

# MINNESOTA DEPARTMENT OF TRANSPORTATION

# ANOKA COUNTY,

# MINNESOTA

**BIDDING DOCUMENTS**

# CONSTRUCTION PLANS FOR

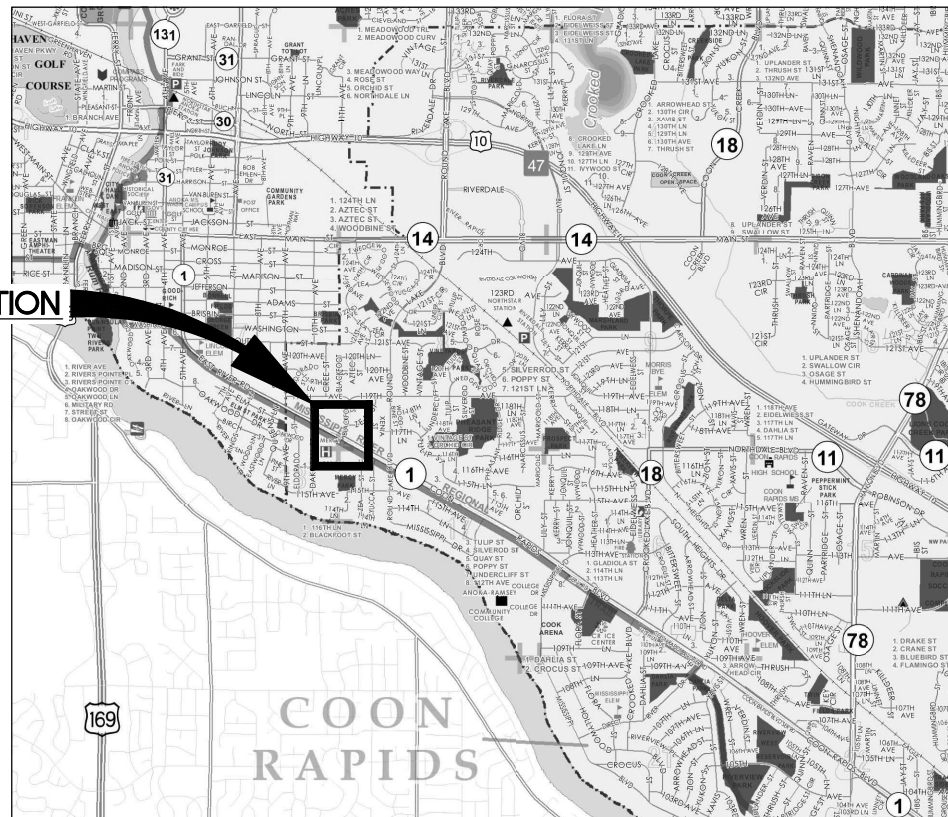
PEDESTRIAN RAMP IMPROVEMENTS & SIGNAL REPLACEMENT

# BLACKFOOT ST & CSAH 1/ COON RAPIDS BLVD

COUNTY SP 002-601-056

CITY SP 114-119-013

COON RAPIDS CITY PROJECT NO. 21-32



N.T.S.

<b>EXISTING</b>	
	RIGHT OF WAY
	PERMANENT EASEMENT
	PROPERTY LINE
	HORIZONTAL CONTROL POINT
	BENCHMARK
	SURVEY MARKER
	SOIL BORING
	SANITARY SEWER AND MANHOLE
	FORCE MAIN AND LIFT STATION
	SANITARY SEWER SERVICE & CLEANOUT
	WATER MAIN, HYDRANT, VALVE AND MANHOLE
	WATER SERVICE AND CURB STOP BOX
	STORM SEWER, MANHOLE AND CATCH BASIN
	CULVERT AND APRON ENDWALL
	GAS MAIN, VALVE, VENT AND METER
	HANDHOLE
	BURIED FIBER OPTIC CABLE AND MANHOLE
	BURIED PHONE CABLE, PEDESTAL AND MANHOLE
	BURIED TV CABLE, PEDESTAL AND MANHOLE
	BURIED ELECTRIC CABLE, PEDESTAL, MANHOLE, TRANSFORMER AND METER
	OVERHEAD WIRE, POLE AND GUY WIRE
	LIGHT POLE
	TRAFFIC SIGNAL
	STREET NAME SIGN
	SIGN (NON STREET NAME)
	RAILROAD TRACKS
	DECIDUOUS AND CONIFEROUS TREE
	BUSH / SHRUB AND STUMP
	EDGE OF WOODED AREA
	WETLAND
	BUILDING
	FENCE (UNIDENTIFIED)
	BARBED WIRE FENCE
	CHAIN LINK FENCE
	ELECTRIC WIRE FENCE
	WOOD FENCE
	WOVEN WIRE FENCE
	PLATE BEAM GUARDRAIL
	CABLE GUARDRAIL
	POST / BOLLARD
	RETAINING WALL
<b>PROPOSED</b>	
	STREET CENTERLINE
	RIGHT-OF-WAY
	PERMANENT EASEMENT
	TEMPORARY EASEMENT
	CONSTRUCTION LIMITS
	SANITARY SEWER, BULKHEAD AND MANHOLE
	FORCE MAIN
	SANITARY SERVICE AND CLEANOUT
	WATER MAIN, TEE, HYDRANT, BULKHEAD AND VALVE
	WATER VALVE MANHOLE, REDUCER, BEND AND CROSS
	WATER SERVICE AND CURB STOP BOX
	STORM SEWER, MANHOLE AND CATCH BASIN
	CULVERT AND APRON ENDWALL
	DRAIN TILE
	DITCH / SWALE
	RIPRAP
	STREET NAME SIGN
	SIGN (NON STREET NAME)
	RETAINING WALL

PROJECT LOCATION

NOTE:  
THE SUBSURFACE UTILITY QUALITY INFORMATION IN THIS PLAN IS 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."

THE CONTRACTOR SHALL CALL THE GOPHER STATE ONE CALL SYSTEM AT 811 BEFORE COMMENCING EXCAVATION.



GOVERNING SPECIFICATIONS

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN EXCEPT AS MODIFIED BY THE SPECIFICATIONS FOR THIS PROJECT.

MNN. PROJ. NO. HSP 0222(161)

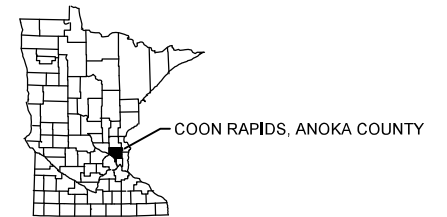
ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3	CONSTRUCTION NOTES
4-8	MNDOT STANDARD PED RAMP DETAILS
9	EXISTING CONDITIONS
10	REMOVALS
11	CONSTRUCTION PLAN
12	INTERSECTION DETAILS
13	EROSION CONTROL
14-15	SIGNING & STRIPING
16-17	TRAFFIC CONTROL DETAILS
18	TRAFFIC CONTROL PLAN
19-35	SIGNAL PLANS

THIS PLAN CONTAINS 35 SHEETS.

PROJECT LOCATION



APPROVED:  
Joseph MacPherson  
ANOKA COUNTY ENGINEER  
4/4/22  
DATE

APPROVED:  
Mark C. Hansen  
CITY ENGINEER OF COON RAPIDS  
DATE

Dan Erickson  
DISTRICT STATE AID ENGINEER  
REVIEWED FOR COMPLIANCE WITH STATE AID AND FEDERAL AID RULES/POLICY  
DATE

Dan Erickson  
STATE AID ENGINEER  
APPROVED FOR STATE AID AND FEDERAL AID FUNDING  
DATE

ANOKA COUNTY, MINNESOTA



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.

Brian J. Hare, PE (MN)  
Signature

FILE NO.  
161219  
1  
of 35

STATEMENT OF ESTIMATED QUANTITIES						
LINE NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED PROJECT TOTALS	ANOKA COUNTY	CITY OF COON RAPIDS
					SP 002-601-056	SP 114-119-013
					ESTIMATED QUANTITY	ESTIMATED QUANTITY
2	2021.501	MOBILIZATION	LUMP SUM	1	0.6	0.4
3	2102.503	PAVEMENT MARKING REMOVAL	LIN FT	285	285	
4	2102.518	PAVEMENT MARKING REMOVAL	SQ FT	810	810	
5	2104.502	REMOVE SIGNAL SYSTEM	EACH	1	1	
6	2104.502	REMOVE CASTING	EACH	1	1	
7	2104.502	SALVAGE SIGN	EACH	10	10	
8	2104.502	REMOVE SIGN	EACH	2	2	
9	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	404	404	
10	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	88	88	
11	2104.503	REMOVE CURB AND GUTTER	LIN FT	253	253	
12	2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	175	175	
13	2104.518	REMOVE CONCRETE WALK	SQ FT	2171	2171	
14	2106.507	COMMON EXCAVATION	CU YD	100	100	
15	2106.507	COMMON EMBANKMENT (CV)	CU YD	32	32	
16	2211.509	AGGREGATE BASE (CV) CLASS 5	TON	154	154	
17	2360.509	TYPE SP12.5 WEARING COURSE MIXTURE (3,F)	TON	19	19	
18	2360.509	TYPE SP 12.5 NON WEARING COURSE MIXTURE (3,B)	TON	10	10	
19	2360.509	TYPE SP 9.5 WEARING COURSE MIXTURE (2,B)	TON	10	10	
20	2506.502	CASTING ASSEMBLY R-3065	EACH	1	1	
21	2506.602	ADJUST FRAME AND RING CASTING (STORM)	EACH	1	1	
22	2521.518	4" CONCRETE WALK	SQ FT	1397	1397	
23	2521.518	6" CONCRETE WALK	SQ FT	1141	1141	
24	2531.503	CONCRETE CURB AND GUTTER DESIGN B612	LIN FT	276	276	
25	2531.602	CONCRETE MEDIAN NOSE-SPECIAL	EACH	2	2	
26	2531.618	TRUNCATED DOMES	SQ FT	147	147	
27	2545.502	SERVICE CABINET	EACH	1	0.5	0.5
28	2563.601	TRAFFIC CONTROL	LUMP SUM	1	0.6	0.4
29	2564.602	INSTALL SIGN	EACH	10	10	
30	2565.501	EMERGENCY VEHICLE PREEMPTION SYSTEM	LUMP SUM	1	0.5	0.5
31	2565.501	TRAFFIC CONTROL INTERCONNECT	LUMP SUM	1	0.5	0.5
32	2565.516	TRAFFIC CONTROL SIGNAL SYSTEM	SYSTEM	1	0.5	0.5
33	2564.616	TEMPORARY SIGNAL SYSTEM	SYSTEM	1	0.5	0.5
34	2573.502	STORM DRAIN INLET PROTECTION	EACH	3	3	
35	2573.503	SEDIMENT CONTROL LOG, TYPE COMPOST	LIN FT	299	299	
36	2575.505	SEEDING	ACRE	0.05	0.05	
37	2575.508	HYDRAULIC MULCH MATRIX	LB	100	100	
38	2574.508	FERTILIZER TYPE 2	LB	12	12	
39	2575.508	SEED MIXTURE 25-131	LB	13	13	
40	2582.503	24" SOLID LINE PREFORM THERMO GROUND IN CONT	LIN FT	137	137	
41	2582.518	CROSSWALK PREFORM THERMOPLASTIC GROUND IN	SQ FT	803	803	



**TRAFFIC CONTROL AND STRIPING NOTES:**

1. ALL CROSSWALK AND STOPBAR MARKINGS ARE TO BE THERMOPLASTIC GROUND IN. CONTRACTOR IS RESPONSIBLY FOR LAYING OUT THE STRIPING.
2. PERMANENT PAVEMENT MARKINGS ARE TO BE PLACED AFTER THE FINAL LIFT OF BITUMINOUS IS PLACED.
3. ALL TRAFFIC CONTROL MEASURES SHALL CONFORM TO THE LATEST VERSION OF THE MMUTCD MANUAL.
4. ALL ACCESS POINTS TO THE PROJECT THAT ARE UNDER CONSTRUCTION SHALL HAVE A MINIMUM OF 2 - TYPE 3 BARRICADES WITH FLASHERS AND 1 ROAD CLOSED PLACARD.
5. ALL CLOSED ROADS SHALL HAVE ADVANCED WARNING SIGNS WITH FLASHERS PLACED AT ADJOINING INTERSECTIONS TO THE PROJECT AREA.
6. ADDITIONAL TRAFFIC CONTROL DEVICES MAY BE REQUIRED BY THE ENGINEER AND SHALL BE INCIDENTAL TO THE PROJECT.

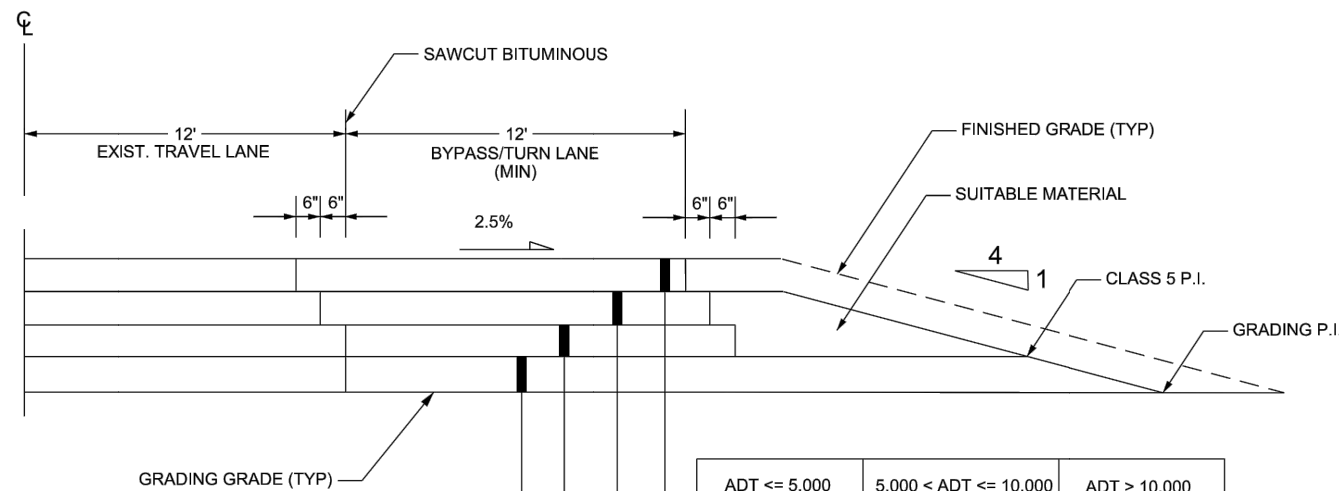
**REMOVAL NOTES:**

1. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO BEGINNING REMOVALS.
2. ALL EXISTING CONCRETE PAVEMENT, STREET SURFACING, SIDEWALKS, TRAILS, AND CURB & GUTTER SHALL BE REMOVED TO THE REMOVAL LIMITS MARKED IN THE FIELD BY THE ENGINEER UNLESS OTHERWISE NOTED IN THE PLANS. ALL CONCRETE AND BITUMINOUS SHALL BE SAW CUT PRIOR TO REMOVING. ALL CONCRETE SHALL BE SAW CUT TO THE NEAREST JOINT. ALL SAW CUTS SHALL BE INCIDENTAL TO REMOVAL ITEMS, WITH THE EXCEPTION OF STREET PAVEMENTS.
3. THE CONTRACTOR SHALL TAKE SPECIAL CARE NOT TO DAMAGE ANY TREES OR BUSHES NOT MARKED FOR REMOVAL.
4. THE CONTRACTOR SHALL STRICTLY CONFINE ALL CONSTRUCTION ACTIVITIES TO THE CONSTRUCTION LIMITS DELINEATED ON THE PLANS.
5. TEMPORARY SIDEWALK OR DRIVEWAY AGGREGATE MAY BE REQUIRED BETWEEN REMOVAL AND REPLACEMENT ACTIVITIES. ALL COSTS ASSOCIATED WITH PROVIDING TEMPORARY SIDEWALKS OR DRIVEWAYS SHALL BE INCIDENTAL.
6. STREET SIGNS LOCATED ON THE PROJECT SHALL REMAIN IN PLACE AS LONG AS POSSIBLE. EXISTING STREET SIGNS MAY BE REQUIRED TO BE RESET DURING PHASES OF CONSTRUCTION FOR PUBLIC SAFETY.
7. ALL KNOWN UTILITIES ARE SHOWN ON THE PLANS. ADDITIONAL UTILITIES MAY BE PRESENT WITHIN THE CONSTRUCTION LIMITS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT EXISTING UTILITIES.

**CONSTRUCTION NOTES:**

1. MATCH ALL EXISTING CURB AND GUTTER, SIDEWALK, AND BITUMINOUS. MATCH POINT WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. EXISTING UTILITIES DO EXIST WITHIN THE CONSTRUCTION LIMITS. KNOWN UTILITIES ARE MARKED ON THE PLAN TO QUALITY LEVEL D. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL CONSTRUCTION ACTIVITIES WITH ALL UTILITY COMPANIES' EXISTING AND PROPOSED FACILITIES.
3. NEW SIDEWALKS SHALL NOT EXCEED 5% GRADE AT ANY POINT LONGITUDINALLY OR 2% CROSS SLOPE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH AND CONFORM TO REQUIRED GRADES.
4. PEDESTRIAN RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ADA REQUIREMENTS, MNDOT STANDARD PLATES, AND PROWAG.
5. TEMPORARY PEDESTRIAN AND VEHICLE CROSSINGS AND ACCESS SHALL BE INSTALLED BY THE CONTRACTOR. LOCATIONS SHALL BE SPECIFIED IN THE FIELD BY THE ENGINEER. PAYMENT FOR AGGREGATE SHALL INCLUDE ALL EXPENSES FOR FURNISHING, INSTALLING, AND MAINTAINING AGGREGATE FOR CROSSINGS.
6. BOULEVARD GRADES MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER TO MATCH EXISTING GRADES.
7. TREE TRIMMING SHALL BE AT THE DIRECTION OF THE FIELD ENGINEER OR AS NOTED ON THE PLANS.
8. THE CONTRACTOR MAY FORM OR SAW THE JOINTS IN WALKING SURFACES AS APPROVED BY THE ENGINEER. IF FORMING THE JOINTS, ROUND JOINTS WITHIN THE WALKING SURFACE WITH 1/4 IN. (6 MM) RADIUS GROOVING TOOL AND ROUND EDGES OF THE WALK WITH AN EDGING TOOL HAVING A RADIUS NO GREATER THAN 1/2 IN. (13 MM).

# ANOKA COUNTY HIGHWAY DEPARTMENT



ADT <= 5,000	5,000 < ADT <= 10,000	ADT > 10,000
2.0" SPWEB340C	1.5" SPWEB340E	2.0" SPWEB340F
2.0" SPWEB340C	1.5" SPWEB340E	2.0" SPWEB340F
N/A	2.0" SPNW330B	2.0" SPNW330B
6.0" CLASS 5	6.0" CLASS 5	6.0" CLASS 5

MIX DESIGN  
(2360 SPEC)

ALL DISTURBED SOIL MUST BE SEEDED, MULCHED, AND DISK ANCHORED IN ACCORDANCE WITH MN/DOT STANDARD SPECIFICATIONS. RAPID-DEGRADABLE STRAW BLANKET SHALL BE USED IN AREAS OF HIGH EROSION.

## Base and Bituminous Construction Detail

NOT TO SCALE

DETAIL A  
September 2019

THESE STANDARD PLATES AS APPROVED BY FHWA SHALL APPLY.

LIST OF STANDARD PLATES	
NO.	TITLE
4020 J	MANHOLE OR CATCH BASIN COVER (2 SHEETS)
4022 A	MANHOLE OR CATCH BASIN COVER
4101 D	RING CASTING FOR MANHOLE OR CATCH BASIN
4108 F	ADJUSTING RINGS FOR CATCH BASINS & MANHOLES
7038 A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7100 H	CONCRETE CURB & GUTTER (DESIGN B & V)
7111 J	INSTALLATION OF CATCH BASIN CASTINGS
7113 A	CONCRETE APPROACH NOSE DETAIL
8000 K	TEMPORARY CHANNELIZERS

### PRIVATE UTILITY CONTACTS

UTILITY	CONTACT NAME	EMAIL
XCEL ENERGY	ADAM BARTHEL	adam.j.barthel@xcelenergy.com
CENTERPOINT ENERGY	NICK LARSON	nicholas.larson@centerpointenergy.com
CENTURYLINK / LUMEN	BILL BYERS	bill.byers@lumen.com
ARVIG	CURTIS OLSON	curtis.olson@arvig.com
COMCAST	LUKE BASTIL	Luke_Bastil@comcast.com
ZAYO	JASON OVERKAMP	joverkamp@terratechllc.net

### EXISTING AND FORCASTED AADT BLACKFOOT ST & CSAH 1

Approach	2016 AADT	Forecasted 2040 AADT
Blackfoot Street (Southbound)	3,550	3,900
CSAH 1 (Westbound)	12,100	14,500
Blackfoot Street/ Mercy Entrance (Northbound)	3,550	3,550
CSAH 1 (Eastbound)	12,100	14,500

SEH Project	161219	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
Drawn By	KM						
Designed By	KM						
Checked By	BH						

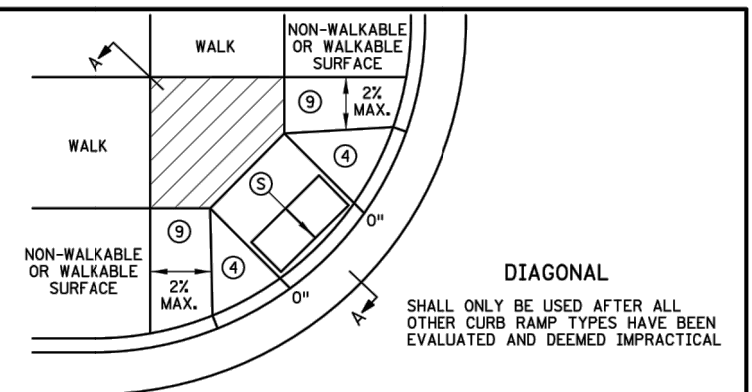
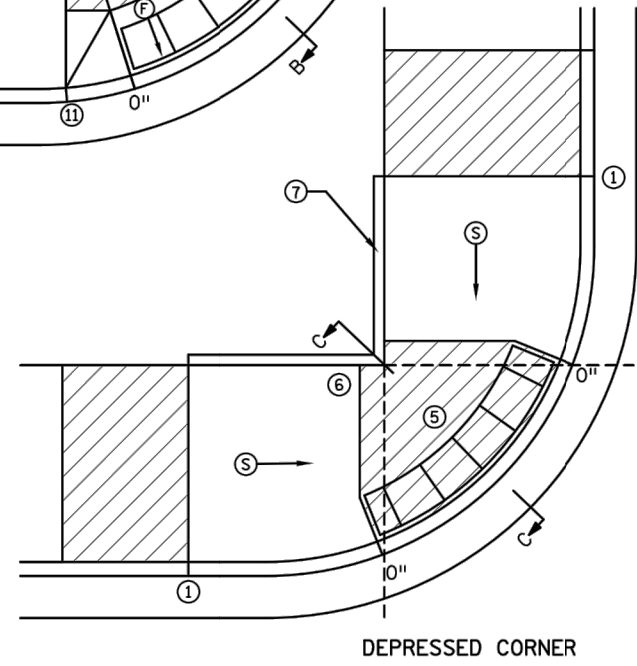
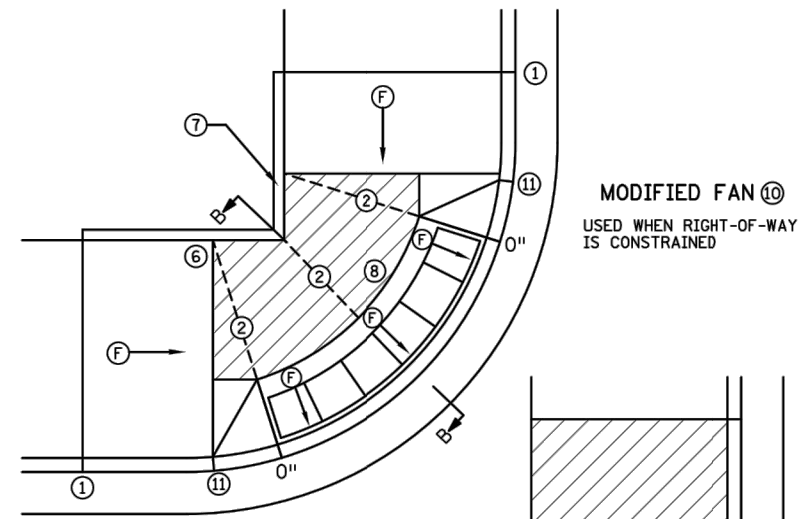
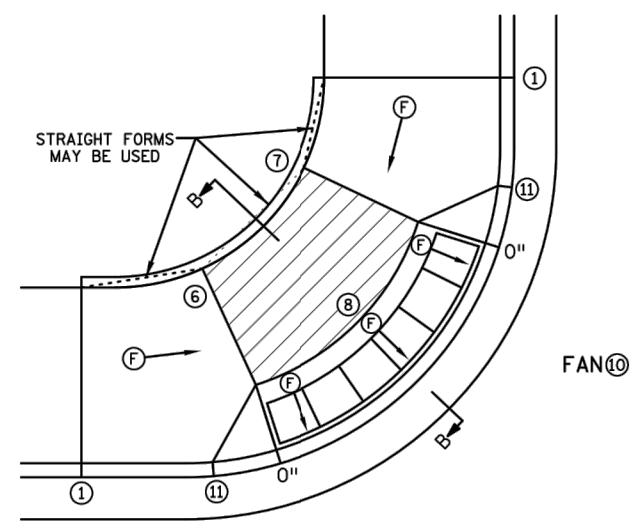
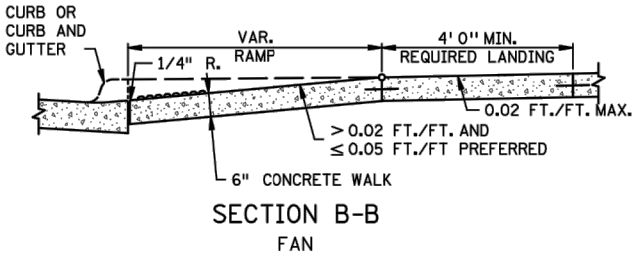
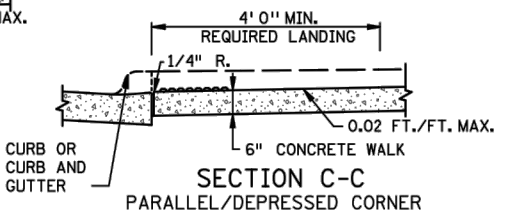
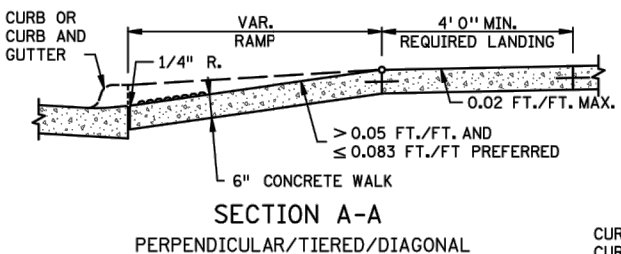
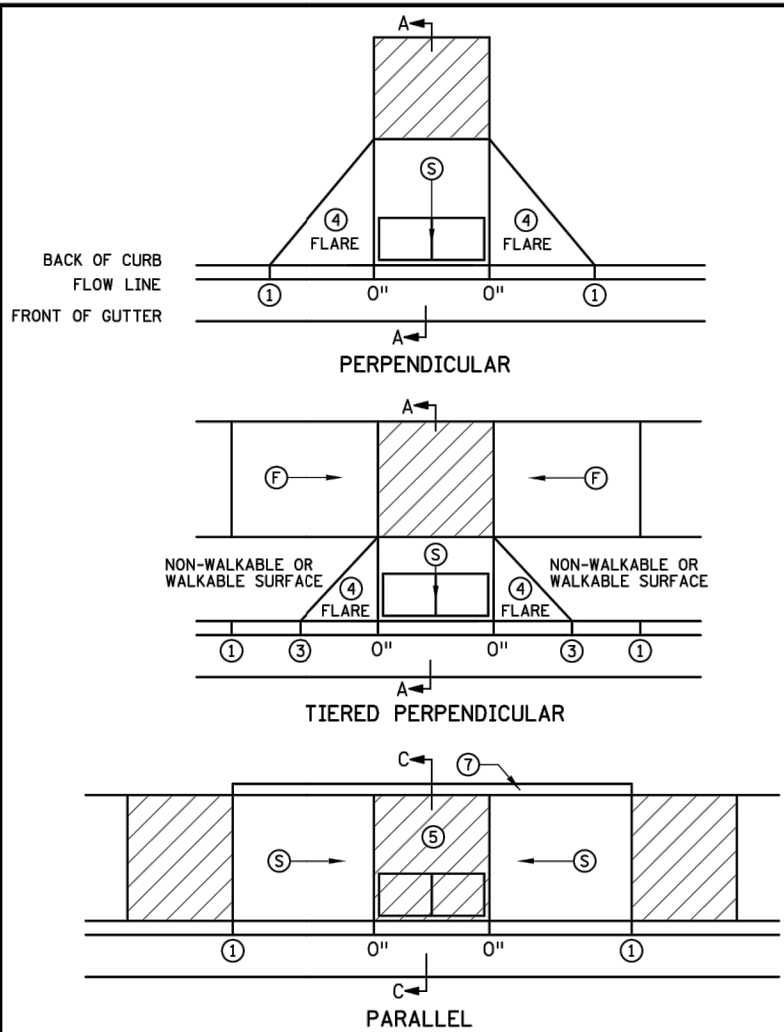


I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 DATE 3/25/22  
 BRIAN J. HARE, PE (MN)  
 LICENSE NO. 52610

**BLACKFOOT ST &  
CSAH 1/COON RAPIDS BLVD**  
ANOKA COUNTY, MN

### CONSTRUCTION NOTES

SP 002-601-056 SP 114-119-013



- 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 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 SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.
- WHEN SIDEWALK IS AT BACK OF CURB, TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE. MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.
- 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 THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.
- WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE 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.
  - (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 LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
  - (8) A 7' MIN TOP RADIUS GRADE BREAK IS 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.
  - (11) INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3" CURB HEIGHT. REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

LEGEND	
(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%.
(X)	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: 11-04-2021  
*Jeff J. Pel*  
JEFFREY PERKINS  
OPERATIONS DIVISION

**MINNESOTA**  
DEPARTMENT OF TRANSPORTATION  
STANDARD PLAN 5-297.250 1 OF 6  
APPROVED: 11-04-2021  
REVISOR:  
*Tom Sika*  
THOMAS TYRBYCKI  
STATE DESIGN ENGINEER

**PEDESTRIAN CURB RAMP DETAILS**

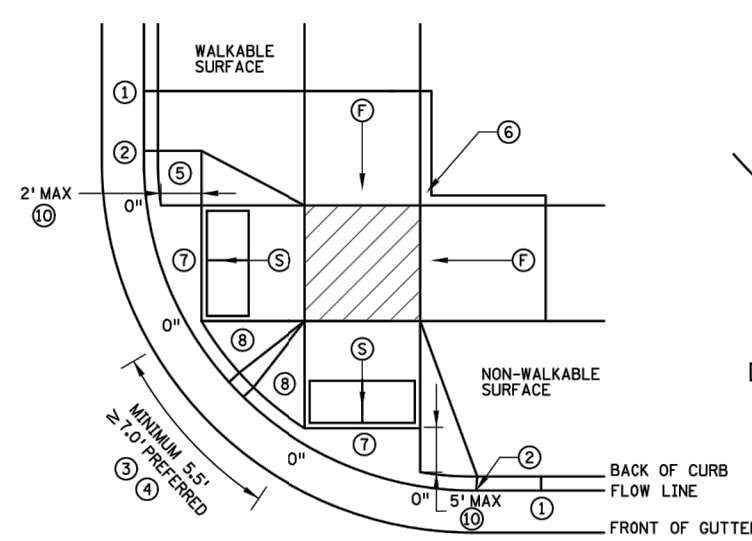
STATE PROJ. NO. (TH ) SHEET NO. OF SHEETS

SEH Project	161219	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
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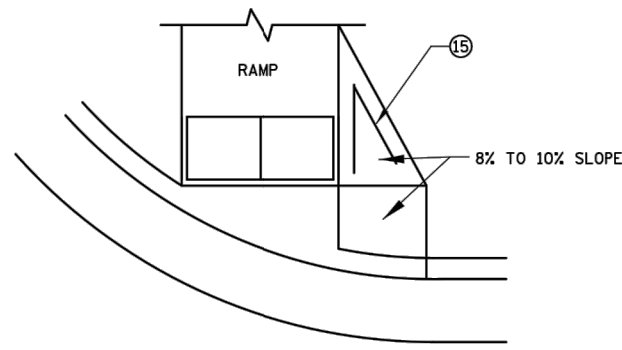
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*Brian J. Hare*  
BRIAN J. HARE, PE (MN)  
DATE 3/25/22 LICENSE NO. 52610

BLACKFOOT ST &  
CSAH 1/COON RAPIDS BLVD  
ANOKA COUNTY, MN

**MNDOT STANDARD  
PEDESTRIAN RAMP DETAILS**  
SP 002-601-056 SP 114-119-013

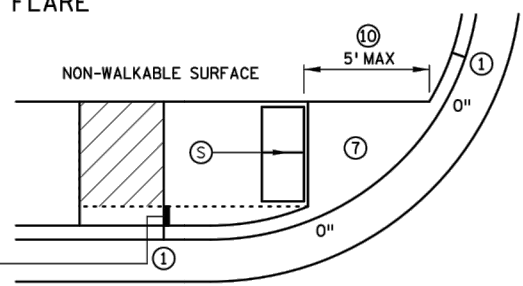


COMBINED DIRECTIONAL

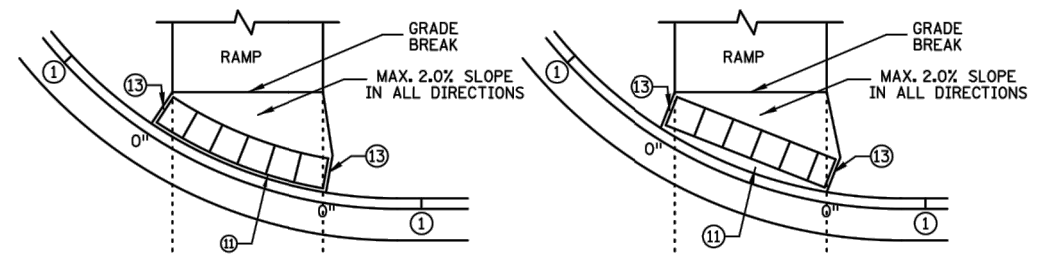


DIRECTIONAL RAMP WALKABLE FLARE

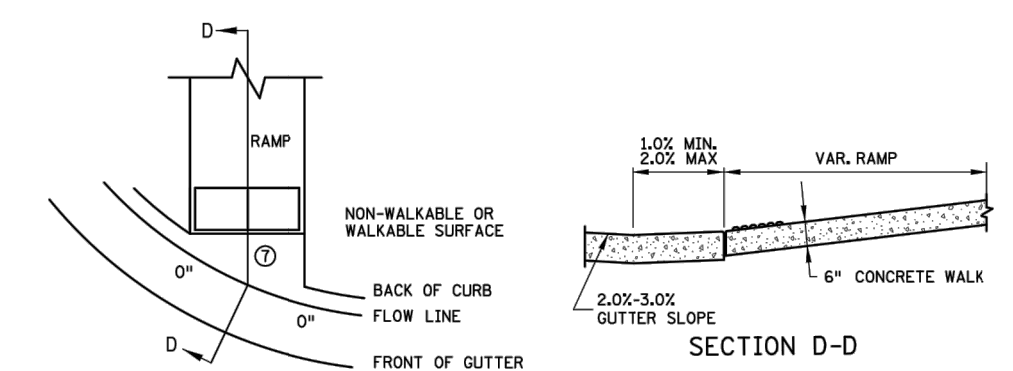
IF NON-CONCRETE BLVD. IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION, PAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB.



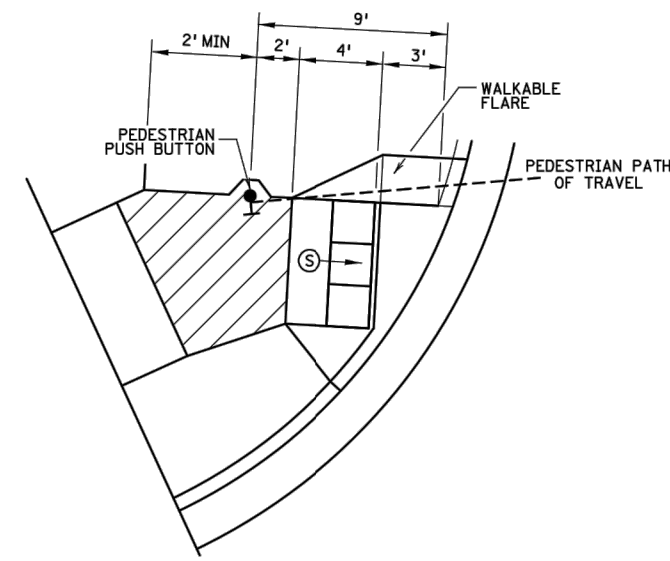
STANDARD ONE-WAY DIRECTIONAL ⑨



DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED 12  
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



CURB FOR DIRECTIONAL RAMPS 14



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)

- 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 THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.
  - WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE 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 SHALL 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.
  - 15 PLACE 2 NO. 4 BARS 4 INCHES FROM SIDE OF FORMS WITH A MINIMUM 2 INCHES OF CONCRETE COVER ALONG EACH SIDE OF FLARE (INCIDENTAL).

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%.
(X)	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: 11-04-2021  
*Jeffrey J. Perkins*  
JEFFREY PERKINS  
OPERATIONS DIVISION

MINNESOTA  
DEPARTMENT OF TRANSPORTATION  
STANDARD PLAN 5-297.250  
2 OF 6  
APPROVED: 11-04-2021  
REVISED:  
*Tom Styrbicki*  
THOMAS STYRBICKI  
STATE DESIGN ENGINEER

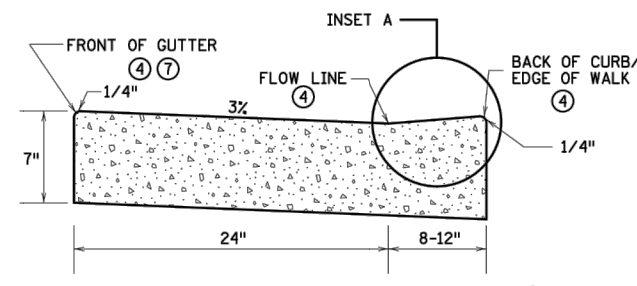
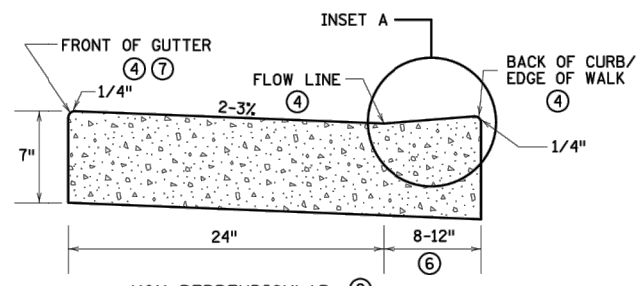
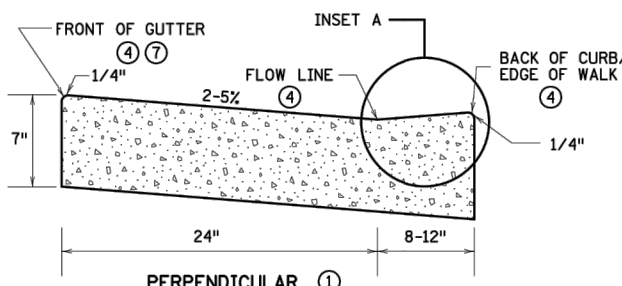
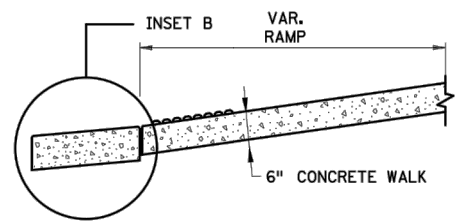
PEDESTRIAN CURB RAMP DETAILS  
STATE PROJ. NO. (T.H. ) SHEET NO. OF SHEETS

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Designed By	KM						
Checked By	BH						

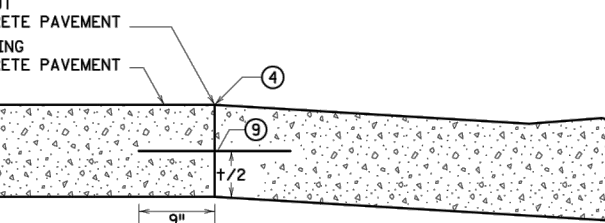
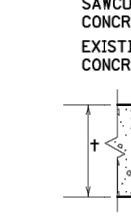
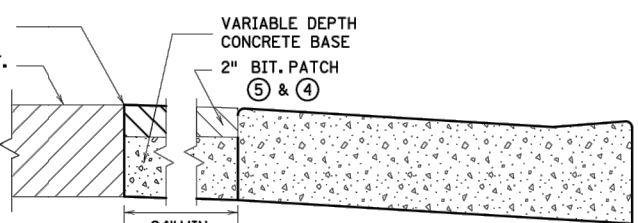
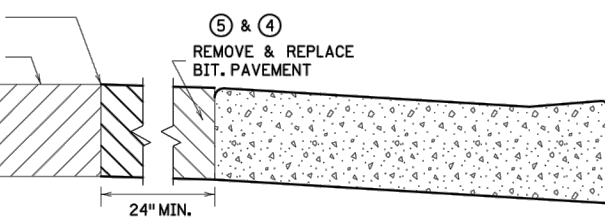
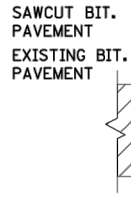
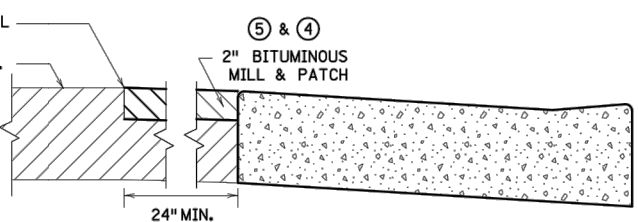
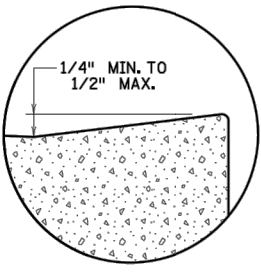
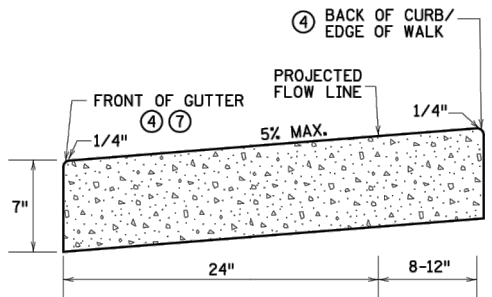
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
*Brian J. Hare*  
BRIAN J. HARE, PE (MN)  
DATE 3/25/22 LICENSE NO. 52610

BLACKFOOT ST & CSAH 1/COON RAPIDS BLVD  
ANOKA COUNTY, MN

MNDOT STANDARD PEDESTRIAN RAMP DETAILS  
SP 002-601-056 SP 114-119-013  
5 of 35

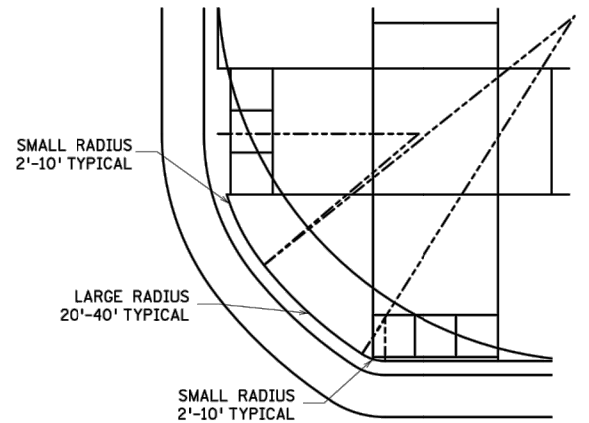
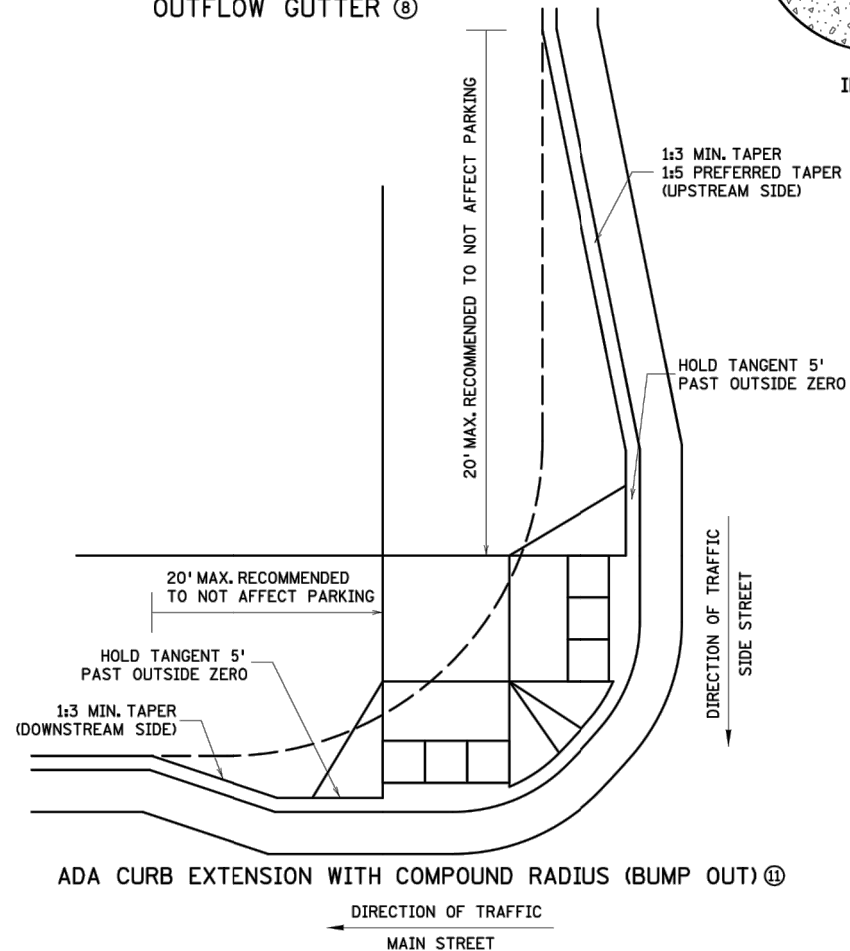


PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



ONLY ALLOWED PER ENGINEER'S APPROVAL

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



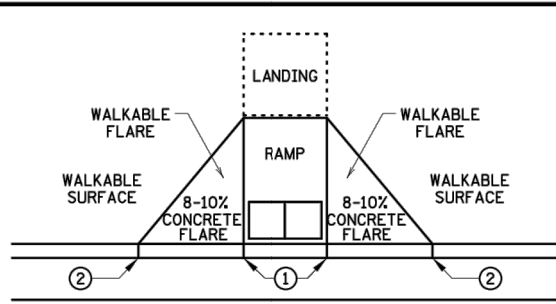
NOTES:

- POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM. NO PONDING SHALL BE PRESENT IN THE PAR.
- ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.
- ① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.
- ② FOR USE AT CURB RAMPS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.
- ③ BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.
- ④ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".
- ⑤ ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.
- ⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.
- ⑦ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. TOP 1.5" OF THE GUTTER FACE MUST BE A FORMED EDGE. PAR GUTTER SHALL NOT BE OVERLAID.
- ⑧ SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.
- ⑨ DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT 1' MINIMUM FROM ALL JOINTS.
- ⑩ HELPS PROVIDE TWO SEPARATE RAMPS, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.
- ⑪ CURB EXTENSIONS SHOULD BE USED IN VERTICALLY CONSTRAINED AREAS, USUALLY IN DOWNTOWN ROADWAY SEGMENTS WHERE ON-STREET PARKING IS AVAILABLE. CURB EXTENSIONS SHOULD BE CONSIDERED FOR APS INTERSECTIONS WHERE SPACE IS LIMITED. PUSH BUTTONS MUST MEET APS CRITERIA AS DESCRIBED IN THE PUSH BUTTON LOCATION DETAIL SHEET.

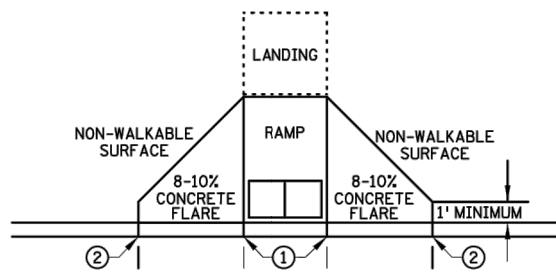
REVISIONS:  
 APPROVED: 11-04-2021  
 Jeff J. Perkins  
 OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STANDARD PLAN 5-297.250 3 OF 6  
 APPROVED: 11-04-2021  
 REVISOR:  
 THOMAS STYBRICKI  
 STATE DESIGN ENGINEER

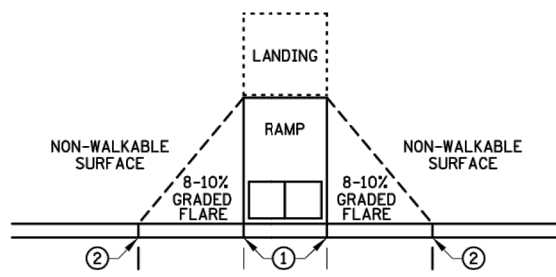
PEDESTRIAN CURB RAMP DETAILS  
 STATE PROJ. NO. (TH ) SHEET NO. OF SHEETS



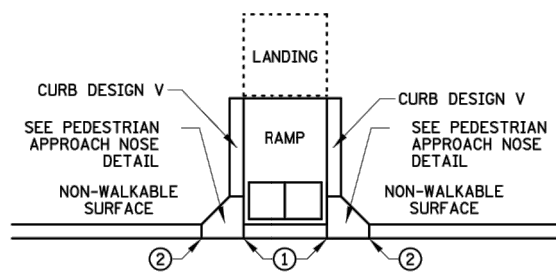
PAVED FLARES  
ADJACENT TO WALKABLE SURFACE



PAVED FLARES  
ADJACENT TO NON-WALKABLE SURFACE

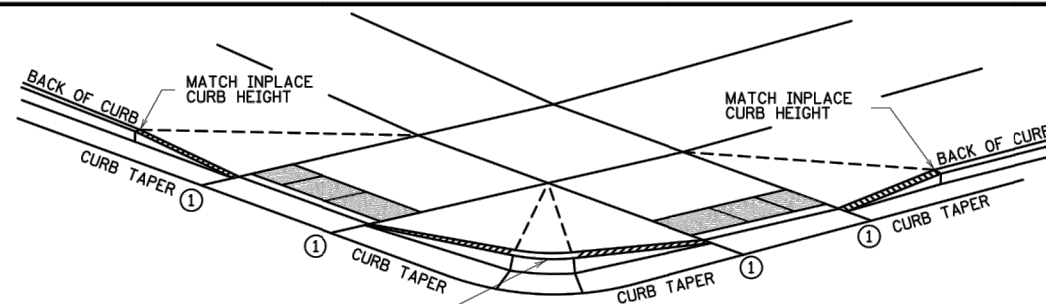


GRADED FLARES



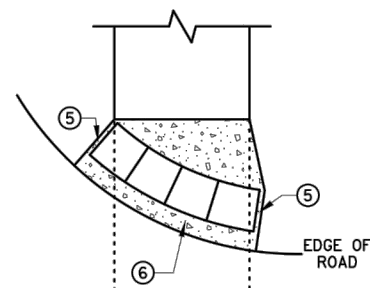
RETURNED CURB ④

TYPICAL SIDE TREATMENT OPTIONS ③ ⑩

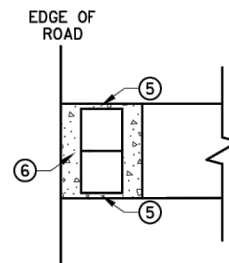


3" MINIMUM CURB HEIGHT, 4" PREFERRED  
(MEASURED AT FRONT FACE OF CURB)  
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑦  
CURB AND GUTTER

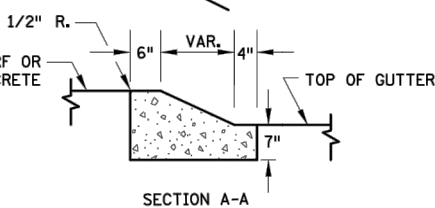
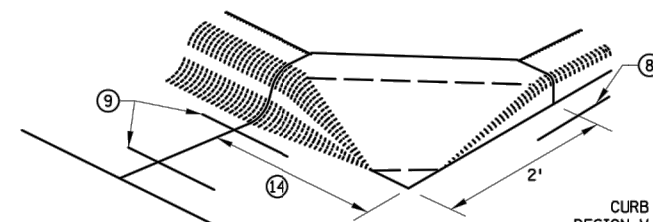


RADIAL DETECTABLE WARNING

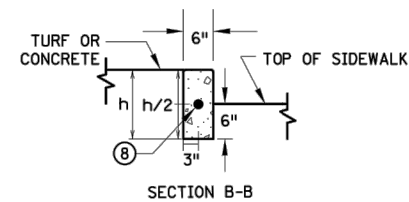


RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

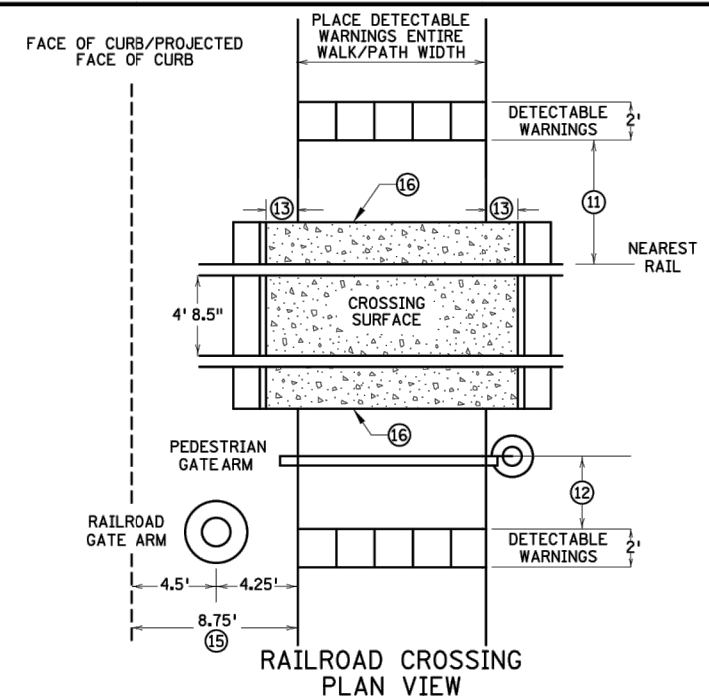


SECTION A-A



SECTION B-B

PEDESTRIAN APPROACH  
NOSE DETAIL  
(FOR RETURNED CURB  
SIDE TREATMENT)



RAILROAD CROSSING  
PLAN VIEW

NOTES:

INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3 INCH CURB HEIGHT, INCREASE CURB TAPER LENGTH AT LESS THAN 8% OR REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

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 RAMP'S FROM THE BACK OF CURB.

① 0" CURB HEIGHT. SEE INSET A ON SHEET 3 OF 6.

② FULL CURB HEIGHT.

③ 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.

④ TYPICALLY USED FOR MEDIANS AND ISLANDS.

⑤ 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.

⑥ 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.

⑦ 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.

⑧ 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.

⑨ 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.

⑩ 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. CONSTRUCT THESE TAPERS AT 0"-3" AT 8-10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.

⑪ 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.

⑫ 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 ⑪.

⑬ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.

⑭ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.

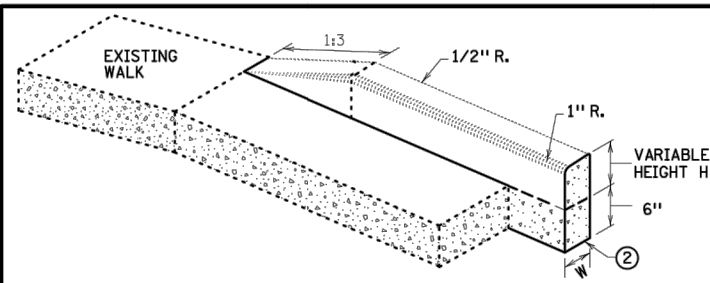
⑮ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.

⑯ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

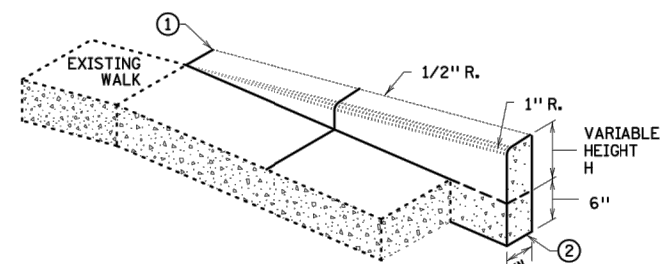
REVISION:
APPROVED: 11-04-2021
<i>Jeffrey J. Perkins</i>
JEFFREY PERKINS OPERATIONS DIVISION

	STANDARD PLAN 5-297.250	4 OF 6
	APPROVED: 11-04-2021 REVISION: 	
DEPARTMENT OF TRANSPORTATION	THOMAS TYRBYCKI STATE DESIGN ENGINEER	STATE PROJ. NO. (TH ) SHEET NO. OF SHEETS

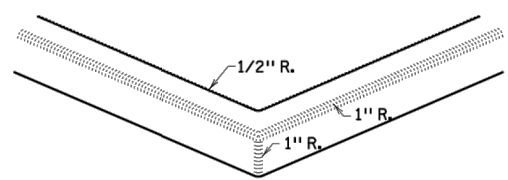
PEDESTRIAN CURB RAMP DETAILS



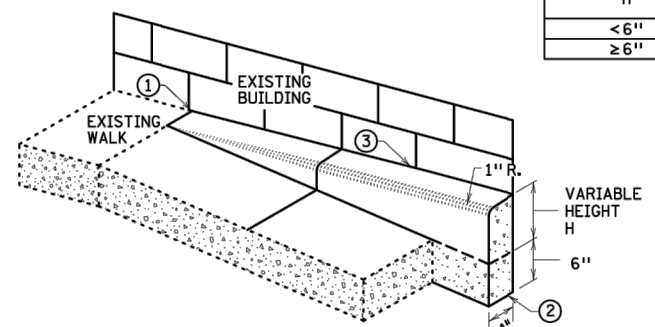
V CURB ADJACENT TO LANDSCAPE  
CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE  
CURB OUTSIDE SIDEWALK LIMITS

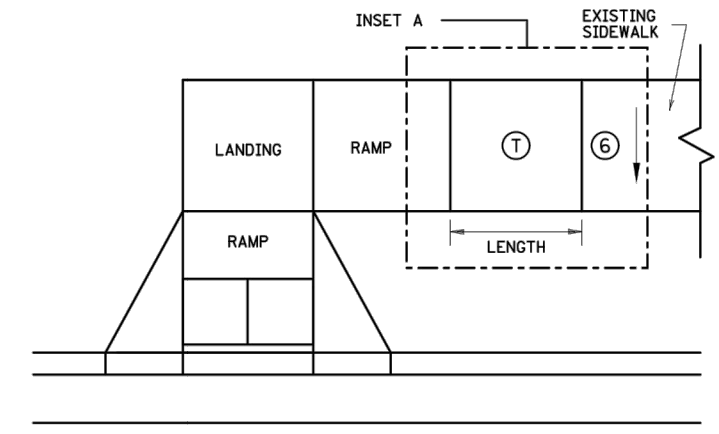


V CURB INTERSECTION

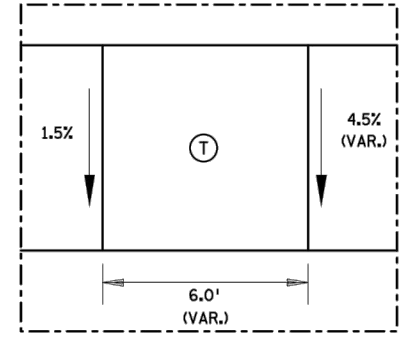


V CURB ADJACENT TO BUILDING  
OR BARRIER

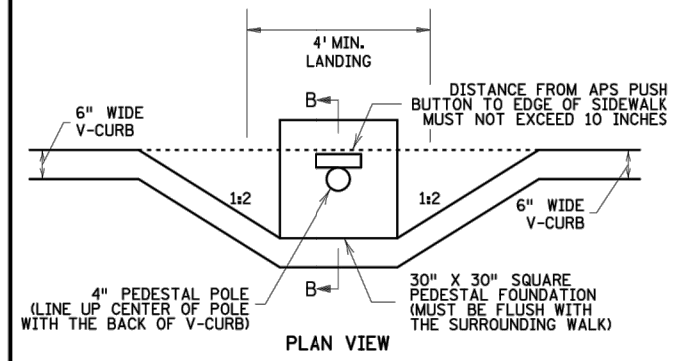
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



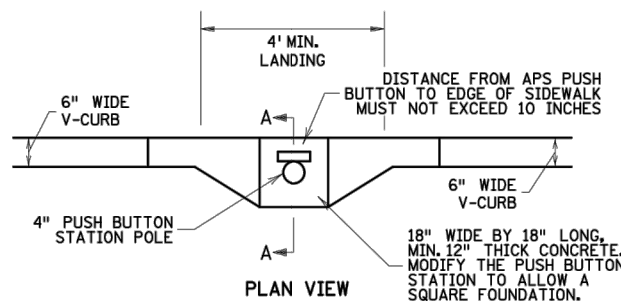
TRANSITION PANEL ④ ⑤



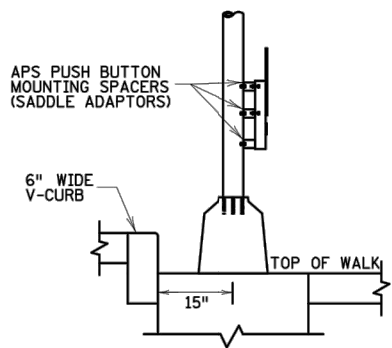
INSET A



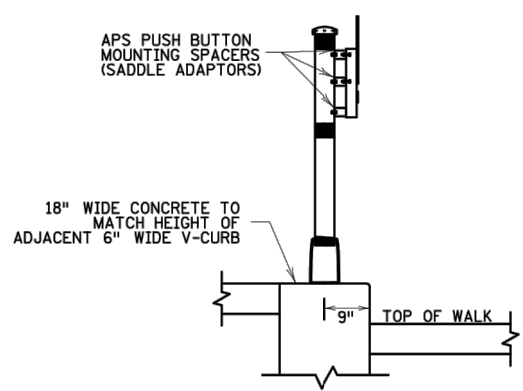
PLAN VIEW



PLAN VIEW



SECTION B-B  
SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



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 CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM 1/2" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.
- 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%.
- 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.
- 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.

REVISIONS:  
APPROVED: 11-04-2021  
*Jeff J. Perkins*  
JEFFREY PERKINS  
OPERATIONS DIVISION

STANDARD PLAN 5-297.250 5 OF 6  
MINNESOTA DEPARTMENT OF TRANSPORTATION  
*Thomas Styrbicki*  
THOMAS STYRBICKI  
STATE DESIGN ENGINEER  
APPROVED: 11-04-2021  
REVISED:

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. (TH ) SHEET NO. OF SHEETS

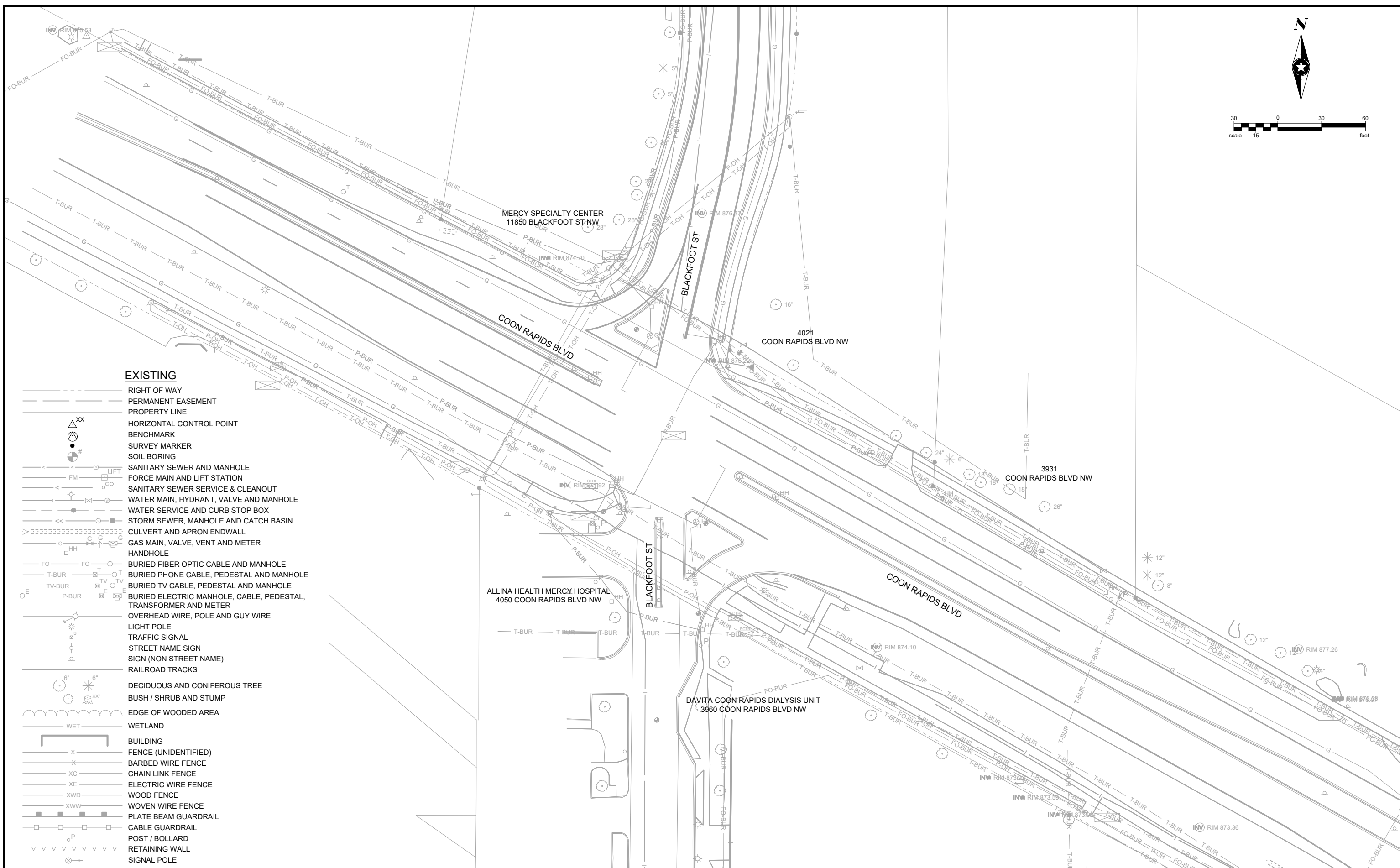
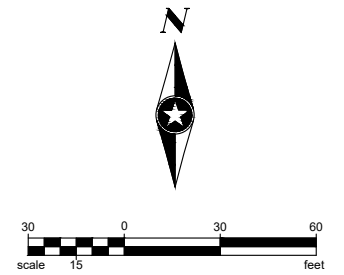
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Designed By	KM						
Checked By	BH						

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*Brian J. Hare*  
BRIAN J. HARE, PE (MN)  
DATE 3/25/22 LICENSE NO. 52610

BLACKFOOT ST &  
CSAH 1/COON RAPIDS BLVD  
ANOKA COUNTY, MN

MNDOT STANDARD  
PEDESTRIAN RAMP DETAILS  
SP 002-601-056 SP 114-119-013





**EXISTING**

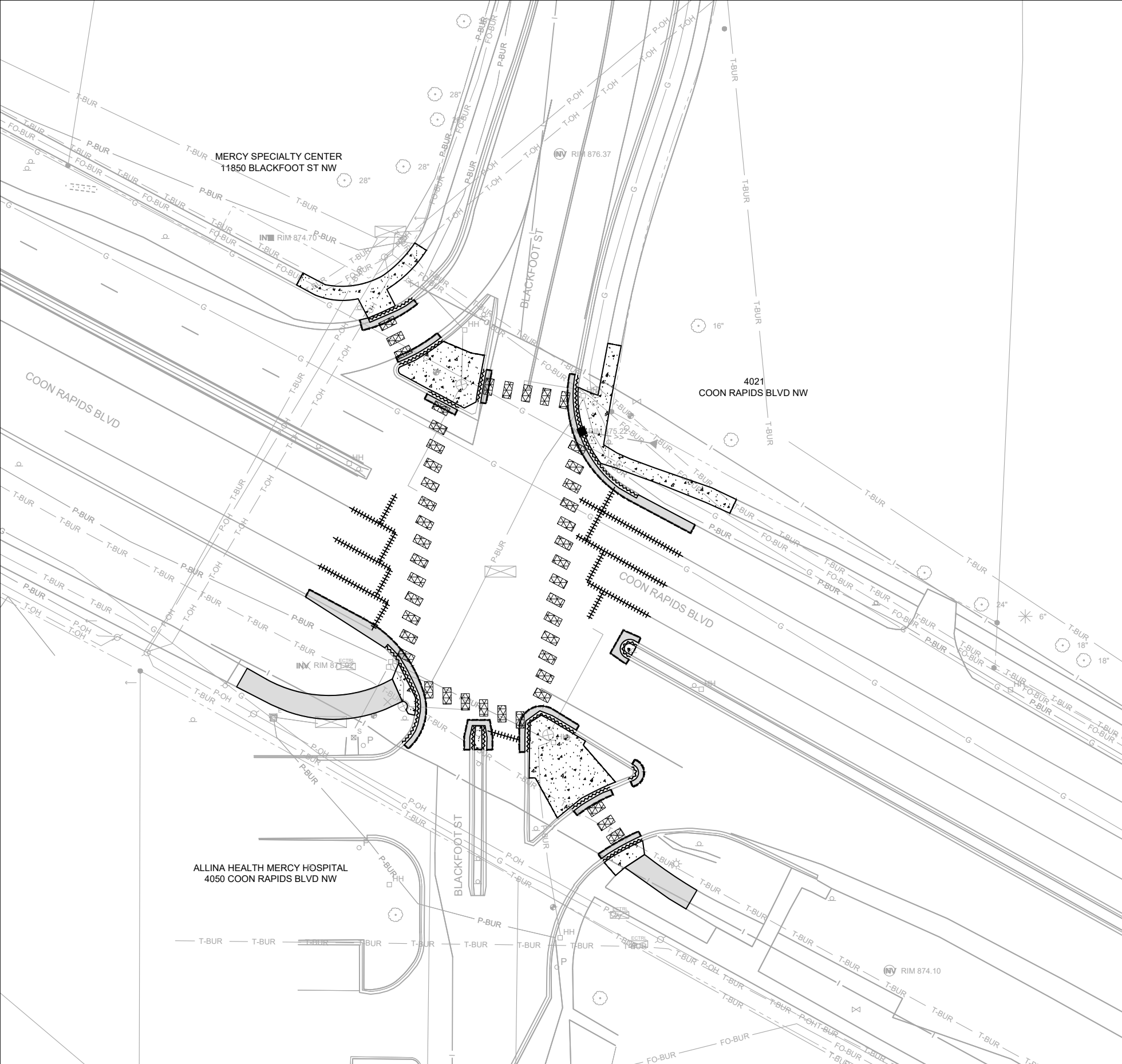
- RIGHT OF WAY
- PERMANENT EASEMENT
- PROPERTY LINE
- △ XX HORIZONTAL CONTROL POINT
- BENCHMARK
- SURVEY MARKER
- SOIL BORING
- SANITARY SEWER AND MANHOLE
- FM FORCE MAIN AND LIFT STATION
- SANITARY SEWER SERVICE & CLEANOUT
- WATER MAIN, HYDRANT, VALVE AND MANHOLE
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- GAS MAIN, VALVE, VENT AND METER
- HANDHOLE
- FO BURIED FIBER OPTIC CABLE AND MANHOLE
- T-BUR BURIED PHONE CABLE, PEDESTAL AND MANHOLE
- TV-BUR BURIED TV CABLE, PEDESTAL AND MANHOLE
- P-BUR BURIED ELECTRIC MANHOLE, CABLE, PEDESTAL, TRANSFORMER AND METER
- OVERHEAD WIRE, POLE AND GUY WIRE
- LIGHT POLE
- TRAFFIC SIGNAL
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RAILROAD TRACKS
- DECIDUOUS AND CONIFEROUS TREE
- BUSH / SHRUB AND STUMP
- EDGE OF WOODED AREA
- WET WETLAND
- BUILDING
- X FENCE (UNIDENTIFIED)
- X BARBED WIRE FENCE
- XC CHAIN LINK FENCE
- XE ELECTRIC WIRE FENCE
- XWD WOOD FENCE
- XWW WOVEN WIRE FENCE
- PLATE BEAM GUARDRAIL
- CABLE GUARDRAIL
- POST / BOLLARD
- RETAINING WALL
- SIGNAL POLE


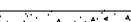




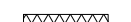

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Checked By	BH						

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*Brian J. Hare*  
 BRIAN J. HARE, PE (MN)  
 DATE 3/25/22 LICENSE NO. 52610

**BLACKFOOT ST & CSAH 1/COON RAPIDS BLVD**  
 ANOKA COUNTY, MN




-  BITUMINOUS PAVEMENT REMOVAL
-  CONCRETE SIDEWALK / PAVEMENT REMOVAL
-  SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
-  SAWING CONCRETE PAVEMENT (FULL DEPTH)
-  CURB & GUTTER REMOVAL
-  PAVEMENT MARKING REMOVAL (LIN FT)
-  PAVEMENT MARKING REMOVAL (SQ FT)
-  REMOVE CASTING



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



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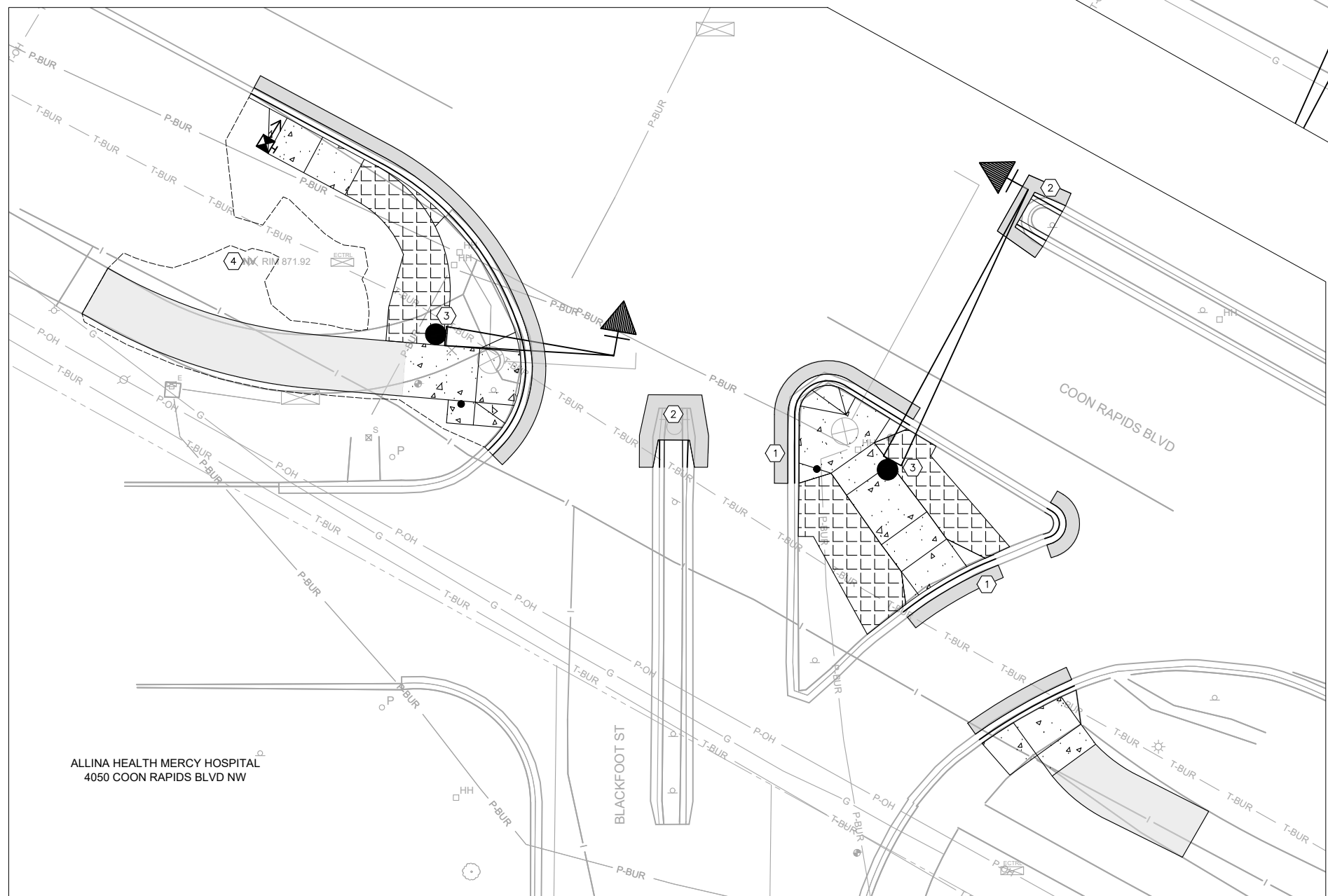
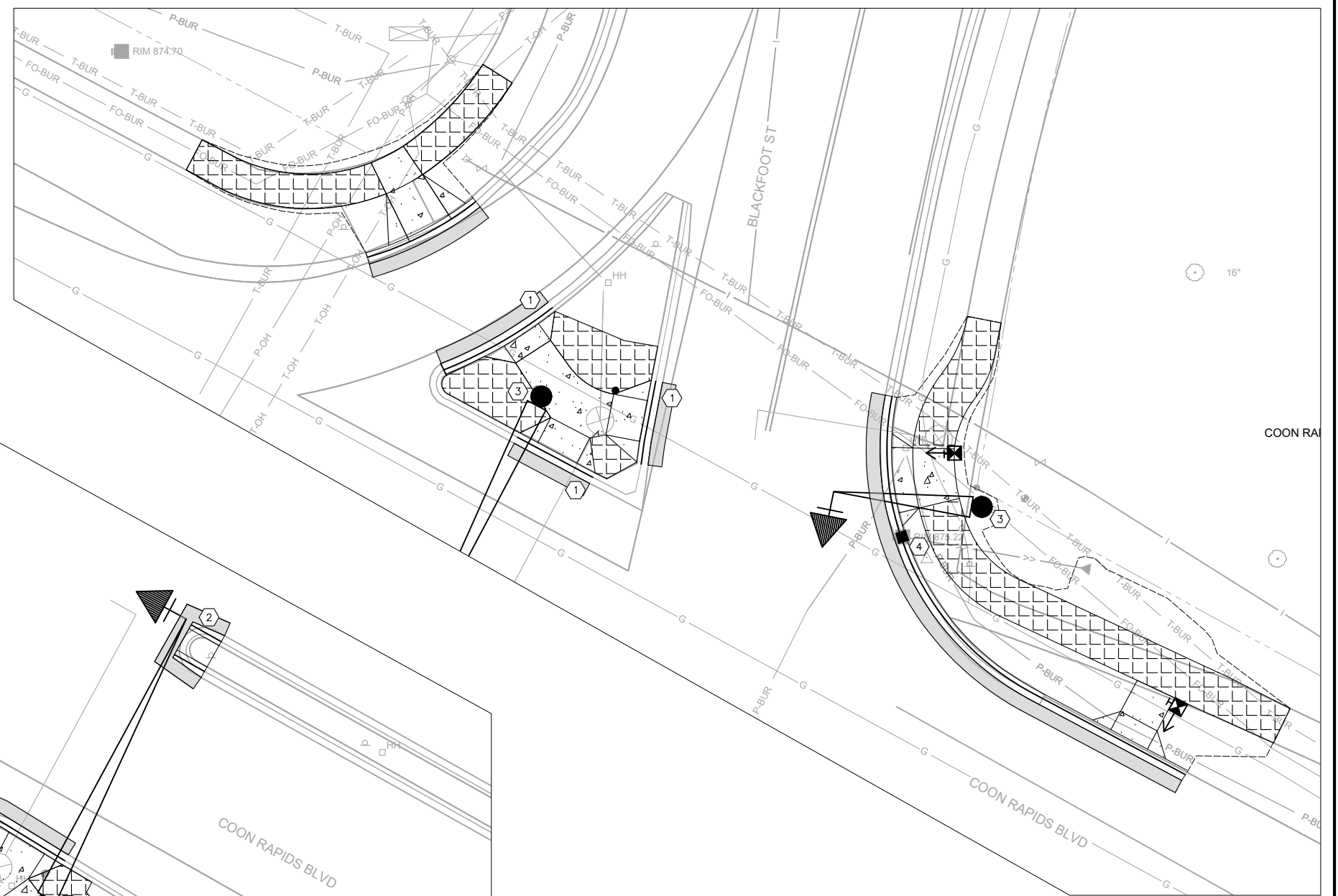
 BRIAN J. HARE, PE (MN)  
 DATE 3/25/22 LICENSE NO. 52610

**BLACKFOOT ST & CSAH 1/COON RAPIDS BLVD**  
 ANOKA COUNTY, MN

**REMOVALS**  
 SP 002-601-056 SP 114-119-013

**LEGEND**

-  6" CONCRETE WALK
-  4" CONCRETE WALK
-  BITUMINOUS PAVEMENT
-  CONCRETE CURB AND GUTTER TYPE B612
-  CONSTRUCTION LIMITS
-  PROPOSED PUSH BUTTON STATION  
(SEE SIGNAL PLANS ON SHEETS 18-33 FOR DETAILS)
-  CASTING R-3065



- KEYED NOTES:**
- ① TIP OUT CURB
  - ② CONCRETE MEDIAN NOSE-SPECIAL (EACH) (SEE STANDARD PLATE 7113 A)
  - ③ PROPOSED SIGNAL POLE (SEE SHEETS 18-33 FOR PLANS)
  - ④ ADJUST FRAME & RING CASTING

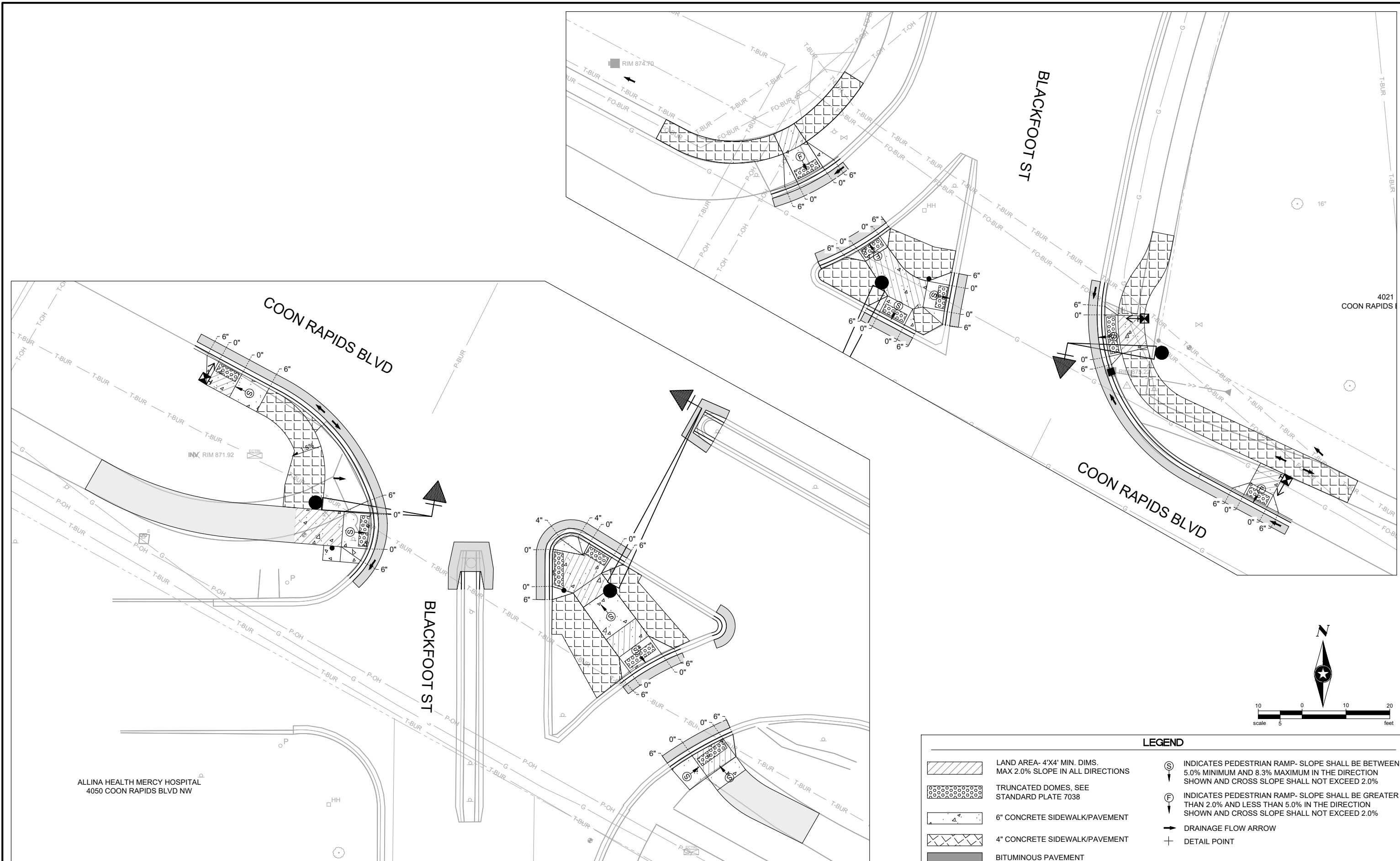
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**BLACKFOOT ST &  
 CSAH 1/COON RAPIDS BLVD**  
 ANOKA COUNTY, MN

**CONSTRUCTION PLAN**  
 SP 002-601-056 SP 114-119-013



ALLINA HEALTH MERCY HOSPITAL  
4050 COON RAPIDS BLVD NW

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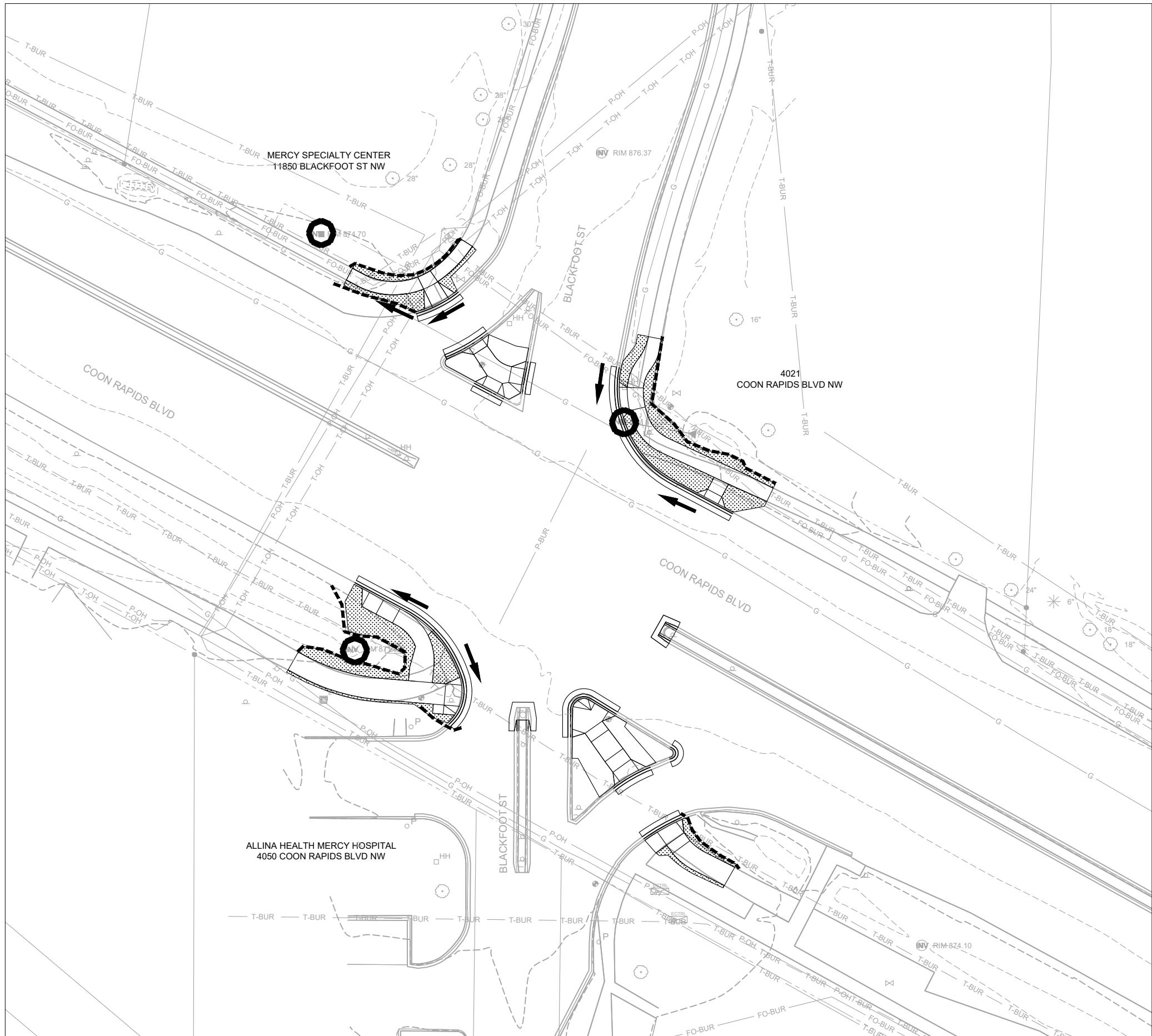


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 DATE 3/25/22

**BLACKFOOT ST &  
CSAH 1/COON RAPIDS BLVD**  
 ANOKA COUNTY, MN

**INTERSECTION DETAILS**

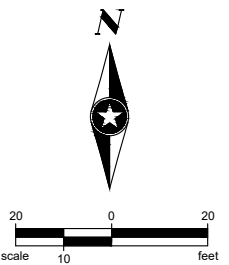
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**EROSION CONTROL**

- STORM DRAIN INLET PROTECTION
- SEDIMENT CONTROL LOG, TYPE COMPOST
- DRAINAGE DIRECTION
- SEED TYPE 25-131 (220 LB/ACRE), FERTILIZER TYPE 2 (200 LB/ACRE)

**NOTE:**  
 1. ALL RESTORATION SHALL BE COMPLETED WITHIN COUNTY/ CITY RIGHT-OF-WAY



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**BRIAN J. HARE, PE (MN)**  
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**BLACKFOOT ST & CSAH 1/COON RAPIDS BLVD**  
 ANOKA COUNTY, MN

**EROSION CONTROL**  
 SP 002-601-056 SP 114-119-013

# PERMANENT PAVEMENT MARKING PLAN

## NOTES & GUIDELINES

### PERFORMED MARKINGS:

MANUFACTURER CERTIFICATIONS ARE REQUIRED FOR INSTALLERS.

DO NOT USE LINE MATERIAL TO PIECE TOGETHER WIDER LINES, LETTERS, SYMBOLS, OR CROSSWALK BLOCKS.

### PERFORMED MARKINGS GROUND IN APPLICATION:

CONCRETE PAVEMENT SURFACES AND BITUMINOUS PAVEMENT SURFACES WHERE PAVEMENT MARKINGS CANNOT BE INLAID IN THE HOT MAT, SHALL HAVE A RECESS GROUND IN FOR THE PLACEMENT OF THERMOPLASTIC PAVEMENT MARKINGS. SEE CONSTRUCTION SPECIFICATIONS.

### GENERAL INFORMATION:

THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULTATION AND INSPECTION. THE CONTRACTOR WILL PLACE NECESSARY 'SPOTTING' AT APPROPRIATE POINTS TO PROVIDE HORIZONTAL CONTROL FOR STRIPING AND TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS. LONGITUDINAL JOINTS, PAVEMENT EDGES AND EXISTING MARKINGS MAY SERVE AS HORIZONTAL CONTROL WHEN SO DIRECTED.

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

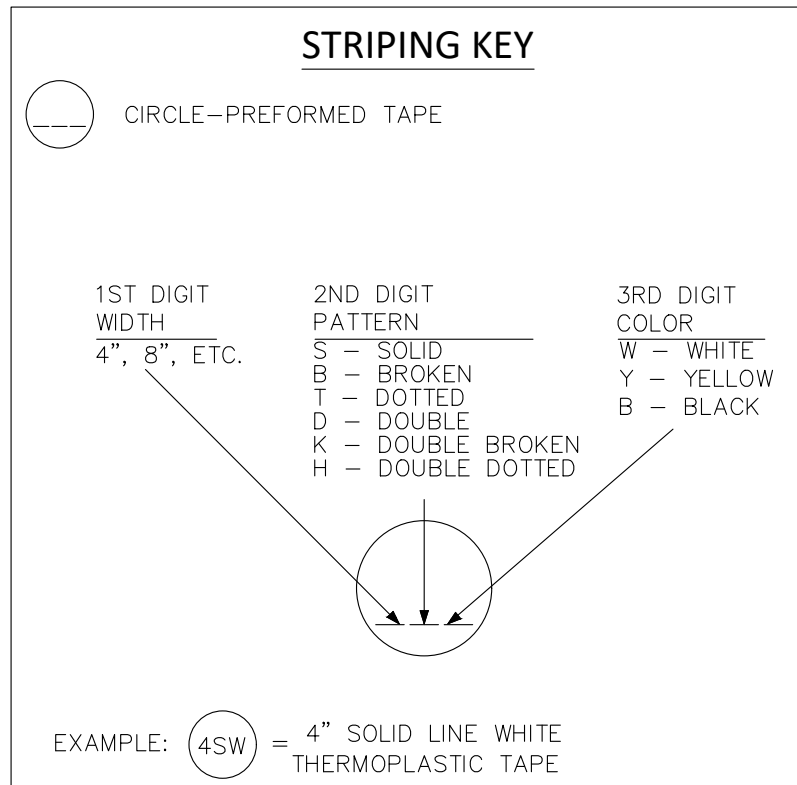
A TOLERANCE OF 1/4 INCH UNDER OR 1/4 INCH OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO 3 INCHES FROM THE SPECIFIED LENGTHS PROVIDED THE OVER AND UNDER VARIATIONS ARE REASONABLY 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.

JUST PRIOR TO THE PLACEMENT OF PAVEMENT MARKINGS THE ROAD SURFACE SHALL BE CLEANED AND FREE OF CONTAMINATION AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENTS AND/OR LAITANCE.

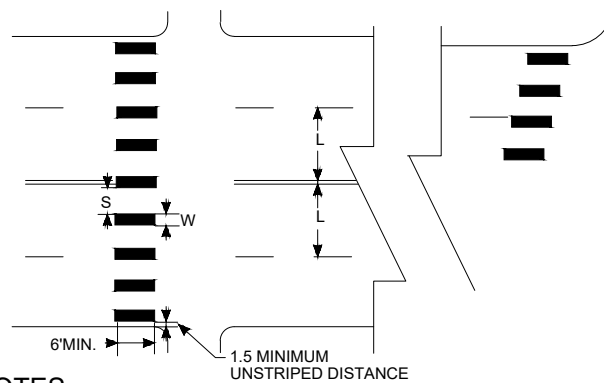
APPLY ALL PAVEMENT MARKINGS AS RECOMMENDED BY THE MATERIAL MANUFACTURER.

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

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.



(L) WIDTH OF INSIDE LANE	(W) WIDTH OF PAINTED AREA	(S) WIDTH OF SPACE
11'	2.5'	3.0'



### NOTES:

1. PAINTED AREAS TO BE CENTERED ON CENTERLINE AND LANE LINES.
2. A MINIMUM OF 1.5 FT. CLEAR DISTANCE SHALL BE LEFT ADJACENT TO THE CURB. IF LAST PAINTED AREA FALLS INTO THIS DISTANCE IT MUST BE OMITTED.
3. ON TWO LANE TWO WAY STREETS, USE SPACING SHOWN FOR AN 11 FT. INSIDE LANE.
4. FOR DIVIDED ROADWAYS, ADJUSTMENTS IN SPACING OF THE BLOCKS SHOULD BE MADE IN THE MEDIAN SO THAT THE BLOCKS ARE MAINTAINED IN THEIR PROPER LOCATION ACROSS THE TRAVELED PORTION OF THE ROADWAY.
5. AT SKEWED CROSSWALKS, THE BLOCKS ARE TO REMAIN PARALLEL TO THE LANE LINES AS SHOWN.

### MARKINGS FOR PEDESTRIAN CROSSWALKS

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Designed By	KM						
Checked By	BH						

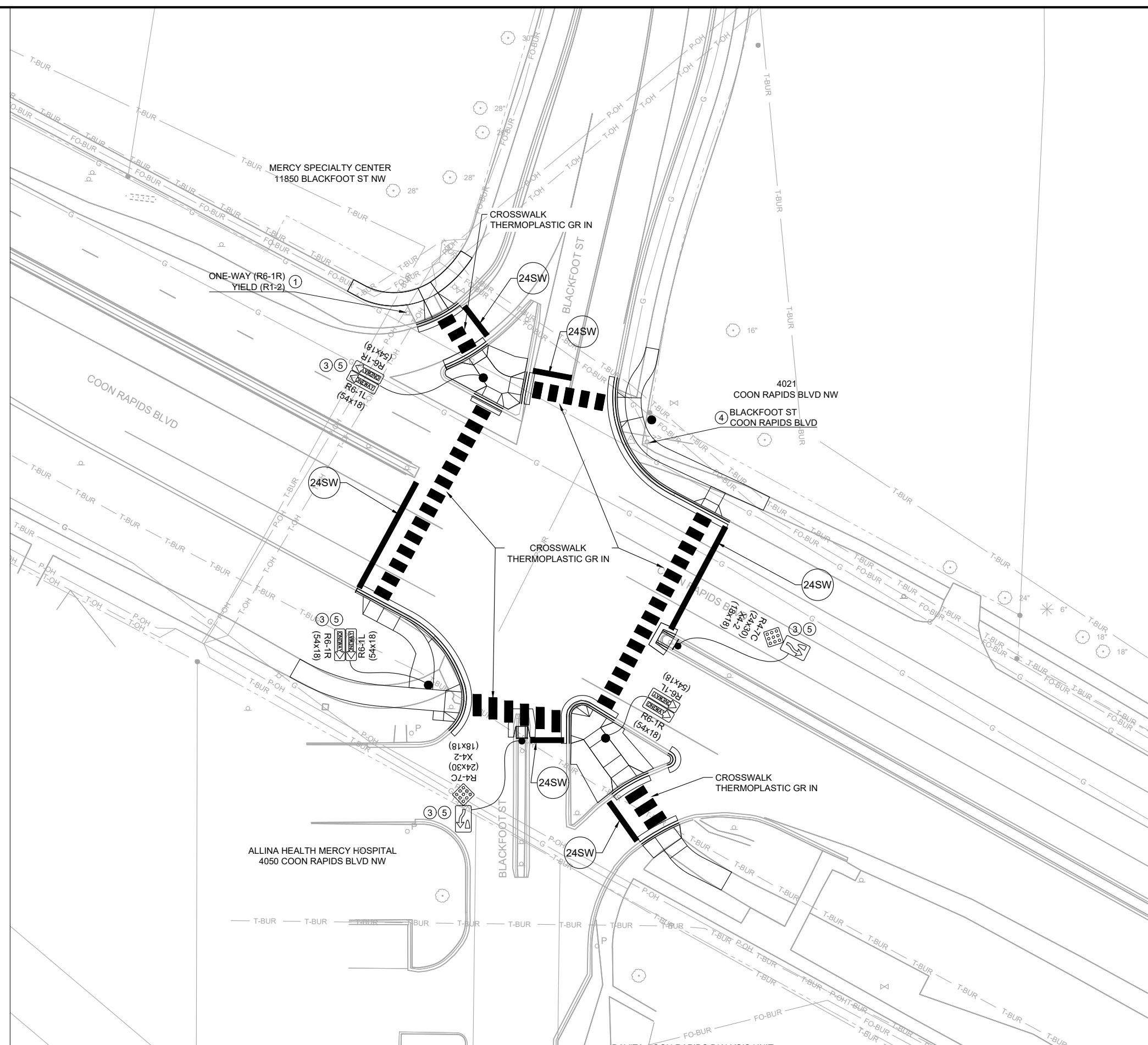
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*Brian J. Hare*  
BRIAN J. HARE, PE (MN)  
DATE 3/25/22 LICENSE NO. 52610

BLACKFOOT ST &  
CSAH 1/COON RAPIDS BLVD  
ANOKA COUNTY, MN

### SIGNING & STRIPING NOTES

SP 002-601-056 SP 114-119-013



**SIGN LEGEND**

- NEW SIGN POST
- SIGNAL POLE SIGN ATTACHMENT

**KEYED NOTES:**

- ① REMAIN IN PLACE
- ② FURNISH & INSTALL
- ③ SALVAGE
- ④ REMOVE
- ⑤ REINSTALL

**NOTES:**

1. SEE SHEET 23 FOR SIGNS ON SIGNAL POLE MAST ARMS

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Designed By	KM						
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**BLACKFOOT ST &  
 CSAH 1/COON RAPIDS BLVD**  
 ANOKA COUNTY, MN

**SIGNING & STRIPING**

SP 002-601-056 SP 114-119-013

NOTES & GUIDELINES

GENERAL INFORMATION:

1. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN THE DEVICES IN THIS TRAFFIC CONTROL PLAN UNLESS OTHERWISE NOTED.
2. FIELD CONDITIONS MAY REQUIRE MODIFICATIONS OF THIS LAYOUT AS DEEMED NECESSARY BY THE ENGINEER.
3. ALL DISTANCES ARE APPROXIMATE.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ANY WORK AREAS NEAR TRAFFIC IN ACCORDANCE WITH THE MNMUTCD.
5. IF THE CONTRACTOR DECIDES TO PERFORM THE CONSTRUCTION WORK IN A SEQUENCE OTHER THAN SHOWN IN THIS TRAFFIC CONTROL PLAN THE CONTRACTOR SHALL PROVIDE COMPLETE REVISED TRAFFIC CONTROL PLANS TO BE APPROVED BY THE ENGINEER.








SIGNING:

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

BARRICADES SHALL BE FABRICATED WITH SIGN SHEETING MATERIAL AS LISTED ON THE MN/DOT APPROVED PRODUCT LIST FOR BARRICADE SHEETING. NOTE THAT ASTM TYPE VII SHEETING IS NOT ALLOWED ON BARRICADES AFTER JANUARY 1, 2010.

5. LONGITUDINAL DROPOFFS SHALL BE SIGNED AS SHOWN IN THE "TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS" FIELD MANUAL UNLESS OTHERWISE SPECIFIED IN THESE PLANS.
6. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE FINAL SIGNS TO ASSURE THAT THE FINAL SIGNS ARE PLACED AS NEEDED, OR PROVIDE TEMPORARY SIGNING AT THEIR EXPENSE UNTIL THE FINAL SIGNING IS PLACED.

TRAFFIC CONTROL DEVICES & SYMBOLS LEGEND


SYMBOL	DESCRIPTION
	WORK AREA / AREA CLOSED TO TRAFFIC
	TRAFFIC CONTROL SIGN
	TYPE III BARRICADE = 
	DRUM-LIKE CHANNELIZER =  (50' SPACING UNLESS OTHERWISE NOTED).
	TYPE A FLASHING WARNING LIGHT


TRAFFIC CONTROL - QUANTITIES SUMMARY (PAY ITEMS)			
			QUANTITY
2563	TRAFFIC CONTROL	LUMP SUM	1


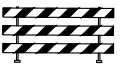
TRAFFIC CONTROL NOTES:

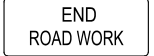
- 1) ITEM NO. 2563.601 SHALL INCLUDE ALL LABOR AND MATERIALS REQUIRED TO MAINTAIN VEHICULAR AND PEDESTRIAN TRAFFIC THROUGH THE PROJECT LIMITS DURING THE ENTIRE CONSTRUCTION PERIOD. THIS INCLUDES BUT IS NOT LIMITED TO: ALL REQUIRED SIGNS AND SIGN SUPPORTS ("STOP", "STOP AHEAD", "ROAD WORK AHEAD", "LEFT/RIGHT LANE CLOSED", "SIDEWALK CLOSED", ETC.), CONES, BARRELS, STANDARD BARRICADES, ARROW BOARDS, ETC. AS WELL AS SAND BAGS NEEDED TO KEEP SIGNS UPRIGHT/VISIBLE TO ONCOMING TRAFFIC AND PEDESTRIANS AT ALL TIMES.
- 2) ALL TRAFFIC CONTROL DEVICES AND SIGNING MUST CONFORM TO AND BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MnMUTCD) AND PART IV "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS" (CURRENT EDITION).
- 3) THE CONTRACTOR IS REQUIRED TO PROVIDE TO THE ENGINEER FOR REVIEW AND APPROVAL AT LEAST SEVEN (7) CALENDAR DAYS PRIOR TO COMMENCING ANY FIELD WORK A WRITTEN PLAN ON HOW THE CONTRACTOR INTENDS TO MEET THE CONTRACT REQUIREMENTS FOR MAINTENANCE OF TRAFFIC AND TRAFFIC CONTROL INCLUDING BUT NOT LIMITED TO PROVIDING TO THE ENGINEER A COMPLETE PLAN FOR WHICH MnMUTCD FIELD MANUAL LAYOUTS ARE PLANNED TO BE USED FOR EACH FIELD OPERATION. LAYOUTS MUST SHOW ALL DEVICES THE CONTRACTOR PROPOSES TO INSTALL AND MAINTAIN FOR EACH FIELD OPERATION.
- 4) CONTRACTOR MUST PROVIDE, MAINTAIN, COVER AND/OR TURN AWAY FROM TRAFFIC (WHEN NOT IN USE) ALL REQUIRED TRAFFIC CONTROL DEVICES AT ALL TIMES. NOTE THAT ENGINEER WILL SUSPEND WORK IF REQUIRED TRAFFIC CONTROL DEVICES ARE NOT INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE FIELD MANUAL OR AS OTHERWISE APPROVED BY THE ENGINEER FOR THE APPROPRIATE TRAFFIC CONTROL SITUATIONS.
- 6) ALL TRAFFIC LANES MUST BE KEPT OPEN TO TRAFFIC AT ALL TIMES, EXCEPT FOR ALLOWABLE SHORT TERM LANE CLOSURES TO COMPLETE INSTALLATION OF TRAFFIC SIGNAL POLES, AND ALSO TO COMPLETE CURB AND GUTTER AND SIDEWALK REMOVAL AND INSTALLATION WORK. SHORT TERM LANE CLOSURES ARE LIMITED TO THE HOURS OF 9:00 AM TO 3:00 PM, MONDAY THROUGH THURSDAY, UNLESS OTHERWISE APPROVED BY ENGINEER FOR THESE TIME LIMITS TO BE EXTENDED TO ACCOMMODATE IMMEDIATE WORK AT THE INTERSECTION. LONG TERM LANE CLOSURES WILL NOT BE ALLOWED, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- 9) THE CONTRACTOR SHALL NOT USE THE MOBILE AND SHORT DURATION TEMPORARY TRAFFIC CONTROL LAYOUTS FROM THE MnMUTCD "FIELD MANUAL." WORK ON THIS PROJECT IS RESTRICTED TO USING SHORT TERM STATIONARY TEMPORARY TRAFFIC CONTROL LAYOUTS, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- 10) AT LEAST ONE THROUGH LANE FOR TRAFFIC IN EACH DIRECTION ON ALL ROADWAYS, AND AT LEAST ONE LEFT TURN LANE FOR EACH DIRECTION OF OF CSAH 1 TRAFFIC MUST BE MAINTAINED AT ALL TIMES.
- 11) SEE DIVISION S OF THE SPECIAL PROVISIONS FOR FURTHER INFORMATION REGARDING TRAFFIC CONTROL TO BE PROVIDED, INSTALLED, MAINTAINED AND REMOVED BY THE CONTRACTOR DURING THE ENTIRE PROJECT.
- 12) THE CONTRACTOR IS RESPONSIBLE FOR ALL SIGNS, BARRICADES, AND DEVICES NEEDED TO CLOSE THE SIDEWALK AND BITUMINOUS TRAIL ON THE NORTH & SOUTH SIDE OF CSAH 1 DURING CONSTRUCTION OF THE SOUTHBOUND RIGHT TURN LANE (CLOSE TRAIL AT NEAREST ROADWAY CROSSINGS BOTH EAST AND WEST OF BLACKFOOT STREET (INCIDENTAL)).

TRAFFIC CONTROL TABULATION SHEET

"R" SERIES			
SIGN	SIGN NO.	COLOR	SIZE
	R11-2	BLACK ON WHITE	48" X 30"

"W" SERIES			
SIGN	SIGN NO.	COLOR	SIZE
	W20-1	BLACK ON ORANGE	36" x 36"

DEVICES			
ITEM	SIGN NO.	COLOR	SIZE
	DLC		
	TYPE III		

"G" SERIES			
SIGN	SIGN NO.	COLOR	SIZE
	G20-2A	BLACK ON ORANGE	48" X 24"

SEH Project	161219	Rev.#		Revision Issue Description	Date	Rev.#		Revision Issue Description	Date
Drawn By	KM								
Designed By	KM								
Checked By	BH								



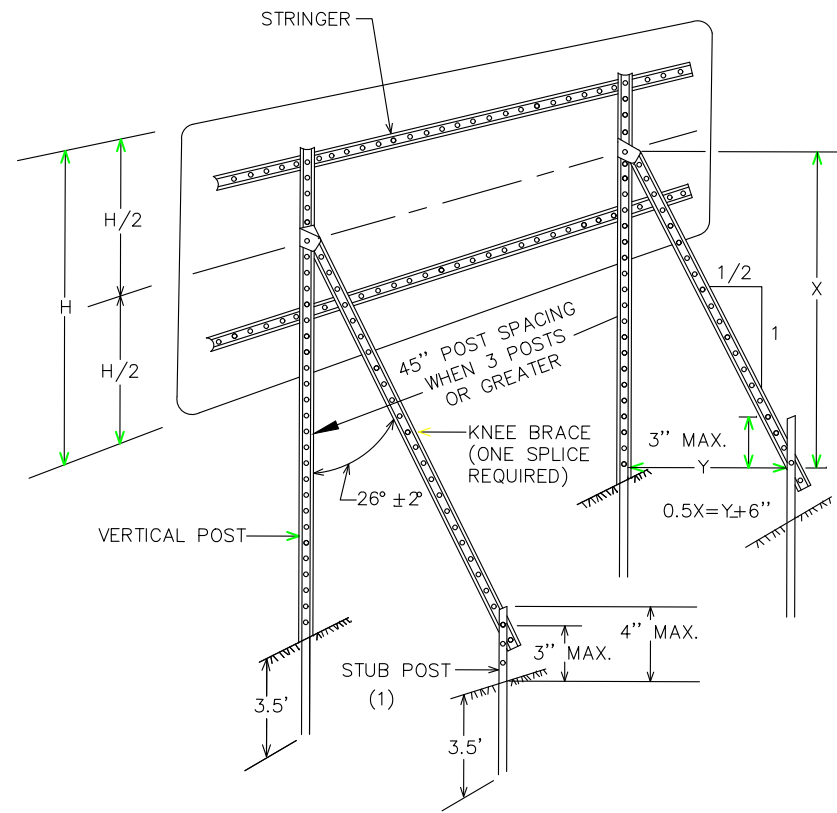
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 DATE 3/25/22  
 BRIAN J. HARE, PE (MN)  
 LICENSE NO. 52610

BLACKFOOT ST &  
 CSAH 1/COON RAPIDS BLVD  
 ANOKA COUNTY, MN

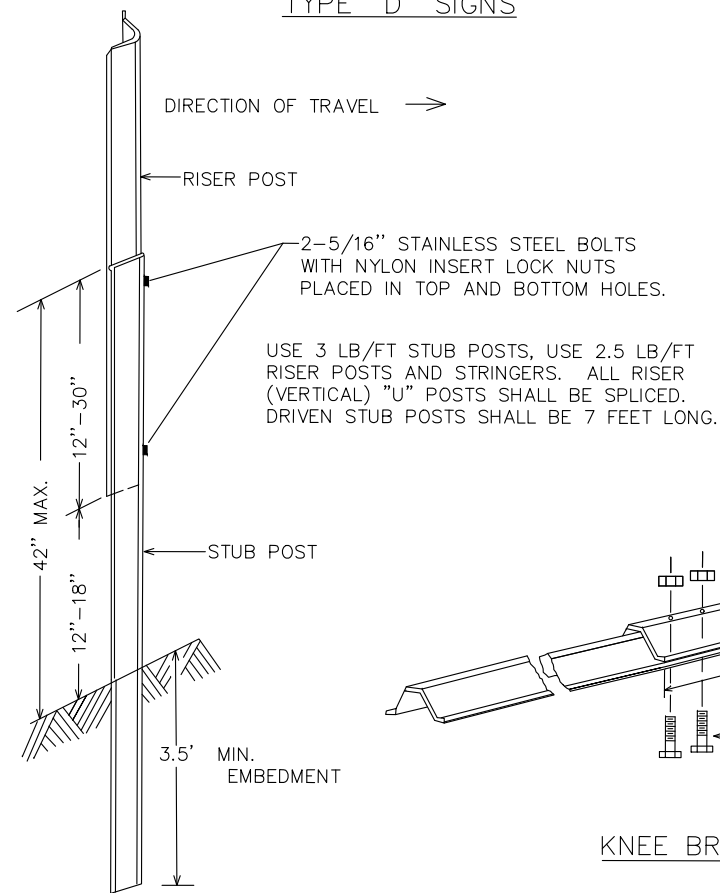
TRAFFIC CONTROL DETAILS

SP 002-601-056 SP 114-119-013

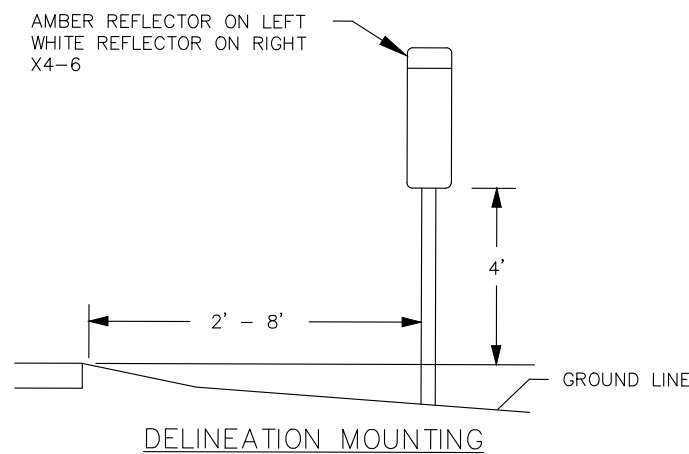




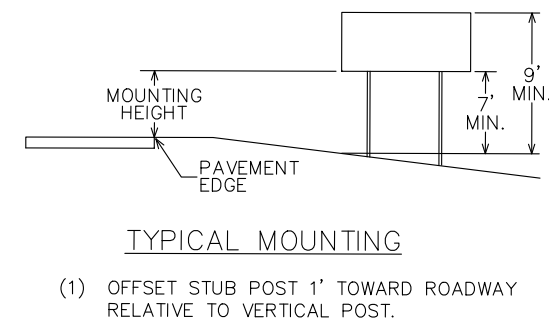
TYPICAL "A-FRAME" INSTALLATION  
TYPE "D" SIGNS



"U" POST BREAKAWAY SPLICE

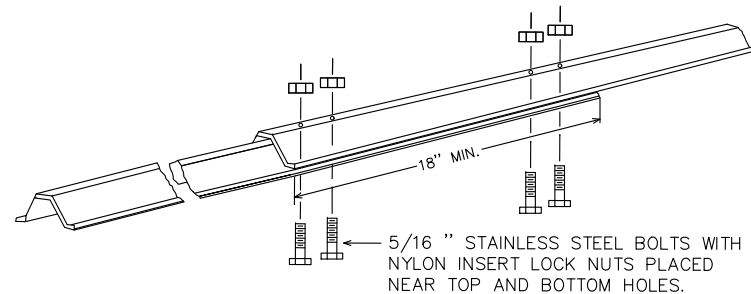


DELINEATION MOUNTING

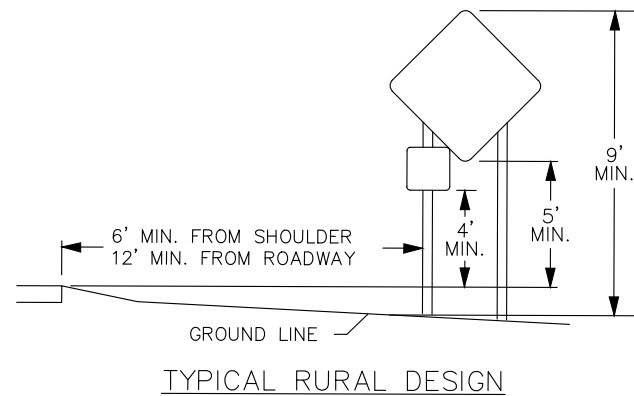


TYPICAL MOUNTING

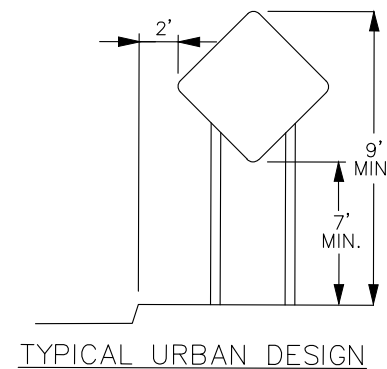
(1) OFFSET STUB POST 1' TOWARD ROADWAY  
RELATIVE TO VERTICAL POST.



KNEE BRACE STRUCTURAL SPLICE



TYPICAL RURAL DESIGN



TYPICAL URBAN DESIGN

Signs to be placed on driven u-posts shall be placed in accordance with Table 1 or 2 below. If the TTC Plan places post mounted temporary signs adjacent to existing structures there shall be no more than two u-post within 84 inches of each other aligned in the same plane so as not to compromise that structure's and the new device's crashworthiness. If it is not possible to maintain this spacing then the post mounted temporary signs shall be placed a min of 4' beyond the in place structures. Sign panels shall be placed on sign structures to meet the 5' min depicted on the typical rural design detail, the 7' min depicted on the typical urban design detail, and the 9' min depicted on the typical mounting detail on this sheet.

STANDARD CONSTRUCTION SIGNS IN MnDOT STANDARD SIGNS AND MARKINGS MANUAL

TABLE 1

PANEL SIZE (IN.)	POSTS			
	NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)
24 x 24	2-U	18		13
30 x 24	2-U	18		13
36 x 30	2-U	24		13
36 x 36	2-U	18		14
42 x 36	2-U	30		14
48 x 48	2-U	30		15
60 x 60	2-U	42	1	16
66 x 60	2-U	42	2	16
72 x 72	2-U	42	2	17
96 x 54	2-U	54	2	19
96 x 84	2-U	54	2	19
132 x 108	3-U	45	3	22
168 x 132	4-U	48	4	25

GENERAL NOTES:

1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
2. SEE MnDOT STANDARD SIGNS AND MARKINGS MANUAL FOR PUNCHING HOLES.
3. MINIMUM OF 45" SPACING BETWEEN POSTS MUST BE MAINTAINED WHEN USING MORE THAN TWO POSTS.

TABLE 2

SPECIAL DESIGN CONSTRUCTION SIGNS

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

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

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

SEH Project	161219	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
Drawn By	KM						
Designed By	KM						
Checked By	BH						

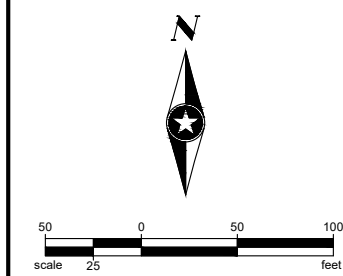
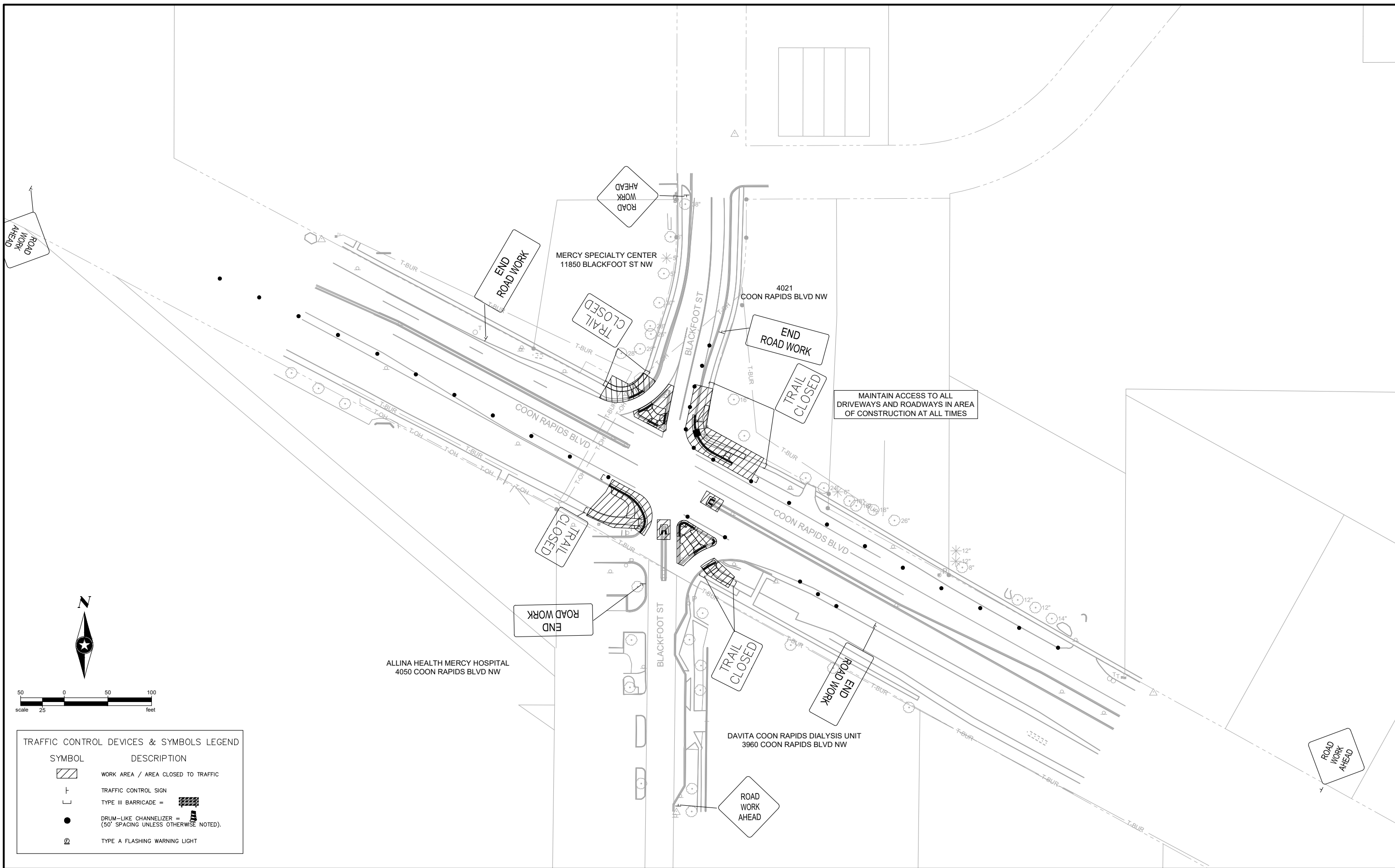


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ANOKA COUNTY, MN

TRAFFIC CONTROL DETAILS

SP 002-601-056 SP 114-119-013

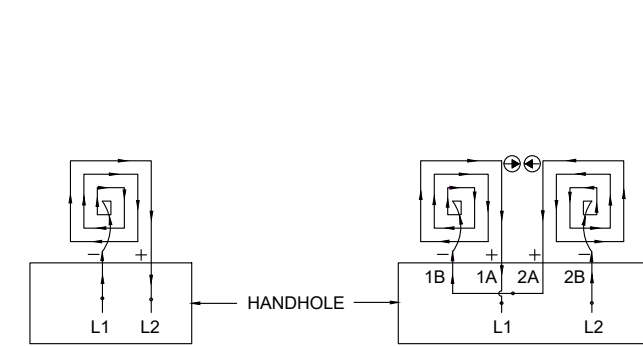
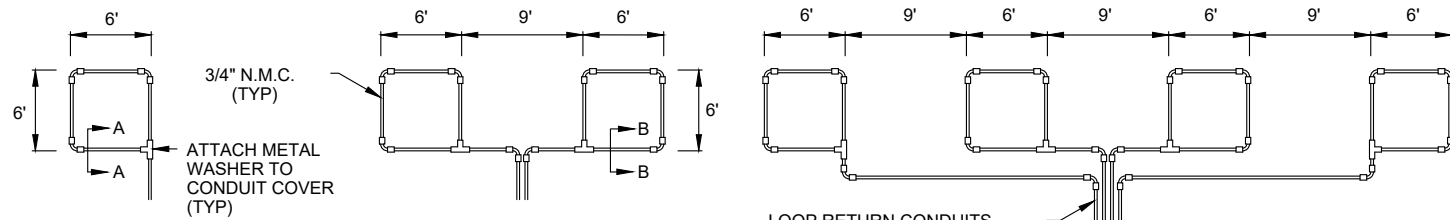


TRAFFIC CONTROL DEVICES & SYMBOLS LEGEND	
SYMBOL	DESCRIPTION
	WORK AREA / AREA CLOSED TO TRAFFIC
	TRAFFIC CONTROL SIGN
	TYPE III BARRICADE =
	DRUM-LIKE CHANNELIZER = (50' SPACING UNLESS OTHERWISE NOTED).
	TYPE A FLASHING WARNING LIGHT

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 ANOKA COUNTY, MN

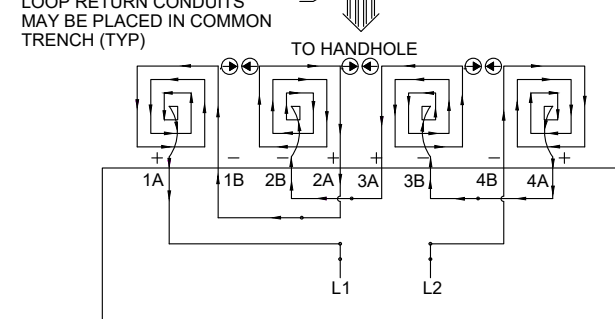
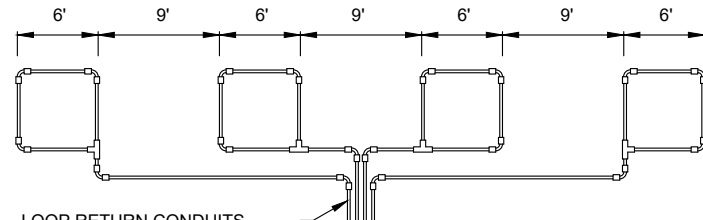


**LOOP DETECTOR  
DETAIL 'A'**  
(LOOP PHASING FOR  
SINGLE CONNECTION)

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)

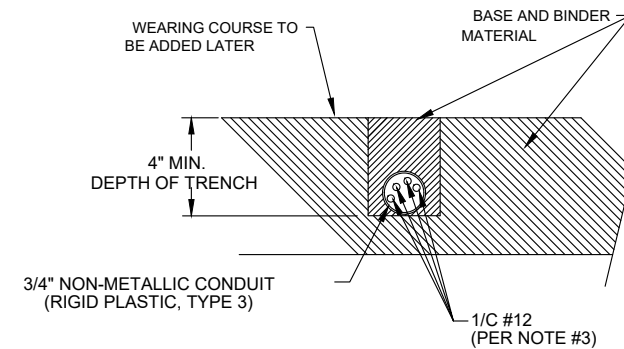


LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

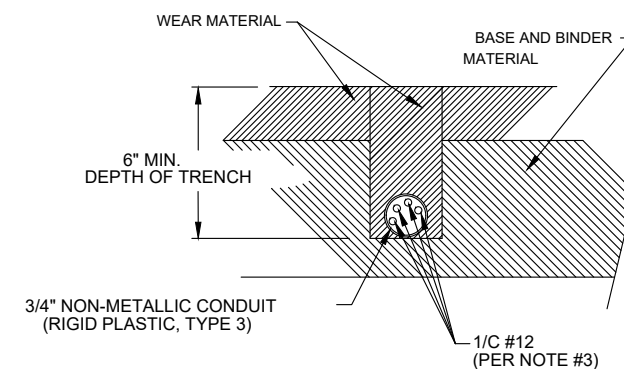
L1 TO 1A      3B TO 4A  
1B TO 2A      4B TO L2  
2B TO 3A

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

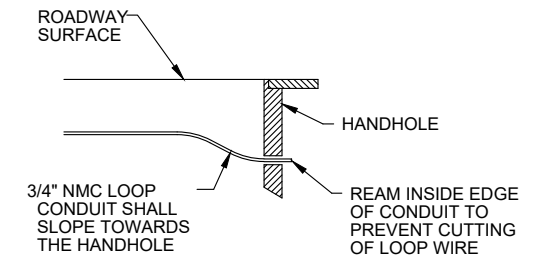
**LOOP DETECTOR  
DETAIL 'C'**  
(LOOP PHASING FOR  
SERIES CONNECTION)



**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.	(2)
LUMINAIRE NO.	(3)
CONTROLLER AND CABINET	(4)
CONTROLLER AND CABINET - IN PLACE	(5)
HANDHOLE	(6)
HANDHOLE - IN PLACE	(7)
RIGID STEEL CONDUIT (RSC)	(8)
RIGID STEEL CONDUIT (RSC) - IN PLACE	(9)
SIGNAL FACE WITH BACKGROUND SHIELD	(10)
SIGNAL FACE W/O BACKGROUND SHIELD	(11)
SIGNAL FACE - IN PLACE	(12)
PEDESTRIAN INDICATORS	(13)
PEDESTRIAN INDICATORS - IN PLACE	(14)
PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE	(15)
PEDESTRIAN PUSH BUTTON STATION	(16)
TRAFFIC SIGNAL PEDESTAL	(17)
TRAFFIC SIGNAL PEDESTAL - INPLACE	(18)
TRAFFIC SIGNAL POLE AND MAST ARM	(19)
TRAFFIC SIGNAL POLE AND MAST ARM - IN PLACE	(20)
STREET LIGHT POLE AND LUMINAIRE	(21)
STREET LIGHT POLE AND LUMINAIRE - IN PLACE	(22)
MAST ARM AND LUMINAIRE	(23)
MAST ARM AND LUMINAIRE - INPLACE	(24)
WOOD POLE	(25)
WOOD POLE - IN PLACE	(26)
SOURCE OF POWER	(27)
RAILROAD SIGNAL - IN PLACE	(28)
RIGHT OF WAY LINE	(29)
CENTERLINE	(30)
EDGE OF ROADWAY	(31)
SHOULDERLINE	(32)
CURB LINE	(33)
STOP BAR	(34)
EMERGENCY VEHICLE PREEMPTION DETECTOR	(35)

**ABBREVIATIONS**

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

**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**

ITEM NO	ITEM	UNIT	TOTAL ESTIMATED QUANTITY
2104	REMOVE SIGNAL SYSTEM	EACH	1
2545	SERVICE CABINET	EACH	1
2565	EMERGENCY VEHICLE PREEMPTION SYSTEM	LS	1
2565	TRAFFIC CONTROL INTERCONNECT	LS	1
2565	TRAFFIC CONTROL SIGNAL SYSTEM	SYSTEM	1
2565	TEMPORARY SIGNAL SYSTEM	SYSTEM	1

**TRAFFIC SIGNAL STANDARD PLATES**

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

PLATE NO.	DESCRIPTION
8111 E	TRAFFIC SIGNAL BRACKETING (PEDESTAL MOUNTED) (3 SHEETS)
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)
8126 L	POLE FOUNDATION (PA90 & PA100)
8129 A	SHIM AND WASHER (TRAFFIC CONTROL SIGNALS AND ROADWAY LIGHTING)

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*John M. Gray*  
JOHN M. GRAY, PE (MN)  
DATE 3/25/2022 LICENSE NO. 22457

**BLACKFOOT ST &  
CSAH 1/COON RAPIDS BLVD**  
ANOKA COUNTY, MN

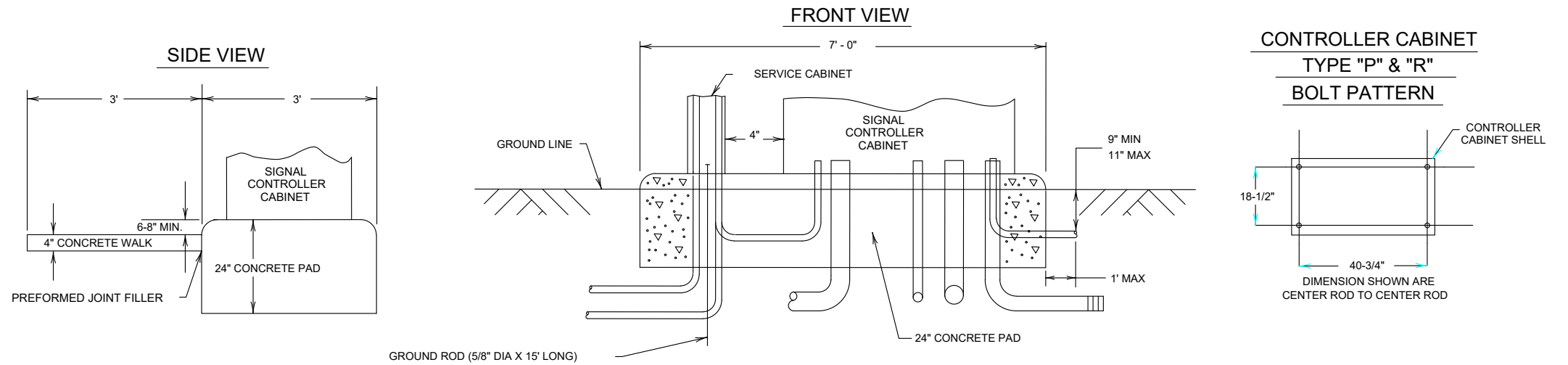
**TRAFFIC SIGNAL SYSTEM  
DETAILS & STANDARD PLATES**  
CSAH 1 (COON RAPIDS BLVD) AT BLACKFOOT STREET  
SP 002-601-056 SP 114-119-013

# TYPICAL PAD WITH CONTROLLER CABINET AND SERVICE CABINET

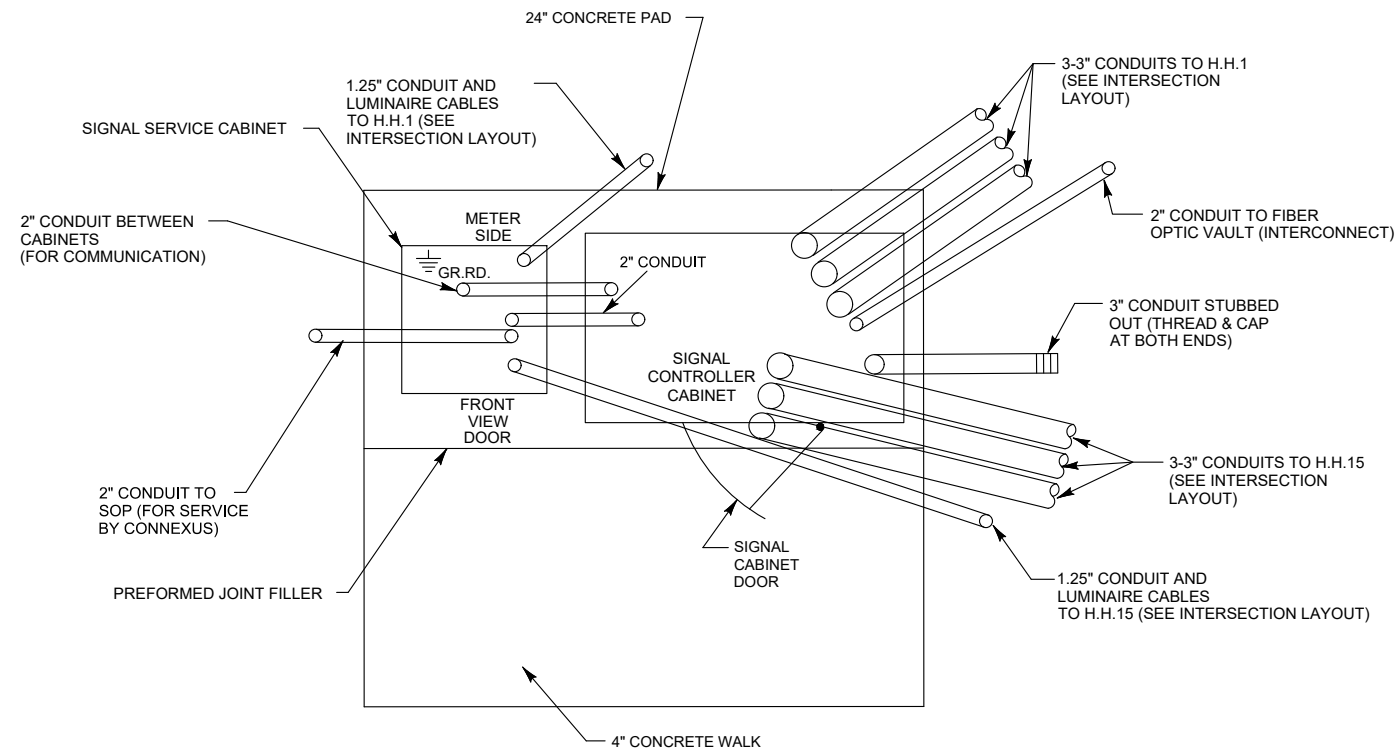
SEE INTERSECTION LAYOUT FOR CABLE INFORMATION (NOT TO SCALE)

## 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.



## PLAN VIEW CSAH 1 AT BLACKFOOT STREET



SEH Project	161219	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
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Designed By	MO						
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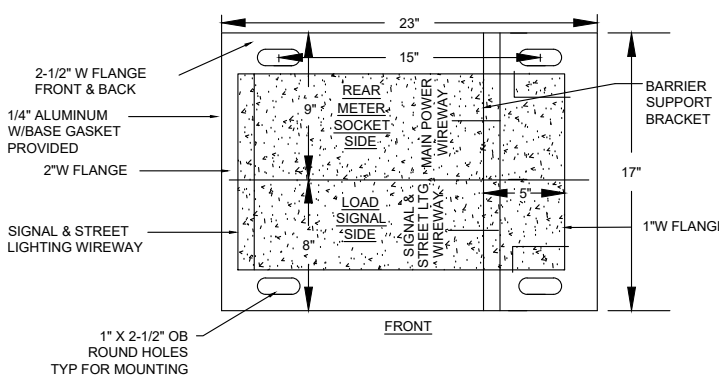
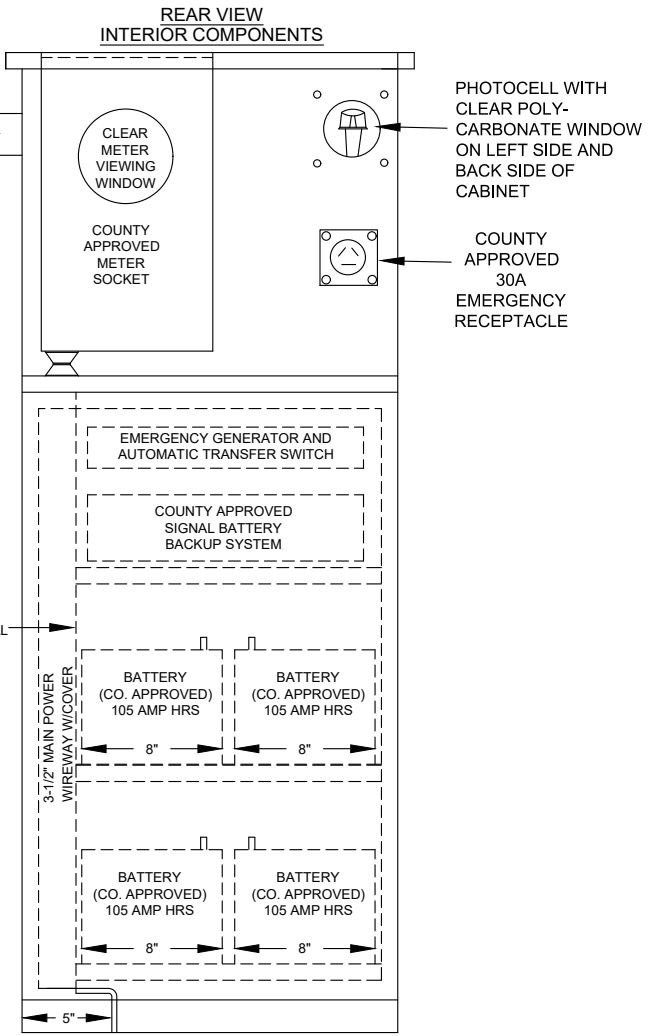
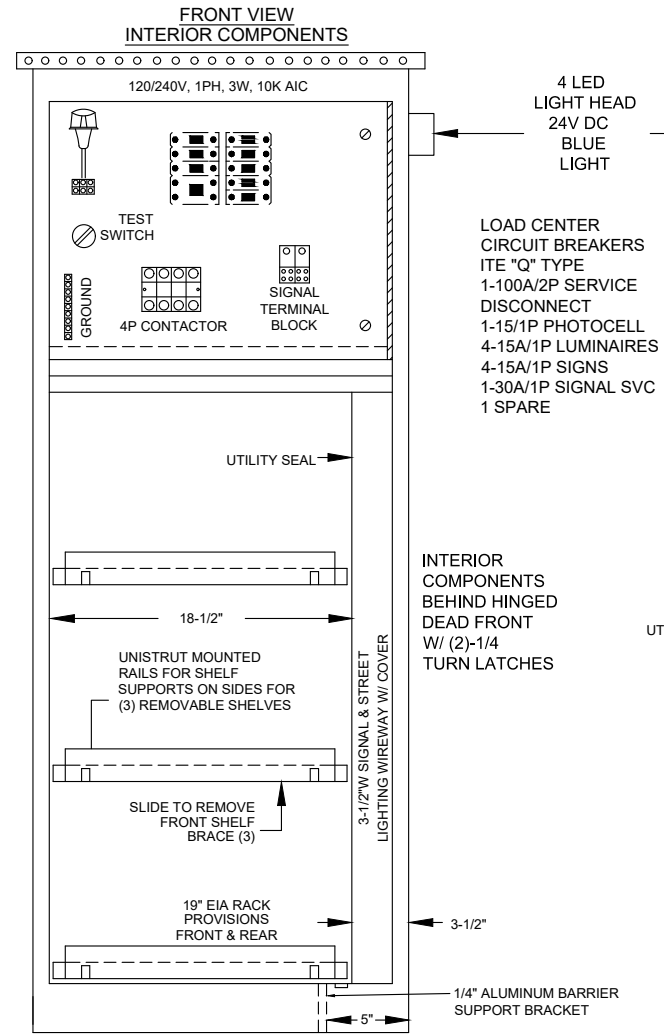
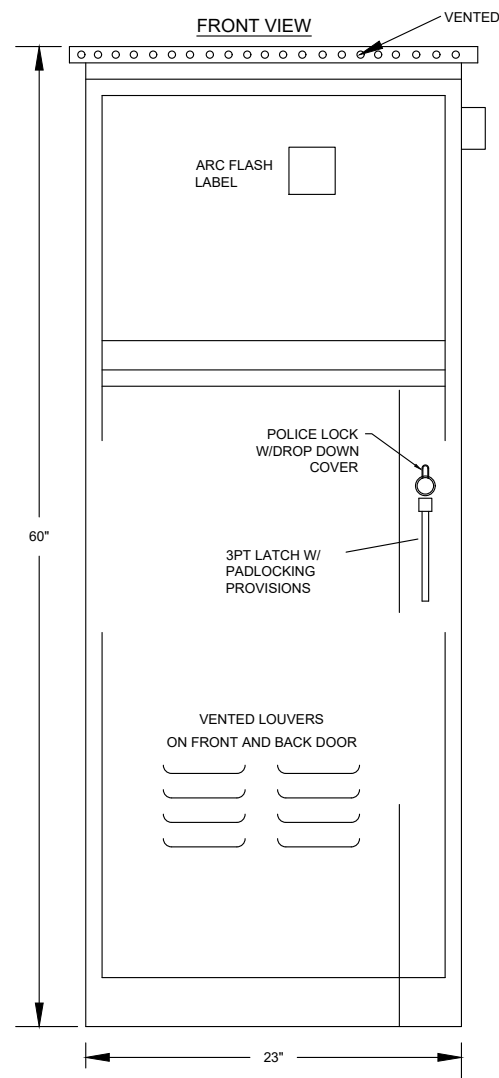


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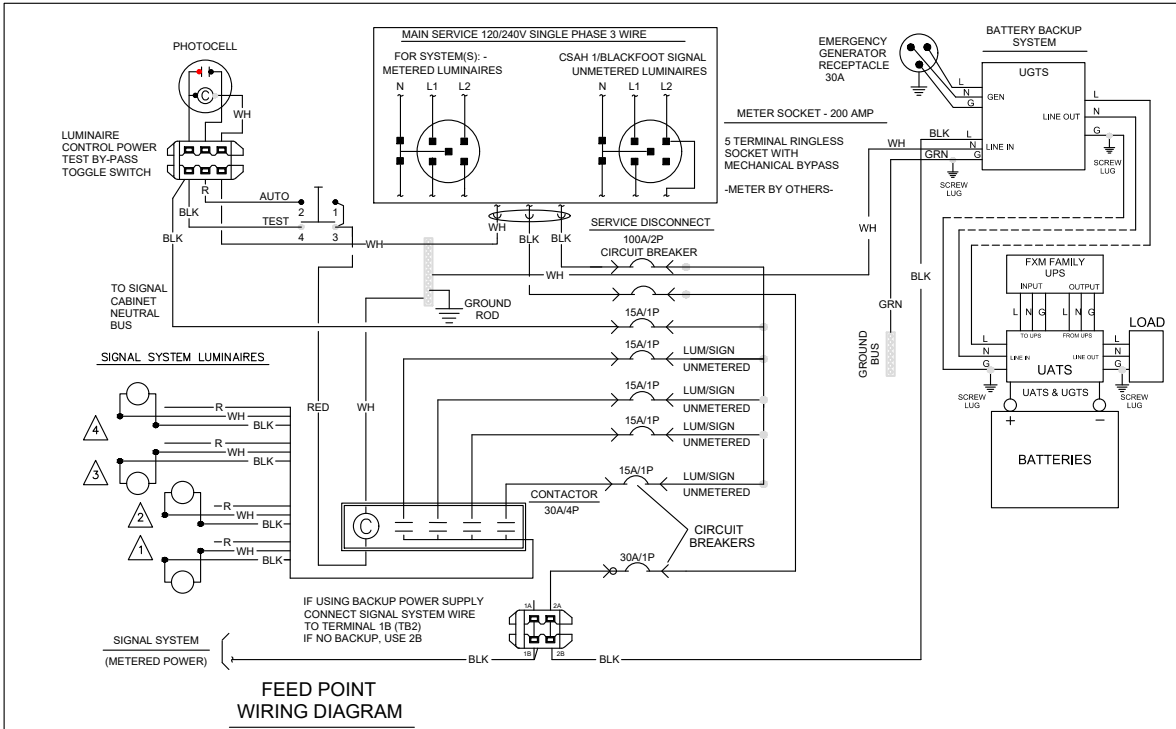
**TRAFFIC SIGNAL SYSTEM  
EQUIPMENT PAD DETAILS**  
 CSAH 1 (COON RAPIDS BLVD) AT BLACKFOOT STREET  
 SP 002-601-056 SP 114-119-013



**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.



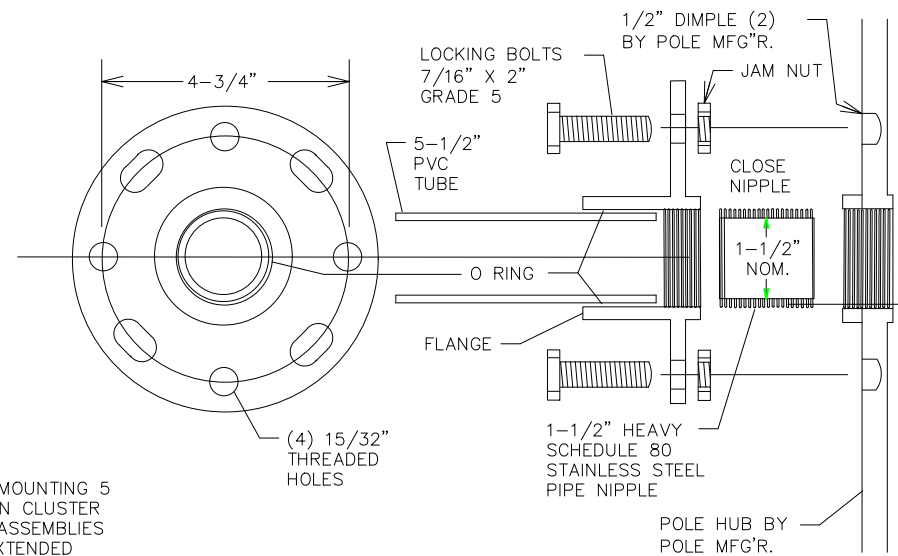
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Checked By	JG						

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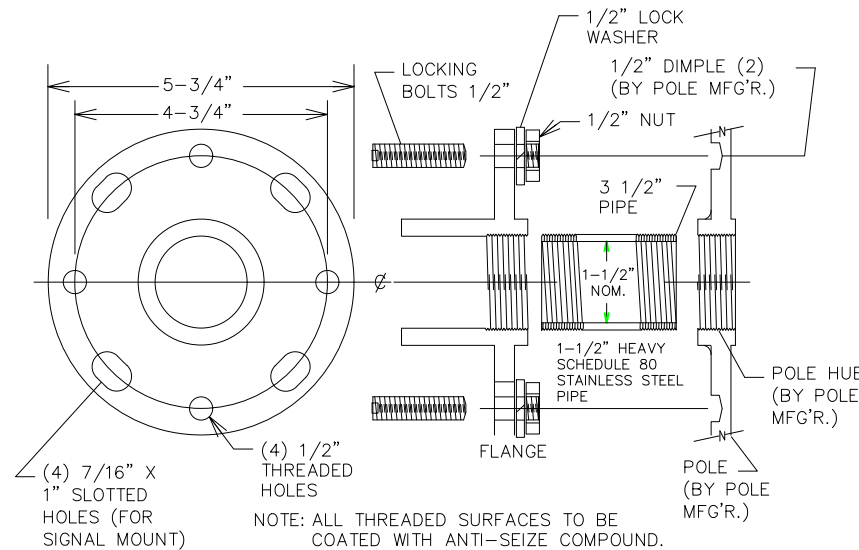
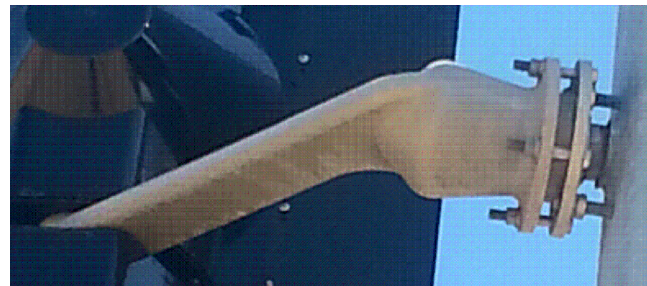
*John M. Gray*  
 JOHN M. GRAY, PE (MN)  
 DATE 3/25/2022 LICENSE NO. 22457

**BLACKFOOT ST & CSAH 1/COON RAPIDS BLVD**  
 ANOKA COUNTY, MN

**TRAFFIC SIGNAL SYSTEM SIGNAL SERVICE CABINET DETAILS**  
 CSAH 1 (COON RAPIDS BLVD) AT BLACKFOOT STREET  
 SP 002-601-056 SP 114-119-013

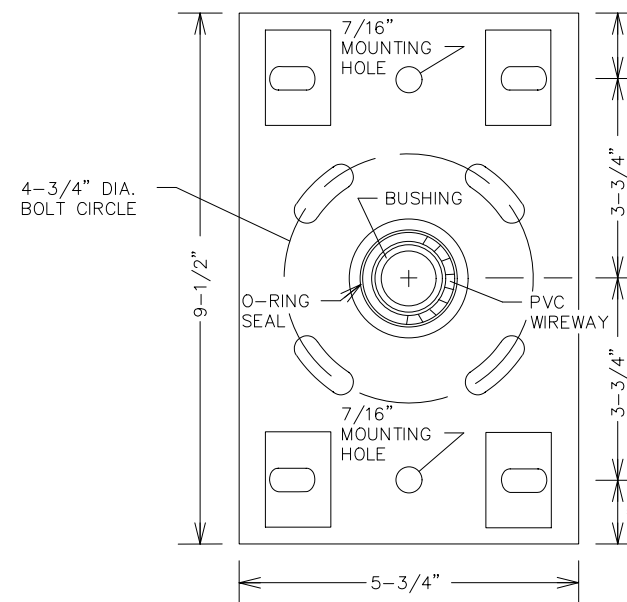


THREADED HUB AND FLANGE POLE ADAPTOR

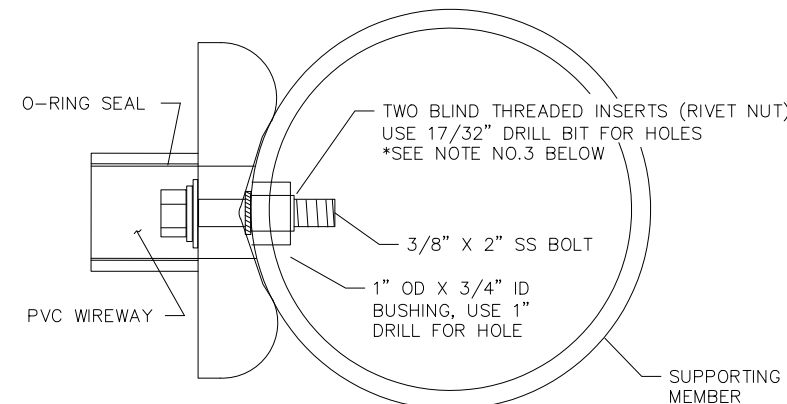


EXTENDED THREADED POLE ADAPTOR

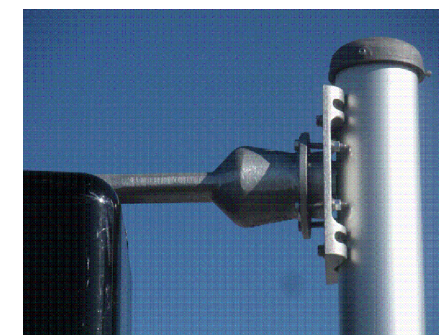
- NOTES:
1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
  2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
  3. SEE STANDARD PLATE NUMBER 8123 FOR ADDITIONAL SIGNAL POLE DETAILS.
  4. EXTENDED THREADED POLE ADAPTOR ONLY USED WITH 5 SECTION CLUSTER HEADS.



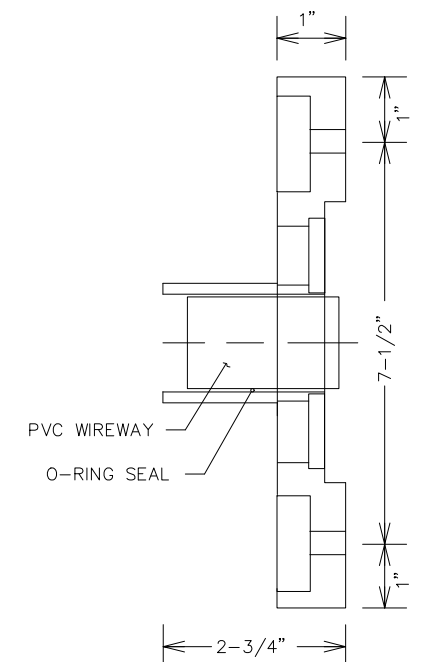
BOLT ON HUB & FLANGE



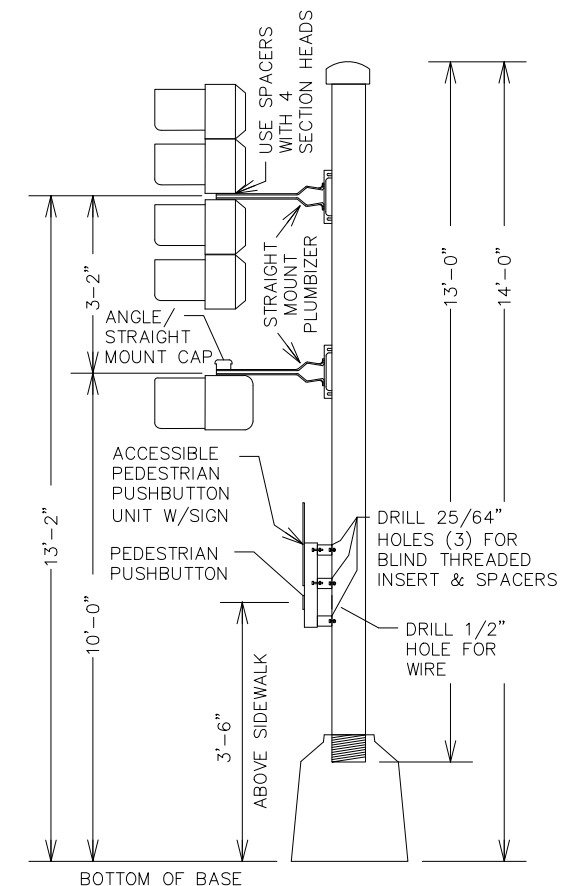
TOP VIEW



- 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.

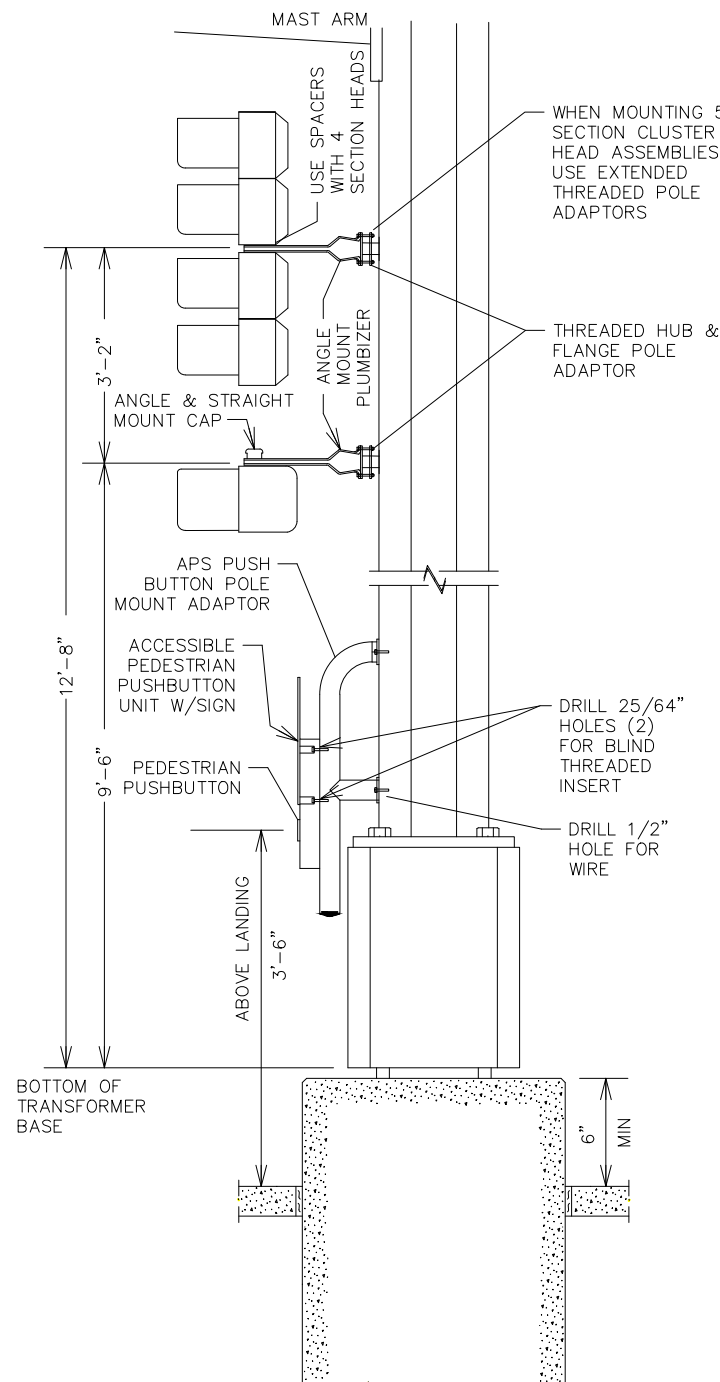


SIDE VIEW



TYPICAL PEDESTAL MOUNTING

NOT TO SCALE



TYPICAL SIGNAL POLE MOUNTING

NOT TO SCALE

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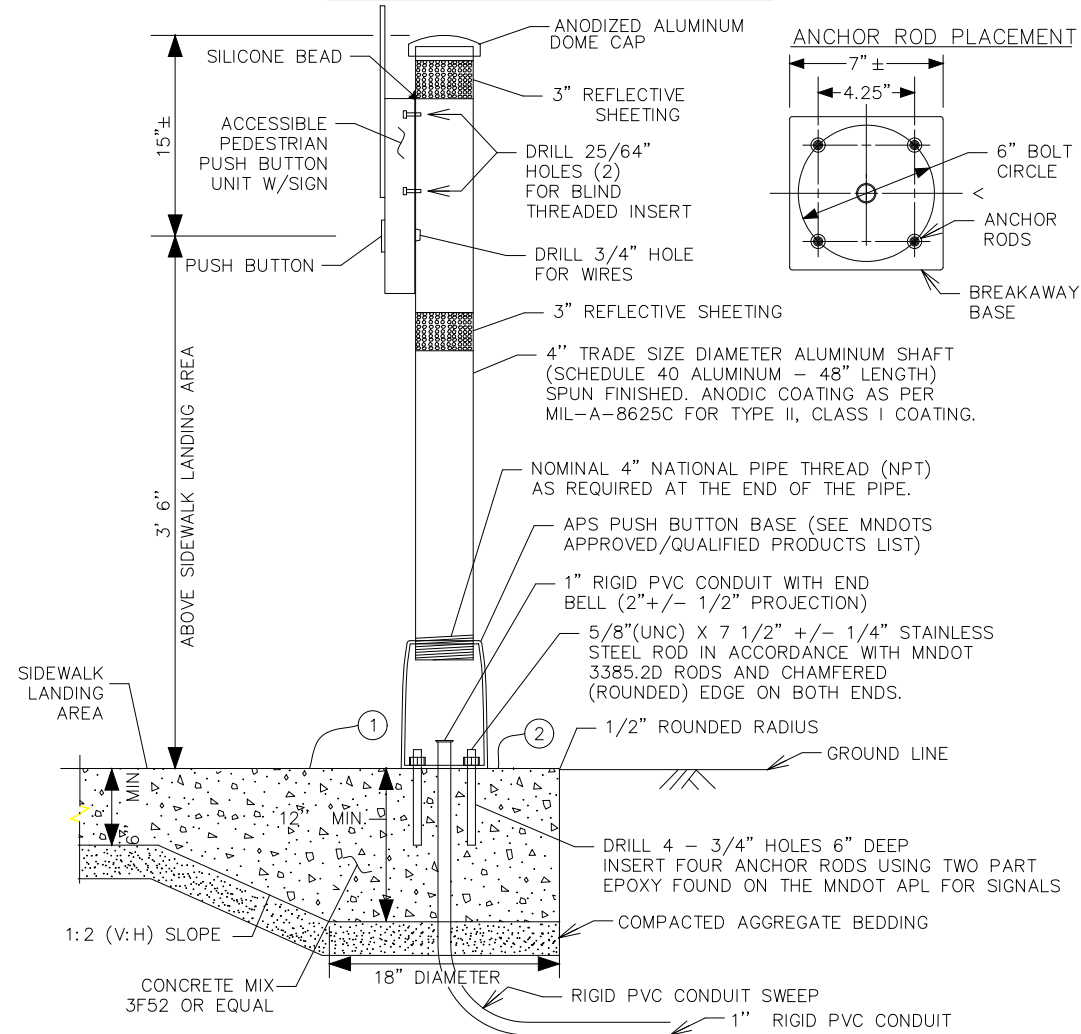
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BLACKFOOT ST &  
CSAH 1/COON RAPIDS BLVD  
ANOKA COUNTY, MN

TRAFFIC SIGNAL SYSTEM  
ONE WAY POLE MOUNT DETAILS  
CSAH 1 (COON RAPIDS BLVD) AT BLACKFOOT STREET  
SP 002-601-056 SP 114-119-013

### APS PUSH BUTTON STATION



**NOTES:**

PLACEMENT AND ORIENTATION OF THE PUSH BUTTON STATION IS CRITICAL. MOUNT THE BUTTON SO THAT THE FACE IS PARALLEL WITH THE ASSOCIATED CROSSWALK. SCREW IN SHAFT TO A TIGHTENED POSITION BEFORE MOUNTING ACCESSIBLE PEDESTRIAN PUSH BUTTON UNIT TO THE SHAFT.

ORIENT ACCESS OPENING ON THE BREAKAWAY PEDESTAL DIRECTLY BELOW THE APS BUTTON.  
 PLUMB THE PUSH BUTTON STATION WITH LEVELING SHIMS IN ACCORDANCE WITH STANDARD PLATE 8129.  
 INSTALL BLIND THREADED INSERTS USING MANUFACTURER'S SPECIFIC INSERTION TOOL.

USE ZINC PLATED STEEL 1/4 - 20 UNC BLIND THREADED INSERTS SUITABLE FOR MOUNTING ON SURFACE WALL THICKNESS OF .337. APPROVED BLIND INSERTS ARE LISTED ON MNDOT'S APPROVED/QUALITY PRODUCTS LIST WEBSITE FOR TRAFFIC SIGNALS.

USE APS 1/4 - 20 STAINLESS STEEL MOUNTING BOLTS. APPLY BRUSH ON ANTI SEIZE COMPOUND TO BOLTS PRIOR TO ASSEMBLY.

APPLY A BEAD OF 100% SILICONE SEALANT ALONG THE TOP OF THE PUSH BUTTON UNIT WHERE IT COMES IN CONTACT WITH THE 4" SHAFT.

USE WHITE REFLECTIVE SHEETING AT INTERSECTION CORNERS AND YELLOW REFLECTIVE SHEETING IN CENTER MEDIANS. APPROVED TUBE DELINEATOR SHEETING IS LISTED ON MNDOT'S APPROVED/QUALIFIED PRODUCTS LIST WEBSITE FOR SIGNING.

AN 18" X 6" FIBER FORMING TUBE MAY BE USED FOR THE LOWER HALF OF THE FOUNDATION WHEN CONDITIONS DO NOT ALLOW FOR THE 18" X 6" HOLE TO STAND OPEN.

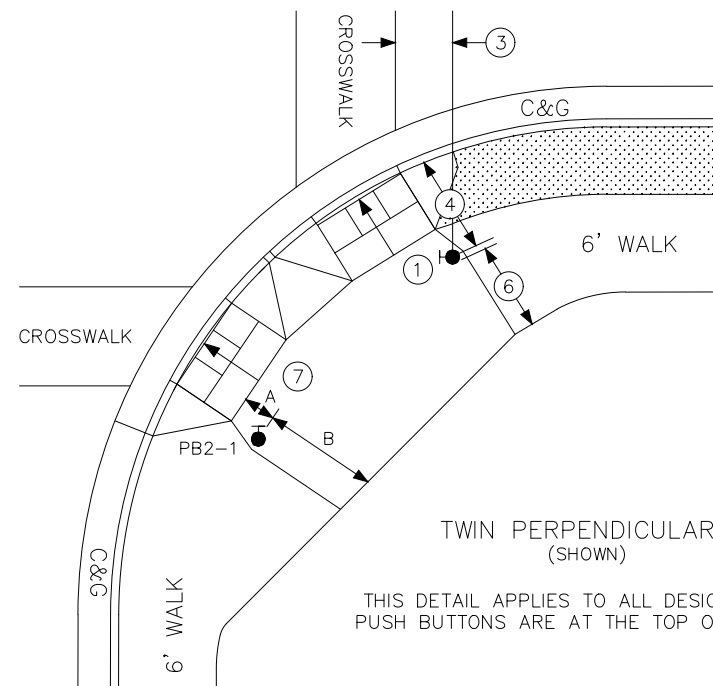
- ① THE PUSH BUTTON STATION FOUNDATION IS MONOLITHIC (POURED AT ONE TIME) WITH THE SIDEWALK. PROVIDE A 1:2 (V:H) SLOPE GRADE WHERE THE 6" MIN SIDEWALK DEPTH TRANSITIONS TO THE 12" MIN FOUNDATION DEPTH. MAINTAIN THE COMPACTED AGGREGATE BEDDING AND THICKNESS USED FOR THE SIDEWALK THROUGHOUT THE SLOPE AND FOUNDATION GRADING. PROVIDE 1:2 (V:H) SLOPE GRADING 360 DEGREES FOR THE TRANSITION FROM THE SIDEWALK TO THE FOUNDATION WHEN THE FOUNDATION IS NOT LOCATED NEAR EDGE OF SIDEWALK AND IS SURROUNDED BY CONCRETE WALK.
- ② ENSURE CONCRETE CONTROL JOINTS AND EDGE OF CONCRETE WALK ARE A MINIMUM 9" FROM THE CENTER OF THE PUSH BUTTON FOUNDATION.

### TYPICAL APS PEDESTRIAN PUSH BUTTON LOCATION

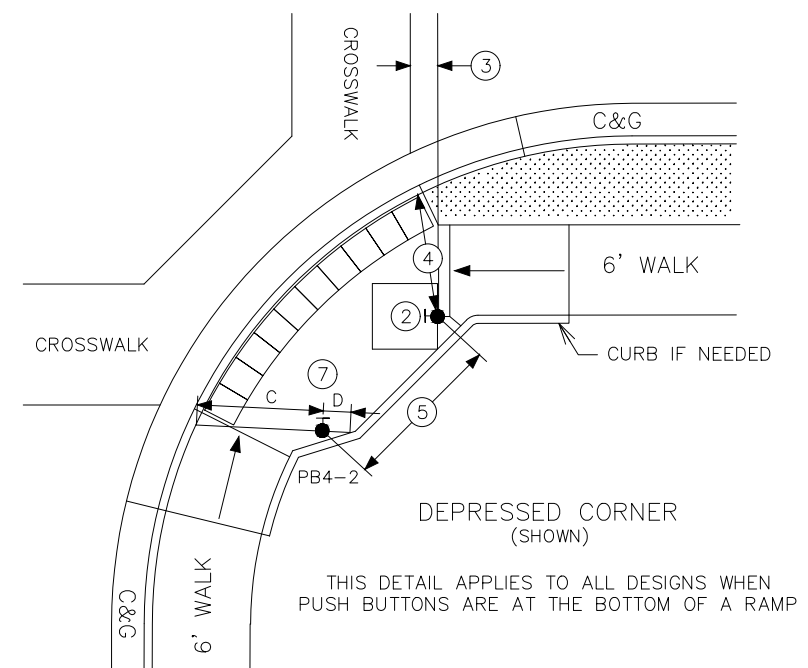
THIS IS A GENERAL DETAIL INTENDED TO SHOW THE REQUIREMENTS OF APS PUSH BUTTON LOCATION. FOR PROJECT SPECIFIC INFORMATION REGARDING PEDESTRIAN RAMP LAYOUT AND PUSH BUTTON LOCATIONS, SEE THE PLAN.

SUPPLEMENTAL GUIDANCE FOR CONSTRUCTING COMPLIANT APS PUSH BUTTONS:

- ① THE FACE OF THE BUTTON SHALL BE PARALLEL WITH THE OUTSIDE EDGE OF CROSSWALK.
- ② A MINIMUM 4 FT X 4 FT LANDING AREA SHALL BE PROVIDED ADJACENT TO EACH BUTTON, WITH A 2 PERCENT MAXIMUM SLOPE IN ALL DIRECTIONS.
- ③ BUTTONS SHALL BE WITHIN 5 FT OF THE OUTSIDE EDGE OF THE CROSSWALK.
- ④ BUTTONS SHALL BE BETWEEN 1.5 FT AND 10 FT FROM THE BACK OF CURB OR EDGE OF ROADWAY, MEASURED IN THE DIRECTION OF TRAVEL. STANDALONE PUSH BUTTON STATIONS SHOULD BE 4' MINIMUM FROM THE BACK OF CURB TO AVOID KNOCKDOWNS.
- ⑤ BUTTONS SHALL BE AT LEAST 10 FT APART.
- ⑥ PROVIDE A MAINTENANCE ACCESS ROUTE (MAR) WHEREVER POSSIBLE FOR SNOW REMOVAL PURPOSES. A MAR REQUIRES A 6 FT MINIMUM CLEAR DISTANCE BETWEEN A PUSH BUTTON AND ANY OBSTRUCTIONS, INCLUDING BUILDINGS, V-CURB, ELECTRICAL FOUNDATIONS, SIGNAL CABINETS, OR ANOTHER PUSH BUTTON.
- ⑦ BUTTON SHOULD BE 2 FT MINIMUM FROM RAMP GRADE BREAK AND BACK OF WALK.

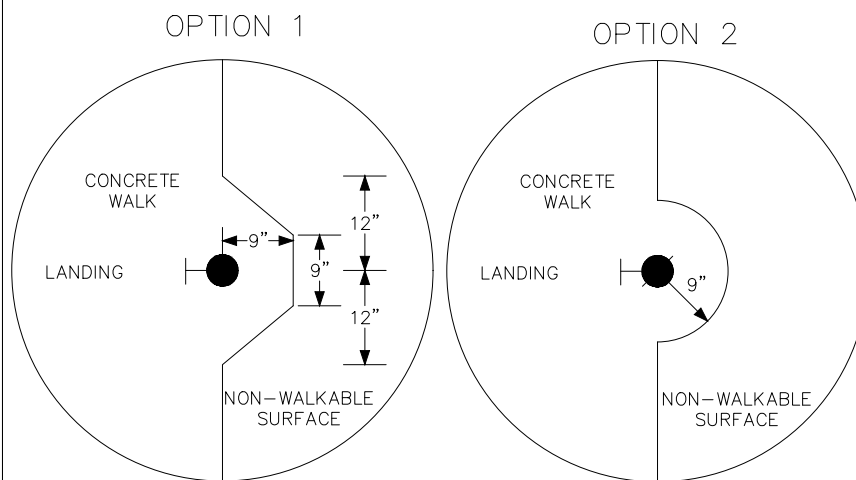


TWIN PERPENDICULARS (SHOWN)  
 THIS DETAIL APPLIES TO ALL DESIGNS WHEN PUSH BUTTONS ARE AT THE TOP OF A RAMP



DEPRESSED CORNER (SHOWN)  
 THIS DETAIL APPLIES TO ALL DESIGNS WHEN PUSH BUTTONS ARE AT THE BOTTOM OF A RAMP

CONTRACTOR MUST USE OPTION 1 OR 2 WHEN THE APS PUSH BUTTON IS SHOWN AT THE EDGE OF WALK. OPTION USED (OR SELECTED) MUST BE THE SAME THROUGHOUT THE ENTIRE PROJECT.



SIGNAL CONTROL POINTS			DISTANCE TO FRONT OF LANDING (FT)	DISTANCE TO BACK OF LANDING (FT)
SIGNAL NO.	X	Y		
PB2-1	-	-	A	B
PB4-2	-	-	C	D

- A - DISTANCE MEASURED FROM THE PUSH BUTTON TO THE FRONT OF LANDING/TOP OF RAMP
- B - CLEAR DISTANCE MEASURED FROM THE PUSH BUTTON TO THE BACK OF LANDING/EDGE OF WALK
- C - CLEAR DISTANCE MEASURED FROM THE PUSH BUTTON TO THE OUTSIDE EDGE OF DOMES IN THE DIRECTION OF TRAVEL
- D - CLEAR DISTANCE FROM THE PUSH BUTTON TO THE BACK OF LANDING MEASURED IN THE OPPOSITE DIRECTION OF TRAVEL

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 JOHN M. GRAY, PE (MN)  
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**BLACKFOOT ST & CSAH 1/COON RAPIDS BLVD**  
 ANOKA COUNTY, MN

**TRAFFIC SIGNAL SYSTEM APS PUSH BUTTON STATION DETAILS**  
 CSAH 1 (COON RAPIDS BLVD) AT BLACKFOOT STREET  
 SP 002-601-056 SP 114-119-013

FROM		TO DEVICE	
SIGNAL SERVICE	1/C 6 EGC	AS SHOWN ON PLAN	
SOP	3-1/C 2 R WH BLK	SIGNAL SERVICE	
SIGNAL SERVICE	3-1/C 6 BLK WH G	SIGNAL CABINET	
SIGNAL CABINET	(6SM) CABLE	SIGNAL CABINET	

SIGNAL CABINET TO DEVICE	
6PR 19	AS SHOWN ON PLAN
COAXIAL CABLE	AS SHOWN ON PLAN
4/C 18 R BLK WH G	AS SHOWN ON PLAN
2/C 14 BLK WH OR CLR	AS SHOWN ON PLAN
3/C 20 R OR O WH OR YEL BLK OR BL	AS SHOWN ON PLAN
CAT 5	AS SHOWN ON PLAN

SIGNAL CABINET TO DEVICE			
6/C 14 CABLE	R O BL WH BLK/R BLK	RED/RLA YEL/YLA GRN/GLA NEU YLA/FYA GLA	4 AND 5 SECTION SIGNAL HEADS
4/C 14 CABLE	R BLK/R BLK WH	RED/DWK YEL/WLK GRN/SPR NEU	3 SECTION HEAD PED HEADS
4/C 14 CABLE	R BLK/R BLK WH	RED YEL GRN NEU	5 SECTION (CLUSTER HEADS ONLY)
4/C 14 CABLE	R BLK/R BLK WH	FYA YLA GLA NEU	
3/C 14 CABLE	BLK G WH	EVP LIGHT/AWF LUMINAIRE VIDEO CAMERA ENFORCEMENT LIGHT	

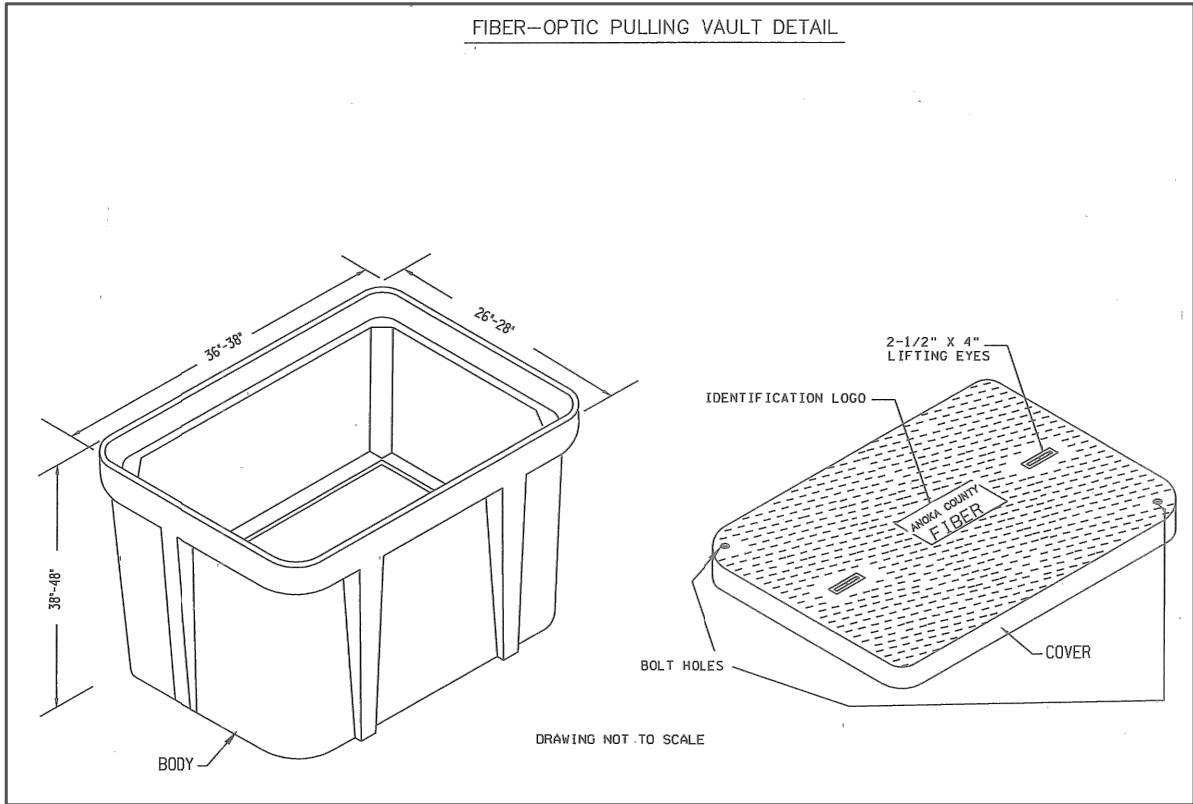
NOTES:  
ARRANGE AND TERMINATE CONDUCTORS AND CABLES AS SHOWN WITHOUT SPLICE.  
NUMBER ONLY MEANS AWG CONDUCTOR SIZE (e.g. 14=14AWG)  
1/C MEANS AN INDIVIDUAL CONDUCTOR NOT PART OF A CABLE ASSEMBLY

CABLE LABELING ABBREVIATIONS		
ABBREVIATION	LABEL REFERENCE DESCRIPTION & EXAMPLE	COMPONENT
X-Y	INDICATION NUMBER 2-1	SIGNAL HEAD
X-Y	LOOP NUMBER D2-1	DETECTOR
X-Y	PUSH BUTTON NUMBER PB2-1	PUSH BUTTON
X-Y	PED INDICATION NUMBER P2-1	PED INDICATION
X-Y	LUMINAIRE NUMBER L1	LUMINAIRE
X-Y	EVP PHASE NUMBER EVP 2+5	EVP DETECTOR
X-Y	EVP LIGHT PHASE NUMBER EVPL 2+5	EVP CON. LIGHT
X-Y	VIDEO DETECTION PHASE V2-1	VIDEO DETECTION
X-Y	RADAR DETECTION PHASE RD2-1	RADAR DETECTION
SS	SIGNAL SERVICE	SERVICE WIRE
CC	CABINET COMMS	COMMS CABLE
FO	FIBER OPTIC	FIBER CABLE
SPARE Y	SPARE WIRE TO POLE NUMB. SPARE1	SPARE WIRE
ELYZ *	ENFORC. LIGHT POLE & DIRECTION	ENFORCEMENT LIGHT
PTZ1	PTZ CAMERA POLE NUMBER PTZ1	PTZ CAMERA
IC	INTERCONNECT CABLE	INTERCONNECT
EGC	EQUIPMENT GROUNDING CONDUCTOR	GROUND

X = SIGNAL SYSTEM PHASE NUMBER; REFER TO THE PLAN  
Y = SIGNAL SYSTEM ASSIGNED COMPONENT NUMBER; REFER TO THE PLAN  
Z \* = DIRECTION  
FURNISH AND INSTALL LABELS ON CABLES WITH ABBREVIATIONS SHOWN ON THIS TABLE AND IN ACCORDANCE WITH THE WIRING DIAGRAM.

WIRE COLOR CODE KEY	
R	Red
O	Orange
BL	Blue
WH	White
BLK	Black
BRN	Brown
CL	Clear
G	Green
R/BLK	Red with Black Stripe
O/BLK	Orange with Black Stripe
BL/BLK	Blue with Black Stripe
WH/BLK	White with Black Stripe
WH/R	White with Red Stripe
BLK/WH	Black with White Stripe
BLK/R	Black with Red Stripe

CONDUCTOR AND CABLE SPECIFICATION CHART		
NUMBER OF CONDUCTORS & AWG SIZE	TYPE	Specification Number
1/C 2	INDIVIDUAL SERVICE CONDUCTORS	3815.2B.1
1/C 6	FEEDER AND BRANCH CONDUCTORS	3815.2B.1
1/C 6 INS.GR.	Grounding Conductors	3815.2B.5
2/C 14	Loop Detector Lead-In Cable	3815.2C.4
3/C 14	Signal Control Cable	3815.2C.3
4/C 14	Signal Control Cable	3815.2C.3
6/C 14	Signal Control Cable	3815.2C.3
12/C 14	Signal Control Cable	3815.2C.3
6PR 19	Telephone Cables Outdoor	3815.2C.6.b
3/C 20	EVP Detector Cable	3815.2C.5

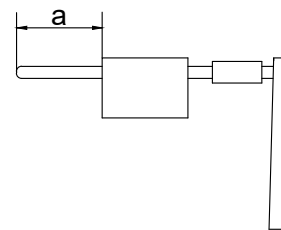




SIGNS FOR TRAFFIC SIGNAL SYSTEM						
SIGN PANELS TYPE D (SIGNALS) (FURNISH & INSTALL)						
POLE NO.	SIGN PANEL	a (FT)	SIZE (IN)	UNIT AREA (SQ FT)	NO. REQ.	PANEL LEGEND
1	D-1	8	132 X 24	22.00	1	Coon Rapids Blvd
3	D-2	28	96 X 24	16.00	1	Blackfoot St
4	D-3	8	132 X 24	22.00	1	Coon Rapids Blvd
6	D-4	28	96 X 24	16.00	1	Blackfoot St
TOTAL QUANTITIES				76.00	4	

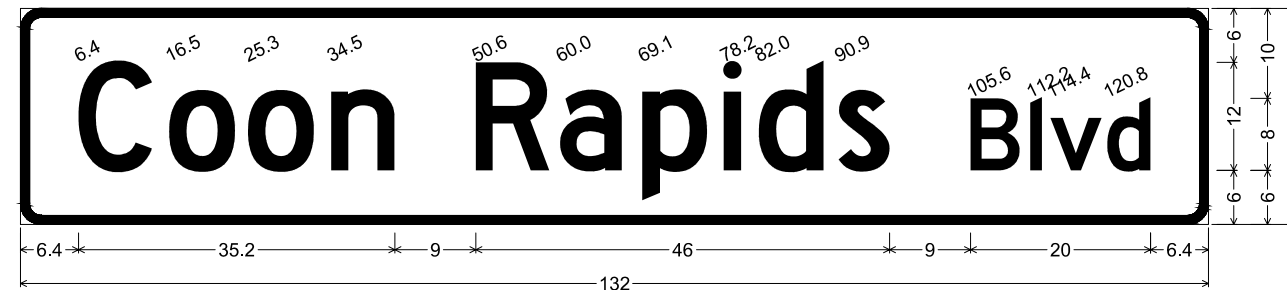
SIGNS FOR TRAFFIC SIGNAL SYSTEM						
SIGN PANELS TYPE C (SIGNALS) (FURNISH & INSTALL)						
POLE NO.	SIGN PANEL	a (FT)	SIZE (IN)	UNIT AREA (SQ FT)	NO. REQ.	PANEL LEGEND
3, 6	R10-X12	1	36 X 42	10.50	2	Left Turn Yield on Flashing Yellow Arrow
TOTAL QUANTITIES				21.00	2	

SIGNS FOR TRAFFIC SIGNAL SYSTEM						
SIGN PANELS TYPE D (SIGNALS) (SALVAGE & INSTALL)						
POLE NO.	SIGN PANEL	a (FT)	SIZE (IN)	NO. REQ.	PANEL LEGEND	
3	D-5	14	60 X 12	1	↑ Emergency [E]	
TOTAL QUANTITIES				1		



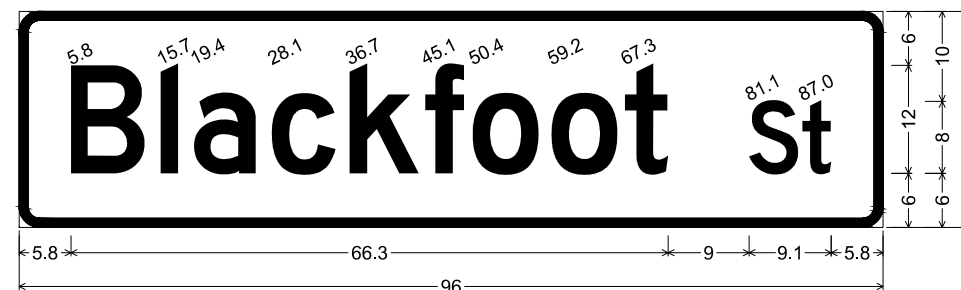
"a" distance = distance from end of mast arm to the edge of the sign panel.

D-1, D-3



2.3" Radius, 1.0" Border, White on, Green;  
"Coon Rapids Blvd", D 2K;

D-2, D-4



2.3" Radius, 1.0" Border, White on, Green;  
"Blackfoot St", D 2K;

GENERAL SIGNING NOTES:

- COLOR FOR ALL TYPE D SIGNS SHALL BE WHITE LEGEND AND BORDER ON GREEN BACKGROUND, FULLY REFLECTORIZED.
- FURNISHING AND INSTALLING NEW TYPE C AND TYPE D SIGNS AND SALVAGING AND REINSTALLING A TYPE D SIGN AS NOTED ABOVE, SHALL BE INCLUDED AS PART OF BID ITEM FOR "TRAFFIC CONTROL SIGNAL SYSTEM." SEE SPECIAL PROVISIONS.
- SEE CURRENT MnDOT STANDARD SIGNS AND MARKINGS MANUAL FOR STANDARD SIGN DESIGNS AND SPLICE PLATE DETAILS.
- FOR NON-STANDARD SIGN DESIGNS, LAYOUTS ARE INCLUDED.
- SEE STANDARD PLAN 5.297.731 FOR SIGN MOUNTING TO MAST ARM.

NOTE: SIGN DIMENSIONS ARE IN INCHES.

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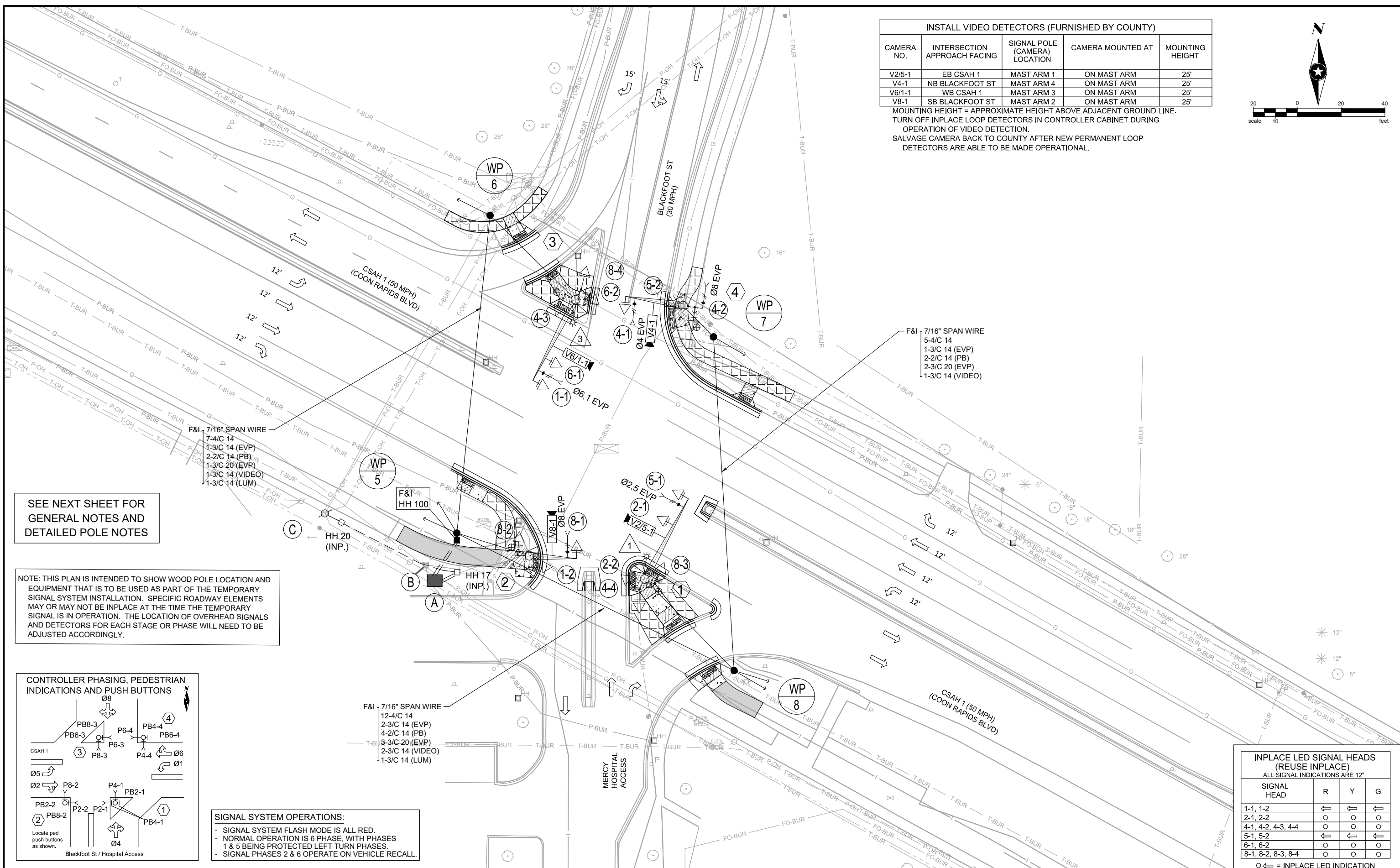
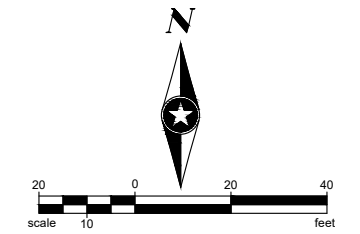
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BLACKFOOT ST &  
CSAH 1/COON RAPIDS BLVD  
ANOKA COUNTY, MN

TRAFFIC SIGNAL SYSTEM  
SIGNAL SIGNING DETAILS & TABULATIONS  
CSAH 1 (COON RAPIDS BLVD) AT BLACKFOOT STREET  
SP 002-601-056 SP 114-119-013

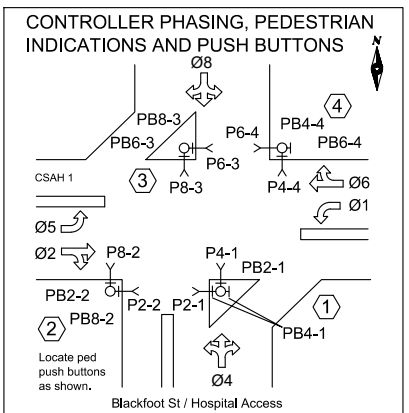
INSTALL VIDEO DETECTORS (FURNISHED BY COUNTY)				
CAMERA NO.	INTERSECTION APPROACH FACING	SIGNAL POLE (CAMERA) LOCATION	CAMERA MOUNTED AT	MOUNTING HEIGHT
V2/5-1	EB CSAH 1	MAST ARM 1	ON MAST ARM	25'
V4-1	NB BLACKFOOT ST	MAST ARM 4	ON MAST ARM	25'
V6/1-1	WB CSAH 1	MAST ARM 3	ON MAST ARM	25'
V8-1	SB BLACKFOOT ST	MAST ARM 2	ON MAST ARM	25'

MOUNTING HEIGHT = APPROXIMATE HEIGHT ABOVE ADJACENT GROUND LINE.  
 TURN OFF INPLACE LOOP DETECTORS IN CONTROLLER CABINET DURING OPERATION OF VIDEO DETECTION.  
 SALVAGE CAMERA BACK TO COUNTY AFTER NEW PERMANENT LOOP DETECTORS ARE ABLE TO BE MADE OPERATIONAL.



SEE NEXT SHEET FOR GENERAL NOTES AND DETAILED POLE NOTES

NOTE: THIS PLAN IS INTENDED TO SHOW WOOD POLE LOCATION AND EQUIPMENT THAT IS TO BE USED AS PART OF THE TEMPORARY SIGNAL SYSTEM INSTALLATION. SPECIFIC ROADWAY ELEMENTS MAY OR MAY NOT BE INPLACE AT THE TIME THE TEMPORARY SIGNAL IS IN OPERATION. THE LOCATION OF OVERHEAD SIGNALS AND DETECTORS FOR EACH STAGE OR PHASE WILL NEED TO BE ADJUSTED ACCORDINGLY.



**SIGNAL SYSTEM OPERATIONS:**

- SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 6 PHASE, WITH PHASES 1 & 5 BEING PROTECTED LEFT TURN PHASES.
- SIGNAL PHASES 2 & 6 OPERATE ON VEHICLE RECALL.

INPLACE LED SIGNAL HEADS (REUSE INPLACE)			
ALL SIGNAL INDICATIONS ARE 12"			
SIGNAL HEAD	R	Y	G
1-1, 1-2	←	←	←
2-1, 2-2	○	○	○
4-1, 4-2, 4-3, 4-4	○	○	○
5-1, 5-2	←	←	←
6-1, 6-2	○	○	○
8-1, 8-2, 8-3, 8-4	○	○	○

○ ← = INPLACE LED INDICATION

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**BLACKFOOT ST & CSAH 1/COON RAPIDS BLVD**  
 ANOKA COUNTY, MN

**TEMPORARY SIGNAL SYSTEM INTERSECTION LAYOUT**  
 CSAH 1 (COON RAPIDS BLVD) AT BLACKFOOT STREET  
 SP 002-601-056 SP 114-119-013

26 of 35

**NOTES:**

- 1) LOCATION OF WOOD POLES AND TEMPORARY CABINET FOUNDATION SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 2) ALL VEHICLE AND PEDESTRIAN SIGNAL HEADS, PEDESTRIAN PUSH BUTTONS, EVP DETECTORS AND CONFIRMATION LIGHTS, AND LUMINAIRES SHALL BE REUSED AND MADE OPERATIONAL AS SHOWN.
- 3) ALL TRAFFIC SIGNAL MATERIALS AND ELECTRICAL EQUIPMENT TO BE FURNISHED AND INSTALLED BY CONTRACTOR FOR THE TEMPORARY SIGNAL SYSTEM SHALL BE APPROVED BY ENGINEER PRIOR TO INSTALLATION AT THE INTERSECTION. SEE SPECIAL PROVISIONS.
- 4) CONTRACTOR SHALL REUSE AND MAINTAIN EXISTING HANDHOLES 17 AND 20, AND SHALL FURNISH AND INSTALL NEW HANDHOLE 100 TO BE USED AS PART OF THE TEMPORARY SIGNAL SYSTEM.
- 5) SEE SPECIAL PROVISIONS REGARDING VIDEO DETECTION SYSTEM TO BE FURNISHED BY THE COUNTY, INSTALLED AND MADE OPERATIONAL BY THE CONTRACTOR AND SALVAGED BACK TO THE COUNTY BY THE CONTRACTOR AFTER TEMPORARY SIGNAL SYSTEM IS REMOVED AND NEW PERMANENT SIGNAL SYSTEM IS MADE OPERATIONAL (INCLUDED AS PART OF PAY ITEM FOR "TEMPORARY SIGNAL SYSTEM").
- 6) (F & I) = ITEMS TO BE FURNISHED & INSTALLED BY CONTRACTOR.
- 7) CONTRACTOR SHALL MAINTAIN A SIGNAL SYSTEM IN OPERATION AT THIS INTERSECTION AT ALL TIMES, UNLESS OTHERWISE APPROVED BY THE ENGINEER FOR THE SIGNAL SYSTEM TO BE TURNED OFF DURING NON-PEAK TRAFFIC PERIODS (FOR SWITCHOVERS FROM EXISTING SIGNAL SYSTEM TO TEMPORARY SIGNAL SYSTEM, AND FROM TEMPORARY SIGNAL SYSTEM TO NEW PERMANENT SIGNAL SYSTEM).
- 8) CONTRACTOR SHALL PROTECT AND MAINTAIN ALL ITEMS OF THE EXISTING PERMANENT SIGNAL SYSTEM THAT WILL BE REUSED AS PART OF THE TEMPORARY SIGNAL SYSTEM AND SHALL REPLACE ITEMS DAMAGED DURING CONSTRUCTION WITH NEW ITEMS (AT NO EXPENSE TO THE COUNTY).

**(A)**

INPLACE (S & I)	CONTROLLER AND CABINET
INSTALL (FURNISHED BY COUNTY)	VIDEO DETECTION SYSTEM CABINET EQUIPMENT
F&I	TEMPORARY CABINET FOUNDATION EXTEND INTO HH 17: 1.25" CONDUIT 3-1/C 6 (METERED SIGNAL SERVICE) 2-3/C 14 (LUM) EXTEND INTO HH 100: 2-3" CONDUITS 24-4/C 14 4-3/C 14 (EVP) 8-2/C 14 (PB) 5-3/C 20 (EVP) 4-3/C 14 (VIDEO) 2-3/C 14 (LUM)

**(B)**

INPLACE (MAINTAIN INPLACE)	CABINET FOUNDATION SIGNAL SERVICE CABINET EXTENDED INTO HH 17: 2-1.25" RSC
F&I	2-3/C 14 (LUM) 3-1/C 6 (METERED SIGNAL SERVICE)

INPLACE (MAINTAIN INPLACE)	EXTENDED INTO HH 20: 1.25" RSC 3-1/C 6 (INPUT POWER)
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**(C)**

INPLACE (MAINTAIN INPLACE)	WOOD POLE (SOP) (XCEL ENERGY) 1.25" RSC RISER AND WEATHERHEAD 3-1/C 6 (INPUT POWER) EXTENDED INTO HH 20: 1.25" RSC 3-1/C 6 (INPUT POWER)
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**(1)**

INPLACE (MAINTAIN INPLACE)	P100 POLE FOUNDATION TYPE P100-A-40-D40-9 (DAVIT AT 350 DEG) LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH 2-ONE WAY SIGNALS-OVERHEAD TYPE 10B-POLE MOUNTED 90 DEG TYPE 20B-POLE MOUNTED 180 DEG 3-PEDESTRIAN PUSH BUTTONS & SIGNS TYPE D SIGN PANEL-OVERHEAD ONE WAY EVP DETECTOR & LIGHT (Ø2.5)
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INSTALL (FURNISHED BY COUNTY)	1-VIDEO DETECTOR CAMERA AND MAST ARM BRACKET (FACING EB TRAFFIC) (V2/5-1)
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F&I	7/16" SPAN WIRE TO WOOD POLE 8 7-4/C 14 1-3/C 14 (EVP) 2-2/C 14 (PB) 1-3/C 20 (EVP) 1-3/C 14 (VIDEO) 1-3/C 14 (LUM)
-----	---

**(3)**

INPLACE (MAINTAIN INPLACE)	P100 POLE FOUNDATION TYPE P100-A-40-D40-9 (DAVIT AT 350 DEG) LUMINAIRE-200 W HPS W/PEC & CHECK SWITCH 2-ONE WAY SIGNALS-OVERHEAD TYPE 10B-POLE MOUNTED 90 DEG TYPE 20B-POLE MOUNTED 180 DEG 2-PEDESTRIAN PUSH BUTTONS & SIGNS TYPE D SIGN PANEL-OVERHEAD ONE WAY EVP DETECTOR & LIGHT (Ø6.1)
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INSTALL (FURNISHED BY COUNTY)	1-VIDEO DETECTOR CAMERA AND MAST ARM BRACKET (FACING WB TRAFFIC) (V6/1-1)
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F&I	7/16" SPAN WIRE TO WOOD POLE 6 7-4/C 14 1-3/C 14 (EVP) 2-2/C 14 (PB) 1-3/C 20 (EVP) 1-3/C 14 (VIDEO) 1-3/C 14 (LUM)
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**(WP 5) F & I**

50' WOOD POLE-CLASS 2 2-DOWN GUYS, GUY GUARDS, AND SCREW ANCHORS 2-3" CONDUIT RISERS AND WEATHERHEADS AND 1-2" CONDUIT RISER AND WEATHERHEAD EXTEND 2-3" CONDUIT RISERS INTO HH 100 (SEE CABINET A NOTES) 24-4/C 14 4-3/C 14 (EVP) 8-2/C 14 5-3/C 20 4-3/C 14 (VIDEO) EXTEND 2" CONDUIT RISER INTO HH 17: 2-3/C 14 (LUM)
--

**(WP 7) F & I**

50' WOOD POLE-CLASS 2 1-DOWN GUY, GUY GUARD, AND SCREW ANCHOR
---

**(2)**

INPLACE (MAINTAIN INPLACE)	P80 POLE FOUNDATION TYPE P80-A-20 1-ONE WAY SIGNAL-OVERHEAD 2-TYPE 10B-POLE MOUNTED 90 DEG AND 270 DEG 2-PEDESTRIAN PUSH BUTTONS & SIGNS ONE WAY EVP DETECTOR & LIGHT (Ø8)
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INSTALL (FURNISHED BY COUNTY)	1-VIDEO DETECTOR CAMERA AND MAST ARM BRACKET (FACING SB TRAFFIC) (V8-1)
-------------------------------	---

F&I	7/16" SPAN WIRE TO WOOD POLE 5 5-4/C 14 1-3/C 14 (EVP) 2-2/C 14 (PB) 1-3/C 20 (EVP) 1-3/C 14 (VIDEO)
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**(4)**

INPLACE (MAINTAIN INPLACE)	P80 POLE FOUNDATION TYPE P80-A-25 1-ONE WAY SIGNAL-OVERHEAD 2-TYPE 10B-POLE MOUNTED 90 DEG AND 270 DEG 2-PEDESTRIAN PUSH BUTTONS & SIGNS ONE WAY EVP DETECTOR & LIGHT (Ø4) ONE WAY EVP DETECTOR - POLE MOUNTED 180 DEG (Ø8)
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INSTALL (FURNISHED BY COUNTY)	1-VIDEO DETECTOR CAMERA AND MAST ARM BRACKET (FACING NB TRAFFIC) (V4-1)
-------------------------------	---

F&I	7/16" SPAN WIRE TO WOOD POLE 7 5-4/C 14 1-3/C 14 (EVP) 2-2/C 14 (PB) 2-3/C 20 (EVP) 1-3/C 14 (VIDEO)
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**(WP 6) F & I**

50' WOOD POLE-CLASS 2 1-DOWN GUY, GUY GUARD, AND SCREW ANCHOR
---

**(WP 8) F & I**

50' WOOD POLE-CLASS 2 2-DOWN GUYS, GUY GUARDS, AND SCREW ANCHORS
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SEH Project	161219	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
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Designed By	MO						
Checked By	JG						

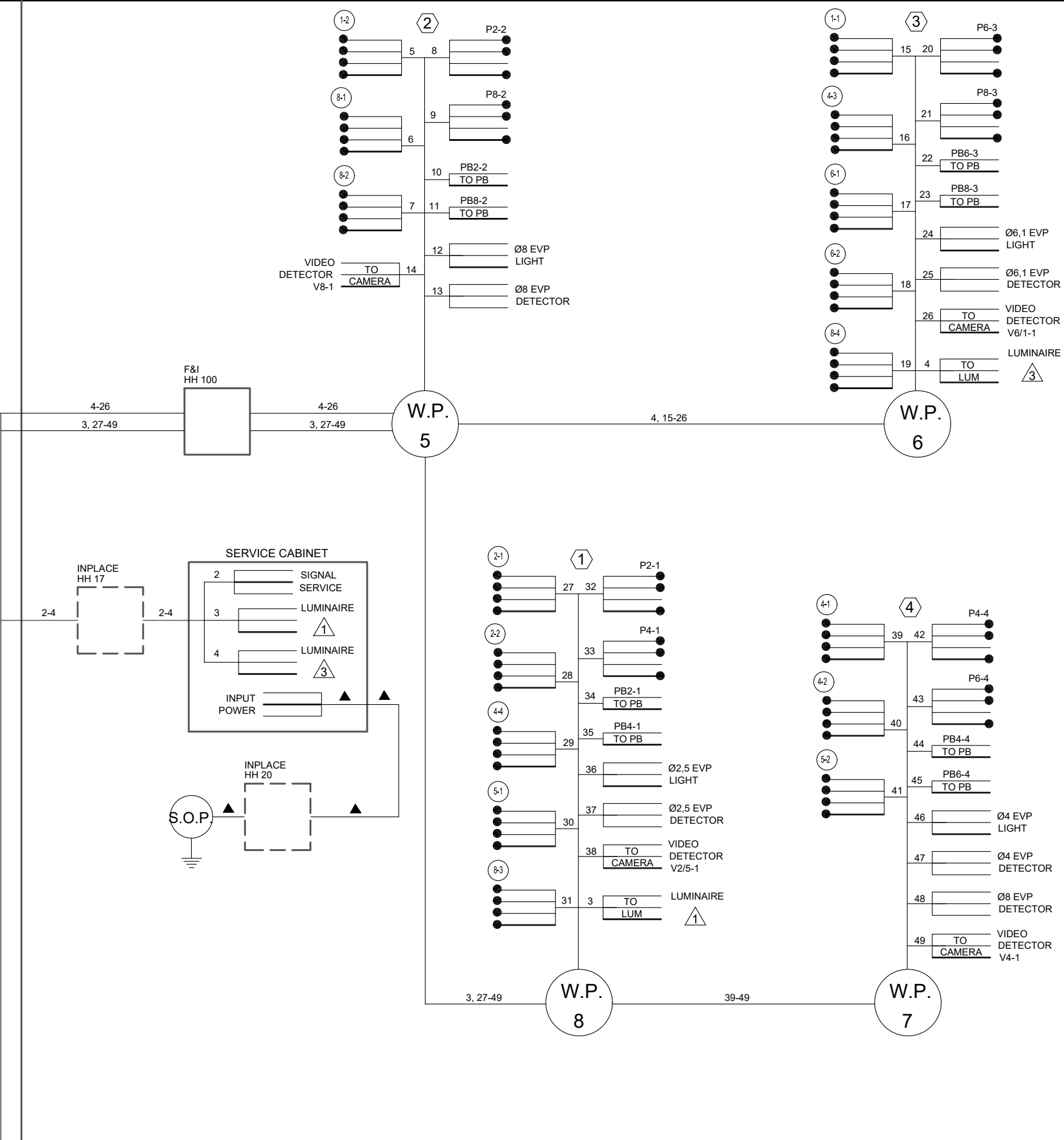
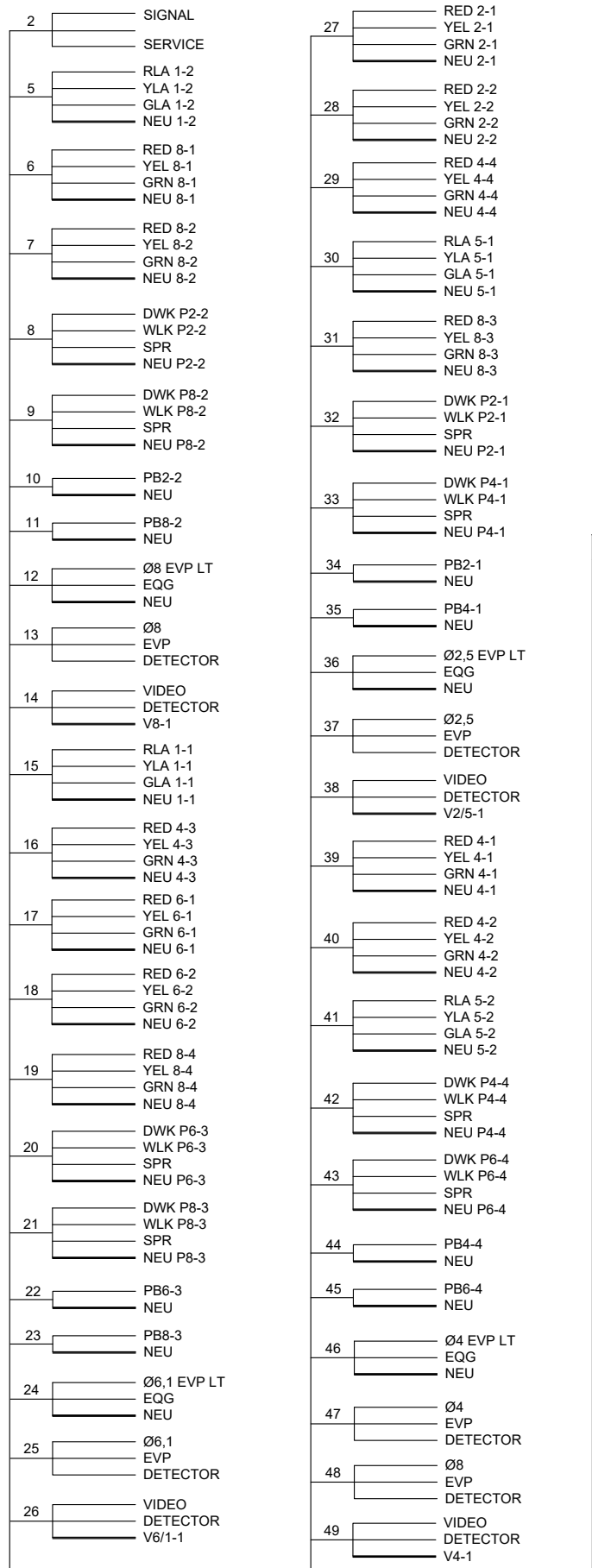
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

*John M. Gray*  
JOHN M. GRAY, PE (MN)  
DATE 3/25/2022 LICENSE NO. 22457

**BLACKFOOT ST &  
CSAH 1/COON RAPIDS BLVD**  
ANOKA COUNTY, MN

**TEMPORARY SIGNAL SYSTEM  
POLE & CABINET NOTES**  
CSAH 1 (COON RAPIDS BLVD) AT BLACKFOOT STREET  
SP 002-601-056 SP 114-119-013

CONTROLLER CABINET



NOTES:  
 1) ALL CABLES AND CONDUCTORS ARE NEW AND SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THE TEMPORARY SIGNAL SYSTEM PAY ITEM (EXCEPT AS DENOTED BY ▲ WHICH ARE INPLACE POWER AND SERVICE CABLES TO BE REUSED AND MAINTAINED INPLACE).

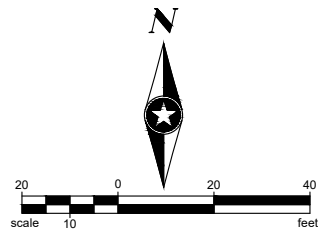
SEE DETAIL SHEETS FOR CONDUCTOR COLOR CODE CHARTS.

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Drawn By	MO			Description			
Designed By	MO						
Checked By	JG						

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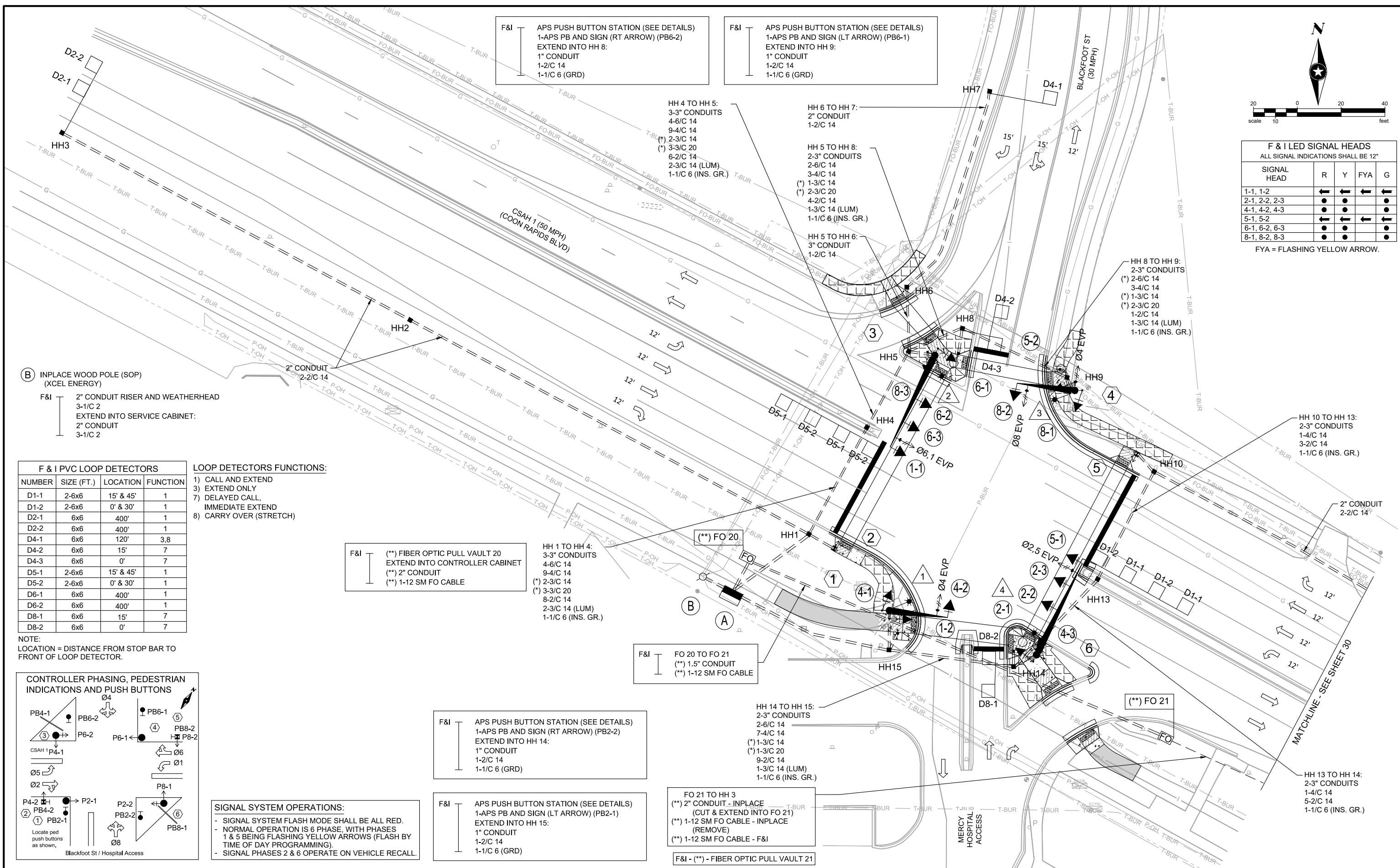
BLACKFOOT ST &  
 CSAH 1/COON RAPIDS BLVD  
 ANOKA COUNTY, MN



**F & I LED SIGNAL HEADS**  
ALL SIGNAL INDICATIONS SHALL BE 12"

SIGNAL HEAD	R	Y	FYA	G
1-1, 1-2	←	←	←	←
2-1, 2-2, 2-3	●	●	●	●
4-1, 4-2, 4-3	●	●	●	●
5-1, 5-2	←	←	←	←
6-1, 6-2, 6-3	●	●	●	●
8-1, 8-2, 8-3	●	●	●	●

FYA = FLASHING YELLOW ARROW.



F&I APS PUSH BUTTON STATION (SEE DETAILS)  
1-APS PB AND SIGN (RT ARROW) (PB6-2)  
EXTEND INTO HH 8:  
1" CONDUIT  
1-2/C 14  
1-1/C 6 (GRD)

F&I APS PUSH BUTTON STATION (SEE DETAILS)  
1-APS PB AND SIGN (LT ARROW) (PB6-1)  
EXTEND INTO HH 9:  
1" CONDUIT  
1-2/C 14  
1-1/C 6 (GRD)

HH 4 TO HH 5:  
3-3" CONDUITS  
4-6/C 14  
9-4/C 14  
(\*) 2-3/C 14  
(\*) 3-3/C 20  
6-2/C 14  
2-3/C 14 (LUM)  
1-1/C 6 (INS. GR.)

HH 6 TO HH 7:  
2" CONDUIT  
1-2/C 14

HH 5 TO HH 8:  
2-3" CONDUITS  
2-6/C 14  
3-4/C 14  
(\*) 1-3/C 14  
(\*) 2-3/C 20  
4-2/C 14  
1-3/C 14 (LUM)  
1-1/C 6 (INS. GR.)

HH 5 TO HH 6:  
3" CONDUIT  
1-2/C 14

HH 8 TO HH 9:  
2-3" CONDUITS  
(\*) 2-6/C 14  
3-4/C 14  
(\*) 1-3/C 14  
(\*) 2-3/C 20  
1-2/C 14  
1-3/C 14 (LUM)  
1-1/C 6 (INS. GR.)

HH 10 TO HH 13:  
2-3" CONDUITS  
1-4/C 14  
3-2/C 14  
1-1/C 6 (INS. GR.)

2" CONDUIT  
2-2/C 14

HH 13 TO HH 14:  
2-3" CONDUITS  
1-4/C 14  
5-2/C 14  
1-1/C 6 (INS. GR.)

(B) INPLACE WOOD POLE (SOP)  
(XCEL ENERGY)

F&I 2" CONDUIT RISER AND WEATHERHEAD  
3-1/C 2  
EXTEND INTO SERVICE CABINET:  
2" CONDUIT  
3-1/C 2

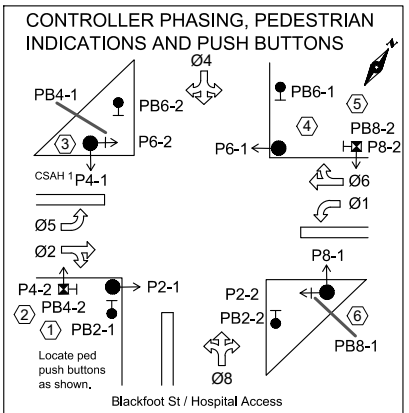
**F & I PVC LOOP DETECTORS**

NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	15' & 45'	1
D1-2	2-6x6	0' & 30'	1
D2-1	6x6	400'	1
D2-2	6x6	400'	1
D4-1	6x6	120'	3,8
D4-2	6x6	15'	7
D4-3	6x6	0'	7
D5-1	2-6x6	15' & 45'	1
D5-2	2-6x6	0' & 30'	1
D6-1	6x6	400'	1
D6-2	6x6	400'	1
D8-1	6x6	15'	7
D8-2	6x6	0'	7

**LOOP DETECTORS FUNCTIONS:**

- CALL AND EXTEND
- EXTEND ONLY
- DELAYED CALL, IMMEDIATE EXTEND
- CARRY OVER (STRETCH)

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



**SIGNAL SYSTEM OPERATIONS:**

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION IS 6 PHASE, WITH PHASES 1 & 5 BEING FLASHING YELLOW ARROWS (FLASH BY TIME OF DAY PROGRAMMING).
- SIGNAL PHASES 2 & 6 OPERATE ON VEHICLE RECALL.

F&I (\*\* FIBER OPTIC PULL VAULT 20  
EXTEND INTO CONTROLLER CABINET  
(\*\*) 2" CONDUIT  
(\*\*) 1-12 SM FO CABLE

HH 1 TO HH 4:  
3-3" CONDUITS  
4-6/C 14  
9-4/C 14  
(\*) 2-3/C 14  
(\*) 3-3/C 20  
8-2/C 14  
2-3/C 14 (LUM)  
1-1/C 6 (INS. GR.)

F&I FO 20 TO FO 21  
(\*\*) 1.5" CONDUIT  
(\*\*) 1-12 SM FO CABLE

F&I APS PUSH BUTTON STATION (SEE DETAILS)  
1-APS PB AND SIGN (RT ARROW) (PB2-2)  
EXTEND INTO HH 14:  
1" CONDUIT  
1-2/C 14  
1-1/C 6 (GRD)

F&I APS PUSH BUTTON STATION (SEE DETAILS)  
1-APS PB AND SIGN (LT ARROW) (PB2-1)  
EXTEND INTO HH 15:  
1" CONDUIT  
1-2/C 14  
1-1/C 6 (GRD)

HH 14 TO HH 15:  
2-3" CONDUITS  
2-6/C 14  
7-4/C 14  
(\*) 1-3/C 14  
(\*) 1-3/C 20  
9-2/C 14  
1-3/C 14 (LUM)  
1-1/C 6 (INS. GR.)

FO 21 TO HH 3  
(\*\*) 2" CONDUIT - INPLACE  
(CUT & EXTEND INTO FO 21)  
(\*\*) 1-12 SM FO CABLE - INPLACE  
(REMOVE)  
(\*\*) 1-12 SM FO CABLE - F&I

F&I - (\*\*) - FIBER OPTIC PULL VAULT 21

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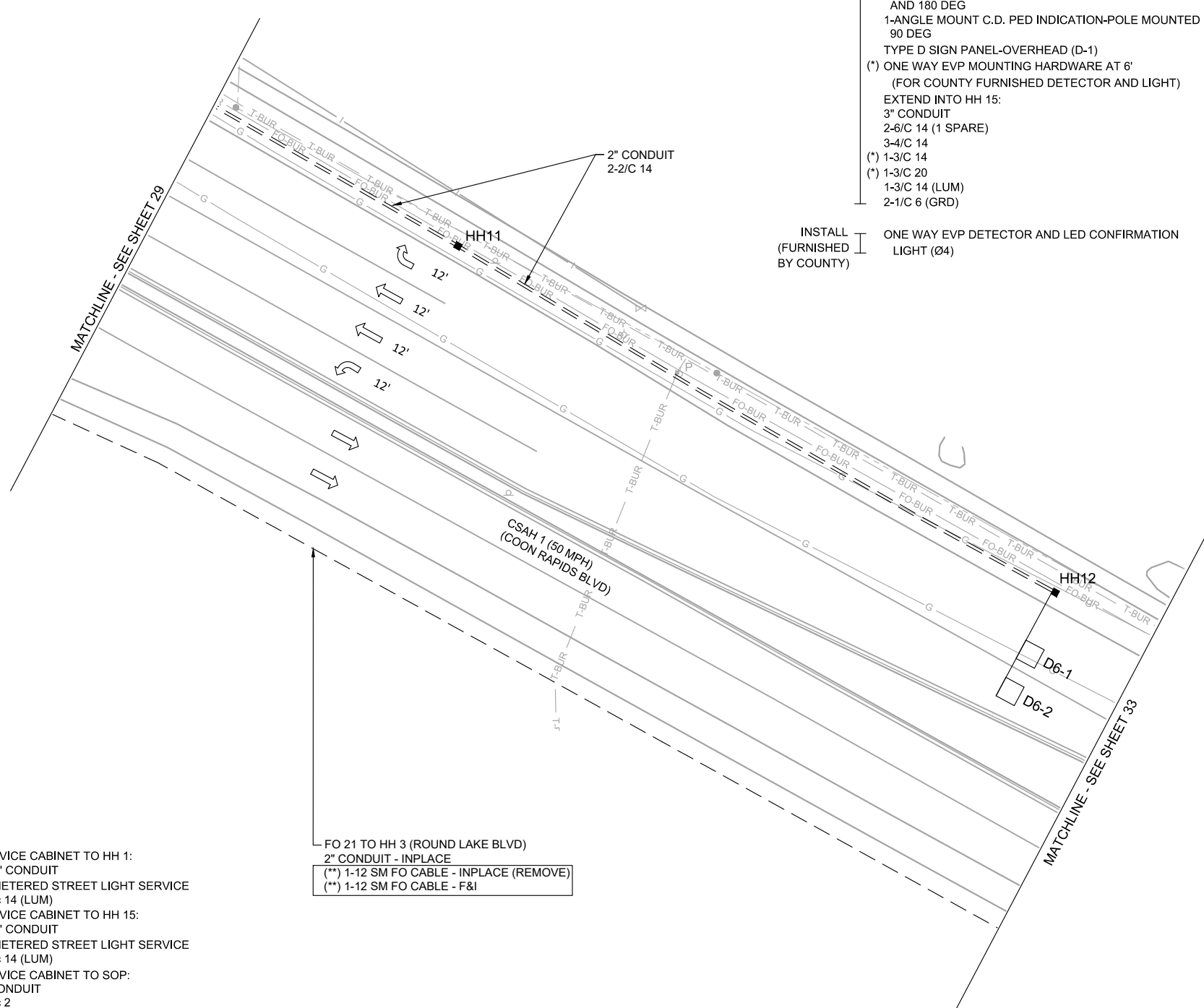
**BLACKFOOT ST & CSAH 1/COON RAPIDS BLVD**  
ANOKA COUNTY, MN

**TRAFFIC SIGNAL SYSTEM INTERSECTION LAYOUT**  
CSAH 1 (COON RAPIDS BLVD) AT BLACKFOOT STREET  
SP 002-601-056 SP 114-119-013

29 of 35

**NOTES:**

- 1) LOCATION OF FOUNDATIONS, LOOP DETECTORS, PUSH BUTTON STATIONS, VAULTS, 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 & 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 (XCEL ENERGY). SEE SPECIAL PROVISIONS.
- 6) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCLUDED AS PART OF TRAFFIC SIGNAL SYSTEM PAY ITEM).
- 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 QUANTITIES AND SPECIAL PROVISIONS.
- 12) (\*\*) DENOTES ITEMS TO BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 13) ALL CABLES AND CONDUCTORS SHALL BE NEW (FURNISHED AND INSTALLED BY THE CONTRACTOR). NO SPLICING IS ALLOWED ON ANY CABLE OR CONDUCTOR BETWEEN THE CONTROLLER/SERVICE CABINETS AND EACH POLE OR MAST ARM MOUNTED COMPONENT (EXCEPT THAT LOOP DETECTOR SPLICES ARE ALLOWED IN ADJACENT HANDHOLES ONLY).
- 14) SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES REGARDING REMOVAL OF INPLACE SIGNAL SYSTEM (TO BE MEASURED AND PAID FOR SEPARATELY).



**1 F&I** PA90 POLE FOUNDATION  
 TYPE PA90-A-25-D30-9 (DAVIT AT 350 DEG)  
 LUMINAIRE-LED  
 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 90 DEG  
 TYPE D SIGN PANEL-OVERHEAD (D-1)  
 (\*) ONE WAY EVP MOUNTING HARDWARE AT 6' (FOR COUNTY FURNISHED DETECTOR AND LIGHT)  
 EXTEND INTO HH 15:  
 3" CONDUIT  
 2-6/C 14 (1 SPARE)  
 3-4/C 14  
 (\*) 1-3/C 14  
 (\*) 1-3/C 20  
 1-3/C 14 (LUM)  
 2-1/C 6 (GRD)  
 INSTALL (FURNISHED BY COUNTY) ONE WAY EVP DETECTOR AND LED CONFIRMATION LIGHT (Ø4)

**3 F&I** PA100 POLE FOUNDATION  
 TYPE PA100-A-45-D30-9 (DAVIT AT 350 DEG)  
 LUMINAIRE-LED  
 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'  
 2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11' AND 23'  
 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  
 1-APS PB, SIGN (LT ARROW), AND MAST ARM POLE ADAPTOR (PB4-1)  
 R10-X12 SIGN PANEL-ADJACENT TO 1-1  
 TYPE D SIGN PANEL-OVERHEAD (D-2)  
 (\*) ONE WAY EVP MOUNTING HARDWARE AT 6' (FOR COUNTY FURNISHED DETECTOR AND LIGHT)  
 EXTEND INTO HH 5:  
 3" CONDUIT  
 2-6/C 14 (1 SPARE)  
 6-4/C 14  
 (\*) 1-3/C 14  
 1-2/C 14  
 (\*) 1-3/C 20  
 1-3/C 14 (LUM)  
 2-1/C 6 (GRD)  
 INPLACE (S&I) TYPE D SIGN PANEL (D-5) (EMERGENCY) - OVERHEAD (F&I NEW SIGN BRACKETING AND MOUNTING HARDWARE)  
 INSTALL (FURNISHED BY COUNTY) ONE WAY EVP DETECTOR AND LED CONFIRMATION LIGHT (Ø6,1)

**4 F&I** PA90 POLE FOUNDATION  
 TYPE PA90-A-25-D30-9 (DAVIT AT 350 DEG)  
 LUMINAIRE-LED  
 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 90 DEG  
 TYPE D SIGN PANEL-OVERHEAD (D-3)  
 (\*) ONE WAY EVP MOUNTING HARDWARE AT 6' (FOR COUNTY FURNISHED DETECTOR AND LIGHT)  
 (\*) ONE WAY EVP MOUNTING HARDWARE - POLE MOUNTED 180 DEG (FOR COUNTY FURNISHED DETECTOR)  
 EXTEND INTO HH 9:  
 3" CONDUIT  
 2-6/C 14 (1 SPARE)  
 3-4/C 14  
 (\*) 1-3/C 14  
 (\*) 2-3/C 20  
 1-3/C 14 (LUM)  
 1-1/C 6 (GRD)  
 INSTALL (FURNISHED BY COUNTY) ONE WAY EVP DETECTOR AND LED CONFIRMATION LIGHT (Ø8) - OVERHEAD  
 ONE WAY EVP DETECTOR (Ø4) - POLE MOUNTED 180 DEG

**6 F&I** PA100 POLE FOUNDATION  
 TYPE PA100-A-45-D30-9 (DAVIT AT 350 DEG)  
 LUMINAIRE-LED  
 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'  
 2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11' AND 23'  
 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  
 1-APS PB, SIGN (LT ARROW), AND MAST ARM POLE ADAPTOR (PB8-1)  
 R10-X12 SIGN PANEL-ADJACENT TO 5-1  
 TYPE D SIGN PANEL-OVERHEAD (D-4)  
 (\*) ONE WAY EVP MOUNTING HARDWARE AT 6' (FOR COUNTY FURNISHED DETECTOR AND LIGHT)  
 EXTEND INTO HH 14:  
 3" CONDUIT  
 2-6/C 14 (1 SPARE)  
 6-4/C 14  
 (\*) 1-3/C 14  
 1-2/C 14  
 (\*) 1-3/C 20  
 1-3/C 14 (LUM)  
 2-1/C 6 (GRD)  
 INSTALL (FURNISHED BY COUNTY) ONE WAY EVP DETECTOR AND LED CONFIRMATION LIGHT (Ø2,5)

**A F&I** EQUIPMENT PAD FOUNDATION  
 INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)  
 BBU SIGNAL SERVICE CABINET BETWEEN CONTROLLER CABINET AND SERVICE CABINET:  
 METERED SIGNAL SERVICE  
 2" CONDUIT  
 3-1/c 6  
 CONTROLLER CABINET TO HH 1:  
 2-3" CONDUITS (1 EMPTY) 3" CONDUIT  
 2-6/C 14 2-6/C 14  
 7-4/C 14 3-4/C 14  
 (\*) 1-3/C 14 (\*) 1-3/C 14  
 (\*) 1-3/C 20 (\*) 2-3/C 20  
 7-2/C 14 4-2/C 14  
 1-1/c 6 (INS. GR.)  
 CONTROLLER CABINET TO HH 15:  
 3" CONDUIT 2-3" CONDUITS (1 EMPTY)  
 2-6/C 14 2-6/C 14  
 3-4/C 14 7-4/C 14  
 (\*) 1-3/C 14 (\*) 1-3/C 14  
 (\*) 1-3/C 20 (\*) 1-3/C 20  
 1-2/C 14 9-2/C 14  
 1-1/C 6 (GRD)

**F&I** SERVICE CABINET TO HH 1:  
 1.25" CONDUIT  
 UNMETERED STREET LIGHT SERVICE  
 2-3/c 14 (LUM)  
 SERVICE CABINET TO HH 15:  
 1.25" CONDUIT  
 UNMETERED STREET LIGHT SERVICE  
 2-3/c 14 (LUM)  
 SERVICE CABINET TO SOP:  
 2" CONDUIT  
 3-1/c 2  
 STUB OUT 3" CONDUIT FROM CONTROLLER CABINET TO EAST (THREAD AND CAP-FOR FUTURE USE)  
 SERVICE CABINET TO CONTROLLER CABINET:  
 2" CONDUIT (FOR FUTURE COMMUNICATION CABLE)  
 CONTROLLER CABINET TO FO VAULT:  
 (\*\*) 2" CONDUIT  
 (\*\*) 1-12 SM FIBER-OPTIC CABLE

FO 21 TO HH 3 (ROUND LAKE BLVD)  
 2" CONDUIT - INPLACE  
 (\*\*) 1-12 SM FO CABLE - INPLACE (REMOVE)  
 (\*\*) 1-12 SM FO CABLE - F&I

**2 F&I** PEDESTAL FOUNDATION  
 12" PEDESTAL POLE, BASE, WIND COLLAR  
 1-STRAIGHT MOUNT C.D. PED INDICATION  
 1-APS PB, SIGN (RT ARROW), AND PB SPACERS (PB4-2)  
 EXTEND INTO HH 1:  
 3" CONDUIT  
 1-4/C 14  
 1-2/C 14  
 2-1/C 6 (GRD)

**5 F&I** PEDESTAL FOUNDATION  
 12" PEDESTAL POLE, BASE, WIND COLLAR  
 1-STRAIGHT MOUNT C.D. PED INDICATION  
 1-APS PB, SIGN (RT ARROW), AND PB SPACERS (PB8-2)  
 EXTEND INTO HH 10:  
 3" CONDUIT  
 1-4/C 14  
 1-2/C 14  
 1-1/C 6 (GRD)

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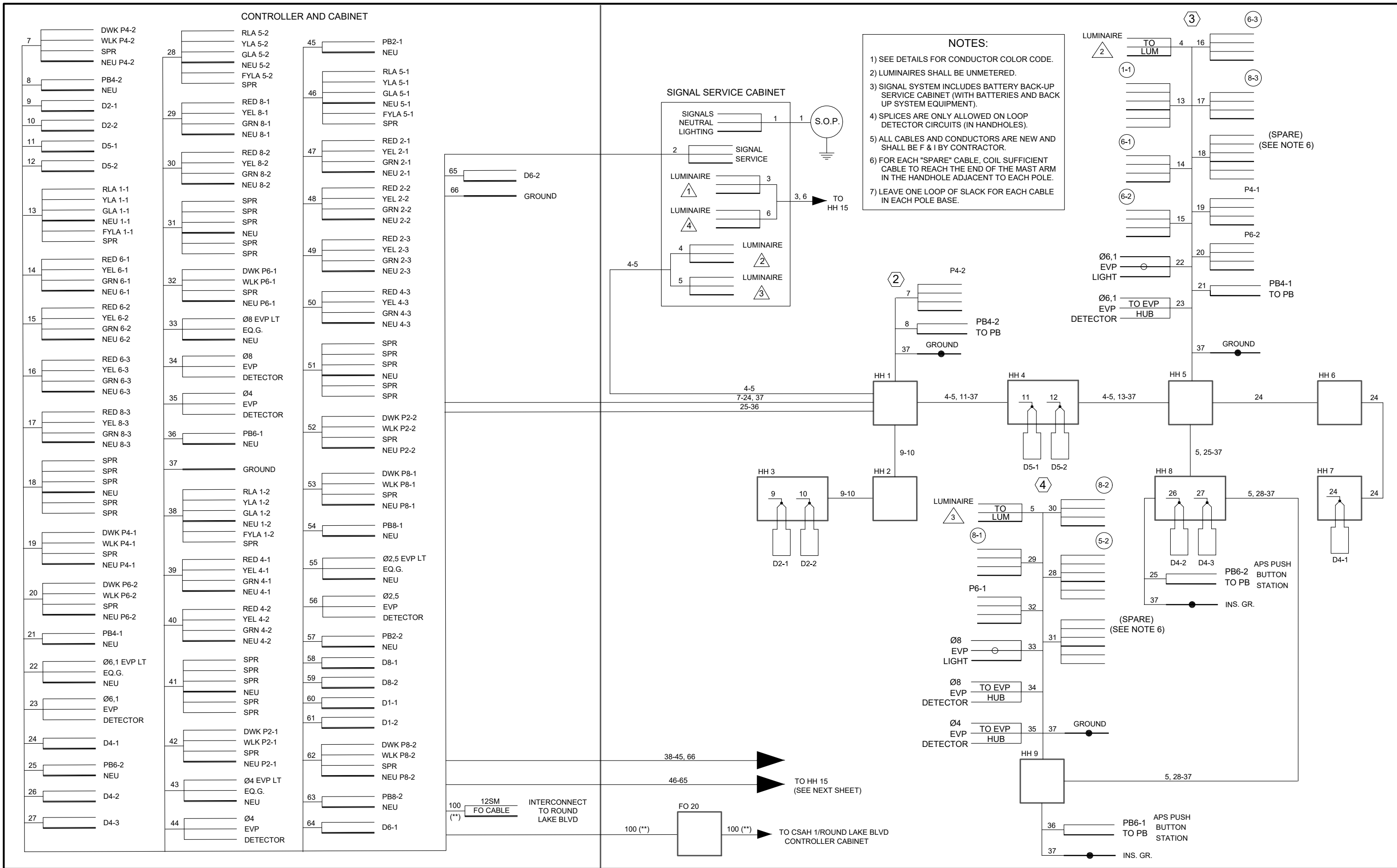
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**BLACKFOOT ST & CSAH 1/COON RAPIDS BLVD**  
 ANOKA COUNTY, MN

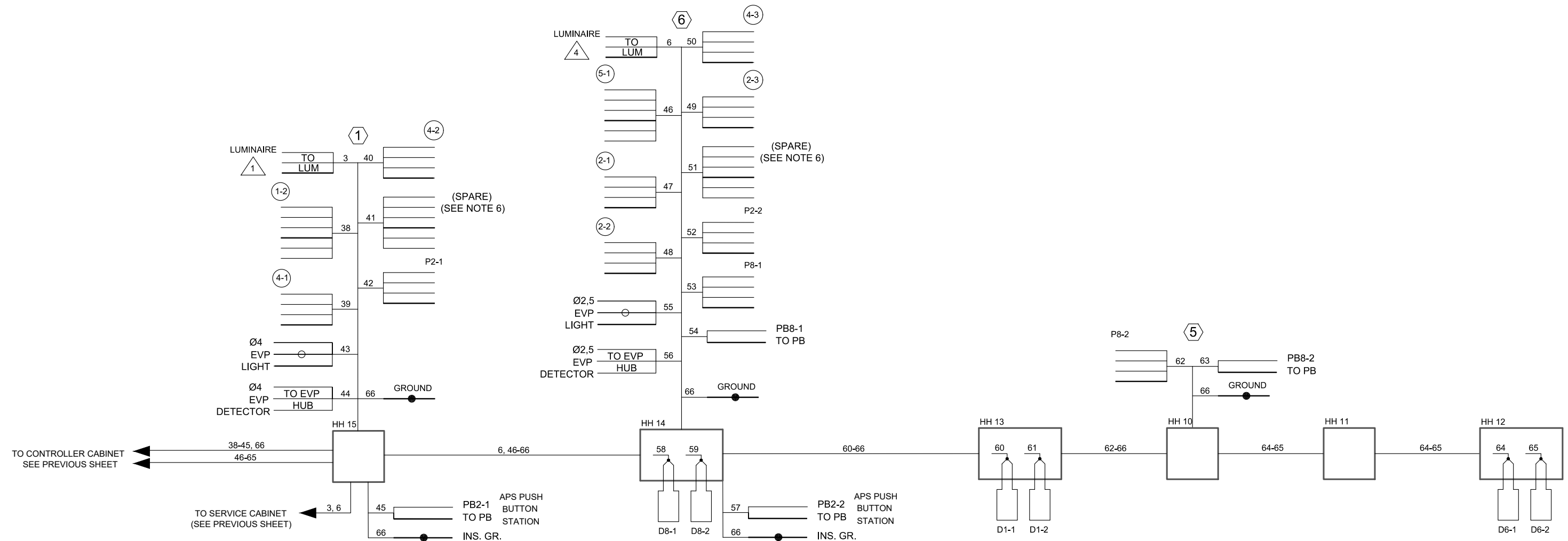
**TRAFFIC SIGNAL SYSTEM INTERSECTION LAYOUT**  
 CSAH 1 (COON RAPIDS BLVD) AT BLACKFOOT STREET  
 SP 002-601-056 SP 114-119-013

30 of 35



**NOTES:**

- 1) SEE DETAILS FOR CONDUCTOR COLOR CODE.
- 2) LUMINAIRES SHALL BE UNMETERED.
- 3) SIGNAL SYSTEM INCLUDES BATTERY BACK-UP SERVICE CABINET (WITH BATTERIES AND BACK UP SYSTEM EQUIPMENT).
- 4) SPLICES ARE ONLY ALLOWED ON LOOP DETECTOR CIRCUITS (IN HANDHOLES).
- 5) ALL CABLES AND CONDUCTORS ARE NEW AND SHALL BE F & I BY CONTRACTOR.
- 6) FOR EACH "SPARE" CABLE, COIL SUFFICIENT CABLE TO REACH THE END OF THE MAST ARM IN THE HANDHOLE ADJACENT TO EACH POLE.
- 7) LEAVE ONE LOOP OF SLACK FOR EACH CABLE IN EACH POLE BASE.



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SEH Project	161219	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
Drawn By	MO						
Designed By	MO						
Checked By	JG						



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

*John M. Gray*  
 JOHN M. GRAY, PE (MN)  
 DATE 3/25/2022 LICENSE NO. 22457

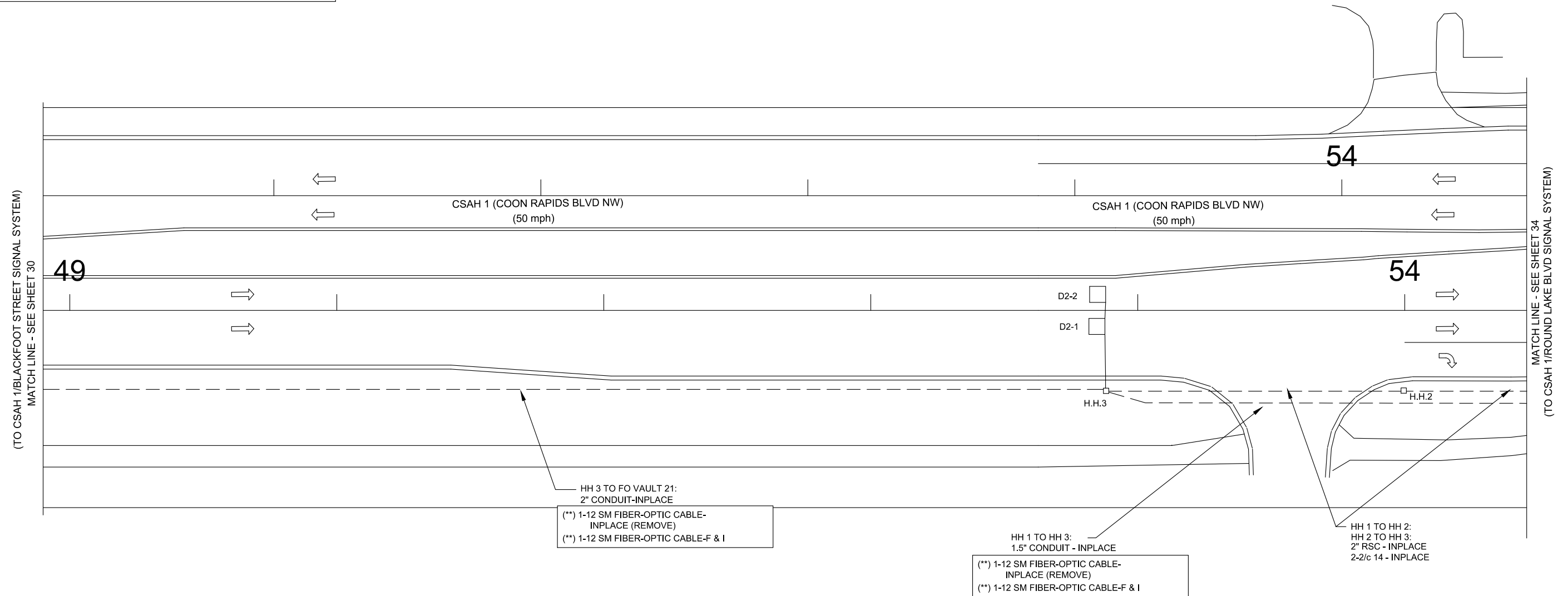
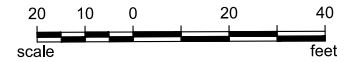
**BLACKFOOT ST &  
 CSAH 1/COON RAPIDS BLVD**  
 ANOKA COUNTY, MN

**TRAFFIC SIGNAL SYSTEM  
 FIELD WIRING DIAGRAM**  
 CSAH 1 (COON RAPIDS BLVD) AT BLACKFOOT STREET  
 SP 002-601-056 SP 114-119-013



**INTERCONNECT NOTES:**

- 1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
- 2) (\*\*) DENOTES ITEMS TO BE FURNISHED & INSTALLED (OR REMOVED AND DISPOSED OF) BY CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 3) ALL ITEMS OF THE ROUND LAKE BLVD SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED, PROTECTED AND MAINTAINED INPLACE.
- 4) FOR EXISTING CONDUITS BEING REUSED AS PART OF THE COMPLETE INTERCONNECT SYSTEM, THE CONTRACTOR SHALL PULL A FISH TAPE THROUGH THESE CONDUITS TO CONFIRM THAT CONDUITS ARE ABLE TO BE REUSED WITH NEW CABLE INSTALLATIONS, PRIOR TO NEW INTERCONNECT CABLES BEING INSTALLED IN THESE CONDUITS.



HH 3 TO FO VAULT 21:  
2" CONDUIT-INPLACE  
(\*\*) 1-12 SM FIBER-OPTIC CABLE-  
INPLACE (REMOVE)  
(\*\*) 1-12 SM FIBER-OPTIC CABLE-F & I

HH 1 TO HH 3:  
1.5" CONDUIT - INPLACE  
(\*\*) 1-12 SM FIBER-OPTIC CABLE-  
INPLACE (REMOVE)  
(\*\*) 1-12 SM FIBER-OPTIC CABLE-F & I

HH 1 TO HH 2:  
HH 2 TO HH 3:  
2" RSC - INPLACE  
2-2/c 14 - INPLACE

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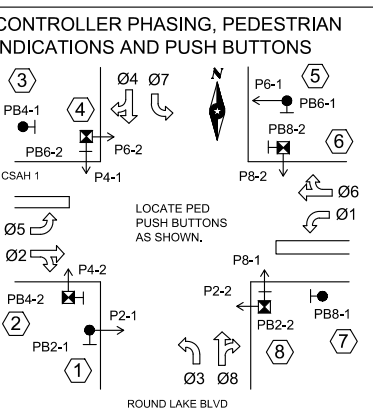
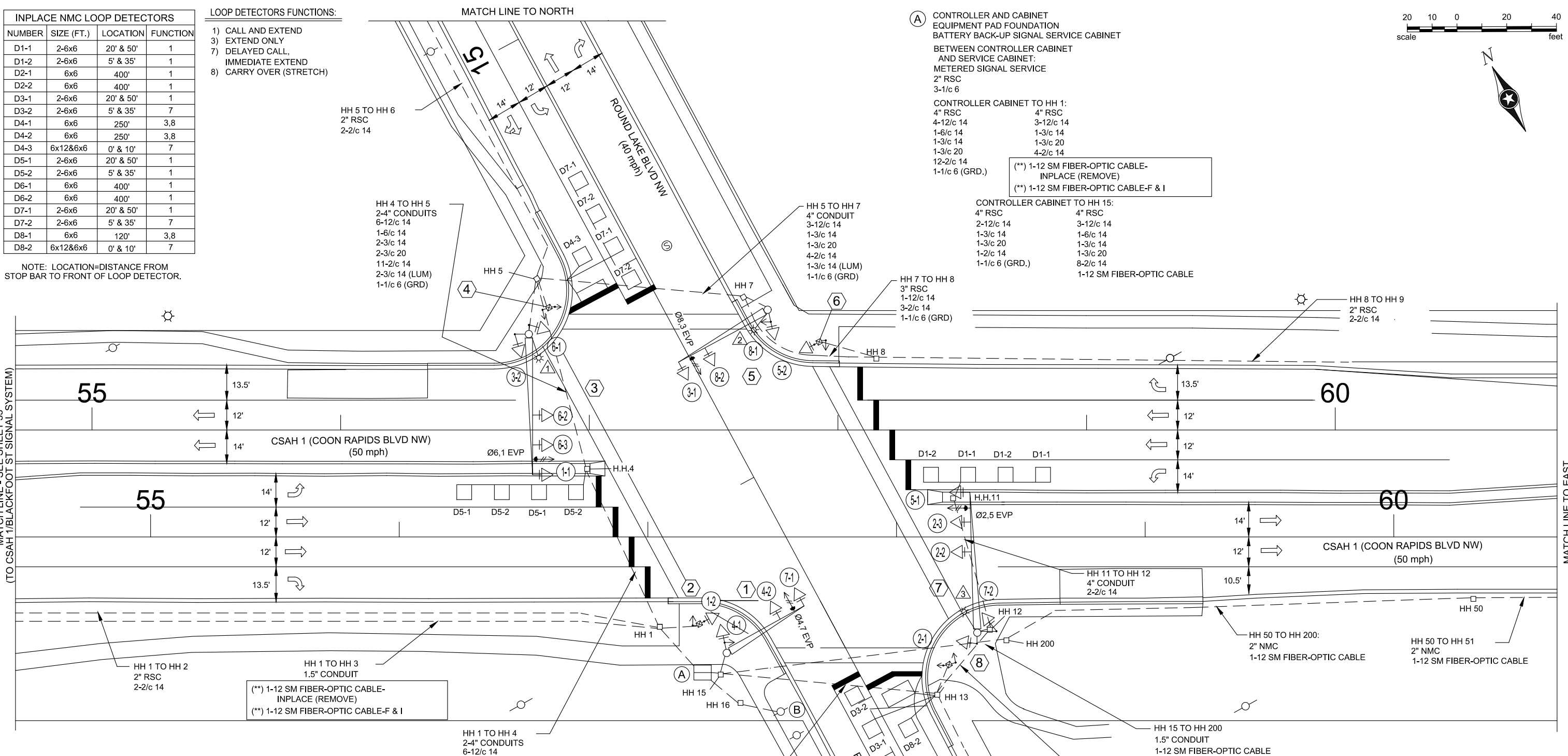
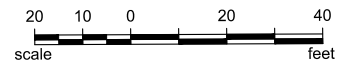
**BLACKFOOT ST &  
CSAH 1/COON RAPIDS BLVD**  
ANOKA COUNTY, MN

**TRAFFIC CONTROL INTERCONNECT  
INTERSECTION LAYOUT**  
CSAH 1 (COON RAPIDS BLVD)  
(BLACKFOOT ST TO ROUND LAKE BLVD)  
SP 002-601-056 SP 114-119-013

INPLACE NMC LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	20' & 50'	1
D1-2	2-6x6	5' & 35'	1
D2-1	6x6	400'	1
D2-2	6x6	400'	1
D3-1	2-6x6	20' & 50'	1
D3-2	2-6x6	5' & 35'	7
D4-1	6x6	250'	3,8
D4-2	6x6	250'	3,8
D4-3	6x12&6x6	0' & 10'	7
D5-1	2-6x6	20' & 50'	1
D5-2	2-6x6	5' & 35'	1
D6-1	6x6	400'	1
D6-2	6x6	400'	1
D7-1	2-6x6	20' & 50'	1
D7-2	2-6x6	5' & 35'	7
D8-1	6x6	120'	3,8
D8-2	6x12&6x6	0' & 10'	7

- LOOP DETECTORS FUNCTIONS:**
- 1) CALL AND EXTEND
  - 3) EXTEND ONLY
  - 7) DELAYED CALL, IMMEDIATE EXTEND
  - 8) CARRY OVER (STRETCH)

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



- SIGNAL SYSTEM OPERATIONS:**
- SIGNAL SYSTEM FLASH MODE IS ALL RED.
  - NORMAL OPERATION IS 8 PHASE, WITH PHASES 1, 3, 5, & 7 BEING FLASHING YELLOW ARROW OPERATION (FLASH BY TIME OF DAY).
  - VEHICLE SIGNAL PHASES 2 & 6 OPERATE ON RECALL.

**INPLACE LED SIGNAL FACES**  
ALL SIGNAL INDICATIONS ARE 12"

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

FYA = FLASHING YELLOW ARROW

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