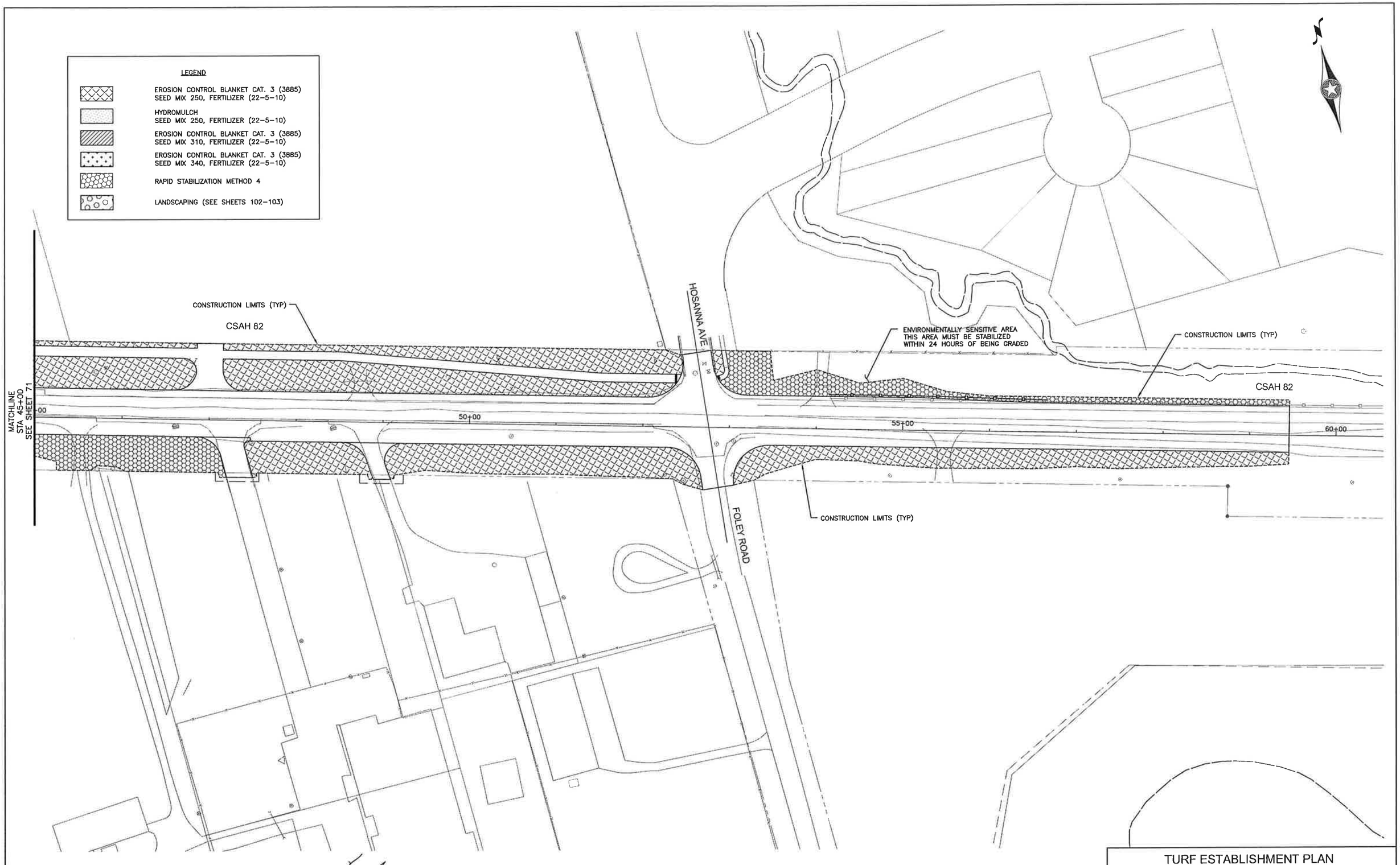

TURF ESTABLISHMENT PLAN

SCALE 0 50 100

CERTIFIED BY _____ LICENSED ENGINEER LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET 72 OF 142 SHEETS

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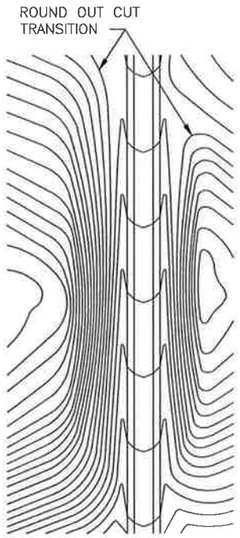
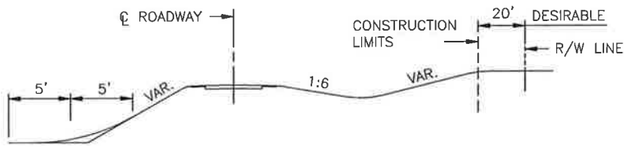
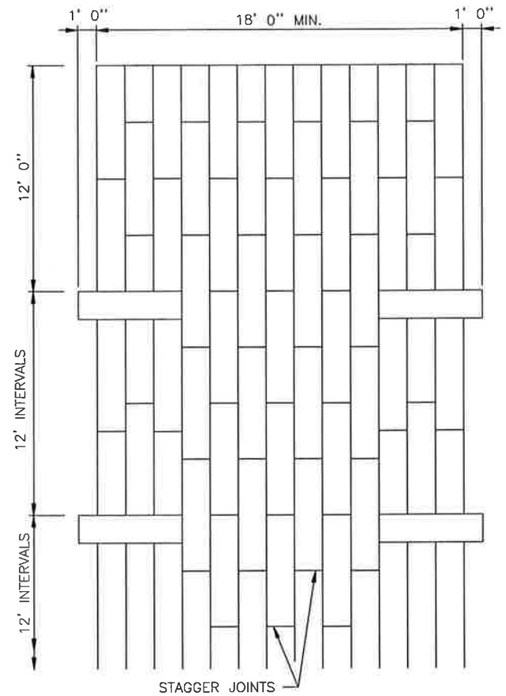


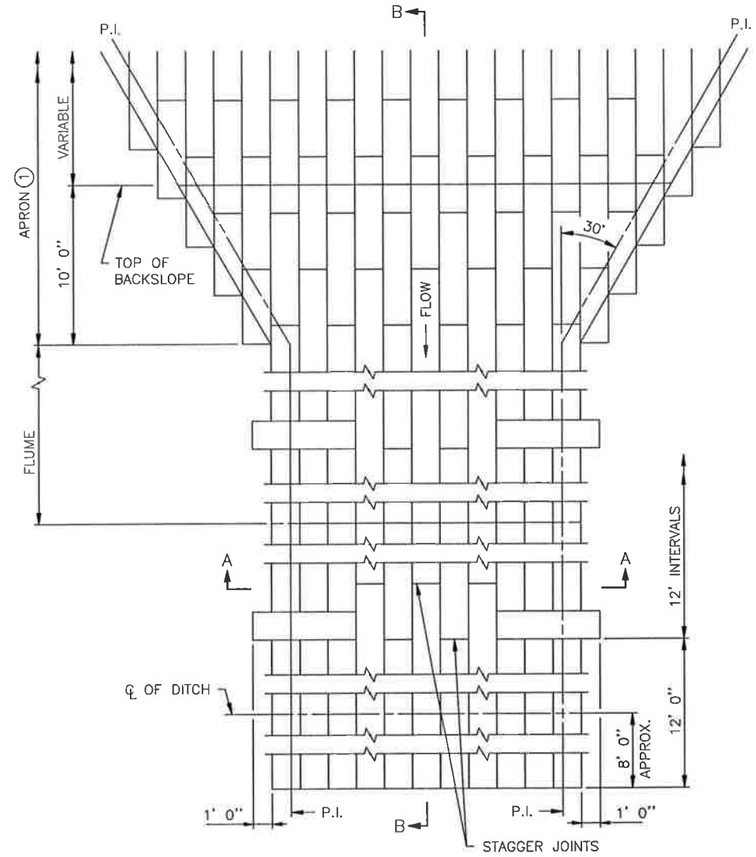
CONTOURING ROAD CUTS



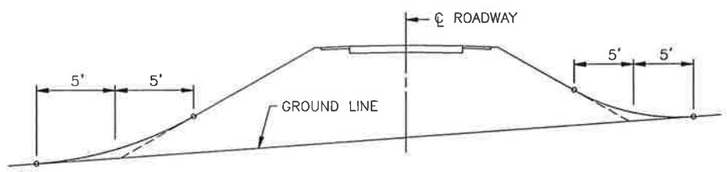
ROUNDING SHOULDERS AND BACKSLOPES



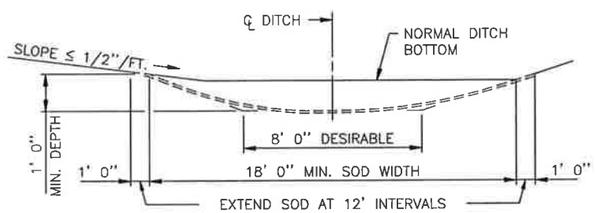
PLAN VIEW



PLAN VIEW

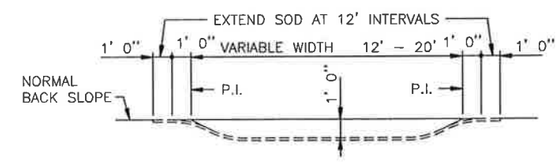


SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES

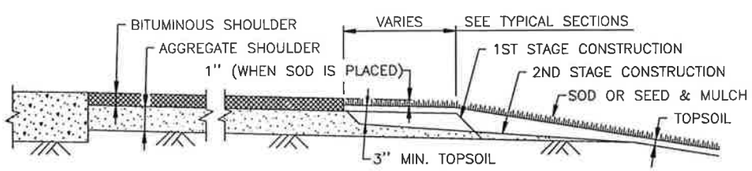


SODDED DITCH CROSS SECTION

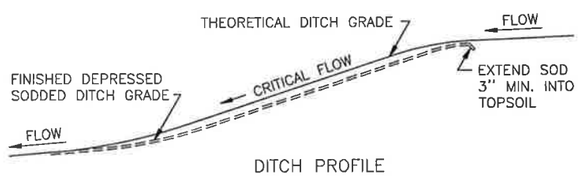
WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.), FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.



SECTION A–A

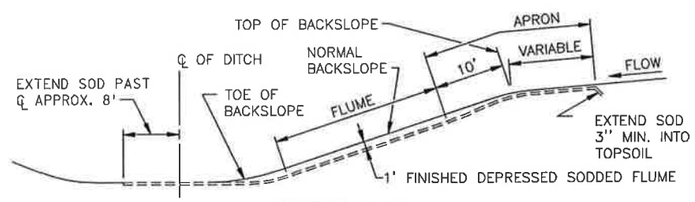


SHAPING AND TOPSOILING INSLOPES



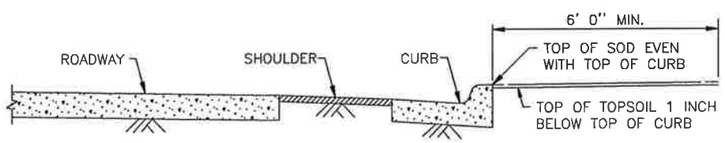
DITCH PROFILE

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	
STATE PROJ. NO.	SAP 007–660–005 & SAP 007–682–008 (CSAH 60, CSAH 82 & VICTORY DRIVE)

FILE NAME S404K02.SPN
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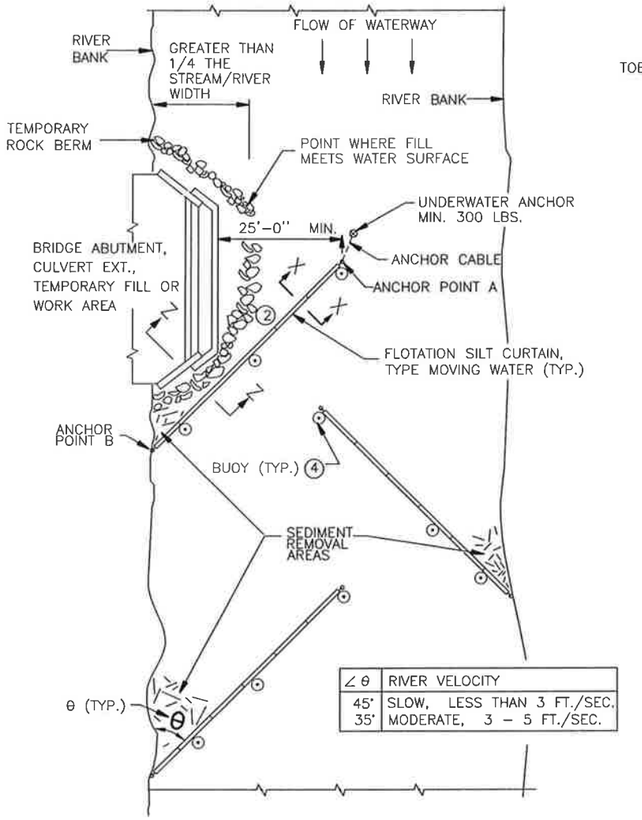
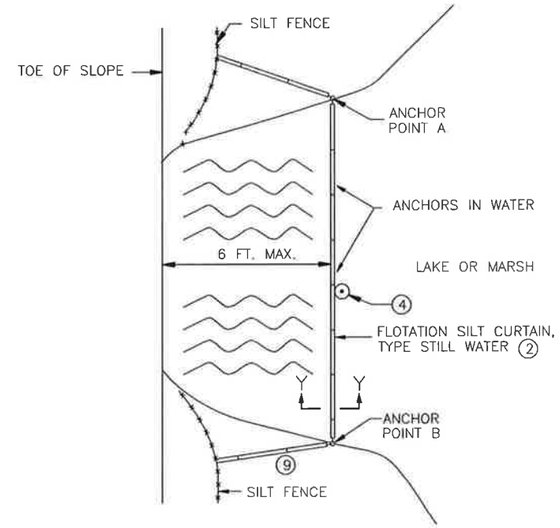
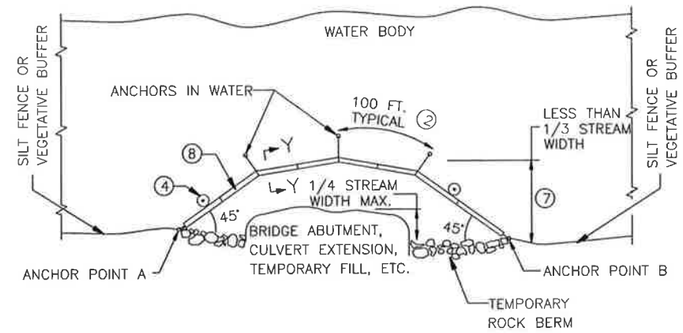


∠ θ	RIVER VELOCITY
45°	SLOW, LESS THAN 3 FT./SEC.
35°	MODERATE, 3 – 5 FT./SEC.

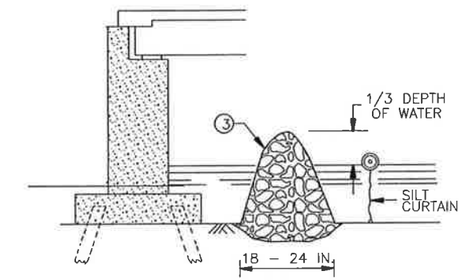
PLAN VIEW (TYPE: MOVING WATER)



PLAN VIEW (TYPE: STILL WATER)



PLAN VIEW (TYPE: WORK AREA)



SECTION Z–Z TEMPORARY ROCK BERM
FOR SEDIMENT CONTROL

DESIGN GUIDELINES: MOVING WATER

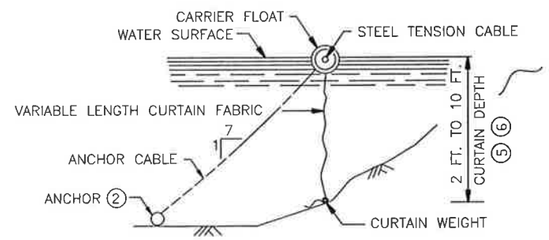
WHEN TEMPORARY FILL ENCROACHES MORE THAN 1/4 BUT LESS THAN 1/3 WIDTH OF THE STREAM.
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 11 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.
1 6

DESIGN GUIDELINES: WORK AREA

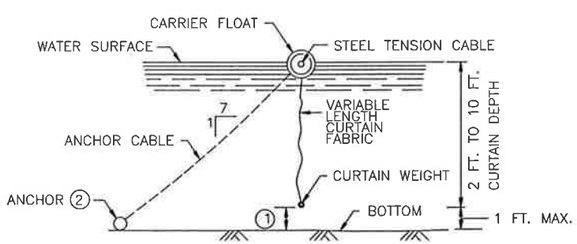
WHEN TEMPORARY FILL ENCROACHES LESS THAN 1/4 OF THE WIDTH OF STREAM.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.

DESIGN GUIDELINES: STILL WATER 6

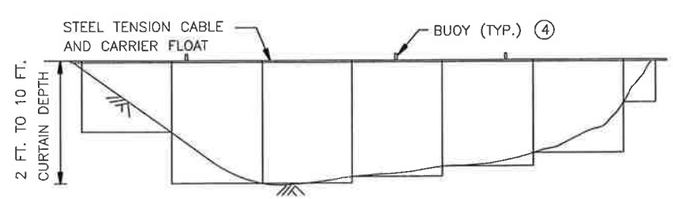
MINIMUM WATER DEPTH: 0 FT.
MAXIMUM WATER DEPTH: 10 FT.



SECTION Y–Y

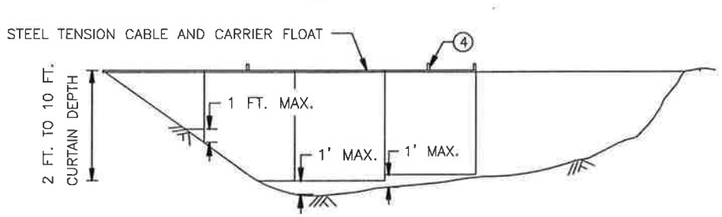


SECTION X–X



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

FOR CONTAINING OVERFLOWS FROM WEIRS, STANDPIPES, SETTLING PONDS



FLOTATION SILT CURTAIN – TYPE: MOVING WATER 5

USE FOR SMALLER RIVERS WITH SLOW AND MODERATE VELOCITIES

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.	TITLE:
5-297.405 (1 OF 4)	TEMPORARY SEDIMENT CONTROL SILT CURTAIN
STANDARD APPROVED: SEPTEMBER 27, 2006	
STATE PROJ. NO.	SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) — SHEET NO. 74 OF 142

FILE NAME S4051106_SPN.DGN
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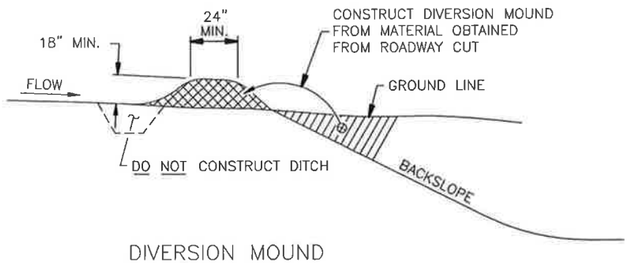
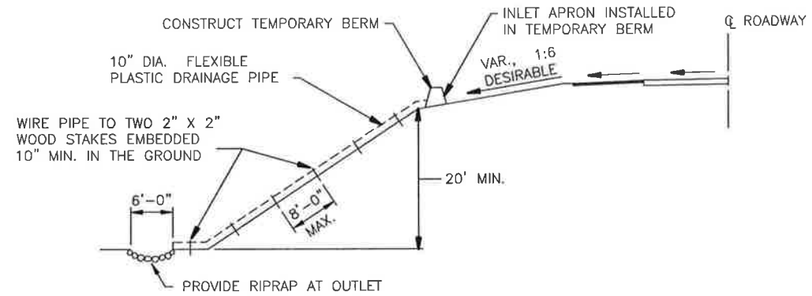


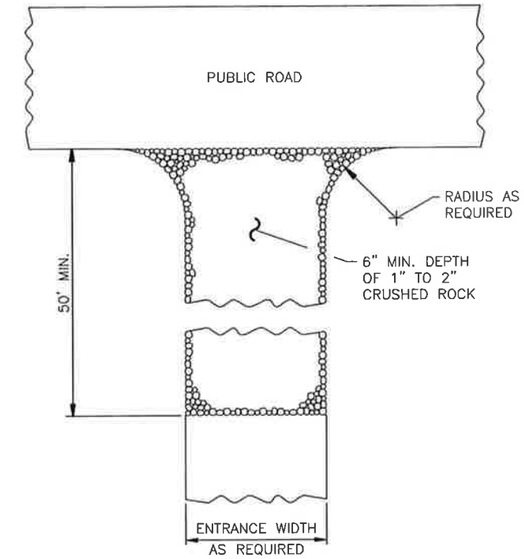
DIVERSION MOUND

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

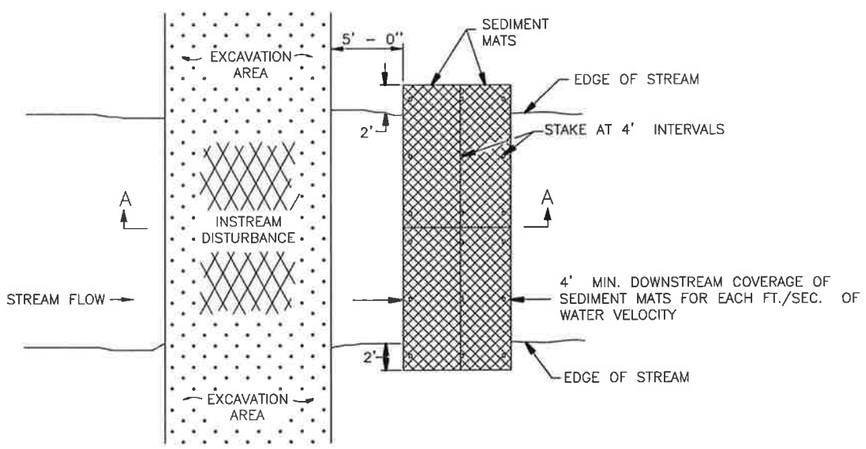


TEMPORARY DOWN DRAIN ON FILL SLOPE

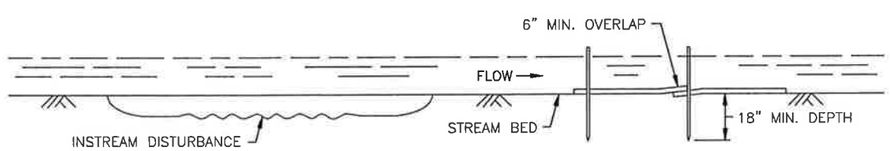
DESIGN GUIDELINES:
STORM FREQUENCY: 2 YEAR – 24 HOUR
MAXIMUM DRAINAGE AREA: 3 ACRES



ROCK CONSTRUCTION ENTRANCE ①



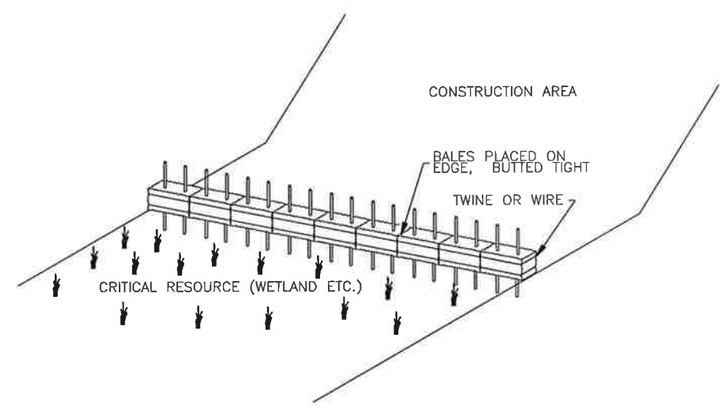
PLAN VIEW



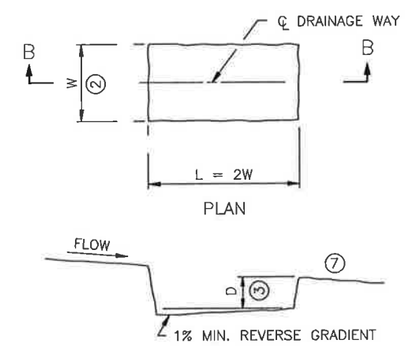
SECTION A–A

SEDIMENT MAT ⑥
TYPICAL STREAM BED INSTALLATION

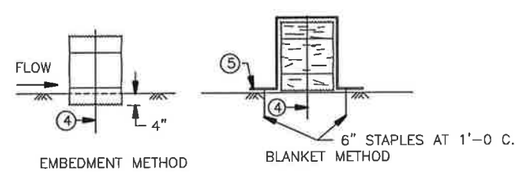
DESIGN GUIDELINES:
MAXIMUM FLOW VELOCITY: 5 FT./SEC.
MAXIMUM FLOW DEPTH: 2 FT.



BALE BARRIERS
TO BE USED FOR CRITICAL PERIMETER CONTROL AREAS



SEDIMENT TRAP DETAIL



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

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: SEPTEMBER 27, 2006	
STATE PROJ. NO.	SAP 007–660–005 & SAP 007–682–008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET NO. 75 OF 142

FILE NAME S4052I06_SPN.DGN
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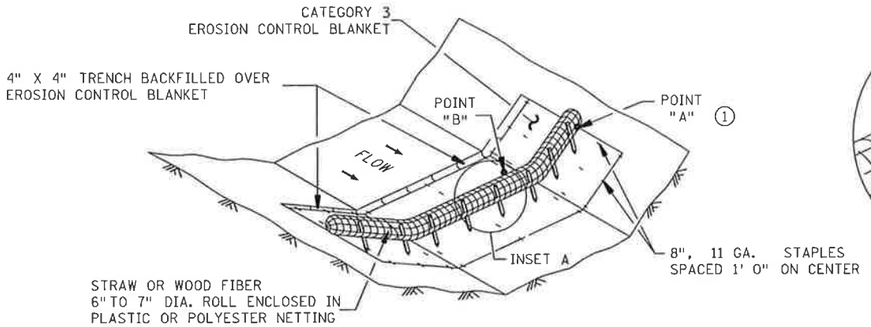
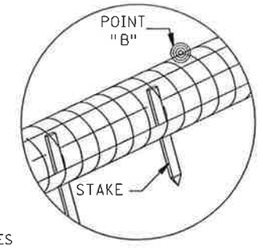
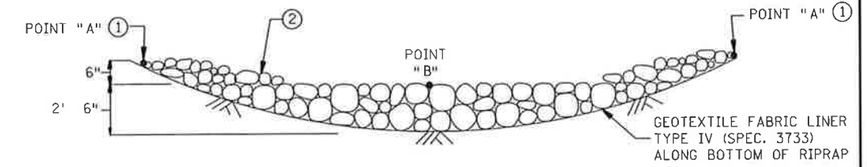


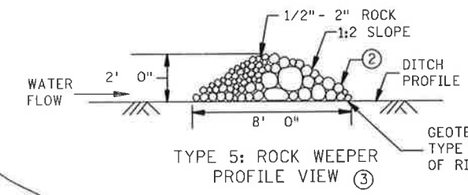
TYPE 3: BIOROLL BLANKET SYSTEM DITCH CHECK



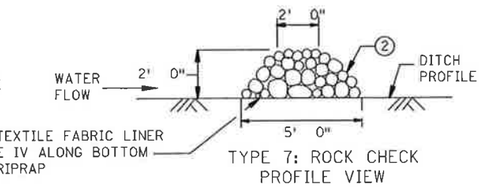
INSET A



CROSS SECTION (ROCK WEEPER AND ROCK CHECK)



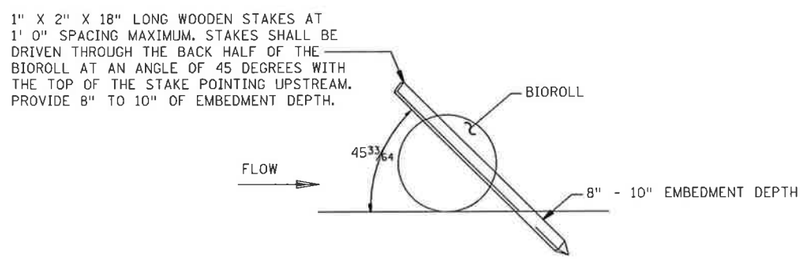
TYPE 5: ROCK WEEPER
PROFILE VIEW ③



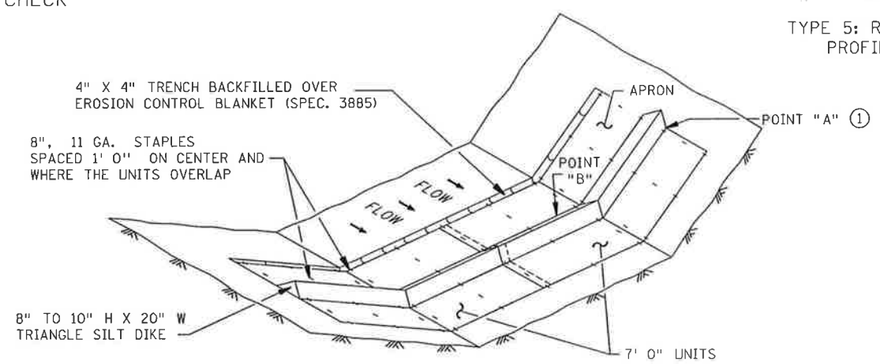
TYPE 7: ROCK CHECK
PROFILE VIEW

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

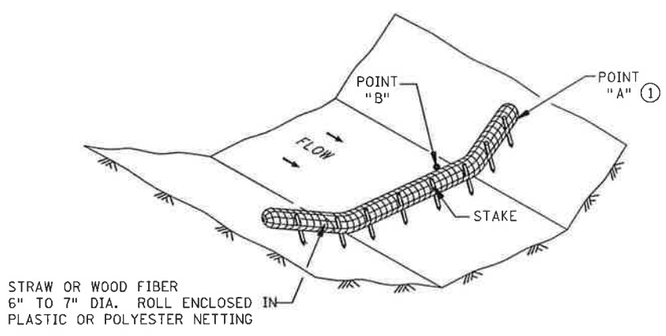
USE ON ROUGH GRADED AREAS



BIOROLL STAKING DETAIL



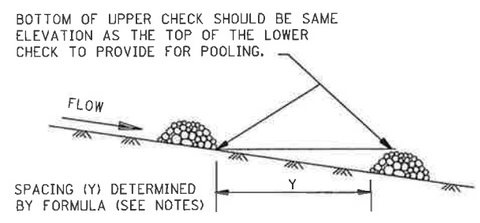
TYPE 6: GEOTEXTILE TRIANGULAR DIKE DITCH CHECK



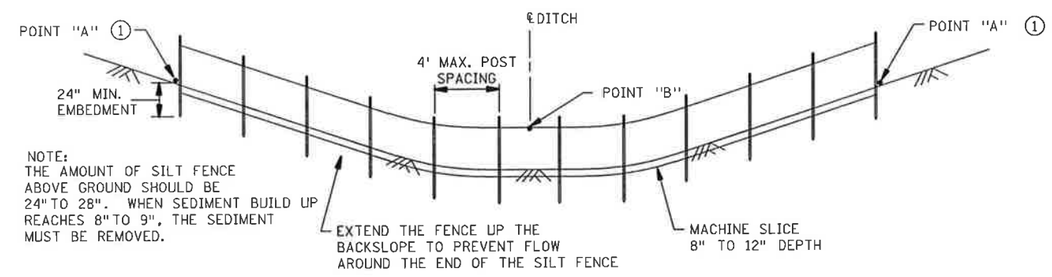
TYPE 2: BIOROLL DITCH CHECK

USE ON ROUGH GRADED AREAS

1.5 FT./SECOND



DITCH CHECK SPACING ④



TYPE 1: SLICED IN SILT FENCE DITCH CHECK

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.

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

STANDARD SHEET NO.
5-297.405 (3 OF 4)
STANDARD APPROVED:
SEPTEMBER 27, 2006

TEMPORARY SEDIMENT CONTROL
DITCH CHECK/BARRIER

STATE PROJ. NO. SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET NO. 76 OF 142

FILE NAME S4053I06_SPN.DGN

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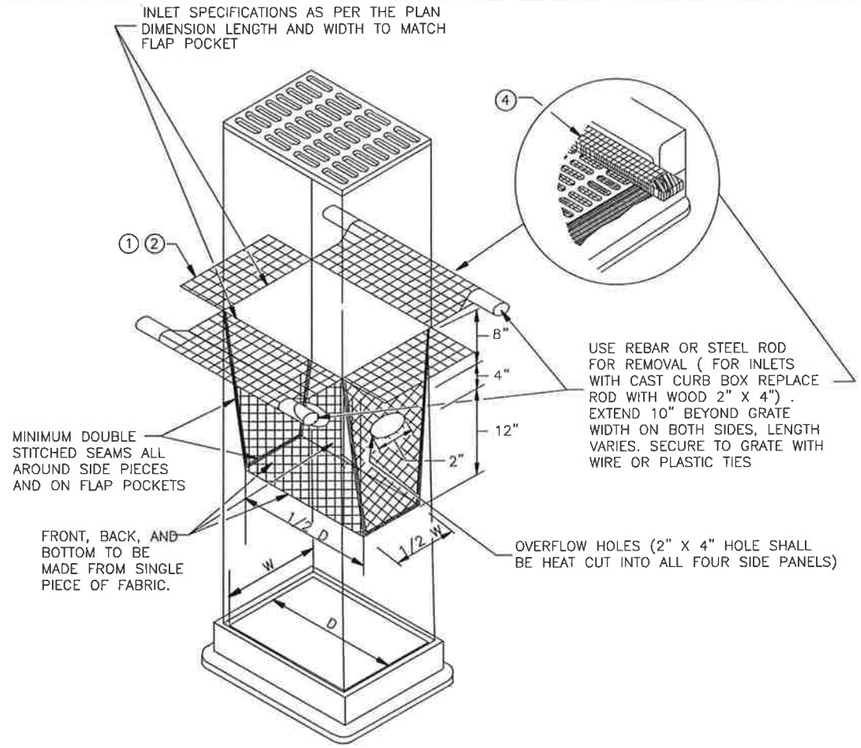
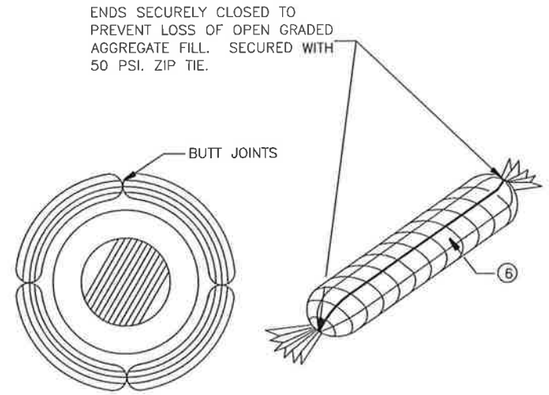
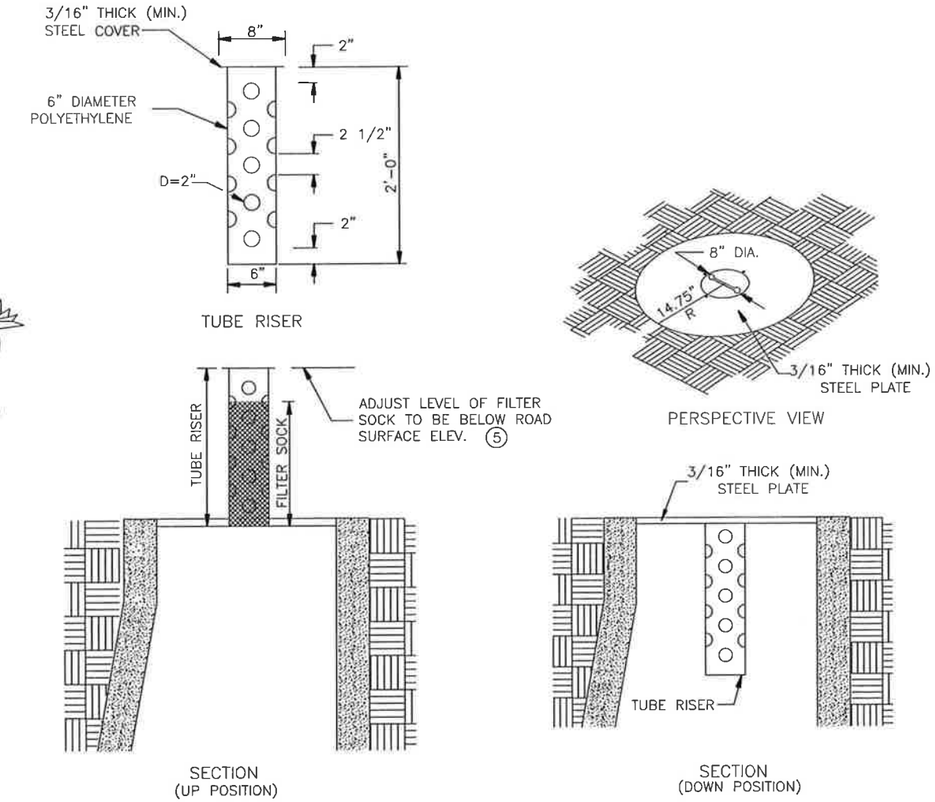


FILTER BAG INSERT ③

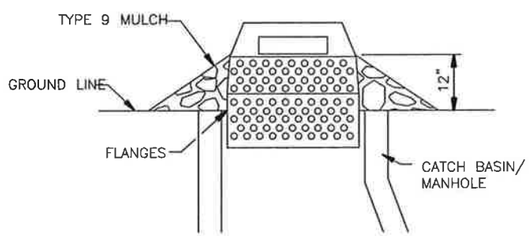
(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX)



ROCK LOG/COMPOST LOG

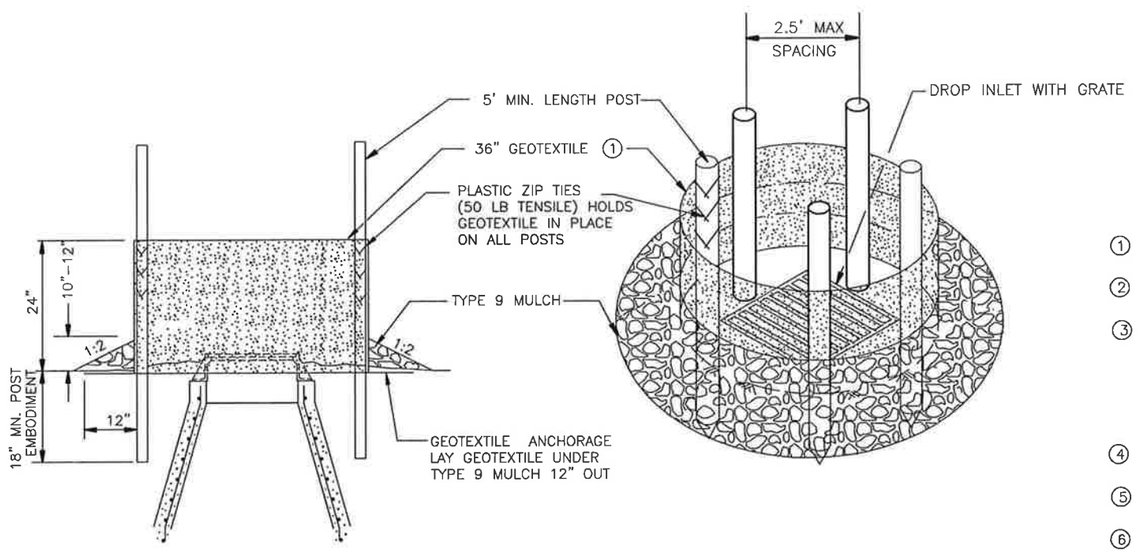


POP-UP HEAD



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: SEPTEMBER 27, 2006	
STATE PROJ. NO.	SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET NO. 77 OF 142

FILE NAME S4054106_SPN.DGN
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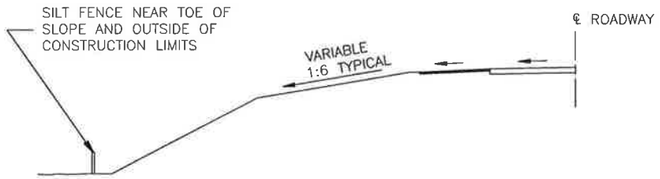
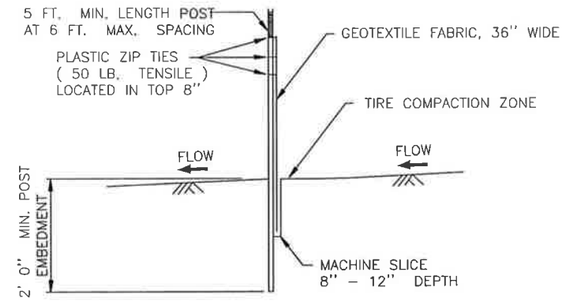
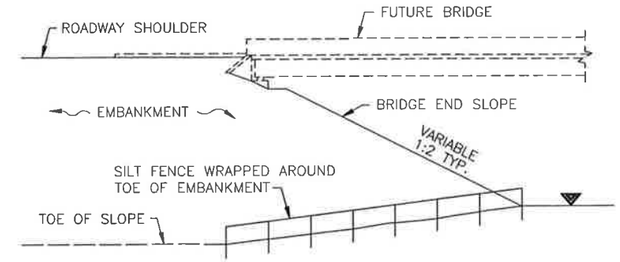


LOCATION OF SILT FENCE
AT TOE OF ROADWAY EMBANKMENT

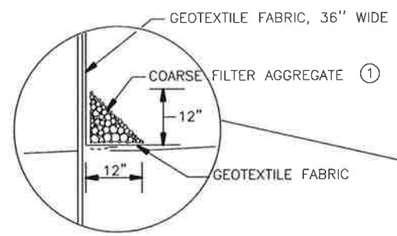


SILT FENCE, MACHINE SLICED
DESIGN GUIDELINES:
TO PROTECT AREAS FROM SHEET FLOW.
MAXIMUM CONTRIBUTING AREA: 1 ACRE.

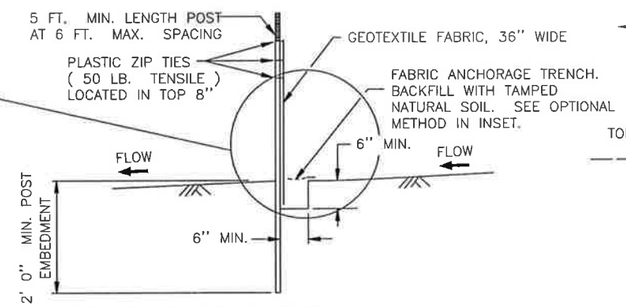


BRIDGE FILL

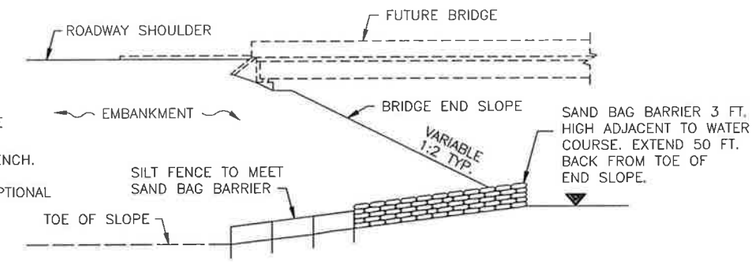
DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: STAGNANT
CONTRIBUTING SLOPE AREA: 1/2 ACRE



OPTIONAL METHOD
FOR SILT FENCE, HEAVY DUTY

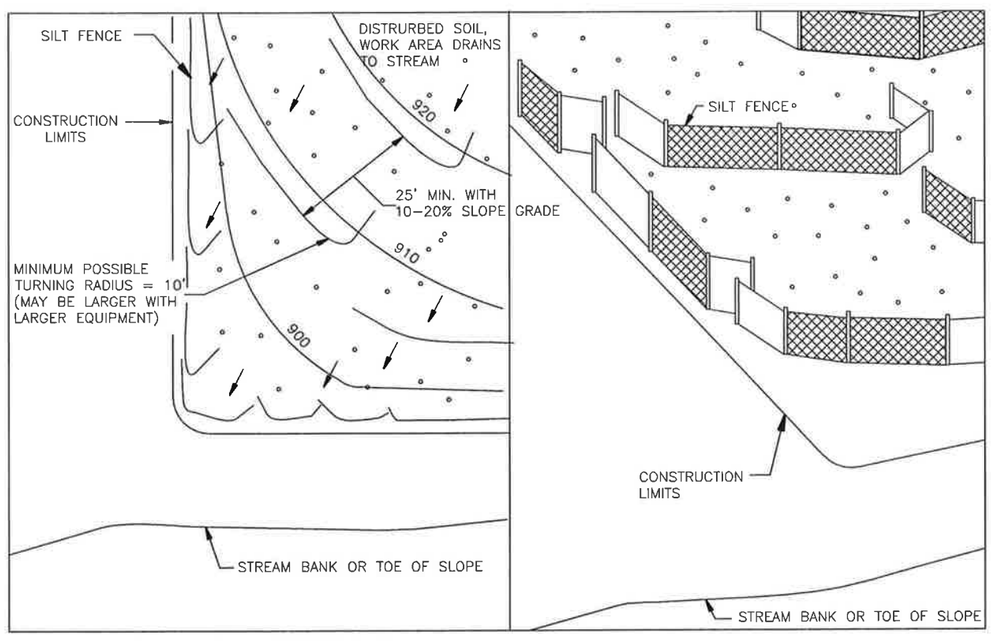


SILT FENCE, HEAVY DUTY
(HAND INSTALLED)
DESIGN GUIDELINES:
TO PROTECT AREAS FROM SHEET FLOW.
MAXIMUM CONTRIBUTING AREA: 1 ACRE.



BRIDGE FILL

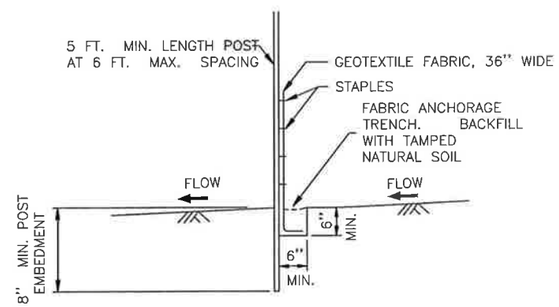
DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: 1 TO 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1 ACRE



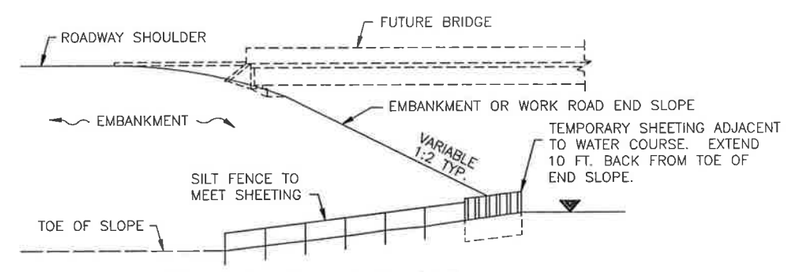
PLAN VIEW

SIDE VIEW

SILT FENCE, J–HOOK INSTALLATION



SILT FENCE, PREASSEMBLED
DESIGN GUIDELINES:
TO PROTECT AREAS FROM SHEET FLOW.
MAXIMUM CONTRIBUTING AREA: 1 ACRE.



EMBANKMENT OR WORK ROAD FILL

DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: 8 TO 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES

SILT FENCE AT BRIDGE EMBANKMENT ADJACENT TO WATER

NOTES:
SEE SPECS. 2573, 3149 & 3886.
① COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.

STANDARD SHEET NO. 5–297.408	TITLE: TEMPORARY SEDIMENT CONTROL SILT FENCE
STANDARD APPROVED: SEPTEMBER 27, 2006	
STATE PROJ. NO.	SAP 007–660–005 & SAP 007–682–008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET NO. 78 OF 142

FILE NAME S4081106_SPN.DGN

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PAVEMENT MARKING NOTES & GUIDELINES

GENERAL INFORMATION:

THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULTATION AND INSPECTION. THE CONTRACTOR WILL PLACE NECESSARY "SPOTTING" AT APPROPRIATE POINTS TO PROVIDE HORIZONTAL CONTROL FOR STRIPING AND TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS. LONGITUDINAL JOINTS, PAVEMENT EDGES AND EXISTING MARKINGS MAY 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 ¼ INCH UNDER OR ¼ INCH OVER 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 ONE-HALF FOOT FROM THE SPECIFIED LENGTHS, PROVIDED OVER AND UNDER VARIATIONS ARE REASONABLY COMPENSATORY. ALIGNMENT DEVIATIONS FROM THE CONTROL GUIDE SHALL NOT EXCEED 1 INCH. MATERIAL SHALL NOT BE APPLIED OVER LONGITUDINAL JOINTS. 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 THE APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NON-METALLIC) 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 25 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" WIDE AND 15 MILL THICKNESS (WET) REQUIRES AN APPLICATION RATE OF ONE (1) GALLON OF COMPONENTS FOR 320 FEET 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 DEGREES F OR GREATER.

PERMANENT PAVEMENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY TAPE MARKINGS.

PAINT:

AT THE TIME OF APPLYING THE MARKING MATERIAL, THE APPLICATION AREA SHALL BE FREE OF CONTAMINATION. THE CONTRACTOR SHALL CLEAN THE ROADWAY SURFACE PRIOR TO THE LINE APPLICATION IN A MANNER AND TO THE EXTENT REQUIRED BY THE ENGINEER.

GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE PAINT LINE.

EXCEPT WHEN USED AS TEMPORARY MARKING, PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR TEMPERATURE IS 50° F OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILM OF DUST TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL CAN BE APPLIED.

THE FILLING OF TANKS, POURING OF MATERIALS OR CLEANING OF EQUIPMENT SHALL NOT BE PERFORMED ON UNPROTECTED PAVEMENT SURFACES, UNLESS ADEQUATE PROVISIONS ARE MADE TO PREVENT SPILLAGE OF MATERIAL.

POLY PREFORM GROOVED APPLICATION:

CONCRETE PAVEMENT SURFACES AND BITUMINOUS PAVEMENT SURFACES WHERE PAVEMENT MARKINGS CANNOT BE INLAID IN THE HOT MAT SHALL BE GROOVED FOR THE INSTALLATION OF DURABLE REFLECTORIZED PAVEMENT MARKINGS. SEE SPECIAL PROVISIONS.

SYMBOLS & MATERIALS LEGEND

CROSSWALK BLOCK WHITE-POLY PREFORM OR EPOXY

PAVEMENT MESSAGE (LEFT ARROW)-EPOXY

PAVEMENT MESSAGE (RIGHT ARROW)-EPOXY

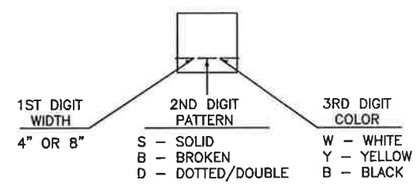
STRIPING KEY

CIRCLE - EPOXY

SQUARE - POLY PREFORM

TRIANGLE - PAINT

PENTAGON - REMOVEABLE PREFORMED PLASTIC MARKING



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

NOTES:

8DW = 3' STRIPE, 3' GAP (6' CYCLE)

SIGNING NOTES:

1. SALVAGED SIGNS THAT ARE TO BE REINSTALLED SHALL BE REINSTALLED USING NEW SIGN POSTS.
2. CONTRACTOR SHALL SALVAGE SIGNS AND SIGN POSTS AND DELIVER THEM TO THE OWNER OR REINSTALL THEM, AS DIRECTED IN THE EXISTING SIGN & SIGN REMOVAL PLAN. SIGNS TO BE REINSTALLED SHALL BE STORED IN ONE LOCATION.
3. CONTRACTOR SHALL MAINTAIN STOP SIGNS, SPEED LIMIT SIGNS AND STREET NAME SIGNS AT ALL TIMES DURING CONSTRUCTION.
4. SEE MnDOT STANDARD SIGNS MANUAL FOR PUNCHING CODE AND DETAILED DRAWINGS OF TYPE "C" SIGN PANELS

STREET NAME SIGN NOTES:

1. STREET NAME SIGNS SHALL BE ON 9" BLADES. MAXIMUM LENGTH SHALL BE 48".
2. SIGNS SHALL HAVE A VIP GRADE MATERIAL SHEETING.
3. TEXT SHALL BE 6" UPPER CASE AND 4.5" LOWER CASE. TEXT FONT SHALL BE C SERIES LETTERING. STANDARD SPACING IS 56% OF C SERIES SPACING. DECREASE SPACING APPROPRIATELY TO ACCOMMODATE LONGER STREET NAMES TEXT.
4. USE WHITE LETTERING ON GREEN BACKGROUND. NEITHER MARGINS NOR BORDER IS ESSENTIAL.
5. BACK TO BACK STREET NAME SIGNS SHALL BE BOLTED TOGETHER BY A MINIMUM OF TWO BOLTS FOR ADDED STABILITY.
6. BRACKETING SHALL CONFORM TO U-CHANNEL POSTS.
7. STREET NAME SIGNS MUST REMAIN DURING THE LIFETIME OF THE PROJECT FOR EMERGENCY VEHICLE USE.

SIGNING & STRIPING NOTES & LEGEND

CERTIFIED BY _____ LICENSED ENGINEER LIC. NO. 42779 01/09/2012

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(S1) REMOVE SIGN TYPE C

SIGN NUMBER	QUANTITY	CODE NUMBER	PANEL LEGEND	NOTES
	(EACH)			
C-101	1	R8-3	NO PARKING	
	1	W3-1	STOP AHEAD	
	1	W14-3	NO PASSING ZONE	
C-102	1	R8-3	NO PARKING	
	1	R2-1	SPEED LIMIT 40	
C-105	1	M1-6	COUNTY 82	
C-106	1	X3-1	RIGHT OF WAY	
C-107	1	R1-1	STOP	
C-108	1	R5-1	DO NOT ENTER	
C-110	2	W3-1	STOP AHEAD	
C-111	1	R3-7	RT LANE MUST TURN RT	
C-112	1	M1-6	COUNTY 60	
TOTALS	13			

(S2) REMOVE SIGN TYPE D

SIGN NUMBER	QUANTITY	CODE NUMBER	PANEL LEGEND	NOTES
	(EACH)			
D-101	1	D1-1	MINNESOTA STATE UNIV	
	1	D1-1	BLUE EARTH CO HIGHWAY DEPT	
	1	D1-1	MRCI	
D-102	1	D1-1	UNIVERSITY SQ. MALL	
D-103	1	D1-1	TO T.H. 22 (ARROW LT)	
D-104	1	D1-1	MINNESOTA STATE UNIV	
TOTALS	6			

(S3) REMOVE SIGN TYPE SPECIAL

SIGN NUMBER	QUANTITY (EACH)	PANEL LEGEND	NOTES
S-101	1	S VICTORY DR	A
TOTALS			

(S5) SALVAGE & INSTALL SIGN TYPE SPECIAL

SIGN NUMBER	QUANTITY	POSTS NUMBER & TYPE	POSTS LENGTH	MOUNTING HEIGHT	SIZE	PANEL LEGEND	NOTES
	(EACH)		(FEET)	(FEET)	(INCH)		
S-201	1			9.5	6 X 48	TANGER ROAD	A
	1			10.0	6 X 48	STADIUM ROAD	A
S-202	1			9.5	6 X 48	HOSANNA AVE	A
S-203	1			9.5	6 X 48	FOLEY ROAD	A
TOTALS	4						

(S8) HAZARD MARKER

SIGN NUMBER	QUANTITY (EACH)	SIZE (INCH)	CODE NUMBER	PANEL LEGEND	NOTES
C-002	4	18 X 18	X4-2	HAZARD MARKER	A
C-011	2	18 X 18	X4-2	HAZARD MARKER	A
TOTALS	6				

(S4) SALVAGE & INSTALL SIGN TYPE C

SIGN NUMBER	QUANTITY	POSTS NUMBER & TYPE	POSTS KNEE BRACE QUANTITY	POSTS LENGTH	MOUNTING HEIGHT	SIZE	CODE NUMBER	PANEL LEGEND	NOTES
	(EACH)			(FEET)	(FEET)	(INCH)			
C-201	1	2U		13.0	7.0	30 X 30	R1-1	STOP	C
C-203	1	2U		13.0	7.0	30 X 30	R3-7	RT LANE MUST TURN RT	
C-204	1	2U		13.0	7.0	30 X 30	R1-1	STOP	
C-205	1	2U		13.5	7.0	12 X 36	X4-4	CLEARANCE MARKER	
C-206	1	2U		13.0	7.0	30 X 30	R1-1	STOP	B
C-207	1	2U		13.0	7.0	30 X 30	R1-1	STOP	B
C-208	2	2U	1A	13.5	7.0	36 X 36	W3-3	SIGNAL AHEAD	
C-209	1	1U		8.5	4.0	6 X 12	X4-5	SNOW PLOW MARKER	
TOTALS	9								

(S7) SIGN PANELS TYPE D

SIGN NUMBER	TOTAL QUANTITY	POSTS NUMBER & TYPE	POSTS KNEE BRACE QUANTITY	POSTS LENGTH	PANEL MIN. MTG. HEIGHT	PANEL SIZE	PANEL F&I TOTAL AREA	PANEL CODE NUMBER	PANEL LEGEND	NOTES
	(EACH)			(FT)	(FT)	(INCH)	(SQ FT)			
D-001	1	2U	2A		7.0	72 X 30	15.0	D3-2	ARROW-VICTORY DR N/VICTORY DR S-ARROW	
D-002	1	2U			7.0	48 X 24	8.0	D1-1d	VICTORY DR SOUTH-ARROW	F
D-003	1	2U			7.0	48 X 24	8.0	D1-1d	STADIUM RD EAST-ARROW	F
D-004	1	2U	2A		7.0	72 X 30	15.0	D3-2	ARROW-VICTORY DR S/VICTORY DR N-ARROW	
D-005	1	2U			7.0	48 X 24	8.0	D1-1d	VICTORY DR NORTH-ARROW	F
D-006	1	2U	2A		7.0	72 X 30	15.0	D3-2	ARROW-STADIUM RD E/STADIUM RD W-ARROW	
D-007	1	2U			7.0	48 X 24	8.0	D1-1d	STADIUM RD W-ARROW	F
TOTALS							77			

(S6) SIGN PANELS TYPE C

SIGN NUMBER	TOTAL QUANTITY	POSTS NUMBER & TYPE	POSTS KNEE BRACE QUANTITY	POSTS LENGTH	PANEL MIN. MTG. HEIGHT	PANEL SIZE	PANEL AREA	PANEL F&I TOTAL AREA	CODE NUMBER	PANEL LEGEND	NOTES
	(EACH)			(FT)	(FT)	(INCH)	(SQ FT)	(SQ FT)			
C-001	1	2U		12.5	7.0	24 X 24	4.0	4.0	M1-6	BLUE EARTH 60	
C-002	4	1U		13.0	7.0	24 X 30	5.0	20.0	R4-7	KEEP RIGHT	D F
C-003	1	2U		12.5	7.0	24 X 24	4.0	4.0	W14-1	DEAD END	
C-004	4	2U	1A	16.5	7.0	36 X 12	3.0	12.0	W2-6ap	ROUNDABOUT TEXT	
	4					36 X 36	9.0	36.0	W2-6	ROUNDABOUT ARROWS	
	4					24 X 24	4.0	16.0	W13-1	15 MPH	
C-005	1	2U	1A	16.0	7.0	36 X 30	7.5	7.5	R3-30AD	ARROW LT ONLY, ARROW THRU/RIGH	
C-006	4	2U				30 X 30	4.3	17.0	W11-2	PEDESTRIAN SYMBOL	E
C-007	4	2U	1A	14.5	7.0	36 X 12	3.0	12.0	R6-1R	ONE WAY-RIGHT	
	4					36 X 36 X 36	4.5	18.0	R1-2	YIELD	
C-008	4	2U	1A	14.5	7.0	30 X 30	4.3	17.0	W11-2	PEDESTRIAN SYMBOL	E
	4					24 X 18	3.5	14.0	W16-7MPL	ARROW DOWN/LEFT	E
C-009	4	2U		11.5	7.0	36 X 12	3.0	12.0	R6-1R	ONE WAY-RIGHT	
C-010	1	2U	1A	13.0	7.0	36 X 30	7.5	7.5	R3-30DA	ARROW THRU/LT, ARROW RIGHT ONLY	
C-011	2	1U		13.0	7.0	30 X 30	4.3	8.5	W12-1	DOUBLE ARROW	D F
C-013	1	2U		12.5	7.0	24 X 24	4.0	4.0	M1-6	BLUE EARTH 82	
TOTALS								210			

NOTES:
A INSTALL WITH SIGN TYPE-C
B MOUNTED WITH SIGN TYPE-SPECIAL
C SALVAGE FROM LIGHT POLE, INSTALL ON CHANNEL POST
D INSTALL WITH HAZARD MARKER
E BLACK ON YELLOW-GREEN
F MOUNT IN CONCRETE

(T) PERMANENT PAVEMENT MARKINGS & REMOVALS

LOCATION	EPOXY SOLID LINE 4" WHITE	EPOXY SOLID LINE 12" WHITE	EPOXY SOLID LINE 4" YELLOW	EPOXY SOLID LINE 12" YELLOW	EPOXY SOLID LINE 24" YELLOW	EPOXY BROKEN LINE 4" YELLOW	EPOXY BROKEN LINE 4" WHITE	EPOXY DOTTED LINE 8" WHITE	EPOXY DOUBLE SOLID LINE 4" YELLOW	EPOXY PAVEMENT MESSAGE LEFT ARROW	EPOXY PAVEMENT MESSAGE RIGHT ARROW	EPOXY PAVEMENT MESSAGE THRU ARROW	EPOXY PAVEMENT MESSAGE RT/THRU/LT ARROW	EPOXY PAVEMENT MESSAGE LT/THRU ARROW	EPOXY PAVEMENT MESSAGE THRU/RT ARROW	POLY PREFORM GROUND IN CROSS WALK MARKING	PAVEMENT MARKING REMOVAL	PAVEMENT MARKING REMOVAL SPECIAL	NOTES
	(LIN FT)	(LIN FT)	(LIN FT)	(LIN FT)	(LIN FT)	(LIN FT)	(LIN FT)	(LIN FT)	(LIN FT)	(EACH)	(EACH)	(EACH)	(EACH)	(EACH)	(EACH)	(SQ FT)	(LIN FT)	(EACH)	
CSAH 60	4131	45	2520	30	130	232	60	20	625	2	1	0	0	1	2	162	0	0	
CSAH 82-NORTH	1615	52	835	30	70	0	112	20	240	1	1	0	0	3	0	216	0	0	
CSAH 82-EAST	4615	20	1060	30	495	0	0	20	2035	4	5	0	0	3	0	126	0	0	
VICTORY DRIVE SOUTH	2780	127	90	30	37	0	0	20	880	1	2	1	1	0	0	108	900	3	
TANAGER	650	0	0	70	0	0	0	0	440	1	1	0	0	0	0	0	0	0	
TOTALS	13791	244	4505	190	732	232	172	80	4220	9	10	1	1	7	2	612	900	3	

SIGNING & STRIPING TABULATIONS

CERTIFIED BY LICENSED ENGINEER LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET 80 OF 142 SHEETS

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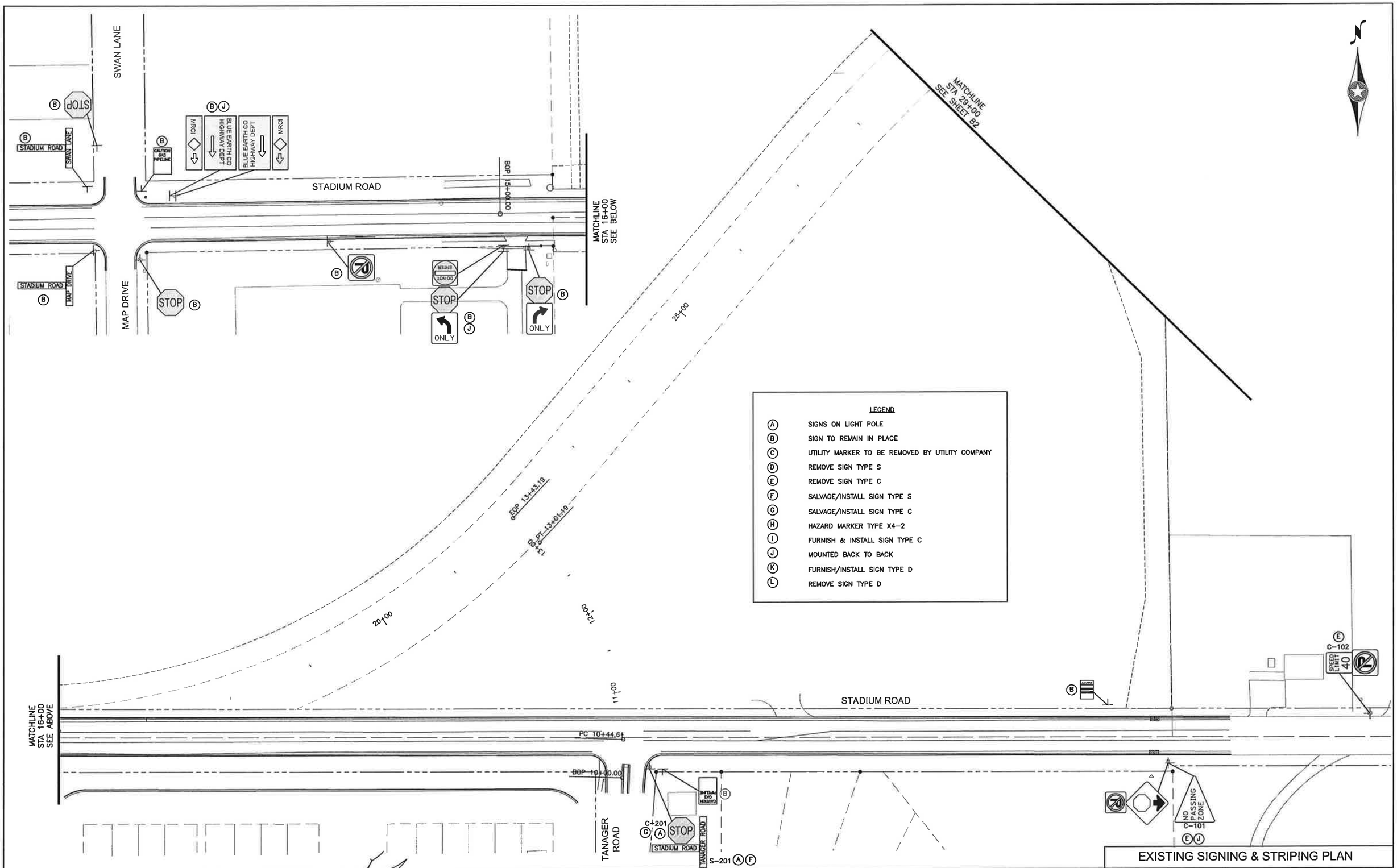

EXISTING SIGNING & STRIPING PLAN

SCALE 0 50 100

CERTIFIED BY _____ LICENSED ENGINEER LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET 81 OF 142 SHEETS

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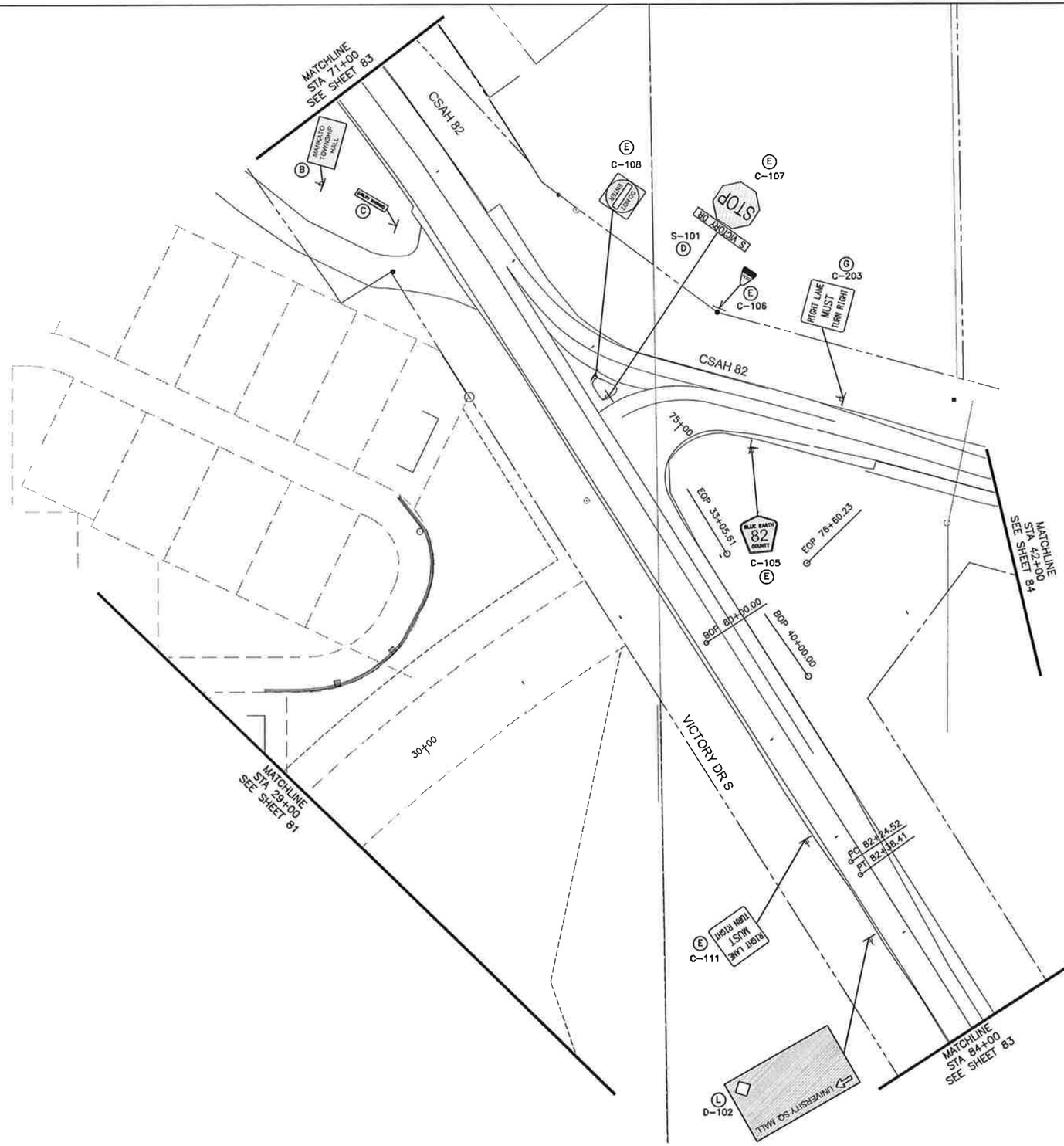

LEGEND

- (A) SIGNS ON LIGHT POLE
- (B) SIGN TO REMAIN IN PLACE
- (C) UTILITY MARKER TO BE REMOVED BY UTILITY COMPANY
- (D) REMOVE SIGN TYPE S
- (E) REMOVE SIGN TYPE C
- (F) SALVAGE/INSTALL SIGN TYPE S
- (G) SALVAGE/INSTALL SIGN TYPE C
- (H) HAZARD MARKER TYPE X4-2
- (I) FURNISH & INSTALL SIGN TYPE C
- (J) MOUNTED BACK TO BACK
- (K) FURNISH/INSTALL SIGN TYPE D
- (L) REMOVE SIGN TYPE D

EXISTING SIGNING & STRIPING PLAN

SCALE 0 50 100

CERTIFIED BY _____ LICENSED ENGINEER LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET 82 OF 142 SHEETS

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LEGEND

- (A) SIGNS ON LIGHT POLE
- (B) SIGN TO REMAIN IN PLACE
- (C) UTILITY MARKER TO BE REMOVED BY UTILITY COMPANY
- (D) REMOVE SIGN TYPE S
- (E) REMOVE SIGN TYPE C
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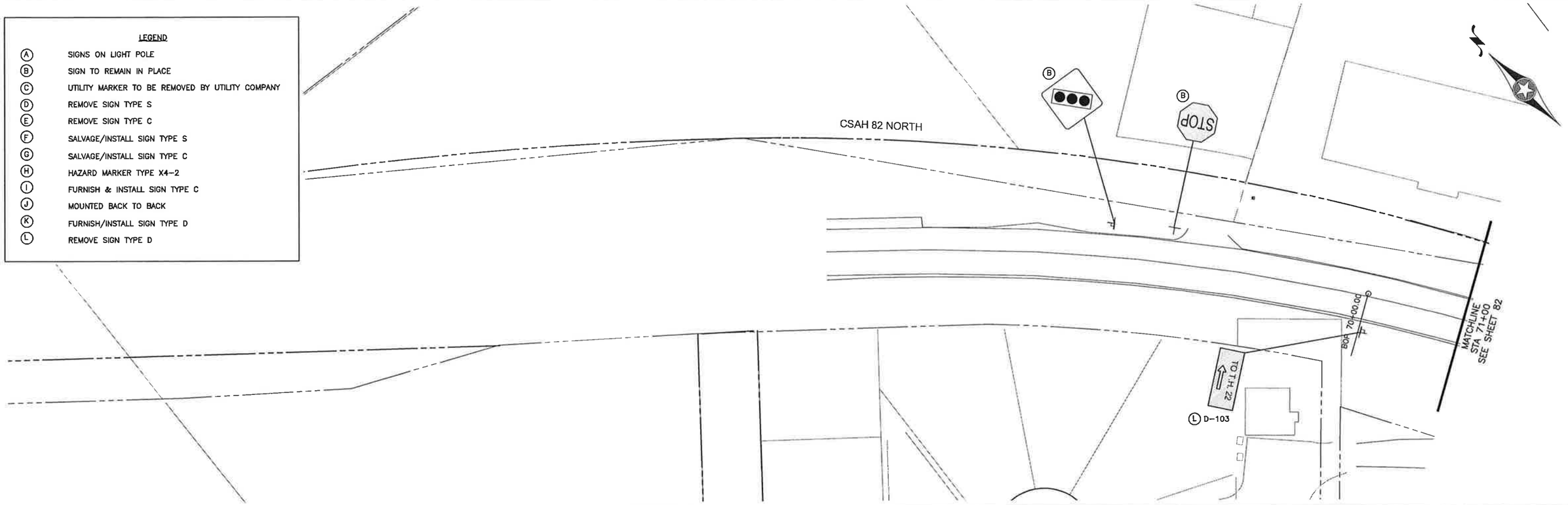
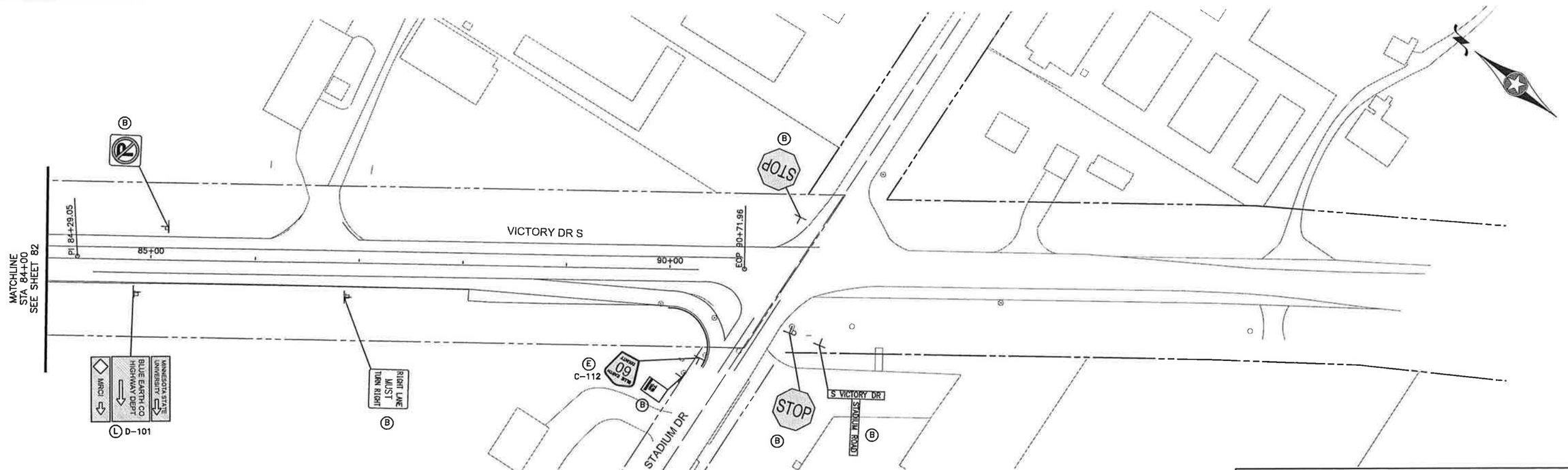
- (H) HAZARD MARKER TYPE X4-2
- (I) FURNISH & INSTALL SIGN TYPE C
- (J) MOUNTED BACK TO BACK
- (K) FURNISH/INSTALL SIGN TYPE D
- (L) REMOVE SIGN TYPE D





EXISTING SIGNING & STRIPING PLAN

SCALE 0 50 100

CERTIFIED BY _____ LICENSED ENGINEER LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET 83 OF 142 SHEETS

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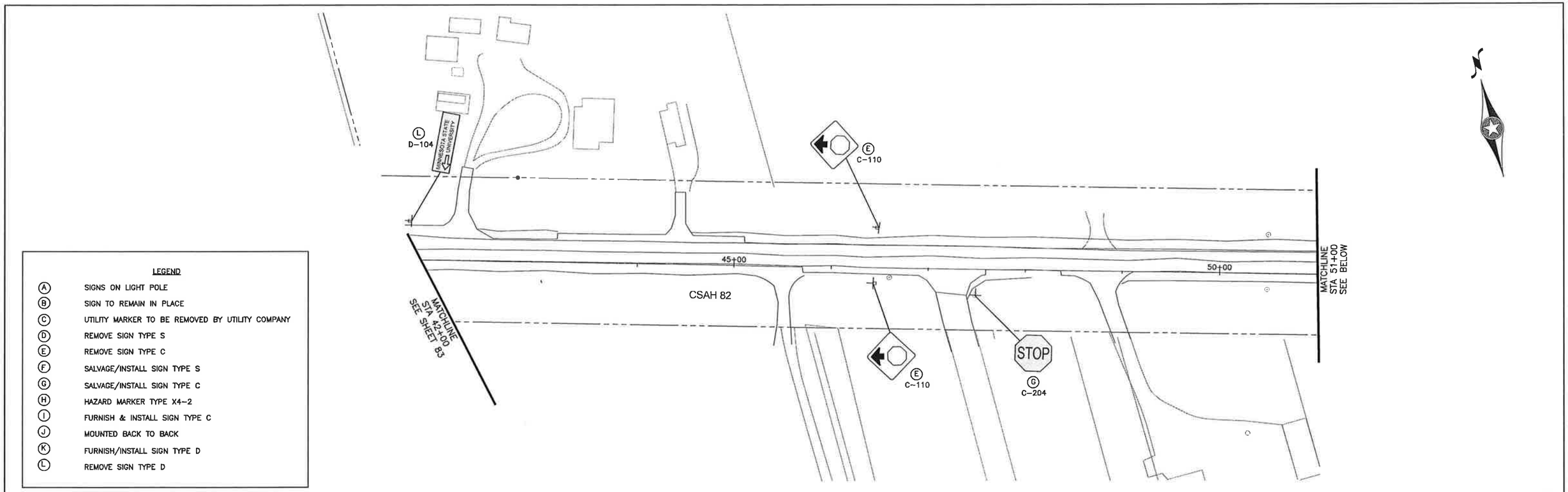

EXISTING SIGNING & STRIPING PLAN

SCALE 0 50 100

CERTIFIED BY _____ LICENSED ENGINEER LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET 84 OF 142 SHEETS

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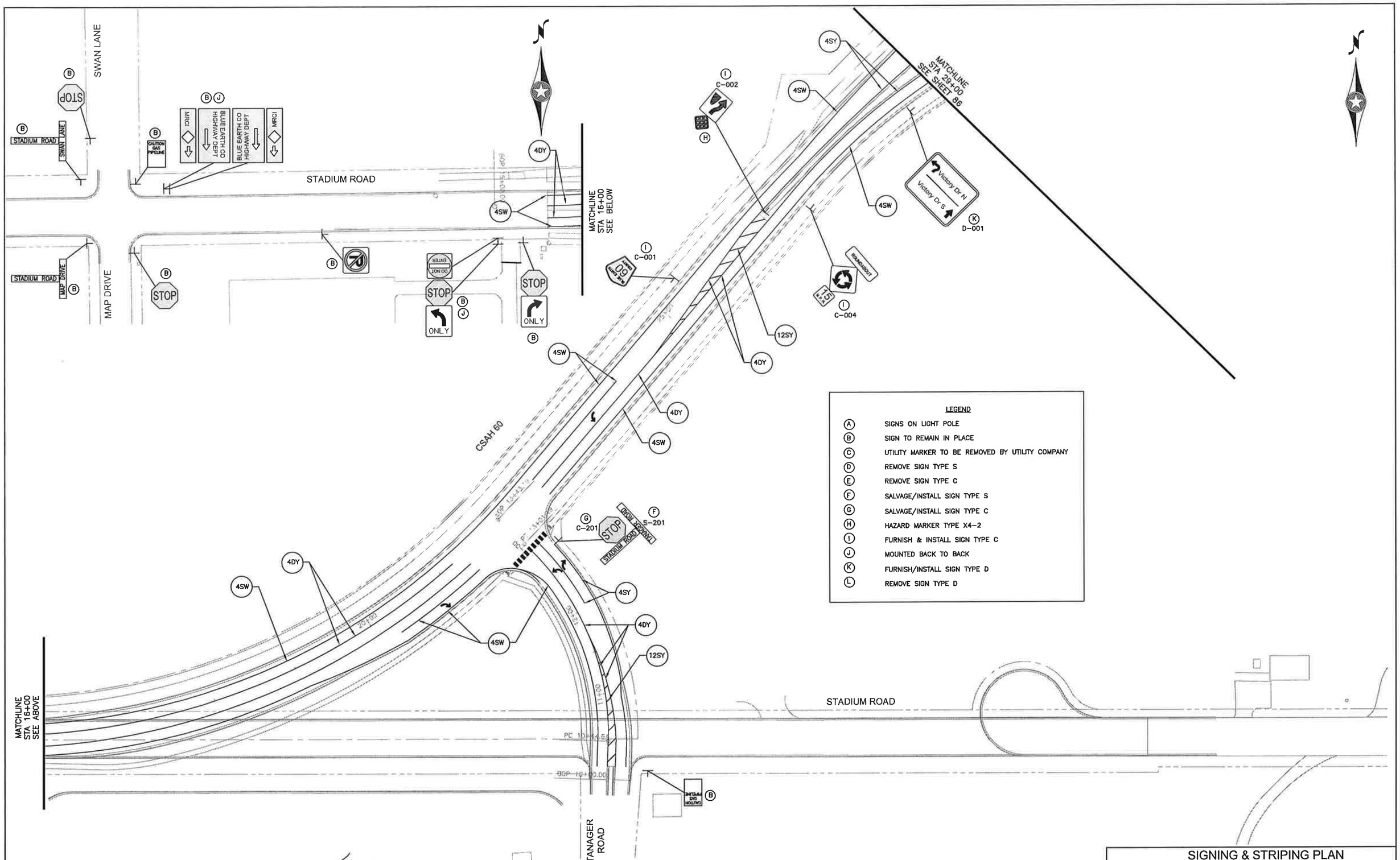

LEGEND

- (A) SIGNS ON LIGHT POLE
- (B) SIGN TO REMAIN IN PLACE
- (C) UTILITY MARKER TO BE REMOVED BY UTILITY COMPANY
- (D) REMOVE SIGN TYPE S
- (E) REMOVE SIGN TYPE C
- (F) SALVAGE/INSTALL SIGN TYPE S
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- (H) HAZARD MARKER TYPE X4-2
- (I) FURNISH & INSTALL SIGN TYPE C
- (J) MOUNTED BACK TO BACK
- (K) FURNISH/INSTALL SIGN TYPE D
- (L) REMOVE SIGN TYPE D

SIGNING & STRIPING PLAN

SCALE 0 50 100

CERTIFIED BY _____ LICENSED ENGINEER LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET 85 OF 142 SHEETS

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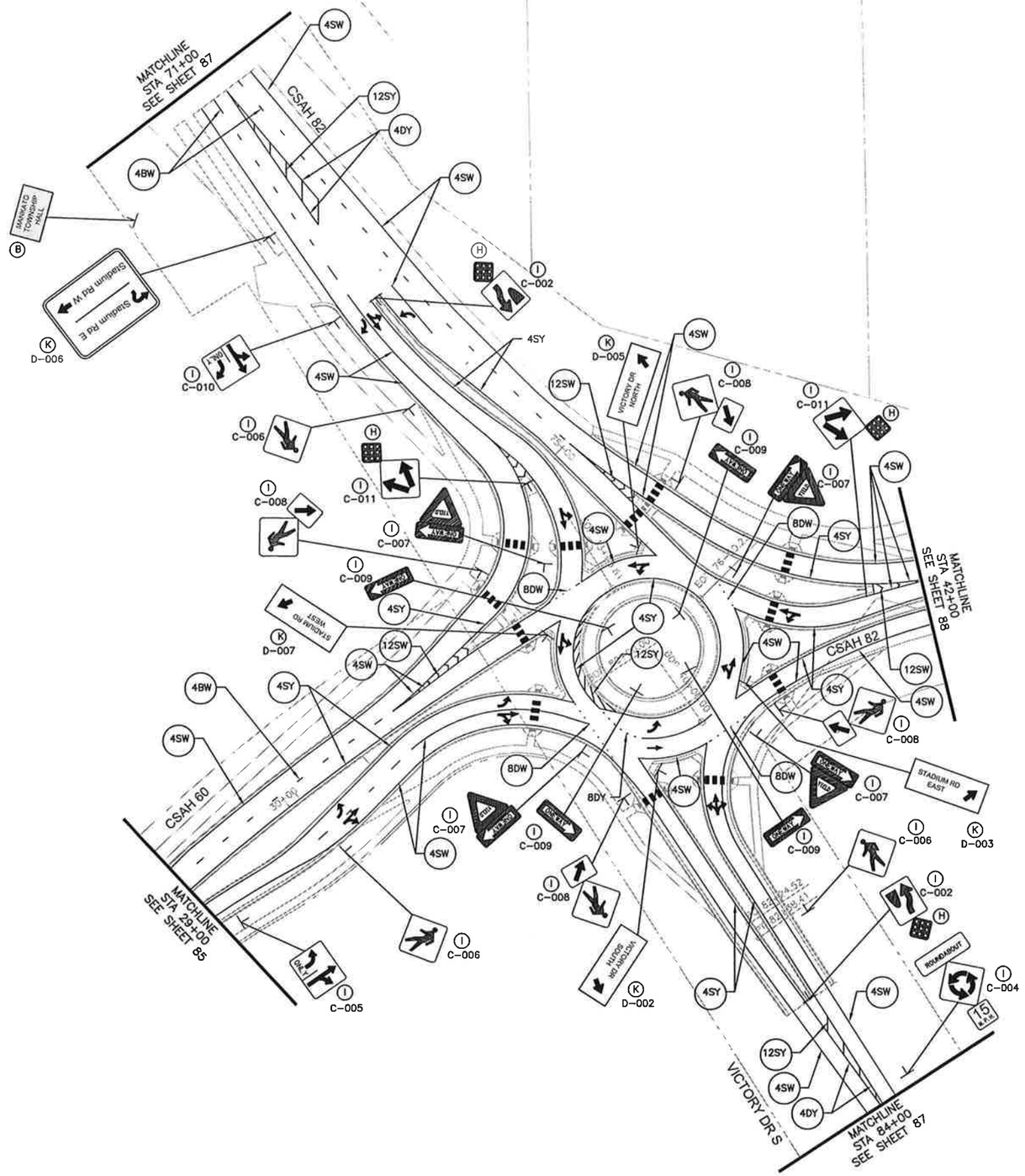

LEGEND

- Ⓐ SIGNS ON LIGHT POLE
- Ⓑ SIGN TO REMAIN IN PLACE
- Ⓒ UTILITY MARKER TO BE REMOVED BY UTILITY COMPANY
- Ⓓ REMOVE SIGN TYPE S
- Ⓔ REMOVE SIGN TYPE C
- Ⓕ SALVAGE/INSTALL SIGN TYPE S
- Ⓖ SALVAGE/INSTALL SIGN TYPE C
- Ⓗ HAZARD MARKER TYPE X4-2
- Ⓘ FURNISH & INSTALL SIGN TYPE C
- Ⓙ MOUNTED BACK TO BACK
- Ⓚ FURNISH/INSTALL SIGN TYPE D
- Ⓛ REMOVE SIGN TYPE D

SIGNING & STRIPING PLAN

SCALE 0 50 100

CERTIFIED BY _____ LICENSED ENGINEER LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET 86 OF 142 SHEETS

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LEGEND

- (A) SIGNS ON LIGHT POLE
- (B) SIGN TO REMAIN IN PLACE
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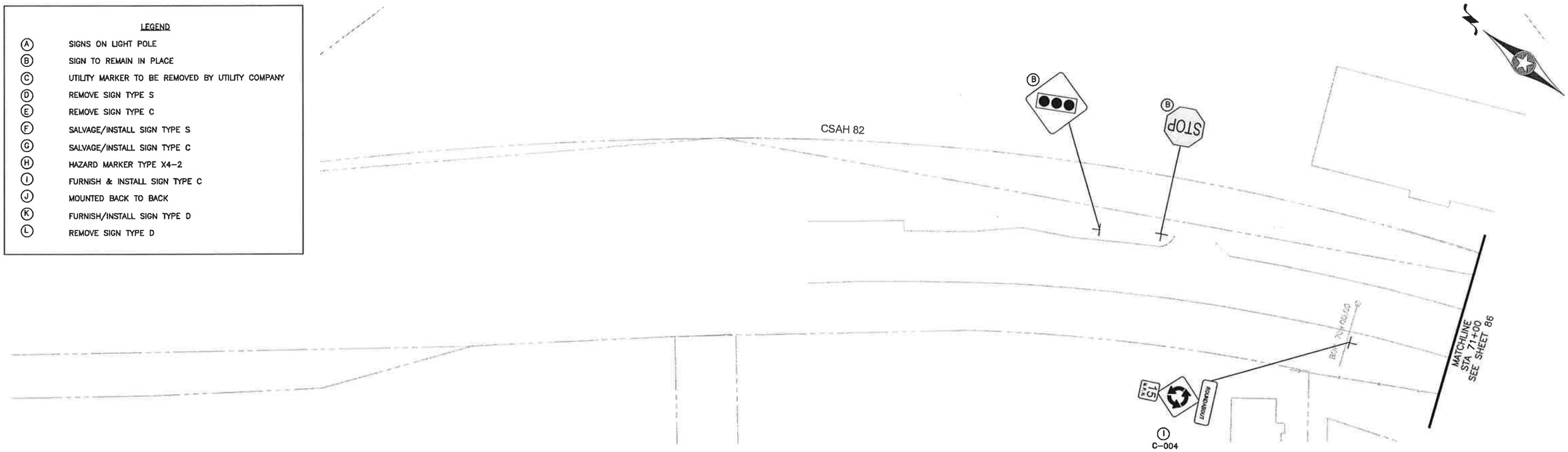
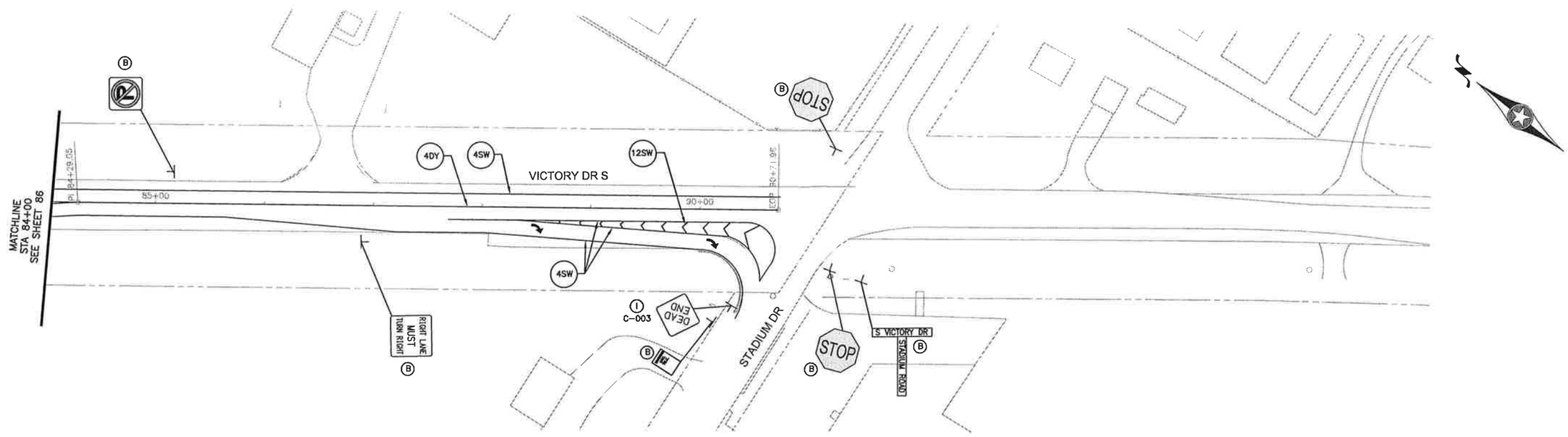
- (L) REMOVE SIGN TYPE D





SIGNING & STRIPING PLAN

SCALE 0 50 100

CERTIFIED BY _____ LICENSED ENGINEER LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET 87 OF 142 SHEETS

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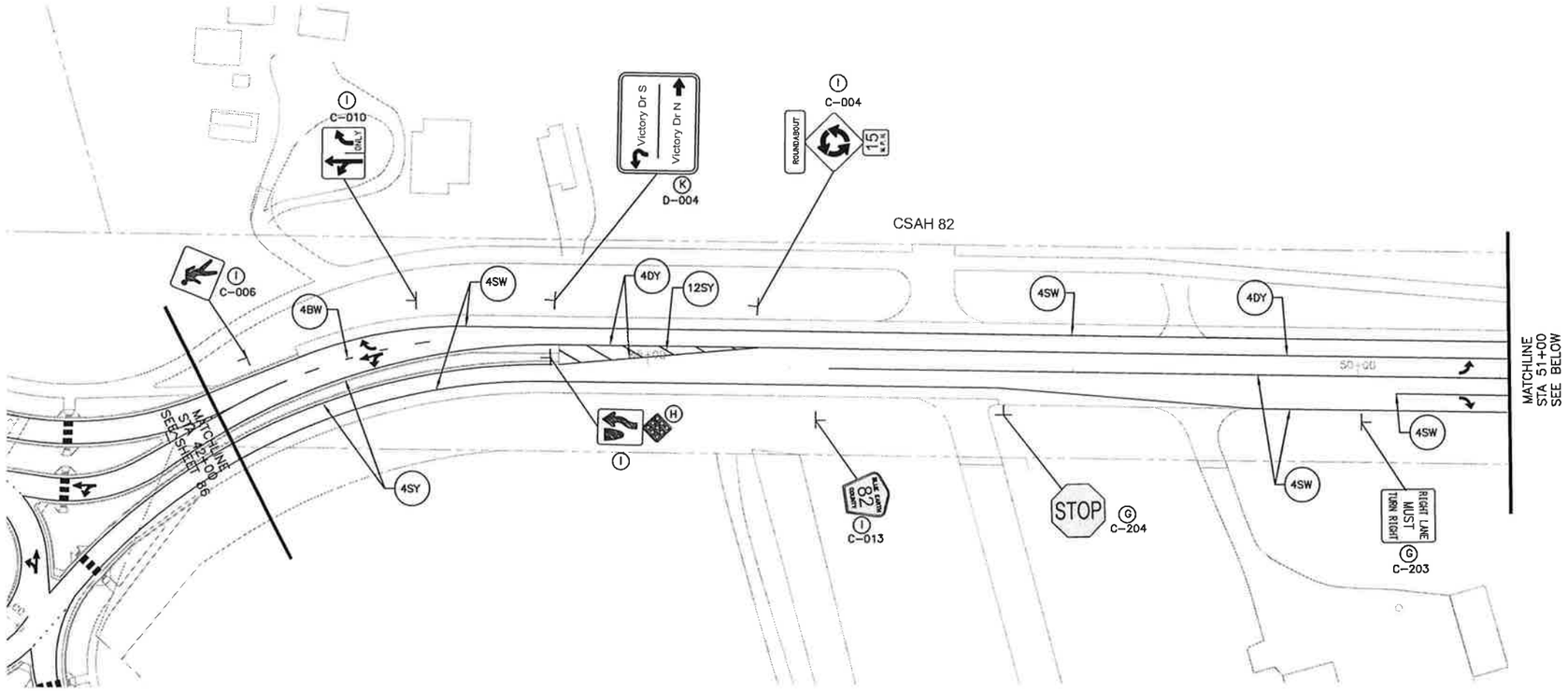

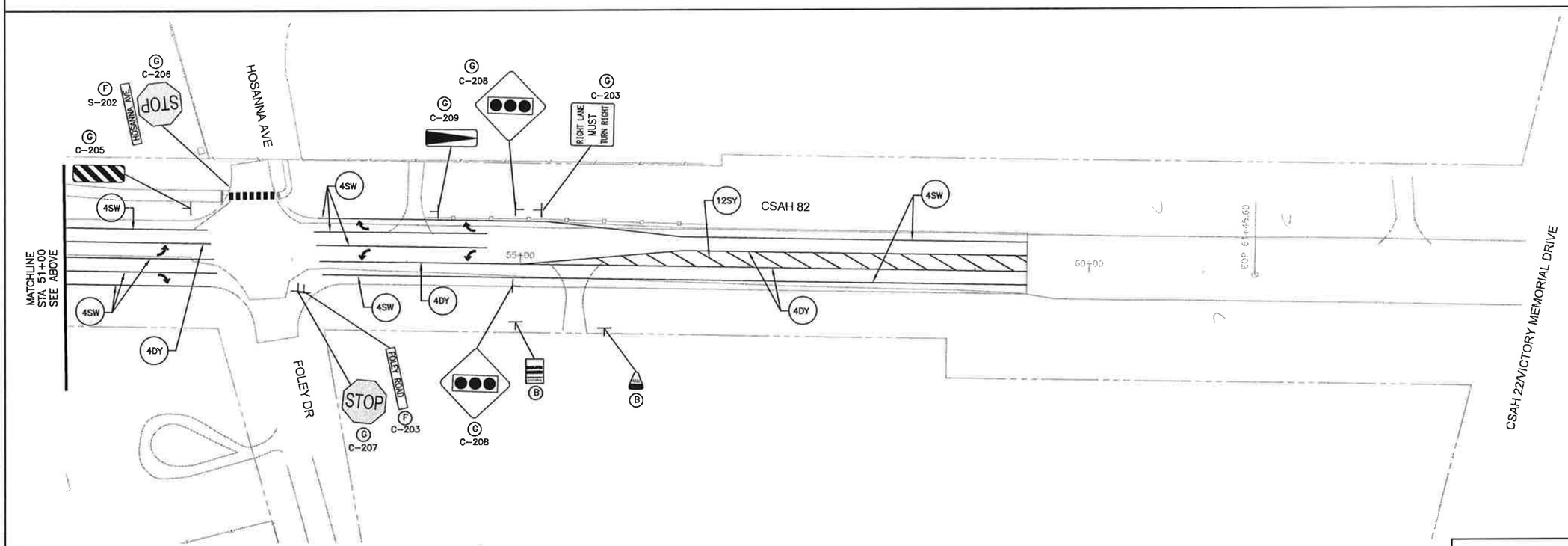

LEGEND

A	SIGNS ON LIGHT POLE
B	SIGN TO REMAIN IN PLACE
C	UTILITY MARKER TO BE REMOVED BY UTILITY COMPANY
D	REMOVE SIGN TYPE S
E	REMOVE SIGN TYPE C
F	SALVAGE/INSTALL SIGN TYPE S
G	SALVAGE/INSTALL SIGN TYPE C
H	HAZARD MARKER TYPE X4-2
I	FURNISH & INSTALL SIGN TYPE C
J	MOUNTED BACK TO BACK
K	FURNISH/INSTALL SIGN TYPE D
L	REMOVE SIGN TYPE D

SIGNING & STRIPING PLAN

SCALE 0 50 100

CERTIFIED BY _____ LICENSED ENGINEER LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET 88 OF 142 SHEETS

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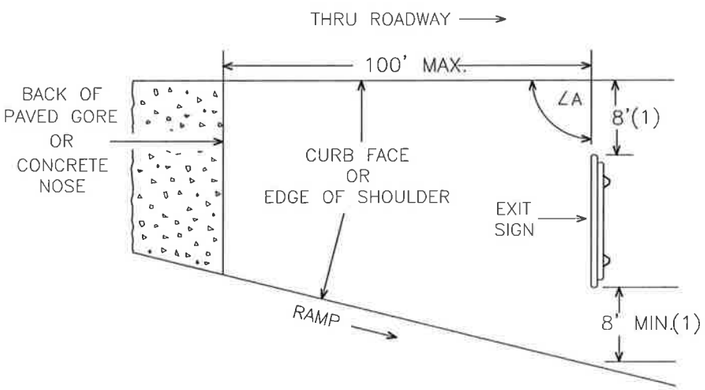
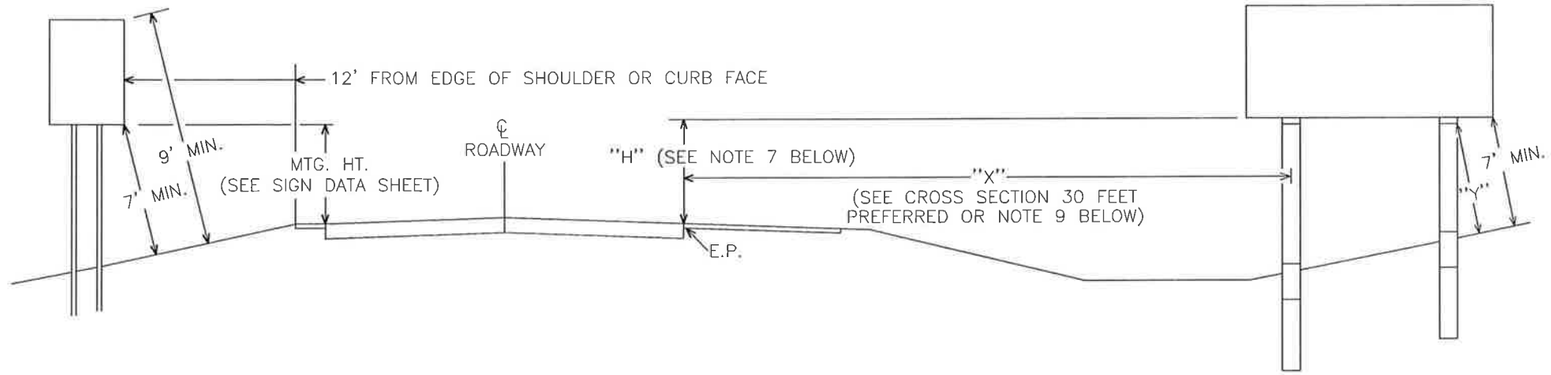
GORE PLACEMENT

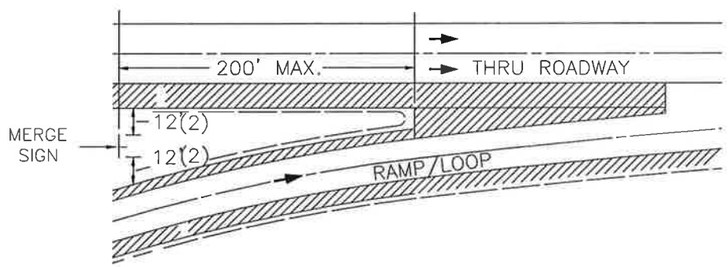


ROADSIDE PLACEMENT



ROUTE MARKER, REGULATORY & WARNING SIGNS – TYPE C
MINOR GUIDE SIGNS – TYPE D

MAJOR GUIDE SIGN – TYPE A



NOTES:

1. IF A SECONDARY SIGN IS MOUNTED BELOW A MAJOR SIGN, THE MAJOR SIGN SHALL BE AT LEAST 8' ABOVE THE PAVEMENT EDGE AND THE SECONDARY SIGN AT LEAST 5'.
2. ALL ROUTE MARKERS, WARNING AND REGULATORY SIGNS SHALL BE AT LEAST 7' ABOVE PAVEMENT EDGE.
3. SIGN FACES SHALL BE VERTICAL.
4. OVERHEAD SIGNS SHALL BE POSITIONED AT RIGHT ANGLES TO THE THRU ROADWAY UNLESS OTHERWISE NOTED.
5. TO AVOID SPECULAR GLARE, ∠A SHALL BE APPROXIMATELY 93°FOR SIGNS LOCATED LESS THAN 30' FROM THE EDGE OF PAVEMENT AND APPROXIMATELY 92° FOR SIGNS LOCATED 30' OR MORE FROM EDGE OF PAVEMENT. THIS APPLIES TO SIGNS TYPE A, C, & D AND INCLUDES SIGNS IN THE GORE.
6. "Y" IS THE PERPENDICULAR DISTANCE FROM THE GROUND LINE TO THE FRICTION FUSE ON THE POST. THIS DISTANCE SHALL BE AT LEAST 7'.
7. WHERE "X" IS LESS THAN 30', "H" SHALL, BE 7'± 6". WHERE "X" IS 30' OR GREATER, MINIMUM AND PREFERRED "H" IS 5'.
8. LATERAL CLEARANCES GIVEN APPLY TO RIGHT AND OR LEFT SIDE INSTALLATION.
9. WHEN A TYPE A SIGN IS INSTALLED DIRECTLY BEHIND TRAFFIC BARRIER, THE LEFT EDGE OF THE SIGN PANEL SHALL BE LOCATED A MINIMUM OF 4 FEET BEHIND THE FACE OF THE TRAFFIC BARRIER.

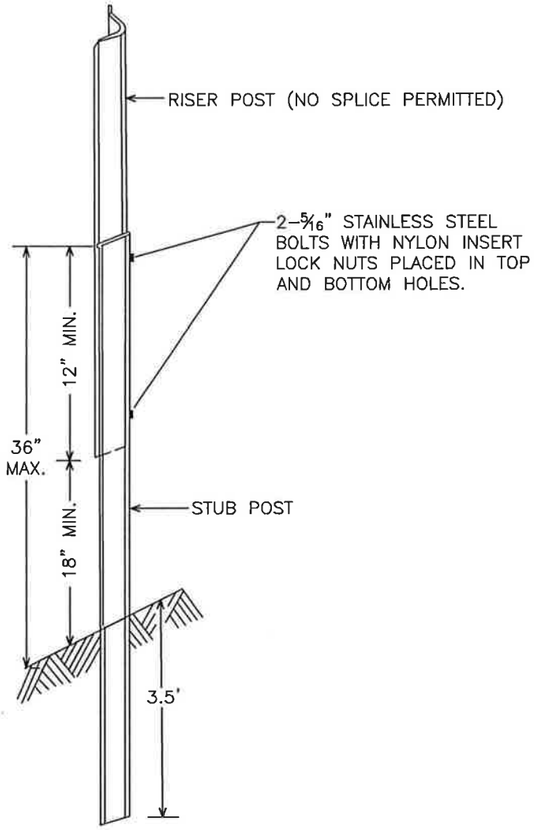
SPECIFIC NOTES:

(1) EXIT SIGNS
IF THESE OFFSETS CANNOT BE ATTAINED WITHIN 100 FEET OF THE PAVED GORE, A 4 FOOT OFFSET IS ACCEPTABLE. IF THE 4 FOOT OFFSETS CANNOT BE ATTAINED WITHIN 100 FEET OF THE PAVED GORE, CONTACT THE PROJECT ENGINEER WHO WILL CONSULT WITH THE STATE SIGNING ENGINEER.

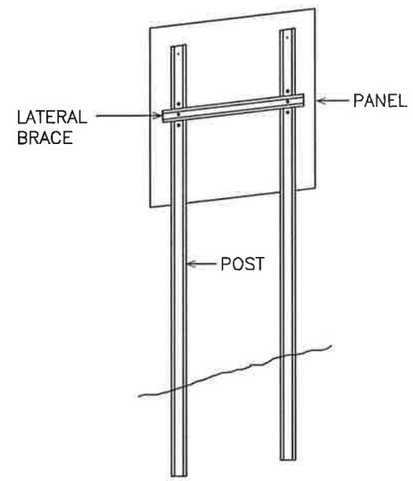
(2) MERGE SIGNS
IF THESE OFFSETS CANNOT BE ATTAINED WITHIN 200 FEET OF THE PAVED GORE, A 4 FOOT OFFSET IS ACCEPTABLE. IF THE 4 FOOT OFFSETS CANNOT BE ATTAINED WITHIN 200 FEET OF THE PAVED GORE, CONTACT THE PROJECT ENGINEER WHO WILL CONSULT WITH THE STATE SIGNING ENGINEER.

SIGN PLACEMENT

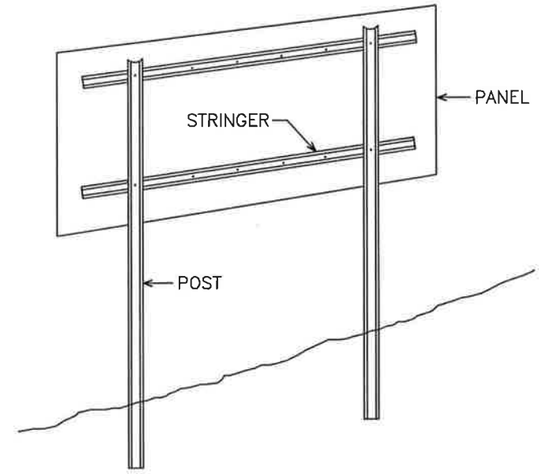
TYPE C & D POST



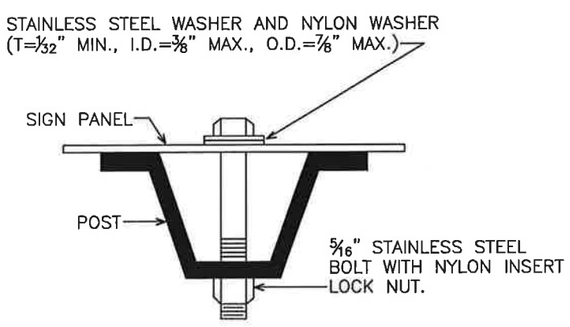
U POST SPLICE



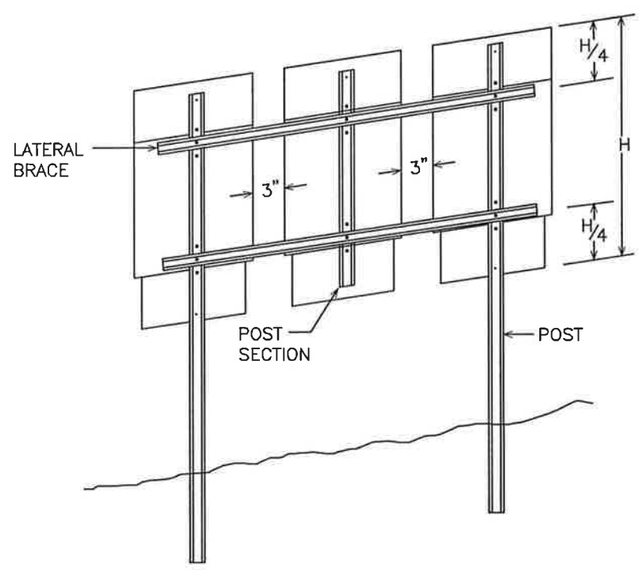
TYPICAL TYPE C INSTALLATION



TYPICAL TYPE D INSTALLATION



U POST MOUNTING
TYPE C SIGNS



MODIFIED TYPE C INSTALLATION

NOTES:

1. USE 3# STUB POSTS, RISER POSTS, STRINGERS, KNEE BRACES, LATERAL BRACES AND KNEE BRACE STUB POSTS. ALL SHALL CONFORM TO MN/DOT 3401.
2. FOR TYPE D SIGN POSTS LENGTHS AND SPACINGS, SEE SIGN DATA SHEET.
3. TYPE D SIGN PANELS SHALL BE BOLTED TO STRINGERS AT 24" MAXIMUM INTERVALS IN ACCORDANCE WITH TYPE D STRINGER AND PANEL-JOINT DETAIL (SEE STANDARD SIGNS MANUAL).
4. MOUNTING (PUNCH CODE) FOR TYPE C SIGN PANELS SHALL BE AS INDICATED IN THE STANDARD SIGNS MANUAL UNLESS OTHERWISE SPECIFIED.
5. ALL RISER (VERTICAL) U POSTS SHALL BE SPLICED. DRIVEN STUB POSTS SHALL BE AT LEAST 7' LONG.
6. USE STAINLESS STEEL 5/16" BOLTS, WASHERS, AND NYLON INSERT LOCK NUTS AS SHOWN FOR ALL GROUND MOUNTED AND OVERHEAD MOUNTED SIGNS.
7. STAINLESS STEEL WASHER WITH SAME DIMENSIONS SHALL BE PROVIDED BETWEEN ALL NYLON WASHERS AND BOLT HEADS
8. BRACING STUBS SHALL BE NO MORE THAN 4" ABOVE GROUND AND EMBEDDED AT LEAST 3½'.
9. A-FRAME BRACKET SHALL BE STEEL CONFORMING TO MN/DOT 3306 AND GALVANIZED IN ACCORDANCE WITH MN/DOT 3394.
10. COLLARS SHALL BE USED TO SHIM OVERLAYS AND DEMOUNTABLE LEGEND AWAY FROM PANEL WHERE INTERFERENCE WITH BOLT HEADS IS ENCOUNTERED. MN/DOT 3352.2A5.
11. 2 POST TYPE C SIGNS SHALL BE REINFORCED WITH AT LEAST ONE LATERAL BRACE. INSTALLATIONS WHERE THE TOTAL PANEL HEIGHT IS 60" OR MORE SHALL HAVE TWO LATERAL BRACES LOCATED APPROXIMATELY AT THE QUARTER POINTS.
12. WHERE 2 SINGLE POST TYPE C SIGNS ARE MOUNTED SIDE BY SIDE, THEY SHALL BE REINFORCED LATERALLY BY AT LEAST 2 BRACES BOLTED AT EACH POST AND LOCATED APPROXIMATELY AT THE QUARTER POINTS.
13. WHERE 3 OR MORE SINGLE POST TYPE C SIGNS ARE INSTALLED SIDE BY SIDE, THEY SHALL BE REINFORCED LATERALLY BY AT LEAST 2 BRACES BOLTED AT EACH POST AND AND POST SECTION, LOCATED APPROXIMATELY AT THE QUARTER POINTS AS SHOWN IN MODIFIED TYPE C INSTALLATION.

TYPE C & D SIGN
STRUCTURAL DETAILS

Sheet 1 of 3

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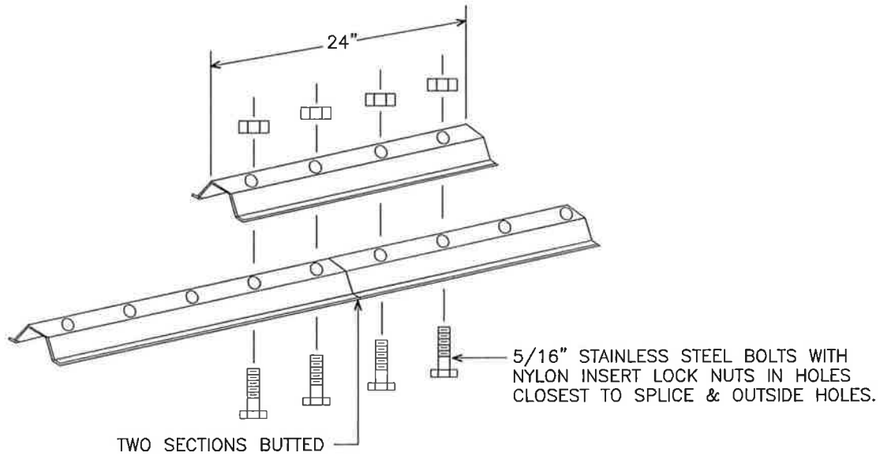
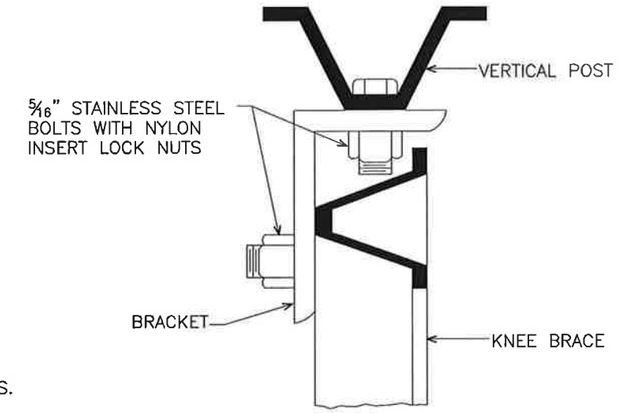
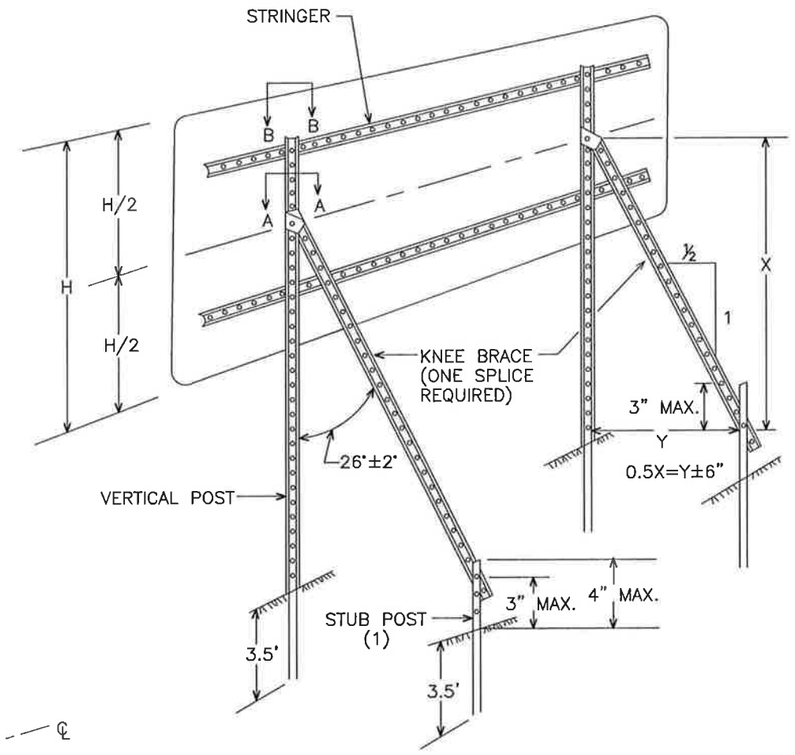
REVISED: 8-5-08



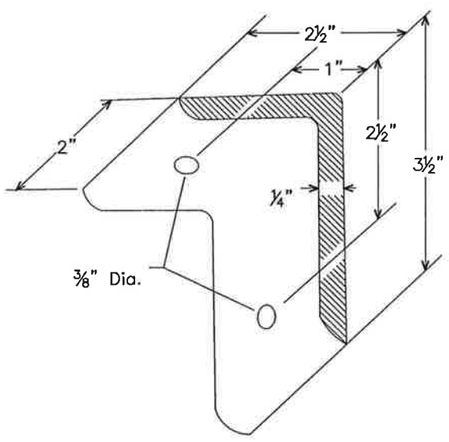
LATERAL BRACE OR STRINGER SPLICE DETAIL (EXPLODED VIEW)



SECTION A–A

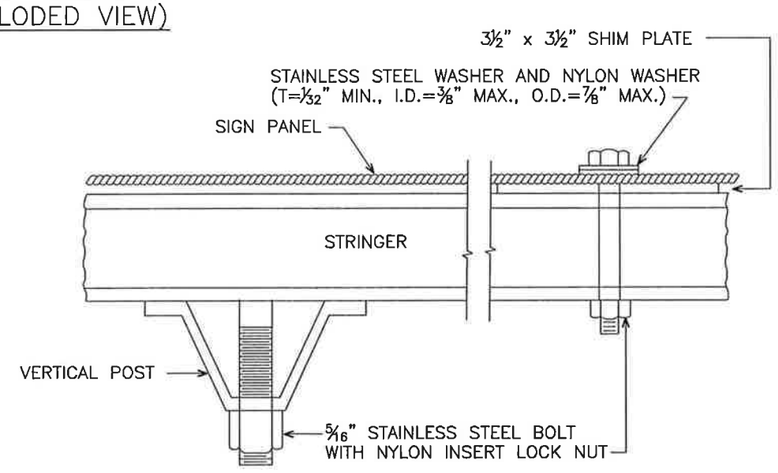


TYPICAL "A–FRAME" INSTALLATION TYPE "D" SIGNS

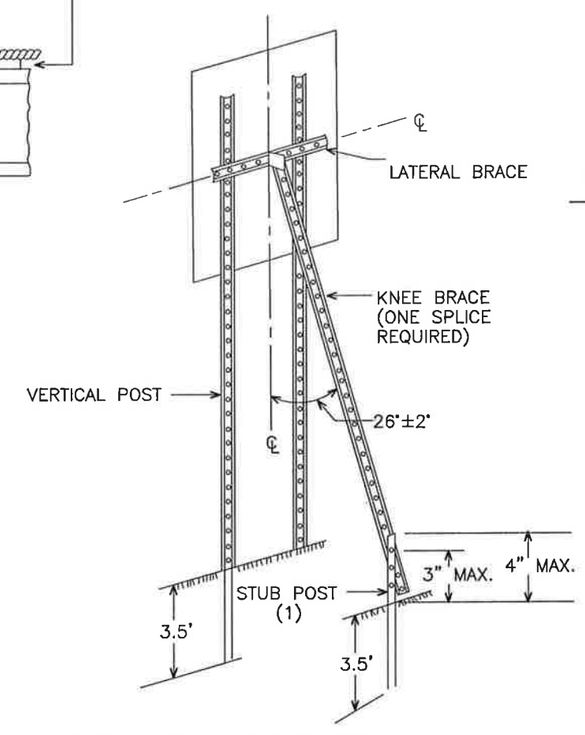


A–FRAME BRACKET

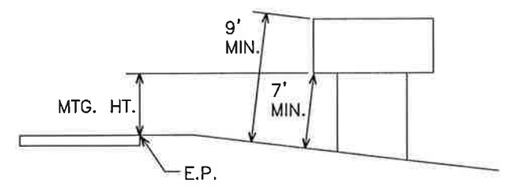
(STEEL MN/DOT 3306 GALVANIZED PER MN/DOT 3394)



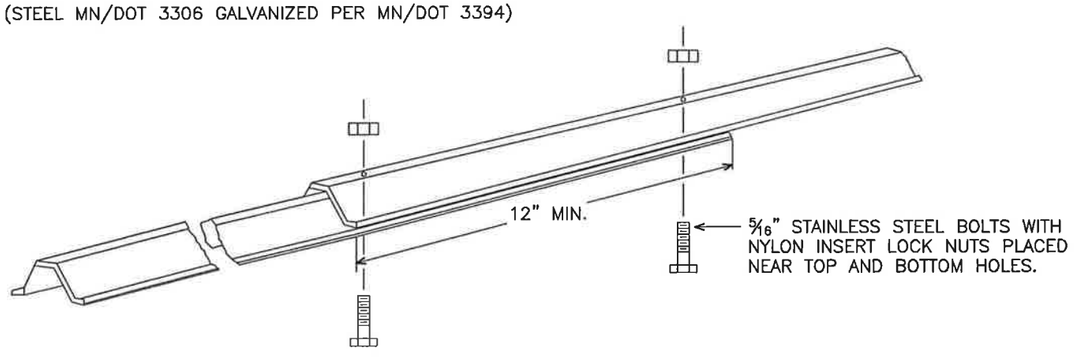
SECTION B–B



TYPICAL "A–FRAME" INSTALLATION TYPE "C" SIGNS



TYPICAL MOUNTING



KNEE BRACE SPLICE

TYPE C & D SIGN STRUCTURAL DETAILS

Sheet 2 of 3

Revised 1–7–08

STATE PROJ. NO. SAP 007–660–005 & SAP 007–682–008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET NO. 91 OF 142

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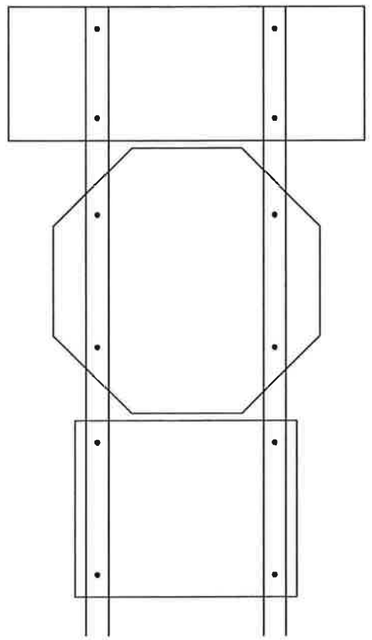
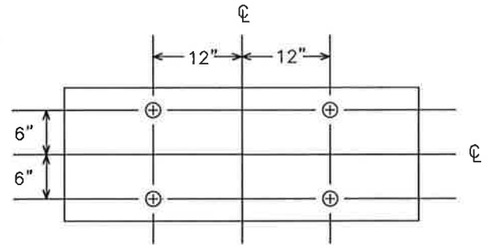
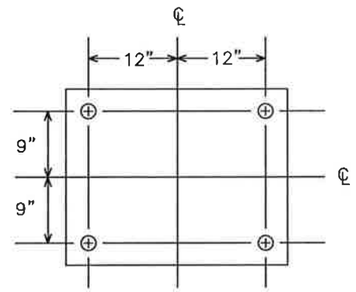


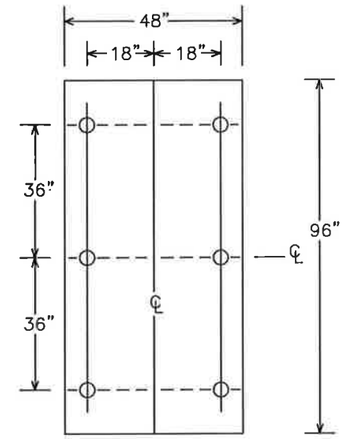
R6-1, R1-1 & (R6-3 OR R6-3a)
MOUNTING



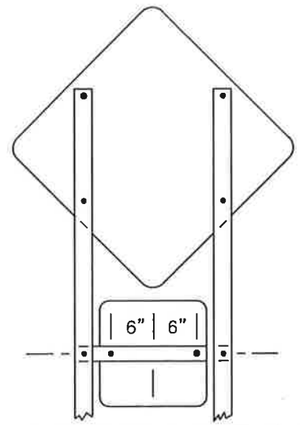
PUNCHING FOR R6-1(48"x18")



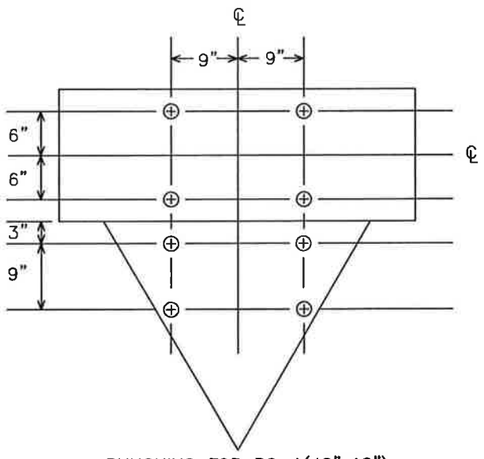
PUNCHING FOR R6-3 OR R6-3a(30"x24")



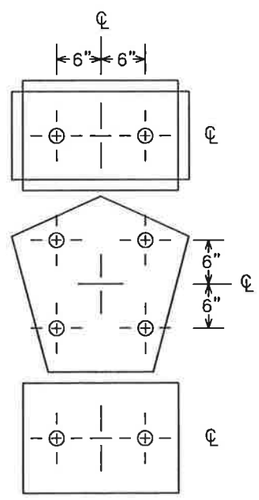
PUNCHING FOR R2-4b
SPEED LIMIT



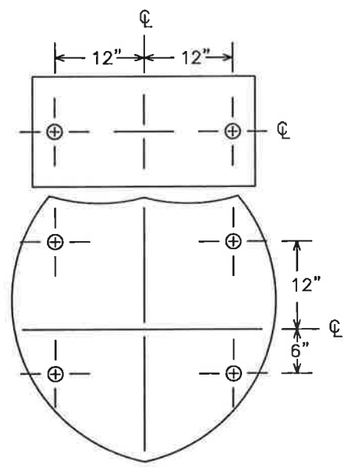
(W1-1, W1-2, W1-3, W1-4 OR W1-5) & W13-1
MOUNTING



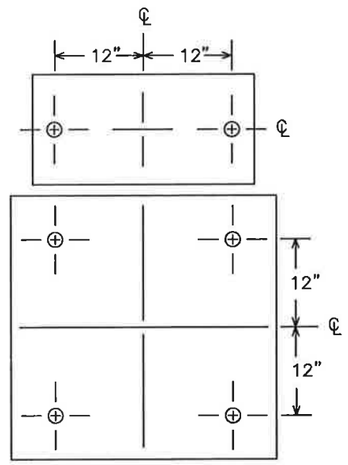
PUNCHING FOR R6-1(48"x18")
& R1-2(36"x36"x36")



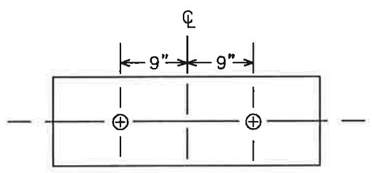
M2-1A [21"x15"] OR
(M3-1A, M3-2A, M3-3A OR M3-4A) [24"x12"] AND
M1-6 [24"x24"] AND
(M5-1A, M5-2A, M6-1A, M6-2A, M6-3A M6-4A, M6-5A OR M6-6A) [21"x15"]
PUNCHING



(M3-1A, M3-2A, M3-3A OR M3-4A) [30"x15"] AND
M1-1 [45"x36" OR 36"x36"]
PUNCHING



(M3-1, M3-1A, M3-2, M3-2A, M3-3, M3-3A M3-4 OR
M3-4A) [30"x15"] AND (M1-4 OR M1-5A) [36"x36"]
PUNCHING



PUNCHING FOR R6-1(36"x12")

TYPE C & D SIGN

STRUCTURAL DETAILS

Sheet 3 of 3

REVISED: 10-28-08

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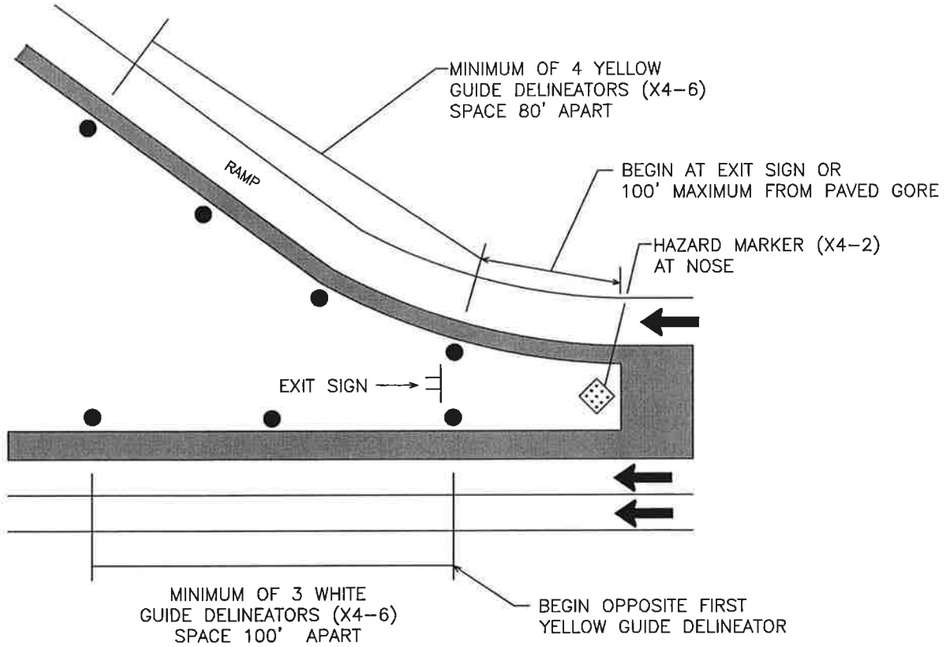
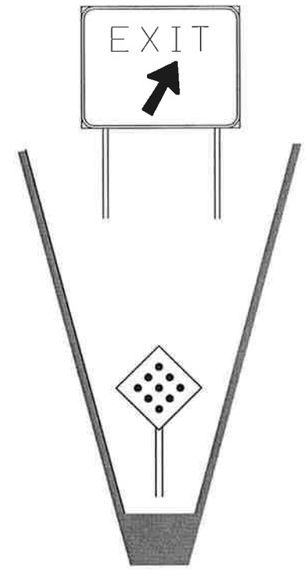
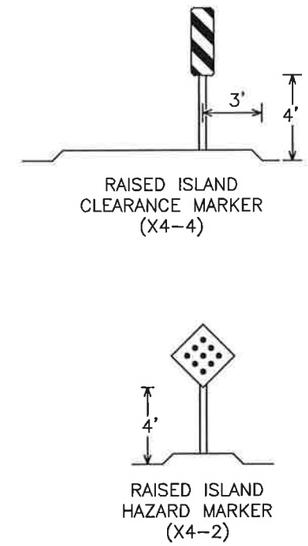
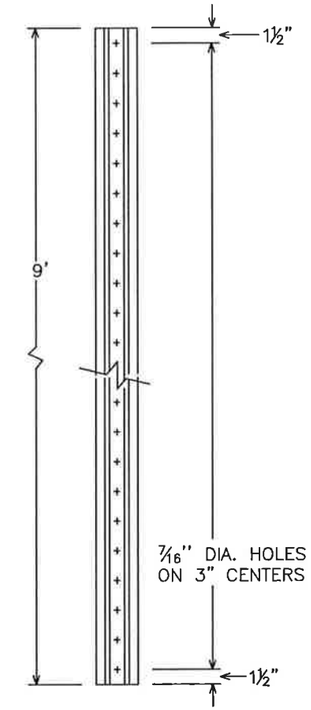


PLAN A
RAMP DELINEATION

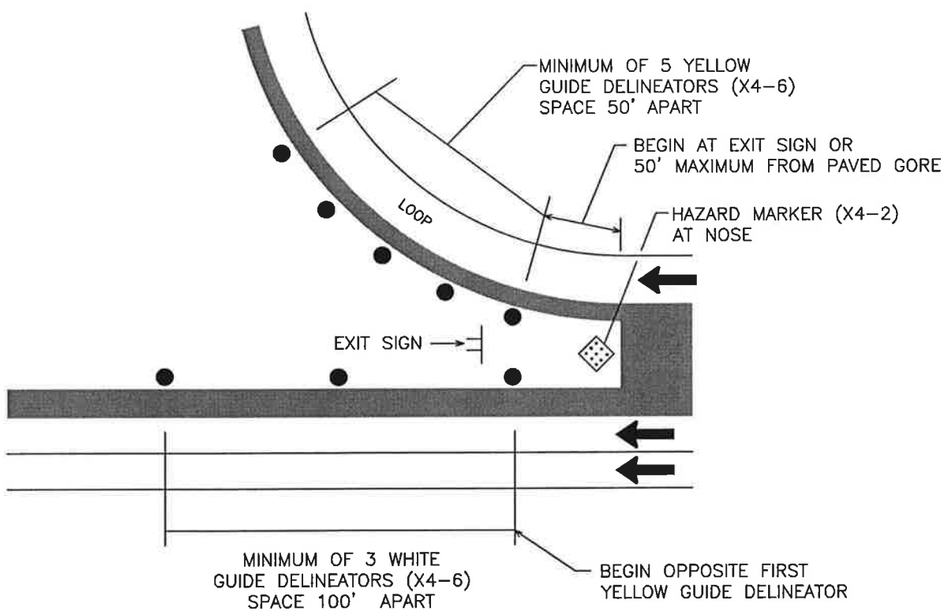




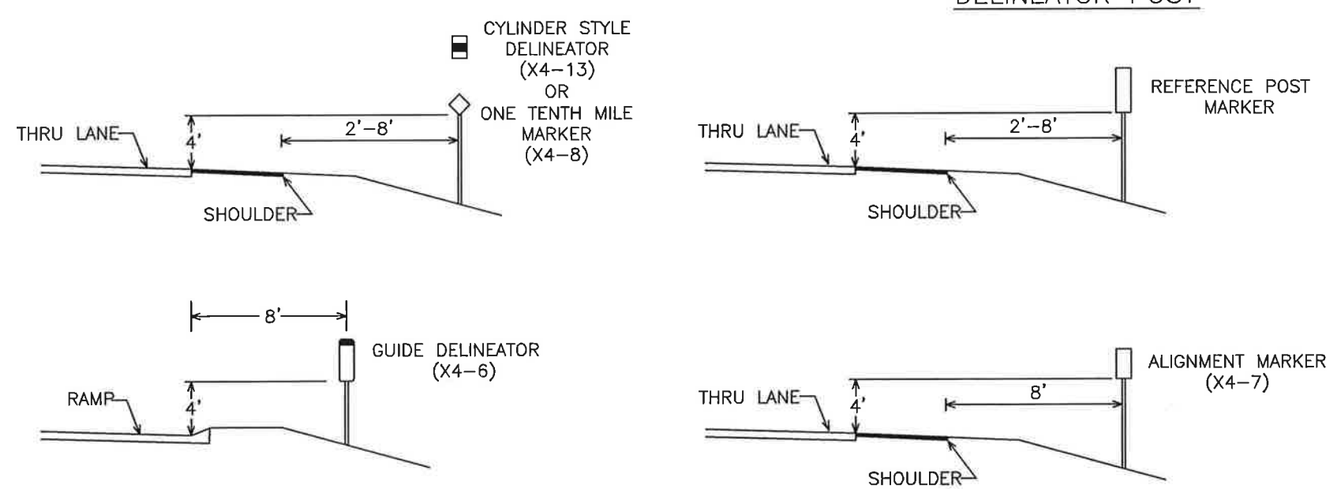


MN/DOT 3401
NORMAL WEIGHT= 2 LB./FT.

DELINEATOR POST



PLAN B
LOOP DELINEATION



TYPICAL PLACEMENT

DELINEATORS AND MARKERS

REVISED: 1-21-09

STATE PROJ. NO. SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET NO. 93 OF 142

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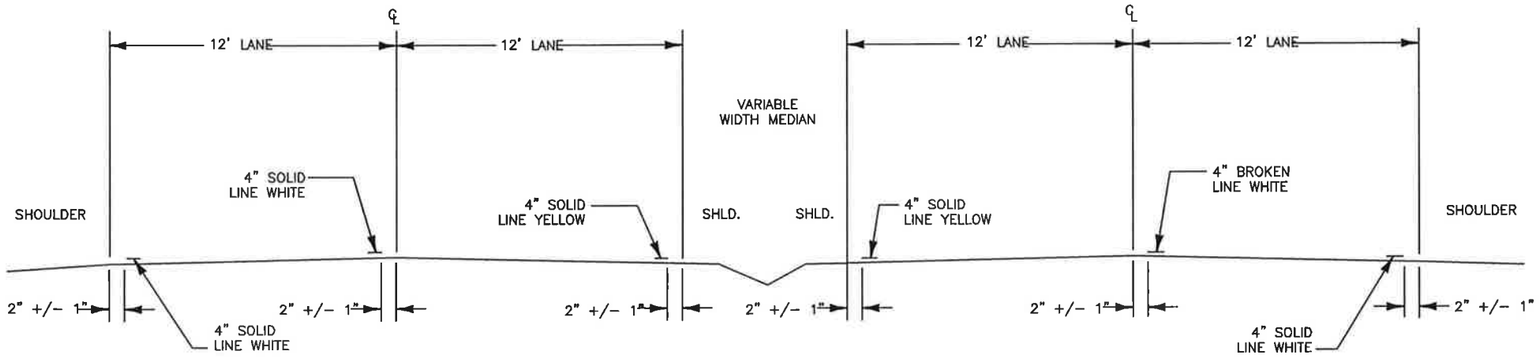
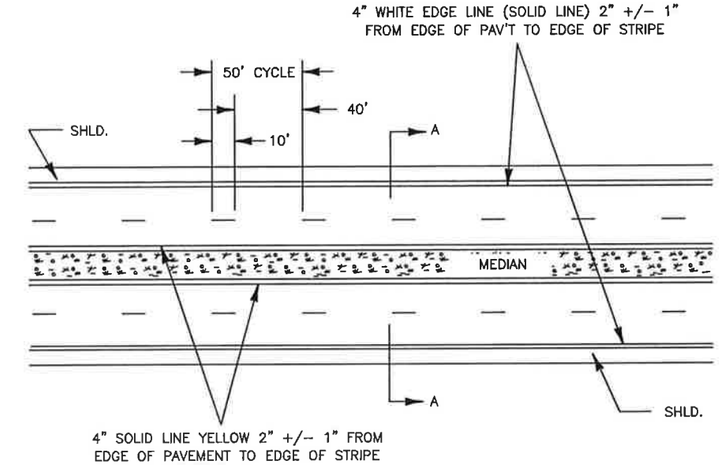
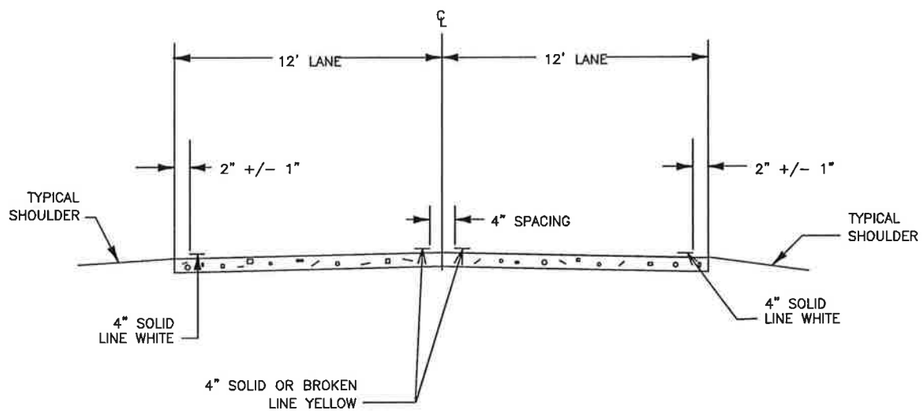


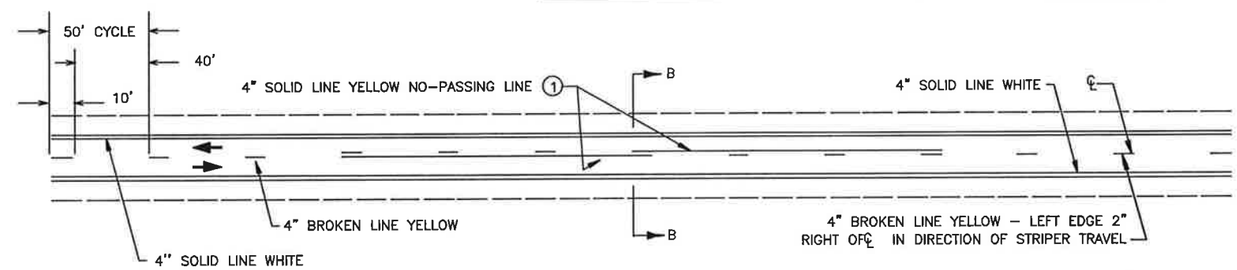
SECTION A–A
FOUR LANES



TYPICAL 4–LANE DIVIDED LANE MARKINGS

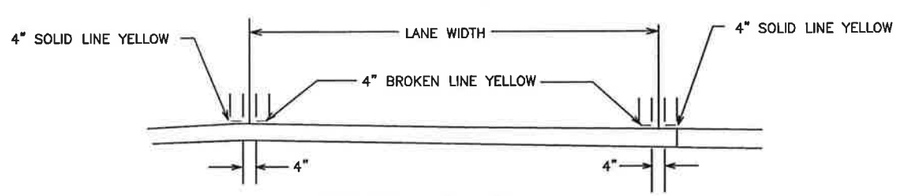


SECTION B–B

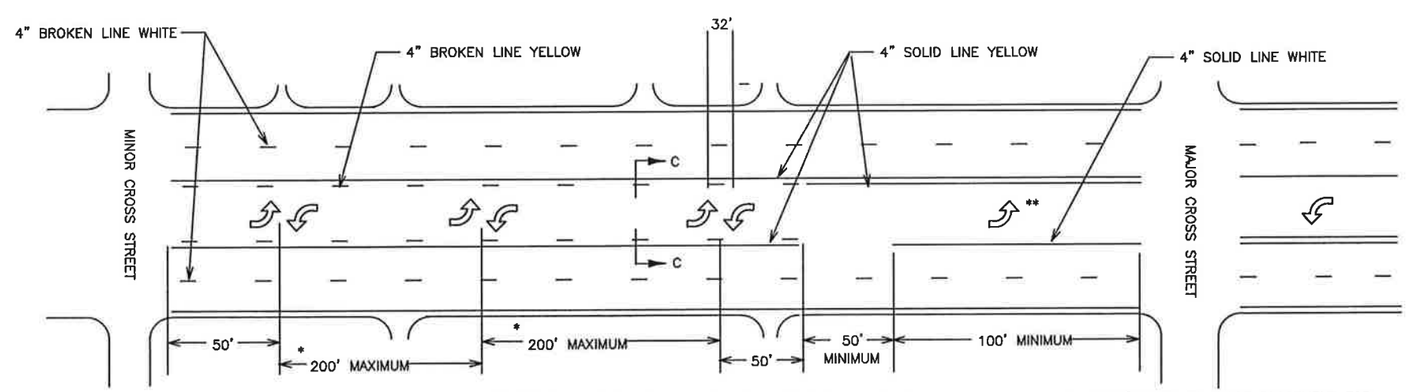


TWO LANE–TWO WAY TRAFFIC MARKINGS

(1) CONTACT TRAFFIC ENGINEER FOR NO PASSING ZONE SURVEY.



SECTION C–C
TWO WAY LEFT TURN LANE



TWO WAY LEFT TURN LANE

* THESE DISTANCES SHOULD BE EQUAL. THE ARROWS ARE PLACED TO SHOW THE OPERATION AND DO NOT HAVE TO LINE UP WITH ANY OF THE DRIVEWAYS.

** SEE "TYPICAL MESSAGE PLACEMENT FOR TURN LANES" FOR NUMBER AND PLACEMENT OF ARROWS.

PAVEMENT MARKING TYPICALS

REVISED: 02–JAN–2004

STATE PROJ. NO. SAP 007–660–005 & SAP 007–682–008 (CSAH 60, CSAH 82 & VICTORY DRIVE)

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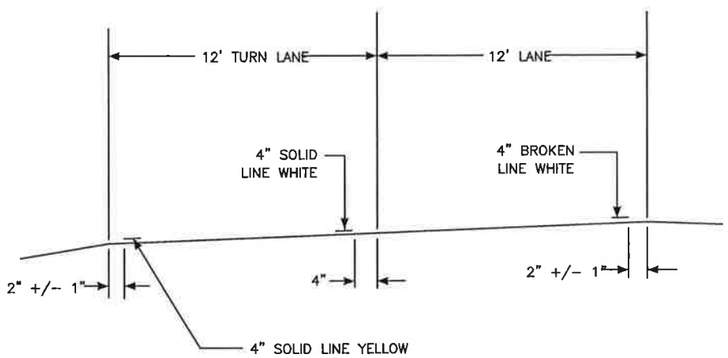
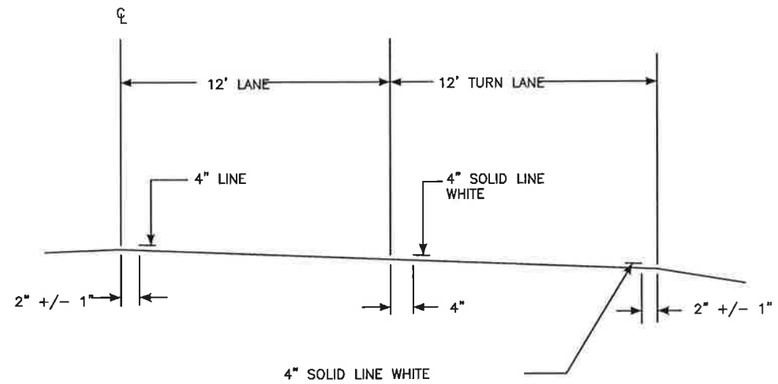
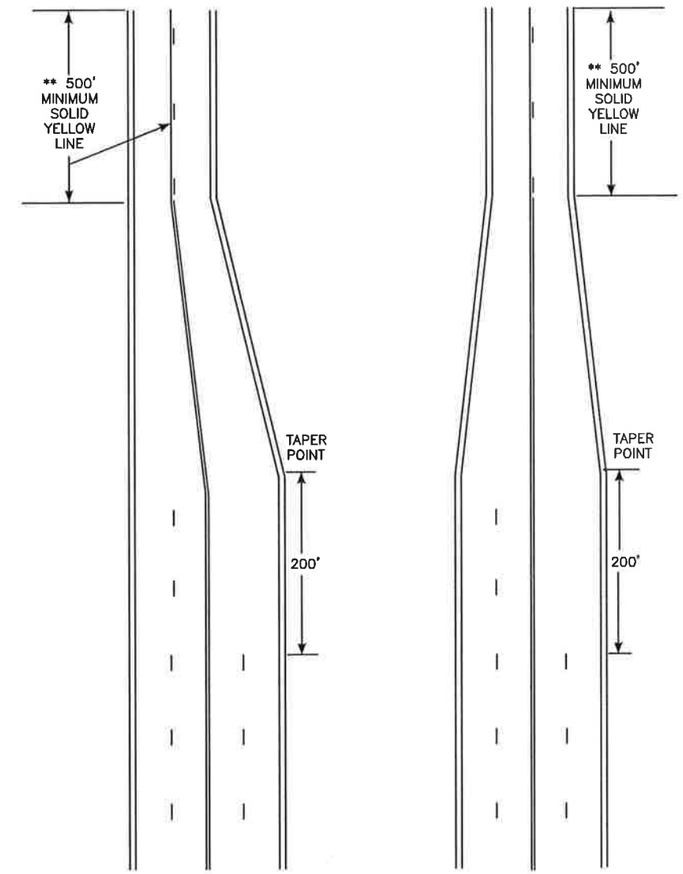
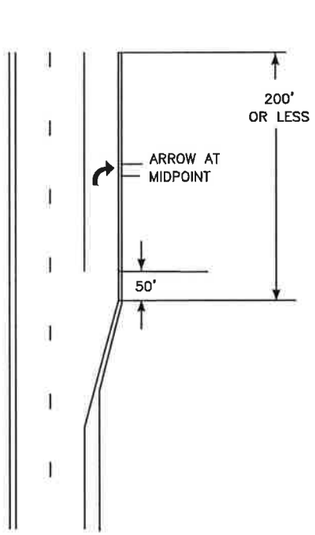
TYPICAL LEFT TURN LANE

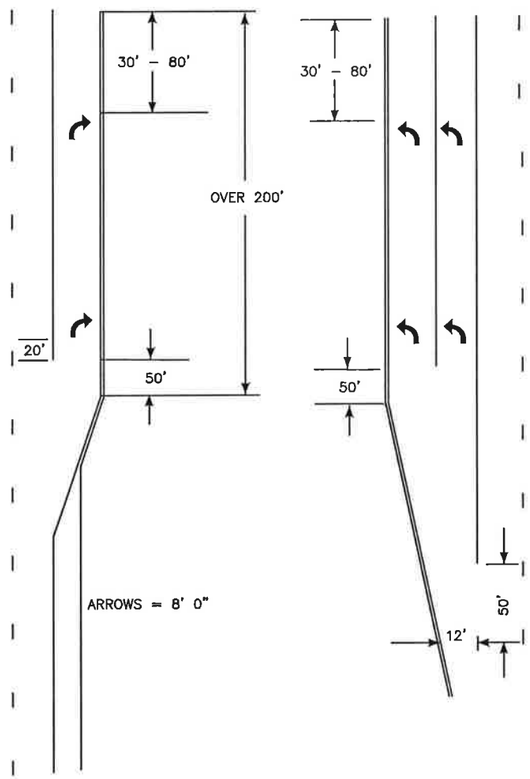


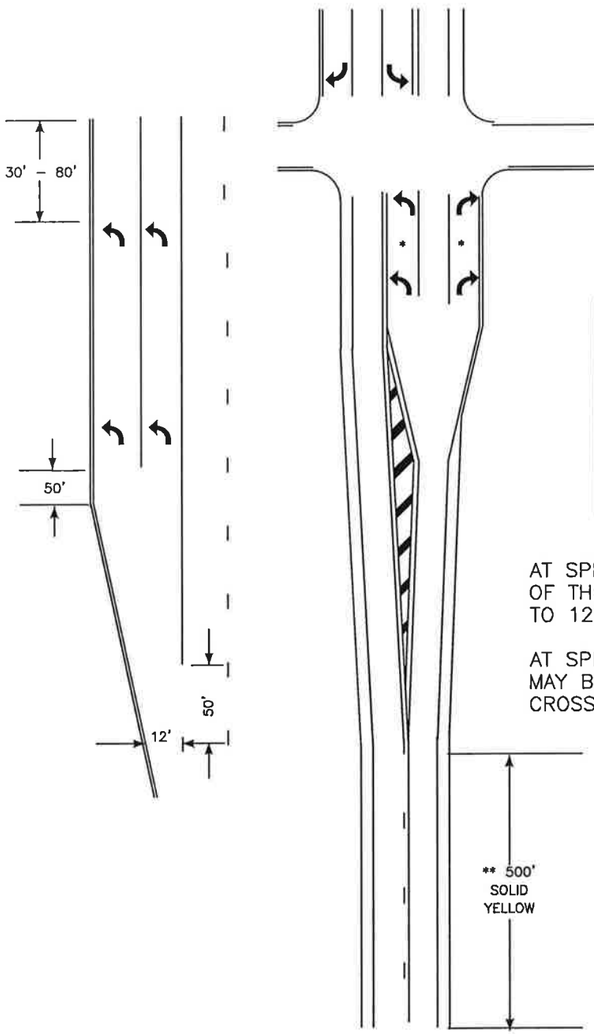


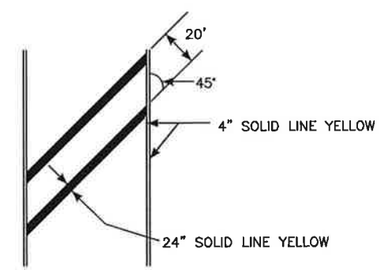
TYPICAL LANE REDUCTION TRANSITION











AT SPEEDS LESS THAN 40 MPH THE WIDTH OF THE CROSSHATCH LINE MAY BE REDUCED TO 12".

AT SPEEDS 40 MPH AND OVER THE SPACING MAY BE INCREASED TO 30' BETWEEN CROSSHATCH LINES.

* SEE "TYPICAL MESSAGE PLACEMENT FOR TURN LANES" FOR NUMBER OF ARROWS.

** IF THE DISTANCE BETWEEN THE BEGINNING OF THE SOLID LINE YELLOW IS LESS THAN THE DISTANCES IN THE CHART BELOW FROM THE END OF A PRECEDING SOLID LINE YELLOW IN THE SAME LANE, THE SOLID LINE SHALL BE EXTENDED BETWEEN THEM.

35 MPH SPEED LIMIT OR LESS . . . 500'
40–50 MPH SPEED LIMIT . . . . . 650'
55 MPH SPEED LIMIT . . . . . 800'

PAVEMENT MARKING TYPICALS

REVISED: 02–JAN–2004

STATE PROJ. NO. SAP 007–660–005 & SAP 007–682–008 (CSAH 60, CSAH 82 & VICTORY DRIVE)

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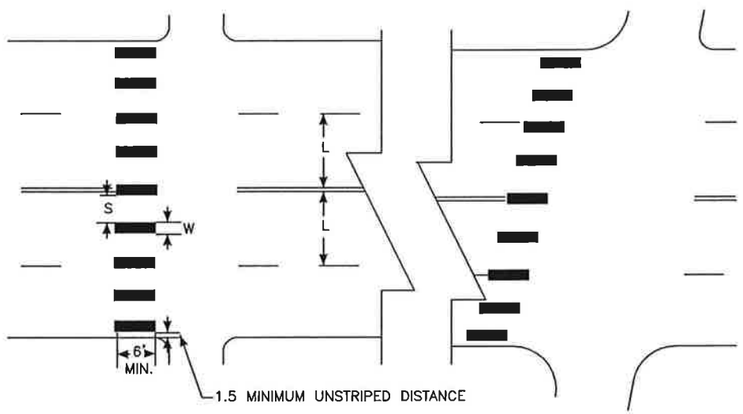
MARKINGS FOR PEDESTRIAN CROSSWALKS

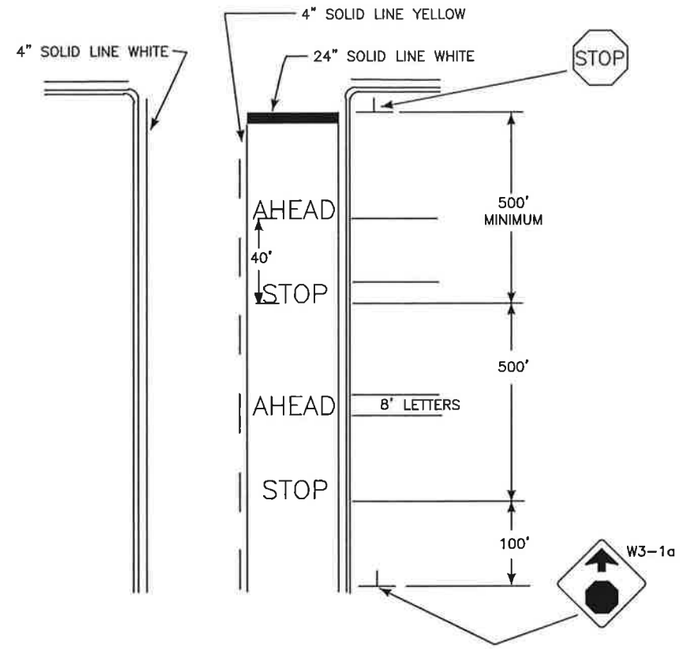
(L) WIDTH OF INSIDE LANE	(W) WIDTH OF PAINTED AREA	(S) WIDTH OF SPACE
9'	2.0'	2.5'
10'	2.5'	2.5'
11'	2.5'	3.0'
12'	3.0'	3.0'
13'	3.0'	3.5'



NOTES:

1. PAINTED AREAS TO BE CENTERED ON CENTERLINE AND LANE LINES.
2. A MINIMUM OF 1.5 FT. CLEAR DISTANCE SHALL BE LEFT ADJACENT TO THE CURB. IF LAST PAINTED AREA FALLS INTO THIS DISTANCE IT MUST BE OMITTED.
3. ON TWO LANE TWO WAY STREETS, USE SPACING SHOWN FOR AN 11 FT. INSIDE LANE.
4. 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.
5. AT SKEWED CROSSWALKS, THE BLOCKS ARE TO REMAIN PARALLEL TO THE LANE LINES AS SHOWN.

PLACEMENT FOR "STOP AHEAD" MARKINGS AND STOP LINES



NOTES:

1. DOUBLE PAVEMENT MESSAGE AS SHOWN SHOULD BE INSTALLED WHENEVER THE STOP AHEAD SIGN IS PLACED A MINIMUM OF 336m (1100') IN ADVANCE OF THE STOP SIGN
2. IF THE DISTANCE BETWEEN THE BEGINNING OF THE SOLID LINE YELLOW IS LESS THAN THE DISTANCES IN THE CHART BELOW FROM THE END OF A PRECEDING SOLID LINE YELLOW IN THE SAME LANE, THE SLID LINE SHALL BE EXTENDED BETWEEN THEM.

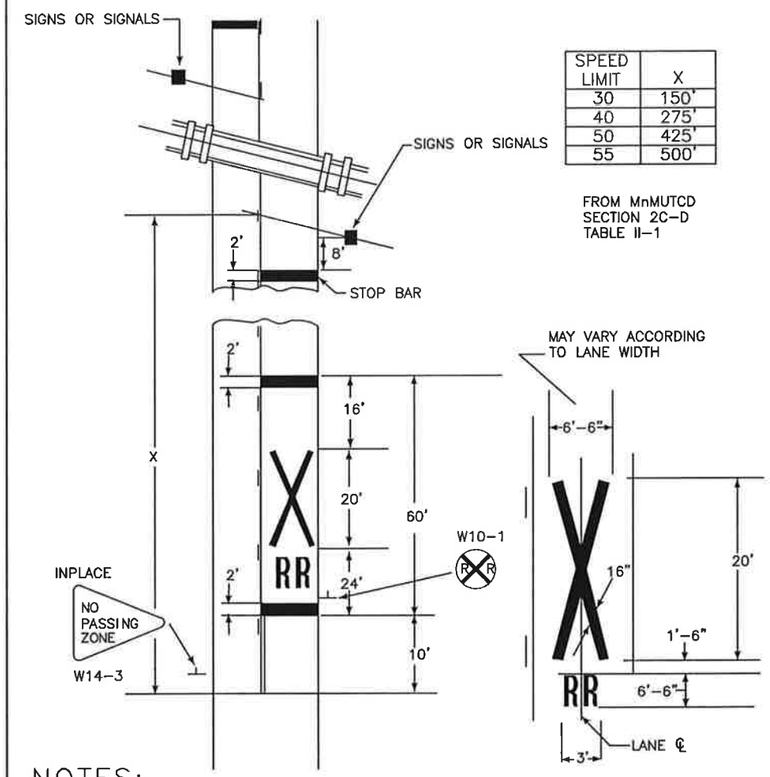
   35 MPH SPEED LIMIT OR LESS . . . 150 m (500')
   40–50 MPH SPEED .LIMIT . . . . . 200 m (650')
   55 MPH SPEED .LIMIT . . . . . 245 m (800')

3. WHERE STOP LINES ARE USED WITHOUT A MARKED CROSSWALK, THE STOP LINE SHOULD BE PLACED AT THE DESIRED STOPPING POINT, AND IN NO CASE NO MORE THAN 9 m (30 FEET) OR LESS THAN 1 m (4 FEET) FROM THE NEAREST EDGE OF THE INTERSECTING CURB LINE OR THE NEAR EDGE OF THE SHOULDER. WHERE STOP LINES AND CROSSWALK MARKINGS ARE USED TOGETHER, THE STOP LINE SHOULD BE PLACED 1.2 m (4 FEET) IN ADVANCE OF AND PARALLEL TO THE NEAREST CROSSWALK LINE.

   IF A STOP LINE IS USED IN CONJUNCTION WITH A STOP SIGN, IT SHOULD ORDINARILY BE PLACED IN LINE WITH THE STOP SIGN. HOWEVER, IF THE SIGN CANNOT BE LOCATED EXACTLY WHERE VEHICLES ARE EXPECTED TO STOP, THE STOP LINE SHOULD BE PLACED AT THE STOPPING POINT.

METRO DISTRICT NOTE: STOP BARS AND CROSSWALK PAVEMENT MARKINGS WILL NOT BE INSTALLED AT THE SAME LOCATION UNLESS OTHERWISE DETAILED IN THE PLAN.

MARKINGS FOR RAILROAD CROSSINGS



SPEED LIMIT	X
30	150'
40	275'
50	425'
55	500'

FROM MnMUTCD SECTION 2C–D TABLE II–1

NOTES:

1. THE DISTANCE FROM THE RAILROAD CROSSING MARKING TO THE NEAREST TRACK WILL VARY ACCORDING TO THE APPROACH SPEED AND SIGHT DISTANCE OF THE VEHICULAR TRAFFIC APPROACHING, BUT SHOULD NOT BE LESS THAN 50 FEET.
2. ON MULTI–LANE ROADS THE TRANSVERSE BANDS SHOULD EXTEND ACROSS ALL APPROACH LANES, AND INDIVIDUAL R X R SYMBOLS SHOULD BE USED IN EACH APPROACH LANE.
3. THE STOP LINE MAY BE PARALLEL TO AND 15 FEET FROM THE TRACKS WHERE THERE ARE RAILROAD CROSSBUCK SIGNS.

PAVEMENT MARKING TYPICALS

REVISED: 16–MAY–2006

STATE PROJ. NO. SAP 007–660–005 & SAP 007–682–008 (CSAH 60, CSAH 82 & VICTORY DRIVE)

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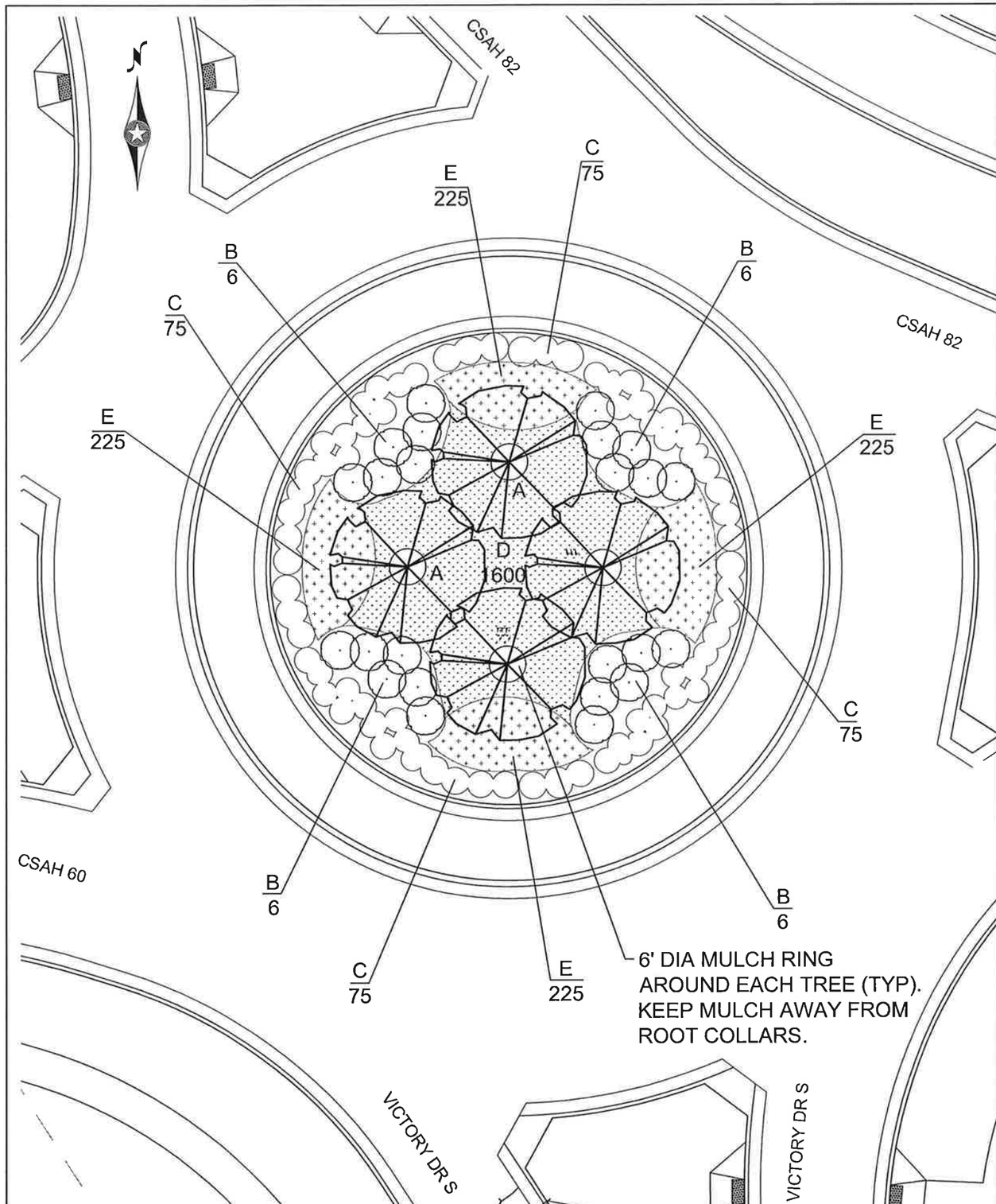
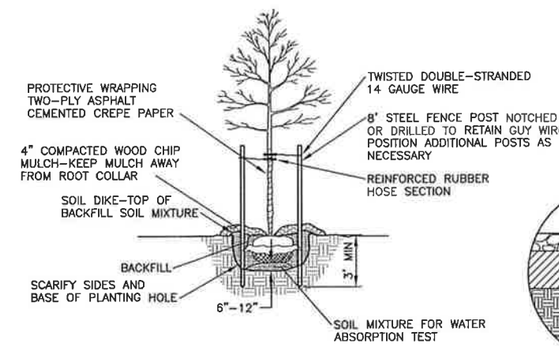


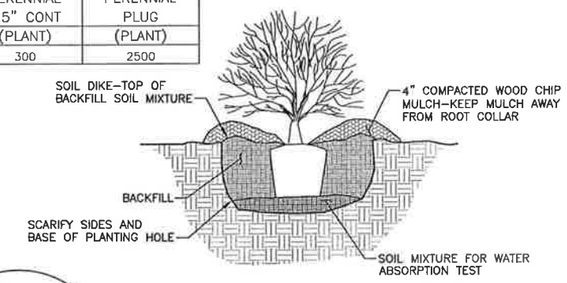
PLANT SCHEDULE

KEY	QTY.	COMMON NAME	BOTANICAL NAME	SIZE	UNIT	SPACING	REMARKS
A	4	SPRING SNOW CRABAPPLE	MALUS 'SPRING SNOW'	2" CAL B&B	TREE	PLAN	FRUITLESS; HARDY, DISEASE RESISTANT
B	24	ARCTIC FIRE DOGWOOD	CORNUS STOLONIFERA 'FARROW' PP18,523	NO 5 CONT	SHRUB	2' OC	SMALLER SIZE AT MATURITY; VIBRANT RED STEM COLOR
C	300	STELLA D'ORO DAY LILIY	HEMEROCALLIS 'STELLA D'ORO'	4.5" CONT	PLANT	6" OC	HARDY, SPREADING; BLOOMS JUNE UNTIL FROST
D	1600	PRAIRIE DROPSEED	SPOROBOLUS HETEROLEPIS	2" PLUG	PLANT	1 PLUG/SF	1'-3' HIGH; COMPANION TO LITTLE BLUE STEM; HARDY
E	900	LITTLE BLUE STEM	SCHIZACHYRIUM SCOPARUM	2" PLUG	PLANT	1 PLUG/SF	1'-1.5' HIGH; COMPANION TO PRAIRIE DROPSEED; HARDY

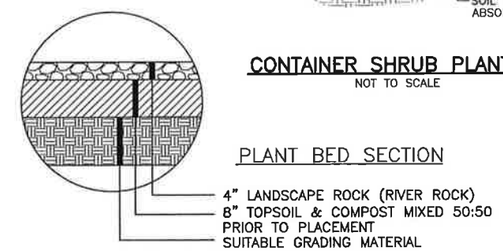
(U)	LANDSCAPING					
LOCATION	MULCH MATERIAL TYPE 5	COMPOST GRADE 2	DECIDUOUS TREE 2" CAL B & B	DECIDUOUS SHRUB NO 5 CONT	PERENNIAL 4.5" CONT	PERENNIAL PLUG
	(CU YD)	(CU YD)	(TREE)	(SHRUB)	(PLANT)	(PLANT)
ROUNDABOUT	64	64	4	24	300	2500



DECIDUOUS TREE PLANTING
NOT TO SCALE



CONTAINER SHRUB PLANTING
NOT TO SCALE



PLANT BED SECTION

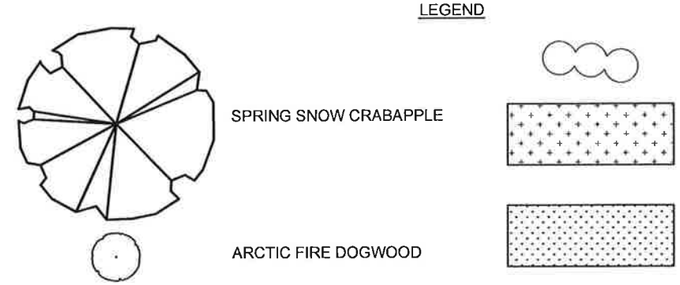
GENERAL PLANTING NOTES:

1. PROVIDE AND INSTALL HEALTHY PLANT MATERIALS THAT MEET ALL SPECIFICATIONS AND ARE OF THE SIZE, TYPE AND SPECIES NAMED ON THE PLANT SCHEDULE AND SHOWN ON THE PLANS.
2. DIG PLANT HOLE 1'-0" MINIMUM LARGER ON ALL SIDES THAN ROOT BALL.
3. PRIOR TO PLACING TREE, SCARIFY BOTTOM AND SIDES OF THE PLANTING HOLE.
4. TEST SOIL ABSORPTION. FILL HOLE PARTIALLY WITH SUPPLEMENTED SOIL MIXTURE, ADD WATER AND ALLOW TO PUDDLE AND SETTLE PRIOR TO SETTING TREE.
6. AFTER PUDDLING HAS SETTLED, SET TREE AND BACKFILL WITH SUPPLEMENTED SOIL MIXTURE.
7. WATER THOROUGHLY AND ADD BACKFILL AS NEEDED AFTER MOISTURE IS ABSORBED.
8. BUILD SOIL DIKE AROUND PERIPHERY OF TREE TO HOLD WATER.
9. AFTER SETTLEMENT, MULCH WITH MINIMUM 4" LAYER SHREDDED BARK, WOOD CHIPS OR AS OTHERWISE SPECIFIED. DO NOT PLACE MULCH OVER THE ROOT COLLAR.
10. REMOVE DEAD OR DAMAGED BRANCHES RETAINING THE NATURAL FORM OF THE TREE.

BAG & BALL PLANTING NOTE:

1. REMOVE WRAPPING AND ALL TIES OR STRAPS. IF ROOT BALL IS WRAPPED IN BURLAP THE LOWER PORTION OF THE FABRIC MAY BE LEFT AT THE BOTTOM OF THE HOLE. SYNTHETIC WRAP MUST BE REMOVED AND PROPERLY DISPOSED.
2. LOOSEN ROOTS TO ENSURE THEY ARE NOT GIRDLING THE ROOT BALL.
3. SALVAGE AND REUSE ALL SOIL THAT CAME WITH THE ROOT BALL.
4. WATER THE ROOT BALL PRIOR TO PLACING IT IN THE HOLE.
5. IF TREE IS CONTAINER GROWN, SALVAGE ALL SOIL AND MIX WITH SUPPLEMENTED SOIL FOR BACKFILL.

LEGEND



NOTES:

1. FINAL LAYOUT DETERMINED IN THE FIELD.
2. TREES, SHRUBS AND PERENNIALS ARE SHOWN ON THE PLAN AT THEIR APPROXIMATE MATURE SIZE. BEDDING AND CONTAINER PLANTS WILL BE SMALLER AT PLANTING.
3. IN GENERAL, NATIVE GRASSES AND HARDY PERENNIALS CAN BE EXPECTED TO DOUBLE IN SIZE THE FIRST YEAR IF WATERED. BOTH THE NATIVE GRASSES AND THE DAY LILIES ARE TOLERANT OF DRY CONDITIONS ONCE ESTABLISHED BUT WILL REQUIRE ADEQUATE WATER THE FIRST YEAR TO DO SO.
4. TREES AND SHRUBS REQUIRE ADEQUATE WATER THE FIRST YEAR TO ESTABLISH HEALTHY ROOT SYSTEMS. SPRING SNOW AND ARCTIC FIRE ARE BOTH DROUGHT AND DISEASE TOLERANT.
5. 4" WOOD CHIP MULCH MUST BE MAINTAINED THE FIRST YEAR OVER THE ENTIRE PLANTED AREA. ONCE THE GRASSES AND DAY LILIES ARE ESTABLISHED AND HAVE FILLED IN, MULCHING ONLY THE TREES AND SHRUBS WILL BE NECESSARY. WATER THE PLANTED AREA THOROUGHLY PRIOR TO LAYING THE MULCH. PROPER MULCHING HELPS TO MAINTAIN SOIL MOISTURE IN DRY PERIODS.
6. STAKE TREES PER DETAIL.

LANDSCAPE PLAN & TABULATIONS

SCALE 0 10 20

CERTIFIED BY _____ LICENSED ENGINEER LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008 (CSAH 60, CSAH 82 & VICTORY DRIVE) SHEET 97 OF 142 SHEETS

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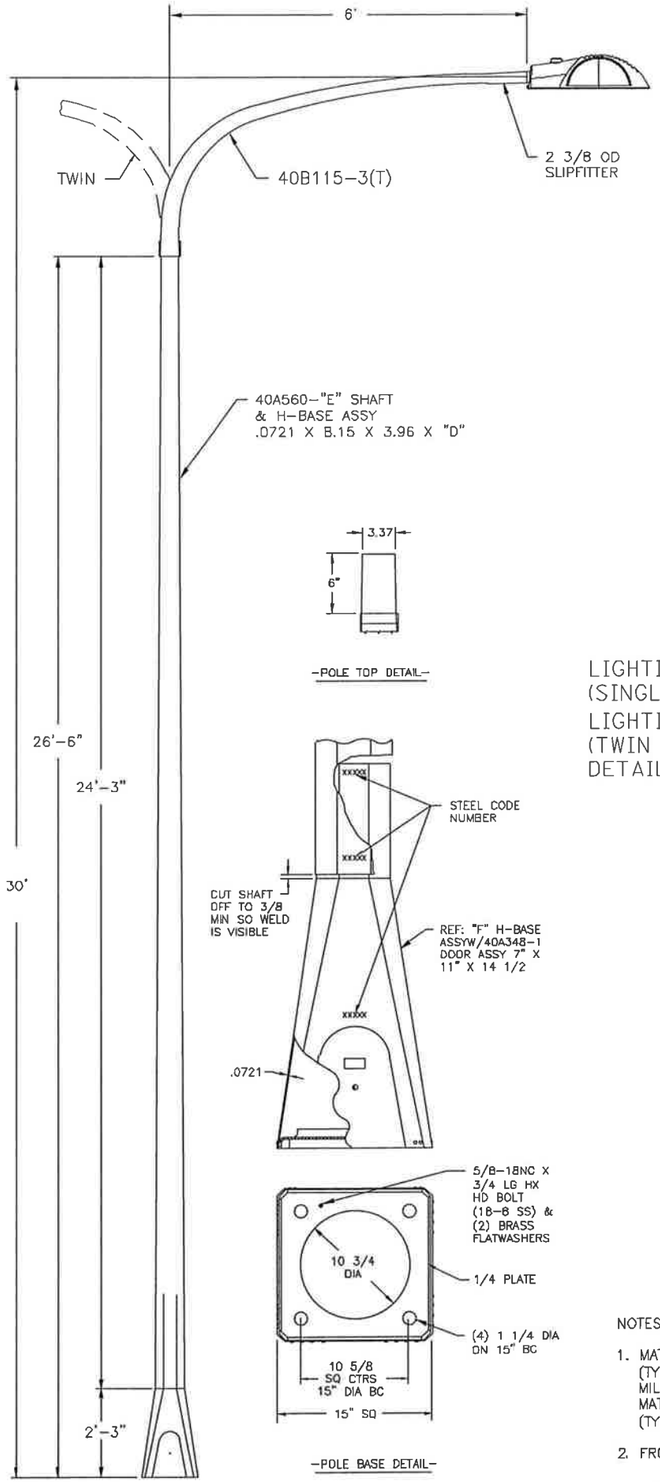


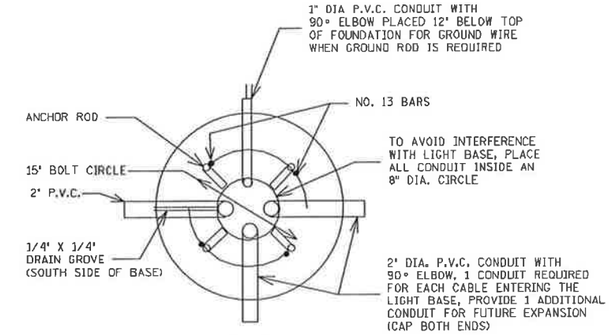
-POLE TOP DETAIL-

-POLE BASE DETAIL-

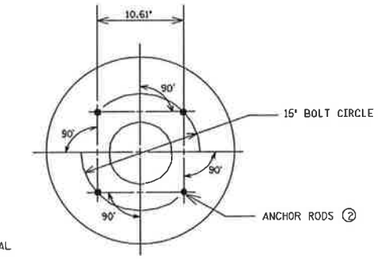
LIGHTING UNIT TYPE SPECIAL 1
(SINGLE ARM) &
LIGHTING UNIT TYPE SPECIAL 2
(TWIN ARM)
DETAIL

NOTES:

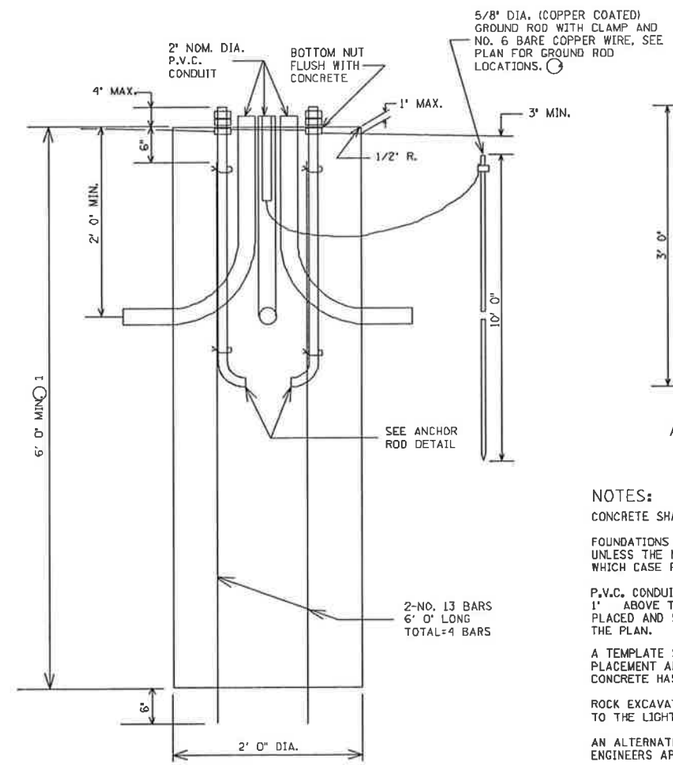
1. MATERIAL - STAINLESS STEEL ASTM A240 (TYPE 201L) 50,000 PSI MIN YIELD AFTER MILL PROCESSING. LUMINAIRE SLIPFITTER MATERIAL STAINLESS STEEL ASTM A312 (TYPE 304L).
2. FROST FINISH



PLAN

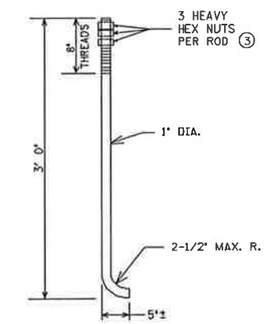


ANCHOR ROD PLACEMENT



ELEVATION

LIGHT BASE DESIGN E
STANDARD PLATE 8127B



ANCHOR ROD DETAIL
4 REQUIRED ②

NOTES:

CONCRETE SHALL BE MIX NO. 3Y43.

FOUNDATIONS MAY BE CONSTRUCTED IN AUGURED HOLES UNLESS THE NATURAL SOILS WILL NOT STAND OPEN, IN WHICH CASE FORMING WILL BE REQUIRED.

P.V.C. CONDUIT PER SPEC. 3803 SHALL BE PROJECTED 1" ABOVE THE FOUNDATION BEFORE THE MORTAR IS PLACED AND SHALL BE THE SIZE AND NUMBER SHOWN IN THE PLAN.

A TEMPLATE SHALL BE PROVIDED FOR ANCHOR ROD PLACEMENT AND SHALL BE LEFT IN PLACE UNTIL THE CONCRETE HAS SET.

ROCK EXCAVATION FOR LIGHT BASE SHALL BE INCIDENTAL TO THE LIGHTING SYSTEM.

AN ALTERNATE PRECAST BASE MAY BE USED WITH THE ENGINEERS APPROVAL.

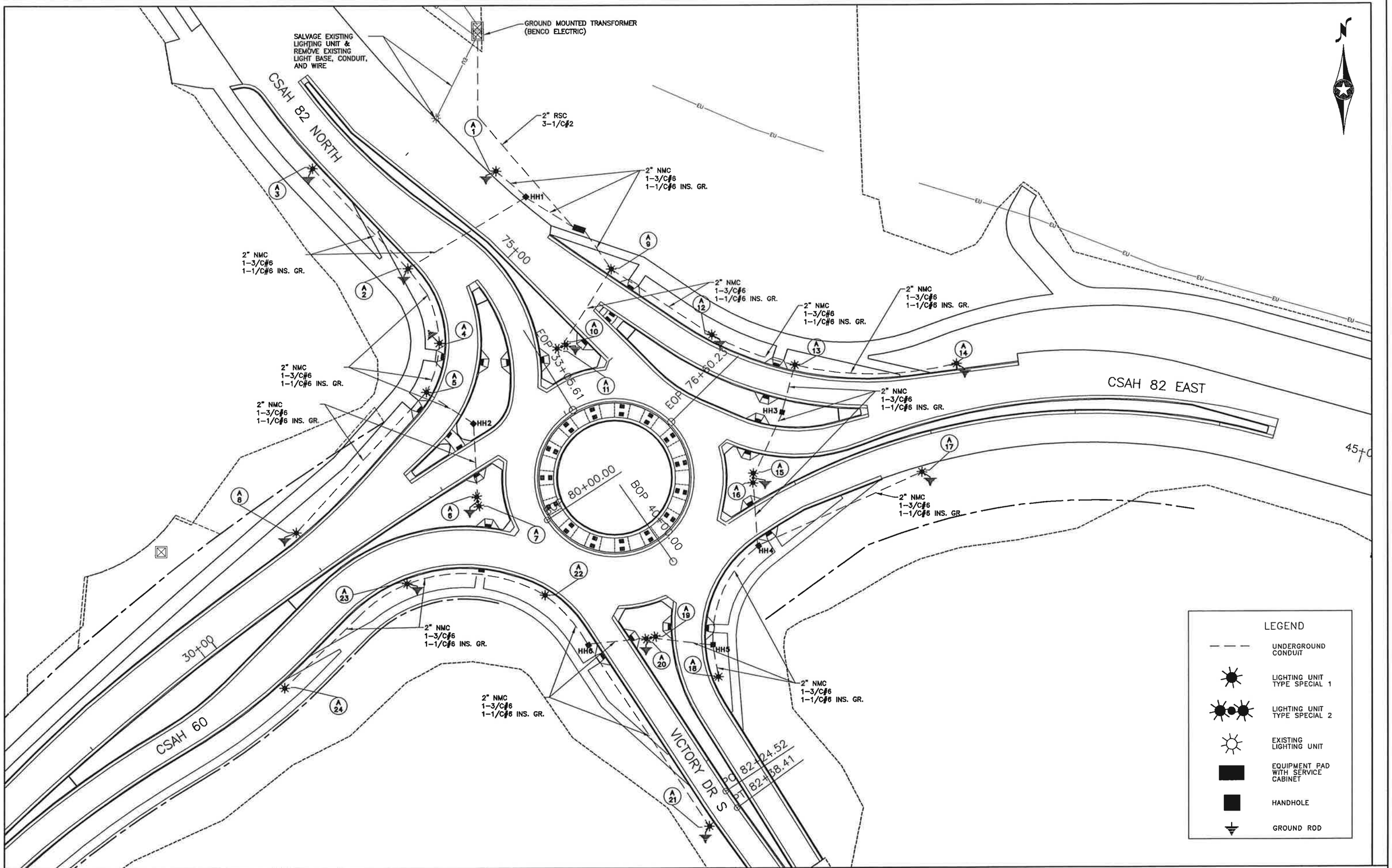
① THE DEPTH OF THE FOUNDATION MAY BE CHANGED IN THE PLANS OR SPECIAL PROVISIONS.

② ANCHOR RODS PER SPEC. 3385, TYPE B OR C SHALL BE PLACED AT RIGHT ANGLES TO THE DIRECTION OF THE MAST ARM. GALVANIZE THE TOP 1 FT. OF THE ANCHOR ROD AND NUTS PER SPEC. 3392.

③ WRAP THREADS OF ANCHOR RODS BELOW BOTTOM NUT WITH 3 LAYERS OF PLASTIC ELECTRICAL TAPE.

④ PLACE GROUND ROD 3" TO 6' DEEP AND WITHIN 1' OF BASE.

LIGHTING PLAN	CERTIFIED BY Bryan Neveth BRYAN NEVETH LIC. NO. 43354 FEB. 24, 2012	SAP 007-660-005 & SAP 007-682-008(CSAH 60 & CSAH 82) SHEET 98 OF 142 SHEETS



LIGHTING PLAN

SCALE 0 30 60

CERTIFIED BY BRYAN NEMETH LIC. NO. 43354 FEB. 24, 2012

SAP 007-660-005 & SAP 007-682-008(CSAH 60 & CSAH 82) SHEET 99 OF 142 SHEETS

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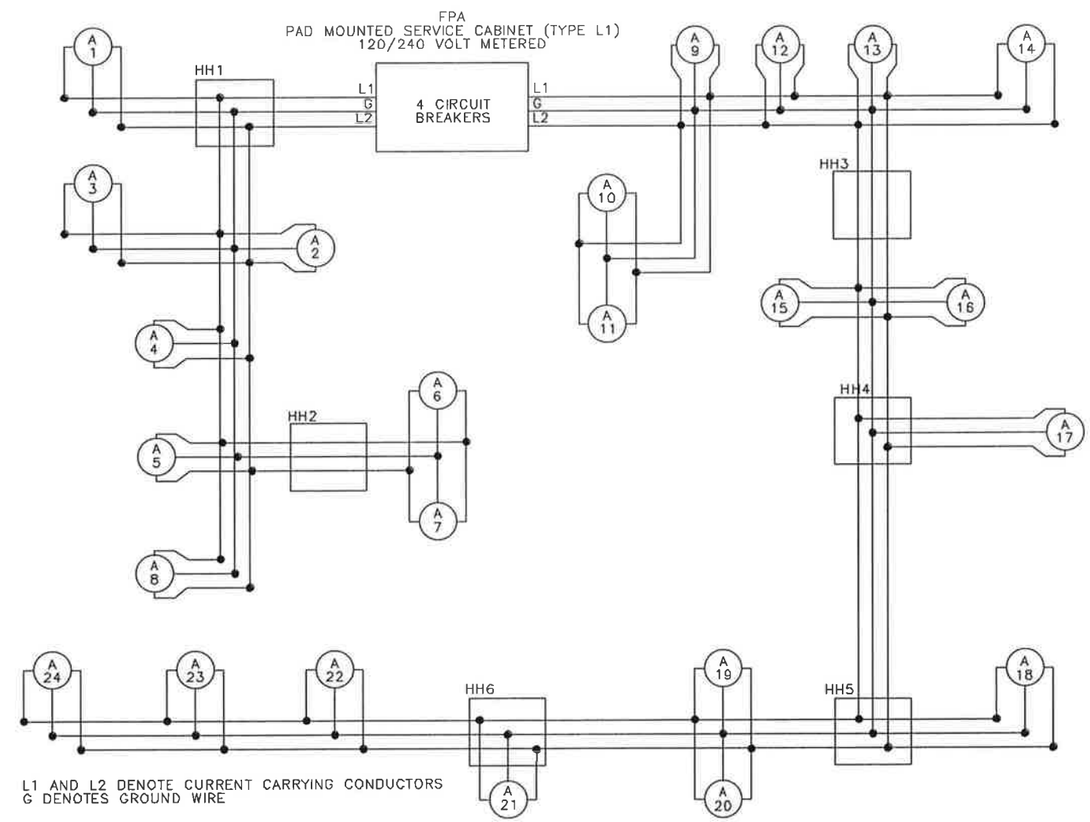
LIGHTING STANDARDS AND BASES								
NO.	STATION	CHAIN	OFFSET		LOCATION	LUMINAIRE	BASE	LIGHTING UNIT TYPE
A1	74+51.16	CSAH 82 NORTH	35.16	LT	BOULEVARD	120 LED	E	SPECIAL 1
A2	74+51.16	CSAH 82 NORTH	24.68	RT	BOULEVARD	120 LED	E	SPECIAL 1
A3	73+60.79	CSAH 82 NORTH	53.45	RT	BOULEVARD	120 LED	E	SPECIAL 1
A4	32+50.06	CSAH 60	87.94	LT	BOULEVARD	120 LED	E	SPECIAL 1
A5	32+25.12	CSAH 60	63.66	LT	BOULEVARD	120 LED	E	SPECIAL 1
A6,A7	32+15.19	CSAH 60	19.45	RT	MEDIAN	120 LED	E	SPECIAL 2
A8	30+99.77	CSAH 60	32.04	LT	BOULEVARD	120 LED	E	SPECIAL 1
A9	75+55.07	CSAH 82 NORTH	43.78	LT	BOULEVARD	120 LED	E	SPECIAL 1
A10,A11	75+69.46	CSAH 82 NORTH	18.21	RT	MEDIAN	120 LED	E	SPECIAL 2
A12	76+36.44	CSAH 82 NORTH	61.32	LT	BOULEVARD	120 LED	E	SPECIAL 1
A13	41+30.75	CSAH 82 EAST	75.5	LT	BOULEVARD	120 LED	E	SPECIAL 1
A14	42+25.02	CSAH 82 EAST	43.41	LT	BOULEVARD	120 LED	E	SPECIAL 1
A15,A16	40+75.69	CSAH 82 EAST	18.14	LT	MEDIAN	120 LED	E	SPECIAL 2
A17	41+85.21	CSAH 82 EAST	24.08	RT	BOULEVARD	120 LED	E	SPECIAL 1
A18	81+55.42	VICTORY DR SOUTH	38.09	LT	BOULEVARD	120 LED	E	SPECIAL 1
A19,A20	81+07.10	VICTORY DR SOUTH	13.87	LT	MEDIAN	120 LED	E	SPECIAL 2
A21	82+37.23	VICTORY DR SOUTH	23.85	RT	BOULEVARD	120 LED	E	SPECIAL 1
A22	80+42.55	VICTORY DR SOUTH	30.80	RT	BOULEVARD	120 LED	E	SPECIAL 1
A23	31+42.21	CSAH 60	40.60	RT	BOULEVARD	120 LED	E	SPECIAL 1
A24	30+29.06	CSAH 60	50.02	RT	BOULEVARD	120 LED	E	SPECIAL 1



LIGHTING PLAN

CERTIFIED BY BRYAN NEMETH LIC. NO. 43354 FEB. 24, 2012

SAP 007-660-005 & SAP 007-682-008(CSAH 60 & CSAH 82) SHEET 100 OF 142 SHEETS

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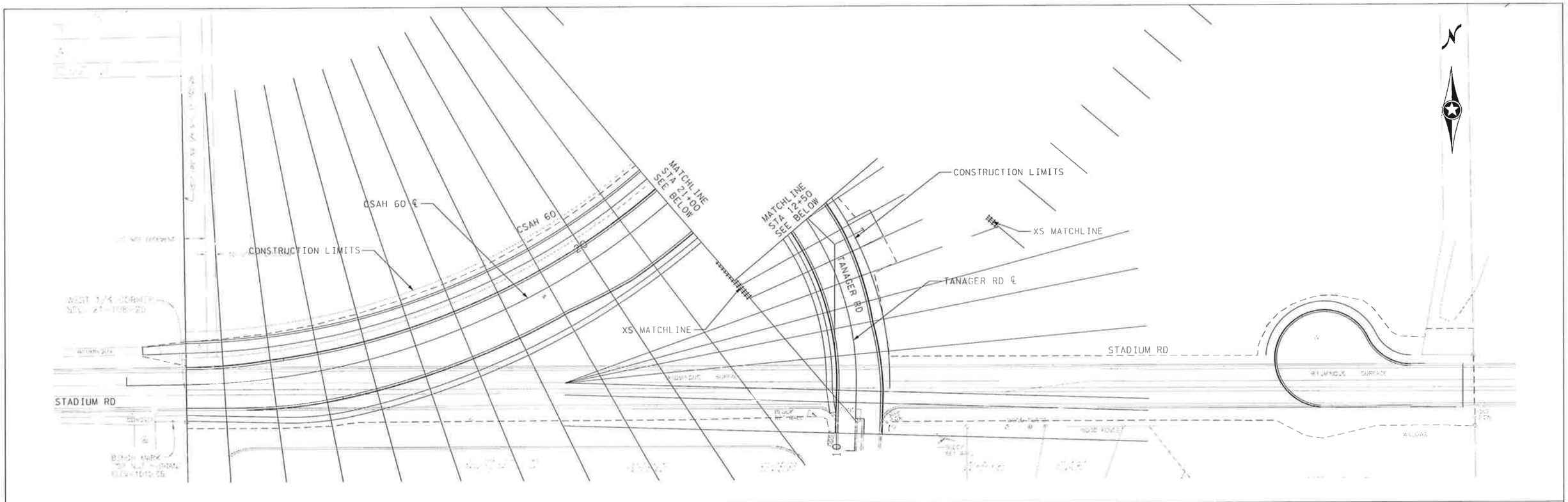

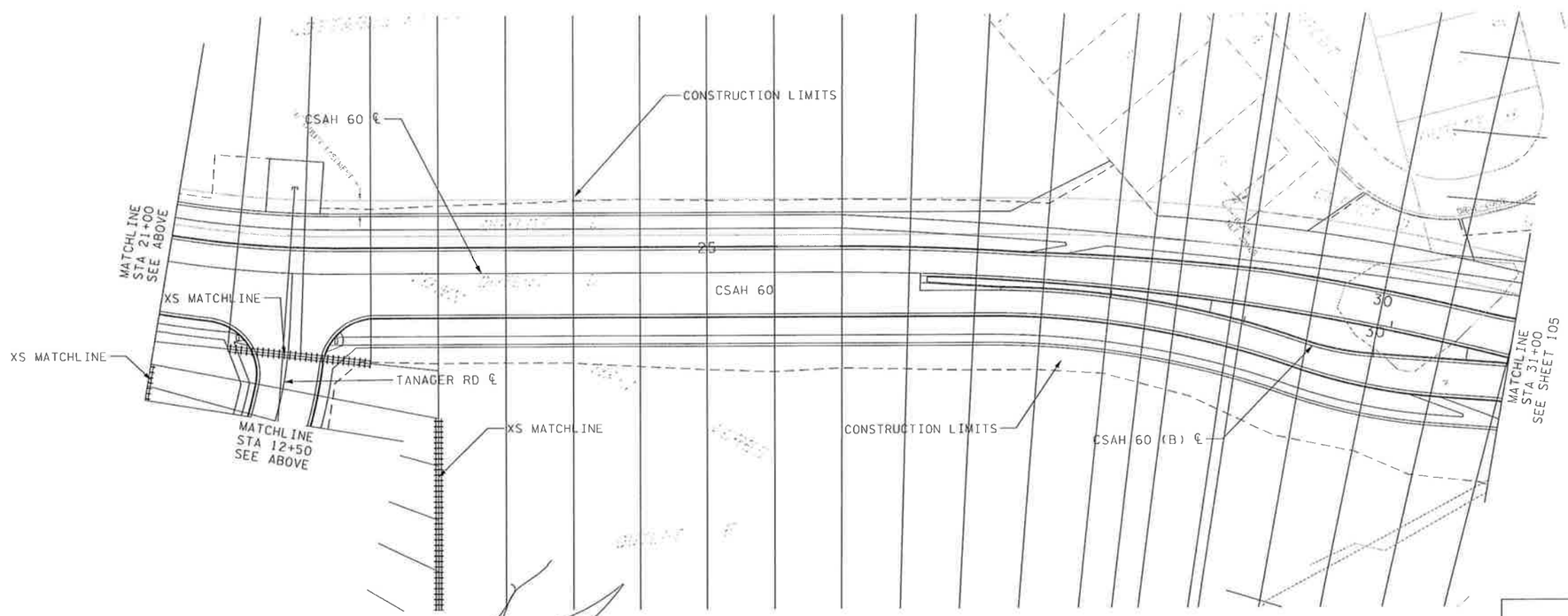

CROSS SECTION LAYOUT PLAN

SCALE 0 50 100

CERTIFIED BY LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008(CSAH 60 & CSAH 82) SHEET 101 OF 142 SHEETS

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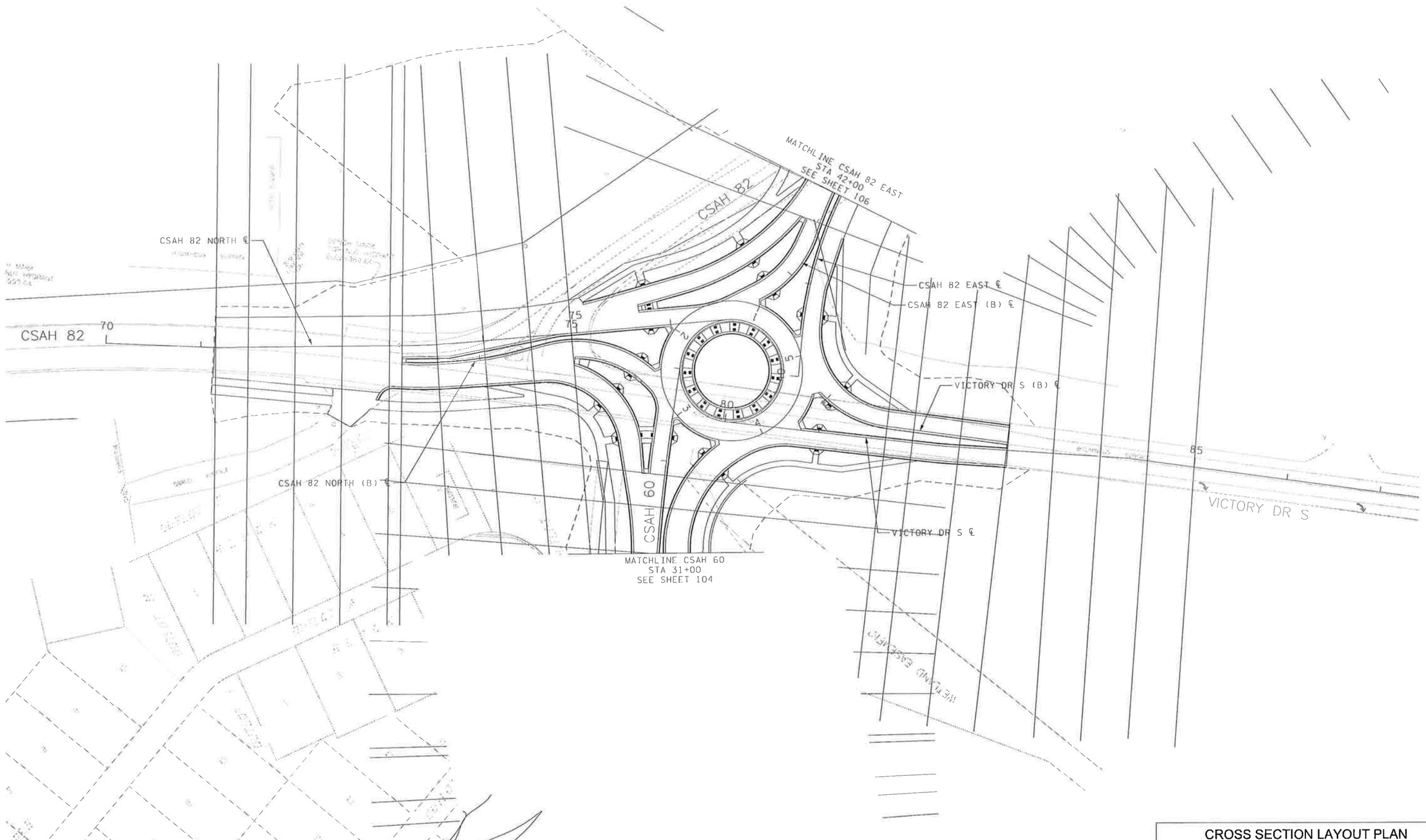

CROSS SECTION LAYOUT PLAN

SCALE 0 50 100

CERTIFIED BY LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008(CSAH 60 & CSAH 82) SHEET102 OF 142 SHEETS

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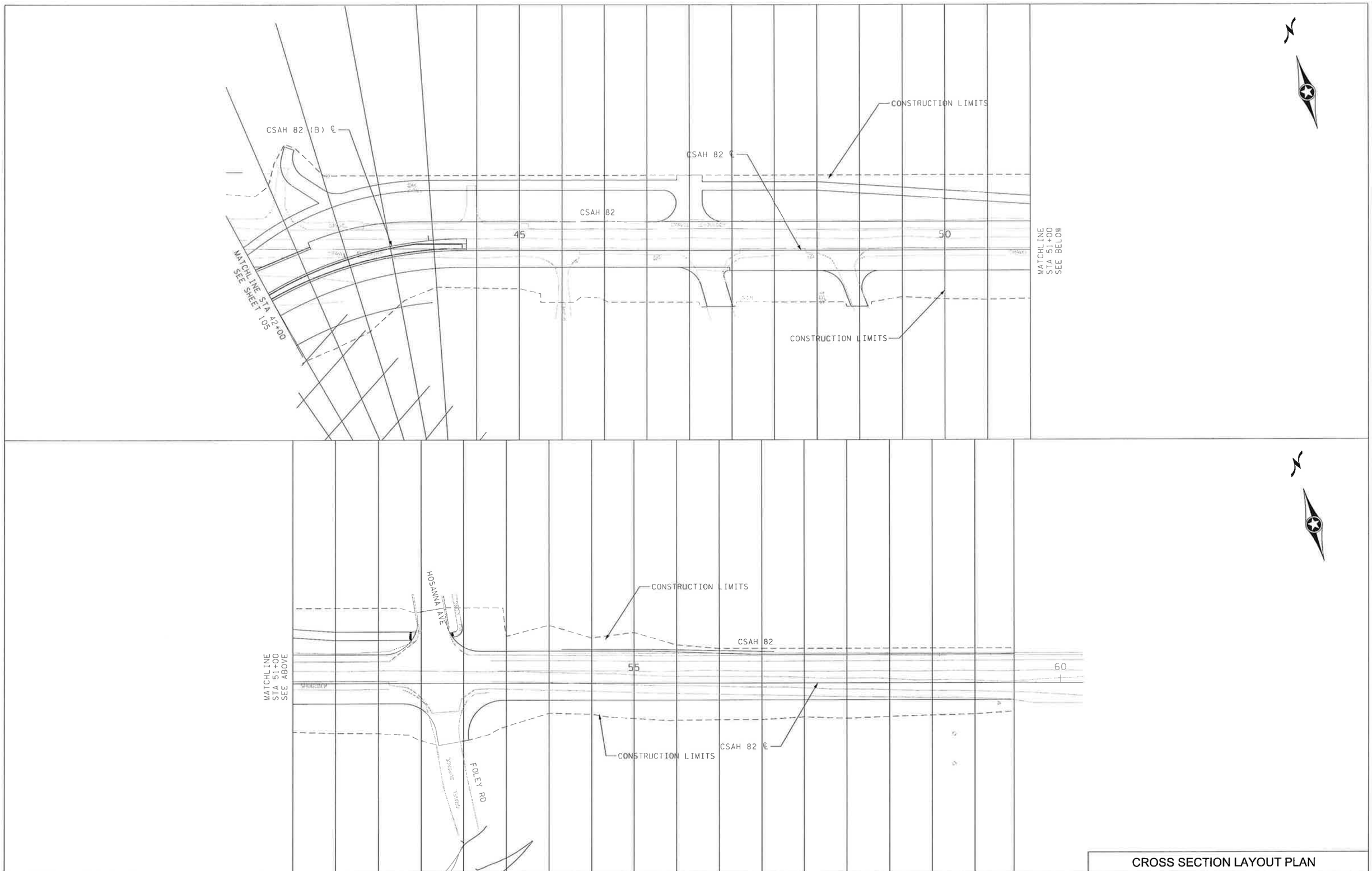

CROSS SECTION LAYOUT PLAN

SCALE 0 50 100

CERTIFIED BY LIC. NO. 42779 01/09/2012

SAP 007-660-005 & SAP 007-682-008(CSAH 60 & CSAH 82) SHEET103 OF 142 SHEETS

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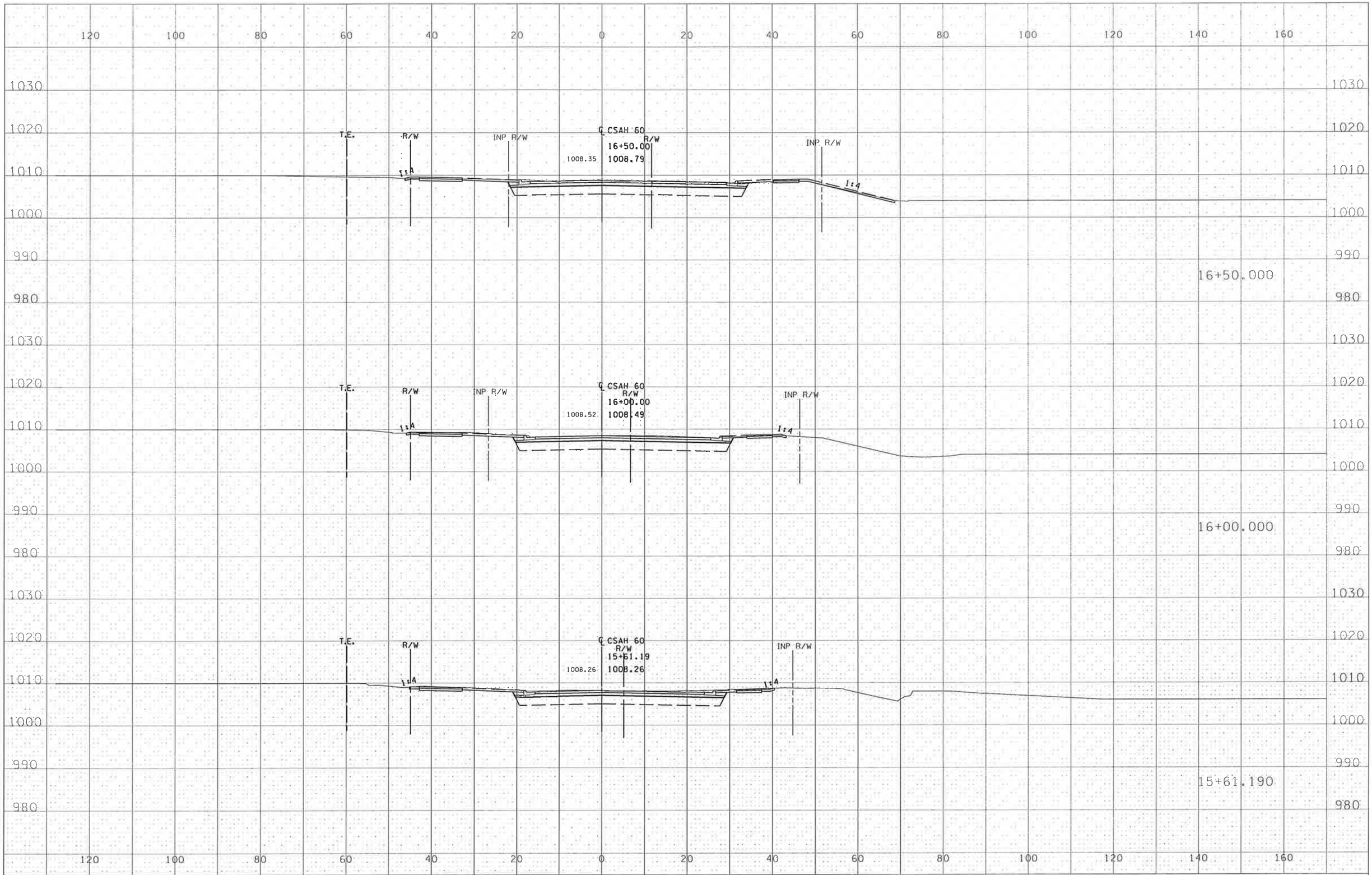

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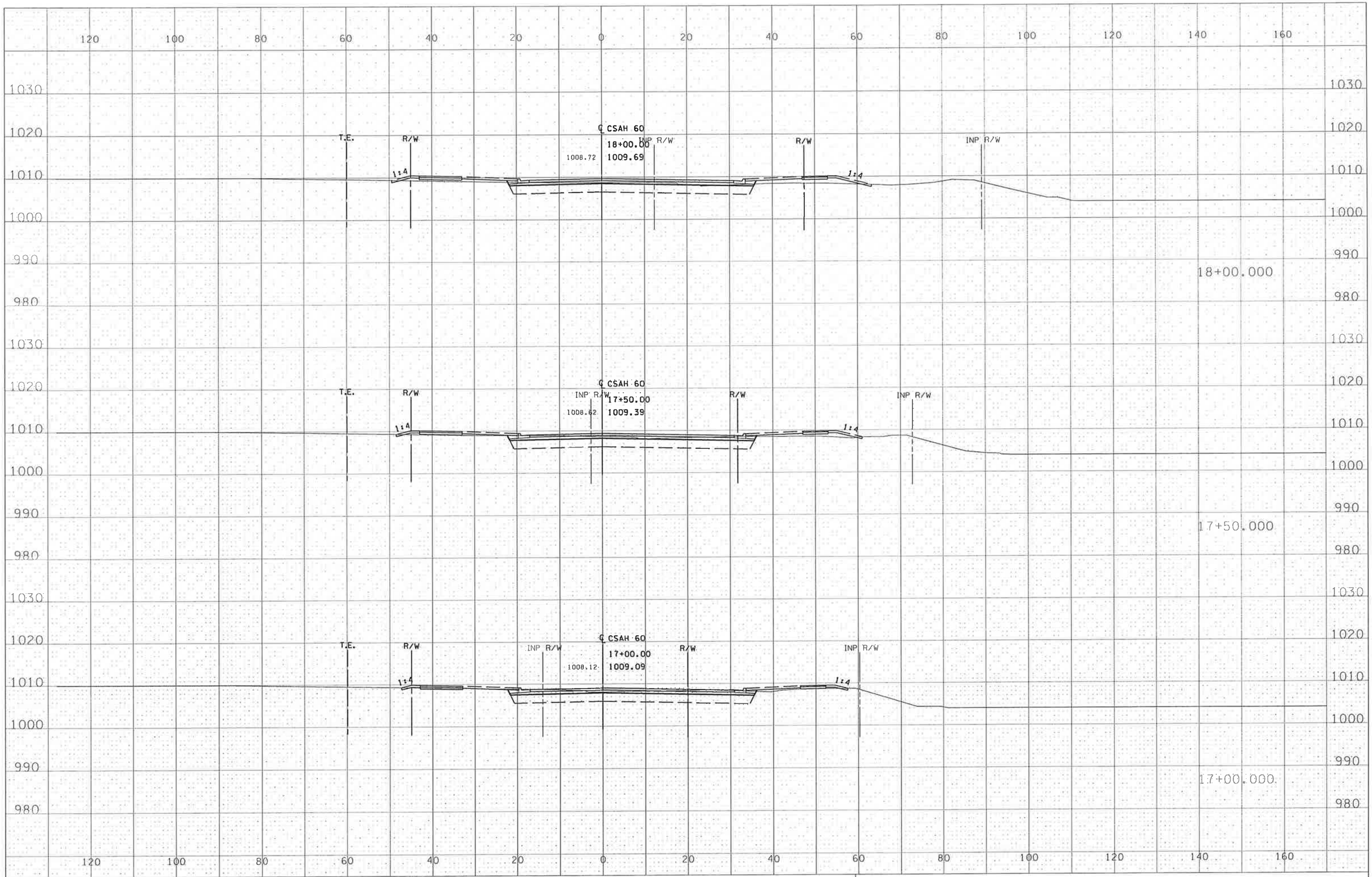

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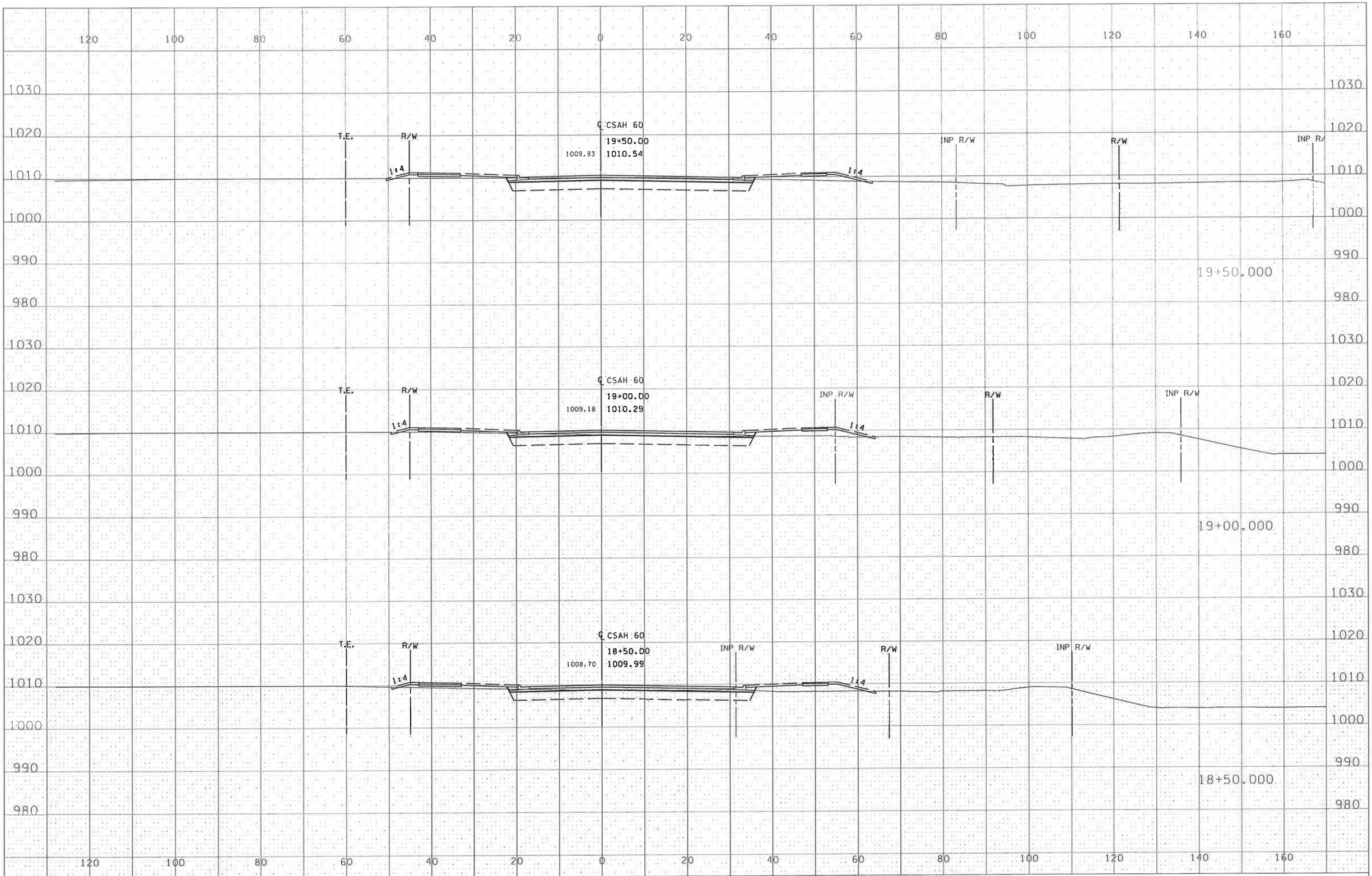

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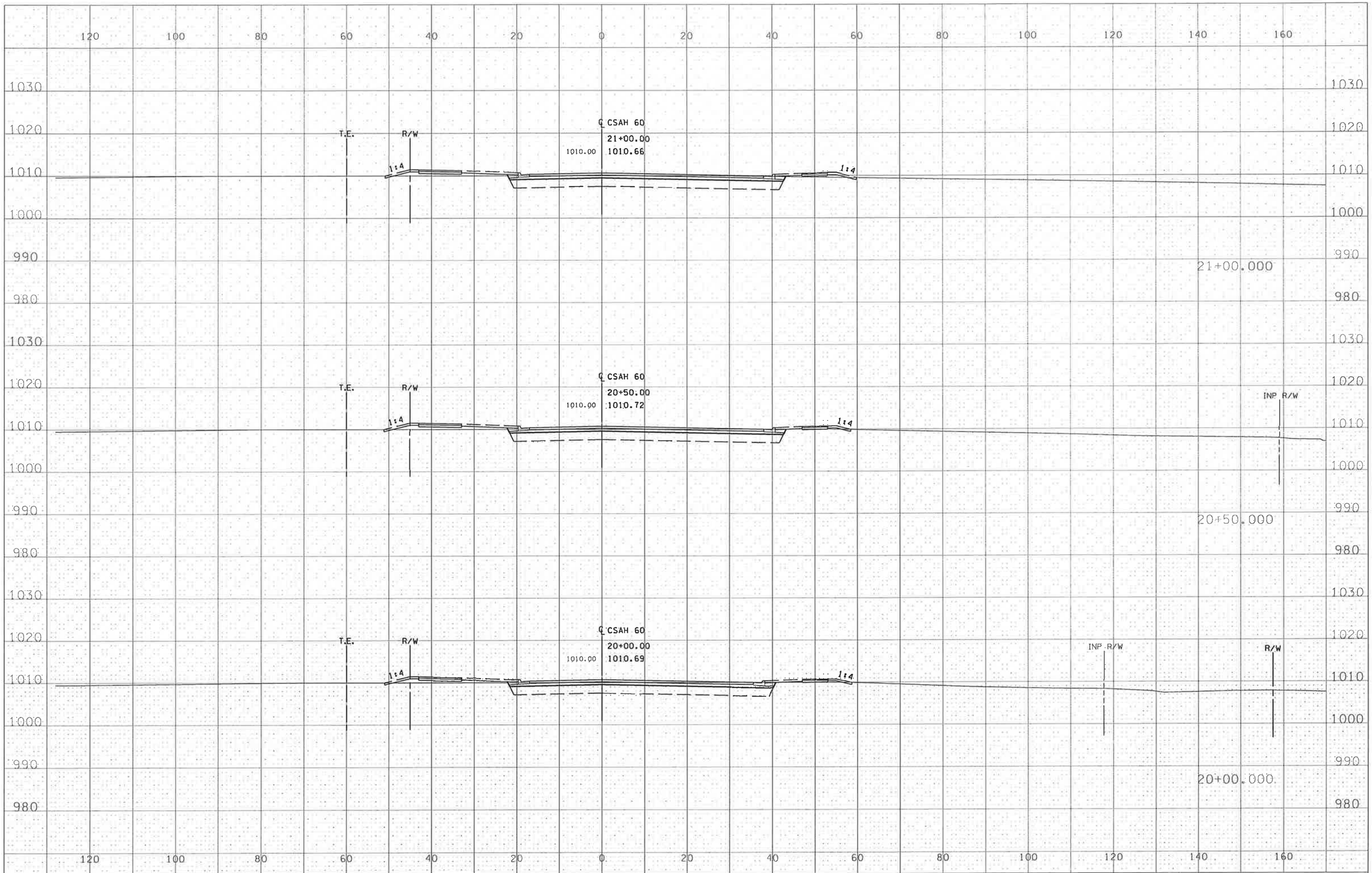

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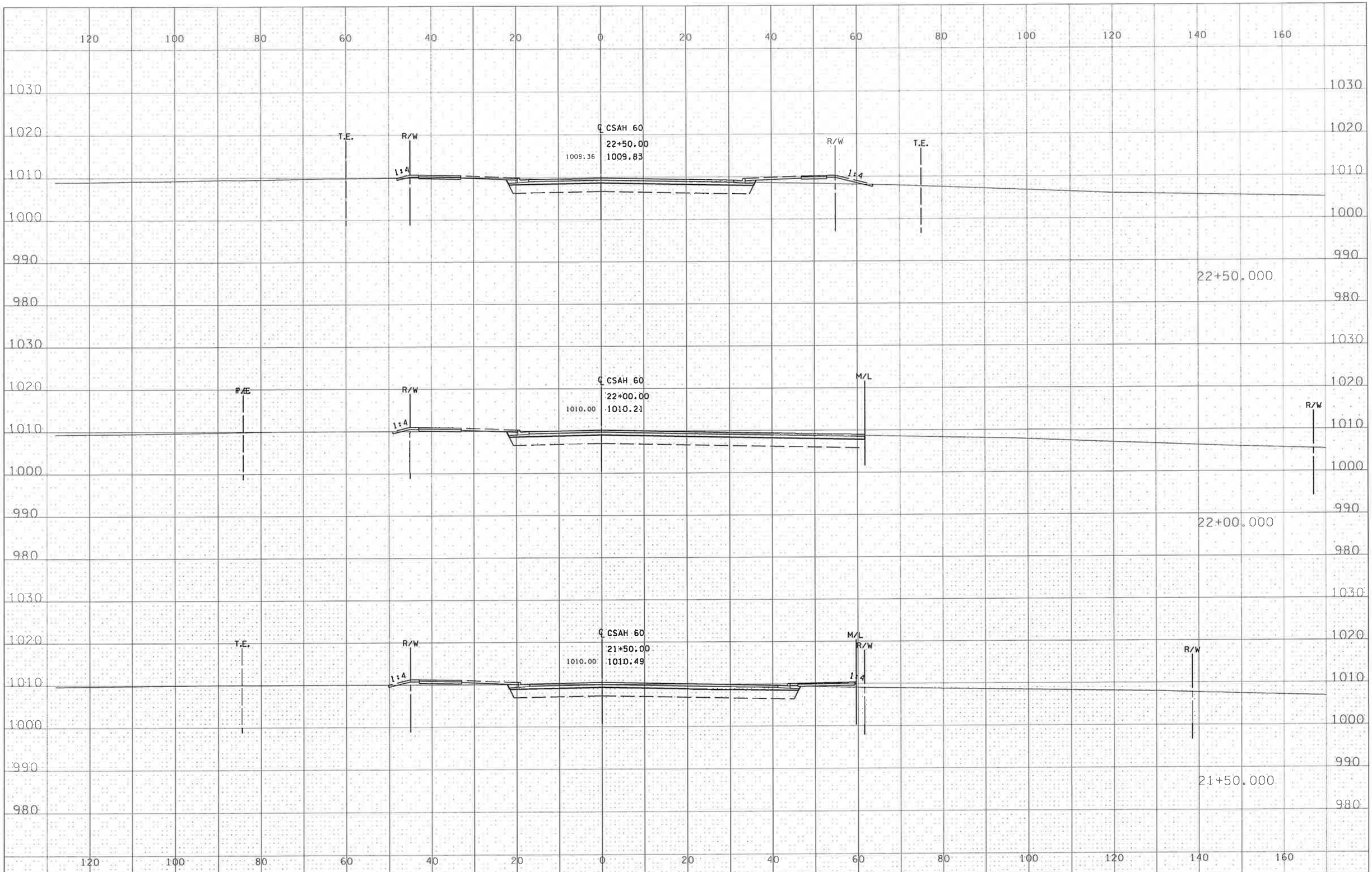

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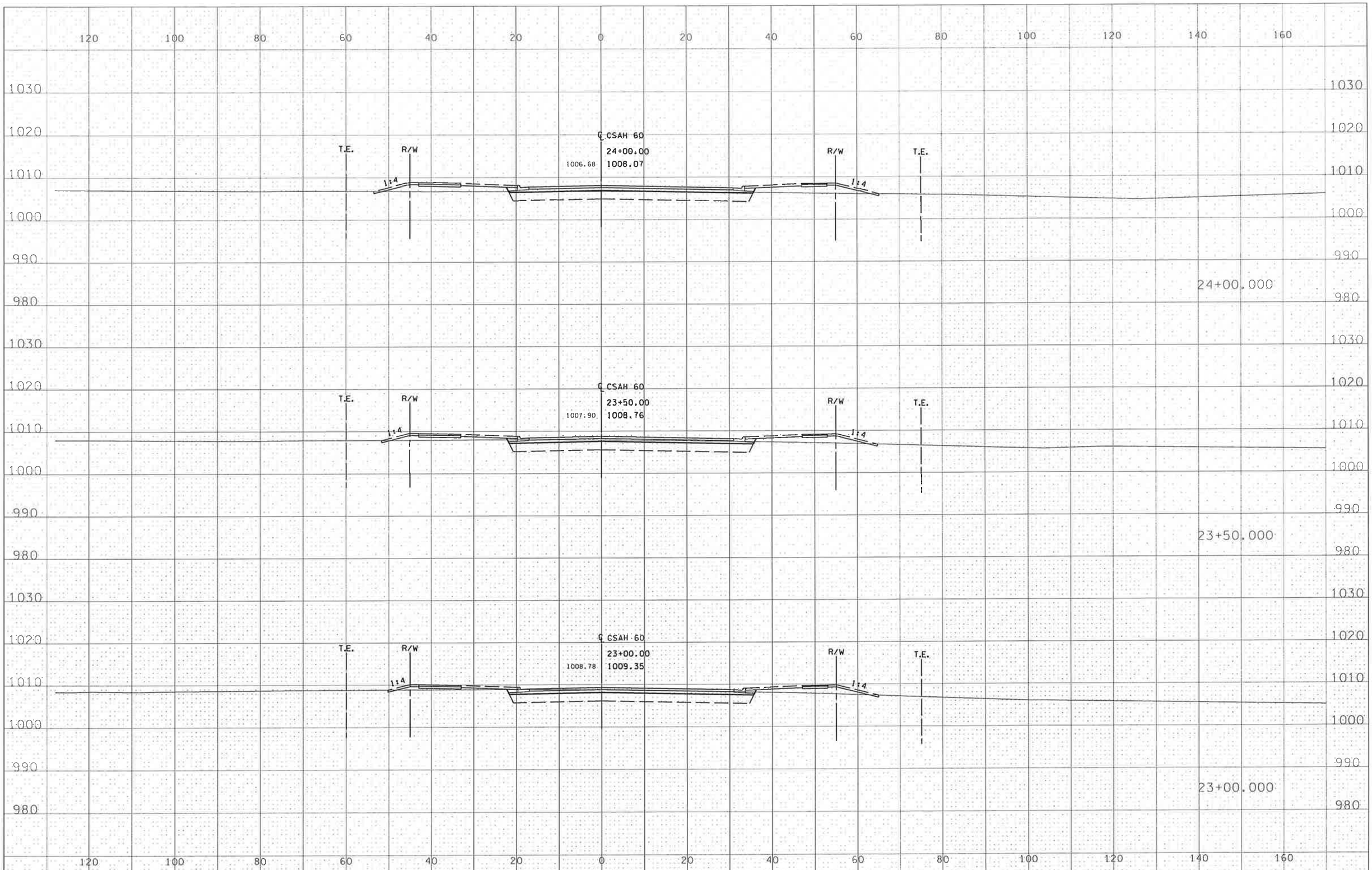
2/24/2012



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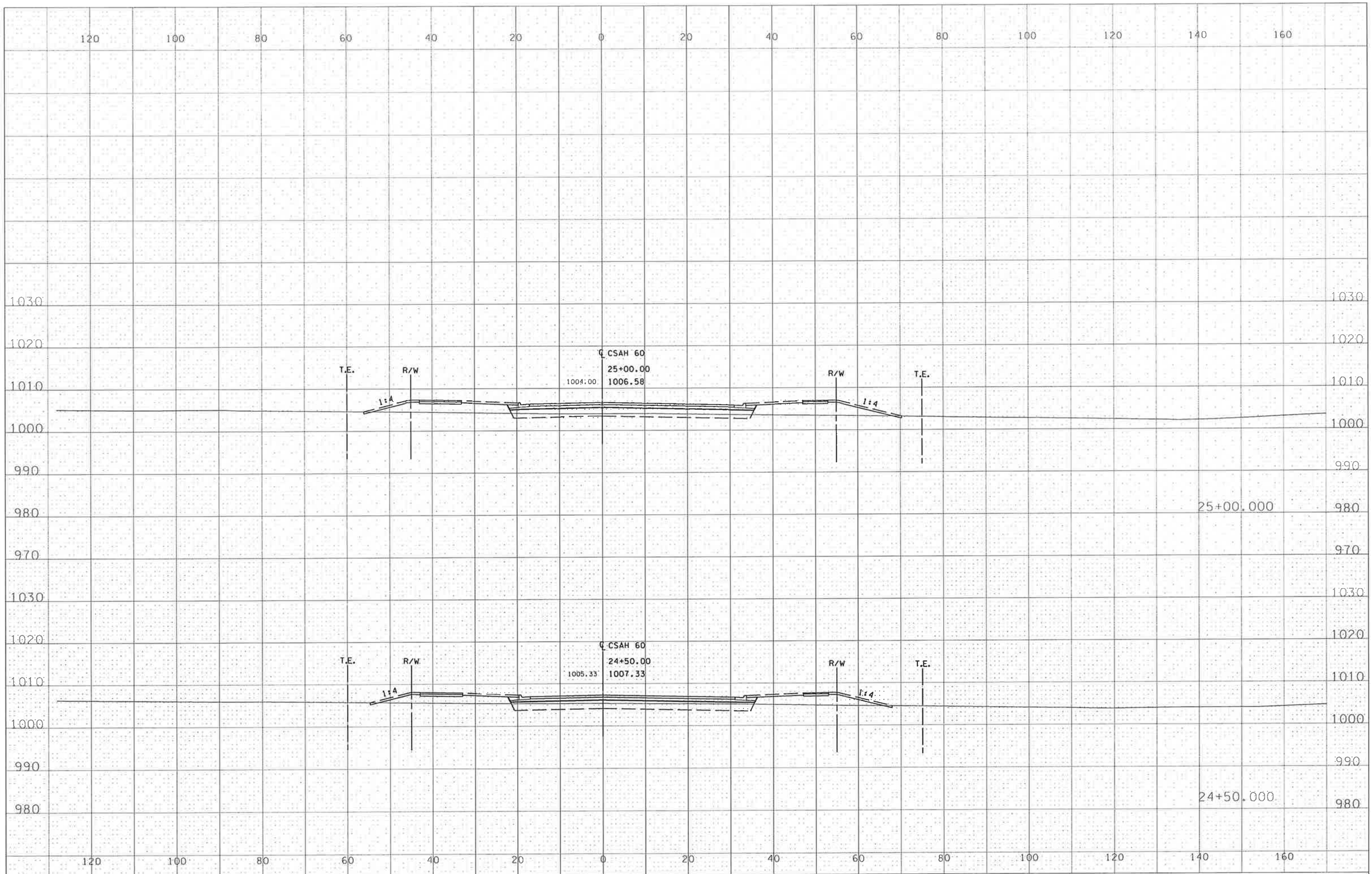

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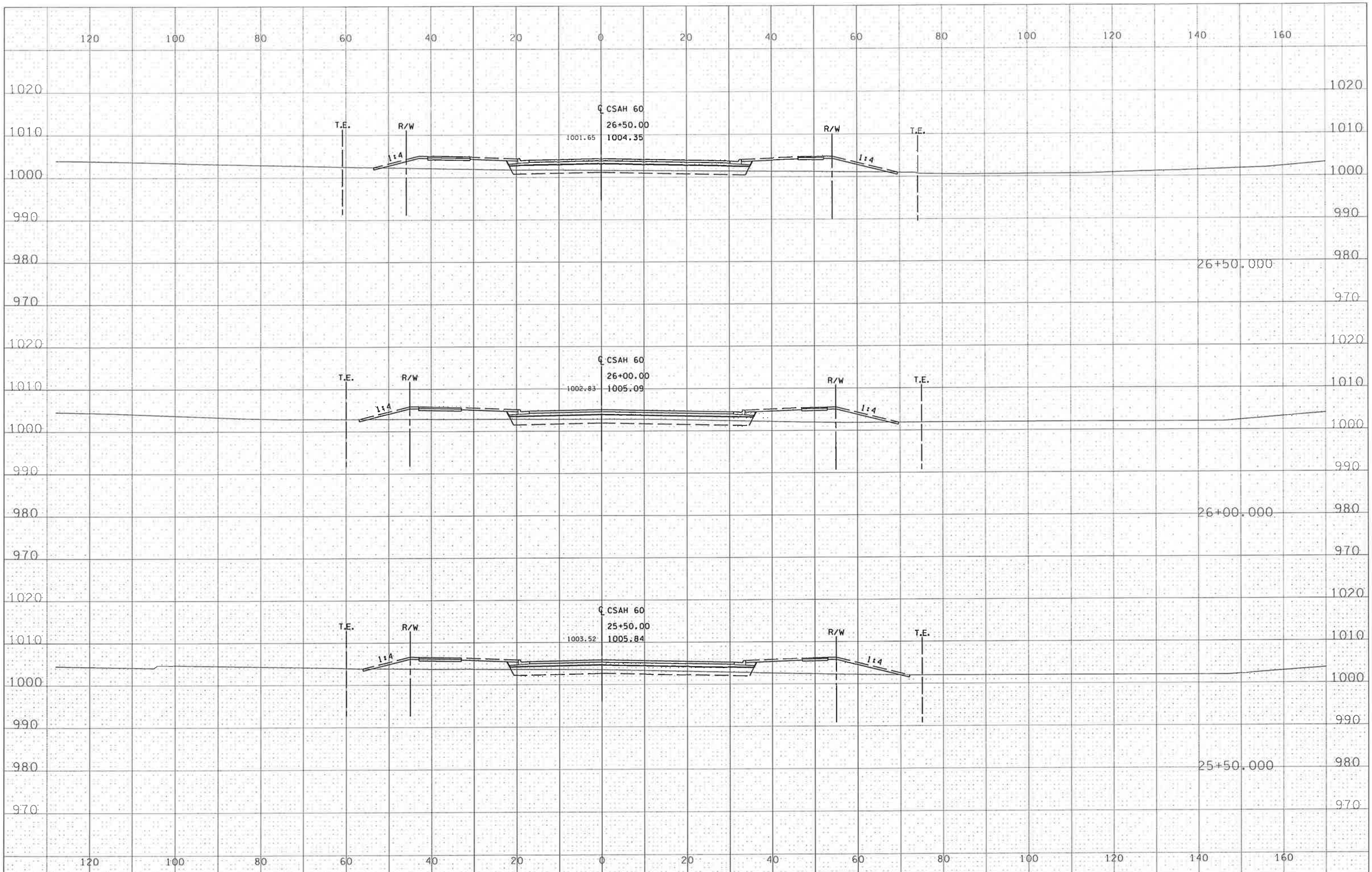

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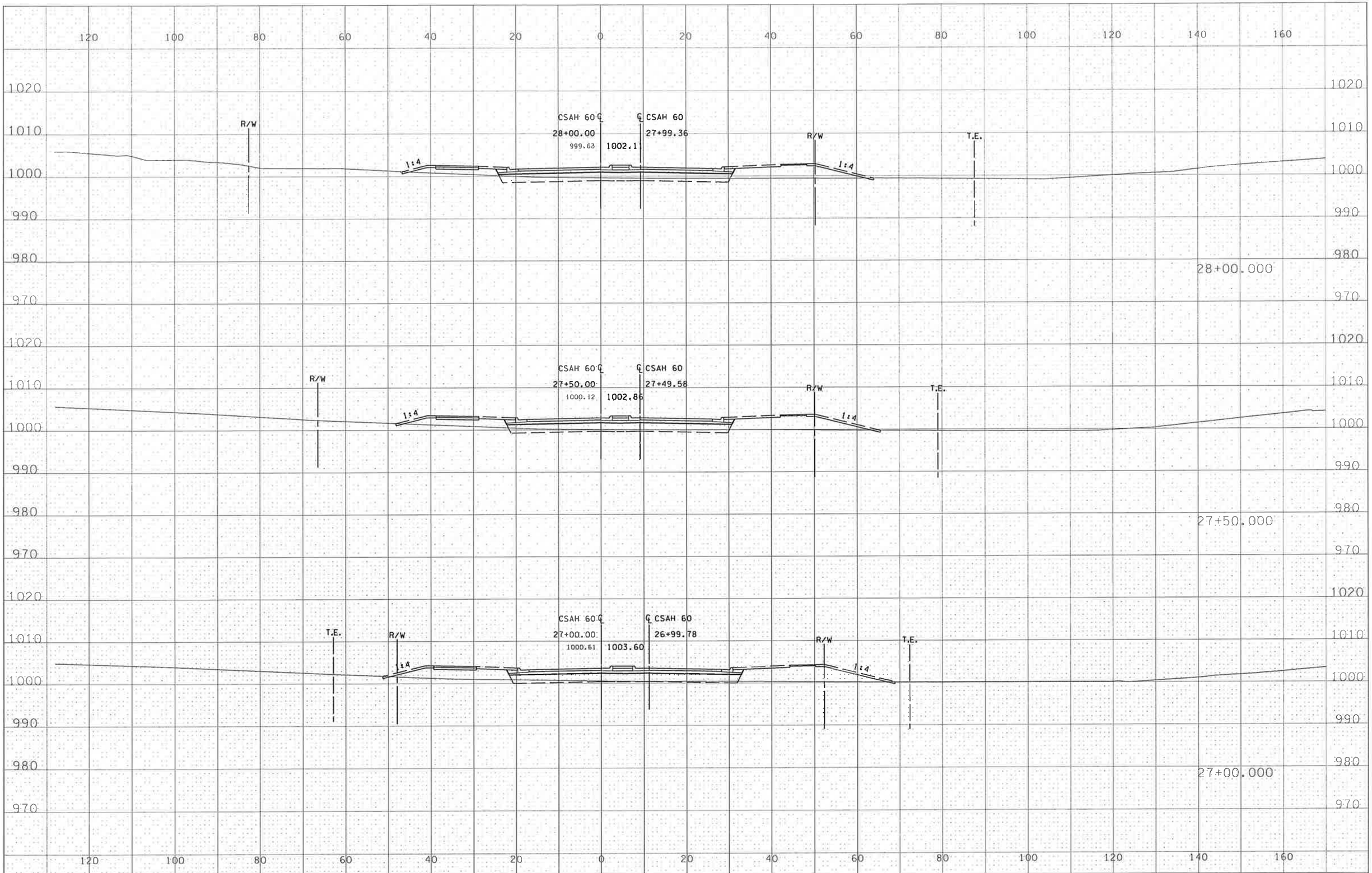

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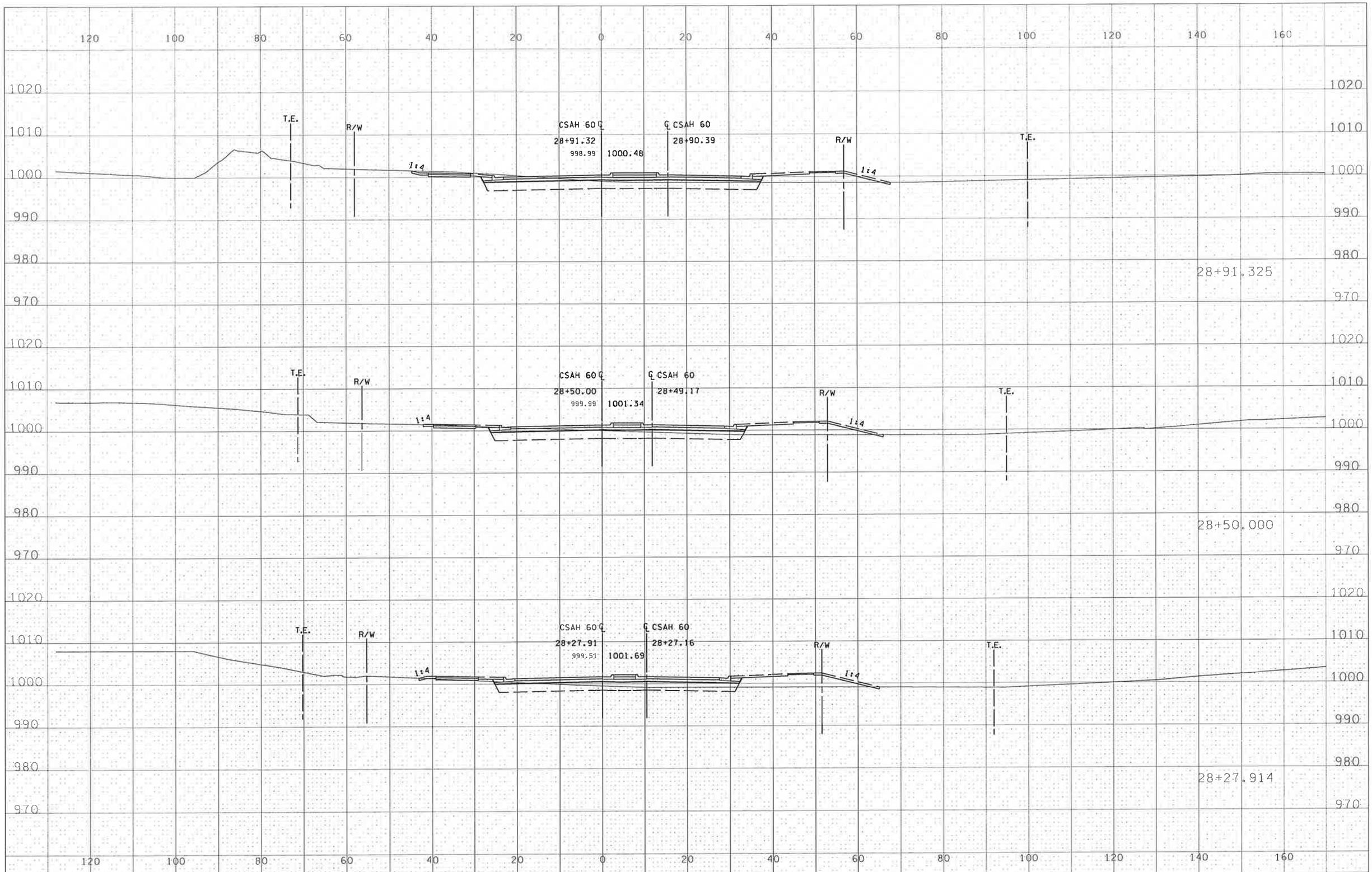

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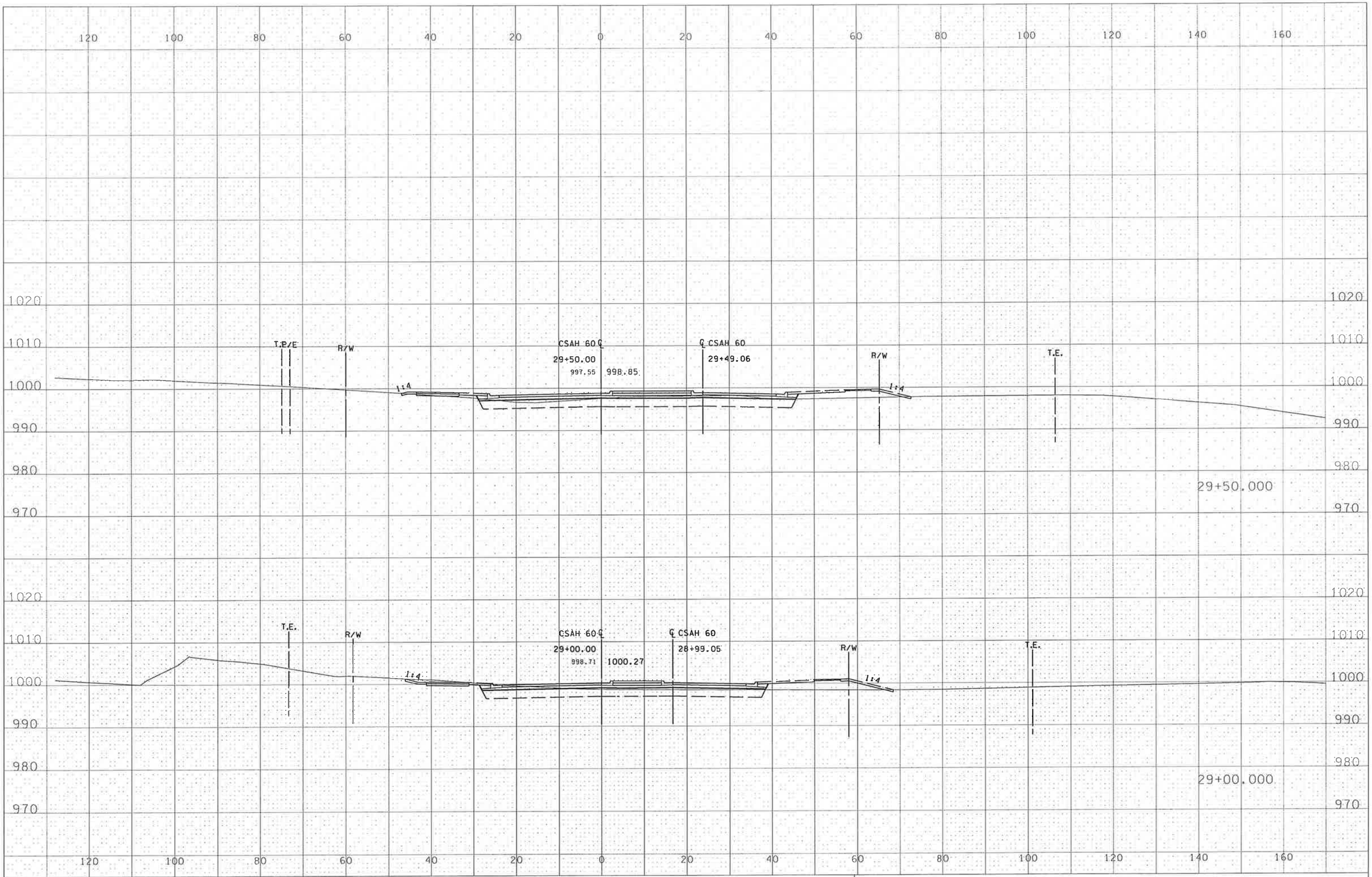

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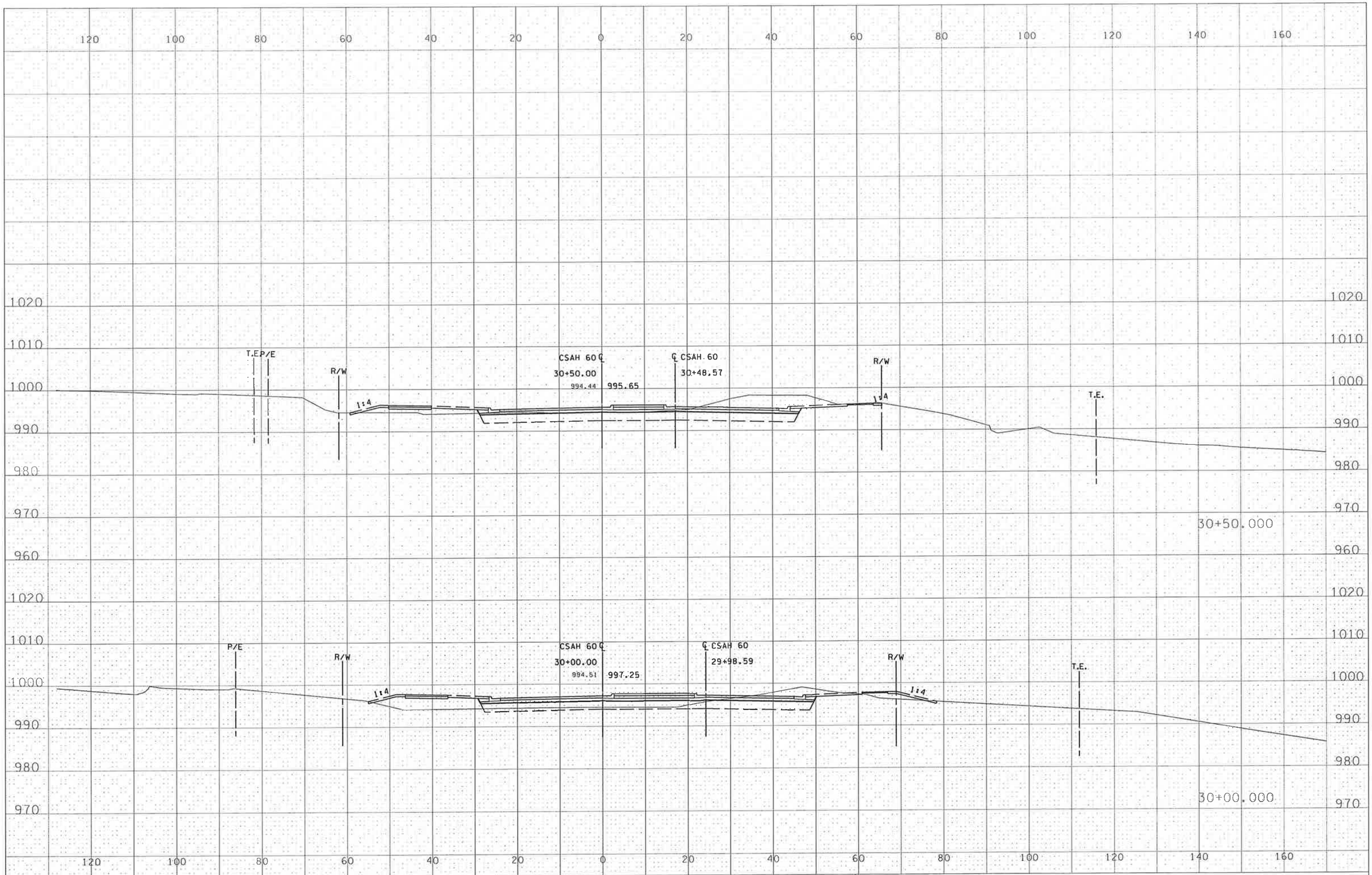

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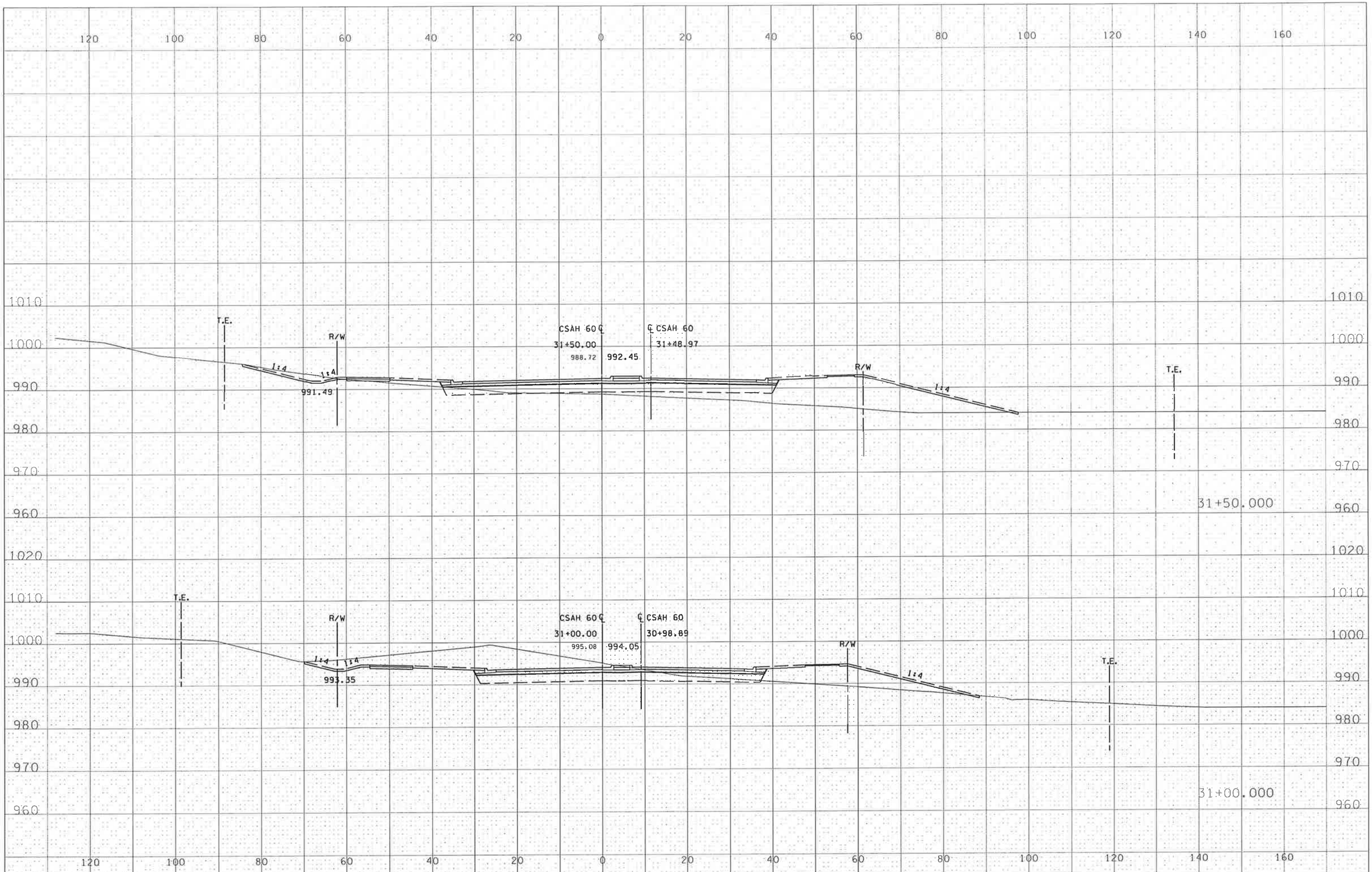

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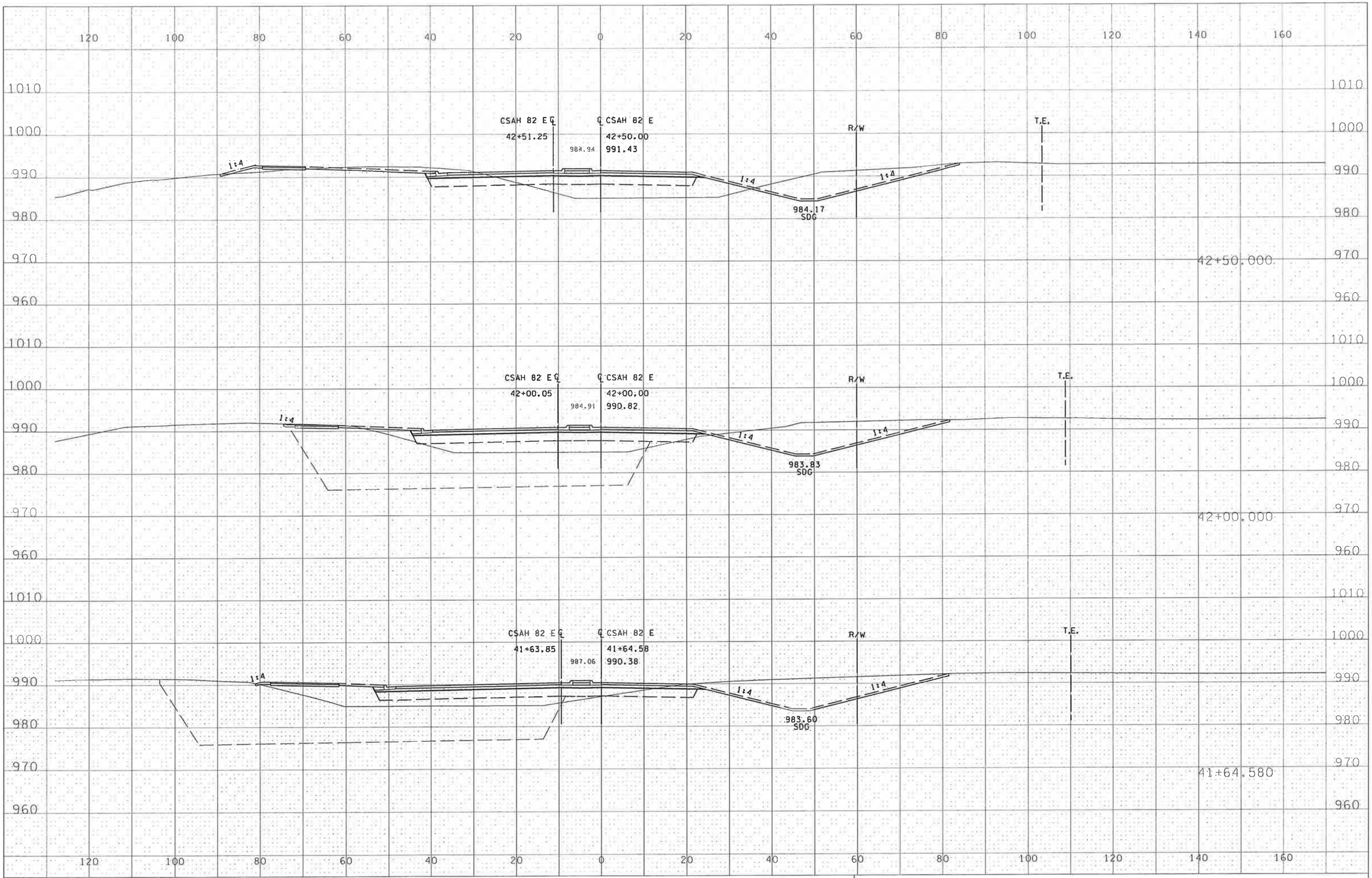

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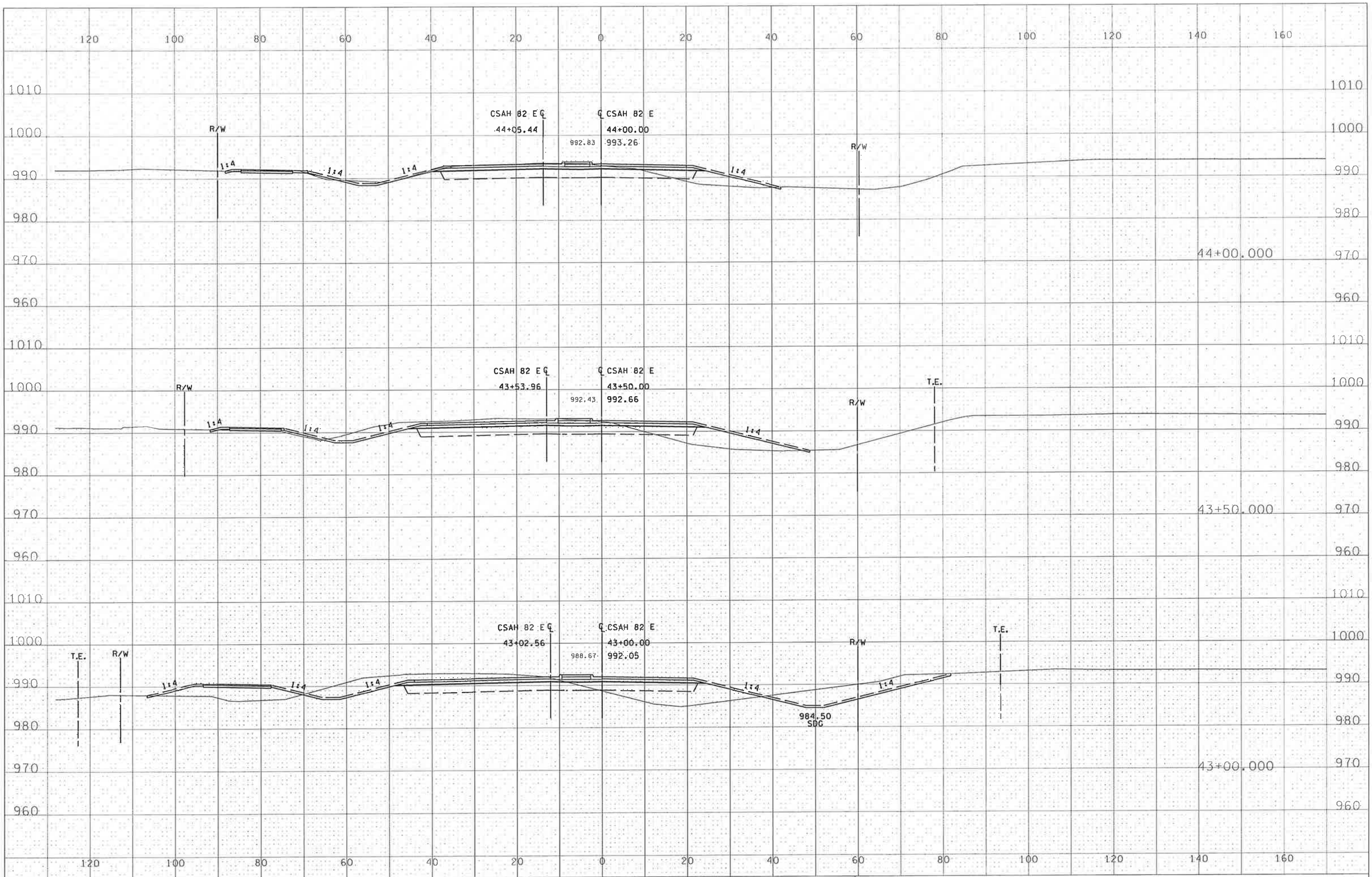

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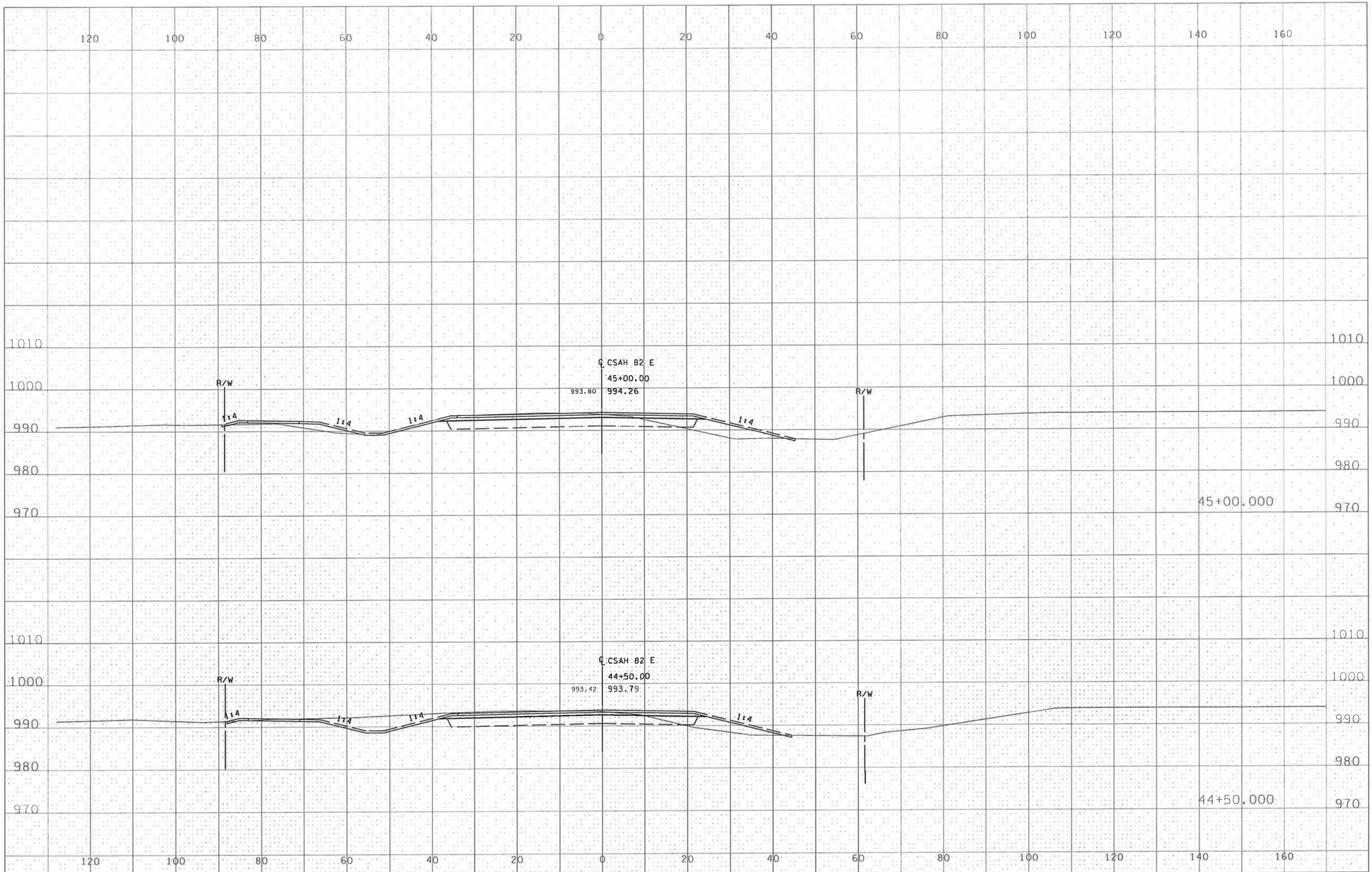

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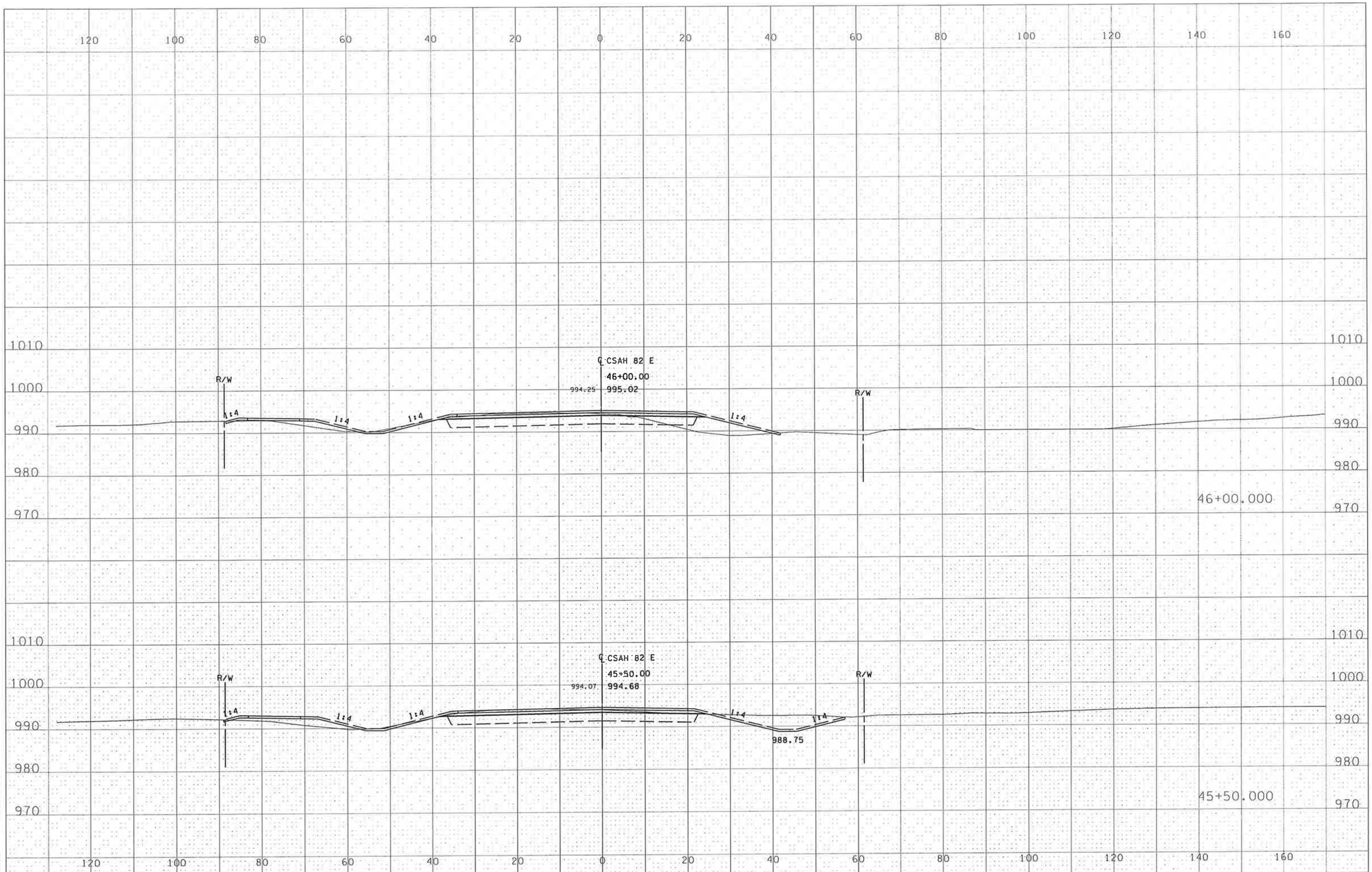

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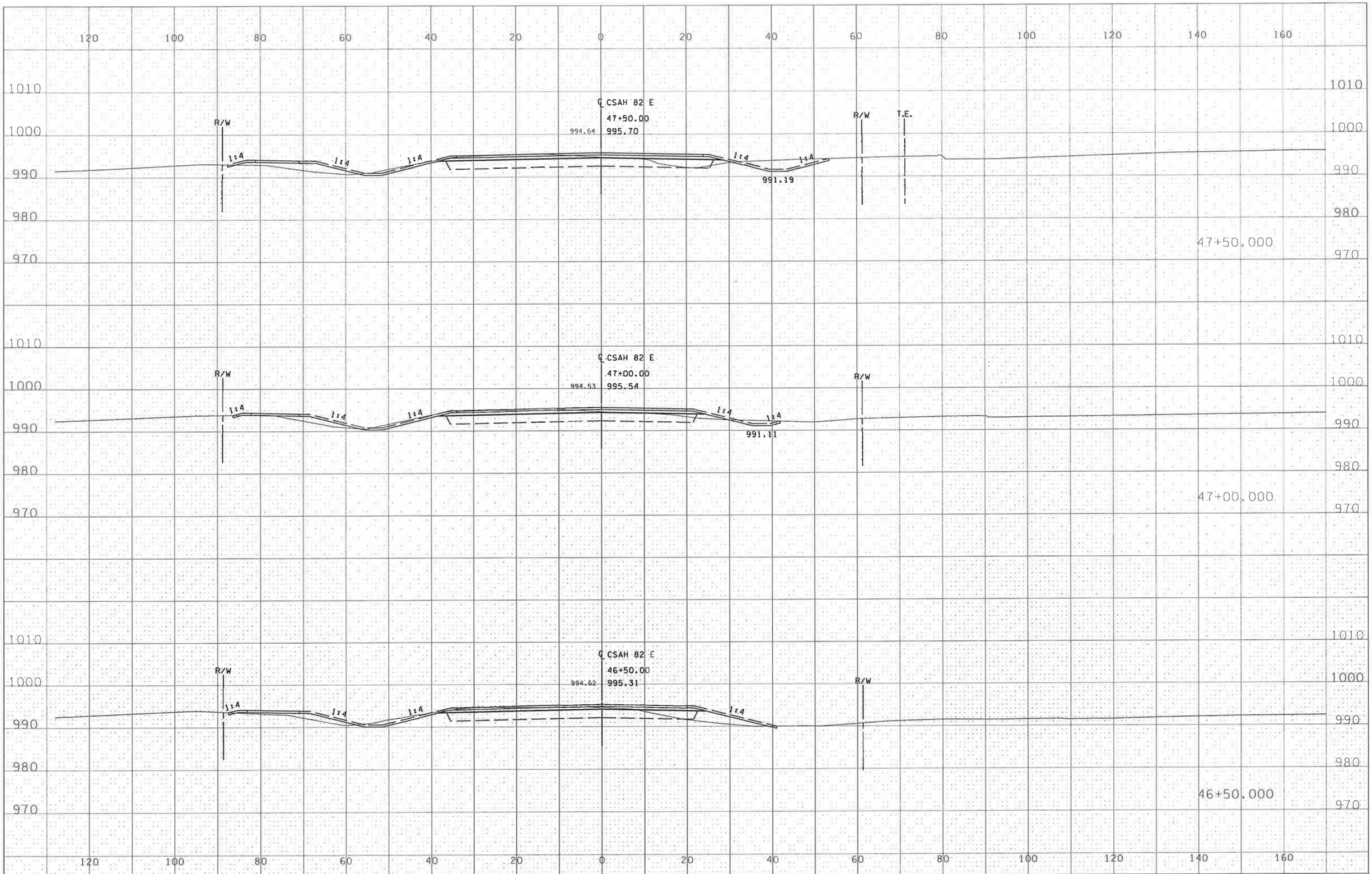

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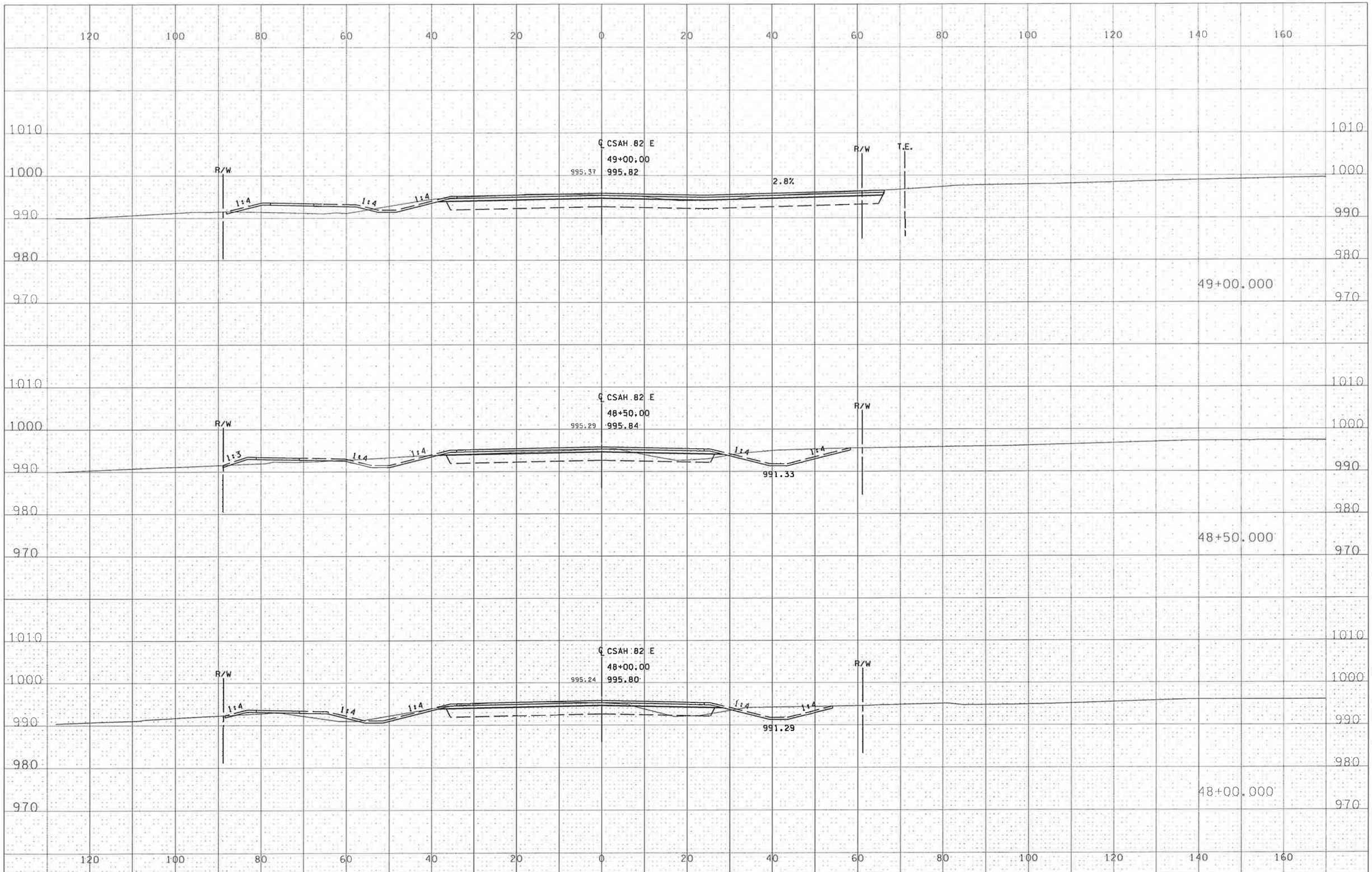

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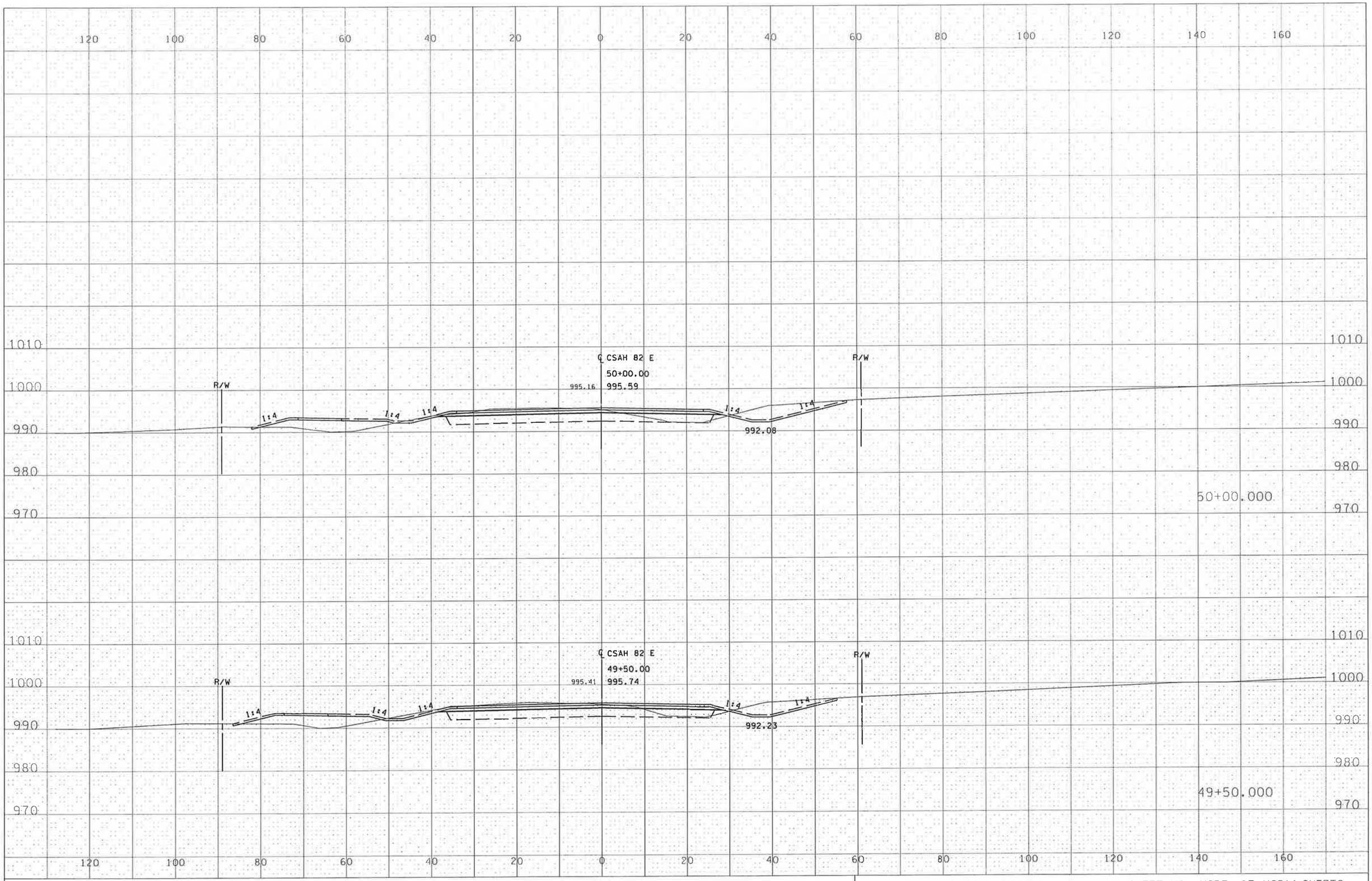

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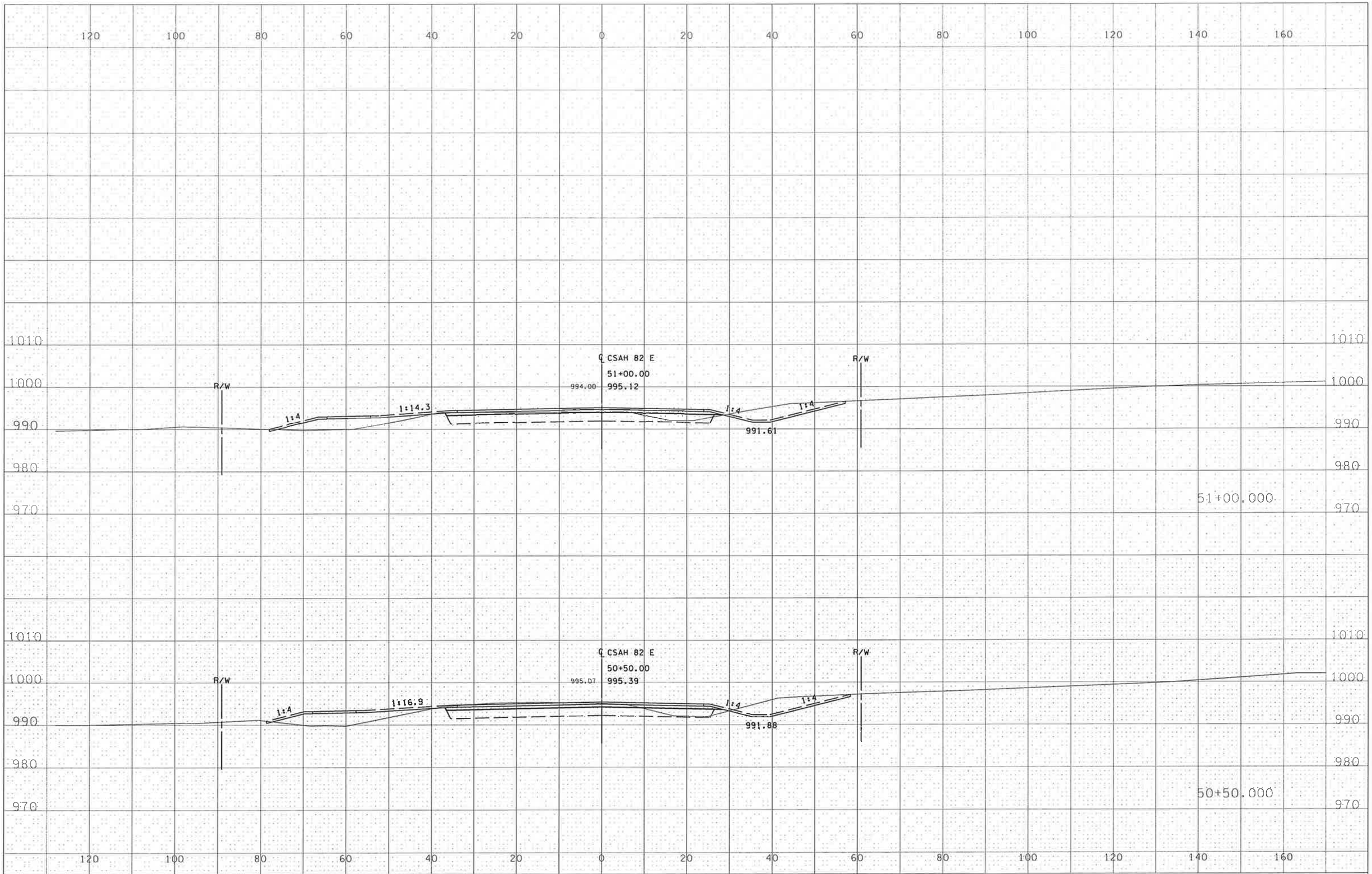

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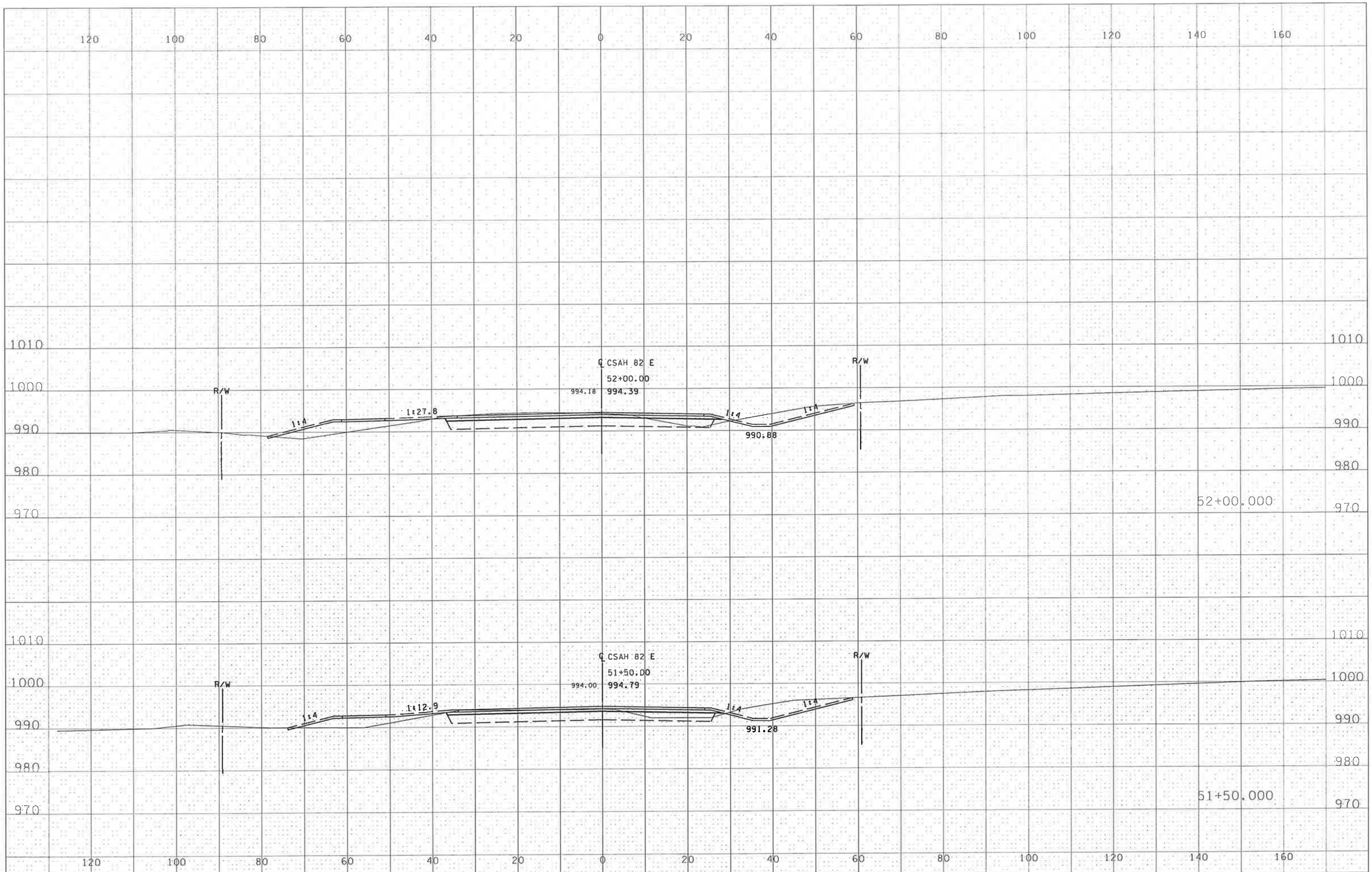

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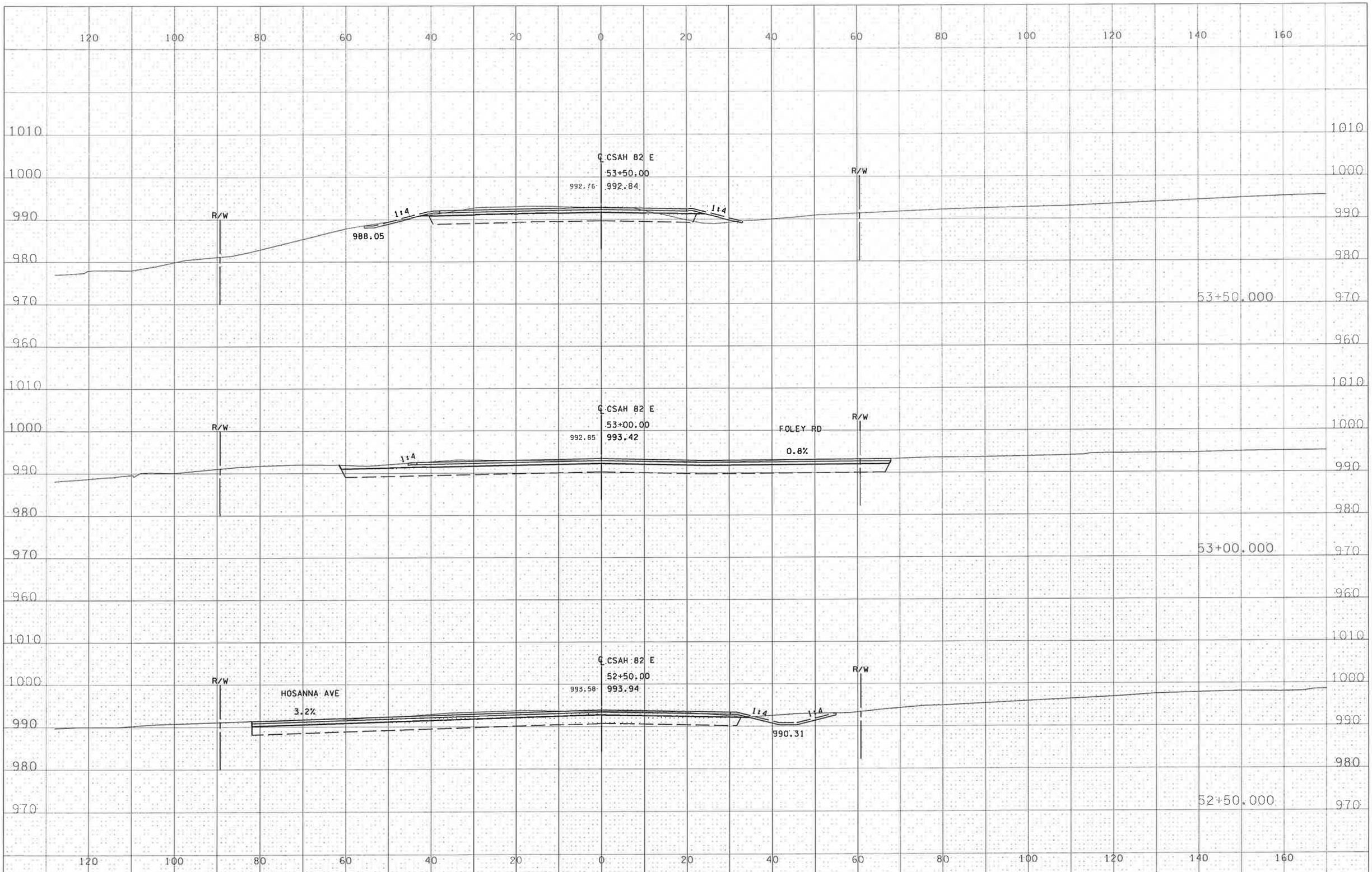

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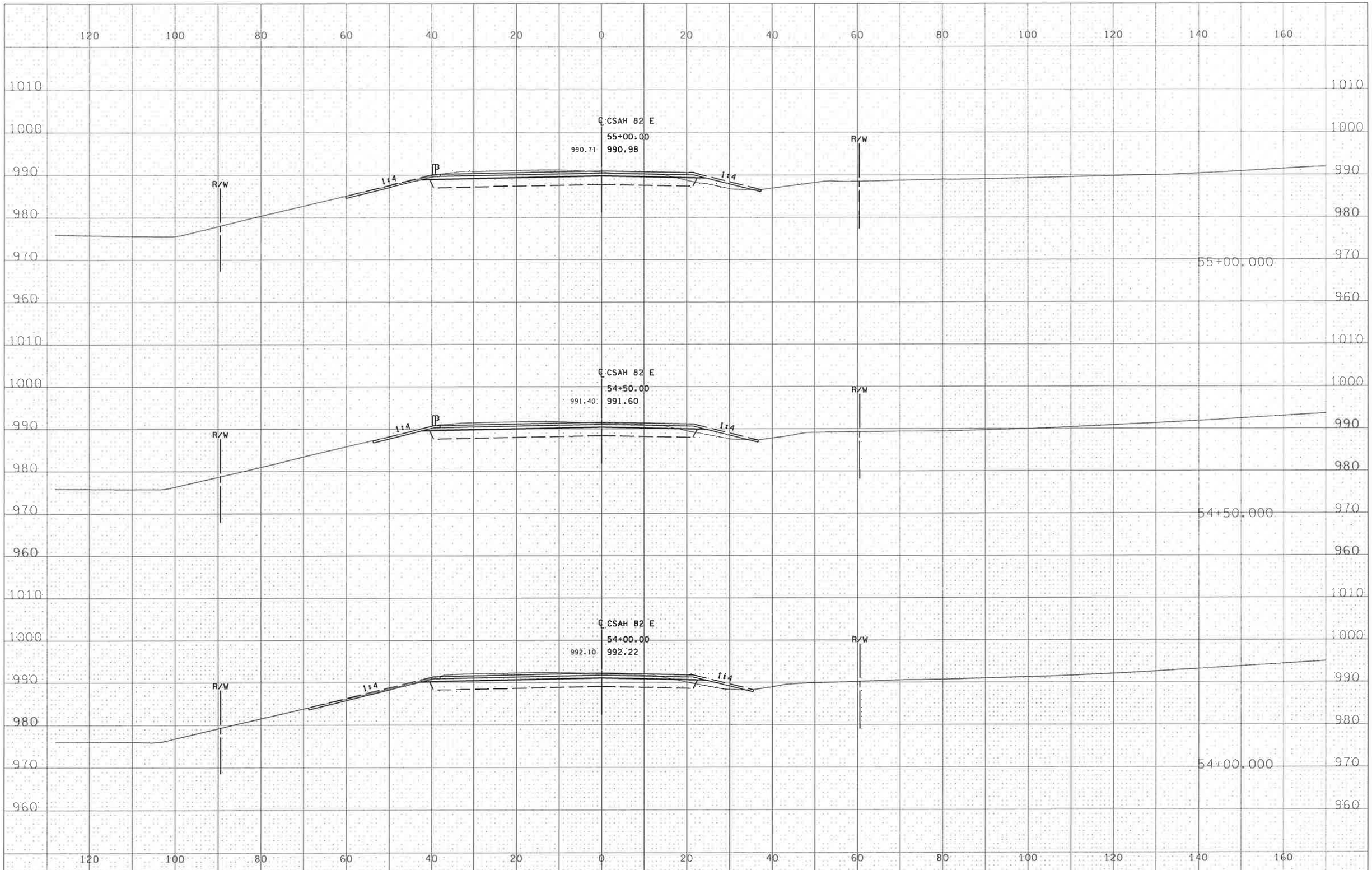

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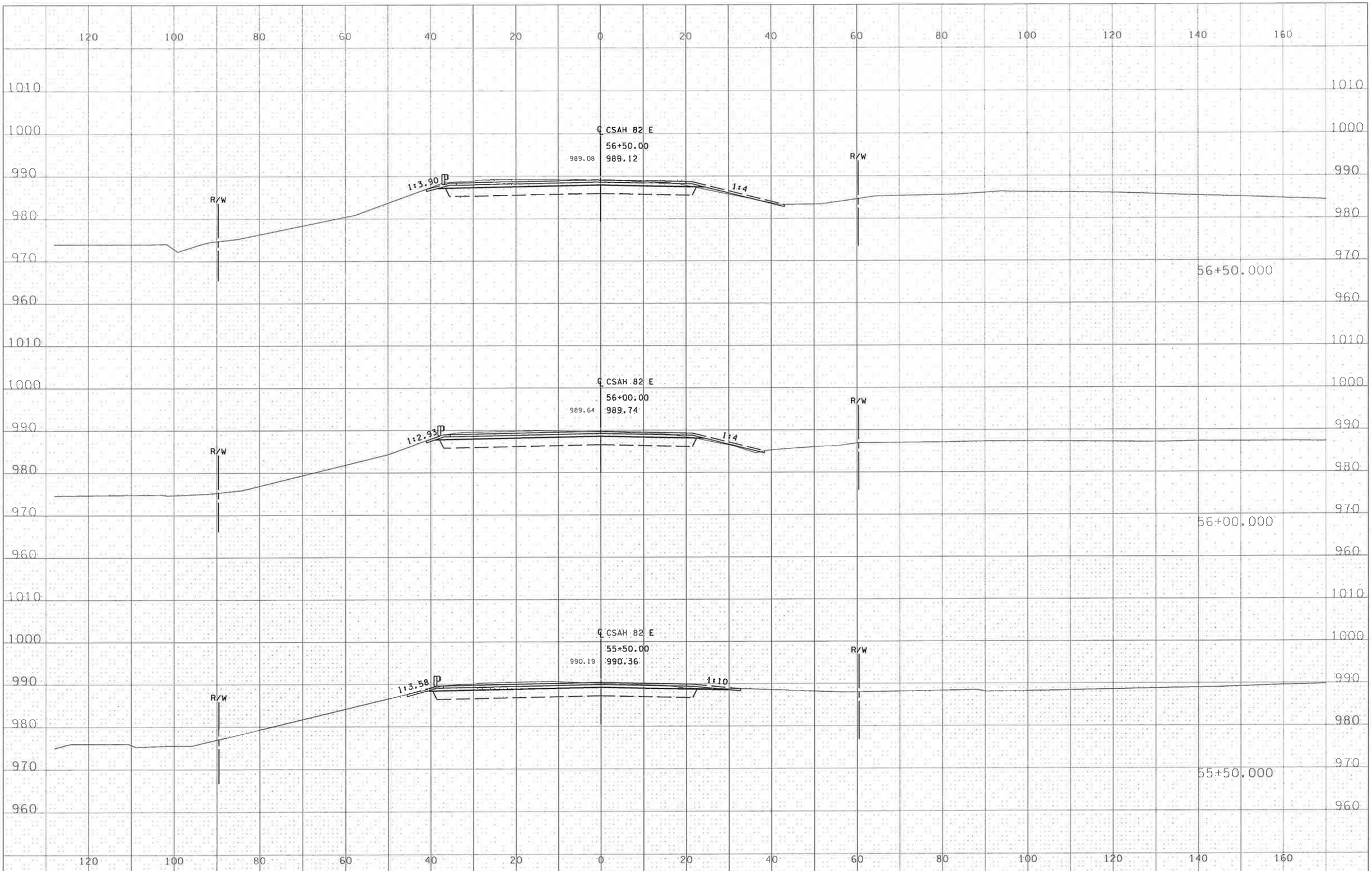

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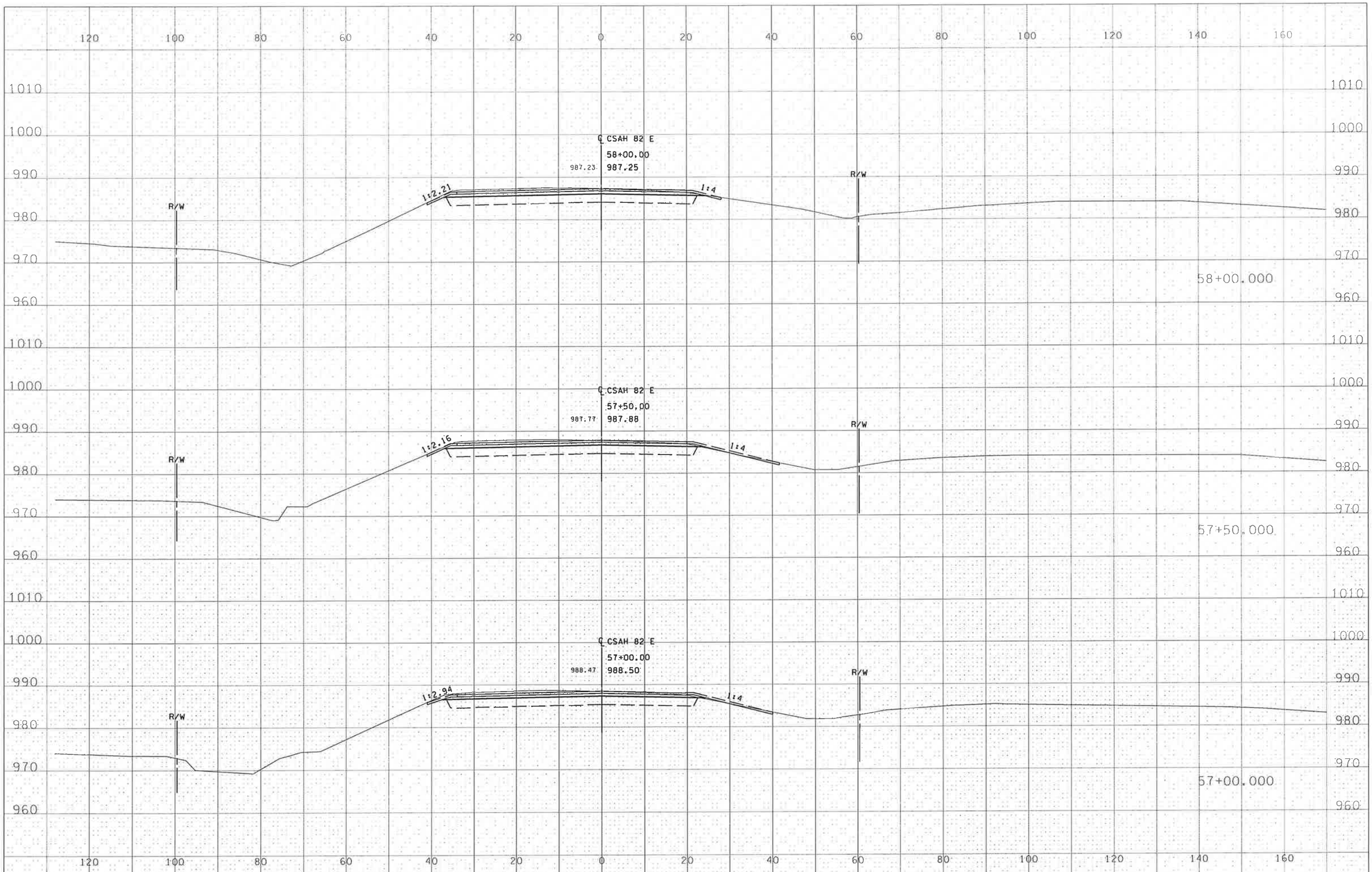

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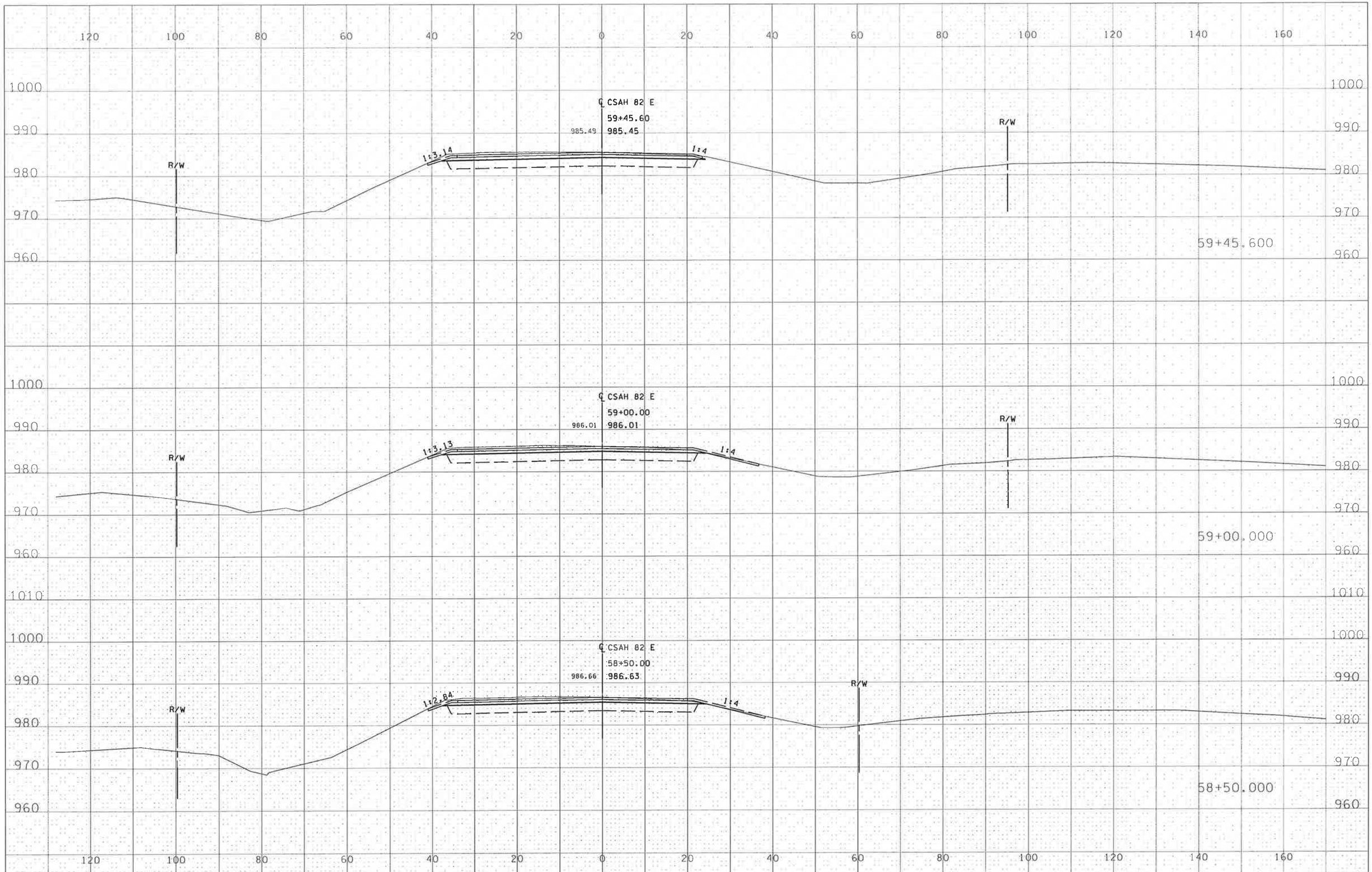

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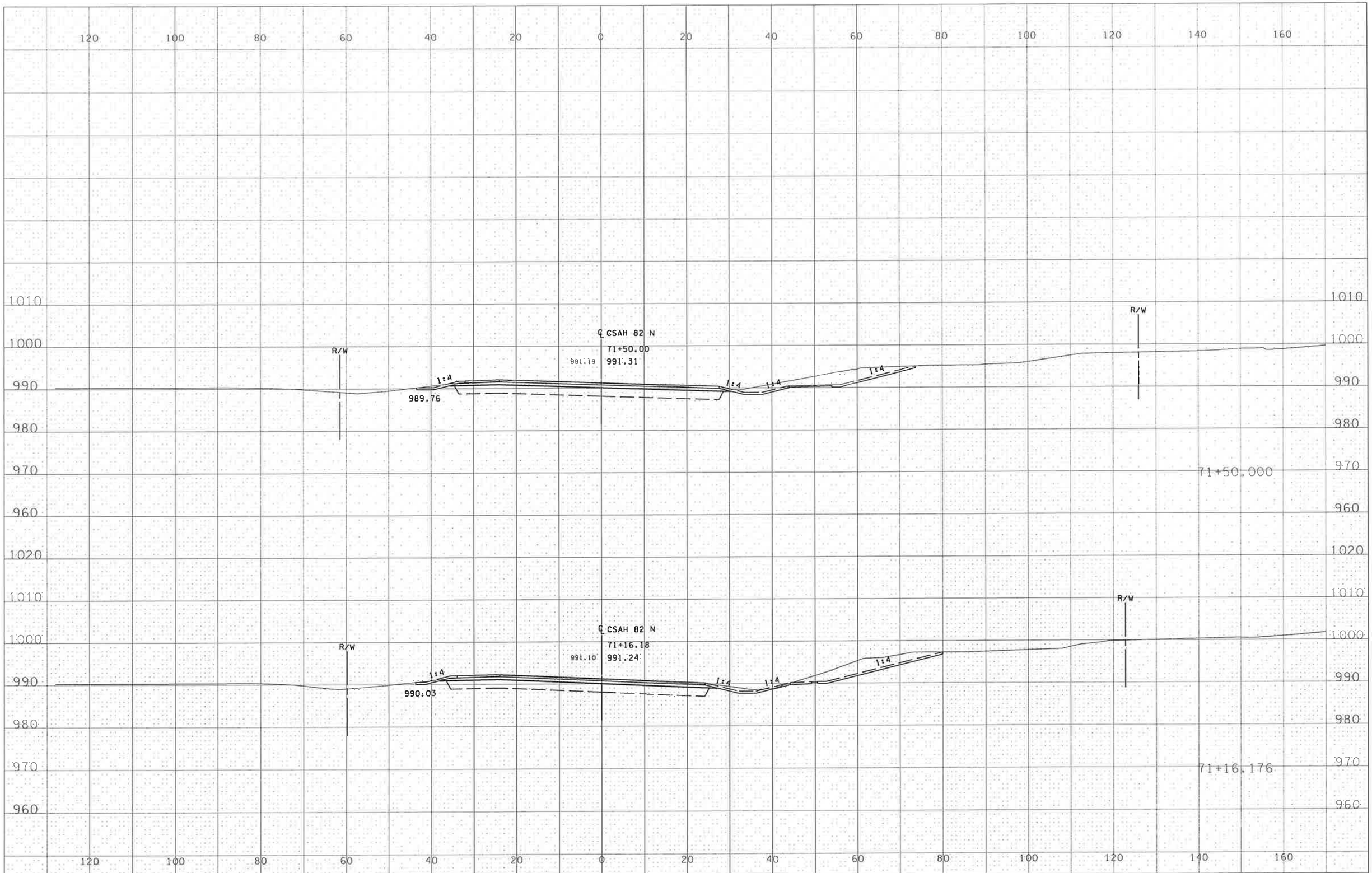

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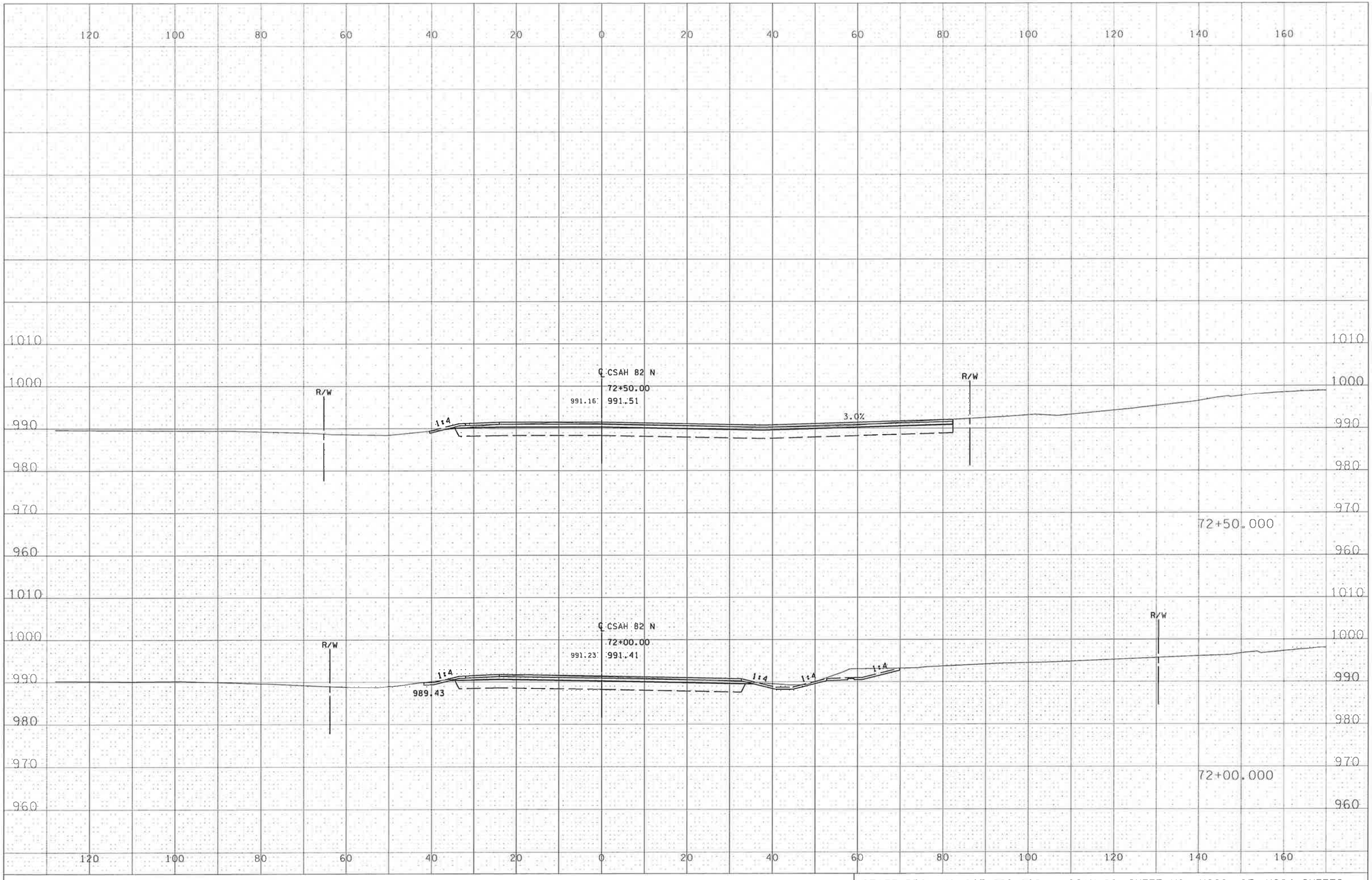

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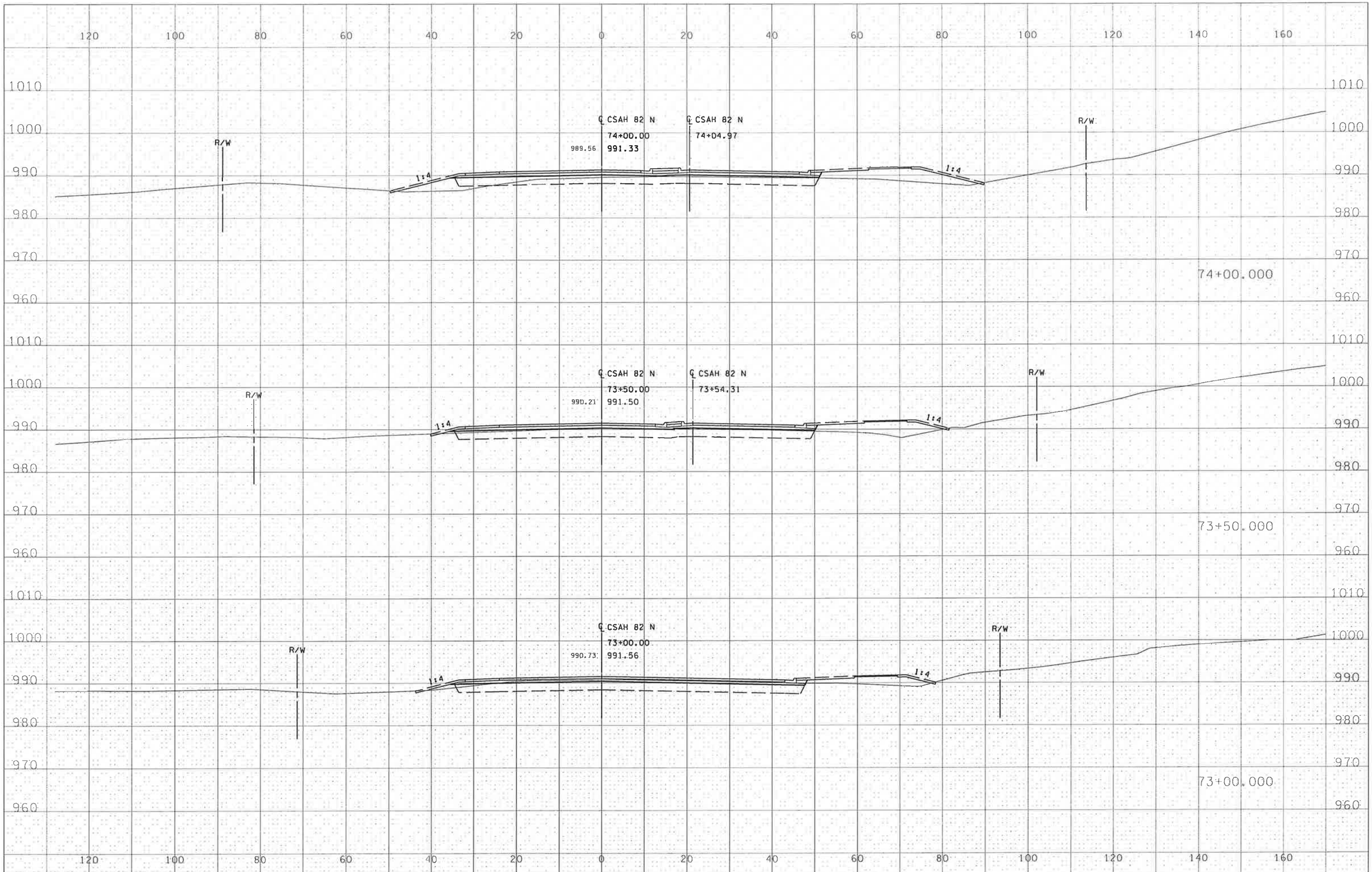

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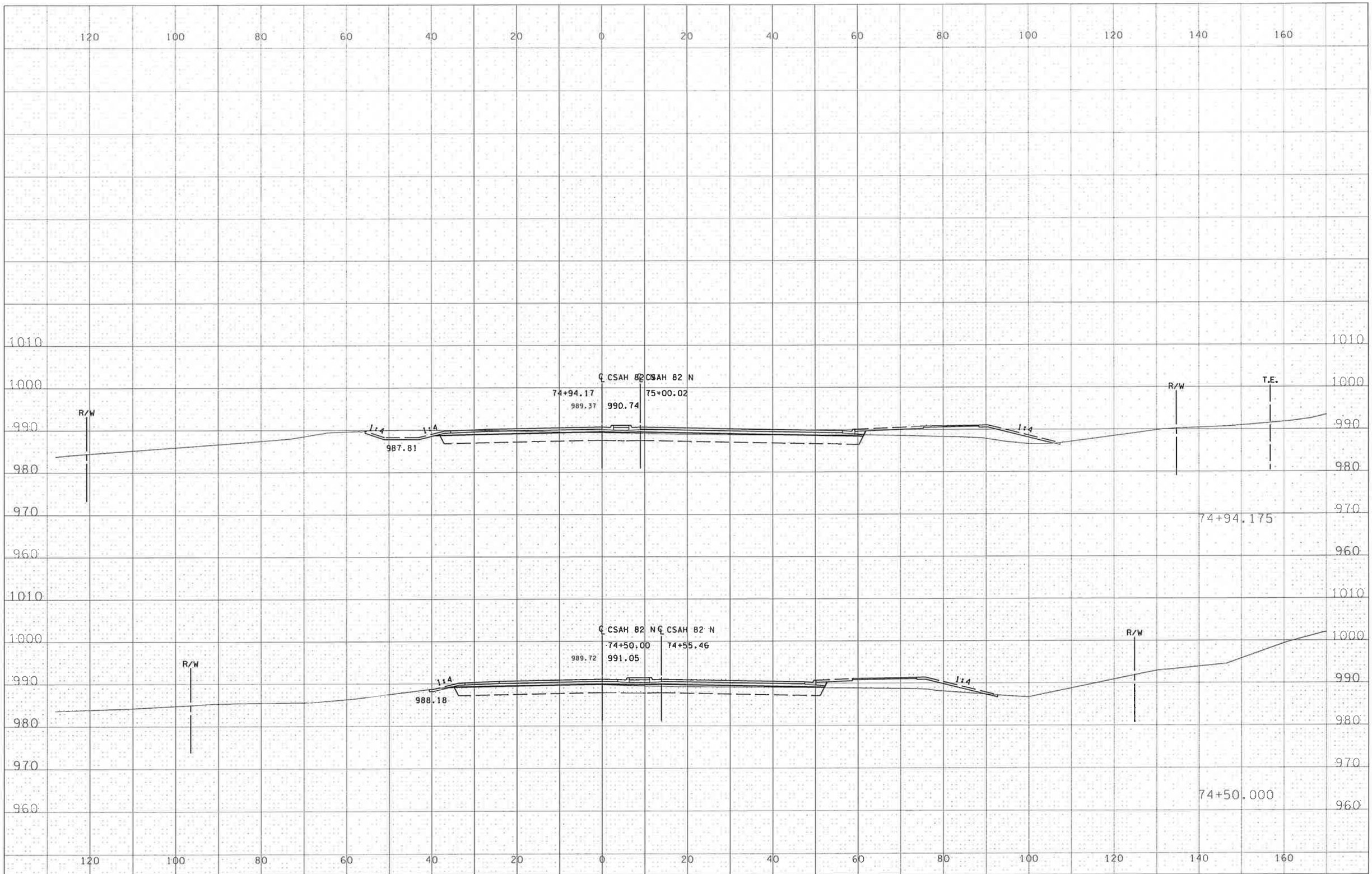

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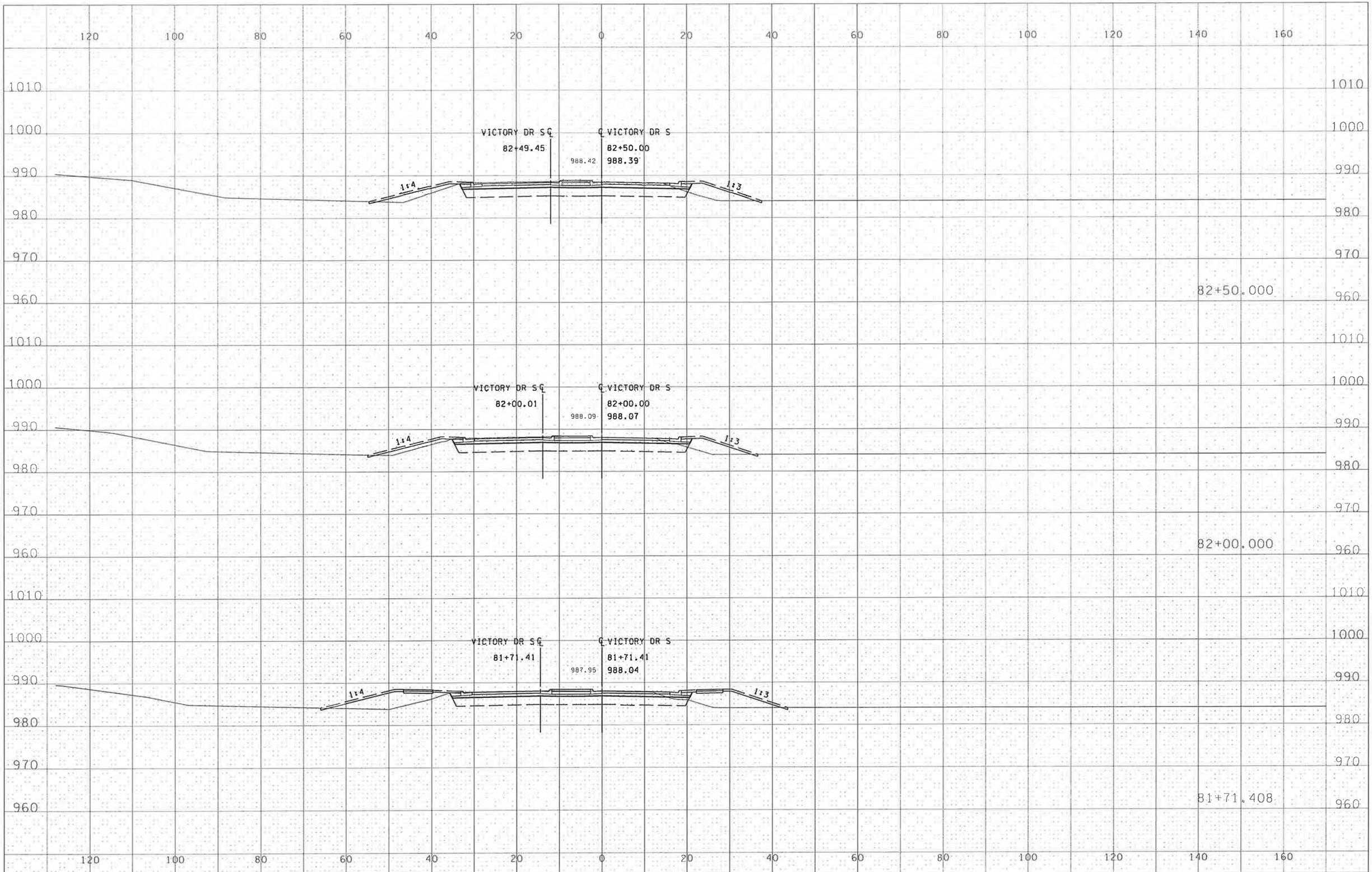

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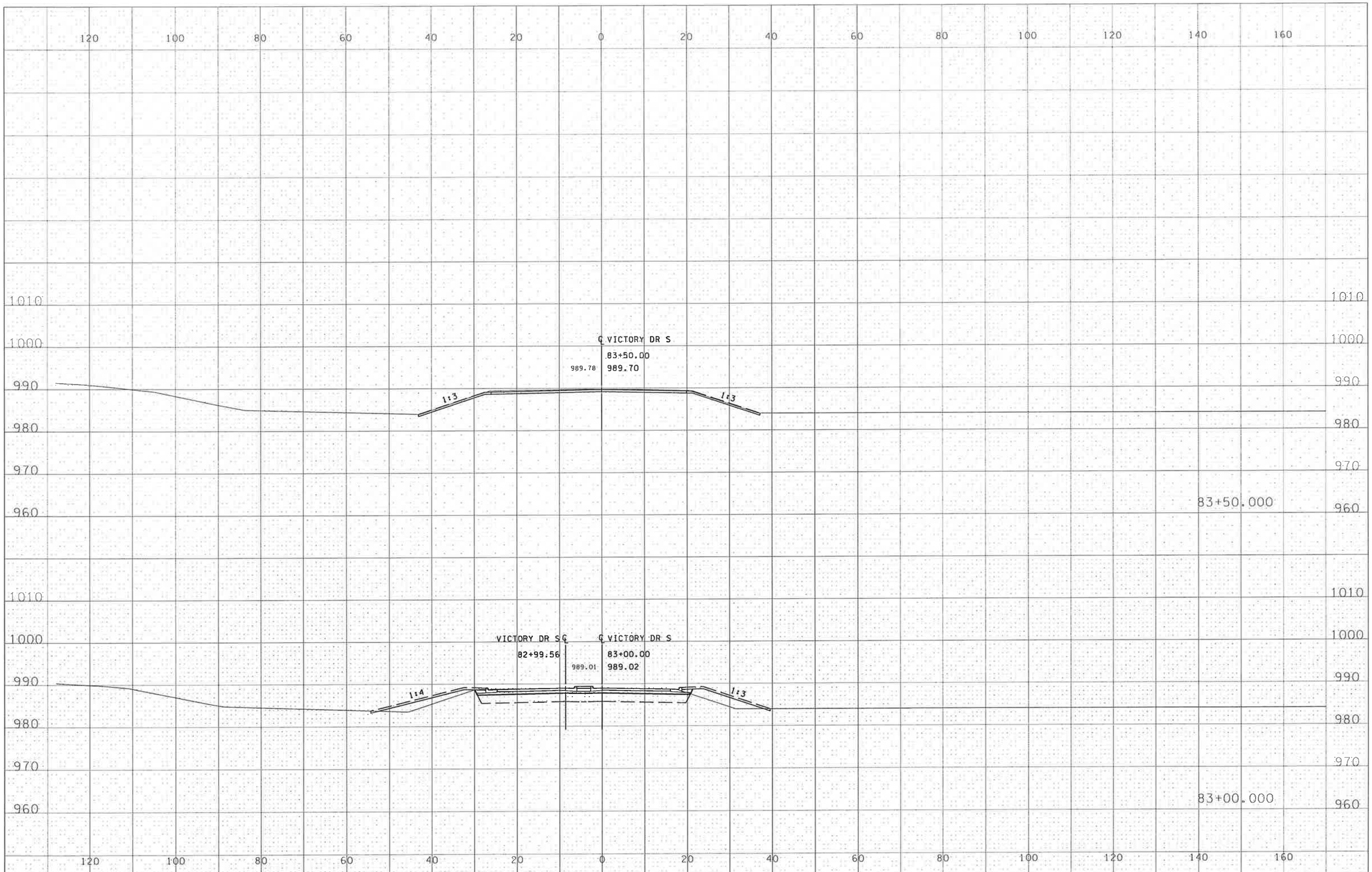

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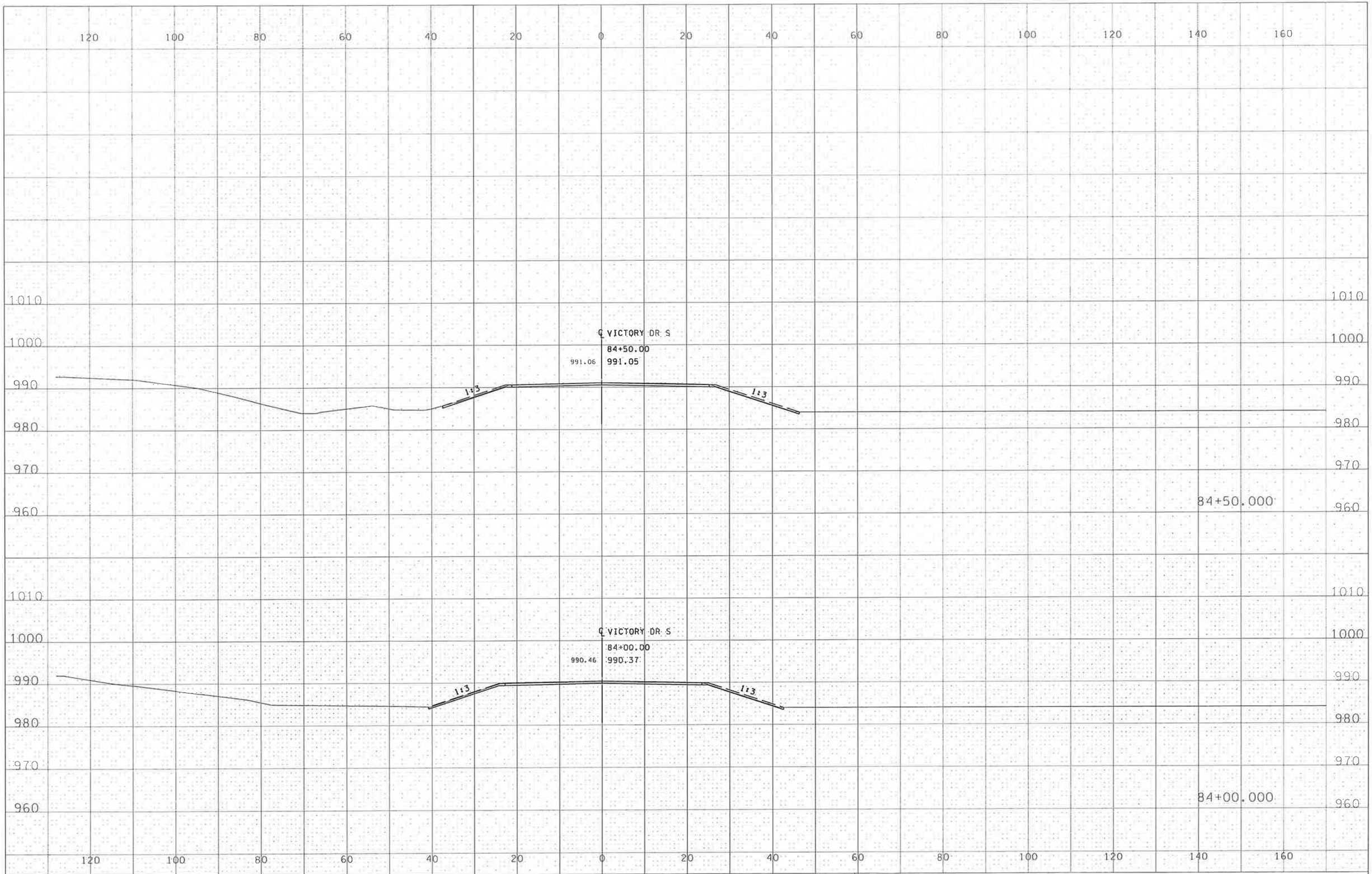
STATE PROJ. NO. XXX-XXX-XXX VICTORY DR SHEET NO. XSD2 OF XSD4 SHEETS



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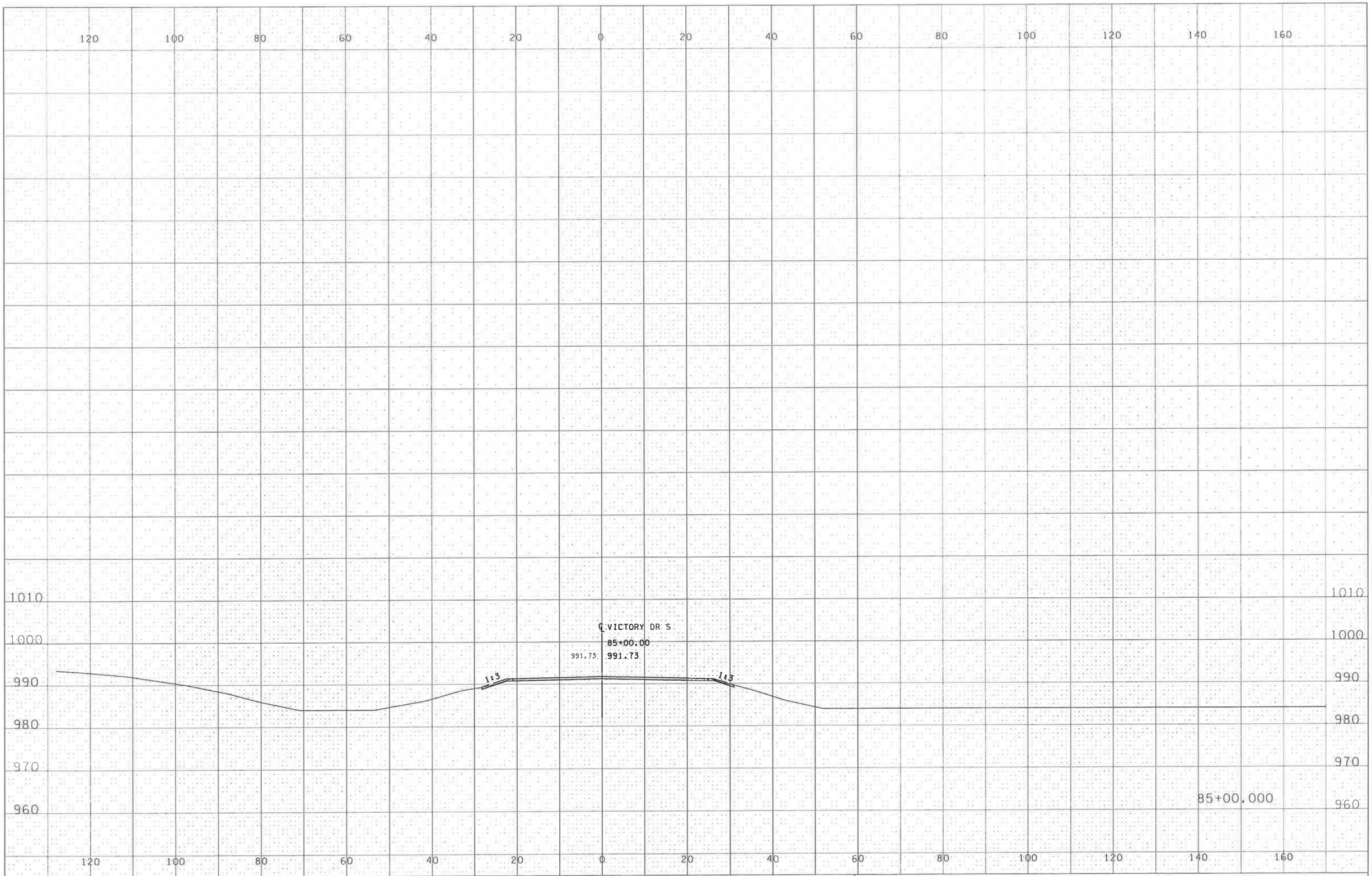

STATE PROJ. NO. XXX-XXX-XXX VICTORY DR SHEET NO. XSD4 OF XSD4 SHEETS

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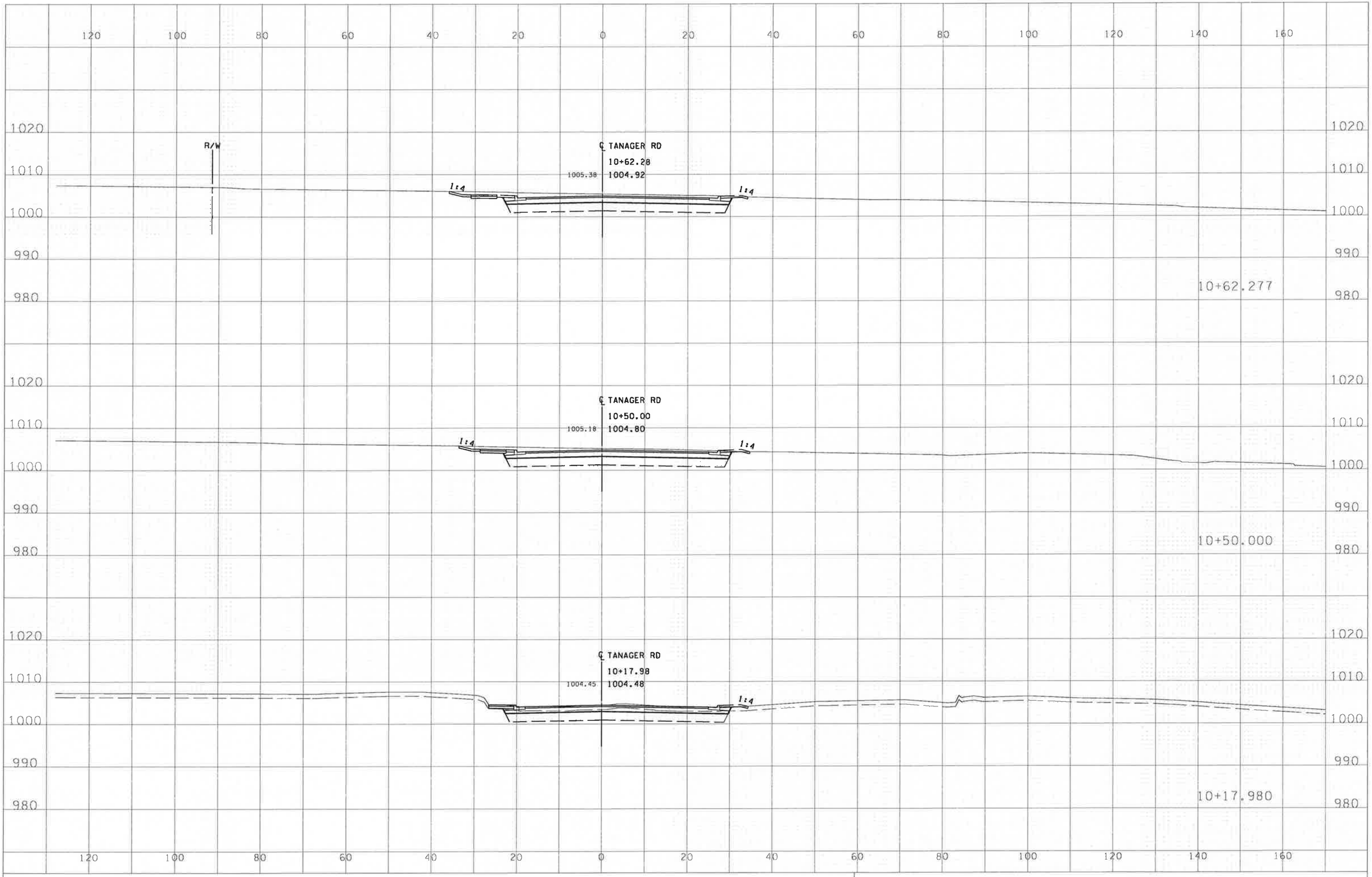

TANAGER RD SHEET NO. XSE1 OF XSE4 SHEETS

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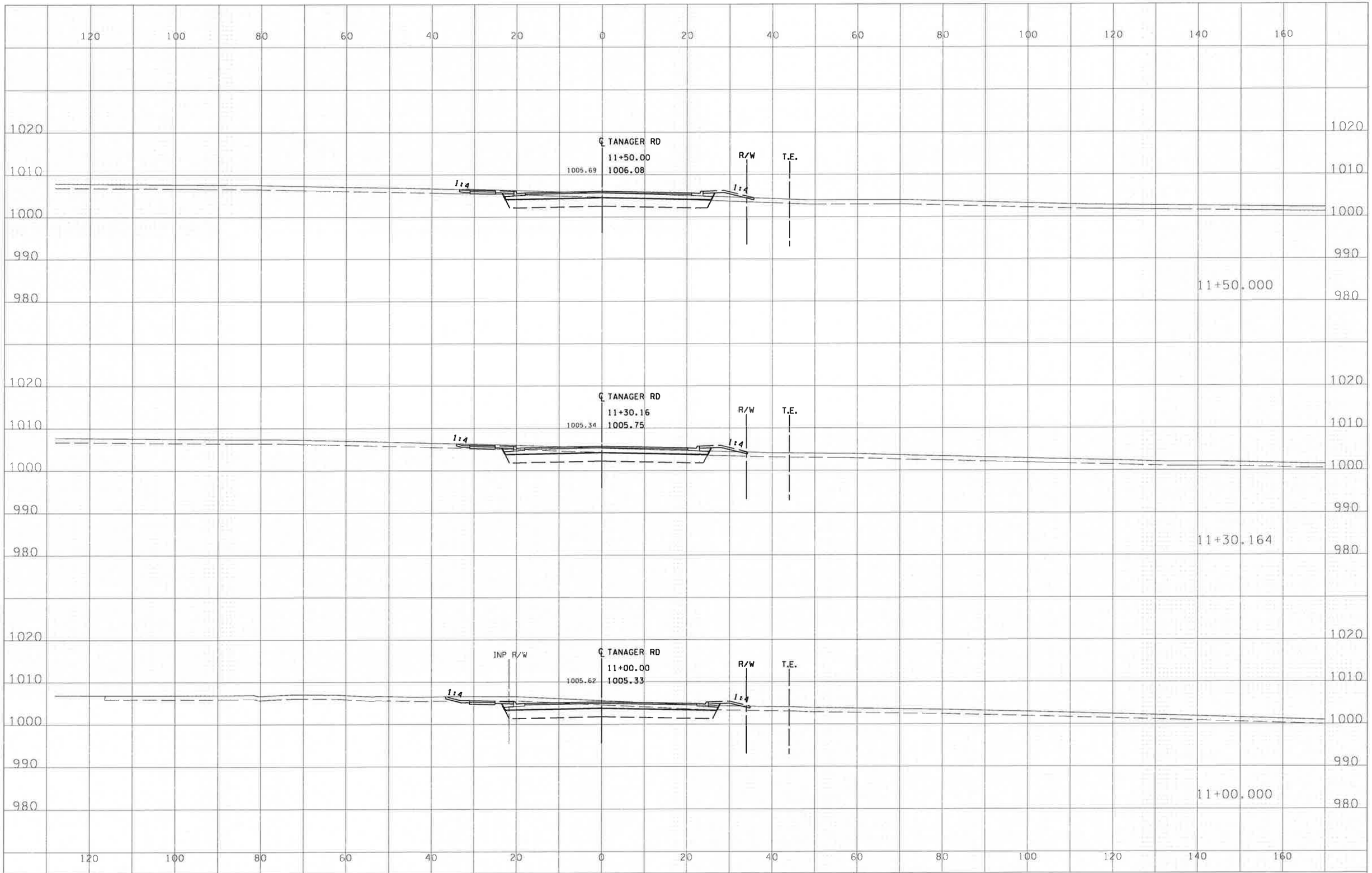

TANAGER RD

SHEET NO. XSE2 OF XSE4 SHEETS

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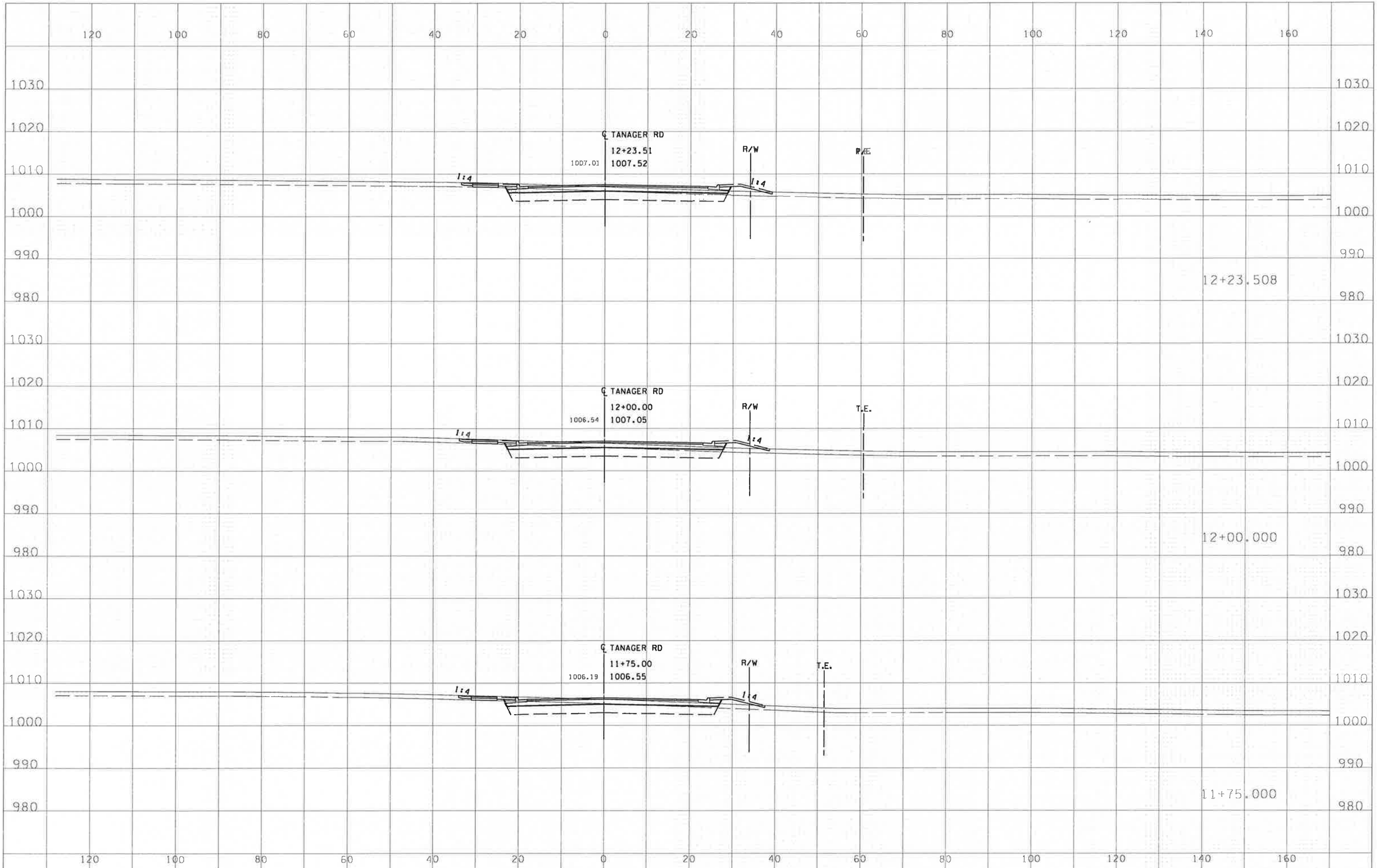
3/27/2012



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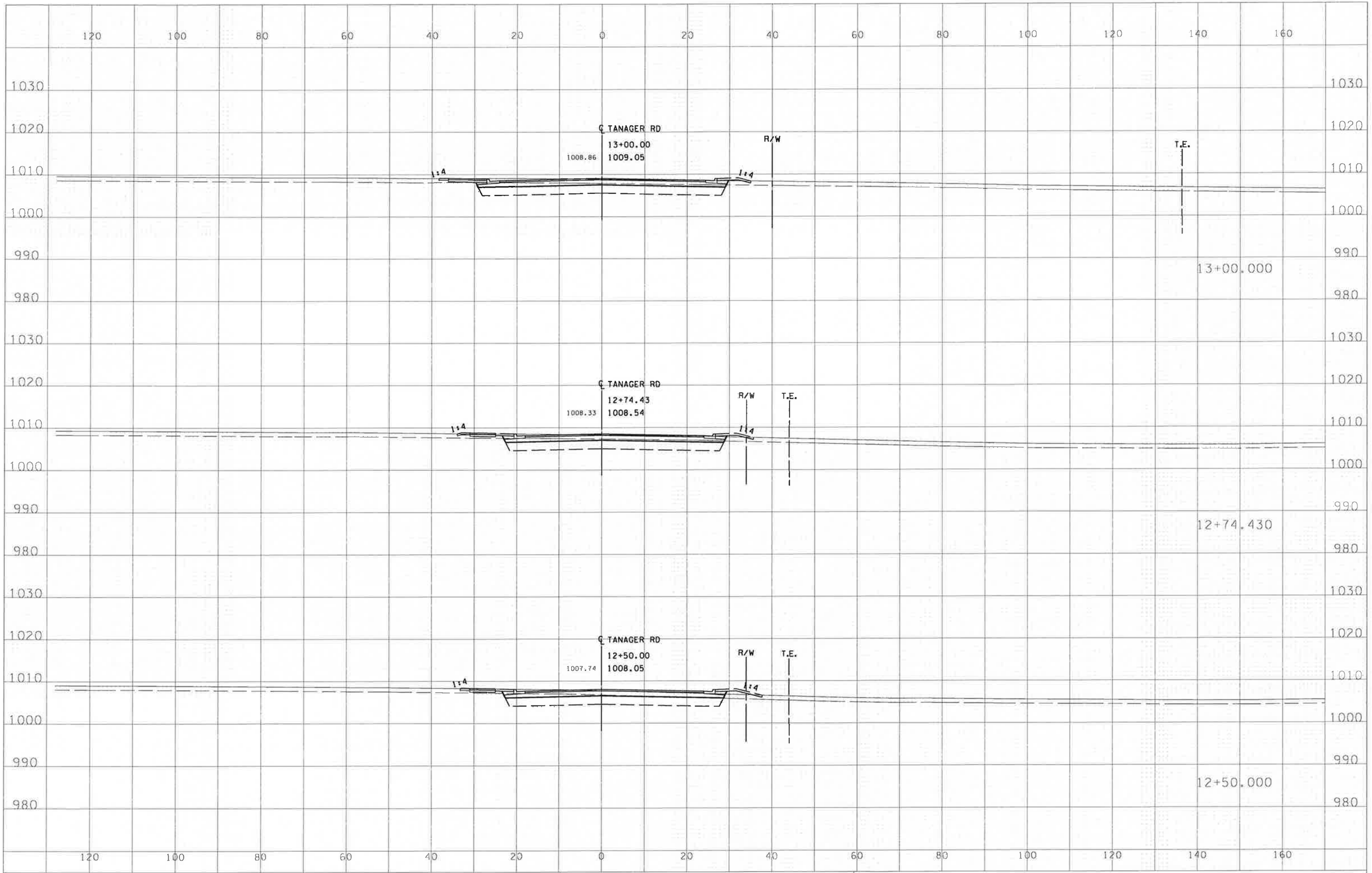
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