

2021 STREET IMPROVEMENT PROJECTS FOR THE CITY OF LINO LAKES, MN

CONSTRUCTION PLAN FOR FULL DEPTH RECLAMATION AND OVERLAY STREET IMPROVEMENTS

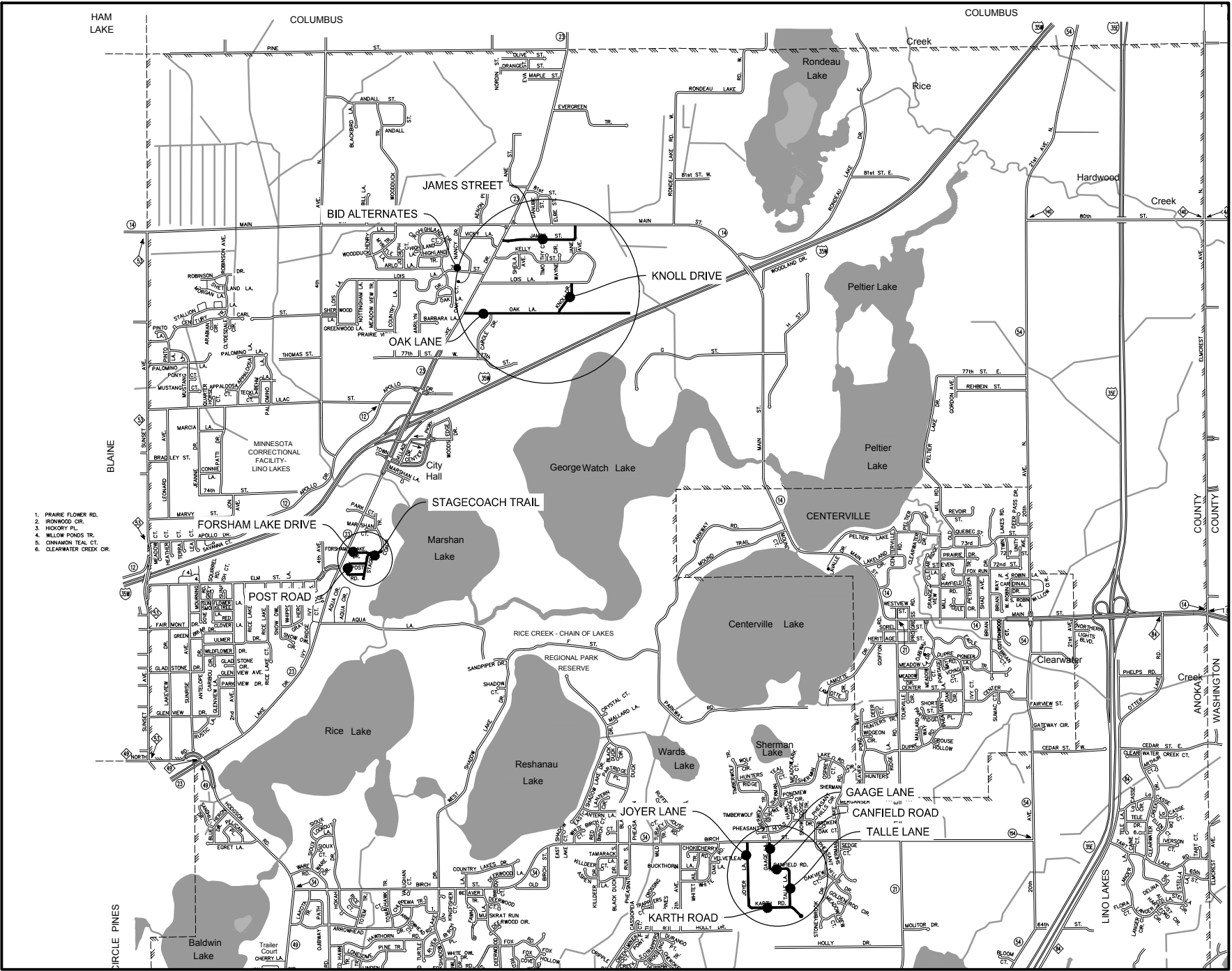
GOVERNING SPECIFICATIONS

THE 2020 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.

PLAN SET INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL LAYOUT
3	STATEMENT OF ESTIMATED QUANTITIES
4	TYPICAL SECTIONS
5-12	GENERAL DETAILS
13-27	CONSTRUCTION PLANS



THIS PLAN SET CONTAINS 27 SHEETS

THIS PLAN SET HAS BEEN PREPARED FOR:



CITY OF LINO LAKES
600 TOWN CENTER PARKWAY
LINO LAKES, MN 55014
(651) 982-2400

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



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.

DIANE L. HANKEE, P.E.

DATE: 12/14/2020 LICENSE NUMBER: 43338

WSB PROJ. NO. 017006-000

SHEET
1
OF
27

PROJECT LOCATION MAP

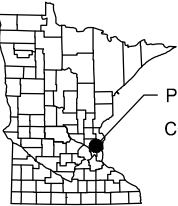
UTILITY INFORMATION

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

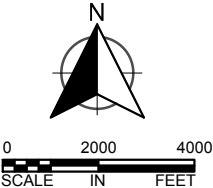
GOPHER ONE CALL TICKET NUMBER: 203221466, 203221481, 203221488, & 203221499

EXCAVATION NOTICE SYSTEM

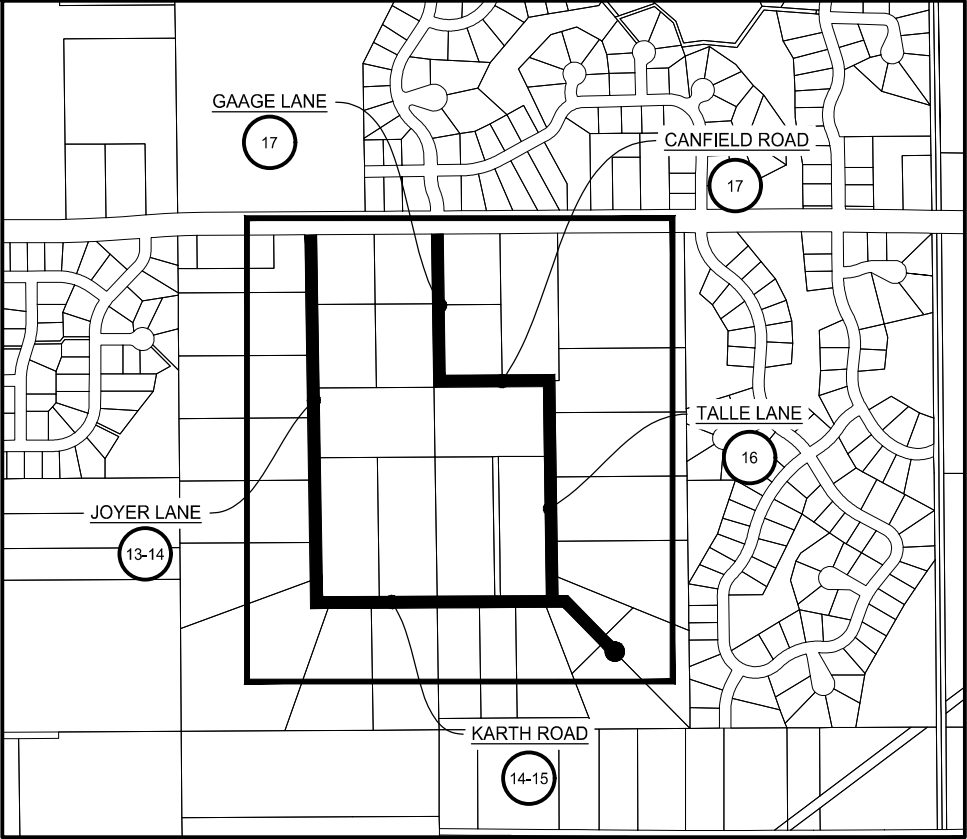
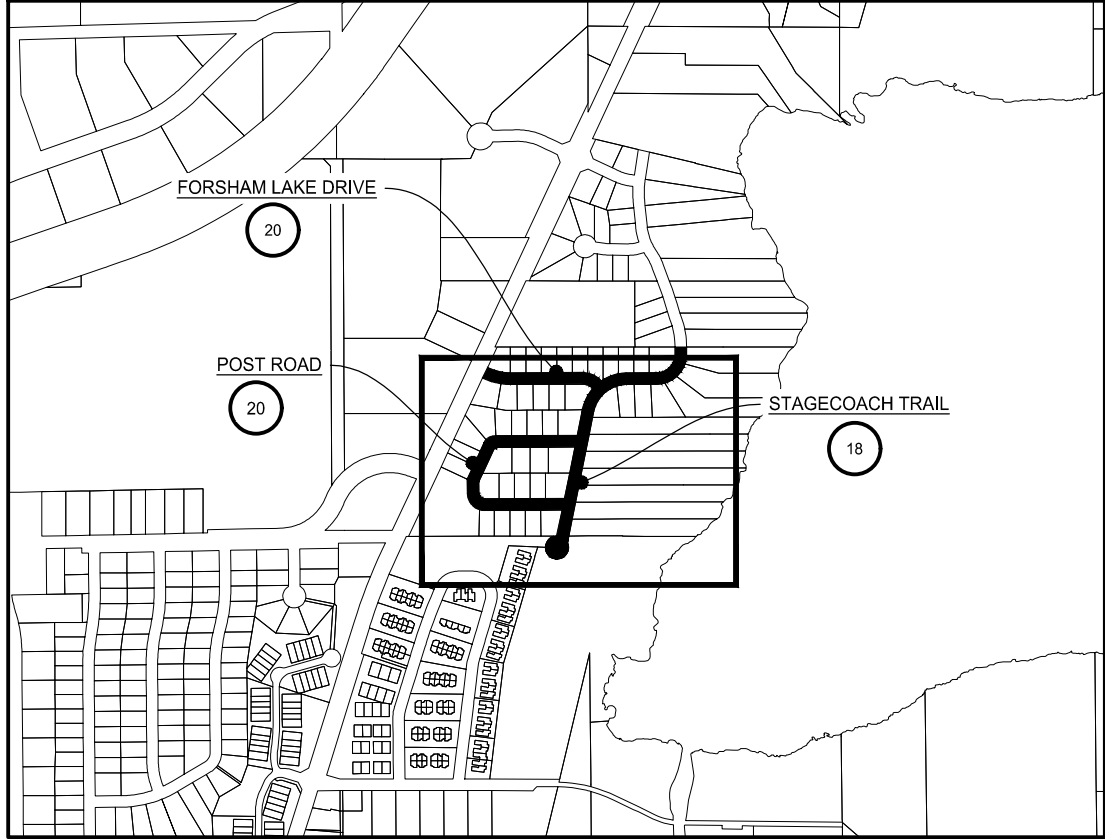
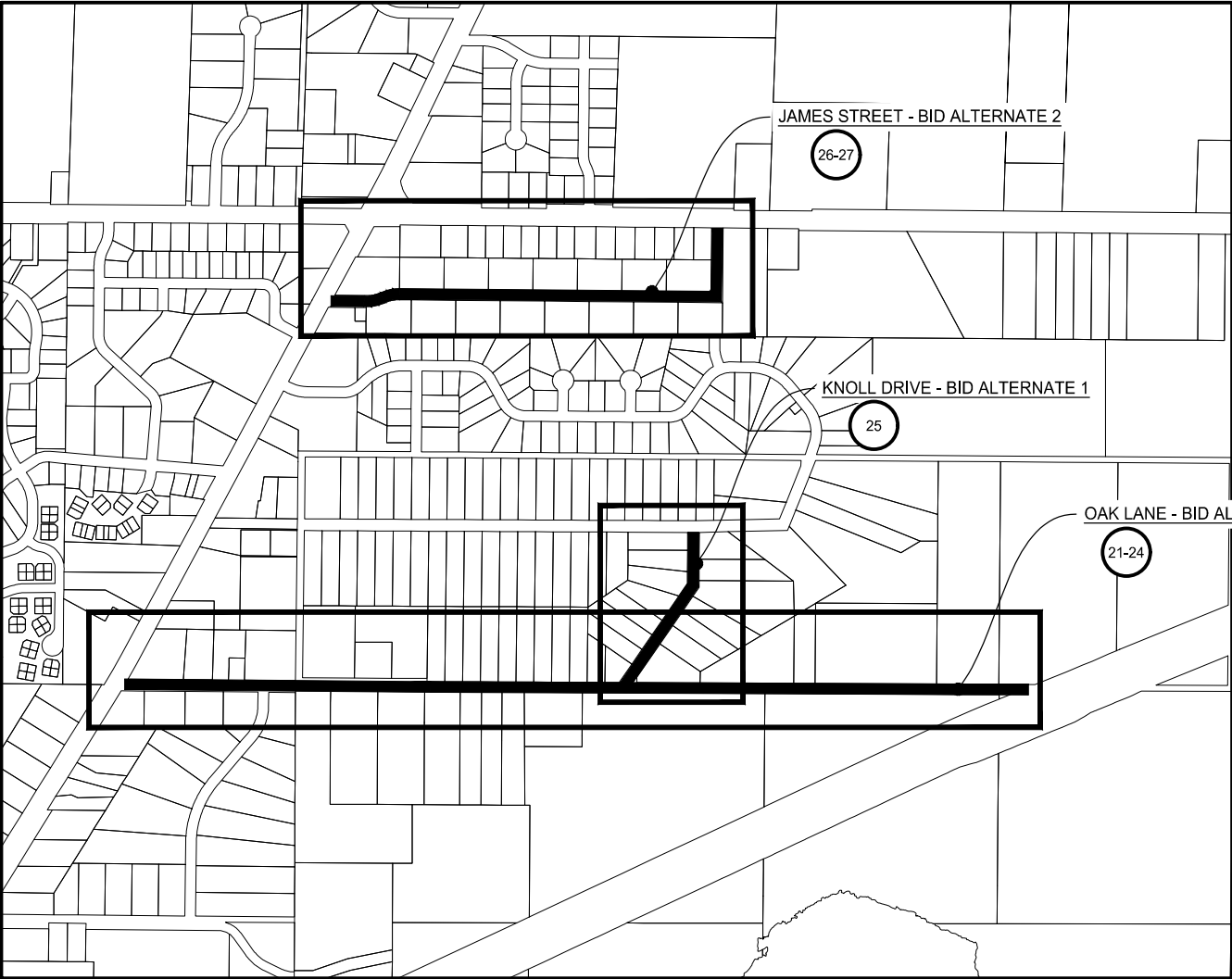
A CALL TO GOPHER STATE ONE (651-454-0002) IS REQUIRED A MINIMUM OF 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION.



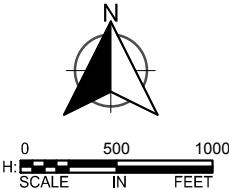
PROJECT LOCATION
COUNTY: ANOKA



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LEGEND	
SHEET NO.	DESCRIPTION
(X)	STREET CONSTRUCTION PLANS



WSB PROJECT NO.:
017006-000

SCALE:	DESIGN BY:
AS SHOWN	EY
PLAN BY:	CHECK BY:
THC	DLH

REVISIONS	
NO.	DATE
	DESCRIPTION

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DIANE L. HANKEE
DATE: 12/14/2020 LIC. NO.: 43338

2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

GENERAL LAYOUT

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STATEMENT OF ESTIMATED QUANTITIES				
MNDOT SPECIFICATION NO.	DESCRIPTION	NOTES	UNIT	ESTIMATED TOTAL QUANTITY
KARTH NEIGHBORHOOD SURFACE IMPROVEMENTS				
2021.501	MOBILIZATION		LS	1
2101.505	CLEARING		ACRE	0.25
2101.505	GRUBBING		ACRE	0.25
2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)		L F	102
2104.503	SAWING BIT PAVEMENT (FULL DEPTH)		L F	381
2104.503	REMOVE PIPE CULVERTS		L F	254
2104.504	REMOVE CONCRETE DRIVEWAY PAVEMENT		S Y	186
2104.504	REMOVE BITUMINOUS DRIVEWAY PAVEMENT		S Y	757
2104.504	REMOVE BITUMINOUS PAVEMENT		S Y	20
2105.504	GEOTEXTILE FABRIC TYPE 5		S Y	6886
2105.601	SITE GRADING		LS	1
2106.507	EXCAVATION - COMMON		C Y	2296
2106.507	EXCAVATION - SUBGRADE		C Y	4591
2106.507	SELECT GRANULAR EMBANKMENT (CV)		C Y	4591
2106.507	COMMON EMBANKMENT (CV)		C Y	250
2112.519	SUBGRADE PREPARATION		RDST	62
2123.610	STREET SWEEPER (WTH PICKUP BROOM)		HOURL	75
2123.610	UTILITY CREW		HOURL	10
2130.523	WATER		MGAL	75
2211.507	AGGREGATE BASE (CV) CLASS 2		C Y	25
2211.507	AGGREGATE BASE (CV) CLASS 5		C Y	1531
2215.504	FULL DEPTH RECLAMATION		S Y	20867
2357.506	BITUMINOUS MATERIAL FOR TACK COAT		GAL	714
2360.504	TYPE SP 9.5 WEAR CRS MIX(2,C)3.0" THICK		S Y	757
2360.509	TYPE SP 9.5 WEARING COURSE MIX (2,C)		TON	1210
2360.509	TYPE SP 12.5 NON WEAR COURSE MIX (2,C)		TON	2419
2501.502	12" CS PIPE APRON		EACH	2
2501.502	15" RC PIPE APRON		EACH	10
2501.502	18" RC PIPE APRON		EACH	2
2501.503	12" CS PIPE CULVERT		L F	30
2501.503	15" RC PIPE CULVERT		L F	281
2501.503	18" RC PIPE CULVERT		L F	76
2501.602	TRASH GUARD FOR 15" PIPE APRON		EACH	10
2501.602	TRASH GUARD FOR 18" PIPE APRON		EACH	2
2503.503	15" RC PIPE SEWER DES 3006 CL V		L F	532
2504.602	IRRIGATION SYSTEM REPAIR		EACH	10
2506.503	CONST DRAINAGE STRUCTURE DES 48-4020		L F	16
2511.507	RANDOM RIPRAP CLASS III		C Y	25
2531.504	6" CONCRETE DRIVEWAY PAVEMENT		S Y	186
2535.503	BITUMINOUS CURB		L F	1818
2540.602	MAIL BOX		EACH	5
2540.602	MAIL BOX SUPPORT		EACH	5
2540.602	TEMPORARY MAIL BOX		EACH	31
2557.602	REPAIR DOG FENCE		EACH	10
2563.601	TRAFFIC CONTROL		LS	1
2573.503	SILT FENCE, TYPE MS		L F	3053
2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER		L F	3053
2574.507	COMMON TOPSOIL BORROW		C Y	1131
2575.504	SODDING TYPE LAWN		S Y	679
2575.505	SEEDING		ACRE	2
2575.508	SEED MIXTURE 25-151		LB	169

STATEMENT OF ESTIMATED QUANTITIES				
MNDOT SPECIFICATION NO.	DESCRIPTION	NOTES	UNIT	ESTIMATED TOTAL QUANTITY
STAGECOACH NEIGHBORHOOD SURFACE IMPROVEMENTS				
2021.501	MOBILIZATION		LS	1
2104.502	REMOVE CASTING		EACH	17
2104.503	SAWNG CONCRETE PAVEMENT (FULL DEPTH)		L F	594
2104.503	SAWNG BIT PAVEMENT (FULL DEPTH)		L F	727
2104.503	REMOVE CURB & GUTTER		L F	858
2104.504	REMOVE CONCRETE DRIVEWAY PAVEMENT		S Y	89
2104.504	REMOVE BITUMINOUS DRIVEWAY PAVEMENT		S Y	89
2104.504	REMOVE BITUMINOUS PAVEMENT		S Y	45
2104.518	REMOVE BITUMINOUS WALK		S F	360
2106.507	EXCAVATION - COMMON		C Y	251
2106.507	EXCAVATION - SUBGRADE		C Y	376
2106.507	SELECT GRANULAR EMBANKMENT (CV)		C Y	376
2112.519	SUBGRADE PREPARATION		RDST	34
2123.610	STREET SWEEPER (WTH PICKUP BROOM)		HOURL	10
2123.610	UTILITY CREW		HOURL	10
2130.523	WATER		MGAL	10
2211.507	AGGREGATE BASE (CV) CLASS 5		C Y	251
2215.504	FULL DEPTH RECLAMATION		S Y	11255
2331.603	JOINT ADHESIVE		L F	6720
2357.506	BITUMINOUS MATERIAL FOR TACK COAT		GAL	563
2360.504	TYPE SP 9.5 WEAR CRS MIX(2,C)3.0" THICK		S Y	89
2360.509	TYPE SP 9.5 WEARING COURSE MIX (2,C)		TON	954
2360.509	TYPE SP 12.5 NON WEAR COURSE MIX (2,C)		TON	1908
2506.502	ADJUST FRAME & RING CASTING		EACH	17
2506.602	REPAIR CATCH BASINS		EACH	6
2506.602	CHIMNEY SEAL		EACH	17
2506.602	CASTING ASSEMBLY (SANITARY)		EACH	17
2521.518	6" CONCRETE WALK		S F	360
2531.504	6" CONCRETE DRIVEWAY PAVEMENT		S Y	89
2531.603	ADJUST CONCRETE CURB & GUTTER		L F	150
2531.603	CONCRETE CURB & GUTTER DES SURMOUNTABLE		L F	858
2531.618	TRUNCATED DOMES		S F	76
2540.602	TEMPORARY MAIL BOX		EACH	10
2557.602	REPAIR DOG FENCE		EACH	10
2563.601	TRAFFIC CONTROL		LS	1
2573.502	STORM DRAIN INLET PROTECTION		EACH	18
2573.503	SILT FENCE, TYPE MS		L F	1680
2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER		L F	1680
2574.507	COMMON TOPSOIL BORROW		C Y	44
2575.504	SODDING TYPE LAWN		S Y	260
WATERMAIN IMPROVEMENTS				
2504.602	WATER SERVICE SYSTEM		EACH	7
2504.603	BOLT & VALVE BOX REPLACEMENT - VALVE		EACH	7
2504.603	BOLT & VALVE BOX REPLACEMENT - HYDRANT & HYDRANT VALVE		EACH	5
BID ALTERNATE 1 - OAK NEIGHBORHOOD OVERLAY SURFACE IMPROVEMENTS				
2021.501	MOBILIZATION		LS	1
2232.504	MILL BITUMINOUS SURFACE		S Y	400
2357.506	BITUMINOUS MATERIAL FOR TACK COAT		GAL	1376
2360.509	TYPE SP 9.5 BIT MIXTURE FOR PATCHING		TON	123
2360.509	TYPE SP 9.5 WEARING COURSE MIX (2,B)		TON	1166
BID ALTERNATE 2 - JAMES STREET OVERLAY SURFACE IMPROVEMENTS				
2021.501	MOBILIZATION		LS	1
2232.504	MILL BITUMINOUS SURFACE		S Y	100
2357.506	BITUMINOUS MATERIAL FOR TACK COAT		GAL	790
2360.509	TYPE SP 9.5 BIT MIXTURE FOR PATCHING		TON	71
2360.509	TYPE SP 9.5 WEARING COURSE MIX (2,B)		TON	670

BASIS FOR ESTIMATED QUANTITIES	
BIT. WEAR COURSE MIXTURE	113 LBS/SY. YD. PER INCH THICKNESS
BIT. NON-WEAR COURSE MIXTURE	113 LBS/SY. YD. PER INCH THICKNESS
2357 BIT. MATERIAL FOR TACK	0.05 GAL. SY. YD. PER LIFT APPLIED
2211 AGGREGATE BASE CLASS 5	105 LBS/SQ. YD. PER 1 INCH THICKNESS



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: CHECK BY:
THC DLH

REVISIONS

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DIANE L. HANKEE
DATE: 12/14/2020 LIC. NO.: 43338

2021 STREET IMPROVEMENT PROJECT
LINO LAKES, MINNESOTA

STATEMENT OF ESTIMATED QUANTITIES

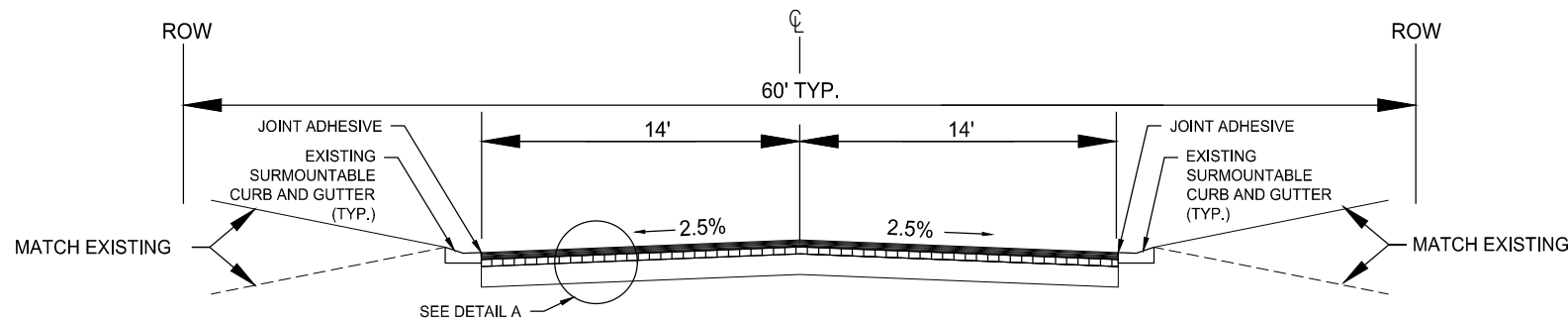
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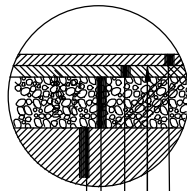
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2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

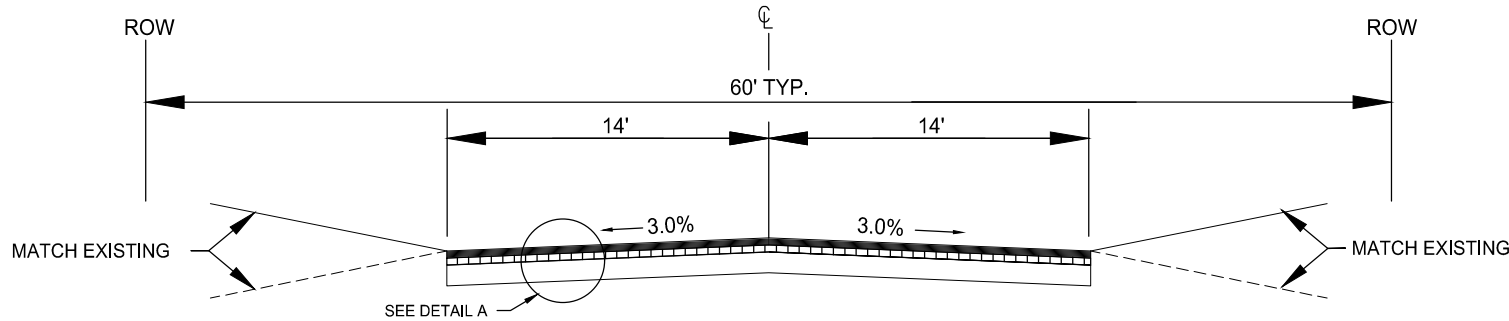
TYPICAL
SECTIONS



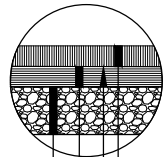
TYPICAL FULL DEPTH PAVEMENT RECLAIM SECTION
FORSHAM LAKE DRIVE, POST ROAD, STAGECOACH TRAIL
NOT TO SCALE



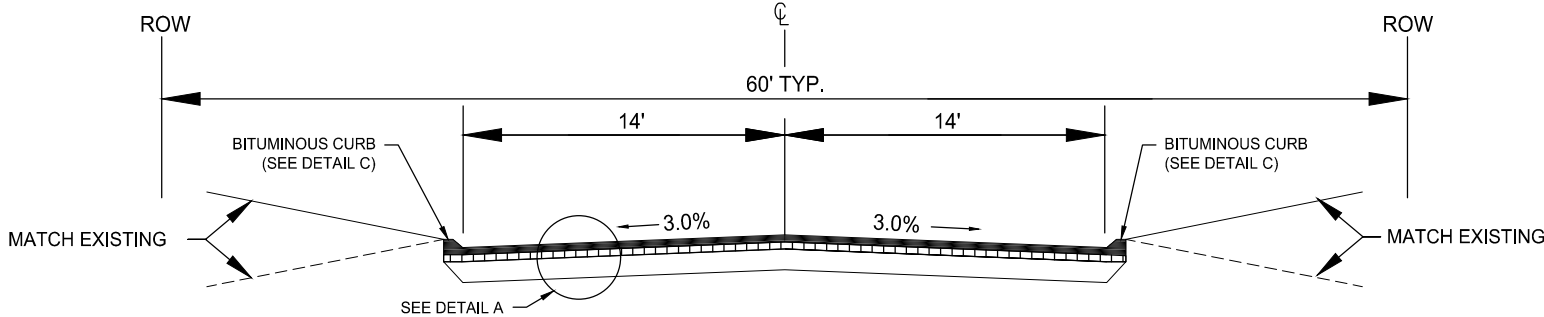
SPEC 2360 1.5" TYPE SP 9.5 WEARING COURSE (SPWEA240C)
SPEC 2357 BITUMINOUS TACK COAT
SPEC 2360 3" TYPE SP 12.5 NON WEARING COURSE (SPNWB230C)
6" RECLAIMED AGGREGATE BASE
EXISTING SUBGRADE



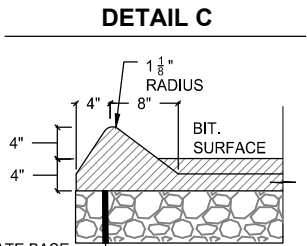
TYPICAL FULL DEPTH PAVEMENT RECLAIM SECTION
GAAGE LANE, CANFIELD ROAD, TALLE LANE, KARTH ROAD (STATION 21+00 TO 25+25), JOYER LANE
NOT TO SCALE



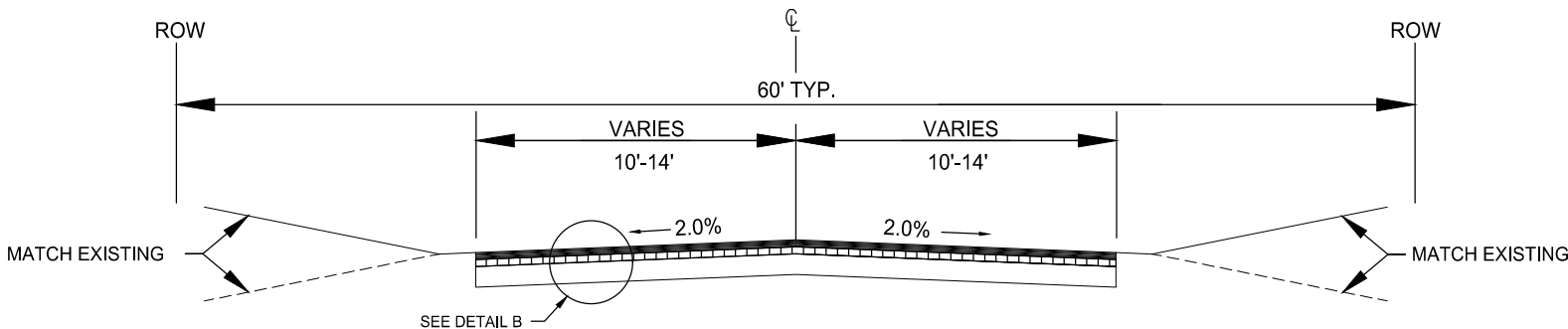
SPEC 2360 1.5" TYPE SP 9.5 WEARING COURSE (SPWEA240B) (OVERLAY)
SPEC 2357 BITUMINOUS TACK COAT
EXISTING BITUMINOUS
EXISTING AGGREGATE



TYPICAL FULL DEPTH PAVEMENT RECLAIM SECTION
KARTH ROAD (STATION 25+25 TO STATION 36+64)
NOT TO SCALE

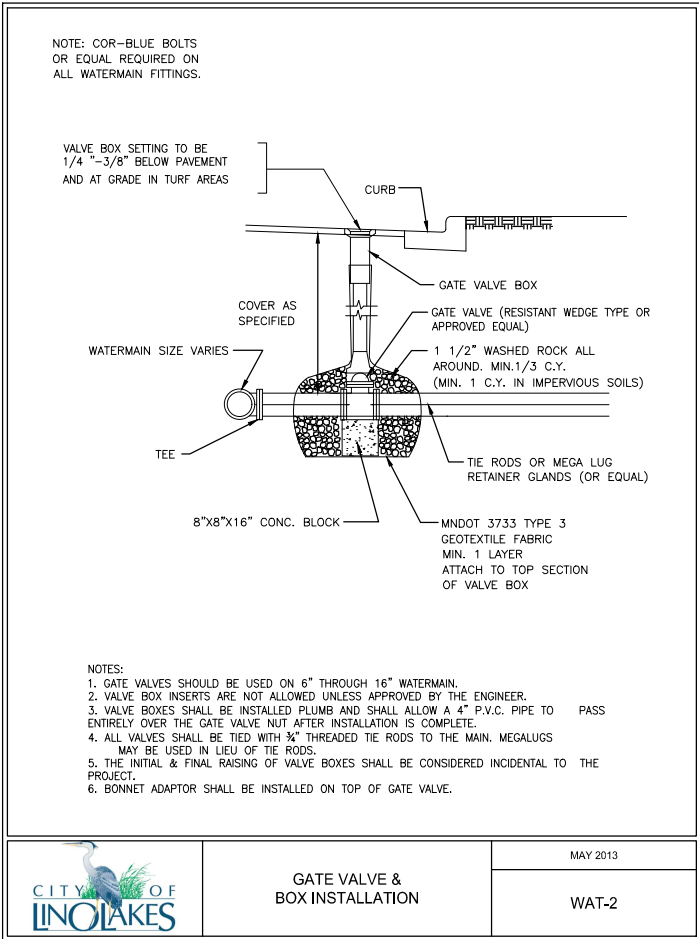
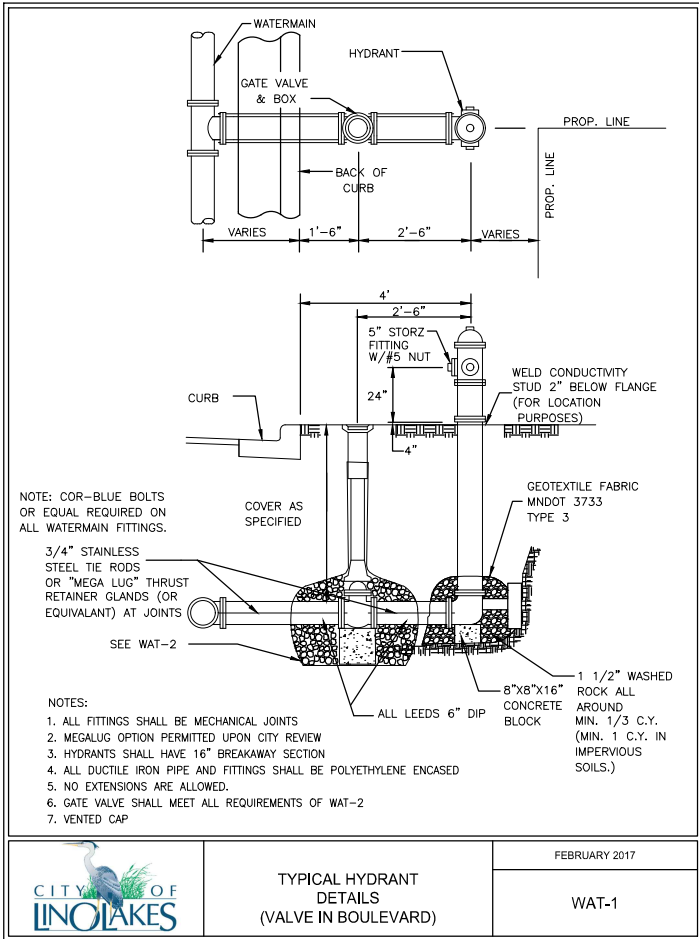
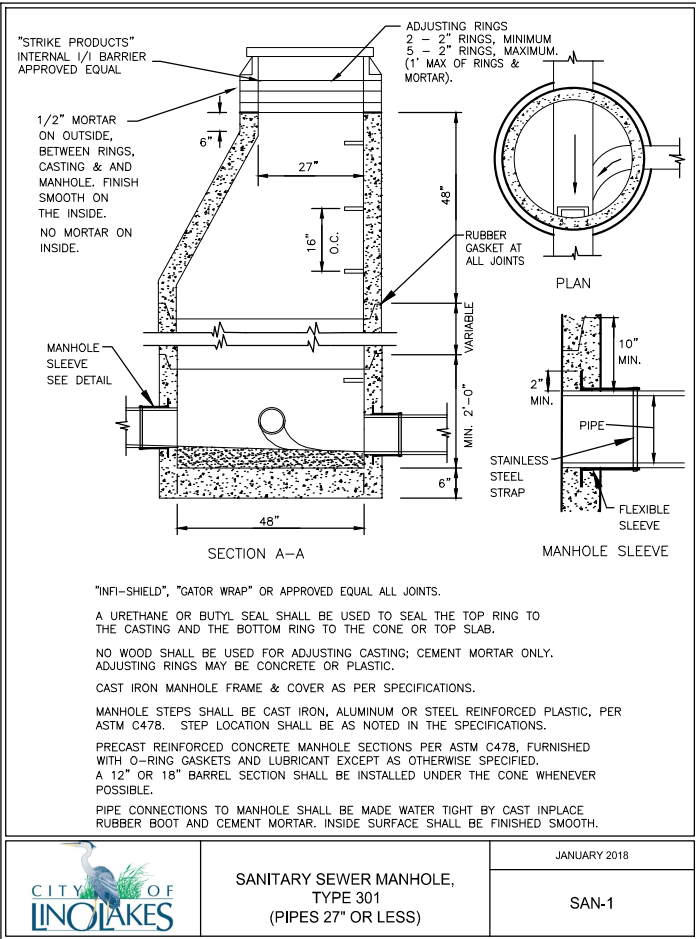
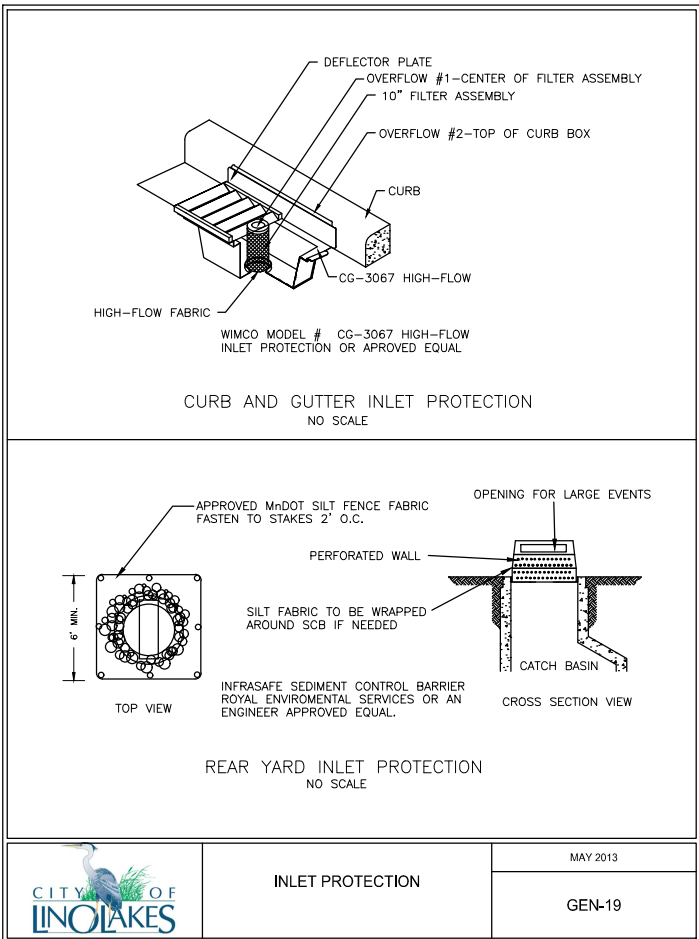
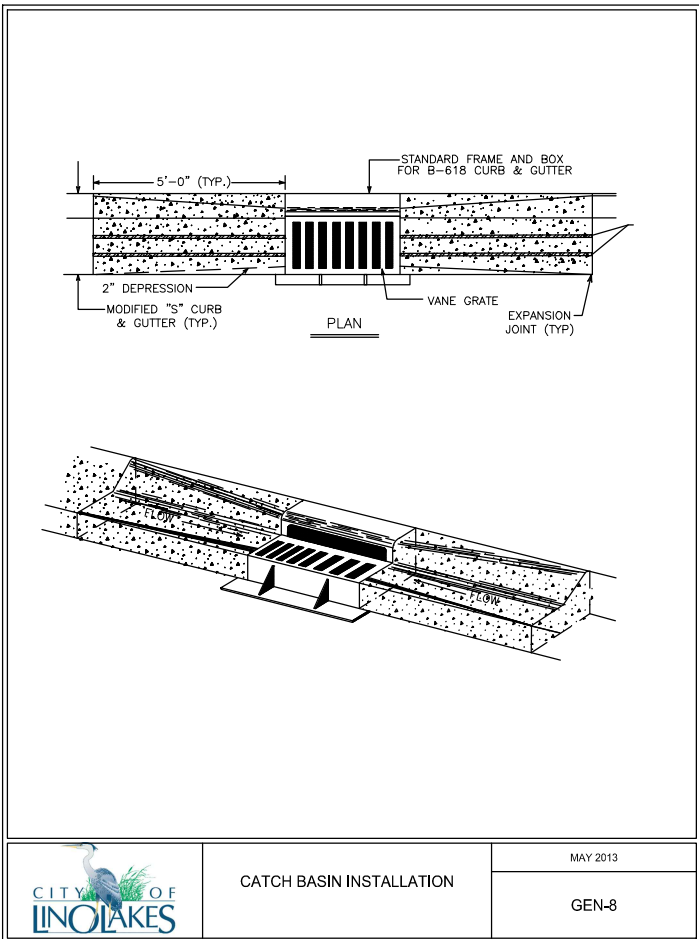
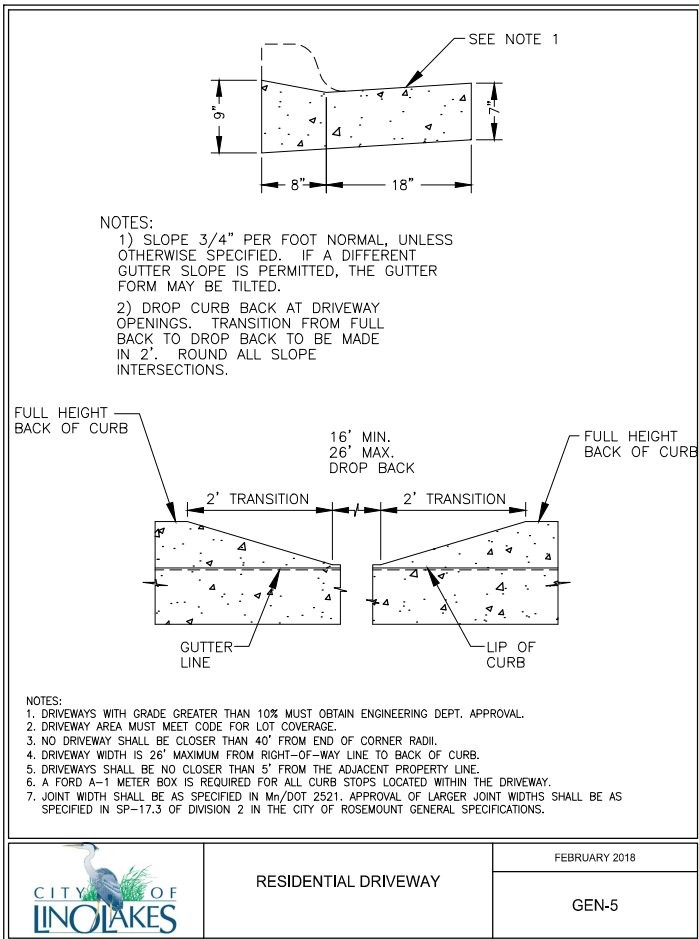
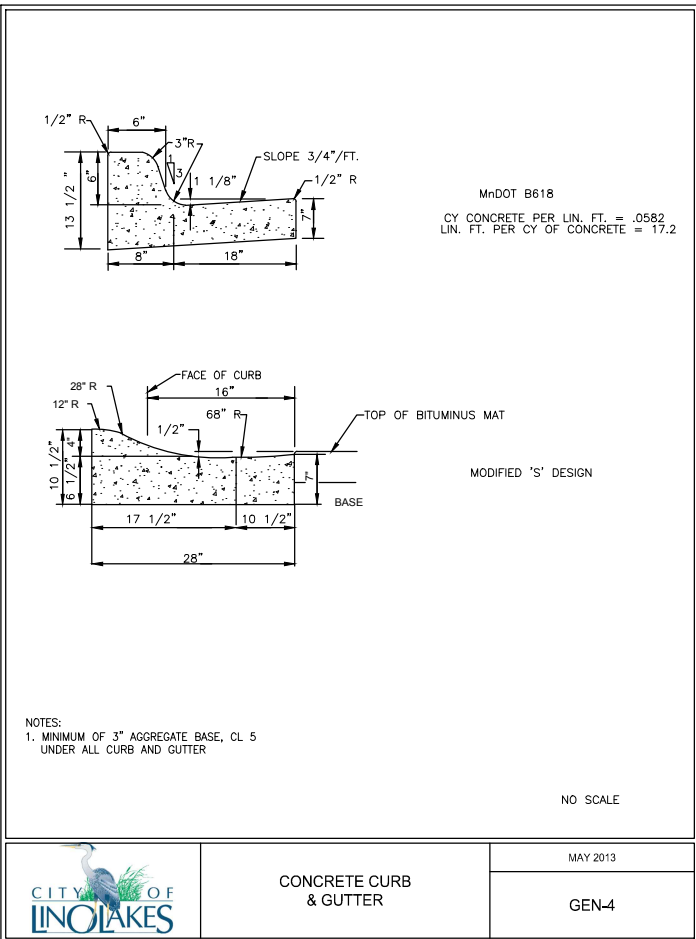


BITUMINOUS CURB DETAIL
INTEGRAL WITH BITUMINOUS BASE
(N.T.S.)



TYPICAL PAVEMENT OVERLAY SECTION
JAMES STREET, OAK LANE, KNOLL DRIVE
NOT TO SCALE

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WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THCH
CHECK BY: DLH

REVISIONS

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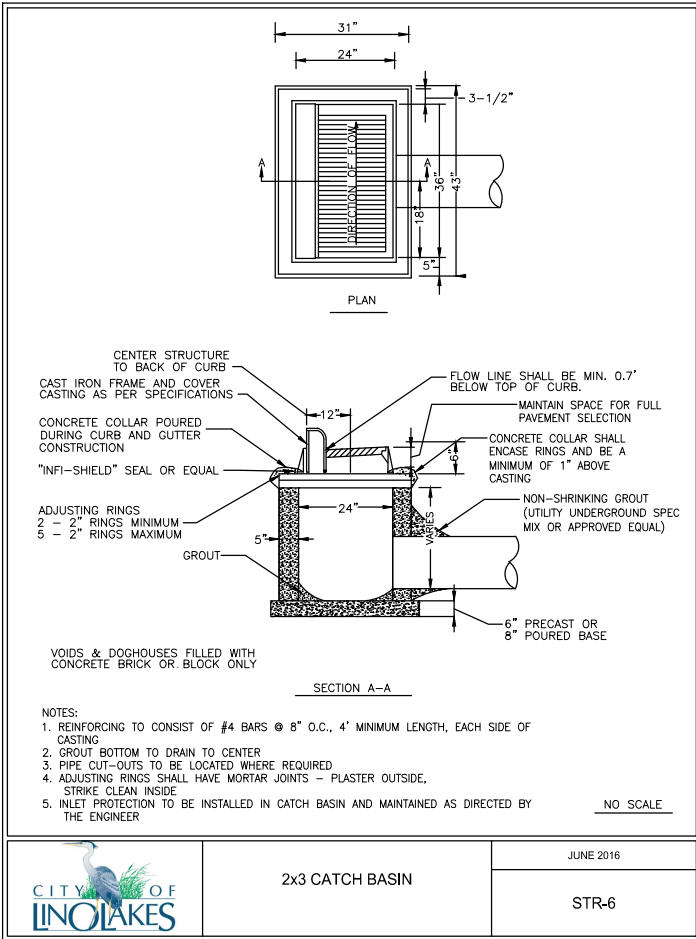
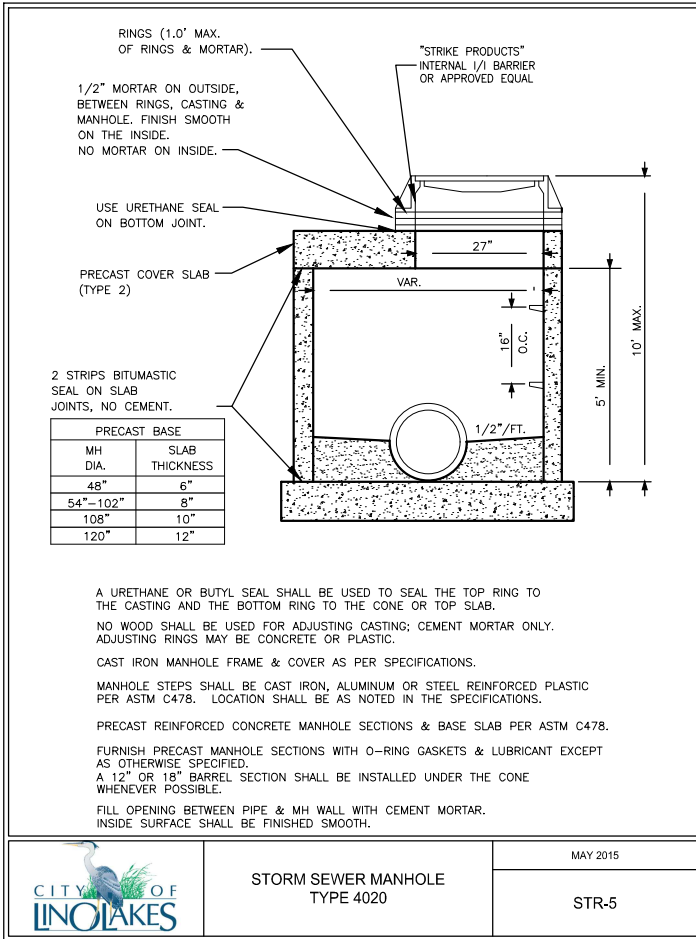
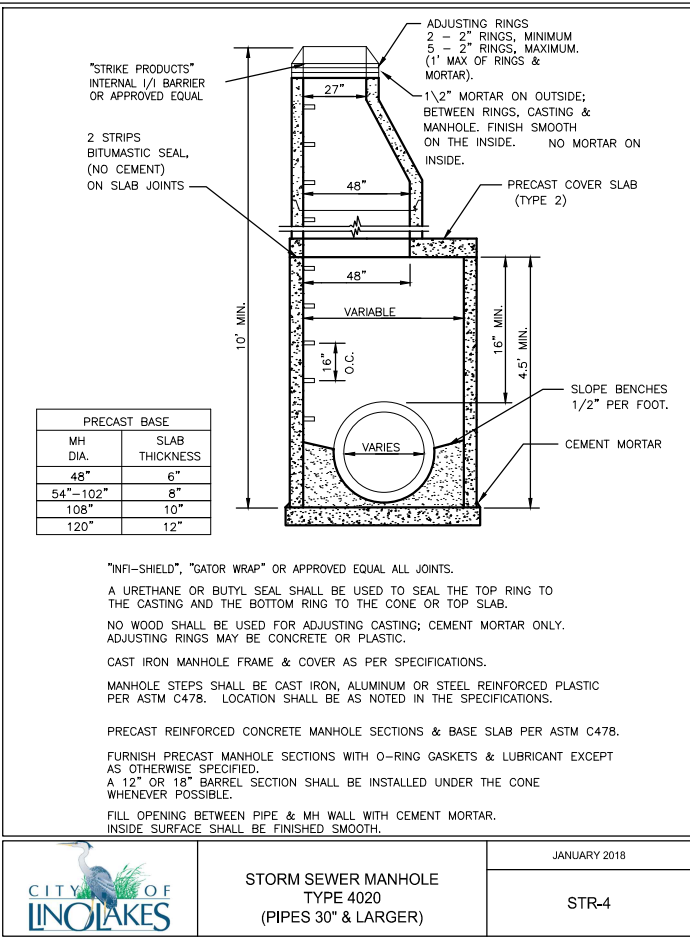
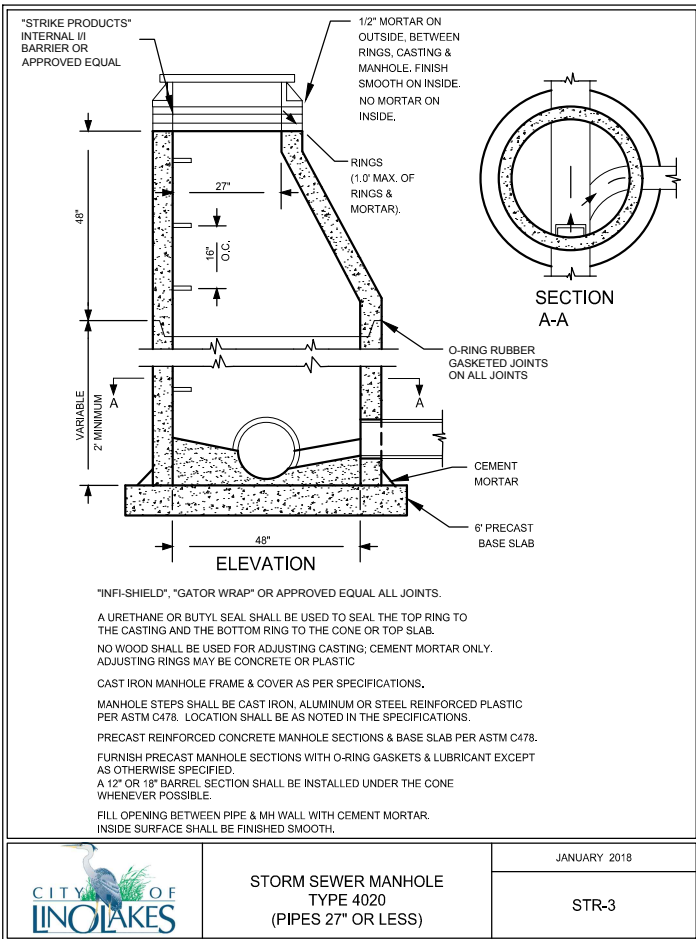
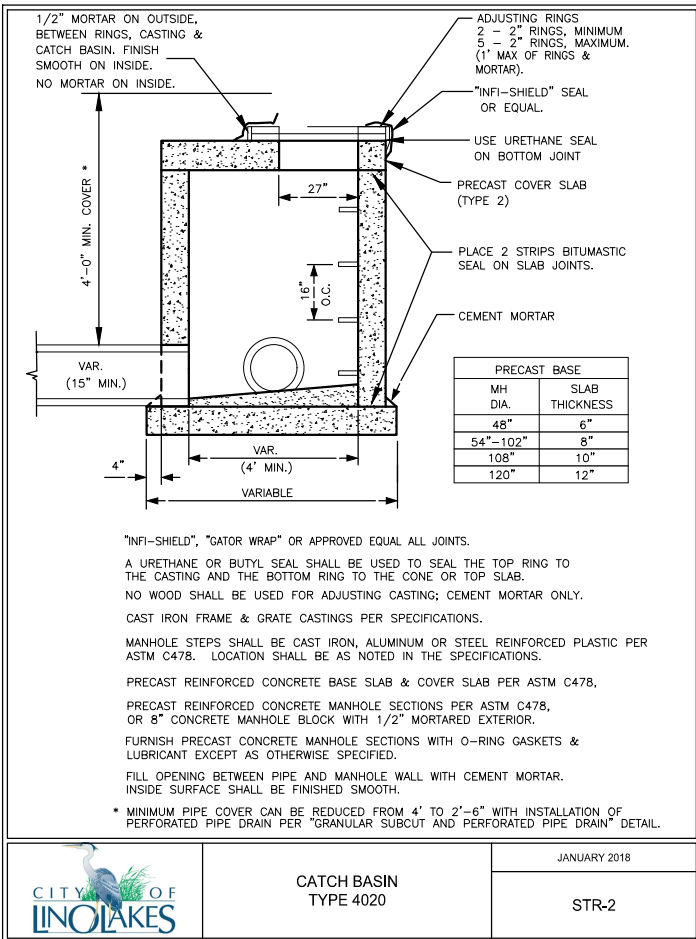
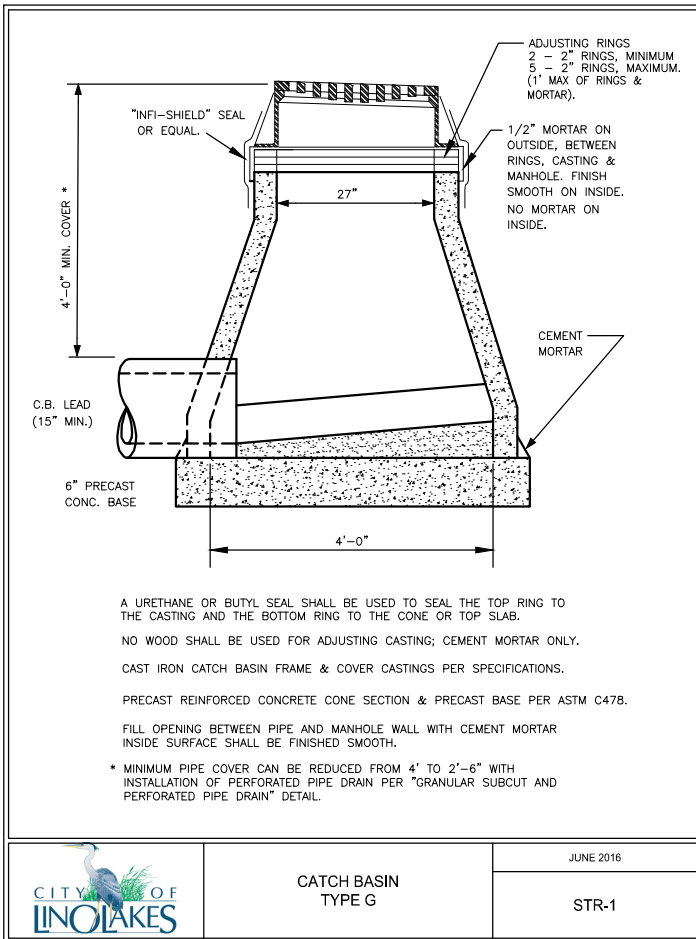
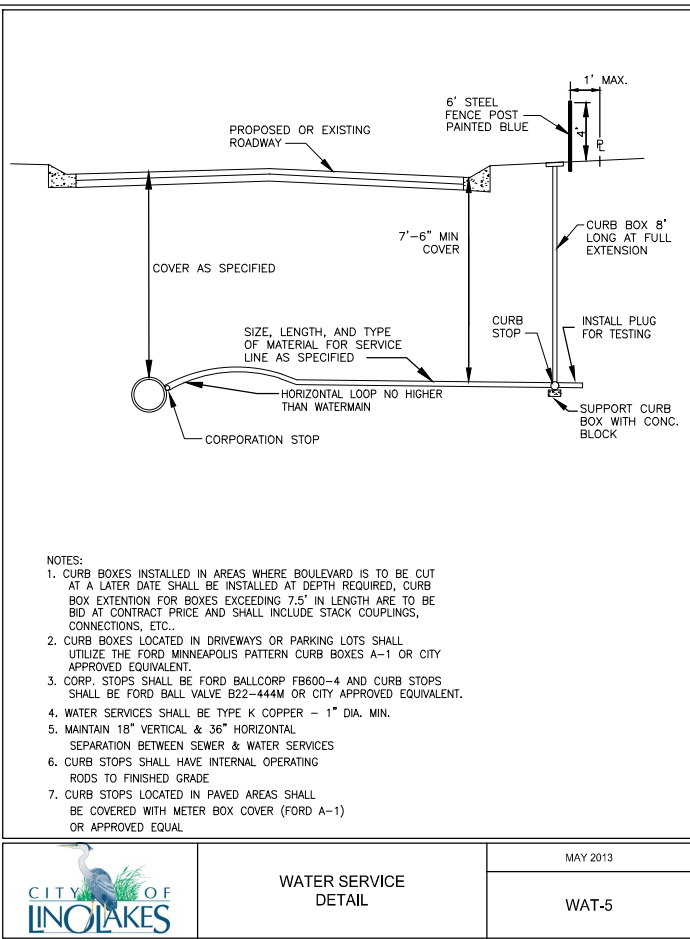
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2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

GENERAL DETAILS

SHEET
5
OF
27

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PLAN BY: THCH
CHECK BY: DLH

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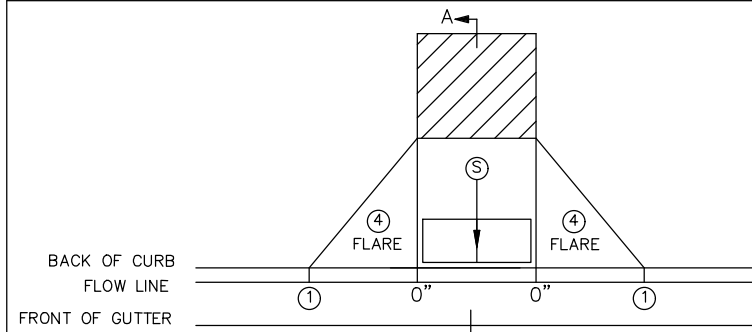
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2021 STREET IMPROVEMENT PROJECT
LINO LAKES, MINNESOTA

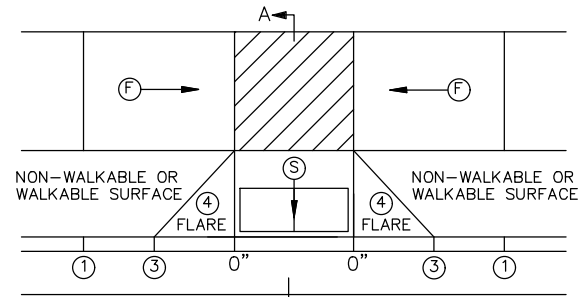
GENERAL DETAILS

SHEET
6
OF
27

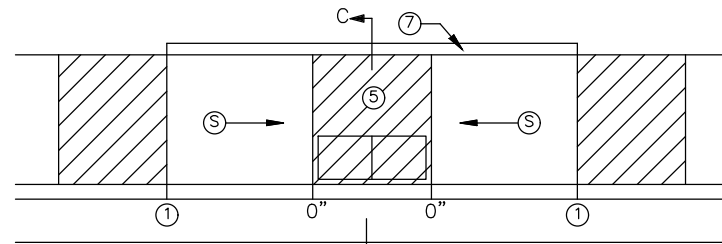
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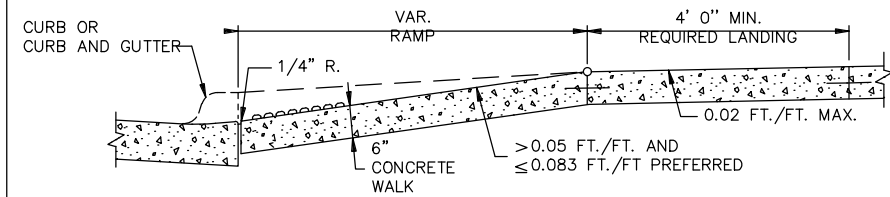
PERPENDICULAR



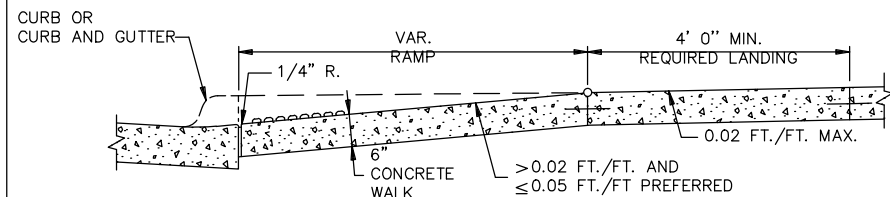
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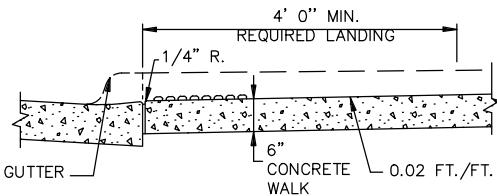
PARALLEL



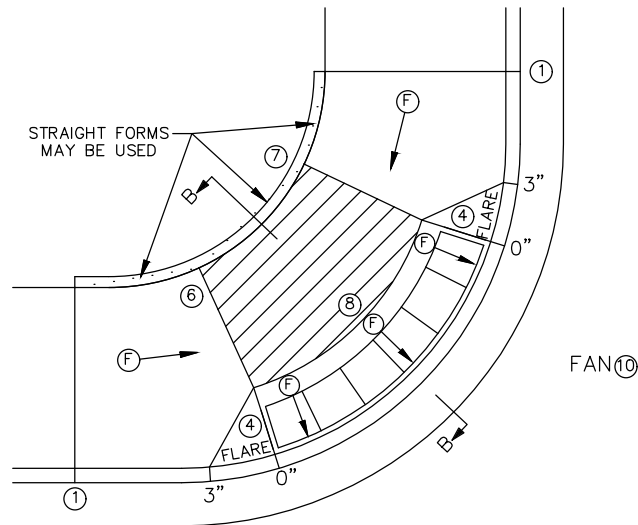
SECTION A-A
PERPENDICULAR/TIERED/DIAGONAL



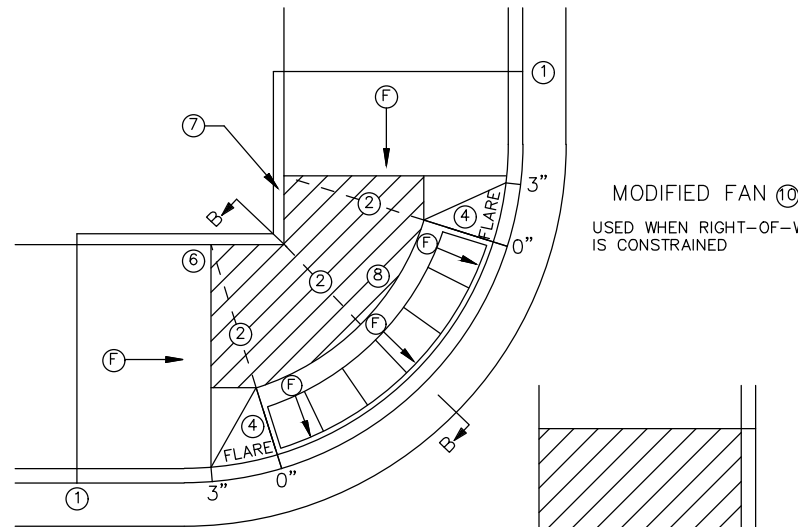
SECTION B-B
FAN



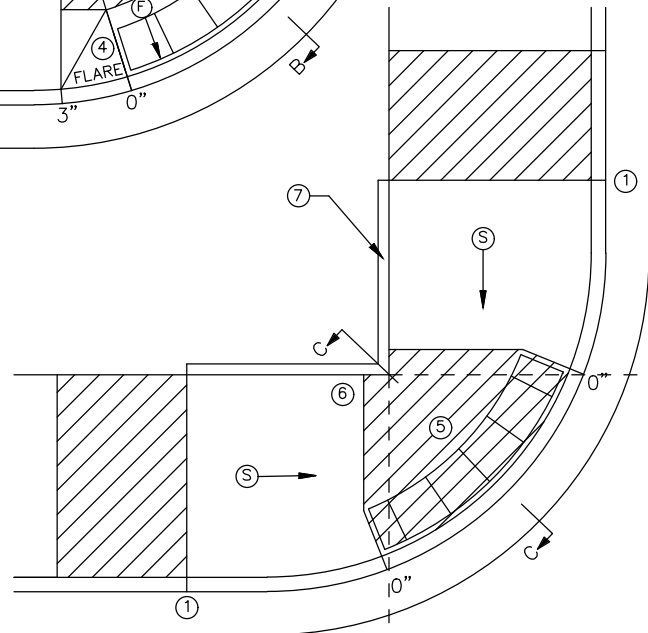
SECTION C-C
PARALLEL/DEPRESSED CORNER



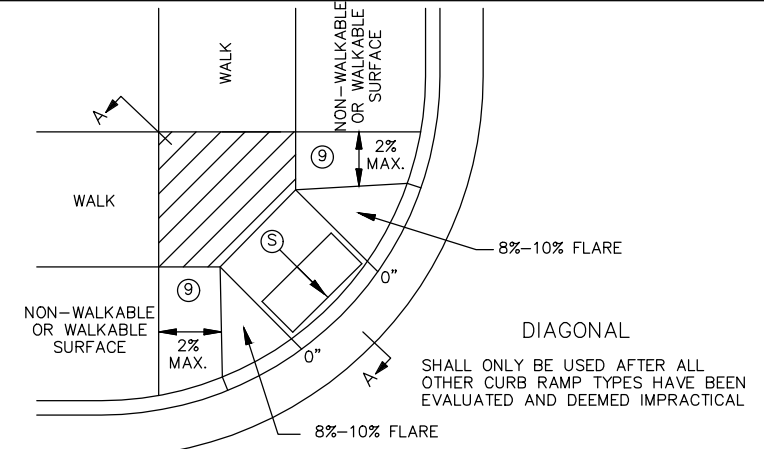
FAN 10



MODIFIED FAN 10
USED WHEN RIGHT-OF-WAY
IS CONSTRAINED



DEPRESSED CORNER



DIAGONAL

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMP 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 RAMP 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 RAMP. 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 PAR.

X" CURB HEIGHT



STANDARD PLAN 5-297.250 1 OF 6

STATE DESIGN ENGINEER

APPROVED: 1-23-2017
REVISED:

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

PEDESTRIAN CURB RAMP DETAILS



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THC
CHECK BY: DLH

NO.	DATE	DESCRIPTION

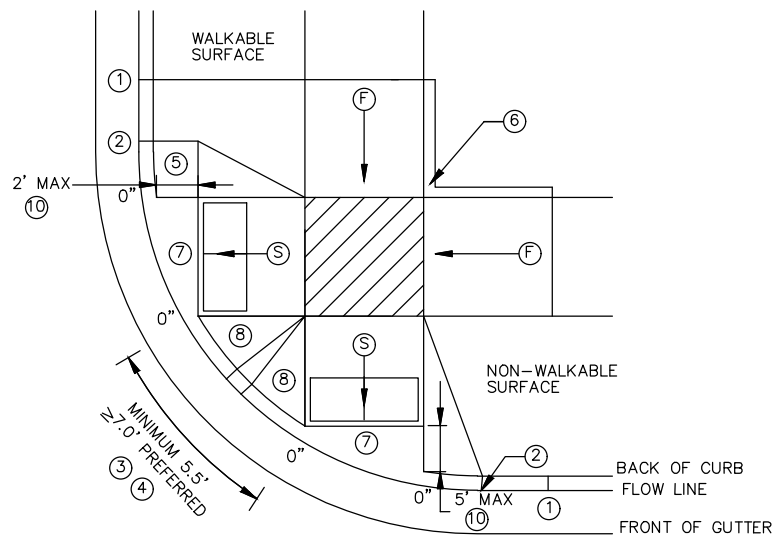
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DIANE L. HANKEE
DATE: 12/14/2020 LIC. NO.: 43338

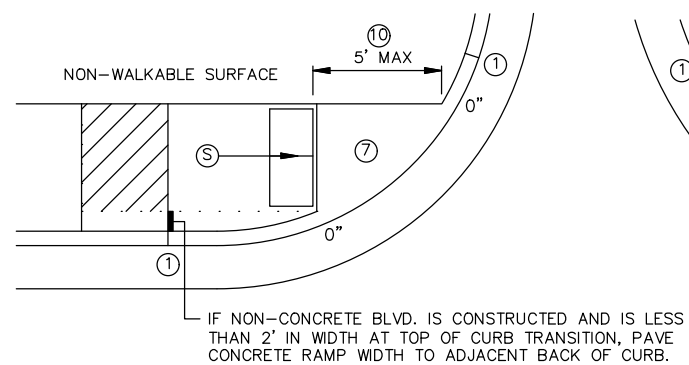
2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

GENERAL DETAILS

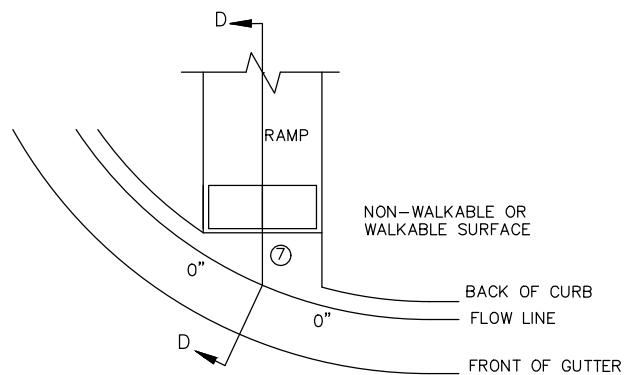
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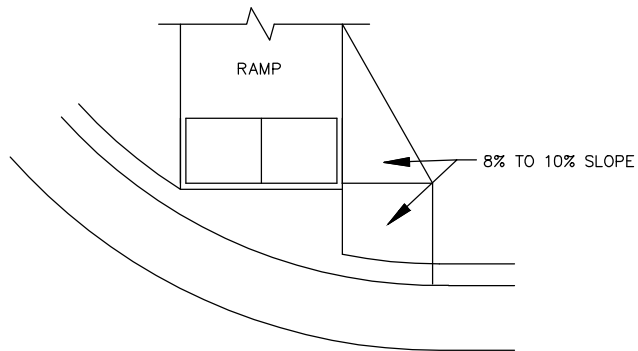
COMBINED DIRECTIONAL ⑨



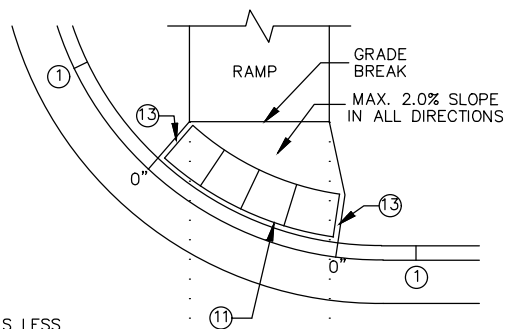
STANDARD ONE-WAY DIRECTIONAL ⑩



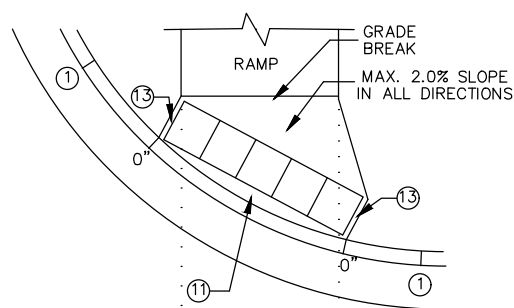
CURB FOR DIRECTIONAL RAMPS ⑭



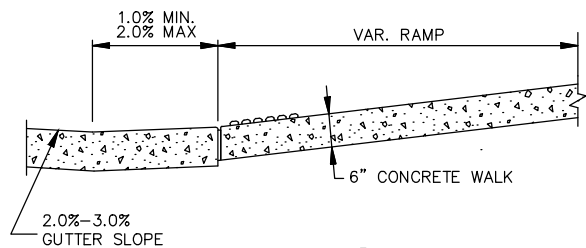
DIRECTIONAL RAMP WALKABLE FLARE



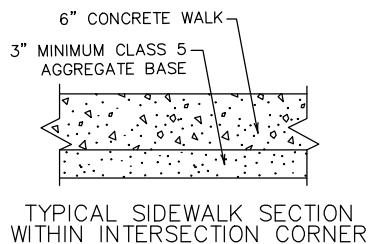
DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫



ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



SECTION D-D



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

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

④ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)

⑤ 4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).

⑥ 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.

⑦ 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.

⑧ 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.

⑨ 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.

⑩ 8% TO 10% WALKABLE FLARE.

⑪ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.

⑫ 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.

⑬ 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.

⑭ 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.

⑮ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

⑯ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

LEGEND

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

⑤ 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%.

⑥ 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%.

⑦ LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX. 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.

X" CURB HEIGHT

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER



STANDARD PLAN 5-297.250

2 OF 6

PEDESTRIAN CURB RAMP DETAILS

STATE DESIGN ENGINEER

APPROVED: 1-23-2017
REVISED:

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS



WSB PROJECT NO.:
017006-000

SCALE: DESIGN BY:
AS SHOWN EY
PLAN BY: CHECK BY:
THC DLH

NO.	DATE	DESCRIPTION

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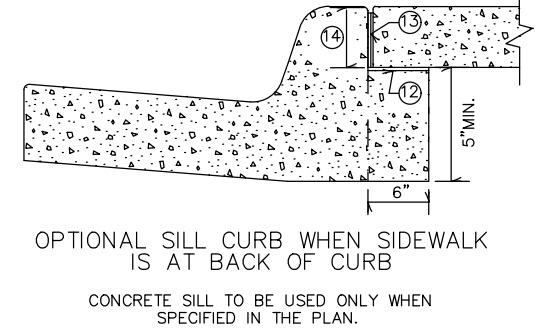
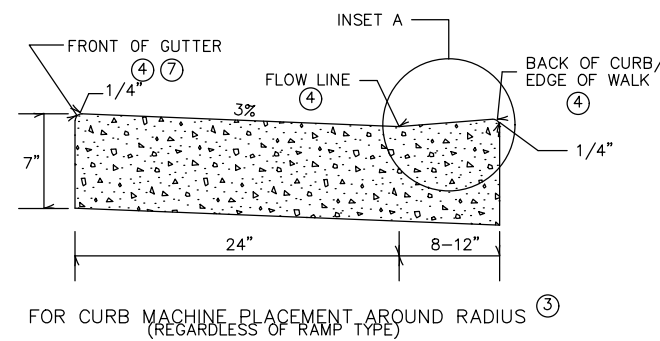
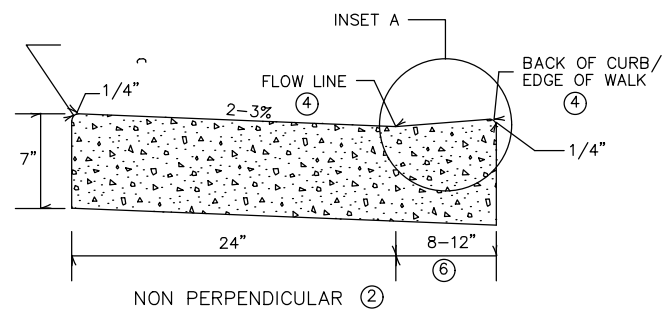
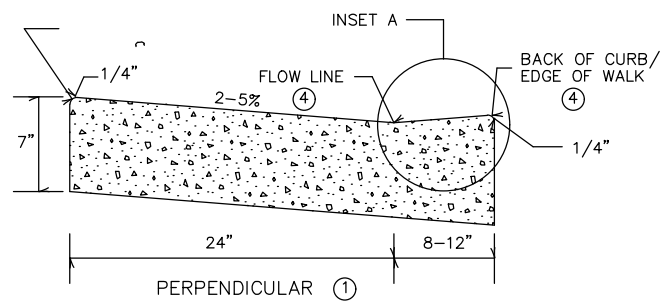
DIANE L. HANKEE
DATE: 12/14/2020 LIC. NO.: 43338

2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

GENERAL DETAILS

SHEET
8
OF
27

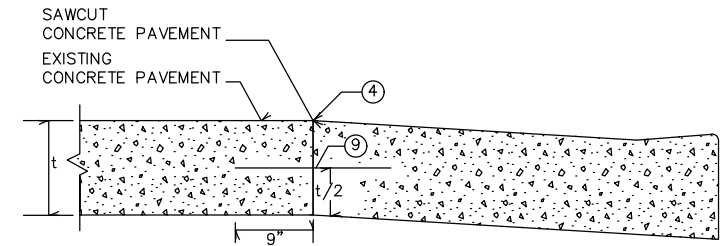
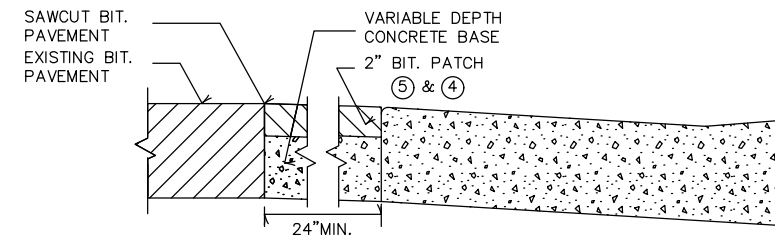
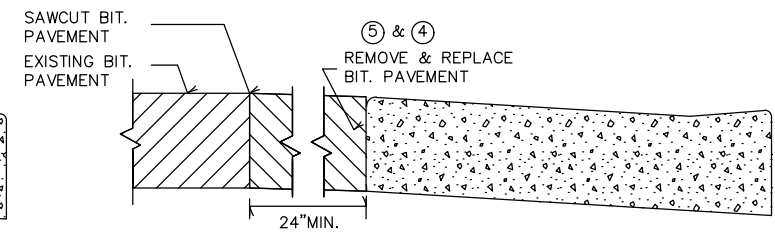
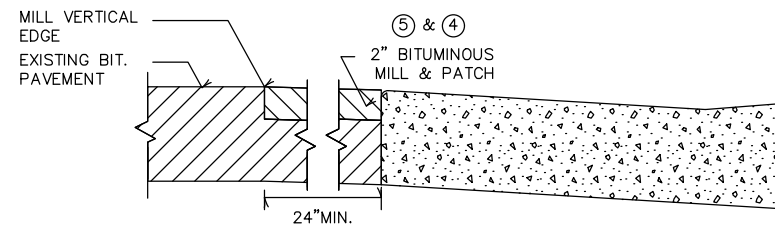
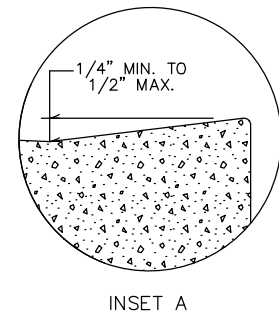
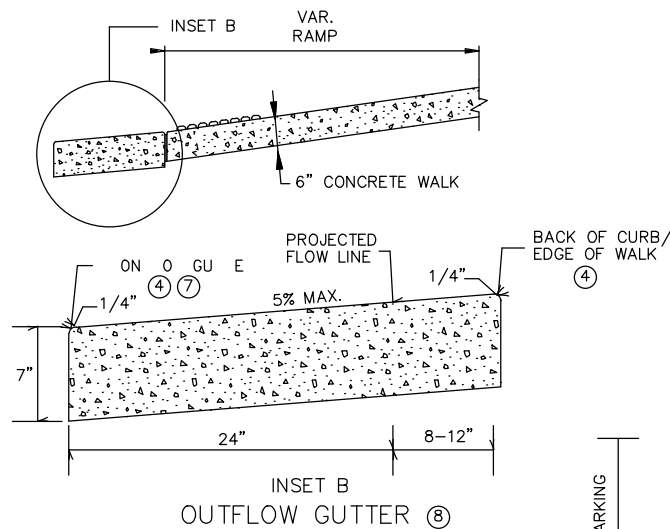
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PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL

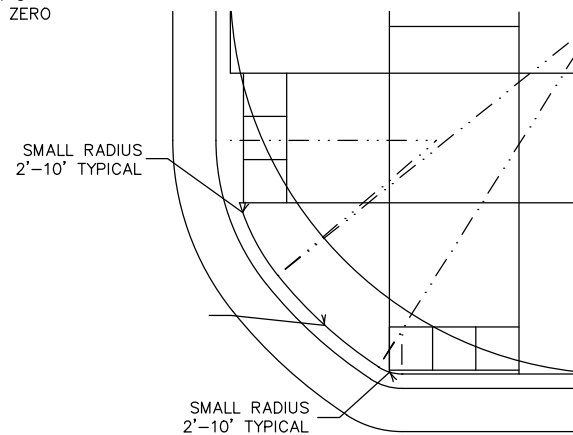
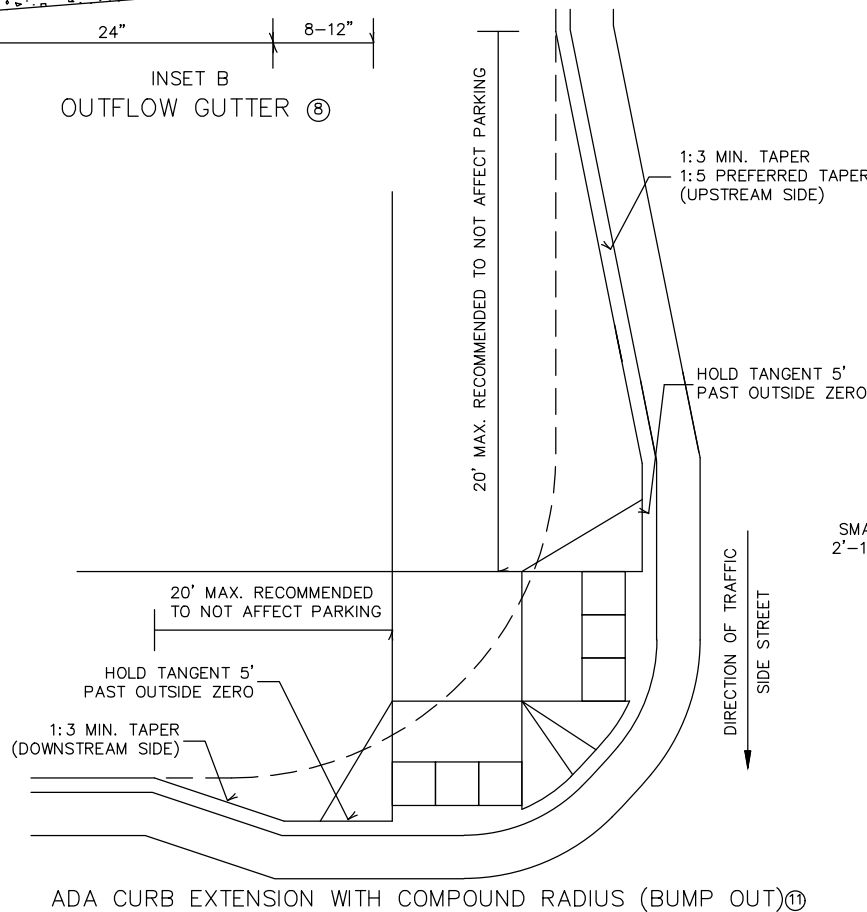
FOR CURB MACHINE PLACEMENT AROUND RADIUS (REGARDLESS OF RAMP TYPE)

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



ONLY ALLOWED PER ENGINEER'S APPROVAL

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



COMBINED DIRECTIONAL (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.

- 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 RAMP.
- 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.
- BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.
- THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".
- 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.
- VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.
- 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.
- SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.
- 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.
- 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.
- 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.
- PLACE BOND BREAKER BETWEEN WALK AND TOP OF SILL.
- 1/2" PREFORMED JOINT FILLER PER MNDOT SPEC. 3702.
- DIMENSION TO BE SAME AS SIDEWALK THICKNESS, 4" MIN.



STANDARD PLAN 5-297.250 3 OF 6
APPROVED: 1-23-2017
REVIS: 1-23-2017
STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

PEDESTRIAN CURB RAMP DETAILS



WSB PROJECT NO.: 017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THC
CHECK BY: DLH

NO.	DATE	DESCRIPTION

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

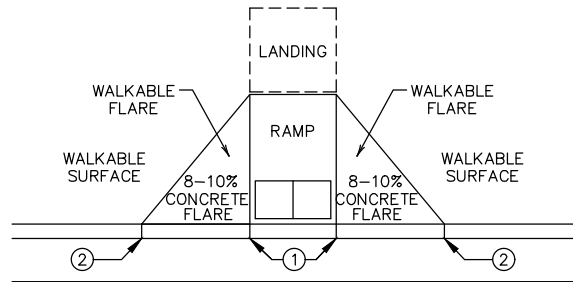
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2021 STREET IMPROVEMENT PROJECT
LINO LAKES, MINNESOTA

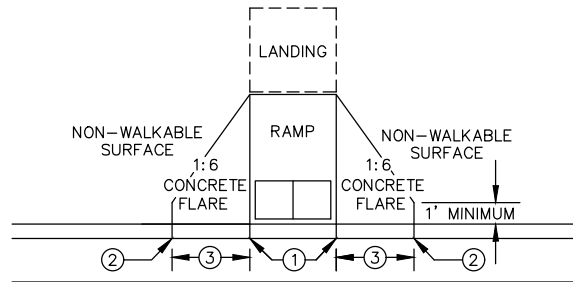
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SHEET 9 OF 27

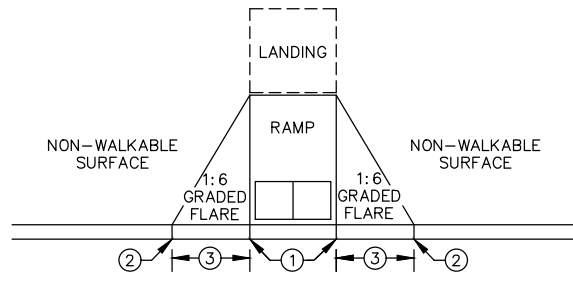
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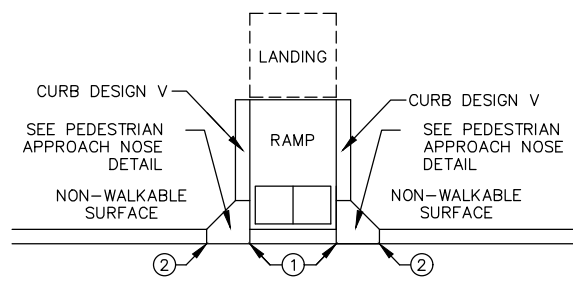
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

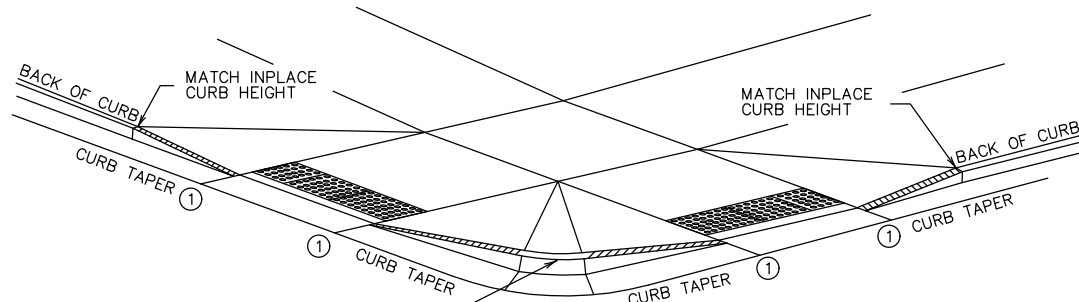


GRADED FLARES



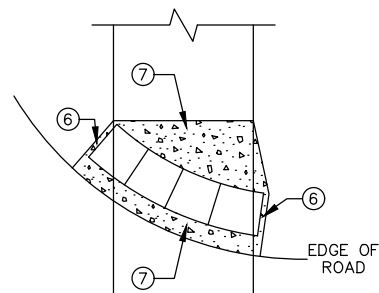
RETURNED CURB ⑤

TYPICAL SIDE TREATMENT OPTIONS ④ ①

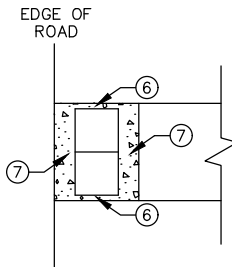


3" MINIMUM CURB HEIGHT, 4" PREFERRED
(MEASURED AT FRONT FACE OF CURB)
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑧
CURB AND GUTTER

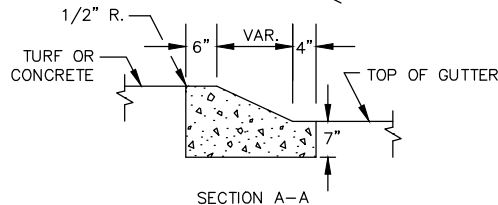
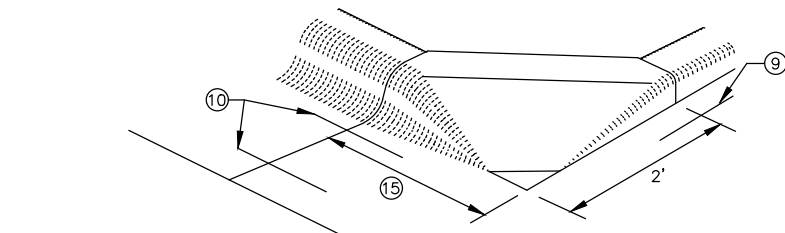


RADIAL DETECTABLE WARNING

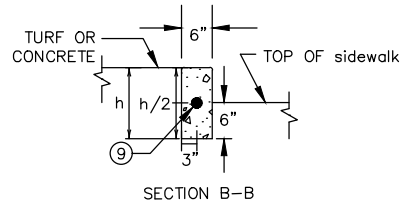


RECTANGULAR DETECTABLE WARNING

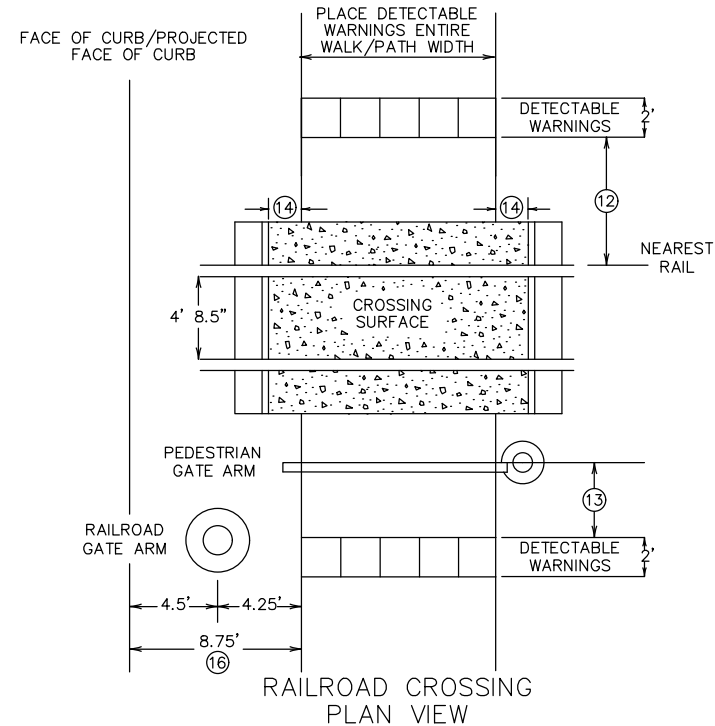
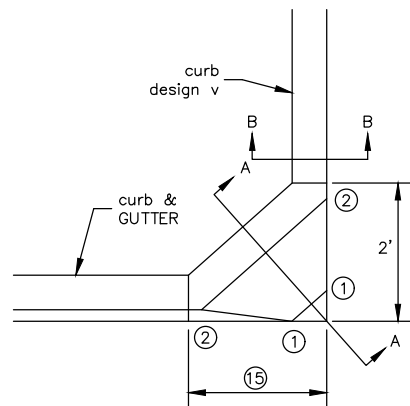
DETECTABLE EDGE WITHOUT CURB AND GUTTER



SECTION A-A



SECTION B-B



RAILROAD CROSSING
PLAN VIEW

NOTES:

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



STANDARD PLAN 5-297.250 4 OF 6

APPROVED: 1-23-2017
REVISOR: [Signature]
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THC
CHECK BY: DLH

NO.	DATE	DESCRIPTION

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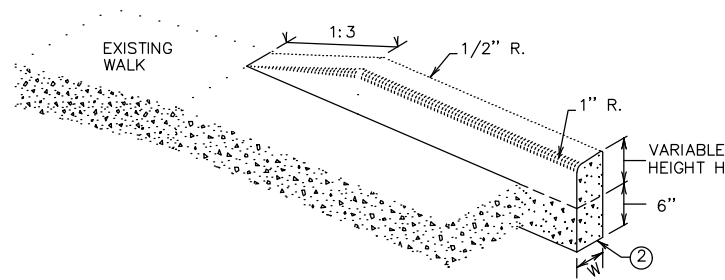
DIANE L. HANKEE
LIC. NO.: 43338
DATE: 12/14/2020

2021 STREET IMPROVEMENT PROJECT LINO LAKES, MINNESOTA

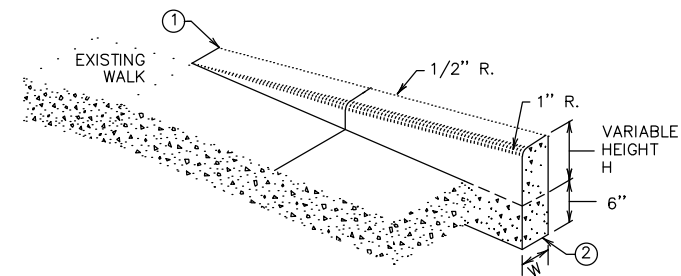
GENERAL DETAILS

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10
OF
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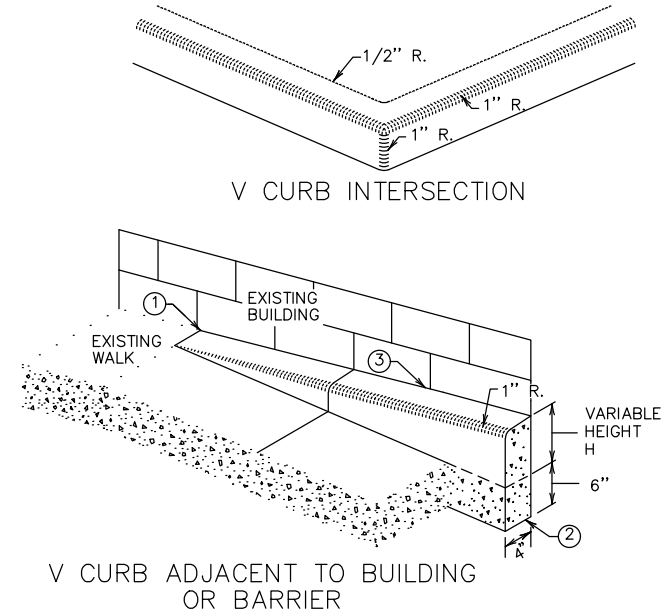
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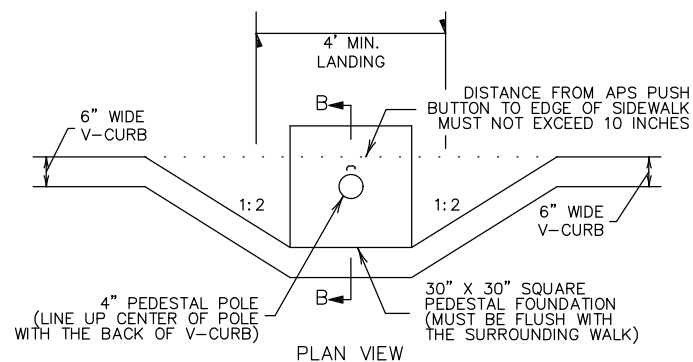
V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS



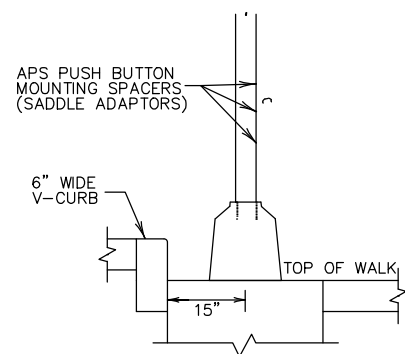
V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS



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

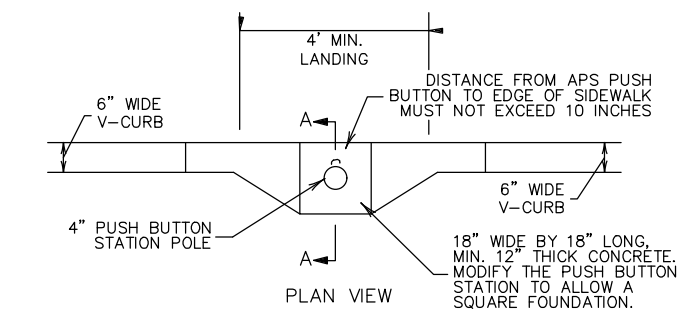


PLAN VIEW

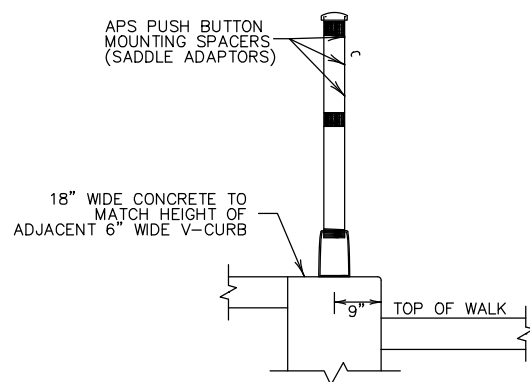


SECTION B-B

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)

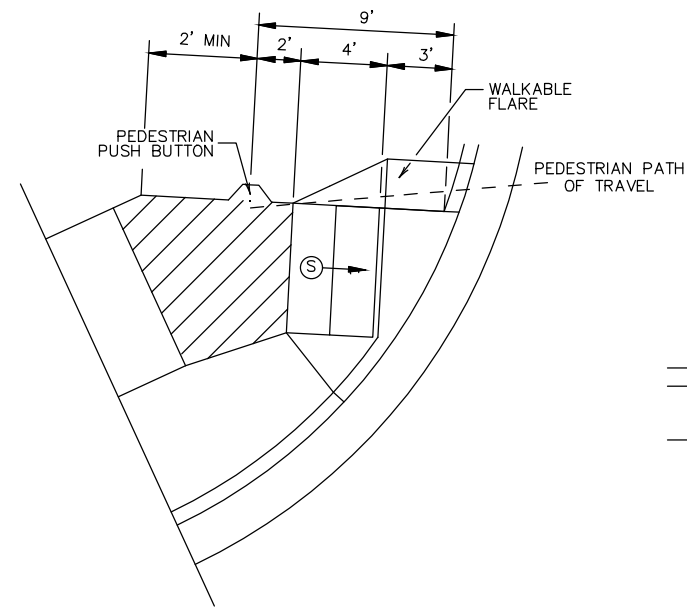


PLAN VIEW



SECTION A-A

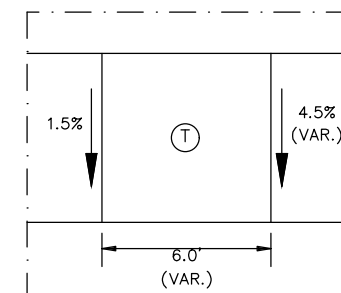
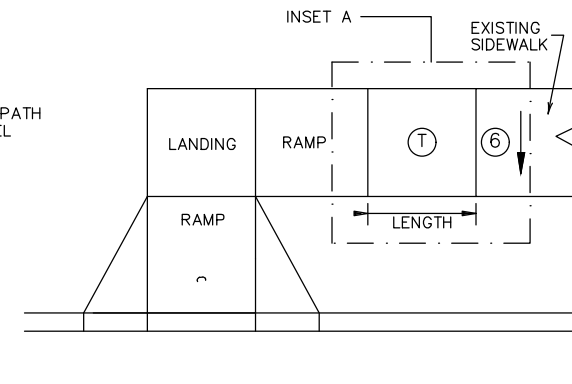
PUSH BUTTON STATION (V-CURB)



SEMI-DIRECTIONAL RAMP (3,4,9)

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

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



TRANSITION PANEL ④ ⑤

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.

- ⑤ 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%.
- ④ LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.
- ① 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.



STANDARD PLAN 5-297.250
5 OF 6
APPROVED: 1-23-2017
REVIS: 1-23-2017
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THC
CHECK BY: DLH

REVISIONS	
NO.	DATE

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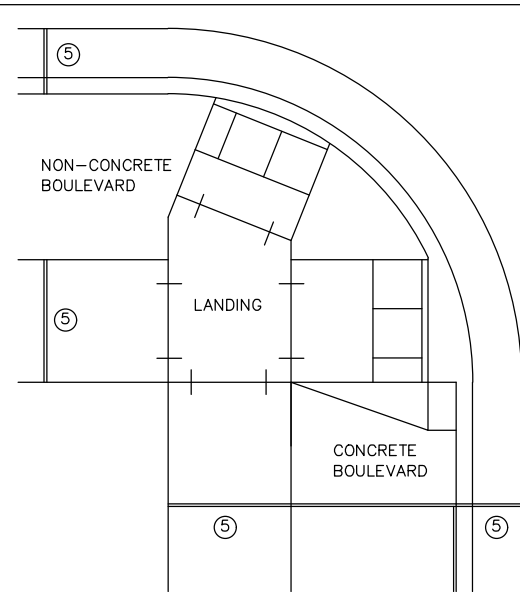
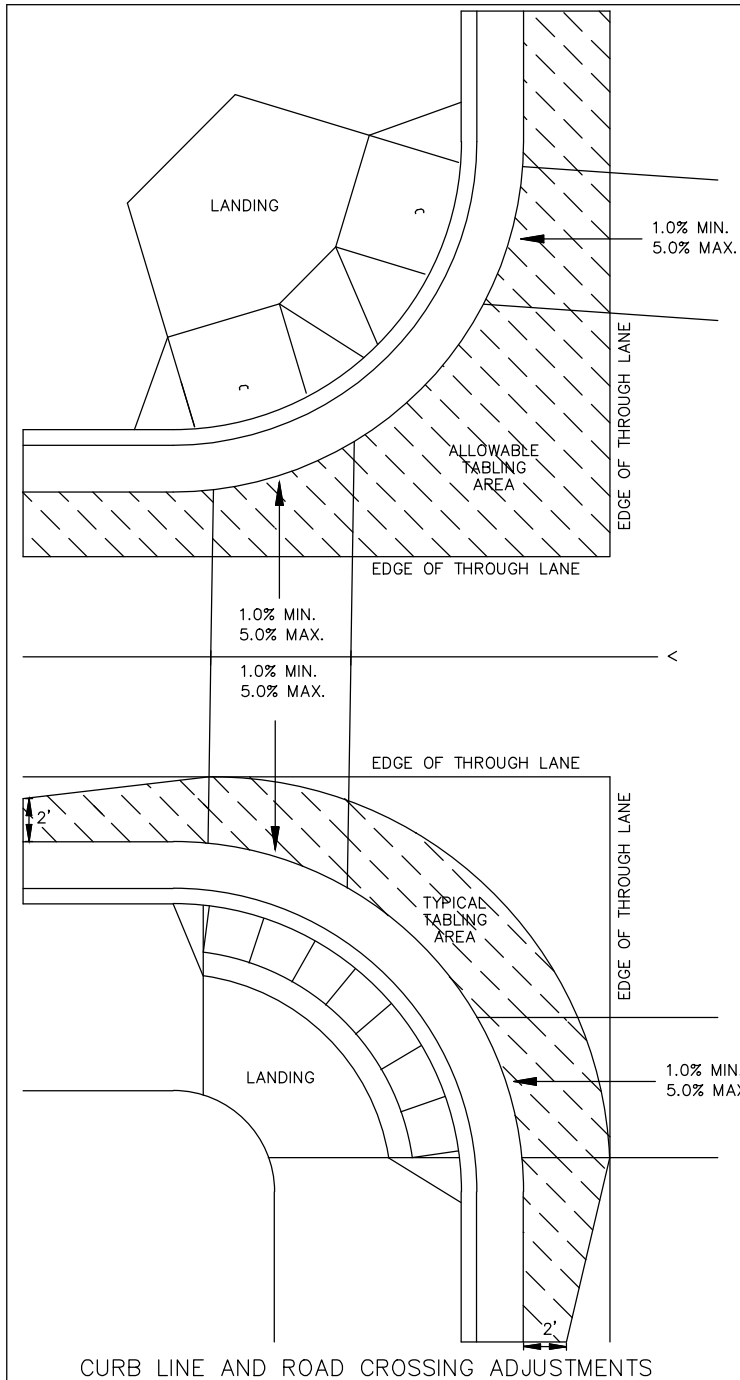
DIANE L. HANKEE
DATE: 12/14/2020 LIC. NO.: 43338

2021 STREET IMPROVEMENT
PROJECT
LINO LAKE, MINNESOTA

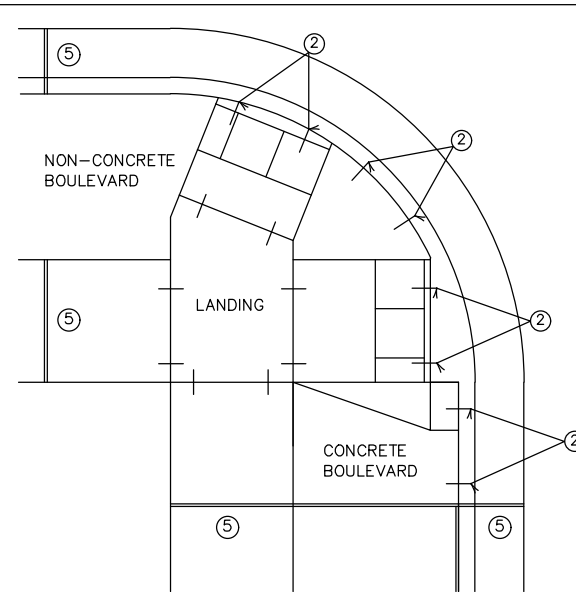
GENERAL DETAILS

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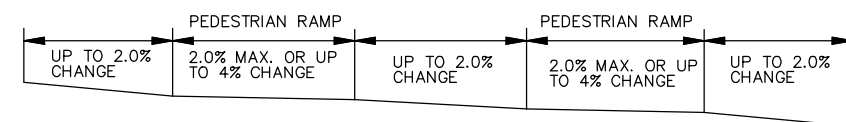
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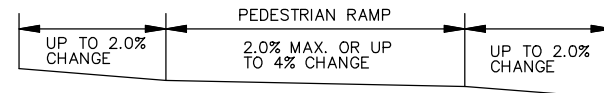
EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS



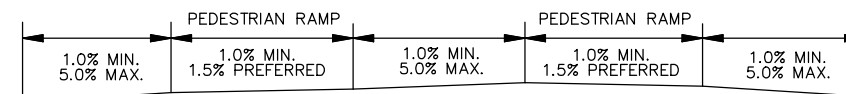
OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS ④



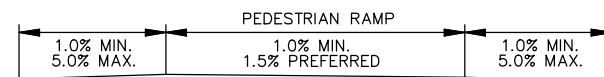
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



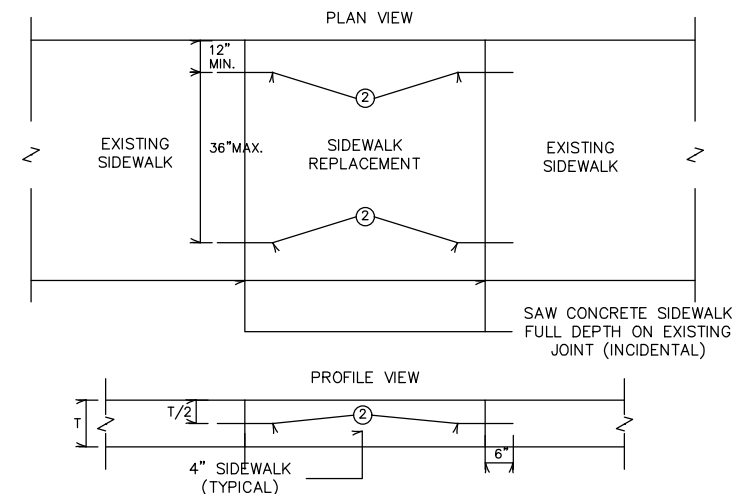
FLOW LINE PROFILE "TABLE" - FAN



FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS

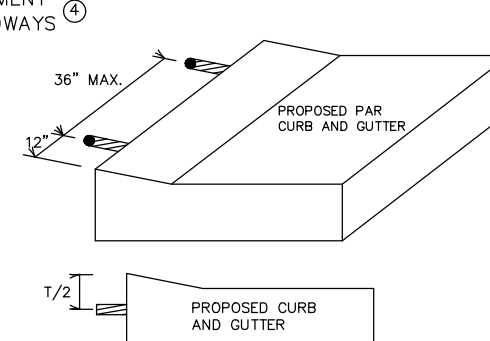


FLOW LINE PROFILE RAISE - FAN

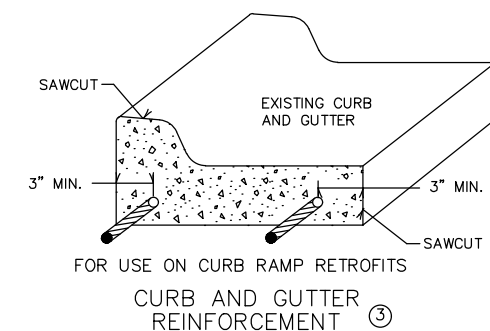


OPTIONAL SIDEWALK REINFORCEMENT

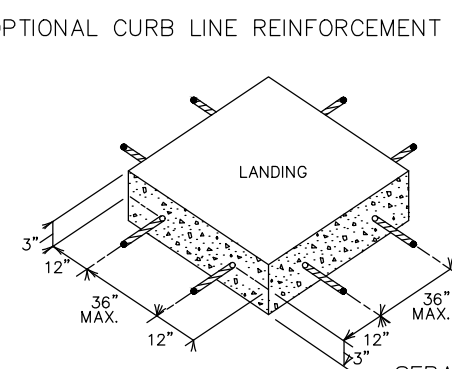
SIDEWALK REINFORCEMENT TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.



OPTIONAL CURB LINE REINFORCEMENT DETAILS ② ④



CURB AND GUTTER REINFORCEMENT ③



SEPARATE LANDING POUR REINFORCEMENT ①

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.

"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

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER



STANDARD PLAN 5-297.250 6 OF 6
APPROVED: 1-23-2017
REVIS: 1-23-2017
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THC
CHECK BY: DLH

REVISIONS	
NO.	DESCRIPTION

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DATE: 12/14/2020
LIC. NO.: 43338
DIANE L. HANKEE

2021 STREET IMPROVEMENT PROJECT
LINO LAKES, MINNESOTA

GENERAL DETAILS

SHEET
12
OF
27

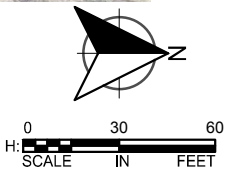
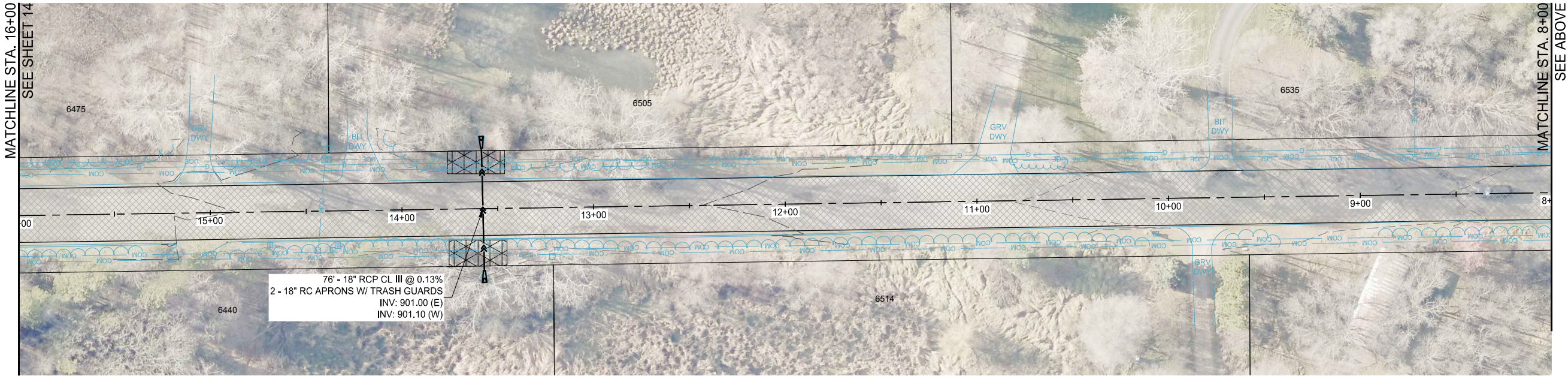
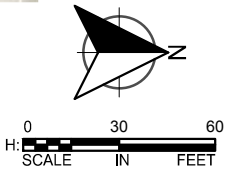
- NOTES:
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 2. PROTECT EXISTING UTILITIES. RECORD PLANS FOR SANITARY SEWER, WATERMAIN AND STORM SEWER CAN BE FOUND IN APPENDIX A OF THE PROJECT MANUAL. LOCATION MAPS FOR PRIVATE UTILITIES CAN BE FOUND IN APPENDIX D OF THE PROJECT MANUAL.
 3. PROTECT EXISTING DRIVEWAYS AND LANDSCAPING.
 4. ALL STREETS IN AND ADJACENT TO THE PROJECT SHALL REMAIN CLEAN AND PASSABLE AT ALL TIMES. ANY SEDIMENT OR DEBRIS SHALL BE REMOVED WITHIN 24 HOURS, AS DIRECTED BY THE ENGINEER , TO ENSURE PUBLIC SAFETY AND ACCESS.
 5. CITY RECORDS INDICATE THE PRESENCE OF GEOTEXTILE FABRIC UNDER THE ROADWAY WHERE PAST REPAIRS WERE COMPLETED. THE FABRIC IS AT AN ESTIMATED DEPTH OF 18" BELOW EXISTING GRADE. IF THE CONTRACTOR ENCOUNTERS FABRIC WHILE PERFORMING FULL DEPTH RECLAMATION ACTIVITIES, THE CONTRACTOR SHALL SUSPEND RECLAIMING OPERATIONS AND REMOVE AND SALVAGE THE EXISTING PAVEMENT BY MILLING.

JOYER LANE



LEGEND:

	FULL DEPTH RECLAMATION (SEE SPECIFICATION)		SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
	SITE GRADING: EXCAVATE 0.5' - 1' DEPTH TO PROVIDE DRAINAGE AWAY FROM ROAD		
	CLEAR & GRUB (BY ACRE)		



WSB PROJECT NO.:
017006-000

SCALE:	DESIGN BY:
AS SHOWN	EY
PLAN BY:	CHECK BY:
THC	DLH

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2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

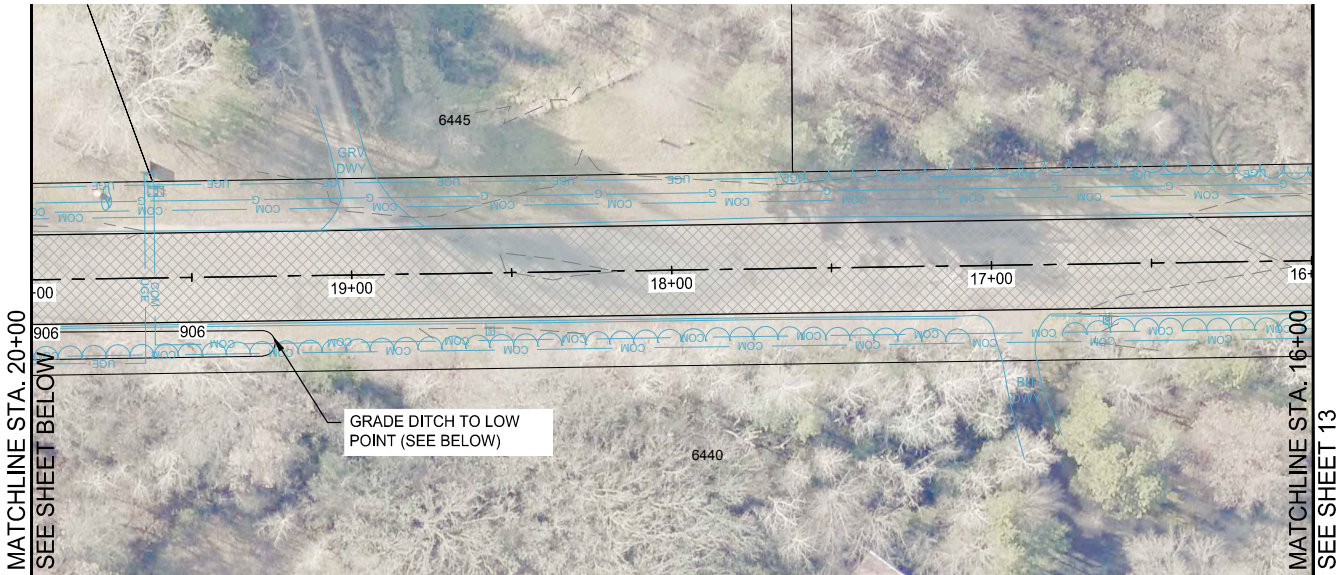
CONSTRUCTION
PLAN

SHEET
13
OF
27

NOTES:

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JOYER LANE



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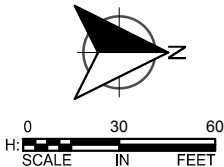
FULL DEPTH RECLAMATION
(SEE SPECIFICATION)

SITE GRADING: EXCAVATE 0.5' - 1'
DEPTH TO PROVIDE DRAINAGE AWAY
FROM ROAD

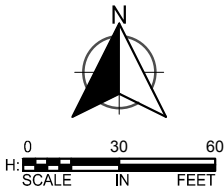
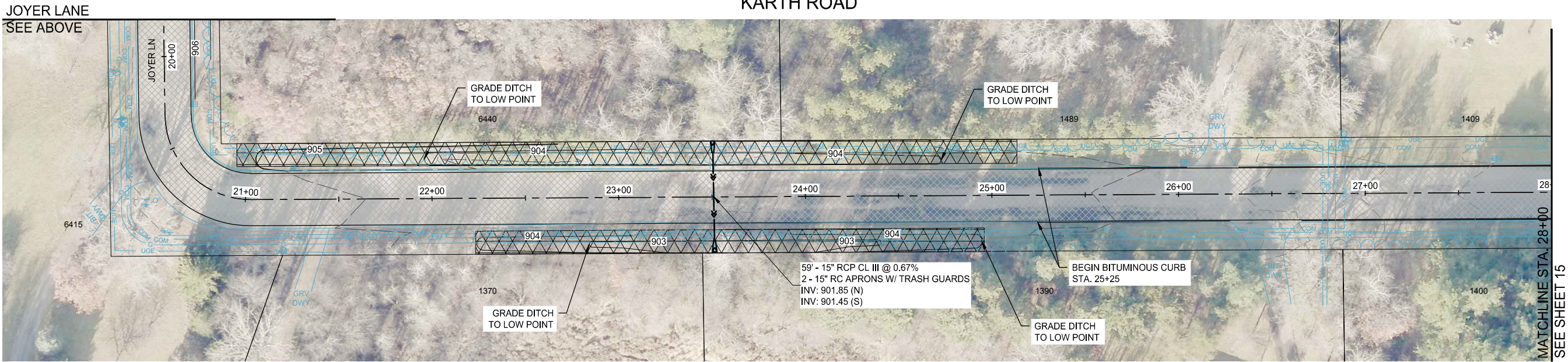
CLEAR & GRUB (BY ACRE)

B

SAWING BITUMINOUS PAVEMENT
(FULL DEPTH)



KARTH ROAD



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THC
CHECK BY: DLH

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DATE: 12/14/2020 LC. NO.: 43338

2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

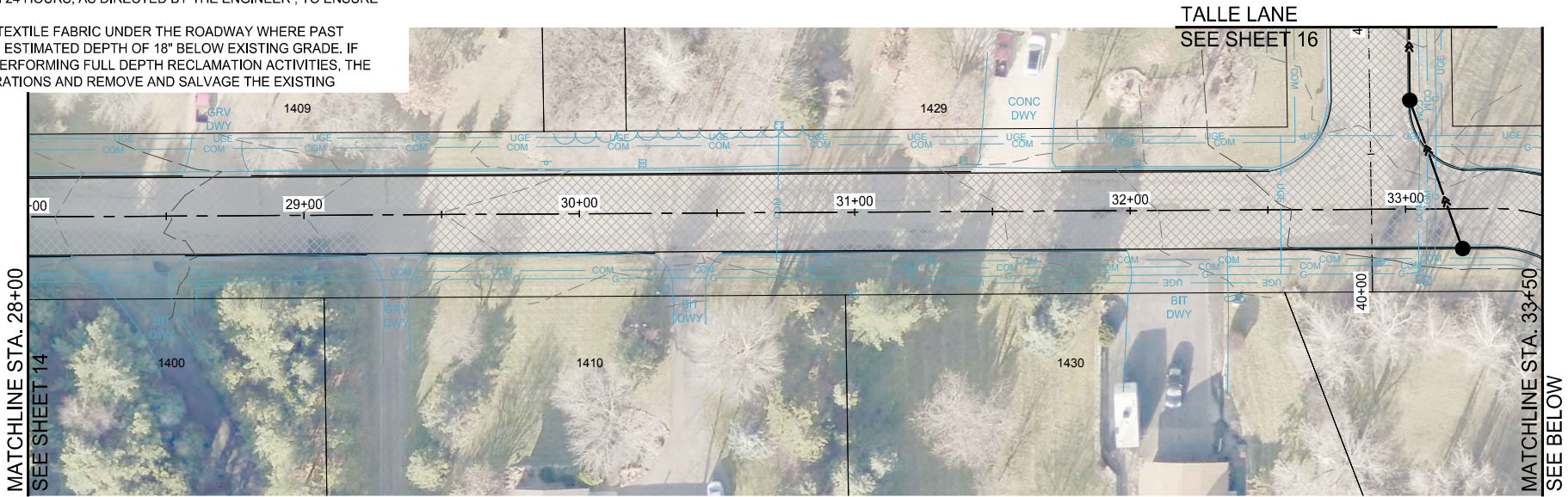
CONSTRUCTION
PLAN

SHEET
14
OF
27

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5. CITY RECORDS INDICATE THE PRESENCE OF GEOTEXTILE FABRIC UNDER THE ROADWAY WHERE PAST REPAIRS WERE COMPLETED. THE FABRIC IS AT AN ESTIMATED DEPTH OF 18" BELOW EXISTING GRADE. IF THE CONTRACTOR ENCOUNTERS FABRIC WHILE PERFORMING FULL DEPTH RECLAMATION ACTIVITIES, THE CONTRACTOR SHALL SUSPEND RECLAIMING OPERATIONS AND REMOVE AND SALVAGE THE EXISTING PAVEMENT BY MILLING.

KARTH ROAD



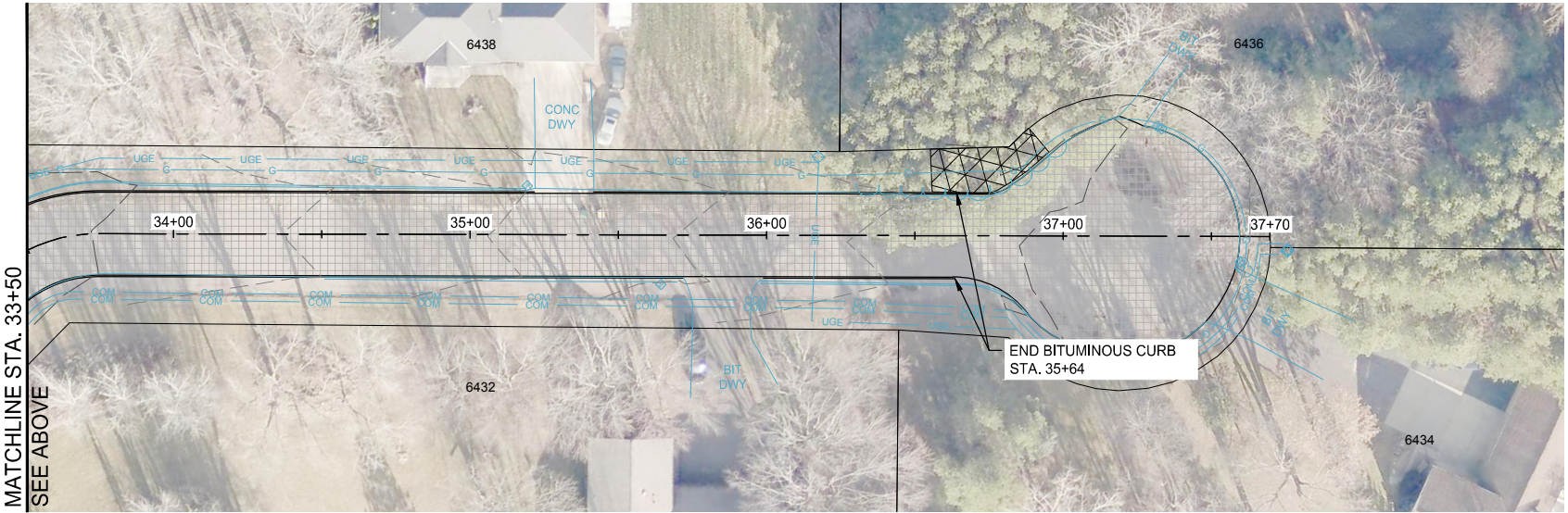
LEGEND:

FULL DEPTH RECLAMATION
(SEE SPECIFICATION)

SITE GRADING: EXCAVATE 0.5' - 1'
DEPTH TO PROVIDE DRAINAGE AWAY
FROM ROAD

CLEAR & GRUB (BY ACRE)

SAWING BITUMINOUS PAVEMENT
(FULL DEPTH)



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THCH
CHECK BY: DLH

REVISIONS	
NO.	DESCRIPTION

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

DIANE L. HANKEE
DATE: 12/14/2020 LIC. NO.: 43338

2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

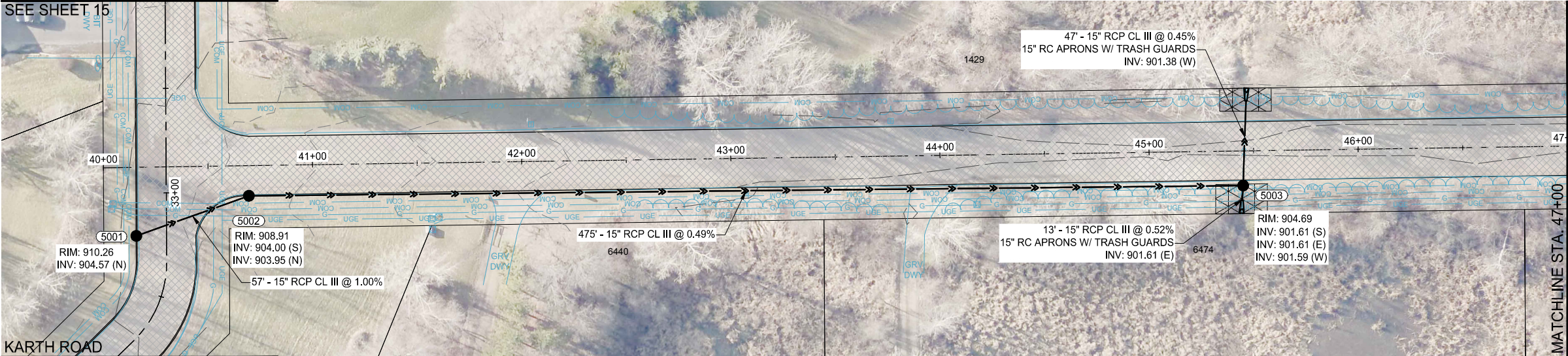
CONSTRUCTION
PLAN

SHEET
15
OF
27

- NOTES:
1. REMOVALS TO BE DETERMINED BY THE ENGINEER IN THE FIELD. LIMITS OF ALL REMOVALS WILL BE MARKED BY THE ENGINEER IN THE FIELD PRIOR TO CONSTRUCTION.
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TALLE LANE

KARTH ROAD
SEE SHEET 15



KARTH ROAD
SEE SHEET 15

LEGEND:



FULL DEPTH RECLAMATION
(SEE SPECIFICATION)



SITE GRADING: EXCAVATE 0.5' - 1'
DEPTH TO PROVIDE DRAINAGE AWAY
FROM ROAD

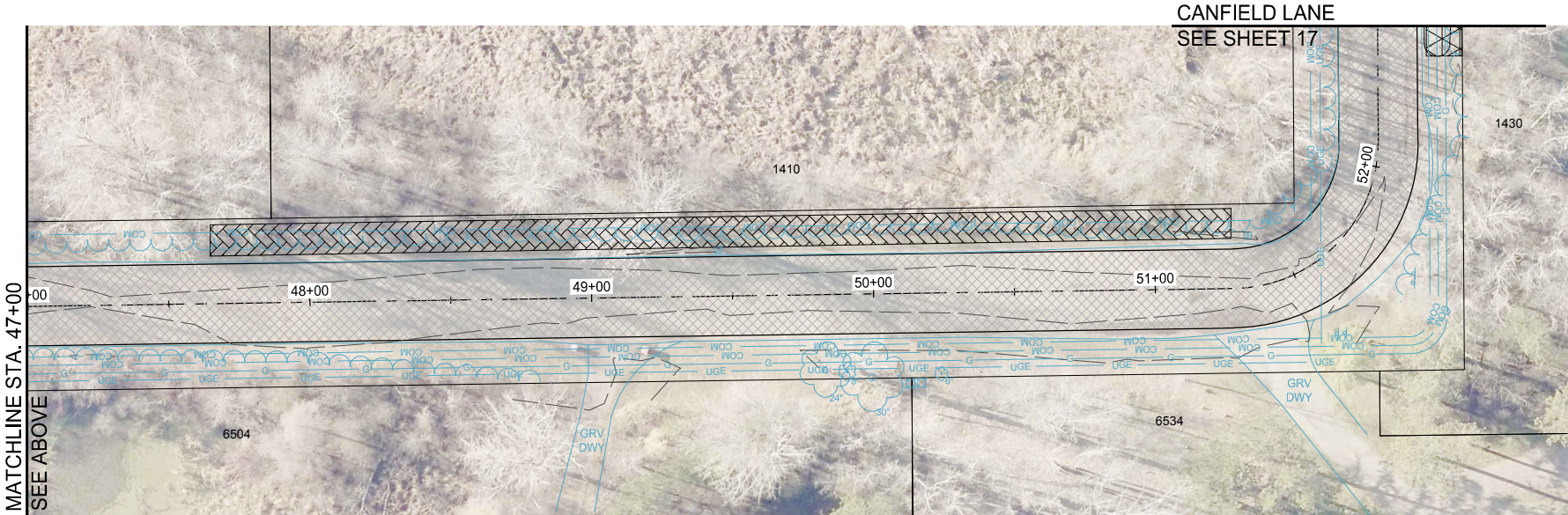
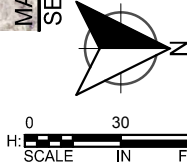


CLEAR & GRUB (BY ACRE)



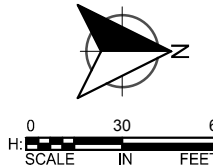
SAWING BITUMINOUS PAVEMENT
(FULL DEPTH)

MATCHLINE STA. 47+00
SEE BELOW



CANFIELD LANE
SEE SHEET 17

MATCHLINE STA. 47+00
SEE ABOVE



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THCH
CHECK BY: DLH

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DIANE L. HANKEE
DATE: 12/14/2020 LIC. NO.: 43338

2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

CONSTRUCTION
PLAN

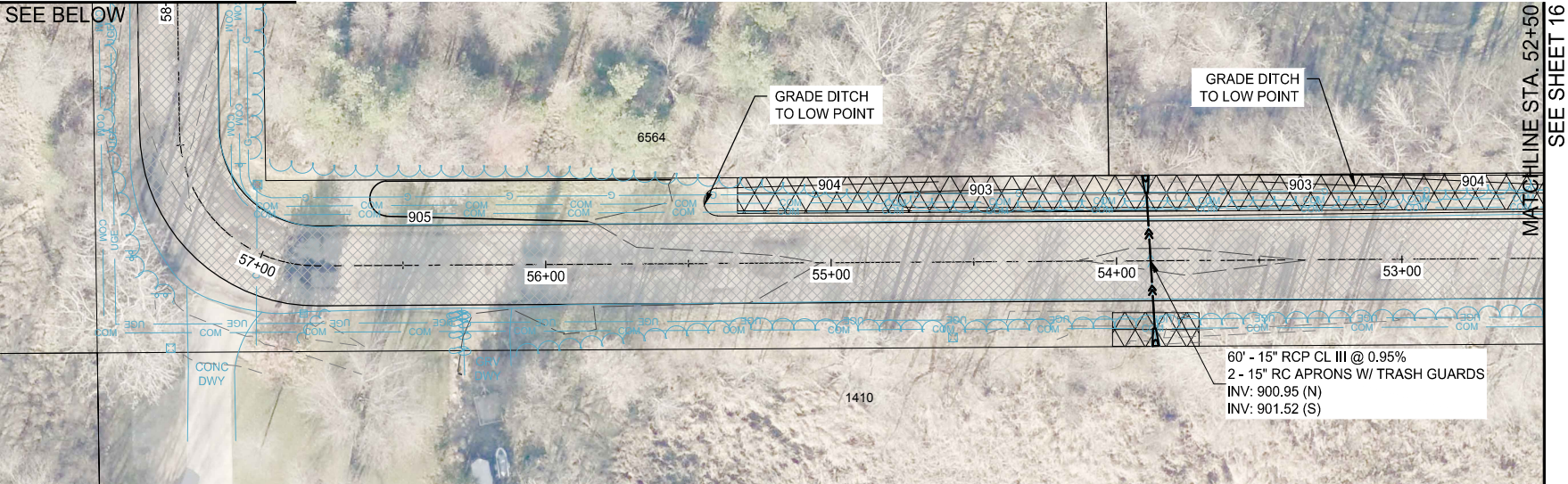
SHEET
16
OF
27

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CANFIELD ROAD

GAAGE LANE



LEGEND:



FULL DEPTH RECLAMATION
(SEE SPECIFICATION)



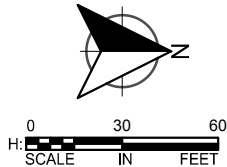
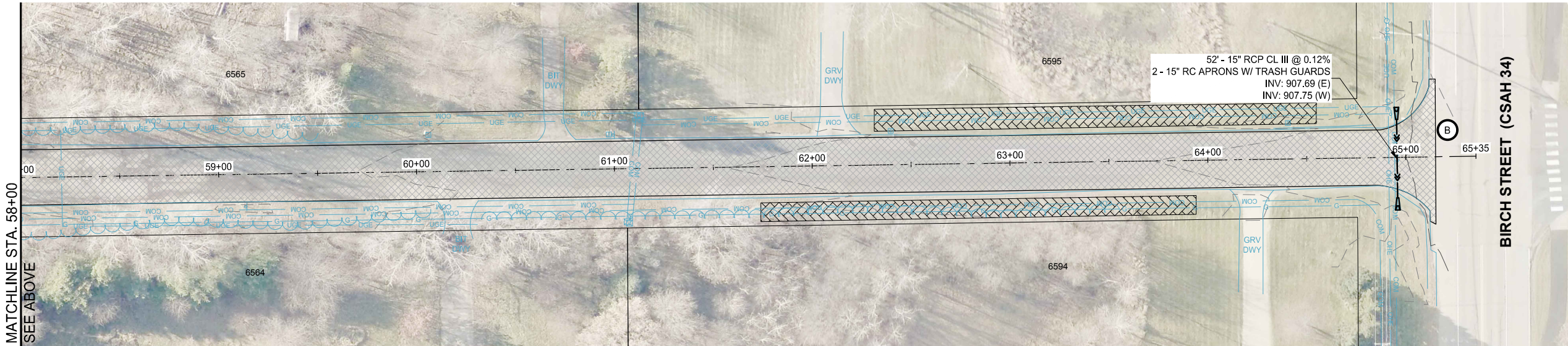
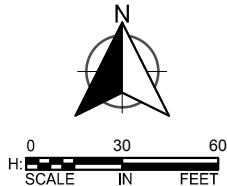
SAWING BITUMINOUS PAVEMENT
(FULL DEPTH)



SITE GRADING: EXCAVATE 0.5' - 1'
DEPTH TO PROVIDE DRAINAGE AWAY
FROM ROAD



CLEAR & GRUB (BY ACRE)



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THC
CHECK BY: DLH

REVISIONS

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DIANE L. HANKEE
DATE: 12/14/2020 LIC. NO.: 43338

2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

CONSTRUCTION
PLAN

SHEET
17
OF
27

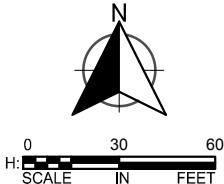
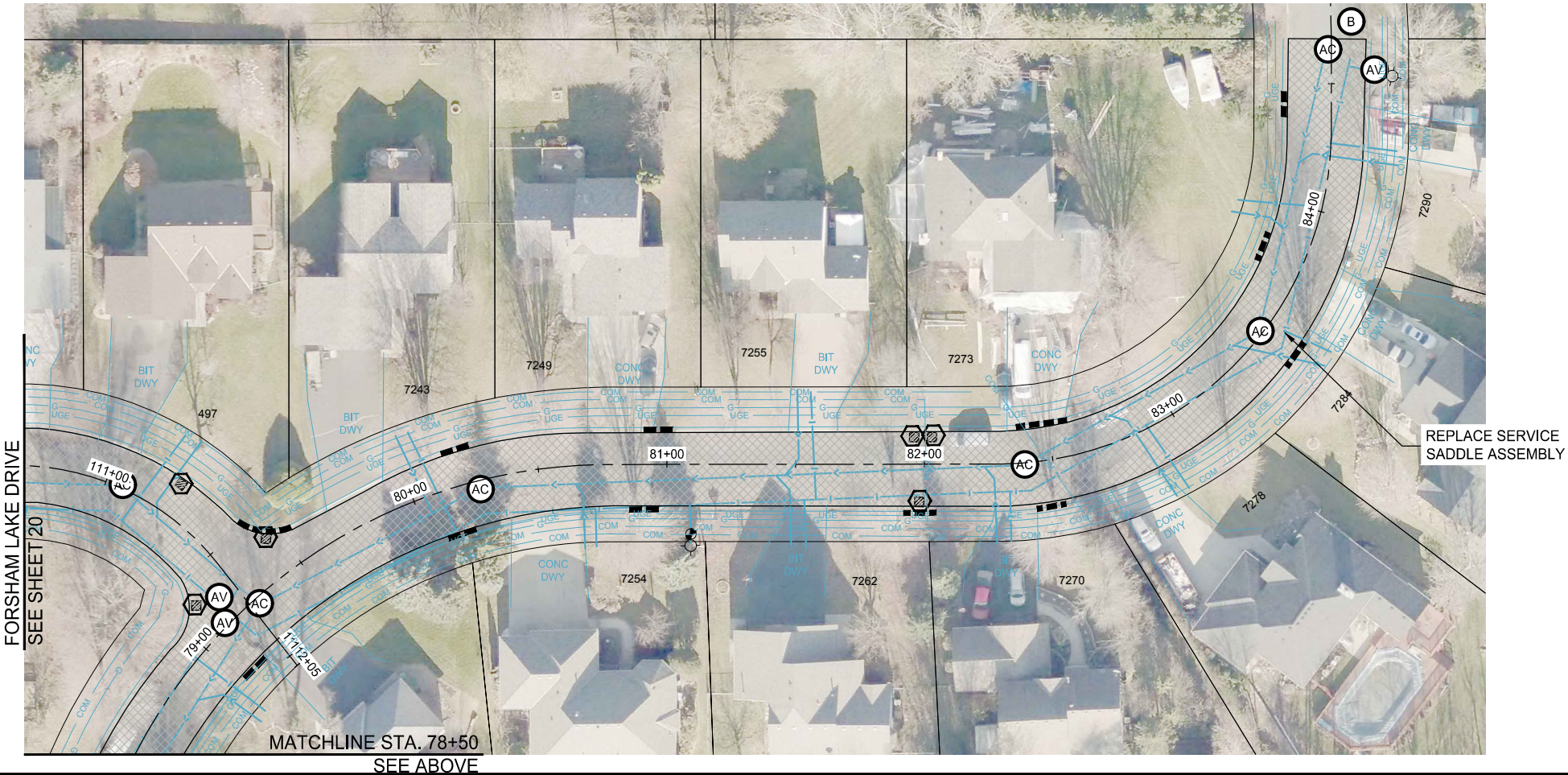
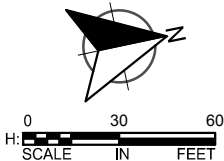
STAGE COACH TRAIL



- NOTES:
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 7. REPAIR 2 CATCH BASINS. LOCATIONS AS DIRECTED BY ENGINEER.

LEGEND:

	FULL DEPTH RECLAMATION (SEE SPECIFICATION)		ADJUST FRAME AND RING CASTING
	1.5" BITUMINOUS OVERLAY (SEE SPECIFICATION)		REPAIR GATE VALVE BOLTS
	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)		ADJUST GATE VALVE AND BOX
	REMOVE AND REPLACE CONCRETE CURB AND GUTTER		REMOVE AND REPLACE PEDESTRIAN RAMP
			PROPOSED INLET PROTECTION



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THCH
CHECK BY: DLH

REVISIONS	
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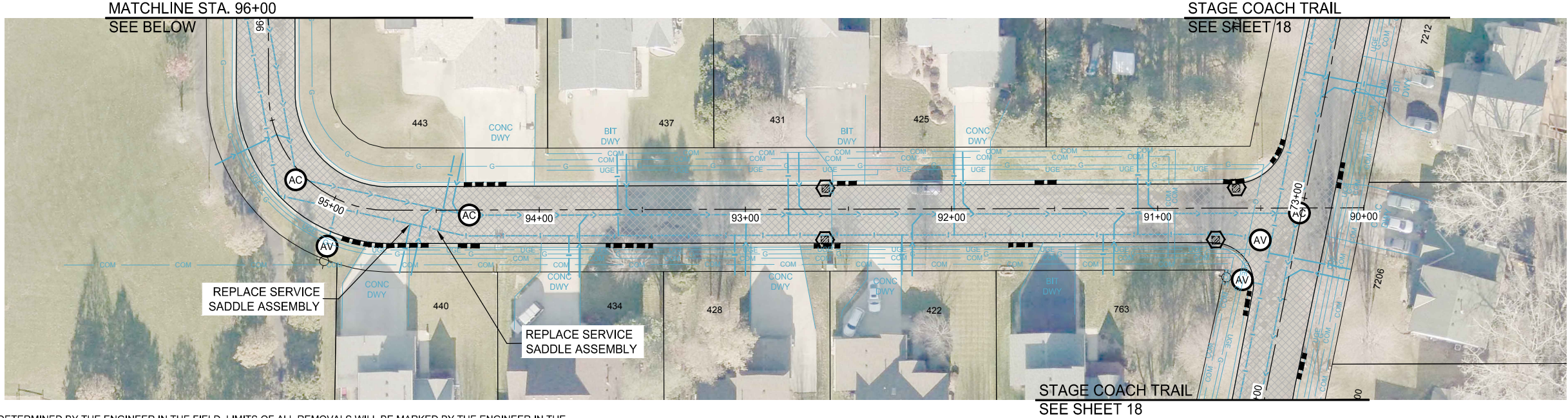
DATE: 12/14/2020
LIC. NO.: 43338
DIANE L. HANKEE

2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

CONSTRUCTION
PLAN

SHEET
18
OF
27

POST ROAD

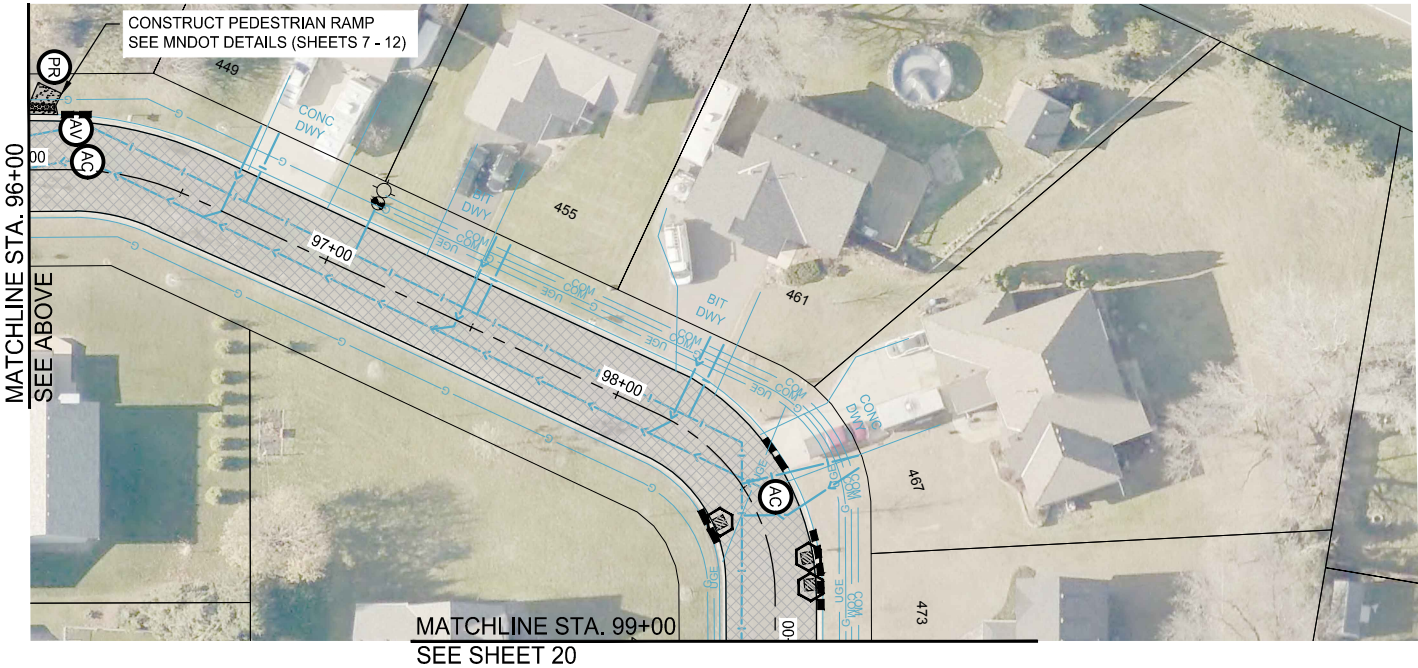


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LEGEND:

	FULL DEPTH RECLAMATION (SEE SPECIFICATION)		ADJUST FRAME AND RING CASTING
	1.5" BITUMINOUS OVERLAY (SEE SPECIFICATION)		REPAIR GATE VALVE BOLTS
	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)		REMOVE AND REPLACE PEDESTRIAN RAMP
	REMOVE AND REPLACE CONCRETE CURB AND GUTTER		PROPOSED INLET PROTECTION

POST ROAD



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THC
CHECK BY: DLH

REVISIONS	
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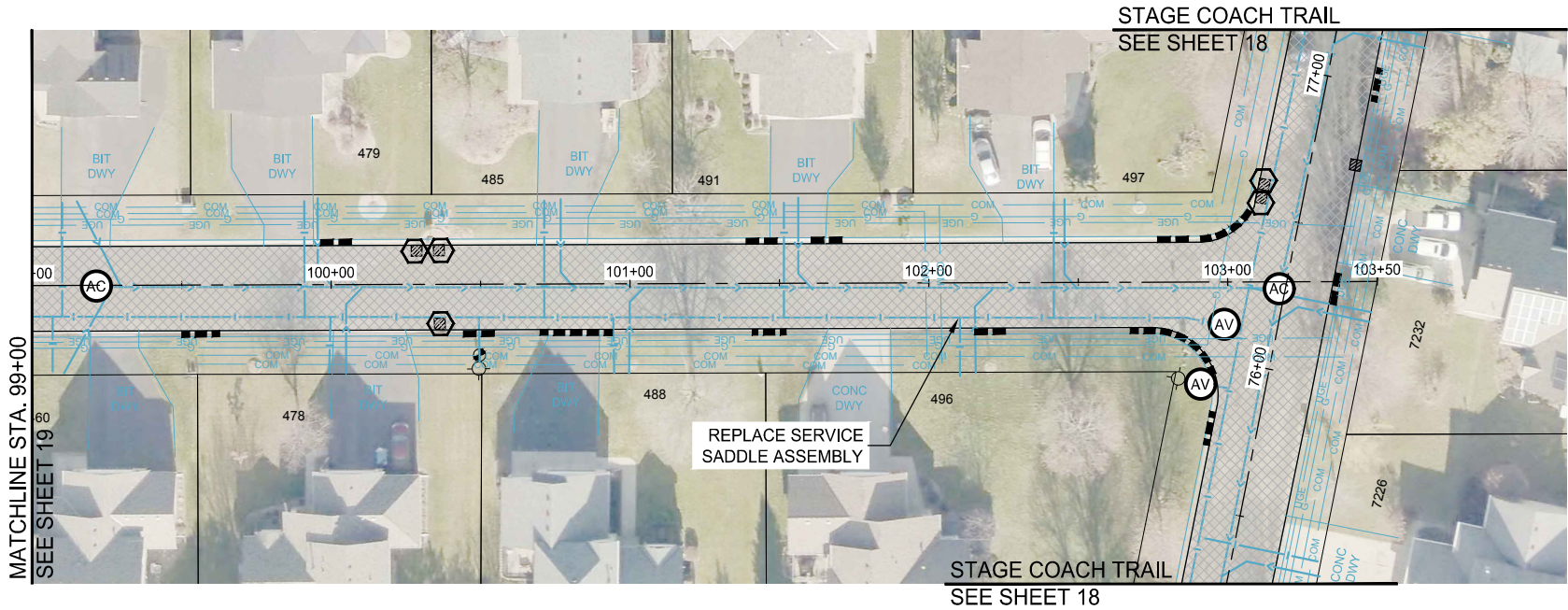
DIANE L. HANKEE
DATE: 12/14/2020 LIC. NO.: 43338

2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

CONSTRUCTION
PLAN

SHEET
19
OF
27

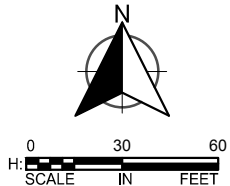
POST ROAD



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LEGEND:

- | | | | |
|--|--|--|--|
| | FULL DEPTH RECLAMATION (SEE SPECIFICATION) | | ADJUST FRAME AND RING CASTING |
| | 1.5" BITUMINOUS OVERLAY (SEE SPECIFICATION) | | REPAIR GATE VALVE BOLTS
ADJUST GATE VALVE AND BOX |
| | SAWING BITUMINOUS PAVEMENT (FULL DEPTH) | | REMOVE AND REPLACE
PEDESTRIAN RAMP |
| | REMOVE AND REPLACE
CONCRETE CURB AND GUTTER | | PROPOSED INLET PROTECTION |



REVISIONS

NO.	DATE	DESCRIPTION

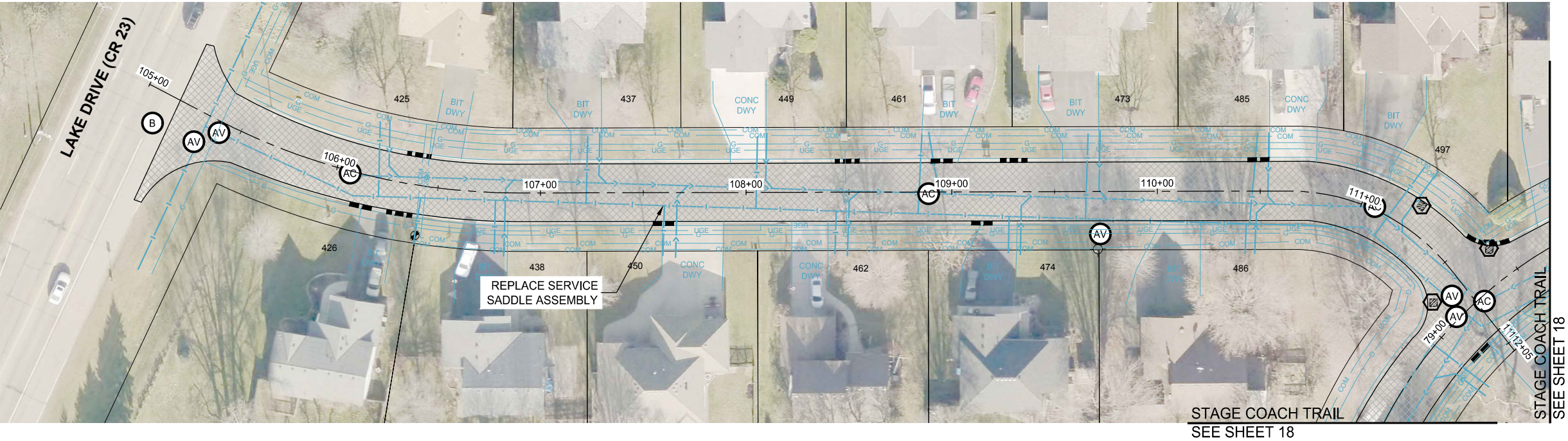
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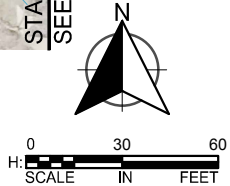
2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

CONSTRUCTION
PLAN

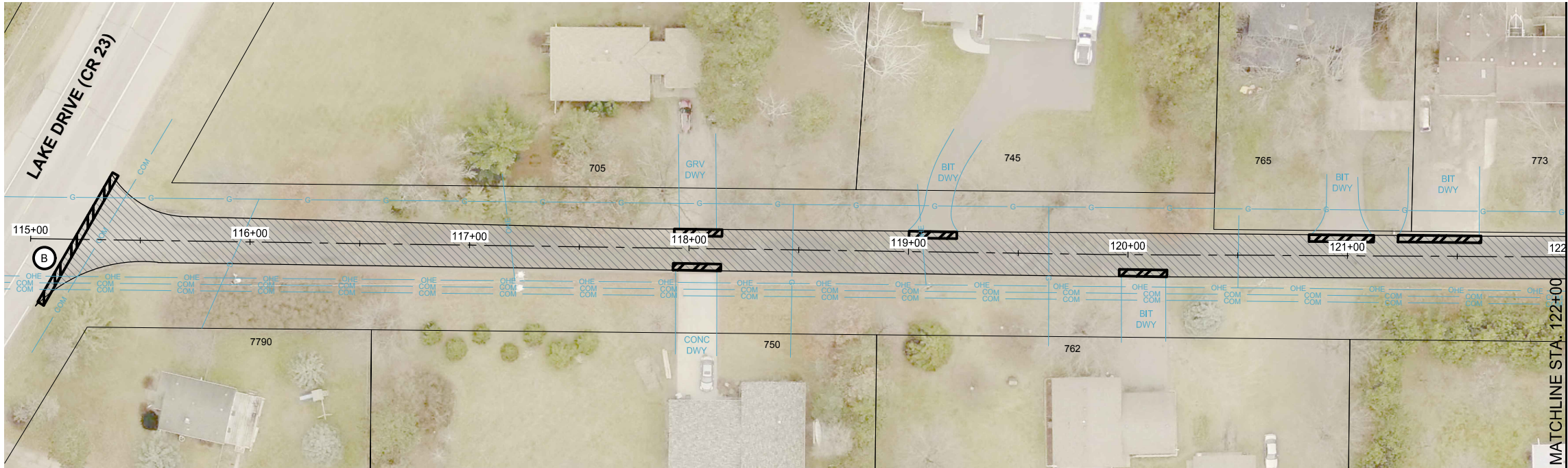
SHEET
20
OF
27



FORSHAM LAKE DRIVE



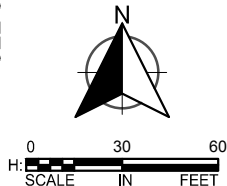
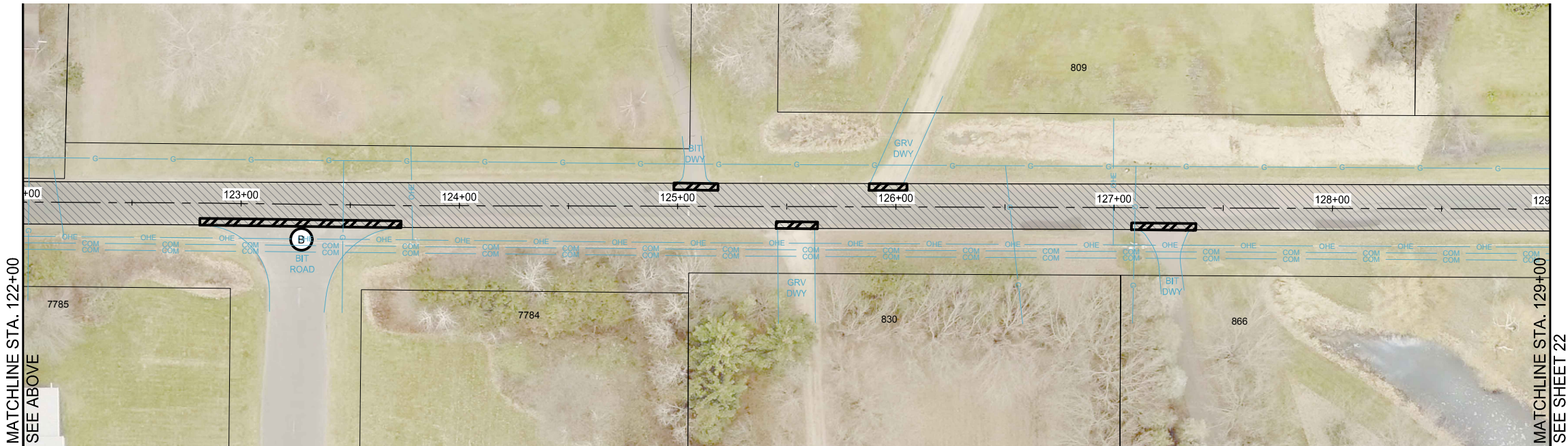
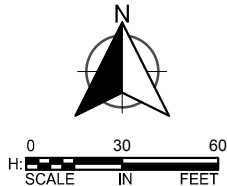
OAK LANE



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LEGEND:

	FULL DEPTH RECLAMATION (SEE SPECIFICATION)		ADJUST FRAME AND RING CASTING
	1.5" BITUMINOUS OVERLAY (SEE SPECIFICATION)		REPAIR GATE VALVE BOLTS ADJUST GATE VALVE AND BOX
	3' BITUMINOUS EDGE MILL (1.5" DEPTH)		PROPOSED INLET PROTECTION
	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)		



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THC
CHECK BY: DLH

REVISIONS	
NO.	DESCRIPTION

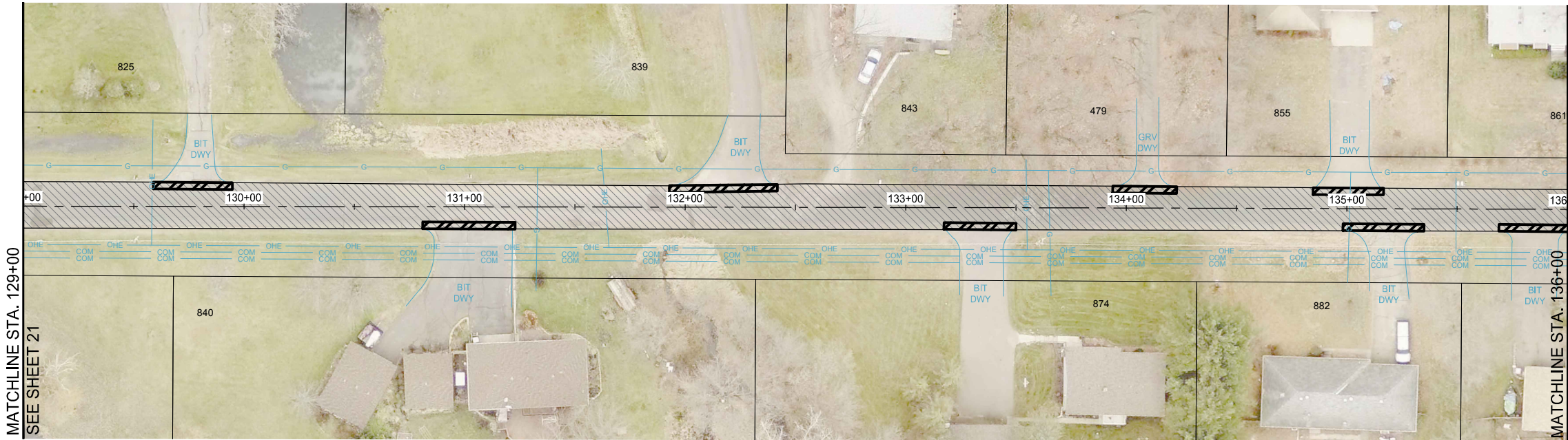
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DIANE L. HANKEE
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2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

CONSTRUCTION
PLAN

OAK LANE



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LEGEND:

FULL DEPTH RECLAMATION
(SEE SPECIFICATION)

1.5" BITUMINOUS OVERLAY
(SEE SPECIFICATION)

3' BITUMINOUS EDGE MILL
(1.5" DEPTH)

B

SAWING BITUMINOUS PAVEMENT
(FULL DEPTH)

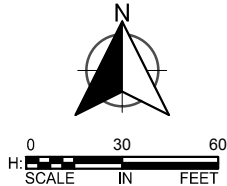
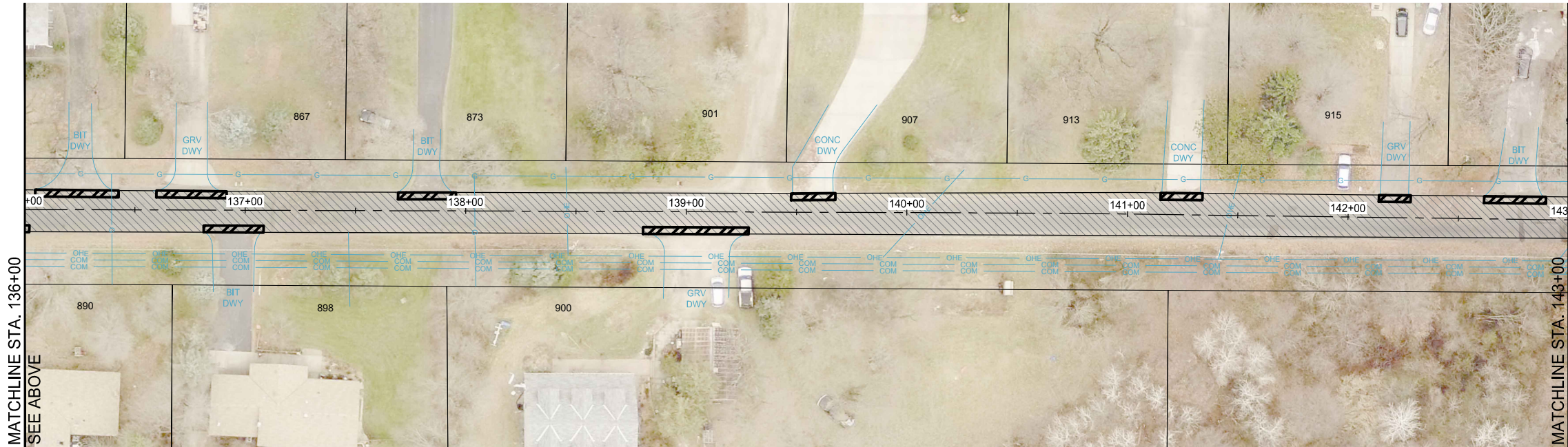
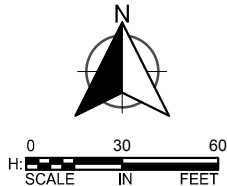
AC

ADJUST FRAME AND RING CASTING

AV

REPAIR GATE VALVE BOLTS
ADJUST GATE VALVE AND BOX

PROPOSED INLET PROTECTION



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THC
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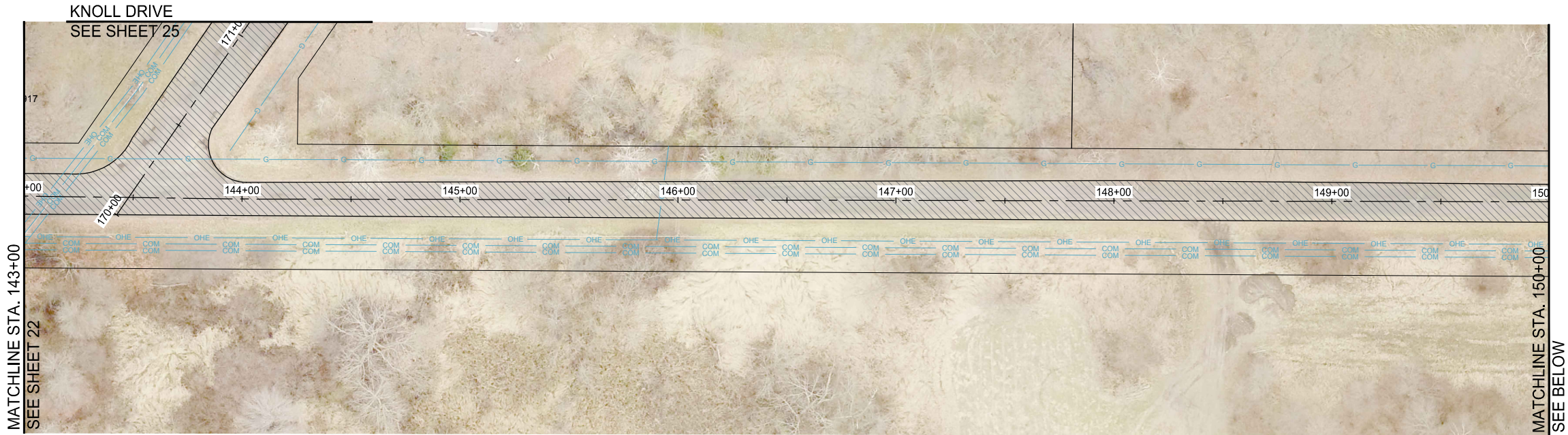
2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

CONSTRUCTION
PLAN

SHEET
22
OF
27

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OAK LANE



- NOTES:
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LEGEND:

FULL DEPTH RECLAMATION
(SEE SPECIFICATION)

1.5" BITUMINOUS OVERLAY
(SEE SPECIFICATION)

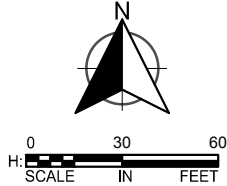
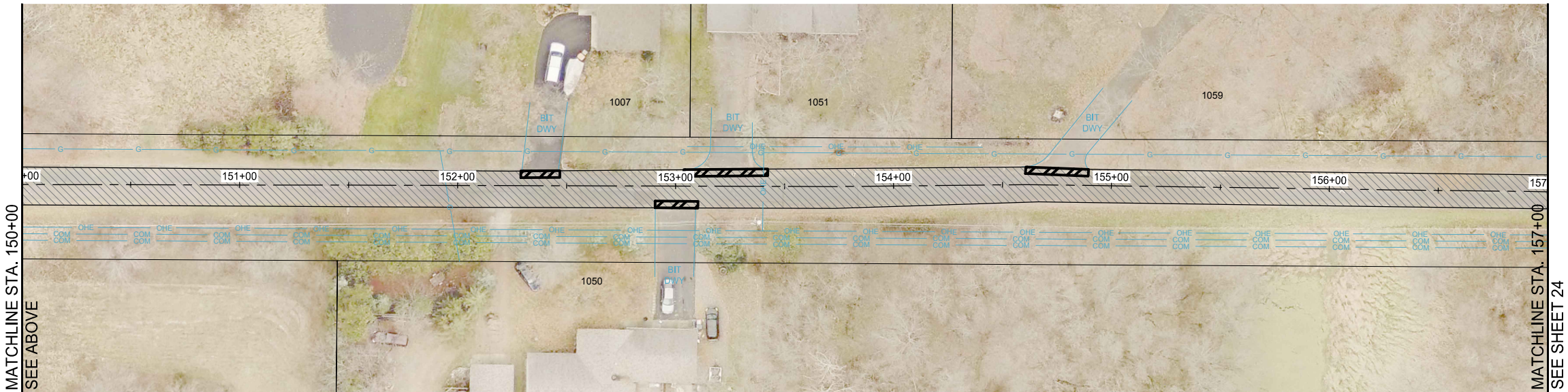
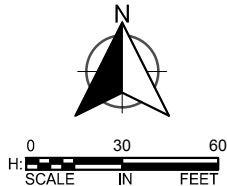
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(1.5" DEPTH)

SAWING BITUMINOUS PAVEMENT
(FULL DEPTH)

ADJUST FRAME AND RING CASTING

REPAIR GATE VALVE BOLTS
ADJUST GATE VALVE AND BOX

PROPOSED INLET PROTECTION



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THC
CHECK BY: DLH

REVISIONS	
NO.	DATE

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DIANE L. HANKEE
DATE: 12/14/2020 LIC. NO.: 43338

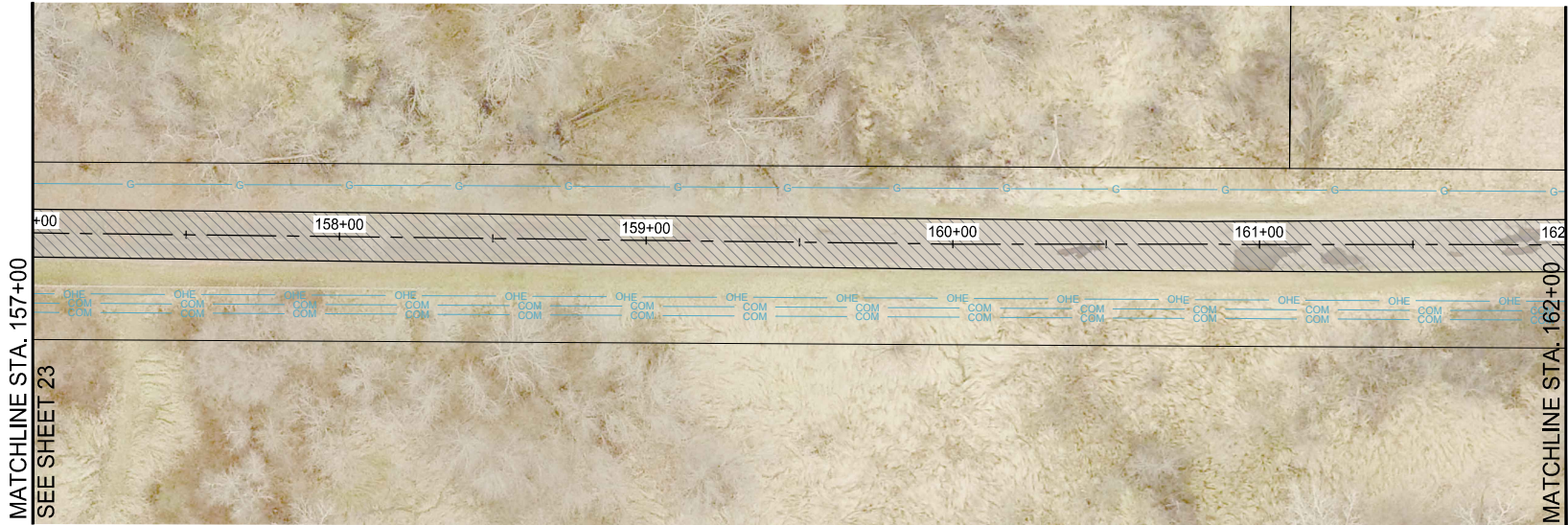
2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

CONSTRUCTION
PLAN

SHEET
23
OF
27

K:\077006-000\Cad\Plan\017006-000-C-Street-Plan.dwg 1/5/2021 2:35:03 PM

OAK LANE



- NOTES:
1. REMOVALS TO BE DETERMINED BY THE ENGINEER IN THE FIELD. LIMITS OF ALL REMOVALS WILL BE MARKED BY THE ENGINEER IN THE FIELD PRIOR TO CONSTRUCTION.
 2. PROTECT EXISTING UTILITIES. RECORD PLANS FOR SANITARY SEWER, WATERMAIN AND STORM SEWER CAN BE FOUND IN APPENDIX A OF THE PROJECT MANUAL. LOCATION MAPS FOR PRIVATE UTILITIES CAN BE FOUND IN APPENDIX D OF THE PROJECT MANUAL.
 3. PROTECT EXISTING DRIVEWAYS AND LANDSCAPING.
 4. ALL STREETS IN AND ADJACENT TO THE PROJECT SHALL REMAIN CLEAN AND PASSABLE AT ALL TIMES. ANY SEDIMENT OR DEBRIS SHALL BE REMOVED WITHIN 24 HOURS, AS DIRECTED BY THE ENGINEER , TO ENSURE PUBLIC SAFETY AND ACCESS.

LEGEND:

AC

AV

FULL DEPTH RECLAMATION
(SEE SPECIFICATION)

1.5" BITUMINOUS OVERLAY
(SEE SPECIFICATION)

3' BITUMINOUS EDGE MILL
(1.5" DEPTH)

SAWING BITUMINOUS PAVEMENT
(FULL DEPTH)

ADJUST FRAME AND RING CASTING

REPAIR GATE VALVE BOLTS
ADJUST GATE VALVE AND BOX

PROPOSED INLET PROTECTION

WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THC
CHECK BY: DLH

REVISIONS	
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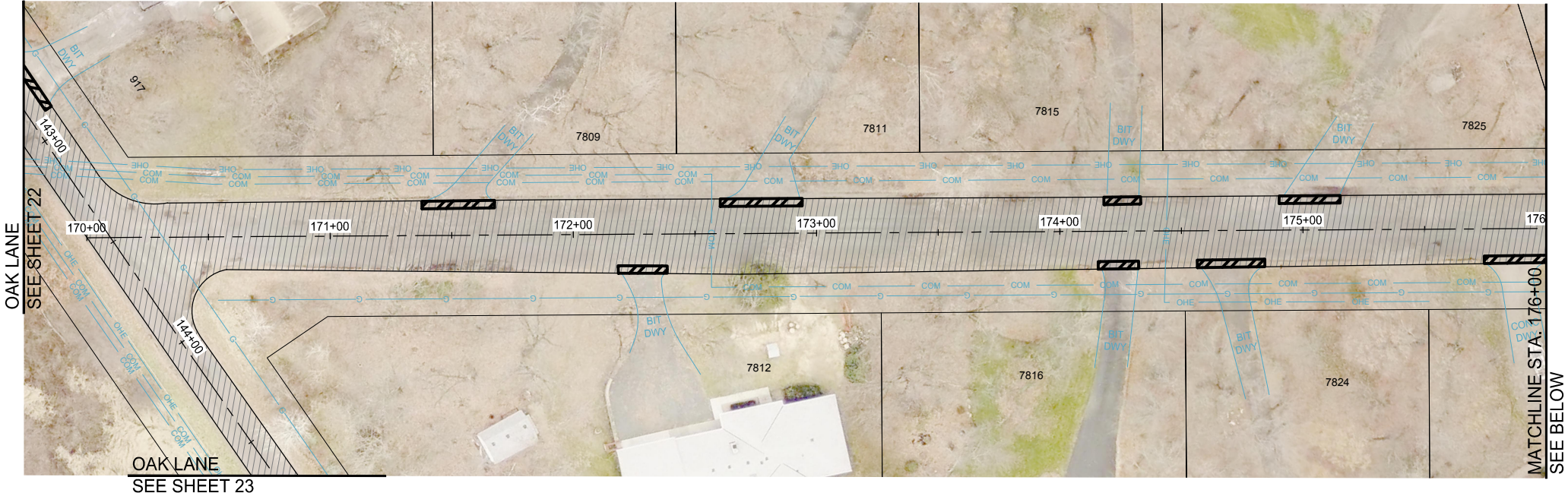
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2021 STREET IMPROVEMENT
PROJECT
LINO LAKES, MINNESOTA

CONSTRUCTION
PLAN

SHEET
24
OF
27

KNOLL DRIVE



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(SEE SPECIFICATION)

1.5" BITUMINOUS OVERLAY
(SEE SPECIFICATION)

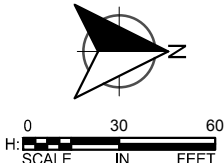
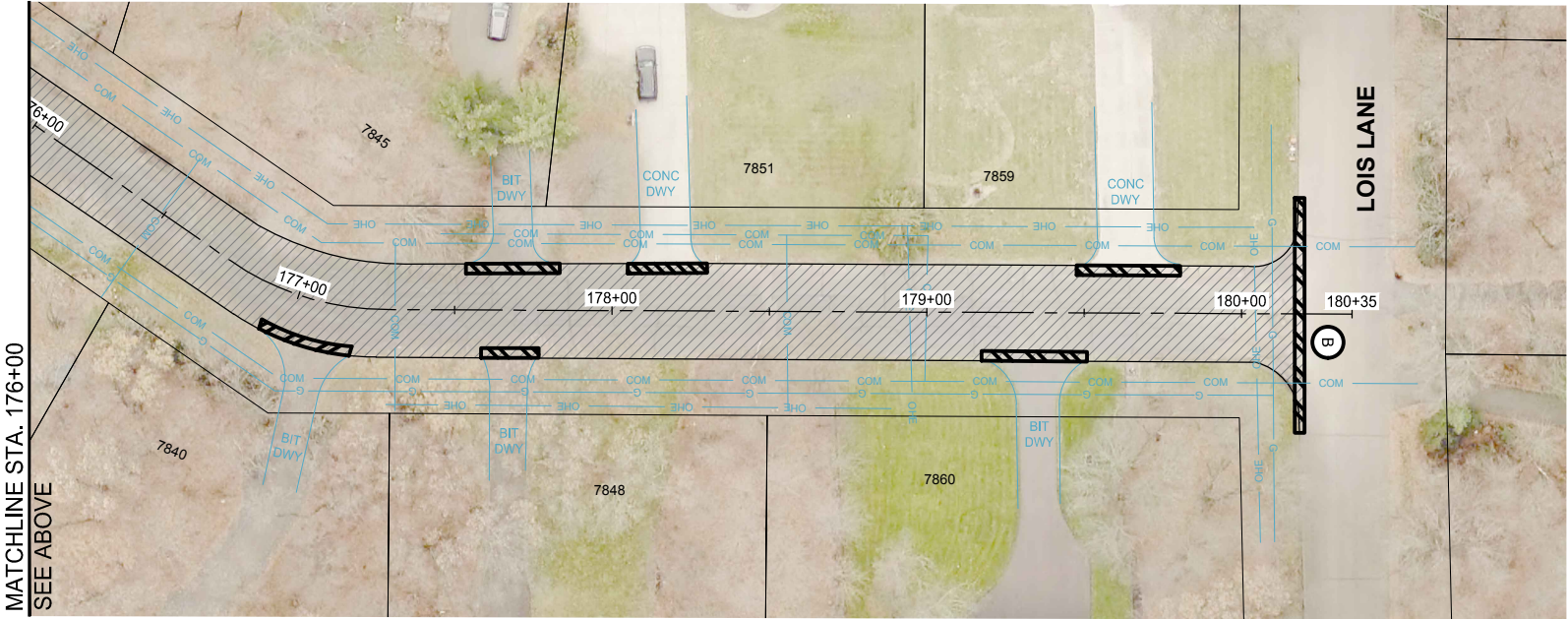
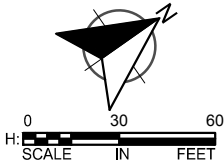
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(1.5" DEPTH)

SAWING BITUMINOUS PAVEMENT
(FULL DEPTH)

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REPAIR GATE VALVE BOLTS
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PROPOSED INLET PROTECTION



WSB PROJECT NO.:
017006-000

SCALE: AS SHOWN
DESIGN BY: EY
PLAN BY: THCH
CHECK BY: DLH

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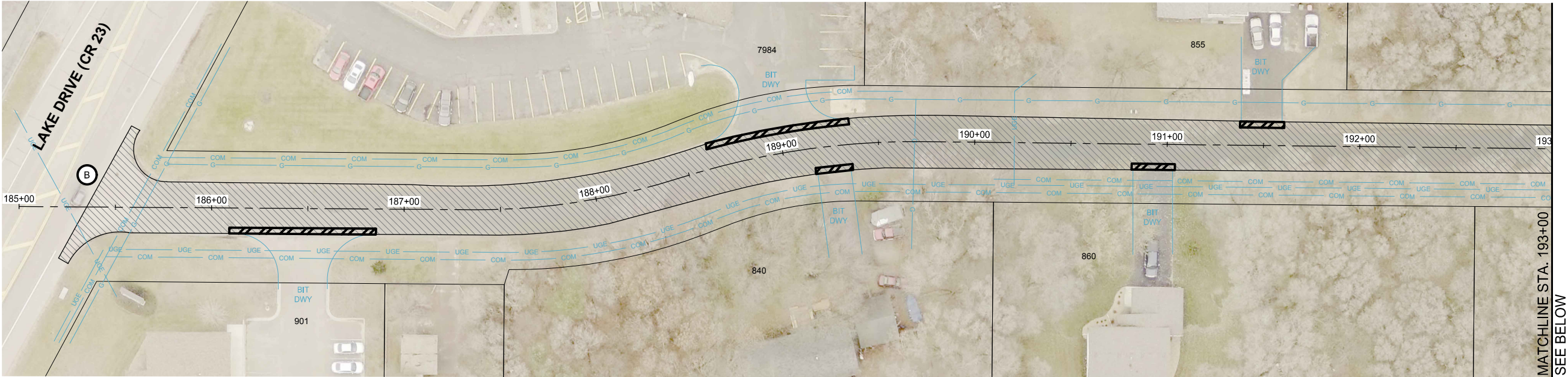
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LINO LAKES, MINNESOTA

CONSTRUCTION
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JAMES STREET



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B

SAWING BITUMINOUS PAVEMENT
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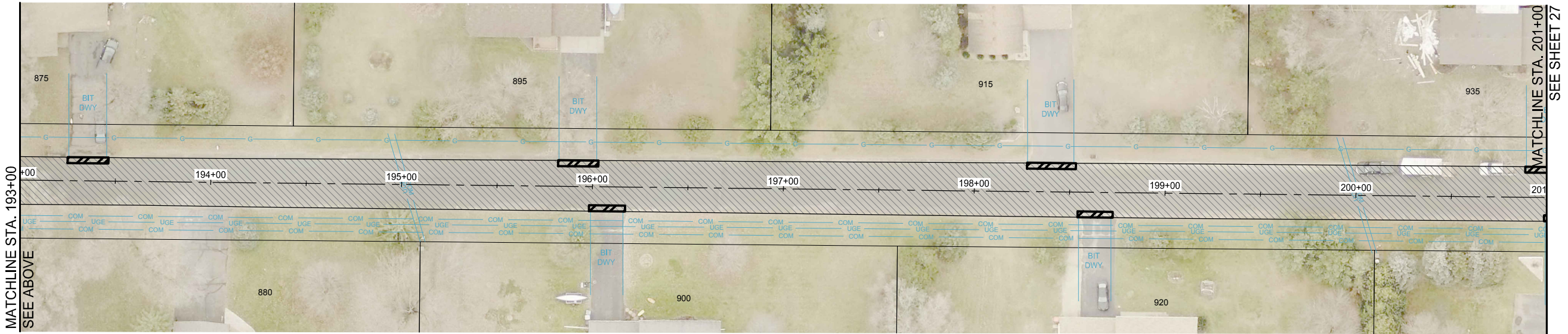
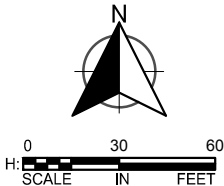
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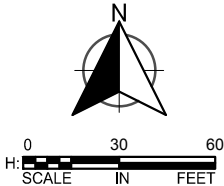
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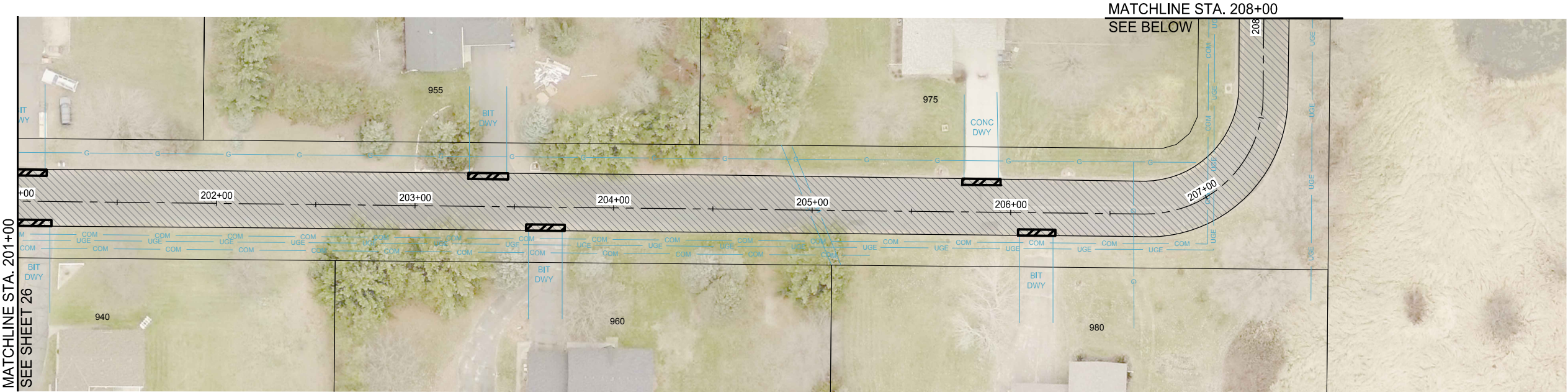
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LINO LAKES, MINNESOTA

CONSTRUCTION
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