Technical Memo 5: Detailed Definition of Alternatives - Bus Rapid Transit and MnPASS

Highway 169 Mobility Study

Draft

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HNTB

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Table of Contents

Introduction **3**

2040 No-Build Alternative **4**

Build Alternatives **5**

MnPASS 7

BRT 7

Alternative 1: BRT on US 169 & I-394; MnPASS on US 169 9

BRT Alignment 9

MnPASS Alignment 18

Alternative 2: BRT on US 169 & I-55; MnPASS on US 169 21

BRT Alignment 22

MnPASS Alignment 25

Alternative 3: MnPASS on US 169 to I-494 25

Segments 25

Appendix A: BRT Concept Drawings **26**

Appendix B: MnPASS Concept Drawings **27**

Introduction

The *Highway 169 Mobility Study* is a collaboration between MnDOT, Met Council, and Scott County to develop and evaluate potential options for improving transit and reducing congestion on Highway 169 between Shakopee and Golden Valley. The study focuses on a set of alternatives that includes elements of highway bus rapid transit (BRT), MnPASS Express Lanes, and spot mobility improvements such as the addition of auxiliary lanes or interchange modifications. These improvements are intended to increase mobility, reliability, and safety through the study area. The Highway 169 Corridor Study Area is a 23-mile segment from Highway 41 in Shakopee to Highway 55 in Golden Valley. Located in the southwest quadrant of the Twin Cities region, in the study area Highway 169 passes through Plymouth, Golden Valley, St. Louis Park, Minnetonka, Hopkins, Edina, Eden Prairie, and Bloomington in Hennepin County, and Savage and Shakopee in Scott County. The purpose of this *Detailed Definition of Alternatives* memorandum is to define the alternatives and provide a basis for ridership modeling, frame the scope of future project work, and form a basis for cost estimates for each alternative.

2040 No-Build Alternative

The no-build alternative is included in every transit study to establish a starting point for evaluating the benefits and costs of the build alternatives, as well as to identify the impacts of retaining current conditions. The Highway 169 Transitway is not identified as a funded transitway in the current *Metropolitan Council 2040 Transportation Policy Plan (TPP),* adopted in January 2015. Strategic capacity improvements along Highway 169 include an additional southbound lane in Shakopee between Scott County 69/Canterbury Road and Scott CSAH 21 by 2018. MnPASS lanes are identified in the TPP, in the Long-Range Highway Capital Projects between 2015 and 2024, in the current revenue scenario, including:

- I-35E between Little Canada Road and Ramsey County Road J
- I-94 lanes in both directions between Cedar Ave in Minneapolis and Marion Street in Saint Paul
- I-35W lanes in both directions between MN 36/280 and US-10

The American Boulevard/I-494 BRT is identified in the TPP as an accelerated BRT in an increased revenue scenario. Each of the projects listed below is within the current Long Range Transit Capital Projects list in the TPP, in the current revenue scenario. Each of the projects has an associated local service connectivity plan.

Light Rail Transit (LRT)

- METRO Green Line Extension (SWLRT)
- METRO Blue Line Extension (Bottineau)

Fixed Guideway BRT

- METRO Gold Line

Highway BRT

- METRO Orange Line (I-35W BRT)
- METRO Red Line Extension

Arterial BRT

- Penn Avenue (C Line)
- Chicago-Emerson/Fremont Avenue (D Line)

The year 2040 no-build scenario includes all funded transitways identified in the TPP. In a no-build scenario traffic will continue to increase along the Highway 169 corridor and provide significant back-up for commuters and residents.

Build Alternatives

The build alternatives are composed of BRT operations and MnPASS operations between Marschall Road in Shakopee to downtown Minneapolis using Highway 169 with routes along Highway 55 or I-394. The build alternatives assume the changes outlined in these plans, along with all other local and regional bus improvements, as consistent with guidance from the Metropolitan Council. See *Highway 169 North Analysis* memorandum for evaluation of an alternative Highway 169 BRT route from Marschall Road to Brooklyn Boulevard with connection to METRO Blue Line that is not described within this technical memorandum.[1] The *Highway 169 Mobility Study* analyzes the pairing of BRT and MnPASS infrastructure improvements and their ability to support each other within their transportation goals.

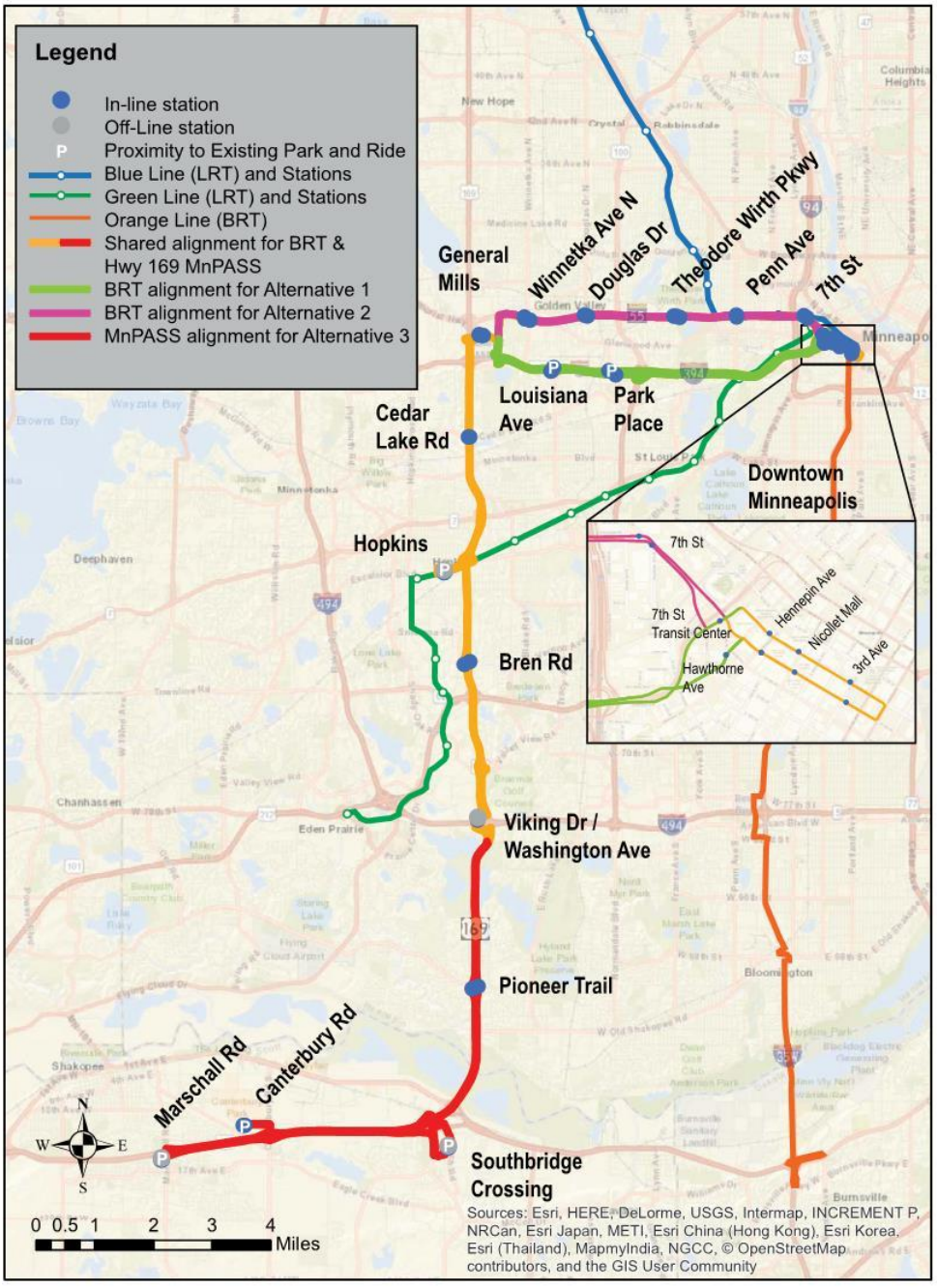
The three build alternatives include:

- Alternative 1: BRT on US 169 & I-394 and MnPASS on US 169.
- Alternative 2: BRT on US 169 & I-55 and MnPASS on US 169
- Alternative 3: MnPASS on US 169 to I-494, with no BRT

See Figure 1 for a map of the three alternatives.

[1] *Highway 169 North Analysis: Highway 169 Mobility Study.* September 2016. https://metrocouncil.org/Transportation/Planning-2/Transit-Plans,-Studies-Reports/Highways-Roads/Highway-Transitway-Corridor-Study/Hwy169NTechMemoApp.aspx

Figure 1: Highway 169 Route Alternatives



MnPASS and BRT are combined within the alternatives 1 and 2 to maximize the use of two infrastructure improvements. The congestion-free MnPASS lanes allow transit, particularly express buses, the ability to travel faster and safer, and more reliably during peak travel times.

MnPASS

MnPASS is a strategy for managing and reducing congestion on some of Minnesota's busiest highways. MnPASS is an Express Lane system that combines high occupancy vehicle and fare based travel together for use during peak travel times. In general, these times are in the morning from 6 am to 10 am and in the evening from 3 pm to 7 pm. During peak travel times, transit, motorcycles, and vehicles with two or more occupants may drive in a MnPASS lane for free. Vehicles with a single occupant may use MnPASS lanes during peak hours for a fee. Fees vary from $0.25 to $8.00 and are posted on overhead electronic sign displays. Payments for trips are done by attaching a MnPASS transponder to a vehicle's windshield. With a MnPASS account, these transponders can be preloaded with money. When driving in a MnPASS lane during peak hours, overhead antennas electronically read the MnPASS transponder and deduct money from the associated account. During off-peak travel times, MnPASS lanes are available to all users on the roadway for free. Motorists may enter and exit MnPASS Express Lanes only where there are dashed, double-white lines. MnPASS Express Lanes are typically separated from regular lanes (general purpose lanes) by solid, double -white lines and dashed, double-white lines. It's always illegal to cross solid, double-white lines. Overhead signs alert motorists of the entry and exit locations for MnPASS Express Lanes.

MnPASS goals are to improve public transit service and ridership, increase car and van pools, increase the number of people that are moved through a corridor during peak travel times, and provide a congestion-free travel choice for commuters. Federal law requires vehicles in the MnPASS Express Lanes travel at speeds above 45 mph for 90 percent of the time or greater during peak travel times.[2] Benefits of MnPASS lanes include rewarding HOV and transit users with an express lane, providing an express lane for those willing to pay, and helping to manage congestion during peak travel times.

BRT

BRT is an enhanced transit service that features high-frequency service, distinct vehicles, limited stops, and station amenities. In contrast to traditional buses, BRT vehicles are specialized to accommodate more passengers and allow for rapid boarding and alighting through off-board fare collection. Vehicles can be either standard 40' buses or articulated 60' buses. BRT stations on the Highway 169 Transitway would be consistent with Metro

[2] Minnesota Department of Transportation. Accessed May 4, 2017.
http://www.dot.state.mn.us/mnpass/useandperformance.html

Transit's Regional Transitway Guidelines. BRT vehicles and stations typically have a unique and identifiable appearance and branding to distinguish them from regular bus service, and stations typically contain shelters with heat and light, specialized landscaping, furniture, raised curbside platforms, distinguishable wayfinding pylons, and real-time bus arrival signs. Stations are integrated with existing pedestrian and bicycle circulation.

Figure 2: Example Online Station



Online, inline, and offline stations were considered along the Highway 169 Transitway. Online stations (Figure 1) are located within the vehicle runningway and the transitway vehicle can access the station without leaving the runningway. Inline stations (Figure 2) are located adjacent to the runningway, typically along freeway interchange ramps. Although they require the transitway vehicle to exit the primary runningway, they provide easy access to a station for buses and immediately return to the runningway. Routes are planned to minimize or avoid turning movements to provide efficient access to inline stations. Offline stations (Figure 3) require transitway vehicles to exit the runningway and require several turning movements resulting in potential traffic delays that impact transitway service speed and reliability, especially during peak travel times.[3]

Figure 3: Example Inline Station



Figure 4: Example Offline Station



[3] Regional Transitway Guidelines. Station and Spacing and Siting Guidelines. pg. 3.2. https://metrocouncil.org/Transportation/Publications-And-Resources/Regional-Transitway-Guidelines-Chapter-3-Station-S.aspx

Alternative 1: BRT on US 169 & I-394; MnPASS on US 169

Alternative 1 incorporates both BRT and MnPASS alignments, as described below.

BRT Alignment

Guideway

BRT will operate on bus-only shoulders between Marschall Road in Shakopee along Highway 169 to Betty Crocker Drive. Buses will enter and exit Highway 169 from existing interchange ramps. Generally, the cost of upgrading BRT shoulders will be part of the MnPASS project costs. The MnPASS project would include 10' wide shoulders, and could be used by BRT. The additional cost of widening the shoulders to 12' for transit use will be part of the BRT costs.

BRT routing would use the MnPASS alignment and options wherever possible. In certain options, additional lanes are considered for construction, to allow the BRT to use MnPASS and access the station platforms. Generally, the BRT routing will run on a 12' bus-only shoulder.

Seven highway alternatives were identified as options for running BRT from Marschall Road in Shakopee to downtown Minneapolis, and three screening criteria were used to narrow the alternatives for further study. The screening criteria included: duplication of existing transit service, direct connections to Minneapolis, and results of a longitudinal employer household dynamics (LEHD) analysis. See the *Initial Alternatives Report* for a detailed description of the screening process and alternatives considered. The criteria were used to identify two main alternatives for further study: BRT on Highway 169 and I-394 and Highway 169 and Highway 55 (TH 55) and MnPASS on Highway 169 from Marschall Rd to TH 55.

Establishing station locations provides the framework for the BRT alignment options. Station location options and subsequent routing balances needs and goals throughout the corridor while recognizing individual community or station contexts. Original station locations were based on the *Highway Transitway Corridor Study*, completed in May 2014. The corridor was made up of eight Highway 169 stations, three I-394 stations, and was 26.9 miles long. The corridor would provide connections to the planned METRO Green Line Extension (SWLRT) and the planned American Boulevard arterial BRT line.

This study, the *Highway 169 Mobility Study*, used the *Highway Transitway Corridor Study* as a starting point but relied on stakeholders within the corridor to continue defining the alternatives. Stakeholders were comprised of two groups, the project management team (PMT) and the technical advisory committee (TAC) which included representatives from Cities and Counties along the corridor. The groups provided input representing the Cities of Shakopee, Savage, Eden Prairie, Bloomington, Minnetonka, St. Louis Park, Hopkins, Golden Valley, Plymouth; Minneapolis, Scott and Hennepin County, MnDOT and the

Metropolitan Council. The PMT and TAC retained the core station locations while analyzing optional routing and station platform placements.

Stations

The project management team (PMT) and the technical advisory committee (TAC) were formed to advise and guide the process for arriving at the current station locations. The two groups included transit providers, stakeholders, and local agencies along the Highway 169 corridor. Individual meetings with the Cities along the corridor were held. The groups and meetings enabled the project team to determine station locations, routing, and termini. The groups revisited all the station locations and assumptions within *Highway Transitway Corridor Study,* reviewing the entire Highway 169 corridor from Shakopee to downtown Minneapolis. Future commercial and residential development was discussed with City engineers and planners, and efforts made to balance station locations and spacing. Generally, to accommodate the length of the corridor and long routing times, attempts were made to stay within proximity to the Highway 169 corridor alignment.

Tables 1 and 2 show the updated potential station locations as analyzed by this *Highway 169 Mobility Study* (Base Station Locations). Station locations were defined based on consideration of their benefits to the transitway, and not the specific location context alone. An arterial BRT goal is for fast reliable service which is balanced with the number of stations and serving different ridership markets. Generally, this study did not recommend online stations due to exorbitant costs, and right-of-way and development constraints.

Table 1: Base Station Locations

Stations	Location	Type, Options
Marschall Road South	Shakopee	Offline
Canterbury Road	Shakopee	Offline
Southbridge Crossing	Shakopee	Offline
Pioneer Trail	Eden Prairie/ Bloomington	Inline
Bren Road	Minnetonka/ Edina	Inline
Viking Drive/ Washington Avenue	Eden Prairie/ Edina	Offline, option for Online
Hopkins	Hopkins	Offline
Cedar Lake Road	St. Louis Park/ Minnetonka	Inline, online or offline
General Mills	Golden Valley	Offline

Table 2: Downtown Station Locations

Station	Description	Type, Option
Hennepin Avenue	6th Street; Between 1st Avenue N and Hennepin Avenue	EB Online
Nicollet Mall	6th Street; Between Hennepin Avenue and Nicollet Mall	EB Online
3rd Avenue	6th Street; Between 2nd Avenue and 3rd Avenue	EB Online
3rd Avenue	7th Street; Between 4th Avenue and 3rd Avenue	WB Online
Nicollet Mall	7th Street: Between Nicollet Mall and S Marquette Avenue	WB Online
Hennepin Avenue	7th Street: Between Hennepin Avenue and Nicollet Mall	WB Online

All potential station locations for the base BRT routing within the alternatives can be constructed with no private property acquisitions. All stations have existing or future connecting bus routes served by Metro Transit, Minnesota Valley Transit Authority (MVTA), SouthWest Transit, and/or Plymouth Metrolink routes. See the *Highway 169 BRT Transit Service Plan and O&M Costs* memorandum for details on connecting bus routes. The numbered bus routes within the bullets below represent Metro Transit service unless indicated otherwise. Some existing station infrastructure can be utilized at certain station locations along the Highway 169 and I-394 corridors, and is described below.

Marschall Road is an existing park and ride in Shakopee serving the Marschall Road Transit Station at 1615 Weston Court. This location was determined to be the terminus for the study through Project Management Team collaboration. Marschall Road is considered a hub for transit service with Scott County and City of Shakopee interested in future service and expanded infrastructure. See Appendix A, Sheet 2.

Connecting bus routes include:

- MVTA 490
- MVTA 493
- MVTA 495
- MVTA 496 (new)
- MVTA 497
- MCTA 498 (new)
- MVTA 499
- Mystic Lake shuttle (private)

Optional routing was considered at Marschall Road, following local roads (12th Avenue/ Vierling Drive.) from Marschall Road Station to Canterbury Road. Base routing uses the Highway 169 alignment.

Canterbury Road is also an existing park and ride in Shakopee, within the Seagate Technology parking lot at 1280 Disk Drive, SW corner of the parking lot. The station offers proximity to some of the larger employers in Scott County, some of which operate 24 hours a day, and will connect riders to the Shakopee circulator. A walk-up/transit transfer station and retention of the park and ride lease with Seagate was considered. The station location chosen is within the parking lot at Seagate in the northwest corner. Canterbury Park is currently redeveloping portions of their site and plans additional redevelopment. In future planning efforts, the station location may shift to better serve job and housing concentrations.

Connecting bus routes include:

- MVTA 498 (new)
- MVTA 499

See Appendix A, Sheet 3 for the base option. Optional routing was considered at Canterbury Station for an online station, to better facilitate use of the MnPASS facilities on Highway 169. The online station option was dismissed due to low ridership for this type of investment and the conclusion in previous studies to consider online stations primarily in unique high-density contexts.

Southbridge Crossing is an existing park and ride in Shakopee. The station location requires an offline route from Highway 169. Base bus routing via CH 21 and Hansen Avenue was chosen to limit circuity for entering and exiting the Highway 169 alignment. Large traffic demand was noted for the Minnesota river crossing at this location warranting demand for the park and ride station. The market the station could capture includes existing and future City of Savage riders and riders from development potential.

Connecting bus routes include:

- MVTA 490
- MVTA 491
- MVTA 492
- MVTA 499

See Appendix A, Sheets 4 and 5 for the base option. Due to the proximity of the additional park and ride at Marschall Road Station, consideration was given to not retain this station location as the potential ridership benefits may be offset by the increased travel times. It was discussed whether Highway 169 BRT service was needed until local development could support all-day frequent service. In that case, Southbridge would retain the existing park and ride for express bus service. A hybrid approach for providing BRT and local bus service was also considered such as during peak ridership providing a BRT stop or altering the Highway 101 roadway alignment for more direct bus routing.

Pioneer Trail and Old Shakopee Road stations were analyzed simultaneously. The potential station location determined to be carried forward by the PMT and TAC is at Pioneer Trail. Transit providers recommended Pioneer Trail due to its ability to connect to existing transit

service. Old Shakopee Road was considered as bus service could be extended to the station to connect it with the many destinations to the east, including Normandale Community College. City of Bloomington originally recommended Old Shakopee Road as a station location. High volume ramps at Old Shakopee Road indicated significant activity and therefore potential ridership. Old Shakopee Road could be served by local bus connection to Orange Line BRT. However, no transit service is planned on Old Shakopee Road, nor is there a practical route extension to the west on this road. Adding a transit route to connect to Orange Line (at I-35W) and businesses east along Old Shakopee Road, would be additional cost to the overall Highway 169 project cost, and was considered too cost prohibitive.

Connecting bus routes include:

- 547 (new)

See Appendix A, Sheet 6 for the base option.

Viking Drive/Washington Avenue station would serve commercial development in the Golden Triangle and connect to extended local service along 78th Street as well as SouthWest Transit service in the Golden Triangle. Eventually the station would connect to planned future arterial BRT service along American Boulevard. The station platforms would be located on 78th Street just east of Washington Avenue, as shown on Sheet 7 in Appendix A. Roundabouts at Viking Drive and Washington Avenue would be used to route buses from Highway 169 to the station, and buses would use the 169 Frontage Road to return to Highway 169 via the Valley View Road ramps.

Connecting bus routes include:

- 542 (extended)
- 630N
- 630S
- 632

Options considered for this station include:

- An online station at 78th Street that would allow BRT buses to remain on Highway 169 while serving a station in the Golden Triangle. Depending on the configuration of the station, BRT buses would use the MnPASS lane to stop at a center-running station, or remain in the bus-only shoulder to stop at a side-running station. See Sheet 7A in Appendix A for the concept drawing. This option has been retained for further study and a cost estimate developed.
- A connection to Southwest LRT Golden Triangle Station, however due to the Golden Triangle Station's distance off Highway 169, the PMT and TAC decided not to directly connect to Golden Triangle Station. This option was dismissed.
- An inline station at Valley View Road to serve Golden Triangle. This option was dismissed because of its distance from destinations in the Golden Triangle.

See Appendix A, Sheet 7 for the base option, and 7A for the online station. Optional routing was considered at Viking Drive/Washington Avenue Station for an online station, to better facilitate the use of MnPASS facilities and eliminate the circuitous routing to the station. The routing and offline station remains in the station alternatives to not preclude development of American Boulevard arterial BRT planning. An option to have the BRT routing use local roads and include a station at Valley View Road with the BRT using Washington Avenue to access Highway 169 to the north at Valley View Road was also considered.

Bren Road is an inline station with proper spacing for BRT routing. United Health Group runs a shuttle between campuses that could be connected to BRT. Consistent with FHWA preferences, a far-side station location was selected for northbound routing. Some advantages of far-side station locations include minimizing conflict between right turning vehicles and buses, encouraging pedestrians to cross behind the bus, shorter deceleration distances for buses, and gaps in traffic flow created for buses re-entering the flow of traffic. A near-side station location was selected for southbound routing due to the available right-of-way and the increased conflict with the bus and the dual left-turns from traffic turning movements on the south side.

Connecting bus routes include:

- 12
- 42 (expanded)
- 46
- 146
- 615

See Appendix A, Sheet 8 for the base option.

Hopkins downtown station is a point of connection to SWLRT, a primary consideration within the study. This issue was studied at a high level in the *Highway Transitway Corridor Study*. Connection to SWLRT at the Downtown Hopkins station provides strong regional bus and LRT connections. A 280-space park and ride is under construction at Hopkins Station at 8th Street and Excelsior Boulevard. The Downtown Hopkins SWLRT station is envisioned as an activity center with a direct connection to Main Street in Downtown Hopkins. The BRT routing at the station would use a future bus pull-in along Excelsior Boulevard and use 8th Street S, 1st Street S, and 9th Avenue S as a bus turnaround. The Hopkins station is considered the base option within the alternatives. It was determined this station was more efficient than connecting with another SWLRT station at Blake Road. A station location at Highway 7 was eliminated for its inability to connect to SWLRT, a lack of pedestrian access, and bus-turn-around challenges along Highway 169.

Connecting bus routes include:

- 12
- 605
- 612
- 614

- 615
- 664
- 670

See Appendix A, Sheet 9 for the base option. Optional routing was considered where Highway 169 crosses the SWLRT alignment, either at Golden Valley Triangle station, Downtown Hopkins station or Excelsior Boulevard station. Due to the bus turnaround and future SWLRT station area planning, and goals of the BRT route, the Downtown Hopkins station routing was chosen.

Cedar Lake Road station and Minnetonka Boulevard were analyzed to provide east-west local transit service. Additional apartments and population density is planned on Cedar Lake Road. The base option determined for the alternatives includes the offset interchange to accommodate an online station on the bridge. The offset interchange was chosen as a lower build option to accommodate MnPASS lanes, and allow buses to use the exit and entrance ramps to access the online station on top of the bridge. Multiple interchange options and MnPASS configurations were considered, including:

- a single point offset interchange
- an offset interchange with an online BRT station at Cedar Lake Road
- a service road connecting Cedar Lake Road to the Minnetonka Boulevard interchange

Multiple placements of the BRT platforms and BRT routing were considered to maximize the infrastructure for both MnPASS lanes and BRT shoulders and an online station. See concepts within Appendix A, Sheets 10A, 10B, and 10C.

Connecting bus routes include:

- 9
- 643
- 663

See Appendix A, Sheet 10 for the base option. Optional routing was considered at Cedar Lake Road to facilitate a new interchange configuration and optimal MnPASS options and facilities. The online station routing remains, with bus routing using ramps to exit and enter the Highway 169 alignment, and serving station platforms on the Cedar Lake Road bridge over Highway 169, with no elevator towers needed.

General Mills campus station is logical for BRT due to the concentration of employees and trip generation. The existing transit stop along Betty Crocker Drive could be utilized along the north end of the campus within General Mills parking lot, using Betty Crocker Drive as the entrance and exit from Highway 169.

Connecting bus routes include:

- 675
- 740 (extended) (Plymouth Metrolink)

See Appendix A, Sheet 11 for the base option. Optional routing was considered at General Mills campus to enter and exit the campus, and access I-394 and/or TH 55 for the respective BRT route. A slip ramp was considered for direct access to the south end of the campus, with final routing consideration chosen as Betty Crocker Drive.

Louisiana Avenue station provides access to jobs and existing transit service. Louisiana Avenue is well-served by express bus today.

Connecting bus routes include:

- 9
- 604
- 643
- 649
- 652
- 663
- 672
- 675
- 705
- 756

See Appendix A, Sheet 17 for the base option.

West End station serves Park Place Boulevard and Xenia Avenue and a high density of jobs and existing transit service and future development. The base option is to reconstruct the park and ride at the corner of 16th Street and Park Place Boulevard for the eastbound station and the westbound I-394 on-ramp for a far-side westbound station location. The base option allows for inline stations. The eastbound station location considers a reconfiguration of the existing park and ride at the corner of Park Place Boulevard/ Xenia Avenue and the I-394 entrance ramp, removing the free right-hand turning movement to accommodate bus routing. Both station locations allow for a bus routing configuration that could enter and exit the eastbound and westbound managed lanes on I-394, as well as enter and exit I-394 when the reversible managed lanes are closed. The pedestrian crossing at Xenia Avenue is possible but uncomfortable due to the interstate traffic underneath.

Multiple station location options were considered at this station due to the optional bus routing for entering and exiting the managed lane and development needs.

- The eastbound routing considered includes Park Place to 16th Street to Lilac Drive (frontage road) to eastbound I-394 (during am peak when MnPASS is open) or Park Place to 16th Street to Lilac Drive/Wayzata Boulevard back to Park Place to eastbound I-394 (during pm peak when eastbound MnPASS is closed).
- The same option was considered for westbound service from Park Place to 16th Street to Lilac Drive/Wayzata Boulevard back to Park Place to westbound I-394.
- The platform location considered was along the intersection of Park Place Boulevard and 16th Street. No vehicle connection from 16th Street to Wayzata Boulevard/Lilac

Drive South is planned; only a bicycle and pedestrian connection, therefore the entrance to the managed lane would occur along Utica and Wayzata Boulevard.

All these routing options were dismissed due to no thru vehicle connection for 16th Street planned by the City of Golden Valley and future development.

Connecting bus routes include:

- 9
- 604
- 643
- 649

See Appendix A, Sheet 18 for the base option. Optional routing was considered for the West End Station or original Park Place/Xenia Avenue Station, to serve the high density of employment and development. Bus routing was considered that maximizes existing infrastructure, future development plans and existing Metro Transit routes and park and rides.

Hawthorne Avenue station is a westbound only station, close to the 7th Street Transit Center. Hawthorne Avenue is a unique station to alternative 1.

Downtown Stations are to use 6th and 7th Street routes for BRT transit operations. The station platforms will be similar to existing and planned arterial BRT stations, which accommodate downtown conditions. Similar platform length of 160 feet is considered. The use of 8th Street and planned arterial BRT station platforms was considered instead of the 6th and 7th Street pairs.

For connecting bus routes at Hawthorne Avenue station and the Downtown Stations, see the *Highway 169 BRT Transit Service Plan and O&M Costs memorandum* for details. BRT enters downtown Minneapolis on I-394 from either the MnPASS managed lanes or the shoulders using exit 9B or 6th St N continuing with a right-hand turn onto 6th Street North. BRT exits downtown Minneapolis on Hawthorne Avenue, veering right onto Linden Ave and enters I-394 westbound.

See Table 3 for a summary of alternative 1 Station locations, either an online, inline, and offline station. Online stations are located within the guideway, inline stations are located adjacent to the guideway, typically along freeway interchange ramps, and offline stations require transitway vehicles to exit the guideway.

Table 3: Alternative 1 Stations

Station	Type, Options
Marschall Road South	Offline
Canterbury Road	Offline
Southbridge Crossing	Offline
Pioneer Trail	Inline
Bren Road	Inline
Viking Drive/ Washington Avenue	Offline, option for online
Hopkins	Offline
Cedar Lake Road	Inline, online or offline
General Mills	Offline
West End	Online
Hawthorne Avenue	Online
Hennepin Avenue	EB Online
Nicollet Mall	EB Online
3rd Avenue	EB Online
3rd Avenue	WB Online
Nicollet Mall	WB Online
Hennepin Avenue	WB Online

MnPASS Alignment

MnPASS Express Lanes are considered on Highway 169, running north-south for most of the corridor, and east-west in the southern portion in Scott County. MnPASS lanes are center-running for their entire length. The termini of the MnPASS alignment are Marschall Road in Shakopee on the south end and south of the interchanges at I-394 and Betty Crocker Drive on the north end. The alignment runs along Highway 169 and connects with Highway 21, 13 and 101 in Scott County, then crosses the Minnesota river on the Bloomington Ferry river bridge and connects with Interstate 494, Highways 62, 7, 16, Interstate I-394 and Highway 55 in Hennepin County.

System Connections

The alignment along Highway 169 is consistent with MnDOT's vision for a system of MnPASS lanes. To complete the system, connections between various corridors are a primary component. Creating efficient connections between corridors in the system allows for faster, convenient, and safer travel for MnPASS users. An efficient and complete MnPASS system will also improve congestion management. Creating system connections within all alternatives was a primary consideration within the study. The study analyzed existing corridor conditions, available right-of-way, and the efficiency and capacity each connection could provide. While reviewing the feasibility of the options for interchange reconstruction and retrofits to existing infrastructure, options were generally categorized into low builds and high builds. The Highway 169 alignment provides connection to the following existing and future MnPASS corridors:

- Directly or indirectly to existing MnPASS lanes on I-394
- Future MnPASS lanes considered for the corridors in the current revenue scenario in the *Metropolitan Council 2040 Transportation Policy Plan*

Base MnPASS alignments were developed to provide an analysis of a cost-effective system for MnPASS. A primary conceptual engineering challenge is balancing center or median-running MnPASS lanes with shoulder-running lanes to provide efficient BRT entrance and exit from the highway alignment. Median-running express lanes are good for express bus operations, however do not provide quick and easy access to inline or offline stations. The BRT station locations and routing are considered as a parameter for the MnPASS alignment, but did not prohibit a base option analysis that is the most efficient for the MnPASS system.

Segments

For conceptual geometric engineering, the alignment is split into nine segments. The use of segments allows for the comparison of options within the MnPASS alignment, see Table 3.

Table 4: MnPASS Alignment Segments

Segment	Begins	Ends
1	Marschall Road	South of I-494 Interchange
2	South of I-494 Interchange	North of I-494 Interchange
3	North of I-494 Interchange	South of TH 62 Interchange
4	South of TH 62 Interchange	North of TH 62 Interchange
5	North of TH 62 Interchange	North of Interlachen Boulevard
6	North of Interlachen Boulevard	South of Bridge at 2nd Street
7	South of Bridge at 2nd Street	South of Bridge at Minnetonka Boulevard
8	South of Bridge at Minnetonka Boulevard	West 16th Street
9	West 16th Street	TH 55

Below is a description of each segment and the cross sections considered for adding MnPASS within the Highway 169 Transitway.

Segment 1 (Marshall Road to south of I-494 interchange) expands Highway 169 to the inside for the MnPASS lanes. The base, or lower build, option considered for the Bloomington Ferry Bridge over the Minnesota River is Segment 1, using the existing width with minor widenings, lane reconfiguration, and smaller shoulder widths. The higher build is Segment 1a, providing expansions to several spans of the bridge to accommodate the lanes and recommended shoulder widths. See Appendix B, Sheets 1 through 9 and the typical section of Bloomington Ferry Bridge at the end of Appendix B.

Segment 2 (south of I-494 to north of I-494 interchange) expands Highway 169 to the inside for the MnPASS lanes. Segment 2 is divided into lower and higher build options. Segment 2a is the base, or lower build, option where only MnPASS is built and the directional bridges over Highway 169 are expanded accordingly. Segment 2b is the higher build option with both MnPASS lanes center running and widened shoulders to for BRT routing to include an online BRT station built at the bridge crossing over West 78th Street. See Appendix B, Sheets 9 through 11.

Segment 3 (north of I-494 to south of TH 62 interchange) expands Highway 169 to the inside for MnPASS. See Appendix B Sheets 11 and 12.

Segment 4 (south of TH 62 Interchange to north of TH 62 interchange) expands Highway 169 to the inside for MnPASS. This segment has higher cost associated with it due to a significant amount of reconstruction required, including adjustments to the ramp loops for the TH 62 interchange. See Appendix B, Sheets 12 through 14.

Segment 5 (north of TH 62 interchange to north of Interlachen Boulevard) expands Highway 169 to the outside while adjusting ramp connections and the lane reconfiguration. This segment utilizes a significant portion of existing pavement. Replacement of the bridge over Nine Mile Creek is scheduled to be completed in November 2017 under a different project. The bridge replacement will provide adequate width on the bridge to accommodate future MnPASS lanes without additional bridge widening or structure modification. See Appendix B, Sheets 14 through 15 and 14A.

Segment 6 (north of Interlachen Boulevard to south of Bridge at 2nd Street) expands Highway 169 to the outside. Options were explored at the Excelsior Boulevard crossing. Segment 6 is the base, or lower build, option providing a small expansion to the west edge of the bridge. In this option, northbound Highway 169 has a MnPASS lane and two thru lanes. Segment 6a, or higher build option, provides a larger expansion to the west side of the bridge which allows for northbound Highway 169 to contain a MnPASS lane, two thru lanes, and an auxiliary lane. This option will require retaining walls to be constructed. Northbound existing conditions for this area include two thru lanes and an auxiliary (exit) lane. See Appendix B, Sheets 15 through 16 and 15A through 16A.

Segment 7 (south of Bridge at 2nd Street to south of Bridge at Minnetonka Boulevard) expands Highway 169 to both the inside and outside in various locations, adjusts ramp connections, and reconfigures lanes. See Appendix B, Sheets 16, 15A, 16A, and 17.

Segment 8 (south of Bridge at Minnetonka Boulevard to West 16th Street) contains four different options. At Cedar Lake Road, the existing configuration includes button hook ramps south of Cedar Lake Road. With the expansion of Highway 169 for MnPASS, these button hooks are no longer viable, therefore several interchange options were considered. Segment 8, the base or comparatively lower build option, includes an offset interchange. The three additional options considered include:

- Segment 8a, a single point offset interchange
- Segment 8b, an offset interchange with an online BRT station at Cedar Lake Road
- Segment 8c, a service road connecting Cedar Lake Road to the Minnetonka Boulevard interchange

The three options explore multiple solutions to seamlessly move traffic between Highway 169 and Cedar Lake Road as well as maintaining local road access. Some examples of infrastructure included in these alternatives include ramps on new bridges over Highway 169, local traffic rerouted over Highway 169, local traffic rerouted under Highway 169, or a service road running parallel to Highway 169 to connect to the Minnetonka Boulevard interchange. All options require various amounts of regrading and retaining walls. See Appendix B, Sheet 17, 18, 17A, 18A, 17B, 18B, 17C, 18C, and 18D.

Segment 9 (West 16th Street to TH 55) includes the I-394 and TH 55 interchanges. Two options were explored for this segment. The base or lower build option retains most of the existing interchange infrastructure and expands as required for the MnPASS lanes. The higher build option is a large turbine interchange at I-394 and a reconfiguration of the TH 55 interchange. See Appendix B, Sheets 18 through 21, and 18D through 21D.

For both alternatives 1 and 2, the base or lower build option, the MnPASS lanes terminate at I-394. In the low build option, MnPASS lanes on Highway 169 terminate just north of the I-394 interchange, not including a direct connection to I-394. MnPASS users will merge from the inside MnPASS lanes to the outside lanes to use the appropriate exit ramps to I-394. Once on I-394, users can merge back to the inside to resume use of the MnPASS lanes. The high build option includes a direct connection to the MnPASS lanes on I-394.

Bridges

Highway 169 crosses Bassett Creek, Minnehaha Creek, Nine Mile Creek, Anderson Lakes Parks Reserve, and the Minnesota River in the study area. Nine Mile Creek bridge is currently being reconstructed for six lanes and the ability to accommodate a MnPASS lane and a bus-only shoulder. Bloomington Ferry River bridge provides a critical river crossing within the south metropolitan area. The next closest river crossing is on I-35W multiple miles to the east.

Alternative 2: BRT on US 169 & I-55; MnPASS on US 169

This build alternative assumes arterial BRT operations between downtown Minneapolis and Shakopee, using Highway 169, TH 55, and MnPASS operations between Marschall Road and TH 55. Alternatives 1 and 2 include a common guideway along Highway 169 for BRT routing. Alternatives 1 and 2 also include common BRT station locations along Highway 169 and in downtown Minneapolis. Alternative 2 includes station locations along TH 55 and not along I-394. MnPASS will be center-running within the Highway 169 Transitway alignment prior to the I-394 interchange and BRT operations will use the outside lane along TH 55.

BRT Alignment

Guideway

Alternative 2 follows Highway 169 guideway and TH 55. BRT will operate on bus-only shoulders within the Highway 169 guideway, the same as alternative 1. BRT routing will use the Betty Crocker Drive exit and entrance from Highway 169 (serving the potential station platform on Betty Crocker Drive at the General Mills campus) to enter and exit the TH 55 alignment. The outside lane along TH 55 will be used to access stations platforms on the right-hand side.

BRT will use the same guideway in the downtown core of Minneapolis as alternative 1, altering only the entry and exit points. BRT enters downtown Minneapolis on TH 55 using 10th St N, turning left on Glenwood Avenue and right onto 6th Street North. The bus turns right at 4th Avenue to its terminus. Westbound BRT trips would exit downtown Minneapolis on 7th Street, making a left turn to travel westbound on TH 55.

Stations

All stations along the Highway 169 segment of alternative 1 are also included in alternative 2. General Mills Station uses Betty Crocker Drive, and is a common station between alternatives 1 and 2 and a diverge point for the I-394 BRT route and the TH 55 BRT routes.

Five stations are proposed along TH 55 (from west to east) including Winnetka Avenue N, Douglas Drive, Theodore Wirth Parkway, Penn Avenue, and 7th Street and Olson station. Far-sided stations were considered consistent with *Metro Transit's Regional Transitway Guidelines*. Certain locations were considered for near side station locations due to traffic operations and to facilitate operations to Blue Line LRT at Penn Avenue.

Free right-hand turning movements by general traffic are eliminated wherever possible to protect the pedestrian environment for BRT station access. Far-side and near-side stations were considered based on specific station context, pedestrian access needs, bus routing, future planned development, intersection configuration, and traffic operations.

Boone Avenue station was considered as a station location but dismissed. The station locations were considered simultaneously. This station was eliminated because of its proximity to other potential station locations on Winnetka Avenue North and to General Mills station. Walkability at this intersection is also poor.

Connecting bus routes include:

- 756

Winnetka Avenue station is considered to have higher potential for development at the intersection corners than Boone Avenue. A pedestrian bridge is present, though not ADA compliant, residential density is higher, and buses to New Hope connect at this location.

Connecting bus routes include:

- 705

Douglas Drive station uses the existing crosswalk configuration as the base condition. A pedestrian underpass was considered as a high build option at this intersection, along with the reconstruction of Douglas Drive in 2017. Redevelopment on the corners of the intersection is planned. Future planned construction work is considered in the alternative concept.

Connecting bus routes include:

- 755

Theodore Wirth Parkway station is considered for multiple platform locations between Theodore Wirth Parkway and Meadow Lane N intersections. Far side platforms for eastbound are options, either closer to Meadow Lane N and an existing transit stop or Theodore Wirth Parkway. Far side platforms are also considered for westbound, either just past the intersection of Theodore Wirth Parkway, or within the adjacent driveway (parallel to TH 55) at an existing transit stop.

Connecting bus routes include:

- 755

Penn Avenue station is considered both near side for eastbound, and far side for westbound at existing transit stops, connect to the Blue Line LRT station platform, and accommodate existing traffic operations.

Connecting bus routes include:

- Blue Line LRT
- Penn Avenue BRT (C-Line)
- 19
- 755

7th Street station relies on the use of the existing arterial BRT stations at the corner of 7th Street and TH 55 (Olson Memorial Drive).

Connecting bus routes include:

- Penn Avenue BRT
- Chicago/Fremont Avenue BRT (D-Line)
- 5
- 19
- 22
- 755

7th Street Transit Center stations include an eastbound station on Glenwood Avenue and a westbound station on 7th Street (at the corner of 9th Street, Glenwood Avenue and 2nd Avenue North). BRT enters downtown Minneapolis on TH 55 using 10th St N, turning left on Glenwood Avenue and right onto 6th Street North. The bus turns right at 4th Avenue,

with another right-hand turn onto 7th Street. BRT exits downtown Minneapolis on 7th Street, making a left-hand turn to travel westbound on TH 55.

Downtown Stations are the same for alternatives 1 and 2. The stations will use 6th and 7th Street for BRT transit operations. The station platforms are similar to existing and planned arterial BRT stations, which accommodate downtown conditions. Similar platform length of 160 feet is considered. The use of 8th Street and planned arterial BRT station platforms was considered instead of the 6th and 7th Street pairs.

Downtown Stations provide convenient connections to various METRO lines, including Green Line, Blue Line, Green Line Extension (SWLRT), Blue Line Extension (Bottineau), Orange Line, Northstar Commuter Rail Line, and an array of local and express bus routes.

See Table 5 for a summary of alternative 2 Station locations, either an online, inline, and offline station. Online stations are located within the guideway, inline stations are located adjacent to the guideway, typically along freeway interchange ramps, and offline stations require transitway vehicles to exit the guideway.

Table 5: Alternative 2 Stations

Station	Type, Options
Marschall Road South	Offline
Canterbury Road	Offline
Southbridge Crossing	Offline
Pioneer Trail	Inline
Bren Road	Inline
Viking Drive/ Washington Avenue	Offline, option for online
Hopkins	Offline
Cedar Lake Road	Inline, online or offline
General Mills	Offline
Winnetka Avenue	Online
Douglas Drive	Online
Theodore Wirth Parkway	Online
Penn Avenue	Online
7th Street Transit Center	Online
Hennepin Avenue	EB Online
Nicollet Mall	EB Online
3rd Avenue	EB Online
3rd Avenue	WB Online
Nicollet Mall	WB Online
Hennepin Avenue	WB Online

MnPASS Alignment

The MnPASS alignment for alternative 2 is the same as in alternative 1, terminating in Shakopee at Marschall Road and south of the interchanges of Highway 169 and I-394 and Betty Crocker Drive. The Segments are the same as alternative 1, with details found above in the alternative 1, MnPASS Alignment section.

Alternative 3: MnPASS on US 169 to I-494

A critical river crossing is provided by the Bloomington Ferry River bridge, warranting demand for MnPASS lanes due to congestion on Highway 169. See the *Traffic Operations and Transit Forecasting Technical Memorandum* for detailed analysis on the needs due to the concentrated congestion along certain segments of Highway 169.

This build alternative assumes no BRT operations, only MnPASS operations between Shakopee (Marschall Road) and I-494.

Segments

In this alignment option, the Segments are the same as alternative 1 except the MnPASS lanes terminate at I-494. MnPASS lanes on Highway 169 terminate at the I-494 interchange and do not include a direct connection. MnPASS users will be required to merge from the inside MnPASS lanes to the outside lanes to use the appropriate I-494 exit ramps. For this alternative, the alignment would consist of Segment 1 and Segment 2. These segments are described in the Alignment 1 section, and their location is outlined above in Table 4.

Appendix A: BRT Concept Drawings

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STATION KEY MAP

N

Golden Valley

MINNESOTA 55

Winnetka Ave N Station

Douglas Dr Station

Penn Ave Station

7th St and TH 55 Station

METRO Blue Line

C Line

Betty Crocker Dr Station

INTERSTATE 394

Theodore Wirth Pkwy Station

Minneapolis Downtown Stations

Louisiana Ave Station

West End Station

Cedar Lake Rd Station

St. Louis Park

METRO Green Line

Hopkins

Hopkins Station

169

Edina

Bren Rd Station

MINNESOTA 62

INTERSTATE 494

A/B

Viking Dr/ Washington Ave Station

Eden Prairie

Bloomington

Pioneer Trail Station

Station Locations
A/B indicate alternative locations

Canterbury Station

Shakopee

169

Marschall Rd Station

Southbridge Crossing Station



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MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
STATION OVERVIEW

SHEET 1 OF 19

100
SCALE IN FEET

N

Existing and Potential Connecting Bus Routes:
MVTA Express Route 490
MVTA Express Route 493
MVTA 495
MVTA 497
MVTA 499 (Enhance, Restructure)

Marschall Road Transit Station Park and Ride
-400 parking spaces
-indoor climate controlled waiting area
-bike racks

169

3 4 2 1
80' 80'

Marschall Rd
Transit Station Building

Weston Ct

Marschall Rd

Kohls

STATION KEY MAP
METRO Blue Line
C Line
METRO Green Line
55
394
169
62
494
Station Locations

Specific Notes
1. New Marschall Road park and ride bus access only
2. Existing Marschall Road platforms
3. Passenger vehicle parking lot entry and exit
4. 10 parking stalls removed

SOUTHBOUND/WESTBOUND
NORTHBOUND/EASTBOUND
SB PLATFORM LOCATION
NB PLATFORM LOCATION
ALTERNATIVE ROUTING
C-LINE BRT
GREEN LINE LRT TRACKS
BLUE LINE LRT TRACKS
RIGHT OF WAY
EXISTING MANHOLE
EXISTING LIGHT POLE
EXISTING DRAINAGE STRUCTURE
EXISTING BUS STOP
PARK AND RIDE
TRAFFIC SIGNAL
PROPOSED ROADWAY
PROPOSED SIDEWALK
PROPOSED TRANSIT ONLY

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MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
MARSCHALL RD STATION

SHEET 2 OF 19

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Placeholder: Station location pending discussion with City of Shakopee

Specific Notes

1. Remove parking stall row, approximately 26 parking stalls removed, driving aisle to remain
2. Station location to be determined with future developments

12th Ave E

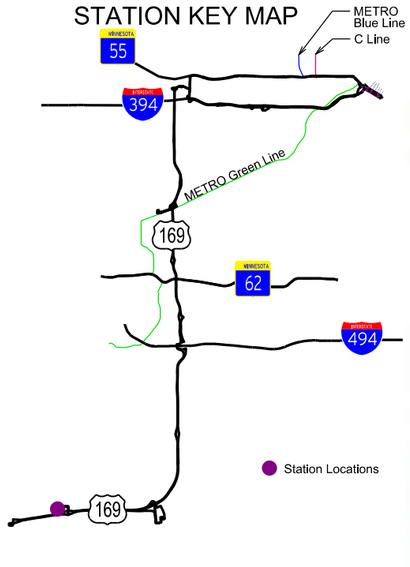
Seagate Technology

Secretariat Dr

80'

80'

STATION KEY MAP



- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
- PARK AND RIDE
- TRAFFIC SIGNAL
- PROPOSED ROADWAY
- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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MNDOT TH 169 STUDY

TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES

CANTERBURY STATION - OPTION A

SHEET 3 OF 19

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SCALE IN FEET

N

MINNESOTA 21

Hansen Ave

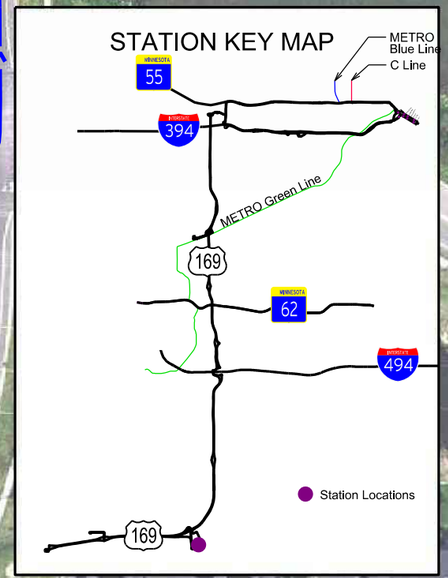
Crossings Blvd

1

Specific Notes

1 Existing 2-way stop of Hansen Ave will convert to all-way

STATION KEY MAP



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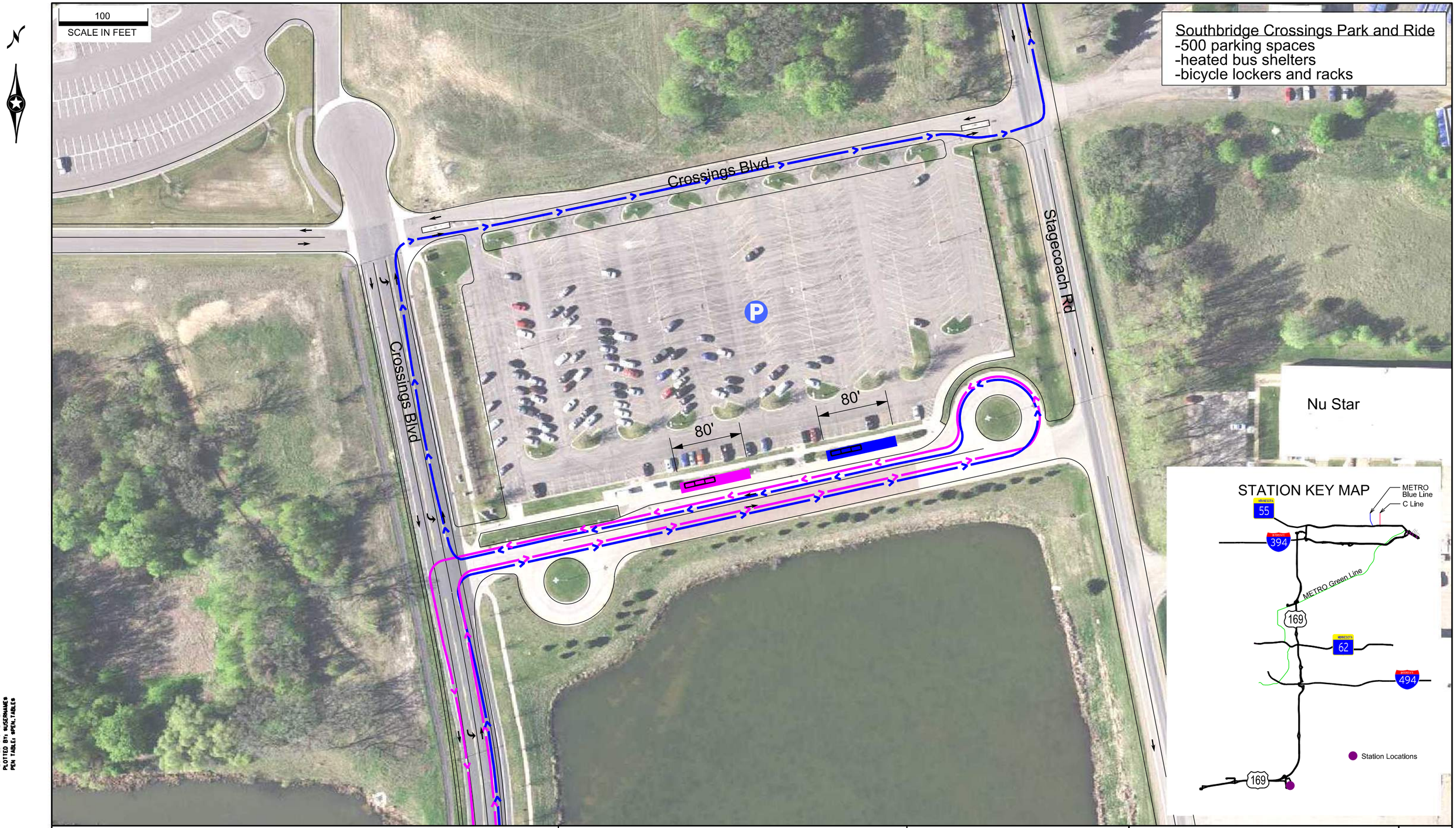
- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
- PARK AND RIDE
- TRAFFIC SIGNAL
- PROPOSED ROADWAY
- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
SOUTHBRIDGE CROSSING STATION

SHEET 4 OF 19



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- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
- PARK AND RIDE
- TRAFFIC SIGNAL
- PROPOSED ROADWAY
- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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MNDOT TH 169 STUDY

TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES

SOUTHBRIDGE CROSSING STATION

N

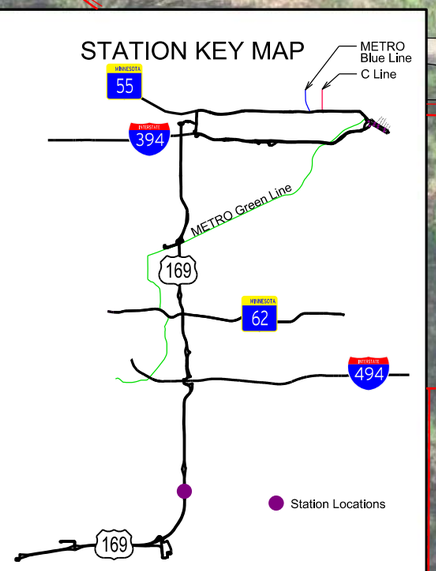
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SCALE IN FEET

169

Pioneer Trail

80'

STATION KEY MAP



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- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
- PARK AND RIDE
- TRAFFIC SIGNAL
- PROPOSED ROADWAY
- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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MNDOT TH 169 STUDY

TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES

PIONEER TRAIL

SHEET 6 OF 19

100
SCALE IN FEET

80'

80'

W 78th St

Viking Dr

Washington Ave S

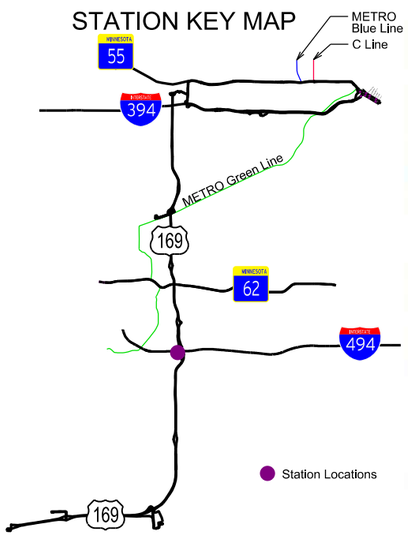
W 78th St

Ramp to Washington Ave S

INTERSTATE
494

169

STATION KEY MAP



- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
- PARK AND RIDE
- TRAFFIC SIGNAL
- PROPOSED ROADWAY
- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
VIKING DR/WASHINGTON AVE STATION

SHEET 7 OF 19

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SCALE IN FEET

W 78th St

80'

80'

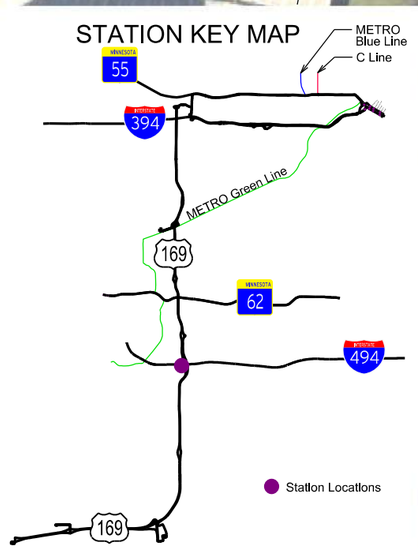
Ramp from I-494

169

Ramp from I-494

Frontage Rd

STATION KEY MAP



METRO Blue Line
C Line

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- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- PROPOSED ROADWAY WORK
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
- PARK AND RIDE
- TRAFFIC SIGNAL
- PROPOSED ROADWAY
- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
VIKING DR/WASHINGTON AVE STATION - OPTION A

SHEET 7A OF 19

100
SCALE IN FEET

N

Smetana Dr

169

80'

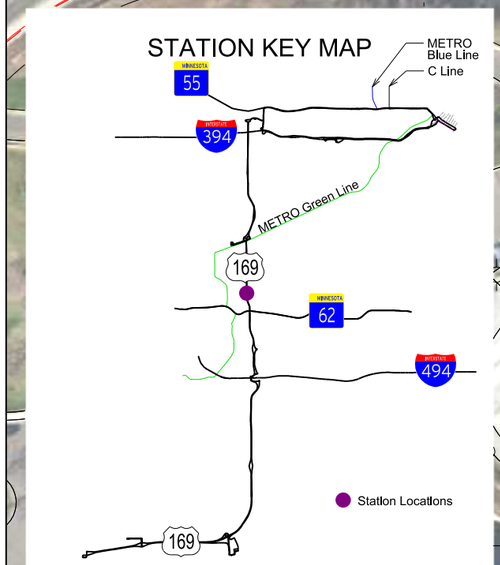
Bren Rd

80'

Lincoln Dr

1

STATION KEY MAP



Specific Notes

1 Far side station location requires additional ROW

SOUTHBOUND/WESTBOUND
NORTHBOUND/EASTBOUND
SB PLATFORM LOCATION
NB PLATFORM LOCATION
ALTERNATIVE ROUTING
C-LINE BRT

GREEN LINE LRT TRACKS
BLUE LINE LRT TRACKS
RIGHT OF WAY
EXISTING MANHOLE
EXISTING LIGHT POLE
EXISTING DRAINAGE STRUCTURE

EXISTING BUS STOP
PARK AND RIDE
TRAFFIC SIGNAL
PROPOSED ROADWAY
PROPOSED SIDEWALK
PROPOSED TRANSIT ONLY

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MNDOT TH 169 STUDY

TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES

BREN RD STATION

SHEET 8 OF 19

DESIGN FILE: \\Minw00\pmwork\Jobs\64426 TH 169 Managed Lane-BRT Study\TechProd\Work\CADD\Plan Sheets\64426_br110.dgn
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SCALE IN FEET

Downtown Hopkins

1st St S

9th Ave S

8th Ave S

7th Ave S

6th Ave S

5th Ave S

2nd St S

Excelsior Blvd

80'

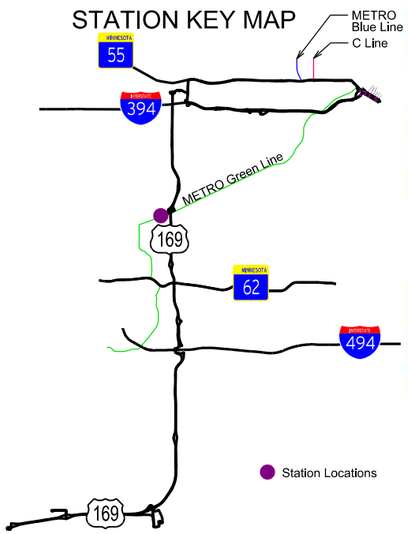
Future Green line LRT station

1

Existing and Potential Connecting Bus Routes:

Metro Transit 605
Metro Transit 612
Metro Transit 614
Metro Transit 615
Metro Transit 664
(Green Line Proposed)

STATION KEY MAP



Specific Notes

1 2nd St S will close with future City of Hopkins plans for 8th St S

SOUTHBOUND/WESTBOUND
NORTHBOUND/EASTBOUND
SB PLATFORM LOCATION
NB PLATFORM LOCATION
ALTERNATIVE ROUTING
C-LINE BRT
GREEN LINE LRT TRACKS
BLUE LINE LRT TRACKS
RIGHT OF WAY
EXISTING MANHOLE
EXISTING LIGHT POLE
EXISTING DRAINAGE STRUCTURE
EXISTING BUS STOP
PARK AND RIDE
TRAFFIC SIGNAL
PROPOSED ROADWAY
PROPOSED SIDEWALK
PROPOSED TRANSIT ONLY

DEPARTMENT OF TRANSPORTATION
Scott
METROPOLITAN COUNCIL
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HNTB

MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
DOWNTOWN HOPKINS STATION

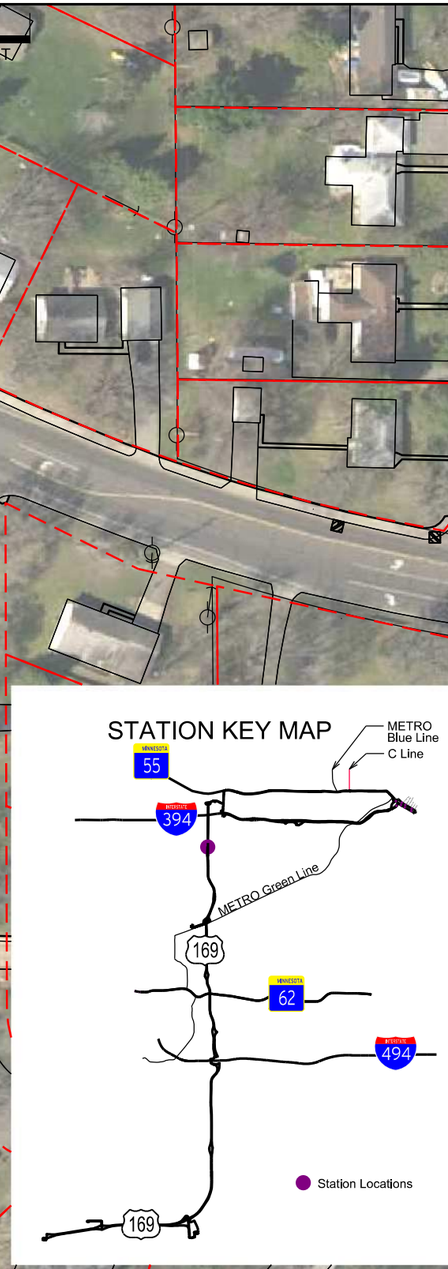
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STATION KEY MAP



16th RAMP

80'

Cedar Lake Rd

80'

169

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SOUTHBOUND/WESTBOUND
NORTHBOUND/EASTBOUND
SB PLATFORM LOCATION
NB PLATFORM LOCATION
ALTERNATIVE ROUTING
C-LINE BRT
GREEN LINE LRT TRACKS
BLUE LINE LRT TRACKS
RIGHT OF WAY
EXISTING MANHOLE
EXISTING LIGHT POLE
EXISTING DRAINAGE STRUCTURE
EXISTING BUS STOP
PARK AND RIDE
TRAFFIC SIGNAL
PROPOSED ROADWAY
PROPOSED SIDEWALK
PROPOSED TRANSIT ONLY

DEPARTMENT OF TRANSPORTATION
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MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
CEDAR LAKE RD STATION

SHEET 10 OF 19

N

100
SCALE IN FEET

16' RAMP

16' RAMP

80'

80'

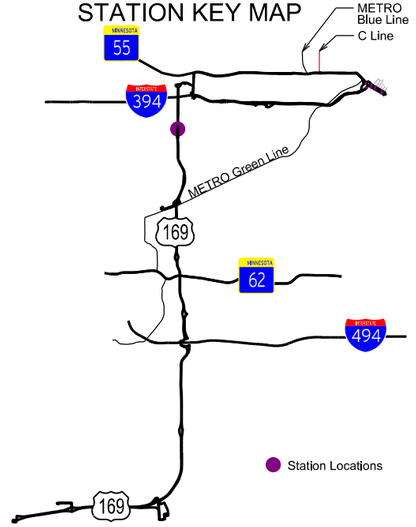
80'

80'

Cedar Lake Rd

169

STATION KEY MAP



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SOUTHBOUND/WESTBOUND
NORTHBOUND/EASTBOUND
SB PLATFORM LOCATION
NB PLATFORM LOCATION
ALTERNATIVE ROUTING
C-LINE BRT

GREEN LINE LRT TRACKS
BLUE LINE LRT TRACKS
RIGHT OF WAY
EXISTING MANHOLE
EXISTING LIGHT POLE
EXISTING DRAINAGE STRUCTURE

EXISTING BUS STOP
PARK AND RIDE
TRAFFIC SIGNAL
PROPOSED ROADWAY
PROPOSED SIDEWALK
PROPOSED TRANSIT ONLY

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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES

CEDAR LAKE RD STATION - OPTION A

SHEET 10A OF 19

100
SCALE IN FEET

16' RAMP

16' RAMP

80'

Cedar Lake Rd

80'

169

16' RAMP

STATION KEY MAP

METRO Blue Line
C Line

55
394
METRO Green Line
169
62
494
169

Station Locations

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PLOTTED BY: #USERNAME#
PEN TABLE: #PEN.TABLE#

- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
- PARK AND RIDE
- TRAFFIC SIGNAL
- PROPOSED ROADWAY
- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES

CEDAR LAKE RD STATION - OPTION B

SHEET 10B OF 19

100
SCALE IN FEET

N

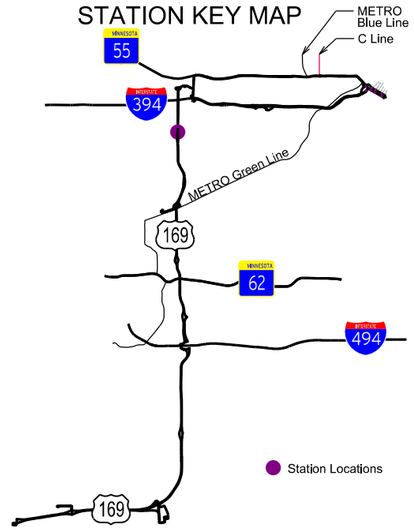
80'

Cedar Lake Rd

80'

169

STATION KEY MAP



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- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
- PARK AND PERIDE
- TRAFFIC SIGNAL
- PROPOSED ROADWAY
- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
CEDAR LAKE RD STATION - OPTION C

SHEET 10C OF 19

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SCALE IN FEET

N

169

Trail

2

Betty Crocker Dr

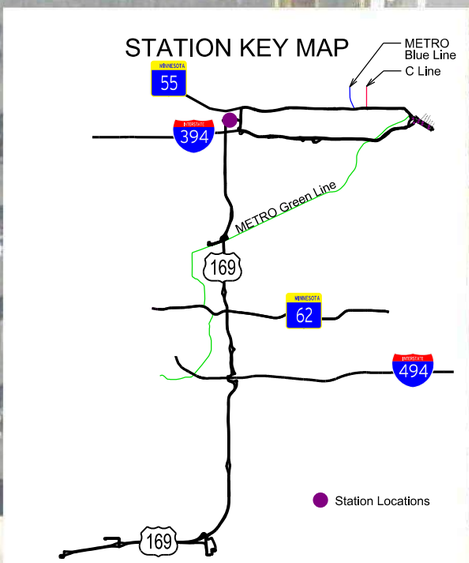
1

80'

80'

General Mills Campus Parking Lot

STATION KEY MAP



Specific Notes

1. Remove parking stall row, loss of approximately 38 parking stalls, driving aisle to remain
2. Optional station location

SOUTHBOUND/WESTBOUND
NORTHBOUND/EASTBOUND
SB PLATFORM LOCATION
NB PLATFORM LOCATION
ALTERNATIVE ROUTING
C-LINE BRT
GREEN LINE LRT TRACKS
BLUE LINE LRT TRACKS
RIGHT OF WAY
EXISTING MANHOLE
EXISTING LIGHT POLE
EXISTING DRAINAGE STRUCTURE
EXISTING BUS STOP
PARK AND RIDE
TRAFFIC SIGNAL
PROPOSED ROADWAY
PROPOSED SIDEWALK
PROPOSED TRANSIT ONLY

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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
BETTY CROCKER DR STATION

SHEET 11 OF 19

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SCALE IN FEET

N

Winnetka Ave N

Post Office

Golden Valley Commons
(Restaurants, commerical)

Chipotle

80'

80'

80'

Trail

MINNESOTA
55

Rhode Island Ave N

1

STATION KEY MAP

METRO Blue Line
C Line

55
394
METRO Green Line
169
62
494
169

Station Locations

Specific Notes

1 Alternative station location

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- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
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- PROPOSED ROADWAY
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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES

WINNETKA AVE N STATION

SHEET 12 OF 19

100
SCALE IN FEET

N

Mortenson

Douglas Dr N

Luce Line Trail

Country Club Dr

80'

Olson Hwy Service Dr

MINNESOTA
55

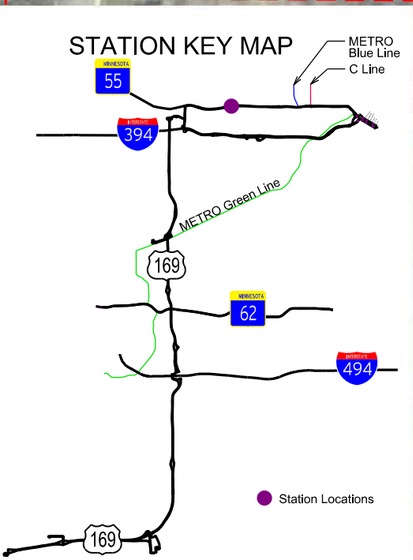
Olson Hwy Service Dr

80'

Westchester Cir

Perpich Center for
Arts Education

STATION KEY MAP



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PLOTTED BY: $USERNAME$
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- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
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- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
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- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND
TH 169 - 55 BRT ROUTES
DOUGLAS DR STATION

SHEET
13
OF
19

100
SCALE IN FEET

N

Meadow Ln N

80'

80'

80'

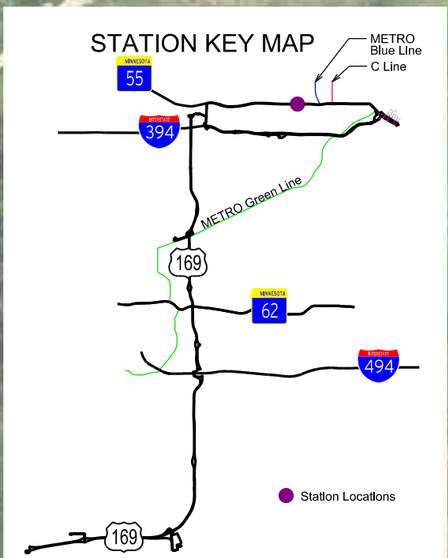
2

1

Theodore Wirth Pkwy

MINNESOTA
55

STATION KEY MAP



Specific Notes

1. Alternative station location
2. Alternative station location to share current shelter space

- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
- PARK AND RIDE
- TRAFFIC SIGNAL
- PROPOSED ROADWAY
- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES

THEODORE WIRTH PKWY STATION

SHEET 14 OF 19

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100
SCALE IN FEET

Russell Ave N
Queen Ave N
Penn Ave N
Oliver Ave N
Newton Ave N

80'

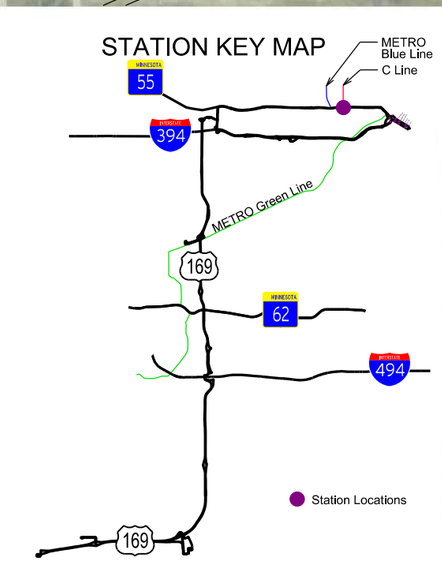
MINNESOTA
55

Blue Line LRT station

80'

Penn Ave N

STATION KEY MAP



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PEN TABLE: PEN_TABLE

- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
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- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
- PARK AND RIDE
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- PROPOSED ROADWAY
- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
PENN AVE STATION

SHEET 15 OF 19

500
SCALE IN FEET

7th St and
TH 55 Stations

7th St

10th St

Glenwood Ave

7th St Transit
Center Stations

9th St

Hennepin Ave
Stations

6th St

1st Ave N

2nd Ave N

Hennepin Ave

4th St

5th St

Nicollet Mall

Marquette Ave

2nd Ave

3rd Ave

4th Ave

5th Ave S

Nicollet Mall
Stations

3rd Ave
Stations

7th St

8th St

9th St

10th St

6th St

Hawthorne Ave

INTERSTATE 94

INTERSTATE 394

MINNESOTA 55

1

Specific Notes

(1) Optional routing location

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- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
- PARK AND RIDE
- TRAFFIC SIGNAL
- PROPOSED ROADWAY
- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND
TH 169 - 55 BRT ROUTES
TH 55 DOWNTOWN MINNEAPOLIS ROUTES

SHEET
16
OF
19

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SCALE IN FEET

N

80'

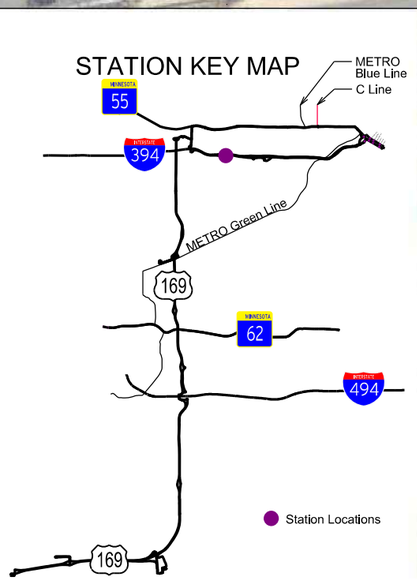
80'

INTERSTATE
394

Louisiana Ave

Frontage Rd

STATION KEY MAP



SOUTHBOUND/WESTBOUND
NORTHBOUND/EASTBOUND
SB PLATFORM LOCATION
NB PLATFORM LOCATION
ALTERNATIVE ROUTING
C-LINE BRT

GREEN LINE LRT TRACKS
BLUE LINE LRT TRACKS
RIGHT OF WAY
EXISTING MANHOLE
EXISTING LIGHT POLE
EXISTING DRAINAGE STRUCTURE

EXISTING BUS STOP
PARK AND RIDE
TRAFFIC SIGNAL
PROPOSED ROADWAY
PROPOSED SIDEWALK
PROPOSED TRANSIT ONLY

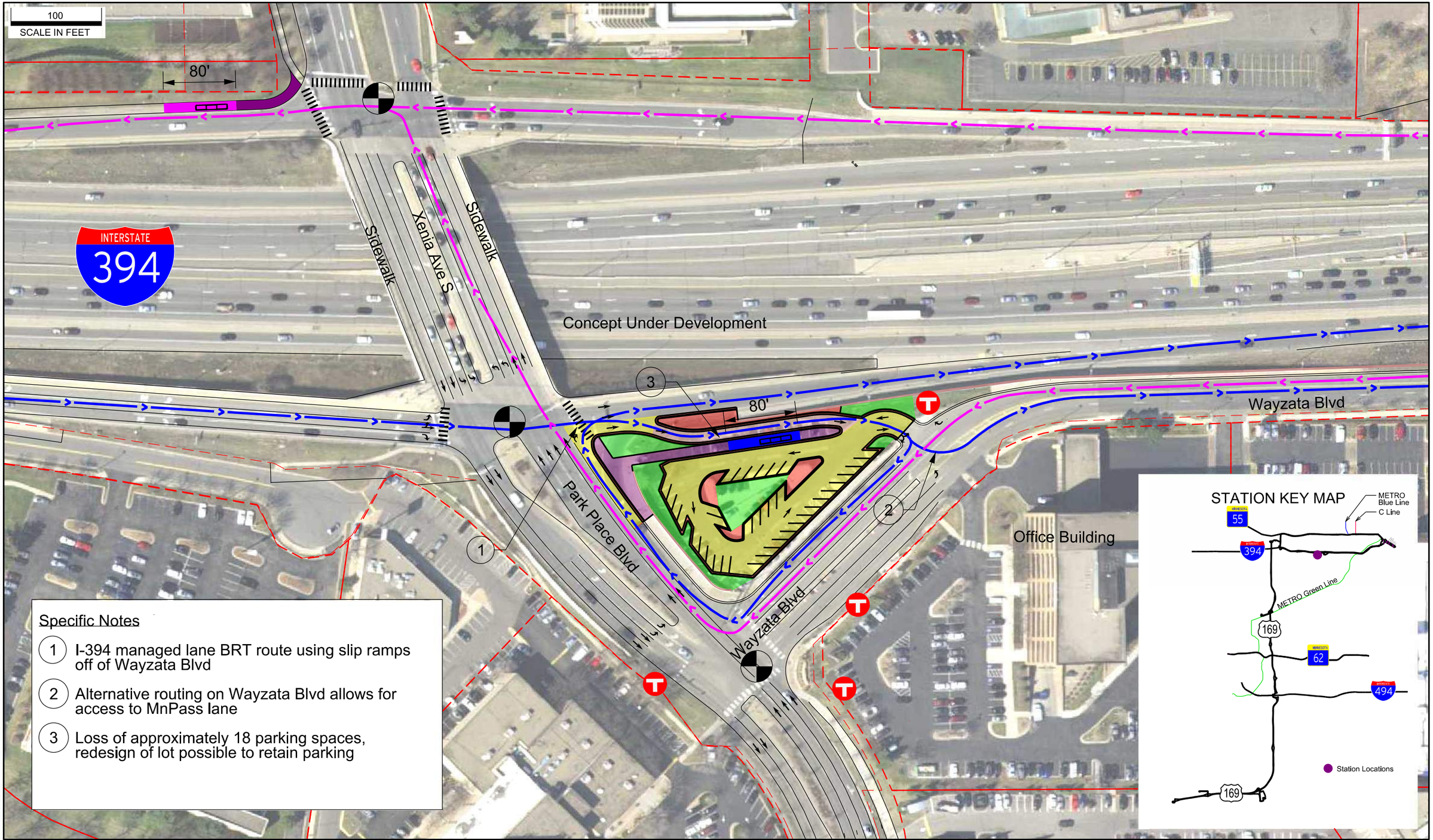
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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
LOUISIANA AVE STATION

SHEET 17 OF 19

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Specific Notes

1. I-394 managed lane BRT route using slip ramps off of Wayzata Blvd
2. Alternative routing on Wayzata Blvd allows for access to MnPass lane
3. Loss of approximately 18 parking spaces, redesign of lot possible to retain parking

SOUTHBOUND/WESTBOUND
NORTHBOUND/EASTBOUND
SB PLATFORM LOCATION
NB PLATFORM LOCATION
ALTERNATIVE ROUTING
C-LINE BRT
GREEN LINE LRT TRACKS
BLUE LINE LRT TRACKS
RIGHT OF WAY
EXISTING MANHOLE
EXISTING LIGHT POLE
EXISTING DRAINAGE STRUCTURE
EXISTING BUS STOP
PARK AND RIDE
TRAFFIC SIGNAL
PROPOSED ROADWAY
PROPOSED SIDEWALK
PROPOSED TRANSIT ONLY

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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
WEST END STATION - OPTION A

SHEET 18 OF 19

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SCALE IN FEET

Specific Notes

1. Optional routing location
2. Managed Lane Route vs Shoulder Running Route

MINNESOTA 55
INTERSTATE 94
INTERSTATE 394

7th St
10th St
Glenwood Ave
Hawthorne Ave Station
Hawthorne Ave
9th St
6th St
2nd Ave N
1st Ave N
Hennepin Ave
Hennepin Ave Stations
4th St
5th St
Nicollet Mall
Marquette Ave
Nicollet Mall Stations
7th St
8th St
9th St
10th St
2nd Ave
3rd Ave
3rd Ave Stations
4th Ave
5th Ave S
6th St
7th St

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- SOUTHBOUND/WESTBOUND
- NORTHBOUND/EASTBOUND
- SB PLATFORM LOCATION
- NB PLATFORM LOCATION
- ALTERNATIVE ROUTING
- C-LINE BRT
- GREEN LINE LRT TRACKS
- BLUE LINE LRT TRACKS
- RIGHT OF WAY
- EXISTING MANHOLE
- EXISTING LIGHT POLE
- EXISTING DRAINAGE STRUCTURE
- EXISTING BUS STOP
- PARK AND RIDE
- TRAFFIC SIGNAL
- PROPOSED ROADWAY
- PROPOSED SIDEWALK
- PROPOSED TRANSIT ONLY

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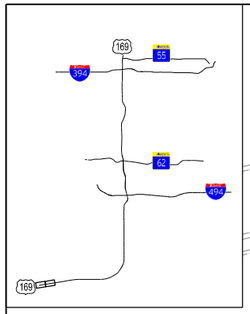
MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - I-394 AND TH 169 - 55 BRT ROUTES
I-394 DOWNTOWN MINNEAPOLIS ROUTES

SHEET 19 OF 19

Appendix B: MnPASS Concept Drawings

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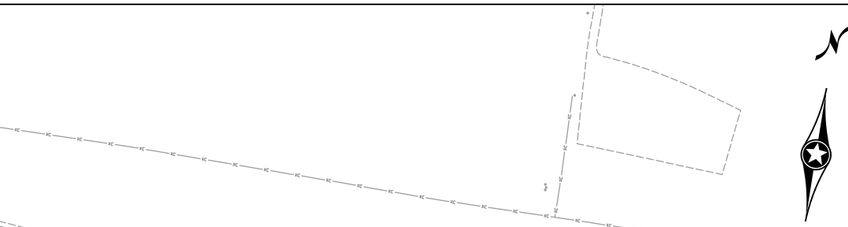


MARSCHALL RD

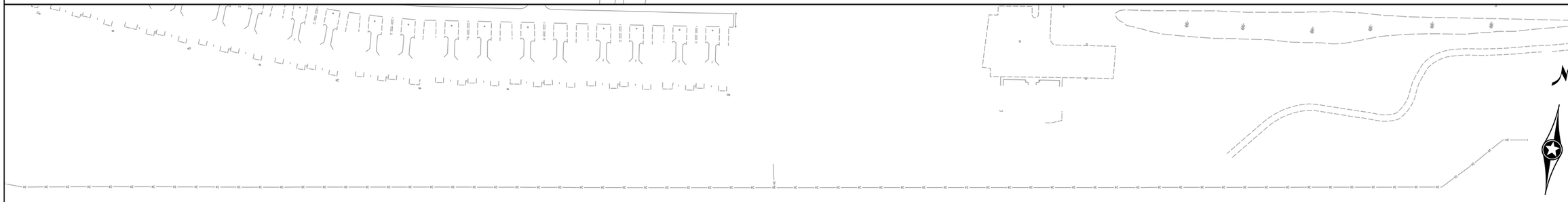
12' RAMP

12' SHLD
12' THRU
12' THRU
12' MNPASS
10' SHLD

169



SEGMENT 1



12' SHLD
12' THRU
12' THRU
12' MNPASS
10' SHLD

169

10' SHLD
12' MNPASS
12' THRU
VAR THRU

12' SHLD
12' THRU
12' THRU
12' MNPASS
10' SHLD

10' SHLD
12' MNPASS
12' THRU
12' THRU
12' SHLD

SEGMENT 1

CONSTRUCT ROADWAY
CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

200
SCALE IN FEET

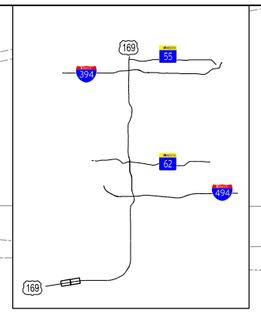
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MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 -
MNPASS CONCEPT

SHEET
01
OF
21

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PLOTTED BY: rkostick
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AREA UNDER CONSTRUCTION

AREA UNDER CONSTRUCTION

CSAH 16

12' SHLD
12' THRU
12' THRU
12' MNPASS
16' SHLD
10' SHLD
12' MNPASS
12' THRU
12' THRU
12' SHLD

169

SEGMENT 1

CANTERBURY RD

SEGMENT 1

CONSTRUCT ROADWAY
CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

200
SCALE IN FEET

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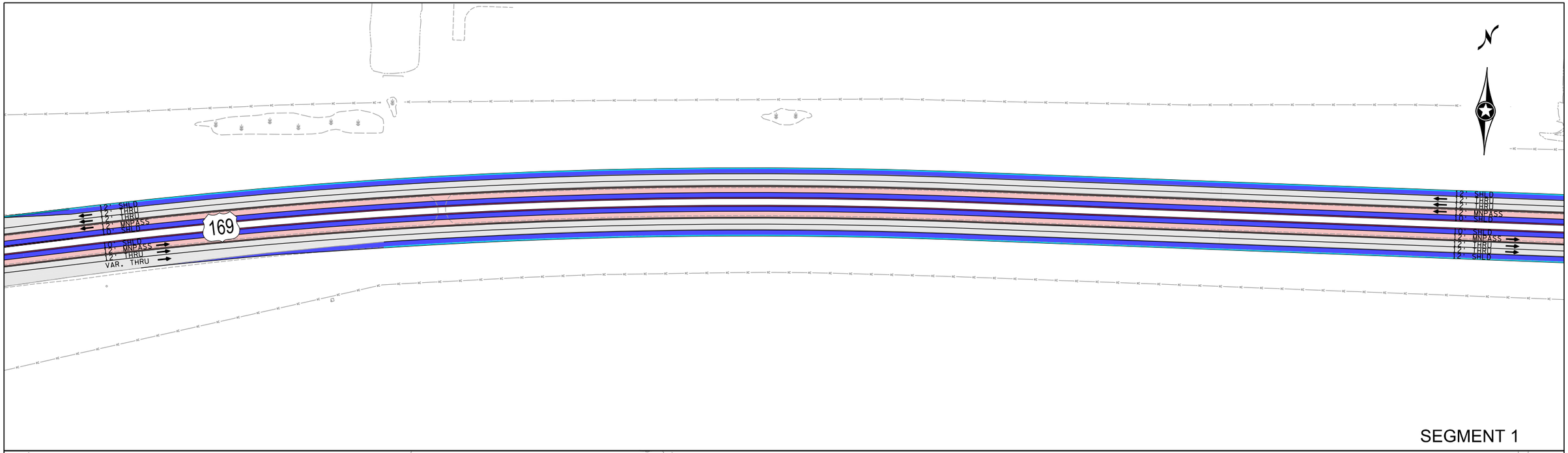
MNDOT TH 169 STUDY

TH 169 TRANSITWAY AND MNPASS

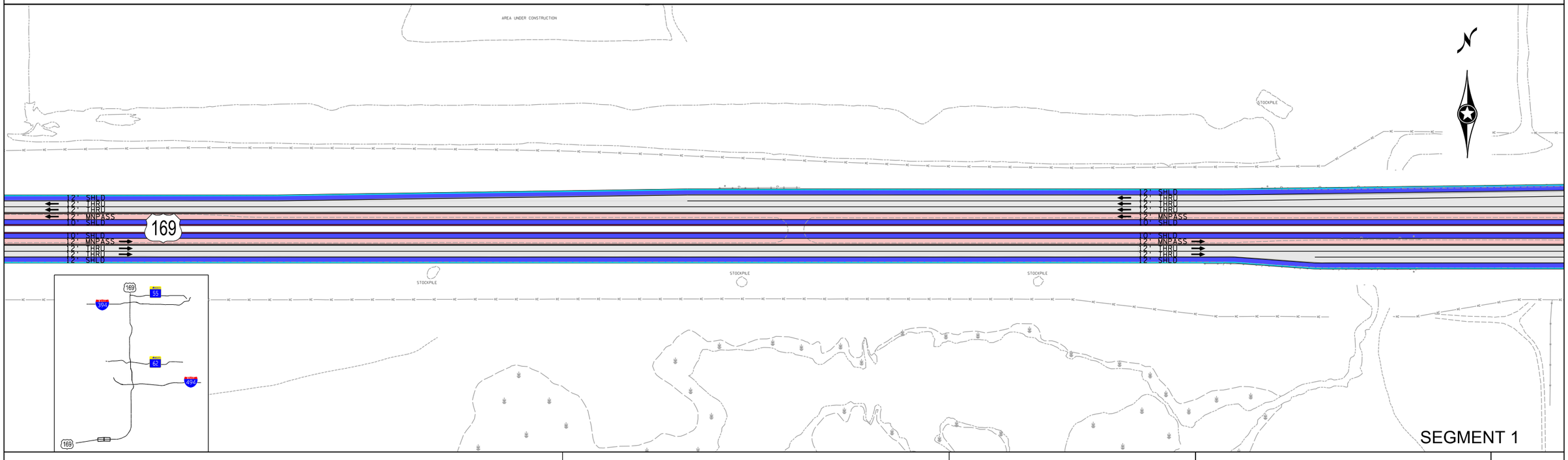
DRAFT TH 169 - MNPASS CONCEPT

SHEET 02 OF 21

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SEGMENT 1



SEGMENT 1

CONSTRUCT ROADWAY
CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

200
SCALE IN FEET

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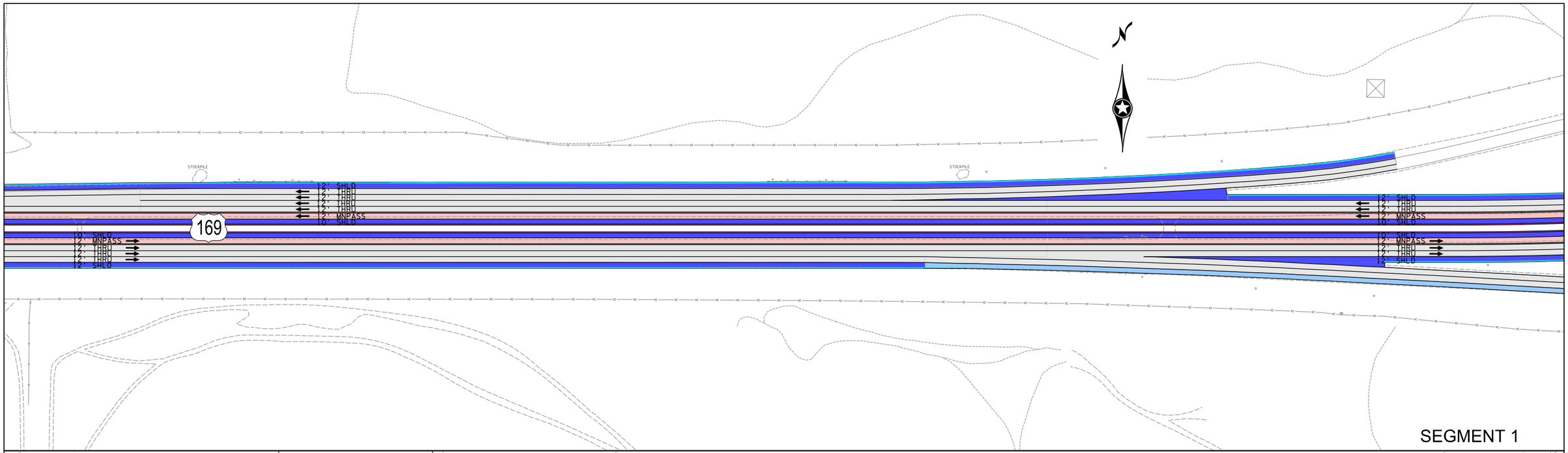
MNDOT TH 169 STUDY

TH 169 TRANSITWAY AND MNPASS

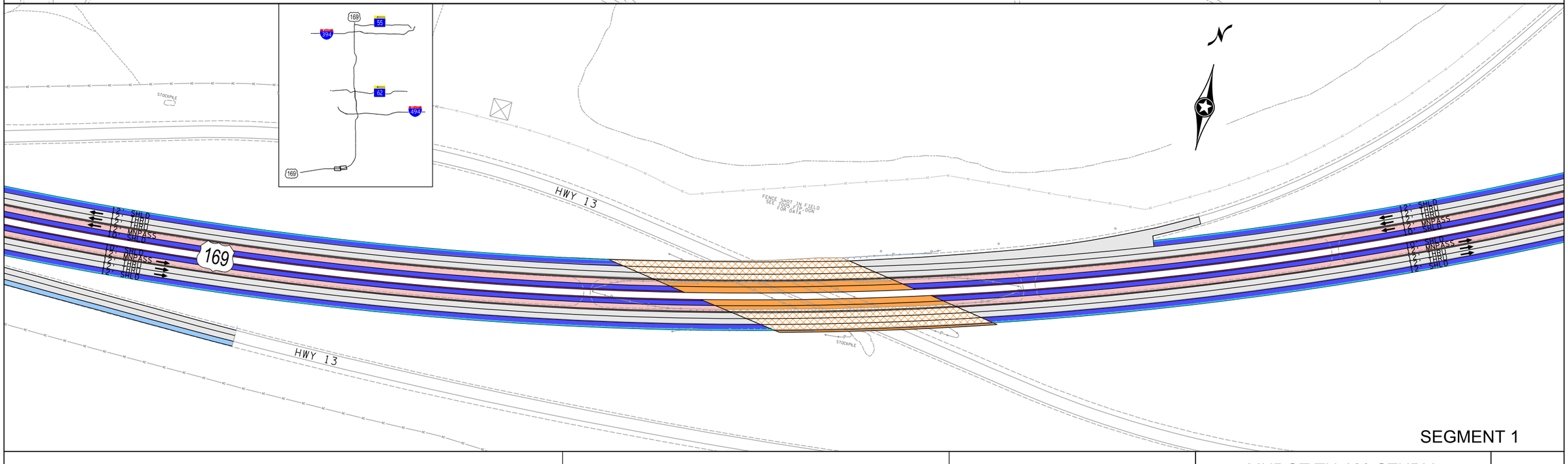
DRAFT TH 169 - MNPASS CONCEPT

SHEET 03 OF 21

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SEGMENT 1



SEGMENT 1

CONSTRUCT ROADWAY
CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

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SCALE IN FEET

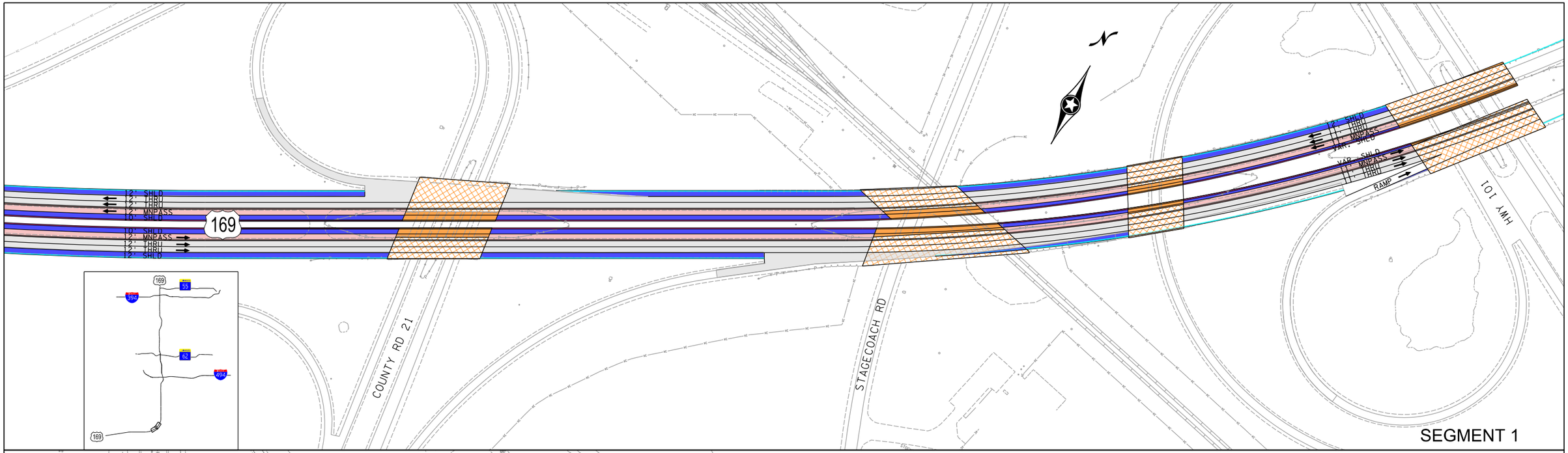
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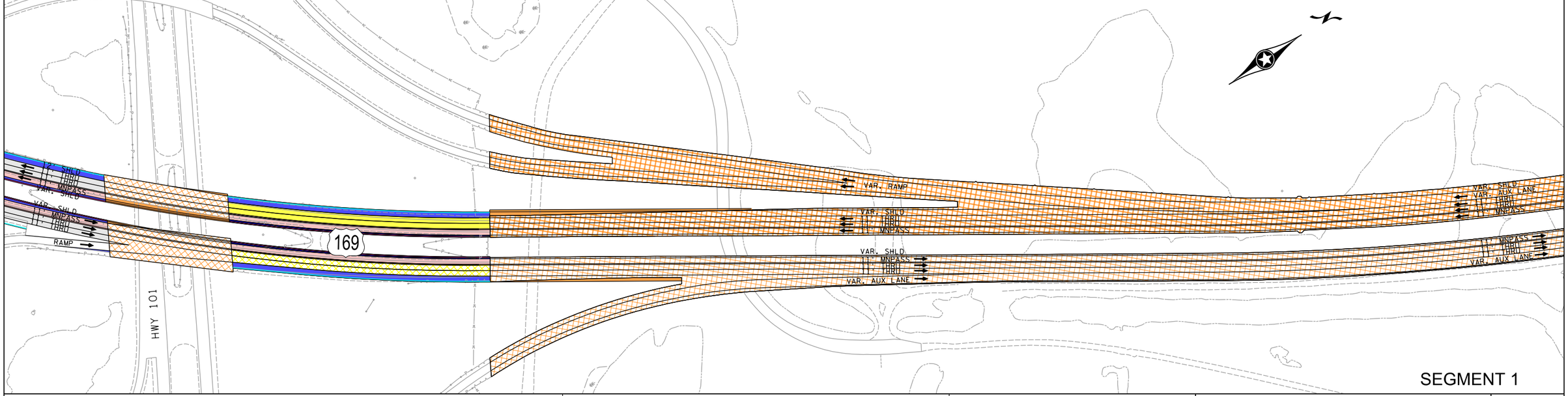
MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 -
MNPASS CONCEPT

SHEET
04
OF
21

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CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

200
SCALE IN FEET

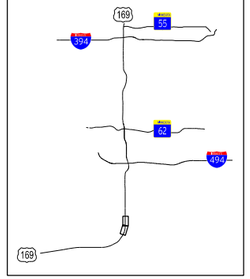
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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

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MINNESOTA RIVER

169

VAR. SHLD
VAR. AUX LANE
11' THRU
11' THRU
11' MNPASS

11' MNPASS
11' THRU
VAR. AUX LANE

VAR. SHLD
VAR. AUX LANE
11' THRU
11' THRU
11' MNPASS

11' MNPASS
11' THRU
11' THRU
VAR. AUX LANE

SEGMENT 1

RIVERVIEW RD

HENNEPIN TOWN RD

169

VAR. SHLD
VAR. AUX LANE
11' THRU
11' THRU
11' MNPASS

11' MNPASS
11' THRU
11' THRU
VAR. AUX LANE

VAR. SHLD
12' MERGE
12' THRU
12' THRU
12' MNPASS
8.82' SHLD
8.82' SHLD
12' MNPASS
12' THRU
12' THRU
12' SHLD

W OLD SHAKOPEE RD

STOCKPILE

SEGMENT 1

CONSTRUCT ROADWAY
CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

200
SCALE IN FEET

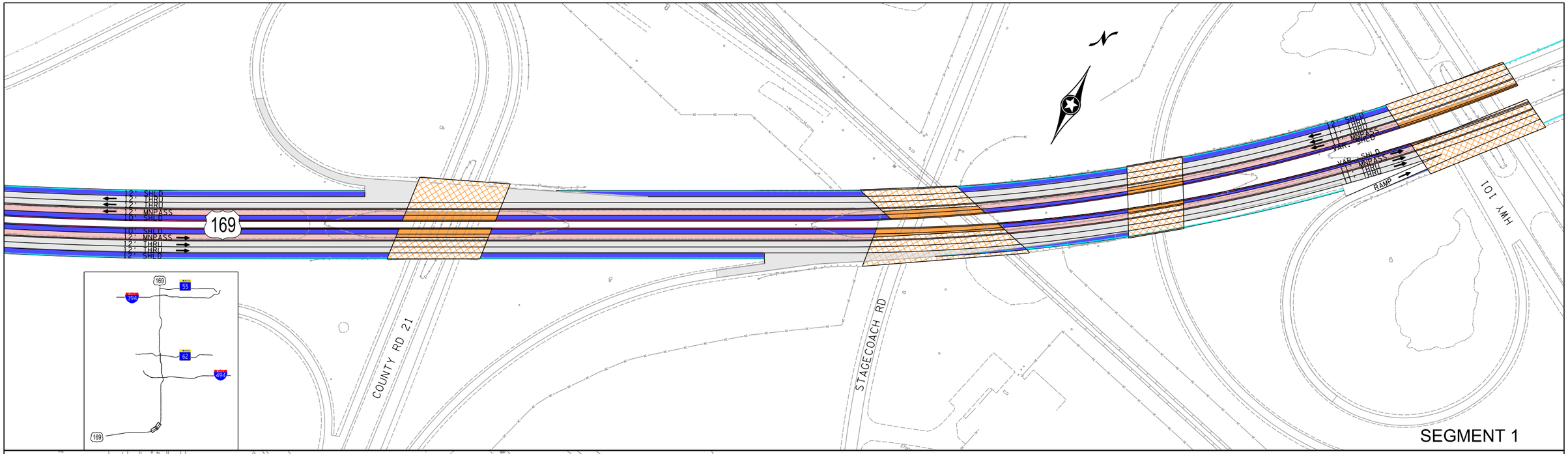
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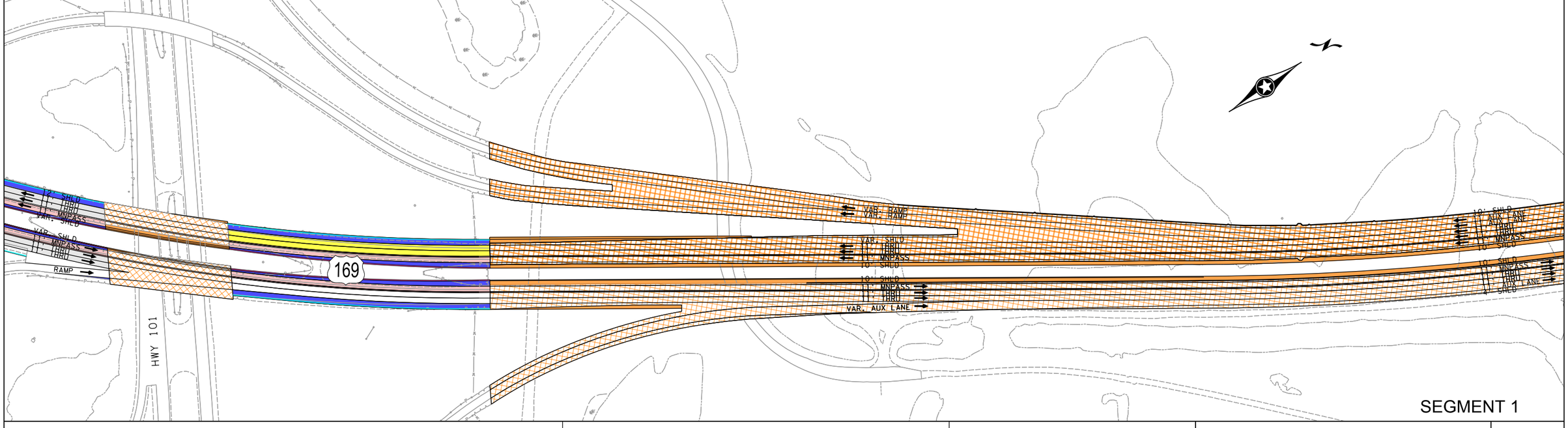
MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 06 OF 21

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CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

200
SCALE IN FEET

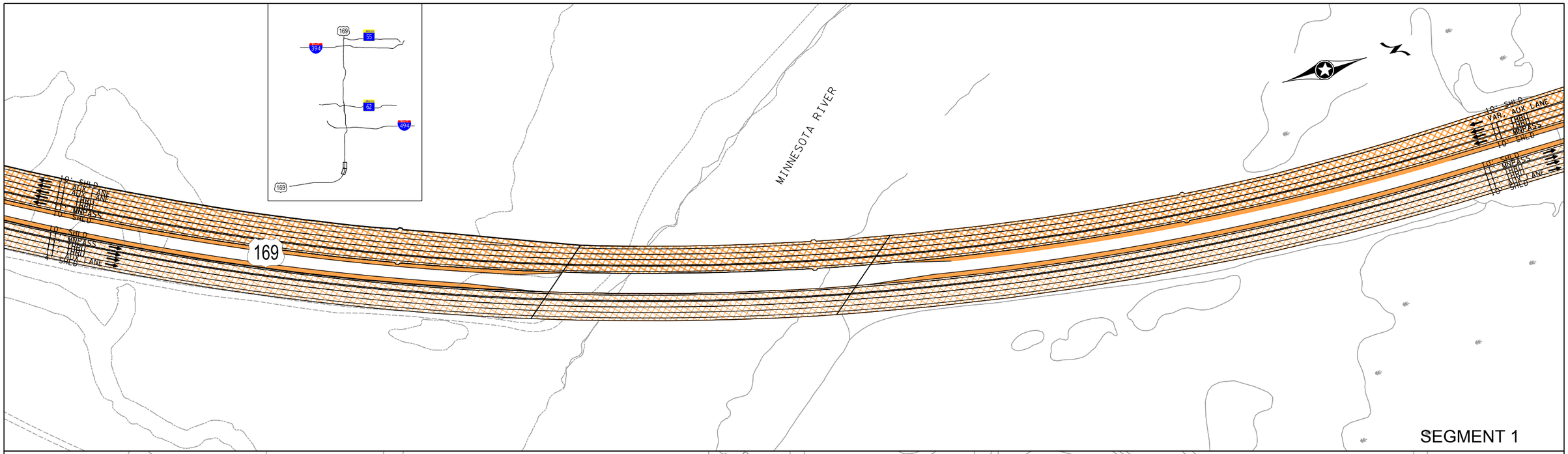
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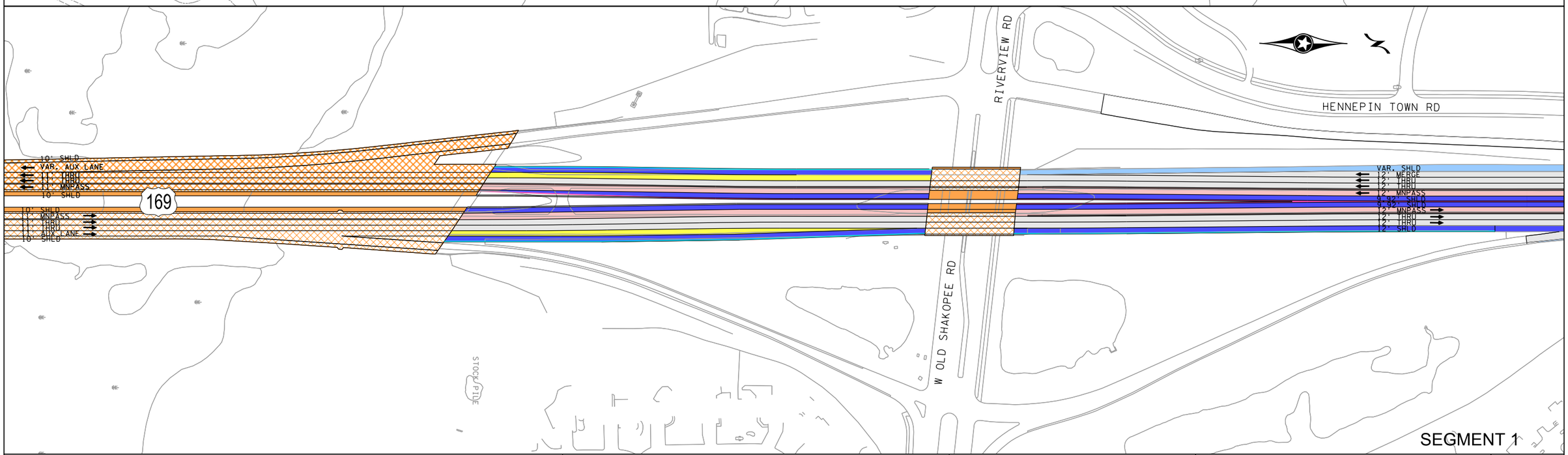
MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

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SHEET 05A OF 21

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- CONSTRUCT MNPASS LANE
- CONSTRUCT MEDIAN BARRIER
- CONSTRUCT/EXPAND BRIDGE
- CONSTRUCT CONCRETE WALK
- INPLACE ROADWAY
- INPLACE SHOULDER
- EXISTING BRIDGE

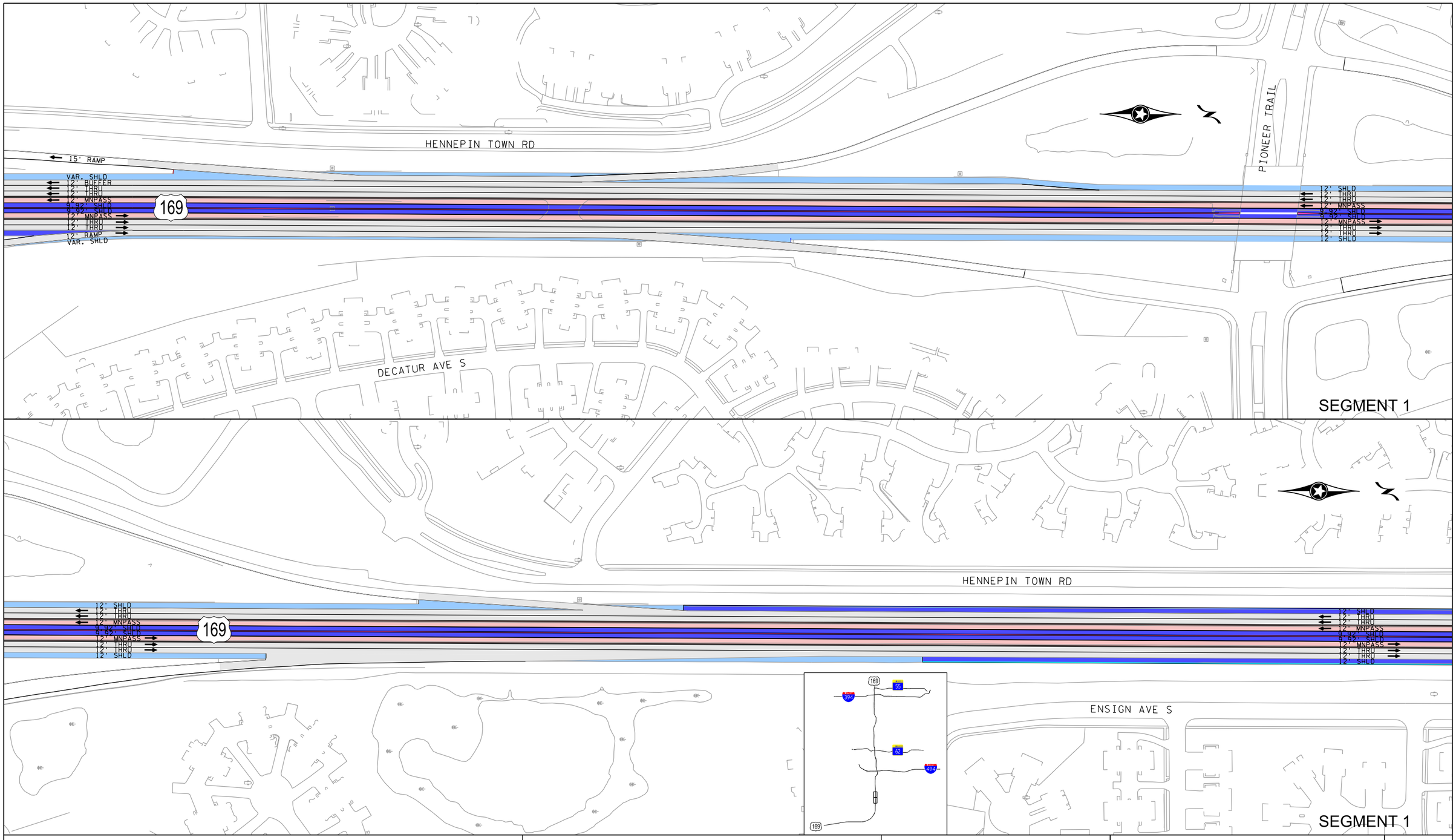
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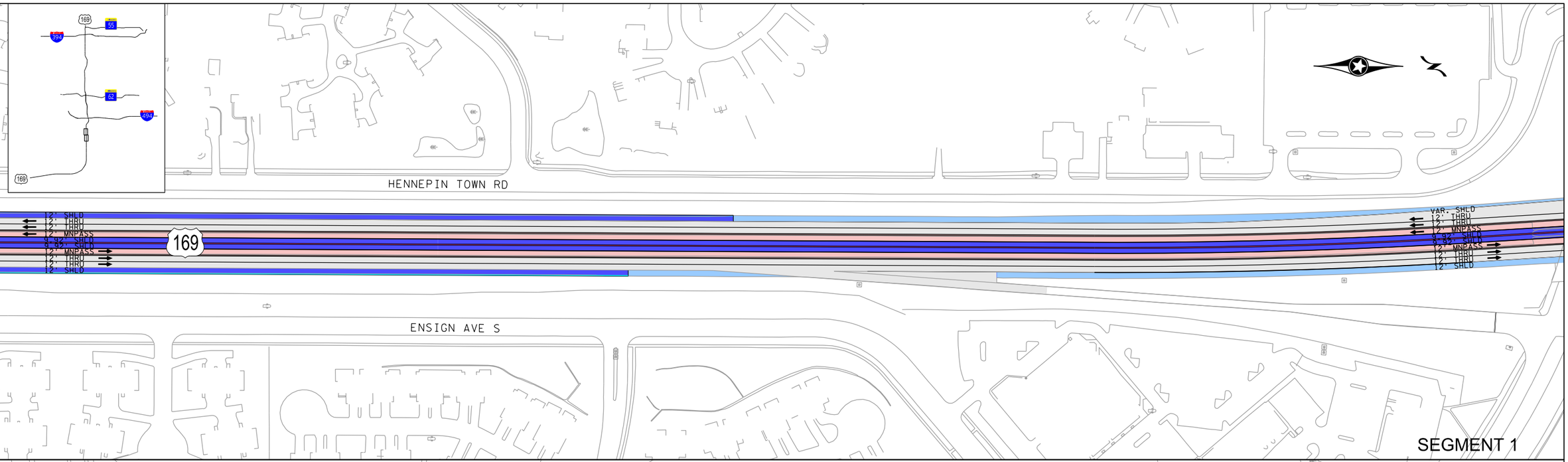
MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

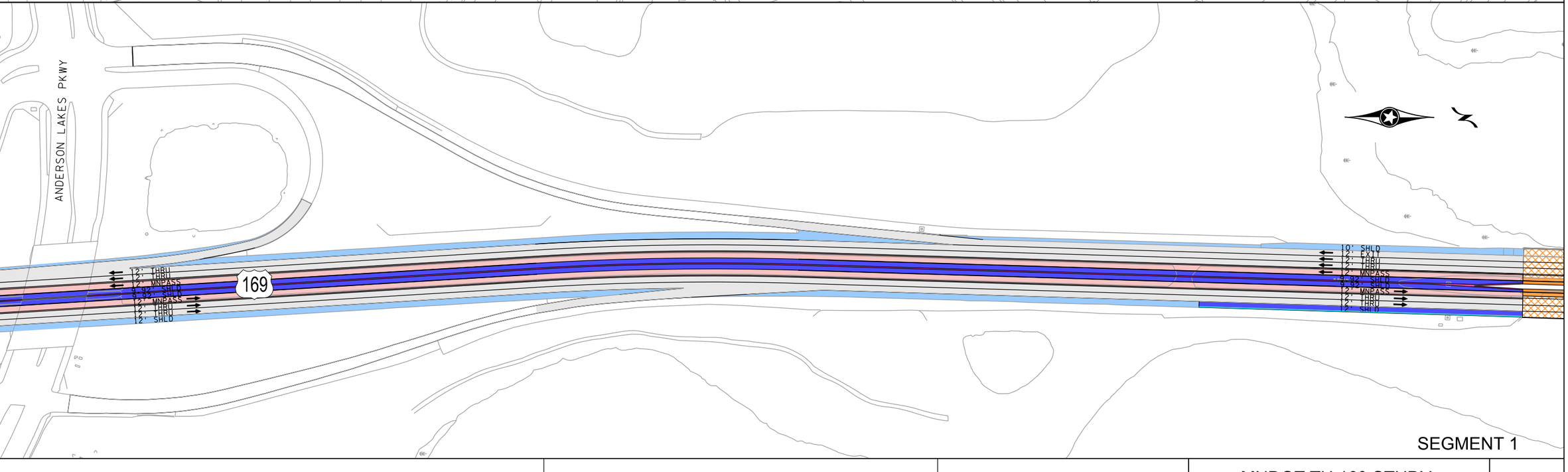
DRAFT TH 169 - MNPASS CONCEPT

SHEET 06A OF 21



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CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

200
SCALE IN FEET

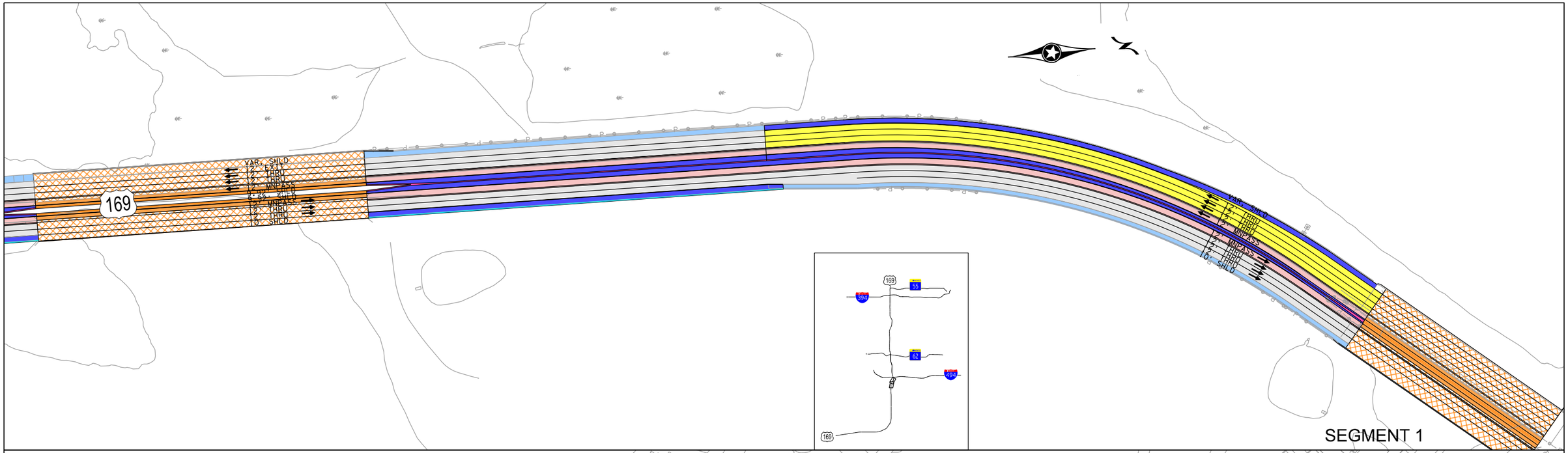
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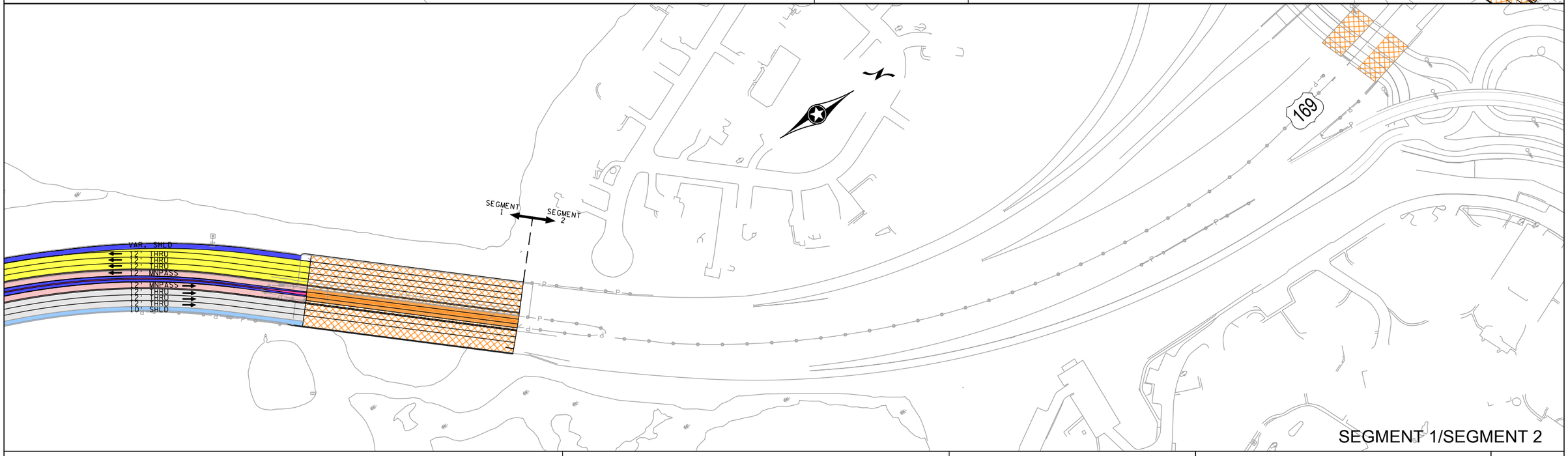
MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 08 OF 21

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CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

200
SCALE IN FEET

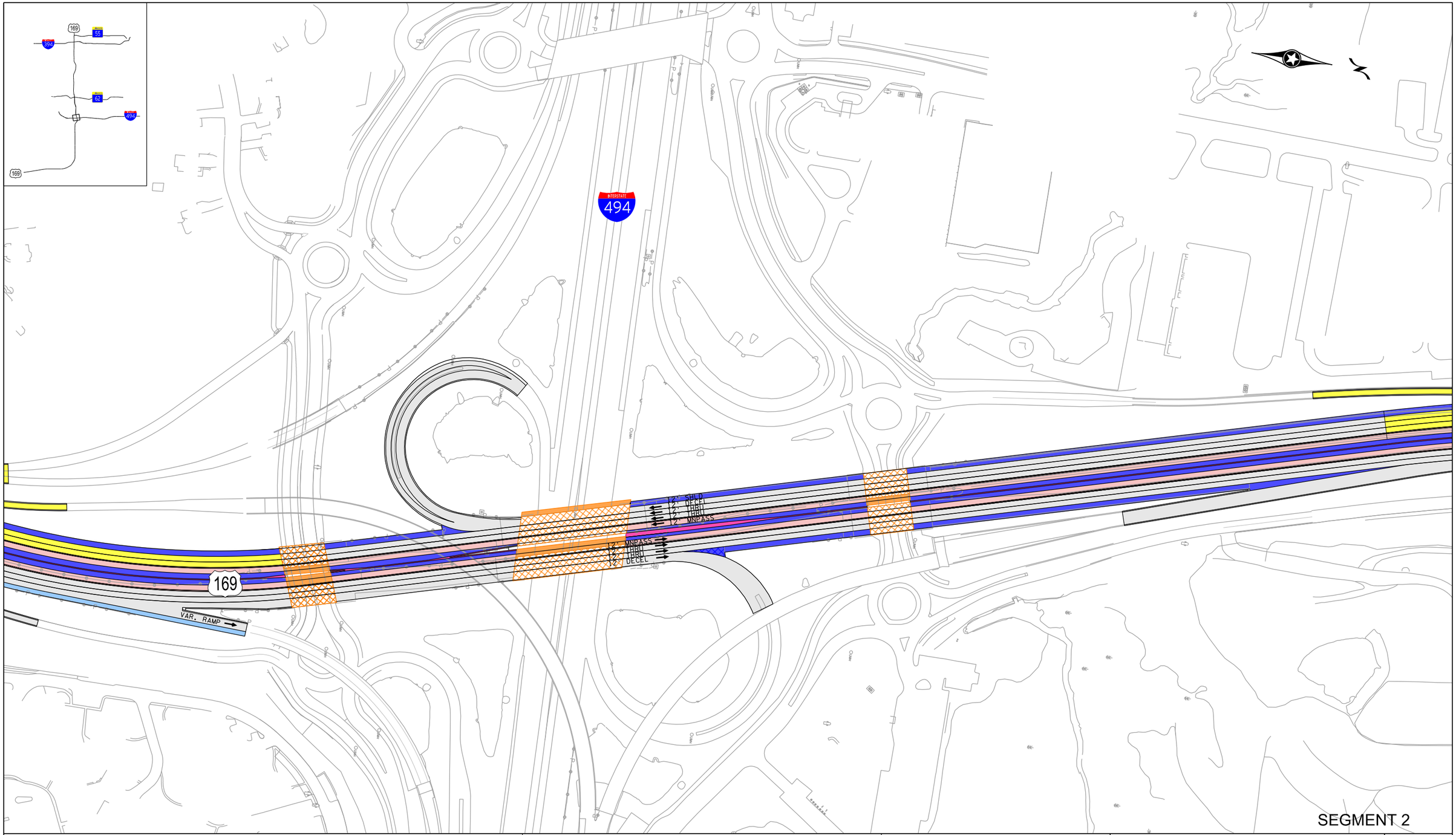
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SEGMENT 2

CONSTRUCT ROADWAY
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CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE
FUTURE WORK BY OTHERS

200
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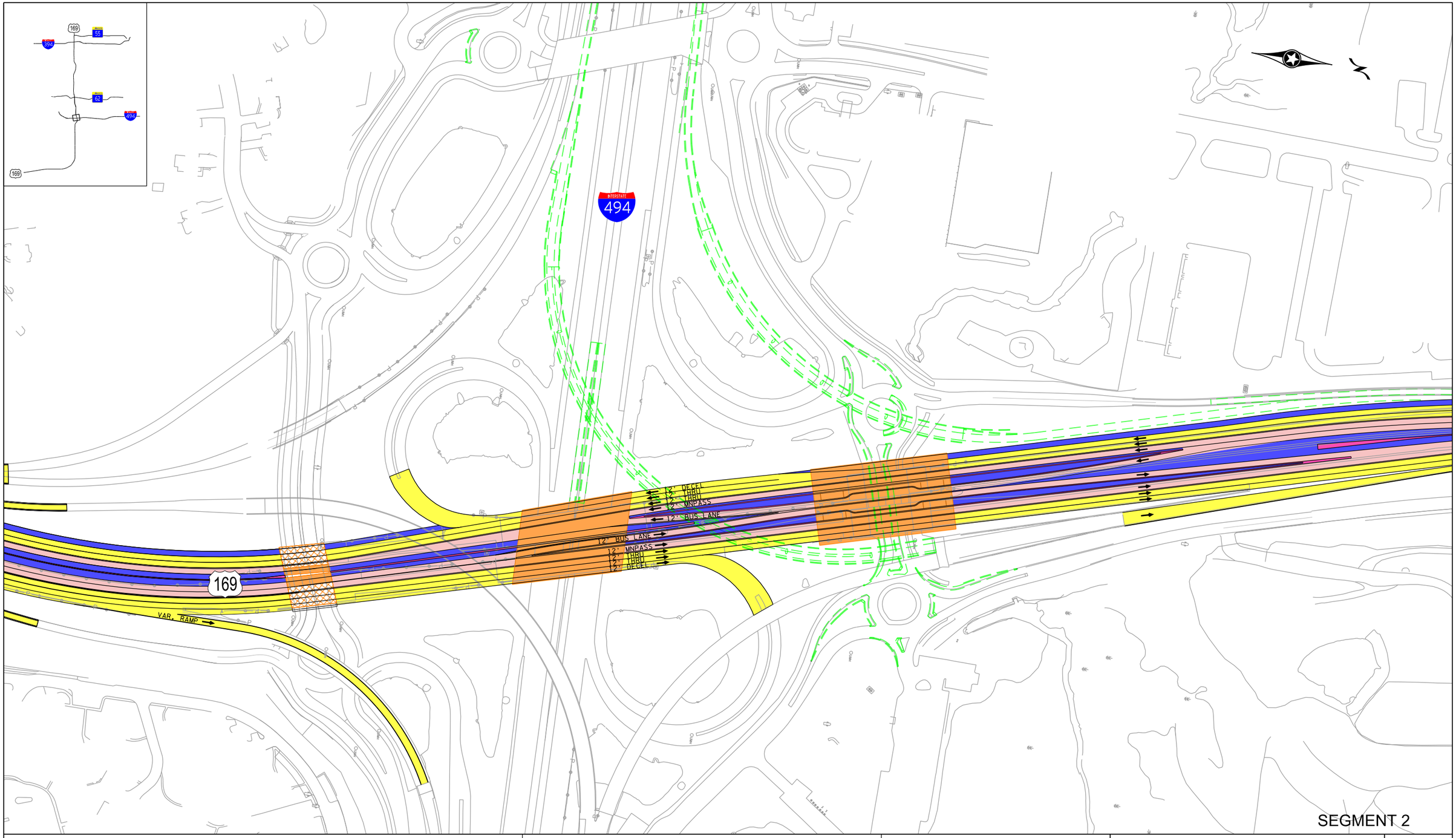
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TH 169 TRANSITWAY AND MNPASS

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SEGMENT 2

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CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE
FUTURE WORK BY OTHERS

200
SCALE IN FEET

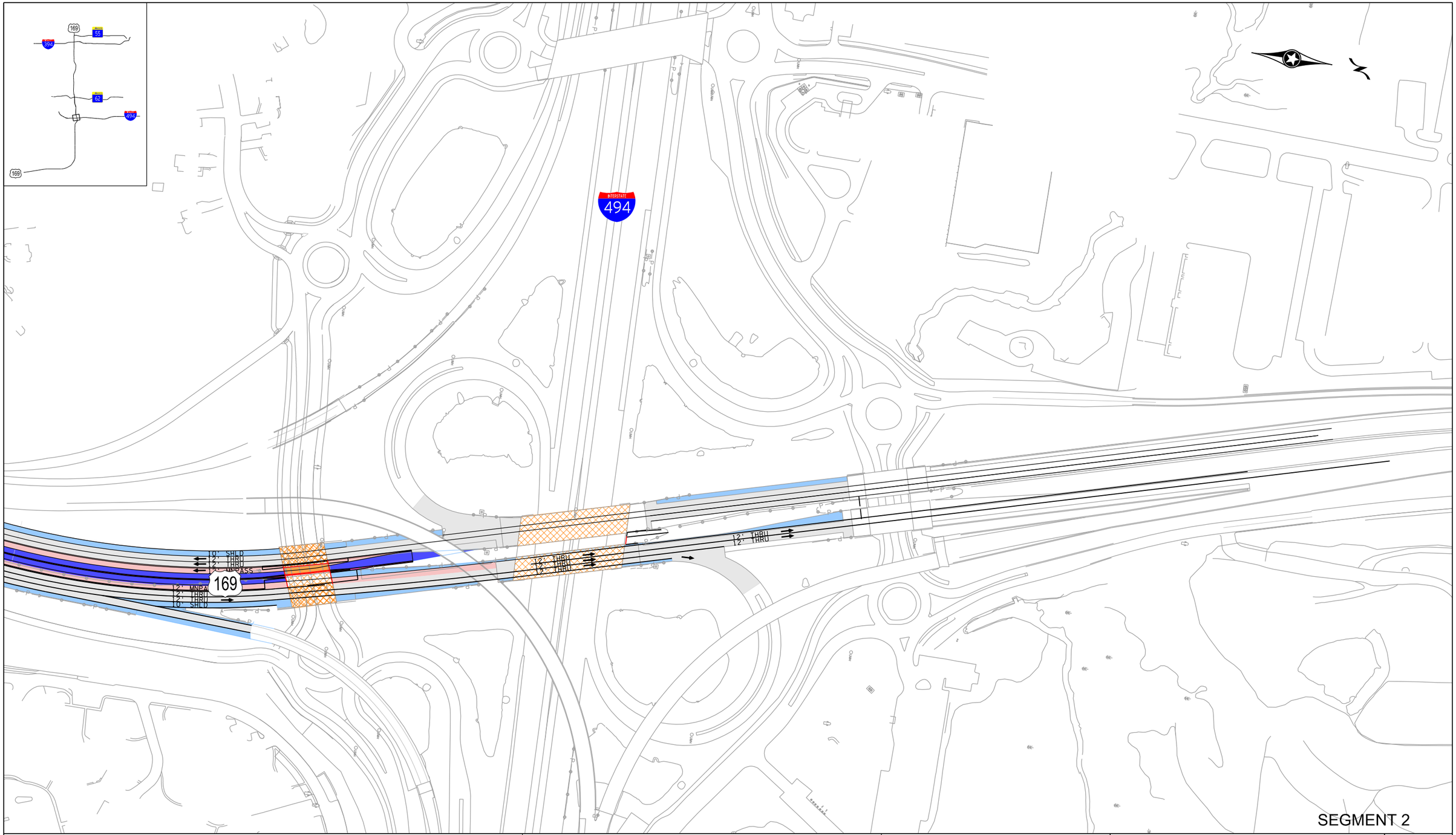
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TH 169 TRANSITWAY AND MNPASS

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SHEET 10A OF 21

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- CONSTRUCT MEDIAN BARRIER
- CONSTRUCT/EXPAND BRIDGE
- CONSTRUCT CONCRETE WALK
- INPLACE ROADWAY
- INPLACE SHOULDER
- EXISTING BRIDGE

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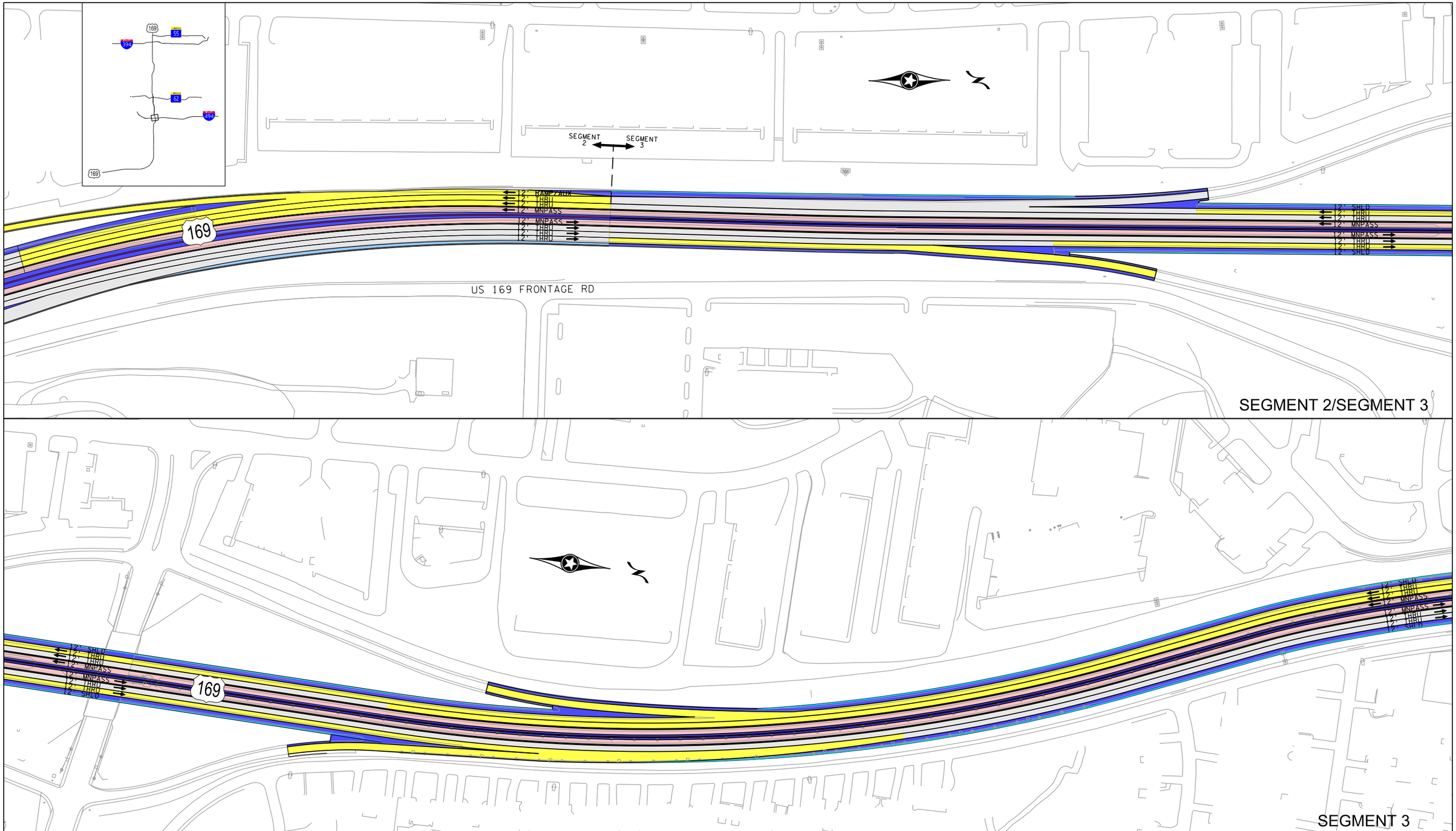
MNDOT TH 169 STUDY

TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 10B OF 21

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CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

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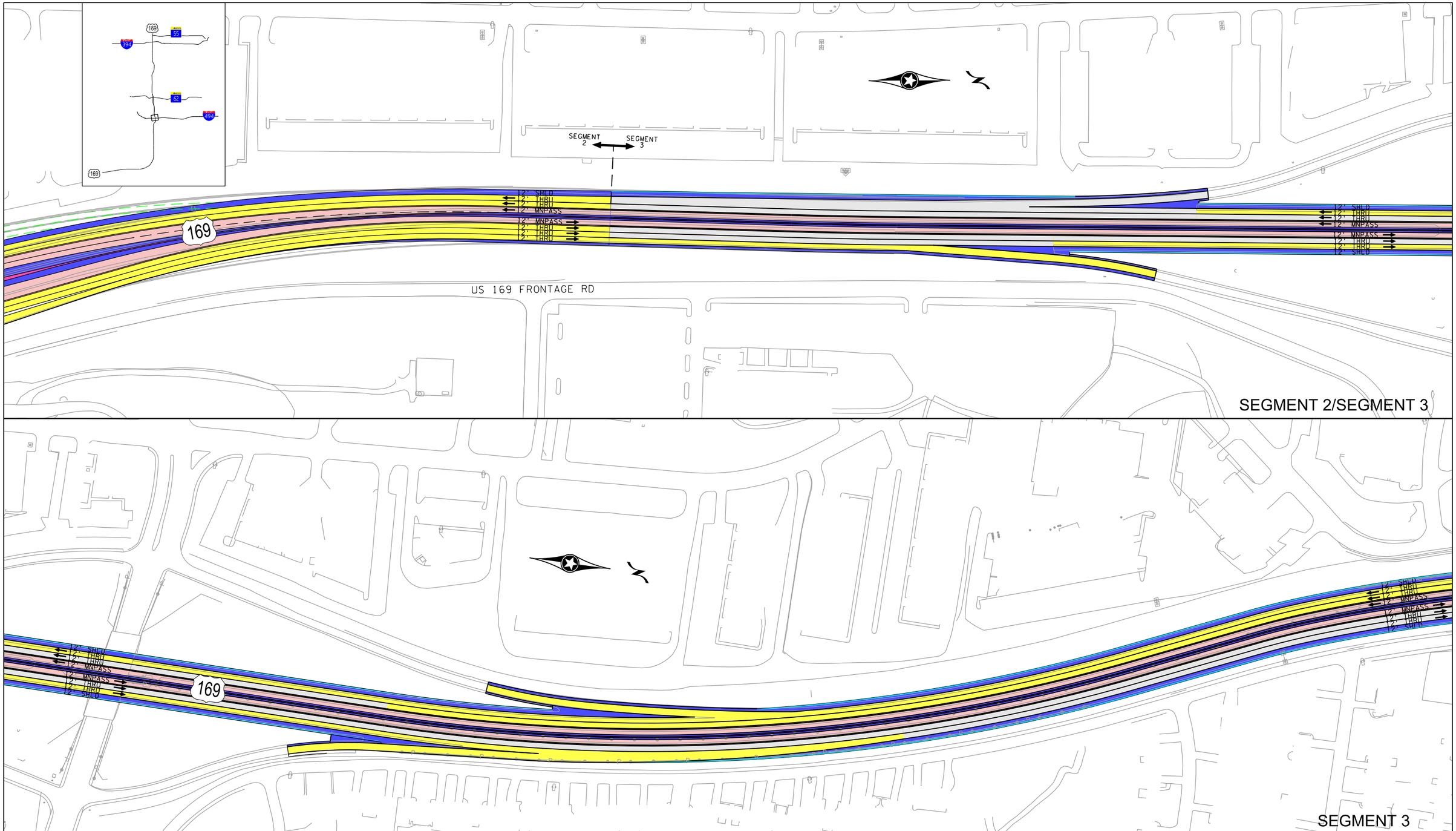
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TH 169 TRANSITWAY AND MNPASS

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SHEET 11 OF 21

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CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

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SCALE IN FEET

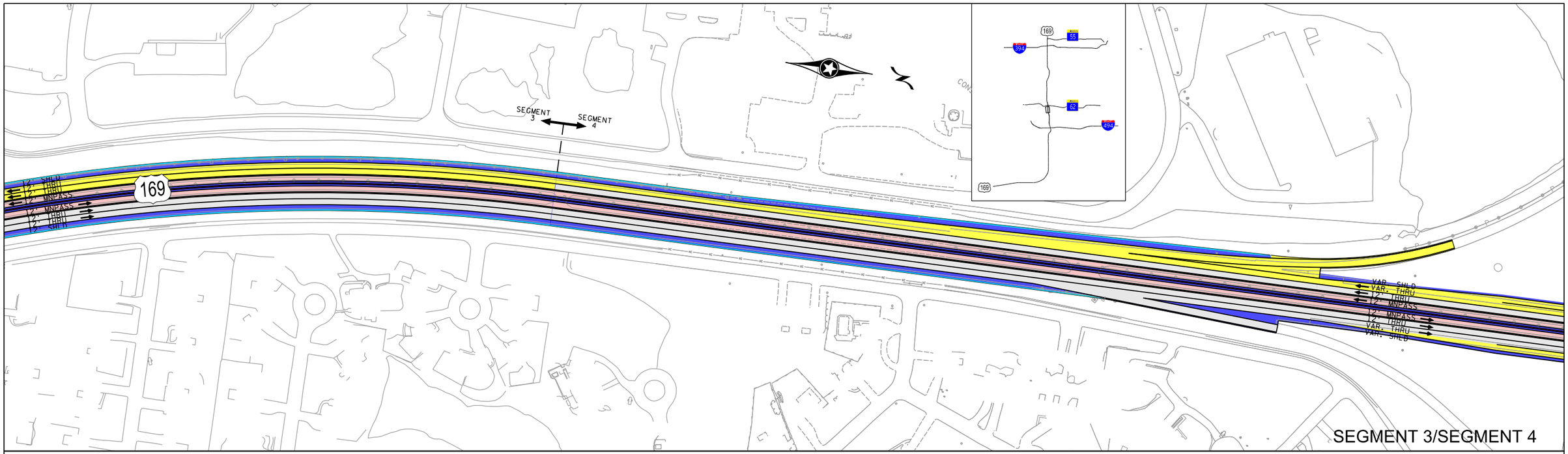
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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 11A OF 21

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CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
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CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

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SCALE IN FEET

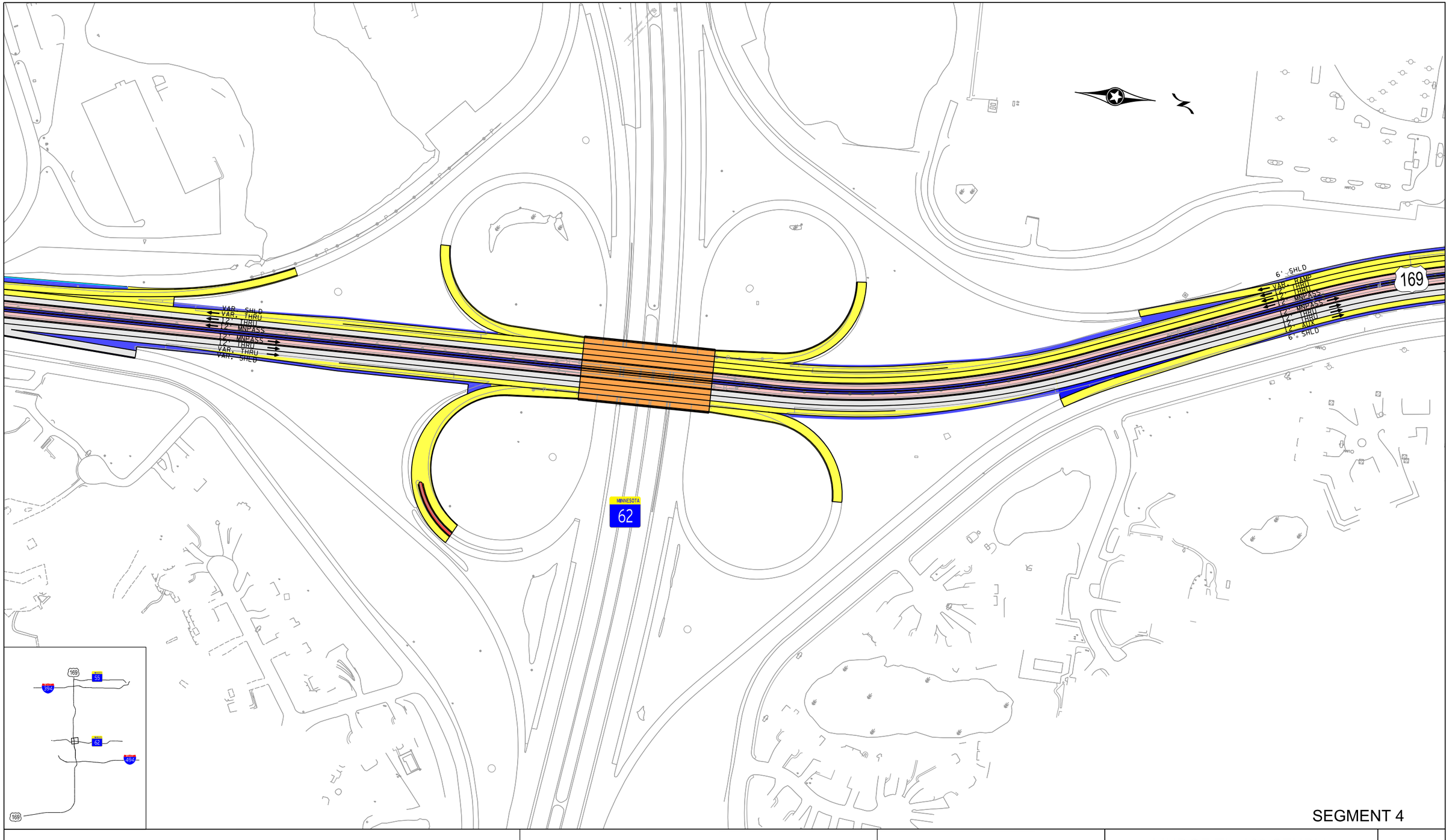
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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 -
MNPASS CONCEPT

SHEET
12
OF
21

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SEGMENT 4

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- CONSTRUCT MNPASS LANE
- CONSTRUCT MEDIAN BARRIER
- CONSTRUCT/EXPAND BRIDGE
- CONSTRUCT CONCRETE WALK
- INPLACE ROADWAY
- INPLACE SHOULDER
- EXISTING BRIDGE

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SCALE IN FEET

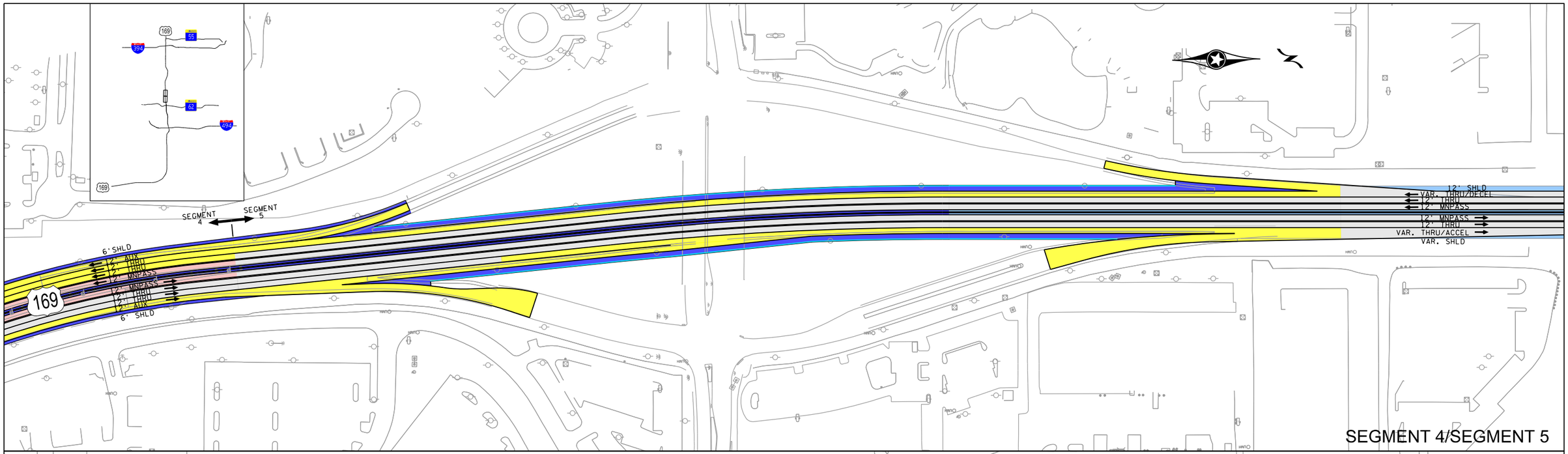
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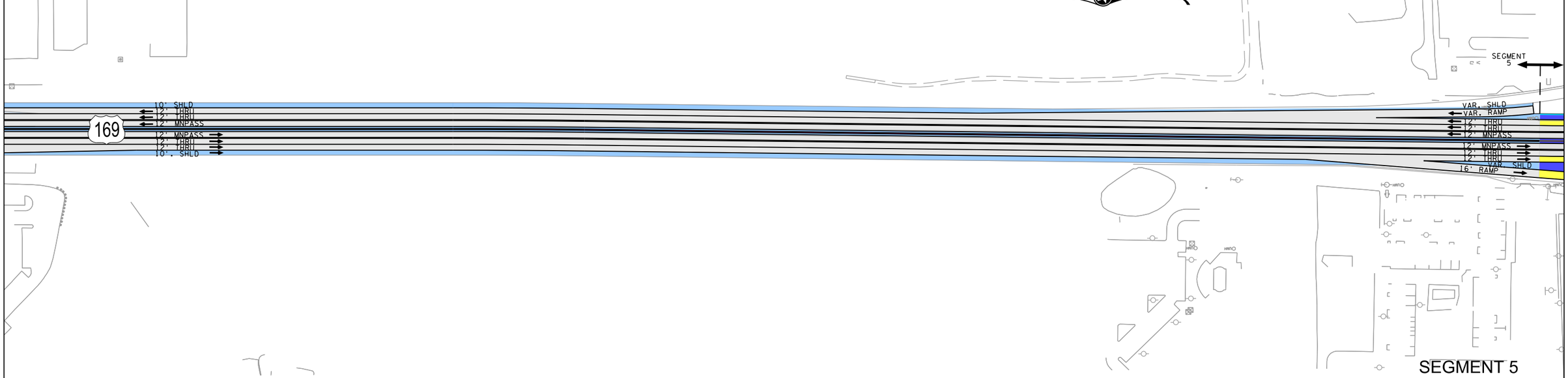
MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 13 OF 21

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CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

200
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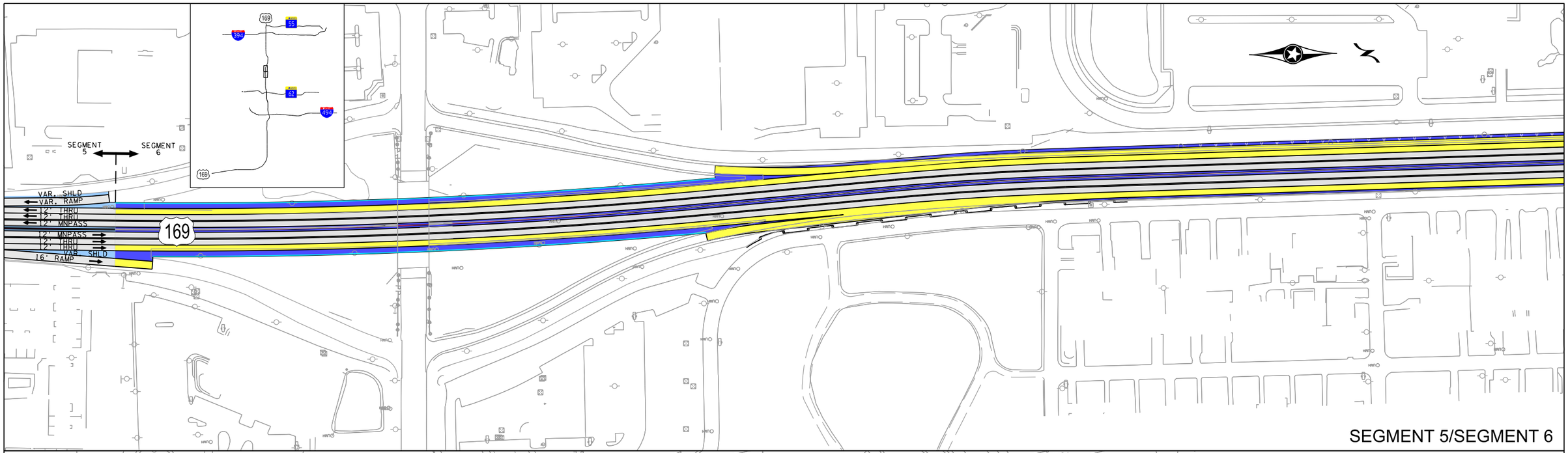
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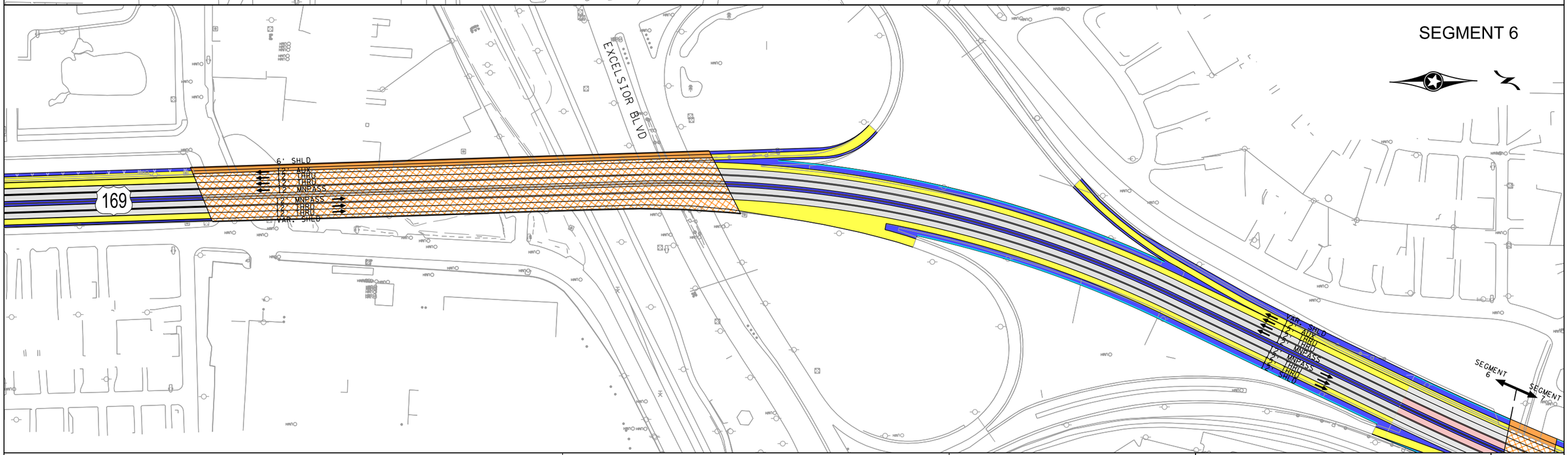
MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 14 OF 21

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CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

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SCALE IN FEET

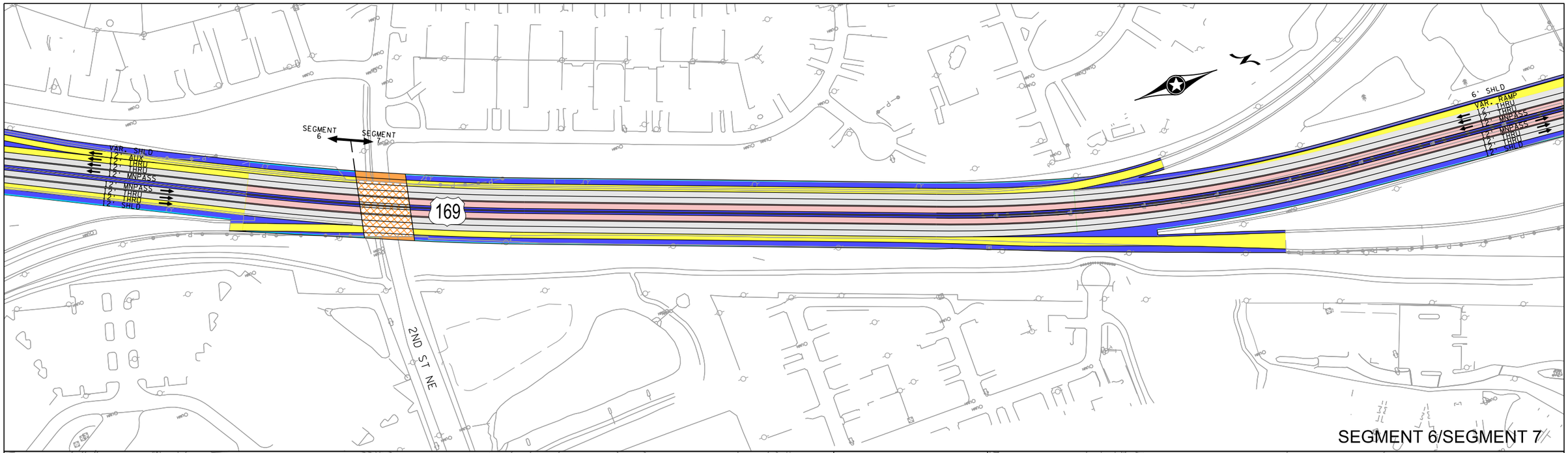
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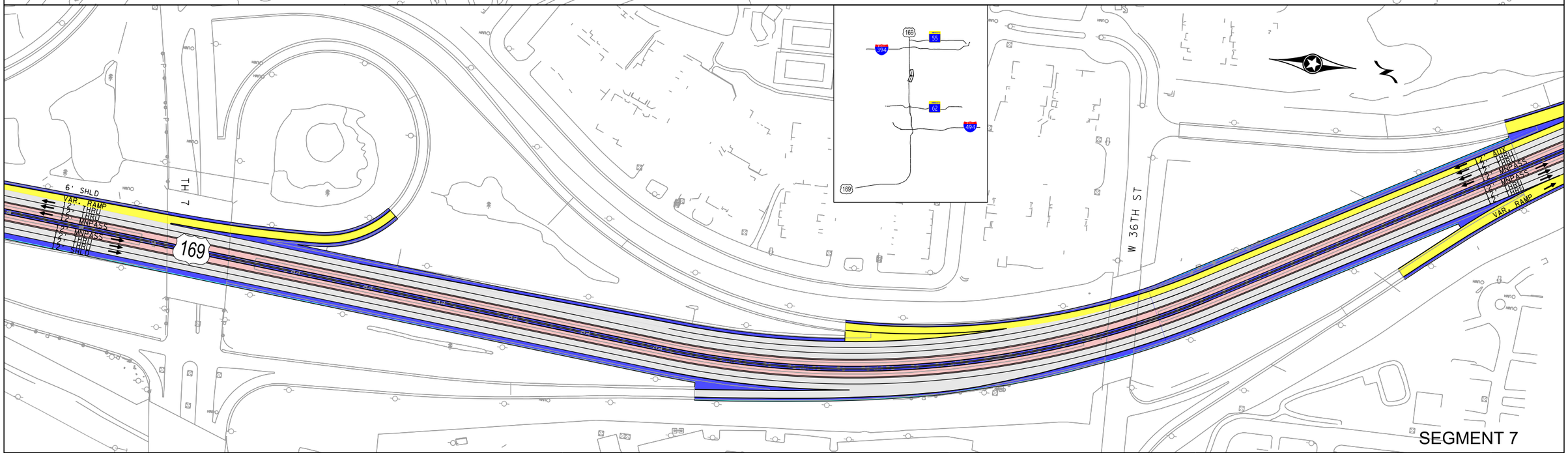
MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT
OPTION 1

SHEET 15 OF 21

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- CONSTRUCT MNPASS LANE
- CONSTRUCT MEDIAN BARRIER
- CONSTRUCT/EXPAND BRIDGE
- CONSTRUCT CONCRETE WALK
- INPLACE ROADWAY
- INPLACE SHOULDER
- EXISTING BRIDGE

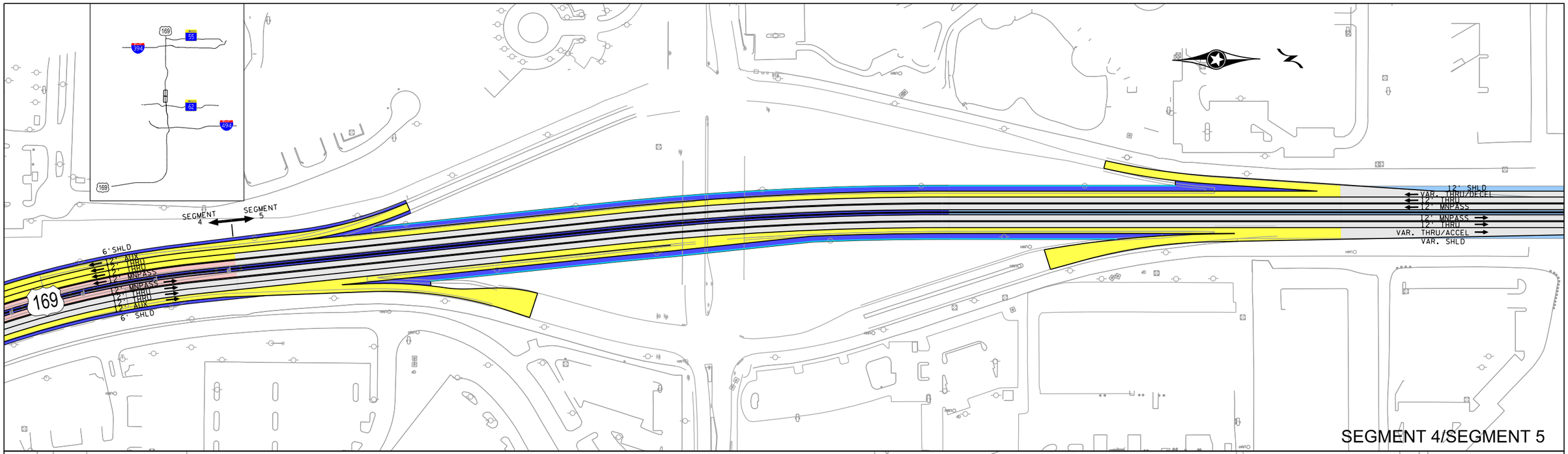
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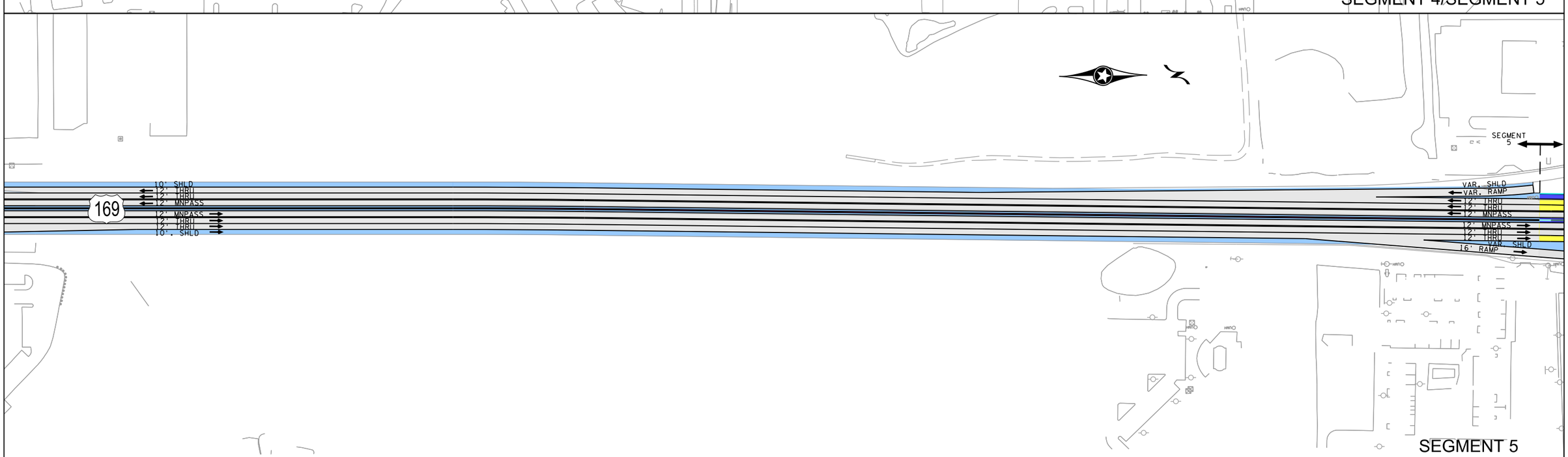
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MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 16 OF 21





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- CONSTRUCT/EXPAND BRIDGE
- CONSTRUCT CONCRETE WALK
- INPLACE ROADWAY
- INPLACE SHOULDER
- EXISTING BRIDGE

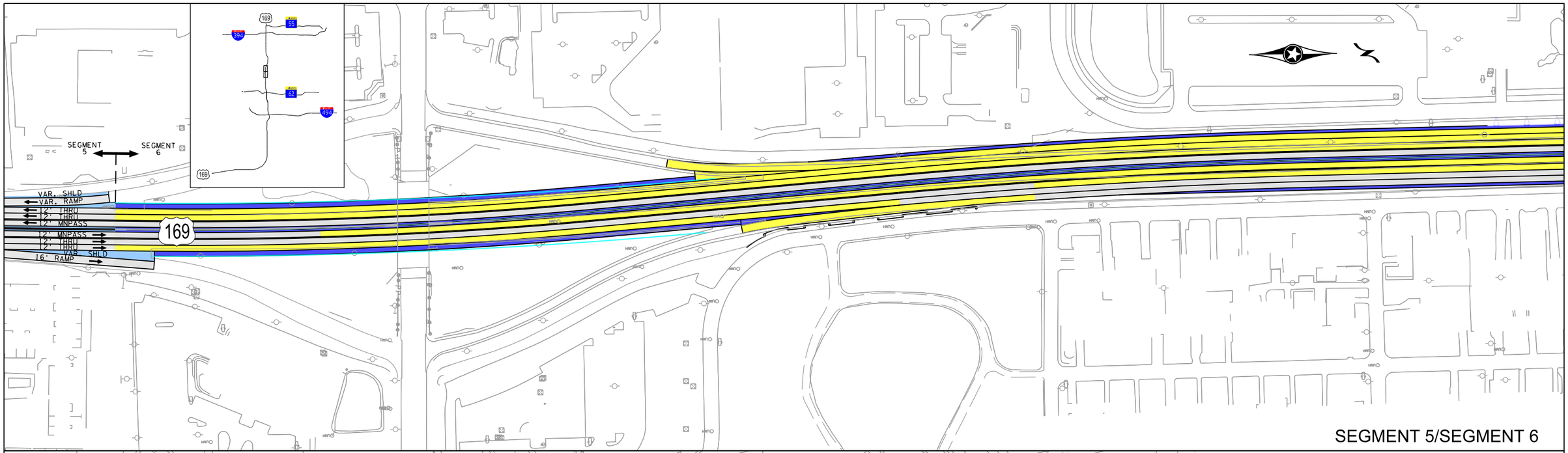
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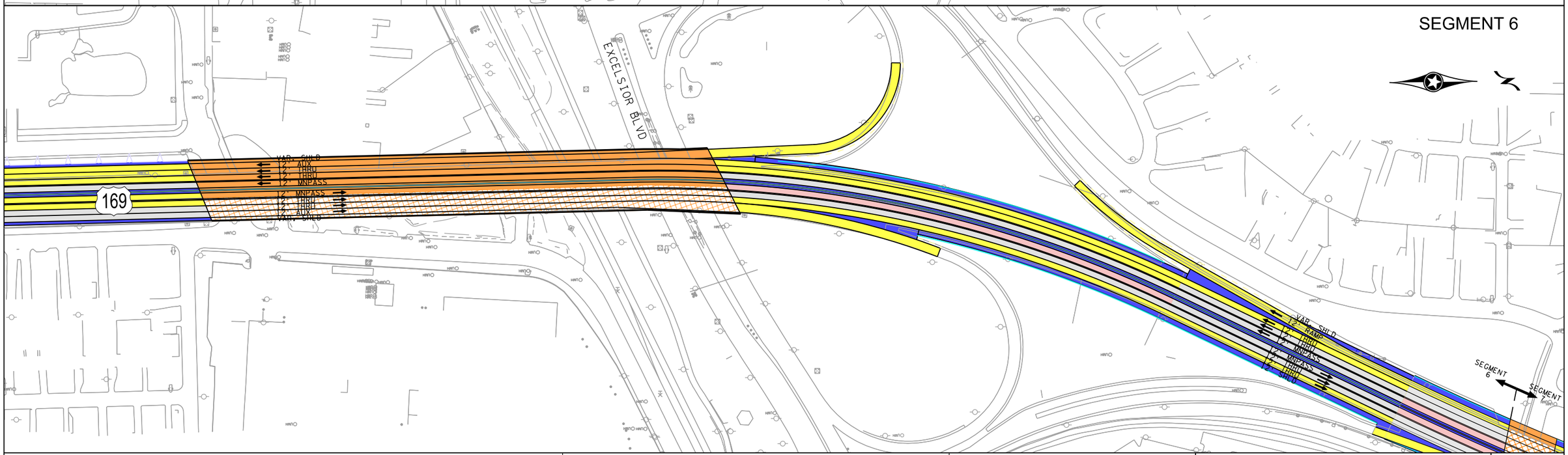
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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 14A OF 21





CONSTRUCT ROADWAY
CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

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SCALE IN FEET

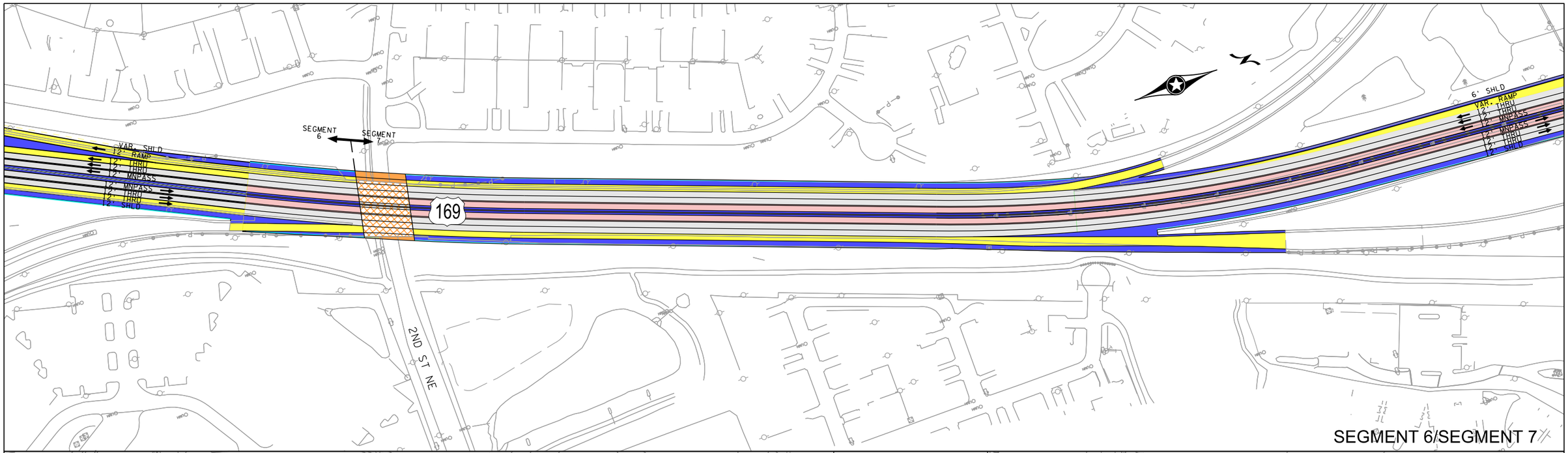
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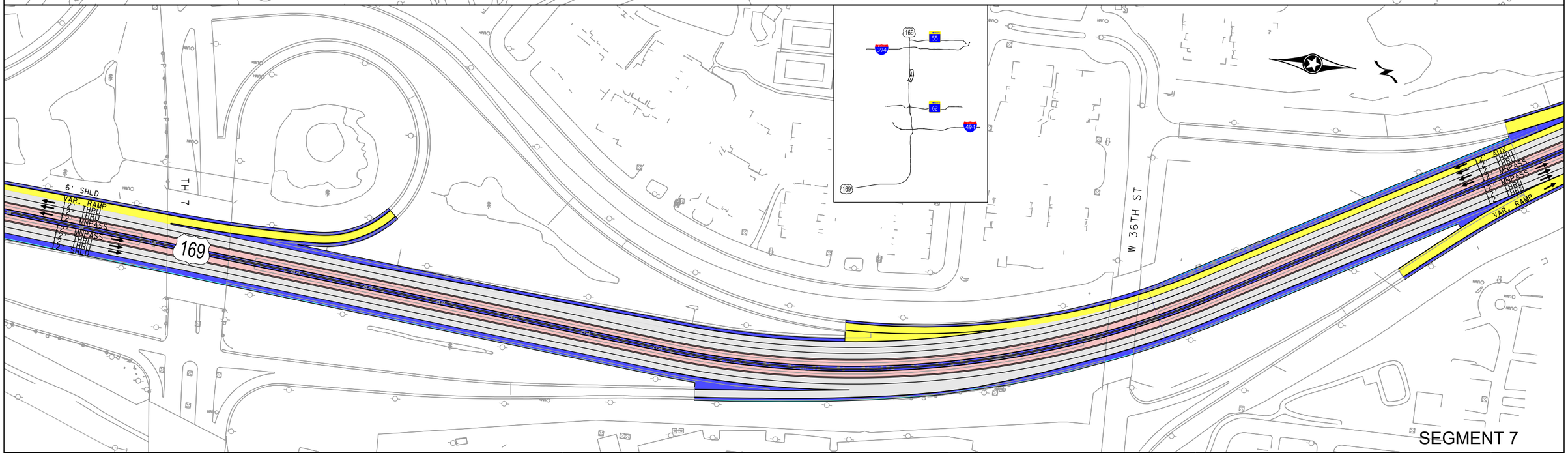
MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT
OPTION 1

SHEET 15A OF 21

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- CONSTRUCT MNPASS LANE
- CONSTRUCT MEDIAN BARRIER
- CONSTRUCT/EXPAND BRIDGE
- CONSTRUCT CONCRETE WALK
- INPLACE ROADWAY
- INPLACE SHOULDER
- EXISTING BRIDGE

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SCALE IN FEET

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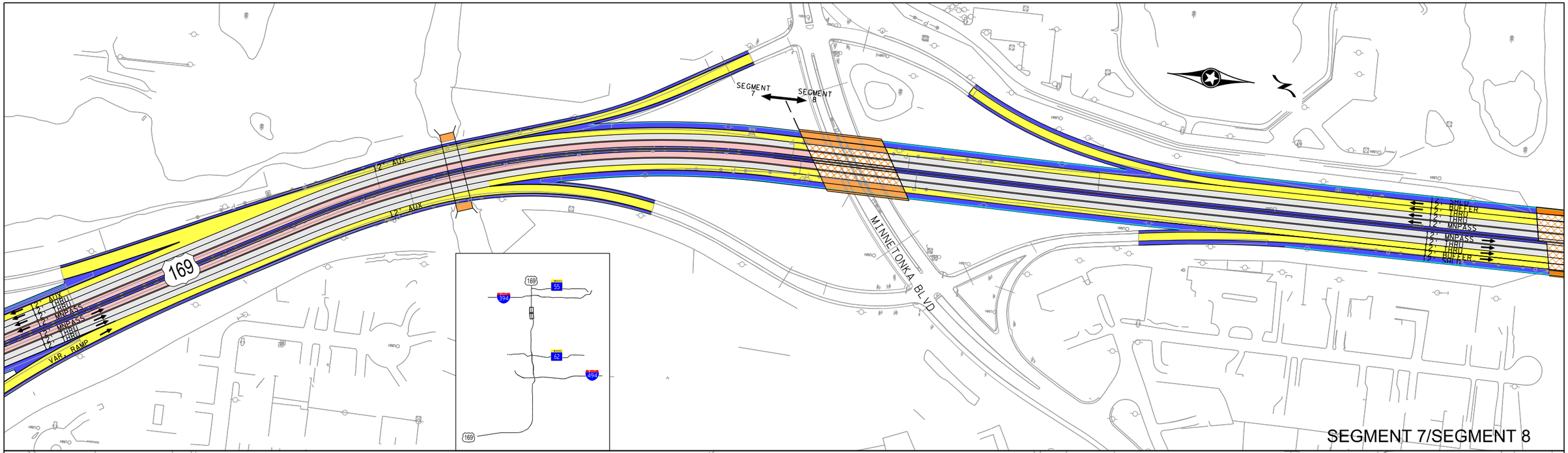
MNDOT TH 169 STUDY

TH 169 TRANSITWAY AND MNPASS

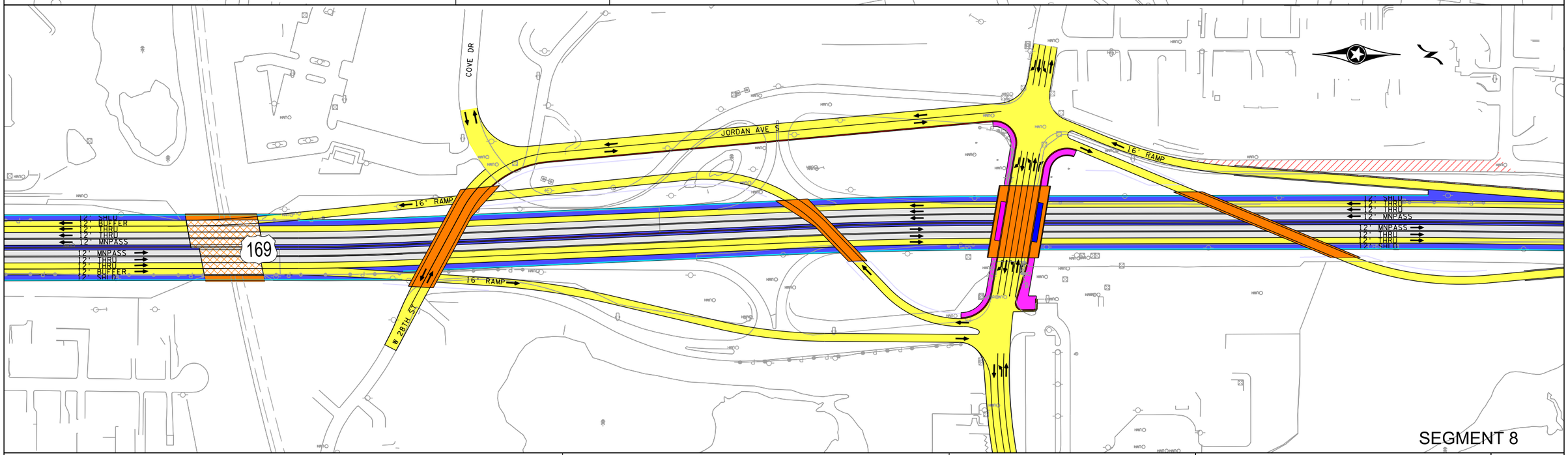
DRAFT TH 169 - MNPASS CONCEPT

SHEET 16A OF 21

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SEGMENT 7/SEGMENT 8



SEGMENT 8

CONSTRUCT ROADWAY
CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

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SCALE IN FEET

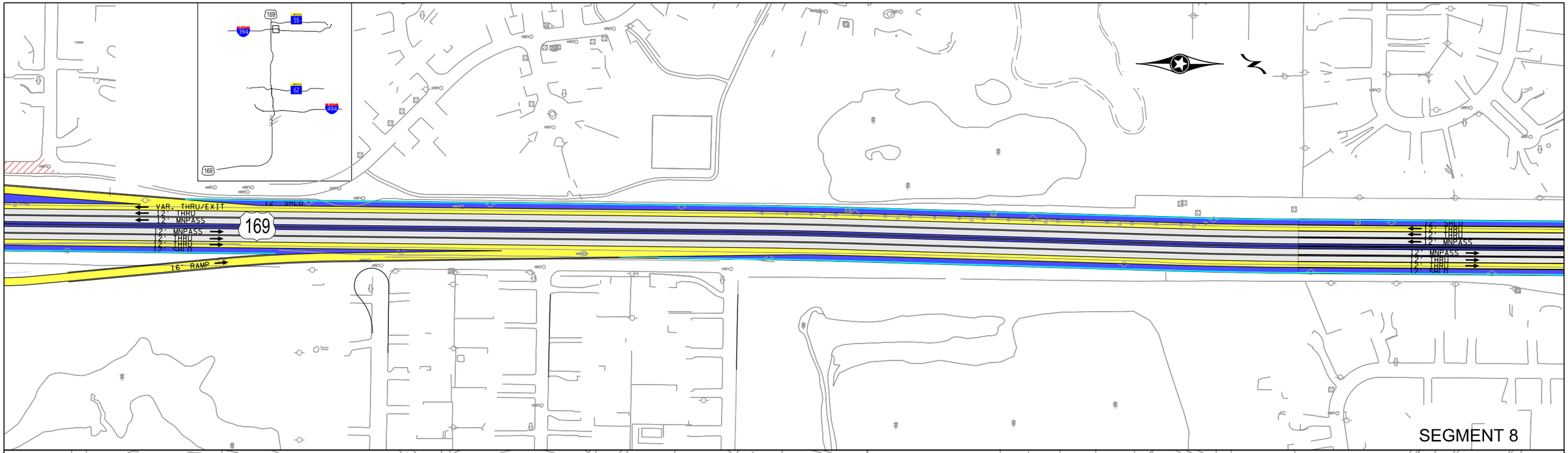
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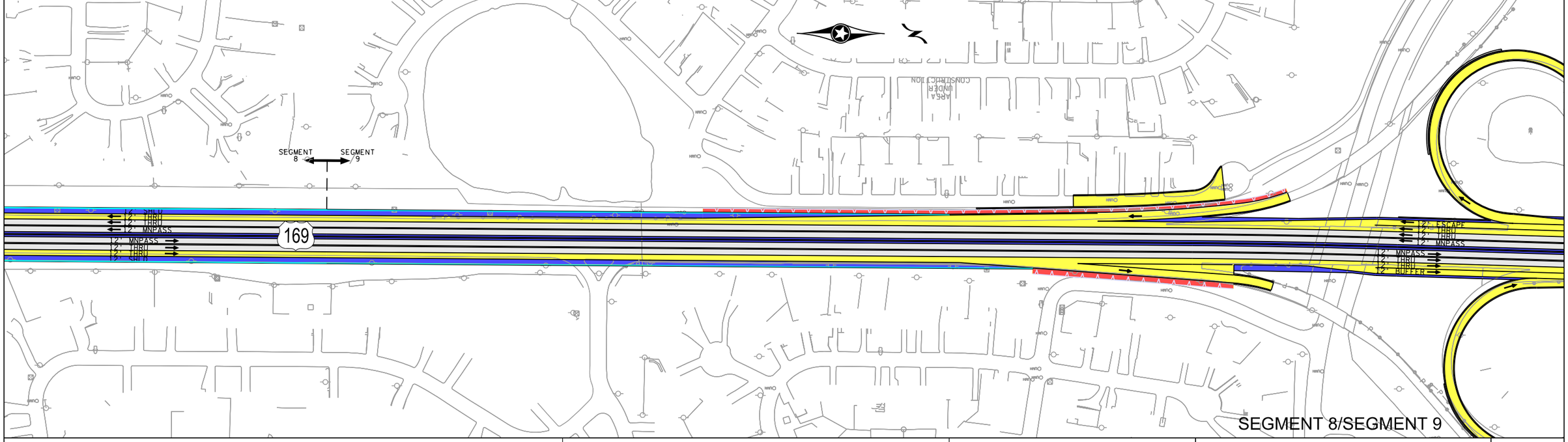
MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 17 OF 21

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CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

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SCALE IN FEET

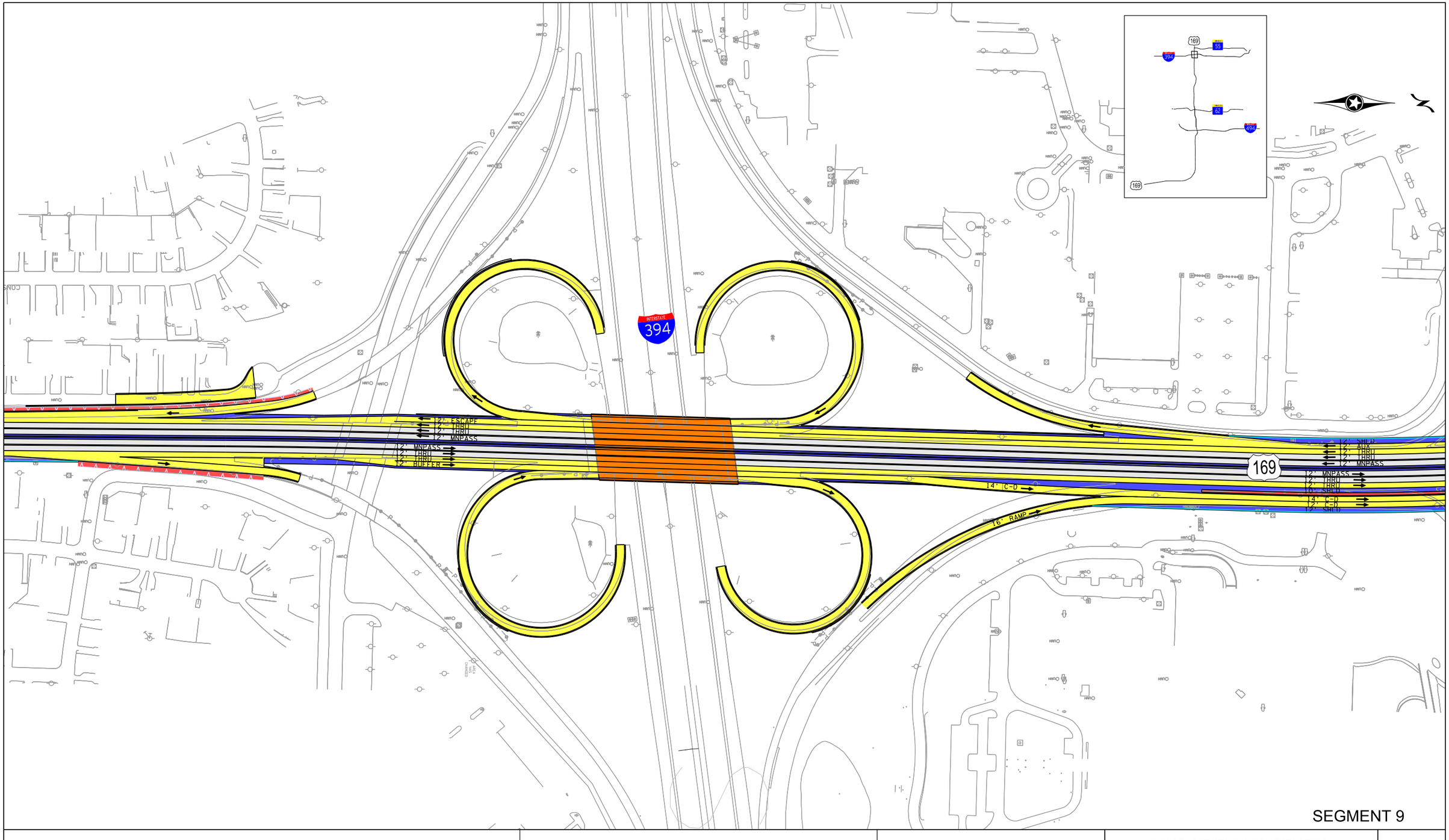
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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 18 OF 21

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SEGMENT 9

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CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
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INPLACE SHOULDER
EXISTING BRIDGE

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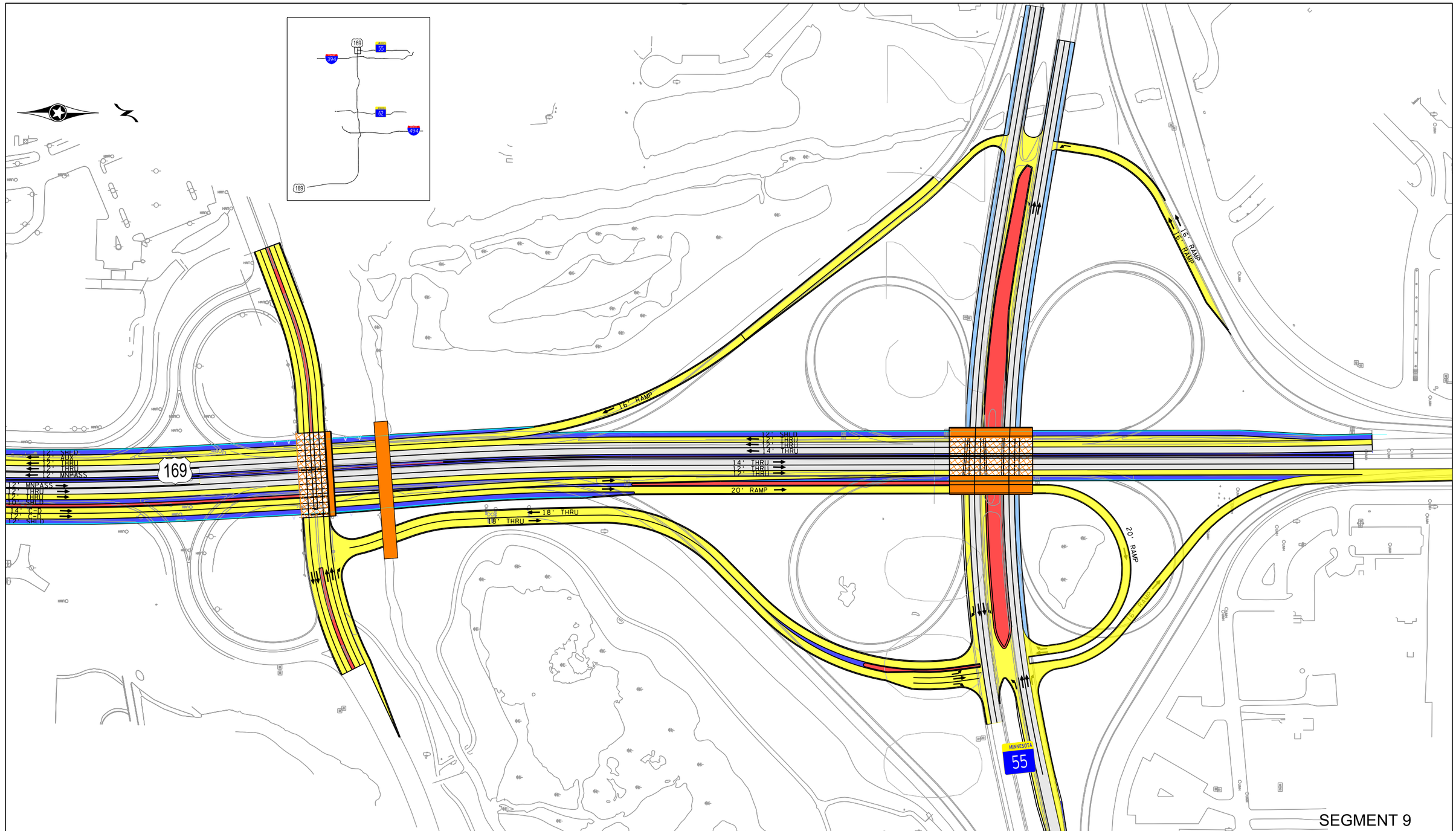
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TH 169 TRANSITWAY AND MNPASS

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SHEET 19 OF 21

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CONSTRUCT MEDIAN BARRIER
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CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

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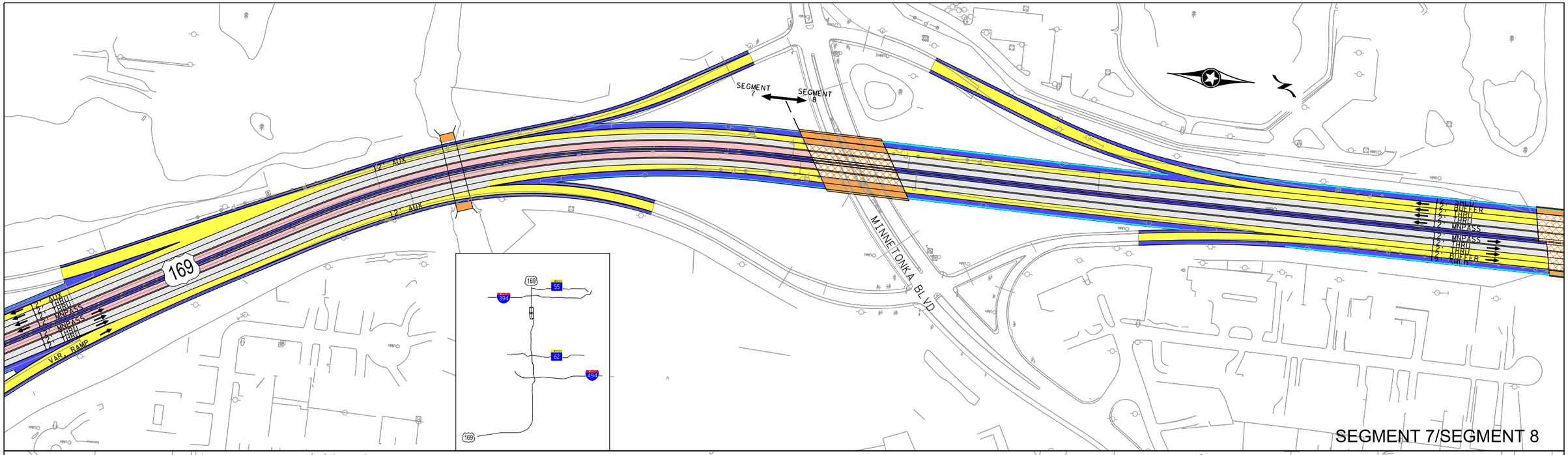
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TH 169 TRANSITWAY AND MNPASS

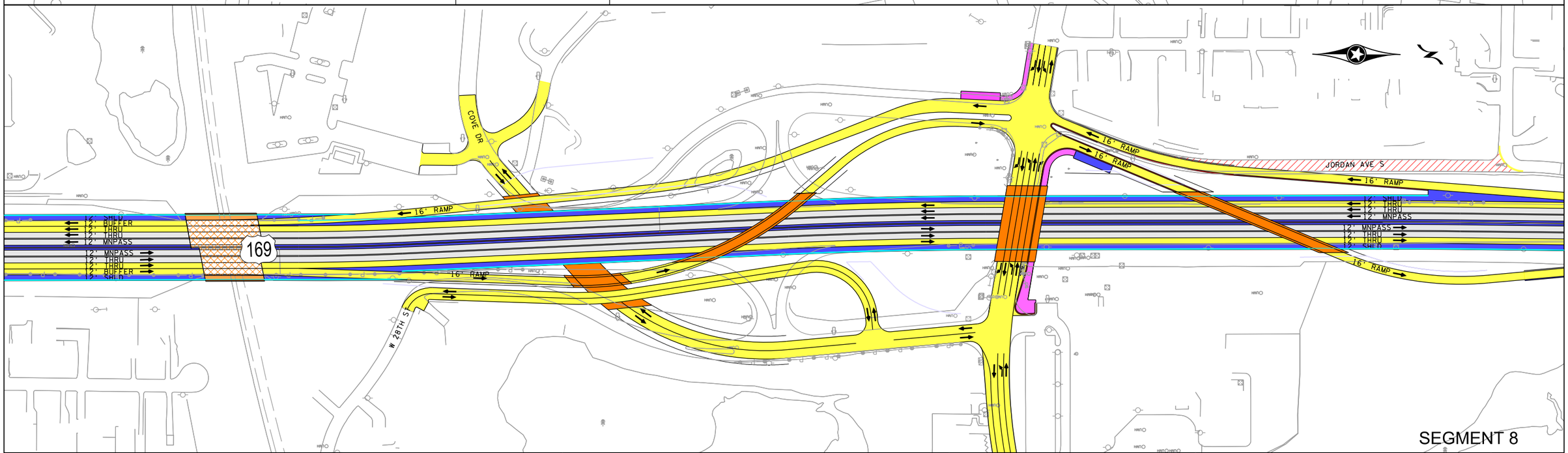
DRAFT TH 169 - MNPASS CONCEPT

SHEET 21 OF 21

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SEGMENT 7/SEGMENT 8



SEGMENT 8

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CONSTRUCT MEDIAN BARRIER
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CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

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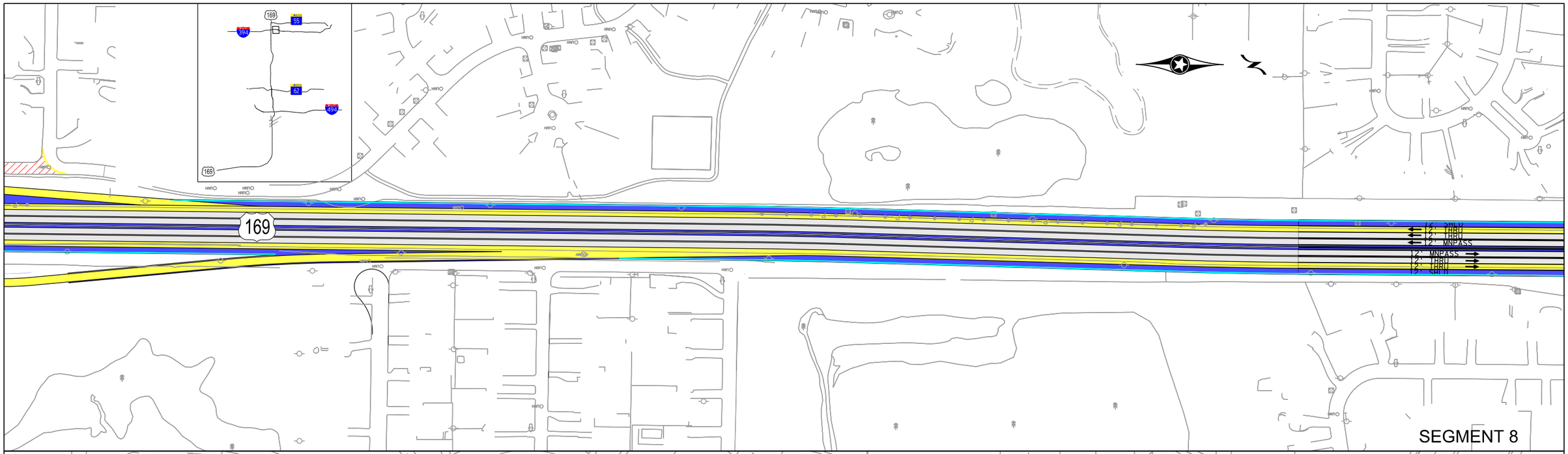
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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 17A OF 21

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INPLACE SHOULDER
EXISTING BRIDGE

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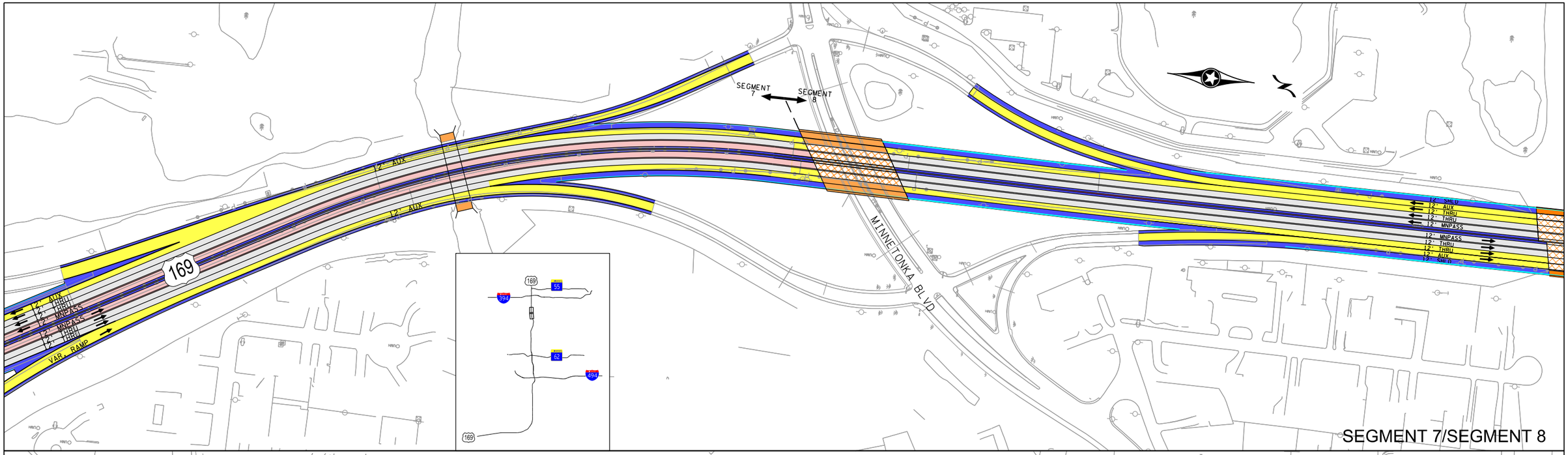
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TH 169 TRANSITWAY AND MNPASS

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SHEET 18A OF 21

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SEGMENT 7/SEGMENT 8

SEGMENT 8

CONSTRUCT ROADWAY
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CONSTRUCT MEDIAN BARRIER
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CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

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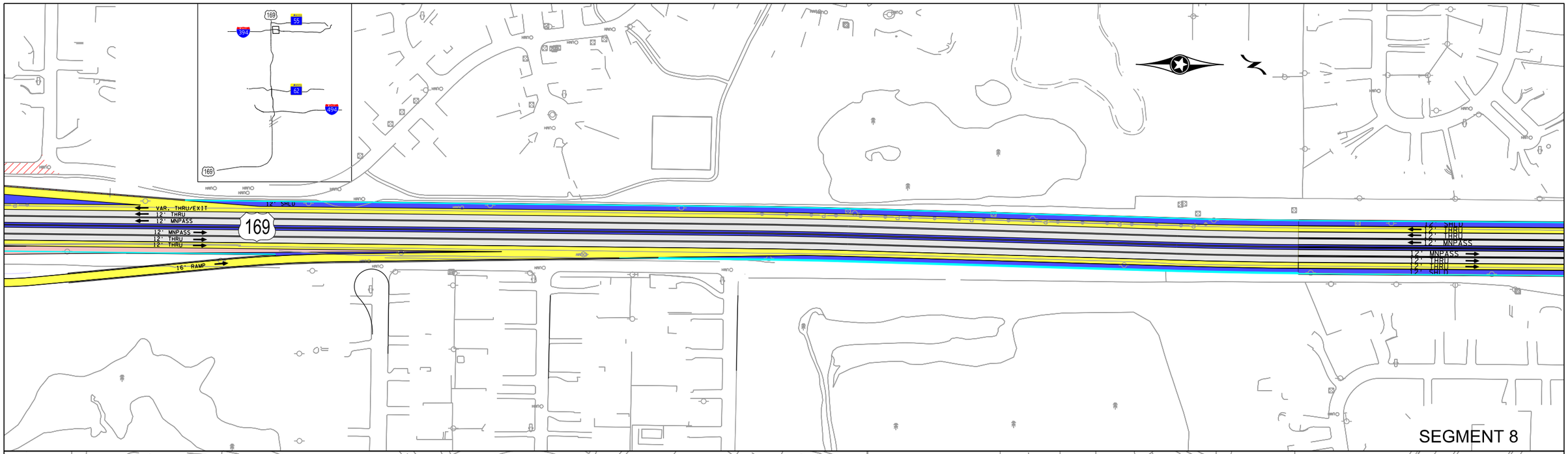
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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 17B OF 21

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CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

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SCALE IN FEET

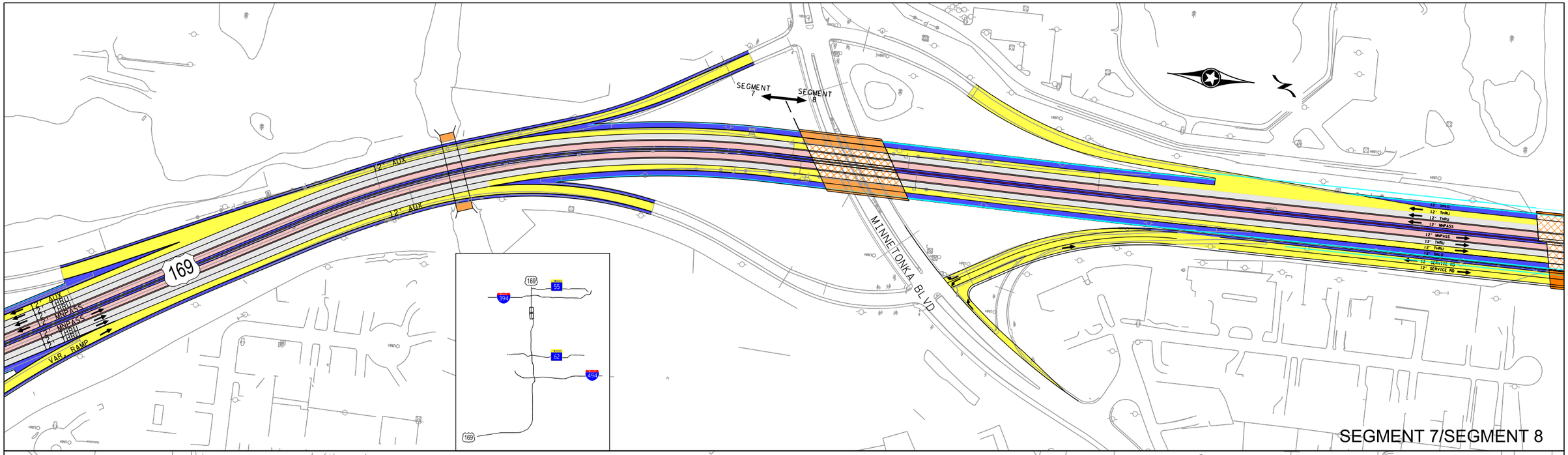
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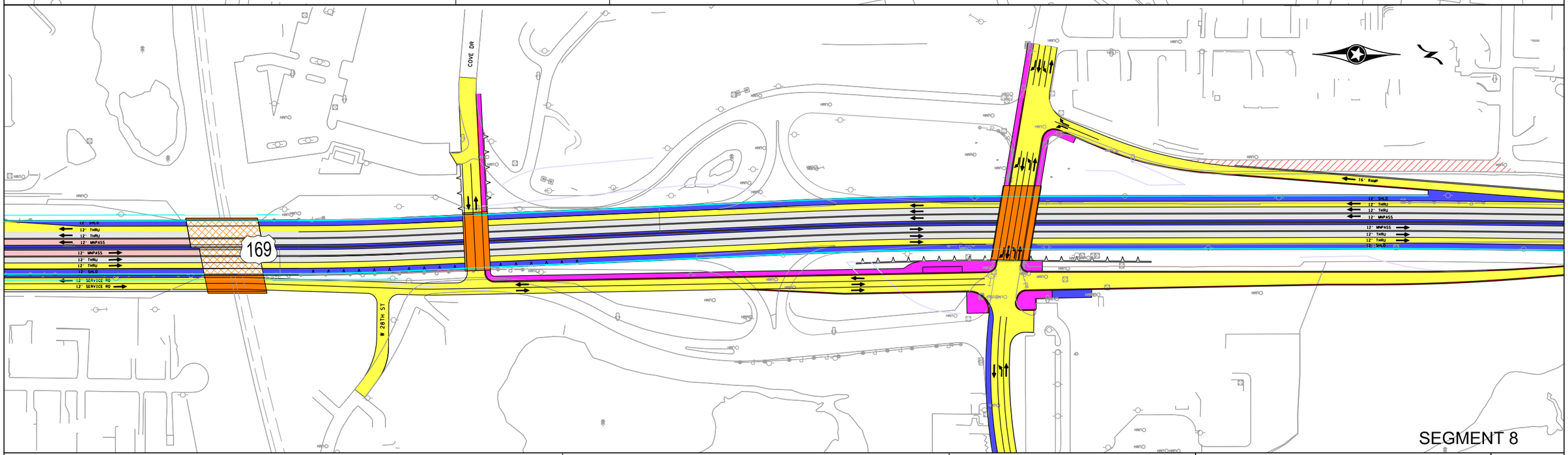
MNDOT TH 169 STUDY
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DRAFT TH 169 - MNPASS CONCEPT

SHEET 18B OF 21

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- CONSTRUCT/EXPAND BRIDGE
- CONSTRUCT CONCRETE WALK
- INPLACE ROADWAY
- INPLACE SHOULDER
- EXISTING BRIDGE

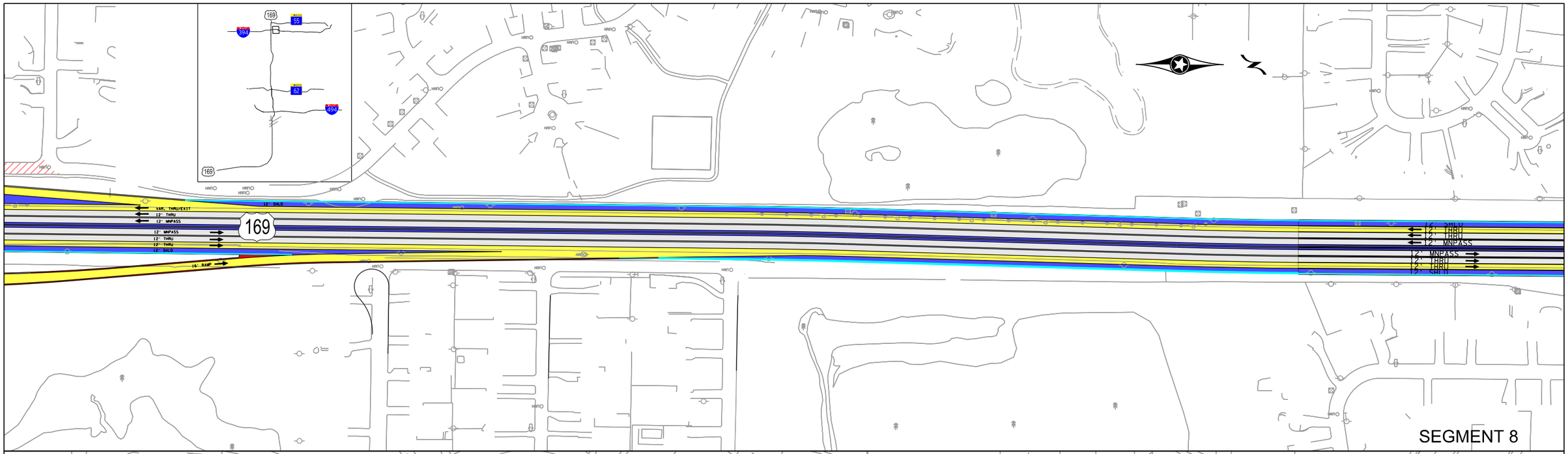
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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 17C OF 21





CONSTRUCT ROADWAY
CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
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INPLACE SHOULDER
EXISTING BRIDGE

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SCALE IN FEET

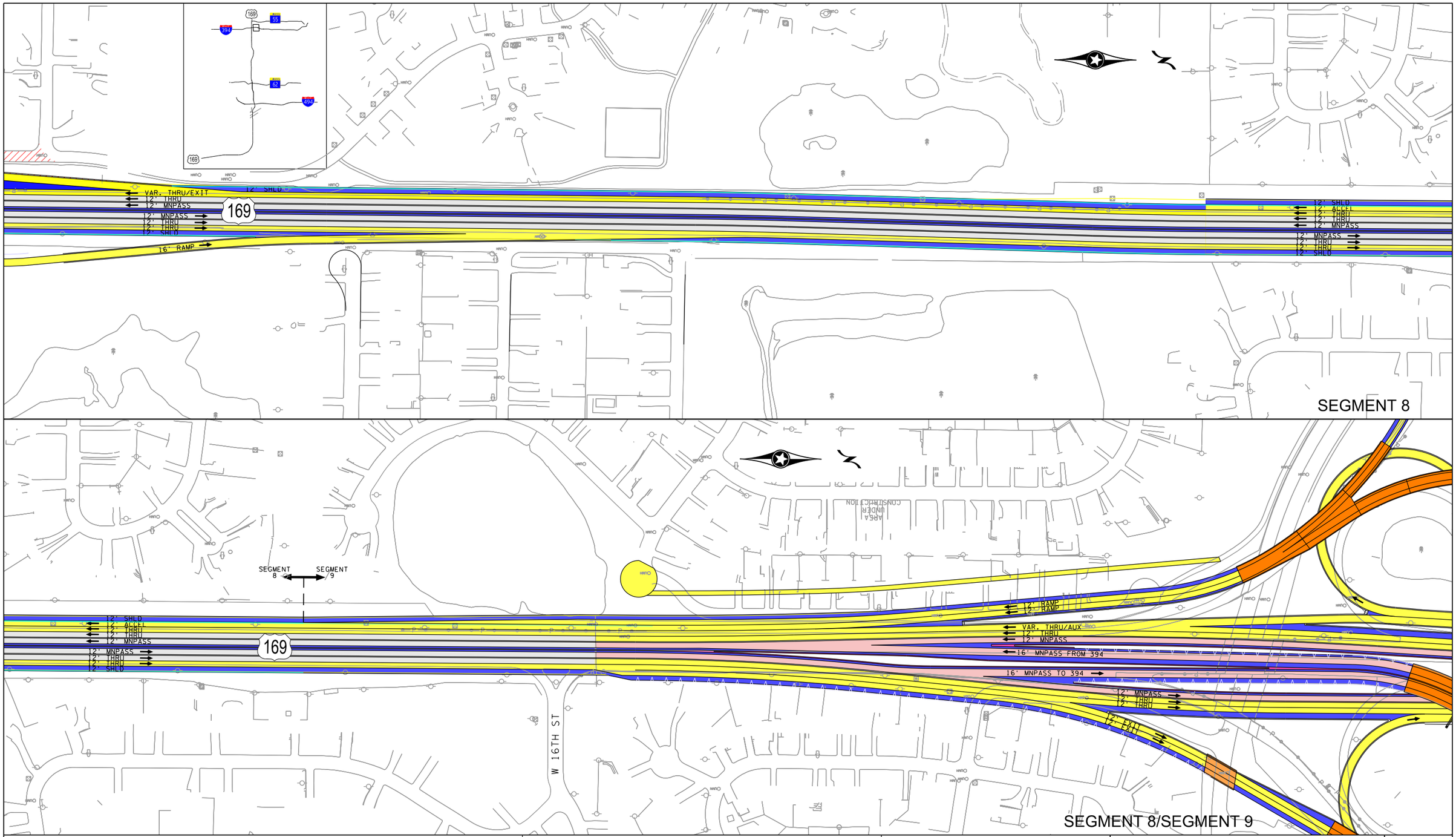
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TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 18C OF 21

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INPLACE SHOULDER
EXISTING BRIDGE

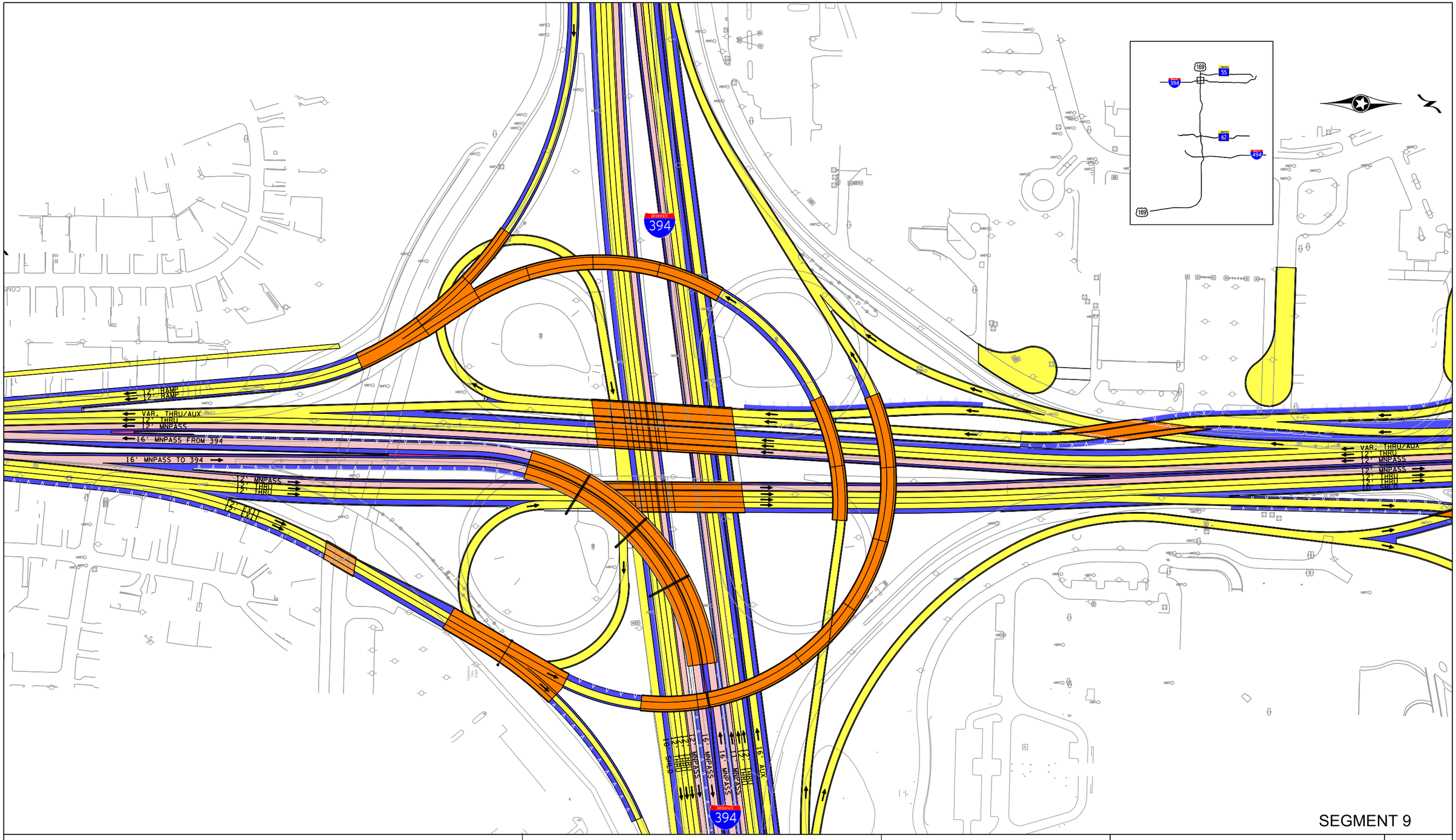
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MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

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SHEET 18D OF 21



CONSTRUCT ROADWAY
CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

200
SCALE IN FEET

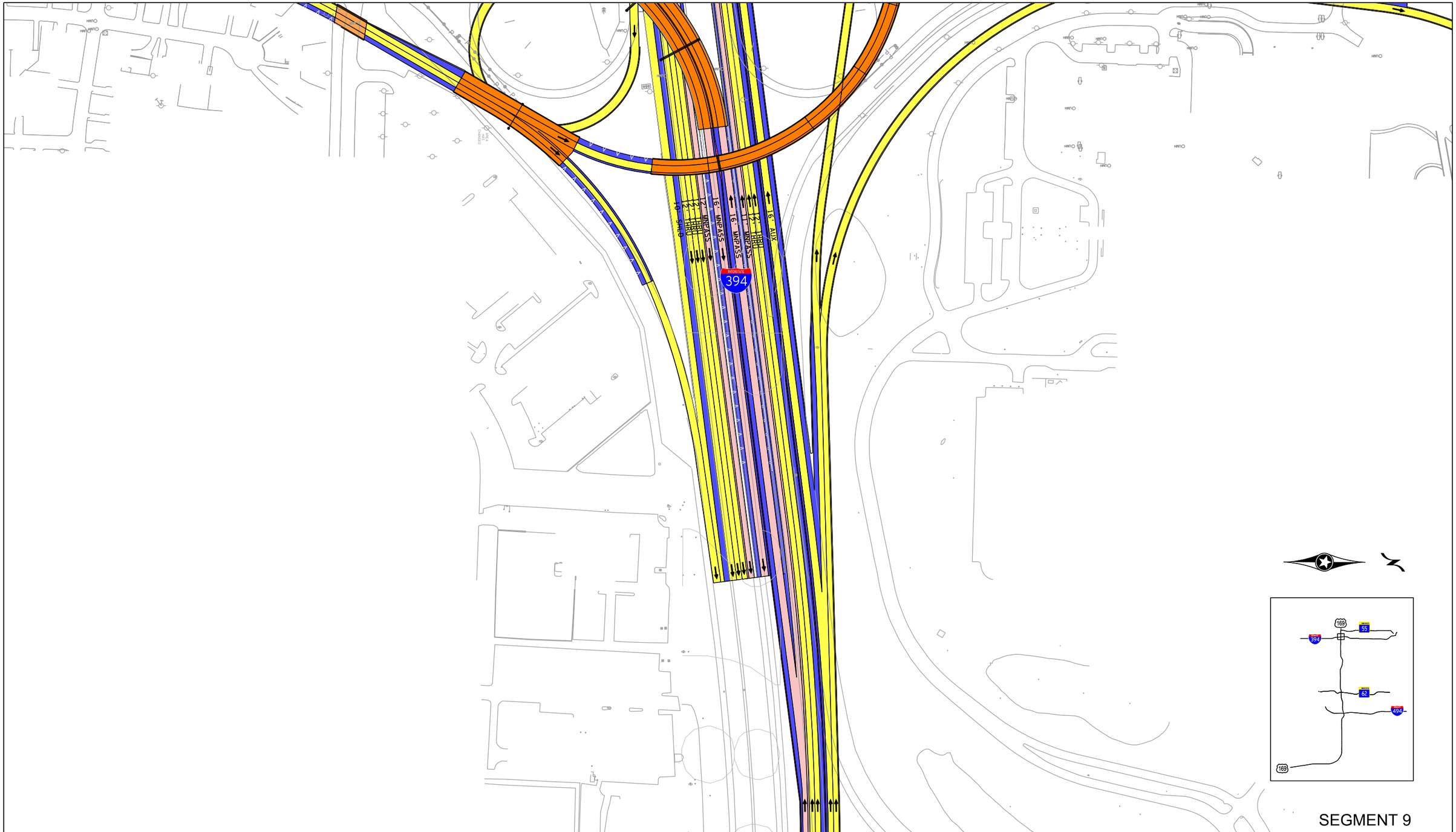
DEPARTMENT OF TRANSPORTATION
Scott
METROPOLITIAN COUNCIL
SRF Consulting Group, Inc.
HNTB

MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 19D OF 21

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SEGMENT 9

- CONSTRUCT ROADWAY
- CONSTRUCT SHOULDER
- CONSTRUCT MNPASS LANE
- CONSTRUCT MEDIAN BARRIER
- CONSTRUCT/EXPAND BRIDGE
- CONSTRUCT CONCRETE WALK
- INPLACE ROADWAY
- INPLACE SHOULDER
- EXISTING BRIDGE

200
SCALE IN FEET

DEPARTMENT OF TRANSPORTATION

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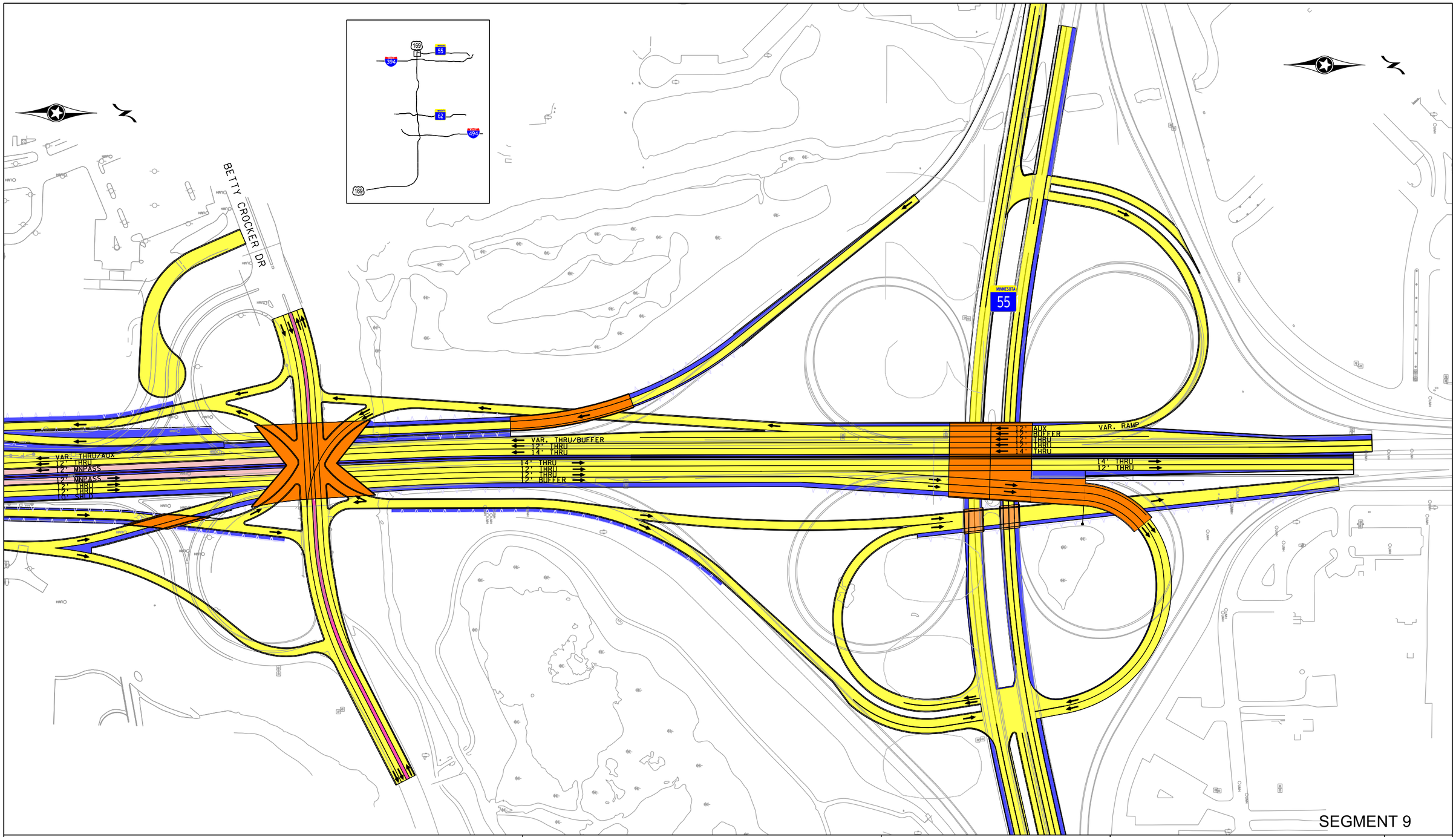
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MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 -
MNPASS CONCEPT

SHEET
20D
OF
21

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CONSTRUCT ROADWAY
CONSTRUCT SHOULDER
CONSTRUCT MNPASS LANE
CONSTRUCT MEDIAN BARRIER
CONSTRUCT/EXPAND BRIDGE
CONSTRUCT CONCRETE WALK
INPLACE ROADWAY
INPLACE SHOULDER
EXISTING BRIDGE

200
SCALE IN FEET

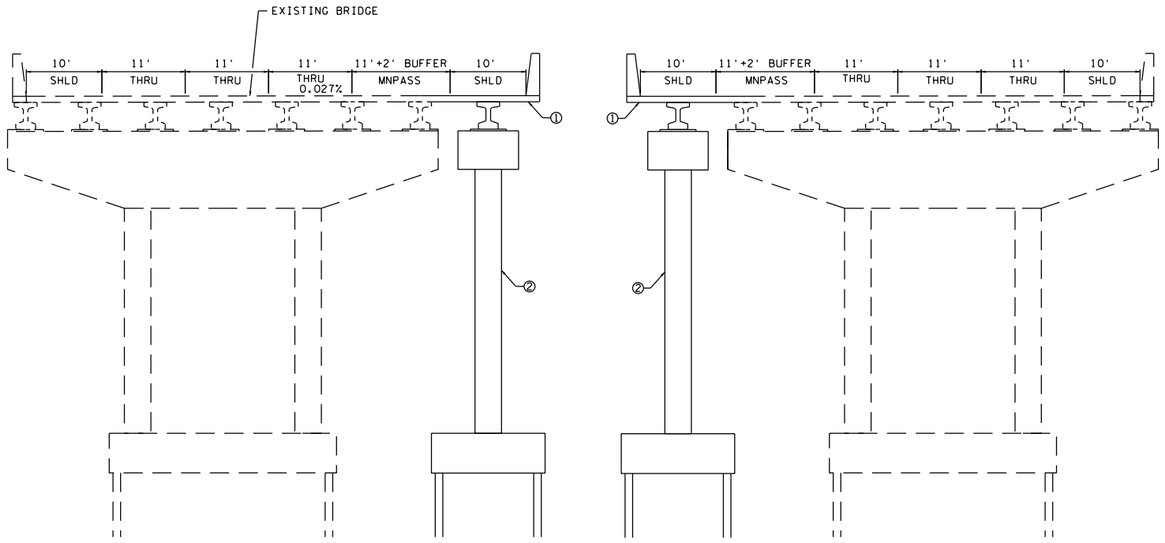
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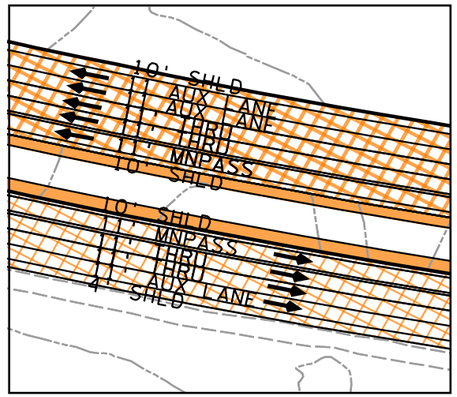
MNDOT TH 169 STUDY
TH 169 TRANSITWAY AND MNPASS

DRAFT TH 169 - MNPASS CONCEPT

SHEET 21D OF 21

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CONSTRUCT/EXPAND BRIDGE

EXISTING BRIDGE

SPECIFIC NOTES:

① EXPANDED BRIDGE DECK

② NEW PIER REQUIRED TO SUPPORT EXPANDED BRIDGE DECK

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MNDOT TH 169 STUDY

TH 169 TRANSITWAY AND MNPASS

SEGMENT 1A
BLOOMINGTON FERRY
BRIDGE EXPANSION

SHEET 6B OF 21

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