02-683-02

MINNESOTA DEPARTMENT OF TRANSPORTATION
CITY OF RAMSEY
ANOKA COUNTY

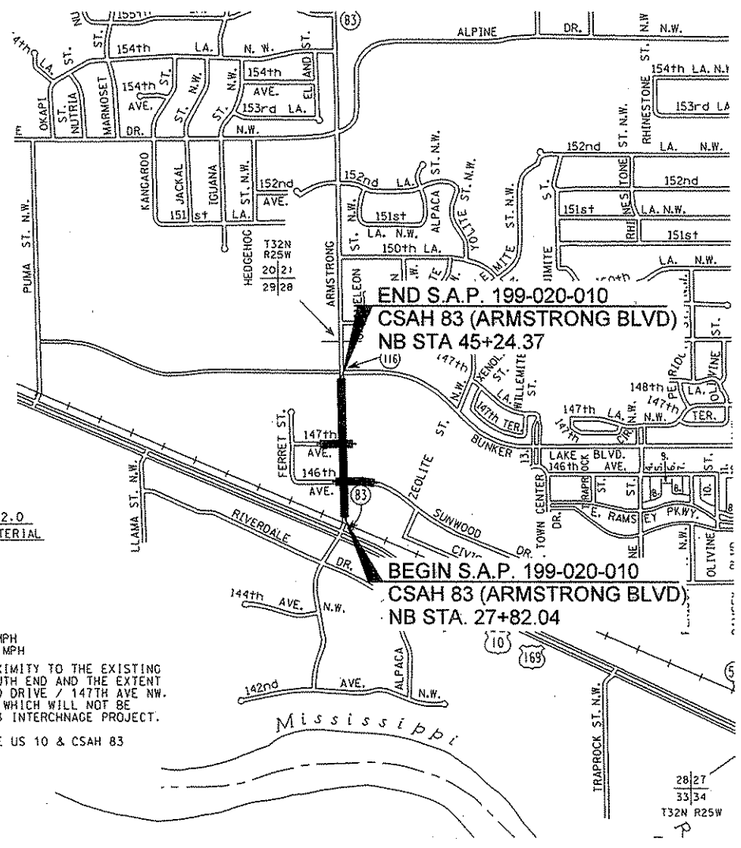
CONSTRUCTION PLAN FOR GRADING, BITUMINOUS SURFACING, STORM SEWER, CONCRETE CURB AND GUTTER, BITUMINOUS TRAIL, SIGNING AND TRAFFIC CONTROL SIGNAL

LOCATED ON CSAH 83 (ARMSTRONG BLVD) FROM 100 FT NORTH OF US 10 TO CSAH 116 (BUNKER LAKE BLVD)

Geographical legal description: That part of Anoka County Highway Right of Way Plat No 33 (CSAH 83) in the North Half of Section 29, Township 32, Range 25, which lies between the Northerly Right of Way line of the Burlington Northern Railroad and Bunker Lake Boulevard.

CSAH 83 (ARMSTRONG BLVD)
S.A.P. 199-020-010

GROSS LENGTH	1742.33 ft	0.330 miles
BRIDGES-LENGTH	0.00 ft	0.000 miles
EXCEPTIONS-LENGTH	0.00 ft	0.000 miles
NET LENGTH	1742.33 ft	0.330 miles



DESIGN DESIGNATION
CSAH 83 (ARMSTRONG BLVD)
S.A.P. 199-020-010

R VALUE	= 50
ADT (Current Year) 2012	= 12,520
ADT (Future Year) 2032	= 25,550
D (DIRECTIONAL DISTR.)	= 50/50
T (Heavy Commercial)	= 3.9%
ESALS 1,633,000	
DESIGN SPEED 55 MPH	
BASED ON STOPPING SIGHT DISTANCE	
HEIGHT OF EYE 3.5 HEIGHT OF OBJECT 2.0	
FUNCTIONAL CLASSIFICATION "A" MINOR ARTERIAL	
NO. OF TRAFFIC LANES 4	
NO. OF PARKING LANES 0	
SHOULDER WIDTH 8'	
TON DESIGN 10	

DESIGN SPEED NOT ACHIEVED AT:
NB STA. 29+75.00 TO STA. 35+53.73 40 MPH
SB STA. 127+81.52 TO STA 135+53.73 40 MPH

HORIZONTAL LIMITATIONS DUE TO THE PROXIMITY TO THE EXISTING RAILROAD CROSSING AND US 10 AT THE SOUTH END AND THE EXTENT OF PERMANENT CONSTRUCTION NEAR SUNWOOD DRIVE / 147TH AVE NW. PERMANENT CONSTRUCTION REFERS TO THAT WHICH WILL NOT BE RECONSTRUCTED WITH THE US 10 & CSAH 83 INTERCHNAGE PROJECT.

VERTICAL LIMITATIONS DUE TO THE FUTURE US 10 & CSAH 83 INTERCHANGE PROFILES FOR CSAH 83.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02. ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

PLAN SYMBOLS

STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT-OF-WAY LINE
SLOPE EASEMENT — SE
PRESENT RIGHT-OF-WAY
CONTROL OF ACCESS LINE
PROPERTY LINES (EXCEPT LAND LINES)
VACATED PLATTED PROPERTY
CORPORATE OR CITY LIMITS
TRUNK HIGHWAY CENTER LINE — T H 7
RETAINING WALL
RAILROAD
RAILROAD RIGHT-OF-WAY
RIVER OR CREEK — NAME
DRY RUN
DRAINAGE DITCH — SIZE
DRAIN TILE
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE — W
CHAIN LINK FENCE — CL
RAILROAD SNOW FENCE
STONE WALL OR FENCE
HEDGE
RAILROAD CROSSING SIGN — RR
RAILROAD CROSSING BELL
ELECTRIC WARNING SIGN
CROSSING GATE
MEANDER CORNER
SPRINGS
MARSH
TIMBER
ORCHARD — TIMBER
BRUSH
NURSERY
CATCH BASIN — CB
FIRE HYDRANT
CATTLE GUARD — ROAD
OVERPASS (HIGHWAY OVER)
UNDERPASS (HIGHWAY UNDER) — RR
BRIDGE — BR
BUILDING (ONE STORY FRAME) — 1-S-F 35 / 75
F - FRAME C - CONCRETE
S - STONE T - TILE
B - BRICK ST- STUCCO
IRON ROD OR PIPE
MONUMENT (STONE, CONCRETE, OR METAL) — MONU.
WOODEN HUB
GRAVEL PIT — G
SAND PIT — S
BORROW PIT — B
ROCK QUARRY — Q

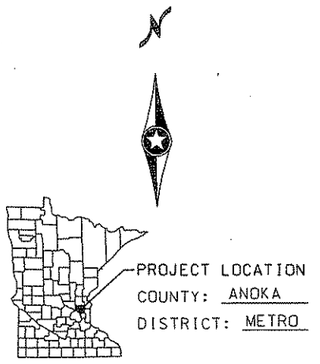
UTILITY SYMBOLS

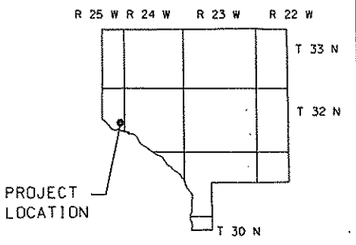
POWER POLE LINE
TELEPHONE OR TELEGRAPH POLE LINE
JOINT TELEPHONE AND POWER
ON POWER POLE
ON TELEPHONE POLES
ANCHOR
STREET LIGHT
PEDESTAL (TELEPHONE CABLE TERMINAL) — PED.
GAS MAIN — G
WATER MAIN
CONDUIT
TELEPHONE CABLE IN CONDUIT — T
ELECTRIC CABLE IN CONDUIT — P
TELEPHONE MANHOLE — T
ELECTRIC MANHOLE — P
BURIED TELEPHONE CABLE — T-BUR
BURIED ELECTRIC CABLE — P-BUR
AERIAL TELEPHONE CABLE — T-AE
FIBER OPTICS — FO
SEWER (SANITARY OR STORM)
SEWER MANHOLE

SCALES

INDEX MAP 0 1000 2000
PLAN 0 50 100
PROFILE HORIZ. 0 50 100
VERT. 0 5 10
CROSS SECTION 0 10 20
GENERAL LAYOUT 0 150 FT 300 FT

Date Printed: 6/12/20..
WSB Filename: K:\09173-010\Cad\Plan\CD020295_1sh.dgn





PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

GOVERNING SPECIFICATIONS

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION SHALL GOVERN."

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MN MUTCD INCLUDING THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

INDEX

ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITHIN THE CONSTRUCTION OF THIS PROJECT.

WSB & Associates, Inc.
701 Xenia Avenue South, Suite 300 | Minneapolis, MN 55416 | 763-541-4800 - Fax 763-541-1700 | www.wsbeng.com
INFRASTRUCTURE | ENGINEERING | PLANNING | CONSTRUCTION

SIGNATURE: _____ TYPED OR PRINTED NAME: NICHOLAS E. HENTGES, PE

DESIGN ENGINEER: I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE: 04/03/12 LICENSE NUMBER 44620

APPROVED _____ CITY OF RAMSEY ENGINEER DATE 6/13/12

APPROVED _____ ANOKA COUNTY ENGINEER DATE 6/15/12

For _____ DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY DATE 6/18/12

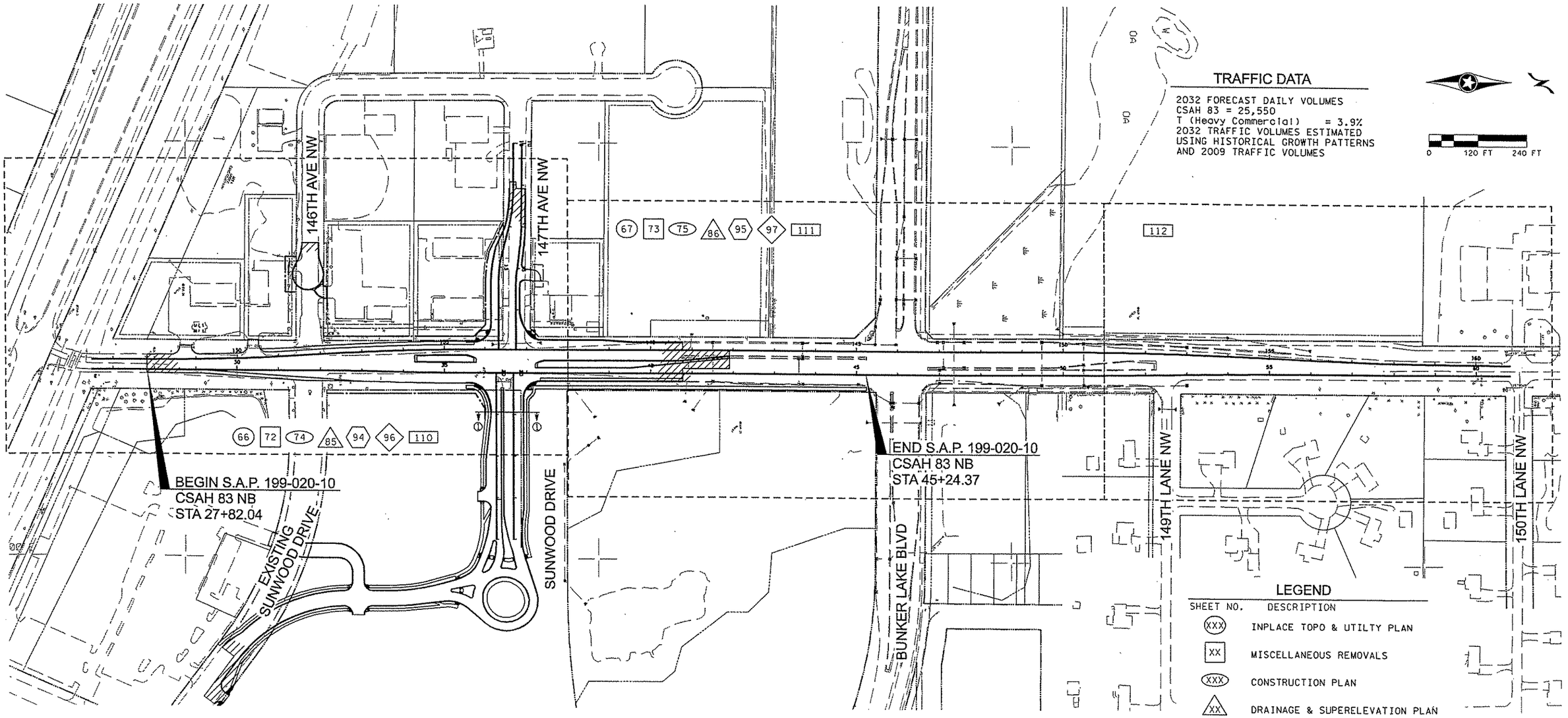
For _____ APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER DATE 6/18/12

I HEREBY CERTIFY THAT THE FINAL FIELD REVISIONS, IF ANY, OF THE PLAN WERE MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE _____ REG. NO. _____

S.A.P. 199-020-010
C.P. 12-20

Armstrong Blvd (CSAH 83)



TRAFFIC DATA

2032 FORECAST DAILY VOLUMES
CSAH 83 = 25,550
T (Heavy Commercial) = 3.9%
2032 TRAFFIC VOLUMES ESTIMATED
USING HISTORICAL GROWTH PATTERNS
AND 2009 TRAFFIC VOLUMES

0 120 FT 240 FT

LEGEND

SHEET NO.	DESCRIPTION
XXX	INPLACE TOPO & UTILTY PLAN
XX	MISCELLANEOUS REMOVALS
XXX	CONSTRUCTION PLAN
XX	DRAINAGE & SUPERELEVATION PLAN
XXX	EROSION CONTROL PLAN
XX	TURF ESTABLISHMENT PLAN
XX	SIGNING AND PAVEMENT MARKING PLAN
	NEW CONSTRUCTION UNDER THIS CONTRACT
	INPLACE PAVEMENT
Ⓓ	20+94.40 = 4+40.22 SEE SHEETS 1A - 7B FOR SAP 199-104-010 CONSTRUCTION DETAILS

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

CERTIFIED BY: LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE
DATE: 04/03/12 LIC. NO: 44620

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City of RAMSEY

Armstrong Blvd at Sunwood Drive
City of Ramsey, Minnesota

CITY OF RAMSEY, MINNESOTA

GENERAL LAYOUT
S.A.P. 199-020-010 / C.P. 12-20

SHEET 2 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: k:\01973-010\cad\plan\C0020295_gl01.dgn

ESTIMATED QUANTITIES

TAB	SHEETS	ITEM NUMBER	Description	Notes	Unit	PROJECT TOTAL ESTIMATED QUANTITY	S.A.P. 199-020-010 CSAH 83 (ARMSTRONG BLVD) ESTIMATED QUANTITY	S.A.P. 199-020-010 CSAH 83 STORM SEWER ESTIMATED QUANTITY	100% CITY NON-PARTICIPATING ESTIMATED QUANTITY
		2021.501	MOBILIZATION		LUMP SUM	1.00	0.58	0.07	0.35
		2031.501	FIELD OFFICE TYPE D		LUMP SUM	1.00	0.58	0.07	0.35
C, GB	8 , 52	2101.502	CLEARING		TREE	53	50		3
C, GB	8 , 52	2101.507	GRUBBING		TREE	53	50		3
G	21	2102.502	PAVEMENT MARKING REMOVAL		LIN FT	2250	2250		
C, GB	8 , 52	2102.602	PAVEMENT MARKING REMOVAL - SPECIAL	(10)	EACH	9	9		
C	8	2104.501	REMOVE CONCRETE CULVERT		LIN FT	298	298		
C	8	2104.501	REMOVE METAL CULVERT		LIN FT	115	115		
C	8	2104.501	REMOVE SEWER PIPE (STORM)		LIN FT	119	4		115
C	8	2104.501	REMOVE CURB AND GUTTER		LIN FT	1139	239		900
C	8	2104.501	REMOVE CHAIN LINK FENCE		LIN FT	395	275		120
C	8	2104.503	REMOVE CONCRETE WALK		SQ FT	140			140
C, GB	8 , 52	2104.505	REMOVE BITUMINOUS PAVEMENT	(1)	SQ YD	16430	10001		6429
	72	2104.509	REMOVE VEHICULAR GATE		EACH	1			1
C	8	2104.509	REMOVE CONCRETE APRON		EACH	6	6		
C	8	2104.509	REMOVE METAL APRON		EACH	6	6		
C	8	2104.509	REMOVE DRAINAGE STRUCTURE		EACH	2	2		
	72 - 73	2104.509	REMOVE SIGN TYPE C		EACH	16	12		4
N	109	2104.509	REMOVE SIGN TYPE SPECIAL		EACH	3			3
C	8	2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)		LIN FT	20	4		16
C, G, GB	8 , 21 , 52	2104.513	SAWING BIT PAVEMENT (FULL DEPTH)	(1)	LIN FT	2224	1874		350
C, H	8 , 68	2104.523	SALVAGE CASTING		EACH	5	2		3
C	8	2104.523	SALVAGE CATCH BASIN		EACH	2	2		
HH	68	2104.523	SALVAGE GATE VALVE & BOX		EACH	1			1
HH	68	2104.523	SALVAGE HYDRANT		EACH	1			1
	72	2104.523	SALVAGE SIGN TYPE SPECIAL	(13)	EACH	1	1		
	72	2104.523	SALVAGE VEHICULAR GATE		EACH	1			1
E, GF	9 , 53	2105.501	COMMON EXCAVATION (P)	(7)	CU YD	11119	10042		1077
E	9	2105.507	SUBGRADE EXCAVATION (P)		CU YD	2207	1486		721
E	9	2105.522	SELECT GRANULAR BORROW (CV) (P)	(14)	CU YD	5861	4515		1346
E	9	2105.523	COMMON BORROW (CV) (P)	(14)	CU YD	9937	8974		963
E, GF	9 , 53	2105.525	TOPSOIL BORROW (LV) (P)		CU YD	3555	3117		438
		2105.601	DEWATERING		LUMP SUM	1			1
		2123.610	STREET SWEEPER (WITH PICKUP BROOM)	(3)	HOUR	95	95		
		2130.501	WATER	(2)	M GALLONS	100	100		

* SEE SHEETS 2A - 3A FOR SAP 199-104-010 ESTIMATED QUANTITIES

BASIS FOR QUANTITIES

UNIT WEIGHT OF BITUMINOUS MIX.....113 LBS/SY/IN

STREET SWEEPER.....5 HOURS/WEEK

TURF ESTABLISHMENT
- SEED MIXTURE 240.....75 LBS/ACRE
- SEED MIXTURE 260.....100 LBS/ACRE
- FERTILIZER TYPE 3 .....400 LBS/ACRE
- MULCH MATERIAL TYPE 1.....2 TONS/ACRE

TABULATION INDEX

NOTES:
(1) SEE TYPICAL SECTIONS FOR APPROXIMATE BITUMINOUS THICKNESSES.
(2) TO BE USED AS DUST CONTROL AS DIRECTED BY THE ENGINEER (SEE SWPPP).
(3) CONTRACTOR MUST HAVE A STREET SWEEPER ON SITE OR AVAILABLE WITHIN 3 HOURS OF REQUEST. TRACKED SEDIMENT MUST BE REMOVED FROM ALL OFF-SITE SURFACES PROMPTLY UPON DISCOVERY, OR AS DIRECTED BY THE CITY ENGINEER. SEE SWPPP NOTES FOR FURTHER INFORMATION.
(4) SIGN PANELS PAID BY SQ. FT. INCLUDES FURNISHING AND INSTALLING OF THE SIGNS AND POSTS.
(5) ENGINEER TO VERIFY FINAL LOCATIONS PRIOR TO PLACEMENT.
(6) ALL BROKEN OR DOTTED LINES ARE PAID BY THE ACTUAL LENGTH OF LINE MARKED AND DO NOT INCLUDE THE LENGTH OF THE GAPS.
(7) INCLUDES 6,182 CU YD OF TOPSOIL EXCAVATION.
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(9) TO BE USED FOR TEMPROARY STABILIZATION OF DISTURBED AREAS AND STOCKPILES AS DIRECTED BY THE ENGINEER.
(10) APPLIES TO PAVEMENT MESSAGE REMOVAL
(11) HIGH EARLY CONCRETE
(12) 2' X 3' BOX.
(13) 8019 146TH AVE NW BUSINESS SIGN AND VEHICULAR GATE.
(14) TO BE IMPORTED FROM THE LAKE RAMSEY BORROW AREA, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
(15) FOR 21" RC PIPE.
(16) FOR USE ALONG THE CSAH 83 WEST R/W AT THE 801 146TH AVE NW PROPERTY.
(17) 8019 146TH AVE NW PROPERTY. REMOVAL OF EXISTING SYSTEM IS INCIDENTAL.
(18) 30 MPH
(19) 55 MPH
(P) DENOTES PLAN QUANTITY

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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CITY OF RAMSEY, MINNESOTA

ESTIMATED QUANTITIES
S.A.P. 199-020-010 / C.P. 12-20

SHEET 3 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: k:\10873-00\cad\plan\CD020295_est.dgn

ESTIMATED QUANTITIES

TAB	SHEETS	ITEM NUMBER	Description	Notes	Unit	PROJECT TOTAL ESTIMATED QUANTITY	S.A.P. 199-020-010 CSAH 83 (ARMSTRONG BLVD) ESTIMATED QUANTITY	S.A.P. 199-020-010 CSAH 83 STORM SEWER ESTIMATED QUANTITY	100% CITY NON-PARTICIPATING ESTIMATED QUANTITY
A, GA	7 , 52	2211.503	AGGREGATE BASE (CV) CLASS 5 MODIFIED		CU YD	5447	4864		583
A, GA	7 , 52	2221.503	AGGREGATE SHOULDERING (CV) CL 5 MODIFIED		CU YD	234	234		
A, GA	7 , 52	2360.501	TYPE SP 12.5 WEARING COURSE MIX (4, C)		TON	3887	3131		756
A	7	2360.502	TYPE SP 12.5 NON WEAR COURSE MIX (4, B)		TON	1420	1420		
	81 - 84	2411.618	MODULAR BLOCK RETAINING WALL		SQ FT	455	455		
GE	52	2501.511	15" CS PIPE CULVERT		LIN FT	388	388		
M	91	2501.511	15" RC PIPE CULVERT CLASS V		LIN FT	80	80		
K		2501.515	15" RC PIPE APRON		EACH	1		1	
K		2501.515	18" RC PIPE APRON		EACH	1		1	
K		2501.515	27" RC PIPE APRON		EACH	1		1	
M	91	2501.569	15" RC SAFETY APRON		EACH	4	4		
K	90	2501.602	TRASH GUARD FOR 27" PIPE APRON		EACH	1		1	
K	90	2503.541	15" RC PIPE SEWER DESIGN 3006 CL V		LIN FT	810		578	232
K	90	2503.541	18" RC PIPE SEWER DESIGN 3006 CL III		LIN FT	358		358	
K	90	2503.541	24" RC PIPE SEWER DESIGN 3006 CL III		LIN FT	386		386	
K	90	2503.541	27" RC PIPE SEWER DESIGN 3006 CL III		LIN FT	166		166	
H	68	2503.602	DISCONNECT SANITARY SEWER SERVICE		EACH	1			1
H	68	2503.602	RECONNECT TO EXISTING SANITARY SEWER SERVICE		EACH	1			1
	72	2503.602	CONSTRUCT BULKHEAD	(15)	EACH	1		1	
H	68	2503.602	CONNECT TO EXISTING SANITARY SEWER		EACH	2			2
J	90	2503.602	CONNECT TO EXISTING STORM SEWER		EACH	2		2	
H	68	2503.602	6" PIPE PLUG		EACH	1			1
H	68	2503.603	6" PVC PIPE SEWER		LIN FT	99			99
HH	68	2504.602	CONNECT TO EXISTING WATERMAIN		EACH	1			1
HH	68	2504.602	HYDRANT		EACH	1			1
HH	68	2504.602	INSTALL HYDRANT		EACH	1			1
	69	2504.602	ADJUST HYDRANT AND GATE VALVE		EACH	1			1
HH	68	2504.602	INSTALL GATE VALVE AND BOX		EACH	1			1
	69	2504.602	ADJUST GATE VALVE & BOX		EACH	1			1
HH	68	2504.602	6" GATE VALVE AND BOX		EACH	5			5
HH	68	2504.602	12" GATE VALVE AND BOX		EACH	2			2
		2504.602	SPRINKLER HEAD	(17)	EACH	30	30		
		2504.603	SPRINKLER SYSTEM PVC	(17)	LIN FT	580	580		
HH	68	2504.603	6" WATERMAIN DUCTILE IRON CL 53		LIN FT	252			252
HH	68	2504.603	12" WATERMAIN DUCTILE IRON CL 52		LIN FT	629			629
HH	68	2504.604	6" POLYSTYRENE INSULATION		SQ YD	24			24
HH	68	2504.608	DUCTILE IRON FITTINGS		POUND	3250			3250

* SEE SHEETS 2A - 3A FOR SAP 199-104-010 ESTIMATED QUANTITIES

BASIS FOR QUANTITIES

UNIT WEIGHT OF BITUMINOUS MIX.....113 LBS/SY/IN

STREET SWEEPER.....5 HOURS/WEEK

TURF ESTABLISHMENT
- SEED MIXTURE 240.....75 LBS/ACRE
- SEED MIXTURE 260.....100 LBS/ACRE
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NO.	DATE	BY	CHK	REVISIONS

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ESTIMATED QUANTITIES
S.A.P. 199-020-010 / C.P. 12-20

SHEET 4 OF 153 SHEETS

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H, J	68 , 90	2506.501	CONST DRAINAGE STRUCTURE DESIGN F		LIN FT	47.9		35.5	12.4
J	90	2506.501	CONST DRAINAGE STRUCTURE DESIGN G		LIN FT	11.7		11.7	
J	90	2506.501	CONST DRAINAGE STRUCTURE DESIGN H		LIN FT	3.8		3.8	
J	90	2506.501	CONST DRAINAGE STRUCTURE DES 48-4020		LIN FT	50.6		41.7	8.9
J	90	2506.501	CONST DRAINAGE STRUCTURE DES 60-4020		LIN FT	34.9		34.9	
J	90	2506.502	CONST DRAINAGE STRUCTURE DES SPECIAL	(12)	EACH	3		2	1
H, L	68 , 90	2506.516	CASTING ASSEMBLY		EACH	20		17	3
H	68 , 86	2506.521	INSTALL CASTING		EACH	5		2	3
H	68	2506.522	ADJUST FRAME & RING CASTING		EACH	1			1
H	68	2506.602	RECONSTRUCT MANHOLES		EACH	3			3
	86	2506.602	INSTALL CATCH BASIN		EACH	2		2	
K, M, GE	90 , 91 , 52	2511.501	RANDOM RIPRAP CLASS II		CU YD	24	18	6	
B	7	2521.501	4" CONCRETE WALK		SQ FT	10129	10129		
A	7	2521.511	2" BITUMINOUS WALK		SQ FT	6738	6738		
B	7	2531.501	CONCRETE CURB & GUTTER DESIGN B418		LIN FT	1348	1348		
B	7	2531.501	CONCRETE CURB & GUTTER DESIGN B424		LIN FT	1126	1071		55
B	7	2531.501	CONCRETE CURB & GUTTER DESIGN B612		LIN FT	392			392
B	7	2531.501	CONCRETE CURB & GUTTER DESIGN B618		LIN FT	779	123		656
B	7	2531.507	6" CONCRETE DRIVEWAY PAVEMENT	(11)	SQ YD	6			6
B	7	2531.602	CONC ENTRANCE NOSE DESIGN 7113		EACH	4	4		
B	7	2531.604	6" CONCRETE VALLEY GUTTER	(11)	SQ YD	12			12
B	7	2531.618	TRUNCATED DOMES		SQ FT	124	124		
G	21	2533.507	PORTABLE PRECAST CONC BARRIER DES 8337		LIN FT	300	300		
G	21	2533.508	RELOCATE PORT PRECAST CONC BAR DES 8337		LIN FT	380	380		
K, M, GE	90 , 91 , 52	2554.509	GUIDE POST TYPE B		EACH	12	8	4	
G	21	2554.615	IMPACT ATTENUATOR NO 1	(18)	ASSEMBLY	2	2		
G	21	2554.615	IMPACT ATTENUATOR NO 2	(19)	ASSEMBLY	1	1		
G	21	2554.615	RELOCATE IMPACT ATTENUATOR NO 2	(19)	ASSEMBLY	1	1		
	74	2557.501	WIRE FENCE DESIGN 60-9322		LIN FT	150			150
		2557.522	METAL BRACE ASSEMBLY		EACH	6			6
		2557.527	ELECTRICAL GROUND		EACH	2			2
	74	2557.602	INSTALL VEHICULAR GATE		EACH	1			1
		2563.601	TRAFFIC CONTROL		LUMP SUM	1.00	0.58	0.07	0.35
O	109	2564.531	SIGN PANELS TYPE C	(4)(5)	SQ FT	178.0	160.4		17.6
	74	2564.537	INSTALL SIGN TYPE SPECIAL	(5)(13)	EACH	1	1		
P	109	2564.552	HAZARD MARKER X4-2	(5)	EACH	4	4		
P	109	2564.553	CLEARANCE MARKER X4-4	(5)	EACH	3	3		

* SEE SHEETS 2A - 3A FOR SAP 199-104-010 ESTIMATED QUANTITIES

BASIS FOR QUANTITIES

UNIT WEIGHT OF BITUMINOUS MIX.....113 LBS/SY/IN

STREET SWEEPER.....5 HOURS/WEEK

TURF ESTABLISHMENT
- SEED MIXTURE 240.....75 LBS/ACRE
- SEED MIXTURE 260.....100 LBS/ACRE
- FERTILIZER TYPE 3.....400 LBS/ACRE
- MULCH MATERIAL TYPE 1.....2 TONS/ACRE

TABULATION INDEX

NOTES:
(1) SEE TYPICAL SECTIONS FOR APPROXIMATE BITUMINOUS THICKNESSES.
(2) TO BE USED AS DUST CONTROL AS DIRECTED BY THE ENGINEER (SEE SWPPP).
(3) CONTRACTOR MUST HAVE A STREET SWEEPER ON SITE OR AVAILABLE WITHIN 3 HOURS OF REQUEST. TRACKED SEDIMENT MUST BE REMOVED FROM ALL OFF-SITE SURFACES PROMPTLY UPON DISCOVERY, OR AS DIRECTED BY THE CITY ENGINEER. SEE SWPPP NOTES FOR FURTHER INFORMATION.
(4) SIGN PANELS PAID BY SQ. FT. INCLUDES FURNISHING AND INSTALLING OF THE SIGNS AND POSTS.
(5) ENGINEER TO VERIFY FINAL LOCATIONS PRIOR TO PLACEMENT.
(6) ALL BROKEN OR DOTTED LINES ARE PAID BY THE ACTUAL LENGTH OF LINE MARKED AND DO NOT INCLUDE THE LENGTH OF THE GAPS.
(7) INCLUDES 6,182 CU YD OF TOPSOIL EXCAVATION.
(8) FERTILIZER ANALYSIS 22-5-10
(9) TO BE USED FOR TEMPROARY STABILIZATION OF DISTURBED AREAS AND STOCKPILES AS DIRECTED BY THE ENGINEER.
(10) APPLIES TO PAVEMENT MESSAGE REMOVAL
(11) HIGH EARLY CONCRETE
(12) 2' X 3' BOX.
(13) 8019 146TH AVE NW BUSINESS SIGN AND VEHICULAR GATE.
(14) TO BE IMPORTED FROM THE LAKE RAMSEY BORROW AREA, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
(15) FOR 21" RC PIPE.
(16) FOR USE ALONG THE CSAH 83 WEST R/W AT THE 801 146TH AVE NW PROPERTY.
(17) 8019 146TH AVE NW PROPERTY. REMOVAL OF EXISTING SYSTEM IS INCIDENTAL.
(18) 30 MPH
(19) 55 MPH
(P) DENOTES PLAN QUANTITY

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE
DATE: 04/03/12 LIC. NO: 44620

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City of RAMSEY
Armstrong Blvd at Sunwood Drive
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CITY OF RAMSEY, MINNESOTA
ESTIMATED QUANTITIES
S.A.P. 199-020-010 / C.P. 12-20

Date Printed: 6/12/2012
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ESTIMATED QUANTITIES

TAB	SHEETS	ITEM NUMBER	Description	Notes	Unit	PROJECT TOTAL ESTIMATED QUANTITY	S.A.P. 199-020-010 CSAH 83 (ARMSTRONG BLVD) ESTIMATED QUANTITY	S.A.P. 199-020-010 CSAH 83 STORM SEWER ESTIMATED QUANTITY	100% CITY NON-PARTICIPATING ESTIMATED QUANTITY
R	120	2565.511	TRAFFIC CONTROL SIGNAL SYSTEM		SIG SYS	1			1
R	120	2565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM		LUMP SUM	1			1
		2571.502	DECIDUOUS TREE 10' HT B&B	(16)	TREE	10			10
D, GC	8 , 52	2573.502	SILT FENCE, TYPE MACHINE SLICED		LIN FT	8566	6930		1636
D	8	2573.505	FLOTATION SILT CURTAIN TYPE STILL WATER		LIN FT	266	266		
D	8	2573.530	STORM DRAIN INLET PROTECTION		EACH	32	26		6
D, GC	8 , 52	2573.540	FILTER LOG TYPE WOOD FIBER BIOROLL		LIN FT	835	835		
		2573.602	TEMPORARY ROCK CONSTRUCTION ENTRANCE		EACH	8	8		
D, GC	8 , 52	2573.602	CULVERT PROTECTION		EACH	8	7		1
D, GC	8 , 52	2575.501	SEEDING		ACRE	5.5	4.8		0.7
D, GC	8 , 52	2575.502	SEED MIXTURE 240		POUND	369	324		45
D	8	2575.502	SEED MIXTURE 260		POUND	41	41		
D, GC	8 , 52	2575.511	MULCH MATERIAL TYPE 1		TON	6.5	5.4		1.1
D, GC	8 , 52	2575.519	DISK ANCHORING		ACRE	6	4		2
D	8	2575.523	EROSION CONTROL BLANKETS CATEGORY 3		SQ YD	8400	7989		411
D, GC	8 , 52	2575.532	FERTILIZER TYPE 3	(8)	POUND	2114	1876		238
D	8	2575.570	RAPID STABILIZATION METHOD 2		ACRE	0.5	0.5		
D	8	2575.571	RAPID STABILIZATION METHOD 3	(9)	M GALLONS	4.9	2.7		2.2
G	21	2581.501	REMOVABLE PREFORMED PLASTIC MARKING		LIN FT	3200	3200		
GD	52	2582.501	PAVT MSSG (RT ARROW) PAINT		EACH	2	2		
G	21	2582.501	PAVT MSSG (RR XING) PAINT		EACH	1	1		
Q	109	2582.501	PAVT MSSG (LT ARROW) PREFORMED THERMOPLASTIC		EACH	14	13		1
Q	109	2582.501	PAVT MSSG (RT ARROW) PREFORMED THERMOPLASTIC		EACH	8	7		1
Q	109	2582.501	PAVT MSSG (LT-THRU ARROW) PREFORMED THERMOPLASTIC		EACH	1	1		
Q	109	2582.501	PAVT MSSG (RT-THRU ARROW) PREFORMED THERMOPLASTIC		EACH	3	3		
Q	109	2582.501	PAVT MSSG (RR XING) PREFORMED THERMOPLASTIC		EACH	2	2		
G, GD	21 , 52	2582.502	4" SOLID LINE WHITE - PAINT		LIN FT	4804	4804		
G	21	2582.502	4" SOLID LINE YELLOW - PAINT		LIN FT	500	500		
G, GD	21 , 52	2582.502	4" DOUBLE SOLID LINE YELLOW - PAINT		LIN FT	2923	2923		
Q	109	2582.502	24" STOP LINE WHITE - PREFORMED THERMOPLASTIC		LIN FT	321	276		45
Q	109	2582.502	24" SOLID LINE YELLOW - PREFORMED THERMOPLASTIC		LIN FT	542	358		184
Q, GD	109 , 52	2582.502	4" SOLID LINE WHITE - EPOXY		LIN FT	9886	8720		1166
Q	109	2582.502	4" BROKEN LINE WHITE - EPOXY	(6)	LIN FT	563	563		
Q	109	2582.502	8" DOTTED LINE WHITE - EPOXY	(6)	LIN FT	100	100		
Q	109	2582.502	4" SOLID LINE YELLOW - EPOXY		LIN FT	2283	2283		
Q	109	2582.502	4" DOUBLE SOLID LINE YELLOW - EPOXY		LIN FT	3140	2321		819
Q	109	2582.503	CROSSWALK MARKING - PREFORMED THERMOPLASTIC		SQ FT	612	612		

* SEE SHEETS 2A - 3A FOR SAP 199-104-010 ESTIMATED QUANTITIES

BASIS FOR QUANTITIES

UNIT WEIGHT OF BITUMINOUS MIX.....113 LBS/SY/IN

TACK COAT
- BETWEEN NEW LAYERS.....0.05 GAL/SY

TURF ESTABLISHMENT
- SEED MIXTURE 240.....75 LBS/ACRE
- SEED MIXTURE 260.....100 LBS/ACRE
- FERTILIZER TYPE 3 .....400 LBS/ACRE
- MULCH MATERIAL TYPE 1.....2 TONS/ACRE

TABULATION INDEX

NOTES:

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(17) 8019 146TH AVE NW PROPERTY. REMOVAL OF EXISTING SYSTEM IS INCIDENTAL.
(18) 30 MPH
(19) 55 MPH
(P) DENOTES PLAN QUANTITY

NO.	DATE	BY	CHK	REVISIONS

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SHEET 6 OF 153 SHEETS

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BITUMINOUS & AGGREGATE — A

STATION TO STATION			2360 TYPE SP 12.5 WEARING COURSE MIXTURE (4,C) (SPWEB440C) (1)	2360 TYPE SP 12.5 NON WEARING COURSE MIXTURE (4,B) (SPNWB430B) (1)	AGGREGATE BASE (CV) CLASS 5 MODIFIED	AGGREGATE BASE (CV) CLASS 5 MOD. (4" CONCRETE WALK)	AGGREGATE BASE (CV) CLASS 5 MOD. (2.0" BITUMINOUS WALK)	AGGREGATE SHOULDERING (CV) CLASS 5 MODIFIED	2" BITUMINOUS WALK
			TON	TON	CU YD	CU YD	CU YD	CU YD	SQ FT
S.A.P. 199-020-010									
CSAH 83 (ARMSTRONG BLVD)									
27+82.04	TO	38+00	1954	1079	2896	54	9	56	654
38+00	TO	45+24.37	555	341	866	54	76		6084
146TH AVE NW			183		141		7		
147TH AVE NW			573		429		6		
PROJECT TOTALS			3265	1420	4332	108	98	56	6738

NOTES:
(1) TACK COAT IS INCIDENTAL.
(2) SEE SHEET 74 FOR LOCATION OF PAVEMENT SECTION CHANGE BETWEEN CSAH 83 AND 147TH AVE NW.

CONCRETE — B

STATION TO STATION			CURB & GUTTER					CONCRETE WALK		6" CONCRETE DRIVEWAY PAVEMENT (1)	MEDIAN NOSE DESIGN 7113	TRUNCATED DOMES
			CURB AND GUTTER DESIGN B424	CURB AND GUTTER DESIGN B418	CURB AND GUTTER DESIGN B618	CURB AND GUTTER DESIGN B612	6" CONCRETE VALLEY GUTTER (1)	4" CONCRETE WALK	4" CONCRETE MEDIAN			
			LIN FT	LIN FT	LIN FT	LIN FT	SQ YD	SQ FT	SQ FT	SQ YD	EACH	SQ FT
S.A.P. 199-020-010												
CSAH 83 (ARMSTRONG BLVD)												
27+82.04	TO	38+00	487	525	123			1989	3842		4	124
38+00	TO	45+24.37	584	823					4298			
146TH AVE NW.						392	12			6		
147TH AVE NW			55		656							
PROJECT TOTALS			1126	1348	779	392	12	1989	8140	6	4	124

GENERAL NOTES:
- SEE BITUMINOUS & AGGREGATE TABULATION FOR AGGREGATE BASE QUANTITY LOCATED BELOW THE CONCRETE WALK AND BITUMINOUS TRAIL.

NOTES:
(1) HIGH EARLY CONCRETE

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SHEET 7 OF 153 SHEETS

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MISCELLANEOUS REMOVALS

C

STATION TO STATION			CLEARING	GRUBBING	REMOVE BITUMINOUS PAVEMENT (1)	REMOVE CURB AND GUTTER	REMOVE CHAIN LINK FENCE	REMOVE CONCRETE WALK	SAWING CONCRETE PAVEMENT (FULL DEPTH)	SAWING BITUMINOUS PAVEMENT (FULL DEPTH) (1)	PAVEMENT MARKING REMOVAL - SPECIAL	REMOVE SEWER PIPE (STORM)	REMOVE METAL CULVERT	REMOVE METAL APRON	REMOVE CONCRETE CULVERT	REMOVE CONCRETE APRON	REMOVE DRAINAGE STRUCTURE	SALVAGE CASTING	SALVAGE CATCH BASIN
			TREE	TREE	SQ YD	LIN FT	LIN FT	SQ FT	LIN FT	LIN FT	EACH	LIN FT	LIN FT	EACH	LIN FT	EACH	EACH	EACH	EACH
S.A.P. 199-020-010																			
CSAH 83 (ARMSTRONG BLVD)																			
27+82.04	TO	38+00	29	29	6655		275			100	3		115	6	190	4	2		
38+00	TO	51+00	1	1	2915	239			4	320	4	4			108	2		2	2
51+00	TO	53+79.96																	
146TH AVE NW			3	3	1396	390			12	105									
SUNWOOD DRIVE					2553	415		140	4	65		115							
147TH AVE NW					2480	95	120			180									
PROJECT TOTALS			33	33	15999	1139	395	140	20	770	7	119	115	6	298	6	2	2	2

NOTES:
(1) SEE SHEET 13 FOR INPLACE PAVEMENT THICKNESSES.

TURF ESTABLISHMENT & EROSION CONTROL

D

STATION TO STATION			SEEDING	SEED MIXTURE 240 (1)	SEED MIXTURE 260 (2)	DISK ANCHORING	MULCH MATERIAL TYPE 1 (4)	FERTILIZER TYPE 3 (3)	EROSION CONTROL BLANKET CAT 3	RAPID STABILIZATION METHOD 2 (5)	RAPID STABILIZATION METHOD 3 (6)	FILTER LOG TYPE WOOD FIBER BIOROLL	FLOTATION SILT CURTAIN TYPE STILL WATER	SILT FENCE MACHINE TYPE SLICED	STORM DRAIN INLET PROTECTION	CULVERT PROTECTION
			ACRE	POUND	POUND	ACRE	TON	POUNDS	SQ YD	ACRE	M GALLONS	LIN FT	LIN FT	LIN FT	EACH	EACH
S.A.P. 199-020-010																
CSAH 83 (ARMSTRONG BLVD)																
27+82.04	TO	38+00	2.0	142	11	1	0.6	797	7817	0.2	1.1	116		1572	7	3
38+00	TO	45+24.37	0.8	32	30	1	0.8	286	172	0.3	1.6	256	266	2007	19	2
146TH AVE NW			0.4	24		1	0.5	127	411		1.0			680		1
147TH AVE NW			0.3	21		1	0.6	111			1.2			956	6	
PROJECT TOTALS			3.5	219	41	4	2.5	1321	8400	0.5	4.9	372	266	5215	32	6

NOTES:
(1) APPLICATION RATE OF 75 LBS PER ACRES
(2) APPLICATION RATE OF 100 LBS PER ACRES
(3) APPLICATION RATE OF 400 LBS PER ACRE (22-5-10)
(4) APPLICATION RATE OF 2 TONS PER ACRE
(5) INCLUDES TYPE 1 MULCH @ 1.5 TONS / ACRE AND TYPE 5 HYDRAULIC SOIL STABILIZER @ 750 LBS / ACRE.
(6) TO BE USED FOR TEMPORARY STABILIZATION OF DISTURBED AREAS AND STOCKPILES AS DIRECTED BY THE ENGINEER.

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TABULATED QUANTITIES
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CSAH 83 IMPROVEMENTS (RAMSEY, MN)

E

Earthwork Summary

CSAH 83 at Sunwood Drive / 147th Avenue NW
EXCAVATION

COMMON EXCAVATION	S.A.P. 199-020-010	8018	CU YD (EV)
SUBGRADE EXCAVATION	S.A.P. 199-020-010	2207	CU YD (EV)

EMBANKMENT

SELECT GRADING	S.A.P. 199-020-010	18117	CU YD (CV)
SELECT GRANULAR EMBANKMENT	S.A.P. 199-020-010	5861	CU YD (CV)
TOPSOIL	S.A.P. 199-020-010	1649	CU YD (CV)

CSAH 83 at Sunwood Drive / 147th Avenue NW EARTHWORK ACCOUNTING

COMMON MATERIAL BALANCE

AVAILABLE FROM EXCAVATION

SUBGRADE EXC. + COMMON EXC.
(2207 + 8018) CU YD (EV) /1.25 = 8180 CU YD (CV)

(8180 - 18117) = 9937 CU YD (CV) BORROW

SELECT GRANULAR BALANCE	(5861)	CU YD (CV)		=	5861	CU YD (CV)	BORROW
TOPSOIL BALANCE	(1649)	CU YD (CV)	*1.4	=	2309	CU YD (LV)	BORROW

GENERAL NOTES:

1. 125% SHRINKAGE FACTOR USED FROM EXCAVATED VOLUME (EV) TO COMPACTED VOLUME (CV) FOR COMMON EXCAVATION. 130% EXPANSION FACTOR USED FROM COMPACTED VOLUME (CV) TO LOOSE VOLUME (LV) FOR SELECT GRANULAR AND SELECT GRADING
2. ANY MATERIAL NOT UTILIZED ON THIS PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR, THE DISPOSAL OF WHICH SHALL BE HIS RESPONSIBILITY WITH NO ADDITIONAL COMPENSATION PAID OTHER THAN THE PRICE BID FOR COMMON EXCAVATION.
3. SELECT GRANULAR BALANCE ASSUMES NO EXCAVATED MATERIAL WILL MEET SELECT GRANULAR SPECIFICATIONS.

* SEE SHEETS 60A - 62A FOR SAP 199-104-010 MASS GRADING PLAN AND FOR THE LAKE RAMSEY BORROW AREA GRADING PLAN. GRANULAR AND SELECT GRANULAR BORROW TO BE TAKEN FROM THE LAKE RAMSEY BORROW AREA, UNLESS OTHERWISE APPROVED BY THE ENGINEER. SEE SHEETS 61A FOR LOCATION AND DETAILS.

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City of RAMSEY

Armstrong Blvd at Sunwood Drive
City of Ramsey, Minnesota

CITY OF RAMSEY, MINNESOTA

EARTHWORK TABULATION & SUMMARY
S.A.P. 199-020-010 / C.P. 12-20

SHEET 9 OF 153 SHEETS

EARTHWORK TABULATION — F

STATION TO STATION			EXCAVATION			EMBANKMENT		
			COMMON	TOPSOIL	SUB-GRADE	SUITABLE GRADING	SELECT GRANULAR BORROW (ROADWAY)	TOPSOIL
			CU YD (EV)	CU YD (EV)	CU YD (EV)	CU YD (CV)	CU YD (CV)	CU YD (CV)
CSAH 83								
27+85	TO	28+00	24	27	26	7	26	9
28+00	TO	28+50	78	86	87	22	88	31
28+50	TO	29+00	77	82	89	16	89	32
29+00	TO	29+50	80	80	90	18	93	31
29+50	TO	30+00	67	88	92	31	101	30
30+00	TO	30+50	45	73	95	26	111	33
30+50	TO	31+00	23	49	69	24	128	32
31+00	TO	31+50	14	35	24	34	147	31
31+50	TO	32+00	16	32	4	86	157	33
32+00	TO	32+50	29	152		295	164	41
32+50	TO	33+00	37	277		677	170	50
33+00	TO	33+50	28	309		1065	176	59
33+50	TO	34+00	30	338		1350	182	68
34+00	TO	34+50	34	358		1626	187	74
34+50	TO	35+00	8	74		347	38	16
35+00	TO	35+50	49	349		1578	192	72
35+50	TO	35+91	23	280		1305	172	50
35+91	TO	37+21		674		3391	561	137
37+21	TO	37+50	3	127		501	121	28
37+50	TO	38+00	19	282		775	213	53
38+00	TO	38+50	32	282	6	672	213	56
38+50	TO	39+00	19	274	52	586	213	56
39+00	TO	39+50	13	257	134	477	213	56
39+50	TO	40+00	69	235	176	369	213	54
40+00	TO	40+50	144	214	184	279	206	54
40+50	TO	40+95	135	159	172	171	174	42
40+95	TO	41+00	10	12	14	13	13	3
41+00	TO	41+50	63	79	90	120	81	17
41+50	TO	41+90	46	57	73	84	65	11
41+90	TO	42+00	5	12	9	15	8	2
42+00	TO	42+50		52		50		10
42+50	TO	43+00		44		38		8
43+00	TO	43+50		45		41		8
43+50	TO	44+00		53		57		10
44+00	TO	44+50		58		67		12
44+50	TO	45+00		74		88		17
45+00	TO	45+24		42		70		10
SUBTOTALS			1220	5721	1486	16371	4515	1336

EARTHWORK TABULATION — F

STATION TO STATION			EXCAVATION			EMBANKMENT		
			COMMON	TOPSOIL	SUB-GRADE	SUITABLE GRADING	SELECT GRANULAR BORROW (ROADWAY)	TOPSOIL
			CU YD (EV)	CU YD (EV)	CU YD (EV)	CU YD (CV)	CU YD (CV)	CU YD (CV)
147TH AVE NW								
11+09	TO	11+50	40	9	71		68	7
11+50	TO	12+00	61	16	96		92	9
12+00	TO	12+50	59	27	115	1	116	9
12+50	TO	13+00	29	40	101	10	135	12
13+00	TO	13+50	2	49	42	58	139	18
13+50	TO	14+00		55	4	203	137	24
14+00	TO	14+50		69		434	150	32
14+50	TO	14+63		23		167	46	10
SUBTOTALS			191	288	429	873	883	121

EARTHWORK TABULATION — F

STATION TO STATION			EXCAVATION			EMBANKMENT		
			COMMON	TOPSOIL	SUB-GRADE	SUITABLE GRADING	SELECT GRANULAR BORROW (ROADWAY)	TOPSOIL
			CU YD (EV)	CU YD (EV)	CU YD (EV)	CU YD (CV)	CU YD (CV)	CU YD (CV)
SUNWOOD DRIVE								
20+42	TO	20+50		21		109	29	7
20+50	TO	20+75		63		402	83	
20+75	TO	20+94		48		339	59	
SUBTOTALS				132		850	171	7

EARTHWORK SUMMARY — F

ALIGNMENT	STATION TO STATION			EXCAVATION			EMBANKMENT		
				COMMON	TOPSOIL (1)	SUB-GRADE	SUITABLE GRADING	SELECT GRANULAR BORROW (ROADWAY)	TOPSOIL BORROW
				CU YD (EV)	CU YD (EV)	CU YD (EV)	CU YD (CV)	CU YD (CV)	CU YD (CV)
CSAH 83	27+85	TO	45+24	1,220	5,721	1,486	16,371	4,515	1,336
147TH	11+09	TO	14+63	191	288	429	873	883	121
SUNWOOD	20+42	TO	20+94		132		850	171	7
CUL-DE-SAC				425	41	292	23	292	185
TOTALS				1,836	6,182	2,207	18,117	5,861	1,649

NOTES:
(1) PAID AS COMMON EXCAVATION. QUANTITY IS NOT INCLUDED IN THE COMMON EXCAVATION COLUMN.

* SEE SHEETS 60A - 62A FOR SAP 199-104-010 MASS GRADING PLAN AND FOR THE LAKE RAMSEY BORROW AREA GRADING PLAN. GRANULAR AND SELECT GRANULAR BORROW TO BE TAKEN FROM THE LAKE RAMSEY BORROW AREA, UNLESS OTHERWISE APPROVED BY THE ENGINEER. SEE SHEETS 61A FOR LOCATION AND DETAILS.

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE
DATE: 04/03/12 LIC. NO: 44620

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SHEET 10 OF 153 SHEETS

Date Printed: 6/12/2012
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CONSTRUCTION AND SOIL NOTES

1. GRADING GRADE IS DEFINED AS THE BOTTOM OF THE AGGREGATE BASE LAYER.
2. COMMON EMBANKMENT IS SELECT GRADING MATERIAL AND SHALL CONSIST OF ALL MINERAL SOILS ENCOUNTERED EXCEPT SILT, SILT LOAM, SILTY CLAY LOAM, TOPSOIL, ORGANIC SOILS, DEBRIS AND OTHER UNSTABLE MATERIAL. SILTY SOILS MAY BE USED IN LOWER PORTIONS OF ANY EMBANKMENT BELOW A DEPTH OF 6 FEET BENEATH PAVED SURFACES.
3. SELECT GRANULAR MATERIAL SHALL MEET THE REQUIREMENTS OF SPEC. 3149.2B2.
4. AGGREGATE BASE (CV) CLASS 5 MODIFIED IS DEFINED AS AGGREGATE HAVING LESS THAN 10% BY WEIGHT PASSING THE NO. 200 SIEVE.
5. UNSUITABLE SOILS IS DEFINED AS SOILS WHICH DO NOT MEET OR ARE NOT MANUFACTURED TO MEET ANY OF THE ABOVE DEFINED CATEGORIES, AND ARE THEREFORE NOT REUSABLE. UNSUITABLE MATERIAL MAY NOT BE PLACED WITHIN A 1(V): 1.5(H) SLOPED DOWNWARD AND OUTWARD FROM THE GRADING EMBANKMENT PI OR ABOVE THE ELEVATION OF THE BOTTOM OF THE SELECT GRANULAR SUBGRADE CORRECTION MATERIAL.
6. SLOPE DRESSING ON THE PROJECT IS DEFINED AS THE TOPSOIL OR OTHER SOIL PLACED DURING CONSTRUCTION TO PROVIDE A MEDIUM FOR ESTABLISHING TURF.
7. UNLESS OTHERWISE SPECIFICALLY ALLOWED OR REQUIRED BY THE CONTRACT, BITUMINOUS AND CONCRETE ITEMS DISTURBED BY CONSTRUCTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OUTSIDE THE RIGHT-OF-WAY IN ACCORDANCE WITH SPEC. 2104.3C3.
8. OBTAIN COMPACTION ON THE GRADING PORTIONS OF PERMANENT CONSTRUCTION IN ACCORDANCE WITH THE "SPECIFIED DENSITY METHOD" REQUIREMENTS, MN/DOT SPECIFICATION 2105.3F1.
9. COMPACTION OF THE AGGREGATE BASE LAYERS SHALL BE OBTAINED IN ACCORDANCE WITH THE "MODIFIED PENETRATION INDEX COMPACTION METHOD" REQUIREMENTS, MN/DOT SPECIFICATION 2211.3C3.
10. PROOF ROLLING WILL BE REQUIRED ON THIS PROJECT.
11. IN ANY PROPOSED WIDENING CONSTRUCTION, THE CONTRACTOR SHOULD STRIVE TO SUBSTANTIALLY MATCH THE SOILS INPLACE BELOW THE PROPOSED SUBCUT.
12. IN ANY CASE WHERE GRANULAR SOIL EMBANKMENTS OR BACKFILL JOINS PLASTIC SOIL EMBANKMENTS OR BACKFILL A 1(V):20(H) TAPER SHALL BE CONSTRUCTED SO THAT THE GRANULAR SOIL OVERLAYS THE PLASTIC SOIL.
13. AS A PRECAUTIONARY MEASURE FROM A SOILS STANDPOINT, TRAFFIC LANES TO BE USED DURING CONSTRUCTION MUST BE DELINEATED TO KEEP VEHICLES A SAFE DISTANCE AWAY FROM THE ADJACENT EXCAVATION. THE DELINEATION SHOULD COINCIDE WITH POINTS ESTABLISHED BY A 1 (V) : 2 (H) OR GREATER (FLATTER) SLOPE BETWEEN THE EDGE OF THE TRAFFIC SURFACE AND THE BOTTOM OF THE EXCAVATION.
14. THE TOP OF BACKSLOPES AND THE TOE OF FILL SLOPES SHALL BE ROUNDED TO NATURALIZE THE CONSTRUCTION EVEN THOUGH THE CROSS SECTIONS DO NOT SHOW ANY SUCH ROUNDING.
15. UNLESS OTHERWISE REQUIRED, ADD 1(V):20(H) TAPERS TO THE FULL DEPTH STATION LIMITS OF ALL EXCAVATION SUBGRADE. PROVIDE 1(V):20(H) TRANSITION TAPERS BETWEEN CHANGES IN EXCAVATION SUBGRADE DEPTHS LONGITUDINALLY.
16. WHERE CONNECTING NEW SURFACING ADJACENT TO ANY INPLACE PAVEMENTS TO BE WIDENED, CUT VERTICALLY TO THE BOTTOM OF THE IN-PLACE SURFACING, THEN AT A 1(V):0.5(H) TAPER TO THE BOTTOM OF THE RECOMMENDED SUBCUT.
17. WHERE CONNECTING TO INPLACE ROADWAYS AT THE TERMINI OF THE PROPOSED NEW CONSTRUCTION, CUT VERTICALLY TO THE BOTTOM OF THE INPLACE SURFACING OR TO THE BOTTOM OF THE NEW SURFACING DESIGN, WHICHEVER IS DEEPER; THEN AT A 1(V):20(H) TAPER TO THE BOTTOM OF THE RECOMMENDED EXCAVATION SUBGRADE.
18. THE CONTRACTOR WILL PROVIDE A SAWCUT TO ENSURE A UNIFORM JOINT WHERE PLACING NEW PAVEMENT NEXT TO INPLACE PAVEMENT.
19. USE TACK COAT BETWEEN ALL BITUMINOUS MIXTURES AND PRIOR TO PLACING ANY BITUMINOUS MIXTURES ON THE EXISTING PAVEMENT. THE BITUMINOUS TACK COAT MATERIAL SHALL BE APPLIED IN ACCORDANCE WITH SPECIFICATION 2357. FURNISHING & APPLYING THE TACK COAT WILL BE CONSIDERED INCIDENTAL AND NO DIRECT COMPENSATION WILL BE MADE.
20. STRIP AND/OR SALVAGE TOPSOIL FOR THE GRADING AREAS AS SHOWN IN THE TYPICAL SECTIONS AND CROSS SECTIONS. SALVAGED TOPSOIL WILL BE USED LATER AS SLOPE DRESSING ON ALL DISTURBED AREAS. IF TOPSOIL BORROW IS REQUIRED, IT SHALL BE AN 'A' HORIZON SOIL ACCEPTABLE TO THE ENGINEER.
21. CONCRETE WASH OUT MATERIALS: REMOVE ALL EXISTING MATERIALS WHICH WERE THE RESULT OF THE CONCRETE PLANT OPERATIONS, IN AREAS OF ROADWAY EMBANKMENT CONSTRUCTION FROM THE TOE OF SLOPE TO THE TOE OF SLOPE.
22. THE ENGINEER SHALL SEE THAT THE TERMINI OF ALL PORTABLE CONCRETE MEDIAN BARRIER LOCATIONS FOR ONCOMING TRAFFIC ARE EITHER SET BACK AT LEAST 30' FROM THE EDGE OF TRAVELED LANE OR WHATEVER DISTANCE DEEMED APPROPRIATE FOR THE SITUATION OR PROTECTED BY EXISTING GUARDRAIL OR SOME OTHER ATTENUATION DEVICE.
23. PIPE SEWERS CONNECTING MANHOLES AND CATCH BASINS SHALL BE IN ACCORDANCE WITH SPEC. 2503. BEDDING AND BACKFILL SHALL CONSIST OF UNIFORM SUITABLE GRADING MATERIAL MATCHING ADJACENT SOILS UNLESS OTHERWISE DIRECTED BY THE ENGINEER AND BE INCIDENTAL.
24. THE CONSTRUCTION LIMITS AS SHOWN IN THE PLANS REPRESENT THE POINT OF INTERSECTION BETWEEN THE REQUIRED FILL OR CUT SLOPE AND THE EXISTING GROUND LINE AS DEPICTED ON THE CROSS SECTIONS. THE CONSTRUCTION LIMITS DO NOT INCLUDE AREAS REQUIRED FOR SLOPE ROUNDING.
25. THE CONTRACTOR IS HEREBY REMINDED OF HIS RESPONSIBILITY UNDER STATE LAW TO CONTACT ALL UTILITIES THAT MAY HAVE FACILITIES IN THE AREA. CONTACT MUST BE MADE THROUGH GOPHER STATE ONE-CALL.
26. ANY DEBRIS WHICH MAY BE ENCOUNTERED DURING GRADING SHALL BE DISPOSED OF BY THE CONTRACTOR OUTSIDE THE PROJECT RIGHT OF WAY IN A SUITABLE DISPOSAL AREA AS APPROVED BY THE ENGINEER, AND IN ACCORDANCE WITH SPEC. 2104.3C3.
27. TEMPORARY EROSION CONTROL - TEMPORARY EROSION CONTROL DEVICES AND THEIR SUGGESTED LOCATIONS HAVE BEEN SHOWN IN THE PLANS ALONG WITH PAY ITEMS FOR THEIR USE. THIS DOES NOT HOWEVER RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES TO CONDUCT HIS CONSTRUCTION IN A MANNER THAT WILL CONTROL EROSION. RESPONSIBILITY FOR CONTROLLING EROSION AND MAINTENANCE OF EROSION CONTROL AS SET IN MN/DOT SPECIFICATIONS 1717, 1803, 2101, 2105, 2573, 2575, AND IS AMENDED BY THE SPECIAL PROVISIONS.
28. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE CURRENT FIELD MANUAL.
29. RIDE QUALITY WILL BE SUBJECT TO MNDOT SPEC.2360.7B - SURFACE REQUIREMENTS.
30. GENERALLY SPEAKING, STORM SEWERS, PONDS, AND DITCHES ARE LOCATED TO MAINTAIN THE FLOW OF STORM WATER IN MUCH THE SAME DIRECTION IT FLOWED PRIOR TO THIS PROJECT. CHANGING THE DIRECTION OF FLOW FROM WHAT IS SHOWN ON THE PLANS COULD CAUSE PROBLEMS BEYOND THE PROJECT LIMITS, AND WILL NOT BE PERMITTED UNLESS SPECIFICALLY APPROVED IN ADVANCE BY THE ENGINEER.
31. SELECT GRANULAR AND GRANULAR BORROW MATERIAL TO BE IMPORTED FROM THE LAKE RAMSEY BORROW AREA, UNLESS OTHERWISE APPROVED BY THE ENGINEER. SEE THE SAP 199-104-010 PLAN SET FOR THE LAKE RAMSEY BORROW AREA LOCATION.
32. THE CONTRACTOR SHALL HAVE A STREET SWEEPER ON SITE OR HAVE ONE AVAILABLE WITHIN 3 HOURS OF REQUEST. TRACKED SEDIMNENT MUST BE REMOVED FROM ALL OFF-SITE SURFACES PROMPTLY UPON DISCOVERY, OR AS DIRECTED BY THE CITY ENGINEER.

THE FOLLOWING STANDARD PLATES AS APPROVED BY THE FHWA SHALL APPLY ON THIS PROJECT.

MNDOT STANDARD PLATES

PLATE No.	DESCRIPTION
3000L	REINFORCED CONCRETE PIPE (5 SHEETS)
3006G	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
3007D	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3040F	CORRUGATED METAL PIPE CULVERT (STANDARD 2-2/3" X 1/2" CORRUGATION)
3100G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3124B	METAL APRON CONNECTION
3133C	RIPRAP AT RCP OUTLETS
3134C	RIPRAP AT CMP OUTLETS
3145F	CONCRETE PIPE TIES
3148A	SAFETY SLOPE METAL END SECTION FOR CIRCULAR & ARCHED PIPES (2 SHEETS)
3221C	CORRUGATED STEEL PIPE COUPLING BAND (3 SHEETS)
4005L	MANHOLE OR CATCH BASIN TYPE A & B CONE SECTIONS PRECAST - DESIGN F
4006L	MANHOLE OR CATCH BASIN PRECAST - DESIGNS G AND H
4010H	CONCRETE SHORT CONE & ADJUSTING RING (SECTIONAL CONCRETE)
4011E	PRECAST CONCRETE BASE
4020J	MANHOLE OR CATCH BASIN (FOR USE WITH OR WITHOUT TRAFFIC LOADS) (2 SHEETS)
4022A	MANHOLE OR CATCH BASIN COVER (3 ft. X 2 ft. OPENING)
4026A	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4101D	RING CASTING FOR MANHOLE OR CATCH BASIN
4110F	COVER CASTING FOR MANHOLE (FOR USE IN ALL TRAFFIC AREAS) • CASTING NO. 715 AND 716
4143E	STOOL GRATE & CONCRETE FRAME (MEDIAN DRAINS) - CASTING NO. 731
7035N	CONCRETE WALK & CURB RETURNS AT ENTRANCES
7038A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7100H	CONCRETE CURB AND GUTTER (DESIGN B and DESIGN V)
7113A	CONCRETE APPROACH NOSE DETAIL
8000I	STANDARD BARRICADES
8150C	INSTALLATION OF CULVERT MARKERS
8337C	TEMPORARY PORTABLE PRECAST CONCRETE BARRIER (TYPE "F") (3 SHEETS)
9000D	APPROACHES AND ENTRANCES (RECOMMENDED STANDARDS)
9102D	TURF ESTABLISHMENT AREAS (AT PIPE CULVERT ENDS)

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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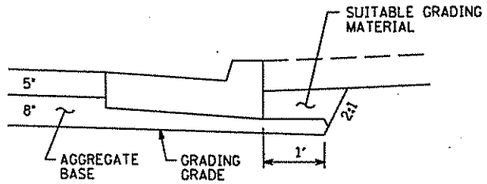
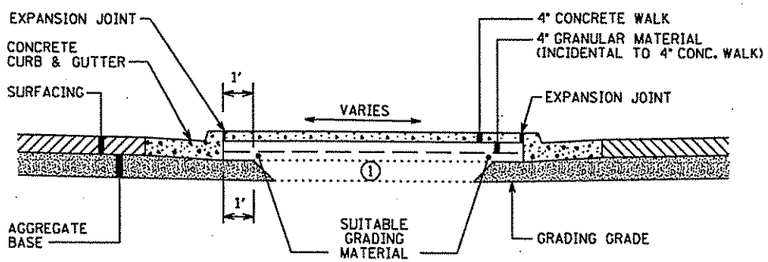
CITY OF RAMSEY, MINNESOTA
CONSTRUCTION NOTES AND STANDARD PLATES
S.A.P. 199-020-010 / C.P. 12-20

SHEET 11 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: k:\0973-00\cad\plan\00020295_csn.dgn

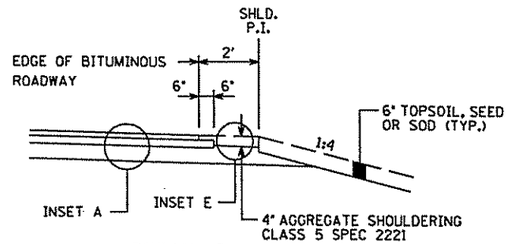


DETAIL A

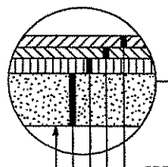


① GRADING GRADE AND AGGREGATE BASE TO BE CARRIED THROUGH ENTIRE WIDTH OF MEDIAN WHEN MEDIAN WIDTH IS LESS THAN 8' - MEASURED FROM FACE OF CURB TO FACE OF CURB.

DETAIL B
CONCRETE MEDIAN

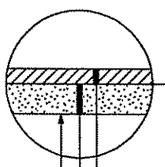


DETAIL C
BITUMINOUS EDGE



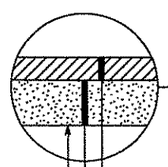
INSET A
CSAH 83 (ARMSTRONG BLVD.

- SPEC 2360 1.5" TYPE SP 12.5 WEARING COURSE MIXTURE SPWEB440C
- SPEC 2360 1.5" TYPE SP 12.5 WEARING COURSE MIXTURE SPWEB440C
- SPEC 2360 2" TYPE SP 12.5 NON WEAR COURSE MIXTURE SPNWB430B
- SPEC 2211 9" AGGREGATE BASE CLASS 5 MODIFIED (SEE TABLE)
- 12" SELECT GRANULAR MATERIAL



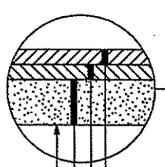
INSET C
TRAIL

- SPEC 2360 2" TYPE SP 12.5 WEARING COURSE MIXTURE SPWEB240C (PAID FOR AS 2" BITUMINOUS WALK - SQ FT.)
- SPEC 2211 4" AGGREGATE BASE CLASS 5 MODIFIED (SEE TABLE)
- GRADING GRADE / SUBGRADE PREPARATION



INSET E
DRIVEWAYS, AND TEMPORARY PAVEMNENT FOR STAGING

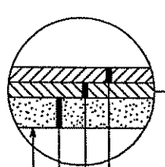
- SPEC 2350 3" TYPE SP 12.5 NON WEAR COURSE MIXTURE SPWEB440C
- SPEC 2211 6" AGGREGATE BASE CLASS 5 MODIFIED (SEE TABLE)
- 12" SELECT GRANULAR MATERIAL



INSET B
146TH AVE NW
147TH AVE NW
*

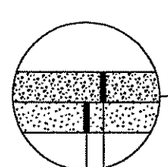
- SPEC 2360 2" TYPE SP 12.5 WEARING COURSE MIXTURE SPWEB440C
- SPEC 2360 2" TYPE SP 12.5 WEARING COURSE MIXTURE SPWEB440C
- SPEC 2211 6" AGGREGATE BASE CLASS 5 MODIFIED (SEE TABLE)
- 12" SELECT GRANULAR MATERIAL

* SEE THE SUNWOOD DRIVE REALIGNMENT PLAN FOR THE PAVEMENT SECTION FOR SUNWOOD DRIVE, EAST OF STA. 20+94.4 = STA. 4+40.22



INSET D
RURAL SHOULDER

- SPEC 2360 1.5" TYPE SP 12.5 WEARING COURSE MIXTURE SPWEB440C
- SPEC 2360 2.5" TYPE SP 12.5 WEARING COURSE MIXTURE SPWEB440C
- VAR. DEPTH AGGREGATE BASE, CLASS 5 MODIFIED (SEE TABLE) (4" MINIMUM, MATCH BOTTOM OF THRU LANE AGGREGATE)
- 12" SELECT GRANULAR MATERIAL



INSET F
4" CONCRETE WALK

- 4" CONCRETE WALK
- SPEC 2211 4" AGGREGATE BASE CLASS 5 MODIFIED (SEE TABLE)

TABLE
MODIFIED CLASS 5 SPECIFICATIONS

% PASSING	
1"	100
3/4"	90 - 100
3/8"	50 - 80
No. 4	35 - 70
No. 10	20 - 60
No. 40	10 - 35
No. 200	5 - 10

NO.	DATE	BY	CHK	REVISIONS

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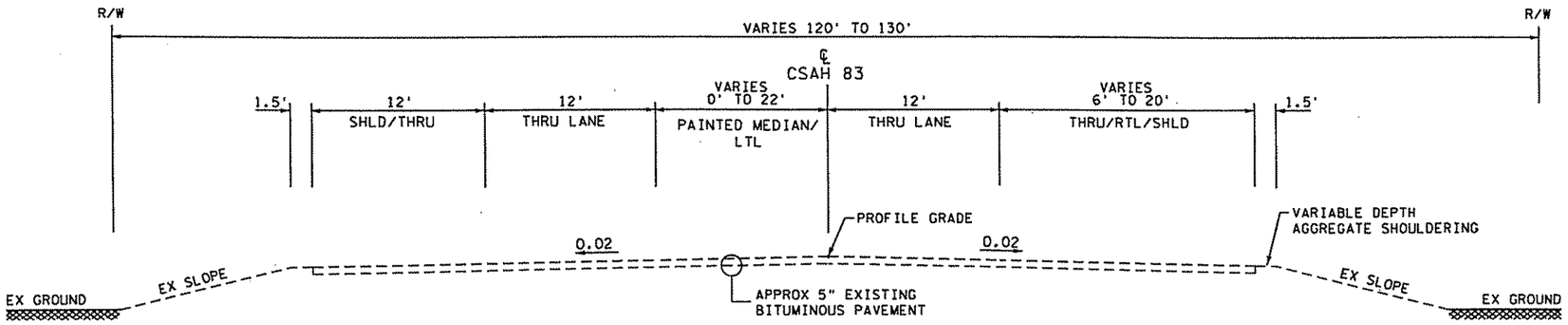
CITY OF RAMSEY, MINNESOTA

TYPICAL SECTIONS
S.A.P. 199-020-010 / C.P. 12-20

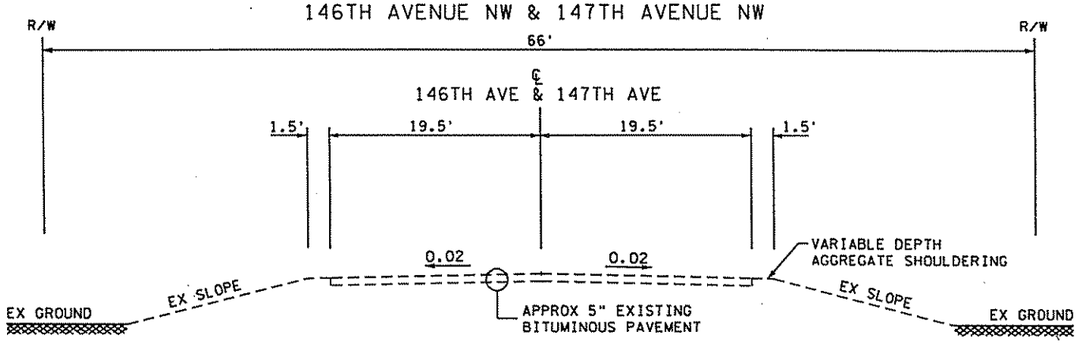
SHEET 12 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: K:\0973-010\cad\plan\C0020295_ts01.dgn

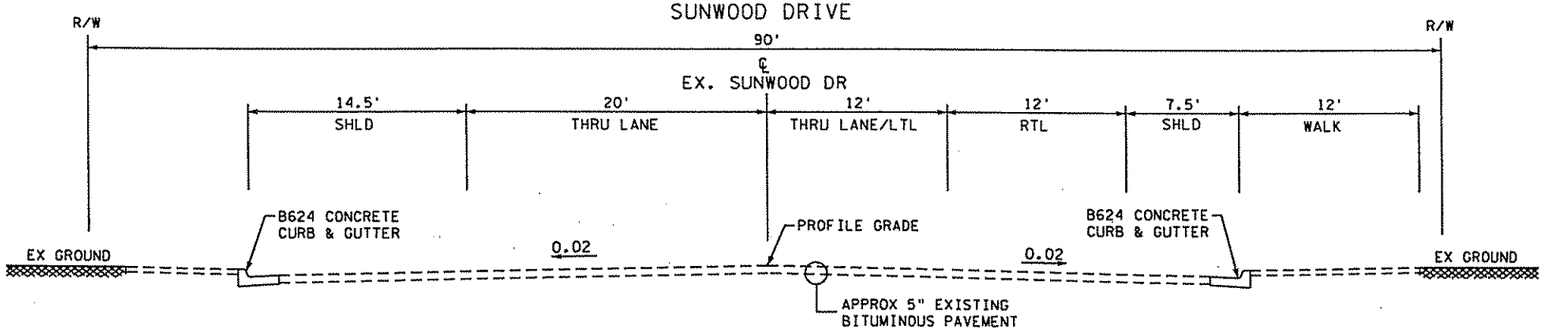
EXISTING SECTION
CSAH 83 (ARMSTRONG BLVD)



EXISTING SECTION
146TH AVENUE NW & 147TH AVENUE NW



EXISTING SECTION
SUNWOOD DRIVE



GENERAL NOTES:

INPLACE PAVEMENT DEPTHS ARE BASED ON SOIL BORINGS AND BEST AVAILABLE INFORMATION. NO GUARANTEES ARE MADE REGARDING THE UNIFORMITY OF THE PAVEMENT THICKNESS.

UNLESS OTHERWISE SPECIFIED, THE GRADING GRADE CROSS SLOPES WILL BE THE SAME AS THE PROPOSED DRIVING SURFACE.

ALL EDGE DIMENSIONS ARE FACE TO FACE OF CURB OR TO THE EDGE OF THE BITUMINOUS PAVEMENT.

FOR LANE WIDTHS SEE CONSTRUCTION PLANS AND FOR CROSS SLOPES AND SUPERELEVATION SEE DRAINAGE, TURF AND EROSION CONTROL PLANS.

ALL CROSS SLOPES ARE FT/FT.

Date Printed: 6/12/2012
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NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE

DATE: 04/03/12 LIC. NO: 44620

WSB & Associates, Inc.
701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416
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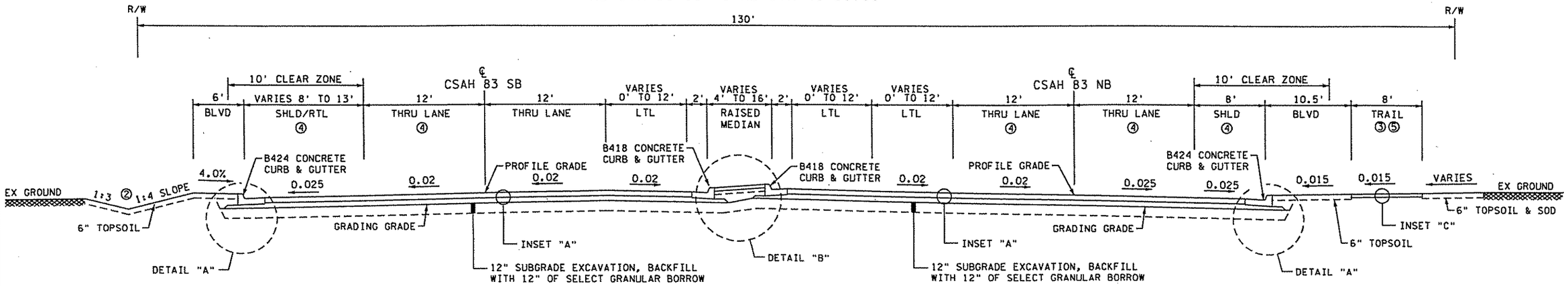
CITY OF RAMSEY, MINNESOTA

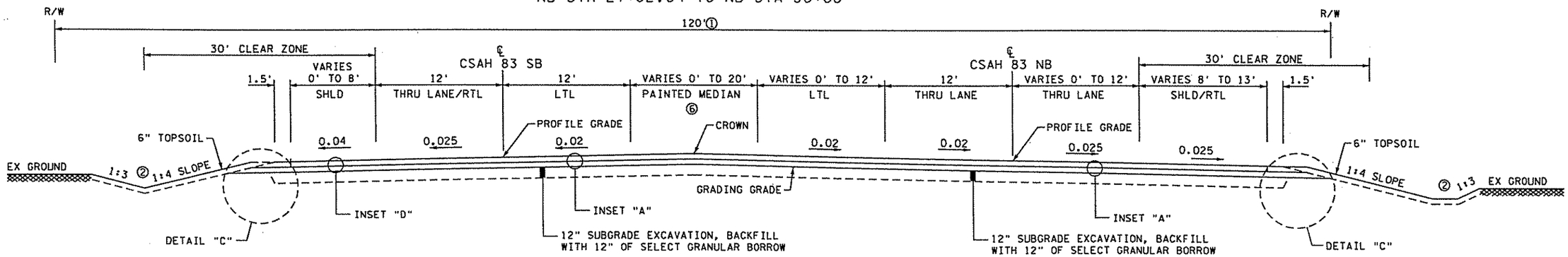
TYPICAL SECTIONS
S.A.P. 199-020-010 / C.P. 12-20

SHEET 13 OF 153 SHEETS

CSAH 83 (ARMSTRONG BLVD)
NB STA 36+00 TO NB STA 41+90.68



CSAH 83 (ARMSTRONG BLVD)
NB STA 27+82.04 TO NB STA 36+00



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SEE SHEET 12 FOR INSETS AND DETAILS.

NOTES:

① R/W 120' FROM STA 27+00 TO 31+50 & VARIES FROM 160' TO 175' FROM STA 32+00 TO 36+00

② DITCH WIDTH AND DEPTH VARIES. SEE SHEETS 76 - 77 AND CROSS SECTIONS FOR DITCH PROFILES AND WIDTHS

③ TRAIL CONTINUES TO STA 45+24.37

④ CONSTRUCTION ENDS AT STA 40+77.55

⑤ 2 FOOT CLEAR ZONE ON EITHER SIDE OF TRAIL.

⑥ RAISED MEDIAN FROM STA 34+28 (NB) TO STA 35+78 (NB). SEE SHEET 74 .

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TYPICAL SECTIONS
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SHEET 14 OF 153 SHEETS

Date Printed: 6/12/2012
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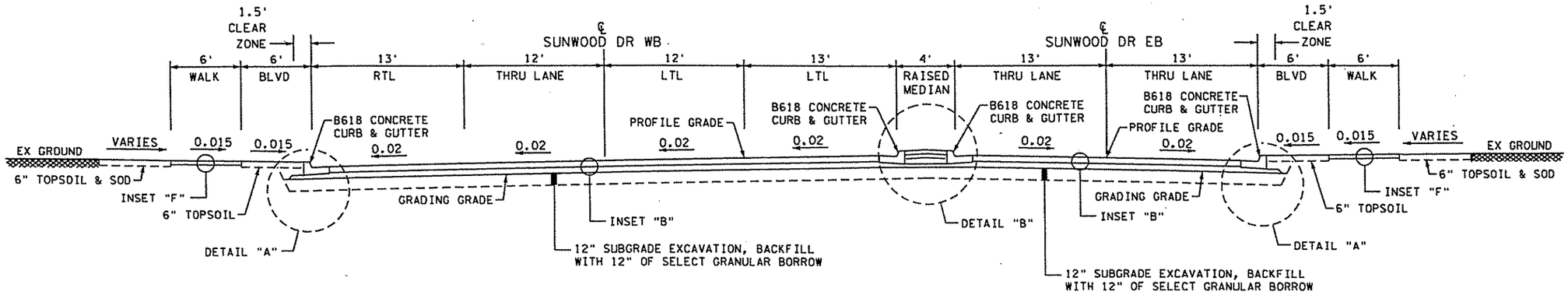
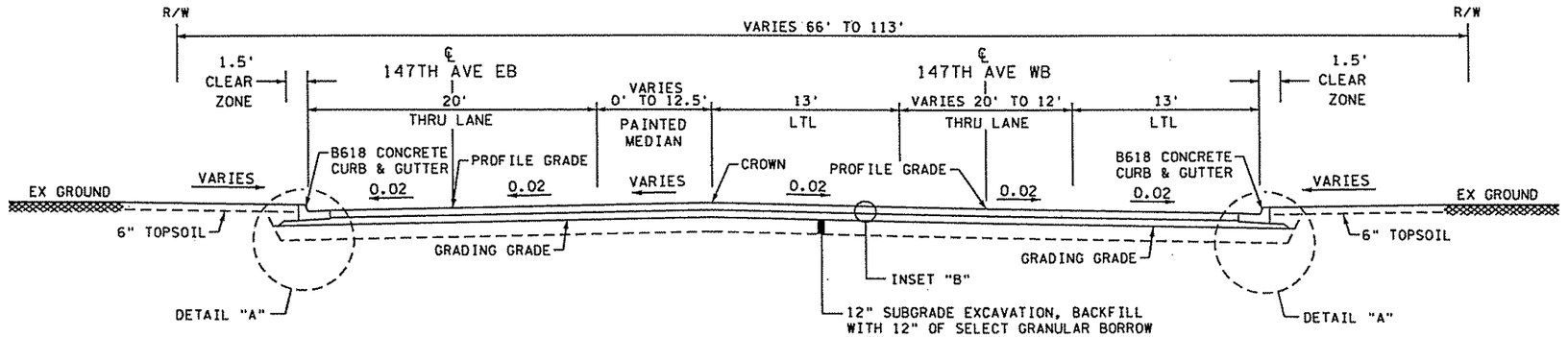
SUNWOOD DRIVE



147TH AVENUE NW



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ALL CROSS SLOPES ARE FT/FT.

SEE SHEET 12 FOR INSETS AND DETAILS.

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SHEET 15 OF 153 SHEETS

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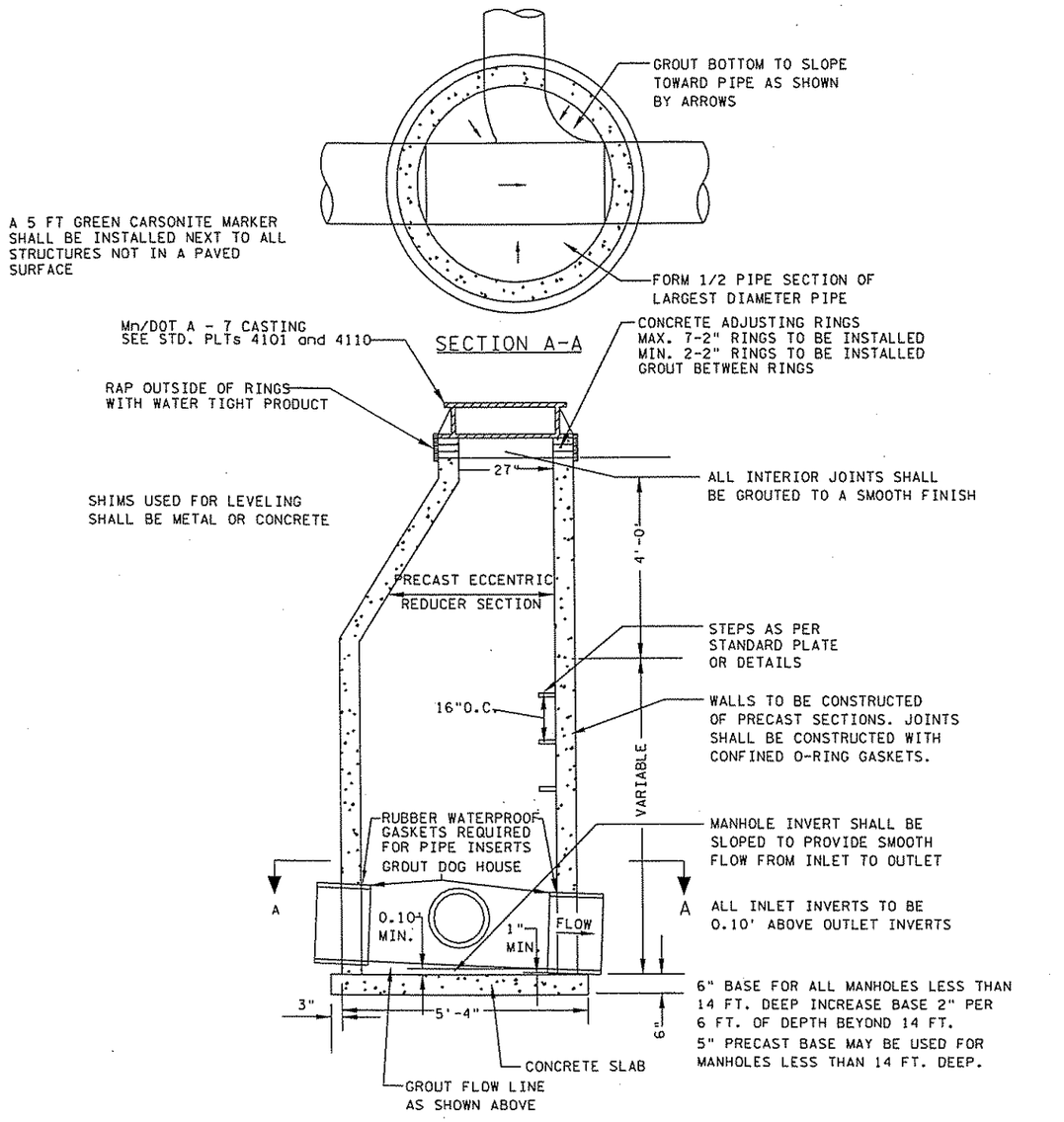
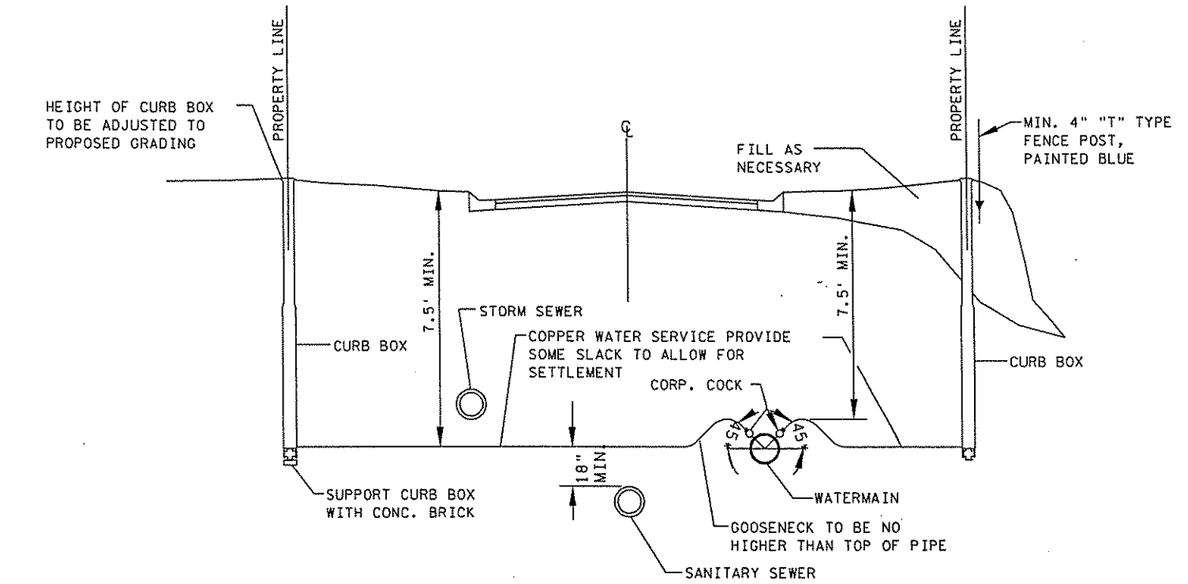


NOTES:

1. A 10 GAGE SOLID COPPER TRACER WIRE IS REQUIRED WITH ALL SEWER LINES
2. CONDUCTIVITY IS REQUIRED ON ALL TRACER WIRE
3. TRACER WIRES ARE TO END IN STRUCTURES, AT FINISHED GRADE ON ALL SERVICES AND STUBS

MANHOLE

NO SCALE



WATER SERVICE

NO SCALE

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MISCELLANEOUS DETAILS

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SHEET 16 OF 153 SHEETS

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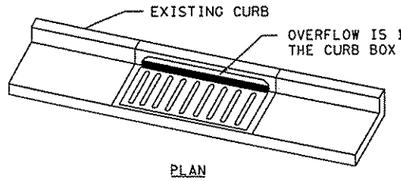
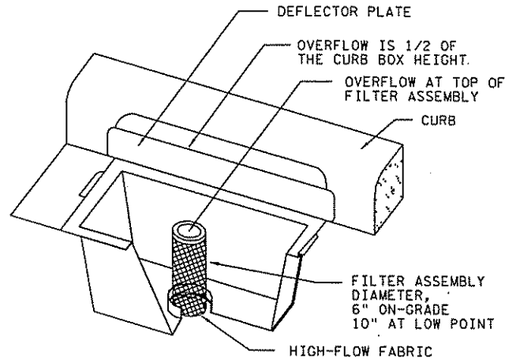
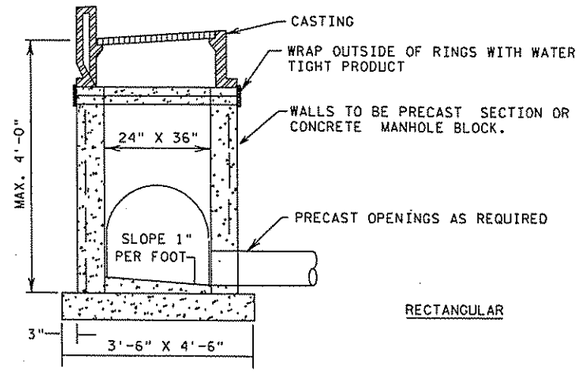


PLAN

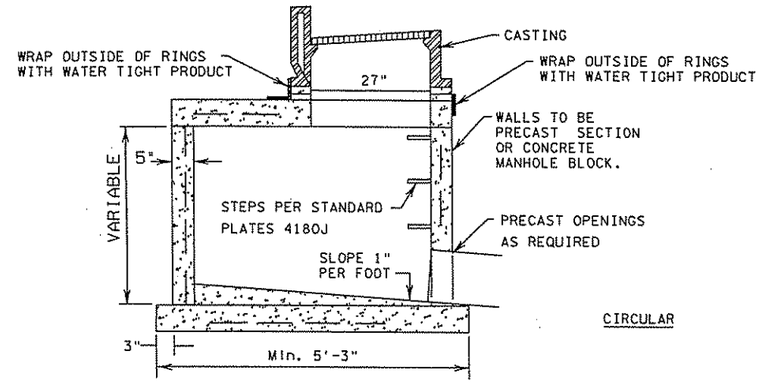


STORM DRAIN INLET PROTECTION

NO SCALE



RECTANGULAR

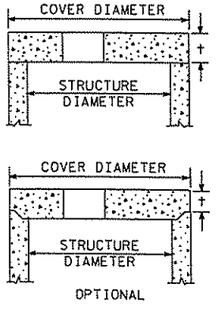


CIRCULAR

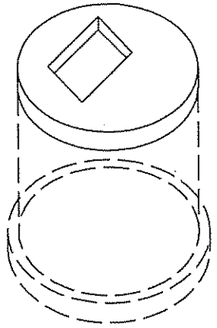
NOTES:
1. MANHOLE INVERT SHALL SLOPED TO PROVIDE A SMOOTH FLOW FROM INLET TO OUTLET
2. CONCRETE BASE SHALL BE 6" POURED IN PLACE OR 5" PRECAST SLAB.
3. CONCRETE ADJUSTING RINGS TO BE INSTALLED MAX.7-2" RINGS, MIN 2-2" RINGS
4. GROUT BETWEEN RINGS
5. SHIMS USED FOR LEVELING SHALL BE METAL OR CONCRETE
6. STEPS ARE REQUIRED IF STRUCTURE FROM THE CASTING TO THE INVERT IS GREATER THAN 4 FEET

DRAINAGE STRUCTURE TYPE SPECIAL

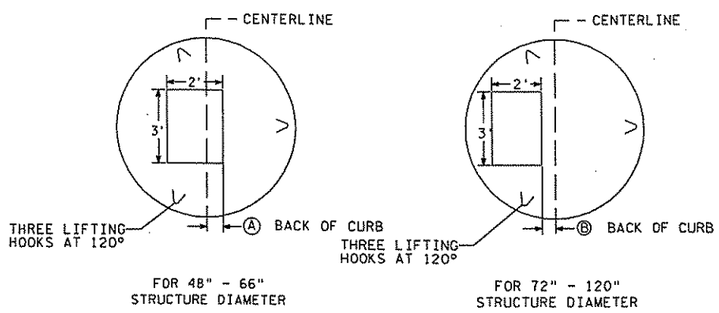
NO SCALE



OPTIONAL



MANHOLE TOP SLAB WITH OFF-SET 2'X3' HOLE					
STRUCTURE DIAMETER (IN)	COVER DIAMETER (IN)	MINIMUM t (IN)	A (IN)	B (IN)	WEIGHT OF COVER (LBS)
48	58	6.0	9.0		930
54	65	8.0	6.0		1710
60	72	8.0	3.0		2230
66	79	8.0	0.0		2810
72	86	8.0		3.0	3440
78	93	8.0		6.0	4120
84	100	8.0		9.0	4860
90	108	8.0		12.0	5760
96	114	8.0		15.0	6490
102	120	8.0		18.0	7260
108	126	12.0		21.0	12100
120	144	12.0		24.0	16100



FOR 48" - 66"
STRUCTURE DIAMETER

FOR 72" - 120"
STRUCTURE DIAMETER

4022 TOP SLAB WITH RECTANGULAR OPENING

NO SCALE

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Plan By: CWK
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MISCELLANEOUS DETAILS
S.A.P. 199-020-010 / C.P. 12-20

SHEET 17 OF 153 SHEETS

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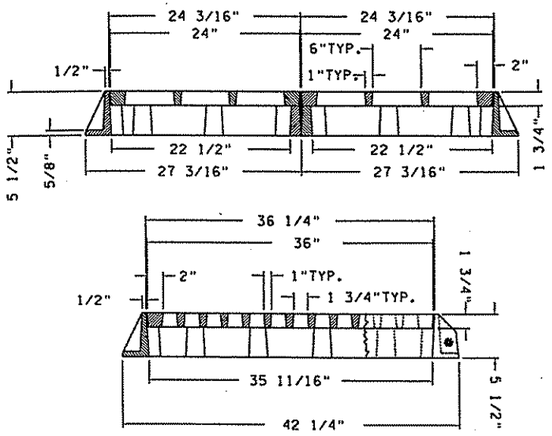
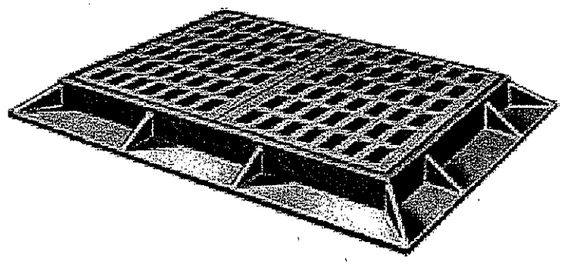
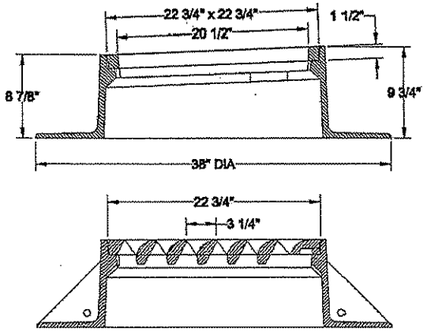
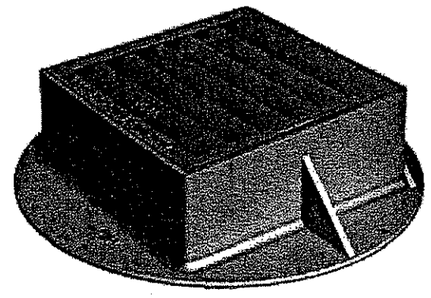
WSB Filename:





CASTING TYPE C
NO SCALE





CASTING TYPE E
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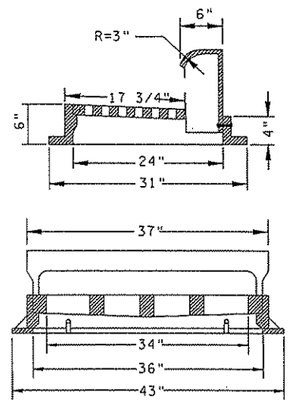

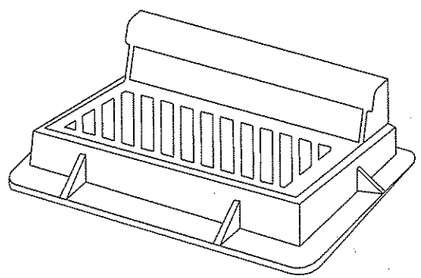

CASTING TYPE F
NO SCALE

NO.	DATE	BY	CHK	REVISIONS

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SHEET 18 OF 153 SHEETS

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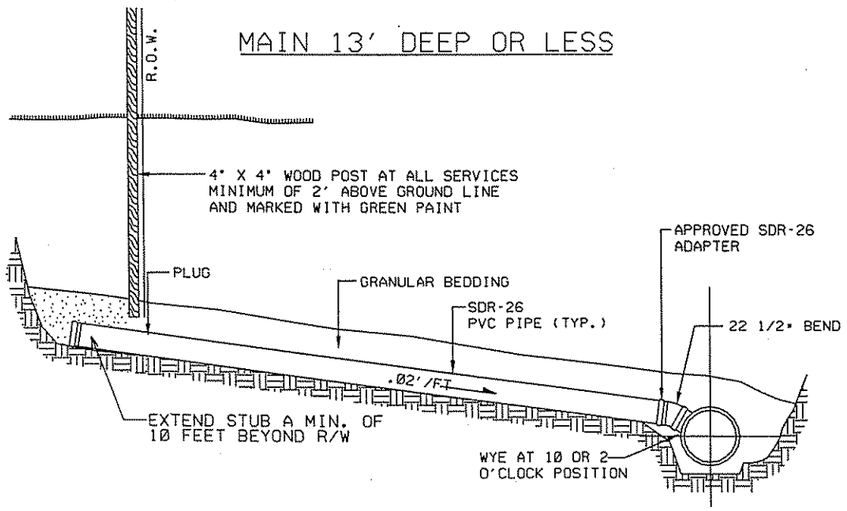
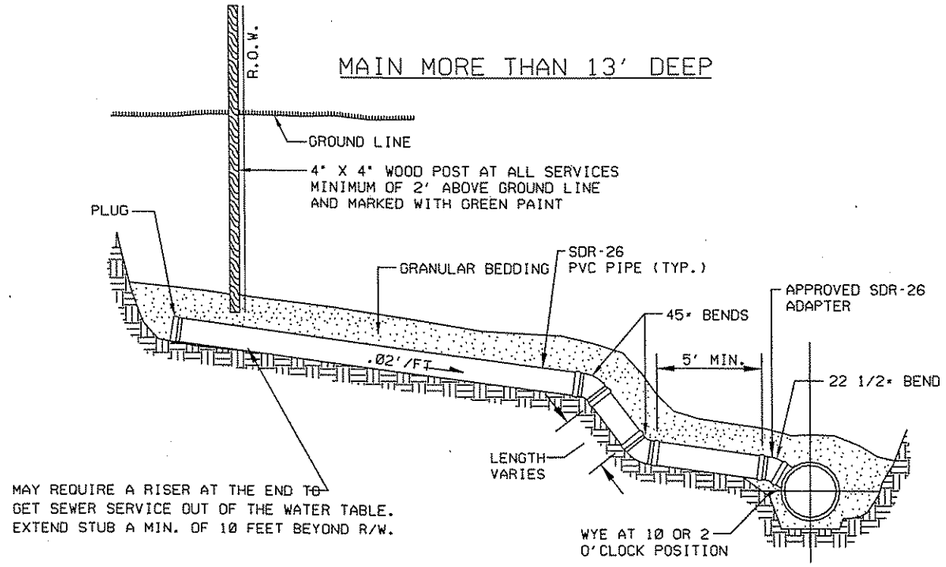
MAIN 13' DEEP OR LESS

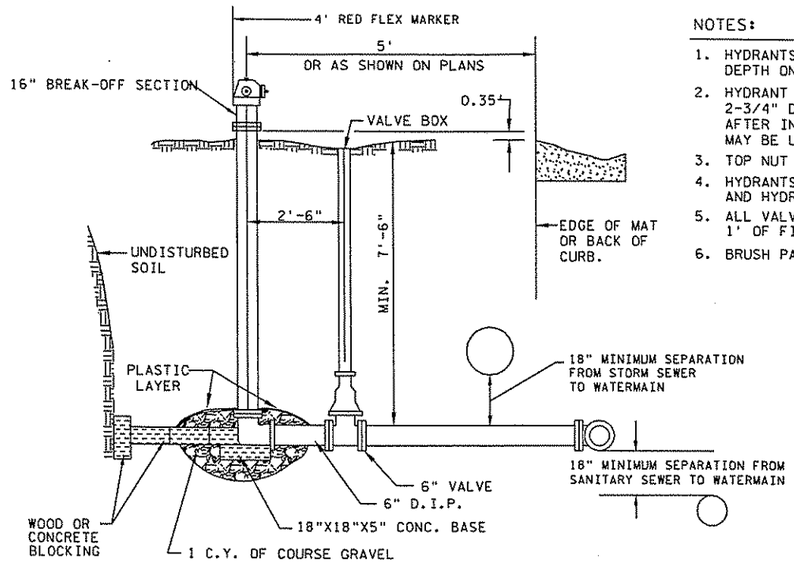


MAIN MORE THAN 13' DEEP



SANITARY SEWER SERVICE

NO SCALE



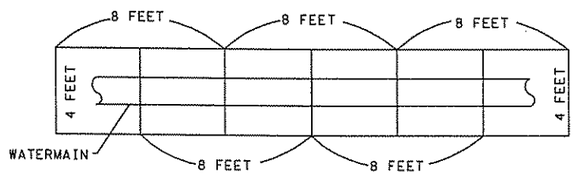
NOTES:

1. HYDRANTS TO BE ORDERED FOR 8'-0" BURY. IN AREAS OF EXTRA DEPTH ON THE WATERMAIN, HYDRANT EXTENSIONS MAY BE REQUIRED.
2. HYDRANT SHALL BE BLOCKED OR TIED TO THE TEE AT MAIN WITH 2-3/4" DIAMETER TIE RODS. ALL TIE RODS TO BE COAL TAR COATED AFTER INSTALLATION. RESTRAINED JOINT PIPE AND RETAINING GLANDS MAY BE USED.
3. TOP NUT OF HYDRANT 2.5' ABOVE TOP BACK OF CURB OR BITUMINOUS SURFACE
4. HYDRANTS BURIED BELOW WATER TABLE, DRAIN HOLES NEED TO BE PLUGGED AND HYDRANT MARKED BY PAINTING 5" CAP YELLOW
5. ALL VALVE BOXES SHALL HAVE A VALVE NUT EXTENSION TO WITHIN 1' OF FINISHED GRADE
6. BRUSH PAINT ALL HYDRANTS AFTER INSTALLATION IS COMPLETE

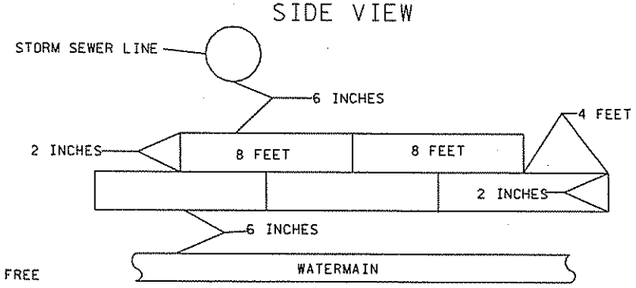
HYDRANT

NO SCALE

TOP VIEW



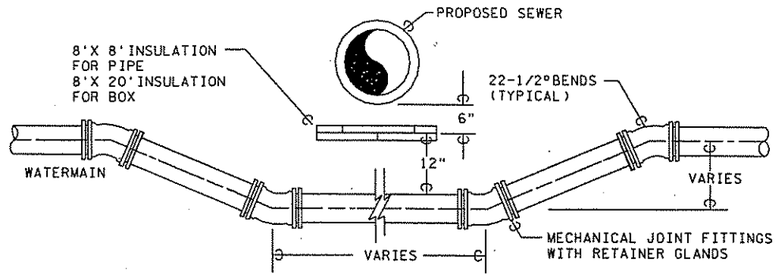
SIDE VIEW



NOTES: 1) SHEETS ARE 2 INCHES BY 4 FEET BY 8 FEET
2) SURFACE PREPARATION SHALL BE SMOOTH AND ROCK FREE
3) JOINTS WILL BE OVERLAPPED BY 4 FEET
4) POLYSTYRENE INSULATION OR APPROVED EQUAL

UTILITY INSULATION

NO SCALE



WATERMAIN INSULATION & LOWERING

NO SCALE

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MISCELLANEOUS DETAILS
S.A.P. 199-020-010 / C.P. 12-20

SHEET 19 OF 153 SHEETS

NOTES & GUIDELINES

GENERAL INFORMATION:

1. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN THE DEVICES IN THIS TRAFFIC CONTROL PLAN UNLESS OTHERWISE NOTED.
2. FIELD CONDITIONS MAY REQUIRE MODIFICATIONS OF THIS LAYOUT AS DEEMED NECESSARY BY THE ENGINEER.
3. ALL DISTANCES ARE APPROXIMATE.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ANY WORK AREAS NEAR TRAFFIC IN ACCORDANCE WITH THE MNMUTCD.
5. AN ANNUAL FALL REVIEW OF ALL TRAFFIC CONTROLS WILL BE MADE TO PREPARE FOR WINTER MAINTENANCE OF THE PROJECT. THIS MAY INCLUDE ADJUSTMENTS OR EXCHANGE OF ONE TRAFFIC CONTROL DEVICE FOR ANOTHER. READJUSTMENTS MAY AGAIN BE REQUIRED IN THE SPRING.
6. IF THE CONTRACTOR DECIDES TO PERFORM THE CONSTRUCTION WORK IN A SEQUENCE OTHER THAN SHOWN IN THIS TRAFFIC CONTROL PLAN THE CONTRACTOR SHALL PROVIDE COMPLETE REVISED TRAFFIC CONTROL PLANS TO BE APPROVED BY THE ENGINEER.

SIGNING:

1. ALL TRAFFIC CONTROL DEVICES, INCLUDING OVERHEAD SIGNS ON ROADS OPEN TO TRAFFIC THAT ARE NOT CONSISTANT WITH TRAFFIC OPERATION SHALL BE COVERED, REMOVED OR REVISED AS DIRECTED BY THE ENGINEER.
2. WHEN SIGNS ARE INSTALLED, THEY SHALL BE MOUNTED ON POSTS DRIVEN INTO THE GROUND AT THE PROPER HEIGHT AND LATERAL OFFSET AS DETAILED IN THE MNMUTCD. IF THIS IS NOT POSSIBLE THEY WILL BE MOUNTED ON PORTABLE SUPPORTS AS APPROVED BY THE ENGINEER. WHEN THE SIGNS ARE REMOVED THE SIGN POSTS SHALL ALSO BE REMOVED AS SOON AS POSSIBLE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EXTRA SIGNING NEEDED TO FACILITATE TRAFFIC SWITCHES OR FOR TRANSITIONING TRAFFIC FROM ONE STAGE TO ANOTHER.
4. ALL ORANGE WARNING AND ORANGE GUIDE SIGNS SHALL BE FABRICATED WITH SIGN SHEETING MATERIAL AS LISTED ON THE MN/DOT APPROVED PRODUCT LIST FOR "SHEETING FOR RIGID TEMPORARY WORK ZONE SIGNS".

   BARRICADES SHALL BE FABRICATED WITH SIGN SHEETING MATERIAL AS LISTED ON THE MN/DOT APPROVED PRODUCT LIST FOR BARRICADE SHEETING. NOTE THAT ASTM TYPE VII SHEETING IS NOT ALLOWED ON BARRICADES AFTER JANUARY 1, 2010.
5. LONGITUDINAL DROPOFFS SHALL BE SIGNED AS SHOWN IN THE "TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS" FIELD MANUAL UNLESS OTHERWISE SPECIFIED IN THESE PLANS.
6. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE FINAL SIGNS TO ASSURE THAT THE FINAL SIGNS ARE INSTALLED AS NEEDED, OR PROVIDE TEMPORARY SIGNING AT THEIR EXPENSE UNTIL THE FINAL SIGNING IS INSTALLED.

PAVEMENT MARKING:

1. OBLITERATE ANY CONFLICTING PAVEMENT MARKINGS AS DIRECTED BY THE ENGINEER.
2. PAINT, POLYMER LANE TAPE AND/OR TRPM'S ARE ACCEPTABLE TEMPORARY STRIPING ALTERNATIVES ACCORDING TO ACTUAL CONDITIONS ENCOUNTERED AS DIRECTED BY THE ENGINEER. GENERALLY, ONLY PAINT WILL BE USED BEFORE MAY 1ST OR WHEN THE OTHER MANUFACTURERS' SPECIFICATIONS CAN NOT BE MET.
3. TRPM'S (TEMPORARY RAISED PAVEMENT MARKERS) SHOULD BE USED TO SUPPLEMENT THE LONG TERM (MORE THAN 3 DAYS) EDGELINES ON ALL TRANSITION AREAS WHEN THE CONDITIONS ARE WITHIN THE MANUFACTURERS' SPECIFICATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND INSTALLATION OF TEMPORARY AND FINAL STRIPING. MN/DOT TRAFFIC PERSONNEL WILL ASSIST IN THE SPOTTING OF TRANSITION AREAS, GORES AND TAPERS.

BARRIER & DELINEATION:

1. TOP MOUNTED BARRIER DELINEATORS WILL HAVE A MINIMUM OF 24 SQ. IN. OF REFLECTIVE SURFACE AREA AND BE PLACED AT 30' SPACES ON TOP OF THE BARRIER WHEN THE BARRIER IS WITHIN 10' OF TRAFFIC UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER. IF THE TRAFFIC ENGINEER REQUIRES SIDE MOUNTED BARRIER DELINEATORS, THEY WILL HAVE A MINIMUM OF 12 SQ. IN. OF REFLECTIVE SURFACE AREA AND BE PLACED AT 30' SPACES. IF A SMALLER APPROVED BARRIER DELINEATOR IS USED IT SHALL BE AT ONE HALF THE SPACING AND ONE HALF THE BID PRICE.

CONSTRUCTION INFORMATION SIGNING:

1. THE CONTRACTOR SHALL USE CONSTRUCTION INFORMATION SIGNING AS SHOWN IN THE PLAN AND WHICH ARE TO BE USED AS FOLLOWS:

   G20-X1 CLOSURE NOTICE SIGNS PAIRED WITH G20-X3 WORK ENDS SIGNS TO DISPLAY THE CORRECT START DATE AND AN ESTIMATED FINISH DATE AS APPROVED BY THE PROJECT ENGINEER.

   G20-X2 WORK ZONE ADVANCE NOTICE SIGNS WITH THE CORRECT STARTING DATE DISPLAYED BEFORE WORK BEGINS. ONCE WORK BEGINS, THE START DATE LEGEND SHALL BE COVERED BY THE SUGGESTED PLAQUE CONTAINED IN THIS PLAN. IF NO ALTERNATE MESSAGE IS SUGGESTED OR IF DIRECTED BY THE PROJECT ENGINEER, THE CORRECT ESTIMATED FINISH DATE, MONTH, OR SEASON SHALL BE DISPLAYED.

   CONSTRUCTION INFORMATION SIGNING NOT VISIBLE TO THE MOTORING PUBLIC ONCE WORK BEGINS WILL BE MOVED BY THE CONTRACTOR TO A SITE IN ADVANCE OF THE WORK ZONE OR CLOSURE AS DIRECTED BY THE PLAN OR PROJECT ENGINEER.

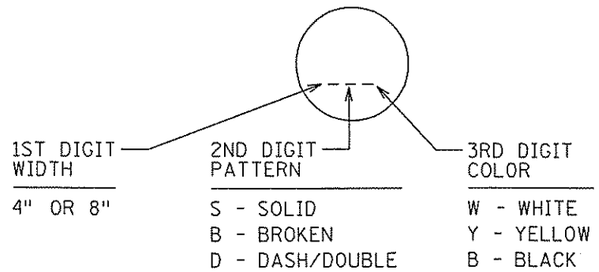
TRAFFIC CONTROL DEVICES & SYMBOLS LEGEND

SYMBOL	DESCRIPTION
	AREA CLOSED TO TRAFFIC / WORK AREA
⊢	TRAFFIC CONTROL SIGN
⌴	TYPE III BARRICADE =
○	DRUM-LIKE CHANNELIZER =
Ⓕ	TYPE A FLASHING WARNING LIGHT
	FLASHING ARROW BOARD TYPE C = (4' X 8' UNLESS OTHERWISE NOTED).
- - -	SOLID LINE PAVEMENT MARKING WITH TEMPORARY RAISED PAVEMENT MARKERS AT 10' SPACES
	CONCRETE BARRIER WITH DELINEATORS AT 30' SPACES
	IMPACT ATTENUATOR
↰	PAVEMENT MESSAGE (LEFT ARROW) EPOXY

STRIPING KEY

TRIANGLE - PAINT

PENTAGON - REMOVEABLE PREFORMED PLASTIC MARKING



EXAMPLE: (4SW) = 4" SOLID LINE WHITE - EPOXY

INDEX

TRAFFIC CONTROL

NO.	DATE	BY	CHK	REVISIONS

Design By: MJS
Plan By: MAS
Checked By: NEH
Approved By: SD

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CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER - SEAN GILMORE, PE

DATE: 04/03/12 LIC. NO: 40945

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STAGING & TRAFFIC CONTROL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 20 OF 153 SHEETS

Date Printed: 6/12/2012
K:\0913-010\cad\plan\C0020295_tcdl.dgn
WSB Filename:

TRAFFIC CONTROL TABULATION

G

ITEM	PAVEMENT MARKING REMOVAL	SAWING BIT PAVEMENT (FULL DEPTH)	PORTABLE PRECAST CONC BARRIER DES 8337	RELOCATE PORTABLE PRECAST CONC BARRIER DES 8337	IMPACT ATTENUATOR NO 1 (1)	IMPACT ATTENUATOR NO 2 (2)	RELOCATE IMPACT ATTENUATOR NO 2 (2)	REMOVABLE PREFORMED PLASTIC MARKING	4" SOLID LINE WHITE - PAINT	4" SOLID LINE YELLOW - PAINT	4" DOUBLE SOLID LINE YELLOW - PAINT	PVMNT MSSG (RR XING) PAINT
	LIN FT	LIN FT	LIN FT	LIN FT	ASSEMBLY	ASSEMBLY	ASSEMBLY	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT
STAGE 1		80										
STAGE 2	1750	200	120		2			700				
STAGE 3A		100										
STAGE 3B	500	500	140	120		1		1900	2400	500		
STAGE 4		20	40	260			1	600	1600		1600	1
TOTAL	2250	900	300	380	2	1	1	3200	4000	500	1600	1

GENERAL NOTES:
1. BYPASS STRIPING QUANTITIES SHOWN ON SHEET 52 .

NOTES:
(1) 30 MPH
(2) 55 MPH

NO.	DATE	BY	CHK	REVISIONS

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Approved By: SD

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SHEET 21 OF 153 SHEETS

Date Printed: 6/12/2012
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"R" SERIES

SIGN	SIGN NO.	COLOR	SIZE
ROAD CLOSED	R11-2	BLACK ON WHITE	48"X30"
STOP	R1-1	WHITE ON RED	36"X36"
ALL WAY	R1-4	WHITE ON RED	18"X6"
	R3-1	BLACK/RED ON WHITE	24"X24"
	R3-2	BLACK/RED ON WHITE	24"X24"
ONLY ONLY	R3-30AA	BLACK ON WHITE	36"X30"
DO NOT STOP ON TRACKS	R8-8	BLACK ON WHITE	24"X30"
DO NOT STOP ON TRACKS	R8-8	BLACK ON WHITE	36"X48"

"W" SERIES

SIGN	SIGN NO.	COLOR	SIZE
	W1-6	BLACK ON ORANGE	48"X24"
R R	W10-1	BLACK ON YELLOW	36" DIA.
	W20-2	BLACK/RED WHITE ON ORANGE	30"X30"
	W12-1	BLACK ON ORANGE	30"X30"
ROAD WORK AHEAD	W20-1	BLACK ON ORANGE	36"X36"
ROAD WORK AHEAD	W20-1	BLACK ON ORANGE	48"X48"
DETOUR AHEAD	W20-2	BLACK ON ORANGE	48"X48"
ROAD CLOSED AHEAD	W20-3	BLACK ON ORANGE	48"X48"
TURN LANE CLOSED	W20-X18	BLACK ON ORANGE	36"X36"
1000 FEET	W20-100F	BLACK ON ORANGE	42"X24"
1500 FEET	W20-100F	BLACK ON ORANGE	42"X24"

"M" SERIES

ANOKA 83 COUNTY	M1-6	WHITE ON BLUE	24"x 12"
DETOUR	M4-8	BLACK ON ORANGE	24"x 12"
END DETOUR	M4-8a	BLACK ON ORANGE	24"x 12"
	M5-1La	WHITE ON BLUE	21"x 15"
	M5-1Ra	WHITE ON BLUE	21"x 15"
	M6-1Ra/La	WHITE ON BLUE	21"x 15"
	M6-3a	WHITE ON BLUE	21"x 15"
SOUTH	M3-1ma	WHITE ON BLUE	24"x 12"
NORTH	M3-3ma	WHITE ON BLUE	24"x 12"
TO	M4-5a	WHITE ON BLUE	24"x 12"

MISCELLANEOUS

ROAD CLOSED Sunwood Dr TO Bunker Lk Blvd FOLLOW DETOUR BEGINS MTH DY	TC-1	BLACK ON ORANGE	SEE DETAIL
ROAD CLOSED Bunker Lk Blvd TO Sunwood Dr FOLLOW DETOUR BEGINS MTH DY	TC-2	BLACK ON ORANGE	SEE DETAIL
EVENT PARKING	TC-3	BLACK ON ORANGE	SEE DETAIL
EVENT PARKING	TC-4	BLACK ON ORANGE	SEE DETAIL
EVENT PARKING	TC-5	BLACK ON ORANGE	SEE DETAIL
EVENT PARKING	TC-6	BLACK ON ORANGE	SEE DETAIL
EVENT PARKING	TC-7	BLACK ON ORANGE	SEE DETAIL

"G" SERIES

SIGN	SIGN NO.	COLOR	SIZE
END ROAD WORK	G20-2A	BLACK ON ORANGE	48"X24"
ROAD CLOSED BEGINNING MONTH DY	G20-X1	BLACK ON ORANGE	36"X30"
BUSINESS ACCESS	G20-X6R	BLACK ON ORANGE	36"X24"

DEVICES

ITEM	SIGN NO.	COLOR	SIZE
	PLASTIC DRUM	BLACK ON ORANGE	36"
	TYPE III BARRICADE	ORANGE ON WHITE	8'
F	FLASHER		

NO.	DATE	BY	CHK	REVISIONS

Design By: MJS
Plan By: CWK
Checked By: AJP
Approved By: NEH

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CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE

DATE: 04/03/12 LIC. NO: 44620

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SHEET 22 OF 153 SHEETS

Date Printed: 6/12/2012
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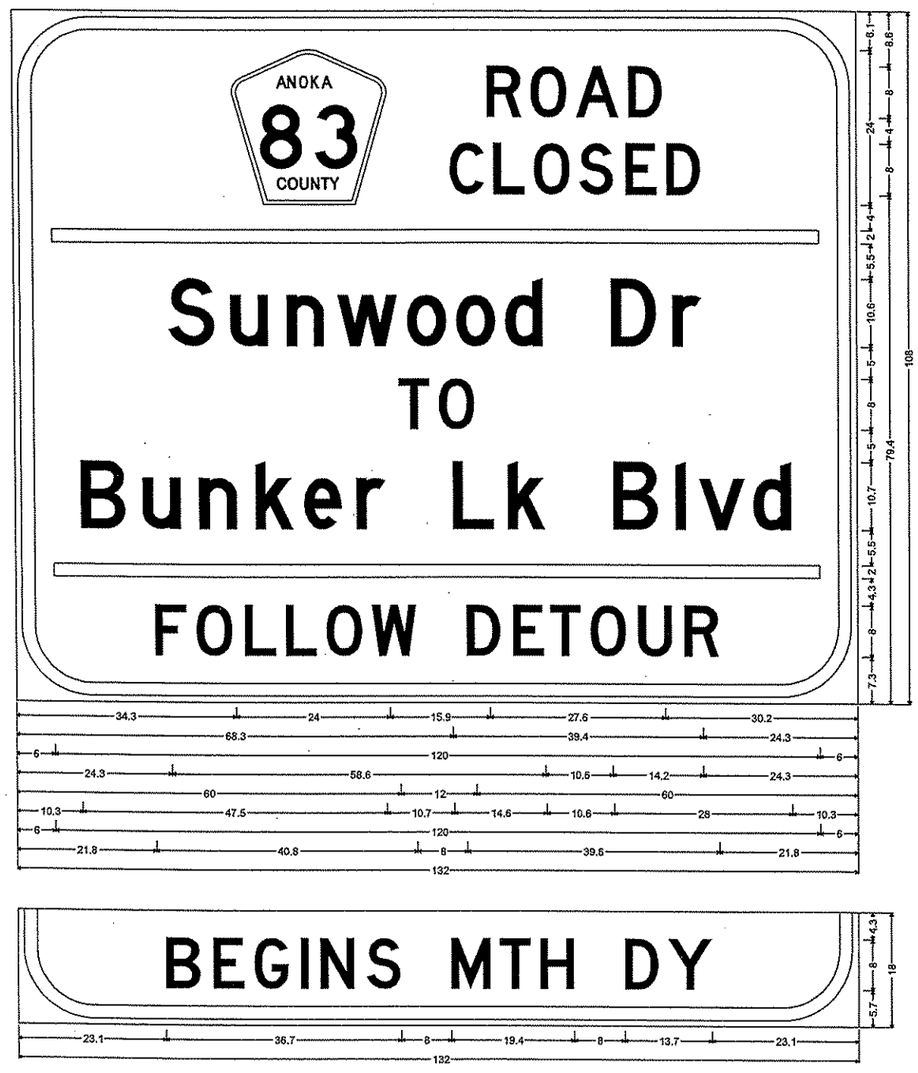
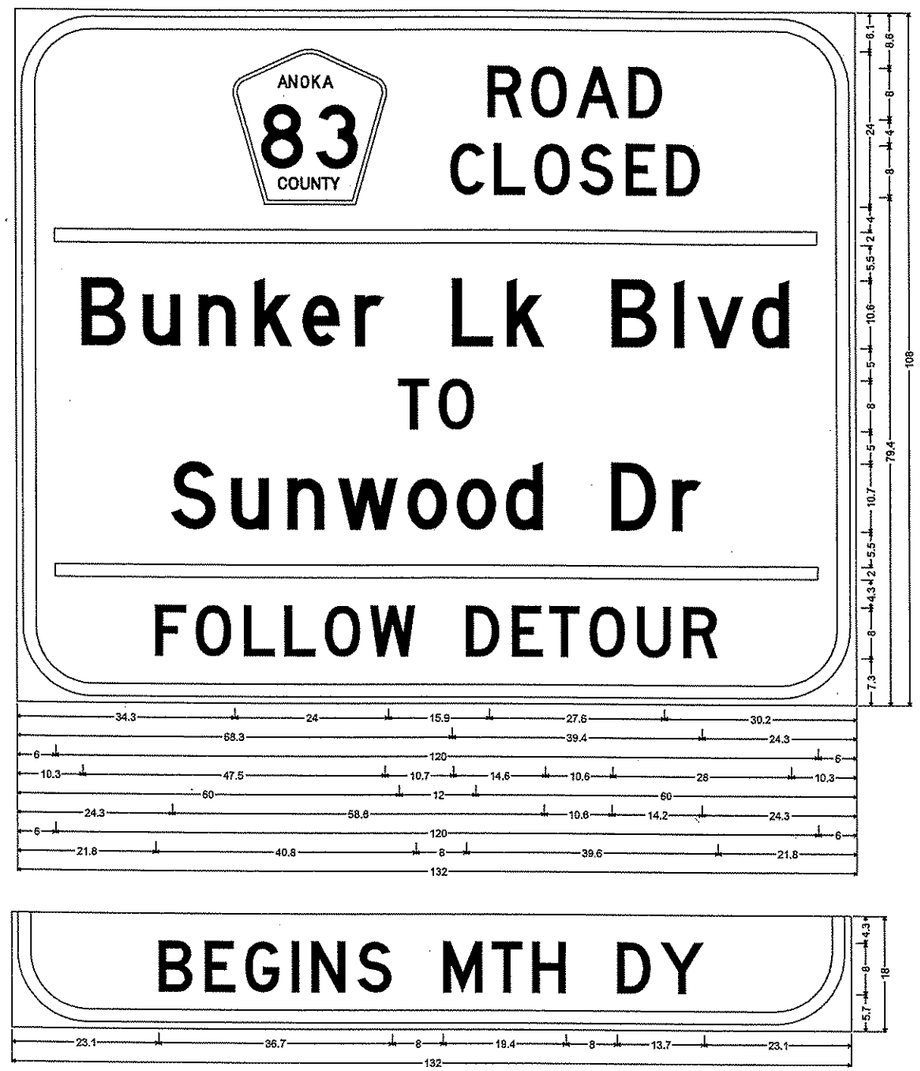
TC-1



TC-2



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WSB Filename: k:\01\913-010\cad\plan\CD0220295_tc05.dgn

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Plan By: MAS
Checked By: NEH
Approved By: SD

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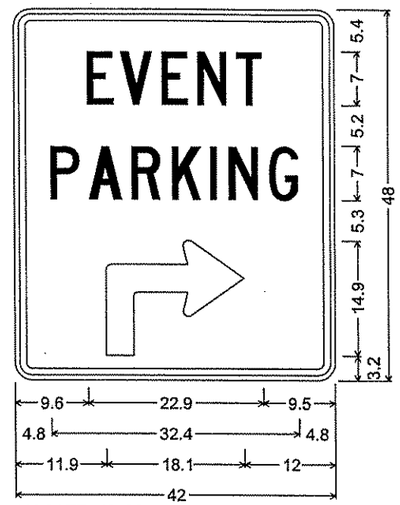
SHEET 23 OF 153 SHEETS

TC-3

M4-9ATL_42x36;
2.3" Radius, 0.9" Border, 0.6" Indent, Black on Orange;
[EVENT] C; [PARKING] C;
90 Deg Advanced Turn Arrow Custom 18.1" X 14.9";

TC-4

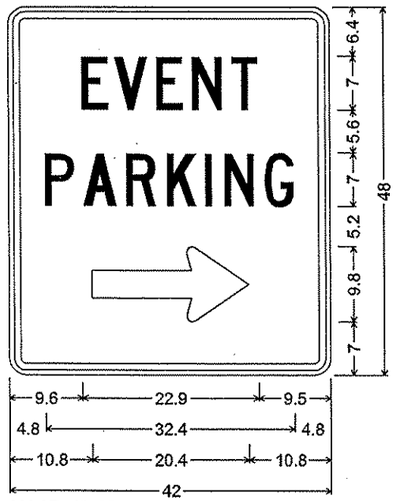


M4-9ATR_42x36;
2.3" Radius, 0.9" Border, 0.6" Indent, Black on Orange;
[EVENT] C; [PARKING] C;
90 Deg Advanced Turn Arrow Custom 18.1" X 14.9";

TC-5

M4-9L_42x36;
2.3" Radius, 0.9" Border, 0.6" Indent, Black on Orange;
[EVENT] C; [PARKING] C;
Arrow Custom - 20.4" 180°;

TC-6



M4-9R_42x36;
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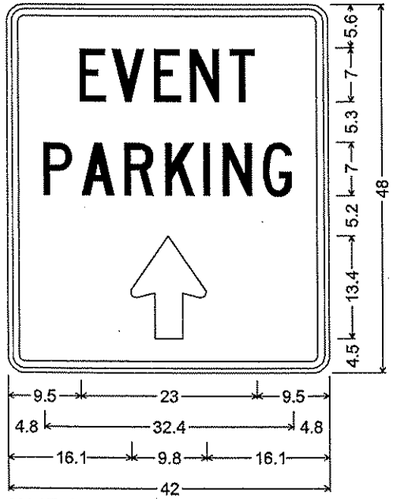
[EVENT] C; [PARKING] C;
Arrow Custom - 20.4" 0°;

TC-7



M4-9T_42x36;
2.3" Radius, 0.9" Border, 0.6" Indent, Black on Orange;
[EVENT] C; [PARKING] C;
Arrow Custom - 13.4" 90°;

NO.	DATE	BY	CHK	REVISIONS

Design By: MJS
Plan By: MAS
Checked By: NEH
Approved By: SD

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CERTIFIED BY _____
LICENSED PROFESSIONAL ENGINEER - SEAN DILMORE, PE
DATE: 04/03/12 LIC. NO: 40945

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SHEET 24 OF 153 SHEETS

Date Printed: 6/12/2012
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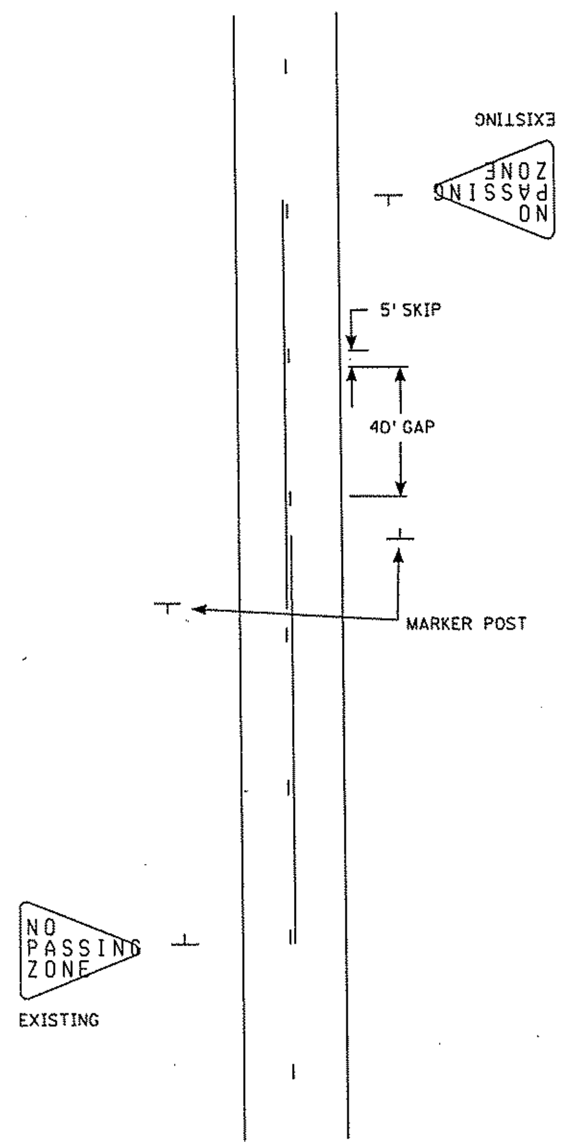
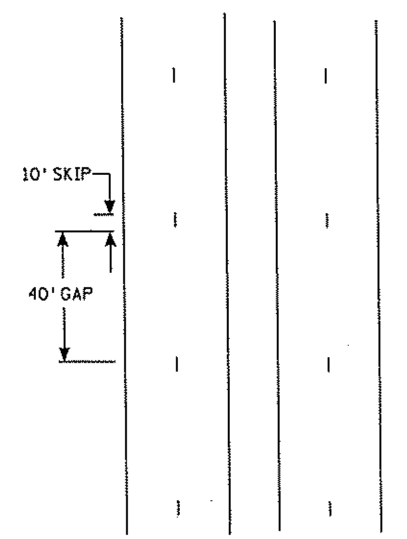
INTERIM PAVEMENT MARKING

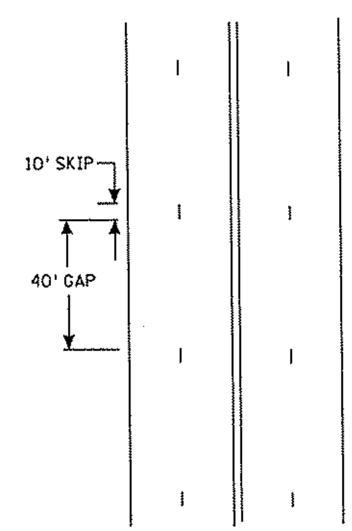
TWO LANE, TWO WAY



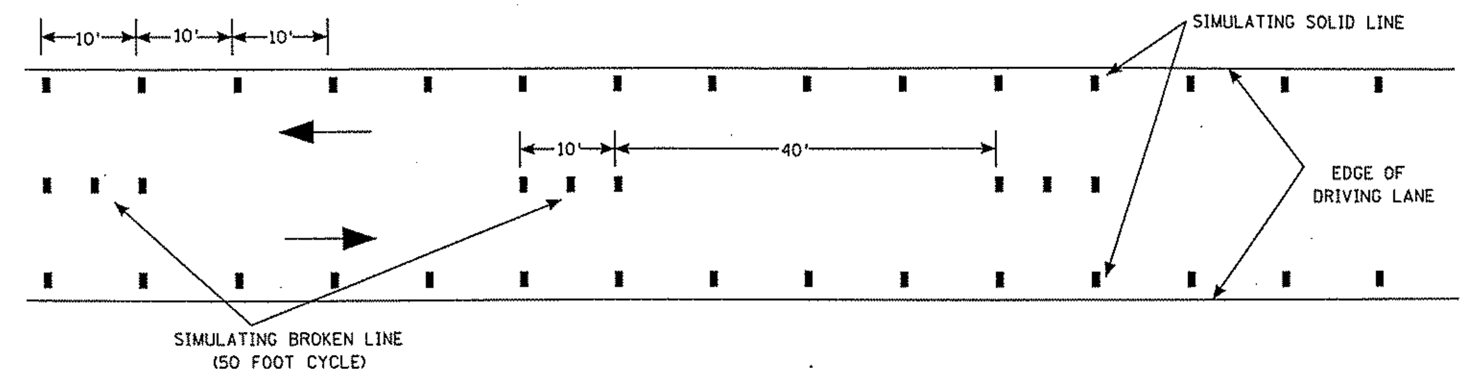
MULTI-LANE, DIVIDED



MULTI-LANE, UNDIVIDED



SIMULATING A SOLID LINE AND A BROKEN LINE (50 FOOT CYCLE) WITH TRPMS



USING TRPM'S AS INTERIM PAVEMENT MARKING

WHEN TRPM'S ARE USED TO SIMULATE A LINE THE FOLLOWING GUIDELINE APPLIES:

SKIP STRIPE - USES 3 TRPM's PER 10' SKIP STRIPE ON 5' CENTERS WITH A 40' GAP

SOLID LINE - USES TRPM'S ON 10' CENTERS ON TANGENTS, FLATTER GRADES AND CURVES UNDER 6 DEGREES. FOR CURVES OVER 6 DEGREES AND STEEP GRADES, THIS SPACING SHALL BE REDUCED TO 5' CENTERS.

GENERAL NOTES:

SEE SPECIAL PROVISIONS FOR INTERIM PAVEMENT MARKING GUIDELINES

THESE INTERIM PAVEMENT MARKING GUIDELINES APPLY TO ALL TEMPORARY TRAFFIC CONTROL ZONES OF AT LEAST 300' IN LENGTH ON TANGENT AND 50' ON CURVES OF 6 DEGREES OR GREATER.

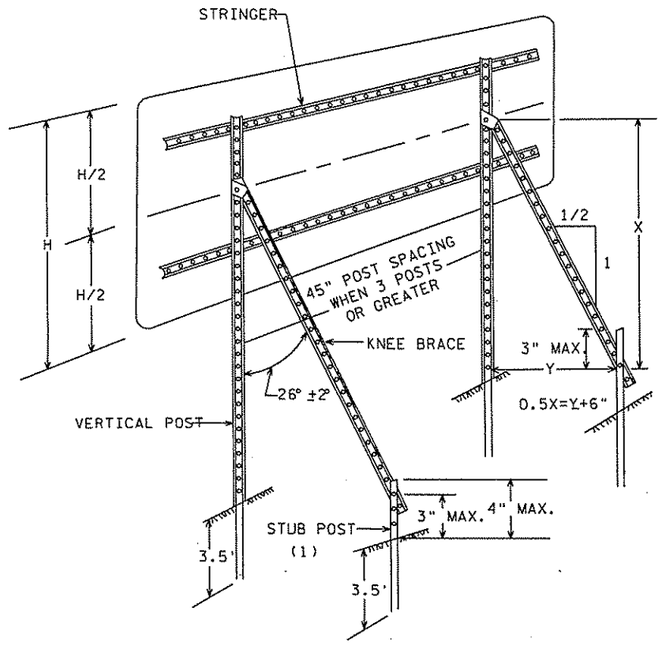
1. FOR ALL PROJECTS GREATER THAN 1.25 MILES IN LENGTH, INTERIM SKIP STRIPE PAVEMENT MARKINGS SHALL USE THE SAME CYCLE LENGTH AS FINAL PAVEMENT MARKINGS (50') AND SHALL BE A MINIMUM OF 5' LENGTH.
2. ON PROJECTS GREATER THAN 300' IN LENGTH, BUT LESS THAN 1.25 MILES IN LENGTH, THE INTERIM MARKING SHALL MATCH THE CYCLE LENGTH AT EITHER END OF THE PROJECT. THE INTERIM STRIPE SHALL BE 5' IN LENGTH.

ALL INTERIM MARKINGS SHALL BE INSTALLED PRIOR TO REMOVING LANE CLOSURE OR OPENING THE ROADWAY TO TRAFFIC.

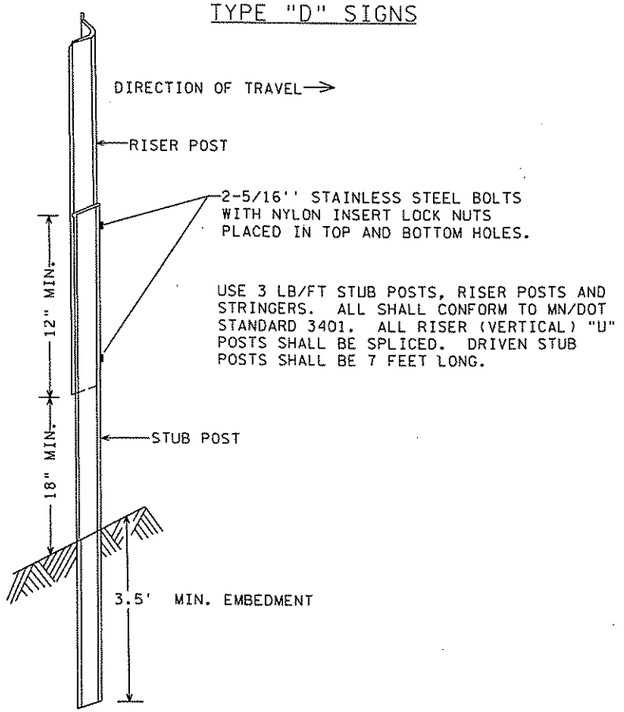
GENERAL NOTES (CONTINUED):

FINAL MARKINGS AND ALL OTHER PAVEMENT MARKINGS INCLUDING EDGELINES, CHANNELIZING LINES, LANE REDUCTION TRANSITIONS, GORE MARKINGS AND OTHER LONGITUDINAL MARKINGS AND THE VARIOUS NON-LONGITUDINAL MARKINGS (STOP LINES, RAIL ROAD CROSSINGS, CROSSWALKS, WORDS, SYMBOLS, ETC) SHOULD BE INSTALLED WITHIN 14 CALENDAR DAYS.

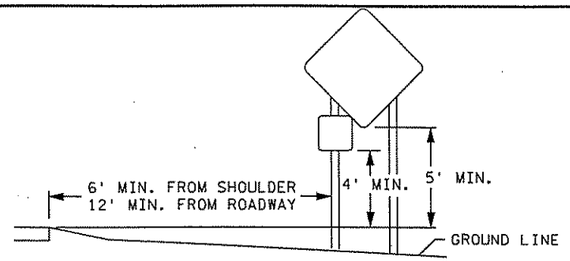
NOTE: WHEN FINAL MARKINGS ARE TO BE EPOXY AND PAINT IS USED FOR INTERIM SOLID LINES, A 10 MIL THICK LAYER APPLICATION OF A WATER-BASED TRAFFIC MARKING PAINT SHALL BE USED. WITH A 10 MIL LAYER OF PAINT APPLIED, BEADS SHOULD BE APPLIED AT A RATE OF 6 LBS/GAL. REMOVAL OF THE 10 MIL LAYER OF PAINT IS NOT REQUIRED PRIOR TO PLACING THE EPOXY.



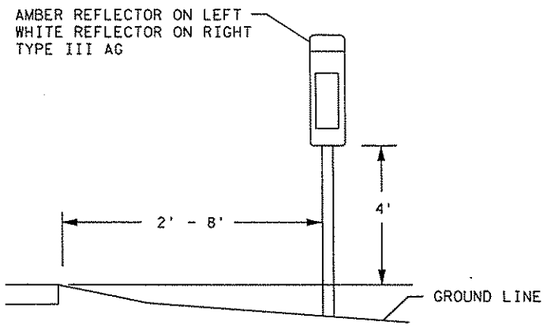
TYPICAL "A-FRAME" INSTALLATION
TYPE "D" SIGNS



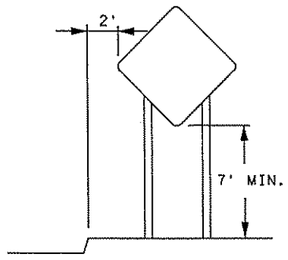
"U" POST SPLICE



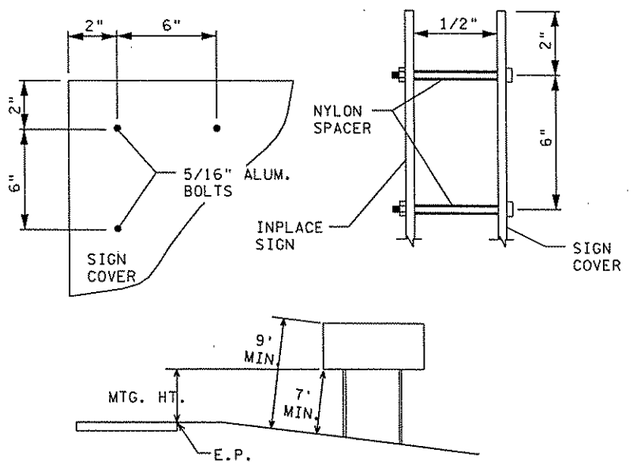
TYPICAL RURAL DESIGN



DELINEATION MOUNTING



TYPICAL URBAN DESIGN



TYPICAL MOUNTING

(1) OFFSET STUB POST 1' TOWARD ROADWAY RELATIVE TO VERTICAL POST.

SIGN DATA

SIGNS TO BE INSTALLED ON DRIVEN U-POSTS SHALL BE INSTALLED IN ACCORDANCE WITH TABLE 1 OR TABLE 2 BELOW. SIGN PANELS SHALL BE INSTALLED ON SIGN STRUCTURES TO MEET THE MINIMUM 5 FEET DEPICTED ON THE TYPICAL RURAL DESIGN DETAIL, THE 7 FEET DEPICTED ON THE TYPICAL URBAN DESIGN DETAIL, OR MINIMUM 7 AND 9 FEET DEPICTED ON THE TYPICAL MOUNTING DETAIL ON THIS SHEET.

TABLE 1

STANDARD CONSTRUCTION SIGNS IN MN/DOT STANDARD SIGNS MANUAL

PANEL SIZE (IN.)	POSTS			
	NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)
24 x 24	2-U	18		13
30 x 24	2-U	18		13
36 x 30	2-U	24		13
36 x 36	2-U	18		14
42 x 36	2-U	30		14
48 x 48	2-U	30		15
60 x 60	2-U	42	1	16
72 x 72	2-U	42	2	17
96 x 54	2-U	54	2	16
168 x 132	4-U	48	4	20

GENERAL NOTES:
1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
2. SEE STANDARD SIGNS MANUAL FOR PUNCHING HOLES.

TABLE 2

SPECIAL DESIGN CONSTRUCTION SIGNS

PANEL SIZE		POSTS			
LENGTH (IN.)	HEIGHT (IN.)	NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)
54 - 96	78	2-U	42	2	20
102 - 138	78	3-U	45	3	20
144 - 180	78	4-U	45	4	20

DESIGNER NOTE:

INCLUDE SPECIAL SIGN DETAILS IN THE TRAFFIC CONTROL PLAN IN TABLE TWO.

NOTES:

FOR TEMPORARY CONSTRUCTION SIGN FRAMING, THE CONTRACTOR MAY USE GRADE 5 ZINC PLATED BOLTS FOR ALL BOLTED CONNECTIONS, EXCEPT FOR THE KNEE BRACE CONNECTION TO THE REAR STUB POST, WHICH SHALL UTILIZE A 5/16 INCH STAINLESS STEEL BOLT AND NYLON INSERT LOCK NUT. ADDITIONAL SIGN FRAMING DETAILS CAN BE FOUND IN THE TRAFFIC ENGINEERING MANUAL PART 6.

IF THE CONTRACTOR ELECTS TO USE SOME OTHER TYPE OF SIGN SUPPORT (OTHER THAN U-CHANNEL SIGN POSTS) FOR MOUNTING CONSTRUCTION SIGNS, DETAILS OF THE PROPOSED SIGN STRUCTURE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING THE SIGN STRUCTURE COMPONENTS. ANY SIGN STRUCTURE TO BE SUBMITTED TO THE ENGINEER SHALL BE AN FHWA ACCEPTED BREAKAWAY SIGN SUPPORT. SIGN STRUCTURE SHALL ALSO BE APPROVED FOR 90 MPH WIND LOAD.

SIGNS SHOWN TO BE COVERED SHALL BE COVERED WITH THE SAME COLOR AS THE SIGN BACKGROUND. THE CONTRACTOR SHALL INSTALL COVERS OR ADDITIONAL SIGNS USING A MINIMUM 1/2" NYLON SPACER BETWEEN THE INPLACE SIGN AND THE COVERING MATERIAL. HOLES WILL BE DRILLED IN THE COVER AND THE INPLACE SIGN AND SHALL BE INSTALLED IN ACCORDANCE TO THE SIGN PANEL DETAIL. SPACERS ARE REQUIRED. MID-PANEL SPACING SHALL BE NO GREATER THAN 24".

TYPICAL TEMPORARY SIGN FRAMING AND INSTALLATION DETAILS

NO.	DATE	BY	CHK	REVISIONS

Design By: MJS
Plan By: MAS
Checked By: NEH
Approved By: SD

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SHEET 26 OF 153 SHEETS

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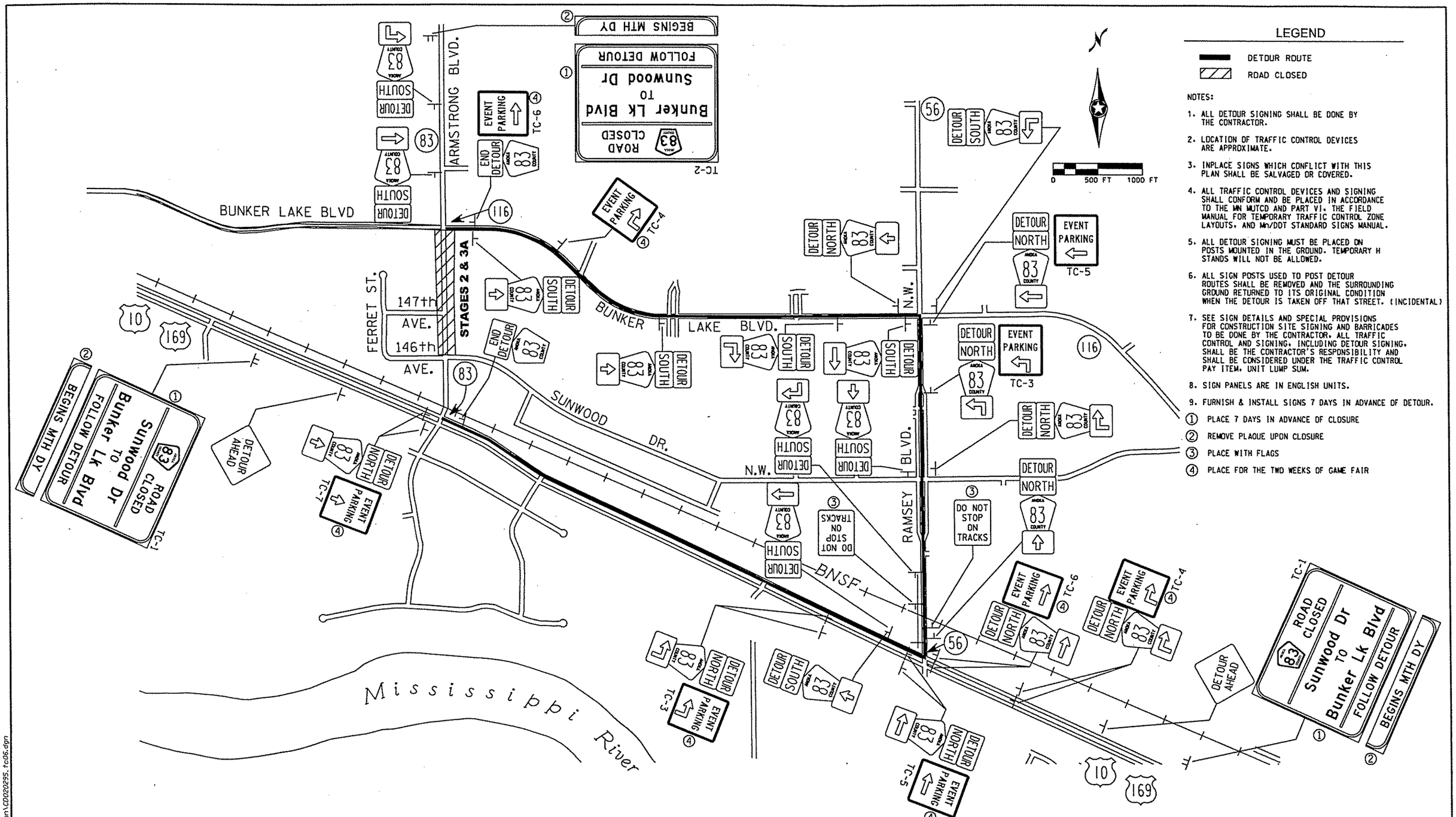

LEGEND

- DETOUR ROUTE
- ROAD CLOSED

NOTES:

1. ALL DETOUR SIGNING SHALL BE DONE BY THE CONTRACTOR.
2. LOCATION OF TRAFFIC CONTROL DEVICES ARE APPROXIMATE.
3. INPLACE SIGNS WHICH CONFLICT WITH THIS PLAN SHALL BE SALVAGED OR COVERED.
4. ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM AND BE PLACED IN ACCORDANCE TO THE MN MUTCD AND PART VI, THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS, AND MN/DOT STANDARD SIGNS MANUAL.
5. ALL DETOUR SIGNING MUST BE PLACED ON POSTS MOUNTED IN THE GROUND. TEMPORARY H STANDS WILL NOT BE ALLOWED.
6. ALL SIGN POSTS USED TO POST DETOUR ROUTES SHALL BE REMOVED AND THE SURROUNDING GROUND RETURNED TO ITS ORIGINAL CONDITION WHEN THE DETOUR IS TAKEN OFF THAT STREET. (INCIDENTAL)
7. SEE SIGN DETAILS AND SPECIAL PROVISIONS FOR CONSTRUCTION SITE SIGNING AND BARRICADES TO BE DONE BY THE CONTRACTOR. ALL TRAFFIC CONTROL AND SIGNING, INCLUDING DETOUR SIGNING, SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE CONSIDERED UNDER THE TRAFFIC CONTROL PAY ITEM, UNIT LUMP SUM.
8. SIGN PANELS ARE IN ENGLISH UNITS.
9. FURNISH & INSTALL SIGNS 7 DAYS IN ADVANCE OF DETOUR.

① PLACE 7 DAYS IN ADVANCE OF CLOSURE
② REMOVE PLAQUE UPON CLOSURE
③ PLACE WITH FLAGS
④ PLACE FOR THE TWO WEEKS OF GAME FAIR

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM AND BE PLACED IN ACCORDANCE TO THE MN MUTCD AND PART VI, THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

NO.	DATE	BY	CHK	REVISIONS

Design By: MJS
Plan By: MAS
Checked By: NEH
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SHEET 27 OF 153 SHEETS

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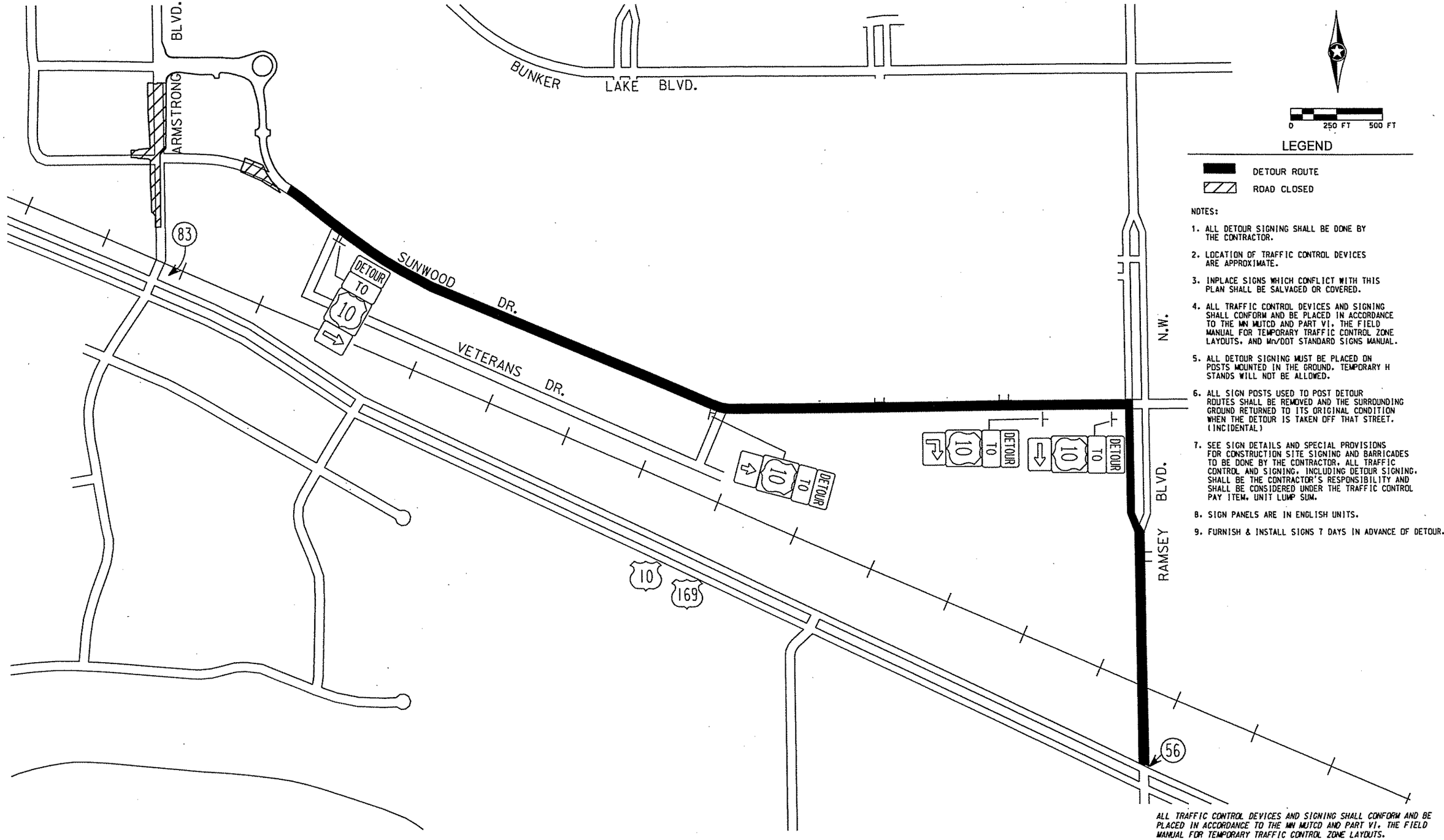

LEGEND

DETOUR ROUTE

ROAD CLOSED

NOTES:

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ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM AND BE PLACED IN ACCORDANCE TO THE MN MUTCD AND PART VI. THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

NO.	DATE	BY	CHK	REVISIONS

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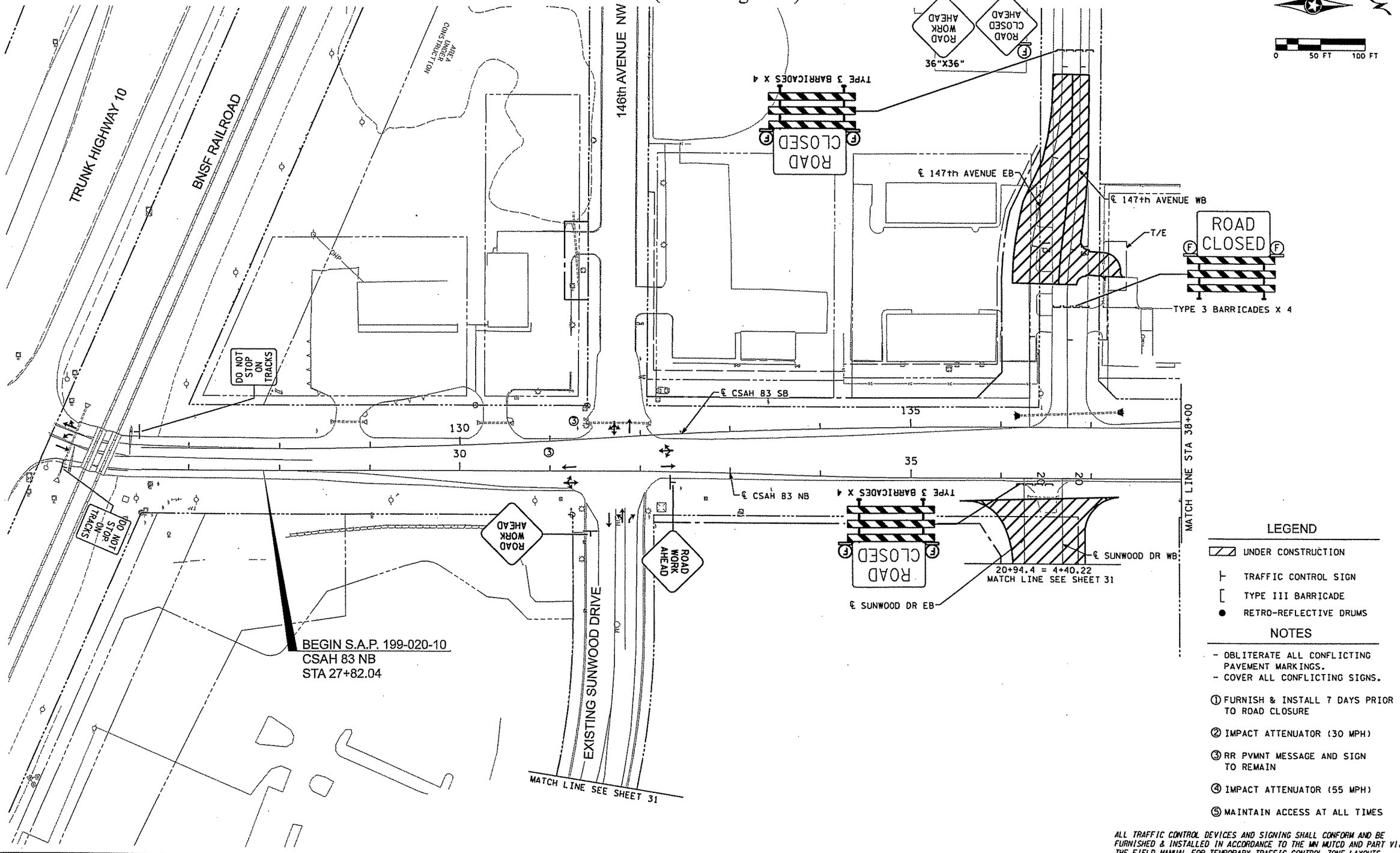

LEGEND

- UNDER CONSTRUCTION
- TRAFFIC CONTROL SIGN
- TYPE III BARRICADE
- RETRO-REFLECTIVE DRUMS

NOTES

- OBLITERATE ALL CONFLICTING PAVEMENT MARKINGS.
- COVER ALL CONFLICTING SIGNS.

① FURNISH & INSTALL 7 DAYS PRIOR TO ROAD CLOSURE

② IMPACT ATTENUATOR (30 MPH)

③ RR PVMNT MESSAGE AND SIGN TO REMAIN

④ IMPACT ATTENUATOR (55 MPH)

⑤ MAINTAIN ACCESS AT ALL TIMES

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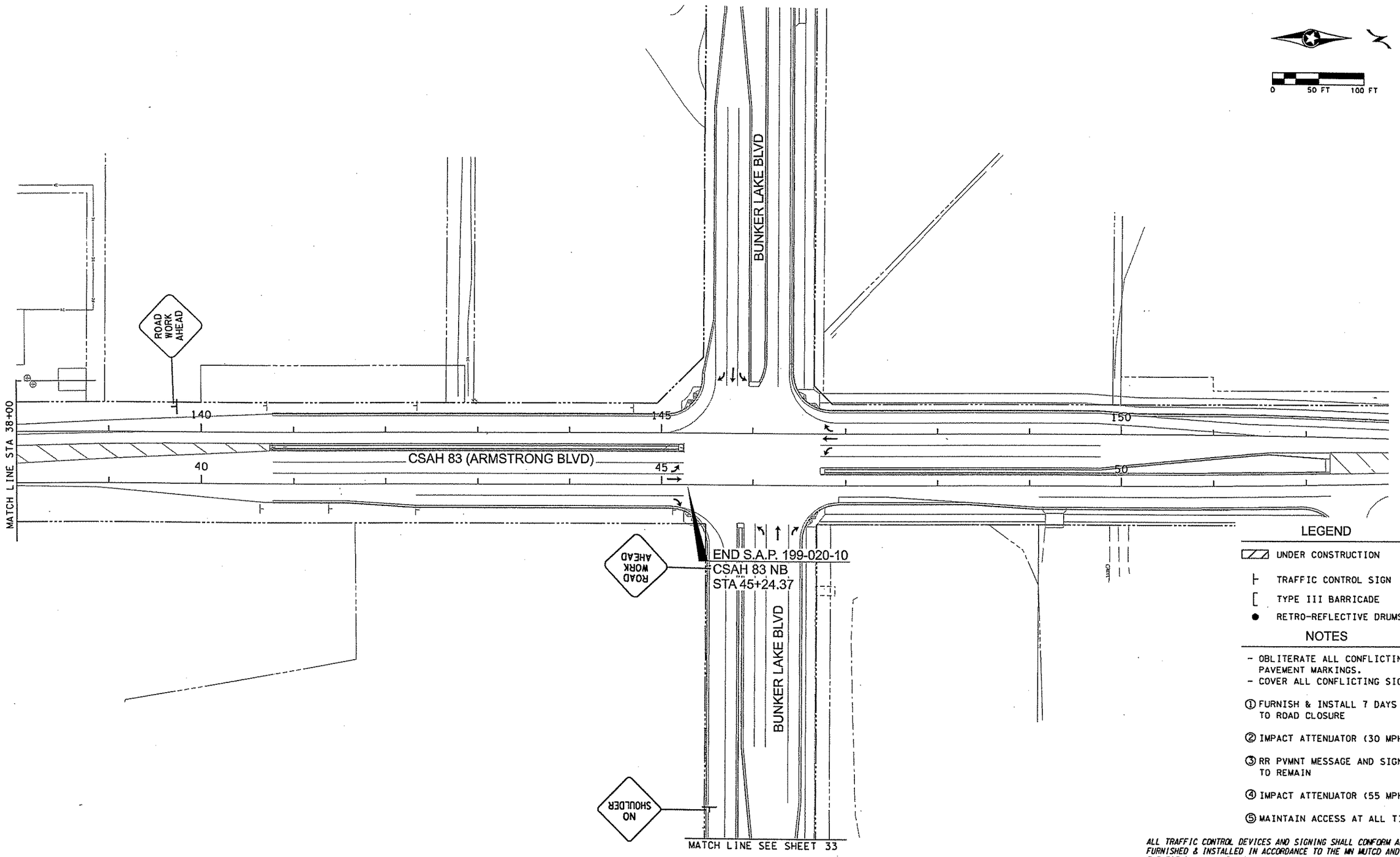

LEGEND

- UNDER CONSTRUCTION
- TRAFFIC CONTROL SIGN
- TYPE III BARRICADE
- RETRO-REFLECTIVE DRUMS

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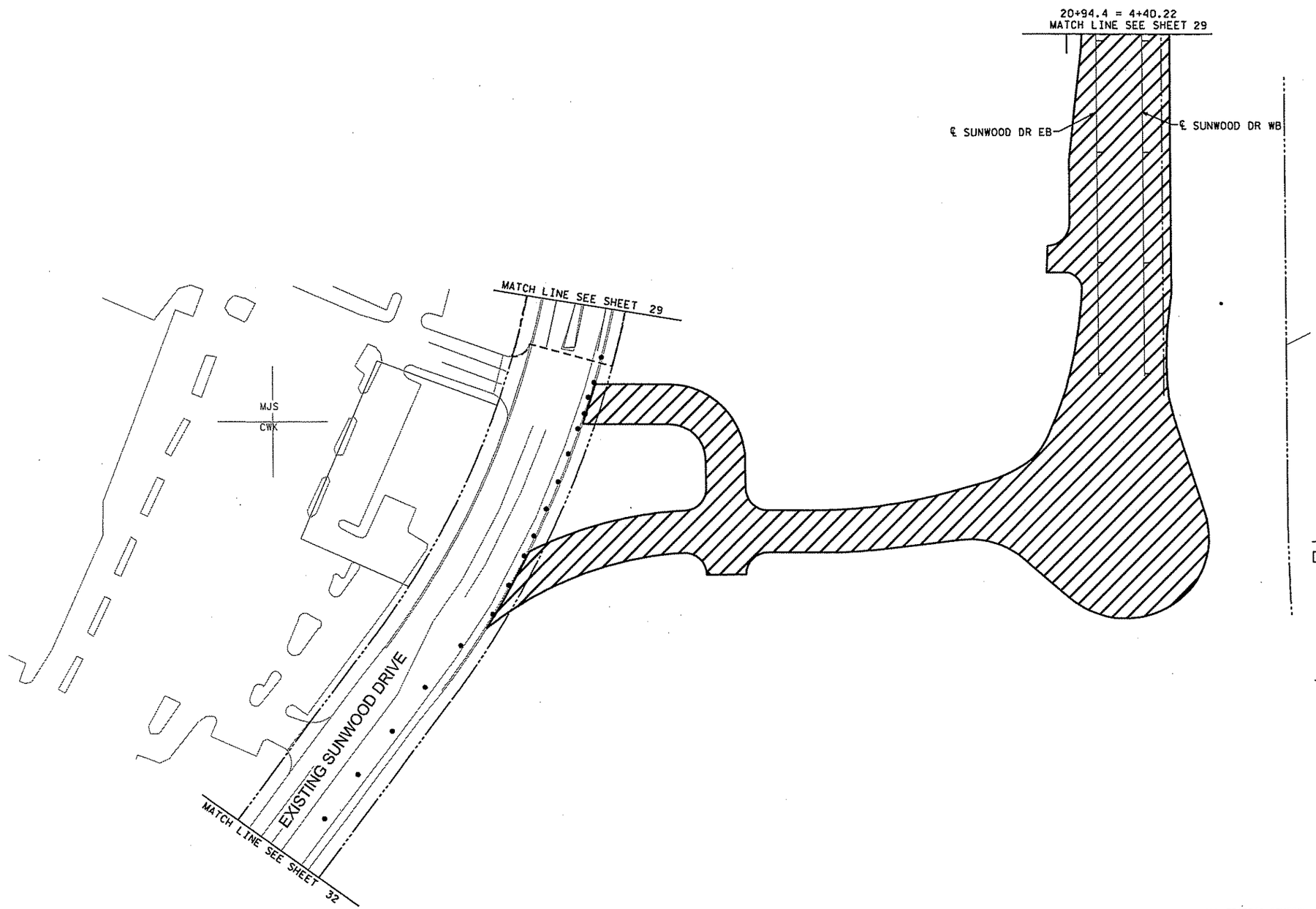

LEGEND

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- TRAFFIC CONTROL SIGN
- TYPE III BARRICADE
- RETRO-REFLECTIVE DRUMS

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SHEET 31 OF 153 SHEETS

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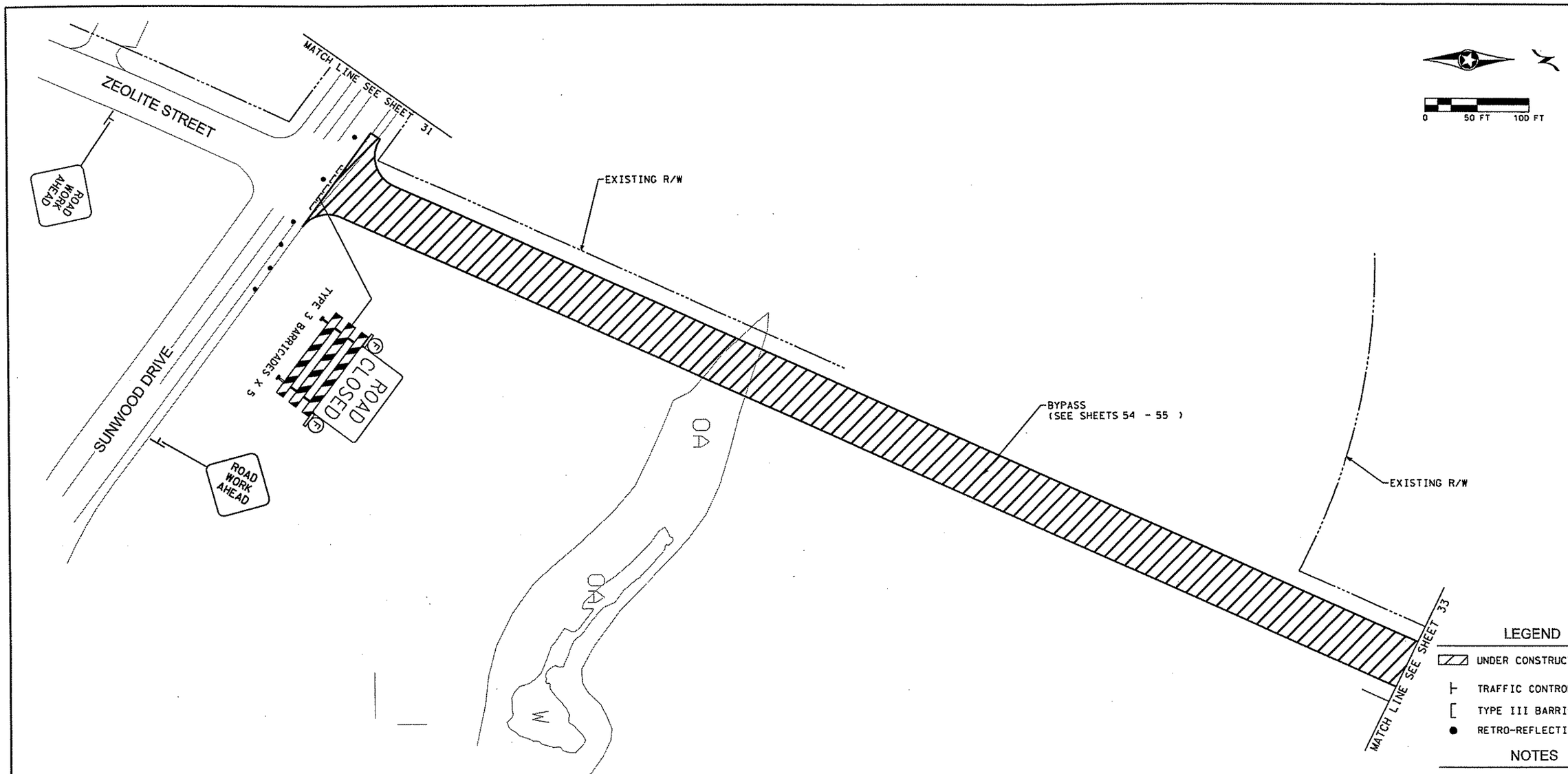

LEGEND

- UNDER CONSTRUCTION
- TRAFFIC CONTROL SIGN
- TYPE III BARRICADE
- RETRO-REFLECTIVE DRUMS

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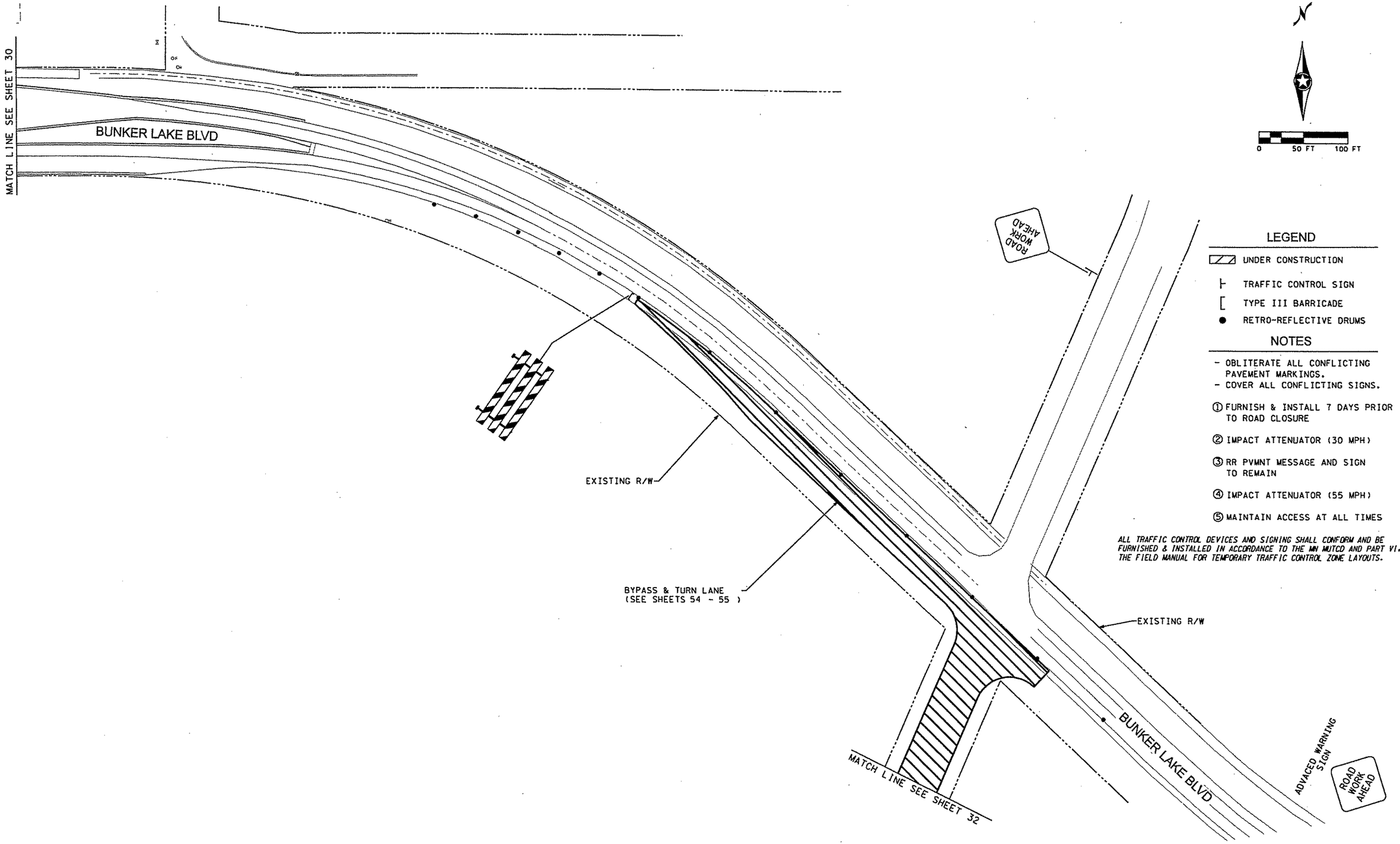

LEGEND

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- TRAFFIC CONTROL SIGN
- TYPE III BARRICADE
- RETRO-REFLECTIVE DRUMS

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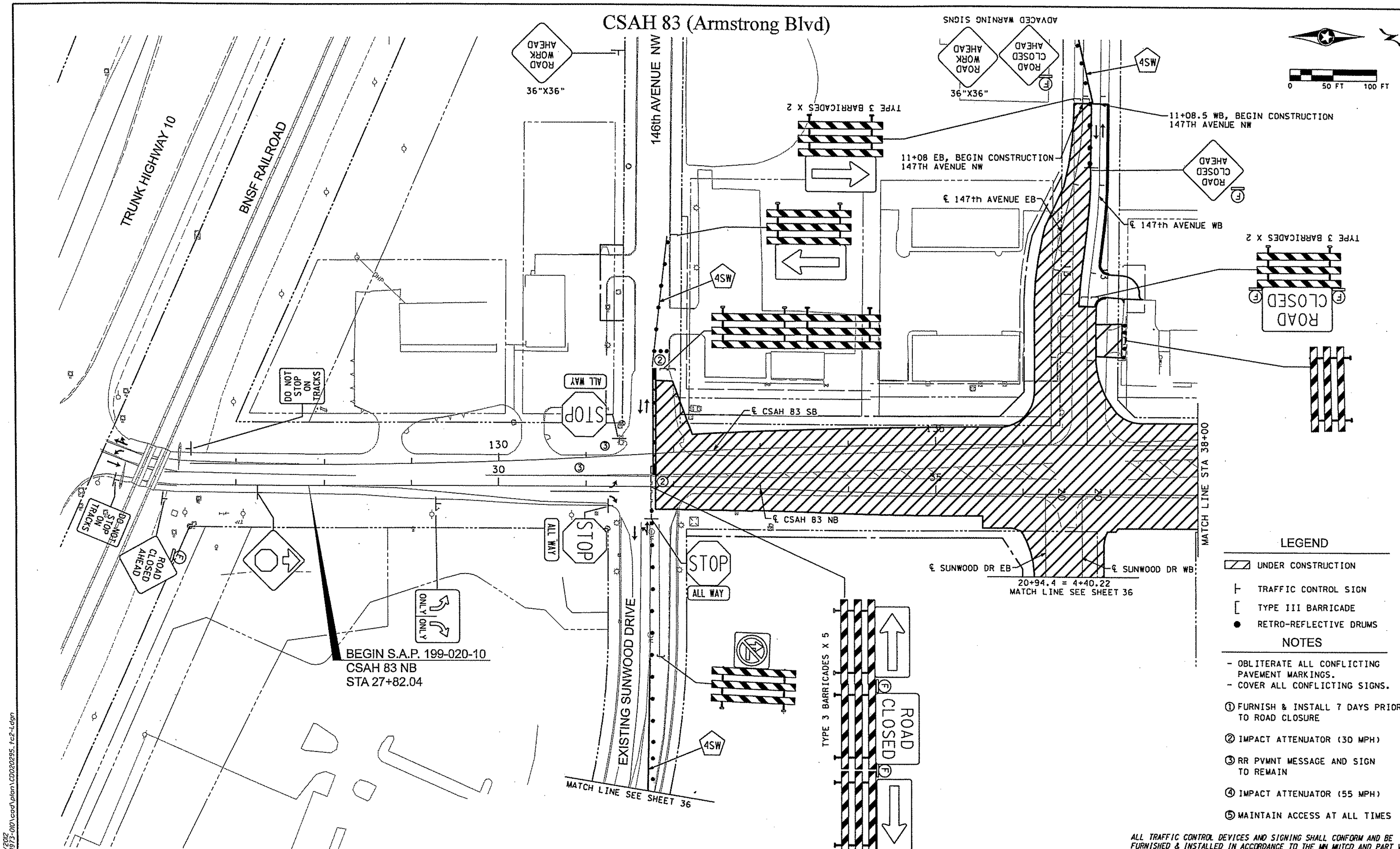

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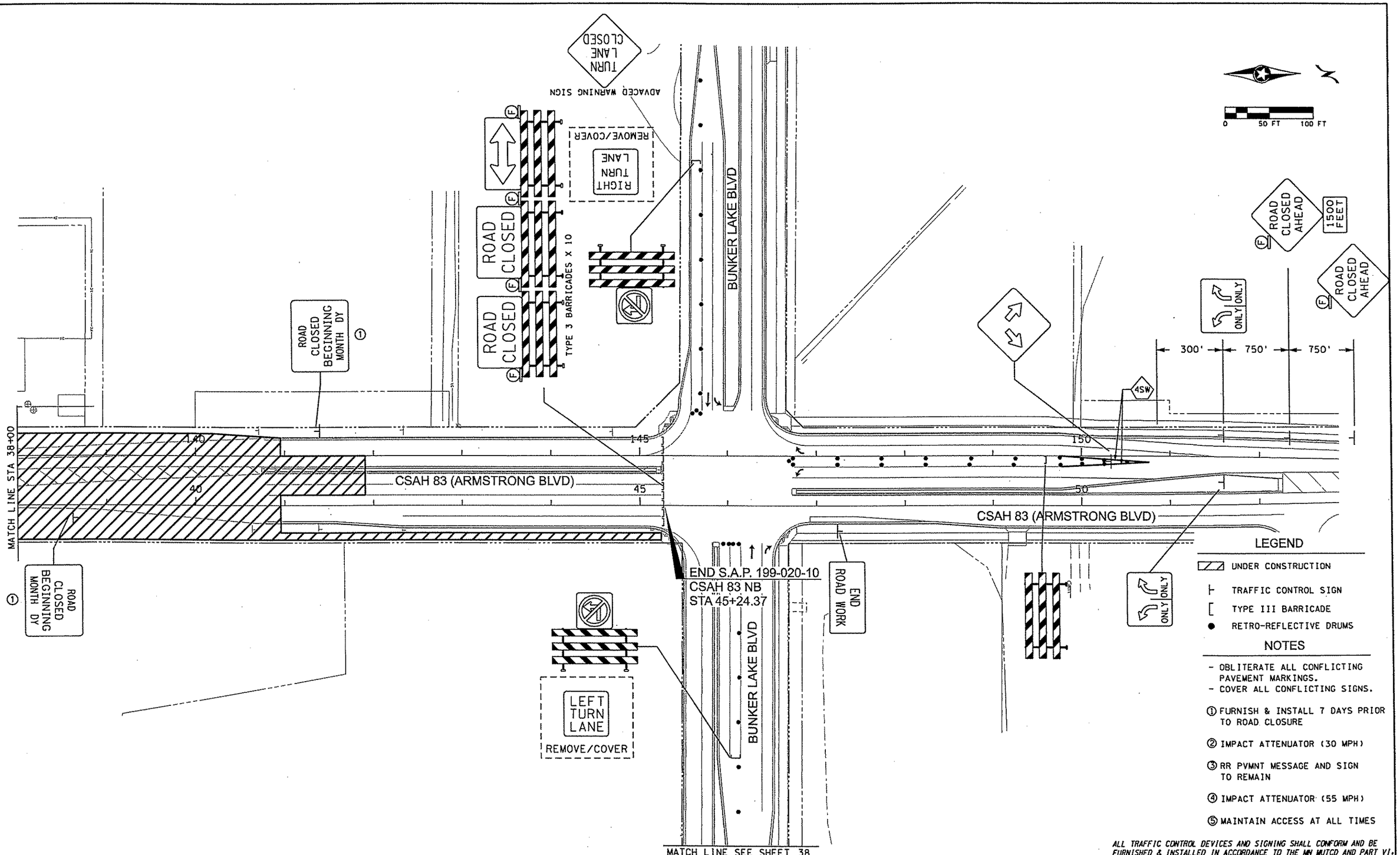

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- TRAFFIC CONTROL SIGN
- TYPE III BARRICADE
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Armstrong Blvd at Sunwood Drive
City of Ramsey, Minnesota

CITY OF RAMSEY, MINNESOTA
STAGE 2 (STA 38+00 TO STA 51+00)
STAGING & TRAFFIC CONTROL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 35 OF 153 SHEETS

Date Printed: 6/12/2012
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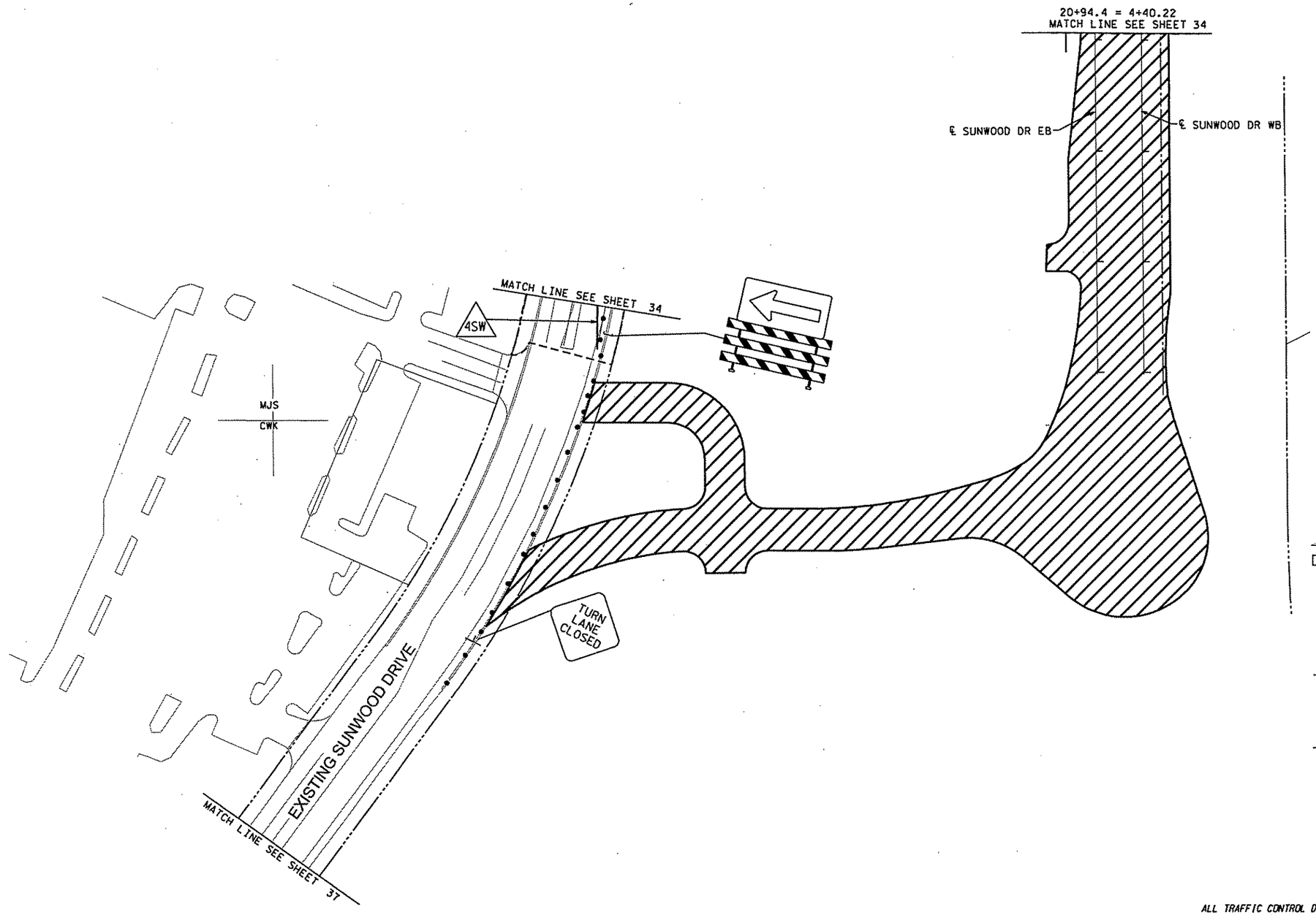

0 50 FT 100 FT

LEGEND

- UNDER CONSTRUCTION
- TRAFFIC CONTROL SIGN
- TYPE III BARRICADE
- RETRO-REFLECTIVE DRUMS

NOTES

- OBLITERATE ALL CONFLICTING PAVEMENT MARKINGS.
- COVER ALL CONFLICTING SIGNS.

① FURNISH & INSTALL 7 DAYS PRIOR TO ROAD CLOSURE

② IMPACT ATTENUATOR (30 MPH)

③ RR PVMNT MESSAGE AND SIGN TO REMAIN

④ IMPACT ATTENUATOR (55 MPH)

⑤ MAINTAIN ACCESS AT ALL TIMES

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM AND BE FURNISHED & INSTALLED IN ACCORDANCE TO THE MN MUTCD AND PART VI, THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

Date Printed: 6/12/2012
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NO.	DATE	BY	CHK	REVISIONS

Design By: MJS
Plan By: MAS
Checked By: NEH
Approved By: SD

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER - SEAN D. MOBRE, PE

DATE: 04/03/12 LIC. NO: 40945

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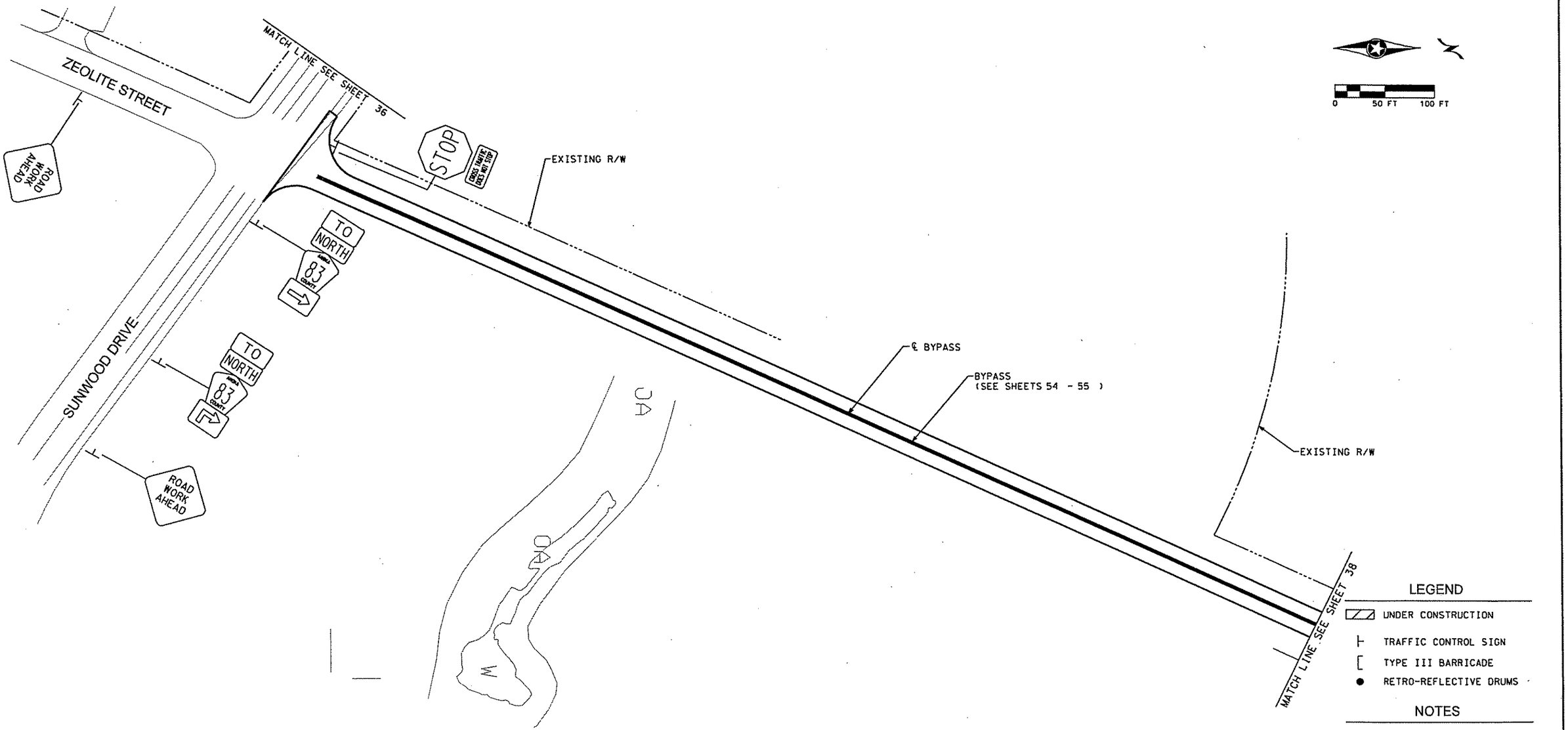
STAGE 2 (SUNWOOD DRIVE)
STAGING & TRAFFIC CONTROL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 36 OF 153 SHEETS



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SHEET 37 OF 153 SHEETS

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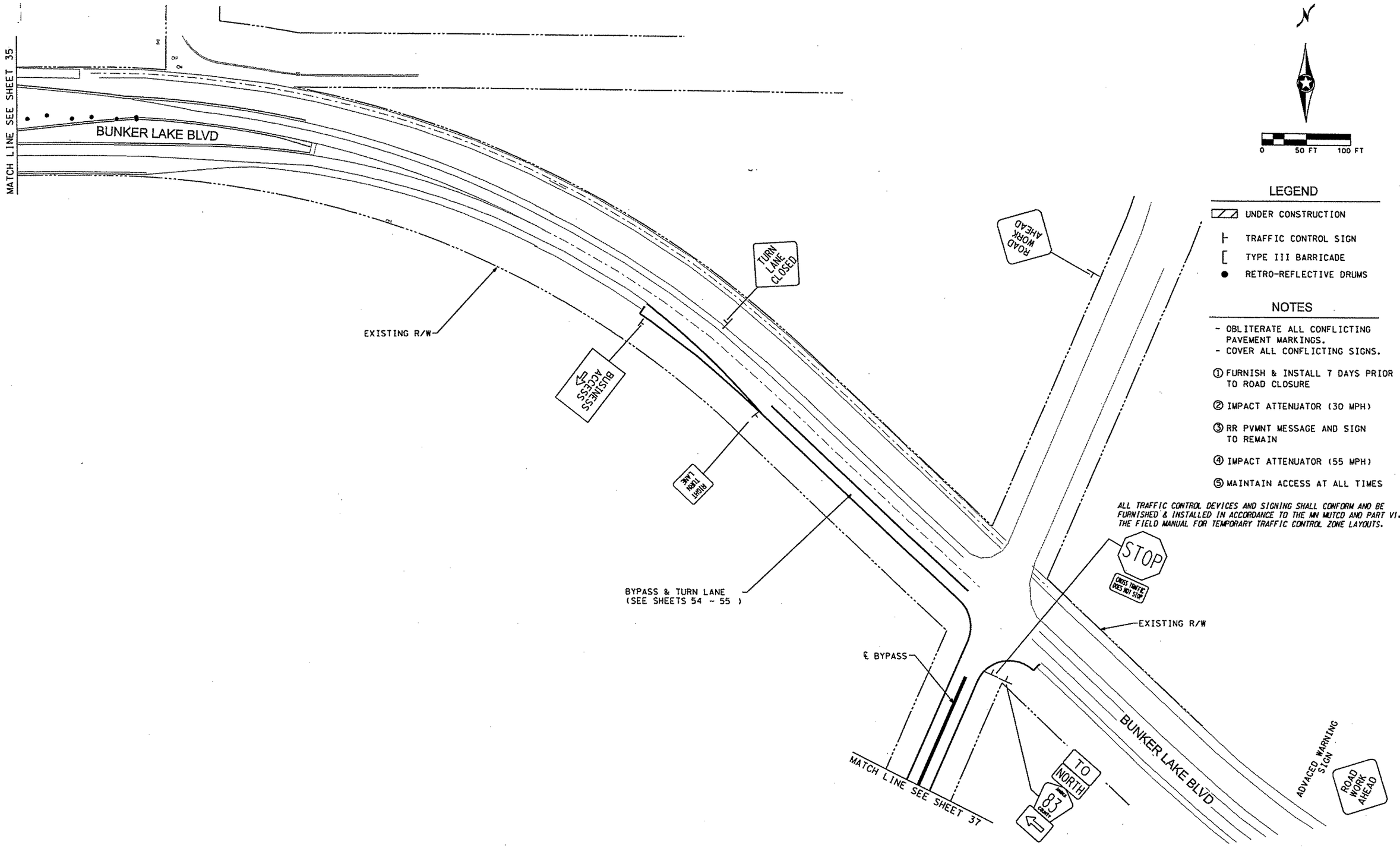

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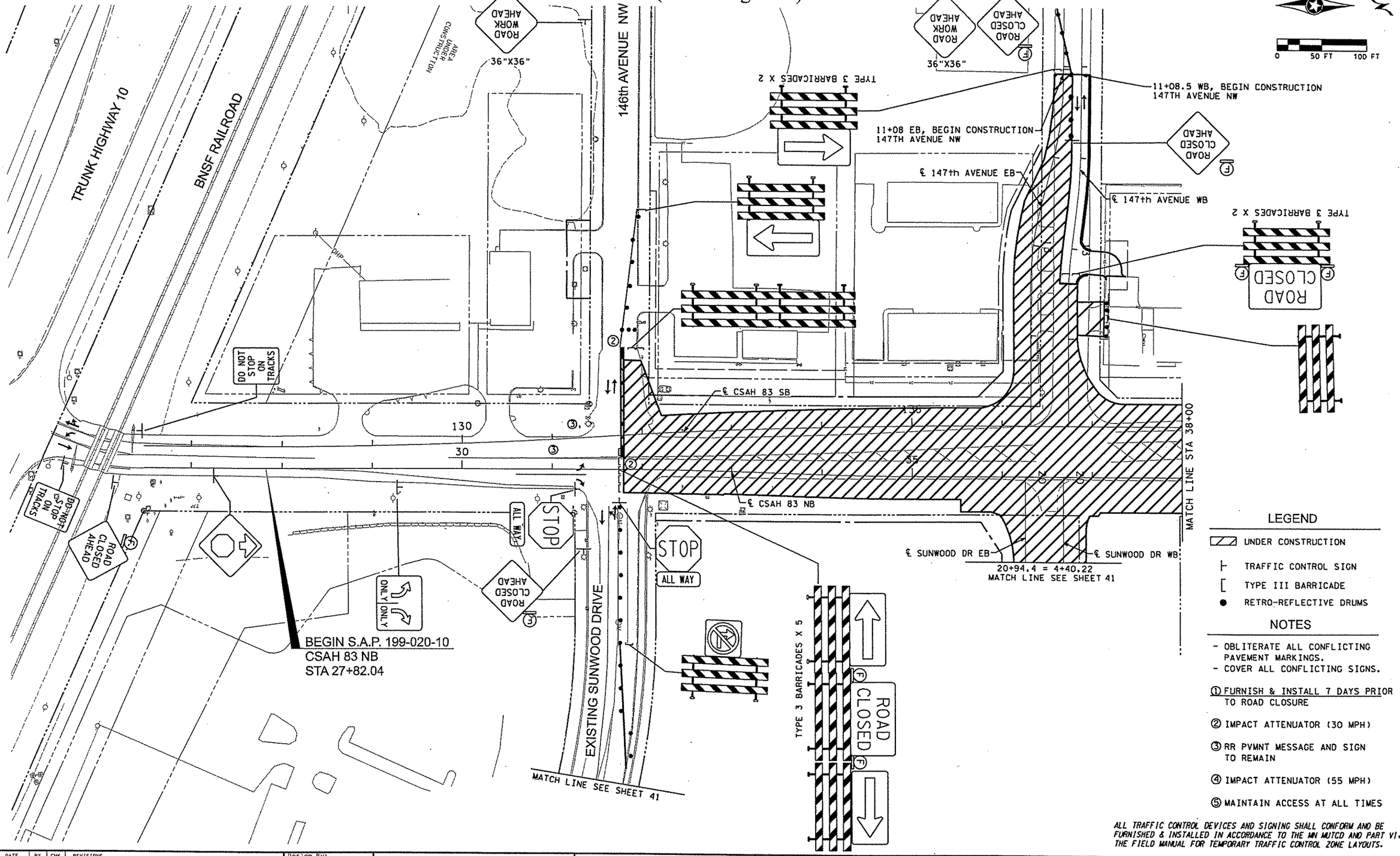

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STAGE 3A (STA 26+00 TO STA 38+00)

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SHEET 39 OF 153 SHEETS

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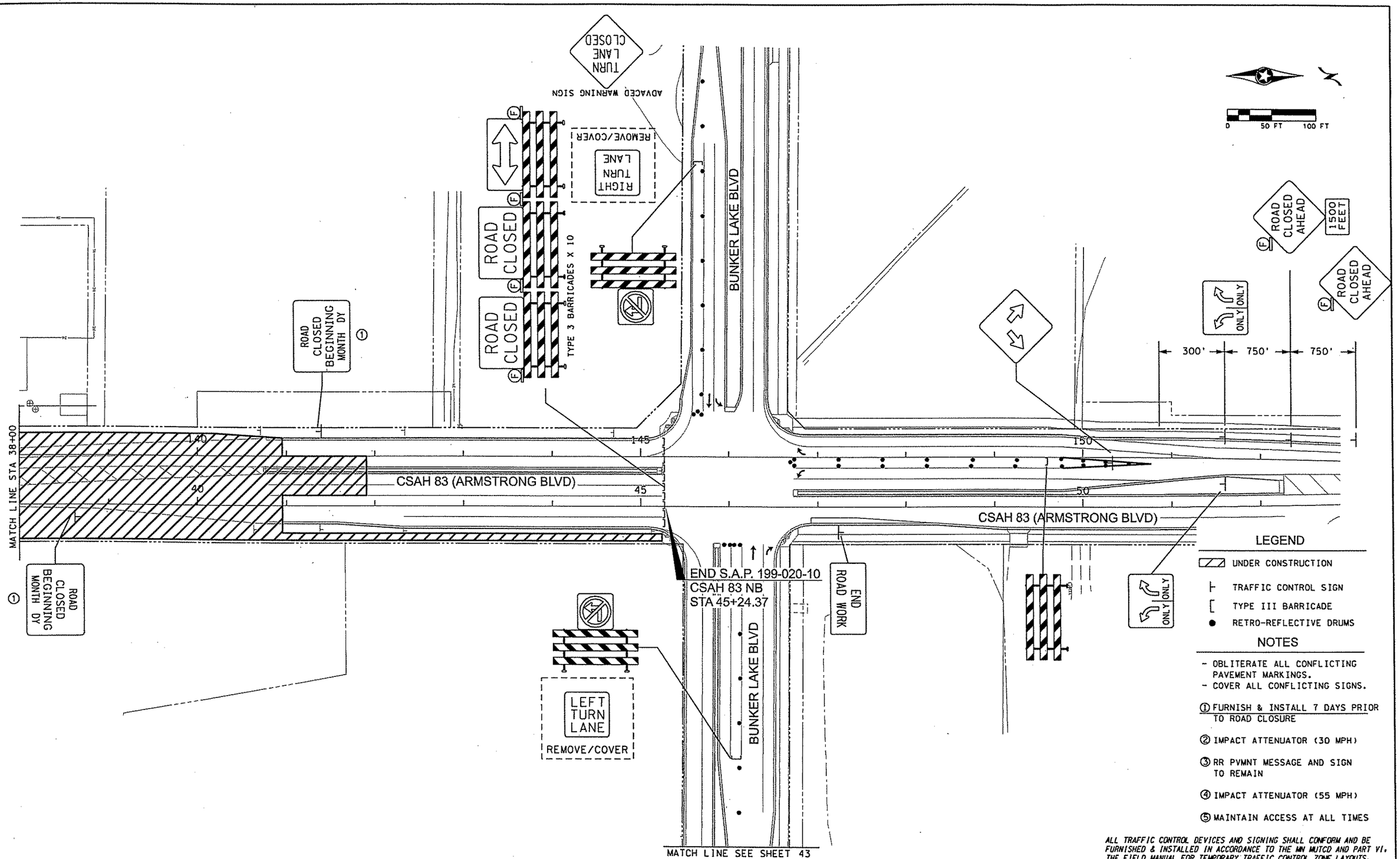

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SHEET 40 OF 153 SHEETS

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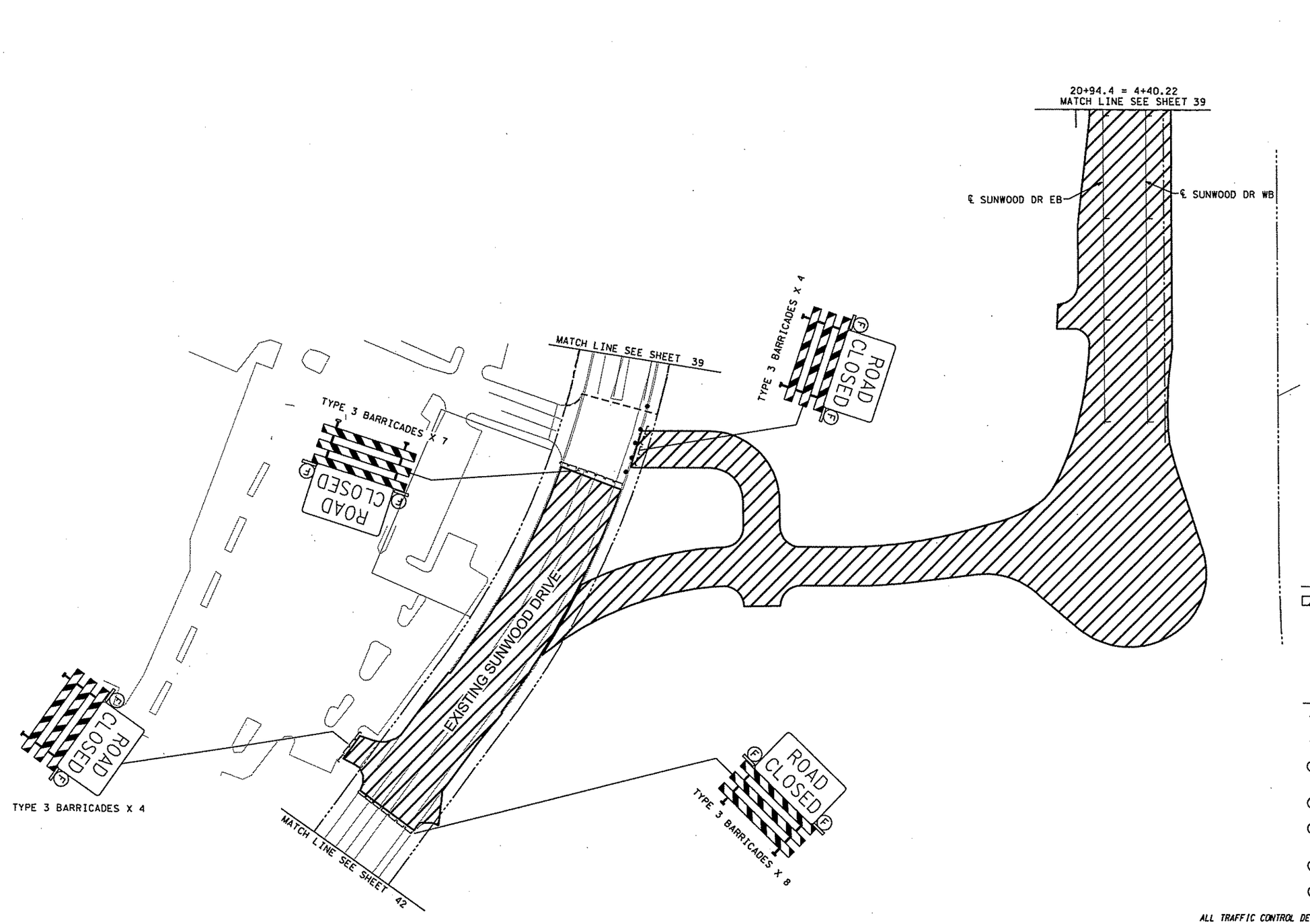

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SHEET 41 OF 153 SHEETS

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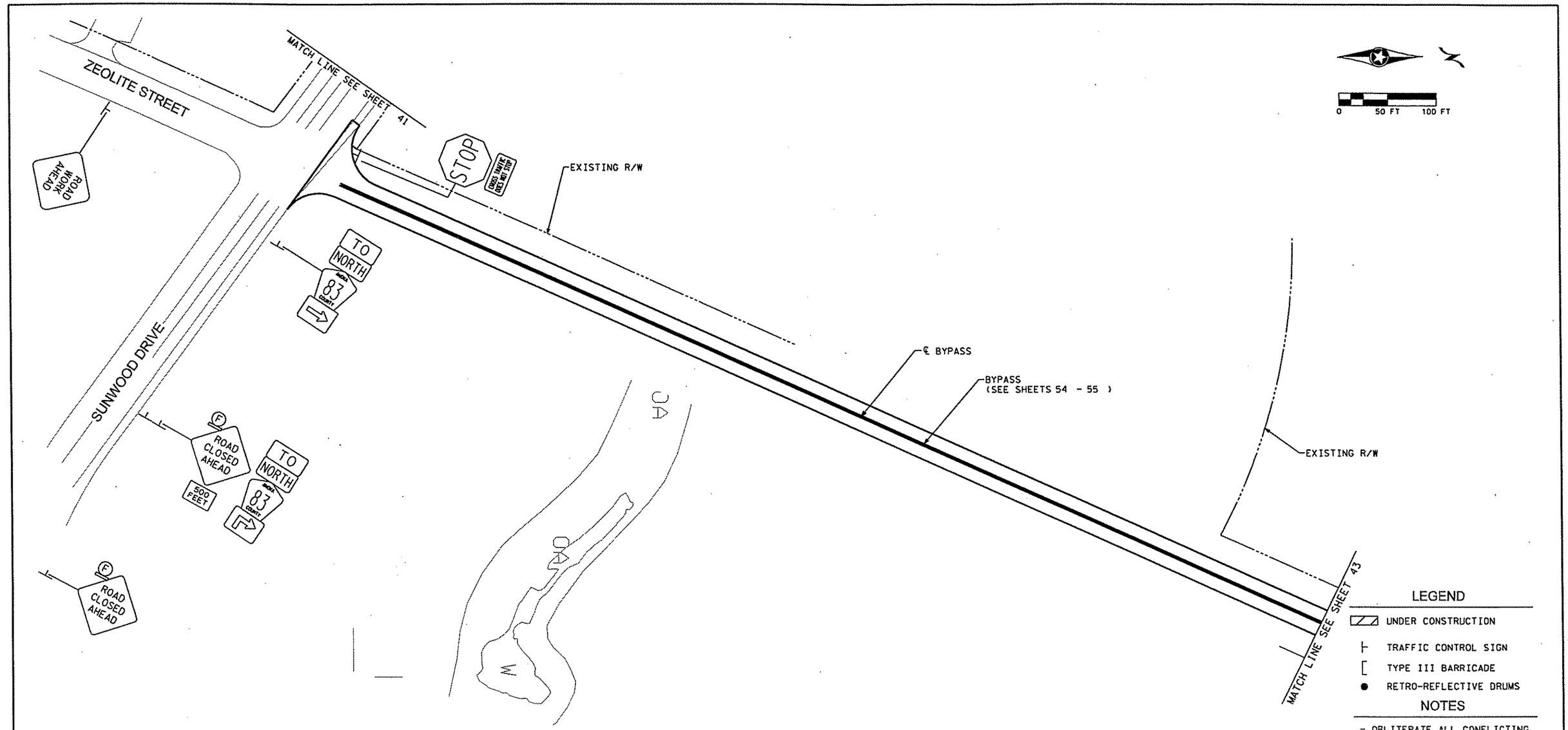

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SHEET 42 OF 153 SHEETS

Date Printed: 6/12/2012
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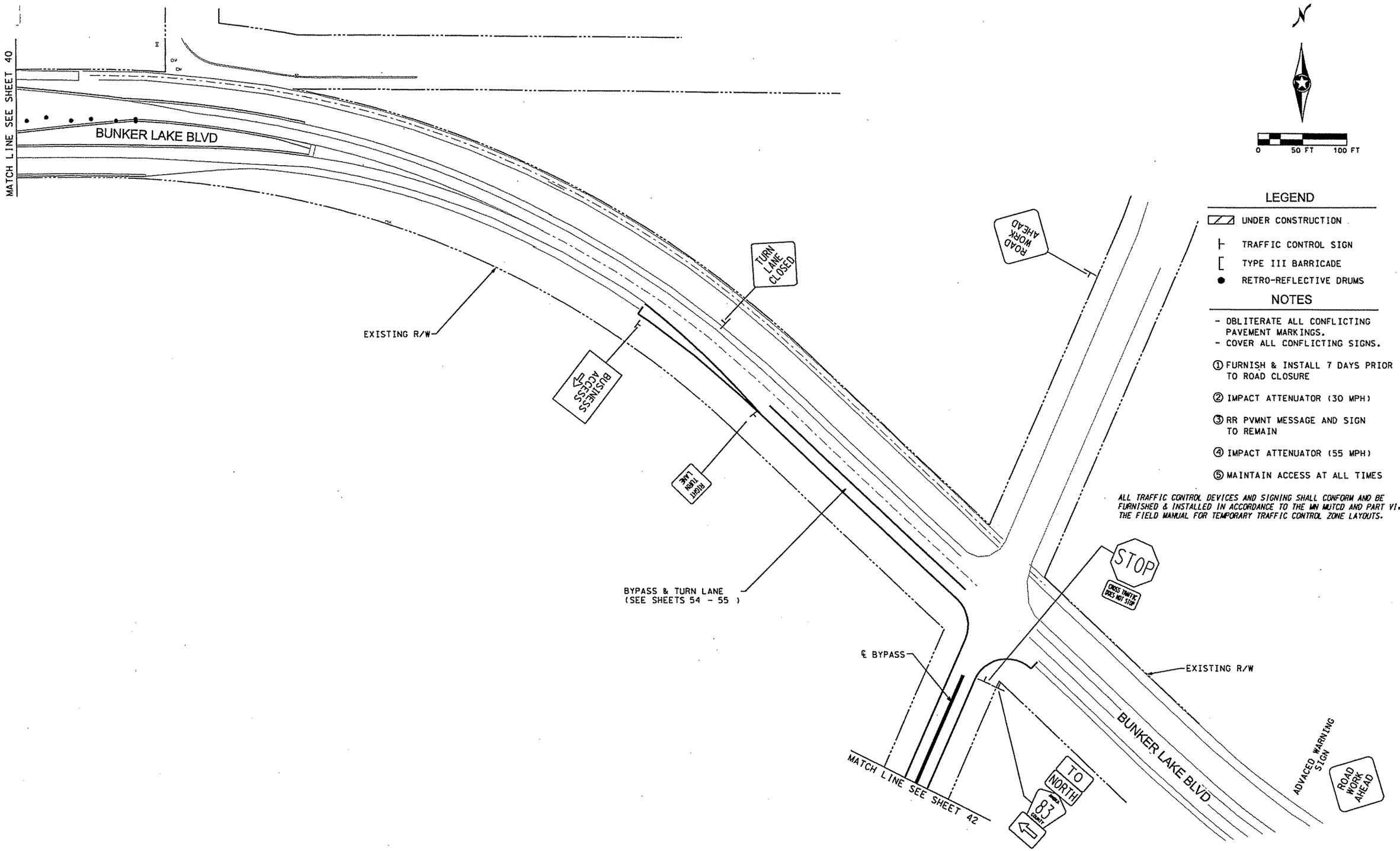

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SHEET 43 OF 153 SHEETS

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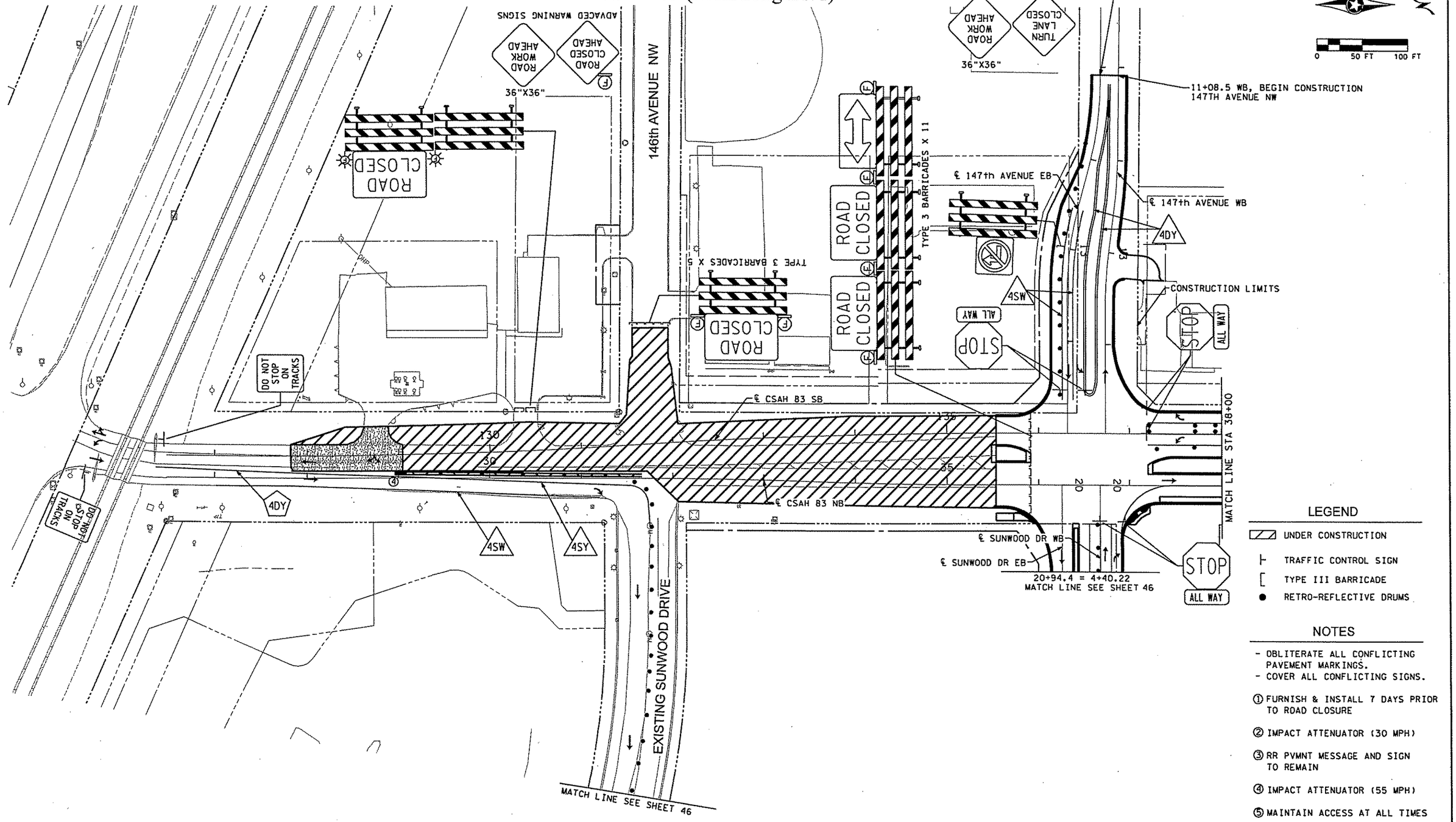

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SHEET 44 OF 153 SHEETS

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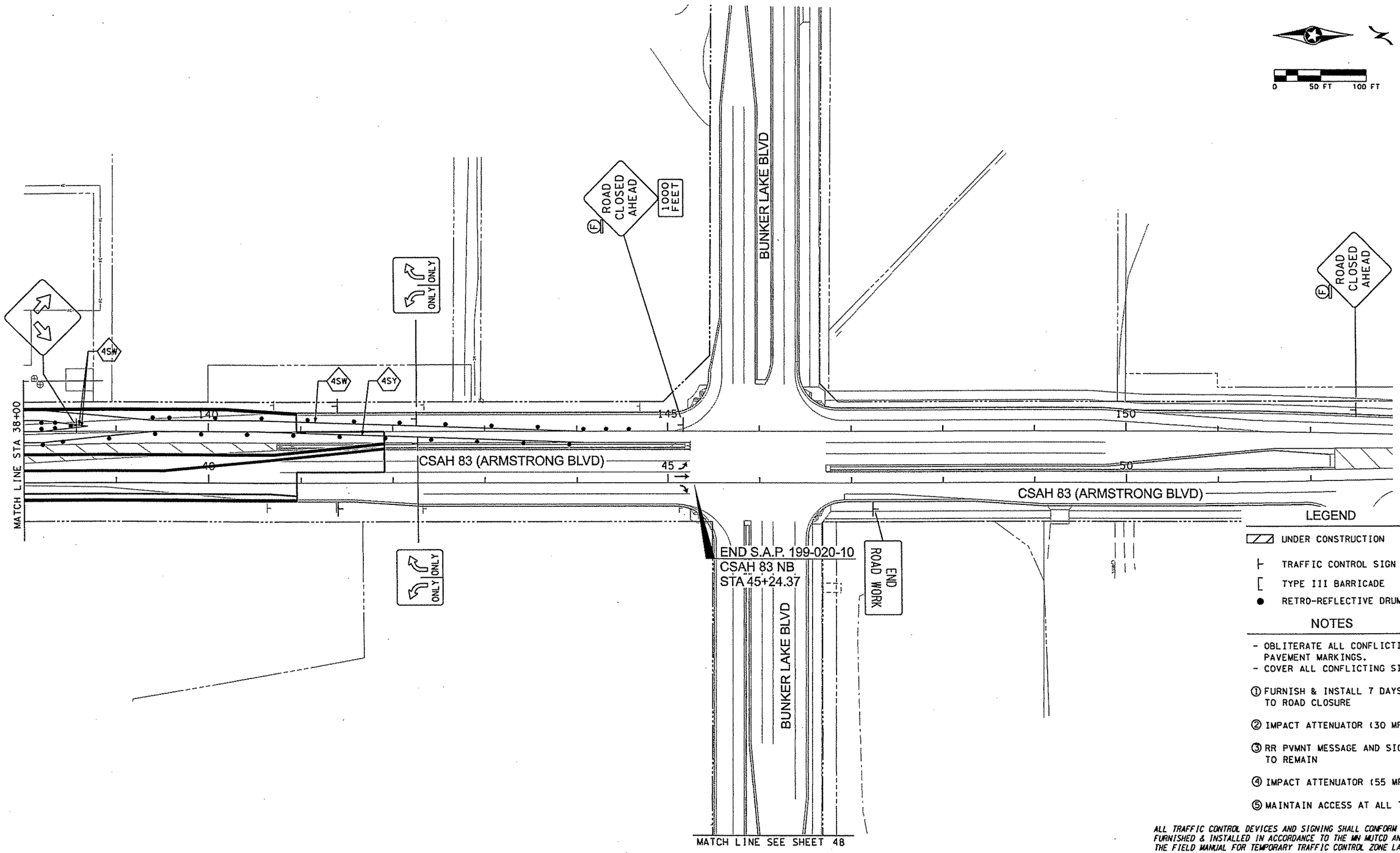

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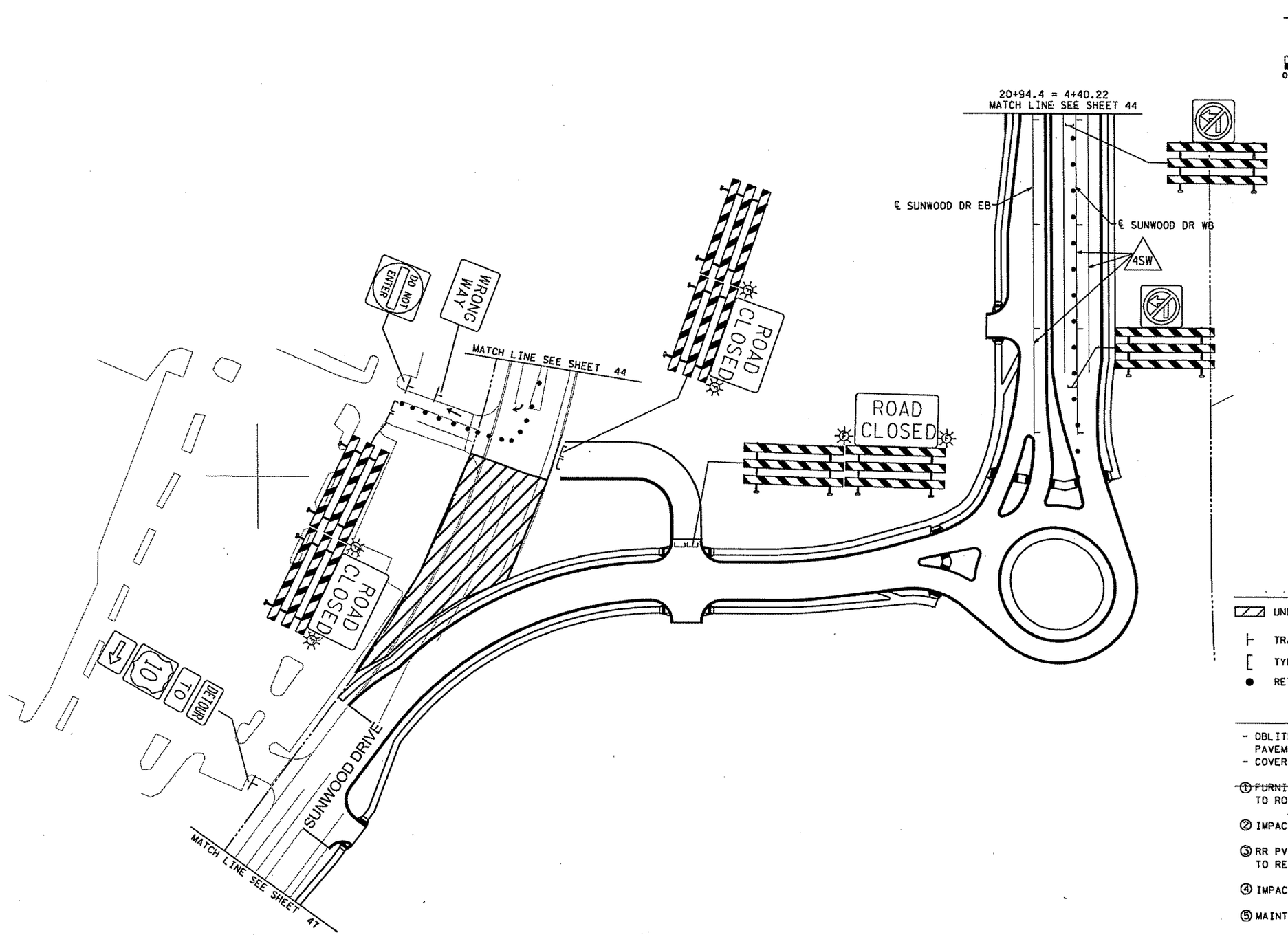

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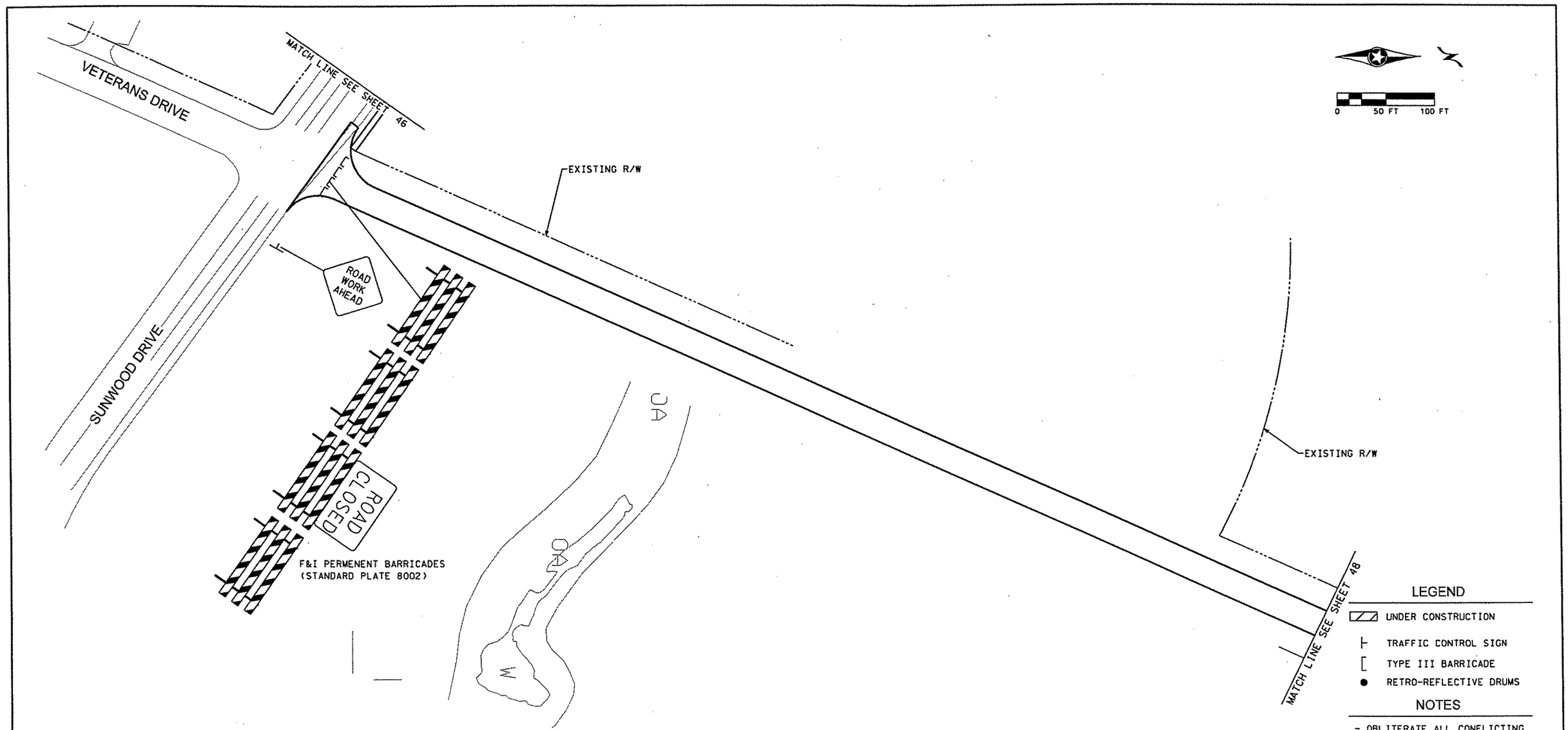

LEGEND

- UNDER CONSTRUCTION
- TRAFFIC CONTROL SIGN
- TYPE III BARRICADE
- RETRO-REFLECTIVE DRUMS

NOTES

- OBLITERATE ALL CONFLICTING PAVEMENT MARKINGS.
- COVER ALL CONFLICTING SIGNS.

① FURNISH & INSTALL 7 DAYS PRIOR TO ROAD CLOSURE

② IMPACT ATTENUATOR (30 MPH)

③ RR PVMNT MESSAGE AND SIGN TO REMAIN

④ IMPACT ATTENUATOR (55 MPH)

⑤ MAINTAIN ACCESS AT ALL TIMES

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM AND BE FURNISHED & INSTALLED IN ACCORDANCE TO THE MN MUTCD AND PART VI. THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

NO.	DATE	BY	CHK	REVISIONS

Design By: MJS
Plan By: CWK
Checked By: NEH
Approved By: SD

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CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER - SEAN DELMORE, PE

DATE: 04/03/12 LIC. NO: 40945

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CITY OF RAMSEY, MINNESOTA
STAGE 3B (SUNWOOD DRIVE)
STAGING & TRAFFIC CONTROL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 47 OF 153 SHEETS

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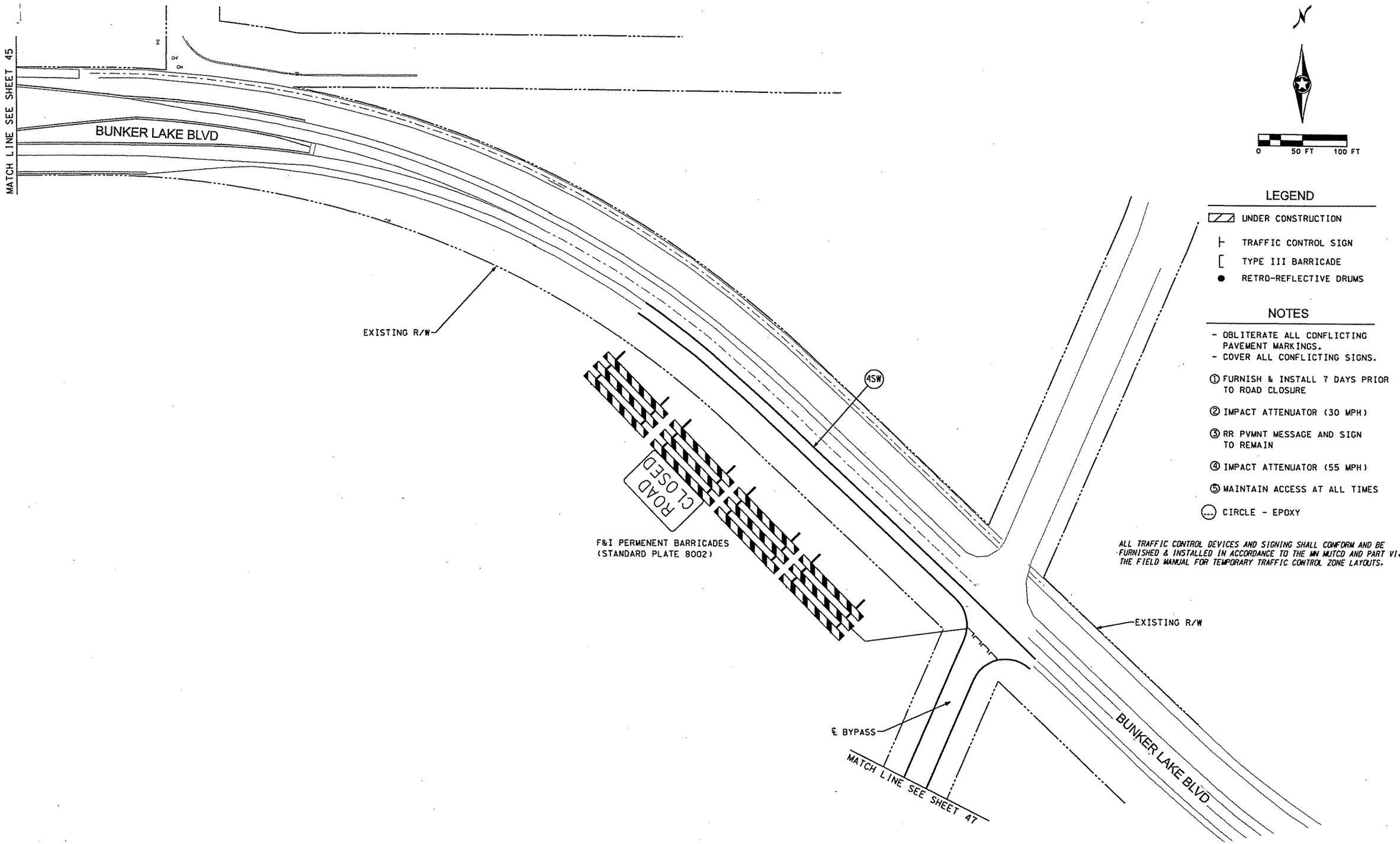

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Design By:
Plan By: MAS
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Approved By: SD

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SHEET 48 OF 153 SHEETS

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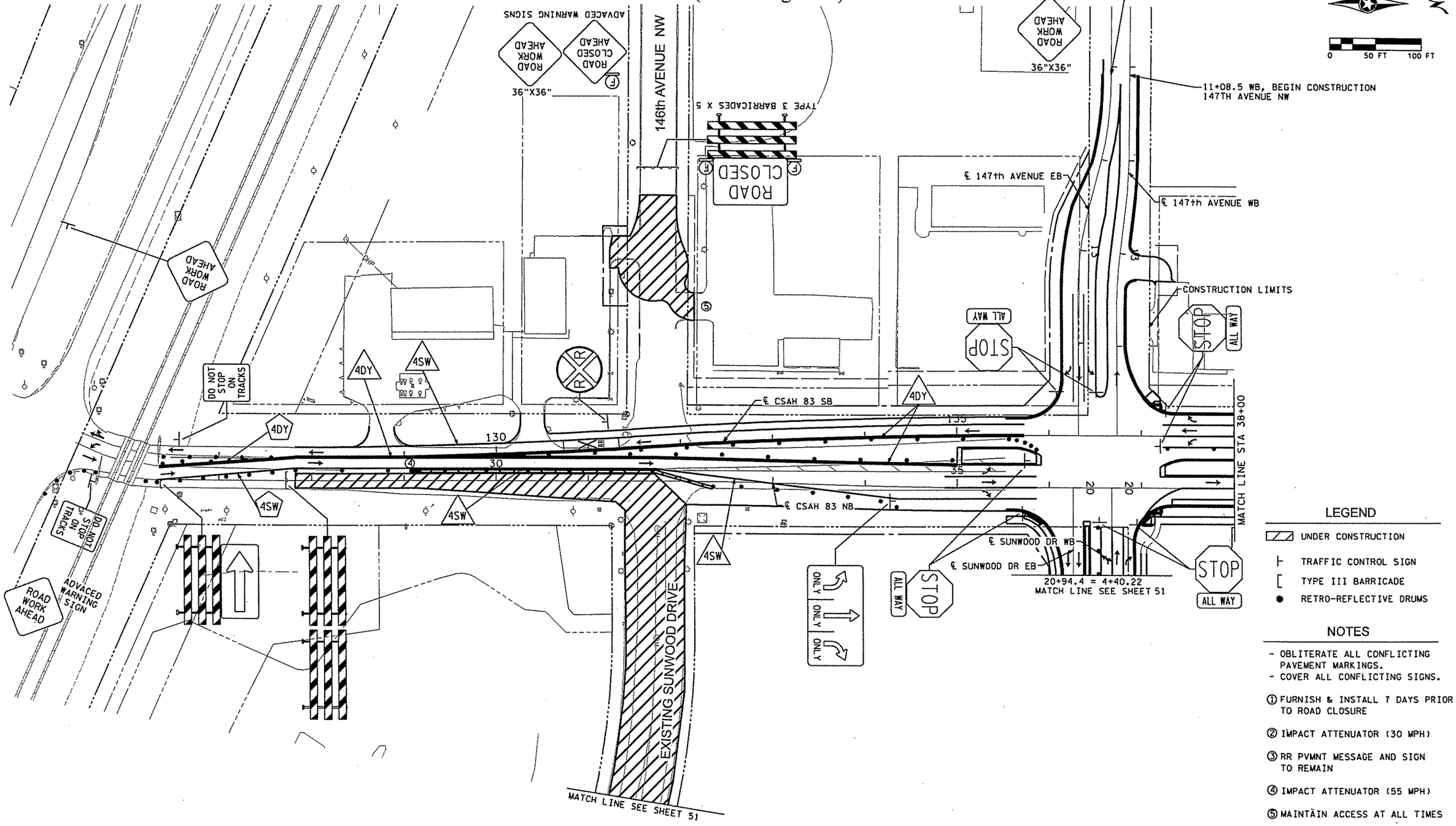
CSAH 83 (Armstrong Blvd)



LEGEND

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- TRAFFIC CONTROL SIGN
- TYPE III BARRICADE
- RETRO-REFLECTIVE DRUMS

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STAGE 4 (STA 26+00 TO STA 38+00)
STAGING & TRAFFIC CONTROL PLAN
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SHEET 49 OF 153 SHEETS

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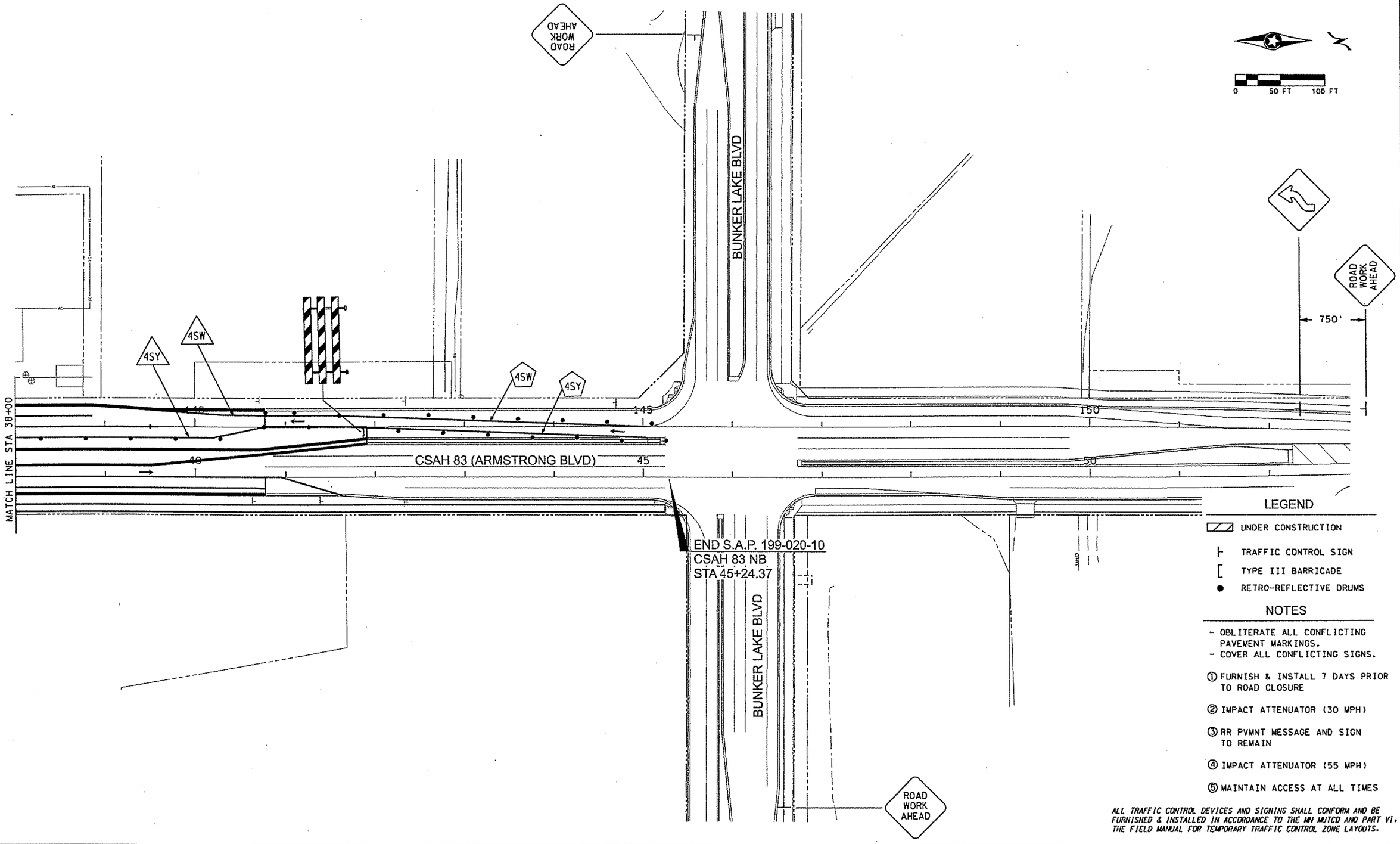

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- TRAFFIC CONTROL SIGN
- TYPE III BARRICADE
- RETRO-REFLECTIVE DRUMS

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SHEET 50 OF 153 SHEETS

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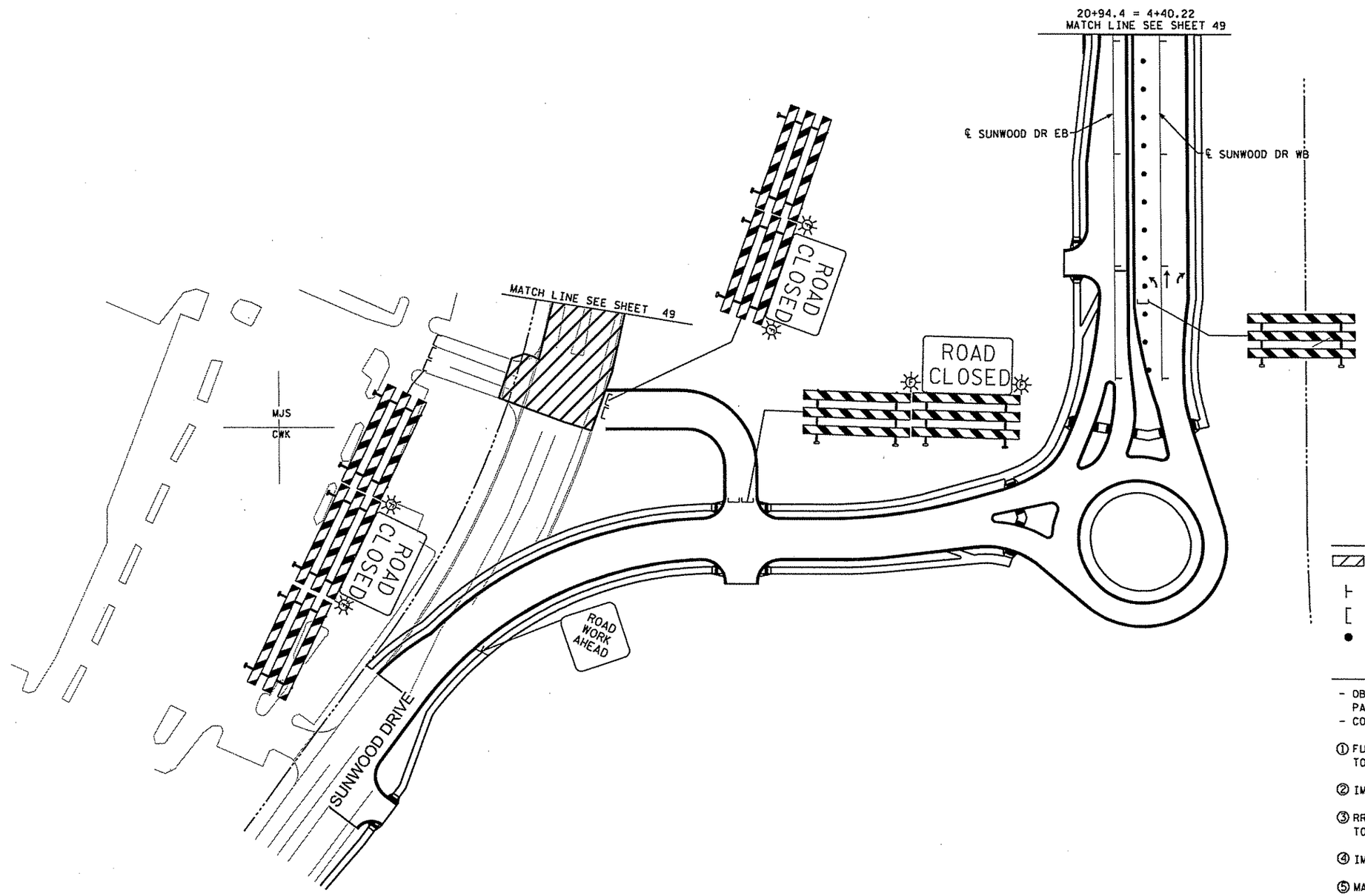

0 50 FT 100 FT

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- TRAFFIC CONTROL SIGN
- TYPE III BARRICADE
- RETRO-REFLECTIVE DRUMS

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SHEET 51 OF 153 SHEETS

Date Printed: 6/12/2012
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TEMPORARY ZEOLITE STREET - ALIGNMENT TABULATION

ITEM	CONTROL POINT	STATION	DELTA ANGLE	DEGREE OF CURVE - ARC	TANGENT	RADIUS	ARC LENGTH	EASTING	NORTHING	DIRECTION	DISTANCE
L1	BOP	300+00.00						448474.4893	172942.2056	N 23°42'50" E	1375.3946
	EOP	313+75.39						449027.6293	174201.4699		

TEMPORARY BUNKER LAKE BLVD TURN LANE - ALIGNMENT TABULATION

ITEM	CONTROL POINT	STATION	DELTA ANGLE	DEGREE OF CURVE - ARC	TANGENT	RADIUS	ARC LENGTH	EASTING	NORTHING	DIRECTION	DISTANCE
L1	BOP	400+00.00						448676.5152	174500.8905	S 53°10'56" E	0.0000
	PC	400+00.00						448676.5152	174500.8905		
	RADIUS	N/A	06°08'49"	05°19'12"	57.8284	1077.0000	115.5459	448031.1011	173638.7016		
C2	PI	400+57.83						448722.8096	174466.2356		
L3	PT	401+15.55						448765.1269	174426.8228	S 47°02'07" E	422.4133
	EOP	405+37.96						449074.2383	174138.9284		

BYPASS BITUMINOUS & AGGREGATE — GA

STATION TO STATION	2360 TYPE SP 12.5 WEARING COURSE MIXTURE (4,C) (SPWEB440C) (1)	AGGREGATE BASE (CV) CLASS 5 MODIFIED	AGGREGATE SHOULDERING (CV) CLASS 5 MODIFIED
	TON	CU YD	CU YD
S.A.P. 199-020-010			
ZEOLITE STREET	474	814	153
BUNKER LAKE BLVD TURN LANE	148	95	25
PROJECT TOTALS	622	909	178

NOTES:
(1) TACK COAT IS INCIDENTAL.
(2) SEE SHEET 54 FOR LOCATION OF PAVEMENT SECTION CHANGE BETWEEN ZEOLITE ST. AND BUNKER LAKE BLVD.

BASIS OF QUANTITIES:
UNIT WEIGHT OF BITUMINOUS MIX 113 LBS/SY/IN
TACK COAT : NEW LAYERS 0.05 GAL /SY

BYPASS MISCELLANEOUS REMOVALS — GB

STATION TO STATION	CLEARING	GRUBBING	REMOVE BITUMINOUS PAVEMENT (1)	SAWING BITUMINOUS PAVEMENT (FULL DEPTH) (1)	PAVEMENT MARKING REMOVAL - SPECIAL (2)
	TREE	TREE	SQ YD	LIN FT	EACH
S.A.P. 199-020-010					
ZEOLITE STREET	20	20			
BUNKER LAKE BLVD TURN LANE			431	554	2
PROJECT TOTALS	20	20	431	554	2

NOTES:
(1) EXISTING BITUMINOUS SHOULDER DEPTH VARIES (4" TYP.)
(2) FOR REMOVAL OF RIGHT TURN ARROWS (PAINT) IN BUNKER LAKE BLVD RT TURN LANE UPON CLOSURE OF ZEOLITE ST.

BYPASS TURF ESTABLISHMENT & EROSION CONTROL — GC

STATION TO STATION	SEEDING	SEED MIXTURE 240 (1)	DISK ANCHORING	MULCH MATERIAL TYPE 1 (3)	FERTILIZER TYPE 3 (2)	FILTER LOG TYPE WOOD FIBER BIOROLL	SILT FENCE MACHINE TYPE SLICED	CULVERT PROTECTION
	ACRE	POUND	ACRE	TON	POUNDS	LIN FT	LIN FT	EACH
S.A.P. 199-020-010								
ZEOLITE STREET	1.9	141	2	4	749	375	2813	2
BUNKER LAKE BLVD TURN LANE	0.1	9			44	88	538	
PROJECT TOTALS	2.0	150	2	4	793	463	3351	2

NOTES:
(1) APPLICATION RATE OF 75 LBS PER ACRES
(2) APPLICATION RATE OF 400 LBS PER ACRE (22-5-10)
(3) APPLICATION RATE OF 2 TONS PER ACRE

BYPASS PAVEMENT MARKINGS — GD

STATION TO STATION	EPOXY	PAINT		PAVEMENT MESSAGES (PAINT)
	4" SOLID WHITE (1)	4" SOLID WHITE	4" DOUBLE SOLID YELLOW	RIGHT TURN ARROW
	LIN FT	LIN FT	LIN FT	EACH
S.A.P. 199-020-010				
ZEOLITE STREET			1323	
BUNKER LAKE BLVD TURN LANE	594	804		2
PROJECT TOTALS	594	804	1323	2

NOTES:
(1) FOR PERMANENT STRIPING OF FOG LINE FOR EB BUNKER LAKE BLVD UPON CLOSURE OF ZEOLITE STREET.

BYPASS CULVERT TABULATION — GE

STRUCTURE LOCATION (1)						CIRCULAR PIPE (2), (3)	DRAINS TO			(4) RIPRAP CL II	GUIDE POSTS TYPE B	
STRUCT. NO.	STREET	STATION	OFFSET FT	SIDE	OUTLET ELEVATION BOTTOM	15" CS PIPE CULVERT	STRUCT NO	PIPE GRADE FT/FT	INVERT ELEVATION			REMARKS
						LIN FT				CU YD	EACH	
T5000	ZEOLITE STREET	306+00	35.1	LT	864.65	154	T5001	0.0107	863.00		1	
T5001	ZEOLITE STREET	307+50	64.5	LT	863.00					5	1	
T5002	ZEOLITE STREET	307+73	85.2	RT	862.00					5	1	
T5003	ZEOLITE STREET	310+00	31.5	RT	867.41	234	T5002	0.0231	862.00		1	
TOTALS						388				10	4	

NOTES:
(1) STATION, OFFSETS, AND INVERT ELEVATIONA ARE GIVEN TO END OF PIPE.
(2) CLASS C BEDDING TO BE USED FOR CS PIPE UNLESS OTHERWISE NOTED.
(3) LENGTH GIVEN FROM END TO END OF PIPE.
(4) GRANULAR FILTER BLANKET OR GEOTEXTILE FILTER MATERIAL REQUIRED SHALL BE INCIDENTAL. SEE MN/DOT STANDARD PLATE 3133.

NO.	DATE	BY	CHK	REVISIONS

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Plan By: CWK
Checked By: AJP
Approved By: NEH

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SHEET 52 OF 153 SHEETS

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GF

BYPASS - ARMSTRONG BLVD & SUNWOOD DRIVE
Earthwork Summary

BYPASS
EXCAVATION

COMMON EXCAVATION	S.A.P. 199-020-010	1834	CU YD (EV)									
TOPSOIL EXCAVATION	S.A.P. 199-020-010	1267	CU YD (EV)									
EMBANKMENT												
SELECT GRANULAR EMBANKMENT	S.A.P. 199-020-010	1151	CU YD (CV)									
TOPSOIL	S.A.P. 199-020-010	890	CU YD (CV)	TOPSOIL BALANCE	(890)	CU YD (CV)						

BYPASS EARTHWORK ACCOUNTING

COMMON MATERIAL AND SELECT GRANULAR EMBANKMENT BALANCE

				AVAILABLE FROM EXCAVATION								
				COMMON EXC.								
				(1834)					CU YD (EV)	/1.25	= 1467	CU YD (CV)
					(1467 - 1151)						= 316	CU YD (CV)
							316	CU YD (CV)		•1.3	= 411	CU YD (LV)
										•1.4	= 1246	CU YD (LV) BORROW

GENERAL NOTES:

1. 125% SHRINKAGE FACTOR USED FROM EXCAVATED VOLUME (EV) TO COMPACTED VOLUME (CV) FOR COMMON EXCAVATION. 140% EXPANSION FACTOR USED FROM COMPACTED VOLUME (CV) TO LOOSE VOLUME (LV) FOR TOPSOIL.
2. ANY MATERIAL NOT UTILIZED ON THIS PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR, THE DISPOSAL OF WHICH SHALL BE HIS RESPONSIBILITY WITH NO ADDITIONAL COMPENSATION PAID OTHER THAN THE PRICE BID FOR COMMON EXCAVATION.
3. COMMON MATERIAL AND SELECT GRANULAR EMBANKMENT BALANCE ASSUMES COMMON EXCAVATION MATERIAL WILL MEET THE SPECIFICATIONS FOR SELECT GRANULAR EMBANKMENT.
4. TOPSOIL EXCAVATION PAID AS COMMON EXCAVATION. EXCAVATED TOPSOIL NOT ASSUMED TO BE USED AS TOPSOIL EMBANKMENT.

EARTHWORK QUANTITIES

GF

ROADWAY	STATION	EXCAVATION (EV)		EMBANKMENT (CV)	
		ROADWAY COMMON (CU YD)	TOPSOIL (CU YD)	SELECT GRANULAR (CU YD)	TOPSOIL (CU YD)
S.A.P. 199-020-010					
ZEOLITE STREET	300+66.16				
	301+00.00	14	20	17	7
	301+50.00	11	28	51	16
	302+00.00	22	31	45	26
	302+50.00	17	33	42	24
	303+00.00	16	34	36	23
	303+50.00	23	36	44	26
	304+00.00	50	39	64	31
	304+50.00	69	45	75	41
	305+00.00	64	44	96	43
	305+50.00	128	43	92	42
	306+00.00	150	47	77	46
	306+50.00	69	45	75	33
	307+00.00	61	41	52	27
	307+50.00	84	54	25	51
	308+00.00	47	52	24	46
	308+50.00	9	30	46	17
	309+00.00	23	29	56	16
	309+50.00	123	37	26	27
	310+00.00	233	51	5	45
	310+50.00	205	56	15	54
	311+00.00	116	60	36	46
	311+50.00	77	66	35	41
	312+00.00	58	59	8	34
	312+50.00	47	53		28
	313+00.00	31	47		21
	313+25.00	26	27		10
SUBTOTAL ZEOLITE STREET		1773	1107	1042	821

EARTHWORK QUANTITIES

GF

ROADWAY	STATION	EXCAVATION (EV)		EMBANKMENT (CV)	
		ROADWAY COMMON (CU YD)	TOPSOIL (CU YD)	SELECT GRANULAR (CU YD)	TOPSOIL (CU YD)
BUNKER LAKE BLVD TURN LANE	400+00.00				
	400+50.00	3	11	15	6
	401+00.00	6	11	13	6
	401+50.00	6	11	13	6
	402+00.00	6	11	15	7
	402+50.00	6	11	15	7
	403+00.00	6	11	14	7
	403+50.00	6	11	11	6
	404+00.00	6	11	9	6
	404+50.00	6	16	4	6
	405+00.00	6	34		7
	405+37.96	4	22		5
SUBTOTAL BUNKER LAKE BLVD TURN LANE		61	160	109	69
PROJECT TOTAL		1834	1267	1151	890

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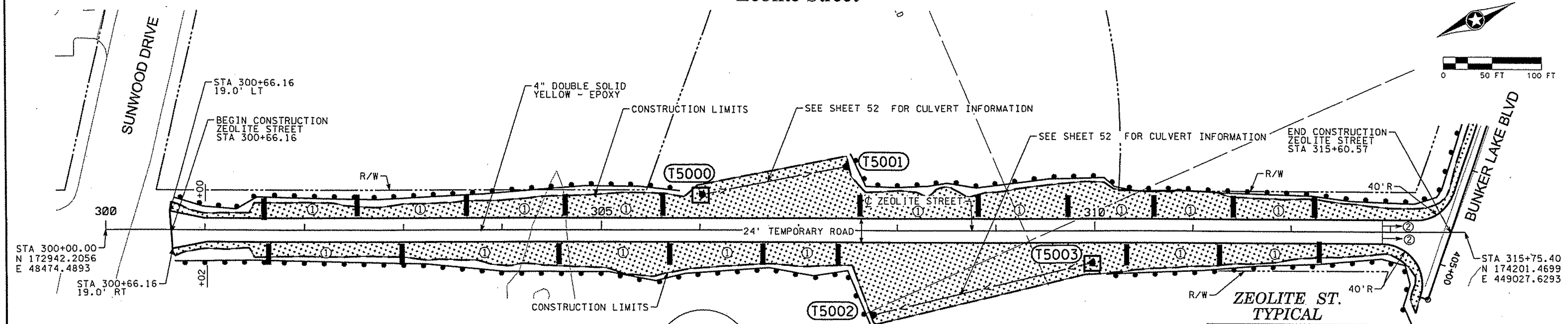
SHEET 53 OF 153 SHEETS

Zeolite Street



LEGEND

- SILT FENCE MACHINED SLICED
- SEED MIXTURE 240 (75 LBS/AC) FERTILZER TYPE 3 (400 LBS/AC) W/ MULCH MATERIAL TYPE 1 (2 TONS/AC), DISK ACNHORED
- 8" BIOROLL
- CULVERT PROTECTION

NOTES:

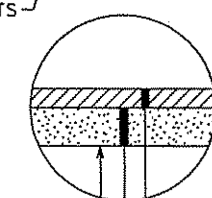
SILT FENCE SHALL FOLLOW, AS CLOSE AS POSSIBLE, TO A SINGLE CONTOUR, IF SEDIMENT DEPOSITS IN WATERS OF THE STATE, THE MATERIAL MUST BE REMOVED WITHIN SEVEN DAYS.USE TEMPORARY SEED & MULCH TO STABILIZE PONDS UNTIL PERMANENT SEED & MULCH ARE PLACED.

① BIO ROLL DITCH CHECKS TO BE SPACED AT 133'

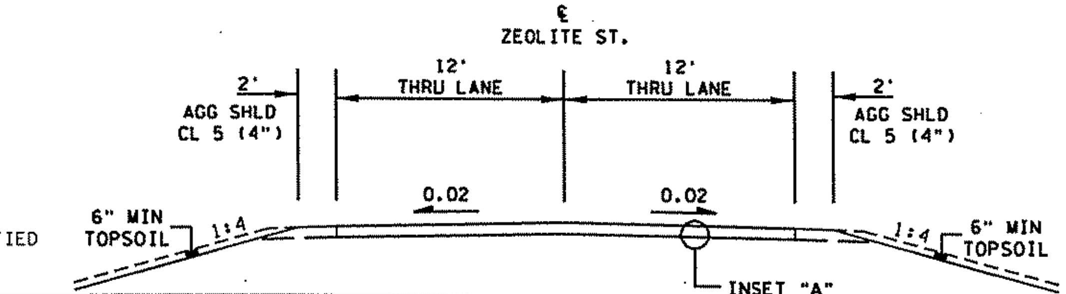
② BEGIN BUNKER LAKE BLVD PAVEMENT SECTION AT STA 312+92

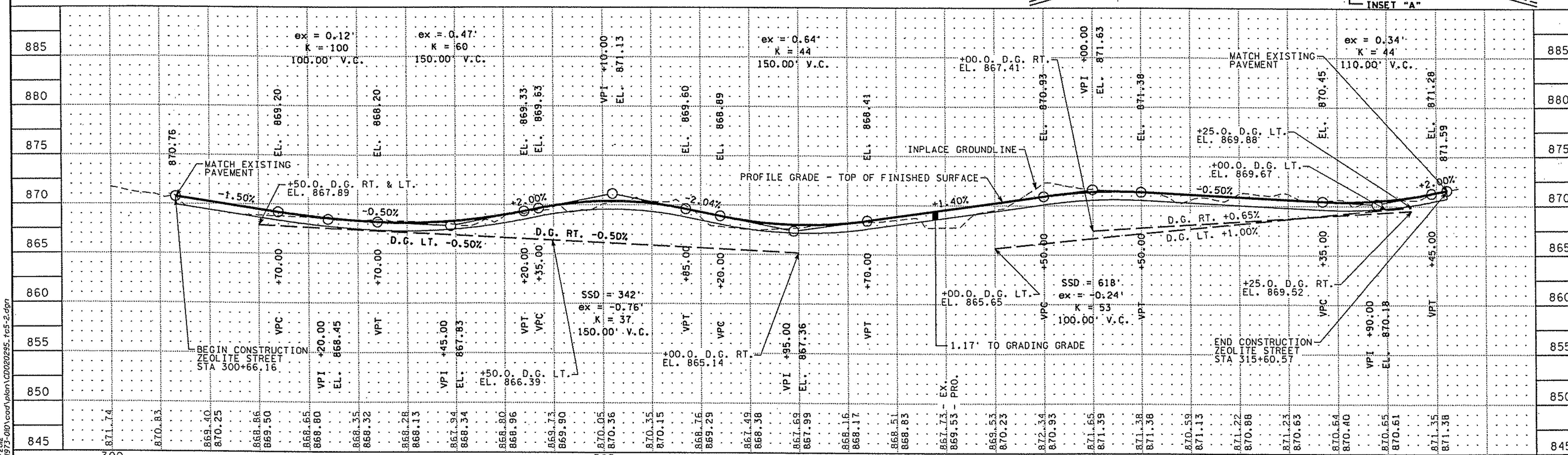
INSET A

ZEOLITE STREET



ZEOLITE ST. TYPICAL





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Approved By: NEH

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CERTIFIED BY: LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE
DATE: 04/03/12 LIC. NO: 44620

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SHEET 54 OF 153 SHEETS

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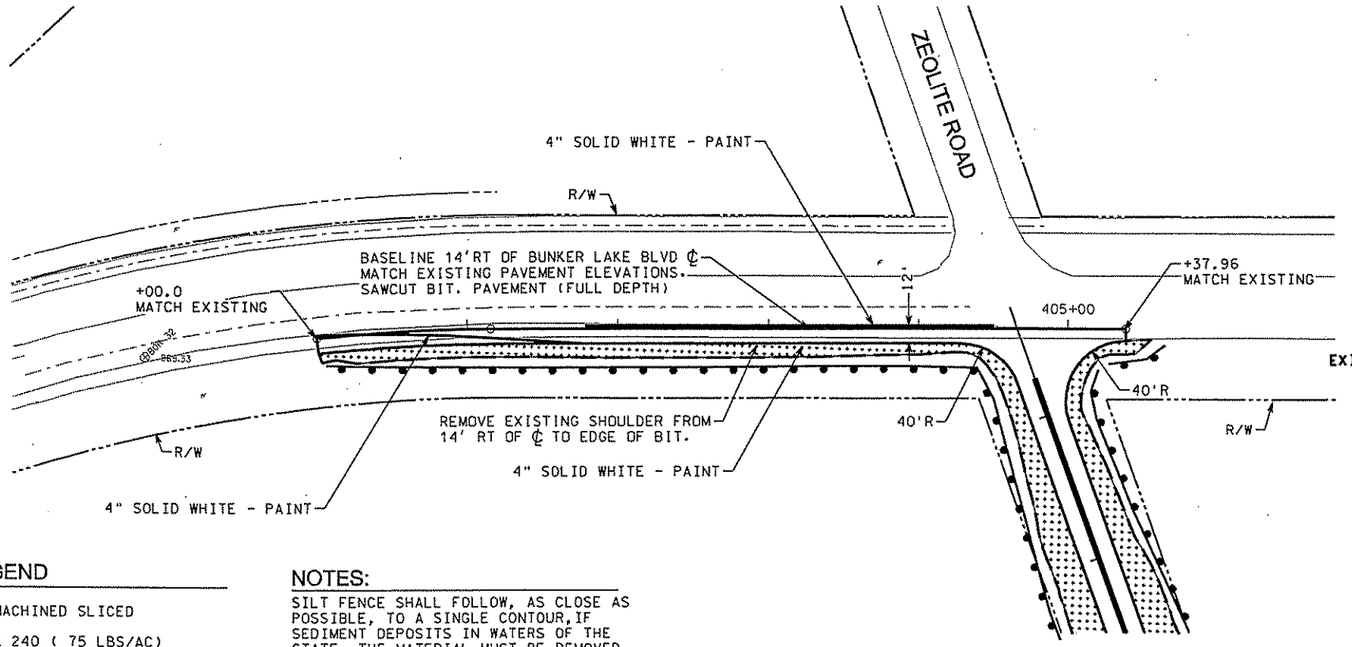
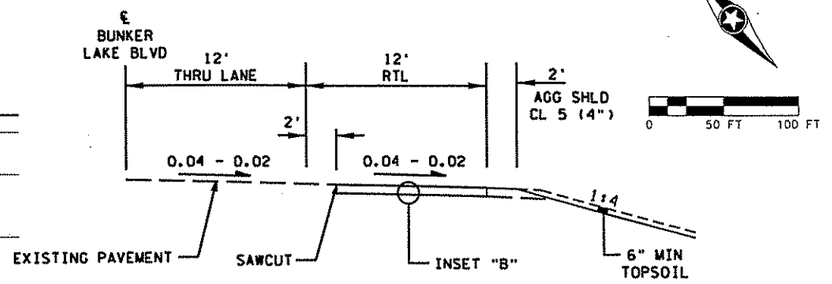
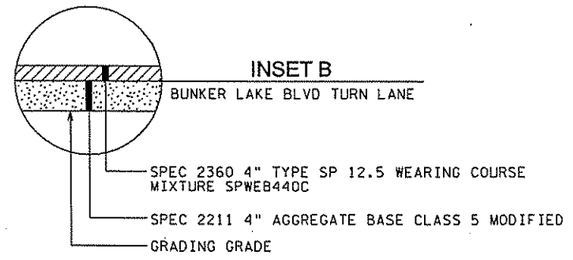
Bunker Lake Blvd



BUNKER LAKE BLVD
RIGHT TURN LANE TYPICAL



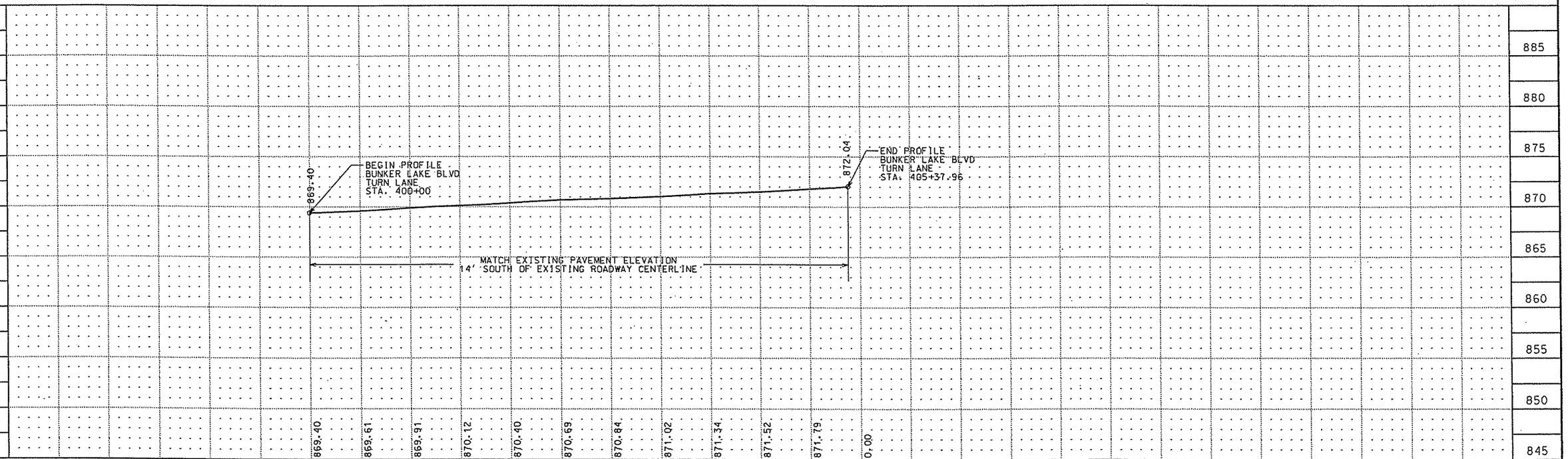


LEGEND

- SILT FENCE MACHINED SLICED
- SEED MIXTURE 240 (75 LBS/AC)
  FERTILZER TYPE 3 (400 LBS/AC)
  W/ MULCH MATERIAL TYPE 1
  (2 TONS/AC), DISK ACNHORED

NOTES:

SILT FENCE SHALL FOLLOW, AS CLOSE AS POSSIBLE, TO A SINGLE CONTOUR,IF SEDIMENT DEPOSITS IN WATERS OF THE STATE, THE MATERIAL MUST BE REMOVED WITHIN SEVEN DAYS.USE TEMPORARY SEED & MULCH TO STABILIZE PONDS UNTIL PERMANENT SEED & MULCH ARE PLACED.



NO.	DATE	BY	CHK	REVISIONS

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Plan By: CWK
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SHEET 55 OF 153 SHEETS

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STA = 302+00
ORIGINAL EL. =868.65
PROFILE GRADE = 869.83

STA = 304+00
ORIGINAL EL. =868.80
PROFILE GRADE = 869.97

STA = 301+50
ORIGINAL EL. =868.86
PROFILE GRADE = 870.17

STA = 303+50
ORIGINAL EL. =867.94
PROFILE GRADE = 869.44

STA = 301+00
ORIGINAL EL. =869.40
PROFILE GRADE = 870.52

STA = 303+00
ORIGINAL EL. =868.28
PROFILE GRADE = 869.30

STA = 300+66.16
ORIGINAL EL. =870.94
PROFILE GRADE = 870.76

STA = 302+50
ORIGINAL EL. =868.35
PROFILE GRADE = 869.51

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SHEET 56 OF 153 SHEETS

Date Printed: 6/12/2012
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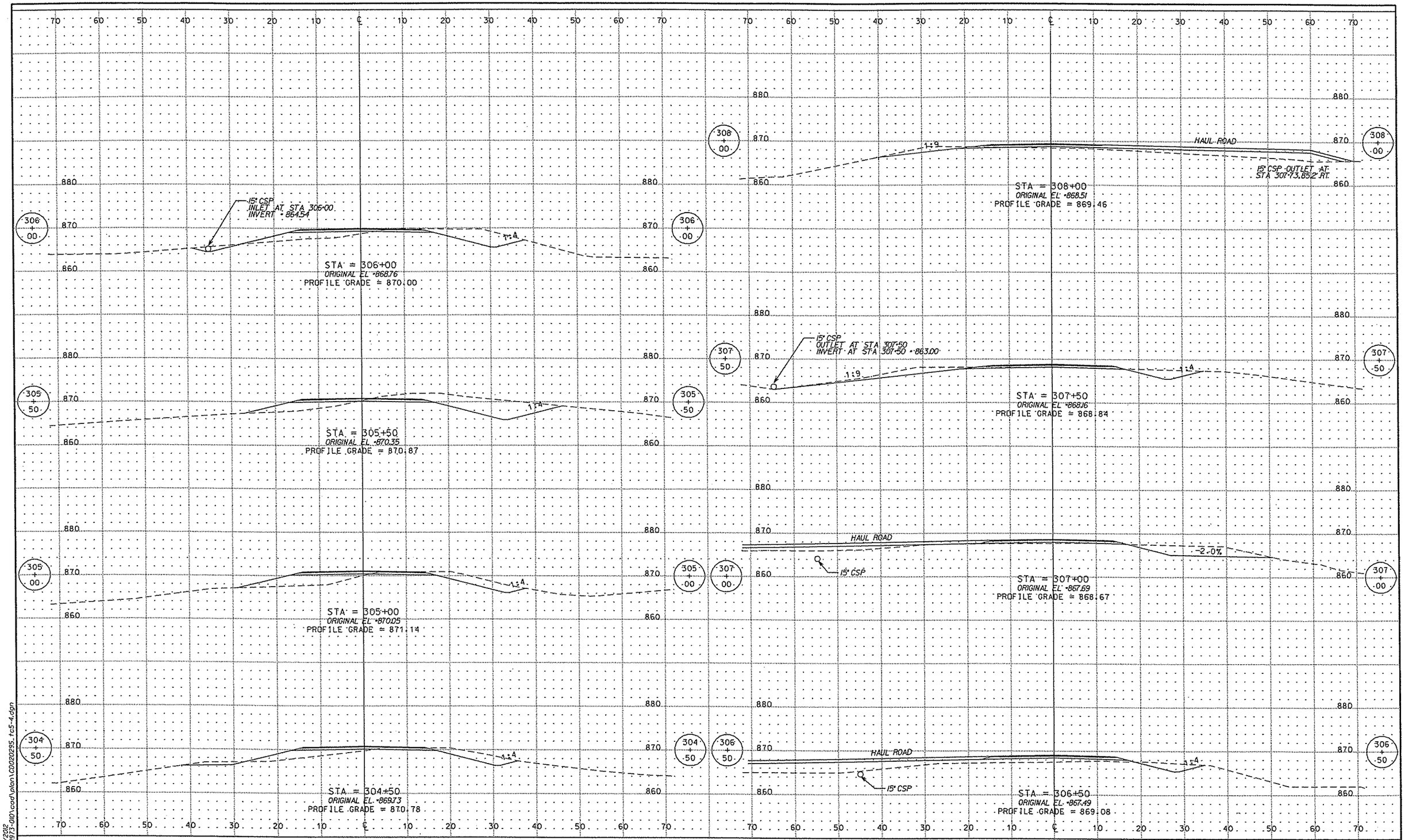

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SHEET 57 OF 153 SHEETS

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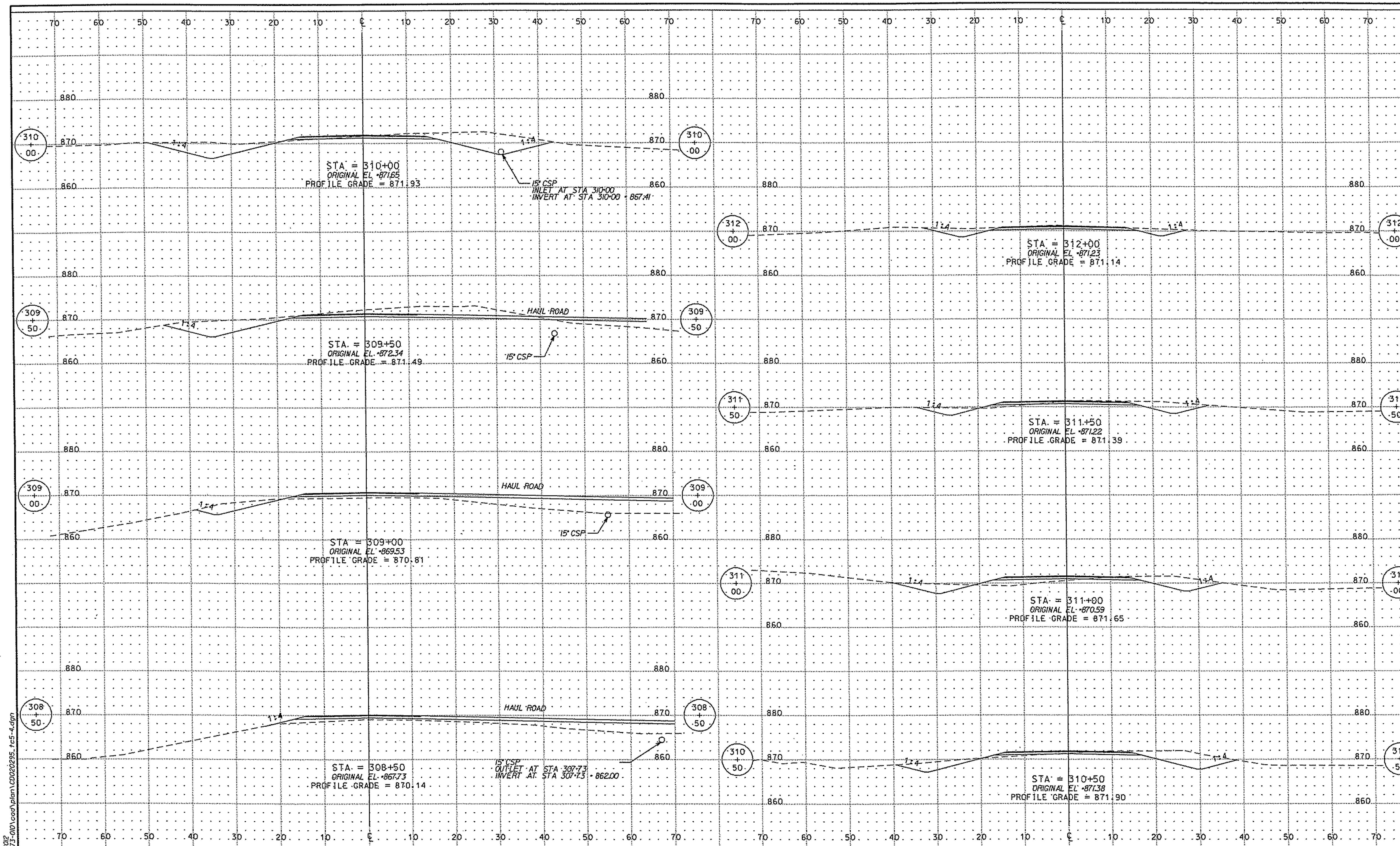

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SHEET 58 OF 153 SHEETS

70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70

880
870
860

313 + 25

1:4 1:4

STA = 313+25
ORIGINAL EL = 870.60
PROFILE GRADE = 871.16

313 + 00

1:4 1:4

STA = 313+00
ORIGINAL EL = 870.65
PROFILE GRADE = 870.97

312 + 50

1:4 1:4

STA = 312+50
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PROFILE GRADE = 870.90

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Date Printed: 6/12/2012
WSB Filename: H:\0913-010\cad\plan\CD020295_tc5-4.dgn

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CERTIFIED BY: LICENSED PROFESSIONAL ENGINEER DOUGLAS E. HENTGES, PE

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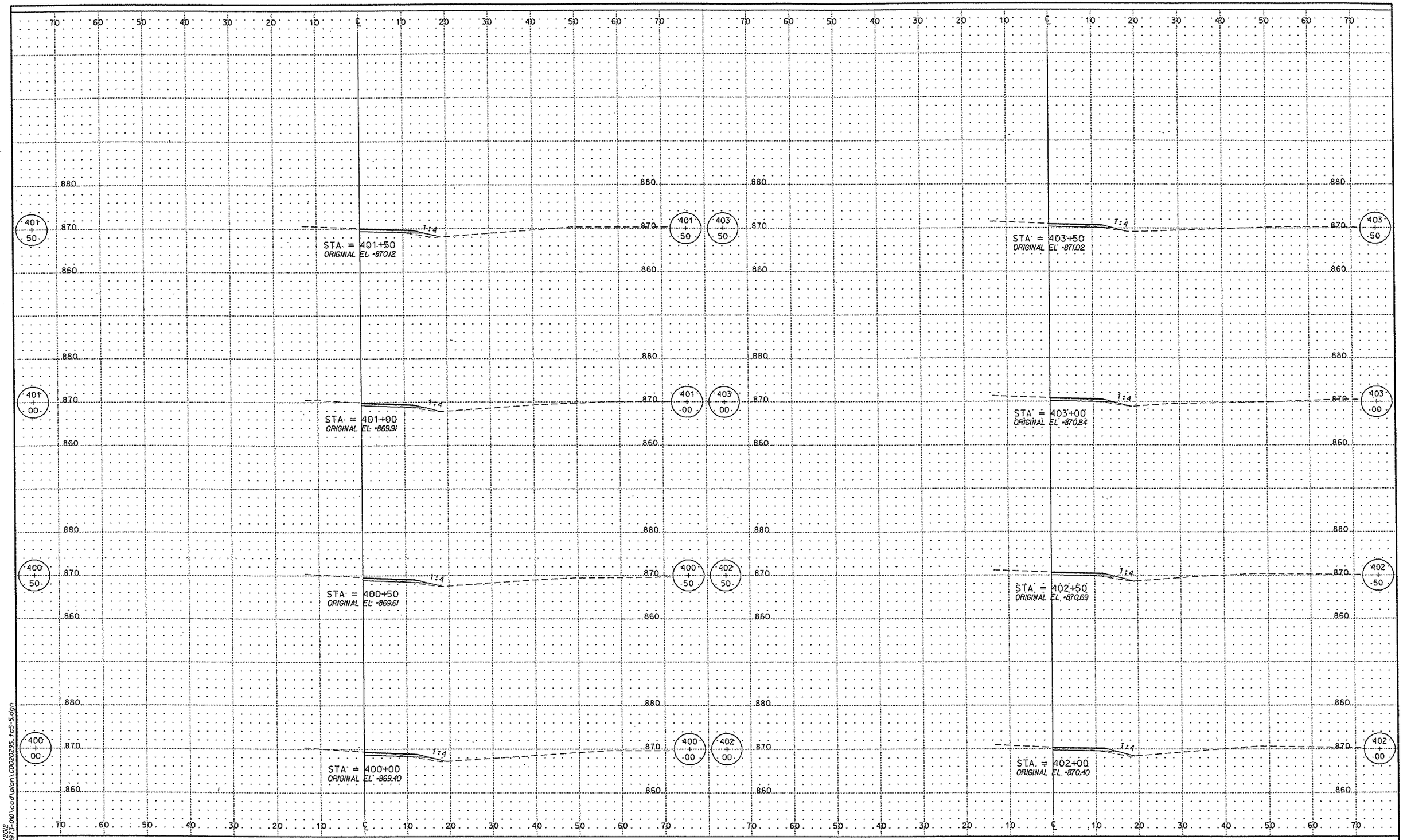
SHEET 59 OF 153 SHEETS



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SHEET 60 OF 153 SHEETS

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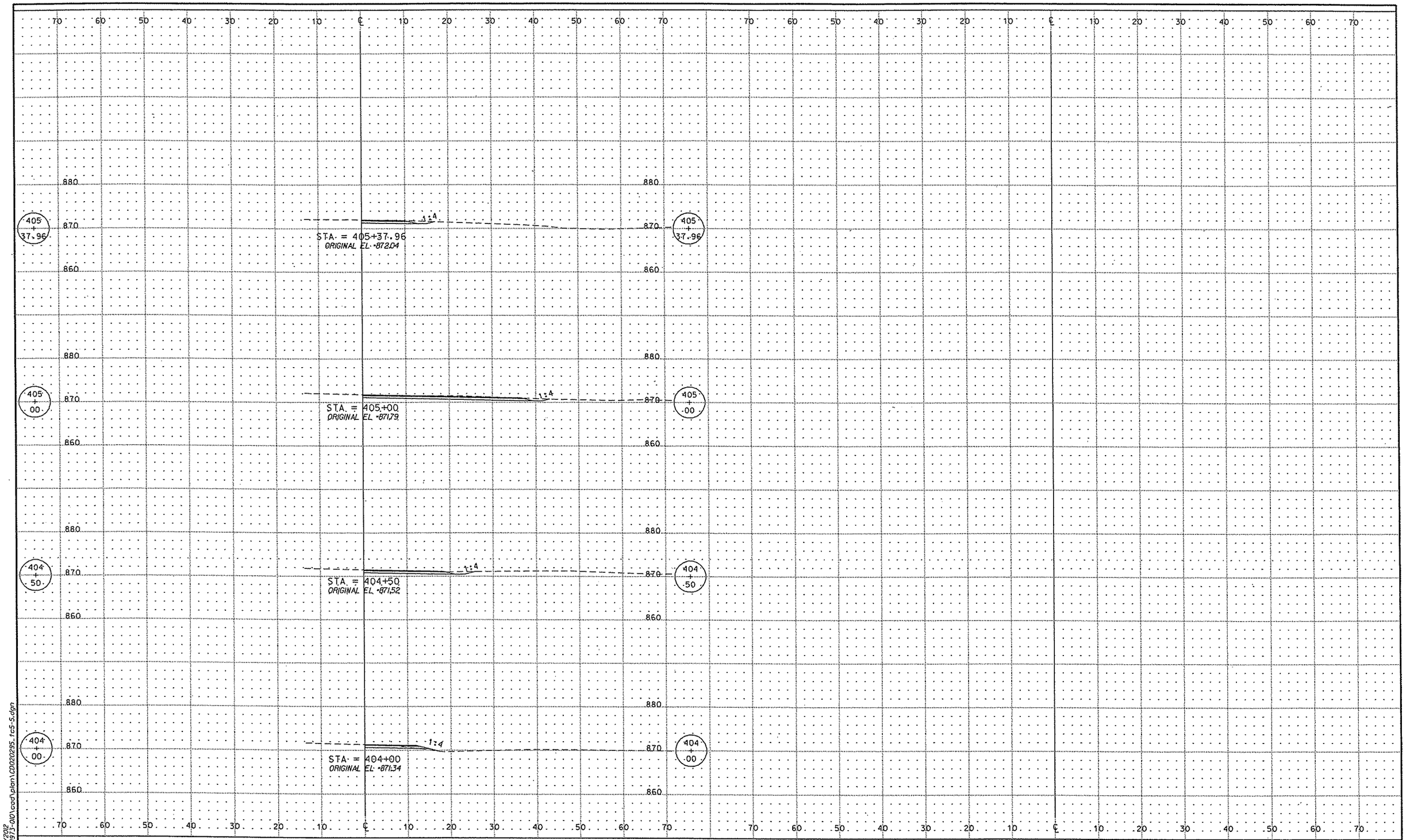

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SHEET 61 OF 153 SHEETS

Date Printed: 6/12/2012
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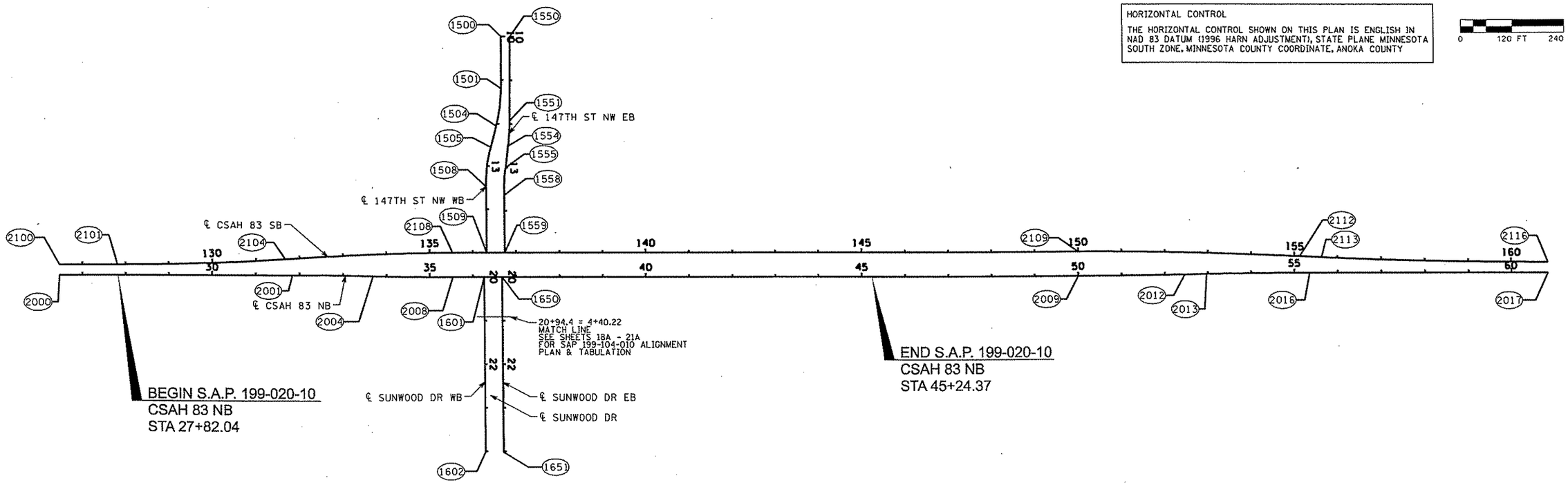
Armstrong Blvd (CSAH 83)

HORIZONTAL CONTROL

THE HORIZONTAL CONTROL SHOWN ON THIS PLAN IS ENGLISH IN NAD 83 DATUM (1996 HARN ADJUSTMENT), STATE PLANE MINNESOTA SOUTH ZONE, MINNESOTA COUNTY COORDINATE, ANOKA COUNTY

0 120 FT 240 FT



BEGIN S.A.P. 199-020-10
CSAH 83 NB
STA 27+82.04

END S.A.P. 199-020-10
CSAH 83 NB
STA 45+24.37

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CITY OF RAMSEY, MINNESOTA

ALIGNMENT PLAN & TABULATION
S.A.P. 199-020-010 / C.P. 12-20

SHEET 62 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: k:\09973-010\cad\plan\C0020295_al01.dgn

ALIGNMENT TABULATION

POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		BEARING
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	X	Y	
CSAH 83 NB										
2000	POT	26+48.065						447,551.5625	172,772.9196	N 0° 12' 02.99" W
2001	PC	31+83.424						447,549.6859	173,308.2748	
2002	PI	32+75.934	1° 50' 59.66" RT	0° 59' 59.73"	5,730.000'	92.510'	185.004'	447,549.3617	173,400.7844	PI
2003	CC							453,279.6507	173,328.3594	N 1° 38' 56.67" E
2004	PRC	33+68.428						447,552.0239	173,493.2563	
2006	PI	34+61.088	1° 51' 10.50" LT	0° 59' 59.73"	5,730.000'	92.661'	185.305'	447,554.6905	173,585.8786	PI
2007	CC							441,824.3971	173,658.1532	
2008	PT	35+53.733						447,554.3608	173,678.5387	N 0° 12' 13.83" W
2009	PC	50+00.001						447,549.2155	175,124.7978	
2010	PI	51+23.378	1° 14' 01.47" LT	0° 30' 00.02"	11,459.000'	123.377'	246.745'	447,548.7765	175,248.1742	PI
2011	CC							436,090.2880	175,084.0303	
2012	PT	52+46.746						447,545.6813	175,371.5125	N 1° 26' 15.29" W
2013	PC	52+96.746						447,544.4269	175,421.4967	
2014	PI	54+15.985	1° 11' 32.51" RT	0° 30' 00.02"	11,459.000'	119.239'	238.469'	447,541.4354	175,540.6982	PI
2015	CC							458,999.8201	175,708.9789	
2016	PT	55+35.215						447,540.9251	175,659.9362	N 0° 14' 42.78" W
2017	PDT	60+84.356						447,538.5748	176,209.0715	
CSAH 83 SB										
2100	POT	126+47.540						447,527.5626	172,772.8355	N 0° 12' 02.99" W
2101	PC	127+81.517						447,527.0930	172,906.8112	
2102	PI	129+74.717	3° 51' 44.16" LT	0° 59' 59.73"	5,730.000'	193.201'	386.255'	447,526.4158	173,100.0107	PI
2103	CC							441,797.1282	172,886.7267	N 4° 03' 47.15" W
2104	PRC	131+67.772						447,512.7266	173,292.7258	
2106	PI	133+60.822	3° 51' 33.32" RT	0° 59' 59.73"	5,730.000'	193.050'	385.954'	447,499.0480	173,485.2907	PI
2107	CC							453,228.3249	173,698.7250	
2108	PT	135+53.726						447,498.3612	173,678.3395	N 0° 12' 13.83" W
2109	PC	149+99.974						447,493.2159	175,124.5784	
2110	PI	152+56.623	2° 33' 57.96" RT	0° 30' 00.02"	11,459.000'	256.649'	513.213'	447,492.3028	175,381.2261	PI
2111	CC							458,952.1434	175,165.3459	
2112	PT	155+13.187						447,502.8813	175,637.6572	N 2° 21' 44.13" E
2113	PC	155+63.187						447,504.9421	175,687.6147	
2114	PI	158+23.976	2° 36' 26.91" LT	0° 30' 00.02"	11,459.000'	260.789'	521.488'	447,515.6912	175,948.1822	PI
2115	CC							436,055.6800	176,159.9261	
2116	PT	160+84.675						447,514.5751	176,208.9688	N 0° 14' 42.78" W
	POT	160+84.675						447,514.5751	176,208.9688	

ALIGNMENT TABULATION

POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		BEARING
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	X	Y	
SUNWOOD DR WB										
1650	POT	CSAH 83 NB 36+67.826=						447,553.9549	173,792.6307	N 89° 47' 46.17" E
		SUNWOOD DR WB 20+00.000								
1651	POT	24+01.813						447,955.7654	173,794.0602	
SUNWOOD DR EB										
1601	POT	CSAH 83 NB 36+25.826=						447,554.1043	173,750.6310	N 89° 47' 46.17" E
		SUNWOOD DR EB 20+00.000								
1602	POT	24+01.813						447,955.9148	173,752.0605	
147TH ST NW WB										
1550	POT	10+00.000						447,002.1417	173,813.3650	S 89° 29' 39.34" E
1551	PC	11+93.487						447,195.6214	173,811.6572	
1552	PI	12+22.105	6° 33' 06.00" RT	11° 27' 32.96"	500.000'	28.618'	57.174'	447,224.2385	173,811.4046	PI
1553	CC							447,191.2081	173,311.6766	
1554	PT	12+50.661						447,252.6399	173,807.8884	S 82° 56' 33.34" E
1555	PC	13+00.661						447,302.2611	173,801.7452	
1556	PI	13+32.387	7° 15' 40.48" LT	11° 27' 32.96"	500.000'	31.726'	63.366'	447,333.7464	173,797.8473	PI
1557	CC							447,363.6930	174,297.9570	
1558	PT	13+64.028						447,365.4718	173,797.9602	N 89° 47' 46.17" E
1559	PDT	147TH ST WB 14+96.491=						447,497.9339	173,798.4314	
		CSAH 83 SB 136+73.818								
147TH ST NW EB										
1500	POT	10+00.000						447,001.9651	173,793.3658	S 89° 29' 39.34" E
1501	PC	11+18.514						447,120.4746	173,792.3197	
1502	PI	11+62.362	14° 16' 54.19" RT	16° 22' 12.80"	350.000'	43.848'	87.242'	447,164.3212	173,791.9327	PI
1503	CC							447,117.3853	173,442.3333	
1504	PT	12+05.756						447,206.7172	173,780.7411	S 75° 12' 45.15" E
1505	PC	12+55.756						447,255.0612	173,767.9794	
1506	PI	13+01.807	14° 59' 28.68" LT	16° 22' 12.80"	350.000'	46.051'	91.577'	447,299.5873	173,756.2255	PI
1507	CC							447,344.3931	174,106.3871	
1508	PT	13+47.333						447,345.6383	173,756.3893	N 89° 47' 46.17" E
1509	POT	147TH ST EB 14+99.817=						447,498.0816	173,756.9317	
		CSAH 83 SB 136+32.318								

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ALIGNMENT PLAN & TABULATIONS
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SHEET 63 OF 153 SHEETS

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GENERAL NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA.

THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE UTILITY COMPANIES. CALL GOPHER STATE ONE CALL AT 1-800-252-1166 AT LEAST 48 HOURS PRIOR TO EXCAVATION OR CONSTRUCTION.

ALL UTILITY WORK SHOWN ON THESE UTILITY PLANS SHALL BE DONE BY OTHERS UNLESS OTHERWISE NOTED, WITH THE EXCEPTION OF THE MET COUNCIL FORCE MAIN.

THE REMARKS COLUMN IS BASED UPON THE BEST INFORMATION AVAILABLE AND MAY NOT REFLECT THE ACTUAL EFFECTS ON THE UTILITIES BY CONSTRUCTION. ACTUAL DETERMINATIONS WILL BE MADE IN THE FIELD DURING CONSTRUCTION.

UTILITIES

THE FOLLOWING IS A LIST OF UTILITY COMPANIES INVOLVED IN THIS PROJECT:

ANOKA COUNTY
CENTERPOINT ENERGY
CENTURY LINK
CITY OF RAMSEY
COMCAST
CONNEXUS
MET COUNCIL ENVIRONMENTAL SERVICES
WINDSTREAM COMMUNICATIONS

UTILITY ABBREVIATIONS

F/O BUR = BURIED FIBER OPTIC LINE
GAS = UNDERGROUND GAS LINE
OHP = OVERHEAD POWER LINE
P-BUR - BURIED POWER LINE
SAN SEWER = SANITARY SEWER LINE
SIG BUR = BURIED SIGNAL INTERCONNECT LINE
T-BUR = BURIED TELEPHONE LINE
TV BUR = BURIED TELEVISON LINE
WM = WATER MAIN

OWNERSHIP

AC = ANOKA COUNTY
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CM = COMCAST
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CX = CONNEXUS
MC = MET COUNCIL ENVIRONMENTAL SERVICES
RAMSEY = CITY OF RAMSEY
WC = WINDSTREAM COMMUNICATIONS

CONNEXUS (POWER)

Alignment	Station to Station	Offset	Item	Owner	Remarks
CSAH 83 NB	26+82	32' RT	POWER POLE	CX	ADJUST GRADE AT BASE
CSAH 83 NB	26+82 TO 30+83	32' RT TO 33' RT	OHP	CX	LEAVE AS IS
CSAH 83 NB	30+83	33' RT	POWER POLE	CX	ADJUST GRADE AT BASE
CSAH 83 NB	30+83 TO 32+26	33' RT TO 39' RT	P-BUR	CX	LEAVE AS IS
CSAH 83 NB	32+26 TO 33+96	39' RT TO 37' RT	P-BUR	CX	LEAVE AS IS
CSAH 83 NB	33+96 TO 36+25	37' RT TO 36' RT	P-BUR	CX	LEAVE AS IS
CSAH 83 NB	36+25	36' RT	CABINET	CX	RELOCATE
CSAH 83 NB	36+25 TO 45+24	36' RT	P-BUR	CX	ADJUST GRADE AS NEEDED
CSAH 83 NB	26+82 TO 27+68	93' RT TO 100' LT	OHP	CX	LEAVE AS IS
CSAH 83 NB	30+83 TO 31+40	33' RT TO 50' LT	OHP	CX	REMOVE
CSAH 83 NB	31+40	50' LT	LIGHT POLE	CX	REMOVE
CSAH 83 NB	30+83 TO 30+99	33' RT TO 16' RT	P-BUR	CX	LEAVE AS IS
CSAH 83 NB	30+99 TO 32+25	16' RT TO 17' RT	P-BUR	CX	LEAVE AS IS
CSAH 83 NB	32+25	17' RT TO 89' LT	P-BUR	CX	LEAVE AS IS
CSAH 83 NB	32+25	89' LT	CABINET	CX	LEAVE AS IS
CSAH 83 NB	32+25 TO 33+09	89' LT TO 126' LT	P-BUR	CX	LEAVE AS IS
CSAH 83 NB	32+25 TO 38+93	89' LT TO 82' LT	P-BUR	CX	ADJUST GRADE AS NEEDED
CSAH 83 NB	33+96	28' RT TO 11' RT	P-BUR	CX	ADJUST GRADE AS NEEDED
CSAH 83 NB	33+96 TO 35+42	11' RT TO 9' RT	P-BUR	CX	ADJUST GRADE AS NEEDED
CSAH 83 NB	35+42	9' RT TO 119' LT	P-BUR	CX	ADJUST GRADE AS NEEDED
CSAH 83 NB	35+42	119' LT	CABINET	CX	RELOCATE
CSAH 83 NB	38+84 TO 38+09	75' LT TO 158' LT	P-BUR	CX	LEAVE AS IS
147TH AVE EB	10+09 TO 11+98	5' RT TO 17' RT	OHP	CX	RELOCATE / BURY
147TH AVE EB	11+98	17' RT	POWER POLE	CX	REMOVE
147TH AVE EB	11+98 TO 14+62	17' RT TO 13' LT	OHP	CX	RELOCATE / BURY
147TH AVE EB	14+62	13' LT	POWER POLE	CX	REMOVE
147TH AVE EB	11+98 TO 12+19	17' RT TO 110' RT	OHP	CX	RELOCATE / BURY

CENTURY LINK (TELEPHONE)

Alignment	Station to Station	Offset	Item	Owner	Remarks
CSAH 83 NB	26+82 TO 29+68	45' RT TO 46' RT	T-BUR	CL	LEAVE AS IS
CSAH 83 NB	29+68 TO 31+30	46' RT TO 144' RT	T-BUR	CL	LEAVE AS IS
CSAH 83 NB	31+30	144' RT TO 163' RT	T-BUR	CL	LEAVE AS IS
CSAH 83 NB	31+30 TO 32+10	144' RT	T-BUR	CL	LEAVE AS IS
CSAH 83 NB	32+10	144' RT TO 55' RT	T-BUR	CL	LEAVE AS IS
CSAH 83 NB	32+10 TO 32+24	55' RT TO 39' RT	T-BUR	CL	LEAVE AS IS
CSAH 83 NB	32+24 TO 32+19	39' RT TO 79' LT	T-BUR	CL	LEAVE AS IS
CSAH 83 NB	26+94 TO 31+39	69' LT	T-BUR	CL	LEAVE AS IS
CSAH 83 NB	31+39 TO 32+19	69' LT TO 79' LT	T-BUR	CL	LEAVE AS IS
CSAH 83 NB	32+19 TO 32+47	79' LT TO 70' LT	T-BUR	CL	LEAVE AS IS
CSAH 83 NB	32+47 TO 45+50	70' LT TO 75' LT	T-BUR	CL	LEAVE AS IS
CSAH 83 NB	31+39 TO 31+41	69' LT TO 375' LT	T-BUR	CL	LEAVE AS IS

COMCAST (TELEVISION)

Alignment	Station to Station	Offset	Item	Owner	Remarks
CSAH 83 NB	26+82 TO 33+13	44' RT TO 42' RT	TV-BUR	CM	LEAVE AS IS
CSAH 83 NB	33+13 TO 45+50	42' RT TO 25' RT	TV-BUR	CM	LEAVE AS IS

CENTERPOINT ENERGY (GAS)

Alignment	Station to Station	Offset	Item	Owner	Remarks
CSAH 83 NB	27+04 TO 45+50	60' LT TO 63' LT	GAS	CP	LEAVE AS IS
CSAH 83 NB	31+25 TO 31+28	57' LT TO 163' RT	GAS	CP	LEAVE AS IS
CSAH 83 NB	31+45 TO 31+49	57' LT TO 375' LT	GAS	CP	LEAVE AS IS

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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CERTIFIED BY: _____ LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE

DATE: 04/03/12 LIC. NO: 44620

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CITY OF RAMSEY, MINNESOTA

INPLACE UTILITY TABULATION
S.A.P. 199-020-010 / C.P. 12-20

SHEET 64 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: K:\0973-010\cad\plan\CD020295_ut10.dgn

GENERAL NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA.

THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE UTILITY COMPANIES. CALL GOPHER STATE ONE CALL AT 1-800-252-1166 AT LEAST 48 HOURS PRIOR TO EXCAVATION OR CONSTRUCTION.

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WINDSTREAM COMMUNICATIONS

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WINDSTREAM COMMUNICATIONS (FIBER OPTIC)

Alignment	Station to Station	Offset	Item	Owner	Remarks
CSAH 83 NB	26+82 TO 45+50	38' RT TO 30' RT	F/O BUR	WC	LEAVE AS IS

CITY OF RAMSEY (SANITARY SEWER)

Alignment	Station to Station	Offset	Item	Owner	Remarks
CSAH 83 NB	26+82 TO 29+02	70' RT TO 48' RT	SAN SEWER	MC	LEAVE AS IS
CSAH 83 NB	29+02	48' RT TO 66' RT	SAN SEWER	MC	EAST END PLUGGED; LEAVE AS IS
CSAH 83 NB	29+02 TO 31+75	48' RT TO 51' RT	SAN SEWER	MC	LEAVE AS IS
CSAH 83 NB	31+75	83' RT TO 51' RT	SAN SEWER	MC	WEST END PLUGGED; LEAVE AS IS
CSAH 83 NB	31+75	51' RT TO 169' RT	SAN SEWER	MC	LEAVE AS IS
CSAH 83 NB	31+75 TO 32+11	169' RT	SAN SEWER	MC	NORTH END PLUGGED; LEAVE AS IS
CSAH 83 NB	31+75 TO 31+40	169' RT TO 369' RT	SAN SEWER	MC	LEAVE AS IS

ANOKA COUNTY (SIGNAL INTERCONNECT)

Alignment	Station to Station	Offset	Item	Owner	Remarks
CSAH 83 NB	26+82 TO 28+93	16' RT	SIG BUR	AC	LEAVE AS IS

CITY OF RAMSEY (WATER MAIN)

Alignment	Station to Station	Offset	Item	Owner	Remarks
CSAH 83 NB	26+82 TO 29+03	62' RT TO 41' RT	WM	RAMSEY	LEAVE AS IS
CSAH 83 NB	29+03 TO 31+83	41' RT TO 44' RT	WM	RAMSEY	LEAVE AS IS
CSAH 83 NB	32+03 TO 31+83	104' LT TO 103' LT	WM	RAMSEY	LEAVE AS IS
CSAH 83 NB	31+83	103' LT TO 150' RT	WM	RAMSEY	LEAVE AS IS
CSAH 83 NB	31+83 TO 31+51	150' RT TO 366' RT	WM	RAMSEY	LEAVE AS IS
CSAH 83 NB	31+74 TO 32+09	228' RT TO 234' RT	WM	RAMSEY	LEAVE AS IS
CSAH 83 NB	32+09	234' RT	HYDRANT	RAMSEY	LEAVE AS IS

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Plan By: CWK
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Approved By: NEH

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SHEET 65 OF 153 SHEETS

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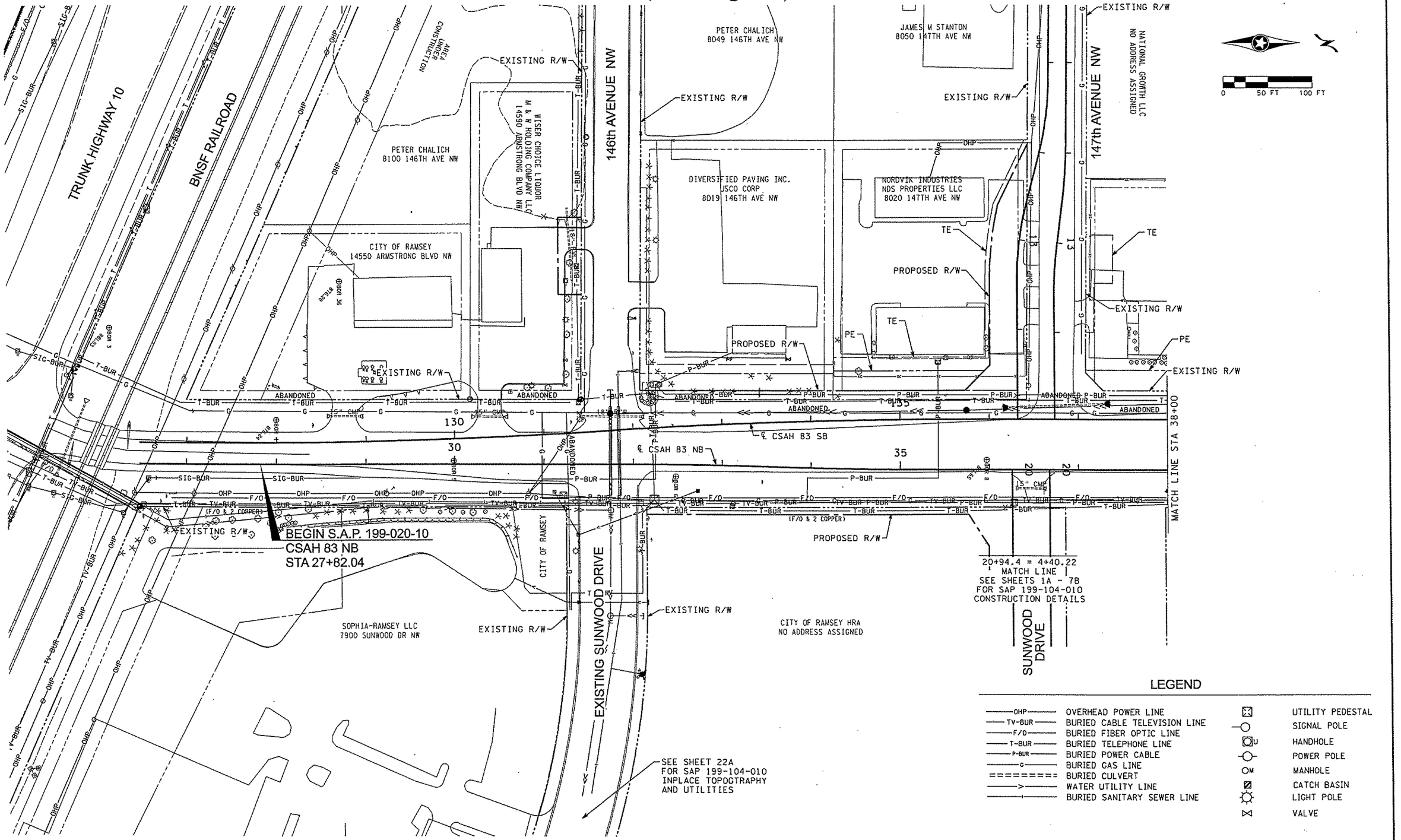
CSAH 83 (Armstrong Blvd)



LEGEND

OHP	OVERHEAD POWER LINE		UTILITY PEDESTAL
TV-BUR	BURIED CABLE TELEVISION LINE		SIGNAL POLE
F/O	BURIED FIBER OPTIC LINE	U	HANDHOLE
T-BUR	BURIED TELEPHONE LINE		POWER POLE
P-BUR	BURIED POWER CABLE	M	MANHOLE
G	BURIED GAS LINE		CATCH BASIN
=========	BURIED CULVERT		LIGHT POLE
W	WATER UTILITY LINE		VALVE
S	BURIED SANITARY SEWER LINE		

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SHEET 66 OF 153 SHEETS

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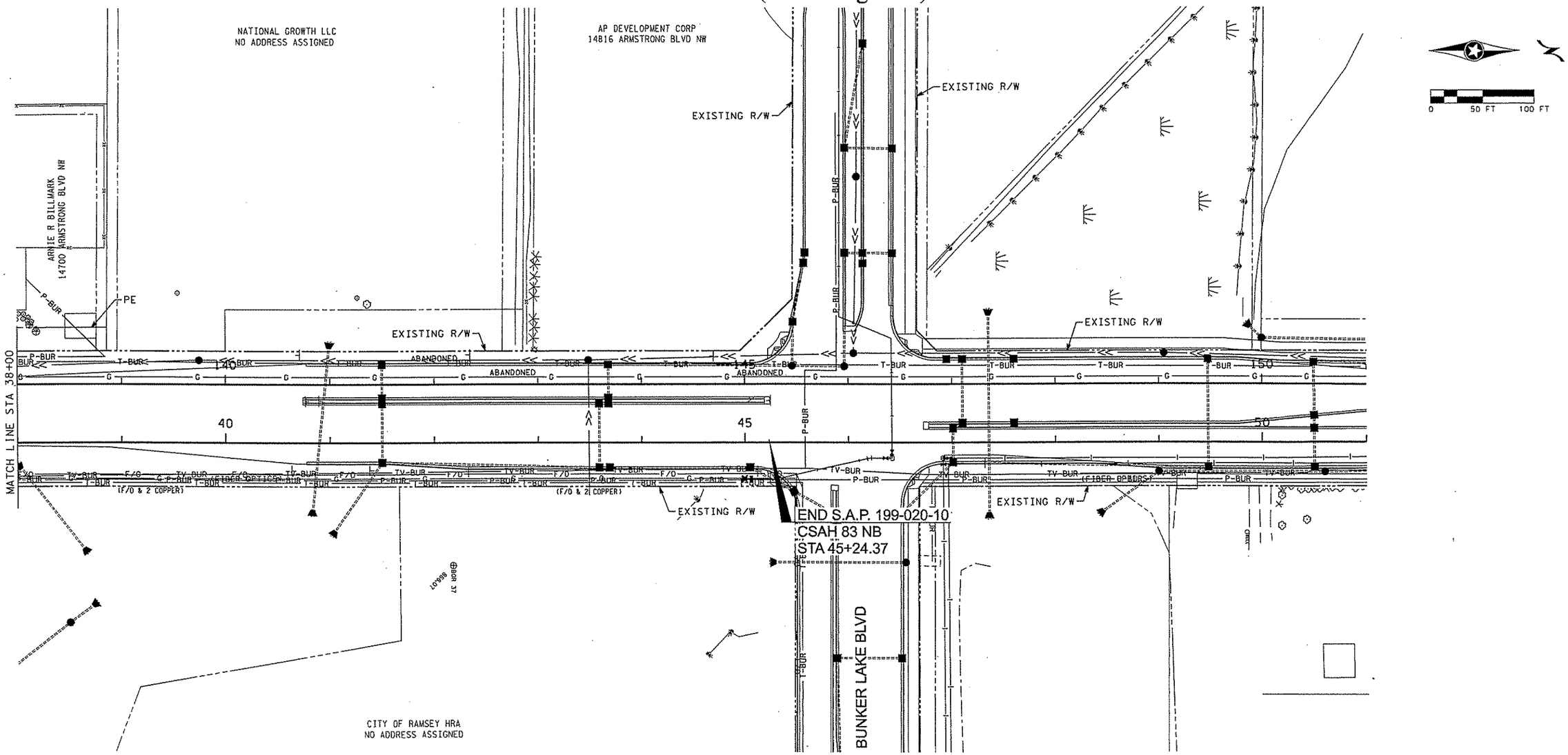
CSAH 83 (Armstrong Blvd)



LEGEND

OHP	OVERHEAD POWER LINE		UTILITY PEDESTAL
TV-BUR	BURIED CABLE TELEVISION LINE		SIGNAL POLE
F/O	BURIED FIBER OPTIC LINE	U	HANDHOLE
T-BUR	BURIED TELEPHONE LINE		POWER POLE
P-BUR	BURIED POWER CABLE	M	MANHOLE
G	BURIED GAS LINE		CATCH BASIN
	BURIED CULVERT		LIGHT POLE
	WATER UTILITY LINE		VALVE
	BURIED SANITARY SEWER LINE		

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SHEET 67 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: k:\01973-010\cad\plan\C0020295_ut02.dgn

SANITARY SEWER — H

STRUCTURE TO STRUCTURE	DISCONNECT SANITARY SEWER SERVICE	RECONNECT TO EXISTING SANITARY SEWER SERVICE	CONNECT TO EXISTING SANITARY SEWER	6" PIPE PLUG	SALVAGE CASTING	INSTALL CASTING	ADJUST FRAME & RING CASTING	RECONSTRUCT MANHOLES	6" PVC PIPE SEWER - SDR 26	NOTES
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	LIN FT	
CSAH 83										
6000 TO 6000A					1	1	1	1		(1)
6001 TO 6000			1	1	1	1		1	54	(2)
6002 TO 6001	1	1	1		1	1		1	45	(3)
PROJECT TOTAL	1	1	2	1	3	3	1	3	99	

NOTES:
(1) STRUCTURE 6000 - NEW T/C = 874.29, EXISTING T/C = 872.85.
(2) STRUCTURE 6001 - NEW T/C = 877.10, EXISTING T/C = 868.51.
(3) STRUCTURE 6002 - NEW T/C = 869.99, EXISTING T/C = 867.97.

WATERMAIN — HH

STATION TO STATION	OFFSET	SALVAGE GATE VALVE & BOX	SALVAGE HYDRANT	CONNECT TO EXISTING WATER MAIN	HYDRANT (1)	INSTALL HYDRANT	INSTALL GATE VALVE & BOX	6" GATE VALVE AND BOX	12" GATE VALVE AND BOX	6" WATER MAIN DUCTILE IRON CL 53	12" WATER MAIN DUCTILE IRON CL 52	DUCTILE IRON FITTINGS (1)	6" POLYSTYRENE INSULATION
		2504	2504	2504	2504	2504	2504	2504	2504	2504	2504	2504	2504
		EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	LIN FT	LIN FT	POUND	SQ YD
CSAH 83 (ARMSTRONG BLVD)													
44+99 TO 44+99	41.7' RT	1	1	1		1	1			10		85	
147TH AVE NW													
10+92.45 EB TO 14+96.5 WB	3.5' RT - 7.9' RT										460	85	8
11+24.9 EB TO 11+24.2 WB	3.0' RT - 32.8' LT							1		56		350	
11+35.1 EB TO 11+37.0 EB	2.6' RT - 32.7' RT							1		31		350	
12+26.0 EB TO 12+26.6 WB	14.4' LT - 15.7' LT				1			1		36		325	4
12+75.4 EB TO 12+87.2 EB	26.8' LT - 36.0' RT							1		64		350	
12+89.5 WB TO 12+82.7 WB	13.5' RT - 40.4' LT							1		55		350	4
SUNWOOD DRIVE													
20+00.0 WB TO 20+94.4 WB	1.9' RT								1		104	860	8
20+46.2 WB TO 20+46.2 WB	1.9' RT - 61.6' LT								1		65	495	
PROJECT TOTAL		1	1	1	1	1	1	5	2	252	629	3250	24

NOTES:
(1) THRUST BLOCKING INCIDENTAL.

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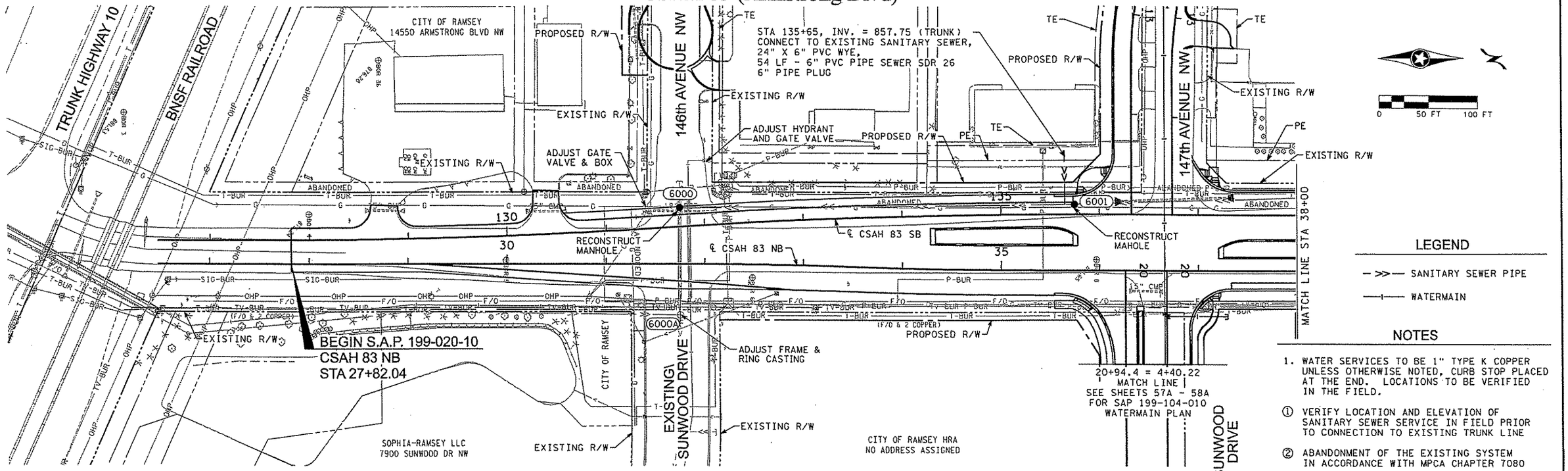
PROPOSED UTILITY TABULATION
S.A.P. 199-020-010 / C.P. 12-20

SHEET 68 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: k:\09713-010\cad\plan\CD020295_pu0.dgn

CSAH 83 (Armstrong Blvd)

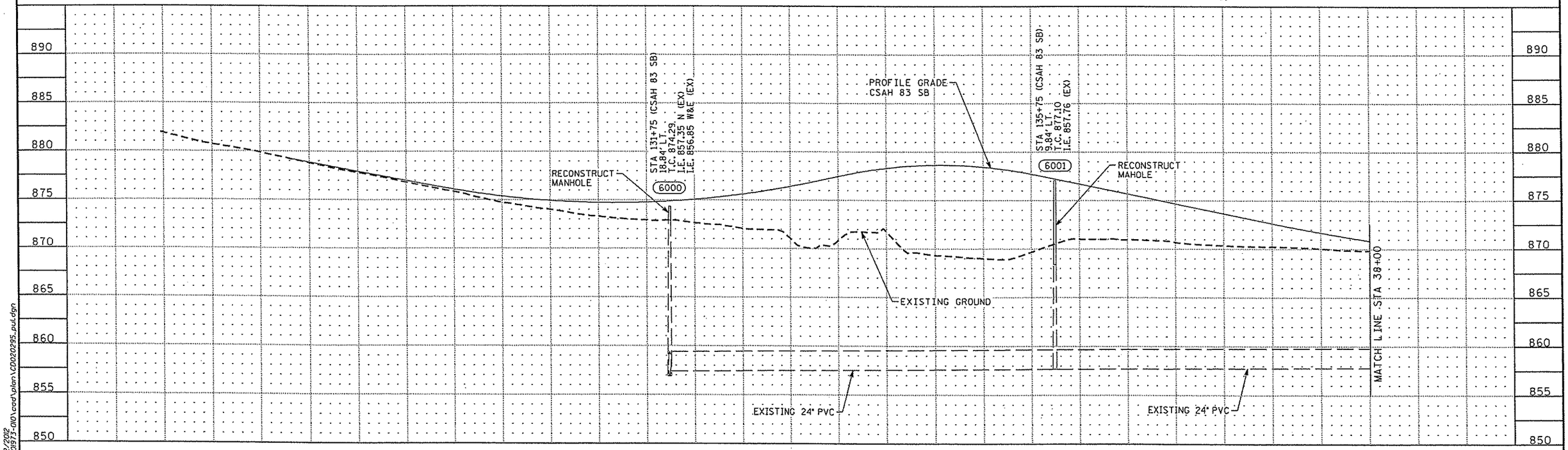


LEGEND

- SANITARY SEWER PIPE
- WATERMAIN

NOTES

1. WATER SERVICES TO BE 1" TYPE K COPPER UNLESS OTHERWISE NOTED, CURB STOP PLACED AT THE END. LOCATIONS TO BE VERIFIED IN THE FIELD.
2. ① VERIFY LOCATION AND ELEVATION OF SANITARY SEWER SERVICE IN FIELD PRIOR TO CONNECTION TO EXISTING TRUNK LINE
3. ② ABANDONMENT OF THE EXISTING SYSTEM IN ACCORDANCE WITH MPCA CHAPTER 7080



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SHEET 69 OF 153 SHEETS

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STA 138+02, INV. = 857.99 (TRUNK)
CONNECT TO EXISTING SANITARY SEWER,
DISCONNECT SANITARY SEWER SERVICE,
RECONNECT TO EXISTING SANITARY SERVICE,
24" X 6" PVC WYE,
45 LF - 6" PVC PIPE SEWER SDR 26

ARNIE R BILLMARK
14700 ARMSTRONG BLVD NW

EX. PE

PE

RECONSTRUCT MANHOLE

6002

6003

EXISTING R/W

ABANDONED

MATCH LINE STA 38+00

STA 44+99, 41.7' RT
SALVAGE HYDRANT
SALVAGE 6" GATE VALVE & BOX
CONNECT TO EXISTING WATERMAIN
F&I:
6" 45 DEGREE BEND
10 LF 6" DIP CL 53
INSTALL HYDRANT
INSTALL GATE VALVE & BOX

END S.A.P. 199-020-10
CSAH 83 NB
STA 45+24.37

BUNKER LAKE BLVD

50 FT 100 FT

LEGEND

— >> — SANITARY SEWER PIPE

—|— WATERMAIN

NOTES

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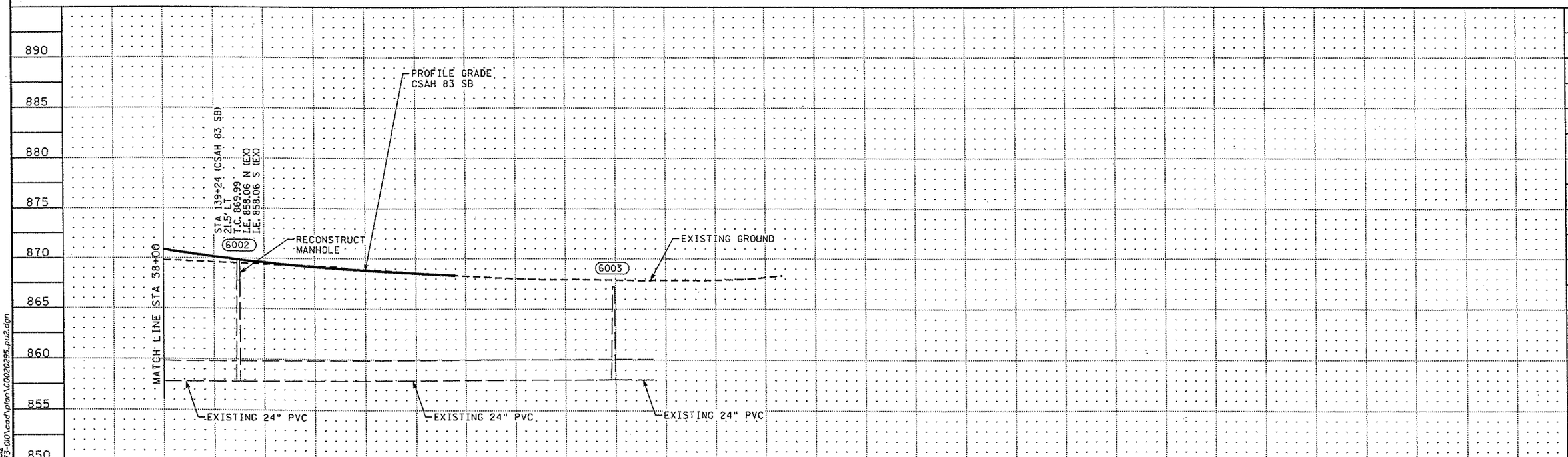
① VERIFY LOCATION AND ELEVATION OF SANITARY SEWER SERVICE IN FIELD PRIOR TO CONNECTION TO EXISTING TRUNK LINE

② ABANDONMENT OF THE EXISTING SYSTEM IN ACCORDANCE WITH MPCA CHAPTER 7080



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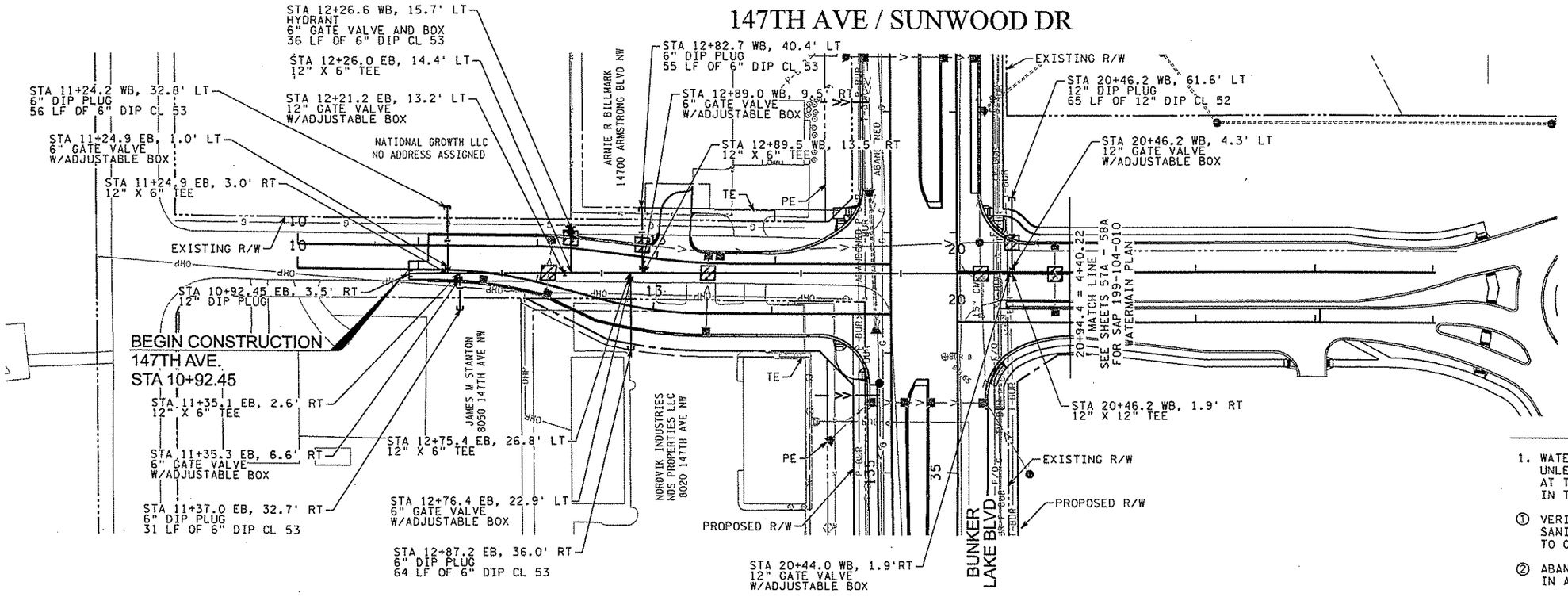
S.A.P. 199-020-010 / C.P. 12-20

SHEET 70 OF 153 SHEETS

Date Printed: 5/12/2012
WSB Filename: K:\10\573-010\cad\plan\C00220295_pl2.dgn

147TH AVE / SUNWOOD DR



LEGEND

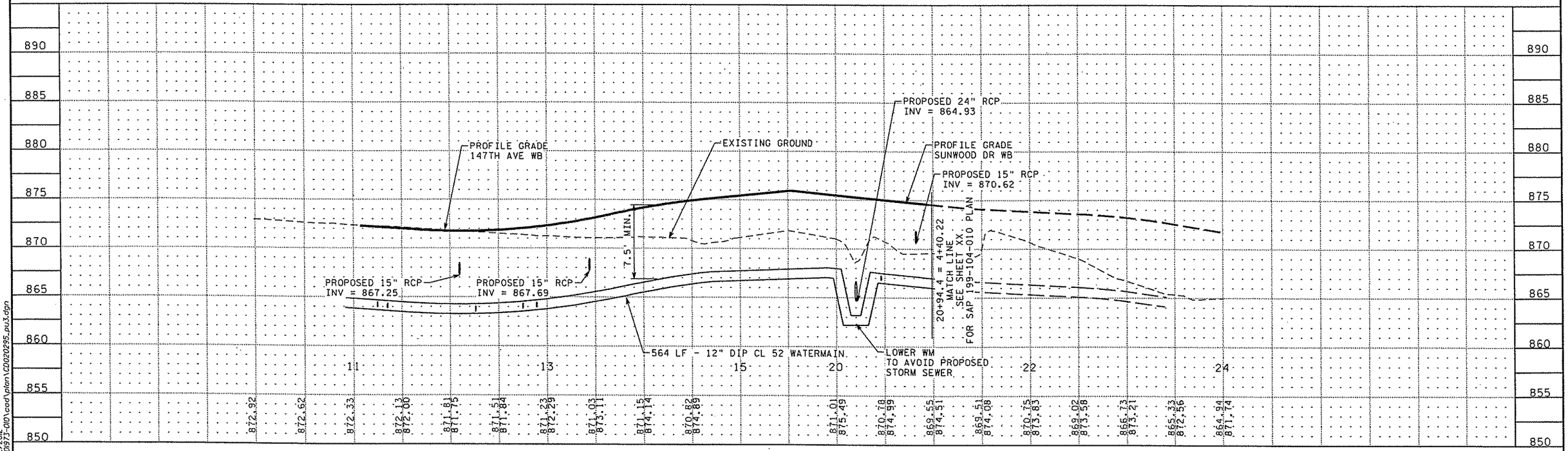
- SANITARY SEWER PIPE
- WATERMAIN
- 6" INSULATION

NOTES

1. WATER SERVICES TO BE 1" TYPE K COPPER UNLESS OTHERWISE NOTED, CURB STOP PLACED AT THE END. LOCATIONS TO BE VERIFIED IN THE FIELD.

① VERIFY LOCATION AND ELEVATION OF SANITARY SEWER SERVICE IN FIELD PRIOR TO CONNECTION TO EXISTING TRUNK LINE

② ABANDONMENT OF THE EXISTING SYSTEM IN ACCORDANCE WITH MPCA CHAPTER 7080



NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE

DATE: 04/03/12 LIC. NO: 44620

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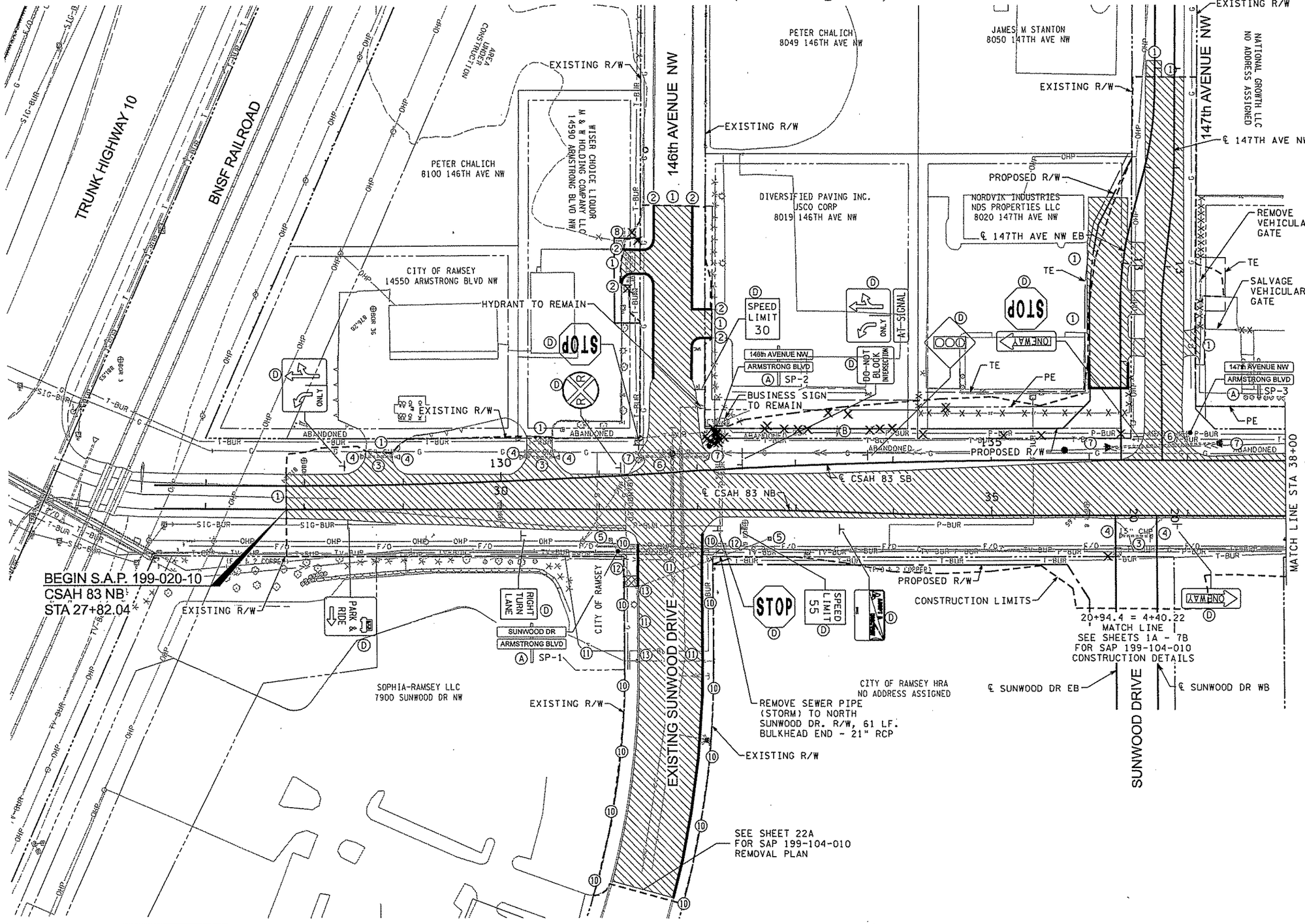
SHEET 71 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: k:\01973-010\cad\plan\CD0020295_pu3.dgn

CSAH 83 (Armstrong Blvd)



LEGEND

- (A) REMOVE SIGN
- (B) SALVAGE SIGN
- (C) REMOVE MARKER
- (D) REMOVE SIGN TYPE "C"
- SP-XXX SIGN TYPE "SPECIAL"
- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE WALK (SAWING INCIDENTAL)
- REMOVE CURB & GUTTER
- REMOVE CHAIN LINK FENCE
- CLEAR & GRUB (TREE)
- (1) SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)
- (2) SAWCUT CONCRETE PAVEMENT (FULL DEPTH)
- (3) REMOVE METAL CULVERT
- (4) REMOVE METAL APRON
- (5) REMOVE DRAINAGE STRUCTURE
- (6) REMOVE CONCRETE CULVERT
- (7) REMOVE CONCRETE APRON
- (8) CULVERT TO REMAIN
- (9) SALVAGE CATCH BASIN AND CASTING
- (10) LIGHTING UNIT AND BASE REMOVAL (BY OTHERS)
- (11) SEWER PIPE (STORM) TO REMAIN
- (12) REMOVE SEWER PIPE (STORM)
- (13) DRAINAGE STRUCTURE TO REMAIN

NOTES

- ALL REMOVAL ITEMS SHALL BE DISPOSED OF OFF THE PROJECT SITE IN ACCORDANCE WITH THE SPECIFICATIONS.
- ALL TREES WITHIN CONSTRUCTION LIMITS NOT LABELED FOR REMOVAL SHALL BE PROTECTED FROM CONSTRUCTION ACTIVIES TO AVOID DAMAGE, INCIDENTAL.
- ALL REMOVED SIGNS FROM PROJECT SHALL BE SALVAGED TO THE CITY OF RAMSEY OR ANOKA COUNTY
- SHE SHEETS 69 - 70 FOR EXISTING SANITARY SEWER & WATER MAIN ADJUSTMENTS
- SEE SHEET 8 FOR TABULATED REMOVAL QUANTITIES

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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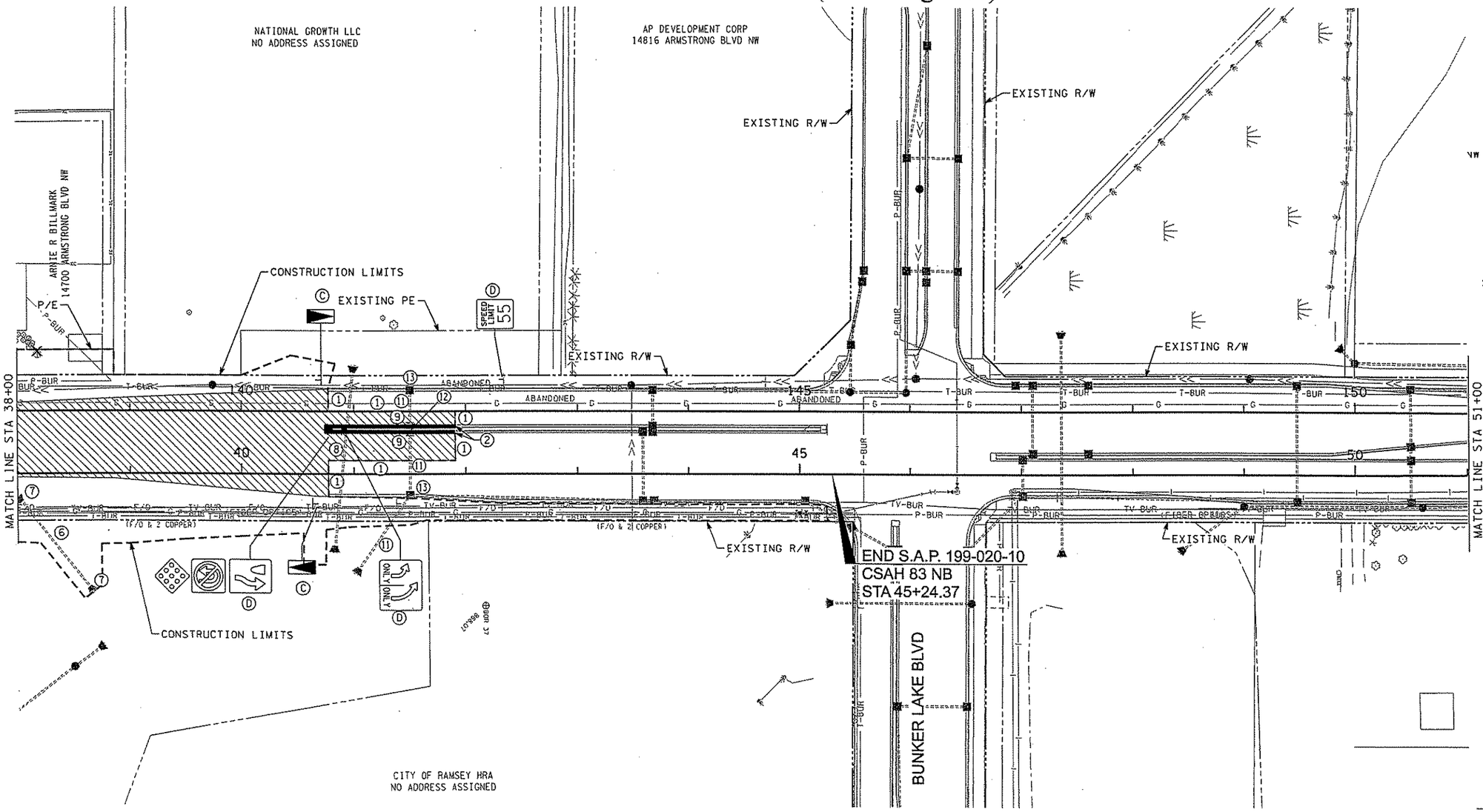
MISCELLANEOUS REMOVAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 72 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: K:\10913-010\cad\plan\C0020295_mr01.dgn

CSAH 83 (Armstrong Blvd)



LEGEND

- (A) REMOVE SIGN
- (B) SALVAGE SIGN
- (C) REMOVE MARKER
- (D) REMOVE SIGN TYPE "C"
- SP-XXX SIGN TYPE "SPECIAL"
- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE WALK (SAWING INCIDENTAL)
- REMOVE CURB & GUTTER
- REMOVE CHAIN LINK FENCE
- CLEAR & GRUB (TREE)
- (1) SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)
- (2) SAWCUT CONCRETE PAVEMENT (FULL DEPTH)
- (3) REMOVE METAL CULVERT
- (4) REMOVE METAL APRON
- (5) REMOVE DRAINAGE STRUCTURE
- (6) REMOVE CONCRETE CULVERT
- (7) REMOVE CONCRETE APRON
- (8) CULVERT TO REMAIN
- (9) SALVAGE CATCH BASIN AND CASTING
- (10) LIGHTING UNIT AND BASE REMOVAL (BY OTHERS)
- (11) SEWER PIPE (STORM) TO REMAIN
- (12) REMOVE SEWER PIPE (STORM)
- (13) DRAINAGE STRUCTURE TO REMAIN

NOTES

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- ALL REMOVED SIGNS FROM PROJECT SHALL BE SALVAGED TO THE CITY OF RAMSEY OR ANOKA COUNTY
- SHE SHEETS 69 - 70 FOR EXISTING SANITARY SEWER & WATER MAIN ADJUSTMENTS
- SEE SHEET 8 FOR TABULATED REMOVAL QUANTITIES

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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DATE: 04/03/12 LIC. NO: 44620

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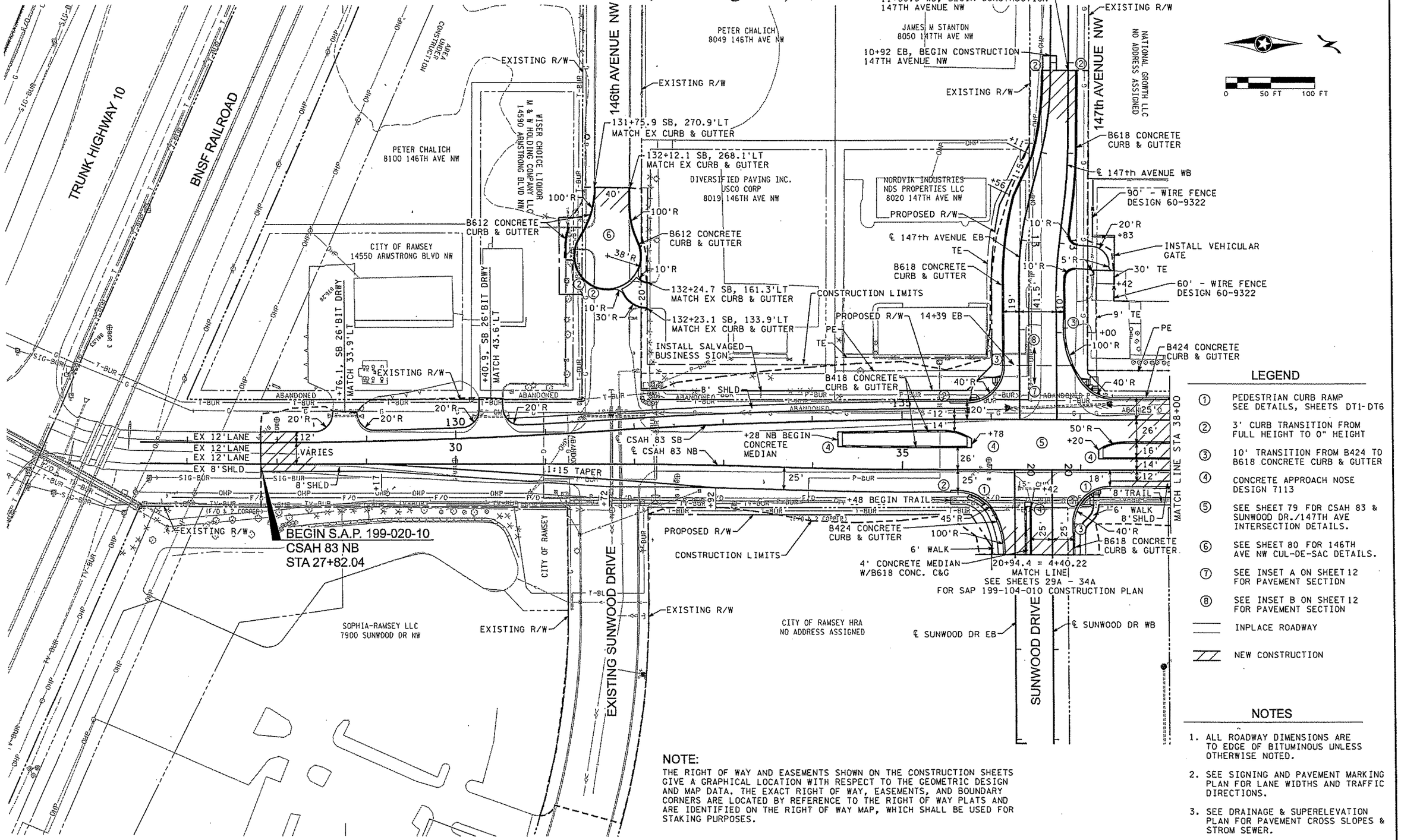
MISCELLANEOUS REMOVAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 73 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: K:\09713-010\cad\plan\CD020295_mr02.dgn

CSAH 83 (Armstrong Blvd)



LEGEND

1. PEDESTRIAN CURB RAMP SEE DETAILS, SHEETS DT1-DT6
2. 3' CURB TRANSITION FROM FULL HEIGHT TO 0" HEIGHT
3. 10' TRANSITION FROM B424 TO B618 CONCRETE CURB & GUTTER
4. CONCRETE APPROACH NOSE DESIGN 7113
5. SEE SHEET 79 FOR CSAH 83 & SUNWOOD DR./147TH AVE INTERSECTION DETAILS.
6. SEE SHEET 80 FOR 146TH AVE NW CUL-DE-SAC DETAILS.
7. SEE INSET A ON SHEET 12 FOR PAVEMENT SECTION
8. SEE INSET B ON SHEET 12 FOR PAVEMENT SECTION

INPLACE ROADWAY

NEW CONSTRUCTION

NOTES

1. ALL ROADWAY DIMENSIONS ARE TO EDGE OF BITUMINOUS UNLESS OTHERWISE NOTED.
2. SEE SIGNING AND PAVEMENT MARKING PLAN FOR LANE WIDTHS AND TRAFFIC DIRECTIONS.
3. SEE DRAINAGE & SUPERELEVATION PLAN FOR PAVEMENT CROSS SLOPES & STROM SEWER.

NOTE:
THE RIGHT OF WAY AND EASEMENTS SHOWN ON THE CONSTRUCTION SHEETS GIVE A GRAPHICAL LOCATION WITH RESPECT TO THE GEOMETRIC DESIGN AND MAP DATA. THE EXACT RIGHT OF WAY, EASEMENTS, AND BOUNDARY CORNERS ARE LOCATED BY REFERENCE TO THE RIGHT OF WAY PLATS AND ARE IDENTIFIED ON THE RIGHT OF WAY MAP, WHICH SHALL BE USED FOR STAKING PURPOSES.

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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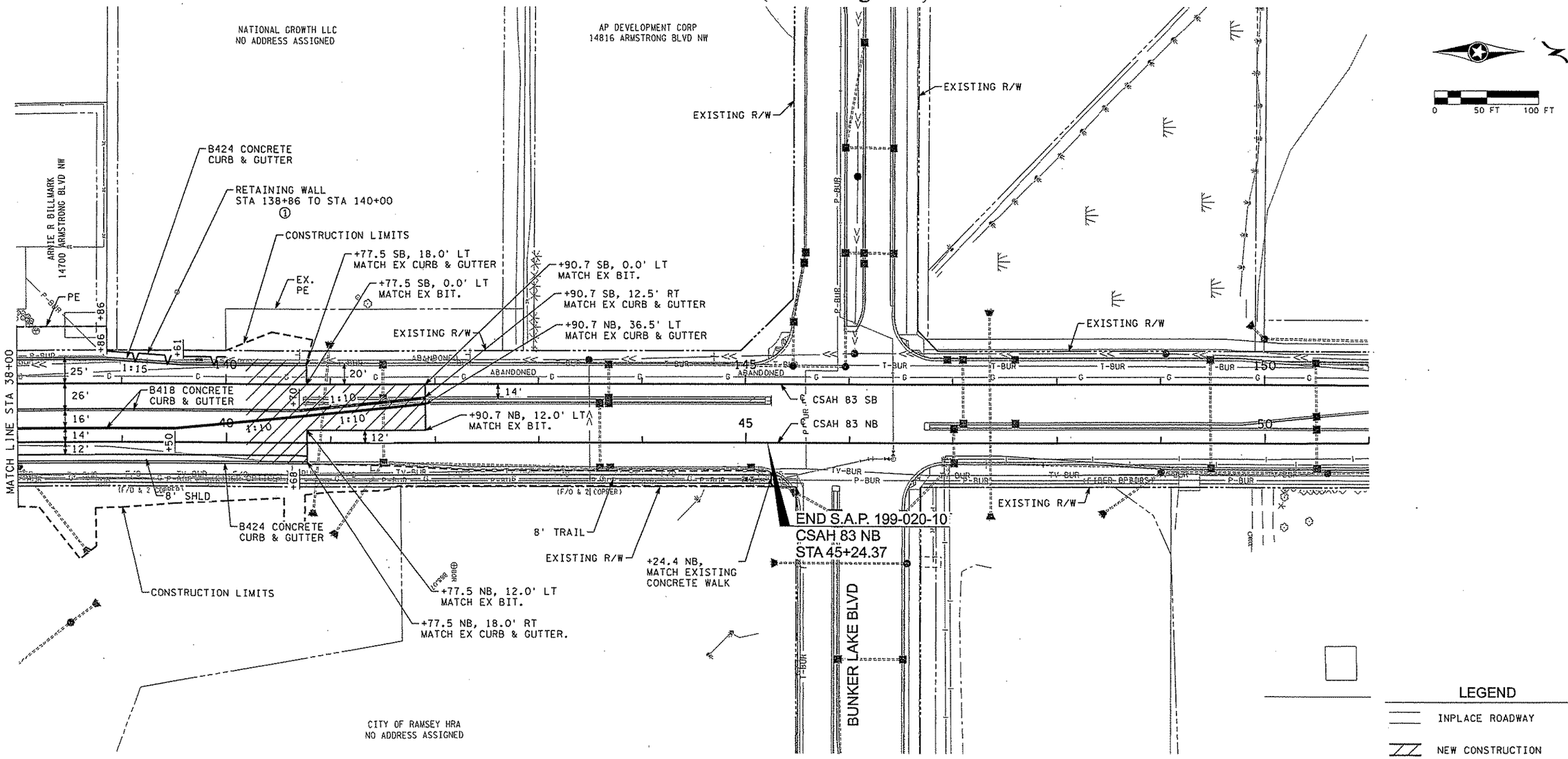
CONSTRUCTION PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 74 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: K:\09973-010\cad\plan\CD020295_cp01.dgn

CSAH 83 (Armstrong Blvd)



LEGEND

- INPLACE ROADWAY
- NEW CONSTRUCTION
- ① SEE SHEET B1 FOR DETAILS

NOTES

1. ALL ROADWAY DIMENSIONS ARE TO EDGE OF BITUMINOUS UNLESS OTHERWISE NOTED.
2. SEE SIGNING AND PAVEMENT MARKING PLAN FOR LANE WIDTHS AND TRAFFIC DIRECTIONS.
3. SEE DRAINAGE & SUPERELEVATION PLAN FOR PAVEMENT CROSS SLOPES & STROM SEWER.

NO.	DATE	BY	CHK	REVISIONS

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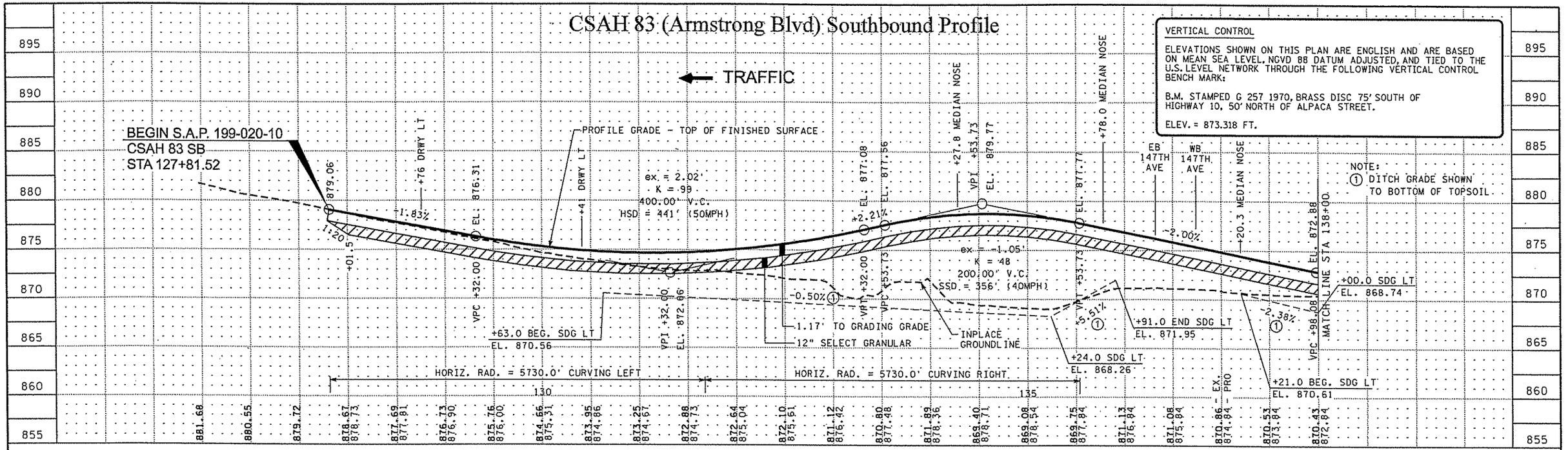
S.A.P. 199-020-010 / C.P. 12-20

SHEET 75 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: K:\0193-010\cad\plan\CD020295_ap02.dgn

CSAH 83 (Armstrong Blvd) Southbound Profile



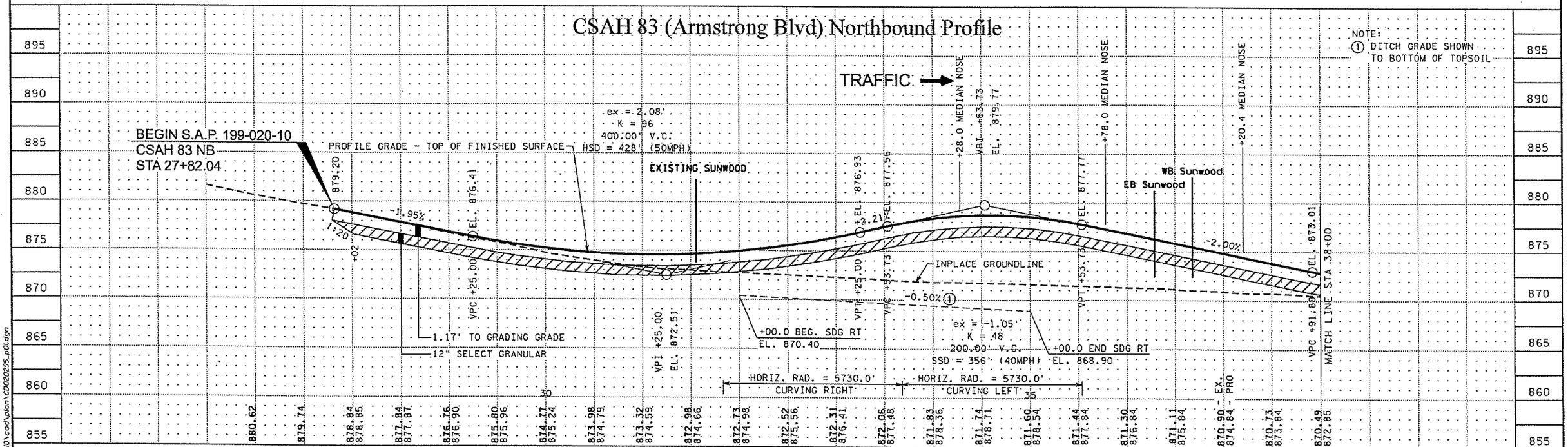
VERTICAL CONTROL

ELEVATIONS SHOWN ON THIS PLAN ARE ENGLISH AND ARE BASED ON MEAN SEA LEVEL, NGVD 88 DATUM ADJUSTED, AND TIED TO THE U.S. LEVEL NETWORK THROUGH THE FOLLOWING VERTICAL CONTROL BENCH MARK:

B.M. STAMPED G 257 1970, BRASS DISC 75' SOUTH OF HIGHWAY 10, 50' NORTH OF ALPACA STREET.

ELEV. = 873.318 FT.

CSAH 83 (Armstrong Blvd) Northbound Profile



NO.	DATE	BY	CHK	REVISIONS

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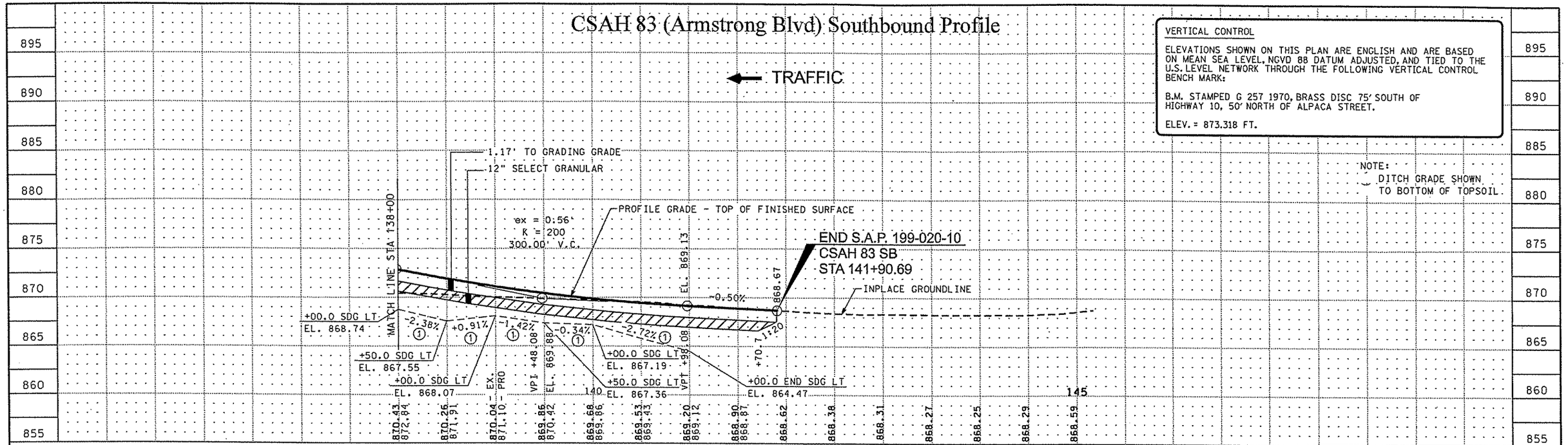
SHEET 76 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: k:\01973-010\cad\plan\CD0020295_roll.dgn

CSAH 83 (Armstrong Blvd) Southbound Profile



VERTICAL CONTROL

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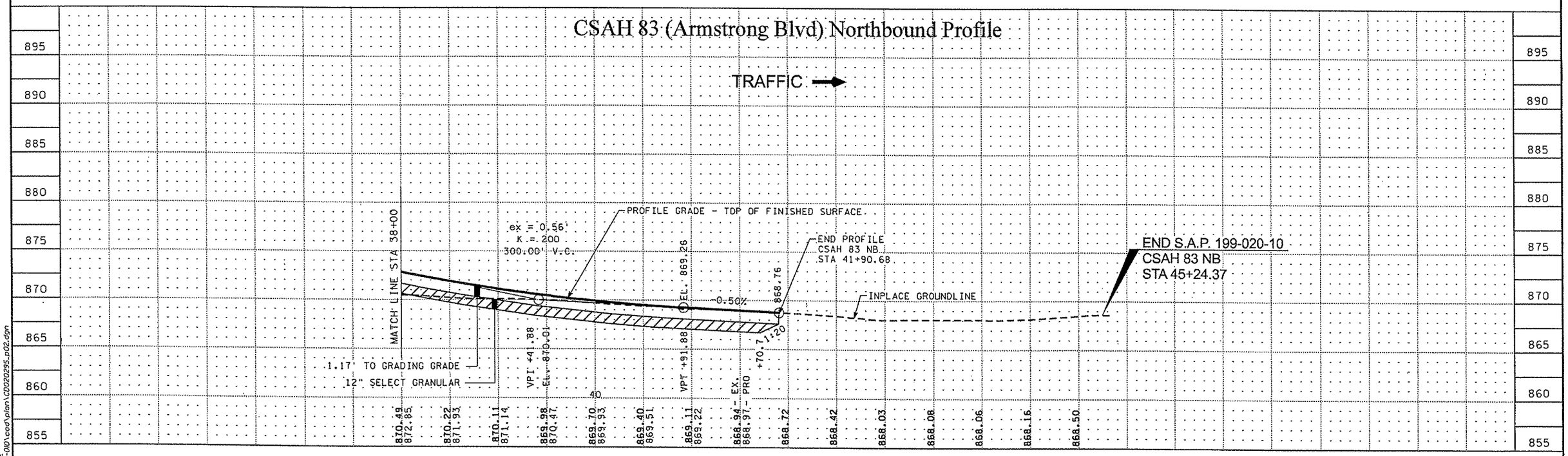
B.M. STAMPED G 257 1970, BRASS DISC 75' SOUTH OF HIGHWAY 10, 50' NORTH OF ALPACA STREET.

ELEV. = 873.318 FT.

NOTE:
DITCH GRADE SHOWN TO BOTTOM OF TOPSOIL

CSAH 83 (Armstrong Blvd) Northbound Profile



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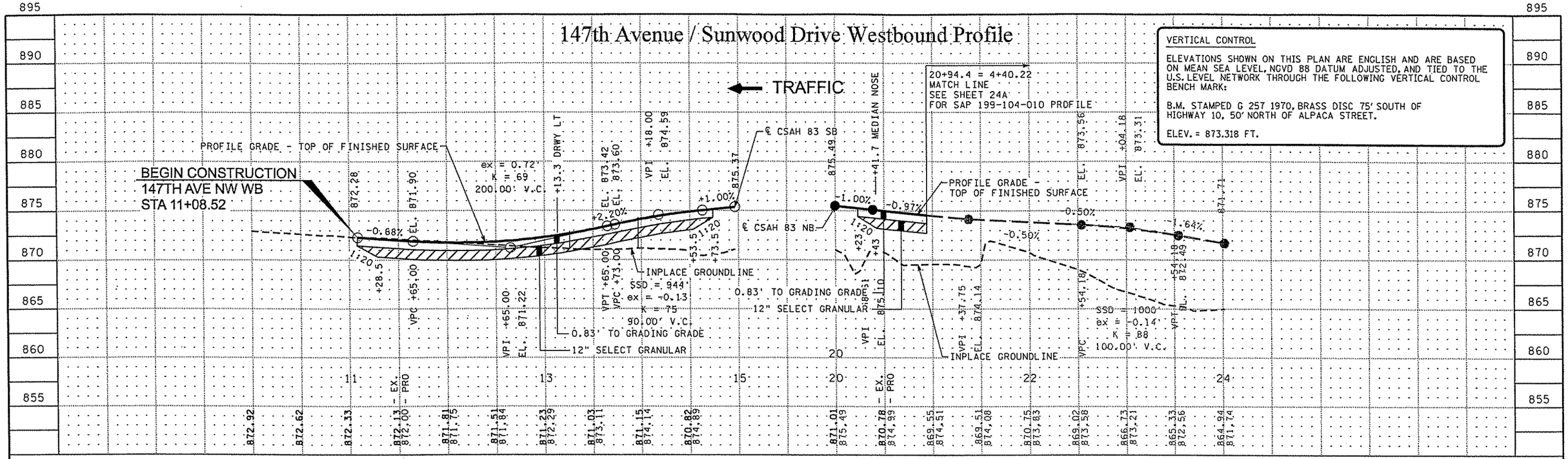
SHEET 77 OF 153 SHEETS

Date Printed: 6/02/2012
WSB Filename: K:\0197S-010\cad\plan\C0020295_p02.dgn

147th Avenue / Sunwood Drive Westbound Profile



VERTICAL CONTROL

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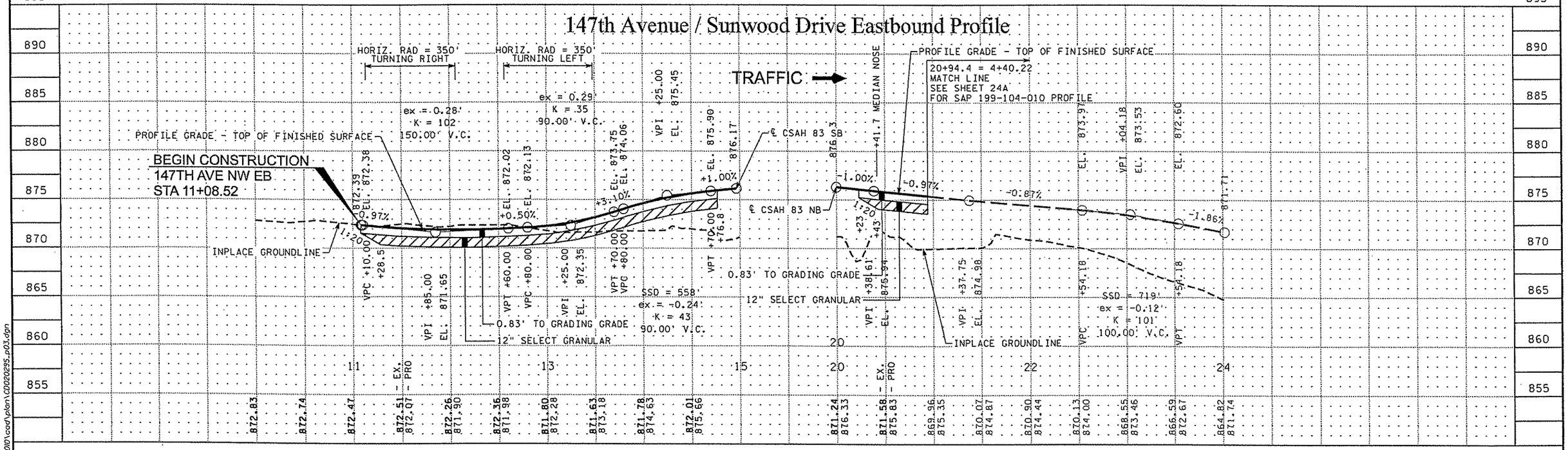
B.M. STAMPED G 257 1970, BRASS DISC 75' SOUTH OF HIGHWAY 10, 50' NORTH OF ALPACA STREET.

ELEV. = 873.318 FT.

147th Avenue / Sunwood Drive Eastbound Profile



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CITY OF RAMSEY, MINNESOTA
147TH AVENUE / SUNWOOD DRIVE
PROFILES
S.A.P. 199-020-010 / C.P. 12-20

SHEET 78 OF 153 SHEETS

Date Printed: 6/12/2012
IESS Filename: K:\0913-010\cad\plan\C00200295_p03.dgn

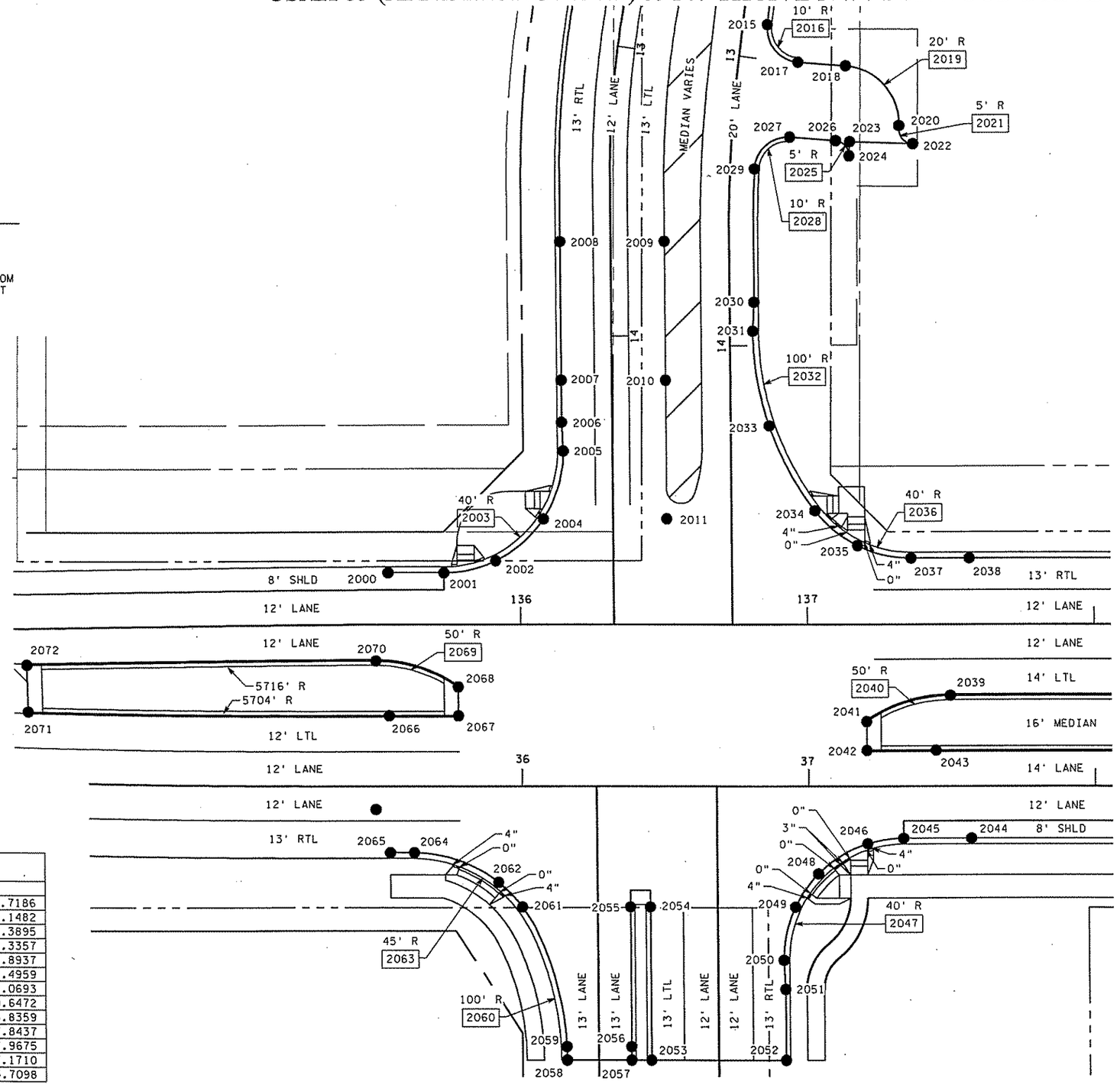
CSAH 83 (ARMSTRONG BLVD) & 147 TH AVE NW / SUNWOOD DRIVE

0 20 FT 40 FT

NOTES

- POINTS ARE ON EDGE OF BITUMINOUS PAVEMENT.

① 3' CURB TRANSITION FROM 6" HEIGHT TO 0" HEIGHT



EDGE OF BIT. POINTS

POINT	X	Y	ELEVATION
2000	447480.3613	173678.2754	877.30
2001	447480.2916	173697.8680	877.06
2002	447476.1200	173715.9678	876.80
2004	447461.6159	173732.6469	876.31
2005	447438.1424	173739.7183	875.66
2006	447428.1443	173739.1828	875.42
2007	447413.5925	173739.1310	875.00
2008	447365.5928	173738.9602	873.31
2009	447365.4630	173775.4600	874.04
2010	447413.4627	173775.6308	875.00
2011	447461.4624	173775.8015	875.45
2015	447190.7491	173811.7353	871.98
2017	447303.6328	173822.3284	871.75
2018	447304.8111	173838.8153	871.54
2020	447325.4564	173857.3774	871.16
2022	447331.7380	173862.1616	871.07
2023	447330.9700	173840.1100	871.13
2024	447335.8372	173839.8886	871.09
2026	447330.6227	173835.2502	871.33
2027	447329.4838	173819.3157	871.99
2029	447340.4098	173807.0088	872.72
2030	447386.3155	173806.5344	873.68
2031	447396.3172	173806.0700	873.88
2033	447429.1487	173811.6217	874.31
2034	447458.4427	173827.4517	874.39
2035	447470.4589	173842.2303	874.22
2037	447474.7119	173860.7966	873.74
2038	447474.6405	173880.8708	873.15
2039	447522.1648	173874.1258	874.35
2041	447531.2682	173845.0720	874.78
2042	447541.2681	173845.1076	874.57
2043	447541.1828	173869.1075	874.21
2044	447571.6399	173881.2159	873.27
2045	447571.7236	173857.6943	873.92
2046	447573.6644	173845.2229	874.24
2048	447584.1307	173828.0398	874.48
2049	447595.6027	173819.9539	874.52
2050	447613.8727	173815.8440	874.43
2051	447623.8709	173816.3796	874.32
2052	447648.2724	173816.4664	874.09
2053	447648.4396	173769.4667	875.03
2054	447595.7830	173769.2794	875.54
2055	447595.8079	173762.2794	875.68
2056	447643.8085	173762.4502	875.45
2057	447648.4645	173762.4667	875.42
2058	447648.5445	173739.9669	875.38
2059	447643.8889	173739.8440	875.45
2061	447595.9449	173724.6310	876.43
2062	447587.4962	173716.3640	876.69
2064	447577.3309	173687.0038	877.09
2065	447577.3607	173678.6205	877.20
2066	447529.8610	173678.4515	878.26
2067	447529.7748	173702.6800	877.67
2068	447519.7748	173702.6444	877.63
2070	447510.8786	173673.9476	878.11
2071	447528.9321	173553.2239	879.11
2072	447512.6877	173552.7871	878.87

RADIUS POINTS

POINT	X	Y
2003	447438.2919	173697.7186
2016	447292.1621	173823.1482
2019	447324.7603	173837.3895
2021	447326.7410	173862.3357
2025	447335.6099	173834.8937
2028	447340.9545	173818.4959
2032	447395.9543	173908.0693
2036	447432.7122	173860.6472
2040	447572.1662	173873.8359
2047	447613.7233	173857.8437
2060	447648.9074	173637.9675
2063	447624.3306	173687.1710
2069	447562.3781	173673.7098

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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CERTIFIED BY: LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE
DATE: 04/03/12 LIC. NO: 44620

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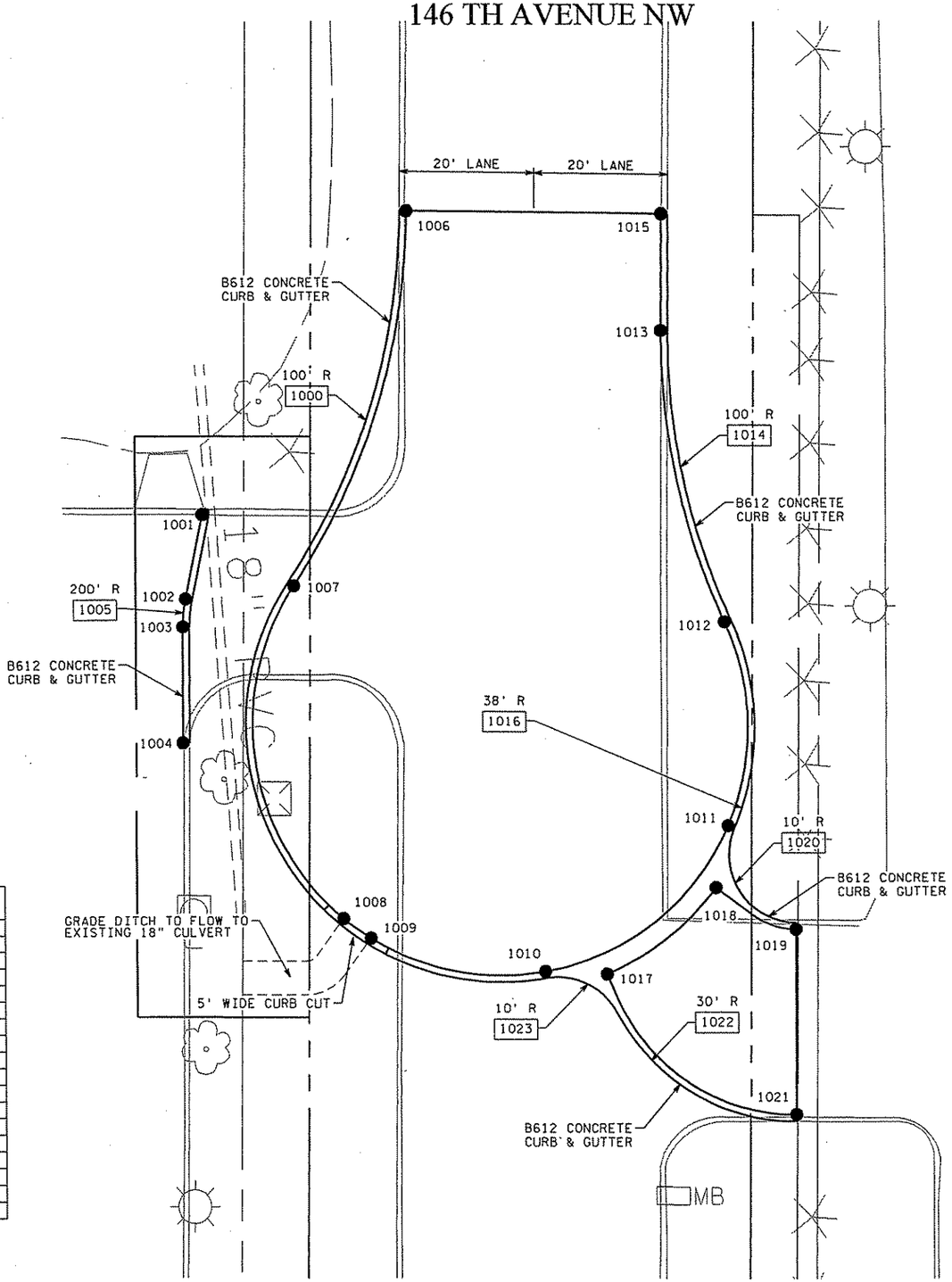

0 5 FT 10 FT

NOTES

- POINTS ARE ON EDGE OF BITUMINOUS PAVEMENT.
- (1) 3' CURB TRANSITION FROM 6" HEIGHT TO 0" HEIGHT

EDGE OF BIT. POINTS

POINT	X	Y	ELEVATION
1001	447286.8890	173251.2183	872.46
1002	447299.4197	173248.6726	872.48
1003	447303.5370	173248.2523	872.49
1004	447320.7086	173248.2003	872.52
1006	447241.9019	173281.9757	873.56
1007	447297.3997	173264.8796	873.10
1008	447346.6446	173272.1982	872.68
1009	447349.5383	173276.2711	872.68
1010	447354.4030	173302.2248	872.81
1011	447332.5954	173329.6145	872.99
1012	447302.4639	173329.1967	873.14
1013	447259.3385	173319.8665	873.36
1015	447242.1768	173319.9890	873.45
1017	447354.7164	173311.4828	872.85
1018	447341.7821	173327.7766	872.95
1019	447347.9351	173339.7223	872.68
1021	447375.3845	173339.7223	872.45

RADIUS POINTS

POINT	X	Y
1000	447241.1718	173180.9784
1005	447303.6006	173269.2522
1014	447260.0596	173420.8639
1016	447317.9981	173295.6157
1020	447336.9351	173339.7223
1022	447346.3845	173339.4741
1023	447365.2261	173304.1897

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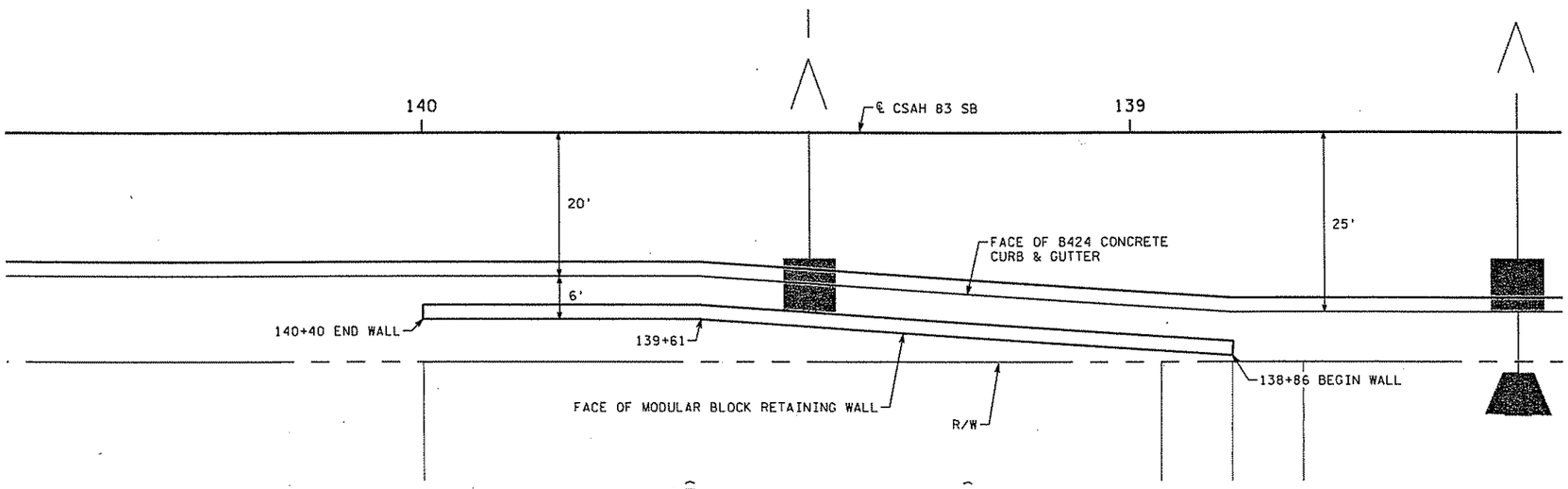
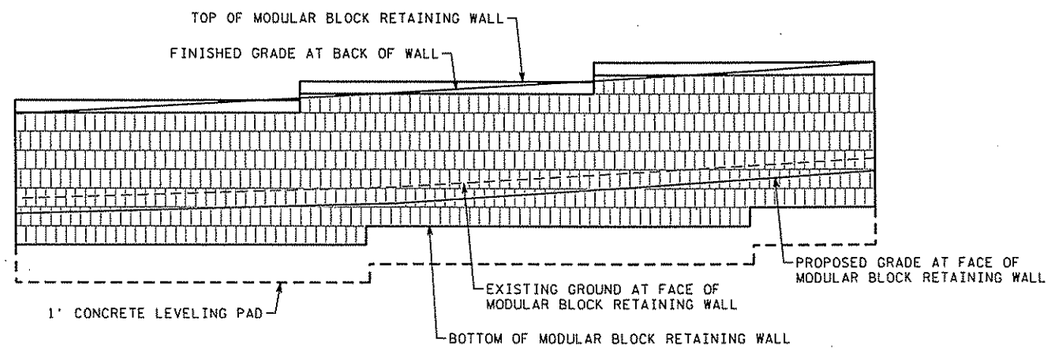


TOP OF WALL ELEVATION	870.29	870.29 (LOW) 870.79 (HIGH)	870.79 (LOW) 871.29 (HIGH)	871.29	TOP OF WALL ELEVATION
STATION	140+00	139+62.5	139+23	138+86	STATION



BOTTOM OF WALL ELEVATION	866.46	866.46 (LOW) 866.96 (HIGH)	866.96 (LOW) 867.46 (HIGH)	867.46	BOTTOM OF WALL ELEVATION
STATION	140+00	139+54	139+03	138+86	STATION

0 10 FT 20 FT

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RETAINING WALL PLAN
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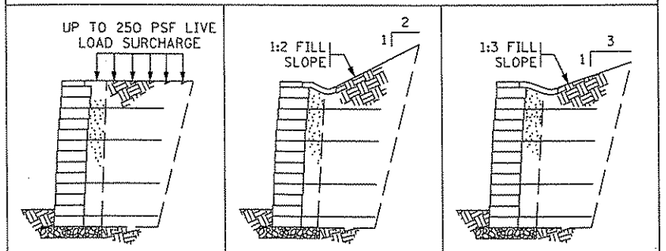
LOADING CASES



250 PSF - LL SURCHARGE
CASE 1

1:2 SLOPED FILL
CASE 3

1:3 SLOPED FILL
CASE 4

CASE 2 IS OMITTED INTENTIONALLY FOR FUTURE RECONSIDERATION

NOTES TO CONTRACTOR:

APPROVED COMBINATIONS OF MODULAR BLOCK UNIT AND SOIL REINFORCEMENT PRODUCTS LIST WITH MBW REINFORCEMENT CLASS NOTED ARE HELD AND MAINTAINED BY THE FOUNDATIONS UNIT, AND POSTED AT www.mrr.dot.state.mn.us/geotechnical/foundations/foundations.asp UNDER FOUNDATIONS UNIT. ONLY APPROVED PRODUCT COMBINATIONS, INCLUDING BLOCK PRODUCED FROM APPROVED SOURCES MEETING DURABILITY AND QUALITY CONTROL REQUIREMENTS, MAY BE USED IN STANDARD DESIGNS.

PROVIDE DETAILED DRAWINGS FOR CONSTRUCTION CONTAINING:

- SUBMIT, WITH THE DETAILED DRAWINGS, A COPY OF Mn/DOT STANDARD SHEETS FOR LOADING CASE(S) USED WITH OPTIONS USED MARKED IN THE TABLE.
- ELEVATION VIEW WITH REINFORCEMENT PLACEMENT REQUIREMENTS, WALL FACING LAYOUT, AND GEOMETRIC INFORMATION. TOP OF WALL MAY EXTEND UP TO 4" ABOVE PLAN TOP OF WALL ELEVATION.
- PLAN VIEW WITH BOTTOM AND TOP OF WALL ALIGNMENT, AND PLAN LIMITS OF WALL ALIGNMENT.
- CROSS SECTIONS DETAILING BATTER, REINFORCEMENT, VERTICAL SPACING, REINFORCEMENT LENGTHS, SUBSURFACE DRAINAGE, SURFACE DRAINAGE, AND WATER RUNOFF COLLECTION ABOVE WALL.
- REINFORCEMENT LAYOUT: REINFORCEMENT SHALL BE PLACED AT 100% COVERAGE RATIO. REINFORCEMENT ELEVATIONS SHALL BE CONSISTENT ACROSS LENGTH OF WALL STRUCTURE.
- NOTE BLOCK, REINFORCEMENT, AND FILL PLACEMENT METHODS AND REQUIREMENTS.
- DETAIL ALL WALL FILL PENETRATIONS AND WALL FACE PENETRATIONS. DETAIL REINFORCEMENT AND/OR WALL FACING UNIT PLACEMENT AROUND PENETRATIONS.
- DETAILS THAT ARE SPECIFIC TO VENDOR PRODUCTS AND THEIR INTERACTION WITH OTHER PROJECT COMPONENTS.
- LIST INFORMATION ON APPROVED COMBINATION OF MBW UNIT AND GEOSYNTHETIC REINFORCEMENT, INCLUDING Mn/DOT CLASSIFICATION CODE, NOMINAL BLOCK WIDTH, PROPERTIES FOR FIELD IDENTIFICATION, AND INSTALLATION INSTRUCTIONS.
- DETAILS OF CAP UNITS AND INSTALLATION/FASTENING INSTRUCTIONS FOR THE CAPS. CAP UNITS SHALL BE SET IN A BED OF ADHESIVE DESIGNED TO WITHSTAND MOISTURE AND TEMPERATURE EXTREMES, REMAIN FLEXIBLE, AND SHALL BE SPECIFICALLY FORMULATED FOR BONDING MASONRY TO MASONRY.
- CERTIFICATION BY PROFESSIONAL ENGINEER THAT THE CONSTRUCTION LAYOUT MEETS THE REQUIREMENTS OF PLANS AND Mn/DOT MSEW STANDARDS. DEVIATION FROM STANDARD DESIGN TABLES ARE PERMITTED BY VALUE ENGINEERING SUBMITTAL ONLY ON PROJECTS WITH OVER 5000 SQ. FT. OF WALL.

DEFINITION OF TERMS

MBW	=	MODULAR BLOCK WALL
LL	=	LIVE LOAD
C.I.P.	=	CAST-IN-PLACE
H	=	WALL HEIGHT
S	=	VERTICAL REINFORCEMENT SPACING
REINFORCEMENT COVERAGE RATIO	=	WIDTH OF SOIL REINFORCEMENTS TO HORIZONTAL SPACING (100% COVERAGE RATIO REQUIRED)

DESIGN CRITERIA

DESIGN CRITERIA FOLLOWS THE AASHTO SPECIFICATION FOR HIGHWAY BRIDGES (16TH EDITION WITH 1998 INTERIMS) EXCEPT FOR THE DEVIATIONS NOTED BELOW. DESIGN CRITERIA ARE IN ACCORDANCE WITH Mn/DOT POLICY, AS RECORDED IN THE Mn/DOT ROAD DESIGN MANUAL.

A. THE MINIMUM REINFORCEMENT LENGTH IS 4 FT. OR 0.7H, WHICHEVER IS GREATER.
B. THE REINFORCEMENT FILL FRICTION ANGLE IS 35°.
C. THE ALLOWABLE CONNECTION LOAD, AT A GIVEN NORMAL LOAD, IS COMPUTED AS THE ULTIMATE CONNECTION STRENGTH REDUCED BY A SAFETY FACTOR EQUAL TO 2.0.
D. THE LATERAL EARTH PRESSURE COMPUTATION FOR EXTERNAL STABILITY CALCULATIONS USES AN INTERFACE ANGLE SET EQUAL TO THE RETAINED BACKFILL ANGLE.
E. THE LATERAL EARTH PRESSURE COMPUTATION FOR INTERNAL STABILITY CALCULATIONS INCORPORATES THE EFFECTS OF WALL FACE BATTER.

MINIMUM FACTORS OF SAFETY:
OVERTURNING: 2.0
SLIDING: 1.5
ECCENTRICITY: $e < L/6$
BEARING CAPACITY: 2.5
DEEP SEATED STABILITY: 1.3

BEARING:
A. SEE FOUNDATION REPORT FOR ALLOWABLE SOIL BEARING PRESSURE.
B. CASES 1 AND 4 - ALLOWABLE SOIL BEARING CAPACITY (ULTIMATE BEARING CAPACITY REDUCED BY A SAFETY FACTOR OF 2.5) OF 2000 PSF IS REQUIRED FOR WALLS UP TO 10 FT. IN HEIGHT. FOR WALLS GREATER THAN 10 FT. IN HEIGHT, THE REQUIRED ALLOWABLE BEARING CAPACITY IS EQUAL TO: 2000 PSF + (H-10)(625 PSF) WITH H IN FEET.
CASE 3 - ALLOWABLE SOIL BEARING CAPACITY (ULTIMATE
C. BEARING CAPACITY REDUCED BY A SAFETY FACTOR OF 2.5) OF 2500 PSF IS REQUIRED FOR WALLS UP TO 10 FT. IN HEIGHT. FOR WALLS GREATER THAN 10 FT. IN HEIGHT, THE REQUIRED ALLOWABLE BEARING CAPACITY IS EQUAL TO: 2500 PSF + (H-10)(850 PSF) WITH H IN FEET.

REINFORCED WALL FILL CHARACTERISTICS:
A. MODIFIED SELECT GRANULAR BORROW FOLLOWING Mn/DOT 3149.2B2. MODIFICATION: MODIFIED SELECT GRANULAR BORROW, FOR SPECIAL USE IN EMBANKMENT OR BACKFILL CONSTRUCTION OR OTHER SPECIFIED PURPOSES, MAY BE ANY PIT-RUN OR CRUSHER-RUN MATERIAL THAT IS GRADED FROM COARSE TO FINE, SUCH THAT 100% OF THE MATERIAL MUST PASS THE 2" SIEVE, AND THAT THE RATIO OF THE PORTION PASSING THE #200 SIEVE DIVIDED BY THE PORTION PASSING THE 1" SIEVE MAY NOT EXCEED 10% BY MASS (THAT IS: "200/1" RATIO)
B. INTERNAL ANGLE OF FRICTION (Φ_r) = 35°
C. COHESION (C) = 0
D. MOIST UNIT WEIGHT (γ_r) = 125 PSF

COARSE FILTER AGGREGATE CHARACTERISTICS:
A. COARSE FILTER AGGREGATE TO MEET Mn/DOT SPEC. 3149.2H.

RETAINED BACKFILL CHARACTERISTICS:
A. INTERNAL ANGLE OF FRICTION (Φ_b) = 30°
B. COHESION (C) = 0
C. MOIST UNIT WEIGHT (γ_b) = 120 PSF

FOUNDATION SOILS CHARACTERISTICS:
A. INTERNAL ANGLE OF FRICTION (Φ_f) = 30°
B. COHESION (C) = 0
C. UNIT WEIGHT (γ_f) = 120 PSF

SUMMARY OF ESTIMATED QUANTITIES FOR MBW WALLS

		UNIT	QUANTITY
(2)	STRUCTURE EXCAVATION CLASS U	CU. YD.	N/A
(2)	REINFORCED WALL FILL (CV)	CU. YD.	22
(1)	MBW WALL	SQ. FT.	455
(2)	TYPE I GEOTEXTILE	SQ. YD.	80

(1) VERTICAL FACE AREA OF MODULAR BLOCK AS MEASURED FROM PLAN TOP OF WALL TO BOTTOM OF COURSE OF WALL

(2) INCIDENTAL

NOTES TO DESIGNER:

HEIGHT AND LOCATION RESTRICTIONS FOR ISSUES SUCH AS FREEZE-THAW DURABILITY ARE GOVERNED BY APPROPRIATE TECHNICAL MEMORANDUMS. CURRENT GOVERNED TECH. MEMO. NO.: 01-05-MRR-01 MAY BE FOUND AT www.dot.state.mn.us/tecsup/tmemo/index.html.

IN ADDITION TO THE STANDARD SHEETS, PLAN AND FRONT ELEVATION VIEWS OF THE MODULAR BLOCK RETAINING WALLS SHALL BE INCLUDED IN THE PLANS. THE PLAN VIEW MUST SHOW ALIGNMENT BASELINE, LIMITS OF BOTTOM OF WALL ALIGNMENT, AND LIMITS OF TOP OF WALL ALIGNMENT AS ALIGNMENTS VARY WITH BATTER OF WALL SYSTEM ACTUALLY SUPPLIED. THE FRONT ELEVATION MUST IDENTIFY BOTTOM AND TOP OF WALL ELEVATIONS, EXISTING GRADES, AND FINISHED GRADES.

IF THE WALL IS CURVED, THE RADIUS AT THE BOTTOM AND THE TOP OF EACH WALL SEGMENT AND THE P.C. AND P.T. STATION POINTS OFF OF BASELINE AND LIMITS OF BOTTOM AND TOP OF WALL ALIGNMENT MUST BE SHOWN.

REFERENCE STANDARD PLATES AND PROVIDE DETAILS FOR TRAFFIC BARRIERS, CURB AND GUTTER, HANDRAILS AND FENCING AS REQUIRED BY PROJECT CONDITIONS. SEE AASHTO AND Mn/DOT DESIGN MANUALS, STANDARD PLATES AND DETAILS FOR REQUIREMENTS.

SURFACE DRAINAGE PATTERNS SHALL BE SHOWN IN THE PLAN VIEW. PROVIDE DIMENSIONS FOR WIDTH AND DEPTH OF THE DRAINAGE SWALE AS WELL AS THE TYPE OF IMPERVIOUS LINER MATERIAL. SURFACE WATER RUNOFF SHOULD BE COLLECTED ABOVE AND DIVERTED AROUND WALL FACE.

DETAIL LINES AND GRADES OF THE INTERNAL DRAINAGE COLLECTION PIPE. DETAIL OR NOTE THE DESTINATION OF INTERNAL WALL DRAINS AS WELL AS THE METHOD OF TERMINATION (DAYLIGHT END OF PIPE OR CONNECTION INTO HYDRAULIC STRUCTURE). THE SPACING FOR DRAIN PIPE OUTLET SHALL NOT BE MORE THAN 250 FT.

SOFT SOILS AND/OR HIGH WATER CONDITIONS (DEFINED AS GROUNDWATER WITHIN A DEPTH EQUAL TO THE WALL HEIGHT H) MAY NOT BE SUITABLE FOR APPLICATION OF STANDARD DESIGNS AND REQUIRE SPECIAL CONSIDERATION BY THE FOUNDATIONS UNIT.

STANDARD DESIGN CHARTS ARE NOT APPLICABLE TO:
- PROJECT/SITES WHERE FOUNDATION SOILS SHEAR STRENGTH AND/OR BEARING CAPACITY DO NOT MEET OR EXCEED VALUES USED IN THE DEVELOPMENT OF STANDARD DESIGN CHARTS.
- PROJECTS WITH A LARGE QUANTITY OF FACE AREA WHERE PROJECT SPECIFIC DESIGNS ARE RECOMMENDED, AS DEFINED IN Mn/DOT ROAD DESIGN MANUAL.
- WHERE SLOPES IN FRONT OF WALL ARE STEEPER THAN 1:3.
- WHERE MAXIMUM WALL HEIGHT EXCEEDS 12 FT.
- WHERE WALLS ARE TIERED.
- WALLS WITH NOISE WALLS.

IF USING CONCRETE RAILING, INCLUDE STANDARD BRIDGE DETAIL "CONCRETE RAILING (TYPE F)" IN PLAN SET.

PROVIDE PROJECT SPECIFIC AESTHETIC REQUIREMENTS INCLUDING COLOR AND FASCIA SURFACING IN THE SPECIAL PROVISIONS.

CHAPTER 9 OF THE Mn/DOT "ROAD DESIGN MANUAL" CONTAINS GUIDELINES, TRAFFIC SAFETY AND OTHER ASPECTS.

GENERAL NOTES:

UTILITIES:
EXISTING AND PROPOSED UTILITIES ARE SHOWN IN THE GRADING PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING FACILITIES AND SHALL EXERCISE CARE IN ADJACENT CONSTRUCTION.

EXCAVATION AND EARTHWORK:
ALL EXCAVATION AND EMBANKMENT WORK SHALL CONFORM TO Mn/DOT 2451.

CAST-IN-PLACE CONCRETE:
ALL CONCRETE SHALL CONFORM TO Mn/DOT 2461, EXCEPT AS NOTED.

CONSTRUCTION:
CONSTRUCTION SHALL BE IN ACCORDANCE WITH Mn/DOT 2411, EXCEPT AS NOTED.

GEOMETRICS AND GRADES:
DATA FOR BASELINE GEOMETRY IS TABULATED FOR WALL ALIGNMENT, SEE LAYOUT SHEETS. WALL ALIGNMENT REFERENCE IS ALONG FRONT FACE OF WALL.

THE FILL SLOPE CONVENTION OF 1 VERTICAL TO HORIZONTAL IS USED IN THIS PLAN.

COMPACTION REQUIREMENTS:
COMPACT REINFORCED WALL FILL IN ACCORDANCE WITH Mn/DOT SPEC. 2105.3F1 UNLESS RECOMMENDED OTHERWISE BY THE SOILS ENGINEER.

COMPACT GRANULAR BEDDING IN ACCORDANCE WITH Mn/DOT SPEC. 2105.3F1 UNLESS RECOMMENDED OTHERWISE BY THE SOILS ENGINEER.

MODULAR BLOCK RETAINING WALL
GENERAL NOTES AND SUMMARY OF QUANTITIES

STANDARD SHEET NO.
FIG.5-297.640

REVISED: 06-10-02

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MODULAR BLOCK WALL REINFORCEMENT LAYOUT

CASE 3 - 1:2 FILL SLOPE

MBW REINFORCEMENT CLASS	STRENGTH OF SOIL REINF. (PLF)		① MINIMUM REINFORCEMENT LENGTH, L (FT.)	MAXIMUM WALL HEIGHT (FT.)	② NOMINAL BLOCK WIDTH (IN.)	WALL BATTER RANGE (DEGREES)		③ MAXIMUM UNREINFORCED WALL HT, A (IN.)	ZONE 1		ZONE 2		ZONE 3	
	LG. TERM (T_{al})	DESIGN (T_a)				≥	<		H1 (FT.)	$S1_{MAX}$ (IN.)	H2 (FT.)	$S2_{MAX}$ (IN.)	H3 (FT.)	$S3_{MAX}$ (IN.)
MBW-700	1050	700	0.7 H	12.0	12	0	3	24	4.9	24	5.6	16	1.5	8
						3	7	24	5.9	24	6.1	16		
						7	10	24	9.2	24	2.8	16		
						10	15	24	9.8	24	2.2	16		
					21	0	3	24	4.9	24	5.6	16	1.5	8
						3	7	24	5.9	24	6.1	16		
						7	10	32	4.6	32	5.2	24	2.2	16
						10	15	32	7.2	32	4.3	24	0.5	16
MBW-1050	1575	1050	0.7 H	12.0	12	0	3	24	10.8	24	1.2	18		
						3	7	24	12.0	24				
						7	10	24	12.0	24				
						10	15	24	12.0	24				
					21	0	3	32	6.9	32	3.9	24	1.2	18
						3	7	36	5.6	42	3.3	32	3.1	24
						7	10	42	6.6	42	3.9	32	1.5	24
						10	15	42	8.5	42	3.0	32	0.5	24
MBW-1400	2100	1400	0.7 H	12.0	12	0	3	24	12.0	24				
						3	7	24	12.0	24				
						7	10	24	12.0	24				
						10	15	24	12.0	24				
					21	0	3	42	8.9	42	3.1	32		
						3	7	42	10.8	42	1.2	32		
						7	10	42	12.0	42				
						10	15	42	11.5	42	0.5	32		

NOTES TO CONTRACTOR:

① OR 4 FT. MINIMUM, WHICHEVER IS GREATER.

② WIDTH - AS MEASURED FROM FRONT TO BACK FACE OF BLOCK UNIT.

③ MAXIMUM DISTANCE FROM TOP OF WALL TO FIRST REINFORCEMENT LAYER. UNREINFORCED WALLS ARE NOT INCLUDED IN THIS STANDARD BUT MAY BE CONSTRUCTED UP TO AT LEAST THE HEIGHT GIVEN IN THE TABLE FOR A GIVEN NOMINAL BLOCK WIDTH AND THE SPECIFIED FILL MATERIALS CONTAINED IN THIS STANDARD.

④ PAY LIMITS OF STRUCTURAL EXCAVATION. ACTUAL EXCAVATION SLOPE IS DETERMINED BY OSHA REGULATIONS AND IN-SITU SOILS; EXCAVATION BEYOND "LIMITS OF STRUCTURAL EXCAVATION" AT CONTRACTOR'S EXPENSE.

⑤ THE WRAP LENGTH FOR GEOTEXTILE FABRIC SHALL NOT BE MORE THAN 6".

⑥ INSPECT EXCAVATION SLOPES FOR ACTIVE SEEPAGE AND PLACE ADDITIONAL DRAINS WHERE SEEPAGE OCCURS AS DIRECTED BY THE ENGINEER.

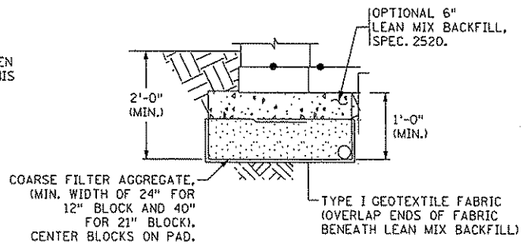
⑦ PLACE DRAIN AT BOTTOM OF REINFORCED SOIL IF PIPE CAN BE SLOPED TO OUTLET. DO NOT OUTLET ONTO A SIDEWALK.

⑧ IF PIPE AT THIS ELEVATION CANNOT BE SLOPED TO DRAIN, OMIT DRAIN AND USE "CONCRETE PAD WITHOUT DRAIN" DETAIL.

⑨ 4" THERMOPLASTIC PERFORATED PIPE, Mn/DOT SPEC. 3245, WRAP WITH TYPE I GEOTEXTILE, Mn/DOT SPEC. 3733 (TYP.) INSTALLATION AS PER Mn/DOT SPEC. 2502, WITH PRECAST CONCRETE HEAD WALL AT OUTLET.

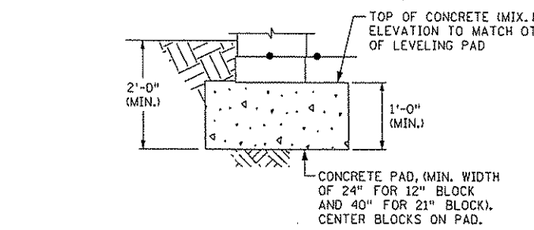
⑩ S_{MAX} = 0.5 $S1_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 1.
S_{MAX} = 0.5 $S2_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 2.
S_{MAX} = 0.5 $S3_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 3.

⑪ THE REINFORCED WALL FILL DRAIN MAY BE CONNECTED INTO FOOTING DRAIN, INSTEAD OF OUT LETTING THROUGH THE WALL, IF CAPACITY IS ADEQUATE TO TRANSMIT THE FLOW.



OPTIONAL CONCRETE LEVELING PAD

NOT TO SCALE



CONCRETE PAD WITHOUT DRAIN

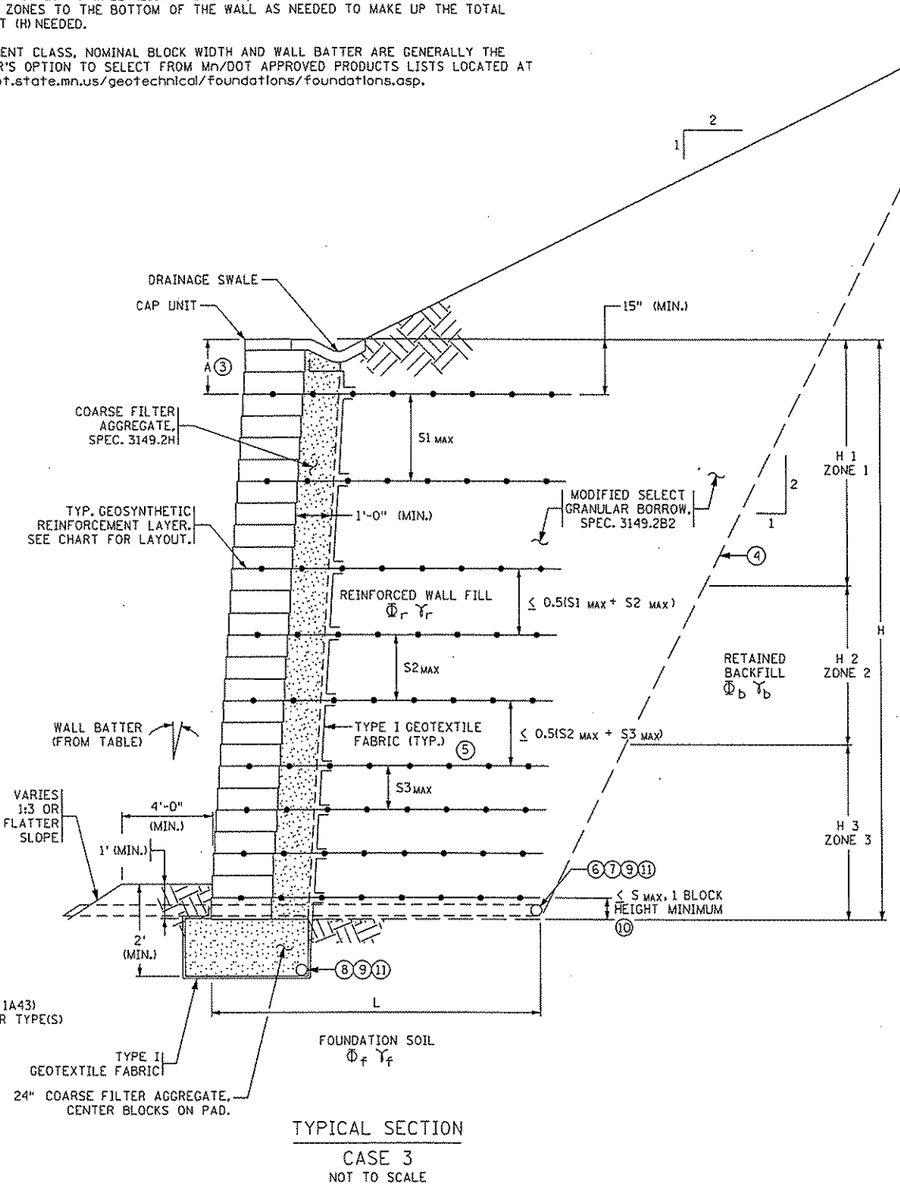
NOT TO SCALE

REVISED: 06-10-02

INSTRUCTIONS TO CONTRACTOR:

USE AS MANY ZONES AS WALL HEIGHT REQUIRES, STARTING WITH ZONE 1 AND ADDING ADDITIONAL ZONES TO THE BOTTOM OF THE WALL AS NEEDED TO MAKE UP THE TOTAL WALL HEIGHT (H) NEEDED.

REINFORCEMENT CLASS, NOMINAL BLOCK WIDTH AND WALL BATTER ARE GENERALLY THE CONTRACTOR'S OPTION TO SELECT FROM Mn/DOT APPROVED PRODUCTS LISTS LOCATED AT www.mrr.dot.state.mn.us/geotechnical/foundations/foundations.asp.



TYPICAL SECTION

CASE 3

NOT TO SCALE

FIG.5-297.643

MODULAR BLOCK RETAINING WALL
SOIL REINFORCEMENT FOR 1:2 FILL SLOPE, CASE 3

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Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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DATE: 04/03/12 LIC. NO: 44620

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RETAINING WALL PLAN
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SHEET 83 OF 153 SHEETS

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MODULAR BLOCK WALL REINFORCEMENT LAYOUT

CASE 4 - 1:3 FILL SLOPE

MBW REINFORCEMENT CLASS	STRENGTH OF SOIL REINF. (PLF) LG. TERM (T_{al})	STRENGTH OF SOIL REINF. (PLF) DESIGN (T_a)	① MINIMUM REINFORCEMENT LENGTH, L (FT.)	MAXIMUM WALL HEIGHT (FT.)	② NOMINAL BLOCK WIDTH (IN.)	WALL BATTER RANGE (DEGREES) ≥	WALL BATTER RANGE (DEGREES) <	③ MAXIMUM UNREINFORCED WALL HT, A (IN.)	ZONE 1 H1 (FT.)	ZONE 1 $S1_{MAX}$ (IN.)	ZONE 2 H2 (FT.)	ZONE 2 $S2_{MAX}$ (IN.)	ZONE 3 H3 (FT.)	ZONE 3 $S3_{MAX}$ (IN.)
MBW-700	1050	700	0.7 H	12.0	12	0	3	24	8.5	24	3.5	16		
						3	7	24	9.2	24	2.8	16		
						7	10	24	11.2	24	0.8	16		
						10	15	24	12.0	24				
					21	0	3	32	4.6	32	3.9	24	3.5	16
						3	7	32	5.2	32	3.9	24	2.9	16
						7	10	32	5.2	32	5.9	24	0.9	16
						10	15	32	5.9	32	6.1	24		
MBW-1050	1575	1050	0.7 H	12.0	12	0	3	24	12.0	24				
						3	7	24	12.0	24				
						7	10	24	12.0	24				
						10	15	24	12.0	24				
					21	0	3	42	5.6	42	3.3	32	3.1	24
						3	7	42	8.2	42	2.6	32	1.2	24
						7	10	42	8.5	42	3.5	32		
						10	15	42	9.8	42	2.2	32		
MBW-1400	2100	1400	0.7 H	12.0	12	0	3	24	12.0	24				
						3	7	24	12.0	24				
						7	10	24	12.0	24				
						10	15	24	12.0	24				
					21	0	3	42	8.9	42	3.1	32		
						3	7	42	10.8	42	1.2	32		
						7	10	42	12.0	42				
						10	15	42	12.0	42				

NOTES TO CONTRACTOR:

① OR 4 FT. MINIMUM, WHICHEVER IS GREATER.

② WIDTH - AS MEASURED FROM FRONT TO BACK FACE OF BLOCK UNIT.

③ MAXIMUM DISTANCE FROM TOP OF WALL TO FIRST REINFORCEMENT LAYER. UNREINFORCED WALLS ARE NOT INCLUDED IN THIS STANDARD BUT MAY BE CONSTRUCTED UP TO AT LEAST THE HEIGHT GIVEN IN THE TABLE FOR A GIVEN NOMINAL BLOCK WIDTH AND THE SPECIFIED FILL MATERIALS CONTAINED IN THIS STANDARD.

④ PAY LIMITS OF STRUCTURAL EXCAVATION. ACTUAL EXCAVATION SLOPE IS DETERMINED BY OSHA REGULATIONS AND IN-SITU SOILS; EXCAVATION BEYOND "LIMITS OF STRUCTURAL EXCAVATION" AT CONTRACTOR'S EXPENSE.

⑤ THE WRAP LENGTH FOR GEOTEXTILE FABRIC SHALL NOT BE MORE THAN 6".

⑥ INSPECT EXCAVATION SLOPES FOR ACTIVE SEEPAGE AND PLACE ADDITIONAL DRAINS WHERE SEEPAGE OCCURS AS DIRECTED BY THE ENGINEER.

⑦ PLACE DRAIN AT BOTTOM OF REINFORCED SOIL IF PIPE CAN BE SLOPED TO OUTLET. DO NOT OUTLET ONTO A SIDEWALK.

⑧ IF PIPE AT THIS ELEVATION CANNOT BE SLOPED TO DRAIN, OMIT DRAIN AND USE "CONCRETE PAD WITHOUT DRAIN" DETAIL.

⑨ 4" THERMOPLASTIC PERFORATED PIPE, Mn/DOT SPEC. 3245, WRAP WITH TYPE I GEOTEXTILE, Mn/DOT SPEC. 3733 (TYP.) INSTALLATION AS PER Mn/DOT SPEC. 2502, WITH PRECAST CONCRETE HEAD WALL AT OUTLET.

⑩ S_{MAX} = 0.5 $S1_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 1.
S_{MAX} = 0.5 $S2_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 2.
S_{MAX} = 0.5 $S3_{MAX}$ IF THE WALL HEIGHT IS WITHIN ZONE 3.

⑪ THE REINFORCED WALL FILL DRAIN MAY BE CONNECTED INTO FOOTING DRAIN, INSTEAD OF OUT LETTING THROUGH THE WALL, IF CAPACITY IS ADEQUATE TO TRANSMIT THE FLOW.

REVISED: 06-10-02

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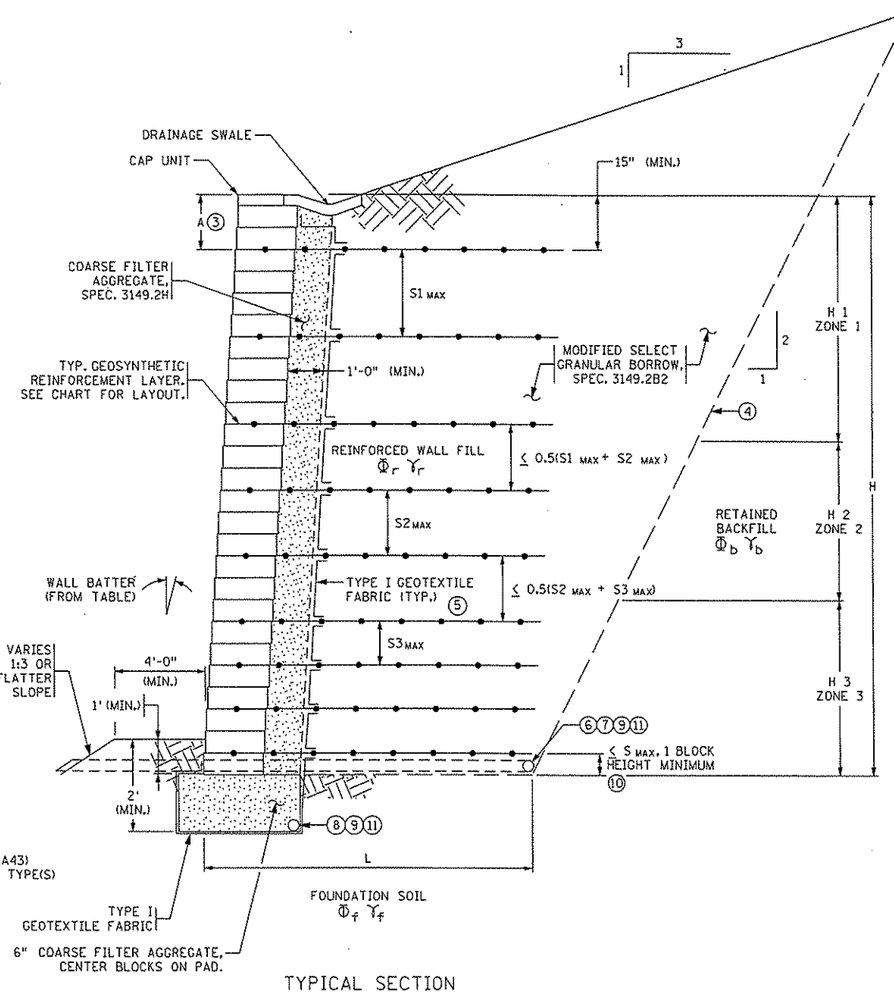
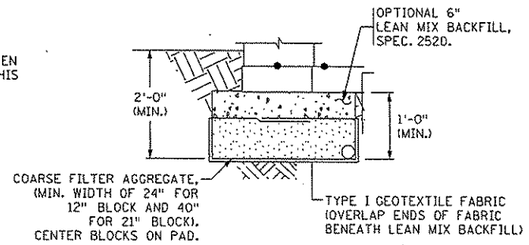


TYPICAL SECTION

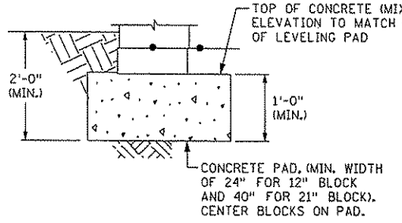
CASE 4

NOT TO SCALE



OPTIONAL CONCRETE LEVELING PAD

NOT TO SCALE



CONCRETE PAD WITHOUT DRAIN

NOT TO SCALE

STANDARD SHEET NO.
FIG.5-297.644

MODULAR BLOCK RETAINING WALL
SOIL REINFORCEMENT FOR 1:3 FILL SLOPE, CASE 4

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Approved By: NEH

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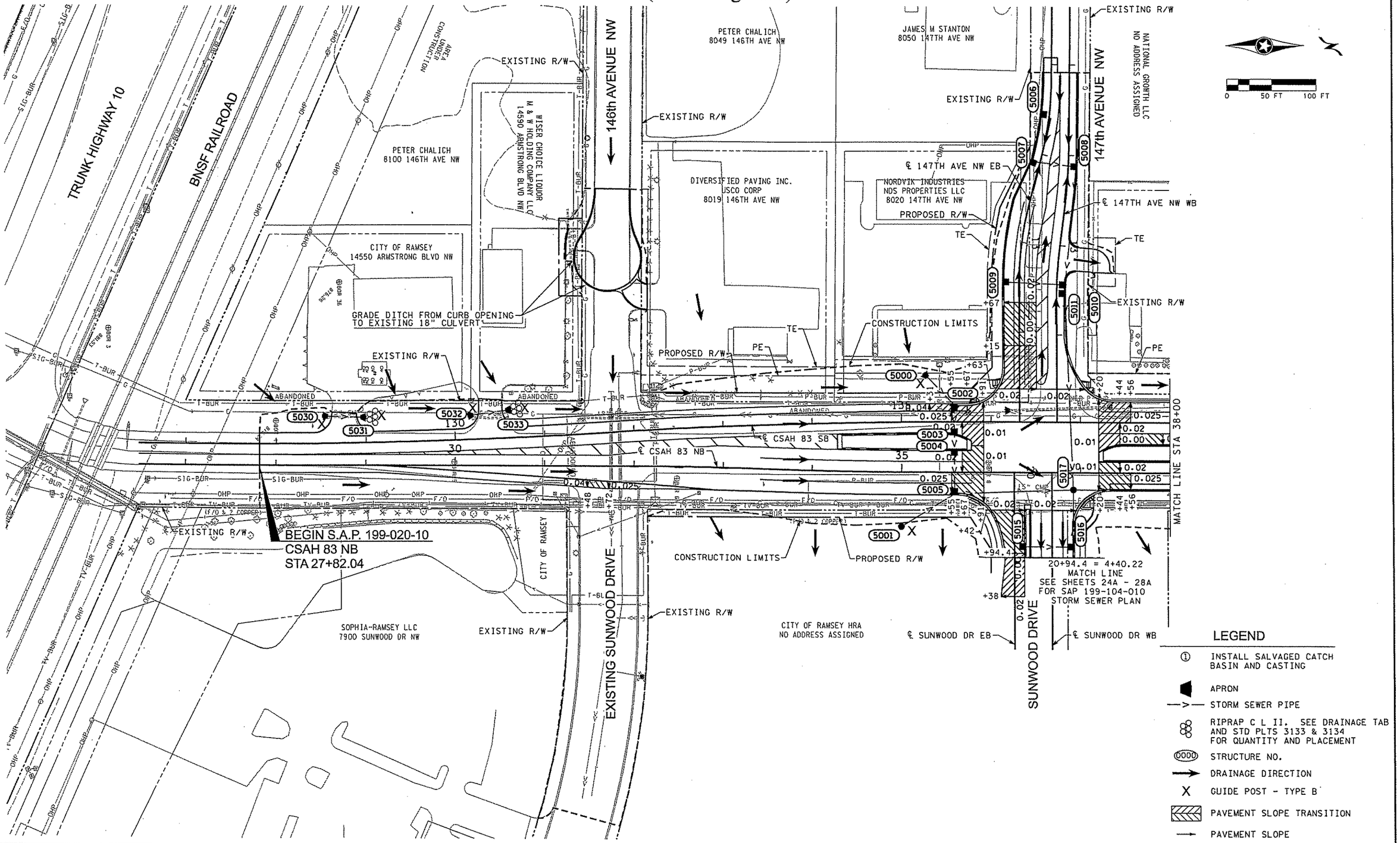

LEGEND

- ① INSTALL SALVAGED CATCH BASIN AND CASTING
- APRON
- STORM SEWER PIPE
- RIPRAP C L II. SEE DRAINAGE TAB AND STD PLTS 3133 & 3134 FOR QUANTITY AND PLACEMENT
- (0000) STRUCTURE NO.
- DRAINAGE DIRECTION
- X GUIDE POST - TYPE B
- PAVEMENT SLOPE TRANSITION
- PAVEMENT SLOPE

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Plan By: CWK
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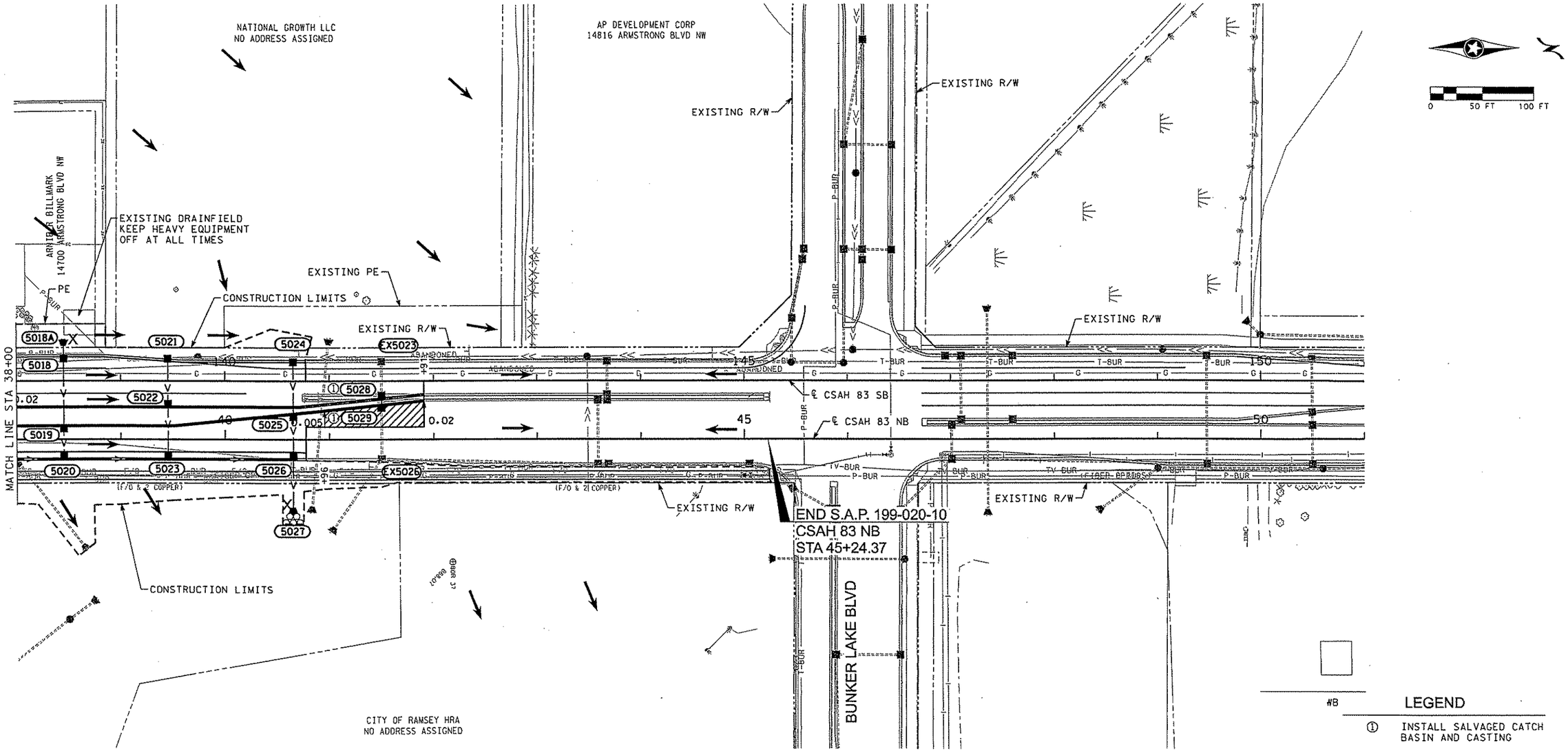

#B

LEGEND

- ① INSTALL SALVAGED CATCH BASIN AND CASTING
- APRON
- STORM SEWER PIPE
- RIPRAP C L II. SEE DRAINAGE TAB AND STD PLTS 3133 & 3134 FOR QUANTITY AND PLACEMENT
- (0000) STRUCTURE NO.
- DRAINAGE DIRECTION
- X GUIDE POST - TYPE B
- PAVEMENT SLOPE TRANSITION
- PAVEMENT SLOPE

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SHEET 86 OF 153 SHEETS

Date Printed: 6/12/2012
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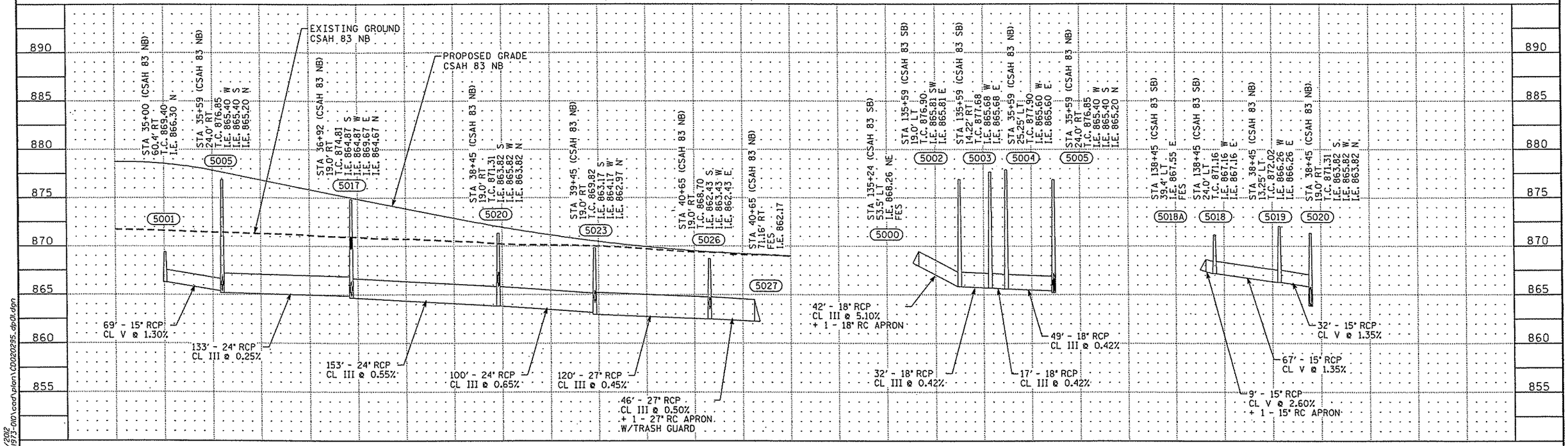
STORM SEWER TABULATION (THIS SHEET ONLY)

STRUCTURE LOCATION (1)					STRUCTURE PAY HEIGHT (3), (4), (10)						(5) STEPS REQUIRED	CASTING ASSEMBLY	(2) TOP CASTING ELEV FINISHED	OUTLET ELEVATION BOTTOM	CIRCULAR PIPE - DESIGN 3006 (6), (7)				CIRCULAR PIPE APRONS				DRAINS TO			(8) RIPRAP CL II	GUIDE POSTS TYPE B	REMARKS
STRUCT. NO.	STREET	STATION	OFFSET FT	SIDE	SPECIAL (2'X3' EACH	F LIN FT	G LIN FT	H LIN FT	4020-48 LIN FT	4020-60 LIN FT					15" RCP CL V LIN FT	18" RCP CL III LIN FT	24" RCP CL III LIN FT	27" RCP CL III LIN FT	15" RCP APRON EACH	18" RCP APRON EACH	27" RCP APRON EACH	27" RCP TRASH GUARD EACH	STRUCT NO	PIPE GRADE FT/FT	INVERT ELEVATION	CU YD	EACH	
5000	CSAH 83 SB	135+24	53.5	LT										868.26		42				1			5002	0.0510	865.81		1	
5001	CSAH 83 NB	35+00	60.4	RT				3.8				M-11	869.40	866.30	69								5005	0.0130	865.40		1	
5002	CSAH 83 SB	135+59	19	LT		11.0					Y	E	876.90	865.81		32							5003	0.0042	865.68			
5003	CSAH 83 SB	135+59	14.22	RT		12.1					Y	C	877.68	865.68		17							5004	0.0042	865.60			
5004	CSAH 83 NB	35+59	25.25	LT		12.4					Y	C	877.90	865.60		49							5005	0.0042	865.40			
5005	CSAH 83 NB	35+59	24	RT						11.6	Y	E	876.85	865.20			133						5017	0.0025	864.87			
5017	CSAH 83 NB	36+92	19	RT						10.3	Y	A-7D	874.81	864.67			153						5020	0.0055	863.82			
5018	CSAH 83 SB	138+45	24	LT			3.9					E	871.16	867.16	67								5019	0.0135	866.25			
5018A	CSAH 83 SB	138+45	39.4	LT										867.55	9				1				5018	0.0260	867.16		1	
5019	CSAH 83 NB	38+45	13.25	LT					5.9		Y	C	872.02	866.25	32								5020	0.0135	865.82			
5020	CSAH 83 NB	38+45	19	RT					7.4		Y	E	871.31	863.82			100						5023	0.0065	863.17			
5023	CSAH 83 NB	39+45	19	RT						6.8	Y	E	869.82	862.97				120					5026	0.0045	862.43			
5026	CSAH 83 NB	40+65	19	RT						6.2	Y	E	868.70	862.43				46					5027	0.0050	862.17			
5027	CSAH 83 NB	40+65	71.16	RT										862.17							1	1				6	1	(9)
TOTALS						35.5	3.9	3.8	13.3	34.9					177	140	386	166	1	1	1	1				6	4	

NOTES:
(1) STATION AND OFFSETS ARE GIVEN TO CENTER OF GRATE OR END OF APRON. INVERT ELEVATIONS ARE GIVEN AT CENTER OF STRUCTURE OR END OF APRON.
(2) TOP OF CASTING ELEVATIONS ARE TO CENTER OF GRATE
(3) PAY HEIGHTS ARE FROM BOTTOM OF CASTING TO INVERT PLUS 0.7'
(4) TYPE 4020 STRUCTURES WITH TYPE C OR F CASTINGS REQUIRE 4022 TOP SLABS.
(5) IF STEPS ARE REQUIRED. STRUCTURE TO INCLUDE MANHOLE STEPS 16" ON CENTER. SEE MN/DOT STANDARD PLATE 4180.
(6) CLASS C BEDDING TO BE USED FOR RC PIPE UNLESS OTHERWISE NOTED.
(7) LENGTH GIVEN TO CENTER OF STRUCTURE OR END OF BARREL. (DOES NOT INCLUDE APRON LENGTH).
(8) GRANULAR FILTER BLANKET OR GEOTEXTILE FILTER MATERIAL REQUIRED SHALL BE INCIDENTAL. SEE MN/DOT STANDARD PLATE 3133.
(9) TIE LAST THREE JOINTS AT APRON END. FURNISHING AND INSTALLING PIPE TIES SHALL BE INCIDENTAL. SEE MN/DOT STANDARD PLATE 3145.
(10) SEE SHEET 17 FOR TOP SLAB DETAIL FOR SD AND 4020 STRUCTURES THAT USE TYPE C OR F CASTINGS.
(11) SALVAGE EXISTING CATCH BASIN AND CASTING.
(12) INSTALL SALVAGED CATCH BASIN AND CASTING.



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SHEET 87 OF 153 SHEETS

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STORM SEWER TABULATION (THIS SHEET ONLY)

STRUCTURE LOCATION (1)					STRUCTURE PAY HEIGHT (3), (4), (10)						(5) STEPS REQUIRED	CONNECT TO EXISTING STORM SEWER	CASTING ASSEMBLY	(2) TOP CASTING ELEV FINISHED	OUTLET ELEVATION BOTTOM	CIRCULAR PIPE - DESIGN 3006 (6), (7)				CIRCULAR PIPE APRONS		DRAINS TO			(8) RIPRAP CL II	GUIDE POSTS TYPE B	REMARKS
STRUCT. NO.	STREET	STATION	OFFSET FT	SIDE	SPECIAL (2'X3' BOX)	F	G	H	4020-48	4020-60						15" RCP CL V	18" RCP CL III	24" RCP CL III	27" RCP CL III	27" RCP APRON	27" RCP TRASH GUARD	STRUCT NO	PIPE GRADE	INVERT ELEVATION			
					EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT		EACH		FINISHED	BOTTOM	LIN FT	LIN FT	LIN FT	LIN FT	EACH	EACH	NO	FT/FT	ELEVATION	CU YD	EACH	
5021	CSAH 83 SB	139+45	24	LT			3.9						E	869.64	865.64	49						5022	0.0148	864.91			
5022	CSAH 83 SB	139+45	25.25	RT					5.4		Y		C	870.22	864.91	50						5023	0.0148	864.17			
5024	CSAH 83 SB	140+65	21	LT			3.9						E	868.57	864.57	52						5025	0.0119	863.95			
5025	CSAH 83 NB	40+65	24.7	LT					5.5		Y		C	869.34	863.95	44						5026	0.0119	863.43			
5028	CSAH 83 SB	141+50	17.29	RT								1		868.95	864.30	10						5029	0.0233	864.16			(11)(12)
5029	CSAH 83 NB	41+50	33.18	LT								1		868.69	864.16							EX5026	0.0264	862.79			(11)(12)
TOTALS							7.8		10.9			2				205											

NOTES:
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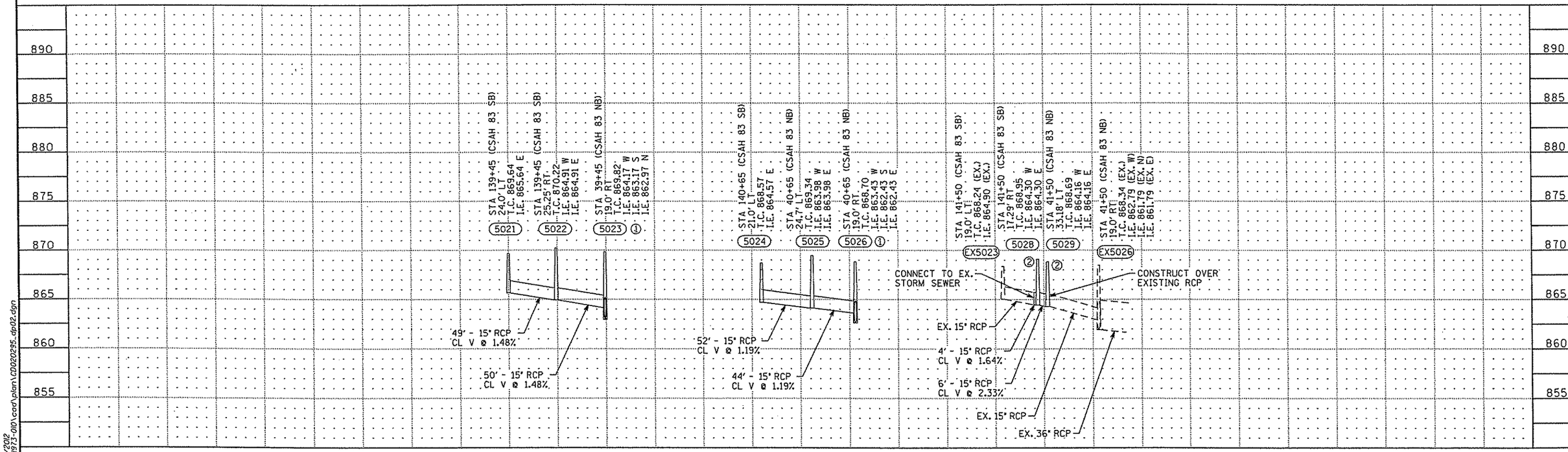
(2) TOP OF CASTING ELEVATIONS ARE TO CENTER OF GRATE
(3) PAY HEIGHTS ARE FROM BOTTOM OF CASTING TO INVERT PLUS 0.7'
(4) TYPE 4020 STRUCTURES WITH TYPE C OR F CASTINGS REQUIRE 4022 TOP SLABS.
(5) IF STEPS ARE REQUIRED. STRUCTURE TO INCLUDE MANHOLE STEPS 16" ON CENTER. SEE MN/DOT STANDARD PLATE 4180.
(6) CLASS C BEDDING TO BE USED FOR RC PIPE UNLESS OTHERWISE NOTED.
(7) LENGTH GIVEN TO CENTER OF STRUCTURE OR END OF BARREL. (DOES NOT INCLUDE APRON LENGTH).
(8) GRANULAR FILTER BLANKET OR GEOTEXTILE FILTER MATERIAL REQUIRED SHALL BE INCIDENTAL. SEE MN/DOT STANDARD PLATE 3133.
(9) TIE LAST THREE JOINTS AT APRON END. FURNISHING AND INSTALLING PIPE TIES SHALL BE INCIDENTAL. SEE MN/DOT STANDARD PLATE 3145.
(10) SEE SHEET17 FOR TOP SLAB DETAIL FOR SD AND 4020 STRUCTURES THAT USE TYPE C OR F CASTINGS.
(11) SALVAGE EXISTING CATCH BASIN AND CASTING.
(12) INSTALL SALVAGED CATCH BASIN AND CASTING.

① SEE SHEET 87 FOR TABULATED STRUCTURE INFORMATION.
② SALVAGE & INSTALL CATCH BASIN AND CASTING.



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SHEET 88 OF 153 SHEETS

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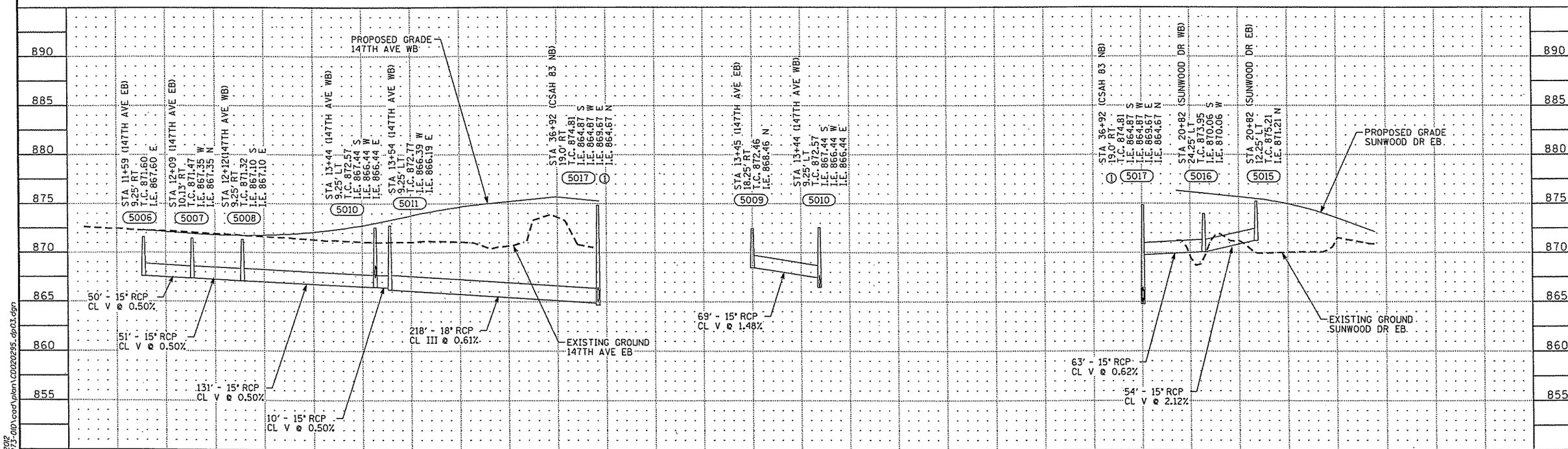
STORM SEWER TABULATION (THIS SHEET ONLY)

STRUCTURE LOCATION (1)					STRUCTURE PAY HEIGHT (3), (4), (10)						(5) STEPS REQUIRED	CASTING ASSEMBLY	(2) TOP CASTING ELEV FINISHED	OUTLET ELEVATION BOTTOM	CIRCULAR PIPE - DESIGN 3006 (6), (7)				CIRCULAR PIPE APRONS		DRAINS TO			(8) RIPRAP CL II	GUIDE POSTS TYPE B	REMARKS
STRUCT. NO.	STREET	STATION	OFFSET FT	SIDE	SPECIAL (2'X3' BOX)	F	G	H	4020-48	4020-60					15" RCP CL V	18" RCP CL III	24" RCP CL III	27" RCP CL III	27" RCP APRON	27" RCP TRASH GUARD	STRUCT NO	PIPE GRADE FT/FT	INVERT ELEVATION			
					EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT					LIN FT	LIN FT	LIN FT	LIN FT	EACH	EACH				CU YD	EACH	
5006	147TH AVE EB	11+59	9.25	RT	1							F	871.60	867.60	50						5007	0.0050	867.35			
5007	147TH AVE EB	12+09	10.13	RT					4.4			F	871.47	867.35	51						5008	0.0050	867.10			
5008	147TH AVE WB	12+12	9.25	LT					4.5			F	871.32	867.10	131						5010	0.0050	866.44			
5009	147TH AVE EB	13+45	18.25	RT	1							F	872.46	868.46	69						5010	0.0148	867.44			
5010	147TH AVE WB	13+44	9.25	LT					6.4		Y	F	872.57	866.44	10						5011	0.0050	866.39			
5011	147TH AVE WB	13+54	9.25	LT					6.9		Y	F	872.77	866.19		218					5017	0.0061	864.87			
5015	SUNWOOD DR EB	20+82	12.25	LT	1							F	875.21	871.21	54						5016	0.0212	870.06			
5016	SUNWOOD DR WB	20+82	24.25	LT					4.2			F	873.95	870.06	63						5017	0.0062	869.67			
TOTALS					3				26.4						428	218										

NOTES:
(1) STATION AND OFFSETS ARE GIVEN TO CENTER OF GRATE OR END OF APRON. INVERT ELEVATIONS ARE GIVEN AT CENTER OF STRUCTURE OR END OF APRON.
(2) TOP OF CASTING ELEVATIONS ARE TO CENTER OF GRATE
(3) PAY HEIGHTS ARE FROM BOTTOM OF CASTING TO INVERT PLUS 0.7'
(4) TYPE 4020 STRUCTURES WITH TYPE C OR F CASTINGS REQUIRE 4022 TOP SLABS.
(5) IF STEPS ARE REQUIRED. STRUCTURE TO INCLUDE MANHOLE STEPS 16" ON CENTER. SEE MN/DOT STANDARD PLATE 4180.
(6) CLASS C BEDDING TO BE USED FOR RC PIPE UNLESS OTHERWISE NOTED.
(7) LENGTH GIVEN TO CENTER OF STRUCTURE OR END OF BARREL. (DOES NOT INCLUDE APRON LENGTH).
(8) GRANULAR FILTER BLANKET OR GEOTEXTILE FILTER MATERIAL REQUIRED SHALL BE INCIDENTAL. SEE MN/DOT STANDARD PLATE 3133.
(9) TIE LAST THREE JOINTS AT APRON END. FURNISHING AND INSTALLING PIPE TIES SHALL BE INCIDENTAL. SEE MN/DOT STANDARD PLATE 3145.
(10) SEE SHEET 17 FOR TOP SLAB DETAIL FOR SD AND 4020 STRUCTURES THAT USE TYPE C OR F CASTINGS.
(11) SALVAGE EXISTING CATCH BASIN AND CASTING.
(12) INSTALL SALVAGED CATCH BASIN AND CASTING.

① SEE SHEET 87 FOR TABULATED STRUCTURE INFORMATION.



NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
CERTIFIED BY: LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE
DATE: 04/03/12 LIC. NO: 44620

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CITY OF RAMSEY, MINNESOTA
DRAINAGE PROFILES & TABULATIONS
S.A.P. 199-020-010 / C.P. 12-20

SHEET 89 OF 153 SHEETS

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DRAINAGE STRUCTURE SUMMARY — J

SHEET NO.	STRUCTURES						CONNECT TO EXISTING	F&I CASTING ASSEMBLY
	SPECIAL (2' X 3' BOX)	F	G	H	48-4020	60-4020		
	EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	EACH	EACH
SHEET 87		35.5	3.9	3.8	13.3	34.9		11
SHEET 88			7.8		10.9		2	4
SHEET 89	3				26.4			5
TOTALS	3	35.5	11.7	3.8	50.6	34.9	2	20

STORM SEWER SUMMARY — K

SHEET NO.	CIRCULAR-DESIGN 3006				CIRCULAR APRONS			TRASH GUARD	RANDOM RIPRAP CLASS II	GUIDE POSTS TYPE B
	15" RCP CL V	18" RCP CL III	24" RCP CL III	27" RCP CL III	15" RCP	18" RCP	27" RCP	27" RCP		
	LIN FT	LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	EACH	CU YD	EACH
SHEET 87	177	140	386	166	1	1	1	1	6	4
SHEET 88	205									
SHEET 89	428	218								
TOTALS	810	358	386	166	1	1	1	1	6	4

CASTINGS — L

ASSEMBLY	RING OR FRAME	COVER OR GRATE	CURB BOX	STANDARD PLATE NUMBER	USE	TOTAL
C	SEE CASTING ASSEMBLY TYPE "C" DETAIL - SHEET 18					5
E	SEE CASTING ASSEMBLY TYPE "E" DETAIL - SHEET 18					8
F	SEE CASTING ASSEMBLY TYPE "F" DETAIL - SHEET 18					5
F	INCLUDED IN PAY ITEM FOR DRAINAGE STRUCTURE DESIGN SPECIAL					3
M-11	ROUND CONC	731		4143 4143		1
A-7D	700-7	716		4101 4110		1
					TOTAL	20

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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SHEET 90 OF 153 SHEETS

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CULVERT TABULATION

M

STRUCTURE LOCATION (1)					OUTLET ELEVATION BOTTOM	CIRCULAR PIPE - DESIGN 3006 (2), (3)	CIRCULAR PIPE APRONS (5)	DRAINS TO			(4) RIPRAP CL II	GUIDE POSTS TYPE B	REMARKS
STRUCT. NO.	STREET	STATION	OFFSET FT	SIDE		15" RC PIPE CULVERT LIN FT	15" RC SAFETY APRON EACH	STRUCT NO	PIPE GRADE FT/FT	INVERT ELEVATION	CU YD	EACH	
5030	CSAH 83 SB	128+52	30.3	LT	874.20	40	1	5031	0.0131	873.57		1	
5031	CSAH 83 SB	129+00	28	LT	873.57		1				4	1	
5032	CSAH 83 SB	130+15	26.4	LT	871.19	40	1	5033	0.0131	870.56		1	
5033	CSAH 83 SB	130+63	31	LT	870.56		1				4	1	
TOTALS						80	4				8	4	

NOTES:
(1) STATION, OFFSETS, AND INVERT ELEVATIONA ARE GIVEN TO END OF APRON.
(2) CLASS C BEDDING TO BE USED FOR CS PIPE UNLESS OTHERWISE NOTED.
(3) LENGTH GIVEN TO END OF BARREL. (DOES NOT INCLUDE APRON LENGTH).
(4) GRANULAR FILTER BLANKET OR GEOTEXTILE FILTER MATERIAL REQUIRED SHALL BE INCIDENTAL. SEE MN/DOT STANDARD PLATE 3133.
(5) SEE MN/DOT STANDARD PLATE 3022 FOR SAFETY APRON DETAILS.

Date Printed: 6/12/2012
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Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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SHEET 91 OF 153 SHEETS

LOCATION OF SWPPP COMPONENTS: NPDES -CSW PERMIT

DESCRIPTION	TITLE	LOCATION
SURFACE WATER FLOW DIRECTION/DRAINAGE AREAS	EROSION CONTROL & TURF ESTABLISHMENT	94 – 95
RECEIVING WATERS	PROJECT MANUAL	PROJECT MANUAL
TEMP./PERM. EROSION & SEDIMENT CONTROL PLAN	EROSION CONTROL & TURF ESTABLISHMENT	92 – 97
TEMP./PERM. EROSION & SEDIMENT CONTROL BMP DETAILS	EROSION CONTROL DETAILS	98 – 103
PERM. STORMWATER MANAGEMENT FACILITIES	DRAINAGE & SUPERELEVATION PLAN	85 – 86
CONSTRUCTION LIMITS	CONSTRUCTION PLANS.	74 – 75
EXISTING AND FINAL GRADES	CONSTRUCTION PLANS/ PROFILES / CROSS SECTIONS	74 – 78 131 – 153
SWPPP EST. QUANTITIES	ESTIMATED QUANTITIES	4 – 5
SWPPP SPECIFICATIONS	SWPPP NOTES	92 – 93

PROJECT DESCRIPTION & SEQUENCING DATES
This project consists of street & utility reconstruction of Armstrong Blvd, (CSAH 83) and Sunwood Drive / 147th Ave NW from US 10 to Bunker Lake Blvd (CSAH 116) within the City of Ramsey.
Project commencement date = July 9, 2012
Final completion date = November 15, 2012

IMPERVIOUS SURFACE AND DISTURBED AREA CALCULATIONS
Total Area to be disturbed = 6.77 Acres
Imperious area: Pre-Construction = 2.89 Acres /Post-Const. = 3.80 Acres
Net increase in impervious area = 0.91 Acres

RECEIVING WATERS
Storm water from this project will be conveyed through the storm sewer system into the existing storm water pond 83A (east of CSAH 83, north of 147th Ave NW.). Rural sections of CSAH 83, south of 147th Ave NW, drain into the adjacent ditches, then north into the storm water system and into pond 83A.

ENVIRONMENTALLY SENSITIVE AREAS
No environmentally sensitive areas, threatened/endangered/special concern species are known to exist within or adjacent to the project limits. There are no known hazardous materials or wastes within the project limits. A portion of two wetlands will be filled as a result of this project.

APPENDIX A. SPECIAL OR IMPAIRED WATERS
No special or impaired waters are located within one mile of, and downstream of any project discharge points.

NPDES OBLIGATIONS OF RESPONSIBLE PARTIES:
Construction and implementation of this SWPPP shall be governed by the Mn/DOT spec. book, special provisions, amendments, NPDES Construction Stormwater Permit, project plans, specifications and detail plates.

The City of Ramsey (Permitted Owner), and the Contractor (Site Operator), are jointly responsible for full implementation of the SWPPP and all requirements of the NPDES Permit Construction Stormwater General Permit. The Contractor is responsible for installations, inspections, maintenance and repairs of all erosion prevention and sediment control BMP's before, during, and after active construction. The City of Ramsey is responsible for the long-term operation and maintenance of all permanent stormwater management systems. The contractor is liable until final stabilization of all disturbed areas been achieved, all synthetic BMP's (if applicable) have been removed, and the Permit Modification form has been submitted to the MPCA, pursuant to Part II.B.5, Part II.C, and Part IV.G.6 of the NPDES Permit Construction Stormwater General Permit.

CONTRACTOR
To Be Determined. NPDES Transfer Form shall be submitted to the MPCA within 7 days of awarding contractor.

PROJECT OWNER & LONG TERM MAINTENANCE OF PERMANENT STORMWATER MANAGEMENT FACILITIES
City of Ramsey (Tim Himmer, City Engineer)
7550 Sunwood Dr. NW, Ramsey, MN 55303
Phone No. 763-433-9893 thimmer@ci.ramsey.mn.us

MPCA INSPECTOR: Shawn Nelson (651-757-2604)

24-HOUR EMERGENCY STATE DUTY OFFICER: 1-800-422-0798

SEQUENCE OF CONSTRUCTION/TIMING OF BMP INSTALLATION:
No construction operations, including removals, that require erosion & sediment control per the SWPPP can commence until the Contractor's erosion control supervisor certifies the proper installation of BMP's and a chain of responsibility for SWPPP implementation is created for all operators on the site. Perimeter sediment controls (silt fence; inlet protection, construction entrances, etc.) shall be installed prior to the start of construction. These practices shall remain in place until Final Stabilization is achieved.

Contractor shall implement the necessary on site BMP's in accordance with the NPDES permit requirements to prevent nuisance conditions (MN Rules 7050.2010) from any discharges under coverage of the NPDES permit. In some cases, multiple or redundant applications of some BMP's may be needed to meet these requirements.

INSPECTION AND RECORD KEEPING
1. The contractor/site operator must inspect the entire construction site at least once every seven (7) days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours.

2. All inspections and maintenance conducted must be recorded in writing and retained with the SWPPP in accordance with Part III.D of the NPDES construction permit. Amendments to the SWPPP will be made by the project engineer or the contractor after written approval by the project engineer. Records of each inspection and maintenance activity shall include:
   a. Date and time of inspections;
   b. Name of person(s) conducting inspections;
   c. Findings of inspections, including recommendations for corrective actions;
   d. Corrective actions taken (including dates, times, and party completing maintenance activities);
   e. Date and amount of all rainfall events greater than 1/2 inch (0.5 inches) in 24 hours;
   f. Documentation of changes made to the SWPPP

3. The SWPPP shall be amended to include additional or modified BMPs, designed to correct identified problems or address situations under Part III.A.5 of the NPDES permit.

4. The SWPPP (original or copies), all changes to the SWPPP, project manual, and inspections/maintenance records must be kept at the site during construction by the contractor/site operator who has operational control of that portion of the site. The SWPPP can be kept in either the field office or on site vehicle during normal working hours.

EROSION CONTROL PRACTICES
All exposed soil areas shall be stabilized within 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Temporary stockpiles without significant silt, clay or organic components (e.g., clean aggregate stockpiles, demolition concrete stockpiles, sand stockpiles) and the constructed base components of roads, parking lots and similar surfaces are exempt from this requirement but must have silt fence or other effective perimeter sediment controls, and cannot be placed in surface waters, curb and gutters, conduits, or ditches, unless there is a bypass in-place to prevent stormwater run-on into the stockpile (Part IV.C.5).

3:1 slopes (or steeper) must be less than 75 feet in length. Slopes greater than 75 feet must have graded in phases or broken with silt fence, biorolls, or other appropriate perimeter control BMP(s) within 7 days of exposing soils.

Erosion Control Blankets/Mats: Contractor shall verify during regular inspections that no gullies, rills, or scour holes have formed under erosion control blankets and mats, and correct all eroded areas within 7 days. All repairs must be completed within 24 hours of discovery, or as soon as field conditions allow access

Temporary/Permanent Drainage Ditches & Swales: The normal wetted perimeter of any temporary or permanent drainage ditch or swale that drains water from any portion of the construction site, or diverts water around the site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge into any surface water. Stabilization of the last 200 lineal feet must be completed within 24 hours after connecting to a surface water.

Temporary or permanent ditches or swales that are being used as a temporary sediment containment system (with properly designed rock ditch checks, bio rolls, silt dikes etc.) do not need to be stabilized. These areas must be stabilized within 24 hours after no longer being used as a sediment containment system.

Storm Sewer Outlets: Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours after hydraulic connection to a surface water.

SEDIMENT CONTROL PRACTICES
The contractor/site operator are responsible for the installation, operation, and continued maintenance of all temporary and permanent water quality management BMPs, as well as all erosion prevention and sediment control BMPs, for the duration of the construction work at the site, until final stabilization is achieved. All BMPs must be adequately designed, installed, and maintained to prevent erosion from a minimum 0.5 inch total rainfall event within 24 hours.

All nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs within 24 hours after discovery, or as soon as field conditions allow access unless another time frame is specified in the SWPPP. All eroded material that leaves the site shall be collected by the contractor and returned to the site at the contractor's expense and incidental to the project cost.

Down gradient systems: If the down gradient treatment system is overloaded, additional up gradient sediment control practices or redundant BMPs must be installed to eliminate the overloading, and the SWPPP must be amended to identify these additional practices.

Silt fences: Silt fences shall be placement, as close as possible to follow a single contour elevation. All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/3 of the height of the fence. All repairs must be completed within 24 hours of discovery, or as soon as field conditions allow access

Temporary and Permanent Sedimentation Basins: Where ten (10) or more acres of disturbed soil drain to a common location, a temporary (or permanent) sediment basin must be provided prior to runoff leaving the construction site or entering surface waters. All temporary basins shall be designed and constructed to the minimum standards specified in Part III.B of the NPDES construction permit.

Temporary and Permanent Sedimentation Basin Maintenance: Basins must be drained and sediment removed when the depth of collected sediment in the basin reaches 1/2 the storage volume. Drainage and removal must be completed within 72 hours of discovery, or as soon as field conditions allow access (Part IV.E.4.b).

Temporary soil stockpiles: Silt fence or other effective sediment controls must be implemented, and piles cannot be placed in surface waters, including stormwater conveyances such as curb and gutter systems, or conduits and ditches unless there is a bypass in place for the stormwater.

Construction Site Entrance/Vehicle Tracking: Contractor must minimize sediment from the construction site (or onto streets within the site) by implementing BMPs such as stone pads, concrete or steel wash racks, or equivalent systems. Street sweeping must be used daily during construction operations if such BMPs are not adequate to prevent sediment from being tracked onto the street. Street Sweeper must be either on site at all times or available within 3 hours of notice of need. Tracked sediment must be removed from all paved surfaces, within 24 hours of discovery, or if applicable, within a shorter time to comply with Part IV.C.6 of the NPDES construction permit. Multiple street sweepings at the contractor's expense may be required on all entry/exit points to the site at the discretion of the Project Owner.

Surface Waters: including off-site and downstream drainage ditches, catch basins, and conveyance systems, must be inspected for evidence of erosion and sediment deposition. The removal and stabilization of exposed soils must take place within seven (7) days of discovery unless precluded by legal, regulatory, or physical access constraints. If precluded, removal and stabilization must take place within seven (7) calendar days of obtaining access. The Permittees are responsible for contacting all local, regional, state and federal agencies and receiving any applicable permits, prior to conducting any work (Part IV.F.4.c).

Inlet Protection: All storm drain inlets (including down gradient, off-site) must be protected by appropriate BMPs during construction until all sources with potential for discharging to the inlet have been stabilized. Silt fence is not an acceptable catch basin inlet protection BMP.

DEWATERING AND BASIN DRAINING
Dewatering or basin draining is not anticipated during construction of this project. In the event dewatering or basin draining is required, the contractor shall submit a dewatering plan to the Project Engineer for approval prior to undertaking these activities. Dewatering plan must include BMP's to prevent sediment transport, erosion, and adverse impacts to downstream receiving waters. If an approved TMDL Waste Load Allocation is established for construction activities on a receiving waterbody, the contractor must implement all necessary BMP's to meet the assigned WLA. The dewatering plan and DNR appropriations permit will become part of the SWPPP.

POLLUTION PREVENTION MANAGEMENT MEASURES
1. Solid Waste: (sediment, asphalt, concrete millings, construction, and demolition debris) and other wastes must be disposed of properly and shall comply with MPCA disposal requirements.

2. Hazardous Material: (e.g. gas, oil, antifreeze, paint, cleaning solvents curing compounds, fertilizers, etc.) must be properly stored, with secondary spill containment. Restricted access must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with MPCA regulations.

3. Trucks and other Construction Equipment: External washing, engine degreasing, or other maintenance involving hazardous liquids or lubricants is prohibited on site.

4. Concrete Washout Onsite: Contractors/site operator must submit a concrete washout plan to the project engineer for approval. Slurry must be contained in a leak-proof containment facility or impermeable liner. The approved plan will be incorporated into the SWPPP. Refer to SWPPP specifications for design details.

5. Burning: Burning of garbage, construction debris; trees, brush, or other vegetative material is not allowed on site.

FINAL STABILIZATION
Final Stabilization is achieved when the following three parameters are completed, prior to submission of the NOT to MPCA.

1. 70% Vegetative Cover: All soil disturbing activities at the site have been completed and all exposed soils are stabilized by a uniform, live perennial vegetative cover with a density of 70% over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions.

2. Final Clean out of Permanent Stormwater Management Systems & Conveyance Systems: All sediment must be removed from permanent stormwater management systems, conveyance systems, and ditches must be stabilized with permanent cover.

3. Removal of all Temporary BMPs: Prior to submission of the NOT, all temporary synthetic and structural erosion prevention and sediment control BMPs (such as silt fence) must be removed on the portions of the site for which the Permittee is responsible. BMPs designed to decompose on site (such as some compost logs) may be left in place.

PAYMENT TO CONTRACTOR
Payment for construction practices and materials associated with the maintenance or repair of BMPs designated in the original tabulated quantities of this project SWPPP are incidental costs to the contractor for this project. Contractor recommendations for additional or revised BMPs needed to comply with NPDES permit requirements and/or to prevent nuisance conditions shall be submitted to the project engineer for approval. All eroded material that leaves the site shall be collected by the contractor and returned to the site at the contractor's expense and incidental to the project cost.

Date Printed: 6/7/2012
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NO.	DATE	BY	CHK	REVISIONS

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Plan By: CWK
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Approved By: NEH

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SWPPP
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SHEET 92 OF 153 SHEETS

STORMWATER POLLUTION PRENTION PLAN (SWPPP) SPECIFICATIONS

INSPECTION, RECORD KEEPING, & SWPPP AMENDMENTS (CONTINUED)
The contractor/site operator must assign a trained individual(s) (pursuant to Part III.A.1-2) to oversee the implementation, maintenance, and repair of BMPs. This individual(s) shall also perform inspections, revise/amend the SWPPP (document in SWPPP as necessary), and be available for an onsite inspection within 72 hours upon request by the permitted owner (or its designee), local government units, or MPCA (Part III.A.2.a.ii).

The SWPPP shall be amended to include additional requirements, such as additional or modified BMPs, designed to correct problems identified or address situations whenever (Part III.A.5):

a. There is a change in design, construction, operation, maintenance, weather or seasonal conditions that has a significant effect on the discharge of pollutants to surface waters or underground waters;
b. Inspections or investigations by site operators, local, state or federal officials indicate the SWPPP is not effective in eliminating or significantly minimizing the discharge of pollutants to surface waters or underground waters or that the discharges are causing water quality standard degradation (e.g. nuisance conditions as defined in Minn. R. 7050.0210, subp. 2); or
c. The SWPPP is not achieving the general objectives of minimizing pollutants in stormwater discharges associated with construction activity, or the SWPPP is not consistent with the terms and conditions of this permit.
d. The MPCA notifies the Permittee(s) in writing that the project's stormwater discharges may contribute to non-attainment of any applicable water quality standards, impaired waters standards, and/or TMDL Waste Load Allocations. In response, the Permittee(s) must develop a supplemental BMP action plan or appropriate SWPPP amendments describing SWPPP modifications to address the identified concerns and submit information requested by MPCA, which may include an individual permit application. If MPCA's written notification requires a response, failure to respond within the specified timeframe constitutes a permit violation.

INSPECTION AND ENTRY (Part V.H)
The Permittee(s) must comply with the provisions of 40 CFR 122.41(i), Minn. Stat. ch. 115.04 and Minn. Stat. ch. 115B.17. The contractor/site operator shall allow representatives of the MPCA or any member, employee or agent thereof, when authorized by it, upon presentation of credentials, to enter upon any property, public or private, for the purpose of obtaining information or examination of records or conducting surveys or investigations.

INSPECTIONS (Part IV.E)
1. Where parts of the construction site have permanent cover, but work remains on other parts of the site, inspections of the areas with permanent cover may be reduced to once per month. Where construction sites have permanent cover on all exposed soil areas and no construction activity is occurring anywhere on the site, the site must be inspected for a period of twelve (12) months (the inspections may be ceased during frozen ground conditions). Following the twelfth month of permanent cover and no construction activity, inspections may be terminated until construction activity is once again initiated or sooner if notified in writing by the MPCA. Where work has been suspended due to frozen ground conditions, the required inspections and maintenance schedule must begin within 24 hours after runoff occurs at the site or prior to resuming construction, whichever comes first.

MAINTENANCE (Part IV.E)
The contractor/site operator are responsible until another contractor/site operator has assumed control (see change of permit coverage) over all areas of the site that have not been stabilized or the site has undergone Final Stabilization, and a NOT has been submitted to the MPCA (Part IV.E.4.e).

RECORD RETENTION (Part III.D)
All owner(s) must keep the SWPPP, along with the following additional records, on file for three (3) years after submittal of the NOT (this does not include records of other permits required for the project after submittal of the NOT).

1. Records of all inspection and maintenance conducted during construction.
2. All permanent operation and maintenance agreements that have been implemented, including all
3. Right-of-way, contracts, covenants and other binding requirements regarding perpetual maintenance; and
4. All required calculations for design of the temporary and Permanent Stormwater Management Systems.

The Permittee(s) must implement the entire SWPPP and the requirements of this NPDES permit (Part IV.A). The BMPs identified in the SWPPP and in this permit must be selected, installed, and maintained in an appropriate and functional manner that is in accordance with relevant manufacturer specifications and accepted engineering practices.

SEDIMENT CONTROL PRACTICES (Part IV.C)
Temporary or permanent drainage ditches and sediment basins that are designed as part of a sediment containment system (e.g., ditches with rock check dams) require sediment control practices only as appropriate for site conditions (Part IV.C.1.a).

Short-term activities: The timing of the installation of sediment control practices may be adjusted to accommodate short-term activities such as clearing or grubbing, or passage of vehicles. Any short-term activity must be completed as quickly as possible and the sediment control practices must be installed immediately after the activity is completed. However, sediment control practices must be installed before the next forecasted precipitation event (30% or greater) even if the activity is not complete (Part IV.C.3).

Inlet Protection: Inlet protection may be removed for a particular inlet if a specific safety concern (street flooding/freezing) has been identified and the Permittee(s) have received written correspondence from the jurisdictional authority (e.g. city/county/township/MnDOT engineer) verifying the need for removal. Written correspondence must be documented in the SWPPP and available within 72 hours upon request. Permission to remove inlet protection based on a specific safety concern must still be obtained from the local jurisdictional authority within 30 days of removal (Part IV.C.4).

DEWATERING AND BASIN DRAINING (Part IV.D)
Dewatering or basin draining that may have turbid or sediment laden discharge water must be discharged to a temporary or permanent sedimentation basin (and/or other appropriate BMP) on the project site whenever possible. Discharge from the temporary or permanent sedimentation basin must be visually checked to ensure adequate treatment is obtained in the basin and that nuisance conditions (see Minn. R. 7050.0210, subp. 2), impacts to wetlands, and erosion in receiving channels or on downslope properties will not result from the discharge. The discharge must be dispersed over natural rock riprap, sand bags, plastic sheeting, or other accepted energy dissipation measures. Adequate sedimentation control measures are required for discharge water that contains suspended solids (Part IV.D.1).

POLLUTION PREVENTION MANAGEMENT MEASURES (Part IV.F)
Concrete washout onsite: All liquid and solid wastes generated by concrete washout/stucco operations must be contained in a leak-proof containment facility, impermeable liner or hauled immediately off site. A two (2) foot compacted clay liner that does not allow washout liquids to enter ground water is considered an impermeable liner, with prior approval from project engineer. All liquid and solid wastes must not contact the ground, and there must not be runoff from the concrete washout operations or areas. Liquid and solid wastes must be disposed of properly and in compliance with MPCA regulations. A sign must be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities (Part IV.F.4). The contractor/site operator must submit a concrete washout plan to the project engineer for all on site containment facilities or impermeable liners. The approved plan will be incorporated into the SWPPP.

ADDITIONAL BMPs FOR SPECIAL OR IMPAIRED WATERS DURING CONSTRUCTION ACTIVITY (APPENDIX A)
All requirements in Appendix A are in addition to BMPs already specified in the permit. Where provisions of Appendix A conflict with requirements elsewhere in the permit, the provisions in Appendix A take precedence. All BMPs used to comply with this Appendix must be documented in the SWPPP for the project (Appendix A.A).

C.1.a Exposed Soils: Contractor shall stabilize all exposed soil areas within (7) days after the construction activity in that portion of the site has temporarily or permanently ceased (Appendix A.C.1.a).

C.1.a Temporary basin: Contractor shall adhere to the requirements described in Part III.B. 1-5 of the NPDES construction permit for common drainage locations that serve an area with five (5) or more acres disturbed.

C.2 Post construction: The water quality volume that must be treated by the project's permanent stormwater management system described in Part III.C. shall be one (1) inch of runoff from the new impervious surfaces created by the project. Where site conditions allow, at least 1/2 inch of the water quality volume must be infiltrated. See Part III.C.2 for more information on infiltration design and appropriate site conditions. If it is determined that site conditions are not appropriate for infiltration (e.g. lack of 3 ft. of separation to seasonally saturated ground water, proximity to bedrock, contaminated soils) the reasons should be documented in the SWPPP for the project. Infiltration is not required in Hydrologic Soil Group D soils.

C.3 Buffer zone: An undisturbed buffer zone of not less than 100 linear feet from the special water (not including tributaries) shall be maintained at all times. Exceptions from this requirement for areas, such as water crossings, limited water access and restoration of the buffer are allowed if the Permittee fully documents in the SWPPP the circumstances and reasons that the buffer encroachment is necessary. Replacement of existing impervious surface within the buffer is allowed under this permit. All potential water quality, scenic and other environmental impacts of these exceptions must be minimized by the use of additional or redundant BMPs and documented in the SWPPP for the project.

C.4 Enhanced runoff controls: The Permanent Stormwater Management System must be designed such that the pre- and post-project runoff rate and volume from the 1 and 2-year 24-hour precipitation events remain the same or are reduced.

C.5 Temperature Controls: The Permanent Stormwater Management System must be design such that the discharge from the project will minimize any increase in the temperature of trout stream receiving waters resulting from the 1-and 2-year 24-hour precipitation events. This includes all tributaries of designated trout streams within the section that the trout stream is located. Projects that discharge to trout streams must minimize the impact using one or more of the following measures, in order of preference:

a. Minimize new impervious surfaces.
b. Minimize the discharge from the connected impervious surfaces by discharging to vegetated areas, or grass swales, and through the use of other non-structural controls.
c. Infiltration or evapo-transpiration of runoff in excess of pre-project conditions (up to the 2-year 24-hour precipitation event).

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE
DATE: 04/03/12 LIC. NO: 44620

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S.A.P. 199-020-010 / C.P. 12-20

SHEET 93 OF 153 SHEETS

Date Printed: 6/12/2012
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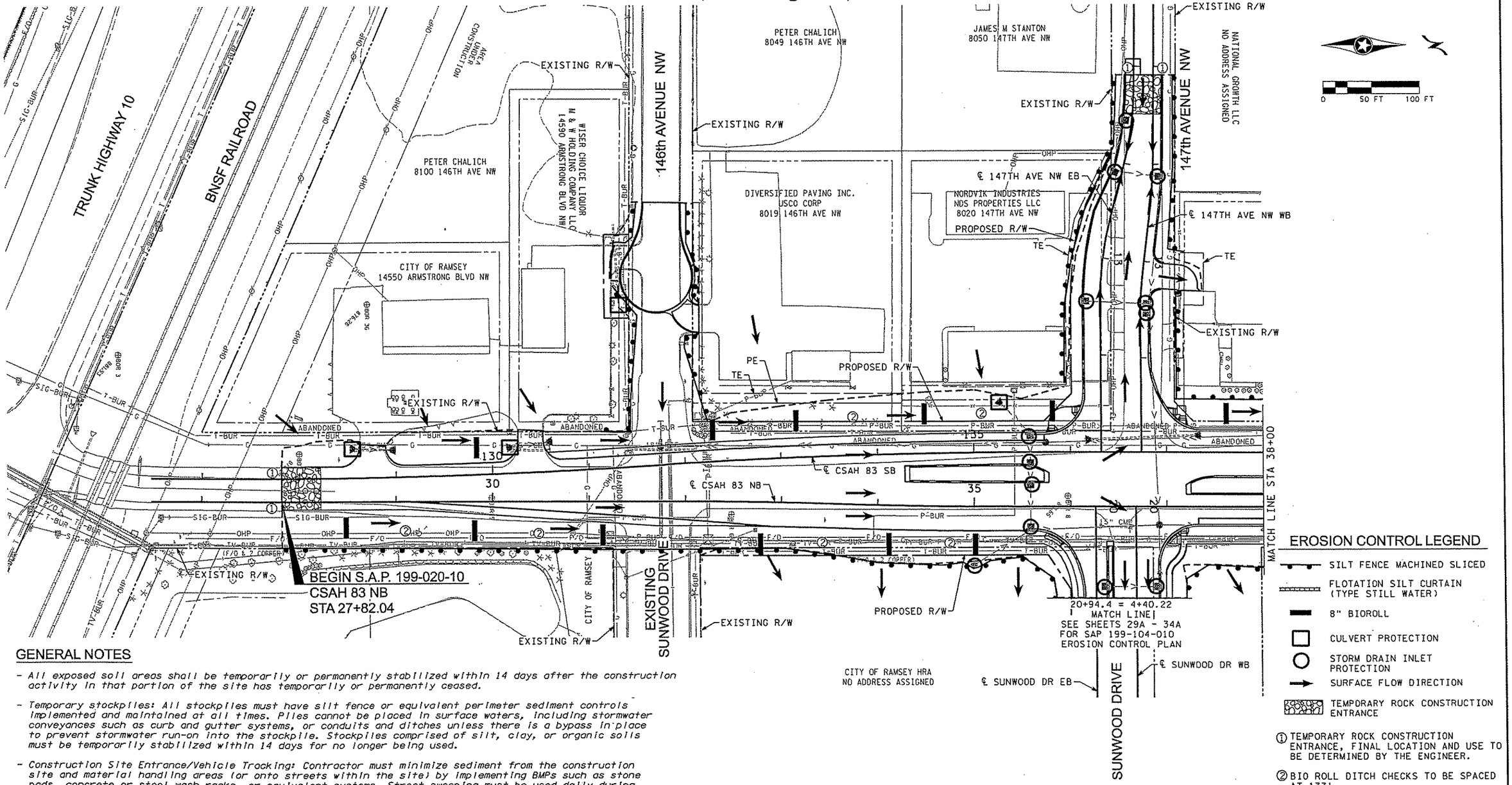

GENERAL NOTES

- *All exposed soil areas shall be temporarily or permanently stabilized within 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.*
- *Temporary stockpiles: All stockpiles must have silt fence or equivalent perimeter sediment controls implemented and maintained at all times. Piles cannot be placed in surface waters, including stormwater conveyances such as curb and gutter systems, or conduits and ditches unless there is a bypass in place to prevent stormwater run-on into the stockpile. Stockpiles comprised of silt, clay, or organic soils must be temporarily stabilized within 14 days for no longer being used.*
- *Construction Site Entrance/Vehicle Tracking: Contractor must minimize sediment from the construction site and material handling areas (or onto streets within the site) by implementing BMPs such as stone pads, concrete or steel wash racks, or equivalent systems. Street sweeping must be used daily during construction operations if such BMPs are not adequate to prevent sediment from being tracked onto the street. Tracked sediment must be removed from all paved surfaces within 24 hours of discovery, or sooner as directed by the project owner to comply with Part IV.C.6 of the NPDES construction permit. Multiple street sweepings at the contractor's expense may be required on all entry/exit points to the site at the discretion of the Project Owner.*
- *Refer to SWPPP for Pollution Prevention measures, inspection requirements, final stabilization criteria, etc.*
- *See Erosion Control Detail Sheets 98 to 103.*
- *See Drainage Plan Sheets 87 to 88 .*

EROSION CONTROL SEQUENCE

1 - PLACE PERIMETER CONTROLS - SILT FENCE AND BIOROLLS

2 - TEMPORARILY OR PERMANENTLY STABILIZE ALL DISTURBED AREAS WITHIN 14 DAYS AFTER THE AREA IS DISTURBED.

EROSION CONTROL LEGEND

- SILT FENCE MACHINED SLICED
- FLOTATION SILT CURTAIN (TYPE STILL WATER)
- 8" BIOROLL
- CULVERT PROTECTION
- STORM DRAIN INLET PROTECTION
- SURFACE FLOW DIRECTION
- TEMPORARY ROCK CONSTRUCTION ENTRANCE

① TEMPORARY ROCK CONSTRUCTION ENTRANCE, FINAL LOCATION AND USE TO BE DETERMINED BY THE ENGINEER.

② BIO ROLL DITCH CHECKS TO BE SPACED AT 133'

NOTES:

SILT FENCE SHALL FOLLOW, AS CLOSE AS POSSIBLE, TO A SINGLE CONTOUR, IF SEDIMENT DEPOSITS IN WATERS OF THE STATE, THE MATERIAL MUST BE REMOVED WITHIN SEVEN DAYS. USE TEMPORARY SEED & MULCH TO STABILIZE PONDS UNTIL PERMANENT SEED & MULCH ARE PLACED.

NO.	DATE	BY	CHK	REVISIONS

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Plan By: CWK
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Approved By: NEH

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SHEET 94 OF 153 SHEETS

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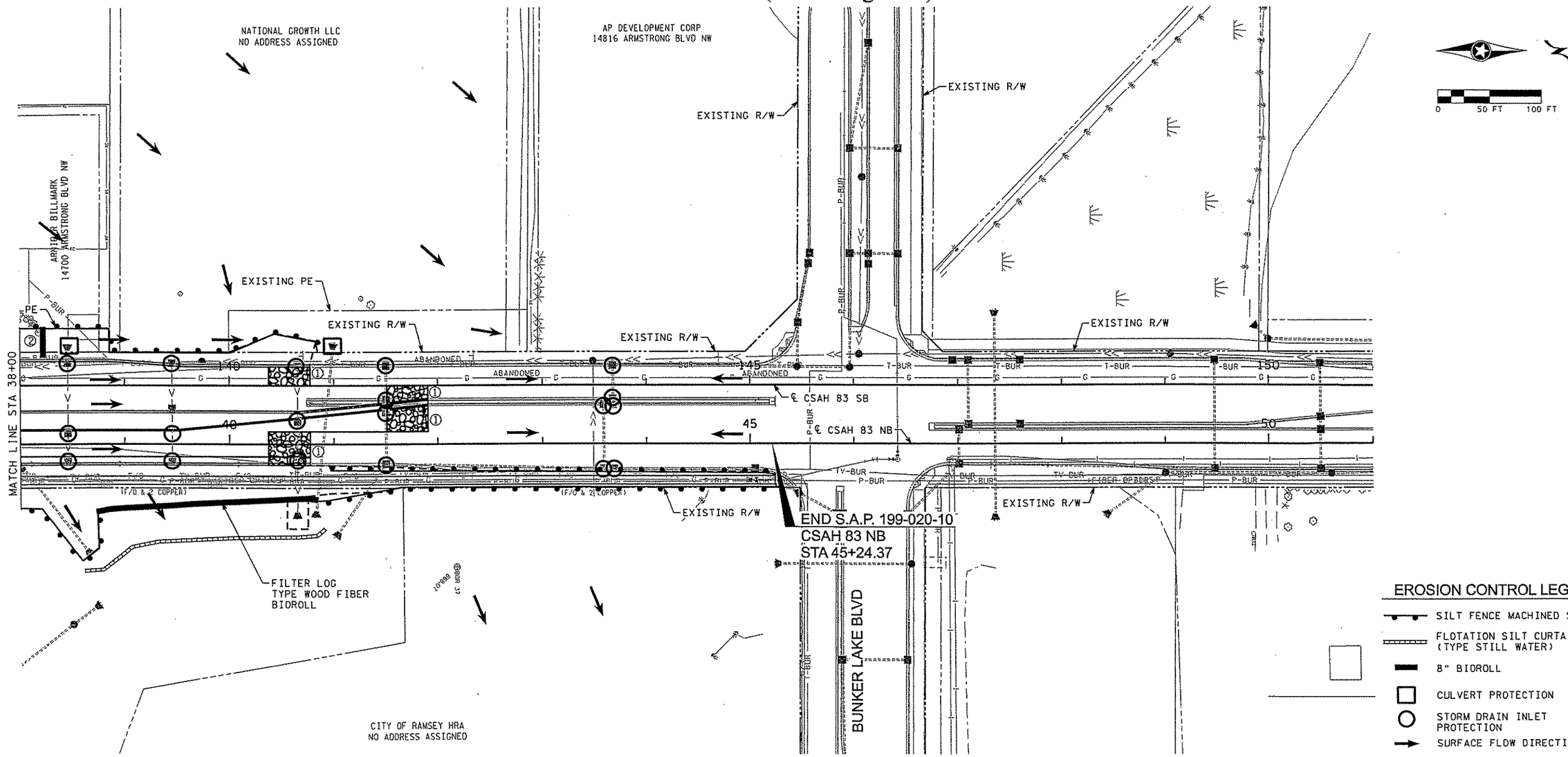

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SHEET 95 OF 153 SHEETS

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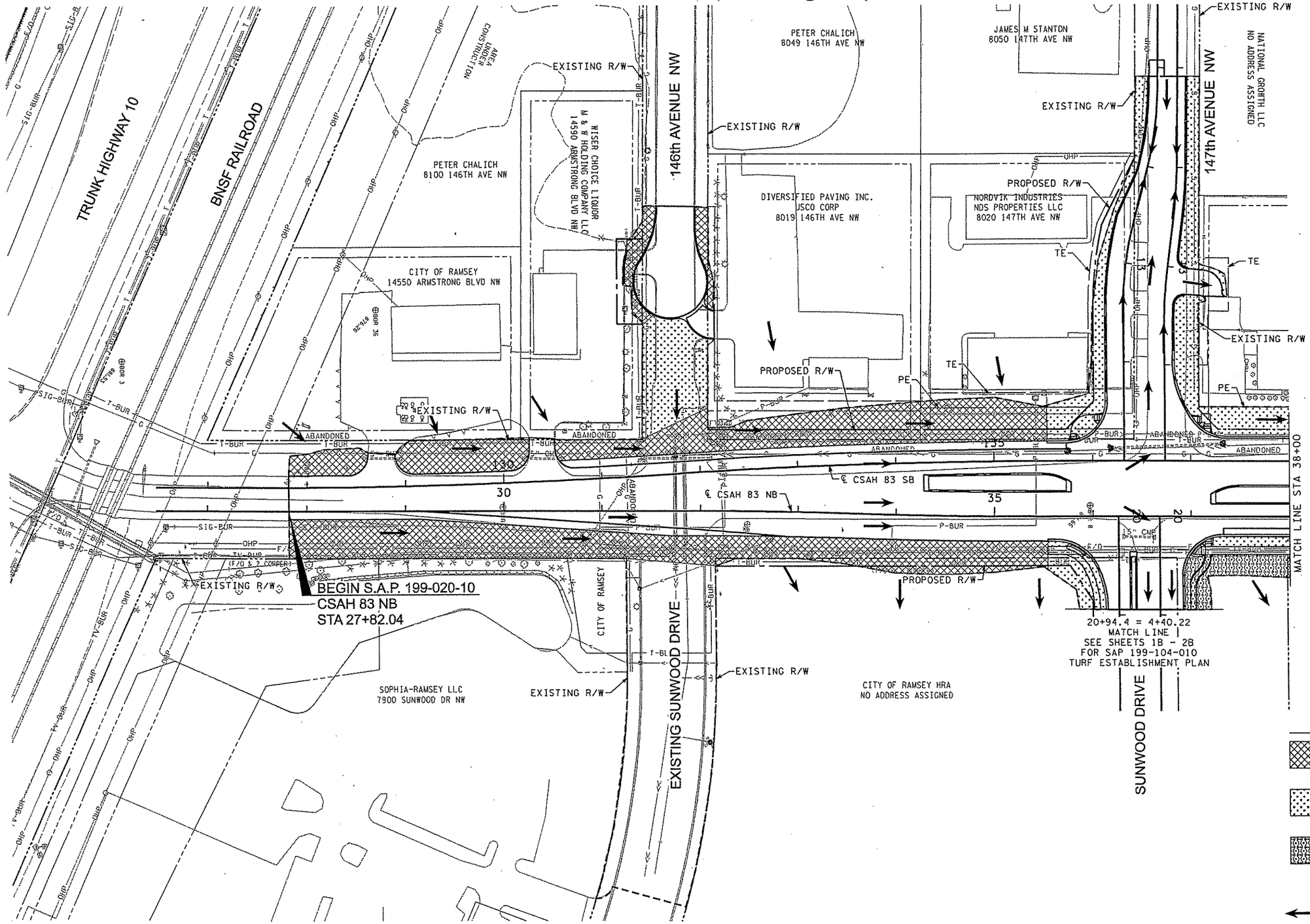

LEGEND

- SEED MIXTURE 240 (75 LBS/AC)
  FERTILZER TYPE 3 (400 LBS/AC)
  CAT. 3 EROSION CONTROL BLANKET
- SEED MIXTURE 240 (75 LBS/AC)
  FERTILZER TYPE 3 (400 LBS/AC)
  W/ MULCH MATERIAL TYPE 1
  (2 TONS/AC), DISK ACNHORED
- SEED MIXTURE 260 (100 LBS/AC)
  FERTILZER TYPE 3 (400 LBS/AC)
  RAPID STABILIZATION METHOD 2
  (TYPE 1 MULCH @ 1.5 TON/AC,
  TYPE 5 HYDRAULIC SOIL STABILIZER
  @ 750 LBS/AC)
- FLOW DIRECTION

NO.	DATE	BY	CHK	REVISIONS

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SHEET 96 OF 153 SHEETS

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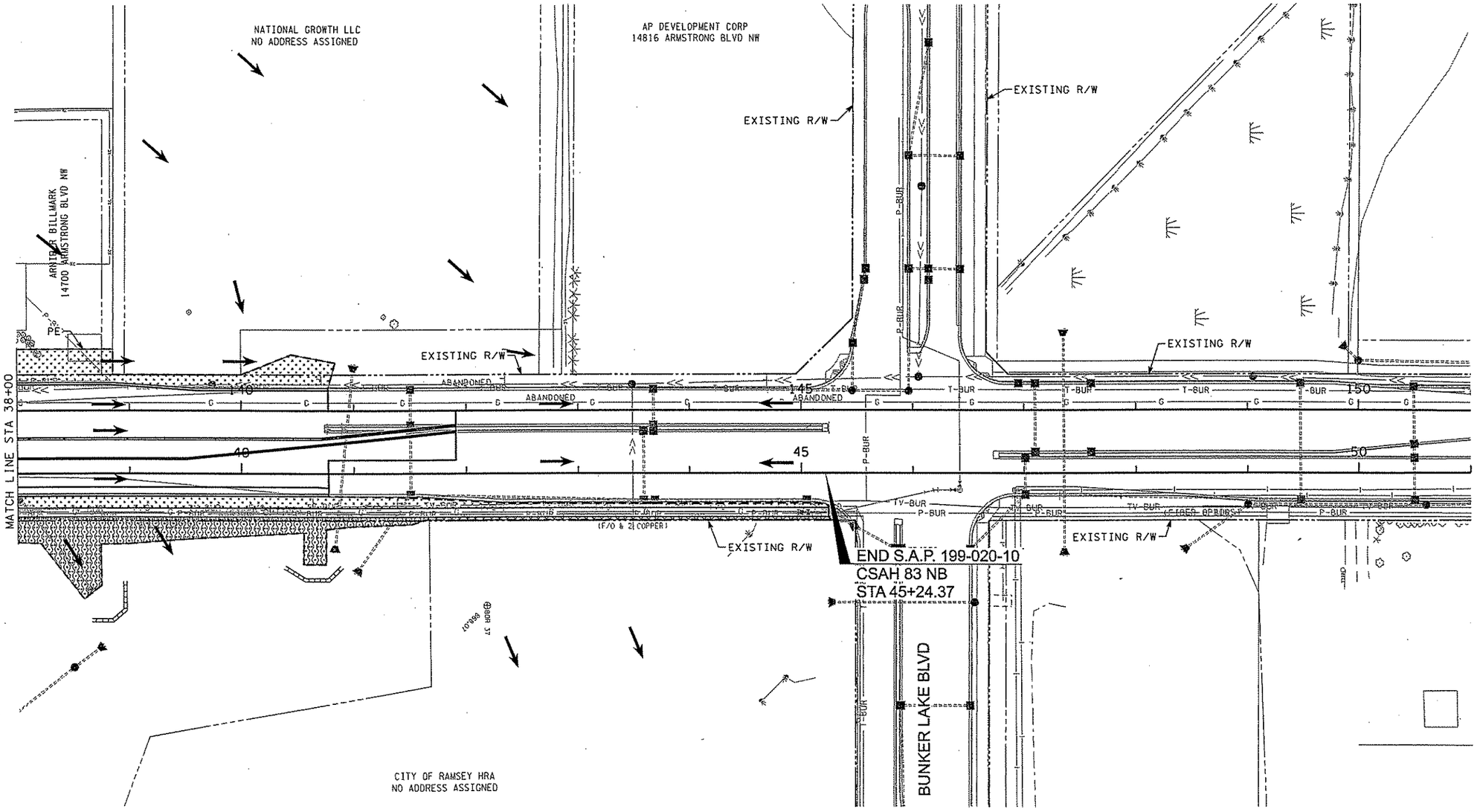

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  CAT. 3 EROSION CONTROL BLANKET
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  RAPID STABILIZATION METHOD 2
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  TYPE 5 HYDRAULIC SOIL STABILIZER
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SHEET 97 OF 153 SHEETS

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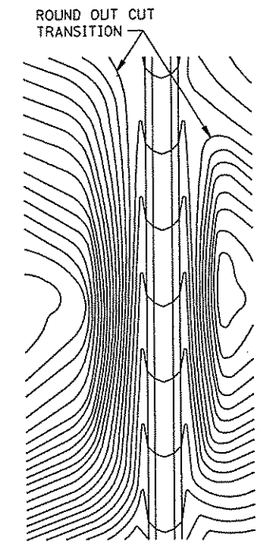
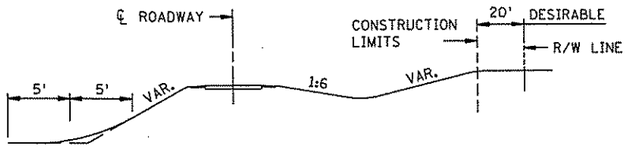
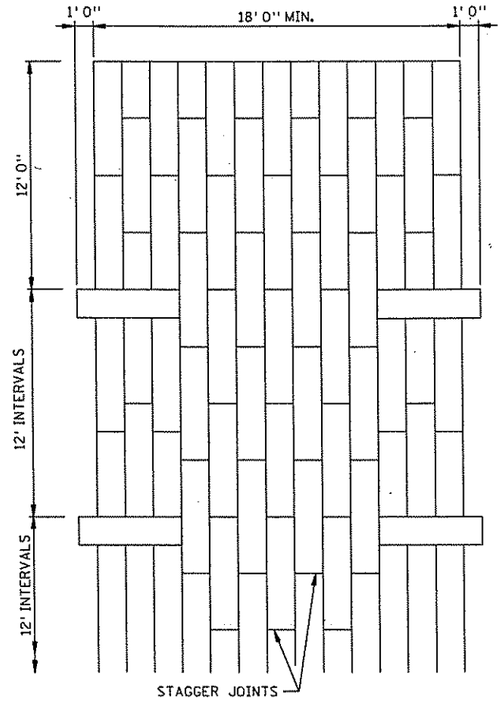


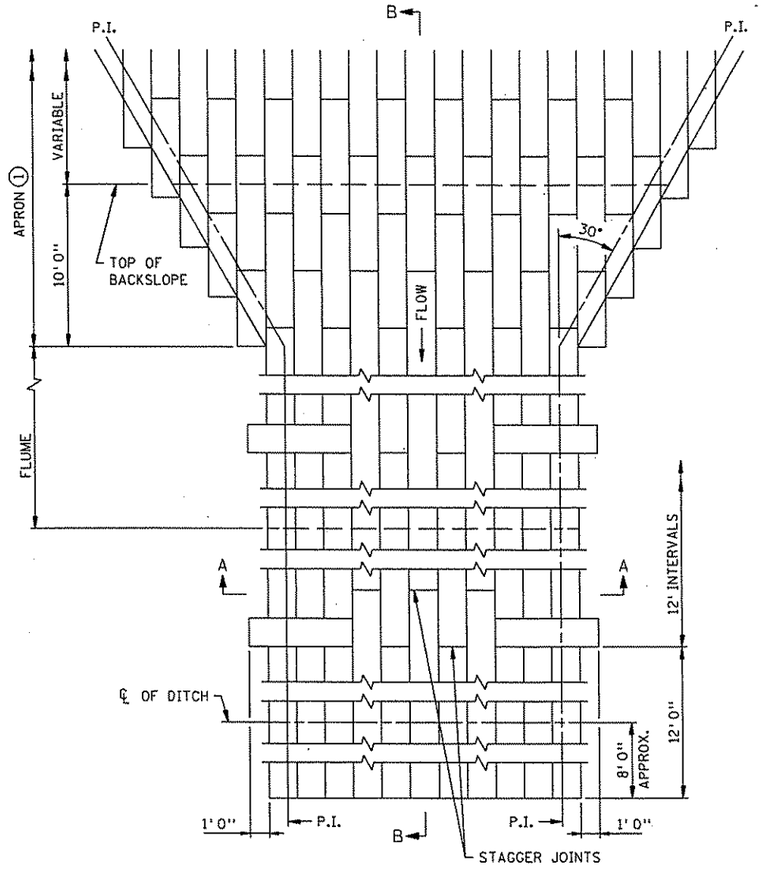
CONTOURING ROAD CUTS



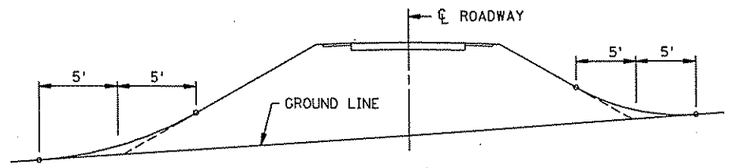
ROUNDING SHOULDERS AND BACKSLOPES



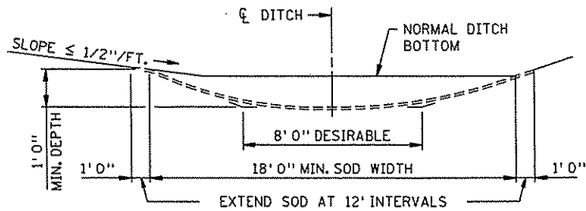
PLAN VIEW



PLAN VIEW

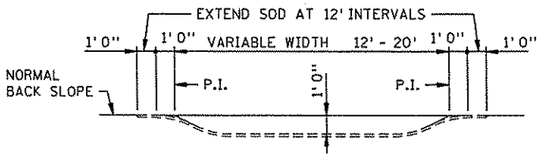


SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES

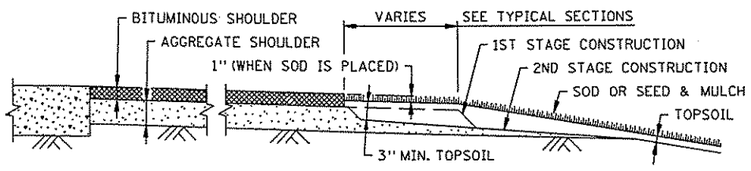


SODDED DITCH CROSS SECTION

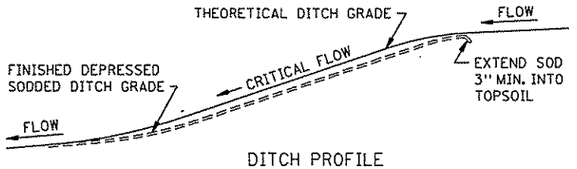
WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.), FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.



SECTION A-A

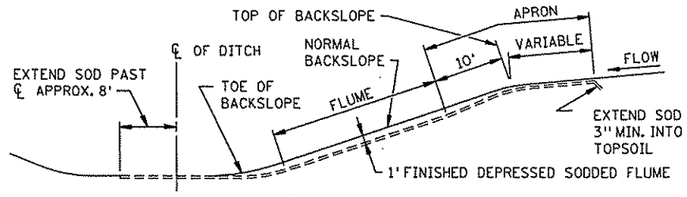


SHAPING AND TOPSOILING INSLOPES



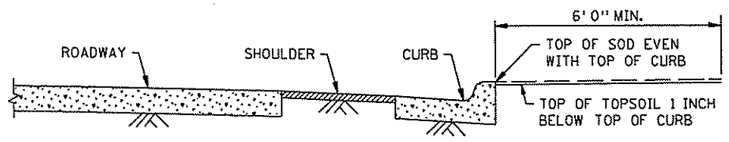
DITCH PROFILE

SODDED DITCH DETAILS



SECTION B-B

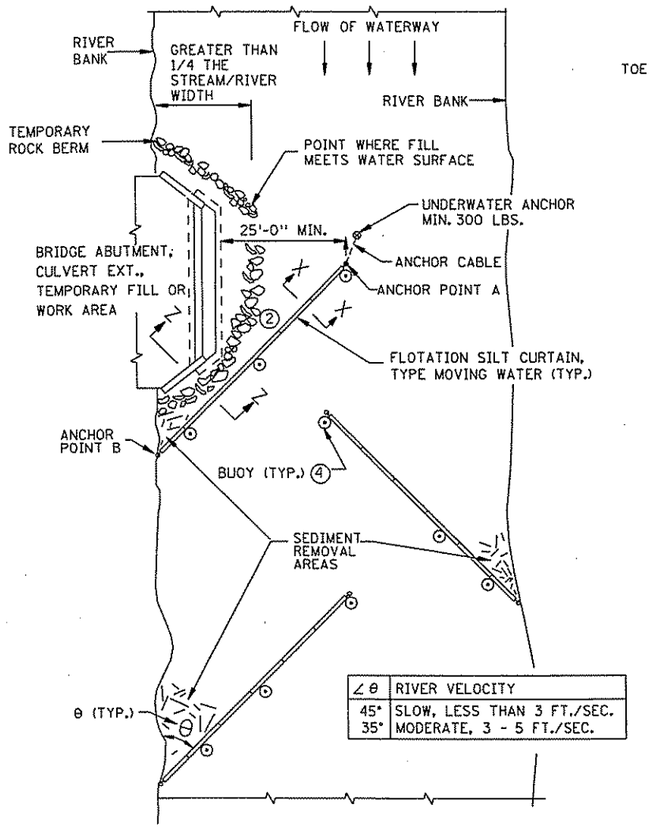
SODDED FLUME DETAILS



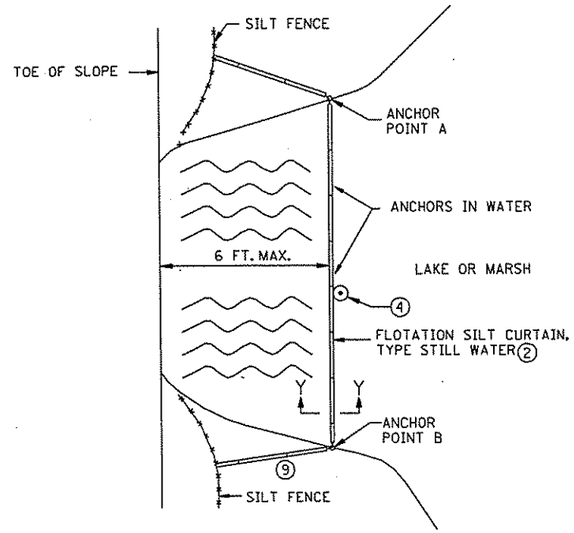
SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED

NOTES:
SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.
① CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

STANDARD SHEET NO. 5-297.404	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES
STANDARD APPROVED: NOVEMBER 20, 2002	
S.A.P. 199-020-010	SHEET NO. 98 OF 153 SHEETS



PLAN VIEW (TYPE: MOVING WATER)



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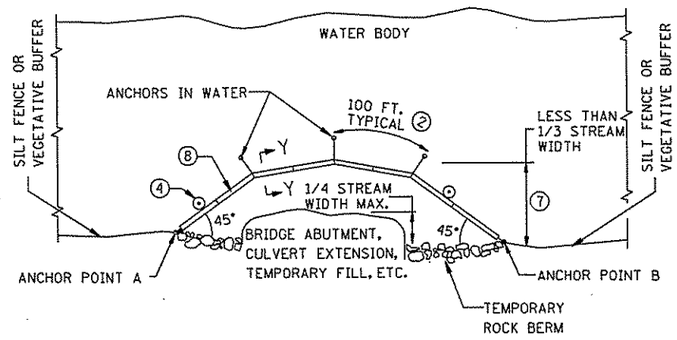
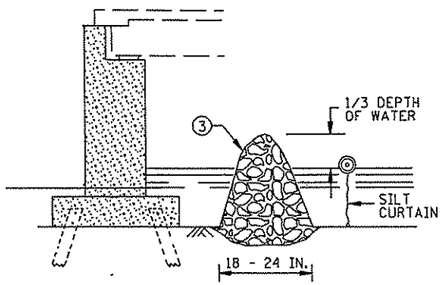
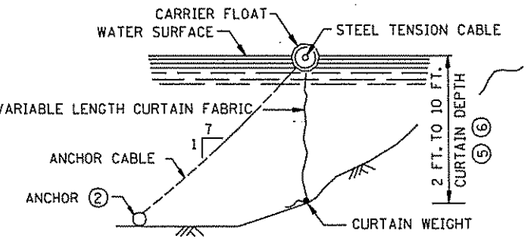


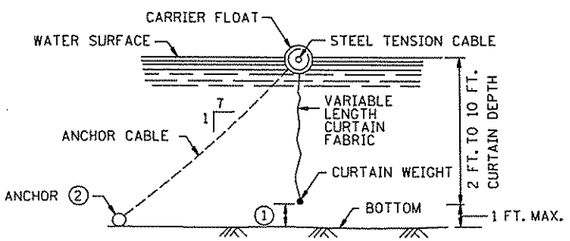
PLAN VIEW (TYPE: WORK AREA)



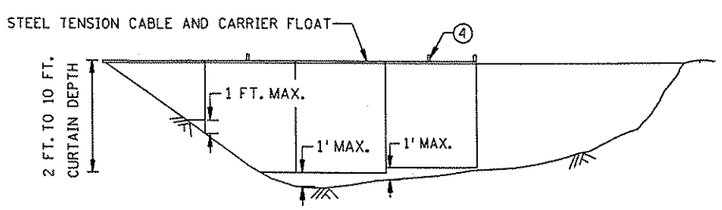
SECTION Z-Z TEMPORARY ROCK BERM
FOR SEDIMENT CONTROL



SECTION Y-Y

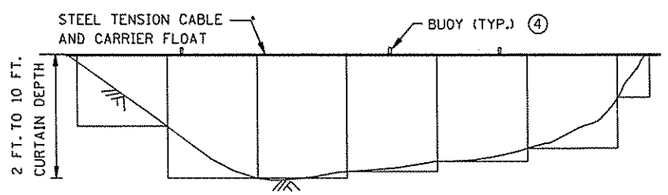


SECTION X-X



FLOTATION SILT CURTAIN - TYPE: MOVING WATER ⑤

USE FOR SMALLER RIVERS
WITH SLOW AND MODERATE VELOCITIES



FLOTATION SILT CURTAIN - TYPE: WORK AREA AND STILL WATER ⑤

FOR CONTAINING OVERFLOWS FROM WEIRS, STANDPIPES, SETTLING PONDS

DESIGN GUIDELINES:
MOVING WATER

WHEN TEMPORARY FILL ENCROACHES MORE THAN 1/4 BUT LESS THAN 1/3 WIDTH OF THE STREAM.
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 11 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC. ①⑥

DESIGN GUIDELINES:
WORK AREA

WHEN TEMPORARY FILL ENCROACHES LESS THAN 1/4 OF THE WIDTH OF STREAM.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.

DESIGN GUIDELINES: ⑥
STILL WATER

MINIMUM WATER DEPTH: 0 FT.
MAXIMUM WATER DEPTH: 10 FT.

NOTES:

SEE SPECS. 2573 & 3887.

① CURTAIN EXTENDS TO 1 FT. MAXIMUM FROM BOTTOM OF WATER BODY.

② FOR ANCHOR AND WEIGHT REQUIREMENTS, SEE SPEC. 2573.

③ IN AREAS WHERE THE PLAN CALLS FOR RIPRAP AT THE BRIDGE, A TEMPORARY ROCK BERM WILL BE USED TO PROVIDE ADDITIONAL PROTECTION. THE TEMPORARY ROCK BERM IS INCIDENTAL FOR WHICH NO DIRECT PAYMENT WILL BE MADE.

④ ON U.S. COAST GUARD OR OTHER MOTORIZED WATERWAYS, BUOYS ARE REQUIRED TO MARK THE ENDS AND SPECIAL AREAS FOR VISIBILITY. PLACE BUOYS AS REQUIRED FOR NAVIGATIONAL PURPOSES.

⑤ WATER DEPTH CAN BE 0 TO 10 FEET, 0 TO 11 FEET FOR TYPE MOVING WATER.

⑥ SILT CURTAIN HEIGHT INCLUDES MAXIMUM WAVE HEIGHT FOR WATER BODY.

⑦ KEEP AS CLOSE TO WORK AREA AS POSSIBLE.

⑧ SILT CURTAIN, ROCK BERM OR SHEET PILE AS REQUIRED TO CONTROL THE INFILTRATION OF SILT.

⑨ IF 6 INCHES OR LESS OF WATER, USE BALE BARRIERS, SEE SHEET 2.

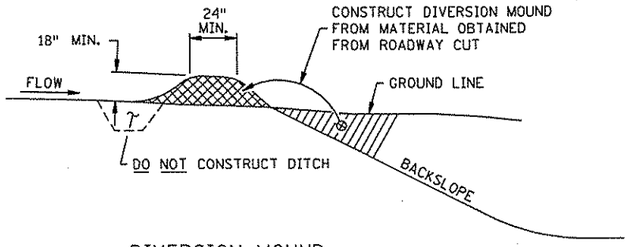
STANDARD SHEET NO. 5-297.405 (1 OF 4)	TITLE: TEMPORARY SEDIMENT CONTROL SILT CURTAIN
STANDARD APPROVED: MARCH 29, 2012	
S.A.P. 199-020-010	SHEET NO. 99 OF 153 SHEETS

PLOTTED/REVISED: 6/12/2012

DISTRICT: MnDOT DISTRICT
USER NAME: WSB & Associates
PATH & FILENAME: k:\0197.3-010\cad\plan\CD020295_te03.dgn

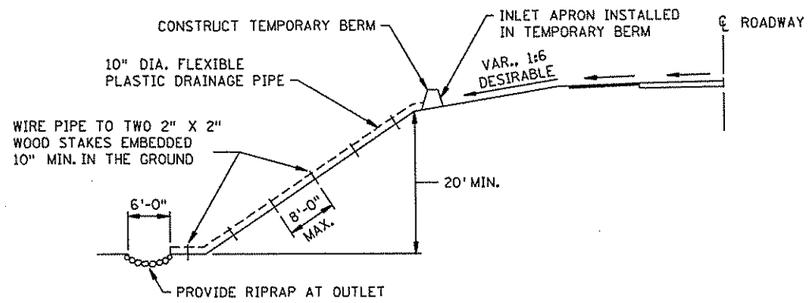
FILE NAME: CD020295_te03.dgn

PLOTTED/REVISED: 6/12/2012



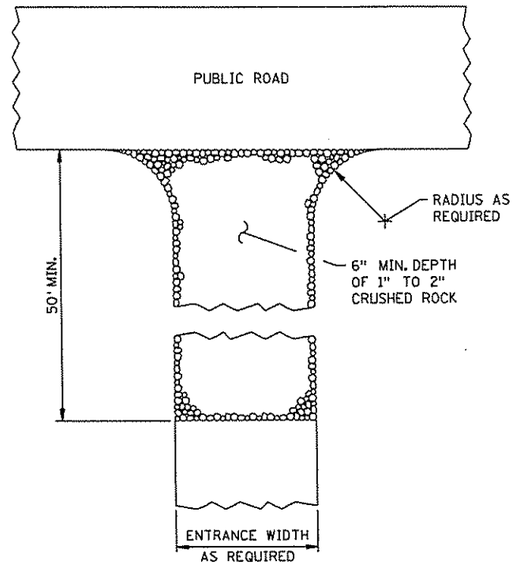
DIVERSION MOUND

DESIGN GUIDELINES:
STORM FREQUENCY: 10 YEAR - 24 HOUR
MAXIMUM DRAINAGE AREA: 5 ACRES
MAXIMUM DIVERSION: GRADE 5%

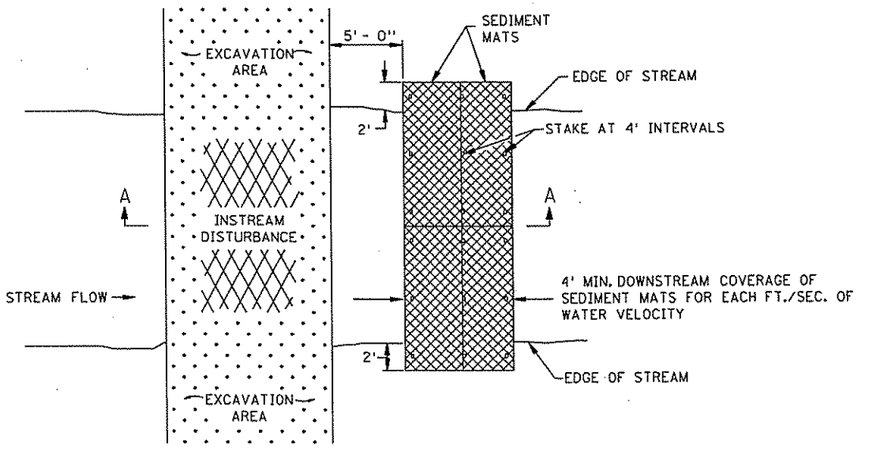


TEMPORARY DOWN DRAIN ON FILL SLOPE

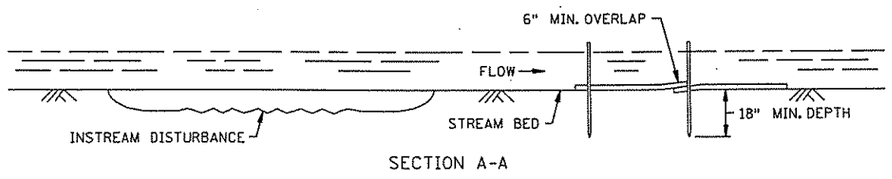
DESIGN GUIDELINES:
STORM FREQUENCY: 2 YEAR - 24 HOUR
MAXIMUM DRAINAGE AREA: 3 ACRES



ROCK CONSTRUCTION ENTRANCE ①



PLAN VIEW

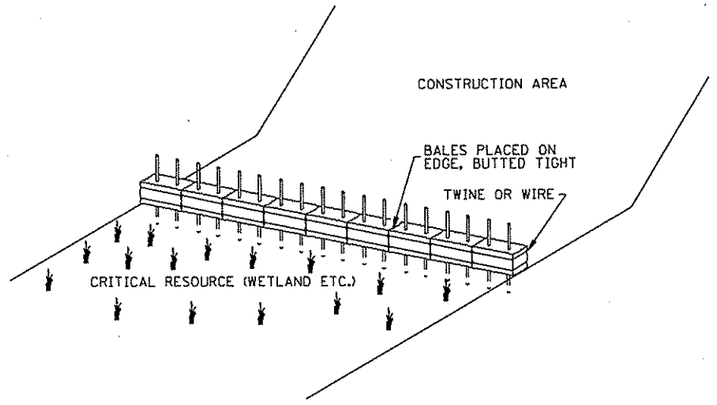


SECTION A-A

SEDIMENT MAT ⑥

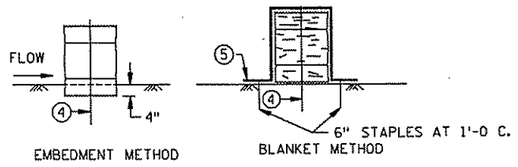
TYPICAL STREAM BED INSTALLATION

DESIGN GUIDELINES:
MAXIMUM FLOW VELOCITY: 5 FT./SEC.
MAXIMUM FLOW DEPTH: 2 FT.



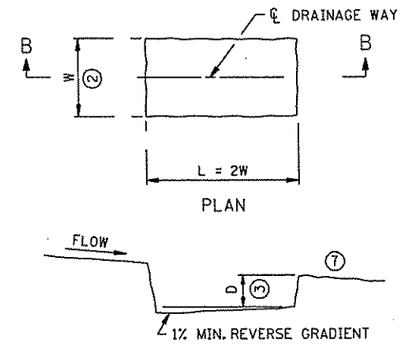
BALE BARRIERS

TO BE USED FOR CRITICAL PERIMETER CONTROL AREAS



BALE BARRIER DETAIL

APPROX. BALE SIZE: 14" X 18" X 36" LONG



PLAN

SECTION B-B

SEDIMENT TRAP DETAIL

NOTES:
SEE SPECS. 2573, 3892, & 3894.

① ROCKS AT ENTRANCE CLEAN WORKSITE MUD OFF OF TRUCK TIRES BEFORE TRUCKS ENTER MAIN ROAD. KEEPING MUD OFF THE ROAD WILL PREVENT AUTO DAMAGE AND KEEP CONSTRUCTION SEDIMENT OUT OF DRAINAGE SYSTEMS AND WETLANDS. GEOTEXTILE MAY BE PLACED UNDER THE ROCK TO KEEP ROCKS SEPARATE FROM SOIL.

② W = 10 FT. MIN., 20 FT. MAX.

③ D = 2 FT.

④ TWO 2 IN. X 2 IN. WOOD STAKES OR REINFORCING BARS IN EACH BALE EMBEDDED 10 INCHES MINIMUM IN THE GROUND.

⑤ PLACE A CATEGORY 3 EROSION CONTROL BLANKET, 6 FT. WIDE MINIMUM, OVER THE BALE INSTEAD OF TRENCHING.

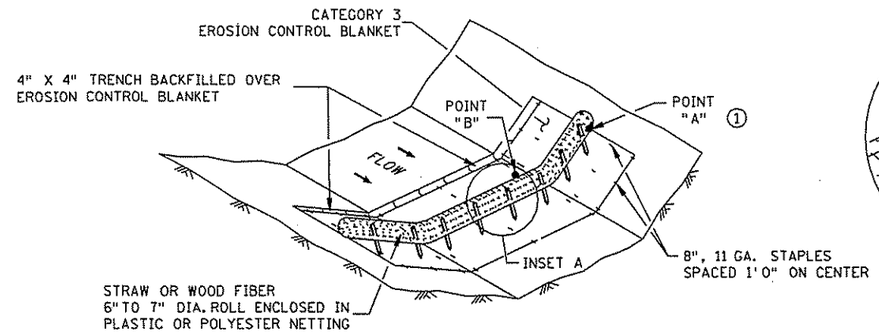
⑥ THIS DETAIL MAY NOT BE ACCEPTABLE FOR WORK ON PUBLIC WATERS, SEE GENERAL PUBLIC WATERS PERMIT (GP) 2004-0001.

⑦ LOCATION OF DOWNSTREAM TEMPORARY SEDIMENT CONTROL DEVICE.

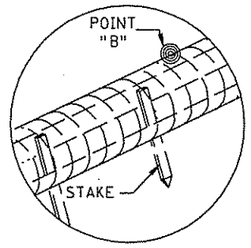
STANDARD SHEET NO. 5-297.405 (2 OF 4)	TITLE: TEMPORARY SEDIMENT CONTROL MISCELLANEOUS DETAILS
STANDARD APPROVED: MARCH 29, 2012	
S.A.P. 199-020-010	SHEET NO. 100 OF 153 SHEETS

DISTRICT #: MnDOT DISTRICT
USER NAME: WSB & Associates
PATH & FILENAME: K:\01973-010\cad\plan\CD020295_te03.dgn
FILE NAME: CD020295_te03.dgn

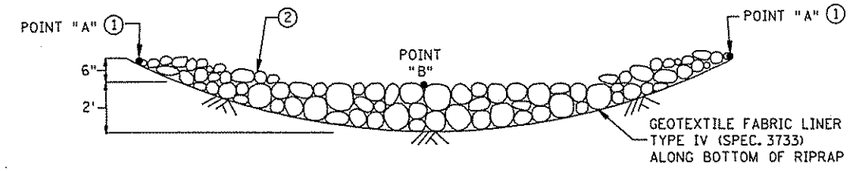
PLOTTED/REVISED: 6/12/2012



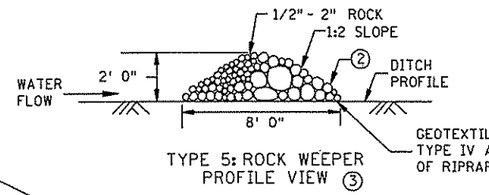
TYPE 3: BIOROLL BLANKET SYSTEM DITCH CHECK



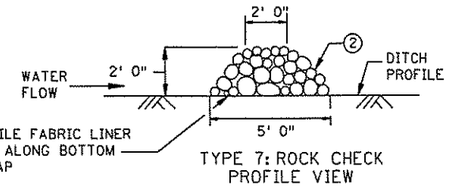
INSET A



CROSS SECTION (ROCK WEEPER AND ROCK CHECK)



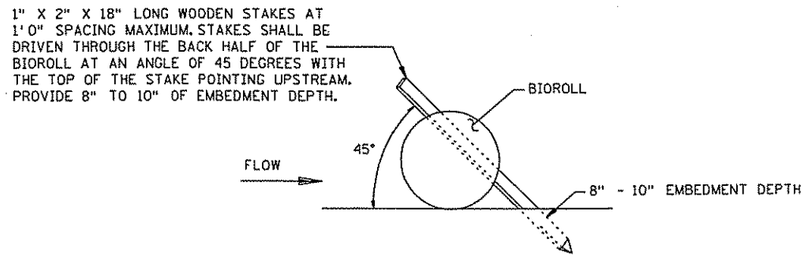
TYPE 5: ROCK WEEPER
PROFILE VIEW (3)



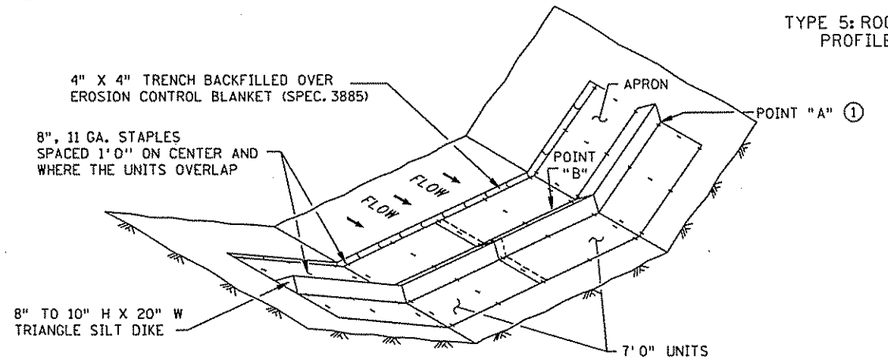
TYPE 7: ROCK CHECK
PROFILE VIEW

TYPE 5: ROCK WEEPER AND
TYPE 7: ROCK CHECK DITCH CHECKS (4)

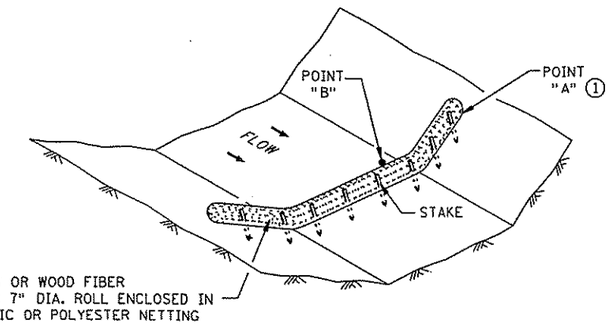
USE ON ROUGH GRADED AREAS



BIOROLL STAKING DETAIL

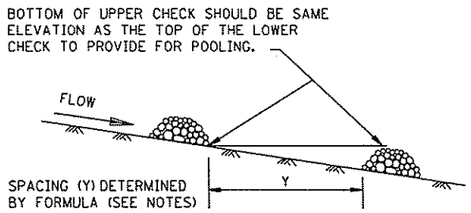


TYPE 6: GEOTEXTILE TRIANGULAR DIKE DITCH CHECK

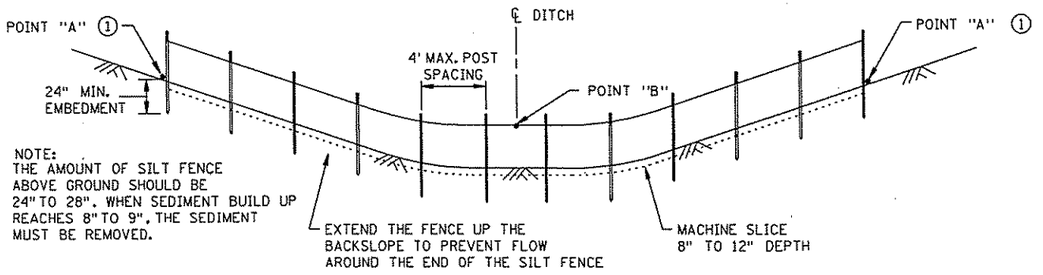


TYPE 2: BIOROLL DITCH CHECK

USE ON ROUGH GRADED AREAS



DITCH CHECK SPACING (4)



TYPE 1: SLICED IN SILT FENCE DITCH CHECK

GENERAL DESIGN GUIDELINES						
DITCH CHECK TYPE	SILT FENCE	BIOROLL	BIOROLL BLANKET	TRIANGULAR DIKE	ROCK WEEPER	ROCK CHECK
STORM FREQUENCY: MAX. FLOW VELOCITY: MAX. DITCH GRADE: MAX. DRAINAGE AREA:	2 YR. - 24 HR. < 1 FT./SECOND 0% - 0.5% 1 ACRE	2 YR. - 24 HR. 1.5 FT./SECOND 1.5% - 3% 2 ACRE	2 YR. - 24 HR. 4.5 FT./SECOND 1.5% - 3% 2 ACRE	2 YR. - 24 HR. 1.5 FT./SECOND 1.5% - 2.0% 4 ACRE	5 YR. - 24 HR. 12 FT./SECOND 3% - 5% 4+ ACRE	5 YR. - 24 HR. 12 FT./SECOND 3% - 5% 4+ ACRE

NOTES:

SEE SPECS. 2573, 3601, 3733, 3885, 3886 & 3889.

APPROXIMATE SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM THE FOLLOWING SPACING FORMULA:

$$\text{APPROXIMATE SPACING OF DITCH CHECKS (FT.)} = Y = \frac{\text{DITCH CHECK HEIGHT (FT)}}{\text{\% CHANNEL SLOPE}} \times 100$$

(1) POINT "A" MUST BE A MINIMUM OF 6 INCHES HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

(2) CLASS I - IV RIPRAP (SPEC. 3601) WITH GEOTEXTILE FABRIC LINER, TYPE IV (SPEC. 3733).

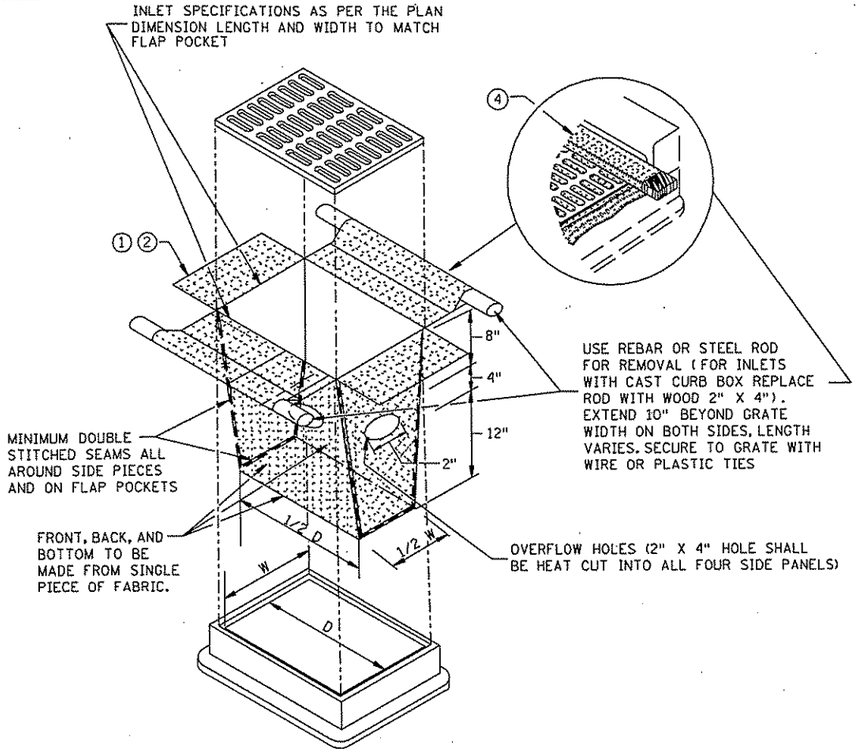
(3) THE ROCK WEEPER FILTERS SEDIMENT OUT OF THE WATER BETTER THAN THE OTHER DITCH CHECKS. THE ROCK WEEPER COULD BE USED AS A PERMANENT WATER FILTERING FEATURE.

(4) PERMANENT ROCK DITCH CHECKS PLACED WITHIN THE CLEAR ZONE WILL NEED TO BE 18" OR LESS IN HEIGHT. A 1:6 APPROACH AND DEPARTURE SLOPE SHALL BE PROVIDED.

STANDARD SHEET NO. 5-297.405 (3 OF 4)	TEMPORARY SEDIMENT CONTROL DITCH CHECK/BARRIER
STANDARD APPROVED: MARCH 29, 2012	
S.A.P. 199-020-010	SHEET NO. 101 OF 153 SHEETS

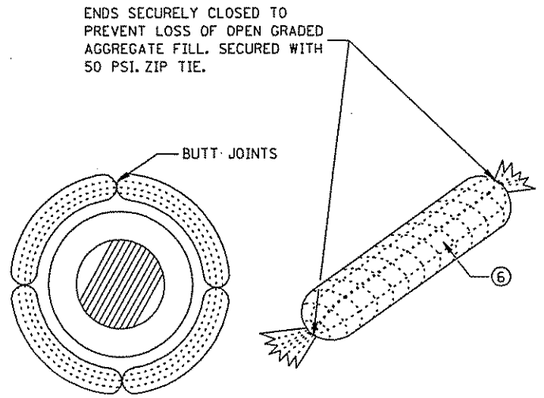
DISTRICT *: MnDOT DISTRICT
USER NAME: WSB & Associates
PATH & FILENAME: k:\0197-010\cad\plan\CD020295_te03.dgn
FILE NAME: CD020295_te03.dgn

PLOTTED/REVISED: 6/12/2012

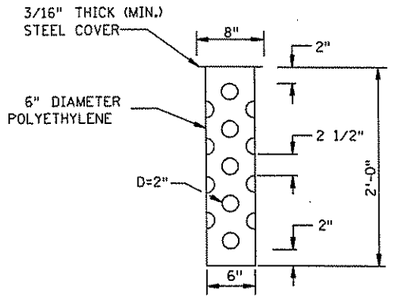


FILTER BAG INSERT ③

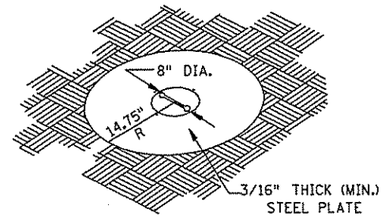
(CAN BE INSTALLED IN ANY INLET TYPE, WITH OR WITHOUT A CURB BOX)



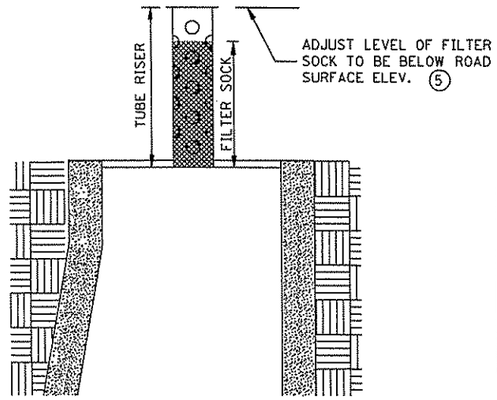
ROCK LOG/COMPOST LOG



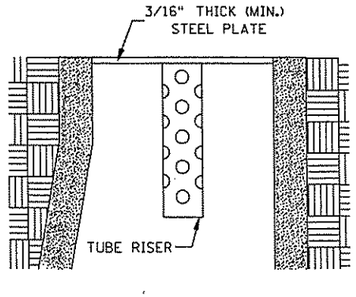
TUBE RISER



PERSPECTIVE VIEW

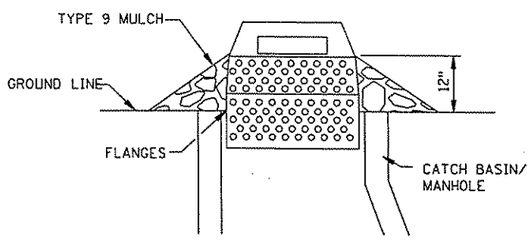


SECTION
(UP POSITION)



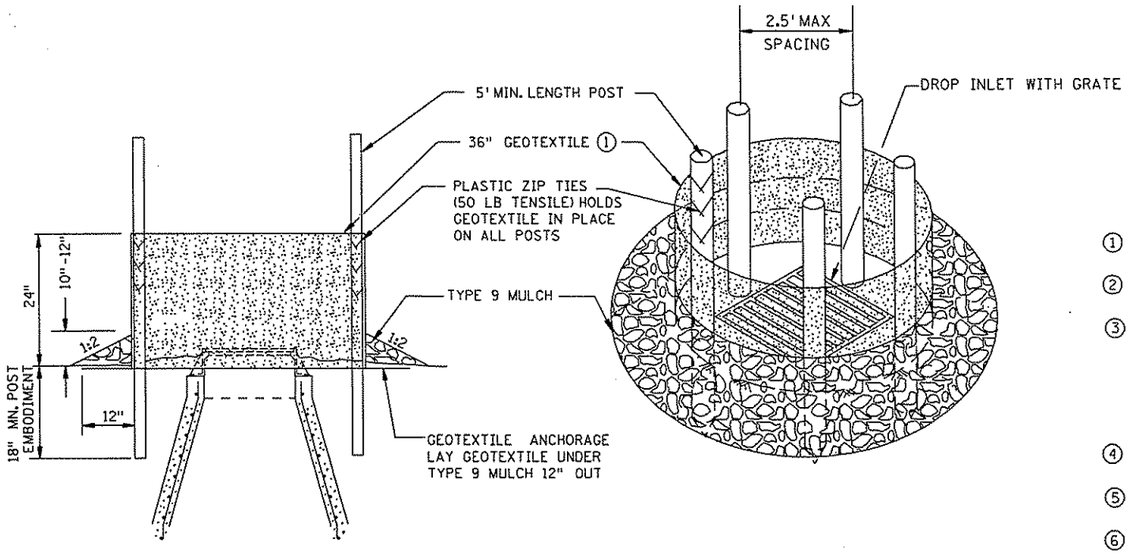
SECTION
(DOWN POSITION)

POP-UP HEAD



SEDIMENT CONTROL INLET HAT

NOTE:
THE SEDIMENT CONTROL BARRIER SHALL BE A METAL OR PLASTIC/POLYETHYLENE RISER SIZED TO FIT INSIDE THE CATCH BASIN/MANHOLE; HAVE PERFORATIONS TO ALLOW FOR WATER INFILTRATION; HAVE AN OVERFLOW OPENING, FLANGES AND A LID/COVER.



SILT FENCE RING AND ROCK FILTER BERM

USE WHERE INLET DRAINS IN AN AREA WITH SLOPES AT 1:3 or LESS

NOTES:
SEE SPECS. 2573, 3137, 3886 & 3891.

MANUFACTURED ALTERNATIVES LISTED ON Mn/DOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED.

① ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886.

② FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

③ INSTALLATION NOTES:
DO NOT INSTALL FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE OF 3 INCHES BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES. WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.

④ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.

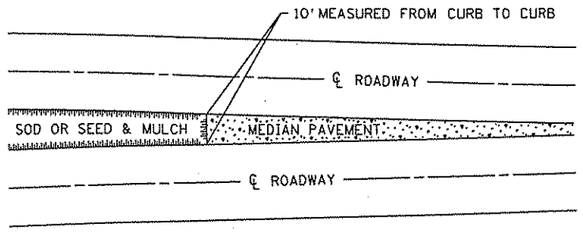
⑤ SOCK HEIGHT MUST NOT BE SO HIGH AS TO SLOW DOWN WATER FILTRATION TO CAUSE FLOODING OF THE ROADWAY.

⑥ GEOTEXTILE SOCK BETWEEN 4-10 FEET LONG AND 4-6 INCH DIAMETER. SEAM TO BE JOINED BY TWO ROWS OF STITCHING WITH A PLASTIC MESH BACKING OR PROVIDE A HEAT BONDED SEAM (OR APPROVED EQUIVALENT), FILL ROCK LOG WITH OPEN GRADED AGGREGATE CONSISTING OF SOUND DURABLE PARTICLES OF COARSE AGGREGATE CONFORMING TO SPEC. 3137 TABLE 3137-1; CA-3 GRADATION.

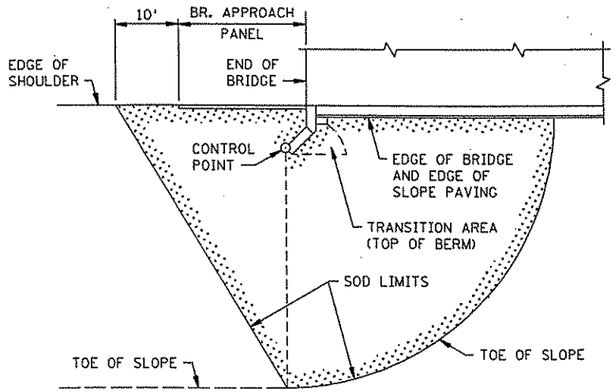
STANDARD SHEET NO. 297.405 (4 OF 4)	TITLE: TEMPORARY SEDIMENT CONTROL STORM DRAIN INLET PROTECTION
STANDARD APPROVED: MARCH 29, 2012	
S.A.P. 199-020-010	SHEET NO. 102 OF 153 SHEETS

DISTRICT •: MnDOT DISTRICT
USER NAME: WSB & Associates
PATH & FILENAME: k:\0197-010\cad\plan\CD020295_te03.dgn
FILE NAME: CD020295_te03.dgn

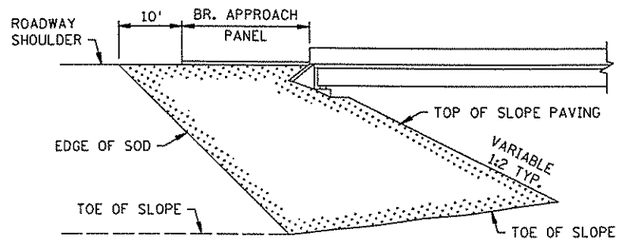
PLOTTED/REVISED:
6/12/2012



SODDING LIMITS AT GORE AREA

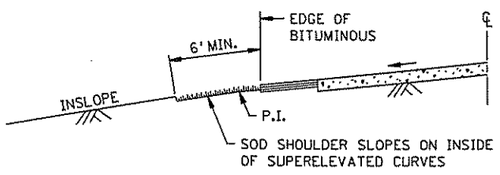


PLAN

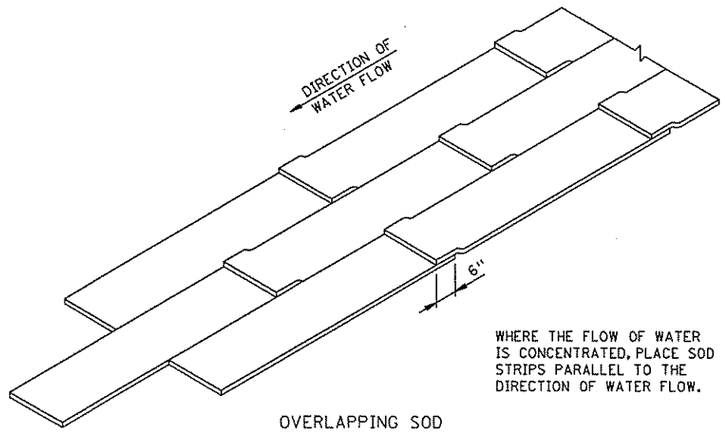


ELEVATION

SODDING LIMITS AT BRIDGE APPROACH FILLS

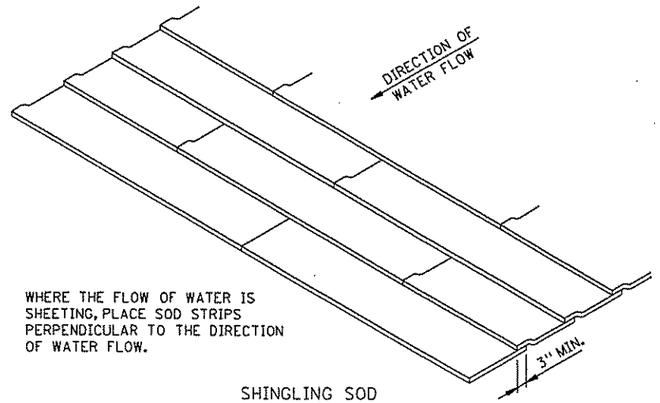


SODDING INSLOPES OF SUPERELEVATED CURVES



WHERE THE FLOW OF WATER IS CONCENTRATED, PLACE SOD STRIPS PARALLEL TO THE DIRECTION OF WATER FLOW.

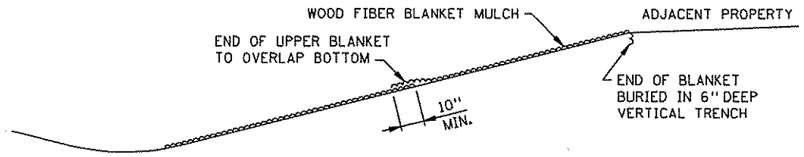
OVERLAPPING SOD



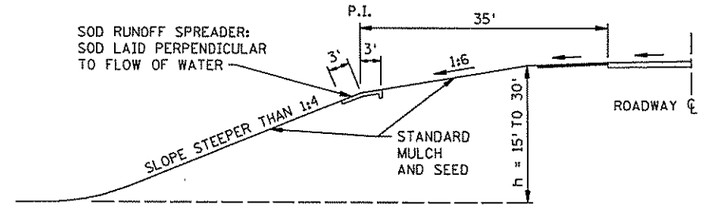
WHERE THE FLOW OF WATER IS SHEETING, PLACE SOD STRIPS PERPENDICULAR TO THE DIRECTION OF WATER FLOW.

SHINGLING SOD

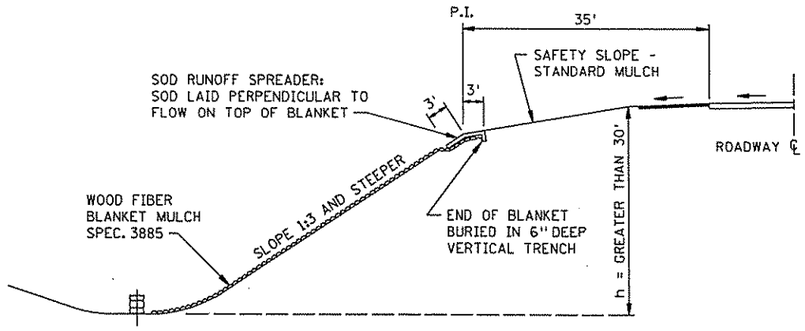
SPECIAL SOD PLACEMENT TECHNIQUES



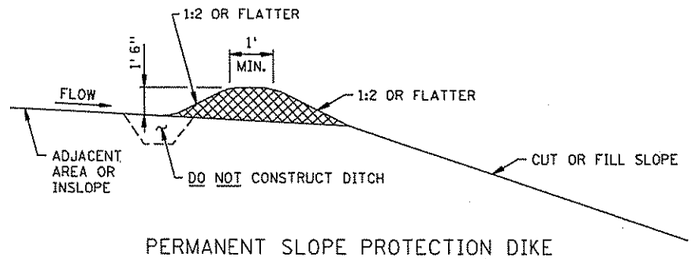
WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE



BROKEN-BACK SAFETY FILL SLOPE



WOOD FIBER BLANKET INSTALLATION ON AN INSLOPE
(WHEN REQUIRED)



PERMANENT SLOPE PROTECTION DIKE

STANDARD SHEET NO. 5-297.406	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS AND AT GORE AREAS & BRIDGE APPROACH FILLS
STANDARD APPROVED: JANUARY 31, 1985	
REVISION DATE 10-26-2000	S.A.P. 199-020-010 SHEET NO. 103 OF 153 SHEETS

DISTRICT •: MnDOT DISTRICT
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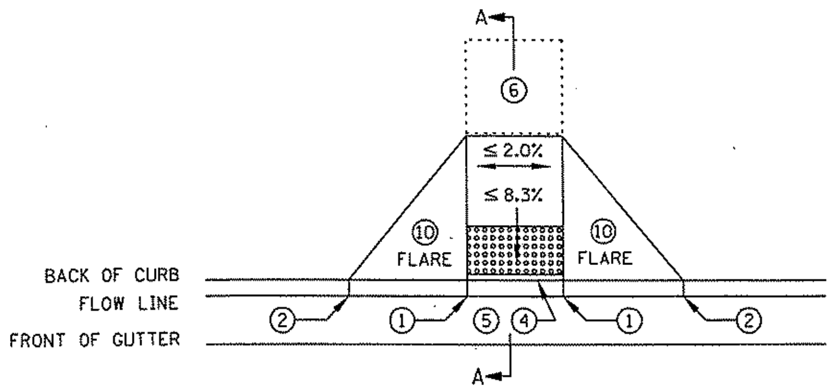
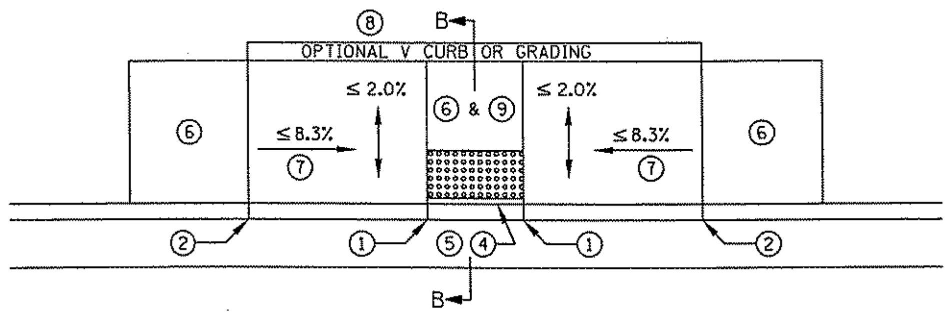
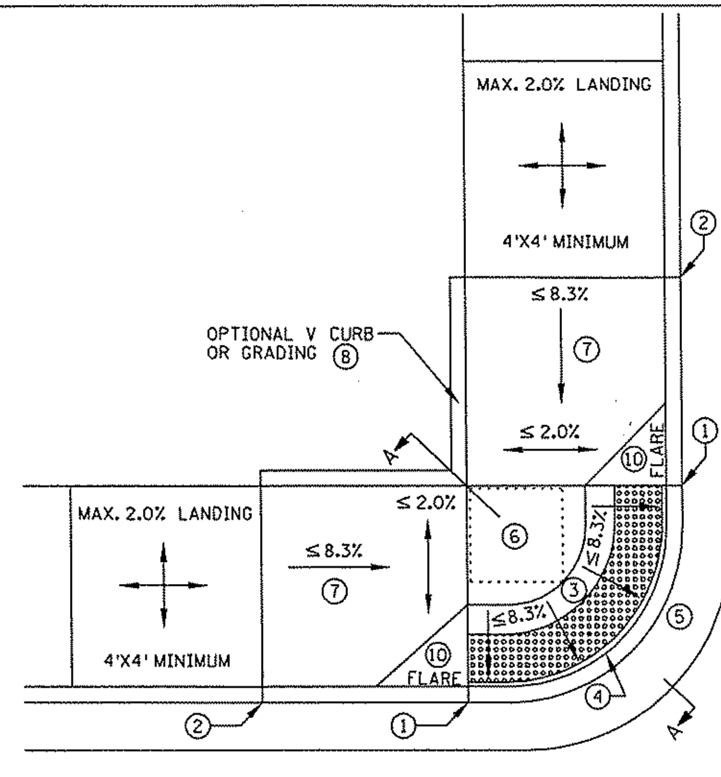


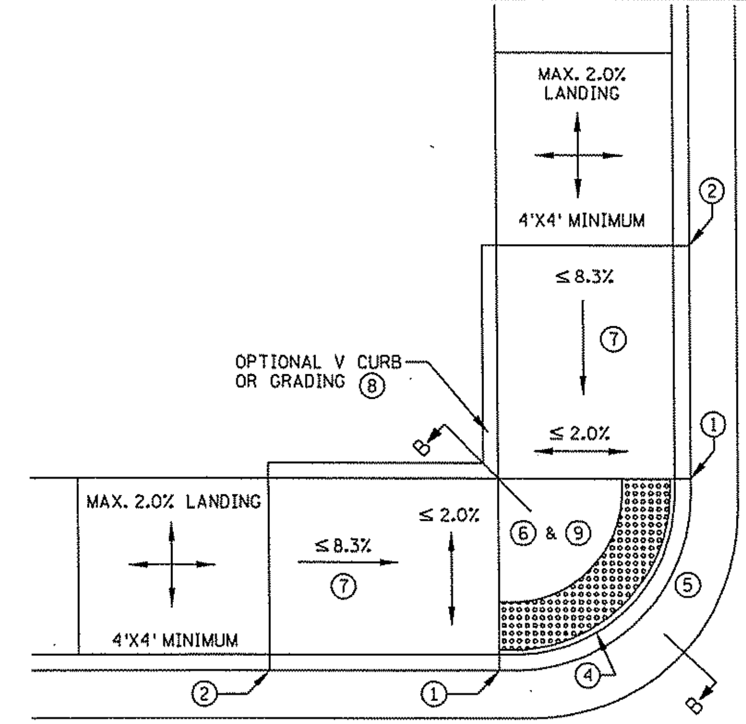
PERPENDICULAR



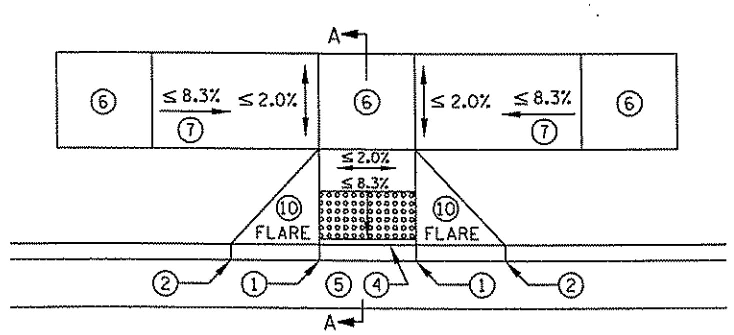
PARALLEL



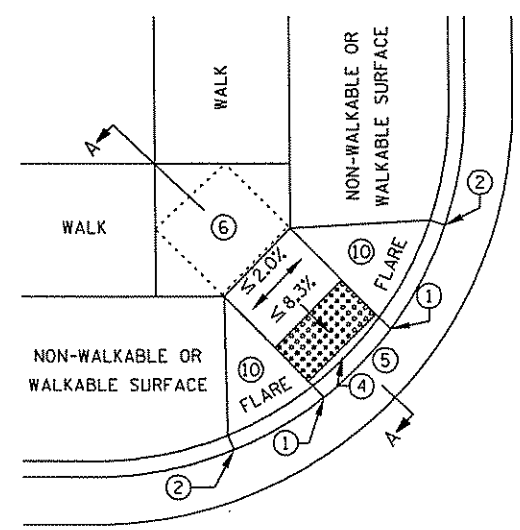
FAN



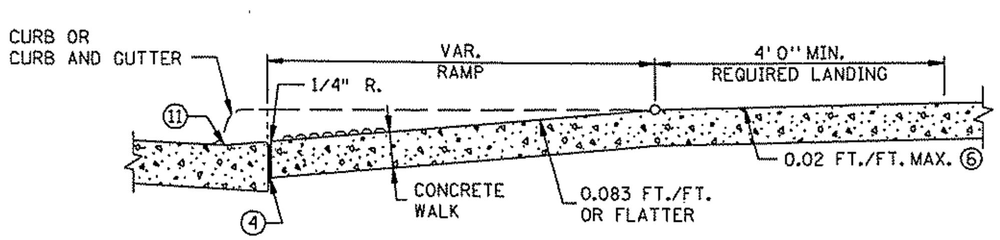
DEPRESSED CORNER



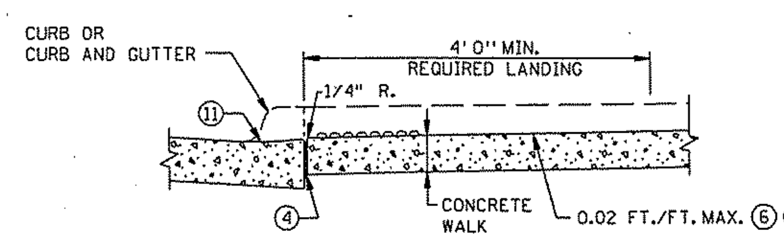
TIERED PERPENDICULAR



DIAGONAL ⑫



SECTION A-A
PERPENDICULAR/TIERED/DIAGONAL/FAN



SECTION B-B
PARALLEL/DEPRESSED CORNER

NOTES:

SEE STANDARD PLATE 7038 AND SHEET 4 OF 5 FOR DETAILS ON DETECTABLE WARNING.

SLOPES ARE DEFINED AS ABSOLUTE ELEVATION DIFFERENCE PER LENGTH OF RUN. (AS OPPOSED TO A RELATIVE SLOPE WITH RESPECT TO A CURB LINE OR CURB HEIGHT.)

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE CHANGES DIRECTION, AND AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5%.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS 5% OR GREATER.

CONTRACTION JOINTS SHALL BE CONSTRUCTED AT ALL GRADE BREAKS.

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

USE 6" CONCRETE FOR ALL INITIAL RAMP AND LANDING AREAS.

CONTRACTOR SHALL EMPLOY APPROPRIATE METHODS FOR INTERMEDIATE GRADE CONTROL TO ENSURE ALL GRADE BREAKS ARE CONSTRUCTED PROPERLY.

ALL GRADE BREAKS SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL/PEDESTRIAN ACCESS ROUTE.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. SHARED USE PATHS SHALL HAVE DETECTABLE WARNING ACROSS THE ENTIRE WIDTH OF PATH WHEN THE PATH CROSSES A ROAD.

① 0" CURB HEIGHT.

② FULL CURB HEIGHT.

③ LESS THAN 5% PREFERRED. 5-8.3% SHOULD ONLY BE USED AFTER ALL OTHER SLOPES HAVE BEEN CONSIDERED AND DEEMED IMPRACTICAL.

④ 1/2" PREFORMED JOINT FILLER MATERIAL AASHTO M 213. JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT SIDEWALK. JOINT SHALL BE FREE OF DEBRIS. RECTANGULAR DETECTABLE WARNINGS SHALL BE SET BACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SET BACK 3"-6" FROM THE BACK OF CURB.

⑤ SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING CURB AND GUTTER AT CURB OPENINGS. SEE SHEET NO. 3 OF 5.

⑥ 4' BY 4' MIN. LANDING WITH MAX. 2% SLOPE IN ALL DIRECTIONS.

⑦ IF RUNNING SLOPE IS LESS THAN 5.0% NO SECONDARY LANDING IS REQUIRED.

⑧ V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. SEE SHEET 5 OF 5.

⑨ DETECTABLE WARNINGS MAY BE PART OF 4' X 4' LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.

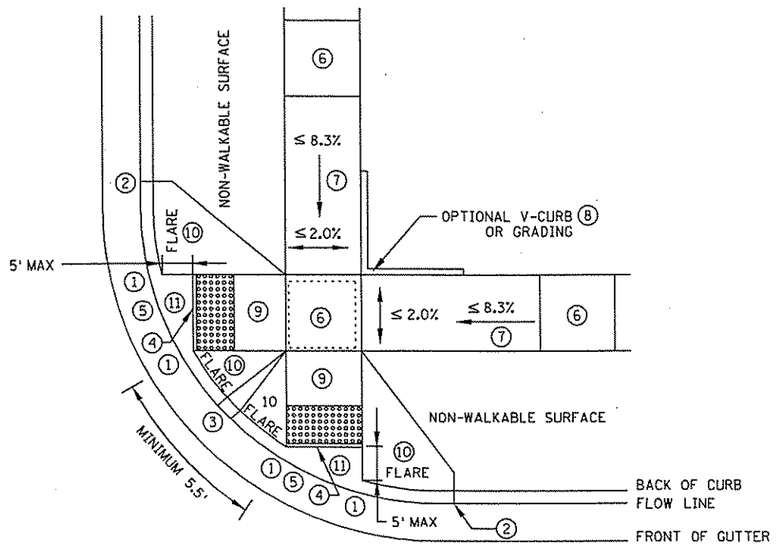
⑩ SEE SHEET 4 OF 5, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.

⑪ SEE SHEET 3 OF 5 FOR FURTHER DETAIL.

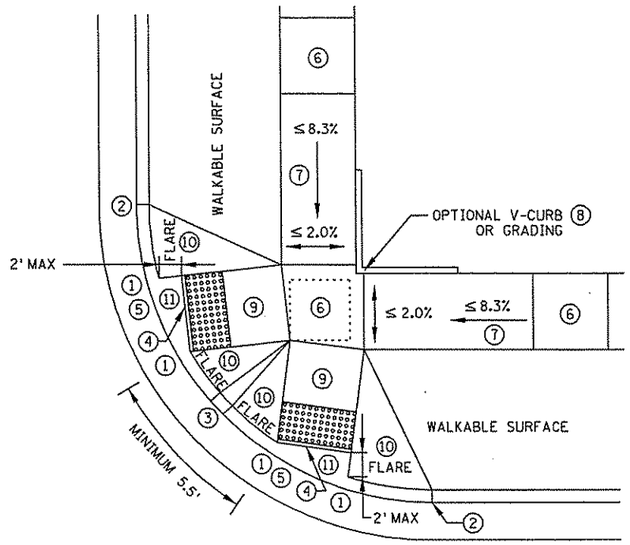
⑫ DIAGONAL RAMPS SHOULD ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN CONSIDERED AND DEEMED IMPRACTICAL.

STANDARD PLAN SHEET NO. 5-297.250 (1 OF 5)	PEDESTRIAN CURB RAMP DETAILS
STANDARD APPROVED: MAY 10, 2012	

Date Printed: 6/12/2012
WSB Filename: k:\01973-010\cad\plan\C0020295_fe04.dgn

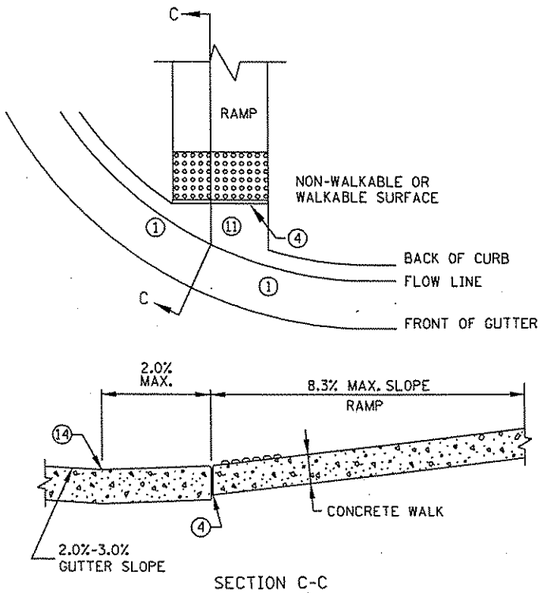


ADJACENT TO NON-WALKABLE SURFACE



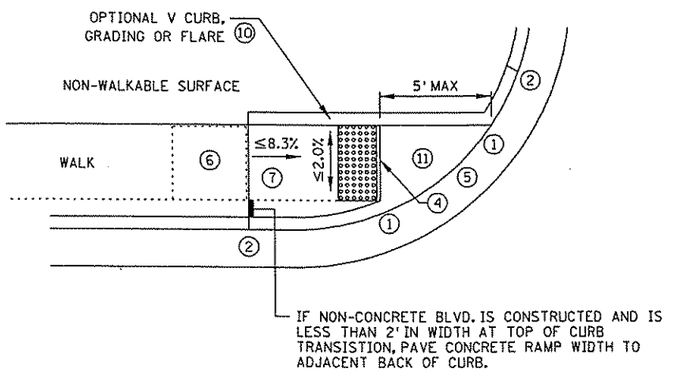
ADJACENT TO WALKABLE SURFACE

COMBINED DIRECTIONAL

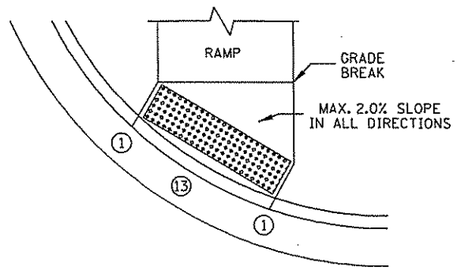


SECTION C-C

CURB FOR DIRECTIONAL RAMPS ⑫



ONE-WAY DIRECTIONAL



NOTES:

SEE STANDARD PLATE 7038 AND SHEET 4 OF 5 FOR DETAILS ON DETECTABLE WARNING.

SLOPES ARE DEFINED AS ABSOLUTE ELEVATION DIFFERENCE PER LENGTH OF RUN. (AS OPPOSED TO A RELATIVE SLOPE WITH RESPECT TO A CURB LINE OR CURB HEIGHT.)

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE CHANGES DIRECTION, AND AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5%.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS 5% OR GREATER.

CONTRACTION JOINTS SHALL BE CONSTRUCTED AT ALL GRADE BREAKS.

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

USE 6" CONCRETE WALK FOR ALL INITIAL RAMP AND LANDING AREAS.

CONTRACTOR SHALL EMPLOY APPROPRIATE METHODS FOR INTERMEDIATE GRADE CONTROL TO ENSURE ALL GRADE BREAKS ARE CONSTRUCTED PROPERLY.

ALL GRADE BREAKS SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL/PEDESTRIAN ACCESS ROUTE.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. SHARED USE PATHS SHALL HAVE DETECTABLE WARNING ACROSS THE ENTIRE WIDTH OF PATH WHEN THE PATH CROSSES A ROAD.

① 0" CURB HEIGHT.
② FULL CURB HEIGHT.
③ 3" MINIMUM CURB HEIGHT.
④ 1/2" PREFORMED JOINT FILLER MATERIAL AASHTO M 213. JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT SIDEWALK. JOINT SHALL BE FREE OF DEBRIS. RECTANGULAR DETECTABLE WARNINGS SHALL BE SET BACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SET BACK 3"-6" FROM THE BACK OF CURB.
⑤ SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING CURB AND GUTTER AT CURB OPENINGS. SEE SHEET NO. 3 OF 5.
⑥ 4' BY 4' MIN. LANDING WITH MAX. 2% SLOPE IN ALL DIRECTIONS.
⑦ IF RAMP SLOPE IS LESS THAN 5% NO SECONDARY LANDING IS REQUIRED.
⑧ V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.
⑨ RUNNING SLOPE LESS THAN OR EQUAL TO 8.3% & CROSS SLOPE LESS THAN OR EQUAL TO 2%.
⑩ SEE SHEET 4 OF 5, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.
⑪ MAX. 2% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.
⑫ TO BE USED FOR ALL DIRECTIONAL RAMPS.
⑬ DOMES PLACED AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
⑭ ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE MAY NOT BE GREATER THAN 1/4 INCH.

STANDARD PLAN SHEET NO. 5-297.250 (2 OF 5)	PEDESTRIAN CURB RAMP DETAILS
STANDARD APPROVED: MAY 10, 2012	
S.A.P. 199-020-010	SHEET NO. 105 OF 153 SHEETS

Date Printed: 6/12/2012
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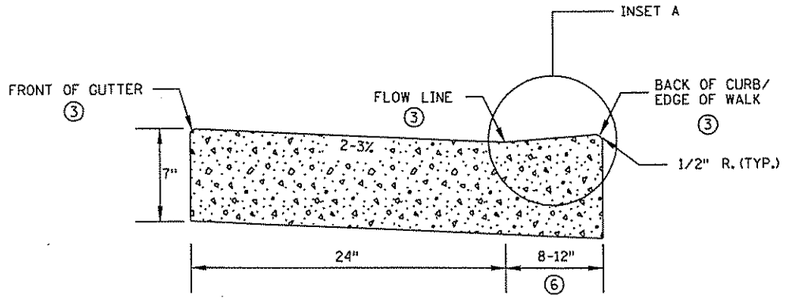
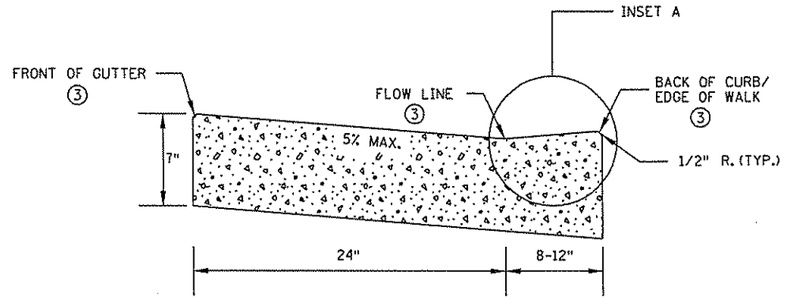
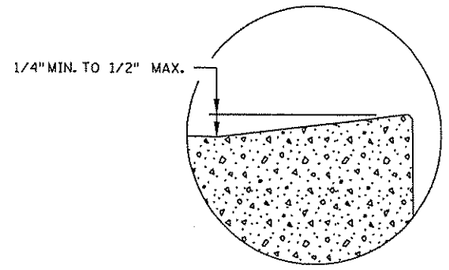


NON PERPENDICULAR ①

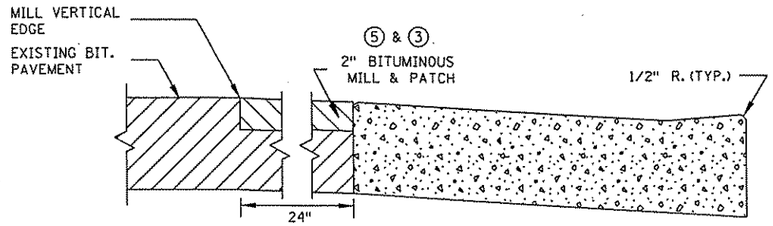


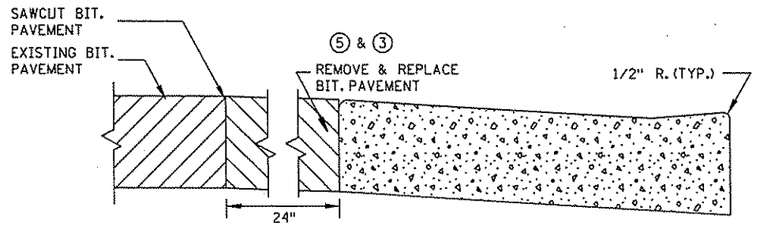
PERPENDICULAR ②

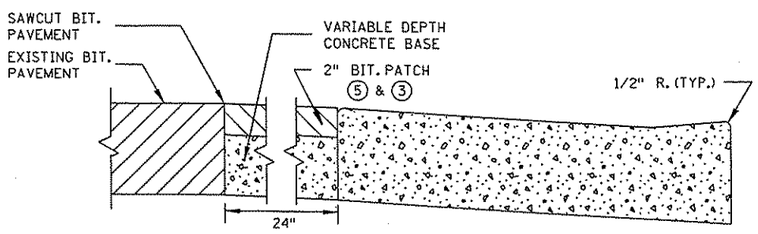


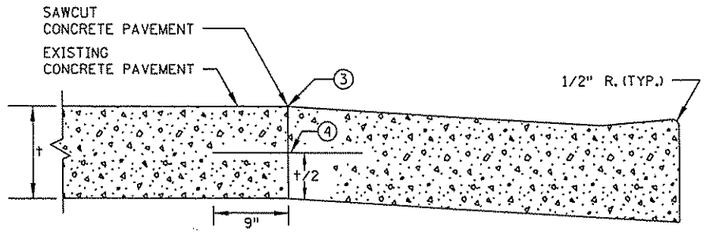
INSET A

PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL









PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

FOR USE ON CURB RAMP RETROFITS

NOTES:

ADEQUATE DRAINAGE SHALL BE MAINTAINED THROUGHOUT THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% ABSOLUTE MAXIMUM.

NO PONDING SHALL BE PRESENT IN THE PAR.

ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE MAY NOT BE GREATER THAN 1/4 INCH.

① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS, DEPRESSED CORNERS, & ONE WAY AND COMBINED DIRECTIONALS.

② FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.

③ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".

④ DRILL AND GROUT NO. 13 EPOXY-COATED 18" LONG BARS AT 2' CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT.

⑤ ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.

⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS.

STANDARD PLAN SHEET NO. 5-297.250 (3 OF 5)	PEDESTRIAN CURB RAMP DETAILS
STANDARD APPROVED: MAY 10, 2012	
S.A.P. 199-020-010	SHEET NO. 106 OF 153 SHEETS

Date Printed: 6/12/2012
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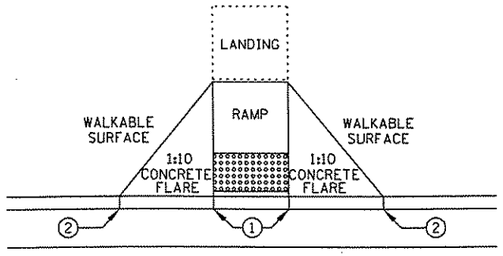
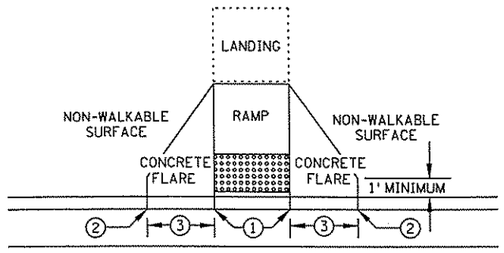
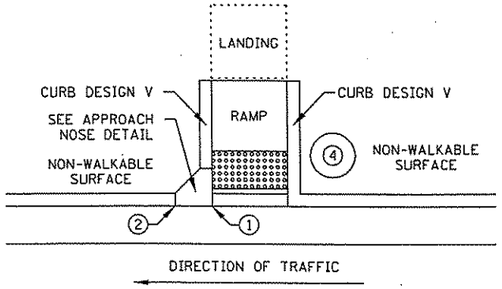


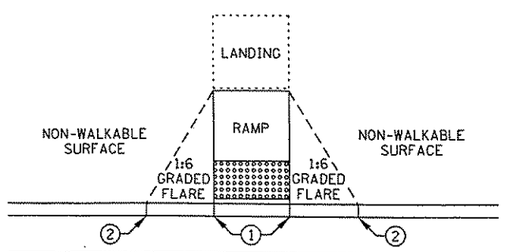
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

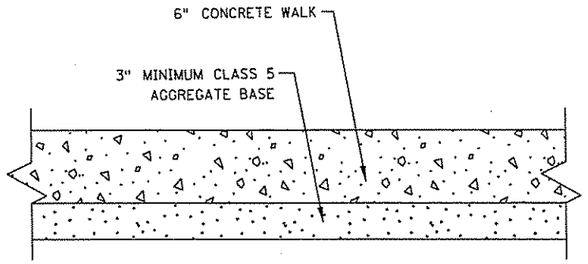


RETURNED CURB

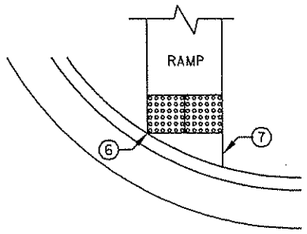


GRADED FLARES

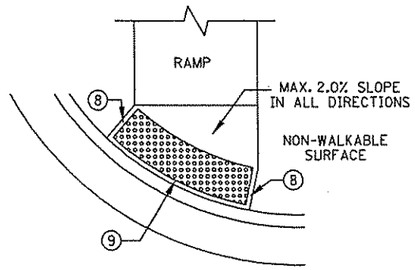
TYPICAL SIDE TREATMENT OPTIONS ⑤



TYPICAL SIDEWALK SECTION
WITHIN INTERSECTION CORNER

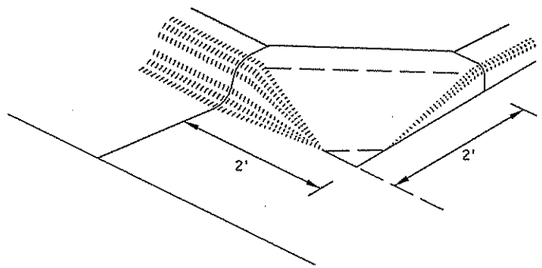


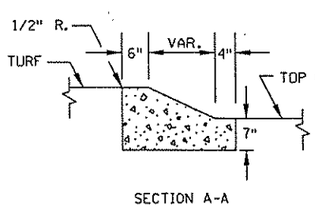
DETECTABLE WARNING
SETBACK CRITERIA



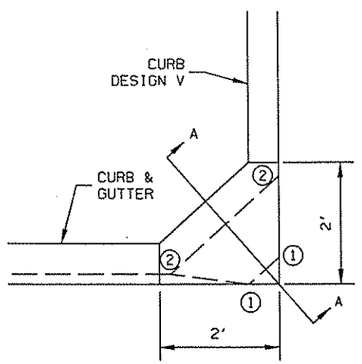
RADIAL DETECTABLE
WARNING AT RADIUS

DETECTABLE WARNING PLACEMENT





SECTION A-A



APPROACH NOSE DETAIL
FOR DOWNSTREAM SIDE OF TRAFFIC

NOTES:

SEE STANDARD PLATE 7038 AND THIS SHEET FOR DETAILS ON DETECTABLE WARNING.

USE 6" CONCRETE WALK UP TO EXISTING SIDEWALK GRADES FOR ALL RAMP AND LANDING AREAS.

WHETHER A SURFACE IS WALKABLE OR NOT SHALL BE DETERMINED BY THE ENGINEER.

FLARE LENGTHS SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. SHARED USE PATHS SHALL HAVE DETECTABLE WARNING ACROSS THE ENTIRE WIDTH OF PATH WHEN THE PATH CROSSES A ROAD.

① 0" CURB HEIGHT.
② FULL CURB HEIGHT.
③ 2' - 3' CONCRETE FLARE.
④ IMMOVABLE OBJECT OR OBSTRUCTION.
⑤ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED ON ALL RAMPS AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
⑥ DETECTABLE WARNING SHALL HAVE ONE CORNER 3" FROM THE BACK OF CURB.
⑦ SHALL BE 2' MAXIMUM OFFSET WHEN ADJACENT TO WALKABLE SURFACE AND 5' MAXIMUM OFFSET WHEN ADJACENT TO NON-WALKABLE SURFACE.
⑧ WHEN NO FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
⑨ DETECTABLE WARNING TO BE PLACED AT A UNIFORM OFFSET DISTANCE FROM 3" TO 6" FROM THE BACK OF CURB. IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNING SHALL BE PLACED 1' FROM THE EDGE OF ROADWAY TO PROVIDE CONCRETE BORDER.

STANDARD PLAN SHEET NO. 5-297.250 (4 OF 5)	PEDESTRIAN CURB RAMP DETAILS
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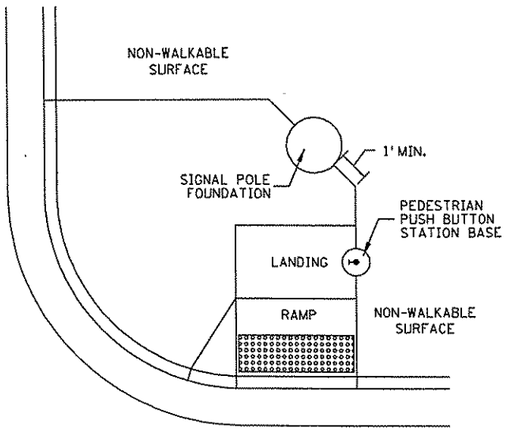
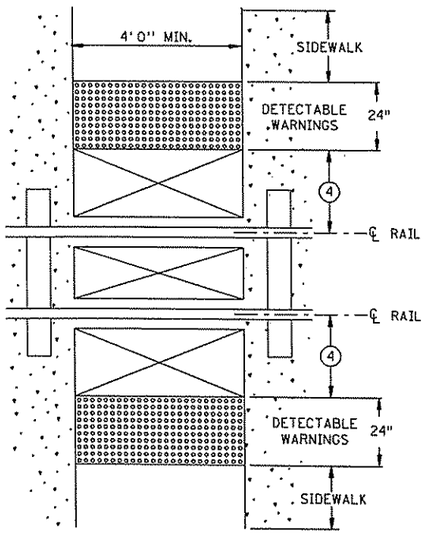
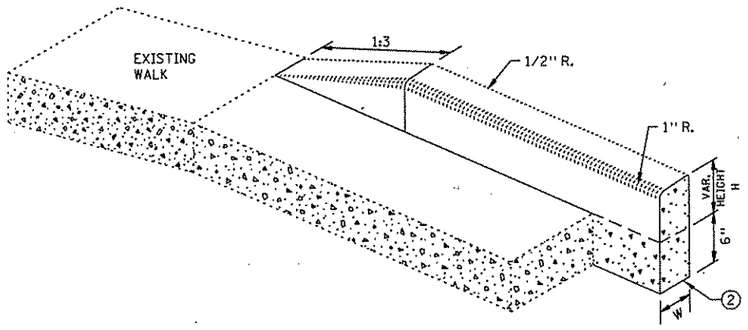
Date Printed: 6/12/2012
WSB Filename: k\10973-010\cad\plan\CD020295_re04.dgn



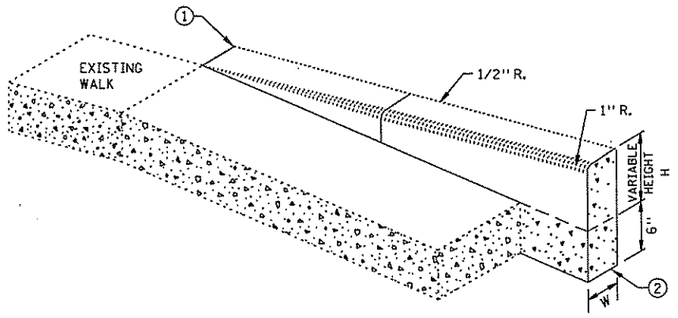
CONCRETE WALK EDGES ADJACENT TO CONCRETE STRUCTURES



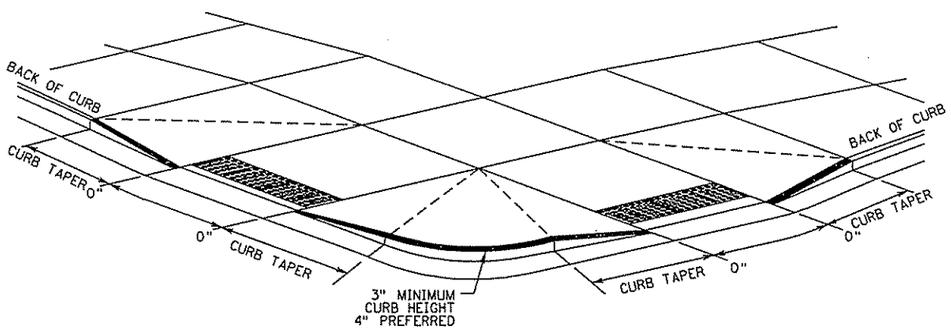
RAILROAD CROSSING PLAN VIEW



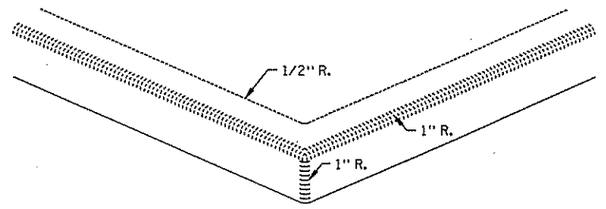
V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS

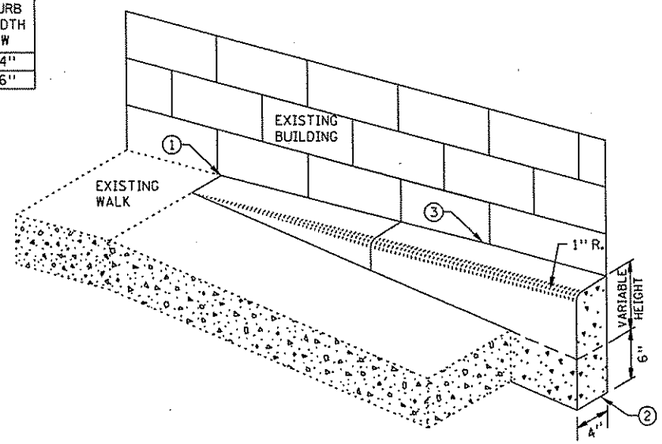


DETECTABLE EDGE AT QUADRANT ⑤



V CURB INTERSECTION

CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



V CURB ADJACENT TO BUILDING

NOTES:

ALL V-CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.

V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.

(1) END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.

(2) ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.

(3) EDGE BETWEEN NEW V CURB AND INPLACE STRUCTURE SHALL BE SEALED AND BOND BREAKER SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED V-CURB.

(4) EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 6'MINIMUM TO 15' MAXIMUM FROM THE CENTERLINE OF THE NEAREST RAIL. WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL.

(5) ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES TRUNCATED DOMES WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TRANSITIONS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS IMMEDIATELY AT THE EDGE OF THE TRUNCATED DOMES AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TRANSITION AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILTY GUIDELINES.

STANDARD PLAN SHEET NO. 5-297.250 (5 OF 5)	PEDESTRIAN CURB RAMP DETAILS
STANDARD APPROVED: MAY 10, 2012	
S.A.P. 199-020-010	SHEET NO. 108 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: k:\10913-010\cad\plan\CD020295_te04.dgn

REMOVE SIGN TYPE SPECIAL | N

SP-1	1	Sunwood Dr
		Armstrong Blvd NW
SP-2	1	146th Ave NW
		Armstrong Blvd NW
SP-3	1	147th Ave NW
		Armstrong Blvd NW
TOTAL	3	

DELINEATORS & MARKERS | P

TYPE	QUANTITY	LOCATION	NOTES
X4-2 HAZARD MARKER	4	MOUNT BELOW C-9	(1)
X4-4 CLEARANCE MARKER	3	2 AT STA 35+50, 1 AT STA 51+50	(1)

GENERAL NOTES:
1. FOR DELINEATOR AND MARKER LOCATIONS SEE SHEET 110.

NOTES:
(1) SEE STANDARD SIGNS MANUAL FOR HAZARD MARKER (X4-2). (BLACK BACKGROUND)

SIGN PANELS TYPE C | O

SIGN NO.	QUANTITY	POSTS NO. & TYPE	POSTS KNEE BRACES QUANT.	POSTS LENGTH (FT.)	MOUNTING HEIGHT (FT.) (1)	PANEL SIZE (IN.)	PANEL AREA (SQ. FT.)	TOTAL PANEL AREA (SQ. FT.)	SIGN CODE #	PANEL LEGEND	NOTE
C-1	1	2U		13.0	7	36 X 30	7.5	7.5	R3-30AD	LT, RT/THRU	
C-2	2	1U		13.5	7	30 X 30	6.3	12.5	W1-4L	CURVE LT	
						18 X 18	2.3	4.5	W13-1	40 MPH	
C-3	1	1U		13.5	7	30 X 36	7.5	7.5	D4-2R	PARK & RIDE	
C-4	1	2U		13.5	7	36" DIA	9.0	9.0	W10-1	RAILROAD ADVANCE WARNING	
C-5	1	2U		13.0	7	66 X 30	13.8	13.8	R3-30ACCA	LT, THRU, THRU, RT	
C-6	2	1U		13.0	7	30 X 30	6.3	12.6	R3-7R	RIGHT TURN LANE	
C-7	1	2U		12.5	7	42 X 24	7.0	7.0	I-X1	ADOPT A HIGHWAY	
C-8	2	1U		13.0	7	30 X 30	6.3	12.6	R5-1	DO NOT ENTER	(2)
C-9	4	1U		13.5	7	30 X 36	7.5	30.0	R4-7	KEEP RIGHT	(2)
C-10	1	2U		13.0	7	54 X 30	11.3	11.3	R3-30ACA	LT, THRU, RT	
C-11	1	1U		13.0	7	24 X 30	5.0	5.0	R2-1	SPEED LIMIT 55	
C-12	1	1U		13.0	7	30 X 30	6.3	6.3	R3-7L	LEFT TURN LANE	
C-13	1	2U		13.0	7	36 X 30	7.5	7.5	R3-30AB	DOUBLE LT TURN	
C-14	1	2U		14.0	7	36 X 36	9.0	9.0	W9-1R	RIGHT LANE ENDS	
						30 X 24	5.0	5.0	W20-100p	1000 FEET	
C-15	1	2U		14.5	7	36 X 48	12.0	12.0	R8-8	DO NOT STOP ON TRACKS	
C-16	1	1U		13.0	7	24 X 30	5.0	5.0	R8-8	DO NOT STOP ON TRACKS	
TOTAL								178.0			

NOTES:
(1) MOUNTING HEIGHT MINIMUM. SEE SHEET 116 FOR TYPICAL MOUNTING.
(2) MOUNT IN CONCRETE. SEE SHEET 118 .
(3) MOUNTED BACK TO BACK.

GENERAL NOTES:
1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
2. SEE SHEET 116 FOR STRUCTURAL DETAILS.

PERMANENT PAVEMENT MARKING | Q

STATION TO STATION			EPOXY 4" SOLID WHITE	EPOXY 4" BROKEN WHITE	EPOXY 8" DOTTED WHITE	EPOXY 4" SOLID YELLOW	EPOXY 4" DOUBLE SOLID YELLOW	PREFORMED THERMOPLASTIC 24" STOP LINE WHITE	PREFORMED THERMOPLASTIC 24" SOLID YELLOW	PAVEMENT MESSAGES (PREFORMED THERMOPLASTIC) LEFT TURN ARROW	RIGHT TURN ARROW	LEFT / THRU ARROW	RIGHT / THRU ARROW	RR XING	CROSSWALK MARKING
			LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	EACH	EACH	SQ FT
S.A.P. 199-020-010															
CSAH 83 (ARMSTRONG BLVD)															
27+82.04	TO	38+00	4274	149	100	498	2090	276	321	8	4	1	3	2	612
38+00	TO	51+00	3791	399		1785				5	3				
51+00	TO	53+79.96	61	15			231		37						
146TH AVE NW															
147TH AVE NW			1166				819	45	184	1	1				
PROJECT TOTALS			9292	563	100	2283	3140	321	542	14	8	1	3	2	612

GENERAL NOTES:
1. ALL BROKEN AND DOTTED LINES ARE PAID FOR BY THE ACTUAL LENGTH OF LINE AND WILL NOT INCLUDE THE GAP BETWEEN THE LINES. 3' LINE WITH 12' GAP FOR DOTTED LINES. 10' LINE WITH 40' GAP FOR BROKEN LINES.

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NO.	DATE	BY	CHK	REVISIONS

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Plan By: CWK
Checked By: AJP
Approved By: NEH

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CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE
DATE: 04/03/12 LIC. NO: 44620

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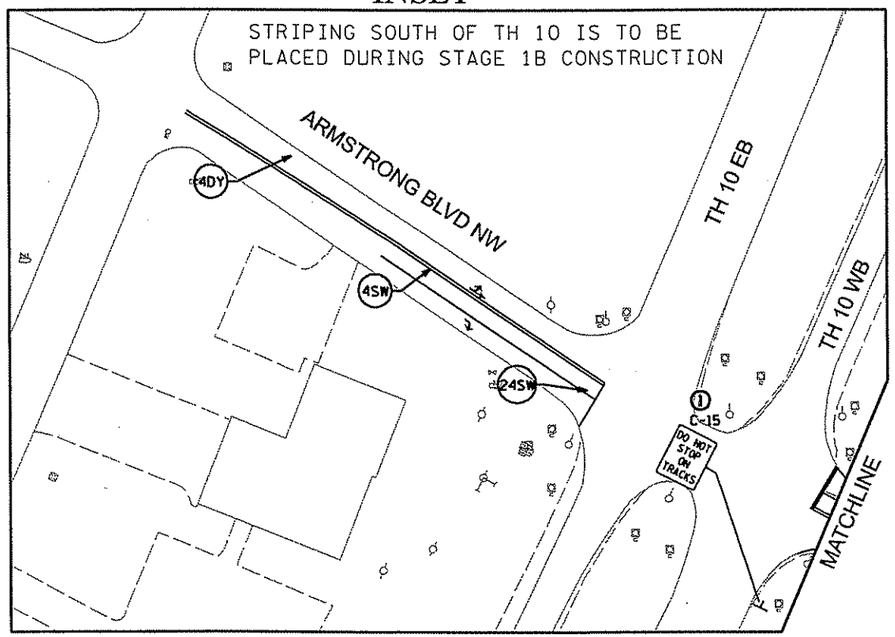
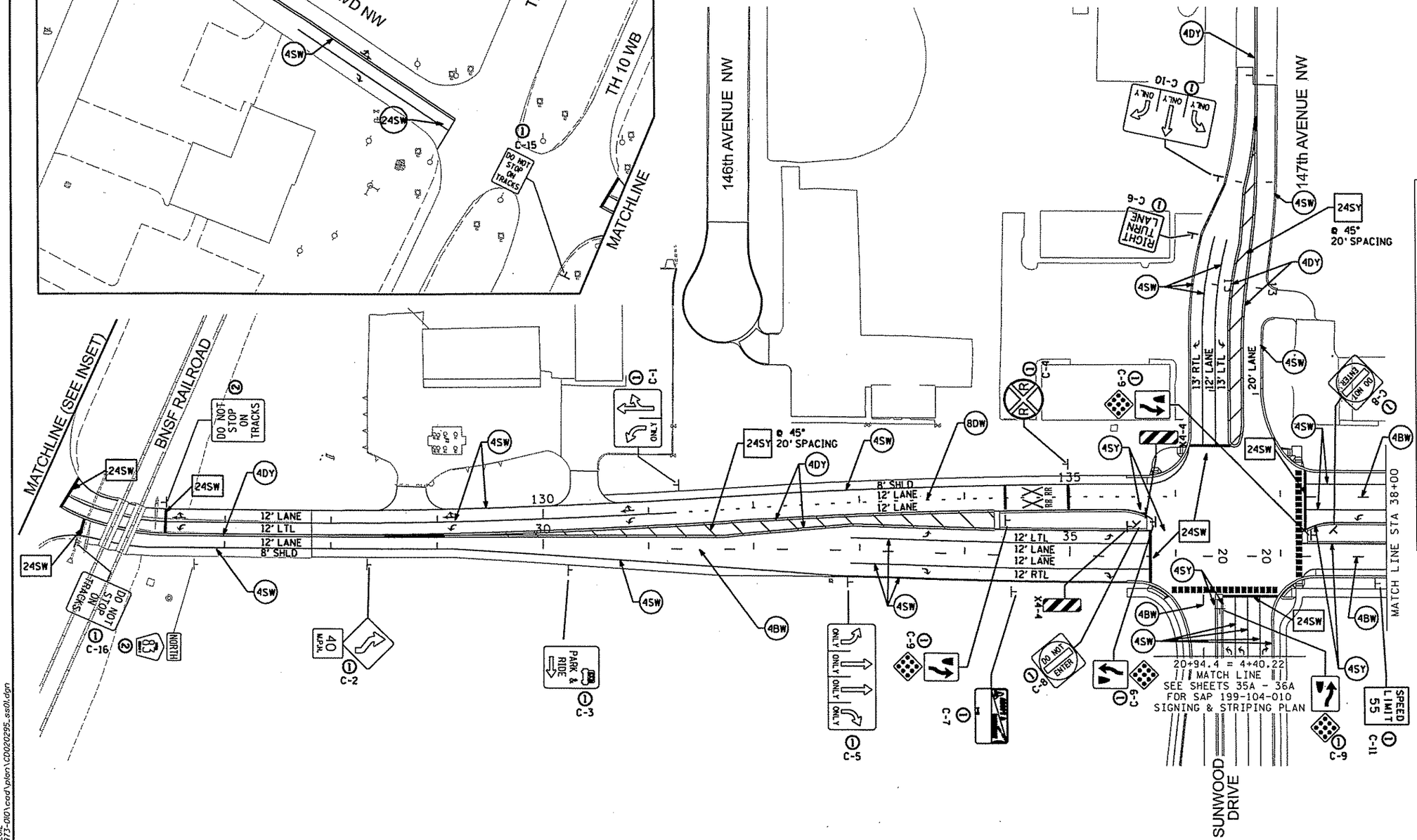
City of Ramsey, Minnesota

CITY OF RAMSEY, MINNESOTA
TABULATIONS
SIGNING & PAVEMENT MARKING PLAN
S.A.P. 199-020-010 / C.P. 12-20

INSET



CSAH 83 (Armstrong Blvd)



0 50 FT 100 FT

SYMBOLS & MATERIALS LEGEND

- PAVEMENT MESSAGE (LEFT/THRU OR LEFT OR RIGHT ARROW) WHITE PREFORM THERMOPLASTIC
- CROSSWALK BLOCK WHITE PREFORM THERMOPLASTIC
- 24" SOLID WHITE STOP BAR - PREFORM THERMOPLASTIC

STRIPING KEY

- CIRCLE - EPOXY
- SQUARE - PREFORM THERMOPLASTIC
- TRIANGLE - PAINT
- PENTAGON -REMOVABLE PREFORMED PLASTIC MARKING

MESSAGE KEY

1ST DIGIT WIDTH 4" OR 8"	2ND DIGIT PATTERN	3RD DIGIT COLOR
	S - SOLID	W - WHITE
	B - BROKEN	Y - YELLOW
	D -DOUBLE	B - BLACK

EXAMPLE: (4SW) = 4" SOLID LINE WHITE

NOTE: ALL 4" OR 8" STRIPING TO BE EPOXY. ALL 24" WHITE OR YELLOW TO BE PREFORMED THERMOPLASTIC.

NOTES

1. F & I
2. INPLACE

C-XXX "C" TYPE SIGN

X-XXX "SPECIAL" SIGN

GENERAL NOTES

- ALL PAVEMENT MARKINGS TO BE EPOXY
- REMOVE CONFLICTING PAVEMENT MARKINGS-(INCIDENTAL)

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Approved By: NEH

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SIGNING & PAVEMENT MARKING PLAN

S.A.P. 199-020-010 / C.P. 12-20

SHEET 110 OF 153 SHEETS

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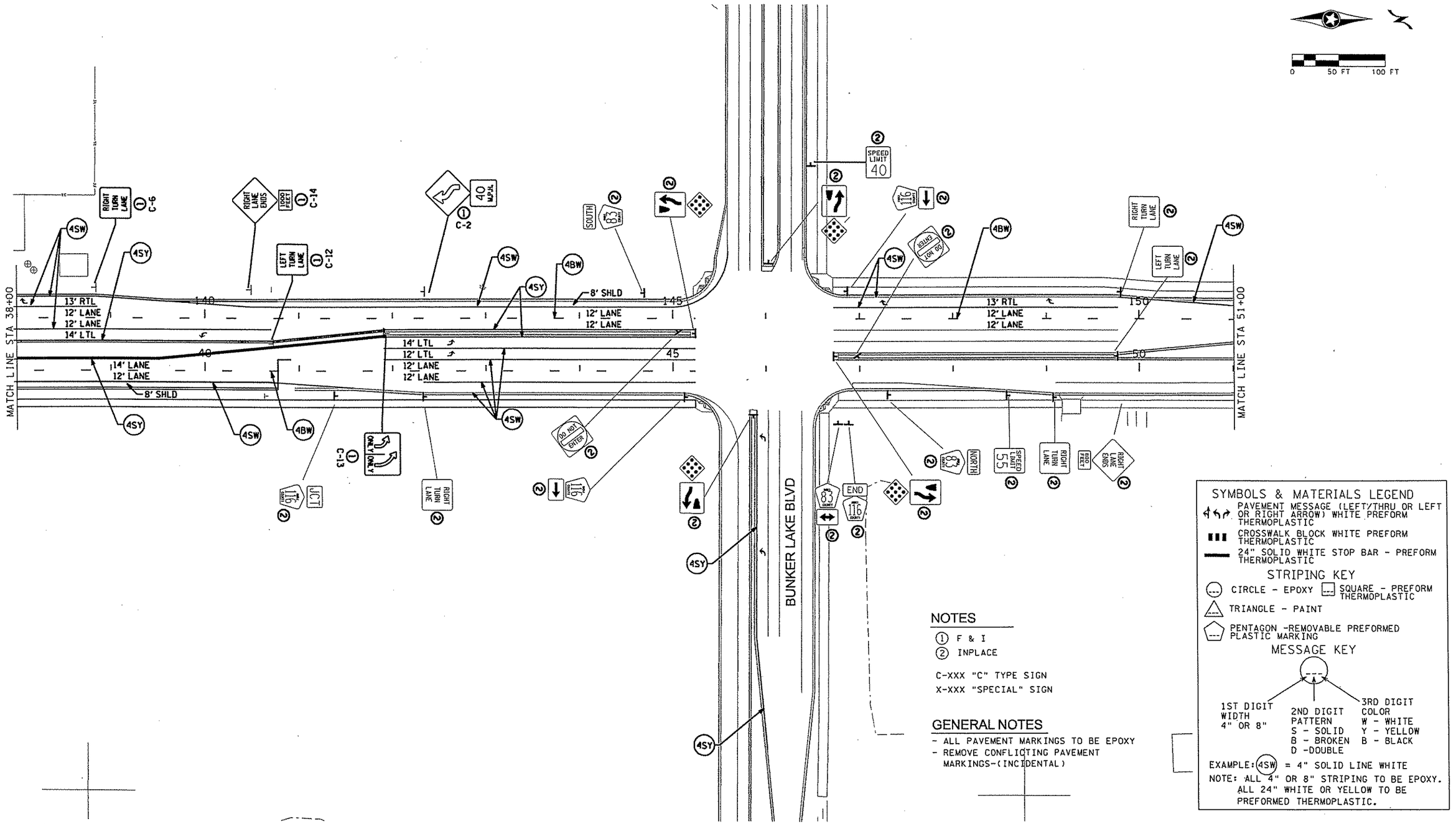
CSAH 83 (Armstrong Blvd)



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- TRIANGLE - PAINT
- PENTAGON -REMOVABLE PREFORMED PLASTIC MARKING

MESSAGE KEY

1ST DIGIT	2ND DIGIT	3RD DIGIT
WIDTH 4" OR 8"	PATTERN S - SOLID B - BROKEN D -DOUBLE	COLOR W - WHITE Y - YELLOW B - BLACK

EXAMPLE: (4SW) = 4" SOLID LINE WHITE

NOTE: ALL 4" OR 8" STRIPING TO BE EPOXY. ALL 24" WHITE OR YELLOW TO BE PREFORMED THERMOPLASTIC.

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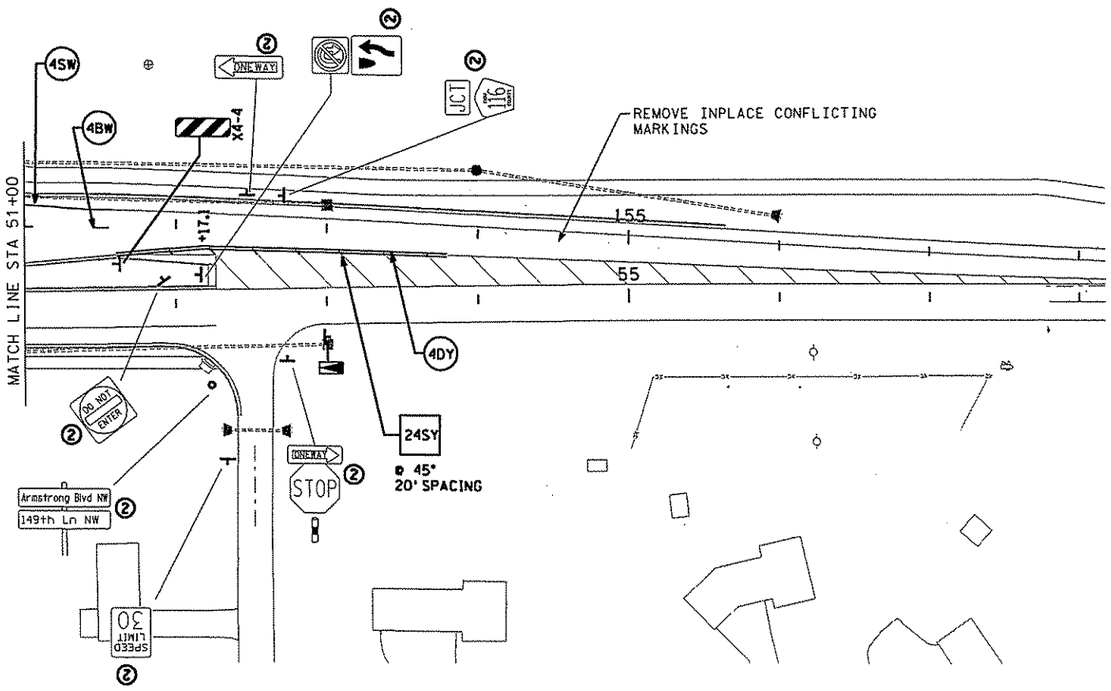

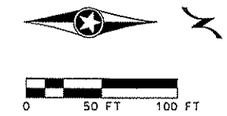

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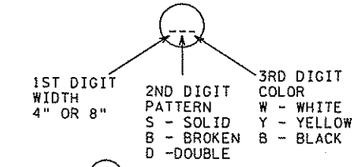

EXAMPLE: (4SW) = 4" SOLID LINE WHITE

NOTE: ALL 4" OR 8" STRIPING TO BE EPOXY. ALL 24" WHITE OR YELLOW TO BE PREFORMED THERMOPLASTIC.

NOTES

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2. INPLACE

C-XXX "C" TYPE SIGN
X-XXX "SPECIAL" SIGN

GENERAL NOTES

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- REMOVE CONFLICTING PAVEMENT MARKINGS-(INCIDENTAL)

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SHEET 112 OF 153 SHEETS

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GENERAL REQUIREMENTS

THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD SPOTTING, LOCATION AND INSPECTION. THE ENGINEER WILL PLACE NECESSARY "SPOTTING" AT APPROPRIATE POINTS TO PROVIDE HORIZONTAL CONTROL FOR STRIPING AND TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS. BROKEN LINE INTERVALS WILL NOT BE MARKED. LONGITUDINAL JOINTS. PAVEMENT EDGES, AND EXISTING MARKINGS SHALL SERVE AS HORIZONTAL CONTROL WHEN SO DIRECTED.

EDGE LINES AND LANE LINES ARE TO BE BROKEN ONLY AT INTERSECTIONS WITH PUBLIC ROADS AND AT PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY A YIELD SIGN, STOP SIGN, OR TRAFFIC SIGNAL. THE BREAK POINT IS TO BE AT THE START OF THE RADIUS FOR THE INTERSECTION OR AT MARKED STOP LINES OR CROSSWALKS.

A TOLERANCE OF 1/4" OVER OR UNDER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO 6" FROM THE SPECIFIED LENGTHS PROVIDED THE OVER AND UNDER VARIATIONS ARE REASONABLY COMPENSATORY. ALIGNMENT DEVIATIONS FROM THE CONTROL GUIDE SHALL NOT EXCEED 2". MATERIAL SHALL NOT BE APPLIED OVER LONGITUDINAL JOINT. ESTABLISHMENT OF APPLICATION TOLERANCES SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLY AS CLOSELY AS PRACTICABLE WITH THE PLANNED DIMENSIONS.

EPOXY

THE ROAD SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE ENGINEER JUST PRIOR TO APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NONMETALLIC), OR AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. NEW PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENTS AND/OR LAITANCE. ON LOW SPEED (SPEED LIMIT 35 MPH OR LESS) URBAN PORTLAND CEMENT CONCRETE ROADWAYS, SANDBLAST CLEANING SHALL BE USED FOR ALL EPOXY PAVEMENT MARKINGS.

THE EPOXY MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE EPOXY RESIN LINE TO PROVIDE AN IMMEDIATE NO-TRACK SYSTEM.

AN EPOXY RESIN LINE 4 INCHES WIDE AND 15 MIL THICKNESS (WET), REQUIRES AN APPLICATION RATE OF (1) GAL OF COMPONENTS FOR 320 FT OF LINE. GLASS BEADS SHALL BE APPLIED AT A POUND PER GALLON RATE SUFFICIENT TO ACHIEVE AN ACCEPTABLE NO-TRACK SYSTEM.

OPERATIONS SHALL BE CONDUCTED ONLY WHEN THE ROAD PAVEMENT SURFACE TEMPERATURES ARE 50°F OR GREATER.

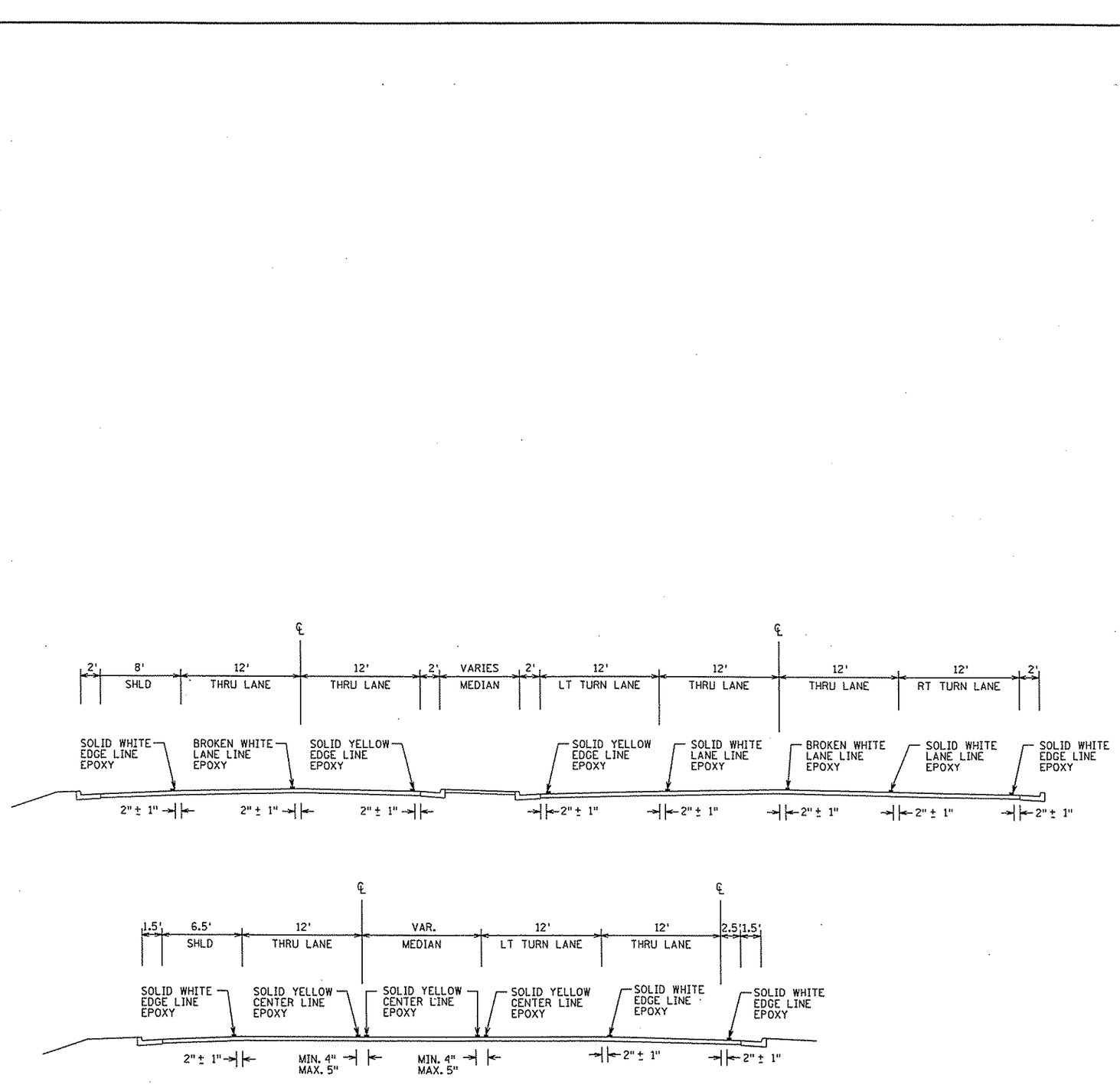
PERMANENT PAVEMENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY MARKINGS.

PREFORM THERMOPLASTIC APPLICATION

SEE SPECIAL PROVISIONS FOR FURTHER INFORMATION REGARDING INSTALLATION PROCEDURES FOR PREFORM THERMOPLASTIC PAVEMENT MARKINGS.

HEAT FUSED THERMOPLASTIC

1. THE INSTALLERS OF THIS MATERIAL MUST CARRY A CARD CERTIFYING THAT THEY HAVE ATTENDED A TRAINING SESSION THAT ADDRESSES SURFACE PREPARATIONS AND ALL APPLICATION REQUIREMENTS AND TECHNIQUES NECESSARY FOR SUCCESSFUL APPLICATION.
2. ALL MARKINGS SHALL BE OF THE "INLAY" METHOD UNLESS THE "OVERLAY" PROCEDURE IS SPECIFIED.



TYPICAL STRIPING DETAILS

NO.	DATE	BY	CHK	REVISIONS

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Plan By: CWK
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SIGNING & PAVEMENT MARKING PLAN
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SHEET 113 OF 153 SHEETS

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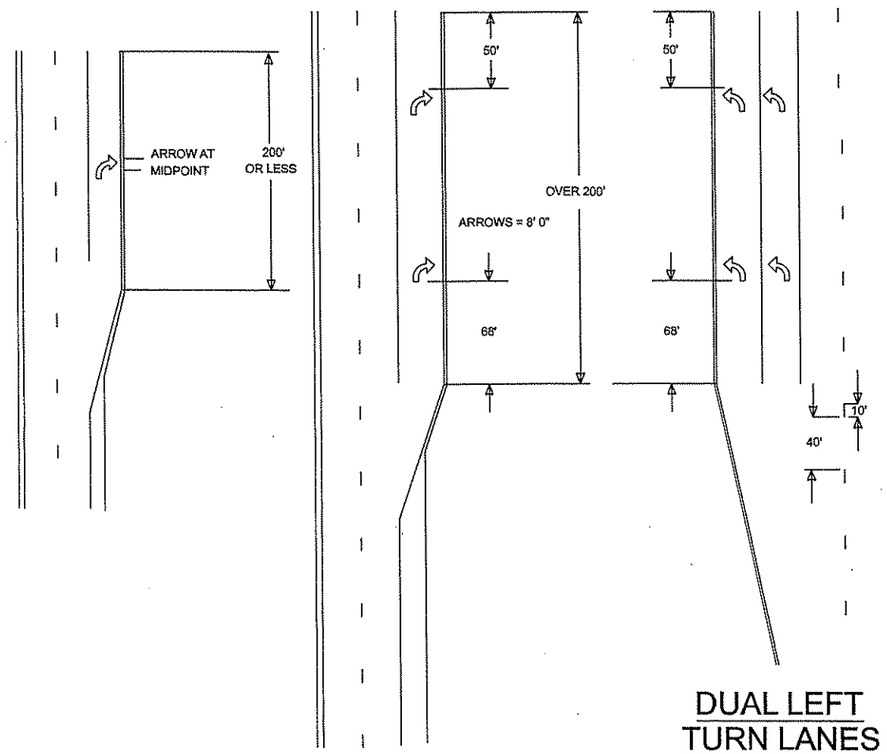
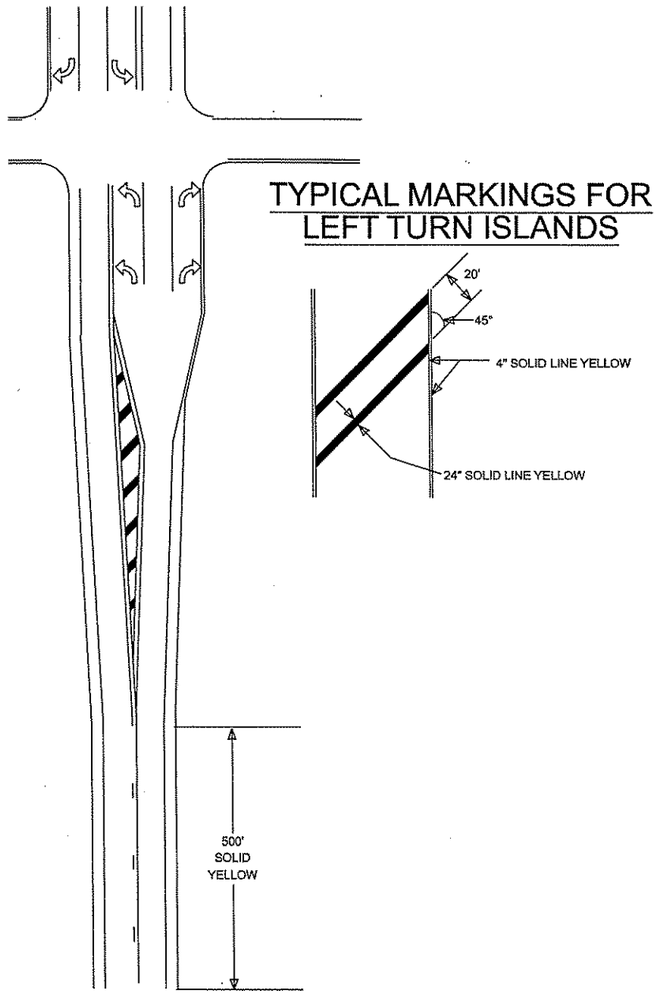
TYPICAL MESSAGE PLACEMENT FOR TURN LANES



DUAL LEFT TURN LANES

TYPICAL MARKINGS FOR LEFT TURN ISLANDS



NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

CERTIFIED BY: LICENSED PROFESSIONAL ENGINEER NICHOLAS E. HENTGES, PE

DATE: 04/03/12 LIC. NO: 44620

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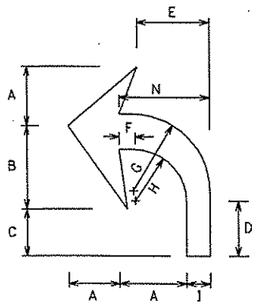
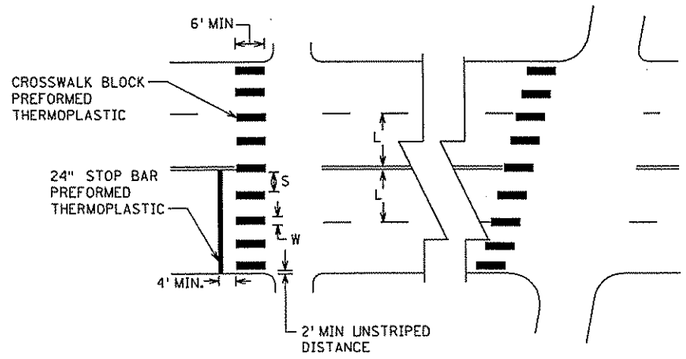


SIZE 6' x 8'

DIMENSION TABLE	
A	2'- 6"
B	3'- 6"
C	2'- 0"
D	2'- 6"
E	3'- 1"
F	0'- 8"
G	3'- 3"
H	2'- 2"
I	1'- 0"
J	1'- 0"
K	1'- 3"
L	5'- 0"
M	7'- 8"
N	3'- 10"
P	4'- 6"

(L) WIDTH OF INSIDE LANE	(W) WIDTH OF PAINTED AREA	(S) WIDTH OF SPACE
9'	2.0'	2.5'
10'	2.5'	2.5'
11'	2.5'	3.0'
12'	3.0'	3.0'
13'	3.0'	3.5'

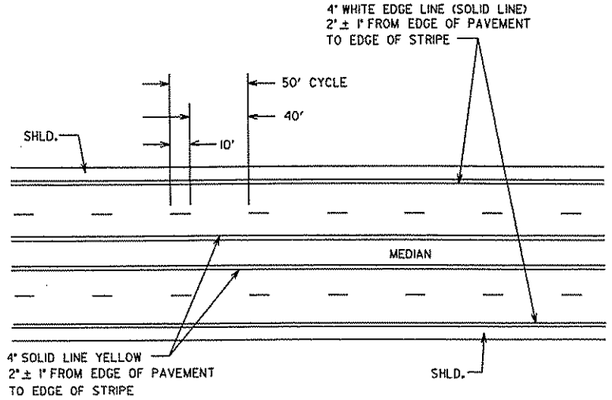


NOTES:

1. THERMOPLASTIC AREAS TO BE CENTERED ON CENTERLINE AND LANE LINES.
2. A MINIMUM OF 1.5' CLEAR DISTANCE SHALL BE LEFT ADJACENT TO THE CURB. IF LAST PAINTED AREA FALLS INTO THIS DISTANCE IT MUST BE OMITTED.
3. FOR DIVIDED ROADWAYS, ADJUSTMENTS IN SPACING OF THE BLOCKS SHOULD BE MADE IN THE MEDIAN SO THAT THE BLOCKS ARE MAINTAINED IN THEIR PROPER LOCATION ACROSS THE TRAVELED PORTION OF THE ROADWAY.
4. AT SKEWED CROSSWALKS, THE BLOCKS ARE TO REMAIN PARALLEL TO THE LANE LINES AS SHOWN.

MARKINGS FOR PEDESTRIAN CROSSINGS

(PREFORMED THERMOPLASTIC



TYPICAL FOUR-LANE DIVIDED LANE MARKINGS

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SHEET 115 OF 153 SHEETS

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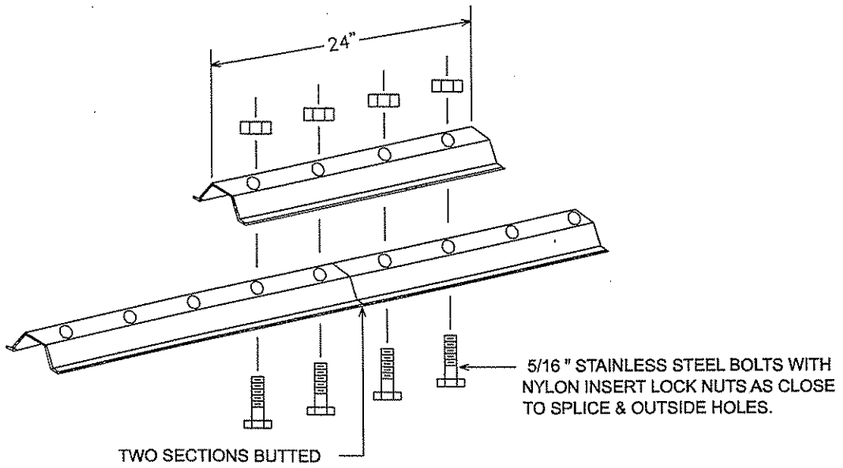
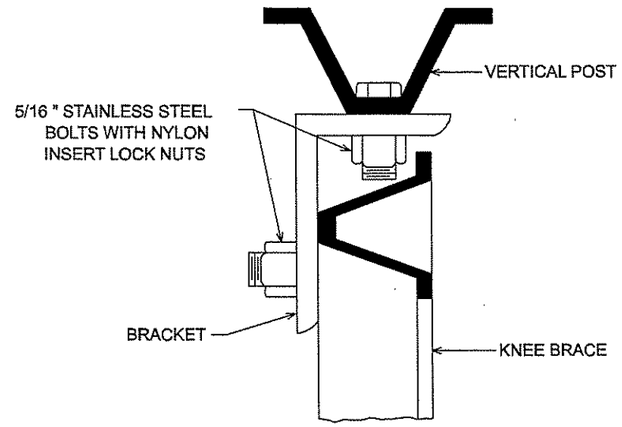
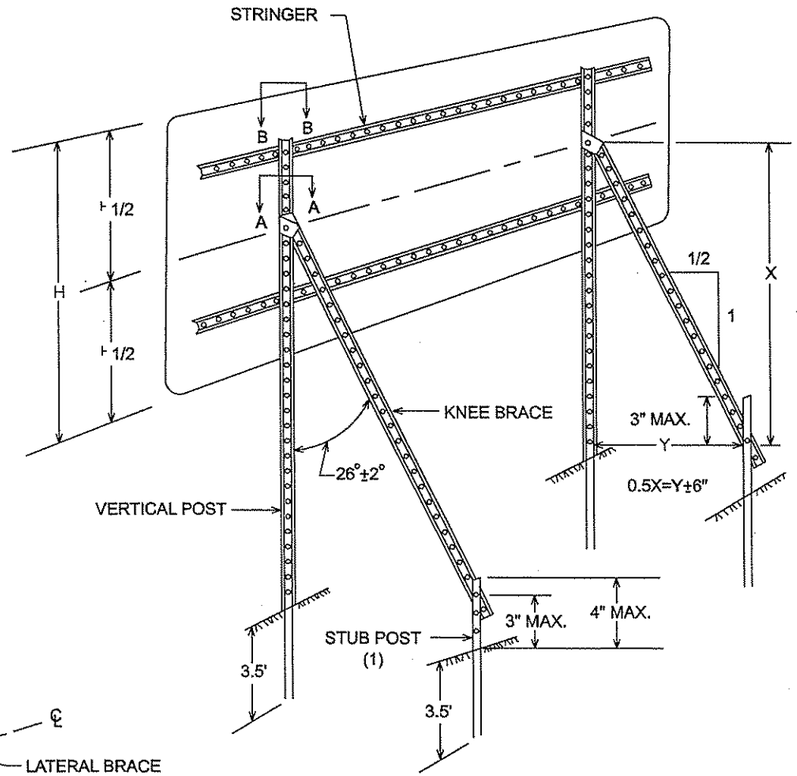


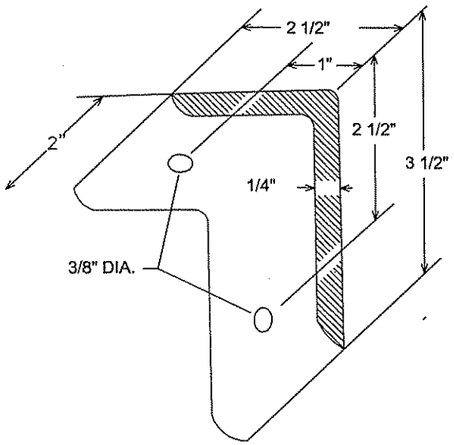
LATERAL BRACE OR STRINGER SPLICE DETAIL (EXPLODED VIEW)



SECTION A-A

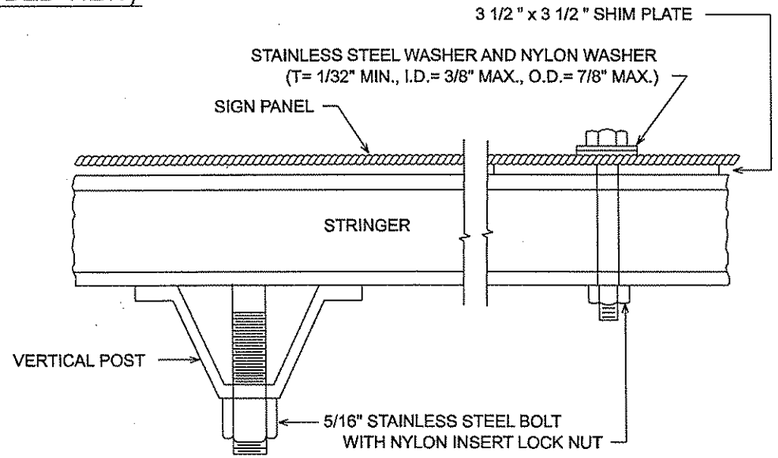


TYPICAL "A-FRAME" INSTALLATION TYPE "D" SIGNS

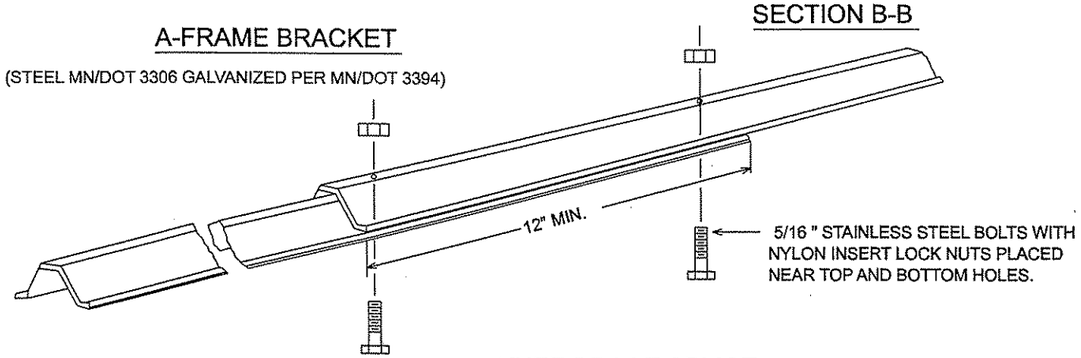


A-FRAME BRACKET

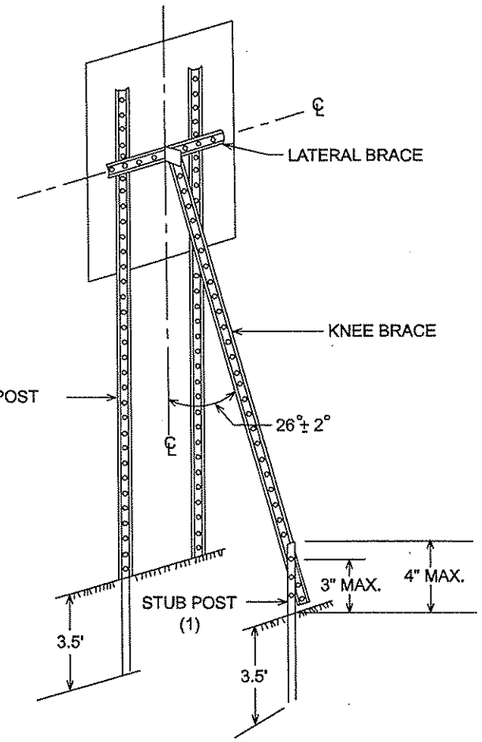
(STEEL MN/DOT 3306 GALVANIZED PER MN/DOT 3394)



SECTION B-B



KNEE BRACE SPLICE



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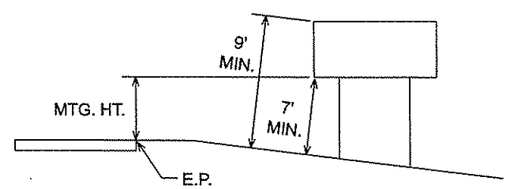

TYPICAL MOUNTING

(1) OFFSET STUB POST 1' TOWARD ROADWAY RELATIVE TO VERTICAL POST.

TYPE C & D SIGN STRUCTURAL DETAILS

NO.	DATE	BY	CHK	REVISIONS

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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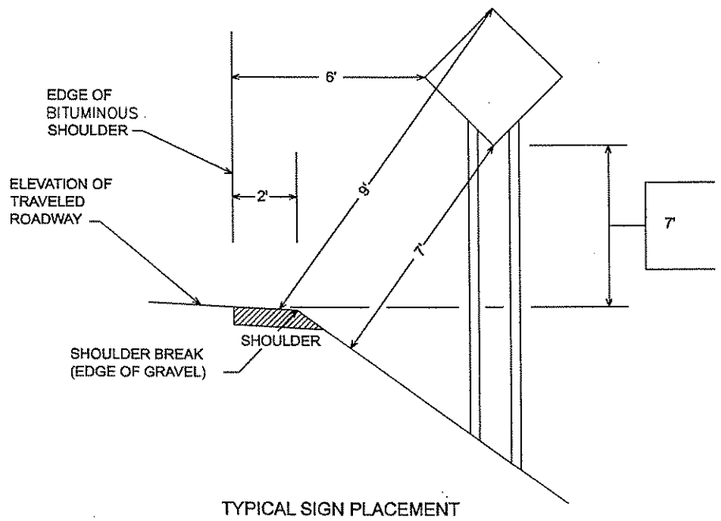
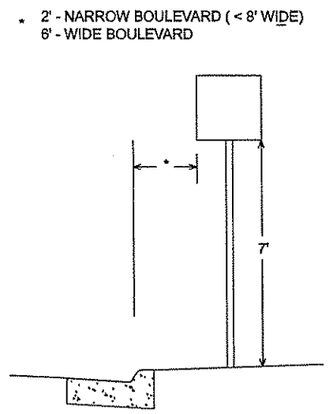
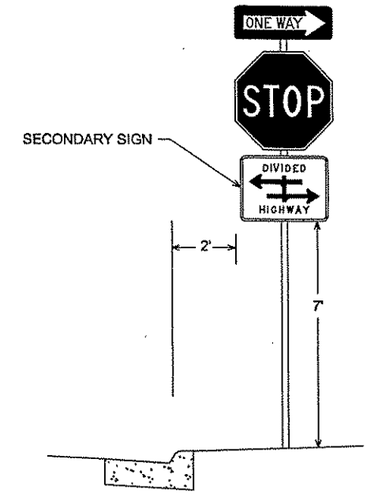
RURAL



TYPICAL SIGN PLACEMENT

URBAN





TYPICAL SIGN PLACEMENT

NOTE:

- ALL DIMENSIONS ARE MINIMUMS
- MAINTAIN 2' CLEAR FROM SIGNS TO BITUMINOUS TRAIL

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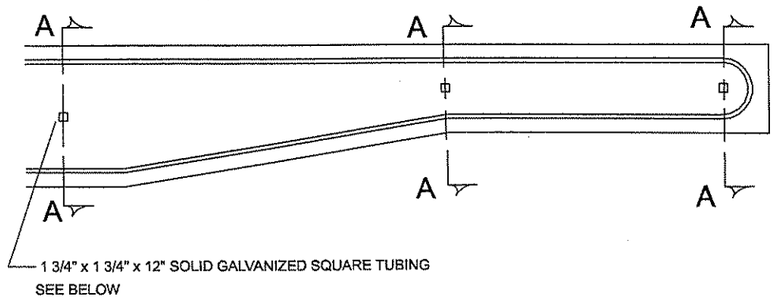
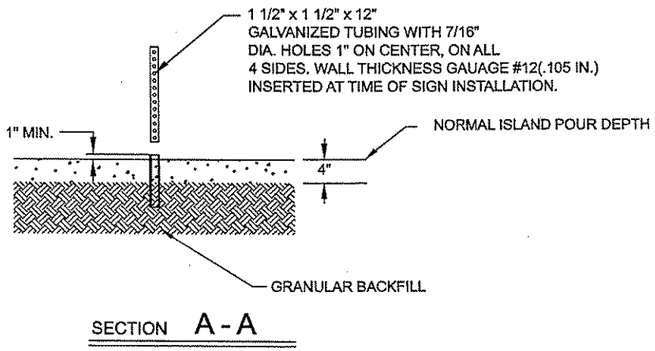
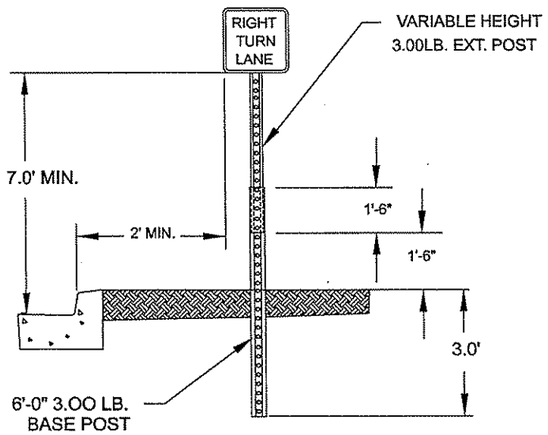


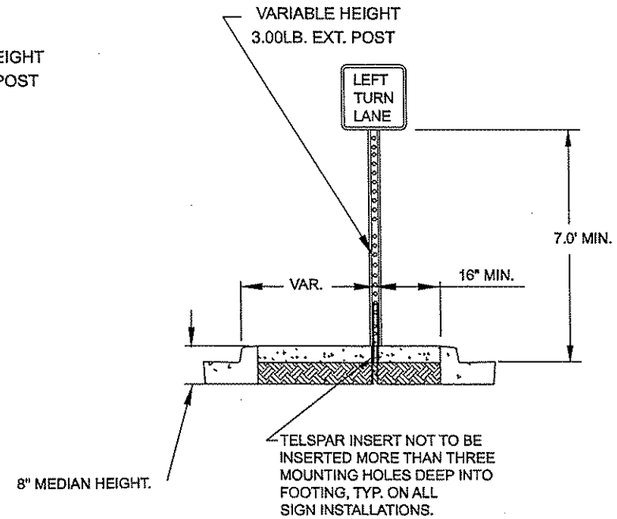
GROUND POST MOUNT SIGN
INSTALLATION TYPICAL



SECTION A - A

ISLAND MOUNT BREAK-AWAY SIGN
INSTALLATION TYPICAL





NO.	DATE	BY	CHK	REVISIONS
1	5/10/11	MJS	AP	REPLACED MN/DOT DETAIL WITH ANOKA COUNTY DETAIL

Design By: NEH
Plan By: CWK
Checked By: AJP
Approved By: NEH

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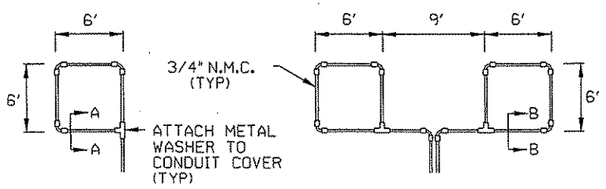
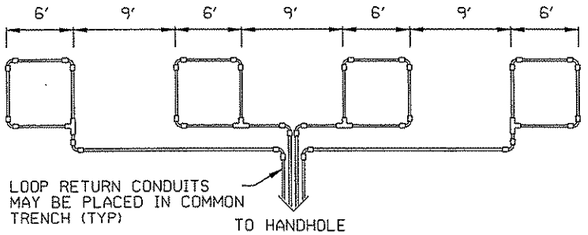
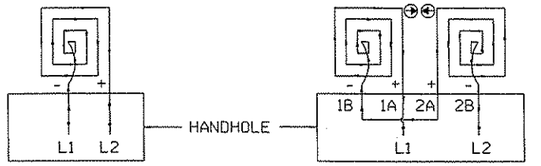




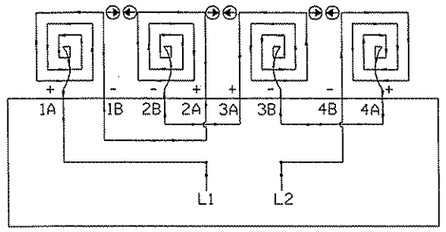


LOOP DETECTOR DETAIL 'A'
(LOOP PHASING FOR SINGLE CONNECTION)

LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

L1 TO 1A
1B TO 2A
2B TO L2

LOOP DETECTOR DETAIL 'B'
(LOOP PHASING FOR SERIES CONNECTION)

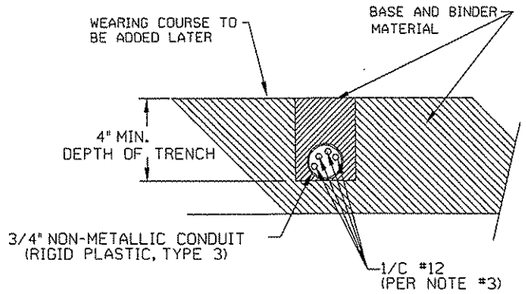


LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

L1 TO 1A
1B TO 2A
2B TO 3A
3B TO 4A
4B TO L2

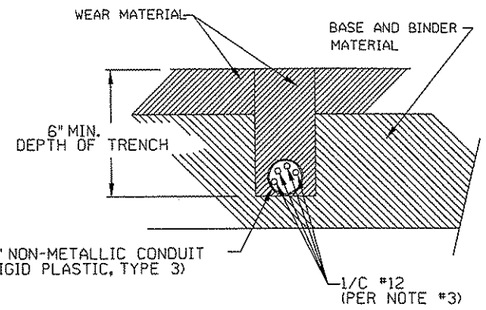
SPLICE CONTROL CABLE TO L1 & L2 IN HANDHOLE. ALL CONDUCTORS SHALL BE TAGGED IN HANDHOLE (1A, 1B, ECT)

LOOP DETECTOR DETAIL 'C'
(LOOP PHASING FOR SERIES CONNECTION)



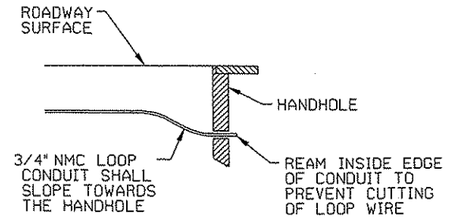
SECTION A-A

DETAIL FOR LOOP INSTALLATION IN NEW ROADWAY



SECTION B-B

DETAIL FOR LOOP INSTALLATION IN EXISTING ROADWAY



DRAINAGE DETAIL

LOOP DETECTOR WIRING

1) ALL CORNERS SHALL BE 90° CONDUIT BENDS.
2) CONNECT WIRES IN HANDHOLES USING SPLICE KIT METHOD DESCRIBED IN THE SPECIAL PROVISIONS.
3) LOOP DETECTOR WIRES SHALL BE #12 AWG CROSSED LINKED POLYETHYLENE (XLP). SEE SPECIAL PROVISIONS.
4) LOOP LEAD IN WIRES SHALL BE TWISTED A MIN. OF (5) TURNS PER FOOT THROUGH THE CONDUIT TO THE HANDHOLE.
5) NMC DESIGNATES NON-METALLIC CONDUIT (SPEC. 3803)
6) LOOPS 6' x 6' THRU 6' x 14' SHALL HAVE (4) TURNS.
7) LOOPS 6' x 15' AND LARGER SHALL HAVE (2) TURNS.

STANDARD PLATES

THESE STANDARD PLATES AS APPROVED BY FHWA SHALL APPLY:

PLATE NO.	DESCRIPTION
* 8110 E	TRAFFIC SIGNAL BRACKETING - POLE MOUNTED
8111 E	TRAFFIC SIGNAL BRACKETING - PEDESTAL MOUNTED (3 SHEETS)
8112 G	PEDESTAL FOUNDATION - TRAFFIC CONTROL SIGNALS
* 8114 A	PVC HANDHOLE/PULLBOX - NO VEHICLE LOAD (2 SHEETS)
8118 D	SERVICE EQUIPMENT AND POLE - TRAFFIC CONTROL SIGNALS
* 8119 C	GROUND MOUNTED CABINET FOUNDATION
8120 P	PA85 POLE FOUNDATION
* 8121 G	TRANSFORMER BASE AND POLE BASE PLATE - (2 SHEETS)
8122 F	PEDESTAL AND PEDESTAL BASE
* 8123 G	POLE AND MAST ARM - LUMINAIRES AND TRAFFIC LIGHTS ASSEMBLY (2 SHEETS)
* 8126 J	PA90 AND PA100 POLE FOUNDATION
* 8132 B	PREFORMED RIGID PVC CONDUIT LOOP DETECTOR - (3 SHEETS)

* - APPLIES TO THIS PROJECT

CONDUCTOR COLOR CODE

R	RED
O	ORANGE
BL	BLUE
WH	WHITE
R/BLK	RED WITH BLACK TRACER
O/BLK	ORANGE WITH BLACK TRACER
BL/BLK	BLUE WITH BLACK TRACER
WH/BLK	WHITE WITH BLACK TRACER
BLK	BLACK
BLK/WH	BLACK WITH WHITE TRACER
G/BLK	GREEN WITH BLACK TRACER
G	GREEN

LEGEND OF SYMBOLS

CONTROLLER AND SERVICE EQUIP. NO's
SIGNAL BASE NO.
SIGNAL FACE NO.
LUMINAIRE NO.
CONTROLLER AND CABINET
CONTROLLER AND CABINET - IN PLACE
HANDHOLE
HANDHOLE - IN PLACE
RIGID STEEL CONDUIT (RSC)
RIGID STEEL CONDUIT (RSC) - IN PLACE
SIGNAL FACE WITH BACKGROUND SHIELD
SIGNAL FACE W/O BACKGROUND SHIELD
SIGNAL FACE - IN PLACE
PEDESTRIAN INDICATORS
PEDESTRIAN INDICATORS - IN PLACE
PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE
PEDESTRIAN PUSH BUTTON STATION
TRAFFIC SIGNAL PEDESTAL
TRAFFIC SIGNAL PEDESTAL - INPLACE
TRAFFIC SIGNAL POLE AND MAST ARM
TRAFFIC SIGNAL POLE AND MAST ARM - IN PLACE
STREET LIGHT POLE AND LUMINAIRE
STREET LIGHT POLE AND LUMINAIRE - IN PLACE
MAST ARM AND LUMINAIRE
MAST ARM AND LUMINAIRE - INPLACE
WOOD POLE
WOOD POLE - IN PLACE
SOURCE OF POWER
RAILROAD SIGNAL - IN PLACE
RIGHT OF WAY LINE
CENTERLINE
EDGE OF ROADWAY
SHOULDERLINE
CURB LINE
STOP BAR
EMERGENCY VEHICLE PREEMPTION DETECTOR

ABBREVIATIONS

3-1(EG)	SIGNAL HEAD PHASE "3" - NO "1"	P2-1(EG)	PED INDICATION PHASE "2" - NO. "1"
BR. GR.	BARE GROUND	PB	PUSH BUTTON
CH. SW.	CHECK SWITCH	PB2-1(EG)	PUSH BUTTON PHASE "2" - NO. "1"
CLR	CLEAR	PEC	PHOTOELECTRIC CELL
D2-1(EG)	DETECTOR PHASE "2" - NO. "1"	PED	PEDESTRIAN
DWK	DON'T WALK	R	RED
EOG	EQUIPMENT GROUND	R&S	REMOVE AND SALVAGE
EVP	EMERGENCY VEHICLE PRE-EMPTION	RLTA	RED LEFT TURN ARROW
F&I	FURNISH AND INSTALL	RRTA	RED RIGHT TURN ARROW
FL	FLASH/FLASHING	RSC	RIGID STEEL CONDUIT
G	GREEN	SOP	SOURCE OF POWER
GLTA	GREEN LEFT TURN ARROW	SPR	SPARE
GRN	GREEN	ST. LHT	STREET LIGHT
GR. R	GROUND ROD	STA	STATION
GRTA	GREEN RIGHT TURN ARROW	SW	SWITCH
GTHA	GREEN THRU ARROW	SWD	SWITCHED
HH	HANDHOLE	S&R	SALVAGE AND REINSTALL
HPS	HIGH PRESSURE SODIUM	TDW	TELEPHONE DROP WIRE
JB	JUNCTION BOX	WLK	WALK
LUM	LUMINAIRE	YEL	YELLOW
NEU	NEUTRAL	YLTA	YELLOW LEFT TURN ARROW
NMC	NONMETALLIC CONDUIT	YRTA	YELLOW RIGHT TURN ARROW
		YTHA	YELLOW THRU ARROW

NO.	DATE	BY	CHK	REVISIONS

Design By: SD
Plan By: MAS
Checked By: NEH
Approved By: SD

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CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER - SEAN DILMORE, PE
DATE: 04/03/12 LIC. NO: 40945

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DETAILS AND STANDARD PLATES
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 119 OF 153 SHEETS

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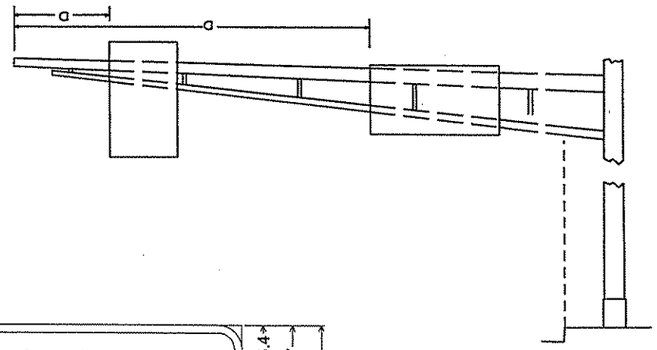
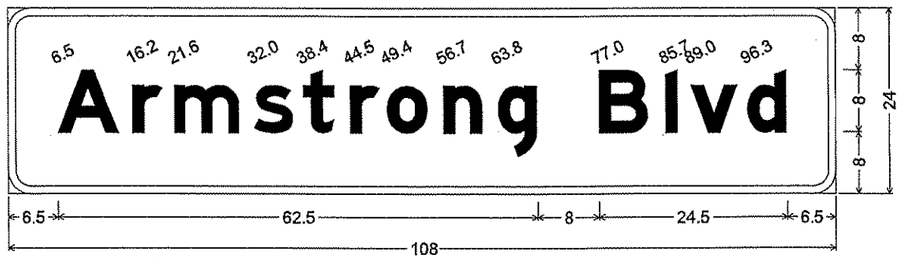
TYPE "D" SIGN DETAILS

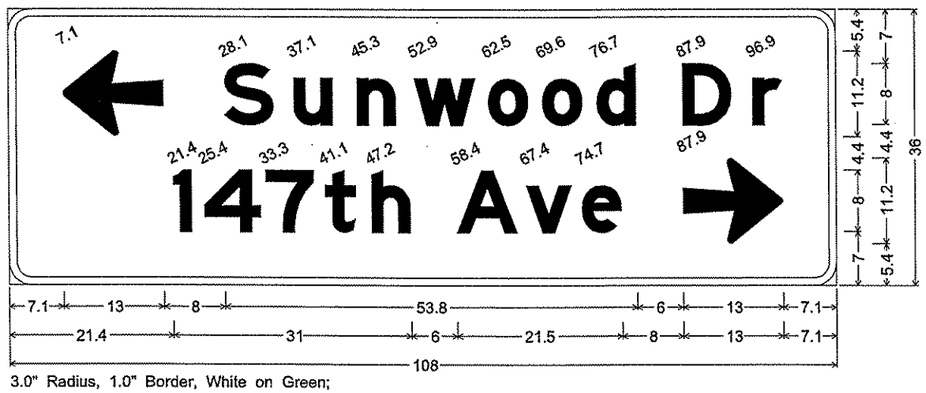


D-1



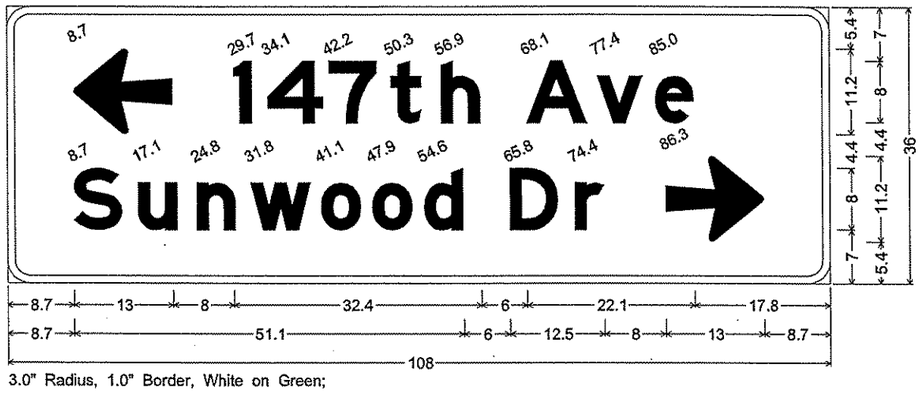
3.0" Radius, 1.0" Border, White on Green;
[Armstrong Blvd] E Mod 80% spacing;

D-2



3.0" Radius, 1.0" Border, White on Green;
Arrow 5 - 13.0" 180°; [Sunwood Dr] E Mod; [147th Ave] E Mod 80% spacing; Arrow 5 - 13.0" 0°;

D-3



3.0" Radius, 1.0" Border, White on Green;
Arrow 5 - 13.0" 180°; [147th Ave] E Mod; [Sunwood Dr] E Mod 80% spacing; Arrow 5 - 13.0" 0°;

MAST ARM MOUNTED SIGNS

SIGN PANEL OR SIGN NO.	SIGNAL SYSTEM	POLE NO.	a (FEET)	SIZE (INCHES)	MOUNTING BRACKET NUMBER	MOUNTING BRACKET SPACING (1)	AREA/ SIGN (SQ. FT.)	NO. REQ.
D-1	A	1		108 X 24	3		18.00	1
D-1	A	3		108 X 24	3		18.00	1
D-2	A	4		108 X 24	3		36.00	1
D-3	A	2		108 X 24	3		36.00	1
R6-1L	A	1, 2, 3, 4	-	36 X 12			3.00	4
R6-1R	A	1, 2, 3, 4	-	36 X 12			3.00	4

STATEMENT OF ESTIMATED QUANTITIES — R

ITEM NO.	DESCRIPTION	LOCATION	UNIT	QTY
2565	TRAFFIC CONTROL SIGNAL SYSTEM "A"	ARMSTRONG BLVD NW & SUNWOOD DR	SIG SYS	1
2565	EMERGENCY VEHICLE PREEMPTION SYSTEM "A"	ARMSTRONG BLVD NW & SUNWOOD DR	LUMP SUM	1

SPECIFIC NOTE:
(1) SPACING BETWEEN STIFFENERS SHALL NOT EXCEED 36 INCHES AND SHALL BE UNIFORMLY SPACED. SEE STANDARD SIGNS MANUAL, PAGE 105A (REVISION DATE 7/06/07) FOR BRACKET SPACING REQUIREMENTS.

GENERAL NOTES:
1. CORNERS OF STANDARD SIGN PANELS WITH MARGINS SHALL BE TRIMMED.
2. TYPE D SIGN PANELS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED.
3. FOR STRUCTURAL DETAILS OF MAST ARM MOUNTED SIGNS SEE STANDARD SIGNS MANUAL, PAGE 105A.
4. FOR TYPE 'D' STRINGER AND PANEL JOINT DETAILS SEE STANDARD SIGNS MANUAL, PAGE 105.
5. THE MAST ARM MOUNTED SIGNS ARE INCIDENTAL.

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Approved By: SD

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DATE: 04/03/12 LIC. NO: 40945

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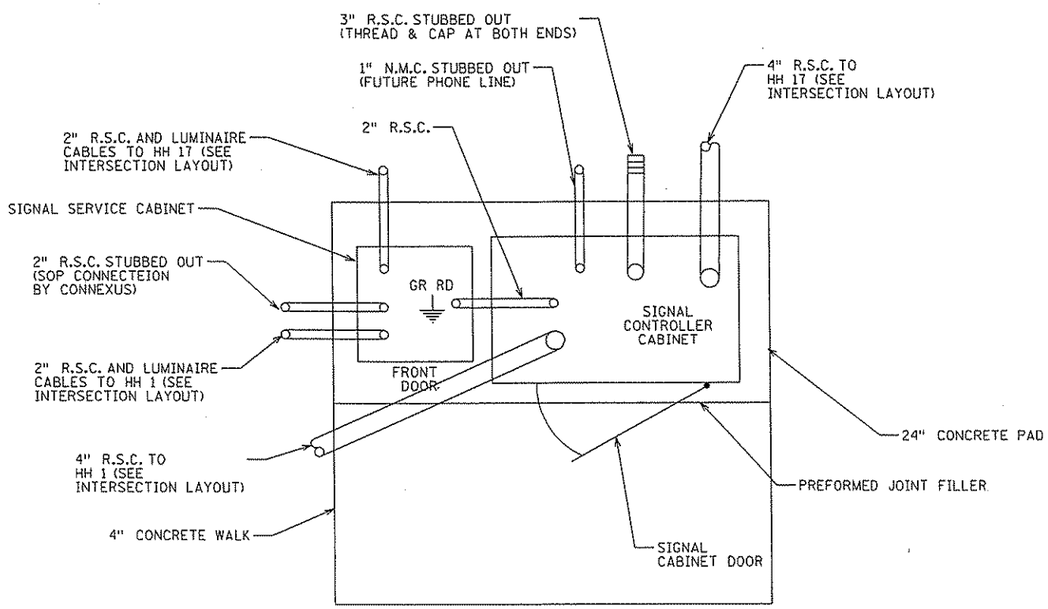
CITY OF RAMSEY, MINNESOTA
DETAILS AND STANDARD PLATES
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

TYPICAL PAD WITH CONTROLLER CABINET AND SERVICE CABINET

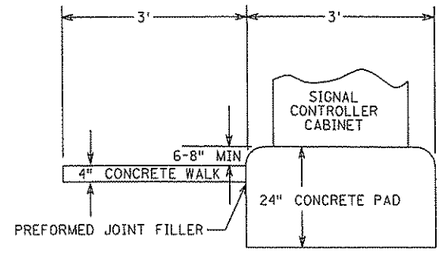
SEE INTERSECTION LAYOUT FOR CABLE INFORMATION (NOT TO SCALE)

PLAN VIEW

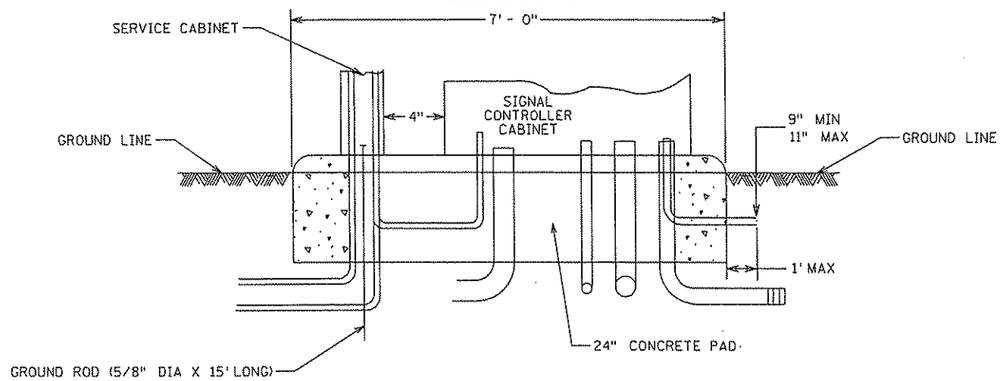
CSAH 83 (ARMSTRONG BLVD) @ SUNWOOD DR



SIDE VIEW



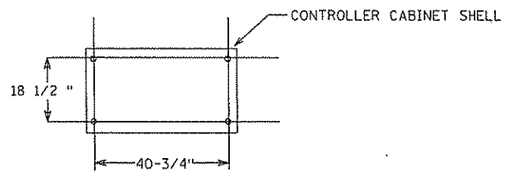
FRONT VIEW



NOTES:

1. THE ANCHOR RODS, NUTS AND WASHERS FOR THE COUNTY FURNISHED CONTROLLERS AND CABINETS SHALL BE FURNISHED BY THE COUNTY AND INSTALLED BY THE CONTRACTOR.
2. THE UPPER PART OF EACH EQUIPMENT PAD SHALL BE BEVELLED OR CHAMFERED IN A NEAT MANNER AS DIRECTED BY THE ENGINEER.
3. THE TOP OF THE CONDUITS SHALL BE THREADED AND CAPPED AFTER INSTALLATION (UNTIL CABLES ARE INSTALLED).
4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE CONCRETE AND SHALL BE LOCATED INSIDE THE CABINET WHERE DIRECTED BY THE ENGINEER, BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
5. CONCRETE MIX 3A32 OR EQUAL SHALL BE USED FOR EACH EQUIPMENT PAD AND SIDEWALK.
6. CONDUITS WITH BOTH ENDS TERMINATING WITHIN THE PAD SHALL NOT IN INSTALLED BELOW THE CONCRETE.
7. THE EXACT LOCATION OF CONDUITS WITHIN EACH PAD SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
8. ANCHOR RODS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
9. CONTRACTOR SHALL PROVIDE MINIMUM 4-INCH CLEARANCE BETWEEN CONTROLLER AND SERVICE CABINETS ON THE EQUIPMENT PAD FOUNDATIONS AS SHOWN.

CONTROLLER CABINET TYPE "P" & "R" BOLT PATTERN



DIMENSION SHOWN ARE CENTER ROD TO CENTER ROD

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Approved By: SD

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EQUIPMENT PAD LAYOUT
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 121 OF 153 SHEETS

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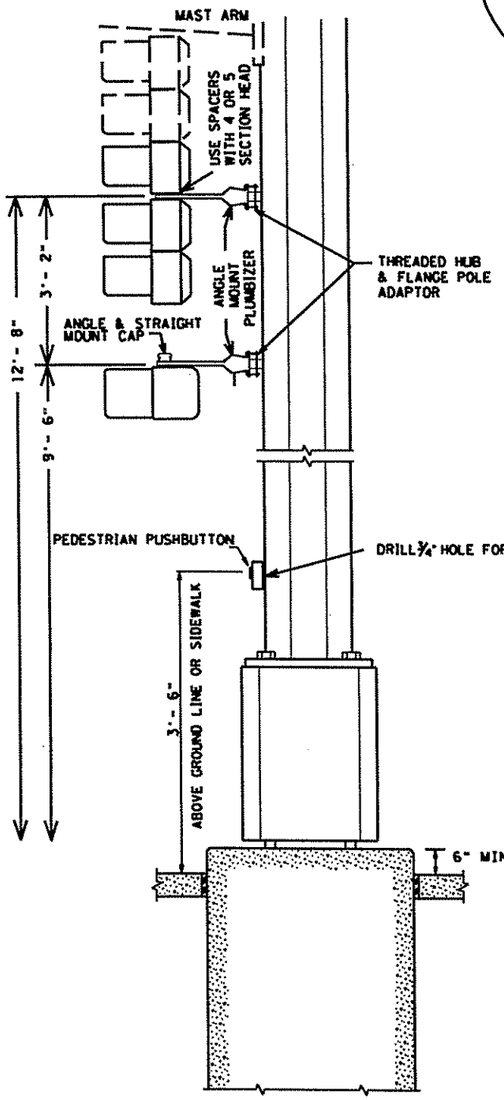
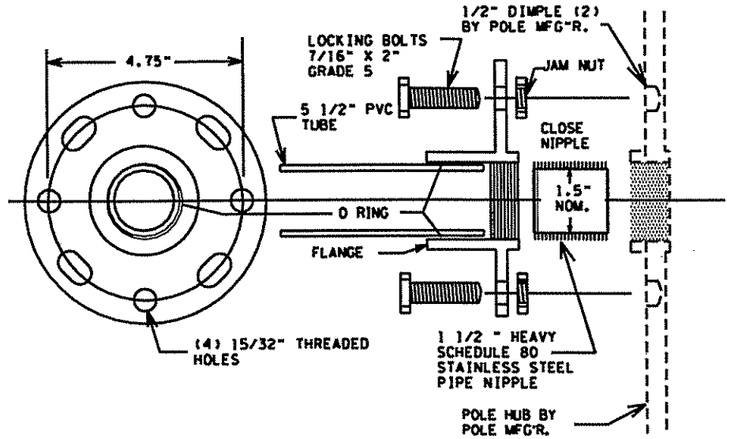
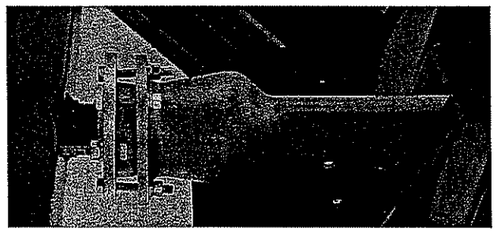


TYPICAL SIGNAL POLE MOUNTING

NOT TO SCALE

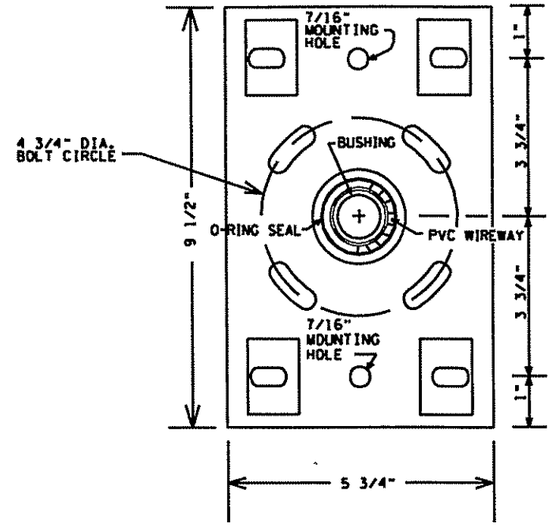


THREADED HUB AND FLANGE POLE ADAPTOR

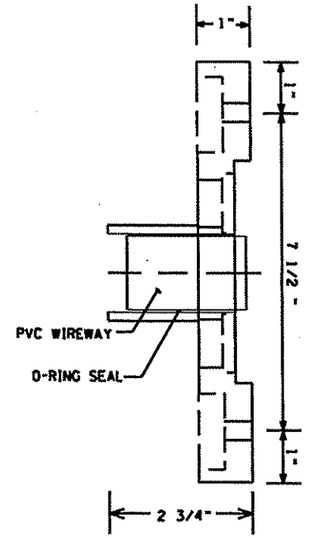


NOTE:

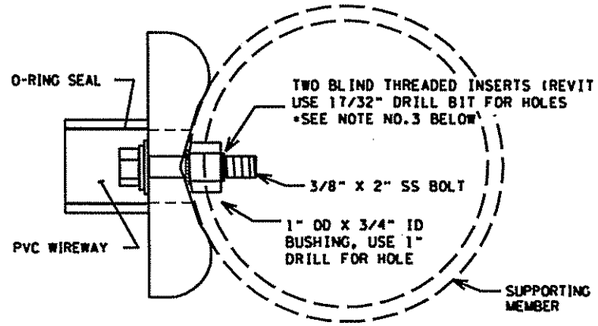
1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 & 5 SECTION POLY HEADS.
3. SEE STANDARD PLATE NUMBER 8123 FOR ADDITIONAL SIGNAL POLE DETAILS.



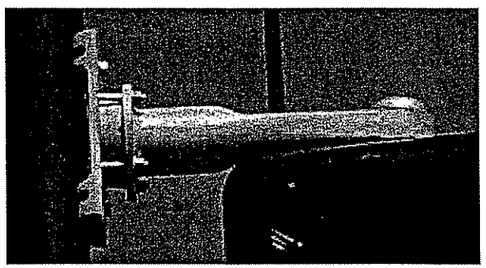
BOLT ON HUB & FLANGE



SIDE VIEW

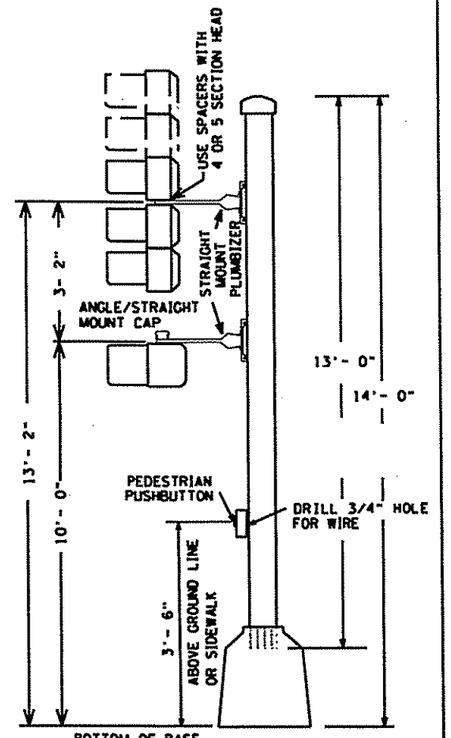


TOP VIEW



NOTE:

1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 & 5 SECTION POLY HEADS.
3. BLIND THREADED INSERTS (RIVET NUT) MUST BE INSTALLED USING MANUFACTURERS SPECIFIC INSTALLATION TOOL. NO OTHER METHOD OF INSTALLATION IS ACCEPTABLE.
4. SEE STANDARD PLATE NUMBER 8122 FOR ADDITIONAL PEDESTAL POLE DETAILS.



TYPICAL PEDESTAL MOUNTING

NOT TO SCALE

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Approved By: SD

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CITY OF RAMSEY, MINNESOTA
POLE AND PEDESTAL MOUNTING DETAILS
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 122 OF 153 SHEETS

Date Printed: 6/12/2012
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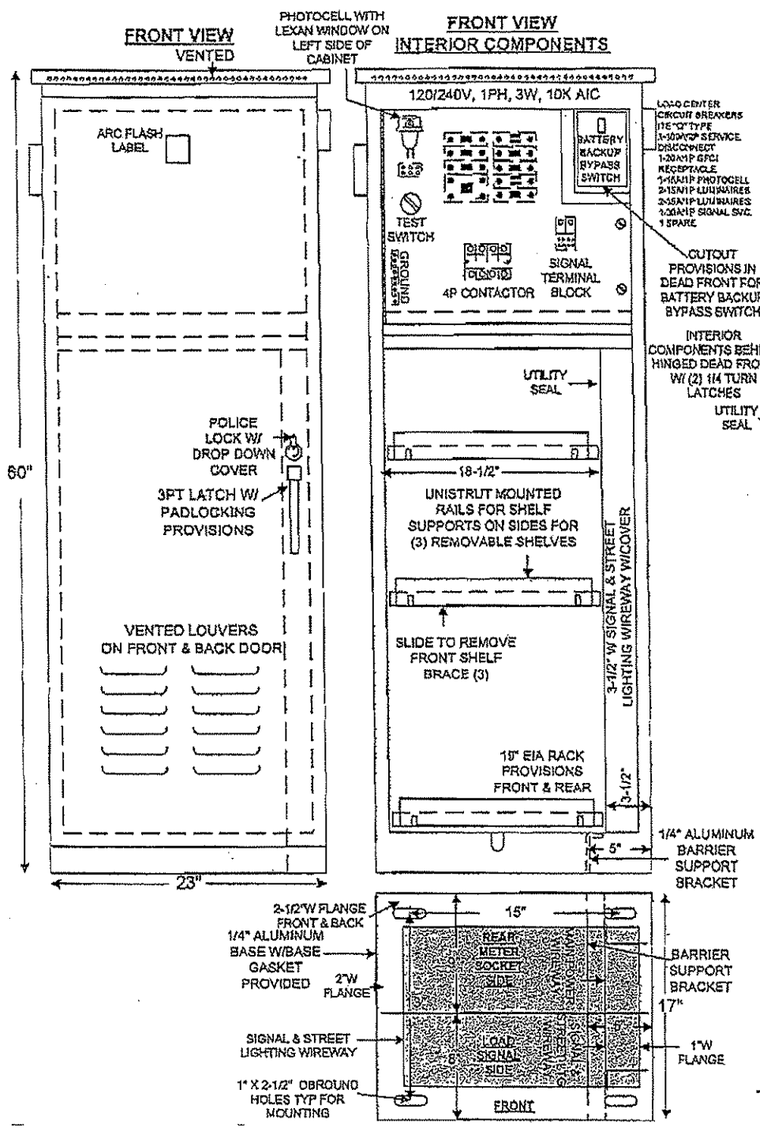
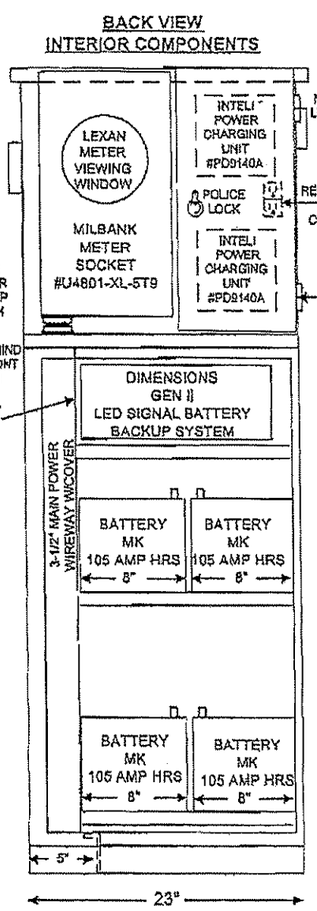
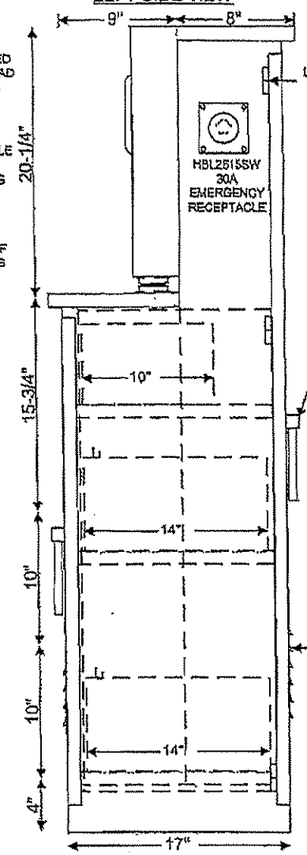


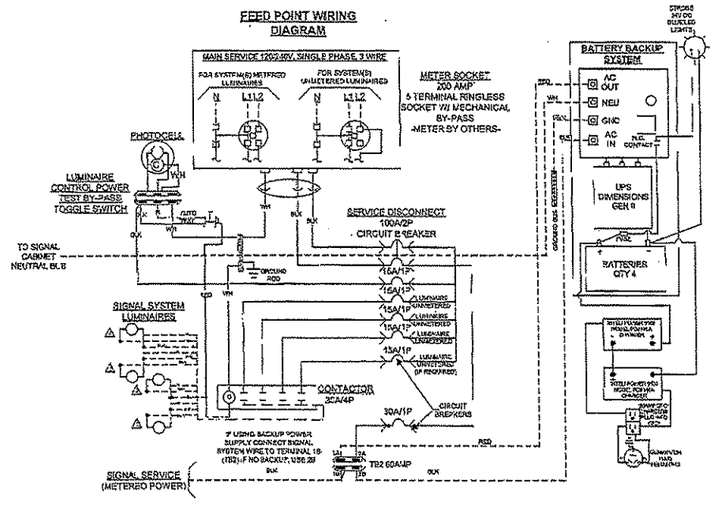




ANOKA CO.
BATTERY BACK UP CABINET QTY.

CABINET CONSTRUCTION:

-NEMA3R
-1/8" ALUMINUM 5052-H32
-ANODIZED 30 MINUTE CLEAR
-NEOPRENE GASKETED DOORS
-NON-CORRODING HARDWARE
-ETL LISTED IN ACCORDANCE W/UL508A



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CITY OF RAMSEY, MINNESOTA
SERVICE CABINET DETAILS
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 123 OF 153 SHEETS

Date Printed: 6/12/2012
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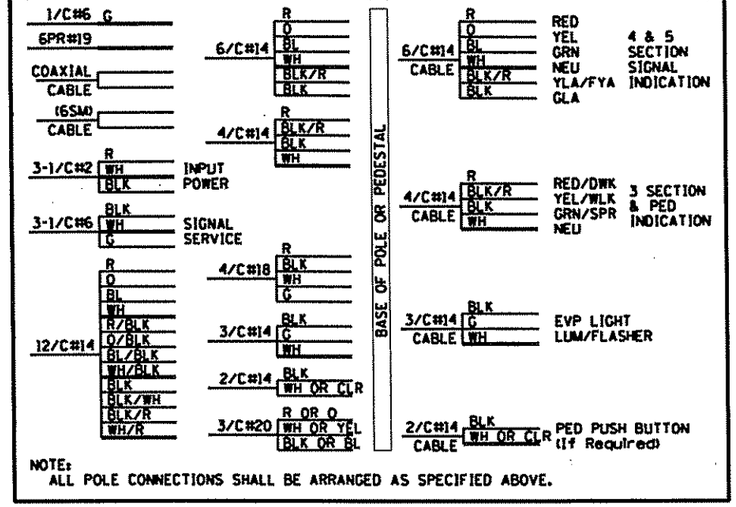
CONDUCTOR COLOR CODE (14 GAUGE)



NOTE:
ALL POLE CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE.

Wire Color Code Key	
R	Red
O	Orange
BL	Blue
WH	White
BLK	Black
BRN	Brown
CL	Clear
G	Green
R/BLK	Red with Black Stripe
O/BLK	Orange with Black Stripe
BL/BLK	Blue with Black Stripe
WH/BLK	White with Black Stripe
WH/R	White with Red Stripe
BLK/WH	Black with White Stripe
BLK/R	Black with Red Stripe

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CITY OF RAMSEY, MINNESOTA
EVP DETAILS, COLOR CODE, PUSH BUTTON STATION DETAILS
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

MATCH LINE - NB CSAH 83 STA. 38+50

NOTES:

1) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS, COUNTDOWN PEDESTRIAN INDICATIONS, LED INDICATIONS, AND PAINTING OF SIGNAL SYSTEM.
2) THE EXACT LOCATION OF HANDHOLES, POLES, LOOP DETECTORS, AND EQUIPMENT PAD SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
4) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY FOR EMERGENCY VEHICLE PREEMPTION EQUIPMENT SHALL BE F&I 6' FROM THE END OF MAST ARM.
5) THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION.
6) THE CONTRACTOR SHALL LOCATE AND VERIFY INPLACE UTILITIES PRIOR TO COMMENCING WORK.
7) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCIDENTAL).
8) EACH PEDESTRIAN INDICATION SHALL BE LED, ONE SECTION "FILLED" HAND/WALKING PERSON INDICATION.
9) ALL POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE MOUNTED USING ONE-WAY SIGNAL HEAD MOUNTS. SEE DETAILS AND SPECIAL PROVISIONS.
10) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" NMC. SEE SPECIAL PROVISIONS.
11) ALL VEHICLES AND PEDESTRIAN SIGNAL HOUSINGS, BACKGROUND SHIELD, AND VISORS SHALL BE FABRICATED USING BLACK POLYCARBONATE MATERIALS. SEE SPECIAL PROVISIONS.
12) (* EVP) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR UNDER ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
13) DISTANCE OFF SHOULDER OR CURB FOR EVP CONDUIT SHALL BE 1-2 FEET.

(A) EQUIPMENT PAD - SEE DETAIL
SERVICE CABINET
CONTROLLER AND CABINET
4" RSC TO HH 1:
4-12/c#14
3-4/c#14
*2-3/c#14 (EVP)
*2-3/c#20 (EVP)
15-2/c#14
**1-6SM/6MM FO
3" RSC STUBBED OUT (THREAD AND CAP FOR FUTURE USE)
2" RSC STUBBED OUT (THREAD AND CAP FOR FUTURE USE)
1" NMC STUBBED OUT (CAP FOR FUTURE TELEPHONE LINE)

(B) SOP-TRANSFORMER (POWER BY CONNEXUS)
4" RSC TO HH 16:
4-12/c#14
3-4/c#14
*2-3/c#14 (EVP)
*2-3/c#20 (EVP)
13-2/c#14

SIGNAL SERVICE CABINET
(SAME FOUNDATION AS CONTROLLER CABINET)
2" RSC INTO HH 1:
UNMETERED STREET LIGHT SERVICE
2-3/c#14 (LUM)
2" RSC INTO HH 16:
UNMETERED STREET LIGHT SERVICE
2-3/c#14 (LUM)
2" RSC STUBBED OUT (FOR POWER BY CONNEXUS)

(1) PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 18'
2-ANGLE MOUNT SIGNAL AT 90 AND 180 DEG
1-ANGLE MOUNT C.D. PED IND AT 180 DEG
*1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 3 & 8)
LUMINAIRE-250W HPS
1-PUSH BUTTON AND SIGN
1-SIGN D-1 ARMSTRONG BLVD
1-SIGN R6-1L ONE WAY
1-SIGN R6-1R ONE WAY
1-SIGN R9-3 FACING POLE 4
3" RSC INTO HH 1:
2-12/c#14
1-4/c#14
1-3/c#14 (LUM)
2-2/c#14
*1-3/c#14 (EVP)
*1-3/c#20 (EVP)
1-1/c#6 (GRD)

2" RSC
2-2/C#14

4" CONDUIT
2-12/c#14
2-4/c#14
1-3/c#14 (LUM)
11-2/c#14
*1-3/c#14 (EVP)
*1-3/c#20 (EVP)
1-1/c#6 (GRD)
** 1-6SM/6MM FO

4" CONDUIT
4-12/c#14
3-4/c#14
2-3/c#14 (LUM)
13-2/c#14
*2-3/c#14 (EVP)
*2-3/c#20 (EVP)
1-1/c#6 (GRD)
** 1-6SM/6MM FO

(2) PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNAL OVERHEAD AT 11' AND 23'
2-ANGLE MOUNT SIGNAL AT 90 AND 180 DEG
2-ANGLE MOUNT C.D. PED IND AT 90 AND 180 DEG
*1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 2 & 5)
LUMINAIRE-250W HPS
2-PUSH BUTTONS AND SIGNS
1-SIGN D-3 SUNWOOD DR & 147TH AVE
1-SIGN R6-1L ONE WAY
1-SIGN R6-1R ONE WAY
3" RSC INTO HH 5:
2-12/c#14
2-4/c#14
1-3/c#14 (LUM)
2-2/c#14
*1-3/c#14 (EVP)
*1-3/c#20 (EVP)
1-1/c#6 (GRD)

2" RSC
1-6SM/6MM FO

4" CONDUIT
2-12/c#14
2-4/c#14
1-3/c#14 (LUM)
9-2/c#14
*1-3/c#14 (EVP)
*1-3/c#20 (EVP)
1-1/c#6 (GRD)
** 1-6SM/6MM FO

2" RSC
7-2/C#14

2" RSC
1-2/C#14

4" CONDUIT
4-2/c#14

(3) PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 11'
2-ANGLE MOUNT SIGNAL AT 90 AND 180 DEG
1-ANGLE MOUNT C.D. PED IND AT 90 DEG
*1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 4 & 7)
LUMINAIRE-250W HPS
1-PUSH BUTTON AND SIGN
1-SIGN D-1 ARMSTRONG BLVD
1-SIGN R6-1L ONE WAY
1-SIGN R6-1R ONE WAY
1-SIGN R9-3 FACING POLE 4
3" RSC INTO HH 9:
2-12/c#14
1-4/c#14
1-3/c#14 (LUM)
2-2/c#14
*1-3/c#14 (EVP)
*1-3/c#20 (EVP)
1-1/c#6 (GRD)

4" RSC
2-12/c#14
1-4/c#14
1-3/c#14 (LUM)
4-2/c#14
*1-3/c#14 (EVP)
*1-3/c#20 (EVP)
1-1/c#6 (GRD)

2" RSC
2-2/C#14

(4) PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNAL OVERHEAD AT 11' AND 23'
2-ANGLE MOUNT SIGNAL AT 90 AND 180 DEG
*1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 1 & 6)
LUMINAIRE-250W HPS
1-SIGN D-2 SUNWOOD DR & 147TH AVE
1-SIGN R6-1L ONE WAY
1-SIGN R6-1R ONE WAY
2-SIGN R9-3 FACING POLE 1 & 3
3" RSC INTO HH 14:
2-12/c#14
2-4/c#14
1-3/c#14 (LUM)
2-2/c#14
*1-3/c#14 (EVP).
*1-3/c#20 (EVP)
1-1/c#6 (GRD)

3" RSC
2-12/c#14
1-4/c#14
1-3/c#14 (LUM)
6-2/c#14
*1-3/c#14 (EVP)
*1-3/c#20 (EVP)
1-1/c#6 (GRD)

4" RSC
2-12/c#14
1-4/c#14
1-3/c#14 (LUM)
6-2/c#14
*1-3/c#14 (EVP)
*1-3/c#20 (EVP)
1-1/c#6 (GRD)

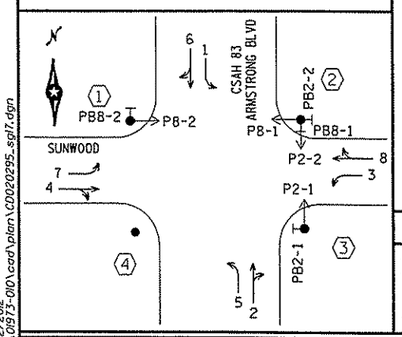
SIGNAL FACE CHART					
FACE	R	Y	G	Y	G
1-1, 1-2	←	←	←		
2-1, 2-2, 2-3	●	●	●		
3-1, 3-2	←	←	←		
4-1, 4-2	●	●	●		
5-1, 5-2	←	←	←		
6-1, 6-2, 6-3	●	●	●		
7-1, 7-2	←	←	←		
8-1, 8-2	●	●	●		

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS

LOOP DETECTOR CHART			
NUMBER	SIZE (FT)	LOCATION	FUNCTION
D1-1, 5-1	6x6	40	1
D1-2, D5-2	6x6	10	1
D2-1, D2-2	6x6	475	1
D3-1, 3-2	6x6	40	1
D3-3, D3-4	6x6	10	1
D4-1, D8-1	6x6	120	3, 8
D4-2	2-6x6	5 & -5	7
D4-3	2-6x6	5 & 20	1
D6-1, D6-2	6x6	475	1
D7-1	6x6	20 & 50	1
D7-2	6x6	5 & 35	1
D8-2	2-6x6	5 & -5	7
D8-3	2-6x6	5 & 20	1

-ALL LOOP DETECTORS SHALL BE PVC
-LOCATION: DISTANCE FROM CROSSWALK/STOP BAR IN FEET
-LOOP DETECTOR FUNCTIONS:
(1) CALL AND EXTEND
(3) EXTEND ONLY
(7) DELAYED CALL, IMMEDIATE EXTEND
(8) CARRY OVER (STRETCH)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE WITH PHASES 1, 3, 5 AND 7 BEING PROTECTED LEFT TURN PHASES.
- PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.

MATCH LINE - NB CSAH 83 STA. 34+80

NO.	DATE	BY	CHK	REVISIONS

Design By: SD
Plan By: MAS
Checked By: NEH
Approved By: SD

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
CERTIFIED BY: LICENSED PROFESSIONAL ENGINEER - SEAN DILMORE, PE
DATE: 04/03/12 LIC. NO: 40945

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CITY OF RAMSEY, MINNESOTA
TRAFFIC CONTROL SIGNAL SYSTEM INTERSECTION LAYOUT
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 125 OF 153 SHEETS

Date Printed: 6/12/2012
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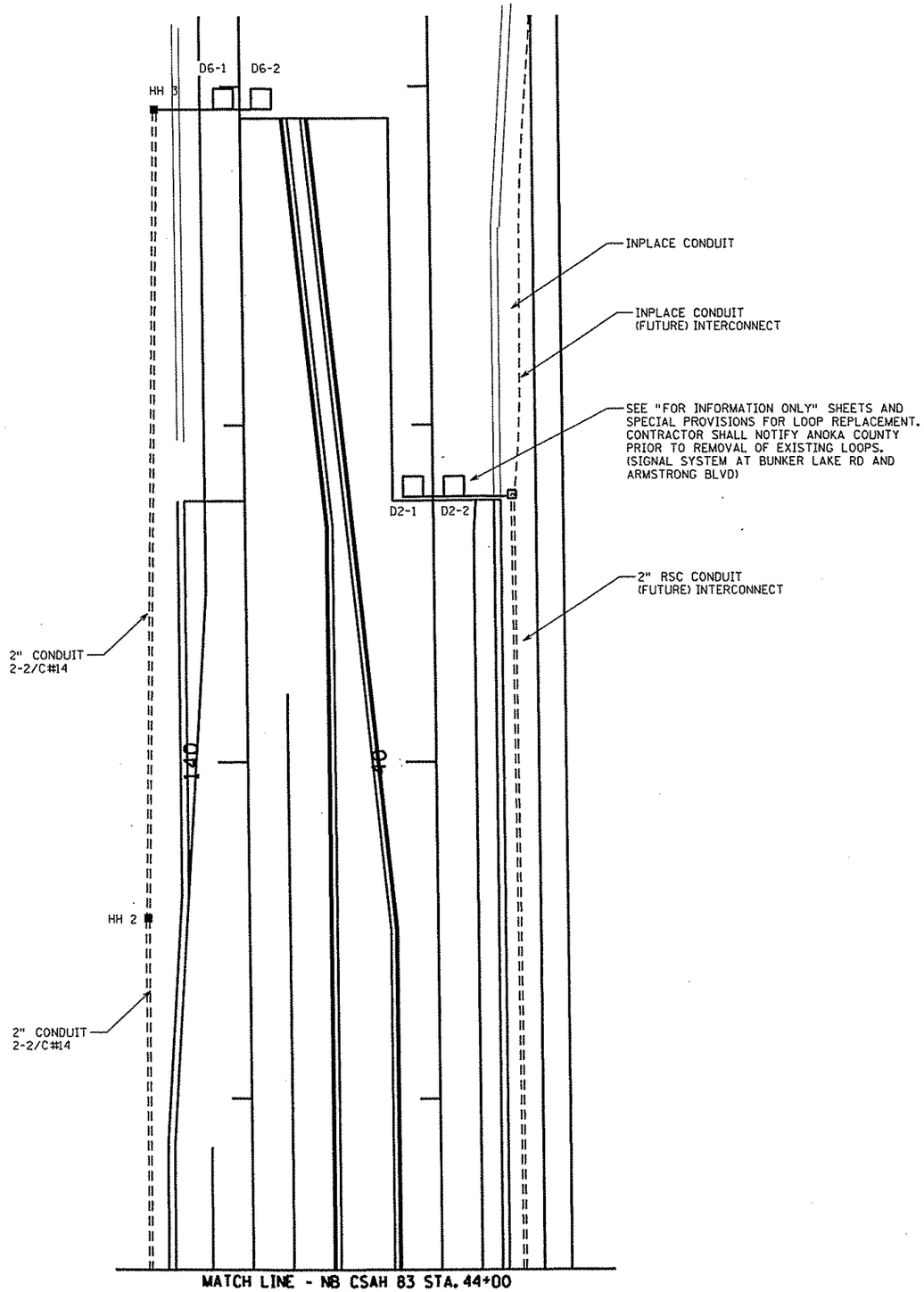

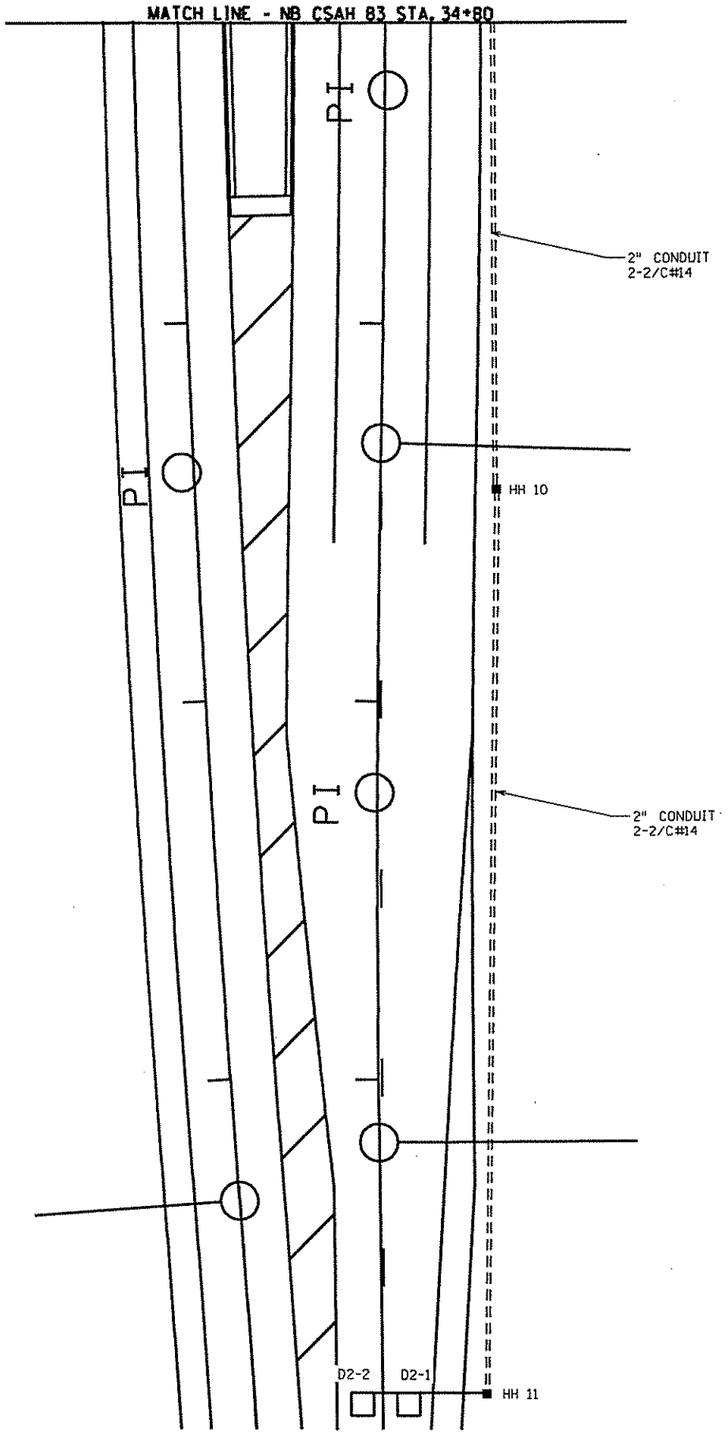

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DATE: 04/03/12 LIC. NO: 40945

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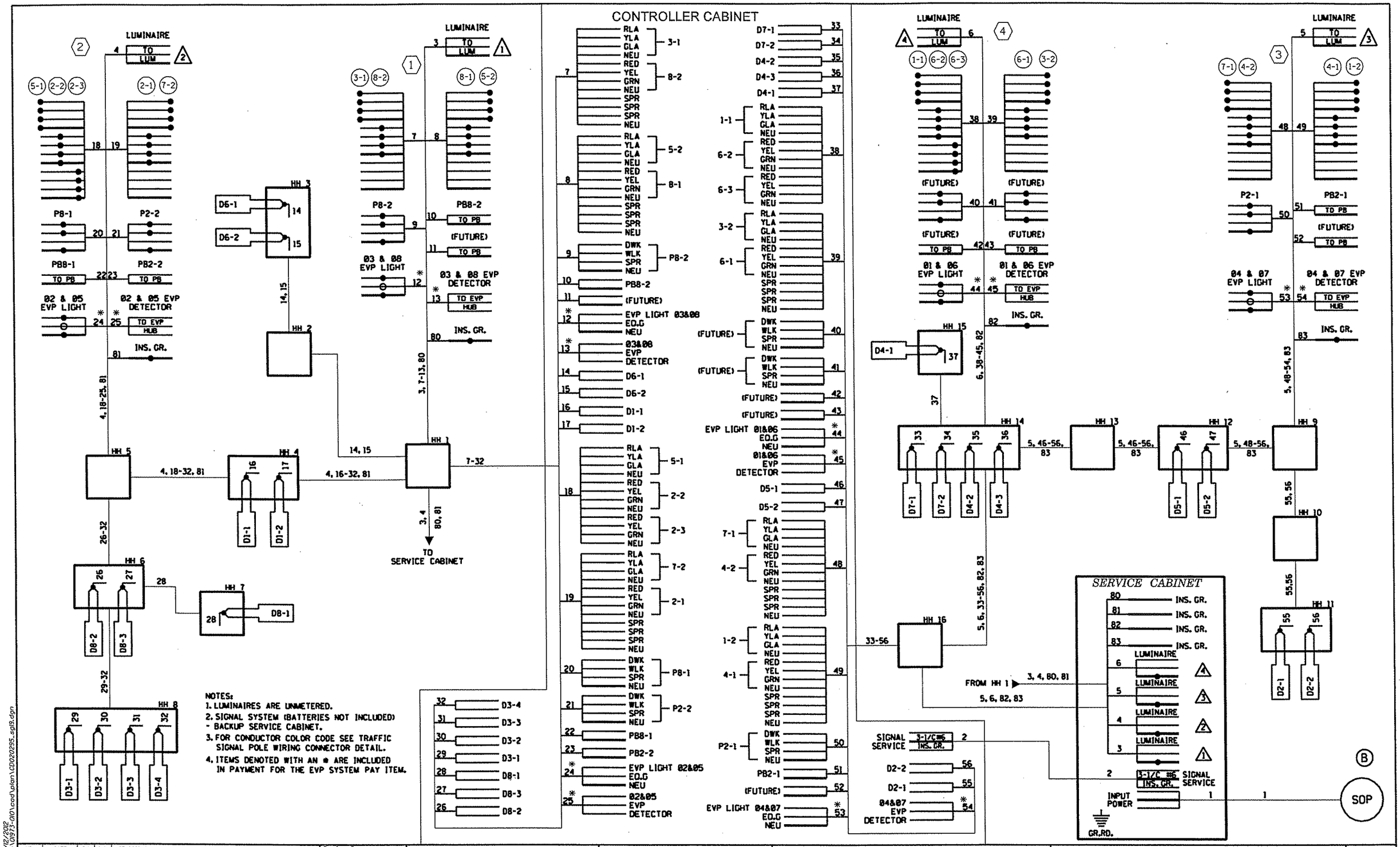
City of Ramsey, Minnesota

CITY OF RAMSEY, MINNESOTA
TRAFFIC CONTROL SIGNAL SYSTEM MATCH LINE
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 126 OF 153 SHEETS



NOTES:
1. LUMINAIRES ARE UNMETERED.
2. SIGNAL SYSTEM (BATTERIES NOT INCLUDED) - BACKUP SERVICE CABINET.
3. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL POLE WIRING CONNECTOR DETAIL.
4. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.

NO.	DATE	BY	CHK	REVISIONS

Design By: SD
Plan By: MAS
Checked By: NEH
Approved By: SD

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CITY OF RAMSEY, MINNESOTA
TRAFFIC CONTROL SIGNAL SYSTEM WIRING DIAGRAM
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 127 OF 153 SHEETS

Date Printed: 6/12/2012
WSB Filename: K:\0913-010\cad\plan\C0020295_sgl8.dgn

FOR INFORMATION ONLY

NOTES:

1) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS, COUNTDOWN PEDESTRIAN INDICATIONS, LED INDICATIONS, AND PAINTING OF SIGNAL SYSTEM.
2) THE EXACT LOCATION OF HANDHOLES, POLES, LOOP DETECTORS, EQUIPMENT PAD, AND PEDESTRIAN CURB RAMPS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
4) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY FOR EMERGENCY VEHICLE PREEMPTION EQUIPMENT SHALL BE F&I 6' FROM THE END OF MAST ARM.
5) THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION.
6) THE CONTRACTOR SHALL LOCATE AND VERIFY INPLACE UTILITIES PRIOR TO COMMENCING WORK.
7) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCIDENTAL).
8) EACH PEDESTRIAN INDICATION SHALL BE LED, ONE SECTION "FILLED" HAND/WALKING PERSON INDICATION.
9) ALL POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE MOUNTED USING ONE-WAY SIGNAL HEAD MOUNTS. SEE DETAILS AND SPECIAL PROVISIONS.
10) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" NMC. SEE SPECIAL PROVISIONS.
11) ALL VEHICLES AND PEDESTRIAN SIGNAL HOUSINGS, BACKGROUND SHIELD, AND VISORS SHALL BE FABRICATED USING BLACK POLYCARBONATE MATERIALS. SEE SPECIAL PROVISIONS.
12) (EVP) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR UNDER ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION). SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
13) DISTANCE OFF SHOULDER OR CURB FOR EVP CONDUIT SHALL BE 1-2 FEET.
14) COIL AN ADDITIONAL 15' OF CABLE FOR DETECTORS D4-1 AND D4-2 FOR FUTURE EXTENSION OF HH 8 (TO THE SOUTH).

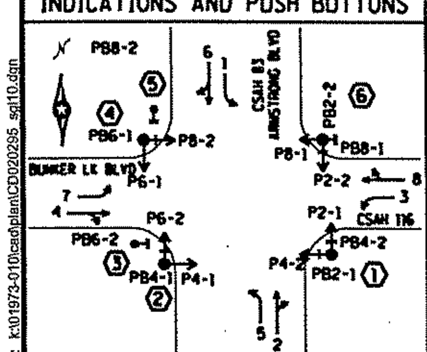
(A)

EQUIPMENT PAD FOUNDATION - SEE DETAIL
CONTROLLER AND CABINET (COUNTY FURNISHED)
BETWEEN CONTROLLER CABINET AND SERVICE CABINET:
METERED SIGNAL SERVICE
2" RSC
2-1/C#6
1-1/C#6 INS. GRD.
4" RSC INTO HH 1:
4-12/C#14
4-4/C#14
2-3/C#14 (EVP)
17-3/C#14
2-3/C#20 (EVP)
4" RSC INTO HH 19:
4-12/C#14
4-4/C#14
2-3/C#14 (EVP)
3-3/C#20 (EVP)
2-5/C#14 (EVP)
18-2/C#14
3" RSC STUBBED OUT (THREAD AND CAP FOR FUTURE USE)
2" RSC STUBBED OUT (THREAD AND CAP FOR FUTURE USE)
1" NMC STUBBED OUT AND CAP FOR FUTURE TELEPHONE LINE)

SIGNAL SERVICE CABINET
(SAME FOUNDATION AS CONTROLLER CABINET)
2" RSC INTO HH 1:
UNMETERED STREET LIGHT SERVICE
4-3/C#14 (LUM)
2" RSC STUB OUT TO HH 20:
3-1/C#2
(FOR POWER BY CONNEXUS)

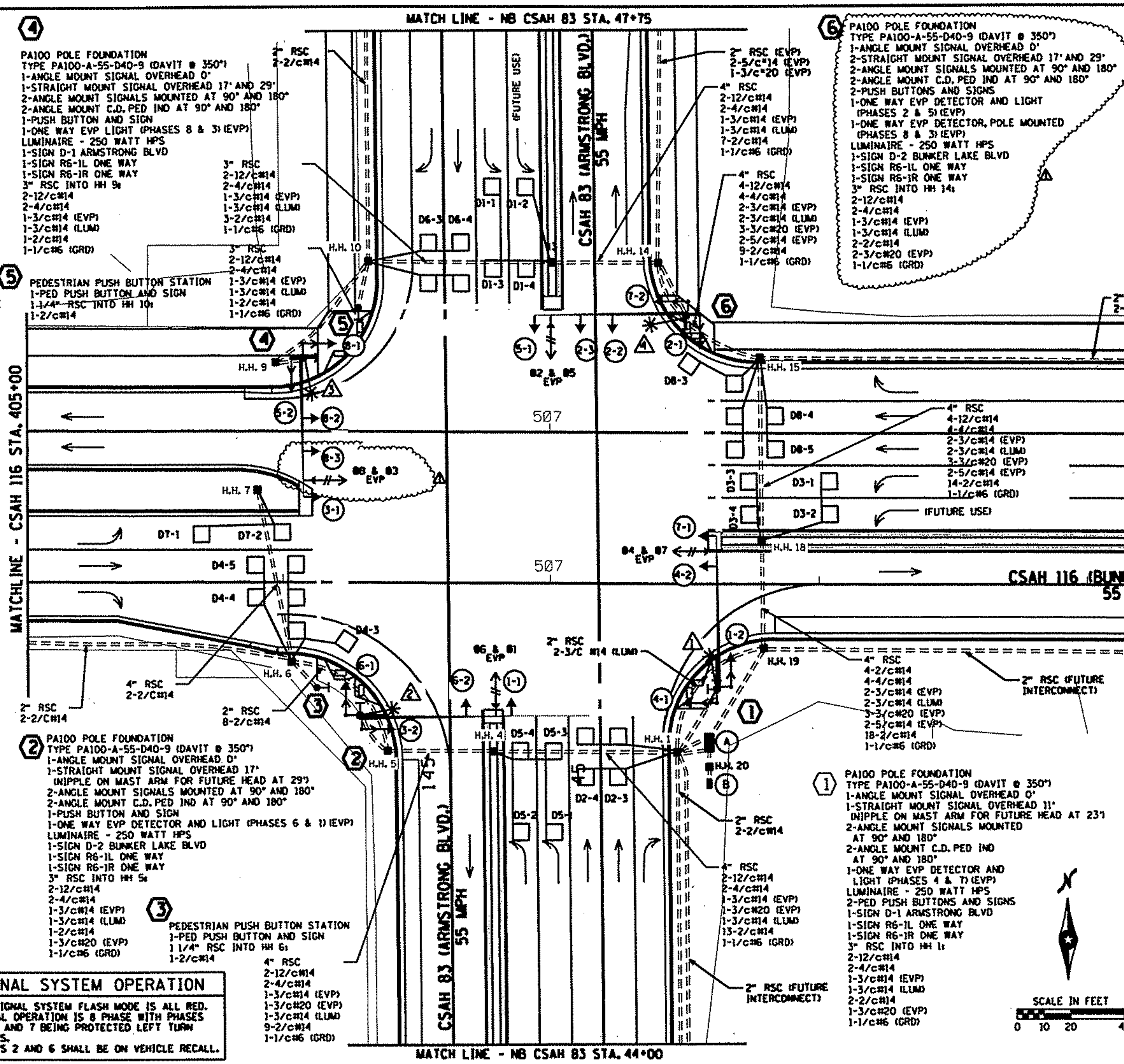
(B) SOP-TRANSFORMER (POWER BY CONNEXUS)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE WITH PHASES 1, 3, 5 AND 7 BEING PROTECTED LEFT TURN PHASES.
- PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.



SIGNAL INDICATIONS

FACE	R	Y	G	Y	G
1-1,1-2	←	←	←		
2-1,2-2,2-3	●	●	●		
3-1,3-2	←	←	←		
4-1,4-2	●	●	●		
5-1,5-2	←	←	←		
6-1,6-2	●	●	●		
7-1,7-2	←	←	←		
8-1,8-2,8-3	●	●	●		

- ALL SIGNAL INDICATIONS SHALL BE 12".
- ALL SIGNAL INDICATIONS SHALL BE LED.
- ALL SIGNAL FACES SHALL HAVE A BACKGROUND SHIELD.

LOOP DETECTORS

NUMBER	SIZE (FEET)	LOCATION	FUNCTION
D1-1,D1-2	6'X6'	40'	1
D1-3,D1-4	6'X6'	10'	1
D2-1,D2-2	6'X6'	475'	1
D2-3, D2-4	2-6'X6'	5' & 20'	1
D3-1,D3-2	6'X6'	40'	1
D3-3,D3-4	6'X6'	10'	1
D4-1, D4-2	6'X6'	250'	3,8
D4-3	2-6'X6'	5' & -5'	7
D4-4	2-6'X6'	5' & 20'	7
D4-5	2-6'X6'	5' & 20'	1
D5-1,D5-2	6'X6'	40'	1
D5-3,D5-4	6'X6'	10'	1
D6-1,D6-2	6'X6'	475'	1
D6-3, D6-4	2-6'X6'	5' & 20'	1
D7-1	6'X6'	40'	1
D7-2	6'X6'	10'	1
D8-1,D8-2	6'X6'	475'	3,8
D8-3	6'X6'	5',20	7
D8-4	6'X6'	5',20	1
D8-5	2-6'X6'	-5' & 5'	1

- ALL LOOP DETECTORS SHALL BE NMC UNLESS NOTED OTHERWISE.
- LOCATION = DISTANCE FROM STOP BAR TO FRONT OF DETECTOR.
- LOOP DETECTOR FUNCTIONS:
  (1) CALL AND EXTEND.
  (3) EXTEND ONLY.
  (7) DELAYED CALL, IMMEDIATE EXTEND.
  (8) CARRY OVER (STRETCH).

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Drawn By: M SCHWARTZ — Checked By: S DELMORE — Approved By: S DELMORE

CITY OF RAMSEY
CSAH 83/116 & MSAS 121 CONSTRUCTION

TRAFFIC CONTROL SIGNAL SYSTEM INTERSECTION LAYOUT CSAH 83 (ARMSTRONG BLVD) AND CSAH 116 (BUNKER LK BLVD)
SIGNAL PLAN
SHEET 8 OF 11 SHEETS

NO.	DATE	BY	CHK	REVISIONS

Design By: SD — Plan By: MAS — Checked By: NEH — Approved By: SD

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LICENSED PROFESSIONAL ENGINEER - SEAN DELMORE, PE
DATE: 04/03/12 LIC. NO: 40945

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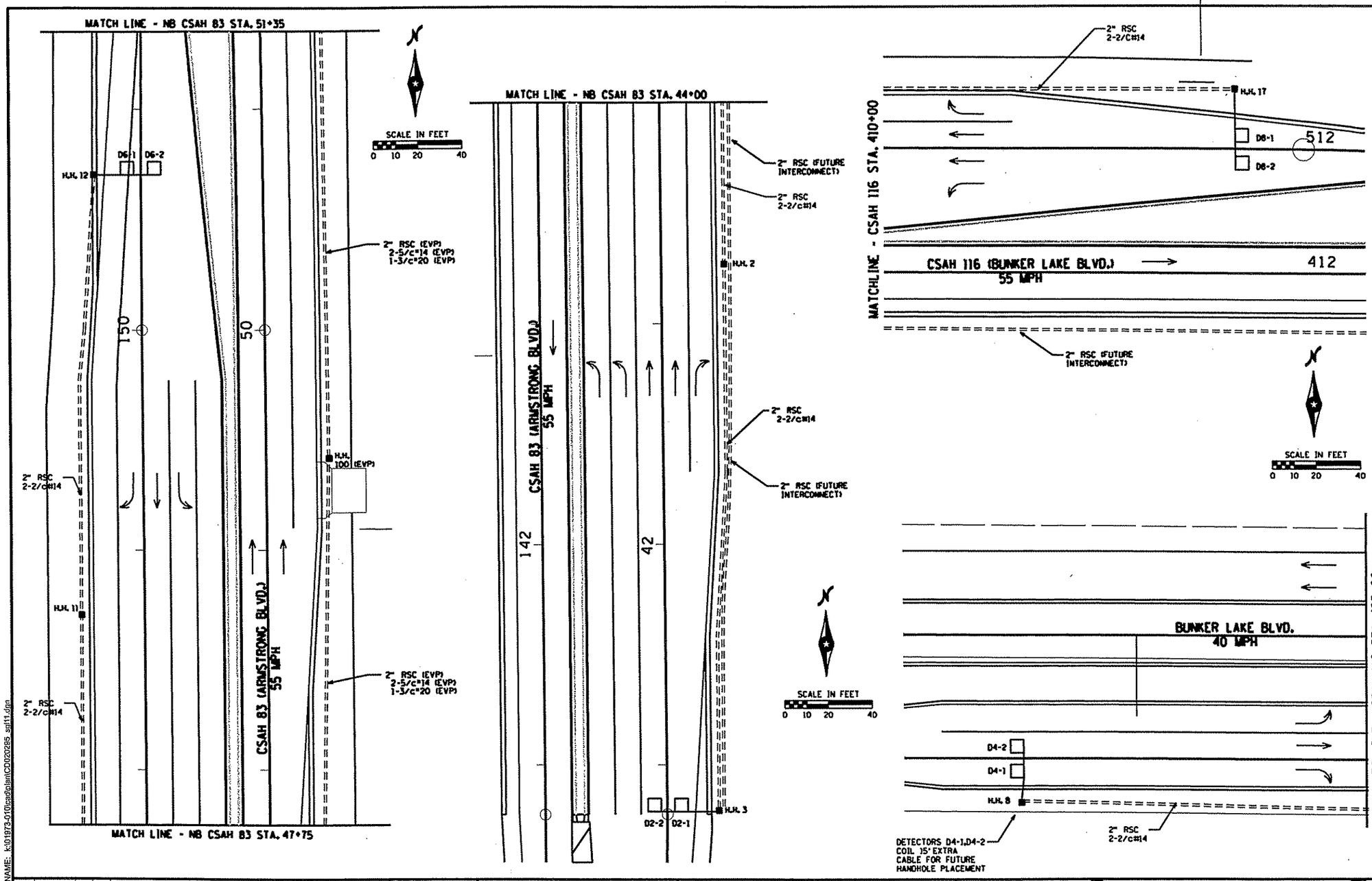
CITY OF RAMSEY, MINNESOTA
FOR INFORMATION ONLY
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20



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NO	DATE	BY	CHK	REVISIONS
3	5/10/11	MAS	SD	RENUMBERED DETECTORS

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Drawn By: M SCHWARTZ
M SCHWARTZ
Checked By: S DELMORE
Approved By: S DELMORE

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Licensed Professional Engineer, Sean Delmore, P.E.
DATE: $$$$DATE$$$$ LIC NO: 40945

CITY OF RAMSEY
CSAH 83/116 & MSAS 121 CONSTRUCTION

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TRAFFIC CONTROL SIGNAL SYSTEM MATCH LINE
CSAH 83 (ARMSTRONG BLVD) AND ~~CSAH 116~~ (BUNKER LK BLVD)
SIGNAL PLAN
SHEET 9 OF 11 SHEETS
~~S.A.P. 139-020-005, S.A.P. 199-121-001, C.P. 11-21~~

SHEET ~~6of9~~ OF ~~8TOT~~ SHEETS

NO.	DATE	BY	CHK	REVISIONS

Design By: SD
Plan By: MAS
Checked By: NEH
Approved By: SD

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
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LICENSED PROFESSIONAL ENGINEER - SEAN DELMORE, PE
DATE: 04/03/12 LIC. NO: 40945

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CITY OF RAMSEY, MINNESOTA
"FOR INFORMATION ONLY"
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 129 OF 153 SHEETS

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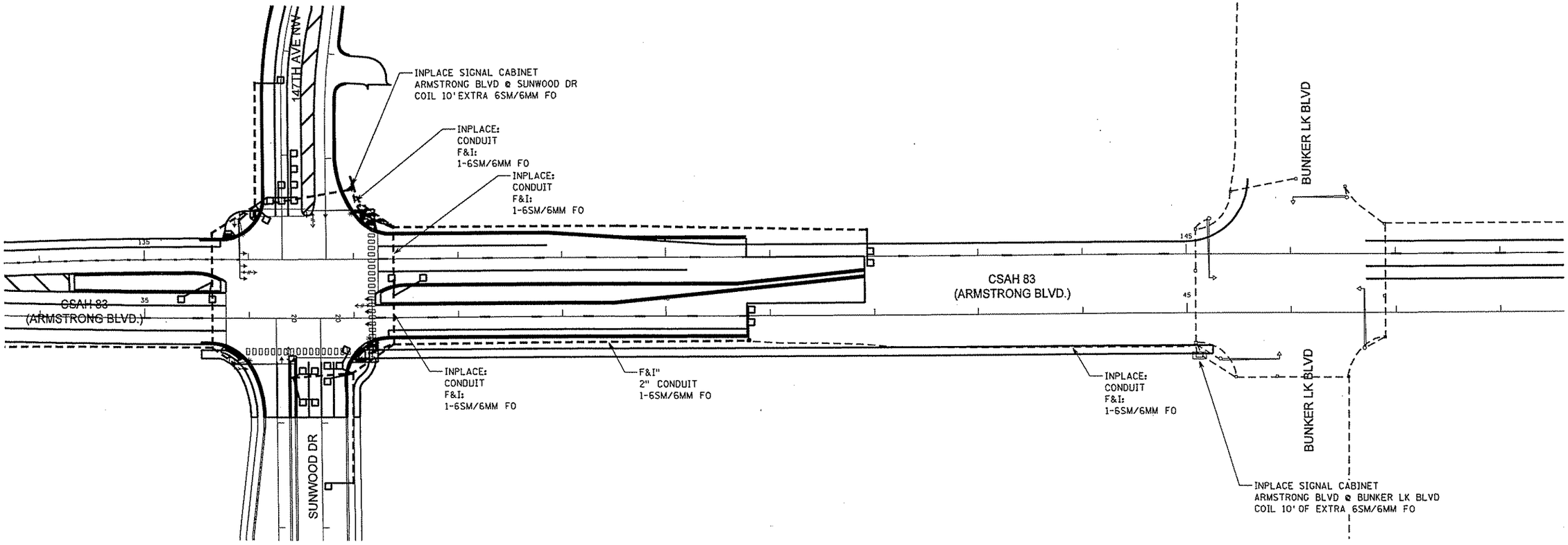
NOTES:

1) THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION.
2) THE CONTRACTOR SHALL LOCATE AND VERIFY INPLACE UTILITIES PRIOR TO COMMENCING WORK.
3) (** FIBER OPTIC) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR UNDER ITEM NO. 2565 (INTERCONNECT) SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
4) DISTANCE OFF SHOULDER OR CURB FOR EVP CONDUIT SHALL BE 1-2 FEET.

0 50 FT 100 FT



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Plan By: MAS
Checked By: NEH
Approved By: SD

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DATE: 04/03/12 LIC. NO: 40945

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CITY OF RAMSEY, MINNESOTA
TRAFFIC CONTROL SIGNAL SYSTEM INTERCONNECT LAYOUT
SIGNAL PLAN
S.A.P. 199-020-010 / C.P. 12-20

SHEET 130 OF 153 SHEETS

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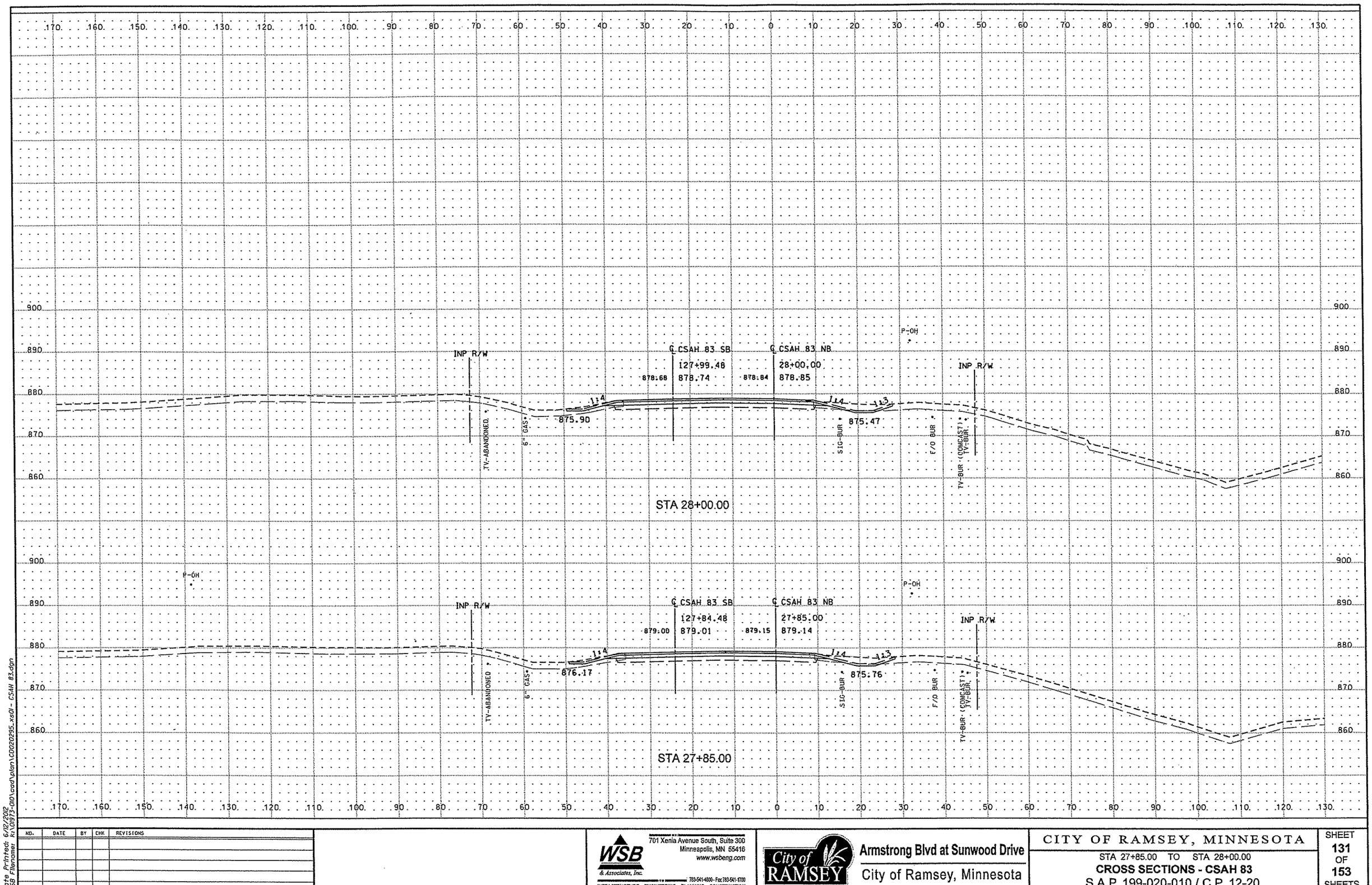

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CITY OF RAMSEY, MINNESOTA

STA 27+85.00 TO STA 28+00.00

CROSS SECTIONS - CSAH 83

S.A.P. 199-020-010 / C.P. 12-20

SHEET 131 OF 153 SHEETS

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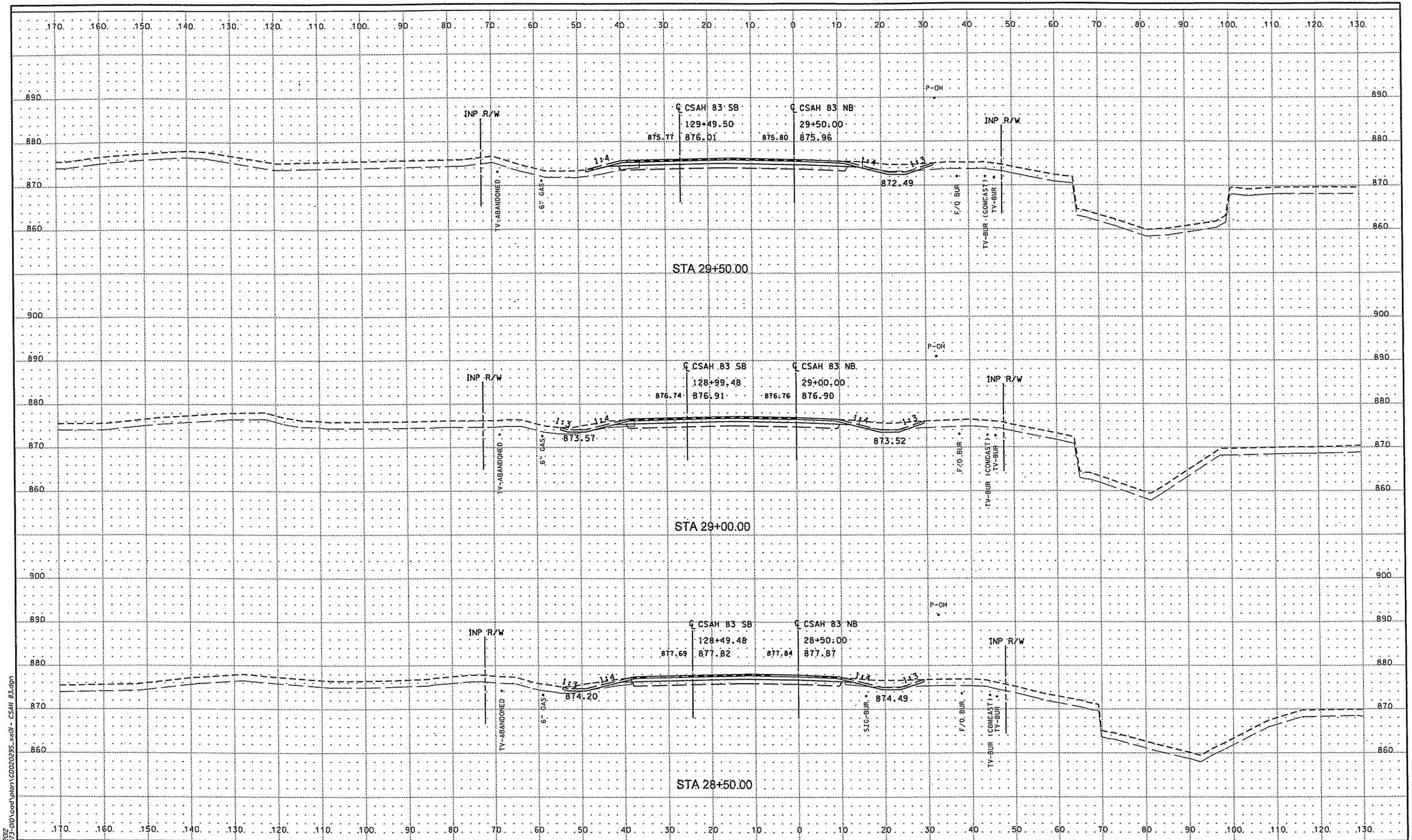

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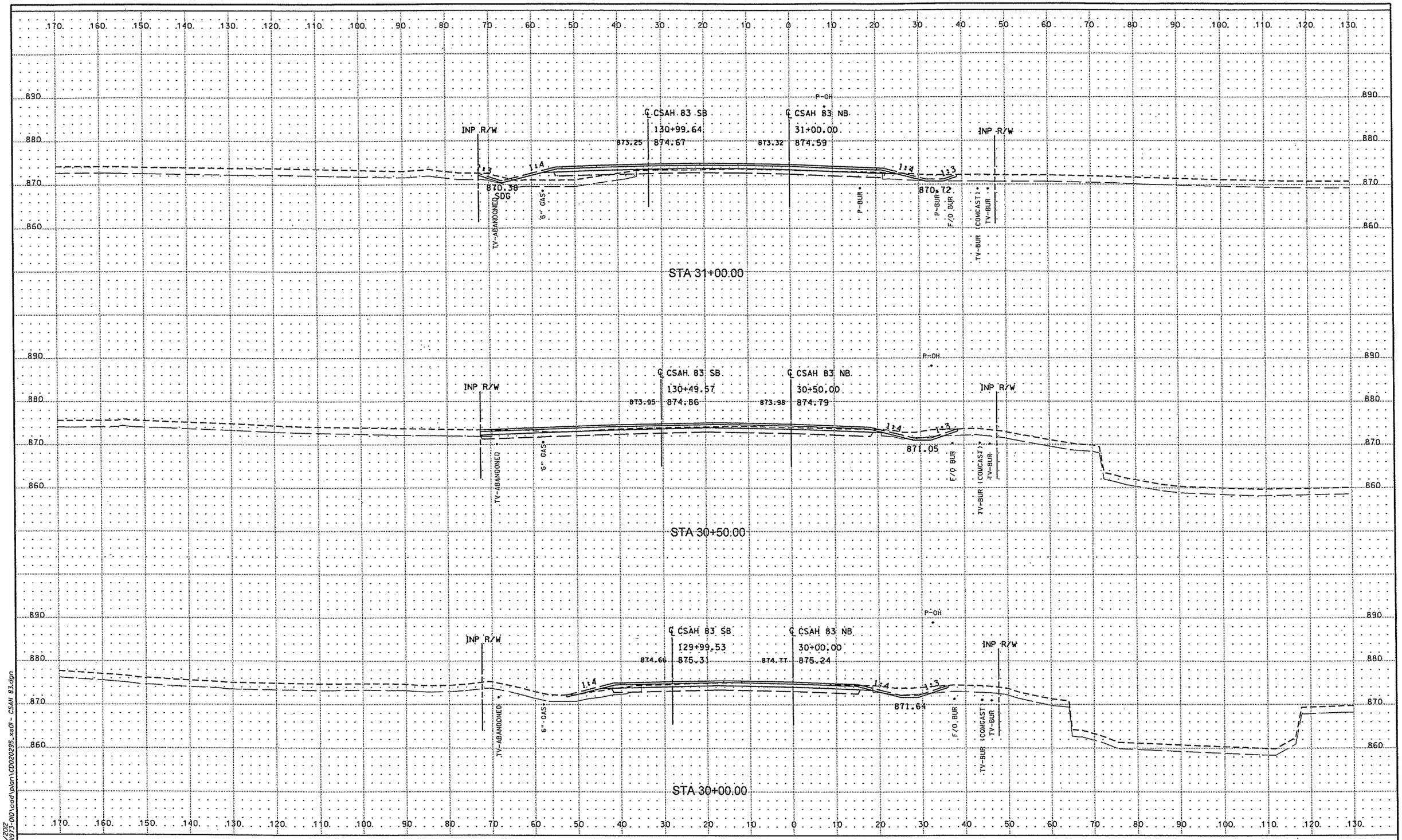
CITY OF RAMSEY, MINNESOTA

STA 28+50.00 TO STA 29+50.00

CROSS SECTIONS - CSAH 83

S.A.P. 199-020-010 / C.P. 12-20

SHEET 132 OF 153 SHEETS



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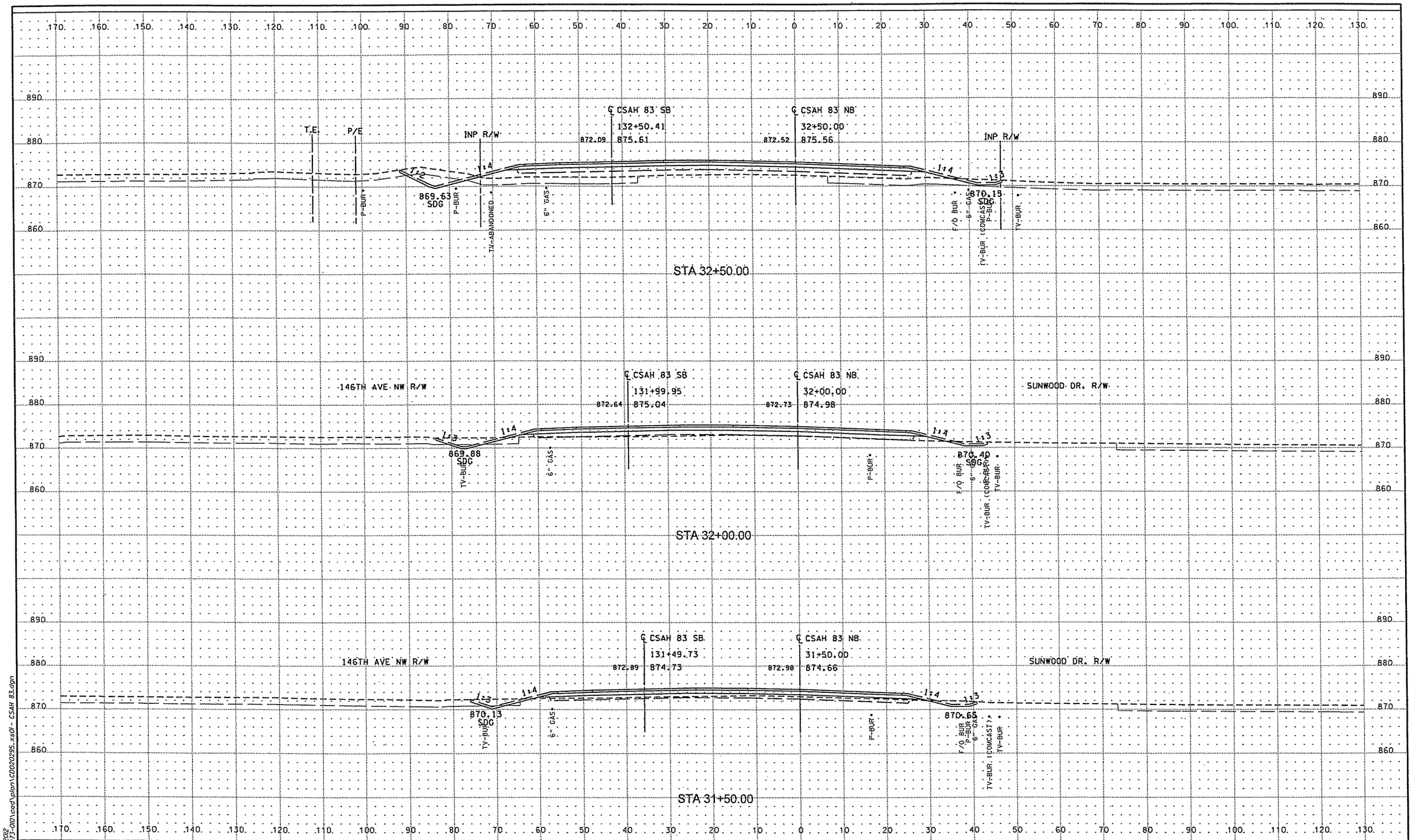

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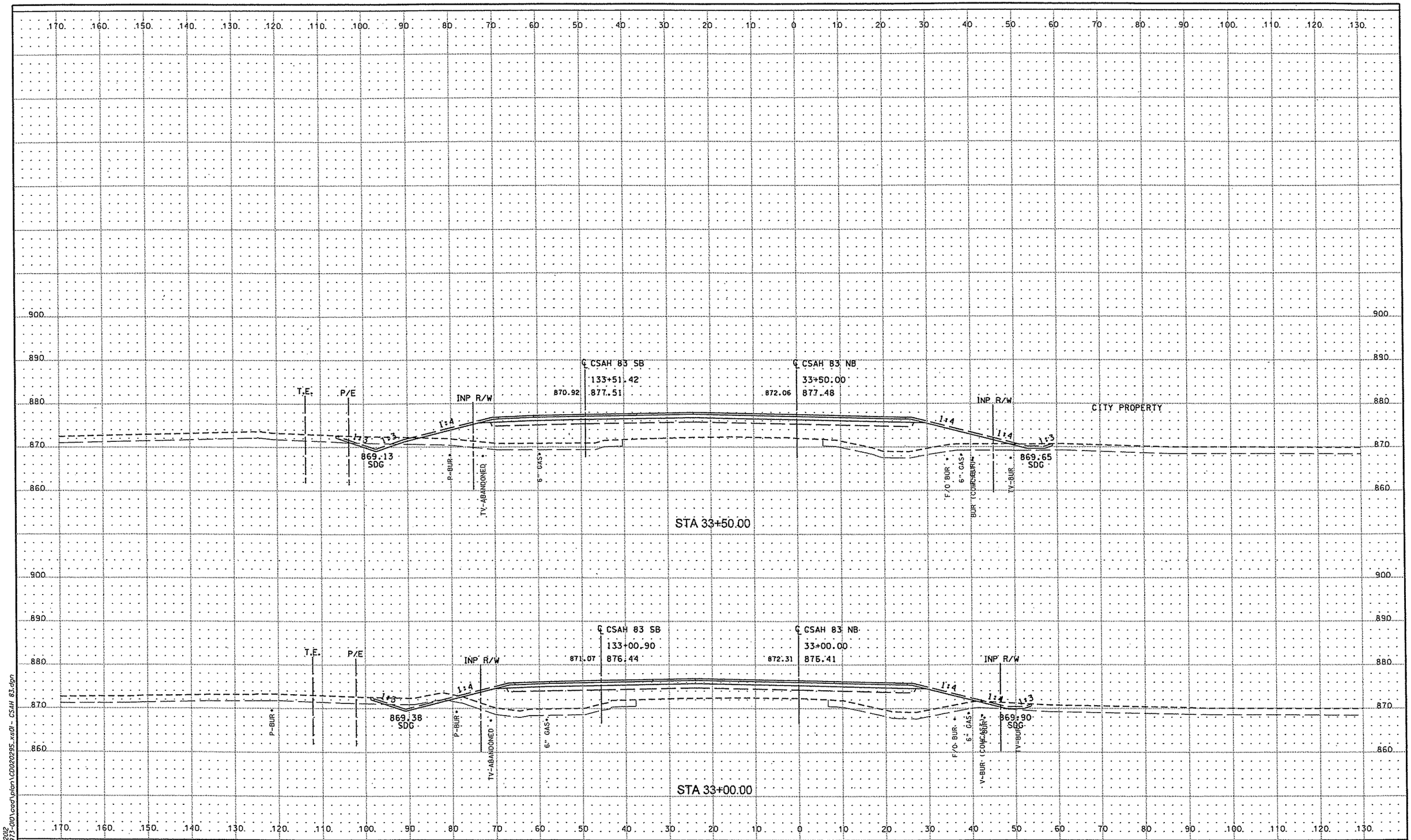

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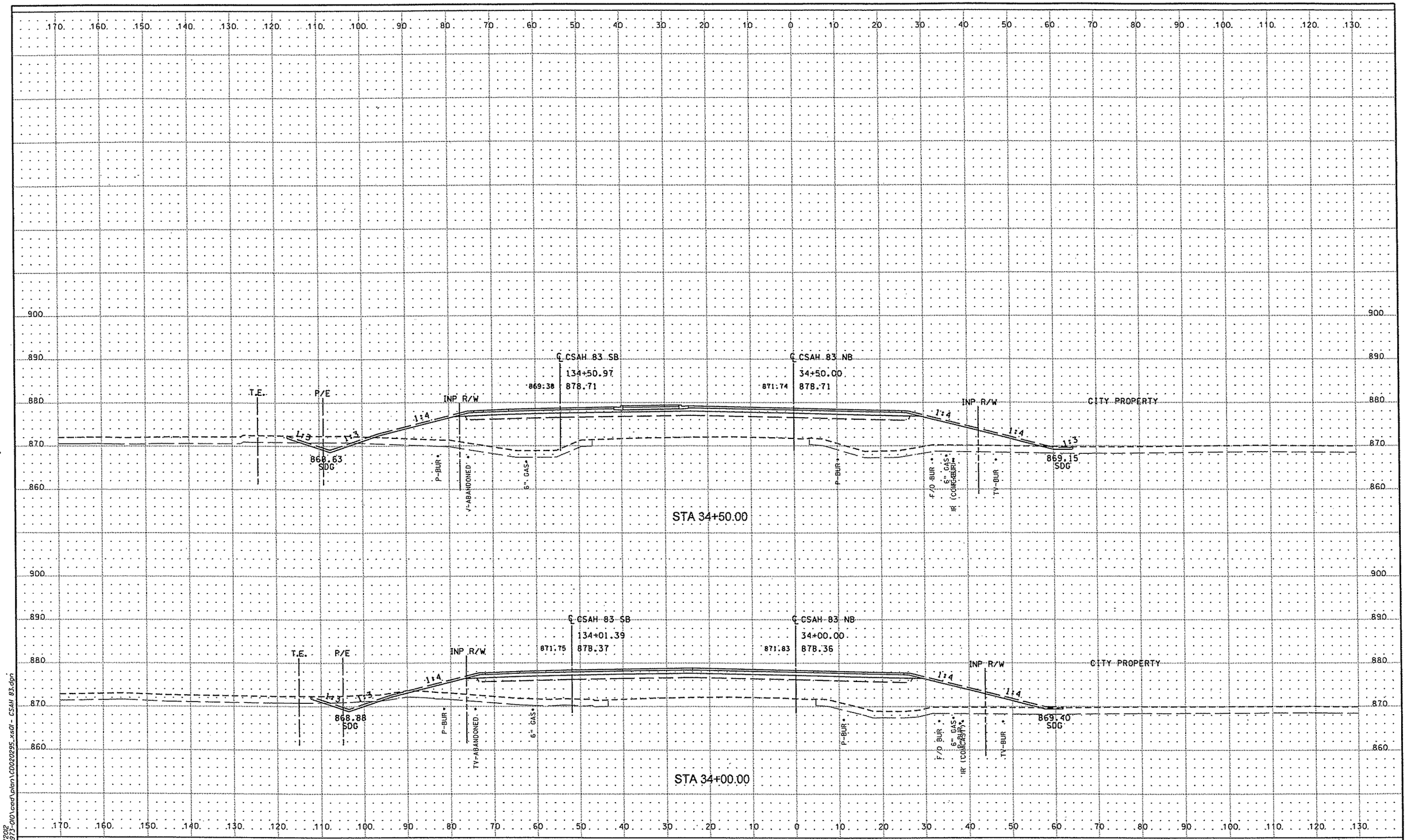

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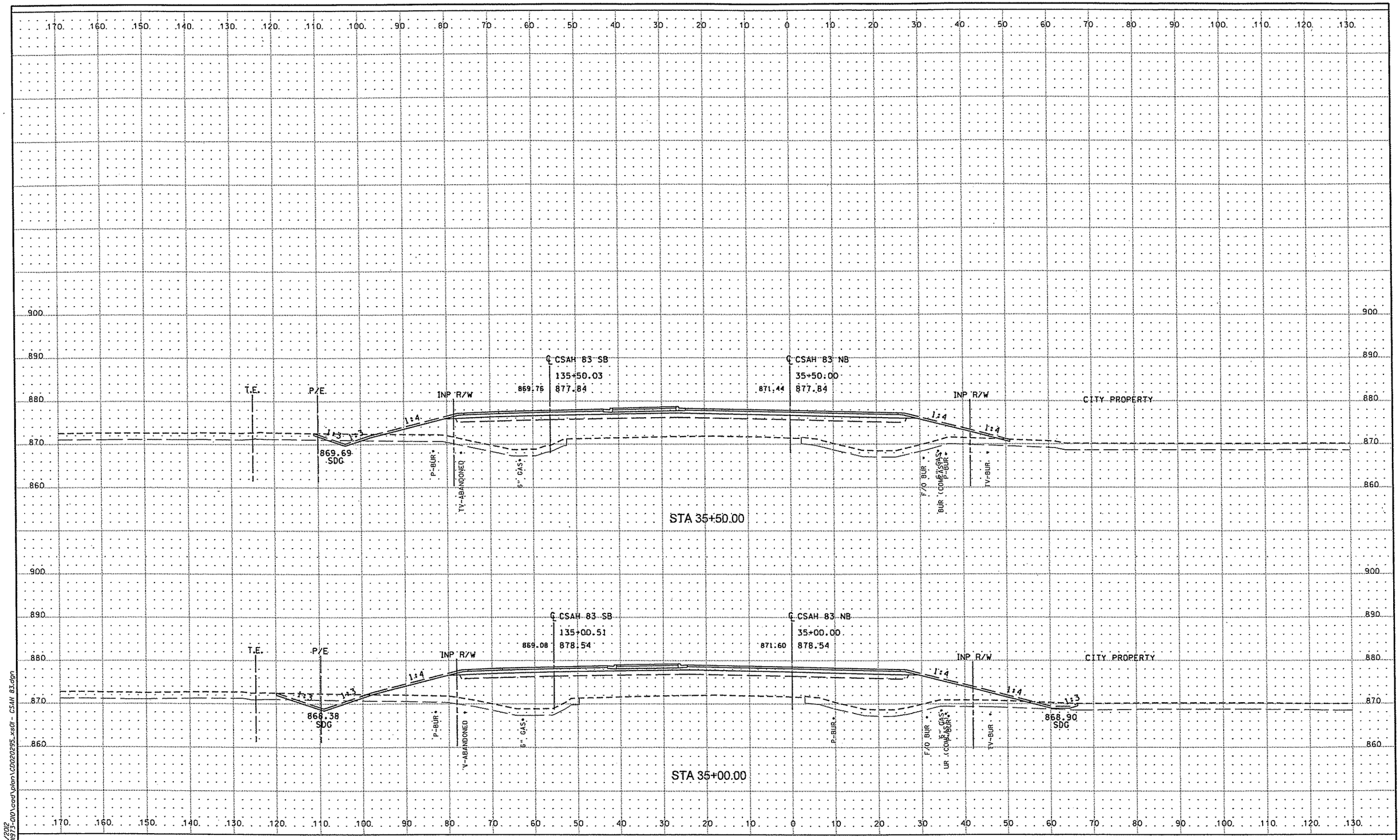

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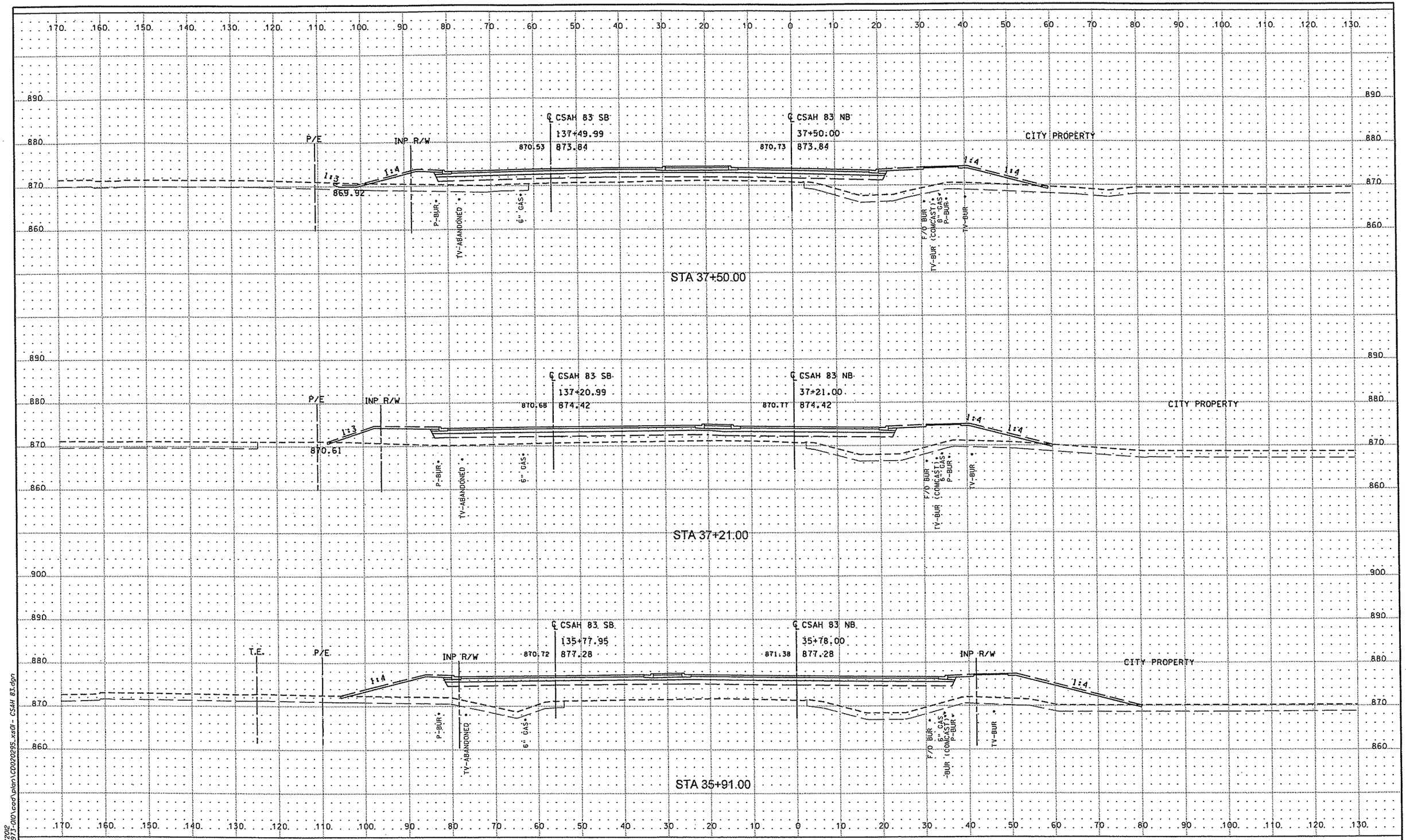

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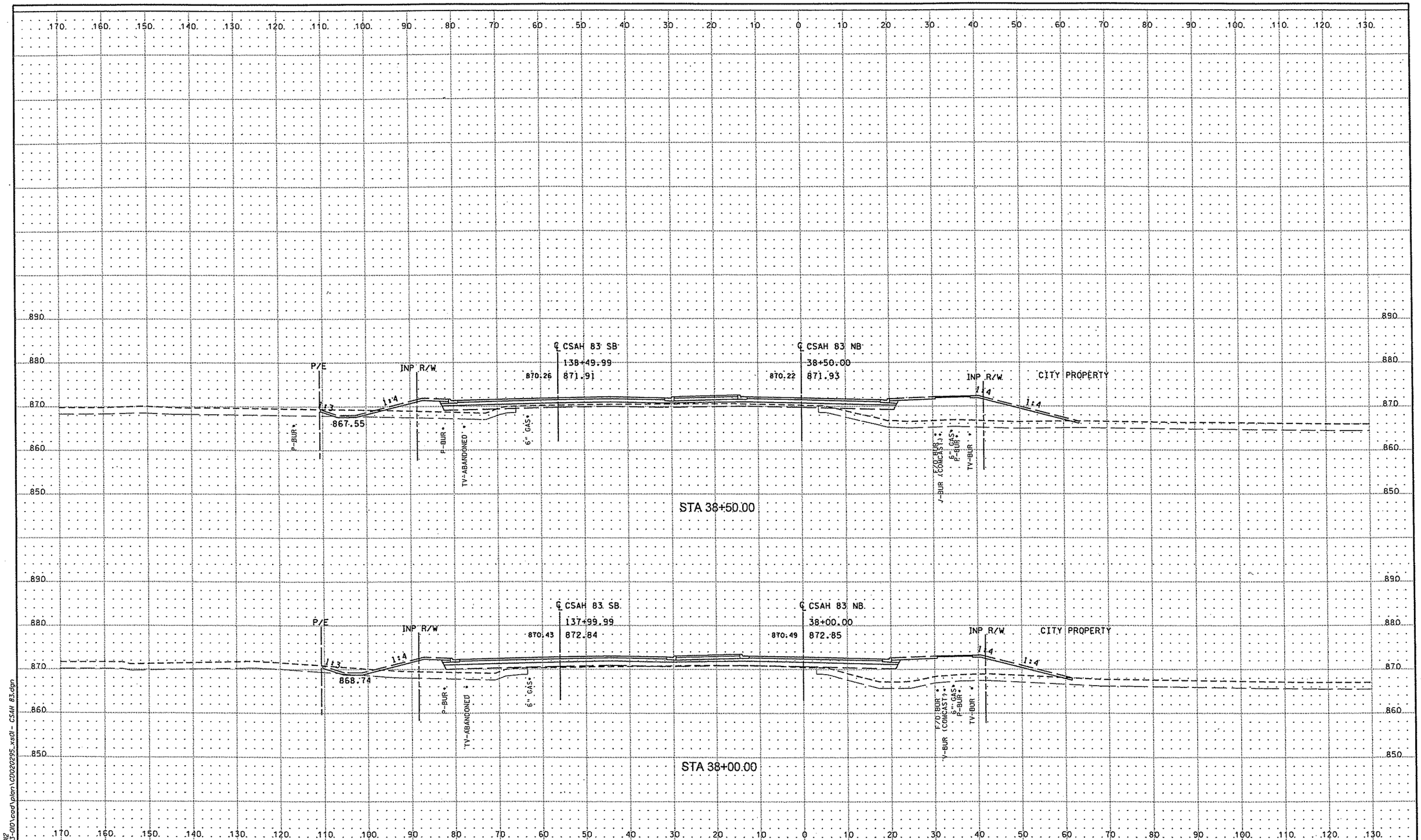

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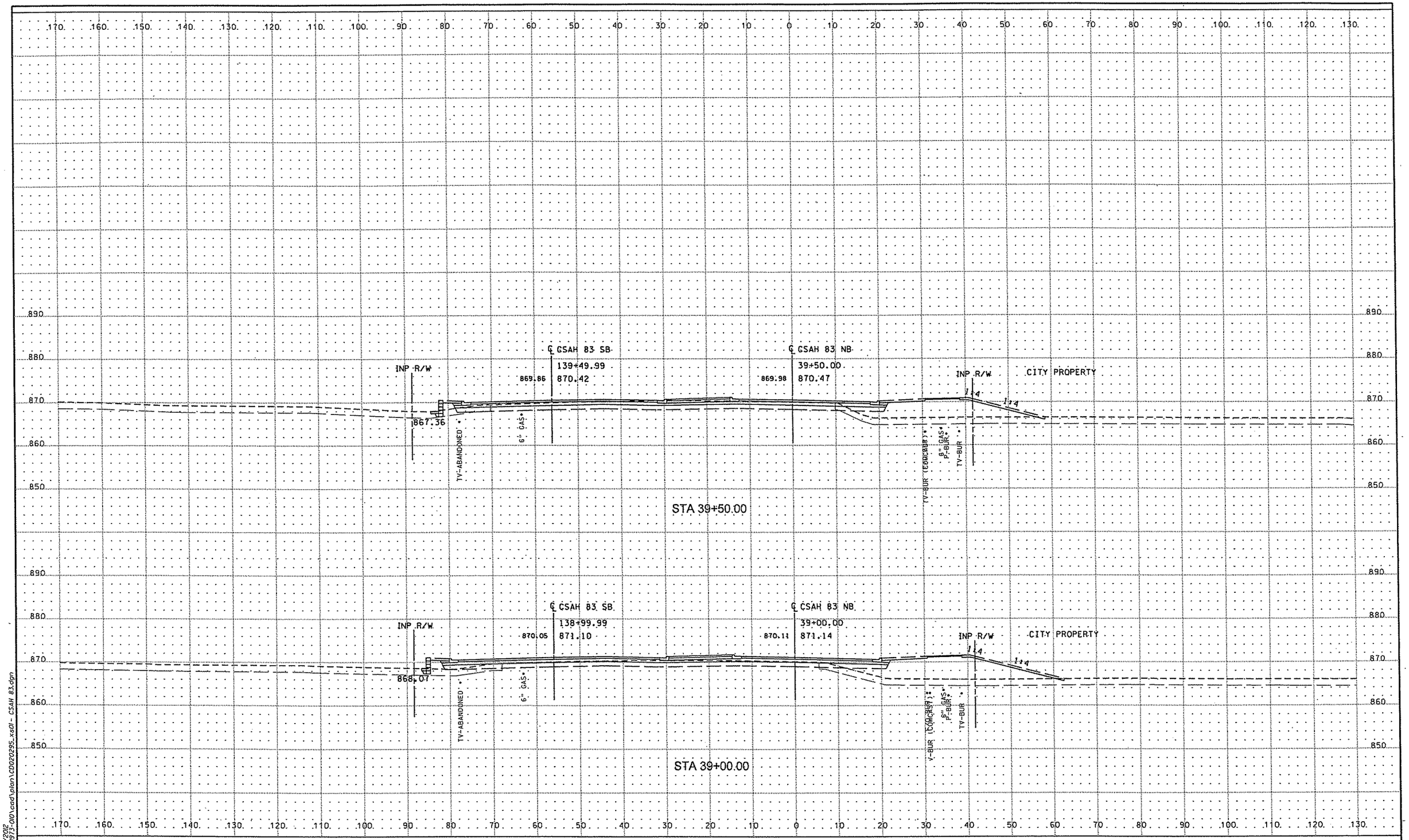

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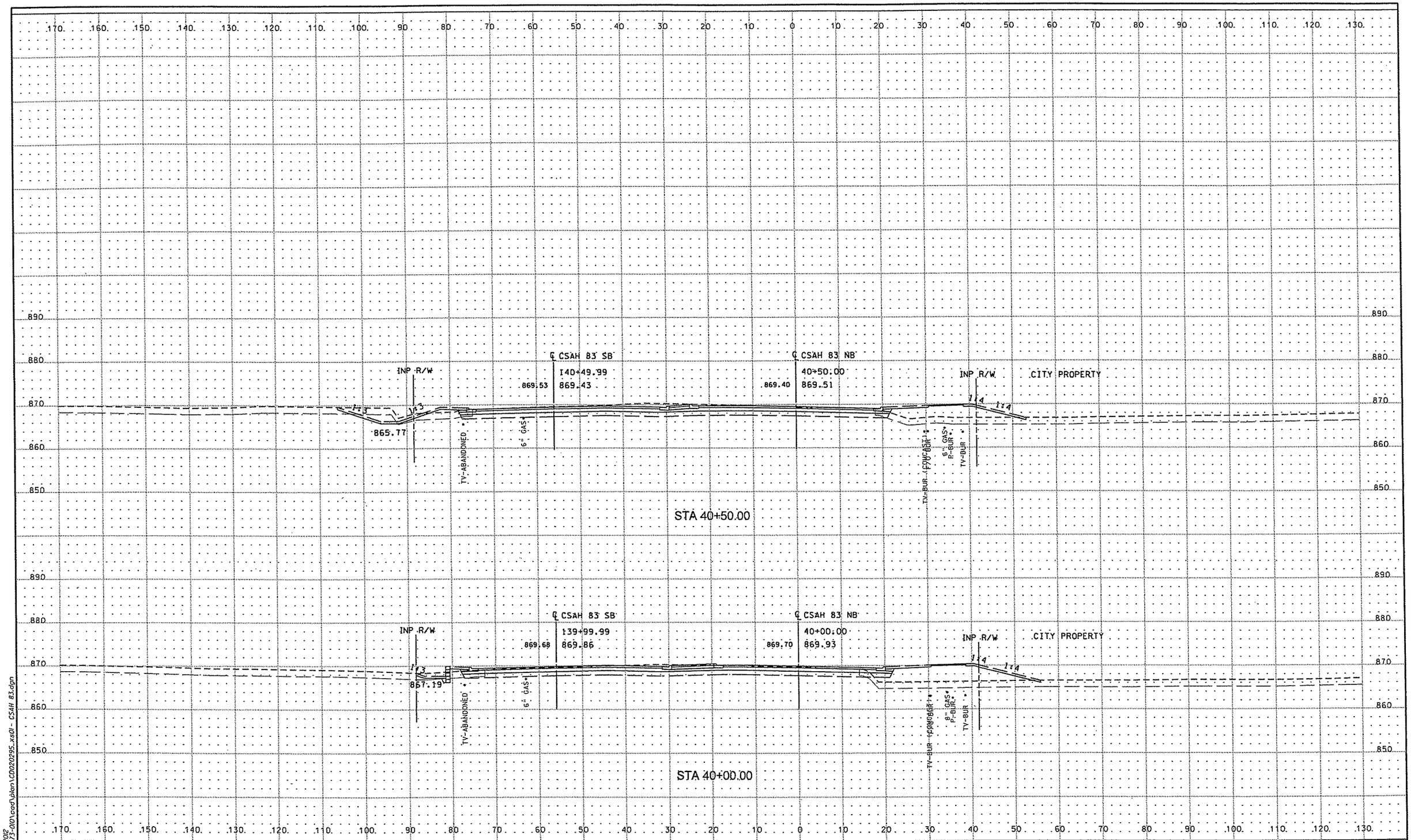

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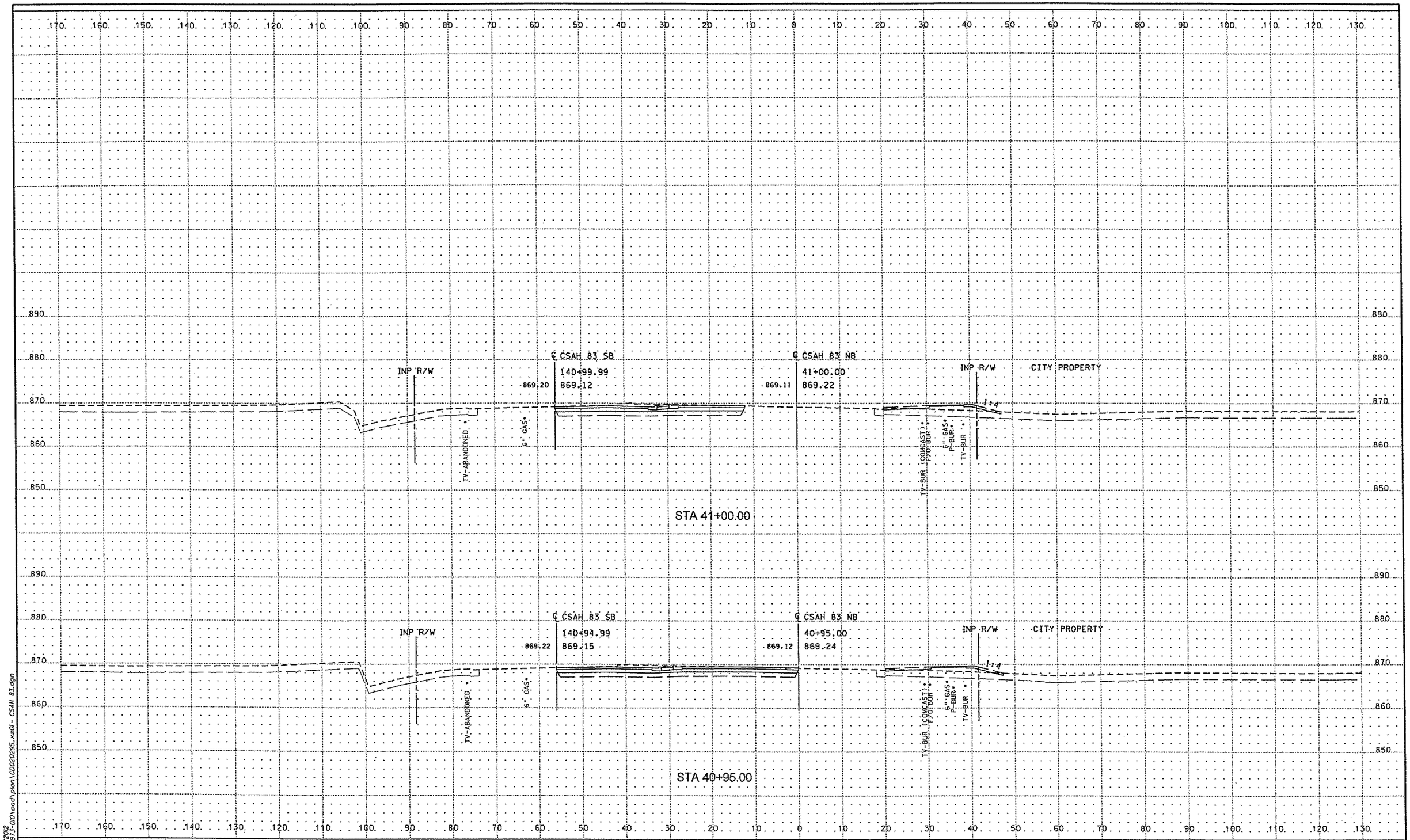

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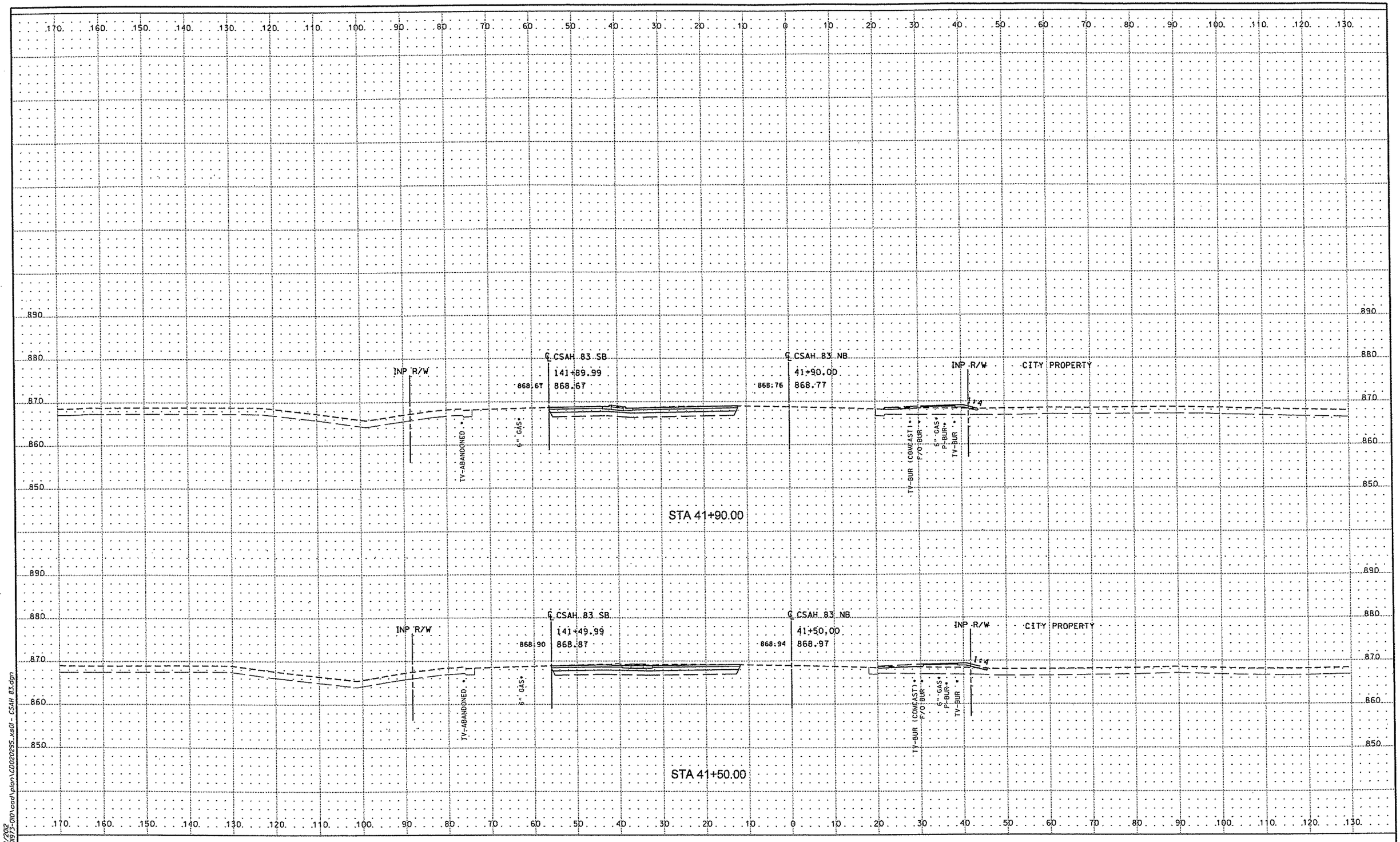

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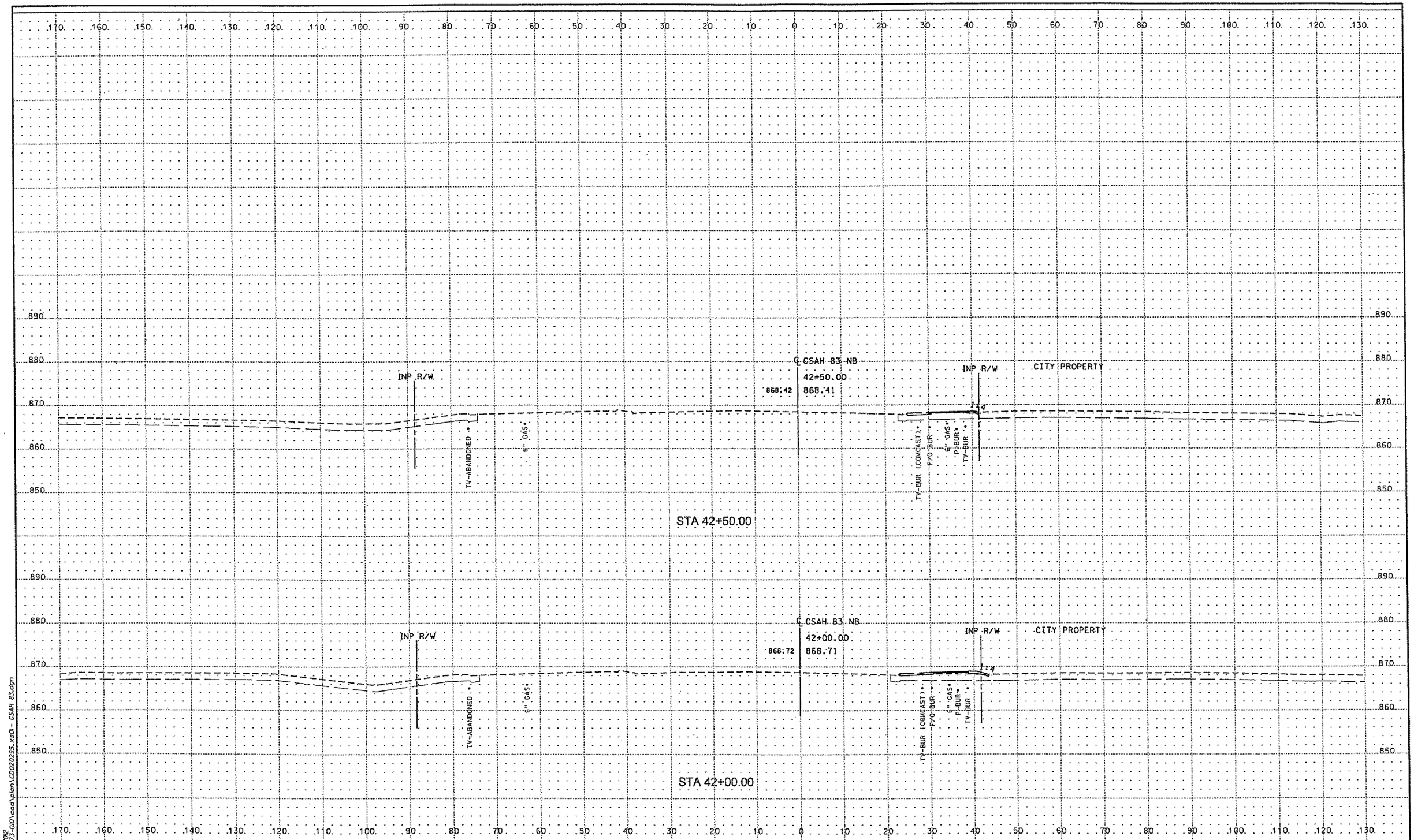

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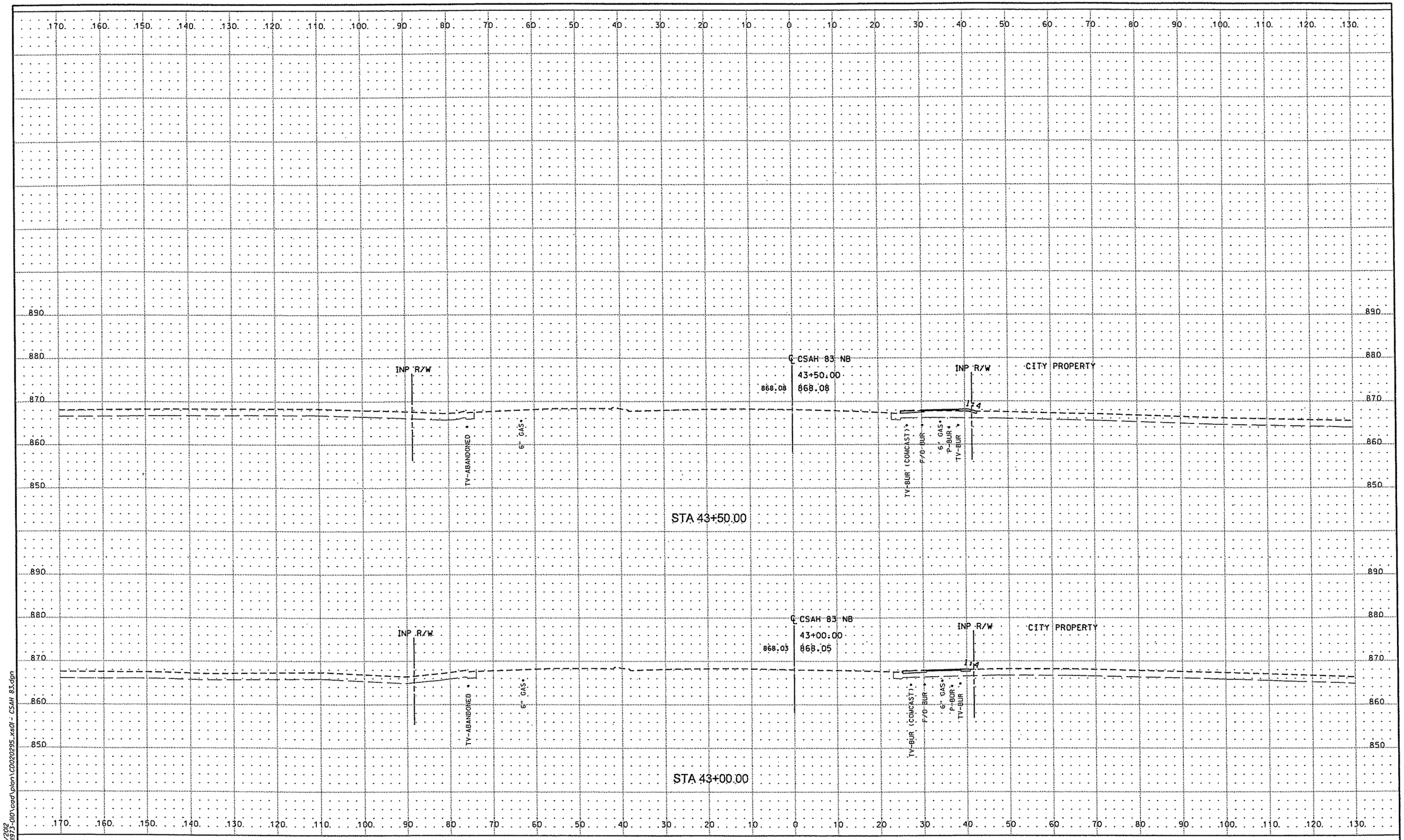

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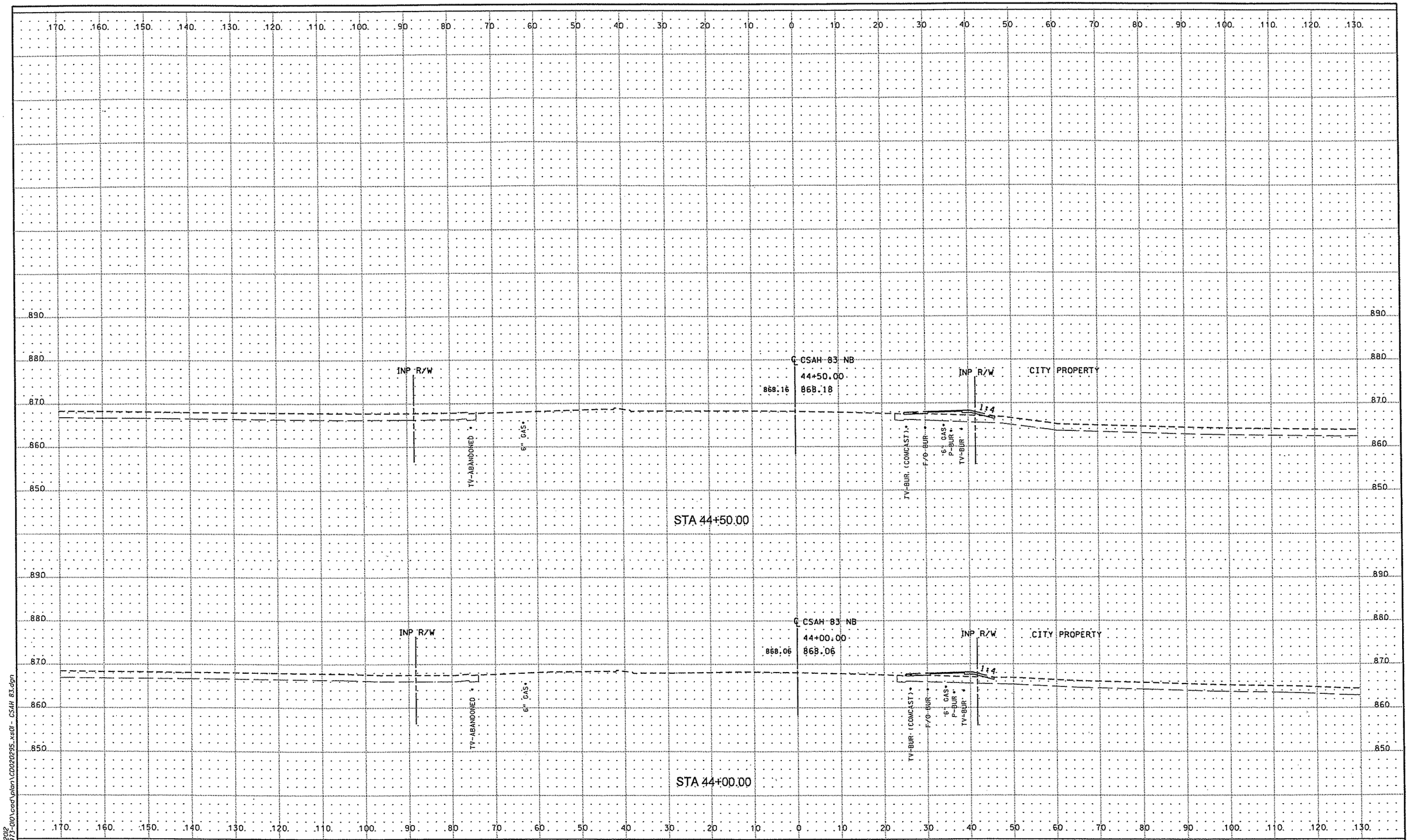

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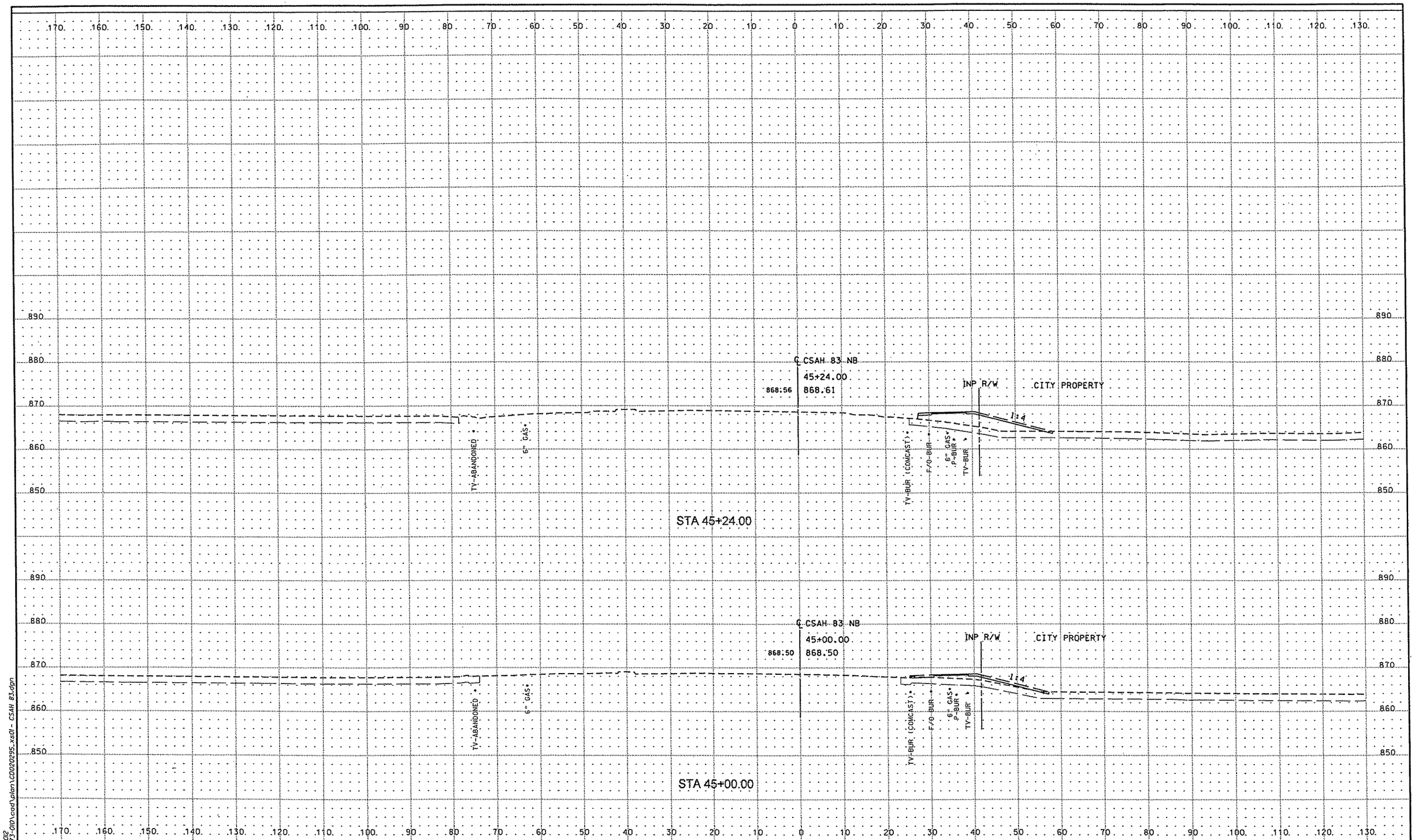

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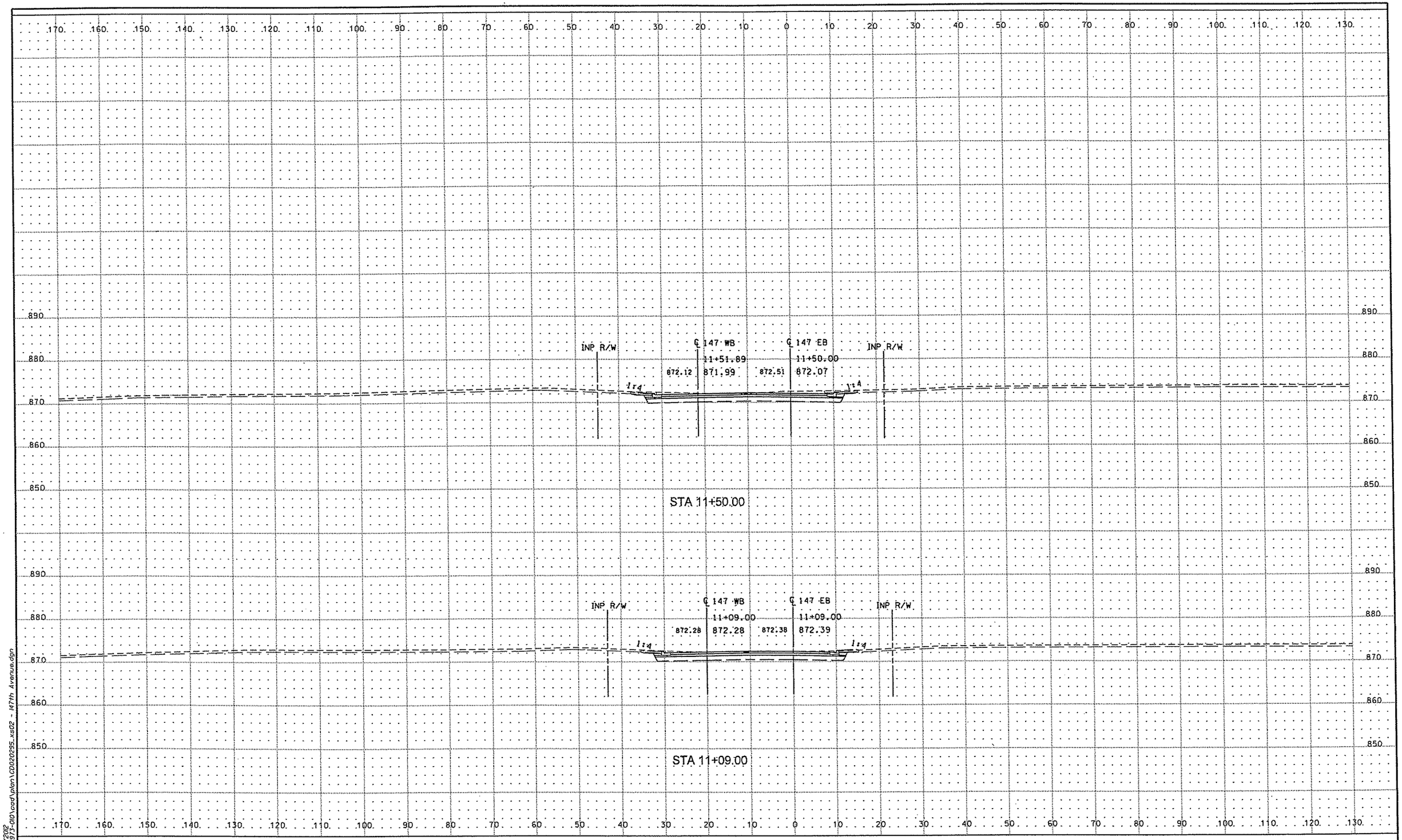

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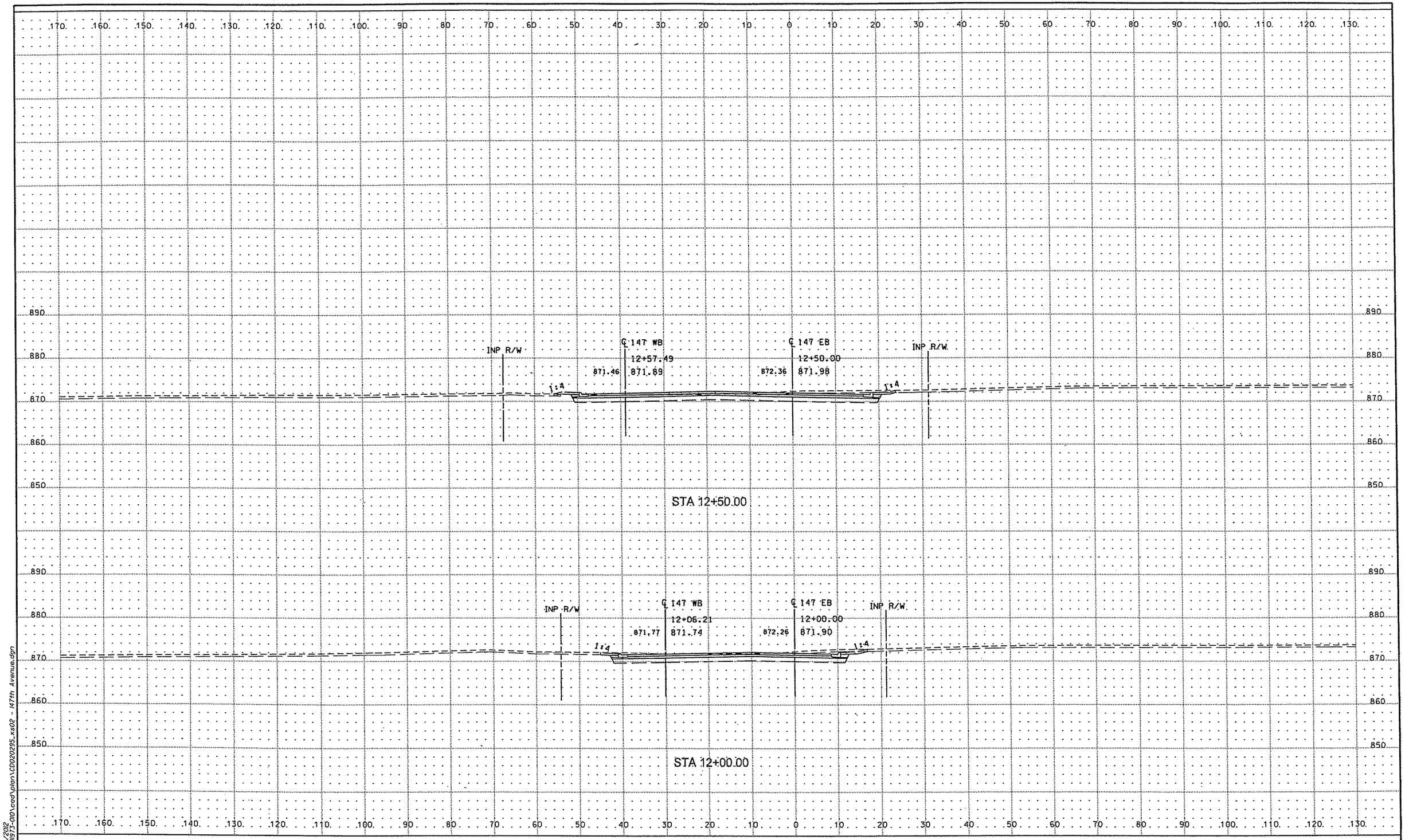

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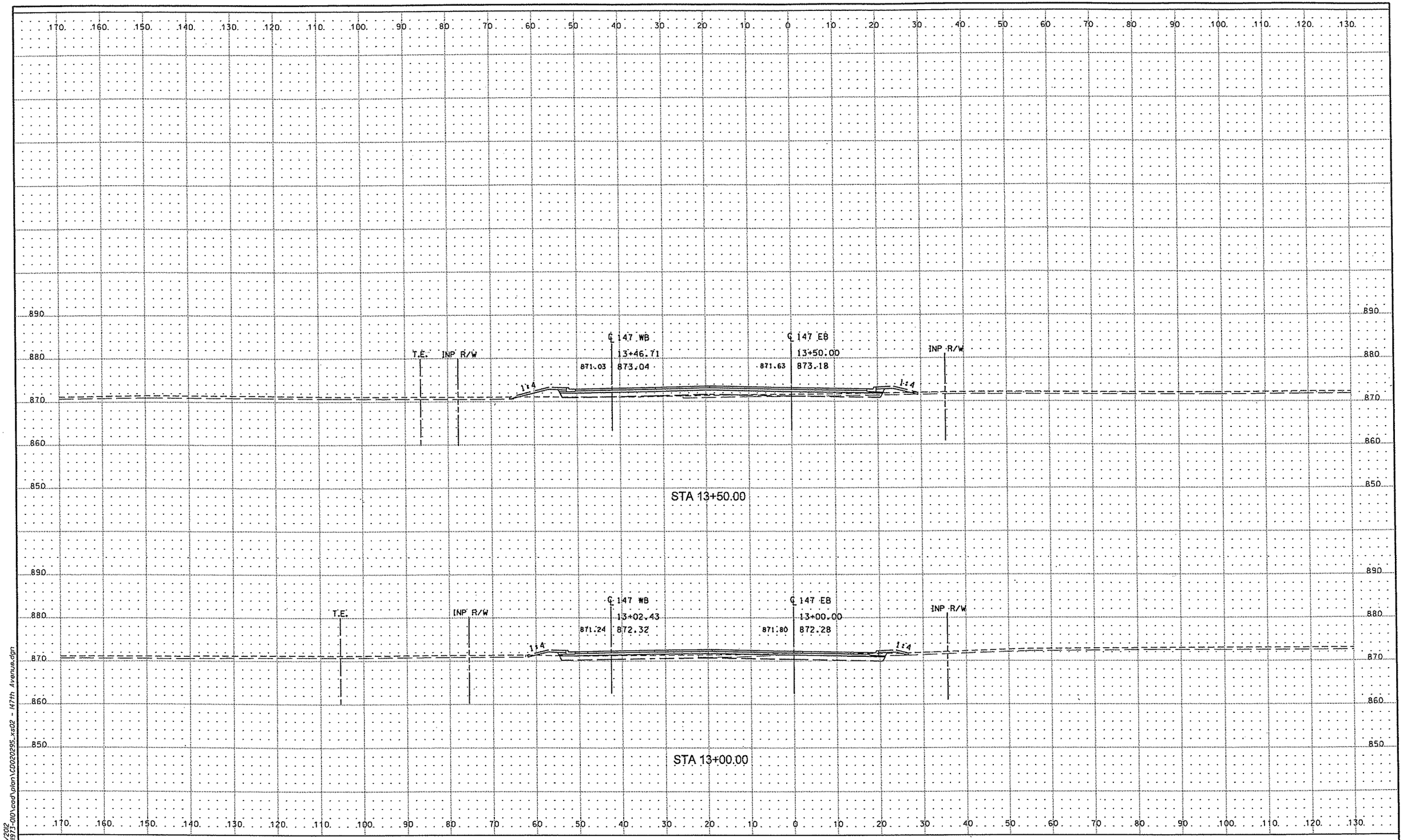

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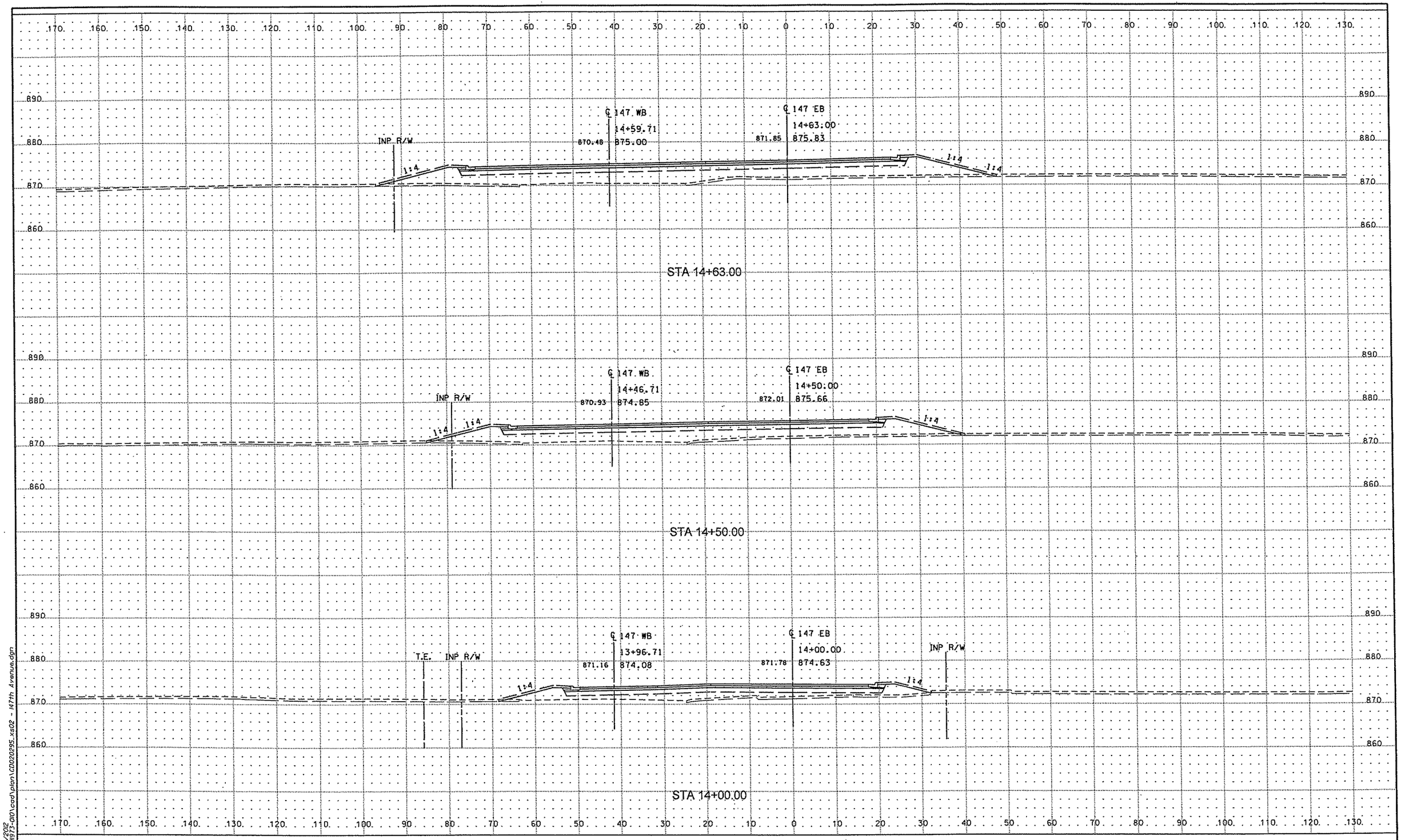

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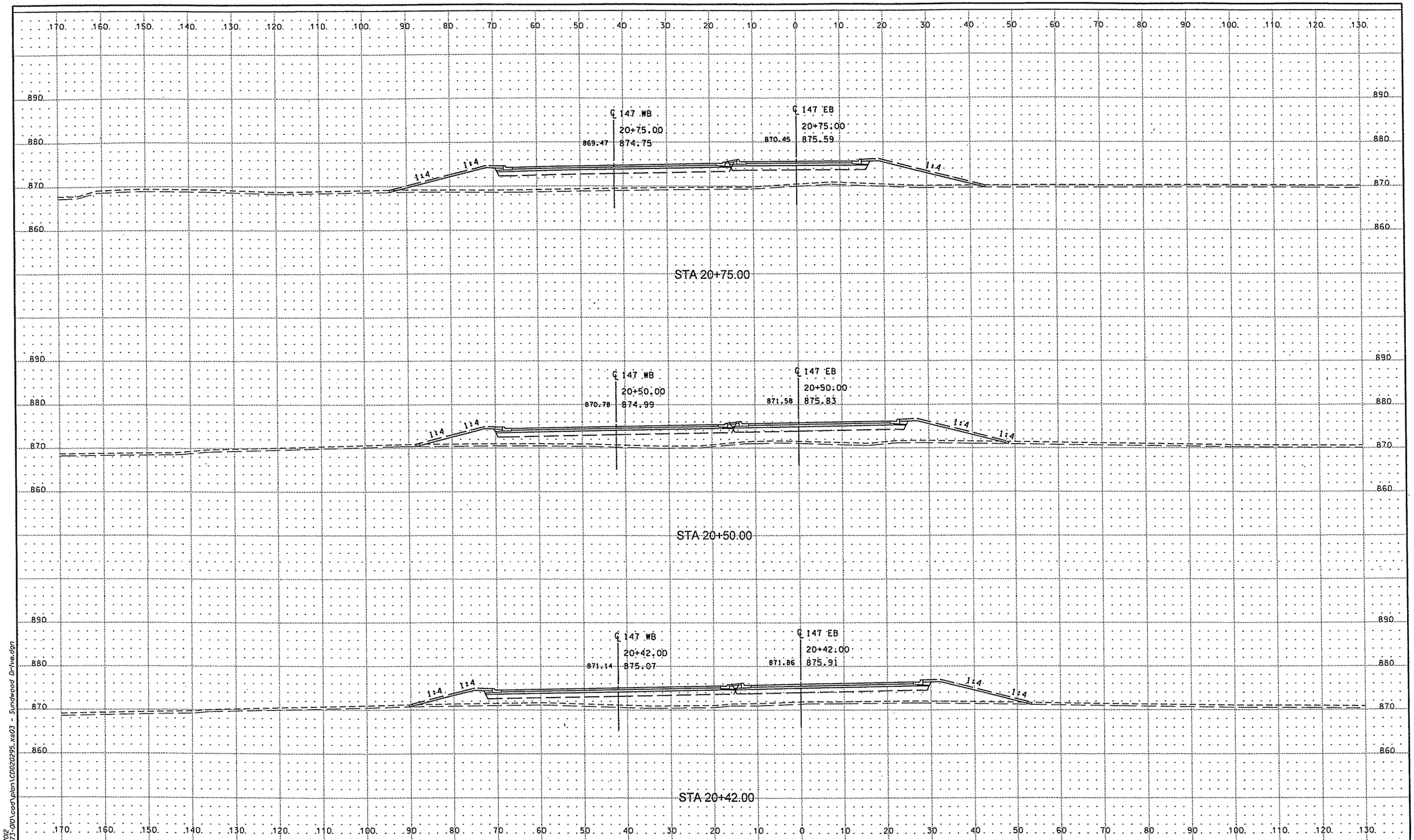

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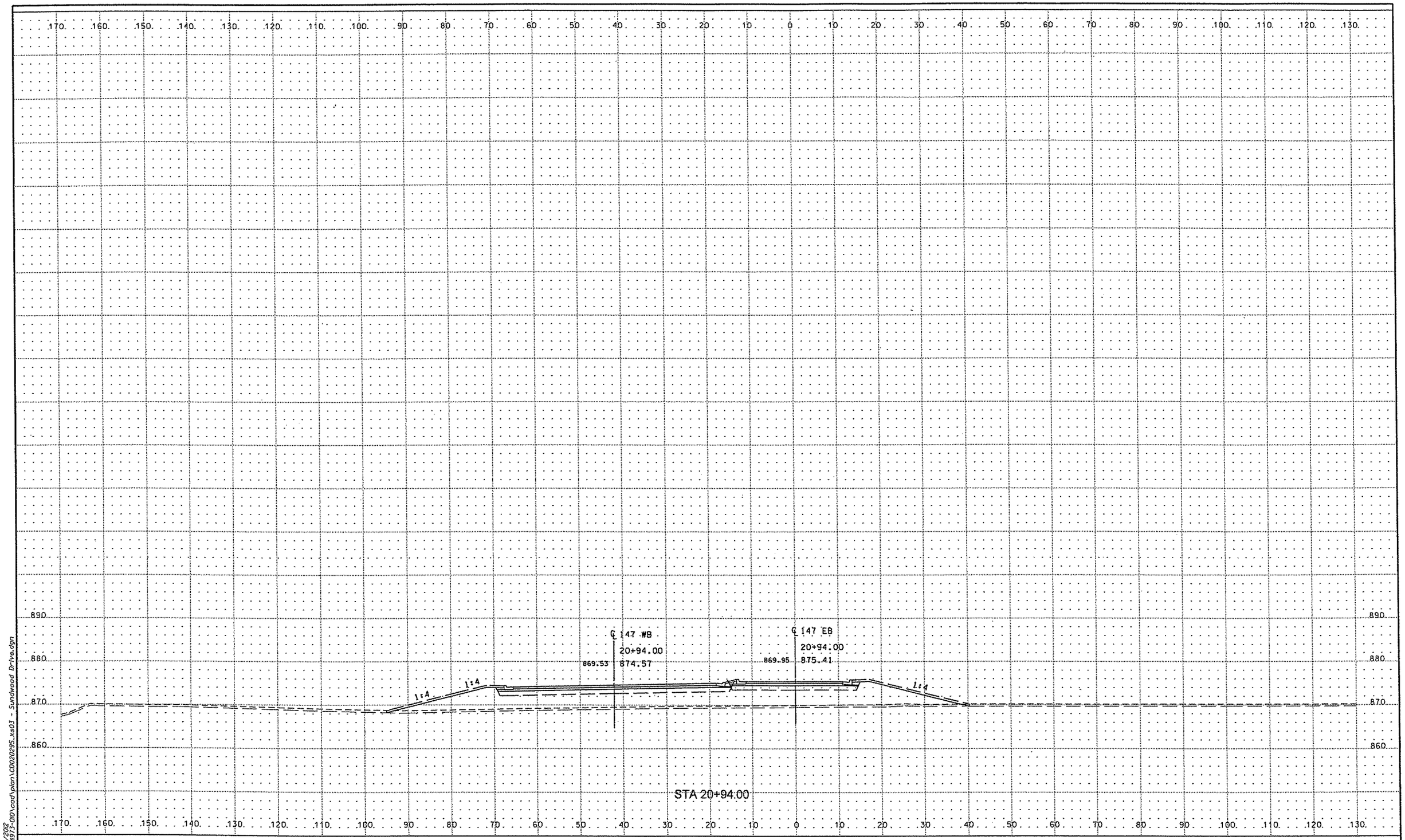

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