

PLAN SYMBOLS

- COUNTY LINE
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- SIXTEENTH LINE
- RIGHT OF WAY LINE
- SLOPE EASEMENT
- EXISTING RIGHT OF WAY
- PROPERTY LINE
- CORPORATE OR CITY LIMITS
- RETAINING WALL
- RAILROAD
- RAILROAD RIGHT OF WAY
- RIVER OR CREEK
- DRAINAGE DITCH
- CULVERT
- DROP INLET
- GUARD RAIL
- BARBED WIRE FENCE
- WOVEN WIRE FENCE
- CHAIN LINK FENCE
- WOOD FENCE
- STONE WALL OR FENCE
- HEDGE

- LOWLAND
- TIMBER
- ORCHARD
- BRUSH
- NURSERY

- CATTLE GUARD
- OVERPASS (Highway Over)
- UNDERPASS (Highway Under)
- BRIDGE

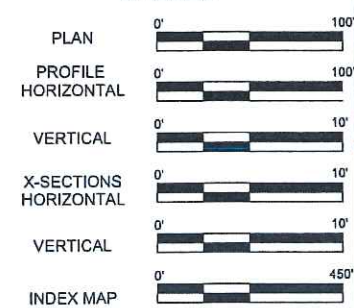
- BUILDING (One Story Frame)
- F-FRAME C-CONCRETE
- S-STONE T-TILE
- B-BRICK ST-STUCCO

- RAILROAD CROSSING BELL
- RAILROAD CROSSING GATE
- MANHOLE
- CATCH BASIN
- FIRE HYDRANT
- CAST IRON MONUMENT
- IRON PIN
- GRAVEL PIT
- SAND PIT
- BORROW PIT
- ROCK QUARRY

UTILITY SYMBOLS

- POWER POLE LINE
- TELEPHONE OR TELEGRAPH
- POLE LINE
- JOINT TELEPHONE & POWER
- ON POWER POLES
- ON TELEPHONE POLES
- ANCHOR
- STEEL TOWER
- STREET LIGHT
- PEDESTAL (Cable Terminal)
- GAS MAIN
- WATERMAIN
- TELEPHONE CABLE IN CONDUIT
- ELECTRIC CABLE IN CONDUIT
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- BURIED TELEPHONE CABLE
- BURIED ELECTRIC CABLE
- SEWER (Sanitary or Storm)
- SEWER MANHOLE

SCALES



MINNESOTA DEPARTMENT OF TRANSPORTATION

ANOKA COUNTY

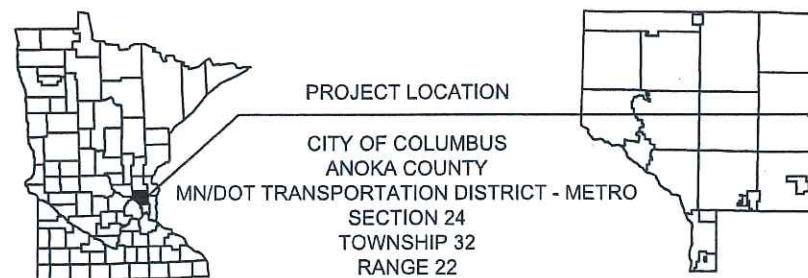
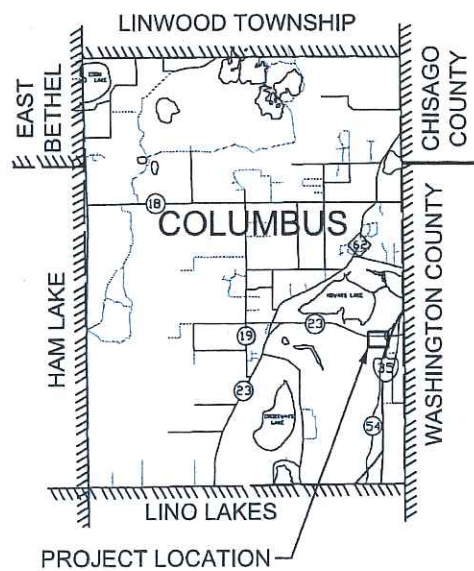
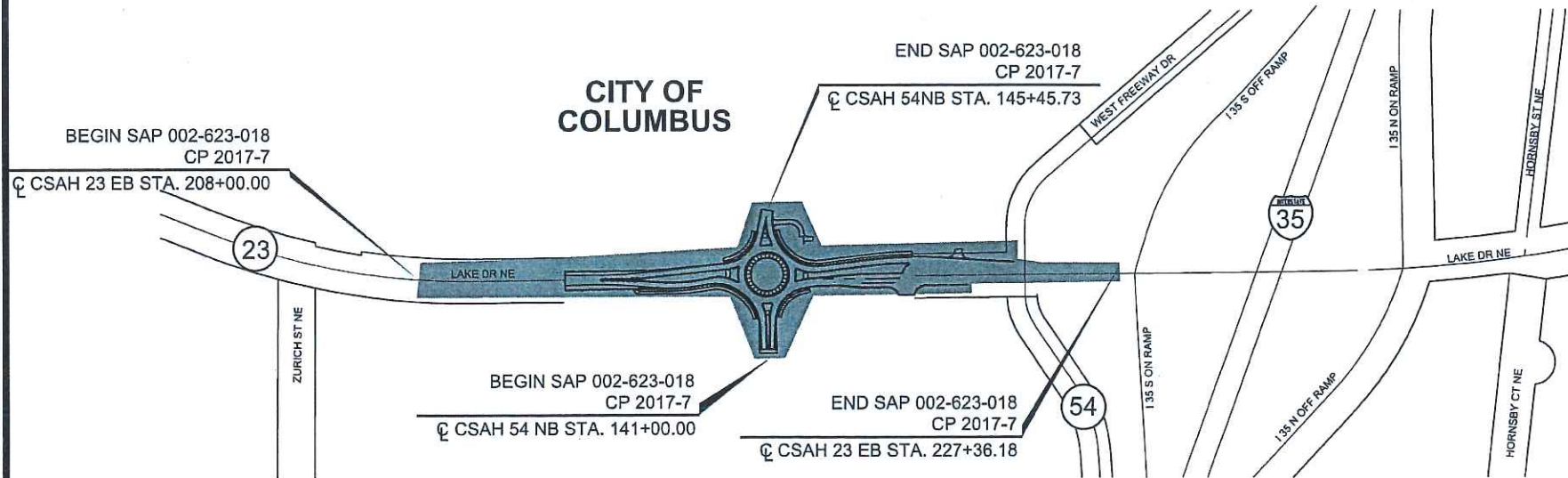
GRADING, AGGREGATE BASE, BITUMINOUS SURFACING, CURB AND GUTTER,
 ROUNDABOUT, STORM SEWER, AND LIGHTING SYSTEM

CONSTRUCTION PLAN FOR _____
 LOCATED ON CSAH 23 BETWEEN 275 FEET EAST OF ZURICH ST NE AND 30' WEST OF SB I35 RAMPS

STATE AID PROJ. NO. SAP 002-623-018

CSAH 23

GROSS LENGTH	<u>1936.18</u> FEET	<u>0.367</u> MILES
BRIDGES-LENGTH	<u>0.00</u> FEET	<u>0.000</u> MILES
EXCEPTIONS-LENGTH	<u>0.00</u> FEET	<u>0.000</u> MILES
NET LENGTH	<u>1936.18</u> FEET	<u>0.367</u> MILES



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

DESIGN DESIGNATION (CSAH 23)	
ESAL ₂₀	<u>1,448,915</u>
R VALUE	<u>60</u>
ADT (2018)	<u>9,937</u>
PROJ. ADT (2038)	<u>14,906</u>
PROJ. HCADT (2038)	<u>879</u>
SOIL FACTOR	<u>NA</u>
<u>10</u> TON DESIGN	
FUNCTIONAL CLASSIFICATION	<u>A MINOR RELIEVER</u>
NO. OF TRAFFIC LANES	<u>2</u>
NO. OF PARKING LANES	<u>0</u>
DESIGN SPEED	<u>55</u> MPH
STOPPING SIGHT DISTANCE BASED ON:	
HEIGHT OF EYE	<u>3.5'</u>
HEIGHT OF OBJECT	<u>2.0'</u>
DESIGN SPEED NOT ACHIEVED AT:	
STA.	<u>214+30.74</u> TO STA. <u>219+15.60</u> MPH <u>20</u>

GOVERNING SPECIFICATIONS

THE 2018 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN
 ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

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THIS PLAN CONTAINS 134 SHEETS

APPROVED 4/12/18
 ANOKA COUNTY ENGINEER DATE

APPROVED 6/13/18
 CITY OF COLUMBUS ENGINEER DATE

7/3/18
 DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY DATE

7/3/18
 APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER DATE

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_TSH.dgn 06/12/2018 2:26:43 PM

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.
 PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE:
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY JRB DATE 05-15-18
 DESIGN BY JRB DATE 05-15-18
 CHECKED BY EJM DATE 06-07-18

ANOKA COUNTY
 HIGHWAY DEPT.

SAP 002-623-018
 CP 2017-7

TITLE SHEET
 Sheet 1 of 134 Sheets

STATEMENT OF ESTIMATED QUANTITIES

TAB / NOTE	ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL PROJECT ESTIMATED QUANTITIES	ANOKA COUNTY	CITY OF COLUMBUS	DRAINAGE ESTIMATED QUANTITIES
					002-623-018 ROADWAY ESTIMATED QUANTITIES	2017-7 ROADWAY ESTIMATED QUANTITIES	
	2013.601	SURVEY EQUIPMENT	LUMP SUM	1	1		
	2021.501	MOBILIZATION	LUMP SUM	1	0.840	0.042	0.118
	2031.502	FIELD OFFICE TYPE D	EACH	1	0.840	0.042	0.118
A	2101.505	CLEARING	ACRE	0.85	0.85		
A	2101.505	GRUBBING	ACRE	0.85	0.85		
A	2101.524	CLEARING	TREE	211	211		
A	2101.524	GRUBBING	TREE	204	204		
B	2102.503	PAVEMENT MARKING REMOVAL	LIN FT	1320	1320		
C	2104.502	REMOVE MANHOLE OR CATCH BASIN	EACH	1	1		
R / [2]	2104.502	REMOVE GATE VALVE & BOX	EACH	2		2	
E	2104.502	REMOVE SIGN TYPE C	EACH	24	24		
E	2104.502	REMOVE SIGN TYPE D	EACH	2	2		
[23]	2104.502	REMOVE HANDHOLE	EACH	4	4		
E	2104.502	SALVAGE SIGN TYPE D	EACH	3	3		
D	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	81	81		
D	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	652	652		
C / [1]	2104.503	REMOVE PIPE CULVERTS	LIN FT	398	398		
R / [2]	2104.503	REMOVE WATER MAIN	LIN FT	28		28	
C	2104.503	REMOVE CONCRETE BOX CULVERT	LIN FT	50	50		
D [3]	2104.504	REMOVE PAVEMENT	SQ YD	2235	2235		
D	2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	7721	7721		
R / [2]	2104.602	REMOVE 12"x6" DIP TEE	EACH	1		1	
R / [2]	2104.602	REMOVE 6" DIP PLUG	EACH	1		1	
G	2105.507	COMMON EXCAVATION (P)	CU YD	7008	7008		
G	2105.507	MUCK EXCAVATION	CU YD	1059	1059		
G	2105.507	SUBGRADE EXCAVATION (P)	CU YD	1314	1314		
G2	2105.507	CHANNEL AND POND EXCAVATION	CU YD	6064	6064		
H	2105.507	GRANULAR BORROW (LV)	CU YD	11336	11336		
H,L	2105.507	SELECT GRANULAR BORROW (LV)	CU YD	4864	4864		
	2105.601	DEWATERING	LUMP SUM	1	1		
[22]	2130.523	WATER	M GALLON	70	70		
I / [5]	2211.507	AGGREGATE BASE (CV) CLASS 5 (P)	CU YD	2059	2059		
I,K / [4]	2211.509	AGGREGATE BASE CLASS 5	TON	198	108	90	
I	2221.507	SHOULDER BASE AGGREGATE (CV) CLASS 5	CU YD	91	91		
D	2232.504	MILL BITUMINOUS SURFACE (2.0")	SQ YD	2670	2670		
M / [15]	2301.502	DOWEL BAR	EACH	150	150		
M / [6]	2301.503	INTEGRANT CURB DESIGN B6	LIN FT	282	282		
M / [6]	2301.504	CONCRETE PAVEMENT 7.0"	SQ YD	433	433		
M	2301.602	1.0" DOWEL BAR	EACH	330	330		
I	2357.506	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	1264	1264		
J,K / [16]	2360.509	TYPE SP 9.5 WEARING COURSE MIX (2,B)	TON	157	92	65	
I	2360.509	TYPE SP 12.5 BIT MIXTURE FOR PATCHING	TON	463	463		
I	2360.509	TYPE SP 12.5 NON WEAR COURSE MIX (3,B)	TON	690	690		
I	2360.509	TYPE SP 12.5 WEARING COURSE MIX (3,F)	TON	2675	2675		
L3	2451.507	FINE FILTER AGGREGATE (LV)	CU YD	62	62		
L	2501.502	15" CS PIPE APRON	EACH	2	2		
L	2501.502	18" CS PIPE APRON	EACH	4	4		
L1	2501.502	15" RC PIPE APRON	EACH	4			4
L1	2501.502	24" RC PIPE APRON	EACH	1			1
L1	2501.502	27" RC PIPE APRON	EACH	1			1
L	2501.502	28" SPAN GS PIPE-ARCH APRON	EACH	2	2		
L	2501.502	28" SPAN RC PIPE-ARCH APRON	EACH	4	4		
L	2501.503	15" CS PIPE CULVERT	LIN FT	60	60		
L	2501.503	18" CS PIPE CULVERT	LIN FT	99	99		
L	2501.503	28" SPAN CS PIPE-ARCH CULVERT	LIN FT	110	110		
L	2501.503	28" SPAN RC PIPE-ARCH CULVERT CLASS IIA	LIN FT	172	172		

NOTES:

- [1] INCLUDES ALL KINDS OF PIPES AND CMP APRONS.
 - [2] SEE CITY OF COLUMBUS PLAN SHEETS 100-102 FOR INFORMATION.
 - [3] 7" CONCRETE OVERLAID WITH BITUMINOUS. SEE SHEET 15 FOR REFERENCE.
DEPTH & EXTENT SHALL BE VERIFIED IN FIELD.
 - [4] AGGREGATE BASE FOR DRIVEWAYS AND BITUMINOUS PATH.
 - [5] AGGREGATE BASE FOR ROADWAY.
 - [6] REINFORCEMENT BARS ARE CONSIDERED INCIDENTAL.
 - [7] 6" PVC SDR 26 SANITARY SEWER.
 - [8] INCLUDES TWO CONNECTIONS TO 6" AND TWO TO 12" WATER MAIN.
 - [9] WATER MAIN PIPE IS PVC C-900.
 - [10] MJ DIP COMPACT FITTINGS.
 - [11] INCLUDES B418 (MOD) TIP-OUT GUTTER.
 - [12] SEE LIGHTING PLAN SHEETS FOR MORE INFORMATION.
 - [13] NETTING SHALL BE NATURAL/BIODEGRADABLE.
 - [14] ADJUSTING RINGS INCIDENTAL TO ALL NEW CASTINGS.
 - [15] NO 4 REINF TIE BAR (EPOXY COATED), SEE MISC DETAILS SHEET 2 FOR MORE INFORMATION.
 - [16] INCLUDES BITUMINOUS TRAIL AND BITUMINOUS DRIVEWAY QUANTITIES.
 - [17] DITCH PROTECTION SYSTEM TEMPORARY BYPASS ROAD.
 - [18] TEMPORARY CULVERT EXTENSION DURING STAGE 2. SEE STAGE 2 TEMPORARY DRAINAGE AND EROSION CONTROL PLANS.
 - [19] TO BE USED DURING CONSTRUCTION OF BYPASS ROAD SEE STAGING PLANS FOR LOCATION.
 - [20] SEE STAGING PLAN SHEET 32 FOR DETAILS.
 - [21] SEE STANDARD PLAN 5-297.405 FOR DETAILS.
 - [22] WATER TO BE USED ONLY FOR DUST CONTROL AS DIRECTED BY THE ENGINEER IN FIELD.
WATER USED FOR COMPACTION AND TURF ESTABLISHMENT SHALL BE INCIDENTAL.
 - [23] SEE SIGNAL STAGING REVISIONS SHEETS 105-111 FOR INFORMATION.
- (P) PLAN QUANTITY

NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\02-623-18\Plan\0262318_TAB.dgn					

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PRINT NAME: ELIZABETH MARKOSE

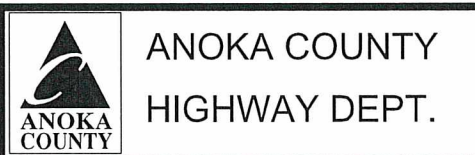
SIGNATURE: *Elizabeth Markose*

DATE: 06-19-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18

DESIGN BY: JRB DATE: 05-15-18

CHECKED BY: EJM DATE: 06-07-18



SAP 002-623-018
CP 2017-7

STATEMENT OF
ESTIMATED QUANTITIES

Sheet 2 of 134 Sheets

STATEMENT OF ESTIMATED QUANTITIES

TAB / NOTE	ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL PROJECT ESTIMATED QUANTITIES	ESTIMATED QUANTITIES		DRAINAGE ESTIMATED QUANTITIES
					ANOKA COUNTY 002-623-018 ROADWAY	CITY OF COLUMBUS 2017-7 ROADWAY	
L1	2501.602	TRASH GUARD FOR 24" PIPE APRON	EACH	1			1
L1	2501.602	TRASH GUARD FOR 27" PIPE APRON	EACH	1			1
L / [18]	2501.602	28" SPAN CS PIPE-ARCH CULVERT 45 DEGREE ELBOW	EACH	2	2		
L / [18]	2501.602	CSP TO RCP 28" SPAN PIPE-ARCH CONNECTION	EACH	2	2		
L3	2502.502	4" PRECAST CONCRETE HEADWALL	EACH	2	2		
L3	2502.503	4" PERF TP PIPE DRAIN (MOD)	LIN FT	1398	1398		
R / [2],[7]	2503.503	6" PVC PIPE SEWER	LIN FT	156		156	
L1	2503.503	15" RC PIPE SEWER CLASS V	LIN FT	773			773
L1	2503.503	18" RC PIPE SEWER CLASS III	LIN FT	85			85
L1	2503.503	21" RC PIPE SEWER CLASS III	LIN FT	607			607
L1	2503.503	24" RC PIPE SEWER CLASS III	LIN FT	447			447
L1	2503.503	27" RC PIPE SEWER CLASS III	LIN FT	82			82
L1	2503.602	CONSTRUCT BULKHEAD	EACH	2	1	1	
R / [2]	2503.602	CONNECT TO EXISTING SANITARY SEWER	EACH	3		3	
L1	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	1			1
R / [2],[10]	2503.608	DUCTILE IRON FITTINGS	POUND	188		188	
R / [2],[8]	2504.602	CONNECT TO EXISTING WATER MAIN	EACH	4		4	
AF	2504.602	ADJUST HYDRANT AND GATE VALVE	EACH	1	1		
AF	2504.602	ADJUST GATE VALVE	EACH	2	2		
R / [2]	2504.602	2" CORPORATION STOP	EACH	1		1	
R / [2]	2504.602	6" GATE VALVE & BOX	EACH	1		1	
R / [2]	2504.602	12" GATE VALVE & BOX	EACH	1		1	
R / [2]	2504.602	2" CURB STOP & BOX	EACH	1		1	
R / [2]	2504.603	2" COPPER IRRIGATION SERVICE	LIN FT	24		24	
R / [2],[9]	2504.603	6" PVC WATERMAIN	LIN FT	105		105	
R / [2],[9]	2504.603	12" PVC WATERMAIN	LIN FT	116		116	
AG, L2 / [14]	2506.502	CASTING ASSEMBLY	EACH	37	3		34
L	2506.503	CONST. DRAINAGE STRUCTURE DESIGN H	LIN FT	17.3			17.3
L	2506.503	CONST. DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	75.2			75.2
L	2506.503	CONST. DRAINAGE STRUCTURE DESIGN 54-4020	LIN FT	23.1			23.1
L	2506.503	CONST. DRAINAGE STRUCTURE DESIGN 60-4020	LIN FT	20.1			20.1
L	2506.503	CONST. DRAINAGE STRUCTURE DESIGN 66-4020	LIN FT	4.9			4.9
L	2506.503	CONST. DRAINAGE STRUCTURE DESIGN 78-4020	LIN FT	5.2			5.2
AG	2506.503	RECONSTRUCT DRAINAGE STRUCTURE	LIN FT	5.8	5.8		
L,L1	2511.504	GEOTEXTILE FILTER TYPE 3	SQ YD	370	370		
L,L1	2511.507	RANDOM RIPRAP CLASS II	CU YD	75	75		
M	2521.518	4" CONCRETE WALK	SQ FT	11539	11539		
M	2521.518	6" CONCRETE WALK	SQ FT	1654	1654		
M	2531.503	CONCRETE CURB & GUTTER DESIGN SPECIAL	LIN FT	365	365		
M / [11]	2531.503	CONCRETE CURB & GUTTER DESIGN B418 (MOD)	LIN FT	1985	1985		
M	2531.503	CONCRETE CURB & GUTTER DESIGN B424	LIN FT	1815	908	907	
M	2531.618	TRUNCATED DOMES	SQ FT	304	304		
AI / [19]	2533.503	PORTABLE PRECAST CONC BARRIER DESIGN 8337	LIN FT	525	525		
AI / [19]	2533.503	RELOCATE PORTABLE PRECAST CONC BARRIER DESIGN 8337	LIN FT	450	450		
I	2535.503	BITUMINOUS CURB	LIN FT	125	125		
Q / [12]	2545.502	LIGHTING UNIT TYPE SPECIAL	EACH	12	12		
Q / [12]	2545.502	LIGHT FOUNDATION DESIGN E	EACH	12	12		
Q / [12]	2545.502	SERVICE CABINET - TYPE L1	EACH	1	1		
Q / [12]	2545.502	EQUIPMENT PAD	EACH	1	1		
Q / [12]	2545.502	HANDHOLE	EACH	4	4		
Q / [12]	2545.503	2" NON-METALLIC CONDUIT	LIN FT	1950	1950		
Q / [12]	2545.503	UNDERGROUND WIRE 1 / C 6 AWG	LIN FT	5325	5325		
Q / [12]	2545.503	UNDERGROUND WIRE 1 / C 8 AWG	LIN FT	1775	1775		
Q / [12]	2545.503	UNDERGROUND WIRE 1 COND 12 AWG	LIN FT	1850	1850		
N	2554.503	PERMANENT BARRICADES	LIN FT	64	64		

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 - [18] TEMPORARY CULVERT EXTENSION DURING STAGE 2. SEE STAGE 2 TEMPORARY DRAINAGE AND EROSION CONTROL PLANS.
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PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-14-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
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**ANOKA COUNTY
HIGHWAY DEPT.**

SAP 002-623-018
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STATEMENT OF
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AI / [19]	2554.615	IMPACT ATTENUATOR	ASSEMBLY	6	6		
AI / [19]	2554.615	RELOCATE IMPACT ATTENUATOR	ASSEMBLY	4	4		
	2563.601	TRAFFIC CONTROL SUPERVISOR	LUMP SUM	1	0.840	0.042	0.118
	2563.601	TRAFFIC CONTROL (STAGE 1)	LUMP SUM	1	0.840	0.042	0.118
	2563.601	TRAFFIC CONTROL (STAGE 2)	LUMP SUM	1	0.840	0.042	0.118
	2563.601	TRAFFIC CONTROL (STAGE 3)	LUMP SUM	1	0.840	0.042	0.118
	2563.601	TRAFFIC CONTROL (STAGE 4)	LUMP SUM	1	0.840	0.042	0.118
	2563.601	TRAFFIC CONTROL (STAGE 5)	LUMP SUM	1	0.840	0.042	0.118
B	2563.602	RAISED PAVEMENT MARKER TEMPORARY	EACH	367	367		
[20]	2563.610	FLAGGER	HOURLY	40	40		
B	2563.613	PORTABLE CHANGEABLE MESSAGE SIGN	UNIT DAY	30	30		
N	2564.502	OBJECT MARKER TYPE X4-2	EACH	4	4		
N	2564.502	OBJECT MARKER TYPE X4-3	EACH	10	10		
N	2564.502	OBJECT MARKER TYPE X4-5	EACH	2	2		
E	2564.502	INSTALL SIGN TYPE D	EACH	3	3		
N	2564.518	SIGN PANEL TYPE C	SQ FT	434	434		
N	2564.518	SIGN PANEL TYPE D	SQ FT	242	242		
[23]	2565.602	HANDHOLE (COUNTY)	EACH	2	2		
[23]	2565.602	HANDHOLE (STATE)	EACH	2	2		
[23]	2565.602	RIGID PVC LOOP DETECTOR (6'X6') (COUNTY)	EACH	5	5		
[23]	2565.602	RIGID PVC LOOP DETECTOR (6'X6') (STATE)	EACH	2	2		
[23]	2565.603	2/C 14 AWG LOOP LEAD-IN	LIN FT	700	700		
[23]	2565.603	2" RIGID STEEL CONDUIT	LIN FT	500	500		
[23]	2565.603	2" NON-METALLIC CONDUIT	LIN FT	300	300		
[23]	2565.616	VIDEO DETECTOR SYSTEM "A"	SYSTEM	1	1		
[23]	2565.616	VIDEO DETECTOR SYSTEM "B"	SYSTEM	1	1		
[21]	2573.501	STABILIZED CONSTRUCTION EXT	LUMP SUM	1	1		
O	2573.502	STORM DRAIN INLET PROTECTION	EACH	31	31		
O / [17]	2573.503	SILT FENCE, TYPE SD	LIN FT	210	210		
O	2573.503	SILT FENCE, TYPE MS	LIN FT	3971	3971		
O	2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER	LIN FT	200	200		
O	2574.508	FERTILIZER TYPE 3	POUND	806	806		
O	2574.508	FERTILIZER TYPE 4	POUND	78	78		
L, L2	2575.504	SODDING TYPE SALT TOLERANT	SQ YD	189	189		
O / [13]	2575.504	EROSION CONTROL BLANKETS CATEGORY 3	SQ YD	22664	22664		
O	2575.505	SEEDING	ACRE	4.68	4.68		
O	2575.508	SEED MIXTURE 25-121	POUND	246	246		
O	2575.508	SEED MIXTURE 33-261	POUND	22	22		
O	2575.523	RAPID STABILIZATION METHOD 3	M GALLON	9	9		
B	2581.503	REMOVABLE PREFORMED PAVEMENT MARKING TAPE	LIN FT	2350	2350		
B	2582.503	4" SOLID LINE PAINT	LIN FT	3150	3150		
B	2582.503	4" DOUBLE SOLID LINE PAINT	LIN FT	1800	1800		
P	2582.503	4" SOLID LINE MULTI-COMPONENT	LIN FT	4873	4873		
P	2582.503	4" DOUBLE SOLID LINE MULTI-COMPONENT	LIN FT	1485	1485		
P	2582.503	24" SOLID LINE PREFORM THERMOPLASTIC	LIN FT	157	157		
P	2582.503	4" SOLID LINE PREFORM THERMO GROUND IN	LIN FT	277	277		
P	2582.503	8" BROKEN LINE PREFORM THERMO GROUND IN	LIN FT	80	80		
P	2582.518	PAVEMENT MESSAGE PREFORM THERMOPLASTIC	SQ FT	30	30		
P	2582.518	CROSSWALK PREFORM THERMOPLASTIC GROUND IN	SQ FT	432	432		

NOTES:

- [1] INCLUDES ALL KINDS OF PIPES AND CMP APRONS.
 - [2] SEE CITY OF COLUMBUS PLAN SHEETS 100-102 FOR INFORMATION.
 - [3] 7" CONCRETE OVERLAID WITH BITUMINOUS. SEE SHEET 15 FOR REFERENCE.
DEPTH & EXTENT SHALL BE VERIFIED IN FIELD.
 - [4] AGGREGATE BASE FOR DRIVEWAYS AND BITUMINOUS PATH.
 - [5] AGGREGATE BASE FOR ROADWAY.
 - [6] REINFORCEMENT BARS ARE CONSIDERED INCIDENTAL.
 - [7] 6" PVC SDR 26 SANITARY SEWER.
 - [8] INCLUDES TWO CONNECTIONS TO 6" AND TWO TO 12" WATER MAIN.
 - [9] WATER MAIN PIPE IS PVC C-900.
 - [10] MJ DIP COMPACT FITTINGS.
 - [11] INCLUDES B418 (MOD) TIP-OUT GUTTER.
 - [12] SEE LIGHTING PLAN SHEETS FOR MORE INFORMATION.
 - [13] NETTING SHALL BE NATURAL/BIODEGRADABLE.
 - [14] ADJUSTING RINGS INCIDENTAL TO ALL NEW CASTINGS.
 - [15] NO 4 REINF TIE BAR (EPOXY COATED), SEE MISC DETAILS SHEET 2 FOR MORE INFORMATION.
 - [16] INCLUDES BITUMINOUS TRAIL AND BITUMINOUS DRIVEWAY QUANTITIES.
 - [17] DITCH PROTECTION SYSTEM TEMPORARY BYPASS ROAD.
 - [18] TEMPORARY CULVERT EXTENSION DURING STAGE 2. SEE STAGE 2 TEMPORARY DRAINAGE AND EROSION CONTROL PLANS.
 - [19] TO BE USED DURING CONSTRUCTION OF BYPASS ROAD SEE STAGING PLANS FOR LOCATION.
 - [20] SEE STAGING PLAN SHEET 32 FOR DETAILS.
 - [21] SEE STANDARD PLAN 5-297.405 FOR DETAILS.
 - [22] WATER TO BE USED ONLY FOR DUST CONTROL AS DIRECTED BY THE ENGINEER IN FIELD.
WATER USED FOR COMPACTION AND TURF ESTABLISHMENT SHALL BE INCIDENTAL.
 - [23] SEE SIGNAL STAGING REVISIONS SHEETS 105-111 FOR INFORMATION.
- (P) PLAN QUANTITY

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>NO</td><td>DATE</td><td>BY</td><td>CHKD</td><td>APPR</td><td>REVISION</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>	NO	DATE	BY	CHKD	APPR	REVISION																			<p>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.</p> <p>PRINT NAME: ELIZABETH MARKOSE</p> <p>SIGNATURE: <i>Elizabeth Markose</i></p> <p>DATE: 06-19-2018 LICENSE NO. 49118</p>	<p>DRAWN BY: JRB DATE: 05-15-18</p> <p>DESIGN BY: JRB DATE: 05-15-18</p> <p>CHECKED BY: EJM DATE: 06-07-18</p>	 <p>ANOKA COUNTY HIGHWAY DEPT.</p>	<p>SAP 002-623-018 CP 2017-7</p>	<p>STATEMENT OF ESTIMATED QUANTITIES</p> <p>Sheet <u>4</u> of <u>134</u> Sheets</p>
NO	DATE	BY	CHKD	APPR	REVISION																								

1. TOP OF THE GRADING SUBGRADE (GRADING GRADE) IS DEFINED AS THE BOTTOM OF THE CLASS 5 AGGREGATE BASE LAYER.
2. BOTTOM OF THE SUBBASE GRADE SHALL BE DEFINED AS THE BOTTOM OF THE 1' OR 2' SUBGRADE EXCAVATION. (SEE X-SECTIONS FOR DETAILS)
3. SUITABLE GRADING MATERIAL ON THIS PROJECT SHALL CONSIST OF ALL GRANULAR AND FINER GRAINED SOILS ENCOUNTERED WITH THE EXCEPTION OF TOPSOIL, DEBRIS, PEAT, MUCK, ORGANIC MATERIAL AND OTHER UNSTABLE MATERIAL.
4. SELECT GRANULAR MATERIAL SHALL MEET THE REQUIREMENTS OF MN/DOT SPEC. 3149.2B2
5. ALL TOPSOIL STRIPPING WILL BE CONSIDERED TO BE COMMON EXCAVATION. TOPSOIL SHALL BE DEFINED AS EXISTING SOILS WHICH MEET MN/DOT SPEC. 3877 THAT WOULD BE SUITABLE FOR REUSE. STRIP ALL TOPSOIL AND INPLACE SLOPE DRESSING WHERE PRESENT IN AREAS TO BE DISTURBED BY CONSTRUCTION AND REUSE AS SLOPE DRESSING. FOR ESTIMATING PURPOSES, THE DEPTH OF TOPSOIL AVAILABLE IS CONSIDERED TO BE 4 INCHES. CONTRACTOR SHALL VERIFY PRIOR TO PLACING BID.
6. SUITABLE GRADING MATERIAL SHALL BE USED TO BACK FILL THE EMBANKMENT UNDER THE NEW ROADWAY CORE, UP TO THE BOTTOM OF THE GRADING SUBGRADE.
7. SLOPE DRESSING ON THE PROJECT IS DEFINED AS THE TOPSOIL OR OTHER SOIL PLACED DURING PRIOR CONSTRUCTION TO PROVIDE A MEDIUM FOR ESTABLISHING TURF.
8. UNSUITABLE SOILS ARE DEFINED AS SOILS WHICH DO NOT MEET OR ARE NOT MANUFACTURED TO MEET ANY OF THE ABOVE DEFINED CATEGORIES, AND ARE THEREFORE NOT REUSABLE AS STRUCTURAL BACKFILL OR EMBANKMENT WITHIN THE ROADWAY CORE.
9. SUITABLE GRADING MATERIAL OBTAINED FROM COMMON EXCAVATION NOT MEETING THE REQUIREMENTS OF MN/DOT SPEC. 3149.2B1, SHALL BE USED OUTSIDE THE ROADWAY CORE ON THE PROJECT AS APPROVED BY THE ENGINEER.
10. UNSUITABLE MATERIALS ARE TOPSOILS, PAVEMENT OR CONCRETE DEBRIS, PEAT, MUCK AND ORGANIC OR OTHER UNSTABLE SOILS.
11. 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 RECYCLED TO THE EXTENT ALLOWED IN BASE AND SURFACING ITEMS OR DISPOSED OF OUTSIDE THE RIGHT-OF-WAY IN ACCORDANCE WITH SPEC. 2104.3C3.
12. REGULAR EMBANKMENT SHALL BE DEFINED AS ALL GRADING MATERIALS THAT ARE APPROPRIATE FOR REUSE ON THE PROJECT BUT THAT MAY NOT MEET THE REQUIREMENTS OF SUITABLE GRADING MATERIALS. REGULAR EMBANKMENT MAY CONSIST OF GRADING SOILS NOT MEETING GRANULAR SPECIFICATIONS AND THEREFORE NOT SUITABLE FOR REUSE UNDER ROAD CORE.
13. WHERE CONNECTING TO THE INPLACE ROADWAYS AT THE TERMINI OF 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 1:20 TAPER TO THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION.
14. WHERE MATCHING INTO INPLACE CROSSROADS, CUT VERTICALLY TO THE BOTTOM OF THE INPLACE SURFACING OR TO THE BOTTOM OF NEW SURFACING DESIGN, WHICHEVER IS DEEPER, THEN AT A 1:4 TAPER TO THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION.
15. WHERE WIDENING ADJACENT TO EXISTING PAVEMENT, CUT VERTICALLY TO THE BOTTOM OF THE CLASS 5 AGGREGATE BASE AND THEN AT A 1V:1/2H SLOPE TO THE BOTTOM OF THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION (AS SHOWN ON THE TYPICAL SECTIONS AND THE CROSS SECTIONS). BACKFILL PROMPTLY TO AVOID UNDERMINING THE EXISTING PAVEMENT.
16. CONTRACTOR SHALL PROVIDE A FULL DEPTH SAWCUT WHERE PLACING NEW PAVEMENT ADJACENT TO INPLACE PAVEMENT TO ENSURE A UNIFORM JOINT. IF NO ITEM FOR THIS WORK IS SPECIFICALLY CALLED OUT FOR, THEN THE WORK SHALL BE INCIDENTAL WITH NO DIRECT COMPENSATION.
18. CONTRACTOR SHALL PROVIDE A UNIFORM BITUMINOUS TACK COAT BETWEEN ALL BITUMINOUS LAYERS AND PRIOR TO PLACING ANY BITUMINOUS MIXTURES ON EXISTING PAVEMENT IN ACCORDANCE WITH SPEC. 2357.
19. EMBANKMENT QUANTITIES SHOWN ON THE EARTHWORK TABULATION REPRESENT ALL EARTHWORK QUANTITIES BELOW THE PROPOSED GRADING GRADE OF ALL PERMANENT ROADWAYS. QUANTITIES REQUIRED ABOVE THE GRADING GRADE ARE PROVIDED IN DETAIL ON THE BITUMINOUS SUMMARY TAB.
20. 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.
21. DITCH BOTTOMS, TOE OF FILL, CUT RUNOUTS AND THE TOP EDGE OF THE BACKSLOPES SHALL BE ROUNDED REGARDLESS OF THE SECTION USED ON THE CROSS SECTION SHEETS.
22. ANY DEBRIS WHICH MAY BE ENCOUNTERED DURING GRADING SHALL BE DISPOSED OF BY THE CONTRACTOR OFF THE PROJECT RIGHT OF WAY IN A SUITABLE DISPOSAL AREA AS APPROVED BY THE ENGINEER.
23. UNSUITABLE SOILS NOT USED ON THE PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT AND DISPOSED OFF IN ACCORDANCE WITH MN/DOT SPECIFICATIONS.
24. INPLACE PAVEMENT RANGES FROM 6" TO 10" THICK (AVERAGE 7" - FOR INFORMATION ONLY). BASED ON COUNTY PAVEMENT CORES, APPROXIMATELY 7" CONCRETE IS ASSUMED TO EXIST UNDER EXISTING BITUMINOUS SURFACE FROM CSAH 23 EB STA. 212+00 TO APPROX 220+00. SEE EXISTING TYPICAL SECTION SHEET 15 FOR REFERENCE. THE CONTRACTOR MAY VERIFY PAVEMENT DEPTH PRIOR TO PLACING BID. NO WARRANTY IS MADE OR IMPLIED WITH THIS INFORMATION.
25. AGGREGATE BASE MATERIAL SHALL MEET THE REQUIREMENTS OF MN/DOT SPEC. 3138, CLASS 5.
26. COMPACTION OF AGGREGATE BASE SHOULD BE IN ACCORDANCE WITH MN/DOT "MODIFIED PENETRATION INDEX METHOD" COMPACTION OF SELECT GRANULAR MATERIAL SHOULD BE IN ACCORDANCE WITH MN/DOT "SPECIFIED DENSITY METHOD"
27. COMPACTION OF THE BASE AND BINDER BITUMINOUS LIFTS SHALL BE BY THE "SPECIFIED DENSITY METHOD". COMPACTION OF WEAR AND ENTRANCES SHALL BE BY THE "ORDINARY COMPACTION METHOD".
28. NO OVER-EXCAVATION WILL BE ALLOWED INSIDE THE COUNTY'S RIGHT OF WAY OF THIS PROJECT

NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_TAB.dgn 06/12/2018 4:38:31 PM

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.

PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY JRB DATE 05-15-18
 DESIGN BY JRB DATE 05-15-18
 CHECKED BY EJM DATE 06-07-18



ANOKA COUNTY
 HIGHWAY DEPT.

SAP 002-623-018
 CP 2017-7

SOILS AND
 CONSTRUCTION NOTES

THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT.

STANDARD PLATES

PLATE NO.	DESCRIPTION
1103	K TYPICAL DOWEL BAR ASSEMBLY (2 SHEETS)
1150	R CONCRETE HEADER JOINTS (2 SHEETS)
3000	L REINFORCED CONCRETE PIPE (5 SHEETS)
3006	G GASKET JOINT FOR R.C. PIPE (2 SHEETS)
3007	E SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3014	J REINFORCED CONCRETE PIPE ARCH (2 SHEETS)
3040	F CORRUGATED METAL PIPE CULVERT
3100	G CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3110	G CONCRETE APRON FOR REINFORCED CONCRETE PIPE-ARCH
3122	K METAL APRON FOR C.M. PIPE-ARCH CULVERT
3123	J METAL APRON FOR C.S PIPE
3131	C PRECAST CONCRETE HEADWALL FOR SUBSURFACE DRAINS
3133	D RIPRAP AT RCP OUTLETS
3145	G CONCRETE PIPE OR PRECAST CULVERT TIES
4006	L MANHOLE OR CATCH BASIN PRECAST - DESIGNS G AND H
4010	H CONCRETE SHORT CONE AND ADJUSTING RING (SECTIONAL CONCRETE)
4011	E PRECAST CONCRETE BASE
4020	J MANHOLE OR CATCH BASIN COVER (FOR USE WITH OR WITHOUT TRAFFIC LOADS) (2 SHEETS)
4026	A CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4101	D RING CASTING FOR MANHOLE OR CATCH BASIN
4110	F COVER CASTING FOR MANHOLE (FOR USE IN ALL TRAFFIC AREAS) - CASTING NO. 715 AND 716
4134	A CURB BOX CASTING FOR CATCH BASIN (FOR DESIGN B CURBS) - CASTING NO. 825
4140	D SPECIAL GRATE CASTINGS FOR CATCH BASIN (CONVEX AND CONCAVE) - CASTING NO. 720 AND 721
4154	B CATCH BASIN GRATE CASTING - CASTING NO. 816
4180	J MANHOLE OR CATCH BASIN STEP
7038	A DETECTABLE WARNING SURFACE TRUNCATED DOMES
7065	C BITUMINOUS CURB
7100	H CONCRETE CURB AND GUTTER (DESIGN B AND DESIGN V)
7111	J INSTALLATION OF CATCH BASIN CASTINGS (CONCRETE CURB AND GUTTER)
7113	A CONCRETE APPROACH NOSE DETAIL
8000	J CHANNELIZERS
8002	G PERMANENT BARRICADE
8106	D EQUIPMENT PAD B
8127	E LIGHT FOUNDATION - DESIGN E, PRECAST/CAST-IN-PLACE, 40 FT. POLE OR LESS (2 SHEETS)
8150	C INSTALLATION OF CULVERT MARKERS
8337	C TEMPORARY PRECAST PORTABLE BARRIERS (TYPE "F") (3 SHEETS)

BASIS OF QUANTITIES

SPEC NO	DESCRIPTION	RATE
2357	BITUMINOUS MATERIAL FOR TACK COAT	0.05 GAL * SQ YD * LIFT
2360	TYPE SP9.5 WEARING COURSE MIXTURE	115 LBS * SQ YD * IN / 2000
2360	TYPE SP12.5 WEARING COURSE MIXTURE	115 LBS * SQ YD * IN / 2000
2360	TYPE SP12.5 NON-WEARING COURSE MIXTURE	115 LBS * SQ YD * IN / 2000
2574	FERTILIZER TYPE 3 (22-5-10)	200 LBS / ACRE
2574	FERTILIZER TYPE 4 (17-10-17)	120 LBS / ACRE
2575	SEED MIXTURE 25-121	61 LBS / ACRE
2575	SEED MIXTURE 33-261	35 LBS / ACRE
2575	RAPID STABILIZATION METHOD 3	6 MGALS / ACRE

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NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_TAB.dgn 06/14/2018 1:13:03 PM

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 SIGNATURE: *Elizabeth Markose*
 DATE: 06-14-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
 DESIGN BY: JRB DATE: 05-15-18
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ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-623-018
CP 2017-7

STANDARD PLATES
BASIS OF QUANTITIES &
INDEX OF TABULATION
Sheet 6 of 134 Sheets

CLEARING & GRUBBING SPEC (2101)							A
ALIGNMENT	STATION TO STATION	OFFSET		CLEARING		GRUBBING	
		LEFT	RIGHT	(ACRE)	(TREE)	(ACRE)	(TREE)
CSAH 23 (002-623-018)							
23EB_9	212+78.41 - 213+57.09	263.81		0.35		0.35	
23EB_9	213+12.37 - 218+56.92	147.14		0.50		0.50	
23EB_9	213+51.32	82.73			1		1
23EB_9	213+52.80	68.51			1		1
23EB_9	213+53.89	84.51			1		1
23EB_9	213+65.25	85.16			1		1
23EB_9	213+66.29	77.07			1		1
23EB_9	213+66.93	83.01			1		1
23EB_9	213+70.03	76.86			1		1
23EB_9	214+07.41	90.9			1		1
23EB_9	214+16.11	94.79			1		1
23EB_9	214+16.16	98.81			1		1
23EB_9	214+21.67	87.1			1		1
23EB_9	214+22.61	90.69			1		1
23EB_9	214+22.79	97.51			1		1
23EB_9	214+43.64	89.1			5		1
23EB_9	214+46.78	81.25			1		1
23EB_9	214+47.73	101.37			2		1
23EB_9	214+52.18	88.97			1		1
23EB_9	214+60.88	79.12			1		1
23EB_9	214+65.88	90.23			1		1
23EB_9	214+66.09	92.21			1		1
23EB_9	214+72.65	87.9			1		1
23EB_9	214+72.81	99.1			1		1
23EB_9	214+89.71	94.04			1		1
23EB_9	214+94.80	105.25			1		1
23EB_9	214+98.28	104.91			1		1
23EB_9	215+00.55	105.55			1		1
23EB_9	215+24.10	89.06			1		1
23EB_9	215+31.30	107.42			1		1
23EB_9	215+41.00	100.35			1		1
23EB_9	215+41.33	93.47			1		1
23EB_9	215+64.76	113.13			1		1
23EB_9	215+65.43	117.29			1		1
23EB_9	215+69.42	92.6			1		1
23EB_9	215+70.43	111.33			1		1
23EB_9	215+73.41	73.82			1		1
23EB_9	215+91.52	109.17			1		1
23EB_9	215+93.19	88.33			1		1
23EB_9	215+94.08	102.96			1		1
23EB_9	215+98.10	112.24			1		1
23EB_9	216+00.97	109.34			1		1
23EB_9	216+02.43	78.22			1		1
23EB_9	216+04.77	89.30			1		1
23EB_9	216+07.69	90.23			1		1
23EB_9	216+08.55	69.84			1		1
23EB_9	216+09.05	93.38			1		1
23EB_9	216+09.74	63.92			1		1
23EB_9	216+09.77	104.82			1		1
23EB_9	216+10.34	72.66			1		1
23EB_9	216+11.26	104.71			1		1
23EB_9	216+12.31	91.54			1		1
23EB_9	216+13.66	96.34			1		1
23EB_9	216+14.30	65.72			1		1
23EB_9	216+14.47	88.22			1		1
23EB_9	216+14.66	74.57			1		1

CLEARING & GRUBBING SPEC (2101)							A
ALIGNMENT	STATION TO STATION	OFFSET		CLEARING		GRUBBING	
		LEFT	RIGHT	(ACRE)	(TREE)	(ACRE)	(TREE)
CSAH 23 (002-623-018)							
23EB_9	216+14.78	70.34			1		1
23EB_9	216+15.10	91.26			1		1
23EB_9	216+16.35	106.90			1		1
23EB_9	216+17.47	65.26			1		1
23EB_9	216+17.89	83.32			1		1
23EB_9	216+18.63	107.82			1		1
23EB_9	216+19.64	84.12			1		1
23EB_9	216+21.08	104.06			1		1
23EB_9	216+22.49	84.78			1		1
23EB_9	216+23.15	94.50			1		1
23EB_9	216+24.52	71.80			1		1
23EB_9	216+25.00	91.93			1		1
23EB_9	216+25.51	80.82			1		1
23EB_9	216+26.46	92.36			1		1
23EB_9	216+26.86	79.26			1		1
23EB_9	216+27.11	87.03			1		1
23EB_9	216+29.92	103.01			1		1
23EB_9	216+30.42	110.96			1		1
23EB_9	216+30.72	119.00			1		1
23EB_9	216+31.04	93.45			1		1
23EB_9	216+33.16	105.94			1		1
23EB_9	216+33.32	96.10			1		1
23EB_9	216+33.36	140.08			1		1
23EB_9	216+33.48	91.44			1		1
23EB_9	216+34.60	155.85			1		1
23EB_9	216+34.74	107.01			1		1
23EB_9	216+35.28	94.55			1		1
23EB_9	216+36.48	96.37			1		1
23EB_9	216+36.52	126.13			1		1
23EB_9	216+36.86	109.71			1		1
23EB_9	216+39.25	139.24			1		1
23EB_9	216+39.57	92.94			1		1
23EB_9	216+39.81	162.05			1		1
23EB_9	216+40.33	166.45			1		1
23EB_9	216+40.81	171.37			1		1
23EB_9	216+40.92	139.47			1		1
23EB_9	216+41.12	158.07			1		1
23EB_9	216+41.91	150.67			1		1
23EB_9	216+42.35	101.21			1		1
23EB_9	216+43.13	153.61			1		1
23EB_9	216+43.69	127.05			1		1
23EB_9	216+44.01	110.86			1		1
23EB_9	216+45.52	102.69			1		1
23EB_9	216+45.62	147.38			1		1
23EB_9	216+45.84	129.99			1		1
23EB_9	216+45.97	163.68			1		1
23EB_9	216+46.24	167.76			1		1
23EB_9	216+46.46	145.38			1		1
23EB_9	216+47.40	146.59			1		1
23EB_9	216+47.90	126.00			1		1
23EB_9	216+49.35	122.44			1		1
23EB_9	216+50.03	168.32			1		1
23EB_9	216+50.12	205.28			1		1
23EB_9	216+50.20	178.75			1		1
23EB_9	216+50.46	120.02			1		1
23EB_9	216+51.80	137.32			1		1

NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\02-623-18\Plan\0262318_TAB.dgn					
06/12/2018 3:04:16 PM					

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.

PRINT NAME: ELIZABETH MARKOSE

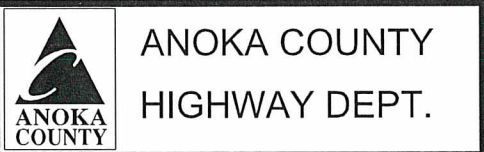
SIGNATURE: *Elizabeth Markose*

DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18

DESIGN BY: JRB DATE: 05-15-18

CHECKED BY: EJM DATE: 06-07-18



SAP 002-623-018
CP 2017-7

CLEARING & GRUBBING SPEC (2101)							A
ALIGNMENT	STATION TO STATION	OFFSET		CLEARING		GRUBBING	
		LEFT	RIGHT	(ACRE)	(TREE)	(ACRE)	(TREE)
CSAH 23 (002-623-018)							
23EB_9	216+51.81	154.56			1		1
23EB_9	216+52.87	169.78			1		1
23EB_9	216+53.10	149.80			1		1
23EB_9	216+54.31	157.24			1		1
23EB_9	216+54.37	115.47			1		1
23EB_9	216+54.50	118.46			1		1
23EB_9	216+54.80	199.52			1		1
23EB_9	216+55.32	175.10			1		1
23EB_9	216+55.87	112.05			1		1
23EB_9	216+56.20	134.13			1		1
23EB_9	216+56.47	148.15			1		1
23EB_9	216+56.94	205.01			1		1
23EB_9	216+57.09	159.22			1		1
23EB_9	216+57.41	157.31			1		1
23EB_9	216+57.44	157.01			1		1
23EB_9	216+57.71	120.51			1		1
23EB_9	216+58.46	161.84			1		1
23EB_9	216+58.93	173.27			1		1
23EB_9	216+59.42	113.01			1		1
23EB_9	216+59.61	150.84			1		1
23EB_9	216+59.90	156.12			1		1
23EB_9	216+61.52	146.98			1		1
23EB_9	216+61.94	112.63			1		1
23EB_9	216+61.96	162.57			1		1
23EB_9	216+62.09	151.19			1		1
23EB_9	216+64.49	121.10			1		1
23EB_9	216+64.64	108.73			1		1
23EB_9	216+65.91	131.16			1		1
23EB_9	216+74.86	131.60			1		1
23EB_9	218+46.13	169.19			1		1
23EB_9	218+54.60	223.46			1		1
23EB_9	218+56.67	174.28			1		1
23EB_9	218+56.78	202.50			1		1
23EB_9	218+64.58	189.92			1		1
23EB_9	218+65.14	211.66			1		1
23EB_9	218+65.47	223.16			3		1
23EB_9	218+69.97	166.28			1		1
23EB_9	218+72.88	147.47			1		1
23EB_9	218+73.17	153.03			1		1
23EB_9	218+77.60	173.31			1		1
23EB_9	218+79.55	152.56			1		1
23EB_9	218+80.08	160.36			1		1
23EB_9	218+81.79	172.44			1		1
23EB_9	218+94.95	158.74			1		1
23EB_9	218+95.29	157.23			1		1
23EB_9	219+38.45	126.80			1		1
23EB_9	219+47.66	145.26			1		1
23EB_9	219+51.26	153.26			1		1

CLEARING & GRUBBING SPEC (2101)							A
ALIGNMENT	STATION TO STATION	OFFSET		CLEARING		GRUBBING	
		LEFT	RIGHT	(ACRE)	(TREE)	(ACRE)	(TREE)
CSAH 23 (002-623-018)							
23EB_9	219+57.33	125.44			1		1
23EB_9	219+59.25	104.92			1		1
23EB_9	219+61.17	145.88			1		1
23EB_9	219+61.52	115.96			1		1
23EB_9	219+61.65	89.91			1		1
23EB_9	219+63.50	118.69			1		1
23EB_9	219+63.55	160.84			1		1
23EB_9	219+63.72	147.22			1		1
23EB_9	219+64.08	123.08			1		1
23EB_9	219+64.71	108.52			1		1
23EB_9	219+68.34	156.46			1		1
23EB_9	219+71.69	102.56			1		1
23EB_9	219+73.69	95.44			1		1
23EB_9	219+74.38	105.26			1		1
23EB_9	219+75.95	142.06			1		1
23EB_9	219+76.38	106.69			1		1
23EB_9	219+76.82	102.73			1		1
23EB_9	219+77.13	95.46			1		1
23EB_9	219+79.52	135.99			1		1
23EB_9	219+81.69	144.05			1		1
23EB_9	219+85.13	134.93			1		1
23EB_9	219+87.94	139.63			1		1
23EB_9	219+92.73	114.81			1		1
23EB_9	219+95.44	128.35			1		1
23EB_9	219+96.74	141.55			1		1
23EB_9	219+96.86	102.15			1		1
23EB_9	219+97.09	109.09			1		1
23EB_9	219+99.33	130.39			1		1
23EB_9	220+02.73	116.12			1		1
23EB_9	220+04.74	131.19			1		1
23EB_9	220+06.79	109.94			1		1
23EB_9	220+06.91	124.56			1		1
23EB_9	220+08.38	135.84			1		1
23EB_9	220+08.55	113.51			1		1
23EB_9	220+21.69	138.34			1		1
23EB_9	220+24.93	137.13			1		1
23EB_9	220+32.27	125.19			1		1
23EB_9	220+33.60	112.72			1		1
23EB_9	220+34.10	131.93			1		1
23EB_9	220+50.22	129.37			1		1
23EB_9	220+63.53	117.27			1		1
23EB_9	220+66.98	111.94			1		1
23EB_9	220+71.15	111.15			1		1
23EB_9	220+75.93	111.56			1		1
23EB_9	220+83.35	131.23			1		1
23EB_9	220+95.28	114.99			1		1
TOTALS				0.85	211	0.85	204

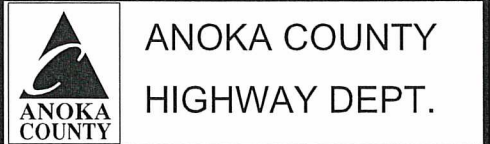
NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_TAB.dgn 06/12/2018 3:04:22 PM

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.

PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *[Signature]*
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
 DESIGN BY: JRB DATE: 05-15-18
 CHECKED BY: EJM DATE: 06-07-18



SAP 002-623-018
 CP 2017-7

REMOVE EXISTING STORM SEWER								C
ALIGNMENT	STATION TO	STATION	OFFSET	REMOVE (SPEC. 2104)			NOTES	
				PIPE CULVERT (LIN FT)	MANHOLE OR CATCH BASIN (EACH)	CONC. BOX CULVERT (LIN FT)		
CSAH 23 (002-623-018)								
23EB_9	211+23.48	- 211+69.07	LT	45			[2]	
23EB_9	212+63.82	- 212+64.88		36		50	[1]	
23EB_9	212+64.88		LT		1			
23EB_9	215+25.80	- 215+85.17		64			[2]	
23EB_9	217+50.38	- 218+18.61		55			[2]	
23EB_9	218+43.64	- 218+86.34	LT	67			[2]	
23EB_9	221+08.35	- 221+87.38		79			[2]	
23EB_9	222+59.64	- 223+19.58	LT	52			[2]	
TOTAL				398	1	50		

NOTES:
 [1] EXISTING 50' 48" CONCRETE BOX CULVERT WITH 18' CMP EXTENTIONS AND APRONS AT BOTH ENDS.
 [2] EXISTING CMP

REMOVAL, SAWING AND MILLING PAVEMENT								D
ALIGNMENT	STATION TO	STATION	REMOVE (SPEC. 2104)		SAWING (SPEC. 2104)		MILLING (SPEC 2232)	
			PAVEMENT (SQ YD) [1]	BITUMINOUS PAVEMENT (SQ YD)	CONCRETE PAVEMENT (LIN FT)	BITUMINOUS PAVEMENT (LIN FT)	MILL BITUMINOUS SURFACE (2.0") (SQ YD)	
CSAH 23 (002-623-018)								
54NB_9	141+00	- 141+50						
23EB_9	208+00	- 212+00					2646	
23EB_9	212+00	- 222+05	2235	3736	81	107	24	
23EB_9	221+33	- 221+76				43		
23WB_9	1218+39	- 1218+61				15		
23BYPASS	303+74	- 317+85		3985		487		
TOTAL			2235	7721	81	652	2670	

NOTES:
 [1] 7" CONCRETE OVERLAID WITH 3" BITUMINOUS PAVEMENT.
 [2] INCLUDES TEMPORARY PAVEMENT REMOVAL FOR STORM SEWER AND CENTERLINE CULVERT TRENCHES.
 [3] TEMPORARY BYPASS ROAD BITUMINOUS REMOVAL. SEE STAGING SHEETS FOR REMOVAL SEQUENCE

EARTHWORK TABULATION (CSAH 23)							F
STATION	EXCAVATION TOTALS			EMBANKMENT TOTALS (CV)			
	COMMON (CU YD)	SUBGRADE (CU YD)	MUCK EXC. (CU YD)	TOPSOIL (CU YD)	GRANULAR (CU YD)	SELECT GRANULAR (CU YD)	MUCK FILL (CU YD)
212+00.00	0	0		0	0	0	
212+50.00	7	12	106	17	34	248	106
212+62.74	16	0	250	8	12	31	250
213+00.00	50	0	703	25	38	90	703
213+50.00	34	55		26	36	119	
214+00.00	35	98		22	89	110	
214+50.00	32	65		21	139	91	
215+00.00	37	28		24	179	79	
215+50.00	34	7		29	201	78	
216+00.00	31	1		29	242	79	
216+50.00	43	0		27	436	85	
218+62.95	302	0		159	2655	481	
219+00.00	20	2		15	238	69	
219+50.00	37	27		22	230	91	
220+00.00	41	75		19	152	99	
220+50.00	52	107		14	100	110	
221+00.00	66	110		13	97	116	
221+07.98	10	17		2	16	19	
221+34.65	31	53		6	51	61	
221+53.95	19	37		3	35	43	
221+73.40	15	45		3	21	52	
222+00.00	24	70		6	23	82	
222+50.00	35	64		12	68	76	
223+00.00	30	0		16	63	0	
223+22.11	14	0		8	22	0	
223+35.18	6	0		2	11	0	
223+50.45	7	0		3	16	0	
224+00.00	28	0		12	33	0	
SUBTOTAL	1056	873	1059	543	5237	2309	1059

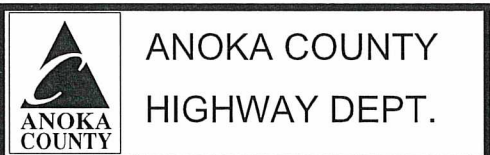
EARTHWORK TABULATION (BYPASS)					F
STATION	EXCAVATION TOTALS		EMBANKMENT TOTALS (CV)		
	COMMON (CU YD)	SUBGRADE (CU YD)	TOPSOIL (CU YD)	GRANULAR (CU YD)	SELECT GRANULAR (CU YD)
304+00.00	0	0	0	0	0
304+50.00	9	1	3	9	0
305+00.00	16	0	3	18	0
305+50.00	22	1	3	64	0
306+00.00	32	1	10	214	0
306+50.00	95	0	18	299	0
307+00.00	130	0	26	194	0
307+50.00	73	0	25	106	0
308+00.00	41	0	20	142	0
308+50.00	45	0	18	182	0
309+00.00	66	0	20	142	0
309+50.00	90	0	21	100	0
310+00.00	80	0	21	120	0
310+50.00	60	0	20	160	0
310+75.00	25	0	10	94	0
311+00.00	24	0	10	105	0
311+25.00	23	0	10	111	0
311+50.00	22	0	10	110	0
311+93.00	49	0	18	177	0
312+00.00	10	0	3	27	0
312+50.00	62	0	21	169	0
312+75.00	28	0	9	71	0
313+00.00	35	1	9	50	0
313+50.00	100	7	17	40	0
314+00.00	118	15	14	8	0
314+50.00	86	9	11	4	0
315+00.00	40	0	10	42	0
315+50.00	32	0	7	132	0
316+00.00	37	0	7	197	0
316+50.00	34	1	8	197	0
317+00.00	29	0	9	199	0
317+50.00	24	0	11	153	0
SUBTOTAL	1537	36	402	3636	0

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_TAB.dgn 06/12/2018 3:04:27 PM

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.
 PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
 DESIGN BY: JRB DATE: 05-15-18
 CHECKED BY: EJM DATE: 06-07-18



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EARTHWORK TABULATION (RAB)						F
STATION	EXCAVATION TOTALS		EMBANKMENT TOTALS (CV)			
	COMMON (CU YD)	SUBGRADE (CU YD)	TOPSOIL (CU YD)	GRANULAR (CU YD)	SELECT GRANULAR (CU YD)	
2500+00.00	0	0	0	0	0	
2500+10.00	9	0	5	79	13	
2500+20.00	9	0	5	98	13	
2500+30.00	9	0	6	112	13	
2500+40.00	10	0	6	124	13	
2500+50.00	10	0	6	132	13	
2500+60.00	10	0	6	136	13	
2500+70.00	10	0	7	138	13	
2500+80.00	10	0	7	136	13	
2500+90.00	10	0	6	128	13	
2501+00.00	10	0	6	121	13	
2501+10.00	10	0	6	109	13	
2501+20.00	9	0	6	88	13	
2501+30.00	9	0	5	66	13	
2501+40.00	8	0	4	49	13	
2501+50.00	8	0	4	41	13	
2501+60.00	7	0	3	39	13	
2501+70.00	8	0	4	41	13	
2501+80.00	8	0	4	48	13	
2501+90.00	8	0	5	62	13	
2502+00.00	8	0	4	71	13	
2502+10.00	7	0	3	69	13	
2502+20.00	7	0	3	65	13	
2502+30.00	7	0	3	62	13	
2502+40.00	7	0	3	61	13	
2502+50.00	7	0	3	57	13	
2502+60.00	7	0	3	50	13	
2502+70.00	7	0	3	45	13	
2502+80.00	7	0	3	44	13	
2502+90.00	7	0	3	43	13	
2503+00.00	7	0	3	48	13	
2503+10.00	8	0	4	53	13	
2503+20.00	8	0	4	46	13	
2503+30.00	7	0	3	36	13	
2503+40.00	7	0	3	33	13	
2503+50.00	7	0	3	35	13	
2503+60.00	7	0	3	40	13	
2503+70.00	8	0	4	50	13	
SUBTOTAL	302	0	159	2655	481	

EARTHWORK TABULATION (LFT ST)						F
STATION	EXCAVATION TOTALS		EMBANKMENT TOTALS (CV)			
	COMMON (CU YD)	SUBGRADE (CU YD)	TOPSOIL (CU YD)	GRANULAR (CU YD)	SELECT GRANULAR (CU YD)	
500+45.29	0	0	0	0	0	
500+70.29	24	0	9	148	0	
500+95.29	21	0	17	248	0	
501+20.29	17	0	12	150	0	
501+45.29	11	0	6	55	0	
501+50.62	3	0	1	1	0	
SUBTOTAL	76	0	45	602	0	

EARTHWORK TABULATION (CSAH 54)								F
STATION	EXCAVATION TOTALS			EMBANKMENT TOTALS (CV)				
	COMMON (CU YD)	SUBGRADE (CU YD)	MUCK EXC. (CU YD)	TOPSOIL (CU YD)	GRANULAR (CU YD)	SELECT GRANULAR (CU YD)	MUCK FILL (CU YD)	
141+00.00	260	134	0	11	0	91	0	
141+50.00	210	127	0	9	0	87	0	
142+00.00	113	107		14	21	84		
142+40.00	54	34		16	75	72		
145+00.00	100	2		29	1477	81		
145+34.55	61	1		21	959	49		
SUBTOTAL	798	405	0	100	2532	464	0	

NOTE: EXCAVATION SPECIAL FROM STATION 141+00 TO STATION 141+50
CONSTRUCTION DEBRIS MAY BE EXPECTED IN THIS AREA

EARTHWORK SUMMARY								G
	EXCAVATION TOTALS			EMBANKMENT TOTALS (CV)				NOTES
	COMMON (CU YD)	SUBGRADE (CU YD)	MUCK EXC. (CU YD)	TOPSOIL (CU YD)	SELECT GRANULAR (CU YD)	GRANULAR (CU YD)	MUCK FILL (CU YD)	
CSAH 54	798	405	0	100	464	2532	0	
CSAH 23	1056	873	1059	543	2309	5237	1059	
BYPASS	1537	36	0	402	0	3636	0	
LIFT STATION	76	0	0	45	0	602	0	
ROUNDAABOUT	302	0		159	481	2655		
BYPASS REMOVAL	3239							[1]
TOTALS	7008	1314	1059	1249	3254	14662	1059	

[1] QUANTITY NOT INCLUDED IN EARTHWORK BALANCE TABULATION H.

POND EXCAVATION						G2
POND LOCATIONS		POND	CUT	FILL	SUITABLE	
STATION	NO.	CU YD	CU YD	DEPTH	CU YD	
CSAH 23 WB STA. 1211+53 - 1213+44 LT	100	3159	996	6.5	2194	
CSAH 23 EB STA. 215+22 - 217+37 RT	500	2905	9	6.17	2729	
TOTAL		6064	1005		4923	
SUITABLE MATERIAL [1]		4923				
UNSUITABLE MATERIAL		1141				

4" TOPSOIL ASSUMED

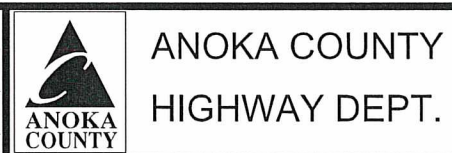
[1] SUITABLE MATERIALS PER SPEC 2105.1A.6

NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_TAB.dgn 06/12/2018 4:38:58 PM

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 CP 2017-7

EARTHWORK BALANCE										H	
EXCAVATION (CU.YD.)					EMBANKMENT (CU.YD.)					(+ EXCESS or (-) BORROW (CU.YD.)	
SUBGRADE (EV) (BID ITEM)	1,314	SUITABLE 1,314 (EV) 120% SHRINKAGE = (CV) 1,095			TOPSOIL	1,249	(CV)	TOPSOIL (1773 (CV) - 1249 (CV)) x 1.4 = +734 (LV)		EXCESS	
		COMMON EXCAVATION (EV) (BID ITEM) 9,833						MUCK DISPOSAL (FOR FILL SLOPES OUTSIDE OF ROADWAY) 1,059 (CV)			MUCK (1059 (CV) - 0 (CV)) x 1.4 = +1483 (LV)
COMMON EXCAVATION (EV) (BID ITEM)	9,833	TOPSOIL 2,128 (EV) 120% SHRINKAGE = (CV) 1,773			MUCK DISPOSAL	1,059	(CV)	GRANULAR (6566 (CV) - 14662 (CV)) X 1.4 = -11,336 (LV)		BORROW	
		SUITABLE 1,641 (EV) 120% SHRINKAGE = (CV) 1,368						GRANULAR (FOR MUCK BACKFILL AND ROAD EMBANKMENT) 14,662 (CV)			UNSUITABLE (1141 (EV)+ 0 (EV)) x 1.4 = +1597 (LV)
MUCK EXCAVATION (EV) (BID ITEM)	1,059	POND 6,064 (EV) UNSUITABLE 1141 (EV) SUITABLE 4923 (EV) 120% SHRINKAGE = (CV) 4,103			SELECT	3,254	(CV)	SELECT 3254 (CV) x 1.4 = 4,556 (LV)		BORROW	
		SUITABLE (EV) 120% SHRINKAGE = (CV)						MUCK 1,059 (EV) 120% SHRINKAGE = (CV) 883			140% SWELL FACTOR
AVAILABLE					NEEDS					BALANCE	

GENERAL NOTES:

- SEE SOILS AND CONSTRUCTION NOTES FOR MATERIAL DEFINITIONS AND ADDITIONAL INFORMATION.
- ALL MATERIAL NOT USED ON THE PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT LIMITS WITH NO DIRECT PAYMENT THEREFORE. THE MATERIAL QUANTITY IS BASED ON ESTIMATED QUANTITIES. DISPOSAL SHALL BE IN ACCORDANCE WITH SPEC. 2105
- THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER BEFORE HAULING MATERIAL OFF SITE.
- SHRINKAGE AND SWELL FACTORS ARE ASSUMED VALUES, USED ONLY FOR THE PURPOSE OF ESTIMATED QUANTITIES. IT SHALL BE UNDERSTOOD THAT NO WARRANTY IS MADE OR IMPLIED AS TO THE ACCURACY, SUFFICIENCY, OR RELIABILITY OF SHRINKAGE FACTORS.

BITUMINOUS SUMMARY											I	
ALIGNMENT	STATION TO STATION	DESCRIPTION	[1], [2], [3]								NOTES	
			2211		2357		2360		2231	2535		
			BITUMINOUS SURFACE	AGGREGATE BASE CLASS 5	AGGREGATE SHOULDERING CLASS 5	BIT. TACK COAT	TYPE SP 12.5 WEAR (3,F)	TYPE SP 12.5 NON-WEAR (3,B)	TYPE SP 12.5 BIT. PATCHING MIXTURE	BITUMINOUS CURB		
			SQ YD	CU YD	CU YD	GAL	TON	TON	TON	LIN FT		
CSAH 23 (002-623-018)												
23EB_9	208+00 - 212+00	W MILL&FILL	2646			265	609					
23EB_9	212+00 - 217+13	EB MAINLINE	1067	222	4	107	245	123	351			
23EB_9	218+08 - 222+05	EB LANES	1433	271		143	330	165	112			
23EB_9	221+92 - 223+17	EB TERMINUS								125	[5]	
23WB_9	1210+35 - 1224+67	BYPASS RD	3985	713	72	399	687				[4]	
23WB_9	1212+40 - 1217+12	WB MAINLINE	1021	216	7	102	235	117				
23WB_9	1218+08 - 1224+45	WB MAINLINE	1157	255	8	116	266	133				
54NB_9	141+25 - 142+93	NB LANES	355	72		36	82	41				
54NB_9	143+91 - 145+35	NB MAINLINE	294	174		29	68	34				
54SB_9	1141+18 - 1142+88	SB LANES	379	76		38	87	44				
54SB_9	1143+87 - 1145+26	SB MAINLINE	287	60		29	66	33				
TOTAL			12624	2059	91	1264	2675	690	463	125		

NOTES:

- [1] 6" BITUMINOUS ROAD AND SHOULDER, 4" - (3,F) WEAR, 2" - (3,B) NON-WEAR
- [2] 6" AGGREGATE BASE
- [3] INCLUDES STORM SEWER TRENCH AGGREGATE QUANTITIES
- [4] 3.0" BITUMINOUS BYPASS ROAD AND 4" AGGREGATE BASE
- [5] SEE STANDARD PLATE 7065C FOR DETAIL

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_TAB.dgn 06/19/2018 1:10:06 PM

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.
 PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-19-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
 DESIGN BY: JRB DATE: 05-15-18
 CHECKED BY: EJM DATE: 06-07-18



ANOKA COUNTY
 HIGHWAY DEPT.

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 CP 2017-7

TABULATION CHARTS

BITUMINOUS PATH							J
ALIGNMENT	STATION TO STATION	OFFSET	[1], [2]			NOTES	
			SURFACE AREA	AGGREGATE BASE CLASS 5	TYPE SP 9.5 WEAR (2,B)		
			SQ YD	TON	TON		
CSAH 23 (002-623-018)							
23EB_9	216+32 - 217+46	25 RT TO 60 RT	112	22	16		
23EB_9	217+78 - 218+88	56 RT TO 27 RT	103	21	15		
23EB_9	216+26 - 216+56	45 LT TO 144 LT	106	21	15		
23EB_9	218+54 - 218+95	150 LT TO 43 LT	116	23	17		
SUBTOTAL			437	87	63		
CITY BITUMINOUS PATH (2017-7)							
23EB_9	214+01 - 216+32	28 RT TO 25 RT	203	41	29		
23WB_9	1218+91 - 1221+72	31 LT TO 22 LT	247	49	36		
SUBTOTAL			450	90	65		
TOTAL			887	177	128		

GENERAL NOTES:

- [1] 2.5" BITUMINOUS PATH TYPE 9.5 WEARING COURSE MIXTURE (B)
- [2] BASED ON A BITUMINOUS PATH DEPTH OF 2.5"

DRIVEWAYS						K
ADDRESS	ALIGN	STATION	DRIVE-WAY WIDTH	AGGRG. BASE CLASS 5 TON	TYPE SP 9.5 WEAR (2,B) TON	NOTES
LIFT STATION ACCESS	23WB_9	1217+67	12	11	26	[1]
PARCEL 9	23WB_9	1222+95	20	10	3	[1]
TOTALS				21	29	

GENERAL NOTES:

- [1] 2.5" BITUMINOUS OVER 4" AGGREGATE BASE CL 5

CONCRETE														M	
				SPEC 2301				SPEC 2521		SPEC 2531					
STATION		ALIGNMENT	OFFSET	CONCRETE PAVEMENT IRREGULAR	INTEGRANT CURB DESIGN B6	1" DOWEL BAR	NO. 4 REINF. TIE BAR [3]	4" CONCRETE WALK	6" CONCRETE WALK	CONCRETE CURB & GUTTER DESIGN SPECIAL	CONCRETE CURB & GUTTER DESIGN B-418 (MOD)	CONCRETE CURB & GUTTER DESIGN B-418 (MOD) TIP-OUT [1]	CONCRETE CURB & GUTTER DESIGN B-424	TRUNCATED DOMES	CONCRETE NOSE DESIGN 7113A [2]
BEGIN	END														
CSAH 23 (002-623-018)															
213+87	217+02	23EB_9	23.2' RT - 16.9' RT						181				306	32	
214+03	216+56	23EB_9	2.0' LT - 34.7' LT					4441	273			303	268	32	48
216+56	217+96	23EB_9		433	282	330	150			365				32	59
217+96	221+33	23EB_9	21.4' RT - 61.3' RT						44					377	16
218+56	222+05	23EB_9	2.0' LT - 32.0' LT					5525	226			312		32	42
1214+69	1217+00	23WB_9	24.5' LT - 19.71' LT						44					221	16
1214+04	1216+66	23WB_9	2.0' RT - 2.0' RT									263			
1218+07	1221+61	23WB_9	14.0' LT - 16.0' LT						44					343	16
1218+63	1221+56	23WB_9	29.5' RT - 2.0' RT									330			
141+25	142+92	54NB_9	19.08' RT - 19.6' RT						67					152	16
141+25	142+43	54NB_9	2.0' LT - 14.4' LT					1000	140			288		32	63
144+40	144+88	54NB_9	2.0' LT - 2.0' LT					573	163			46		32	59
143+93	145+35	54NB_9	3.3' RT - 16.2' RT						67					124	16
1141+18	1142+38	54SB_9	2.0' RT - 15.0' RT									129			
1141+19	1142+88	54SB_9	18.4' LT - 22.0' LT						67					153	16
1143+80	1145+26	54SB_9	20.9' LT - 16.0' LT						67					139	16
1144+33	1144+80	54SB_9	2.0' RT - 2.0' RT									46			
TOTALS				433	282	330	150	11539	1383	365	1717	268	1815	304	271

NOTES:

- [1] PAID FOR AS CONCRETE CURB & GUTTER DESIGN B418 (MOD).
- [2] PAID FOR AS 6" CONCRETE WALK
- [3] PAID FOR AS DOWEL BAR

NO	DATE	BY	CKD	APPR	REVISION

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SIGNATURE: *Elizabeth Markose*

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TABULATION CHARTS

Sheet 12 of 134 Sheets

TURF ESTABLISHMENT AND EROSION CONTROL													O
STATION TO STATION	LOCATION	SILT FENCE TYPE MACHINE SLICED	SILT FENCE TYPE SUPER DUTY	INLET PROTECTION	SEDIMENT CONTROL LOG TYPE WOOD FIBER	FERTILIZER TYPE 3 (22-5-10)	FERTILIZER TYPE 4 (17-10-17)	SEEDING	SEED MIXTURE		EROSION CONTROL BLANKET (CAT. 3)	RAPID STABILIZATION METHOD 3 SPEC 2575-3	NOTES
		LIN FT	LIN FT	EACH	LIN FT	POUND	POUND	ACRE	25-121 POUND	33-261 POUND	SQ YD	MGAL	
CSAH 23 (002-623-018)													
211+97 - 217+54	23EB_9 RT	375		6		99	15	0.62	30	4	3019	1	
	23 RAB			1		32	0	0.16	10	0	772		
217+69 - 223+23	23EB_9 RT	340		6		72	0	0.36	22	0	1735		
1210+09 - 1217+66	23WB_9 LT	1727		6		419	63	2.62	128	18	12683	1	
1218+90 - 1224+55	23WB_9 LT	534		9		184	0	0.92	56	0	4455		
303+74 - 317+87	23BYPASS	995	210	3	200							7	[1],[2]
TOTALS		3,971	210	31	200	806	78	4.68	246	22	22,664	9	

GENERAL NOTES:

- 25-121 - APPLICATION RATE 61 LB/ACRE
- 33-261 - APPLICATION RATE 35 LB/ACRE. (POND SLOPES AND WETLAND)
- FERTILIZER TYPE 3 FOR SEED 25-121. APPLICATION RATE: 200 LB/ACRE
- FERTILIZER TYPE 4 FOR SEED 33-261. APPLICATION RATE: 120 LB/ACRE
- EROSION CONTROL BLANKET (NATURAL) TO BE PLACED ON ALL POND SEEDING AREAS.
- QUANTITIES ARE BASED ON 110% OF THE COMPUTED AREA.

[1] SEE STAGE 2 TEMPORARY DRAINAGE PLANS FOR LOCATIONS

[2] RAPID STABILIZATION METHOD TO BE USED ON TEMP BYPASS ROAD, REAPPLY AS NEEDED OR AS DIRECTED BY THE ENGINEER. APPLICATION RATE 6 MGAL/ACRE

TEMPORARY TRAFFIC BARRIER										AI
ALIGNMENT	STAGE	STA. TO STA. *		LOCATION	DESCRIPTION	PORTABLE PRECAST CONCRETE BARRIER DESIGN 8337 [1]	IMPACT ATTENUATOR [2]	RELOCATE PORT PRECAST CONC BAR DES 8337	RELOCATE IMPACT ATTENUATOR	NOTES
		LIN FT	ASSEMBLY			LIN FT	ASSEMBLY			
23EB_9	1	210+08	214+33	LT	WEST END BYPASS	425	2			[4]
23EB_9	2	212+58	214+33	LT	WEST END BYPASS			175	1	[3],[4]
23EB_9	2	221+30	224+45	LT	EAST END BYPASS	100	4			[4]
23EB_9	5	221+70	224+45	LT	EAST END BYPASS			275	3	[4]
TOTAL						525	6	450	4	

*ALL STATIONING BASED ON 23EB_9 ALIGNMENT

[1] SEE STANDARD PLATE 8337C FOR DETAILS

[2] BARREL ASSEMBLY NOT ACCEPTED

[3] RELOCATE BARRIER TO EAST END OF BYPASS ROAD.

[4] SEE STAGING PLAN SHEET FOR BARRIER CONFIGURATION

UTILITY OWNERS		AA
CITY OF COLUMBUS 16319 KETTLE RIVER BLVD COLUMBUS, MN 55025 CONTACT: DENNIS POSTLER CITY ENGINEER TEL: 651-292-4492	CENTURYLINK 390 COMMERCE DR. WOODBURY, MN 55125 CONTACT: JEFFREY GILBERT TEL 651-730-1362	
CONNEXUS ENERGY 14601 RAMSEY BLVD RAMSEY, MN 55303 CONTACT: MATT RAUSCHENDORFER TEL: 763-323-4259 CELL: 763-218-4655	MIDCO 210 N MCKINLEY ST CAMBRIDGE, MN 55008 CONTACT: JEREMY FRAHM TEL: 612-221-0980	
XCEL ENERGY GAS 1700 E. COUNTY RD E WHITE BEAR LAKE, MN 55112 CONTACT: SCOTT WIDMER TEL: 651-779-3506	ZAYO FIBER CONTACT: STEVE SENGER TEL: 952-230-9660 Steven.Senger@Zayo.com	

GAS - XCEL ENERGY					AB
STATION		LOCATION		INPLACE ITEM	REMARKS
BEGIN	END	ALIGN	OFFSET		
212+13		23EB_9	27 RT	GAS LINE CROSS	LEAVE
212+13	213+43	23EB_9	27 RT TO 27 RT	4" PLASTIC	RELOCATE
213+43		23EB_9	27 RT	GAS LINE CROSS	RELOCATE
213+43	221+50	23EB_9	27 RT TO 36 RT	4" PLASTIC	RELOCATE
221+50	224+06	23EB_9	36 RT TO 34 RT	4" PLASTIC	RELOCATE
224+06		23EB_9	34 RT	GAS VALVE	RELOCATE
224+06	224+56	23EB_9	34 RT TO 36 RT	4" PLASTIC	RELOCATE
1213+41		23WB_9	61 LT	GAS LINE CROSS	RELOCATE

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_TAB.dgn 06/12/2018 3:04:51 PM

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ANOKA COUNTY
HIGHWAY DEPT.

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TABULATION CHARTS

TELEPHONE - CENTURYLINK				AC	
STATION		LOCATION		INPLACE ITEM	REMARKS
BEGIN	END	ALIGN	OFFSET		
216+04	219+68	23EB_9	38 RT TO 43 RT	OVERHEAD	RELOCATE
219+68	224+25	23EB_9	43 RT TO 48 RT	BURIED	LEAVE
224+25		23EB_9	48 RT	BOX	LEAVE

WATERMAIN - CITY OF COLUMBUS				AF	
STATION		LOCATION		INPLACE ITEM	REMARKS
BEGIN	END	ALIGN	OFFSET		
42+88	43+65	FDW_EX	24 RT TO 43 RT	8" DIP	LEAVE
	43+65	FDW_EX	43 RT	DIP CROSS	LEAVE
	211+03	23EB_9	34 RT	GATE VALVE	LEAVE
	211+03	23EB_9	34 RT	DIP CROSS	LEAVE
211+03	213+92	23EB_9	34 RT TO 42 RT	12" PVC	LEAVE
	213+92	23EB_9	42 RT	GATE VALVE	ADJUST
213+92	215+11	23EB_9	43 RT TO 31 RT	12" PVC	LEAVE
	215+11	23EB_9	42 RT	HYDRANT	ADJUST
	215+11	23EB_9	40 RT	GATE VALVE	ADJUST
215+18	217+02	23EB_9	39 RT TO 23 RT	12" PVC	LEAVE
	215+20	23EB_9	34 RT	GATE VALVE	ADJUST
	217+06	23EB_9	22 RT	GATE VALVE	REMOVE [1]
217+06	217+48	23EB_9	22 RT TO 4 LT	12" PVC	LEAVE
	217+51	23EB_9	8 LT	GATE VALVE	REMOVE [1]
217+51	219+56	23EB_9	5 LT TO 49 RT	12" PVC	LEAVE
	219+56	23EB_9	51 RT	GATE VALVE	LEAVE
219+56	220+15	23EB_9	49 RT TO 54 RT	12" PVC	LEAVE
	220+15	23EB_9	51 RT	GATE VALVE	LEAVE
220+15	220+95	23EB_9	54 RT TO 56 RT	12" PVC	LEAVE
	220+95	23EB_9	58 RT	GATE VALVE	LEAVE
	220+95	23EB_9	61 RT	HYDRANT	LEAVE
220+95	224+04	23EB_9	56 RT TO 52 RT	12" PVC	LEAVE
	1211+05	23WB_9	60 LT	DIP CROSS	LEAVE

[1] SEE WATERMAIN PLAN SHEETS FOR DETAILS

POWER - CONNEXUS ENERGY				AD	
STATION		LOCATION		INPLACE ITEM	REMARKS
BEGIN	END	ALIGN	OFFSET		
209+61	212+92	23EB_9	34 RT TO 48 RT	OHP	LEAVE
	212+92	23EB_9	48 RT	POWER POLE	LEAVE
212+92	216+04	23EB_9	48 RT TO 39 RT	OHP	LEAVE
	216+04	23EB_9	39 RT	POWER POLE	RELOCATE
216+04	218+20	23EB_9	39 RT TO 11 RT	OHP	RELOCATE
	218+20	23EB_9	11 RT	POWER POLE	RELOCATE
218+20	219+68	23EB_9	11 RT TO 39 RT	OHP	RELOCATE
	219+68	23EB_9	39 RT	POWER POLE	RELOCATE
219+68	222+06	23EB_9	39 RT TO 61 RT	OHP	LEAVE
	222+06	23EB_9	61 RT	POWER POLE	LEAVE
222+06	224+26	23EB_9	61 RT TO 97 RT	OHP	LEAVE
	224+26	23EB_9	97 RT	POWER POLE	LEAVE

FIBER OPTIC ZAYO				AE	
STATION		LOCATION		INPLACE ITEM	REMARKS
BEGIN	END	ALIGN	OFFSET		
223+64	227+22	23EB_9	42 RT TO 95 RT	F/O-BUR	LEAVE

LOOP DETECTORS				AH	
STATION		LOCATION		INPLACE ITEM	REMARKS
BEGIN	END	ALIGN	OFFSET		
205+22	205+74	23EB_9	2 LT	LOOP DETECTOR	LEAVE
210+05	210+05	23EB_9	16 LT	LOOP DETECTOR	LEAVE
223+67	223+67	23EB_9	9 RT	LOOP DETECTOR	LEAVE
225+43	225+43	23EB_9	13 RT	LOOP DETECTOR	LEAVE

SANITARY SEWER - CITY OF COLUMBUS										AG
STATION		LOCATION		INPLACE ITEM	REMARKS	EXISTING TOC ELEVATION	PROPOSED TOC ELEVATION	CASTING ASSEMBLY EACH	RECONSTRUCT MANHOLE (LIN FT)	NOTES
BEGIN	END	ALIGN	OFFSET							
42+07	44+49	FDW_EX	34 LT TO 43 LT	PIPE	LEAVE					
1208+61	1208+61	23WB_9	47 LT	MANHOLE	LEAVE					
1208+61	1212+09	23WB_9	47 LT TO 44 LT	8" PVC	LEAVE					
1212+09	1212+09	23WB_9	44 LT	MANHOLE	LEAVE					
1212+09	1214+03	23WB_9	44 LT TO 41 LT	8" PVC	LEAVE					
1214+03	1214+03	23WB_9	41 LT	PIPE CROSS	LEAVE					
1214+03	1215+53	23WB_9	41 LT TO 28 LT	8" PVC	LEAVE					
1215+53	1215+53	23WB_9	28 LT	MANHOLE	RECONSTRUCT	898.17	899.85	1	1.68	[1] [2]
1215+53	1218+51	23WB_9	28 LT TO 22 LT	8" PVC	LEAVE					
1215+54	1218+52	23WB_9	28 LT TO 25 RT	8" PVC	LEAVE					
1218+07	1218+07	23WB_9	63 LT	LIFT/PUMP STATION	LEAVE					
1218+51	1218+51	23WB_9	22 LT	MANHOLE	RECONSTRUCT	900.64	903.59	1	2.95	[1] [2]
1218+51	1218+51	23WB_9	28 LT	PIPE CROSS	LEAVE					
1218+51	1221+56	23WB_9	28 LT TO 9 LT	8" PVC	LEAVE					
1218+73	1221+56	23WB_9	20 LT TO 3 LT	8" PVC	LEAVE					
1221+56	1221+56	23WB_9	9 LT	MANHOLE	RECONSTRUCT	900.81	901.98	1	1.17	[1] [2]
1221+56	1224+47	23WB_9	9 LT TO 8 LT	8" PVC	LEAVE					
1221+56	1224+35	23WB_9	3 LT TO 3 LT	8" PVC	LEAVE					
1224+35	1224+35	23WB_9	3 LT	PIPE CROSS	LEAVE					
1224+47	1224+47	23WB_9	8 LT	MANHOLE	LEAVE					
214+03	214+03	23EB_9	46 RT	PIPE CROSS	LEAVE					
TOTAL								3	5.8	

NOTES:

[1] PAID AS RECONSTRUCT DRAINAGE STRUCTURE PER SPEC 2506.503

[2] USE 7" CASTING NO. 700-7 AND NO. 716 COVER CASTINGS PER STANDARD PLATES 4101 AND 4110 RESPECTIVELY. ADJUSTING RINGS ARE INCIDENTAL

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_TAB.dgn 06/13/2018 11:05:39 AM

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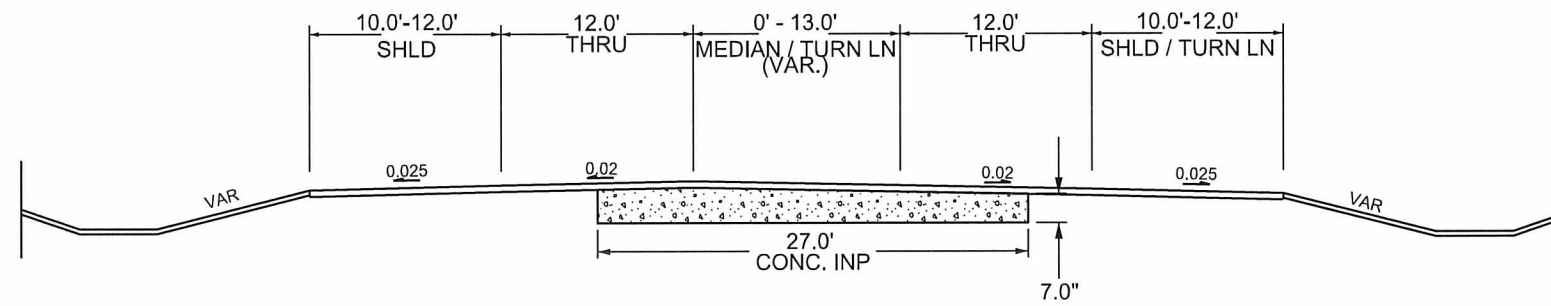
TABULATION CHARTS

GENERAL NOTES:

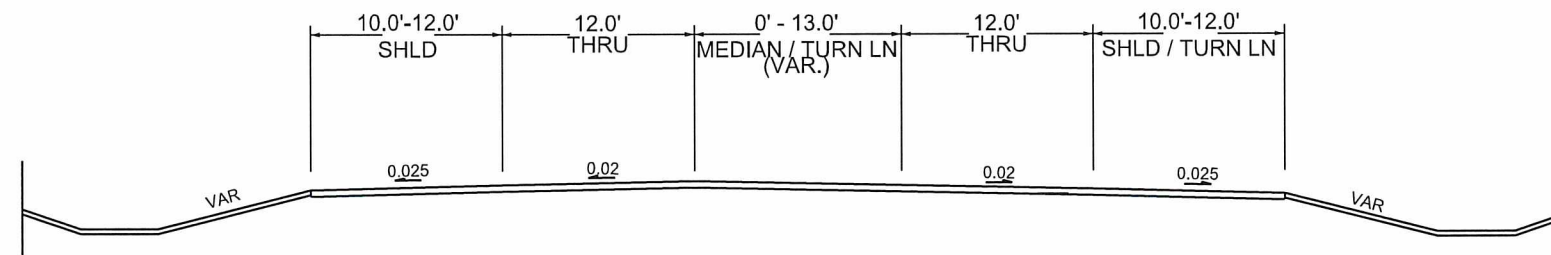
- CONTRACTOR SHALL CONFIRM LOCATION OF CONCRETE PAVEMENT IN THE FIELD.

EXISTING TYPICAL SECTIONS

C.S.A.H. 23 (LAKE DRIVE)
STA 212+00.00 - STA 220+14.68



C.S.A.H. 23 (LAKE DRIVE)
STA 220+14.68 - STA 221+76.44



NO	DATE	BY	CKD	APPR	REVISION

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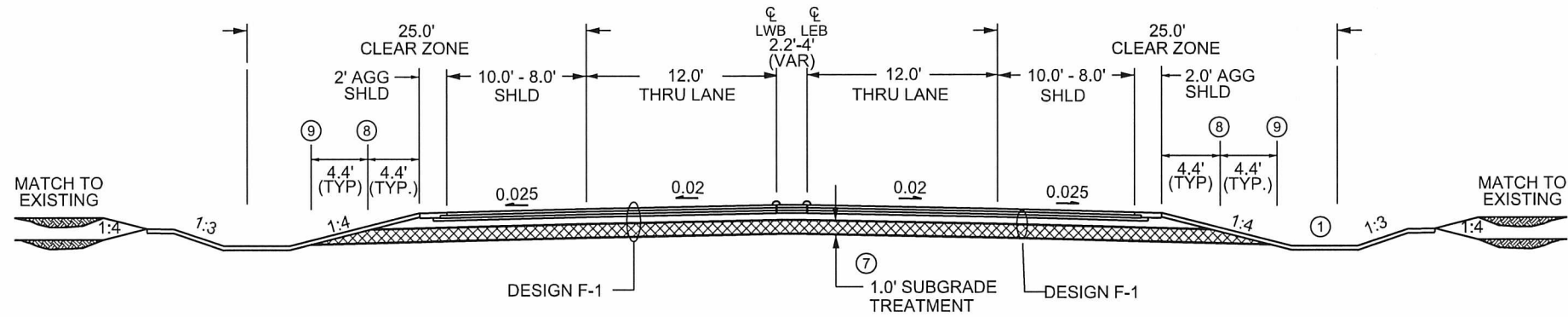


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HIGHWAY DEPT.

SAP 002-623-018
CP 2017-7

TYPICAL SECTIONS
EXISTING
Sheet 15 of 134 Sheets

C.S.A.H. 23 (LAKE DRIVE)
STA 212+00.00 - STA 213+86.85



TURN LANE LOCATIONS				
ALIGNMENT	STA. TO STA. *	LOCATION	DESCRIPTION	TAPER
23EB_9	219+70 - 221+33	RT	RIGHT TURN LANE	1:10

* STATION RANGE INCLUDES TAPER SECTION

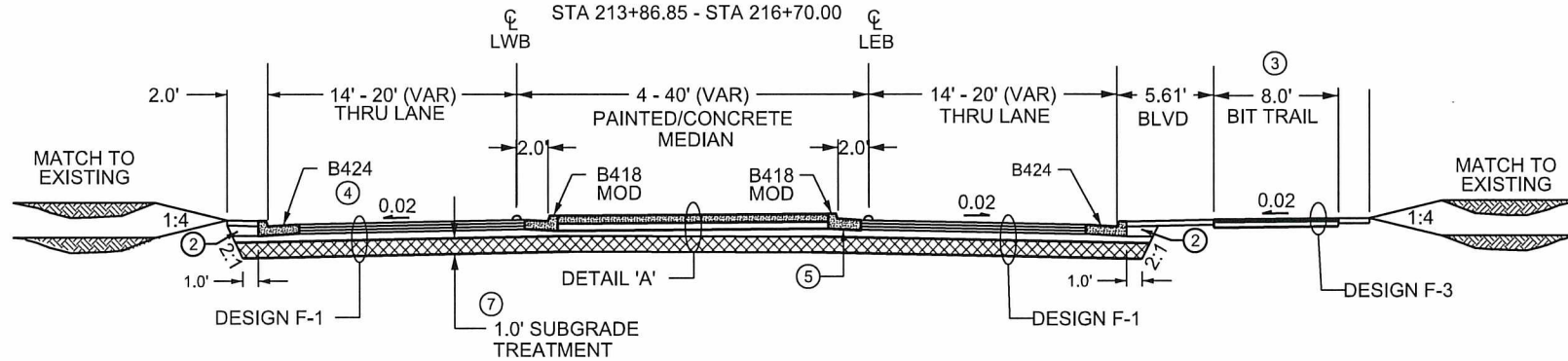
GENERAL NOTES:

- ALL STATIONING FOR THESE SECTIONS BASED ON 23EB_9 ALIGNMENT
- SELECT GRANULAR SHALL BE USED FOR SUBGRADE TREATMENT.
- SEE CONSTRUCTION PLANS FOR TURN LANE LOCATIONS.
- ALL CROSS SLOPES ARE EXPRESSED AS A DECIMAL.
- UNLESS OTHERWISE SPECIFIED, THE GRADING GRADE CROSS SLOPES SHALL BE THE SAME AS THE FINISHED SURFACE OF THE MAINLINE.
- UNLESS OTHERWISE SPECIFIED, CLASS 5 AGGREGATE WILL EXTEND 1' BEYOND BACK OF CURB, AND 2' BEYOND RURAL SHOULDER EDGE.
- PLACE 4.0" TOPSOIL & SEED ON ALL DISTURBED AREAS.

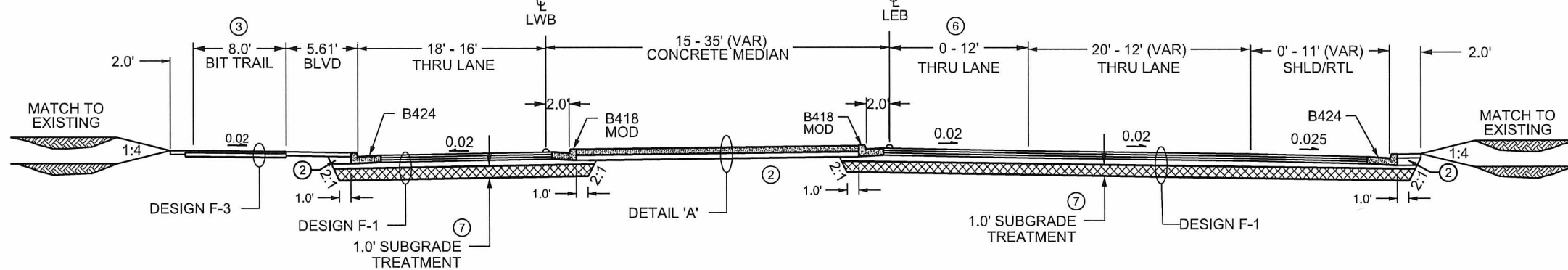
NOTES:

- SEE PROFILE & X-SECTIONS FOR SPECIAL DITCH GRADES.
- BACKFILL WITH SUITABLE GRADING MATERIAL.
- SEE CONSTRUCTION PLAN SHEETS FOR BITUMINOUS TRAIL LOCATIONS. CLASS 5 AGGREGATE BASE SHALL EXTEND 6" BEYOND BOTH EDGES OF BITUMINOUS TRAIL.
- BEGIN CURB LWB AT STA 215+17.17
- TIP-OUT GUTTER BETWEEN EB STA. 214+00 & 216+69
- BEGIN THRU LANE AT STA 219+00
- SUBCUT AS NECESSARY.
- GRADING PI.
- SUBGRADE PI.

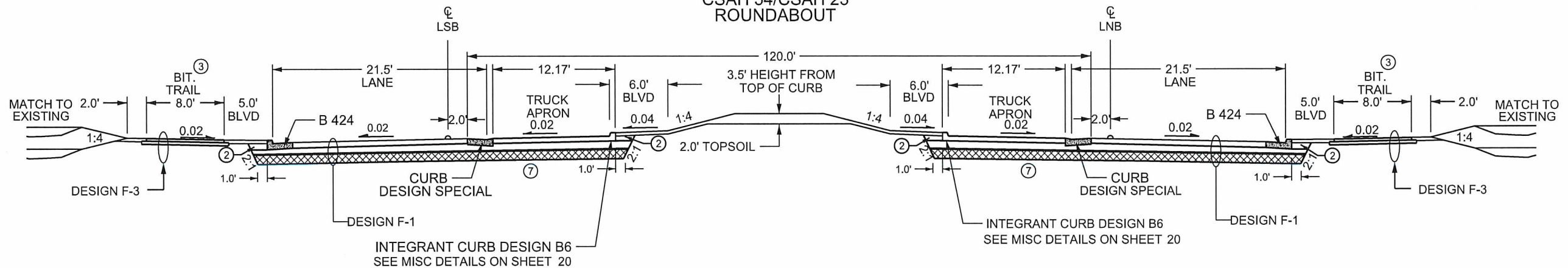
C.S.A.H. 23 (LAKE DRIVE)
STA 213+86.85 - STA 216+70.00



C.S.A.H. 23 (LAKE DRIVE)
STA 218+50.00 - STA 221+71.68



CSAH 54/CSAH 23
ROUNDAABOUT

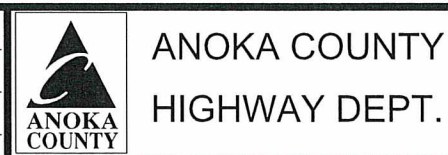


NO	DATE	BY	CKD	APPR	REVISION

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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.
PRINT NAME: ELIZABETH MARKOSE
SIGNATURE: *Elizabeth Markose*
DATE: 06-12-2018 LICENSE NO. 49118

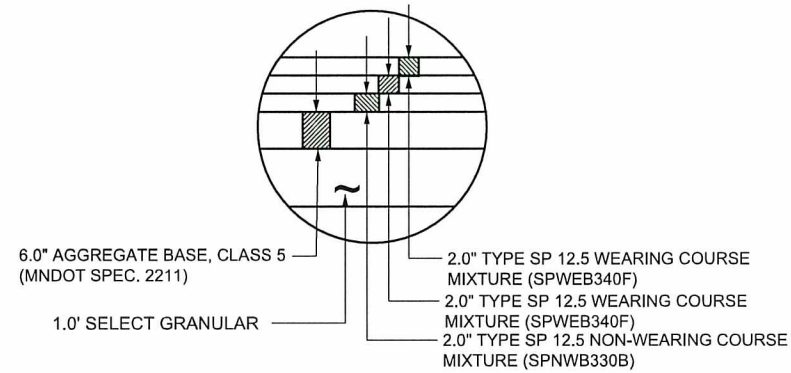
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DESIGN BY: JRB DATE: 05-15-18
CHECKED BY: EJM DATE: 06-07-18



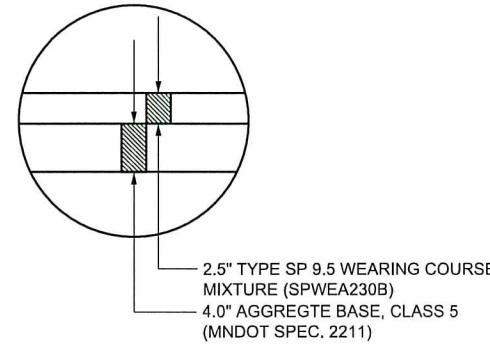
SAP 002-623-018
CP 2017-7

TYPICAL SECTIONS PROPOSED
Sheet 16 of 134 Sheets

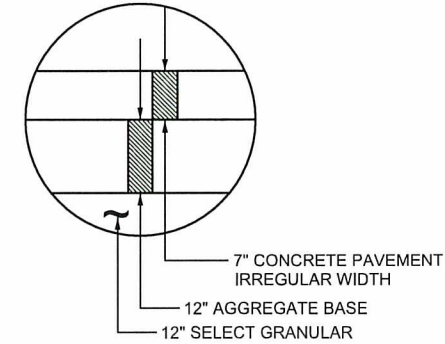
DESIGN F-1
CSAH 23



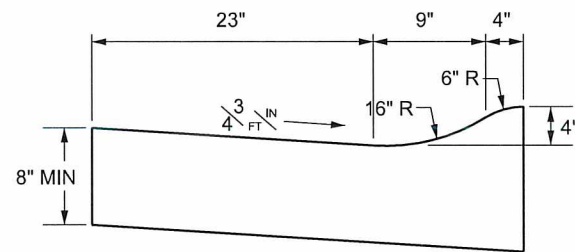
DESIGN F-3
BITUMINOUS PATH
AND LIFT STATION ACCESS



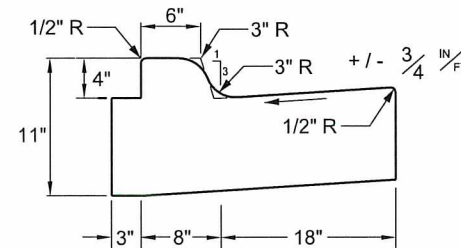
TRUCK APRON
(SEE MISC DETAILS ON SHEET 20)



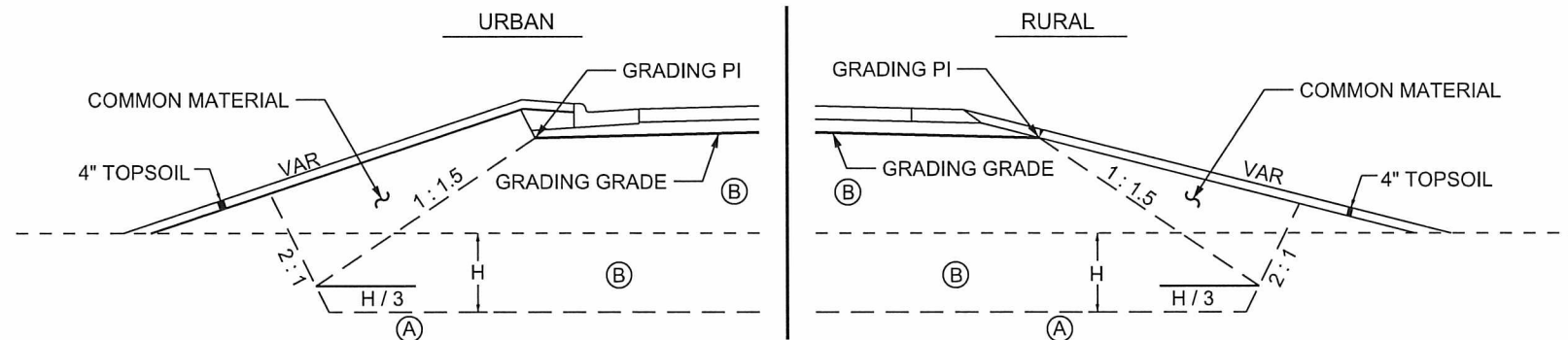
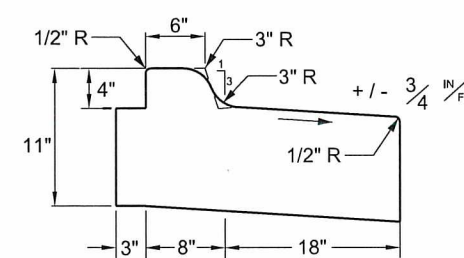
CURB DESIGN SPECIAL
(NO VARIANCES ALLOWED)



MEDIAN
B418 MODIFIED CURB & GUTTER
(NO VARIANCES ALLOWED)

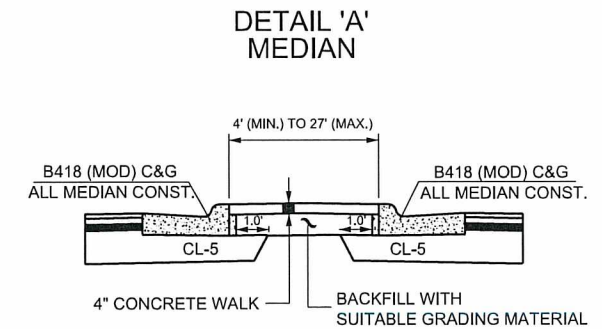


MEDIAN
TIP-OUT B418 MODIFIED CURB & GUTTER
(NO VARIANCES ALLOWED)



MUCK EXCAVATION

- (A) SEE PROFILES AND CROSS SECTIONS FOR MUCK EXCAVATION DEPTH
- (B) BACKFILL WITH GRANULAR MATERIAL



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_TYP.dgn 06/12/2018 2:26:07 PM

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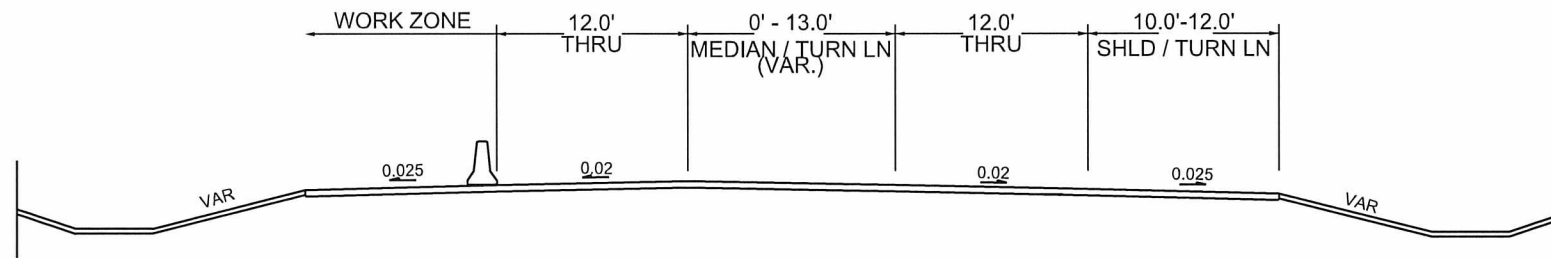


ANOKA COUNTY
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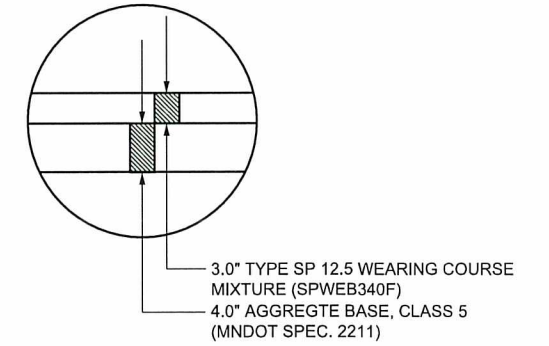
SAP 002-623-018
CP 2017-7

TYPICAL
DETAILS
Sheet 17 of 134 Sheets

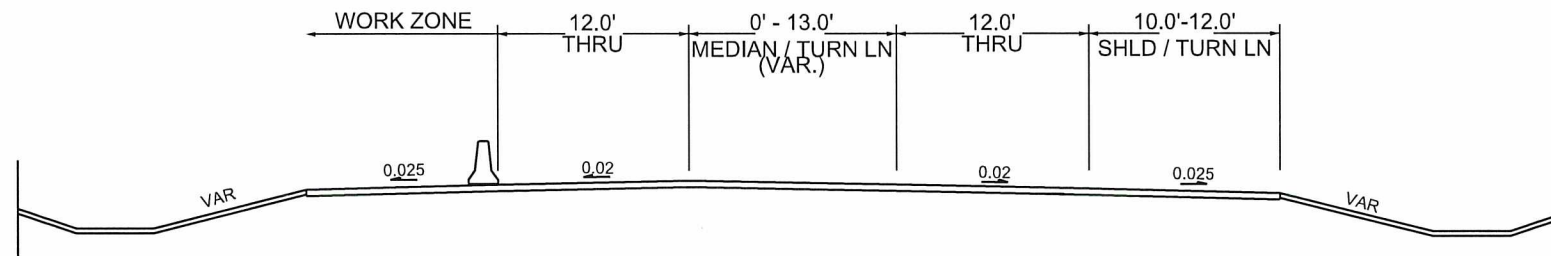
STAGE 1
C.S.A.H. 23 (LAKE DRIVE)
STA 210+08 - STA 214+33



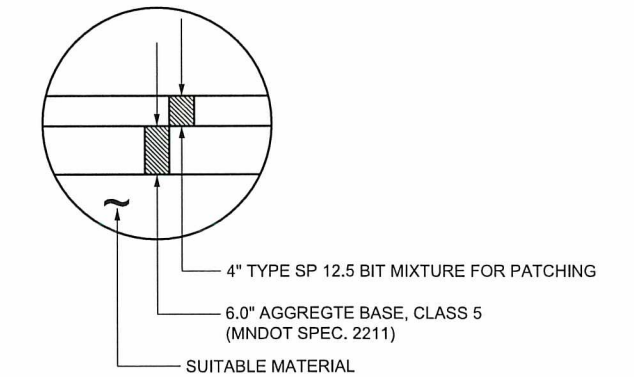
TEMPORARY PAVEMENT
DESIGN F-4



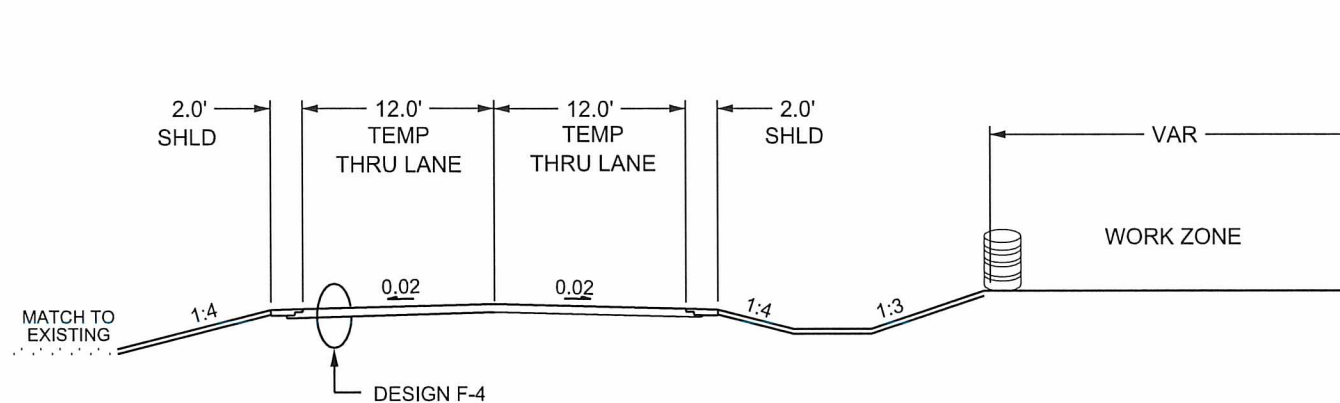
STAGE 2
C.S.A.H. 23 (LAKE DRIVE)
STA 212+58 - STA 214+33
STA 221+30 - STA 224+45



TRENCH BACKFILL



STAGE 3
TEMPORARY BYPASS ROAD



GENERAL NOTES:

- ALL STATIONING FOR THESE SECTIONS BASED ON 23EB_9 ALIGNMENT
- SEE STAGING PLANS FOR TEMPORARY PORTABLE PRECAST CONCRETE BARRIER LOCATIONS.
- FLAGGER REQUIRED FOR CENTERLINE CULVERT REMOVAL AND INSTALLATION.

NO	DATE	BY	CKD	APPR	REVISION

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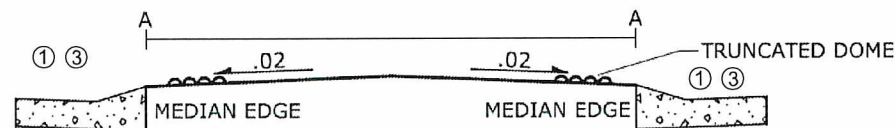
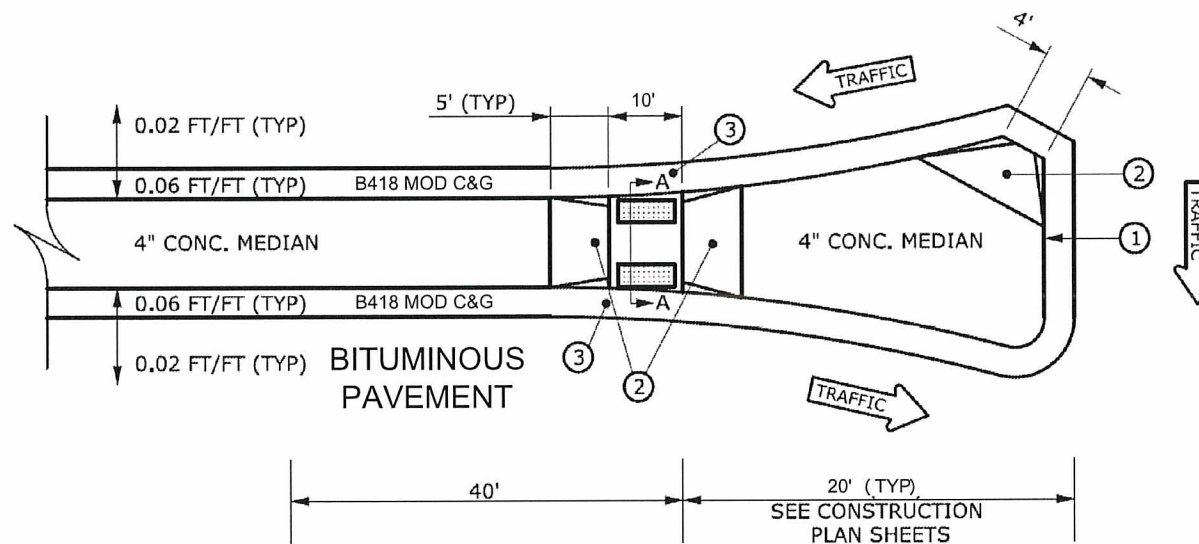
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CHECKED BY: EJM DATE: 06-07-18



ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-623-018
CP 2017-7

TYPICAL SECTIONS
PROPOSED



SECTION A-A

SPLITTER ISLAND DETAIL

NOTES: INSTALL PEDESTRIAN WALKWAY THROUGH MEDIAN. THE WALKWAY SHALL CUT THROUGH THE MEDIAN AT ROADWAY LEVEL. REFER TO MN/DOT STANDARD PLANS 5-297.250 FOR DETAILS. USE TRUNCATED DOMES AT EACH CURB, FLARED SIDES SHALL BE SLOPED AT A MAXIMUM SLOPE OF 0.083 FT/FT AS SHOWN ON STANDARD PLANS 5-297.250

- ① GUTTER SLOPE SHALL BE THE SAME AS ROADWAY SO THAT A LOW POINT IS NOT CREATED.
- ② DESIGN 7113 APPROACH NOSE. PAID FOR AS 6" CONCRETE WALK.
- ③ MAINTAIN GUTTER THROUGH CURB OPENING.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_MISCDET.dgn 06/12/2018 2:28:10 PM

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DRAWN BY JRB DATE 05-15-18
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 CHECKED BY EJM DATE 06-07-18

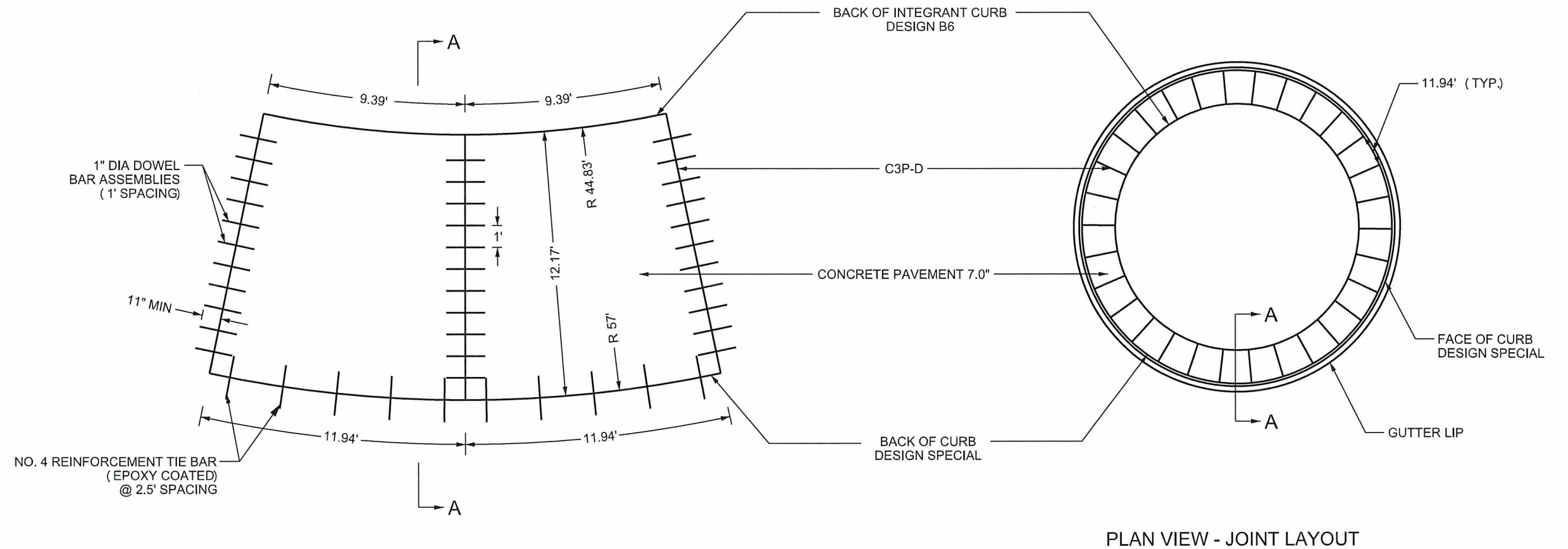


ANOKA COUNTY
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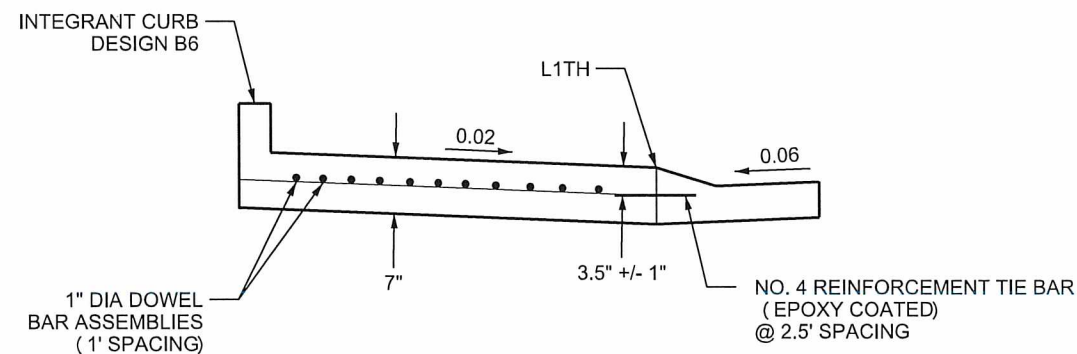
SAP 002-623-018
 CP 2017-7

MISCELLANEOUS
 DETAILS
 Sheet 19 of 134 Sheets

CONCRETE PANELS & REBARS



PLAN VIEW - JOINT LAYOUT



SECTION A-A

GENERAL NOTES:

SEE TYPICAL SECTIONS AND PLAN SHEETS FOR CURB AND GUTTER DETAILS.

DOWEL BAR ASSEMBLIES SHALL BE SIMILAR TO THOSE SHOWN ON STANDARD PLATE 1103.

ALL REINFORCING BARS SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301 AND SHALL MEET THE REQUIREMENTS OF GRADE 60 FOR AASHTO M-31 OR M-53.

TIE BARS:
USE NO. 4 BARS 2' LONG @ 2.5' SPACING.
(NO. 4 ENGLISH DESIGNATION CORRESPONDS TO NO. 13 METRIC DESIGNATION)

C3P-D JOINT SHOULD EXTEND THROUGH INTEGRANT CURB B6.

NOT TO SCALE

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_MISCDET.dgn 06/12/2018 2:28:13 PM

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 DATE: 06-12-2018 LICENSE NO. 49118

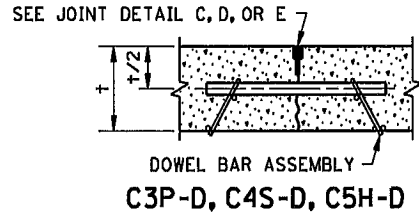
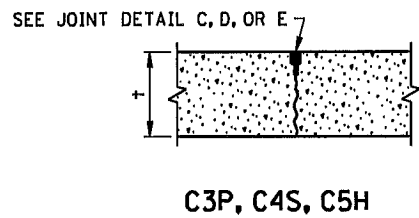
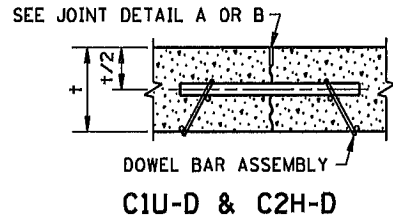
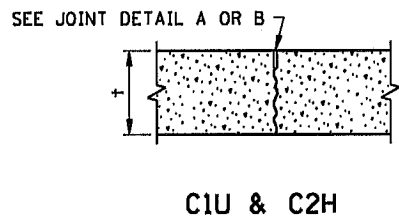
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 CHECKED BY: EJM DATE: 06-07-18



**ANOKA COUNTY
HIGHWAY DEPT.**

SAP 002-623-018
CP 2017-7

MISCELLANEOUS
DETAILS



CONTRACTION JOINT REFERENCE, DETAIL & SEALER SPEC. TABLE

JOINT REFERENCE		JOINT DETAIL	JOINT SEALER SPEC.	JOINT WIDTH
WITHOUT DOWELS	WITH DOWELS			
C1U	C1U-D	A	UNSEALED	1/8"
C2H	C2H-D	B	3725	1/8"
C3P	C3P-D	C	3721	3/8"
C4S	C4S-D	D	3722	3/8"
C5H	C5H-D	E	3725	3/8"

LEGEND

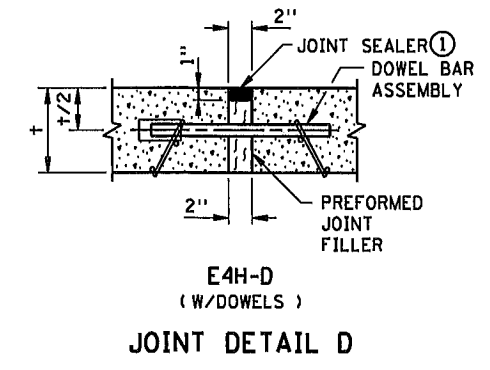
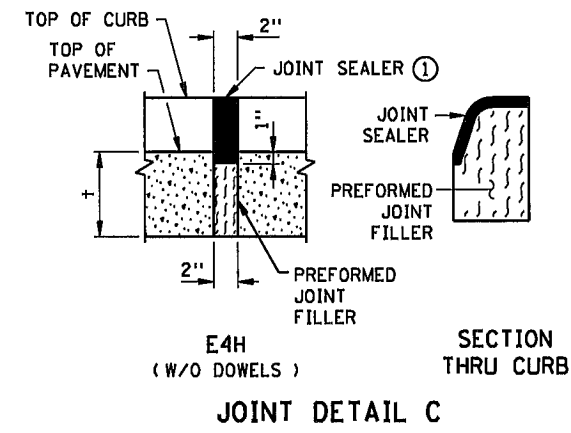
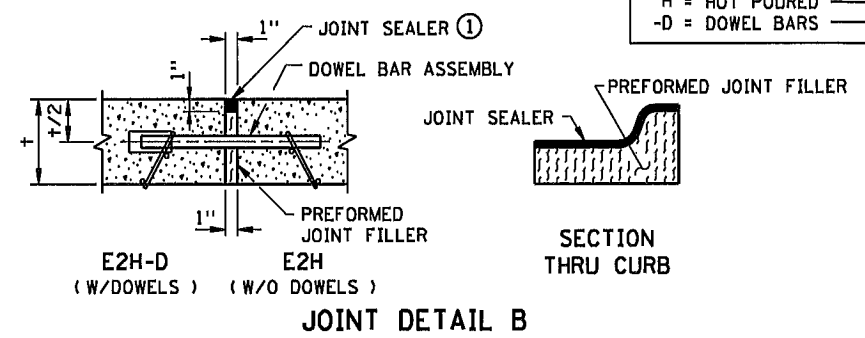
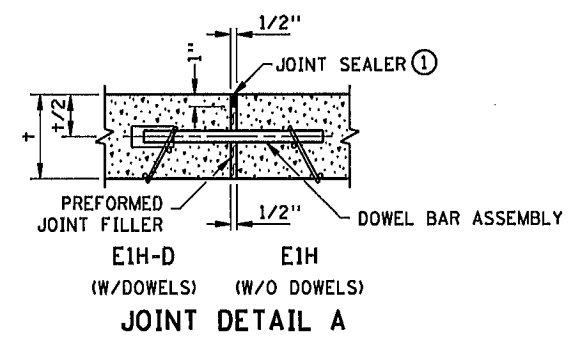
C = CONTRACTION JOINT EXAMPLE C2H-D
 NO. = JOINT REFERENCE
 U = UNSEALED
 H = HOT Poured
 P = PREFORMED
 S = SILICONE
 -D = DOWEL BARS

EXPANSION JOINT REFERENCE, DETAIL & SEALER SPEC. TABLE

JOINT REFERENCE WITHOUT DOWELS	JOINT REFERENCE WITH DOWELS	JOINT DETAIL	JOINT SEALER SPEC.	JOINT WIDTH
E1H	E1H-D	A	3725	1/2"
E2H	E2H-D	B	3725	1"
E4H		C	3725	2"
	E4H-D	D	3725	2"
E8H		STANDARD PLAN 5-297.229	3725	4"

LEGEND

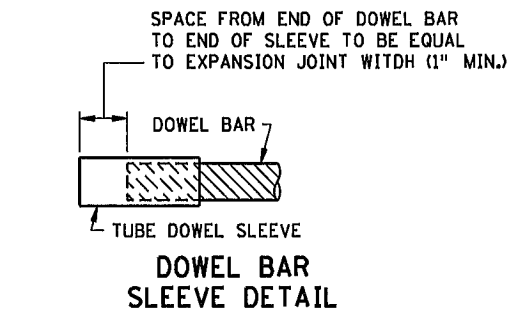
E = EXPANSION JOINT EXAMPLE E4H-D
 NO. = JOINT REFERENCE
 H = HOT Poured
 -D = DOWEL BARS



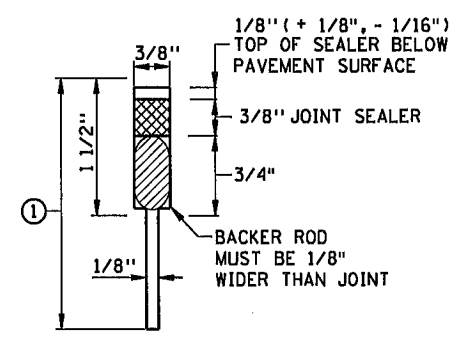
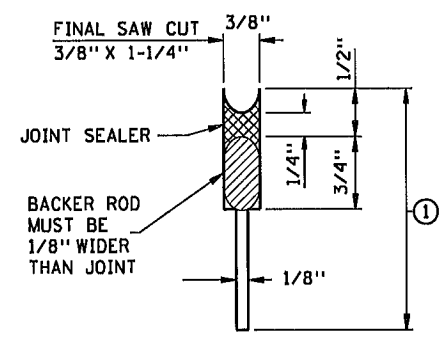
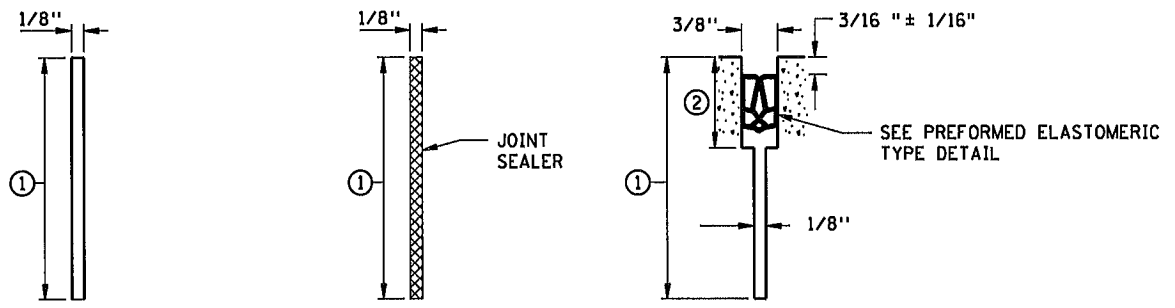
DOWEL BAR DIAMETER TABLE

PAVEMENT THICKNESS †	DOWEL BAR DIAMETER
LESS THAN 6"	NONE
6" - 6 1/2"	1" OR NONE
7" - 7 1/2"	1"
8" - 10"	1 1/4"
10 1/2" AND GREATER	1 1/2"

- NOTES:**
- SEE STANDARD PLATE 1103 FOR DOWEL BAR ASSEMBLY. SEE STANDARD PLATE 1150 FOR CONSTRUCTION OF HEADER JOINTS. JOINT WIDTH TOLERANCE IS + 1/16" TO - 1/32". FURNISH AND INSTALL ALL JOINT SEALER IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. SEE STANDARD PLANS 5-297.217 AND 5-297.219, FOR CONCRETE MAINLINE/RAMP PAVEMENT. SEE PAVING LAYOUTS IN THE PLANS FOR JOINT CLASS DESIGNATION TO BE USED AND SPECIAL REINFORCEMENT REQUIRED.
 - JOINT DEPTH SHALL BE: FOR CONCRETE OVERLAYS - 1/3 THE PAVEMENT THICKNESS FOR CONCRETE PAVEMENT - 1/4 THE PAVEMENT THICKNESS
 - SEE CONTRACTION JOINT SEALER DETAIL. WHEN USING PREFORMED JOINT SEALER, THE DEPTH SHALL BE 1/4" MORE THAN THE PREFORMED SEALER, WHEN COMPRESSED, TO FIT THE JOINT DESIGN WIDTH. "a" DIMENSION SHALL APPLY AT ANY POINT THROUGHOUT "c" DEPTH. SHARP INTERNAL CORNERS WILL NOT BE PERMITTED. ALL CORNERS SHALL BE PROVIDED WITH SUITABLE FILLET.
 - WHEN SEALING, THE JOINT FACES SHALL BE CLEANED AND DRIED BY SANDBLASTING AND AIR BLASTING.
 - PRIOR TO SEALING THE JOINT, A 1/2" DIA. CLOSED CELL BACKER ROD SHALL BE PLACED SUCH THAT THE TOP OF THE BACKER ROD IS 1/2" BELOW THE SURFACE OF THE PAVEMENT. NON SELF-LEVELING SILICONE SHALL BE TOOLED INTO THE JOINT MAINTAINING A SEAL AND BEAD THICKNESS OF 1/4".
 - PRIOR TO SEALING THE JOINT, A 1/2" DIA. CLOSED CELL BACKER ROD CAPABLE OF WITHSTANDING SEALANT TEMPERATURES OF 400 DEGREES F. SHALL BE PLACED 1/2" BELOW THE TOP OF PAVEMENT.

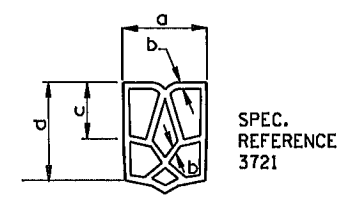


- NOTES:**
- PREFORMED JOINT FILLER MATERIAL, SPEC. 3702. FOR DOWEL BAR ASSEMBLY, SEE STANDARD PLATE 1103.
 - JOINT SEALER SPEC. 3725. THE JOINT FACES SHALL BE CLEANED AND DRIED BY SANDBLASTING AND AIR BLASTING. TOP OF SEALER, FLUSH TO 1/8" BELOW TOP OF PAVEMENT SURFACE. MAKE TOP OF SEALER FOR CURB SECTION D JOINTS FLUSH WITH SURFACE ±1/8".



REQUIRED DIMENSIONS

JOINT TYPE	TRANSVERSE
NOMINAL SEALER SIZE	1 1/16"
a	0.69" + 0.13" - 0.05"
b	0.08" ± 0.02"
c	0.25" MIN.
d	0.63" MIN.



PREFORMED ELASTOMERIC TYPE DETAIL

REVISIONS:
 APPROVED: 8-6-2014
 DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

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 CP 2017-7

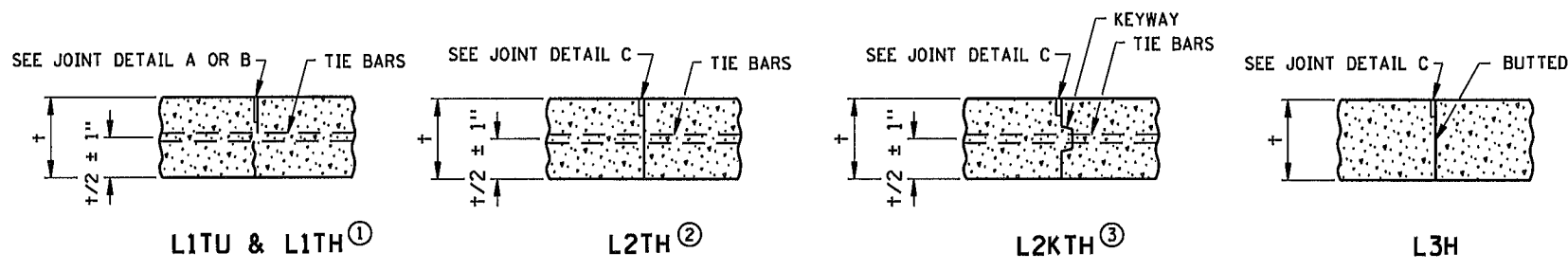
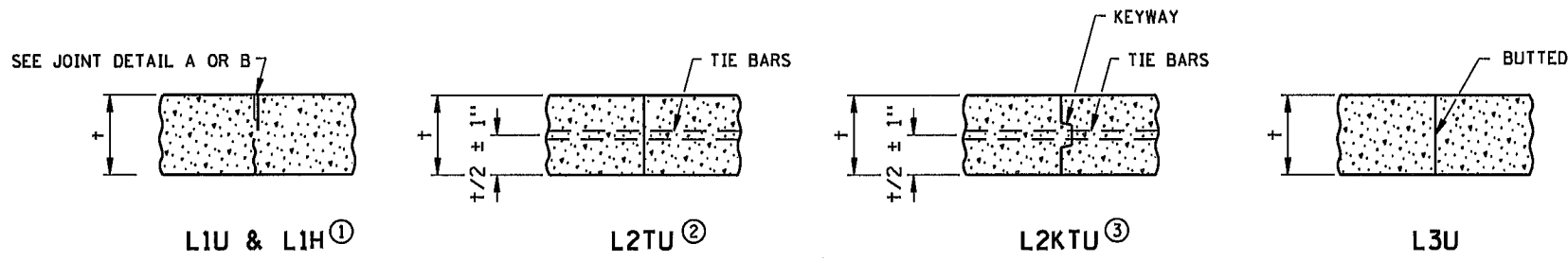
CONTRACTION JOINTS
 DESIGN C



STATE DESIGN ENGINEER
 8-6-2014

REVISOR:
 APPROVED:
 8-6-2014

PAVEMENT JOINTS
 CONTRACTION (DESIGN C) AND EXPANSION (DESIGN E)
STANDARD PLAN 5-297.221 | 1 OF 2
 SAP 002-623-018 | CP 2017-7
 SHEET 21 OF 134 SHEETS



TIEBAR TABLE

PAVEMENT THICKNESS	TIEBAR SIZE	LENGTH
< 10-1/2"	NO. 4	30"
≥ 10-1/2"	NO. 5	36"
ALL THICKNESS WHEN TYING TO CURB AND GUTTER	NO. 4	30"

THE TIE BAR SPACING FOR ALL L2T AND L2KT JOINTS SHALL BE 3'-0" CENTER TO CENTER AND BENT 60° AS SHOWN, EXCEPT WHEN NOTED OTHERWISE IN THE PLANS.

TIE BARS IN THE L2T AND L2KT JOINTS SHALL BE THE SAME SIZE AND LENGTH AS USED FOR THE L1T JOINTS, WHEN TYING PAVEMENT TO PAVEMENT. TIE BARS IN THE L2KT JOINTS SHALL BE NO. 4 X 2' - 6", WHEN TYING CURB & GUTTER TO PAVEMENT.

ALL TIE BARS SHALL BE EPOXY COATED AND COMPLY WITH SPEC. 3301.

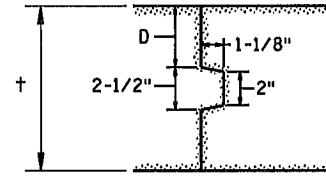
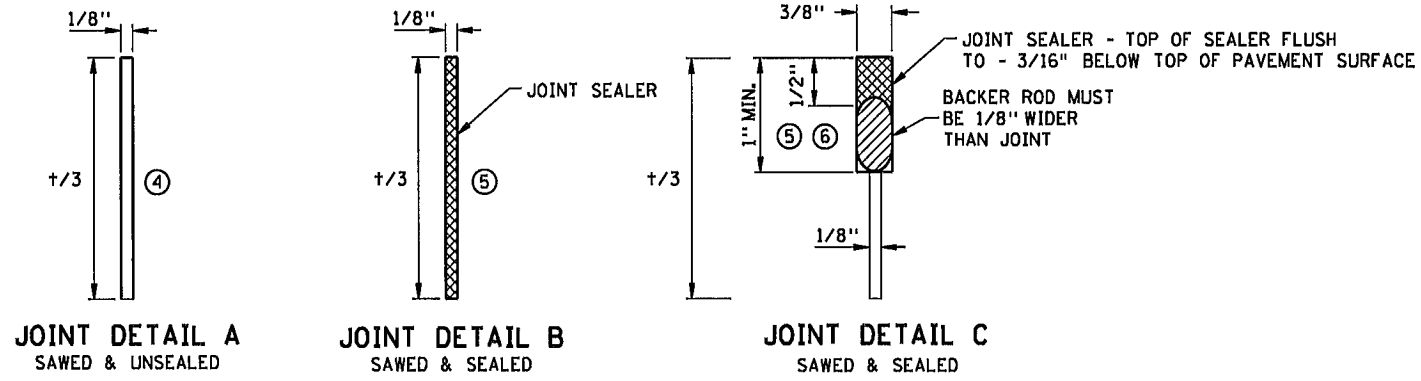
LONGITUDINAL JOINT REFERENCE, DETAIL & SEALER SPECIFICATION TABLE

JOINT REFERENCE			JOINT DETAIL	JOINT SEALER SPEC	JOINT WIDTH
WITHOUT TIE BARS	WITH TIE BARS	WITH KEYWAY & TIE BARS			
L1U	L1TU		A	UNSEALED	1/8"
L1H	L1TH		B	3725	1/8"
	L2TU	L2KTU	NONE	UNSEALED	
	L2TH	L2KTH	C	3725	3/8"
L3U			NONE	UNSEALED	
L3H			C	3725	3/8"

LEGEND

L = LONGITUDINAL JOINT
 NO. = JOINT REFERENCE
 1 = PAVED CONSTRUCTION JOINT
 2 = TIED/KEYED CONSTRUCTION JOINT
 3 = BUTTED CONSTRUCTION JOINT
 K = KEYWAY
 T = TIE BARS
 U = UNSEALED
 H = HOT POURED

EXAMPLE

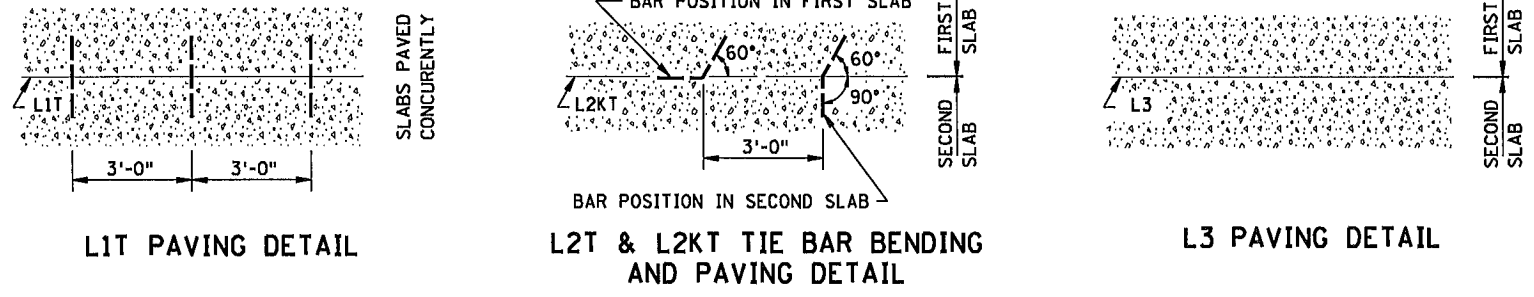


PAVEMENT KEYWAY DETAIL

KEYWAY DIMENSION TABLE

† PAVEMENT THICKNESS	D (TOLERANCE ± 1/4")
< 7"	NO KEYWAY
7" TO 7-1/2"	3"
8" TO 10"	4"
≥ 10-1/2"	5"

KEYWAY (1-1/8" x 2" x 2-1/2") MAY BE FORMED WITH MOLD OR METAL FORM. OTHER APPROVED KEYWAY SHAPES GIVING EQUIVALENT CONSTRUCTION FEATURES MAY BE USED WITH APPROVAL OF THE ENGINEER.



NOTES:

NORMALLY, TIED PAVEMENT WIDTHS SHALL NOT EXCEED FOUR LANES, EXCEPT BRIDGE APPROACH PANELS AND PAVEMENT TAPERS.

JOINT WIDTH TOLERANCE IS + 1/16 IN. TO - 1/32 IN.

FURNISH AND INSTALL ALL JOINT SEALER IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

TIED/KEYED AND BUTTED CONSTRUCTION JOINTS SHALL BE UNSEALED EXCEPT AS OTHERWISE NOTED IN THE PLAN OR REQUIRED BY THE ENGINEER.

SEE STANDARD PLANS 5-297.217 AND 5-297.219 FOR CONCRETE MAINLINE AND RAMP PAVEMENT.

SEE PAVING LAYOUTS IN THE PLANS FOR JOINT CLASS DESIGNATIONS TO BE USED AND SPECIAL REINFORCEMENT REQUIRED.

WHEN CURB AND GUTTER IS PLACED ADJACENT TO CONCRETE MAINLINE, THE TIEBARS SHALL BE PLACED A MINIMUM OF 2" ABOVE THE CURB AND GUTTER GRADE.

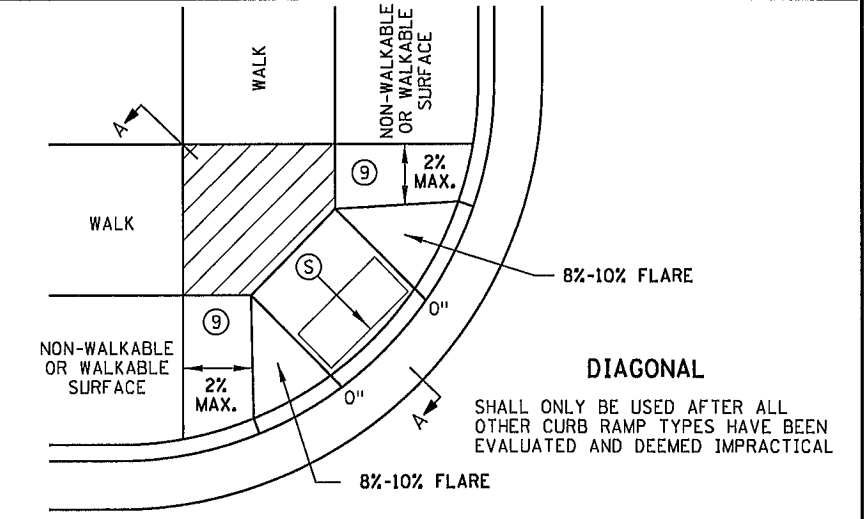
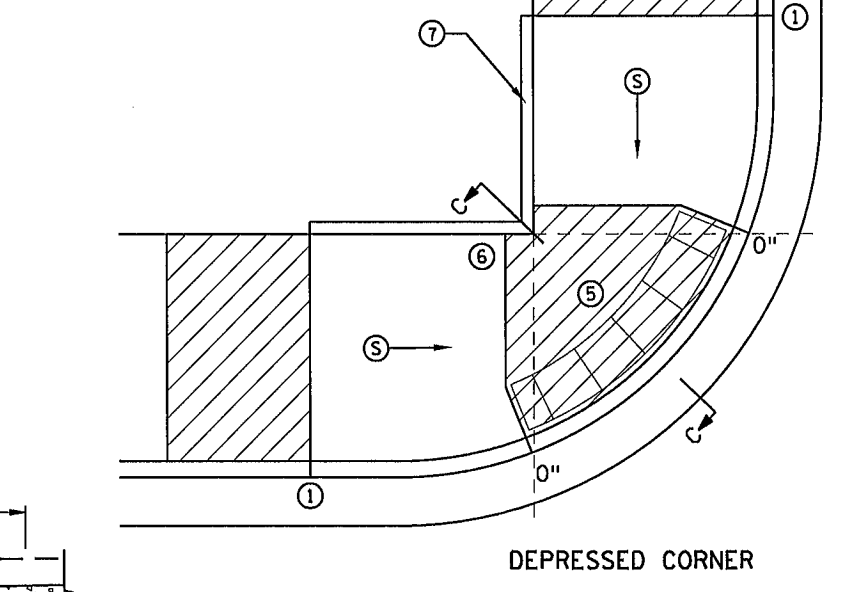
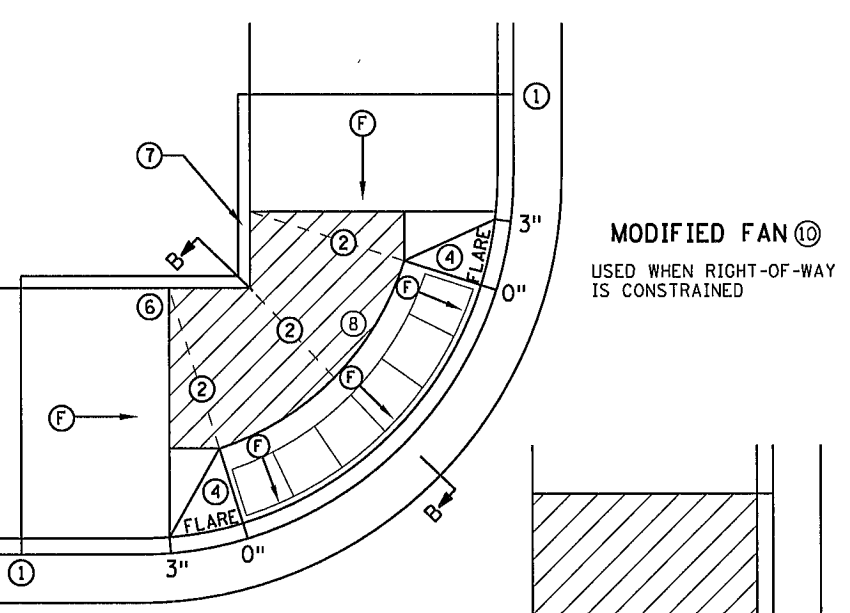
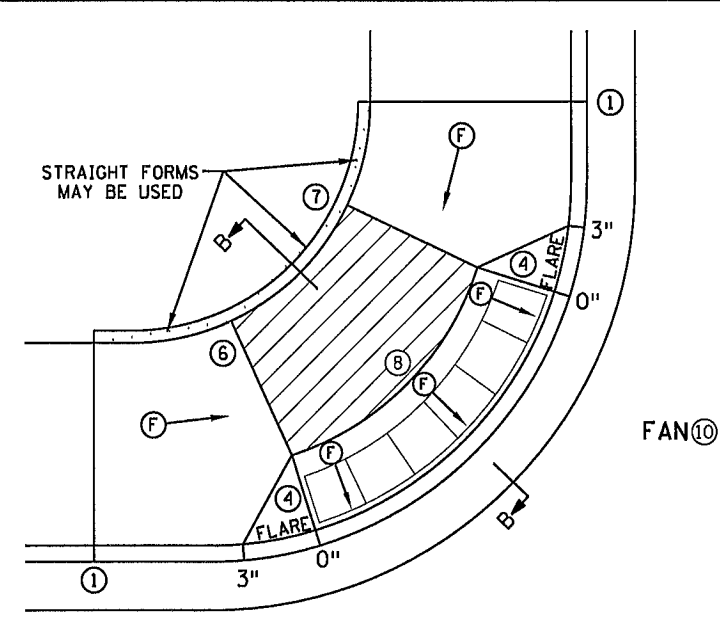
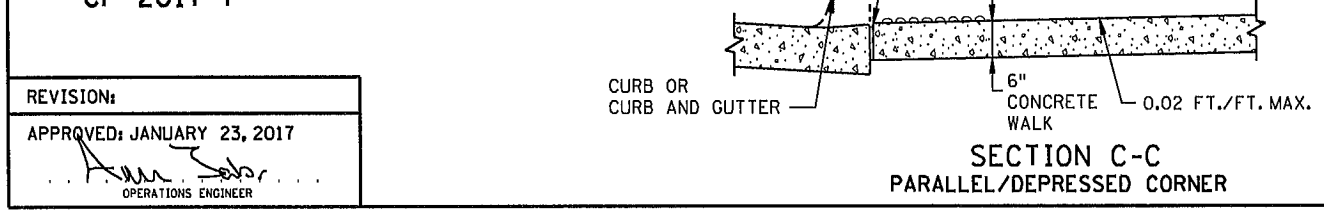
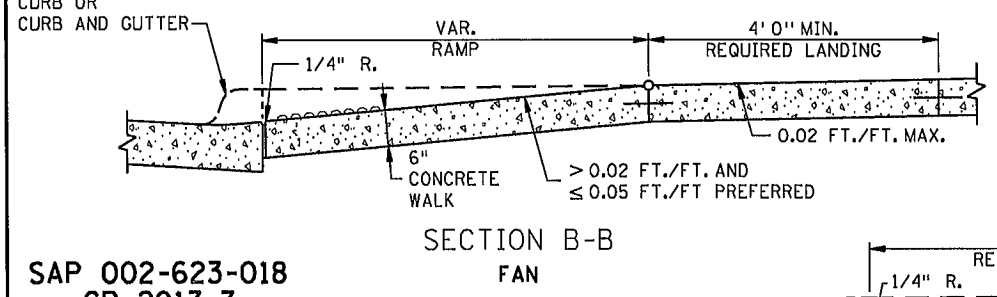
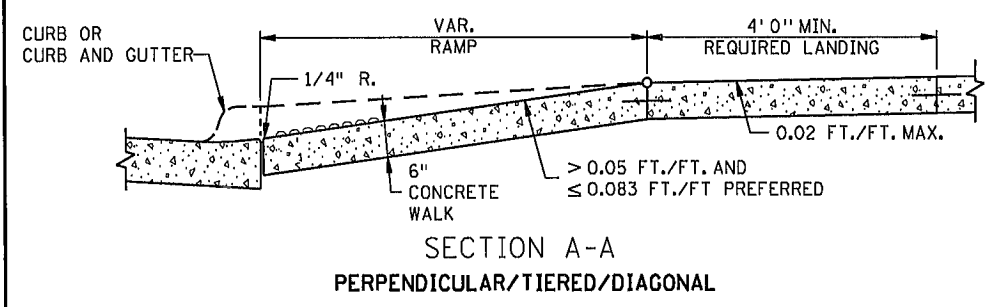
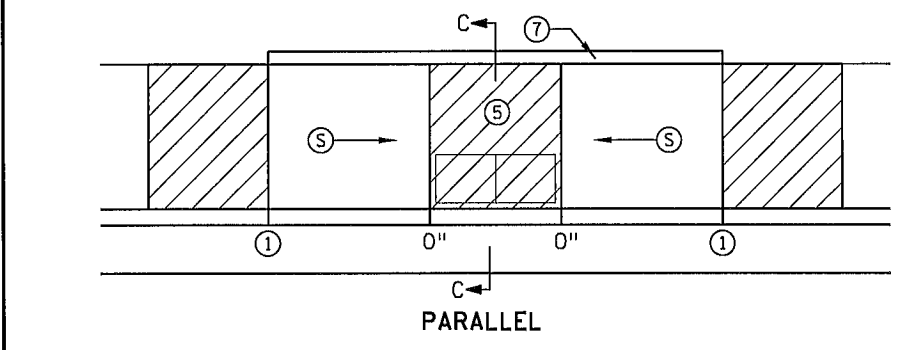
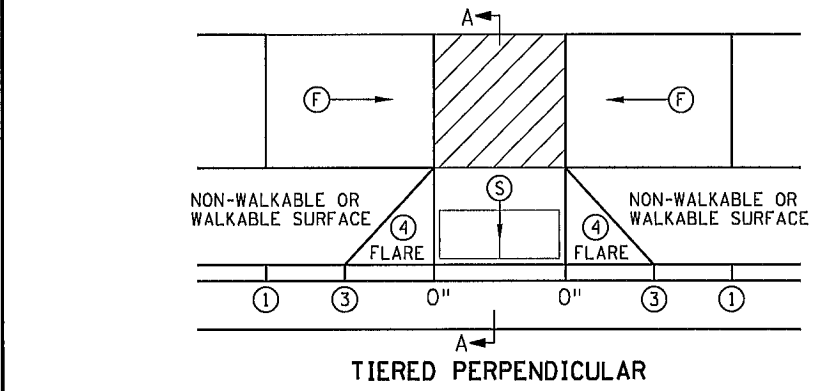
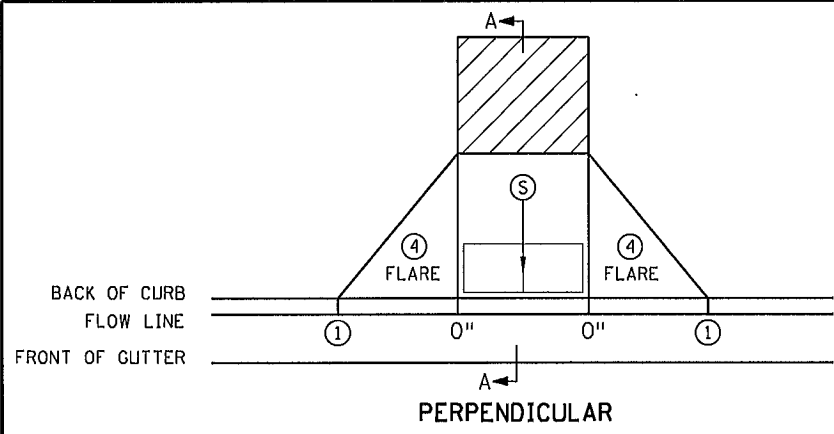
- ① SEE THE LONGITUDINAL JOINT REFERENCE, DETAIL & SEALER SPECIFICATION TABLE TO DETERMINE JOINT DETAIL.
- ② CONCRETE PAVEMENTS LESS THAN 7" SHALL USE L2TU AND L2TH JOINTS UNLESS OTHERWISE ALLOWED BY THE ENGINEER.
- ③ CONCRETE PAVEMENTS GREATER THAN OR EQUAL TO 7" SHALL USE L2KTU AND L2KTH JOINTS UNLESS OTHERWISE ALLOWED BY THE ENGINEER.
- ④ THE JOINT FACES SHALL BE CLEANED WITH WATER DURING THE SAW CUTTING OPERATION OR BY WATER BLASTING AFTER SAWING.
- ⑤ THE JOINT FACES SHALL BE CLEANED AND DRIED BY SANDBLASTING AND AIR BLASTING.
- ⑥ PRIOR TO SEALING THE JOINT, A 1/2" DIAMETER CLOSED CELL BACKER ROD CAPABLE OF WITHSTANDING SEALANT TEMPERATURES OF 400 DEGREES F, SHALL BE PLACED 1/2" BELOW THE TOP OF THE PAVEMENT.

REVISION:
 APPROVED: 8-6-2014
 DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

SAP 002-623-018
 CP 2017-7

REVISOR:
 APPROVED: 8-6-2014
 STATE DESIGN ENGINEER

PAVEMENT JOINTS
 LONGITUDINAL (DESIGN L)
STANDARD PLAN 5-297.221 | 2 OF 2
 SAP 002-623-018 | SHEET 22 OF 134 SHEETS
 CP 2017-7



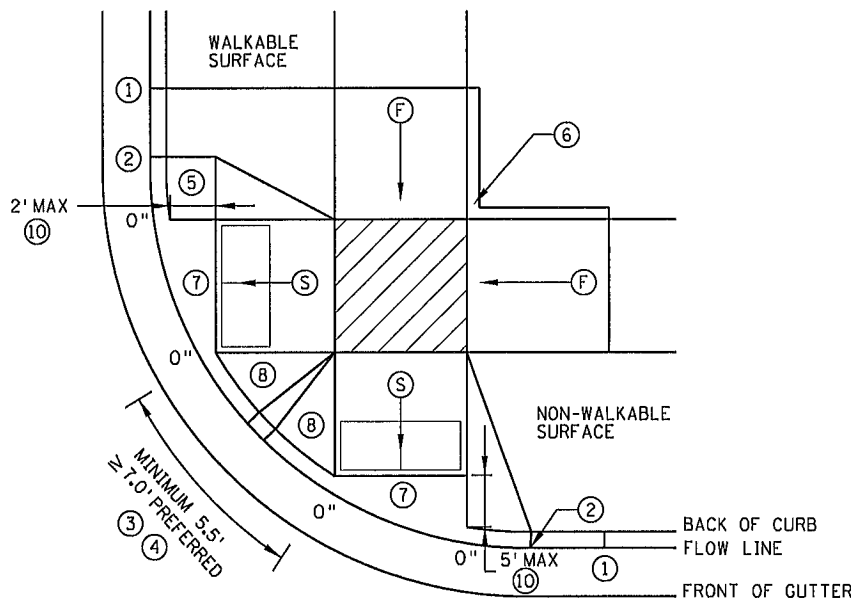
- NOTES:
- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.
 - INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.
 - SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%.
 - CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.
 - ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL, THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH, (EXCEPT AS STATED IN 6 BELOW).
 - TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISIONS - PROSECUTION OF WORK (ADA).
 - TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
 - WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.
 - ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.
 - 4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER ENTIRE WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK. DETECTABLE WARNING SHOULD BE 6" LESS THAN THE PAR/TRAIL WIDTH. ARC LENGTH OF RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.
 - RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.
- MATCH FULL HEIGHT CURB.
 - 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.
 - 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.
 - SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS, WHEN INITIAL LANDING IS AT FULL CURB HEIGHT.
 - DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
 - THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)
 - WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
 - A 7" MIN TOP RADIUS GRADE BREAK REQUIRED TO BE CONSTRUCTIBLE.
 - PAVE FULL WALK WIDTH.
 - "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

LEGEND	
THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.	
(S)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
(F)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
[Hatched Box]	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
X"	CURB HEIGHT

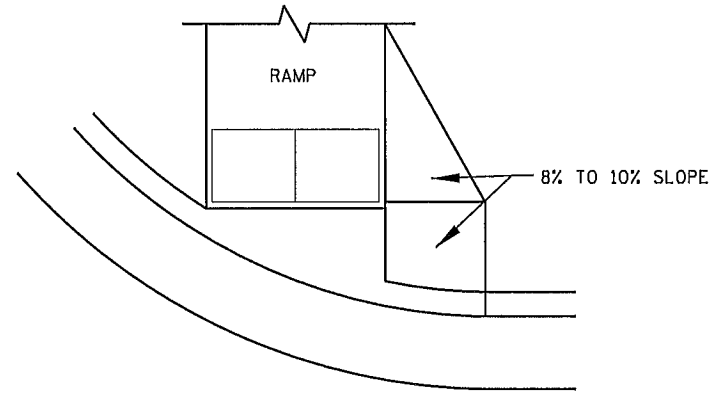
REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

REVISOR:
APPROVED: 1-23-2017
STATE DESIGN ENGINEER

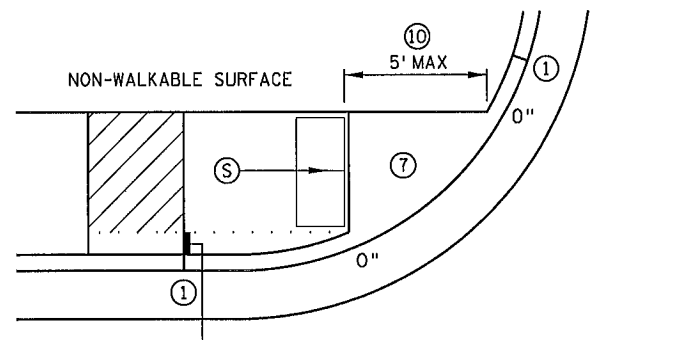
PEDESTRIAN CURB RAMP DETAILS
STANDARD PLAN 5-297.250 | 1 OF 6
SAP 002-623-018 CP 2017-7
SHEET 23 OF 134 SHEETS



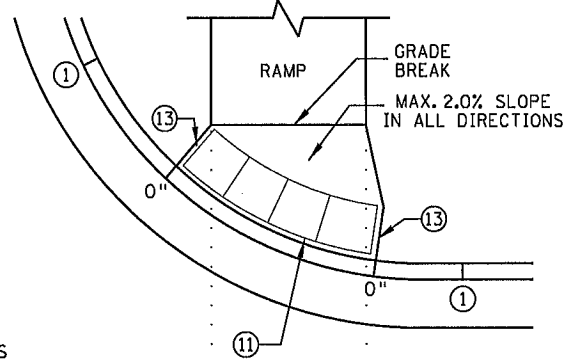
COMBINED DIRECTIONAL ⑨



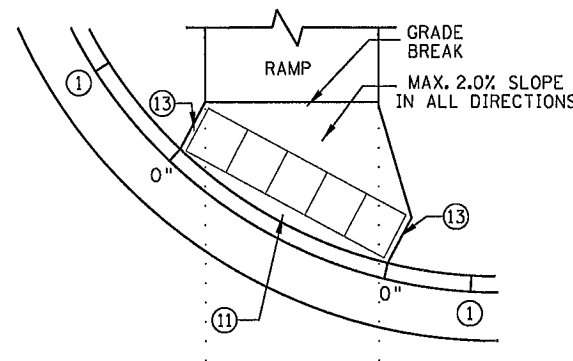
DIRECTIONAL RAMP WALKABLE FLARE



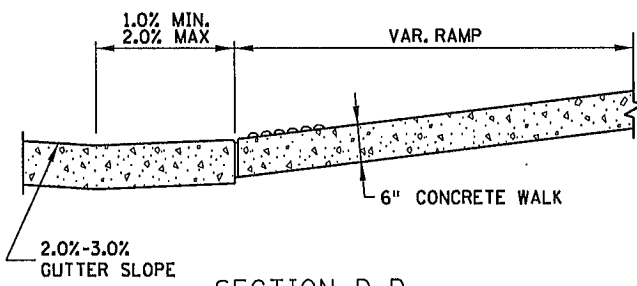
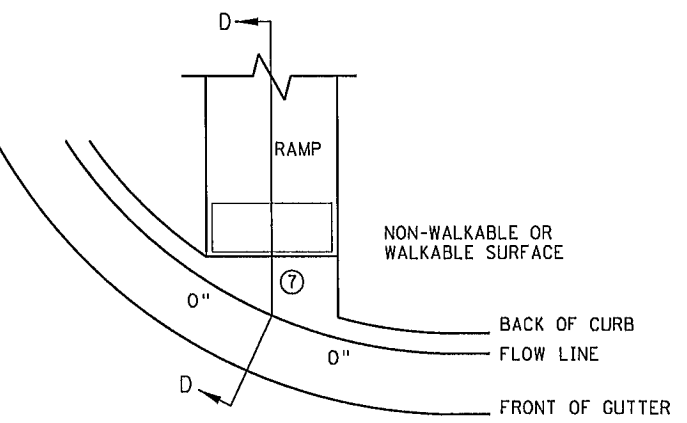
STANDARD ONE-WAY DIRECTIONAL ⑨



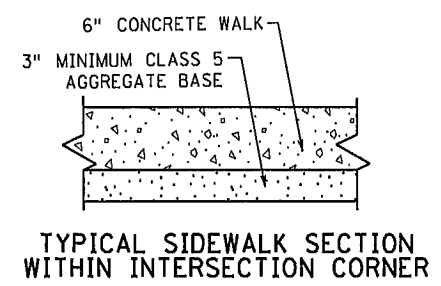
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫



SECTION D-D



TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

NOTES:

- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.
- 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, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.
- SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.
- CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOP GRADE BREAK OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.
- ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH.
- TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY, FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISION (PROSECUTION OF WORK).
- TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
- WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.
- ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.
- 4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER ENTIRE WIDTH OF SHARED-USE PATH AND THE ENTIRE PAR WIDTH OF THE WALK. DETECTABLE WARNING SHOULD BE 6" LESS THAN THE PAR/PATH WIDTH. ARC LENGTH OF RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.
- RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB. SEE NOTES ⑩ & ⑪ FOR INFORMATION REGARDING RECTANGULAR DETECTABLE WARNING PLACEMENT.
- ① MATCH FULL CURB HEIGHT.
- ② 3" HIGH CURB WHEN USING A 3' LONG RAMP
4" HIGH CURB WHEN USING A 4' LONG RAMP.
- ③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)
4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).
- ④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.
- ⑤ WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHOULD BE USED. SEE THE DETAIL ON THIS SHEET.
- ⑥ GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
- ⑦ MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.
- ⑧ 8% TO 10% WALKABLE FLARE.
- ⑨ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
- ⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
- ⑪ RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.
- ⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.
- ⑬ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- ⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

LEGEND	
THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.	
(S)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
(F)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
[Hatched Box]	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.
X"	CURB HEIGHT

CURB FOR DIRECTIONAL RAMPS ⑭

REVISION:
APPROVED: JANUARY 23, 2017
<i>[Signature]</i> OPERATIONS ENGINEER

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CP 2017-7

MINNESOTA DEPARTMENT OF TRANSPORTATION

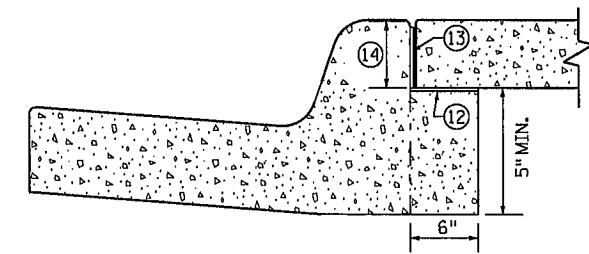
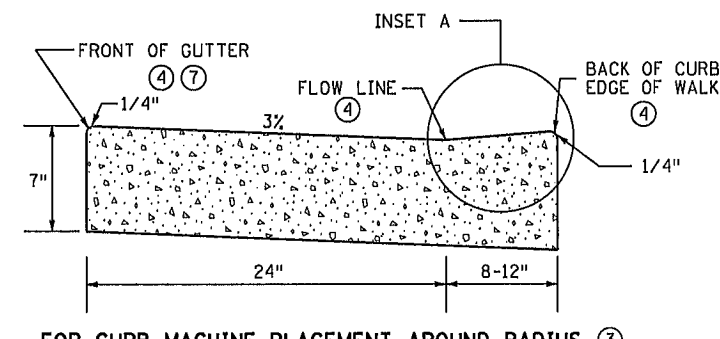
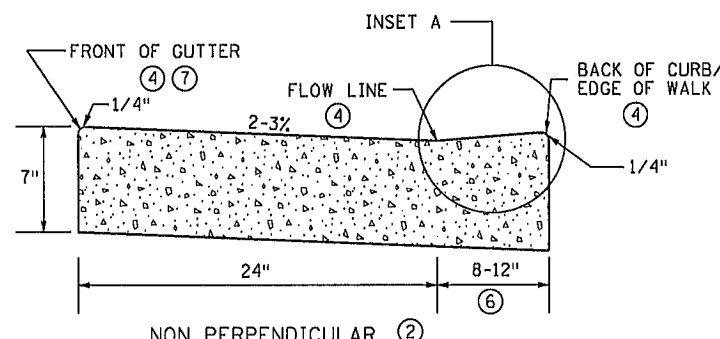
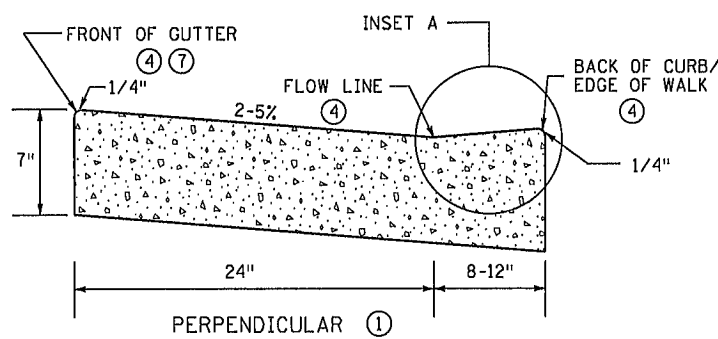
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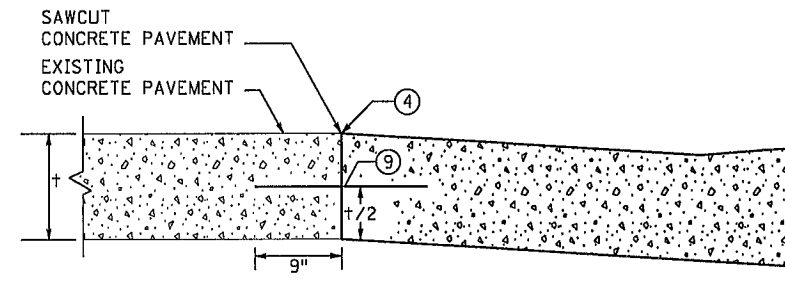
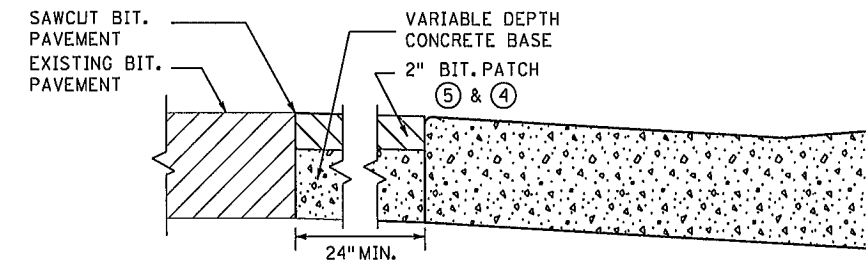
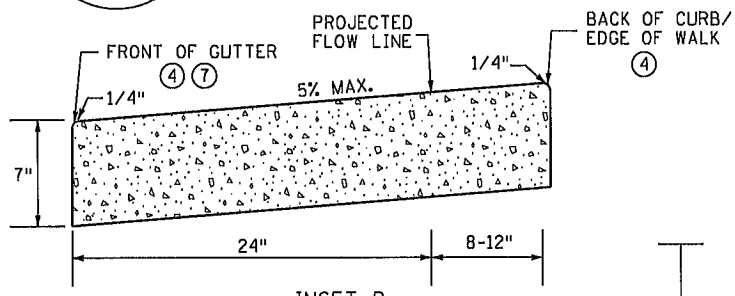
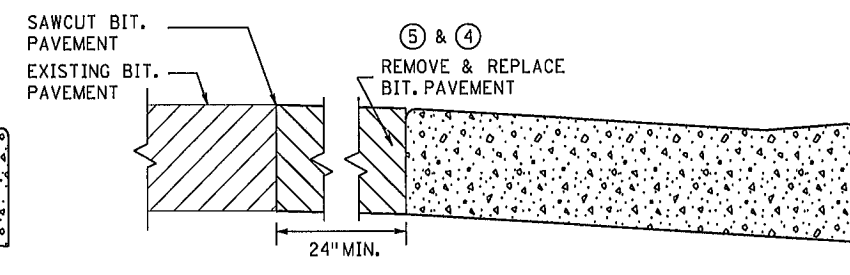
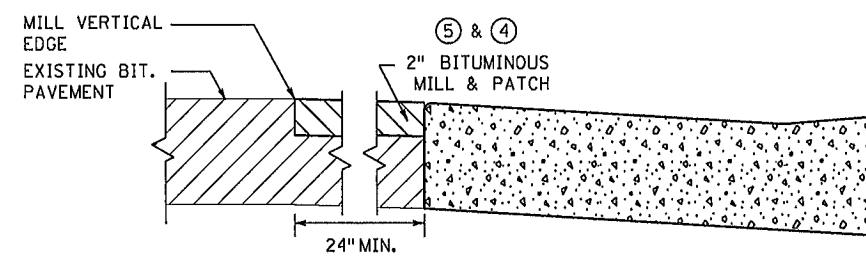
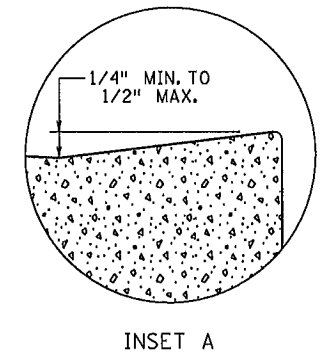
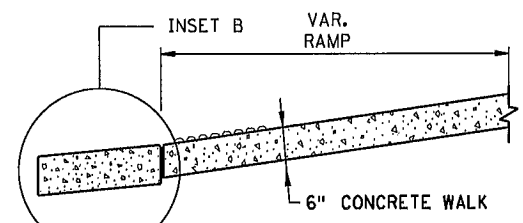
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PEDESTRIAN CURB RAMP DETAILS	
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PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL

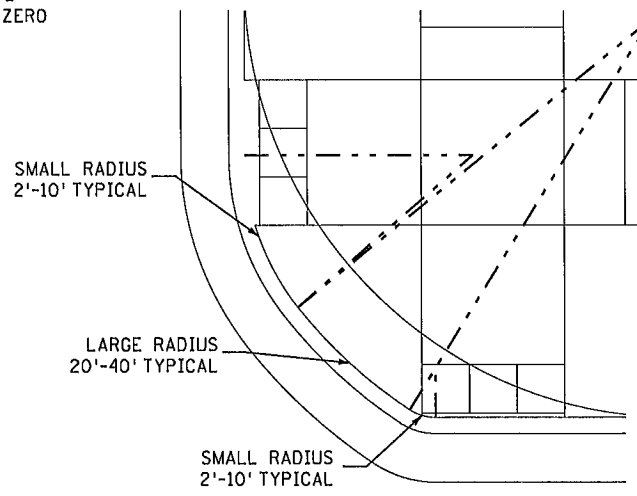
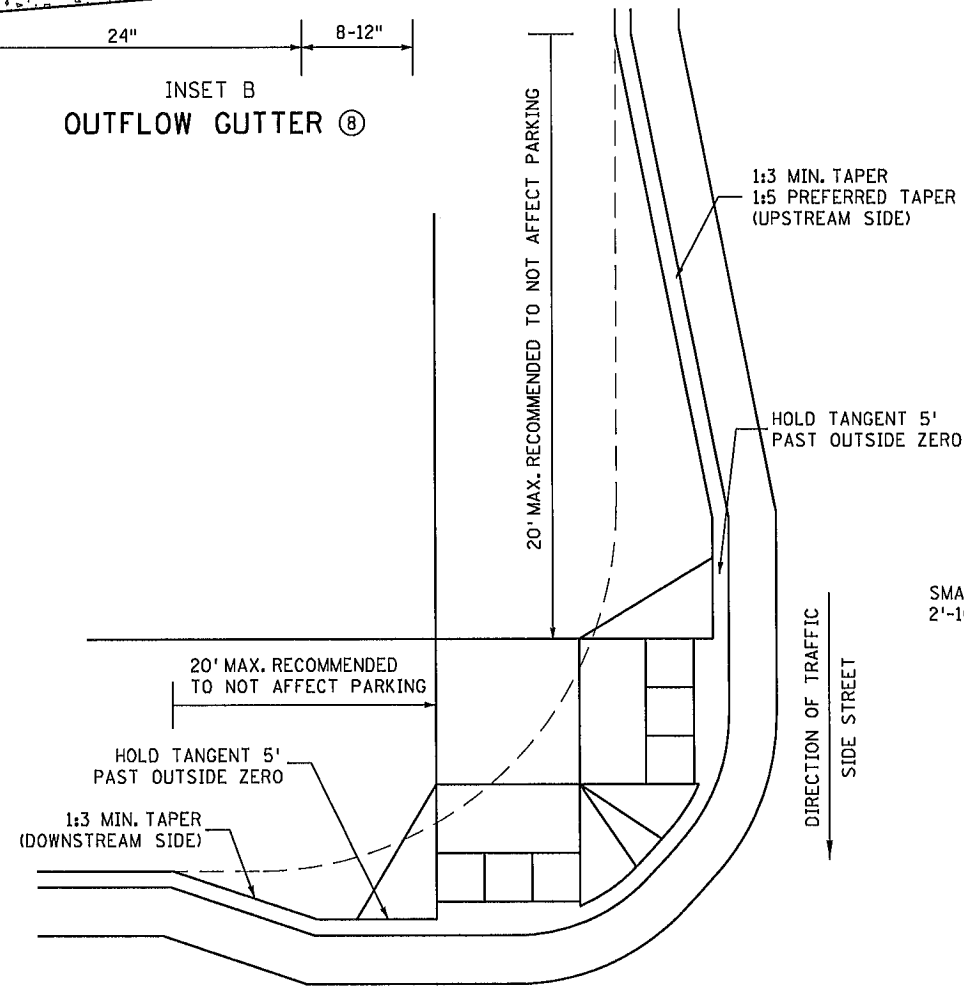


ONLY ALLOWED PER ENGINEER'S APPROVAL

PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER
FOR USE ON CURB RAMP RETROFITS

NOTES:

- POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM. NO PONDING SHALL BE PRESENT IN THE PAR.
- ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.
- ① 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.
- ② FOR USE AT CURB RAMPS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.
- ③ BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.
- ④ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4\".
- 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. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.
- ⑦ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. TOP 1.5\" OF THE GUTTER FACE MUST BE A FORMED EDGE. PAR GUTTER SHALL NOT BE OVERLAID.
- ⑧ SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.
- ⑨ DRILL AND GROUT NO. 4 EPOXY-COATED 18\" LONG TIE BARS AT 30\" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT 1' MINIMUM FROM ALL JOINTS.
- ⑩ HELPS PROVIDE TWO SEPARATE RAMPS, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.
- ⑪ CURB EXTENSIONS SHOULD BE USED IN VERTICALLY CONSTRAINED AREAS, USUALLY IN DOWNTOWN ROADWAY SEGMENTS WHERE ON-STREET PARKING IS AVAILABLE. CURB EXTENSIONS SHOULD BE CONSIDERED FOR APS INTERSECTIONS WHERE SPACE IS LIMITED. PUSH BUTTONS MUST MEET APS CRITERIA AS DESCRIBED IN THE PUSH BUTTON LOCATION DETAIL SHEET.
- ⑫ PLACE BOND BREAKER BETWEEN WALK AND TOP OF SILL.
- ⑬ 1/2\" PREFORMED JOINT FILLER PER MNDOT SPEC. 3702.
- ⑭ DIMENSION TO BE SAME AS SIDEWALK THICKNESS, 4\" MIN.



COMBINED DIRECTIONAL (COMPOUND RADIUS)

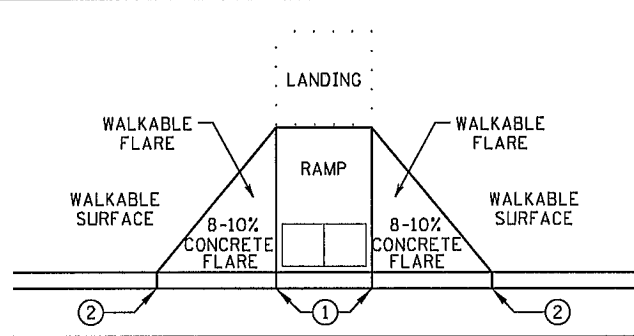
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APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

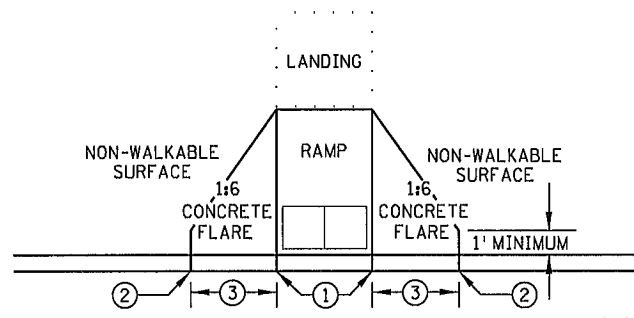
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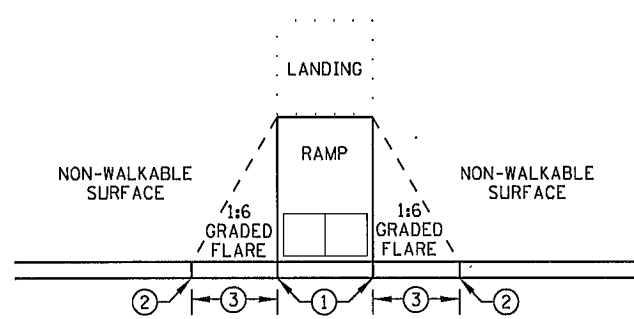
PEDESTRIAN CURB RAMP DETAILS
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SAP 002-623-018 CP 2017-7
SHEET 25 OF 134 SHEETS



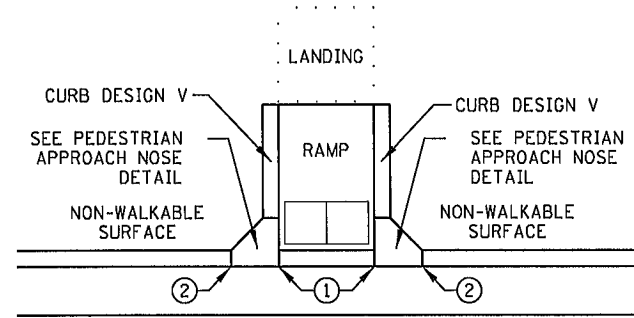
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

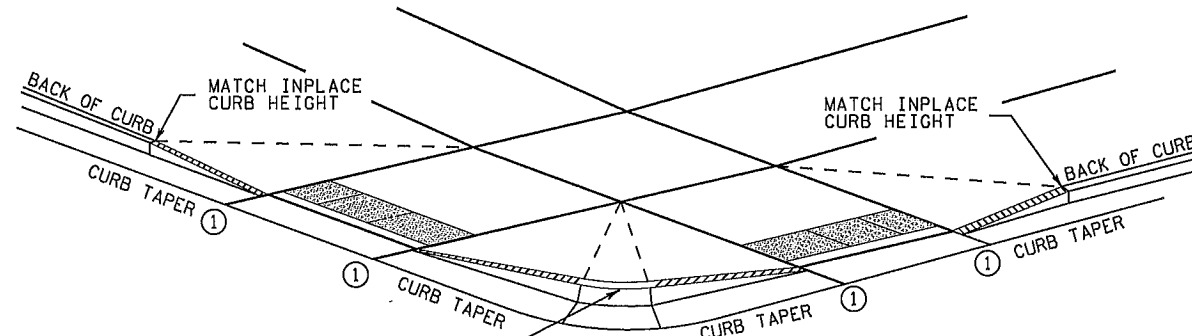


GRADED FLARES



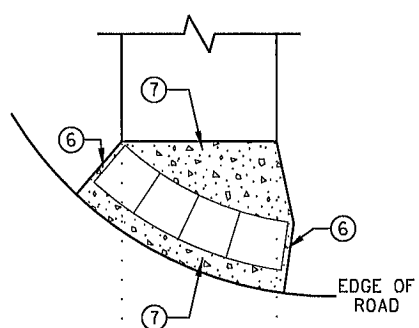
RETURNED CURB ⑤

TYPICAL SIDE TREATMENT OPTIONS ④ ⑪

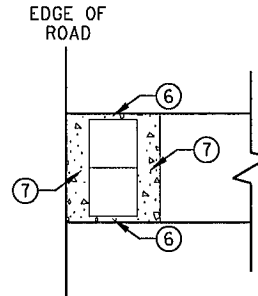


3" MINIMUM CURB HEIGHT, 4" PREFERRED
(MEASURED AT FRONT FACE OF CURB)
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑧
CURB AND GUTTER

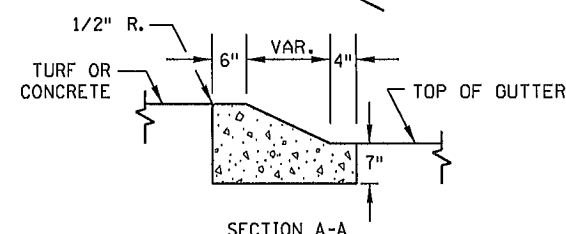
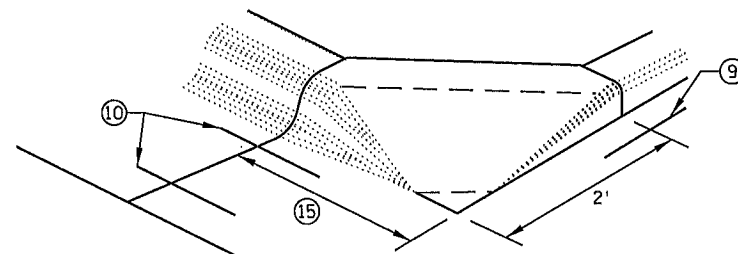


RADIAL DETECTABLE WARNING

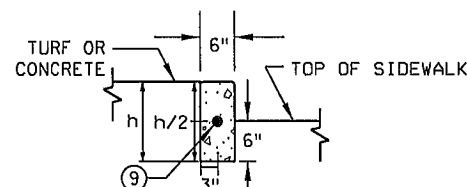


RECTANGULAR DETECTABLE WARNING

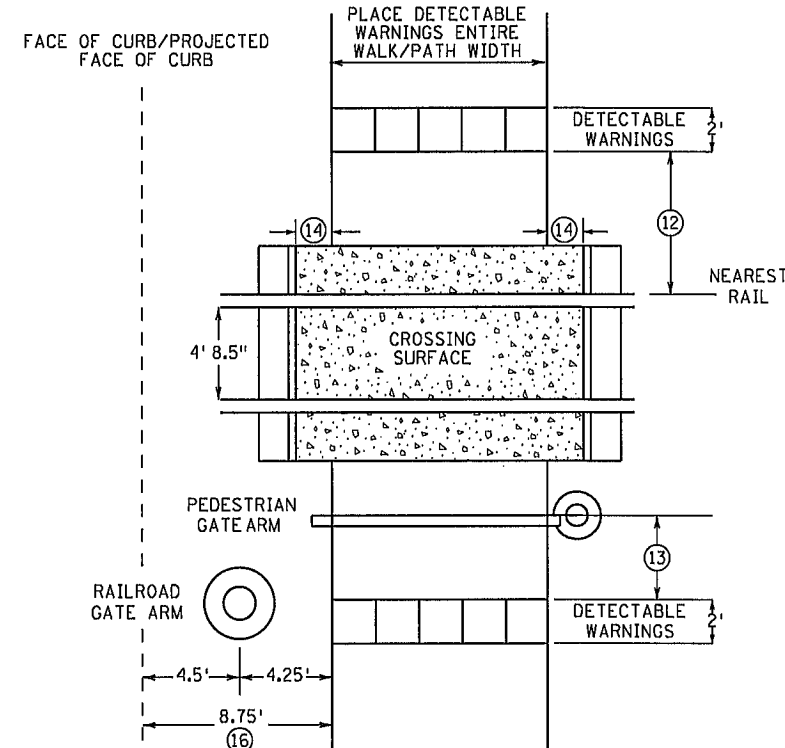
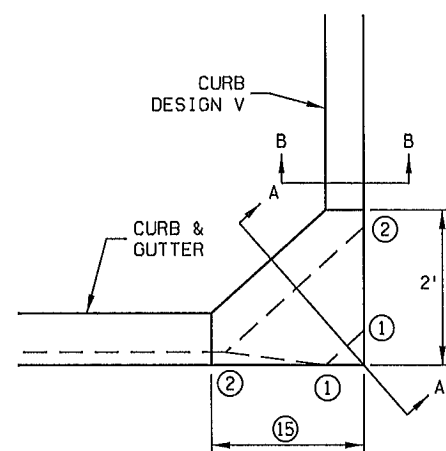
DETECTABLE EDGE WITHOUT CURB AND GUTTER



SECTION A-A



SECTION B-B



RAILROAD CROSSING
PLAN VIEW

- NOTES:
SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.
- ① 0" CURB HEIGHT.
 - ② FULL CURB HEIGHT.
 - ③ 2' FOR 4" HIGH CURB AND 3' FOR 6" HIGH CURB.
 - ④ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED 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.
 - ⑤ TYPICALLY USED FOR MEDIANS AND ISLANDS.
 - ⑥ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
 - ⑦ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.
 - ⑧ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.
 - ⑨ DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.
 - ⑩ DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.
 - ⑪ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6' LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE.
 - ⑫ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.
 - ⑬ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑫.
 - ⑭ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.
 - ⑮ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.
 - ⑯ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

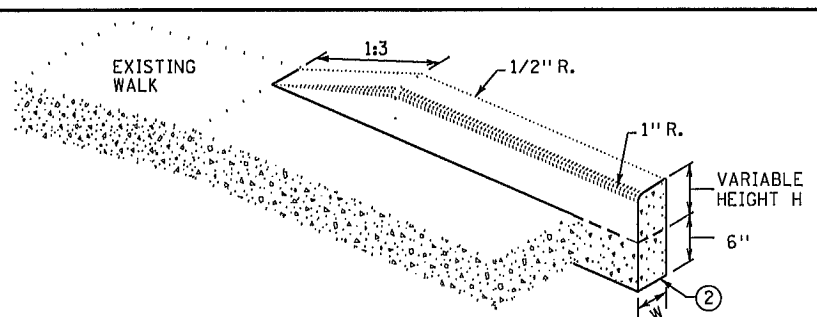
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CP 2017-7

PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)

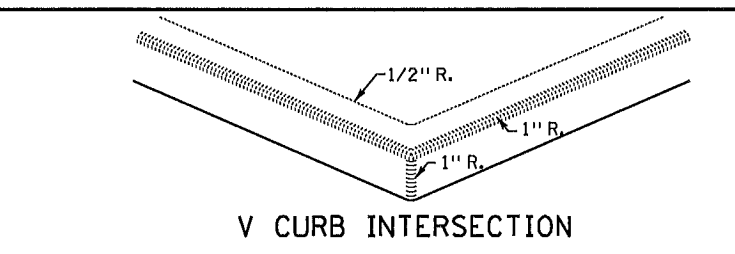
MINNESOTA DEPARTMENT OF TRANSPORTATION
Tom [Signature]
STATE DESIGN ENGINEER

REVISED:
APPROVED:
1-23-2017

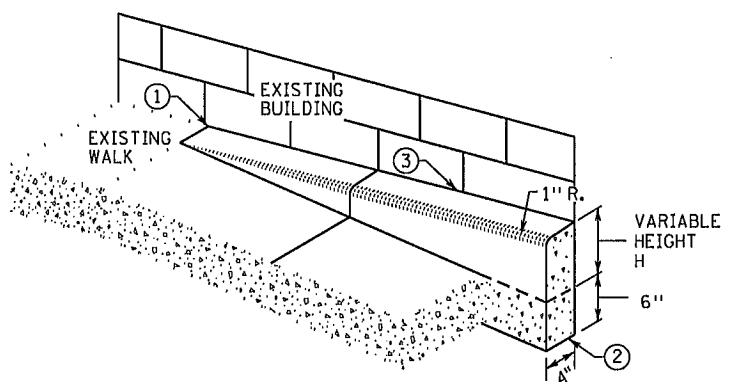
PEDESTRIAN CURB RAMP DETAILS
STANDARD PLAN 5-297.250 | 4 OF 6
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SHEET 26 OF 134 SHEETS



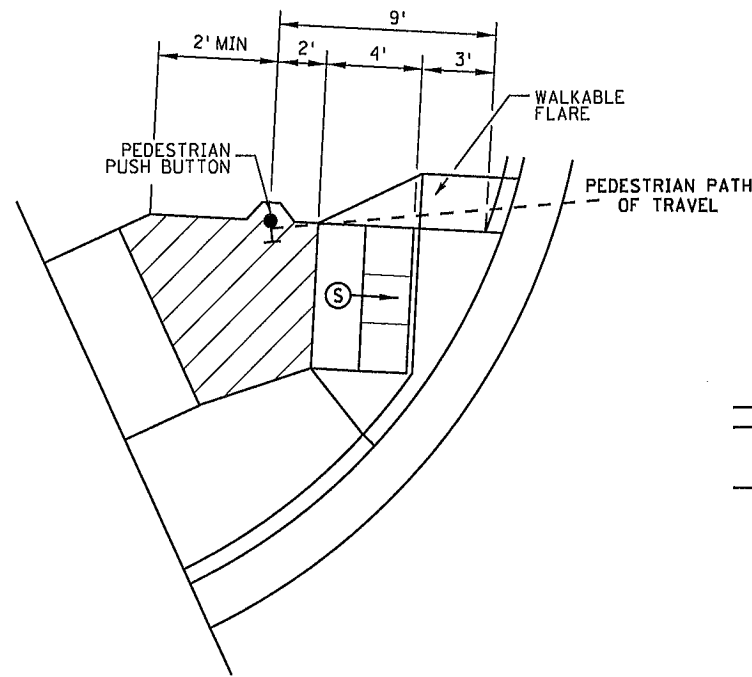
V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS



V CURB INTERSECTION

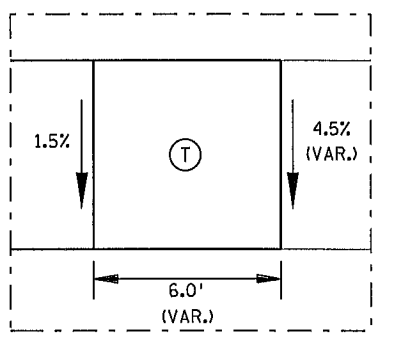
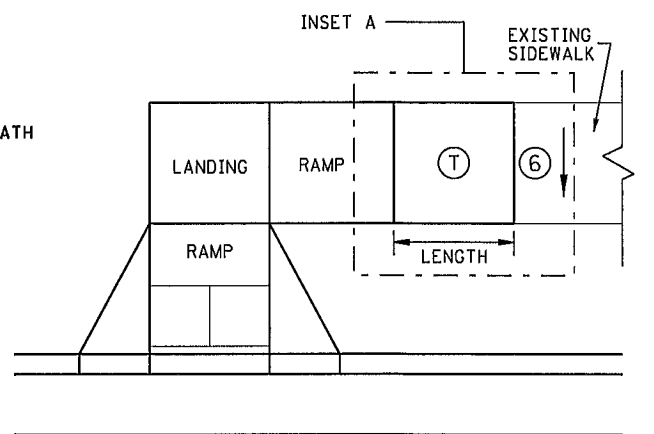


V CURB ADJACENT TO BUILDING
OR BARRIER

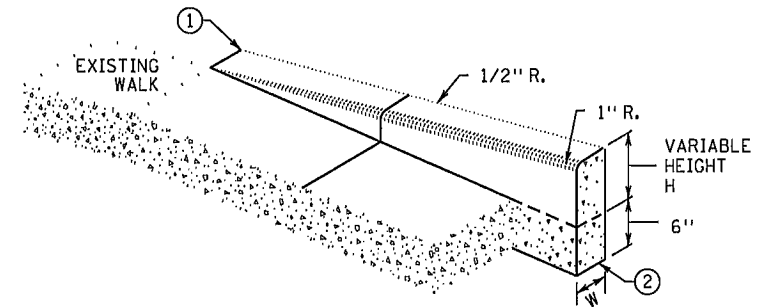


SEMI-DIRECTIONAL RAMP (3,4,9)

3' DOME SETBACK, 4' LONG RAMP AND
PUSH BUTTON 9' FROM THE BACK OF CURB
PRIMARILY USED FOR APS APPLICATIONS
WHERE THE PAR DOES NOT CONTINUE PAST
THE PUSH BUTTON (DEAD-END SIDEWALK)

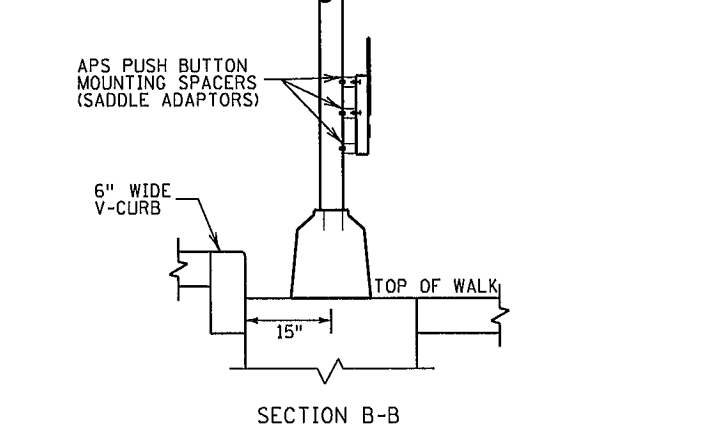
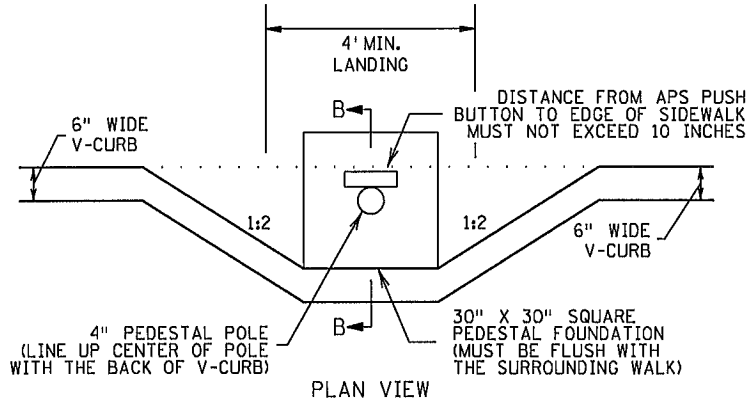


TRANSITION PANEL (4)(5)

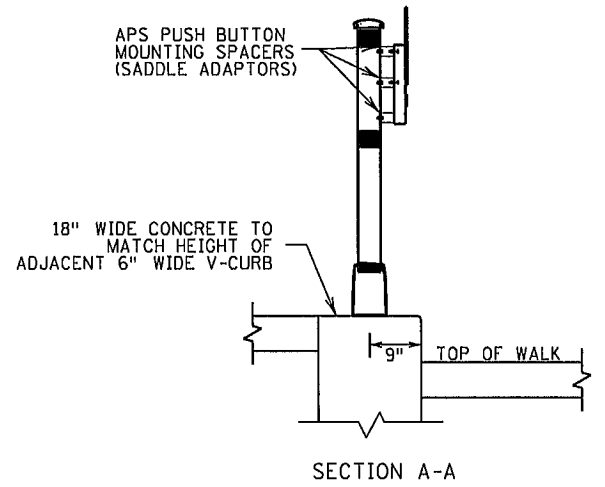
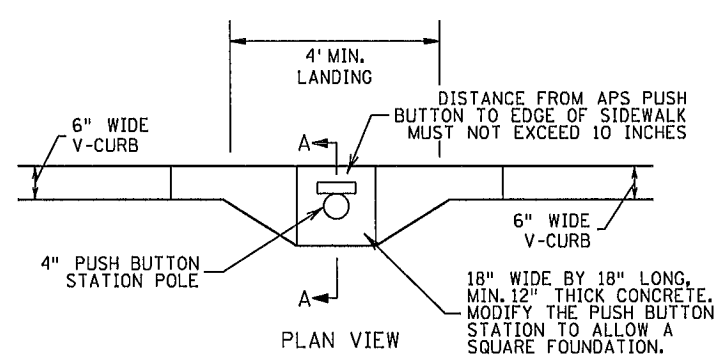


V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS

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



SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



PUSH BUTTON STATION (V-CURB)

NOTES:

- A WALKABLE FLARE IS AN 8-10% CONCRETE FLARE THAT IS REQUIRED WHEN THE FLARE IS ADJACENT TO A WALKABLE SURFACE, OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PUSH BUTTON TRAVERSES THE FLARE.
- ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.
- WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.
- 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.
- END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.
- ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
- EDGE BETWEEN NEW V CURB AND INPLACE STRUCTURE SHALL BE SEALED AND BOND BREAKER SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED V-CURB.
- THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.
- TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).
- EXISTING CROSS SLOPE GREATER THAN 2.0%.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

(L) LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

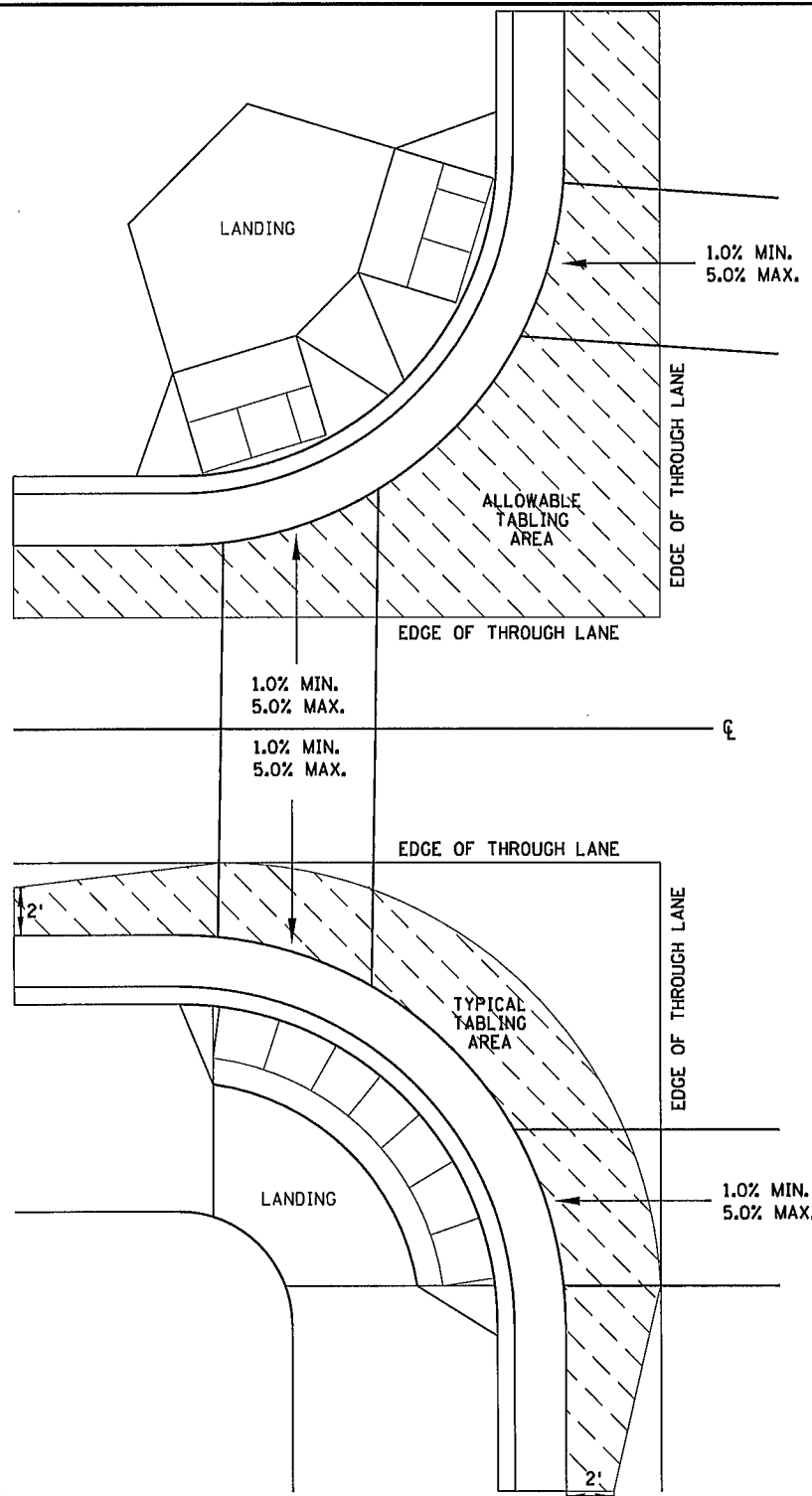
(T) TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

REVISION:
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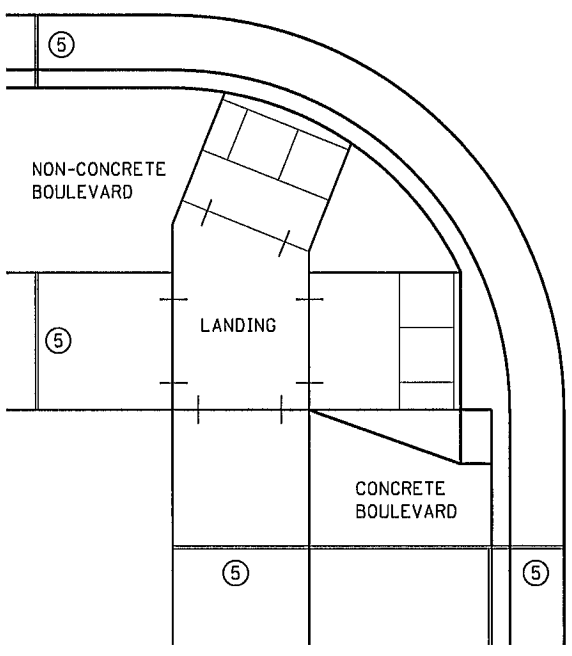
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APPROVED:
1-23-2017
STATE DESIGN ENGINEER

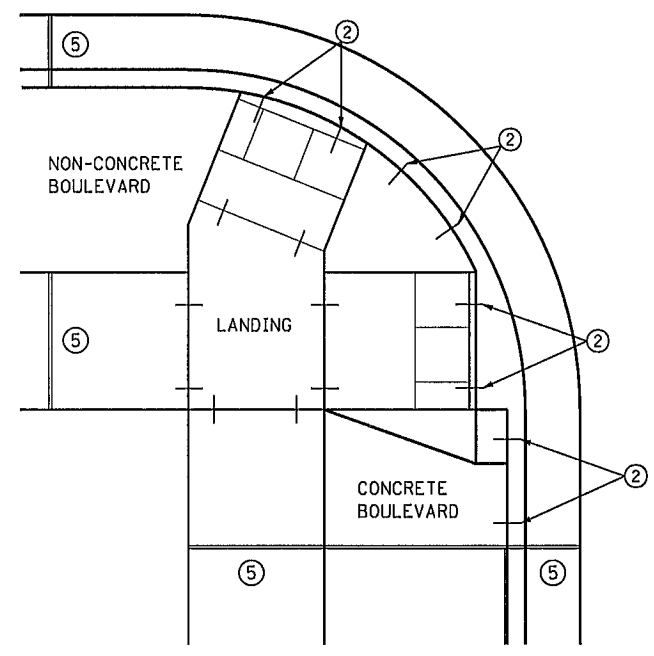
PEDESTRIAN CURB RAMP DETAILS
STANDARD PLAN 5-297.250 | 5 OF 6
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SHEET 27 OF 134 SHEETS



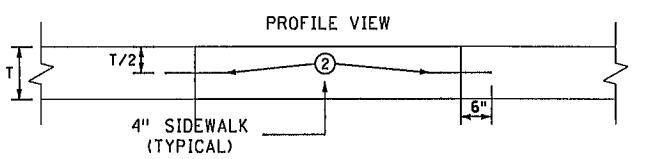
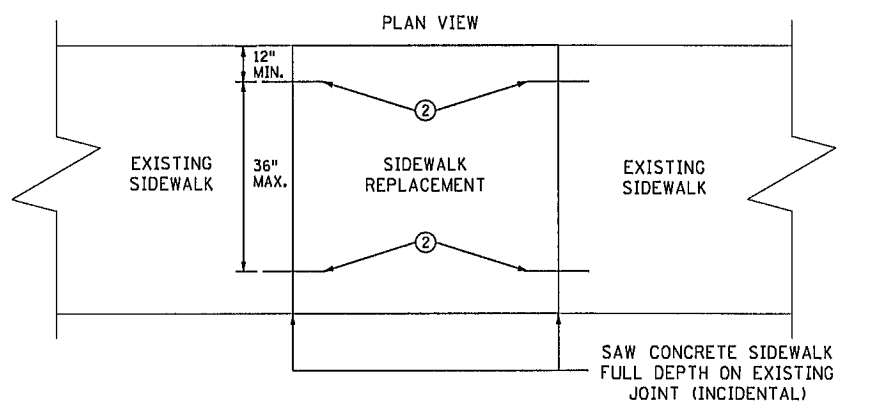
CURB LINE AND ROAD CROSSING ADJUSTMENTS



EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS

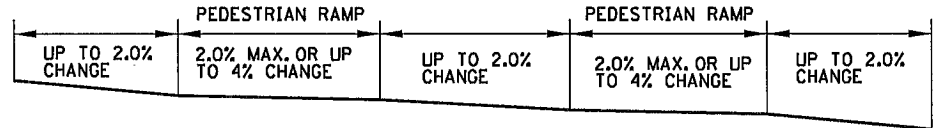


OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS

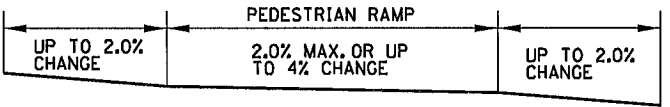


OPTIONAL SIDEWALK REINFORCEMENT

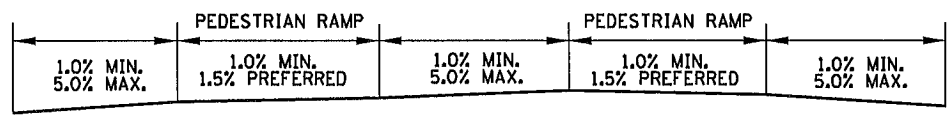
SIDEWALK REINFORCEMENT TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.



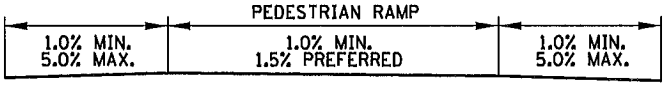
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



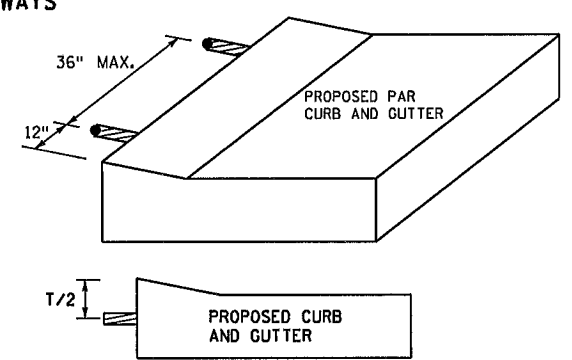
FLOW LINE PROFILE "TABLE" - FAN



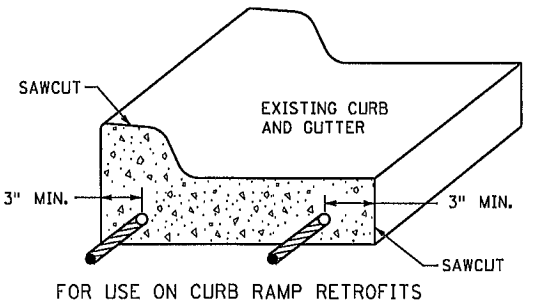
FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS



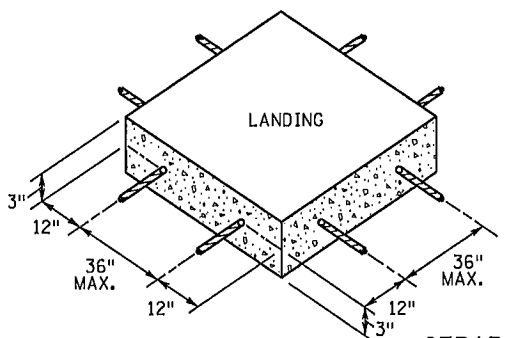
FLOW LINE PROFILE RAISE - FAN



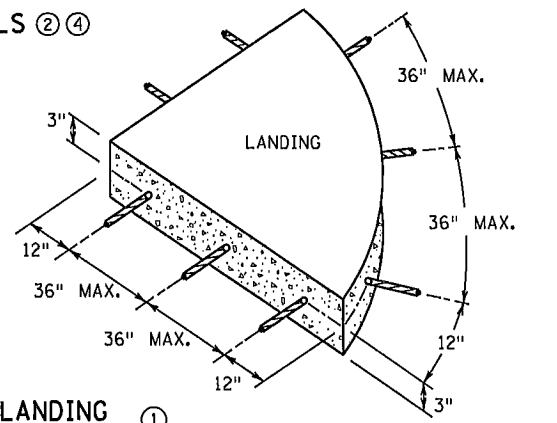
OPTIONAL CURB LINE REINFORCEMENT DETAILS



CURB AND GUTTER REINFORCEMENT



SEPARATE LANDING POUR REINFORCEMENT



"TABLING" OF CROSSWALKS MEANS MAINTAINING LESS THAN 2% CROSS SLOPE WITHIN A CROSSWALK, IS REQUIRED WHEN A ROADWAY IS IN A STOP OR YIELD CONDITION AND THE PROJECT SCOPE ALLOWS.

RECONSTRUCTION PROJECTS: ON FULL PAVEMENT REPLACEMENT PROJECTS "TABLING" OF ENTIRE CROSSWALK SHALL OCCUR WHEN FEASIBLE.

MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2%. WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

- 1) 1.0% MIN. CROSS-SLOPE OF THE ROAD
- 2) 5.0% MAX. CROSS-SLOPE OF THE ROAD
- 3) "TABLE" FLOW LINE UP TO 4% CHANGE FROM EXISTING SLOPE IN FRONT OF PEDESTRIAN RAMP
- 4) UP TO 2% CHANGE IN FLOW LINE FROM EXISTING SLOPE BEYOND THE PEDESTRIAN CURB RAMP

STAND-ALONE ADA RETROFITS: FOLLOW MILL & OVERLAY CRITERIA ABOVE HOWEVER ALL PAVEMENT WARPING IS DONE WITH BITUMINOUS PATCHING ON BITUMINOUS ROADWAYS AND FULL-DEPTH APRON REPLACEMENT ON CONCRETE ROADWAYS.

RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

- 1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
- 2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
- 3) 5.0% RECOMMENDED MAX. FLOW LINE
- 4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL

NOTES:

- ① TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY Poured INITIAL LANDINGS.
- ② DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS AT 36" MAXIMUM CENTER TO CENTER (EPOXY COATED). BARS TO BE ADJUSTED TO MATCH RAMP GRADE.
- ③ DRILL AND GROUT 2 - NO. 4 X 12" LONG REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS WITHIN RADIUS.
- ④ THIS OPTIONAL CURB LINE REINFORCEMENT DETAIL SHOULD ONLY BE USED ON BITUMINOUS ROADWAYS WHEN SPECIFIED IN THE PLAN.
- ⑤ 1/2 IN. PREFORMED JOINT FILLER MATERIAL PER MNDOT SPEC. 3702.

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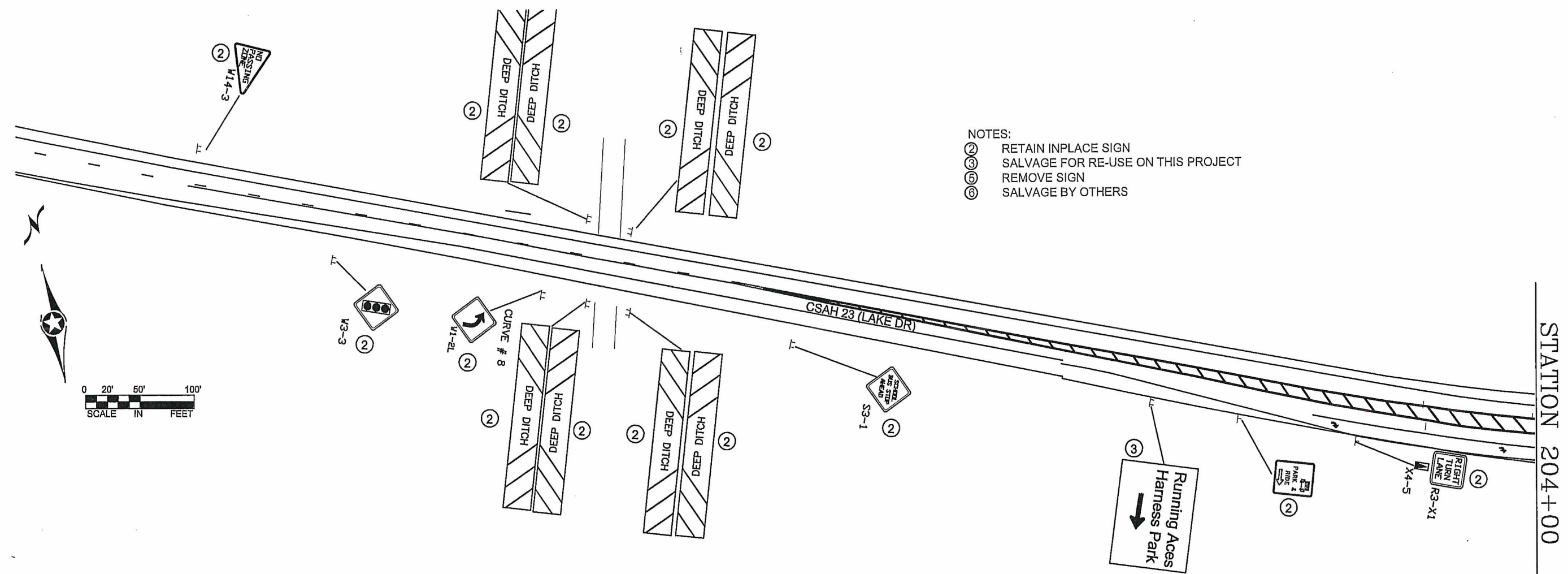
REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER



Tom [Signature]
STATE DESIGN ENGINEER

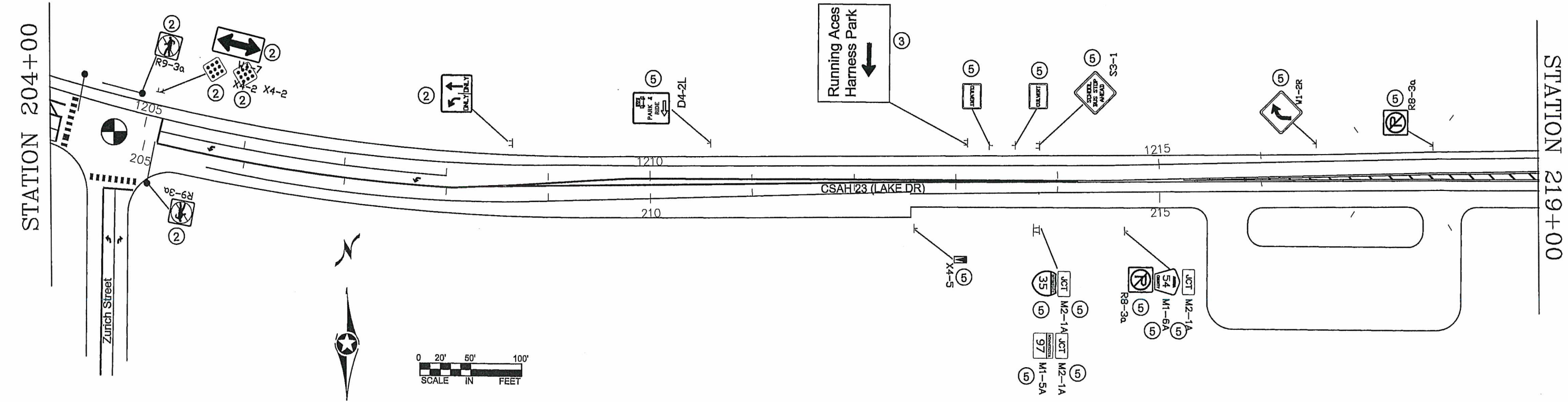
REVISED:
APPROVED:
1-23-2017

PEDESTRIAN CURB RAMP DETAILS	
STANDARD PLAN 5-297.250	6 OF 6
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- NOTES:
- ② RETAIN INPLACE SIGN
 - ③ SALVAGE FOR RE-USE ON THIS PROJECT
 - ⑤ REMOVE SIGN
 - ⑥ SALVAGE BY OTHERS

STATION 204+00



STATION 219+00

NO	DATE	BY	CKD	APPR	REVISION

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

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE: *[Signature]*

DATE: 4/12/18 REG. NO. 20235

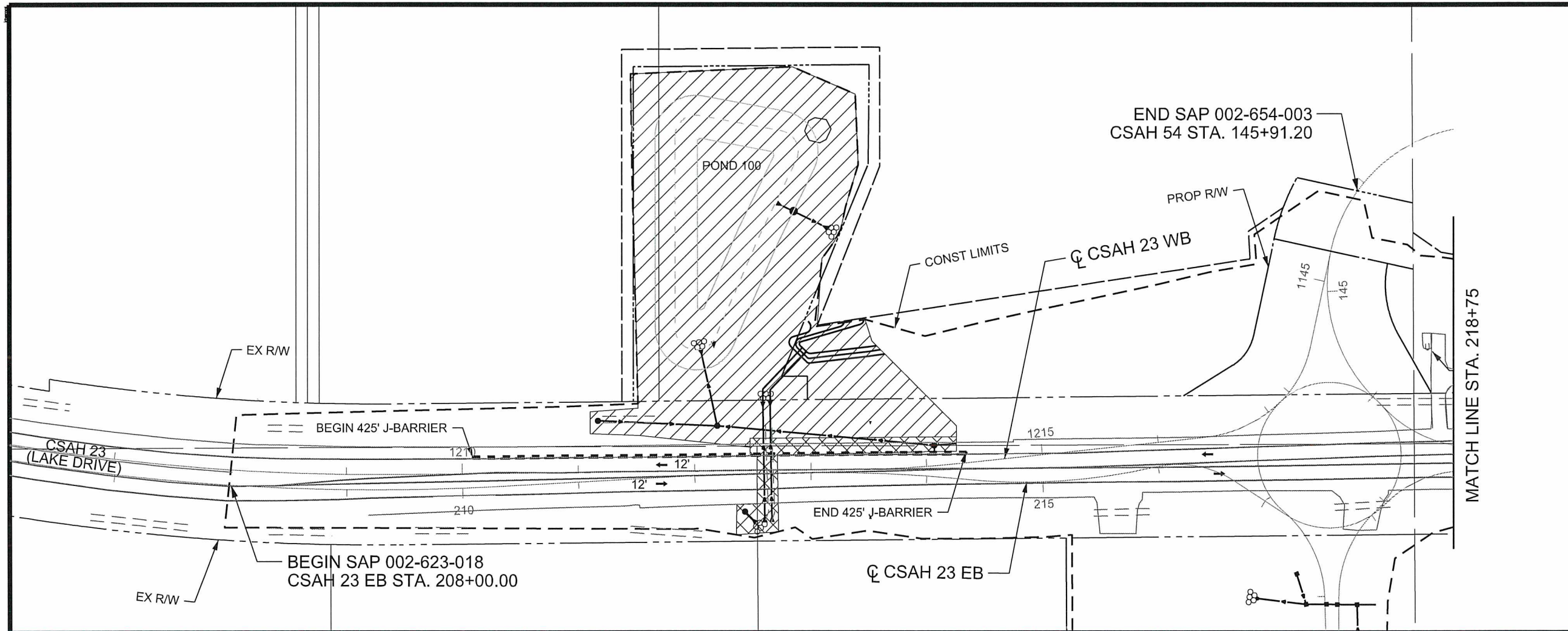
DRAWN BY: TMV DATE: 12/09/17

DESIGN BY: DATE:

CHECKED BY: DATE:

ANOKA COUNTY HIGHWAY DEPT.

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CP 2017 -7



LEGEND	
	STORM SEWER WORK
	CONSTRUCTION UNDER TRAFFIC
	CONSTRUCTION AREA
	TRAFFIC FLOW IN THIS STAGE

CONSTRUCTION NOTES:

CENTERLINE CULVERT REPLACEMENT AT CSAH 23 EB STATION 212+65 SHALL BE PERFORMED PRIOR TO ANY OTHER CONSTRUCTION ACTIVITY ON CSAH 23. DO NOT ATTACH APRONS OR PLACE RIP-RAP AT THE NORTH END DURING THIS STAGE, BUT ATTACH CMP EXTENSIONS AND APRONS.

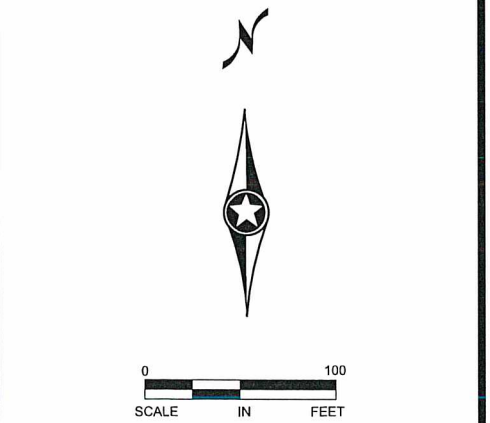
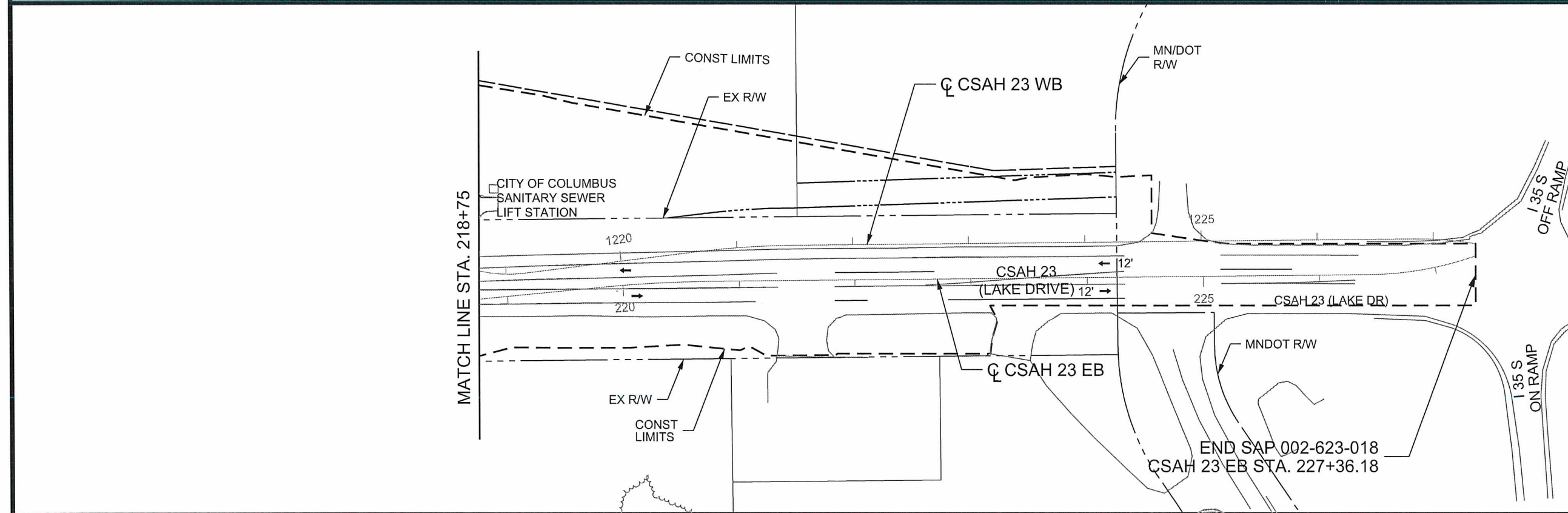
CONSTRUCT STORM SEWER MAINLINE TO THE EXTENT SHOWN AND POND 100 AFTER CULVERT REPLACEMENT.

SEE TEMPORARY TRAFFIC BARRIER TAB A1 FOR MORE DETAILS.

TRAFFIC NOTES:

CSAH 23 & CSAH 54 SHALL BE OPEN TO TRAFFIC.

CENTERLINE CULVERT REPLACEMENT AND CONSTRUCTION ALONG CSAH 23 SHALL BE DONE UNDER FLAGGING OPERATIONS.



1 OF 1

NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\02-623-18\Plan\0262318_STG1_P1.dgn 06/12/2018 2:28:31 PM					

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.

PRINT NAME: ELIZABETH MARKOSE

SIGNATURE: *Elizabeth Markose*

DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18

DESIGN BY: JRB DATE: 05-15-18

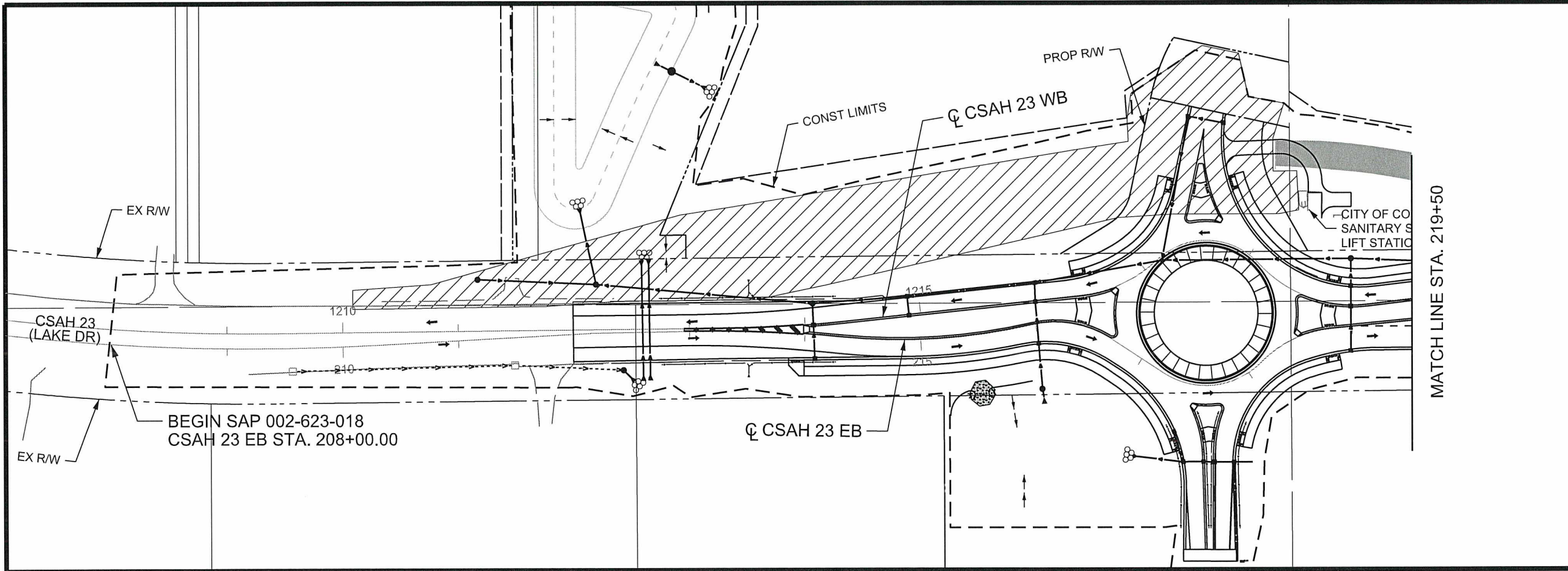
CHECKED BY: EJM DATE: 06-07-18

ANOKA COUNTY HIGHWAY DEPT.

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STAGING PLAN
STAGE 1

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LEGEND

	TEMPORARY PAVEMENT
	CONSTRUCTION AREA
	STORM SEWER WORK
	TRAFFIC FLOW IN THIS STAGE

CONSTRUCTION NOTES:

REMOVE TEMPORARY BYPASS ROAD TO THE EXTENT SHOWN AND CONSTRUCT THE REMAINING SECTION OF ROUNDABOUT AND THE ACCESS TO LIFT STATION.

REMOVE CENTERLINE CULVERT EXTENSION AND REGRADE DITCH.

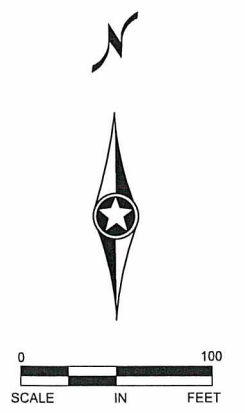
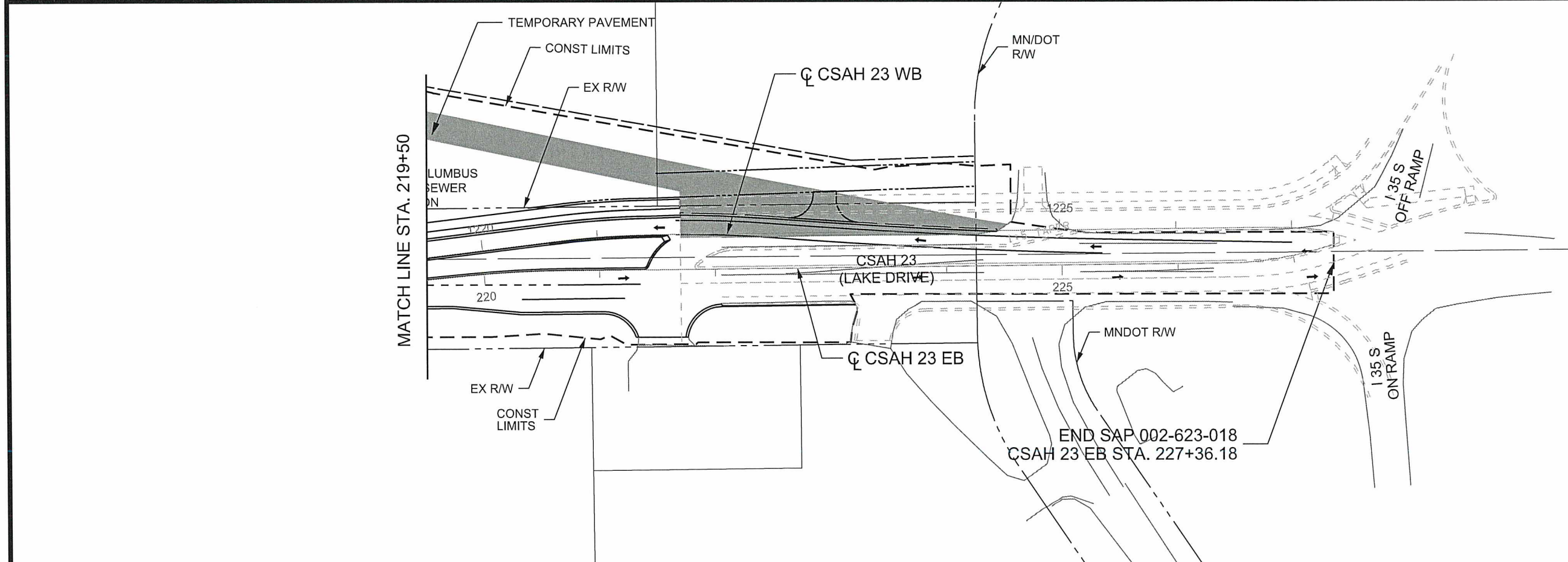
THE CONTRACTOR SHALL MAINTAIN ACCESS TO LIFT STATION AT ALL TIMES.

TRAFFIC NOTES:

CSAH 23 TRAFFIC SHALL BE SHIFTED TO RESPECTIVE LANES ON CSAH 23.

ACCESS TO LIFT STATION SHALL BE OFF TEMPORARY PAVEMENT DURING THIS STAGE

EX CSAH 54 SHALL BE OPEN TO TRAFFIC.



1 OF 1

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_STG4_P1.dgn 06/12/2018 2:29:18 PM

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.

PRINT NAME: ELIZABETH MARKOSE

SIGNATURE: *Elizabeth Markose*

DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18

DESIGN BY: JRB DATE: 05-15-18

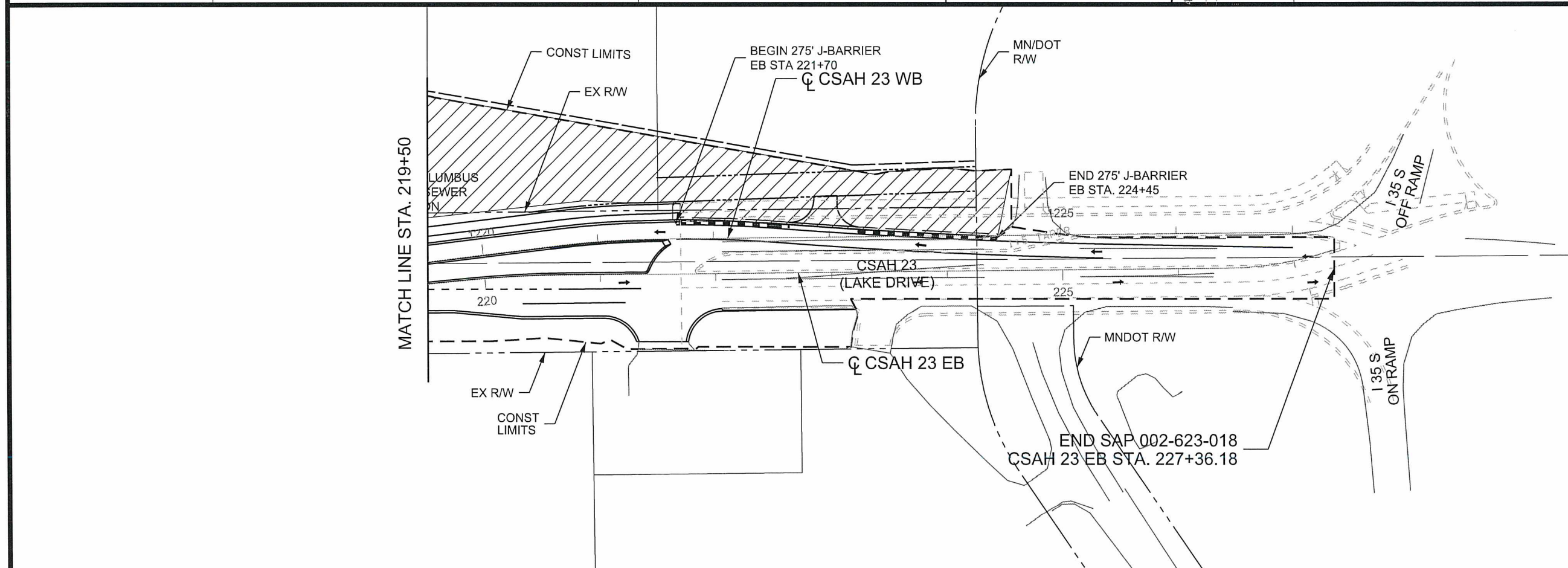
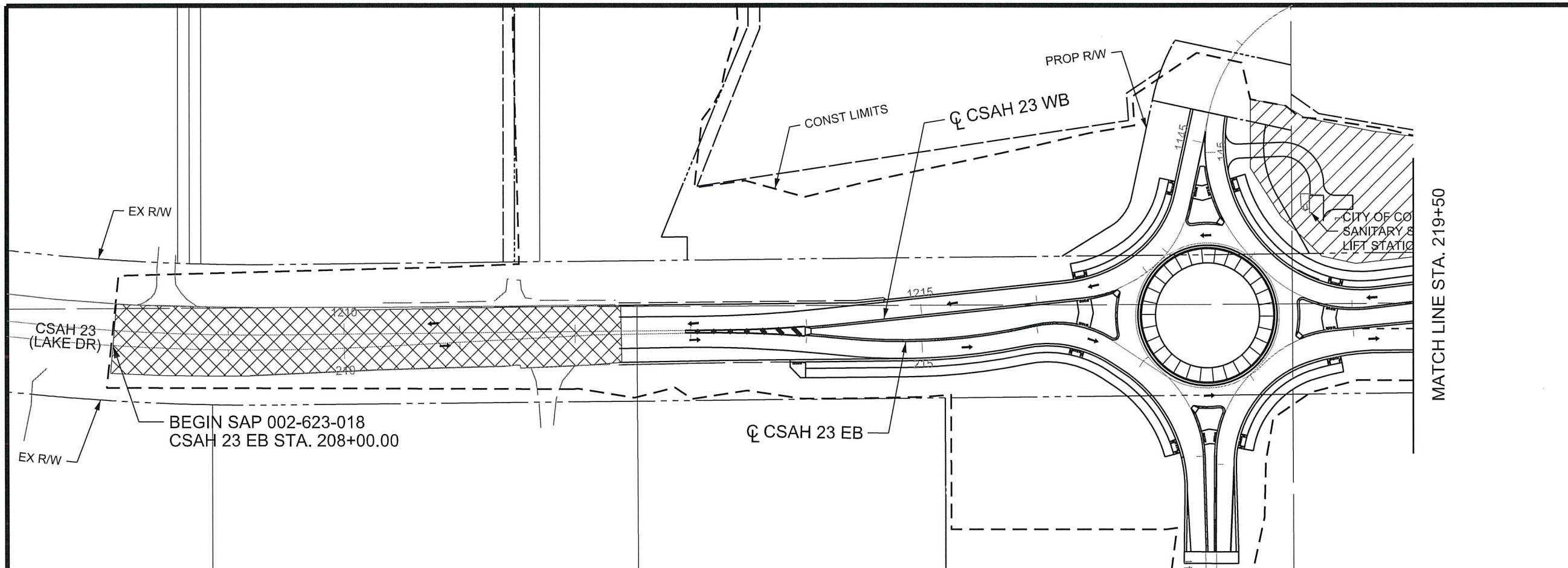
CHECKED BY: EJM DATE: 06-07-18

ANOKA COUNTY
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SAP 002-623-018
CP 2017-7

STAGING PLAN
STAGE 4

Sheet 35 of 134 Sheets



LEGEND

	TEMPORARY PAVEMENT
	CONSTRUCTION AREA
	WORK UNDER TRAFFIC
	STORM SEWER WORK
	TRAFFIC FLOW IN THIS STAGE

CONSTRUCTION NOTES:

REMOVE TEMPORARY ACCESS TO LIFT STATION AND REGRADE.

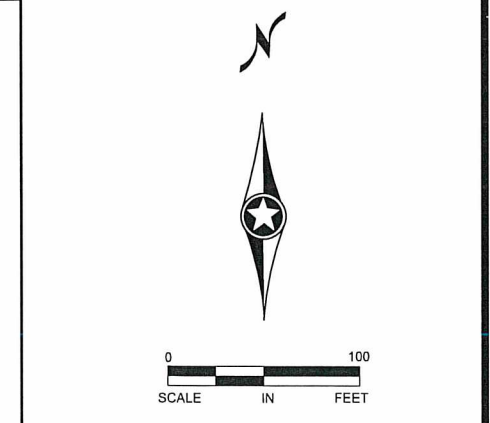
THE CONTRACTOR SHALL MAINTAIN ACCESS TO LIFT STATION AT ALL TIMES.

PROVIDE BREAK IN TEMPORARY BARRIER FOR FIELD ENTRANCE TO PROPERTY NORTH OF CSAH 23.

2" MILL AND OVERLAY TO BE PERFORMED UNDER TRAFFIC WITH FINAL BITUMINOUS LIFT TO MATCH EXISTING.

TRAFFIC NOTES:

CSAH 23 AND CSAH 54 SHALL BE OPEN TO TRAFFIC.



1 OF 1

NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\02-623-18\Plan\0262318_STG5_P1.dgn					
06/12/2018 2:29:32 PM					

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.

PRINT NAME: ELIZABETH MARKOSE

SIGNATURE: *Elizabeth Markose*

DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18

DESIGN BY: JRB DATE: 05-15-18

CHECKED BY: EJM DATE: 06-07-18

ANOKA COUNTY HIGHWAY DEPT.

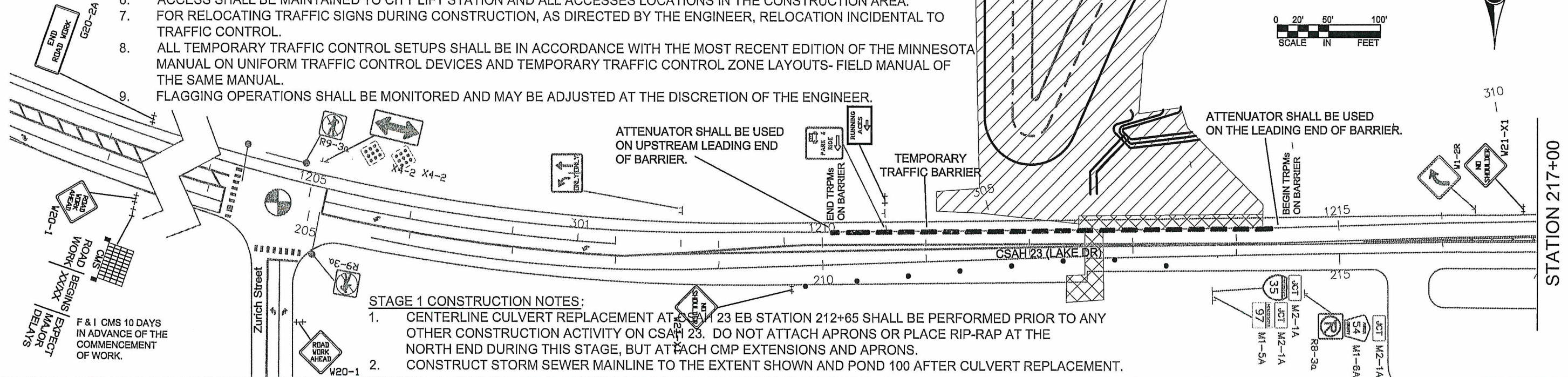
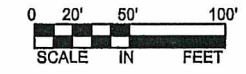
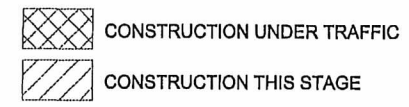
SAP 002-623-018
CP 2017-7

STAGING PLAN
STAGE 5

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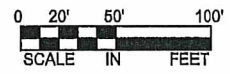
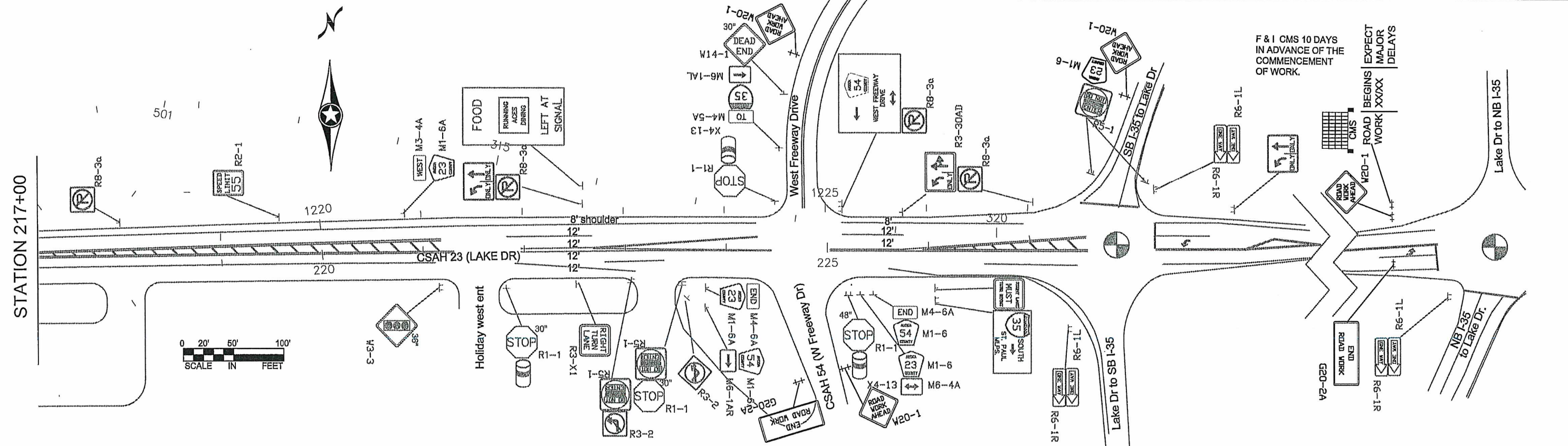
STAGE 1 TRAFFIC CONTROL NOTES:

1. CSAH 23 AND CSAH 54 SHALL BE OPEN TO TRAFFIC.
2. THE CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) A MINIMUM OF TEN DAYS PRIOR TO ACTUAL COMMENCEMENT OF ROAD WORK, TO A LOCATION AS SPECIFIED BY THE ENGINEER. SIGNS TO BE REMOVED WHEN ROAD WORK BEGINS. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
3. TEMPORARY TRAFFIC BARRIER SHALL BE PLACED FOR WB TRAFFIC WITH ATTENUATORS ON EACH END OF BARRIER. WHITE TRPMs SHALL BE PLACED ON THE BARRIER SPACED EVERY 12"6". BARRIER SHALL BE PLACED IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
4. IF A 2' MINIMUM BETWEEN BARRIER AND EDGELINE CANNOT BE MET, BARRIER MUST BE ANCHORED 6" MINIMUM.
5. ALL SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
6. ACCESS SHALL BE MAINTAINED TO CITY LIFT STATION AND ALL ACCESSES LOCATIONS IN THE CONSTRUCTION AREA.
7. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
8. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS- FIELD MANUAL OF THE SAME MANUAL.
9. FLAGGING OPERATIONS SHALL BE MONITORED AND MAY BE ADJUSTED AT THE DISCRETION OF THE ENGINEER.



STAGE 1 CONSTRUCTION NOTES:

1. CENTERLINE CULVERT REPLACEMENT AT CSAH 23 EB STATION 212+65 SHALL BE PERFORMED PRIOR TO ANY OTHER CONSTRUCTION ACTIVITY ON CSAH 23. DO NOT ATTACH APRONS OR PLACE RIP-RAP AT THE NORTH END DURING THIS STAGE, BUT ATTACH CMP EXTENSIONS AND APRONS.
2. CONSTRUCT STORM SEWER MAINLINE TO THE EXTENT SHOWN AND POND 100 AFTER CULVERT REPLACEMENT.



NO	DATE	BY	CHKD	APPR	REVISION

NAME: T:\Traffic\dwg\CSAH 23 (Lake Dr)\from 135 to CR 19.dwg

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.

PRINT NAME: DOUGLAS W. FISCHER, P.E.

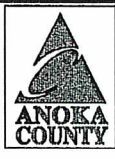
SIGNATURE: *[Signature]*

DATE: 4/12/18 LICENSE NO. 20235

DRAWN BY: TMV DATE 05/18/18.

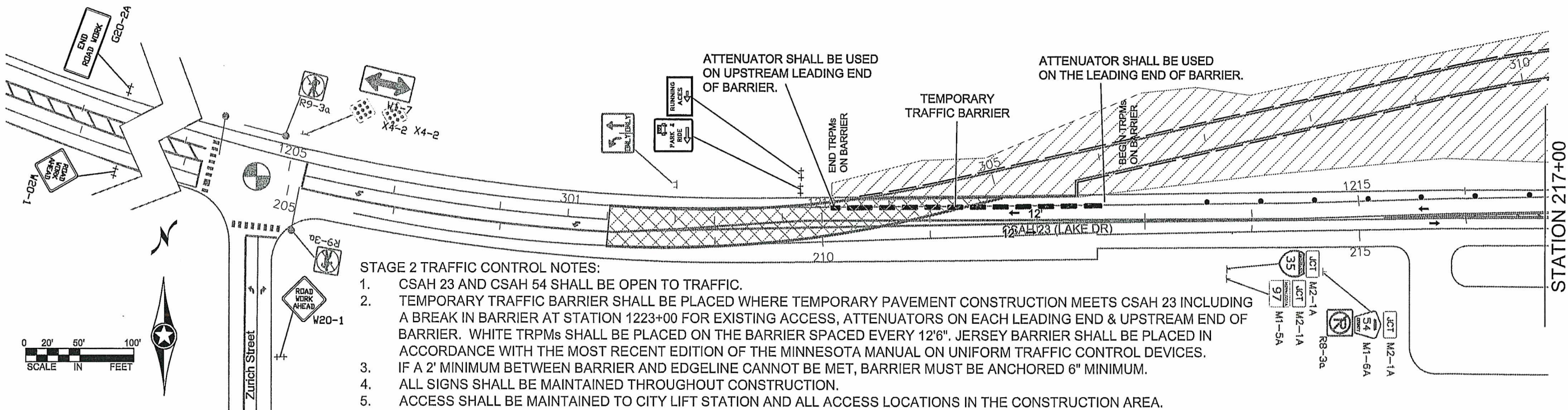
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CHECKED BY: DATE



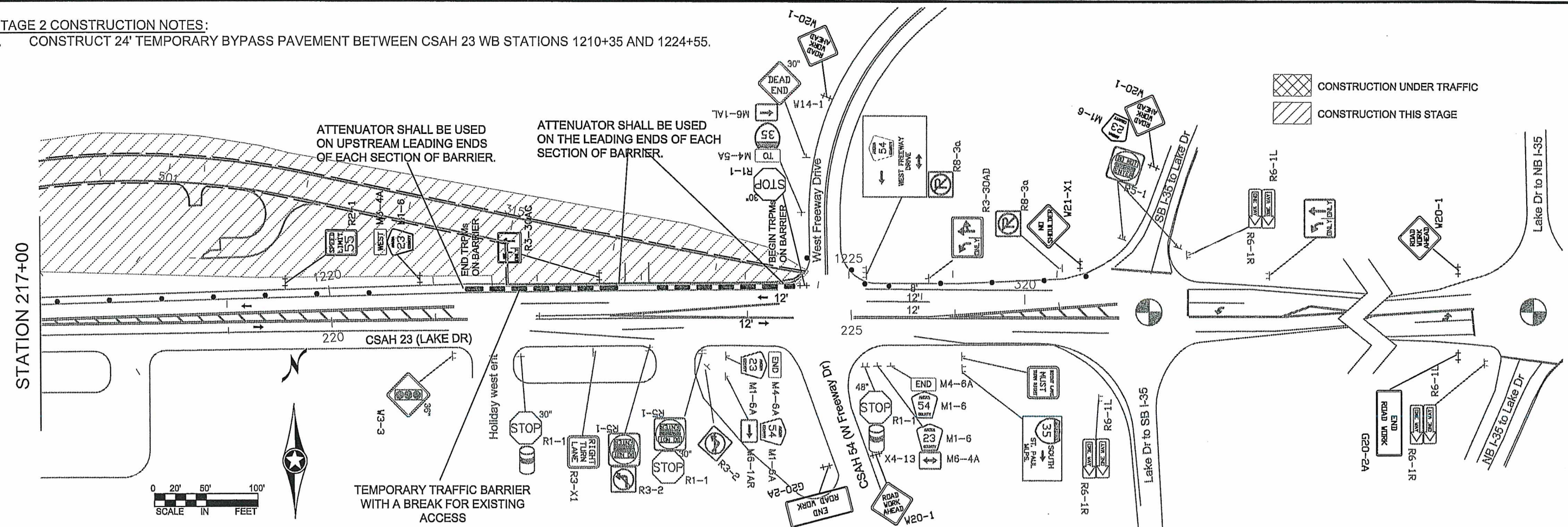
ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-623-018
CP 2017-7



- STAGE 2 TRAFFIC CONTROL NOTES:**
1. CSAH 23 AND CSAH 54 SHALL BE OPEN TO TRAFFIC.
 2. TEMPORARY TRAFFIC BARRIER SHALL BE PLACED WHERE TEMPORARY PAVEMENT CONSTRUCTION MEETS CSAH 23 INCLUDING A BREAK IN BARRIER AT STATION 1223+00 FOR EXISTING ACCESS, ATTENUATORS ON EACH LEADING END & UPSTREAM END OF BARRIER. WHITE TRPMs SHALL BE PLACED ON THE BARRIER SPACED EVERY 12'6". JERSEY BARRIER SHALL BE PLACED IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
 3. IF A 2' MINIMUM BETWEEN BARRIER AND EDGELINE CANNOT BE MET, BARRIER MUST BE ANCHORED 6" MINIMUM.
 4. ALL SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
 5. ACCESS SHALL BE MAINTAINED TO CITY LIFT STATION AND ALL ACCESS LOCATIONS IN THE CONSTRUCTION AREA.
 6. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
 7. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS- FIELD MANUAL OF THE SAME MANUAL.
 8. FLAGGING OPERATIONS SHALL BE MONITORED AND MAY BE ADJUSTED AT THE DISCRETION OF THE ENGINEER.

- STAGE 2 CONSTRUCTION NOTES:**
1. CONSTRUCT 24' TEMPORARY BYPASS PAVEMENT BETWEEN CSAH 23 WB STATIONS 1210+35 AND 1224+55.



NO	DATE	BY	CKD	APPR	REVISION

NAME: T:\Traffic\dwg\CSAH 23 (Lake Dr)\From 135 to CR 19.dwg

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.

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE: *[Signature]*

DATE: 4/2/18 LICENSE NO. 20235

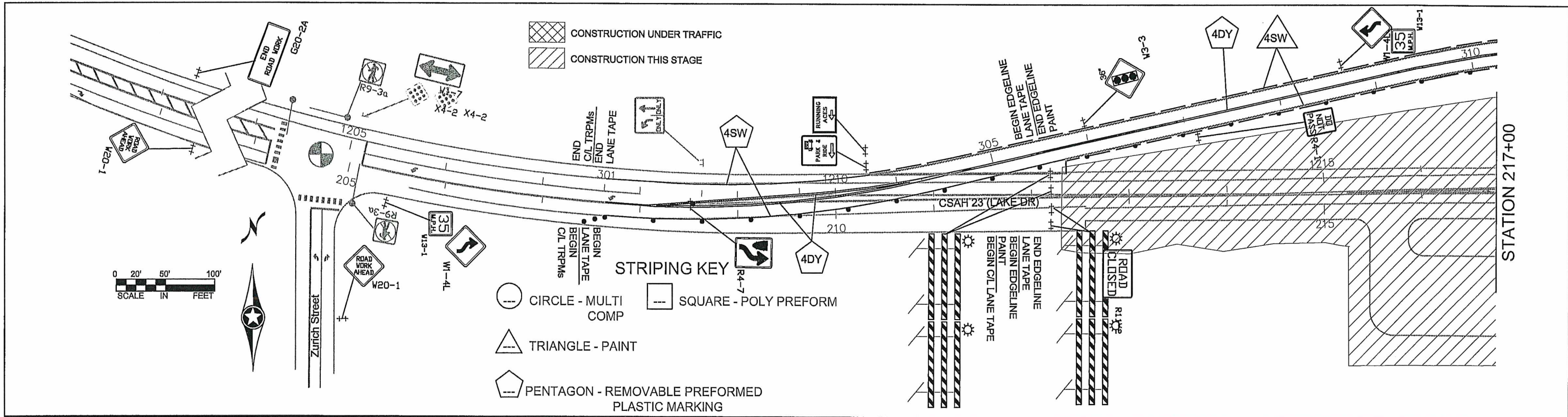
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DESIGN BY: DATE

CHECKED BY: DATE

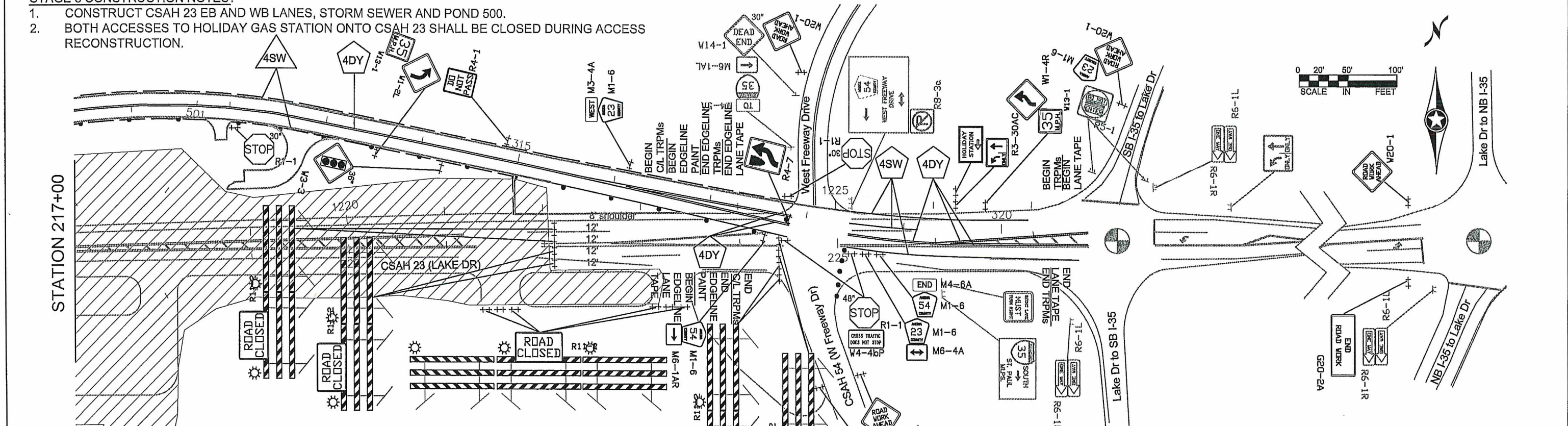
ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-623-018
CP 2017-7



STAGE 3 CONSTRUCTION NOTES:

1. CONSTRUCT CSAH 23 EB AND WB LANES, STORM SEWER AND POND 500.
2. BOTH ACCESSES TO HOLIDAY GAS STATION ONTO CSAH 23 SHALL BE CLOSED DURING ACCESS RECONSTRUCTION.



STAGE 3 TRAFFIC CONTROL NOTES:

1. CSAH 23 TRAFFIC SHALL BE SHIFTED TO TEMPORARY BYPASS ROAD AND CSAH 54 TO REMAIN OPEN TO TRAFFIC.
2. ACCESS SHALL BE MAINTAINED TO CITY LIFT STATION AT ALL ACCESS LOCATIONS IN THE CONSTRUCTION AREA WITH THE EXCEPTION OF HOLIDAY GAS STATION. HOLIDAY GAS STATION ACCESS SHALL BE FROM CSAH 54 ONLY.
3. ALL SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

STAGE 3 TRAFFIC CONTROL NOTES CONT.:

4. ADD TRPMs SPACED EVERY 10 FEET ON TEMPORARY BYPASS CENTERLINE.
5. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
6. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS- FIELD MANUAL OF THE SAME MANUAL.

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.

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE: *[Signature]*

DATE: 4/27/18 LICENSE NO. 20235

DRAWN BY: TMV DATE 05/21/18

DESIGN BY: DATE

CHECKED BY: DATE



**ANOKA COUNTY
 HIGHWAY DEPT.**

SAP 002-623-018
 CP 2017 -7

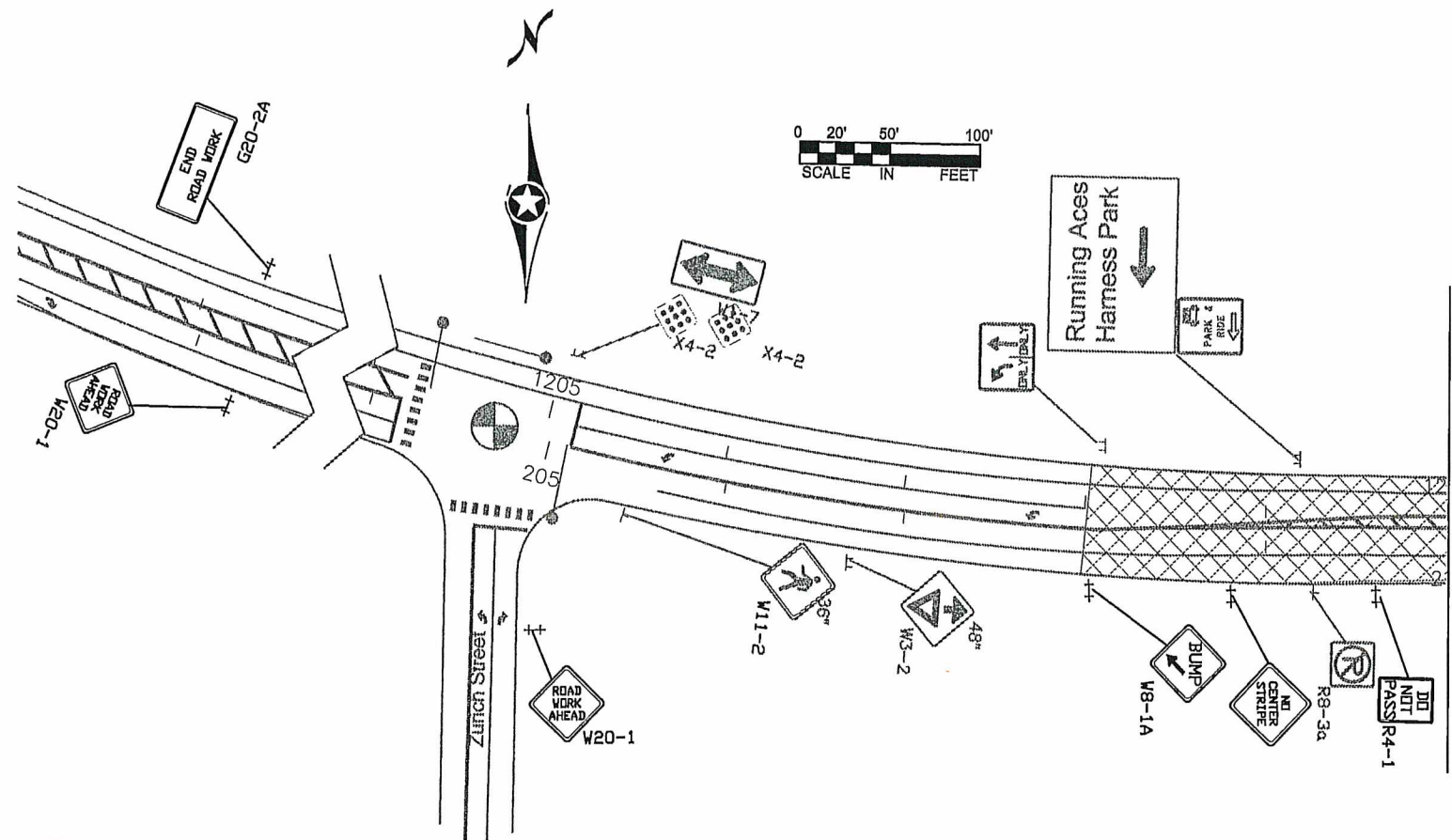
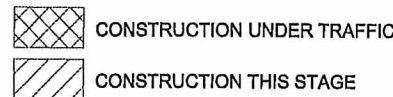
**TRAFFIC CONTROL
 STAGE 3**

STAGE 5 TRAFFIC CONTROL NOTES:

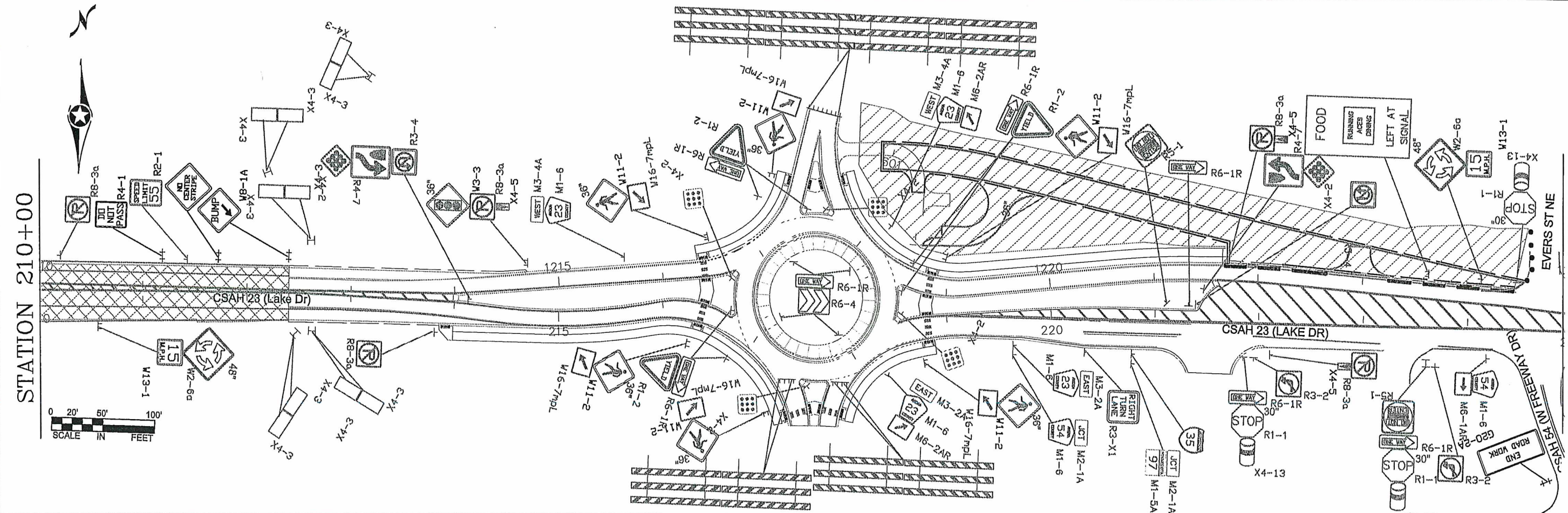
1. CSAH 23 AND CSAH 54 SHALL BE OPEN TO TRAFFIC.
2. ALL SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
3. TEMPORARY TRAFFIC BARRIER SHALL BE PLACED FOR WB TRAFFIC WITH ATTENUATORS ON EACH END OF BARRIER. WHITE TRPMs SHALL BE PLACED ON THE BARRIER SPACED EVERY 12'6". BARRIER SHALL BE PLACED IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
4. ACCESS SHALL BE MAINTAINED TO CITY LIFT STATION AND ALL ACCESS LOCATIONS IN THE CONSTRUCTION AREA AT ALL TIMES.
5. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
6. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS- FIELD MANUAL OF THE SAME MANUAL

STAGE 5 CONSTRUCTION NOTES:

1. REMOVE TEMPORARY ACCESS TO LIFT STATION AND REGRADE.



STATION 210+00



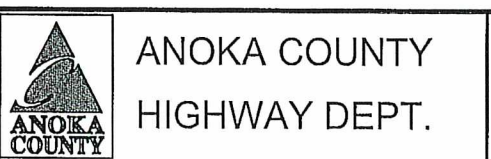
STATION 225+00

NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\002-654-003\BaselTrafficPerm S&S.dwg					

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

PRINT NAME: DOUGLAS W. FISCHER, P.E.
 SIGNATURE: *[Signature]*
 DATE: 4/2/18 REG. NO. 20235

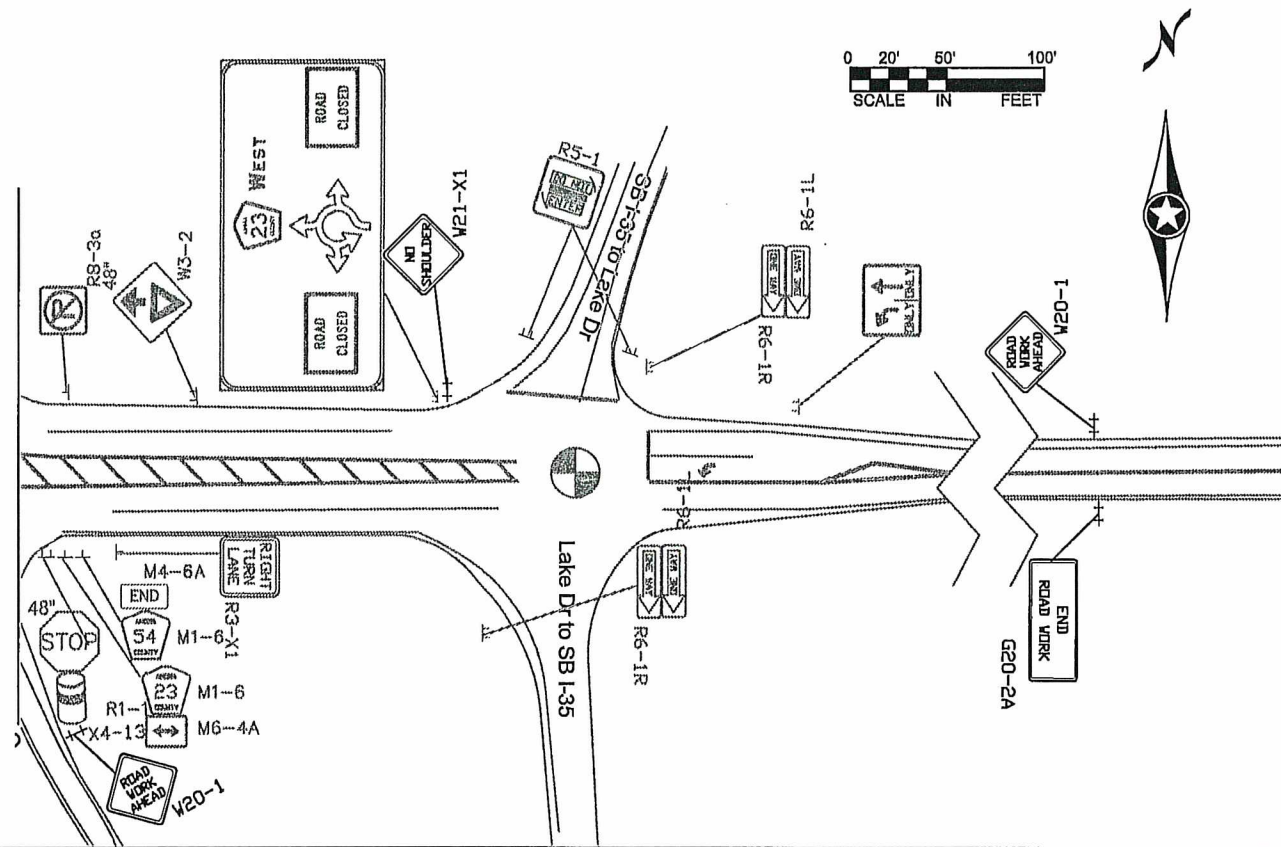
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 DESIGN BY: DATE:
 CHECKED BY: DATE:





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TRAFFIC CONTROL
 STAGE 5
 Sheet 42 of 134 Sheets

STATION 225+00




-  CONSTRUCTION UNDER TRAFFIC
-  CONSTRUCTION THIS STAGE

STAGE 5 TRAFFIC CONTROL NOTES:

1. CSAH 23 AND CSAH 54 SHALL BE OPEN TO TRAFFIC.
2. ALL SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
3. TEMPORARY TRAFFIC BARRIER SHALL BE PLACED FOR WB TRAFFIC WITH ATTENUATORS ON EACH END OF BARRIER. WHITE TRPMs SHALL BE PLACED ON THE BARRIER SPACED EVERY 12'6". BARRIER SHALL BE PLACED IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
4. ACCESS SHALL BE MAINTAINED TO CITY LIFT STATION AND ALL ACCESS LOCATIONS IN THE CONSTRUCTION AREA AT ALL TIMES.
5. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
6. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS- FIELD MANUAL OF THE SAME MANUAL

STAGE 5 CONSTRUCTION NOTES :

1. REMOVE TEMPORARY ACCESS TO LIFT STATION AND REGRADE.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 PRINT NAME: DOUGLAS W. FISCHER, P.E.
 SIGNATURE: 
 DATE: 2/12/18 REG. NO. 20235

DRAWN BY: T.M.V. DATE: 05/21/18
 DESIGN BY: DATE: _____
 CHECKED BY: DATE: _____



ANOKA COUNTY
 HIGHWAY DEPT.

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 CP 2017 -7

TRAFFIC CONTROL
 STAGE 5

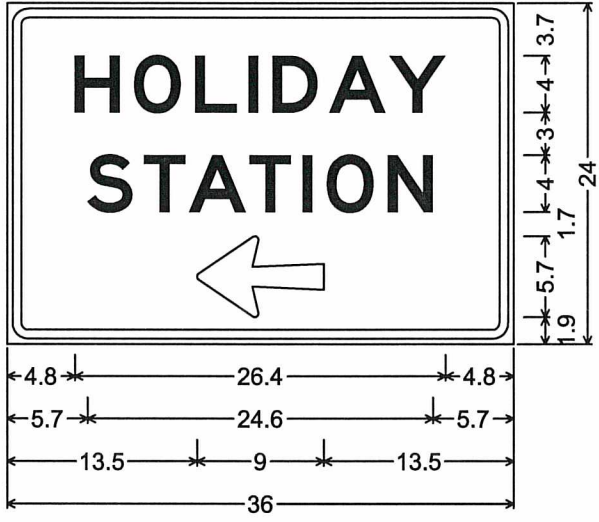
Sheet 43 of 134 Sheets

NO	DATE	BY	CKD	APPR	REVISION

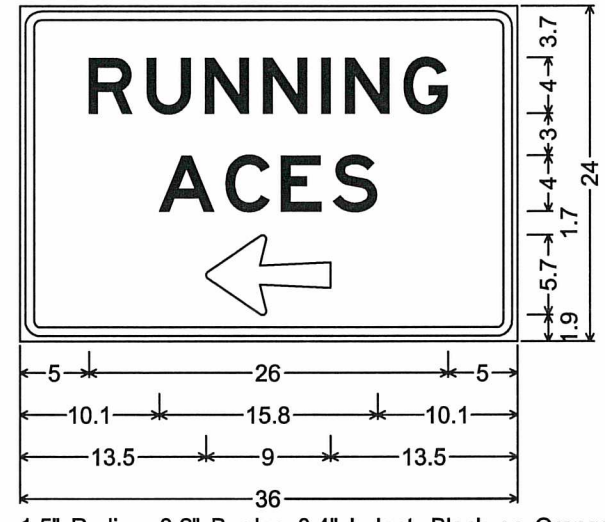
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M.U.T.C.D. CODE	SIZE	INSERT	QTY. STG. 1	QTY. STG. 2	QTY. STG. 3	QTY. STG. 4	QTY. STG. 5
R1-1	30" x 30"	STOP	0	1	2	1	1
	48" x 48"		0	0	2	0	0
W4-4bP	36" x 18"	CROSS TRAFFIC DOES NOT STOP	0	0	2	0	0
R3-1	24" x 24"	SPEED LIMIT 55	0	1	0	1	0
R3-8AC	36" x 30"	ONE WAY	0	1	1	0	0
R4-7	18" x 30"	RIGHT TURN ONLY	0	0	2	0	0
R4-1	24" x 30"	DO NOT PASS	0	0	2	0	2
W1-2L	48" x 48"	LEFT TURN	0	0	1	0	0
W13-1	24" x 24"	35 M.P.H.	0	0	1	0	0
W1-4R	48" x 48"	RIGHT TURN	0	0	1	0	0
W13-1	24" x 24"	35 M.P.H.	0	0	1	0	0
W1-4L	48" x 48"	LEFT TURN	0	0	2	0	0
W13-1	24" x 24"	35 M.P.H.	0	0	2	0	0
W3-3	48" x 48"	TRAFFIC LIGHT	0	0	2	0	0
W3-3	48" x 48"	BUMP	0	0	0	0	2
W3-3	48" x 48"	NO CENTER STRIPE	0	0	2	0	2
W3-3	48" x 48"	DEAD END	0	0	0	1	0
M1-6	24" x 24"	23	1	1	1	0	0
W20-1	48" x 48"	ROAD WORK AHEAD	6	6	6	4	4
W21-X1	48" x 48"	NO SHOULDER	2	1	0	2	1
M3-4A	24" x 12"	WEST	0	2	1	0	0
M1-6	24" x 24"	23	0	3	2	0	0
M3-4A	24" x 12"	WEST	0	1	1	0	0

M.U.T.C.D. CODE	SIZE	INSERT	QTY. STG. 1	QTY. STG. 2	QTY. STG. 3	QTY. STG. 4	QTY. STG. 5
M4-6A	24" x 12"	END	0	0	1	0	0
M1-6	24" x 24"	54	0	0	2	0	0
M6-1AR	24" x 12"	END	0	0	1	0	0
W1-6	48" x 24"	TYPE III	0	0	0	2	0
W1-6	48" x 24"	TYPE III	0	0	0	2	0
R11-2	48" x 30"	ROAD CLOSED	0	0	2	0	0
R11-2	48" x 30"	ROAD CLOSED	0	0	2	0	0
R11-2	48" x 30"	ROAD CLOSED	0	0	4	0	0
R11-2	48" x 30"	ROAD CLOSED	0	0	4	0	0
TYPE III	8 FOOT	TYPE III	0	0	4	0	0
TYPE III	8 FOOT	TYPE III	0	0	5	0	0
D4-2L	30" x 36"	PARK & RIDE	0	1	1	0	0
G20-X6	36" x 24"	HOLIDAY STATION	0	0	1	0	0
G20-X6	48" x 24"	RUNNING ACES	1	1	1	0	0
G20-2A	48" x 24"	END ROAD WORK	3	3	3	3	3
REFLECTORIZED REBOUNDABLE DRUM			8	22	42	15	5
CMS sign to be installed a minimum of ten days prior to actual commencement of road work. Signs to be removed when road work begins.			2	0	0	0	0



1.5" Radius, 0.6" Border, 0.4" Indent, Black on Orange; [HOLIDAY] E; [STATION] E; Arrow 11 - 9.0" 180°;



1.5" Radius, 0.6" Border, 0.4" Indent, Black on Orange; [RUNNING] E; [ACES] E; Arrow 11 - 9.0" 180°;

B TEMPORARY PAVEMENT MARKING TABULATION		
PAVEMENT MARKING REMOVAL 4" SOLID PAINT - WHITE	LIN FT	880
PAVEMENT MARKING REMOVAL 4" DOUBLE SOLID PAINT - YELLOW	LIN FT	440
REMOVABLE PREFORM PLASTIC MARKING (WHITE)	LIN FT	950
REMOVABLE PREFORM PLASTIC MARKING (YELLOW)	LIN FT	1400
4" SOLID LINE WHITE - PAINT	LIN FT	3150
4" SOLID DOUBLE LINE YELLOW - PAINT	LIN FT	1800
1 TEMPORARY RAISED PAVEMENT MARKER	EACH	284
2 TEMPORARY RAISED BARRIER MARKER	EACH	83
PORTABLE CHANGEABLE MESSAGE SIGN	UDAY	30

- 1 SPACED EVERY 10 FEET
- 2 SPACED EVERY 12'6"

- NOTES:
- ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.
 - ALL TYPE III BARRICADES SHALL BE REFLECTORIZED ON BOTH SIDES. BARRICADE MARKINGS SHALL BE SLANTED IN ACCORDANCE WITH THE M.U.T.C.D.

NO	DATE	BY	CKD	APPR	REVISION

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

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE: *[Signature]*

DATE: 6/12/18 REG. NO. 20235

ANOKA COUNTY HIGHWAY DEPT.

DRAWN BY: _____ DATE: _____

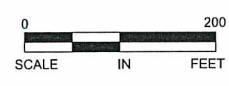
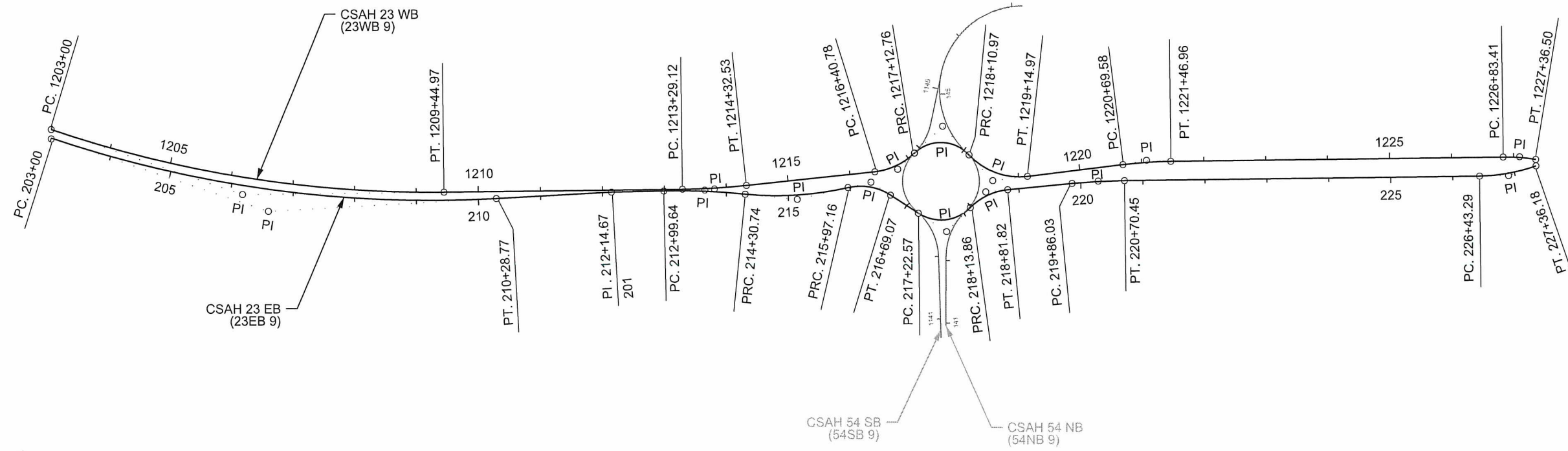
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CHECKED BY: _____ DATE: _____

SAP 002-623-018
CP 2017 -7

STAGING QUANTITIES

Sheet 44 of 134 Sheets



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_AL_P1.dgn 06/12/2018 2:29:39 PM

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.

PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
 DESIGN BY: JRB DATE: 05-15-18
 CHECKED BY: EJM DATE: 06-07-18

ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-623-018
 CP 2017-7

CSAH 23 EB

POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
		DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N	
	PC 203+00.000						559,552.3967	178,620.4374	S 71° 22' 34.74" E
23EB_9-1	PI 206+68.810	21° 42' 54.92" LT	2° 58' 46.98"	1,922.860'	368.810'	728.769'	559,901.8945	178,502.6576	PI
	CC						560,166.4640	180,442.6097	
	PT 210+28.769						560,270.1677	178,522.5482	N 86° 54' 30.33" E
201	POT 212+14.672						560,455.7997	178,532.5743	
	PC 212+99.636						560,540.7474	178,534.2512	N 88° 52' 09.00" E
23EB_9-2	PI 213+65.268	6° 53' 06.96" RT	5° 15' 06.03"	1,091.000'	65.632'	131.106'	560,606.3667	178,535.5464	PI
	CC						560,562.2788	177,443.4636	
	PRC 214+30.742						560,671.6680	178,528.9658	S 84° 14' 44.04" E
	PRC 214+30.742						560,671.6680	178,528.9658	S 84° 14' 44.04" E
23EB_9-3	PI 215+14.691	18° 37' 23.06" LT	11° 11' 26.09"	512.000'	83.949'	166.417'	560,755.1940	178,520.5487	PI
	CC						560,723.0037	179,038.3857	
	PRC 215+97.160						560,837.0346	178,539.2455	N 77° 07' 52.90" E
	PRC 215+97.160						560,837.0346	178,539.2455	N 77° 07' 52.90" E
23EB_9-4	PI 216+35.160	45° 46' 52.13" RT	63° 39' 43.12"	90.000'	38.000'	71.913'	560,874.0802	178,547.7088	PI
	CC						560,857.0791	178,451.5060	
	PT 216+69.072						560,905.9813	178,527.0611	S 57° 05' 14.97" E
	PC 217+22.572						560,950.8943	178,497.9917	S 57° 05' 14.97" E
23EB_9-5	PI 217+76.894	78° 04' 06.22" LT	85° 30' 57.92"	67.000'	54.322'	91.291'	560,996.4975	178,468.4755	PI
	CC						560,987.2992	178,554.2383	
	PRC 218+13.863						561,034.8041	178,506.9912	N 44° 50' 38.81" E
	PRC 218+13.863						561,034.8041	178,506.9912	N 44° 50' 38.81" E
23EB_9-6	PI 218+49.273	39° 43' 55.48" RT	58° 27' 54.29"	98.000'	35.410'	67.959'	561,059.7744	178,532.0978	PI
	CC						561,104.2889	178,437.8835	
	PT 218+81.822						561,095.0257	178,535.4448	N 84° 34' 34.29" E
	PC 219+86.027						561,198.7651	178,545.2945	N 84° 34' 34.29" E
23EB_9-7	PI 220+28.266	4° 50' 14.17" RT	5° 43' 46.48"	1,000.000'	42.238'	84.426'	561,240.8142	178,549.2870	PI
	CC						561,293.2871	177,549.7717	
	PT 220+70.454						561,283.0502	178,549.7193	N 89° 24' 48.46" E
	PC 226+43.290						561,855.8562	178,555.5834	N 89° 24' 48.46" E
23EB_9-8	PI 226+90.150	18° 36' 36.18" LT	20° 02' 00.56"	286.000'	46.860'	92.895'	561,902.7138	178,556.0631	PI
	CC						561,852.9284	178,841.5684	
	PT 227+36.184						561,946.9682	178,571.4712	N 70° 48' 12.28" E

CSAH 23 WB

POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
		DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N	
	PC 1203+00.000						559,552.2021	178,634.2272	S 71° 14' 19.22" E
23WB_9-1	PI 1206+25.587	19° 20' 57.02" LT	3° 00' 00.00"	1,909.860'	325.587'	644.973'	559,860.4891	178,529.5099	PI
	CC						560,166.4640	180,442.6097	
	PT 1209+44.973						560,186.0585	178,532.8503	N 89° 24' 43.76" E
	PC 1213+29.120						560,570.1855	178,536.7915	N 89° 24' 43.76" E
23WB_9-2	PI 1213+80.866	5° 25' 51.49" LT	5° 15' 06.03"	1,091.000'	51.746'	103.414'	560,621.9285	178,537.3224	PI
	CC						560,558.9922	179,627.7341	
	PT 1214+32.534						560,673.3890	178,542.7482	N 83° 58' 52.27" E
	PC 1216+40.776						560,880.4837	178,564.5835	N 83° 58' 52.27" E
23WB_9-3	PI 1216+78.110	37° 29' 37.82" LT	52° 05' 13.46"	110.000'	37.333'	71.983'	560,917.6112	178,568.4980	PI
	CC						560,868.9496	178,673.9771	
	PRC 1217+12.759						560,944.6862	178,594.2026	N 46° 29' 14.45" E
	PRC 1217+12.759						560,944.6862	178,594.2026	N 46° 29' 14.45" E
23WB_9-4	PI 1217+75.591	90° 45' 47.14" RT	92° 24' 45.17"	62.000'	62.831'	98.215'	560,990.2529	178,637.4629	PI
	CC						560,987.3742	178,549.2388	
	PRC 1218+10.975						561,032.9025	178,591.3241	S 42° 44' 58.42" E
	PRC 1218+10.975						561,032.9025	178,591.3241	S 42° 44' 58.42" E
23WB_9-5	PI 1218+67.229	54° 10' 14.72" LT	52° 05' 13.46"	110.000'	56.254'	104.000'	561,071.0877	178,550.0150	PI
	CC						561,113.6785	178,665.9916	
	PT 1219+14.975						561,126.9323	178,556.7930	N 83° 04' 46.86" E
	PC 1220+69.578						561,280.4089	178,575.4209	N 83° 04' 46.86" E
23WB_9-6	PI 1221+08.308	6° 20' 01.60" RT	8° 11' 06.40"	700.000'	38.730'	77.382'	561,318.8570	178,580.0875	PI
	CC						561,364.7511	177,880.5206	
	PT 1221+46.960						561,357.5853	178,580.4840	N 89° 24' 48.46" E
	PC 1226+83.414						561,894.0117	178,585.9756	N 89° 24' 48.46" E
23WB_9-7	PI 1227+10.024	10° 08' 16.34" RT	19° 05' 54.94"	300.000'	26.610'	53.082'	561,920.6207	178,586.2480	PI
	CC						561,897.0828	178,285.9913	
	PT 1227+36.496						561,946.8621	178,581.8325	S 80° 26' 55.20" E

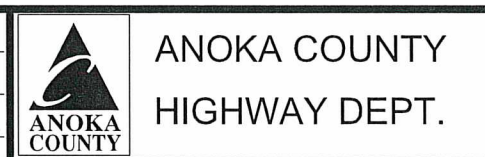
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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

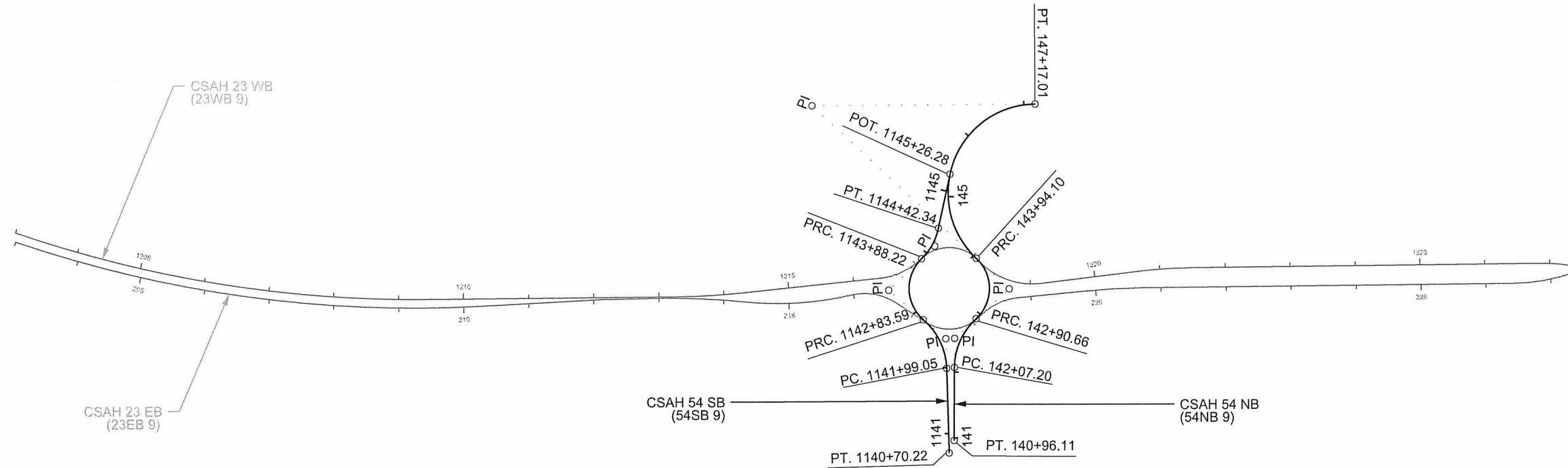
PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
 DESIGN BY: JRB DATE: 05-15-18
 CHECKED BY: EJM DATE: 06-07-18



SAP 002-623-018
 CP 2017-7

ALIGNMENT TABULATION
 CSAH 23 EB & WB
 Sheet 46 of 134 Sheets



CSAH 54 NB ALIGNMENT

POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
		DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N	
PT	140+96.105						560,994.8516	178,318.0481	N 0° 19' 15.04" E
PC	142+07.198						560,995.4737	178,429.1389	N 0° 19' 15.04" E
54NB_9-4	PI 142+51.535	47° 49' 20.40" RT	57° 17' 44.81"	100.000'	44.337'	83.466'	560,995.7220	178,473.4754	PI
	CC						561,095.4721	178,428.5789	
	PRC 142+90.663						561,028.7450	178,503.0603	N 48° 08' 35.43" E
	PRC 142+90.663						561,028.7450	178,503.0603	N 48° 08' 35.43" E
54NB_9-5	PI 143+59.023	95° 35' 08.98" LT	92° 24' 45.17"	62.000'	68.359'	103.434'	561,079.6601	178,548.6747	PI
	CC						560,987.3742	178,549.2388	
	PRC 143+94.097						561,029.3065	178,594.9081	N 47° 26' 33.55" W
	PRC 143+94.097						561,029.3065	178,594.9081	N 47° 26' 33.55" W
54NB_9-6	PI 147+37.240	137° 02' 54.64" RT	42° 26' 28.75"	135.000'	343.143'	322.913'	560,776.5468	178,826.9855	PI
	CC						561,120.6107	178,694.3492	
PT	147+17.010						561,119.6821	178,829.3460	N 89° 36' 21.09" E

CSAH 54 SB ALIGNMENT

POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
		DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N	
PT	1140+70.217						560,987.0714	178,299.0846	N 1° 38' 42.94" W
PC	1141+99.053						560,983.3724	178,427.8674	N 1° 38' 42.94" W
54SB_9-4	PI 1142+44.030	48° 26' 01.20" LT	57° 17' 44.81"	100.000'	44.977'	84.533'	560,982.0810	178,472.8260	PI
	CC						560,883.4136	178,424.9963	
	PRC 1142+83.586						560,947.5868	178,501.6892	N 50° 04' 44.15" W
	PRC 1142+83.586						560,947.5868	178,501.6892	N 50° 04' 44.15" W
54SB_9-5	PI 1143+53.293	96° 41' 52.53" RT	92° 24' 45.17"	62.000'	69.707'	104.637'	560,894.1264	178,546.4225	PI
	CC						560,987.3742	178,549.2388	
	PRC 1143+88.223						560,944.7897	178,594.3006	N 46° 37' 08.38" E
	PRC 1143+88.223						560,944.7897	178,594.3006	N 46° 37' 08.38" E
54SB_9-6	PI 1144+16.128	34° 27' 08.91" LT	63° 39' 43.12"	90.000'	27.905'	54.118'	560,965.0710	178,613.4669	PI
	CC						560,882.9735	178,659.7128	
PT	1144+42.341						560,970.9520	178,640.7450	N 12° 09' 59.47" E
126	POT 1145+26.282						560,988.6429	178,722.8009	

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_AL_P1.dgn 06/12/2018 2:29:40 PM

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.

PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-12-2018 LICENSE NO. 49118

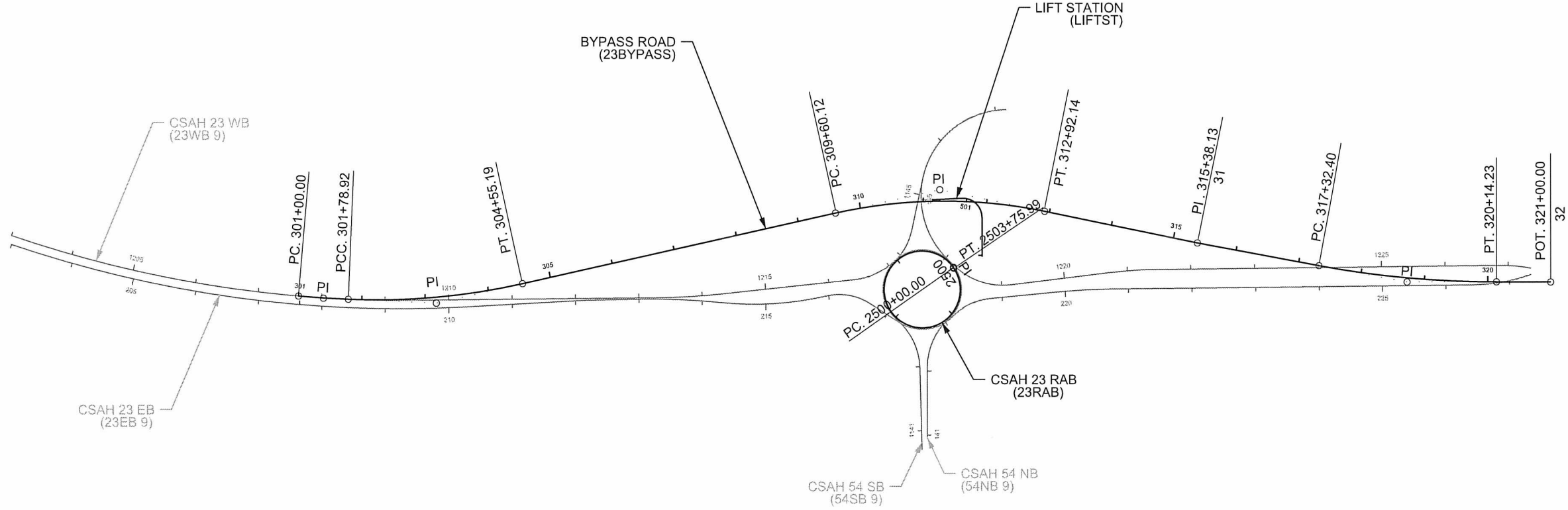
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 DESIGN BY: JRB DATE: 05-15-18
 CHECKED BY: EJM DATE: 06-07-18



ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-623-018
CP 2017-7

ALIGNMENT PLAN
CSAH 54



23 ROUNDABOUT

POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
		DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N	
	PC 2500+00.00						561,036.6007	178,583.5426	N 34° 52' 15.29" W
23RAB1	PI 2500+00.500	359° 02' 41.61" LT	95° 29' 34.68"	60.000'	0.500'	375.991'	561,036.8866	178,583.1323	
	CC						560,987.3742	178,549.2388	
	PT 2503+75.991						561,037.1657	178,582.7173	N 33° 54' 56.90" W

LIFT STATION ACCESS ALIGNMENT

POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
		DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N	
L1	POT 500+45.145						561,002.9727	178,689.2211	
	PC 500+92.581						561,050.3642	178,691.2870	N 87° 30' 14.17" E
LIFTST1	PI 501+23.917	92° 29' 45.83" RT	190° 59' 09.35"	30.000'	31.336'	48.431'	561,081.6707	178,692.6517	PI
	CC						561,051.6707	178,661.3155	
	PT 501+41.012						561,081.6707	178,661.3155	Due South
L2	POT 502+01.863						561,081.6707	178,600.4645	

BYPASS ALIGNMENT

POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
		DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N	
	PC 301+00.000						560,004.6332	178,539.6184	S 85° 08' 21.30" E
23BYPASS-1	PI 301+39.463	2° 22' 02.83" LT	3° 00' 00.00"	1,909.860'	39.463'	78.915'	560,043.9545	178,536.2745	PI
	CC						560,166.4640	180,442.6097	
	PCC 301+78.915						560,083.3803	178,534.5578	S 87° 30' 24.13" E
	PCC 301+78.915						560,083.3803	178,534.5578	S 87° 30' 24.13" E
23BYPASS-2	PI 303+17.851	15° 01' 07.03" LT	5° 26' 09.72"	1,054.000'	138.936'	276.279'	560,222.1847	178,528.5137	PI
	CC						560,129.2320	179,587.5600	
	PT 304+55.194						560,357.8140	178,558.6449	N 77° 28' 28.85" E
	PC 309+60.116						560,850.7189	178,668.1478	N 77° 28' 28.85" E
23BYPASS-3	PI 311+28.617	24° 04' 50.44" RT	7° 15' 09.47"	790.000'	168.501'	332.027'	561,015.2098	178,704.6908	PI
	CC						561,022.0471	177,896.9496	
	PT 312+92.143						561,180.2956	178,670.9376	S 78° 26' 40.71" E
31	POT 315+38.133						561,421.3000	178,621.6622	
	PC 317+32.402						561,612.2813	178,586.0750	S 79° 26' 40.71" E
23BYPASS-4	PI 318+73.713	10° 29' 08.22" LT	3° 43' 13.82"	1,540.000'	141.311'	281.833'	561,751.2013	178,560.1888	PI
	CC						561,894.3869	180,100.0157	
	PT 320+14.235						561,892.5124	178,560.0168	S 89° 55' 48.93" E
32	POT 321+00.000						561,978.2771	178,559.9124	

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_AL_P1.dgn 06/12/2018 2:29:40 PM

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.
 PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
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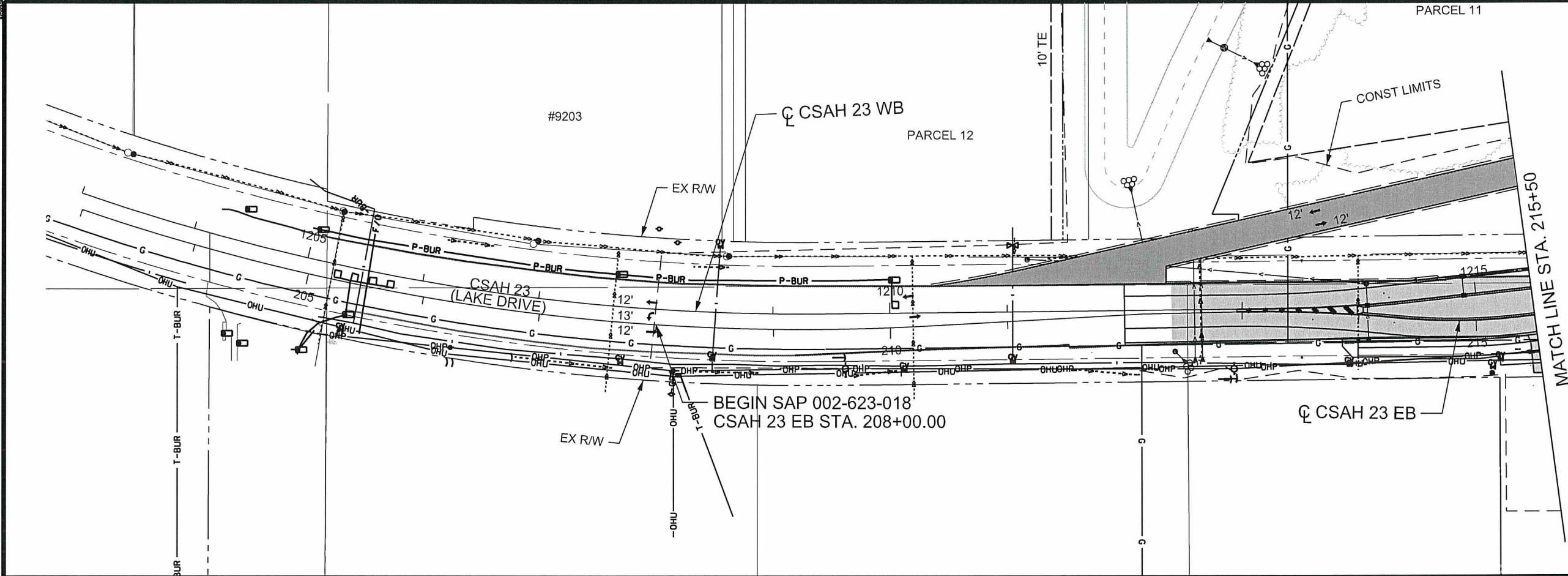
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ANOKA COUNTY
HIGHWAY DEPT.

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CP 2017-7

ALIGNMENT PLAN
BYPASS & RAB

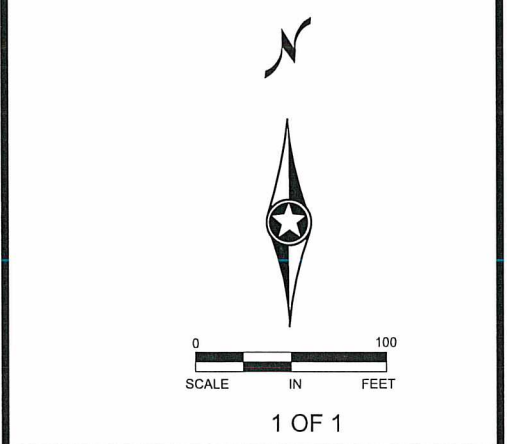
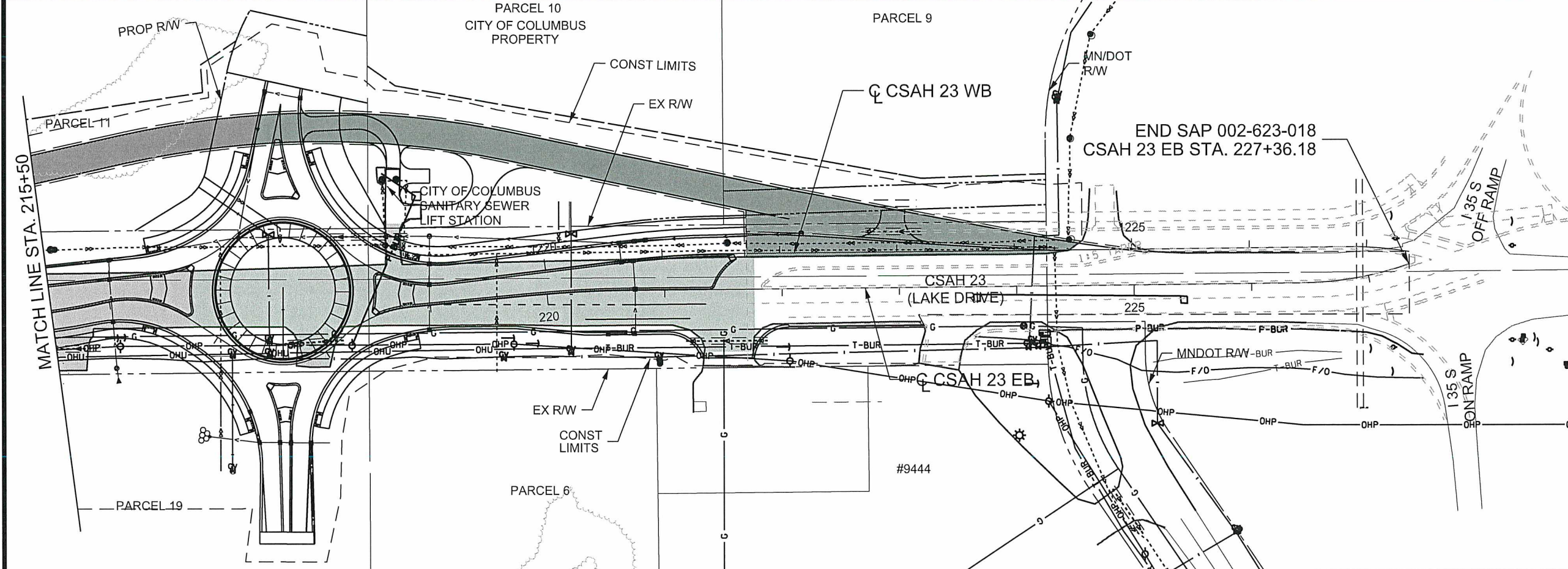


LEGEND

G	XCEL ENERGY
OHU	CENTURYLINK
T-BUR	CONNEXUS ENERGY
P-BUR	ZAYO BANDWIDTH
OHP	MIDCO COMMUNICATIONS
F/O-BUR	TRAFFIC SIGNAL
SIG-BUR	EXISTING STORM SEWER
(Dashed line with arrows)	EXISTING SAN SEWER
(Dashed line with dots)	EXISTING WATER MAIN
(Dashed line with vertical bars)	PROPOSED STORM DRAIN
(Dashed line)	EXISTING R/W
(Solid line)	PROPOSED R/W
(Light gray fill)	PAVEMENT REMOVAL
(Dark gray fill)	TEMPORARY PAVEMENT

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

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE GOPHER STATE ONE CALL EXCAVATION NOTICE SYSTEM REQUIRED BY MINNESOTA STATUTE CHAPTER 216D FOR ALL UNDERGROUND UTILITY LOCATIONS.



NO	DATE	BY	CKD	APPR	REVISION

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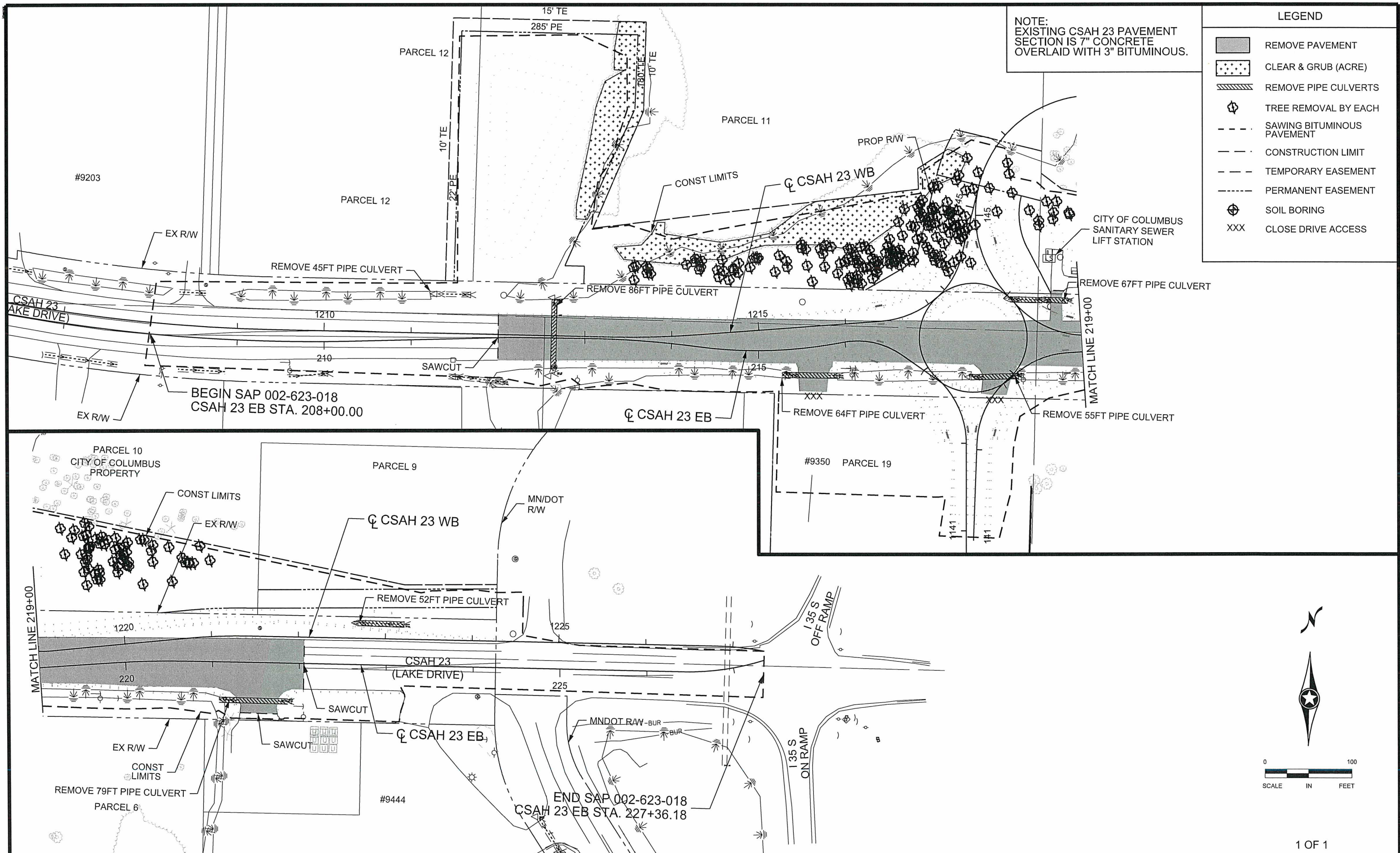
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ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-623-018
 CP 2017-7

EXISTING UTILITY PLAN
 CSAH 23

Sheet 49 of 134 Sheets



NOTE:
EXISTING CSAH 23 PAVEMENT
SECTION IS 7" CONCRETE
OVERLAID WITH 3" BITUMINOUS.

LEGEND	
	REMOVE PAVEMENT
	CLEAR & GRUB (ACRE)
	REMOVE PIPE CULVERTS
	TREE REMOVAL BY EACH
	SAWING BITUMINOUS PAVEMENT
	CONSTRUCTION LIMIT
	TEMPORARY EASEMENT
	PERMANENT EASEMENT
	SOIL BORING
	CLOSE DRIVE ACCESS

NO	DATE	BY	CKD	APPR	REVISION

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ANOKA COUNTY
 HIGHWAY DEPT.

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 CP 2017-7

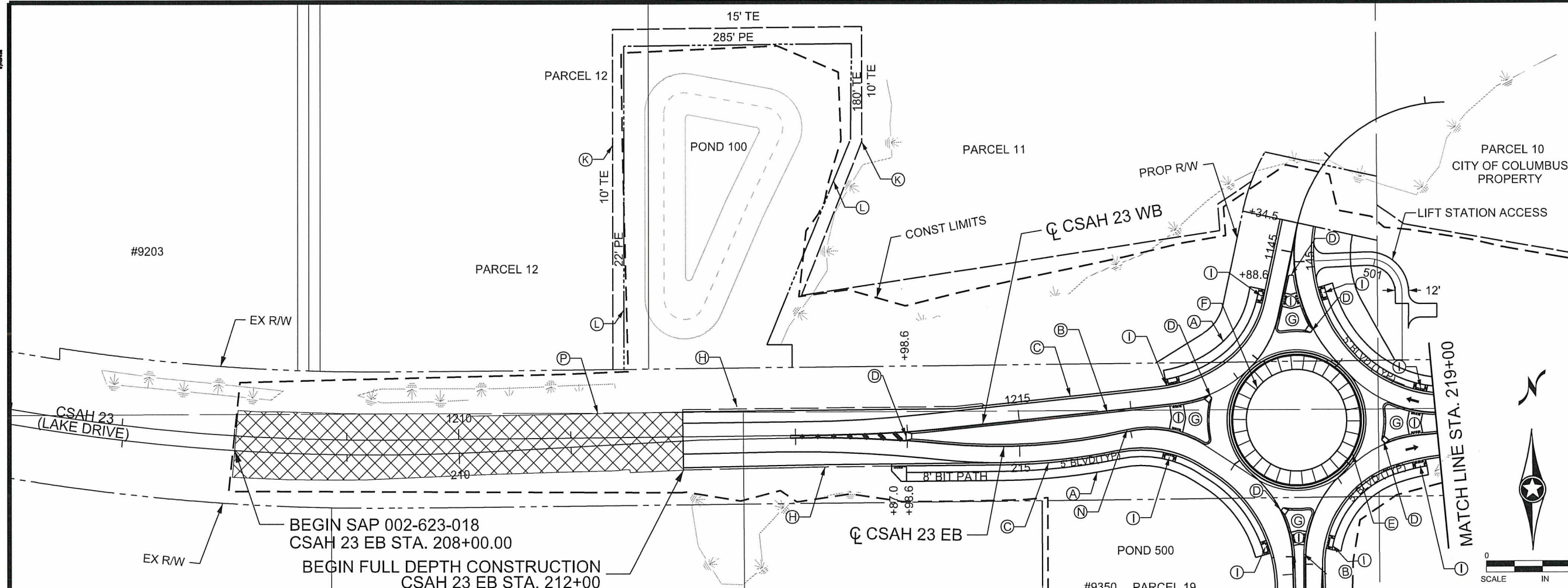
1 OF 1
 REMOVAL PLAN
 CSAH 23
 Sheet 50 of 134 Sheets

CONSTRUCTION NOTES:

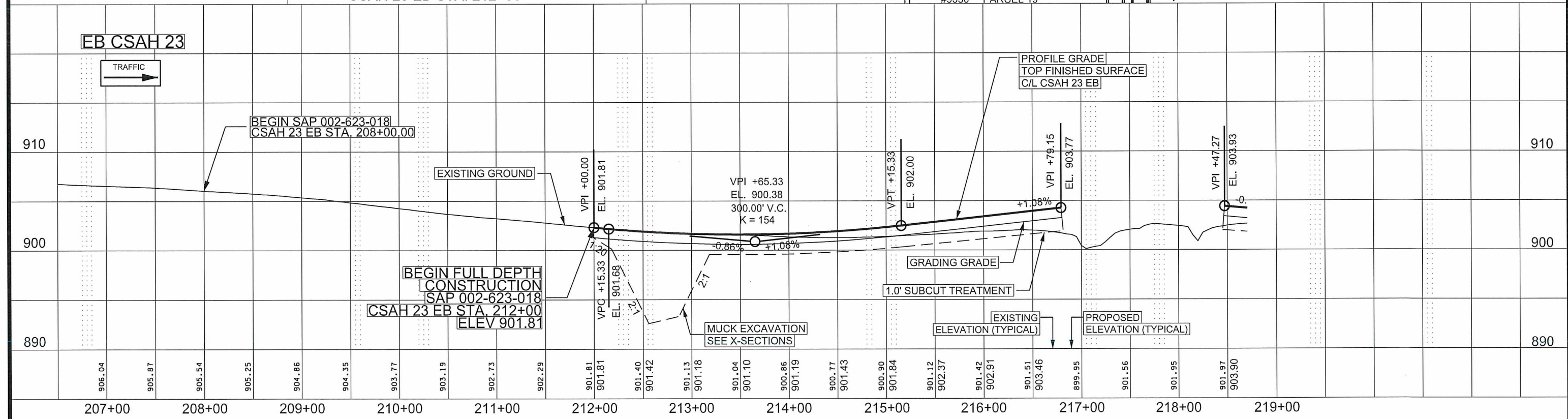
- (A) 8' BITUMINOUS PATH
- (B) B418 CURB & GUTTER
- (C) B424 CURB & GUTTER
- (D) CONCRETE APPROACH NOSE STD. PLATE 7113
- (E) CURB TYPE SPECIAL
- (F) INTERGRANT CURB B6
- (G) 4" CONCRETE WALK
- (H) 2' AGGREGATE SHOULDER
- (I) CONC. PED RAMP
- (K) TEMPORARY EASEMENT
- (L) PERMANENT EASEMENT
- (N) B418 TIP-OUT CURB & GUTTER
- (O) BITUMINOUS CURB
- (P) 2" MILL AND OVERLAY
- WETLAND DELINEATION

ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

SEE SHEETS 58 & 60 FOR CSAH 54/ CSAH 23 ROUNDABOUT DETAILS & HOLIDAY ACCESS DETAILS.



EB CSAH 23



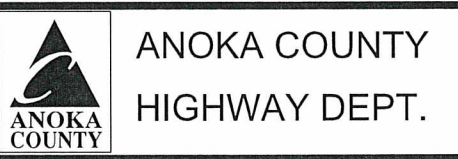
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 CHECKED BY: EJM DATE: 06-07-18



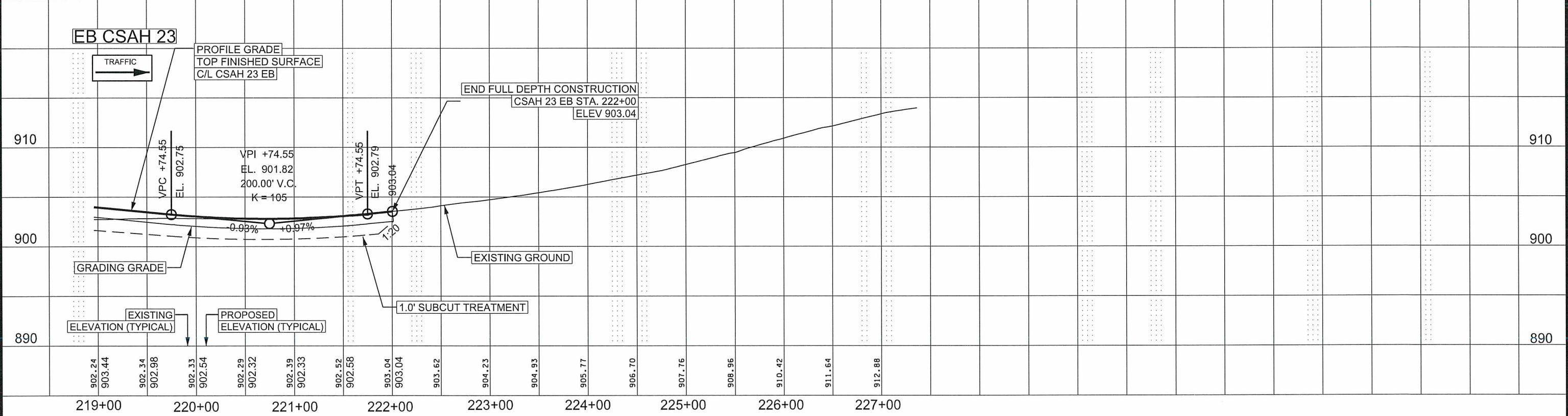
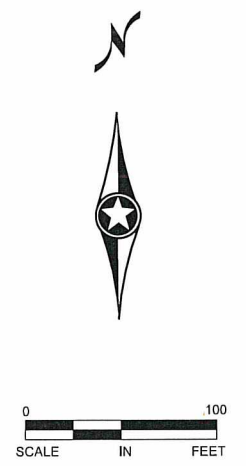
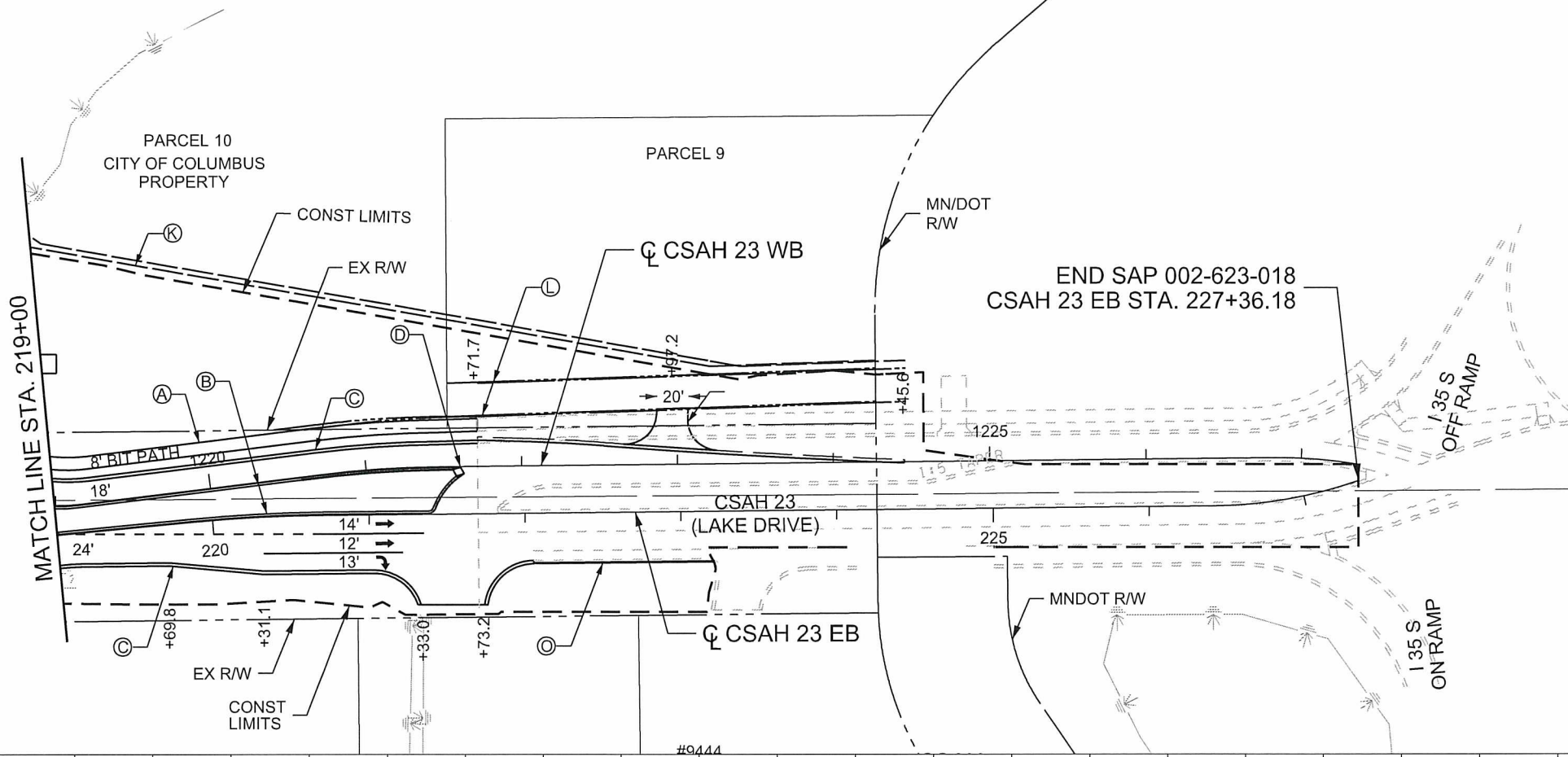
SAP 002-623-018
 CP 2017-7

CONSTRUCTION PLAN AND PROFILE
 CSAH 23
 STA 208+00.00 TO 219+00.00
 Sheet 51 of 134 Sheets

CONSTRUCTION NOTES:

- (A) 8' BITUMINOUS PATH
- (B) B418 CURB & GUTTER
- (C) B424 CURB & GUTTER
- (D) CONCRETE APPROACH NOSE STD. PLATE 7113
- (E) CURB TYPE SPECIAL
- (F) INTERGRANT CURB B6
- (G) 4" CONCRETE WALK
- (H) 2' AGGREGATE SHOULDER
- (I) CONC. PED RAMP
- (K) TEMPORARY EASEMENT
- (L) PERMANENT EASEMENT
- (N) B418 TIP-OUT CURB & GUTTER
- (O) BITUMINOUS CURB
- WETLAND DELINEATION

ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
SEE SHEETS 58 & 60 FOR CSAH 54/ CSAH 23 ROUNDABOUT DETAILS & HOLIDAY ACCESS DETAILS.

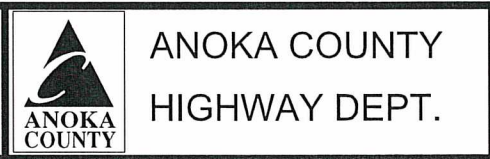


NO	DATE	BY	CKD	APPR	REVISION

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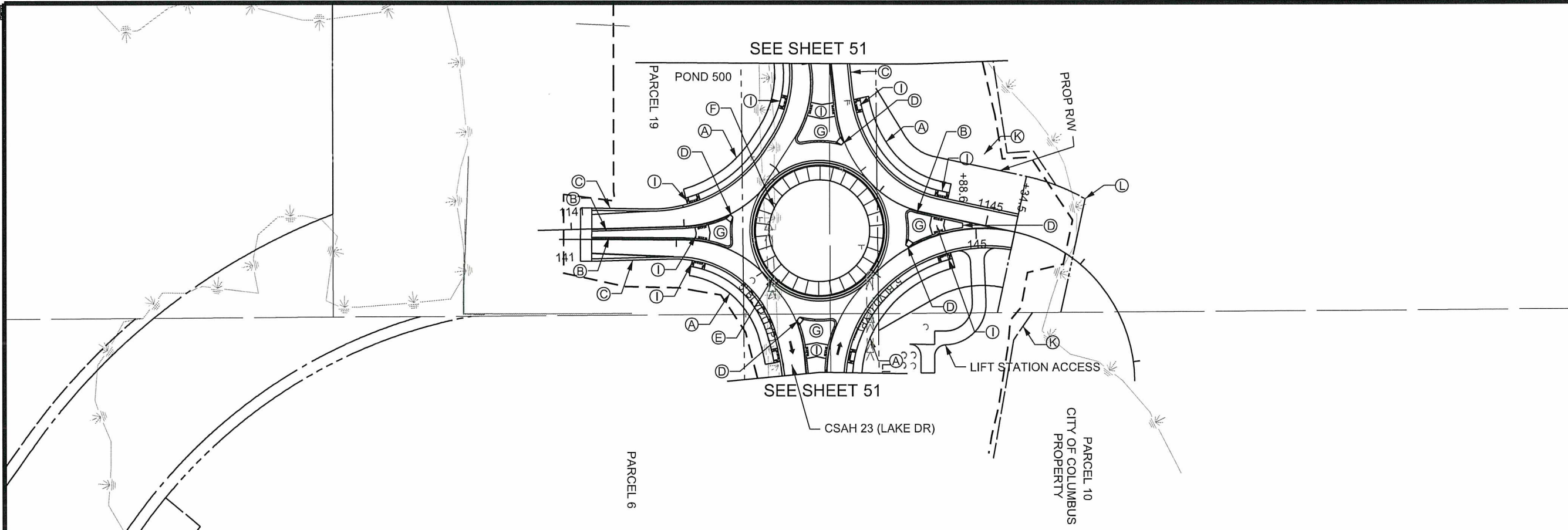
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: ELIZABETH MARKOSE
SIGNATURE: *Elizabeth Markose*
DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
DESIGN BY: JRB DATE: 05-15-18
CHECKED BY: EJM DATE: 06-07-18

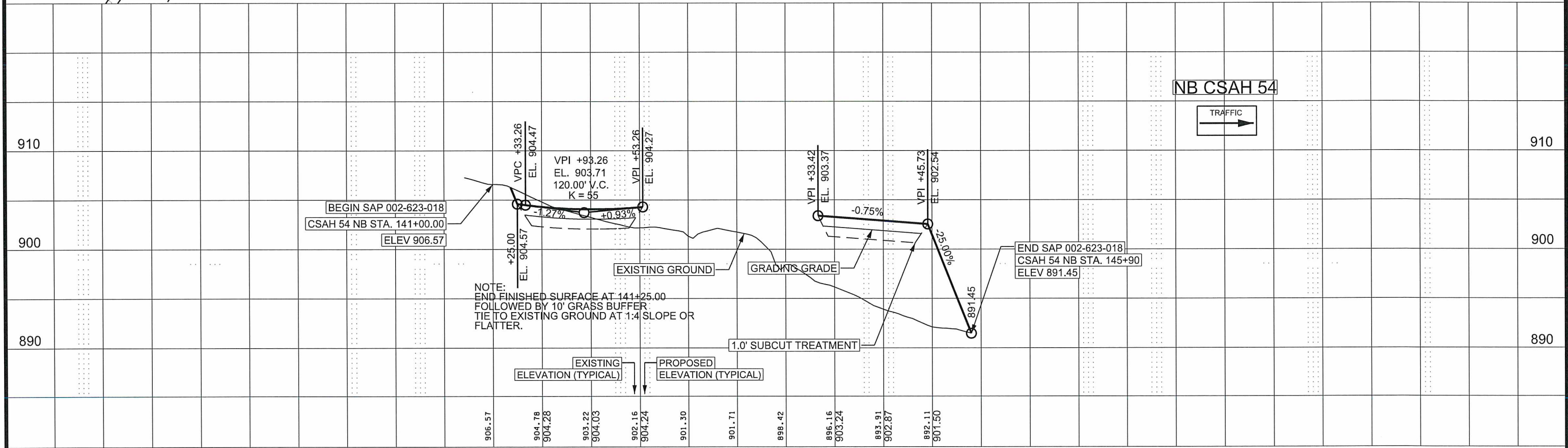


SAP 002-623-018
CP 2017-7

CONSTRUCTION PLAN AND PROFILE
CSAH 23
STA 219+00.00 TO 221+76.44
Sheet 52 of 134 Sheets



- CONSTRUCTION NOTES:**
- (A) 8' BITUMINOUS PATH
 - (B) B418 CURB & GUTTER
 - (C) B424 CURB & GUTTER
 - (D) CONCRETE APPROACH NOSE STD. PLATE 7113
 - (E) CURB TYPE SPECIAL
 - (F) INTERGRANT CURB B6
 - (G) 4" CONCRETE WALK
 - (I) CONC. PED RAMP
 - (K) TEMPORARY EASEMENT
 - (L) PERMANENT EASEMENT
- WETLAND DELINEATION
- ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
- SEE SHEET 58 FOR CSAH 54 / 23 ROUNDABOUT DETAILS.



141+00 142+00 143+00 144+00 145+00 146+00

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_PP2.dgn 06/12/2018 2:30:09 PM

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.

PRINT NAME: ELIZABETH MARKOSE

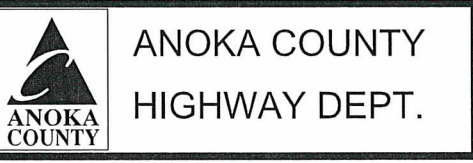
SIGNATURE: *Elizabeth Markose*

DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18

DESIGN BY: JRB DATE: 05-15-18

CHECKED BY: EJM DATE: 06-07-18



SAP 002-623-018
CP 2017-7

3 OF 5

CONSTRUCTION PLAN AND PROFILE

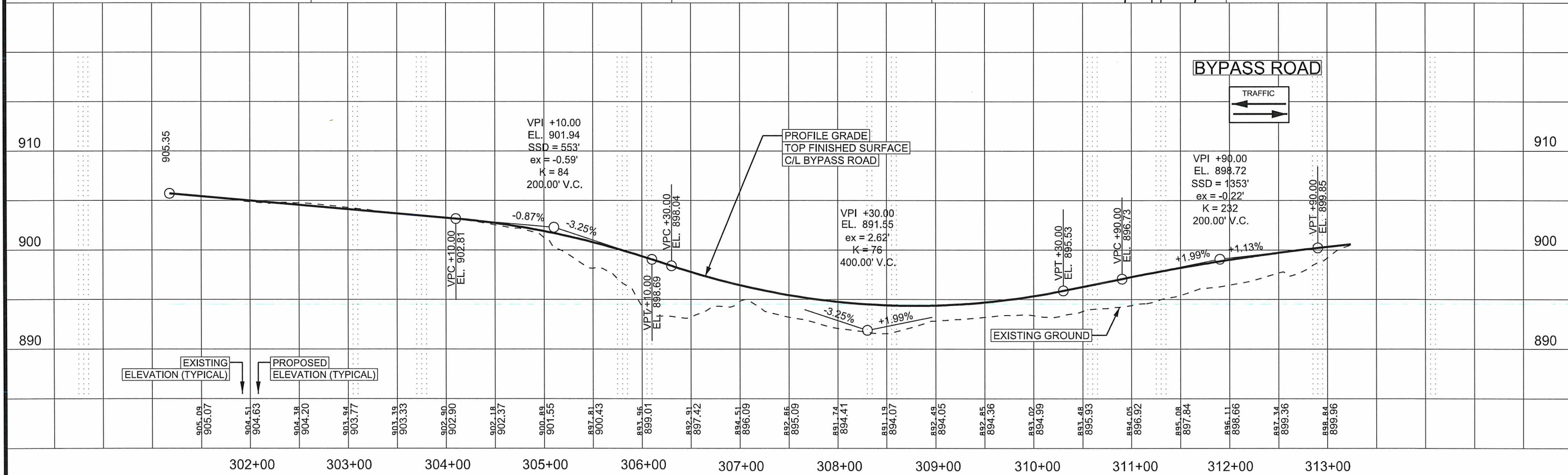
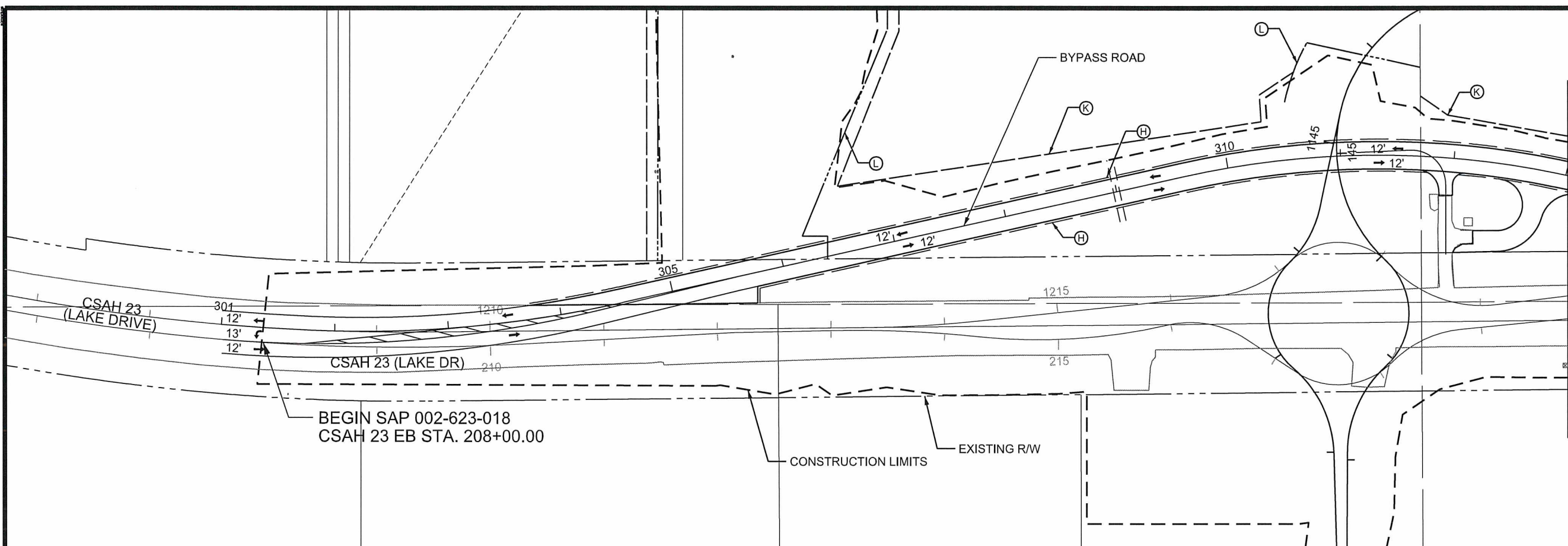
STA 140+00 TO 145+32.54

Sheet 53 of 134 Sheets

CONSTRUCTION NOTES:

- (H) 2' AGGREGATE SHOULDER
- (K) TEMPORARY EASEMENT
- (L) PERMANENT EASEMENT

ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

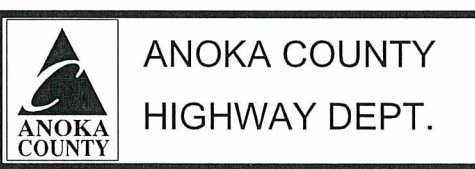


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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 PRINT NAME: ELIZABETH MARCOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
 DESIGN BY: JRB DATE: 05-15-18
 CHECKED BY: EJM DATE: 06-07-18



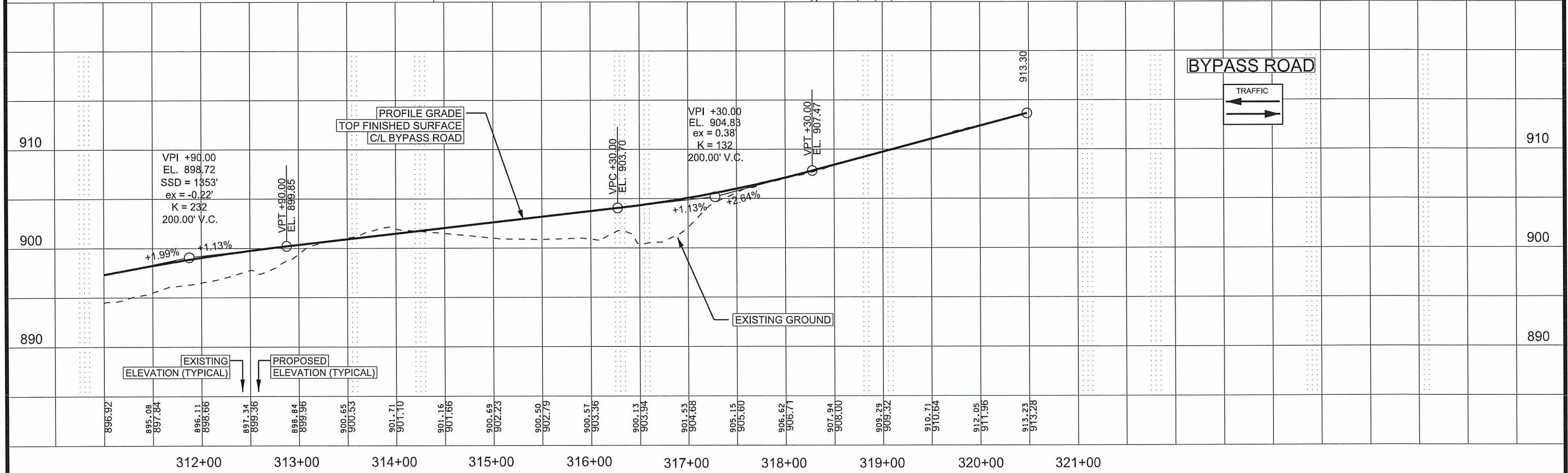
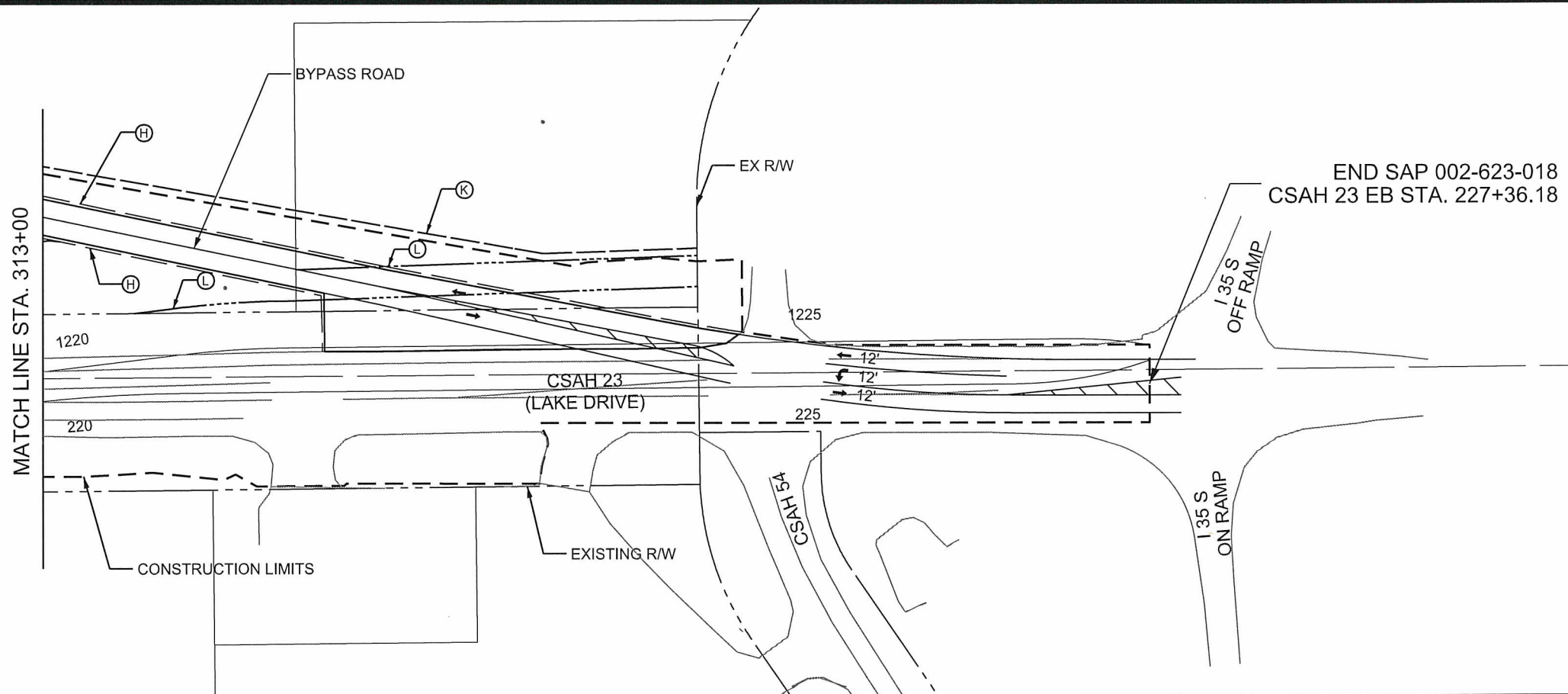
SAP 002-623-018
 CP 2017-7

CONSTRUCTION PLAN AND PROFILE
 BYPASS ROAD
 STA. 301+00 TO 313+00
 Sheet 54 of 134 Sheets

CONSTRUCTION NOTES:

- (H) 2' AGGREGATE SHOULDER
- (K) TEMPORARY EASEMENT
- (L) PERMANENT EASEMENT
- WETLAND DELINEATION

ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.



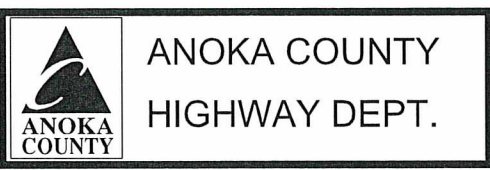
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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *[Signature]*
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
 DESIGN BY: JRB DATE: 05-15-18
 CHECKED BY: EJM DATE: 06-07-18

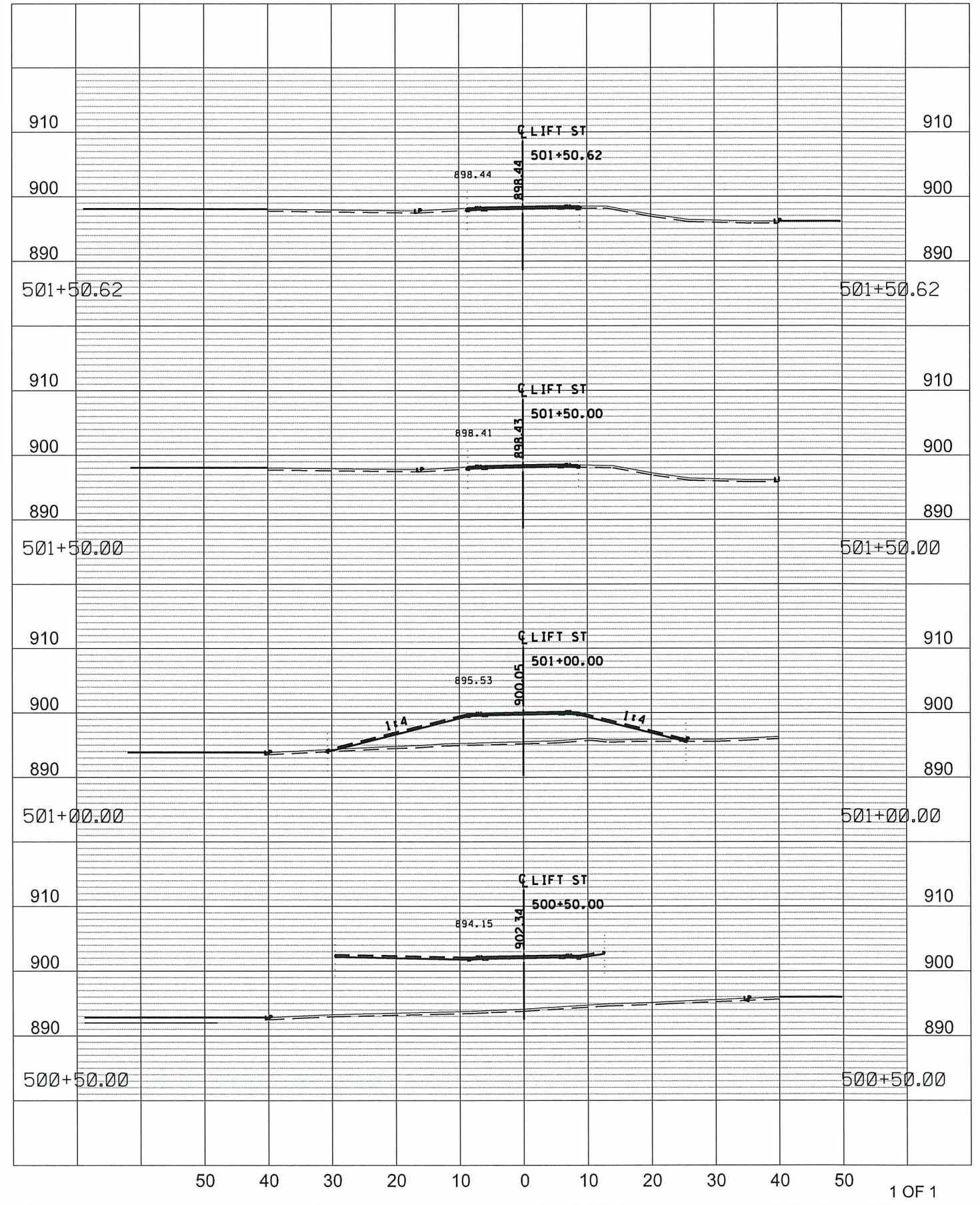
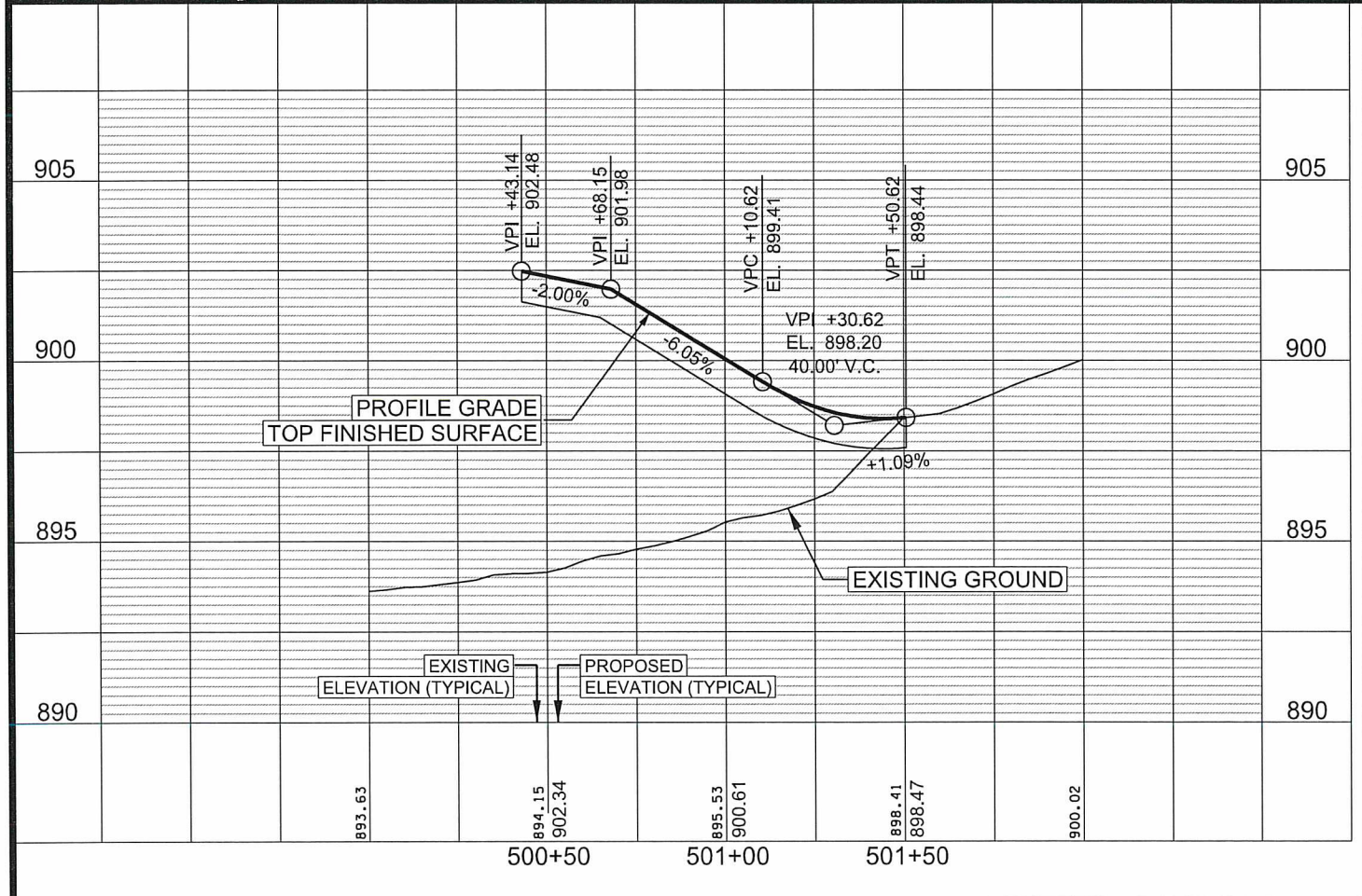
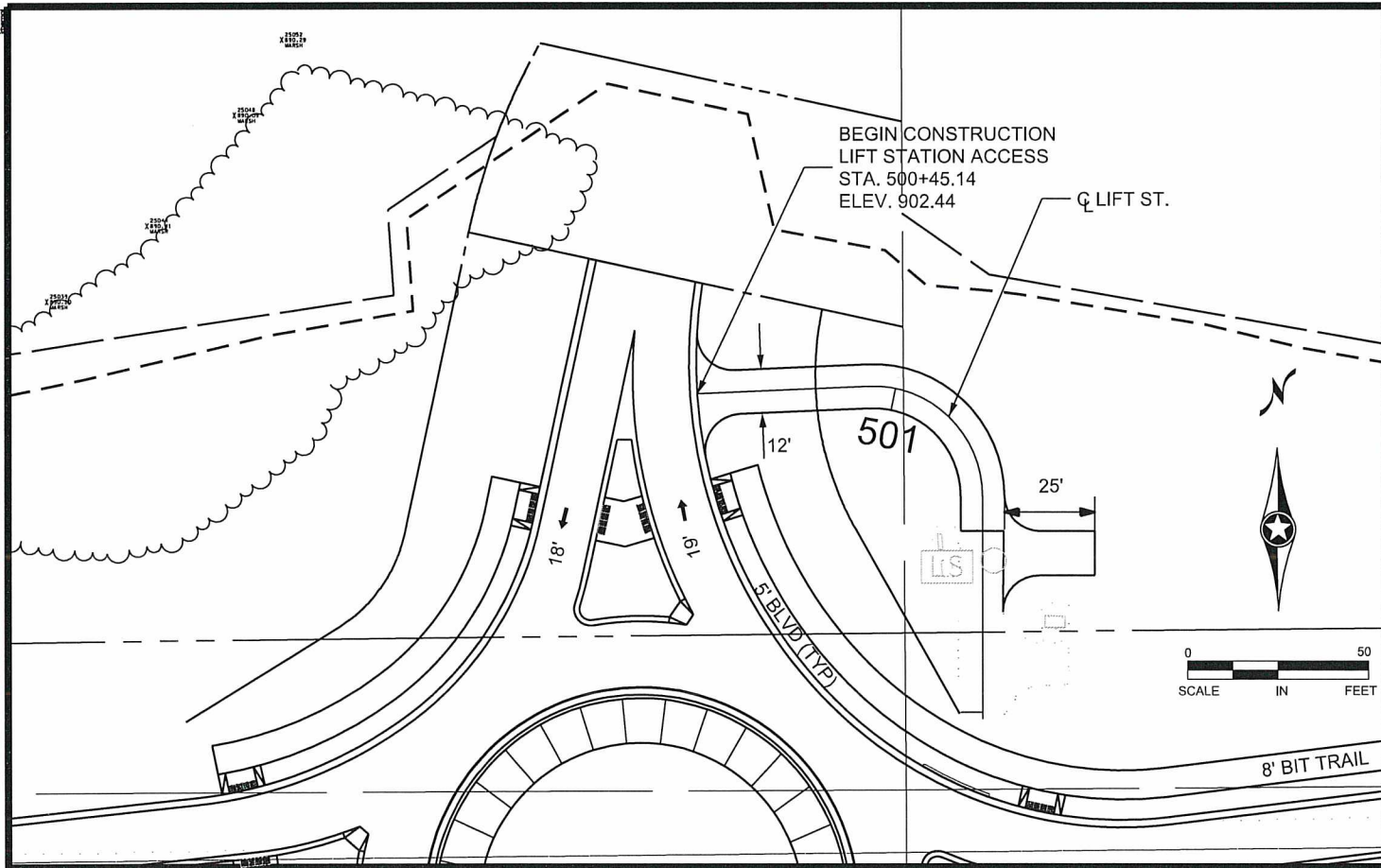


SAP 002-623-018
 CP 2017-7

5 OF 5

CONSTRUCTION PLAN AND PROFILE
 BYPASS ROAD
 STA 313+00 TO 321+00

Sheet 55 of 134 Sheets



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_LIFTSTDET.dgn 06/12/2018 2:30:54 PM

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.

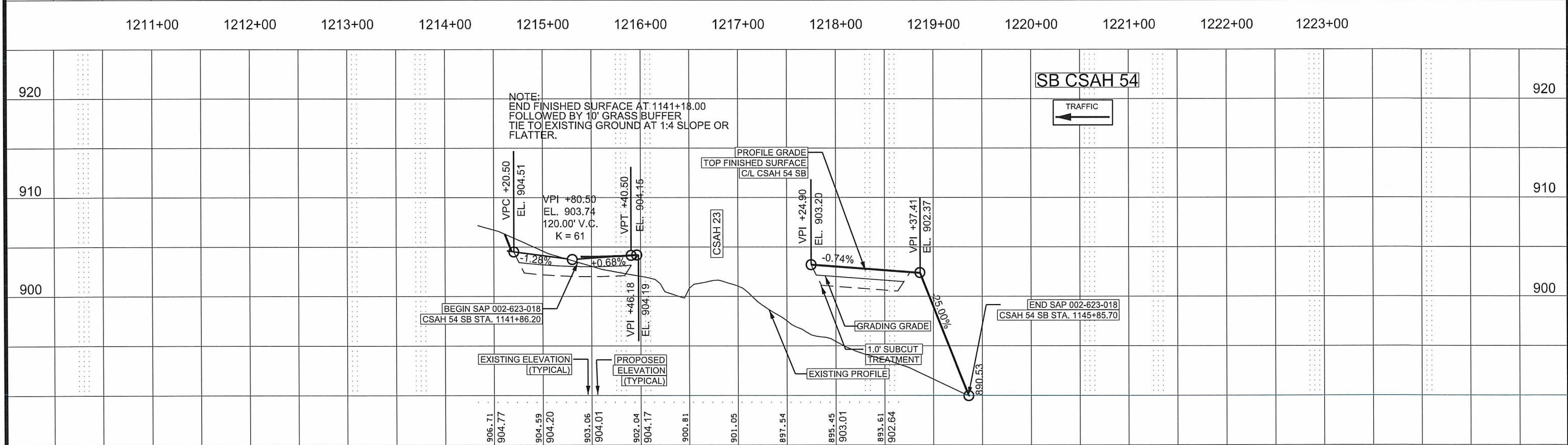
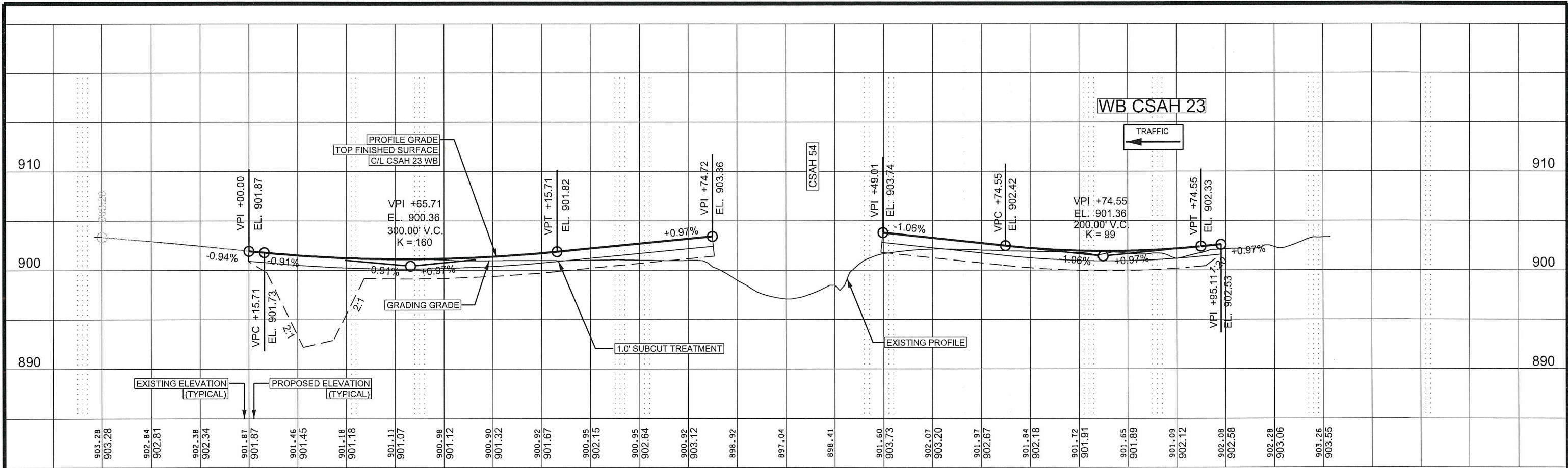
PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
 DESIGN BY: JRB DATE: 05-15-18
 CHECKED BY: EJM DATE: 06-07-18



SAP 002-623-018
 CP 2017-7

CITY OF COLUMBUS
 LIFT STATION ACCESS
 CONSTRUCTION PLAN, PROFILE
 AND X-SECTIONS
 Sheet 56 of 134 Sheets



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_PR1.dgn 06/12/2018 2:30:58 PM

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.

PRINT NAME: ELIZABETH MARKOSE

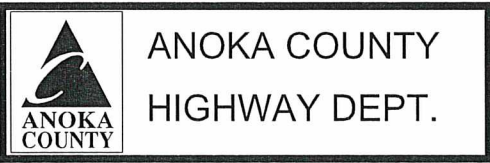
SIGNATURE: *Elizabeth Markose*

DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18

DESIGN BY: JRB DATE: 05-15-18

CHECKED BY: EJM DATE: 06-07-18



SAP 002-623-018
CP 2017-7

SOUTH MEDIAN NOSE ELEVATIONS				
PT ID	ALI.	STATION	OFFSET	ELEV.
O1	54SB_9	1142+43.66	3.20	904.20
O2	54NB_9	142+48.19	-7.30	903.30
O3	54NB_9	142+44.42	-5.00	3' RAD
O4	54NB_9	142+44.52	-0.50	904.20
O5	54NB_9	142+28.90	-0.50	904.12
O6	54NB_9	142+16.93	-0.50	904.06
O7	54SB_9	1142+09.44	0.50	904.04
O8	54SB_9	1142+21.35	0.50	904.09
O9	54SB_9	1142+42.28	0.50	904.17

EAST MEDIAN NOSE ELEVATIONS				
PT ID	ALI.	STATION	OFFSET	ELEV.
P1	23EB_9	218+50.78	-4.30	903.91
P2	23WB_9	1218+54.33	7.30	903.78
P3	23WB_9	1218+57.98	5.00	3' RAD
P4	23WB_9	1218+57.98	0.50	903.64
P5	23WB_9	1218+76.18	0.50	903.45
P6	23WB_9	1218+88.14	0.50	903.33
P7	23EB_9	218+86.94	-0.50	903.57
P8	23EB_9	218+74.95	-0.50	903.68
P9	23EB_9	218+52.67	-0.50	903.89

NORTH MEDIAN NOSE ELEVATIONS				
PT ID	ALI.	STATION	OFFSET	ELEV.
Q1	54SB_9	1144+29.67	7.20	903.24
Q2	54NB_9	144+36.51	-3.60	903.35
Q3	54NB_9	144+38.03	-0.50	903.34
Q4	54NB_9	144+61.20	-0.50	903.17
Q5	54NB_9	144+73.17	-0.50	903.08
Q6	54NB_9	144+88.39	-0.50	902.96
Q7	54SB_9	1144+79.50	0.50	902.80
Q8	54SB_9	1144+63.51	0.50	902.92
Q9	54SB_9	1144+51.35	0.50	903.01
Q10	54SB_9	1144+33.36	0.50	903.15
Q11	54SB_9	1144+33.36	5.00	3' RAD

WEST MEDIAN NOSE ELEVATIONS				
PT ID	ALI.	STATION	OFFSET	ELEV.
R1	23EB_9	216+69.77	-8.10	903.66
R2	23WB_9	1216+72.01	3.40	903.39
R3	23WB_9	1216+70.58	0.50	903.33
R4	23WB_9	1216+46.57	0.50	903.10
R5	23WB_9	1216+34.60	0.50	902.98
R6	23EB_9	216+34.40	-0.50	903.30
R7	23EB_9	216+46.27	-0.50	903.43
R8	23EB_9	216+66.69	-0.50	903.65
R9	23EB_9	216+66.69	-5.00	3' RAD

ROUNDBABOUT CSAH 23					
PT ID	ALIGNMENT	STATION	OFFSET	BIT ELEV.	LOCATION
A	54NB_9	143+36.69	-62.00		79' RAD F/C
	54NB_9	143+36.69	-62.00		58' RAD
	54NB_9	143+36.69	-62.00		45' RAD
A1	54NB_9	141+85.88	91.00		75' RAD F/C
A2	54NB_9	141+86.06	14.00	903.78	BEG
A3	54NB_9	142+09.43	15.20	903.83	END
A4	54NB_9	141+82.42	105.50		90' RAD F/C
A3	54NB_9	142+09.43	15.20	903.83	BEG
A5	54NB_9	142+30.42	16.30	903.95	PED END
A6	54NB_9	142+72.63	17.60	906.15	MID
A7	54NB_9	142+99.48	19.10	903.86	THREE QTR
A8	23EB_9	218+50.45	20.40	903.57	END
A9	23EB_9	217+98.84	213.30		200' RAD F/C
A8	23EB_9	218+50.45	20.40	903.57	BEG
A10	23EB_9	218+73.06	20.70	903.37	PED BEG
A11	23EB_9	218+86.85	19.70	903.24	PED END
A12	23EB_9	219+13.70	19.40	902.95	END
A13	23WB_9	1219+23.35	-126.00		110' RAD F/C
A14	23WB_9	1219+23.35	-14.00	902.80	BEG
A15	23WB_9	1218+88.90	-15.61	903.08	PED BEG
A16	23WB_9	1218+74.89	-16.00	903.19	PED END
A17	23WB_9	1218+54.83	-16.00	903.35	END
A18	54NB_9	143+92.25	131.01		115' RAD F/C
A17	54NB_9	143+63.99	30.87	903.35	BEG
A19	54NB_9	143+93.26	14.00	903.45	END
A20	54NB_9	147+29.09	131.34		130' RAD F/C
A19	54NB_9	143+93.26	14.00	903.45	BEG
A21	54NB_9	144+28.21	15.20	903.15	QTR
A22	54NB_9	144+59.24	15.61	902.89	PED BEG
A23	54NB_9	144+72.84	15.61	902.78	PED END
A24	54NB_9	145+34.55	14.15	902.32	END
A25	54SB_9	1145+26.28	-14.00	902.33	BEG
A26	54SB_9	1144+62.49	-14.00	902.68	END

ROUNDBABOUT CSAH 23					
PT ID	ALIGNMENT	STATION	OFFSET	BIT ELEV.	LOCATION
A28	54SB_9	1144+53.71	-106.00		90' RAD F/C
A27	54SB_9	1144+53.71	-14.00	902.75	BEG
A29	54SB_9	1144+15.97	-16.81	903.03	MID
A30	54SB_9	1143+79.95	-19.01	903.11	END
A31	23WB_9	1216+26.38	-136.00		120' RAD F/C
A30	23WB_9	1217+00.11	-17.71	903.11	BEG
A32	23WB_9	1216+61.66	-16.60	902.92	MID
A33	23WB_9	1216+46.66	-15.43	902.84	PED BEG
A34	23WB_9	1216+33.89	-14.23	902.77	PED END
A35	23WB_9	1216+26.38	-14.00	902.72	END
A36	23EB_9	215+85.81	116.00		100' RAD F/C
A37	23EB_9	215+85.81	14.00	902.40	BEG
A38	23EB_9	216+32.64	17.25	903.02	PED BEG
A39	23EB_9	216+47.77	17.31	903.20	PED END
A40	23EB_9	216+77.89	16.00	903.60	END
A41	54SB_9	1141+75.23	-136.02		120' RAD F/C
A42	54SB_9	1143+02.51	-24.64	903.77	BEG
A43	54SB_9	1142+76.74	-20.67	903.98	QTR
A44	54SB_9	1142+36.84	-20.59	903.83	MID
A45	54SB_9	1142+19.98	-19.22	903.76	PED BEG
A46	54SB_9	1142+05.29	-17.35	903.70	PED END
A47	54SB_9	1141+67.11	-14.29	903.81	END

LIFT STATION					
PT ID	ALI.	STATION	OFFSET	BIT ELEV.	LOCATION
W1	LIFTST	500+56.65	16.00		10' RAD
W2	LIFTST	500+46.78	17.60	902.70	
W3	LIFTST	500+56.65	6.00	902.33	
W4	LIFTST	500+55.79	-6.00	902.11	
W5	LIFTST	500+45.85	-17.07	902.41	
W6	LIFTST	500+55.79	-16.00		10' RAD
W7	LIFTST	501+50.62	6.00	898.56	
W8	LIFTST	501+50.62	-6.00	898.32	

NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\02-623-18\Plan\0262318_IN_P1.dgn 06/12/2018 2:31:06 PM					

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.
 PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
 DESIGN BY: JRB DATE: 05-15-18
 CHECKED BY: EJM DATE: 06-07-18



ANOKA COUNTY
 HIGHWAY DEPT.

SAP 002-623-018
 CP 2017-7

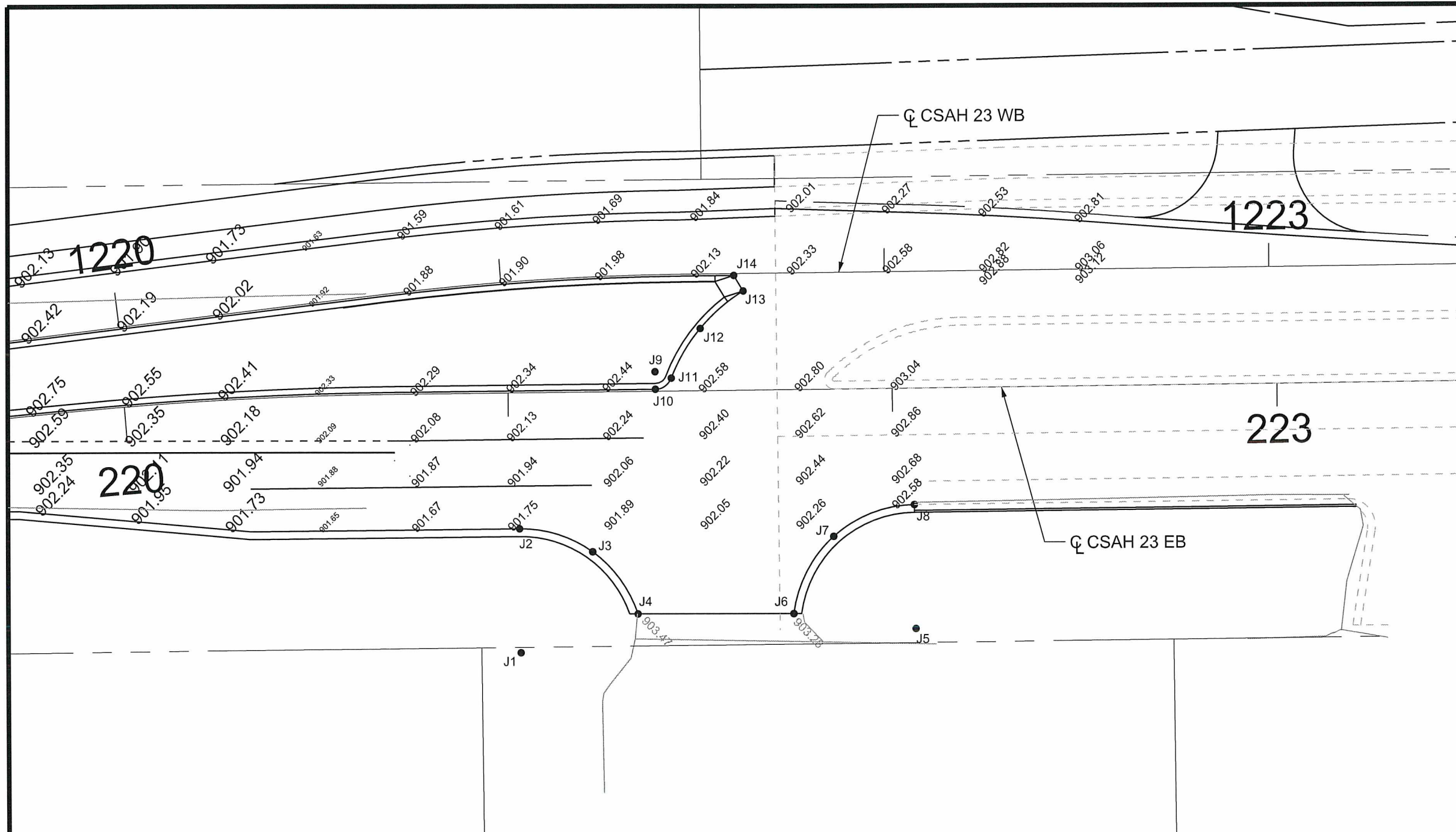
INTERSECTION DETAILS
 CSAH 23 ROUNDABOUT

LEGEND

- 999.99 EXISTING SPOT ELEVATION
- 999.99 PROPOSED SPOT ELEVATION
- XX ● CONTROL POINTS AT GUTTER LIP OR EDGE OF SIDEWALK / TRAIL
- ☐☐☐ TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- CONSTRUCT CONCRETE CURB & GUTTER
- X" CURB HEIGHT
- ▨ LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
- Ⓢ ↓ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- ⓔ ↓ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- DRAINAGE FLOW ARROW

ELEVATIONS ARE TOP OF FINISHED PAVEMENT.

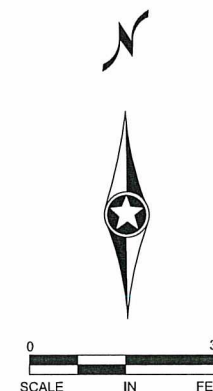
CURB AND GUTTER ELEVATIONS ARE SHOWN AT TOP OF FINISHED BITUMINOUS AT LIP OF GUTTER UNLESS OTHERWISE NOTED.



HOLIDAY ENTRANCE

PT ID	ALIGNMENT	STATION	OFFSET	BIT ELEV.	LOCATION
J1	23EB_9	221+02.52	67.00		30' RAD F/C
J2	23EB_9	221+02.52	35.00	901.75	BEG
J3	23EB_9	221+21.41	41.17	902.61	MID
J4	23EB_9	221+33.02	57.31	903.47	END
J5	23EB_9	222+05.32	62.00		30' RAD F/C
J6	23EB_9	221+73.61	57.73	903.28	BEG
J7	23EB_9	221+84.26	37.91	902.97	MID
J8	23EB_9	222+05.32	30.00	902.66	END
J9	23EB_9	221+38.26	-5.00		3' RAD F/C
J10	23EB_9	221+38.26	-0.50	902.51	BEG
J11	23EB_9	221+42.44	-3.34	902.55	END
J12	23EB_9	221+50.11	-16.00	902.43	MID
J13	23EB_9	221+61.48	-25.47	902.29	END
J14	23EB_9	221+59.06	-29.50	902.22	

#9444



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_IN_P2.dgn 06/12/2018 2:31:12 PM

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.

PRINT NAME: ELIZABETH MARKOSE

SIGNATURE: *Elizabeth Markose*

DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18

DESIGN BY: JRB DATE: 05-15-18

CHECKED BY: EJM DATE: 06-07-18

ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-623-018
CP 2017-7

INTERSECTION DETAILS
HOLIDAY ENTRANCE

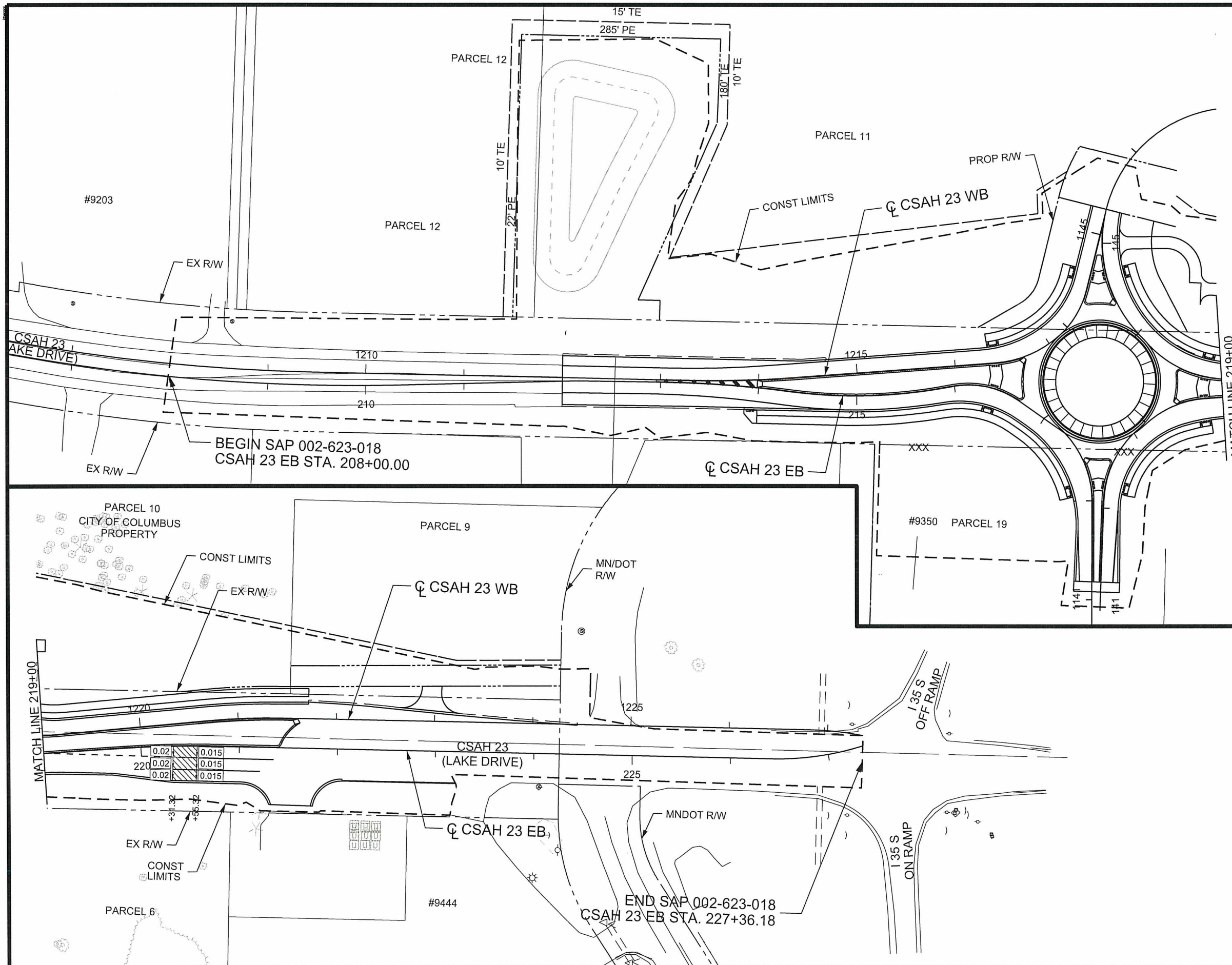
Sheet 60 of 134 Sheets

LEGEND

 SUPERELEVATION TRANSITION

NOTES:

1. ALL CROSS SLOPES ARE IN FEET PER FOOT
2. SEE INTERSECTION DETAIL PLANS FOR MORE INFORMATION.



0.02	0.015
0.02	0.015
0.02	0.015




NO	DATE	BY	CKD	APPR	REVISION

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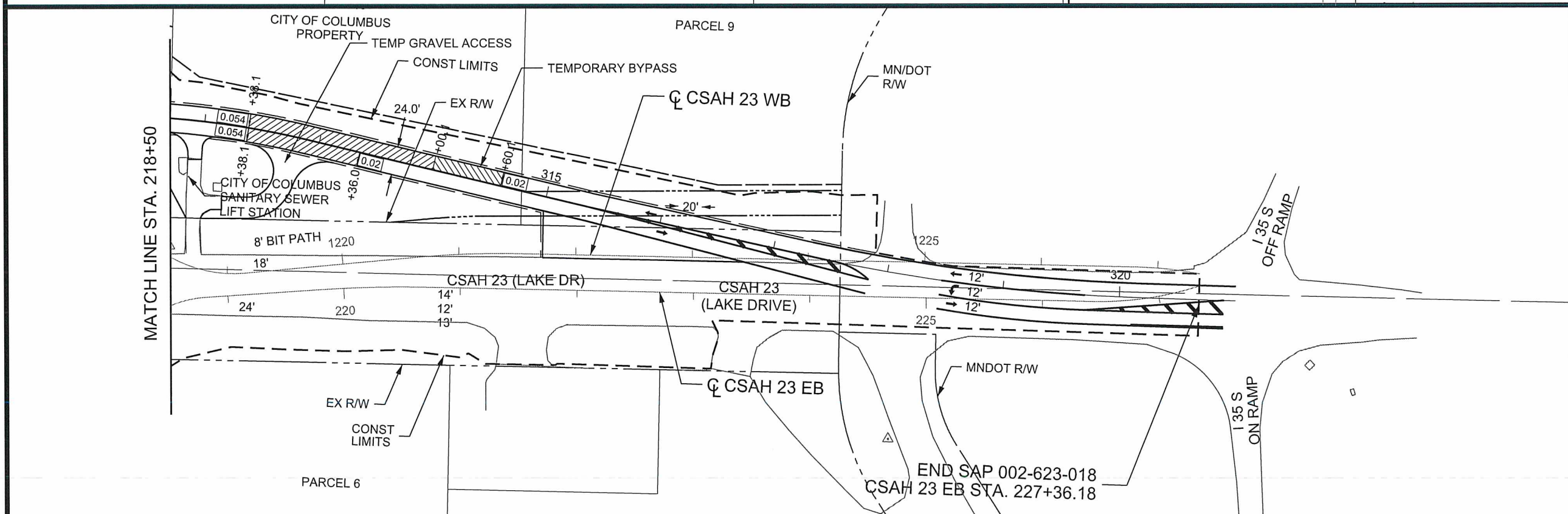
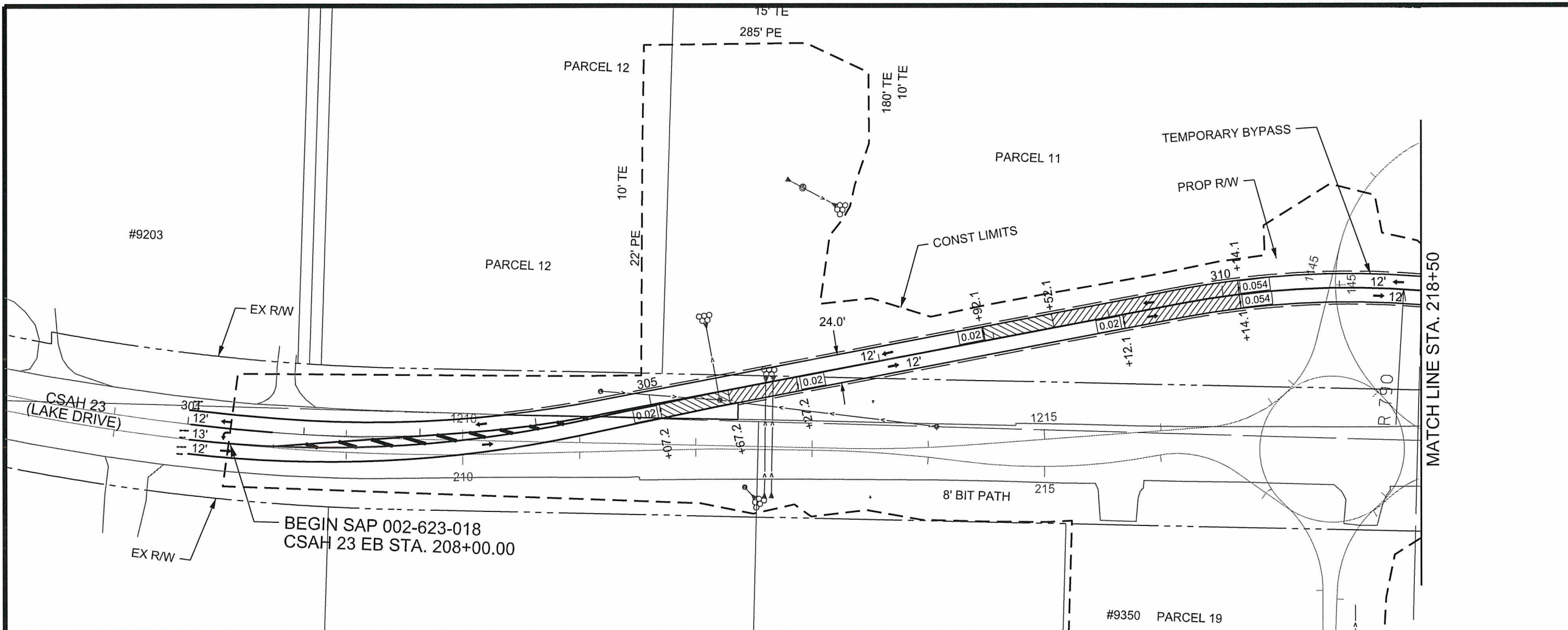
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18
 DESIGN BY: JRB DATE: 05-15-18
 CHECKED BY: EJM DATE: 06-07-18

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SUPERELEVATION PLAN
 Sheet 61 of 134 Sheets

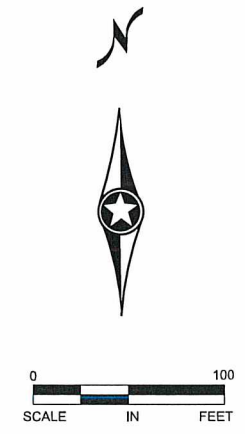


LEGEND

SUPERELEVATION TRANSITION

NOTES:

1. ALL CROSS SLOPES ARE IN FEET PER FEET



1 OF 1

NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\02-623-18\Plan\0262318_SE2.dgn					
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PRINT NAME: ELIZABETH MARKOSE

SIGNATURE:

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CP 2017-7

SUPERELEVATION PLAN BYPASS ROAD

Sheet 62 of 134 Sheets

DRAINAGE TAB

L1

STRUCTURE NO.		ALIGN	CENTER OF CASTING			DRAINAGE STRUCTURES										STORM SEWER								SOD TYPE SALT RESISTANT	RIPRAP CLASS II	GEOTEXTILE FILTER TYPE 3	CONNECT TO EX STORM	NOTES											
						TYPE	DESIGN	PAY HEIGHT						CASTING ASSEMBLY TYPE	STEPS REQ'D	TOP OF CASTING ELEVATION	OUTLET ELEVATION	DOWN STREAM INLET	SLOPE %	15" RCP		18" RCP							21" RCP		24" RCP		27" RCP						
								H LIN FT	48-4020 LIN FT	54-4020 LIN FT	60-4020 LIN FT	66-4020 LIN FT	78-4020 LIN FT							CL V LIN FT	APRON EACH	CL III LIN FT	CL III LIN FT						CL III LIN FT	APRON EACH	CL III LIN FT	APRON EACH	SQ YD	CU YD	SQ YD	EACH			
101	102	23EB_9	214+10.00	20.30	R	CB	H	3.27							C		900.65	897.33	897.25	0.30	29																		
102	103	23WB_9	1214+07.17	1.25	R	CB	48-4020		3.71						A		901.01	897.25	897.15	0.49	19																		
103	198	23WB_9	1214+07.82	17.39	L	MH	60-4020				4.75			F	YES	900.61	895.81	895.25	0.30					188															
104	103	23WB_9	1214+90.00	15.00	L	CB	60-4020				5.88			C	YES	901.15	896.06	895.81	0.30					82															
105	106	23EB_9	216+00.04	16.15	R	CB	48-4020		4.11					D		902.45	898.87	898.76	0.31	35																			
106	107	23WB_9	1215+99.99	1.25	R	CB	48-4020		3.69					B		902.49	898.75	898.67	0.50	16																			
107	104	23WB_9	1216+01.51	15.00	L	CB	60-4020				5.77			D	YES	902.21	896.39	896.06	0.30					112															
108	107	23RAB	2500+99.94	1.00	L	CB	54-4020			6.58				D	YES	903.36	896.73	896.39	0.30					111															
110	108	54SB_9	1145+17.47	15.00	L	CB	48-4020		4.06					C		902.08	898.72	898.10	0.50	125																			
111	110	54NB_9	145+25.71	15.50	R	CB	H	4.04						C		902.22	898.88	898.72	0.50	31																			
113	114	23EB_9	218+97.20	20.20	R	CB	H	3.52						D		902.92	899.35	899.16	0.50	38																			
114	115	23WB_9	1219+00.40	1.25	R	CB	48-4020		4.01					B		903.08	899.02	898.93	0.50	18																			
115	196	23WB_9	1218+99.96	16.22	L	CB	48-4020		3.76					D		902.74	898.93	898.82	0.50	23																			
116	117	23EB_9	220+50.95	35.81	R	CB	H	3.17						C		901.65	898.27	898.16	0.48	23																			
117	118	23EB_9	220+75.00	36.00	R	CB	48-4020		4.04					C		901.67	898.16	898.04	0.30	37																			
118	137	23EB_9	220+75.00	1.25	L	CB	48-4020		4.08					A		902.17	898.04	897.97	0.30	24																			
119	120	23WB_9	1220+65.00	1.25	R	CB	48-4020		3.76					A		901.75	897.94	897.89	0.30	16																			
120	196	23WB_9	1220+65.00	15.00	L	CB	54-4020			3.68				C		901.43	897.70	897.22	0.30					162															
121	138	23WB_9	1220+87.00	15.00	L	CB	48-4020		3.61					C		901.43	897.77	897.74	0.30					9															
125	121	23WB_9	1222+18.66	16.72	L	MH	54-4020			4.09				F		902.31	898.17	897.77	0.30					133												[3]			
134	104	23WB_9	1214+90.00	1.25	R	CB	48-4020		4.50					B	YES	901.44	896.89	896.81	0.50	16																			
135	198	23WB_9	1211+17.20	43.90	L	CB	48-4020		4.38					E		900.70	896.69	895.66	1.00	103																			
137	119	23WB_9	1220+75.00	1.25	R	CB	54-4020			3.73				A		901.75	897.97	897.94	0.30	10																			
138	120	23WB_9	1220+77.75	15.00	L	CB	48-4020		3.67					C		901.43	897.74	897.70	0.30					13															
160	161	23WB_9	1212+87.31	220.33	L	APRON	APRON									893.75	892.50	892.63	-0.50	18	1															[4]			
161	162	23WB_9	1213+15.01	206.25	L	CB	SPECIAL		6.07					SPECIAL	YES	898.50	894.50	894.39	0.52	15																[2]			
162	WETLAND	23WB_9	1213+11.50	208.20	L	APRON	APRON									895.64																				[4]			
196	108	23WB_9	1218+99.90	39.45	L	CB	54-4020			5.02				E	YES	901.87	897.22	896.73	0.30					163															
198	199	23WB_9	1212+19.75	38.61	L	MH	60-4020				3.66			F		898.96	895.25	894.53	1.00					66															
199	POND100	23WB_9	1212+06.27	103.65	L	APRON	APRON									896.53	894.53																			[4]			
900	602	23EB_9	211+49.81	24.42	R	CB	48-4020									901.59	894.23	896.55	0.39	92																[1]			
602	603	23EB_9	212+42.44	31.99	R	MH	48-4020		2.72					F		899.85	896.55	897.67	1.28	9																[7]			
603	WETLAND	23EB_9	212+51.69	41.63	R	APRON	APRON									897.67	896.06																			[4]			
POND 100 OVERFLOW	23EB_9	1213+10.10	289.94	L	EOF																															[6]			
BULKHEAD S	509	54NB_9	141+15.00	18.53	R	BULKHEAD											900.22	899.79	0.50					85												[8]			
BULKHEAD E	509	54NB_9	142+00.00	31.75	R	BULKHEAD											899.38	899.29	0.60					16												[8]			
509	510	54NB_9	142+00.00	15.75	R	CB	66-4020				4.85			C	YES	903.58	898.78	898.68	0.60																				
510	511	54NB_9	142+00.00	1.25	L	CB	48-4020		5.24					A	YES	903.91	898.68	898.62	0.60																				
511	512	54SB_9	1141+93.41	1.25	R	CB	48-4020		5.32					A	YES	903.89	898.62	898.52	0.60																				
512	599	54SB_9	1141+93.74	16.24	L	CB	78-4020					5.24		C	YES	903.54	898.52	898.25	0.60																				
530	512	54SB_9	1142+25.77	20.74	L	CB	H	3.33						C		903.51	900.26	900.13	0.50	27																			
599	POND500	54SB_9	1142+01.45	58.94	L	APRON	APRON									900.50	898.25																						
597	598	23EB_9	215+94.19	55.22	R	APRON	APRON									898.25	897.07	897.07	-0.50	14	1															[4]			
598	105	23EB_9	216+00.04	16.15	R	CB	SPECIAL		4.43					SPECIAL		902.00	899.02	898.87	0.37	35																	[2],[5]		
POND 500 OVERFLOW	23EB_9	215+46.60	50.53	R	EOF																																[6]		
TOTAL								17.3	75.2	23.1	20.1	4.9	5.2	34							773	4	85	607	447	1	82	1	18	45	179	1							

NOTES:

- [1] EXISTING CATCH BASIN FOR INFORMATION PURPOSES ONLY. VERIFY INVERT.
- [2] SPECIAL STRUCTURE PAID AS CONST DRAINAGE STRUCTURE DESIGN 48-4020, WEIR AND GRATE ARE INCIDENTAL TO STRUCTURE. SEE POND GRADING PLAN SHEETS FOR MORE DETAILS.
- [3] CONSTRUCT STRUCTURE FOR FUTURE CONNECTION OF DDI CONSTRUCTION PROJECT (CONNECTION BY OTHERS)
- [4] REFER TO STANDARD PLATE 3133D FOR RIPRAP AT RCP INLETS/OUTLETS
- [5] OUTLET PIPE FROM POND 500 CONNECTS TO THIS STRUCTURE. FOUR 4' X 8' X 2" INSULATION SHEETS REQUIRED OVER EXISTING WATERMAIN (INCIDENTAL).
- [6] SEE POND 100 AND 500 SHEETS FOR EMERGENCY OVERFLOW SPILLWAY DETAILS
- [7] CONSTRUCT MANHOLE OVER EXISTING RC PIPE COMING FROM CB900, VERIFY EXISTING PIPE INVERTS, DEPTH OF STRUCTURE TO BE DETERMINED ON THE FIELD.
- [8] CONSTRUCT BULKHEAD, FURNISH AND INSTALL MARKER AT LAST SECTION OF PIPE FOR FUTURE CONNECTION. MARKER INSTALLATION INCIDENTAL TO BULKHEAD CONSTRUCTION

GENERAL NOTES:

- SLOPES CALCULATED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE OR TO END OF APRON.
- PAY HEIGHT = (TOP OF PRECAST - INVERT) +0.7'. ADJUSTING RINGS ARE INCIDENTAL
- STATION AND OFFSET FOR EACH STRUCTURE GIVEN AT CENTER OF GRATE/CASTING FOR CATCH BASINS AND MANHOLES, AND AT APRON ENDS FOR APRONS
- INVERT ELEVATIONS GIVEN AT CENTER OF STRUCTURE OR END OF APRON
- IF STEPS REQUIRED, STRUCTURE TO INCLUDE MANHOLE STEPS 16" ON CENTER. SEE MN/DOT STANDARD PLATE 4180
- SEE TAB L FOR CULVERT INFORMATION
- TIE LAST THREE JOINTS AT APRON END. FURNISHING AND INSTALLING PIPE TIES SHALL BE CONSIDERED INCIDENTAL
- SEE MN/DOT STANDARD PLATE 3145

<p>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.</p> <p>PRINT NAME: ELIZABETH MARKOSE</p> <p>SIGNATURE: </p> <p>DATE: 06-13-2018 LICENSE NO. 49118</p>	<p>DRAWN BY: JRB DATE 05-15-18</p> <p>DESIGN BY: JRB DATE 05-15-18</p> <p>CHECKED BY: EJM DATE 06-07-18</p>	 ANOKA COUNTY HIGHWAY DEPT.	<p>SAP 002-623-018 CP 2017-7</p> <p style="text-align: center;">DRAINAGE TABULATION</p> <p style="text-align: right;">Sheet 63 of 134 Sheets</p>
<p>NO DATE BY CKD APPR REVISION</p> <p>NAME: P:\02-623-18\Plan\0262318_DR_TAB_P1.dgn 06/13/2018 10:56:14 AM</p>			

CULVERT TABULATION																				L	
ALIGNMENT	STATION TO STATION	OFFSET		INVERT ELEVATION		SLOPE %	FURNISH & INSTALL												NOTES		
		LEFT	RIGHT	INLET	OUTLET		15" CS PIPE CULVERT	15" CS PIPE APRON	18" CS PIPE CULVERT	18" CS PIPE APRON	28" SPAN CS PIPE-ARCH	28" SPAN GS PIPE-ARCH APRON	28" SPAN CS PIPE CULVERT 45 DEGREE ELBOW	CSP TO RCP CONNECTION	28" SPAN RC PIPE-ARCH CL IIA	28" SPAN RC PIPE-ARCH APRON	SOD TYPE SALT TOLERANT	18" DEPTH RIPRAP CL II		GEOTEXTILE FILTER TYPE 3	SELECT GRANULAR (LV)
							LIN FT	EACH	LIN FT	EACH	LIN FT	EACH	EACH	EACH	LIN FT	EACH	SQ YD	CU YD		SQ YD	CU YD
CSAH 23 (002-623-018)																					
23EB_9	212+59.61	60	42	892.76	892.00	0.70								86	2	34	8.5	33.2	154		
23EB_9	212+65.73	61	41	892.76	892.00	0.70								86	2	34	8.5	33.2	154		
23EB_9	212+59.69	52		892.00	891.80	0.30			57	1	1	1				18	6.4	30.4		[1][2]	
23EB_9	212+65.91	53		892.00	891.80	0.30			54	1	1	1				18	6.4	30.4		[1][2]	
23BYPASS	309+00.00	29	26	891.00	890.84	0.30					50	2				24		22.9			
23BYPASS	312+27.58	31	23	896.80	895.70	2.00					49	2				24		22.9			
23BYPASS	313+08.48		24	897.09	896.90	0.30	60	2								19		17.8			
PROJECT TOTAL							60	2	99	4	110	2	2	2	172	4	171	30	191	308	

- [1] USE 28" CS SPAN-ARCH CULVERT TO EXTEND 28" RCP SPAN-ARCH CULVERT UNDER TEMPORARY BYPASS ROAD. REMOVAL OF CULVERT EXTENSIONS AFTER STAGE 2 IS INCIDENTAL.
 [2] SEE STAGE 2 TEMPORARY DRAINAGE PLAN SHEET FOR LOCATION OF RIP RAP, REMOVAL OF RIP RAP AFTER STAGE 2 IS INCIDENTAL.

GENERAL NOTES:

- STATION AND OFFSET FOR EACH STRUCTURE GIVEN AT APRON ENDS.
- INVERT ELEVATIONS GIVEN AT END OF APRON.
- FOR RIP RAP AND GEOTEXTILE FABRIC INSTALLATION SEE MN/DOT STANDARD PLATE 3133D.

CASTING ASSEMBLY SUMMARY						L2
ASSEMBLY	RING OR FRAME CASTING	COVER OR GRATE CASTING	CURB BOX	STANDARD PLATE NO.	QUANTITY	NOTES
A					6	TYPE A MEDIAN [1]
B					3	TYPE B MEDIAN [1]
C	MODIFIED	816	823A	4154, 4160	12	OUTER BOX
D	MODIFIED	816		4154	5	OUTER NO BOX
E	700-4	720 CONVEX		4101, 4140, 4110	2	BEEHIVE
F	700-7	720		4101, 4140, 4110	4	MANHOLE
SPECIAL					2	SEE POND DETAILS
TOTAL					34	

NOTE

[1] SEE DRAINAGE DETAILS SHEET

SUBSURFACE DRAINAGE					L3		
ALIGNMENT	STATION	TO	STATION	4" PERF TP PIPE DRAIN (FT)	4" PRECAST CONC HEADWALL (EACH)	FINE FILTER AGGREGATE (LV) CU YD	NOTES
54NB_9	141+43	-	142+43	393		17	[2]
23EB_9	212+75	-	214+25	330	2	15	[1], [3], [4]
23EB_9	219+75	-	221+50	675		30	[2]
TOTAL				1398	2	62	

SEE DRAINAGE PLAN AND DETAILS FOR MORE INFORMATION

- [1] SEE MNDOT STANDARD PLAN 5-297.433 FOR OUTLET DETAILS
 [2] OUTLET CONNECTION TO CATCHBASIN
 [3] 4" DIA. TP PIPE DRAIN "Y" CONNECTION INCIDENTAL
 [4] PRECAST CONCRETE HEADWALL STANDARD PLATE 3131 C PAID FOR AS SPEC 2502 4 INCH PRECAST CONCRETE HEADWALL

NO	DATE	BY	CKD	APPR	REVISION

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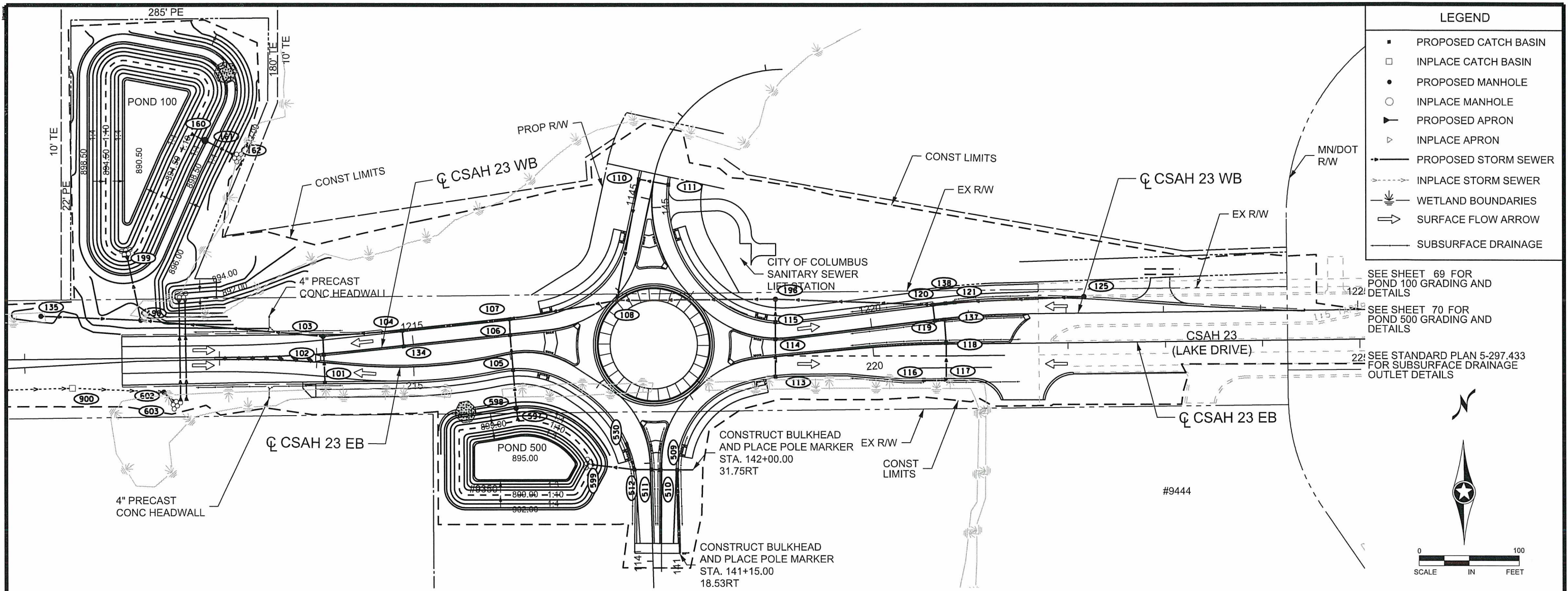
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CP 2017-7

DRAINAGE TABULATION

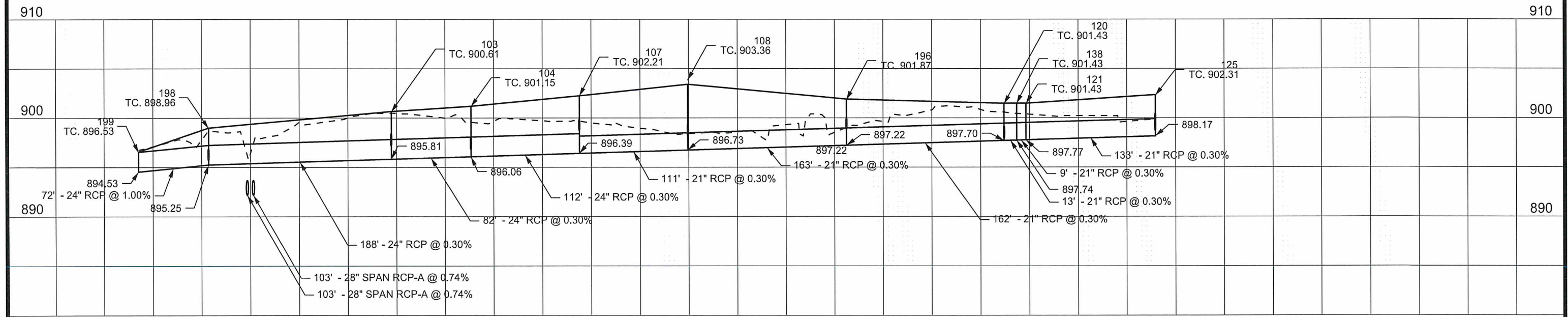
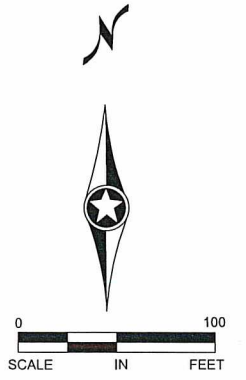


- LEGEND**
- PROPOSED CATCH BASIN
 - INPLACE CATCH BASIN
 - PROPOSED MANHOLE
 - INPLACE MANHOLE
 - ▶ PROPOSED APRON
 - ▽ INPLACE APRON
 - PROPOSED STORM SEWER
 - - - INPLACE STORM SEWER
 - WETLAND BOUNDARIES
 - ⇒ SURFACE FLOW ARROW
 - SUBSURFACE DRAINAGE

SEE SHEET 69 FOR POND 100 GRADING AND DETAILS

SEE SHEET 70 FOR POND 500 GRADING AND DETAILS

SEE STANDARD PLAN 5-297.433 FOR SUBSURFACE DRAINAGE OUTLET DETAILS



211+00 212+00 213+00 214+00 215+00 216+00 217+00 218+00 219+00 220+00 221+00 222+00 223+00

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_DR_P1.dgn 06/12/2018 2:33:59 PM

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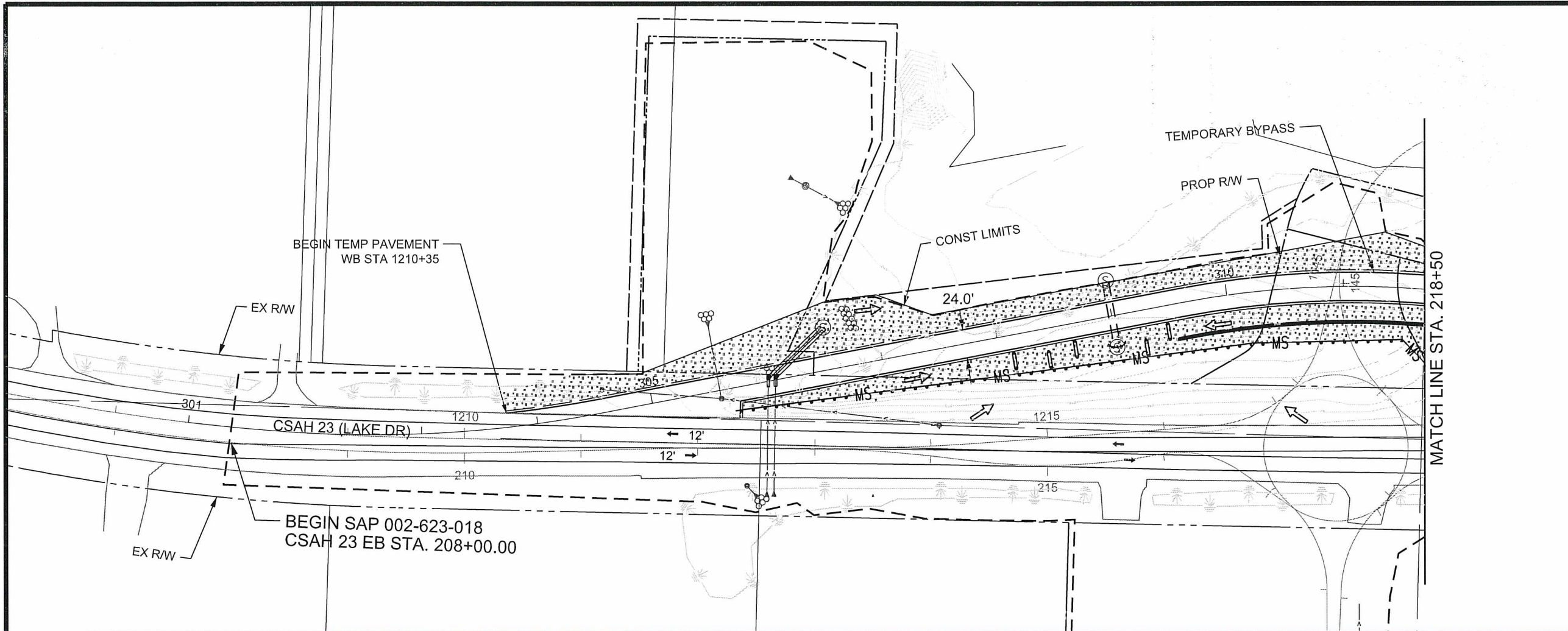
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CP 2017-7

DRAINAGE PLAN AND PROFILE
CSAH 23
STA 212+00 TO 222+00
Sheet 65 of 134 Sheets



LEGEND

- TEMPORARY CULVERT
- ==== TEMPORARY CULVERT EXTENSIONS F&I RCP TO CSP CONNECTION AND 45° ELBOW
- [Stippled Area] RAPID STABILIZATION METHOD 3
- [Cylinder with Log] SEDIMENT CONTROL LOG TYPE WOOD FIBER
- [Thick Line] SILT FENCE TYPE SD PER STANDARD PLAN 5-297.405
- [Circle with X] RIPRAP (CLASS II UNLESS OTHERWISE NOTED)
- [Circle with S] SOD APRON OUTLET OR INLET
- [Culvert Symbol] CULVERT INLET PROTECTION
- [Wavy Line] WETLAND BOUNDARIES
- [Arrow] SURFACE FLOW ARROW

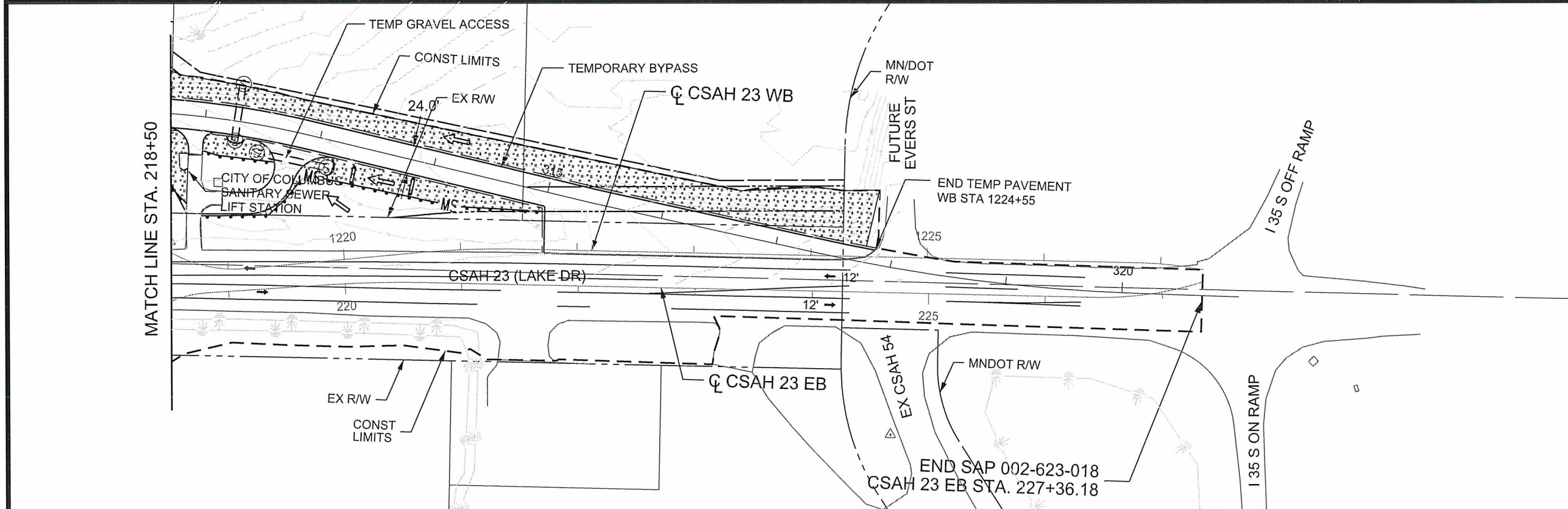
NOTES:

APPLY RAPID STABILIZATION METHOD 3 AS DIRECTED BY ENGINEER. REAPPLY AS NEEDED.

SEE CULVERT TABULATION SHEET FOR TEMPORARY CULVERT LOCATIONS AND DETAILS.

CONTOURS SHOWN ARE FOR FINISHED GRADE OF TEMPORARY BYPASS ROAD.

SEE TEMPORARY BYPASS ROAD X-SECTIONS FOR DETAILS



North arrow pointing up.

Scale bar: 0 IN 100 FEET

NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\02-623-18\Plan\0262318_DR_STG2_P1.dgn 06/12/2018 2:33:11 PM					

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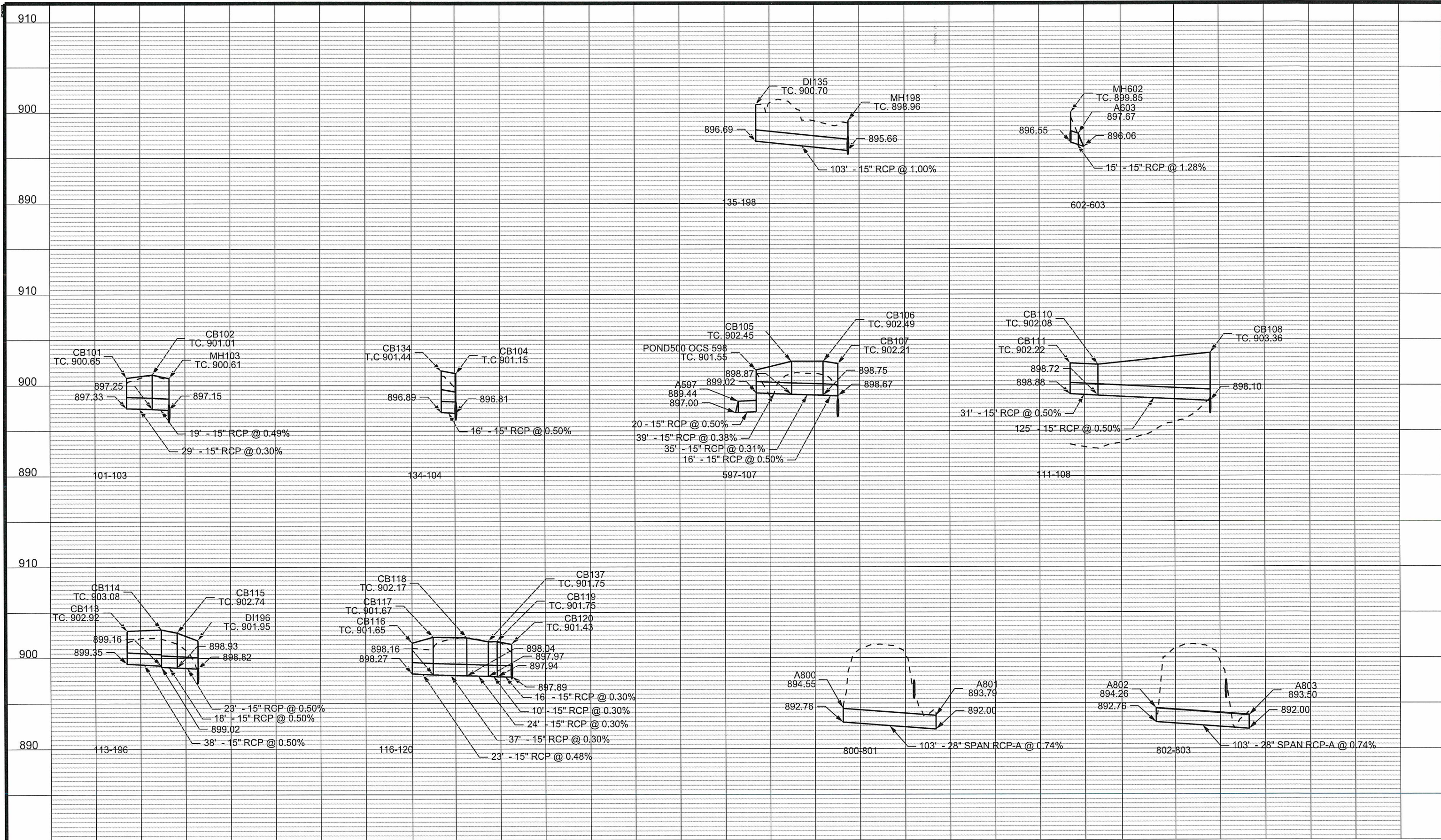
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HIGHWAY DEPT.

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CP 2017-7

1 OF 1

TEMPORARY DRAINAGE PLAN
STAGE 2

Sheet 66 of 134 Sheets



NO	DATE	BY	CKD	APPR	REVISION
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06/12/2018 2:34:05 PM					

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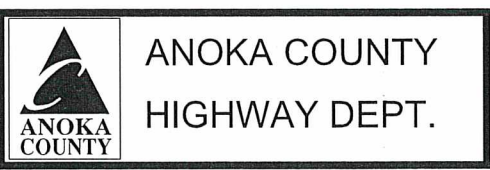
SIGNATURE: *Elizabeth Markose*

DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: JRB DATE: 05-15-18

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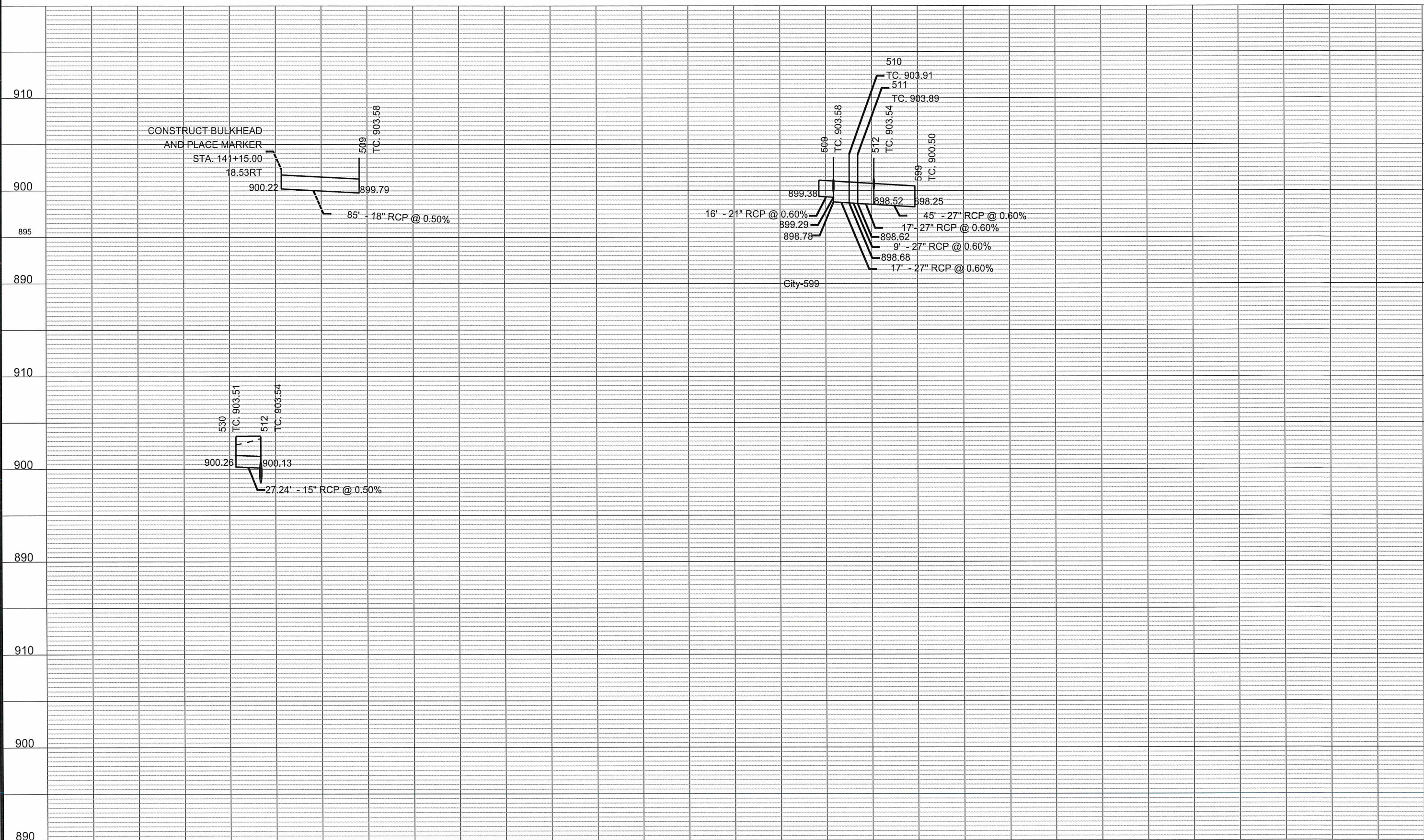
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CP 2017-7

DRAINAGE LEADS

Sheet 67 of 134 Sheets



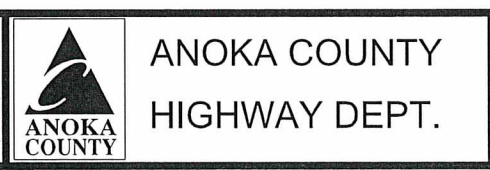
NO	DATE	BY	CKD	APPR	REVISION

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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.

PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-12-2018 LICENSE NO. 49118

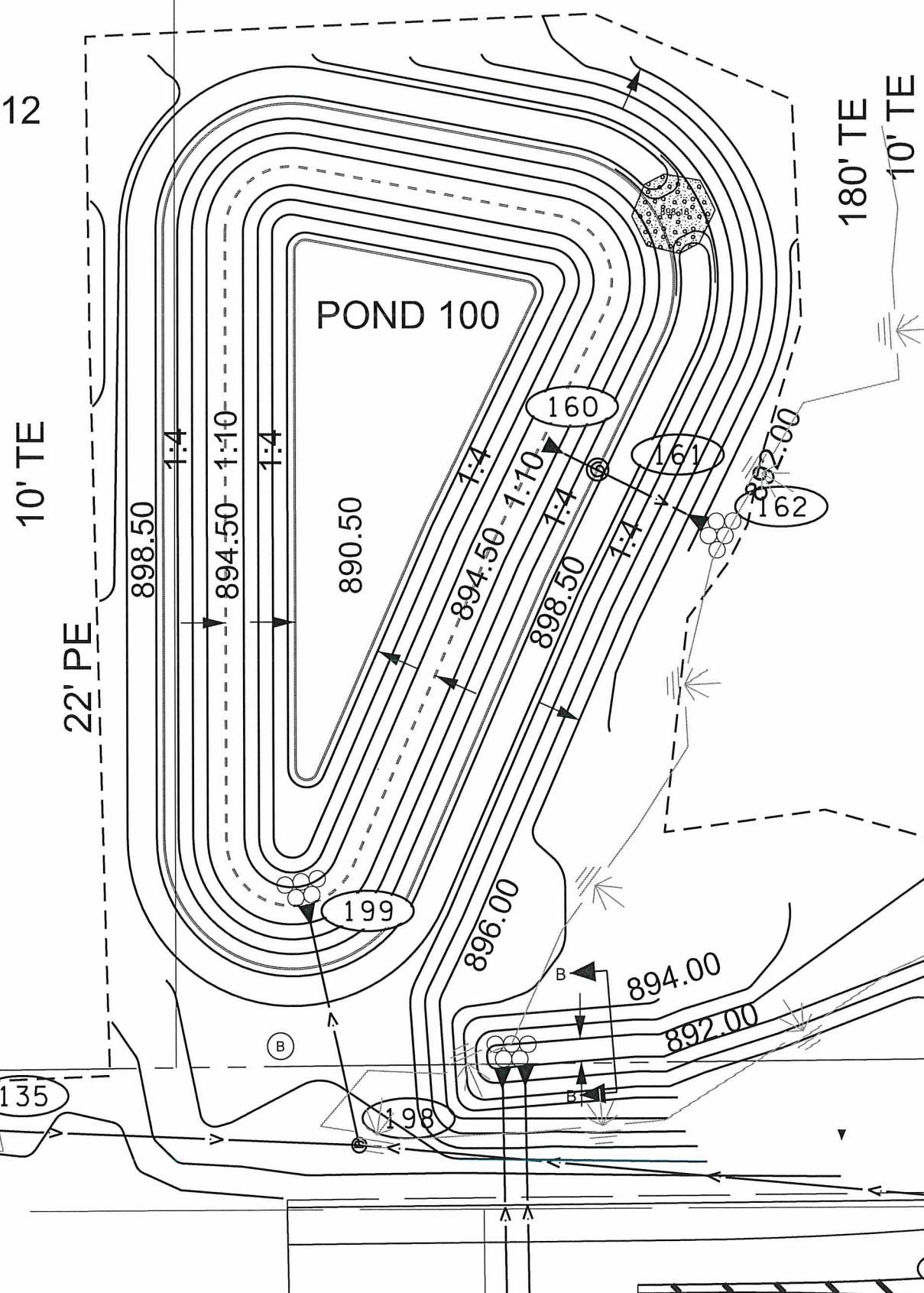
DRAWN BY JRB DATE 05-15-18
 DESIGN BY JRB DATE 05-15-18
 CHECKED BY EJM DATE 06-07-18



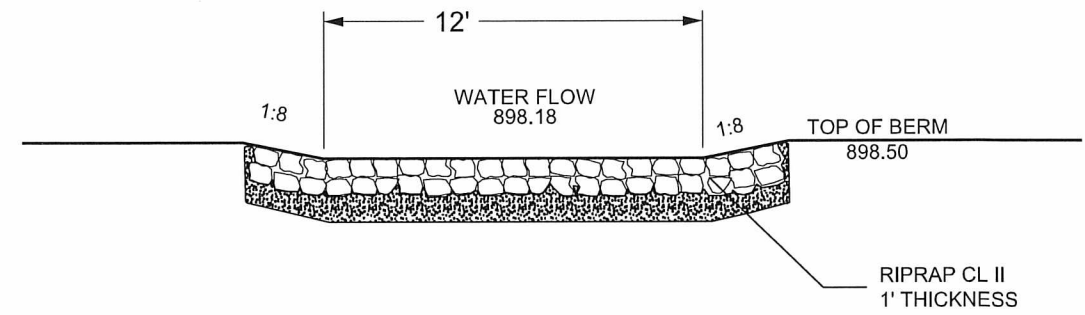
SAP 002-623-018
 CP 2017-7

PARCEL 12

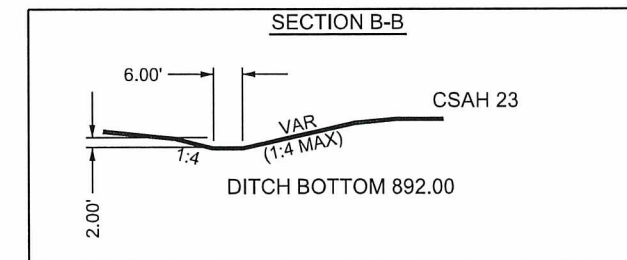
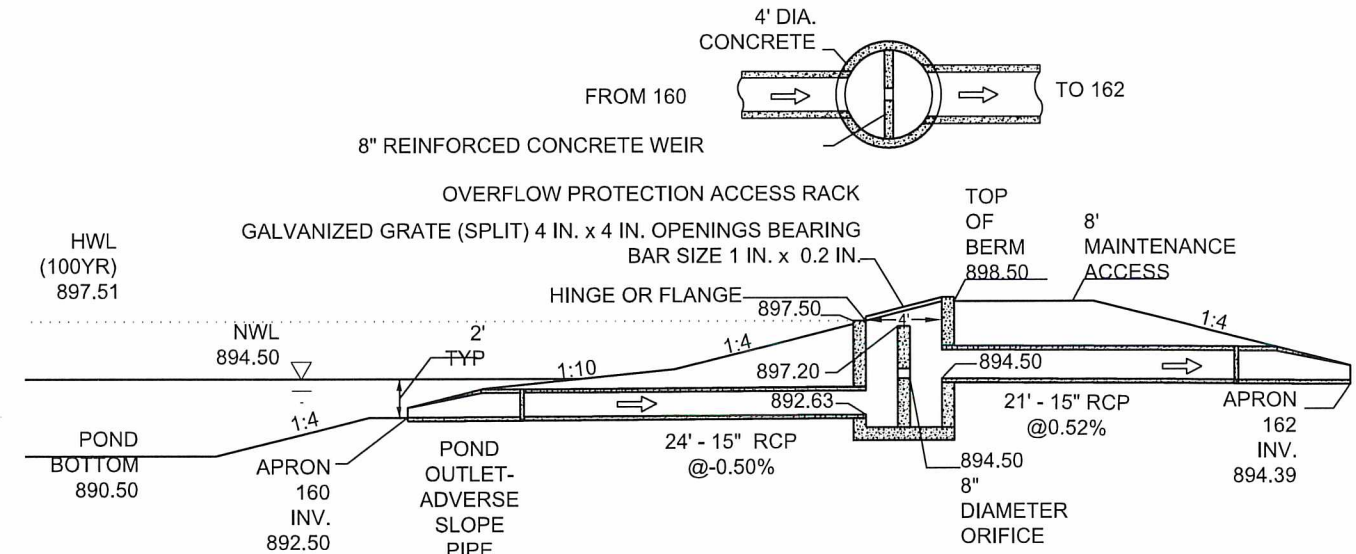
15' TE
285' PE



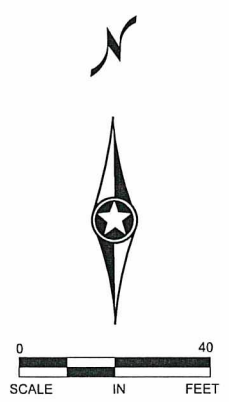
POND 100 OVERFLOW SPILLWAY DETAIL



DETAIL : POND OVERFLOW STRUCTURE #161
DRAINAGE STRUCTURE DESIGN SPECIAL



NOTES:
SEE CROSS SECTIONS FOR GRADING ALONG ROADWAYS
CONTOURS SHOWN TO FINISHED GRADE AFTER TEMPORARY BYPASS ROAD REMOVAL
DITCH GRADING TO MATCH EXISTING



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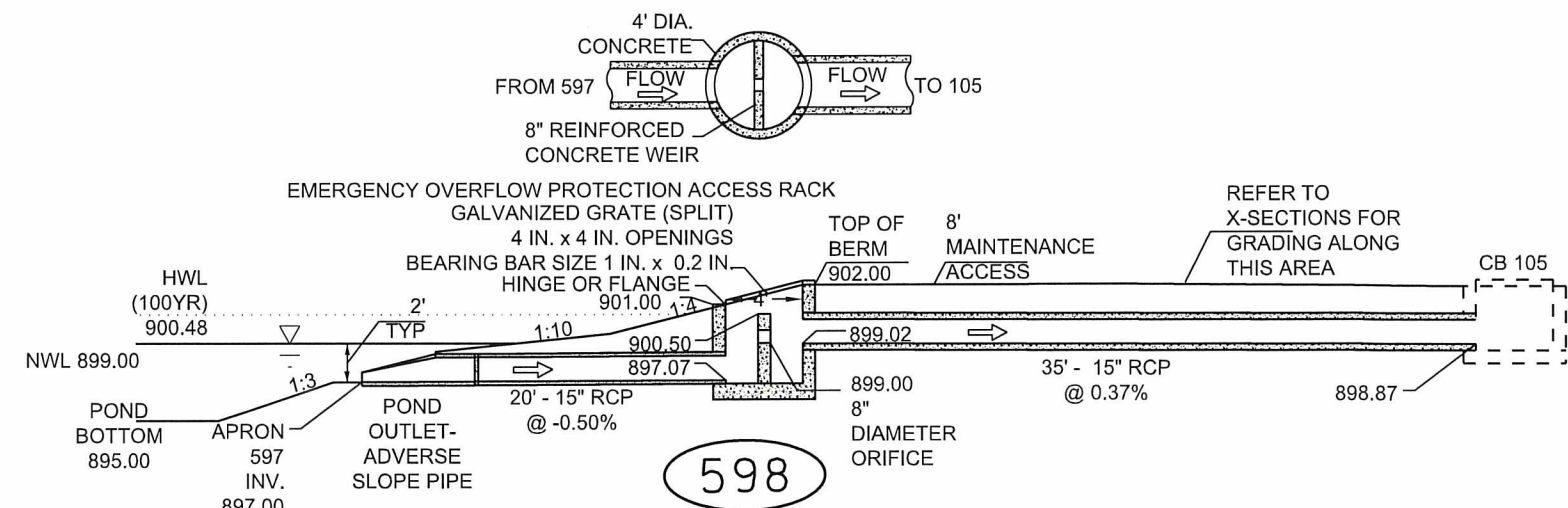
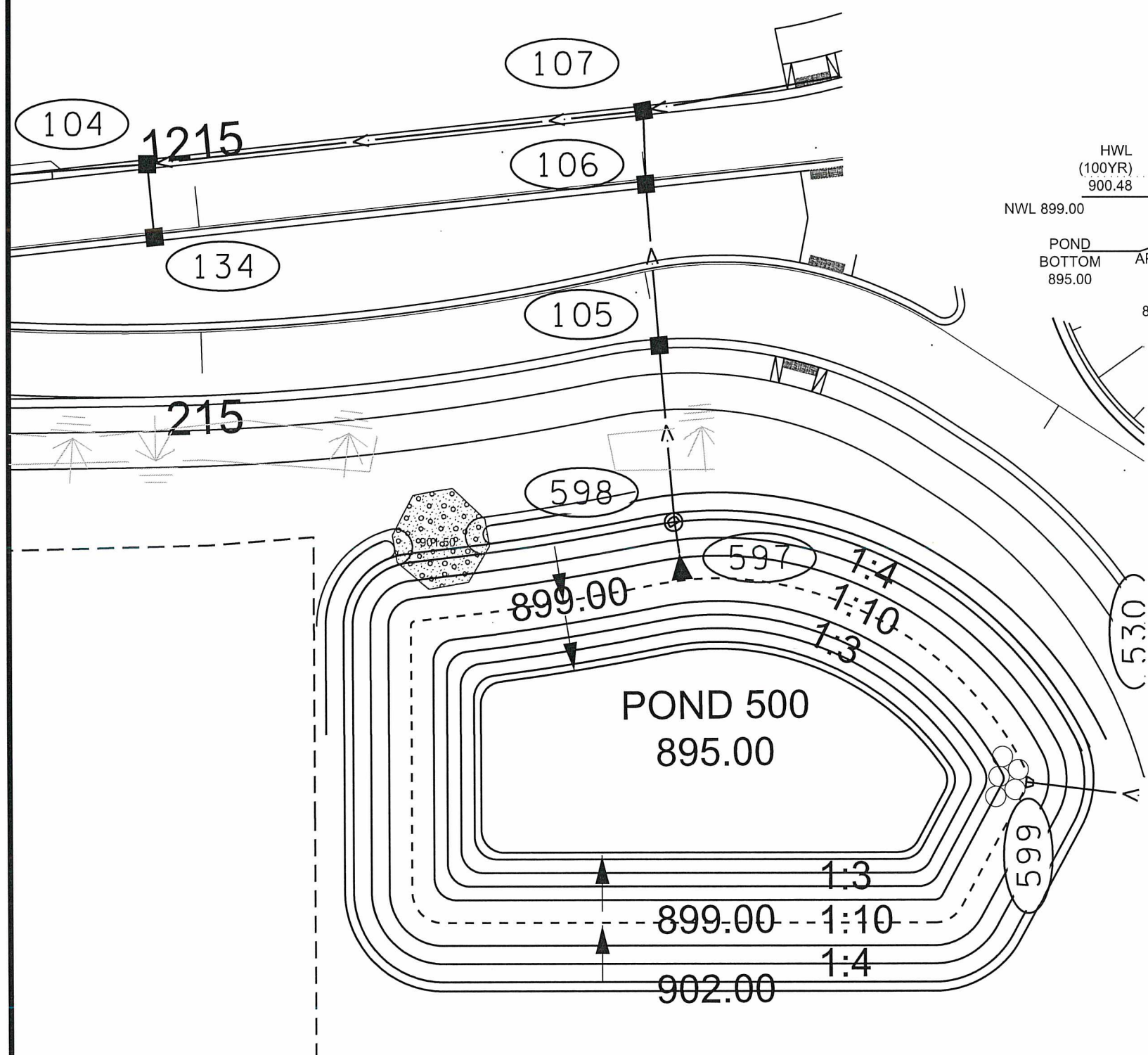
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ANOKA COUNTY
HIGHWAY DEPT.

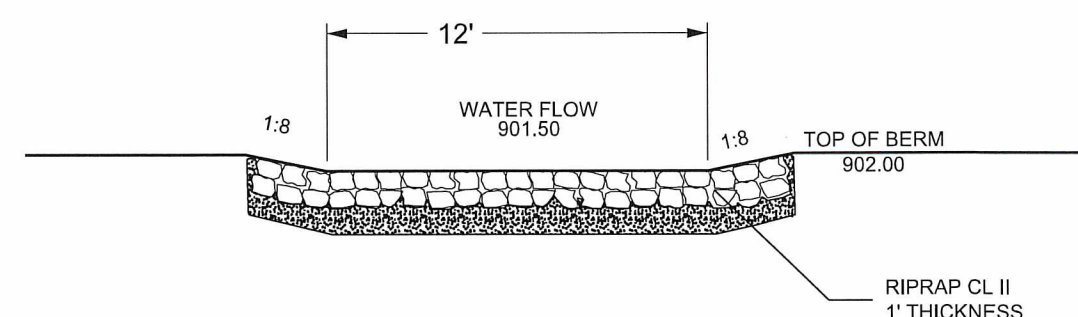
SAP 002-623-018
CP 2017-7

POND 100
GRADING AND DETAILS
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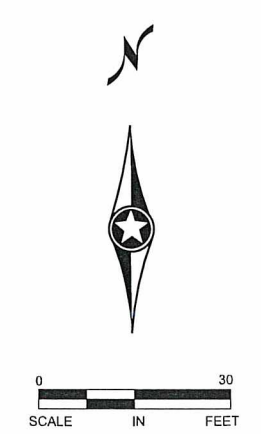
DETAIL : POND OVERFLOW STRUCTURE #598
DRAINAGE STRUCTURE DESIGN SPECIAL



POND 500 OVERFLOW SPILLWAY DETAIL



NOTES:
SEE CROSS SECTIONS FOR GRADING ALONG CSAH 23 AND CSAH 54
CONTOURS ARE SHOWN TO FINISHED GRADE



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NAME: P:\02-623-18\Plan\0262318_DR_PDET500.dgn 06/12/2018 2:34:57 PM

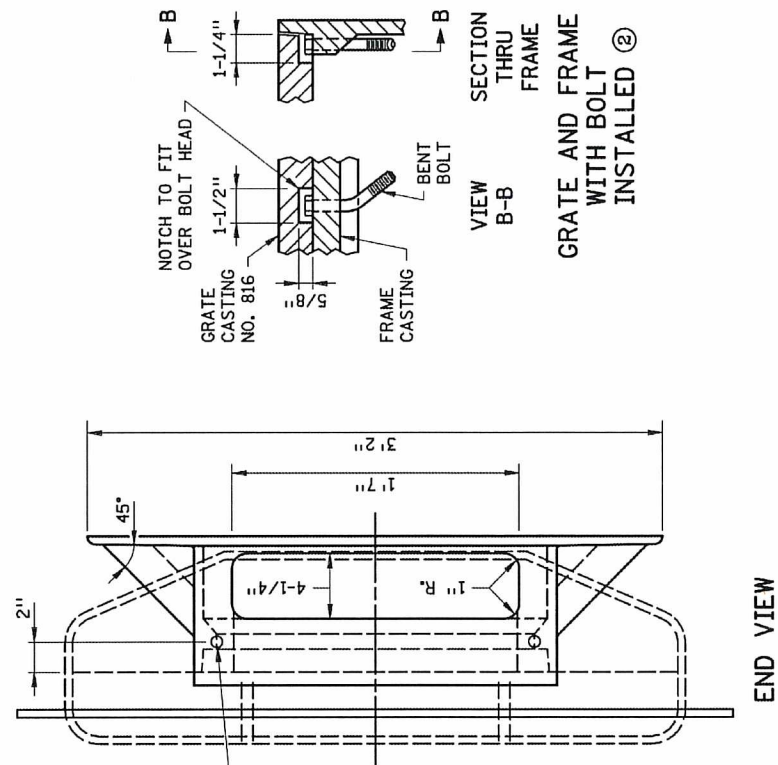
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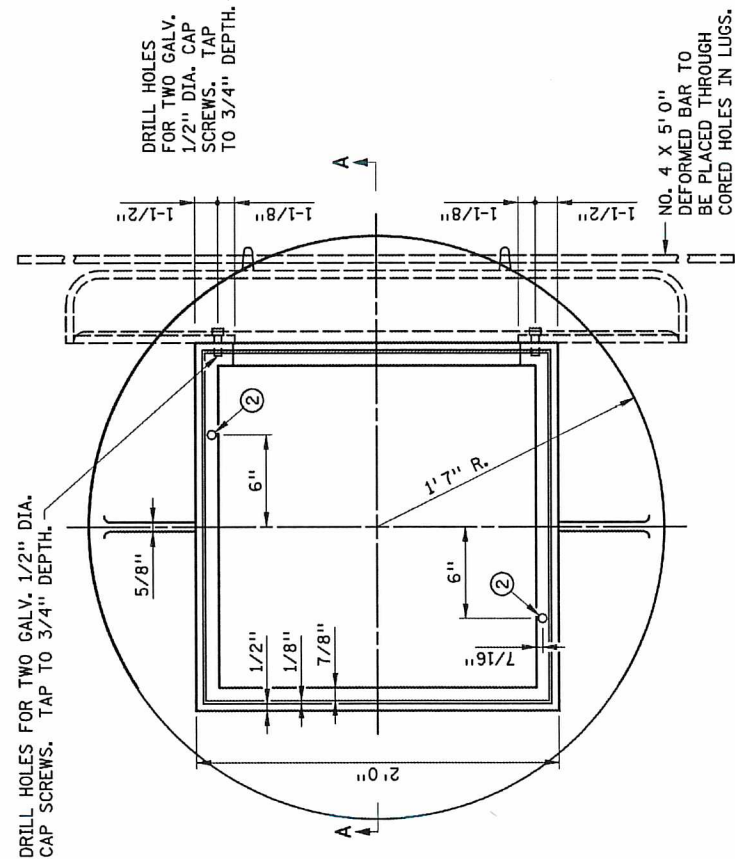
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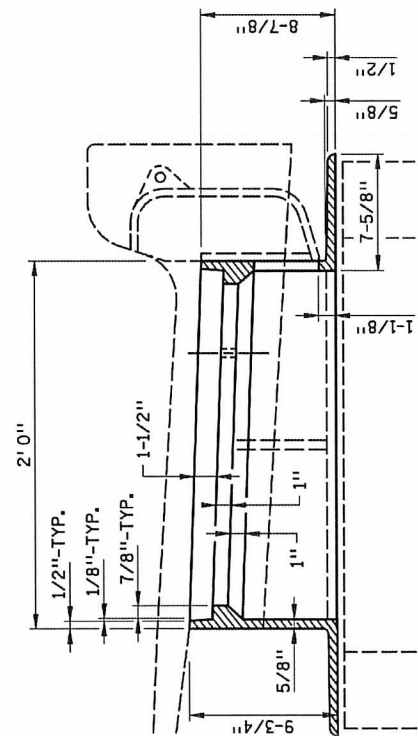
POND 500
GRADING AND DETAILS
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SECTION THRU FRAME
VIEW B-B
GRATE AND FRAME WITH BOLT INSTALLED ②



TOP VIEW



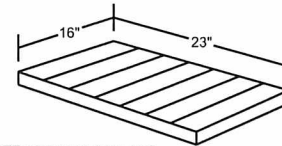
SECTION A-A

GRATE FRAME CASTING TYPE C & D

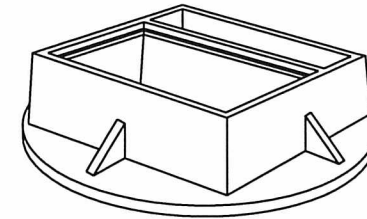
CASTINGS USED FOR ASSEMBLY
 GRATE NO. 816 (MNDOT STD PLATE 4154B)
 CURB BOX ① NO. 823A (MNDOT STD PLATE 4160) OR

NOTES:

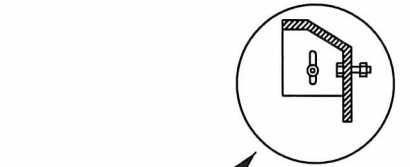
- 1 USE 1/4" FILLETS IN ALL CORNERS. SEE MNDOT STANDARD PLATE 7111 FOR INSTALLATION REQUIREMENTS.
- 2 APPLIES TO DESIGN B OR V CURB AND GUTTER.
- 3 AT LOCATIONS INDICATED IN TOP VIEW, PROVIDE 9/16" DIA. HOLES WHEN GRATE NO. 816 (MNDOT STD PLATE 4154) IS USED WITH THIS FRAME. FIELD PLACE 1/2" DIA X 4" LONG GALV BOLT IN UP STREAM SIDE AND BENT UNDERSIDE TO PREVENT REMOVAL. THIS WILL PREVENT GRATE NO. 816 (MNDOT STD PLATE 4154) FROM BEING PLACED IN WRONG AND NOT BEING BICYCLE SAFE



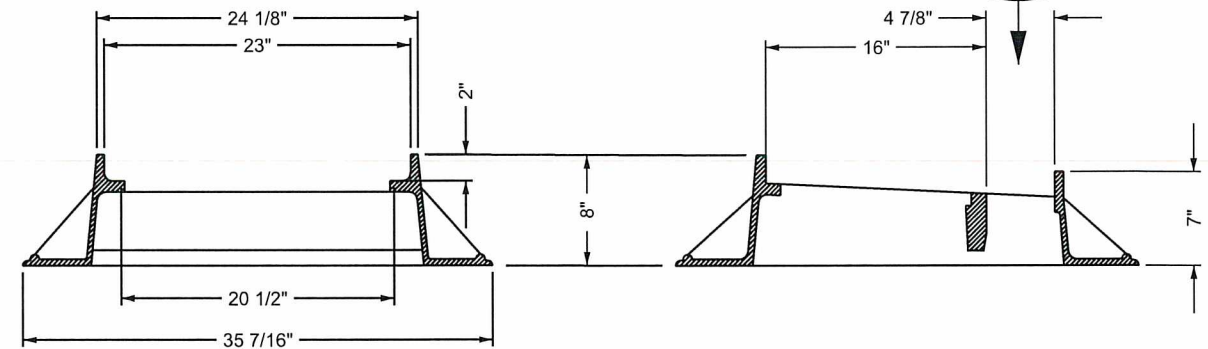
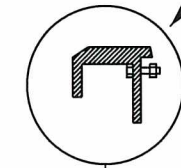
GRATE AREA 23" X 16" X 2"
 MUST BE DIRECTIONAL AND BIKE SAFE
 SIMILAR TO MNDOT STD PLATE 4152C
 OR MNDOT STD PLATE 4154B



FOR CASTING TYPE A
 USE AVAILABLE BOLT ON CURB BOX



FOR CASTING TYPE B
 USE AVAILABLE BOLT ON CURB PLATE



FRAME RING AND CASTING TYPE A AND TYPE B
 TO BE USED FOR MEDIAN CATCH BASINS

NOT TO SCALE

1 OF 2

NO	DATE	BY	CKD	APPR	REVISION
NAME: P:\02-623-18\Plan\0262318_DR_DET.dgn 06/12/2018 2:35:01 PM					

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.
 PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY: NJD DATE: 10/31/13
 DESIGN BY: NJD DATE: 10/31/13
 CHECKED BY: EJM DATE: 06-07-18



ANOKA COUNTY
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 CP 2017-7

DRAINAGE DETAILS

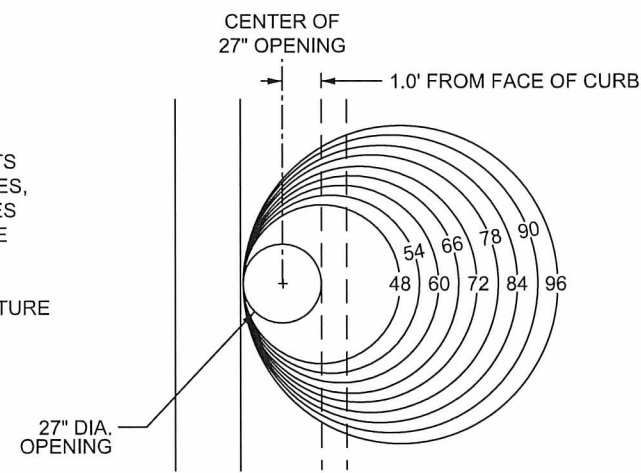
Sheet 71 of 134 Sheets

TABLE A

4020 DIAMETER	* OFFSET FEET
48"	0.79
54"	1.08
60"	1.29
66"	1.58
72"	1.79
78"	2.08
84"	2.29
90"	2.58
96"	2.88
102"	3.17
108"	3.29
120"	3.79

WHERE THE 4020 DIAMETER CONFLICTS WITH OTHER STRUCTURES OR UTILITIES, ROTATE THE STRUCTURE 180 DEGREES TO PROVIDE CLEARANCE. THIS MAY BE ADJUSTED IN THE FIELD.

* OFFSET IS FROM CENTER OF STRUCTURE TO CENTER OF OPENING.

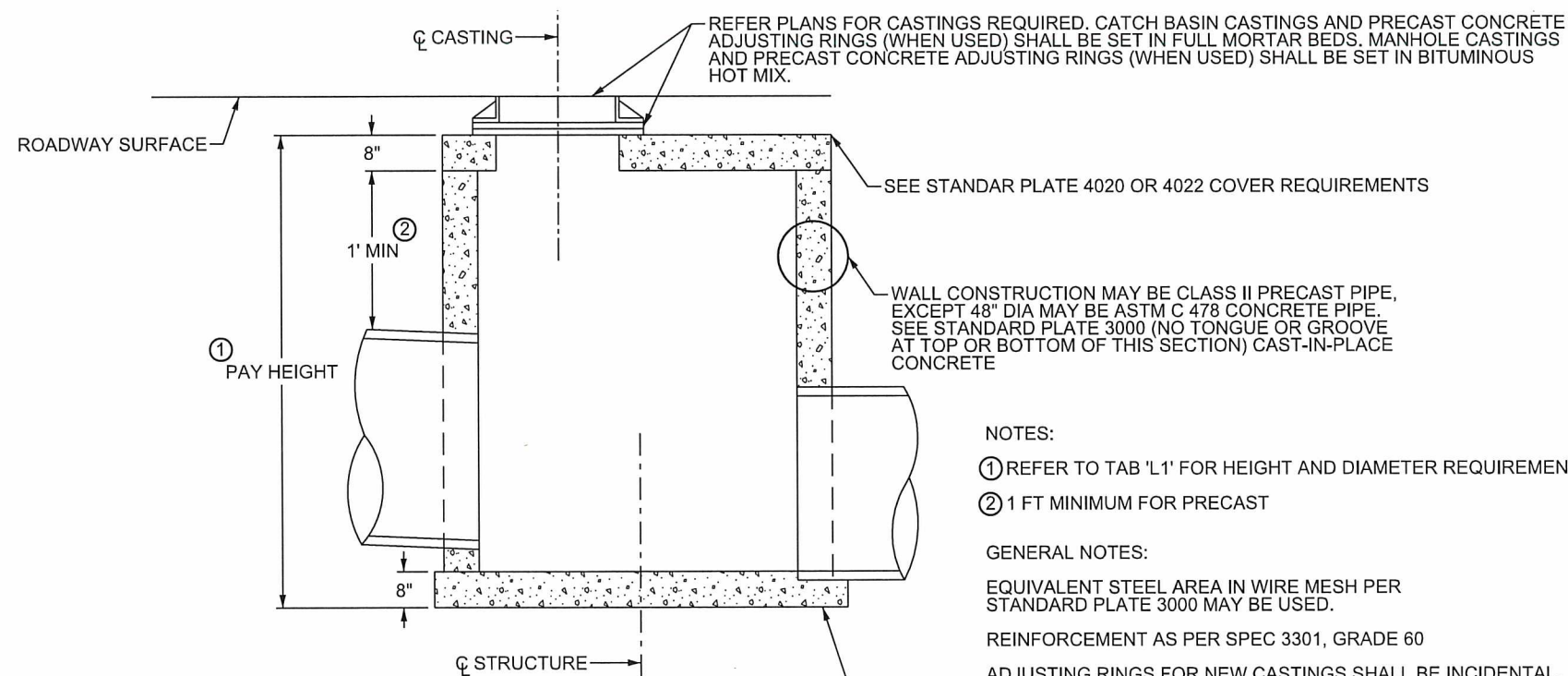


USE FOR 4020

THE FOLLOWING PLACEMENT LOCATIONS SHALL BE USED WITH CONCRETE CURB AND GUTTER.

1. THE CENTER OF GRATE STATION AND OFFSET LOCATION IS GIVEN IN DRAINAGE TABULATION.
2. THE OFFSET FROM THE CENTER OF STRUCTURE TO THE CENTER OF GRATE IS GIVEN IN TABLE "A" TO THE LEFT FOR 4020 STRUCTURES. OFFSET FOR 4005 STRUCTURES IS 0.9 FT.
3. THE CENTER OF OPENING IS 1.0 FT TOWARD THE ROADWAY FROM THE FACE OF CURB.
4. THE STRUCTURES THAT HAVE STEPS SHALL BE LOCATED ON THE ROADSIDE OF THE 27" OPENING AND MUST BE EASILY ACCESSIBLE. THE STEP LOCATION MAY NEED TO BE ADJUSTED IF THERE IS A LARGE PIPE DIRECTLY BELOW THE OPENING.

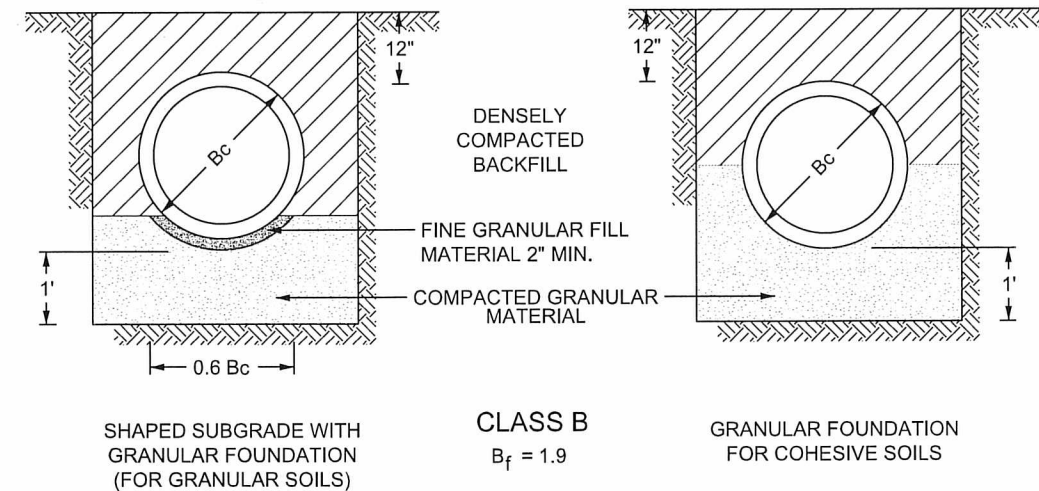
STRUCTURE LOCATION



DRAINAGE STRUCTURE DESIGN 4020

- NOTES:
- ① REFER TO TAB 'L1' FOR HEIGHT AND DIAMETER REQUIREMENTS.
 - ② 1 FT MINIMUM FOR PRECAST
- GENERAL NOTES:
- EQUIVALENT STEEL AREA IN WIRE MESH PER STANDARD PLATE 3000 MAY BE USED.
 - REINFORCEMENT AS PER SPEC 3301, GRADE 60
 - ADJUSTING RINGS FOR NEW CASTINGS SHALL BE INCIDENTAL.

8" POURED CONCRETE BASE, FOR ALTERNATE PRECAST CONCRETE BASE. SEE STANDARD PLATE 4011 (MODIFY DIAMETER AND 2 INCH RAISED AREA TO FIT REQUIRED DIAMETER).



SHAPED SUBGRADE WITH GRANULAR FOUNDATION (FOR GRANULAR SOILS)

CLASS B
B_f = 1.9

GRANULAR FOUNDATION FOR COHESIVE SOILS

NOTES:

FOR CLASS B BEDDINGS, SUBGRADES SHOULD BE EXCAVATED OR OVER EXCAVATED IF NECESSARY, SO A UNIFORM FOUNDATION FREE OF PROTRUDING ROCKS MAY BE PROVIDED.

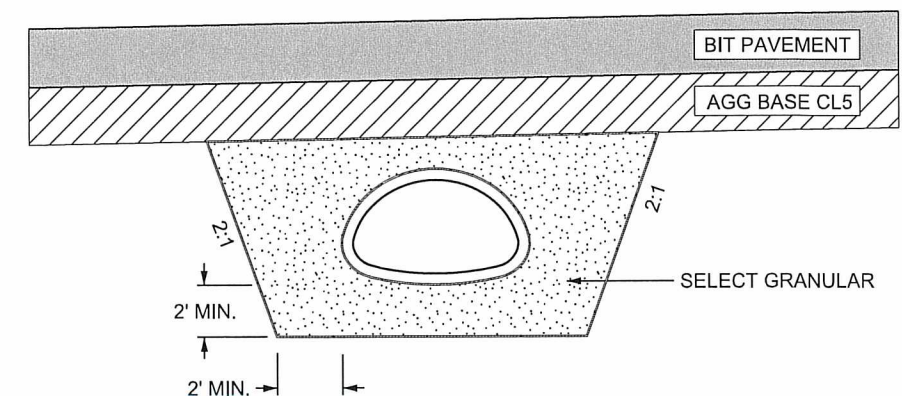
PIPE BEDDING FOR PIPE LAID IN TRENCHES WHERE UNSUITABLE SOILS ARE ENCOUNTERED IS INCIDENTAL.

A MINIMUM OF ONE FOOT OF GRANULAR FOUNDATION SHALL BE PLACED BELOW BOTTOM OF PIPE. SEE SPECIFICATIONS.

LEGEND

- B_c = OUTSIDE DIAMETER
- H = BACKFILL COVER ABOVE TOP OF PIPE
- D = INSIDE DIAMETER
- d = DEPTH OF BEDDING MATERIAL BELOW PIPE

TRENCH BEDDING CLASS B



RC PIPE-ARCH CULVERT BEDDING DETAIL

NOT TO SCALE

NO	DATE	BY	CHKD	APPR	REVISION

NAME: P:\02-623-18\Plan\0262318_DR_DET.dgn 06/12/2018 2:35:06 PM

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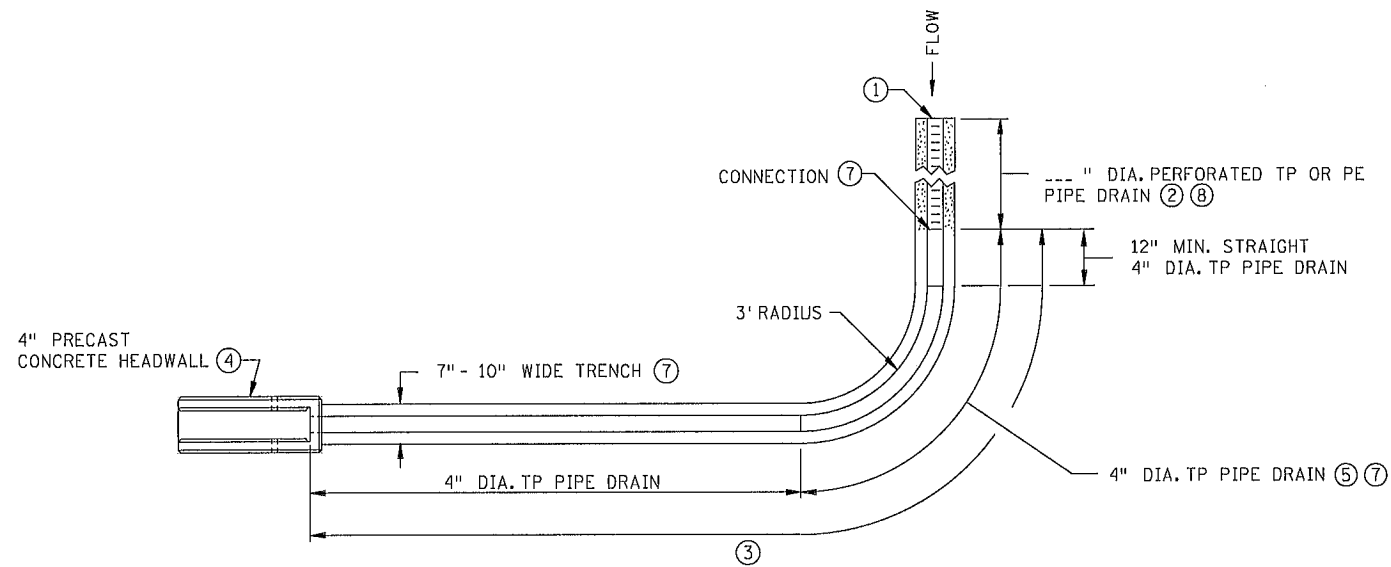
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DESIGN BY: JRB DATE: 05-15-18
CHECKED BY: EJM DATE: 06-07-18



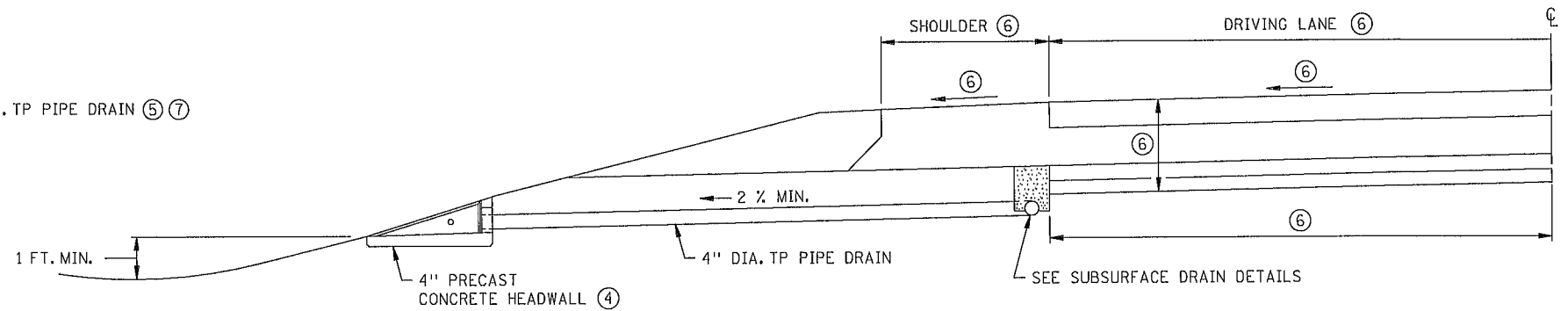
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SAP 002-623-018
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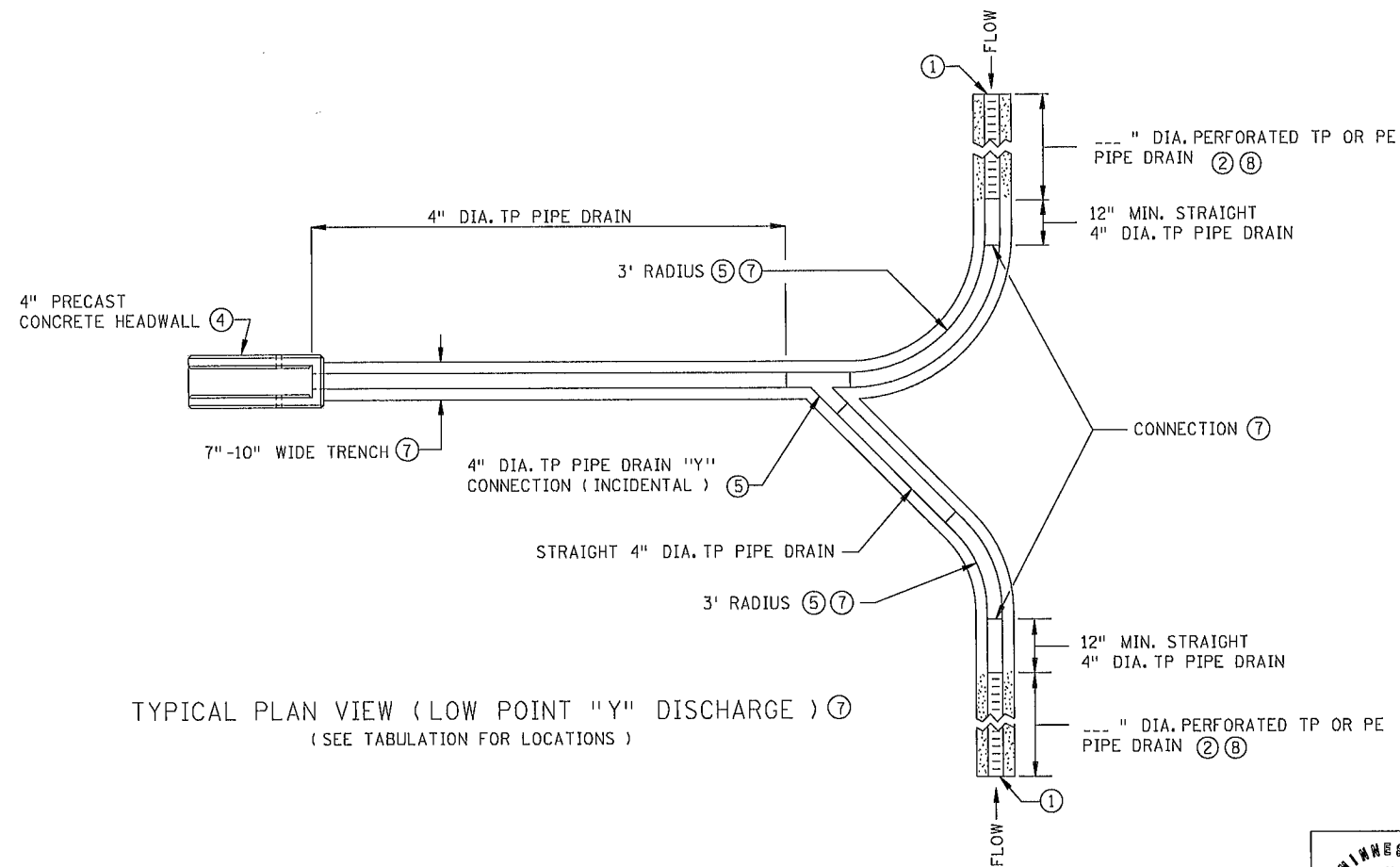
DRAINAGE DETAILS



TYPICAL PLAN VIEW (SINGLE DISCHARGE) ⑦
(SEE TABULATION FOR LOCATIONS)



SECTION VIEW
TYPICAL EDGE DRAIN AND DISCHARGE CROSS SECTION ⑦
(SEE TABULATION FOR LOCATIONS)



TYPICAL PLAN VIEW (LOW POINT "Y" DISCHARGE) ⑦
(SEE TABULATION FOR LOCATIONS)

NOTES:

- ① THE UPSTREAM ENDS OF THE PERFORATED PIPE SHALL BE CAPPED AS APPROVED BY THE PROJECT ENGINEER, THE CAPS ARE INCIDENTAL. PLACE PERFORATED PIPE WITH THE PERFORATIONS DOWN.
- ② MAXIMUM LENGTH 500 FT., EXCEPT 300 FT. MAXIMUM FOR GRADES LESS THAN 0.2% . LENGTH INCLUDED AND PAID FOR AS SPEC. 2502, 1/2 INCH PERFORATED TP OR PE PIPE DRAIN.
- ③ LENGTH INCLUDED AND PAID FOR AS SPEC. 2502, 4 INCH DIA. TP PIPE DRAIN.
- ④ PRECAST CONCRETE HEADWALL STANDARD PLATE 3131 PAID FOR AS SPEC. 2502, 4 INCH PRECAST CONCRETE HEADWALL.
- ⑤ DETAILS OF CONNECTION AND COUPLING TO PIPE SHALL BE APPROVED BY THE ENGINEER, PAYMENT FOR "Y" AND EXTRA CONNECTION, 1/2 INCH TP PIPE AND COUPLING TO BE INCIDENTAL.
- ⑥ SEE ROADWAY TYPICAL SECTIONS FOR ADDITIONAL INFORMATION.
- ⑦ SEE SPECIAL PROVISIONS FOR MATERIAL AND CONSTRUCTION DETAILS.
- ⑧ 3 INCH OR 4 INCH DIAMETER.

REVISION:
APPROVED: 8-6-2014
[Signature]
DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

REVISOR:
APPROVED: 8-6-2014
[Signature]
STATE DESIGN ENGINEER

SUBSURFACE DRAINS
OUTLET PIPES FOR EDGE AND SUBCURT DRAINS
STANDARD PLAN 5-297.433 1 OF 1
SAP 002-623-018 CP 2017-7
SHEET 73 OF 134 SHEETS

PROJECT LOCATION AND GENERAL INFORMATION

THIS PROJECT IS LOCATED ON CSAH 23 IN CITY OF COLUMBUS. THE PROJECT LIES IN RICE CREEK WATERSHED DISTRICT, WITH HOWARD LAKE WITHIN A MILE NORTH OF THE LOCATION AND PELTIER LAKE ABOUT 4 MILES SOUTH.

RECONSTRUCTION OF CSAH 23 MOVES THE INTERSECTION OF CSAH 23 AND CSAH 54 ABOUT 700 FT WEST OF THE CURRENT LOCATION. ONE ROUNDABOUT CONTROLS THE ABOVE INTERSECTION. THE PROJECT ADDS MEDIAN AND BITUMINOUS TRAIL. THIS PROJECT WILL PRIMARILY CONSIST OF GRADING, PLACING AGGREGATE BASE, BITUMINOUS PAVING, CURB AND GUTTER, STORM SEWER CONSTRUCTION & STORM WATER PONDING.

THIS PROJECT WILL DISTURB 6.76 ACRES OF SOILS AND CREATE POTENTIAL FOR SEDIMENT DISCHARGE FROM THE SITE.

TRAINING REQUIREMENTS

THE CONTRACTOR WILL ENSURE COMPLIANCE WITH THE TRAINING REQUIRED IN PART 111.A.2 OF THE GENERAL STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY.

THE INDIVIDUALS TRAINED AND THE TRAINING RECEIVED WILL BE RECORDED IN THE SWPPP BEFORE THE START OF CONSTRUCTION OR AS SOON AS PERSONEL FOR THE PROJECT HAVE BEEN DETERMINED.

LONG TERM OPERATION AND MAINTENANCE

ANOKA COUNTY AND THE CITY OF COLUMBUS STREET DIVISION ARE RESPONSIBLE FOR THE LONG TERM OPERATION AND MAINTENANCE OF THE PERMANENT STORMWATER MANAGEMENT AND SNOW REMOVAL OPERATIONS ALONG THE PROPOSED TRAIL.

Dennis Postler
City of Columbus/TKDA
dennis.postler@tkda.com
444 Cedar Street, Suite 1500
St. Paul, MN 55101
651-292-4400

RECEIVING SURFACE WATERS, DISCHARGE TO IMPAIRED WATERS & SPECIAL WATERS

THE FOLLOWING TABLE IDENTIFIES ALL SURFACE WATERS WITHIN 1 MILE OF THE PROJECT DISTURBED SOIL BOUNDARIES, WHICH WILL RECEIVE STORMWATER RUNOFF FROM THE CONSTRUCTION SITE, DURING OR AFTER CONSTRUCTION.

STORMWATER FROM A DISCHARGE POINT ON THE PROJECT THAT FLOWS TO A SURFACE WATER IDENTIFIED AS IMPAIRED AND/OR SPECIAL MUST INCLUDE THE FOLLOWING ADDITIONAL BMP REQUIREMENTS:

- 1) ALL EXPOSED SOIL AREAS MUST BE STABILIZED AS SOON AS POSSIBLE TO LIMIT SOIL EROSION BUT IN NO CASE LATER THAN SEVEN (7) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
- 2) TEMPORARY SEDIMENT BASINS OR PERMANENT PONDS MUST BE USED FOR COMMON DRAINAGE LOCATIONS THAT SERVE AN AREA WITH FIVE OR MORE ACRES DISTURBED AT ONE TIME.

RECEIVING SURFACE WATERS WITHIN 1 MILE OF PROJECT		
NAME OF WATER BODY	SPECIAL	IMPAIRED
HOWARD LAKE	YES	YES
RICE CREEK	NO	NO
WETLAND	NO	NO

DISTURBED SOIL AREA
TOTAL DISTURBED SOILS AREA FOR THIS PROJECT IS 8.41 ACRES

IMPERVIOUS SOIL AREA
EXISTING AREA OF IMPERVIOUS SURFACE IS 2.41 ACRES.

POST CONSTRUCTION AREA OF IMPERVIOUS SURFACE 3.18 ACRES.

SOIL TYPES
THE PREDOMINANT SOIL TYPE FOUND ON THIS PROJECT IS SAND.

SEDIMENT CONTROL PRACTICES
TEMPORARY STOCKPILED TOPSOIL BERMS MUST INCLUDE PERIMETER BMP'S AS PROVIDED IN THE PLAN AT LOCATIONS WHERE CONSTRUCTION STORMWATER DRAINS FROM THE PROJECT

IN ORDER TO MAINTAIN SHEET FLOW AND MINIMIZE RILLS AND/OR GULLIES, THERE SHALL BE NO UNBROKEN SLOPE LENGTH OF GREATER THAN 75 FEET FOR SLOPES WITH A GRADE OF 1:3 OR STEEPER

ALL STORM DRAIN INLETS MUST BE PROTECTED BY APPROPRIATE BMP'S DURING CONSTRUCTION UNTIL ALL SOURCES WITH POTENTIAL DISCHARGE TO THE INLET HAVE BEEN STABILIZED

VEHICLE TRACKING OF SEDIMENT FROM THE CONSTRUCTION SITE MUST BE MINIMIZED. STREET SWEEPING MUST BE USED IF SEDIMENT IS BEING TRACKED OFF THE CONSTRUCTION SITE

POLLUTION PROVENTION MEASURES

THE CONTRACTOR WILL IMPLEMENT THE POLLUTION PREVENTION MANAGEMENT MEASURES AS DIRECTED IN THE NPDES PERMIT PART V.F AS PERTAINING TO SOLID WASTE, HAZARDOUS MATERIALS EXTERNAL TRUCK WASHING, AND CONCRETE WASHOUT ONSITE.

THESE MANAGEMENT MEASURES FOR POLLUTION PREVENTION WILL BE STRICTLY ENFORCED.

CONSTRUCTION PHASING

SILT FENCE AND/OR OTHER SUITABLE PERIMETER BMP'S AS PROVIDED IN THE PLANS WILL BE INSTALLED PRIOR TO THE START OF ANY LAND DISTURBING ACTIVITY. CONSTRUCTION WILL BE REQUIRED TO BE PHASED SO THAT ALL DOWN GRADIENT SEDIMENT CONTROL MEASURES ARE INSTALLED PRIOR TO OR IN CONJUNCTION WITH ANY SOIL DISTURBING ACTIVITIES.

WHEN TOPSOIL IS DISTURBED, THE TOPSOIL WILL BE STRIPPED AND STOCKPILED IN SOIL BERMS AT THE TOE OF THE STRIPPED SLOPES ALONG THE PROJECT LIMITS. TEMPORARY VEGETATION WILL BE ESTABLISHED ON THE STOCKPILED TOPSOIL BERMS WITH RAPID STABILIZATION AS PROVIDED IN THE PLAN. STOCKPILED TOPSOIL BERMS WILL NOT BE PLACED IN ANY STORMWATER CONVEYANCES.

AFTER STRIPPING THE TOPSOIL THE EXPOSED SOIL INSLOPES WILL BE STABILIZED WITH DISK ANCHORED TYPE 3 MULCH AND SEED WITHIN 7 DAYS OR RAPID STABILIZATION 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS BEEN TEMPORARILY OR PERMANENTLY CEASED.

TEMPORARY SEDIMENT BASINS

THIS ROAD CONSTRUCTION PROJECT AS DESIGNED DOES NOT MEET ANY OF THE TEMPORARY SEDIMENT BASIN DISTURBED AREA THRESHOLD REQUIREMENTS IF PERMANENT POND LOCATIONS ARE CONSTRUCTED PRIOR TO DISCHARGE, TEMPORARY SEDIMENT BASINS WILL NOT BE REQUIRED.

PERMANENT STORMWATER MANAGEMENT SYSTEM

ALL STORMWATER MUST BE DISCHARGED IN A MANNER THAT DOES NOT CAUSE NUISANCE CONDITIONS, EROSION IN RECEIVING WATERS OR ON DOWNSLOPE PROPERTIES, OR INUNDATION IN WETLANDS CAUSING A SIGNIFICANT ADVERSE IMPACT TO THE WETLAND.

PROJECT CONTACTS

MPCA	NPDES	LAURAL MEZNER	218-316-3889
MPCA	EMERGENCY	STATE DUTY OFFICER	800-422-0798
DNR	NOT REQUIRED		
COE	NOT REQUIRED		
ANOKA COUNTY DESIGN SWPPP PREPARATION	U OF MN DESIGN OF SWPPP EXPIRES 5/20	JORGE BERNAL	763-324-3185
ANOKA COUNTY PROJECT REPRESENTATIVE	U OF MN SITE MANAGEMENT EXPIRES 5/20	HARRY GRAMS	763-238-8966
EROSION CONTROL SUPERVISOR (CONTRACTOR)			

EROSION PREVENTION PRACTICES

ALL EXPOSED SOIL AREAS MUST BE STABILIZED AS SOON AS POSSIBLE TO LIMIT SOIL EROSION BUT IN NO CASE LATER THAN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. FOR ALL AREAS WHERE DISTURBED SOILS DRAIN TO AN IMPAIRED OR SPECIAL WATER THE EXPOSED SOIL MUST BE STABILIZED NO LATER THAN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA CEASED. SEE THE IMPAIRED & SPECIAL WATERS SECTION SPECIAL OR IMPAIRED WATER

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 POINT OF DISCHARGE INTO ANY SURFACE WATER. STABILIZATION OF THE LAST 200 FEET MUST BE COMPLETED WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER.

PIPE CULVERT OUTLETS MUST BE PROVIDED WITH TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS AFTER CONNECTION TO A SURFACE WATER. THIS WILL INCLUDE DRAINAGE DITCHES THAT DRAIN WATER FROM ANY PORTION OF THE CONSTRUCTION SITE.

LOCATION OF SWPPP REQUIREMENTS

REQUIREMENT	PLAN		MN/DOT SPECIFICATION	SPECIAL PROVISION
	TITLE	LOCATION		
NPDES PERMIT COMPLIANCE			1701, 1702, & 1717	1717 (AIR, LAND & WATER) 1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT)
CERTIFIED PERSONNEL IN EROSION AND SEDIMENT CONTROL SITE MANAGEMENT			1506, 1717, & 2573	1717 (AIR, LAND & WATER) 1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT)
CHAIN OF RESPONSIBILITY	AGENCY CONTACTS		1506, 1717, & 2573	
PROJECT SCHEDULE / WEEKLY EROSION & SEDIMENT CONTROL SCHEDULE / COMPLETING INSPECTION / MAINTENANCE LOG	AGENCY CONTACTS		1717 & 2573	1717 (AIR, LAND & WATER) 1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT)
SWPPP PREPARATION	AGENCY CONTACTS			
SITE MAP / RECEIVING WATERS / DIRECTION OF FLOW			1717	
PROJECT SPECIFIC CONSTRUCTION STAGING			1717	1717 (AIR, LAND & WATER) 1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT) 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME)
TEMPORARY EROSION AND SEDIMENT CONTROL BMP LOCATIONS, INSTALLATION, TIMING OF INSTALLATION AND TYPE OF BMP	QUANTITY TABULATIONS		2573 & 2525	2575 (RAPID STABILIZATION SPECIFICATION)
ADDITIONAL TEMPORARY AND OR PERMANENT EROSION AND SEDIMENT CONTROL BMP'S NOT PROVIDED OR SHOWN IN THE PLAN			1717, 2573, & 2575	1717 (AIR, LAND & WATER) 1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT) 2575 (RAPID STABILIZATION SPECIFICATION)
MAINTENANCE OF EROSION AND SEDIMENT CONTROL DEVICES, REMOVAL OF TRACKED SEDIMENT, REMOVAL OF DEVICES			1717 & 2573	1514 (MAINTENANCE DURING CONSTRUCTION) 1717 (LAND AIR & WATER) 1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT)
DEWATERING			2105.3B, & 2451.3C	DEWATERING MAY ALSO REQUIRE DNR PERMIT. NO DEWATERING IS ANTICIPATED FOR THIS PROJECT
FINAL STABILIZATION	QUANTITY TABULATIONS EROSION CONTROL PLAN		1717, 2573, & 2575	1717 (AIR, LAND & WATER) 1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT)
TEMPORARY EROSION AND SEDIMENT CONTROL DETAILS	QUANTITY TABULATIONS EROSION CONTROL PLAN		2575	2575 (RAPID STABILIZATION SPECIFICATION)
PERMANENT EROSION CONTROL DETAILS	EROSION CONTROL DETAILS		2575	2575 (CONTROLLING EROSION AND ESTABLISHING VEGETATION)

NO	DATE	BY	CKD	APPR	REVISION

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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.
PRINT NAME: ELIZABETH MARKOSE
SIGNATURE: *Elizabeth Markose*
DATE: 06-12-2018 LICENSE NO. 49118

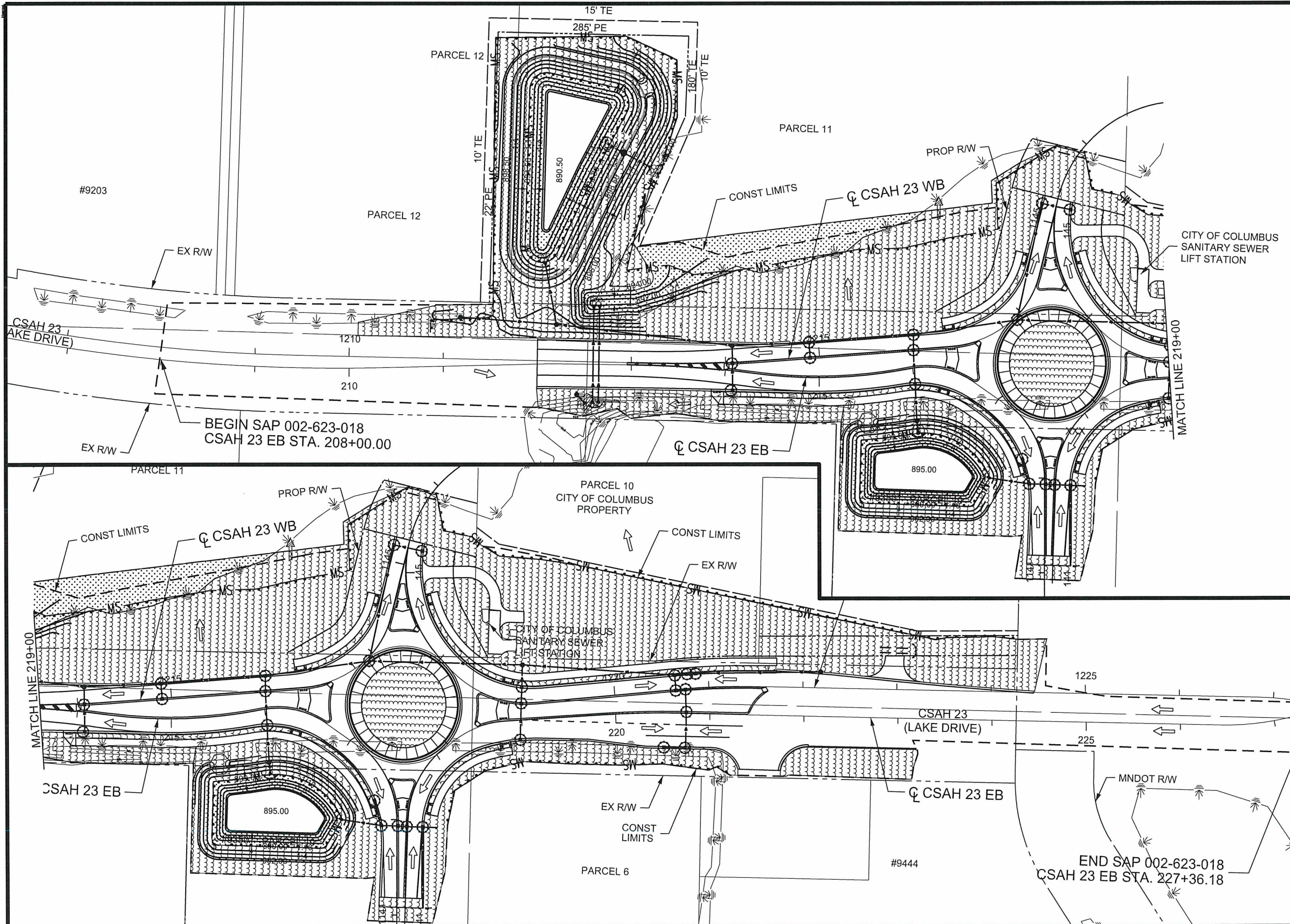
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DESIGN BY JRB DATE 05-15-18
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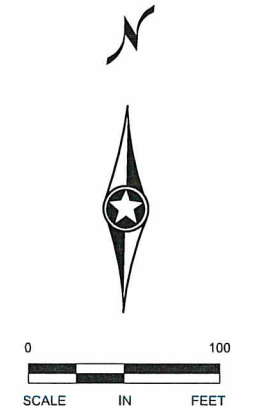
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SWPPP NARRATIVE



- LEGEND**
- PROPOSED CATCH BASIN
 - PROPOSED MANHOLE
 - ▼ PROPOSED APRON
 - ▽ INPLACE APRON
 - PROPOSED STORM SEWER
 - INPLACE CULVERT
 - == PROPOSED CULVERT
 - MS SILT FENCE TYPE MACHINE SLICED
 - ⊗ RIPRAP (CLASS II UNLESS OTHERWISE NOTED)
 - ⊙ SOD APRON INLET OR OUTLET
 - INLET PROTECTION
 - ~ WETLAND BOUNDARIES
 - SURFACE FLOW ARROW
 - SEED MIX 25-121 W/ BLANKET CATEGORY 3 AND FERTILIZER TYPE 3
 - SEED MIX 33-261 BLANKET CATEGORY 3 AND FERTILIZER TYPE 4

NOTE: SEE STAGE 2 TEMPORARY DRAINAGE PLAN FOR TEMPORARY EROSION CONTROL DURING STAGE 2 BYPASS ROAD



NO	DATE	BY	CKD	APPR	REVISION

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PRINT NAME: ELIZABETH MARKOSE
 SIGNATURE: *Elizabeth Markose*
 DATE: 06-12-2018 LICENSE NO. 49118

DRAWN BY JRB DATE 05-15-18
 DESIGN BY JRB DATE 05-15-18
 CHECKED BY EJM DATE 06-07-18

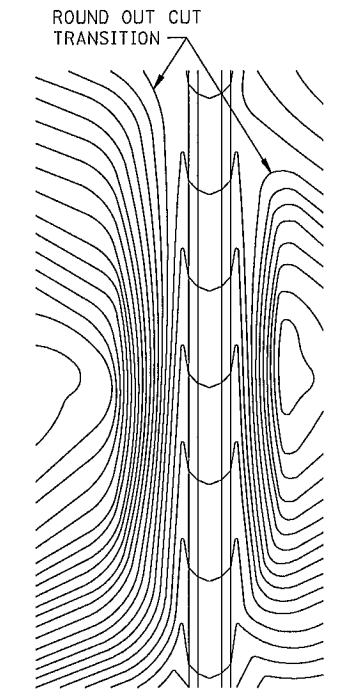
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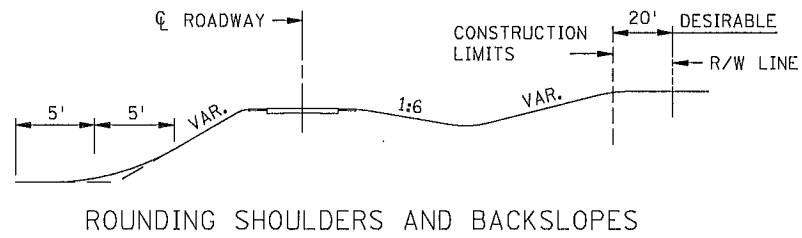
TURF ESTABLISHMENT AND EROSION CONTROL PLAN

Sheet 76 of 134 Sheets

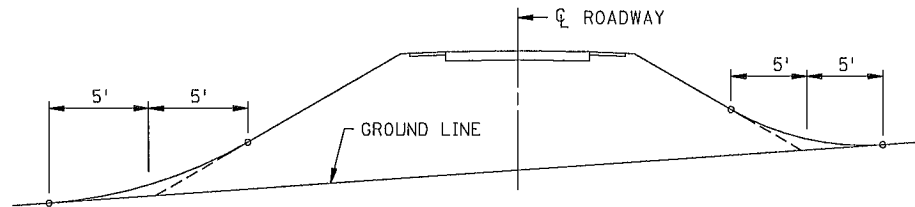
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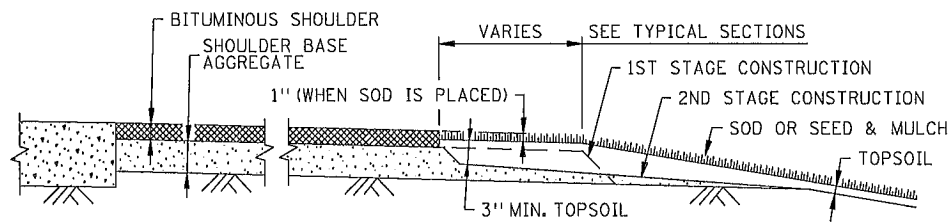
CONTOURING ROAD CUTS



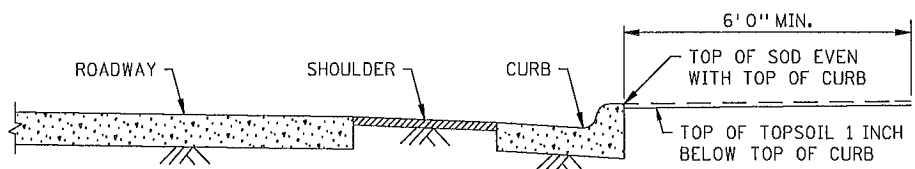
ROUNDING SHOULDERS AND BACKSLOPES



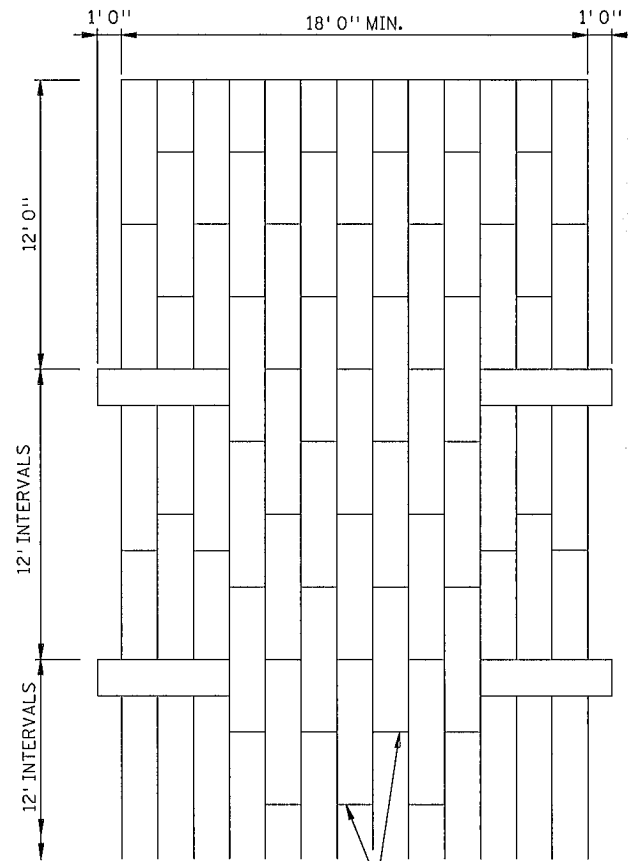
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



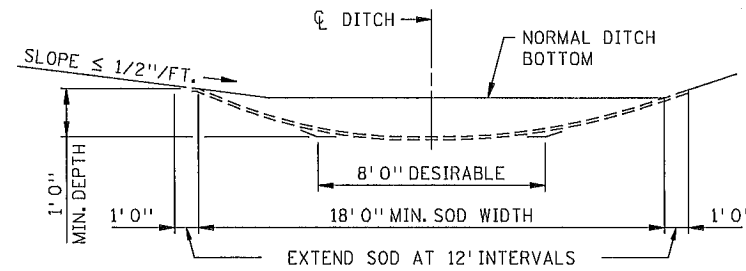
SHAPING AND TOPSOILING INSLOPES



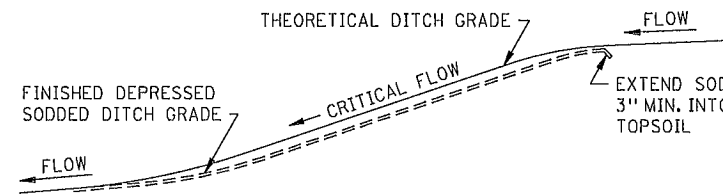
SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



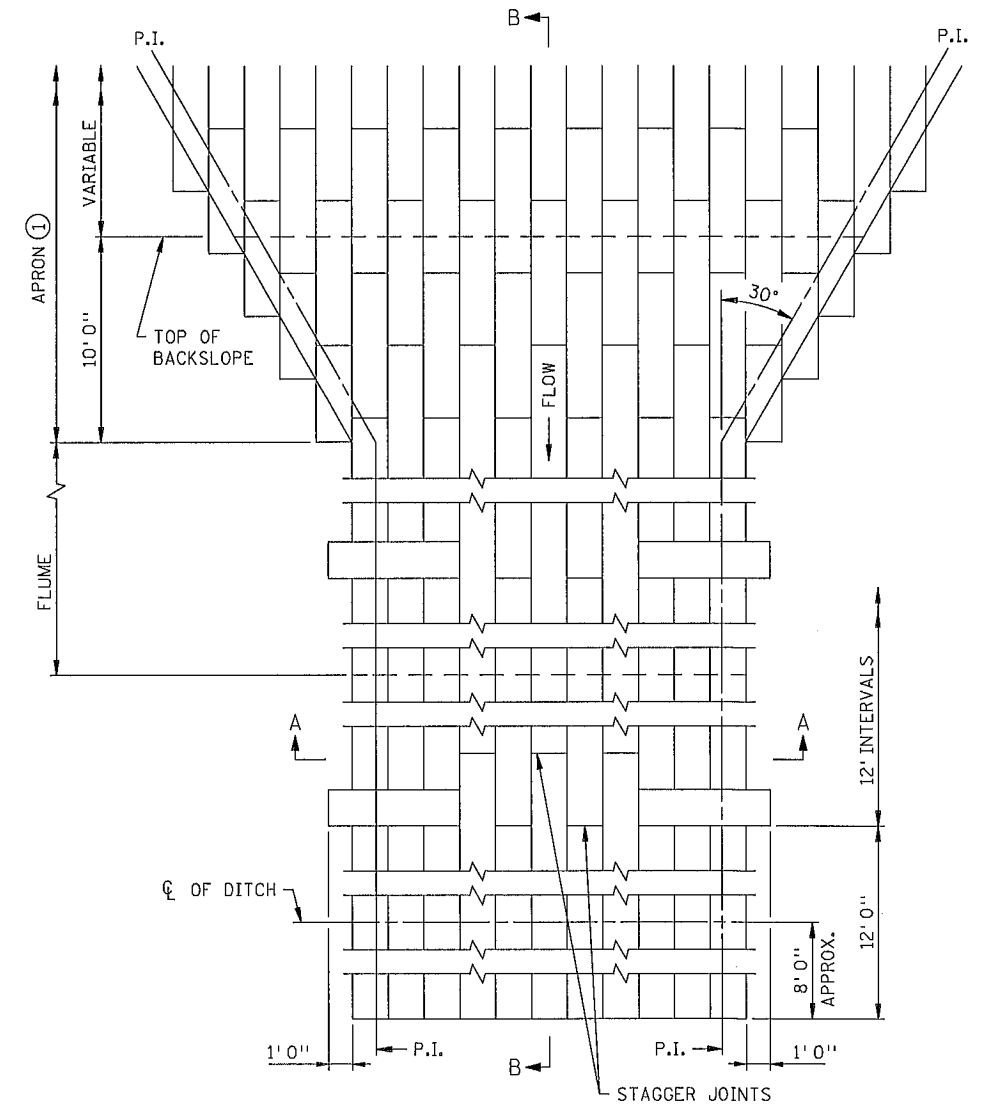
PLAN VIEW



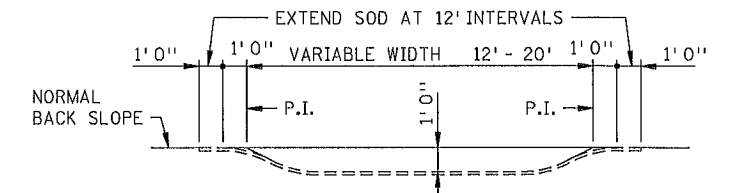
SODDED DITCH CROSS SECTION
WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.),
FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.



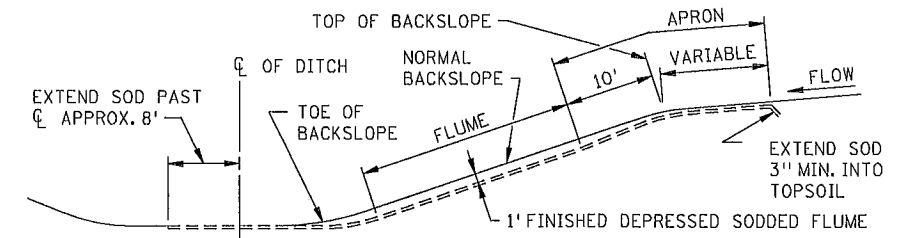
SODDED DITCH DETAILS



PLAN VIEW



SECTION A-A



SECTION B-B
SODDED FLUME DETAILS

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

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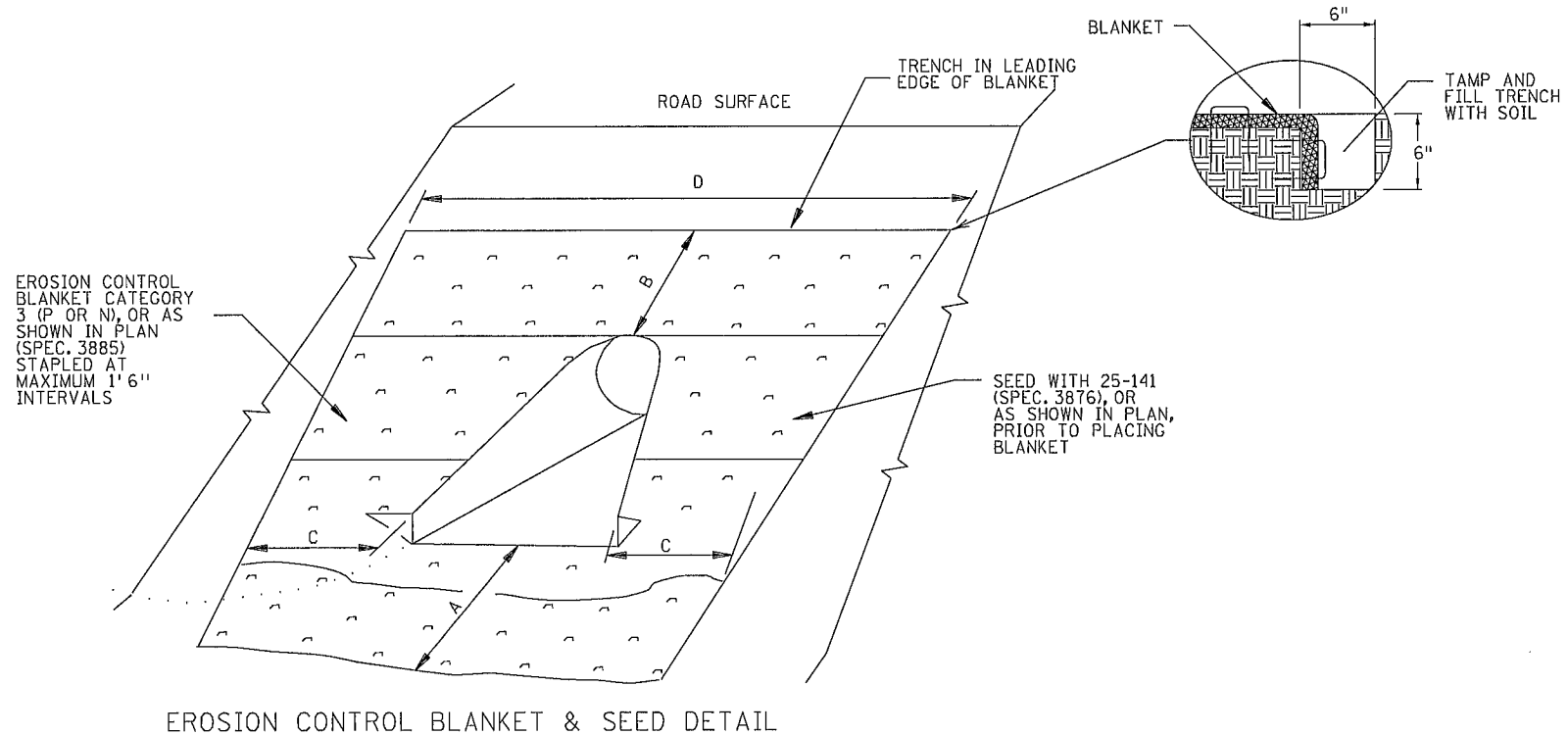
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APPROVED:
2-28-2017

PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES	
STANDARD PLAN 5-297.404	1 OF 3
SAP 002-623-018 CP 2017-7	SHEET 77 OF 134

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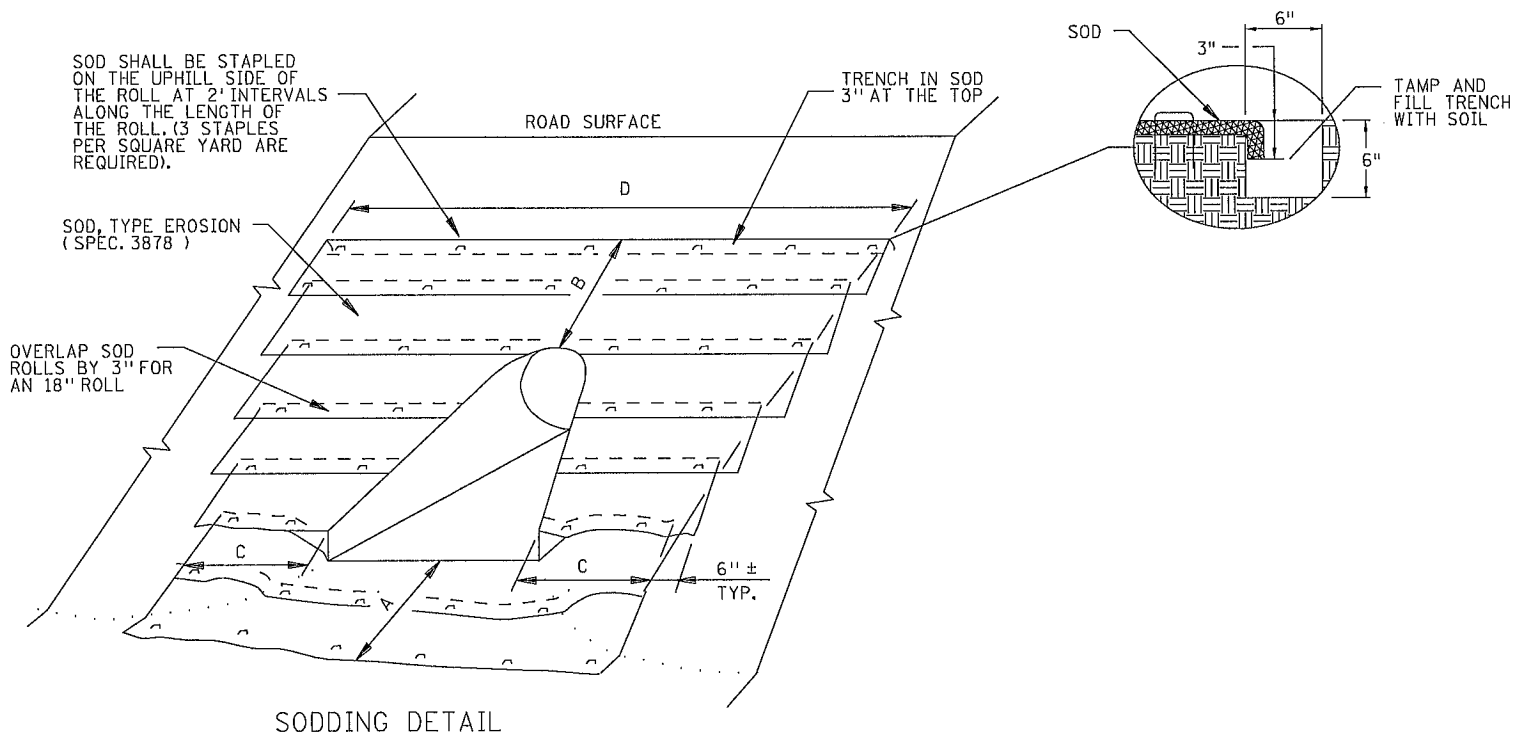
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EROSION CONTROL BLANKET & SEED DETAIL

CULVERT DIAMETER ②	SOD OR EROSION CONTROL BLANKET (SQ. YDS.)						"A"	"B"	"C"	"D"
	CIRCULAR AND ARCH PIPE METAL APRON (PLATE 3123, PLATE 3122)	CIRCULAR AND ARCH PIPE CONCRETE APRON (PLATE 3100, PLATE 3110)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:4 SLOPE (PLATE 3148)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:6 SLOPE (PLATE 3148)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:6 SLOPE (PLATE 3128)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:4 SLOPE (PLATE 3128)				
15"	9	9	8	8	N/A	N/A	3'	1.5'	3'	13'
18"	13	12	12	14	16	N/A	3'	3'	3'	16'
21"	14	14	14	16	18	14	3'	3'	3'	17'
24"	16	15	16	19	21	17	3'	3'	3'	18'
27"	N/A	20	N/A	N/A	N/A	N/A	3'	4.5'	3'	20'
30"	23	22	25	30	32	N/A	3'	4.5'	3'	22'
36"	34	34	39	48	51	37	4.5'	4.5'	4.5'	27'
42"	43	40	51	64	N/A	N/A	4.5'	6'	4.5'	30'
48"	54	50	66	82	N/A	N/A	4.5'	7.5'	4.5'	34'
54"	65	58	81	102	N/A	N/A	4.5'	9'	4.5'	37'
60"	69	59	91	115	N/A	N/A	4.5'	9'	4.5'	39'
66"	69	63	N/A	N/A	N/A	N/A	4.5'	9'	4.5'	39'
72"	78	72	99	122	N/A	N/A	4.5'	10.5'	4.5'	41'

CULVERT DIAMETER ②	SOD OR EROSION CONTROL BLANKET (SQ. YDS.)						"A"	"B"	"C"	"D"
	CIRCULAR AND ARCH PIPE METAL APRON (PLATE 3123, PLATE 3122)	CIRCULAR AND ARCH PIPE CONCRETE APRON (PLATE 3100, PLATE 3110)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:4 SLOPE (PLATE 3148)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:6 SLOPE (PLATE 3148)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:6 SLOPE (PLATE 3128)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:4 SLOPE (PLATE 3128)				
15"	10	10	9	10	N/A	N/A	4.5'	1.5'	3'	13'
18"	13	13	12	14	15	N/A	6'	1.5'	3'	14'
21"	16	14	16	18	19	15	6'	1.5'	3'	15'
24"	18	18	18	21	22	18	7.5'	1.5'	3'	16'
27"	N/A	19	N/A	N/A	N/A	N/A	7.5'	1.5'	3'	17'
30"	23	23	24	28	29	N/A	9'	1.5'	3'	18'
36"	36	35	38	47	48	37	10.5'	1.5'	4.5'	23'
42"	43	40	47	58	N/A	N/A	12'	1.5'	4.5'	25'
48"	50	46	57	70	N/A	N/A	13.5'	1.5'	4.5'	27'
54"	57	50	67	84	N/A	N/A	15'	1.5'	4.5'	29'
60"	74	63	90	113	N/A	N/A	16.5'	1.5'	6'	33'
66"	75	67	N/A	N/A	N/A	N/A	16.5'	1.5'	6'	33'
72"	77	70	92	114	N/A	N/A	16.5'	1.5'	6'	34'



SODDING DETAIL

- NOTES:
- AREA SHOWN IN SQUARE YARDS IS FOR ONE CULVERT END.
 - QUANTITIES ARE CALCULATED TO INCLUDE SOD REQUIRED TO PROVIDE A 3" OVERLAP ON ALL 18" WIDE ROLLS. THIS ALLOWS FOR SHRINKAGE OF THE SOD.
 - FOR PIPE ARCHES USE EQUIVALENT PIPE DIAMETER TO APPROXIMATE AREA.
 - FOR CORRUGATED POLYETHYLENE PIPE METAL APRON (PLATE 3129), USE THE METAL APRON COLUMN (PLATE 3123).
 - AREAS AND DIMENSIONS ARE APPROXIMATE AND ARE BASED ON APRON SIDE SLOPES OF NO STEEPER THAN 1:2, UNLESS INDICATED AS FOR SAFETY APRONS.
 - CARE SHOULD BE TAKEN IN SELECTING SOD TO STABILIZE THE APRON. RIP-RAP SHOULD BE USED FOR FLOW VELOCITIES GREATER THAN 6 FPS.
- ① ADDITIONAL QUANTITIES MAY BE SHOWN IN THE PLAN OR REQUIRED BY THE ENGINEER.
 ② FOR ARCH PIPE USE CLOSEST CIRCULAR PIPE DIAMETER AND APRON SLOPE. (DIAMETERS LARGER THAN 72" REQUIRE SPECIAL DESIGNS.)

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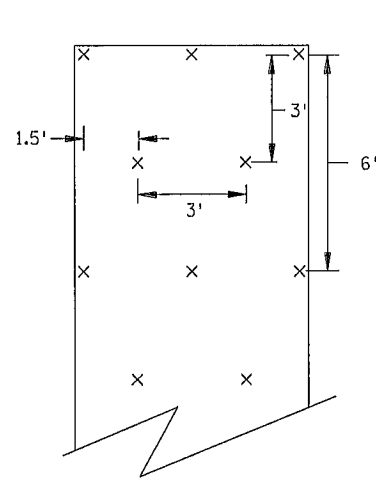
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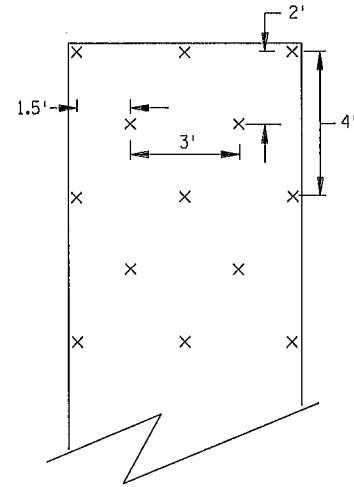
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PERMANENT EROSION CONTROL
 TURF ESTABLISHMENT DETAIL AT CULVERT ENDS
 STANDARD PLAN 5-297.404 2 OF 3
 SAP 002-623-018 CP 2017-7
 SHEET 78 OF 134

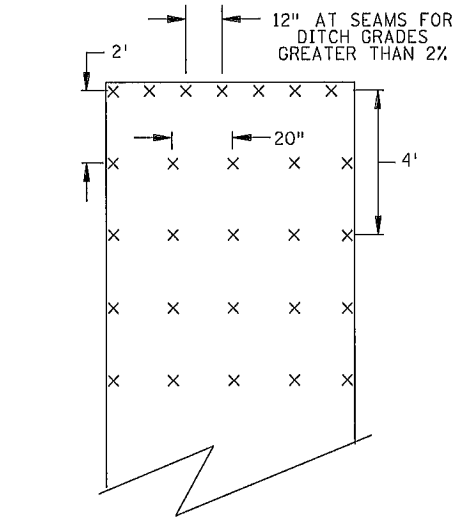
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SLOPES FLATTER THAN 1:2
(120 STAPLES PER 100 SQ YD)

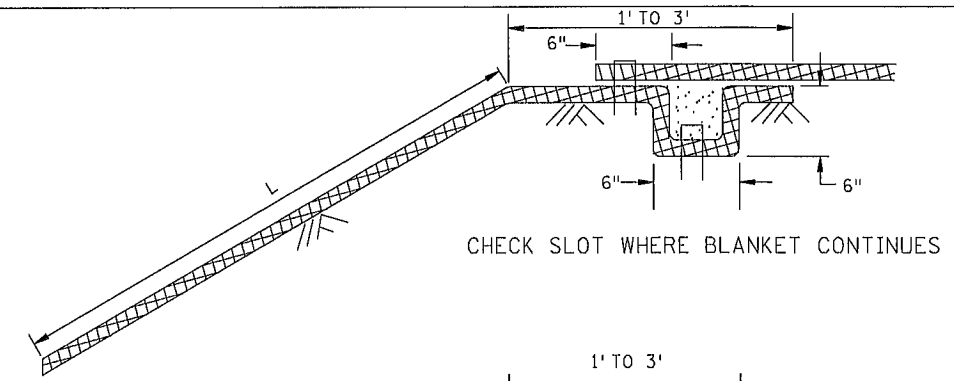


SLOPES 1:2 TO 1:1
(170 STAPLES PER 100 SQ YD)

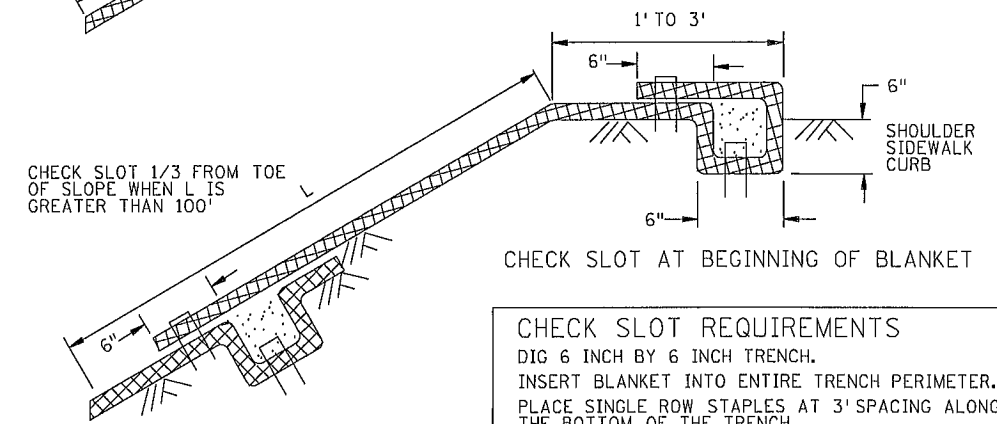


CHANNEL AND DITCH APPLICATIONS
(350 STAPLES PER 100 SQ YD)

BLANKET STAPLE PATTERN

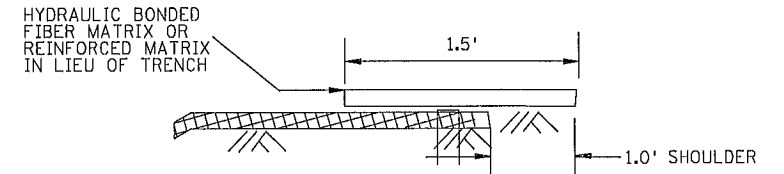


CHECK SLOT WHERE BLANKET CONTINUES

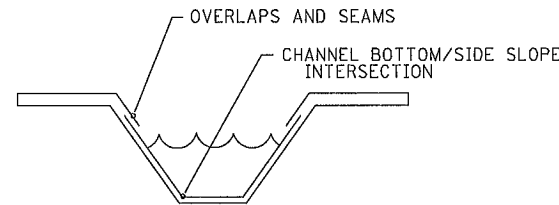


CHECK SLOT AT BEGINNING OF BLANKET

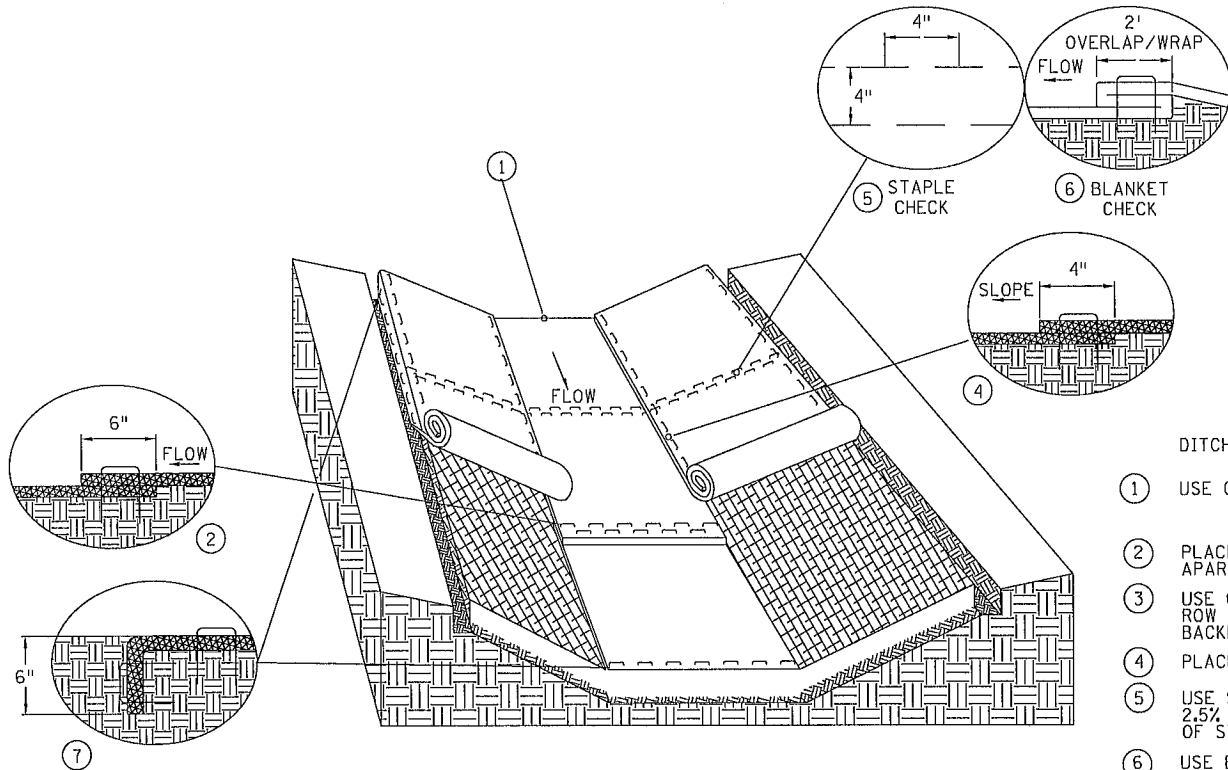
CHECK SLOT REQUIREMENTS
DIG 6 INCH BY 6 INCH TRENCH.
INSERT BLANKET INTO ENTIRE TRENCH PERIMETER.
PLACE SINGLE ROW STAPLES AT 3' SPACING ALONG THE BOTTOM OF THE TRENCH.
BACKFILL TRENCH WITH SOIL AND TAMP.
PLACE SINGLE ROW STAPLES AT 3' SPACING ON OVERLAP.



CHECK SLOT ALTERNATIVE
PLACE SINGLE ROW STAPLES AT 12" SPACING
CHECK SLOT DETAILS



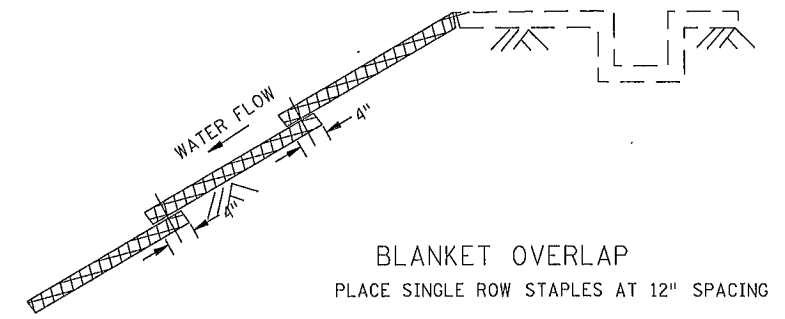
DITCH BLANKET CRITICAL POINTS ⑦



DITCH BLANKET STAPLE DETAIL

DITCH BLANKET STAPLE DETAIL NOTES

- ① USE CHECK SLOT DETAIL (NO ALTERNATES).
- ② PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER.
- ③ USE 6" X 6" TRENCH TO PLACE BLANKET. PLACE SINGLE ROW OF STAPLES ON TOP AND TRENCH SIDES AT 12" SPACING. BACKFILL TRENCH WITH SOIL AND TAMP.
- ④ PLACE SINGLE ROW OF STAPLES AT 12" SPACING.
- ⑤ USE STAPLE CHECK FOR CHANNEL SLOPES LESS THAN 2.5% GRADE AT 100 FOOT INTERVALS. PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND AT 4" SPACING.
- ⑥ USE BLANKET CHECKS FOR THE FOLLOWING SLOPES:
2.5%-3% 100 FT INTERVALS
3%-5% 50 FT INTERVALS
5%-7% 25 FT INTERVALS
- ⑦ CRITICAL POINTS SHALL BE SECURED WITH PROPER STAPLE PATTERNS.



BLANKET OVERLAP
PLACE SINGLE ROW STAPLES AT 12" SPACING

GENERAL BLANKET INSTALLATION REQUIREMENTS
PREPARE SOIL AS PER SPECIFICATION 2574.
LAY PARALLEL OR PERPENDICULAR TO THE DIRECTION OF WATER FLOW.
OVERLAP ADJACENT STRIP EDGES A MINIMUM OF 4 INCHES.
OVERLAP BLANKET 6" (MIN.) AT EACH END. OVERLAP BOTTOM END OF UPPER BLANKET OVER TOP END OF LOWER BLANKET. STAPLE ALONG OVERLAP EVERY 1.5'.
THE UPPERMOST BLANKET OF ALL SLOPE APPLICATIONS MUST START IN A CHECK SLOT. IF SLOPE LENGTH (L) IS 100' OR GREATER, INSERT BLANKET INTO A CHECK SLOT 1/3 FROM THE BOTTOM OF THE SLOPE.

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USER NAME: Jrbernal
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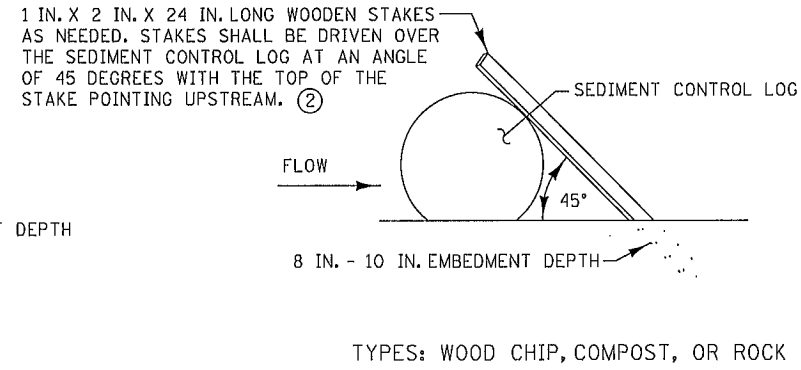
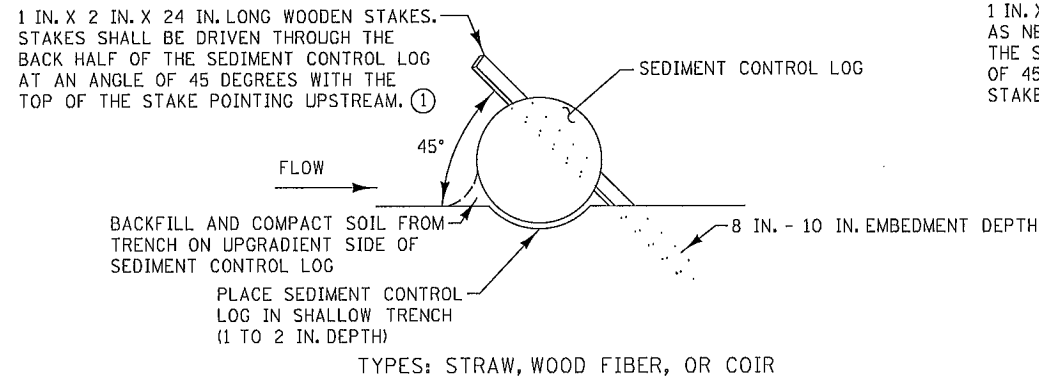
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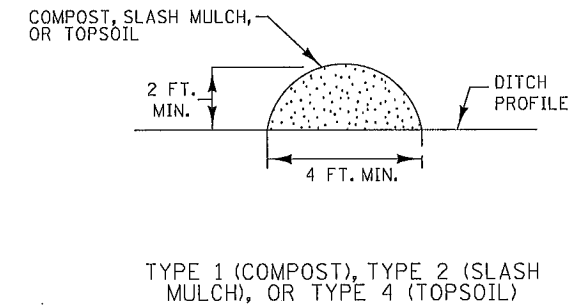
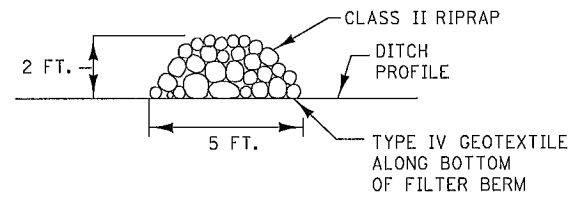
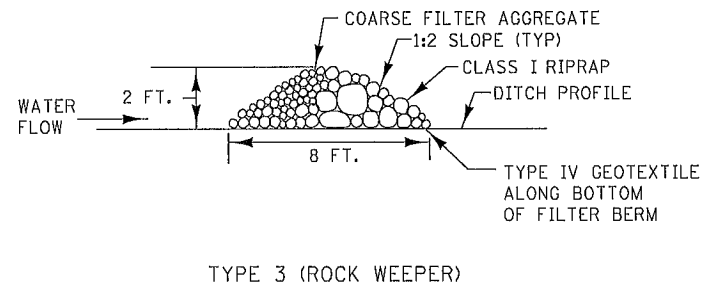
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PERMANENT EROSION CONTROL
BLANKET STAPLE PATTERN FOR SLOPES
STANDARD PLAN 5-297.404 3 OF 3
SAP 002-623-018 CP 2017-7
SHEET 79 OF 134

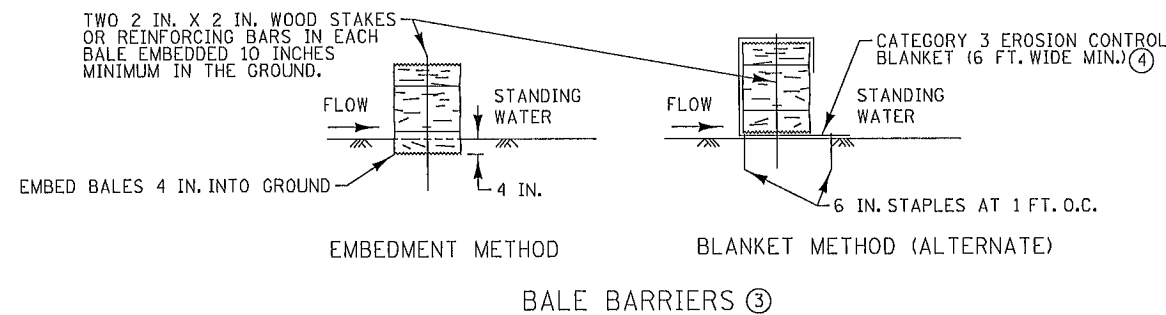
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SEDIMENT CONTROL LOGS



FILTER BERMS



NOTES:

SEE SPECS. 2573, 3149, 3874, 3882, 3886, & 3897.

- ① SPACE BETWEEN STAKES SHALL BE A MAXIMUM OF 1 FOOT FOR DITCH CHECKS OR 2 FEET FOR OTHER APPLICATIONS.
- ② PLACE STAKES AS NEEDED TO PREVENT MOVEMENT OF SEDIMENT CONTROL LOGS PLACED ON SLOPES OR AS NEEDED DUE TO OTHER FACTORS. STAKES SHALL BE INCIDENTAL.
- ③ TO BE USED FOR CRITICAL PERIMETER CONTROL AREAS WHERE STANDING WATER OCCURS (6 INCH MAX. DEPTH). BALES SHALL CONSIST OF TYPE 1 MULCH OF APPROXIMATELY 14 IN. X 18 IN. X 36 IN. LONG. BALES SHALL BE PLACED ON EDGE AND BUTTED TIGHT TO ADJACENT BALES.
- ④ INSTEAD OF TRENCHING, PLACE BALE ON THE BLANKET AND WRAP BLANKET AROUND THE BALE. PLACE STAKE THROUGH BALE AND BLANKET.

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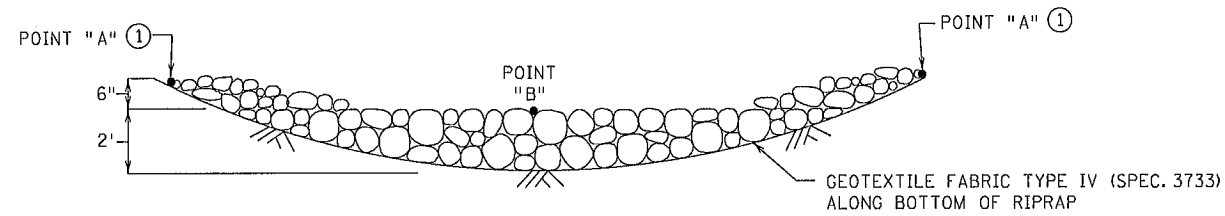


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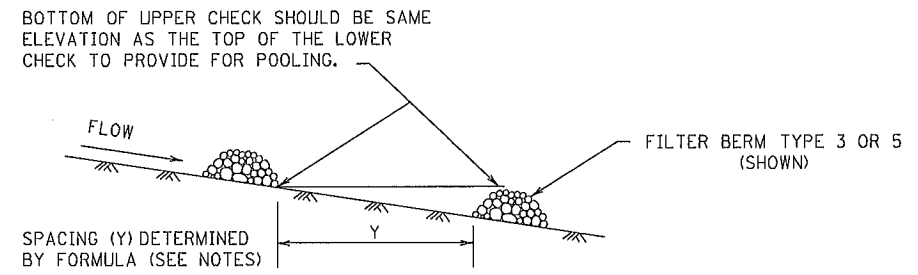
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TEMPORARY SEDIMENT CONTROL	
FILTER BERMS, SEDIMENT CONTROL LOGS, AND BALE BARRIERS	
STANDARD PLAN 5-297.405	2 OF 8
SAP 002-623-018 CP 2017-7	SHEET 80 OF 134

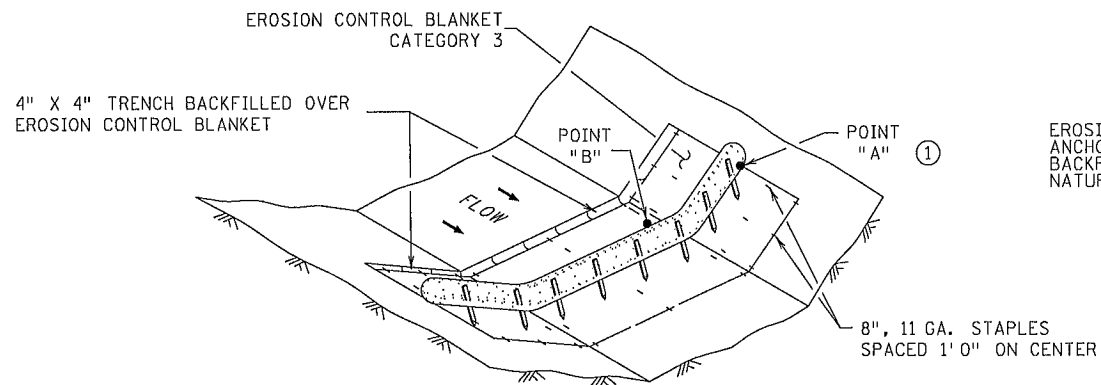
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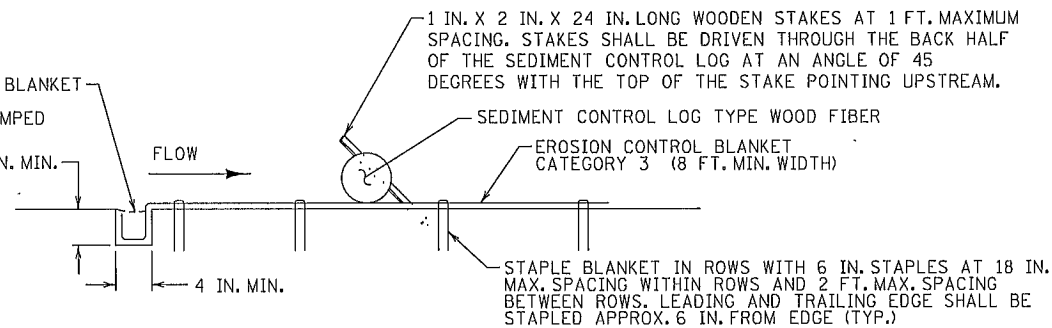
ROCK DITCH CHECKS
FILTER BERMS TYPE 3 (ROCK WEEPER) OR FILTER TYPE 5 (ROCK) ②③
(FOR USE ON ROUGH GRADED AREAS)



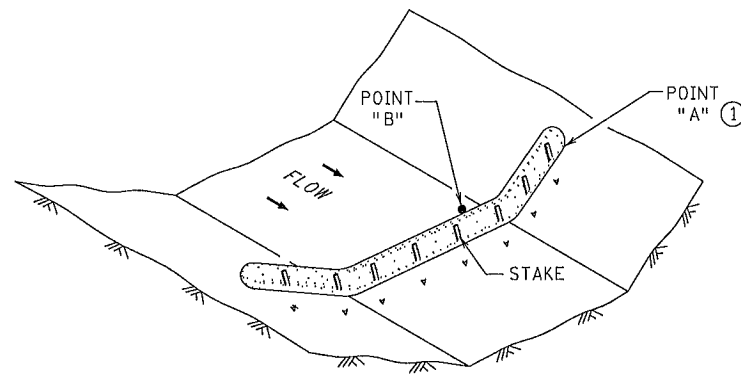
DITCH CHECK SPACING
(FOR ALL FILTER BERM TYPES)



EROSION CONTROL BLANKET ANCHOR TRENCH, BACKFILL WITH TAMPED NATURAL SOIL.



SEDIMENT CONTROL LOG TYPE BLANKET SYSTEM ④



SEDIMENT CONTROL LOG TYPE WOOD FIBER, OR TYPE COMPOST ⑤
(FOR USE ON ROUGH GRADED AREAS)

NOTES:

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

FOR DITCH CHECKS, PLACE SEDIMENT CONTROL LOG PERPENDICULAR TO FLOW AND IN A CRESCENT SHAPE WITH THE ENDS FACING UPSTREAM.

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 PERMANENT ROCK DITCH CHECKS PLACED WITHIN THE CLEAR ZONE ARE TO BE 18" OR LESS IN HEIGHT. A 1:6 APPROACH AND DEPARTURE SLOPE SHALL BE PROVIDED.
- ③ DITCH GRADE 3% - 5%, MAX. FLOW VELOCITY 12 FT./SEC..
- ④ DITCH GRADE 1.5% - 3%, MAX. FLOW VELOCITY 4.5 FT./SEC..
- ⑤ DITCH GRADE 1.5% - 3%, MAX. FLOW VELOCITY 1.5 FT./SEC..

DISTRICT #: USER NAME: jrberrnd PATH & FILENAME: P:\02-623-18\Plan\0262318_EC_P2.dgn
FILE NAME: 0262318_EC_P2.dgn

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APPROVED: 2-28-2017 <i>[Signature]</i> CHIEF ENVIRONMENTAL OFFICER



REVISED:
[Signature]
STATE DESIGN ENGINEER
APPROVED:
2-28-2017

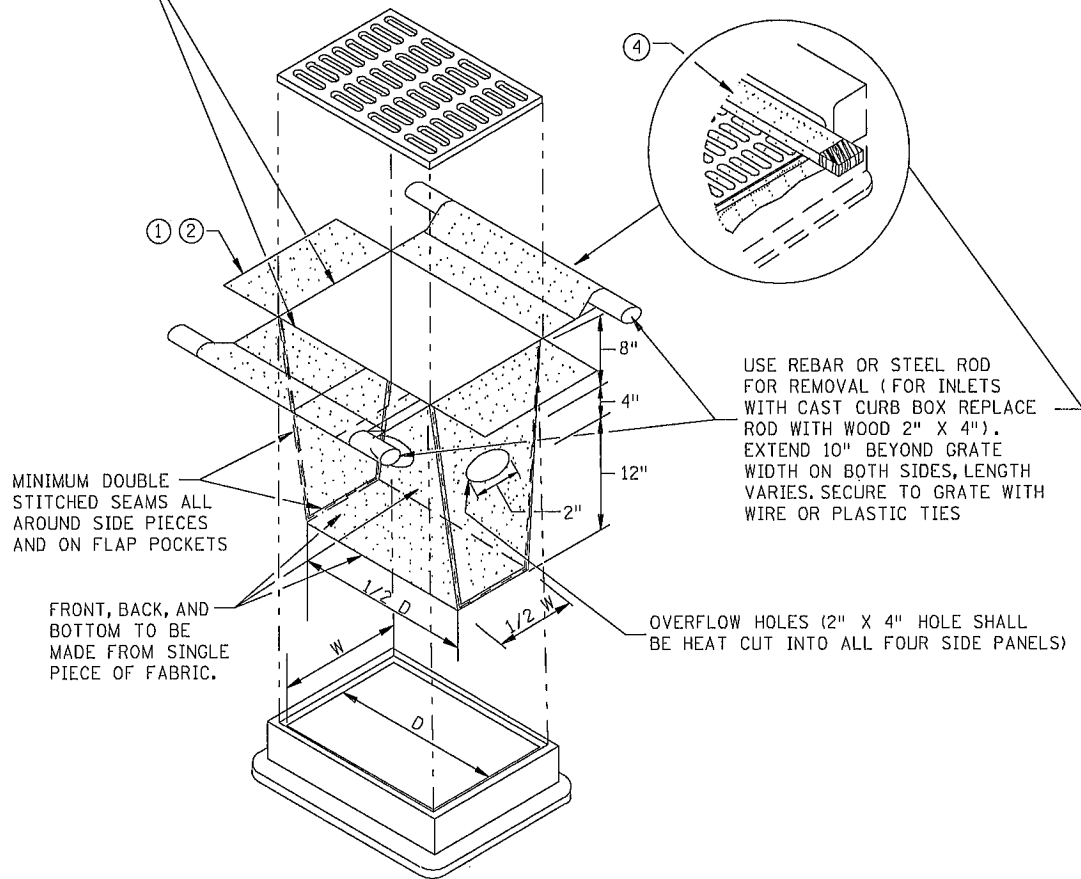
TEMPORARY SEDIMENT CONTROL DITCH CHECK	
STANDARD PLAN 5-297.405	3 OF 8
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PLOTTED/REVISED:
06/12/2018

DISTRICT #: jrbarnal
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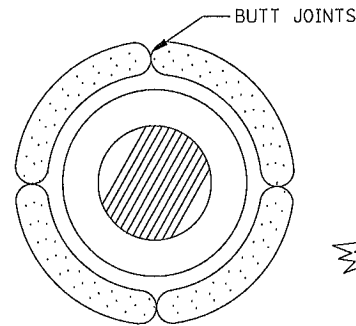
INLET SPECIFICATIONS AS PER THE PLAN
DIMENSION LENGTH AND WIDTH TO MATCH
FLAP POCKET



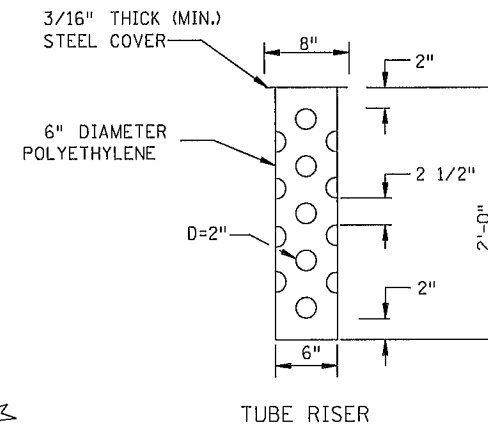
FILTER BAG INSERT ③

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

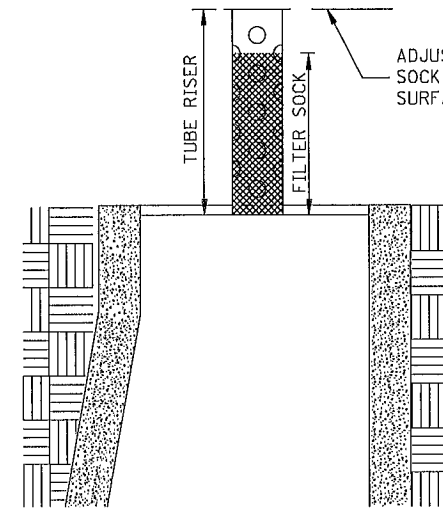
ENDS SECURELY CLOSED TO
PREVENT LOSS OF OPEN GRADED
AGGREGATE FILL. SECURED WITH
50 PSI. ZIP TIE.



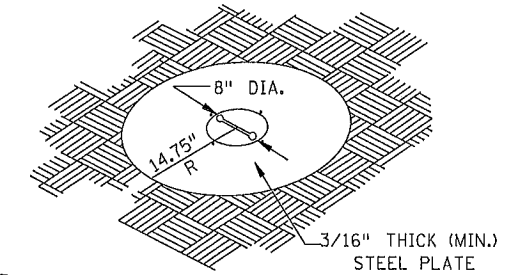
ROCK LOG/COMPOST LOG



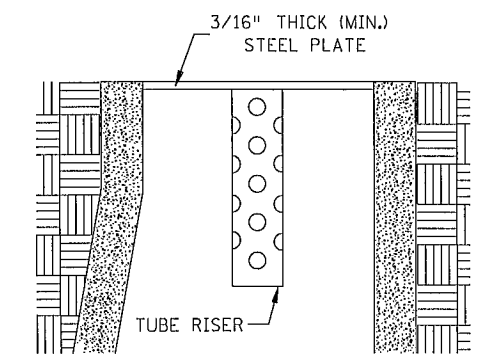
TUBE RISER



SECTION
(UP POSITION)

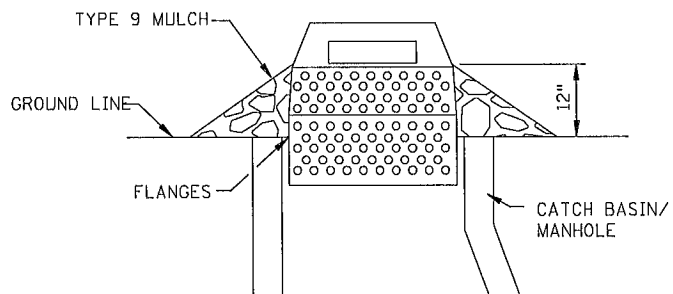


PERSPECTIVE VIEW



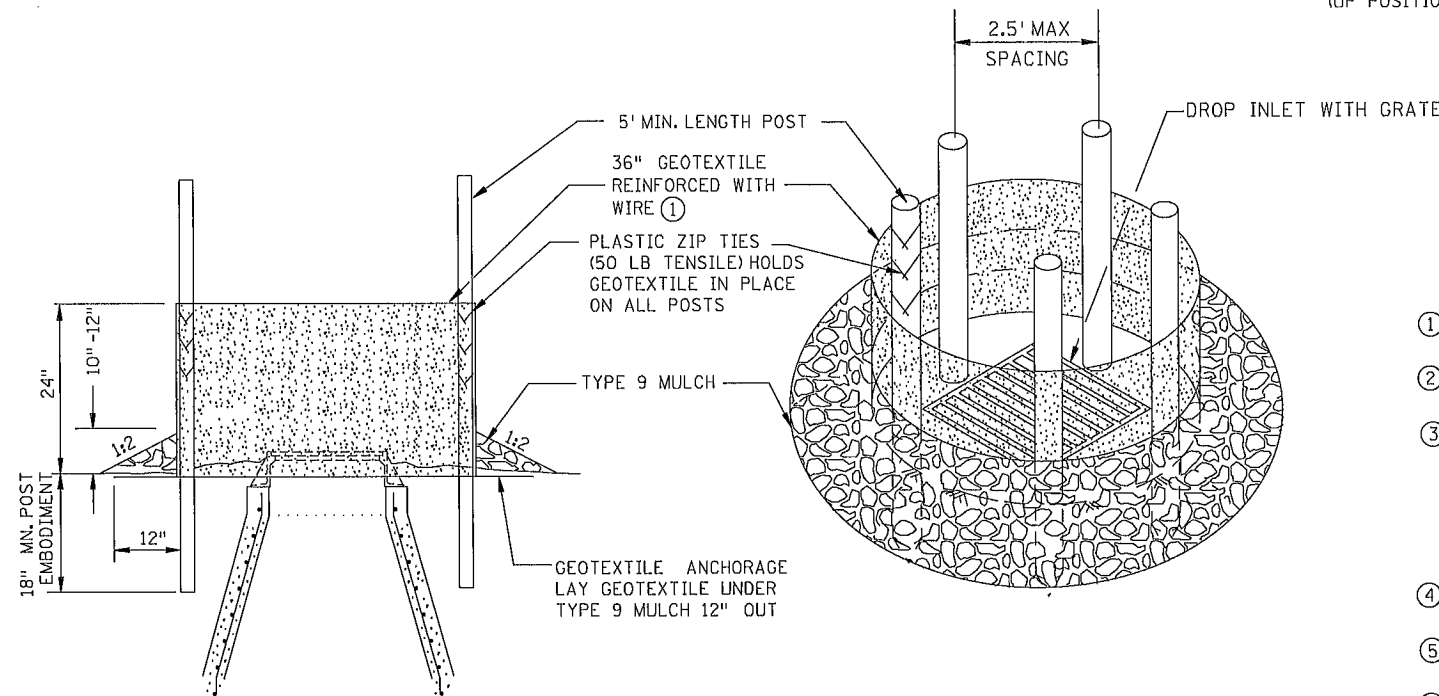
SECTION
(DOWN POSITION)

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.

DEVICES MUST BE ADJUSTED ACCORDINGLY AS TO NOT CAUSE FLOODING ON ROADWAY
THAT WOULD IMPEED TRAFFIC FLOW.

- 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 PLACE FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES,
MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE
PLACED 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.

REVISION:
APPROVED: 2-28-2017
<i>Chris Clark</i> CHIEF ENVIRONMENTAL OFFICER

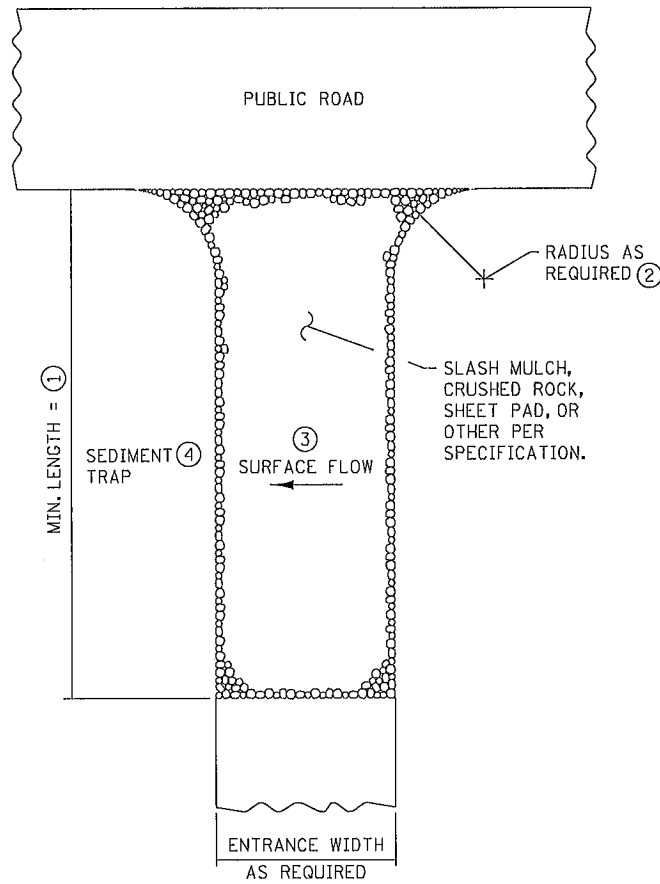


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STATE DESIGN ENGINEER

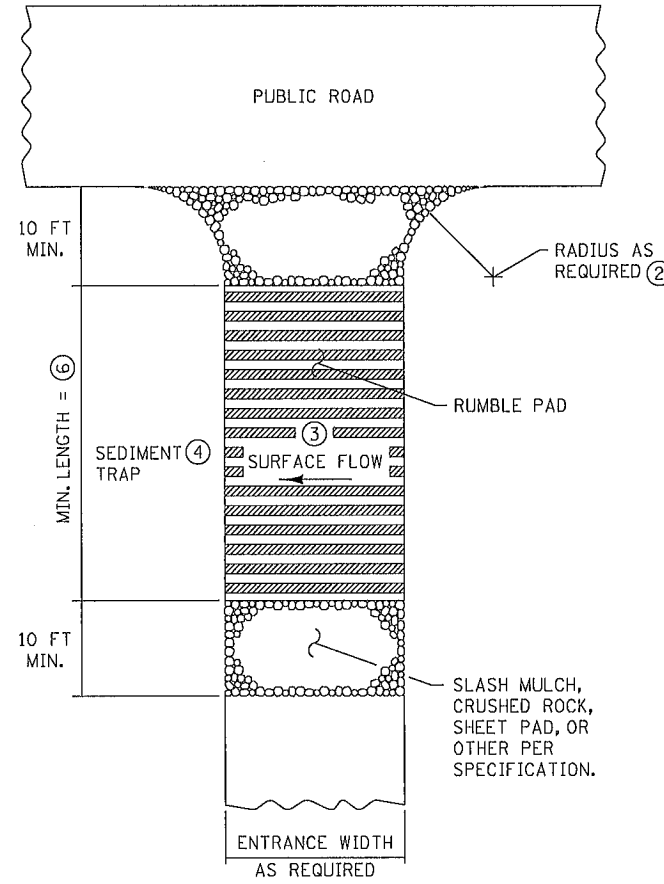
REVISED:
APPROVED:
2-28-2017

TEMPORARY SEDIMENT CONTROL STORM DRAIN INLET PROTECTION	
STANDARD PLAN 5-297.405	4 OF 8
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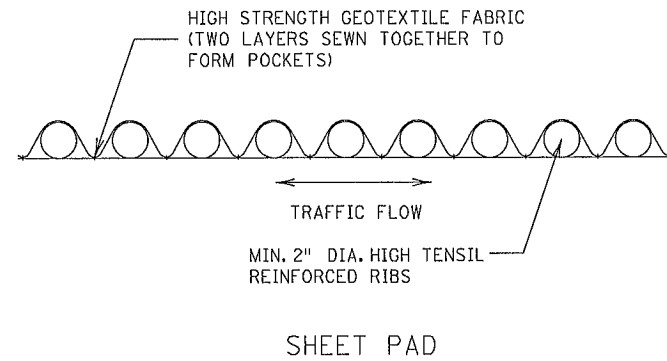
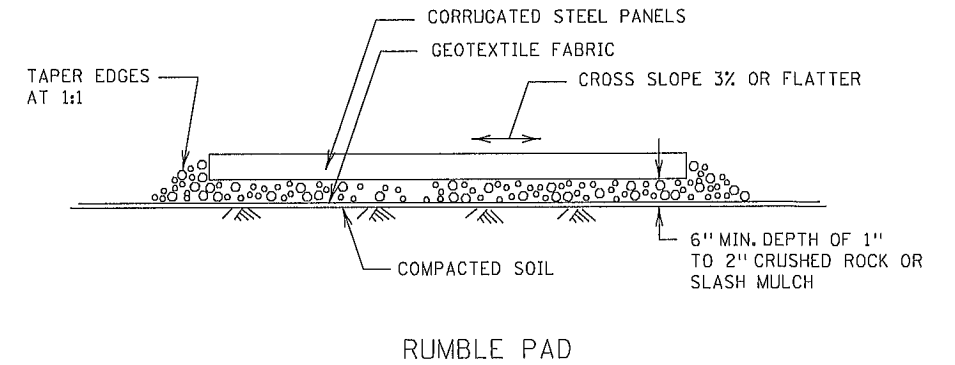
PLOTTED/REVISED:
06/12/2018



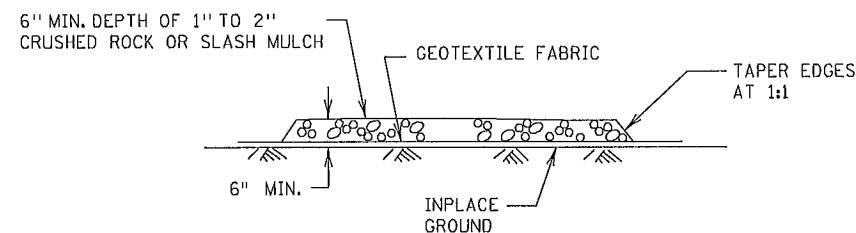
SLASH MULCH, CRUSHED ROCK, OR SHEET PAD CONSTRUCTION EXIT ⑤⑦



RUMBLE PAD CONSTRUCTION EXIT ⑤⑦



SHEET PAD



SLASH MULCH OR CRUSHED ROCK

NOTES:

SEE SPECS. 2573 & 3882.

- ① MINIMUM LENGTH SHALL BE THE GREATER OF 50 FEET OR A LENGTH SUFFICIENT TO ALLOW A MINIMUM OF 5 TIRE ROTATIONS ON THE PROVIDED PAD. MINIMUM LENGTH SHALL BE CALCULATED USING THE LARGEST TIRE WHICH WILL BE USED IN TYPICAL OPERATIONS.
- ② PROVIDE RADIUS OR WIDEN PAD SUFFICIENTLY TO PREVENT VEHICLE TIRES FROM TRACKING OFF OF PAD WHEN LEAVING SITE.
- ③ IF RUNOFF FROM DISTURBED AREAS FLOWS TOWARD CONSTRUCTION EXITS, PREVENT RUNOFF FROM DRAINING DIRECTLY TO PUBLIC ROAD OVER CONSTRUCTION EXIT BY CROWNING THE EXIT OR SLOPING TO ONE SIDE. IF SURFACE GRADING IS INSUFFICIENT, PROVIDE OTHER MEANS OF INTERCEPTING RUNOFF.
- ④ IF RUNOFF FROM CONSTRUCTION EXITS WILL DRAIN OFF OF PROJECT SITE, PROVIDE SEDIMENT TRAP WITH STABILIZED OVERFLOW.
- ⑤ IF A TIRE WASH OFF IS REQUIRED THE CONSTRUCTION EXITS SHALL BE GRADED TO DRAIN THE WASH WATER TO A SEDIMENT TRAP.
- ⑥ MINIMUM LENGTH OF RUMBLE PAD SHALL BE 20 FEET, OR AS REQUIRED TO REMOVE SEDIMENT FROM TIRES. IF SIGNIFICANT SEDIMENT IS TRACKED FROM THE SITE, THE RUMBLE PAD SHALL BE LENGTHENED OR THE DESIGN MODIFIED TO PROVIDE ADDITIONAL VIBRATION. WASH-OFF LENGTH SHALL BE AS REQUIRED TO EFFECTIVELY REMOVE CONSTRUCTION SEDIMENT FROM VEHICLE TIRES.
- ⑦ MAINTENANCE OF CONSTRUCTION EXITS SHALL OCCUR WHEN THE EFFECTIVENESS OF SEDIMENT REMOVAL HAS BEEN REDUCED. MAINTENANCE SHALL CONSIST OF REMOVING SEDIMENT AND CLEANING THE MATERIALS OR PLACING ADDITIONAL MATERIAL (SLASH MULCH OR CRUSHED ROCK) OVER SEDIMENT FILLED MATERIAL TO RESTORE EFFECTIVENESS.

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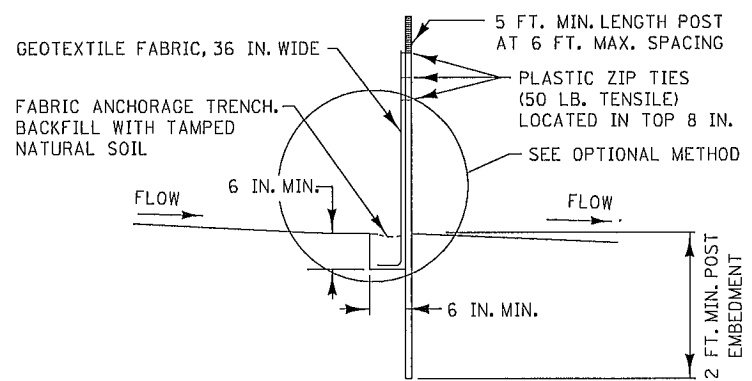
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APPROVED: 2-28-2017
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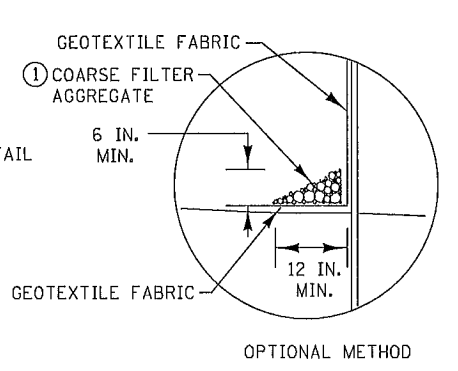
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STATE DESIGN ENGINEER
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2-28-2017

TEMPORARY SEDIMENT CONTROL	
STABILIZED CONSTRUCTION EXIT	
STANDARD PLAN 5-297.405	5 OF 8
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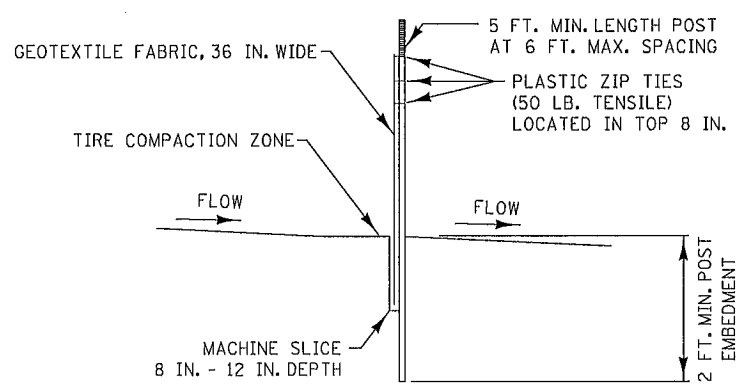
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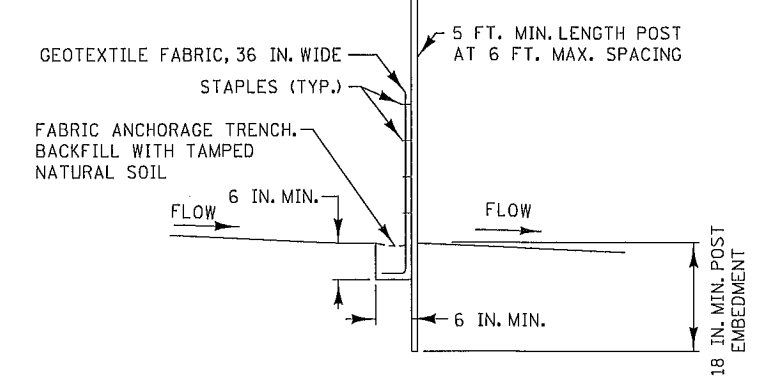
SILT FENCE TYPE HI ②
(HAND INSTALLED)



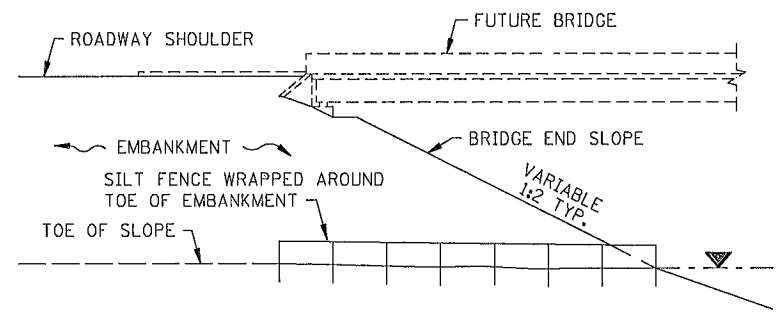
OPTIONAL METHOD



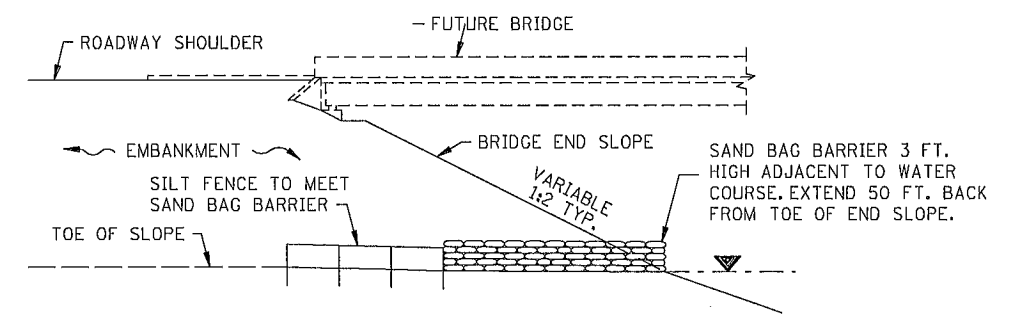
SILT FENCE TYPE MS ②
(MACHINE SLICED)



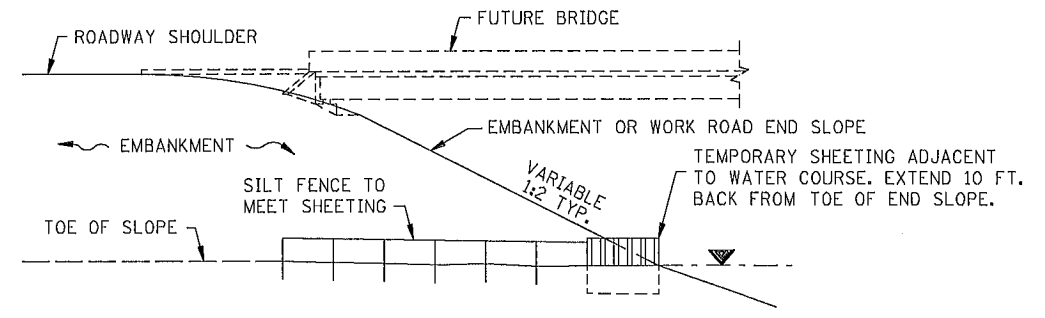
SILT FENCE TYPE PA ③
(PREASSEMBLED)



SILT FENCE ONLY ④

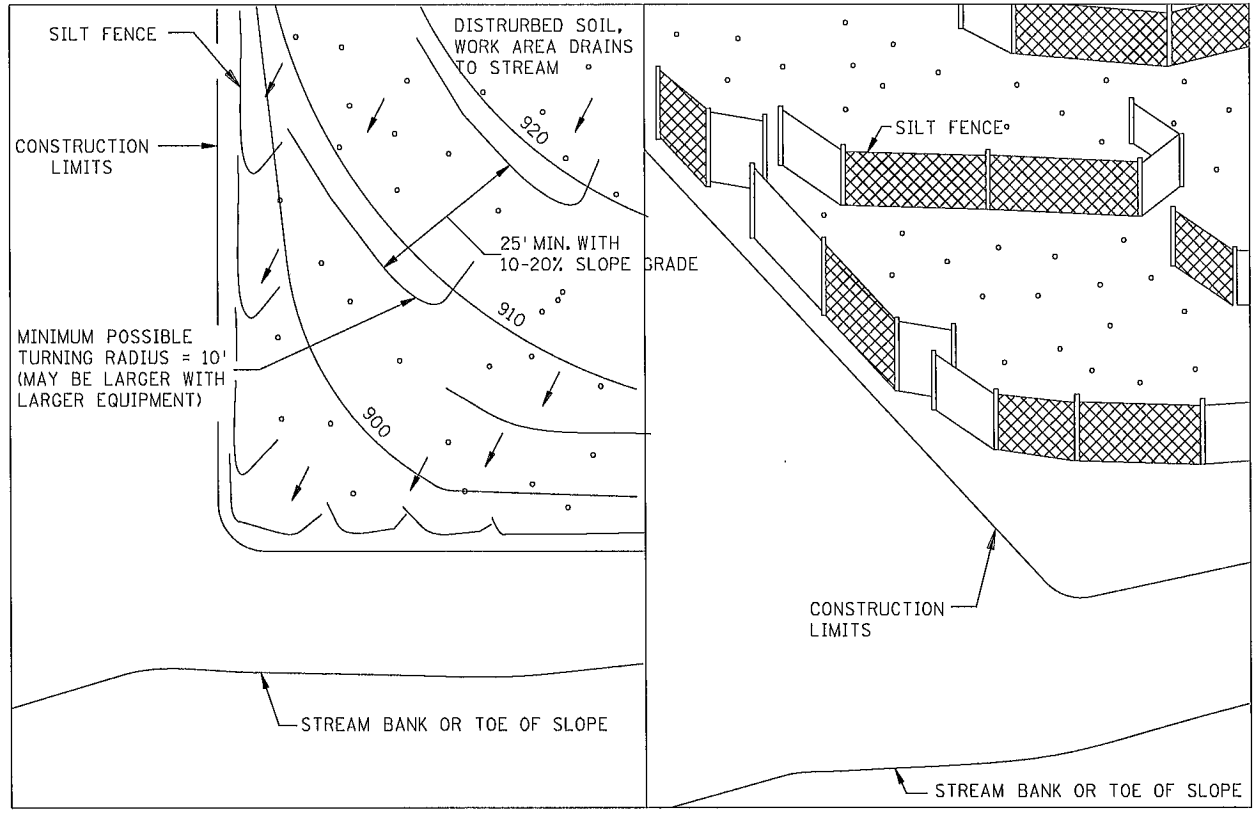


SILT FENCE WITH SAND BAGS ⑤



SILT FENCE WITH SHEETING ⑥

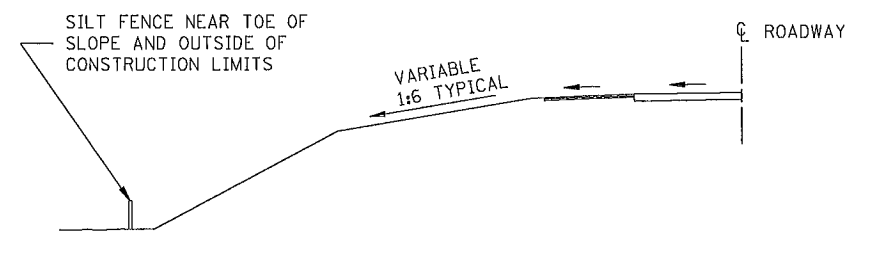
INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER



PLAN VIEW

PERSPECTIVE VIEW

J-HOOK INSTALLATION



LOCATION AT TOE OF ROADWAY EMBANKMENT

NOTES:

- SEE SPECS. 2573, 3149 & 3886.
- ① COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.
- ② TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 1 ACRE.
- ③ TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 0.25 ACRE.
- ④ WATER COURSE FLOW VELOCITY: STANDING. CONTRIBUTING SLOPE AREA: 1/2 ACRE.
- ⑤ WATER COURSE FLOW VELOCITY: 1 TO 7 FT./SEC. CONTRIBUTING SLOPE AREA: 1 ACRE.
- ⑥ WATER COURSE FLOW VELOCITY: 8 TO 15 FT./SEC. CONTRIBUTING SLOPE AREA: 3 ACRES.

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DEPARTMENT OF TRANSPORTATION

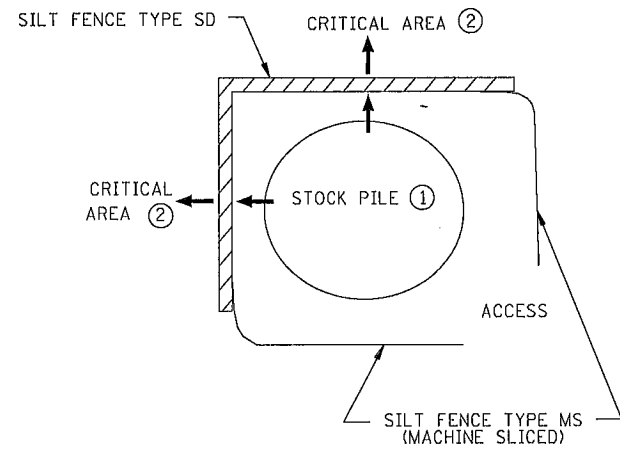
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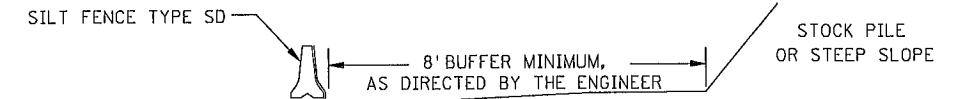
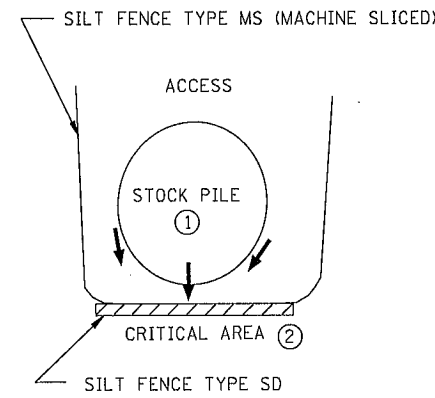
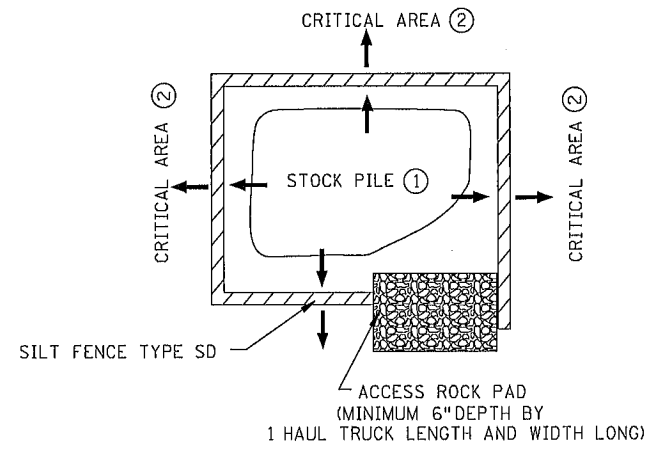
TEMPORARY SEDIMENT CONTROL
 SILT FENCE
 STANDARD PLAN 5-297.405 6 OF 8
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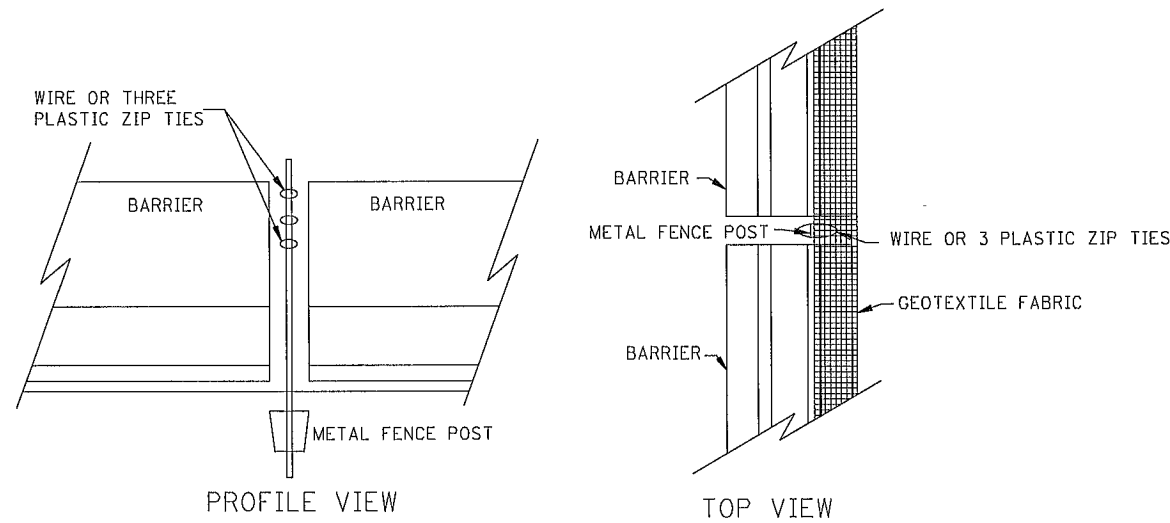
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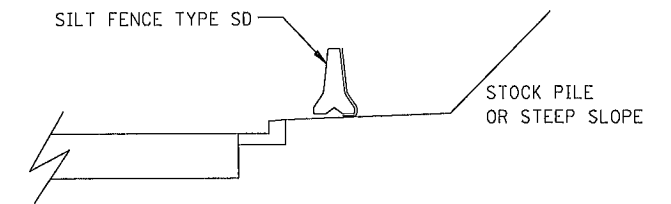
STOCK PILE CONTAINMENT



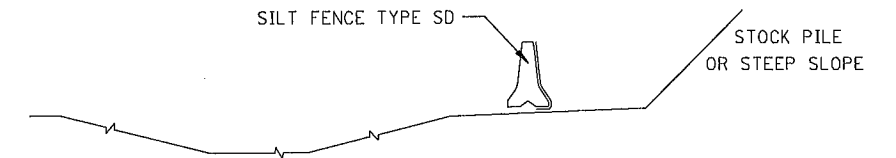
STOCKPILE SEDIMENT CONTROL



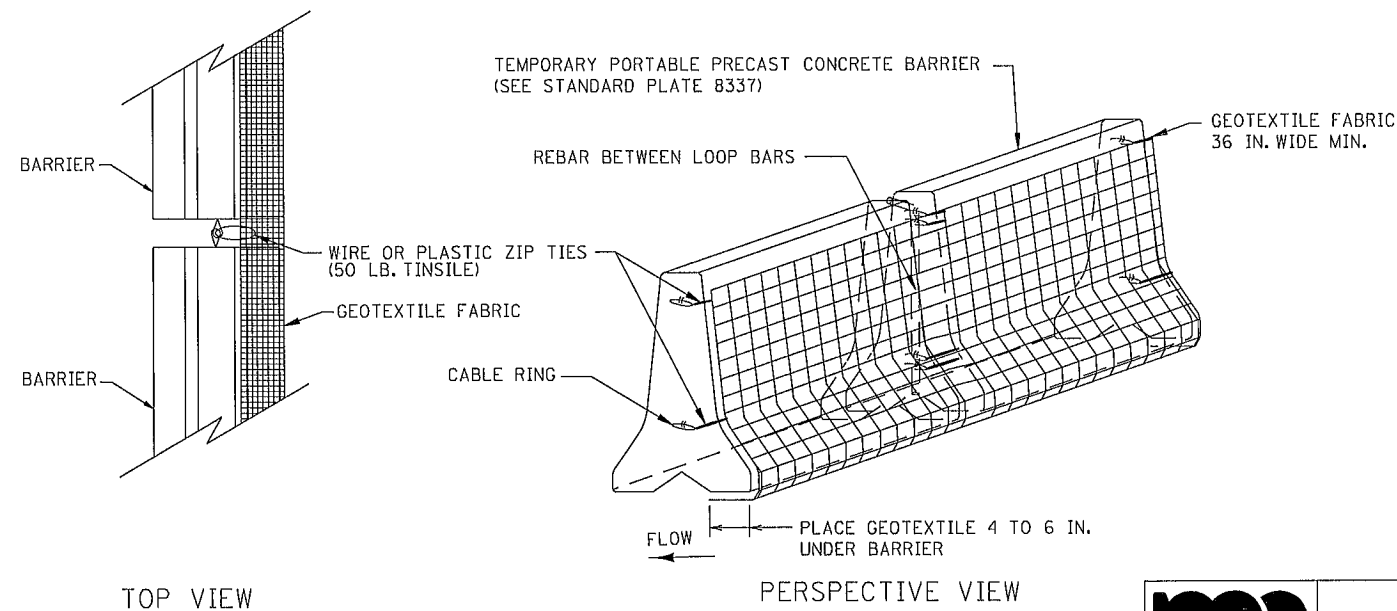
SILT FENCE TYPE SD (SUPER DUTY) BARRIER WITHOUT LOOP BARS



CURB AND GUTTER PROTECTION SYSTEM



DITCH PROTECTION SYSTEM



SILT FENCE TYPE SD (SUPER DUTY) BARRIER WITH LOOP BARS

NOTES:

SEE SPECS. 2533, 2573 & 3886.

SILT FENCE TYPE SD USED TO PROTECT CRITICAL AREAS FROM SHEET FLOW, AND AREAS WHERE OTHER SILT FENCES CANNOT BE PLACED. MAXIMUM CONTRIBUTING AREA: 1 ACRE.

PLACE SILT FENCE TYPE SD ALONG A CONSTANT ELEVATION.

SILT FENCE TYPE SD CAN UTILIZE EITHER A CONCRETE, OR WATER FILLED, TEMPORARY MEDIAN BARRIER.

① PLACING STOCK PILES NEXT TO AN ENVIRONMENTALLY SENSITIVE AREA IS NOT RECOMMENDED. WHEN THERE ARE NO FEASIBLE ALTERNATIVES, PLACE SILT FENCE SD AS SHOWN OR AS DIRECTED BY THE ENGINEER.

② CRITICAL AREAS INCLUDE WETLANDS, JUDICIAL DITCHES, STREAMS, WATER BODIES, AND OTHER AREAS REQUIRING PROTECTION.



Tom Jha
 STATE DESIGN ENGINEER

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TEMPORARY SEDIMENT CONTROL
 SUPER DUTY SILT FENCE

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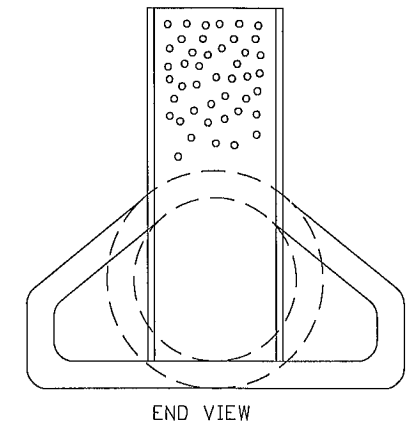
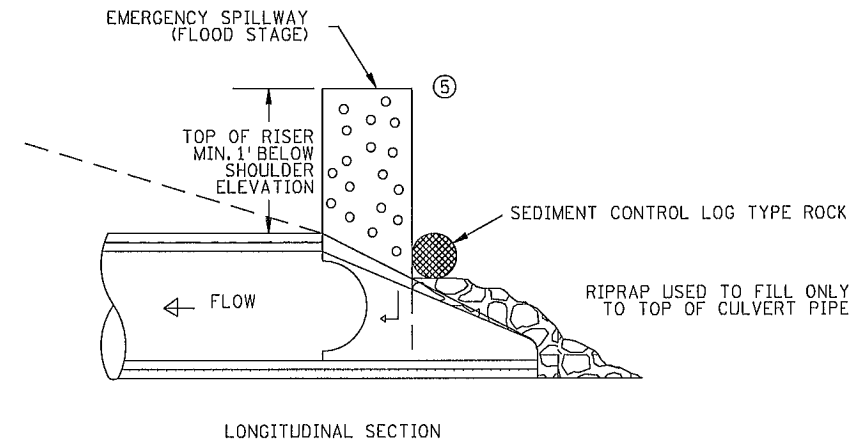
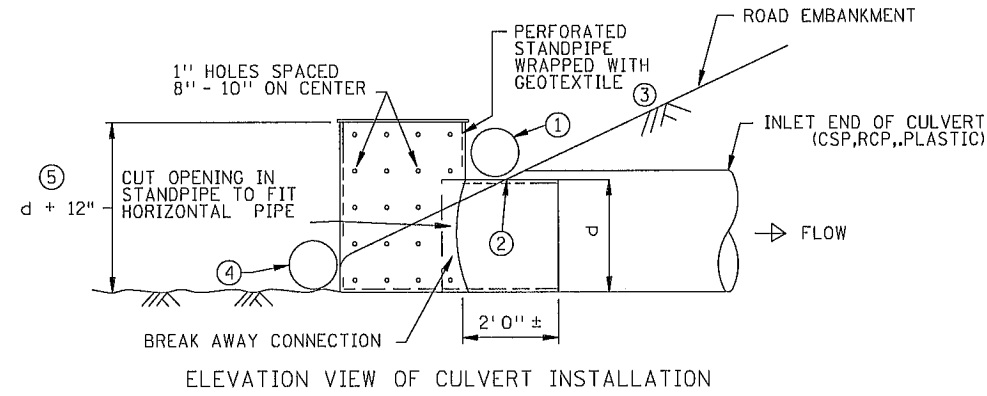
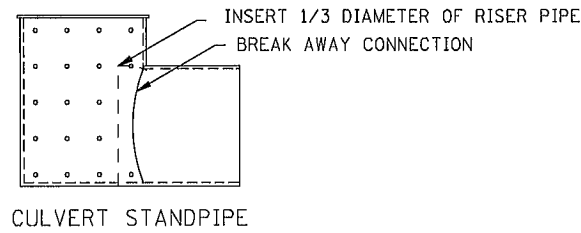
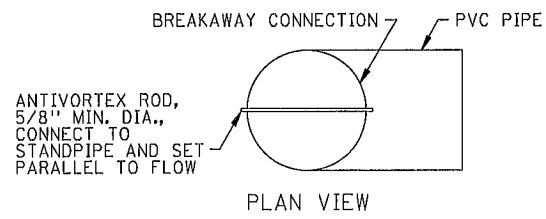
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REVISION:
 APPROVED: 2-28-2017
 Chief Environmental Officer

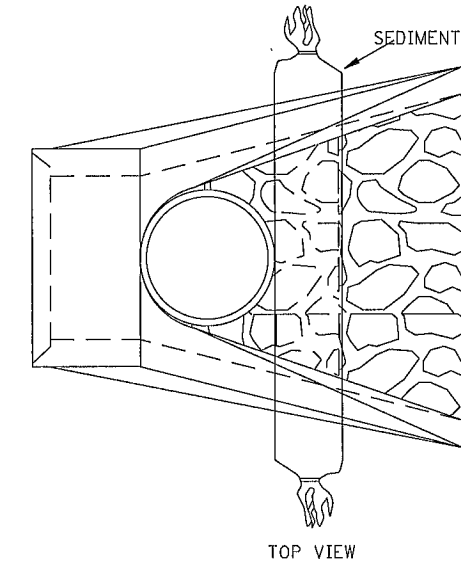
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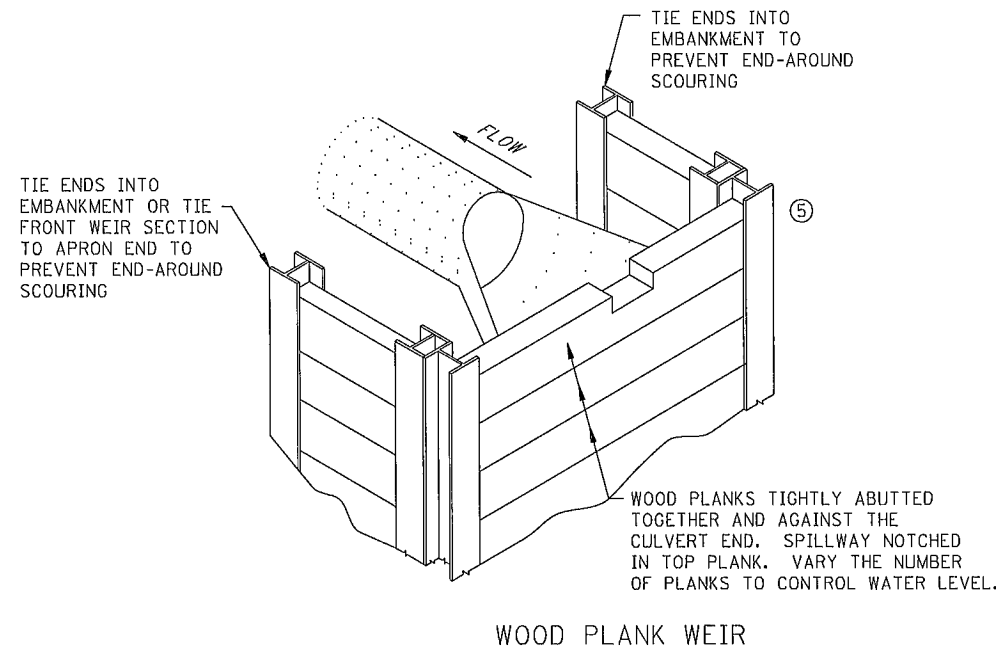
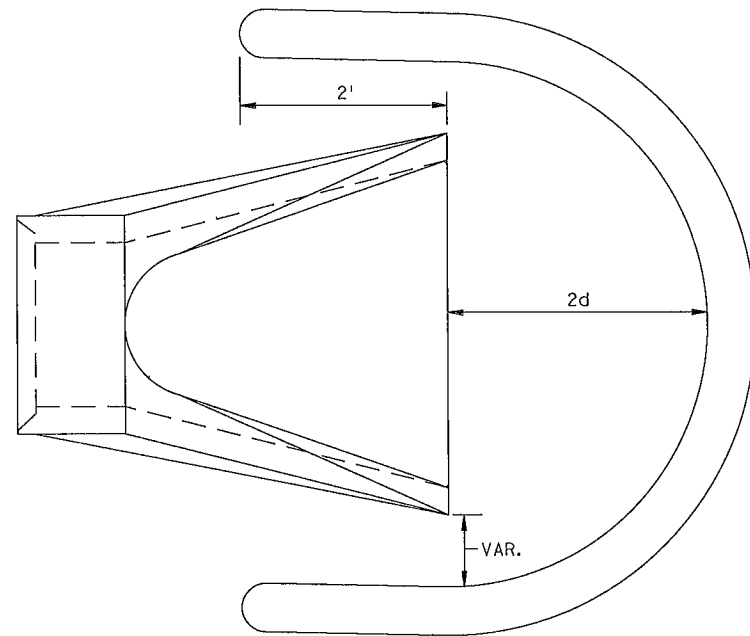


CULVERT STANDPIPE INSERT (D-RISER)

d = CULVERT SIZE: 12" - 36"



CULVERT STANDPIPE INSERT (D-RISER)



NOTES:

- SEE SPECS. 2573, 3891 & 3893.
- FOR USE WHEN TEMPORARY PONDING IS NEEDED IN DITCH SECTIONS FOR SEDIMENT CONTROL.
- MANUFACTURED ALTERNATIVES LISTED ON MnDOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED AT NO ADDITIONAL COST.
- ① ROCK LOG OR SANDBAG TO HOLD STANDPIPE AND ACT AS A SEAL BETWEEN RISER PIPE AND CULVERT.
- ② PLACE CULVERT APRON AND SLIDE TEMPORARY STANDPIPE INTO CSP OR RCP CULVERT.
- ③ ALL GEOTEXTILE USED FOR CULVERT PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886 FOR MACHINE SLICED.
- ④ ROCK LOG OR RIP RAP TO HOLD STANDPIPE AND ACT AS A FILTER BETWEEN RISER PIPE AND CULVERT.
- ⑤ HEIGHT OVERFLOW NOT TO CAUSE FLOODING OF ROAD OR ADJACENT PROPERTIES.

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Chief Environmental Officer

MINNESOTA
DEPARTMENT OF TRANSPORTATION

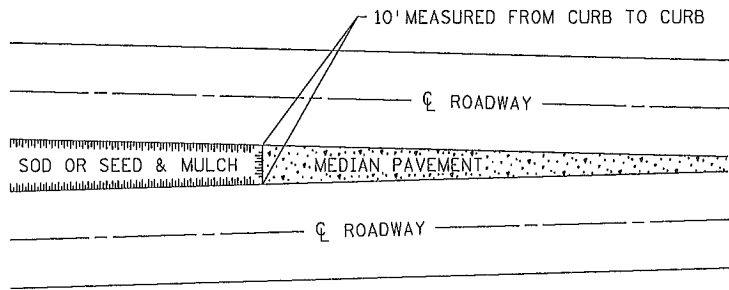
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STATE DESIGN ENGINEER

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2-28-2017

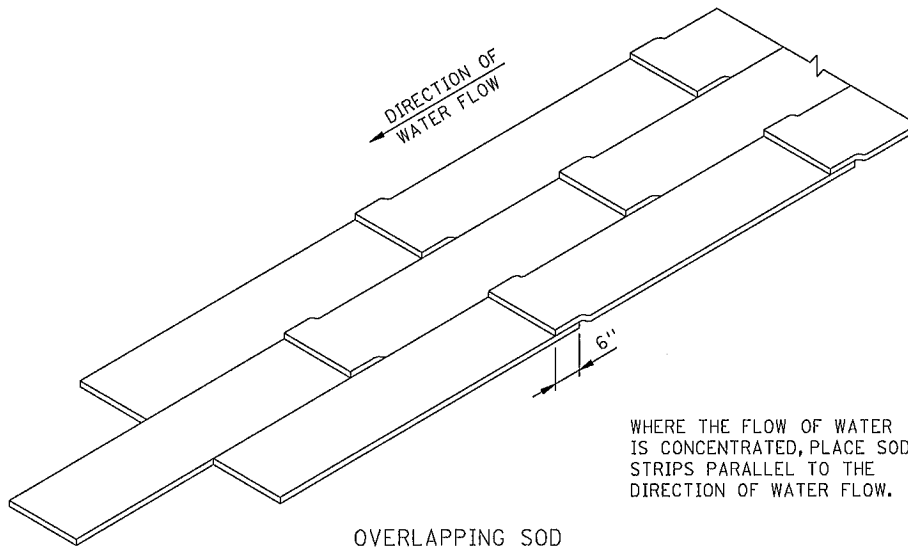
TEMPORARY SEDIMENT CONTROL
CULVERT END CONTROLS

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SHEET 86 OF 134

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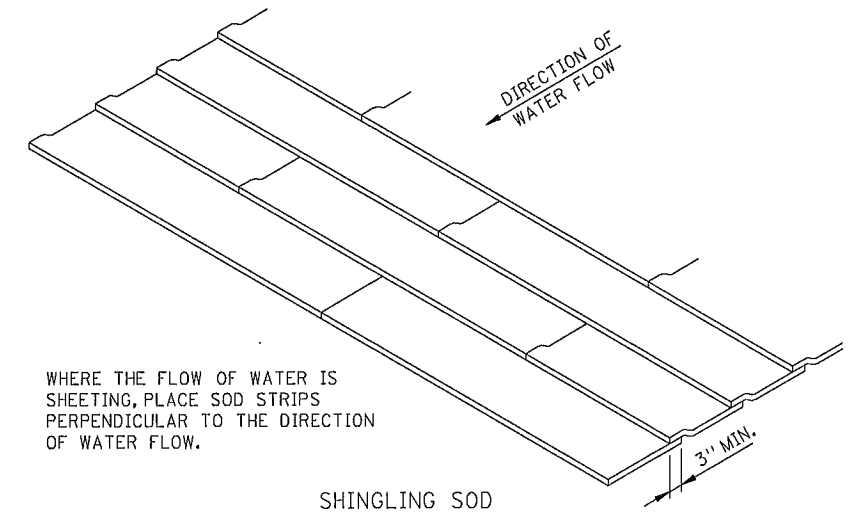


SODDING LIMITS AT GORE AREA



OVERLAPPING SOD

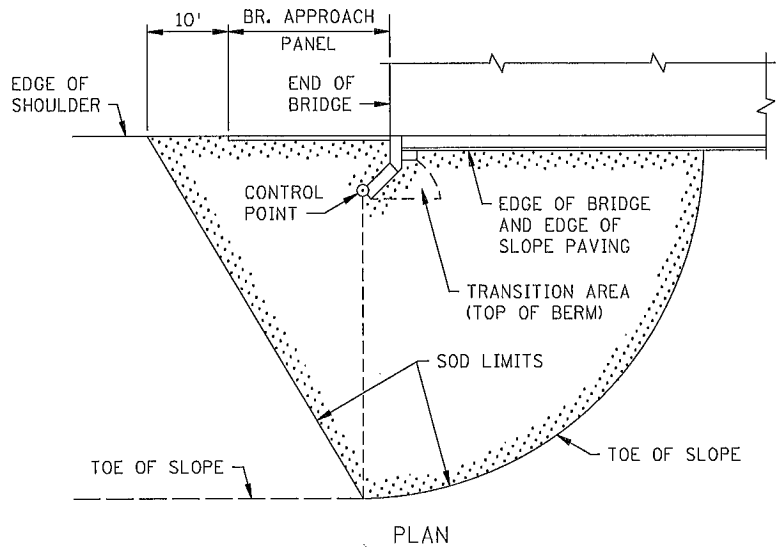
WHERE THE FLOW OF WATER IS CONCENTRATED, PLACE SOD STRIPS PARALLEL TO THE DIRECTION OF WATER FLOW.



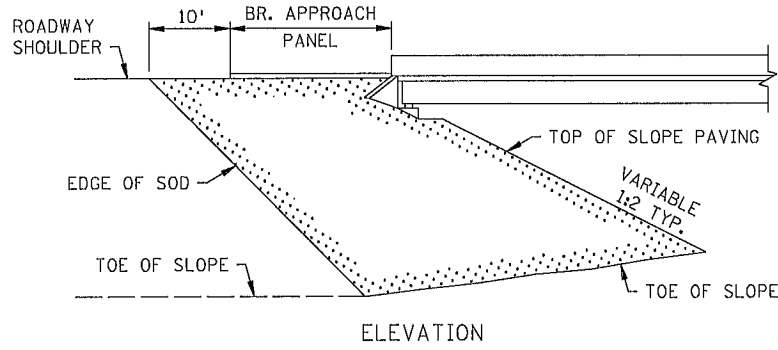
SHINGLING SOD

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

SPECIAL SOD PLACEMENT TECHNIQUES

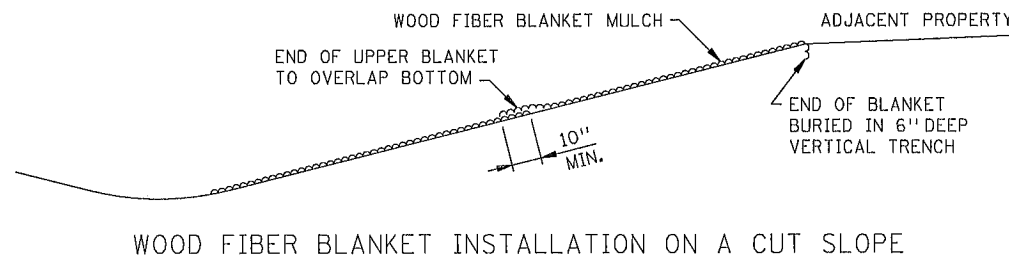


PLAN

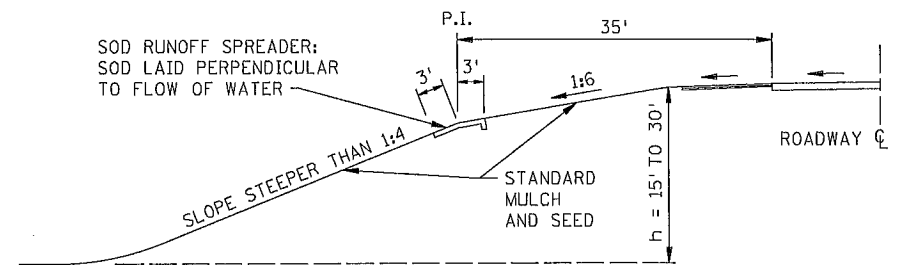


ELEVATION

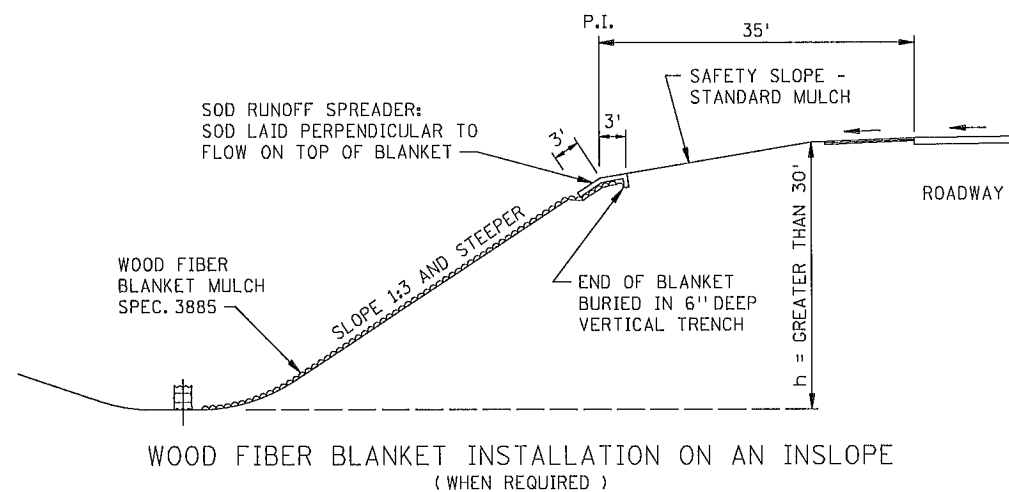
SODDING LIMITS AT BRIDGE APPROACH FILLS



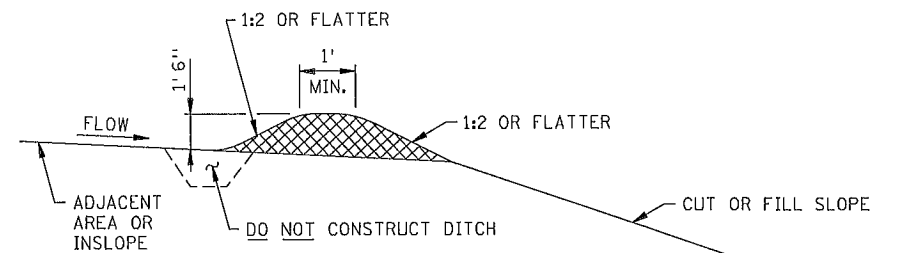
WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE



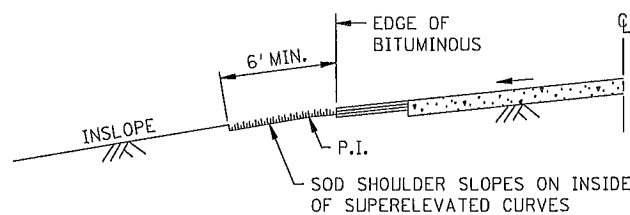
BROKEN-BACK SAFETY FILL SLOPE



WOOD FIBER BLANKET INSTALLATION ON AN INSLOPE (WHEN REQUIRED)



PERMANENT SLOPE PROTECTION DIKE



SODDING INSLOPES OF SUPERELEVATED CURVES

DISTRICT #: USER NAME: jrbernal PATH & FILENAME: P:\02-623-18\Plan\0262318_EC_P2.dgn

REVISION:
APPROVED: 8-6-2014
[Signature]
CHIEF ENVIRONMENTAL OFFICER

REVISOR:
APPROVED: 8-6-2014
[Signature]
STATE DESIGN ENGINEER

PERMANENT SEDIMENT CONTROL
ALONG ROADWAYS AND AT GORE AREAS & BRIDGE APPROACH FILLS
STANDARD PLAN 5-297.406 1 OF 1
SAP 002-623-018 CP 2017-7
SHEET 87 OF 134

PERMANENT PAVEMENT MARKING PLAN
NOTES AND GUIDELINES

GENERAL INFORMATION:

THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULTATION AND INSPECTION. ANOKA COUNTY HIGHWAY DEPARTMENT 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 1/4 INCH UNDER OR 1/4 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 THE 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.

MULTI COMP:

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

AN MULTI COMP 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 FAHRENHEIT OR GREATER.

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

PREFORMED THERMOPLASTIC:

THE PREFORMED THERMOPLASTIC MARKINGS SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS ON CLEAN AND DRY SURFACES. SEE SPECIAL PROVISIONS FOR PREFORMED THERMOPLASTIC MARKING SPECIFICATIONS.

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 A TEMPORARY MARKING, PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR TEMPERATURE IS 50 DEGREES FARHENHEIT OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILM OR 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.

P PAVEMENT MARKING TABULATION		
ITEM	UNIT	TOTAL QUANTITY
4" SOLID LINE WHITE - MULTI COMP	LIN FT	3477
4" SOLID LINE YELLOW - MULTI COMP	LIN FT	1396
4" SOLID DOUBLE LINE YELLOW - MULTI COMP	LIN FT	1485
24" SOLID LINE YELLOW - PREFORMED THERMOPLASTIC	LIN FT	133
24" SOLID LINE WHITE - PREFORMED THERMOPLASTIC	LIN FT	24
PAVEMENT MESSAGE (LT ARROW) - PREFORMED THERMOPLASTIC	SQ FT	30
4" SOLID LINE WHITE - PREFORMED THERMOPLASTIC GR IN	LIN FT	93
4" SOLID LINE YELLOW - PREFORMED THERMOPLASTIC GR IN	LIN FT	184
8" BROKEN LINE WHITE PREFORMED THERMOPLASTIC GR IN (1)	LIN FT	80
3'x6' ZEBRA CROSSWALK - PREFORMED THERMOPLASTIC GR IN	SQ FT	432

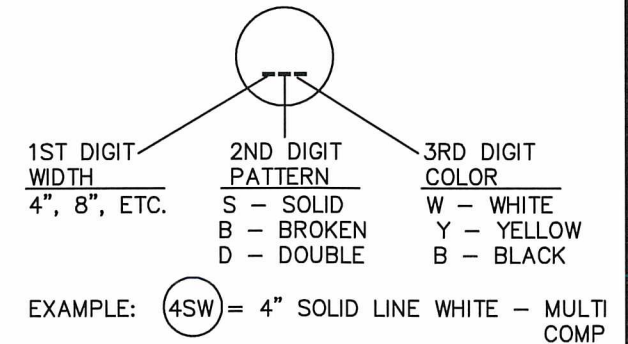
NOTE (1) 3' STRIPE, 3' SKIP

SYMBOLS & MATERIALS LEGEND

- CROSSWALK BLOCK WHITE PREFORMED THERMOPLASTIC
- ← PAVEMENT MESSAGE (LEFT ARROW) PREFORMED THERMOPLASTIC

STRIPING KEY

- CIRCLE - MULTI COMP
- SQUARE - POLY PREFORM
- △ TRIANGLE - PAINT
- ⬠ PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-654-003\Base\Traffic\Perm pvmt mrlg guide notes_guidelines.dwg

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.

PRINT NAME: DOUGLAS W. FISCHER, P.E.

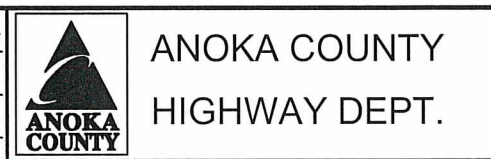
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DATE: 2/19/18 LICENSE NO. 20235

DRAWN BY: TMV DATE 07/11/17

DESIGN BY: _____ DATE _____

CHECKED BY: _____ DATE _____

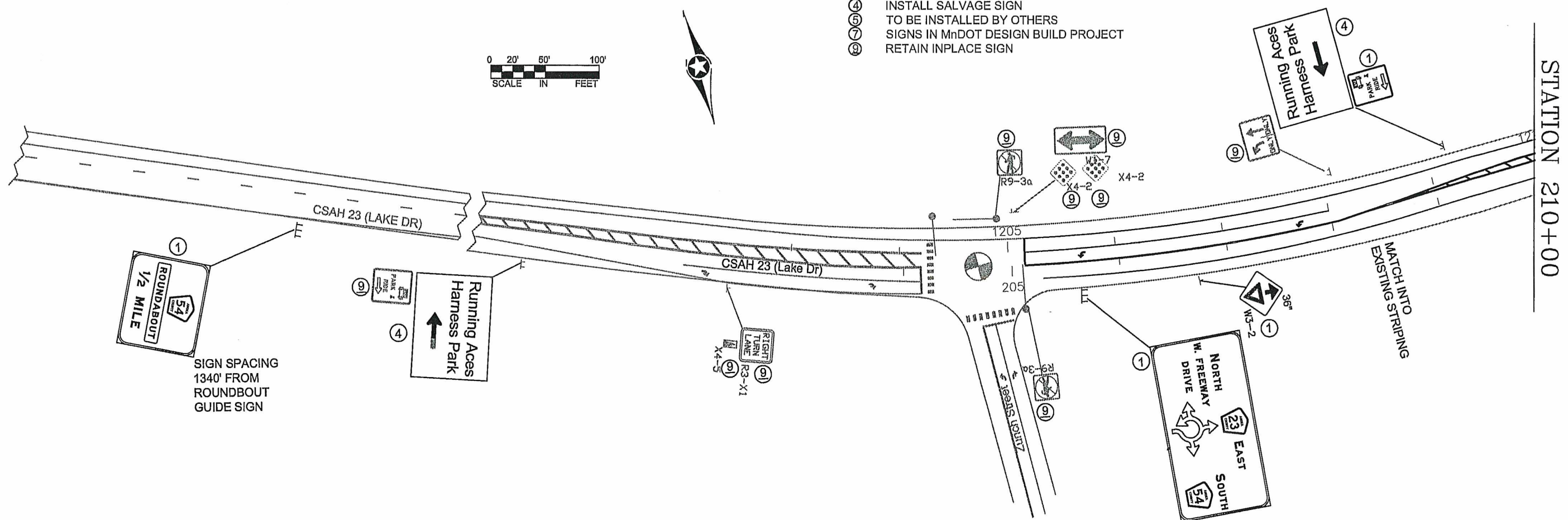
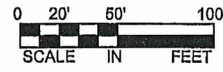


SAP 002-623-018
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**PERMANENT MARKING
TABULATION**

Sheet 88 of 134 Sheets

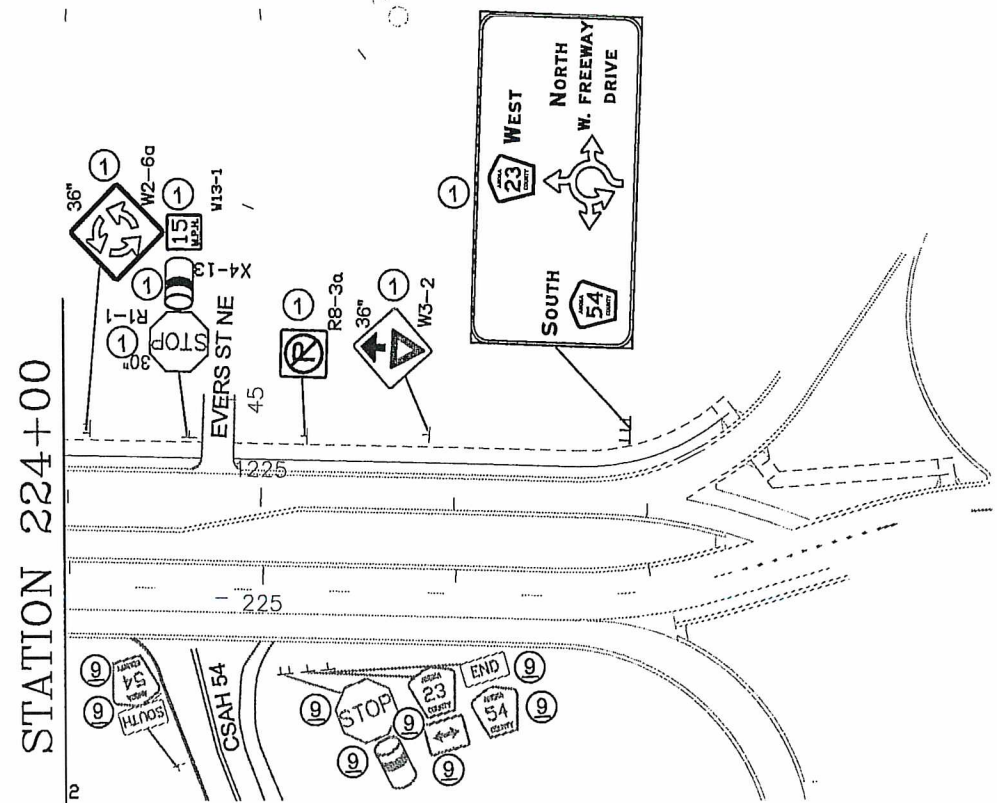
- NOTES:
- ① FURNISH & INSTALL
 - ④ INSTALL SALVAGE SIGN TO BE INSTALLED BY OTHERS
 - ⑤ TO BE INSTALLED BY OTHERS
 - ⑦ SIGNS IN MnDOT DESIGN BUILD PROJECT
 - ⑨ RETAIN INPLACE SIGN



SIGN SPACING
1340' FROM
ROUNDBOUT
GUIDE SIGN

PERMANENT SIGNING & STRIPING NOTES :

- 1. PERMANENT SIGNING & STRIPING ON CSAH 23, EAST OF STATION 1221+70 SHALL BE PERFORMED UNDER MnDOT DESIGN BUILD PROJECT.



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

PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE: *[Signature]*
DATE: 6/27/18 REG. NO. 28235

DRAWN BY: TMV DATE: 03/20/18
DESIGN BY: DATE:
CHECKED BY: DATE:



ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-654-003
SAP 002-623-018
CP 2017 -7

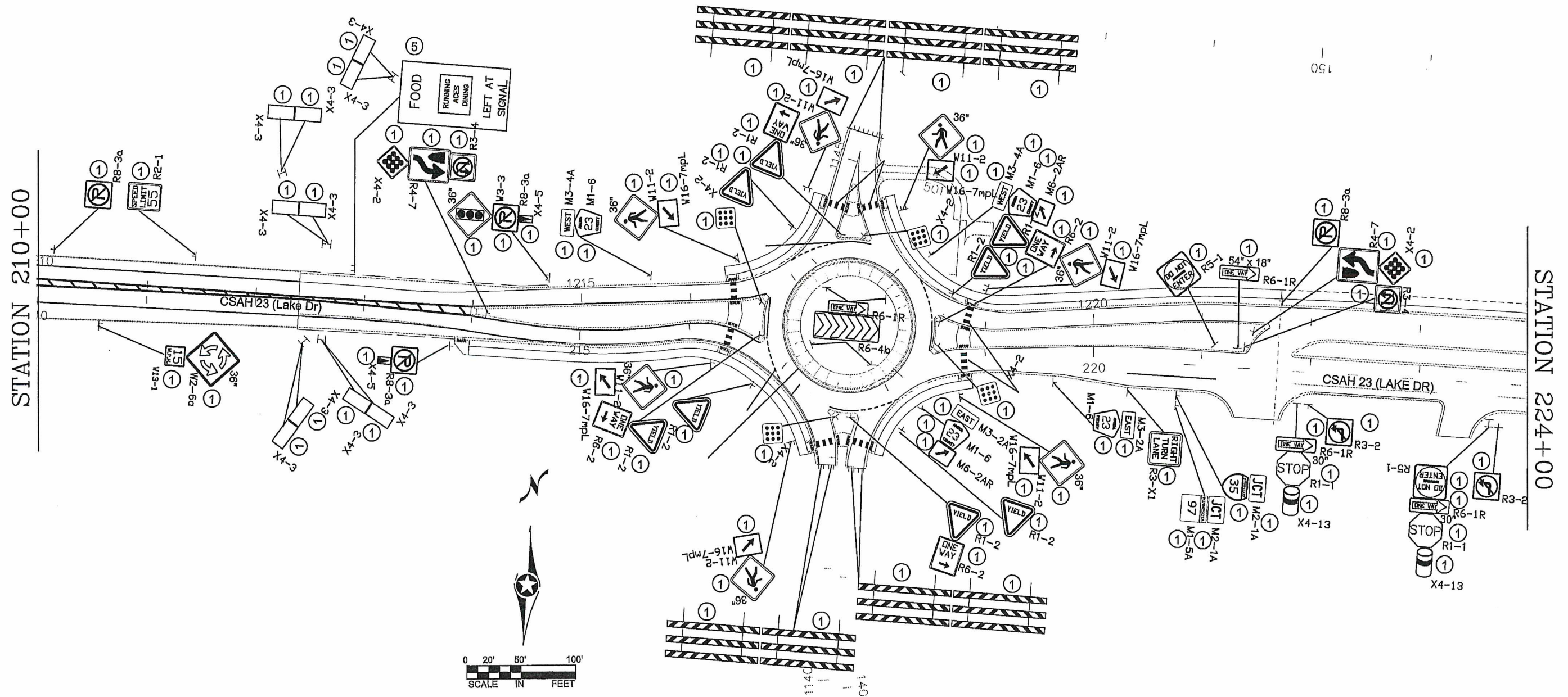
PERMANENT
SIGNING PLAN

NO	DATE	BY	CKD	APPR	REVISION

- NOTES:
- ① FURNISH & INSTALL
 - ④ INSTALL SALVAGE SIGN
 - ⑥ TO BE INSTALLED BY OTHERS
 - ⑦ SIGNS IN MnDOT DESIGN BUILD PROJECT
 - ⑨ RETAIN INPLACE SIGN

PERMANENT SIGNING & STRIPING NOTES :

- 1. PERMANENT SIGNING & STRIPING ON CSAH 23, EAST OF STATION 1221+70 SHALL BE PERFORMED UNDER MnDOT DESIGN BUILD PROJECT.



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 PRINT NAME: DOUGLAS W. FISCHER, P.E.
 SIGNATURE: *[Signature]*
 DATE: 2/12/18 REG. NO. 20235

DRAWN BY: TMV DATE: 03/20/18
 DESIGN BY: DATE: _____
 CHECKED BY: DATE: _____



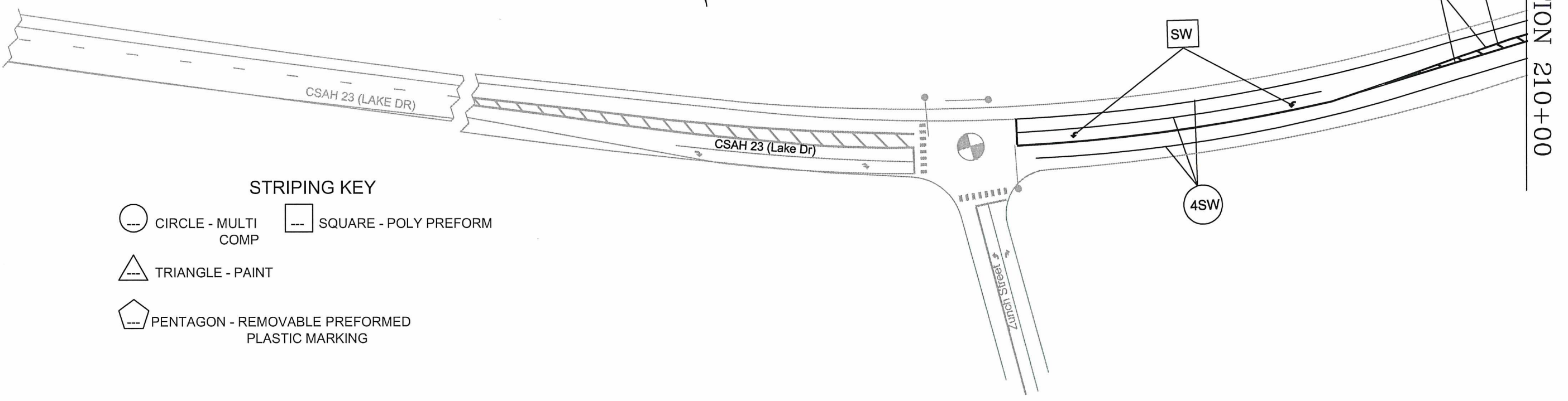
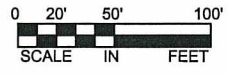
ANOKA COUNTY
 HIGHWAY DEPT.

SAP 002-654-003
 SAP 002-623-018
 CP 2017 -7

PERMANENT
 SIGNING PLAN
 Sheet 90 of 134 Sheets

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-654-003\Bases\Traffic\Perm S&S.dwg

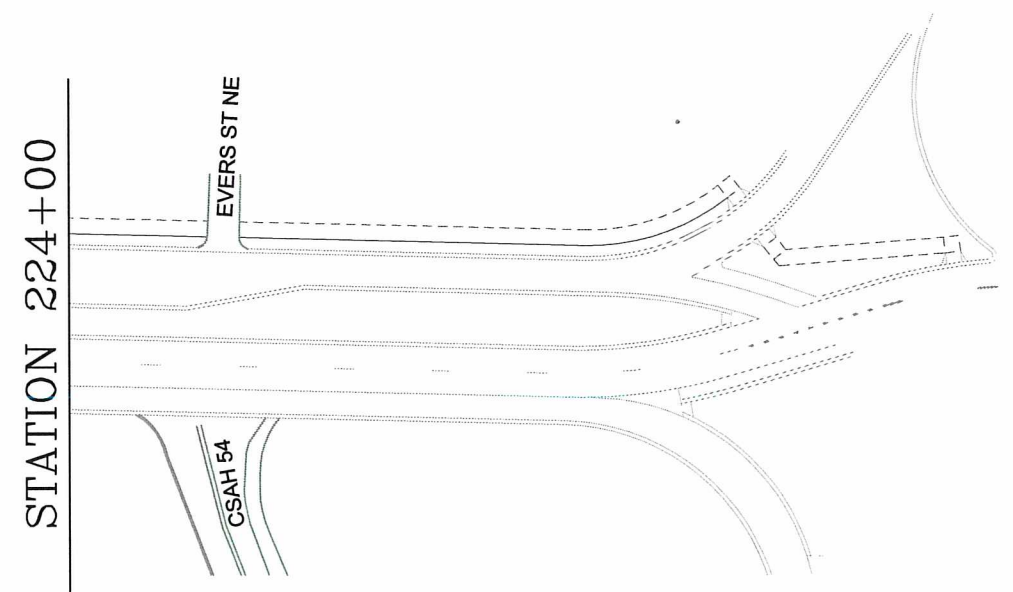


STRIPING KEY

- CIRCLE - MULTI COMP
- SQUARE - POLY PREFORM
- TRIANGLE - PAINT
- PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

PERMANENT SIGNING & STRIPING NOTES :

1. PERMANENT SIGNING & STRIPING ON CSAH 23, EAST OF STATION 1221+70 SHALL BE PERFORMED UNDER MnDOT DESIGN BUILD PROJECT.
2. ALL PAVEMENT MARKINGS INSIDE & INCLUDING THE CROSSWALKS OF THE ROUNDABOUT SHALL BE PERFORMED THERMOPLASTIC GROUND IN.



NO	DATE	BY	CKD	APPR	REVISION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 PRINT NAME: DOUGLAS W. FISCHER, P.E.
 SIGNATURE:
 DATE: 6/19/18 REG. NO. 20235

DRAWN BY: TMV DATE: 03/20/18
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 CHECKED BY: DATE:







ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-654-003
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 CP 2017 -7

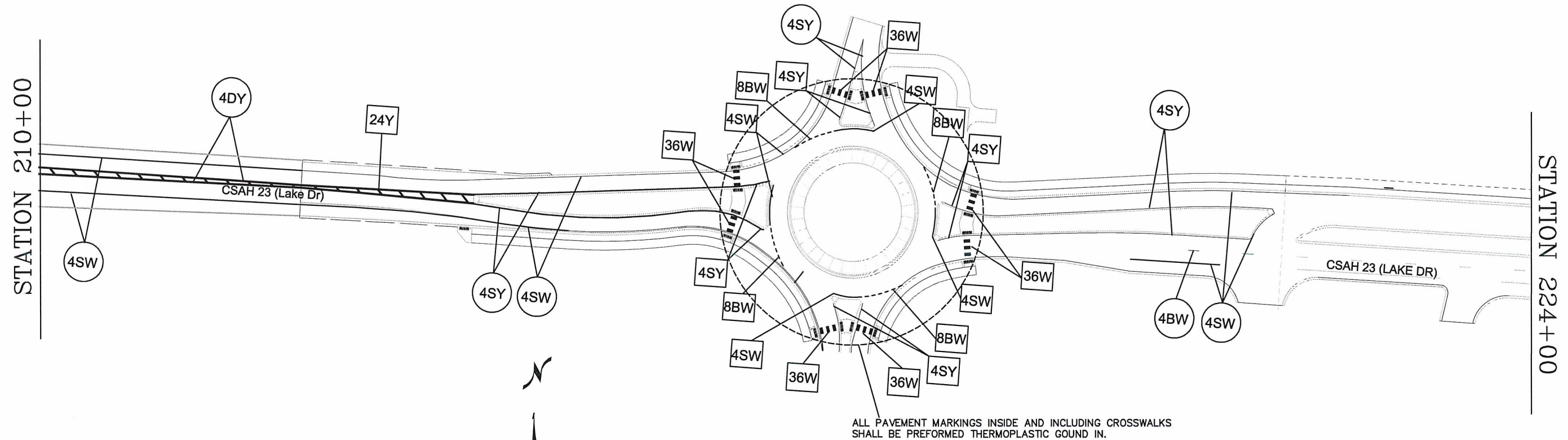
PERMANENT STRIPING PLAN
 Sheet 91 of 134 Sheets

STRIPING KEY

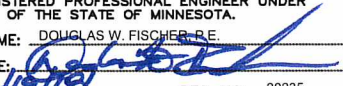
-  CIRCLE - MULTI COMP
-  SQUARE - POLY PREFORM
-  TRIANGLE - PAINT
-  PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

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 PRINT NAME: DOUGLAS W. FISCHER, P.E.
 SIGNATURE: 
 DATE: 4/19/18 REG. NO. 20235

DRAWN BY: TMV DATE: 03/20/18
 DESIGN BY: DATE: _____
 CHECKED BY: DATE: _____



ANOKA COUNTY
 HIGHWAY DEPT.

SAP 002-654-003
 SAP 002-623-018
 CP 2017 -7

PERMANENT
 STRIPING PLAN

SIGN PANELS TYPE C							
M.U.T.C.D. CODE	SIZE	INSERT	QUANTITY	PANEL AREA	TOTAL AREA	MOUNTING POST PER INSTALLATION	MOUNTING HEIGHT To pavement edge
				SQ. FT.	SQ. FT.		
R5-1	30" x 30"		1	6.25	6.25		
R6-1R	36" x 12"		2	3.00	6.00		
R1-1	30" x 30"		3	6.25	18.75	1	7.0'
X4-13	4" diameter x 15"		3	0.42	1.26		
R1-2	36"x 36"x 36"		8	4.50	36.00	2	7.0'
R6-2	24" x 30"		4	5.00	20.00		
R2-1	24" x 30"		1	5.00	5.00	1	7.0'
R3-X1	30" x 30"		1	6.25	6.25	1	7.0'
R3-2	24" x 24"		2	4.00	8.00	1	7.0'
R3-4	24" x 24"		1	4.00	4.00	1	7.0'
R4-7	24" x 30"		2	5.00	10.00		
X4-2	18" x 18"		2	2.25	4.50		
R5-1	30" x 30"		1	6.25	6.25	1	7.0'
R6-1R	54" x 18"		1	6.75	6.75	2	7.0'
R6-1R	36" x 12"		4	3.00	12.00	2	7.0'
R6-4	30" x 24"		4	5.00	20.00		
R8-3a	24" x 24"		5	4.00	20.00	1	7.0'
W2-6a	48" x 48"		2	16.00	32.00	2	7.0'
W13-1	30" x 30"		2	6.25	12.50		
W3-2	48" x 48"		2	16.00	32.00	2	7.0'
W11-2	36" x 36"		7	9.00	63.00	2	7.0'
W16-7mp	30" x 24"		7	5.00	35.00		

SIGN PANELS TYPE C							
M.U.T.C.D. CODE	SIZE	INSERT	QUANTITY	PANEL AREA	TOTAL AREA	MOUNTING POST PER INSTALLATION	MOUNTING HEIGHT To pavement edge
				SQ. FT.	SQ. FT.		
W3-3	36" x 36"		1	9.00	9.00	1	7.0'
W12-1	30" x 30"		1	6.25	6.25	1	7.0'
M2-1A	21" x 15"		1	2.19	2.19	1	7.0'
M1-6	24" x 24"		2	4.00	8.00		
M6-2AR	21" x 15"		1	2.19	2.19		
M3-4A	24" x 12"		2	2.00	4.00	1	7.0'
M3-2A	24" x 12"		2	2.00	4.00		
M1-6	24" x 24"		4	4.00	16.00		
M6-2AR	21" x 15"		2	2.19	4.38		
M2-1A	21" x 15"		1	2.19	2.19	1	7.0'
M1-1	24" x 24"		1	4.00	4.00		
M2-1A	21" x 15"		1	2.19	2.19	1	7.0'
M1-5b	24" x 24"		1	4.00	4.00		
TOTAL TYPE C SIGN SQ FT				433.90			

SIGN PANELS MARKERS							
M.U.T.C.D. CODE	SIZE	INSERT	QUANTITY	LINEAR FT.	MOUNTING POST PER INSTALLATION	MOUNTING HEIGHT To pavement edge	
X4-3	6" x 12"		10	0.50	5.00	1	4.0'
X4-5	6" x 12"		1	0.50	0.50		
X4-5	6" x 12"		1	0.50	0.50		
TOTAL TYPE MARKERS SQ FT				15.00			

M.U.T.C.D. CODE	SIZE	INSERT	QUANTITY	LINEAR FT.	MOUNTING POST PER INSTALLATION	MOUNTING HEIGHT To pavement edge	
PROJECT TOTAL LIN FT				64.00			

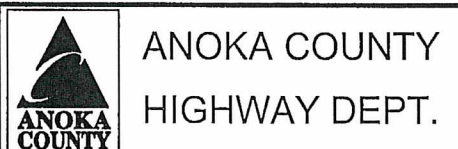
SIGN PANELS TYPE D							
M.U.T.C.D. CODE	SIZE	INSERT	QUANTITY	PANEL AREA	TOTAL AREA	MOUNTING POST PER INSTALLATION	MOUNTING HEIGHT To pavement edge
				SQ. FT.	SQ. FT.		
D4-2L	30" x 36"		1	7.50	7.50	Attach to Running Aces Sign	
D1-5	84" x 72"		1	42.00	42.00	2	7.0'
D1-5	162" x 84"		1	94.50	94.50	3	7.0'
D1-5	168" x 84"		1	98.00	98.00	3	7.0'
TOTAL TYPE D SIGN SQ FT				242.00			
PROJECT TOTAL SQ FT				690.90			
PROJECT TOTAL LIN FT				64.00			

- NOTES:
- ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE PLACED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD), INCLUDING PART VI, "FIELD MANUAL" FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".
 - LOCATIONS OF ALL PERMANENT STRIPING AND PAVEMENT MARKINGS ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - ALL MAINLINE PERMANENT STRIPING AND PAVEMENT MESSAGES SHALL BE PLACED WITHIN 72 HOURS OF MAINLINE PAVING.
 - SEE PERMANENT SIGN TABULATIONS FOR ADDITIONAL INFORMATION.
 - ALL SEGMENT STRIPE LINES SHALL BE EPOXY. PERMANENT MESSAGES AND ARROWS SHALL BE PREFORMED THERMOPLASTIC.
 - ALL SIGNS SHALL BE FURNISHED AND INSTALLED UNLESS OTHERWISE NOTED.

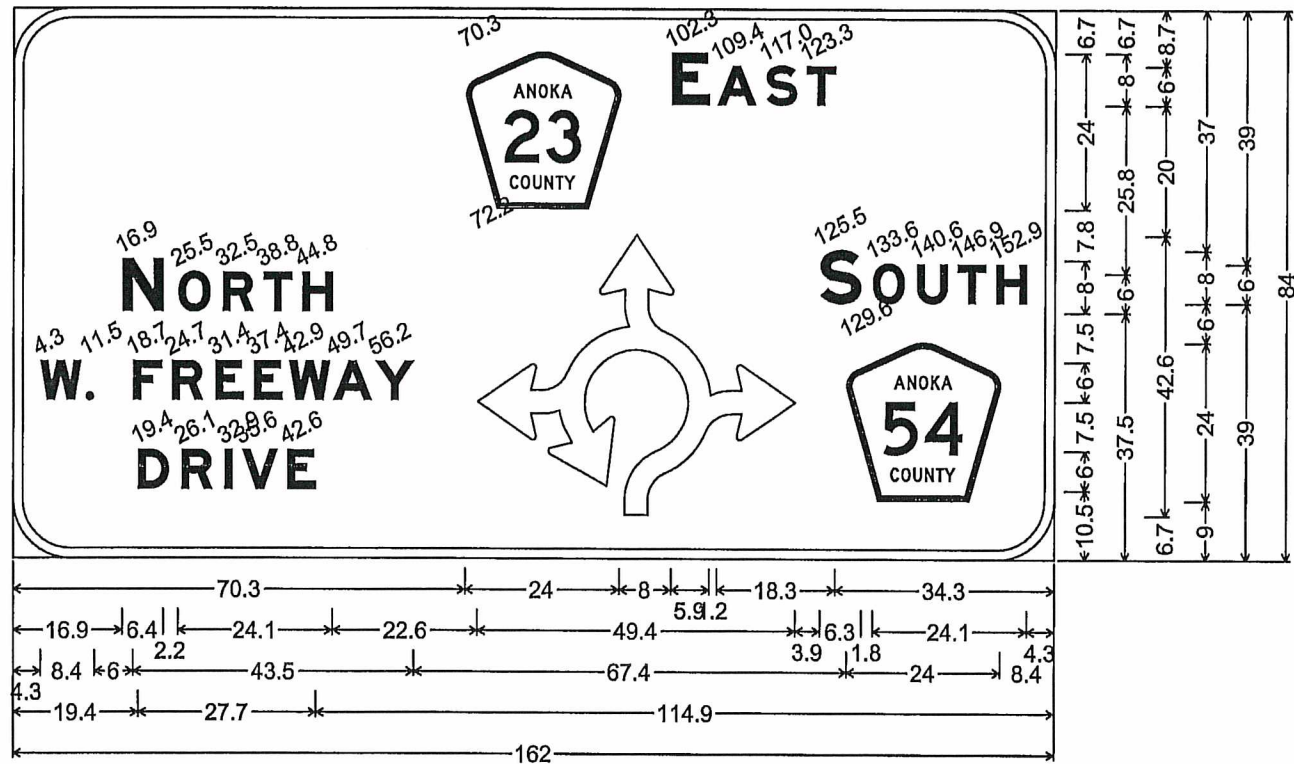
NO	DATE	BY	CKD	APPR	REVISION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 PRINT NAME: DOUGLAS W. FISCHER, P.E.
 SIGNATURE:
 DATE: 4/12/18 REG. NO. 20235

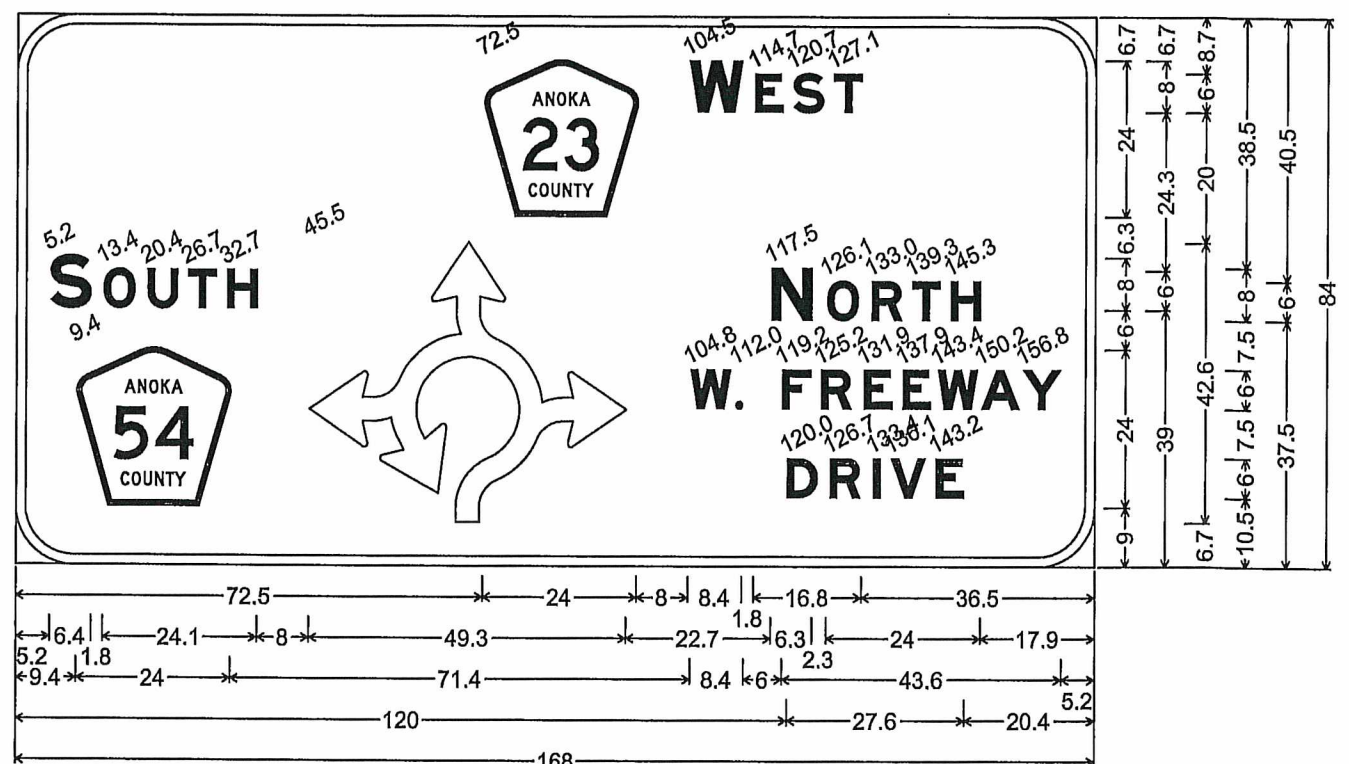
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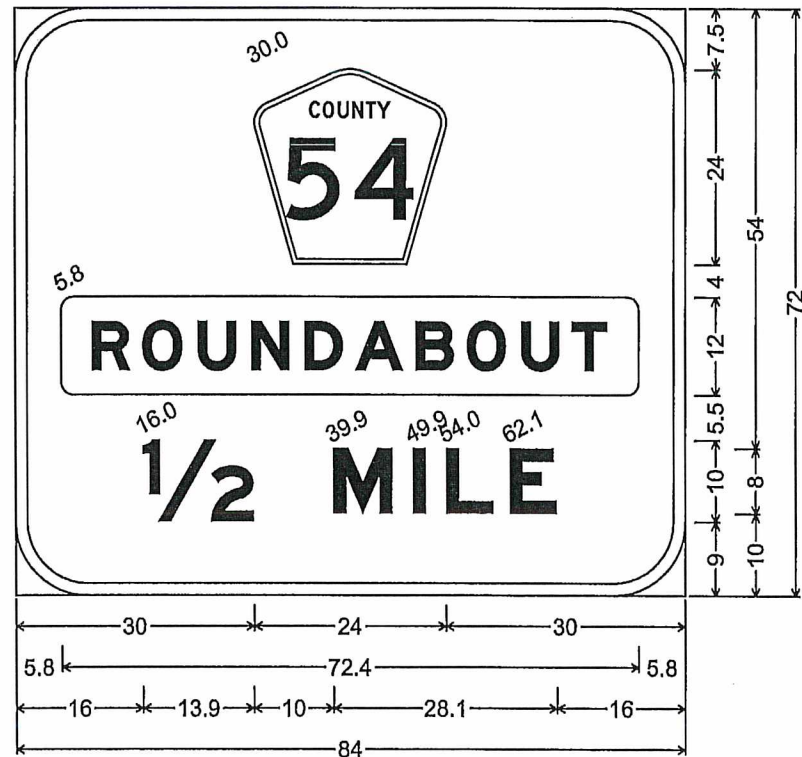
SAP 002-623-018
 CP 2017-7



9.0" Radius, 1.5" Border, White on Green;
 Pentagonal County 23 M1-6; [EAST] E Mod; [NORTH] E Mod; [W. FREEWAY] E Mod;
 [DRIVE] E Mod; RA Arrow-4hd; [SOUTH] E Mod; Pentagonal County 54 M1-6;



9.0" Radius, 1.5" Border, White on Green;
 Pentagonal County 23 M1-6; [WEST] E Mod; [SOUTH] E Mod; Pentagonal County 54 M1-6;
 RA Arrow-4hd; [NORTH] E Mod; [W. FREEWAY] E Mod; [DRIVE] E Mod;



9.0" Radius, 1.5" Border, White on Green;
 Rounded Rectangle 1.5" Radius Yellow;
 [1/2 MILE] E Mod;

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-654-003\BaselTrafficPerm S&S Quantities.dwg

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 PRINT NAME: DOUGLAS W. FISCHER, P.E.
 SIGNATURE: *[Signature]*
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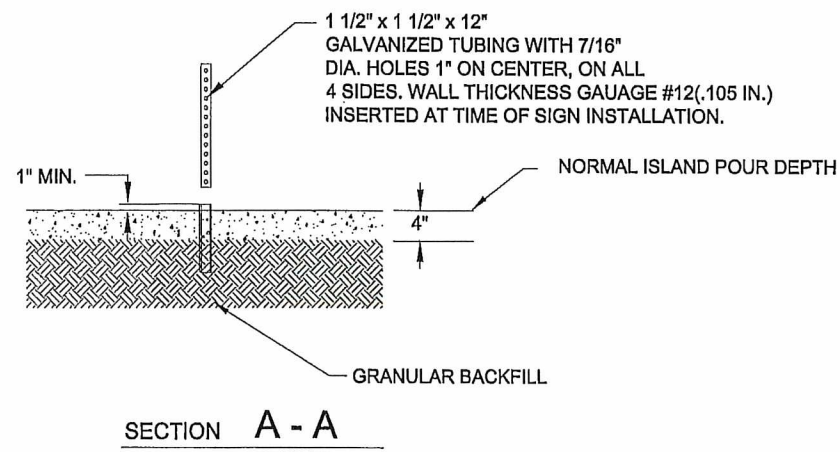
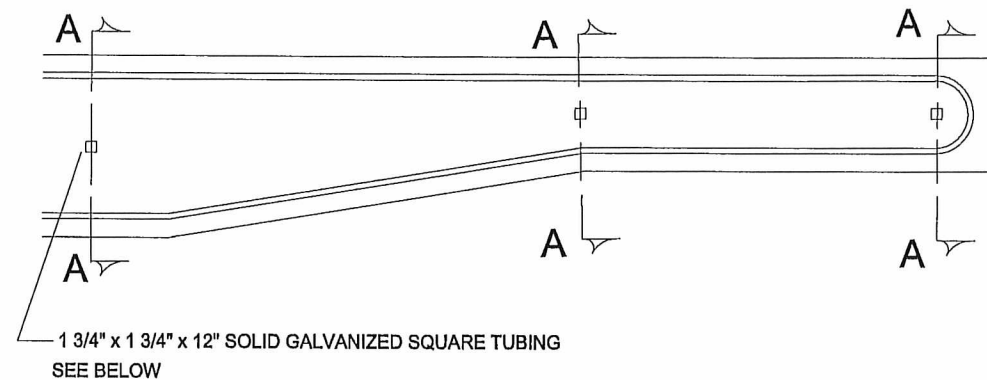
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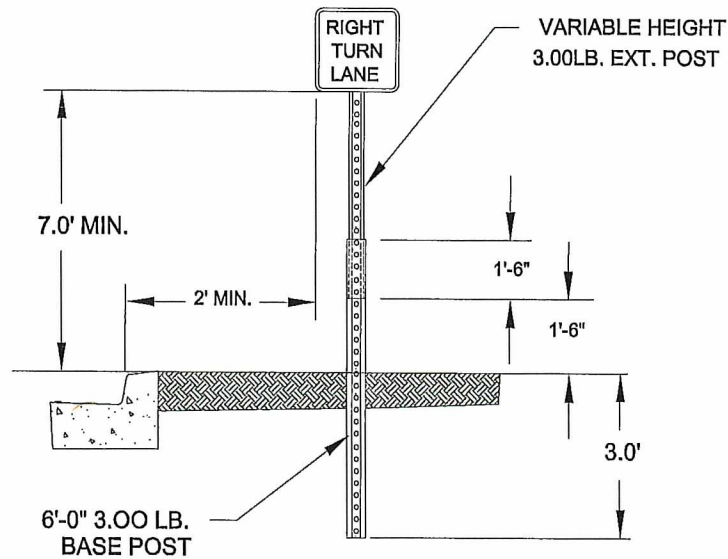
ANOKA COUNTY
 HIGHWAY DEPT.

SAP 002-623-018
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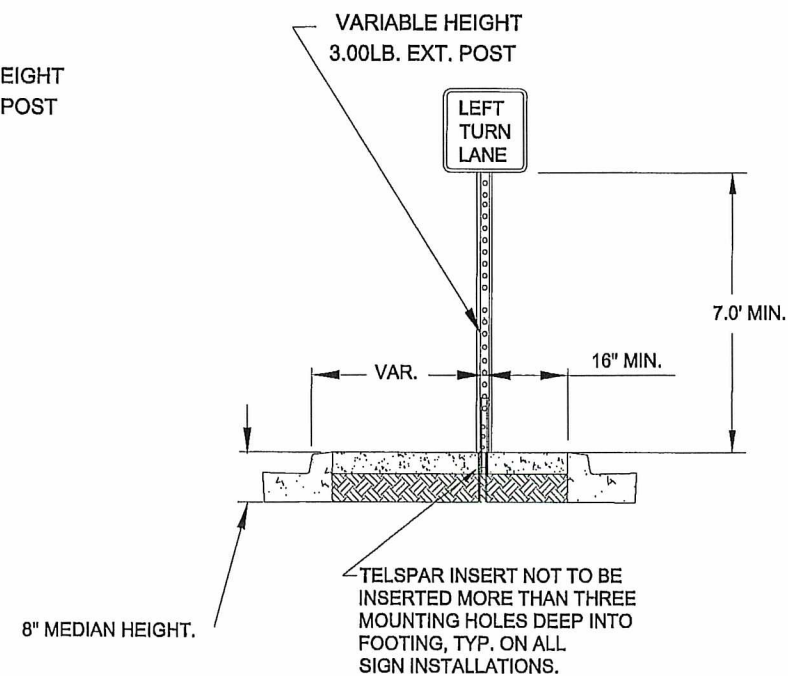
PERMANENT
 SIGNING QUANTITIES



GROUND POST MOUNT SIGN
INSTALLATION TYPICAL



ISLAND MOUNT BREAK-AWAY SIGN
INSTALLATION TYPICAL



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

PRINT NAME: DOUGLAS W. FISCHER, P.E.

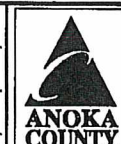
SIGNATURE: *[Signature]*

DATE: 4/27/18 REG. NO. 20235

DRAWN BY: TMV DATE 12/07/17

DESIGN BY: DATE

CHECKED BY: DATE



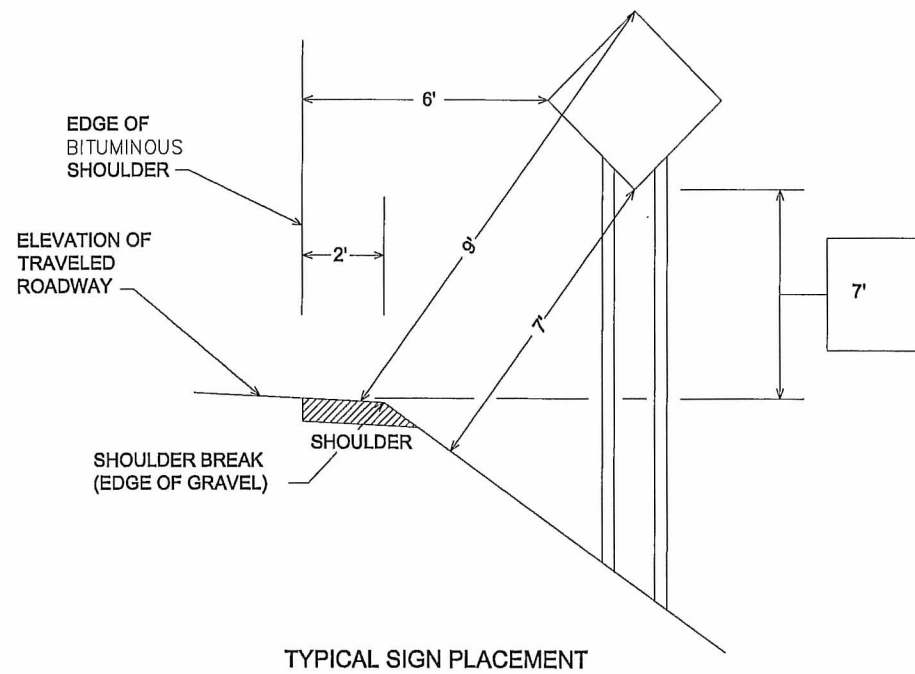
ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-623-018
CP 2017 -7

SIGNING & STRIPING
DETAILS

NO	DATE	BY	CKD	APPR	REVISION

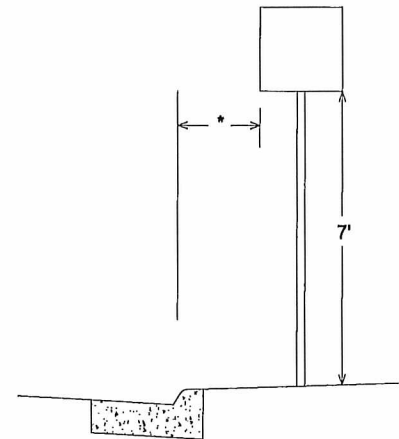
RURAL



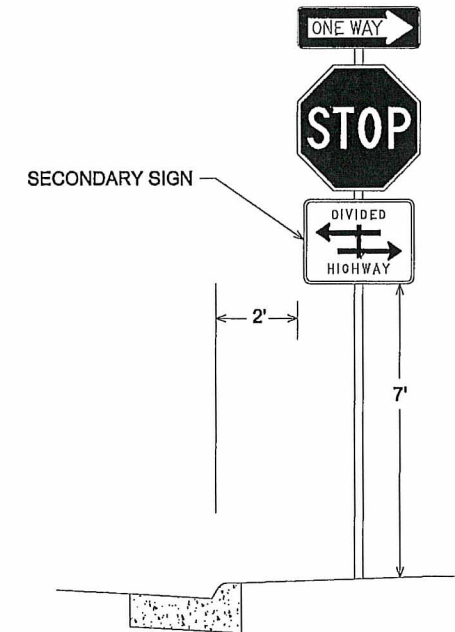
TYPICAL SIGN PLACEMENT

URBAN

* 2' - NARROW BOULEVARD (< 8' WIDE)
6' - WIDE BOULEVARD

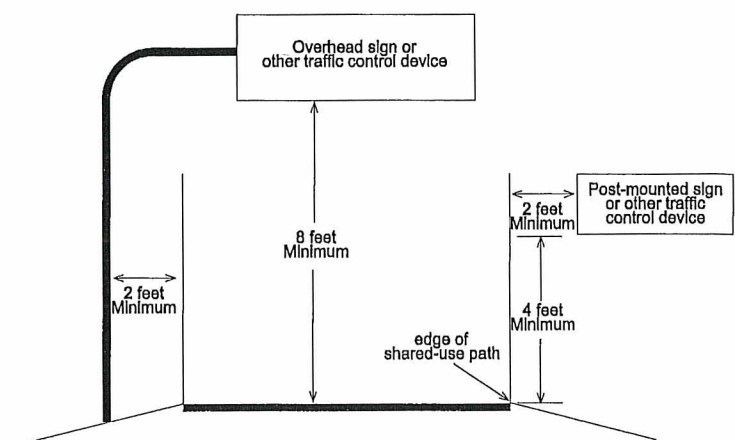


TYPICAL SIGN PLACEMENT



NOTE:

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



TYPICAL SIGN PLACEMENT SHARED-USE PATH

NO	DATE	BY	CKD	APPR	REVISION

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 PRINT NAME: DOUGLAS W. FISCHER, P.E.
 SIGNATURE: *[Signature]*
 DATE: 4/27/18 REG. NO. 20235

DRAWN BY: TMV DATE: 12/07/17
 DESIGN BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____

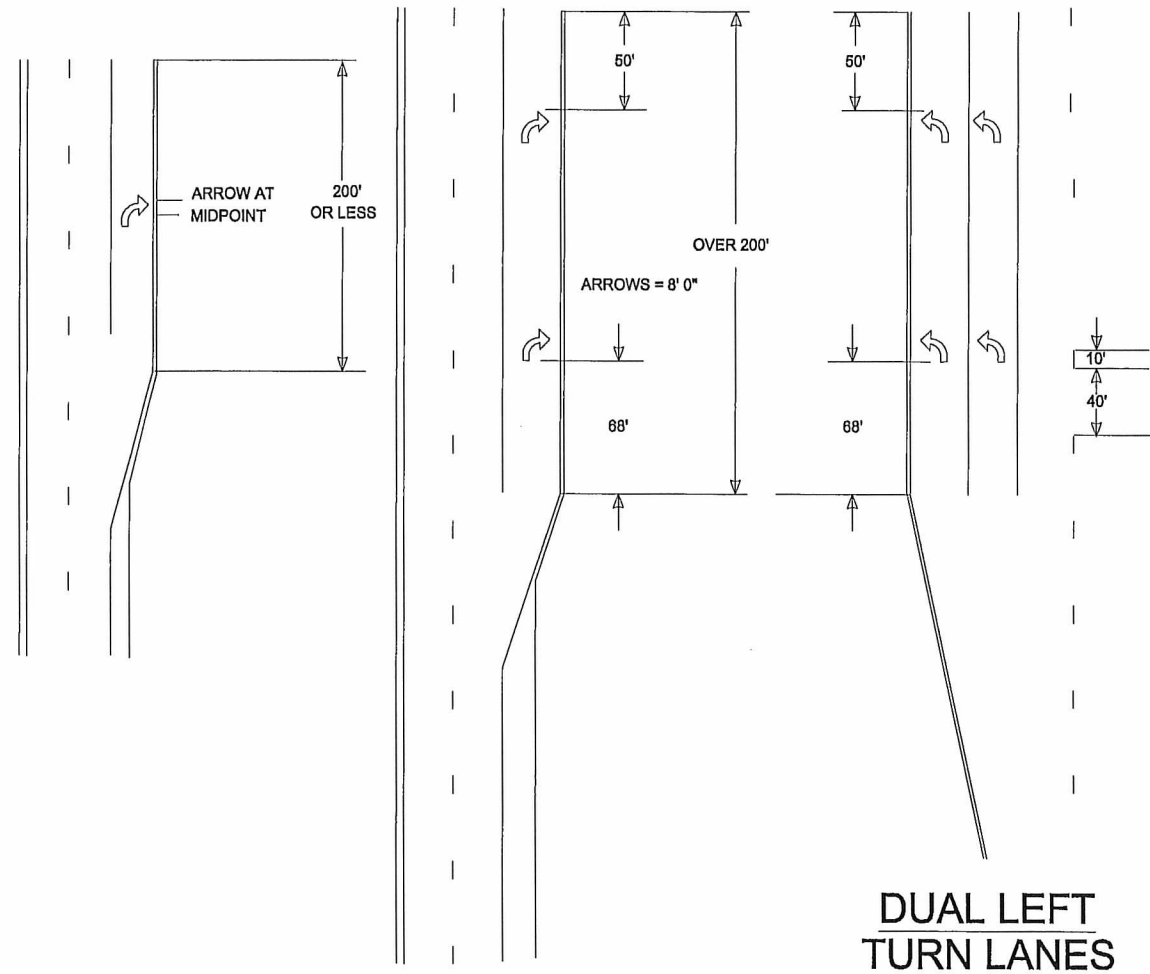


ANOKA COUNTY
HIGHWAY DEPT.

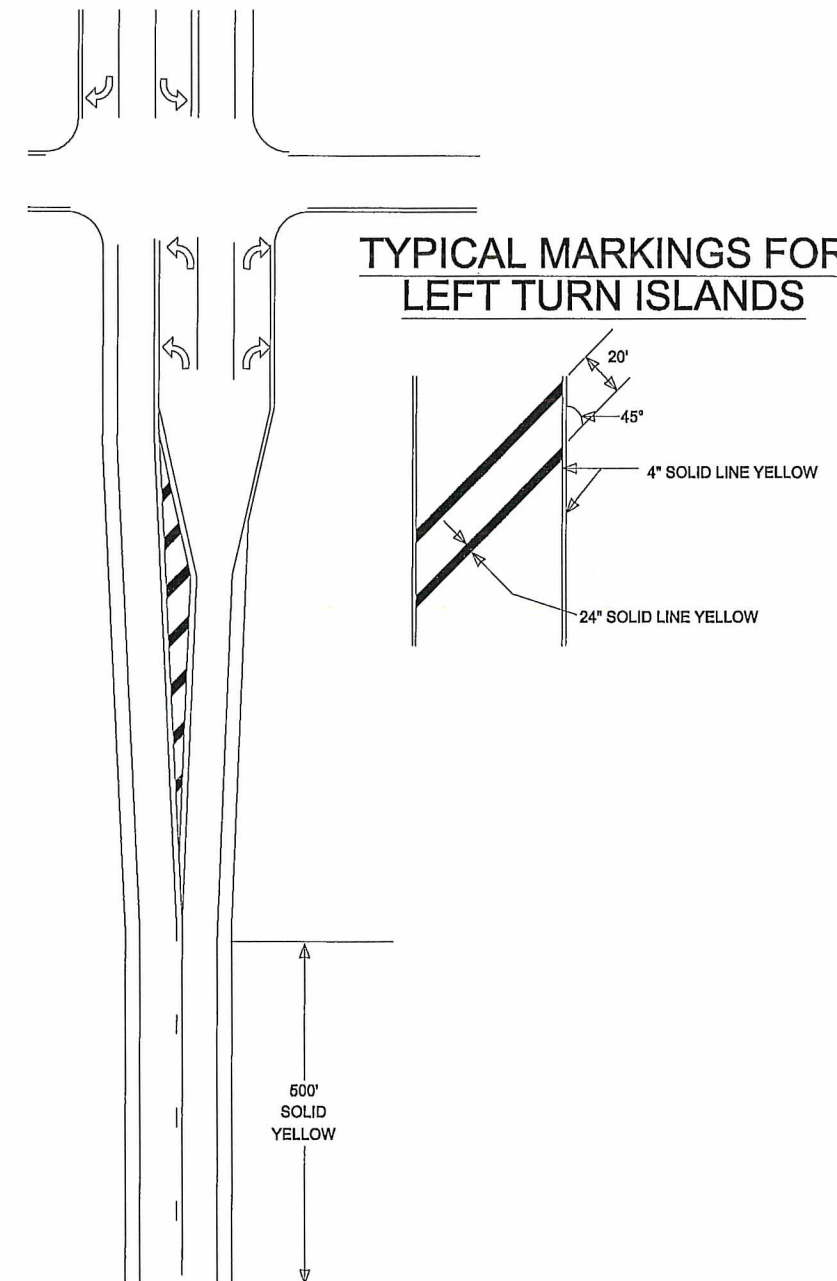
SAP 002-623-018
CP 2017 -7

SIGNING & STRIPING
DETAILS

**TYPICAL MESSAGE PLACEMENT
FOR TURN LANES**



**TYPICAL MARKINGS FOR
LEFT TURN ISLANDS**



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE: *[Signature]*
DATE: 6/12/18 REG. NO. 20235

DRAWN BY: TMV DATE: 12/07/17
DESIGN BY: DATE: _____
CHECKED BY: DATE: _____



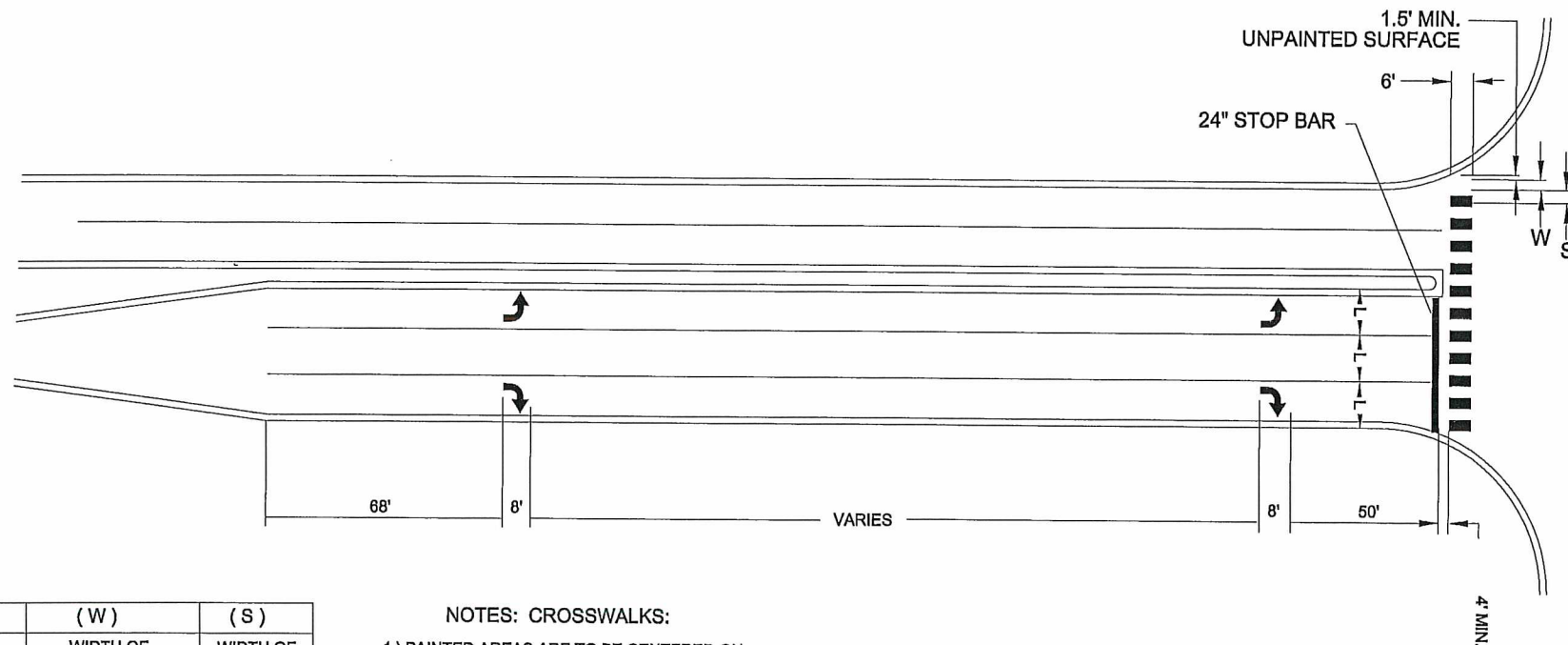
ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-623-018
CP 2017 -7

SIGNING & STRIPING
DETAILS

Sheet 98 of 134 Sheets

MARKINGS FOR PEDESTRIAN CROSSWALKS

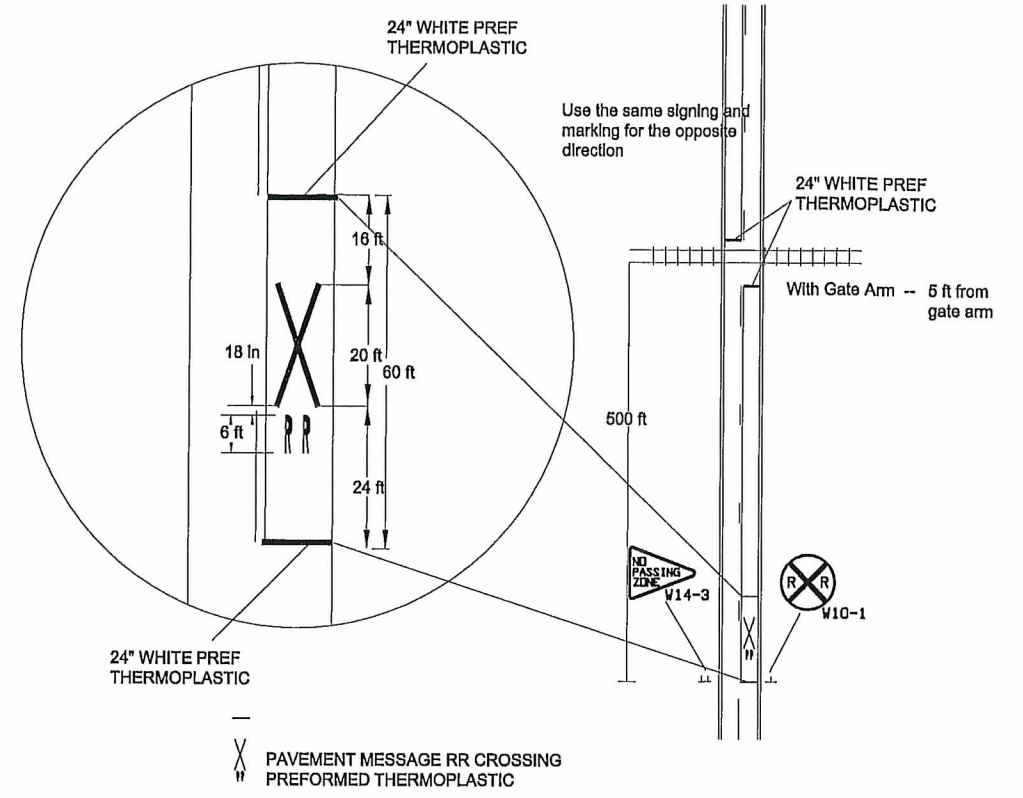


(L)	(W)	(S)
WIDTH OF INSIDE LANE	WIDTH OF PAINTED AREAS	WIDTH OF SPACE
9'	2.0'	2.5'
10'	2.5'	2.5'
11'	2.5'	3.0'
12'	3.0'	3.0'
13'	3.0'	3.5'

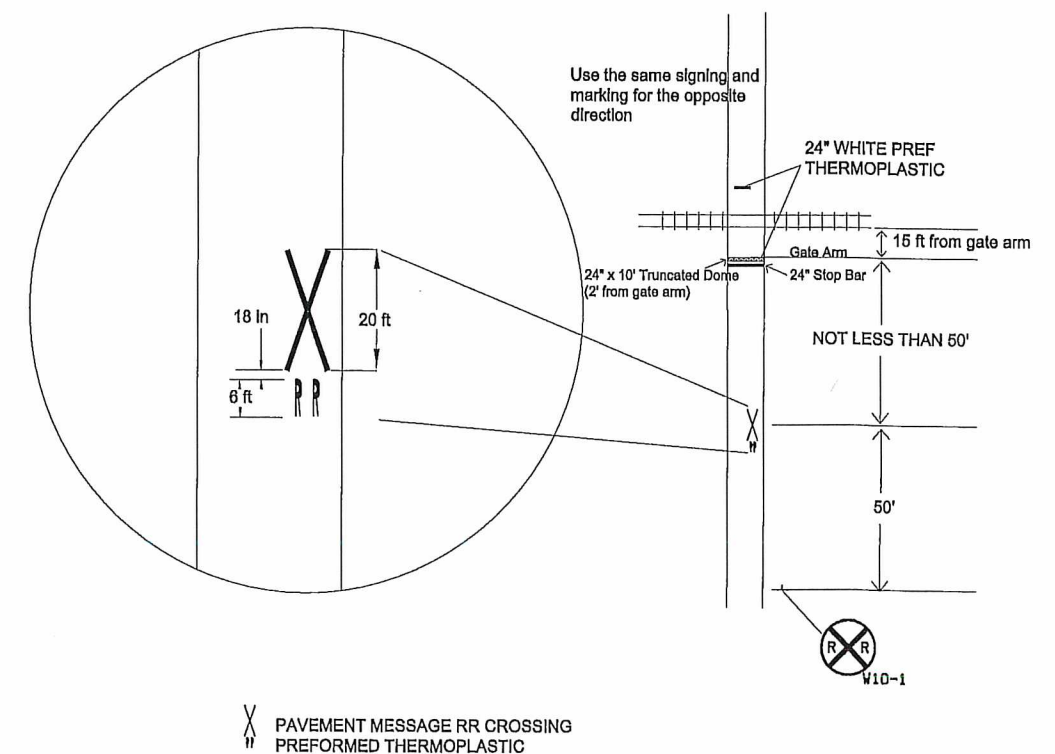
NOTES: CROSSWALKS:

- 1.) PAINTED AREAS ARE TO BE CENTERED ON CENTER AND LANE LINES, EVEN IF INTERSECTION IS NOT ALIGNED.
- 2.) LOCATION OF ZEBRA CROSSWALKS AND STOP BARS, SIGNAL LOOPS AND PED RAMP ARE APPROXIMATE. FINAL LOCATIONS ARE TO BE DETERMINED AND FIELD VERIFIED DURING CONSTRUCTION BY THE FIELD ENGR.
- 3.) ZEBRA CROSSWALKS ARE TO BE PARALLEL TO THE DRIVING LANE OR LANES, EVEN IF THE STREET IS ON AN ANGLE TO THE INTERSECTION.
- 4.) A MIN. OF 1.5' (450mm) CLEAR DISTANCE MUST BE LEFT ADJACENT TO THE CURB. IF LAST PAINTED AREA FALLS INTO THIS AREA, IT MUST BE OMITTED.
- 5.) ON TWO LANE STREETS, USE SPACING SHOWN FOR AN 11' (3.3mm) INSIDE LANE.

RAILROAD CROSSING PAVEMENT MARKINGS



RAILROAD CROSSING PAVEMENT MARKINGS TRAIL GRADE CROSSING



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

PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE: *[Signature]*

DATE: 4/12/18 REG. NO. 20235

DRAWN BY: TMV DATE: 12/07/17

DESIGN BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

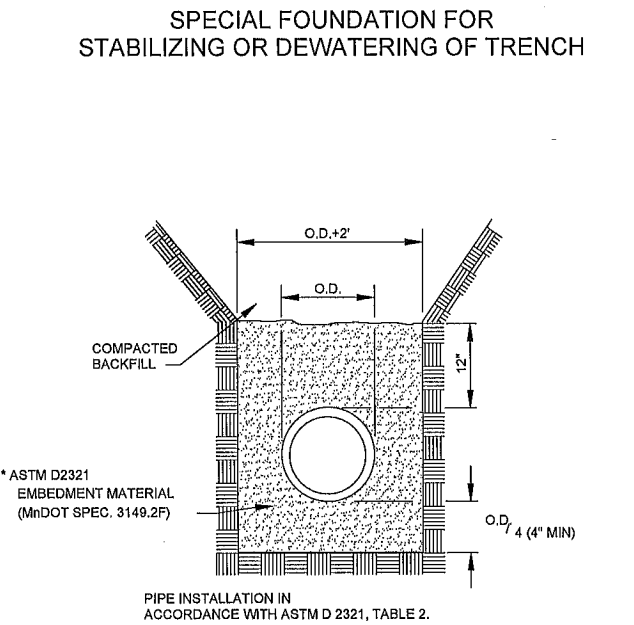
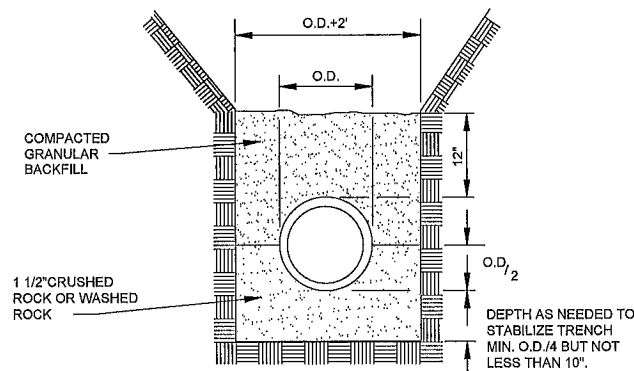
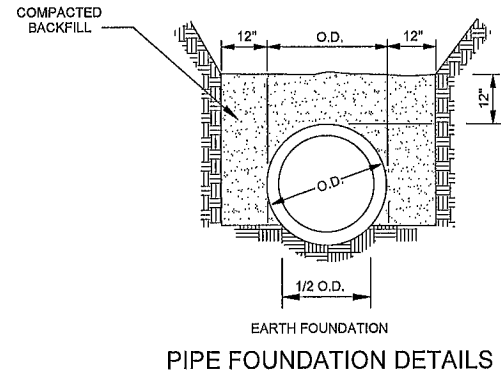


ANOKA COUNTY
HIGHWAY DEPT.

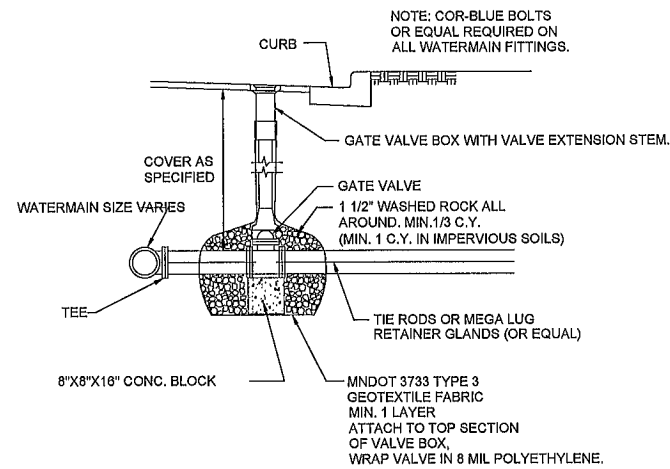
SAP 002-623-018
CP 2017 -7

SIGNING & STRIPING
DETAILS

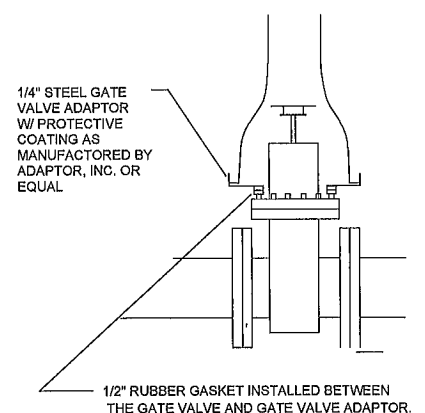
CITY OF COLUMBUS UTILITY IMPROVEMENTS				R
ITEM NO.	ITEM	UNIT	QUANTITY	
LAKE DRIVE UTILITY IMPROVEMENTS				
LAKE DRIVE (CSAH 23)				
1	REMOVE EXISTING GATE VALVE & BOX	EA	2	
2	REMOVE EXISTING WATERMAIN	LF	28	
3	REMOVE EXISTING 12"x6" DIP TEE	EA	1	
4	REMOVE EXISTING 6" DIP PLUG	EA	1	
5	CONNECT TO EXISTING SANITARY SEWER	EA	3	
6	6" PVC SDR 26 SANITARY SEWER	LF	156	
7	CONNECT TO EXISTING 6" WATERMAIN	EA	2	
8	CONNECT TO EXISTING 12" WATERMAIN	EA	2	
9	6" PVC C-900 WATERMAIN	LF	105	
10	12" PVC C-900 WATERMAIN	LF	116	
11	6" GATE VALVE & BOX	EA	1	
12	12" GATE VALVE & BOX	EA	1	
13	MJ DIP COMPACT FITTINGS	LB	188	
14	2" CORPORATION STOP	EA	1	
15	2" CURB STOP & BOX	EA	1	
16	2" COPPER IRRIGATION SERVICE	LF	24	



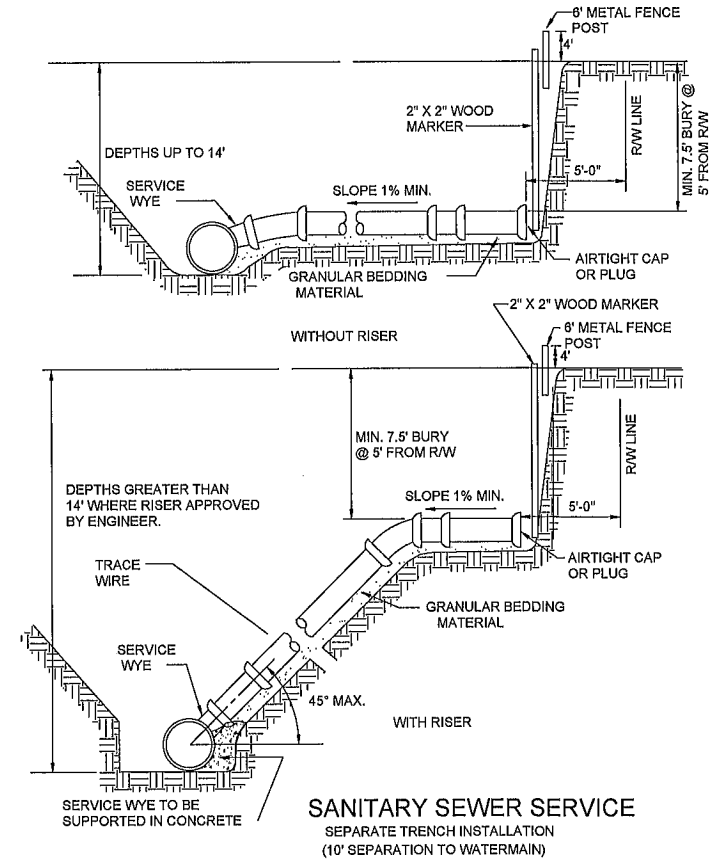
GRANULAR MATERIAL BEDDING METHOD
(FOR PVC SANITARY SEWER PIPE)



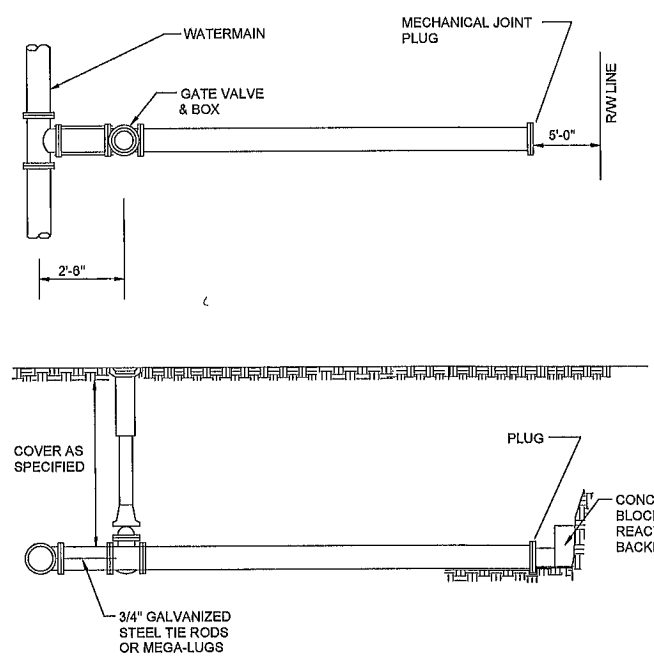
GATE VALVE INSTALLATION



GATE VALVE ADAPTOR



SANITARY SEWER SERVICE
SEPARATE TRENCH INSTALLATION
(10' SEPARATION TO WATERMAIN)



TYPICAL 6" WATER SERVICE

PLOT DATE: Jun 13, 2018 - 10:42am
FILENAME: K:\a-f\Columbus\16915000\04_Production\01_CAD\02_Sheets\CSAH23\LakeDriveDetails.dwg

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DESIGNED	DMP	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. <i>Dennis M. Postler</i> SIGNATURE: DENNIS M. POSTLER DATE: AUGUST 31, 2017 PRINTED NAME: DENNIS M. POSTLER LIC. NO.: 22011
DRAWN	MOB	
CHECKED	DMP	



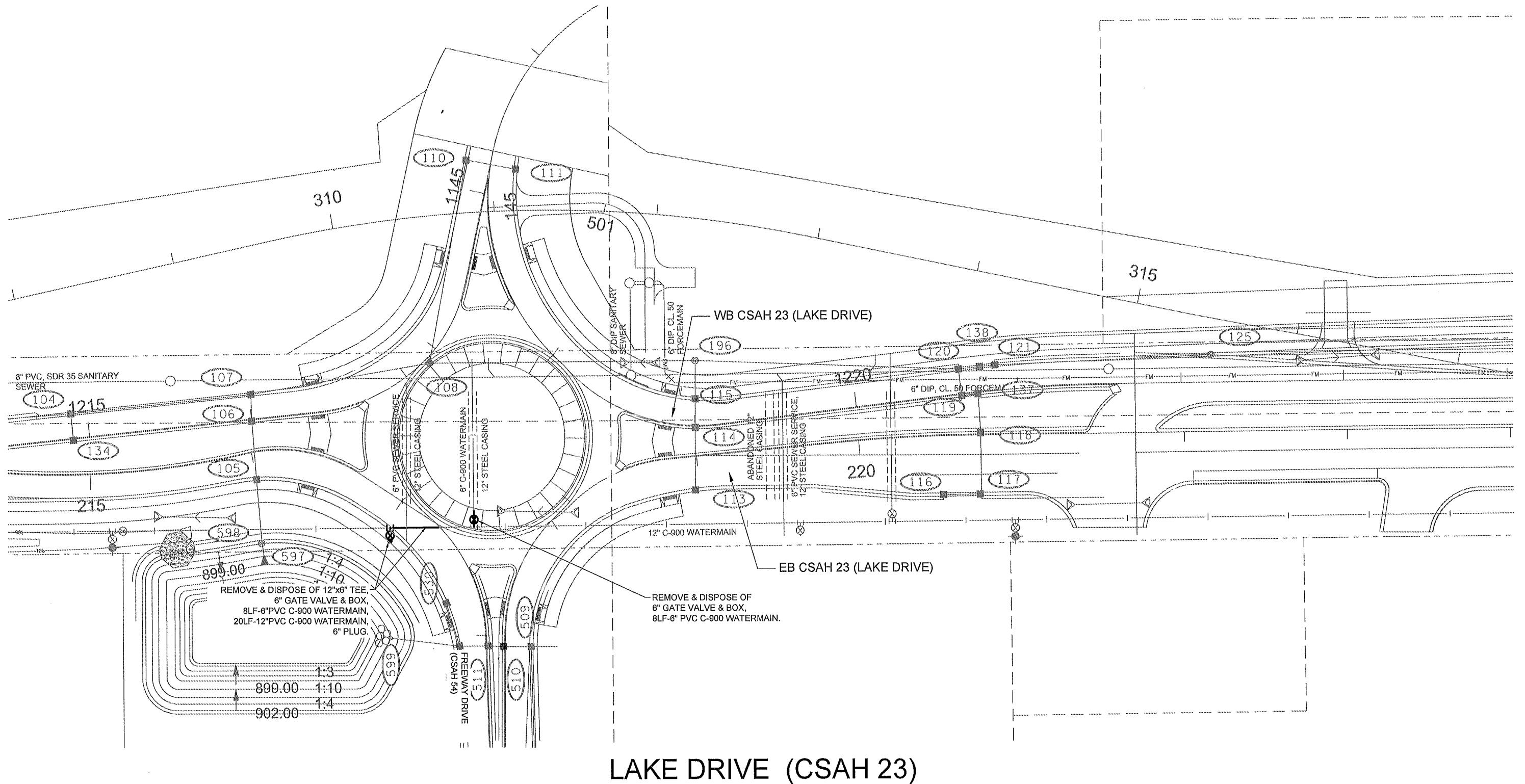
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

CSAH 23 (LAKE DRIVE)
S.A.P. 002-623-018
COLUMBUS MINNESOTA

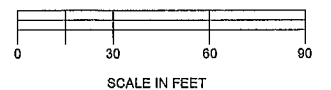
SANITARY SEWER & WATERMAIN
DETAILS

PROJ. NO. 16915.000
DRAWING NO. 100 of 134

PLOT DATE: Jun 13, 2018 - 10:05am
 FILENAME: K:\a-columbus\16615000\04_Production\01_CAD\02_Sheets\CSA\23\LakeDrive\Utilities-Removal.dwg



LAKE DRIVE (CSAH 23)



NO.	DATE	BY	DESCRIPTION OF REVISIONS

DESIGNED	DMP	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. SIGNATURE: <i>Dennis M. Postler</i> DATE: AUGUST 31, 2017 PRINTED NAME: DENNIS M. POSTLER LIC. NO.: 22011
DRAWN	MOB	
CHECKED	DMP	



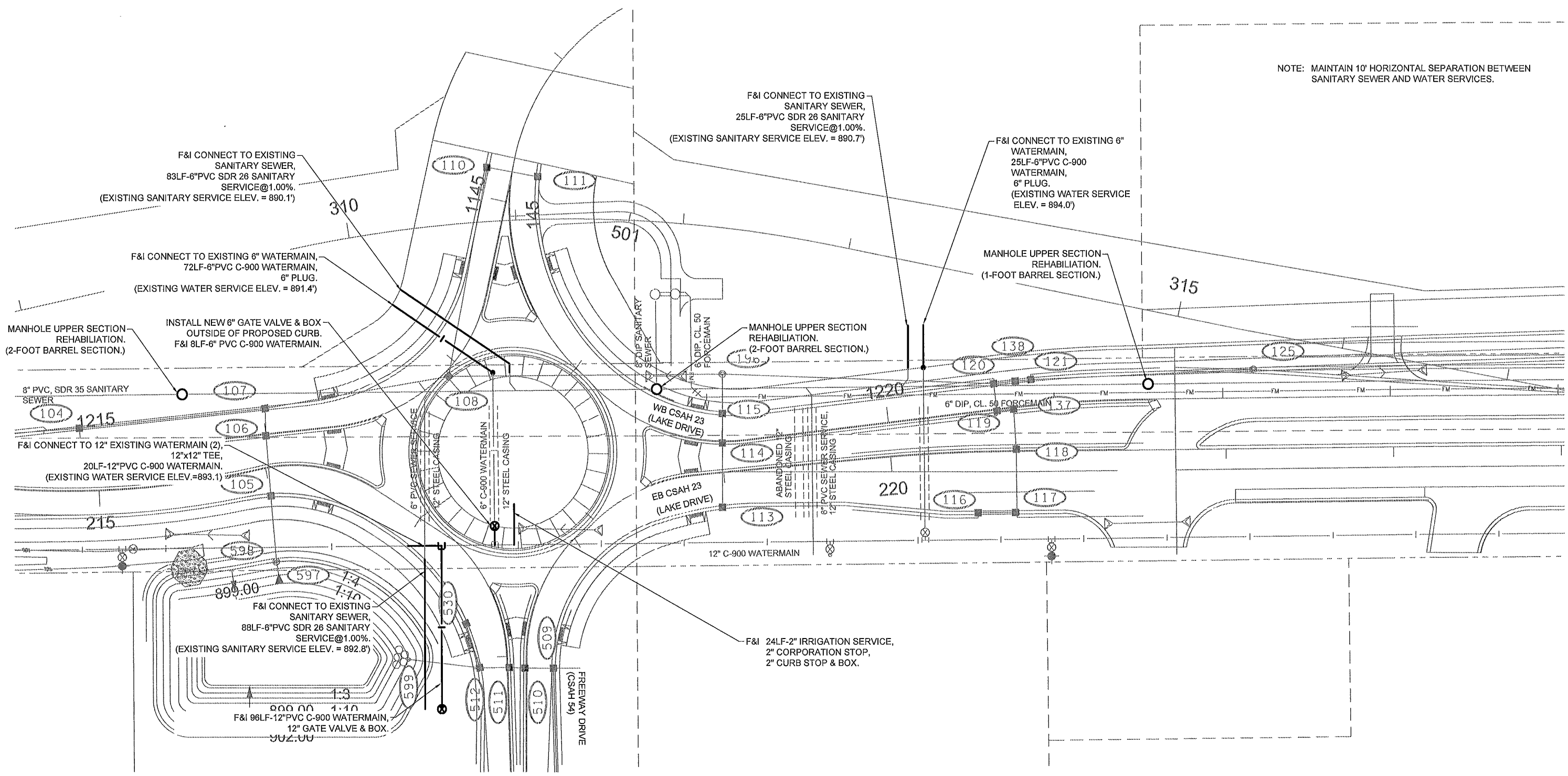
444 Cedar Street, Suite 1500
 Saint Paul, MN 55101
 651.292.4400
 tkda.com

CSAH 23 (LAKE DRIVE)
 S.A.P. 002-623-018
 COLUMBUS MINNESOTA

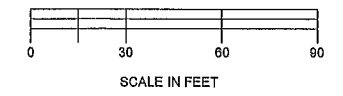
SANITARY SEWER & WATERMAIN
 REMOVALS

PROJ. NO. 16315.000
 DRAWING NO. 101 of 134

NOTE: MAINTAIN 10' HORIZONTAL SEPARATION BETWEEN SANITARY SEWER AND WATER SERVICES.



LAKE DRIVE (CSAH 23)



PLOT DATE: Jun 13, 2018 - 10:04am
 FILENAME: K:\a-columbus\16615000\04_Production\01_CAD\02_Sheets\CSAH23\LakeDrive\Utilities.dwg

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DESIGNED: DMP
 DRAWN: MOB
 CHECKED: DMP

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.

SIGNATURE: *Dennis M. Postler* DATE: AUGUST 31, 2017
 PRINTED NAME: DENNIS M. POSTLER LIC. NO.: 22011

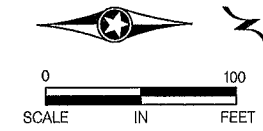

 444 Cedar Street, Suite 1500
 Saint Paul, MN 55101
 651.292.4400
 tkda.com

CSAH 23 (LAKE DRIVE)
 S.A.P. 002-623-018
 COLUMBUS MINNESOTA

SANITARY SEWER & WATERMAIN
 IMPROVEMENTS

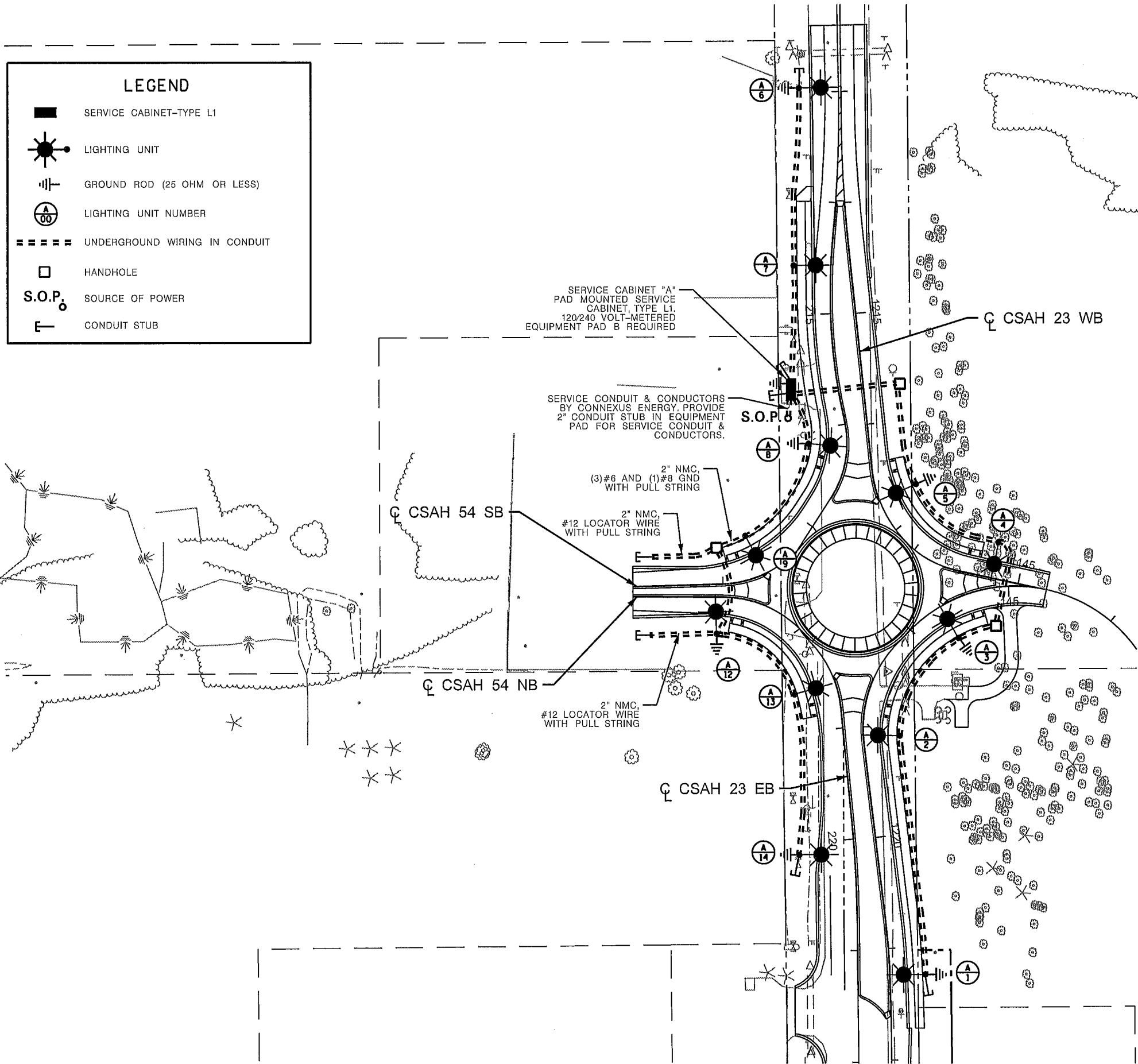
PROJ. NO. 16315.000
 DRAWING NO. 102 of 134

LIGHTING STANDARDS AND FOUNDATIONS					
NO.	LOCATION	STATION	LT.	RT.	TYPE
A1	CSAH 23 WB	1221+26	-	-	SPECIAL
A2	CSAH 23 WB	1219+10	-	-	SPECIAL
A3	CSAH 54 NB	144+35	-	-	SPECIAL
A4	CSAH 54 SB	1144+75	-	-	SPECIAL
A5	CSAH 23 WB	1216+67	-	-	SPECIAL
A6	CSAH 23 EB	212+96	-	-	SPECIAL
A7	CSAH 23 EB	214+58	-	-	SPECIAL
A8	CSAH 23 EB	216+18	-	-	SPECIAL
A9	CSAH 54 SB	1142+36	-	-	SPECIAL
A12	CSAH 54 NB	141+98	-	-	SPECIAL
A13	CSAH 23 EB	218+55	-	-	SPECIAL
A14	CSAH 23 EB	220+11	-	-	SPECIAL



LEGEND	
	SERVICE CABINET-TYPE L1
	LIGHTING UNIT
	GROUND ROD (25 OHM OR LESS)
	LIGHTING UNIT NUMBER
	UNDERGROUND WIRING IN CONDUIT
	HANDHOLE
	SOURCE OF POWER
	CONDUIT STUB

LIGHTING ITEMS			
ITEM NO.	DESCRIPTION	UNIT	QTY.
2545	LIGHTING UNIT TYPE SPECIAL	EACH	12
2545	LIGHT FOUNDATION DESIGN E	EACH	12
2545	2" NON-METALLIC CONDUIT	LIN FT	1,725
2545	UNDERGROUND WIRE 1/C 6 AWG	LIN FT	5,325
2545	UNDERGROUND WIRE 1/C 8 AWG	LIN FT	1,775
2545	UNDERGROUND WIRE 1/C 12 AWG	LIN FT	1,620
2545	SERVICE CABINET TYPE L1	EACH	1
2545	EQUIPMENT PAD B	EACH	1
2545	HANDHOLE	EACH	3



- NOTES:
1. ALL CONDUIT SHALL BE 2" NMC SCHEDULE 40 UNLESS OTHERWISE NOTED.
 2. PROVIDE 2" CAPPED CONDUIT STUB AS INDICATED.
 3. LIGHTING UNITS SHALL BE SET BACK 2 FEET FROM EDGE OF TRAIL TO FACE OF POLE, OR 15 FEET FROM BACK OF CURB TO FACE OF POLE.
 4. ALL CONDUCTORS SHALL BE COPPER, TYPE XHHW-2, (3)#6 & (1)#8 GND UNLESS OTHERWISE NOTED.
 5. COORDINATE SERVICE CONNECTION WITH CONNEXUS ENERGY DESIGNER MAT RAUSCHENDORFER, AT 763-218-4655.

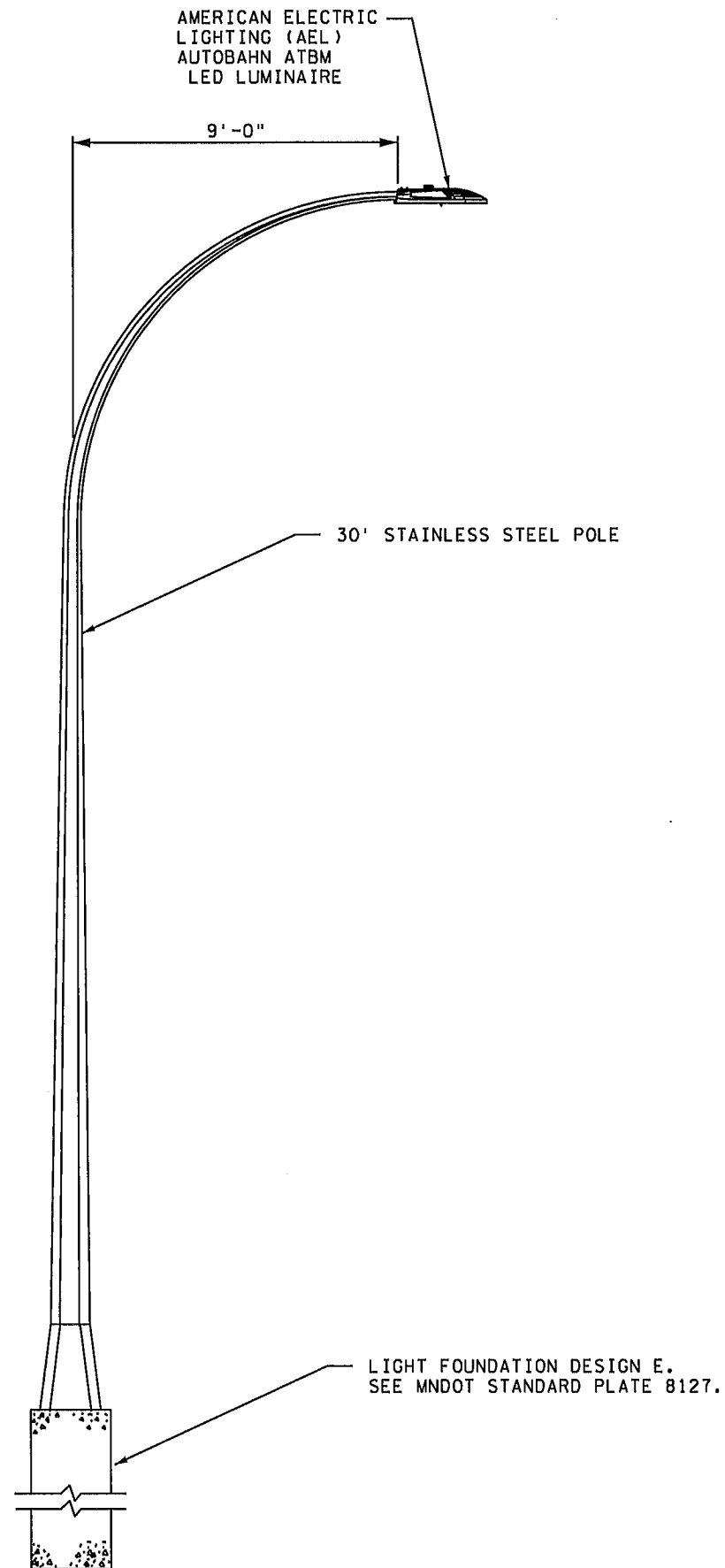
NO.	DATE	BY	CKD	APPR	REVISIONS
NAME: ...Plansheets\140999_11.dgn 6/12/2018 8:22:34 AM					

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.

PRINT NAME: PETER H. CHRISTENSEN
 SIGNATURE: *Peter H. Christensen*
 DATE: 6/12/2018 LICENSE NO. 52213

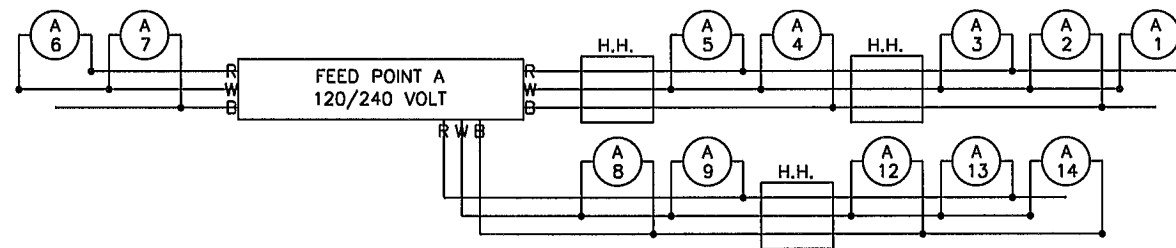
DRAWN BY: CIF DATE: _____
 DESIGN BY: AKF DATE: _____
 CHECKED BY: PHC DATE: _____

S.A.P. 002-623-018
 CSAH 23 (LAKE DR)



EQUIPMENT SCHEDULE					
SYMBOL	DESCRIPTION	LAMP SOURCE	MOUNTING	OPTICS	MANUFACTURER & SERIES #
	LIGHTING UNIT TYPE SPECIAL LED LUMINAIRE ON STAINLESS STEEL POLE WITH DAVIT ARM	133 WATT LED 4000K	30' POLE ON LIGHT FOUNDATION DESIGN E	TYPE II	AMERICAN ELECTRIC LIGHTING - LUMINAIRE: ATBM-F-MVOLT-R2-4B-NL-P7-SH MILLERBERND - POLE: 8-SDB3-9-300

CIRCUIT DIAGRAM



B AND R DENOTE CURRENT CARRYING CONDUCTORS
 W DENOTES NEUTRAL CONDUCTOR
 H.H. DENOTES HANDHOLE

MODEL: \$MODEL\$

NO.	DATE	BY	CKD	APPR	REVISIONS

NAME: ...Plansheets\140999_01.dgn 8:22:35 AM

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.

PRINT NAME: PETER H. CHRISTENSEN

SIGNATURE: *Peter H. Christensen*

DATE: 6/12/2018 LICENSE NO. 52213

DRAWN BY: C.F. DATE: _____

DESIGN BY: A.K.F. DATE: _____

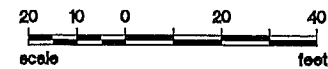
CHECKED BY: P.H.C. DATE: _____



S.A.P. 002-623-018
 CSAH 23 (LAKE DR)

LIGHTING PLAN
 E.B. C.S.A.H. 23
 STA 212+40.00 TO 222+00.00

Sheet 104 of 134 Sheets



LOOP DETECTOR CHART				
NUMBER	SIZE (FT.)	LOCATION	FUNCTION	STATUS
D1-1	2-6x6	20' & 50'	1	F & I
D1-2	2-6x6	5' & 35'	1	F & I
D2-1	6x6	475'	1	INPLACE
D6-1	6x6	475'	1	F & I
DB-1	6x6	120'	3	INPLACE
DB-2	6x6	120'	3	INPLACE
DB-3	2-6x6, 6x15	AS SHOWN	7	INPLACE
DB-4	2-6x6	5' & 20'	1	INPLACE

ALL LOOP DETECTORS SHALL BE RIGID PVC LOOP DETECTORS (SEE DETAILS).
 LOCATION = DISTANCE FROM CROSSWALK OR STOP BAR TO FRONT OF DETECTOR IN FEET.

- FUNCTIONS:
 1) CALL AND EXTEND
 3) EXTEND ONLY
 7) DELAYED CALL, IMMEDIATE EXTEND

- 2 PA100 POLE FOUNDATION
 TYPE PA100-A-40-D40-9 (DAVIT AT 350°)
 2 - ONE WAY SIGNALS OVERHEAD (0' AND 12' FROM END OF MAST ARM)
 1 - POLE MOUNTED ONE WAY SIGNAL AT 225°
 1 - POLE MOUNTED PEDESTRIAN INDICATION AT 45°
 1 - PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)
 ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASE 1+8)
 LUMINAIRE - 250W HPS
 1 - TYPE D SIGN (D-2) - SEE SIGNING DETAILS
 EXTEND INTO HH-4:
 3" RSC
 2 - 12/C #12
 2 - 3/C #12
 1 - 3/C #12 (LUM.)
 1 - 3/C #20

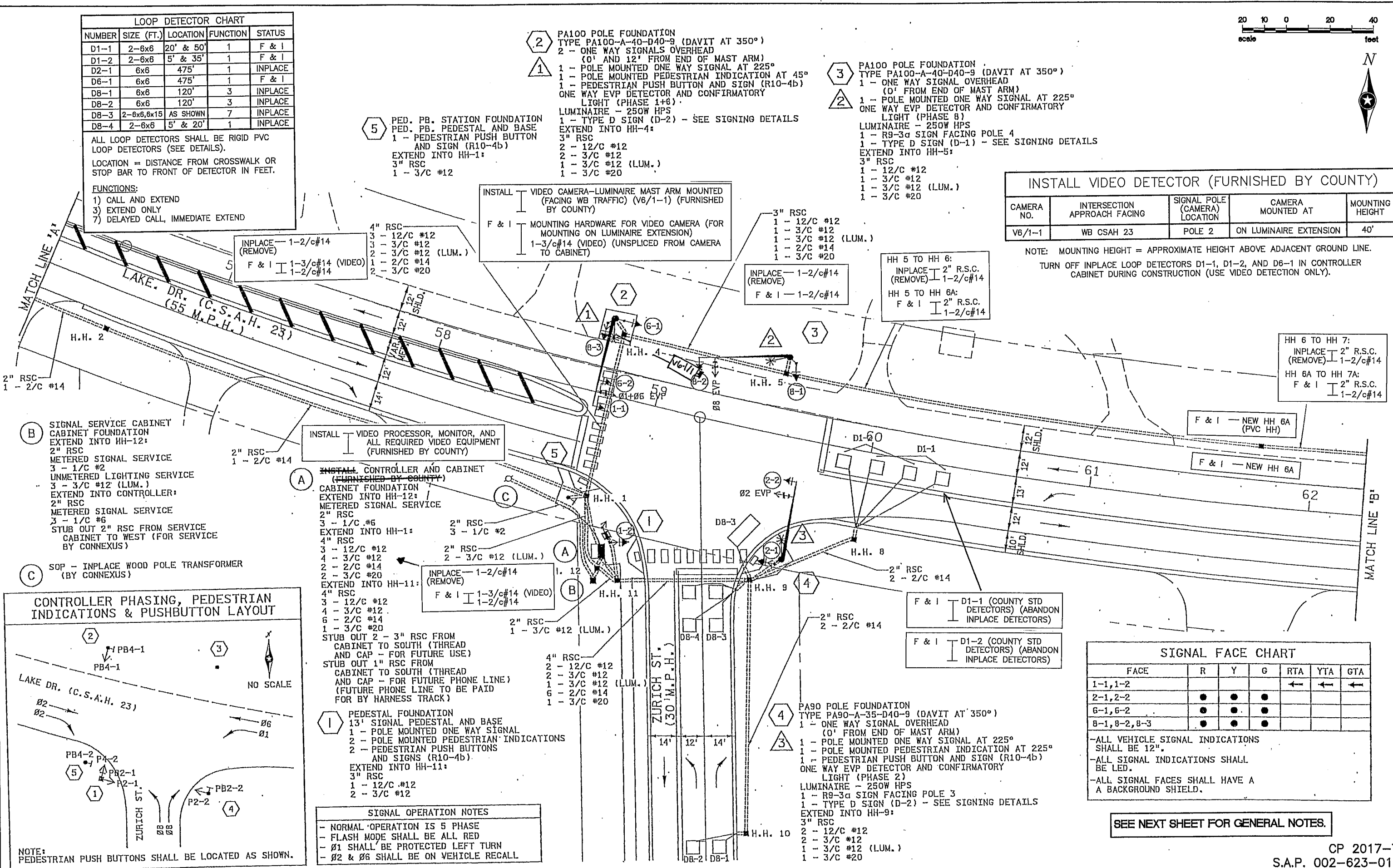
- 3 PA100 POLE FOUNDATION
 TYPE PA100-A-40-D40-9 (DAVIT AT 350°)
 1 - ONE WAY SIGNAL OVERHEAD (0' FROM END OF MAST ARM)
 1 - POLE MOUNTED ONE WAY SIGNAL AT 225°
 ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASE 8)
 LUMINAIRE - 250W HPS
 1 - R9-3a SIGN FACING POLE 4
 1 - TYPE D SIGN (D-1) - SEE SIGNING DETAILS
 EXTEND INTO HH-5:
 3" RSC
 1 - 12/C #12
 1 - 3/C #12
 1 - 3/C #12 (LUM.)
 1 - 3/C #20

- 5 PED. PB. STATION FOUNDATION
 PED. PB. PEDESTAL AND BASE
 1 - PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)
 EXTEND INTO HH-1:
 3" RSC
 1 - 3/C #12

INSTALL VIDEO CAMERA-LUMINAIRE MAST ARM MOUNTED (FACING WB TRAFFIC) (V6/1-1) (FURNISHED BY COUNTY)
 F & I MOUNTING HARDWARE FOR VIDEO CAMERA (FOR MOUNTING ON LUMINAIRE EXTENSION)
 1-3/c#14 (VIDEO) (UNSPliced FROM CAMERA TO CABINET)

INSTALL VIDEO DETECTOR (FURNISHED BY COUNTY)				
CAMERA NO.	INTERSECTION APPROACH FACING	SIGNAL POLE (CAMERA) LOCATION	CAMERA MOUNTED AT	MOUNTING HEIGHT
V6/1-1	WB CSAH 23	POLE 2	ON LUMINAIRE EXTENSION	40'

NOTE: MOUNTING HEIGHT = APPROXIMATE HEIGHT ABOVE ADJACENT GROUND LINE.
 TURN OFF INPLACE LOOP DETECTORS D1-1, D1-2, AND D6-1 IN CONTROLLER CABINET DURING CONSTRUCTION (USE VIDEO DETECTION ONLY).



- B SIGNAL SERVICE CABINET CABINET FOUNDATION
 EXTEND INTO HH-12:
 2" RSC
 METERED SIGNAL SERVICE
 3 - 1/C #2
 UNMETERED LIGHTING SERVICE
 3 - 3/C #12 (LUM.)
 EXTEND INTO CONTROLLER:
 2" RSC
 METERED SIGNAL SERVICE
 3 - 1/C #6
 STUB OUT 2" RSC FROM SERVICE CABINET TO WEST (FOR SERVICE BY CONNEXUS)

- C SOP - INPLACE WOOD POLE TRANSFORMER (BY CONNEXUS)

INSTALL VIDEO PROCESSOR, MONITOR, AND ALL REQUIRED VIDEO EQUIPMENT (FURNISHED BY COUNTY)

A INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)
 CABINET FOUNDATION
 EXTEND INTO HH-12:
 METERED SIGNAL SERVICE
 2" RSC
 3 - 1/C #6
 EXTEND INTO HH-1:
 4" RSC
 3 - 12/C #12
 4 - 3/C #12
 2 - 2/C #14
 2 - 3/C #20
 EXTEND INTO HH-11:
 4" RSC
 3 - 12/C #12
 4 - 3/C #12
 6 - 2/C #14
 1 - 3/C #20
 STUB OUT 2 - 3" RSC FROM CABINET TO SOUTH (THREAD AND CAP - FOR FUTURE USE)
 STUB OUT 1" RSC FROM CABINET TO SOUTH (THREAD AND CAP - FOR FUTURE PHONE LINE) (FUTURE PHONE LINE TO BE PAID FOR BY HARNESS TRACK)

INPLACE - 1-2/c#14
 F & I - 1-3/c#14 (VIDEO)
 1-2/c#14

2" RSC
 1 - 3/C #12 (LUM.)

2" RSC
 2 - 2/C #14

2" RSC
 2 - 2/C #14

2" RSC
 2 - 2/C #14

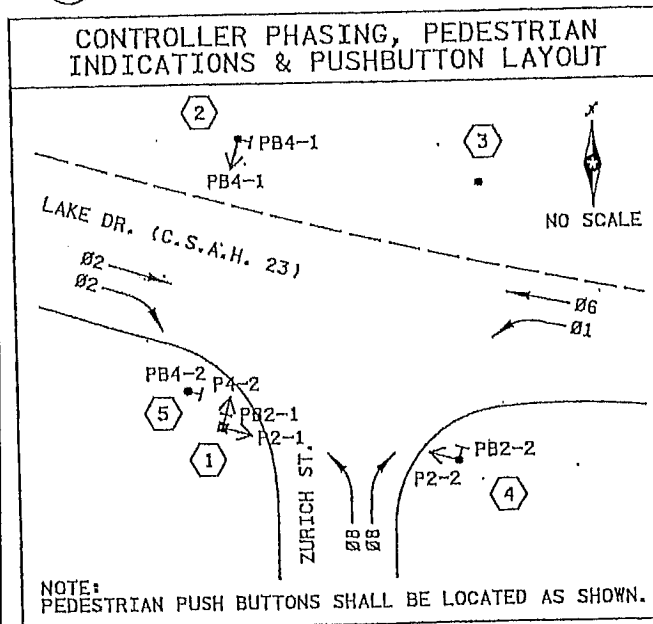
2" RSC
 2 - 2/C #14

2" RSC
 2 - 2/C #14

2" RSC
 2 - 2/C #14

2" RSC
 2 - 2/C #14

2" RSC
 2 - 2/C #14



SIGNAL OPERATION NOTES
 - NORMAL OPERATION IS 5 PHASE
 - FLASH MODE SHALL BE ALL RED
 - Ø1 SHALL BE PROTECTED LEFT TURN
 - Ø2 & Ø6 SHALL BE ON VEHICLE RECALL

SIGNAL FACE CHART						
FACE	R	Y	G	RTA	YTA	GTA
1-1,1-2				←	←	←
2-1,2-2	●	●	●			
6-1,6-2	●	●	●			
8-1,8-2,8-3	●	●	●			

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

SEE NEXT SHEET FOR GENERAL NOTES.

DRAWN BY: JMG
 DESIGNER: JMG
 CHECKED BY: JMG

NO.	BY	DATE	REVISIONS

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.
 Name: John M. Gray, PE
 Date: June 5, 2018
 Lic. No. 22457



ANOKA COUNTY, MN
 CITY OF COLUMBUS

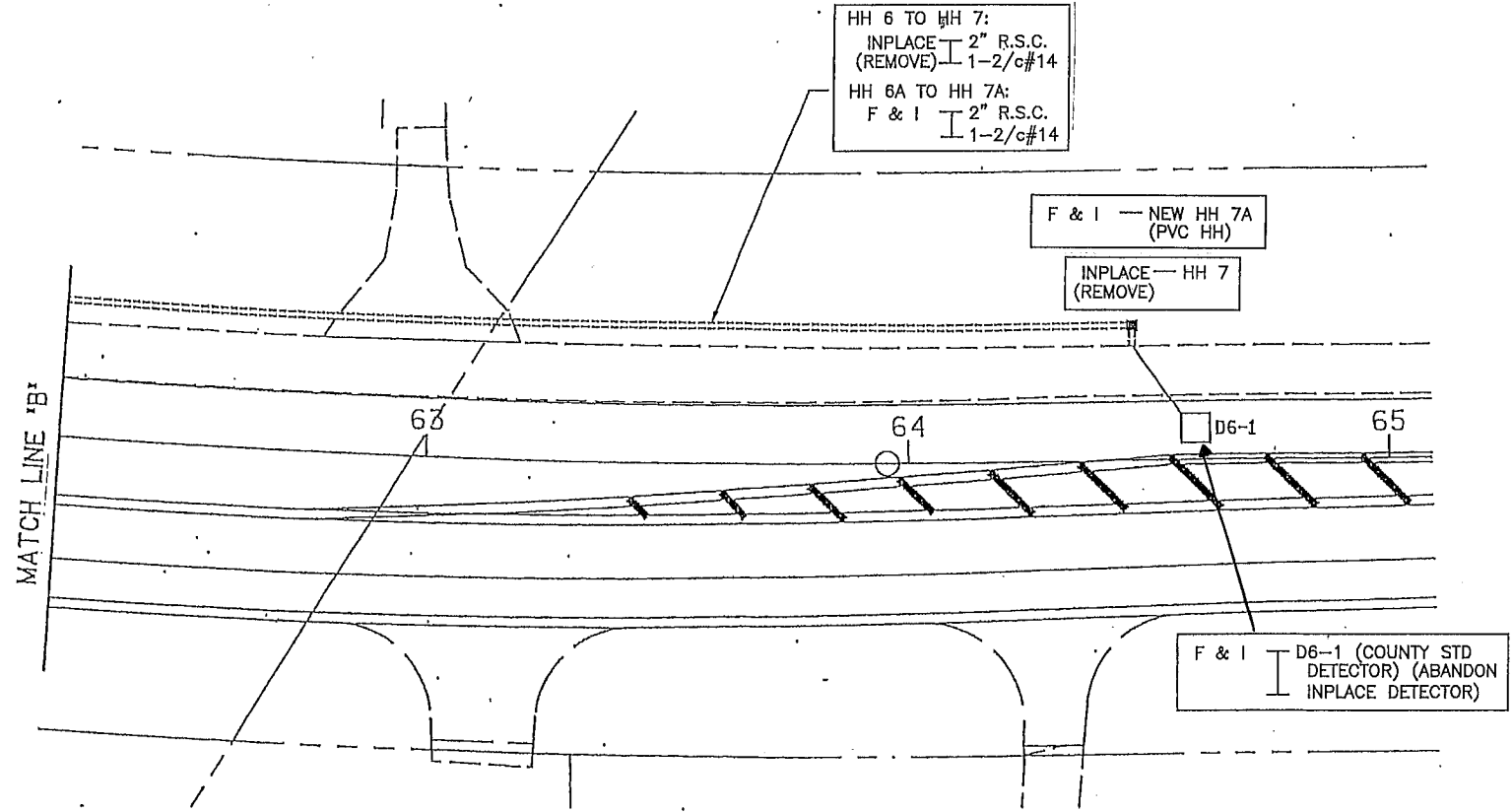
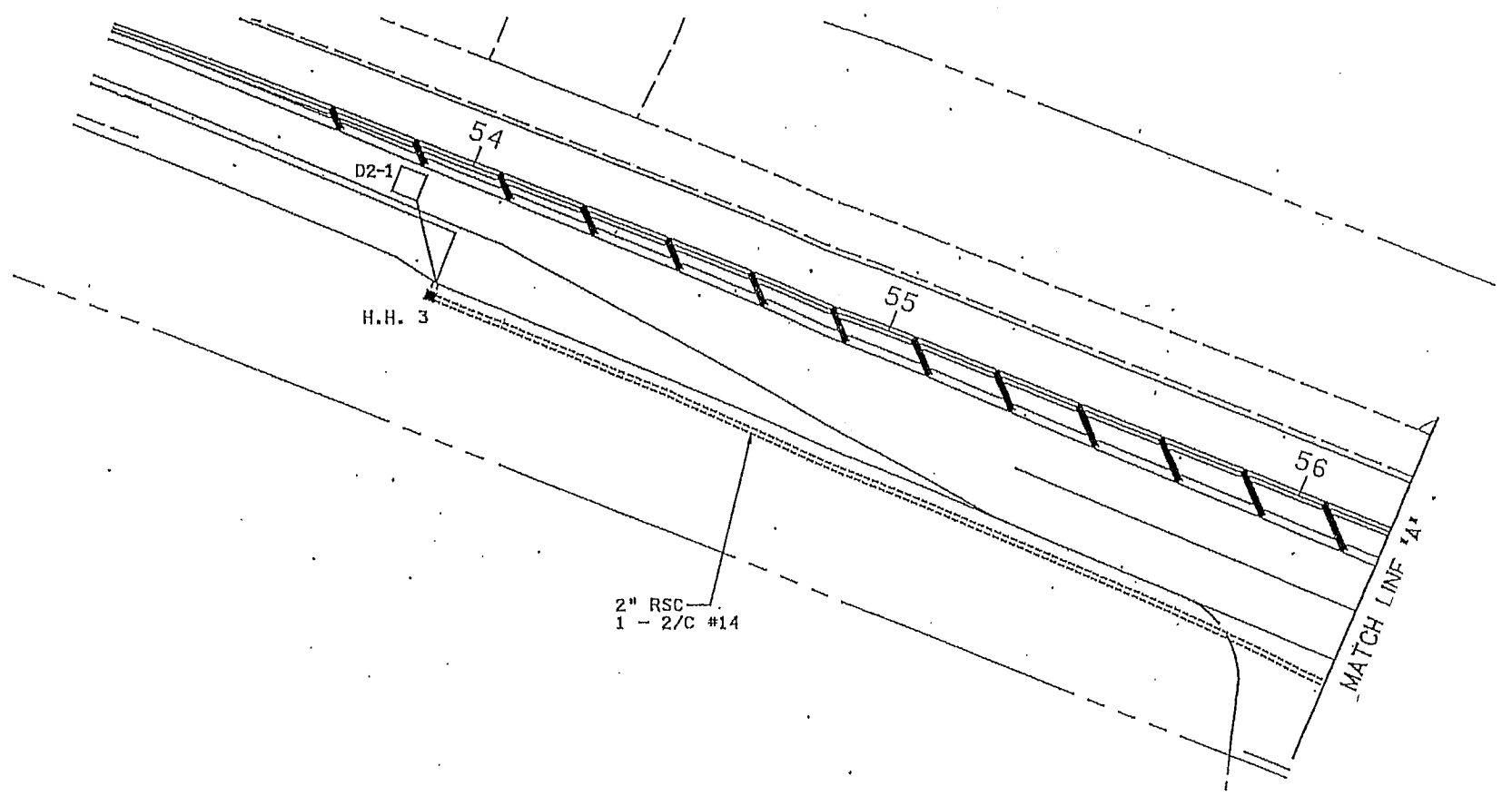
SIGNAL STAGING REVISIONS
 INTERSECTION LAYOUT
 CSAH 23 (LAKE DRIVE) AT ZURICH STREET

SIGNAL SHEET 106
 2 OF 7
 134

CP 2017-7
 S.A.P. 002-623-018



- SIGNAL STAGING NOTES:**
- 1) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS OTHERWISE NOTED ON PLANS.
 - 2) ALL VEHICLE AND PEDESTRIAN SIGNAL HEADS ARE INPLACE AND SHALL BE REUSED AND MAINTAINED IN OPERATION.
 - 3) ALL TRAFFIC SIGNAL MATERIALS AND ELECTRICAL EQUIPMENT TO BE FURNISHED AND INSTALLED BY CONTRACTOR FOR USE DURING TEMPORARY AND PERMANENT OPERATIONS SHALL BE APPROVED BY ENGINEER PRIOR TO INSTALLATION AT THE INTERSECTION. SEE SPECIAL PROVISIONS.
 - 4) SEE SPECIAL PROVISIONS REGARDING VIDEO DETECTION SYSTEM TO BE FURNISHED BY COUNTY AND INSTALLED, MADE OPERATIONAL, AIMED, AND REMOVED BY CONTRACTOR (INCLUDED AS PART OF PAY ITEM FOR "VIDEO DETECTOR SYSTEM A").
 - 5) CONTRACTOR SHALL REMOVE ALL COMPONENTS OF THE VIDEO DETECTOR SYSTEM AFTER ALL NEW PERMANENT LOOP DETECTORS ARE ABLE TO BE MADE OPERATIONAL.
 - 6) VIDEO DETECTOR SYSTEM SHALL BE INSTALLED AND PLACED INTO OPERATION PRIOR TO STAGE 2 CONSTRUCTION WORK AND SHALL BE MAINTAINED IN OPERATION THROUGH STAGE 5 CONSTRUCTION.
 - 7) (F & I) = ITEMS TO BE FURNISHED & INSTALLED BY CONTRACTOR.
(S & I) = ITEMS TO BE SALVAGED & INSTALLED BY CONTRACTOR.
 - 8) LOCATION OF NEW HANDHOLES AND NEW LOOP DETECTORS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - 9) CONTRACTOR WILL BE PAID FOR ONLY THOSE HANDHOLES, LOOP DETECTORS, CONDUIT, AND CABLES REQUIRED TO BE REMOVED AND REPLACED AS PART OF THIS PROJECT (I.E. SOME EXISTING HANDHOLES, LOOP DETECTORS, AND CONDUIT MAY BE ABLE TO BE REUSED AND MAINTAINED INPLACE AND NOT REQUIRE REMOVAL OR REPLACEMENT SHOULD TEMPORARY PAVING OR MILL AND OVERLAY WORK BE ABLE TO BE COMPLETED WITHOUT IMPACTING THESE FACILITIES).
 - 10) CONTRACTOR SHALL MAINTAIN A SIGNAL SYSTEM IN OPERATION AT THIS INTERSECTION AT ALL TIMES, INCLUDING VEHICULAR DETECTION FOR ALL INTERSECTION APPROACHES.
 - 11) CONTRACTOR SHALL PROTECT AND MAINTAIN ALL ITEMS OF EXISTING PERMANENT SIGNAL SYSTEM THAT WILL BE REUSED DURING CONSTRUCTION AND SHALL REPLACE ITEMS DAMAGED DURING ANY CONSTRUCTION WITH NEW ITEMS (AT NO EXPENSE TO THE COUNTY OR THE STATE).
 - 12) NEW HANDHOLES TO BE FURNISHED & INSTALLED BY CONTRACTOR FOR WORK AT THIS SIGNAL SYSTEM SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS IN ACCORDANCE WITH THE DETAILS INCLUDED IN THE SPECIAL PROVISIONS. ANY HANDHOLE IMPACTED BY CONSTRUCTION SHALL BE ADJUSTED TO FINISHED SURROUNDING GRADE (INCIDENTAL).
 - 13) NEW LOOP DETECTORS TO BE FURNISHED AND INSTALLED BY THE CONTRACTORS SHALL HAVE LOOP DETECTOR WIRES THAT SHALL BE CROSS-LINKED POLYETHYLENE (XLP) #12 AWG IN 3/4" N.M.C. SEE SPECIAL PROVISIONS AND DETAILS FOR FURTHER INFORMATION.
 - 14) SEE SPECIAL PROVISIONS & STATEMENT OF ESTIMATED QUANTITIES REGARDING PAY ITEMS FOR ALL TRAFFIC SIGNAL WORK DURING STAGING AND ROAD CONSTRUCTION.



NOTE: THIS PLAN IS INTENDED TO SHOW EQUIPMENT THAT IS TO BE REMOVED, FURNISHED, INSTALLED, AND MADE OPERATIONAL DURING OVERALL STAGING OF CONSTRUCTION ON CSAH 23 TO ACCOMMODATE BOTH TEMPORARY & PERMANENT OPERATION OF VEHICULAR DETECTION IN THE VICINITY OF CONSTRUCTION. VEHICULAR DETECTION IS REQUIRED TO BE PROVIDED AND MAINTAINED FOR BOTH STOP BAR AND ADVANCE DETECTION FOR ALL STAGES OF CONSTRUCTION.

CP 2017-7
S.A.P. 002-623-018

DRAWN BY: JMG
DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

NO.	BY	DATE	REVISIONS

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John M. Gray
Name: John M. Gray, PE
Date: June 5, 2018
Lic. No. 22457

SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

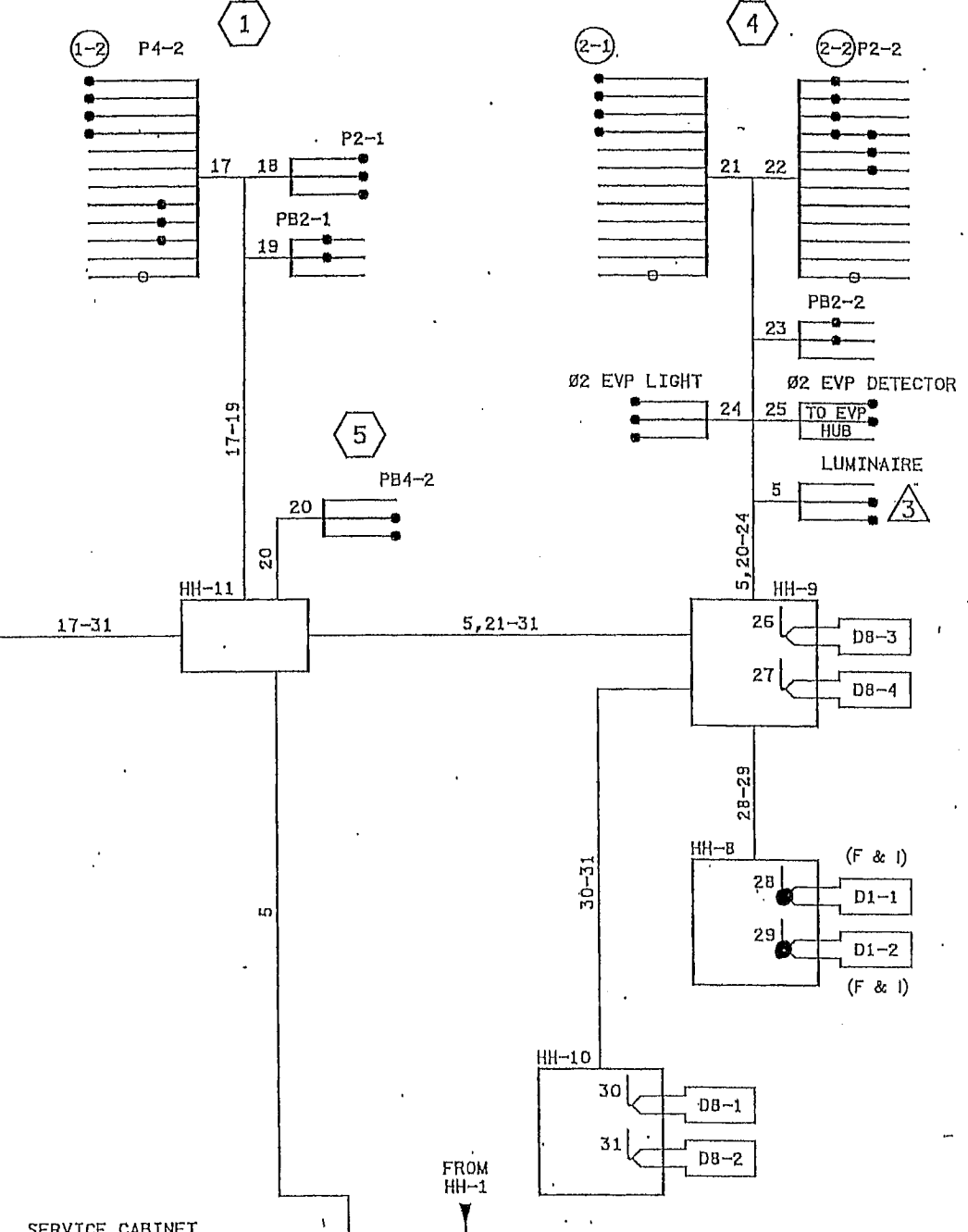
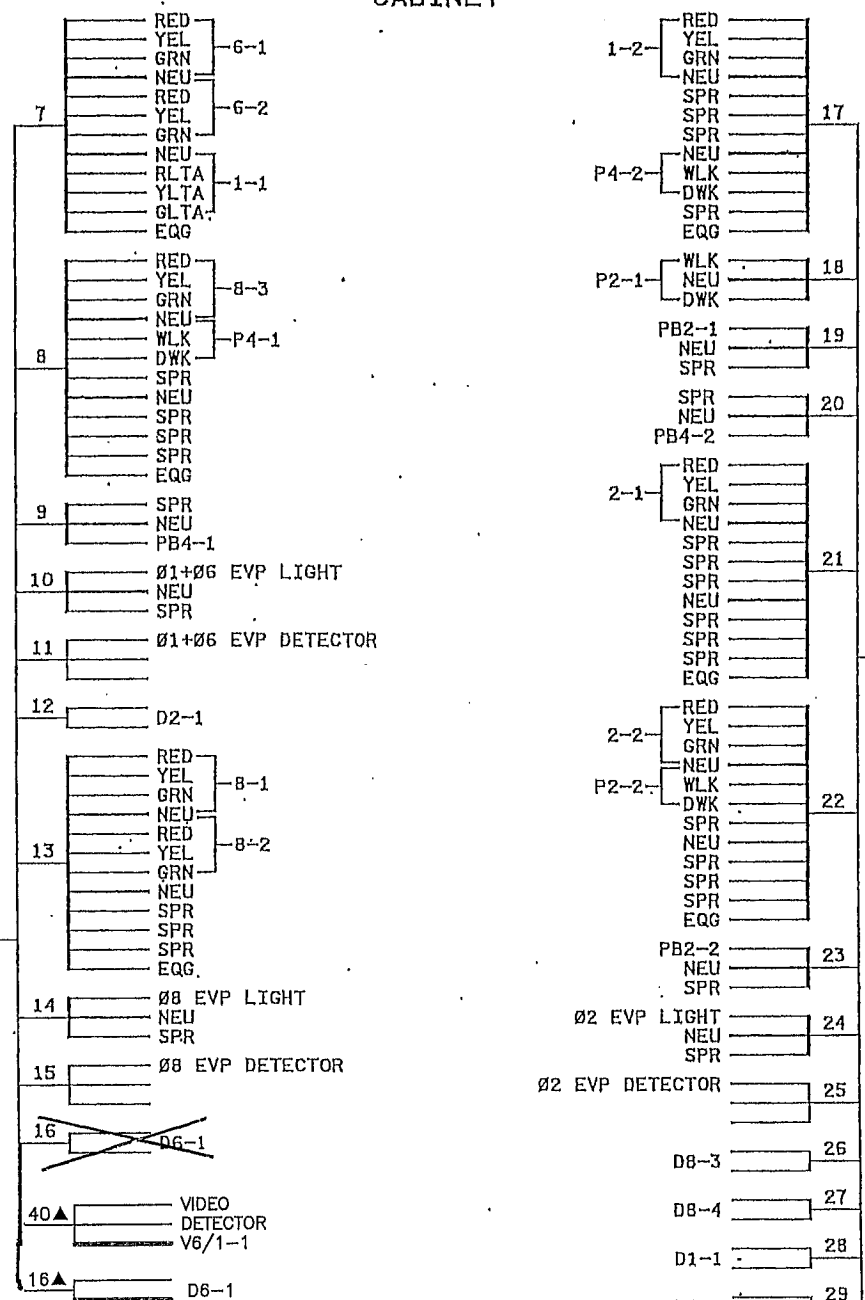
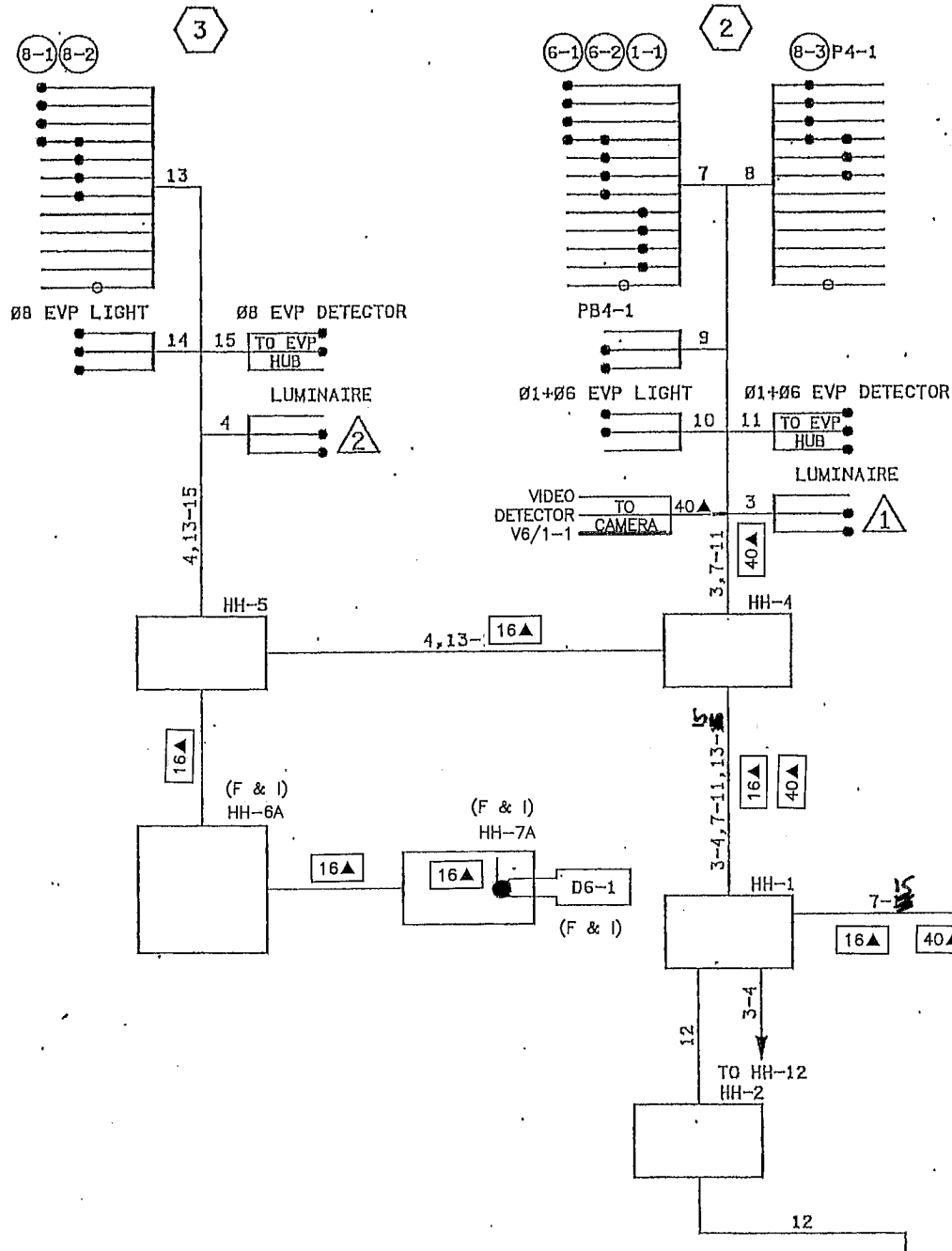
ANOKA COUNTY, MN
CITY OF COLUMBUS

SIGNAL STAGING REVISIONS
MATCH LINES AND GENERAL NOTES
CSAH 23 (LAKE DRIVE) AT ZURICH STREET

SIGNAL SHEET
3 OF 7

107
134

CONTROLLER CABINET



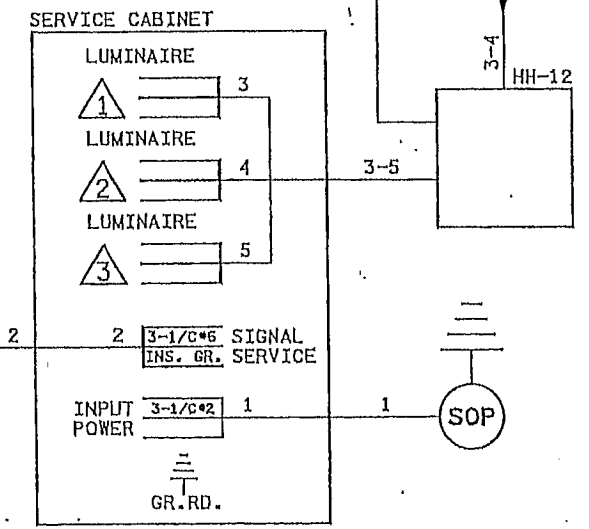
CONDUCTOR COLOR CODE

TO SIGNAL CABINET		TO DEVICE	
3/C#12	R WH BLK	R	RED
		O	YEL
		BL	GRN
		WH	NEU
		Y	YLTA
		BLK	GLTA
		BRN	SPR
		R	RED
		O	YEL
		BL	GRN
		WH	NEU
		Y	YLTA
		BLK	GLTA
		G	DWK
		R	WLK
		O	NEU
		BL	SPR
		WH	EVP/PB/FLASHER
		G	NEU

NOTE: TERMINAL BLOCK CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE.

NOTES:

- 1) ALL CABLES AND CONDUCTORS ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, EXCEPT WHERE DENOTED BY ▲ (▲ = NEW CABLES AND CONDUCTORS TO BE FURNISHED & INSTALLED BY CONTRACTOR).
- 2) F & I DENOTES LOOP DETECTORS & HANDHOLES TO BE FURNISHED & INSTALLED BY CONTRACTOR AS PART OF PROJECT.
- 3) REMOVE AND DISPOSE OF INPLACE CABLE 16 (2/C#14) FROM CABINET TO HH-7, AND REPLACE WITH NEW 2/C#14 CABLE AS SHOWN.
- 4) REMOVE AND DISPOSE OF NEW CABLE 40 AFTER VIDEO DETECTOR IS REMOVED AND LOOPS ARE MADE OPERATIONAL.



NOTE: CABLE 6 OMITTED INTENTIONALLY

DRAWN BY: JMG	DESIGNER: JMG	CHECKED BY: JMG	DESIGN TEAM	NO.	BY	DATE	REVISIONS
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PHONE: (651) 490-2000
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ANOKA COUNTY, MN
CITY OF COLUMBUS

SIGNAL STAGING REVISIONS
FIELD WIRING DIAGRAM
CSAH 23 (LAKE DRIVE) AT ZURICH STREET

SIGNAL SHEET 108
4 OF 7
134

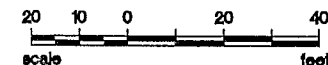
CP 2017-7
S.A.P. 002-623-018

INSTALL VIDEO DETECTOR (FURNISHED BY COUNTY)

CAMERA NO.	INTERSECTION APPROACH FACING	SIGNAL POLE (CAMERA) LOCATION	CAMERA MOUNTED AT	MOUNTING HEIGHT
V2-1	EB CSAH 23	POLE 1	ON LUMINAIRE EXTENSION	40'

NOTE: MOUNTING HEIGHT = APPROXIMATE HEIGHT ABOVE ADJACENT GROUND LINE.
TURN OFF INPLACE LOOP DETECTORS D2-1 AND D2-2 IN CONTROLLER CABINET DURING CONSTRUCTION (USE VIDEO DETECTION ONLY).

SEE NEXT SHEET FOR GENERAL NOTES.



INSTALL VIDEO CAMERA-LUMINAIRE MAST ARM MOUNTED (FACING EB TRAFFIC) (V2-1) (FURNISHED BY COUNTY)
F & I MOUNTING HARDWARE FOR VIDEO CAMERA (FOR MOUNTING ON LUMINAIRE EXTENSION)
1-3/c#14 (VIDEO) (UNSPliced FROM CAMERA TO CABINET)

INSTALL VIDEO PROCESSOR, MONITOR, AND ALL REQUIRED VIDEO EQUIPMENT (FURNISHED BY COUNTY)

(A) EQUIPMENT PAD (SEE DETAILS)
SERVICE CABINET
MASTER CONTROLLER, CONTROLLER AND CABINET
CONTROLLER CABINET TO HH 12
4" RSC
5-12/C#12
3-5/C#12
10-3/C#12
3-3/C#20
8-2/C#14
CONTROLLER CABINET TO HH 1
4" RSC
2-2/C#14
SERVICE CABINET TO CONTROLLER
2" RSC
2-1/C#6
1-1/C#6 BR.GR.
SERVICE CABINET TO HH 12
2" RSC
2-3/C#12

(3) STA 1073+29, 42' LT
45' WOOD POLE
1-DOWN GUY, GUARD & ANCHOR
1-TYPE 10A
15' MAST ARM & LUMINAIRE 250W (HPS)
2-R9-3a SIGN (NO PAD) FACING POLE 2. & 4
R10-12 SIGN (36" x 48") ADJACENT TO HEAD 6-3
METAL JUNCTION BOX WITH TERMINAL BLOCK
2" RSC RISER & WEATHERHEAD ABOVE JB WITH:
1-12/C#12
2-3/C#12
1" RSC AND WEATHERHEAD ABOVE SPAN WIRE
1-3/C#12 (LUM)

(1) STA 1074+30, 44' RT
45' WOOD POLE
2-DOWN GUYS, GUARDS & ANCHORS
2-TYPE 10A
15' MAST ARM & LUMINAIRE 250W (HPS)
2-R9-3a SIGN (NO PAD) FACING POLE 2. & 4
METAL JUNCTION BOX WITH TERMINAL BLOCK
2" RSC BELOW JUNCTION BOX INTO HH 12
1-12/C#12
1-3/C#12
4" RSC RISER & WEATHERHEAD INTO HH 12.
3-5/C#12
11-3/C#12
2-3/C#20
1" RSC AND WEATHERHEAD ABOVE SPAN WIRE
1-3/C#12 (LUM)
F & I 1-3/c#14 (VIDEO)

SYSTEM ID: 22482
METER ADDRESS: HWY 97 AND 35 WEST RAMP
MASTER ID: 22483

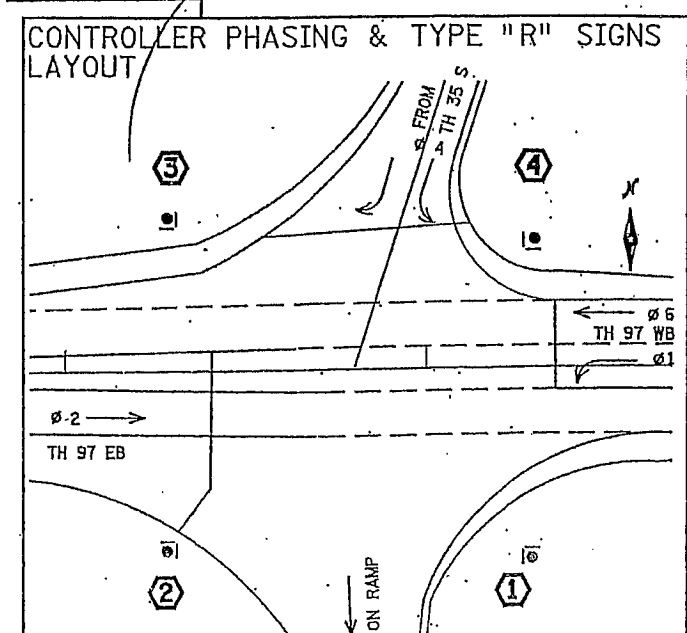
(4) STA 1074+31, 35' LT
45' WOOD POLE
1-DOWN GUY, GUARD & ANCHOR
1-TYPE 10A
ONE WAY EVR DETECTOR (PHASE 1 & 6)
2-R9-3a SIGNS (NO PED) FACING POLE 1 & 3
METAL JUNCTION BOX WITH TERMINAL BOX,
2" RSC RISER & WEATHERHEAD ABOVE
JUNCTION BOX WITH
1-12/C#12
1-3/C#12

WEST FREEWAY DRIVE
(C.S.A.H. 21)

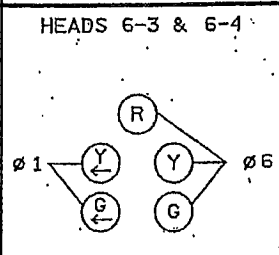
HH 3 TO HH 4:
INPLACE 3" R.S.C.
(REMOVE)
HH 3 TO HH 4A:
F & I 2" CONDUIT
INPLACE 1-2/c#14 (SALVAGE
BACK TO HH 3 AND
REINSTALL TO HH 5)

F & I D2-2 (MNDOT STD
DETECTOR) (ABANDON
INPLACE DETECTOR)

INPLACE 1-2/c#14 (SALVAGE
BACK TO HH 3, COIL
AND STORE IN HH 3
DURING CONSTRUCTION,
REINSTALL BACK TO
HH 5A, AND MAKE
OPERATIONAL)



SIGNAL HEAD PHASING



SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 4 PHASE, WITH PHASE 1
BEING PROTECTED/PERMISSIVE LEFT TURN
AND PHASE 2 & 6 ON VEHICLE RECALL.

(1) PAID FOR AS TRAFFIC CONTROL INTERCONNECTION.

1-7/16" SPAN WIRE
1-1/14" SPAN WIRE
3-12/C#12
1-5/C#12
7-3/C#12
1-3/C#20
3" RSC
2-2/C#14

(2)

(2) STA 1073+27, 49' RT
45' WOOD POLE
2-DOWN GUYS, GUARDS & ANCHORS
2-TYPE 10A
2-R9-3a SIGNS (NO PED) FACING POLE 1 & 3
TWO WAY TWO CHANNEL EVR DETECTOR (PHASE 2 & 4)
METAL JUNCTION BOX WITH TERMINAL BOX
2" RSC RISER & WEATHERHEAD ABOVE
JUNCTION BOX WITH
1-12/C#12
3-3/C#12

LOOP DETECTOR CHART

NUMBER	SIZE (FT.)	LOCATION	STATUS
D1-1	6x6	40'	INPLACE
D1-2	6x6	10'	INPLACE
D2-1	6x6	475'	F & I
D2-2	6x6	188'	F & I
D4-1	6x6	120'	INPLACE
D4-2	6x6	120'	INPLACE
D4-3	6x15	0'	INPLACE
D4-4	6x6	15'	INPLACE
D4-5	6x6	0'	INPLACE
D6-1	6x6	475'	INPLACE

ALL LOOP DETECTORS SHALL BE RIGID
PVC LOOP DETECTORS PER MNDOT
STANDARD PLATE 8132.
LOCATION = DISTANCE FROM CROSSWALK
OR STOP BAR TO FRONT OF DETECTOR
IN FEET.

SIGNAL FACE CHART

FACE	R	Y	G	G	Y
2-1, 2-2, 2-3	○	○	○		
4-1, 4-2, 4-3	○	○	○		
6-1, 6-2	○	○	○		
6-3, 6-4	○	○	○	◀	◀

-ALL VEHICLE SIGNAL INDICATIONS SHALL BE
12" L.E.D.
-EACH SIGNAL FACE SHALL HAVE A BACKGROUND
SHIELD

DRAWN BY: JMG	DESIGNER: JMG	CHECKED BY: JMG
DESIGN TEAM	NO. BY DATE	REVISIONS

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: June 5, 2018 Name: John M. Gray, PE Lic. No. 22457

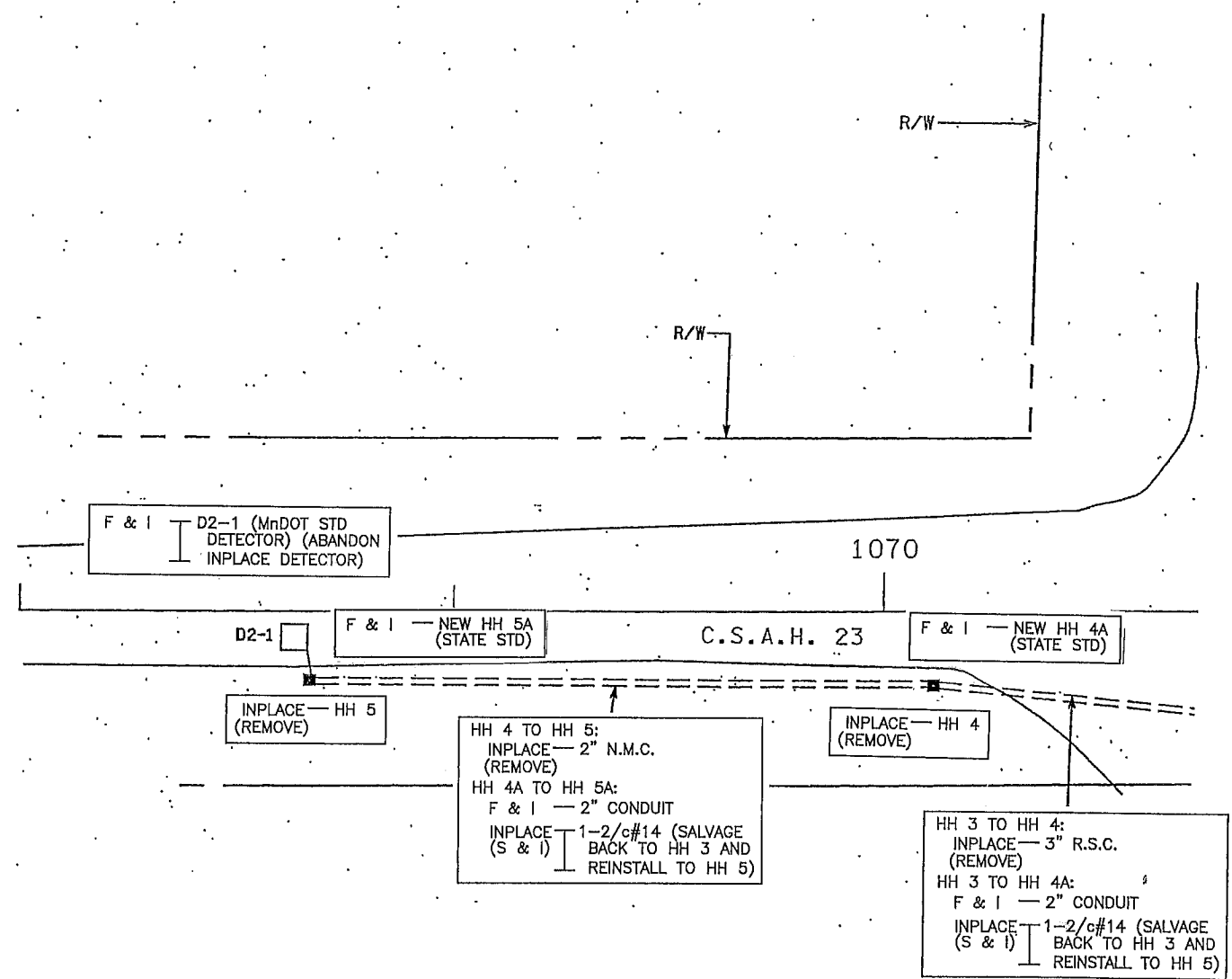


ANOKA COUNTY, MN
CITY OF COLUMBUS

SIGNAL STAGING REVISIONS
INTERSECTION LAYOUT
TH 35 WEST RAMPS AT CSAH 23 (LAKE DR)



- SIGNAL STAGING NOTES:**
- 1) ALL ITEMS OF THIS SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS OTHERWISE NOTED ON PLANS.
 - 2) ALL VEHICLE SIGNAL HEADS ARE INPLACE AND SHALL BE REUSED AND MAINTAINED IN OPERATION.
 - 3) ALL TRAFFIC SIGNAL MATERIALS AND ELECTRICAL EQUIPMENT TO BE FURNISHED AND INSTALLED BY CONTRACTOR FOR USE DURING TEMPORARY AND PERMANENT OPERATIONS SHALL BE APPROVED BY ENGINEER PRIOR TO INSTALLATION AT THE INTERSECTION. SEE SPECIAL PROVISIONS.
 - 4) SEE SPECIAL PROVISIONS REGARDING VIDEO DETECTION SYSTEM TO BE FURNISHED BY COUNTY AND INSTALLED, MADE OPERATIONAL, AIMED, AND REMOVED BY CONTRACTOR (INCLUDED AS PART OF PAY ITEM FOR "VIDEO DETECTOR SYSTEM B").
 - 5) CONTRACTOR SHALL REMOVE ALL COMPONENTS OF THE VIDEO DETECTOR SYSTEM AFTER ALL NEW PERMANENT LOOP DETECTORS ARE ABLE TO BE MADE OPERATIONAL.
 - 6) VIDEO DETECTOR SYSTEM SHALL BE INSTALLED AND PLACED INTO OPERATION PRIOR TO STAGE 2 CONSTRUCTION WORK AND SHALL BE MAINTAINED IN OPERATION THROUGH STAGE 5 CONSTRUCTION.
 - 7) (F & I) = ITEMS TO BE FURNISHED & INSTALLED BY CONTRACTOR.
(S & I) = ITEMS TO BE SALVAGED & INSTALLED BY CONTRACTOR.
 - 8) LOCATION OF NEW HANDHOLES AND NEW LOOP DETECTORS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - 9) CONTRACTOR WILL BE PAID FOR ONLY THOSE HANDHOLES, LOOP DETECTORS, CONDUIT, AND CABLES REQUIRED TO BE REMOVED AND REPLACED AS PART OF THIS PROJECT (I.E. SOME EXISTING HANDHOLES, LOOP DETECTORS, AND CONDUIT MAY BE ABLE TO BE REUSED AND MAINTAINED INPLACE AND NOT REQUIRE REMOVAL OR REPLACEMENT SHOULD TEMPORARY PAVING OR MILL AND OVERLAY WORK BE ABLE TO BE COMPLETED WITHOUT IMPACTING THESE FACILITIES).
 - 10) CONTRACTOR SHALL MAINTAIN A SIGNAL SYSTEM IN OPERATION AT THIS INTERSECTION AT ALL TIMES, INCLUDING VEHICULAR DETECTION FOR ALL INTERSECTION APPROACHES.
 - 11) CONTRACTOR SHALL PROTECT AND MAINTAIN ALL ITEMS OF EXISTING PERMANENT SIGNAL SYSTEM THAT WILL BE REUSED DURING CONSTRUCTION AND SHALL REPLACE ITEMS DAMAGED DURING ANY CONSTRUCTION WITH NEW ITEMS (AT NO EXPENSE TO THE COUNTY OR THE STATE).
 - 12) NEW HANDHOLES TO BE FURNISHED & INSTALLED BY CONTRACTOR FOR THIS SIGNAL SYSTEM SHALL BE IN ACCORDANCE WITH MnDOT APPROVED/QUALIFIED PRODUCTS LIST. NEW HANDHOLE COVERS SHALL BE INSCRIBED WITH "MNDOT SIGNALS". ANY HANDHOLE IMPACTED BY CONSTRUCTION SHALL BE ADJUSTED TO FINISHED SURROUNDING GRADE (INCIDENTAL).
 - 13) NEW LOOP DETECTORS TO BE FURNISHED AND INSTALLED BY THE CONTRACTORS SHALL BE IN ACCORDANCE WITH MnDOT STANDARD PLATE 8132. SEE SPECIAL PROVISIONS FOR FURTHER INFORMATION.
 - 14) SEE SPECIAL PROVISIONS & STATEMENT OF ESTIMATED QUANTITIES REGARDING PAY ITEMS FOR ALL TRAFFIC SIGNAL WORK DURING STAGING AND ROAD CONSTRUCTION.



NOTE: THIS PLAN IS INTENDED TO SHOW EQUIPMENT THAT IS TO BE REMOVED, FURNISHED, INSTALLED, AND MADE OPERATIONAL DURING OVERALL STAGING OF CONSTRUCTION ON CSAH 23 TO ACCOMMODATE BOTH TEMPORARY & PERMANENT OPERATION OF VEHICULAR DETECTION IN THE VICINITY OF CONSTRUCTION. VEHICULAR DETECTION IS REQUIRED TO BE PROVIDED AND MAINTAINED FOR BOTH STOP BAR AND ADVANCE DETECTION FOR ALL STAGES OF CONSTRUCTION.

SYSTEM ID: 22482
 METER ADDRESS: HWY 97 AND 35 WEST RAMP
 MASTER ID: 22483

CP 2017-7
 S.A.P. 002-623-018

DRAWN BY: JMG				
DESIGNER: JMG				
CHECKED BY: JMG				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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.

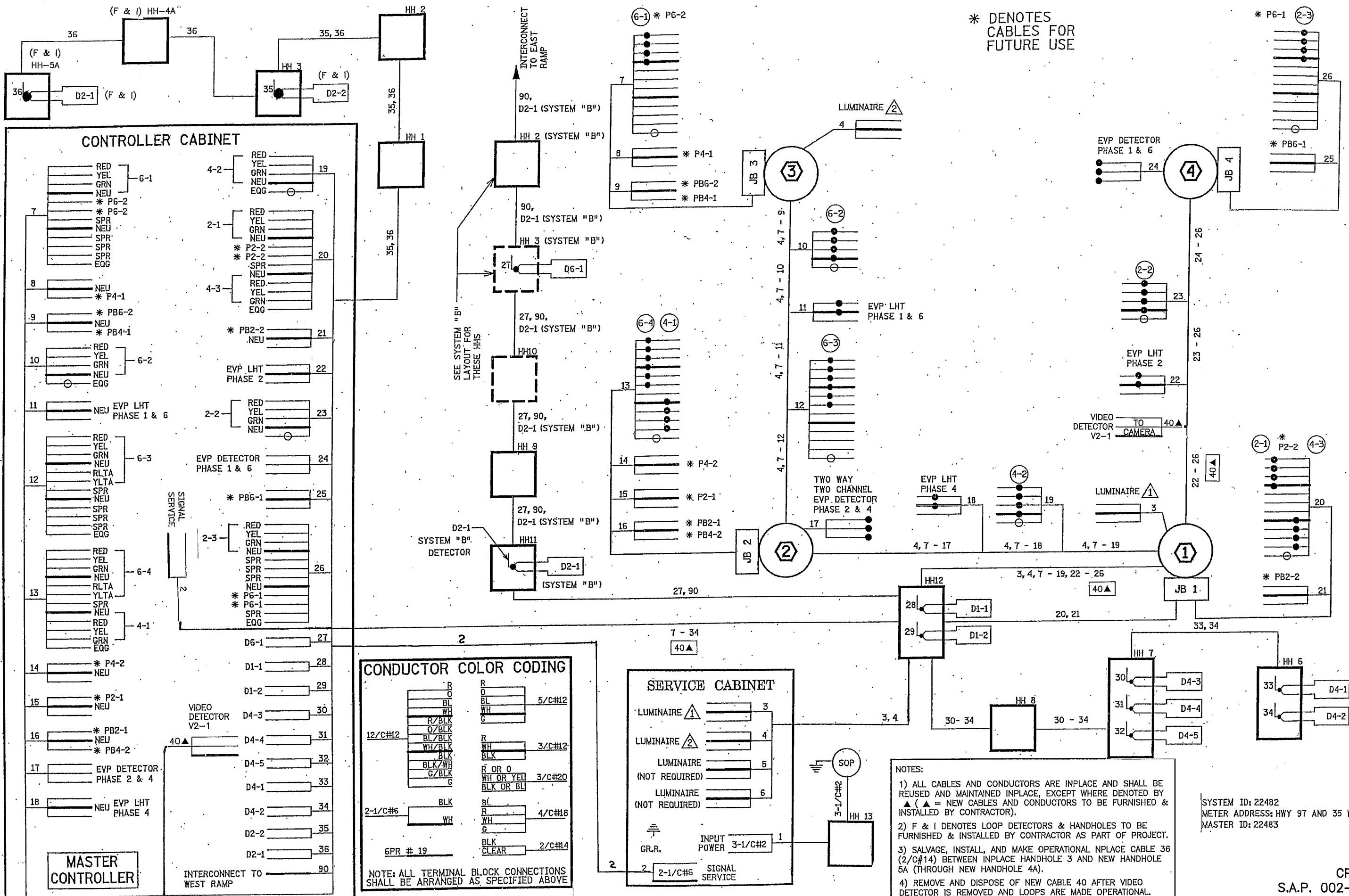
John M. Gray
 Name: John M. Gray, PE
 Date: June 5, 2018
 Lic. No. 22457

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 PHONE: (651) 490-2000
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 ST. PAUL, MN 55110

ANOKA COUNTY, MN
 CITY OF COLUMBUS

SIGNAL STAGING REVISIONS
 MATCH LINES AND GENERAL NOTES
 TH 35 WEST RAMPS AT CSAH 23 (LAKE DR)

SIGNAL SHEET 110
 6 OF 7
 134



* DENOTES CABLES FOR FUTURE USE

CONTROLLER CABINET

CONDUCTOR COLOR CODING

SERVICE CABINET

- NOTES:
- 1) ALL CABLES AND CONDUCTORS ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, EXCEPT WHERE DENOTED BY ▲ (▲ = NEW CABLES AND CONDUCTORS TO BE FURNISHED & INSTALLED BY CONTRACTOR).
 - 2) F & I DENOTES LOOP DETECTORS & HANDHOLES TO BE FURNISHED & INSTALLED BY CONTRACTOR AS PART OF PROJECT.
 - 3) SALVAGE, INSTALL, AND MAKE OPERATIONAL INPLACE CABLE 36 (2/C#14) BETWEEN INPLACE HANDHOLE 3 AND NEW HANDHOLE 5A (THROUGH NEW HANDHOLE 4A).
 - 4) REMOVE AND DISPOSE OF NEW CABLE 40 AFTER VIDEO DETECTOR IS REMOVED AND LOOPS ARE MADE OPERATIONAL.

SYSTEM ID: 22482
METER ADDRESS: HWY 97 AND 35 WEST RAMP
MASTER ID: 22483

DRAWN BY: JMG
DESIGNER: JMG
CHECKED BY: JMG

NO.	BY	DATE	REVISIONS

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Name: John M. Gray, PE
Date: June 5, 2018 Lc. No. 22457

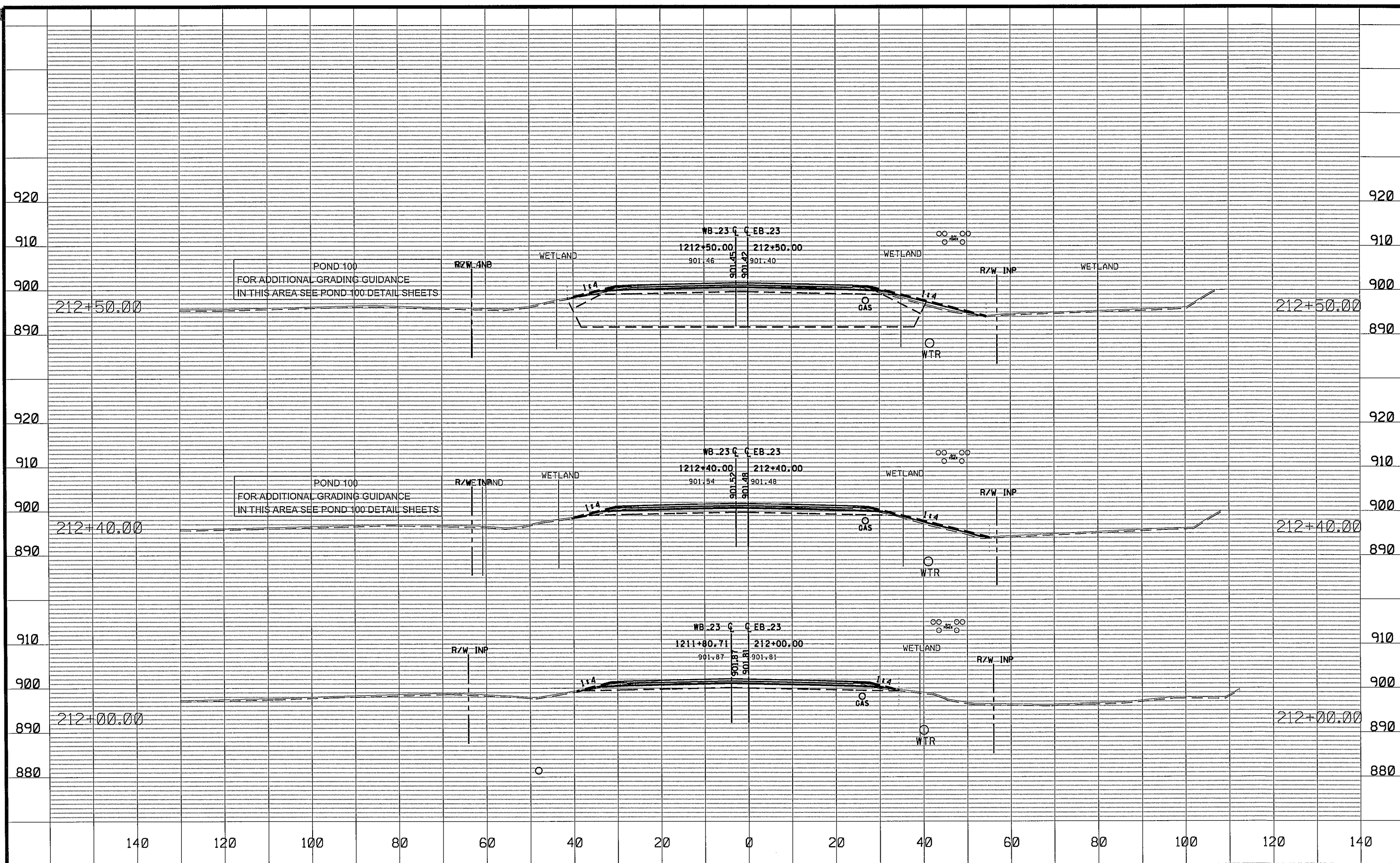
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PHONE: (651) 490-2000
3635 VADNAIS CENTER DR.
ST. PAUL, MN 55110

ANOKA COUNTY, MN
CITY OF COLUMBUS

SIGNAL STAGING REVISIONS
FIELD WIRING DIAGRAM
TH 35 WEST RAMPS AT CSAH 23 (LAKE DR)

SIGNAL SHEET 111
7 OF 7
134

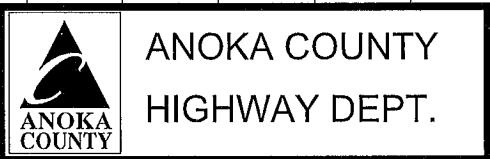
CP 2017-7
S.A.P. 002-623-018



NO	DATE	BY	CKD	APPR	REVISION

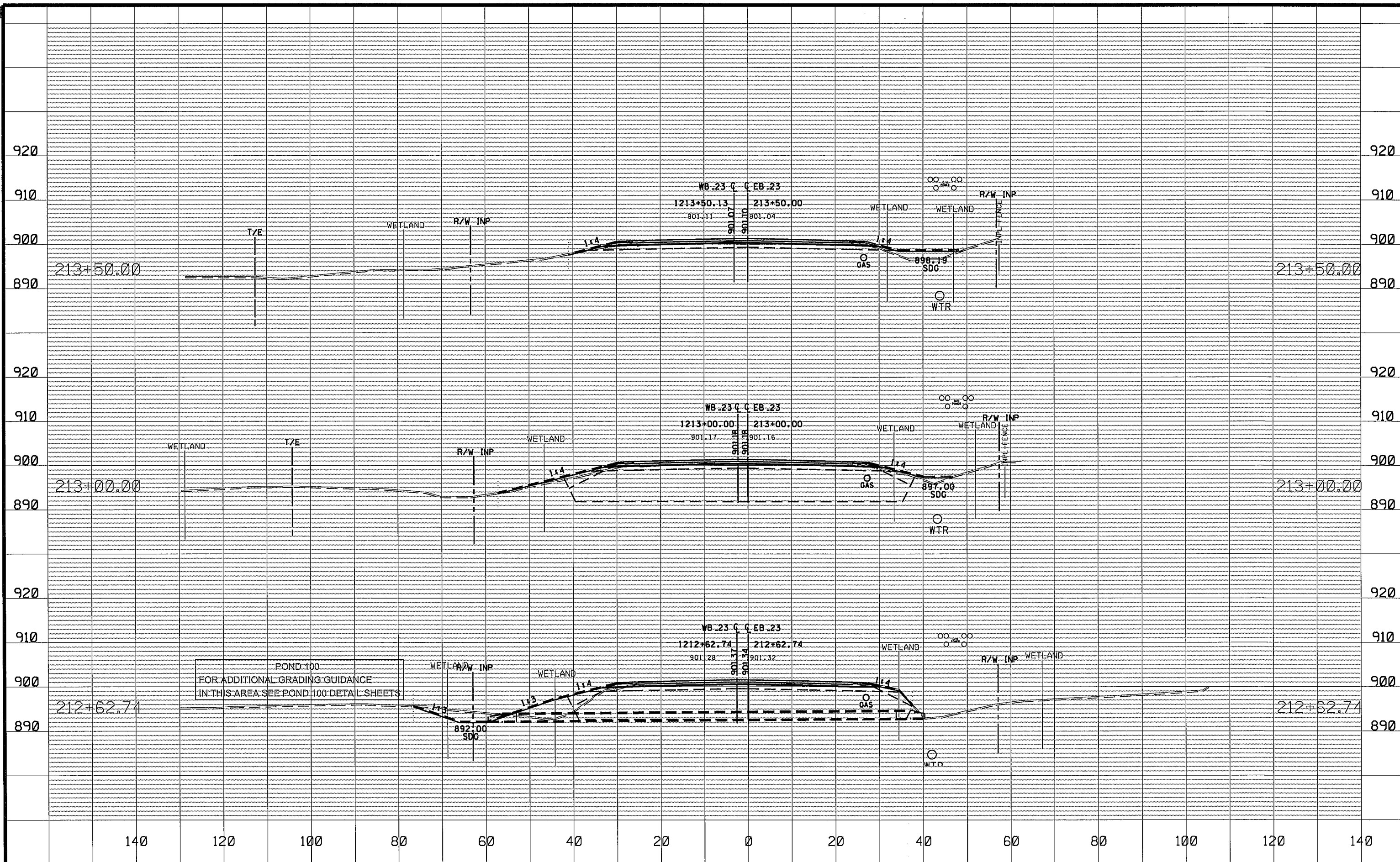
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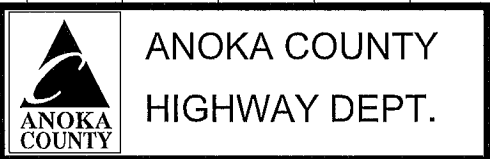
SAP 002-623-018
 CP 2017-7

CROSS SECTIONS
 CSAH 23
 STA 212+00.00 TO 212+50.00
 Sheet 112 of 134 Sheets



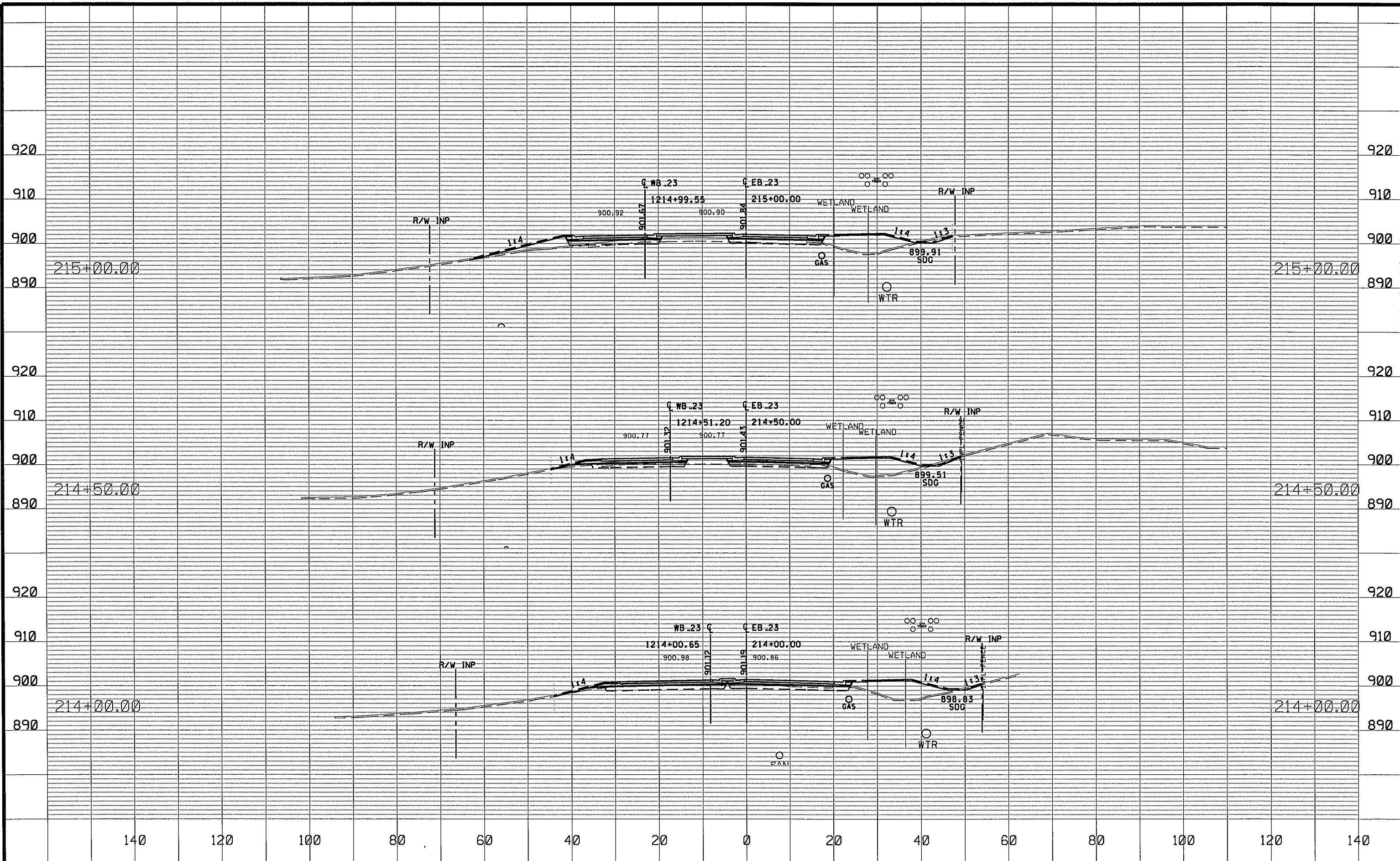
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DRAWN BY JRB DATE 05-15-18
 DESIGN BY JRB DATE 06-16-18
 CHECKED BY EJM DATE 06-07-18



SAP 002-623-018
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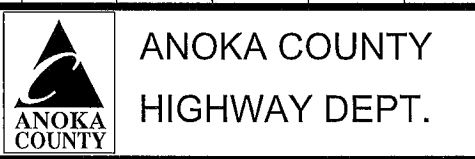
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 STA 212+62.74 TO 213+50.00
 Sheet 113 of 134 Sheets



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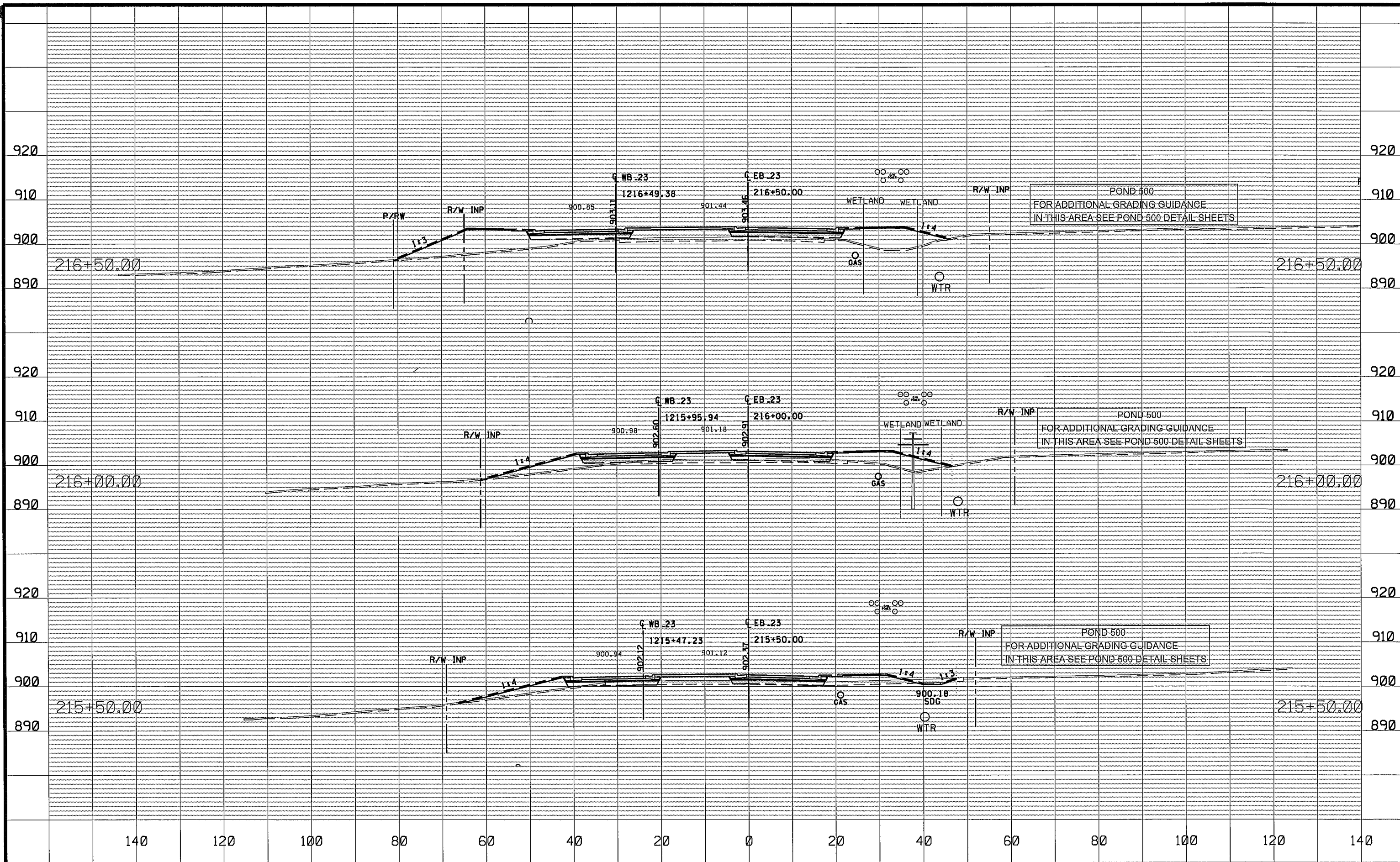
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SAP 002-623-018
 CP 2017-7

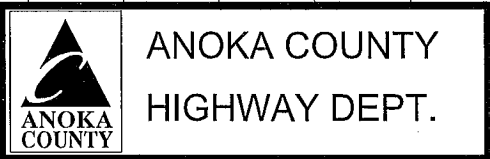
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 STA 214+00.00 TO 215+00.00
 Sheet 114 of 134 Sheets



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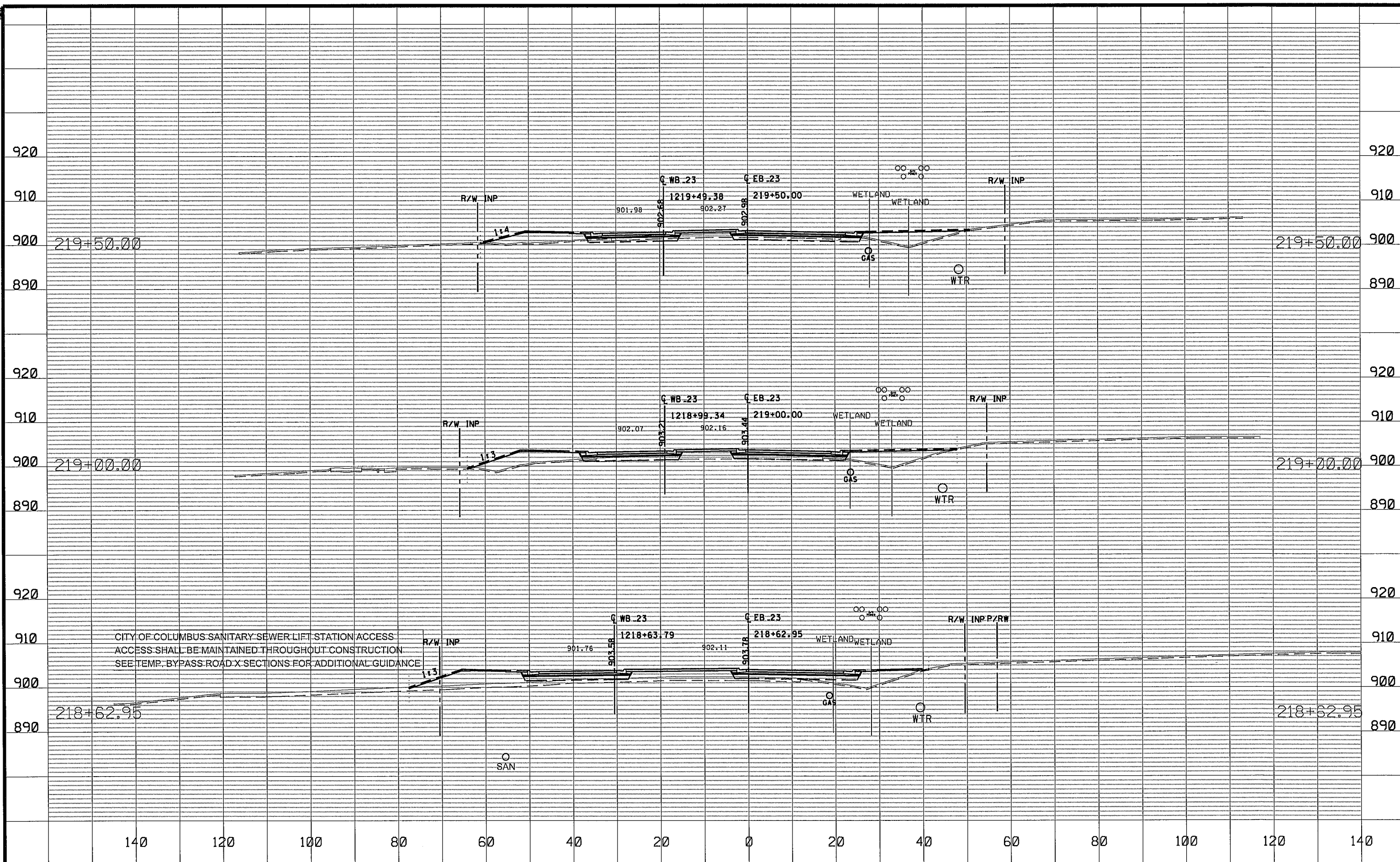
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DRAWN BY JRB DATE 05-15-18
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CROSS SECTIONS
 CSAH 23
 STA 215+50.00 TO 216+50.00
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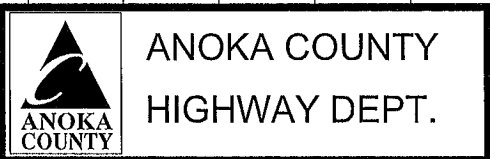


CITY OF COLUMBUS SANITARY SEWER LIFT STATION ACCESS
 ACCESS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION
 SEE TEMP. BYPASS ROAD X-SECTIONS FOR ADDITIONAL GUIDANCE

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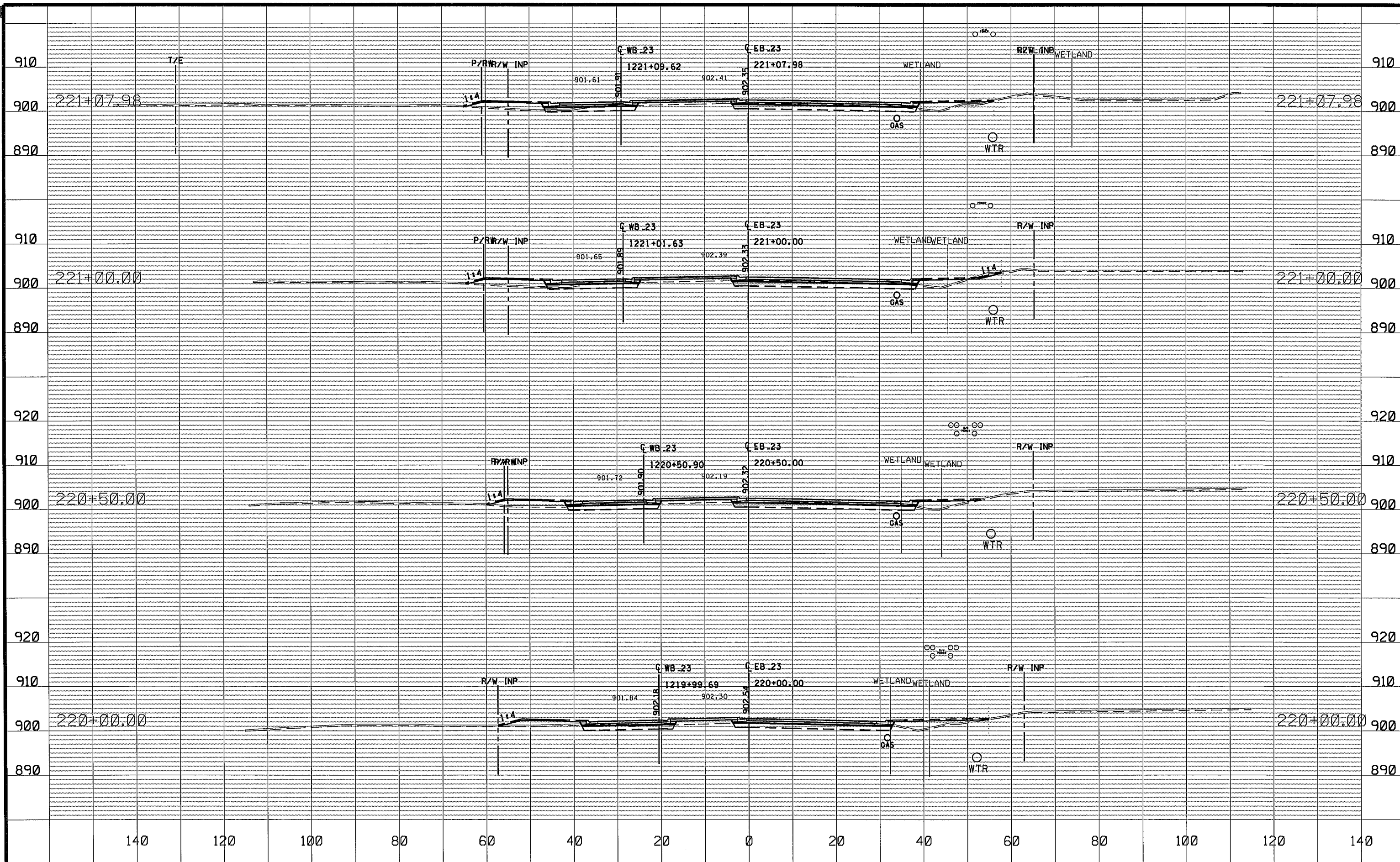
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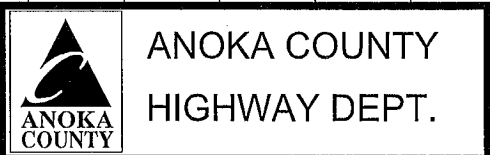
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 STA 218+62.95 TO 219+50.00
 Sheet 116 of 134 Sheets



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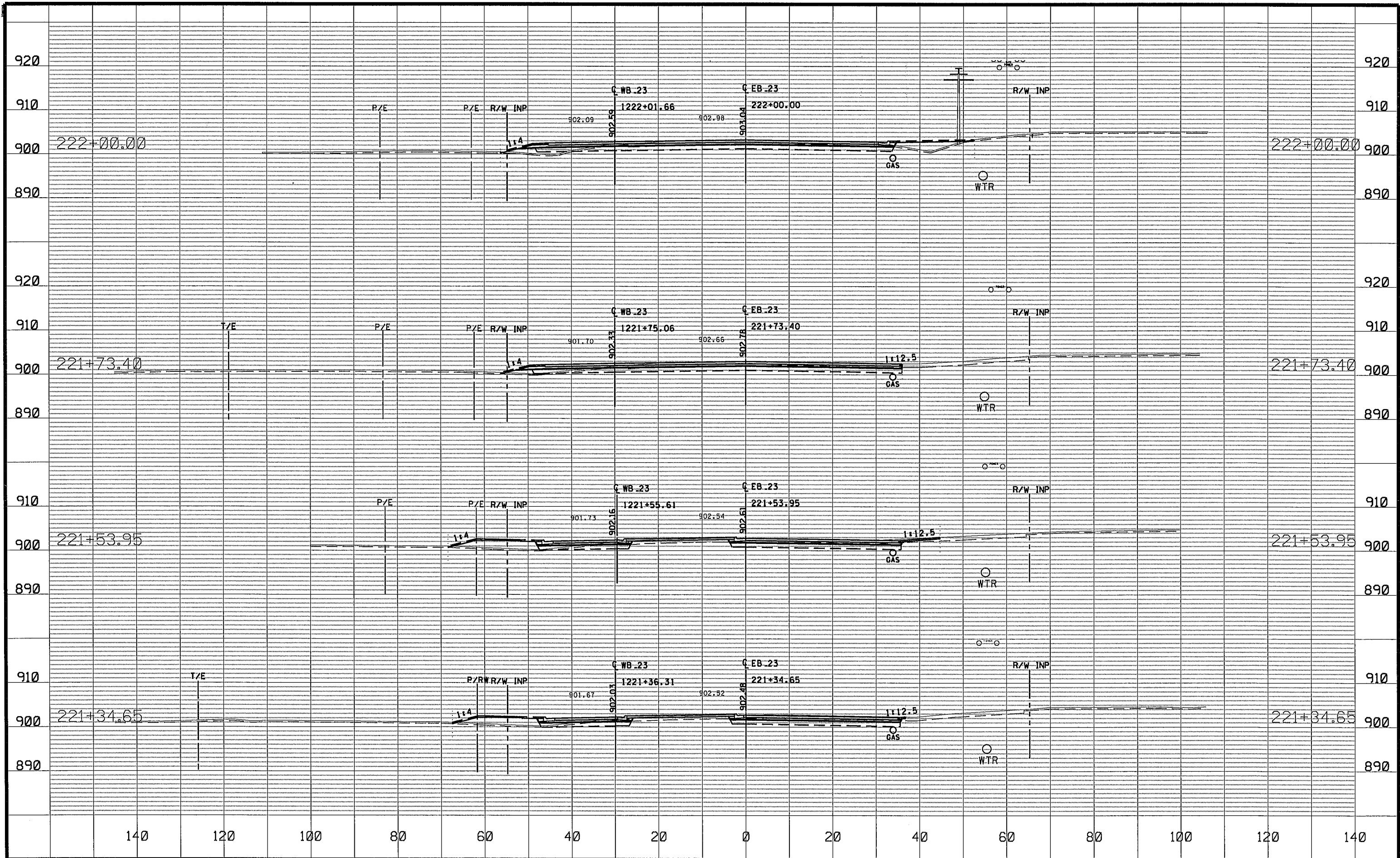
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 CHECKED BY EJM DATE 06-07-18



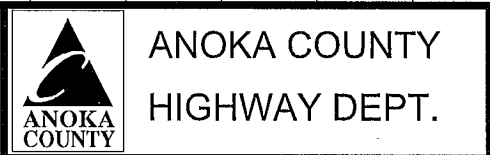
SAP 002-623-018
CP 2017-7

CROSS SECTIONS
CSAH 23
STA 220+00.00 TO 221+07.98
Sheet 117 of 134 Sheets



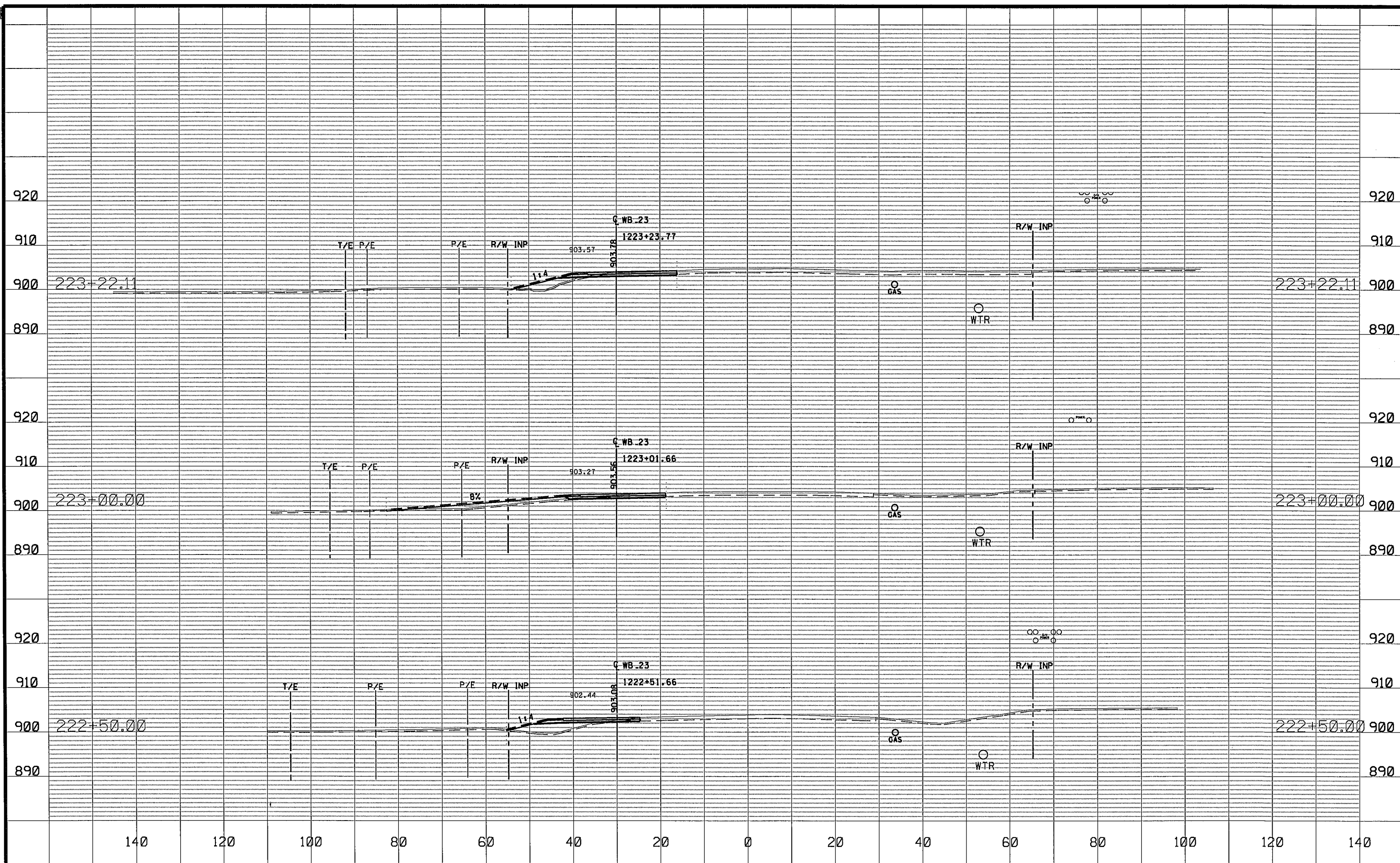
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 CHECKED BY EJM DATE 06-07-18



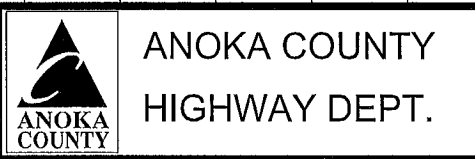
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 CP 2017-7

CROSS SECTIONS
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 STA 221+34.65 TO 222+00.00
 Sheet 118 of 134 Sheets



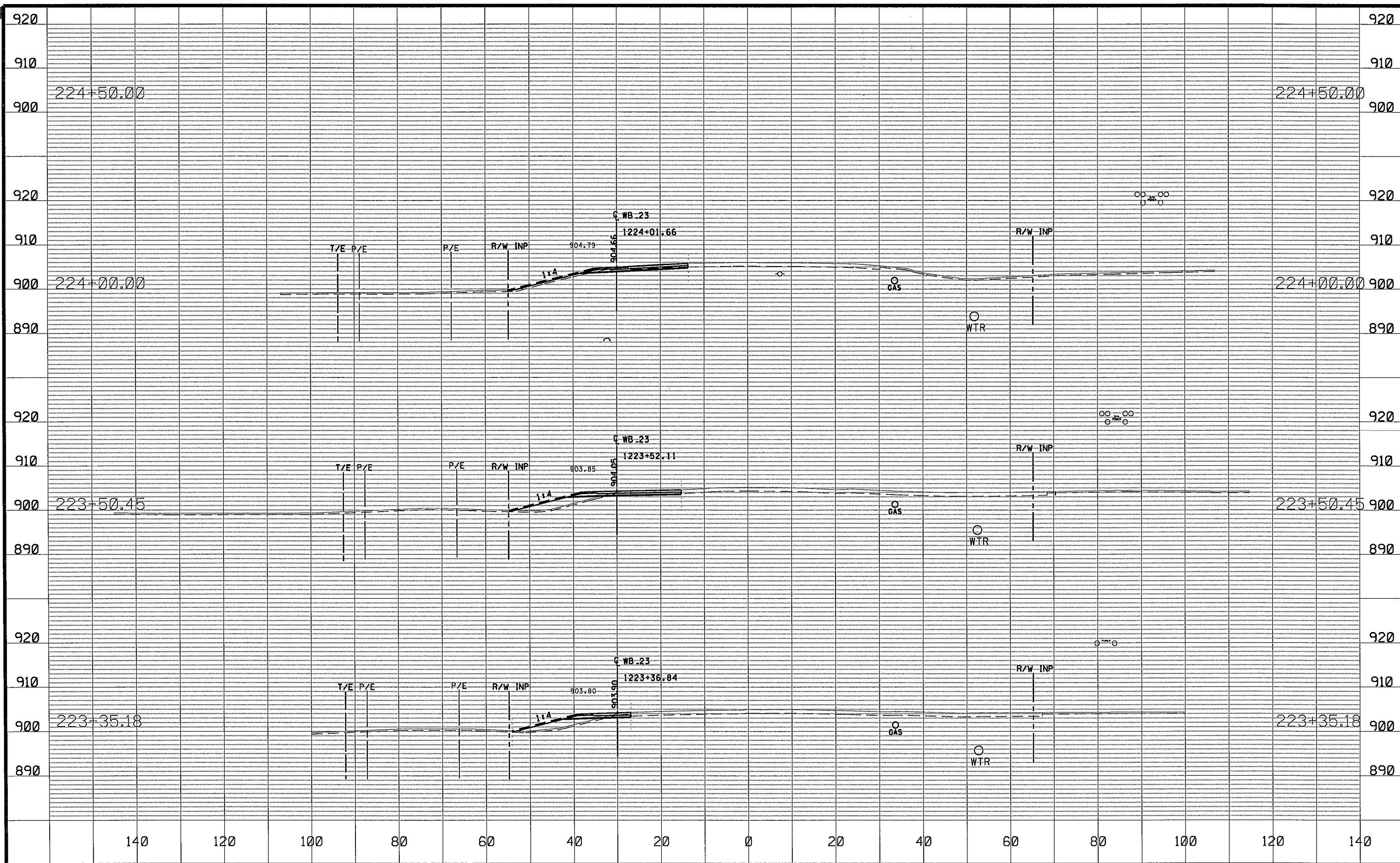
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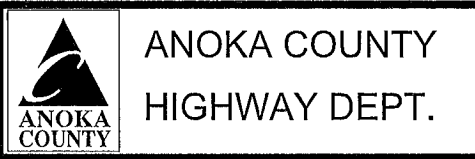
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 STA 222+50.00 TO 223+22.11
 Sheet 119 of 134 Sheets



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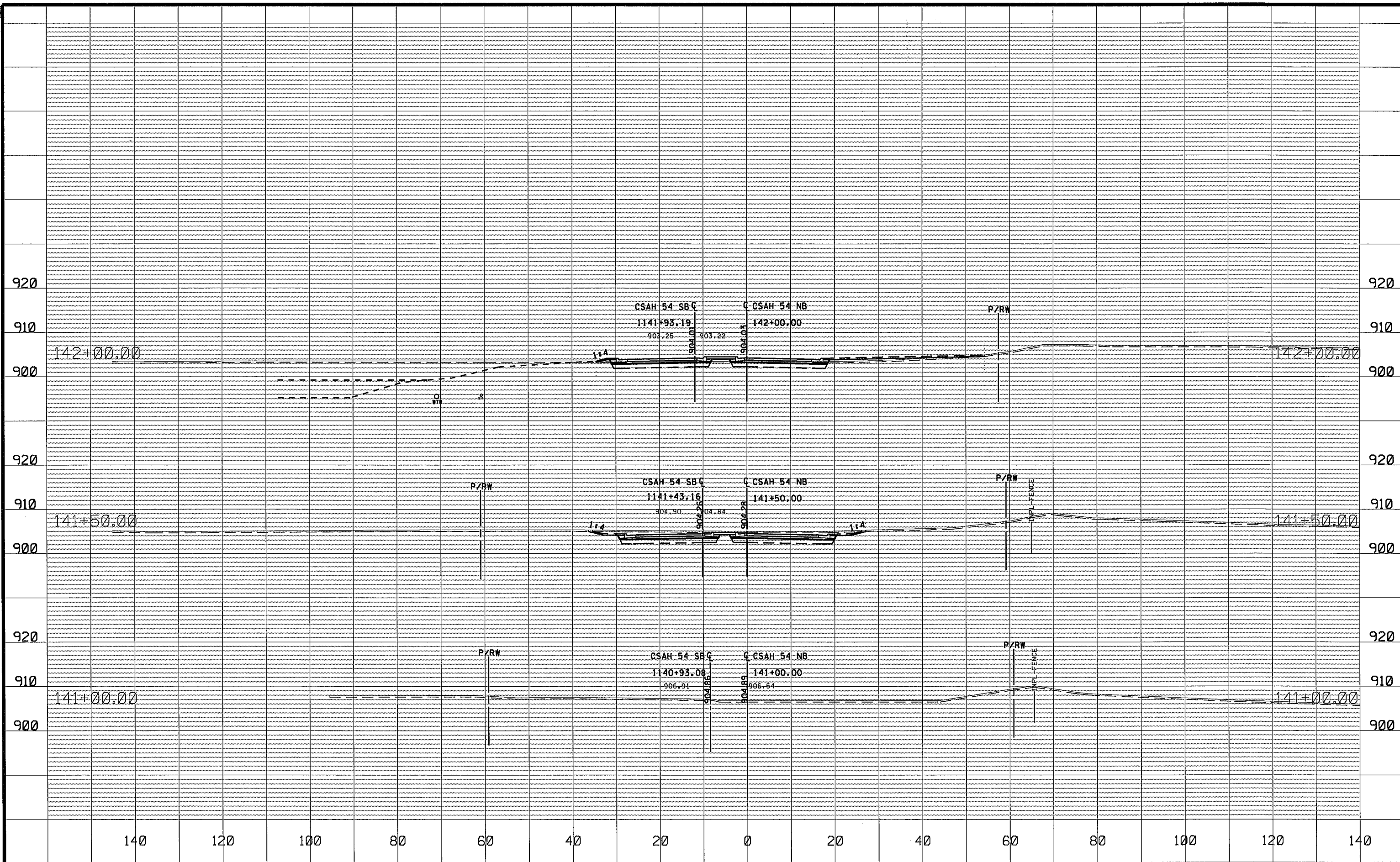
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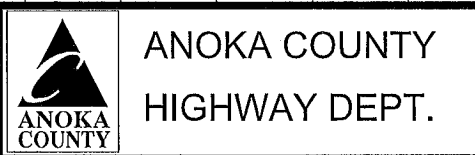
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CROSS SECTIONS
CSAH 23
STA 223+35.18 TO 224+50.00
Sheet 120 of 134 Sheets



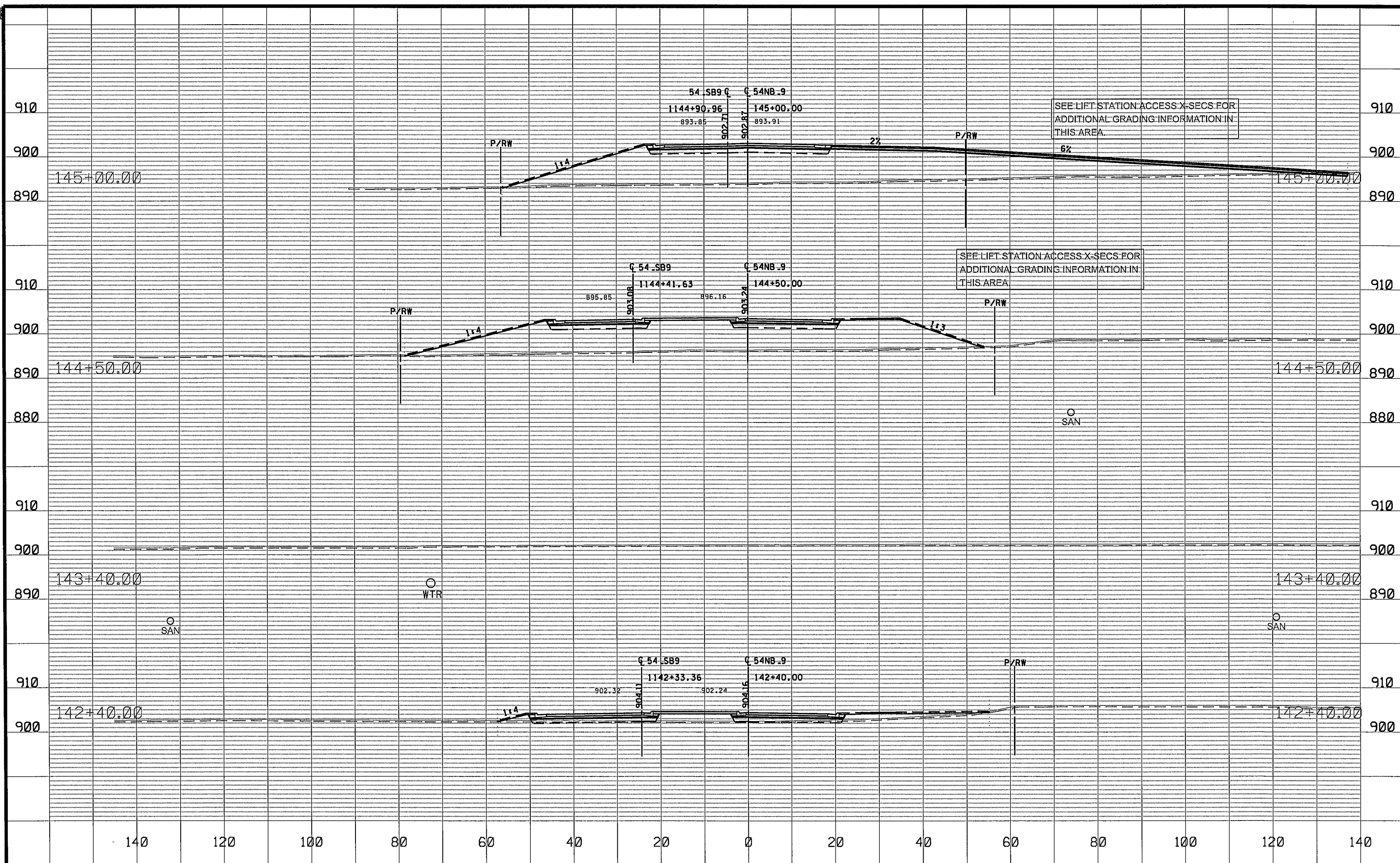
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 CHECKED BY EJM DATE 06-07-18



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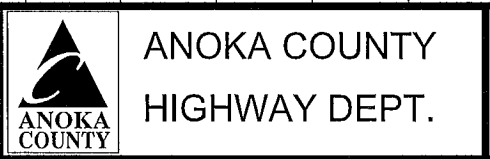
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 STA 141+00.00 TO 142+00.00
 Sheet 121 of 134 Sheets



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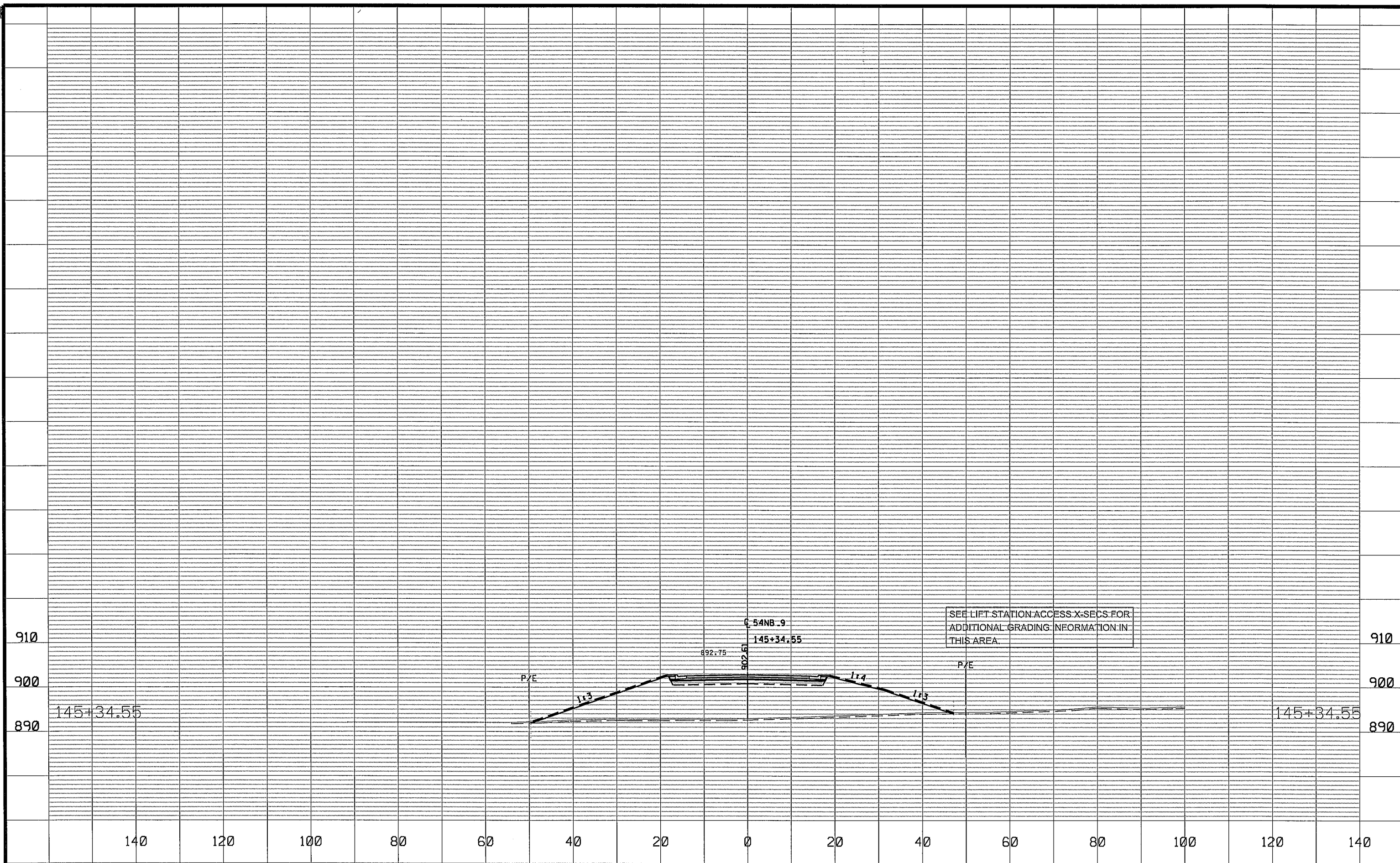
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 DESIGN BY JRB DATE 05-16-18
 CHECKED BY EJM DATE 06-07-18



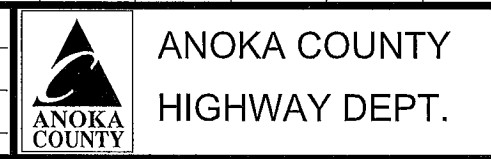
SAP 002-623-018
 CP 2017-7

CROSS SECTIONS
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 Sheet 122 of 134 Sheets



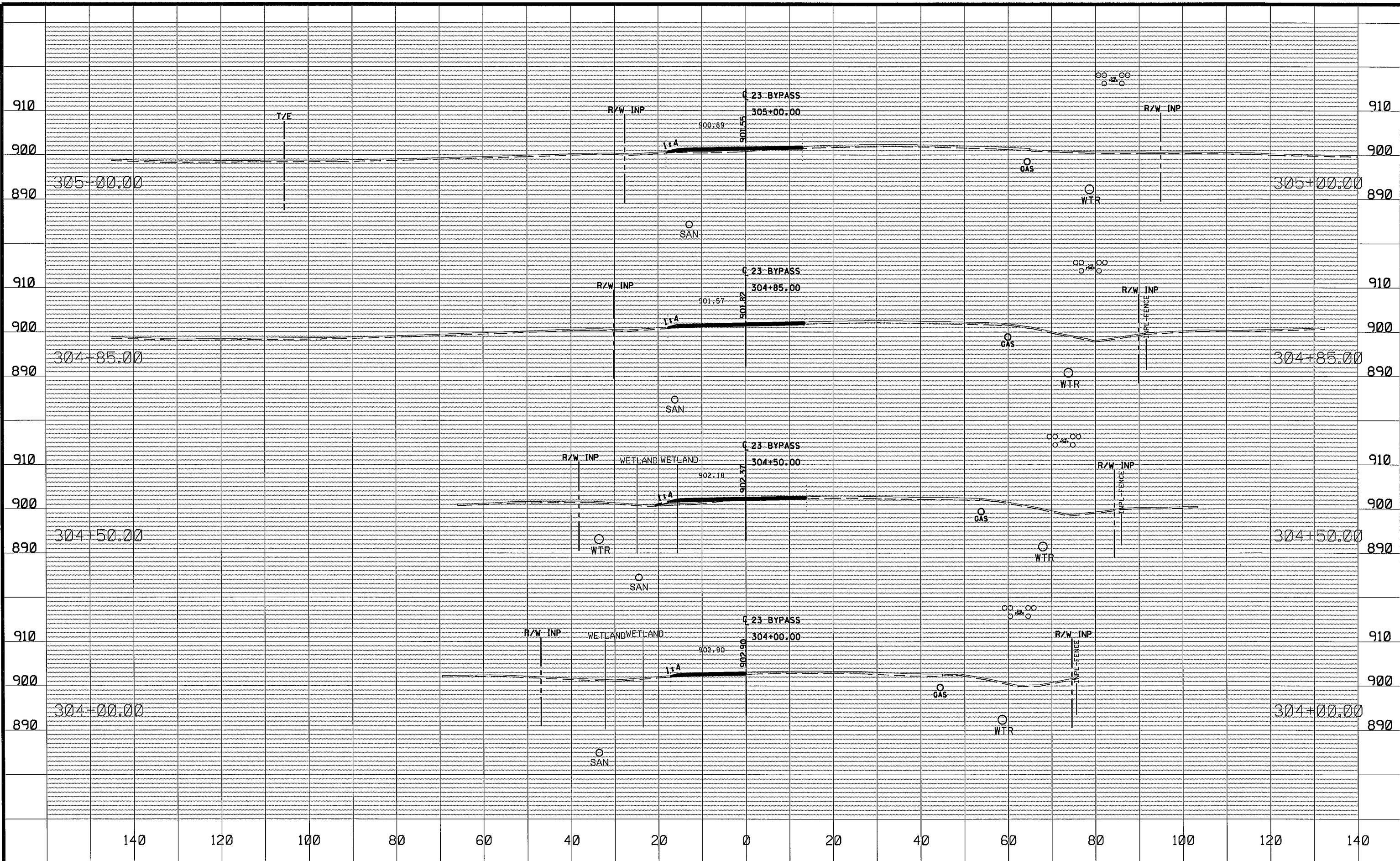
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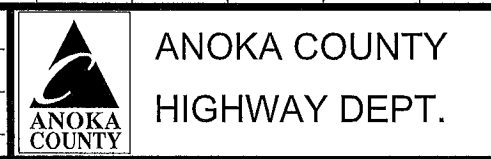
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CP 2017-7

CROSS SECTIONS
STA 145+34.55 TO 145+34.55
Sheet 123 of 134 Sheets



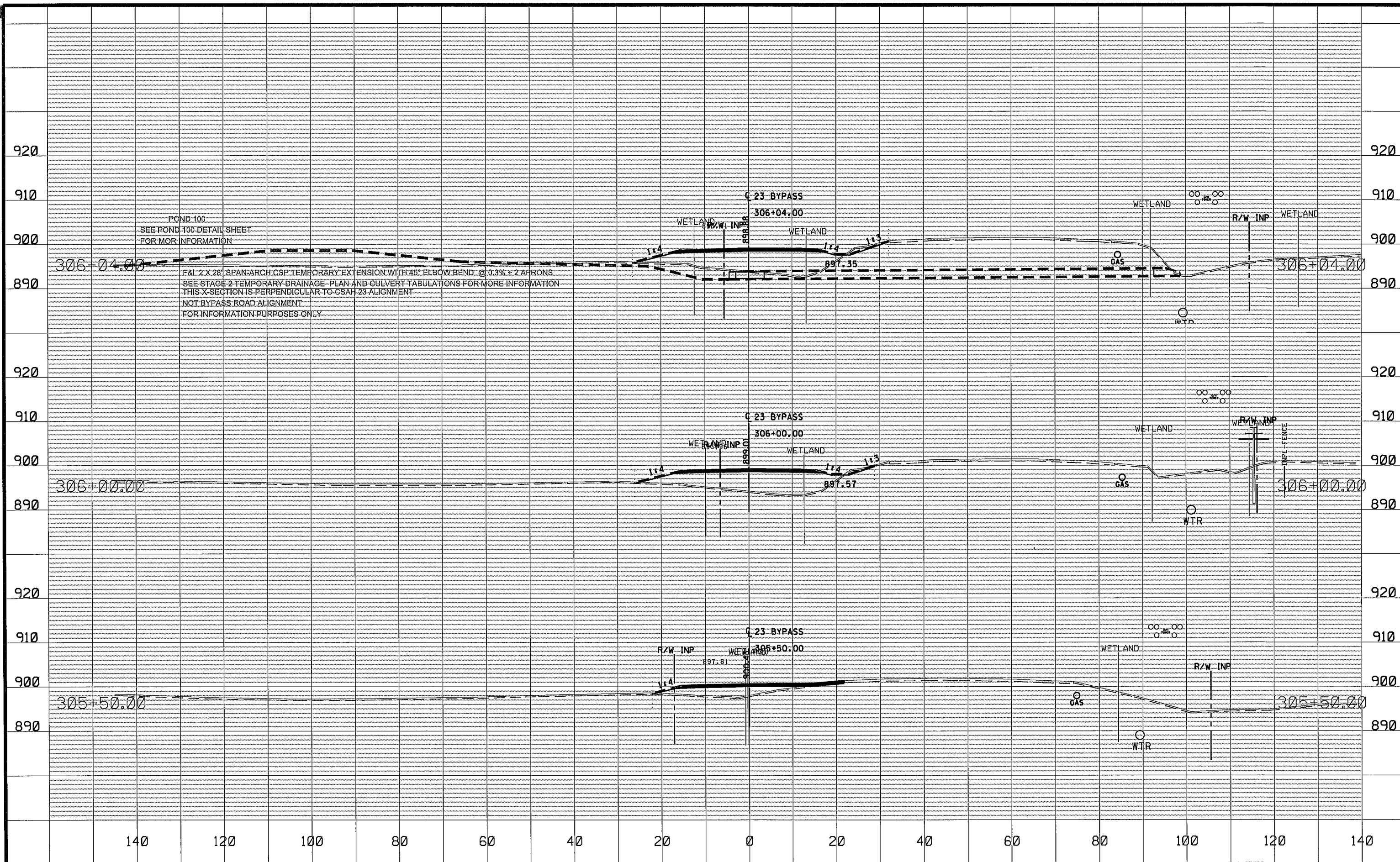
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 CHECKED BY EJM DATE 06-07-18



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CROSS SECTIONS
 STA 304+00.00 TO 305+00.00
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POND 100
SEE POND 100 DETAIL SHEET
FOR MORE INFORMATION

F&I 2 X 28' SPAN ARCH CSP TEMPORARY EXTENSION WITH 45° ELBOW BEND @ 0.3% + 2 APRONS
SEE STAGE 2 TEMPORARY DRAINAGE PLAN AND GULVERT TABULATIONS FOR MORE INFORMATION
THIS X-SECTION IS PERPENDICULAR TO CSAH 23 ALIGNMENT
NOT BYPASS ROAD ALIGNMENT
FOR INFORMATION PURPOSES ONLY

NO	DATE	BY	CKD	APPR	REVISION
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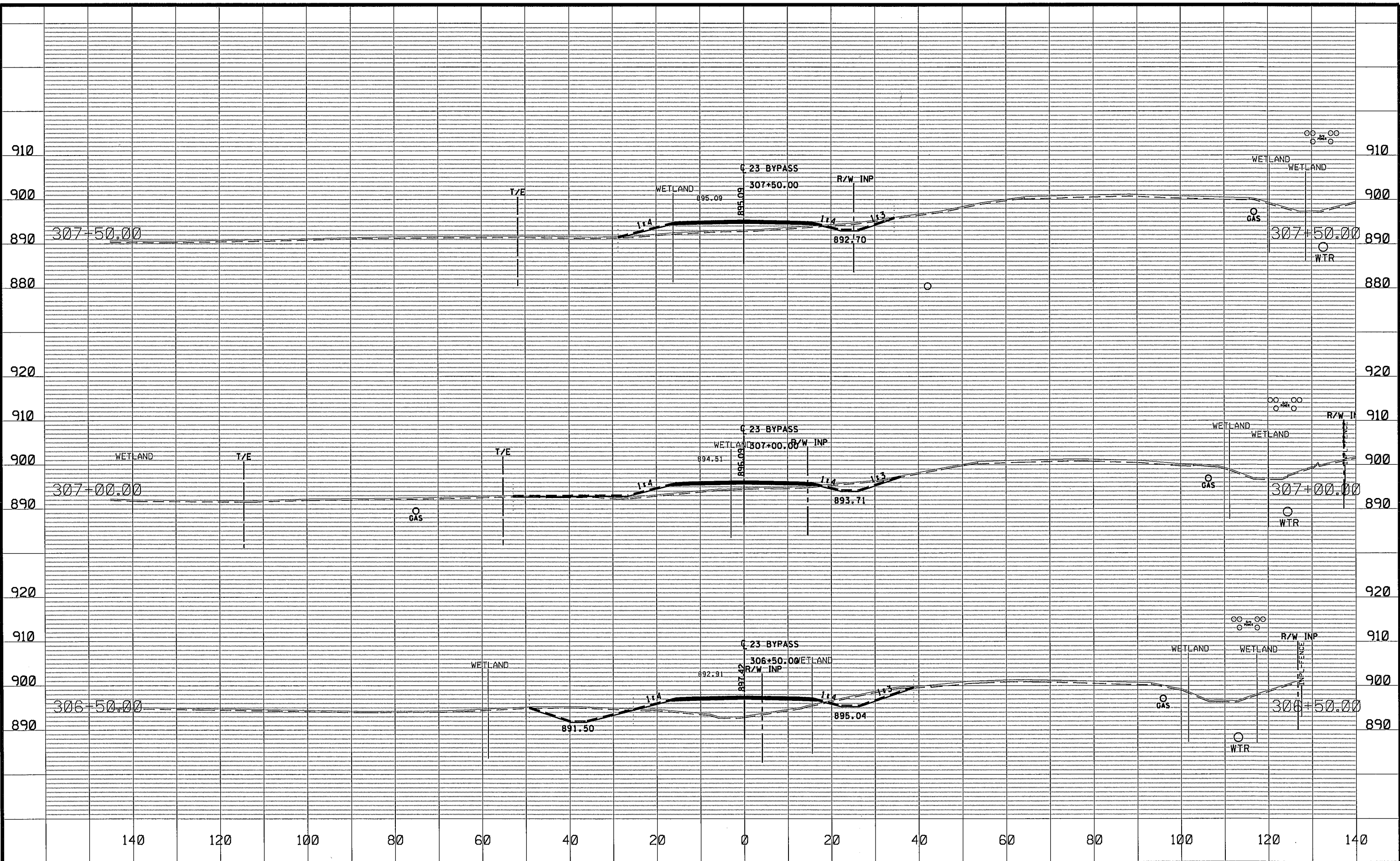
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DESIGN BY JRB DATE 05-15-18
CHECKED BY EJM DATE 06-07-18



ANOKA COUNTY
HIGHWAY DEPT.

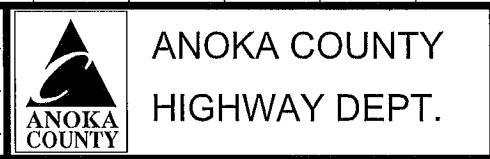
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CP 2017-7

CROSS SECTIONS
STA 305+50.00 TO 306+04.00
Sheet 125 of 134 Sheets



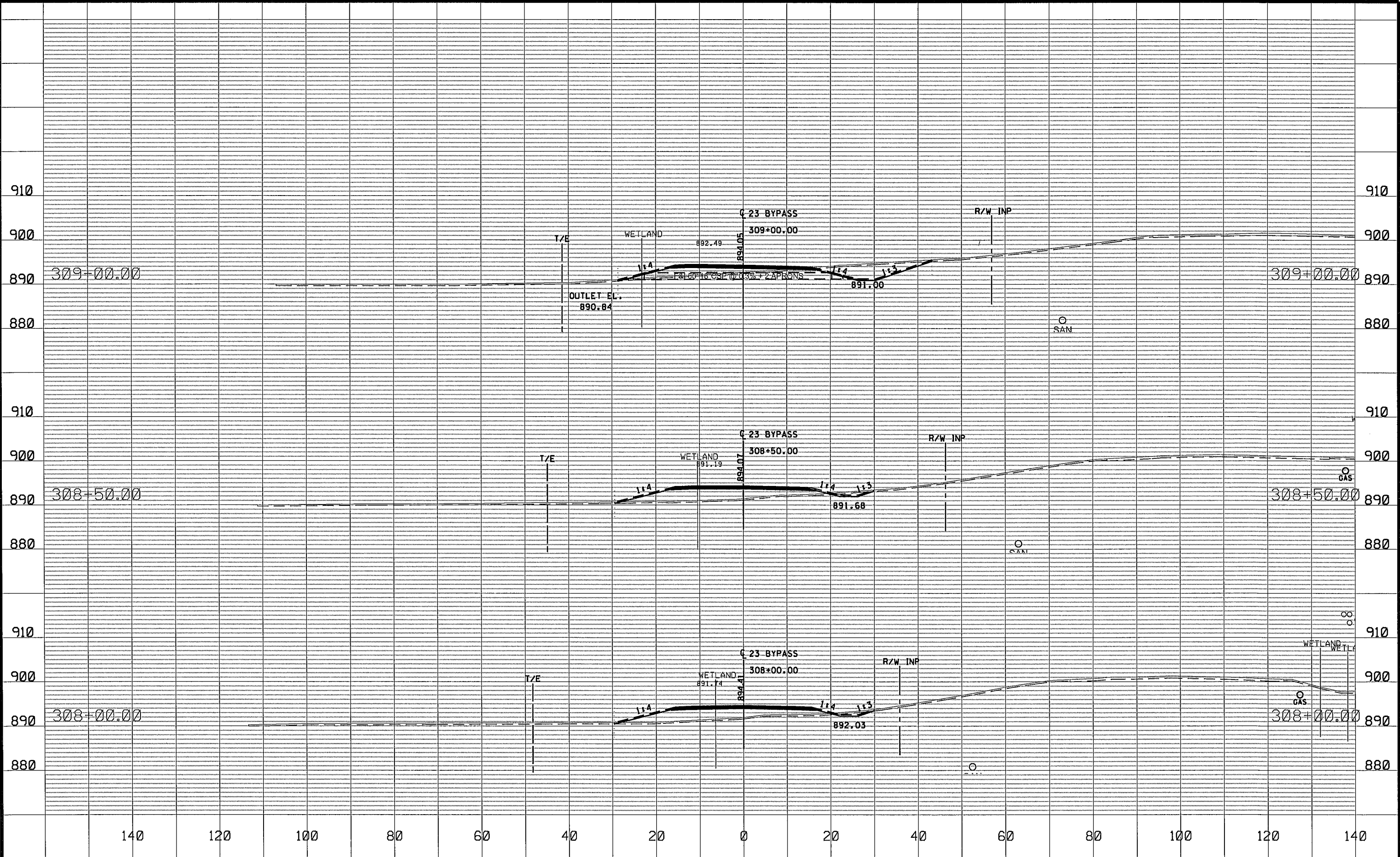
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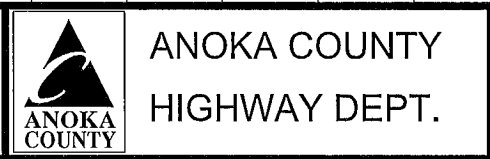
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 CP 2017-7

CROSS SECTIONS
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 Sheet 126 of 134 Sheets



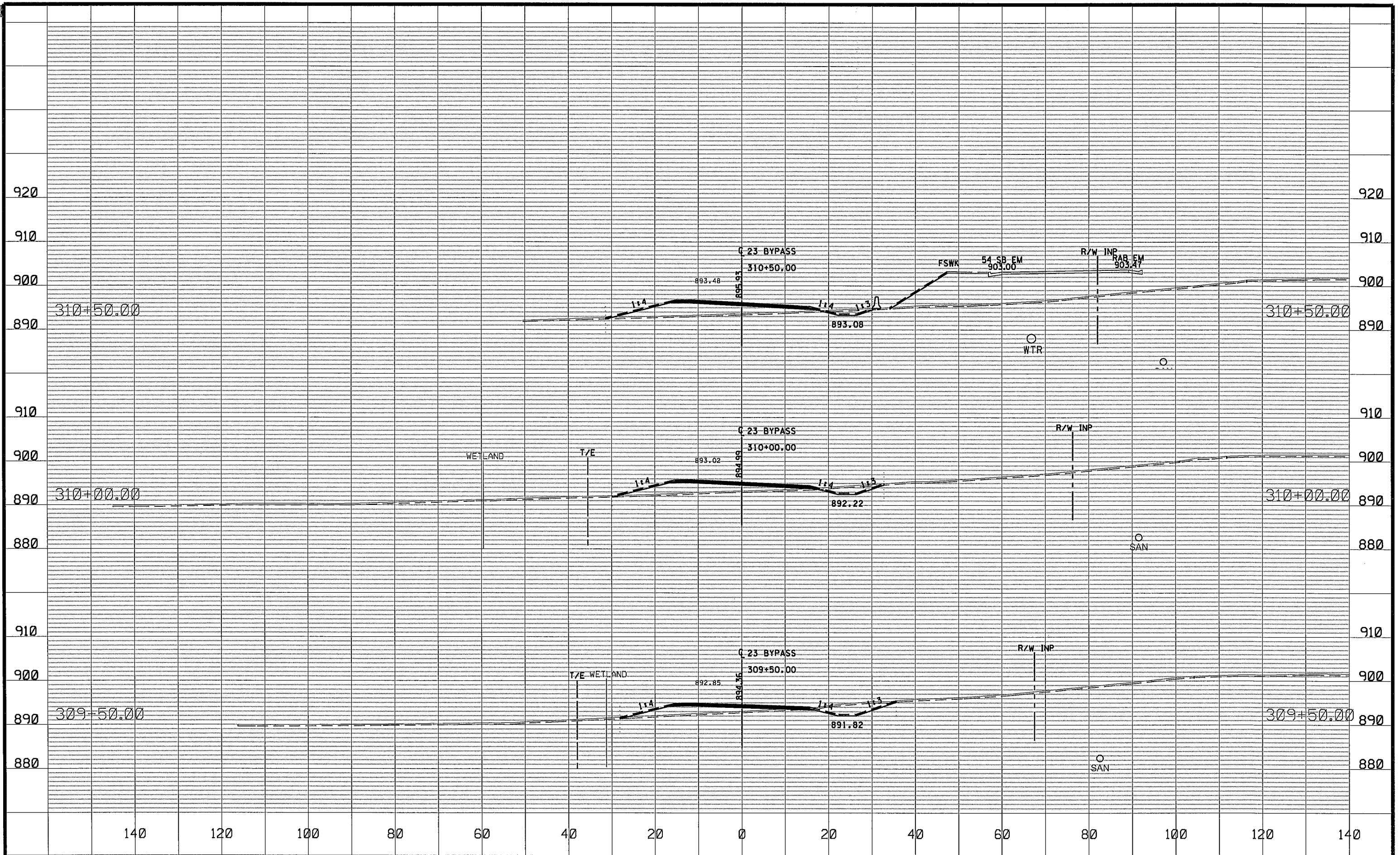
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CROSS SECTIONS
 STA 308+00.00 TO 309+00.00
 Sheet 127 of 134 Sheets



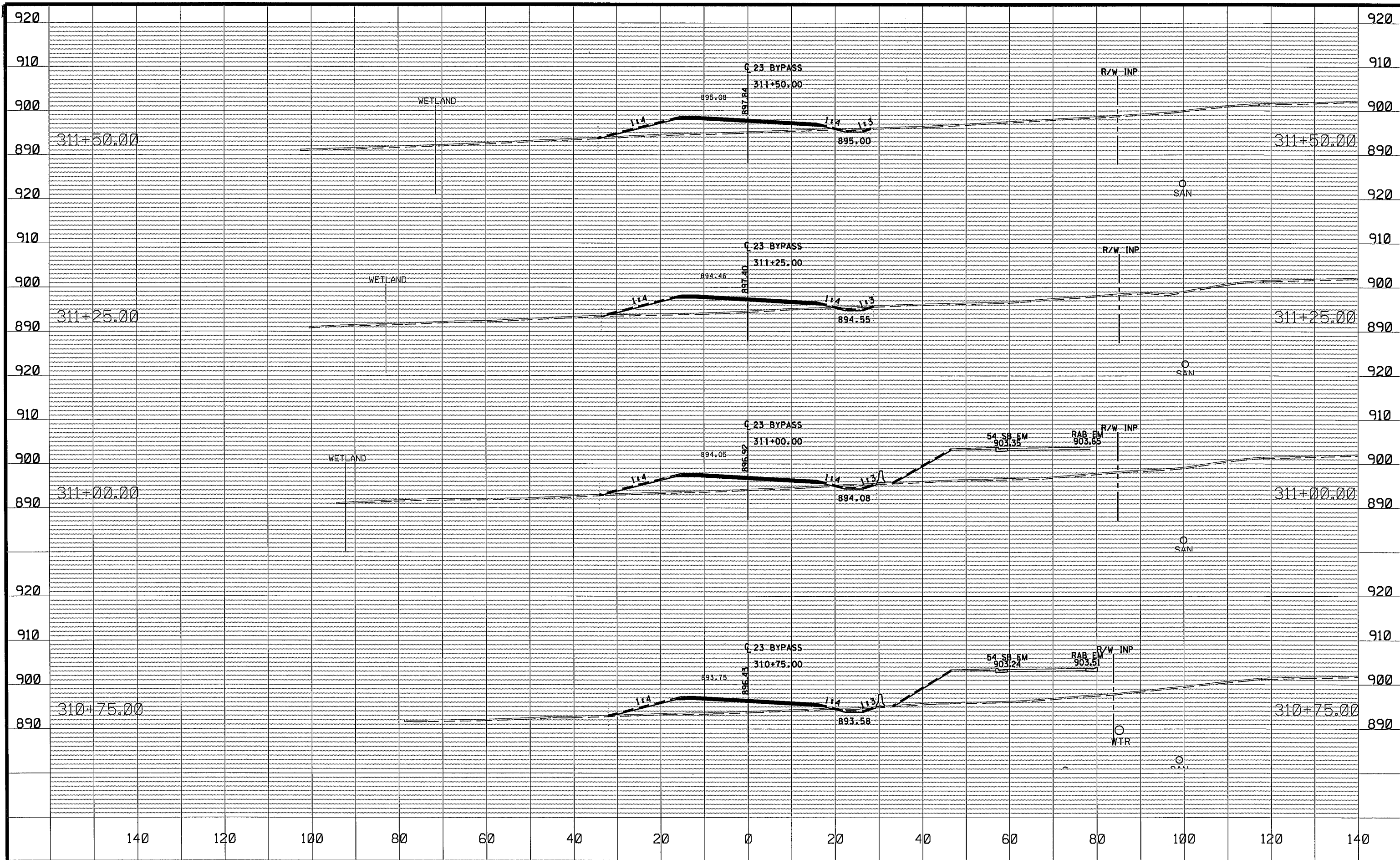
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DESIGN BY	JRB	DATE	05-15-18
CHECKED BY	EJM	DATE	06-07-18

ANOKA COUNTY
HIGHWAY DEPT.

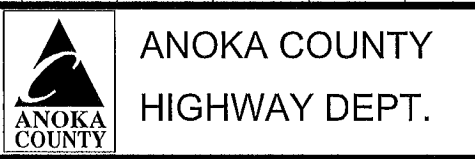
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CP 2017-7

CROSS SECTIONS
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Sheet 128 of 134 Sheets



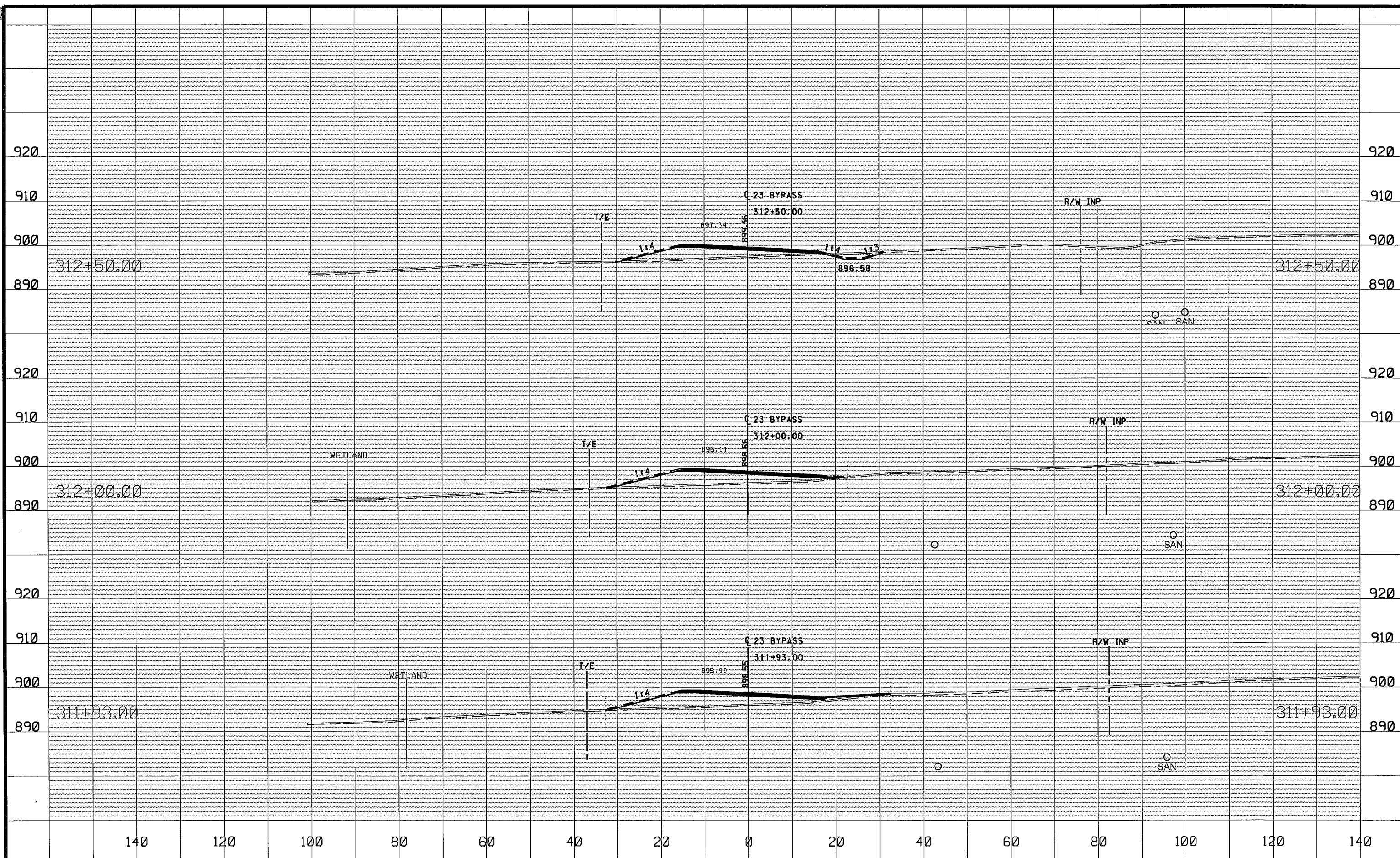
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 CP 2017-7

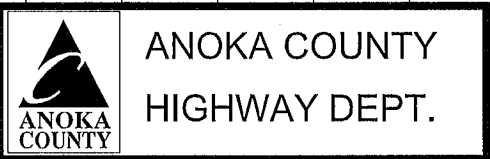
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 Sheet 129 of 134 Sheets



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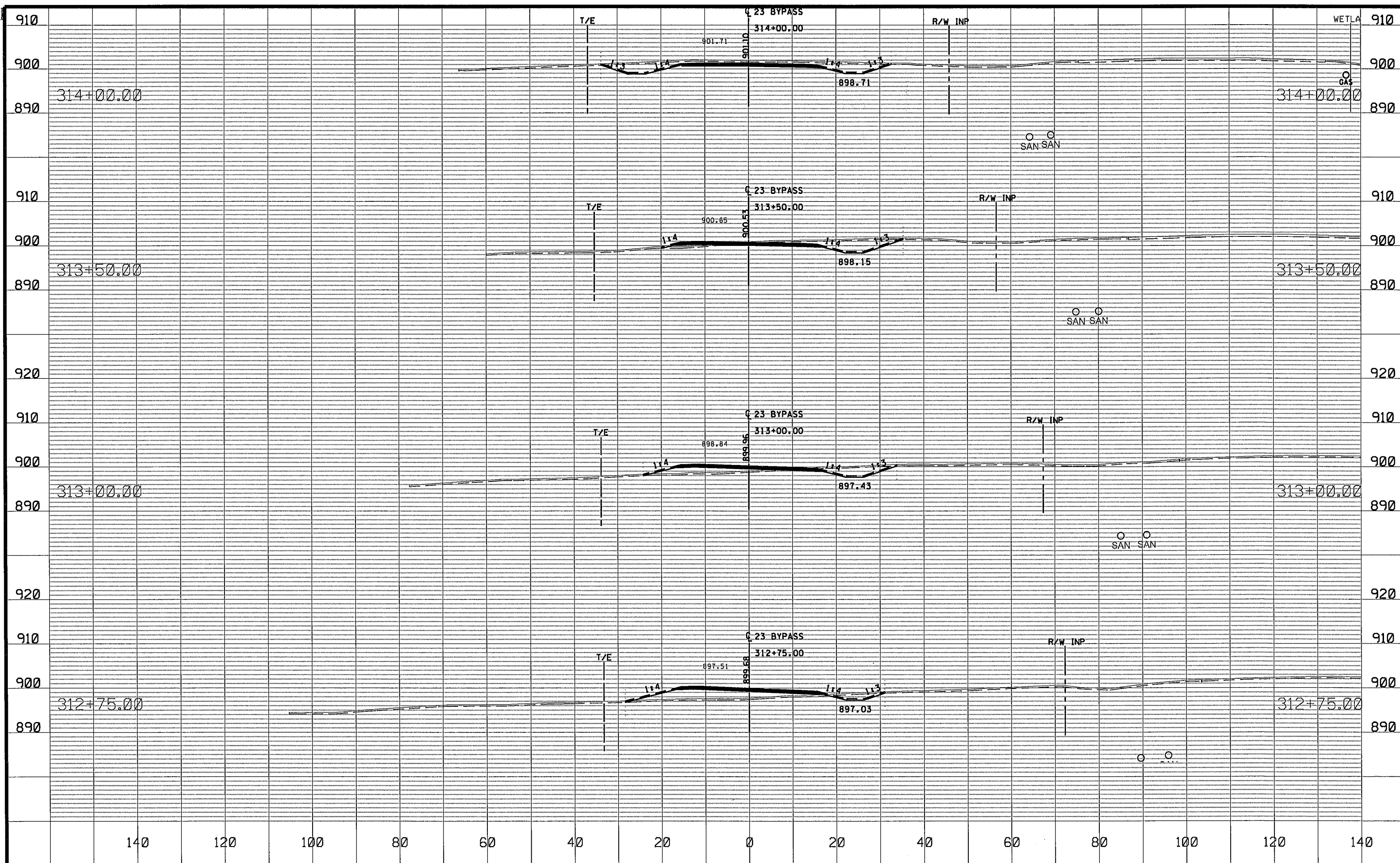
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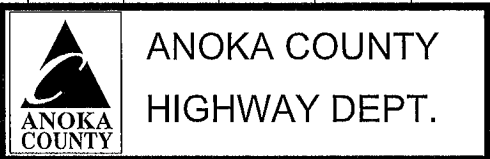
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CROSS SECTIONS
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 Sheet 130 of 134 Sheets



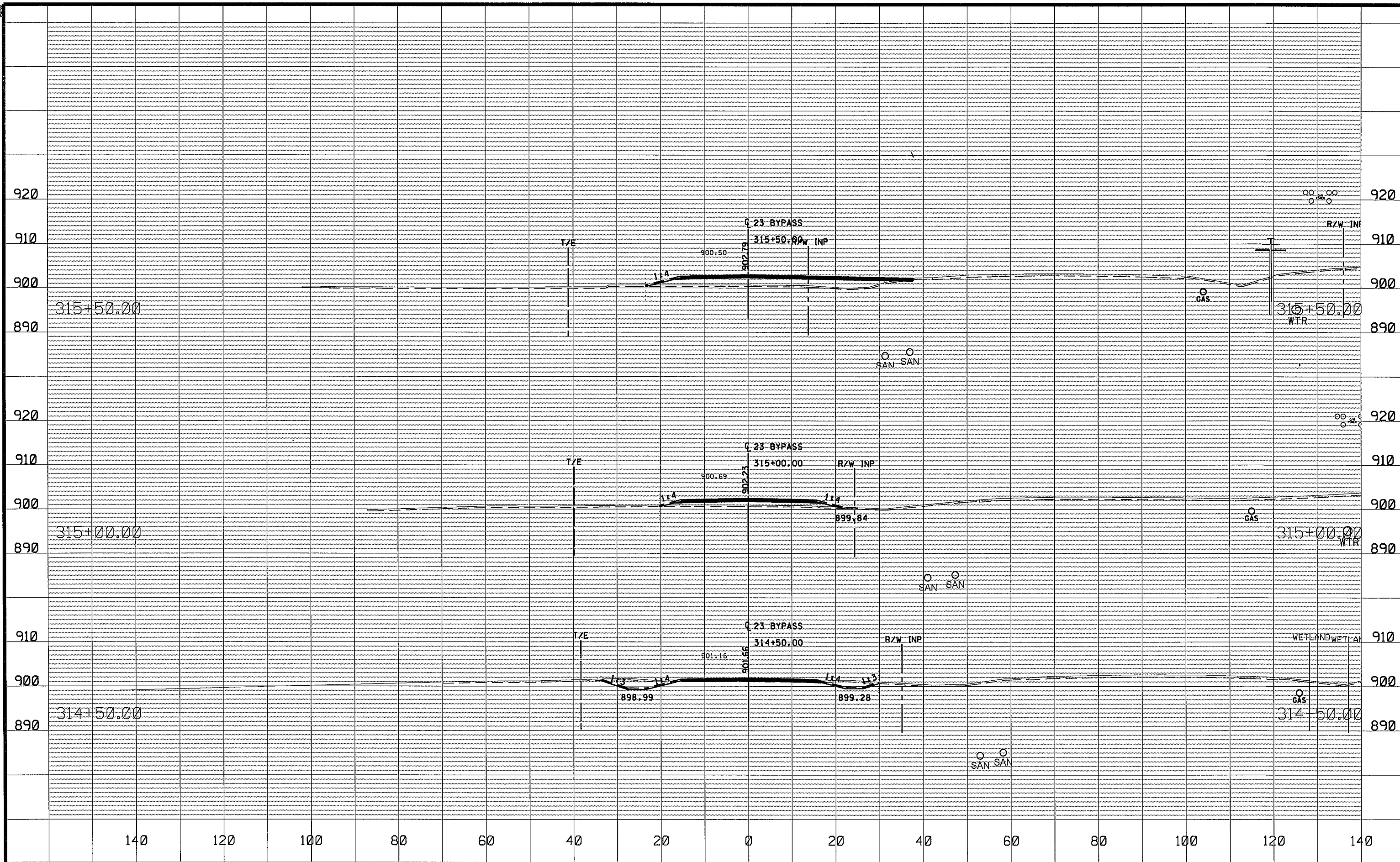
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CROSS SECTIONS
 STA 312+75.00 TO 314+00.00
 Sheet 131 of 134 Sheets



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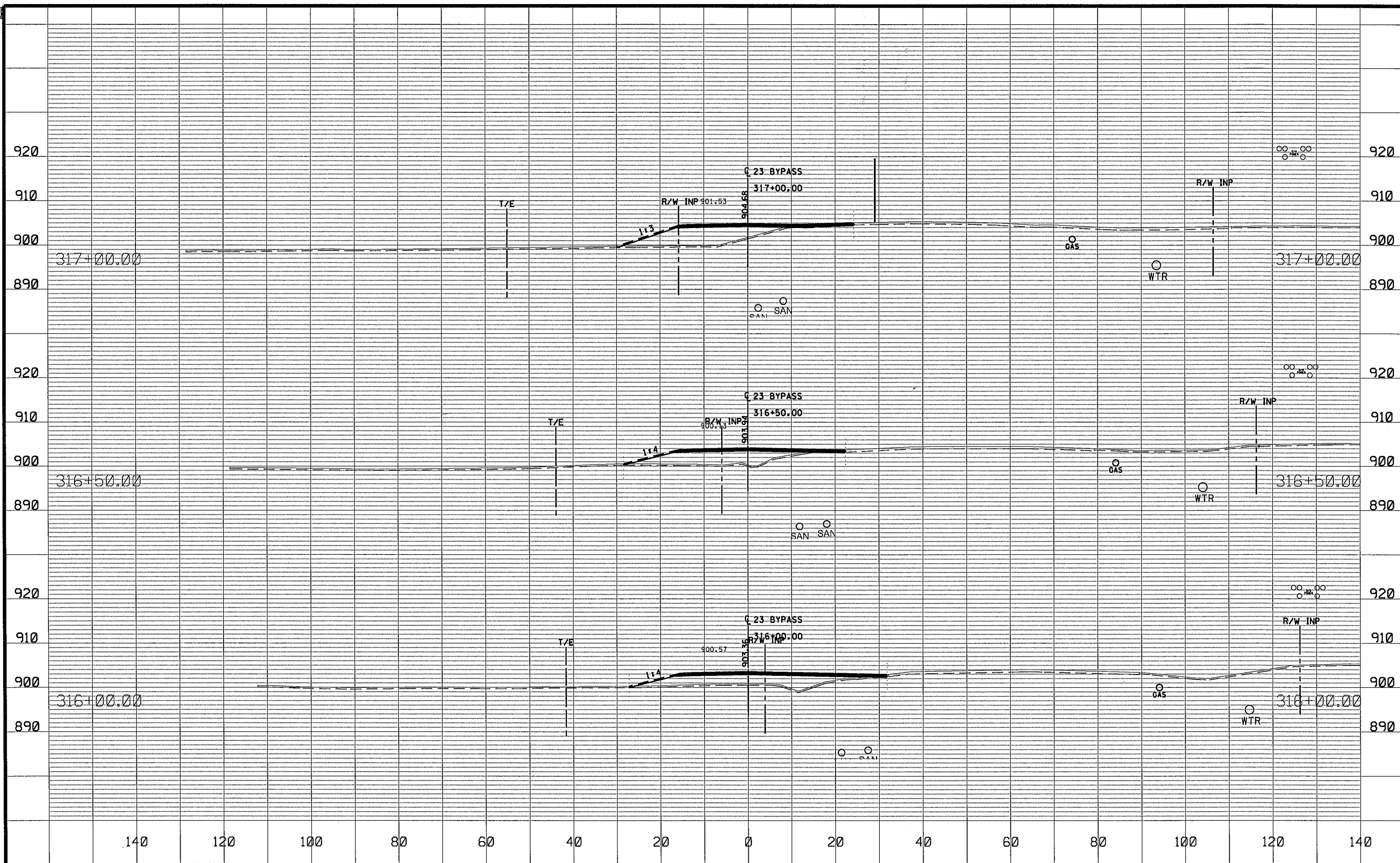
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ANOKA COUNTY
HIGHWAY DEPT.

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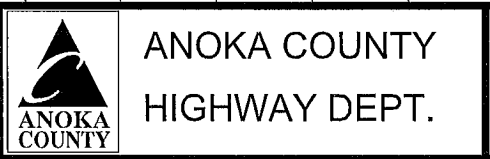
CROSS SECTIONS
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 Sheet 132 of 134 Sheets



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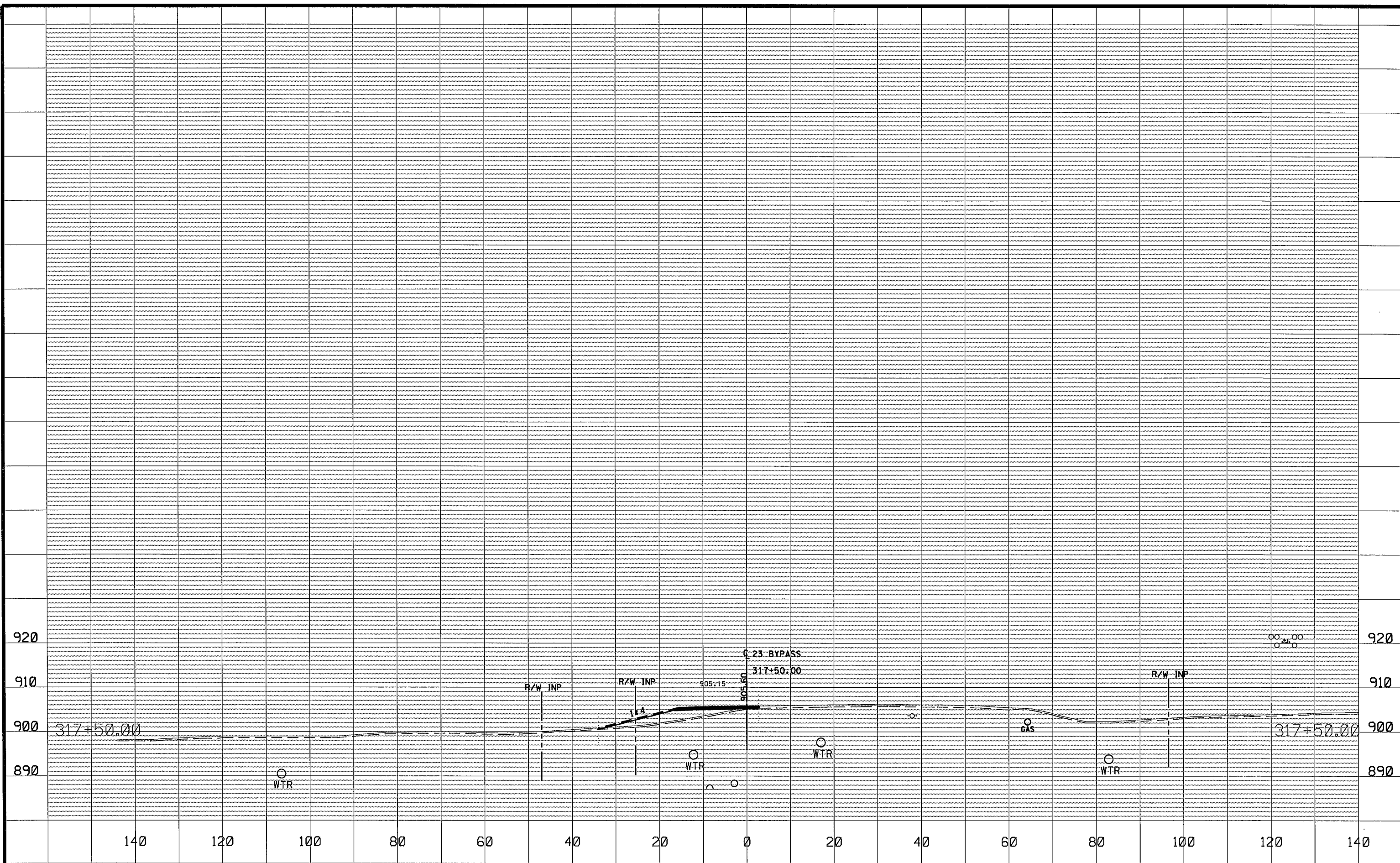
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SAP 002-623-018
 CP 2017-7

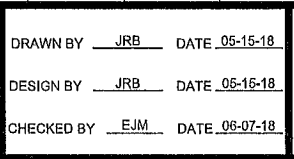
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 Sheet 133 of 134 Sheets



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**ANOKA COUNTY
HIGHWAY DEPT.**

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CROSS SECTIONS
STA 317+50.00 TO 317+50.00
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