## GENERAL CSAH 51 (SUNSET DR) STAGING AND TRAFFIC CONTROL INFORMATION

WORK SHALL BE PERFORMED WITH THROUGH TRAFFIC DETOURED TO XXX AVE (SEE DETOUR PLANS). LOCAL TRAFFIC IS ALLOWED IN SOME AREAS FOR ACCESS REQUIREMENTS. LOCAL METRO TRANSIT BUS TRAFFIC WILL GENERALLY BE DETOURED TO XXX AVE, FOR WHICH A SEPARATE BUS DETOUR AND PARKING RESTRICTION WILL BE DONE BY METRO TRANSIT. (SEE TRAFFIC PERMIT INFORMATION ON THIS SHEET).

THE TRAFFIC DETOUR WORK SHALL BE PAID FOR UNDER THE LUMP SUM ITEM, TRAFFIC CONTROL. WORK FOR PLACEMENT OF TEMPORARY PAVEMENT, TEMPORARY SURFACING MATERIAL (BIT. MILLINGS), PORTABLE CONCRETE MEDIAN BARRIERS, PEDESTRIAN FENCING, PAVEMENT MARKINGS, PAVEMENT MARKING REMOVALS FOR STAGE CONSTRUCTION SHALL BE PAID FOR UNDER SEPARATE PAY ITEMS. SAWCUTS FOR TRAFFIC DETOUR WORK SHALL BE INCIDENTAL.

SIGNING FOR TRAFFIC CONTROL TO SPECIFICALLY ACCOMMODATE MILLING OR PAVING OPERATIONS SHALL BE INCIDENTAL. CHANNELIZERS, TEMPORARY RAMPS, FLAGGING OR OTHER MEASURES NOT INCLUDED IN OTHER ITEMS, BUT SPECIFICALLY REQUIRED FOR MAINTENANCE OF TEMPORARY PEDESTRIAN ACCESS ROUTE (TPAR), SHALL BE INCLUDED IN THE LUMP SUM PAYMENT FOR ALTERNATE PEDESTRIAN ACCESS ROUTE. ALL OTHER SIGNAGE, CHANNELIZERS, BARRICADES AND PORTABLE CHANGEABLE MESSAGE BOARDS NECESSARY FOR THE LOCAL ACCESS DETOURS, BIKE DETOURS, AND OTHER STAGES OF CONSTRUCTION TRAFFIC CONTROL DEPICTED IN THESE STAGING & TRAFFIC CONTROL PLANS SHALL BE INCLUDED IN THE LUMP SUM PAYMENT FOR TRAFFIC CONTROL.

PEDESTRIAN TRAFFIC SHALL BE MAINTAINED ON A MINIMUM OF ONE SIDE OF EACH STREET. AT EACH INTERSECTION THERE SHALL BE AT LEAST ONE ROUTE FOR PEDESTRIAN TRAFFIC TO CROSS CSAH 152 & 9 & 2 AT ALL TIMES. THE TEMPORARY PEDESTRIAN ACCESS ROUTE (TPAR) SHALL BE A MINIMUM WIDTH OF 4' AND SHALL BE A PERMANENT OR TEMPORARY HARD SURFACE FREE OF SURFACE IRREGULARITIES AS PER ADA REGULATIONS. PEDESTRIAN ACCESS SHALL BE MAINTAINED AT ALL TIMES TO COMMERCIAL AREAS.

BIKE AND PEDESTRIAN TRAIL TRAFFIC WITHIN THE CONSTRUCTION COORIDOR SHALL BE MAINTAINED AT ALL TIMES.
THE TRAIL MAYBE REROUTED WITHIN THE CONSTRUCTION LIMITS AS NEEDED IN ORDER TO CONSTRUCT THE PROJECT.
ANY TEMPORARY ROUTES SHALL BE A MINIMUM WIDTH OF 8' AND SHALL BE A PERMANENT OR TEMPORARY HARD SURFACE FREE OF SURFACE IREGULARITES AS PER ADA REGULATIONS.

THE CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION EXIT AT ALL LOCATIONS CONSTRUCTION TRAFFIC LEAVES THE PROJECT SITE.

## TRAFFIC PERMIT INFORMATION

FOR DETOUR INSTALLATIONS & PARKING RESTRICTIONS, CONTRACTOR SHALL APPLY FOR AN OBSTRUCTION PERMIT AND NOTE A REQUEST FOR *"NO PARKING"* POSTING ON THE APPLICATION. THE APPLICATION SHOULD INCLUDE SPECIFIC AREAS THAT NEED TO BE POSTED SUCH AS ONE SIDE OF THE STREET OR BOTH SIDES OF THE STREEET. CITY REQUIRES AT LEAST 72 BUSINESS HOURS ADVANCE NOTICE FOR POSTING (1 WEEK PREFERRED). OBSTRUCTION PERMIT APPLICATION IS MADE THROUGH ROADWAY (CALL SCOTT KRAMER AT 612-673-2383 IF ADDITIONAL INFORMATION IS NEEDED).

## GENERAL STAGING RESTRICTIONS

1. EXISTING LIGHTING SHALL BE MAINTAINED FOR PEDESTRIANS UTILIZING THE CORRIDOR UNTIL NEW LIGHTING SYSTEM IS OPERATIONAL. COORDINATE REMOVAL OF EXISTING POLE MOUNTED LIGHTING WITH CITY OF SPRING PARK AND XCEL ENERGY.

2. THE CONTRACTOR IS RESPONSIBLE FOR THE OPERATION, MAINTENANCE AND ADJUSTMENT OF ANY EXISTING SIGNAL SYSTEM, TEMPORARY OR NEW, FOR THE DURATION OF THE PROJECT.

3. SEE SPECIAL PROVISIONS FOR ADDITIONAL STAGING TIME RESTRICTIONS.

## GENERAL CSAH 51 (SUNSET DR) CONSTRUCTION STAGING SEQUENCE

STAGE 1: TBD

STAGE 2: TBD

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

| | |
|---|---|
| DESIGN BY: | R. MANKE |
| CAD BY: | R. MANKE |
| CHECKED BY: | S. PARK |
| LAST REVISION: | / / |

STAGING NARRATIVE

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 180 / 329

## NOTES

Ⓐ MAINTAIN VEHICULAR ACCESS AT ALL TIMES (SEE ALSO GENERAL CONSTRUCTION STAGING SUMMARY).

Ⓑ MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES TO COMMERCIAL AREAS (SEE ALSO GENERAL CONSTRUCTION STAGING SUMMARY).

Ⓒ MAINTAIN TRAIL ACCESS AT ALL TIMES. PROVIDE TEMPORARY SURFACING WITH APPROVAL OF THE ENGINEER. (SEE ALSO GENERAL CONSTRUCTION STAGING SUMMARY).

SEE ROAD CLOSED SIGN GROUP OPTIONS (TYP)

(RC)

THE CONTRACTOR WILL COORDINATE WITH OTHERS TO ACCOMODATE LOCAL ACCESS TO THE WORK AREAS WHEN PRACTICAL. PROVIDE TEMPORARY TRAFFIC DETOURS, APPROPRIATE CONSTRUCTION SIGNAGE AND FLAGMEN AS REQUIRED OR AS DIRECTED BY THE ENGINEER.

SEE DETOUR PLANS FOR ADDITIONAL SIGNAGE ON ADJACENT SIDE STREETS


R11-4
60″ X 30″

2-3* (T3L OR T3R)
4′ TYPE III BARRICADE
WITH FLASHING AMBER LIGHT

* NUMBER PER DIRECTION
BY THE ENGINEER.

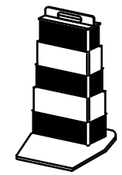

R11-2
48″ X 30″

* NUMBER PER DIRECTION
BY THE ENGINEER.


R11-2a
48″ X 30″

* NUMBER PER DIRECTION
BY THE ENGINEER.

EST. 10



DELINEATE WORK AREAS WITH BARRELS AS SHOWN ON SHEET

SEE SIDEWALK CLOSED SIGN GROUP (TYP)

(SC)

R9-9
30″ X 18″


(T3L OR T3R)
4′ TYPE III BARRICADE
WITH FLASHING
AMBER LIGHT

SEE TRAIL CLOSED SIGN GROUP (TYP)

(TC)

R9-9a
30″ X 18″


(T3L OR T3R)
4′ TYPE III BARRICADE
WITH FLASHING
AMBER LIGHT

SEE ROAD WORK AHEAD SIGN GROUP (TYP)

(RW)


W20-1
36″ X 36″

PLACE SIGN AT OPPOSITE END OF STREET FROM CLOSURE BARRICADES PER GENERAL CONSTRUCTION STAGING PLAN

Hennepin

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CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 181 / 329

# CHANNELIZERS, SIDEWALK BARRICADES, AND PORTABLE STANDS

## GENERAL NOTES:

1. RAILINGS OR OTHER OBJECTS MAY PROTRUDE A MAXIMUM OF 4 INCHES INTO THE WALKWAY CLEAR SPACE WHEN LOCATED A MINIMUM OF 27 INCHES ABOVE THE WALKWAY SURFACE.
2. WHEN TEMPORARY BARRIER IS USED AS A PEDESTRIAN CHANNELIZER IT SHALL MEET CRASHWORTHY REQUIREMENTS.
3. WHEN USED, SIDEWALK BARRICADES SHALL BE PLACED ACROSS THE ENTIRE WIDTH OF THE WALKWAY SURFACE.
4. ALL DEVICES USED TO CHANNELIZE PEDESTRIAN FLOW SHOULD INTERLOCK SUCH THAT GAPS DO NOT ALLOW PEDESTRIANS TO STRAY FROM THE CHANNELIZED PATH.

## SPECIFIC NOTES:

(1) ANY TRIPPING HAZARD IN THE WALKWAY NEEDS A DETECTABLE EDGE. BALLAST SHALL BE LOCATED BEHIND THE DETECTABLE EDGE OR INTERNAL TO THE DEVICE. ANY SUPPORT ON THE FRONT OF THE DEVICE SHOULD NOT EXTEND INTO THE 48 INCH MINIMUM WALKWAY CLEAR SPACE, ANY SUPPORT THAT EXTENDS INTO THE WALKWAY SHALL NOT EXCEED 0.5 INCHES IN HEIGHT ABOVE THE WALKWAY SURFACE; IF GREATER THAN 0.25 INCHES, BEVEL AS SHOWN IN THE EDGE TREATMENT DETAIL.

(2) DETECTABLE EDGES SHALL BE CONTINUOUS AND 6 INCHES MINIMUM ABOVE THE WALKWAY SURFACE AND HAVE COLOR MARKINGS CONTRASTING WITH THE WALKWAY SURFACE. THE DETECTABLE EDGE AROUND A PORTABLE SIGN STAND SHOULD BE PLACED IN THE WALKWAY AREA IN WHICH THE SIGN POSES A HAZARD TO A VISUALLY IMPAIRED PEDESTRIAN.

(3) DEVICES SHALL NOT BLOCK WATER DRAINAGE FROM THE WALKWAY. A GAP HEIGHT OR OPENING FROM THE WALKWAY SURFACE UP TO A MAXIMUM OF 2 INCHES IS ALLOWED FOR DRAINAGE PURPOSES.

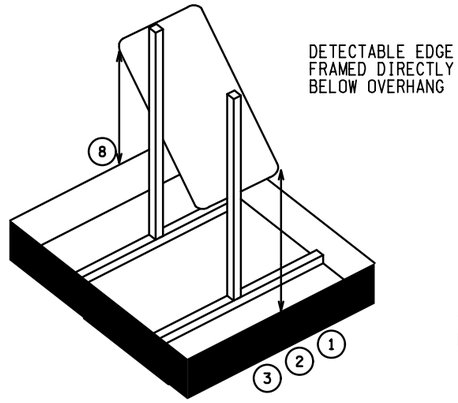
(4) WHEN HAND GUIDANCE IS REQUIRED, THE TOP RAIL OR TOP SURFACE SHALL:
- BE IN A VERTICAL PLANE PERPENDICULAR TO THE WALKWAY ABOVE THE DETECTABLE EDGE,
- BE CONTINUOUS AT A HEIGHT OF 34 TO 38 INCHES ABOVE THE WALKWAY SURFACE, AND
- BE SUPPORTED WITH MINIMAL INTERFERENCE TO THE PEDESTRIAN'S HANDS OR FINGERS.

(5) ALL DEVICES SHALL BE FREE OF SHARP OR ROUGH EDGES, AND FASTENERS (BOLTS) SHALL BE ROUNDED TO PREVENT HARM TO HANDS, ARMS OR CLOTHING OF PEDESTRIANS.

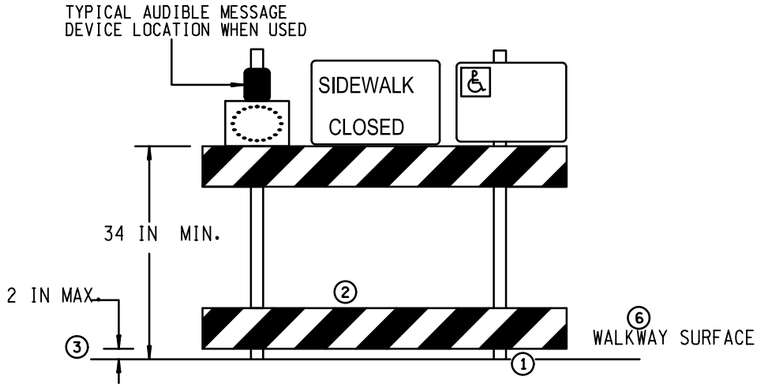
(6) TEMPORARY WALKWAY SURFACES SHALL BE FIRM, STABLE, FREE-DRAINING AND NON-SLIP REGARDLESS OF WEATHER CONDITIONS. TEMPORARY WALKWAY SURFACES SHALL ALLOW NORMAL USAGE OF WHEELCHAIRS, WALKERS, STROLLERS, OR OTHER MOBILITY DEVICES. CONCRETE, BITUMINOUS, STEEL, RUBBER, WOOD (3/4 IN OR THICKER), AND PLASTIC ARE ACCEPTABLE SURFACE MATERIALS FOR A TEMPORARY WALKWAY SURFACE. GRAVEL, MILLINGS, OR OTHER UNEVEN SURFACES ARE NOT ACCEPTABLE SURFACE MATERIALS.

(7) LONGITUDINAL CHANNELIZING DEVICES FOR PEDESTRIANS SHALL BE 32 INCHES HIGH OR GREATER.

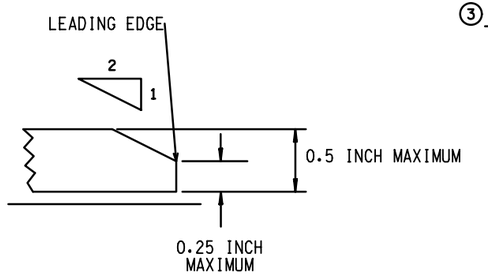
(8) AN EDGE OF THE FRAMING MAY BE REMOVED IF IT IS NOT NEEDED FOR PED GUIDANCE. STABILITY OF THE DETECTABLE EDGE SHOULD BE MAINTAINED.



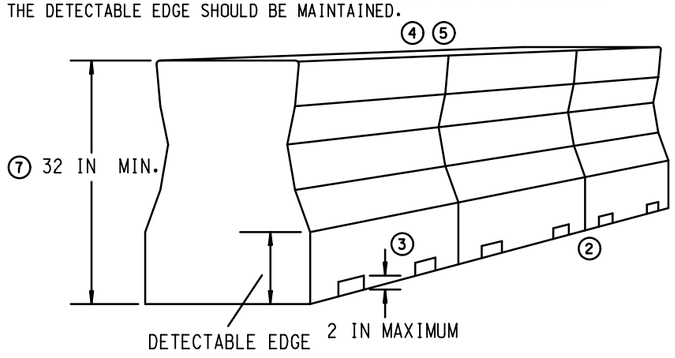

**DETECTABLE EDGE FOR SIGN ON PORTABLE STAND**



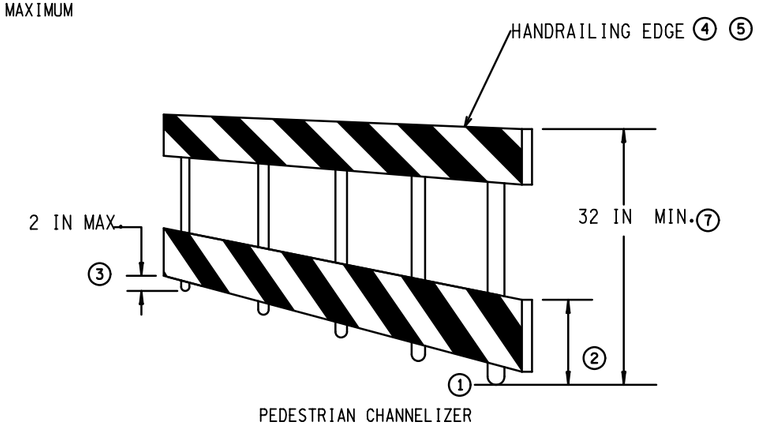

SIDEWALK BARRICADE




EDGE TREATMENT




**PEDESTRIAN CHANNELIZER DEVICE USING A TEMPORARY BARRIER**




PEDESTRIAN CHANNELIZER

**TEMPORARY PEDESTRIAN ACCESS ROUTE (TPAR) DEVICES**

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

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| CAD BY: | R. MANKE |
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| LAST REVISION: | / / |

STAGING NARRATIVES

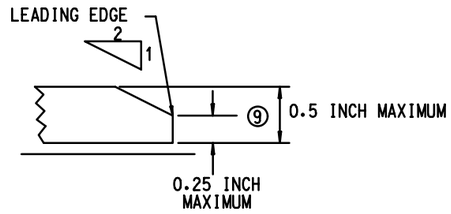
CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 182 / 329

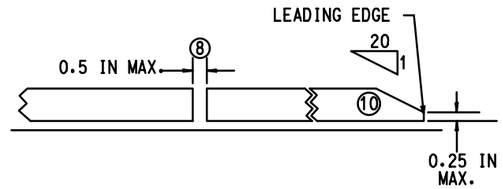
# TEMPORARY CURB RAMPS AND WALKWAY SURFACES

## SPECIFIC NOTES:

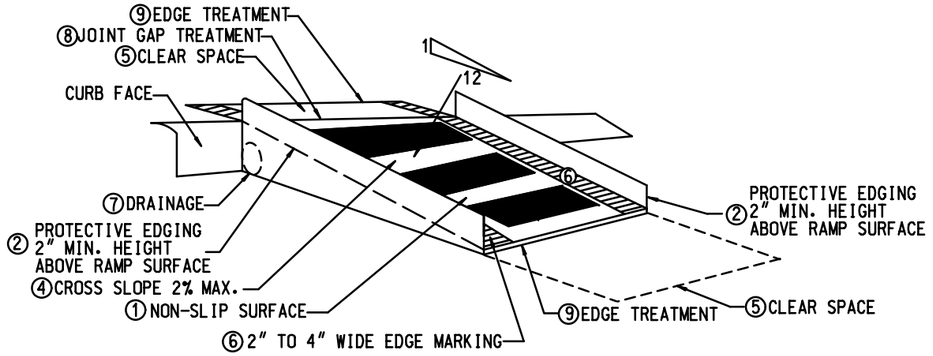
1. CURB RAMPS SHALL BE 48 IN MIN. WIDTH WITH A FIRM, STABLE AND SLIP RESISTANT SURFACE.
2. PROTECTIVE EDGING WITH A 2 IN MIN. HEIGHT SHALL BE PLACED WHEN A CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3. PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN OR MORE.
3. DETECTABLE EDGING WITH 6 IN MIN. HEIGHT AND CONTRASTING COLOR SHALL BE PLACED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. CURB RAMPS AND LANDINGS SHALL HAVE A 2% MAX. CROSS SLOPE.
5. CLEAR SPACE OF 48 IN X 48 IN MIN. SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
6. THE CURB RAMP WALKWAY EDGE SHALL BE MARKED WITH A CONTRASTING COLOR, 2 IN TO 4 IN WIDE MARKING. THE MARKING IS OPTIONAL WHERE COLOR CONTRASTING EDGING IS USED.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL NOT BE IMPEDED.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 1/2 IN WIDTH.
9. CHANGES BETWEEN SURFACE HEIGHTS SHALL NOT EXCEED 1/2 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 1/4 IN HIGH, AND BEVELED AT 1:2 BETWEEN 1/4 IN AND 1/2 IN HEIGHT.
10. THE TEMPORARY WALKWAY SURFACE MAY HAVE A THICKNESS GREATER THAN 0.5 INCHES. IF THE THICKNESS OF THE TEMPORARY WALKWAY SURFACE IS LESS THAN OR EQUAL TO 0.5 INCHES, THE BEVEL MAY BE 1:2.



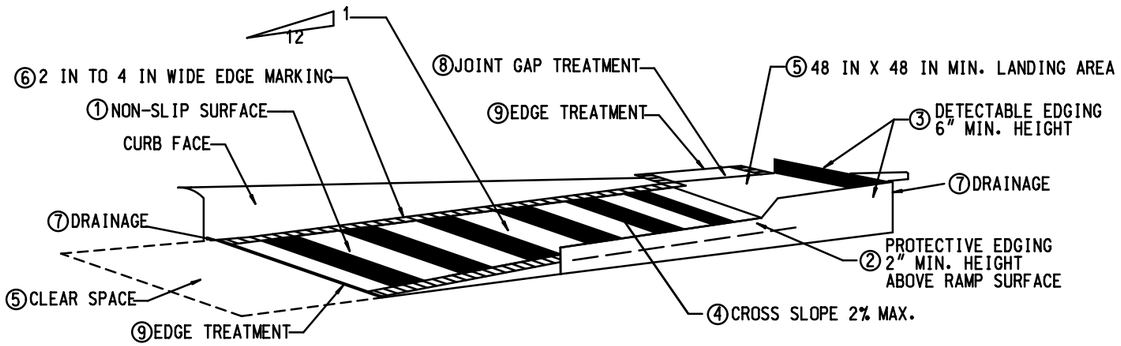

EDGE TREATMENT



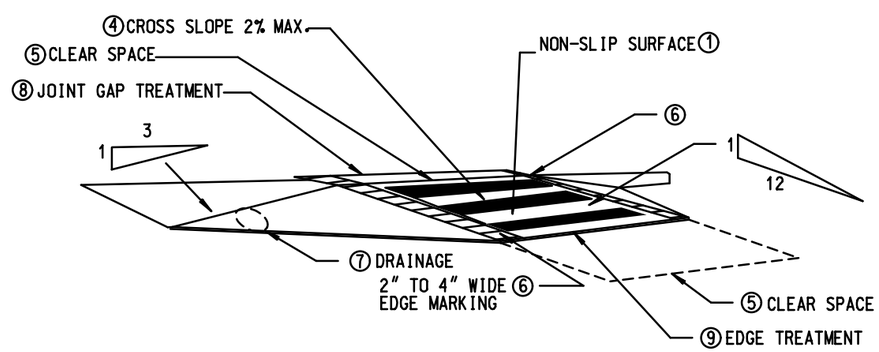

TEMPORARY WALKWAY SURFACE




TEMPORARY CURB RAMP PERPENDICULAR TO CURB
SHOWN WITH PROTECTIVE EDGE




TEMPORARY CURB RAMP
PARALLEL TO CURB




TEMPORARY CURB RAMP PERPENDICULAR TO CURB
SHOWN WITH SIDE APRON

## TEMPORARY PEDESTRIAN ACCESS ROUTE (TPAR) DEVICES

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

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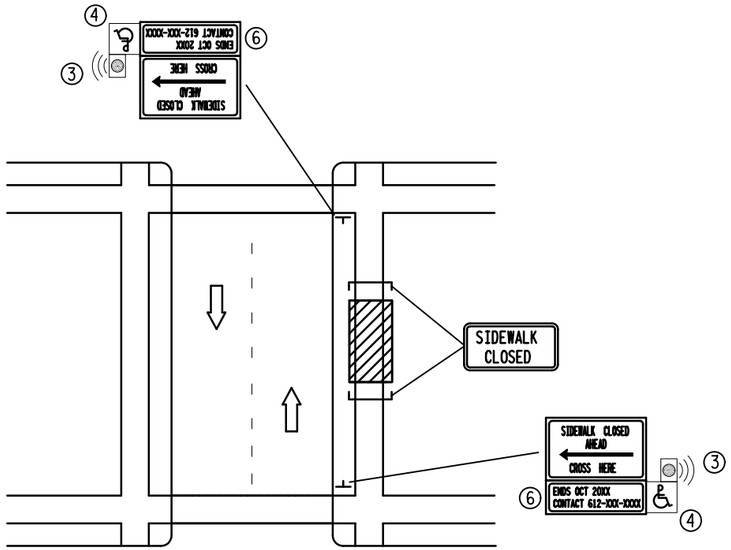
| DESIGN BY: | R. MANKE |
| CAD BY: | R. MANKE |
| CHECKED BY: | S. PARK |
| LAST REVISION: | / / |

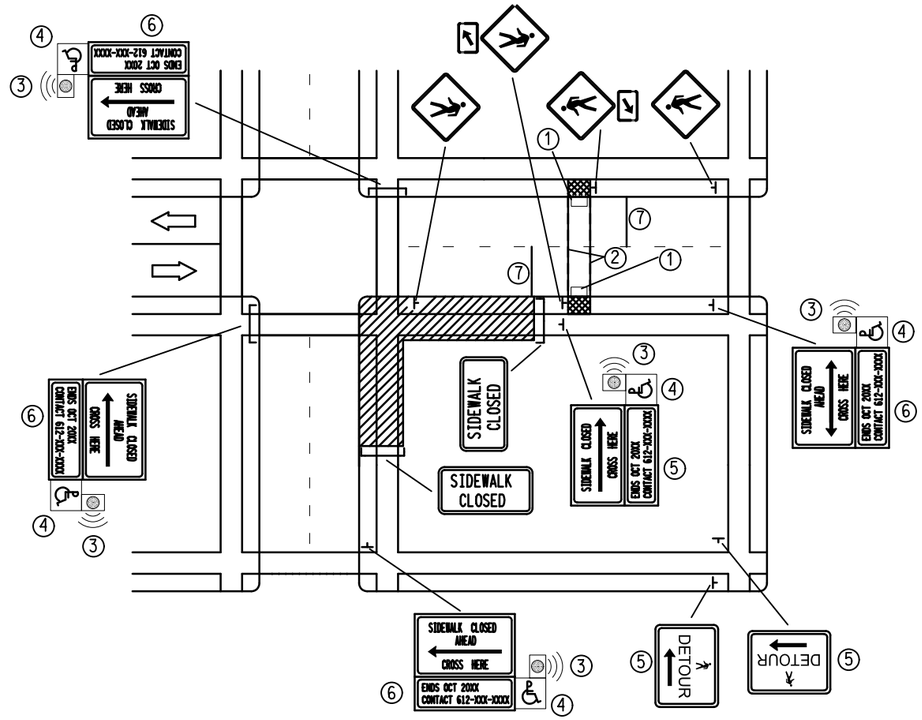
STAGING NARRATIVES

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 183 / 329




OTHER SIDE OF STREET DETOUR
(FOR MID-BLOCK CLOSURE)




OTHER SIDE OF STREET DETOUR OR DETOUR WITH TRAILBLAZING SIGNS
(FOR CORNER SIDEWALK CLOSURE WITH OPTIONAL TEMPORARY CROSSWALK)

## GENERAL NOTES

WHEN CLOSING OR RELOCATING CROSSWALKS OR SIDEWALKS, PROVIDE DETECTABLE TEMPORARY FACILITIES AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH EXISTING PEDESTRIAN FACILITIES. THE MINIMUM TEMPORARY WALKWAY WIDTH SHOULD BE THE WIDTH OF THE EXISTING FACILITY. IF THE EXISTING FACILITY HAS A WIDTH OF GREATER THAN 60 IN, THE WIDTH OF THE TEMPORARY FACILITY MAY BE 60 INCHES. IF THE WIDTH OF THE DETOUR IS LESS THAN 60 INCHES, THEN A 60 INCH BY 60 INCH PASSING SPACE IS REQUIRED EVERY 200 FT.

TEMPORARY TRAFFIC CONTROL DEVICES FOR PEDESTRIANS ARE SHOWN. OTHER DEVICES MAY BE NECESSARY TO CONTROL VEHICULAR TRAFFIC. STAGE WORK, AS NECESSARY, TO PROVIDE AN ALTERNATE PEDESTRIAN ROUTE (APR) AT ALL TIMES. FOR ROADWAYS WITH NO AVAILABLE DETOURS, MAINTAIN ONE OPEN SIDEWALK AT ALL TIMES.

PROVIDE A SMOOTH, CONTINUOUS, HARD SURFACE THROUGH THE LENGTH OF THE APR. PROVIDE A FIRM, STABLE, FREE-DRAINING, AND NON-SLIP TEMPORARY WALKWAY SURFACE, REGARDLESS OF WEATHER CONDITIONS. THE TEMPORARY WALKWAY SURFACE SHALL BE SUPPORTED BY A SOLID BASE TO COVER SHORT SEGMENTS OF ROUGH, SOFT, OR UNEVEN GROUND.THE TEMPORARY WALKWAY SURFACE WILL ALLOW NORMAL USAGE OF WHEELCHAIRS, WALKERS, STROLLERS, AND OTHER MOBILITY DEVICES. CONCRETE, BITUMINOUS, STEEL, RUBBER, WOOD (3/4 INCHES OR THICKER), AND PLASTIC ARE ACCEPTABLE SURFACE MATERIALS FOR THE TEMPORARY WALKWAY SURFACE. GRAVEL, MILLINGS, OR OTHER UNEVEN SURFACES ARE NOT ACCEPTABLE SURFACE MATERIALS.

THE PEDESTRIAN TRAFFIC SIGNALS CONTROLLING CLOSED CROSSWALKS SHALL BE COVERED OR DEACTIVATED.

POST MOUNTED SIGNS LOCATED ADJACENT TO A SIDEWALK SHALL HAVE A 7 FOOT MINIMUM CLEARANCE FROM THE BOTTOM OF THE SIGN TO THE SIDEWALK SURFACE.

ANY PORTABLE SIGN OR BARRICADE PLACED OR STORED IN A PEDESTRIAN WALKWAY THAT COULD BE A HAZARD TO A VISUALLY IMPAIRED PEDESTRIAN SHALL HAVE A DETECTABLE EDGE TO GUIDE THE PEDESTRIAN AROUND THE HAZARD.

MINIMIZE DISRUPTION TO PEDESTRIANS TO THE MAXIMUM EXTENT FEASIBLE BY PROVIDING AN APR IN THE FOLLOWING ORDER OF PREFERENCE:

1. PROVIDE THE APR ON THE SAME SIDE OF THE STREET AS THE DISRUPTED ROUTE UTILIZING BYPASSES.
2. WHERE IT IS NOT FEASIBLE TO PROVIDE A SAME SIDE APR, PROVIDE A DETOUR ON THE OTHER SIDE OF THE STREET.
3. WHERE IT IS NOT FEASIBLE TO PROVIDE AN APR ON THE OTHER SIDE OF THE ROADWAY, PROVIDE AN APR DETOUR WITH TRAILBLAZING SIGNS.

IF NOT ALREADY LIT, LIGHTING SHOULD BE CONSIDERED AT MID-BLOCK CROSSINGS IN ORDER TO ILLUMINATE PEDESTRIANS.

## SPECIFIC NOTES

(1) TEMPORARY CURB RAMPS WITH DETECTABLE WARNINGS.

(2) TEMPORARY PAVEMENT MARKINGS FOR CROSSWALKS MAY USE CROSSWALK BLOCKS OR TWO TRANSVERSE LINES. TWO STRIPS OF 18 INCH PREFORMED MARKING MATERIAL MAY BE USED TO FORM 36 INCH WIDE CROSSWALK BLOCKS.

(3) PROVIDE AN APPROVED AUDIBLE MESSAGE DEVICE OR TACTILE MESSAGE FOR PEDESTRIANS WITH VISUAL DISABILITIES.

(4) THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHOULD BE DISPLAYED WHEN ANY WALKWAY THROUGH A WORK ZONE HAS BEEN DETERMINED TO BE FULLY ACCESSIBLE. THE SYMBOL OF ACCESSIBILITY SHALL NOT BE DISPLAYED IF PERSONS WITH DISABILITIES SHOULD NOT USE THE PRIMARY TEMPORARY PEDESTRIAN DETOUR.

(5) PEDESTRIAN DETOUR TRAILBLAZING SIGNS SHOULD BE USED IF THE PEDESTRIAN DETOUR IS LOCATED SOMEPLACE OTHER THAN ACROSS THE STREET FROM THE SIDEWALK CLOSURE.

(6) TYPICAL SIGN MESSAGE FOR A ALTERNATE PEDESTRIAN ROUTE SHOULD INCLUDE INFORMATION SUCH AS THE DURATION OF THE WALKWAY RESTRICTIONS (BEGINNING AND/OR END DATES) AND A PROJECT CONTACT NUMBER FOR 24 / 7 QUESTIONS OR REPORTING HAZARDS. TYPICAL INFORMATION INCLUDED IN AN AUDIBLE MESSAGE CAN BE FOUND IN "TPAR - AUDIBLE MESSAGE CONTENT GUIDELINES" WHICH CAN BE FOUND ON THE MNDOT TRAFFIC ENGINEERING WEB SITE ON THE PEDESTRIAN ACCOMMODATIONS THROUGH WORK ZONES WEB-PAGE. ADDITIONALLY, A SUMMARY OF THE MESSAGE CONTENT GUIDELINES CAN BE FOUND WITHIN THE PEDESTRIAN ACCOMMODATIONS THROUGH WORK ZONES DESIGN GUIDANCE DOCUMENT.

(7) STOP BAR SHOULD BE LOCATED 20 TO 50 FEET PRIOR TO THE CROSSWALK. RESTRICT PARKING BETWEEN THE STOP BAR AND THE CROSSWALK. ON TWO-WAY ROADWAYS, RESTRICT PARKING BOTH PRIOR TO AND AFTER THE CROSSWALK FOR BOTH DIRECTIONS.

## LEGEND

SIGN
TEMPORARY TRUNCATED DOME
WORK AREA
SIDEWALK BARRICADE
DIRECTION OF TRAFFIC
AUDIBLE MESSAGE DEVICE (AMD)
TEMPORARY CURB RAMP WITH DETECTABLE EDGES

ALTERNATE PEDESTRIAN ROUTE (APR) LAYOUTS-DETOURS

Hennepin

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STAGING NARRATIVES

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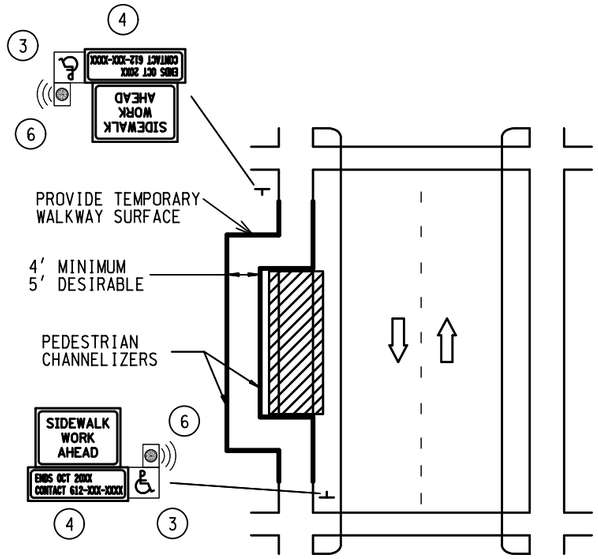
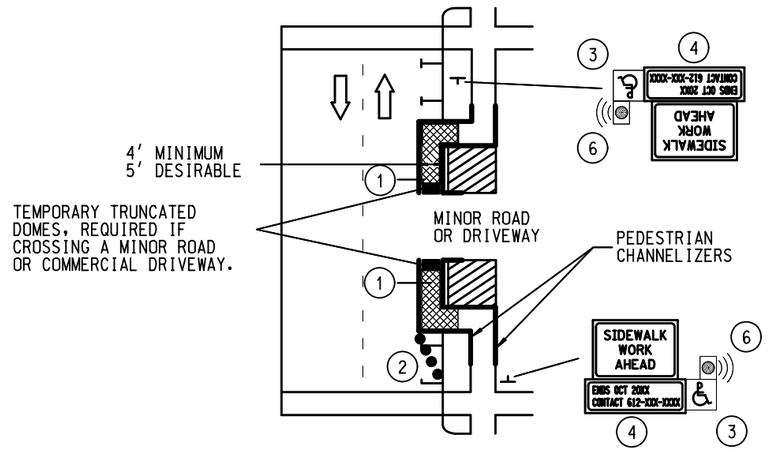



BYPASS ON ADJACENT AVAILABLE RIGHT OF WAY

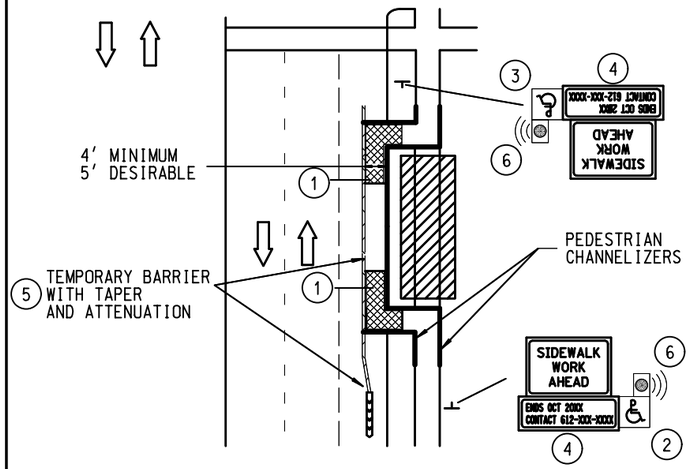
BYPASS TYPE A

NOTE: MAY ONLY BE USED ON ROADWAY WITH POSTED SPEED OF 45 MPH OR LESS.




SIDEWALK BYPASS USING PARKING OR SHOULDER ON LOW SPEED ROADWAY

BYPASS TYPE B




SIDEWALK BYPASS USING SHOULDER OR PARKING LANE ON HIGH SPEED ROADWAY

BYPASS TYPE C

## GENERAL NOTES

WHEN CLOSING OR RELOCATING CROSSWALKS OR SIDEWALKS, PROVIDE DETECTABLE TEMPORARY FACILITIES AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH EXISTING PEDESTRIAN FACILITIES. THE ALTERNATE PEDESTRIAN ROUTE (APR) MUST REMAIN OPEN AT ALL TIMES.

TEMPORARY TRAFFIC CONTROL DEVICES FOR PEDESTRIANS ARE SHOWN. OTHER DEVICES MAY BE NECESSARY TO CONTROL VEHICULAR TRAFFIC. STAGE WORK, AS NECESSARY, TO PROVIDE AN ALTERNATE PEDESTRIAN ROUTE (APR) AT ALL TIMES.

PROVIDE A SMOOTH, CONTINUOUS, HARD SURFACE THROUGH THE LENGTH OF THE APR. PROVIDE A FIRM, STABLE, FREE-DRAINING, AND NON-SLIP TEMPORARY WALKWAY SURFACE, REGARDLESS OF WEATHER CONDITIONS. THE TEMPORARY WALKWAY SURFACE SHALL BE SUPPORTED BY A SOLID BASE TO COVER SHORT SEGMENTS OF ROUGH, SOFT, OR UNEVEN GROUND.THE TEMPORARY WALKWAY SURFACE WILL ALLOW NORMAL USAGE OF WHEELCHAIRS, WALKERS, STROLLERS, AND OTHER MOBILITY DEVICES. CONCRETE, BITUMINOUS, STEEL, RUBBER, WOOD (3/4 INCHES OR THICKER), AND PLASTIC ARE ACCEPTABLE SURFACE MATERIALS FOR THE TEMPORARY WALKWAY SURFACE. GRAVEL, MILLINGS, OR OTHER UNEVEN SURFACES ARE NOT ACCEPTABLE SURFACE MATERIALS.

IF A 60 INCH PEDESTRIAN WALKWAY WIDTH ISN'T PROVIDED FOR THE ROUTE, THEN A 60 INCH BY 60 INCH PASSING SPACE IS REQUIRED EVERY 200 FEET. THE MINIMUM WIDTH OF THE WALKWAY IS 48 INCHES.

THE PEDESTRIAN TRAFFIC SIGNALS CONTROLLING CLOSED CROSSWALKS SHALL BE COVERED OR DEACTIVATED.

POST MOUNTED SIGNS LOCATED ADJACENT TO A SIDEWALK SHALL HAVE A 7 FOOT MINIMUM CLEARANCE FROM THE BOTTOM OF THE LOWEST SIGN TO THE SIDEWALK SURFACE.

ANY PORTABLE SIGN OR BARRICADE PLACED OR STORED IN A PEDESTRIAN WALKWAY THAT COULD BE A HAZARD TO A VISUALLY IMPAIRED PEDESTRIAN SHALL HAVE A DETECTABLE EDGE TO GUIDE THE PEDESTRIAN AROUND THE HAZARD.

MINIMIZE DISRUPTION TO PEDESTRIANS TO THE MAXIMUM EXTENT FEASIBLE BY PROVIDING AN APR IN THE FOLLOWING ORDER OF PREFERENCE:

1. PROVIDE THE APR ON THE SAME SIDE OF THE STREET AS THE DISRUPTED ROUTE UTILIZING BYPASSES.
2. WHERE IT IS NOT FEASIBLE TO PROVIDE A SAME SIDE APR, PROVIDE A DETOUR ON THE OTHER SIDE OF THE STREET.
3. WHERE IT IS NOT FEASIBLE TO PROVIDE AN APR ON THE OTHER SIDE OF THE ROADWAY, PROVIDE AN APR DETOUR WITH TRAILBLAZING SIGNS.

## SPECIFIC NOTES

(1) TEMPORARY CURB RAMPS.

(2) 5 DEVICE TAPER 25 FEET LONG, RECOMMENDED WHEN THE CLOSED AREA WAS USED AS AN INTERMITTENT TRAFFIC LANE OR BYPASS LANE.

(3) THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHOULD BE DISPLAYED WHEN ANY WALKWAY THROUGH A WORK ZONE HAS BEEN DETERMINED TO BE FULLY ACCESSIBLE. THE SYMBOL OF ACCESSIBILITY SHALL NOT BE DISPLAYED IF PERSONS WITH DISABILITIES SHOULD NOT USE THE PRIMARY TEMPORARY PEDESTRIAN DETOUR.

(4) TYPICAL SIGN MESSAGE FOR A TEMPORARY PEDESTRIAN DETOUR SHOULD INCLUDE INFORMATION SUCH AS THE DURATION OF THE WALKWAY RESTRICTIONS (BEGINNING AND/OR END DATES) AND A PROJECT CONTACT NUMBER FOR 24 / 7 QUESTIONS OR REPORTING HAZARDS.

(5) SEE THE MnDOT TEMPORARY BARRIER GUIDANCE MANUAL DECEMBER 2018 FOR GUIDANCE ON PLACEMENT AND USAGE OF TEMPORARY BARRIER.

(6) AN APPROVED AUDIBLE MESSAGE DEVICE OR TACTILE MESSAGE MAY BE PROVIDED FOR PEDESTRIANS WITH VISUAL DISABILITIES.

## LEGEND

- SIGN
- TEMPORARY TRUNCATED DOME
- WORK AREA
- PEDESTRIAN CHANNELIZATION DEVICE
- TEMPORARY BARRIER
- DIRECTION OF TRAFFIC
- AUDIBLE MESSAGE DEVICE (AMD)
- TEMPORARY CURB RAMP WITH DETECTABLE EDGES
- CHANNELIZER

ALTERNATE PEDESTRIAN ROUTE (APR) LAYOUTS-DETOURS

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

| | |
|---|---|
| DESIGN BY: | R. MANKE |
| CAD BY: | R. MANKE |
| CHECKED BY: | S. PARK |
| LAST REVISION: | / / |

STAGING NARRATIVES

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

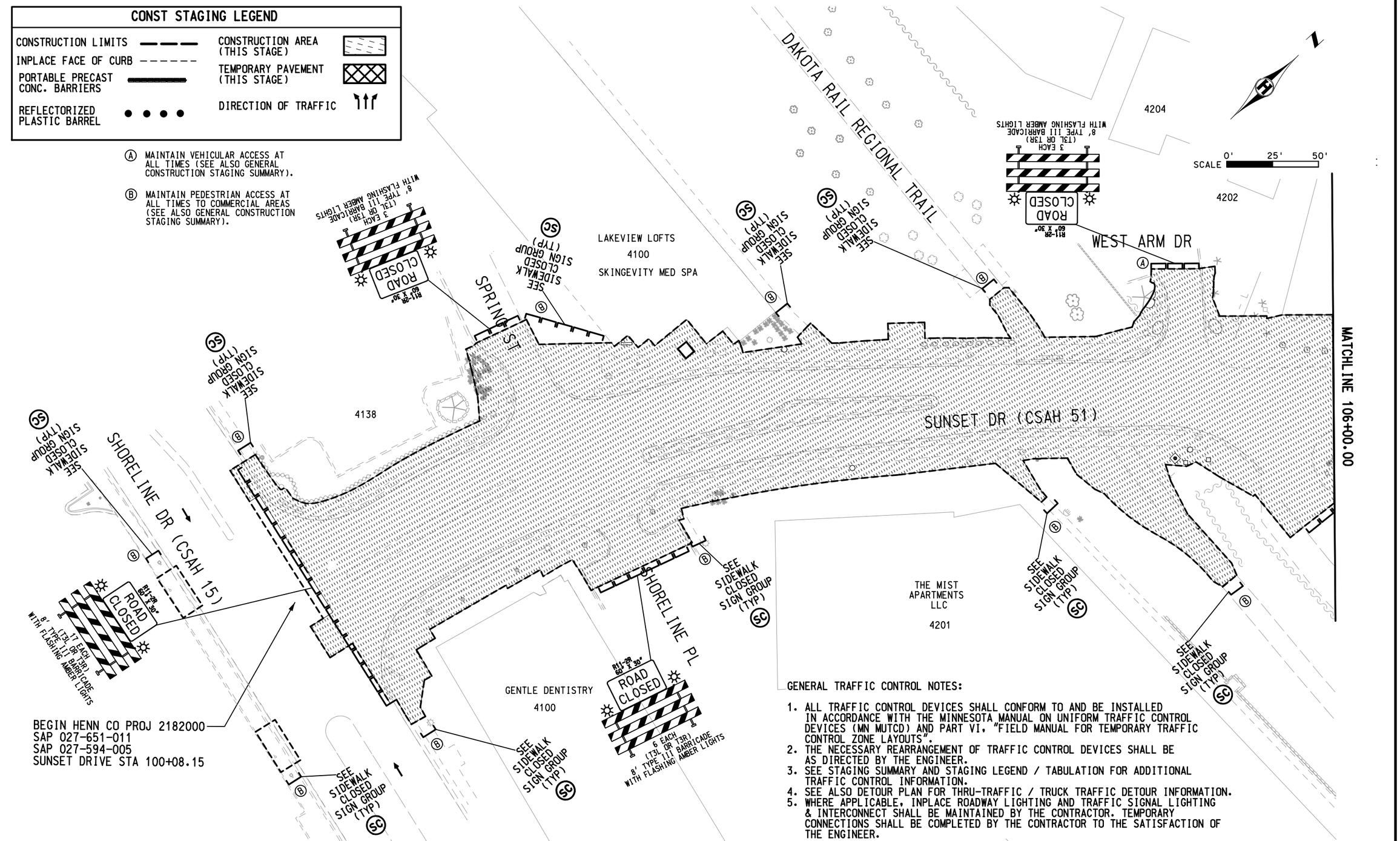
SHEET 185 / 329

## CONST STAGING LEGEND

| | |
|---|---|
| CONSTRUCTION LIMITS | CONSTRUCTION AREA (THIS STAGE) |
| INPLACE FACE OF CURB | TEMPORARY PAVEMENT (THIS STAGE) |
| PORTABLE PRECAST CONC. BARRIERS | DIRECTION OF TRAFFIC |
| REFLECTORIZED PLASTIC BARREL | |

Ⓐ MAINTAIN VEHICULAR ACCESS AT ALL TIMES (SEE ALSO GENERAL CONSTRUCTION STAGING SUMMARY).

Ⓑ MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES TO COMMERCIAL AREAS (SEE ALSO GENERAL CONSTRUCTION STAGING SUMMARY).




GENERAL TRAFFIC CONTROL NOTES:

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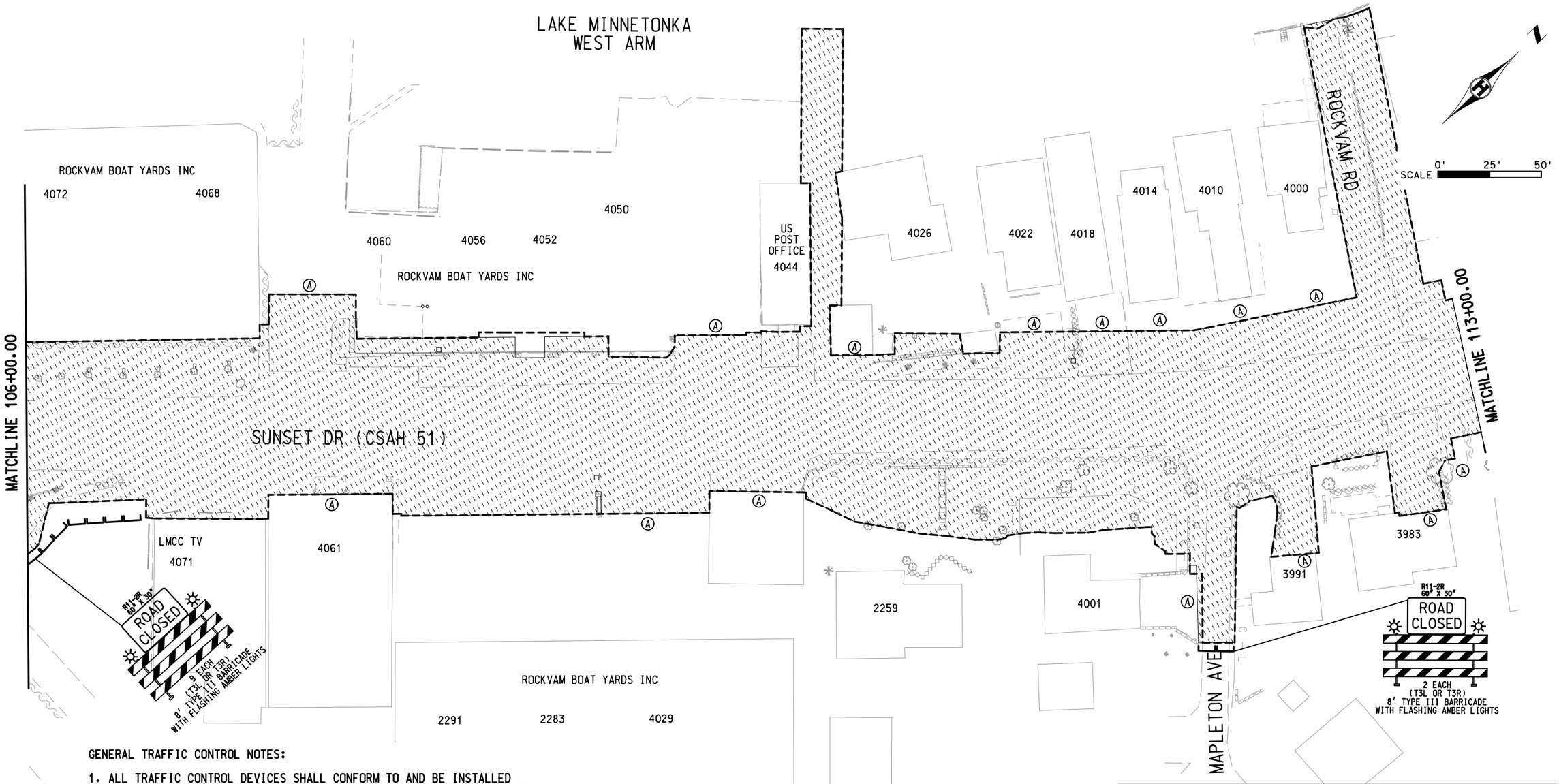
CONSTRUCTION STAGING DETAILS - STAGE 1

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 186 / 329

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## CONST STAGING LEGEND

- CONSTRUCTION LIMITS
- INPLACE FACE OF CURB
- PORTABLE PRECAST CONC. BARRIERS
- REFLECTORIZED PLASTIC BARREL
- CONSTRUCTION AREA (THIS STAGE)
- TEMPORARY PAVEMENT (THIS STAGE)
- DIRECTION OF TRAFFIC

Hennepin

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CONSTRUCTION STAGING DETAILS - STAGE 1

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 187 / 329

## CONST STAGING LEGEND

CONSTRUCTION LIMITS

INPLACE FACE OF CURB

PORTABLE PRECAST CONC. BARRIERS

REFLECTORIZED PLASTIC BARREL

CONSTRUCTION AREA (THIS STAGE)

TEMPORARY PAVEMENT (THIS STAGE)

DIRECTION OF TRAFFIC

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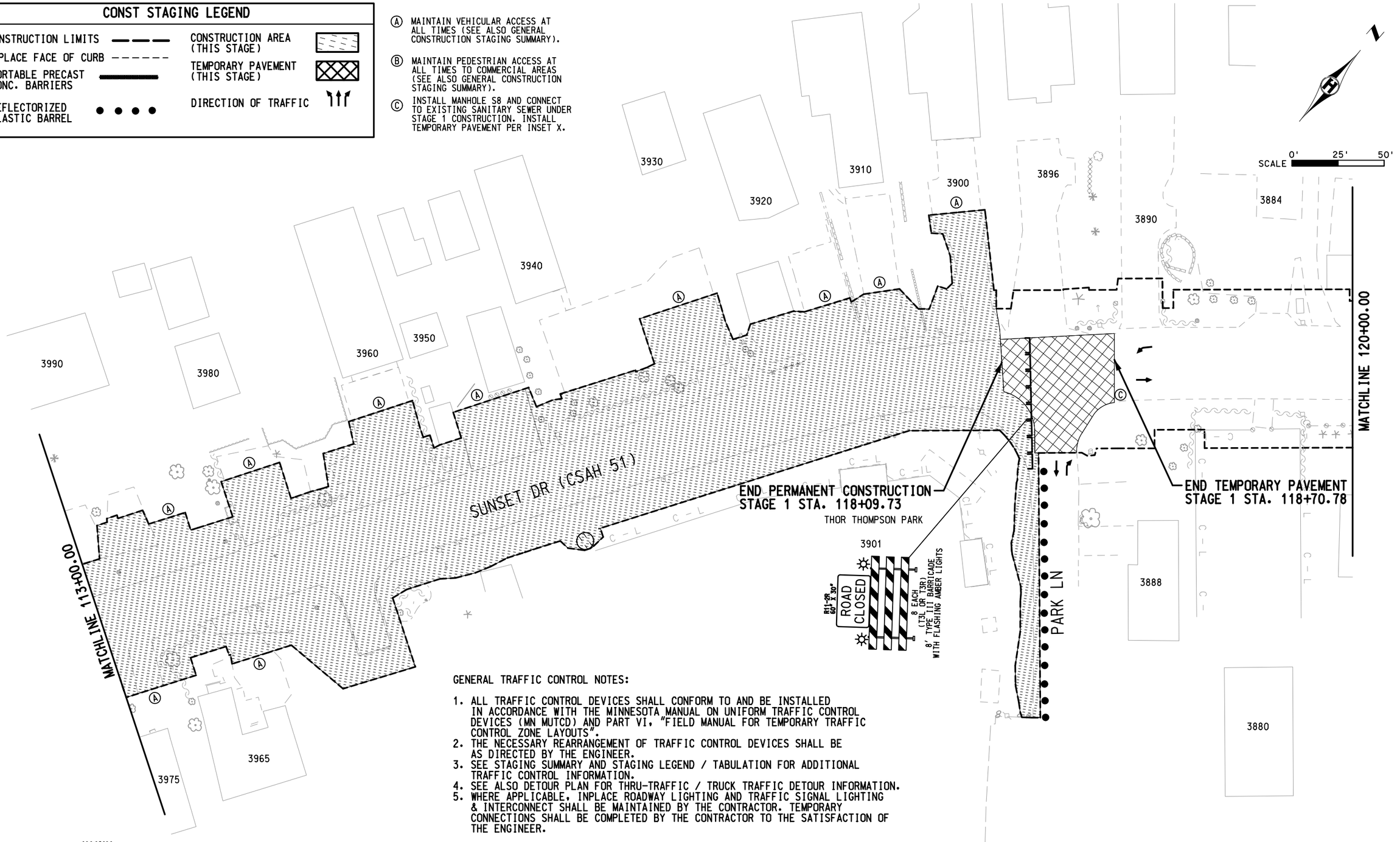
Ⓒ INSTALL MANHOLE S8 AND CONNECT TO EXISTING SANITARY SEWER UNDER STAGE 1 CONSTRUCTION. INSTALL TEMPORARY PAVEMENT PER INSET X.

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CONSTRUCTION STAGING DETAILS - STAGE 1

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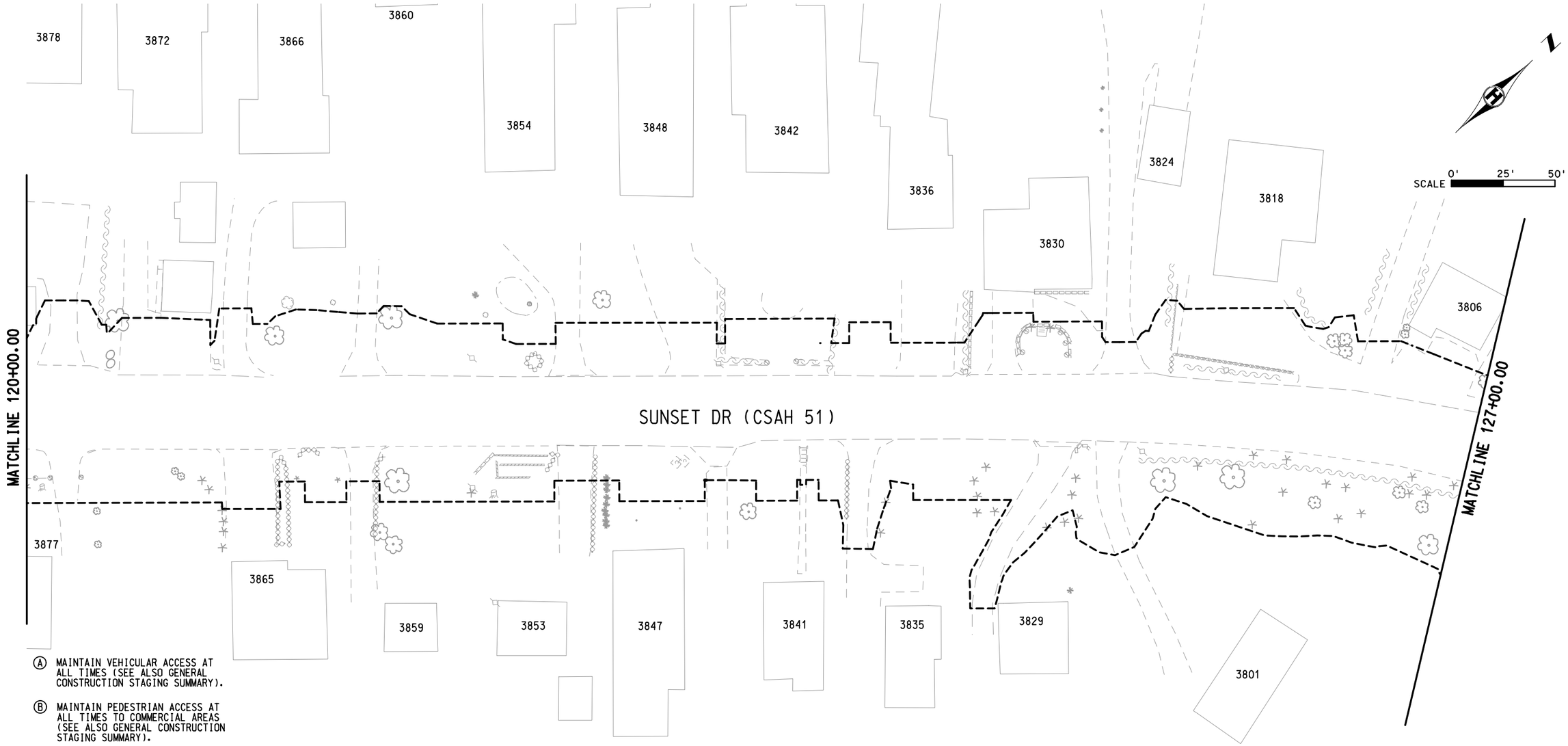
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 188 / 329

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## CONST STAGING LEGEND

- CONSTRUCTION LIMITS
- INPLACE FACE OF CURB
- PORTABLE PRECAST CONC. BARRIERS
- REFLECTORIZED PLASTIC BARREL
- CONSTRUCTION AREA (THIS STAGE)
- TEMPORARY PAVEMENT (THIS STAGE)
- DIRECTION OF TRAFFIC

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CONSTRUCTION STAGING DETAILS - STAGE 1

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 189 / 329

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- INPLACE FACE OF CURB
- PORTABLE PRECAST CONC. BARRIERS
- REFLECTORIZED PLASTIC BARREL
- CONSTRUCTION AREA (THIS STAGE)
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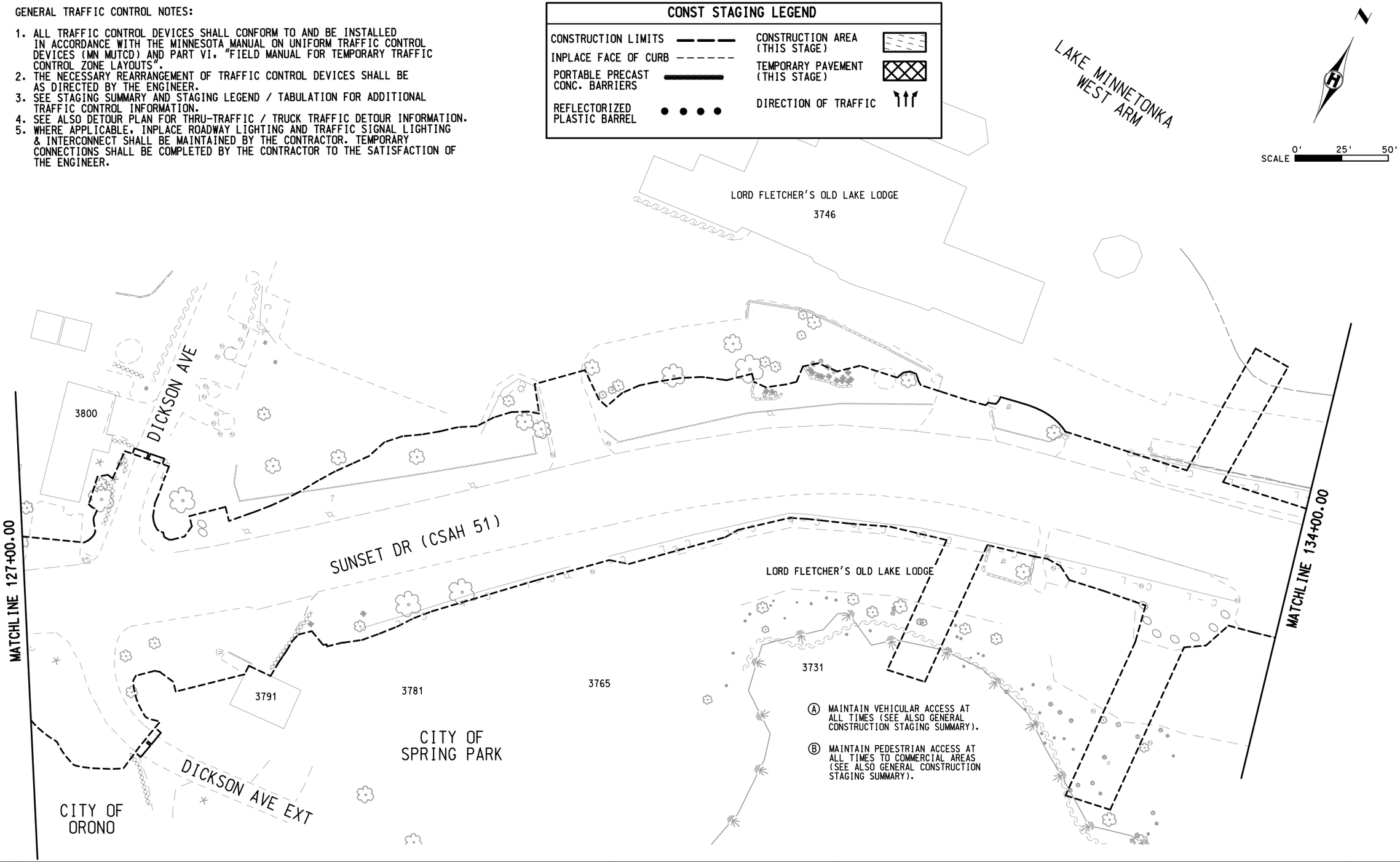
- DIRECTION OF TRAFFIC

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CONSTRUCTION STAGING DETAILS - STAGE 1

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 190 / 329

## CONST STAGING LEGEND

CONSTRUCTION LIMITS

INPLACE FACE OF CURB

PORTABLE PRECAST CONC. BARRIERS

REFLECTORIZED PLASTIC BARREL

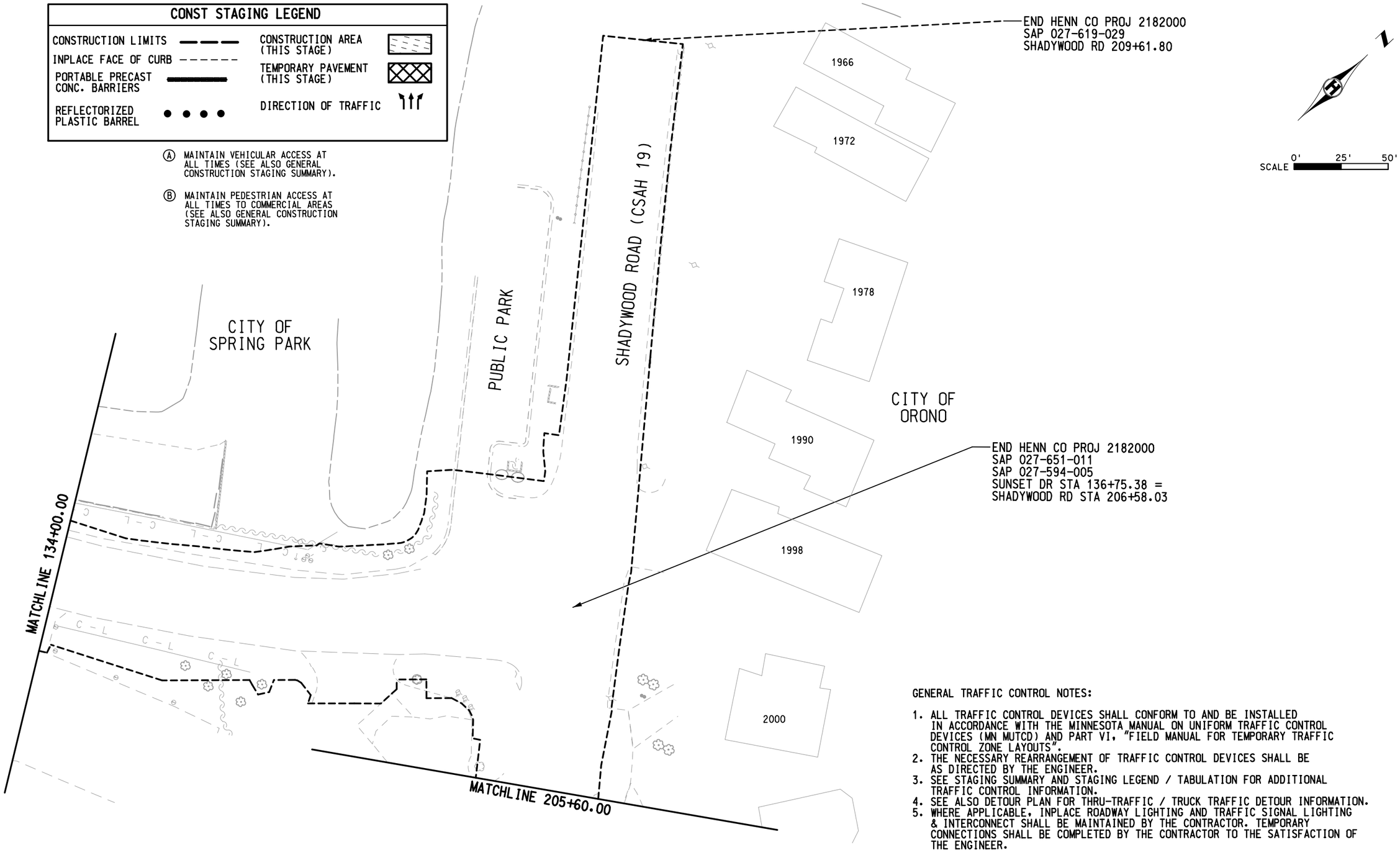
CONSTRUCTION AREA (THIS STAGE)

TEMPORARY PAVEMENT (THIS STAGE)

DIRECTION OF TRAFFIC

Ⓐ MAINTAIN VEHICULAR ACCESS AT ALL TIMES (SEE ALSO GENERAL CONSTRUCTION STAGING SUMMARY).

Ⓑ MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES TO COMMERCIAL AREAS (SEE ALSO GENERAL CONSTRUCTION STAGING SUMMARY).

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CONSTRUCTION STAGING DETAILS - STAGE 1

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 191 / 329

## CONST STAGING LEGEND

| | |
|---|---|
| CONSTRUCTION LIMITS | CONSTRUCTION AREA (THIS STAGE) |
| INPLACE FACE OF CURB | TEMPORARY PAVEMENT (THIS STAGE) |
| PORTABLE PRECAST CONC. BARRIERS | DIRECTION OF TRAFFIC |
| REFLECTORIZED PLASTIC BARREL | |

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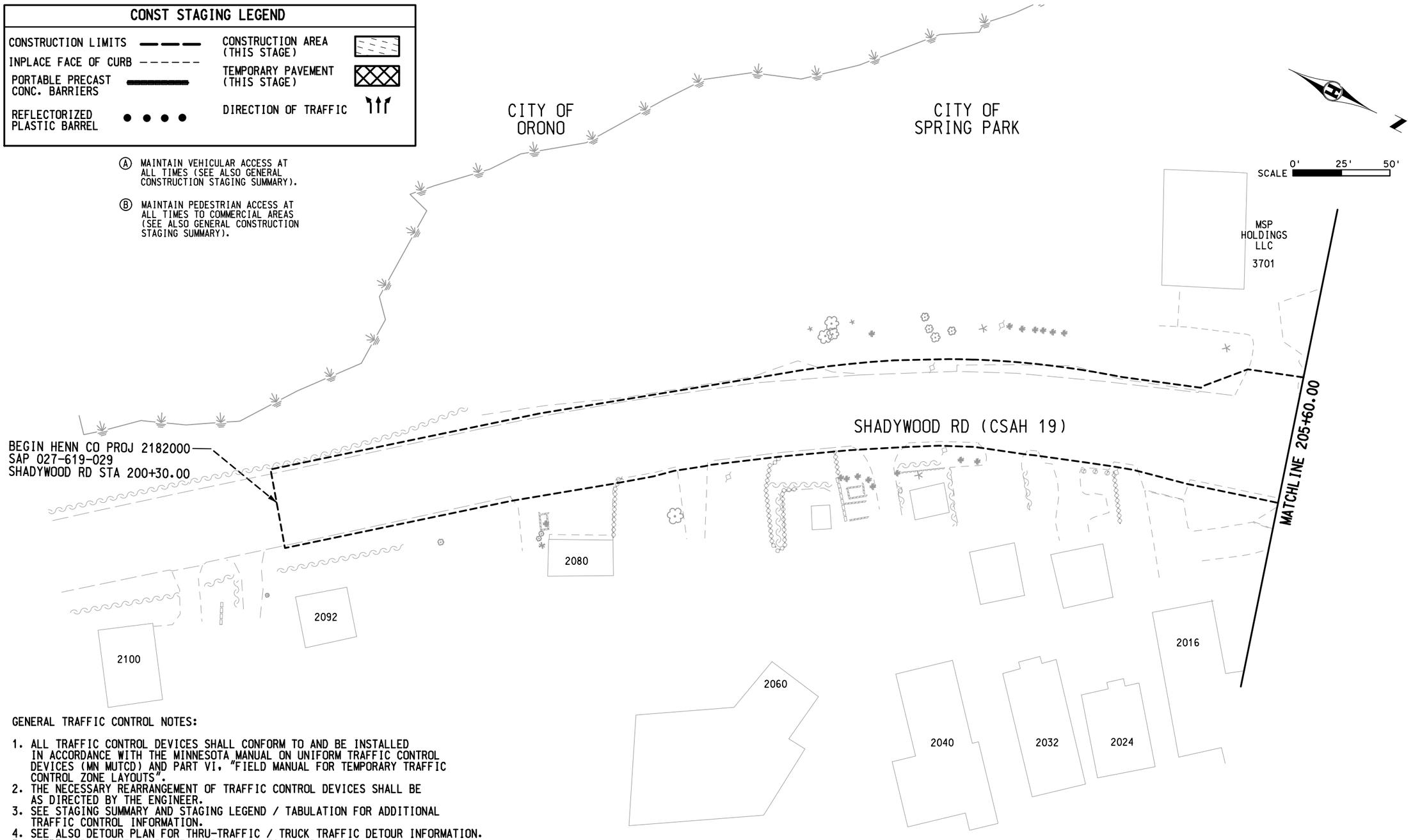


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CONSTRUCTION STAGING DETAILS - STAGE 1

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 192 / 329

## CONST STAGING LEGEND

| | |
|---|---|
| CONSTRUCTION LIMITS | CONSTRUCTION AREA (THIS STAGE) |
| INPLACE FACE OF CURB | TEMPORARY ACCESS (THIS STAGE) |
| PORTABLE PRECAST CONC. BARRIERS | DIRECTION OF TRAFFIC |
| REFLECTORIZED PLASTIC BARREL | |

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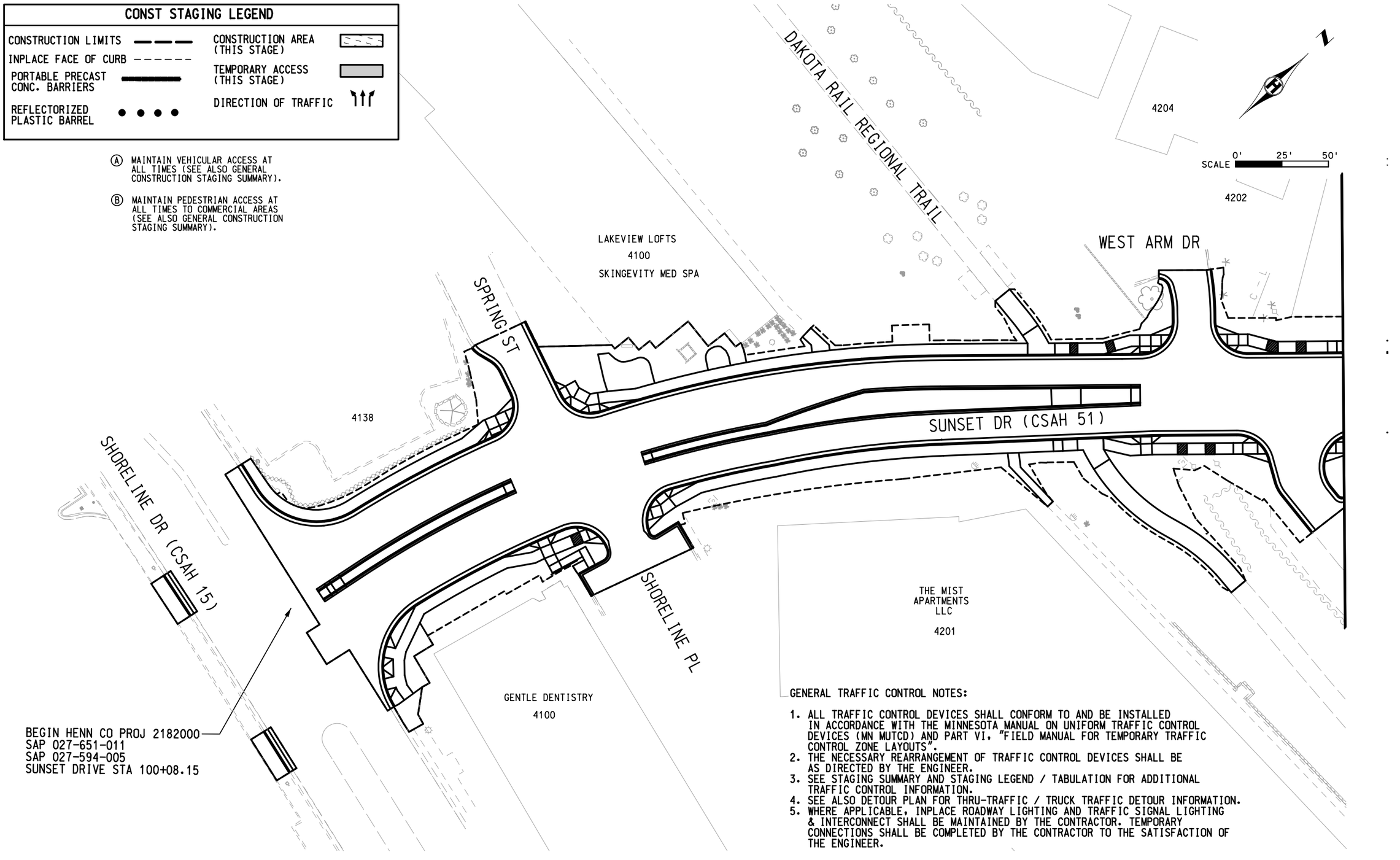


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CONSTRUCTION STAGING DETAILS - STAGE 2

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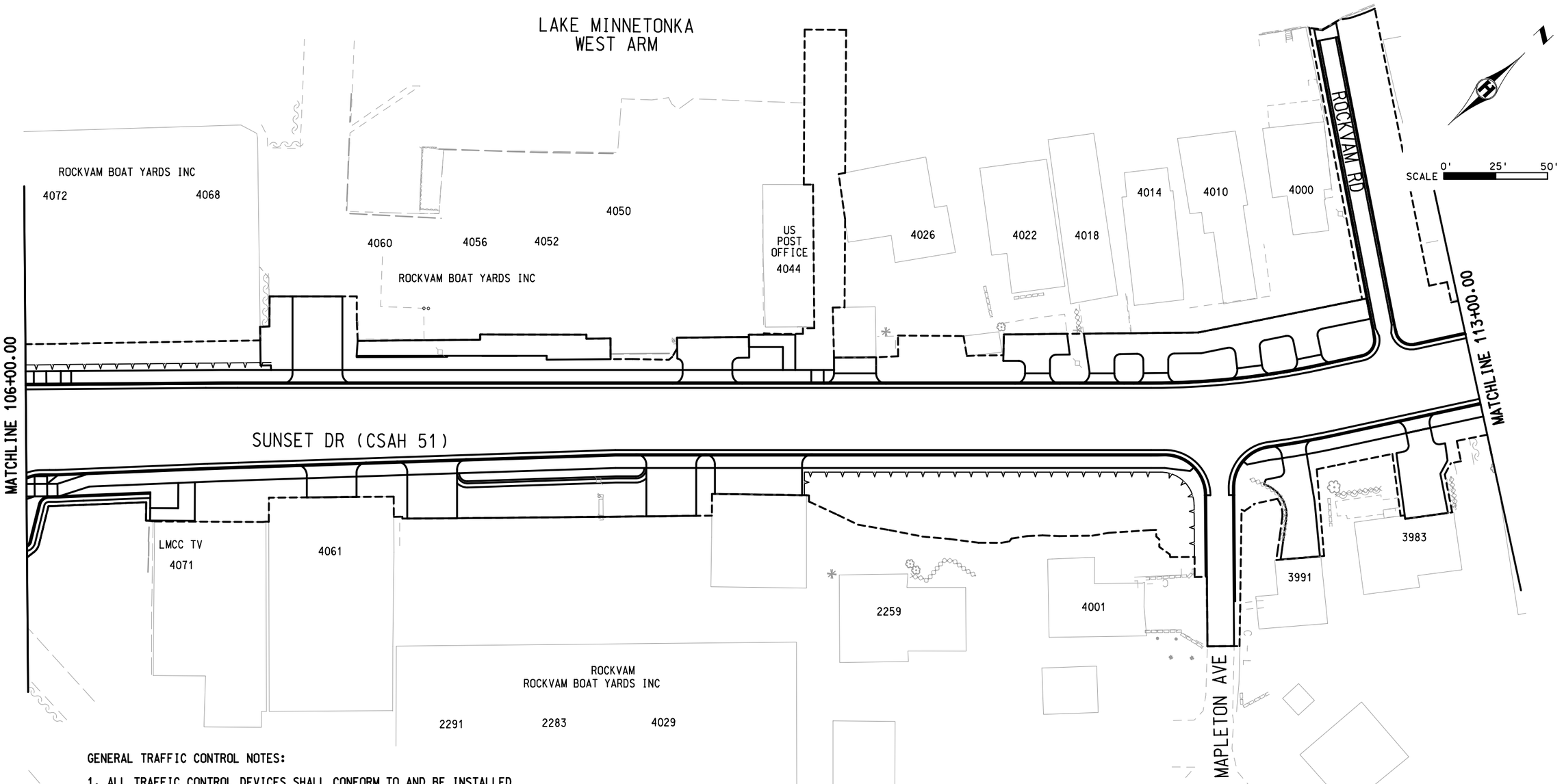
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 193 / 329

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4. SEE ALSO DETOUR PLAN FOR THRU-TRAFFIC / TRUCK TRAFFIC DETOUR INFORMATION.
5. WHERE APPLICABLE, INPLACE ROADWAY LIGHTING AND TRAFFIC SIGNAL LIGHTING & INTERCONNECT SHALL BE MAINTAINED BY THE CONTRACTOR. TEMPORARY CONNECTIONS SHALL BE COMPLETED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

Ⓐ MAINTAIN VEHICULAR ACCESS AT ALL TIMES (SEE ALSO GENERAL CONSTRUCTION STAGING SUMMARY).

Ⓑ MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES TO COMMERCIAL AREAS (SEE ALSO GENERAL CONSTRUCTION STAGING SUMMARY).

## CONST STAGING LEGEND

- CONSTRUCTION LIMITS
- INPLACE FACE OF CURB
- PORTABLE PRECAST CONC. BARRIERS
- REFLECTORIZED PLASTIC BARREL
- CONSTRUCTION AREA (THIS STAGE)
- TEMPORARY ACCESS (THIS STAGE)
- DIRECTION OF TRAFFIC

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

| | |
|---|---|
| DESIGN BY: | A. BENTSON |
| CAD BY: | R. MANKE |
| CHECKED BY: | S. PARK |
| LAST REVISION: | / / |

CONSTRUCTION STAGING DETAILS - STAGE 2

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 194 / 329

## CONST STAGING LEGEND

CONSTRUCTION LIMITS

INPLACE FACE OF CURB

PORTABLE PRECAST CONC. BARRIERS

REFLECTORIZED PLASTIC BARREL

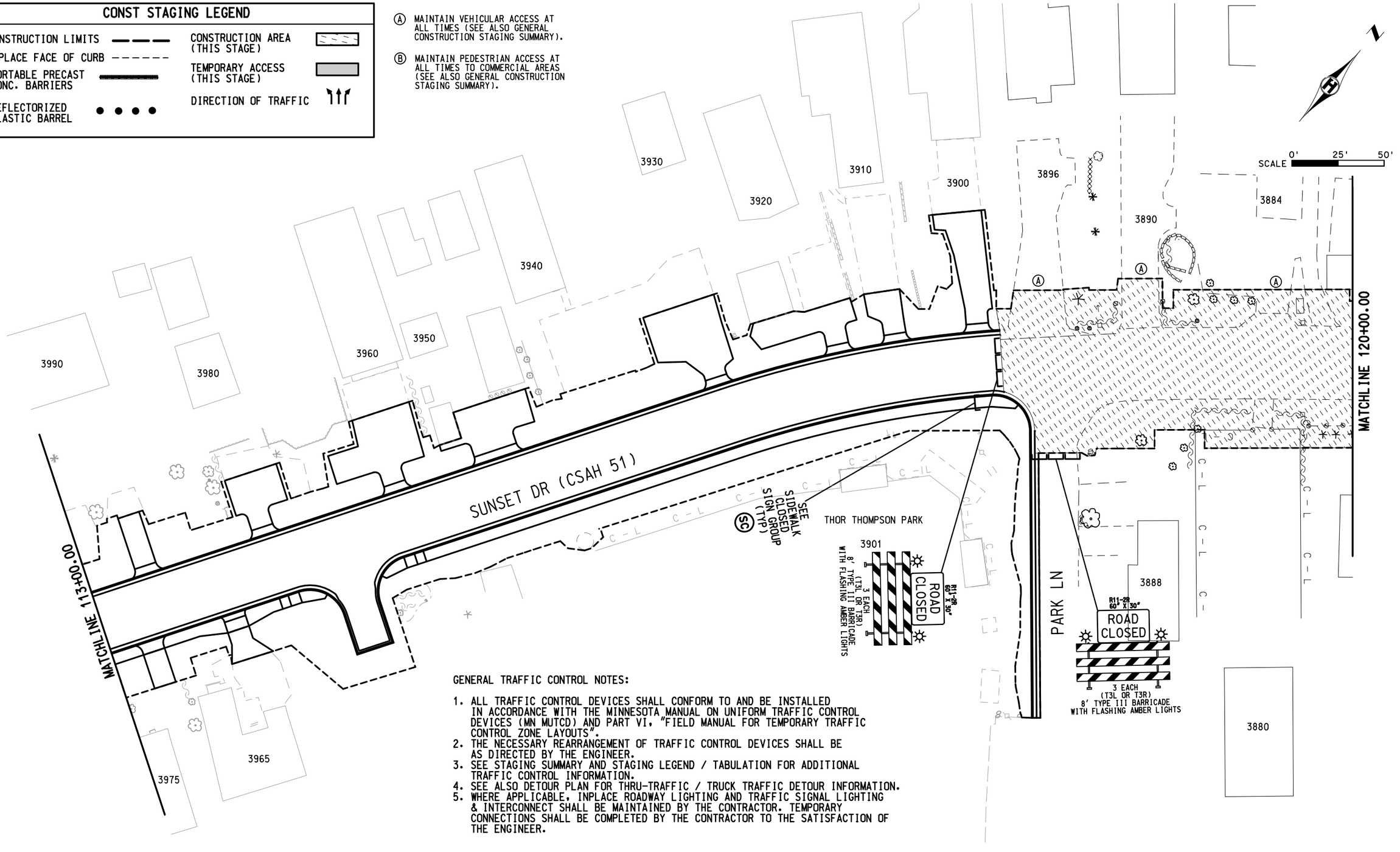
CONSTRUCTION AREA (THIS STAGE)

TEMPORARY ACCESS (THIS STAGE)

DIRECTION OF TRAFFIC

Ⓐ MAINTAIN VEHICULAR ACCESS AT ALL TIMES (SEE ALSO GENERAL CONSTRUCTION STAGING SUMMARY).

Ⓑ MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES TO COMMERCIAL AREAS (SEE ALSO GENERAL CONSTRUCTION STAGING SUMMARY).




GENERAL TRAFFIC CONTROL NOTES:

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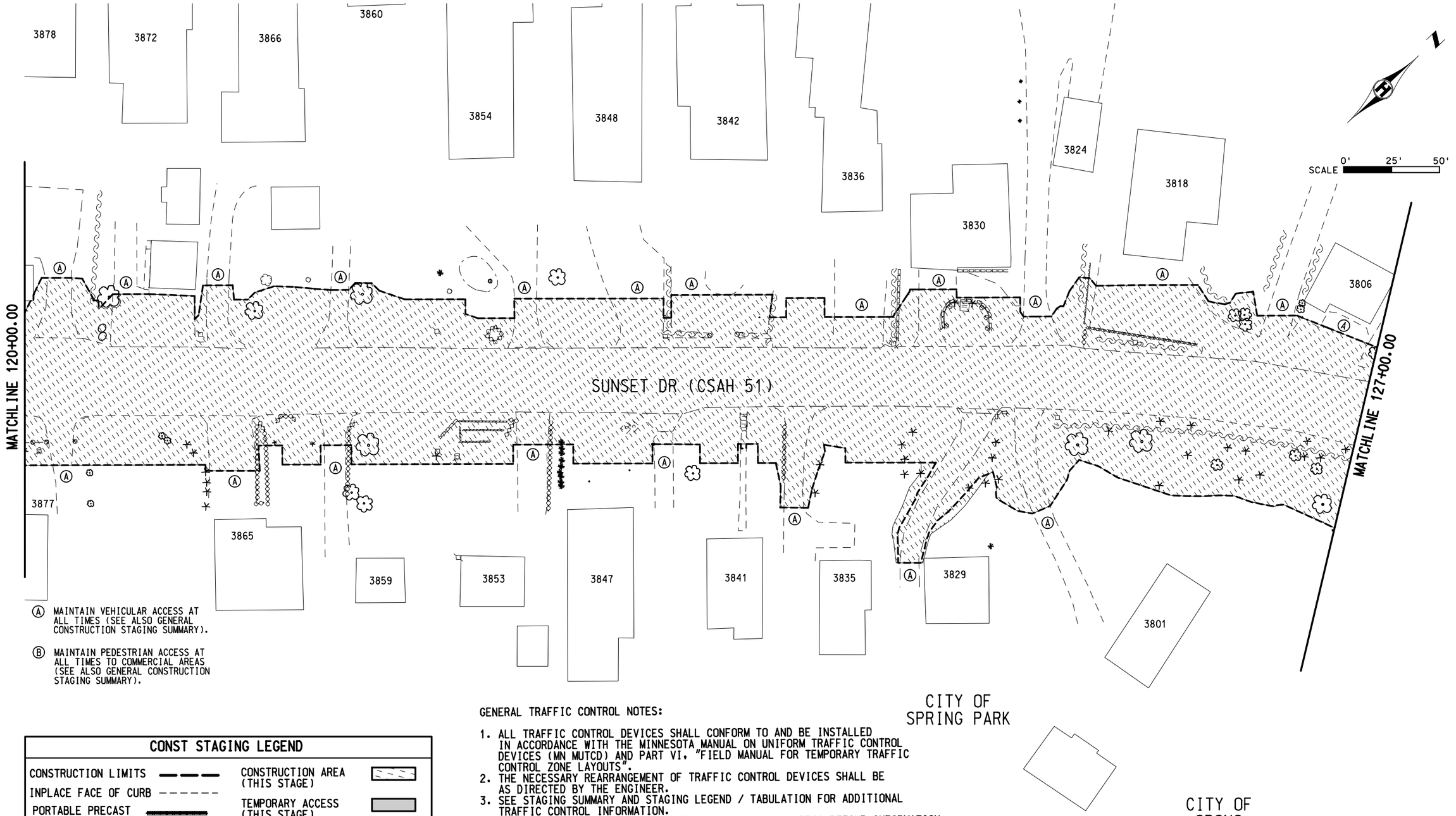
CONSTRUCTION STAGING DETAILS - STAGE 2

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 195 / 329

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Ⓑ MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES TO COMMERCIAL AREAS (SEE ALSO GENERAL CONSTRUCTION STAGING SUMMARY).

## CONST STAGING LEGEND

- CONSTRUCTION LIMITS
- INPLACE FACE OF CURB
- PORTABLE PRECAST CONC. BARRIERS
- REFLECTORIZED PLASTIC BARREL
- CONSTRUCTION AREA (THIS STAGE)
- TEMPORARY ACCESS (THIS STAGE)
- DIRECTION OF TRAFFIC

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

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CONSTRUCTION STAGING DETAILS - STAGE 2

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 196 / 329

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- INPLACE FACE OF CURB
- PORTABLE PRECAST CONC. BARRIERS
- REFLECTORIZED PLASTIC BARREL
- CONSTRUCTION AREA (THIS STAGE)
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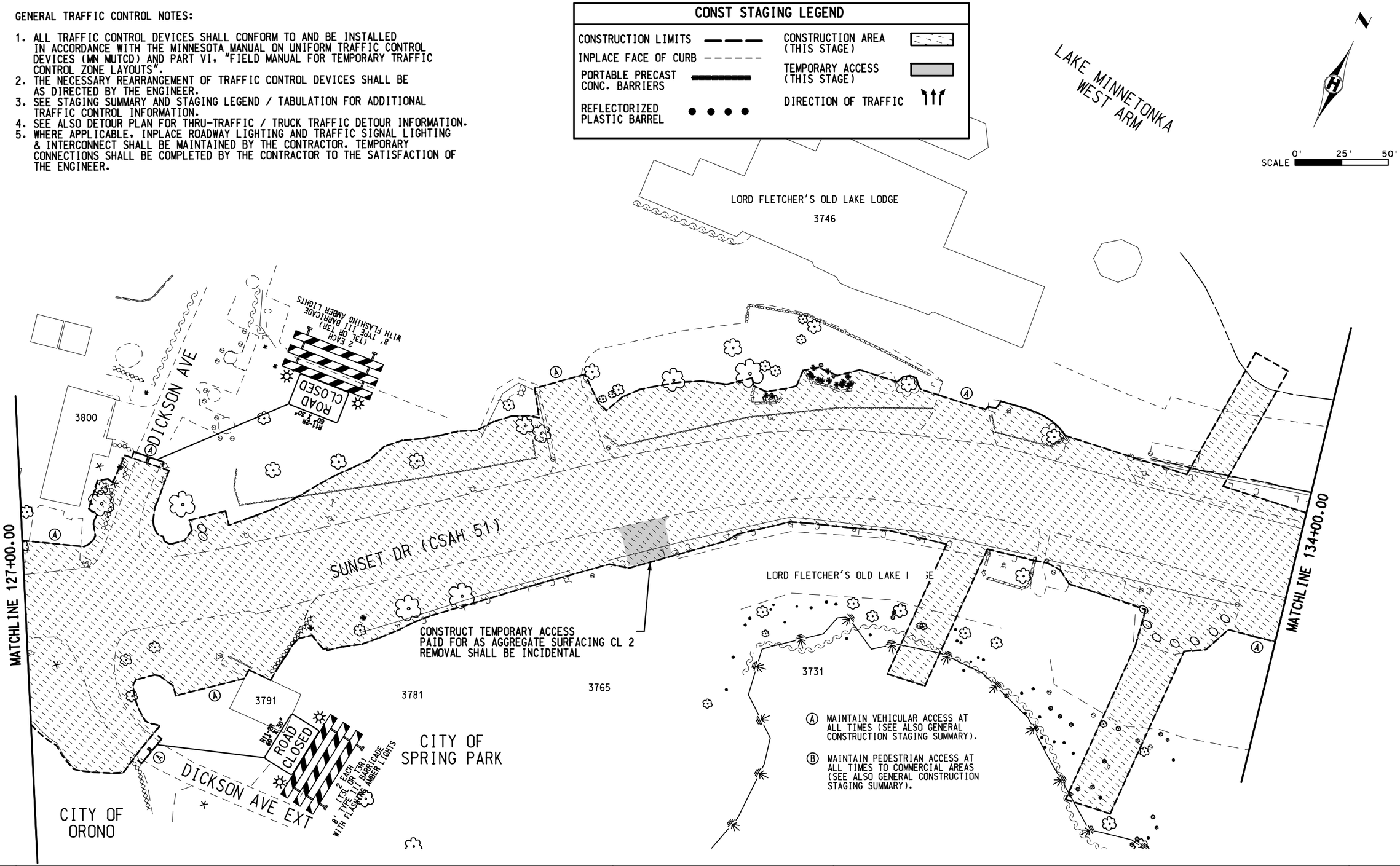


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CONSTRUCTION STAGING DETAILS - STAGE 2

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 197 / 329

## CONST STAGING LEGEND

| | |
|---|---|
| CONSTRUCTION LIMITS | CONSTRUCTION AREA (THIS STAGE) |
| INPLACE FACE OF CURB | TEMPORARY ACCESS (THIS STAGE) |
| PORTABLE PRECAST CONC. BARRIERS | DIRECTION OF TRAFFIC |
| REFLECTORIZED PLASTIC BARREL | |

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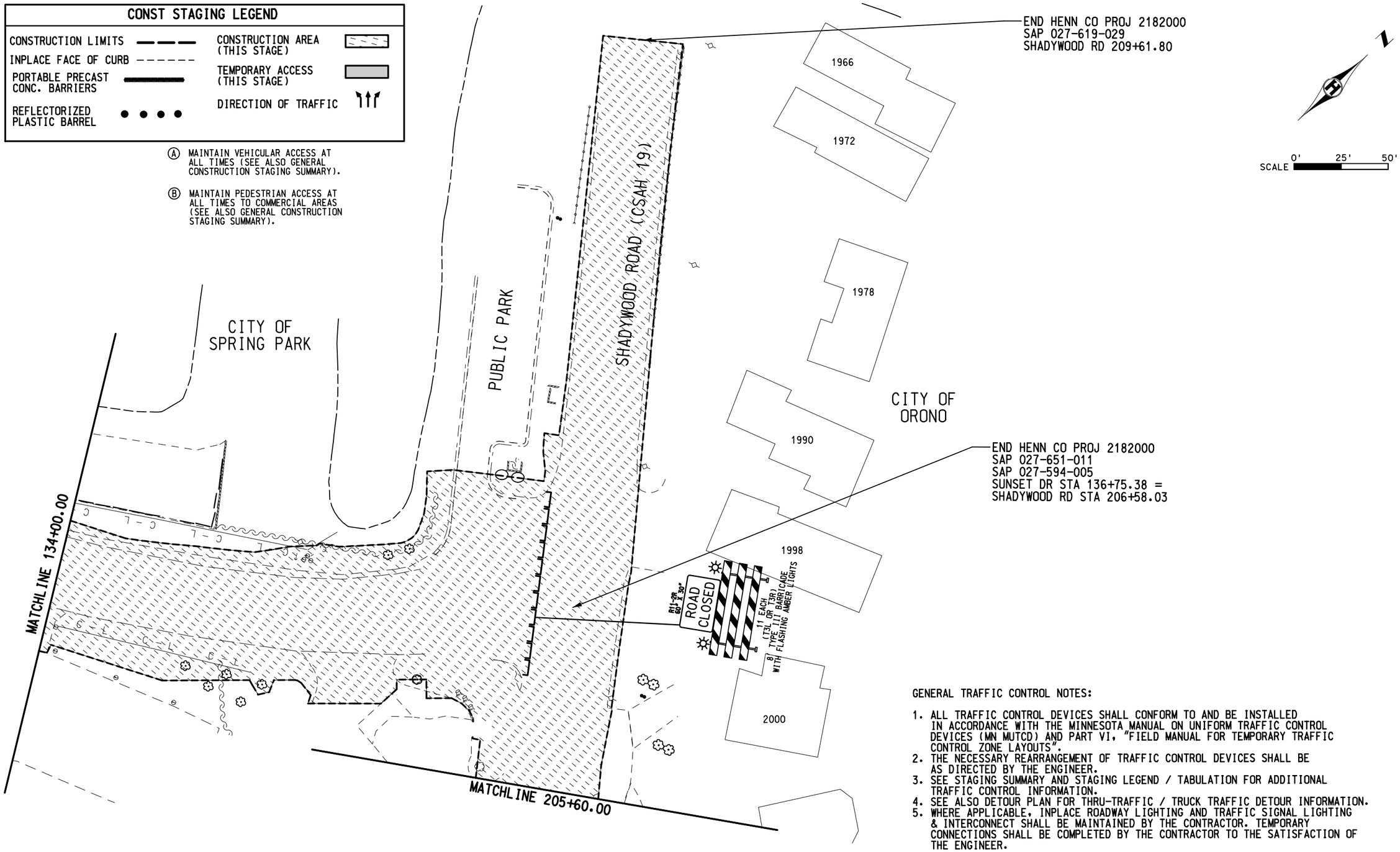


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CONSTRUCTION STAGING DETAILS - STAGE 2

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 198 / 329

## CONST STAGING LEGEND

| | |
|---|---|
| CONSTRUCTION LIMITS | CONSTRUCTION AREA (THIS STAGE) |
| INPLACE FACE OF CURB | TEMPORARY ACCESS (THIS STAGE) |
| PORTABLE PRECAST CONC. BARRIERS | DIRECTION OF TRAFFIC |
| REFLECTORIZED PLASTIC BARREL | |

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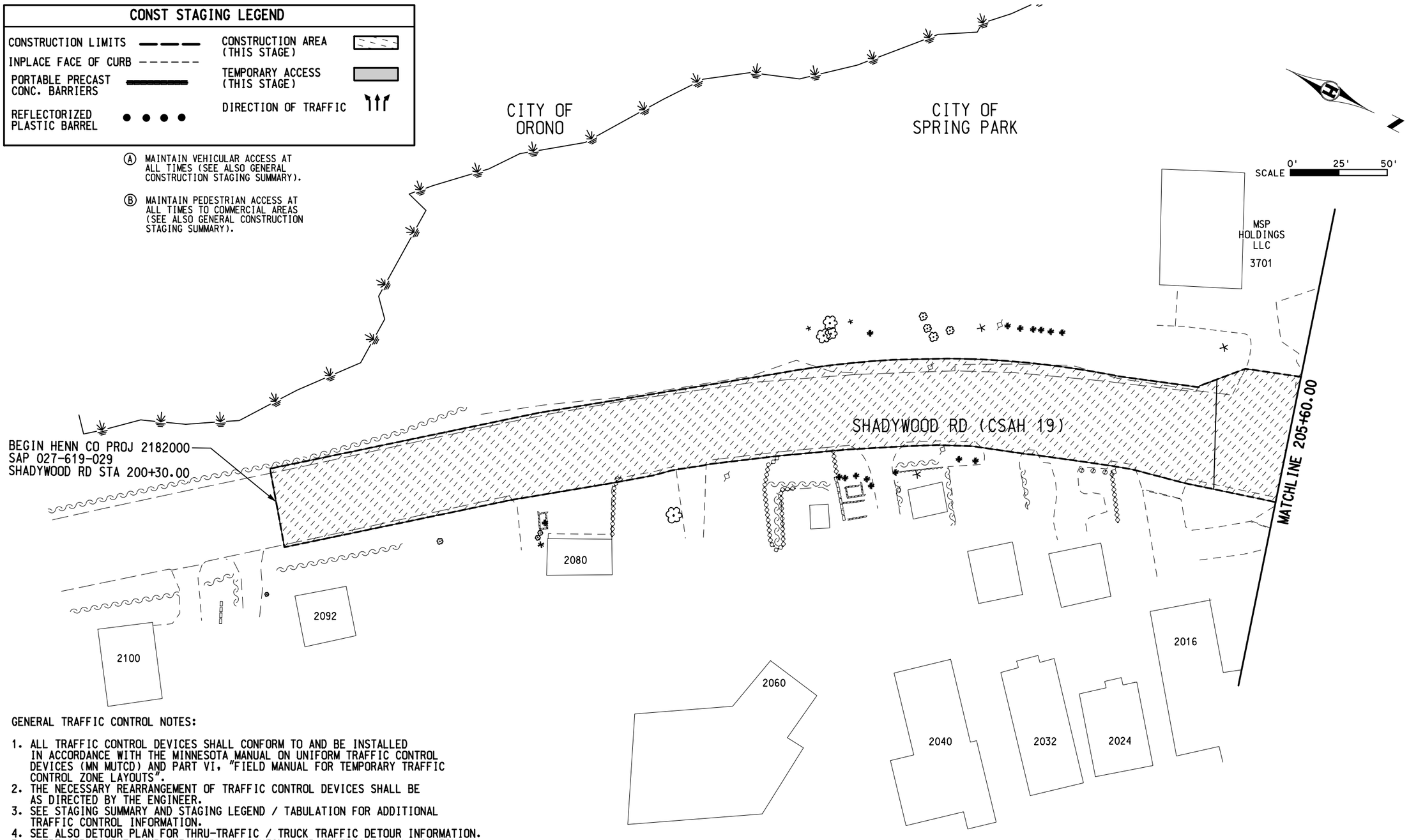


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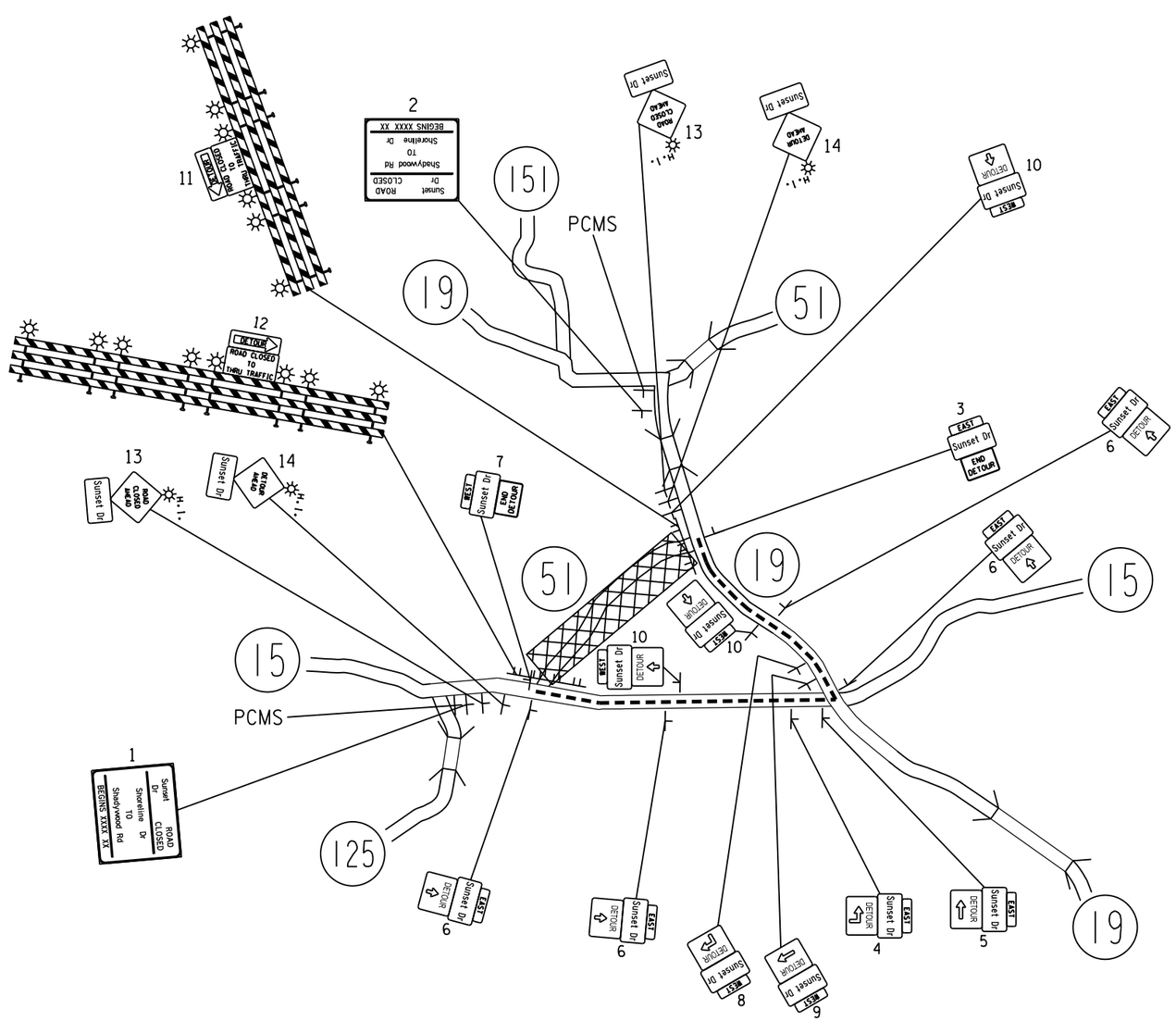
CONSTRUCTION STAGING DETAILS - STAGE 2

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 199 / 329




**TEMPORARY TRAFFIC CONTROL LEGEND**

| | |
|---|---|
| ⊥ | APPROPRIATE SIGN AS INDICATED |
| ⊥ | 8' – TYPE III BARRICADE WITH APPROPRIATE SIGN AS INDICATED |
| ☼ | FLASHING LIGHT |
| H.I. ☼ | HIGH INTENSITY FLASHING LIGHT |
| ⊠ | WORK ZONE |
| PCMS | PORTABLE CHANGEABLE MESSAGE SIGN |
| - - - - - | DETOUR ROUTE |

NOTES:

1. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE INSTALLED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD) AND PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".
2. ALL INPLACE TRAFFIC CONTROL DEVICES THAT ARE NOT CONSISTENT WITH TRAFFIC OPERATION SHALL BE COVERED, REMOVED OR REVISED, AS DIRECTED BY THE ENGINEER.
3. ALL TRAFFIC CONTROL DEVICES ARE SHOWN IN THEIR APPROXIMATE LOCATIONS. ANY NECESSARY REARRANGEMENT SHALL BE AS DIRECTED BY THE ENGINEER.
4. PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) SHALL BE PLACED 7 DAYS PRIOR TO CLOSING ROAD. ENGINEER SHALL DETERMINE THE MESSAGE DISPLAYED.

Hennepin

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.

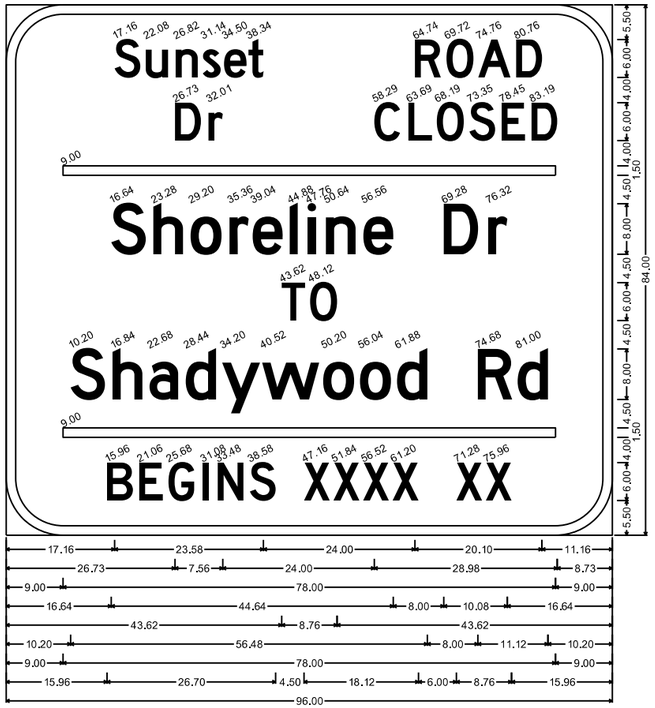
RYAN ALLERS, LICENSED PROFESSIONAL ENGINEER | 45896 LICENSE NO. | / / DATE

| | |
|---|---|
| DESIGN BY: | A. CHALUPSKY |
| CAD BY: | A. CHALUPSKY |
| CHECKED BY: | R. ALLERS |
| LAST REVISION: | / / |

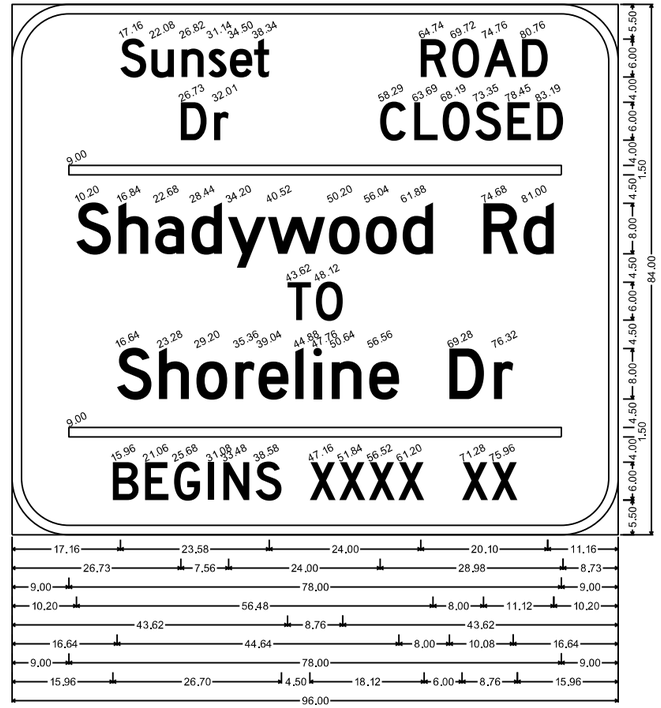
**TRAFFIC CONTROL DETOUR PLAN**

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 177 / 329




G20-X2;
9.00" Radius, 1.50" Border, Black on Orange;
" Sunset ROAD", D 2K; " Dr CLOSED", D 2K; "Shoreline Dr", D 2K; "TO", D 2K;
"Shadywood Rd", D 2K; "BEGINS", D 2K; "XXXX XX", D 2K;




G20-X2;
9.00" Radius, 1.50" Border, Black on Orange;
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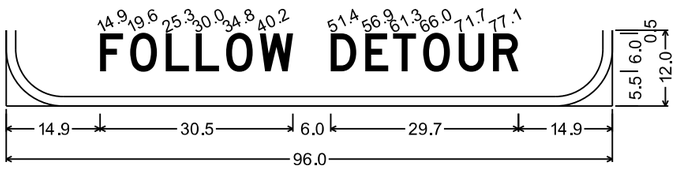
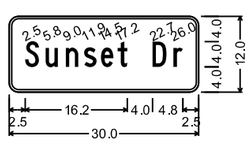
"Shoreline Dr", D 2K; "BEGINS", D 2K; "XXXX XX", D 2K;




FOLLOW DETOUR;
9.0" Radius, 1.5" Border, Black on Orange;
"FOLLOW DETOUR", D;




Sunset Dr;
1.5" Radius, 0.4" Border, Black on Orange;
"Sunset Dr", C;

Hennepin

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RYAN ALLERS, LICENSED PROFESSIONAL ENGINEER | 45896 LICENSE NO. | / / DATE

| | |
|---|---|
| DESIGN BY: | A. CHALUPSKY |
| CAD BY: | A. CHALUPSKY |
| CHECKED BY: | R. ALLERS |
| LAST REVISION: | / / |

TRAFFIC CONTROL DETOUR DETAIL

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 178 / 329

# TRAFFIC CONTROL BASIS FOR LUMP SUM

| SIGN NUMBER | QUANTITY (1) | PANEL (2) CODE NUMBER | COLOR | LEGEND | | SIZE (INCHES) | MOUNTING |
|---|---|---|---|---|---|---|---|
| 1 | 1 | G20-X2 | BLACK ON ORANGE | SUNSET DR WORK ZONE ADVANCE NOTICE<br>SHORELINE DR TO SHADYWOOD RD | (4) | 96 x 84 | (3) |
| 2 | 1 | G20-X2 | BLACK ON ORANGE | SUNSET DR WORK ZONE ADVANCE NOTICE<br>SHADYWOOD RD TO SHORELINE DR | (4) | 96 x 84 | (3) |
| 3 | 1 | M3-2 | WHITE ON BLUE | EAST | | 24 x 12 | (3) |
| | | (6) | BLACK ON ORANGE | SUNSET DR | | 30 x 12 | |
| | | M4-8A | BLACK ON ORANGE | END DETOUR | | 24 x 18 | |
| 4 | 1 | M3-2 | WHITE ON BLUE | EAST | | 24 x 12 | (3) |
| | | (6) | BLACK ON ORANGE | SUNSET DR | | 30 x 12 | |
| | | M4-9MATL | BLACK ON ORANGE | DETOUR ADVANCE 90° TURN ARROW LEFT | | 30 x 24 | |
| 5 | 1 | M3-2 | WHITE ON BLUE | EAST | | 24 x 12 | (3) |
| | | (6) | BLACK ON ORANGE | SUNSET DR | | 30 x 12 | |
| | | M4-9ML90 | BLACK ON ORANGE | DETOUR HORIZONTAL 90° SINGLE ARROW LEFT | | 30 x 24 | |
| 6 | 4 | M3-2 | WHITE ON BLUE | EAST | | 24 x 12 | (3) |
| | | (6) | BLACK ON ORANGE | SUNSET DR | | 30 x 12 | |
| | | M4-9MT | BLACK ON ORANGE | DETOUR VERTICLAL SINGLE ARROW UP | | 30 x 24 | |
| 7 | 1 | M3-4 | WHITE ON BLUE | WEST | | 24 x 12 | (3) |
| | | (6) | BLACK ON ORANGE | SUNSET DR | | 30 x 12 | |
| | | M4-8A | BLACK ON ORANGE | END DETOUR | | 24 x 18 | |
| 8 | 1 | M3-4 | WHITE ON BLUE | WEST | | 24 x 12 | (3) |
| | | (6) | BLACK ON ORANGE | SUNSET DR | | 30 x 12 | |
| | | M4-9MATR | BLACK ON ORANGE | DETOUR ADVANCE 90° TURN ARROW RIGHT | | 30 x 24 | |
| 9 | 1 | M3-4 | WHITE ON BLUE | WEST | | 24 x 12 | (3) |
| | | (6) | BLACK ON ORANGE | SUNSET DR | | 30 x 12 | |
| | | M4-9MR90 | BLACK ON ORANGE | DETOUR HORIZONTAL 90° SINGLE ARROW RIGHT | | 30 x 24 | |
| 10 | 3 | M3-4 | WHITE ON BLUE | WEST | | 24 x 12 | (3) |
| | | (6) | BLACK ON ORANGE | SUNSET DR | | 30 x 12 | |
| | | M4-9MT | BLACK ON ORANGE | DETOUR VERTICLAL SINGLE ARROW UP | | 30 x 24 | |
| 11 | 1 | M4-10L | BLACK ON ORANGE | DETOUR ARROW LEFT | | 48 x 18 | (7) |
| | | R11-4 | BLACK ON WHITE | ROAD CLOSED TO THRU TRAFFIC | | 60 x 30 | |
| 12 | 1 | M4-10R | BLACK ON ORANGE | DETOUR ARROW RIGHT | | 48 x 18 | (7) |
| | | R11-4 | BLACK ON WHITE | ROAD CLOSED TO THRU TRAFFIC | | 60 x 30 | |
| 13 | 2 | W20-3 | BLACK ON ORANGE | ROAD CLOSED AHEAD | (5) | 48 x 48 | (3) |
| | | (6) | BLACK ON ORANGE | SUNSET DR | | 30 x 12 | |
| 14 | 2 | W20-2 | BLACK ON ORANGE | DETOUR AHEAD | (5) | 48 x 48 | (3) |
| | | (6) | BLACK ON ORANGE | SUNSET DR | | 30 x 12 | |

| QUANTITY (1) | DESCRIPTION |
|---|---|
| 3 | 8' TYPE III BARRICADE LEFT |
| 4 | 8' TYPE III BARRICADE RIGHT |
| 14 | FLASHING LIGHT |
| 4 | HIGH INTENSITY FLASHING LIGHT |

SPECIFIC NOTE(S):

(1) THE QUANTIES SHOWN WITHIN THIS TABULATION ARE FOR INFORMATION ONLY.
(2) ALL SIGNING SHALL USE DG3 SIGN SHEETING.
(3) POSTS OR PORTABLE TUBLAR METAL FRAME.
(4) INSTALL A MINIMUM OF 7 DAYS IN ADVANCE OF ROAD CLOSURE, AS DIRECTED BY THE ENGINEER, DATE ON SIGN TO BE DETERMINED BY THE ENGINEER.
(5) WITH HIGH INTENSITY FLASHING LIGHT.
(6) SEE TRAFFIC CONTROL DETAIL SHEETS.
(7) SIGN MOUNTED ON 8' TYPE III BARRICADE.

TRAFFIC CONTROL TABULATION

| ITEM NO. | ITEM DESCRIPTION | ITEM | TOTAL | NOTES |
|---|---|---|---|---|
| 2563 | TAFFIC CONTROL | LUMP | 1 | |
| 2563 | TRAFFIC CONTROL SUPERVISOR | LUMP | 1 | |
| 2563 | PORTABLE CHANGEABLE MESSAGE | UNIT DAY | 40 | |

Hennepin

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RYAN ALLERS, LICENSED PROFESSIONAL ENGINEER — 45896 LICENSE NO. — / / DATE

DESIGN BY: A. CHALUPSKY
CAD BY: A. CHALUPSKY
CHECKED BY: R. ALLERS
LAST REVISION: / /

TRAFFIC CONTROL DETOUR TABULATION

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 179 / 329

| CSAH 51 SIGNING AND STRIPING TABULATION | | | | | | X |
|---|---|---|---|---|---|---|
| ITEM NO | NOTES | ITEM DESCRIPTION | UNIT | PROJECT TOTAL | YELLOW | WHITE |
| 2102 | | PAVEMENT MARKING REMOVAL | SQ FT | 396 | | 396 |
| | | | | | | |
| 2104 | | REMOVE SIGN TYPE C | EACH | 92 | | |
| 2104 | | SALVAGE SIGN TYPE C | EACH | 34 | | |
| 2104 | | INSTALL SIGN TYPE C | EACH | 34 | | |
| | | | | | | |
| 2564 | | SIGN PANELS TYPE C | SQ FT | 505.33 | | |
| | | | | | | |
| 2582 | 4 | 4" BROKEN LINE PAINT | LIN FT | 36 | 36 | |
| | | | | | | |
| 2582 | 3 | 6" SOLID LINE MULTI COMP GR IN | LIN FT | 8436 | 57 | 8379 |
| 2582 | 3 | 6" DOTTED LINE MULTI COMP GR IN | LIN FT | 52 | | 52 |
| 2582 | 2 | 4" DBLE SOLID LINE MULTI COMP GR IN | LIN FT | 5070 | 5070 | |
| | | | | | | |
| 2582 | 4 | 24" SOLID LINE PREF THERMO GR IN | LIN FT | 232 | 232 | |
| 2582 | 1 , 3 | PAVT MSSG PREF THERMO ESR GR IN | SQ FT | 105 | | |
| 2582 | 3 | CROSSWALK PREF THERMO ESR GR IN | SQ FT | 774 | | 774 |

(1) EACH LEFT OR RIGHT ARROW IS APPROXIMATELY 15 SF.
75 SF OF LEFT ARROW THERMOPLASTIC GROUND IN.
30 SF OF RIGHT ARROW THERMOPLASTIC GROUND IN.

(2) YELLOW COLOR.

(3) WHITE COLOR.

(4) YELLOW BROKEN LINE TRAIL MARKING PAINT TO BE USED ON BIKE TRAILS AS SHOWN IN THE PLAN. PAID FOR AS 4" BROKEN LINE PAINT.

## SYMBOLS & MATERIALS LEGEND

S-1 — SIGN

S-1 — SIGN ON ROUND POST

S-1 — SIGN ON STREET LIGHT

S-1 — SIGN MOUNTED BACK TO BACK

RECTANGULAR RAPID FLASHING BEACON (RRFB)

CROSSWALK PREFORM THERMOPLASTIC GROUND IN ENHANCED SKID RESISTANCE

LEFT ARROW WHITE-PAVEMENT MESSAGE PREFORMED THERMOPLASTIC GROUND IN ENHANCED SKID RESISTANCE

RIGHT ARROW WHITE-PAVEMENT MESSAGE PREFORMED THERMOPLASTIC GROUND IN ENHANCED SKID RESISTANCE

BROKEN LINE-40' CYCLE (10' LINE, 30' GAP)

DOTTED LINE-8' CYCLE (2' LINE, 6' GAP), UNLESS SHOWN OTHERWISE IN THE PLAN

4" BROKEN LINE YELLOW TRAIL MARKING PAINT (3' LENGTH, 9' SPACE)

## STRIPING KEY

CIRCLE-MULTI COMP — BOX-PREF TAPE

TRIANGLE-PAINT — OCTAGON-PREF THERMO

| 1ST DIGIT WIDTH 4", 8", ETC. | 2ND DIGIT PATTERN | 3RD DIGIT COLOR |
|---|---|---|
| | S - SOLID<br>B - BROKEN<br>T - DOTTED<br>D - DOUBLE SOLID | W - WHITE<br>Y - YELLOW<br>B - BLACK |

G=GROUND IN W=WET REFLECTIVE
C=CONTRAST E=ENHANCED SKID RESISTANCE

EXAMPLE: 4SW GCW = 4" SOLID LINE WHITE PREF THERMO GROUND IN, CONTRAST, WET REFLECTIVE

## STANDARD PLANS

| NUMBER | DESCRIPTION |
|---|---|
| 5-297.701 | STANDARD SIGN PLACEMENT |
| 5-297.718 | SQUARE TUBE SIGN MOUNTING DETAILS (3 SHEETS) |
| 5-297.721 | THREE WALL BASE - FOR 1-3/4" SQUARE TUBE RISER POST |
| 5-297.722 | FIN BASE FOR 2" SQUARE-TUBE RISER POST IN SOIL |

## INDEX



Hennepin

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.

RYAN ALLERS, LICENSED PROFESSIONAL ENGINEER — 45896 LICENSE NO. — / / DATE

DESIGN BY: A. CHALUPSKY
CAD BY: A. CHALUPSKY
CHECKED BY: R. ALLERS
LAST REVISION: / /

PERMANENT SIGNING AND STRIPING DETAIL SHEET

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 200 / 329

## GENERAL NOTES

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MNDOT "TRAFFIC ENGINEERING MANUAL" AND THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD).

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.

INTERSECTION MARKINGS, LEGENDS, AND SYMBOLS MAY REQUIRE USE OF WIDER CUTTING HEADS TO REDUCE THE NUMBER OF RIDGES FORMED BY MULTIPLE PASSES WITH THE CUTTING HEAD. THE HEIGHT OF THE RIDGES SHOULD BE LESS THAN 20% OF THE GROOVE DEPTH. SMALLER EQUIPMENT MAY BE REQUIRED TO ACHIEVE A GROOVE AT THE RECOMMENDED DEPTH WHEN WORKING NEAR OBSTACLES SUCH AS CURBS OR MEDIANS.

ALL PAVEMENT MARKING SYMBOLS AND SIGNS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS. ANY NECESSARY REARRANGEMENT SHALL BE AS DIRECTED BY THE ENGINEER.

## SIGNING TYPE C

ALL SIGNING SHALL BE FHA TYPE XI.

ALL SIGNS SHALL HAVE HOLES PUNCHED ONLY FOR THE NUMBER OF POSTS REQUIRED.

MOUNTING HEIGHT TO THE BOTTOM EDGE OF THE LOWEST SIGN SHALL BE 7.0 FOOT EXCEPT AS FOLLOWS:
OBJECT MARKERS (OM1-1) AND SNOW PLOW MARKERS (X3-5) 5.0 FOOT
OBJECT MARKER (OM1-1) IF MOUNTED BELOW A KEEP RIGHT 4.0 FOOT

ALL KEEP RIGHT SIGNS (R4-7) SHALL HAVE REAR DELINEATION AS SHOWN IN THE REAR DELINEATION DETAIL AND AN OBJECT MARKER (OM1-1) MOUNTED BELOW THE KEEP RIGHT SIGN.

ALL SIGNS SHOWN IN THE MN MUTCD WITH OPTIONAL FLUORESCENT YELLOW-GREEN BACKGROUND COLOR SHALL USE THE FLUORESCENT YELLOW-GREEN BACKGROUND COLOR.

ALL INPLACE SIGNS WITHIN THE CONSTRUCTION LIMITS SHALL BE PROTECTED INPLACE, REMOVED OR SALVAGED AND REINSTALLED AS SHOWN IN THE PLANS AND AS DIRECTED BY THE ENGINEER. ALL REMOVED SIGNS SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

COUNTY ROUTE MARKERS (M1-6M) SHALL HAVE HENNEPIN AND COUNTY YELLOW COLORED TEXT AND YELLOW ROUTE NUMBERS ON BLUE BACKGROUND.

## PERMANENT STRIPING AND PAVEMENT MARKINGS

ALL WHITE LONGITUDINAL LINES SHALL BE 6 INCH WIDE MULTI COMPONENT GROUND IN (GROOVED). ALL YELLOW LONGITUDINAL LINES SHALL BE 4 INCH WIDE MULTI COMPOENT GROUND IN (GROOVED) EXCEPT YELLOW EDGE LINES WHICH SHALL BE 6 INCH. UNLESS NOTED.

A BROKEN WHITE LINE SHALL BE 6 INCH WIDE AND A BROKEN YELLOW LINE SHALL BE 4 INCH WIDE. BOTH SHALL BE MULTI COMPOENT GROUND IN (GROOVED). BOTH SHALL HAVE A 10 FOOT LENGTH AND 30 FOOT GAP.

A TURN LANE EXTENSION DOTTED LINE SHALL BE A 6" WIDE MULTI COMPONENT GROUND IN (GROOVED) LINE AND SHALL HAVE A 2' LENGTH AND 6' GAP.

CROSSHATCHING (HASH MARKS) SHALL BE 24 INCHES WIDE THERMOPLASTIC GROUND IN (GROOVED) LINE. UNLESS NOTED. INSTALLED AT 45 DEGREE WITH 20 FOOT PERPENDICULAR GAP.

PERMANENT PAVEMENT MARKINGS, STRIPING AND MESSAGES SHALL NOT BE PLACED ONTO A CONCRETE GUTTER.

THE INSTALLERS OF ALL THERMOPLASTIC OR TAPE MATERIALS MUST CARRY A CARD CERTIFYING THAT THEY HAVE ATTENDED A TRAINING SESSION THAT ADDRESSES SURFACE PREPARATIONS AND ALL APPLICATION REQUIREMENTS AND TECHNIQUES NECESSARY FOR SUCCESSFUL APPLICATIONS.

THERMOPLASTIC OR TAPE MATERIAL SHALL HAVE A SEALER APPLIED THAT IS IN ACCORDANCE WITH ALL OF THE MANUFACTURE'S SPECIFICATIONS AFTER THE GROUND IN PROCESS (GROOVED) AND BEFORE ANY THERMOPLASTIC OR TAPE MATERIAL IS APPLIED. AS DIRECTED BY THE ENGINEER.

CROSSWALK MARKINGS SHALL WHERE POSSIBLE CONNECT PEDESTRIAN CURB RAMPS WITH A STRAIGHT LINE. AT 90° TO THE ROADWAY AND BE PLACED IN FRONT OF MEDIAN NOSES.

ALL THERMOPLASTIC SHALL HAVE BEADS EMBEDDED IN THE FACTORY.

Hennepin

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RYAN ALLERS, LICENSED PROFESSIONAL ENGINEER | 45896 LICENSE NO. | / / DATE

| | |
|---|---|
| DESIGN BY: | A. CHALUPSKY |
| CAD BY: | A. CHALUPSKY |
| CHECKED BY: | R. ALLERS |
| LAST REVISION: | / / |

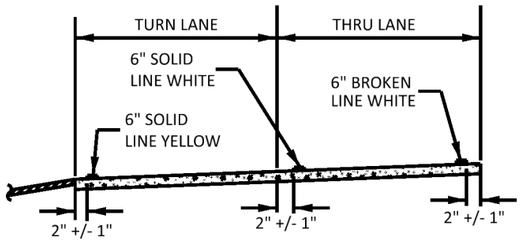
PERMANENT SIGNING AND STRIPING DETAIL SHEET

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

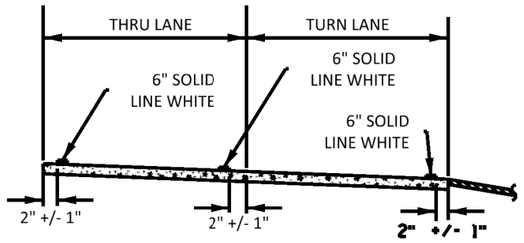
SHEET 201 / 329

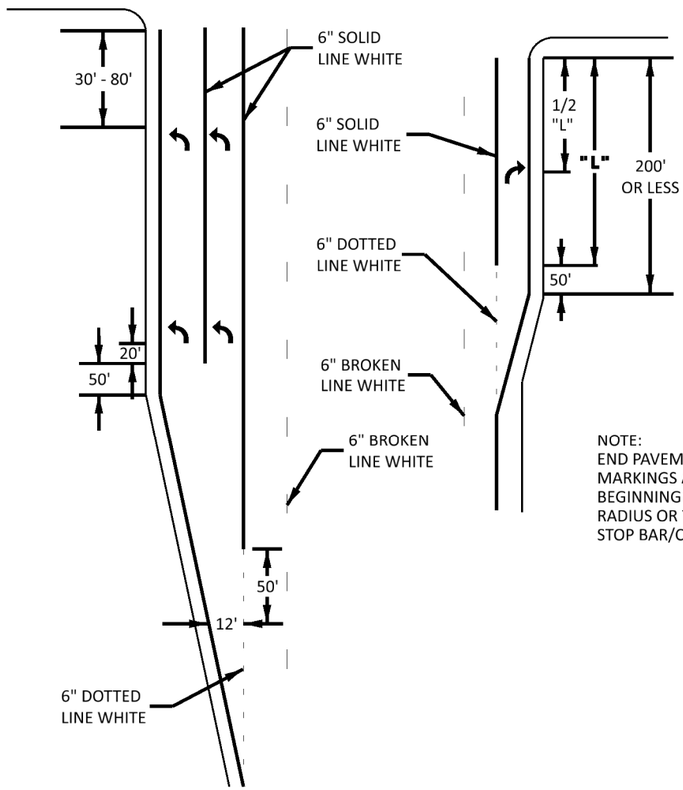
## TURN LANE WITH ARROW MESSAGE AND DOTTED LINE EXTENSION

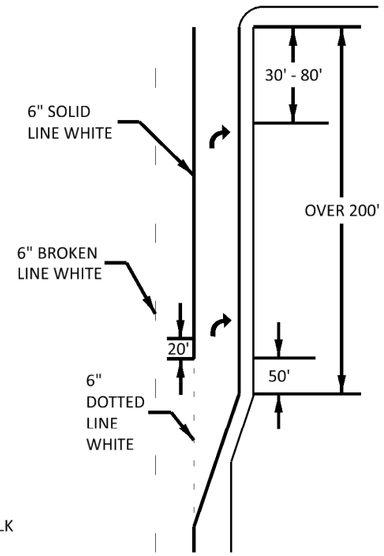
### LEFT TURN LANE




### RIGHT TURN LANE

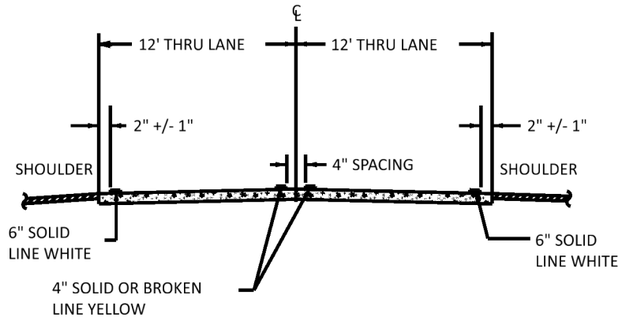


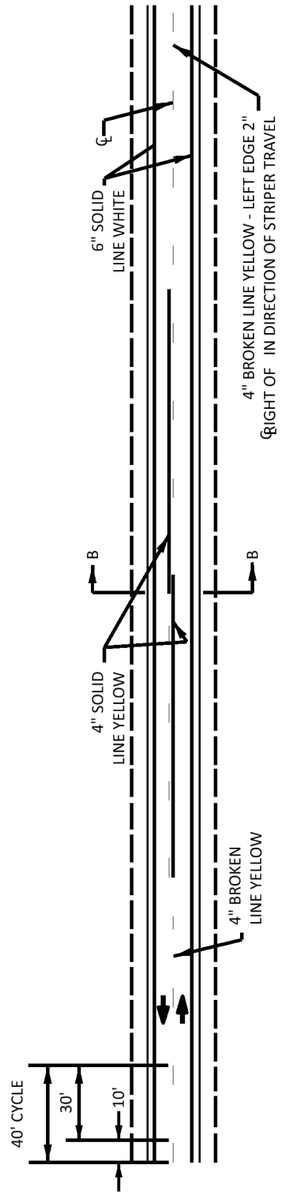




NOTE:
END PAVEMENT MARKINGS AT BEGINNING OF RADIUS OR TO STOP BAR/CROSSWALK

## TWO-LANE, TWO-WAY




SECTION B-B

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| CHECKED BY: | R. ALLERS |
| LAST REVISION: | / / |

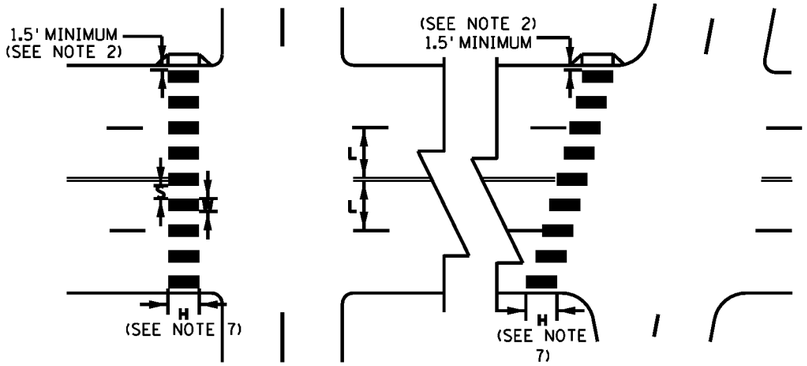
PERMANENT SIGNING AND STRIPING DETAIL SHEET

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 202 / 329

# PEDESTRIAN CROSSWALK MARKINGS

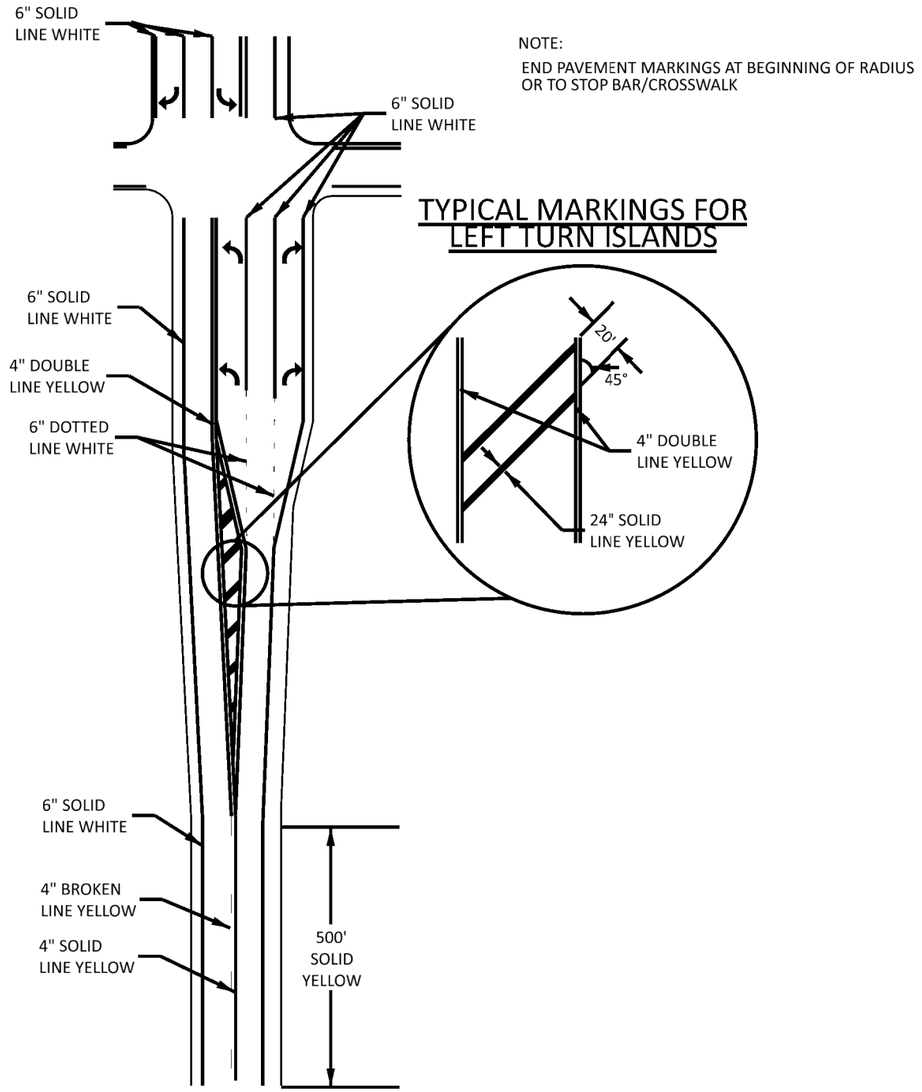
| (L) WIDTH OF INSIDE LANE | (W) WIDTH OF PAINTED AREA | (S) WIDTH OF SPACE | ALTERNATE (W) WIDTH OF PAINTED AREA | ALTERNATE (S) WIDTH OF SPACE |
|---|---|---|---|---|
| 9' | 2.0' | 2.5' | — | — |
| 10' | 2.5' | 2.5' | 2.0' | 3.0' |
| 11' | 2.5' | 3.0' | 2.0' | 3.5' |
| 12' | 3.0' | 3.0' | 2.5' | 3.5'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




NOTES:

1. PAINTED AREAS TO BE CENTERED ON CENTERLINE AND LANE LINES.
2. A MINIMUM OF 1.5 FT. CLEAR DISTANCE SHALL BE LEFT ADJACENT TO THE CURB FACE. 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.
6. THE BLOCKS SHALL BE PLACED SO THAT THEY ARE NOT LOCATED IN THE WHEEL PATH OF THE VEHICLES.
7. THE BLOCKS SHALL BE A MINIMUM OF 6' LONG AND AT LEAST AS LONG AS THE TRUNCATED DOMES, FOR FANNED TRUNCATED DOMES THE BLOCKS SHALL BE AT LEAST AS LONG AS THE APPROACHING SIDEWALK OR SHARED USE PATH.
8. THE ALTERNATE (W) AND (S) MAY BE USED WHEN BLOCKS LONGER THAN 6' (H) ARE USED.

# LEFT TURN LANE ISLAND




NOTE:
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Hennepin

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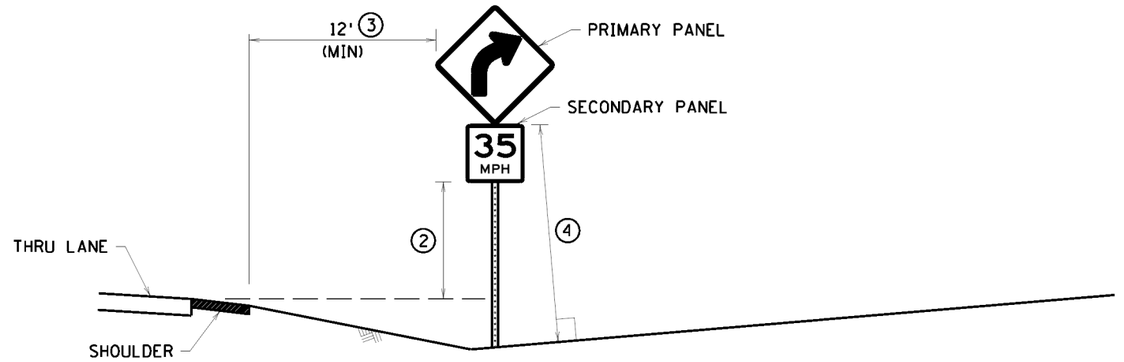
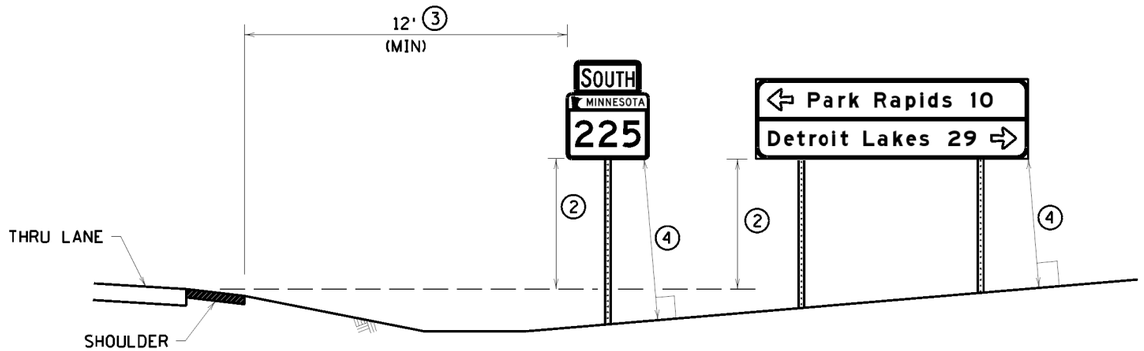
PERMANENT SIGNING AND STRIPING DETAIL SHEET

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

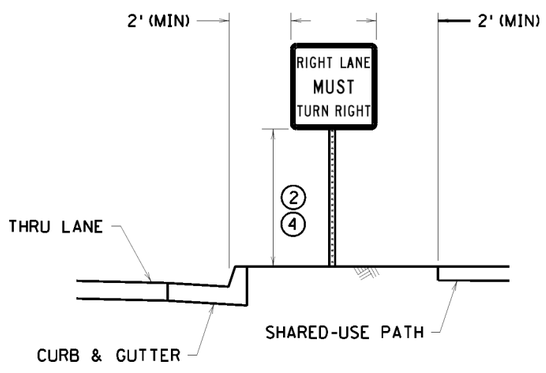
SHEET 203 / 329



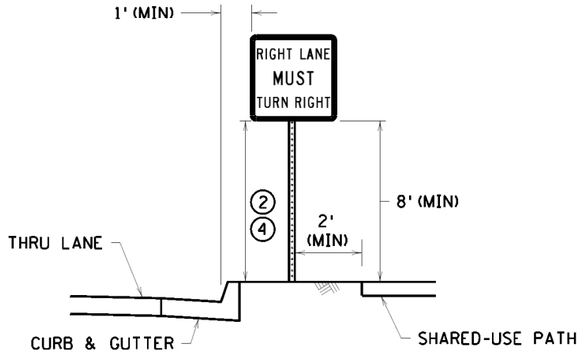

PRIMARY AND SECONDARY PANELS



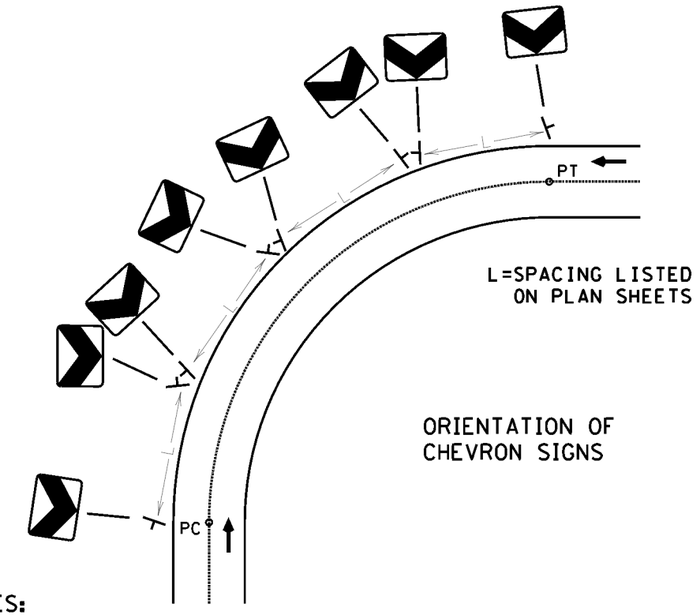

STANDARD LOCATIONS




BOULEVARD LOCATIONS
6' TO 12' WIDE




BOULEVARD LOCATIONS (1)
LESS THAN 6' WIDE




ORIENTATION OF
CHEVRON SIGNS

## NOTES:

PLACE SIGNS AND ORIENT THEM APPROXIMATELY AS SHOWN IN THE PLAN, AT RIGHT ANGLES TO THE DIRECTION OF, AND FACING THE TRAFFIC THEY ARE INTENDED TO SERVE, UNLESS OTHERWISE SPECIFIED. TO AVOID SPECULAR GLARE, TURN SIGNS APPROXIMATELY THREE DEGREES AWAY FROM APPROACHING TRAFFIC.

IF A SIGN NEEDS TO BE REPOSITIONED FROM THE PROPOSED PLAN LOCATION IN ORDER TO AVOID CONFLICTS WITH UTILITIES OR OBSTACLES, CONTACT THE PROJECT ENGINEER.

MOUNT SIGN FACES PLUMB.

LATERAL CLEARANCES GIVEN APPLY TO RIGHT AND/OR LEFT SIDE INSTALLATION.

ERECT OR CONSTRUCT SIGN SUPPORT SO THAT NO PORTION OF THE SIGN PANEL IS WITHIN 15' OF THE RAIL OF A RAILROAD TRACK.

PLACE SIGNS SUCH THAT OBSTACLES DO NOT BLOCK THEM FROM BEING VIEWED BY THE APPROACHING TRAFFIC.

PLACE SIGNS A MINIMUM OF 10' FROM THE NEAREST OBSTACLE. OBSTACLES MAY INCLUDE, BUT ARE NOT LIMITED TO, LIGHT POLES, TREES, SIGNS, AND BUILDINGS. SIGNS MAY BE PLACED CLOSER TO SIGNS IN TIGHT AREAS, BUT NO MORE THAN TWO POSTS IN A 7' DIAMETER CIRCLE.

AVOID PLACING SIGNS IN DITCH BOTTOMS.

(1) ONLY USE WHEN BOULEVARD IS TOO NARROW TO OBTAIN ADEQUATE CURBED LOCATION SIGN OFFSETS.

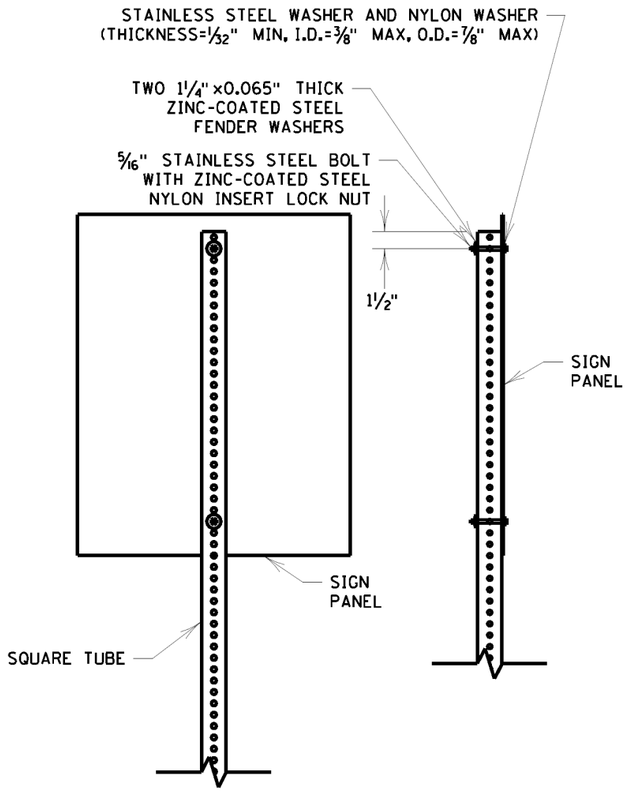
(2) ALL SIGN MOUNTING HEIGHTS ARE MEASURED VERTICALLY FROM THE BOTTOM OF THE LOWEST SIGN PANEL TO THE TOP OF THE CURB, OR IN ABSENCE OF CURB, TO THE NEAR EDGE OF THE THRU-LANE PAVEMENT. SEE SIGN TABULATIONS.

(3) MINIMUM OFFSET MAY BE REDUCED TO AT LEAST 6' FROM SHOULDER AND AT LEAST 12' FROM THRU LANE IF SITE CONDITIONS PROHIBIT A 12' OFFSET FROM SHOULDER.

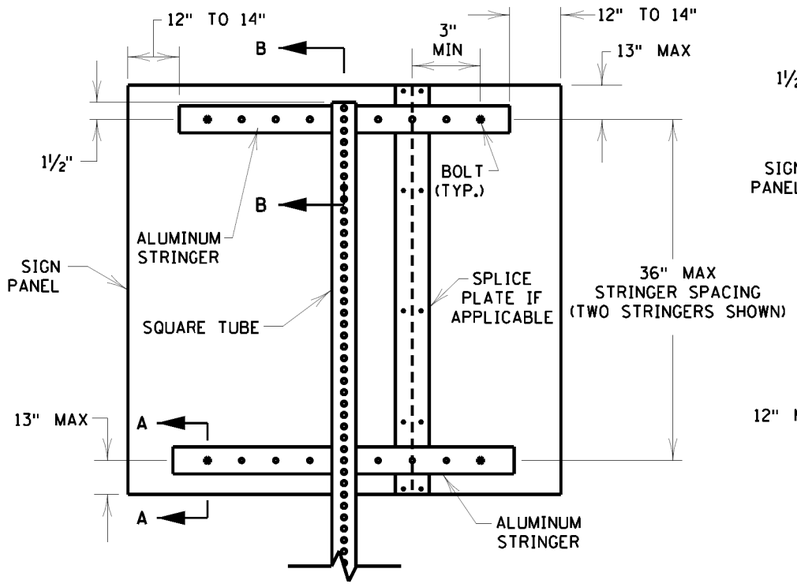
(4) CRASHWORTHY HEIGHT IS AT LEAST 7' FOR BREAKAWAY STRUCTURES AND AT LEAST 4' FOR BENDABLE STRUCTURES. SEE SPECIFIC SQUARE TUBE BASE STRUCTURE PLAN FOR CRASH RESPONSE TYPE. THE CRASHWORTHY HEIGHT IS MEASURED TO THE BOTTOM OF THE PRIMARY SIGN PANEL EXCLUDING ANY SECONDARY SIGN PANELS, MARKERS, DELINEATORS, AND REFERENCE LOCATION SIGN PANELS. ANY SECONDARY SIGN PANELS MOUNTED TO MORE THAN ONE POST ARE CONSIDERED PRIMARY SIGN PANELS FOR CRASHWORTHY PURPOSES.


MODEL NAME Details 5 [Sheet]
USER NAME PW2805
PATH & FILENAME: C:\Users\pw2805\Hennepin County\Hennepin County Transportation Design - HC_Projects\051_1820\Design\Traffic\Signing & Striping\Signing and Striping Plan\1820_Signing_Striping_Plans.dgn
PLOTTED/REVISED: 7/9/2025

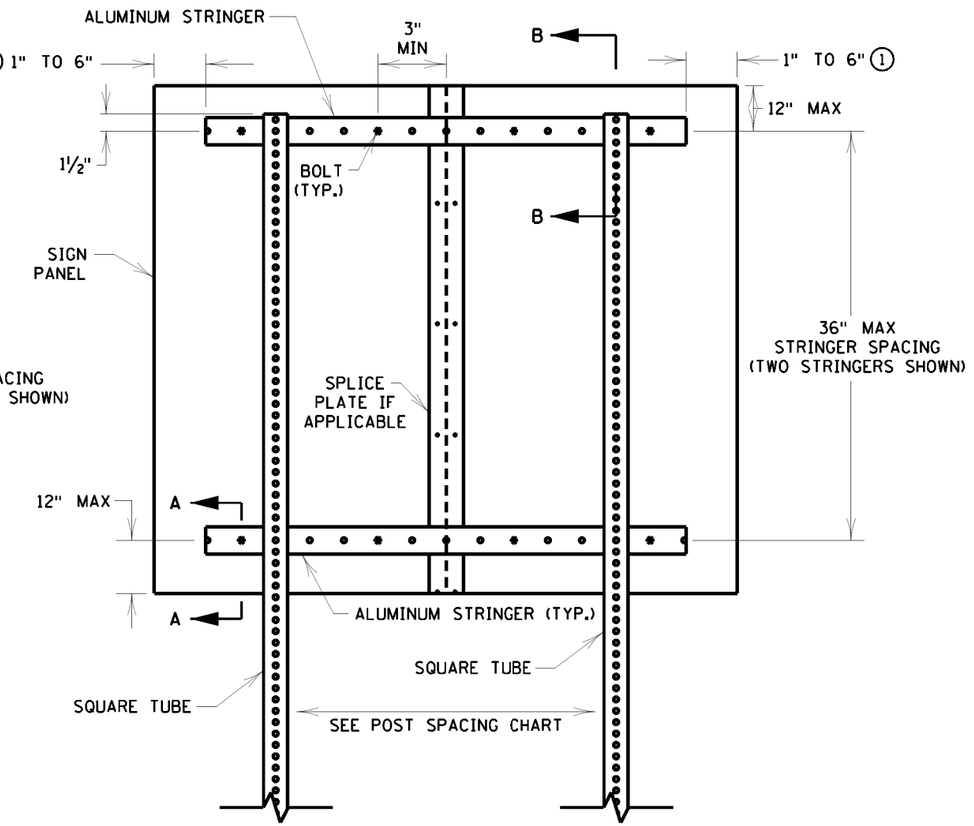

| | | | | | | |
|---|---|---|---|---|---|---|
| LEAD EXPERT OFFICE | BRIAN SORENSON<br>STATE TRAFFIC ENGINEER<br>OFFICE OF TRAFFIC ENGINEERING | | STANDARD SIGN PLACEMENT | APPROVED: 08-09-2023<br>REVISED: | THOMAS STYRBICKI<br>STATE DESIGN ENGINEER | STANDARD PLAN 5-297.701 | 1 OF 1 |
| | DEPARTMENT OF TRANSPORTATION | | STANDARD PLAN | SP 027-651-XXX | | SHEET NO. | 204 |
| | | | | CSAH 51 | | TOTAL SHEETS | 329 |



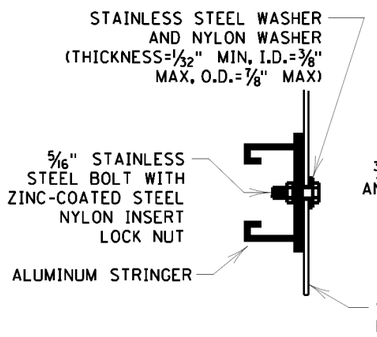

FOR SIGN PANELS UP TO 30" WIDE



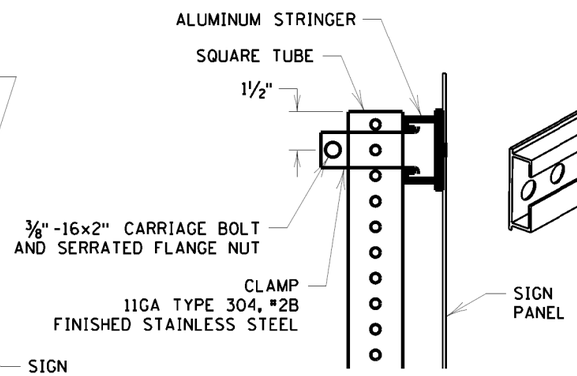

FOR SIGN PANELS 36" WIDE OR GREATER ON ONE POST



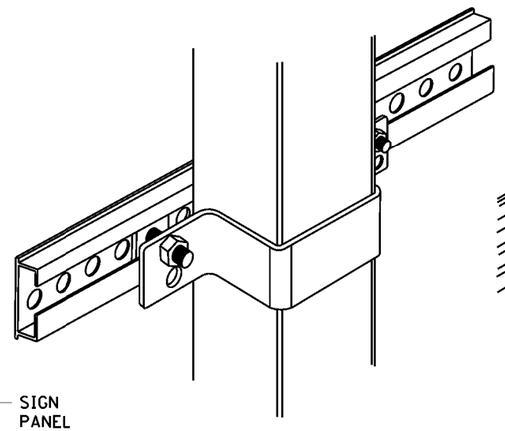

FOR SIGN PANELS ON TWO OR MORE POSTS



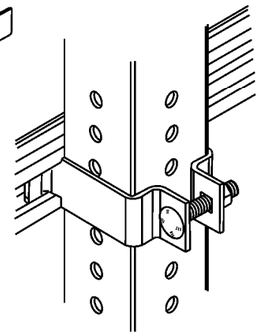

VIEW A-A



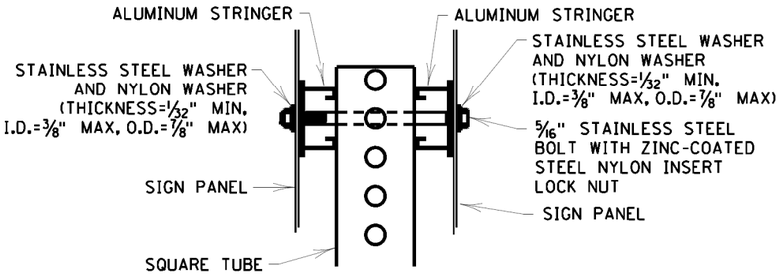

VIEW B-B



CLAMP DETAIL
4" SQUARE TUBE



CLAMP DETAIL
2" AND 2 1/2" SQUARE TUBE




BACK-TO-BACK SIGN MOUNTING WITH STRINGERS

NOTES:

BOLT SIGN PANELS TO STRINGERS OR RISER POSTS AT NO GREATER THAN 24" SPACING OR ACCORDING TO THE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR MOUNTING HOLES (PUNCH CODES) INFORMATION.

CENTER STRINGERS ON SIGN PANEL.

① IF POST SPACING REQUIRES PLACEMENT OF A POST WITHIN THIS AREA, EXTEND STRINGERS AS NEEDED TO ACCOMMODATE THE STRINGER TO POST CLAMP.

| | | | | | |
|---|---|---|---|---|---|
| LEAD EXPERT OFFICE | BRIAN SORENSON<br>STATE TRAFFIC ENGINEER<br>OFFICE OF TRAFFIC ENGINEERING | | SQUARE-TUBE SIGN MOUNTING DETAILS | APPROVED: 08-09-2023<br>REVISED: | THOMAS STYRBICKI<br>STATE DESIGN ENGINEER |
| STANDARD PLAN 5-297.718 | 1 OF 3 | | | | |

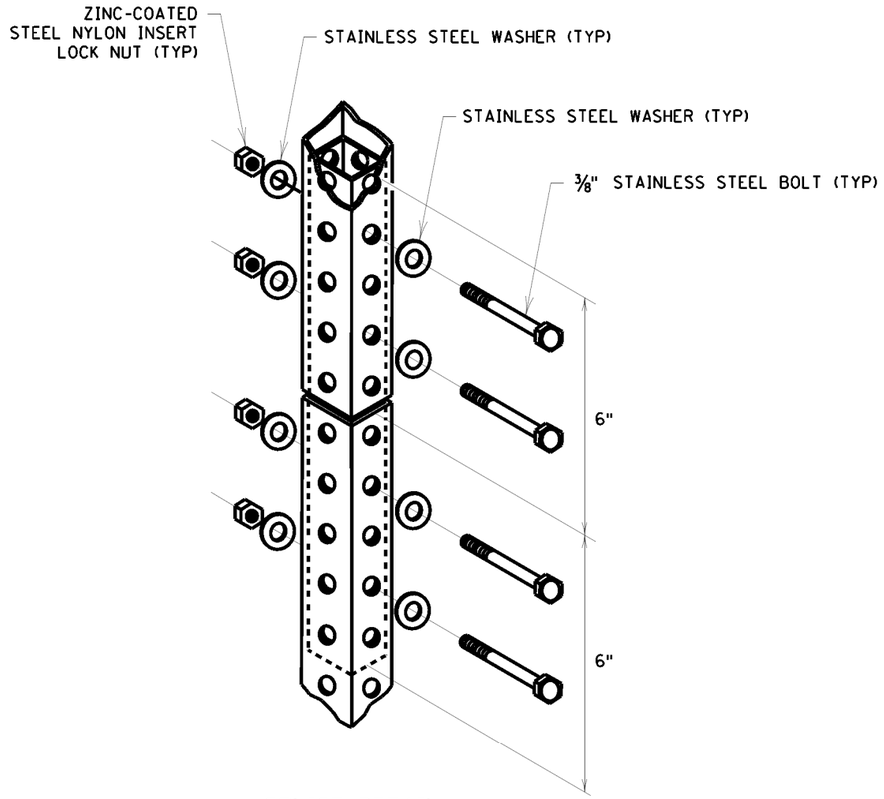
DEPARTMENT OF TRANSPORTATION

STANDARD PLAN

SP 027-651-XXX | SHEET NO. 205

CSAH 51 | TOTAL SHEETS 329

MODEL NAME Details 6 [Sheet]
USER NAME PW2805
PATH & FILENAME: C:\Users\pw2805\Hennepin County\Hennepin County Transportation Design - HC_Projects\051_1820\Design\Traffic\Signing & Striping\Signing and Striping Plan\1820_Signing_Striping_Plans.dgn
PLOTTED/REVISED: 7/9/2025




SPLICE DETAIL

| PANEL WIDTH | SQUARE TUBE POST SPACING | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2 POSTS | 3 POSTS | 4 POSTS | 5 POSTS | 6 POSTS | 7 POSTS | 8 POSTS |
| (IN) | (IN) | (IN) | (IN) | (IN) | (IN) | (IN) | (IN) |
| 42 | 15 | | | | | | |
| 48 | 21 | | | | | | |
| 54 | 30 | | | | | | |
| 60 | 36 | | | | | | |
| 66 | 36 | | | | | | |
| 72 | 42 | | | | | | |
| 78 | 42 | | | | | | |
| 84 | 48 | | | | | | |
| 90 | 48 | 42 | | | | | |
| 96 | 48 | 42 | | | | | |
| 102 | 54 | 42 | | | | | |
| 108 | 54 | 42 | | | | | |
| 114 | 60 | 42 | | | | | |
| 120 | 60 | 48 | | | | | |
| 126 | 66 | 48 | | | | | |
| 132 | 66 | 48 | 42 | | | | |
| 138 | 72 | 48 | 42 | | | | |
| 144 | 72 | 48 | 42 | | | | |
| 150 | 78 | 54 | 42 | | | | |
| 156 | 78 | 54 | 42 | | | | |
| 162 | 84 | 54 | 42 | | | | |
| 168 | 84 | 60 | 48 | | | | |
| 174 | 90 | 60 | 48 | 42 | | | |
| 180 | 90 | 60 | 48 | 42 | | | |
| 186 | 96 | 66 | 48 | 42 | | | |
| 192 | 96 | 66 | 48 | 42 | | | |
| 198 | 102 | 66 | 54 | 42 | | | |
| 204 | 102 | 72 | 54 | 42 | | | |
| 210 | 108 | 72 | 54 | 42 | | | |
| 216 | 108 | 72 | 54 | 48 | 42 | | |
| 222 | 114 | 78 | 60 | 48 | 42 | | |
| 228 | 114 | 78 | 60 | 48 | 42 | | |
| 234 | 120 | 78 | 60 | 48 | 42 | | |
| 240 | 120 | 84 | 60 | 48 | 42 | | |
| 246 | | 84 | 66 | 54 | 42 | | |
| 252 | | 84 | 66 | 54 | 42 | | |
| 258 | | 90 | 66 | 54 | 42 | 42 | |
| 264 | | 90 | 66 | 54 | 48 | 42 | |
| 270 | | 90 | 72 | 54 | 48 | 42 | |
| 276 | | 96 | 72 | 60 | 48 | 42 | |
| 282 | | 96 | 72 | 60 | 48 | 42 | |
| 288 | | 96 | 72 | 60 | 48 | 42 | |
| 294 | | 102 | 78 | 60 | 54 | 42 | |
| 300 | | 102 | 78 | 60 | 54 | 42 | 42 |
| 306 | | 102 | 78 | 66 | 54 | 42 | 42 |
| 312 | | 108 | 78 | 66 | 54 | 48 | 42 |
| 318 | | 108 | 84 | 66 | 54 | 48 | 42 |
| 324 | | 108 | 84 | 66 | 54 | 48 | 42 |
| 330 | | 114 | 84 | 66 | 60 | 48 | 42 |
| 336 | | 114 | 84 | 72 | 60 | 48 | 42 |

DISTANCES ARE CENTER-TO-CENTER OF POSTS

## NOTES:

NO MORE THAN ONE SPLICE PER POST.

WHEN USED, THE SPLICE MUST BE PLACED AT LEAST 8' ABOVE GROUND. THE PREFERRED PLACEMENT LOCATION IS BEHIND THE SIGN PANEL.

INTERIOR POST STUD SHALL BE ONE SIZE SMALLER FOR TIGHT FIT. IF RISER POST IS 2½", INTERIOR POST IS 2³⁄₁₆". IF RISER POST IS 2", INTERIOR POST IS 1¾".


MODEL NAME Details 7 [Sheet]
USER NAME PWZ805
PATH & FILENAME: C:\Users\pwz805\Hennepin County\Hennepin County Transportation Design - HC_Projects\051_1820\Design\Traffic\Signing & Striping\Signing and Striping Plan\1820_Signing_Striping_Plans.dgn
PLOTTED/REVISED: 7/9/2025


| | | | | | |
|---|---|---|---|---|---|
| LEAD EXPERT OFFICE | BRIAN SORENSON<br>STATE TRAFFIC ENGINEER<br>OFFICE OF TRAFFIC ENGINEERING | SQUARE-TUBE SIGN MOUNTING DETAILS | APPROVED: 08-09-2023<br>REVISED: | THOMAS STYRBICKI<br>STATE DESIGN ENGINEER | STANDARD PLAN 5-297.718 | 2 OF 3 |
| DEPARTMENT OF TRANSPORTATION | | STANDARD PLAN | SP 027-651-XXX | | SHEET NO. | 206 |
| | | | CSAH 51 | | TOTAL SHEETS | 329 |

## NUMBER OF ALUMINUM STRINGERS FOR 2½" OR SMALLER POSTS

| PANEL HEIGHT (INCHES) | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | 78 | 84 | 90 | 96 | 102 | 108 | 114 | 120 | 126 | 132 | 138 | 144 | 150 | 156 | 162 | 168 | 174 | 180 | 186 | 192 | 198 | 204 | 210 | 216 | 222 | 228 | 234 | 240 | 246 | 252 | 258 | 264 | 270 | 276 | 282 | 288 | 294 | 300 | 306 | 312 | 318 | 324 | 330 | 336 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 120 | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 4 | 4 | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 114 | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 4 | 4 | 4 | | | 4 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 108 | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | | 4 | 4 | 4 | | | | | 4 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 102 | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | | 4 | 4 | 4 | 4 | 4 | | | 4 | 4 | 4 | 4 | | | | 4 | 4 | 4 | | | | | | | | | | | 4 | 4 | | | | | | | | | | | | | | | | | |
| 96 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 90 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 84 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 78 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 72 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 66 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 60 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 54 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 48 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 42 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 36 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 30 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 24 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 18 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 12 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

1 POST | 2 POST | 3 POST | 4 POST | 5 POST | 6 POST

PANEL WIDTH (INCHES)

## NUMBER OF STRINGERS FOR 4" POSTS

| PANEL HEIGHT (INCHES) | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | 78 | 84 | 90 | 96 | 102 | 108 | 114 | 120 | 126 | 132 | 138 | 144 | 150 | 156 | 162 | 168 | 174 | 180 | 186 | 192 | 198 | 204 | 210 | 216 | 222 | 228 | 234 | 240 | 246 | 252 | 258 | 264 | 270 | 276 | 282 | 288 | 294 | 300 | 306 | 312 | 318 | 324 | 330 | 336 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 144 | | | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 7 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 7 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | | | | | | | | | | | | | | | | | |
| 138 | | | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 7 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 7 | 7 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | | | | | | | | | | | | | |
| 132 | | | 4 | 4 | 4 | 4 | 5 | 5 | 6 | 7 | 7 | 4 | 4 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 7 | 7 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | | | | | | | | | | | |
| 126 | | | | 4 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 4 | 4 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 7 | 7 | 7 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | | | | | | | | | |
| 120 | | | | 4 | 4 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 4 | 4 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | | | | | | | |
| 114 | | | | | 4 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 8 | 4 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | | | | | |
| 108 | | | | | 4 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 7 | 7 | 8 | 4 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | | | |
| 102 | | | | | | 4 | 4 | 4 | 5 | 5 | 6 | 6 | 6 | 7 | 7 | 8 | 4 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 8 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | |
| 96 | | | | | | 3 | 4 | 4 | 4 | 5 | 5 | 6 | 6 | 6 | 7 | 7 | 8 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 8 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 8 | 8 | 6 | 6 | | | |
| 90 | | | | | | 3 | 3 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 | 7 | 7 | 8 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 8 | 8 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | | |
| 84 | | | | | | | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 | 7 | 7 | 7 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | |
| 78 | | | | | | | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 | 7 | 7 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | |
| 72 | | | | | | | | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | | | |
| 66 | | | | | | | | | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 6 | 6 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | | | | | |
| 60 | | | | | | | | | | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | | | | | |
| 54 | | | | | | | | | | 3 | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | | | | | | | |
| 48 | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | | | | | | |
| 42 | | | | | | | | | | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | | | | | |
| 36 | | | | | | | | | | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | |
| 30 | | | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | |
| 24 | | | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | |
| 18 | | | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | |
| 12 | | | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |

4 POST

1 POST | 2 POST | 3 POST

PANEL WIDTH (INCHES)

| | | | | |
|---|---|---|---|---|
| LEAD EXPERT OFFICE | BRIAN SORENSON<br>STATE TRAFFIC ENGINEER<br>OFFICE OF TRAFFIC ENGINEERING | SQUARE-TUBE SIGN MOUNTING DETAILS | APPROVED: 08-09-2023<br>REVISED: | THOMAS STYRBICKI<br>STATE DESIGN ENGINEER |
| STANDARD PLAN 5-297.718 | 3 OF 3 | | | |

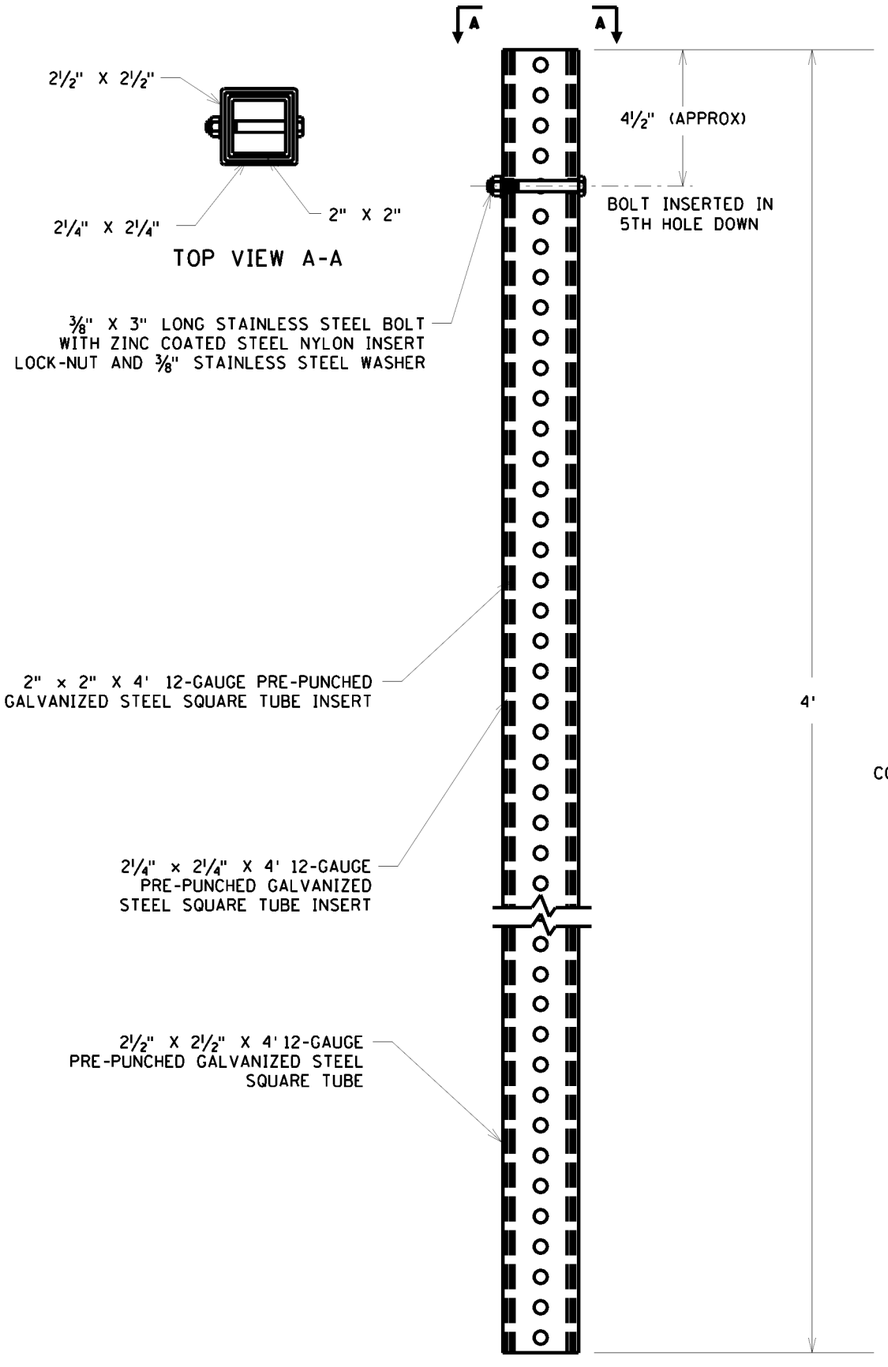
DEPARTMENT OF TRANSPORTATION

STANDARD PLAN

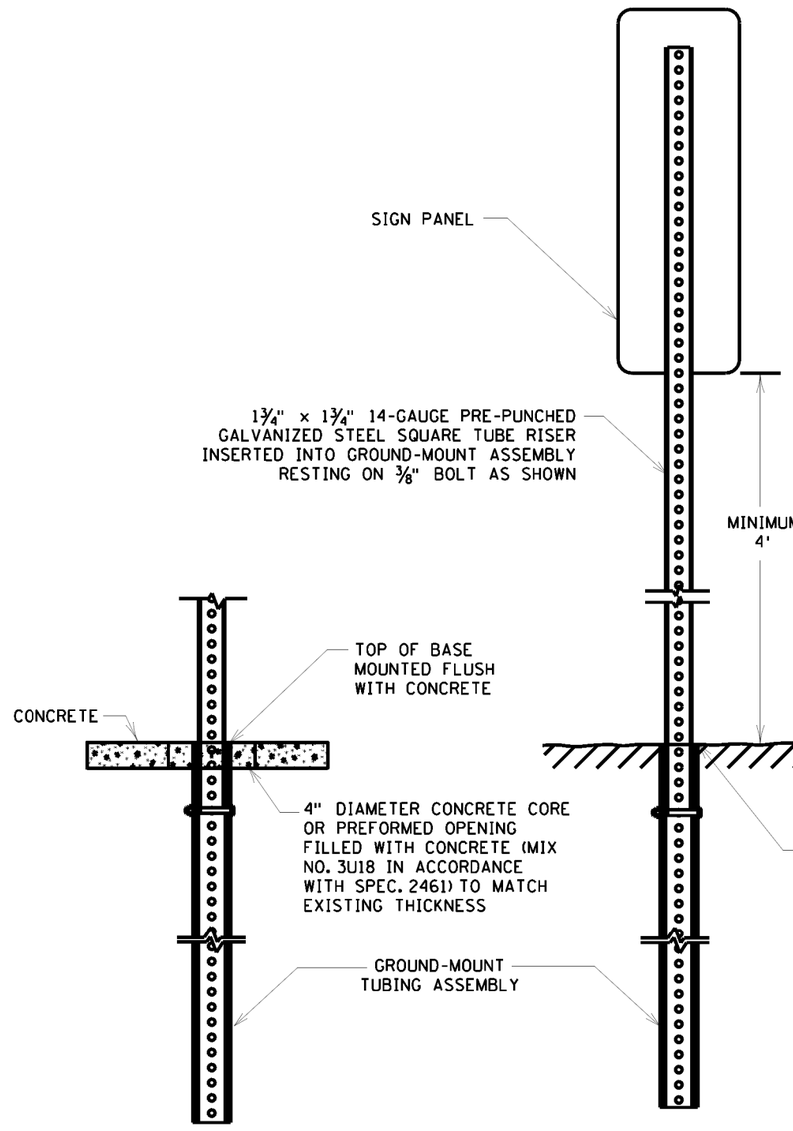
| | | | |
|---|---|---|---|
| SP 027-651-XXX | SHEET NO. | 207 |
| CSAH 51 | TOTAL SHEETS | 329 |

PLOTTED/REVISED: 7/9/2025

MODEL NAME Details 8 [Sheet]
USER NAME PWZ805
PATH & FILENAME: C:\Users\pwz805\Hennepin County\Hennepin County Transportation Design - HC_Projects\051_1820\Design\Traffic\Signing & Striping\Signing and Striping Plan\1820_Signing_Striping_Plans.dgn

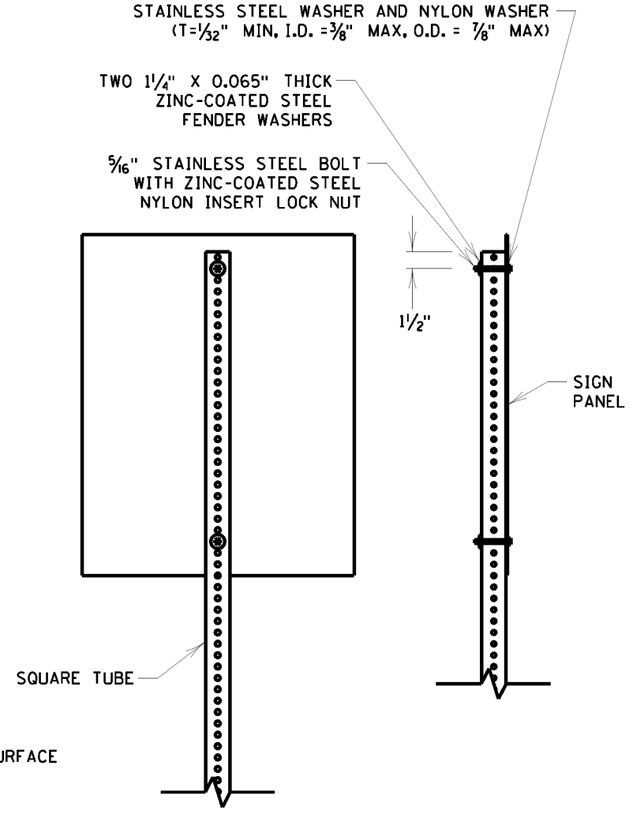



GROUND MOUNT TUBING ASSEMBLY




THREE-WALL BASE CORED THROUGH CONCRETE

THREE-WALL BASE IN SOIL




MOUNTING DETAIL

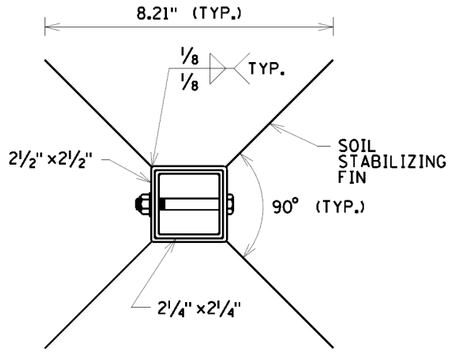
## NOTES:

THE CRASH RESPONSE FOR THIS STRUCTURE IS BENDABLE.

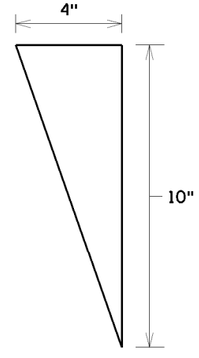
TO MEET CRASHWORTHY REQUIREMENTS THE DISTANCE BETWEEN THE BOTTOM OF THE SIGN PANEL AND THE GROUND SURFACE BELOW ANY PORTION OF THE SIGN PANEL SHALL BE A MINIMUM OF 4'. SEE TABULATIONS FOR MOUNTING HEIGHT.

SQUARE TUBE SIGN POSTS PER MnDOT SPEC. 3402.

| | | | | | | |
|---|---|---|---|---|---|---|
| LEAD EXPERT OFFICE | BRIAN SORENSON<br>STATE TRAFFIC ENGINEER<br>OFFICE OF TRAFFIC ENGINEERING | | THREE-WALL BASE<br>FOR 1¾" SQUARE-TUBE RISER POST | APPROVED: 11-29-2022<br>REVISED: | THOMAS STYRBICKI<br>STATE DESIGN ENGINEER | STANDARD PLAN 5-297.721 | 1 OF 1 |
| | DEPARTMENT OF TRANSPORTATION | | STANDARD PLAN | SP 027-651-XXX<br>CSAH 51 | | SHEET NO. 208<br>TOTAL SHEETS 329 | |

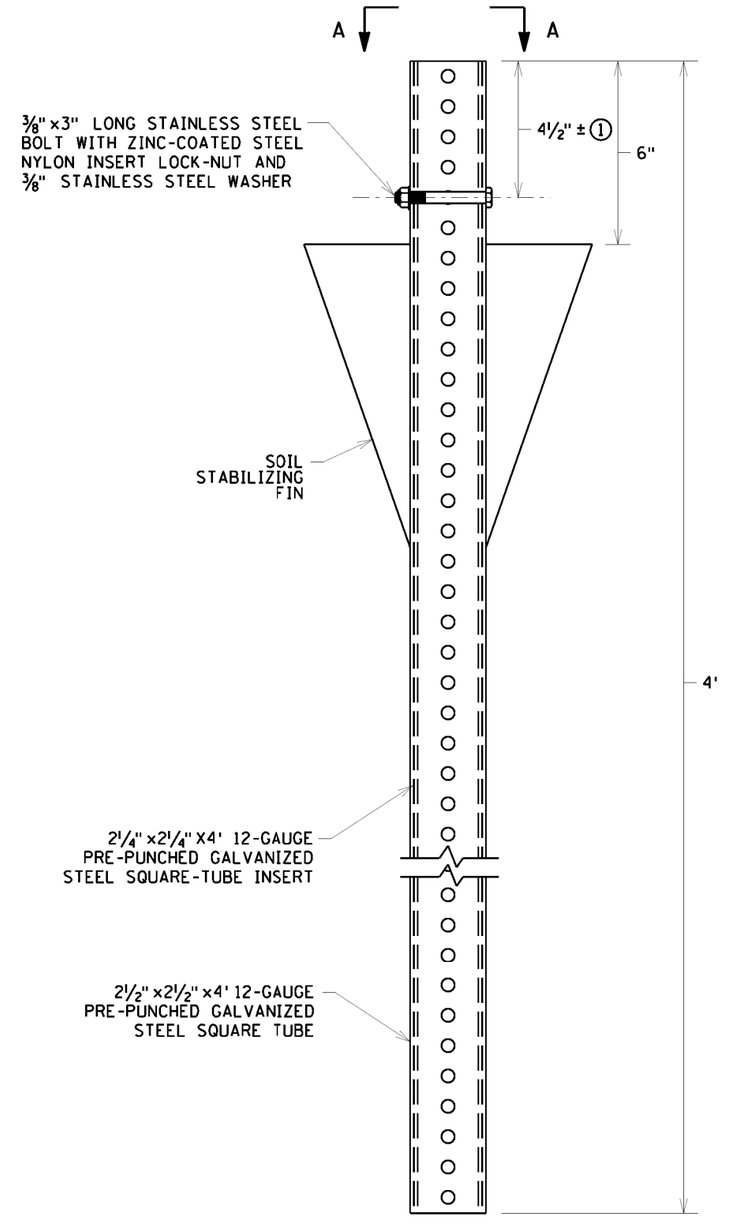



VIEW A-A

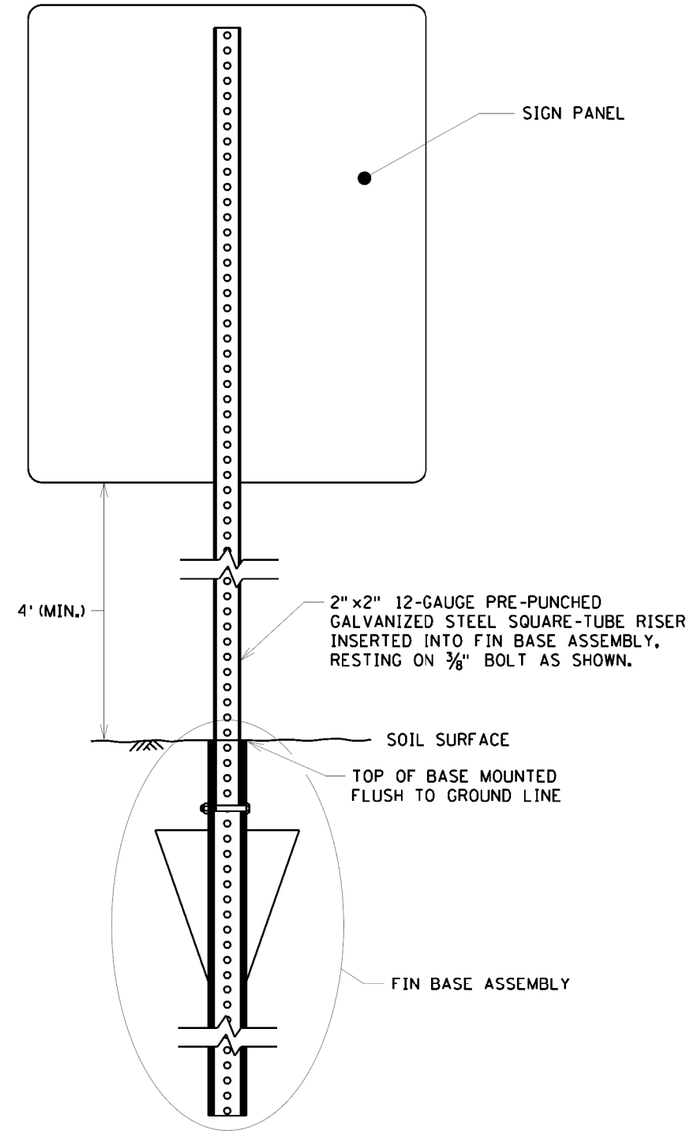



SOIL STABILIZING FIN
FOUR REQUIRED

12-GAUGE PRE-GALVANIZED ASTM A569 STEEL. WELD THE 10" EDGE OF EACH FIN TO EACH CORNER OF THE 2½" SQUARE TUBE. SEE VIEW A-A FOR WELDING DETAILS. WELDS MUST BE ZINC-COATED.




FIN BASE ASSEMBLY




FIN BASE IN SOIL

NOTES:

THE CRASH RESPONSE TYPE FOR THIS STRUCTURE IS BENDABLE.

TO MEET CRASHWORTHY REQUIREMENTS, THE DISTANCE BETWEEN THE BOTTOM OF THE SIGN PANEL AND THE GROUND SURFACE BELOW ANY PORTION OF THE SIGN PANEL MUST BE A MINIMUM OF 4'. SEE TABULATIONS FOR MOUNTING HEIGHT.

SEE STANDARD PLAN 5-297.718 FOR ADDITIONAL MOUNTING DETAILS.

SQUARE-TUBE SIGN POSTS IN ACCORDANCE WITH SPEC. 3402.

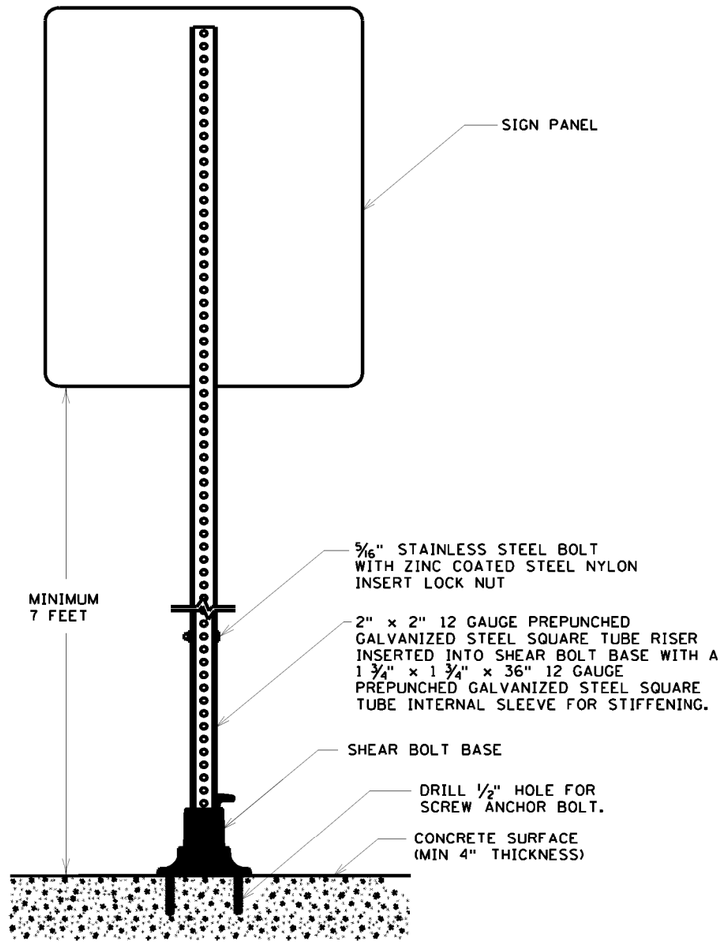
① INSERT BOLT IN 5TH HOLE DOWN.


MODEL NAME Details 10 [Sheet]
USER NAME PW2805
PATH & FILENAME: C:\Users\pw2805\Hennepin County\Hennepin County Transportation Design - HC_Projects\051_1820\Design\Traffic\Signing & Striping\Signing and Striping Plan\1820_Signing_Striping_Plans.dgn
PLOTTED/REVISED: 7/9/2025


| | | | | | | |
|---|---|---|---|---|---|---|
| LEAD EXPERT OFFICE | BRIAN SORENSON<br>STATE TRAFFIC ENGINEER<br>OFFICE OF TRAFFIC ENGINEERING | | FIN BASE<br>FOR 2" SQUARE-TUBE RISER POST IN SOIL | APPROVED: 08-09-2023<br>REVISED: | THOMAS STYRBICKI<br>STATE DESIGN ENGINEER | STANDARD PLAN 5-297.722 | 1 OF 1 |

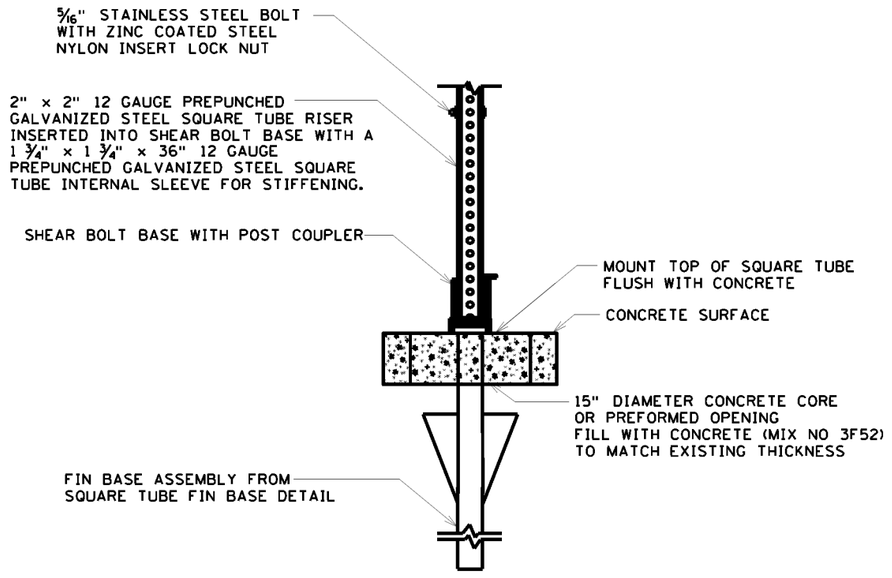
| | | | | |
|---|---|---|---|---|
| DEPARTMENT OF TRANSPORTATION | | STANDARD PLAN | SP 027-651-XXX | SHEET NO. 209 |
| | | | CSAH 51 | TOTAL SHEETS 329 |

PLOTTED/REVISED: $$$$@DATE@$$$$

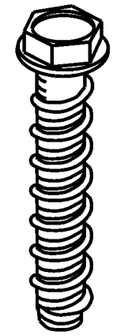



SHEAR BOLT BASE MOUNTED
TO CONCRETE SURFACE

RISER POSTS TO BE MOUNTED CLOSE TO PLUMB. UP TO A MAXIMUM OF 1/2" OF SHIM WASHERS MAY BE USED BETWEEN SHEAR BOLT BASE AND CONCRETE FOR LEVELING. IF MORE THAN 1/2" OF SHIMS ARE REQUIRED, THEN CORE THROUGH THE CONCRETE.




SHEAR BOLT BASE CORED THROUGH CONCRETE



SCREW ANCHOR BOLT
5" LONG CARBON STEEL
THAT MUST MEET A MINIMUM
ALLOWABLE TENSION LOAD
OF 2270 PSI.

NOTES:

1. THE CRASH RESPONSE TYPE FOR THIS STRUCTURE IS BREAKAWAY.
2. TO MEET CRASHWORTHY REQUIREMENTS THE DISTANCE BETWEEN THE BOTTOM OF THE SIGN PANEL AND THE GROUND SURFACE BELOW ANY PORTION OF THE PRIMARY SIGN PANEL MUST BE A MINIMUM OF 7 FEET. SEE TABULATIONS FOR MOUNTING HEIGHT.
3. INSTALLATION OF SHEAR BOLT BASE MUST BE NO EARLIER THAN 3 DAYS AFTER CONCRETE IS PLACED.
4. FOR SHEAR BOLT BASE USE APPROVED PRODUCT FROM MnDOT APPROVED PRODUCTS LIST, PRODUCT MUST BE MODIFIED AS SHOWN.
5. USE ANTI SEIZE ON THE SHEAR BOLT CONNECTIONS.
6. FOR SIGN PANEL MOUNTING DETAILS SEE SQUARE TUBE SIGN MOUNTING DETAILS.
7. SQUARE TUBE SIGN POSTS PER MnDOT SPEC. 3402.

REV 4/20/21

DISTRICT #: $@DISTRICT@$
PLOT NAME: $$@PLOT$NAME@$$
PATH & FILENAME: $$$@PATHFILENAME@$$$

## SHEAR BOLT BASE

FOR 2 INCH SQUARE TUBE RISER POST ON CONCRETE

DRAWN BY: | CHECKED BY: | CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC. NO. _____ DATE $DATE$

COUNTY PROJ. NO. 2182000 (C.S.A.H 51) SHEET NO. 210 OF 329 SHEETS

Hennepin

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.

RYAN ALLERS, LICENSED PROFESSIONAL ENGINEER | 45896 LICENSE NO. | / / DATE

| | |
|---|---|
| DESIGN BY: | A. CHALUPSKY |
| CAD BY: | A. CHALUPSKY |
| CHECKED BY: | R. ALLERS |
| LAST REVISION: | / / |

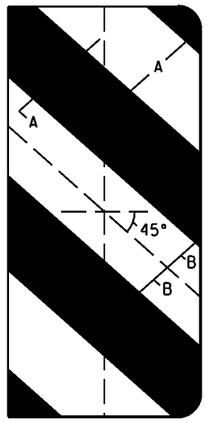
PERMANENT SIGNING AND STRIPING DETAIL SHEET

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 210 / 329

Details 11 [Sheet] PWZ805 7/9/2025 C:\Users\pwz805\Hennepin County\Hennepin County Transportation Design - HC_Projects\051_1820\Design\Traffic\Signing & Striping\Signing and Striping Plan\1820_Signing_Striping_Plans.dgn

REAR DELINEATION FOR R4-7
(NO SCALE)




| REAR DELINEATION FOR R4-7 DIMENSIONS | | | |
|---|---|---|---|
| SIZE | 12"x 30" | 15"x 36" | 18"x 48" |
| MOUNT ON | 24"x 30" | 30"x 36" | 36"x 48" |
| RADIUS | 1.50" | 1.88" | 2.25" |
| A | 5.00" | 6.00" | 6.00" |
| B | 2.50" | 3.00" | 3.00" |
| | | | |

COLOR: YELLOW & BLACK FHA TYPE XI SIGN SHEETING ONLY.

Hennepin

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RYAN ALLERS, LICENSED PROFESSIONAL ENGINEER | 45896 LICENSE NO. | / / DATE

DESIGN BY: A. CHALUPSKY
CAD BY: A. CHALUPSKY
CHECKED BY: R. ALLERS
LAST REVISION: / /

PERMANENT SIGNING AND STRIPING DETAIL SHEET

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 211 / 329

# SIGN AND DELINEATOR / MARKER

Y

| | SIGN NUMBER | PANEL CODE | PANEL | SIZE (W x H) | MOUNTING HEIGHT | SUPPORT TYPE | SUPPORT RISER POST SIZE | SUPPORT NUMBER OF POSTS | REMOVE SIGN | SALVAGE SIGN | SALVAGE SIGN | INSTALL SIGN | SALVAGE SIGN PANEL | INSTALL SIGN PANEL | DELINEATOR /MARKER PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INCHES | FEET | | INCHES | | EACH | SQ FT | EACH | EACH | EACH | EACH | EACH |
| (1) | S-1 | R4-7 | KEEP RIGHT | 24 x 30 | 7 | SQ-CONC | 2 | 1 | 1 | 5.00 | ` | | | | |
| | | (2) | REAR DELINEATION | 12 x 30 | | | | | | 4.00 | | | | | |
| | | OM1-1 | TYPE 1 OBJECT MARKER | 18 x 18 | | | | | 1 | 2.25 | | | | | |
| | S-2 | R5-1 | DO NOT ENTER | | 7 | SQ-CONC | 2 | 1 | 1 | | | | | | |
| | S-3 | M3-2 | EAST (YELLOW ON BLUE) | 24 x 12 | 7 | SQ-SOIL | 2 | 1 | | 2.00 | | | | | |
| | | M1-6M | HENNEPIN COUNTY 51 (YELLOW ON BLUE) | 24 x 24 | | | | | | 4.00 | | | | | |
| | | R8-3 | NO PARKING | 24 x 24 | | | | | | 4.00 | | | | | |
| | S-4 | W11-15A | TRAIL CROSSING | | 7 | SQ-CONC | 2 | 1 | 1 | | | | | | |
| | | R8-3 | NO PARKING | | | | | | | | | | | | |
| | S-5 | R1-1 | STOP | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | | 9.00 | | | | | |
| (1) | S-6 | R3-4 | NO U-TURN | 24 x 24 | 7 | SQ-CONC | 2 | 1 | 1 | 4.00 | | | | | |
| | | R4-7 | KEEP RIGHT | 24 x 30 | | | | | | 5.00 | | | | | |
| | | OM1-1 | OBJECT MARKER (YELLOW ON YELLOW) | 18 x 18 | | | | | | 2.25 | | | | | |
| | S-7 | W11-15 | COMBINED BICYCLE/PEDESTRIAN CROSSING | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | | 9.00 | | | | | |
| | | W16-9P | AHEAD PLAQUE (BLACK ON FLUORESCENT YELLOW-GREEN) | 24 x 12 | 7 | SQ-SOIL | 2 | 1 | | 2.00 | | | | | |
| | S-8 | R8-3 | NO PARKING | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | S-9 | R2-1 | SPEED LIMIT 30 | 24 x 30 | 7 | SQ-SOIL | 2 | 1 | 1 | 5.00 | | | | | |
| | | R8-3 | NO PARKING | 24 x 24 | | | | | | 4.00 | | | | | |
| | S-10 | R4-7 | KEEP RIGHT | 24 x 30 | 7 | SQ-CONC | 2 | 1 | 1 | | | | | | |
| | | OM1-1 | OBJECT MARKER (YELLOW ON YELLOW) | 18 x 18 | | | | | | | | | | | |
| | S-11 | W11-15A | TRAIL CROSSING | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | | W16-7PL | DOWN ARROW LEFT PLAQUE (BLACK ON FLUORESENT YELLOW-GREEN) | | | | | | | | | | | | |
| | S-12 | DESIGN | NO MOTOR VEHICLES | | 5 | SQ-SOIL | 2 | 1 | | | | | 1 | 1 | |
| | S-13 | DESIGN | STOP | | 5 | SQ-SOIL | 2 | 1 | | | | | 1 | 1 | |
| (1) | S-14 | R4-7 | KEEP RIGHT | 24 x 30 | 7 | SQ-CONC | 2 | 1 | | 5.00 | ` | | | | |
| | | (2) | REAR DELINEATION | 12 x 30 | | | | | | 4.00 | | | | | |
| | | OM1-1 | TYPE 1 OBJECT MARKER | 18 x 18 | | | | | | 2.25 | | | | | |
| (1) | S-15 | DESIGN | NORTHERN AVE | | 7 | SQ-SOIL | 2 | 1 | | | | | 1 | 1 | |
| | | DESIGN | NORTHERN AVE | | | | | | | | | | 1 | 1 | |
| (1) | | DESIGN | SUNSET DR | | | | | | | | | | 1 | 1 | |
| | | DESIGN | SUNSET DR | | | | | | | | | | 1 | 1 | |
| | | R1-1 | STOP | 36 x 36 | | | | | 1 | 9.00 | | | | | |
| | S-16 | R8-3 | NO PARKING | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| (1) | S-17 | DESIGN | 4205-4250 | | 7 | R | 2 | 1 | | | | | 1 | 1 | |
| | | DESIGN | 4205-4250 | | | | | | | | | | 1 | 1 | |
| (1) | | DESIGN | SUNSET DR | | | | | | | | | | 1 | 1 | |
| | | DESIGN | SUNSET DR | | | | | | | | | | 1 | 1 | |
| (1) | | DESIGN | WEST ARM DR PRIVATE | | | | | | | | | | 1 | 1 | |
| | | DESIGN | WEST ARM DR PRIVATE | | | | | | | | | | 1 | 1 | |
| | S-18 | R1-1 | STOP | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | | 9.00 | | | | | |

SPECIFIC NOTE(S):
(1) MOUNT BACK TO BACK.
(2) SEE REAR DELINEATION DETAIL.

Hennepin

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RYAN ALLERS, LICENSED PROFESSIONAL ENGINEER | 45896 LICENSE NO. | / / DATE

DESIGN BY: A. CHALUPSKY
CAD BY: A. CHALUPSKY
CHECKED BY: R. ALLERS
LAST REVISION: / /

PERMANENT SIGNING TABULATION SHEET

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 212 / 329

# SIGN AND DELINEATOR / MARKER

Y

| | SIGN NUMBER | PANEL CODE | PANEL | SIZE (W x H) | MOUNTING HEIGHT | SUPPORT TYPE | SUPPORT RISER POST SIZE | SUPPORT NUMBER OF POSTS | REMOVE SIGN | SALVAGE SIGN | SALVAGE SIGN | INSTALL SIGN | SALVAGE SIGN PANEL | INSTALL SIGN PANEL | DELINEATOR /MARKER PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INCHES | FEET | | INCHES | | EACH | SQ FT | EACH | EACH | EACH | EACH | EACH |
| | S-19 | W11-15A | TRAIL CROSSING | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | | W16-7PL | DOWN ARROW LEFT PLAQUE (BLACK ON FLUORESENT YELLOW-GREEN) | | | | | | | | | | | | |
| | S-20 | DESIGN | NO MOTOR VEHICLES | | 5 | SQ-SOIL | 2 | 1 | | | | | 1 | 1 | |
| | S-21 | DESIGN | DAKOTA RAIL REGIONAL TRAIL ST. BONIFACIUS/WAYZATA | | | | | 1 | | | | | 1 | 1 | |
| | S-22 | DESIGN | STOP | | 5 | SQ-SOIL | 2 | 1 | | | | | 1 | 1 | |
| | S-23 | R8-3 | NO PARKING | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | S-24 | M2-1 | JCT (YELLOW ON BLUE) | 21 x 15 | 7 | SQ-CONC | 2 | 1 | | 2.19 | | | | | |
| | | M1-6M | HENNEPIN COUNTY 15 (YELLOW ON BLUE) | 24 x 24 | | | | | | 4.00 | | | | | |
| | | R8-3 | NO PARKING | 24 x 24 | | | | | | 4.00 | | | | | |
| | S-25 | R3-7L | LEFT LANE MUST TURN LEFT | 30 x 30 | 7 | SQ-SOIL | 2 | 1 | 1 | 6.25 | | | | | |
| (1) | S-26 | DESIGN | NORTHERN AVE | | 7 | SQ-SOIL | 2 | 1 | | | | | 1 | 1 | |
| | | DESIGN | NORTHERN AVE | | | | | | | | | | 1 | 1 | |
| (1) | | DESIGN | SUNSET DR | | | | | | | | | | 1 | 1 | |
| | | DESIGN | SUNSET DR | | | | | | | | | | 1 | 1 | |
| | | R1-1 | STOP | 36 x 36 | | | | | 1 | 9.00 | | | | | |
| (1) | S-27 | R3-4 | NO U-TURN | 24 x 24 | 7 | SQ-CONC | 2 | 1 | 1 | 4.00 | | | | | |
| | | R4-7 | KEEP RIGHT | 24 x 30 | | | | | | 5.00 | | | | | |
| | | OM1-1 | OBJECT MARKER (YELLOW ON YELLOW) | 18 x 18 | | | | | | 2.25 | | | | | |
| | S-28 | R3-7R | RIGHT LANE MUST TURN RIGHT | 30 x 30 | 7 | SQ-SOIL | 2 | 1 | 1 | 6.25 | | | | | |
| | | R8-3 | NO PARKING | 24 x 24 | | | | | | 4.00 | | | | | |
| (1) | S-29 | R3-7L | LEFT LANE MUST TURN LEFT | 30 x 30 | 7 | SQ-SOIL | 2 | 1 | 1 | 6.25 | | | | | |
| | | R3-7L | LEFT LANE MUST TURN LEFT | 30 x 30 | | | | | | 6.25 | | | | | |
| | S-30 | R6-1L | ONE WAY LEFT | | 7 | SQ-CONC | 2 | 1 | 1 | | | | | | |
| | S-31 | M1-6M | HENNEPIN COUNTY 15 (YELLOW ON BLUE) | 24 x 24 | 7 | SQ-CONC | 2 | 1 | 1 | 4.00 | | | | | |
| | | M6-4 | DOUBLE ARROW (YELLOW ON BLUE) | 21 x 15 | | | | | 1 | 2.19 | | | | | |
| | S-32 | DESIGN | ADOPT A HIGHWAY | | 7 | SQ-SOIL | 2 | 1 | | | | | 1 | 1 | |
| | | DESIGN | NO PARKING HERE TO CORNER | | | | | | 1 | | | | | | |
| | | R8-3 | NO PARKING | 24 x 24 | | | | | | 4.00 | | | | | |
| | S-33 | DESIGN | NO PARKING BEGINS HERE | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | S-34 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | | 4.00 | | | | | |
| (1) | S-35 | DESIGN | MAPLETON AVE | | 7 | R | 2 | 1 | | | | | 1 | 1 | |
| | | DESIGN | MAPLETON AVE | | | | | | | | | | 1 | 1 | |
| (1) | | DESIGN | SUNSET DR | | | | | | | | | | 1 | 1 | |
| | | DESIGN | SUNSET DR | | | | | | | | | | 1 | 1 | |
| | S-36 | R1-1 | STOP | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | 1 | 9.00 | | | | | |
| | S-37 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | 1 | 4.00 | | | | | |
| | S-38 | R8-3 | NO PARKING | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | S-39 | DESIGN | NO PARKING ENDS HERE | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | S-40 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | | 4.00 | | | | | |
| | S-41 | W11-15 | COMBINED BICYCLE/PEDESTRIAN CROSSING | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | | 9.00 | | | | | |
| | | W16-9P | AHEAD PLAQUE (BLACK ON FLUORESCENT YELLOW-GREEN) | 24 x 12 | 7 | SQ-SOIL | 2 | 1 | | 2.00 | | | | | |

SPECIFIC NOTE(S):
(1) MOUNT BACK TO BACK.
(2) SEE REAR DELINEATION DETAIL.

Hennepin

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.

RYAN ALLERS, LICENSED PROFESSIONAL ENGINEER | 45896 LICENSE NO. | / / DATE

DESIGN BY: A. CHALUPSKY
CAD BY: A. CHALUPSKY
CHECKED BY: R. ALLERS
LAST REVISION: / /

PERMANENT SIGNING TABULATION SHEET

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 213 / 329

# SIGN AND DELINEATOR / MARKER

**Y**

| SIGN NUMBER | PANEL | | | | SUPPORT | | | REMOVE SIGN | SIGN | SALVAGE SIGN | INSTALL SIGN | SALVAGE SIGN PANEL | INSTALL SIGN PANEL | DELINEATOR /MARKER PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PANEL CODE | | SIZE (W x H) | MOUNTING HEIGHT | TYPE | RISER POST SIZE | NUMBER OF POSTS | | | | | | | |
| | | | INCHES | FEET | | INCHES | | EACH | SQ FT | EACH | EACH | EACH | EACH | EACH |
| S-42 | W11-15A | TRAIL CROSSING | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | DESIGN | NO PARKING BEGINS HERE | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| S-43 | W15-1 | PLAYGROUND | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | 1 | 9.00 | | | | | |
| | R8-3 | NO PARKING | 24 x 24 | | | | | | 4.00 | | | | | |
| S-44 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | 1 | 4.00 | | | | | |
| S-45 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | | 4.00 | | | | | |
| S-46 | DESIGN | NO PARKING TOW AWAY ZONE | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| S-47 | R1-1 | STOP | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | 1 | 9.00 | | | | | |
| | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | 1 | 4.00 | | | | | |
| S-48 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | | 4.00 | | | | | |
| S-49 | DESIGN | NO PARKING TOW AWAY ZONE | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| S-50 | W15-1 | PLAYGROUND | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | 1 | 9.00 | | | | | |
| | R8-3 | NO PARKING | 24 x 24 | | | | | | 4.00 | | | | | |
| S-51 | R8-3 | NO PARKING | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| S-52 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | 1 | 4.00 | | | | | |
| S-53 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | 1 | 4.00 | | | | | |
| S-54 | R8-3 | NO PARKING | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| S-55 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | 1 | 4.00 | | | | | |
| S-56 | R2-1 | SPEED LIMIT 30 | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | DESIGN | NO PARKING TOW AWAY ZONE | | | | | | 1 | | | | | | |
| | R8-3 | NO PARKING | | | | | | 1 | | | | | | |
| S-57 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | | 4.00 | | | | | |
| S-58 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | | 4.00 | | | | | |
| S-59 | DESIGN | NO PARKING TOW AWAY ZONE | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| S-60 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | | 4.00 | | | | | |
| S-61 | DESIGN | MAN HOLE MARKER | | 4 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| S-62 | DESIGN | NO PARKING TOW AWAY ZONE | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| S-63 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | 1 | 4.00 | | | | | |
| S-64 | R8-3 | NO PARKING | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| S-65 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | 1 | 4.00 | | | | | |
| S-66 | W1-8 | CHEVRON | | 5 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| S-67 | W1-6 | ONE DIRECTION ARROW | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | R8-3 | NO PARKING | 24 x 24 | | | | | 1 | 4.00 | | | | | |
| S-68 | W1-8 | CHEVRON | | 5 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| S-69 | W1-8 | CHEVRON | | 5 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| S-70 (1) | R2-1 | SPEED LIMIT 30 | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | R8-3 | NO PARKING | 24 x 24 | | | | | 1 | 4.00 | | | | | |
| | OM2-2V | TYPE 2 OBJECT MARKER | | | | | | 1 | | | | | | |
| | OM2-2V | TYPE 2 OBJECT MARKER | | | | | | 1 | | | | | | |
| S-71 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | 1 | 4.00 | | | | | |

SPECIFIC NOTE(S):
(1) MOUNT BACK TO BACK.
(2) SEE REAR DELINEATION DETAIL.

Hennepin

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DESIGN BY: A. CHALUPSKY
CAD BY: A. CHALUPSKY
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LAST REVISION: / /

PERMANENT SIGNING TABULATION SHEET

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 214 / 329

# SIGN AND DELINEATOR / MARKER

Y

| | SIGN NUMBER | PANEL CODE | PANEL | SIZE (W x H) | MOUNTING HEIGHT | SUPPORT TYPE | SUPPORT RISER POST SIZE | SUPPORT NUMBER OF POSTS | REMOVE SIGN | SALVAGE SIGN | SALVAGE SIGN PANEL | INSTALL SIGN | INSTALL SIGN PANEL | DELINEATOR /MARKER PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INCHES | FEET | | INCHES | | EACH | SQ FT | EACH | EACH | EACH | EACH | EACH |
| (1) | S-72 | DESIGN | DICKSON AVE EXT | | 7 | SQ-SOIL | 2 | 1 | | | | | 1 | 1 | |
| | | DESIGN | DICKSON AVE EXT | | | | | | | | | | 1 | 1 | |
| (1) | | DESIGN | SUNSET DR | | | | | | | | | | 1 | 1 | |
| | | DESIGN | SUNSET DR | | | | | | | | | | 1 | 1 | |
| | | R1-1 | STOP | 36 x 36 | | | | | 1 | 9.00 | | | | | |
| | S-73 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | | 4.00 | | | | | |
| | S-74 | W11-2 | PEDESTRIAN CROSSING | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | 1 | 9.00 | | | | | |
| | | W16-9P | AHEAD PLAQUE (BLACK ON FLUORESCENT YELLOW-GREEN) | 24 x 12 | | | | | | 2.00 | | | | | |
| | S-75 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | | 4.00 | | | | | |
| | S-76 | W3-1 | STOP AHEAD | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | 1 | 9.00 | | | | | |
| | | R8-3 | NO PARKING | 24 x 24 | | | | | | 4.00 | | | | | |
| | S-77 | M2-1 | JCT (YELLOW ON BLUE) | 21 x 15 | 7 | SQ-SOIL | 2 | 1 | 1 | 2.19 | | | | | |
| | | M1-6M | HENNEPIN COUNTY 51 (YELLOW ON BLUE) | 24 x 24 | | | | | 1 | 4.00 | | | | | |
| | | DESIGN | NO PARKING TOW AWAY ZONE | | | | | | 1 | | | | | | |
| | | R8-3 | NO PARKING | 24 x 24 | | | | | | 4.00 | | | | | |
| | S-78 | W11-2 | PEDESTRIAN CROSSING | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | 1 | 9.00 | | | | | |
| | | W16-7PL | DOWN ARROW LEFT PLAQUE (BLACK ON FLUORESENT YELLOW-GREEN) | 30 x 18 | | | | | 1 | 3.75 | | | | | |
| | | W11-2 | PEDESTRIAN CROSSING | 36 x 36 | | | | | | 9.00 | | | | | |
| | | W16-7PR | DOWN ARROW RIGHT PLAQUE (BLACK ON FLUORESCENT YELLOW-GREEN) | 30 x 18 | | | | | | 3.75 | | | | | |
| | | DESIGN | NO PARKING TOW AWAY ZONE | | | | | | 1 | | | | | | |
| | S-79 | R2-1 | SPEED LIMIT 30 | 24 x 30 | 7 | SQ-SOIL | 2 | 1 | 1 | 5.00 | | | | | |
| | | R8-3 | NO PARKING | 24 x 24 | | | | | | 4.00 | | | | | |
| | S-80 | W11-2 | PEDESTRIAN CROSSING | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | 1 | 9.00 | | | | | |
| | | W16-7PL | DOWN ARROW LEFT PLAQUE (BLACK ON FLUORESENT YELLOW-GREEN) | 30 x 18 | | | | | 1 | 3.75 | | | | | |
| | | W11-2 | PEDESTRIAN CROSSING | 36 x 36 | | | | | | 9.00 | | | | | |
| | | W16-7PR | DOWN ARROW RIGHT PLAQUE (BLACK ON FLUORESCENT YELLOW-GREEN) | 30 x 18 | | | | | | 3.75 | | | | | |
| | | R8-3 | NO PARKING | | | | | | 1 | | | | | | |
| | S-81 | DESIGN | ADOPT A HIGHWAY | | 7 | SQ-SOIL | 2 | 1 | | | | | 1 | 1 | |
| | | R8-3 | NO PARKING | 24 x 24 | | | | | 1 | 4.00 | | | | | |
| | S-82 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | 1 | 4.00 | | | | | |
| | S-83 | DESIGN | LORD FLETCHER'S RESTAURANT PARKING ONLY | | | | | | | | | | 1 | 1 | |
| | S-84 | R8-3 | NO PARKING | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | S-85 | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | 1 | 4.00 | | | | | |
| (1) | S-86 | DESIGN | DICKSON AVE | | 7 | SQ-SOIL | 2 | 1 | | | | | 1 | 1 | |
| | | DESIGN | DICKSON AVE | | | | | | | | | | 1 | 1 | |
| (1) | | DESIGN | SUNSET DR | | | | | | | | | | 1 | 1 | |
| | | DESIGN | SUNSET DR | | | | | | | | | | 1 | 1 | |
| | | R1-1 | STOP | 36 x 36 | | | | | 1 | 9.00 | | | | | |
| | S-87 | DESIGN | NO PARKING TOW AWAY ZONE | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |

SPECIFIC NOTE(S):
(1) MOUNT BACK TO BACK.
(2) SEE REAR DELINEATION DETAIL.

Hennepin

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.

RYAN ALLERS, LICENSED PROFESSIONAL ENGINEER | 45896 LICENSE NO. | / / DATE

DESIGN BY: A. CHALUPSKY
CAD BY: A. CHALUPSKY
CHECKED BY: R. ALLERS
LAST REVISION: / /

PERMANENT SIGNING TABULATION SHEET

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 215 / 329

# SIGN AND DELINEATOR / MARKER

**Y**

| SIGN NUMBER | PANEL | | | | SUPPORT | | | REMOVE SIGN | SIGN | SALVAGE SIGN | INSTALL SIGN | SALVAGE SIGN PANEL | INSTALL SIGN PANEL | DELINEATOR /MARKER PANEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PANEL CODE | | SIZE (W x H) | MOUNTING HEIGHT | TYPE | RISER POST SIZE | NUMBER OF POSTS | | | | | | | |
| | | | INCHES | FEET | | INCHES | | EACH | SQ FT | EACH | EACH | EACH | EACH | EACH |
| | | | | | | | | | | | | | | |
| S-88 | M3-2 | EAST (YELLOW ON BLUE) | 24 x 12 | 7 | SQ-SOIL | 2 | 1 | | 2.00 | | | | | |
| | M1-6M | HENNEPIN COUNTY 51 (YELLOW ON BLUE) | 24 x 24 | | | | | | 4.00 | | | | | |
| | M5-1L | ADVANCE TURN LEFT (YELLOW ON BLUE) | 21 x 15 | | | | | | 2.19 | | | | | |
| S-89 | R3-8AA | L-R | 36 x 30 | 7 | SQ-SOIL | 2 | 1 | | 7.50 | | | | | |
| | R8-3 | NO PARKING | 24 x 24 | 7 | SQ-SOIL | 2 | 1 | | 4.00 | | | | | |
| S-90 | R1-1 | STOP | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | 1 | 9.00 | | | | | |
| | X4-1 | GUIDE DELINEATOR (BLACK ON WHITE) | | | | | | 1 | | | | | | |
| | M3-2 | EAST (YELLOW ON BLUE) | 24 x 12 | | | | 1 | | 2.00 | | | | | |
| | M1-6M | HENNEPIN COUNTY 51 (YELLOW ON BLUE) | 24 x 24 | | | | | 1 | 4.00 | | | | | |
| | M6-1 | ARROW (YELLOW ON BLUE) | 21 x 15 | | | | | 1 | 2.19 | | | | | |
| | M1-6M | HENNEPIN COUNTY 19 (YELLOW ON BLUE) | 24 x 24 | | | | 1 | 1 | 4.00 | | | | | |
| | M6-4 | DOUBLE ARROW (YELLOW ON BLUE) | 21 x 15 | | | | | 1 | 2.19 | | | | | |
| S-91 | OM1-1 | OBJECT MARKER (YELLOW ON YELLOW) | | 4 | SQ-CONC | 2 | 1 | 1 | | | | | | |
| (1) S-92 | R4-7 | KEEP RIGHT | | 7 | SQ-CONC | 2 | 2 | 1 | | | | | | |
| | R1-1 | STOP | | | | | | | | | | | | |
| | R4-7 | KEEP RIGHT | | | | | | | | | | | | |
| S-93 | M3-4 | WEST (YELLOW ON BLUE) | 24 x 12 | 7 | SQ-CONC | 2 | 1 | | 2.00 | | | | | |
| | M1-6M | HENNEPIN COUNTY 51 (YELLOW ON BLUE) | 24 x 24 | | | | | 1 | 4.00 | | | | | |
| | M6-1 | ARROW (YELLOW ON BLUE) | 21 x 15 | | | | | 1 | 2.19 | | | | | |
| S-94 | OM1-1 | OBJECT MARKER (YELLOW ON YELLOW) | | 4 | SQ-CONC | 2 | 1 | 1 | | | | | | |
| S-95 | R1-1 | STOP | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | | 9.00 | | | | | |
| S-96 | M3-4 | WEST (YELLOW ON BLUE) | 24 x 12 | 7 | SQ-SOIL | 2 | 1 | 1 | 2.00 | | | | | |
| | M1-6M | HENNEPIN COUNTY 51 (YELLOW ON BLUE) | 24 x 24 | | | | | | 4.00 | | | | | |
| | R8-3 | NO PARKING | 24 x 24 | | | | | | 4.00 | | | | | |
| S-97 | W1-1L | SHARP CURVE LEFT | | 7 | SQ-SOIL | 2 | 1 | 1 | | | | | | |
| | R8-3 | NO PARKING | | | | | | | | | | | | |
| S-98 | W11-2 | PEDESTRIAN CROSSING | 36 x 36 | 7 | SQ-SOIL | 2 | 1 | | 9.00 | | | | | |
| | W16-9P | AHEAD PLAQUE (BLACK ON FLUORESCENT YELLOW-GREEN) | 24 x 12 | | | | | | 2.00 | | | | | |
| S-99 | R3-8AD | L-TR | 36 x 30 | 7 | SQ-SOIL | 2 | 1 | | 7.50 | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | PROJECT TOTAL | 92 | 505.33 | | | 34 | 34 | |

SPECIFIC NOTE(S):
(1) MOUNT BACK TO BACK.
(2) SEE REAR DELINEATION DETAIL.

Hennepin

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.

RYAN ALLERS, LICENSED PROFESSIONAL ENGINEER | 45896 LICENSE NO. | / / DATE

DESIGN BY: A. CHALUPSKY
CAD BY: A. CHALUPSKY
CHECKED BY: R. ALLERS
LAST REVISION: / /

PERMANENT SIGNING TABULATION SHEET

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 216 / 329