MINNESOTA DEPARTMENT OF TRANSPORTATION
ANOKA COUNTY

CONSTRUCTION PLAN FOR GRADING, BITUMINOUS SURFACING, DRAINAGE AND SIGNAL SYSTEM

LOCATED ON CSAH 17 BETWEEN CSAH 18 AND 900 FT NORTH OF CSAH 18

LOCATED ON CSAH 18 BETWEEN 710 FT SOUTH OF CSAH 17 AND 610 FT EAST OF CSAH 17

STATE PROJ. NO. 002-617-021 STATE PROJ. NO. 197-020-006 CITY PROJ. NO. 2019-03

MINN. PROJ. NO. HSIP 0219 (023)

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) 1-S-F
F-FRAME C-CONCRETE
S-STONE T-TILE
B-BRICK ST-STUCCO
RAILROAD CROSSING BELL
RAILROAD CROSSING GATE
MANHOLE M.H.
CATCH BASIN C.B.
FIRE HYDRANT
CAST IRON MONUMENT
IRON PIN
GRAVEL PIT G
SAND PIT S
BORROW PIT B
ROCK QUARRY Q

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 T-BUR
BURIED ELECTRIC CABLE P-BUR
T-AE
SEWER (Sanitary or Storm)
SEWER MANHOLE

SCALES

PLAN 0' 100'
PROFILE HORIZONTAL 0' 100'
VERTICAL 0' 10'
X-SECTIONS HORIZONTAL 0' 10'
VERTICAL 0' 10'
VICINITY MAP 0' 1000'

CSAH 17

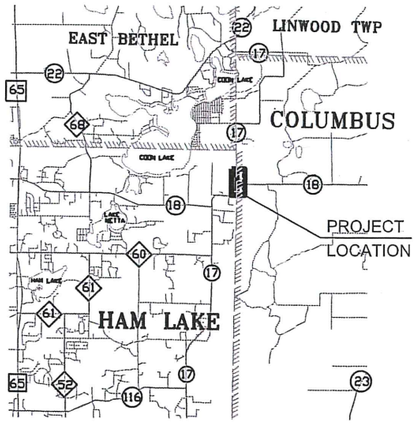
GROSS LENGTH	893.97 FEET	0.169 MILES
BRIDGES-LENGTH	0.00 FEET	0.000 MILES
EXCEPTIONS-LENGTH	0.00 FEET	0.000 MILES
NET LENGTH	893.97 FEET	0.169 MILES

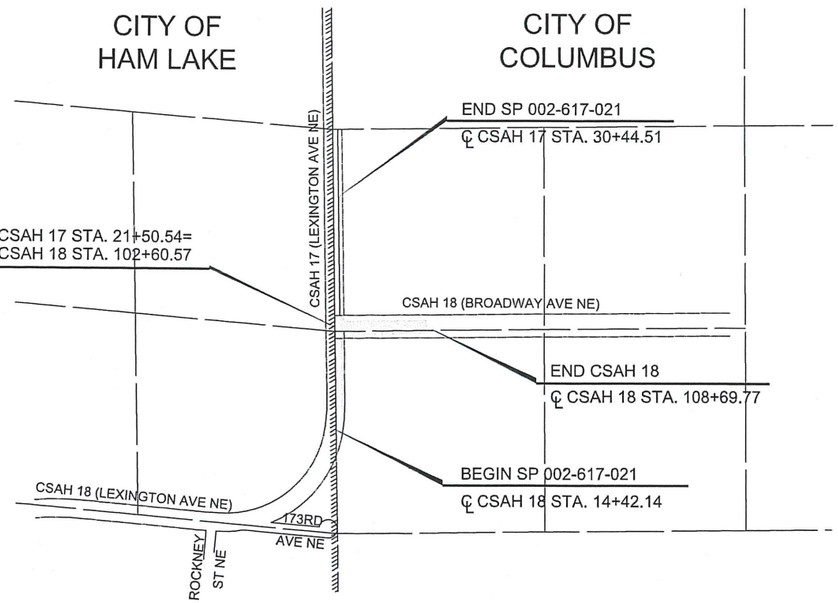
NOTE: LENGTH AND DESCRIPTION BASES ON CSAH 17 CL ALIGNMENT.

CSAH 18

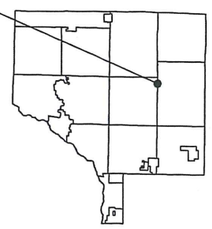
GROSS LENGTH	1317.60 FEET	0.250 MILES
BRIDGES-LENGTH	0.00 FEET	0.000 MILES
EXCEPTIONS-LENGTH	0.00 FEET	0.000 MILES
NET LENGTH	1317.60 FEET	0.250 MILES

NOTE: LENGTH AND DESCRIPTION BASES ON CSAH 18 CL ALIGNMENT.





PROJECT LOCATION
CITY OF COLUMBUS
CITY OF HAM LAKE
ANOKA COUNTY
DISTRICT - METRO
SECTIONS 1, 6
TOWNSHIP 32
RANGES 22, 23



DESIGN DESIGNATION

ESAL 20	969,726
R VALUE	30
ADT (2019)	6967
PROJ. ADT (2039)	9754
PROJ. HCADT (2039)	576
SOIL FACTOR	NA
10 TON DESIGN	

FUNCTIONAL CLASSIFICATION A MINOR EXPANDER
NO. OF TRAFFIC LANES 2 NO. OF PARKING LANES 0
SHOULDER WIDTH 8'
DESIGN SPEED 55 MPH CSAH 17
STOPPING SIGHT DISTANCE BASED ON:
HEIGHT OF EYE 3.5' HEIGHT OF OBJECT 2.0'
DESIGN SPEED NOT ACHIEVED AT :
STA. _____ TO STA. _____ MPH _____

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.

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

INDEX

THIS PLAN CONTAINS 86 SHEETS

APPROVED _____ ANOKA COUNTY ENGINEER DATE 9/10/18

APPROVED _____ CITY OF COLUMBUS ENGINEER DATE 9/11/18

APPROVED Thomas P. Collins CITY OF HAM LAKE ENGINEER DATE 9/11/18

Catherine Hubbard for DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AND FEDERAL AID RULES/POLICY DATE 10/18/18

Catherine Hubbard for STATE AID ENGINEER: APPROVED FOR STATE AND/OR FEDERAL AID FUNDING DATE 10/18/18

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_TSH.dgn 09/07/2018 3:31:49 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 M
DATE: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07/10/18
DESIGN BY EJM DATE 07/10/18
CHECKED BY GMP DATE 07/18/18

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

TITLE SHEET

Sheet 1 of 86 Sheets

STATEMENT OF ESTIMATED QUANTITIES
SP 002-617-021, SP 197-020-006 & CP 2019-03

TAB	NOTE	ITEM NO.	ITEM	UNIT	TOTAL QUANTITY	FEDERAL PARTICIPATING	
						COUNTY OF ANOKA SP 002-617-021	CITY OF HAM LAKE SP 197-020-006
		2021.501	MOBILIZATION	LUMP SUM	1	0.95	0.05
		2031.502	FIELD OFFICE TYPE D	EACH	1	0.95	0.05
A	(1)	2101.505	CLEARING	ACRE	0.55	0.55	
A	(1)	2101.505	GRUBBING	ACRE	0.55	0.55	
A	(1)	2101.524	CLEARING	TREE	29	29	
A	(1)	2101.524	GRUBBING	TREE	23	23	
C	(2)	2104.502	REMOVE SIGN TYPE C	EACH	23	23	
C	(3)	2104.502	SALVAGE SIGN TYPE D	EACH	2	2	
C	(3)	2104.502	SALVAGE SIGN TYPE SPECIAL	EACH	1	1	
D	(2), (4)	2104.503	REMOVE PIPE CULVERTS	LIN FT	72	72	
E	(2)	2104.503	REMOVE FENCE	LIN FT	189	189	
F	(5)	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	3035	3035	
F	(2)	2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	1132	1132	
G	(6)	2105.507	COMMON EXCAVATION (P)	CU YD	3959	3959	
G	(7)	2105.507	MUCK EXCAVATION	CU YD	4622	4622	
G		2105.507	SUBGRADE EXCAVATION (P)	CU YD	1162	1162	
H		2105.507	GRANULAR BORROW (LV)	CU YD	6123	6123	
H		2105.507	SELECT GRANULAR BORROW (LV)	CU YD	484	484	
	(8)	2105.601	DEWATERING	LUMP SUM	1	1	
	(9)	2123.510	DOZER	HOUR	15	15	
	(10)	2130.523	WATER	M GALLON	25	25	
J, K	(11)	2211.507	AGGREGATE BASE (CV) CLASS 5 (P)	CU YD	689	689	
F		2215.504	FULL DEPTH RECLAMATION	SQ YD	5341	5341	
	(12)	2215.507	HAUL FULL DEPTH RECLAMATION (LV)	CU YD	1736	1736	
J		2221.507	SHOULDER BASE AGGREGATE (CV) CLASS 5	CU YD	84	84	
F		2232.504	MILL BITUMINOUS SURFACE (2.0")	SQ YD	3002	3002	
J		2357.506	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	988	988	
J		2360.509	TYPE SP 12.5 NON WEAR COURSE MIX (3,B)	TON	947	947	
J, K		2360.509	TYPE SP 12.5 WEARING COURSE MIX (3,C)	TON	2258	2258	
D	(15)	2501.502	15" GS SAFETY APRON	EACH	2	2	
D	(15)	2501.502	18" GS SAFETY APRON	EACH	4	4	
D	(15)	2501.502	24" GS SAFETY APRON	EACH	2	2	
D		2501.503	15" CS PIPE CULVERT	LIN FT	44	44	
D		2501.503	18" CS PIPE CULVERT	LIN FT	124	124	
D	(13)	2501.503	24" CS PIPE CULVERT	LIN FT	24	24	

NOTES:

(1) CLEARING AND GRUBBING SHALL BE STAKED IN FIELD BY THE ENGINEER.

(2) ALL REMOVAL ITEMS SHALL BE DISPOSED OFF-SITE. NO DISPOSAL SHALL BE ALLOWED WITHIN THE ROADWAY RIGHT-OF-WAY OR EASEMENTS.

(3) SALVAGE TO: ANOKA COUNTY HIGHWAY DEPARTMENT, 1440 BUNKER LAKE BLVD, ANDOVER, MN 55304

(4) LENGTHS INCLUDE CMP APRONS.

(5) PAYMENT FOR SAWING BITUMINOUS WILL ONLY BE PAID WHEN THE CUT IS MADE WITH A SAW. NO PAYMENT SHALL BE MADE FOR CUTS MADE BY A MILLING MACHINE OR RECLAIMER.

(6) INCLUDES INPLACE TOPSOIL. EXCESS TOPSOIL SHALL BE DISPOSED OF OUTSIDE THE ROADWAY RIGHT-OF-WAY.

(7) EXCESS UNSUITABLE MATERIAL SHALL BE DISPOSED OF OUTSIDE THE ROADWAY RIGHT-OF-WAY.

(8) THE CONTRACTOR SHALL PROVIDE A DEWATERING PLAN FOR REVIEW & APPROVAL.

(9) SHALL BE USED FOR MINOR DITCH GRADING ACTIVITIES AS DIRECTED BY THE ENGINEER.

(10) 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.

(11) INCLUDES QUANTITY FOR GRAVEL DRIVEWAY.

(12) EXCESS MATERIAL (ESTIMATED AT 3 INCHES BITUMINOUS PAVEMENT (CV)) TO BE REMOVED FROM PROJECT.

(13) CONNECT TO INPLACE CULVERT SHALL BE INCIDENTAL.

(14) PAVEMENT MARKING REMOVAL AND TEMPORARY RAISED PAVEMENT MARKERS ARE INCIDENTAL.

(15) NO SAFETY GRATE REQUIRED.

(P) PLAN QUANTITY.

NO	DATE	BY	CKD	APPR	REVISION
1	10/18/2018	EM	EM	EM	ELIMINATED CITY OF COLUMBUS' SHARE IN FEDERAL ELIGIBLE ITEMS
2	10/25/2018	EM	EM	EM	CHANGED ITEM 2221.607 TO 2221.507 SHOULDER BASE AGG (CV) CL 5
3	12/04/2018	EM	EM	EM	UPDATED THE PERCENTAGE FOR COUNTY & CITY PRORATA ITEMS AND ADDED NOTE 15.

NAME: P:\02-617-21\Plan\0261721_TAB.dgn 12/04/2018 3:18:15 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: 12-04-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

STATEMENT OF ESTIMATED QUANTITIES

Sheet 2 of 86 Sheets

STATEMENT OF ESTIMATED QUANTITIES
SP 002-617-021, SP 197-020-006 & CP 2019-03

TAB	NOTE	ITEM NO.	ITEM	UNIT	TOTAL QUANTITY	FEDERAL PARTICIPATING	
						COUNTY OF ANOKA SP 002-617-021	CITY OF HAM LAKE SP 197-020-006
D		2511.504	GEOTEXTILE FILTER TYPE 3	SQ YD	89	89	
D		2511.507	RANDOM RIPRAP CL II	CU YD	20	20	
L		2521.518	6" CONCRETE WALK	SQ FT	1006	1006	
L		2531.503	CONCRETE CURB AND GUTTER DESIGN B424	LIN FT	133	110	23
L		2531.618	TRUNCATED DOMES	SQ FT	72	72	
M		2540.602	RELOCATE MAIL BOX SUPPORT	EACH	3	3	
N		2545.502	SERVICE CABINET	EACH	1	0.83	0.17
		2563.601	TRAFFIC CONTROL SUPERVISOR	LUMP SUM	1	0.95	0.05
	(14)	2563.601	TRAFFIC CONTROL	LUMP SUM	1	0.95	0.05
		2563.610	FLAGGER	HOUR	160	160	
		2563.613	PORTABLE CHANGEABLE MESSAGE SIGN	UNIT DAY	72	72	
C		2564.502	INSTALL SIGN TYPE D	EACH	2	2	
C		2564.518	SIGN PANELS TYPE C	SQ FT	227	227	
C		2564.602	INSTALL SIGN TYPE SPECIAL	EACH	1	1	
N		2565.501	EMERGENCY VEHICLE PREEMPTION SYSTEM	LUMP SUM	1	0.50	0.50
N		2565.516	TRAFFIC CONTROL SIGNAL SYSTEM	SYSTEM	1	0.83	0.17
		2573.501	EROSION CONTROL SUPERVISOR	LUMP SUM	1	1	
O		2573.502	STORM DRAIN INLET PROTECTION	EACH	6	6	
O		2573.503	SILT FENCE; TYPE MS	LIN FT	2541	2541	
O		2574.508	FERTILIZER TYPE 3	POUND	261	261	
O		2574.508	FERTILIZER TYPE 4	POUND	210	210	
D		2575.504	SODDING TYPE SALT TOLERANT	SQ YD	59	59	
O		2575.504	EROSION CONTROL BLANKETS CATEGORY 0	SQ YD	968	968	
O		2575.504	EROSION CONTROL BLANKETS CATEGORY 3N	SQ YD	14907	14907	
O		2575.505	SEEDING	ACRE	3.3	3.3	
O		2575.508	SEED MIXTURE 25-121	POUND	80	80	
O		2575.508	SEED MIXTURE 33-261	POUND	59	59	
O		2575.523	RAPID STABILIZATION METHOD 3	M GALLON	18	18	
P		2582.503	4" SOLID LINE MULTI-COMPONENT	LIN FT	8350	8350	
P		2582.503	4" BROKEN LINE MULTI-COMPONENT	LIN FT	260	260	
P		2582.503	4" DOUBLE SOLID LINE MULTI-COMPONENT	LIN FT	3260	3260	
P		2582.503	24" SOLID LINE-PREFORMED THERMOPLASTIC	LIN FT	407	407	
P		2582.518	PAVEMENT MESSAGE PREFORM THERMOPLASTIC	SQ FT	120	120	
P		2582.518	CROSSWALK PREFORM THERMOPLASTIC	SQ FT	594	594	

NOTES:

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(12) EXCESS MATERIAL (ESTIMATED AT 3 INCHES BITUMINOUS PAVEMENT (CV)) TO BE REMOVED FROM PROJECT.

(13) CONNECT TO INPLACE CULVERT SHALL BE INCIDENTAL.

(14) PAVEMENT MARKING REMOVAL AND TEMPORARY RAISED PAVEMENT MARKERS ARE INCIDENTAL.

(15) NO SAFETY GRATE REQUIRED.

(P) PLAN QUANTITY.

NO	DATE	BY	CKD	APPR	REVISION
1	10/18/2018	EM	EM	EM	ELIMINATED CITY OF COLUMBUS' SHARE IN FEDERAL ELIGIBLE ITEMS
2	12/04/2018	EM	EM	EM	UPDATED QUANTITY FOR ITEM NO. 2582.503 24" SOLID LINE.

NAME: P:\02-617-21\Plan\0261721_TAB.dgn 12/04/2018 3:18:20 PM

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PRINT NAME: ELIZABETH MARKOSE

SIGNATURE: Elizabeth Markose

DATE: 12-04-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

STATEMENT OF ESTIMATED QUANTITIES

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

NO.	STANDARD PLATE TITLE
3040F	CORRUGATED METAL PIPE CULVERT
3123J	METAL APRON FOR C.S. PIPE
3124B	METAL APRON CONNECTION
3128H	METAL SAFETY APRON & GRATE
3134D	RIPRAP AT CSP OUTLETS
7038A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7100H	CONCRETE CURB AND GUTTER (DESIGN B AND DESIGN V)
8000J	CHANNELIZERS
8150C	INSTALLATION OF CULVERT MARKERS
9350A	MAILBOX SUPPORT (SWING-AWAY TYPE)

SEE TRAFFIC SIGNAL SHEET 68 FOR ADDITIONAL STANDARD PLATES.

INDEX OF TABULATIONS

TAB	SHEET	DESCRIPTION
A	6	CLEARING AND GRUBBING
C	38, 63	EXISTING SIGNS, SIGN PANELS TYPE C
D	6	CULVERT TABULATION
E	6	REMOVE FENCE
F	7	SAWING, REMOVE, RECLAIM AND MILL BIT. PAVEMENT
G	11	EARTHWORK TABULATION
H	11	EARTHWORK SUMMARY
J	7	BASE AND BITUMINOUS QUANTITIES
K	7	DRIVEWAY CONSTRUCTION
L	7	CONCRETE & TRUNCATED DOMES
M	7	MAILBOX
N	68	TRAFFIC SIGNAL
O	8	EROSION CONTROL AND TURF ESTABLISHMENT
P	58	PERMANENT PAVEMENT MARKING TABULATION
AA	9, 10	UTILITY CONTACTS
AB	9	CENTURYLINK - TELEPHONE
AC	9	COMCAST - FIBER
AD	10	CONNEXUS ENERGY - POWER
AE	10	XCEL ENERGY - GAS
AF	10	ZAYO - F/O

BASIS OF QUANTITIES

SPEC NO	DESCRIPTION	RATE
2357	BITUMINOUS MATERIAL FOR TACK COAT	0.05 GALLONS / SQ YD / LIFT
2360	TYPE SP12.5 WEARING COURSE MIXTURE	113 POUNDS / SQ YD / IN
2360	TYPE SP12.5 NON-WEARING COURSE MIXTURE	113 POUNDS / SQ YD / IN
2574	FERTILIZER TYPE 3, 22-5-10	150 POUNDS / ACRE
2574	FERTILIZER TYPE 4, 17-10-17	120 POUNDS / ACRE
2575	SEED MIXTURE 25-121	61 POUNDS / ACRE
2575	SEED MIXTURE 33-261	35 POUNDS / ACRE
2575	RAPID STABILIZATION METHOD 3	6000 GALLONS / ACRE

NO	DATE	BY	CKD	APPR	REVISION
1	12/04/2018	EM	EM	EM	DELETED STANDARD PLATE NO. 3148A FROM THE LIST.

NAME: P:\02-617-21\Plan\0261721_TAB.dgn 12/04/2018 2:51:46 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: 12-04-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

STANDARD PLATES, INDEX OF TABULATIONS AND BASIS OF QUANTITIES

Sheet 4 of 86 Sheets

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' SUBGRADE EXCAVATION.

3. IN AREAS OF MUCK EXCAVATION ANY EXCAVATION ABOVE THE UNSUITABLE ORGANIC MATERIAL IS PAID FOR AND INCLUDED AS COMMON EXCAVATION.

4. 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.

5. SELECT GRANULAR MATERIAL SHALL MEET THE REQUIREMENTS OF MN/DOT SPEC. 3149.2B2

6. ALL TOPSOIL STRIPPING WILL BE CONSIDERED TO BE COMMON EXCAVATION.

7. TOPSOIL SHALL BE DEFINED AS EXISTING SOILS WHICH MEET MN/DOT SPEC. 3877 THAT WOULD BE SUITABLE FOR REUSE.

8. SELECT GRANULAR MATERIAL SHALL BE USED TO BACK FILL THE EMBANKMENT UNDER THE NEW ROADWAY CORE, UP TO THE TOP OF THE GRADING SUBGRADE.

9. SLOPE DRESSING ON THE PROJECT IS DEFINED AS THE TOPSOIL OR OTHER SOIL PLACED DURING PRIOR CONSTRUCTION TO PROVIDE A MEDIUM FOR ESTABLISHING TURF.

10. 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.

11. 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.

12. UNSUITABLE MATERIALS ARE TOPSOILS, PAVEMENT OR CONCRETE DEBRIS, PEAT, MUCK AND ORGANIC OR OTHER UNSTABLE SOILS.

13. 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.

14. 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.

15. 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 RECOMMENED SUBGRADE EXCAVATION.

16. 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 1:20 TAPER TO THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION.

17. 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.

18. 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.

19. 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.

20. 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 TO VERIFY PRIOR TO PLACING BID.

21. 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.

22. 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.

23. 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.

24. 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.

25. 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.

26. INPLACE BITUMINOUS PAVEMENT RANGES FROM 5" TO 9" THICK. (AVERAGE 6") FOR INFORMATION ONLY, CONTRACTOR MAY VERIFY PAVEMENT DEPTH PRIOR TO PLACING BID. NO WARRANTY IS MADE OR IMPLIED WITH THIS INFORMATION.

27. AGGREGATE BASE MATERIAL SHALL MEET THE REQUIREMENTS OF MN/DOT SPEC. 3138, CLASS 5.

28. 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".

29. COMPACTION OF ALL ROADWAY BITUMINOUS MIXTURES SHALL BE BY THE "MAXIMUM DENSITY METHOD". COMPACTION OF DRIVEWAYS SHALL BE BY THE "ORDINARY COMPACTION METHOD".

30. WET CONDITIONS MAY BE ENCOUNTERED IN EXCAVATION AREAS. DEWATERING WITH SUMP PUMPS CAN ALSO BE EXPECTED. THE CONTRACTOR SHALL PROVIDE A DEWATERING PLAN FOR REVIEW AND APPROVAL BEFORE THE CONSTRUCTION BEGINS. CLEAN CRUSHED ROCK WILL LIKELY BE NECESSARY TO STABILIZE THE BOTTOM OF THE MUCK EXCAVATION FOR PLACEMENT OF FILL.

31. WHEN PAVING BITUMINOUS LIFTS, THE PAVING OPERATION SHALL MOVE IN THE SAME DIRECTION AS TRAFFIC WOULD TRAVEL IN THE LANE BEING PAVED. AT NO TIME WILL THE PAVING OPERATION BE ALLOWED TO PLACE ASPHALT IN THE DIRECTION THAT IS OPPOSITE TO THE TRAVEL DIRECTION OF THE LANES BEING PAVED.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_TAB.dgn 09/07/2018 3:32:32 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: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

SOILS AND CONSTRUCTION NOTES

Sheet 5 of 86 Sheets

CLEARING AND GRUBBING — A

STATION		LOCATION ALIGN	LOCATION OFFSET	CLEAR ACRE	CLEAR TREE	GRUB ACRE	GRUB TREE
CSAH 17							
15+58		17CL	54 LT		1		1
15+73		17CL	52 LT		1		1
15+92		17CL	49 LT		1		1
17+08		17CL	49 LT		1		1
17+14		17CL	46 LT		1		1
17+19		17CL	47 LT		1		1
17+24		17CL	45 LT		1		1
17+29		17CL	47 LT		1		1
17+51		17CL	57 LT		1		1
18+04		17CL	52 LT		2		1
18+26		17CL	52 LT		1		1
18+28		17CL	48 LT		1		1
18+32		17CL	53 LT		1		1
19+29	20+57	17CL	48 LT 60 LT	0.10		0.10	
21+84		17CL	61 LT		3		1
21+84		17CL	72 LT		2		1
21+88		17CL	57 LT		1		1
22+15	22+44	17CL	74 LT 65 LT	0.05		0.05	
23+51		17CL	52 LT		1		1
23+52		17CL	56 LT		3		1
23+66		17CL	61 LT		1		1
23+80		17CL	62 LT		1		1
23+84		17CL	57 LT		1		1
25+56		17CL	62 LT		1		1
17+36	18+11	17CL	73 RT 73 RT	0.05		0.05	
			SUBTOTAL	**0.20**	**28**	**0.20**	**22**
CSAH 18							
105+40		18CL	71 RT		1		1
105+50	108+70	18CL	50 RT 75 RT	0.35		0.35	
			SUBTOTAL	**0.35**	**1**	**0.35**	**1**
			TOTAL	**0.55**	**29**	**0.55**	**23**

CULVERT TABULATION — D

STATION TO STATION		LOCATION ALIGN	LOCATION OFFSET	REMOVE PIPE CULVERTS LIN FT	INVERT UPSTREAM	INVERT DOWNSTREAM	FURNISH & INSTALL 15" CS PIPE CULVERT LIN FT	15" GS APRON EACH	18" CS PIPE CULVERT LIN FT	18" GS APRON EACH	24" CS PIPE CULVERT LIN FT	24" GS APRON EACH	RIPRAP CL II CU YD	GEOTEXTILE FILTER TYPE III SQ YD	SODDING SQ YD	NOTES
CSAH 17																
16+55	17+07	17CL	40 LT 40 LT	30	903.50	903.35	44	2							17	
17+50		17CL	20 LT	6	903.35						14	1			18	(1)
17+52		17CL	33 RT	6		903.00					10	1	6.4	30.4		(1)
20+38		17CL	68 RT		903.00								4.3	12.9		(2)
20+71	21+42	17CL	52 LT 52 LT	30	901.50	901.14			64	2			4.6	22.9	12	
21+65	22+33	17CL	53 LT 53 LT		901.03	900.69			60	2			4.6	22.9	12	
22+76		17CL	55 RT		903.00								4.3	12.9		(2)
			TOTAL	**72**			**44**	**2**	**124**	**4**	**24**	**2**	**20**	**89**	**59**	

NOTES:
(1) REMOVE APRON. CONNECT TO INPLACE CULVERT INCIDENTAL.
(2) 10 FT WIDE OVERFLOW WEIR.

GENERAL NOTES:
- TRENCHING AND CLASS B BEDDING INCIDENTAL TO CULVERT.
- INVERT ELEVATIONS ARE AT THE END OF APRON.
- PROPOSED PIPE LENGTHS DO NOT INCLUDE APRONS.

REMOVE FENCE — E

STATION TO STATION		ALIGNMENT	LOCATION	REMOVE LIN FT
CSAH 17				
18+23	20+11	17CL	58 LT	189
			TOTAL	**189**

NO	DATE	BY	CKD	APPR	REVISION

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C.P. 2019-03

TABULATIONS

Sheet 6 of 86 Sheets

SAWING, REMOVE, RECLAIM AND MILL BIT. PAVEMENT — F

STATION TO STATION		ALIGNMENT	LOCATION	SAWING	REMOVE	RECLAIM	2.0" MILL
				LIN FT	SQ YD	SQ YD	SQ YD
CSAH 17							
14+42	21+51	17CL	NB	740	459	1377	
14+42	21+51	17CL	SB	585	329	1435	
21+51	29+80	17CL	NB	860	104	1242	
21+51	29+80	17CL	SB	850	240	1287	
			SUBTOTAL	3035	1132	5341	
CSAH 18							
102+80	108+70	18CL	EB				1403
102+80	108+70	18CL	WB				1599
			SUBTOTAL				3002
			TOTAL	3035	1132	5341	3002

BASE AND BITUMINOUS QUANTITIES — J

STATION TO STATION		LOCATION	DESCRIPTION	TYPE SP 12.5 WEAR (SPWEB340C)	TYPE SP 12.5 NON WEAR (SPNWB330B)	TACK COAT	AGGREGATE BASE CLASS 5	SHOULDER BASE AGGREGATE CLASS 5
				TON	TON	GALLON	CU YD	CU YD
CSAH 17								
14+42	21+51	17CL	NB	485	242	214	168	24
14+42	21+51	17CL	SB	436	218	193	113	8
21+51	29+80	17CL	NB	484	242	214	196	28
21+51	29+80	17CL	SB	490	245	217	193	24
			SUBTOTAL	1895	947	838	670	84
CSAH 18								
103+37	108+70	18CL	EB	158		70		
103+37	108+70	18CL	WB	181		80		
			SUBTOTAL	339		150		
			TOTAL	2234	947	988	670	84

- SEE SHEET 4 FOR 'BASIS OF QUANTITIES'.

DRIVEWAY CONSTRUCTION — K

STATION	LOCATION		ADDRESS	CONSTRUCT	
	ALIGNMENT	OFFSET		2.5" BIT (1)	4" CL 5
				TON	CU YD
CSAH 17					
16+86.00	17CL	24' - 48' LT	#17416	7	5
18+15.50	17CL	26' - 56' LT	#17440	10	8
21+23.00	17CL	26' - 56' LT	#17450	7	6
			TOTAL	24	19

(1) TYPE SP 12.5 WEARING COURSE MIXTURE. SEE SHEET 4 FOR 'BASIS OF QUANTITIES'.

CONCRETE & TRUNCATED DOMES — L

STATION TO STATION		LOCATION		6" CONC. WALK	CURB & GUTTER B424	TRUNCATED DOMES
		ALIGN	OFFSET	SQ FT	LIN FT	SQ FT
CSAH 17						
20+78	21+20	17CL	31 RT - 55 RT	362	46	24
21+81	22+14	17CL	55 RT - 26 RT	270	41	24
20+79	21+02	17CL	26 LT - 43 LT	214	23	12
21+83	22+06	17CL	26 LT - 44 LT	160	23	12
			TOTAL	1006	133	72

MAILBOX — M

STATION	LOCATION			RELOCATE MAIL BOX SUPPORT
	ALIGN	OFFSET	ADDRESS	EACH
CSAH 17				
16+62	17CL	24 LT	17416	1
17+95	17CL	26 LT	17440	1
20+85	17CL	29 LT	17450	1
			TOTAL	3

NO	DATE	BY	CKD	APPR	REVISION
1	10/25/2018	EM	EM	EM	CHANGED ITEM 2221.607 TO 2221.507 SHOULDER BASE AGG (CV) CL 5

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PRINT NAME: ELIZABETH MARKOSE
SIGNATURE: Elizabeth Markose
DATE: 10-29-18 LICENSE NO. 49118

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TABULATIONS

Sheet 7 of 86 Sheets

EROSION CONTROL AND TURF ESTABLISHMENT

O

STATION TO STATION		LOCATION	INLET PROTECTION	SILT FENCE	SEEDING	SEED		EROSION CONTROL BLANKET CATEGORY 0	EROSION CONTROL BLANKET CATEGORY 3N	FERTILIZER TYPE 3 22-5-10	FERTILIZER TYPE 4 17-10-17	RAPID STABILIZATION METHOD 3
						25-121	33-261					
			EACH	LIN FT	ACRE	POUND	POUND	SQ YD	SQ YD	POUND	POUND	M GALLON
CSAH 17												
14+42	16+77	RT		251								
14+42	21+28	RT			0.54	19	6		2614	63	21	3
18+75	21+28	RT		250								
21+76	29+80	RT		837	0.74	9	18		3582	31	63	4
14+42	16+76	LT			0.12	7		581		23		1
16+62		LT	1									
16+93	18+07	LT			0.08	5		387		15		
17+50		LT	1									
18+22	21+11	LT			0.23	7	4		1113	22	12	1
20+70		LT	1									
21+26	23+26	LT		230	0.18	7	2		871	24	5	1
21+64		LT	1									
22+20	23+26	LT										
23+07		LT	1									
23+42	30+32	LT			0.83	11	20		4017	35	69	5
30+36		LT	1									
		SUBTOTAL	**6**	**1568**	**2.72**	**65**	**50**	**968**	**12197**	**213**	**170**	**15**
CSAH 18												
103+43	108+70	RT			0.50	12	9		2420	38	40	3
103+43	106+88	RT		398								
108+70		RT		53								
103+37	108+70	LT		522	0.06	3			290	10		
		SUBTOTAL		**973**	**0.56**	**15**	**9**		**2710**	**48**	**40**	**3**
		TOTAL	**6**	**2541**	**3.28**	**80**	**59**	**968**	**14907**	**261**	**210**	**18**

NOTES:

- QUANTITIES ARE BASED ON 110% OF THE COMPUTED AREA.
-SEED MIX 25-121: Application Rate 61 pounds/acre. Non-native mix for sandy general road side.
-SEED MIX 33-261: Application Rate 35 pounds/acre. Native sedge/prairie meadow mix for wetland restoration.
- FERTILIZER TYPE 3 (22-5-10) for seed mixt 25-121: Application rate 200 pounds per acre.
- FERTILIZER TYPE 4 (17-10-17) for seed mix 33-261: Application rate 120 pounds per acre.
- RAPID STABILIZATION METHOD 3: Application rate 6000 gallon per acre

NO	DATE	BY	CKD	APPR	REVISION

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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C.P. 2019-03

TABULATIONS

Sheet 8 of 86 Sheets

UTILITY CONTACTS | AA

GOPHER STATE ONE CALL
FIELD UTILITY LOCATE REQUEST
http://www.gopherstateonecall.org
TEL: 651--454-0002 OR
TEL 1-800-252-1166

CENTURYLINK
425 MONROE ST
ANOKA, MN 55303
CONTACT: JEFFERY GILBERT
TEL: 651-730-1362

CONNEXUS ENERGY
14601 RAMSEY BLVD
RAMSEY, MN 55303
CONTACT: GREG PLUMEDAHL
TEL: 763-286-1225

COMCAST CABLE
2611 FAIRVIEW AVE
ROSEVILLE, MN 55113
CONTACT: TODD KERSTEN
TEL: 651-493-5681

XCEL ENERGY
1700 E COUNTY RD E
WHITE BEAR LAKE, MN 55112
CONTACT: SCOTT WIDMER
TEL: 651-779-3506

ZAYO FIBER OPTIC
CONTACT: STEVEN SENGER
TEL: 952-230-9660

CENTURYLINK - TELEPHONE | AB

STATION BEGIN	STATION END	OFFSET				INPLACE ITEM	REMARKS
CSAH 17							
10+00	17+50	30	LT	30	LT	CABLE	LEAVE
17+50		44	LT			SPLICE BOX	ADJUST
17+50	19+58	22	LT	31	LT	CABLE	RELOCATE
19+58		31	LT			SPLICE BOX	ADJUST
19+58	24+05	31	LT	22	LT	CABLE	RELOCATE
21+93		26	LT	85	RT	CROSSING	LEAVE
23+94		22	LT	13	RT	CROSSING	LEAVE
24+05		32	LT			VAULT	ADJUST
24+05	29+80	32	LT	23	LT	CABLE	RELOCATE
26+77		22	LT	24	RT	CROSSING	LEAVE
29+80	30+90	23	LT	28	LT	CABLE	LEAVE
30+90		33	LT			SPLICE BOX	LEAVE
10+00	18+54	33	RT	34	RT	CABLE	LEAVE
18+50	21+15	37	RT	26	RT	CABLE	RELOCATE
21+15	21+84	96	RT	29	RT	CABLE	LEAVE
21+93		85	RT			SPLICE BOX	LEAVE
21+84	22+19	13	RT	23	LT	CABLE	RELOCATE
22+19		36	RT			SPLICE BOX	ADJUST
22+19	23+94	14	RT	23	LT	CABLE	RELOCATE
23+94	26+77	21	RT	24	RT	CABLE	RELOCATE

COMCAST - FIBER | AC

STATION BEGIN	STATION END	OFFSET				INPLACE ITEM	REMARKS
CSAH 17							
10+00	17+40	30	LT	30	LT	COAX CABLE	LEAVE
17+40		40	LT			VAULT	ADJUST
17+40	20+50	40	LT	31	LT	FIBER OPTIC	LEAVE
20+50	27+80	31	LT	24	LT	FIBER OPTIC	RELOCATE
23+78		28	LT			VAULT	ADJUST
27+80	29+80	24	LT	29	LT	FIBER OPTIC	RELOCATE
30+51		29	LT			VAULT	LEAVE

GENERAL NOTES:

ALL UTILITY WORK SHOWN ON THIS SHEET SHALL BE DONE BY OTHERS UNLESS NOTED.

ALL RELOCATES AND ADJUSTMENTS SUBJECT TO ANOKA COUNTY AND/OR CITY OF COLUMBUS / HAM LAKE RIGHT OF WAY POSSESSION.

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.

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 AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

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

NO	DATE	BY	CKD	APPR	REVISION

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TEL: 651-779-3506

ZAYO FIBER OPTIC
CONTACT: STEVEN SENGER
TEL: 952-230-9660

CONNEXUS ENERGY - POWER | AD

STATION BEGIN	STATION END	OFFSET				INPLACE ITEM	REMARKS
CSAH 17							
14+18		67	RT			POWER POLE	LEAVE
14+17	15+00	59	RT	47	RT	BURIED	LEAVE
14+98		55	RT			POWER POLE	LEAVE
17+36		45	RT			POWER POLE	RELOCATE
17+43		46	LT			POWER POLE	RELOCATE
18+55		59	RT			CABINET	RELOCATE
18+55	21+31	59	RT	64	RT	BURIED	RELOCATE
19+50	19+58	40	RT	41	RT	BURIED	RELOCATE
19+61		43	RT			POWER POLE	RELOCATE
20+98		44	LT			POWER POLE	REMOVE
21+93		42	RT			POWER POLE	RELOCATE
22+49		34	RT			POWER POLE	RELOCATE
23+93		97	LT			METER	LEAVE
25+37		33	RT			POWER POLE	RELOCATE
28+48		31	RT			POWER POLE	RELOCATE
28+52	30+45	29	RT	26	RT	BURIED	LEAVE
30+45	30+48	26	RT	27	LT	BURIED	LEAVE
31+54		28	RT			POWER POLE	LEAVE
CSAH 18							
103+25	106+62	19	RT	10	RT	BURIED	LEAVE
103+43		44	LT			POWER POLE	LEAVE
105+61		45	LT			POWER POLE	LEAVE
106+62		10	RT	26	LT	BURIED	LEAVE
106+62	109+06	26	LT	30	LT	BURIED	LEAVE
108+42		45	LT			POWER POLE	LEAVE

XCEL ENERGY - GAS | AE

STATION BEGIN	STATION END	LOCATION				INPLACE ITEM	REMARKS
CSAH 17							
18+36	19+10	40	LT	38	LT		LEAVE
14+42	29+80	28	LT	27	LT	6"	RELOCATE
14+42	22+05	21	LT	20	LT	2"	RELOCATE
19+45		31	LT	40	RT	2"	RELOCATE
19+45		31	LT	40	RT	RECTIFIER	RELOCATE
20+50	20+97	36	LT	55	LT		LEAVE
21+89		21	LT	96	RT	2"	LEAVE
30+89		34	LT			MARKER	LEAVE

ZAYO - F/O | AF

STATION BEGIN	STATION END	LOCATION				INPLACE ITEM	REMARKS
CSAH 17							
22+06	31+39	34	RT	26	RT		RELOCATE
22+07		35	RT			VAULT	RELOCATE
26+77	27+79	21	LT	21	LT		RELOCATE
30+39	30+37	30	LT	28	RT		LEAVE
30+37	31+57	28	RT	27	RT		LEAVE
30+52		31	LT			VAULT	LEAVE
31+51		27	RT			CABINET	LEAVE
CSAH 18							
103+12	108+69	40	LT	40	LT		LEAVE

GENERAL NOTES:

ALL UTILITY WORK SHOWN ON THIS SHEET SHALL BE DONE BY OTHERS UNLESS NOTED.

ALL RELOCATES AND ADJUSTMENTS SUBJECT TO ANOKA COUNTY AND/OR CITY OF COLUMBUS / HAM LAKE RIGHT OF WAY POSSESSION.

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.

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 AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

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

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_TAB.dgn 09/07/2018 3:32:22 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: Elizabeth Markose
DATE: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18
DESIGN BY EJM DATE 05-15-18
CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

TABULATIONS

Sheet 10 of 86 Sheets

EARTHWORK TABULATION (CSAH 17) — G

STATION	EXCAVATION TOTALS			EMBANKMENT TOTALS (CV)			
	COMMON (CU YD)	MUCK (CU YD)	SUBGRADE (CU YD)	TOPSOIL (CU YD)	GRANULAR BACKFILL (CU YD)	SUBGRADE (CU YD)	MUCK DISPOSAL (CU YD)
14+42.14	0		0	0			0
14+50.00	2	0	3	1	1	3	0
15+00.00	17	0	19	5	9	19	0
15+50.00	15	0	19	6	17	20	0
16+00.00	16	0	25	9	27	30	0
16+50.00	19	0	34	12	35	39	0
16+86.00	16	0	26	7	31	29	0
17+00.00	8	0	10	4	11	11	0
17+50.00	98	0	36	31	38	42	0
18+00.00	149	0	39	33	35	44	0
18+15.50	45	0	13	8	12	14	0
18+50.00	97	0	30	18	26	31	0
19+00.00	118	13	44	27	41	46	0
19+50.00	116	102	44	29	122	46	7
20+00.00	119	175	44	31	187	46	12
20+50.00	118	212	45	30	205	46	24
21+00.00	101	421	51	37	565	51	23
21+23.00	30	170	31	11	257	31	2
21+50.00	37	70	27	8	88	27	3
21+75.00	34	56	10	14	35	10	5
22+00.00	30	139	20	14	214	20	6
22+50.00	125	324	53	38	540	54	15
23+00.00	115	221	45	35	252	46	20
23+33.00	34	119	28	15	131	31	15
23+60.00	63	63	22	18	77	24	9
24+00.00	118	86	33	35	105	34	8
24+50.00	125	105	43	45	123	43	9
25+00.00	149	148	41	47	185	43	10
25+50.00	183	203	42	50	295	50	6
26+00.00	242	211	40	51	374	57	1
26+50.00	278	212	33	49	403	56	0
27+00.00	264	223	32	48	400	54	0
27+50.00	241	226	33	47	402	51	0
28+00.00	212	225	33	46	386	48	0
28+50.00	186	247	33	45	375	44	3
29+00.00	180	264	32	44	371	41	8
29+50.00	172	254	31	41	347	38	11
29+80.00	87	133	18	19	181	22	6
TOTAL	**3959**	**4622**	**1162**	**1008**	**6903**	**1341**	**203**

EARTHWORK SUMMARY — H

EXCAVATION (CU YD)

COMMON EXCAVATION
1623 (STAGE 1)
2336 (STAGE 2)
3959
(EV)

TOPSOIL
1327
(EV)

1327 / 1.20 = **1106**
(CV)

SUITABLE
1079 (STAGE 1)
1553 (STAGE 2)
2632
(EV)

1079 / 1.20 = 899 (STAGE 1)
1553 / 1.20 = 1294 (STAGE 2)
2193
(CV)

SUBGRADE EXCAVATION
709 (STAGE 1)
453 (STAGE 2)
1162
(EV)

709 / 1.20 = 591 (STAGE 1)
453 / 1.20 = 378 (STAGE 2)
969
(CV)

MUCK EXCAVATION
1294 (STAGE 1)
3328 (STAGE 2)
4622
(EV)

EMBANKMENT (CU YD)

TOPSOIL
1008
(CV)

GRANULAR BACKFILL
1933 (STAGE 1)
4970 (STAGE 2)
6903
(CV)

SUBGRADE BACKFILL
751 (STAGE 1)
590 (STAGE 2)
1341
(CV)

MUCK DISPOSAL
203
(CV)

EXCESS / BORROW (CU YD)

TOPSOIL
(1008 - 1106) * 1.30 = **(127)**
(EXCESS) (LV)

GRANULAR
(1933 - 899)*1.30 = 1344 (STAGE 1)
(4970 - 1294)*1.30 = 4779 (STAGE 2)
6123
(BORROW) (LV)

SELECT GRANULAR
(751 - 591)*1.30 = 208 (STAGE 1)
((590 - 378)*1.30 = 276 (STAGE 2)
484
(BORROW) (LV)

UNSUITABLE SOIL
(203 - 4622) * 1.40 = **(6187)**
(EXCESS) (LV)

EARTHWORK BALANCE NOTES:

GRANULAR MATERIAL MEETING THE REQUIREMENTS OF MN/DOT SPEC. 3149.2B1 SHALL BE USED TO BACKFILL COMMON EXCAVATION AND MUCK EXCAVATION (EXCLUDING MUCK DISPOSAL) AREAS.

1' SUBGRADE TREATMENT EXCAVATION PAID FOR AS SUBGRADE EXCAVATION. IT IS ASSUMED THAT SUBGRADE EXCAVATION MEET THE REQUIREMENTS OF MN/DOT SPEC. 3149.2B2 FOR SELECT GRANULAR BORROW. ADDITIONAL MATERIAL NEEDED SHALL BE SELECT GRANULAR.

120% SHRINKAGE FACTOR USED FROM EXCAVATED VOLUME (EV) TO COMPACTED VOLUME (CV). 130% SWELL FACTOR USED FROM COMPACTED VOLUME (CV) TO LOOSE VOLUME (LV). 140% SWELL FACTOR ASSUMED FOR MUCK DISPOSAL VOLUME.

SHRINKAGE 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.

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.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_TAB.dgn 09/07/2018 3:32:27 PM

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ANOKA COUNTY
ANOKA COUNTY HIGHWAY DEPT.

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C.P. 2019-03

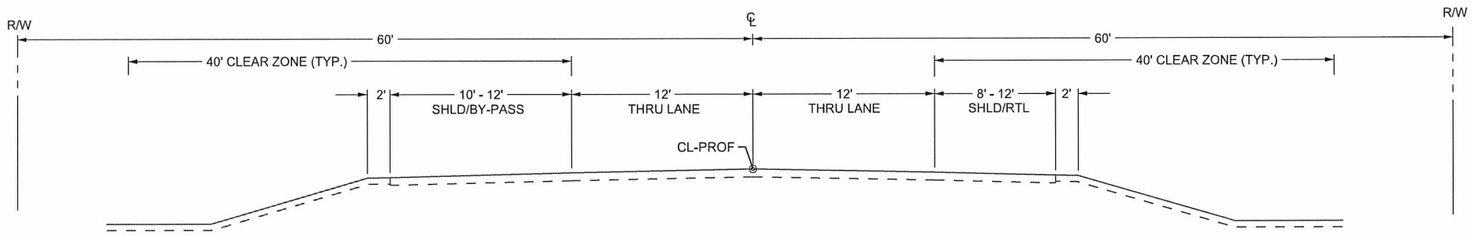
EARTHWORK TABULATION

Sheet 11 of 86 Sheets

EXISTING TYPICAL SECTIONS

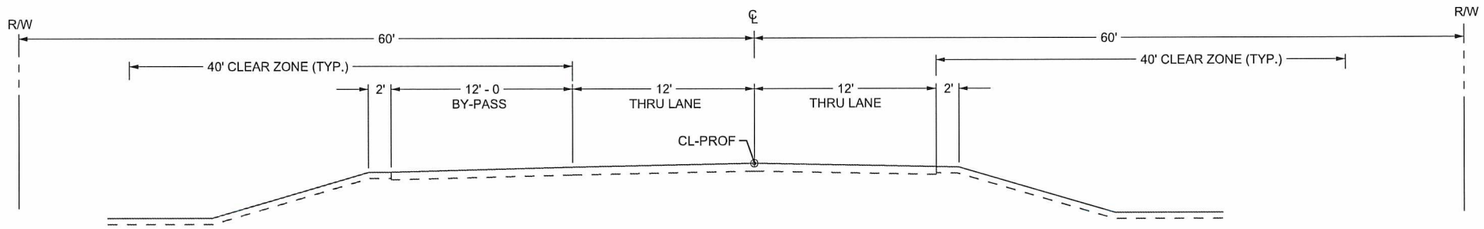
CSAH 17 (LEXINGTON AVE NE)

(CL STA. 14+42.14 TO STA. 21+90.94)



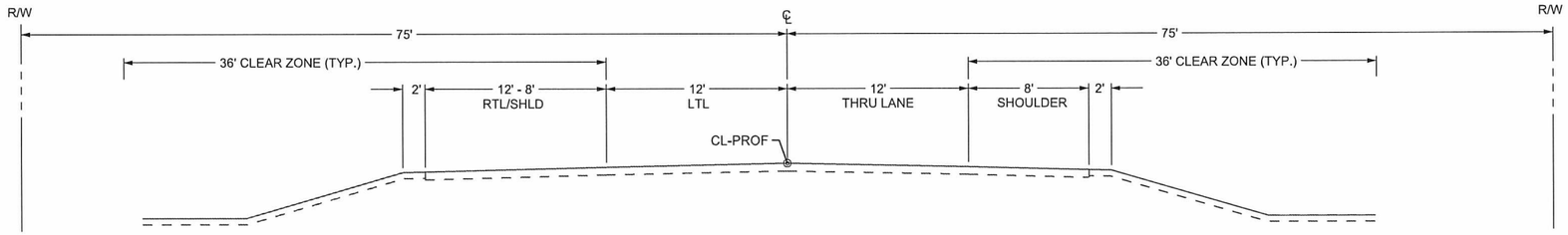
CSAH 17 (LEXINGTON AVE NE)

(CL STA. 21+90.94 TO STA. 29+80.44)



CSAH 18 (BROADWAY AVE NE)

(CL STA. 103+07.29 TO STA. 108+69.77)



NOT TO SCALE

NO	DATE	BY	CKD	APPR	REVISION

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SIGNATURE: Elizabeth M

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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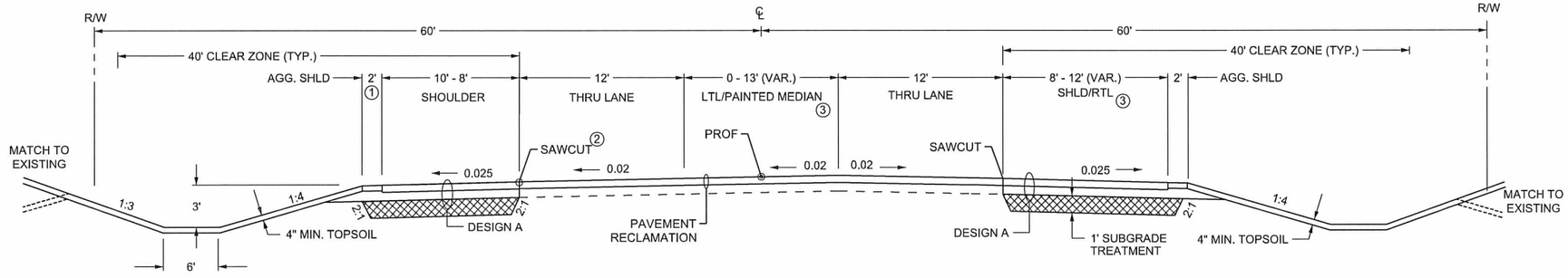
EXISTING TYPICAL SECTIONS

Sheet 12 of 86 Sheets

PROPOSED TYPICAL SECTIONS

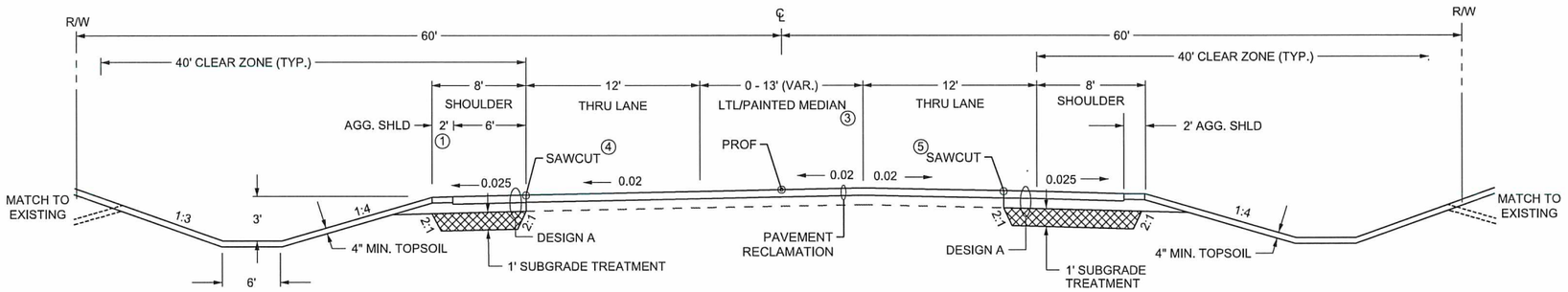
CSAH 17 (LEXINGTON AVE NE)

(CL STA. 14+42.14 TO STA. 21+90.94)



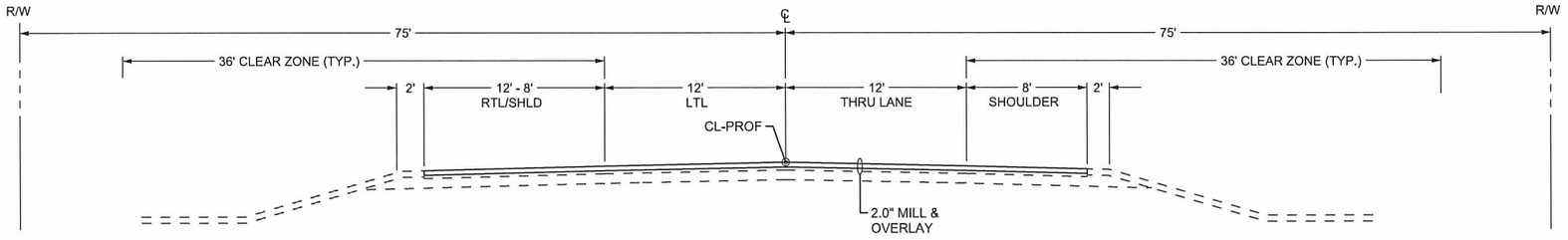
CSAH 17 (LEXINGTON AVE NE)

(CL STA. 21+90.94 TO STA. 29+80.44)



CSAH 18 (BROADWAY AVE NE)

(CL STA. 103+07.29 TO STA. 108+69.77)



NOT TO SCALE

TURN LANE LOCATIONS

ALIGN	STA. TO STA. *		LOCATION	DESCRIPTION	STRIPED TAPER
17 CL	16+50	21+30	RT.	RIGHT TURN LANE	1:15
17 CL	17+32	21+30	LT/RT.	LEFT TURN LANE	1:10
17 CL	21+74	26+20	LT/RT.	LEFT TURN LANE	1:15
18 CL	102+91	107+81	RT.	LEFT TURN LANE	
18 CL	102+87	107+81	RT.	RIGHT TURN LANE	1:15

* STATION RANGE INCLUDES TAPER SECTION.

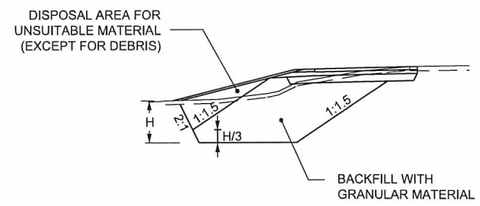
CONSTRUCTION NOTES:

① NO AGGREGATE SHOULDER BUT 8' PAVED SHOULDER BETWEEN STATIONS 16+75 AND 23+44.
② BEGIN SAWCUT ALONG SB CSAH 17 AT STATION 15+95.
③ SEE CONSTRUCTION PLAN SHEETS 44 - 45 AND CHART ABOVE FOR TURN LANE LOCATIONS.
④ SAWCUT BITUMINOUS PAVEMENT 1 FT FROM THE EDGE OF EXISTING PAVEMENT FROM STATION 25+18.
⑤ SAWCUT BITUMINOUS PAVEMENT 1 FT FROM THE EDGE OF EXISTING PAVEMENT FROM STATION 22+28.

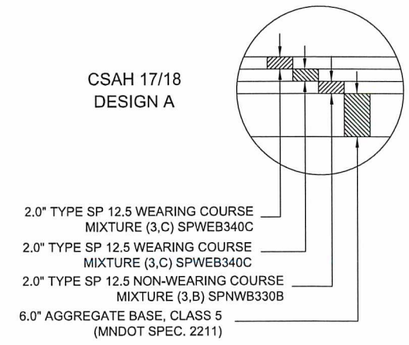
GENERAL NOTES:

1) ALL CROSS SLOPES ARE EXPRESSED IN FT/FT.
2) SAWCUT CSAH 17 ALONG THE OUTSIDE EDGE OF THROUGH LANES, UNLESS OTHERWISE SPECIFIED. (SEE NOTES ④ & ⑤ ABOVE)
3) SEE SOIL & CONSTRUCTION NOTES #31 PERTAINING TO PAVING OPERATION.

MUCK EXCAVATION DETAIL



CSAH 17/18 DESIGN A



NO	DATE	BY	CKD	APPR	REVISION

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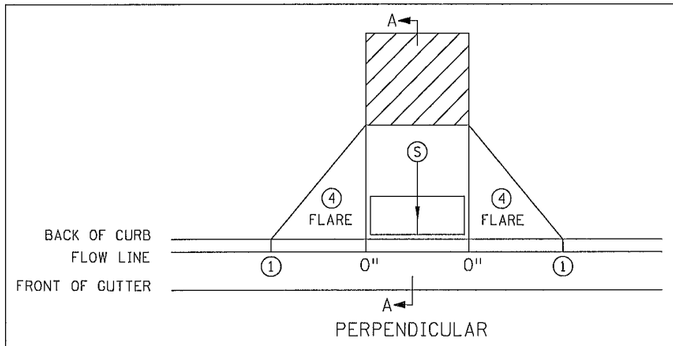
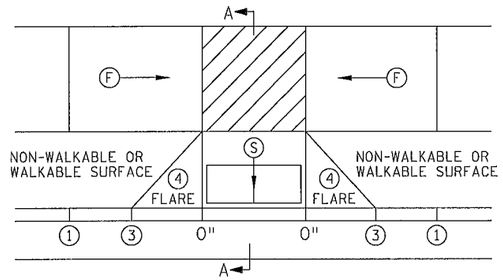
PROPOSED TYPICAL SECTIONS

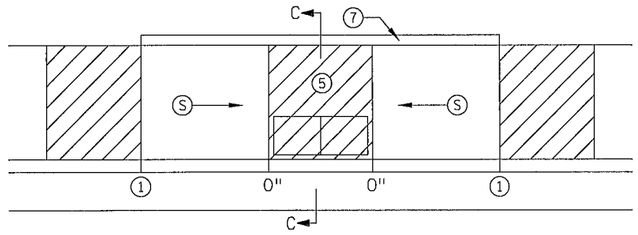
Sheet 13 of 86 Sheets



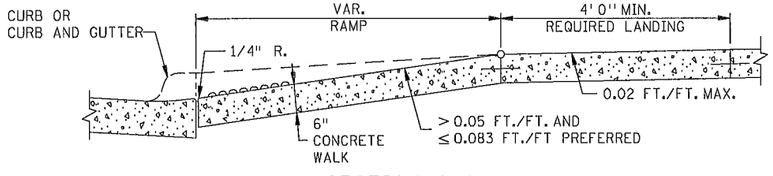
PERPENDICULAR



TIERED PERPENDICULAR

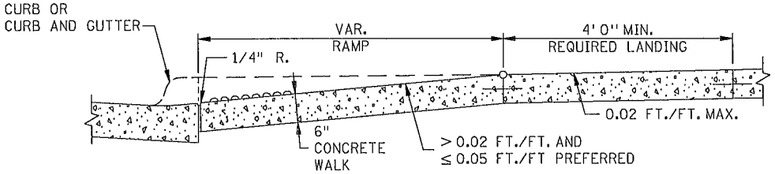


PARALLEL



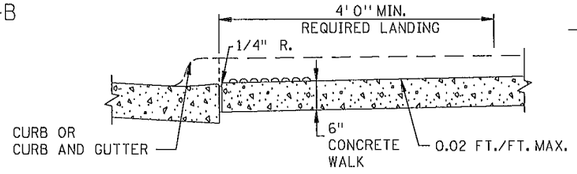
SECTION A-A

PERPENDICULAR/TIERED/DIAGONAL



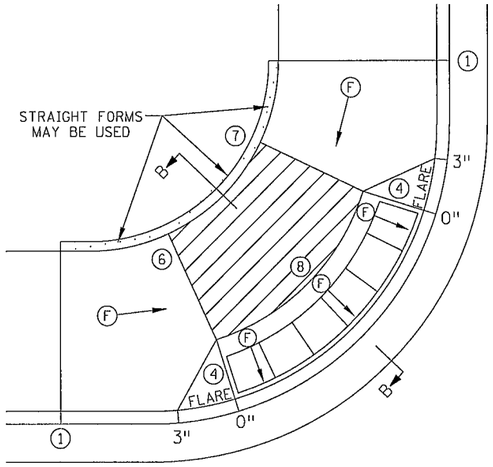
SECTION B-B

FAN

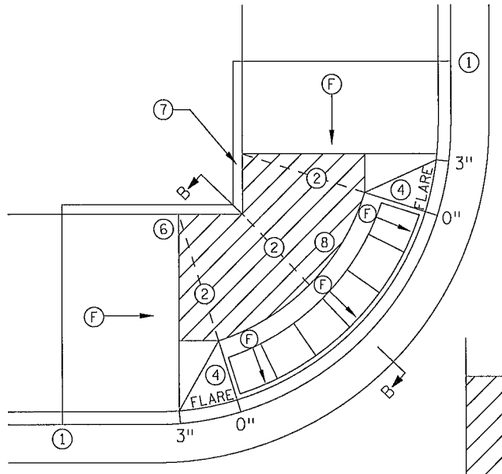


SECTION C-C

PARALLEL/DEPRESSED CORNER

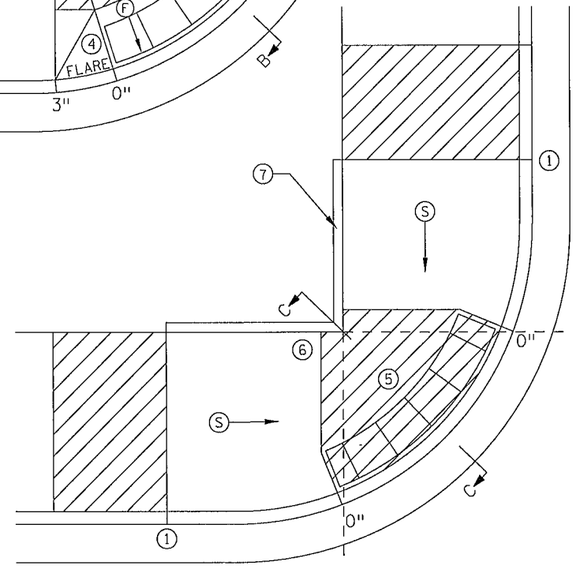


FAN⑩

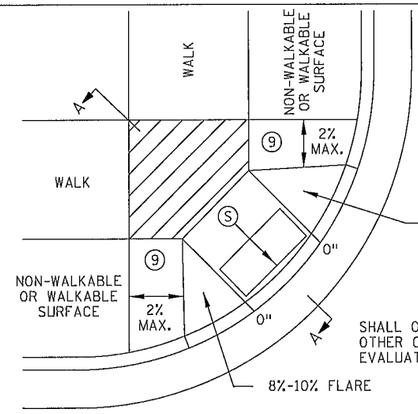


MODIFIED FAN⑩

USED WHEN RIGHT-OF-WAY IS CONSTRAINED



DEPRESSED CORNER



DIAGONAL

SHALL ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL

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.

① MATCH FULL HEIGHT CURB.

② 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.

③ 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.

④ SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS, WHEN INITIAL LANDING IS AT FULL CURB HEIGHT.

⑤ 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.

⑥ 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)

⑦ 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.

⑧ A 7' MIN TOP RADIUS GRADE BREAK REQUIRED TO BE CONSTRUCTIBLE.

⑨ PAVE FULL WALK WIDTH.

⑩ "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%.

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

S.P. 002-617-021

S.P. 197-020-006

REVISION:

APPROVED: JANUARY 23, 2017

OPERATIONS ENGINEER

REVISED:

APPROVED: 1-23-2017

STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

PLOTTED/REVISED: 09/07/2018
DISTRICT #:
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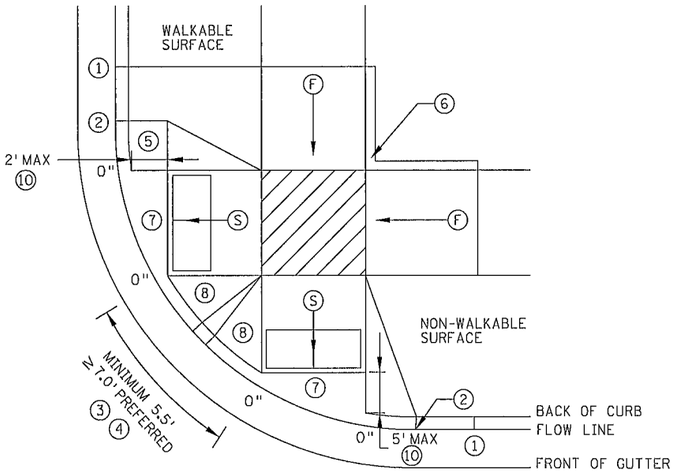
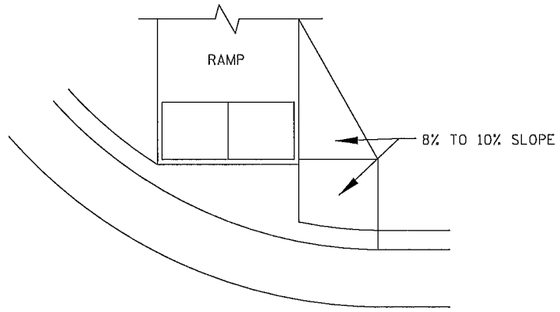


COMBINED DIRECTIONAL ⑨



DIRECTIONAL RAMP WALKABLE FLARE

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.

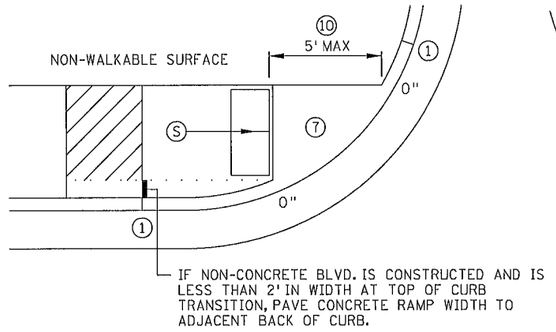
⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD 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.

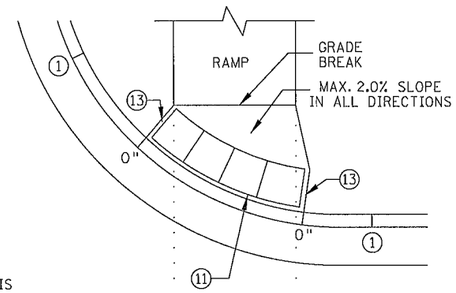
⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.

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.

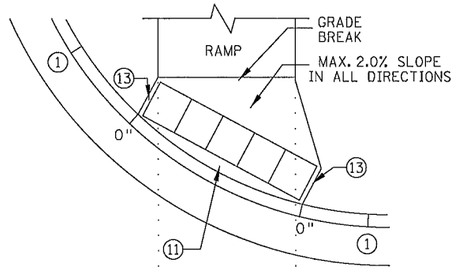
⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

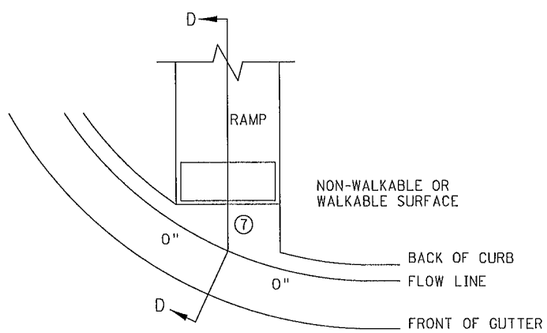


STANDARD ONE-WAY DIRECTIONAL ⑨

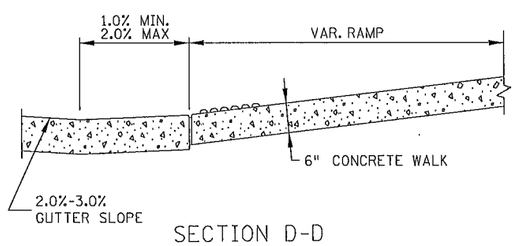


ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB





CURB FOR DIRECTIONAL RAMPS ⑭



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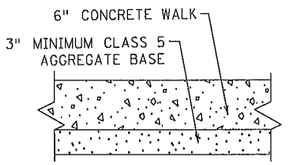

TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

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%.
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

S.P. 002-617-021
#WWW

REVISED:

APPROVED: 1-23-2017
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

PLOTTED/REVISED: 09/07/2018

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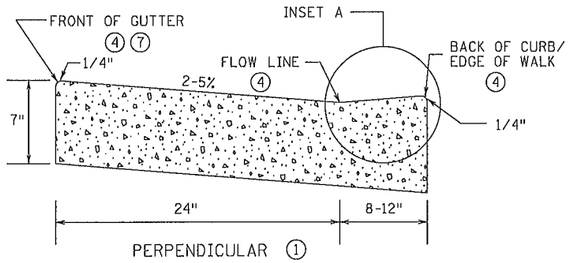
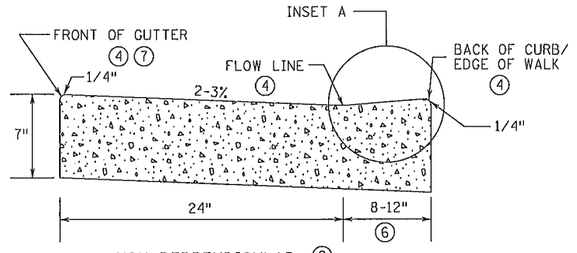
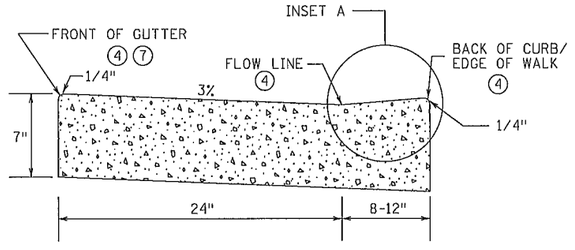


PERPENDICULAR ①

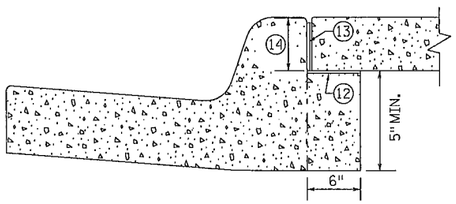


NON PERPENDICULAR ②



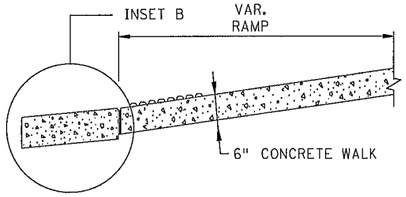
FOR CURB MACHINE PLACEMENT AROUND RADIUS ③
(REGARDLESS OF RAMP TYPE)

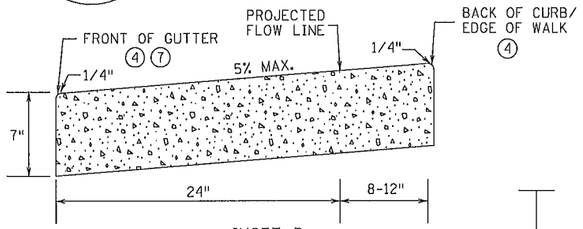
PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



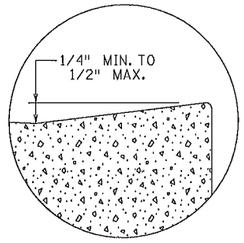
OPTIONAL SILL CURB WHEN SIDEWALK
IS AT BACK OF CURB

CONCRETE SILL TO BE USED ONLY WHEN
SPECIFIED IN THE PLAN.





INSET B
OUTFLOW GUTTER ⑧



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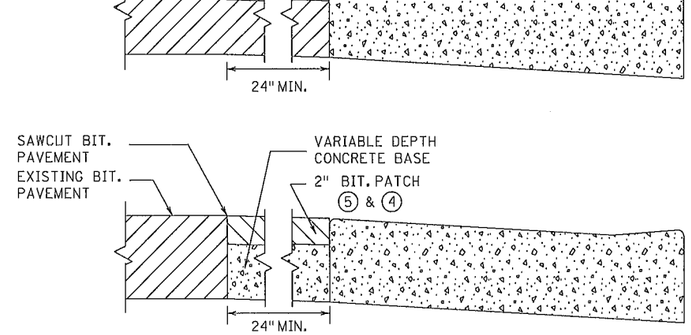
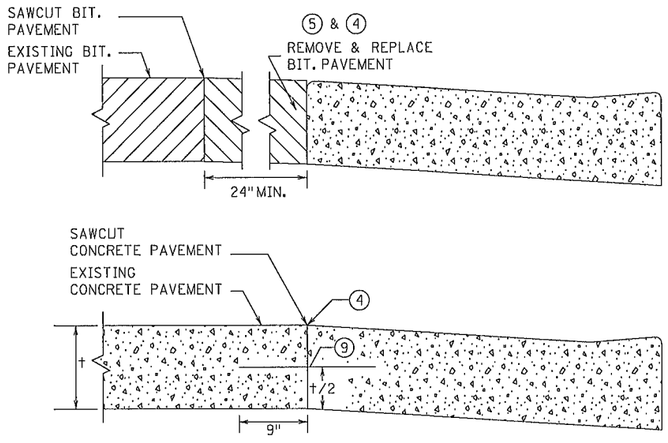
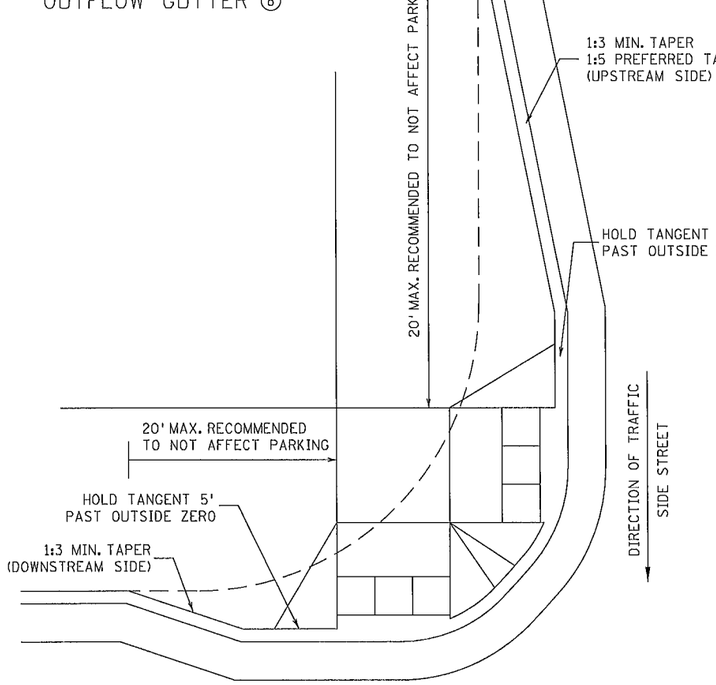


ONLY ALLOWED PER ENGINEER'S APPROVAL

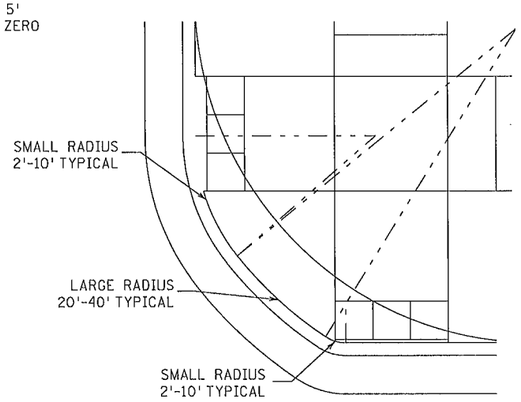


PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

FOR USE ON CURB RAMP RETROFITS



ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT) ⑪



COMBINED DIRECTIONAL ⑩
(COMPOUND RADIUS)

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.

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PATH & FILENAME: P:\02-617-21\Plan\STD Plans\s250_1_spn.dgn
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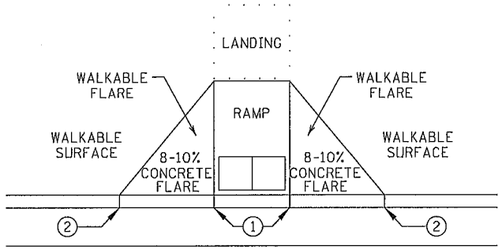
S.P. 002-617-021
S.P. 197-020-006

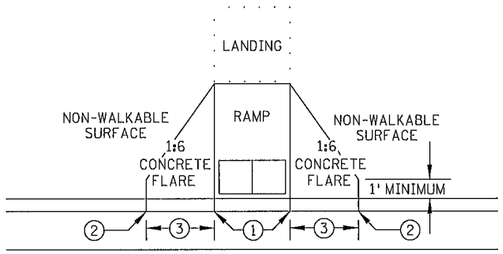
MINNESOTA DEPARTMENT OF TRANSPORTATION
REVISED:
STATE DESIGN ENGINEER
APPROVED: 1-23-2017

PEDESTRIAN CURB RAMP DETAILS

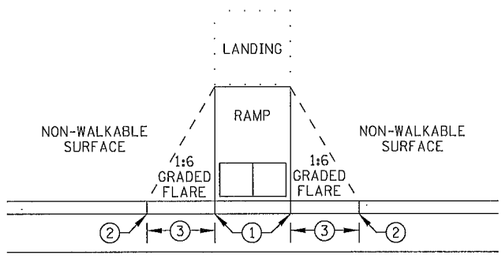
STANDARD PLAN 5-297.250



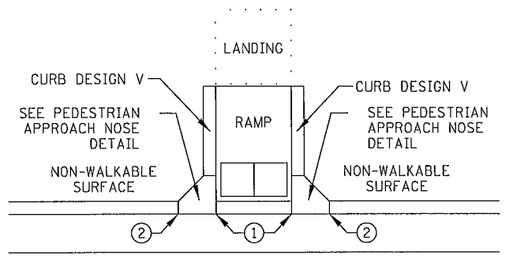
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

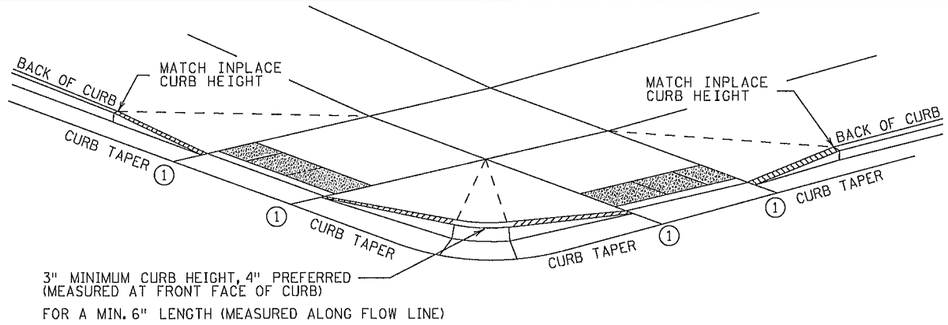


GRADED FLARES

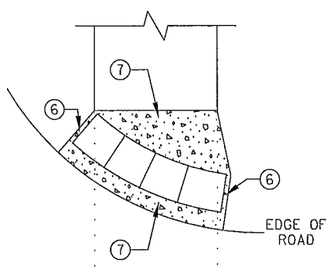


RETURNED CURB ⑤

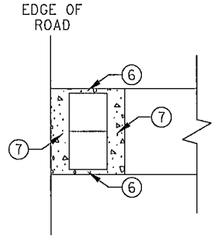
TYPICAL SIDE TREATMENT OPTIONS ④ ⑪



DETECTABLE EDGE WITH ⑧
CURB AND GUTTER

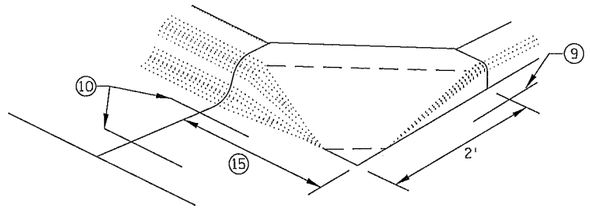


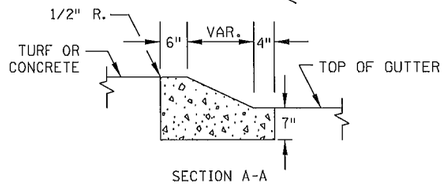
RADIAL DETECTABLE WARNING



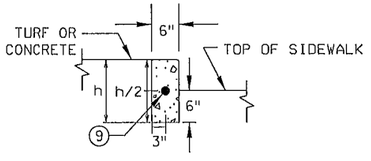
RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER





SECTION A-A



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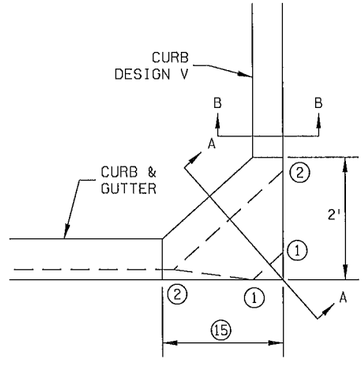
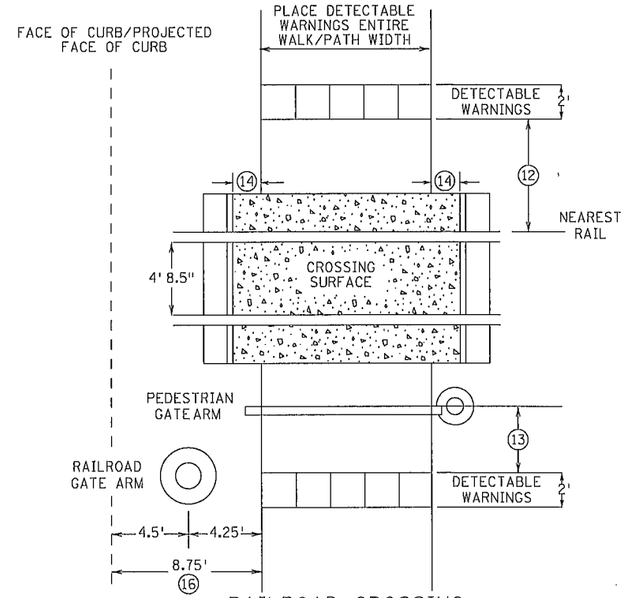


PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



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.

PLOTTED/REVISED: 09/07/2018

DISTRICT #:
USER NAME: ejmarkos
PATH & FILENAME: P:\02-617-21\PlanSTD Plans\s250_1_spndgn
FILE NAME: s250_1_spndgn

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

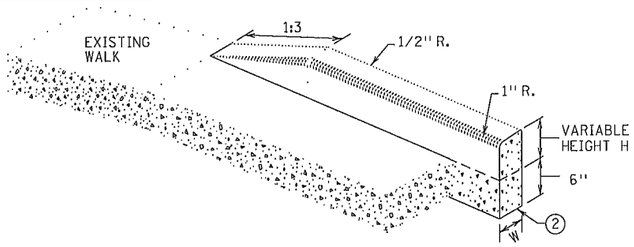
S.P. 002-617-021
S.P. 197-020-006

MINNESOTA DEPARTMENT OF TRANSPORTATION

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

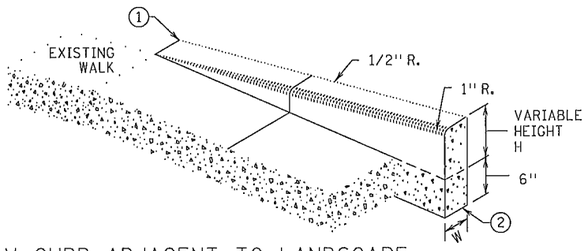
PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250



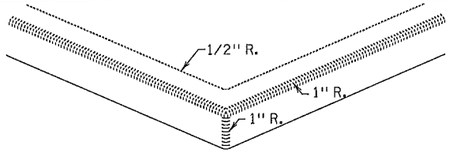
V CURB ADJACENT TO LANDSCAPE

CURB WITHIN SIDEWALK LIMITS

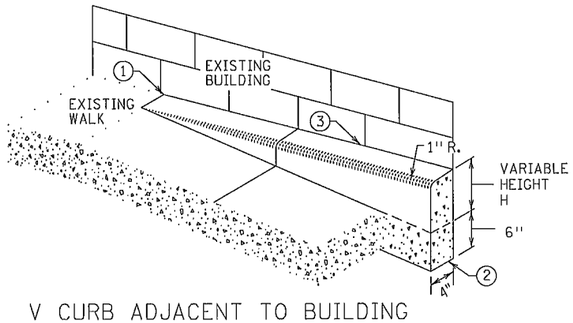


V CURB ADJACENT TO LANDSCAPE

CURB OUTSIDE SIDEWALK LIMITS

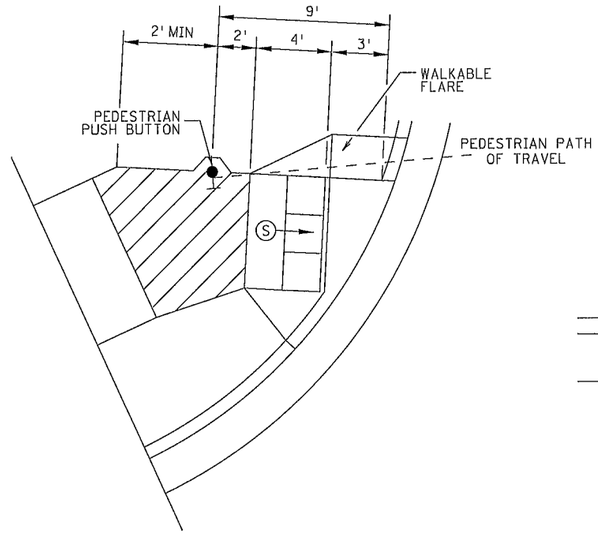


V CURB INTERSECTION



V CURB ADJACENT TO BUILDING OR BARRIER

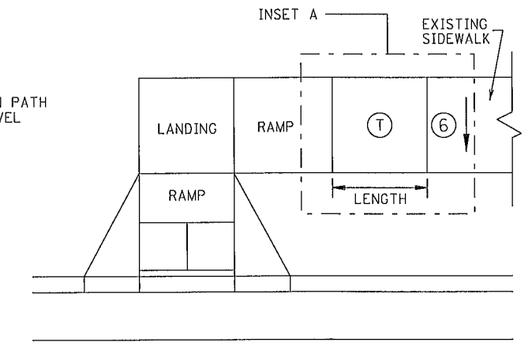
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"

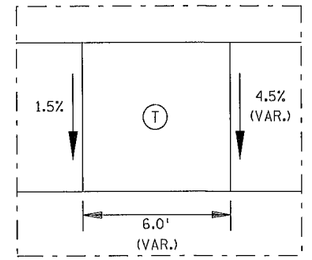


SEMI-DIRECTIONAL RAMP (3,4,9)

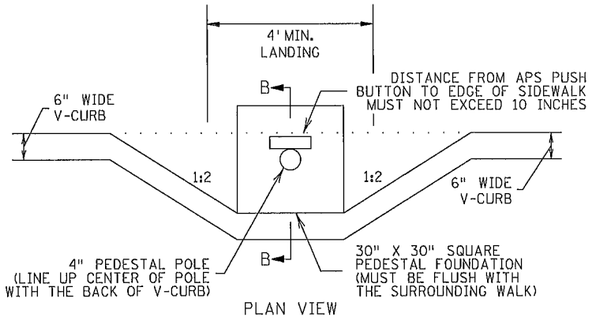
3' DOME SETBACK, 4' LONG RAMP AND PUSH BUTTON 9' FROM THE BACK OF CURB

PRIMARILY USED FOR APS APPLICATIONS WHERE THE PAR DOES NOT CONTINUE PAST THE PUSH BUTTON (DEAD-END SIDEWALK)

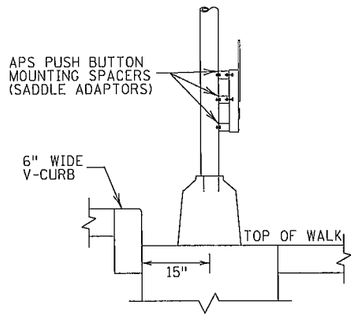




TRANSITION PANEL ④⑤

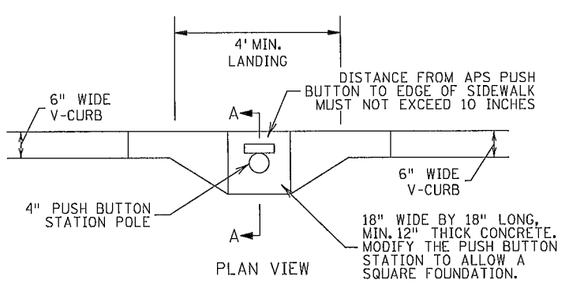


PLAN VIEW

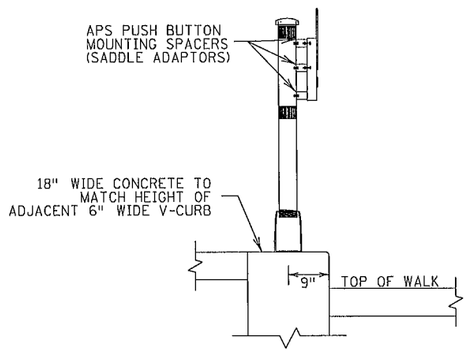


SECTION B-B

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



PLAN VIEW



SECTION A-A

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.

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

② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.

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

④ 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.

⑤ TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).

⑥ 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.

Ⓢ 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%.

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.

Ⓣ 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.

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DISTRICT #:
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REVISION:

APPROVED: JANUARY 23, 2017

OPERATIONS ENGINEER

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APPROVED: 1-23-2017

STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

PLOTTED/REVISED: 09/07/2018
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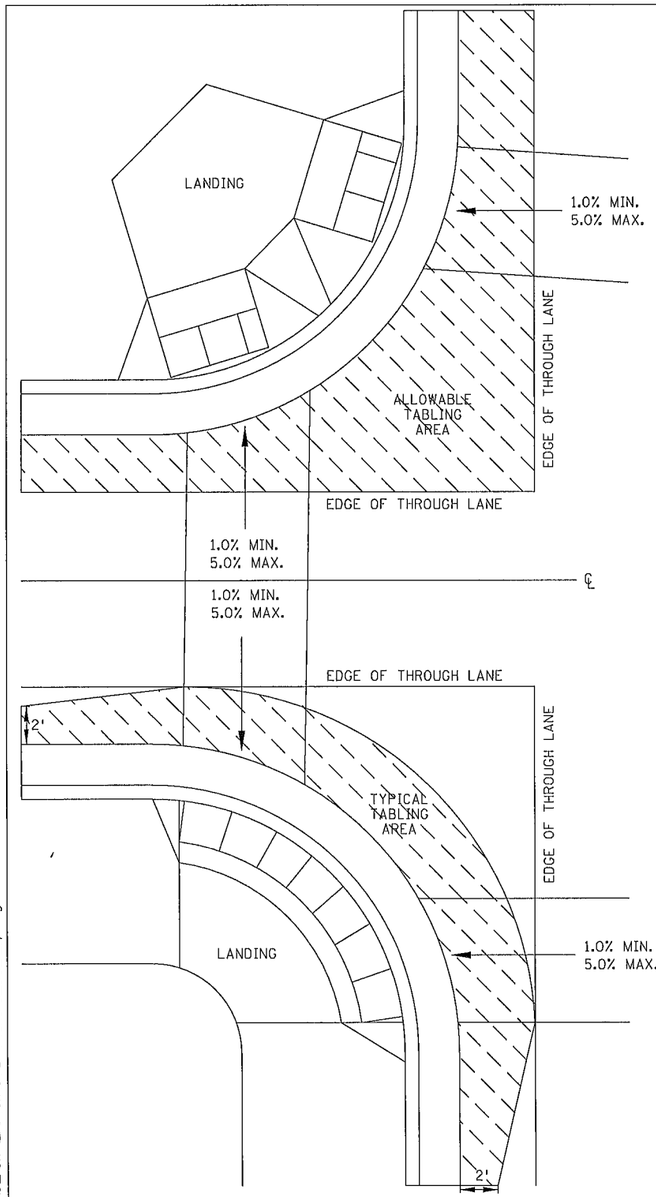
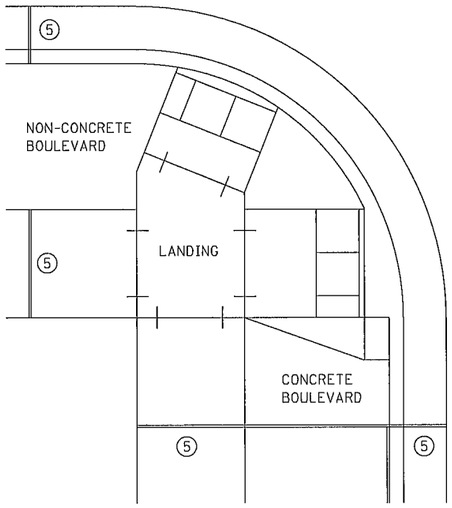
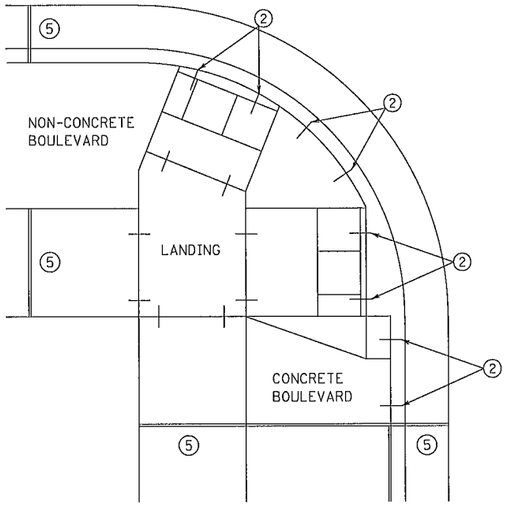


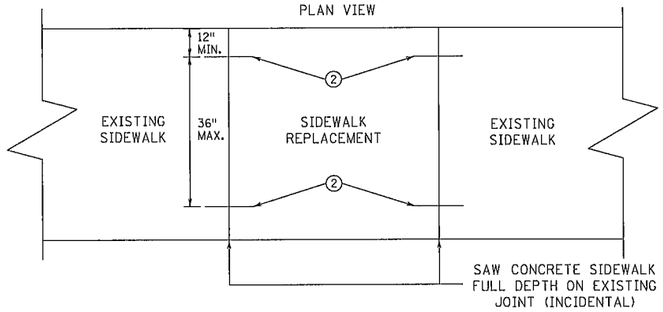
CURB LINE AND ROAD CROSSING ADJUSTMENTS



EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS

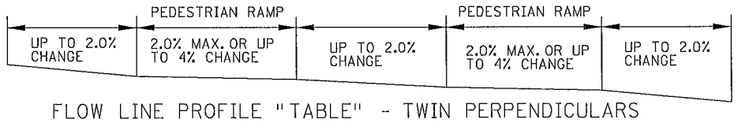


OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS ④

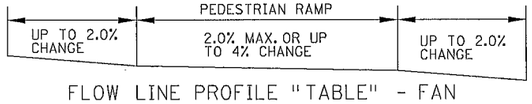


OPTIONAL SIDEWALK REINFORCEMENT

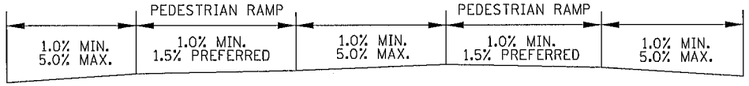
SIDEWALK REINFORCEMENT TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.



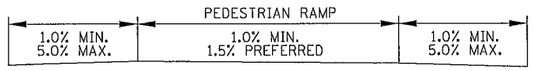
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



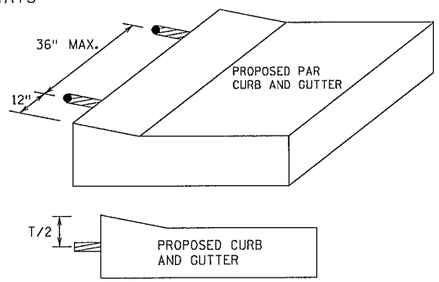
FLOW LINE PROFILE "TABLE" - FAN



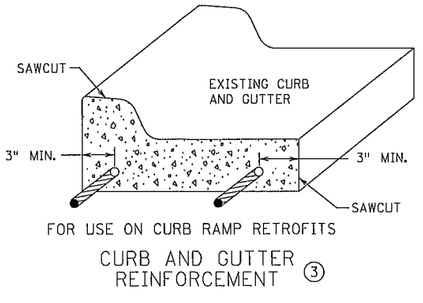
FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS



FLOW LINE PROFILE RAISE - FAN

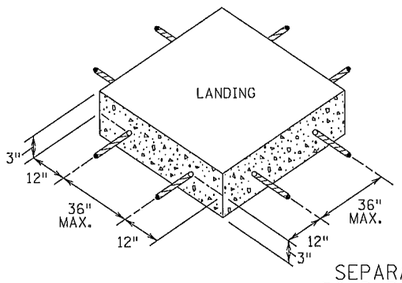


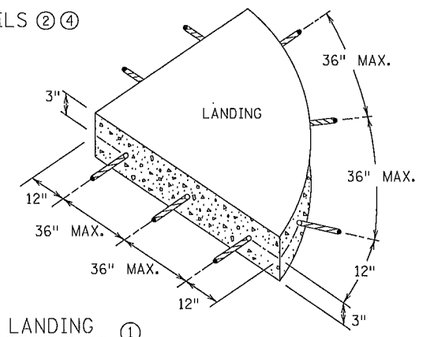
OPTIONAL CURB LINE REINFORCEMENT DETAILS ②④



FOR USE ON CURB RAMP RETROFITS

CURB AND GUTTER REINFORCEMENT ③





SEPARATE LANDING POUR REINFORCEMENT ①

"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.

S.P. 002-617-021
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REVISION:

APPROVED: JANUARY 23, 2017
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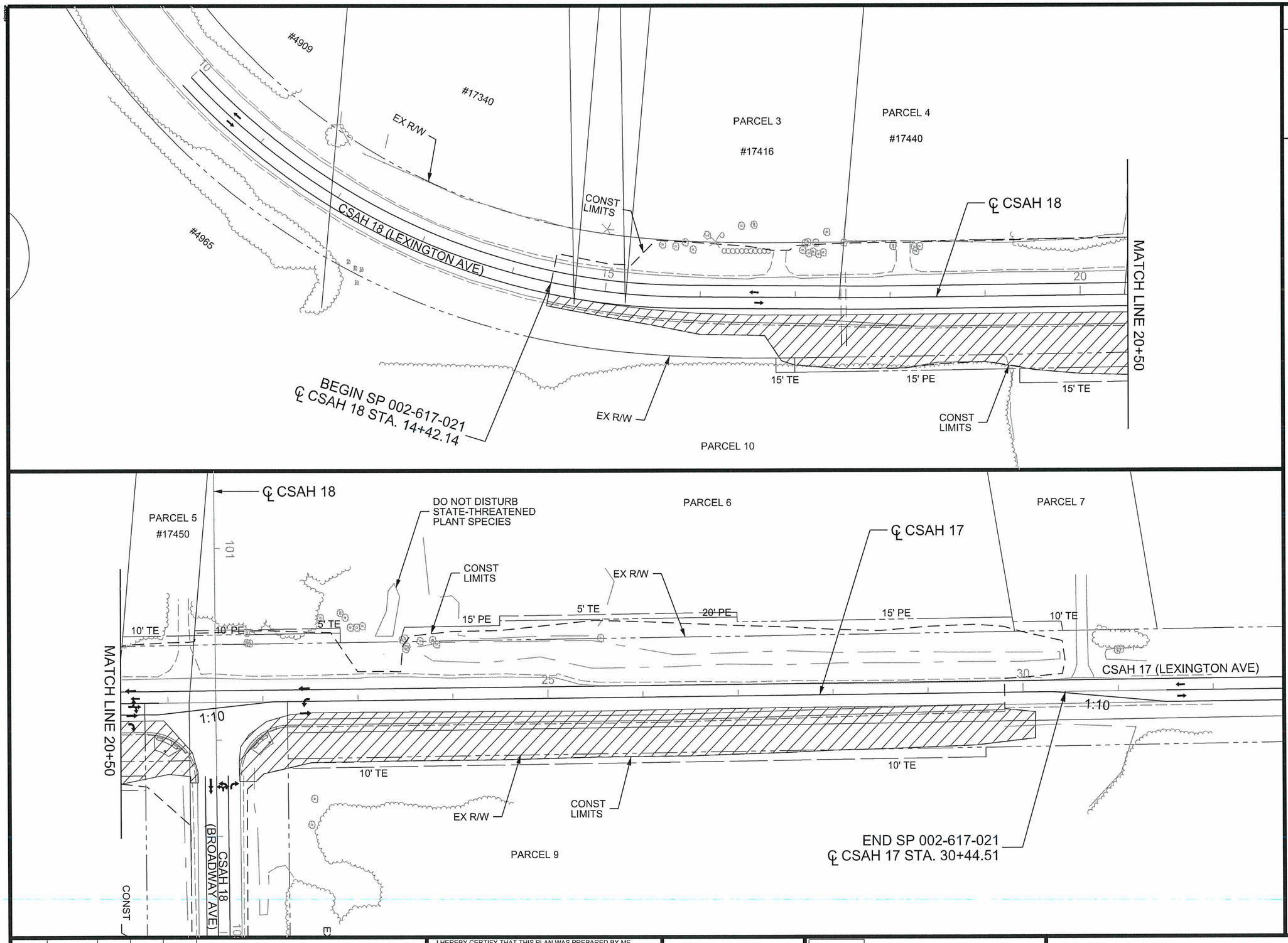
6 OF 6

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250



LEGEND

- CULVERT EXTENSION
- CONSTRUCTION AREA
- TRAFFIC DIRECTION

STAGE 1 CONSTRUCTION NOTES

WIDEN NORTHBOUND CSAH 18/CSAH 17, AND EXTEND THE CENTERLINE CULVERT AT STATION 17+50.

THE CONTRACTOR SHALL MAINTAIN AND PROVIDE PRIVATE ENTRANCE ACCESS AT ALL TIMES.

STAGE 1 TRAFFIC CONTROL NOTES:

THE INTERSECTION OF CSAH 17/CSAH 18 WILL BE AN ALL-WAY STOP.

NORTH SECTION OF CSAH 17 (24+00 - 30+00) SHALL BE REDUCED TO A SINGLE LANE DURING MUCK EXCAVATION / WIDENING OPERATION ALONG NORTHBOUND SHOULDER.

SEE TRAFFIC CONTROL SHEETS FOR MORE INFORMATION.

SCALE 0 100 IN FEET

1 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_STG1_P1.dgn 09/07/2018 3:32:41 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: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

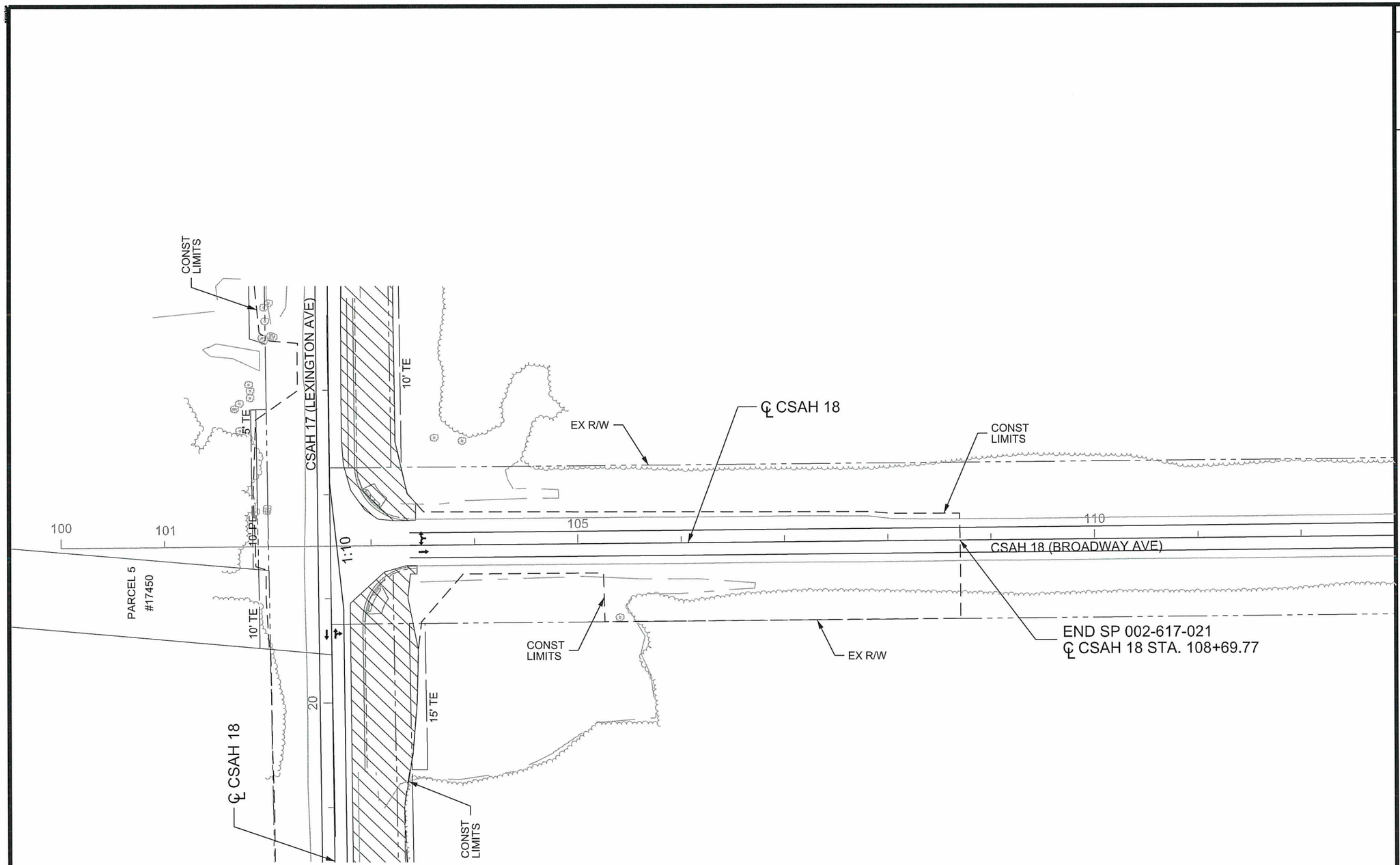
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

CONSTRUCTION STAGE 1
CSAH 17
STA 14+42.14 TO 29+80.44

Sheet 20 of 86 Sheets



LEGEND

CONSTRUCTION AREA

TRAFFIC DIRECTION

STAGE 1 CONSTRUCTION NOTES

WIDEN NORTHBOUND CSAH 17/CSAH 18, AND EXTEND THE CENTERLINE CULVERT AT STATION 17+50.

CONTRACTOR SHALL MAINTAIN AND PROVIDE PRIVATE ENTRANCE ACCESS AT ALL TIMES.

STAGE 1 TRAFFIC CONTROL NOTES:

THE INTERSECTION OF CSAH 17/CSAH 18 WILL BE AN ALL-WAY STOP.

SEE TRAFFIC CONTROL SHEETS FOR MORE INFORMATION.

N

0 100
SCALE IN FEET

2 OF 2

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 M

DATE: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

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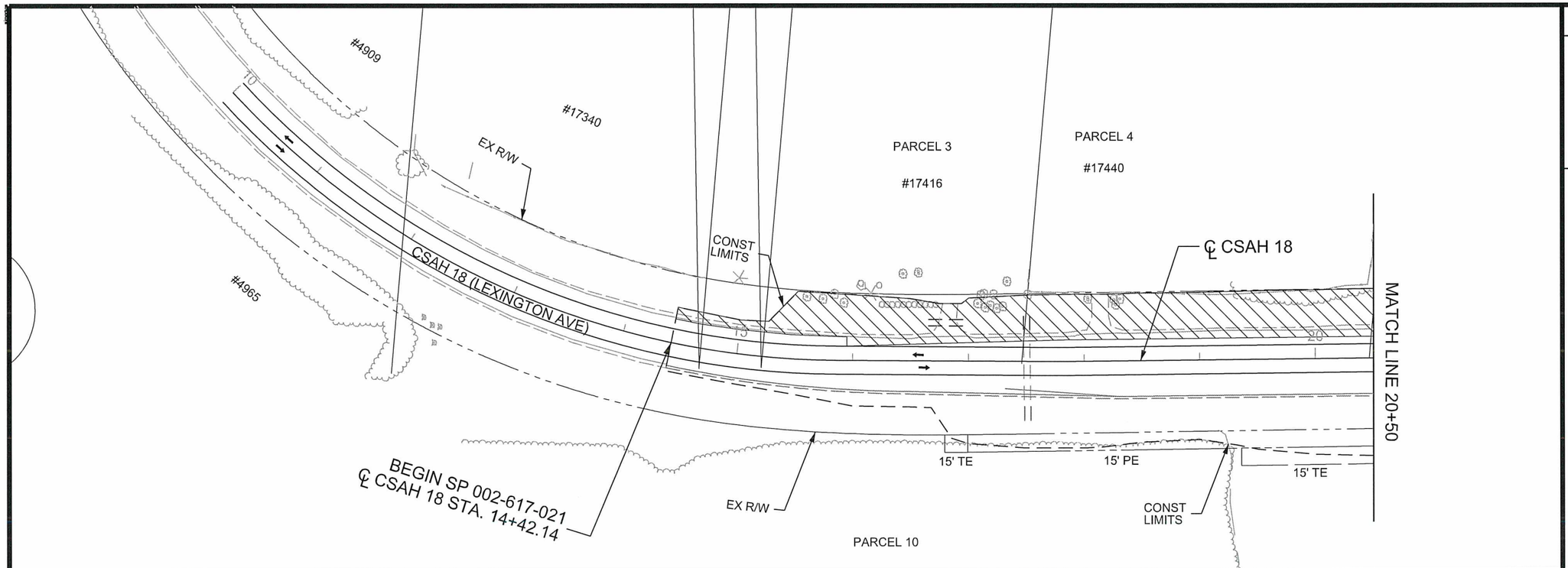
CONSTRUCTION STAGE 1
CSAH 18
STA 103+07.29 TO 108+69.77

Sheet 21 of 86 Sheets



LEGEND

- CULVERT WORK
- CONSTRUCTION AREA
- TRAFFIC DIRECTION

STAGE 2 CONSTRUCTION NOTES

WIDEN CSAH 17 SOUTHBOUND LANE, EXTEND THE CENTERLINE CULVERT AT STATION 17+50, AND REPLACE CULVERTS UNDER DRIVEWAY ACCESSES.

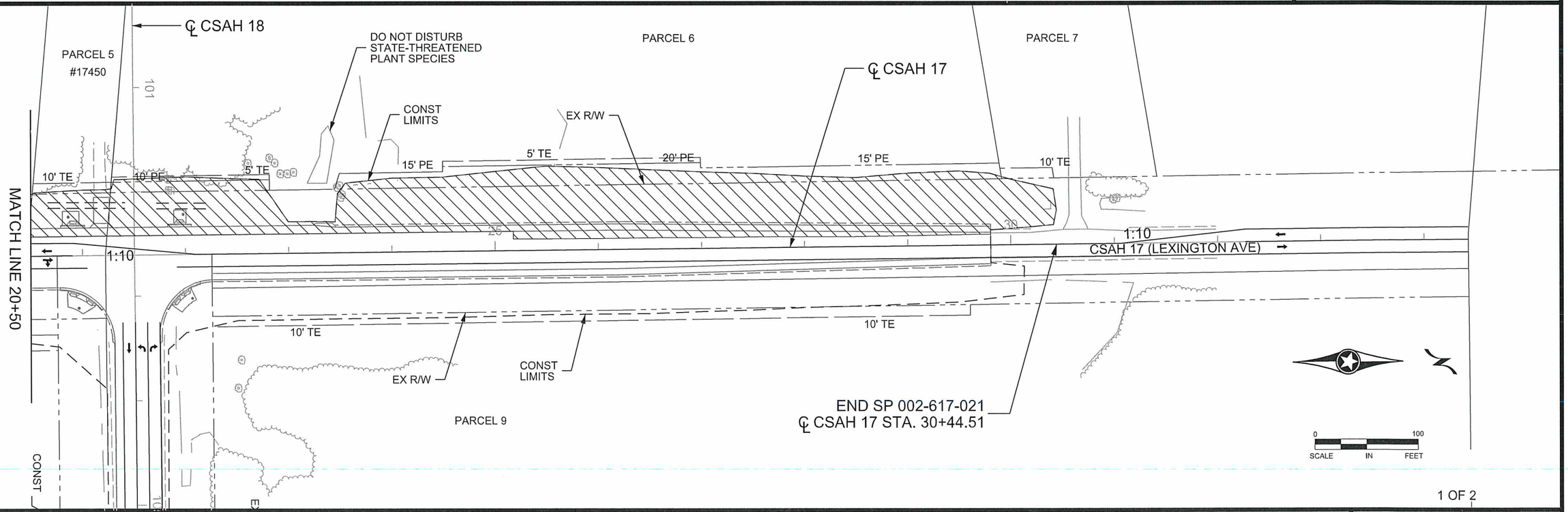
THE CONTRACTOR SHALL MAINTAIN AND PROVIDE PRIVATE ENTRANCE ACCESS AT ALL TIMES.

STAGE 2 TRAFFIC CONTROL NOTES:

THE INTERSECTION OF CSAH 17/CSAH 18 WILL BE AN ALL-WAY STOP.

NORTH SECTION OF CSAH 17 (24+00 - 30+00) SHALL BE REDUCED TO A SINGLE LANE DURING MUCK EXCAVATION / WIDENING OPERATION ALONG SOUTHBOUND SHOULDER.

SEE TRAFFIC CONTROL SHEETS FOR MORE INFORMATION.



1 OF 2

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PRINT NAME: ELIZABETH MARKOSE

SIGNATURE: Elizabeth Markose

DATE: 09-07-18 LICENSE NO. 49118

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DESIGN BY	EJM	DATE	05-15-18
CHECKED BY	GMP	DATE	07-18-18

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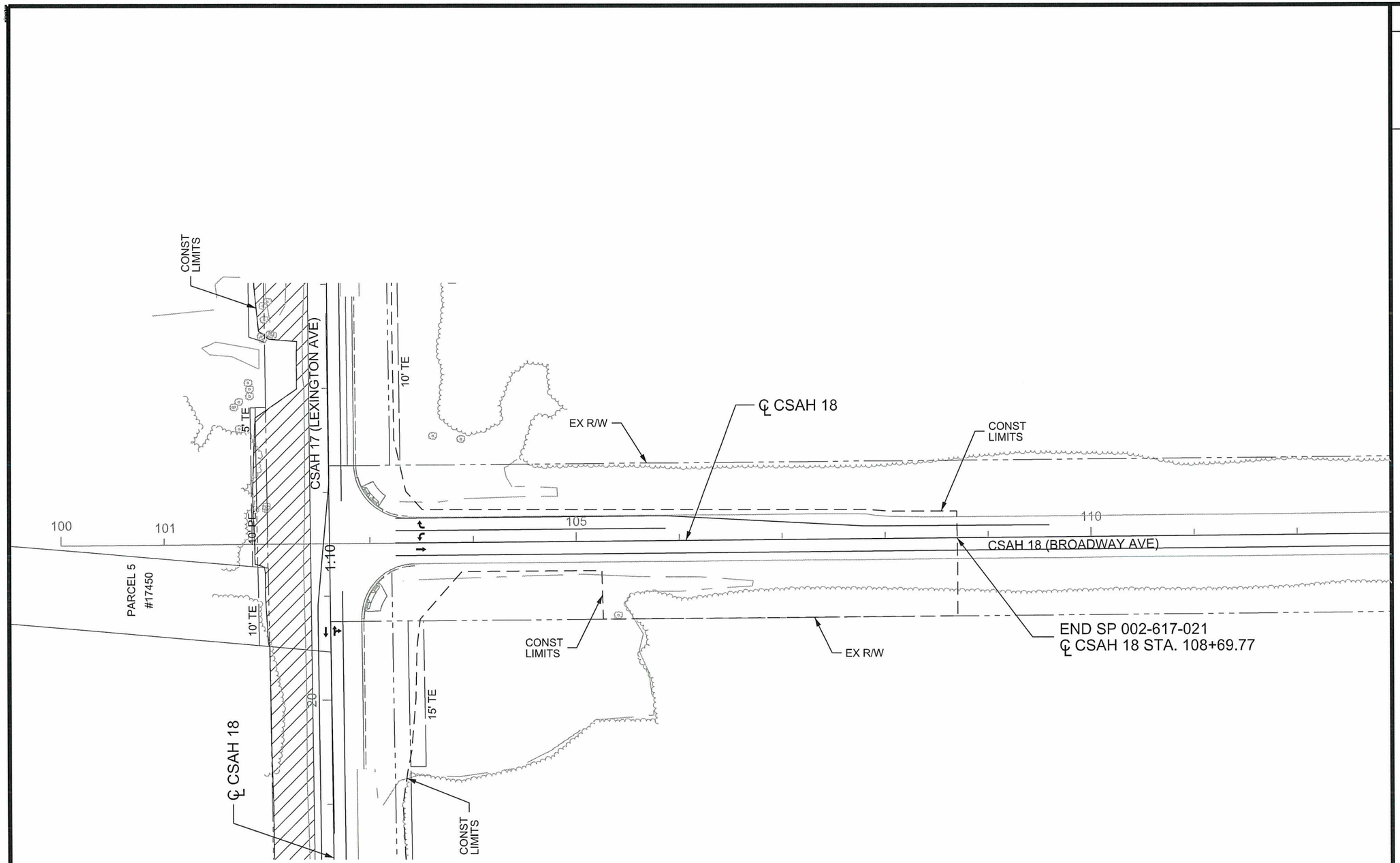
CONSTRUCTION STAGE 2
CSAH 17
STA 14+42.14 TO 29+80.44

Sheet 22 of 86 Sheets



LEGEND

CONSTRUCTION AREA

TRAFFIC DIRECTION

STAGE 2 CONSTRUCTION NOTES

WIDEN SOUTHBOUND CSAH 17/CSAH 18.

CONTRACTOR SHALL MAINTAIN AND PROVIDE PRIVATE ENTRANCE ACCESS AT ALL TIMES.

STAGE 2 TRAFFIC CONTROL NOTES:

THE INTERSECTION OF CSAH 17/CSAH 18 WILL BE AN ALL-WAY STOP.

ALL LANES ON CSAH 18 WILL BE OPEN TO TRAFFIC.

SEE TRAFFIC CONTROL SHEETS FOR MORE INFORMATION.

N

0 100
SCALE IN FEET

2 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_STG2_P2.dgn 09/07/2018 3:32:46 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: 09-01-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

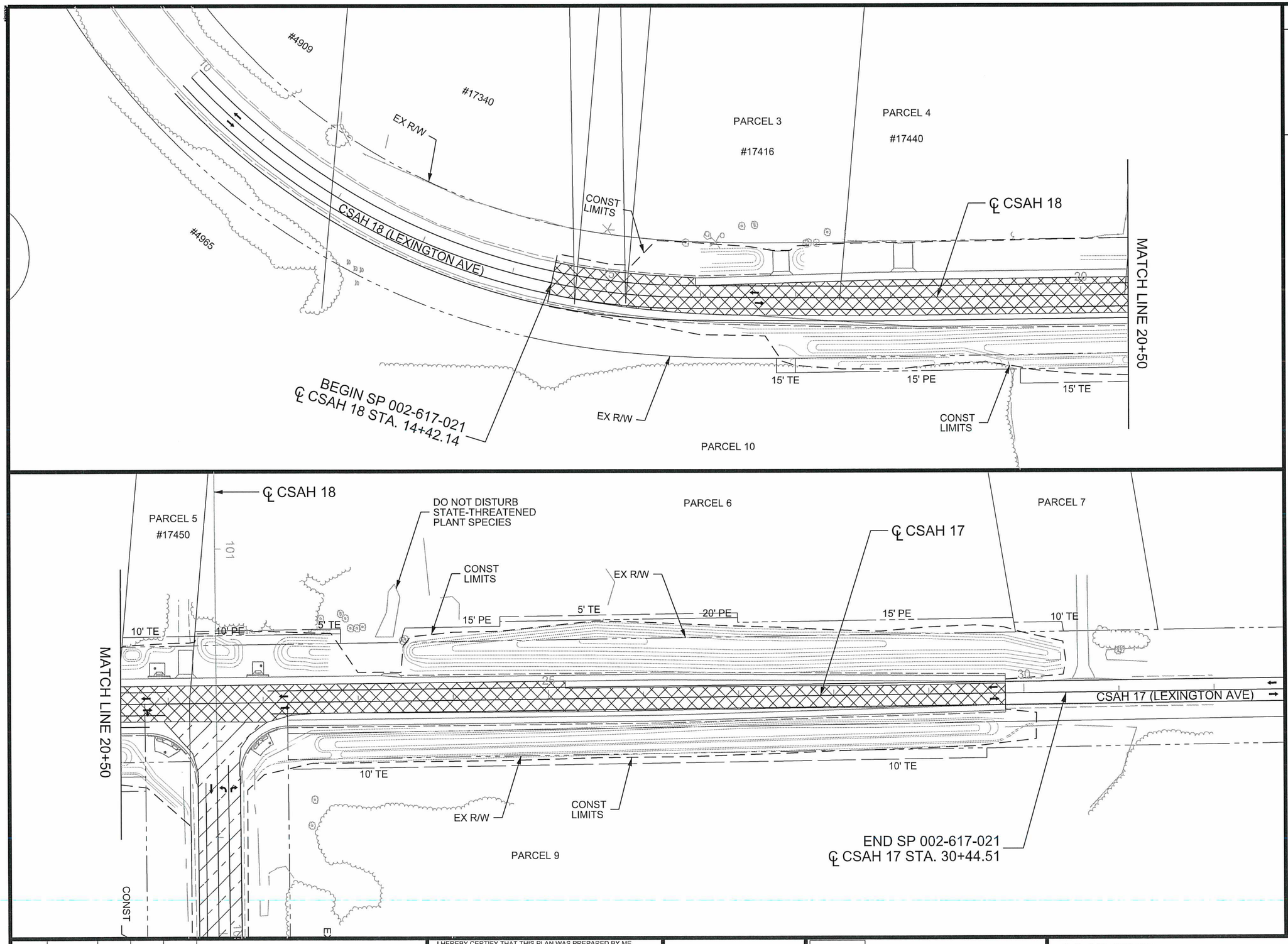
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

CONSTRUCTION STAGE 2
CSAH 18
STA 103+07.29 TO 108+69.77

Sheet 23 of 86 Sheets



LEGEND

- PAVEMENT RECLAMATION UNDER TRAFFIC
- MILL & OVERLAY UNDER TRAFFIC
- TRAFFIC DIRECTION

STAGE 3 CONSTRUCTION NOTES

PAVEMENT RECLAMATION AND MILL & OVERLAY UNDER TRAFFIC, WITH FLAGGING OPERATION.

CONTRACTOR SHALL MAINTAIN AND PROVIDE PRIVATE ENTRANCE ACCESS AT ALL TIMES.

STAGE 3 TRAFFIC CONTROL NOTES:

THE INTERSECTION OF CSAH 17/CSAH 18 WILL BE AN ALL-WAY STOP.

SEE TRAFFIC CONTROL SHEETS FOR MORE INFORMATION.

SCALE 0 100 IN FEET

1 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_STG3_P1.dgn 09/07/2018 3:32:49 PM

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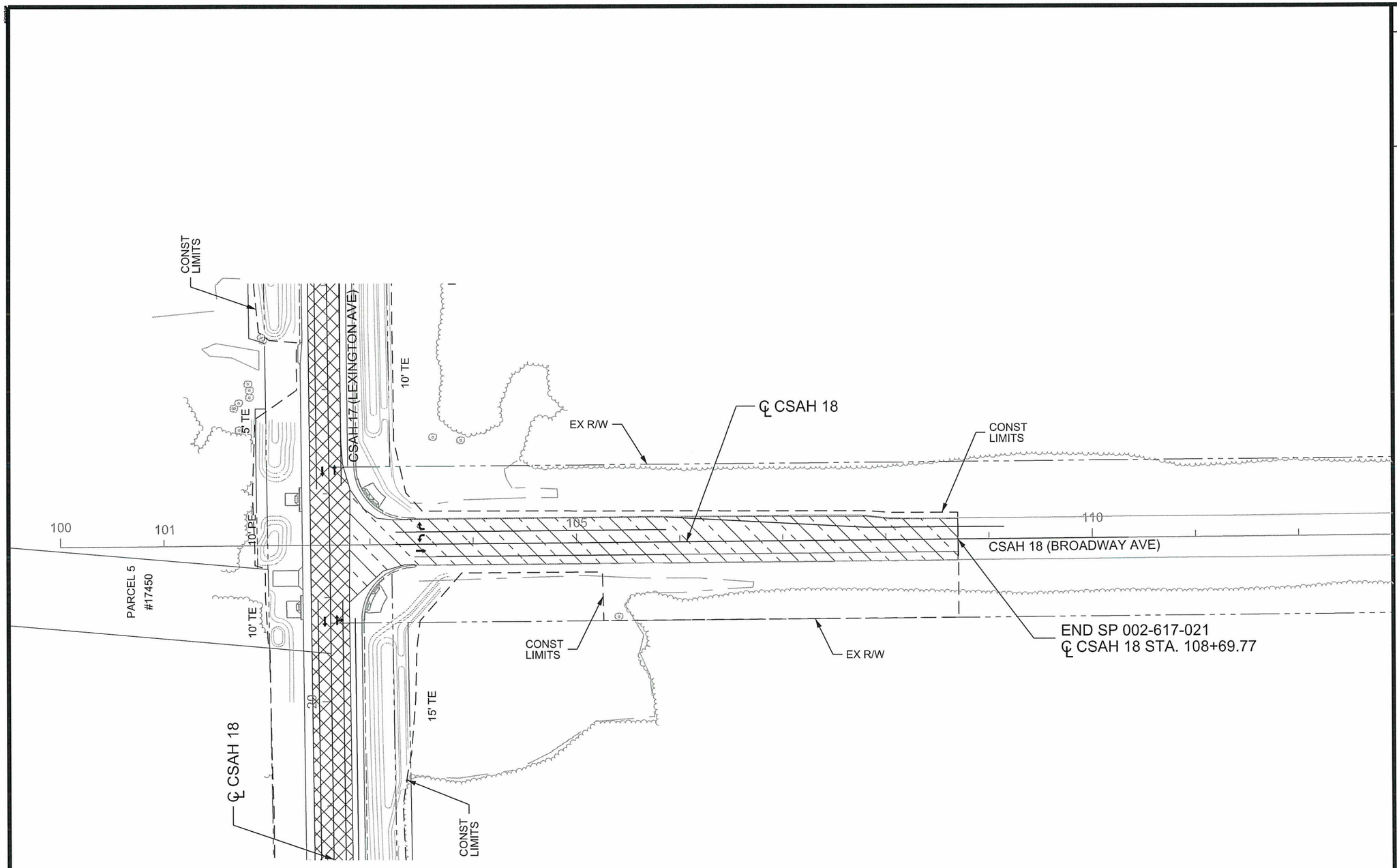
CONSTRUCTION STAGE 3
CSAH 17
STA 14+42.14 TO 29+80.44

Sheet 24 of 86 Sheets



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CONSTRUCTION STAGE 3
CSAH 18
STA 103+07.29 TO 108+69.77

Sheet 25 of 86 Sheets

STAGE 1 TRAFFIC CONTROL NOTES:

1. TRAFFIC IS SHIFTED TO THE SOUTHBOUND LANE OF CSAH 17 NORTH OF CSAH 18.
2. 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. ADD TRPMs SPACED EVERY 10 FEET IN TAPER AREAS. TRPMs SHALL BE REMOVED PRIOR TO WEAR COURSE.
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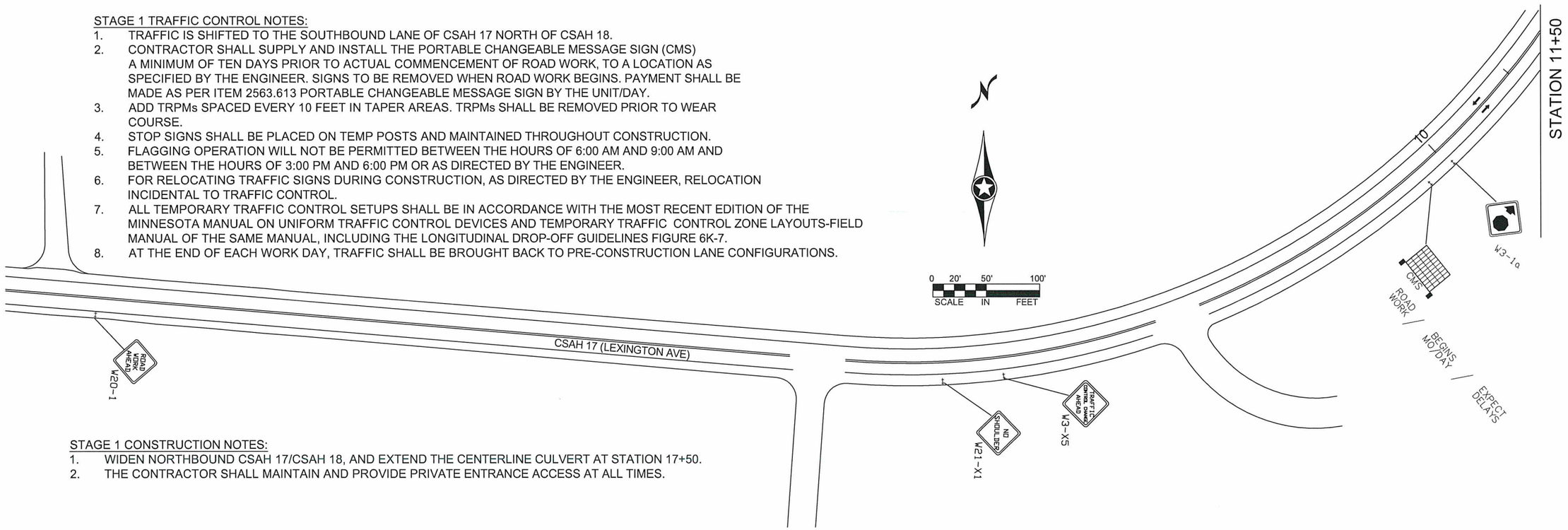
8. AT THE END OF EACH WORK DAY, TRAFFIC SHALL BE BROUGHT BACK TO PRE-CONSTRUCTION LANE CONFIGURATIONS.



STAGE 1 CONSTRUCTION NOTES:

1. WIDEN NORTHBOUND CSAH 17/CSAH 18, AND EXTEND THE CENTERLINE CULVERT AT STATION 17+50.
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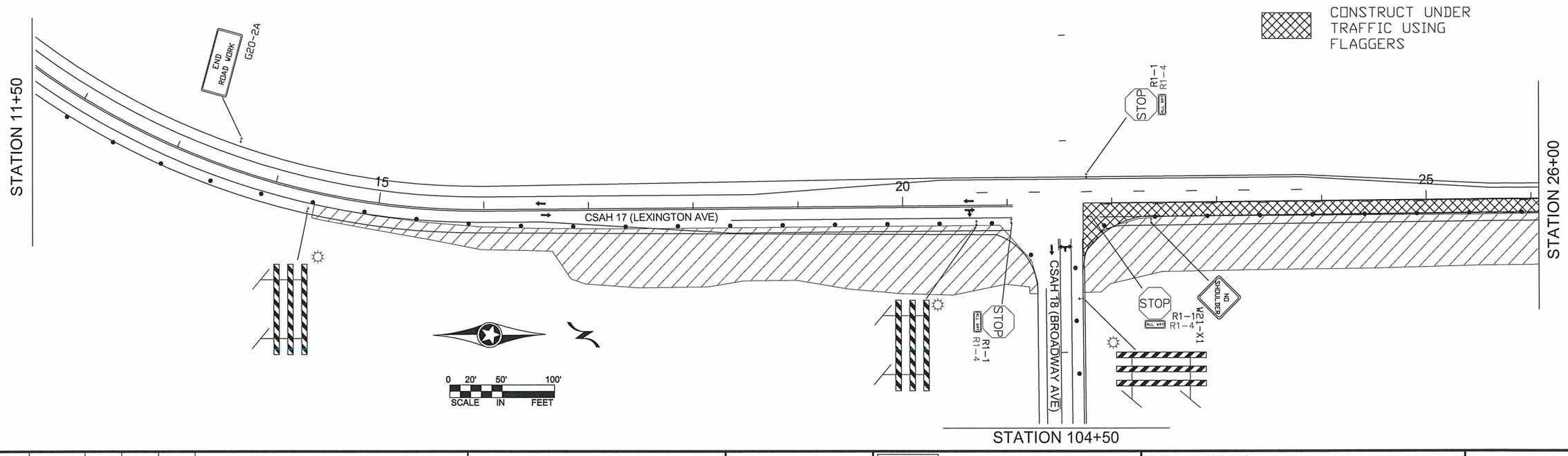

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PRINT NAME: DOUGLAS W. FISCHER, P.E.

SIGNATURE:

DATE: 9/10/18 LICENSE NO. 20235

DRAWN BY LJK DATE 05-14-18

DESIGN BY LJK DATE 05-14-18

CHECKED BY JKR DATE 07-09-18

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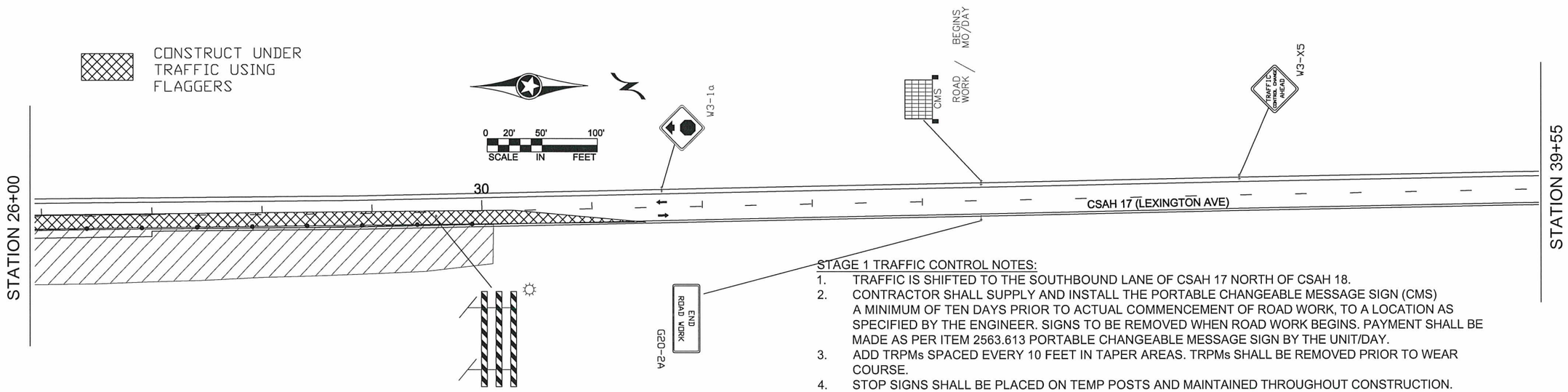
S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

STAGE 1 TRAFFIC CONTROL PLAN



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STAGE 1 CONSTRUCTION NOTES:

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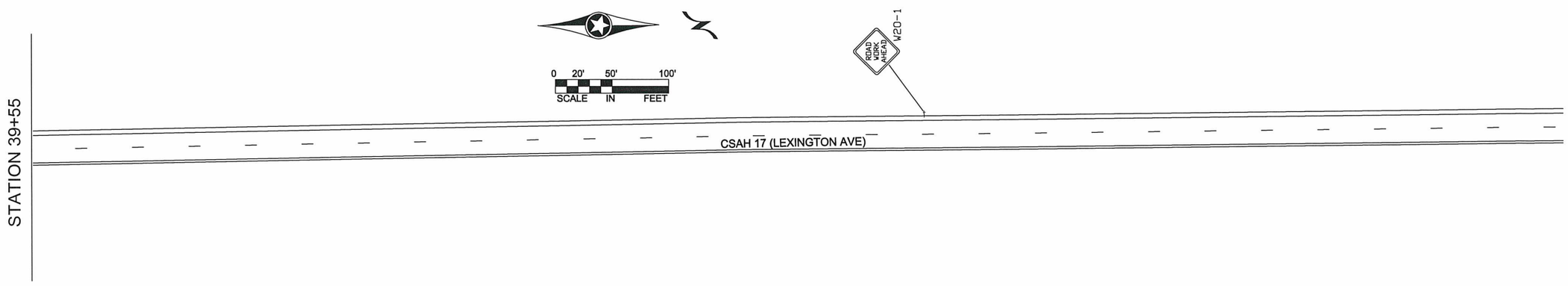

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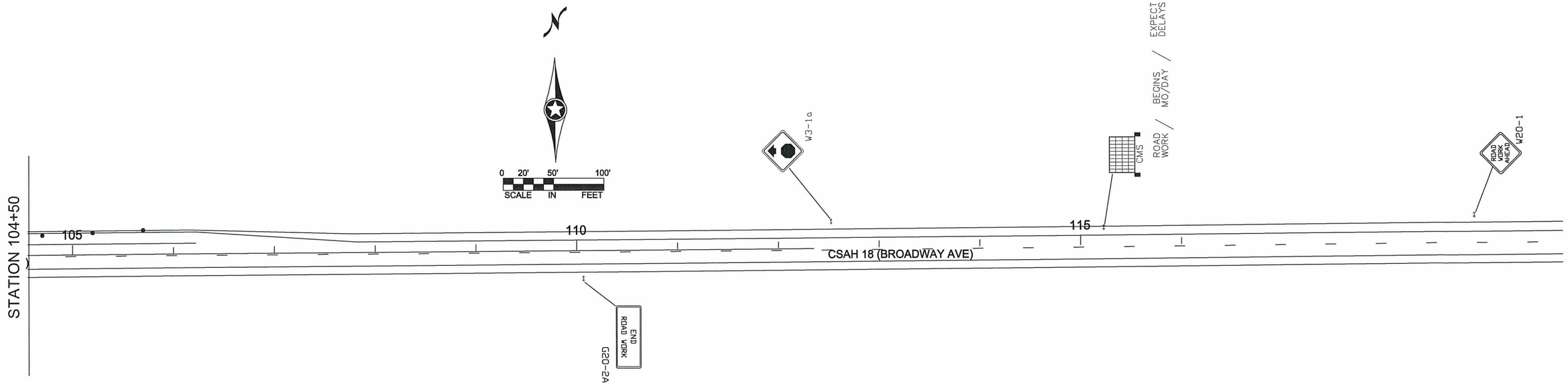
S.P. 197-020-006
C.P. 2019-03

STAGE 1 TRAFFIC CONTROL PLAN

Sheet 27 of 86 Sheets



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STAGE 1 CONSTRUCTION NOTES:

1. WIDEN NORTHBOUND CSAH 17/CSAH 18, AND EXTEND THE CENTERLINE CULVERT AT STATION 17+50.
2. THE CONTRACTOR SHALL MAINTAIN AND PROVIDE PRIVATE ENTRANCE ACCESS AT ALL TIMES.

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STAGE 1 TRAFFIC CONTROL PLAN

STAGE 2 TRAFFIC CONTROL NOTES:

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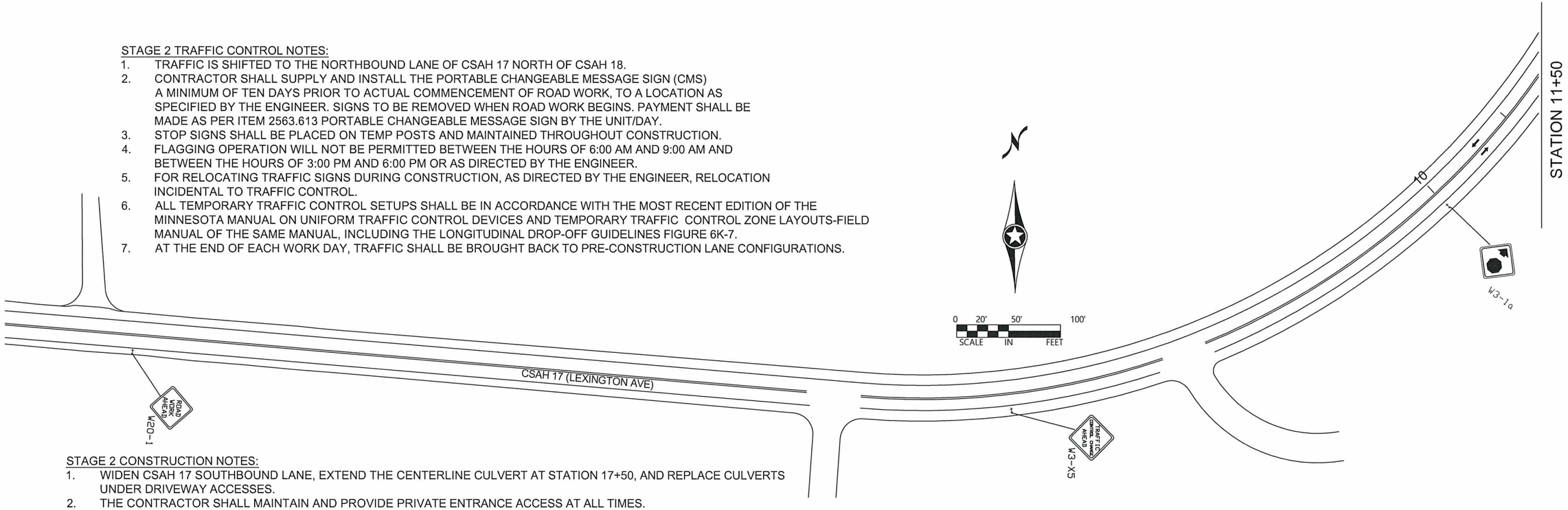

STAGE 2 CONSTRUCTION NOTES:

1. WIDEN CSAH 17 SOUTHBOUND LANE, EXTEND THE CENTERLINE CULVERT AT STATION 17+50, AND REPLACE CULVERTS UNDER DRIVEWAY ACCESSES.
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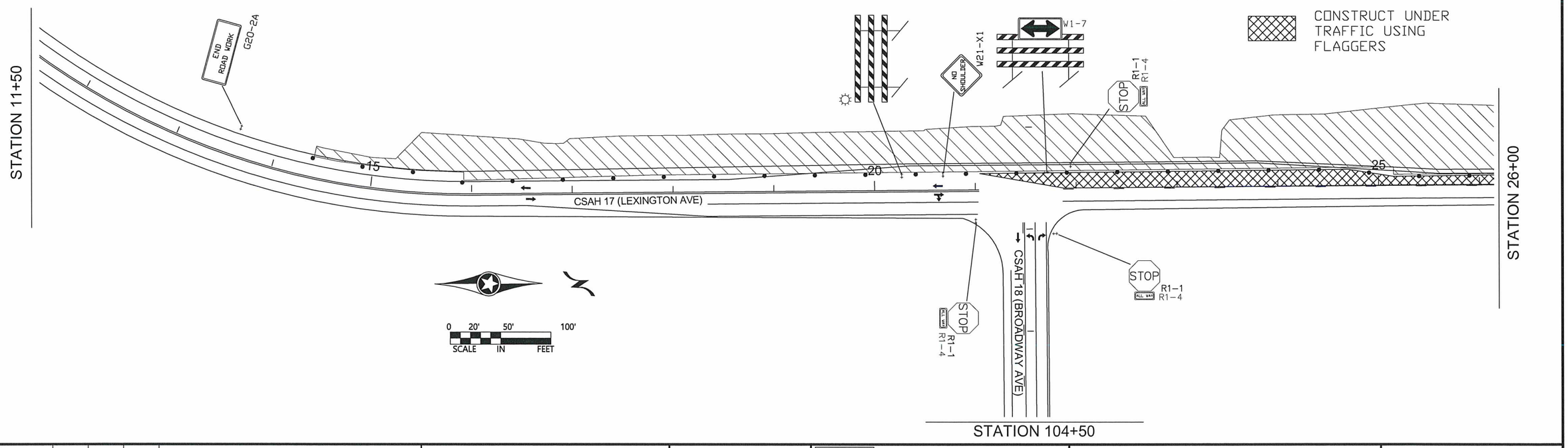

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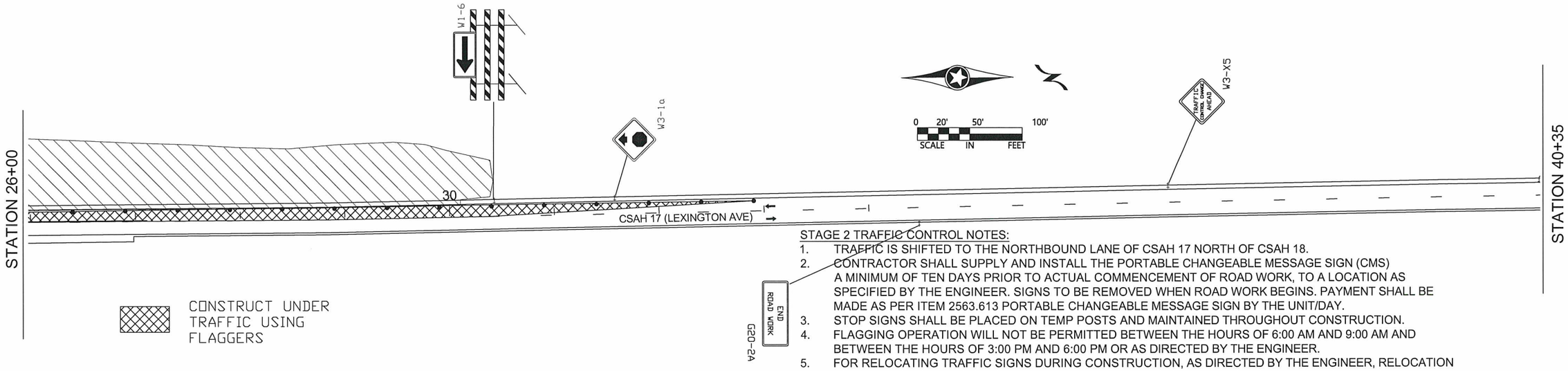
STAGE 2 TRAFFIC CONTROL PLAN

Sheet 29 of 86 Sheets



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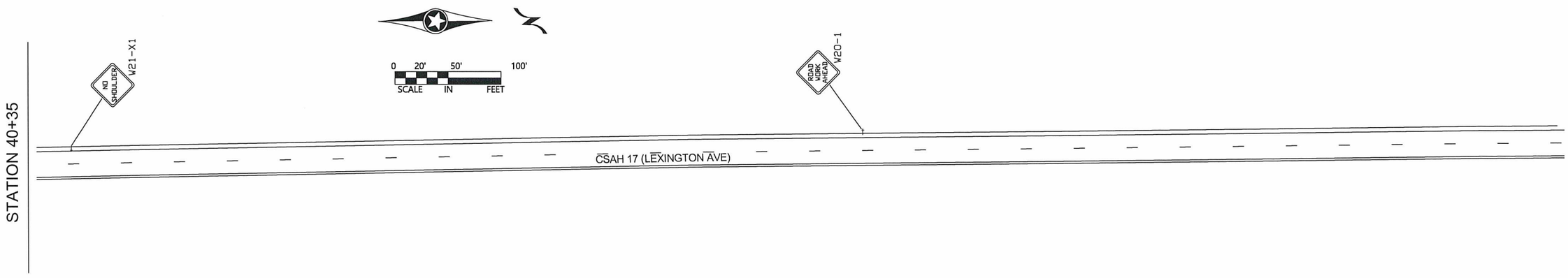

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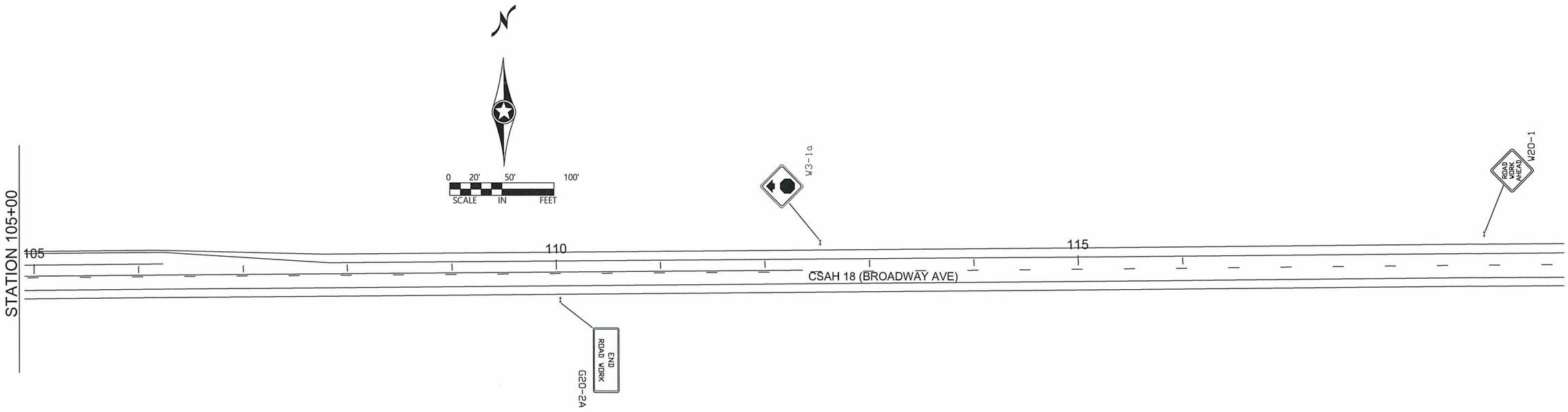
STAGE 2 TRAFFIC CONTROL PLAN

Sheet 30 of 86 Sheets



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STAGE 2 TRAFFIC CONTROL PLAN

Sheet 31 of 86 Sheets

STAGE 3 TRAFFIC CONTROL NOTES:

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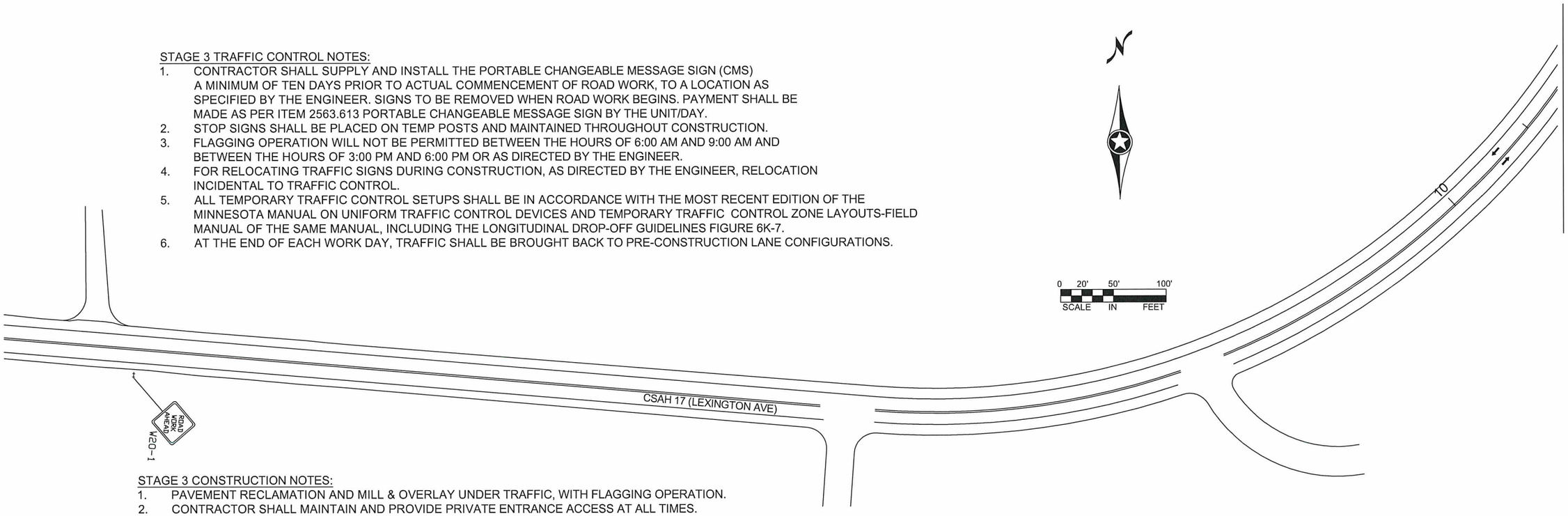

STAGE 3 CONSTRUCTION NOTES:

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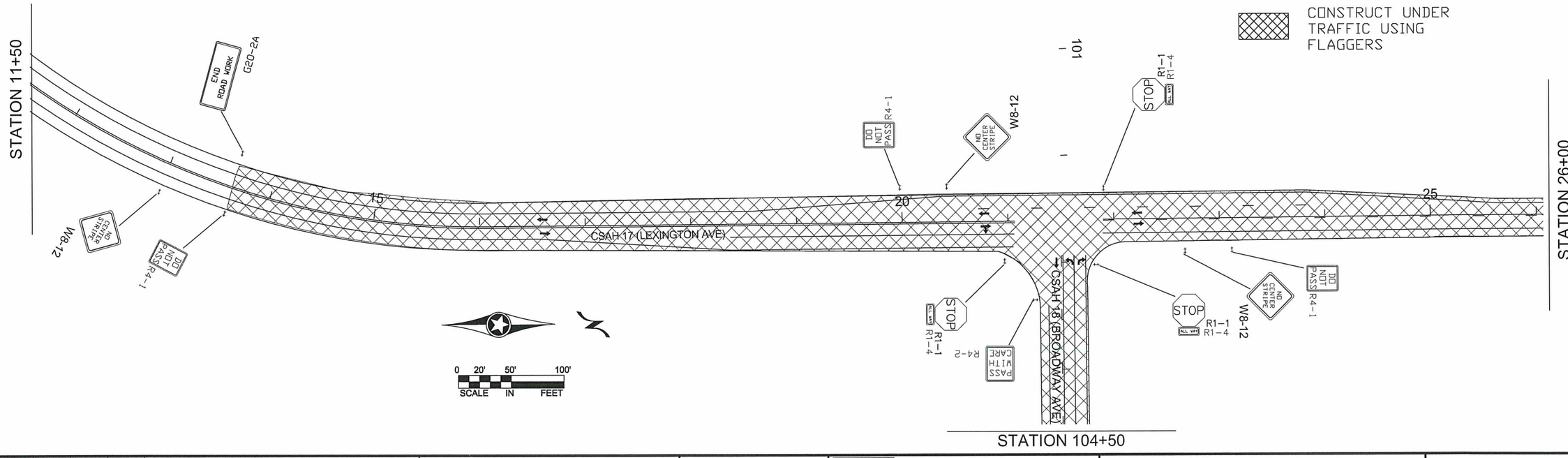

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DRAWN BY LJK DATE 05-14-18

DESIGN BY LJK DATE 05-14-18

CHECKED BY JKR DATE 07-09-18

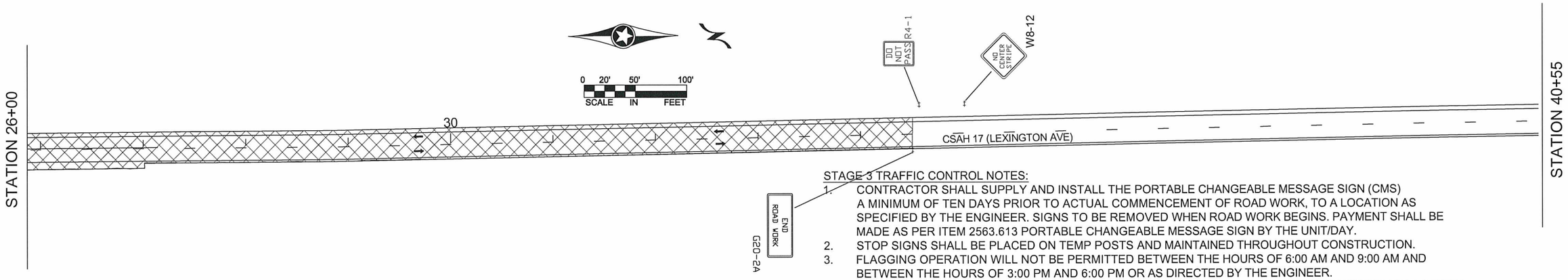
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

STAGE 3 TRAFFIC CONTROL PLAN

Sheet 32 of 86 Sheets

CONSTRUCT UNDER
TRAFFIC USING
FLAGGERS

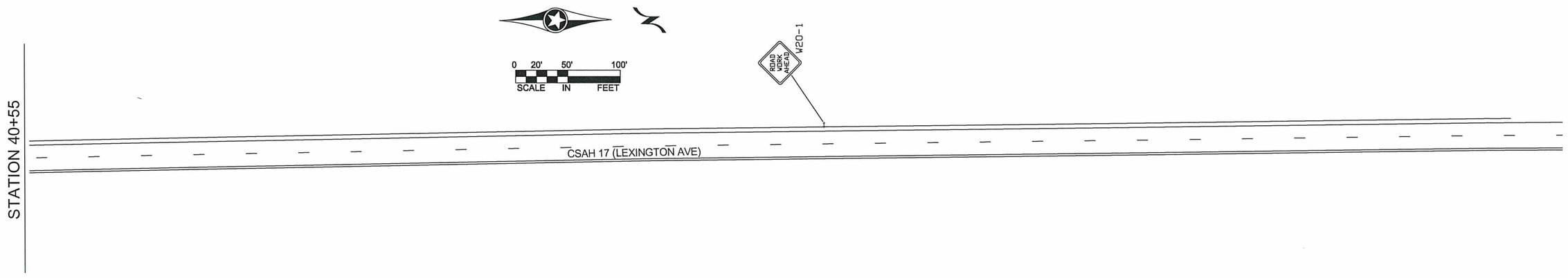


STAGE 3 TRAFFIC CONTROL NOTES:

1. 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.
2. STOP SIGNS SHALL BE PLACED ON TEMP POSTS AND MAINTAINED THROUGHOUT CONSTRUCTION.
3. FLAGGING OPERATION WILL NOT BE PERMITTED BETWEEN THE HOURS OF 6:00 AM AND 9:00 AM AND BETWEEN THE HOURS OF 3:00 PM AND 6:00 PM OR AS DIRECTED BY THE ENGINEER.
4. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
5. 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, INCLUDING THE LONGITUDINAL DROP-OFF GUIDELINES FIGURE 6K-7.
6. AT THE END OF EACH WORK DAY, TRAFFIC SHALL BE BROUGHT BACK TO PRE-CONSTRUCTION LANE CONFIGURATIONS.

STAGE 3 CONSTRUCTION NOTES:

1. PAVEMENT RECLAMATION AND MILL & OVERLAY UNDER TRAFFIC, WITH FLAGGING OPERATION.
2. CONTRACTOR SHALL MAINTAIN AND PROVIDE PRIVATE ENTRANCE ACCESS AT ALL TIMES.



NO	DATE	BY	CKD	APPR	REVISION
NAME:					

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:

DATE: 9/10/18 LICENSE NO. 20235

DRAWN BY LJK DATE 05-14-18

DESIGN BY LJK DATE 05-14-18

CHECKED BY JKR DATE 07-09-18

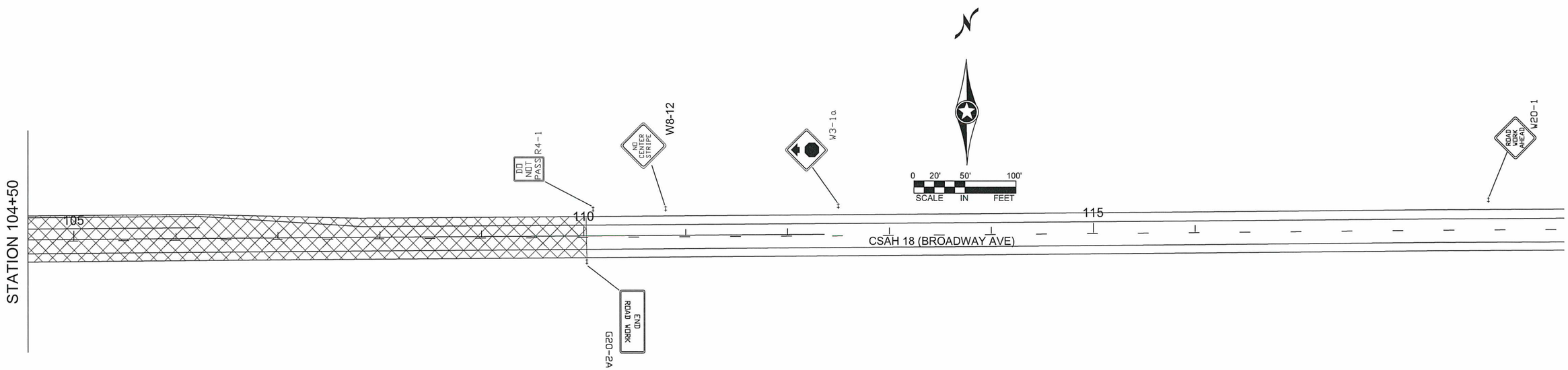
ANOKA COUNTY

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

STAGE 3 TRAFFIC CONTROL PLAN

CONSTRUCT UNDER
TRAFFIC USING
FLAGGERS



STAGE 3 TRAFFIC CONTROL NOTES:

1. 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.
2. STOP SIGNS SHALL BE PLACED ON TEMP POSTS AND MAINTAINED THROUGHOUT CONSTRUCTION.
3. FLAGGING OPERATION WILL NOT BE PERMITTED BETWEEN THE HOURS OF 6:00 AM AND 9:00 AM AND BETWEEN THE HOURS OF 3:00 PM AND 6:00 PM OR AS DIRECTED BY THE ENGINEER.
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STAGE 3 CONSTRUCTION NOTES:

1. PAVEMENT RECLAMATION AND MILL & OVERLAY UNDER TRAFFIC, WITH FLAGGING OPERATION.
2. CONTRACTOR SHALL MAINTAIN AND PROVIDE PRIVATE ENTRANCE ACCESS AT ALL TIMES.

NO	DATE	BY	CKD	APPR	REVISION
NAME:					

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:
DATE: 9/10/18 LICENSE NO. 20235

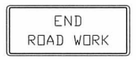
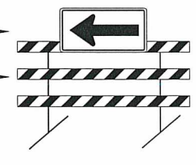
DRAWN BY LJK DATE 05-14-18
DESIGN BY LJK DATE 05-14-18
CHECKED BY JKR DATE 07-09-18

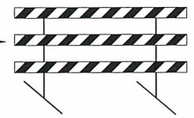
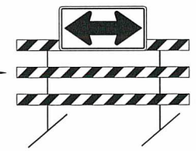
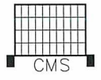
ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

STAGE 3 TRAFFIC CONTROL PLAN

Sheet 34 of 86 Sheets

M.U.T.C.D. CODE	SIZE	INSERT	QTY. STG. 1	QTY. STG. 2	QTY. STG. 3
R1-1	48" x 48"		3	3	3
R1-4	18" x 6"		3	3	3
W20-1	48" x 48"		3	3	3
G20-2A	48" x 24"		3	3	3
W8-23	48" x 48"		2	2	0
W3-1A	48" x 48"		3	3	1
R4-1	24" x 30"		0	0	5
R4-2	24" x 30"		0	0	1
R4-2	36" x 36"		0	0	5
W3-X5	36" x 36"		2	2	0
W1-6	48" x 24"		0	1	0
TYPE III	8 FOOT				

M.U.T.C.D. CODE	SIZE	INSERT	QTY. STG. 1	QTY. STG. 2	QTY. STG. 3
FLASHER			4	1	0
TYPE III	8 FOOT		4	1	0
W1-7	48" x 24"		0	1	0
TYPE III	8 FOOT				
REFLECTORIZED REBOUNDABLE DRUM			43	38	0
W8-1A	48" x 48"		STAGE 3 AS NEEDED		
R11-2	48" x 48"		STAGE 3 AS NEEDED		
W8-8	48" x 48"		STAGE 3 AS NEEDED		
W8-9	48" x 48"		STAGE 3 AS NEEDED		
W8-23	48" x 48"		STAGE 3 AS NEEDED		
W8-11	48" x 48"		STAGE 3 AS NEEDED		
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.			3	0	0

NOTES:

- FOR ANY TRAFFIC CONTROL NOT SHOWN, REFER TO THE LATEST FIELD MANUAL AND/OR M.U.T.C.D. FOR LAYOUTS. ANY CHANGES SHALL REQUIRE APPROVAL BY THE ENGINEER.
- 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.

CHANGEABLE MESSAGE BOARD - MESSAGE SEQUENCE LAYOUT
AFTER SIGNAL INSTALLED

T	R	A	F	F	I	C	
C	O	N	T	R	O	L	
	C	H	A	N	G	E	

	S	I	G	N	A	L	
	A	H	E	A	D		

NOTE:

- CMS MESSAGE TO REMAIN IN PLACE FOR 2 WEEKS AFTER SIGNAL TURNED ON.

CHANGEABLE MESSAGE BOARD - MESSAGE SEQUENCE LAYOUT

		R	O	A	D		
		W	O	R	K		
	B	E	G	I	N	S	

	<	D	A	T	E	>	
	E	X	P	E	C	T	
	D	E	L	A	Y	S	

NO	DATE	BY	CKD	APPR	REVISION
NAME:					

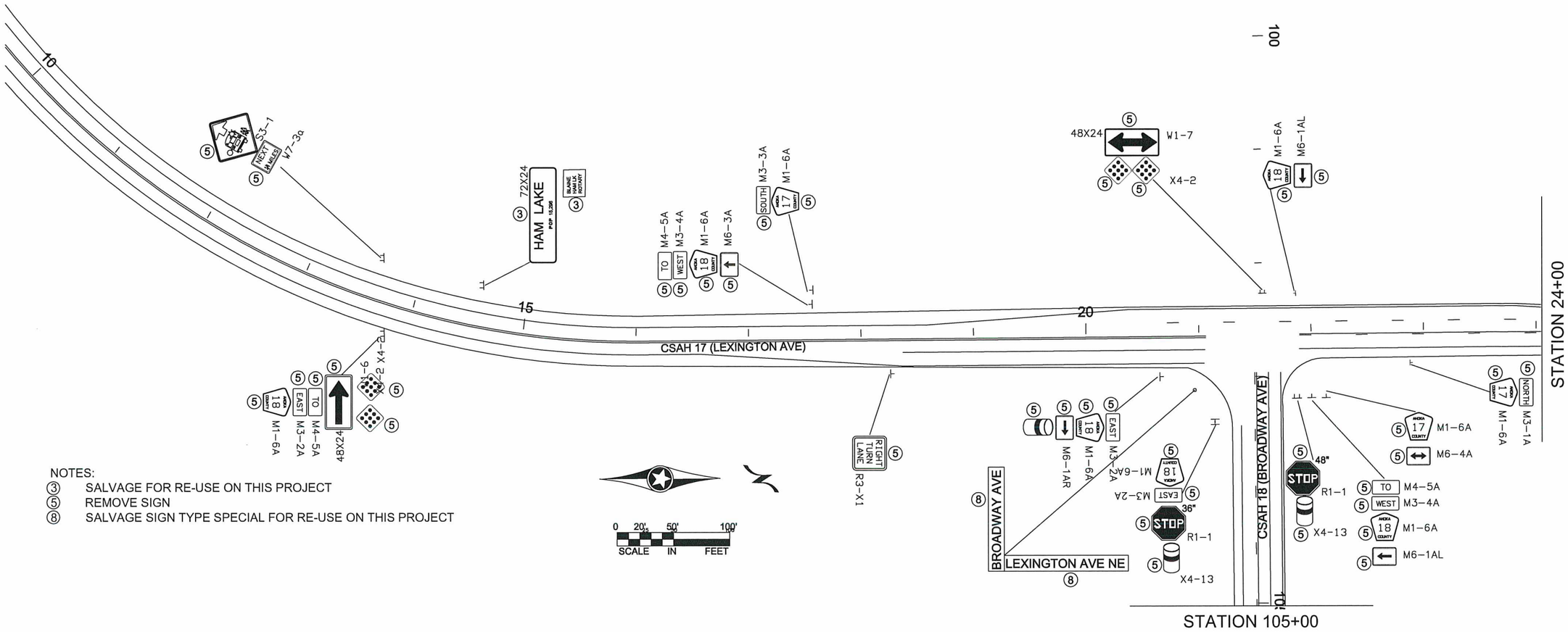
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 9/10/18 REG. NO. 20235

DRAWN BY LJK DATE 05-14-18
DESIGN BY LJK DATE 05-14-18
CHECKED BY JKR DATE 07-09-18

ANOKA COUNTY
HIGHWAY DEPT.

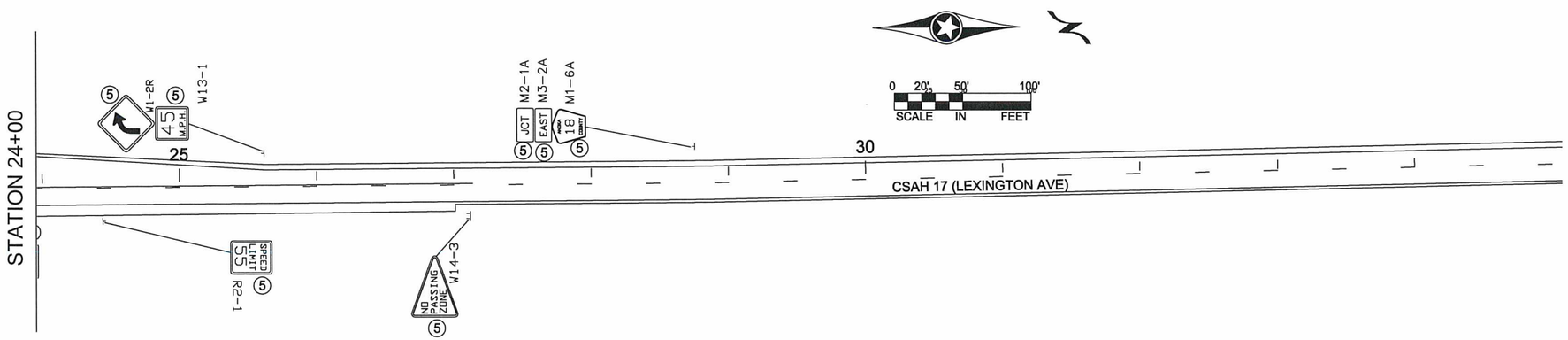
S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

TRAFFIC CONTROL QUANTITIES



NOTES:

③ SALVAGE FOR RE-USE ON THIS PROJECT
⑤ REMOVE SIGN
⑧ SALVAGE SIGN TYPE SPECIAL FOR RE-USE ON THIS PROJECT



NO	DATE	BY	CKD	APPR	REVISION
NAME:					

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:

DATE: 9/10/18 LICENSE NO. 20235

DRAWN BY LJK DATE 04-04-18

DESIGN BY LJK DATE 04-04-18

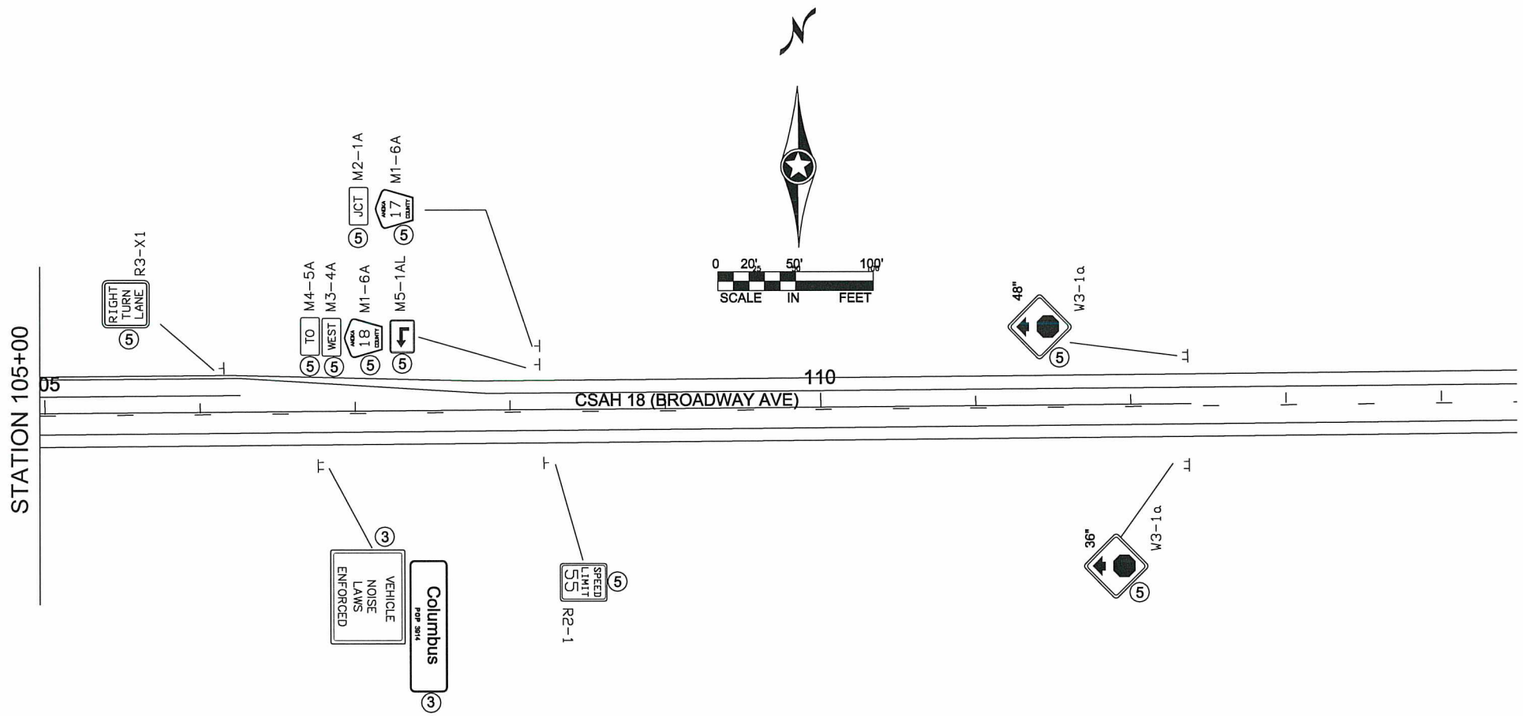
CHECKED BY JKR DATE 05-24-18

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

EXISTING SIGNING & STRIPING PLAN

Sheet 36 of 86 Sheets



NOTES:
② INPLACE SIGN
③ SALVAGE FOR RE-USE ON THIS PROJECT
⑧ SALVAGE SIGN TYPE SPECIAL FOR RE-USE ON THIS PROJECT

NO	DATE	BY	CKD	APPR	REVISION
NAME:					

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:
DATE: 9/10/18 LICENSE NO. 20235

DRAWN BY LJK DATE 04-04-18
DESIGN BY LJK DATE 04-04-18
CHECKED BY JKR DATE 05-24-18

ANOKA COUNTY
HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

EXISTING SIGNING & STRIPING PLAN

Sheet 37 of 86 Sheets

EXISTING SIGN TAB										C
STATION	ADDRESS/ DESCRIPTION (NOTES)	REMOVE SIGN TYPE C	SALVAGE SIGN TYPE C	SALVAGE SIGN TYPE D	SALVAGE SIGN TYPE SPECIAL (1)	INSTALL SIGN TYPE C	INSTALL SIGN TYPE D	INSTALL SIGN TYPE SPECIAL (1)	SIGN NUMBER	SIGN LEGEND
		EACH	EACH	EACH	EACH	EACH	EACH	EACH		
SP 002-617-021										
13+60	LT	1							S3-1	Bus Stop Ahead
									W7-3A	Next 3/4 Miles
13+70	RT	1							M4-5A	TO
									M3-2A	EAST
									M1-6A	Rte Marker 18
									W1-6	48x42 Arrow
									X4-2	9-Button
									X4-2	9-Button
14+60	LT			1			1			Ham Lake
										Bln Ham Lk Rtry
17+50	LT	1							M4-5A	TO
									M3-4A	WEST
									M1-6A	Rte Marker 18
									M6-3A	Arrow Ahead
17+50	LT	1							M3-3A	SOUTH
									M1-6A	Rte Marker 17
18+30	RT	1							R3-X1	Right Turn Lane
20+60	RT	1							M3-2A	EAST
									M1-6A	Rte Marker 18
									M6-1AR	Arrow Right
										Delineator
21+00	RT				1			1		Street Sign
21+60	LT	1							W1-7	Double Arrow
									X4-2	9-Button
									X4-2	9-Button
21+90	LT	1							M1-6A	Rte Marker 18
									M6-1AL	Arrow Left
22+90	RT	1							M3-1A	NORTH
									M1-6A	Rte Marker 17
24+50	RT	1							R2-1	55 MPH
25+60	LT	1							W1-2R	Rt Curve Arrow
									W13-1	45 MPH
27+10	RT	1							W14-3	No Pass Zone
28+80	LT	1							M2-1A	JCT
									M3-2A	EAST
									M1-6A	Rte Marker 18

EXISTING SIGN TAB										C
STATION	ADDRESS/ DESCRIPTION (NOTES)	REMOVE SIGN TYPE C	SALVAGE SIGN TYPE C	SALVAGE SIGN TYPE D	SALVAGE SIGN TYPE SPECIAL (1)	INSTALL SIGN TYPE C	INSTALL SIGN TYPE D	INSTALL SIGN TYPE SPECIAL (1)	SIGN NUMBER	SIGN LEGEND
		EACH	EACH	EACH	EACH	EACH	EACH	EACH		
SP 002-617-021										
103+10	LT	1							M1-6A	Rt Marker 17
									M6-4A	Double Arrow
103+10	LT	1							M4-5A	TO
									M3-4A	WEST
									M1-6A	Rte Marker 18
									M6-1AL	Left Arrow
103+10	LT	1							R1-1	48" Stop
										Delineator
103+20	RT	1							M3-2A	EAST
									M1-6A	Rte Marker 18
									R1-1	36" Stop
										Delineator
106+10	LT	1							R3-X1	Rt Turn Lane
106+70	RT			1			1			Columbus
										Vehicle Noise Laws Enforced
108+20	LT	1							M4-5A	TO
									M3-4A	WEST
									M1-6A	Rte Marker 18
									M5-1AL	Left Arrow
108+20	LT	1							M2-1A	JCT
									M1-6A	Rte Marker 17
108+20	RT	1							R2-1	55 MPH
112+40	LT	1							W3-1A	Stop Ahead
112+40	RT	1							W3-1A	Stop Ahead
PROJECT TOTAL		23	0	2	1	0	2	1		

CONSTRUCTION NOTES:

1. SIGN TYPE SPECIAL ARE TO REMAIN VISIBLE AT ALL TIMES. SHALL BE PAID BY THE EACH, WHEN RELOCATION IS REQUIRED.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\SAP 002-622-035\BASE\TRAFFIC\EXISTING SIGNING AND STRIPING PLAN

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:

DATE: 4/10/18 LICENSE NO. 20235

DRAWN BY LJK DATE 04-04-18

DESIGN BY LJK DATE 04-04-18

CHECKED BY JKR DATE 05-27-18

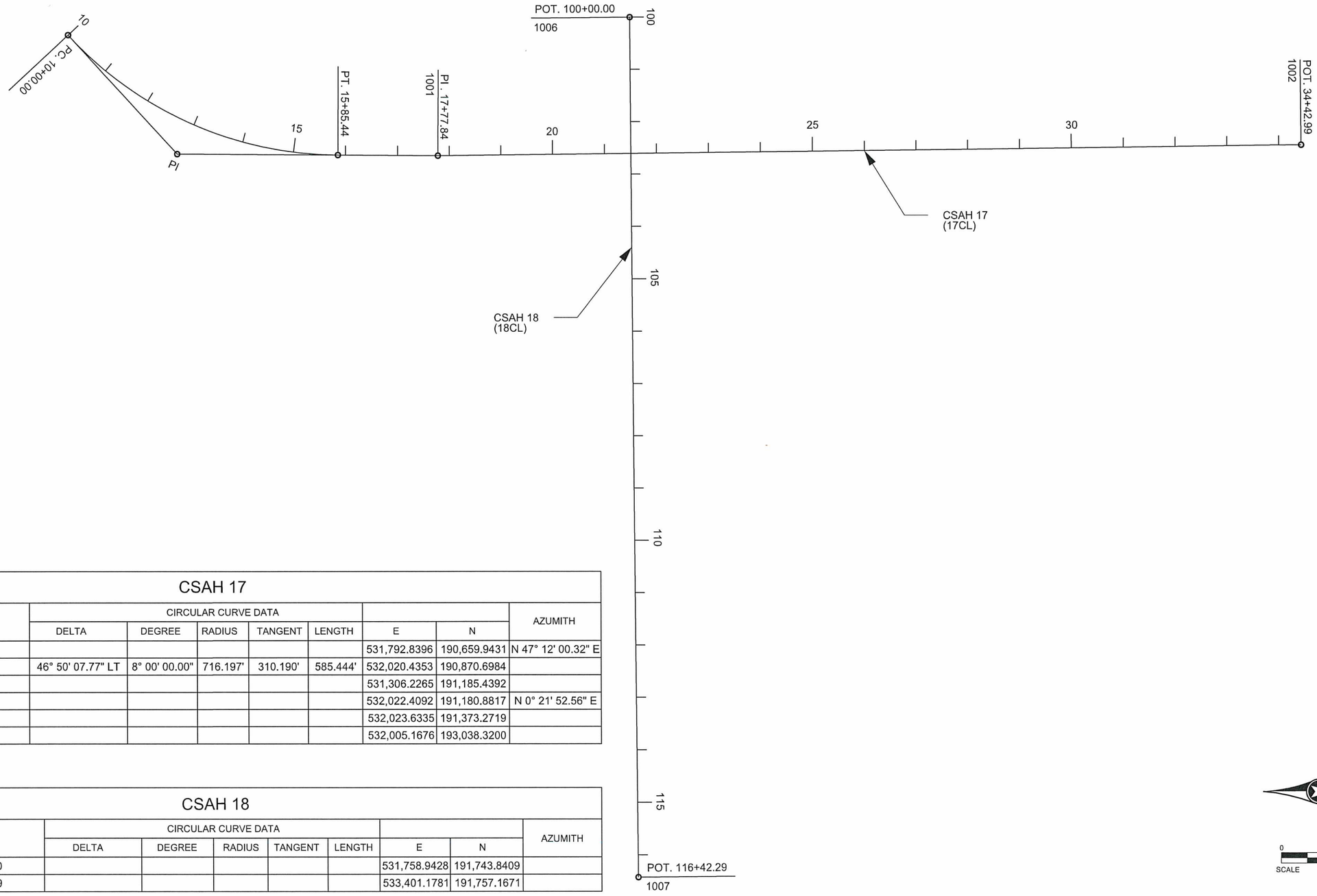
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

EXISTING SIGNING & STRIPING PLAN

Sheet 38 of 86 Sheets



CSAH 17

POINT		STATION	CIRCULAR CURVE DATA							AZUMITH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N	
	PC	10+00.000						531,792.8396	190,659.9431	N 47° 12' 00.32" E
17CL_1	PI	13+10.190	46° 50' 07.77" LT	8° 00' 00.00"	716.197'	310.190'	585.444'	532,020.4353	190,870.6984	
	CC							531,306.2265	191,185.4392	
	PT	15+85.444						532,022.4092	191,180.8817	N 0° 21' 52.56" E
1001	POT	17+77.838						532,023.6335	191,373.2719	
1002	POT	34+42.988						532,005.1676	193,038.3200	

CSAH 18

POINT		STATION	CIRCULAR CURVE DATA							AZUMITH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N	
1006	POT	100+00.000						531,758.9428	191,743.8409	
1007	POT	116+42.289						533,401.1781	191,757.1671	

0 200
SCALE IN FEET

1 OF 1

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_AL_P1.dgn 09/07/2018 3:32:52 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

DATE: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

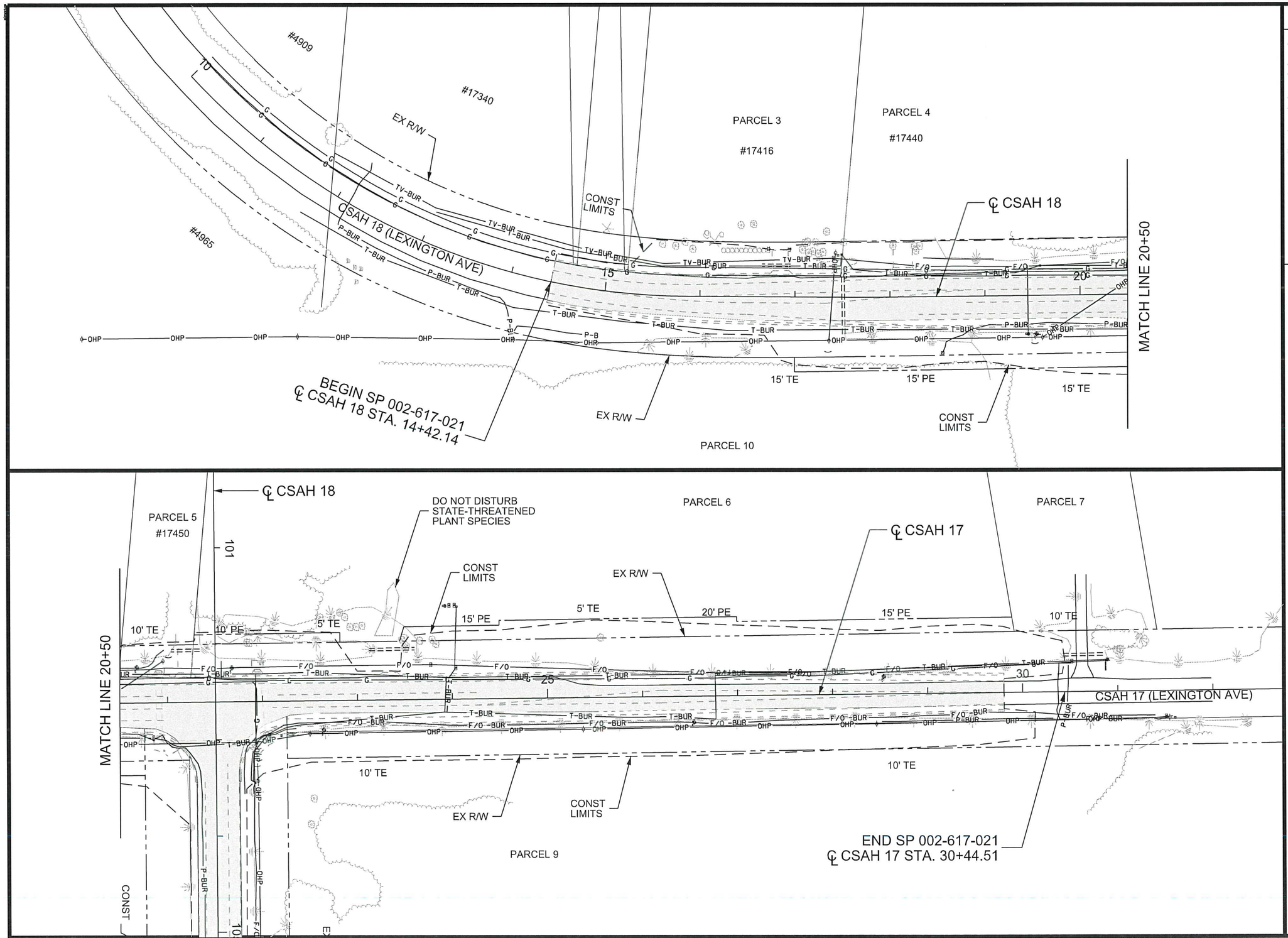
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

ALIGNMENT PLAN

Sheet 39 of 86 Sheets



LEGEND

- G — XCEL ENERGY
- F / O / F/O -BUR — COMCAST / ZAYO
- P-BUR / OHP — CONNEXUS ENERGY
- T-BUR — CENTURY LINK
- EXISTING CULVERT
- EXISTING RW
- PERMANENT EASEMENT
- EXISTING ROADWAY

0 100
SCALE IN FEET

1 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_UTL_P1.dgn 09/07/2018 3:32:54 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: 09-07-18 LICENSE NO. 49118

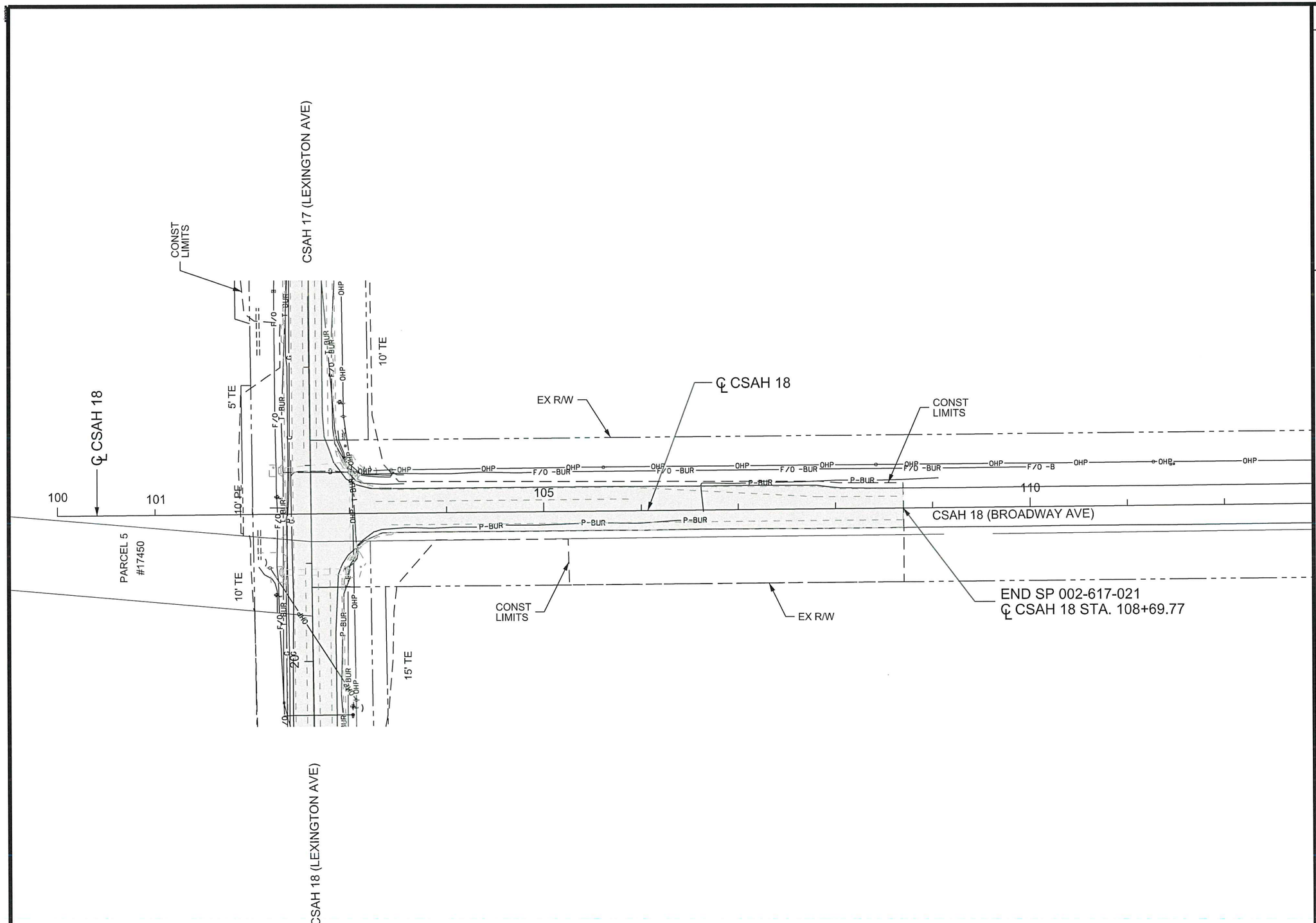
DRAWN BY EJM DATE 07-10-18
DESIGN BY EJM DATE 05-15-18
CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

UTILITY PLAN
CSAH 17
STA 14+41.17 TO 29+81.66

Sheet 40 of 86 Sheets



LEGEND

G	XCEL ENERGY
F / O / F/O -BUR	COMCAST / ZAYO
P-BUR / OHP	CONNEXUS ENERGY
T-BUR	CENTURY LINK
==========	EXISTING CULVERT
– – –	EXISTING RW
– – – –	PERMANENT EASEMENT
	EXISTING ROADWAY

N

0 100
SCALE IN FEET

2 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_UTL_P2.dgn 09/07/2018 3:32:56 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 M

DATE: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

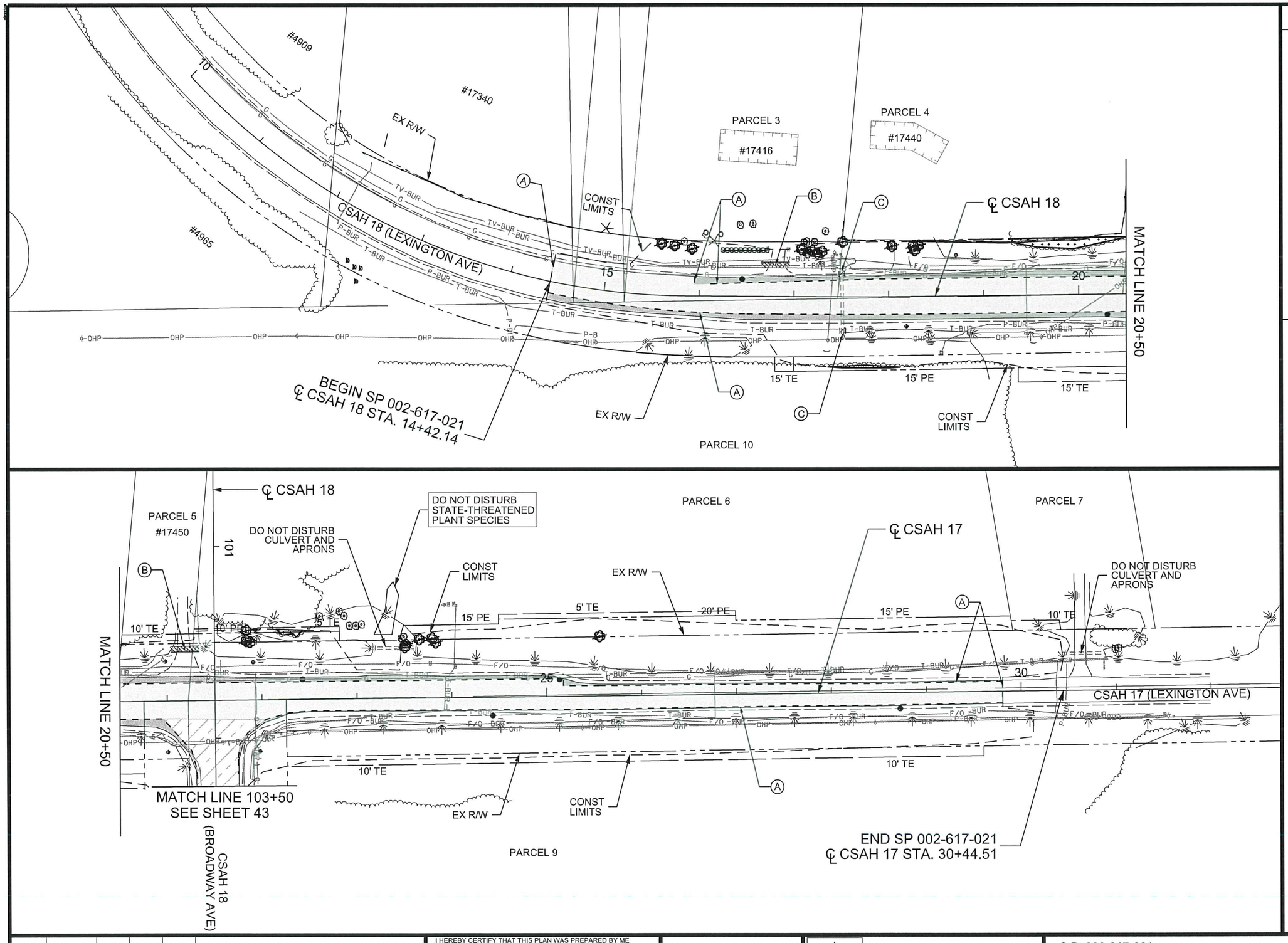
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

UTILITY PLAN
CSAH 18
STA 102+60.46 TO 108+69.77

Sheet 41 of 86 Sheets



LEGEND

- REMOVE BITUMINOUS PAVEMENT
- RECLAIM BITUMINOUS PAVEMENT
- MILL AND OVERLAY BITUMINOUS PAVEMENT
- CLEAR & GRUB (ACRE)
- TREE REMOVAL BY EACH
- REMOVE PIPE CULVERTS
- REMOVE FENCE
- SAWING BITUMINOUS PAVEMENT
- CONSTRUCTION LIMIT
- EXISTING RW
- PERMANENT EASEMENT
- SOIL BORING/ SOUNDING LOCATIONS

REMOVAL NOTES

- (A) SAWCUT
- (B) REMOVE CULVERT AND APRONS
- (C) REMOVE APRON

SCALE 0 100 IN FEET

1 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_RM_P1.dgn 09/10/2018 10:32:33 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: ELIZABETH MARKOSE

SIGNATURE: Elizabeth Markose

DATE: 09-10-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

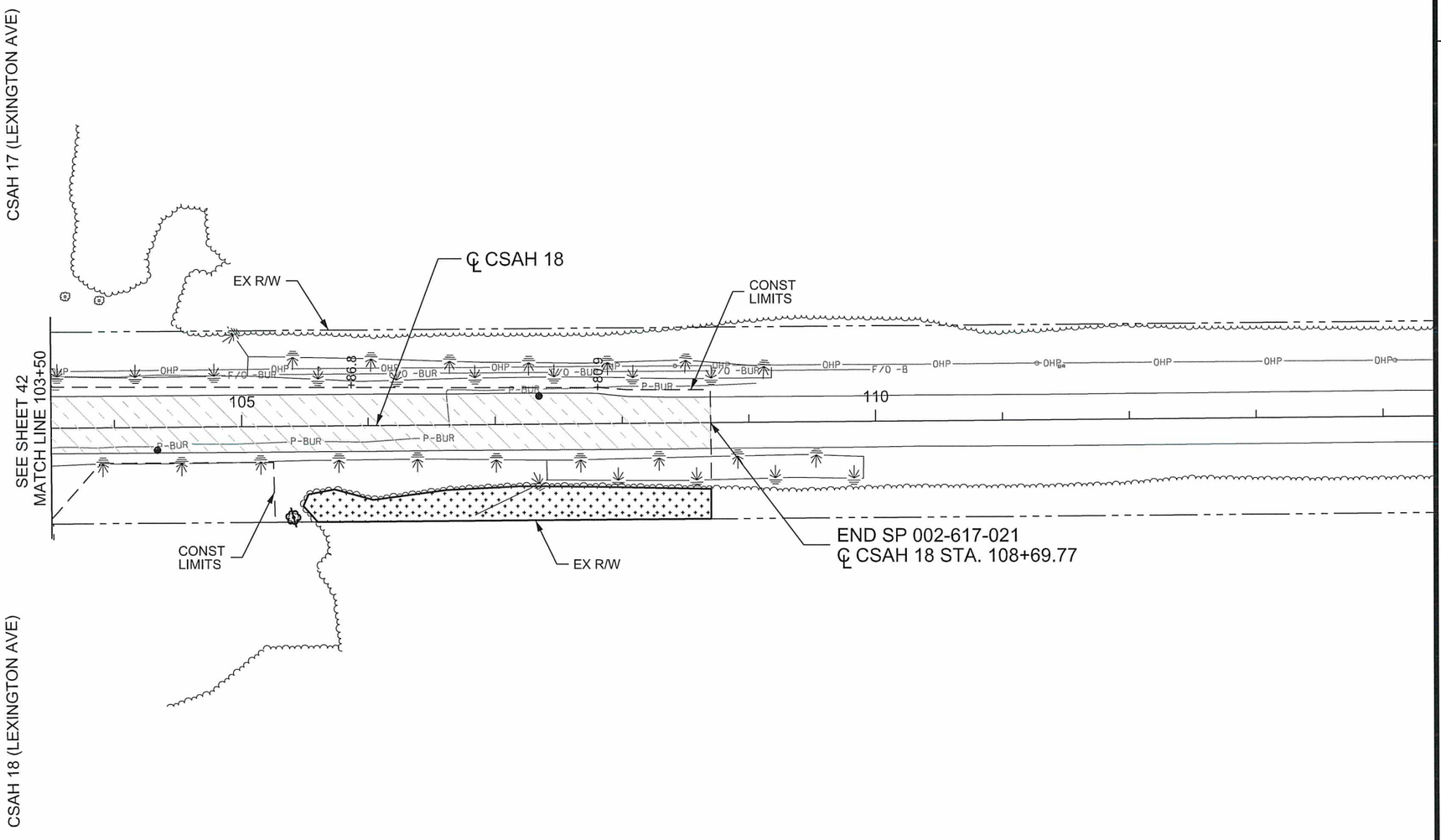
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

REMOVAL PLAN
CSAH 17
STA 14+42.14 TO 29+80.44

Sheet 42 of 86 Sheets



LEGEND

- MILL AND OVERLAY BITUMINOUS PAVEMENT
- CLEAR & GRUB (ACRE)
- TREE REMOVAL BY EACH
- CONSTRUCTION LIMIT
- EXISTING RW
- PERMANENT EASEMENT
- SOIL BORING

N

0 100
SCALE IN FEET

2 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_RM_P2.dgn 09/07/2018 3:32:59 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.

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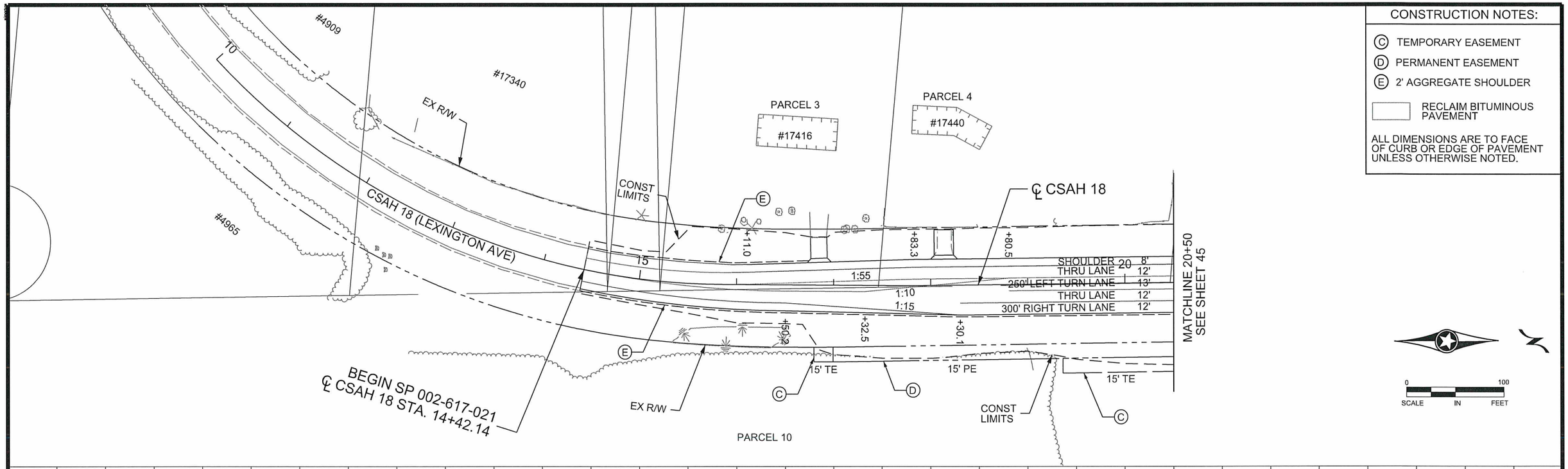
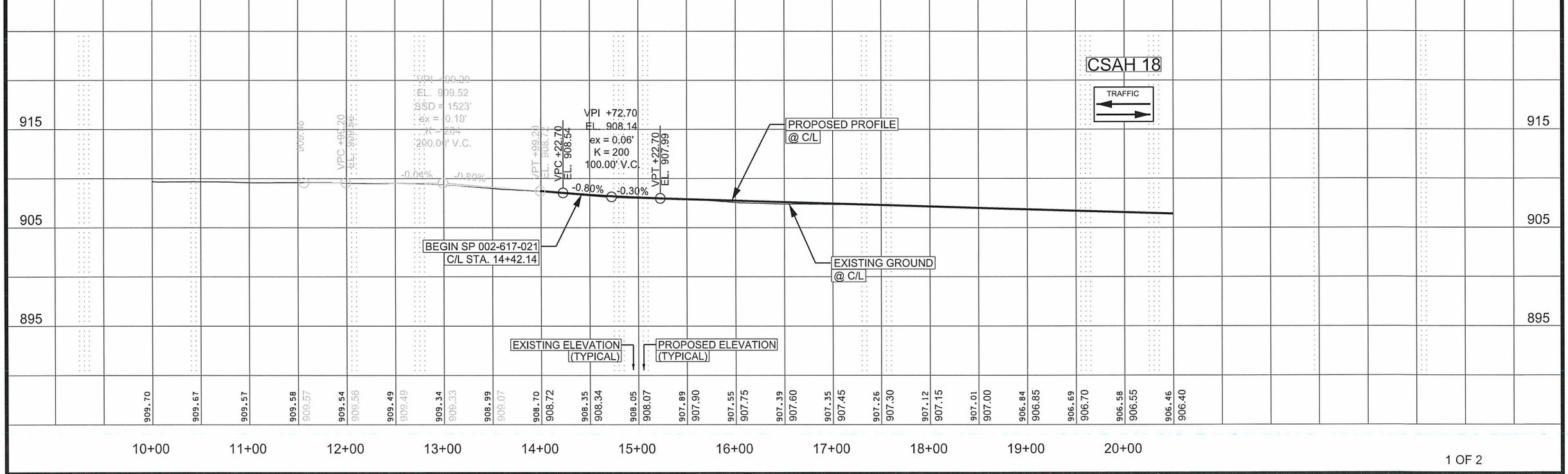
S.P. 197-020-006
C.P. 2019-03

REMOVAL PLAN
CSAH 18
STA 103+50.00 TO 108+69.77

Sheet 43 of 86 Sheets





1 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_PP1.dgn 09/07/2018 3:33:01 PM

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SIGNATURE: Elizabeth Markose
DATE: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18
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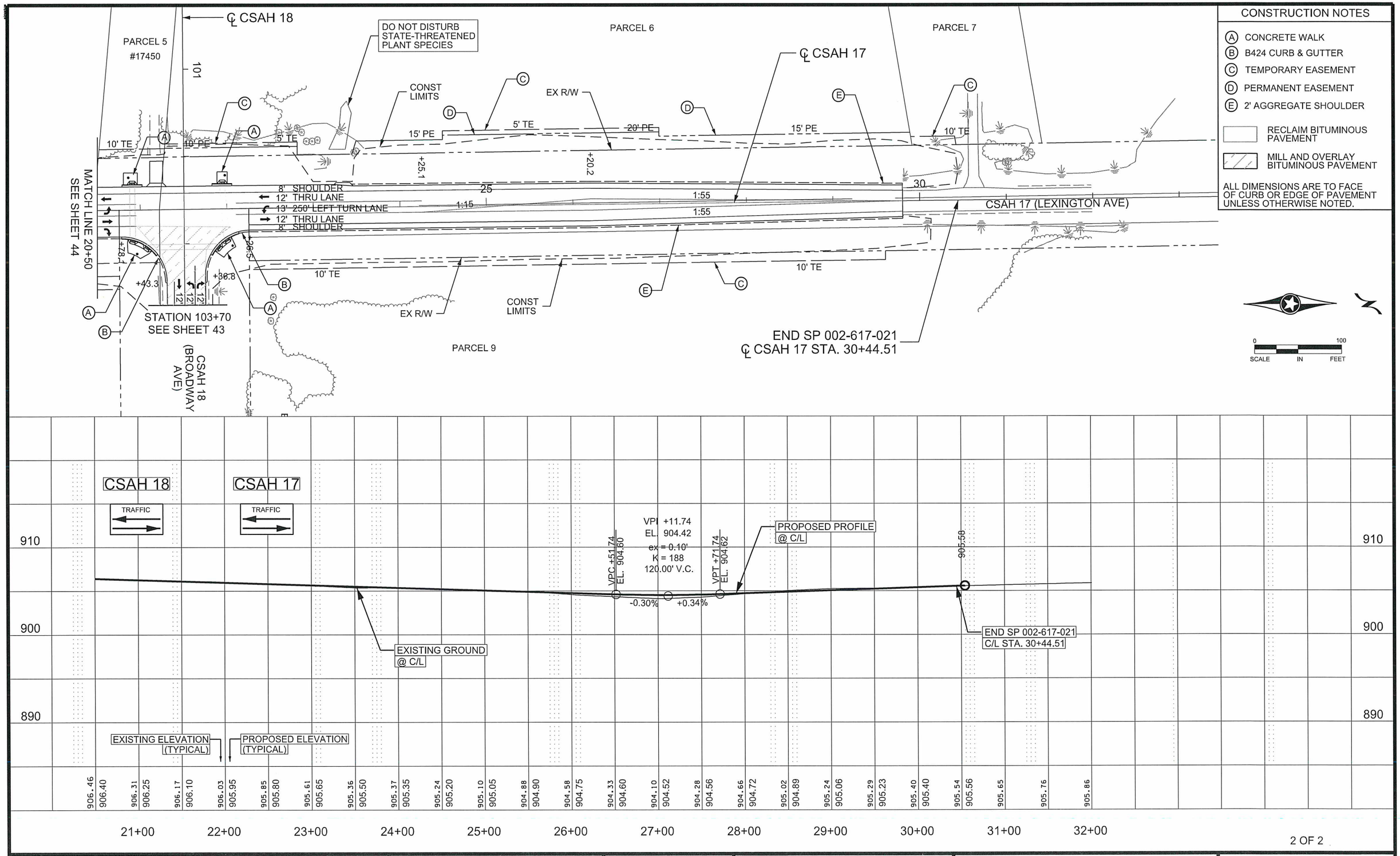
CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

CONSTRUCTION PLAN AND PROFILE CSAH 17
STA 10+00 TO 20+50

Sheet 44 of 86 Sheets



2 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_PP2.dgn 09/07/2018 3:33:03 PM

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SIGNATURE: Elizabeth Markose

DATE: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

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CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY

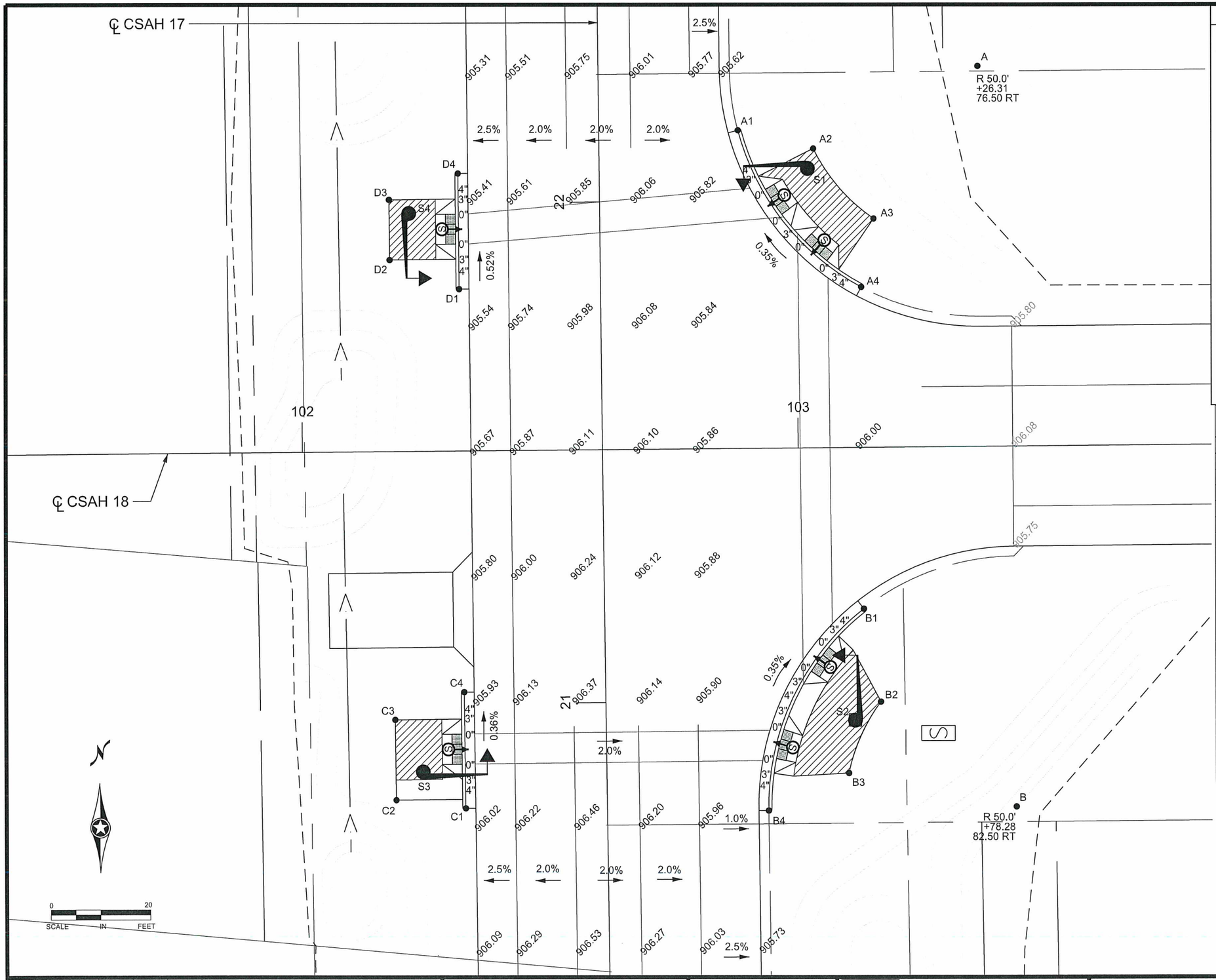
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

CONSTRUCTION PLAN AND PROFILE CSAH 17

STA 20+50 TO 32+00

Sheet 45 of 86 Sheets



LEGEND

- PROPOSED SIGNAL POLE
- PEDESTRIAN PUSH BUTTON
- PROPOSED PEDESTAL POLE
- PROPOSED SIGNAL CABINET
- XXX — CONTROL POINTS
- 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
- (S) — 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%
- DRAINAGE FLOW ARROW

CSAH 17 / CSAH 18 POINTS

POINT	ALIGNMENT	STATION	OFFSET	ELEVATION	DESCRIPTION
A	CL CSAH 17	22+26.31	76.50 RT	----	50' RADIUS POINT
A1	CL CSAH 17	22+13.98	28.04 RT	905.55	FLOW LINE
A2	CL CSAH 17	22+10.15	43.20 RT	906.10	BACK OF WALK
A3	CL CSAH 17	21+96.02	55.20 RT	906.17	BACK OF WALK
A4	CL CSAH 17	21+82.41	52.55 RT	905.69	FLOW LINE
B	CL CSAH 17	20+78.28	82.50 RT	----	50' RADIUS POINT
B1	CL CSAH 17	21+18.10	52.25 RT	905.56	FLOW LINE
B2	CL CSAH 17	20+99.52	55.45 RT	906.06	BACK OF WALK
B3	CL CSAH 17	20+85.35	48.84 RT	906.17	BACK OF WALK
B4	CL CSAH 17	20+78.08	32.50 RT	905.72	FLOW LINE
C1	CL CSAH 17	20+79.26	28.50 LT	905.89	FLOW LINE
C2	CL CSAH 17	20+85.04	39.74 LT	906.32	BACK OF WALK
C3	CL CSAH 17	20+97.04	39.74 LT	906.30	BACK OF WALK
C4	CL CSAH 17	21+02.42	28.50 LT	905.80	FLOW LINE
D1	CL CSAH 17	21+82.95	28.50 LT	905.38	FLOW LINE
D2	CL CSAH 17	21+88.92	46.48 LT	905.95	BACK OF WALK
D3	CL CSAH 17	22+00.92	46.48 LT	905.89	BACK OF WALK
D4	CL CSAH 17	22+06.02	28.50 LT	905.27	FLOW LINE

SIGNAL CONTROL POINTS

POINT	DESCRIPTION	X	Y
S1	SIGNAL POLE	532060.8829	191802.0571
S2	SIGNAL POLE	532070.3389	191691.8554
S3	SIGNAL POLE	531983.1952	191681.6077
S4	SIGNAL POLE	531980.4695	191793.1401

1 OF 1

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_IN_P1.dgn 09/07/2018 3:33:05 PM

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PRINT NAME: ELIZABETH MARKOSE

SIGNATURE: [signature]

DATE: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY

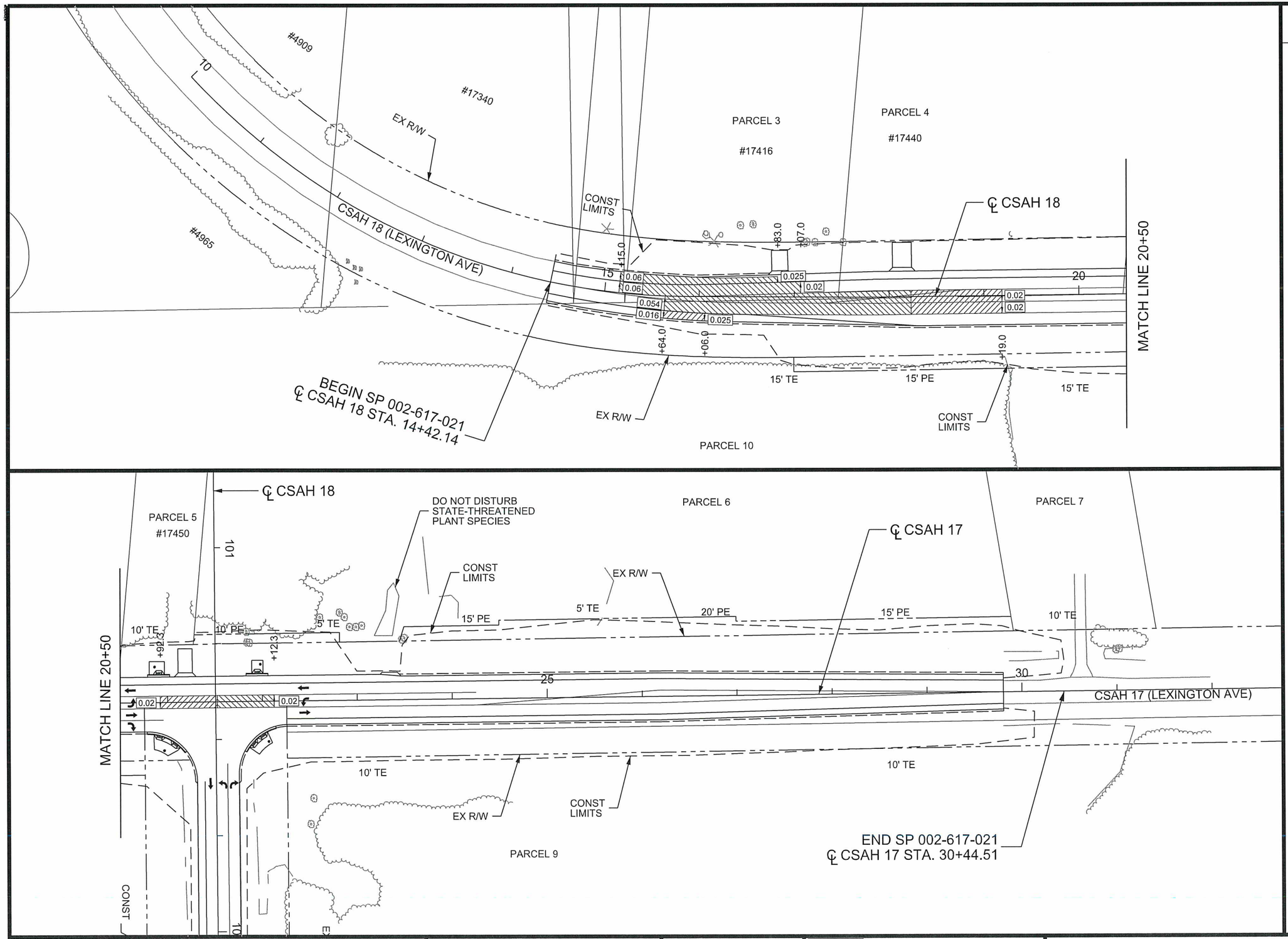
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

INTERSECTION DETAILS

STA 20+45.29 TO 22+39.54

Sheet 46 of 86 Sheets



LEGEND

SUPERELEVATION TRANSITION

MATCH TO EXISTING

0 100
SCALE IN FEET

1 OF 1

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_SE_P1.dgn 09/07/2018 3:33:08 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.

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SIGNATURE:

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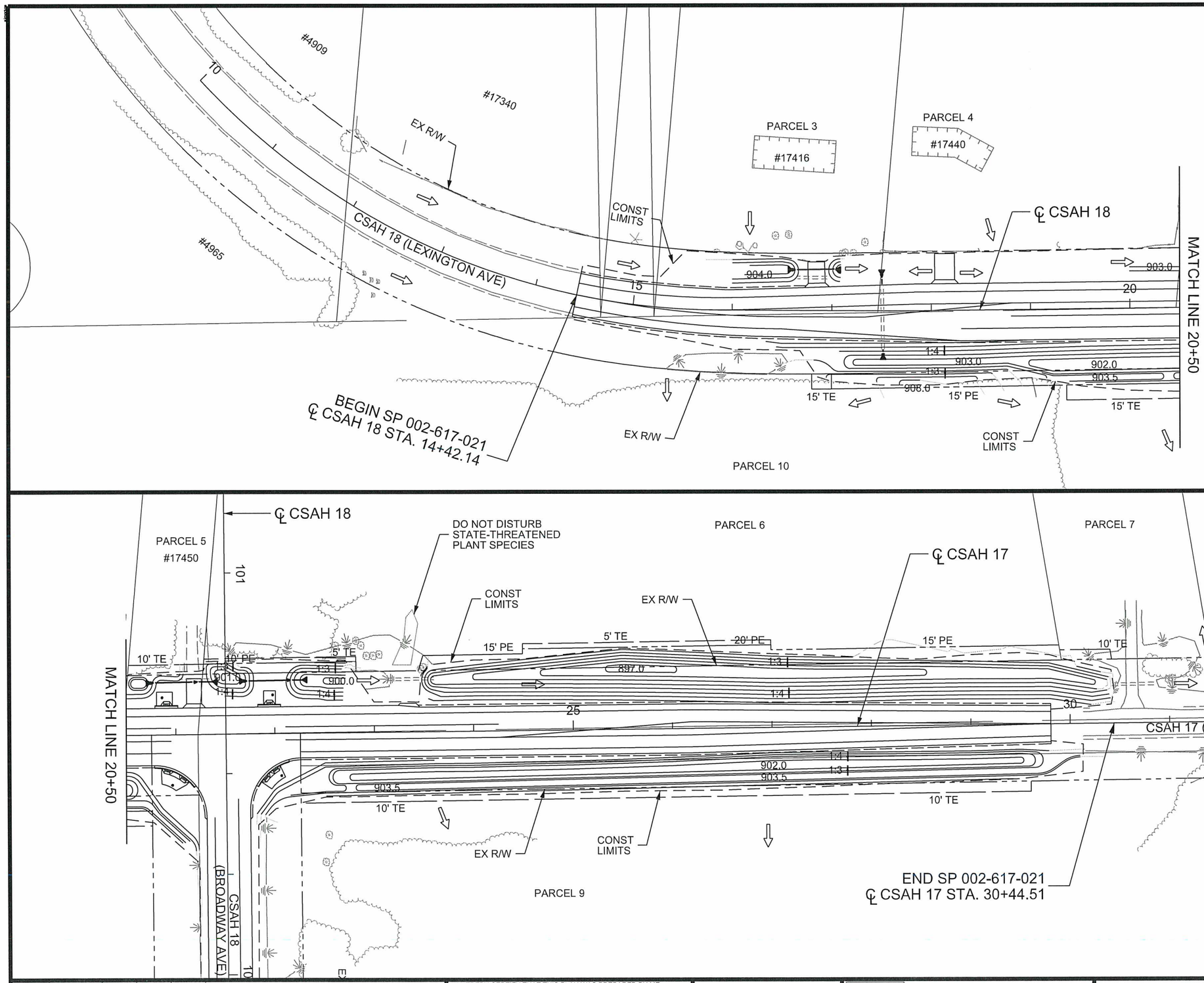
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

SUPERELEVATION PLAN
CSAH 17
STA 14+41.17 TO 29+81.66

Sheet 47 of 86 Sheets



LEGEND

- PROPOSED CULVERT
- INPLACE CULVERT
- WETLAND BOUNDARIES
- SURFACE FLOW ARROW

0 100
SCALE IN FEET

1 OF 1

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_DR_P1.dgn 09/07/2018 3:33:09 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 M

DATE: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
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C.P. 2019-03

DRAINAGE PLAN
CSAH 17
STA 14+42.14 TO 29+80.44

Sheet 48 of 86 Sheets

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

PROJECT LOCATION AND GENERAL INFORMATION

SP 02-617-21 IS LOCATED AT THE INTERSECTION OF CSAH 17 (LEXINGTON AVE NE) AND CSAH 18 (BROADWAY AVE NE) IN CITIES OF HAM LAKE AND COLUMBUS.

THE PROPOSED PROJECT WILL INCLUDE INSTALLATION OF TRAFFIC SIGNAL AT CSAH 17/CSAH 18 INTERSECTION, LEFT AND RIGHT TURN LANES, 8/6 FT SHOULDER AND DRAINAGE DITCHES. THE RECEIVING WATERS WILL DRAIN THROUGH ROADSIDE DITCHES AND CULVERTS AND ULTIMATELY INTO COON CREEK.

THIS PROJECT WILL IMPACT 5.47 ACRES OF SOILS AND CREATE POTENTIAL FOR SEDIMENT DISCHARGE FROM THE SITE.

TRAINING REQUIREMENTS

THE CONTRACTOR SHALL ENSURE COMPLIANCE WITH THE TRAINING REQUIRED IN PART 111.A.2 OF THE GENERAL STORM WATER PERMIT FOR CONSTRUCTION ACTIVITY.

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

LONG TERM OPERATION AND MAINTENANCE

THE STREETS DIVISION OF CITIES OF HAM LAKE AND COLUMBUS SHALL BE RESPONSIBLE FOR THE LONG TERM OPERATION AND MAINTENANCE OF PERMANENT STORM WATER MANAGEMENT.

RECEIVING SURFACE WATERS, DISCHARGE TO IMPAIRED WATERS & SPECIAL WATERS

THE FOLLOWING TABLE IDENTIFIES ALL SURFACE WATERS WITHIN 1 MILE OF THE PROJECT BOUNDARY, WHICH WILL RECEIVE STORM WATER RUNOFF FROM THE CONSTRUCTION SITE, DURING AND AFTER CONSTRUCTION.

RECEIVING SURFACE WATERS		
NAME OF WATER BODY	SPECIAL WATER	IMPAIRED WATER
DNR WETLAND	NO	NO

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

1) ALL EXPOSED SOILS 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) DITCH BOTTOMS ULTIMATELY DRAIN INTO PUBLIC STORM DRAINAGE SYSTEM. STABILIZATION TO PREVENT EROSION IS REQUIRED WITHIN 24 HOURS OF GRADING OF ALL DITCH BOTTOMS.

DISTURBED AREA

TOTAL PROJECT AREA DISTURBED : 5.59 ACRES
EXISTING IMPERVIOUS AREA : 1.98 ACRES
PROPOSED IMPERVIOUS AREA : 2.40 ACRES
EXISTING PERVIOUS AREA : 3.61 ACRES
PROPOSED PERVIOUS AREA : 3.19 ACRES

CONSTRUCTION PHASING

SILT FENCE AND/OR OTHER SUITABLE PERIMETER BMPS 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 SHALL 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 SEED MIX 22-111 AND DISK ANCHORING TYPE 1 MULCH. STOCKPILED TOPSOIL BERMS SHALL NOT BE PLACED IN ANY STORM WATER CONVEYANCES.

AFTER STRIPPING THE TOPSOIL THE EXPOSED SOIL SHALL BE STABILIZED WITH DISK ANCHORED TYPE 1 MULCH WITHIN 7 DAYS OF ROUGH GRADING.

TEMPORARY SEDIMENT BASIN

THIS ROAD CONSTRUCTION PROJECT AS DESIGNED DOES NOT MEET ANY OF THE TEMPORARY SEDIMENT BASIN DISTURBED AREA THRESHOLD REQUIREMENTS AND TEMPORARY SEDIMENT BASIN WILL NOT BE REQUIRED.

PERMANENT STORM WATER MANAGEMENT SYSTEM

ALL STORM WATER 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.

THIS ROAD CONSTRUCTION PROJECT HAS 0.42 ACRE INCREASE IN IMPERVIOUS AREA.

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 ROUGH GRADING. FOR ALL AREAS WHERE DISTURBED SOILS DRAIN TO AN IMPAIRED OR SPECIAL WATERS, THE EXPOSED SOIL MUST BE STABLIZED NO LATER THAN 24 HOURS OF GRADING. SEE THE IMPAIRED & SPECIAL WATERS SECTION OF THIS SWPPP FOR ADDITIONAL BMP REQUIREMENTS FOR DISTURBED AREAS THAT DRAIN TO A SPECIAL OR IMPAIRED WATER.

THE NORMAL WETTED PERIMETER OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH OR SWALE THAT DRAIN 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. STABLITIZATION 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.

POLLUTION PREVENTION MEASURES

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

THESE MANAGEMENT MEASURE FOR POLLUTION PREVENTION SHALL BE STRICTLY ENFORCED.

PROJECT CONTACTS			
DNR	NOT REQUIRED		
COE	NOT REQUIRED		
ANOKA COUNTY DESIGN SWPPP PREPARATION	U OF MN DESIGN OF SWPPP EXPIRES 5/20	JEFF FOSTER	763-324-3126
ANOKA COUNTY PROJECT REPRESENTATIVE	U OF MN SITE MANAGEMENT EXPIRES 5/20	HARRY GRAMS	763-324-3114
EROSION CONTROL SUPERVISOR (CONTRACTOR)			

SEDIMENT CONTROL PRACTICES

TEMPORARY STOCKPILED TOPSOIL BERMS MUST INCLUDE PERIMETER BMPS AS PROVIDED IN THE PLAN AT LOCAITONS WHERE CONSTRUCTION STORM WATER 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 THAT 75 FEET FOR SLOPES WITH A GRADE OF 1:3 OR STEEPER.

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

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

LOCATION OF SWPPP REQUIREMENTS

REQUIREMENT	PLAN TITLE	PLAN LOCATION	MN/DOT SPECIFICATION	SPECIAL PROVISION
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	STORM WATER POLLUTION PREVENTION PLAN	SHEETS 49 - 50	1506, 1717, & 2573	1716 (AIR, LAND & WATER) 1716 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT)
CHAIN OF RESPONSIBILITY			1506, 1717, & 2573	
PROJECT SCHEDULE / WEEKLY EROSION & SEDIMENT CONTROL SCHEDULE / COMPLETING INSPECTION / MAINTENANCE LOG			1717 & 2573	1717 (AIR, LAND & WATER) 1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT)
SWPPP PREPARATION				
SITE MAP / RECEIVING WATERS / DIRECTION OF FLOW	EROSION CONTROL PLAN	SHEETS 56 - 57	1717	
PROJECT SPECIFIC CONSTRUCTION STAGING	CONSTRUCTION STAGING & TRAFFIC CONTROL	SHEETS 20 - 35	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	EROSION CONTROL PLAN, TABULATION CHARTS	SHEETS 8, 56, 57	2573 & 2525	2575 (RAPID STABILIZATION SPECIFICATION)
ADDITIONAL TEMPORARY AND OR PERMANENT EROSION AND SEDIMENT CONTROL BMP'S NOT PROVIDED OR SHOWN IN THE PLAN	STORM WATER POLLUTION PREVENTION PLAN	SHEETS 49 - 50	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	EROSION CONTROL STANDARD PLAN	SHEETS 51 - 55	1717 & 2573	1514 (MAINTENANCE DURING CONSTRUCTION) 1717 (LAND AIR & WATER) 1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT)
DEWATERING	SEQ, AND SOILS & CONSTRUCTION NOTES	2, 5	2105.3B, & 2451.3C	DEWATERING MAY ALSO REQUIRE DNR PERMIT. DEWATERING IS ANTICIPATED FOR THIS PROJECT
FINAL STABILIZATION	TURF ESTABLISHMENT PLAN, TABULATION CHARTS	SHEETS 8, 56, 57	1717, 2573, & 2575	1717 (AIR, LAND & WATER) 1717 (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT)
TEMPORARY EROSION AND SEDIMENT CONTROL DETAILS	EROSION CONTROL STANDARD PLAN	SHEETS 51 - 55	2575	2575 (RAPID STABILIZATION SPECIFICATION)
PERMANENT EROSION CONTROL DETAILS			2575	2575 (CONTROLLING EROSION AND ESTABLISHING VEGETATION)

NO	DATE	BY	CKD	APPR	REVISION
1	04/09/2009	EM	JO	CK	ADDED HAZARDOUS MATERIAL CONTAINMENT NOTE PER MNDOT REVIEW COMMENTS.

NAME: P:\02-617-21\Plan\0261721_SWPPP.dgn 09/07/2018 3:33:10 PM

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PRINT NAME: ELIZABETH MARKOSE
SIGNATURE:
DATE: 09-01-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18
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CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

STORM WATER POLLUTION PREVENTION PLAN

Sheet 49 of 86 Sheets

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

AMENDING THE SWPPP

THE SWPPP MUST BE AMENDED TO RECORD CHANGES OR MODIFICATIONS TO PERMANENT BMPS OR OTHER STORM WATER TREATMENT SYSTEMS AND REMOVALS OF TEMPORARY BMPS. CHANGES TO TEMPORARY BMPS MAY BE RECORDED IN THIS SHEET. INCLUDE A BRIEF DESCRIPTION OF THE PROBLEM, LOCATION, NATURE OF ALTERATION AND COMMENTS. THIS RECORD IS TO BE RETAINED FOR THREE YEARS AFTER PROJECT COMPLETION.

Date Reported	Staff	Plan Location (sheet)	Project Location (station)	Problem, solution, and notes

2 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_SWPPP.dgn 09/07/2018 3:33:13 PM

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PRINT NAME: ELIZABETH MARKOSE

SIGNATURE: Eliz[illegible]

DATE: 09-07-18 LICENSE NO. 49118

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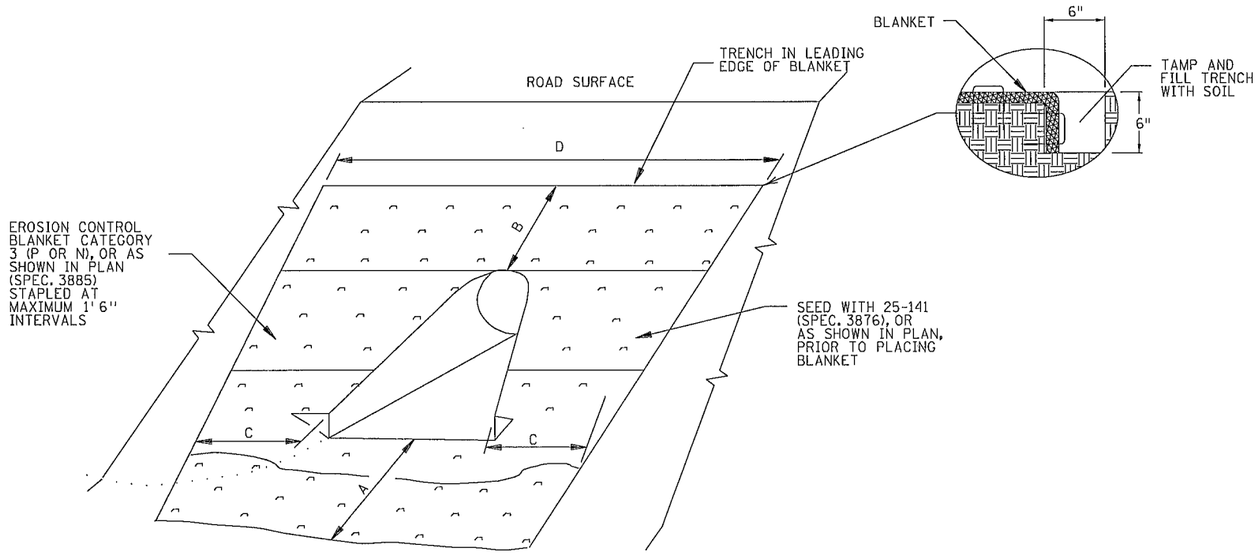
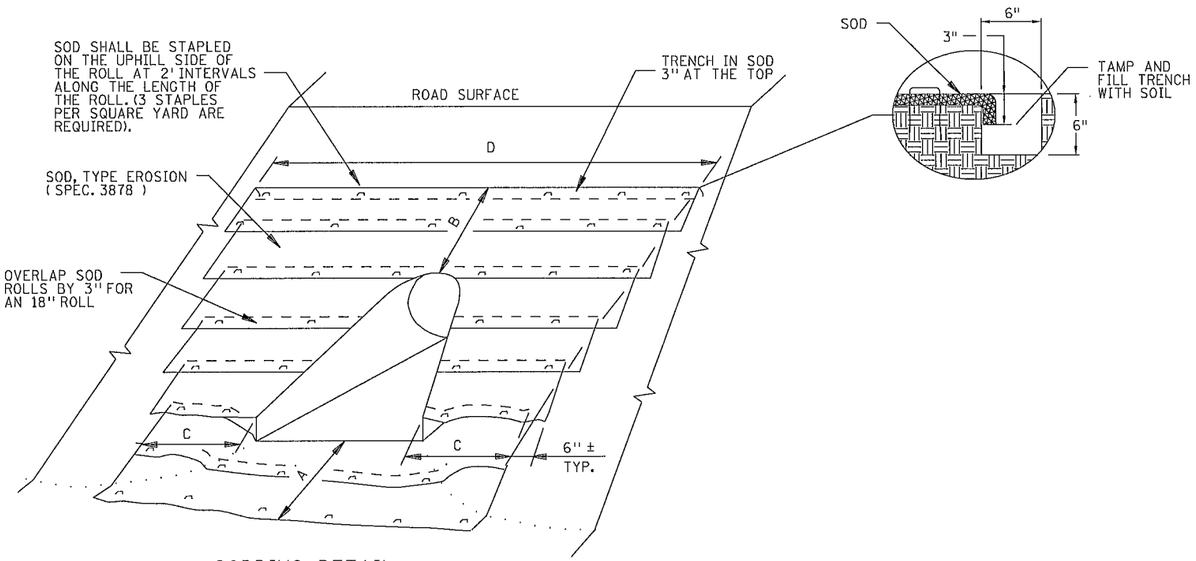
STORM WATER POLLUTION PREVENTION PLAN



EROSION CONTROL BLANKET & SEED DETAIL



SODDING DETAIL

CULVERT INLET APRON ①

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 OUTLET APRON ①

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'

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.)

PLOTTED/REVISED: 09/07/2018

DISTRICT #:
USER NAME: ejmarkos
PATH & FILENAME: P:\02-617-2\Plan\STD Plans\s404_1_spn.dgn

REVISION:

APPROVED: 2-28-2017
CHIEF ENVIRONMENTAL OFFICER

S.P. 002-617-021
S.P. 197-020-006

MINNESOTA DEPARTMENT OF TRANSPORTATION

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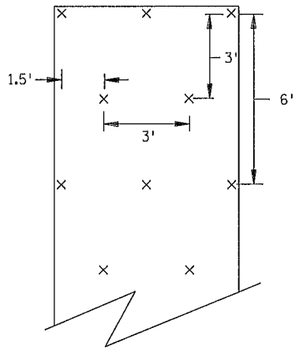
STATE DESIGN ENGINEER

APPROVED: 2-28-2017

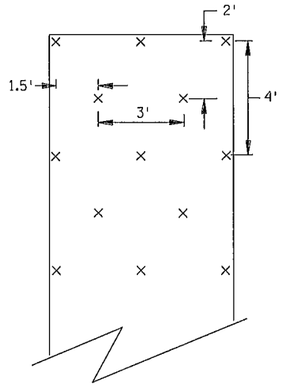
PERMANENT EROSION CONTROL
TURF ESTABLISHMENT DETAIL AT CULVERT ENDS

STANDARD PLAN 5-297.404

PLOTTED/REVISED: 09/07/2018

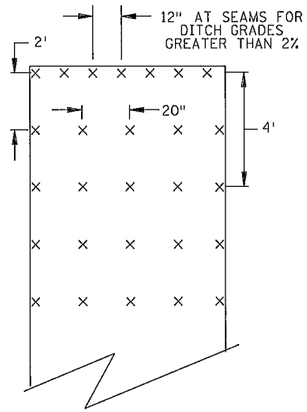


SLOPES FLATTER THAN 1:2
(120 STAPLES PER 100 SQ YD)

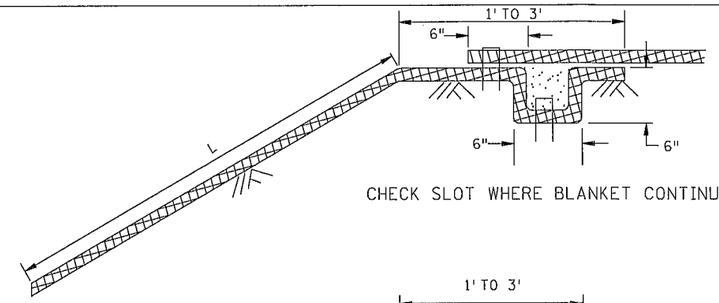


SLOPES 1:2 TO 1:1
(170 STAPLES PER 100 SQ YD)

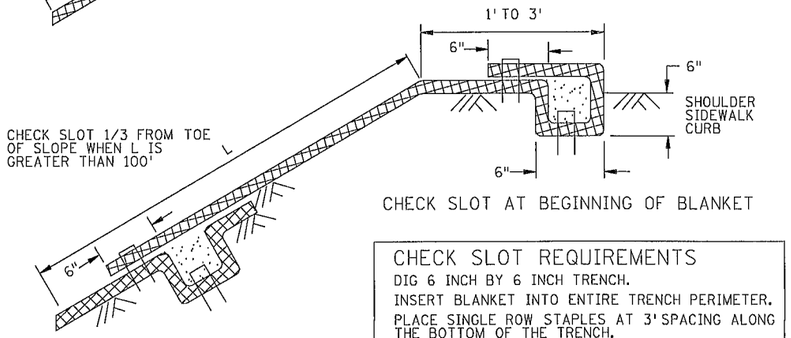
BLANKET STAPLE PATTERN



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



CHECK SLOT WHERE BLANKET CONTINUES



CHECK SLOT AT BEGINNING OF BLANKET

CHECK SLOT REQUIREMENTS

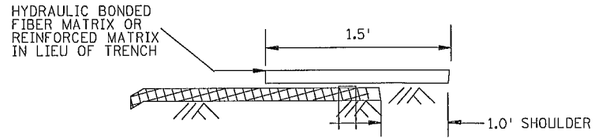
DIG 6 INCH BY 6 INCH TRENCH.

INSERT BLANKET INTO ENTIRE TRENCH PERIMETER.

PLACE SINGLE ROW STAPLES AT 3' SPACING ALONG THE BOTTOM OF THE TRENCH.

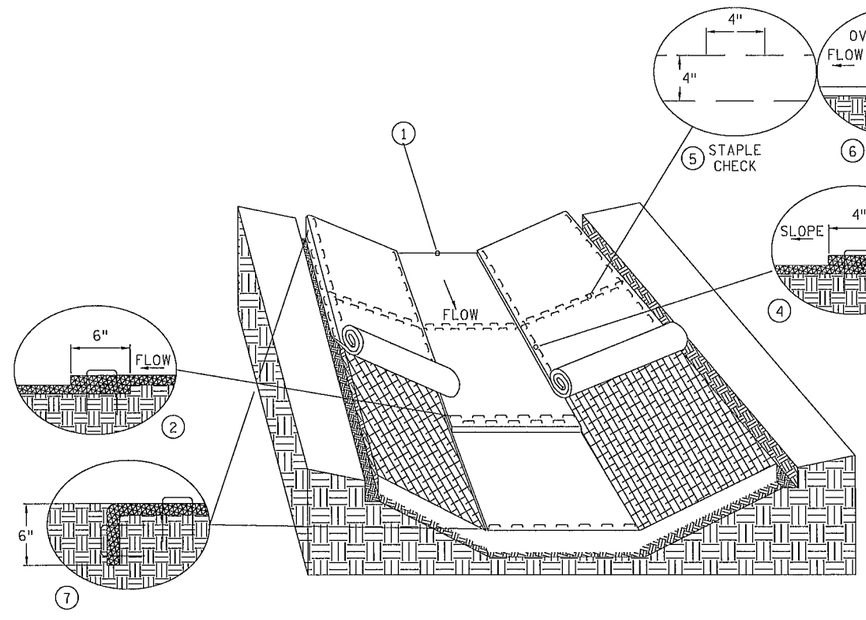
BACKFILL TRENCH WITH SOIL AND TAMP.

PLACE SINGLE ROW STAPLES AT 3' SPACING ON OVERLAP.

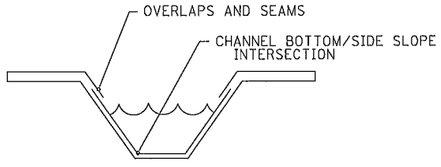


CHECK SLOT ALTERNATIVE
PLACE SINGLE ROW STAPLES AT 12" SPACING

CHECK SLOT DETAILS



DITCH BLANKET STAPLE DETAIL



DITCH BLANKET CRITICAL POINTS (7)

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.

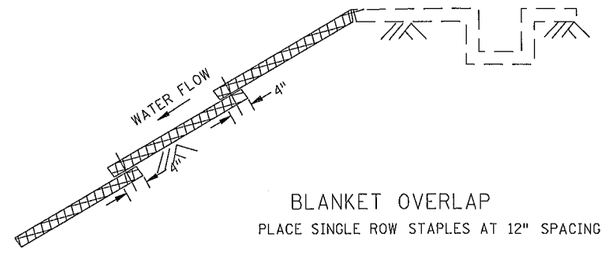
(3) USE 6" X 6" TRENCH TO PLACE BLANKET. PLACE SINGLE ROW OF STAPLES ON TOP AND TRENCH SIDES AT 12" SPACING. BACKFILL TRENCH WITH SOIL AND TAMP.

(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.

DISTRICT #:
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MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

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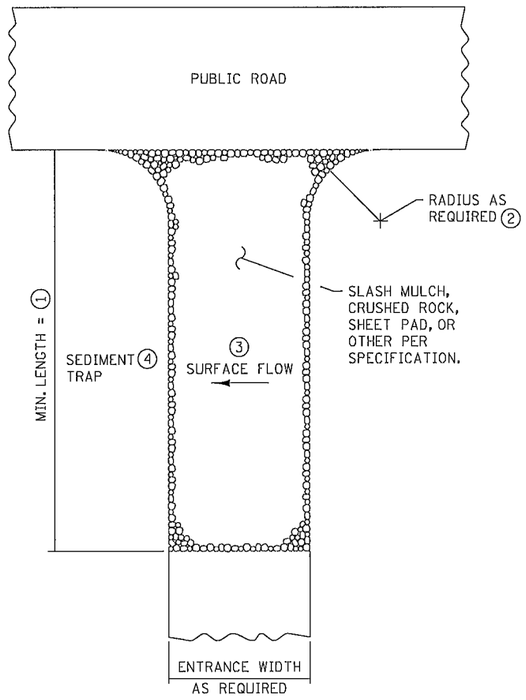
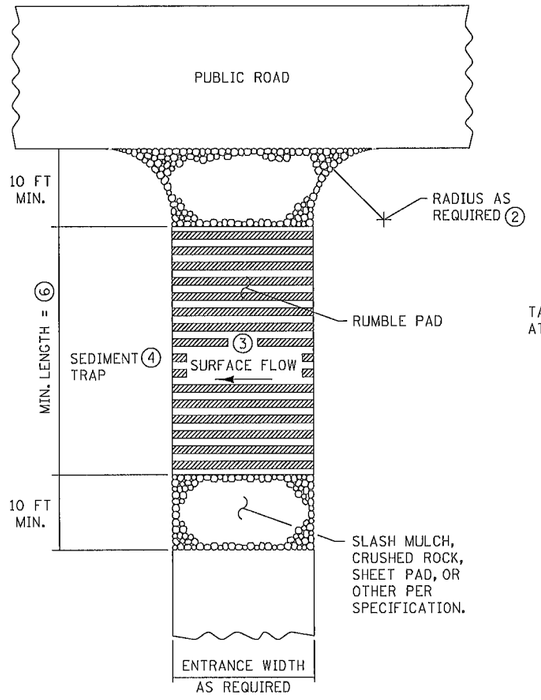
PERMANENT EROSION CONTROL
BLANKET STAPLE PATTERN FOR SLOPES

STANDARD PLAN 5-297.404

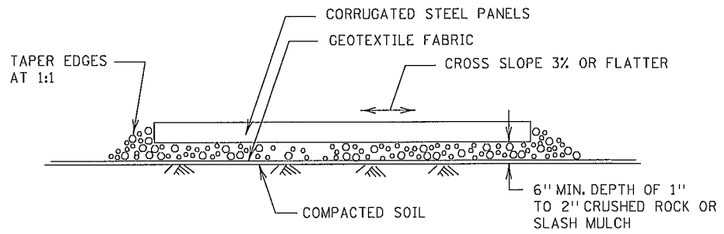
PLOTTED/REVISED:
09/07/2018



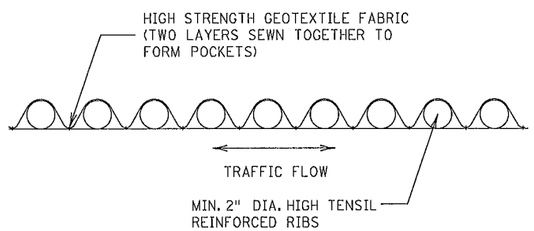
SLASH MULCH, CRUSHED ROCK, OR SHEET PAD CONSTRUCTION EXIT ⑤⑦



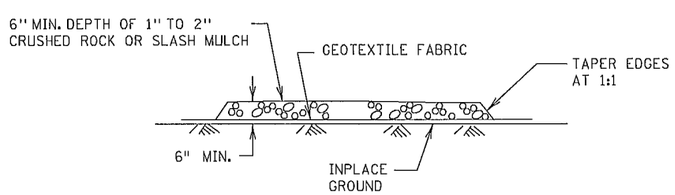
RUMBLE PAD CONSTRUCTION EXIT ⑤⑦



RUMBLE PAD



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.

DISTRICT *:
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FILE NAME: s404_1_spn.dgn

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APPROVED: 2-28-2017
CHIEF ENVIRONMENTAL OFFICER

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C.P. 2019-03

MINNESOTA DEPARTMENT OF TRANSPORTATION

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APPROVED: 2-28-2017

TEMPORARY SEDIMENT CONTROL
STABILIZED CONSTRUCTION EXIT

STANDARD PLAN 5-297.405

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DISTRICT *:
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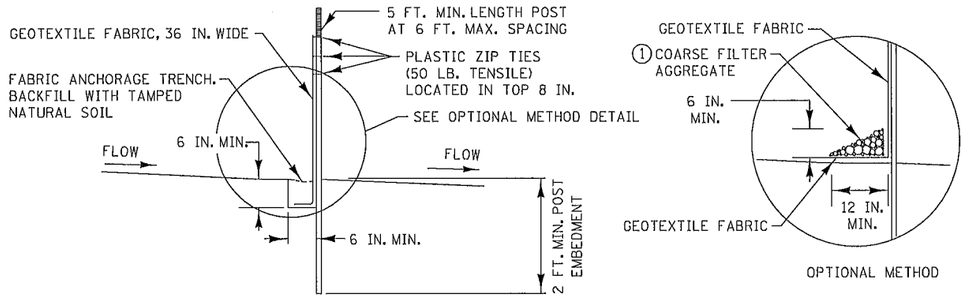
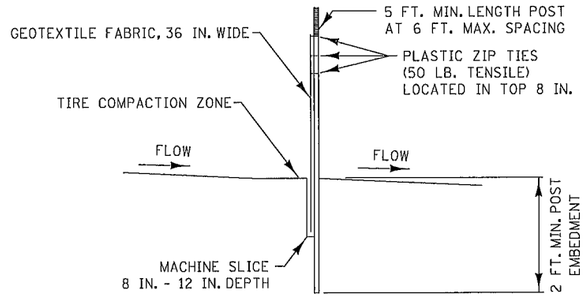
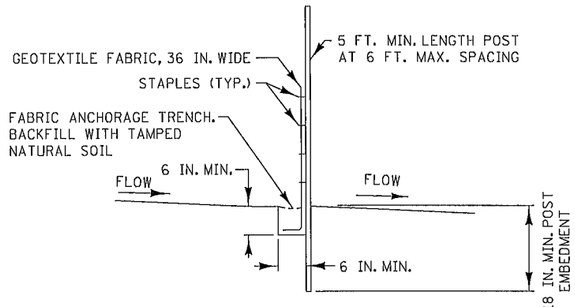
PATH & FILENAME: P:\02-617-21\Plan\STD Plans\s404_1_spn.dgn
FILE NAME: s404_1_spn.dgn



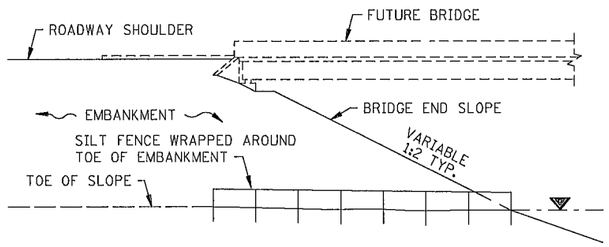
SILT FENCE TYPE HI ②
(HAND INSTALLED)



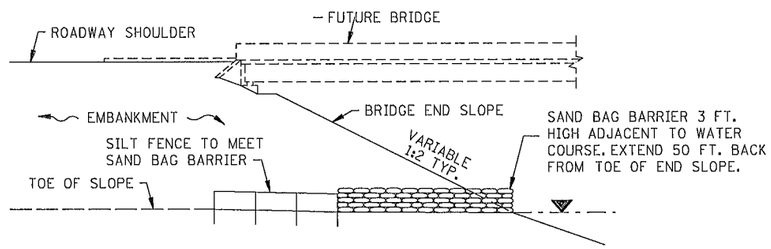
SILT FENCE TYPE MS ②
(MACHINE SLICED)



SILT FENCE TYPE PA ③
(PREASSEMBLED)

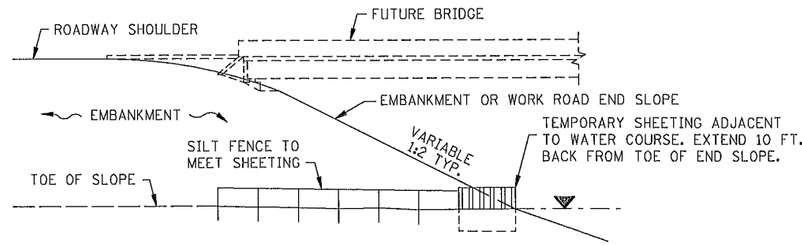


SILT FENCE ONLY ④

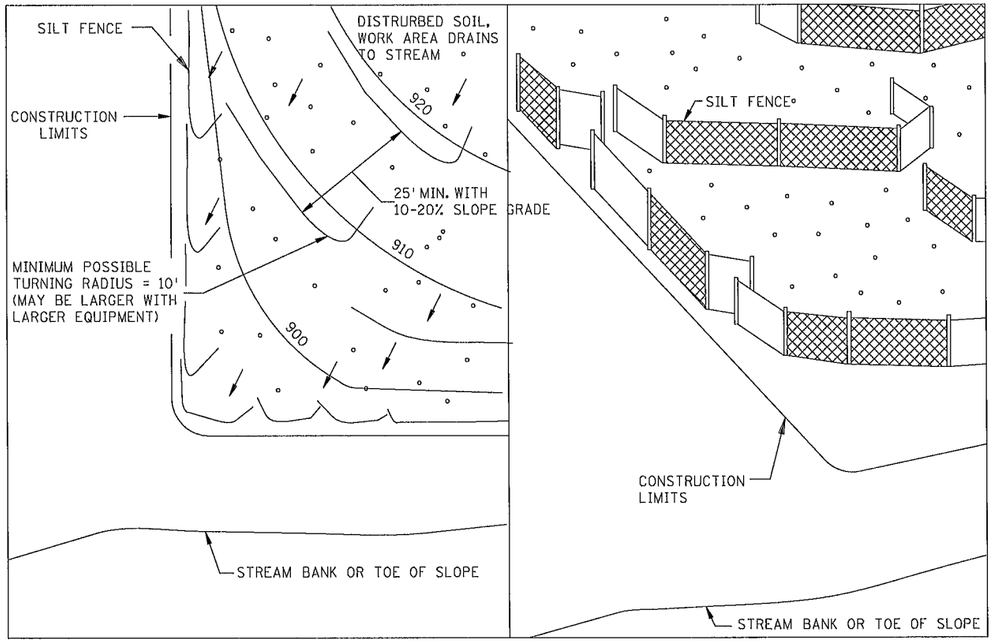


SILT FENCE WITH SAND BAGS ⑤

INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER

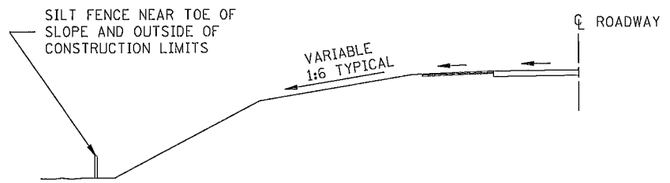


SILT FENCE WITH SHEETING ⑥



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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CHIEF ENVIRONMENTAL OFFICER

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MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

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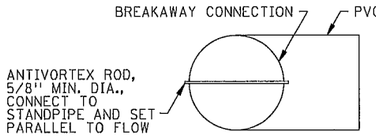
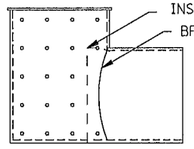
TEMPORARY SEDIMENT CONTROL
SILT FENCE

STANDARD PLAN 5-297.405

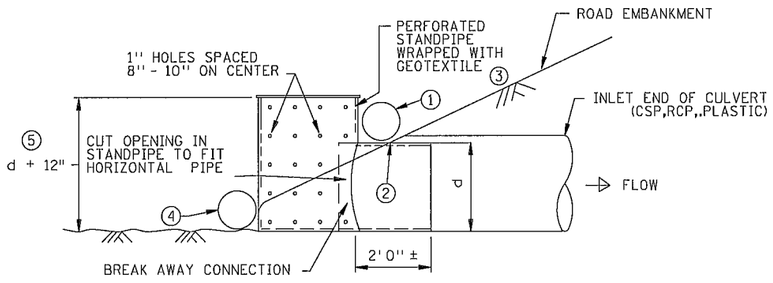
PLOTTED/REVISED:
09/07/2018



PLAN VIEW



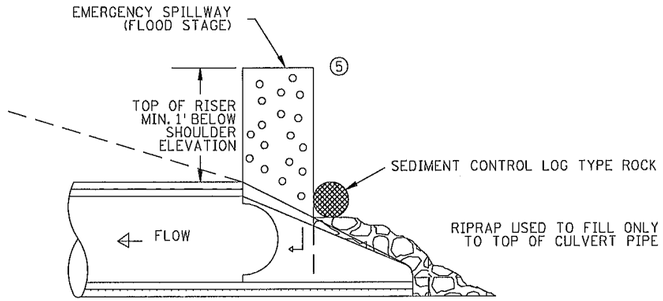
CULVERT STANDPIPE



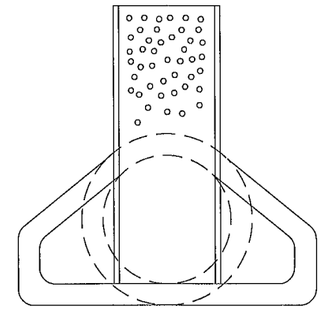
ELEVATION VIEW OF CULVERT INSTALLATION

CULVERT STANDPIPE INSERT (D-RISER)

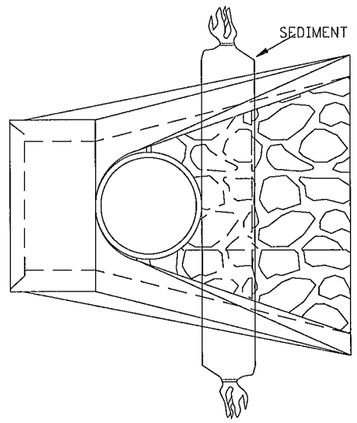
d= CULVERT SIZE: 12" - 36"



LONGITUDINAL SECTION



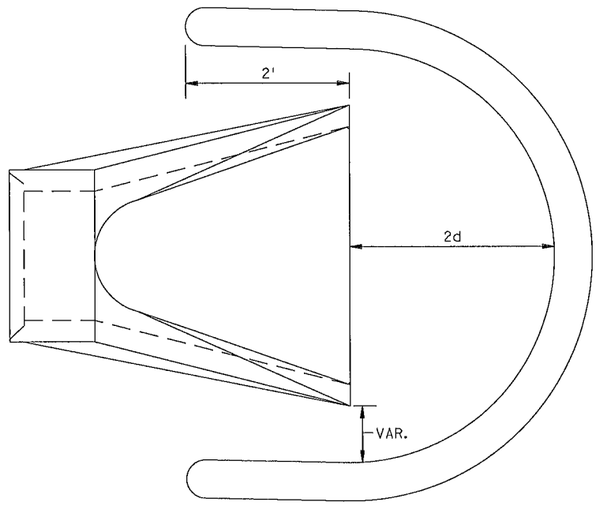
END VIEW



TOP VIEW

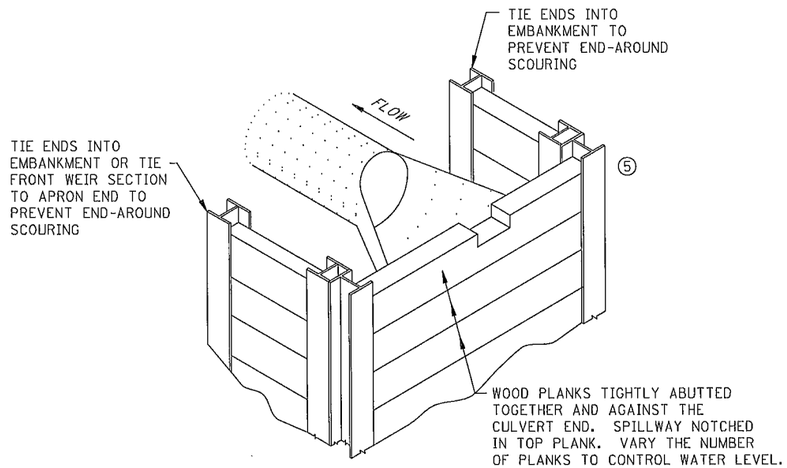
NOTE: SEDIMENT CONTROL LOG TYPE ROCK MAY BE WRAPPED AROUND RISER

CULVERT STANDPIPE INSERT (D-RISER)



SEDIMENT CONTROL LOG WEIR
(COMPOST, WOOD CHIP, OR ROCK)

d = CULVERT SIZE: 12"-36"



WOOD PLANK WEIR

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.

DISTRICT #:
USER NAME: e.lmarkos
PATH & FILENAME: P:\02-617-2\Plan\STD Plans\s404_1_spn.dgn

REVISION:	
APPROVED: 2-28-2017 CHIEF ENVIRONMENTAL OFFICER	S.P. 002-617-021 S.P. 197-020-006

MINNESOTA DEPARTMENT OF TRANSPORTATION

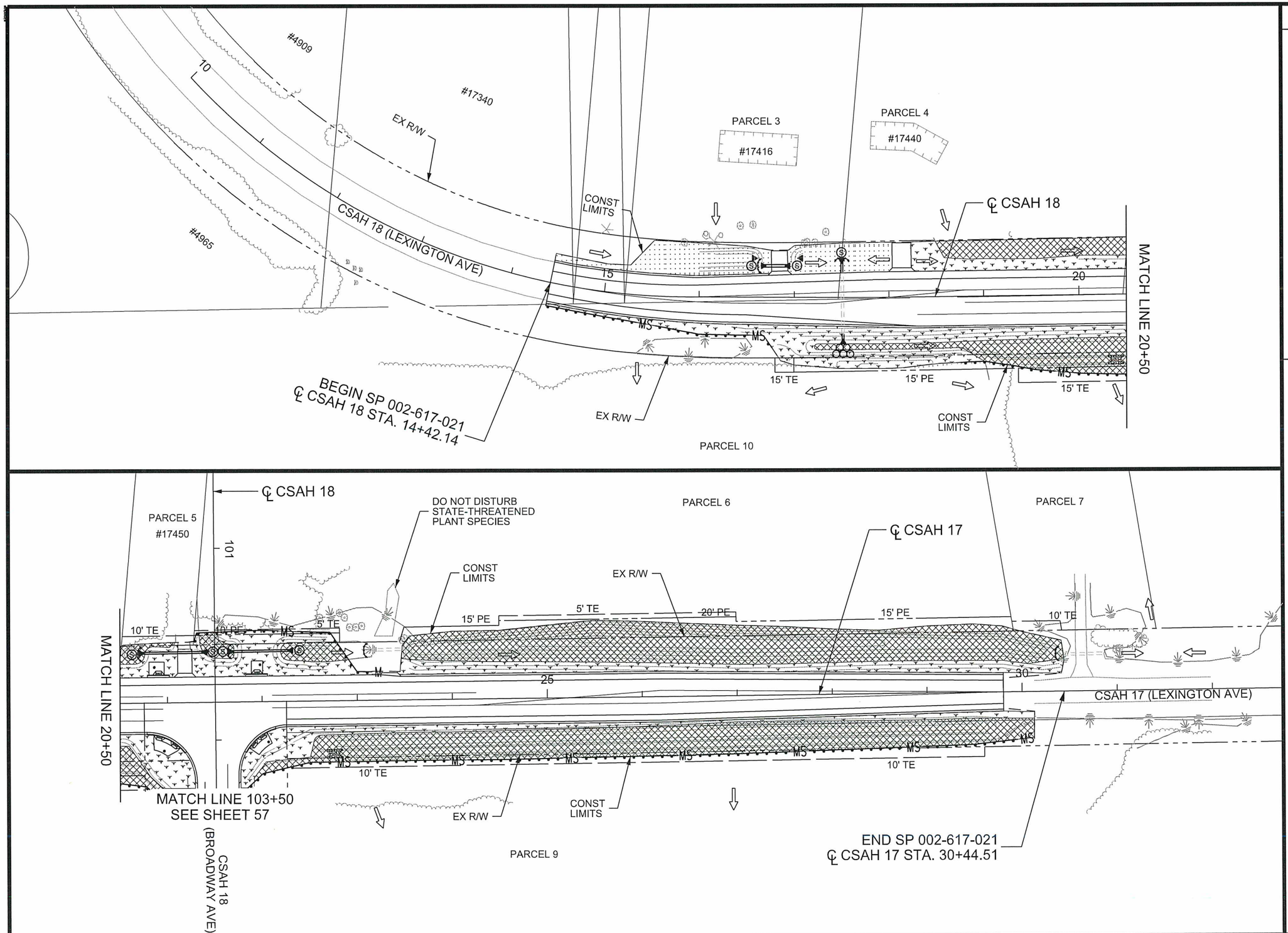
STATE DESIGN ENGINEER

REVISED:

APPROVED: 2-28-2017

TEMPORARY SEDIMENT CONTROL
CULVERT END CONTROLS

STANDARD PLAN 5-297.405



LEGEND

- PROPOSED APRON
- 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 MIXTURE 25-121 W/ EROSION CONTROL BLANKET CATEGORY 0
- SEED MIXTURE 25-121 W/ EROSION CONTROL BLANKET CATEGORY 3N
- SEED MIXTURE 33-261 W/ EROSION CONTROL BLANKET CATEGORY 3N

0 100
SCALE IN FEET

1 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\02-617-21\Plan\0261721_EC_P1.dgn 09/07/2018 3:33:19 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: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18
DESIGN BY EJM DATE 05-15-18
CHECKED BY GMP DATE 07-18-18

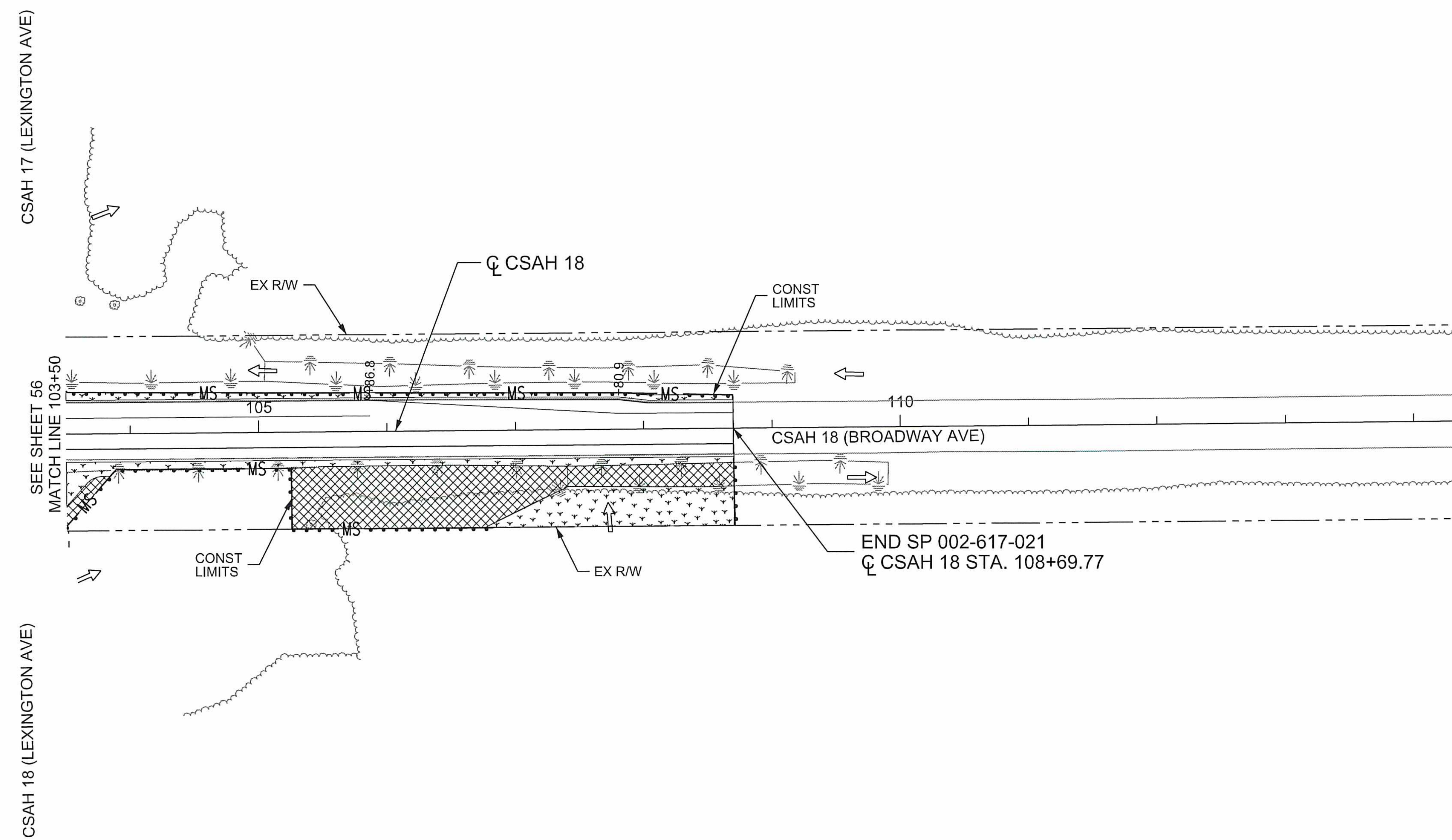
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

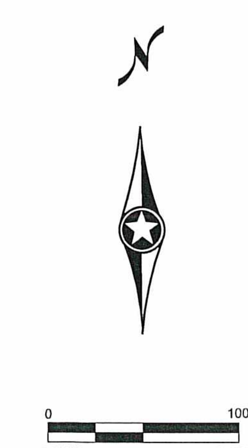
EROSION CONTROL & TURF ESTABLISHMENT PLAN
STA 14+42.14 TO 29+80.44

Sheet 56 of 86 Sheets



LEGEND

Symbol	Description
MS	SILT FENCE TYPE MACHINE SLICED
	WETLAND BOUNDARIES
	SURFACE FLOW ARROW
	SEED MIXTURE 25-121 W/ EROSION CONTROL BLANKET CATEGORY 3N
	SEED MIXTURE 33-261 W/ EROSION CONTROL BLANKET CATEGORY 3N



2 OF 2

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 M

DATE: 09-07-18 LICENSE NO. 49118

DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

EROSION CONTROL AND TURF ESTABLISHMENT PLAN

STA 103+50.00 TO 108+69.77

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 $\frac{1}{4}$ INCH UNDER OR $\frac{1}{4}$ 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 COMPONENT (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 BEANS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE EPOXY RESIN LINE TO PROVIDE AN IMMEDIATE NO-TRACK SYSTEM.

A 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 APPLICAITON 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 FILD 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.

PAVEMENT MARKING TABULATION		P
ITEM	UNIT	TOTAL QUANTITY
4" SOLID LINE WHITE - MULTI COMP	LIN FT	7360
4" BROKEN LINE YELLOW - MULTI COMP	LIN FT	260
4" SOLID LINE YELLOW - MULTI COMP	LIN FT	990
4" SOLID DOUBLE LINE YELLOW - MULTI COMP	LIN FT	3260
24" SOLID LINE YELLOW - PREFORMED THERMOPLASTIC	LIN FT	321
24" SOLID LINE WHITE - PREFORMED THERMOPLASTIC	LIN FT	86
3'x6' ZEBRA CROSSWALK - PREFORMED THERMOPLASTIC	SQ FT	594
PAVEMENT MESSAGE (LFT ARROW) - PREFORMED THERMOPLASTIC	SQ FT	60
PAVEMENT MESSAGE (RT ARROW) - PREFORMED THERMOPLASTIC	SQ FT	60

SYMBOLS & MATERIALS LEGEND

CROSSWALK BLOCK WHITE-POLY PREFORM

PAVEMENT MESSAGE (LEFT ARROW) POLY PREFORM

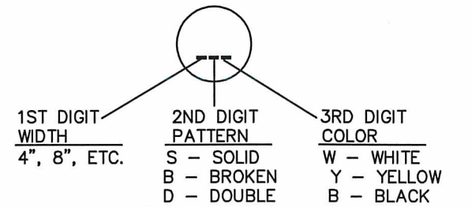
STRIPING KEY

CIRCLE - MULTI COMP

SQUARE - POLY PREFORM THERMOPLASTIC

TRIANGLE - PAINT

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING



NO	DATE	BY	CKD	APPR	REVISION

NAME:

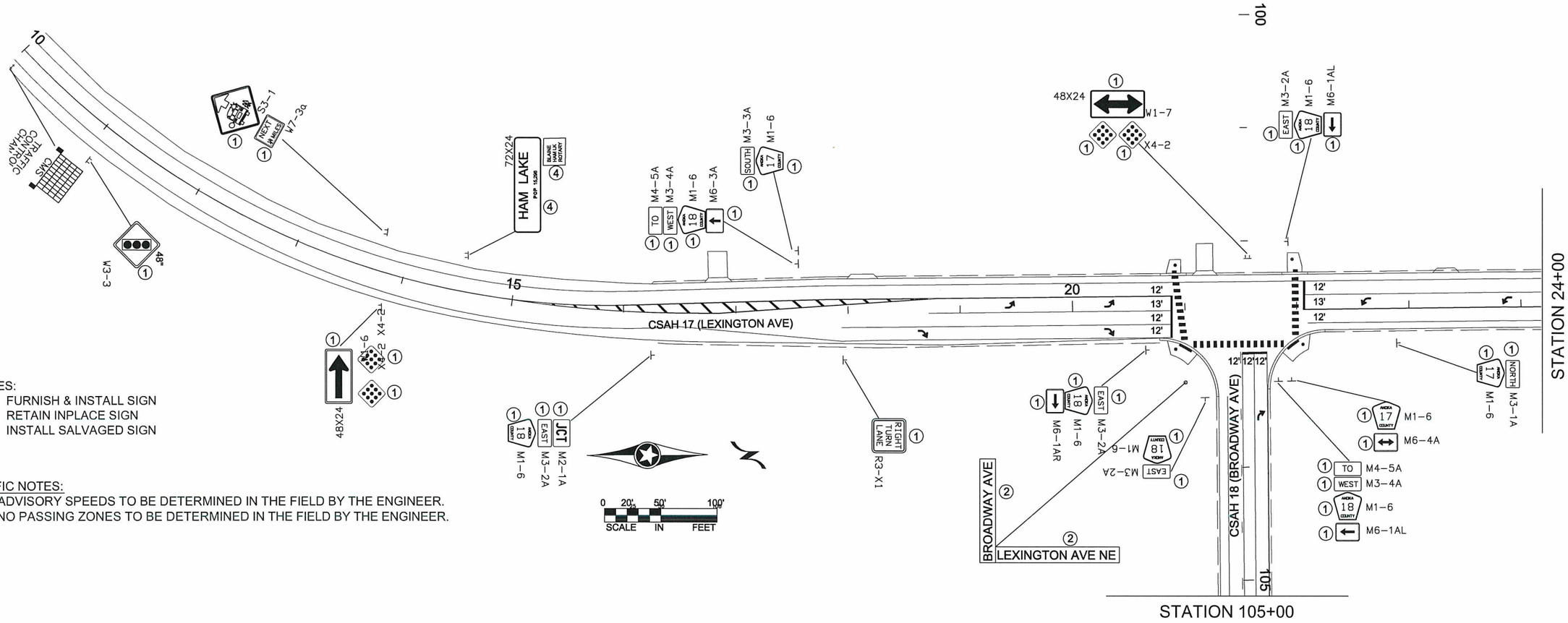
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: DOUGLAS W. FISCHER, P.E.
SIGNATURE:
DATE: 12/4/18 LICENSE NO. 20235

DRAWN BY LJK DATE 04-04-18
DESIGN BY LJK DATE 04-04-18
CHECKED BY JKR DATE 05-24-18

ANOKA COUNTY HIGHWAY DEPT.

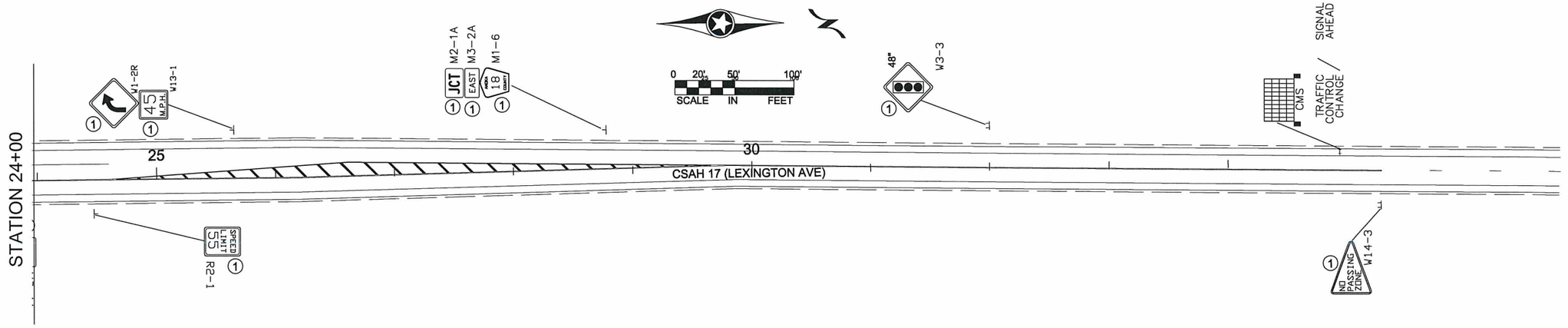
S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

PERMANENT MARKING TABULATION



NOTES:
- ① FURNISH & INSTALL SIGN
- ② RETAIN INPLACE SIGN
- ④ INSTALL SALVAGED SIGN

TRAFFIC NOTES:
1. ADVISORY SPEEDS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. NO PASSING ZONES TO BE DETERMINED IN THE FIELD BY THE ENGINEER.



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SIGNATURE:

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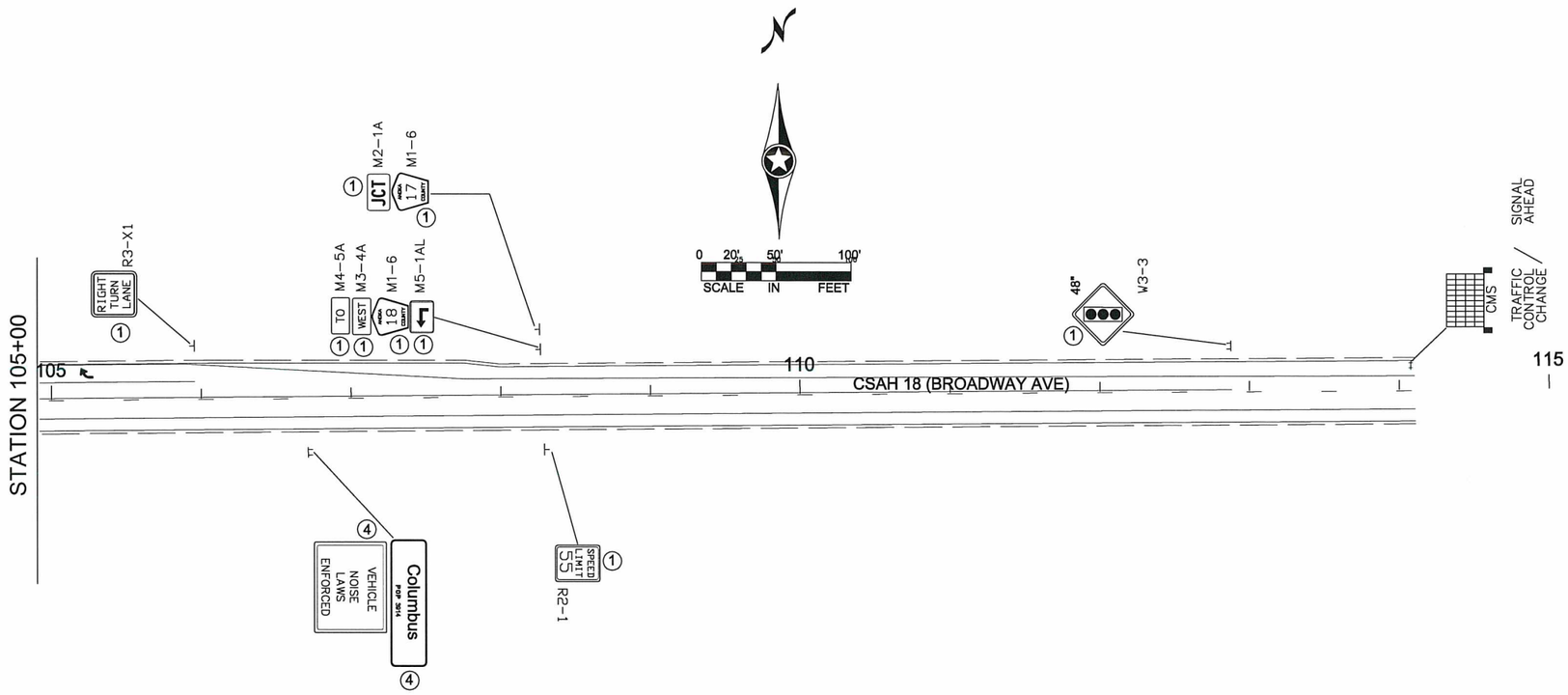
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

PERMANENT SIGNING PLAN

Sheet 59 of 86 Sheets



NOTES:
① FURNISH & INSTALL SIGN
④ INSTALL SALVAGED SIGN

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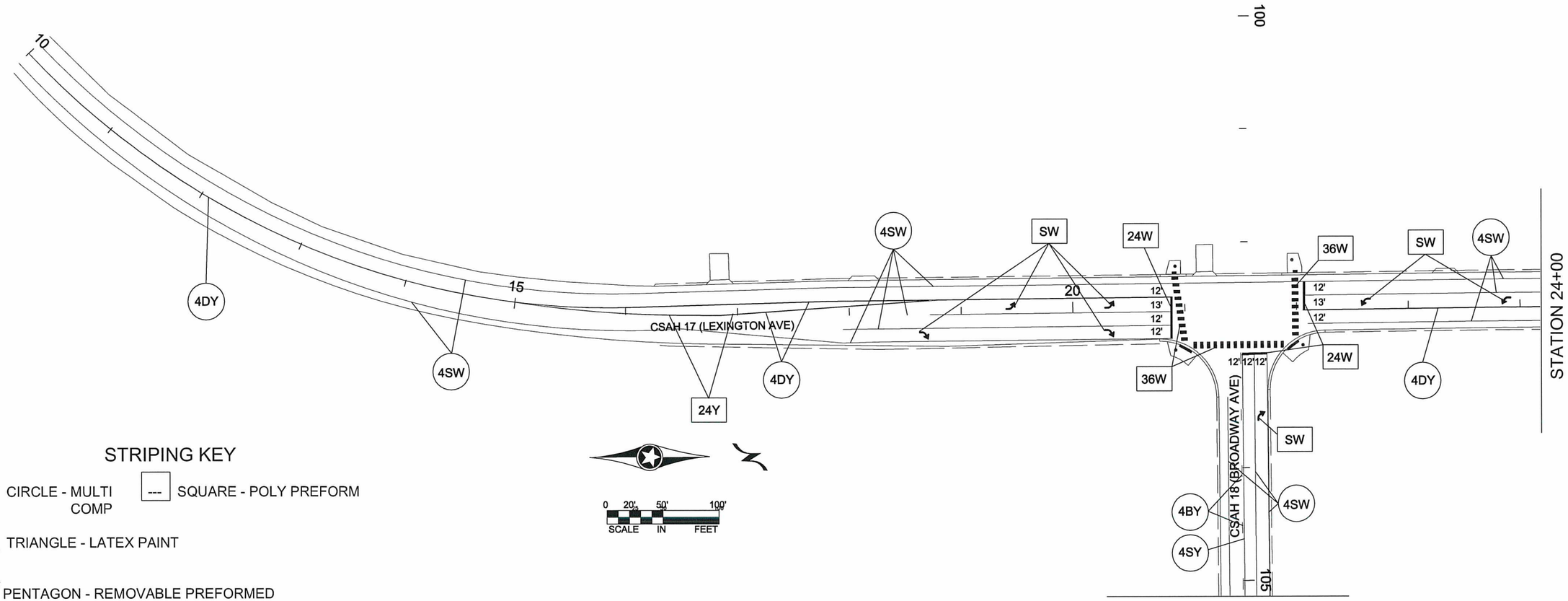
C.P. 2019-03

PERMANENT SIGNING PLAN

Sheet 60 of 86 Sheets



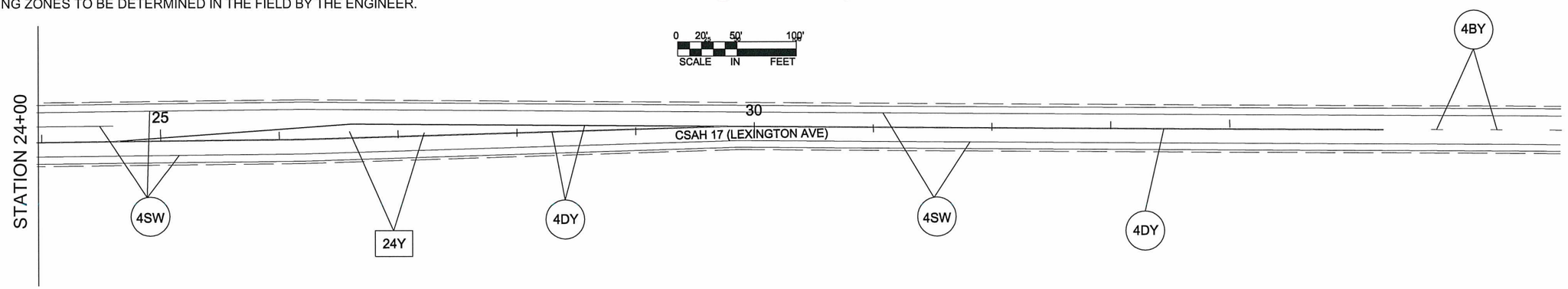
STATION 105+00

STRIPING KEY

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

TRAFFIC NOTES:

1. ADVISORY SPEEDS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. NO PASSING ZONES TO BE DETERMINED IN THE FIELD BY THE ENGINEER.



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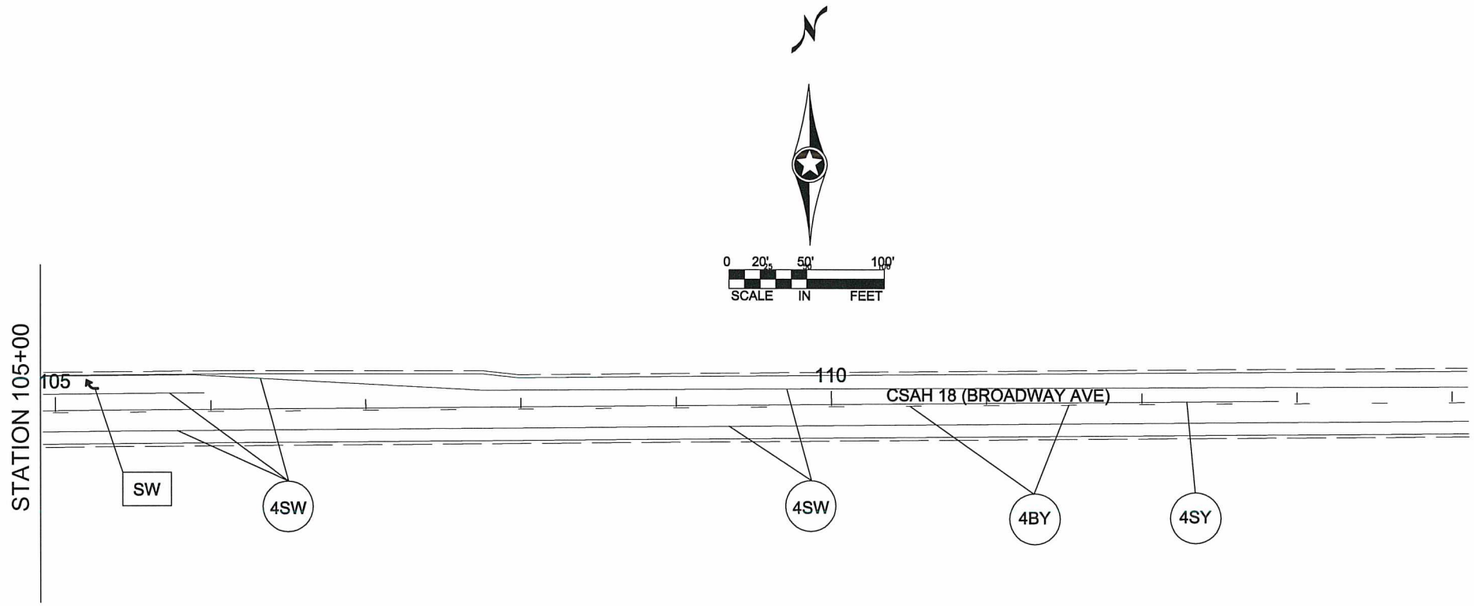
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

PERMANENT STRIPING PLAN

Sheet 61 of 86 Sheets



TRAFFIC NOTES:

1. ADVISORY SPEEDS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. NO PASSING ZONES TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

STRIPING KEY

(---) CIRCLE - MULTI COMP

[---] SQUARE - POLY PREFORM

△ --- TRIANGLE - LATEX PAINT

⬠ --- PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

NO	DATE	BY	CKD	APPR	REVISION
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SIGNATURE:

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DRAWN BY LJK DATE 04-04-18

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CHECKED BY JKR DATE 05-24-18

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

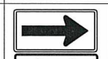
S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

PERMANENT STRIPING PLAN

Sheet 62 of 86 Sheets

SIGN PANELS TYPE C

SP 002-617-021

M.U.T.C.D. CODE	SIZE	INSERT	QUANTITY	SQ FT PANEL AREA	SQ FT TOTAL AREA	MOUNTING POST PER INSTALLATION	MOUNTING HEIGHT
W3-3	48" x 48"		3	16.00	48.00	2	7.0'
M4-5A	24" X 12"		3	2.00	6.00	1	7.0'
M2-1A	21" X 15"		2	2.19	4.38		
M3-2A	24" X 12"		5	2.00	10.00		
M3-4A	24" X 12"		3	2.00	6.00		
M1-6	24" X 24"		8	4.00	32.00		
M6-3A	21" X 15"		1	2.19	2.19		
M6-1AR	21" X 15"		1	2.19	2.19		
M6-1AL	21" X 15"		2	2.19	4.38		
M5-1AL	21" X 15"		1	2.19	2.19		
W1-6	48" X 24"		1	8.00	8.00	2	7.0'
W1-7	48" X 24"		1	8.00	8.00		
X4-2	18" X 18"		4	2.25	9.00		
S3-1	36" X 36"		1	9.00	9.00	2	7.0'
W7-3A	30" X 24"		1	5.00	5.00		
M2-1A	21" X 15"		1	2.19	2.19	1	7.0'
M3-1A	24" X 12"		1	2.00	2.00		
M3-3A	24" X 12"		1	2.00	2.00		
M1-6	24" X 24"		4	4.00	16.00		
M6-4A	21" X 15"		1	2.19	2.19		
R3-X1	30" X 30"		2	6.25	12.50	1	7.0'
R2-1	24" X 30"		2	5.00	10.00	1	7.0'
W1-2R	36" X 36"		1	9.00	9.00	2	7.0'
W13-1	24" X 24"		1	4.00	4.00		
W14-3	64" X 64" X 48"		1	10.67	10.67	2	7.0'
SUBTOTALS			**52**		**226.88**		

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 MULTI COMP. PERMANENT MESSAGES AND ARROWS SHALL BE PREFORMED THERMOPLASTIC.
- ALL SIGNS SHALL BE FURNISHED AND INSTALLED UNLESS OTHERWISE NOTED.

NO	DATE	BY	CKD	APPR	REVISION
NAME:					

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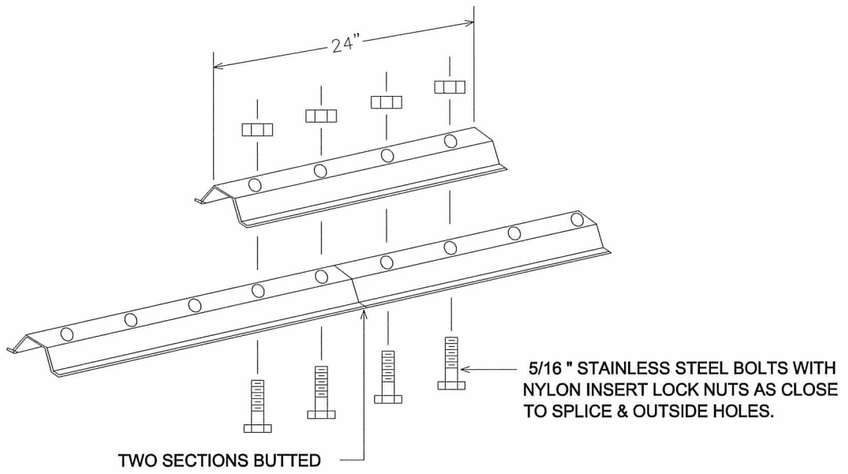
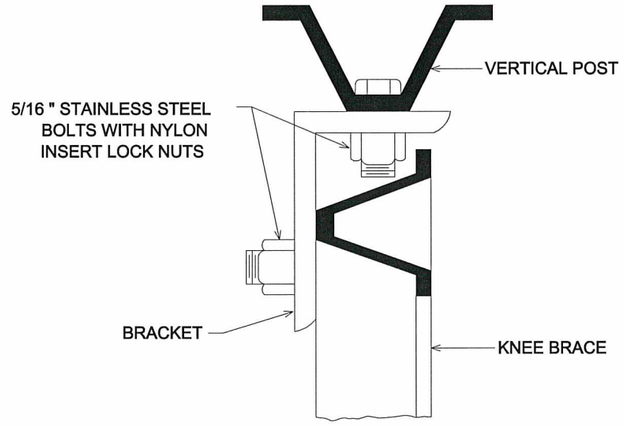
C.P. 2019-03

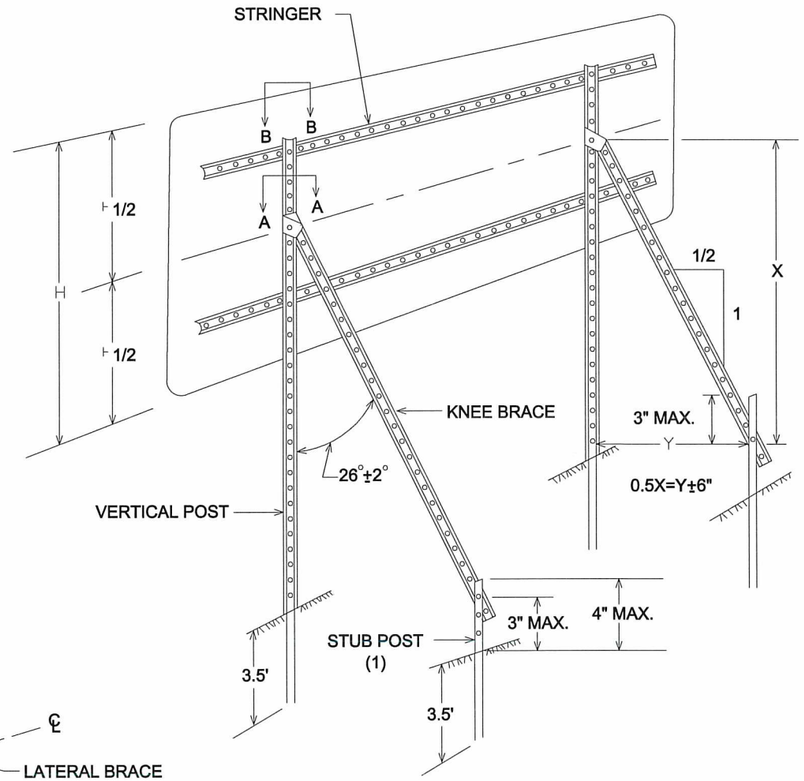
PERMANENT SIGNING QUANTITIES



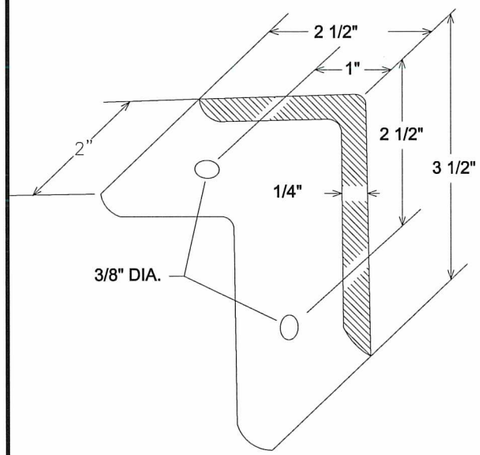
LATERAL BRACE OR STRINGER SPLICE DETAIL (EXPLODED VIEW)



SECTION A-A

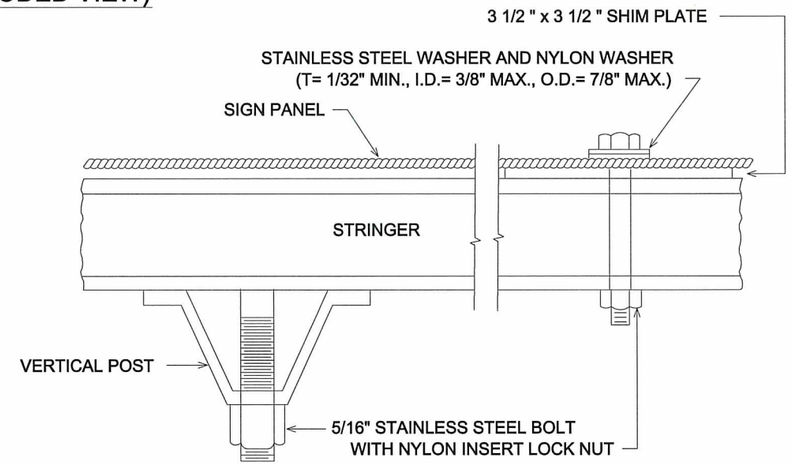


TYPICAL "A-FRAME" INSTALLATION TYPE "D" SIGNS

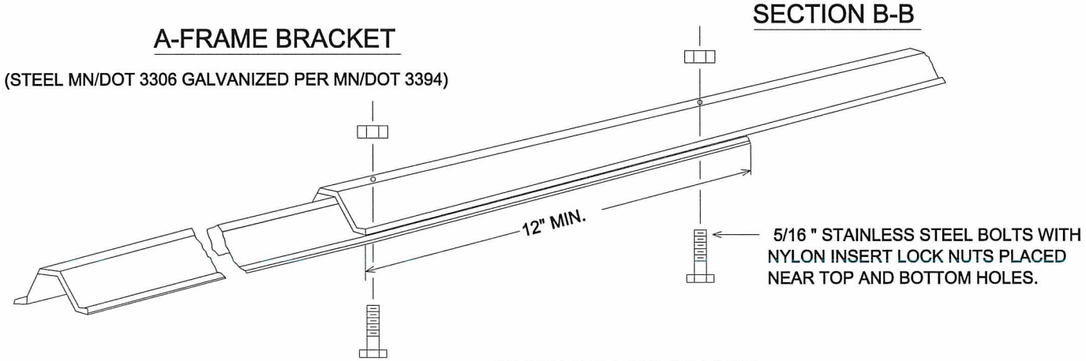


A-FRAME BRACKET

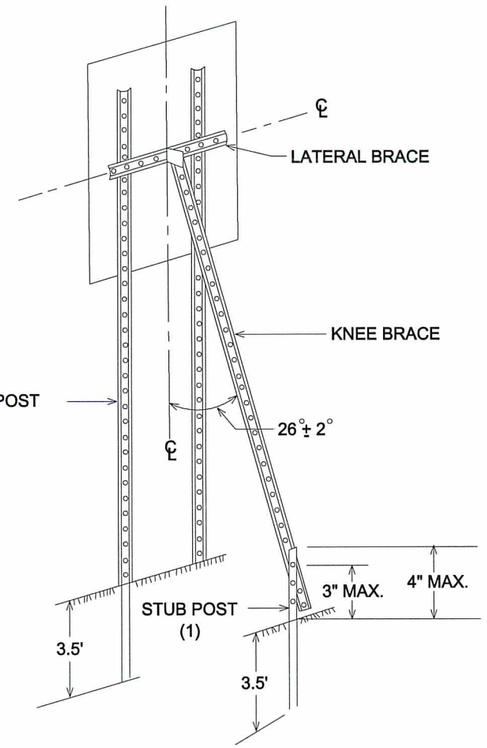
(STEEL MN/DOT 3306 GALVANIZED PER MN/DOT 3394)



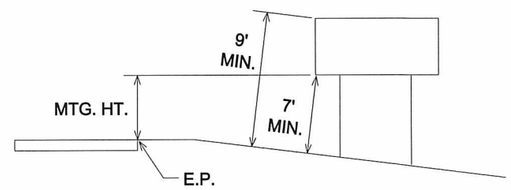
SECTION B-B



KNEE BRACE SPLICE



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



TYPICAL MOUNTING

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

TYPE C & D SIGN STRUCTURAL DETAILS

NO	DATE	BY	CKD	APPR	REVISION
NAME:					

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: 9/10/18 REG. NO. 20235

DRAWN BY LJK DATE 11/2017
DESIGN BY DATE
CHECKED BY DATE

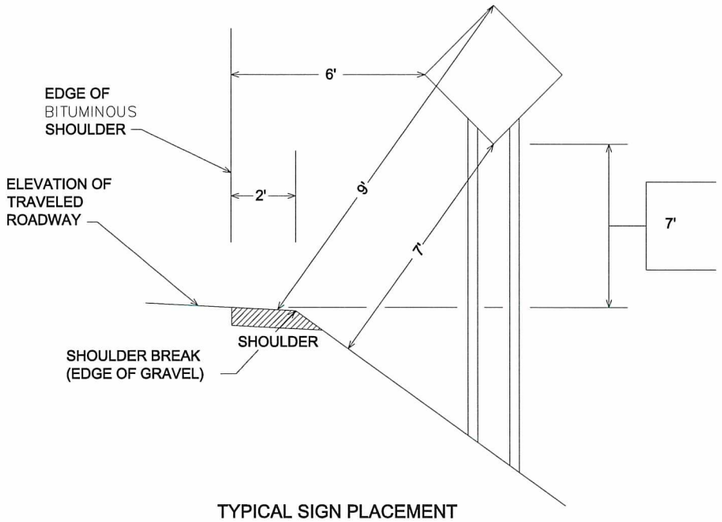
ANOKA COUNTY HIGHWAY DEPT.

S.P. 002-617-021
S.P. 197-020-006
C.P. 2019-03

SIGNING & STRIPING DETAILS

Sheet 64 of 86 Sheets

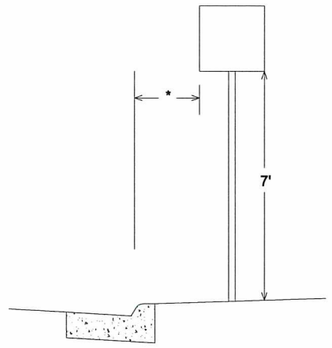
RURAL



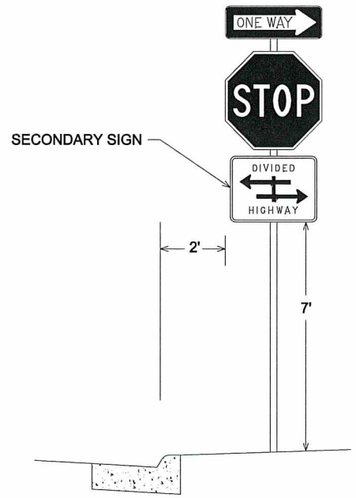
TYPICAL SIGN PLACEMENT

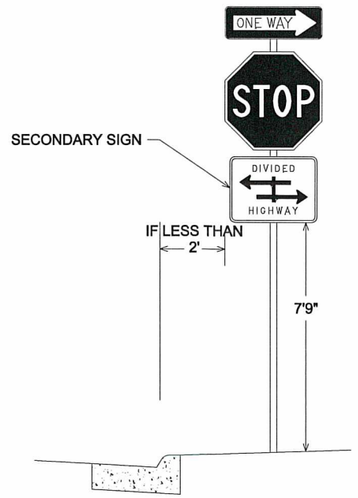
URBAN

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



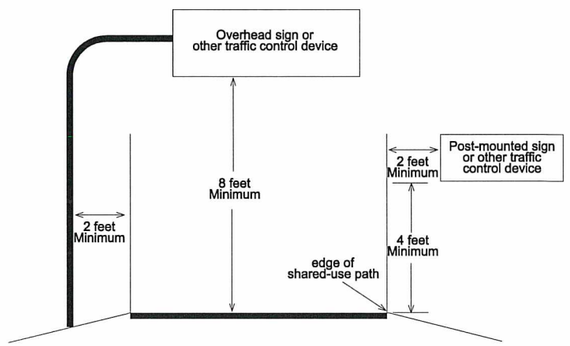
TYPICAL SIGN PLACEMENT





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
NAME:					

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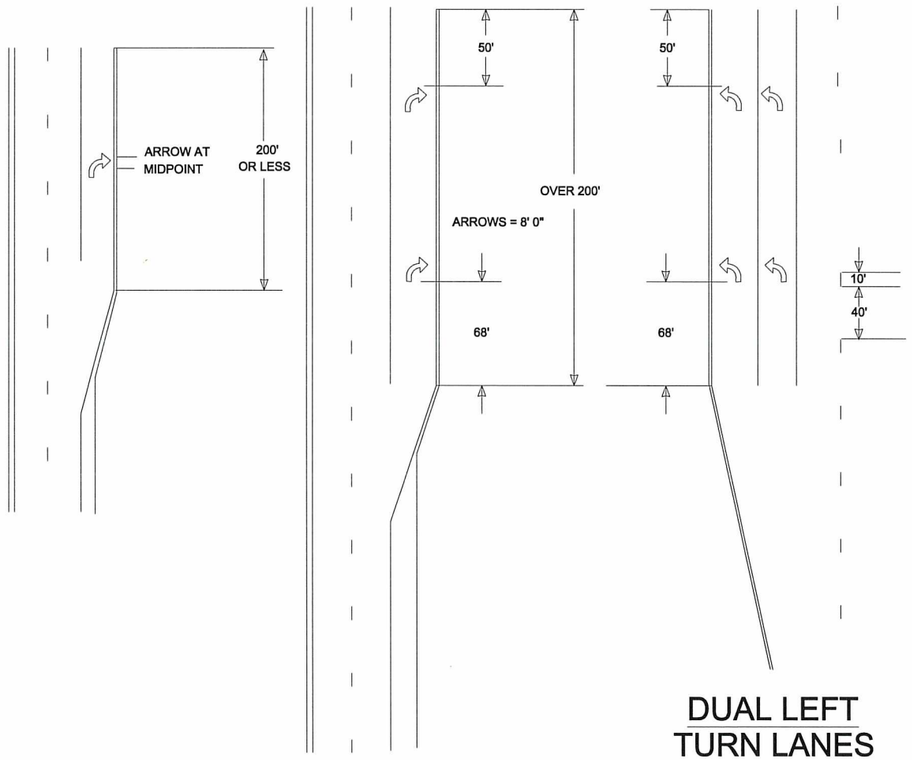
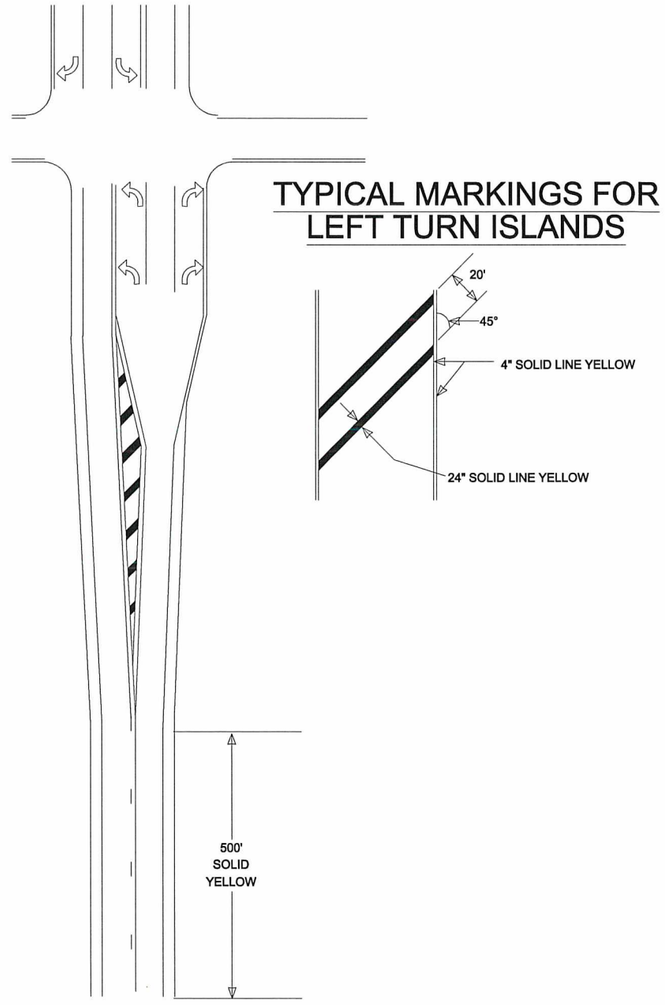
TYPICAL MESSAGE PLACEMENT FOR TURN LANES



DUAL LEFT TURN LANES

TYPICAL MARKINGS FOR LEFT TURN ISLANDS



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S.P. 002-617-021
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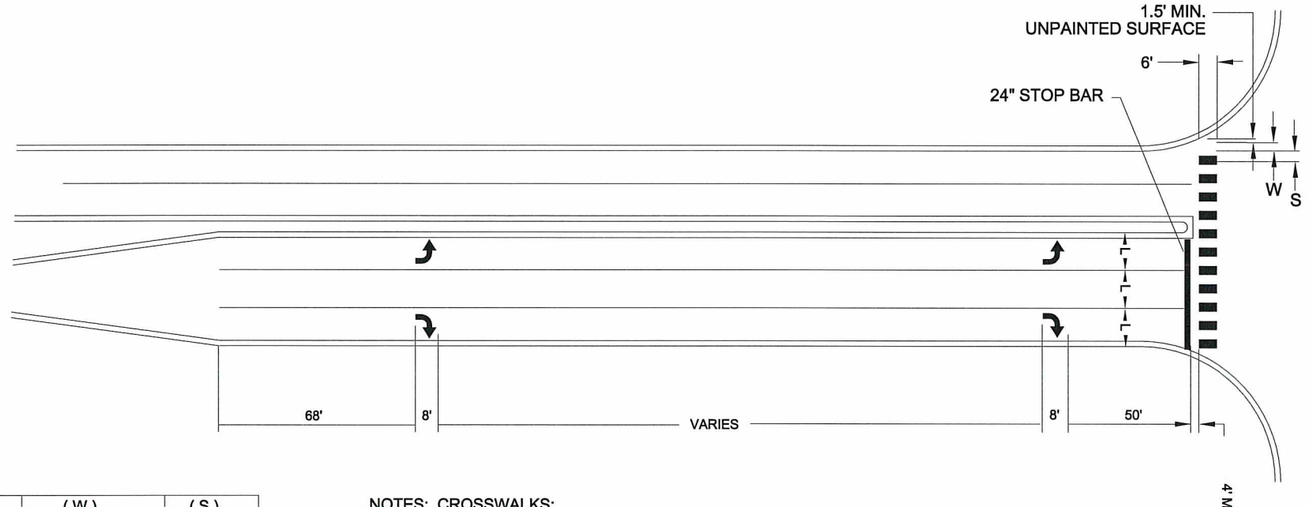
MARKINGS FOR PEDESTRIAN CROSSWALKS



(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 RAMPS ARE APPROXIMATE. FINAL LOCATIONS ARE TO BE DETERMINED AND FIELD VERFIED 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.

NO	DATE	BY	CKD	APPR	REVISION

NAME:

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S.P. 197-020-006
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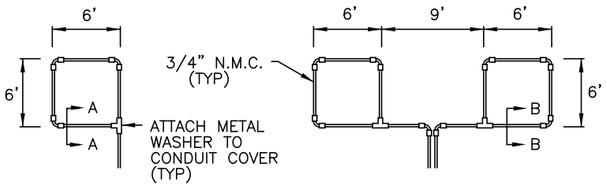
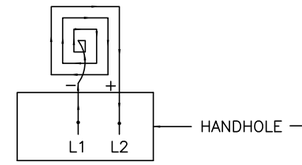
SIGNING & STRIPING DETAILS

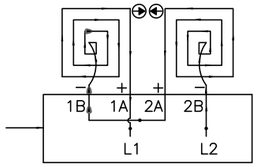
Sheet 67 of 86 Sheets





LOOP DETECTOR DETAIL 'A'

(LOOP PHASING FOR SINGLE CONNECTION)

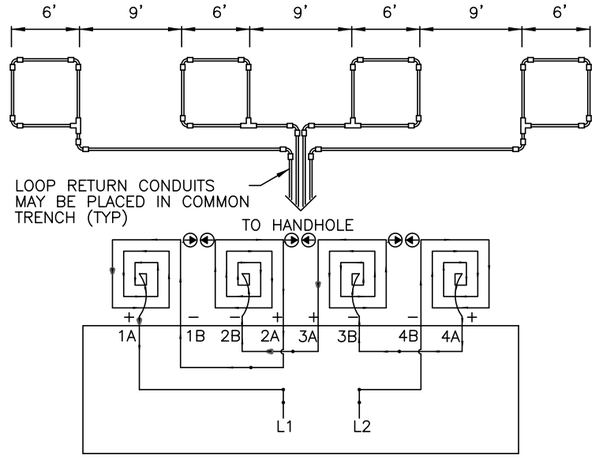


LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

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

LOOP DETECTOR DETAIL 'B'

(LOOP PHASING FOR SERIES CONNECTION)



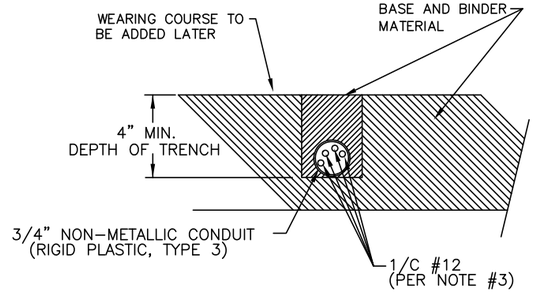
LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

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

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

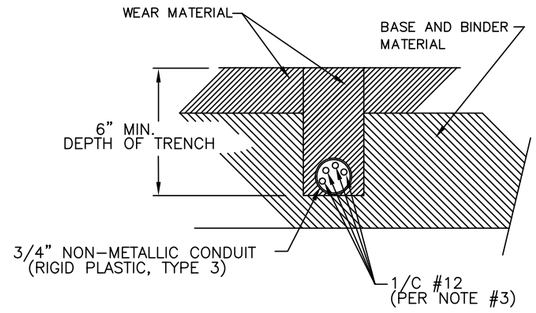
LOOP DETECTOR DETAIL 'C'

(LOOP PHASING FOR SERIES CONNECTION)



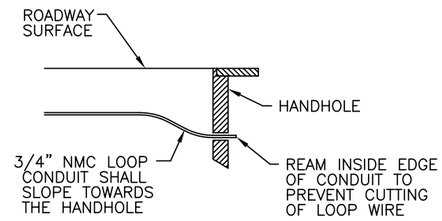
SECTION A–A

DETAIL FOR LOOP INSTALLATION IN NEW ROADWAY



SECTION B–B

DETAIL FOR LOOP INSTALLATION IN EXISTING ROADWAY



DRAINAGE DETAIL

LOOP DETECTOR WIRING

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

LEGEND OF SYMBOLS

CONTROLLER AND SERVICE EQUIP. NO's — A
SIGNAL BASE NO. — 1
SIGNAL FACE NO. — 1-1
LUMINAIRE NO. — 1
CONTROLLER AND CABINET
CONTROLLER AND CABINET – IN PLACE
HANDHOLE
HANDHOLE – IN PLACE
RIGID STEEL CONDUIT (RSC)
RIGID STEEL CONDUIT (RSC) – IN PLACE
SIGNAL FACE WITH BACKGROUND SHIELD
SIGNAL FACE W/O BACKGROUND SHIELD
SIGNAL FACE – IN PLACE
PEDESTRIAN INDICATORS
PEDESTRIAN INDICATORS – IN PLACE
PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE
PEDESTRIAN PUSH BUTTON STATION
TRAFFIC SIGNAL PEDESTAL
TRAFFIC SIGNAL PEDESTAL – INPLACE
TRAFFIC SIGNAL POLE AND MAST ARM
TRAFFIC SIGNAL POLE AND MAST ARM – IN PLACE
STREET LIGHT POLE AND LUMINAIRE
STREET LIGHT POLE AND LUMINAIRE – IN PLACE
MAST ARM AND LUMINAIRE
MAST ARM AND LUMINAIRE – INPLACE
WOOD POLE
WOOD POLE – IN PLACE
SOURCE OF POWER
RAILROAD SIGNAL – IN PLACE
RIGHT OF WAY LINE
CENTERLINE — 3
EDGE OF ROADWAY
SHOULDERLINE
CURB LINE
STOP BAR
EMERGENCY VEHICLE PREEMPTION DETECTOR

ABBREVIATIONS

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

CONDUCTOR COLOR CODE

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

TABULATION OF SIGNAL QUANTITIES

[N]

ITEM NO	ITEM	UNIT	TOTAL ESTIMATED QUANTITY	PARTICIPATION	
				SP 002-617-021	LOCAL FUNDS
2545	SERVICE CABINET	EACH	1		
2565	EMERGENCY VEHICLE PREEMPTION SYSTEM	LS	1		
2565	TRAFFIC CONTROL SIGNAL SYSTEM	SYSTEM	1		

TRAFFIC SIGNAL STANDARD PLATES

THESE TRAFFIC SIGNAL STANDARD PLATES AS APPROVED BY FHWA SHALL APPLY:

	PLATE NO.	DESCRIPTION
	8000 J	CHANNELIZERS, TYPE A, B, C (3 SHEETS)
	8111 E	TRAFFIC SIGNAL BRACKETING (PEDESTAL MOUNTED) (3 SHEETS)
(1)	8112 I	PEDESTAL FOUNDATION (FOR TRAFFIC CONTROL SIGNALS)
	8118 D	SERVICE EQUIPMENT & POLE-TRAFFIC CONTROL SIGNALS
	8119 C	GROUND MOUNTED CABINET FOUNDATION
	8121 H	TRANSFORMER BASE & POLE BASE PLATE (2 SHEETS)
	8122 F	PEDESTAL AND PEDESTAL BASE (FOR TRAFFIC CONTROL SIGNALS SUPPORT) (2 SHEETS)
	8123 G	POLE & MAST ARM-LUMINAIRES & TRAFFIC LIGHTS ASSEMBLY (2 SHEETS)
(2)	8126 L	POLE FOUNDATION (PA90 & PA100)
	8129 A	SHIM AND WASHER (TRAFFIC CONTROL SIGNALS AND ROADWAY LIGHTING)

(1) INSTALL PEDESTAL FOUNDATIONS 60" (5-FEET) BELOW GROUND LINE.

(2) SEE SPECIAL PROVISIONS FOR FOUNDATION MODIFICATION REQUIREMENTS.

S.P. 002-617-021

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

NO.	BY	DATE	REVISIONS

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Date: August 14, 2018 Name: John M Gray, PE Lic. No. 22457

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

ANOKA COUNTY
CITIES OF COLUMBUS AND HAM LAKE

TRAFFIC SIGNAL SYSTEM
DETAILS AND STANDARD PLATES
CSAH 17 (LEXINGTON AVE NE)
AT CSAH 18 (WEST BROADWAY AVE)

FILE NO. ANOKC 146389
SIGNAL SHEET 1 OF 8

68
86

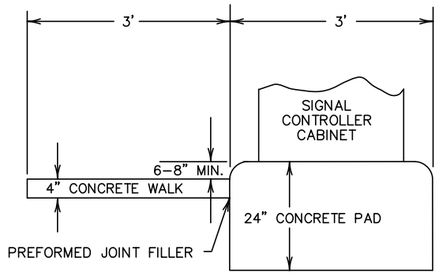
TYPICAL PAD WITH CONTROLLER CABINET AND SERVICE CABINET

SEE INTERSECTION LAYOUT FOR CABLE INFORMATION (NOT TO SCALE)

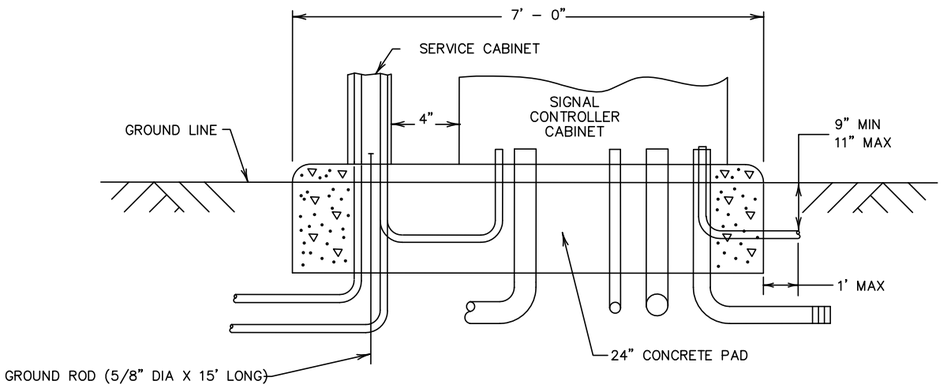
NOTES:

1. THE ANCHOR RODS, NUTS AND WASHERS FOR THE COUNTY FURNISHED CONTROLLER AND CABINET SHALL BE FURNISHED BY THE COUNTY AND INSTALLED BY THE CONTRACTOR.
2. THE UPPER PART OF THE NEW EQUIPMENT PAD SHALL BE BEVELLED OR CHAMFERED IN A NEAT MANNER AS DIRECTED BY THE ENGINEER.
3. THE TOP OF THE CONDUITS SHALL BE THREADED AND CAPPED AFTER INSTALLATION (UNTIL CABLES ARE INSTALLED).
4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE CONCRETE AND SHALL BE LOCATED INSIDE OF THE CABINET WHERE DIRECTED BY THE ENGINEER, BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
5. CONCRETE MIX 3F52 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PAD AND SIDEWALK.
6. CONDUITS WITH BOTH ENDS TERMINATING WITHIN THE PAD SHALL NOT BE INSTALLED BELOW THE CONCRETE.
7. THE EXACT LOCATION OF CONDUITS WITHIN THE PAD SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
8. ANCHOR RODS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
9. CONTRACTOR SHALL PROVIDE MINIMUM 4-INCH CLEARANCE BETWEEN CONTROLLER AND SERVICE CABINETS ON THE EQUIPMENT PAD FOUNDATION AS SHOWN.

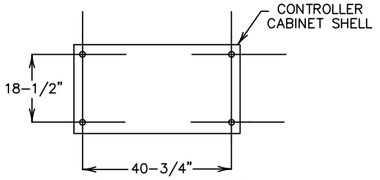
SIDE VIEW



FRONT VIEW

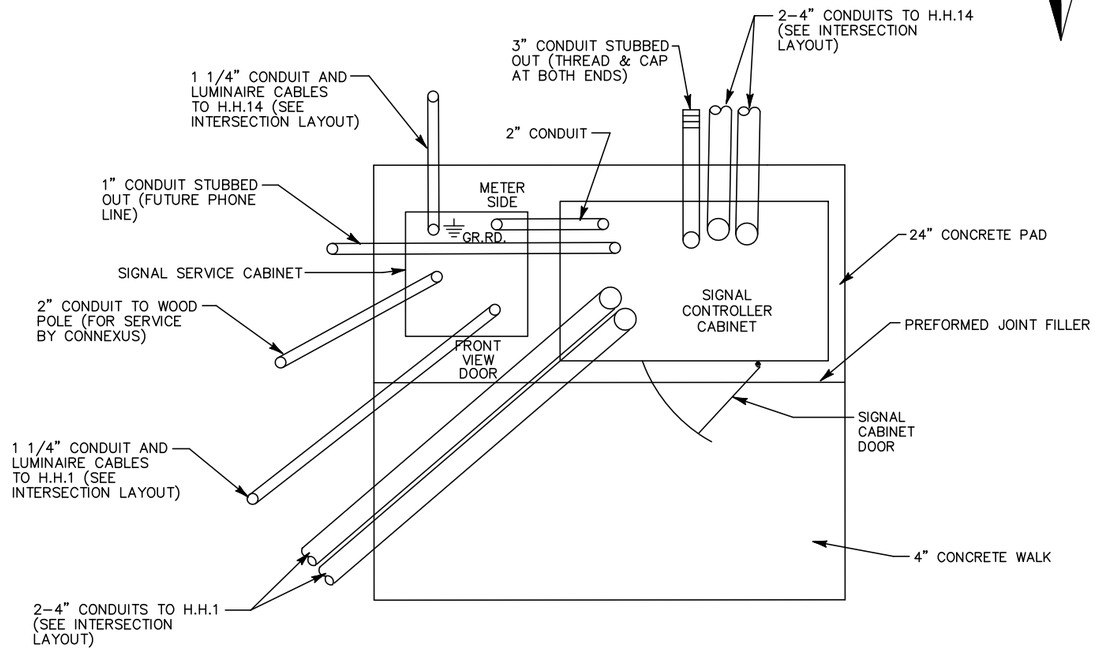


CONTROLLER CABINET TYPE "P" & "R" BOLT PATTERN



PLAN VIEW

CSAH 17 (LEXINGTON AVE) AT CSAH 18 (W BROADWAY AVE)



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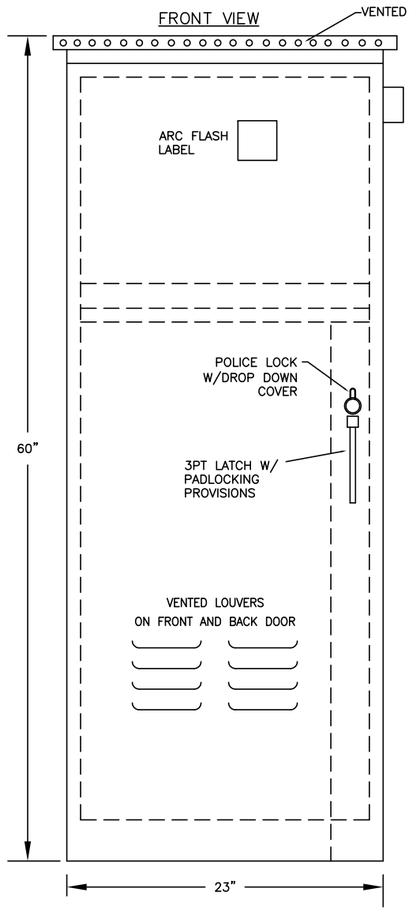
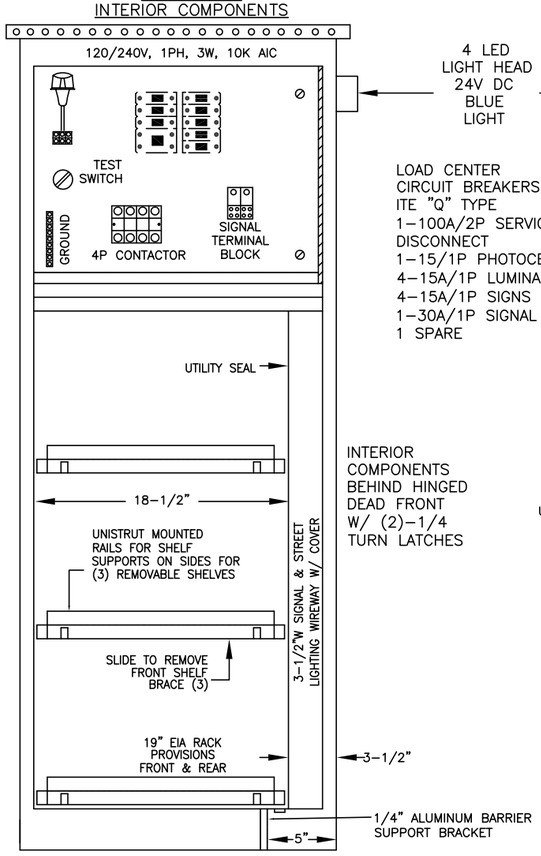
ANOKA COUNTY
CITIES OF COLUMBUS AND HAM LAKE

TRAFFIC SIGNAL SYSTEM
EQUIPMENT PAD DETAILS
CSAH 17 (LEXINGTON AVE NE) AT CSAH 18 (WEST BROADWAY AVE)

FILE NO. ANOKC 146389
SIGNAL SHEET 2 OF 8
69 / 86

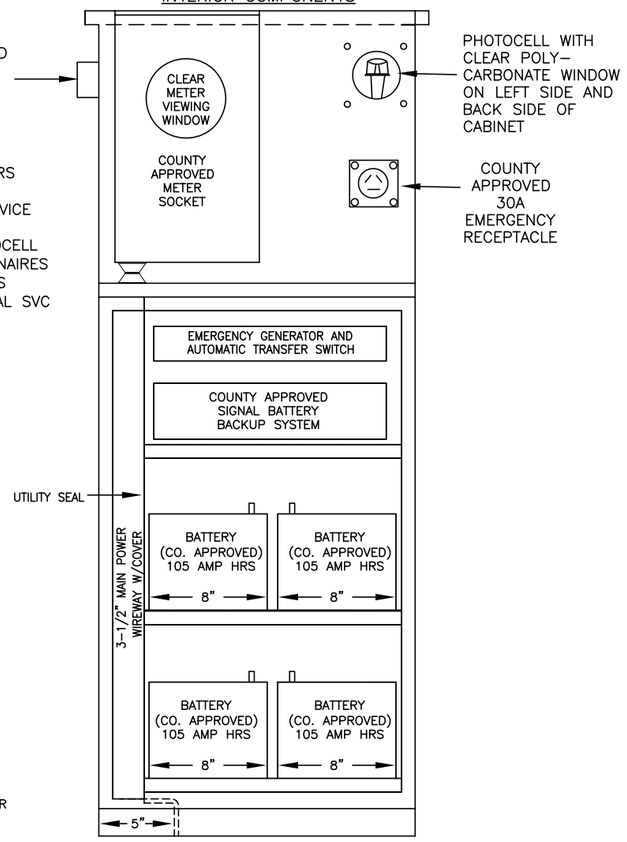




4 LED LIGHT HEAD
24V DC
BLUE LIGHT

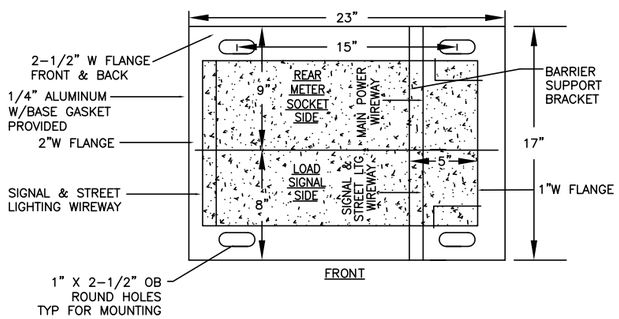
LOAD CENTER
CIRCUIT BREAKERS
ITE "Q" TYPE
1-100A/2P SERVICE DISCONNECT
1-15/1P PHOTOCELL
4-15A/1P LUMINAIRES
4-15A/1P SIGNS
1-30A/1P SIGNAL SVC
1 SPARE

INTERIOR COMPONENTS BEHIND HINGED DEAD FRONT W/ (2)-1/4 TURN LATCHES



PHOTOCELL WITH CLEAR POLY-CARBONATE WINDOW ON LEFT SIDE AND BACK SIDE OF CABINET

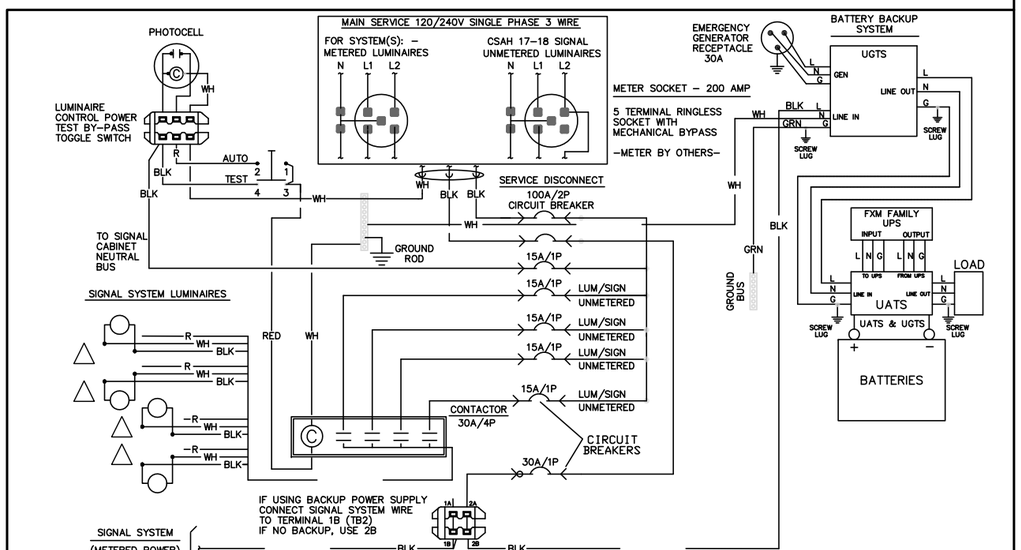
COUNTY APPROVED 30A EMERGENCY RECEPTACLE



CABINET CONSTRUCTION

-NEMA 3R
-1/8" ALUMINUM 5052-H32
-ANODIZED 30 MINUTE CLEAR
-NEOPRENE GASKETED DOORS
-NON-CORRODING HARDWARE
-ETL LISTED IN ACCORDANCE W/UL508A

SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES REGARDING SEPARATE PAY ITEM FOR FURNISHING & INSTALLING NEW BATTERY BACK-UP SIGNAL SERVICE CABINET.



FEED POINT WIRING DIAGRAM

S.P. 002-617-021

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

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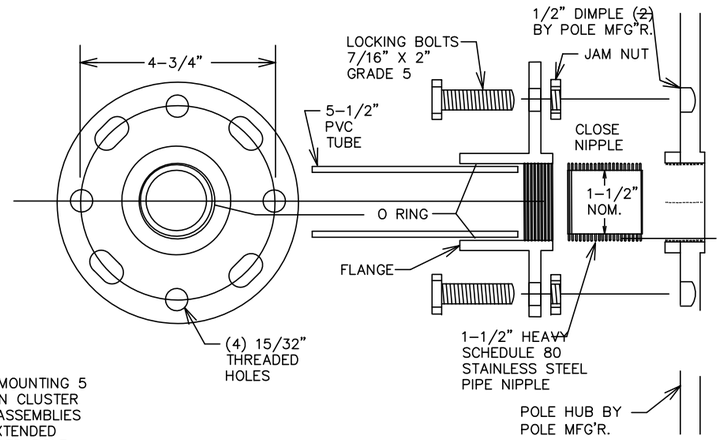
Date: August 14, 2018
Name: John M Gray, PE
Lic. No. 22457

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

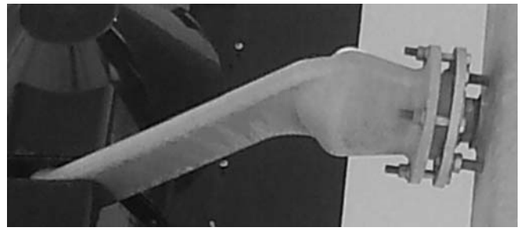
ANOKA COUNTY
CITIES OF COLUMBUS AND HAM LAKE

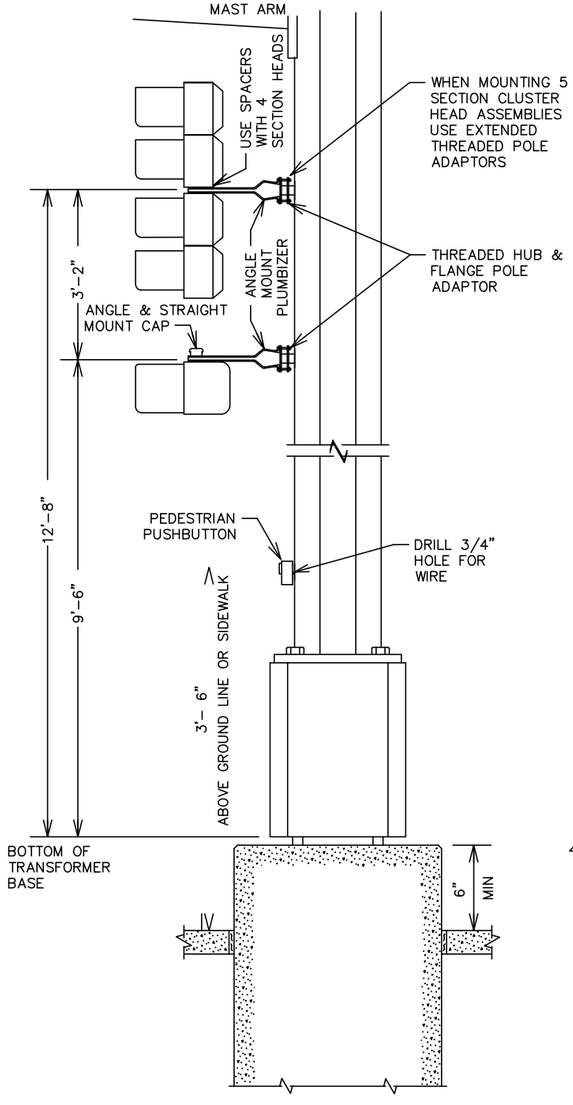
TRAFFIC SIGNAL SYSTEM
SIGNAL SERVICE CABINET DETAILS
CSAH 17 (LEXINGTON AVE NE)
AT CSAH 18 (WEST BROADWAY AVE)

FILE NO. ANOKC 146389
SIGNAL SHEET 3 OF 8



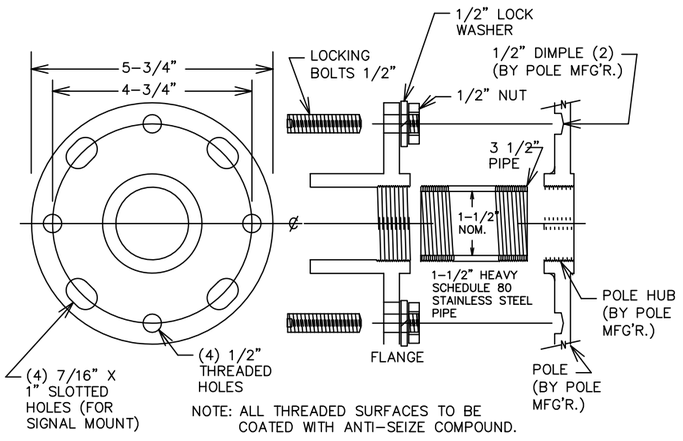
THREADED HUB AND FLANGE POLE ADAPTOR





TYPICAL SIGNAL POLE MOUNTING

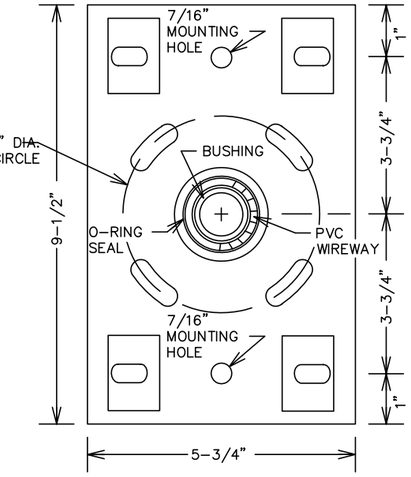
NOT TO SCALE



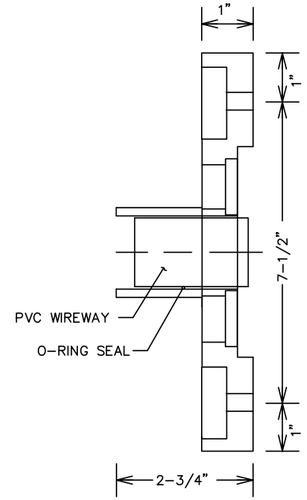
NOTE: ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.

EXTENDED THREADED POLE ADAPTER

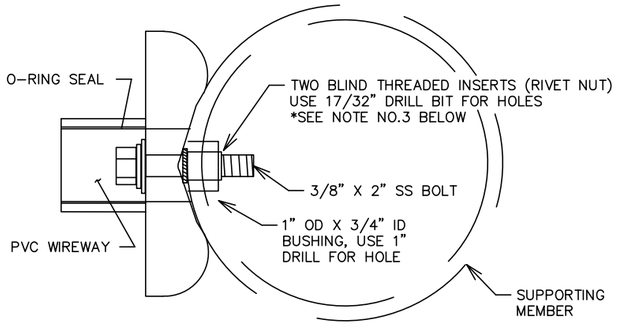
NOTES:
1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
3. SEE STANDARD PLATE NUMBER 8123 FOR ADDITIONAL SIGNAL POLE DETAILS.
4. EXTENDED THREADED POLE ADAPTOR ONLY USED WITH 5 SECTION CLUSTER HEADS.



BOLT ON HUB & FLANGE

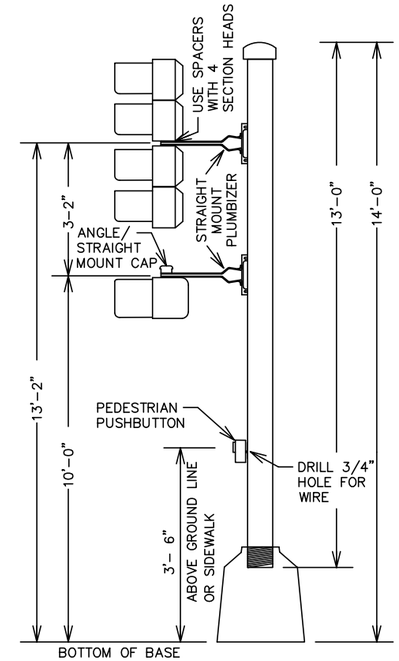


SIDE VIEW



TOP VIEW

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



TYPICAL PEDESTAL MOUNTING

NOT TO SCALE

S.P. 002-617-021

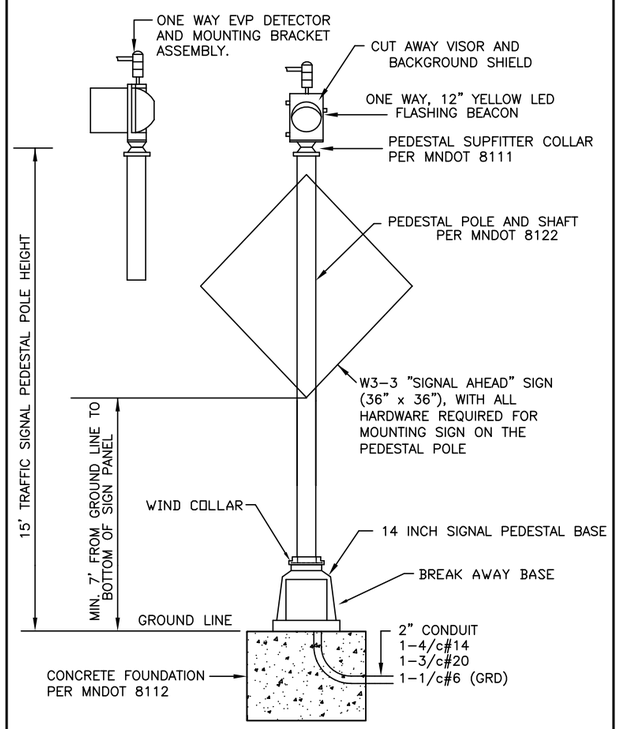
DRAWN BY: JMG DESIGNER: JMG CHECKED BY: JMG DESIGN TEAM	NO.	BY	DATE	REVISIONS	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. Date: August 14, 2018 Name: John M Gray, PE Lic. No. 22457	SEH PHONE: (651) 490-2000 3535 VADNAIS CENTER DR. ST. PAUL, MN 55110	ANOKA COUNTY CITIES OF COLUMBUS AND HAM LAKE	TRAFFIC SIGNAL SYSTEM ONE-WAY POLE MOUNT DETAILS CSAH 17 (LEXINGTON AVE NE) AT CSAH 18 (WEST BROADWAY AVE)	FILE NO. ANOKC 146389 SIGNAL SHEET 4 OF 8	71 86

SIGNS FOR TRAFFIC SIGNAL SYSTEM									
SIGN PANELS TYPE C (SIGNALS) (FURNISH & INSTALL)									
SIGN PANEL	POLE NO.	a (FT)	b (FT)	SIZE (IN)	MOUNTING BRACKET QUANTITY	MOUNTING BRACKET SPACING (1)	UNIT AREA (SQ FT)	NO. REQ.	PANEL LEGEND
R10-X12	2, 4	1'	–	42 x 48	2	---	14.00	2	Left Turn Yield on Flashing Yellow Arrow
W3-3	5	–	–	36 x 36	①	---	9.00	1	Signal Ahead
TOTAL QUANTITIES							37.00	3	

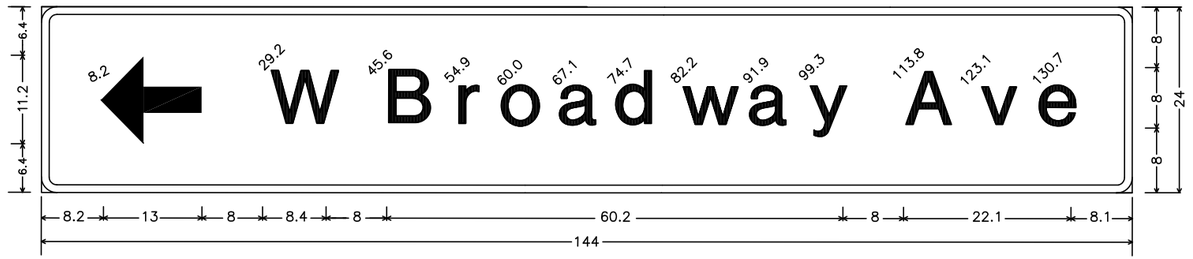
SIGNS FOR TRAFFIC SIGNAL SYSTEM									
SIGN PANELS TYPE D (SIGNALS) (FURNISH & INSTALL)									
SIGN PANEL	POLE NO.	a (FT)	b (FT)	SIZE (IN)	MOUNTING BRACKET QUANTITY	MOUNTING BRACKET SPACING (1)	UNIT AREA (SQ FT)	NO. REQ.	PANEL LEGEND
D-1	2	–	18'	144 x 36	5	---	36.00	1	W Broadway Ave w/Left Arrow
D-2	3	8'	–	126 x 24	5	---	21.00	1	Lexington Ave NE
D-3	4	–	18'	144 x 36	5	---	36.00	1	W Broadway Ave w/Right Arrow
TOTAL QUANTITIES							93.00	3	

(1) = SPACING BETWEEN STIFFENERS SHALL NOT EXCEED 36 INCHES AND SHALL BE UNIFORMLY SPACED. SEE STANDARD SIGNS MANUAL, CURRENT EDITION, PAGE 105A FOR BRACKET SPACING REQUIREMENTS.

PEDESTAL POLE MOUNTED EVP/ADVANCE FLASHER

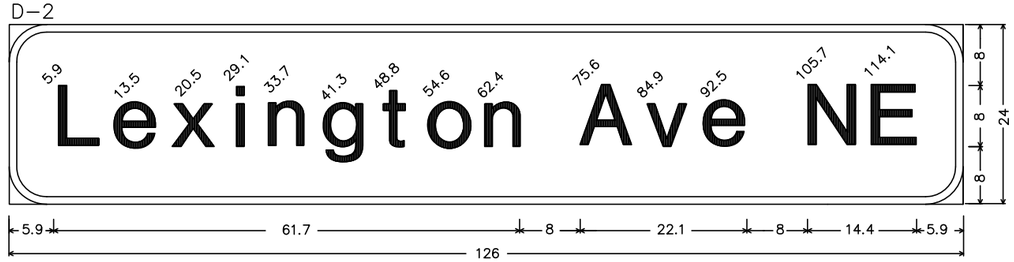


D-1

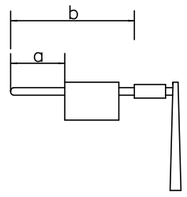


3.0" Radius, 1.0" Border, White on Green
Arrow 5 – 13.0" 180°, (W Broadway Ave) E Mod.

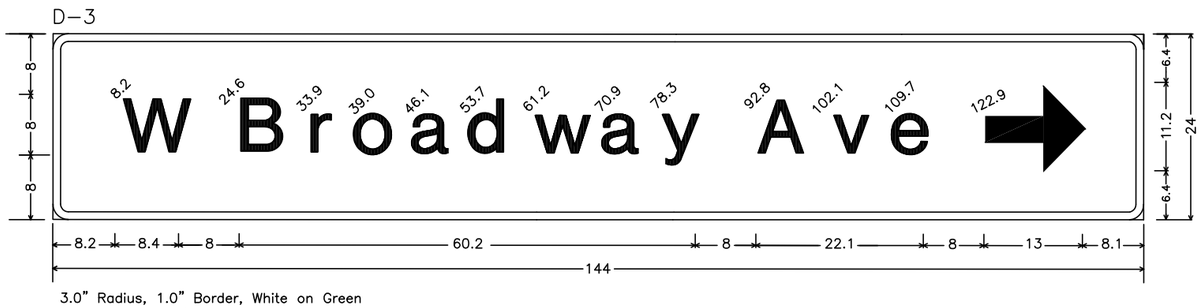
D-2



3.0" Radius, 1.0" Border, White on Green
(Lexington Avenue NE) E Mod;



D-3



3.0" Radius, 1.0" Border, White on Green
(W Broadway Ave) E Mod., Arrow 5–13.0" 0°

GENERAL SIGNING NOTES:

1) COLOR FOR ALL TYPE D SIGNS SHALL BE WHITE LEGEND AND BORDER ON GREEN BACKGROUND, FULLY REFLECTORIZED.
2) CORNERS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED. CORNERS OF STANDARD SIGN PANELS WITH MARGINS SHALL BE TRIMMED.
3) FOR STRUCTURAL DETAILS OF MAST ARM MOUNTED SIGNS, SEE STANDARD SIGNS MANUAL, CURRENT EDITION, PAGE 105A, AND SPECIAL PROVISIONS.
4) SEE STANDARD SIGNS MANUAL FOR DETAILED DRAWINGS OF TYPE C SIGN PANELS.
5) FURNISHING AND INSTALLING NEW TYPE C AND TYPE D SIGNS SHALL BE INCLUDED AS PART OF BID ITEM FOR "TRAFFIC CONTROL SIGNAL SYSTEM". SEE SPECIAL PROVISIONS.
6) MAST ARM POLE MOUNTED AND PEDESTAL POLE MOUNTED SIGN PANELS SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR USING CONTRACTOR FURNISHED AND INSTALLED MOUNTING HARDWARE.
7) ① = INSTALL SIGN PANEL ON TRAFFIC SIGNAL PEDESTAL POLE.
8) SEE STANDARD SIGNS MANUAL FOR ARROW DETAILS.
9) ALL NEW TYPE C AND D SIGN PANELS SHALL BE FABRICATED USING HP SHEETING. SEE SPECIAL PROVISIONS.

S.P. 002-617-021

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DESIGNER: JMG
CHECKED BY: JMG
DESIGN TEAM

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ANOKA COUNTY
CITIES OF COLUMBUS AND HAM LAKE

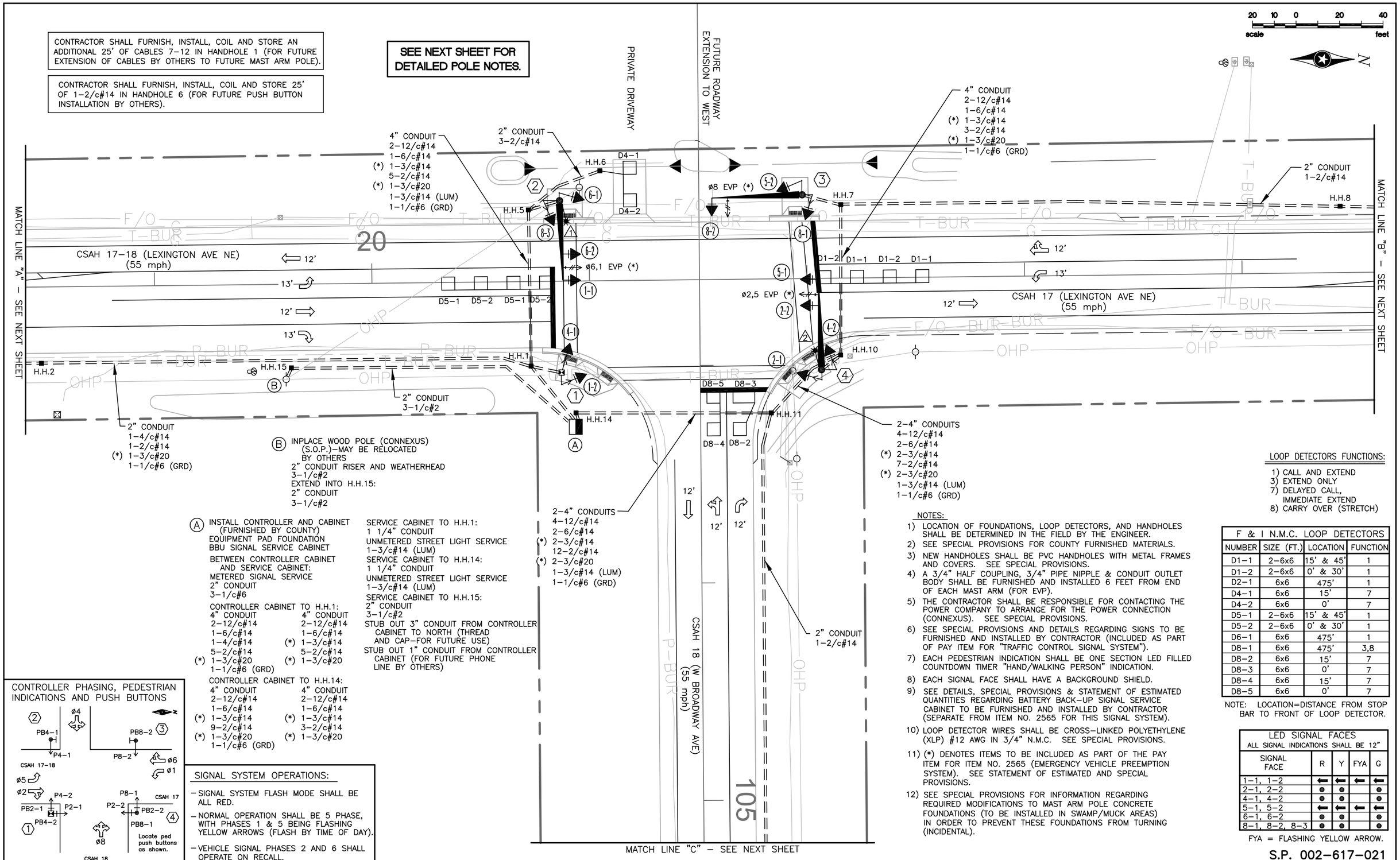
TRAFFIC SIGNAL SYSTEM
SIGNING AND MISCELLANEOUS DETAILS
CSAH 17 (LEXINGTON AVE NE)
AT CSAH 18 (WEST BROADWAY AVE)

FILE NO. ANOKC 146389
SIGNAL SHEET 5 OF 8
72/86

CONTRACTOR SHALL FURNISH, INSTALL, COIL AND STORE AN ADDITIONAL 25' OF CABLES 7–12 IN HANDHOLE 1 (FOR FUTURE EXTENSION OF CABLES BY OTHERS TO FUTURE MAST ARM POLE).

CONTRACTOR SHALL FURNISH, INSTALL, COIL AND STORE 25' OF 1–2/c#14 IN HANDHOLE 6 (FOR FUTURE PUSH BUTTON INSTALLATION BY OTHERS).

SEE NEXT SHEET FOR DETAILED POLE NOTES.



(B) INPLACE WOOD POLE (CONNEXUS) (S.O.P.)–MAY BE RELOCATED BY OTHERS
2" CONDUIT RISER AND WEATHERHEAD
3–1/c#2
EXTEND INTO H.H.15:
2" CONDUIT
3–1/c#2

(A) INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)
EQUIPMENT PAD FOUNDATION
BBU SIGNAL SERVICE CABINET
BETWEEN CONTROLLER CABINET AND SERVICE CABINET:
METERED SIGNAL SERVICE
2" CONDUIT
3–1/c#6

CONTROLLER CABINET TO H.H.1:

4" CONDUIT	4" CONDUIT
2–12/c#14	2–12/c#14
1–6/c#14	1–6/c#14
1–4/c#14	(*) 1–3/c#14
5–2/c#14	5–2/c#14
(*) 1–3/c#20	(*) 1–3/c#20
1–1/c#6 (GRD)	

CONTROLLER CABINET TO H.H.14:

4" CONDUIT	4" CONDUIT
2–12/c#14	2–12/c#14
1–6/c#14	1–6/c#14
(*) 1–3/c#14	(*) 1–3/c#14
9–2/c#14	3–2/c#14
(*) 1–3/c#20	(*) 1–3/c#20
1–1/c#6 (GRD)	

SERVICE CABINET TO H.H.1:
1 1/4" CONDUIT
UNMETERED STREET LIGHT SERVICE
1–3/c#14 (LUM)
SERVICE CABINET TO H.H.14:
1 1/4" CONDUIT
UNMETERED STREET LIGHT SERVICE
1–3/c#14 (LUM)
SERVICE CABINET TO H.H.15:
2" CONDUIT
3–1/c#2
STUB OUT 3" CONDUIT FROM CONTROLLER CABINET TO NORTH (THREAD AND CAP–FOR FUTURE USE)
STUB OUT 1" CONDUIT FROM CONTROLLER CABINET (FOR FUTURE PHONE LINE BY OTHERS)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

SIGNAL SYSTEM OPERATIONS:

– SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.

– NORMAL OPERATION SHALL BE 5 PHASE, WITH PHASES 1 & 5 BEING FLASHING YELLOW ARROWS (FLASH BY TIME OF DAY).

– VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

LOOP DETECTORS FUNCTIONS:

1) CALL AND EXTEND
3) EXTEND ONLY
7) DELAYED CALL, IMMEDIATE EXTEND
8) CARRY OVER (STRETCH)

NOTES:

1) LOCATION OF FOUNDATIONS, LOOP DETECTORS, AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS.
4) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE & CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM END OF EACH MAST ARM (FOR EVP).
5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION (CONNEXUS). SEE SPECIAL PROVISIONS.
6) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCLUDED AS PART OF PAY ITEM FOR "TRAFFIC CONTROL SIGNAL SYSTEM").
7) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION LED FILLED COUNTDOWN TIMER "HAND/WALKING PERSON" INDICATION.
8) EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
9) SEE DETAILS, SPECIAL PROVISIONS & STATEMENT OF ESTIMATED QUANTITIES REGARDING BATTERY BACK–UP SIGNAL SERVICE CABINET TO BE FURNISHED AND INSTALLED BY CONTRACTOR (SEPARATE FROM ITEM NO. 2565 FOR THIS SIGNAL SYSTEM).
10) LOOP DETECTOR WIRES SHALL BE CROSS–LINKED POLYETHYLENE (XLP) #12 AWG IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
11) (*) DENOTES ITEMS TO BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (EMERGENCY VEHICLE PREEMPTION SYSTEM). SEE STATEMENT OF ESTIMATED AND SPECIAL PROVISIONS.
12) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING REQUIRED MODIFICATIONS TO MAST ARM POLE CONCRETE FOUNDATIONS (TO BE INSTALLED IN SWAMP/MUCK AREAS) IN ORDER TO PREVENT THESE FOUNDATIONS FROM TURNING (INCIDENTAL).

F & I N.M.C. LOOP DETECTORS

NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1–1	2–6x6	15' & 45'	1
D1–2	2–6x6	0' & 30'	1
D2–1	6x6	475'	1
D4–1	6x6	15'	7
D4–2	6x6	0'	7
D5–1	2–6x6	15' & 45'	1
D5–2	2–6x6	0' & 30'	1
D6–1	6x6	475'	1
D8–1	6x6	475'	3,8
D8–2	6x6	15'	7
D8–3	6x6	0'	7
D8–4	6x6	15'	7
D8–5	6x6	0'	7

NOTE: LOCATION=DISTANCE FROM STOP BAR TO FRONT OF LOOP DETECTOR.

LED SIGNAL FACES
ALL SIGNAL INDICATIONS SHALL BE 12"

SIGNAL FACE	R	Y	FYA	G
1–1, 1–2	←	←	←	←
2–1, 2–2	●	●		●
4–1, 4–2	●	●		●
5–1, 5–2	←	←	←	←
6–1, 6–2	●	●		●
8–1, 8–2, 8–3	●	●		●

FYA = FLASHING YELLOW ARROW.

S.P. 002–617–021

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DESIGNER: JMG
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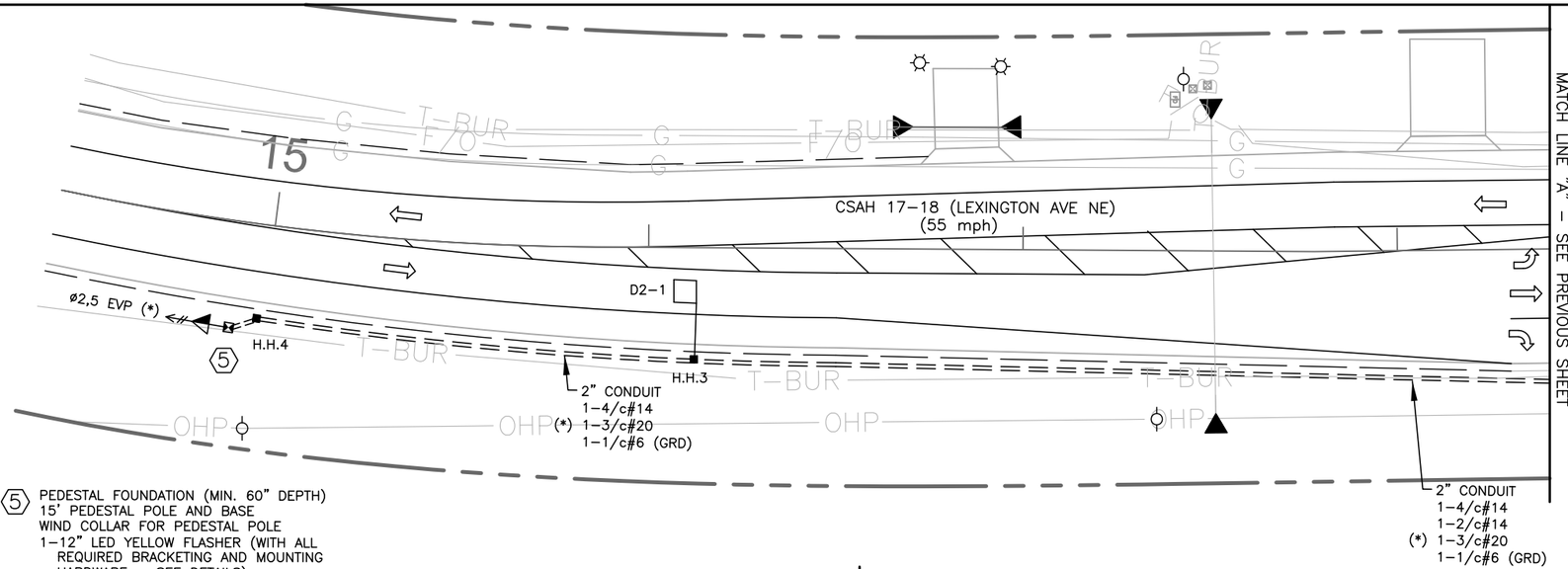
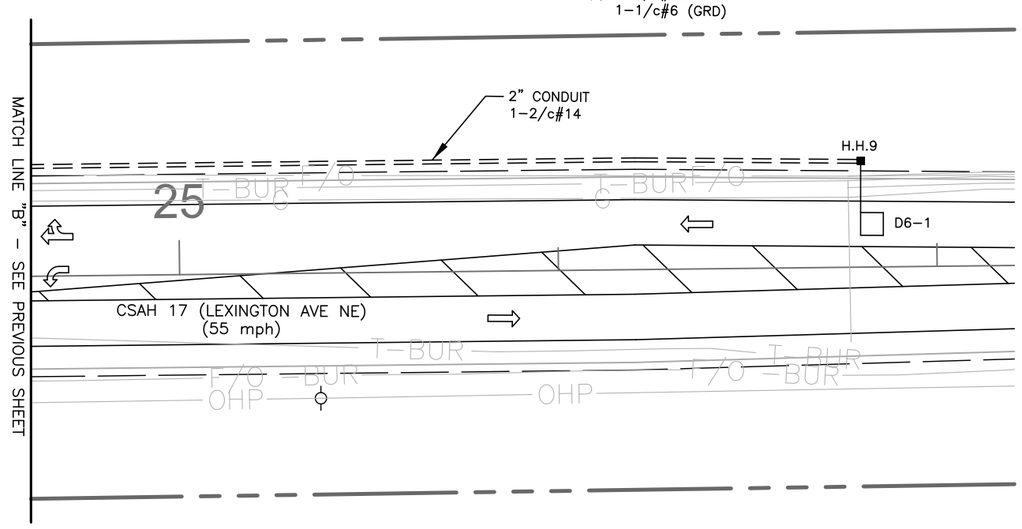
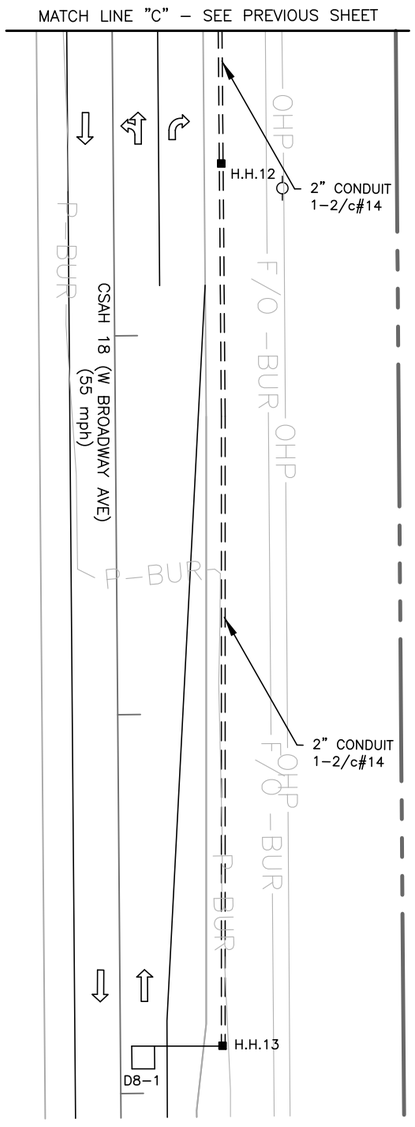
TRAFFIC SIGNAL SYSTEM
INTERSECTION LAYOUT
CSAH 17 (LEXINGTON AVE NE)
AT CSAH 18 (WEST BROADWAY AVE)

FILE NO. ANOKC 146389
SIGNAL SHEET 6 OF 8







20 10 0 20 40
scale feet

N

⑤ PEDESTAL FOUNDATION (MIN. 60" DEPTH)
15' PEDESTAL POLE AND BASE
WIND COLLAR FOR PEDESTAL POLE
1–12" LED YELLOW FLASHER (WITH ALL REQUIRED BRACKETING AND MOUNTING HARDWARE – SEE DETAILS)
(*) 1–ONE WAY EVP DETECTOR (ø2,5)–MOUNT ON TOP OF SLIPFITTER COLLAR
W3–3 SIGN PANEL–POLE MOUNTED
EXTEND INTO H.H.4:
2" CONDUIT
1–4/c#14
(*) 1–3/c#20
1–1/c#6 (GRD)

① PEDESTAL FOUNDATION (MIN. 60" DEPTH)
15' PEDESTAL POLE (INCLUDES BASE, WIND COLLAR)
2–STRAIGHT MOUNT SIGNALS–POLE MOUNTED
2–STRAIGHT MOUNT C.D. PED INDICATIONS–POLE MOUNTED
2–PEDESTRIAN PUSH BUTTONS & SIGNS (R10–3e)
EXTEND INTO H.H.1:
3" CONDUIT
2–12/c#14
1–6/c#14
2–2/c#14
2–1/c#6 (GRD)

② PA100 POLE FOUNDATION (SEE SPECIAL PROVISIONS)
TYPE PA100–A–35–D30–9 (DAVIT AT 350 DEG)
LUMINAIRE–LED
1–ANGLE MOUNT SIGNAL–OVERHEAD AT 0'
1–STRAIGHT MOUNT SIGNAL–OVERHEAD AT 11'
2–ANGLE MOUNT SIGNALS–POLE MOUNTED 90 DEG AND 180 DEG
1–ANGLE MOUNT C.D. PED INDICATIONS–POLE MOUNTED 90 DEG
1–PEDESTRIAN PUSH BUTTON & SIGN (R10–3e)
R10–X12 SIGN PANEL–ADJACENT TO 1–1
TYPE D SIGN PANEL–OVERHEAD (D–1)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø6,1)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.5:
3" CONDUIT
2–12/c#14
1–6/c#14
(*) 1–3/c#14
2–2/c#14
(*) 1–3/c#20
1–3/c#14 (LUM)
1–1/c#6 (GRD)

③ PA100 POLE FOUNDATION (SEE SPECIAL PROVISIONS)
TYPE PA100–A–40
1–ANGLE MOUNT SIGNAL–OVERHEAD AT 0'
2–ANGLE MOUNT SIGNALS–POLE MOUNTED 90 DEG AND 180 DEG
1–ANGLE MOUNT C.D. PED INDICATIONS–POLE MOUNTED 180 DEG
1–PEDESTRIAN PUSH BUTTON & SIGN (R10–3e)
TYPE D SIGN PANEL–OVERHEAD (D–2)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø8)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.7:
3" CONDUIT
2–12/c#14
1–6/c#14
(*) 1–3/c#14
2–2/c#14
(*) 1–3/c#20
1–1/c#6 (GRD)

④ PA100 POLE FOUNDATION (SEE SPECIAL PROVISIONS)
TYPE PA100–A–40–D30–9 (DAVIT AT 350 DEG)
LUMINAIRE–LED
1–ANGLE MOUNT SIGNAL–OVERHEAD AT 0'
1–STRAIGHT MOUNT SIGNAL–OVERHEAD AT 11'
2–ANGLE MOUNT SIGNALS–POLE MOUNTED 90 DEG AND 180 DEG
2–ANGLE MOUNT C.D. PED INDICATIONS–POLE MOUNTED 90 DEG AND 180 DEG
2–PEDESTRIAN PUSH BUTTONS & SIGNS (R10–3e)
R10–X12 SIGN PANEL–ADJACENT TO 5–1
TYPE D SIGN PANEL–OVERHEAD (D–3)
(*) INSTALL ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (FURNISHED BY COUNTY (ø2,5)
(*) ONE WAY EVP MOUNTING HARDWARE (FOR COUNTY FURNISHED DETECTOR AND CONFIRMATION LIGHT)
EXTEND INTO H.H.10:
3" CONDUIT
2–12/c#14
1–6/c#14
(*) 1–3/c#14
2–2/c#14
(*) 1–3/c#20
1–3/c#14 (LUM)
2–1/c#6 (GRD)

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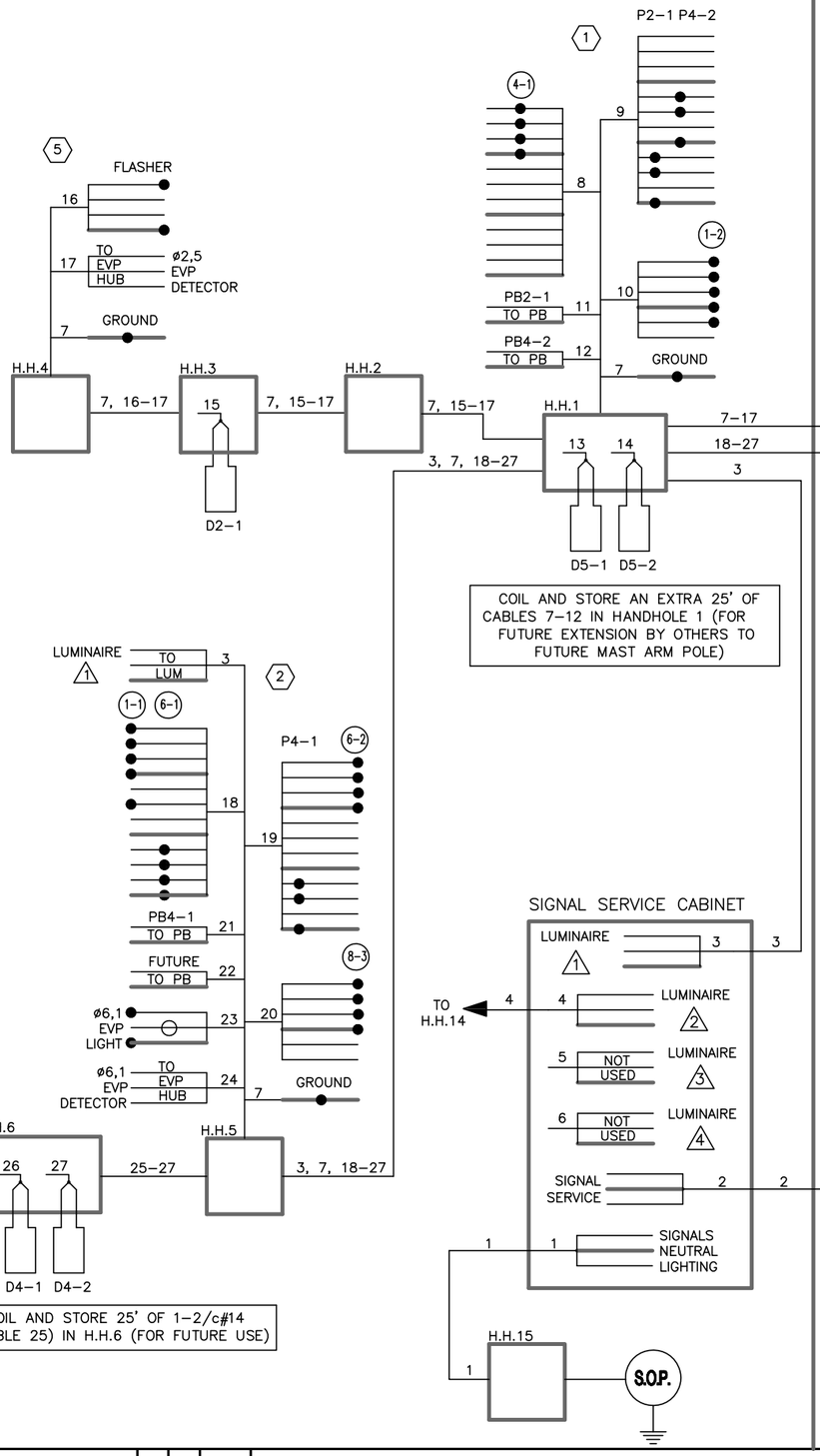
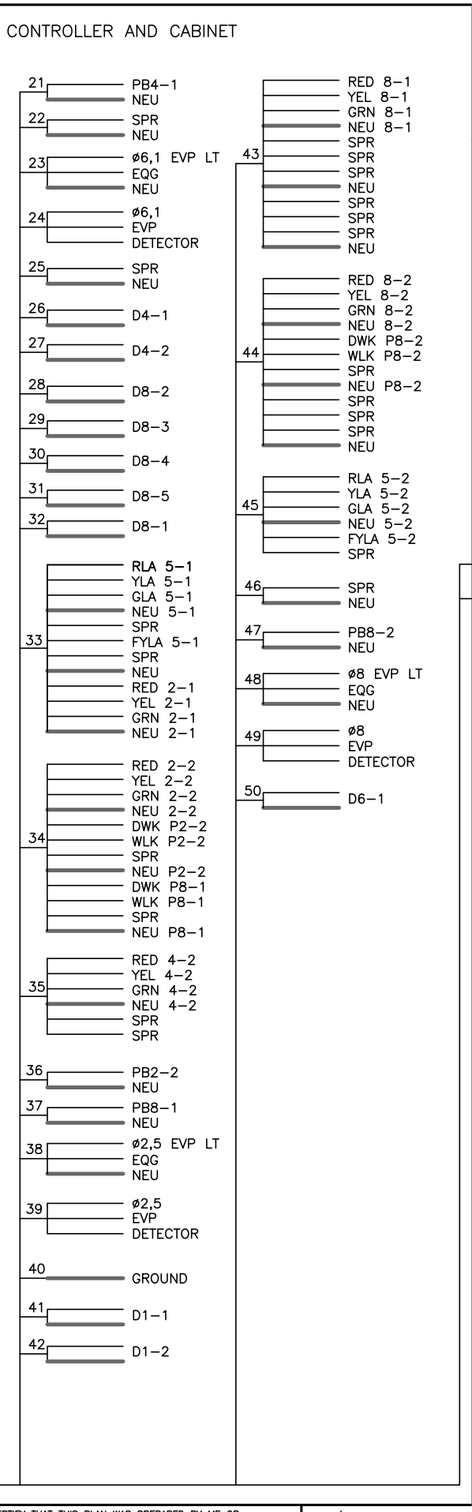
SIGNAL SHEET 7 OF 8
74 / 86

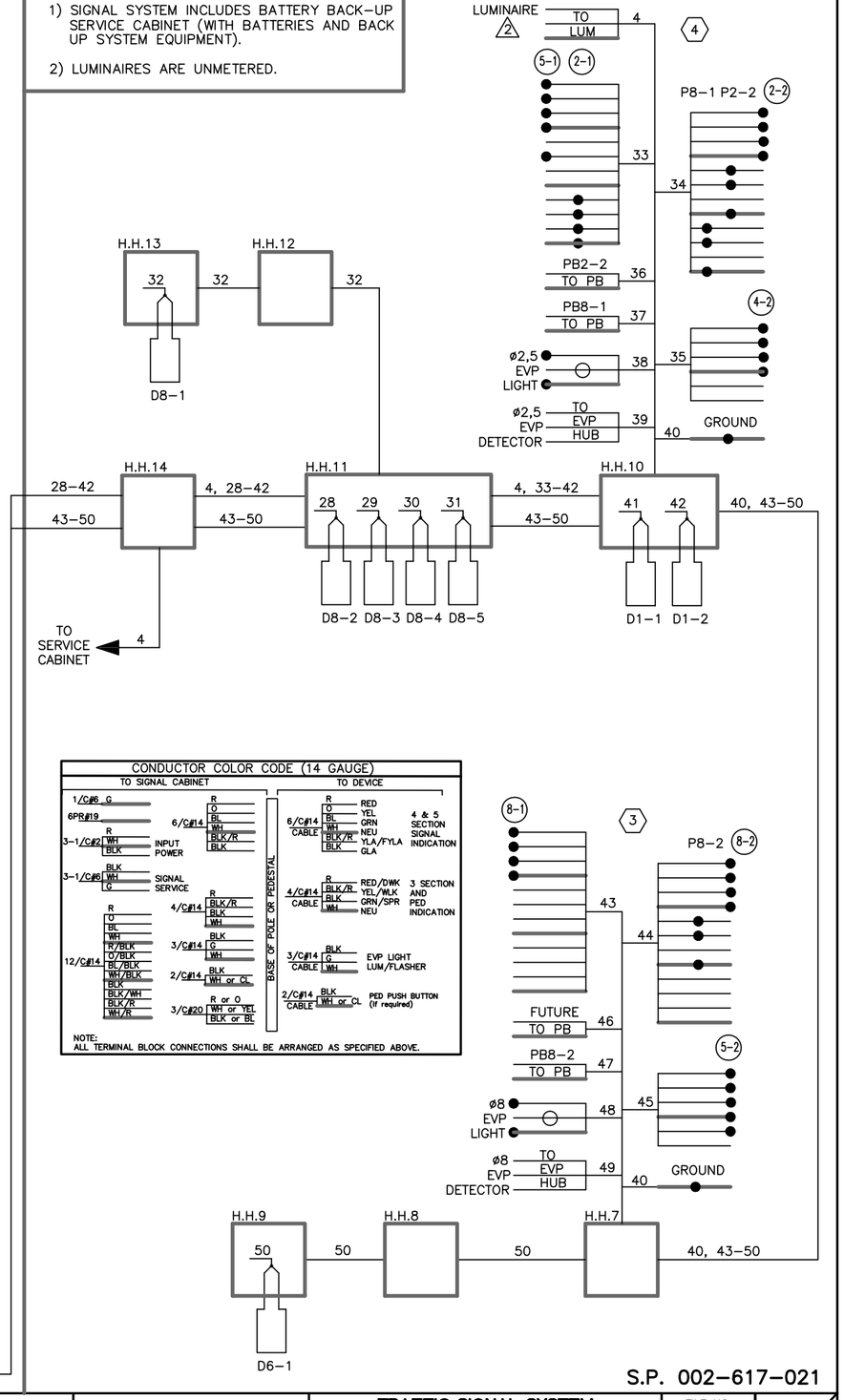




NOTES:

1) SIGNAL SYSTEM INCLUDES BATTERY BACK-UP SERVICE CABINET (WITH BATTERIES AND BACK UP SYSTEM EQUIPMENT).

2) LUMINAIRES ARE UNMETERED.



S.P. 002-617-021

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: August 14, 2018 Name: John M Gray, PE Lic. No. 22457

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

ANOKA COUNTY
CITIES OF COLUMBUS AND HAM LAKE

TRAFFIC SIGNAL SYSTEM FIELD WIRING DIAGRAM CSAH 17 (LEXINGTON AVE NE) AT CSAH 18 (WEST BROADWAY AVE)

FILE NO. ANOKC 146389

SIGNAL SHEET 8 OF 8

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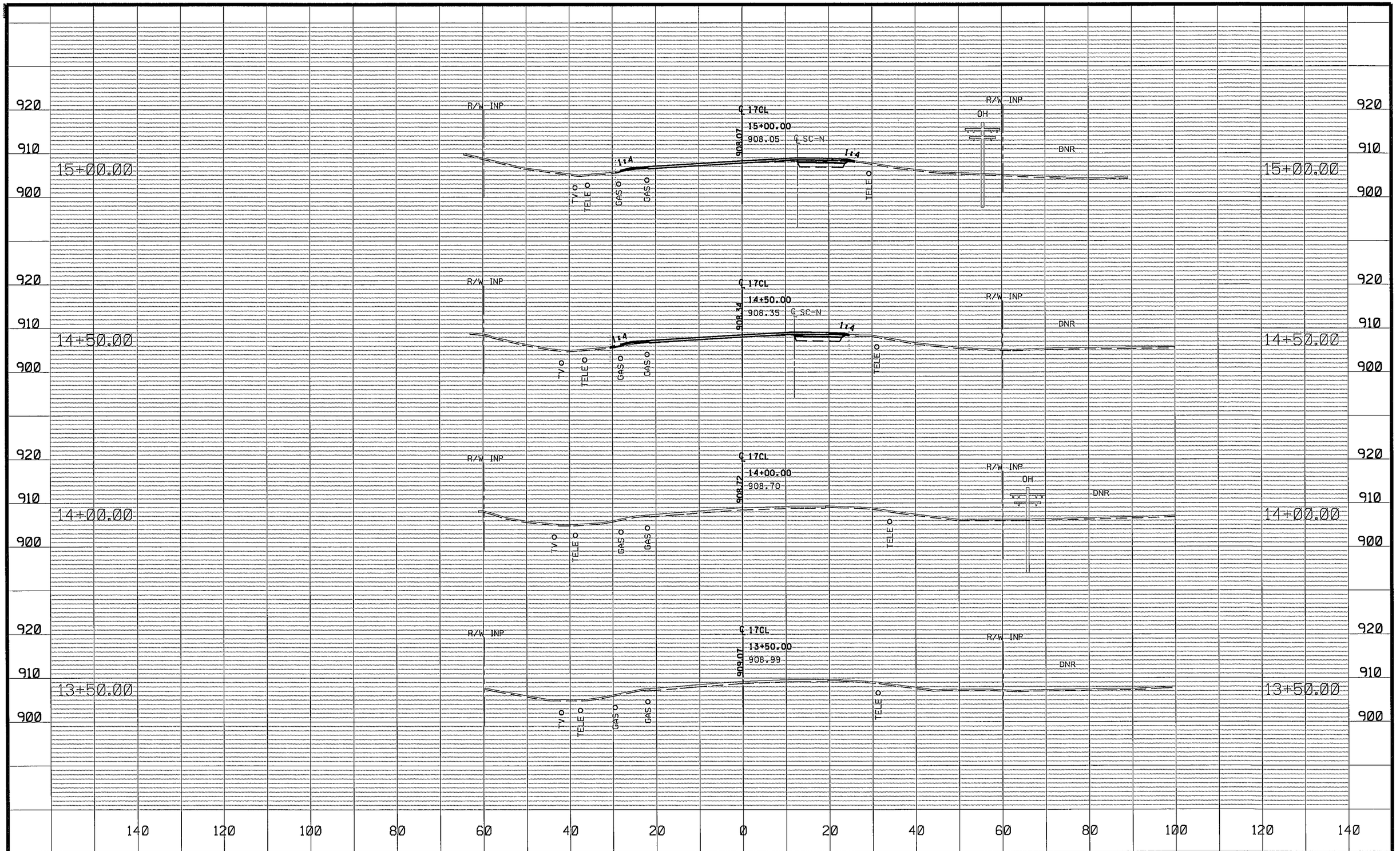

NO	DATE	BY	CKD	APPR	REVISION

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DRAWN BY EJM DATE 07-10-18

DESIGN BY EJM DATE 05-15-18

CHECKED BY GMP DATE 07-18-18

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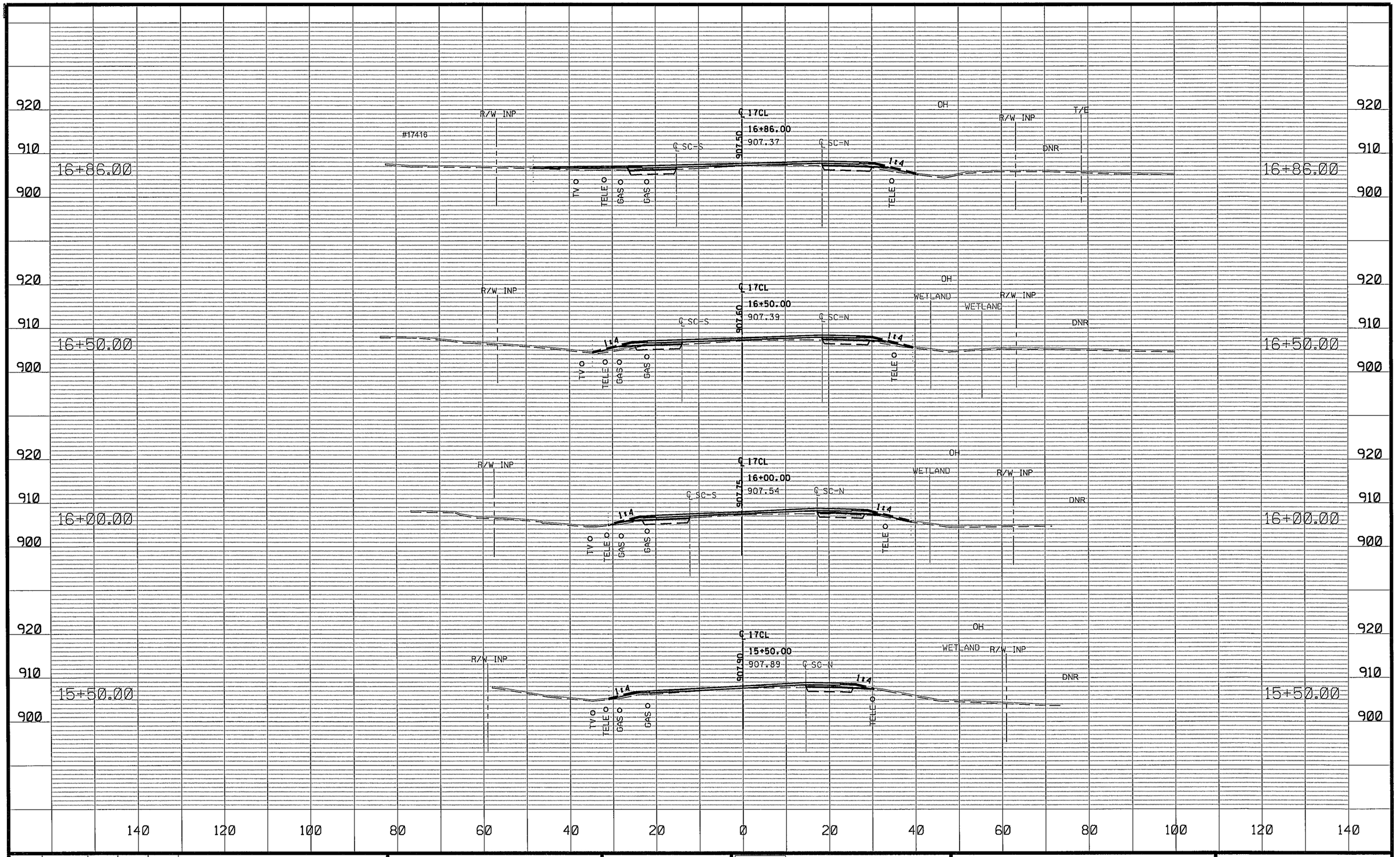
C.P. 2019-03

CROSS SECTIONS

STA 13+50.00 TO 15+00.00

Sheet 76 of 86 Sheets



NO	DATE	BY	CKD	APPR	REVISION

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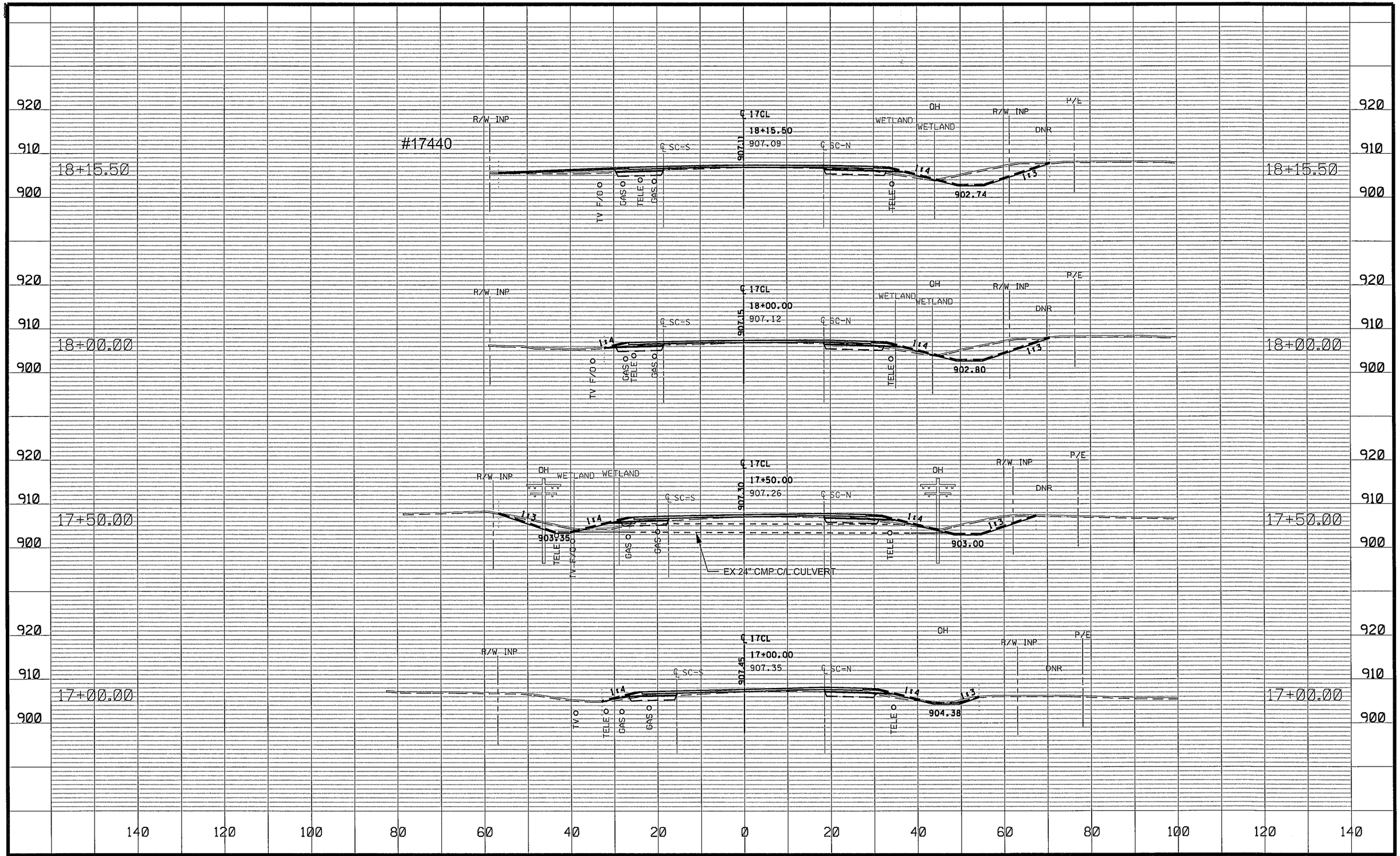
CROSS SECTIONS

STA 15+50.00 TO 16+86.00

Sheet 77 of 86 Sheets



NO	DATE	BY	CKD	APPR	REVISION

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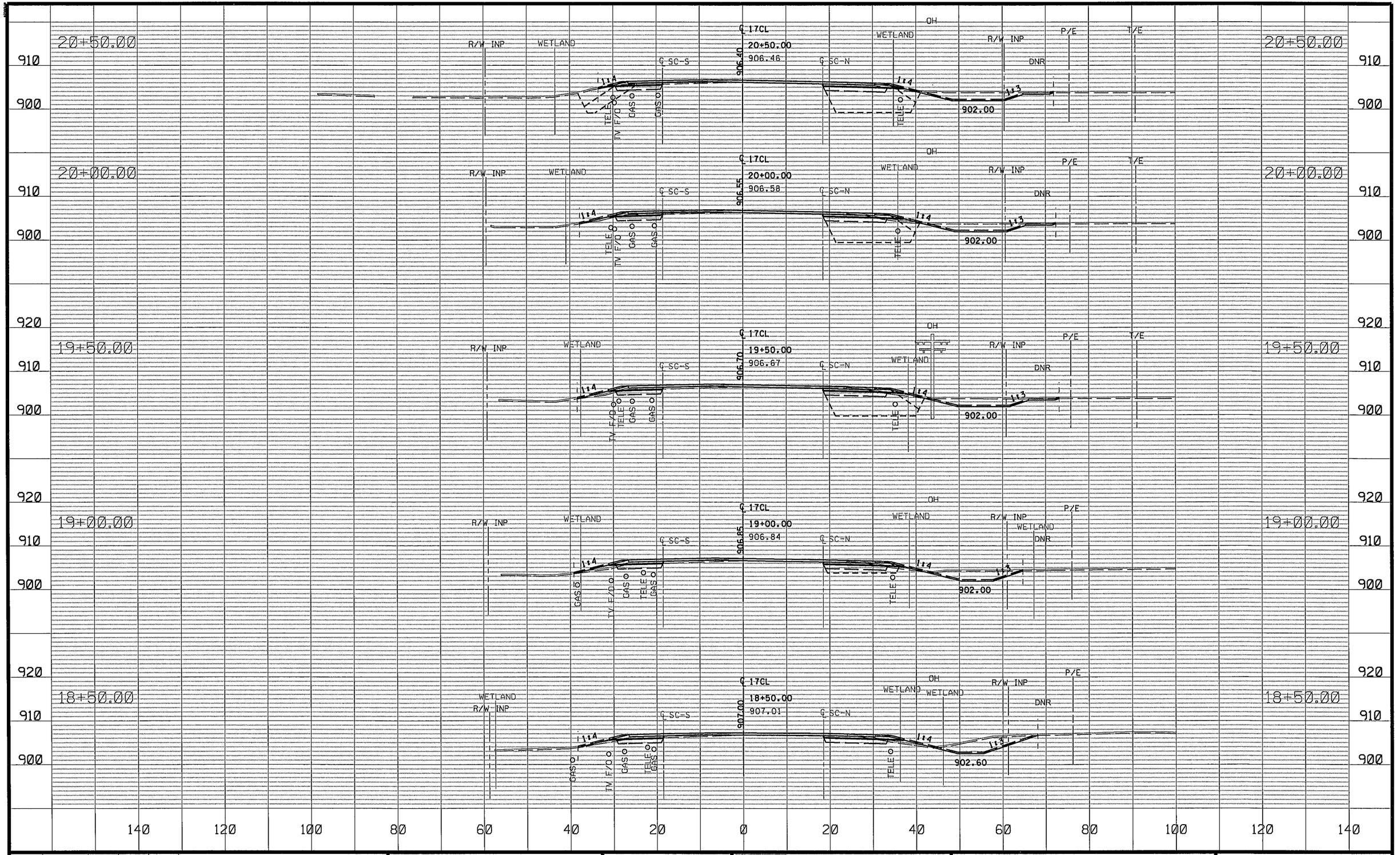
CROSS SECTIONS
STA 17+00.00 TO 18+15.50

Sheet 78 of 86 Sheets



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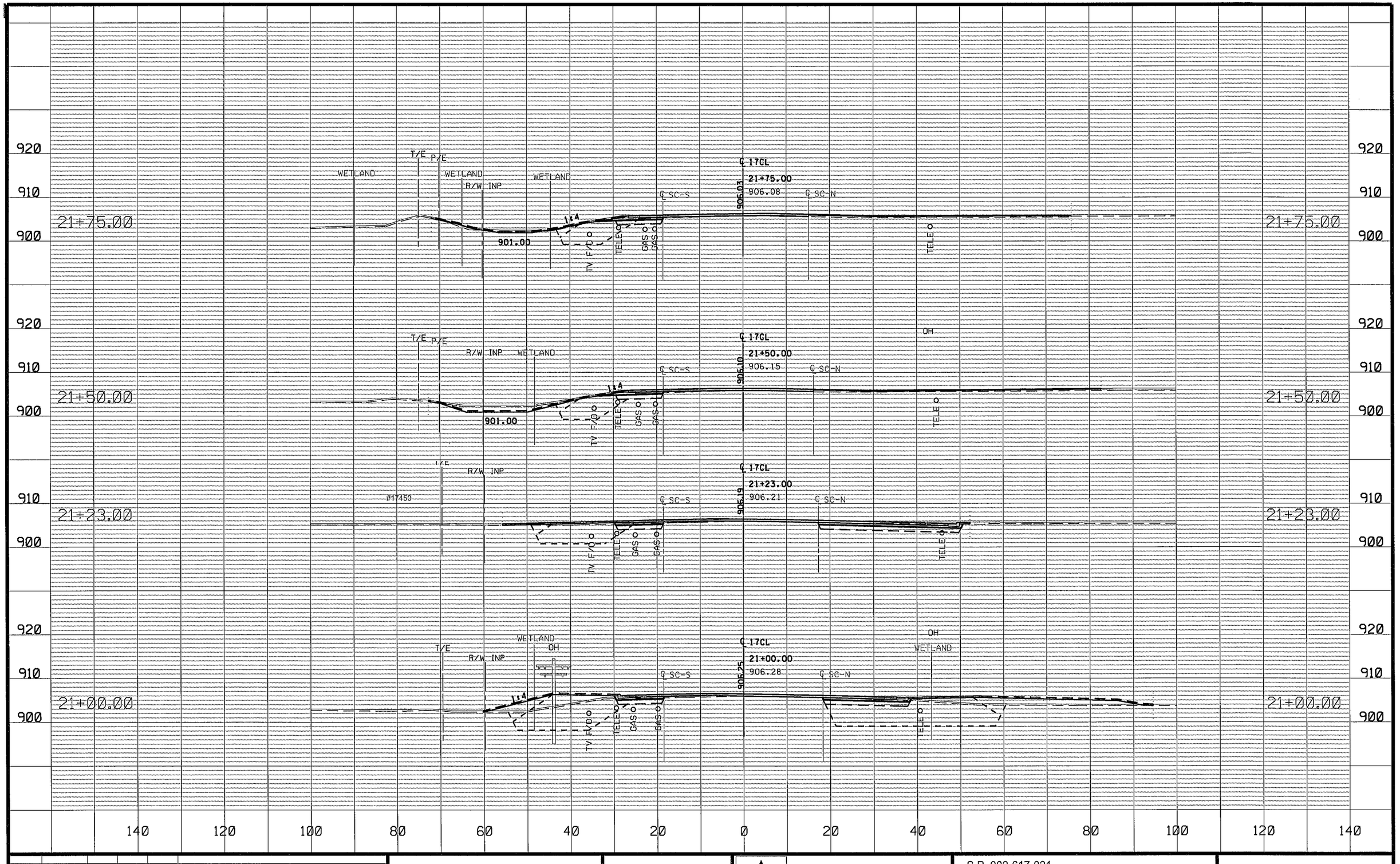
CROSS SECTIONS
STA 18+50.00 TO 20+50.00

Sheet 79 of 86 Sheets



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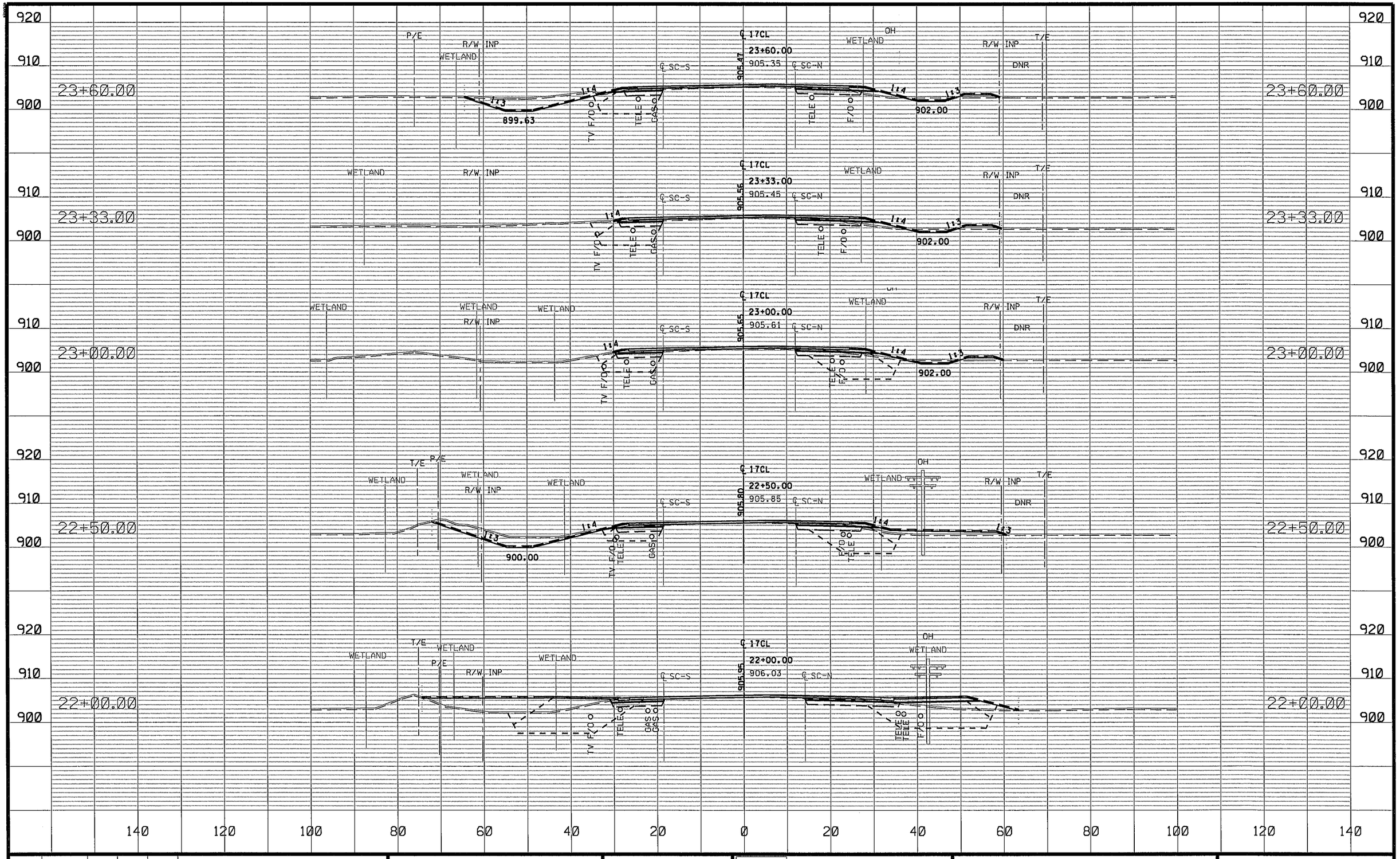
CROSS SECTIONS

STA 21+00.00 TO 21+75.00

Sheet 80 of 86 Sheets



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DESIGN BY EJM DATE 05-15-18
CHECKED BY GMP DATE 07-18-18

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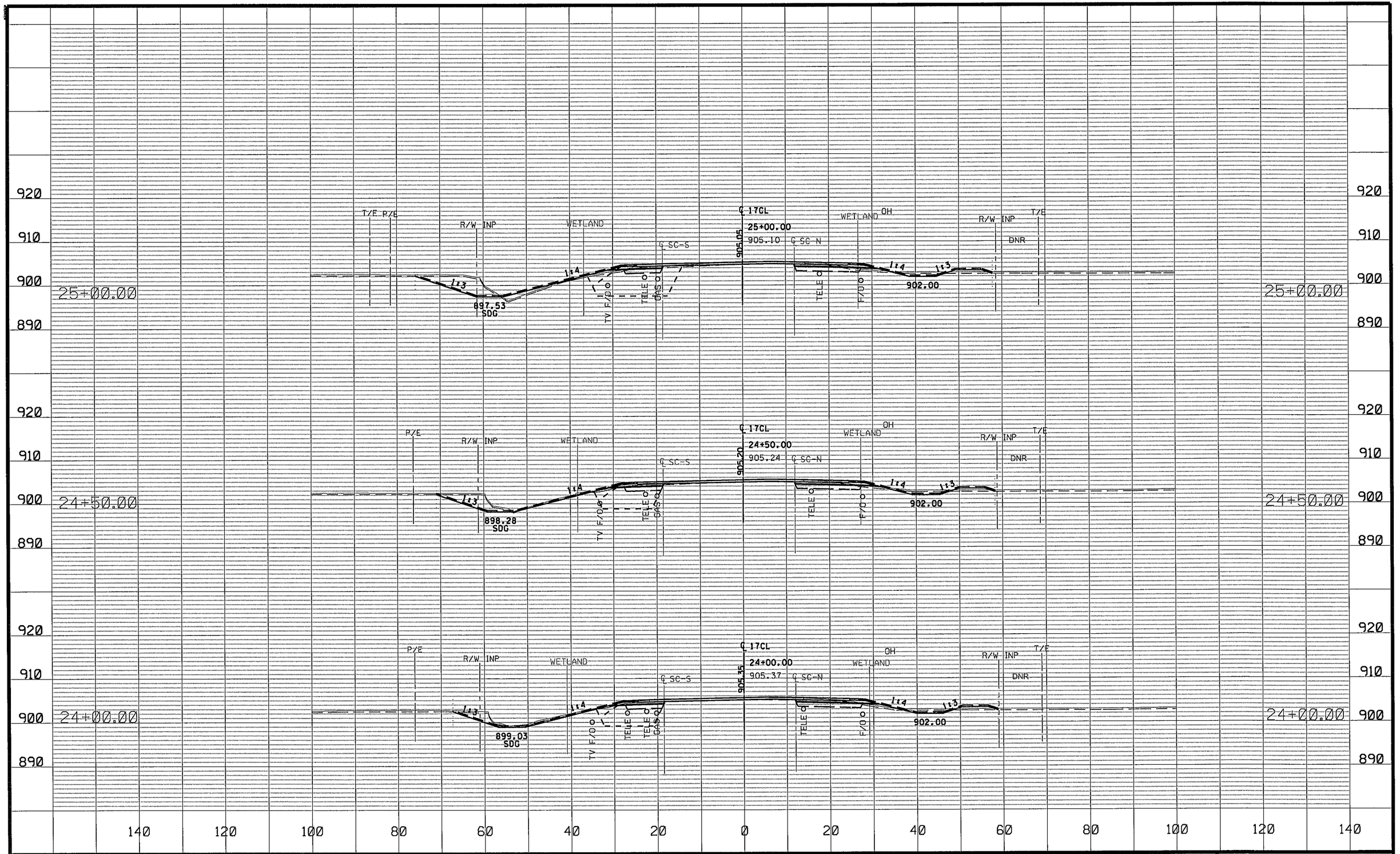
CROSS SECTIONS
STA 22+00.00 TO 23+60.00
Sheet 81 of 86 Sheets



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CROSS SECTIONS

STA 24+00.00 TO 25+00.00

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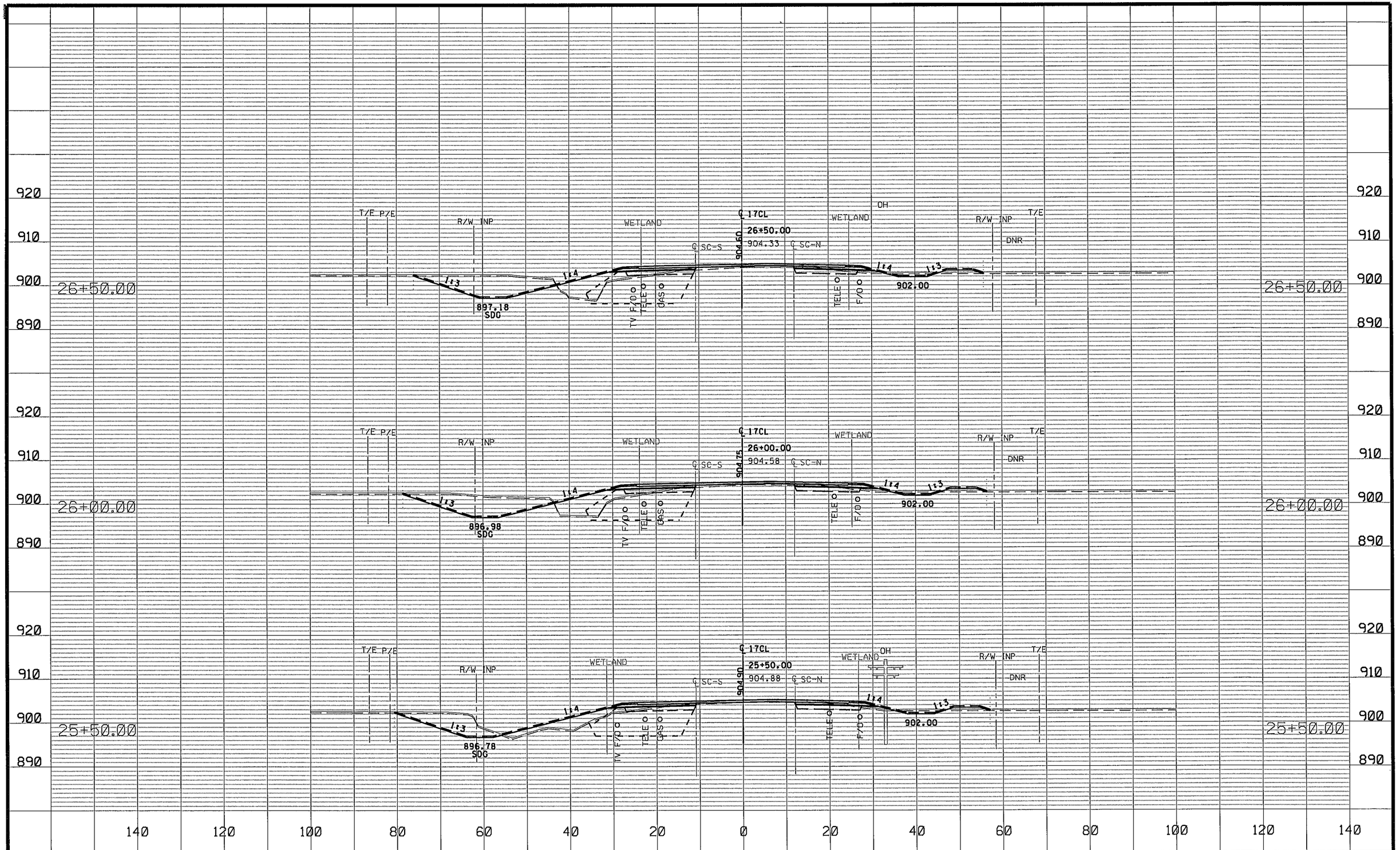

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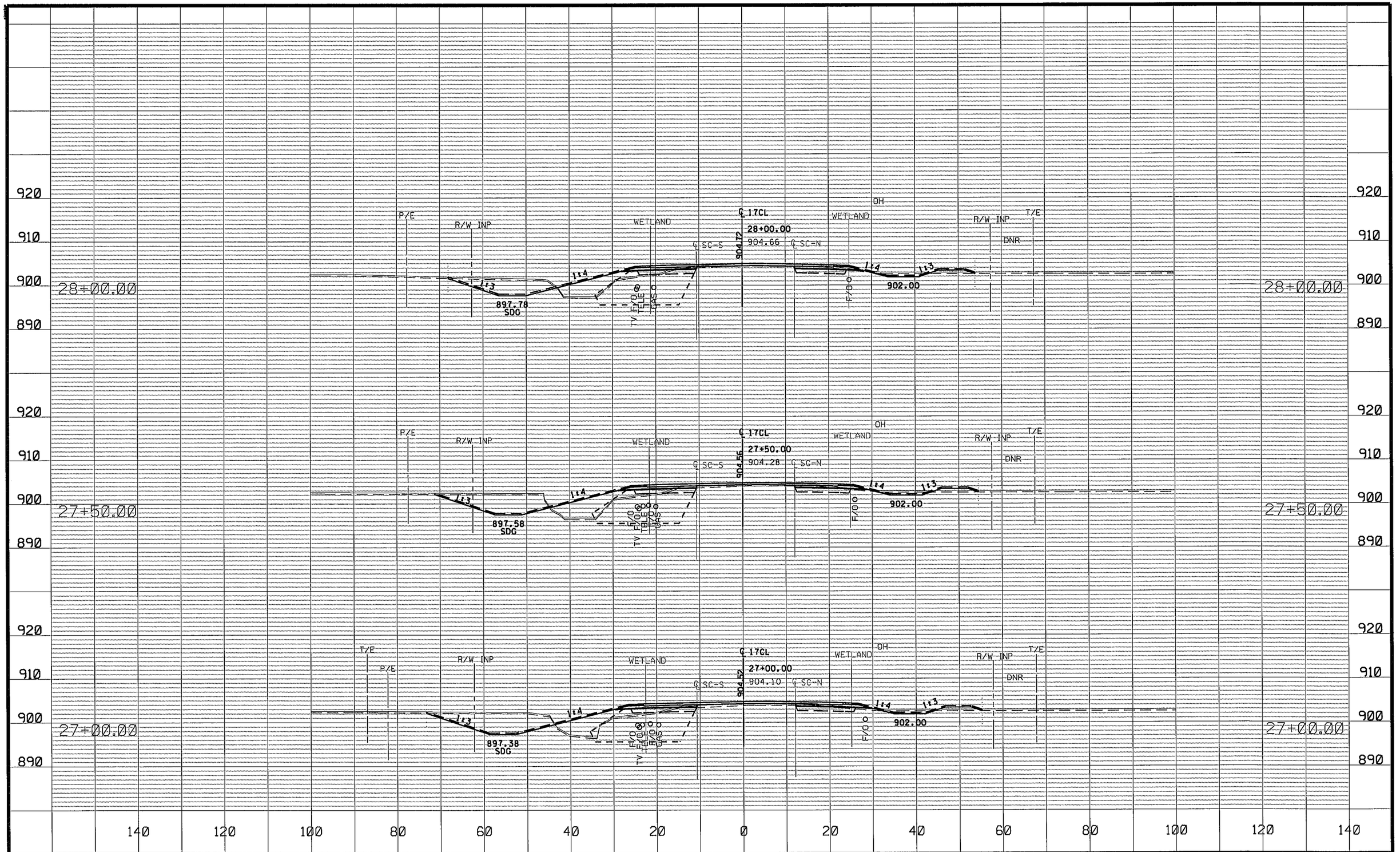
CROSS SECTIONS

STA 25+50.00 TO 26+50.00

Sheet 83 of 86 Sheets



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DESIGN BY EJM DATE 05-15-18

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CROSS SECTIONS

STA 27+00.00 TO 28+00.00

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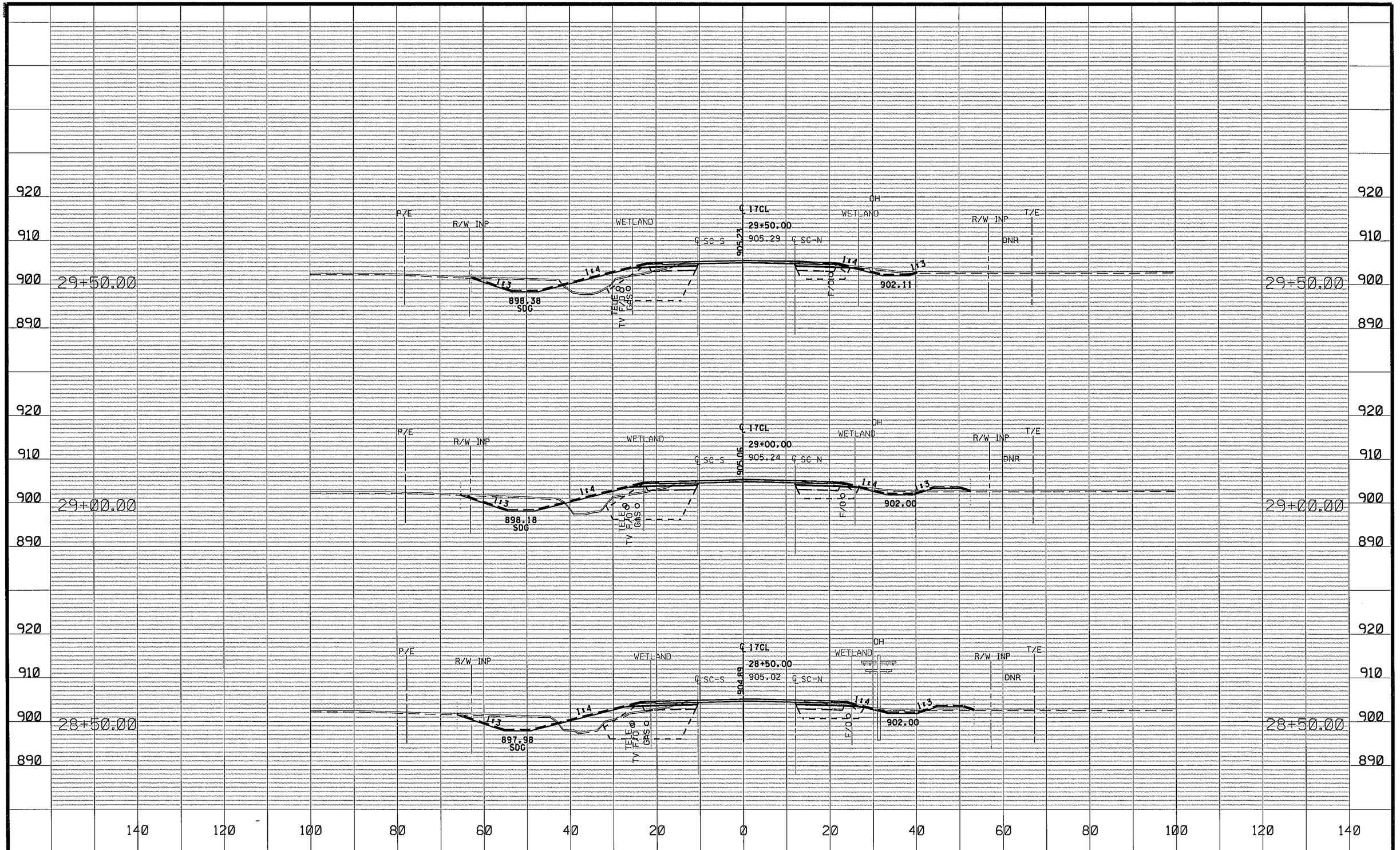

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DESIGN BY EJM DATE 05-15-18

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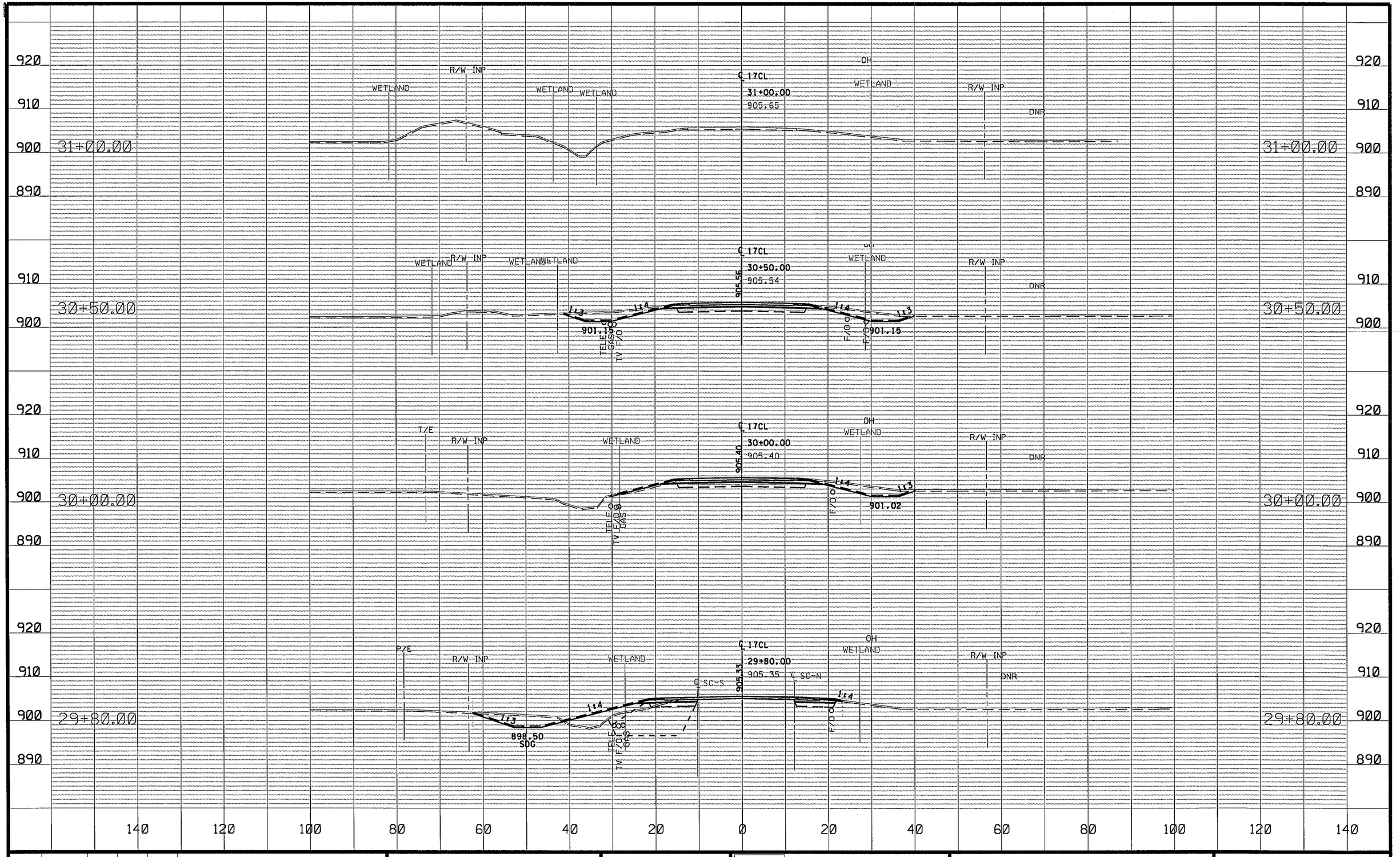
CROSS SECTIONS

STA 28+50.00 TO 29+50.00

Sheet 85 of 86 Sheets



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CROSS SECTIONS

STA 29+80.00 TO 31+00.00

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