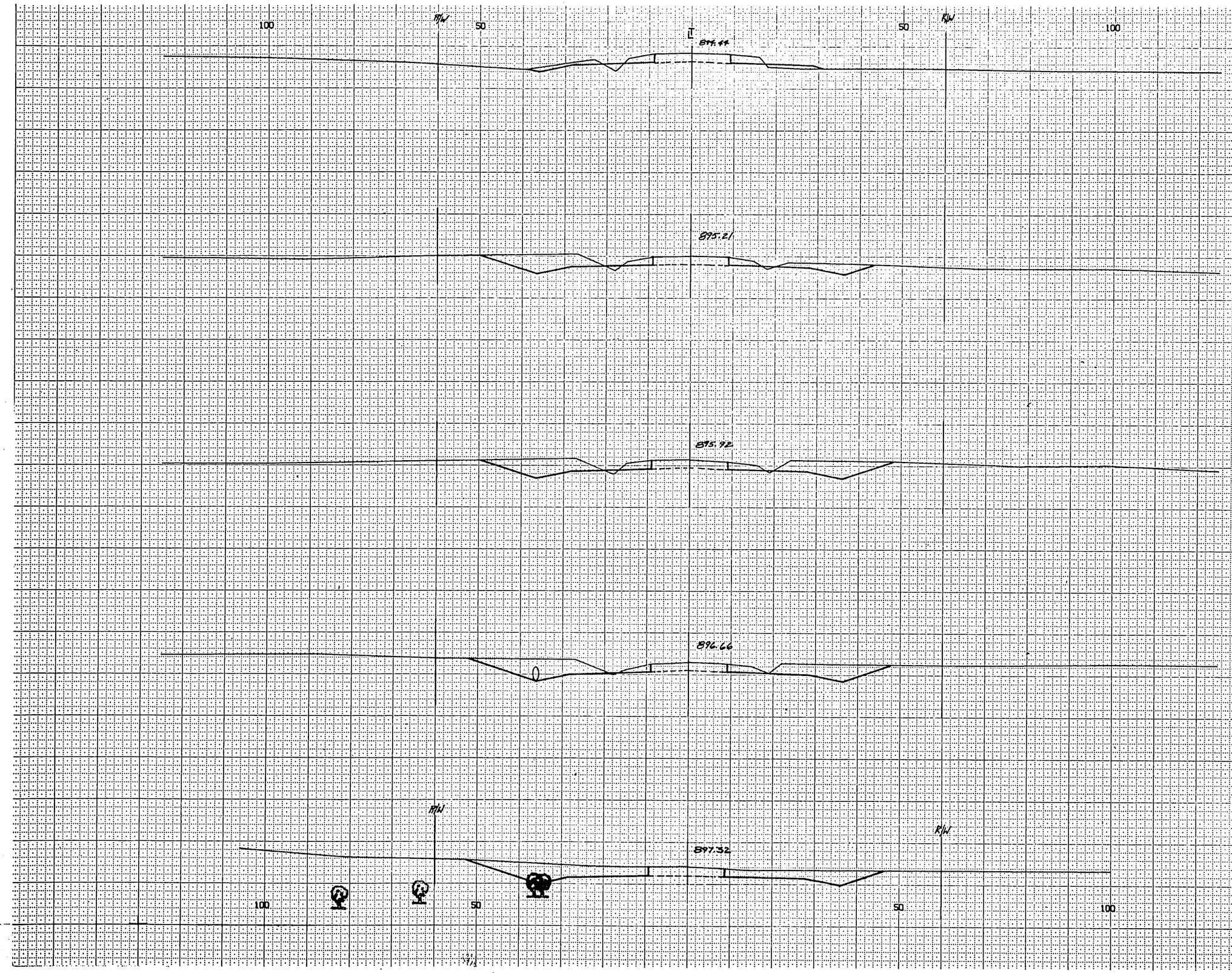
474+00
900

473+00
900

BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 162 (9)	38	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.	FILL
472	100	74	68
473	100	59	61
474	100	80	39
475	100	133	13
476	100	285	4
477			
Total		631	185

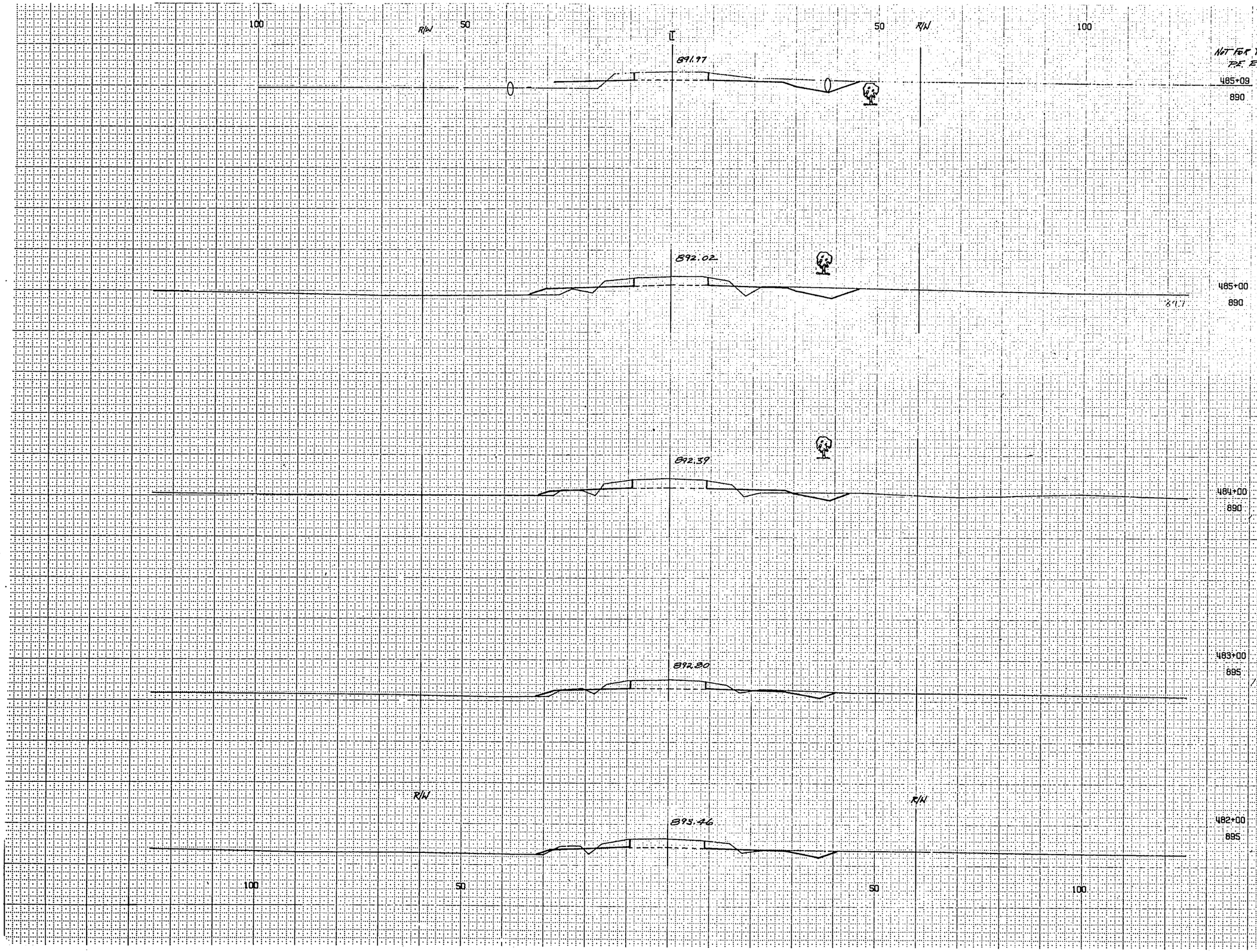
1 = 10 HOR
1 = 05 VER
2070 6



BPR: REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	To 168 (9)	39	120

STATION	DISTANCE	TARDAGE EXCAVATION UNCL	FILL
477			
	100	398	0
478	100	378	2
479	100	304	6
480	100	150	17
481			
TOTAL		1230	25

NOT FOR YARDAGE P.E. EST.

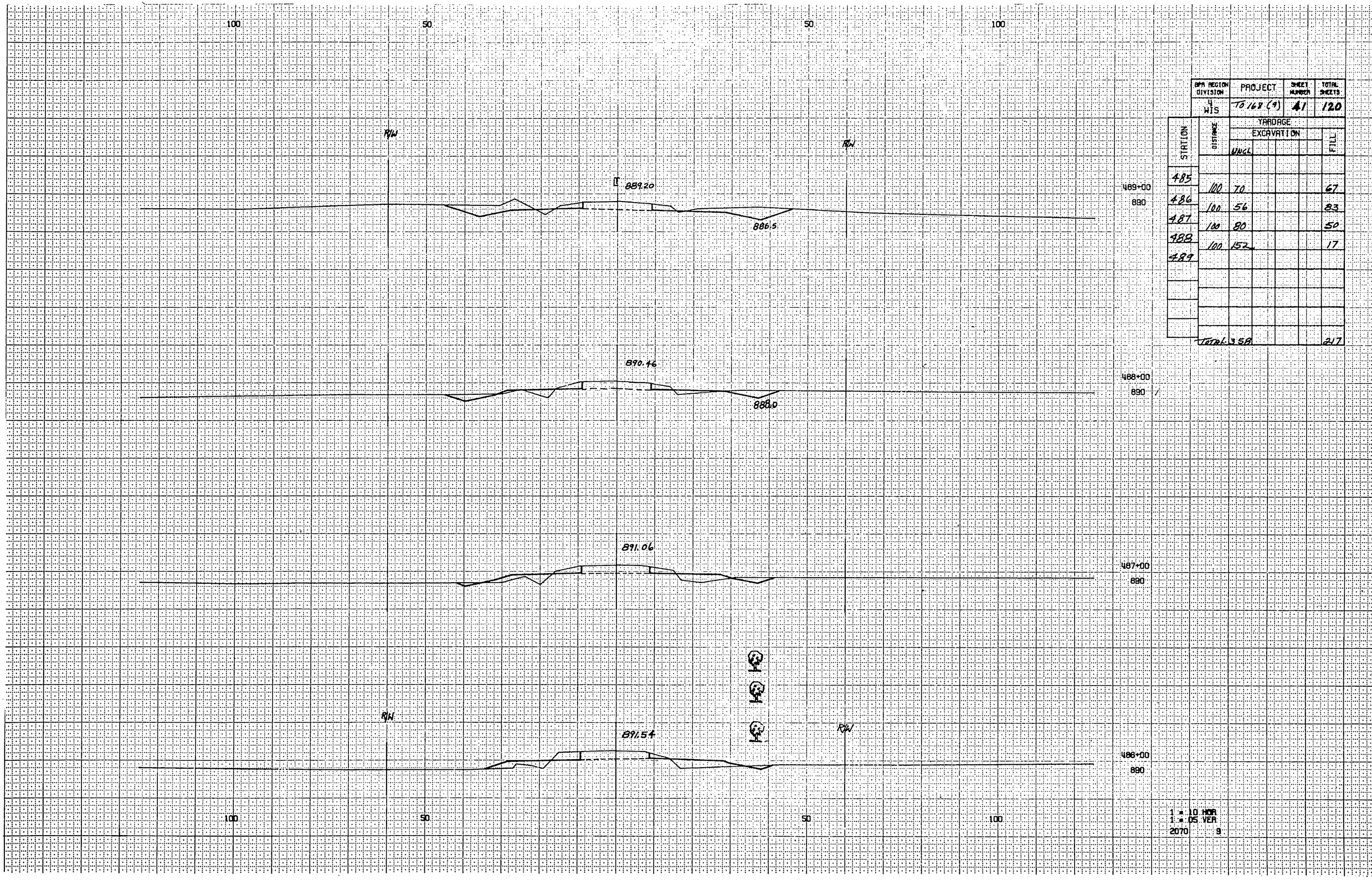


BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 168 (9)	40	120

STATION	DISTANCE	YARDAGE EXCAVATION Unc.				FILL
481						
	100	67				18
482						
	100	70				13
483						
	100	63				26
484						
	100	78				39
485						
	TOTAL	278				96

1 = 10 HOR
1 = 05 VER

2070 8



STATION	DISTANCE	YARDAGE EXCAVATION UNCL	FILL
485			
	100	70	67
486	100	56	83
487	100	80	50
488	100	152	17
489			
TOTAL	358		217

DNR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 168 (9)	41	120

1 = 10 HOR.
1 = 05 VER.
2070 9

100 50 50 100

R/W

882.39

℄

R/W LHE

493+00
880

884.87

LHE

492+00
880

885.73

491+00
885

R/W

887.50

R/W

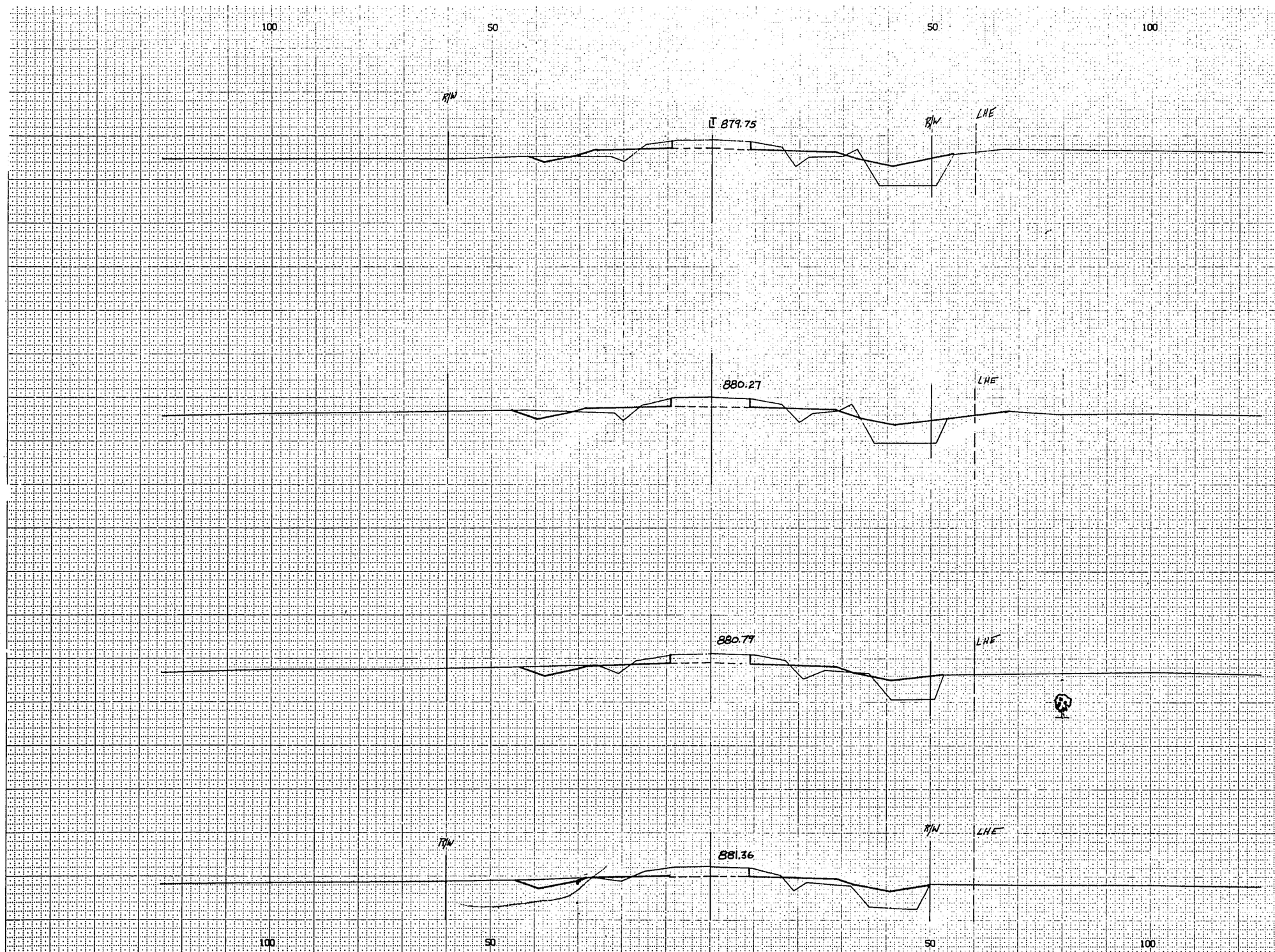
490+00
885

100 50 50 100

1 = 10 HOR
1 = 05 VER
2070 10

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	42	120

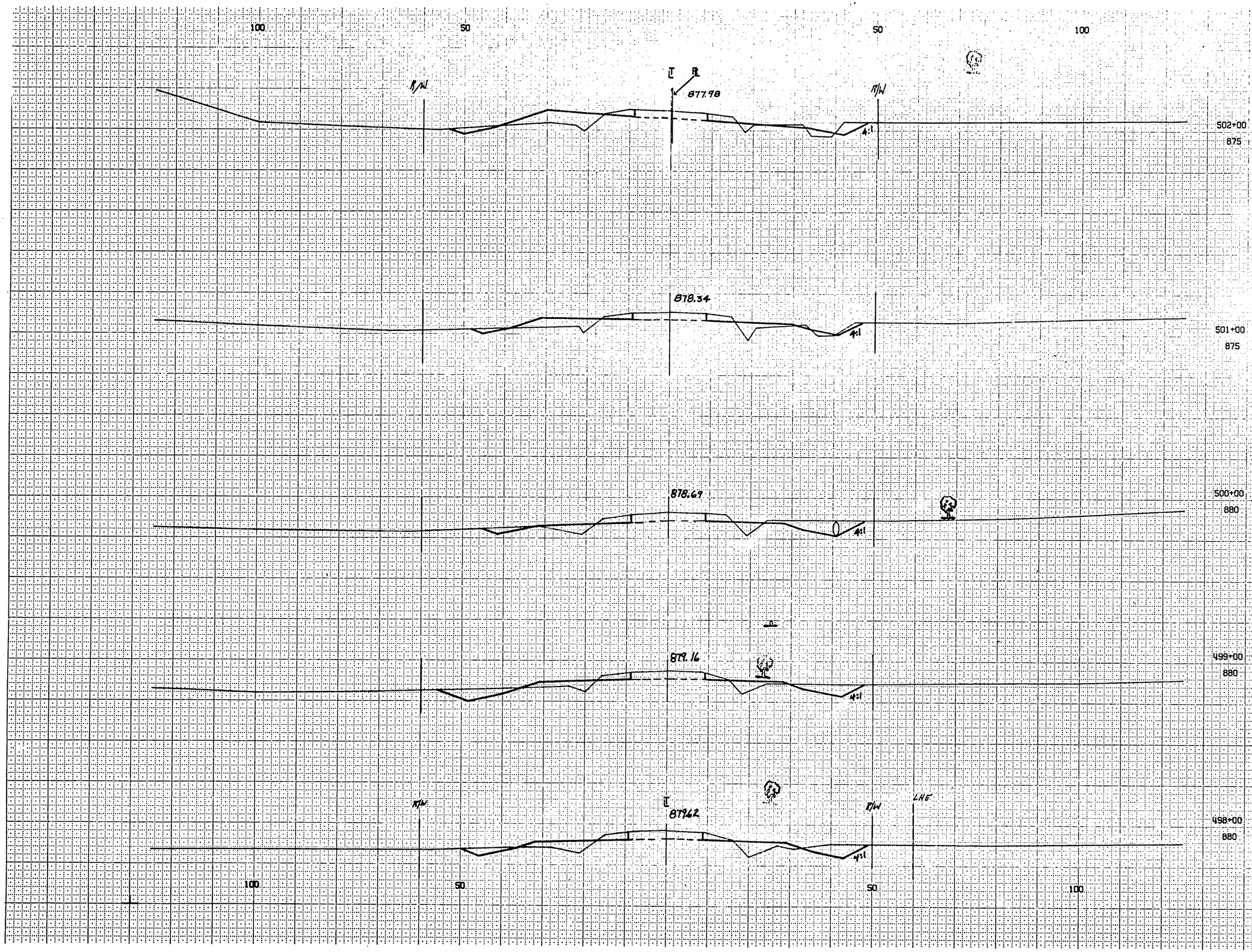
STATION	DISTANCE	YARDAGE EXCAVATION UNCL.	FILL
489			
	100	163	17
490			
	100	85	50
491			
	100	68	111
492			
	100	80	168
493			
	Total	396	346



DPW REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168 (9)	43	120

STATION	DISTANCE	YARDAGE EXCAVATION				FILL
		ROCK				
493	100	78				198
494	100	81				191
495	100	78				194
496	100	63				219
497						
	TOTAL	300				802

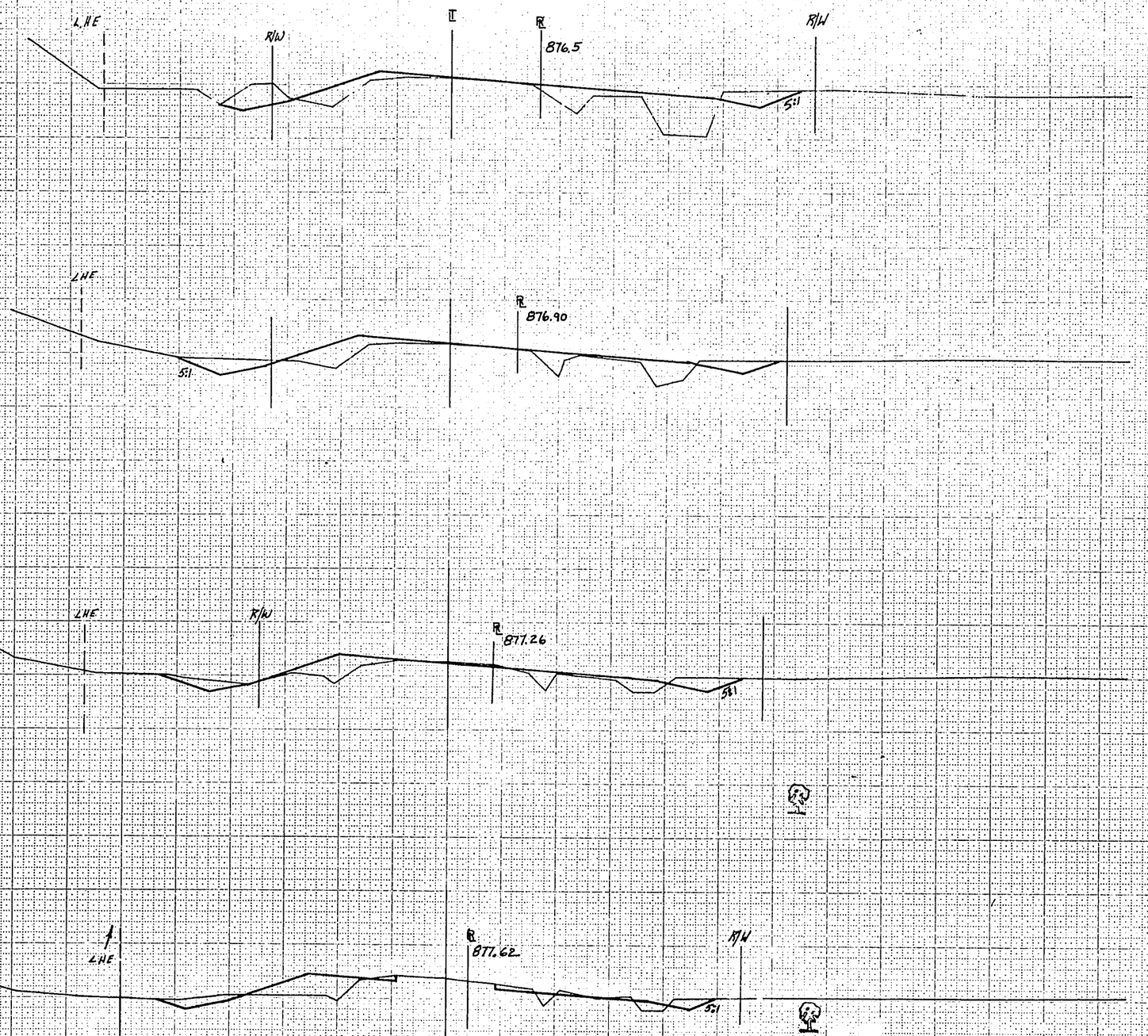
1 = 10 HOR
1 = 05 VER
2070 11



BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO168(9)	44	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL	FILL
497			
	100	89	165
498	100	137	94
499	100	152	68
500	100	109	83
501	100	72	120
502			
	Total	554	530

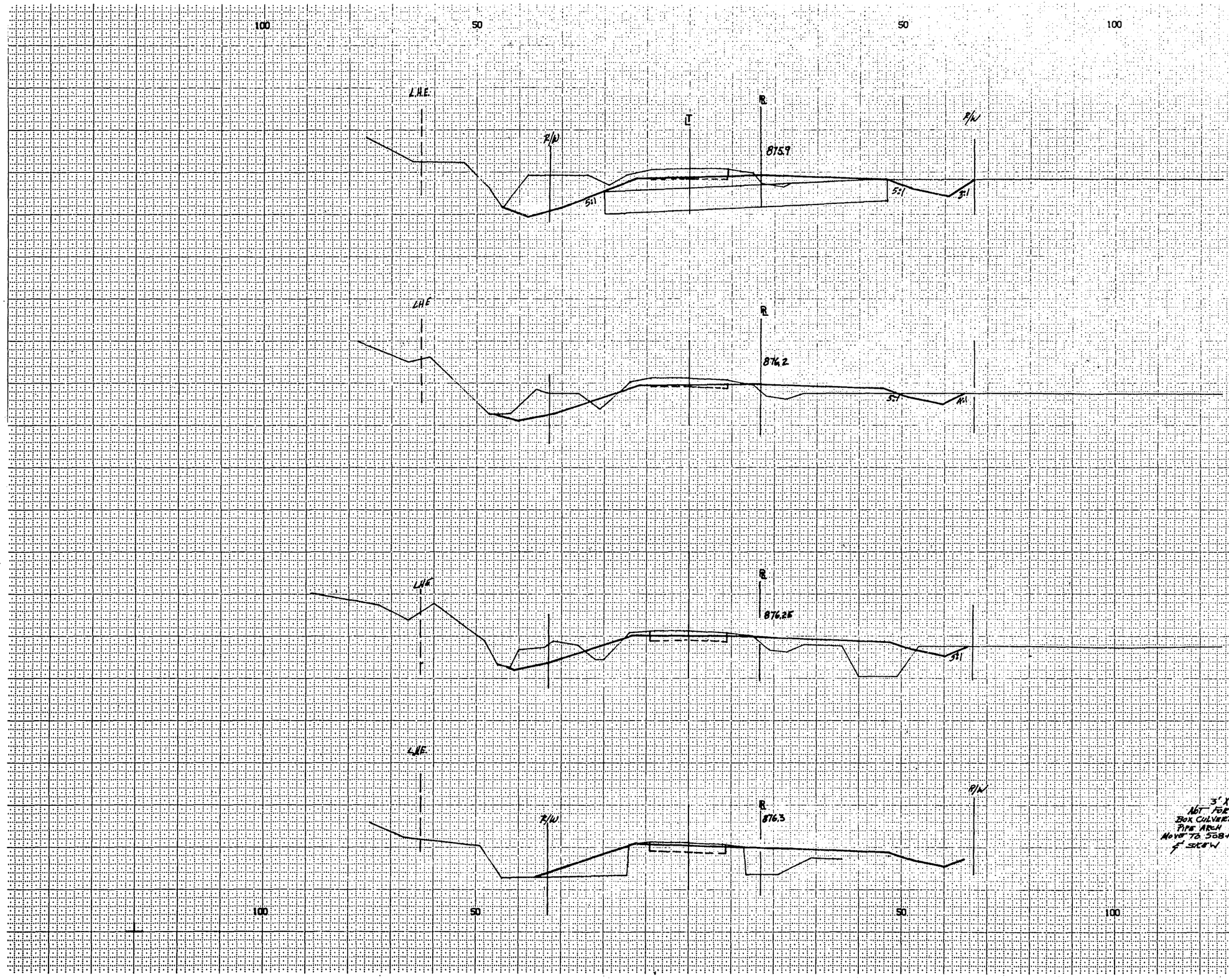
1 = 10 HOR
1 = 05 VER
2070 12



BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	70168 (9)	45	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL	FILL
502			
	100	83	144
503	100	74	185
504	100	85	231
505	100	113	311
506			
TOTAL		355	871

1 = 10 HOR.
1 = 05 VER.
2070 13



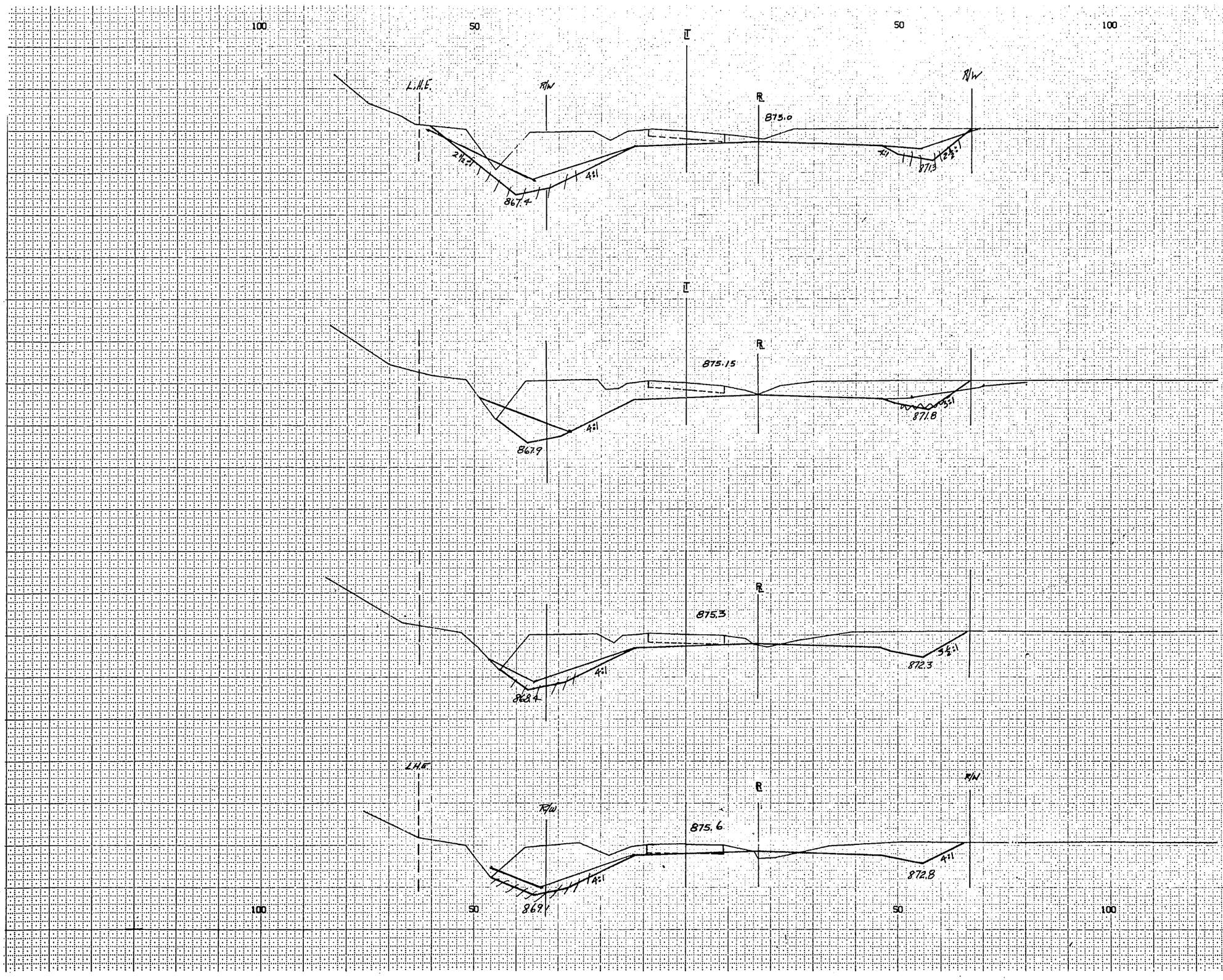
BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO168(9)	46	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
506	100	176				~~244~~
507	100	317				87
508						
TOTAL		493				331

3'X2' BOX CULVERT (REPLACE) PIPE ARCH 58"X31" MOVE TO 508+00 & SKEW

1 = 10 HOR
1 = 05 VER

2070 14

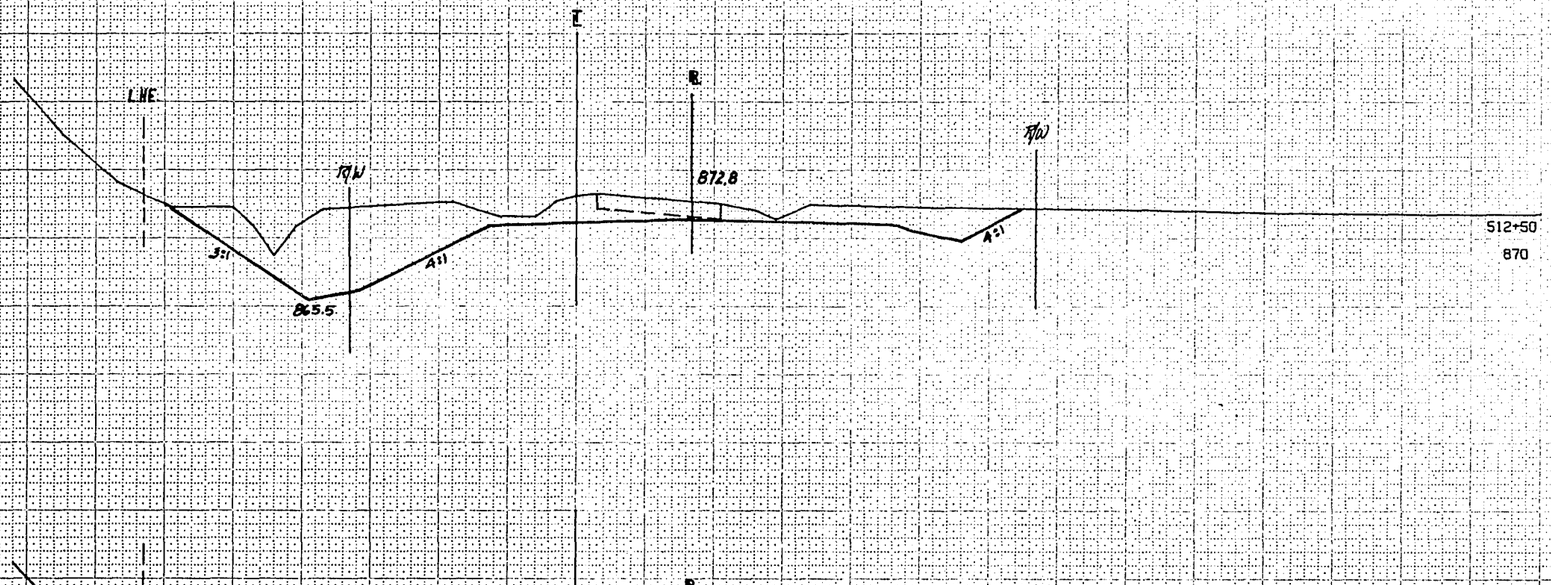


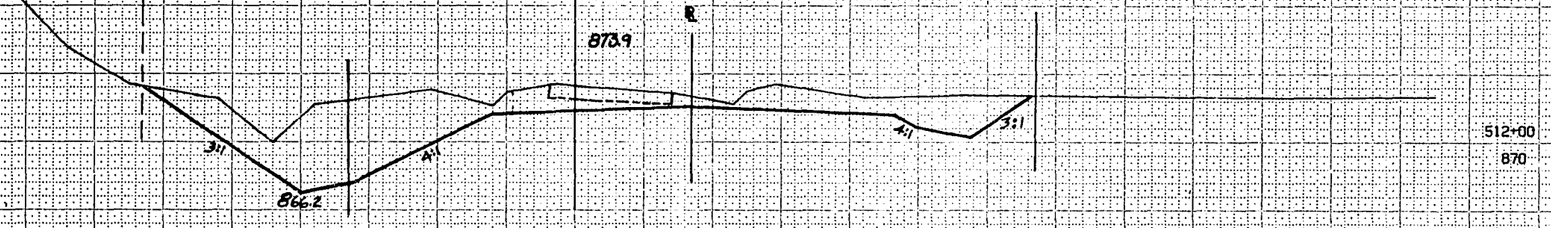
BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 168 (9)	47	120

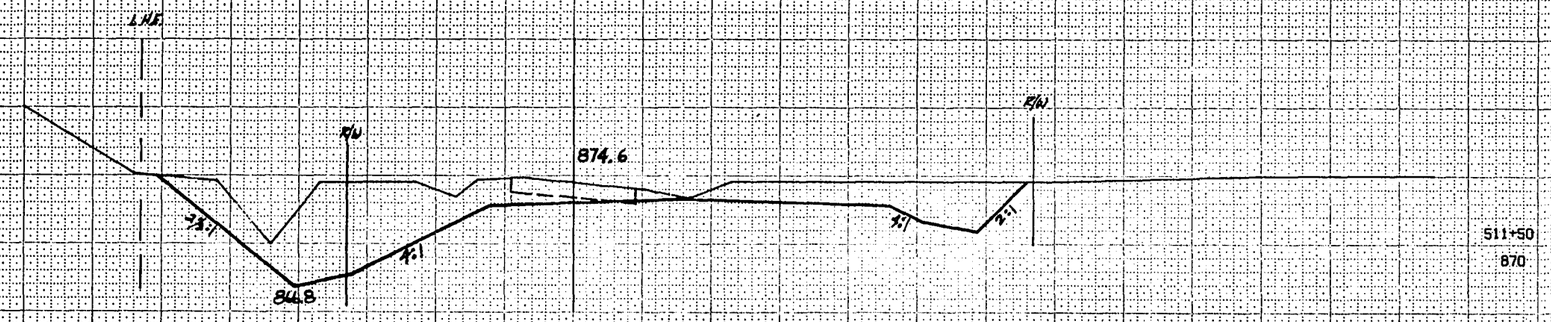
STATION	DISTANCE	YARDAGE EXCAVATION UNCL	FILL
508	100	546	39
509	100	750	13
510	100	926	2
511			
TOTAL	2222		54

1 = 10 HOR
1 = 05 VER
2070 15

100 50 50 100





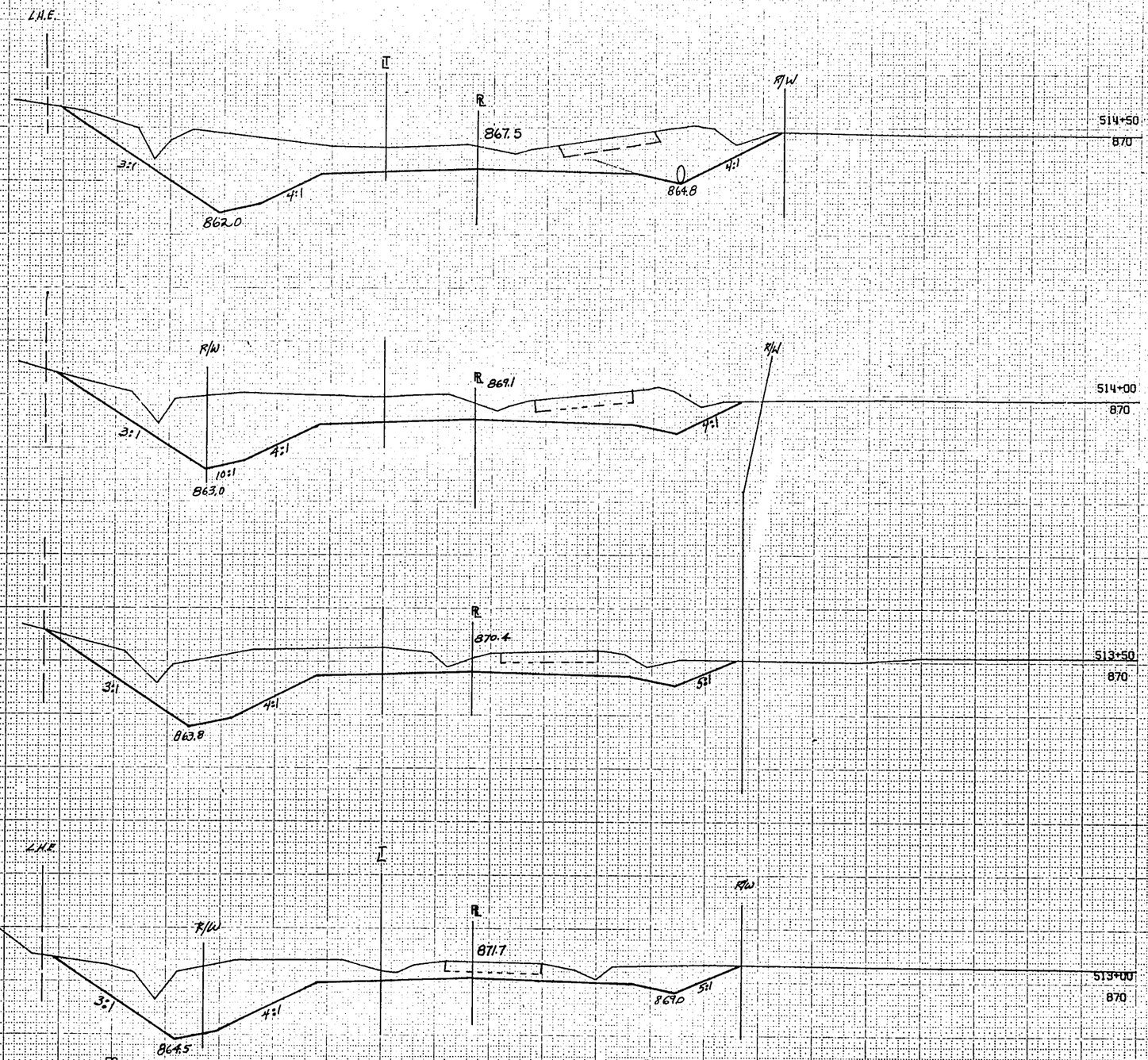


BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168 (9)	48	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL	FILL
511			
	140	1141	0
512			
TOTAL		1141	0

100 50 50 100

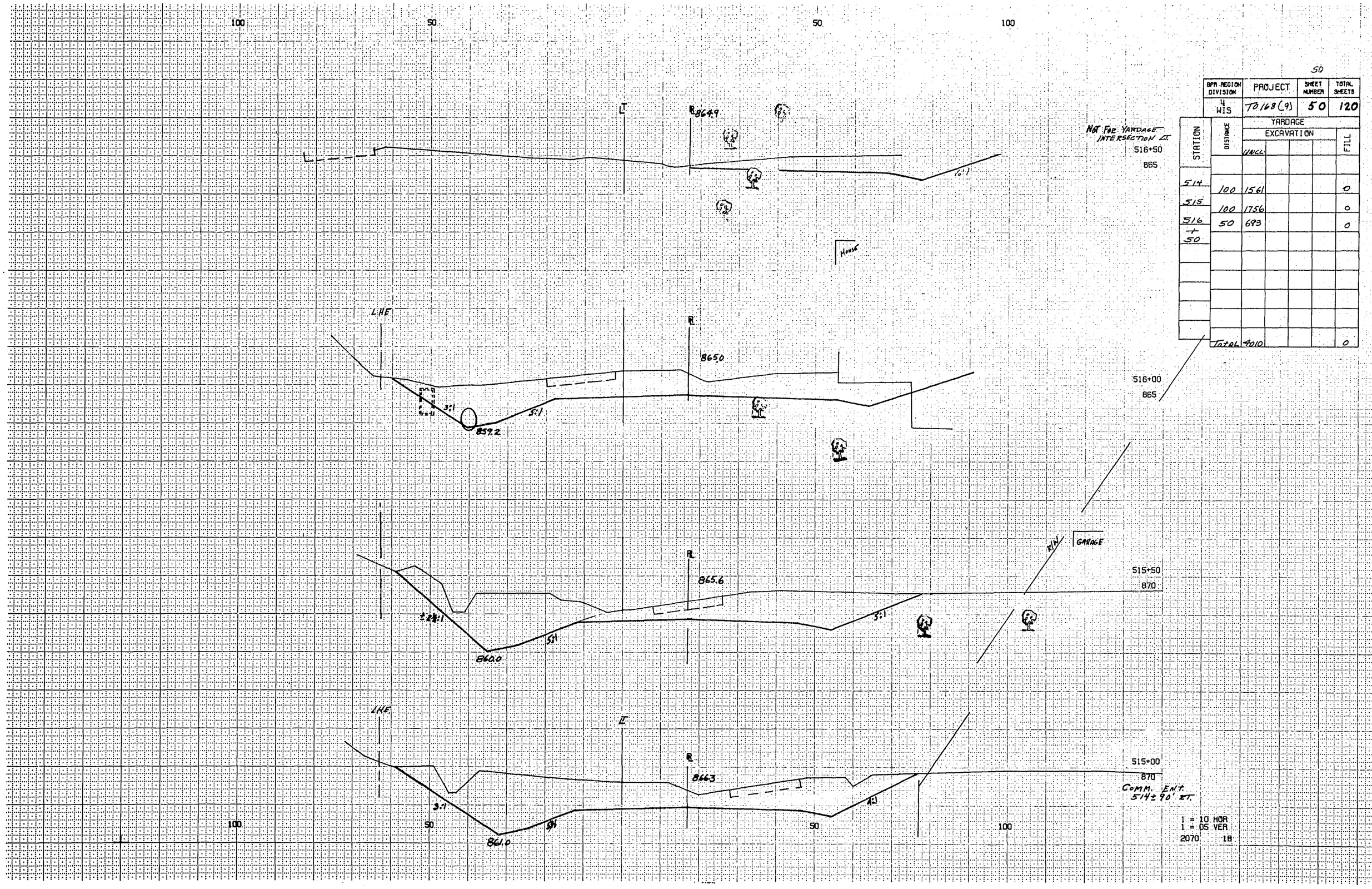
1 = 10 HOR
1 = 05 VER
2070 16



BPR REGION DIVISION		PROJECT		SHEET NUMBER	TOTAL SHEETS
	WIS	TO 168 (9)		49	120

STATION	DISTANCE	YARDAGE EXCAVATION					FILL
512							
	100	1137					0
513	100	1183					0
514							
	Total	2320					0

1 = 10 HOR
1 = 05 VER
2070 17



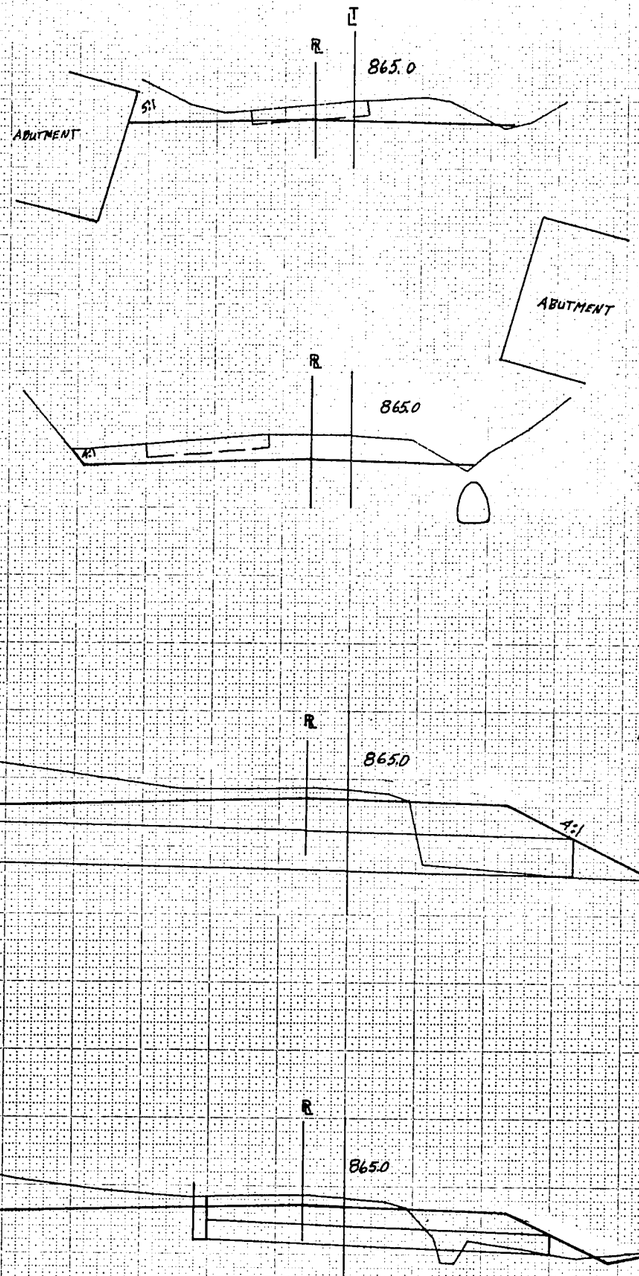
NOT FOR YARDAGE INTERSECTION

50

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO168(9)	50	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.				FILL
514	100	1561				0
515	100	1756				0
516 + 50	50	693				0
Total		4010				0

1 = 10 HOR
1 = 05 VER
2070 18

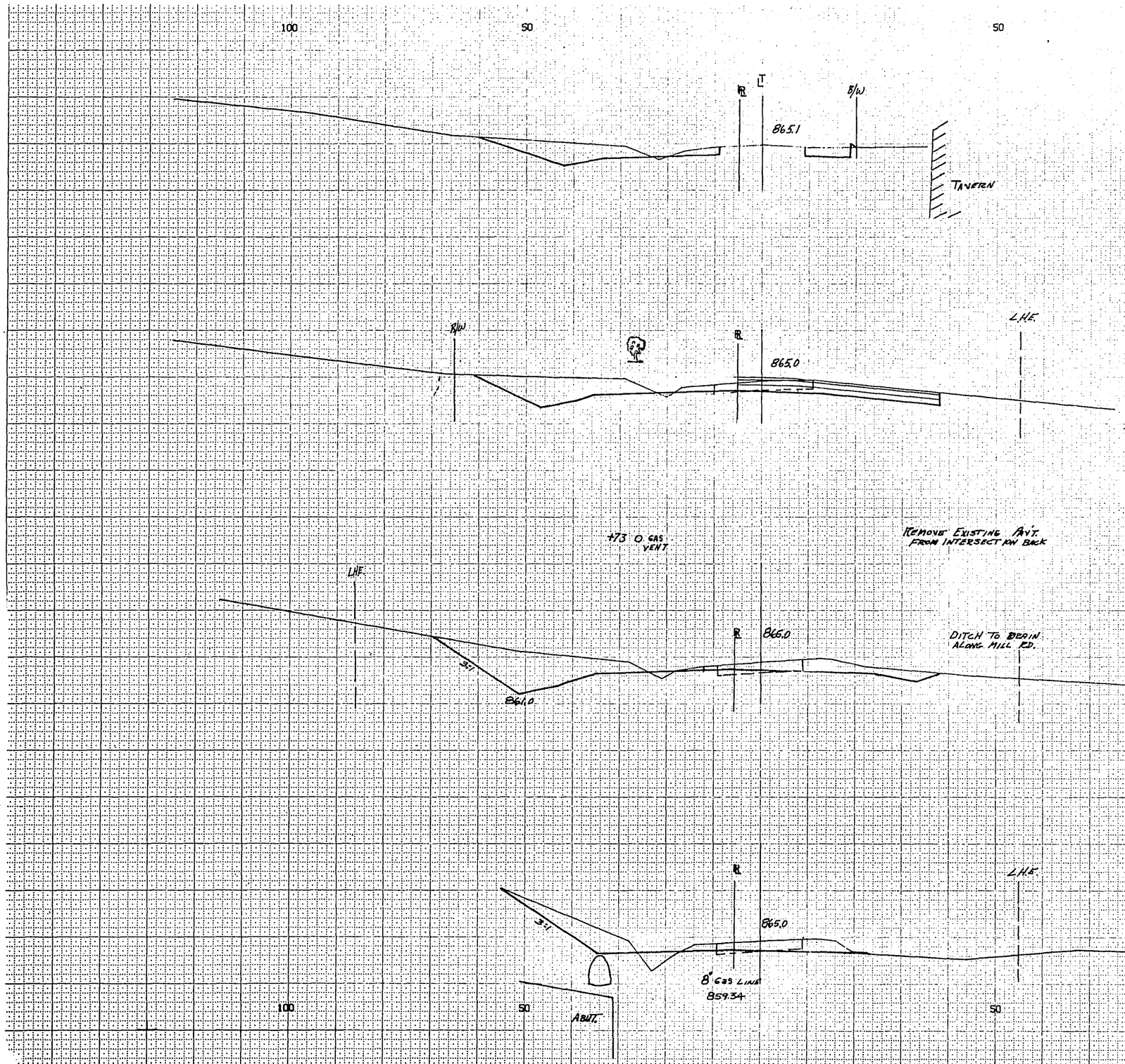


DPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 168 (9)	61	120

STATION	DISTANCE	YARDAGE EXCAVATION				FILL
		UNCL.				
19+00 CONV.						
516+	134	272				404
517+	64	126				74
517+14						
517+14	50	104				2
517+64						
TOTAL	502					480

1 = 10 HOR
1 = 05 VER

2070 19



BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 169(9)	52	120

STATION	DISTANCE	YARDAGE EXCAVATION				FILL
		UNCL				
517+64	36	76				7
518+50	50	186				11
519+50	100	369				7
Total		631				25

1 = 10 HOR
1 = 05 VER
2070 20

BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO168 (9)	53	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.				FILL
519+50						
520	50	133				2
521	100	331				23
	Total	464				24

100 50 50 100

R/W

4:1

L

R

865.9

Gas — T
861.94
Top of 8" CMP

R/W

521+00
865

R

865.5

R/W

4:1

520+50
865

R/W

5:1

R

865.3

R/W

END C & G 520+52

TAVERN

520+00
860

100 50 50 100

1 = 10 HOR
1 = 05 VER
2070 21

100 50 50 100

R/W

5:1

864.1

℄

℞ 866.27

5:1

R/W

NOT FOR YARDAGE
P.E. LT.

521+67

860

R/W

℞ 866.15

5:1

5:1

R/W

521+50

860

℄

℞ 866.01

5:1

521+16

860

100 50 50 100

1 = 10 HOR
1 = 05 VER

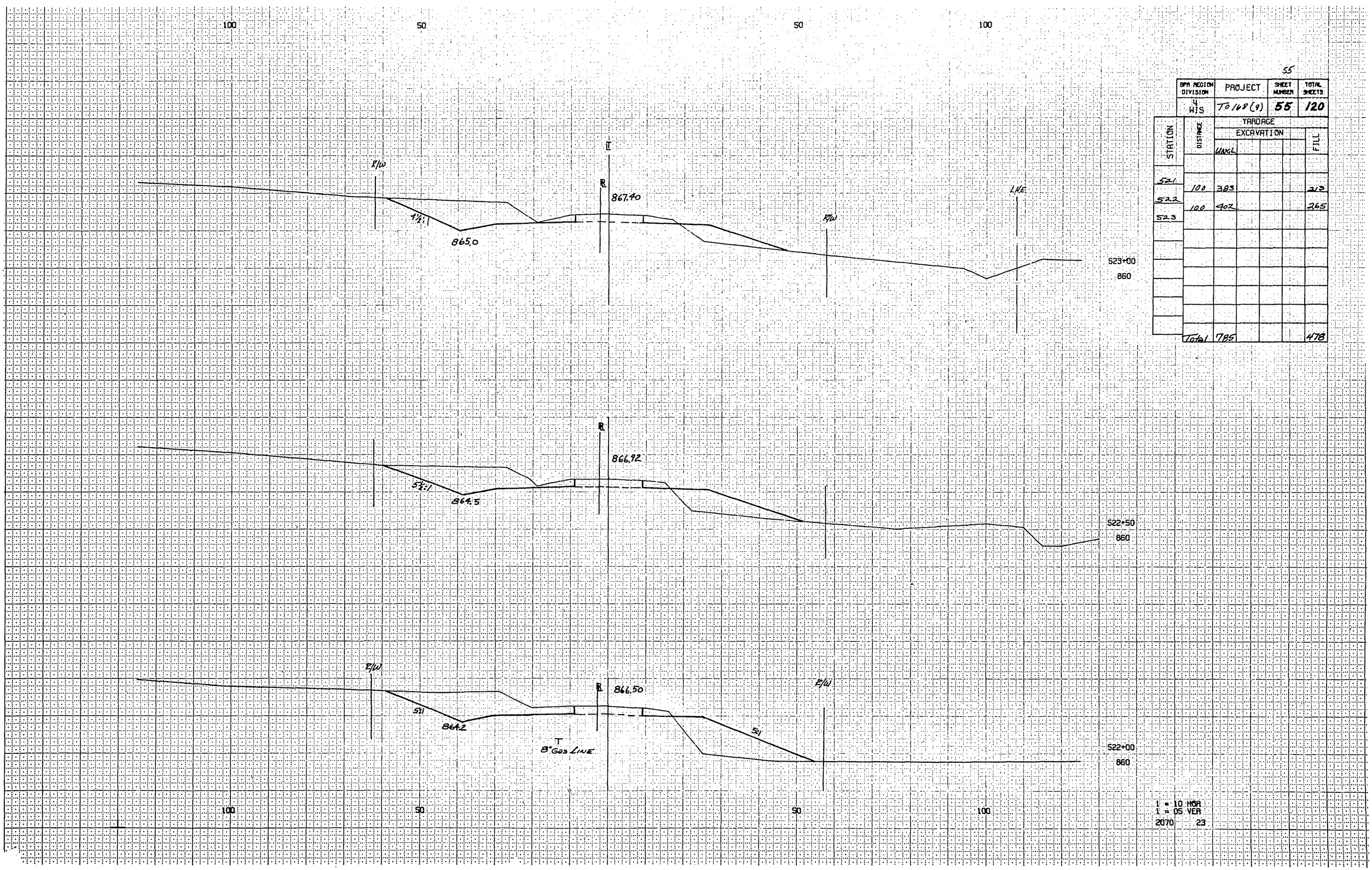
2070 22

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TD 168 (9)	54	120

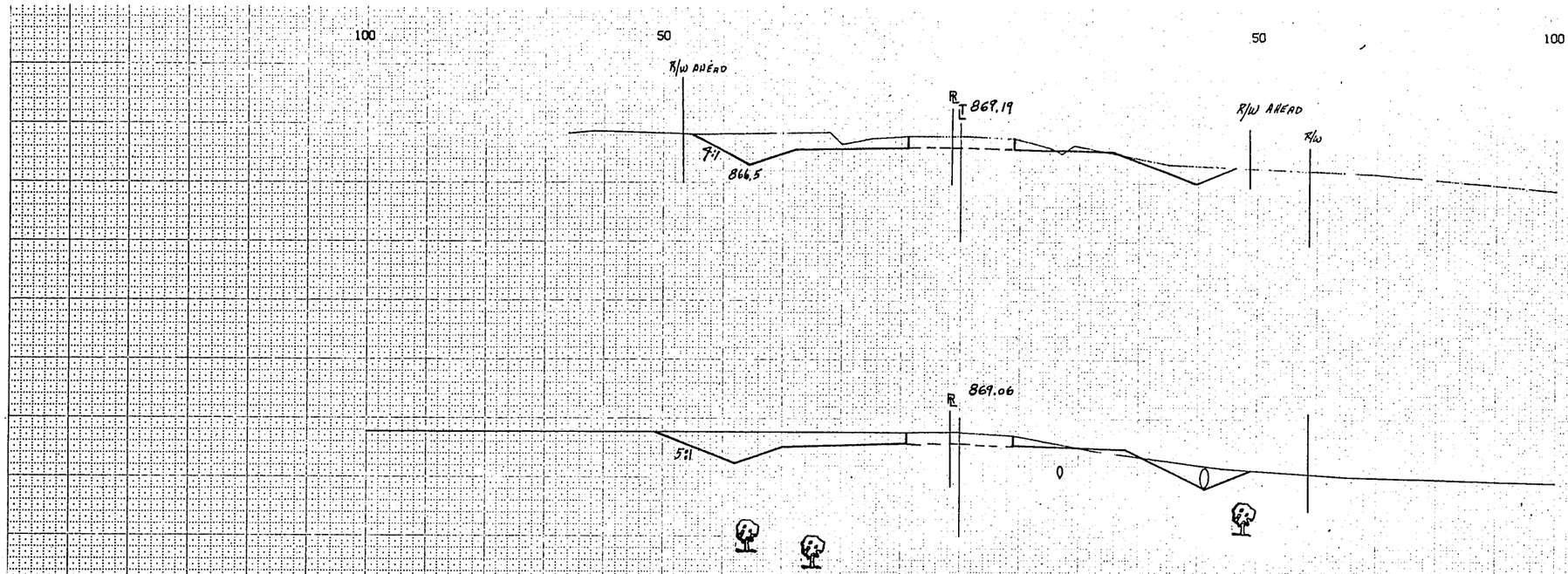
STATION	DISTANCE	YARDAGE EXCAVATION	FILL

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	F0168(9)	55	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
521						
	100	383				213
522	100	402				265
523						
Total		785				478

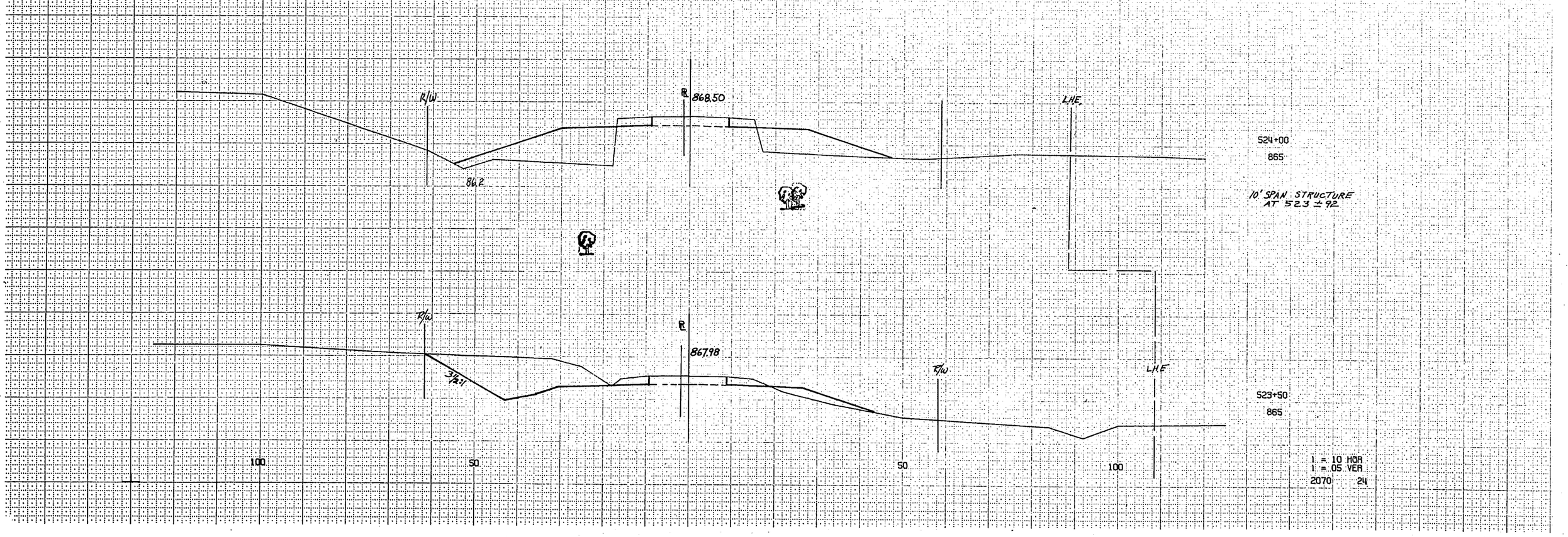


1 = 10 HOR
1 = 05 VER
2070 23

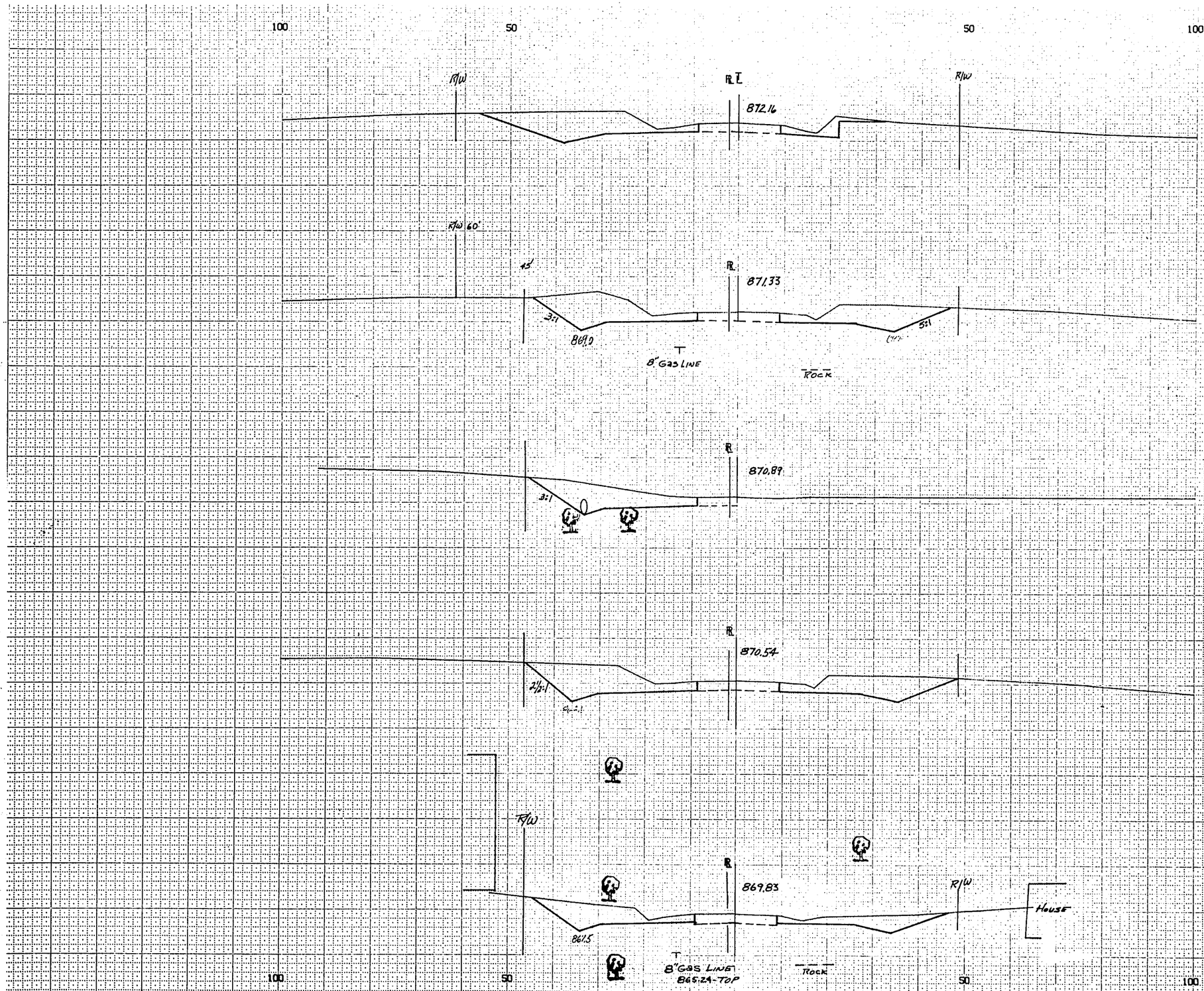


BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168 (9)	56	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.				FILL
523	100	222				387
524						
Total		222				387



1 = 10 HOR
1 = 05 VER
2070 24

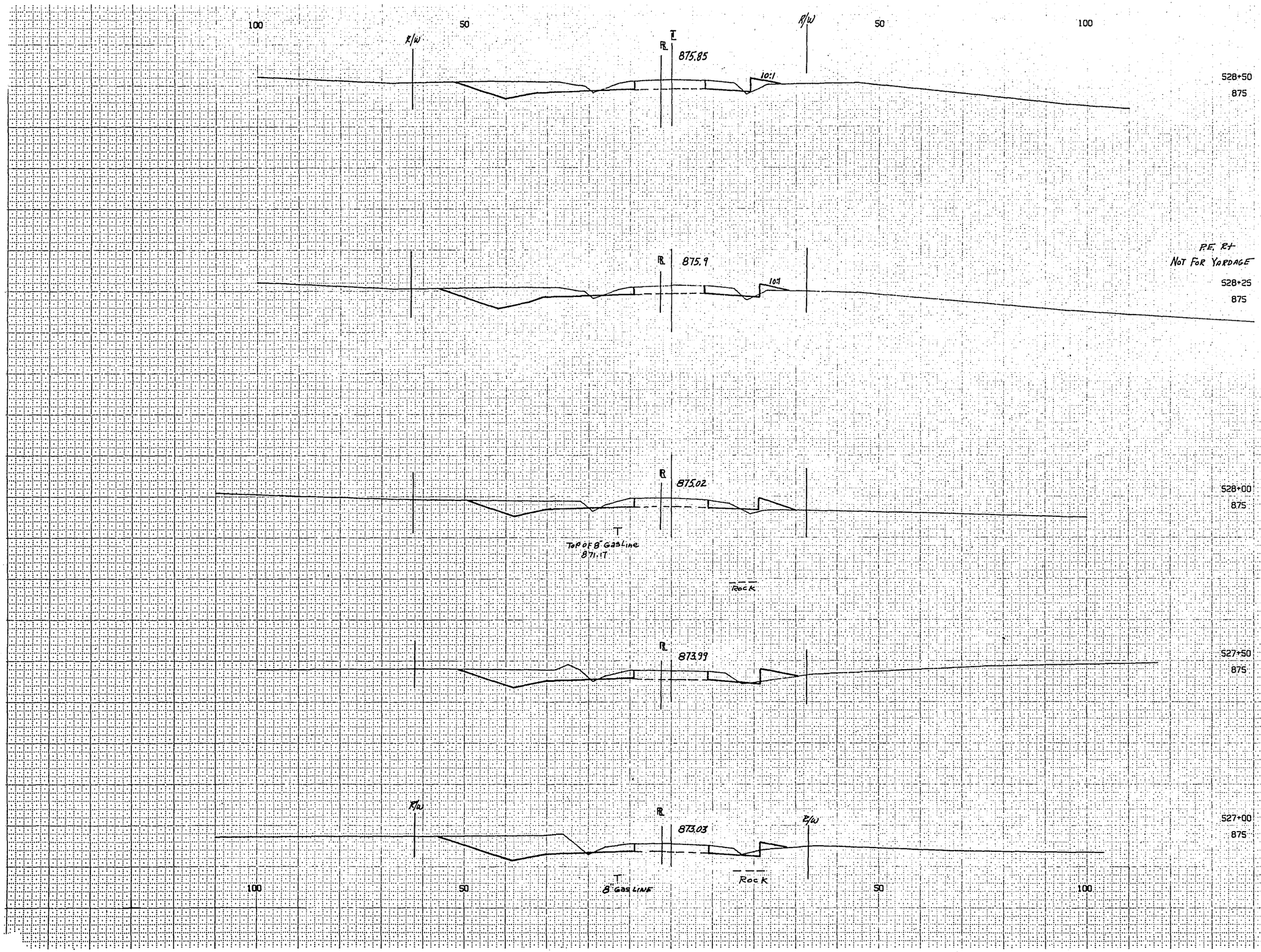


BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168 (1)	57	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
524						
	100	196				317
525						
	100	430				0
526						
	TOTAL	626				317

P.E. LT. NOT FOR YARDAGE

1 = 10 HOR
1 = 05 VER
2070 25



BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	58	120

STATION	DISTANCE	YARDAGE EXCAVATION				FILL
		UNCL				
526						
	100	411				7
527	100	235				26
528						
	TOTAL	646				33

1 = 10 HOR
1 = 05 VER
2070 26

DPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0163(9)	59	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
528						
	100	115				48
529						
	100	61				74
530						
TOTAL		176				122

100 50 50 100

R/W

R 879.00

8:1

R/W

NOT FOR YARDAGE

530+40

875

R 878.24

8:1

530+00

880

T

8" GAS LINE

ROCK

R 877.43

10:1

529+50

875

R/W

R/W

R 876.69

10:1

529+00

875

T

8" GAS LINE

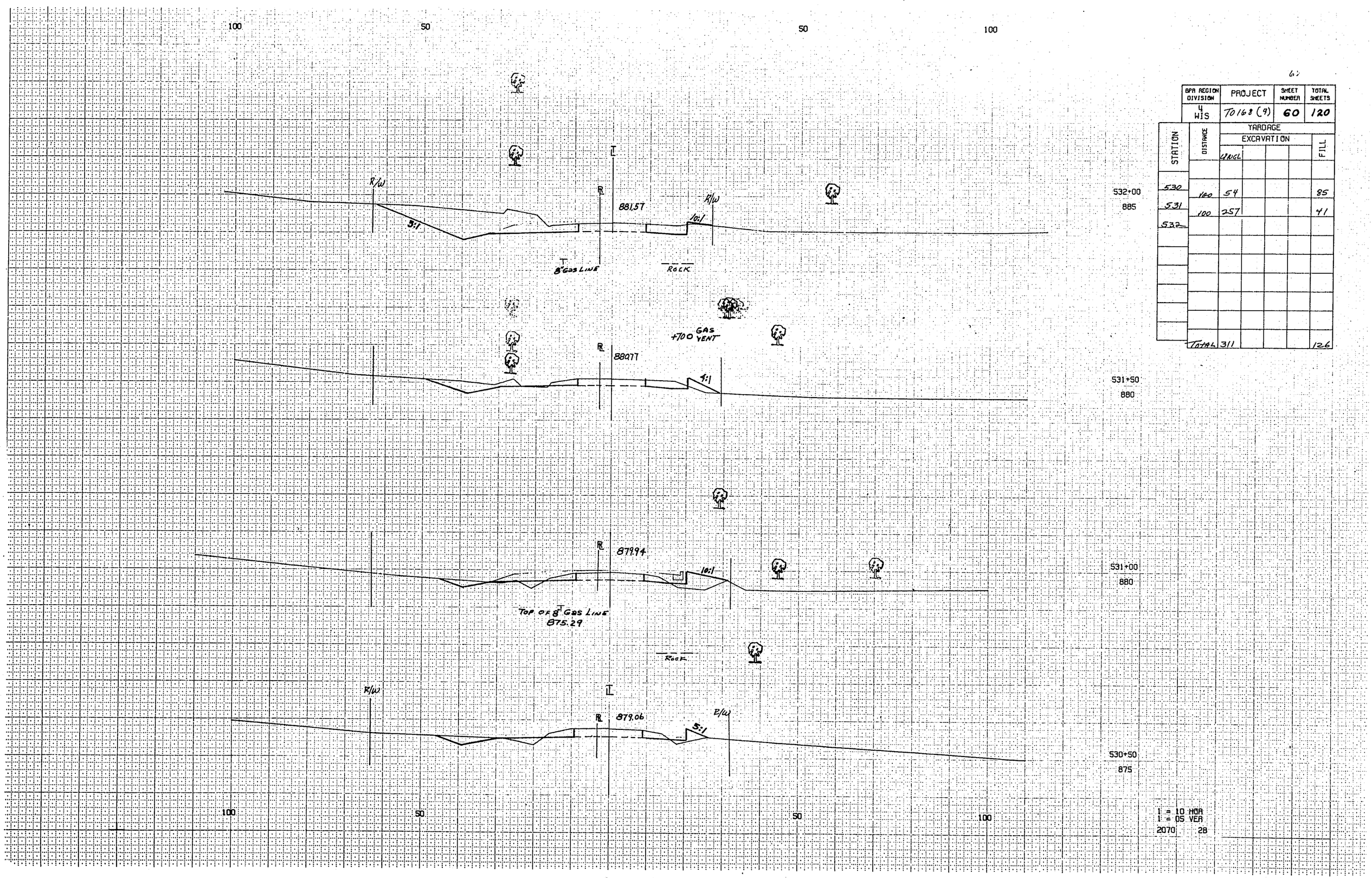
100 50 50 100

NO ROCK DEPTH 10'

1 = 10 HOR
1 = 05 VER
2070 27

BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168 (9)	60	120

STATION	DISTANCE	YARDAGE EXCAVATION				FILL
		ANCL				
530						
	100	54				85
531						
	100	257				41
532						
TOTAL		311				126



1 = 10 HOR
1 = 05 VER

2070 28

100 50 50 100

B/W

PL: 539±10

T

FL 884.98

B/W

T
8" GAS

ROCK

FL 884.19

534+00
885

533+50
885

FL 883.30

533+00
885

T
8" GAS

ROCK

B/W

FL 882.44

B/W

532+50
885

100 50 50 100

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	61	120

STATION	DISTANCE	YARDAGE EXCAVATION	FILL
		ROCK	
532	100	489	0
533	100	459	4
534			
TOTAL		948	4

1 = 10 HOR.
1 = 05 VER.

2070 29

100 50 50 100

R/W

RL

LT

8874

R/W

535+50

885

NOT FOR YARDAGE PR LT.

535+02

885

RL 886.8

535+00

885

TOP 8" GAS LINE
882.66

NO ROCK
DEPTH 9'

R/W RL R/W

885.9

534+50

885

100 50 50 100

1 = 10 HOR
1 = 05 VER

2070 30

BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO168(7)	62	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
534						
	100	265				9
535						
	TOTAL	265				9

100 50 L 50 100

R 888.8

NOT FOR YARDAGE
P.E. LT. & RT.

536+85
890

R/W

R 888.5

R/W

536+50
890

R/W

R 888.0

R/W

536+00
890

T
8" GAS LINE

NO ROCK
DEPTH
9'

R 887.85

NOT FOR YARDAGE
P.E. LT.

535+85
890

R 887.55

R/W

NOT FOR YARDAGE
SCHOOL ENT. RT.

535+60
885

100 50 50 100

1 = 10 HOR
1 = 05 VER

2070 31

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T-0168(7)	63	120

STATION	DISTANCE	YARDAGE EXCAVATION (UNCL)				FILL
535	100	246				6
536						
TOTAL		246				6

100 50 50 100

+65 6" LINE

MATCH LINE SR. 10+50

℄ R 889.6

FENCE

538+50
885

6" GAS LINE

MATCH LINE SR. 10+50

GAS VALVE

T "V" NORTH

℄ R 889.5

E/W

37'

NO ROCK DEPTH 9'

538+00
890

R 889.22

37'

537+50
890

537+80
TOP OF GAS 885.99

ROCK

NO ROCK DEPTH 9'

GAS PUMP ISLAND

77'

℄ R 888.9

E/W

FENCE + 19 36

537+00
890

100 50 50 100

1 = 10 HOR
1 = 05 VER
2070 32

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	To168(9)	64	120

STATION	DISTANCE	YARDAGE EXCAVATION	FILL
		UNCL	
536	100	411	0
537	100	437	0
538			
	TOTAL	848	0

DPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	65	120

STATION	DISTANCE	YARDAGE EXCAVATION	FILL
		WWCL	
538	50	239	0
+50	50	263	0
539			
539	100	226	4
540			
	TOTAL	728	4

NOT FOR YARDAGE P.G. LT.

100 50 50 100

R/W

℄ 8894

R/W

540+40
890

℄

8896

2:1

FENCE

ROCK 18' AT ELEV 888.0

6" GAS LINE EL. TOP OF Pipe = 884.67

540+00
885

R ℄

889.7

539+50
890

+30

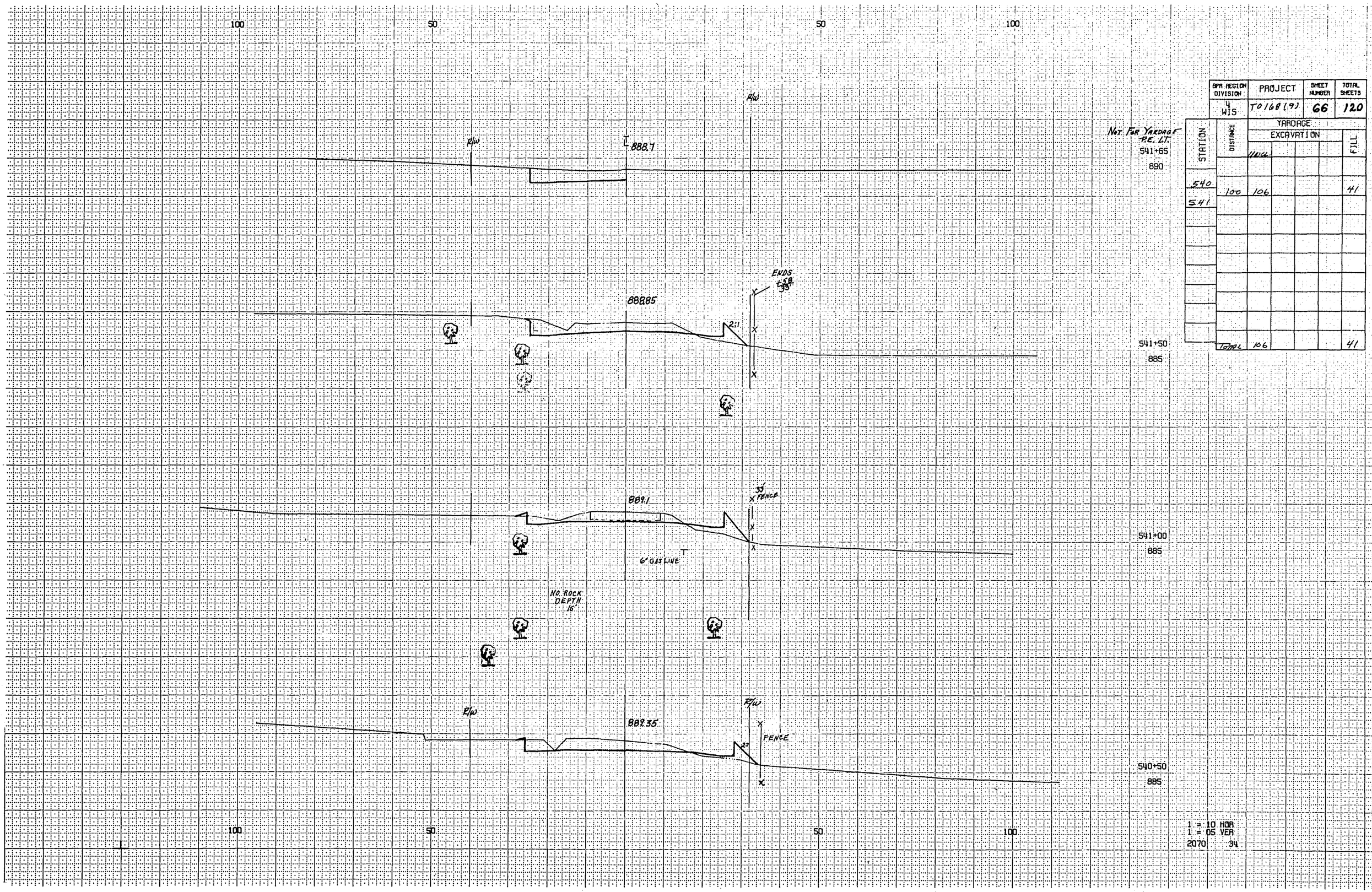
WIRE FENCE

539+00
890

MATCH LINE BACK

100 50 50 100

1 = 10 HOR
1 = 05 VER
2070 33



Not For Yardage
P.C. Lt.
541+65
890

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	66	120

STATION	DISTANCE	YARDAGE EXCAVATION				FILL
		Rock				
540	100	106				41
541						
Total		106				41

100 50 R/W 50 100

℄

R/W

Not For Yardage
P.E. LT.
542+82
890

888.02

6:1

888.3

5:1

542+50
885

40' R/W

R+17.9

888.6

2½:1

+07
34' BACK @ P.L.

542+00
885

T
6" GAS LINE

R/W

34' R/W

888.65

4:1

Not For Yardage
School P.E.R.T.
541+85
885

100 50 50 100

DPT REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO148(9)	67	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.				FILL
541						
	100	68				44
542						
TOTAL		68				44

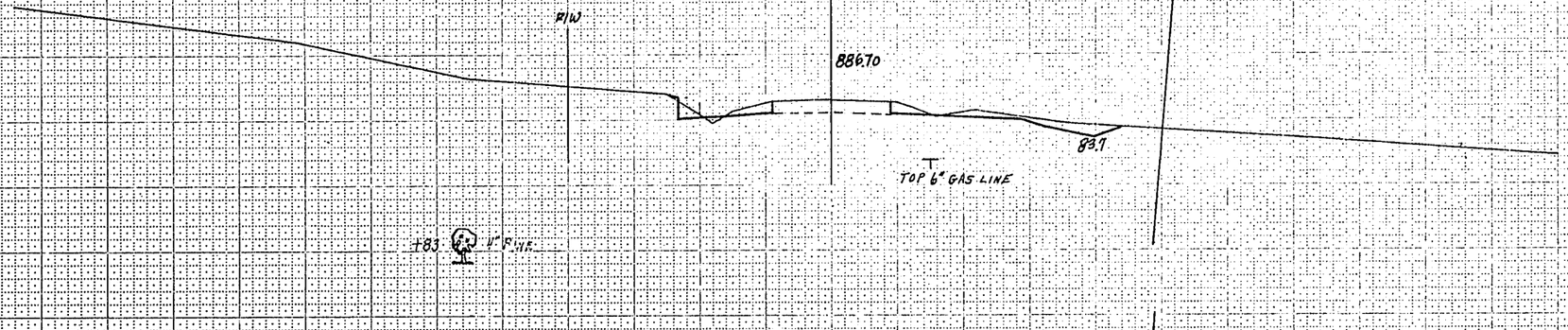
1 = 10 HOR
1 = 05 VER
2070 35

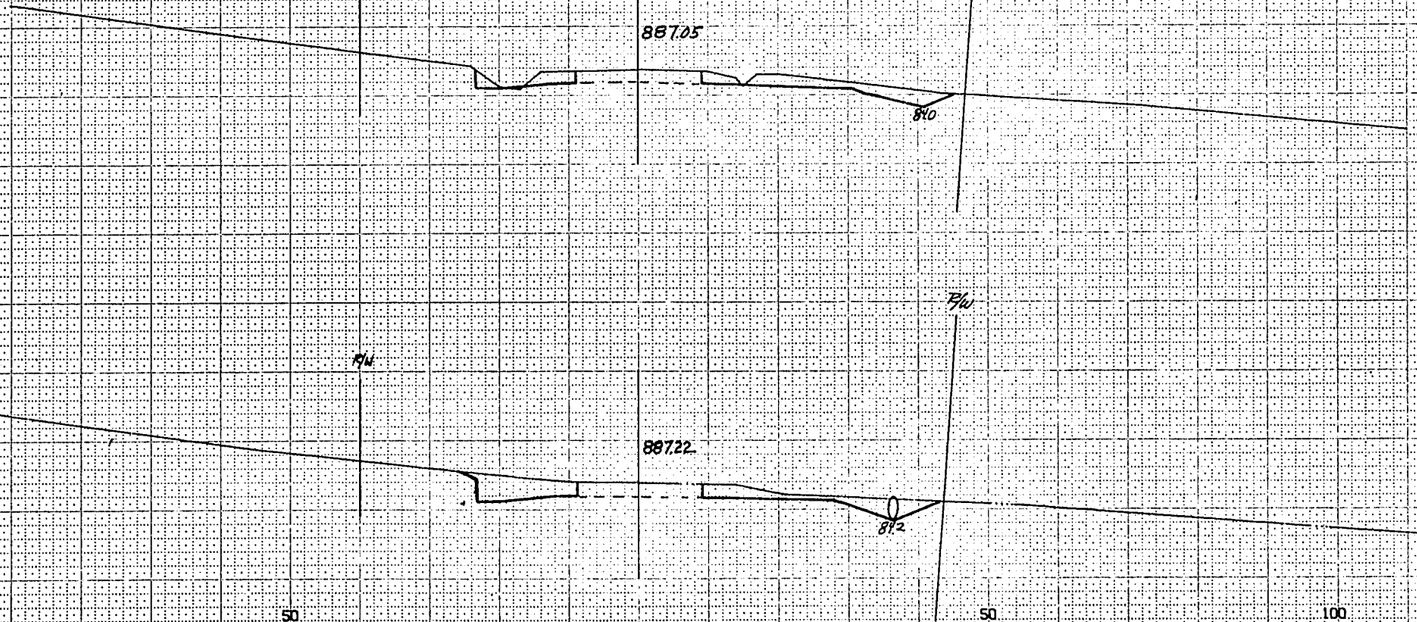
BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	68	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL	YARDAGE FILL
542	100	65	48
543	100	67	37
544			
TOTAL		132	85

1 = 10 HOR
1 = 05 VER
2070 36

100 50 50 100



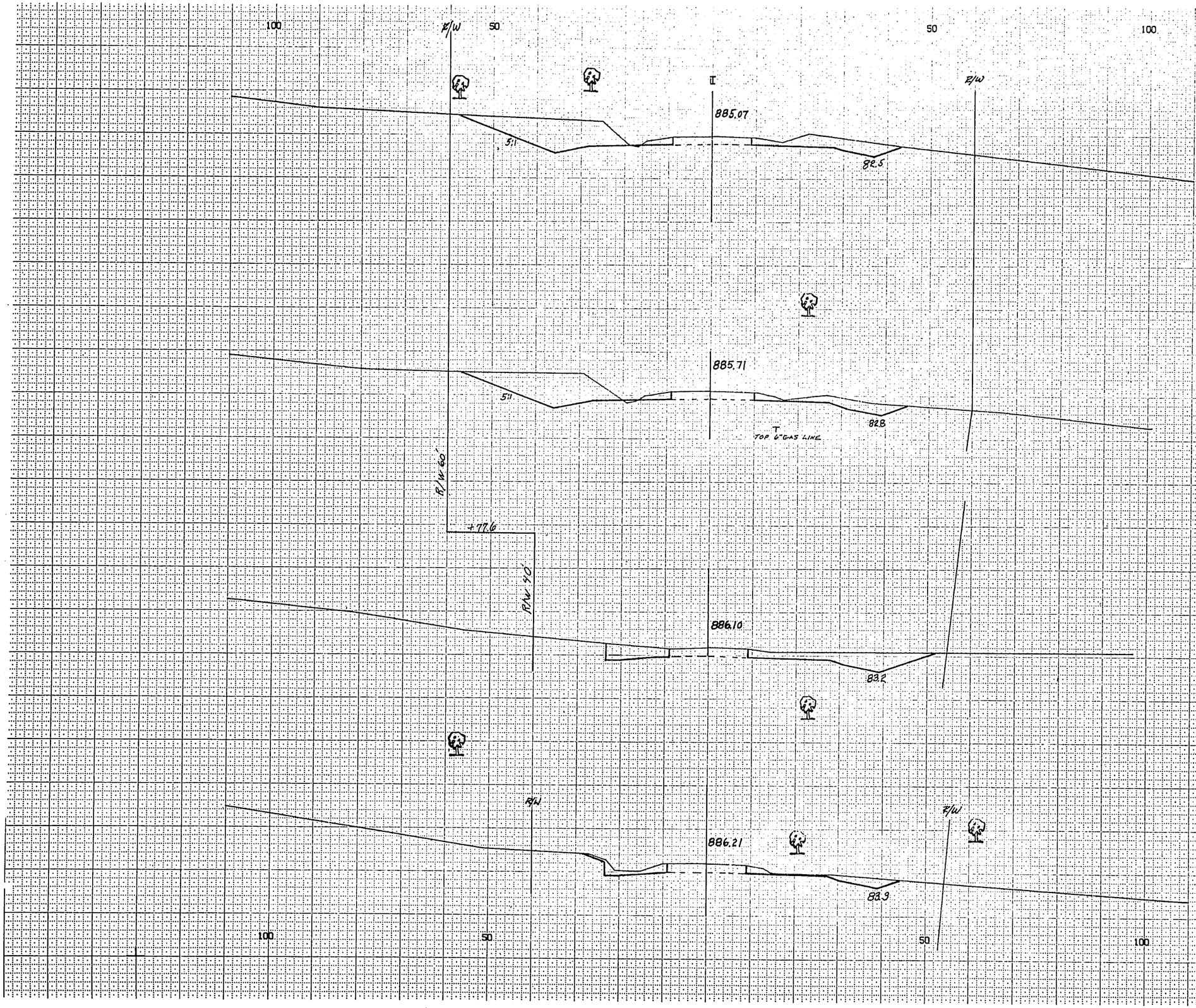


BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO168(9)	69	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL	FILL
544	100	76	6
545			
	TOTAL	76	6

1 = 10 HOR
1 = 05 VER

2070 37

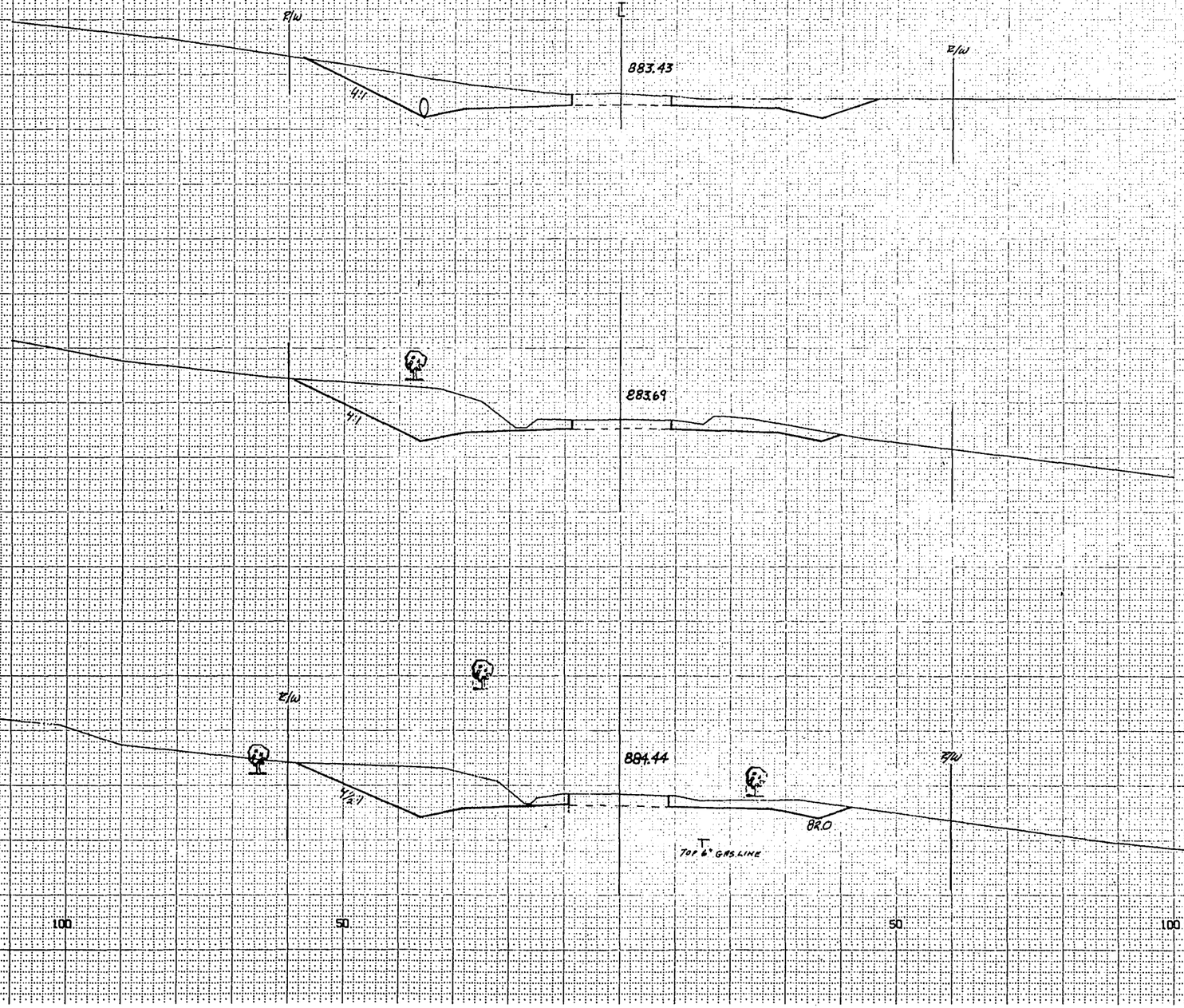


STATION	DISTANCE	YARDAGE EXCAVATION				FILL
		ROCK				
545						
	100	263				7
546						
TOTAL		263				7

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO168(9)	70	120

1 = 10 HOR
1 = 05 VER
2070 38

100 50 50 100



BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 168(9)	71	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
546	100	493				2
547						
TOTAL		493				2

NOT FOR YARDAGE
P.E. LT.
547+73
885

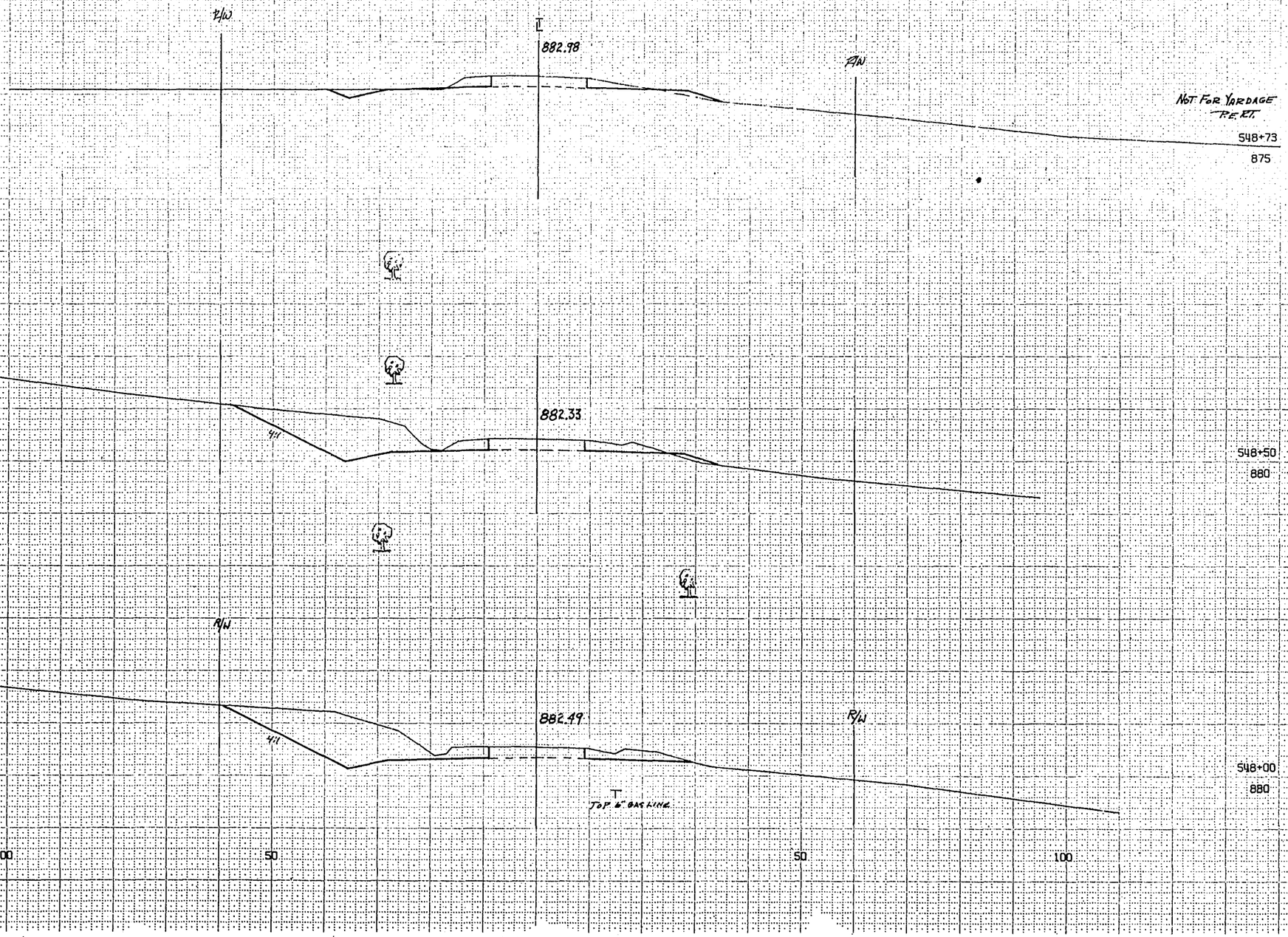
547+50
880

547+00
880

1 = 10 HOR
1 = 05 VER
2070 39

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	72	120

STATION	DISTANCE	YARDAGE EXCAVATION				FILL
		LINCL				
547	100	533				0
548						
TOTAL		533				0



1 = 10 HOR
1 = 05 VER

2070 40

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 168(9)	73	120

STATION	DISTANCE	YARDAGE EXCAVATION (UNCL.)	FILL
548			
	100	419	15
549	100	289	41
550			
TOTAL		708	56

100 50 50 100

R/W

879.85

L

TOP 6" GAS LINE

R/W

550+00

880

880.72

5:1

549+50

875

R/W

881.67

5:1

R/W

549+00

880

TOP 6" GAS LINE

100 50 50 100

1 = 10 HOR
1 = 05 VER

2070 41

100 50 50 100

R/W

875.74

6" GAS LINE

R/W

553+00
870

876.82

6" GAS LINE

552+00
870

R/W

878.19

R/W

TOP 6" GAS LINE

551+00
875

100 50 50 100

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(7)	74	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
550						
	100	243				65
551						
	100	228				65
552						
	100	235				68
553						
TOTAL		706				198

1 = 10 HOR
1 = 05 VER

2070 42

100 50 50 100

RW RW

872.46

3½:1

+98

℄

6"GAS LINE

557+00

870

872.84

5:1

6"GAS LINE

556+00

870

873.67

6"GAS LINE

555+00

870

874.59

TOP 6"GAS LINE

554+00

870

100 50 50 100

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 HIS	TO168(9)	75	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.	FILL
553			
	100	230	70
554	100	161	106
555	100	130	98
556	100	198	50
557			
TOTAL		719	324

1 = 10 HOR
1 = 05 VER

2070 49

100 50 R/W 50 100

L

872.48

2:1 4:1

868.7

R/W

872.43

2:1 6:1

4" GAS LINE

+68
98

HOUSE

+30
98

B/W

872.44

2½:1 3:1

INLET
868.5

872.46

3:1

100 50 50 100

NOT FOR YARDAGE
P.E. LT.
558+20
875

558+00
870

NOT FOR YARDAGE
557+64
870

NOT FOR YARDAGE
P.E. LT.
557+08
870

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	F0168(9)	76	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.	FILL
557			
	100	259	89
558			
TOTAL		259	89

1 = 10 HOR
1 = 05 VER
2070 44

100 50 50 100

R/W R/W

873.26

5:1

6" GAS LINE

561+00
870

873.02

3:1 4:1

697

560+00
870

+95.5

872.97

2½:1 4:1

693

+55
100.5

HOUSE

+05
100

+70
100

872.67

2:1 4:1

690

559+00
870

TOP 6" GAS LINE

+40
100.00

+27
100

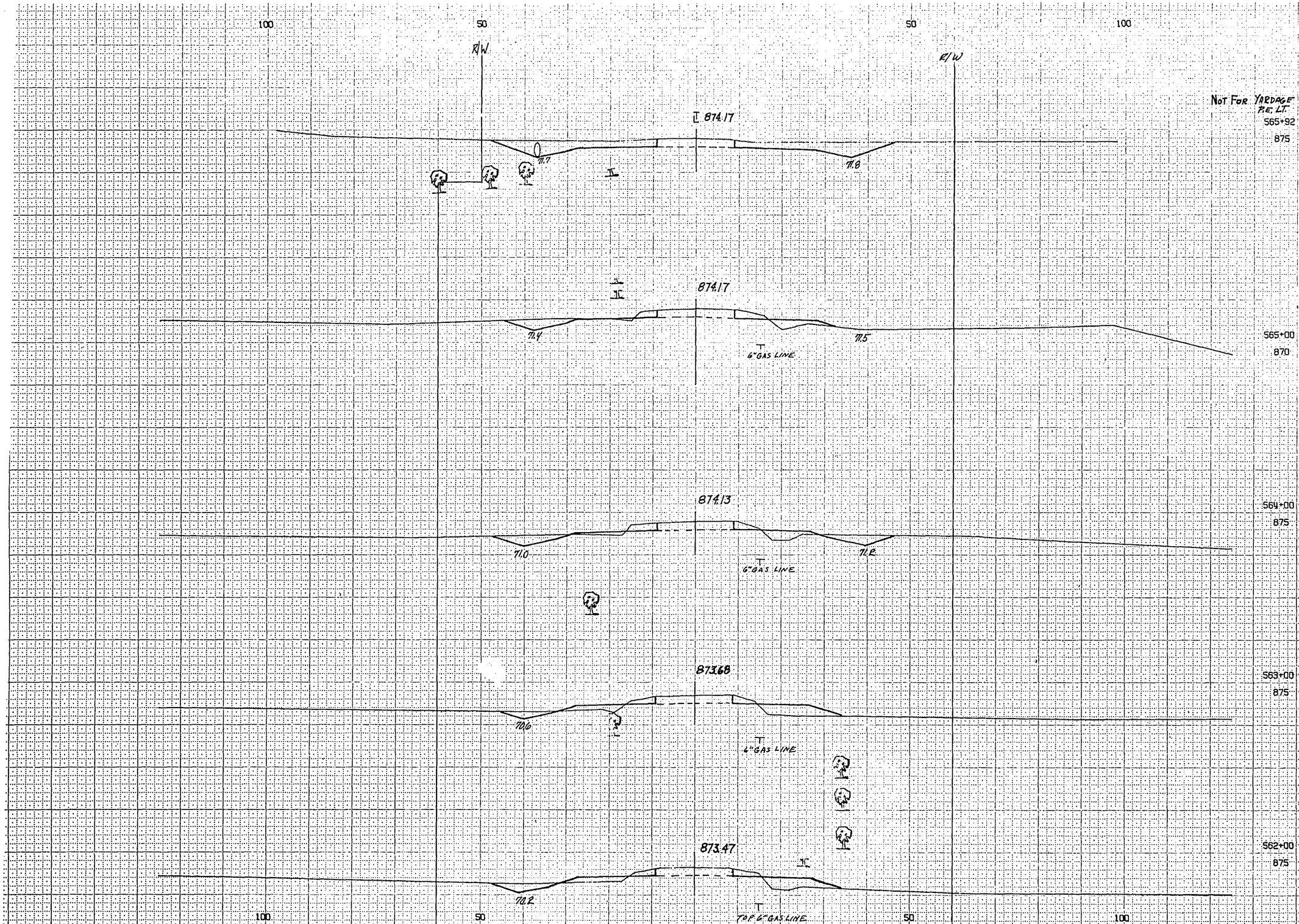
NOT FOR YARDAGE

P.E. LT.
559+85
875

1 = 10 HOR
1 = 05 VER
2070 45

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	77	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.				FILL
558						
	100	294				96
559	100	237				76
560	100	154				78
561						
TOTAL		685				250



NOT FOR YARDAGE

565+92
875

565+00
870

564+00
875

563+00
875

562+00
875

BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	78	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
561						
	100	111				87
562	100	61				93
563	100	93				67
564	100	106				39
565						
	Total	371				286

1 = 10 HOR
1 = 05 VER
2070 46

DPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	79	120

STATION	DISTANCE	YARDAGE: EXCAVATION MARCH	FILL
566	100	148	46
566	100	217	68
567	100	194	124
568			
TOTAL		559	238

100 50 50 100

℄

874.27

5:1

871.8

℄W

T
6" GAS LINE

568+00
870

874.27

72.0

+5ft
100

HOUSE

+2ft
95

874.27

567+00
875

4:1

71.4

T

+1ft
95

+1ft
92

LANON STONE HOUSE

+1ft
92

874.18

566+00
875

3:1

5:1

71.8

T
TOP 2" GAS LINE

NOT FOR YARDAGE
℄ ℄T

567+60
875

100 50 50 100

1 = 10 HOR
1 = 05 VER

2070 47

DPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO168(9)	80	120

STATION	DISTANCE	YARDAGE EXCAVATION	YARDAGE FILL
		WORK	
568	100	154	117
569	100	198	56
570	100	322	61
571			
TOTAL		674	234

100 50 50 100

874.52

RW RW

4:1 5:1

870.0 900

U/G GAS LINE

571+00

870

NOT FOR YARDAGE
P.E. LT. TO BE MOVED EAST & PROPOSED
TWIN 8'X4' BOX CULV
STA 570+ 30'L.H.F. 570+88

875

874.51

CHANNEL CHANGE
ALONG P.L. @ 570+72

C-67-39

874.42

570+00

875

3:1 5:1

871.0

874.36

NOT FOR YARDAGE
P.E. LT.

569+82

875

3:1 5:1

871.1

874.27

4:1

871.5

569+00

870

TOP 6" GAS LINE

100 50 50 100

1" = 10 HOR
1" = 05 VER

2070 48

GPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
L WIS	T0168(9)	81	120

STATION	DISTANCE	YARDAGE EXCAVATION	YARDAGE FILL
	CLEAR		
571	100	413	65
572			
TOTAL		413	65

+56/69 +44/58 +34/58 +26/69

874.84

874.84

874.55

874.54

870.4 870.2 870.1 870.5

TOP 6" GAS LINE

CHANNEL TO BE MOVED WEST TO SECTION LINE

NOT FOR YARDAGE P.E. LT

572+03
875

572+00
875

NOT FOR YARDAGE CULVERT

571+55
870

NOT FOR YARDAGE P.E. C.T.

571+39
875

100 50 50 100

1 = 10 HOR
1 = 05 VER

2070 49

DPW REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	82	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.	FILL
572			
	100	465	35
573	100	537	11
574			
TOTAL	1002		46

100 50 50 100

R/W

℄ 875.93

SULLIVAN RD. RT.

104

574+00
875

2½:1 1:1 0 9" 871.2

6" GAS LINE

℄ 875.96

R/W

R/W

2½:1 0 9" 1:1 871.2

875.46

NOT FOR YARDAGE
P.E. LT.
573+24
875

0 18" 3:1

875.42

P.E. LT
573+23
573+00
875

2½:1 0 30" 4:1 870.8

+66/69

+44/58

+24/58

2 STORY FRAME HOUSE

T
TOP 6" GAS LINE

3½:1 1:1.0

NOT FOR YARDAGE
P.E. LT. 573+99
574+00
880

100 50 50 100

1 = 10 HOR
1 = 05 VER
2070 50

100 50 50 100

BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
L WIS	T0168(9)	83	120

STATION	DISTANCE	YARDAGE EXCAVATION			FILL
		HAUL			
574	100	509			11
575	100	454			9
576					
TOTAL	963				20

NOT FOR YARDAGE
P.E. LT.
576+96
880

L
R 877.6
RW
RW
3%
8724

REMOVE PAV'T
596+00 TO 598+65

RW
877.18
RW
2:1
4:1
4:1
4:1
872.0
T
778
576+00
880

LANNON
STONE
HOUSE

NOT FOR YARDAGE
P.E. LT.
575+75
880

10%
3:1
774.6
4:1
871.9

L
876.6R

575+00
875

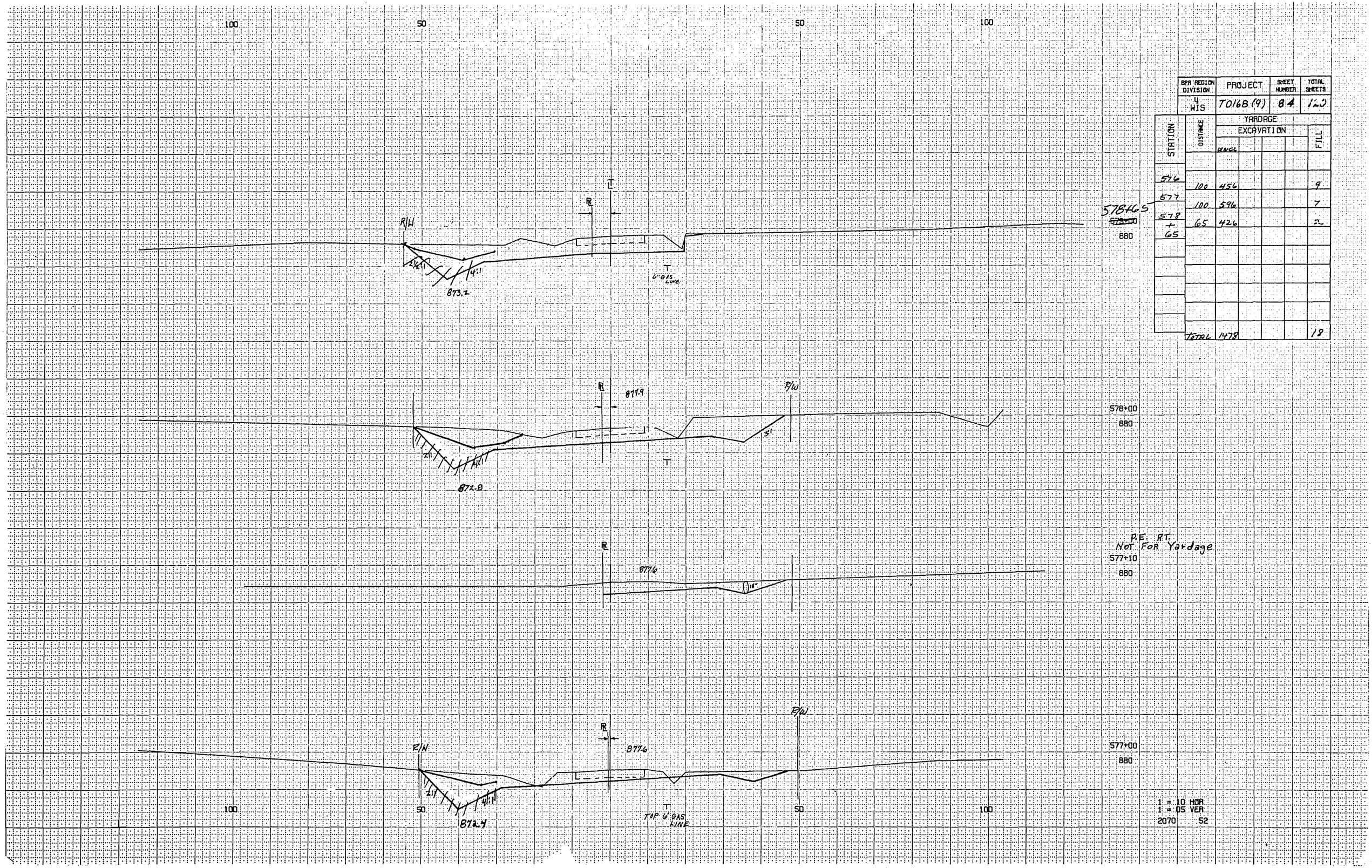
2:1
4:1
3½:1
871.6
T
TOP. 6" GAS LINE
773.4

100 50 50 100

1 = 10 HOR
1 = 05 VER
2070 51

BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	84	120

STATION	DISTANCE	YARDAGE EXCAVATION ROCK	FILL
576			
	100	456	9
577	100	596	7
578 + 65	65	426	2
	TOTAL	1478	18



578+65
880

578+00
880

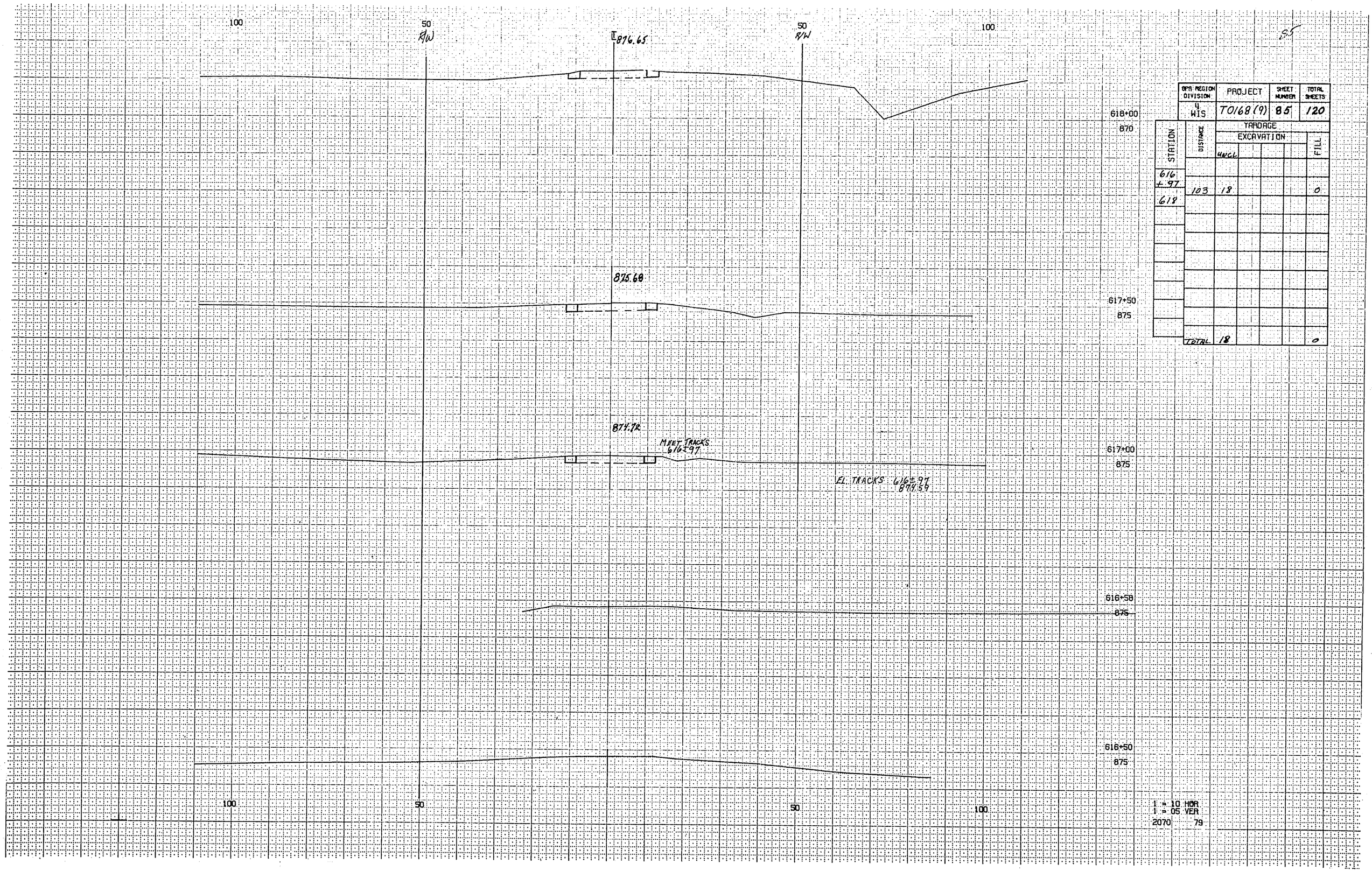
P.E. RT.
Not For Yardage
577+10
880

577+00
880

1 = 10 HOR
1 = 05 VER
2070 52

DPW REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	85	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL	FILL
616 + 97			
	103	18	0
618			
TOTAL		18	0



1 = 10 HOR
1 = 05 VER

2070 79

100 50 R/W 50 R/W 100

880.51

620+00
880

879.54

619+50
880

878.58

619+00
880

877.62

618+50
880

877.38

618+38
880

BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	86	140

STATION	DISTANCE	YARDAGE EXCAVATION UNCL	FILL
618			
	100	18	0
619	100	9	70
620			
TOTAL		27	70

NOT FOR YARDAGE
PE. LT.

1 = 10 HOR
1 = 05 VER
2070 80

100 50 R/W 50 100

882.48

Not For Yardage
C.E. RT.
621+06
880

882.44

621+00
880

881.45

Not For Yardage
C.E. LT.
620+50
880

880.76

Not For Yardage
C.E. LT.
620+12
880

880.57

Not For Yardage
C.E. LT.
620+03
880

100 50 50 100

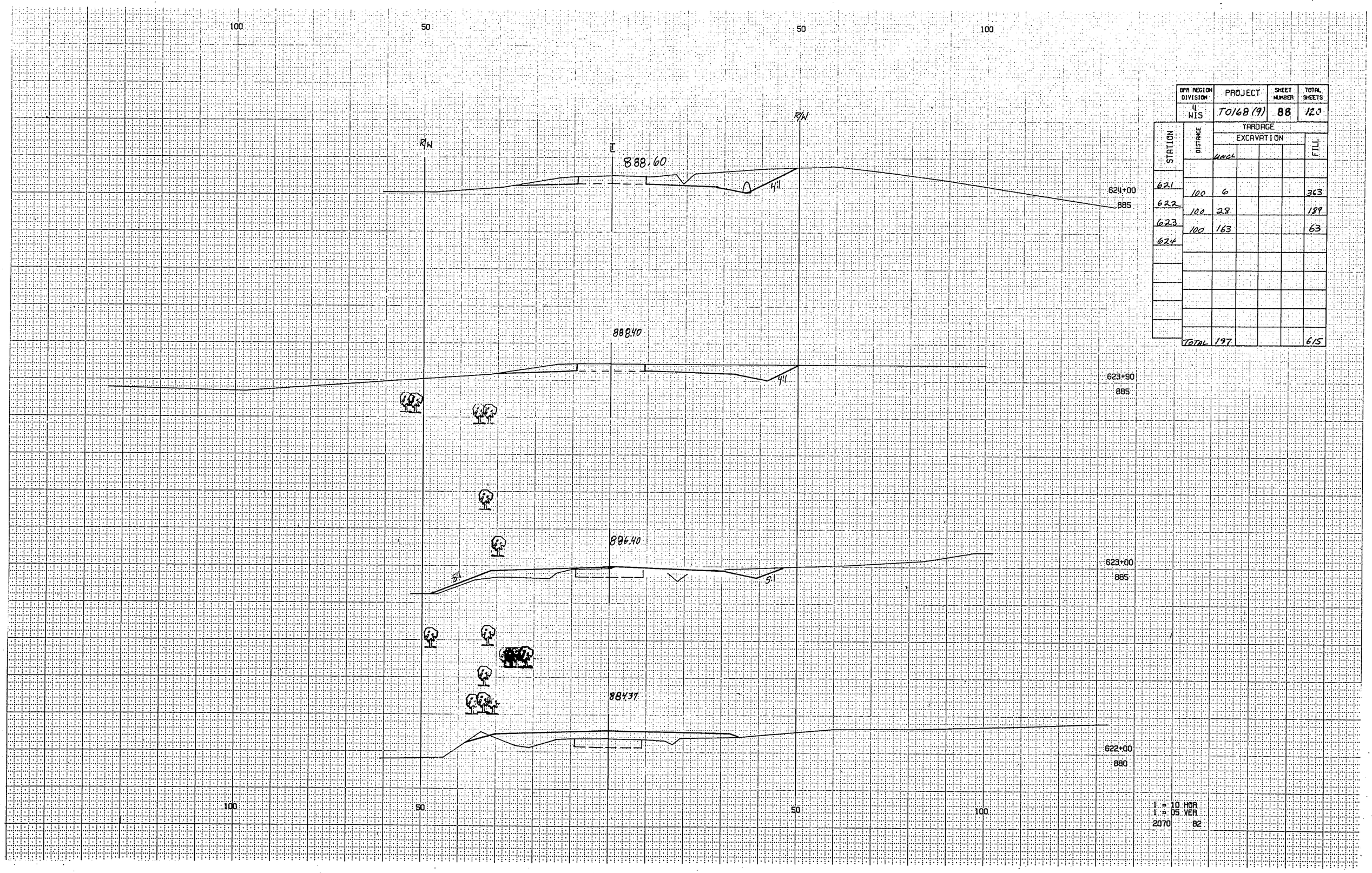
BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	87	120

STATION	DISTANCE	YARDAGE EXCAVATION				FILL
		HARD				
620	100	0				307
621						
TOTAL		0				307

1 = 10 HOR
1 = 05 VER
2070 81

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	88	120

STATION	DISTANCE	YARDAGE EXCAVATION Unclass	FILL
621			
	100	6	363
622			
	100	28	189
623			
	100	163	63
624			
TOTAL	197		615



100 50 50 100

R/W

℄

893.82

4:1

626+00

895

R/W

BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	89	120

STATION	DISTANCE	YARDAGE EXCAVATION	FILL
		UNCL.	
624			
	100.	324	2
625			
	100	307	9
626			
TOTAL	631		11

893.50

5:1

3:1

NOT FOR YARDAGE
C.E. RT.
625+88
895

897.85

4:1

3:1

625+00

885

R/W

888.66

4:1

4:1

R/W

NOT FOR YARDAGE
C.E. RT. FE LT
624+03
890

100 50 50 100

1 = 10 HOR
1 = 05 VER
2070 83

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T.0168(9)	90	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.			FILL
626					
	100	191			15
627					
	100	209			7
628					
	100	198			20
629					
	100	106			115
630					
TOTAL		703			157

100 50 50 100

R/W

L 902.00

630+00
900

901.04

629+00
895

899.39

628+00
895

R/W

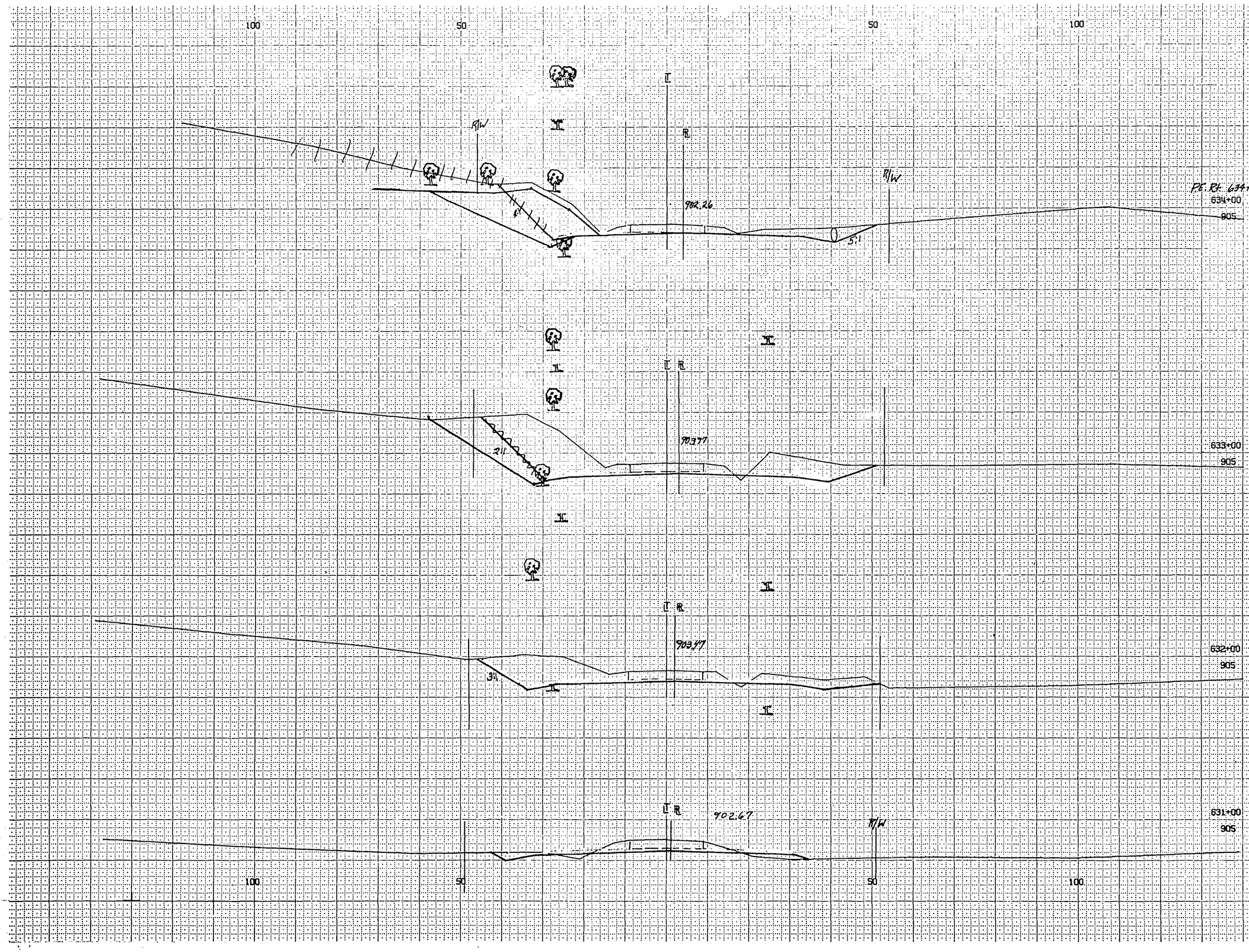
876.88

5:1

627+00
895

100 50 50 100

1 = 10 HOR
1 = 05 VER



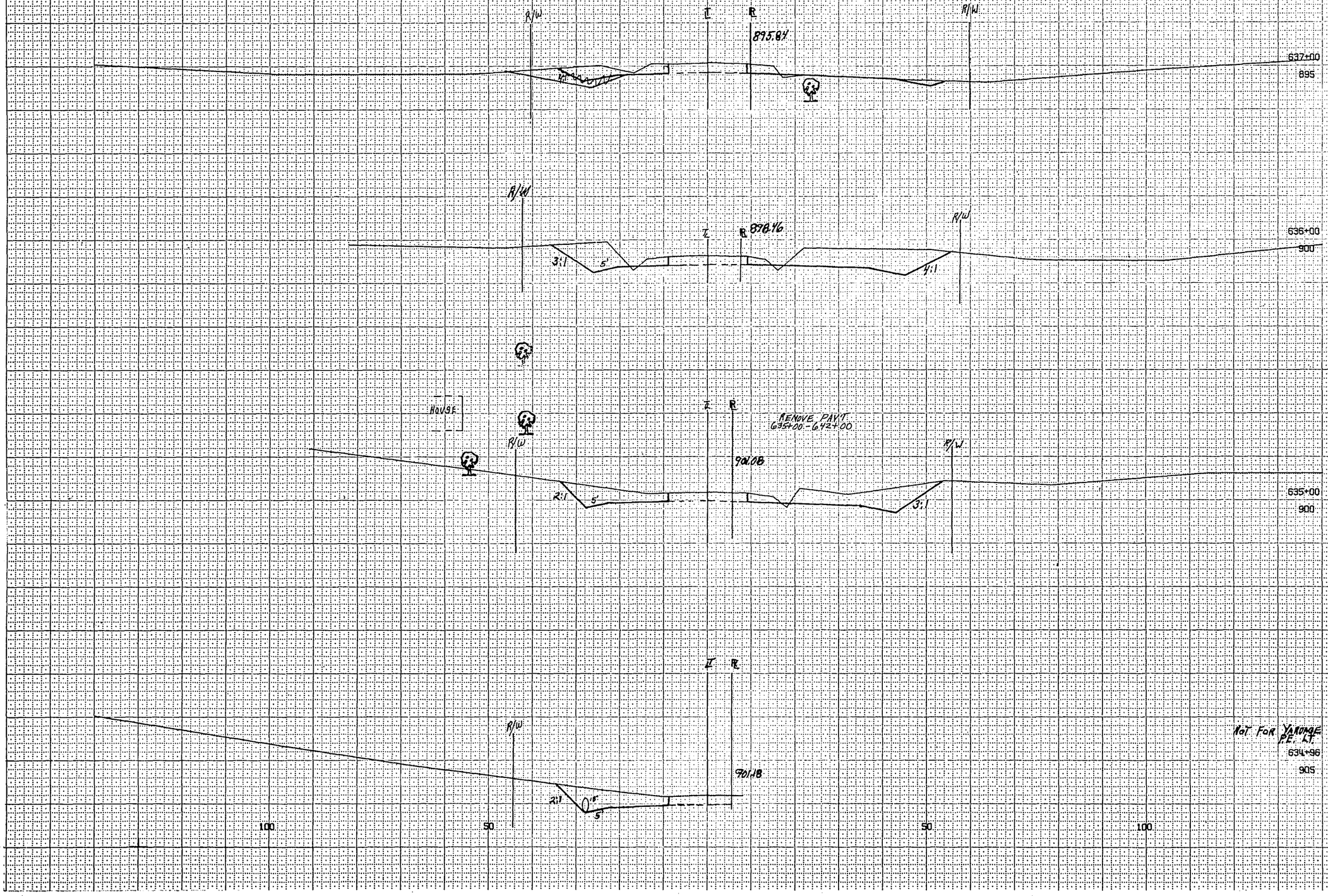
BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T 0168(9)	91	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.	FILL
630			
	100	74	130
631	100	237	39
632	100	554	7
633	100	572	4
634			
TOTAL		1437	180

1 = 10 HOR
1 = 05 VER
2070 85

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	92	120

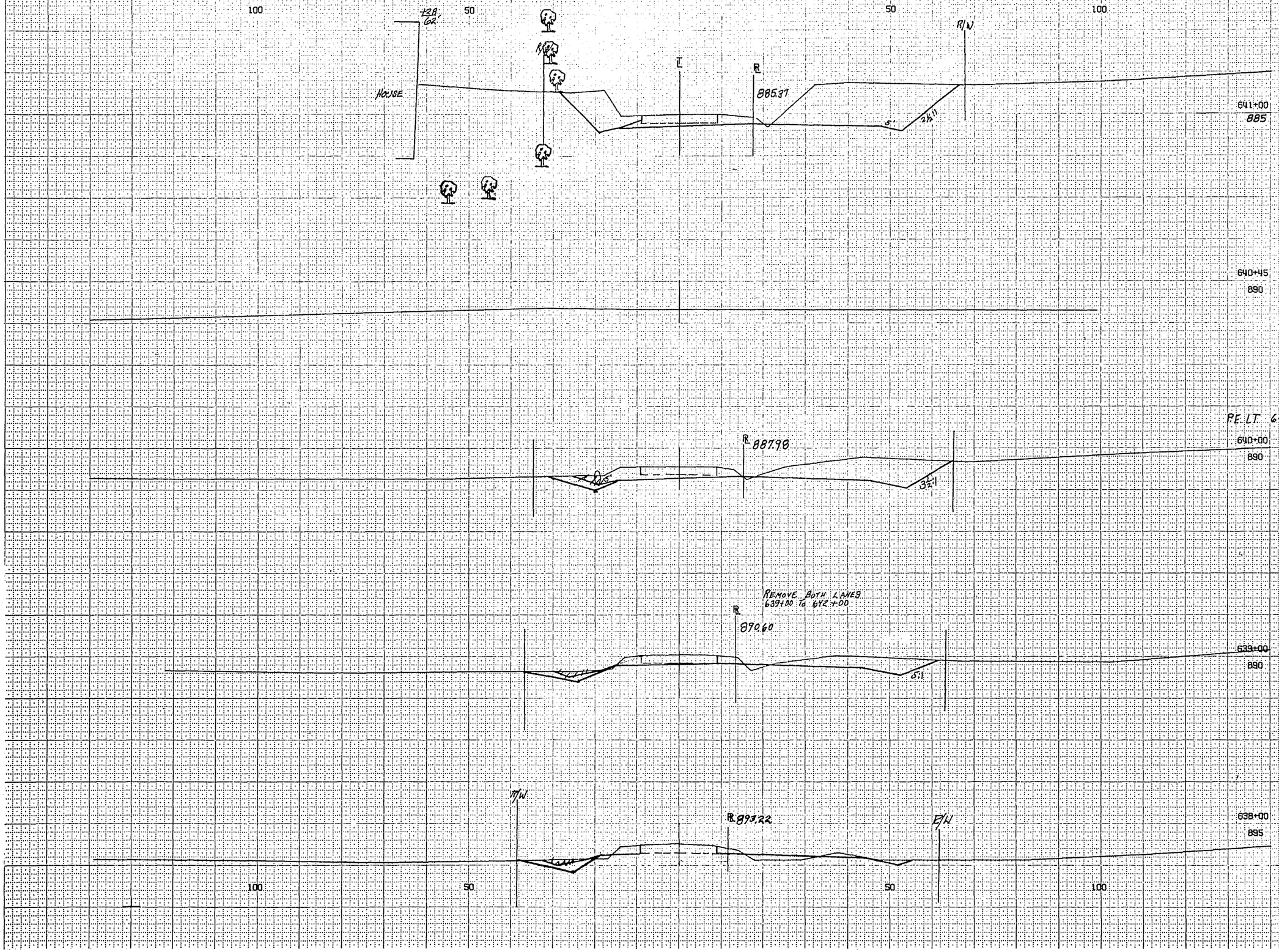
STATION	DISTANCE	YARDAGE EXCAVATION UNCL.	FILL
634			
635	100	415	2
636	100	417	6
637	100	293	9
TOTAL		1125	17



NOT FOR YARDAGE
P.F. LT.
634+96
905

1 = 10 HOR
1 = 05 VER

2070 86



STATION	DISTANCE	YARDAGE EXCAVATION				FILL
		ROCK				
637						
	100	97				24
638	100	131				34
639	100	374				7
640	100	709				4
641						
TOTAL		1301				59

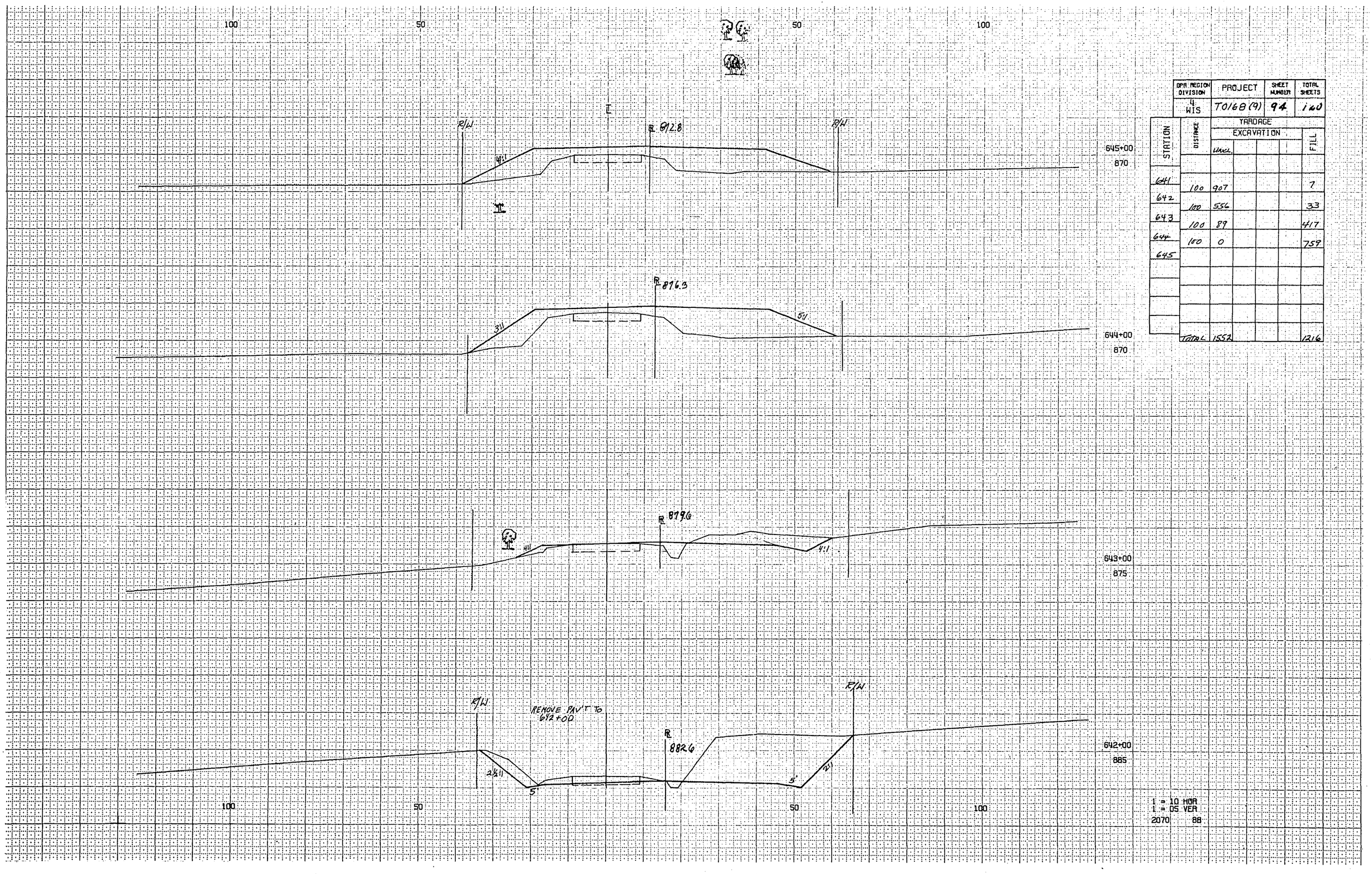
BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	93	120

1 in. = 10 HOR
1 in. = 05 VER

2070 87

DPR: REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	94	140

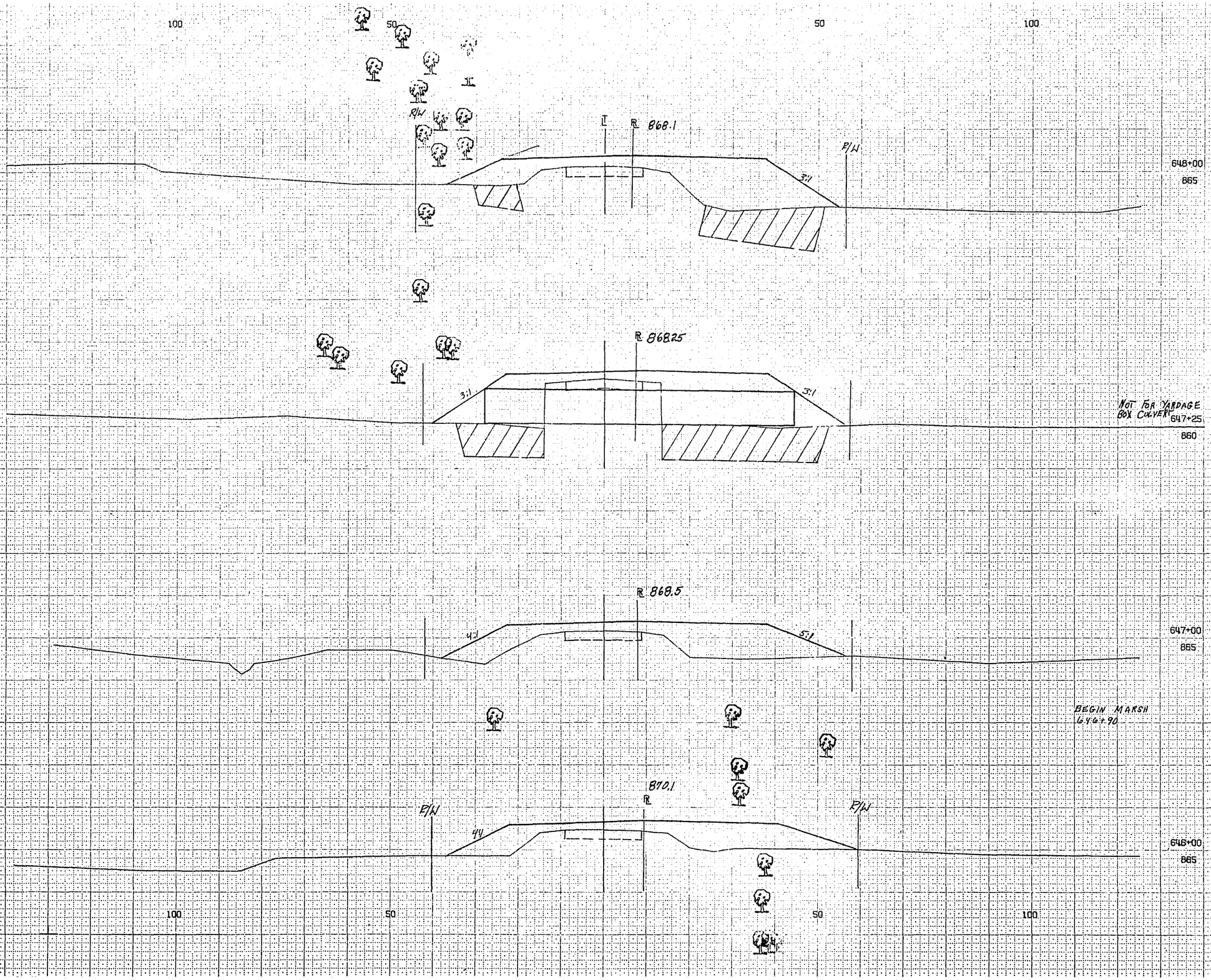
STATION	DISTANCE	TARDAGE EXCAVATION UNCL.				FILL
641						
	100	907				7
642						
	100	556				33
643						
	100	89				417
644						
	100	0				759
645						
	TOTAL	1552				1216



1 = 10 HOR
1 = 05 VER

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	95	120

STATION	DISTANCE	YARDAGE EXCAVATION				FILL
645	100	0				695
646	100	0				713
647	100	0		700		859
648						
TOTAL		0		700		2267

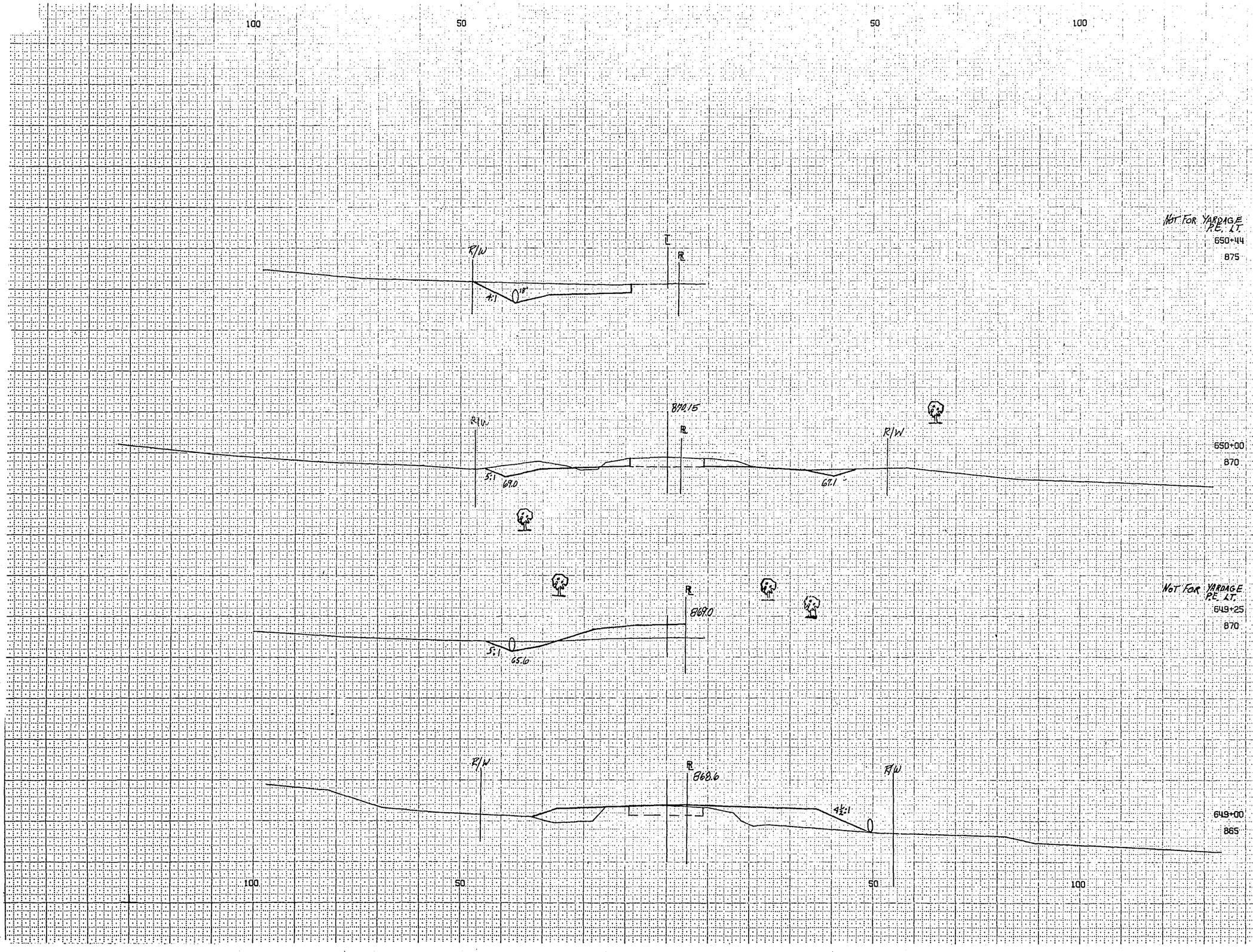


1 = 10 HOR
1 = 05 VER

2070 89

EPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
5 WIS	TO168(9)	96	120

STATION	DISTANCE	TARDAGE EXCAVATION UNCL	MARSH			FILL
648	15	0	37			
"	85	0				635
649	100	72				165
650						
TOTAL	72	37				800



NOT FOR YARDAGE P.E. LT.

NOT FOR YARDAGE P.E. LT.

1 = 10 HOR
1 = 05 VER

2070 90

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168 (9)	97	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
650						
	100	183				9
651	100	393				9
652						
TOTAL		576				18

100 50 50 100

R/W

L R

878.3

2%:1 18" 6' 876.0

NOT FOR YARDAGE
P.E. LT.
652+88
880

L R 876.1 R/W

18" 5:1 73.5

NOT FOR YARDAGE
P.E. RT.
652+10
880

R 875.7

3:1 6' 73.2 5:1 73.0

652+00
875

R/W

±46 T.P.S.V.

House
78' LT

R 872.82 R/W

2%:1 6' 70.5

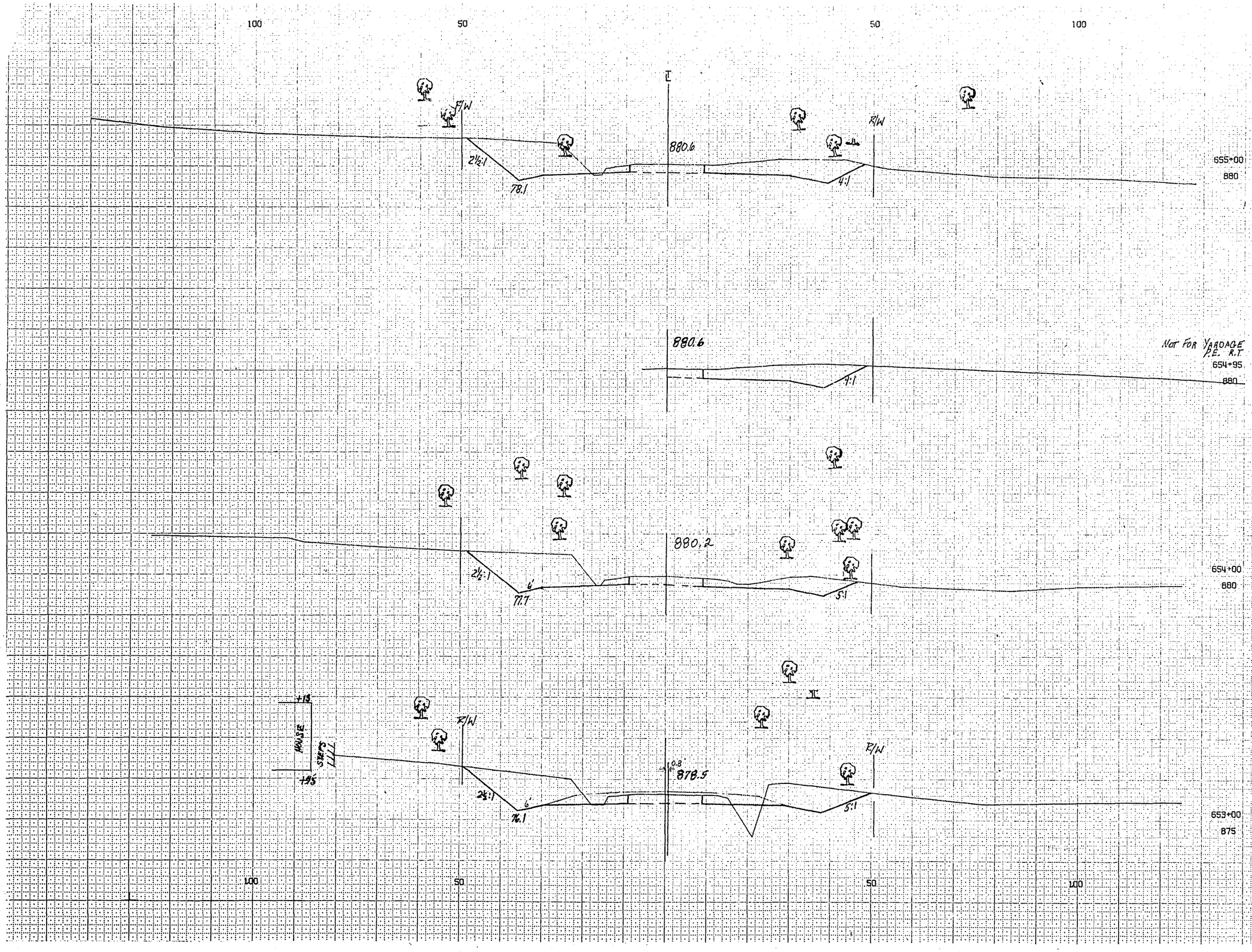
651+00
870

±80
84'
House

100 50 50 100

1" = 10' HOR
1" = 05' VER

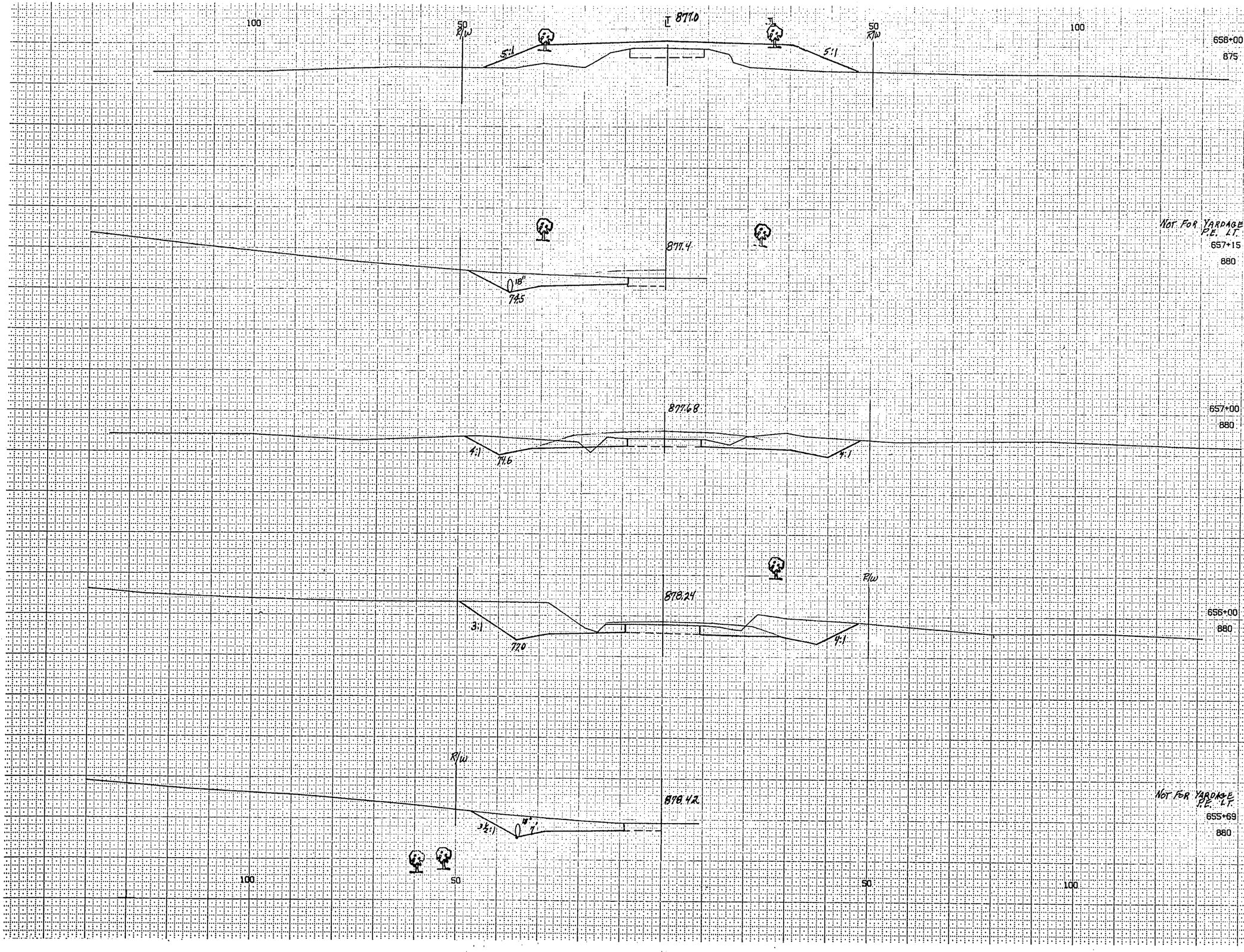
2070 91



DPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 168 (9)	98	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
652						
	100	578				26
653	100	574				26
654	100	583				2
655						
	TOTAL	1735				54

1 = 10 HOR
1 = 05 VER
2070 92



BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	99	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
655						
	100	602				2
656						
	100	474				2
657						
	100	178				283
658						
TOTAL		1254				287

1 = 10 HOR
1 = 05 VER
2070 93

100 50 50 100

100

R/W 875.44 4:1 3:1 R/W

661+00
870

875.73 4:1 3:1

NOT FOR YARDAGE
CULVERT 660+13
870

876.0 4½:1 3½:1

660+00
870

876.54 R/W 4:1 4:1 R/W

659+00
870

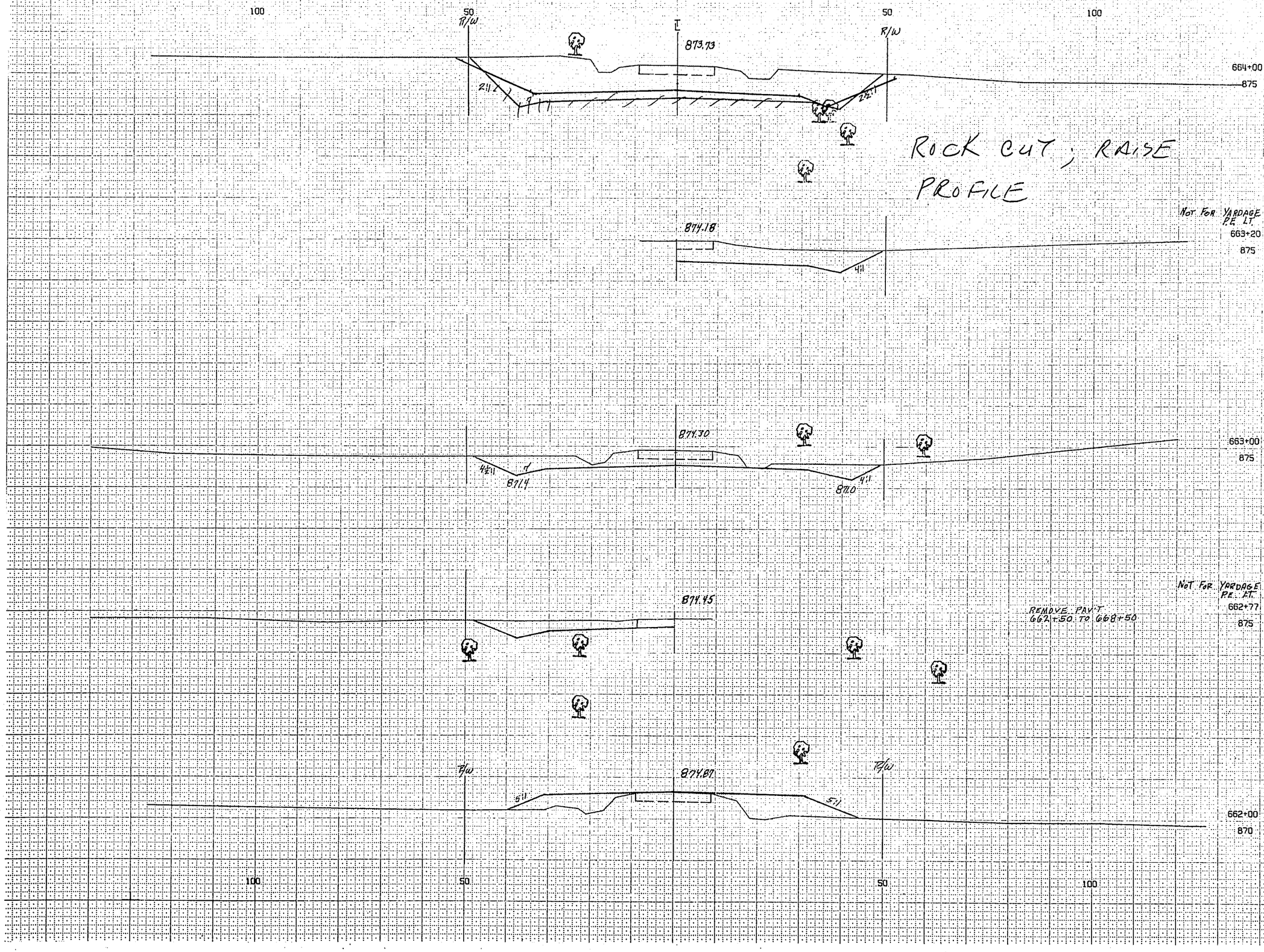
100 50 50 100

1 = 10 HOR
1 = 05 VER

2070 84

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 168 (9)	100	120

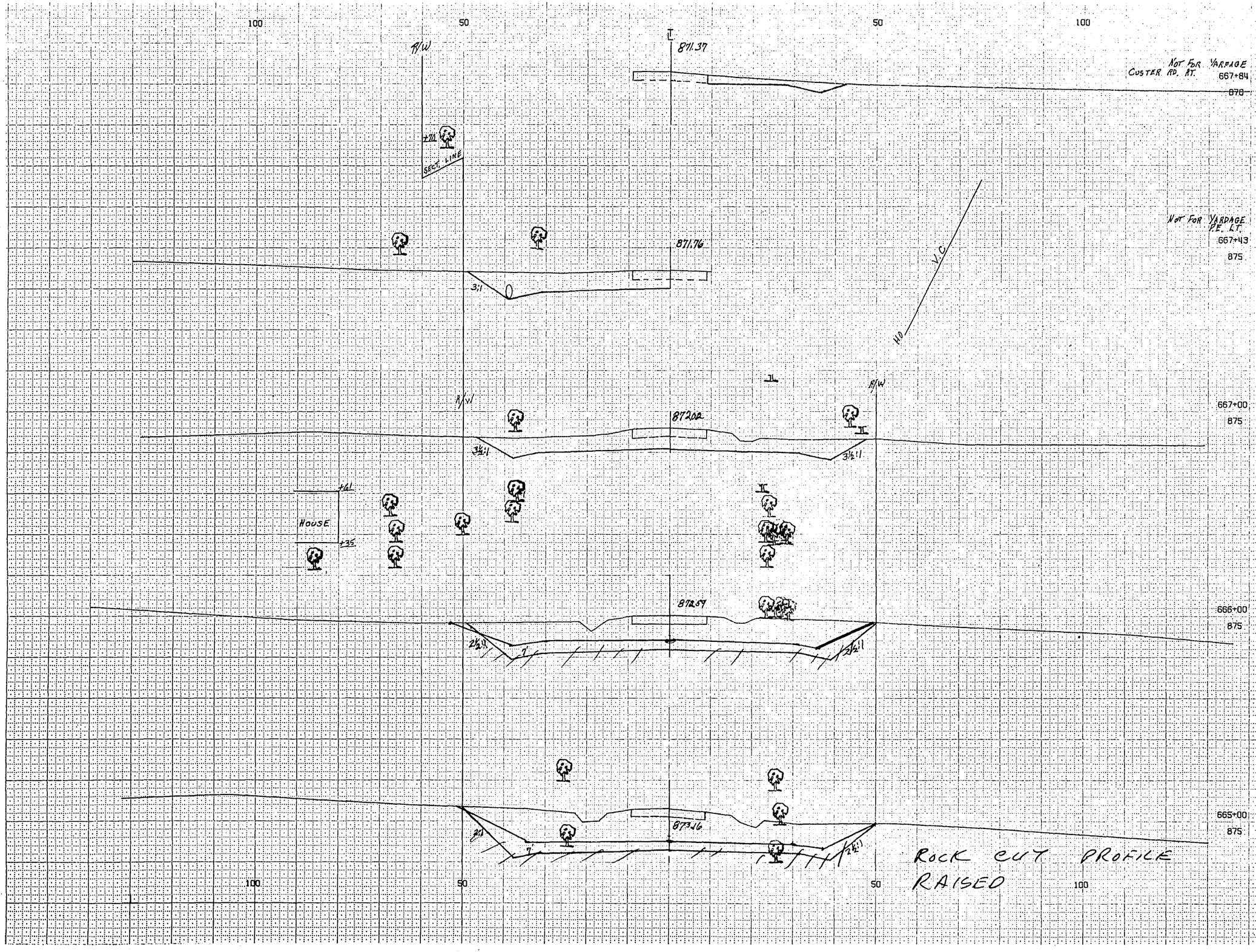
STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
658						
	100	0				791
659	100	0				931
660	100	0				941
661						
TOTAL		0				2613



BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TD 169 (9)	101	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
661						
662	100	0				650
663	100	241				181
664	100	911				0
	TOTAL	1152				831

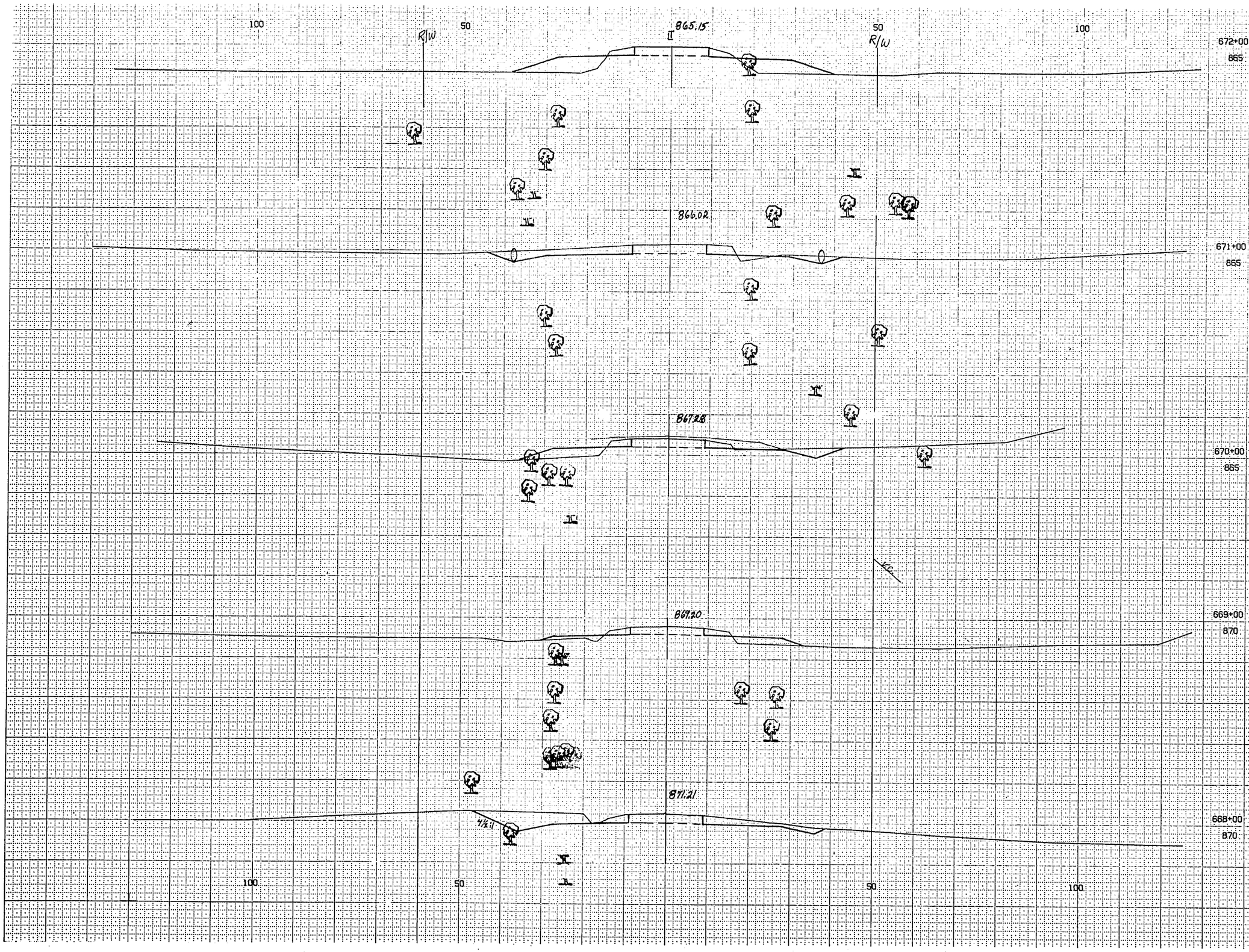
1 = 10 HOR
1 = 05 VER
2070 95



BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 168 (9)	102	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
664						
	100	1411				0
665	100	1374				0
666	100	943				0
667						
TOTAL		3728				0

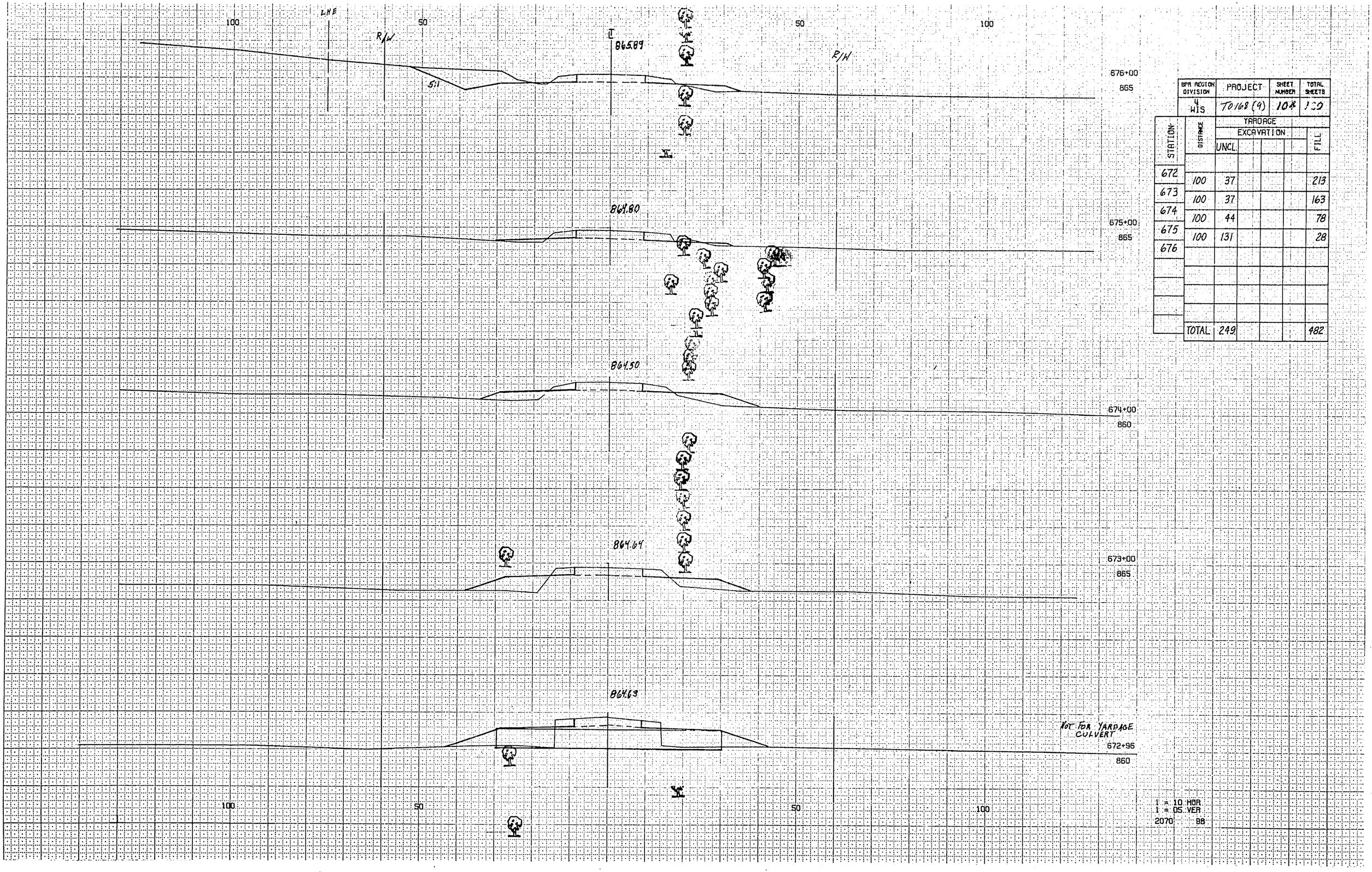
1 = 10 HOR
1 = 05 VER
2070 96



STATION	DISTANCE	YARDAGE EXCAVATION UNCL	FILL
667	100	222	0
668	100	115	26
669	100	54	59
670	100	120	41
671	100	102	124
672			
	TOTAL	613	250

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	To 168 (9)	103	120

1 = 10 HOR
1 = 05 VER
2070 97



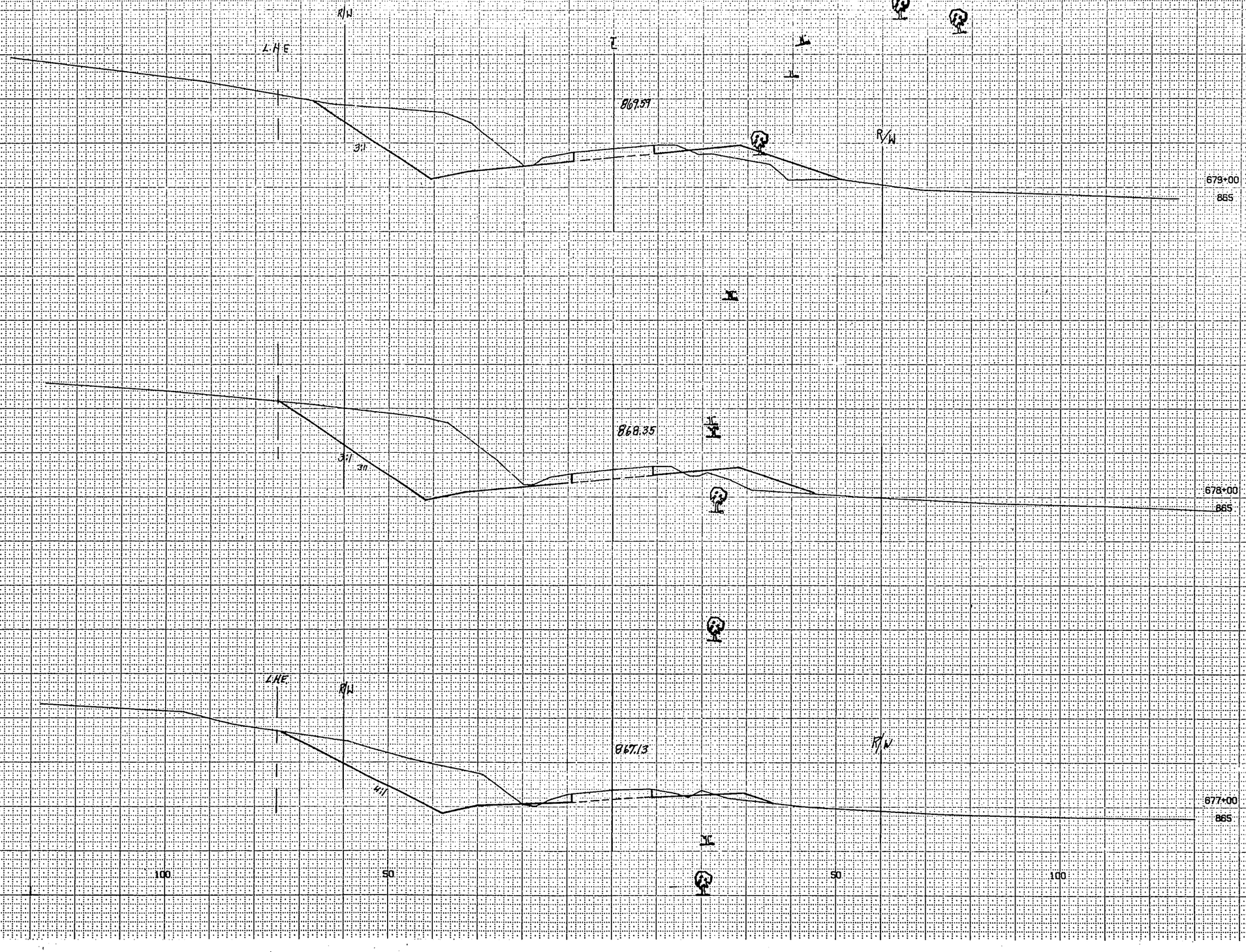
BPR REGION DIVISION		PROJECT		SHEET NUMBER		TOTAL SHEETS	
4	WIS	T0168(4)		104		130	

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.				FILL
672						
	100	37				213
673	100	37				163
674	100	44				78
675	100	131				28
676						
	TOTAL	249				482

1 = 10 HOR
1 = 05 VER

2070 98

100 50 50 100



BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 168(9)	105	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
676						
677	100	417				30
678	100	833				68
679	100	902				115
TOTAL		2152				213

1 = 10 HOR
1 = 05 VER
2070 99

BPR: REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	106	120

STATION	DISTANCE	TAROAGE EXCAVATION UNCL				FILL
679						
	100	680				96
680	100	320				102
681	100	59				67
682						
	TOTAL	1059				265

100 50 50 100

R/W

℄

R/W

874.48

+83
111

Church

+07
116

682+00
875

R/W

872.50

681+00
870

LHE 40°00'30" R/W

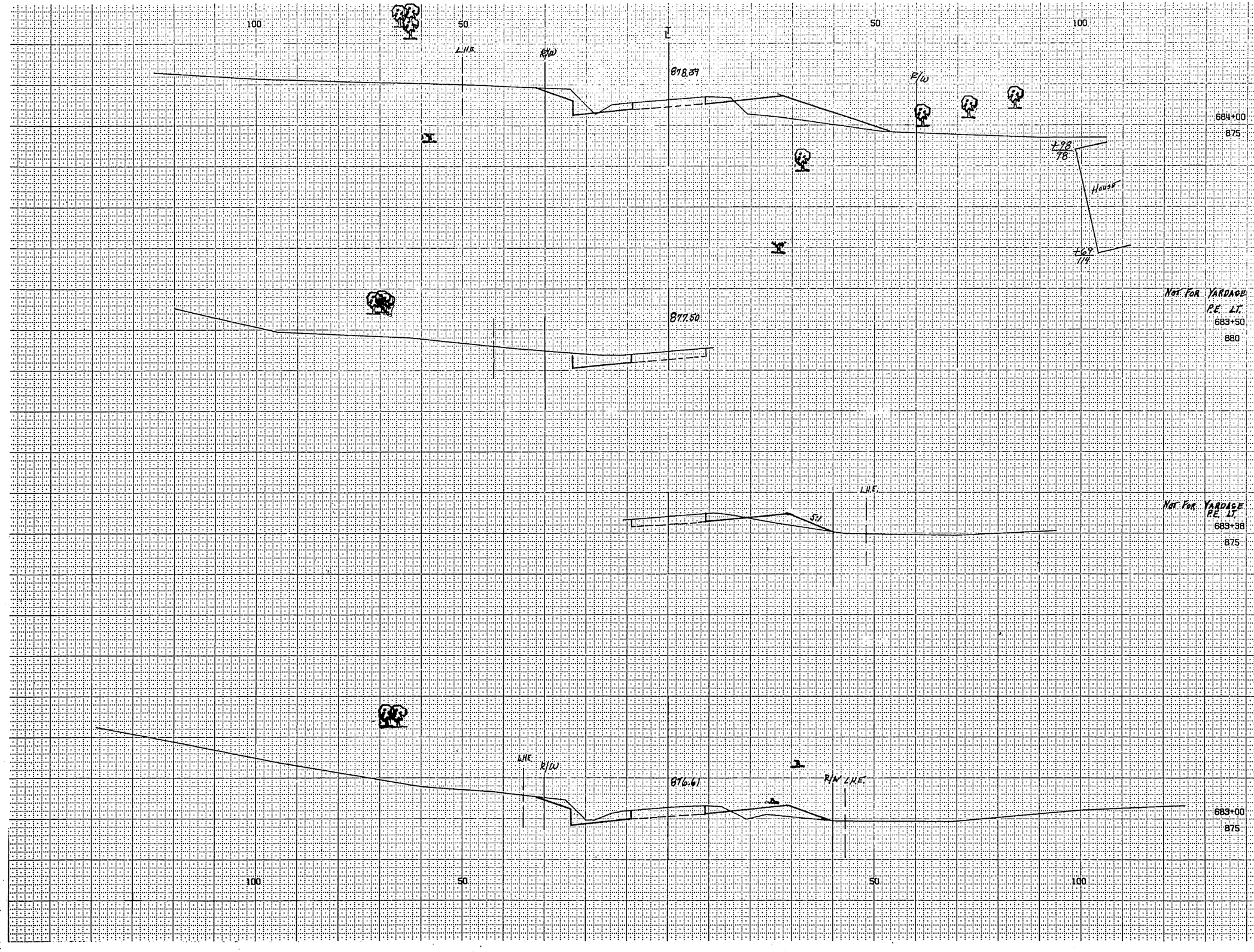
871.81

R/W

680+00
870

100 50 50 100

1 = 10 HOR
1 = 05 VER
2070 100



BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	FD 168 (9)	107	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.	FILL
682			
683	100	80	37
684	100	93	196
TOTAL		173	183

1 = 10 HOR
1 = 05 VER

BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO168 (9)	108	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
684						
	100	93				152
685	100	333				57
686	100	398				39
687						
TOTAL		824				248

100 50 50 100

R/W

8783

12:1

R/W

687+00

870

686+00

875

879.6

3:1

LHE

R/W

879.64

R/W

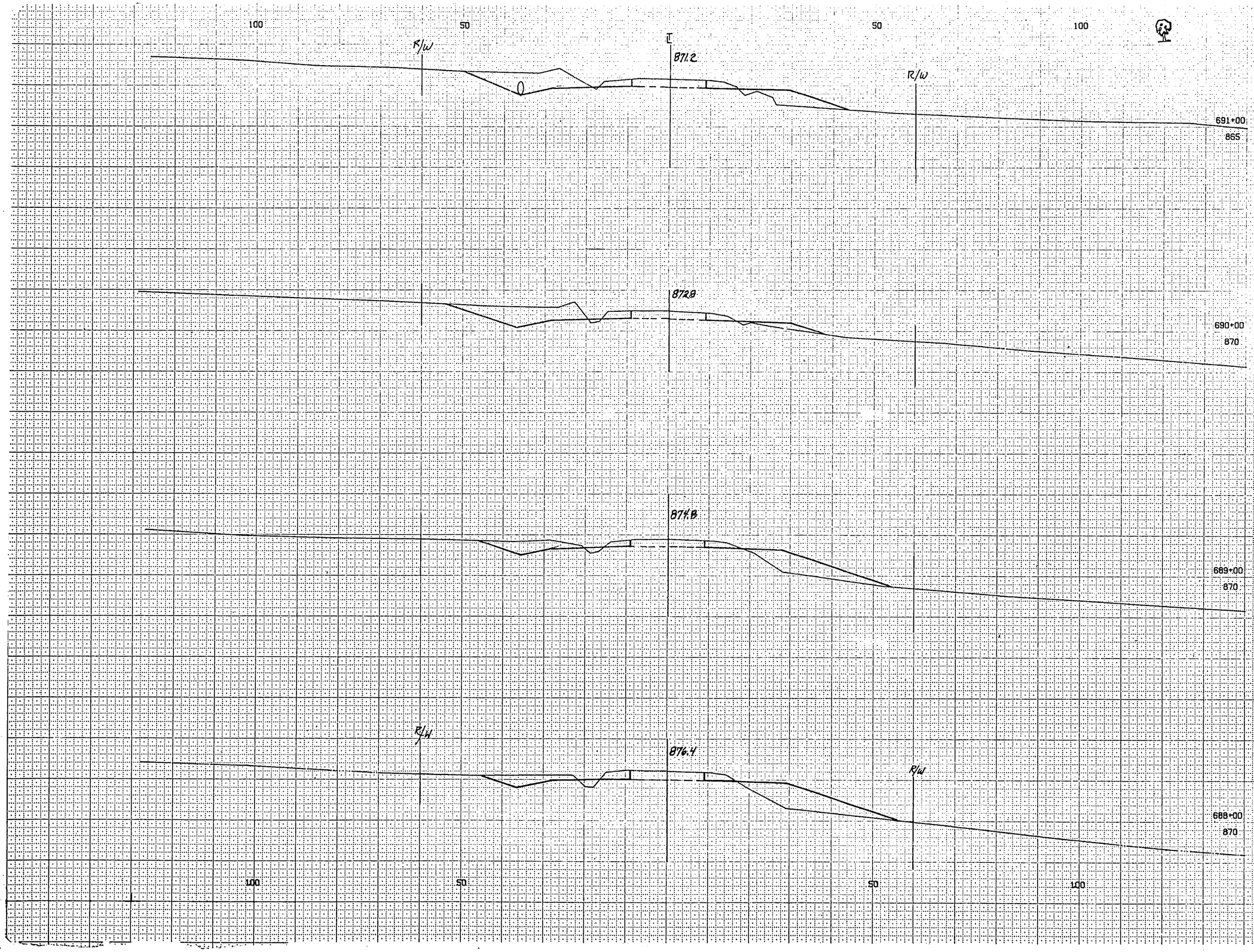
685+00

875

100 50 50 100

1 = 10 HOR
1 = 05 VER

2070 102



BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	To 168 (9)	109	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.				FILL
687						
688	100	165				139
689	100	128				211
690	100	194				115
691	100	254				65
	TOTAL	741				530

L = 10 HOR
L = 05 VER
2070 103

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 168 (9)	110	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL				FILL
691						
	100	324				70
692						
	100	474				31
693						
	100	552				11
694						
	TOTAL	1350				112

100 50 50 100

R/W

℄

866.0

3½:1

R/W

694+00
865

REMOVE EXISTING PAVEMENT 693+00
TO R.R. TRACKS

R/W

℄

2½:1

8665

868.5

693+00
865

8627

4:1

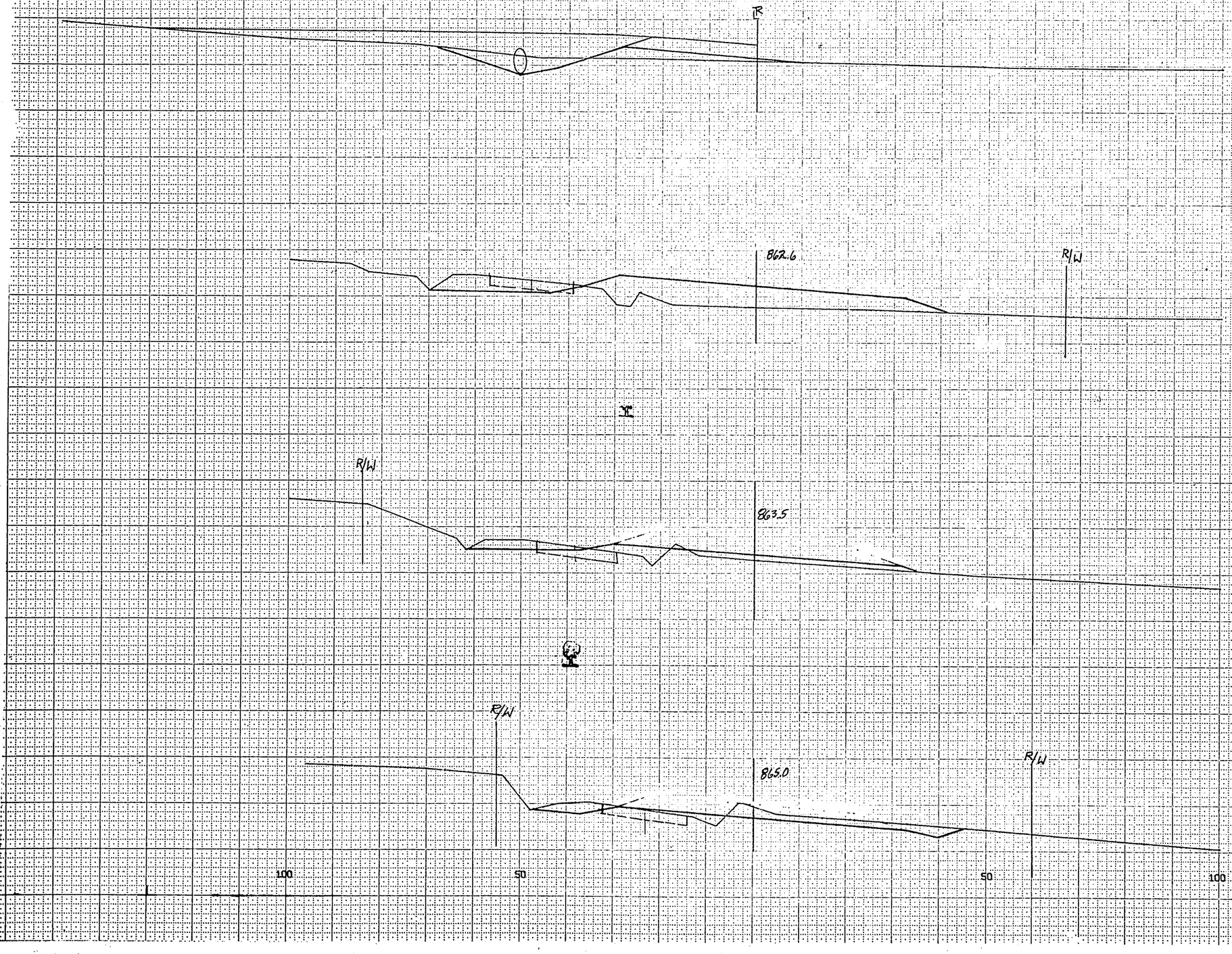
℄ R/W

692+00
865

100 50 50 100

L = 10-HOR
L = 05-VER
2070 104

100 50 50 100



697+62
860

697+00
860

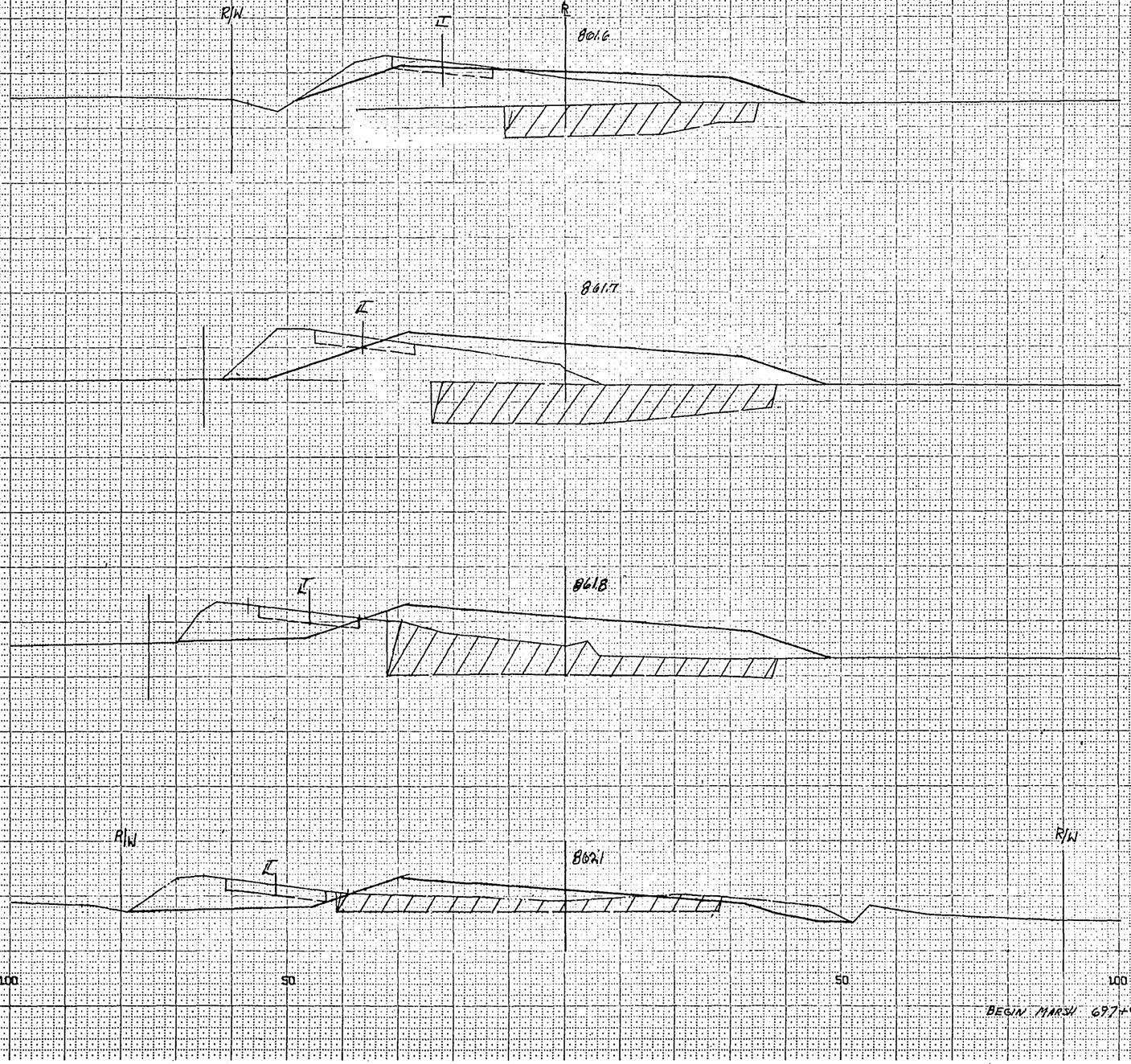
696+00
860

695+00
865

BPA REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
WIS	TO168(9)	111	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL	FILL
694			
695	100	378	17
696	100	128	89
697	100	61	346
	TOTAL	567	452

L = 10 HOR
L = 06 VER
2020 105



BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0768(9)	112	120

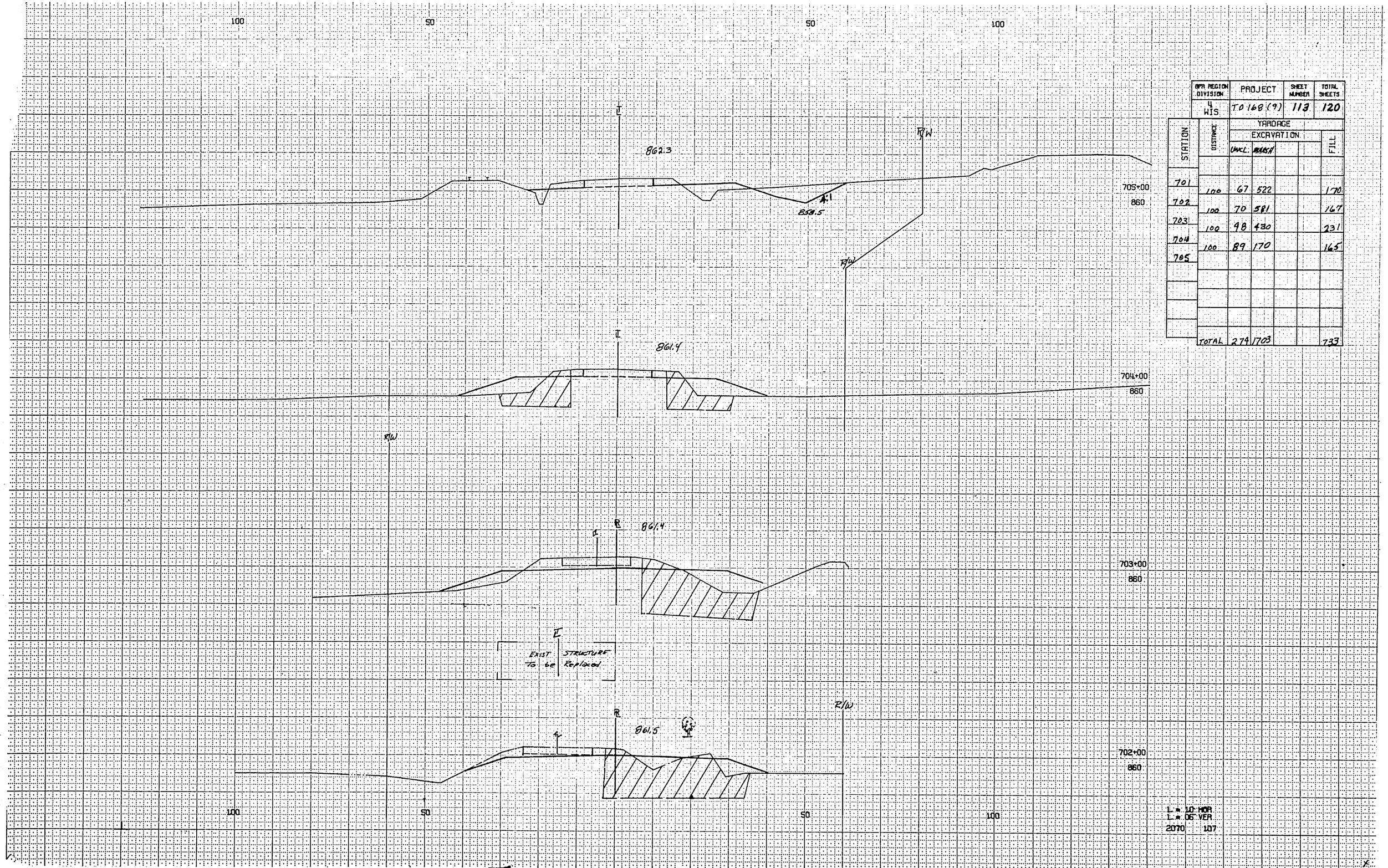
STATION	DISTANCE	YARDAGE EXCAVATION UNCL	MARSH			FILL
697						
	100	189				369
698						
	100	256	524			452
699						
	100	208	710			657
700						
	100	137	563			420
701						
	TOTAL	790	1797			1898

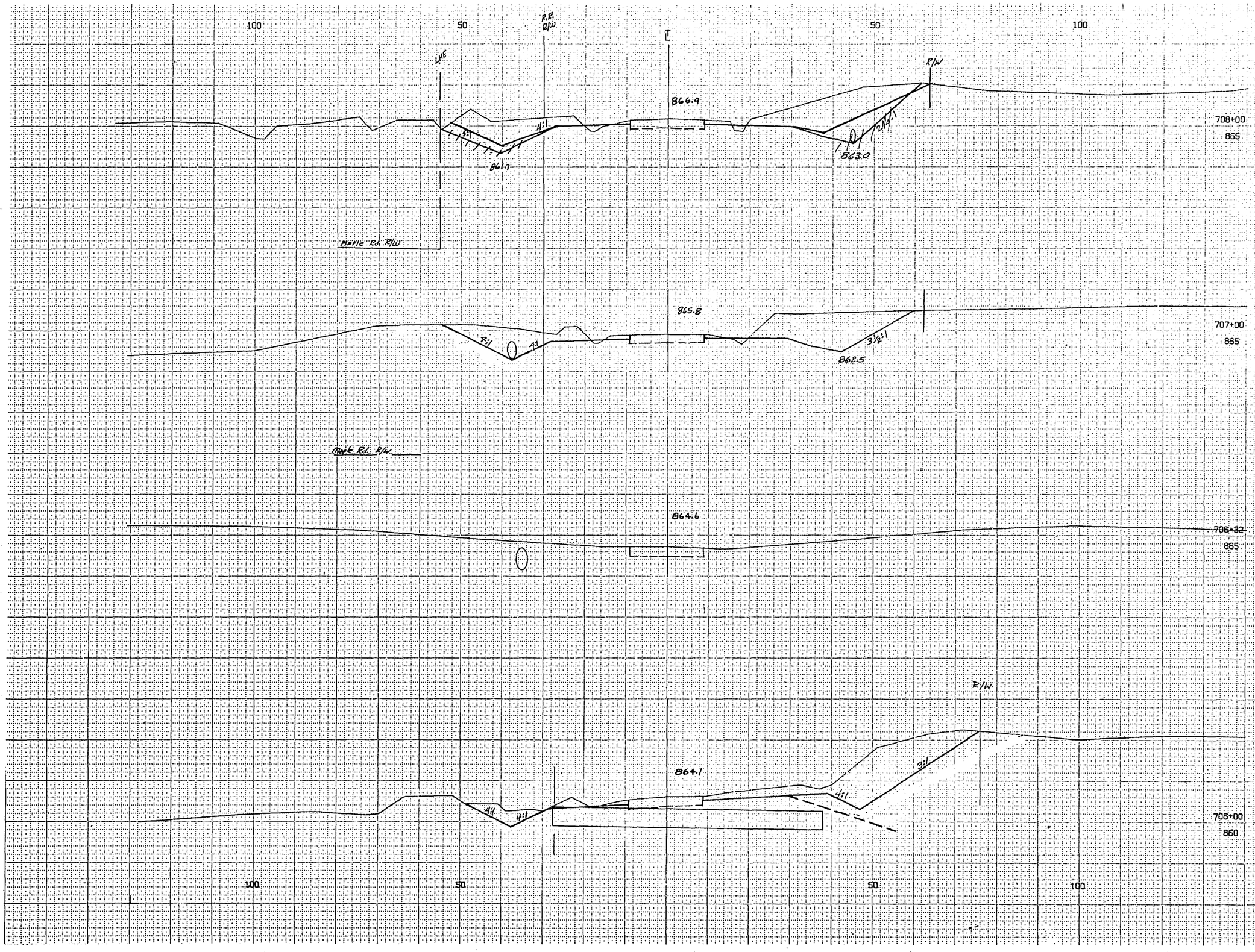
L = 10 HOR
1 = 05 VER
2070 106

BEGIN MARSH 697+95 26' RT OF ℄

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS.	TO 168(9)	113	120

STATION	DISTANCE	YARDAGE EXCAVATION UNCL.	MASS			FILL
701						
	100	67	522			170
702	100	70	581			167
703	100	98	430			231
704	100	89	170			165
705						
TOTAL		274	1703			733





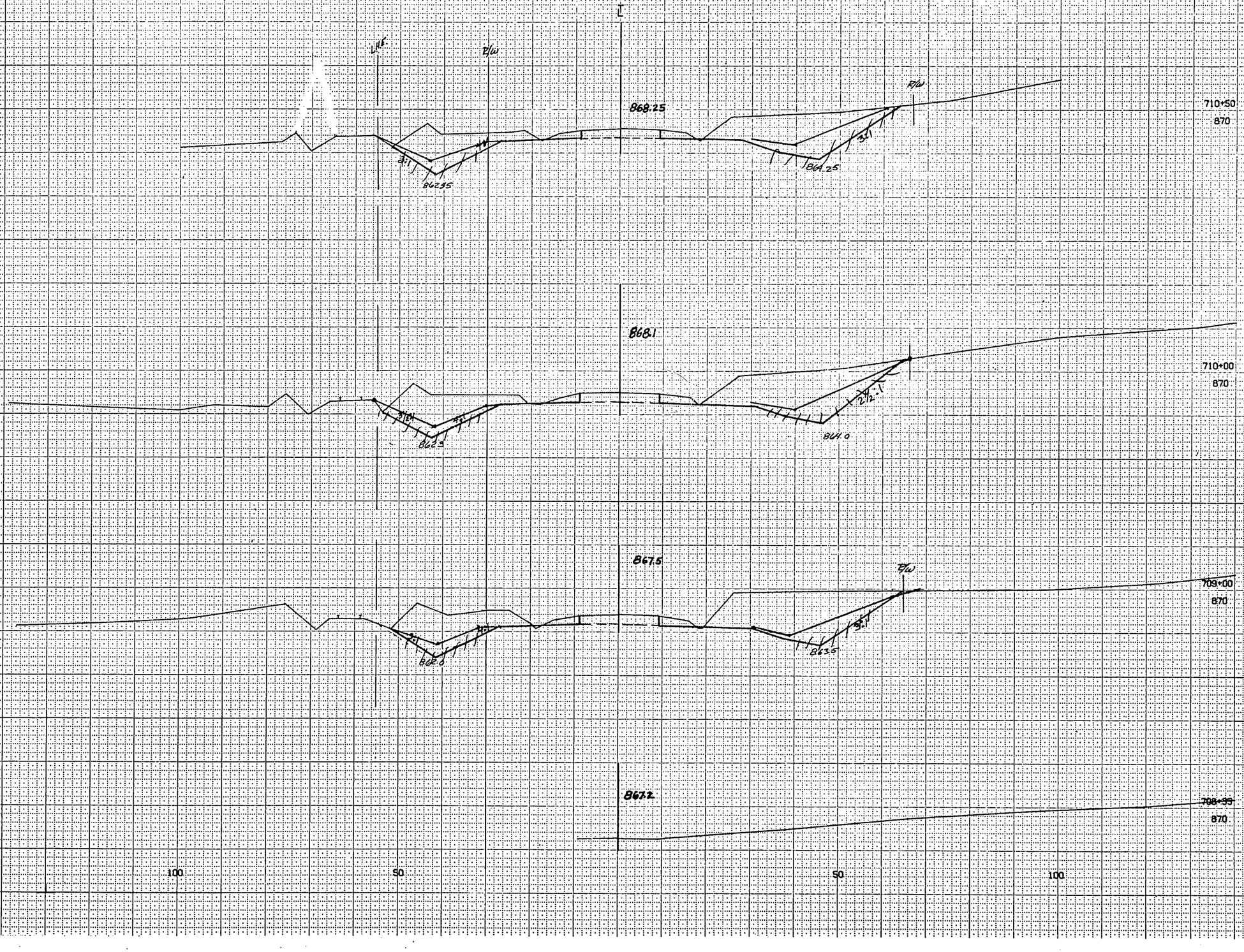
STATION	DISTANCE	YARDAGE EXCAVATION HAUL	FILL
705			
	100	476	44
706	100	756	4
707	100	776	11
708			
TOTAL		2008	59

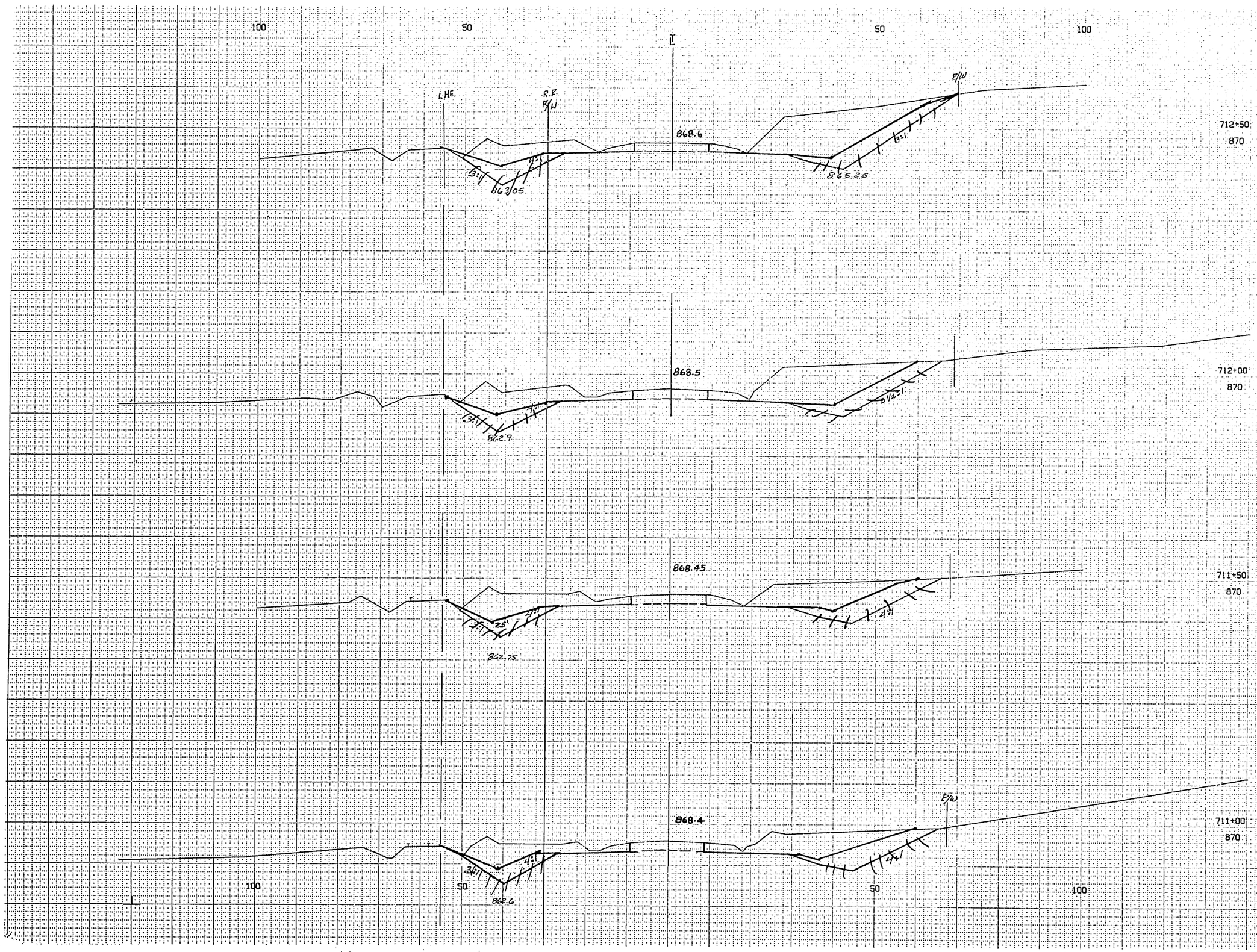
BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(7)	114	120

1 = 10 HOR
1 = 05 VER
2070 108

STR. REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO 168 (9)	115	120

STATION	DISTANCE	YARDAGE EXCAVATION	FILL
		UNCL.	
709	100	944	7
709	100	1035	0
710			
TOTAL	199		7





STATION	DISTANCE	YARDAGE EXCAVATION 4inCL				FILL
710	100	919				0
711	100	898				0
712						
TOTAL	1817					0

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T.0168(9)	116	120

1 = 10 HOR
1 = 05 VER
2070 110

100 50 50 100

LHE

E/W

E

869.09

866.6

863.65

Qsl

3:1

TOP OF 14" Gas Line

714+50
870

868.98

863.5

822.0

714+00
870

868.98

863.35

866.75

713+50
870

868.77

863.20

863.50

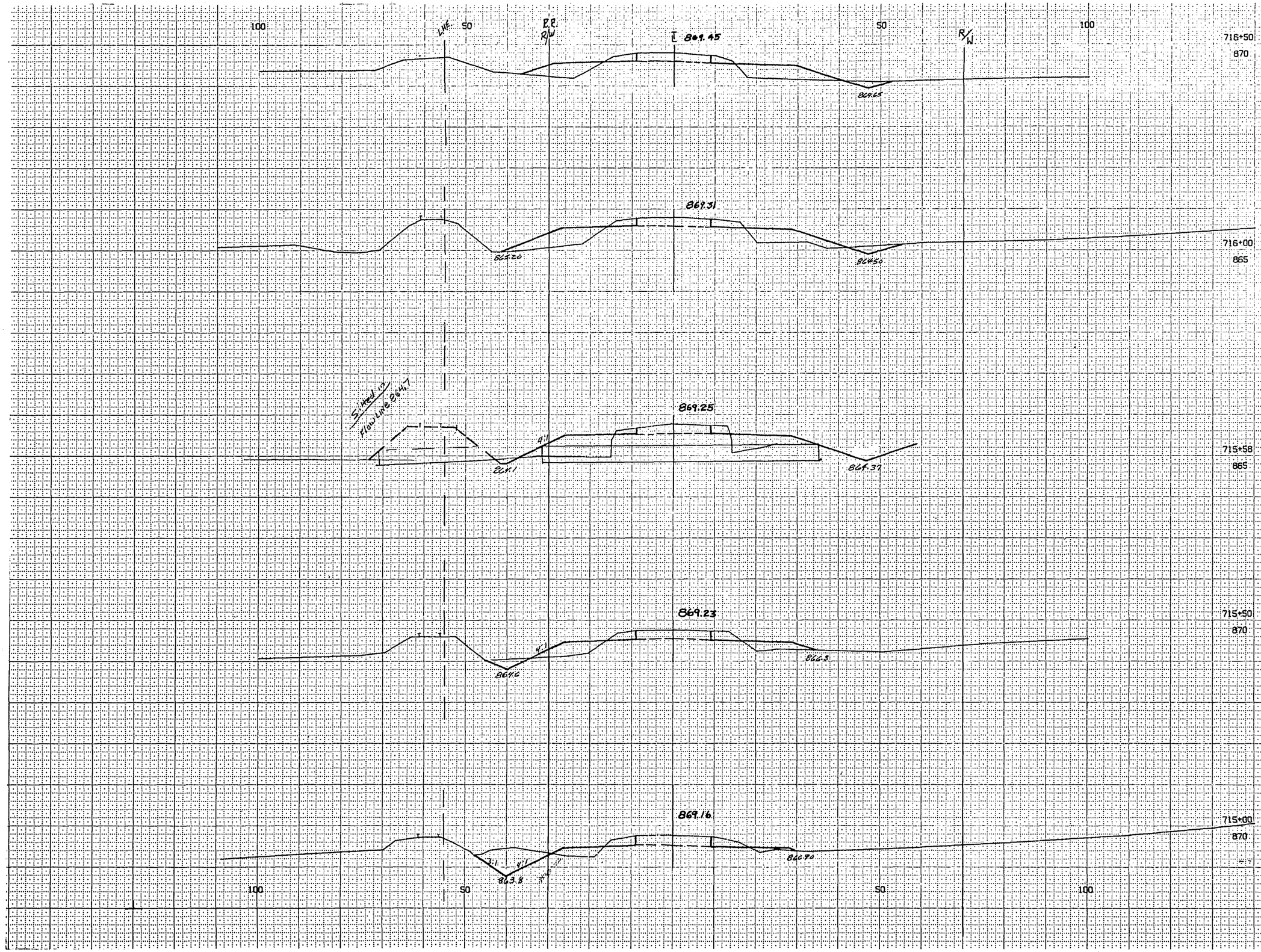
713+00
870

100 50 50 100

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	TO168(9)	117	120

STATION	DISTANCE	YARDAGE EXCAVATION	FILL
		UNCL	
712	100	1024	0
713	100	854	0
714			
TOTAL		1878	0

1 = 10 HOR
1 = 05 VER
2070 111



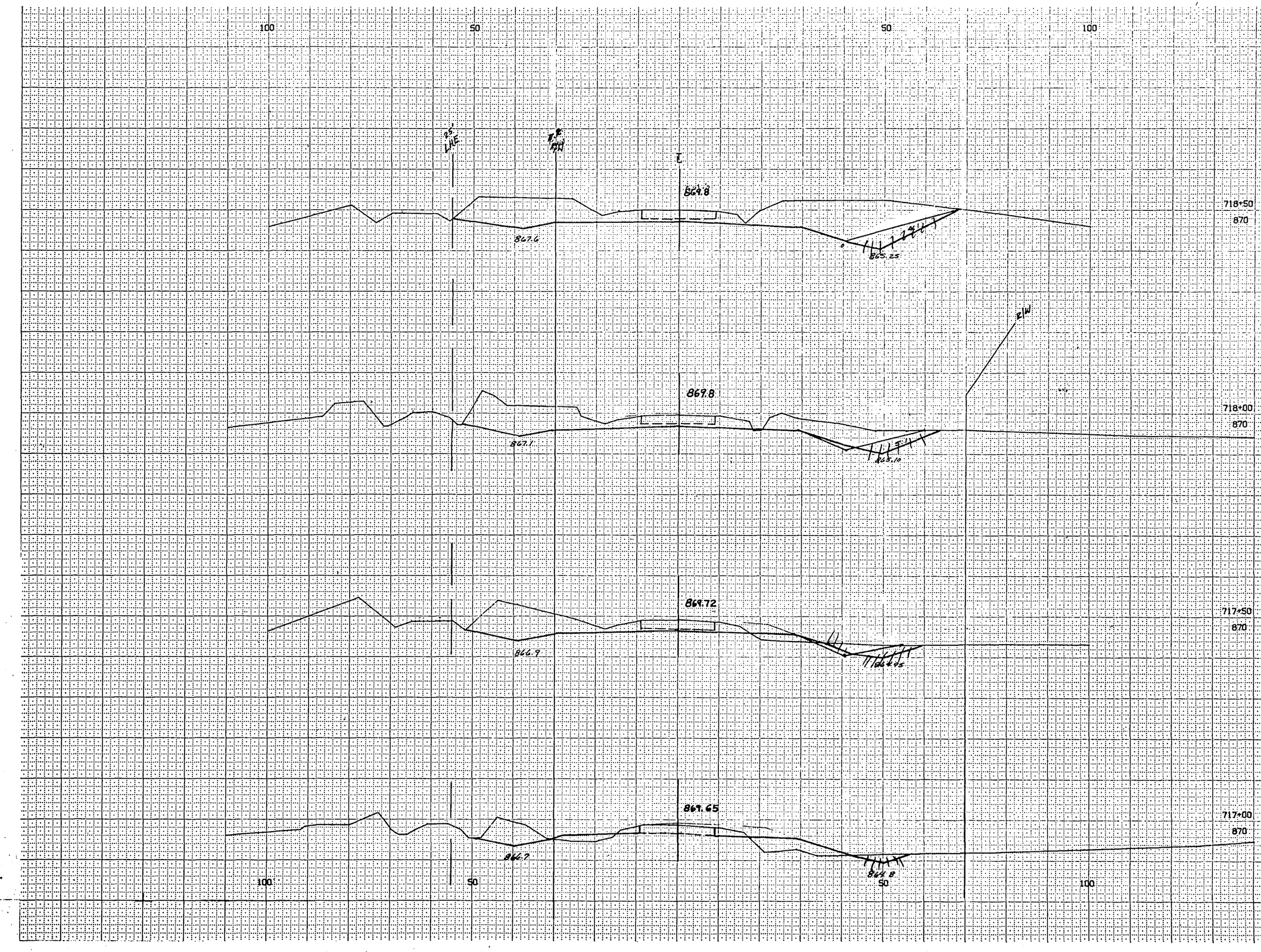
BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(9)	118	120

STATION	DISTANCE	YARDAGE EXCAVATION Level				FILL
714						
	100	393				28
715						
	100	213				46
716						
TOTAL		606				74

1" = 10 HOR
1" = 05 VER
2070 112

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T-0168(9)	119	120

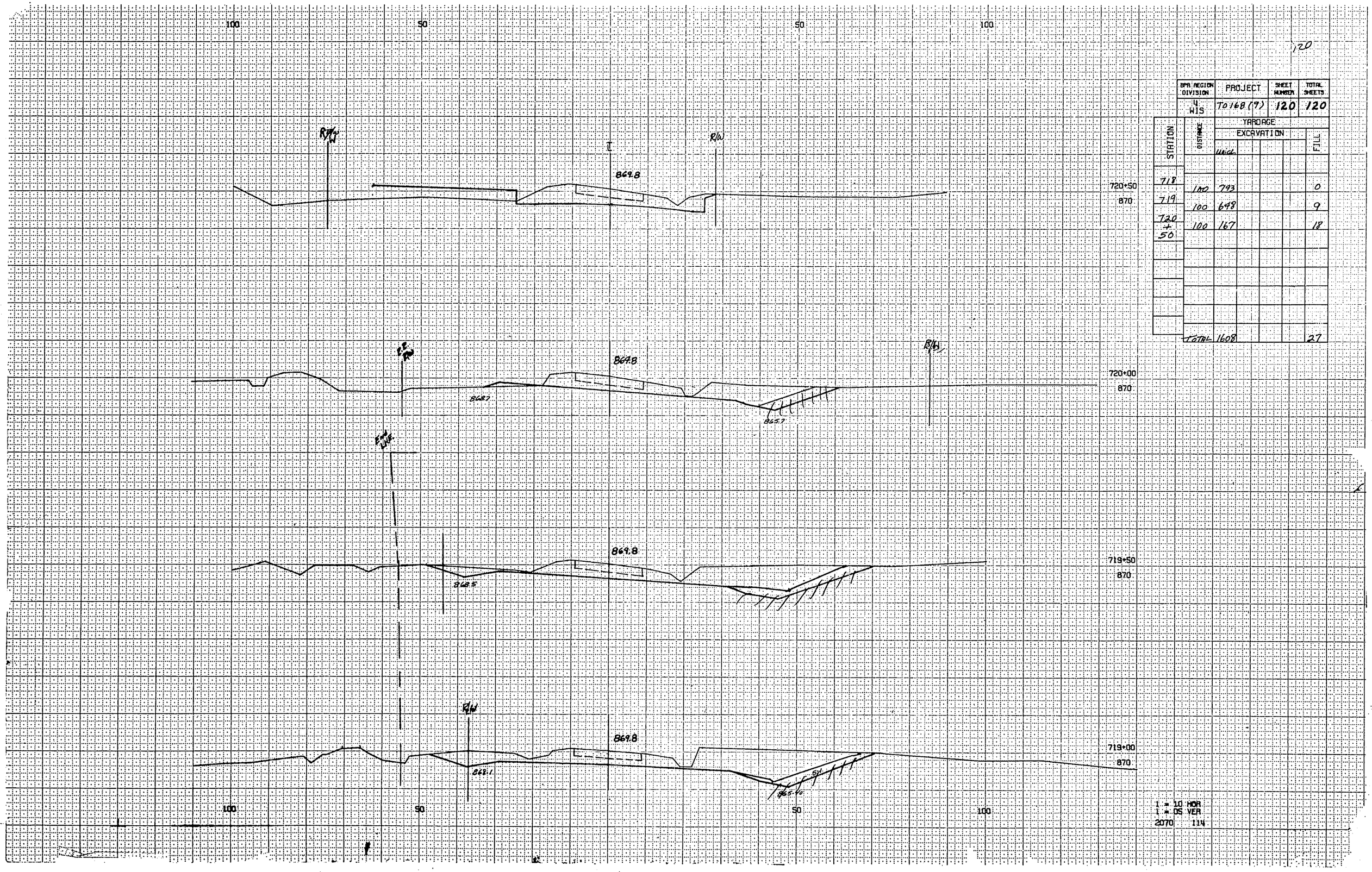
STATION	DISTANCE	YARDAGE EXCAVATION UNCL	FILL
716			
	100	233	89
717			
	100	476	70
718			
TOTAL		709	159



120

BPR REGION DIVISION	PROJECT	SHEET NUMBER	TOTAL SHEETS
4 WIS	T0168(7)	120	120

STATION	DISTANCE	YARDAGE EXCAVATION Unclass.	FILL
718			
	100	793	0
719	100	698	9
720 + 50	100	167	18
TOTAL	1608		27



STRUCTURE HISTORY
By Bridge Section

LIST OF DRAWINGS:

CHECKED BY	DATE	POSTED BY	DATE

BOX CULVERT SURVEY REPORT

Wisconsin Department of Transportation

E-B-23-68

PROJECT NO.	PROJECT ID
T 0168(9)	2321-1-04

STRUCTURE NO.	HIGHWAY		COUNTY
B-67-143	STH 74	☐ TOWN OF ☒ VILLAGE OF Menomonee Falls ☐ CITY OF	Waukesha

MILEPOST NO.	SCHEDULE NO.	SECTION	TOWN	RANGE
	2321-1-00	9	8 N	20 E

☐ CATTLE PASS
☒ DRAINAGE-STREAM Branch of Fox River
☐ BOTH

Annual 24-hour ave. traffic	9000
Design hour volume traffic	1350
Roadway design speed	60 MPH

SURVEY BY	SURVEY DATE	DATE RECEIVED BY C.O.
R. Wienfurt	2/3/69 & 10/2/69	

INSTRUCTIONS FOR STRUCTURE SURVEY

(In addition to this report, the following information shall be submitted)

1. Small county map on which the location of proposed structure is shown in red and highway relocation, if any, in green.

2. Plan and profile sheet on proposed reference line of highway showing the following:–(a) Ground line; (b) Finished grade line; (c) Profile grade line elevations at least every 100 feet; (d) Vertical curve control points; (e) Horizontal curve control points; (f) Curve data.

3. Contour map of the site drawn to a scale of not less than 1" = 20 feet with one-foot or two-foot contours and showing the following:–(a) Existing highway and structure; (b) Proposed highway and structure; (c) Proposed R/W; (d) Station numbers; (e) North point; (f) Buildings; (g) Underground facilities; (h) Other features which influence the design; (i) Recommended channel change; (j) Direction of stream flow; (k) Recommended extent of riprap.

4. Typical cross section of proposed approaches showing the following:–(a) Dimensions; (b) Slopes; (c) Comparative elevations; (d) Type and width of surfacing or pavement; (e) Sidewalk, and curb and gutter.

5. Typical cross sections of proposed channel change. Including upstream and downstream sections if different from that at structure.

6. Photographs of: (a) Existing structure; (b) Upstream and downstream structures; (c) Buildings within 100 feet of proposed structure.

7. Project location map showing structure location and number. (one per project)

8. Hydraulic computations--including allowable high water.

EXISTING STRUCTURE
(complete pertinent data)

A. BRIDGE TYPE

STRUCTURE NO.	LOCATION	
None	at site	☐ UPSTREAM FEET ☐ DOWNSTREAM

TYPE: SUPERSTRUCTURE	TYPE: ABUTMENTS	TYPE: PIERS
Slab	Concrete	None

YEAR BUILT	RATED CAPACITY	POSTED CAPACITY
		None

NO. OF SPANS	CLEAR SPAN LENGTHS ALONG RDWY/ TRACK	SKEW	EVELATION LOW (STEEL/ CONCRETE)
1	16.0' FEET	0° H.F.	859.53

ROADWAY WIDTH BETWEEN CURBS	SIDEWALKS - NUMBER	CLEAR WIDTH
— FEET	None	31.0'

CONDITION: Poor

B. BOX TYPE

STRUCTURE NO.	LOCATION	PURPOSE
	☐ UPSTREAM FEET ☐ DOWNSTREAM	☐ CATTLE PASS ☐ DRAINAGE ☐ BOTH

OPENINGS: NUMBER	CLEAR SPAN AT RIGHT ANGLES TO AXIS OF BOX	INSIDE HEIGHT OF BOX	ANGLE OF SKEW
		FEET	H.F.

APRONS:	TYPE	ELEVATION	CONDITION
INSIDE Inlet:			
Discharge:			

C. PIPE TYPE

NUMBER OF PIPES	LOCATION	PURPOSE
	☐ UPSTREAM FEET ☐ DOWNSTREAM	☐ CATTLE PASS ☐ DRAINAGE ☐ BOTH

MATERIAL	DIAMETER	SKEW	ELEVATION
	FT.	H.F.	Inlet: Discharge:

RUNOFF DATA

WATERSHED: AREA	CHARACTER					MAXIMUM WIDTH	MAXIMUM LENGTH
1623 ACRES	☐ SWAMPY	☐ LEVEL	☒ ROLLING	☐ HILLY		1.35 MILES	3.75 MILES

WATERWAY AREA (BELOW HIGH WATER 90° TO DIRECTION OF FLOW)

			DATE	ELEVATIONS
Existing structure:	98.2 sq. ft.	High water		Has never been above elevation of low steel (859.53)
Supplemental structure:	-- sq. ft.	Low water		
Overflow section:	-- sq. ft.	Water on	2-3-69 10-2-69	857.13 855.01

SCOUR: ☒ NONE ☐ NEGLIGIBLE ☐ SOME ☐ SERIOUS

CAUSE

PROPOSED BOX CULVERT

* *Unless otherwise specified, it will be assumed that the pavement between wing walls will be level.*

* APRONS:	TYPE	ELEVATIONS	PURPOSE
Inlet:	C	851.5	☐ CATTLE PASS ☒ DRAINAGE ☐ BOTH
Discharge:	B	851.3	

OPENINGS: NUMBER	CLEAR SPAN AT RIGHT ANGLES TO AXIS OF BOX	INSIDE HEIGHT OF BOX
2	10 Feet	8 Feet

ANGLE OF SKEW	DESIGN LIVE LOAD
24° LHF	H.S. 20

CHARACTER OF MATERIAL IN STREAM BED: Silty

DOES IT WASH? ☐ YES ☒ NO

RIPRAP REQUIRED	SAND-GRAVEL FILL REQUIRED	CAMBER FOR BARREL RECOMMENDED	SLOPE OF CHANNEL AT STRUCTURE
☐ YES ☒ NO	☒ YES ☐ NO	☐ YES ☒ NO	.004 FT./100 FT.

SPECIAL FOUNDATION TREATMENT REQUIRED - IF YES, DESCRIBE:

BID ITEM FOR EXISTING STRUCTURE REMOVAL - IF YES, DESCRIBE:

☒ YES ☐ NO Remove entire existing structure due to relocation of ℄ (±10' south) & poor condition of existing structure.

STRUCTURE B-67-143

PROJECT T 0168(9)

The hydraulic computations for the subject culvert were based on several methods available; namely, the BPR method, the Soil Conservation Service (Wisconsin) method, the Department of Agriculture, Soil Conservation Service method, the Convex Method of Flood Routing, and SEWRPC recommendation.

SEWRPC suggested that we use 690 cfs but did not include their computations as to method. We employed the Convex Method of Flood Routing and arrived at a runoff of 780 cfs. This is nearest figure to compare with SEWRPC, and I feel that inexperience with the Flood Routing Method is the reason for the discrepancy.

The BPR method resulted in some 520 cfs, which seems low, and the method considers only topographic features. The area involved is quite small, and the topography of such nature that,I feel this method is not accurate in this case.

The Department of Agriculture, SCS method, produced a high rate of runoff, 959 cfs. This method is reliable when the available storage is known and the topographic conditions, soil cover type, and usage are determined accurately. This requires a knowledge of the basin and experience in determining the runoff curve number. Therefore, there seems to be some leeway between different people in choosing these parameters.

The SCS method using Wisconsin Technical Notes #4 also proved high for the same reasons mentioned above.

In conclusion, I recommend that the figure obtained from SEWRPC be used,altering it slightly to 700 cfs. This is the design basis. SEWRPC's work in this area is rather extensive, and; therefore, reliable. I feel that the runoff obtained by the Convex Method of Flood Routing checks theirs reasonably close. An AHW of 6.0 was selected to preclude flooding behind the structure above elevation 860.00. The area of the existing opening is 98.2 sq. ft. as compared to 120 sq. ft. suggested. This is due in part to allowable headwater and the design frequancy of 50 years.

E-3-31-65

HYDROLOGIC AND CHANNEL INFORMATION

State Highway Commission of Wisconsin

Project 2.222-0-00

Culvert Sta. 702 + 42

Designer HHC

Date 10/65

Hydrology:

(10 freq.) Q= 700 cfs.

(freq.) Q= 350 cfs.

Q/B = 350/8 = 43.8

Q/S = 350/15 = 23

5* AHW 6 ft

Elev. 853.5 ft.

Slope (S_o) 0.004 ft/ft.

Length 50 ft.

Elev. 853.2 ft.

Tailwater 4 ft.

L/100S_o = 50/0.4 = 125

Culvert			Q	Capacity Charts	Inlet Cont.			Outlet Control					Controling HW	Outlet Velocity	Comments
Entrance	Material	Size		HW/D	HW	K_e	d_c	$\frac{dc+D}{2}$	h_o*	H	LS_o	**HW			
	Conc. Box	8'x6'	350	1.13	6.78	0.5	3.9	4.95	4.95	1.25	0.2	6.0	6.8	12.8	D=0.912
	Conc. Box	10'x6'	350	0.93	5.76	0.5	3.3	4.65	4.65	0.9	0.2	5.8	5.8	8.50	
	CMP	8'x6'	350	1.07	5.0	0.5	3.0	4.0	4.0	0.9	0.2	4.7	5.0	14.5	

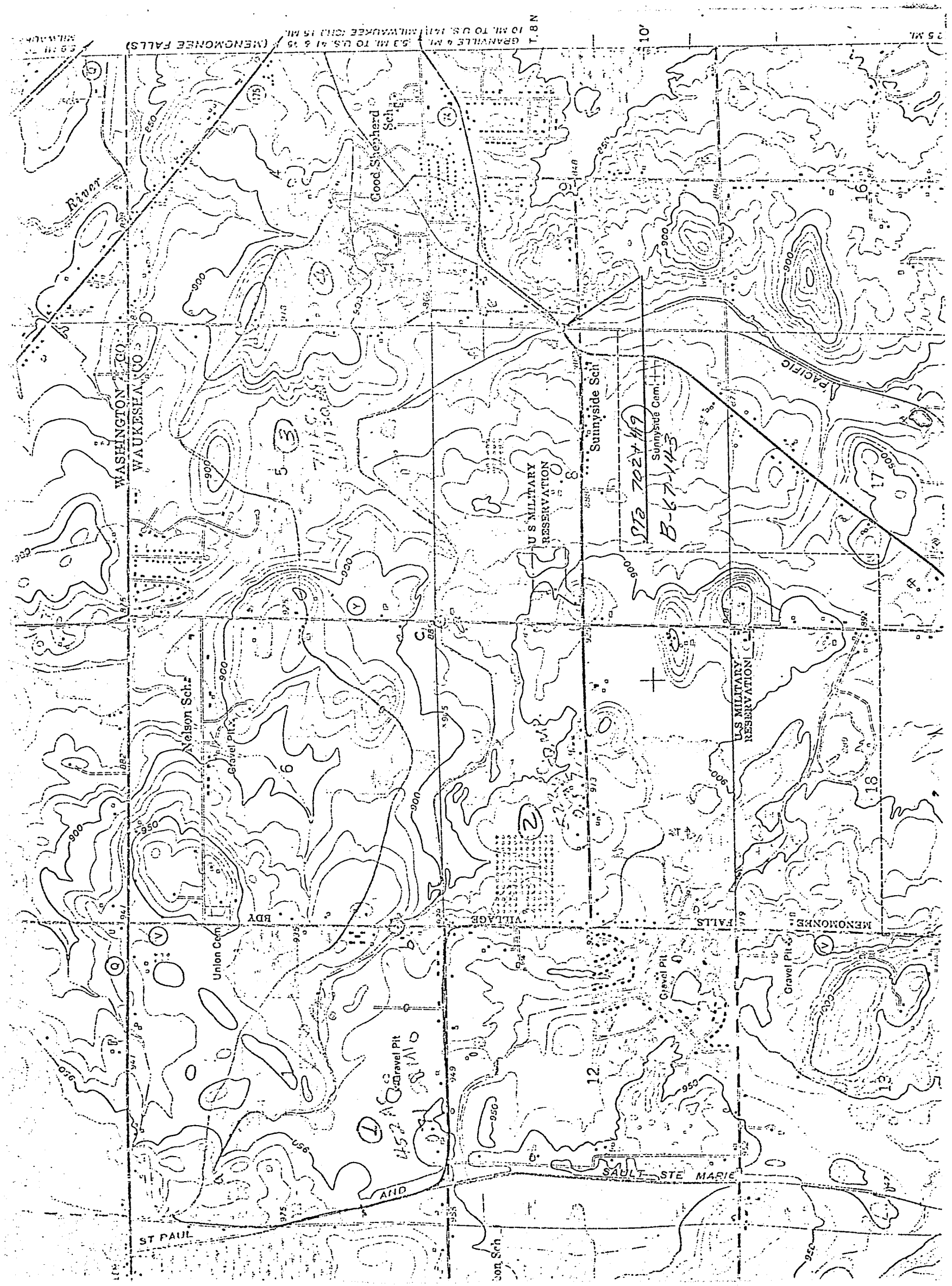
Location comments:

Summary & Recommendations:

Use 2 - 10'x6' conc. box culvert

*h_o=The greater of $\frac{d_c+D}{2}$ or TW

**HW= H+h_o − LS_o


WASHINGTON CO
WAUKESHA CO
River
Good Shepherd Sch
Sunnyside Sch
Sunnyside Cem
U S MILITARY RESERVATION
PACIFIC
Nelson Sch
Gravel Pit
Union Cem
Gravel Pit
Gravel Pit
SAULT STE MARIE
ST PAUL
MENOMONEE FALLS
GRANVILLE 4 MI
10 MI TO U.S. 41
5.3 MI TO U.S. 41 & 45
(MENOMONEE FALLS)
T. 8 N
R. 21 E
R. 20 E
R. 19 E
R. 18 E
B-67-1143
STA 702+49
45.21 AC
AND

STRUCTURE HISTORY
By Bridge Section

LIST OF DRAWINGS:

CHECKED BY	DATE	POSTED BY	DATE

BOX CULVERT SURVEY REPORT

Wisconsin Department of Transportation

E-B-23-68

				PROJECT NO. T 0168(9)	PROJECT ID 2321-1-02
STRUCTURE NO. C-67-38	HIGHWAY STH 74	☒ TOWN OF ☒ VILLAGE OF ☐ CITY OF	Lisbon Menomonee Falls		COUNTY Waukesha
MILEPOST NO.	SCHEDULE NO. 2321-1-00	SECTION Lisbon 24 Man.Falls 19		TOWN 8 N 8 N	RANGE 19 E 20 E
☐ CATTLE PASS ☒ DRAINAGE-STREAM ☐ BOTH	Willow Springs Creek			Annual 24-hour ave. traffic 9000 Design hour volume traffic 1350 Roadway design speed 60 MPH	
SURVEY BY	G. Reiter D. Wienfurt			SURVEY DATE 1/29/69 & 10/1/69	DATE RECEIVED BY C.O.

INSTRUCTIONS FOR STRUCTURE SURVEY

(In addition to this report, the following information shall be submitted)

1. Small county map on which the location of proposed structure is shown in red and highway relocation, if any, in green.

2. Plan and profile sheet on proposed reference line of highway showing the following:–(a) Ground line; (b) Finished grade line; (c) Profile grade line elevations at least every 100 feet; (d) Vertical curve control points; (e) Horizontal curve control points; (f) Curve data.

3. Contour map of the site drawn to a scale of not less than 1" = 20 feet with one-foot or two-foot contours and showing the following:–(a) Existing highway and structure; (b) Proposed highway and structure; (c) Proposed R/W; (d) Station numbers; (e) North point; (f) Buildings; (g) Underground facilities; (h) Other features which influence the design; (i) Recommended channel change; (j) Direction of stream flow; (k) Recommended extent of riprap.

4. Typical cross section of proposed approaches showing the following:–(a) Dimensions; (b) Slopes; (c) Comparative elevations; (d) Type and width of surfacing or pavement; (e) Sidewalk, and curb and gutter.

5. Typical cross sections of proposed channel change. Including upstream and downstream sections if different from that at structure.

6. Photographs of: (a) Existing structure; (b) Upstream and downstream structures; (c) Buildings within 100 feet of proposed structure.

7. Project location map showing structure location and number. (one per project)

8. Hydraulic computations--including allowable high water.

EXISTING STRUCTURE
(complete pertinent data)

A. BRIDGE TYPE

STRUCTURE NO.	LOCATION	
		☐ UPSTREAM
		FEET ☐ DOWNSTREAM

TYPE: SUPERSTRUCTURE | TYPE: ABUTMENTS | TYPE: PIERS

YEAR BUILT	RATED CAPACITY	POSTED CAPACITY

NO. OF SPANS	CLEAR SPAN LENGTHS ALONG RDWY/TRACK	SKEW	EVELATION LOW (STEEL/CONCRETE)
	FEET	H.F.	

ROADWAY WIDTH BETWEEN CURBS	SIDEWALKS - NUMBER	CLEAR WIDTH
FEET		

CONDITION

B. BOX TYPE

STRUCTURE NO.	LOCATION	PURPOSE
None	Site ☐ UPSTREAM	☐ CATTLE PASS
	FEET ☐ DOWNSTREAM	☒ DRAINAGE
		☐ BOTH

OPENINGS: NUMBER	CLEAR SPAN AT RIGHT ANGLES TO AXIS OF BOX	INSIDE HEIGHT OF BOX	ANGLE OF SKEW
1	10.0 Feet	4.0 FEET	None H.F.

APRONS:	TYPE	ELEVATION	CONDITION
INSIDE Inlet:	---	---	Poor
Discharge:	---	---	

C. PIPE TYPE

NUMBER OF PIPES	LOCATION	PURPOSE
	☐ UPSTREAM	☐ CATTLE PASS
	FEET ☐ DOWNSTREAM	☐ DRAINAGE
		☐ BOTH

MATERIAL	DIAMETER	SKEW	ELEVATION
	FT.	H.F.	Inlet:
			Discharge:

RUNOFF DATA

WATERSHED: AREA	CHARACTER				MAXIMUM WIDTH	MAXIMUM LENGTH
1336 ACRES	☐ SWAMPY	☐ LEVEL	☒ ROLLING	☐ HILLY	1.5 MILES	2.5 MILES

WATERWAY AREA (BELOW HIGH WATER 90° TO DIRECTION OF FLOW)

			DATE	ELEVATIONS
Existing structure:	40 sq. ft.	High water	Unknown	866.7
Supplemental structure:	None sq. ft.	Low water	10/1/69	None
Overflow section:	None sq. ft.	Water on	1-29-69 10-1-69	None

SCOUR — CAUSE Restricted waterway

☐ NONE ☐ NEGLIGIBLE
☒ SOME ☐ SERIOUS

PROPOSED BOX CULVERT

* *Unless otherwise specified, it will be assumed that the pavement between wing walls will be level.*

* APRONS:	TYPE	ELEVATIONS	PURPOSE
Inlet:	C	860.7	☐ CATTLE PASS
Discharge:	B	860.5	☒ DRAINAGE
			☐ BOTH

OPENINGS: NUMBER	CLEAR SPAN AT RIGHT ANGLES TO AXIS OF BOX	INSIDE HEIGHT OF BOX
2	8' Each	6'

ANGLE OF SKEW	DESIGN LIVE LOAD
37° LHF	HS 20

CHARACTER OF MATERIAL IN STREAM BED — DOES IT WASH?

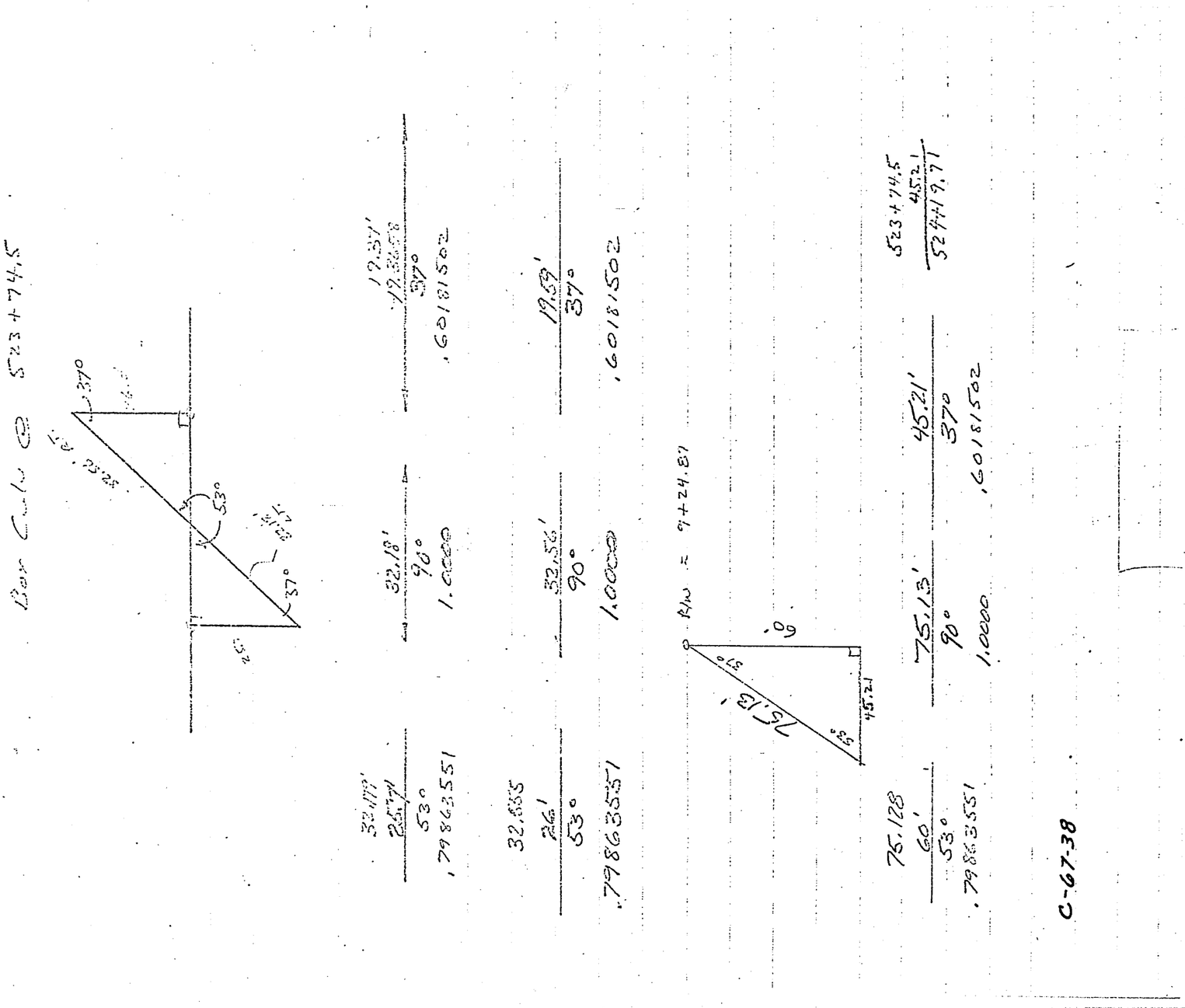
Gravelly Clay — ☒ YES ☐ NO

RIPRAP REQUIRED	SAND-GRAVEL FILL REQUIRED	CAMBER FOR BARREL RECOMMENDED	SLOPE OF CHANNEL AT STRUCTURE
☐ YES ☒ NO	☒ YES ☐ NO	☐ YES ☒ NO	0.003 FT./100 FT.

SPECIAL FOUNDATION TREATMENT REQUIRED - IF YES, DESCRIBE:

BID ITEM FOR EXISTING STRUCTURE REMOVAL - IF YES, DESCRIBE:

☒ YES ☐ NO Remove entire structure. No salvageable items.



E-B-31-65

HYDROLOGIC AND CHANNEL INFORMATION

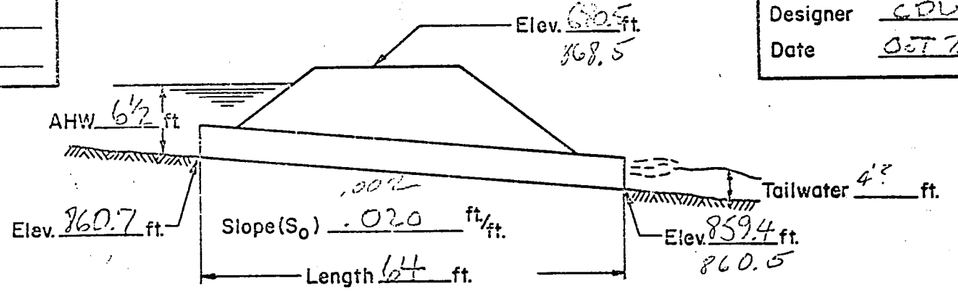
State Highway Commission of Wisconsin

Project

Culvert Sta. 523+93

Designer CDW

Date OCT 27 '67



Hydrology:

(freq.) Q= cfs.

(50 freq.) Q= 145 cfs.

363

$\frac{L}{100 S_o} = \frac{64}{100 S_o} = \frac{32}{320}$

Location comments:

Culvert			Q	Capacity Charts HW	Inlet Cont.		Outlet Control							Controlling HW	Outlet Velocity	Comments
Entrance	Material	Size			$\frac{HW}{D}$	HW	K_e	d_c	$\frac{d_c+D}{2}$	h_o*	H	LS_o	**HW			
30° to 75°	Concrete	8×6	726	6½	1.08	6.1	.4	3.7	4.85	4.85	.95	2.0	3.8	6.1	6.9 fps	USE OF TWIN 8×6 ANALYSED
		TWIN	363	6.4		5.5		3.9	4.95	4.95	1.5	1.3	5.2	6.5	30.0	SINGLED HALF LOADINGS IS EMBLEM
																HEAD- too high
			363	6.5	1.08	6.5	.4	3.9	4.95	4.95	1.5	.13	6.32	6.5	10.0	change slope .002
			363	6.5	1.08	6.5	.4	3.9	4.95	4.95	1.5	.19	6.26	6.5	12.0	.003'

* h_o = The greater of $\frac{d_c+D}{2}$ or TW

** HW = H + h_o − LS_o

Summary & Recommendations:

Use a 2-cell 8'x6' concrete box culvert with a slope of 0.003'/'

HW = .95 + 4.85 − 2.0 = 3.80

= 1.5 + 4.85 − .2

C-67-38

DESIGN/FINAL COMPUTATIONS

Wisconsin Department of Transportation
E-D-408-67

USE OF THE SCS METHOD

$A_{TOT} = 2.09$ sq. mi.
Antecedent Moisture Condition II
Hydrologic Soil Group: C (3.7-1) Blount, Morley, Pella soils
Runoff Curve No. 86 (TABLE 3.7-1)
C.N. pervious = 2.72"
Hydrologic Index = 0.94 (2.72) = 3.50 Hydrograph Family 2
$Q = 2.1$ in. (3.10-1) STORM DIST B

$$T_c = \frac{970-940}{4600} = \frac{30}{4600} = 0.7 \text{ Hrs.}$$

$$\frac{940-845}{13000} = \frac{95}{13000} = \frac{1.4 \text{ Hrs.}}{2.1 \text{ Hrs.}}$$

$T_p = 0.7 T_c = 0.7(2.1) = 1.47$ Hrs.

$T_o = 4.9$ Hrs. (3.21-8) duration of excess

$\frac{T_o}{T_p} = \frac{4.9}{1.47} = 3.33$ $\frac{T_o}{T_p}$ (revised) $= 3$ $\therefore T_p = \frac{4.9}{3} = 1.63$ Hrs.

$q_p = \frac{484A}{Rev.\ T_p} = \frac{(484)(2.09)}{1.63} = 621$ cfs/in. of runoff

$Q_{BP} = 2.1 \quad (621) = 1305$ cfs. for 2.1 in. of runoff

$Q = 1305\ (0.615) = 802$ cfs

BPR METHOD = 470 cfs.

SCC METHOD = 450 cfs.

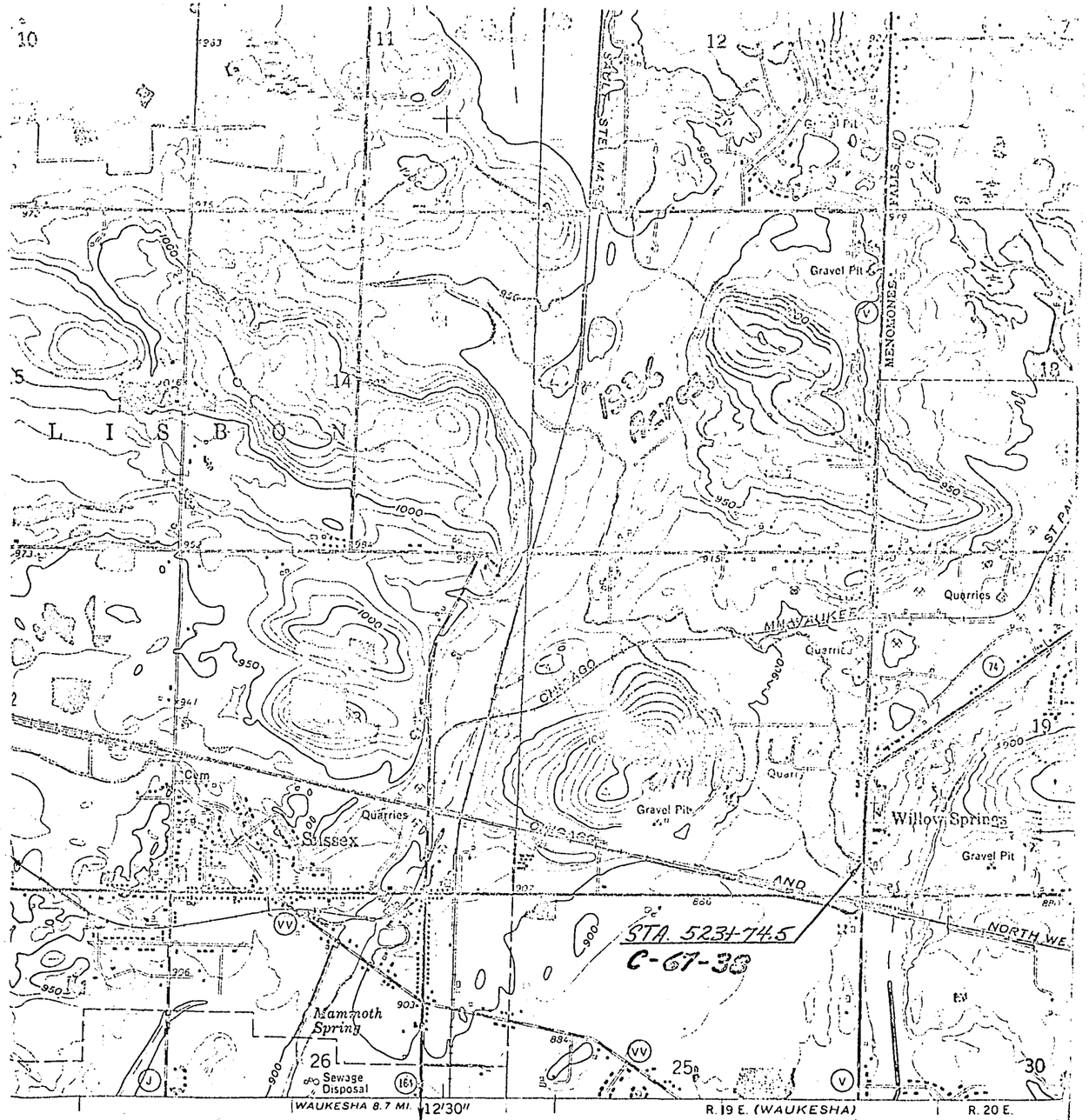
HYDROGRAPH (W_{HG}) = 726 cfs

Use 726 cfs for design.

C-67-38

PROJECT/STRUCTURE NO.	HWY. NO. 5234 74	COUNTY Waukesha	COMPUTATIONS BY AAL	DATE
NAME OF ROAD			CHECKED BY	DATE
TITLE/ITEM Drainage Structure 523+95			SHEET 1	OF

3



e Geological Survey

grammetric methods
d check 1959

datum
ate system, south zone
id ticks,

SCALE 1:24000

1000 0 1000 2000 3000 4000 5000 6000

1 .5 0 1 KILOME

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

1½°
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1959

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, WASHINGTON 25, D. C.
AND BY THE WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY, MADISON
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQ

STRUCTURE HISTORY
By Bridge Section

LIST OF DRAWINGS:

CHECKED BY	DATE	POSTED BY	DATE

BOX CULVERT SURVEY REPORT

Wisconsin Department of Transportation

E-B-23-68

PROJECT NO.	PROJECT ID
T 0168(9)	2321-1-03

STRUCTURE NO.	HIGHWAY		COUNTY
C-67-39	STH 74	☐ TOWN OF ☒ VILLAGE OF Menomonee Falls & Lannon ☐ CITY OF	Waukesha

MILEPOST NO.	SCHEDULE NO.	SECTION	TOWN	RANGE
	2 67 020	19	8 N	20 E

☐ CATTLE PASS
☒ DRAINAGE-STREAM _____
☐ BOTH

Annual 24-hour ave. traffic	7500
Design hour volume traffic	1125
Roadway design speed	60 MPH

SURVEY BY	SURVEY DATE	DATE RECEIVED BY C.O.
R. Garvens	10/2/69	

INSTRUCTIONS FOR STRUCTURE SURVEY

(In addition to this report, the following information shall be submitted)

1. Small county map on which the location of proposed structure is shown in red and highway relocation, if any, in green.

2. Plan and profile sheet on proposed reference line of highway showing the following:–(a) Ground line; (b) Finished grade line; (c) Profile grade line elevations at least every 100 feet; (d) Vertical curve control points; (e) Horizontal curve control points; (f) Curve data.

3. Contour map of the site drawn to a scale of not less than 1'' = 20 feet with one-foot or two-foot contours and showing the following:–(a) Existing highway and structure; (b) Proposed highway and structure; (c) Proposed R/W; (d) Station numbers; (e) North point; (f) Buildings; (g) Underground facilities; (h) Other features which influence the design; (i) Recommended channel change; (j) Direction of stream flow; (k) Recommended extent of riprap.

4. Typical cross section of proposed approaches showing the following:–(a) Dimensions; (b) Slopes; (c) Comparative elevations; (d) Type and width of surfacing or pavement; (e) Sidewalk, and curb and gutter.

5. Typical cross sections of proposed channel change. Including upstream and downstream sections if different from that at structure.

6. Photographs of: (a) Existing structure; (b) Upstream and downstream structures; (c) Buildings within 100 feet of proposed structure.

7. Project location map showing structure location and number. (one per project)

8. Hydraulic computations--including allowable high water.

EXISTING STRUCTURE
(complete pertinent data)

A. BRIDGE TYPE

STRUCTURE NO.	LOCATION	
		☐ UPSTREAM
		FEET ☐ DOWNSTREAM

TYPE: SUPERSTRUCTURE | TYPE: ABUTMENTS | TYPE: PIERS

YEAR BUILT	RATED CAPACITY	POSTED CAPACITY

NO. OF SPANS	CLEAR SPAN LENGTHS ALONG RDWY/TRACK	SKEW	EVELATION LOW (STEEL/CONCRETE)
	FEET	H.F.	

ROADWAY WIDTH BETWEEN CURBS	SIDEWALKS - NUMBER	CLEAR WIDTH
FEET		

CONDITION

B. BOX TYPE

STRUCTURE NO.	LOCATION	PURPOSE
None	☐ UPSTREAM FEET ☐ DOWNSTREAM	☐ CATTLE PASS ☒ DRAINAGE ☐ BOTH

OPENINGS: NUMBER	CLEAR SPAN AT RIGHT ANGLES TO AXIS OF BOX	INSIDE HEIGHT OF BOX	ANGLE OF SKEW
1	6	4.0 FEET	0 H.F.

APRONS:		TYPE	ELEVATION	CONDITION
INSIDE	Inlet:	E	869.5	Poor
	Discharge:	E	869.4	

C. PIPE TYPE

NUMBER OF PIPES	LOCATION	PURPOSE
	☐ UPSTREAM FEET ☐ DOWNSTREAM	☐ CATTLE PASS ☐ DRAINAGE ☐ BOTH

MATERIAL	DIAMETER	SKEW	ELEVATION
	FT.	H.F.	Inlet: Discharge:

RUNOFF DATA

WATERSHED: AREA	CHARACTER					MAXIMUM WIDTH	MAXIMUM LENGTH
379 ACRES	☐ SWAMPY	☐ LEVEL	☒ ROLLING	☐ HILLY		0.95 MILES	1.2 MILES

WATERWAY AREA (BELOW HIGH WATER 90° TO DIRECTION OF FLOW)

			DATE	ELEVATIONS
Existing structure:	24	sq. ft.	High water	—	872.2
Supplemental structure:	—	sq. ft.	Low water	Dry	—
Overflow section:	—	sq. ft.	Water on	11/05/69	869.7

SCOUR — CAUSE

☒ NONE ☐ NEGLIGIBLE ☐ SOME ☐ SERIOUS

PROPOSED BOX CULVERT

* *Unless otherwise specified, it will be assumed that the pavement between wing walls will be level.*

* APRONS:	TYPE	ELEVATIONS	PURPOSE
Inlet:	B	867.8	☐ CATTLE PASS ☒ DRAINAGE ☐ BOTH
Discharge:	B	867.3	

OPENINGS: NUMBER	CLEAR SPAN AT RIGHT ANGLES TO AXIS OF BOX	INSIDE HEIGHT OF BOX
2	8 Feet	4 Feet

ANGLE OF SKEW	DESIGN LIVE LOAD
27° LHF	HS-20

CHARACTER OF MATERIAL IN STREAM BED — DOES IT WASH?

Gravely mixed with Silt — ☐ YES ☒ NO

RIPRAP REQUIRED	SAND-GRAVEL FILL REQUIRED	CAMBER FOR BARREL RECOMMENDED	SLOPE OF CHANNEL AT STRUCTURE
☐ YES ☒ NO	☒ YES ☐ NO	☐ YES ☒ NO	.005 FT./100 FT.

SPECIAL FOUNDATION TREATMENT REQUIRED - IF YES, DESCRIBE:

None

BID ITEM FOR EXISTING STRUCTURE REMOVAL - IF YES, DESCRIBE:

☒ YES ☐ NO Remove existing 6' x 4' Box Culvert @ $71+56

E-B-31-65

HYDROLOGIC AND CHANNEL INFORMATION

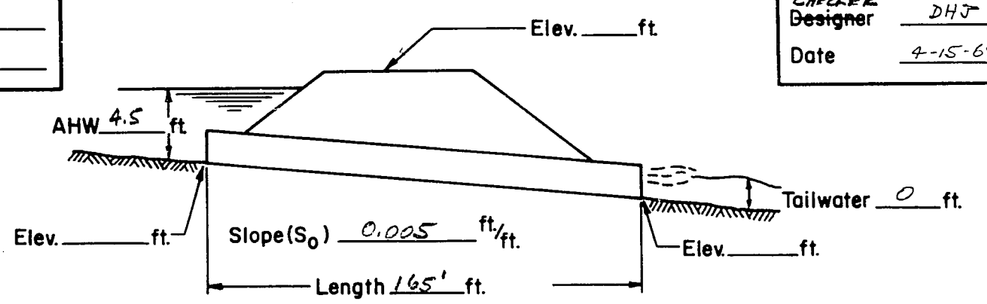
State Highway Commission of Wisconsin

Project STH 74

Culvert Sta. 570+92

CHECKER ~~Designer~~ DHJ

Date 4-15-69



Hydrology:

(50 freq.) Q= 405 cfs.

(____ freq.) Q= ____ cfs.

$\frac{L}{100 S_o} = \frac{165}{0.5} = 333$

Location comments:

Culvert			Q	Capacity Charts HW	Inlet Cont.		Outlet Control							Controlling HW	Outlet Velocity	Comments
Entrance	Material	Size			$\frac{HW}{D}$	HW	K_e	d_c	$\frac{d_c+D}{2}$	h_o*	H	LS_o	**HW			
(1) 30-75°	CONC	8x4	202		1.1	4.4	0.2	2.8	3.4	3.4	1.2	0.8	3.8	4.5		INLET CONTROL @ 4.4' HW IS O.K.

*h_o = The greater of $\frac{d_c+D}{2}$ or TW

**HW = $H + h_o - LS_o$

Summary & Recommendations:

Consultant recommendation for twin 8'x4' concrete box Culvert appears acceptable.

DESIGN/FINAL COMPUTATIONS

570+86
2 CELL 8'x 4'
Box Culv.

63°
26'
26.5'
27°
27°

29.18
26
63°
.891006052

29.74
26.5
63°
.891006052

29.18
90°
1.000000

29.74
90°
1.000000

13.25
27°
.453990500

13.50
27°
.453990500

PROJECT/STRUCTURE NO.
NAME OF ROAD
HWY. NO.
COUNTY
TITLE/ITEM
SHEET NO.
COMPUTATIONS BY
DATE
CHECKED BY
DATE

Wisconsin Department of Transportation
E-B-31-65-67

TO : WAG 4-15-69

FROM : DHJ

SUBJECT : CHECK CONSULTANT CALCULATION RECOMMENDING 8'x4' BOX CULVERT UNDER STH 74

DETERMINE A

110 Ac
28 "
17 "
224

379 Ac. TOTAL * AREAS FROM CONSULTANT ARE ASSUMED CORRECT

ESTIMATE T_c

19" x 400 ft/in = 7600 ft STREAM TRAVEL

ASSUMED DESIGN VELOCITY = 2.5 ft/sec.

$\frac{7600 \text{ ft}}{2.5 \text{ ft/sec}}$ = 3000 SEC

FIND i, RAINFALL INTENSITY

50 YR FREQUENCY, t_c = 50 MINUTES

i = 2.8 IN/HR

DETERMINE Q

$Q = C i A$ C = 0.38 FROM CHART 8.03-1

$Q = 0.38 \times 2.8 \times 379 = 405$ cfs

NIENOW, LANDRY, WEBSTER & ASSOC.
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1750 W. SILVER SPRING DRIVE MILWAUKEE, WIS. 53209 TEL. 264-0412
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WALLACE G. NIENOW P.E.
JAMES W. LANDRY P.E.
ASSOCIATES
KENNETH B. WESTERN E.T.
CARL R. RAHMIG P.E.
CONSULTANT
DONALD W. WEBSTER P.E.

December 21, 1967

Mr. Dick Jahnke
Jahnke & Jahnke
414 W. Moreland Blvd.
Waukesha, Wisconsin

Dear Dick:

Listed below are the final calculations used to determine the need for a dual 4 x 8 box culvert under Highway "74".

8'x4', not 4x8

Total Q when entire area is completely developed
(Q = 400 cfs)

Allowable headwater to North of culvert
(HW = 4.5± ft)

Slope of culvert (0.005 ft/ft)

Use 200 cfs for one box

Q/B = 200/8 = 25 cfs per foot of width

From Bureau of Public Road Chart #6 (HW/d = 1.15)

.4 x 1.15 = 4.6 ft. headwater or .6 above crown of box

I believe that this will show you what was used to determine the ultimate size culvert necessary.

Very truly yours,

Wallace G. Nienow

Wallace G. Nienow

WGN/sas

December 9, 1966

Village Board
Village of Lannon
Waukesha County, Wisconsin

SUBJECT: Northwest Area - Storm Sewer Study

As per your request, my firm has made a study of the Storm Sewer problem in the Northwest area of the Village of Lannon. This report discusses the existing conditions in this area, and recommends immediate improvements, and future improvements.

Existing Conditions

On November 29, 1966, I made a field trip of this area with Mr. Richard Jahnke of Jahnke & Jahnke. We began at the pond in the County Park and proceed southerly from this point. It appeared that the overflow from the pond, at certain times contributes water to the area. The water from this area flows across the railroad right of way through twin 36" culverts, and through a 1.4' x 1.2' box culvert into the Schmitt property.

This water then flows through a system of culverts, box culverts, drain tiles, and open ditches to a 6 ft. by 3.5 ft. box culvert under State Highway "74".

The other portion of this storm drainage system lies westerly of the railroad right of way. This area is also drained by a system of culverts and ditches. Both areas meet at a point at the North end of the Monacelli property and combine into one main stream which leaves the Village through the aforementioned 6' x 3.5' box culvert.

Recommended Immediate Improvements

From the field inspection trip and information provided to me by Mr. Jahnke, we make the following recommendations:

Drainage Area - North

a. In the drainage area North of the dual 36" culverts no improvements are necessary at this time.

b. The existing dual 36" culverts plus the 1.4' x 2' box culvert are adequate to serve both present and future development.

c. Through the Schmitt and Ashley properties, a drainage ditch should be provided for adequate control. This ditch should have a bottom four (4) feet wide and a top 20 feet wide. During high flows, this ditch would flow approximately 2.5 feet deep. A 25 foot minimum width easement is necessary. The dual 50" x 31" corrugated metal culvert pipes under W. Good Hope Road as indicated on Mr. Jahnke's plan are adequate to handle the flow.

d. From this point, the proposed ditch would proceed south through the Weyher property to the North line of the Quartaro property. There it continues Southwesterly along the rearline of the Quartaro and Miller properties, to where it joins a channel from the West in the Monacelli property. The ditch through the Weyher, the Quartaro, and the Miller properties should have a six (6) foot bottom and a 22 foot top. It would flow approximately 2.7 foot deep during high water. An easement 25 feet in width would be necessary in this area.

e. I would recommend that from the point at which the two streams join, a ditch be built similar to those mentioned above to connect to the existing channel through the Wehrman property. This ditch should be built along the Westerly edge of the Monacelli property. The existing channel through the Wehrman property should be deepened, but does not have to be widened at this time.

Drainage Area - West

a. The area to the west drains under Good Hope Road through an existing 30" culvert. This culvert should be replaced with twin 48" concrete culvert pipes.

b. South of this point, the ditch drains through a 4' x 2' box culvert under the railroad right of way. This box should be supplemented with an additional 54" concrete pipe.

c. A new ditch from this culvert to the North line of the Moncelli property is necessary. This ditch should have a bottom six (6) feet wide and a top 23 feet wide. This ditch would flow about 3.0 feet deep during high flows. A 25 foot drainage easement is necessary.

The improvements as listed above for both areas will be capable of handling the ultimate development of these, except through the Wehrman property area. The design and recommendations on these improvements are based on the face that in most cases the ditch bottom will be on the existing rock. In order to do this, certain areas of rock will have to be removed. The removal of this rock will also aide in preventing the water from reaching

the pockets of overburden. The relocation of the stream and rock excavation in the Miller and Monacelli properties should alleviate some of Mr. Monacelli's problems. By placing the ditch farther from his house, and into the rock, it will be possible to intercept some of the water before it reaches the overburden pocket around Mr. Monacelli's house.

These corrections to the existing conditions should relieve the flooding conditions by controlling the drainage channels. Should these improvements be made, it will be necessary in the future to maintain these new ditches. Allowing them to become overgrown and clogged will destroy their usefullness to the Village.

Future Improvements

Box Culvert under State Highway "74"

a. At the present time, there exists a 6' x 3.5' box culvert under the road. This culvert is barely capable of handling the present runoff during the high flow periods. The depth of this box culvert does not permit the water upstream to build up a sufficient head without flooding the adjacent properties. In the near future this culvert must be replaced. Although a single 4' x 8' concrete box culvert would be adequate for several years, the ultimate development of the area requires a double 4' x 8' box be constructed. Improvement by deepening of the channel downstream through the Village of Menomonee Falls will allow the new culverts to be placed at a lower elevation. This would decrease the height of the flooding in the Village of Lannon. When the new culverts are constructed, it will be necessary to widen and deepen the channel through the Wehrman property.

H.C. WEBSTER & SON

