Memorandum

SRF No. 7944

To: Cole Runge, Principal Planner/MPO Director
Brown County Planning Commission/Green Bay MPO

From: George Schulz, SRF PM

Date: August 8, 2018 - Update

Subject: Southern Arterial Conceptual Layouts

Southern Arterial Alternatives Evaluation

Brown County is evaluating several I-41 access alternatives as part of their Southern Arterial project. The following alternatives were evaluated as part of the *Southern Arterial Preliminary Engineering and Operations Review (PEOR) Traffic Analysis, August 8, 2018*:

1. No Build Alternative
2. Alternative 1 – New Scheuring Road (CTH F) Fox River Crossing. Use the existing I-41 Interchange with CTH F.
3. Alternative 2A – New Southern Arterial Fox River Crossing along Rockland and Red Maple Roads with a new I-41 Diamond Interchange with the Southern Arterial.
4. Alternative 2B - New Southern Arterial Fox River Crossing along Rockland and Red Maple Roads with a new I-41 Collector-Distributor (C-D) Roadway between the new Southern Arterial and existing CTH F interchanges.
5. Alternative 3 - New Southern Arterial Fox River Crossing along Rockland and Red Maple Roads with a new I-41 Overpass. No direct I-41 access will be provided to the new Southern Arterial.

See **Appendix A, Figures A.1 through A.4** for the Alternative Location Maps. As part of this evaluation, SRF Consulting Group was requested to develop I-41 mainline and conceptual interchange layouts associated with the proposed Southern Arterial for Alternatives 2A (Diamond Interchange) and 2B (C-D Interchange). Alternatives 1 and 3 have been regarded as not feasible based on the completion of the traffic operations analysis. The Traffic Analysis Report and this Conceptual Layout Memorandum will serve as the basis for the Preliminary Engineering and Operations Review report (PEOR).

Alternatives 2A and 2B were evaluated in terms of right of way impacts, traffic operations, and construction costs. In addition, a list of advantages and disadvantages is provided to assist in the determination of feasible alternatives. The following is a discussion of the impacts and challenges associated with Alternatives 2A and 2B. This memorandum focuses on the new roadways and improvements west of the Fox River crossing. The limits of this evaluation are between Mid Valley Drive and Lawrence Drive. The desire to maintain many of the local street connections was discussed with Brown County and incorporated into each of the conceptual interchange layouts.

Conceptual sign plans were also developed for the freeway segment of Alternatives 2A and 2B to check the feasibility of properly signing for the two interchange options. The Conceptual Sign Plans are provided in Appendix E. Alternative 2A is shown in **Figure E.1** and Alternative 2B is shown in **Figure E.2**.

Alternative 2A – Southern Arterial Diamond Interchange

Alternative 2A begins at the existing WIS 172/Monroe Road (CTH GV) interchange and follows CTH GV to Heritage Road (CTH X). See **Figure A.2, Alternative 2A Location Map in Appendix A**. The Southern Arterial continues southwest along a new alignment to the intersection of Rockland Road and South Broadway (CTH PP), follows Rockland Road to the west, crosses the Fox River, and connects to Red Maple Road on the river's west side. The street continues west on Red Maple Road and Southbridge Road, connects to I-41 via a new full-access diamond interchange, and continues along a new alignment to Packerland Drive (CTH EB). Access along this corridor will be at-grade, and the only grade separation will be at I-41 with a new Diamond Interchange. The conceptual interchange layout for Alternative 2A is provided in **Appendix B, Figure B.1**.

Alternative 2A Design Criteria/Assumptions:

1. I-41 Mainline and Interchange:
    a. I-41 mainline design speed = 70mph
    b. Maximum ramp grades = 4%
    c. Minimum ramp curve radius to meet 60mph design speed for entry and exit curves to/from I-41.
    d. Minimize impacts to quarry
    e. Design the Southern Arterial bridge long enough to accommodate the future expansion of I-41 to 6 lanes. See the proposed typical section at the Southern Bridge overpass in **Figure C.6** located in **Appendix C**.
    f. Match the inside median shoulder width of 16.75 feet and outside shoulder width of 12 feet for the I-41 mainline in each direction. The original median width was 60 feet at and south of the Scheuring Road Interchange. When constructing the Scheuring Road interchange, the centerline was maintained, and the median was converted to

one 12-foot travel lane, a 16.75-foot median shoulder in each direction. A concrete median barrier was added along the centerline to complete the typical section. Typical sections illustrating the existing shoulder widths near the Scheuring Road interchange are provided in **Figures C.4 and C.5 in Appendix C**. See typical sections on the bottom of the figures titled "Typical Finished Section, USH 41 Mainline.

g. Maintain 12-foot lanes for the I-41 mainline.

h. The northbound exit direction sign for the Southern Arterial off ramp is shown on an overhead cantilever structure at the painted gore and this location is based on a 760-foot deceleration lane. See **Figure E.1, Sheet 1 of 3 in Appendix E**. Based on NE Region guidelines, the overhead sign structure will be located at the painted ramp gore for deceleration lanes less than 800 feet or at the beginning of the deceleration lane for deceleration lanes greater than 800 feet.

i. The new northbound exit direction sign for Scheuring Road will include an extra "Exit Only" panel because of the continuous auxiliary lane between the Southern Arterial and Scheuring Road interchanges. The sign will be mounted on the existing overhead cantilever sign structure. See **Figure E.1, Sheet 3 of 3 in Appendix E**. WisDOT has requested that Brown County and their designer verify that the existing sign structure can accommodate the additional loading of the "Exit Only" sign panel when preliminary and final design plans are prepared.

2. Southbridge Road/Southern Arterial:

   a. Design speed = 45 mph.

   b. Four lane divided road.

   c. Avoid the proposed new development on the south side of Southbridge Road, east of I-41 (see **Figure B.1 – Sheet 7 of 7**).

   d. For purposes of this preliminary study, all major intersections along the Southern Arterial are assumed to be roundabouts as part of the conceptual layouts (I-41 SB ramp, I-41 NB ramp and Lawrence Drive intersections). Other intersection designs may need to be evaluated as part of the Intersection Control Evaluation (ICE) report for intersections using state or federal funding in future phases of this project.

   e. Include a multi-use path on the north side of the Southern Arterial.

   f. Minimum spacing between interstate ramp terminals and adjacent intersections = 1320 ft.

   g. Maximum grade of 4%

3. Innovation Court:

   a. Design Speed = 30mph (match existing design speed).

   b. Maintain two-lane road.

c. Maintain direct access to Southbridge Road.

d. Provide desirable spacing of 1320 feet from I-41 ramp intersection.

4. French Road:
    a. Design Speed = 45mph.
    b. Maintain two-lane road.
    c. Southbridge Road currently connects directly French Road, the I-41 east frontage road. Maintain access to Southbridge Road.
5. Mid Valley Drive:
    a. Design speed = 45 mph.
    b. Maintain two-lane road.
    c. Maintain access to Southbridge Road (Southern Arterial) west extension to/from the north and south.
    d. Provide 1320-foot of spacing between the I-41 ramp intersection and the Mid Valley Drive intersection.
    e. Maintain driveway for Green Bay Truck Sales
    f. Avoid/minimize quarry and ravine impacts

Alternative 2A - Advantages:

1. I-41 Mainline and Interchange:
    a. Design avoids substantial impacts to quarry.
    b. Ramp spacing between Southern Arterial and Scheuring Rd Interchanges:
        i. I-41 NB = 2700 ft. Includes a full auxiliary lane between the Southern Arterial northbound on ramp and the Scheuring Road (CTH F) northbound off ramp. The full auxiliary lane will improve freeway operations versus a standard ramp merge and diverge. See **Figure B.3 in Appendix B** for the lane schematic for Alternative 2A along with the ramp spacing distances and **Figure B.1 – Sheets 2 and 3 of 7** for the conceptual layout.
        ii. I-41 SB = 3100 ft. Includes a full auxiliary lane between Scheuring Road (CTH F) southbound on ramp and Southern Arterial southbound off ramp. The full auxiliary lane will improve freeway operations versus a standard ramp merge and diverge. **See Figure B.1 – Sheets 2 and 3 of 7.**
    c. Full northbound and southbound auxiliary lanes between the Southern Arterial and Scheuring Road interchanges do not require additional right of way. **See Figure B.1 – Sheets 2 and 3 of 7.**

2. The northbound entrance ramp from Scheuring Road is a single lane merge with northbound I-41. A continuous northbound auxiliary lane is provided between the Scheuring Road and CTH G interchanges. The expected future 2045 merging volume is 1630 vph in the PM peak hour. The northbound entrance ramp merge/weave is expected to operate at LOS B in 2045.
3. Southbridge Road/Southern Arterial:
    a. The Southern Arterial was relocated south to avoid quarry impacts west of I-41. **See Figure B.1 – Sheets 2 and 6 of 7.**
    b. The relocated intersection with French Road meets the minimum intersection spacing requirement (1320 ft) from the I-41 ramp intersection. **See Figure B.1 – Sheet 7 of 7.**
    c. The relocated intersection with Innovation Court meets the minimum intersection spacing requirement (1320 ft) from the I-41 ramp intersection. **See Figure B.1 – Sheet 7 of 7.**
    d. The relocated intersection with Mid Valley Drive meets the minimum intersection spacing requirement (1320 ft) from the I-41 ramp intersection. **See Figure B.1 – Sheet 6 of 7.**
4. Innovation Court:
    a. Design maintains direct access to Southbridge Road. **See Figure B.1 – 7 of 7.**
5. French Road:
    a. Design maintains direct access to Southbridge Road. **See Figure B.1 – 7 of 7.**
6. Mid Valley Drive:
    a. Design maintains direct access to Southbridge Road to/from the south.
    b. The realignment of the southern segment of Mid Valley Drive (south of the Southern Arterial) minimizes existing building/business impacts. The relocated Mid Valley Drive south of the Southern Arterial maintains existing access to the Green Bay Truck Sales business. **See Figure B.1 – Sheet 1 of 7.**
7. Scheuring Road (CTH F):
    a. No right of way impacts anticipated with the Scheuring Road intersection improvements. **See Figure B.1 – Sheets 4 and 5 of 7**

Alternative 2A - Disadvantages:

1. I-41 Mainline and Interchange:
    a. The southbound I-41 median lane drop is proposed to extend further south beyond the location of the Southern Arterial southbound exit ramp to avoid weaving and merging maneuvers in the same mainline segment. Originally, the median lane drop

was proposed to occur in the middle of the Southern Arterial interchange to avoid extending the project limits further south. The median lane drop pavement marking could be difficult to see if the markings are in the shadow of the structure. Additional overhead signage is required to advise the motorist of the median lane drop near the Southbridge Road overpass due to the potential visibility issue. The additional lane drop signing is shown in **Figure E.1, Sheets 2 and 3 of 3**. In addition, the concrete median barrier will be extended further south to protect the proposed Southern Arterial bridge piers and the exposed southern end of the barrier will be protected by crash attenuators. Ideally, the location of a mainline lane drop would occur along a flat and tangent section south of the Southern Bridge interchange. Brown County and their designer will evaluate this further during preliminary and final design. For purposes of this memo, the additional cost of extending the I-41 southbound median lane south of the Southern Arterial interchange have been included to provide the worst-case condition.

2. Southbridge Road/ Southern Arterial:
    a. The existing connections with French Road and Innovation Court need to be relocated east to meet the minimum intersection spacing criteria (1320 ft). **See Figure B.1 – Sheet 7 of 7.**
    b. A retaining wall is required along the south side of Southbridge Road near the proposed new development in the southwest quadrant of the intersection of Southbridge Road and French Road. This will require the relocation of the proposed development access drive to French Road. **See Figure B.1 – Sheet 7 of 7.**
    c. Access to and from Mid Valley Drive is not maintained between the proposed Southern Arterial and Scheuring Road. Mid Valley Drive is eliminated due to a proposed new development along the potential realignment of Mid Valley Drive south of Quarry Park Drive. Mid Valley Drive can be maintained south of the Southern Arterial to CTH S under Alternative 2A. **See Figure B.1 – Sheet 6 of 7.**
3. Innovation Court (**see Figure B.1 – Sheet 7 of 7**):
    a. I-41 northbound ramp to current location of Innovation Court intersection is approximately 600 ft. This spacing doesn't meet the 1320-foot criteria. Innovation Court was realigned further east to connect with Southbridge Road at the new French Road intersection to meet the desired intersection spacing. The existing site detention pond and foot path needs to be reconstructed due to the realignment.
    b. Potential impacts with environmentally sensitive area near Ashwaubenon Creek.
4. French Road (**see Figure B.1 – Sheet 7 of 7**):
    a. Relocated French Road alignment results in a farm acquisition south of Southbridge Road.

b. Relocated French Road alignment results in an additional Ashwaubenon Creek crossing. Box culvert is assumed at this new creek crossing.

c. Eastern curve doesn't meet the desired 45 mph design speed. It meets a 30 mph design speed.

5. Mid Valley Drive (**see Figure B.1 – Sheets 1 and 6 of 7**):

   a. Curves along the relocated Mid Valley Drive don't meet the minimum 45 mph design speed. It meets a 30/40 mph design speed south of the Southern Arterial.

   b. Access to and from Mid Valley Drive is not maintained between the proposed Southern Arterial and Scheuring Road. Mid Valley Drive is eliminated due to a proposed new development along the potential realignment of Mid Valley Drive south of Quarry Park Drive. Mid Valley Drive can be maintained south of the Southern Arterial to CTH S under Alternative 2A. Figure 5.5 in the *Southern Arterial Preliminary Engineering and Operations Review (PEOR) Traffic Analysis, August 8, 2018* shows the discontinuity of Mid Valley Drive. The discontinuity is also noted in **Figure B.1, Sheet 2 of 7** and **Figure B.2, Sheet 3 of 7** of this memorandum.

6. Scheuring Road (CTH F):

   a. The existing Scheuring Road bridge over I-41 needs to be reconfigured to accommodate the additional westbound and eastbound lane. The existing superstructure will remain. **See Figure B.1 – Sheets 4 and 5 of 7**

Alternative 2B – Southern Arterial Collector-Distributor Interchange

Alternative 2B follows the same local street alignment as Alternative 2A. The primary difference is the proposed collector-distributor (C-D) roadway system between the new Southern Arterial and the existing Scheuring Road (CTH F) interchanges under Alternative 2B. See **Figure A.3 Alternative 2B Location Map in Appendix A**. A collector-distributor roadway system includes additional lanes utilized by freeway traffic but is separate from the freeway mainline lanes and local frontage roads. The primary purpose of the C-D system is to remove weaving, merging and diverging maneuvers associated with ramps from the high-speed freeway mainline. C-D road facilities allow a single exit ramp to distribute traffic to two or more local street connections such as the Southern Arterial and Scheuring Road. All northbound traffic destined to the Southern Arterial and Scheuring Road must exit I-41 south of the Southern Arterial. Likewise, all northbound traffic entering I-41 from the Southern Arterial and Scheuring Road interchanges are collected along the C-D roadway and enter the freeway mainline at one entrance ramp north of the Scheuring Road interchange. This same condition holds for southbound I-41 where all traffic bound for Scheuring Road and the Southern Arterial exits I-41 north of Scheuring Road to the C-D road. The southbound C-D road merges back into the I-41 mainline south of the Southern Arterial. The conceptual interchange layout for Alternative 2B is provided in **Appendix B, Figure B.2**.

Alternative 2B Design Criteria/Assumptions:

1. I-41 Mainline, Interchange and C-D Roadways:
    a. I-41 mainline design speed = 70mph
    b. Maximum ramp grades = 4%
    c. Include parallel style entrance ramps for all appropriate merge cases (interchange ramps to C-D; C-D to mainline).
    d. Provide a minimum 1000-foot separation between the C-D ramp nose with the I-41 mainline and the Southern Arterial/Scheuring Road ramp noses.
    e. Minimum C-D road curve radius to meet 60mph design speed for the C-D road, and C-D ramp entry and exit curves to/from I-41.
    f. Minimize impacts to quarry.
    g. Design the Southern Arterial bridge long enough to accommodate the future expansion of I-41 to 6 lanes. Additional bridge length is required for the northbound and southbound C-D Roads under the Southern Arterial bridge.
    h. Maintain the existing median inside (16.75ft) and outside (12.25ft) shoulder widths along the I-41 mainline to match the existing typical section. The required shoulders, lanes and other elements to construct the C-D road are added to the outside of the existing mainline section. See **Figures C.1 and C.2 in Appendix C** for Alternative 2B typical sections along the I-41 mainline and the C-D roads at the Scheuring Road Overpass. Existing typical sections for the same locations are also provided in **Appendix C (see Figures C.3 through C.5)**.
    i. Maintain 12-foot lanes for both the I-41 mainline and provide a 15-foot travel lane for the C-D roads. See **Figures C.1 and C.2 in Appendix C**.
    j. The I-41 exit direction sign for the northbound C-D roadway off ramp is shown on an overhead cantilever structure at the painted gore and this location is based on an 800-foot deceleration lane. See **Figure E.2, Sheet 1 of 5 in Appendix E**. Based on NE Region guidelines, the overhead sign structure will be located at the painted ramp gore for deceleration lanes less than 800 feet or at the beginning of the deceleration lane for deceleration lanes greater than 800 feet.
2. Southbridge Road/Southern Arterial:
    a. Design speed = 45 mph.
    b. Four lane divided road.
    c. Avoid the proposed new development on the south side of Southbridge Road, east of I- 41 (**see Figure B.2 – Sheet 7 of 7**).

d. For purposes of this preliminary study, all major intersections along the Southern Arterial are assumed to be roundabouts as part of the conceptual layouts (I-41 SB ramp, I-41 NB ramp and Lawrence intersections). Other intersection designs may need to be evaluated as part of the Intersection Control Evaluation (ICE) report for intersections using state or federal funding in future phases of this project.

e. Include a multi-use path on the north side of the Southern Arterial.

f. Minimum spacing between interstate ramp terminals and adjacent intersections = 1320 ft.

g. Maximum grade of 4%

3. Innovation Court:

   a. Design Speed = 30mph (match existing design speed).

   b. Maintain two-lane road.

   c. Maintain direct access to Southbridge Road.

   d. Provide desirable spacing of 1320 feet from I-41 ramp intersection.

4. French Road:

   a. Design Speed = 45mph.

   b. Maintain two-lane road.

   c. Southbridge Road currently connects directly to French Road, the I-41 east frontage road. Maintain access to Southbridge Road.

5. Mid Valley Drive:

   a. Design speed = 45 mph.

   b. Maintain two-lane road.

   c. Maintain access to Southbridge Road (Southern Arterial) west extension to/from the north and south.

   d. Provide 1320' of spacing between the I-41 ramp intersection and the Mid Valley Drive intersection.

   e. Maintain driveway access to Green Bay Truck Sales and other businesses along Mid Valley Drive.

   f. Avoid/minimize quarry and ravine impacts

Alternative 2B - Advantages:

1. I-41 Mainline, Interchange and C-D Roadways (**see Figure B.2 – Sheets 1, 2, 3, 4 and 5 of 7**):
    a. Design avoids substantial impacts to quarry.
    b. Ramp spacing between C-D ramps to/from the north and the existing CTH G Interchange:
        i. I-41 NB = 6000 ft. Includes a full auxiliary lane between C-D Road northbound on ramp and the CTH G northbound off ramp. The existing condition includes a full auxiliary lane, but the length is reduced with the addition of the C-D Road. See **Figure B.2 -5 of 7 and Figure B.4 – 1 of 2 in Appendix B** for the Alternative 2B lane schematic along with the ramp spacing distances.
        ii. I-41 SB = 4900 ft. Includes a full auxiliary lane between CTH G southbound on ramp and C-D Road southbound off ramp. The existing condition includes a full auxiliary lane, but the length is reduced with the addition of the C-D Road.
        iii. Full southbound auxiliary lane does not require additional right of way.
    c. Ramp spacing between C-D ramps to/from the south and the existing CTH S Interchange
        i. I-41 NB = 10,200 ft. Does not include a full auxiliary lane between CTH S northbound on ramp and the C-D Roadway northbound off ramp. See **Figure B.4 in Appendix B** for the lane schematic for Alternative 2B along with the ramp spacing distances.
        ii. I-41 SB = 11,200 ft. Does not include a full auxiliary lane between the C-D Road southbound on ramp and CTH S southbound off ramp.
    d. The I-41 northbound (NB) median lane add and southbound (SB) median lane drop will remain at their current locations.
2. Southbridge Road/Southern Arterial (**see Figure B.2 – Sheets 6 and 7 of 7**):
    a. The Southern Arterial was relocated south to avoid quarry impacts west of I-41.
    b. The relocated intersection with French Road meets the minimum intersection spacing requirement (1320 ft) from the I-41 ramp intersection.
    c. The relocated intersection with Innovation Court meets the minimum intersection spacing requirement (1320 ft) from the I-41 ramp intersection.
    d. The relocated intersection with Mid Valley Drive meets the minimum intersection spacing requirement (1320 ft) from the I-41 ramp intersection.

3. Innovation Court (**see Figure B.2 – Sheet 7 of 7**):
    a. Design maintains direct access to Southbridge Road.
4. French Road (**see Figure B.2 – Sheet 7 of 7**):
    a. Design maintains direct access to Southbridge Road.
5. Mid Valley Drive (**see Figure B.2 – Sheet 6 of 7**):
    a. Design maintains direct access to Southbridge Road to/from the south.
6. Scheuring Road (CTH F):
    a. No right of way impacts anticipated with the Scheuring Road intersection improvements.

Alternative 2B - Disadvantages:

1. I-41 Mainline, Interchange and C-D Roadways:
    a. A two lane on ramp from the northbound C-D Road to northbound I-41 is needed in order to achieve acceptable operations. The merge is expected to operate at LOS C/D in 2045. This will result in impacts to the east frontage road (Lawrence Drive) and the northbound overhead sign structure. **See Figure B.2 – Sheet 5 of 7**. Sign structure reconstruction has been included in the 30% cost contingency.
    b. The northbound C-D road and the Southern Arterial exit ramp is very close to existing French Road. At minimum, a concrete barrier will be needed to separate the northbound C-D road from French Road. **See Figure B.2 – Sheets 1 and 2 of 7**.
    c. Additional bridge width will be required for the Southern Arterial bridge over I-41 due to the northbound and southbound C-D roadways. This width is greater than the width of the bridge under Alternative 2A. The Southern Arterial bridge width will be constructed to accommodate the future 6-lane I-41 expansion under both Alternatives 2A and 2B. **See Figure B.2 – Sheet 2 of 7**.
    d. The northbound C-D road will require the large existing overhead sign structure (exit sign to CTH F) located south of Scheuring Road to be removed. See Alternative 2B, Concept Sign Plan, **Figure E.2, Sheet 4 of 5**.
    e. The northbound C-D road to the Scheuring Road exit ramp (with reconstructed emergency pull-off) will likely impact Ashwaubenon Creek/wetland area adjacent to current ramp. **See Figure B.2 – Sheet 4 of 7**.
    f. Scheuring Road east "abutment", adjacent retaining walls and superstructure will need to be reconstructed due to the additional widening associated with the northbound C-D road. **See Figure B.2 – Sheet 4 of 7**.

g. The widening of the Scheuring Road bridges will likely result in impacts to the existing fly ash cells within the interchange. A preliminary assessment indicates that the northbound exit ramp reconstruction and the bridge and abutment reconstruction will likely disturb the buried fly ash cells. **See Figure B.2 – Sheet 4 of 7**. Additional detailed evaluation will be required during preliminary engineering to fully assess the impacts to the existing buried fly ash cells. A cost has been added to the construction cost estimate as part of the 30% contingency.

h. The Ashwaubenon Creek overpass structure north of the Scheuring Road interchange will need to be reconstructed and widened for the additional northbound C-D road width. **See Figure B.2 – Sheet 4 of 7**.

i. At a minimum, the lateral proximity of the northbound C-D road to Lawrence Drive will require a concrete barrier until termination of the C-D road north of Scheuring Road. **See Figure B.2 – Sheet 5 of 7**.

j. The northbound C-D road will require the large overhead sign structure (advance exit ramp signs for CTH G and Ashland Avenue) and the overhead variable message sign (VMS), located north of Scheuring Road to be reconstructed. See Alternative 2B Concept Sign Plan, **Figure E.2, Sheet 5 of 5**.

k. The southbound C-D road will require the large overhead sign bridge (southbound exit sign for CTH F), located north of Scheuring Rd to be reconstructed. See Alternative 2B Concept Sign Plan, **Figure E.2, Sheet 5 of 5**.

l. The southbound C-D road to the Scheuring Rd exit ramp structure (over Ashwaubenon Creek) will be reconstructed to accommodate the new southbound C-D road and the southbound exit to Scheuring Road. **See Figure B.2 – Sheet 4 of 7**.

m. The southbound C-D road will require reconstruction and widening of the mainline bridge over Ashwaubenon Creek. **See Figure B.2 – Sheet 4 of 7**.

n. The Scheuring Road west "abutment", adjacent retaining walls and superstructure will need to be reconstructed due to the additional widening associated with the southbound C-D road. **See Figure B.2 – Sheet 4 of 7**.

o. At a minimum, the proximity of the southbound C-D road to Mid Valley Drive may require concrete barrier separation north of Quarry Park Drive. **See Figure B.2 – Sheet 3 of 7**.

p. Proximity of the southbound C-D road to Mid Valley Drive will require realignment of Mid Valley Drive south of the new Southern Arterial near the Green Bay Truck Sales business. Realignment of Mid Valley Drive will affect adjacent properties. **See Figure B.2 – Sheet 2 of 7**.

2. Southbridge Road/ Southern Arterial:
    a. The existing connections with French Road and Innovation Court need to be relocated to meet the minimum intersection spacing criteria (1320 ft). **See Figure B.2 – Sheets 2 and 7 of 7**.
    b. A retaining wall is required along the south side of Southbridge Road near the proposed new development in the southwest quadrant of the intersection of Southbridge Road and French Road. This will require the relocation of the proposed development access drive to French Road. **See Figure B.2 – Sheet 7 of 7**.
3. Innovation Court **See Figure B.2 – Sheet 7 of 7**:
    a. I-41 northbound ramp to current location of Innovation Court intersection is approx. 600 ft. This spacing doesn't meet the 1320-foot criteria. Innovation Court was realigned further east to connect with Southbridge Road at the new French Road intersection to meet the desired intersection spacing. The existing site detention pond and foot path needs to be reconstructed due to the realignment.
    b. Potential impacts with environmentally sensitive area near Ashwaubenon Creek.
4. French Road **(see Figure B.2 – Sheet 7 of 7)**:
    a. Relocated French Road alignment results in a farm acquisition south of Southbridge Road.
    b. Relocated French Road alignment results in an additional Ashwaubenon Creek crossing. Box culvert is assumed at this new creek crossing.
    c. Eastern curve doesn't meet the desired 45 mph design speed. It meets a 30 mph design speed.
5. Mid Valley Drive:
    a. The southbound C-D Road results in the need to realign Mid Valley Drive south of the Green Bay Truck Sales business. The realignment of the southern segment of Mid Valley Drive minimizes existing building/business impacts however, requires access modifications. **See Figure B.2 – Sheet 2 of 7.**
    b. Curves along the relocated Mid Valley Drive don't meet the minimum 45 mph design speed. It meets a 30/40 mph design speed south of the Southern Arterial. **See Figure B.2 – Sheets 2 and 6 of 7.**
    c. Access to and from Mid Valley Drive is not maintained between the proposed Southern Arterial and Scheuring Road. Mid Valley Drive is eliminated due to a proposed new development along the potential realignment of Mid Valley Drive south of Quarry Park Drive. Mid Valley Drive can be maintained south of the Southern Arterial to CTH S under Alternative 2B. Figure 5.5 in the *Southern Arterial Preliminary Engineering and Operations Review (PEOR) Traffic Analysis, August 8, 2018* shows the

discontinuity of Mid Valley Drive. The discontinuity is also noted in **Figure B.2, Sheet 3 of 7** of this memorandum.

6. Scheuring Road (CTH F):

    a. The existing Scheuring Road bridge over I-41 needs to be reconfigured to accommodate the additional westbound and eastbound lane. The existing superstructure will be replaced due to the additional widening associated with the northbound and southbound C-D roads. **See Figure B.2 – Sheet 4 of 7.**

Conclusions

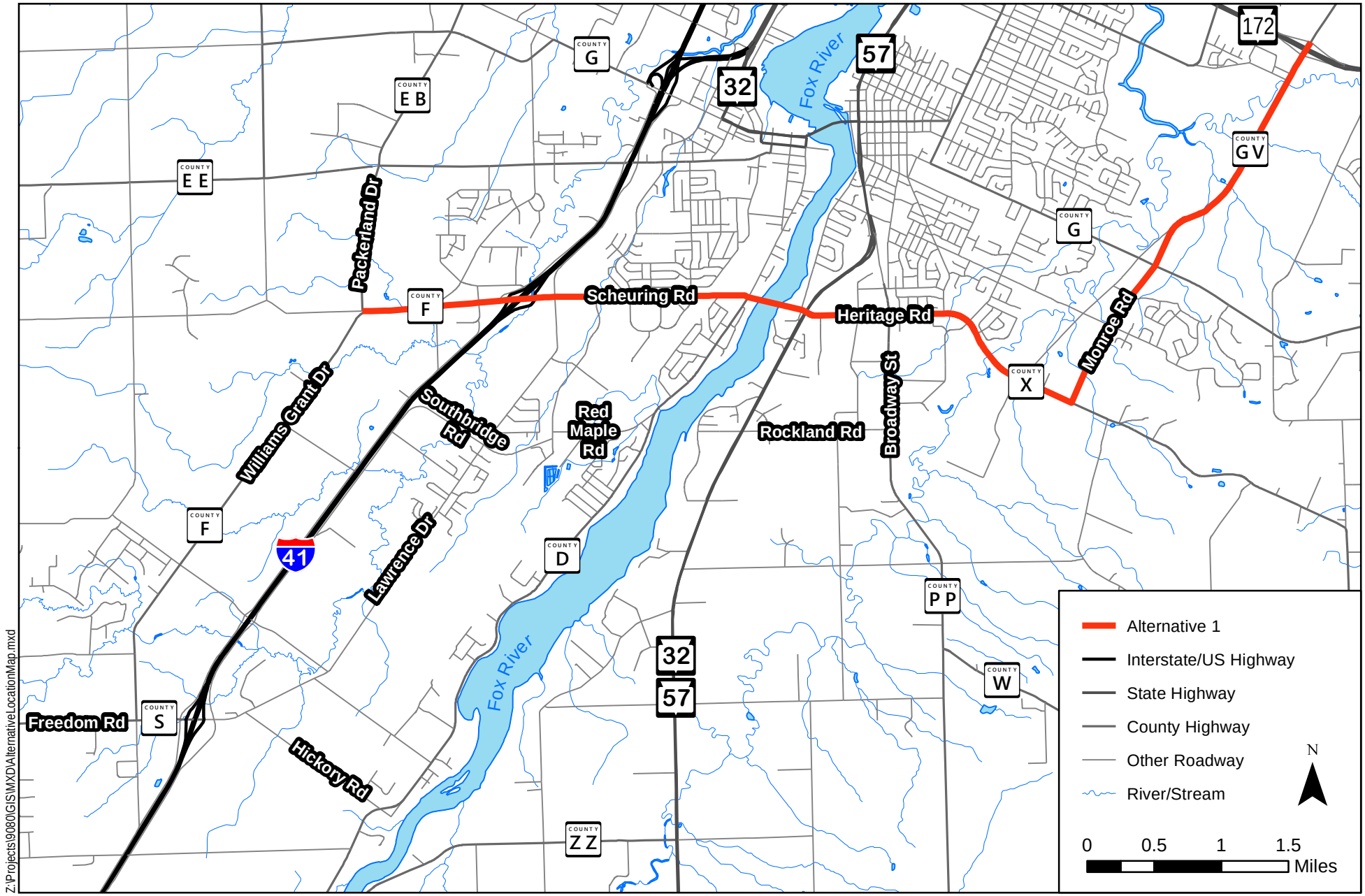
Construction costs, operation issues, and right of way impacts (acres and parcels) were the primary criteria used to evaluate Alternatives 2A (Diamond Interchange) and Alternative 2B (C-D Interchange). A summary of the findings is provided in **Table 1** and additional details are provided in **Tables D.1, Construction Cost Details and D.2, Right of Way Impacts in Appendix D**. The operations results are contained in the *Southern Arterial Preliminary Engineering and Operations Review (PEOR) Traffic Analysis, May 11, 2018 Report*. The results of the operations analysis indicate that both alternatives are feasible from an operations perspective. The primary difference is that the construction cost of Alternative 2B (C-D Interchange) is more than double the cost of Alternative 2A (Diamond Interchange).

Table 1, Summary of Findings

Evaluation Criteria	**Alternative 2A (Diamond I/C)**	**Alternative 2B (C-D Road I/C)**
Preliminary Construction Cost	$38 million	$94.5 million
Right of Way Impact		
Parcels	19	21
Acres	27.3 acres	27.7 acres
Operational Results	Alternative 2A is feasible from an operations perspective.	Alternative 2B is feasible from an operations perspective

APPENDIX A

ALTERNATIVE LOCATION MAPS

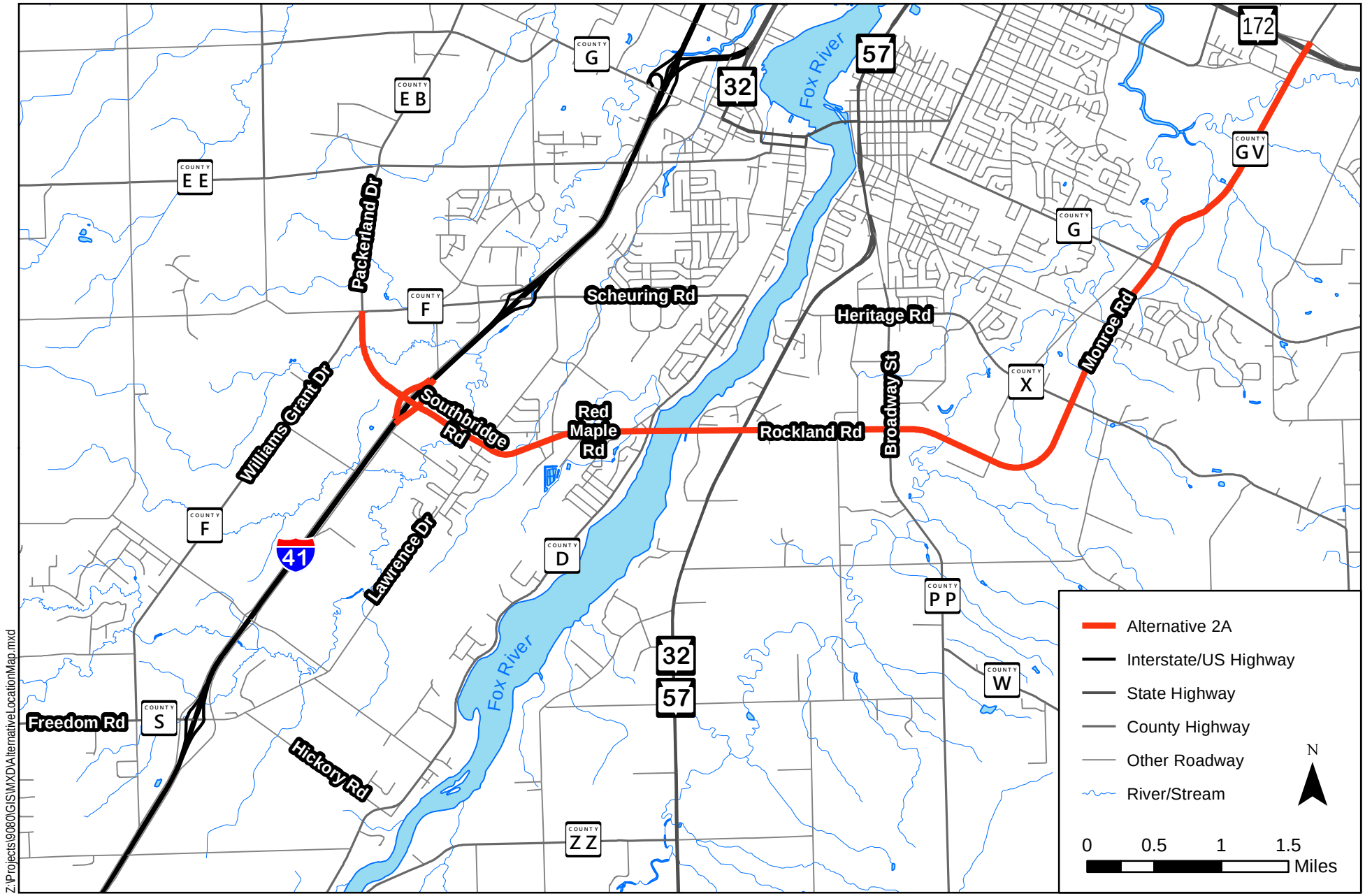


SRF Consulting Group, Inc.

Alternative 1 Location Map

Brown County Southern Arterial Project
WisDOT NE Region

Figure A.1

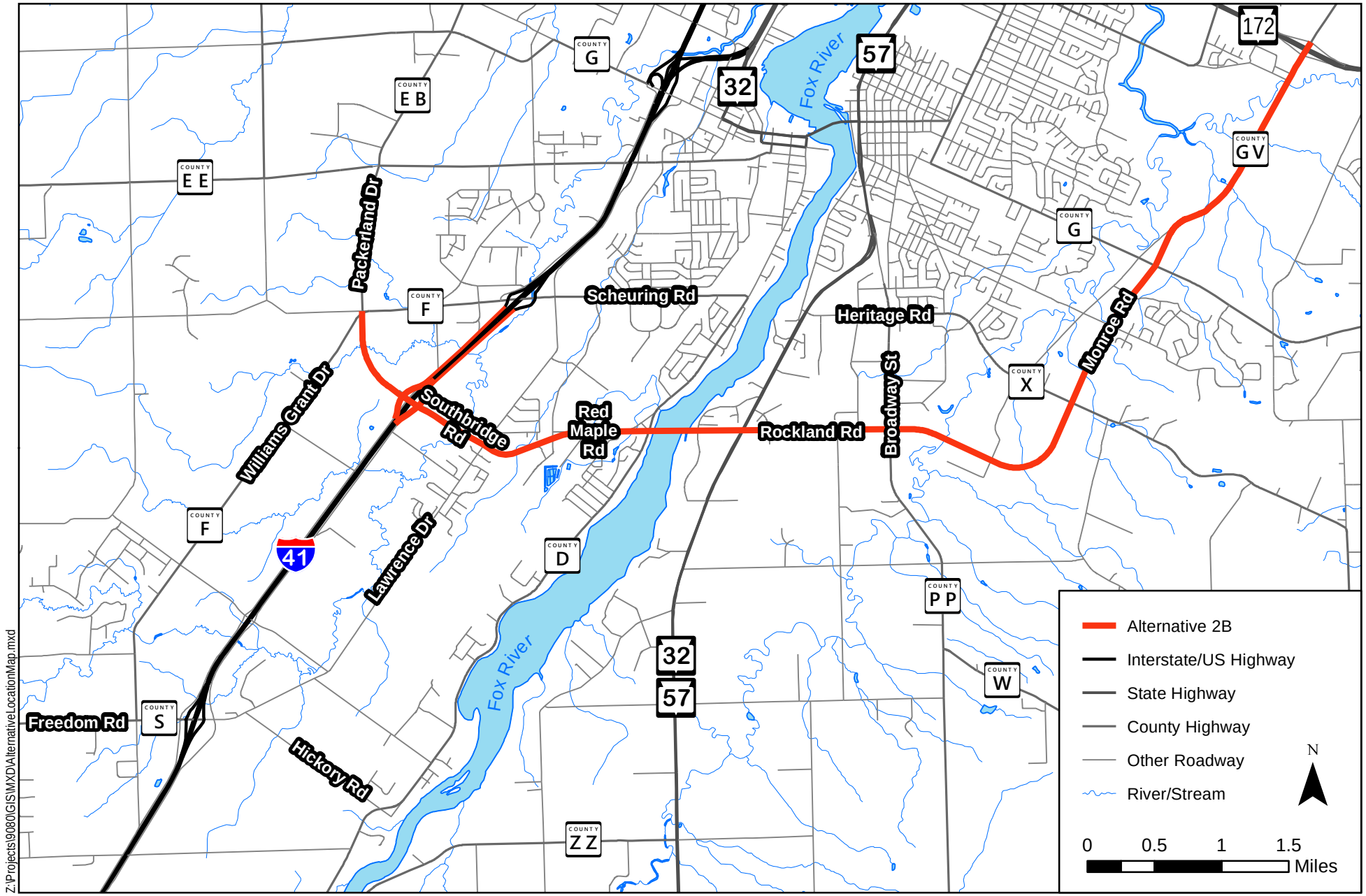


SRF Consulting Group, Inc.

Alternative 2A Location Map

Brown County Southern Arterial Project
WisDOT NE Region

Figure A.2



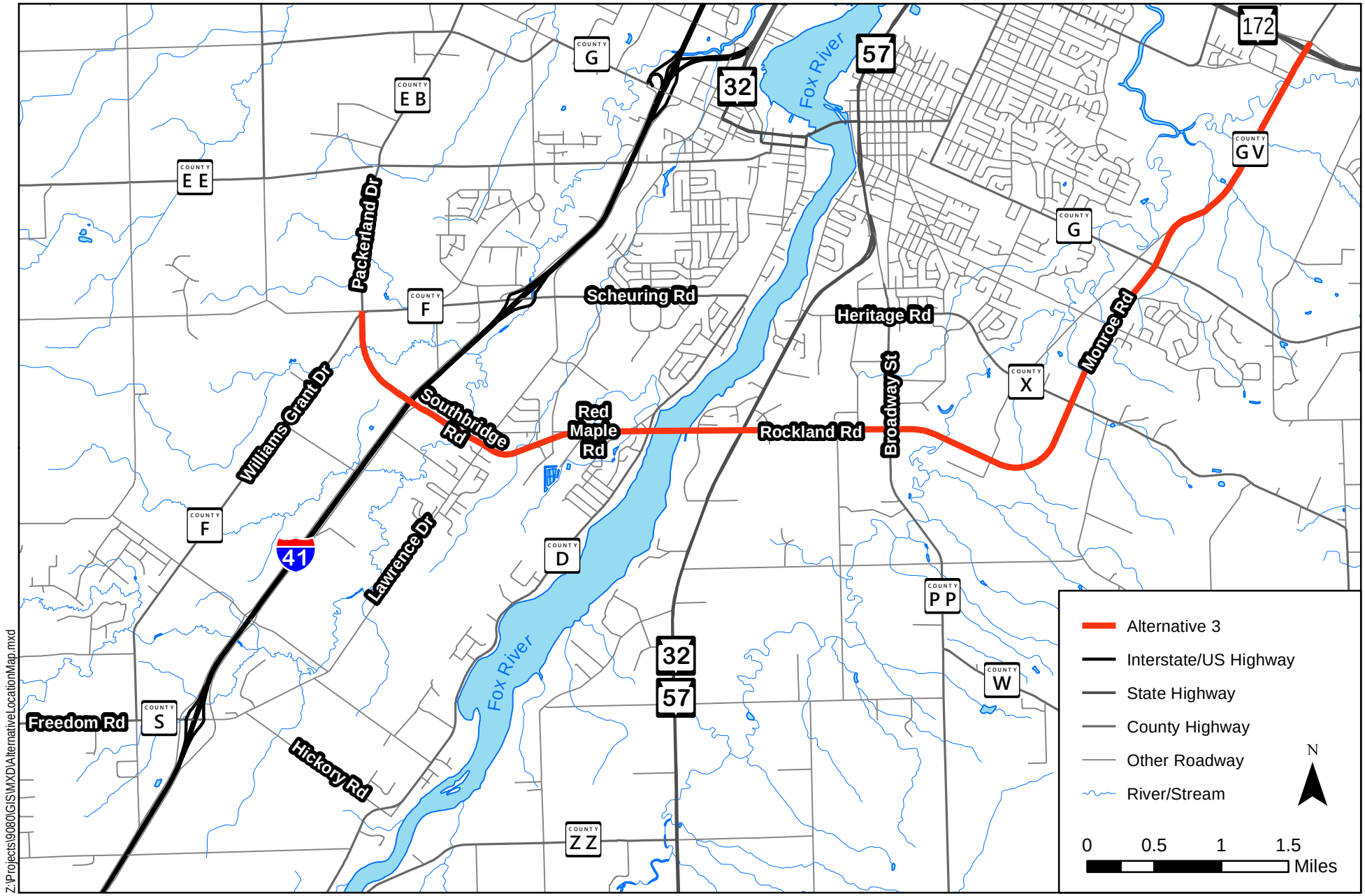
SRF Consulting Group, Inc.

Alternative 2B Location Map

Brown County Southern Arterial Project

WisDOT NE Region

Figure A.3



Alternative 3 Location Map

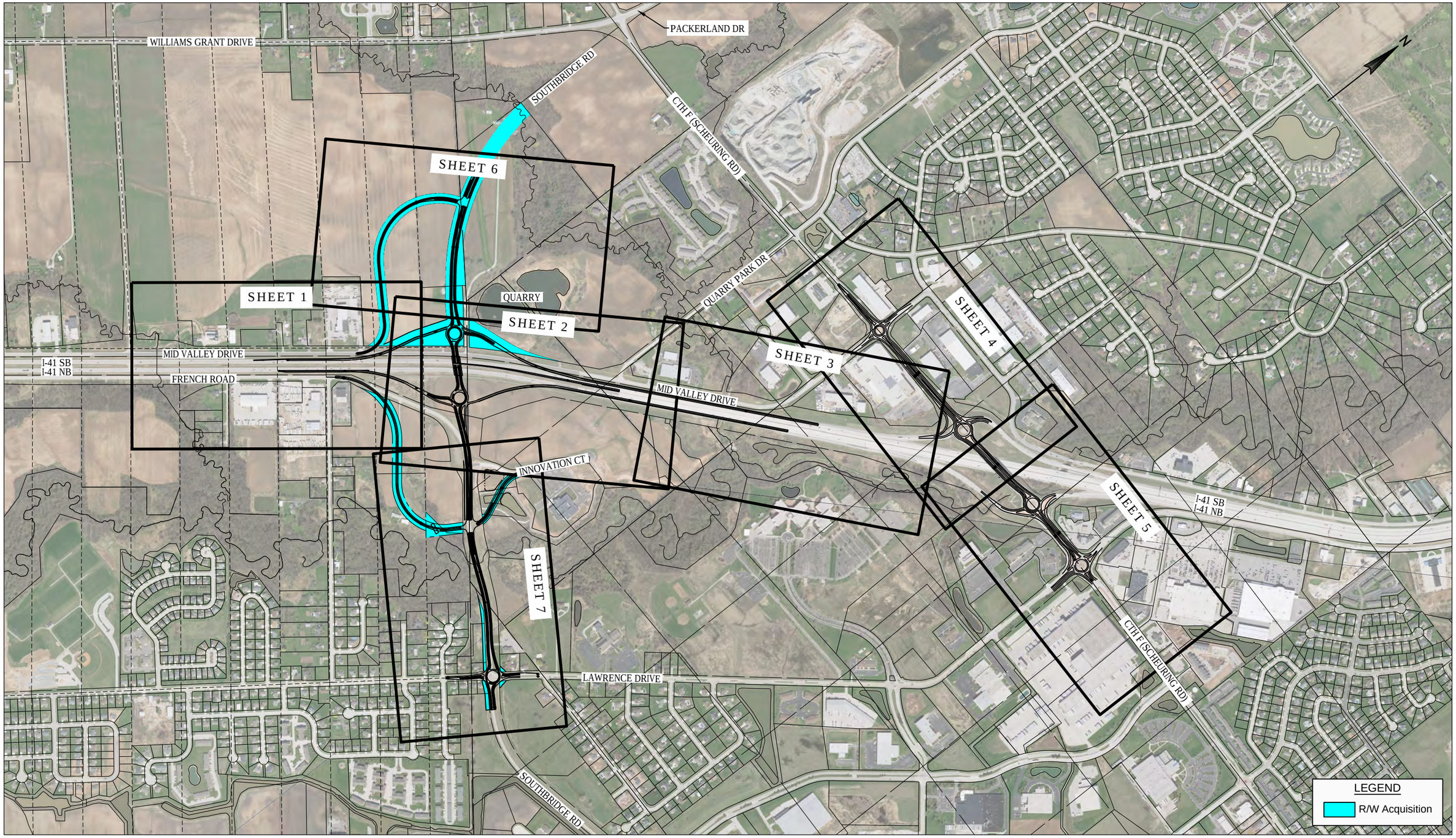
Brown County Southern Arterial Project

WisDOT NE Region

Figure A.4

APPENDIX B

CONCEPTUAL INTERCHANGE LAYOUTS AND I-41 MAINLINE LANE SCHEMATICS



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Consulting Group, Inc.

Job #7944
6/10/2018 - 6:12PM

Southern Arterial Concept - Alternative 2A

Brown County
I-41

Figure B.1 - OVERVIEW

SCALE: 1 IN:1000 FT

M:\Projects\7944\Figures\CAD-BIM\7944_2AFigureLayout.dwg

Consulting Group, Inc.

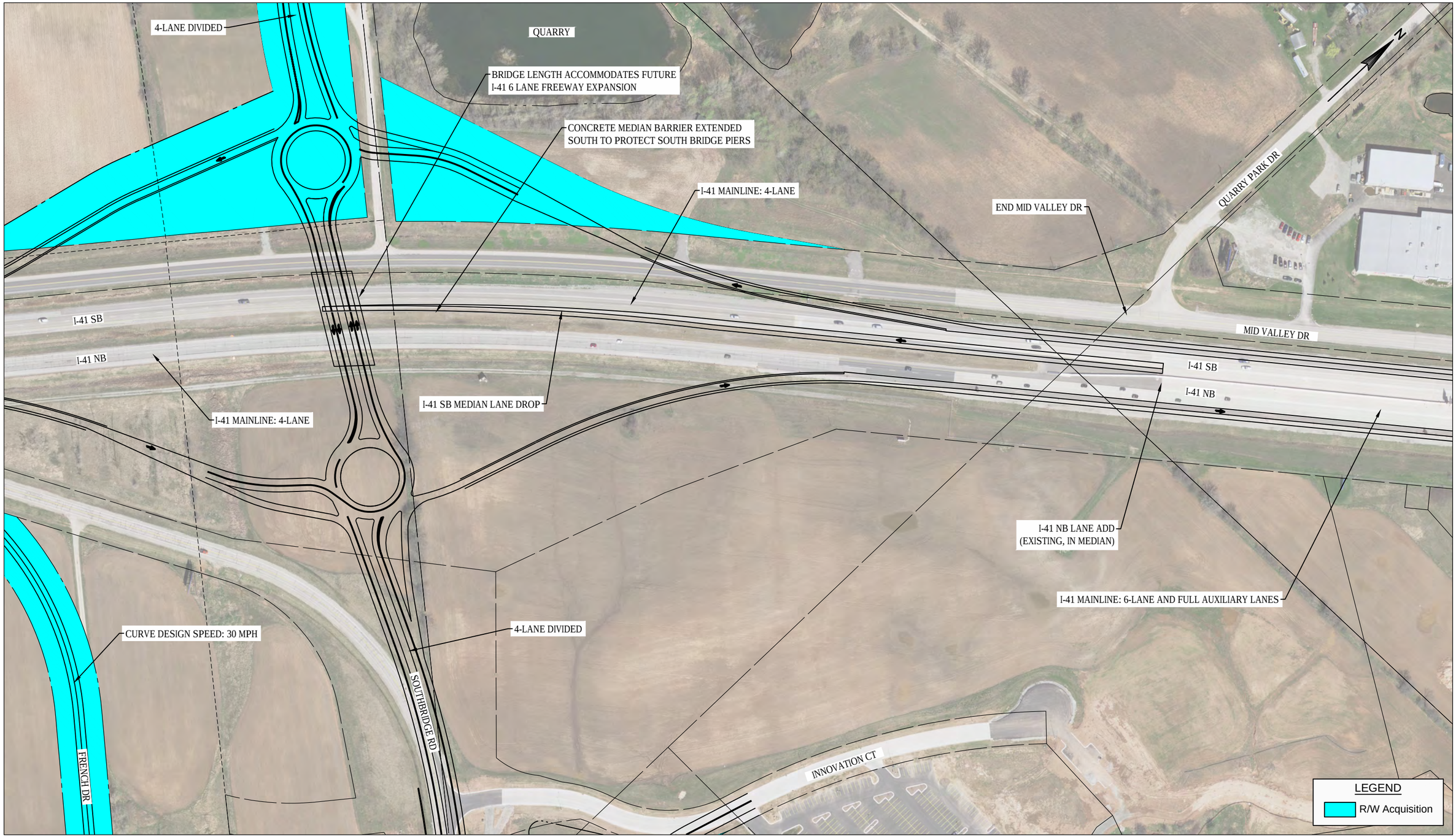
Job #7944
6/10/2018 - 6:12PM

Southern Arterial Concept - Alternative 2A

Brown County
I-41

Figure B.1 - SHEET 1 OF 7

SCALE: 1 IN:200 FT



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Consulting Group, Inc.

Job #7944
6/10/2018 - 6:12PM

Southern Arterial Concept - Alternative 2A

Brown County
I-41

Figure B.1 - SHEET 2 OF 7

SCALE: 1 IN:200 FT

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SRF Consulting Group, Inc.
Job #7944
6/10/2018 - 6:13PM

Southern Arterial Concept - Alternative 2A

Brown County
I-41

Figure B.1 - SHEET 3 OF 7

SCALE: 1 IN:200 FT

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SRF Consulting Group, Inc.

Job #7944
6/10/2018 - 6:13PM

Southern Arterial Concept - Alternative 2A

Brown County
I-41

Figure B.1 - SHEET 4 OF 7

SCALE: 1 IN:200 FT

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Consulting Group, Inc.

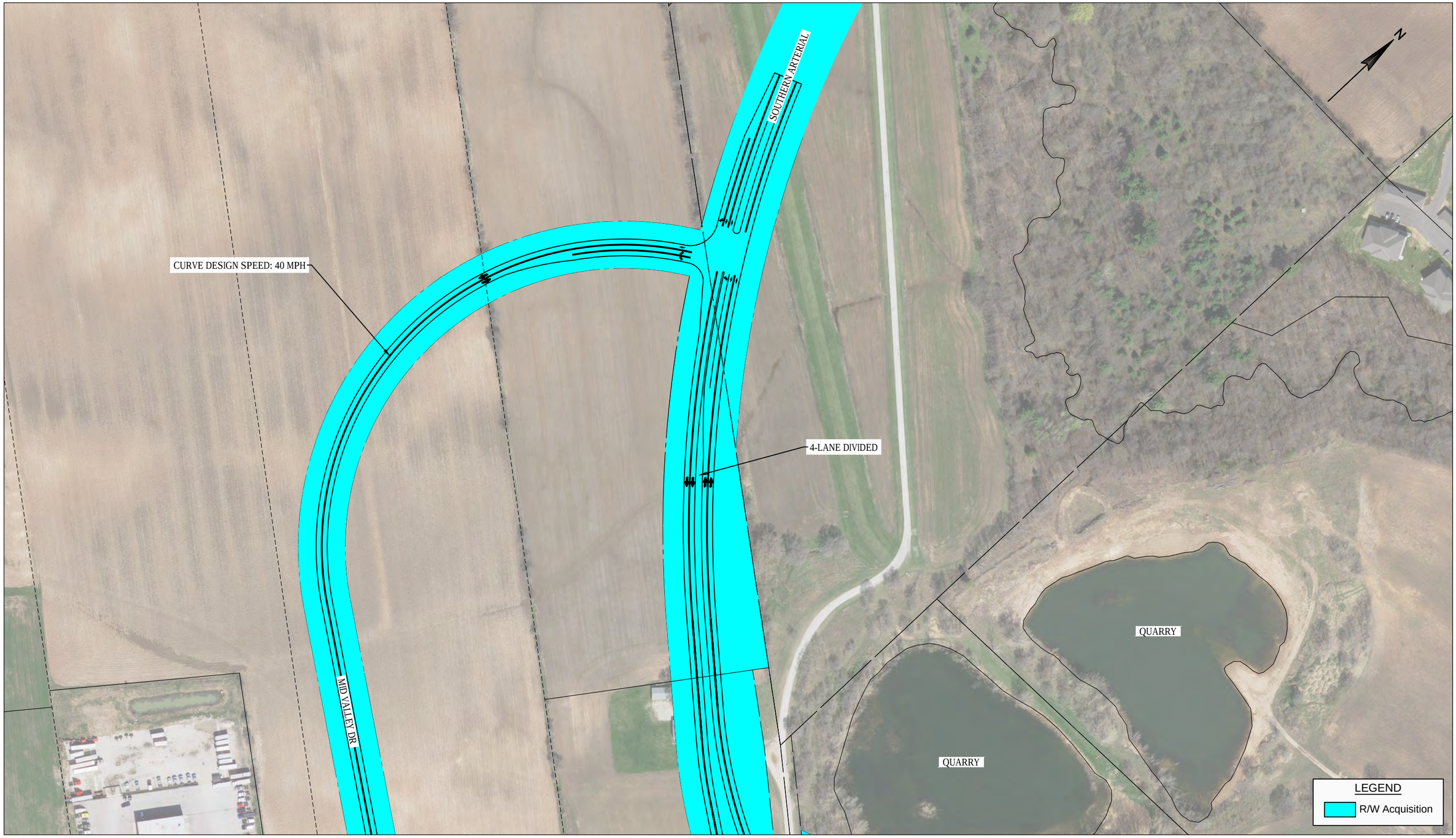
Job #7944
6/10/2018 - 6:13PM

Southern Arterial Concept - Alternative 2A

Brown County
I-41

Figure B.1 - SHEET 5 OF 7

SCALE: 1 IN:200 FT



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Consulting Group, Inc.

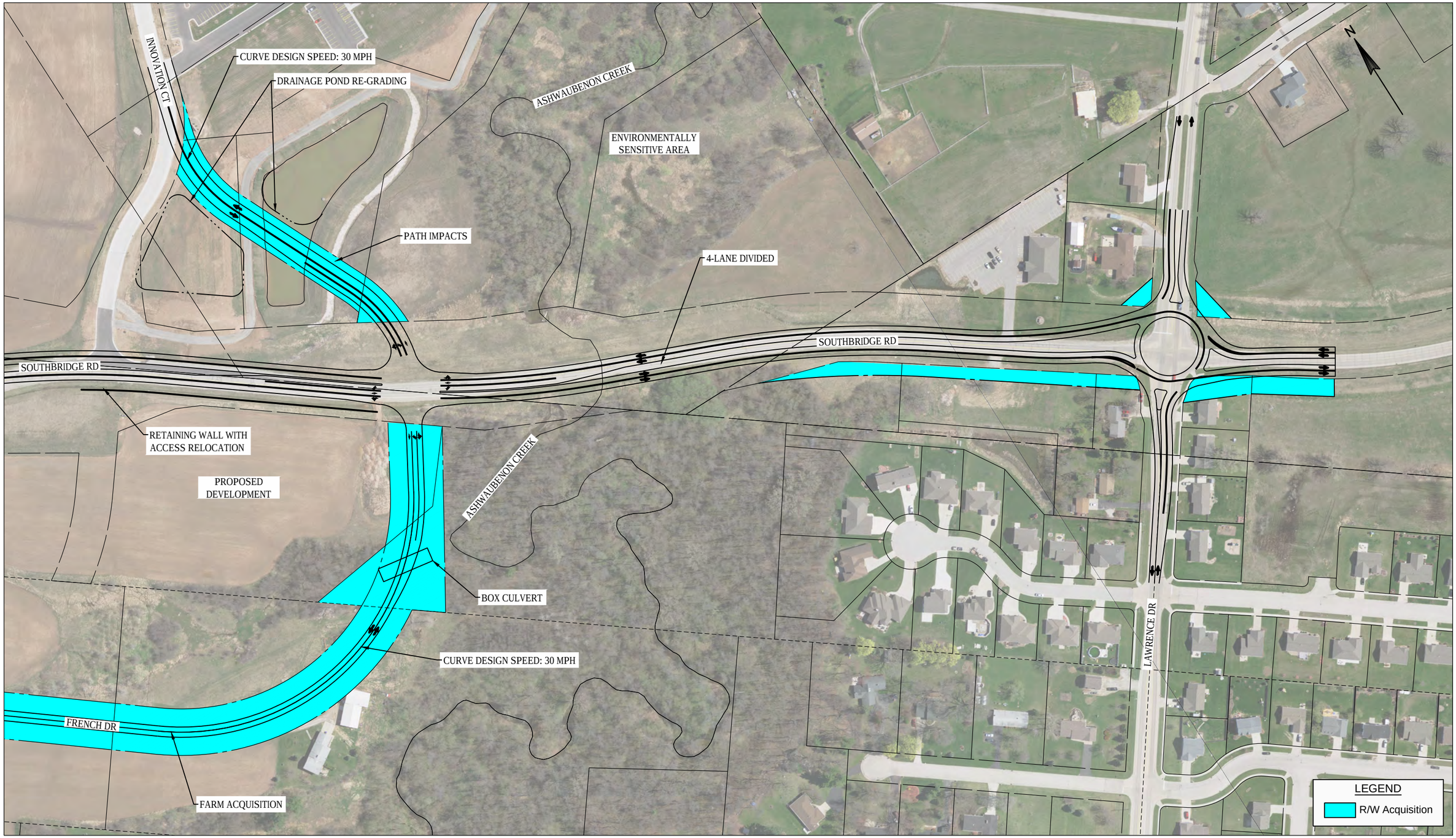
Job #7944
6/10/2018 - 6:13PM

Southern Arterial Concept - Alternative 2A

Brown County
I-41

Figure B.1 - SHEET 6 OF 7

SCALE: 1 IN:200 FT



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Consulting Group, Inc.

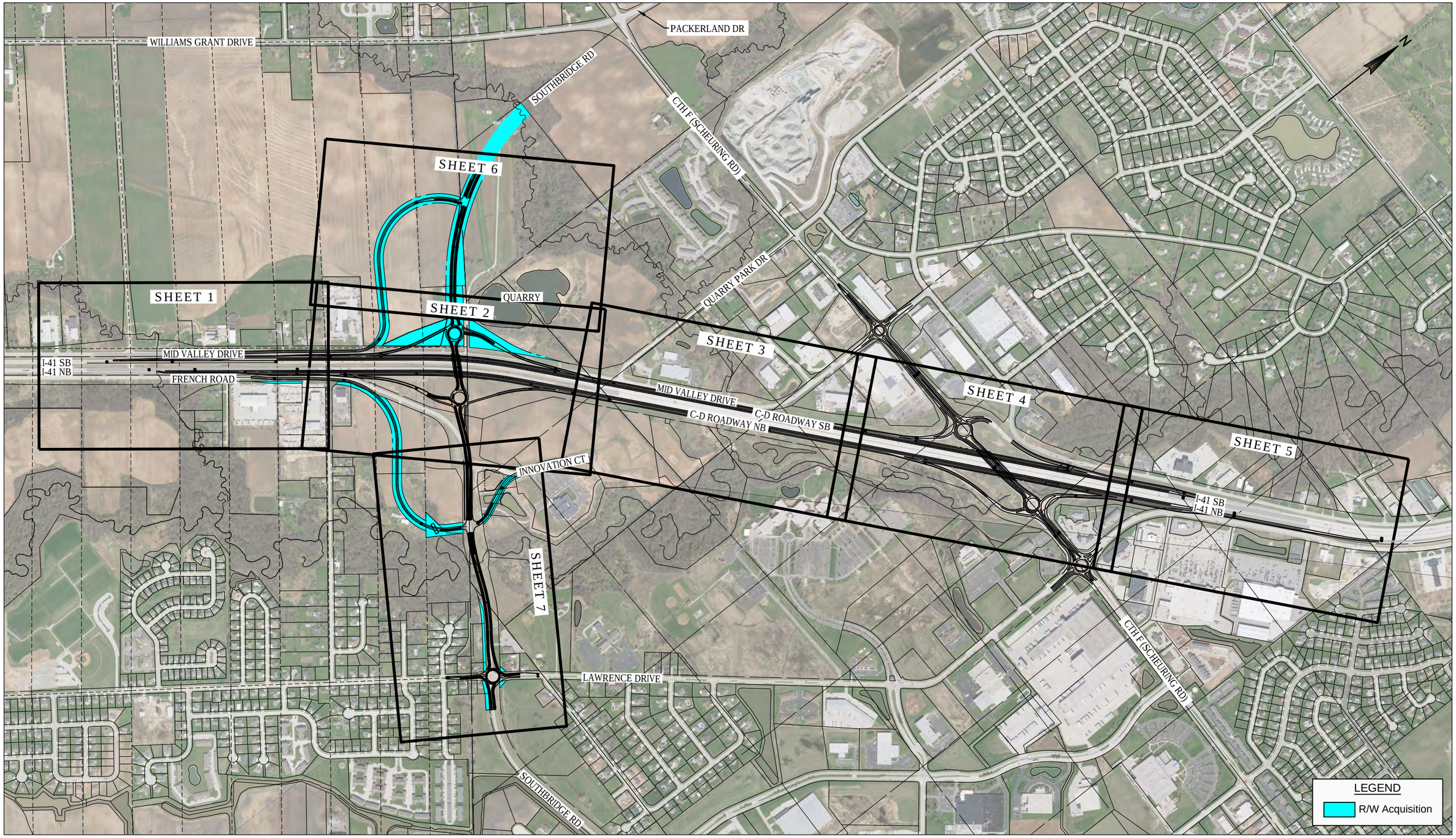
Job #7944
6/10/2018 - 6:13PM

Southern Arterial Concept - Alternative 2A

Brown County
I-41

Figure B.1 - SHEET 7 OF 7

SCALE: 1 IN:200 FT



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Consulting Group, Inc.

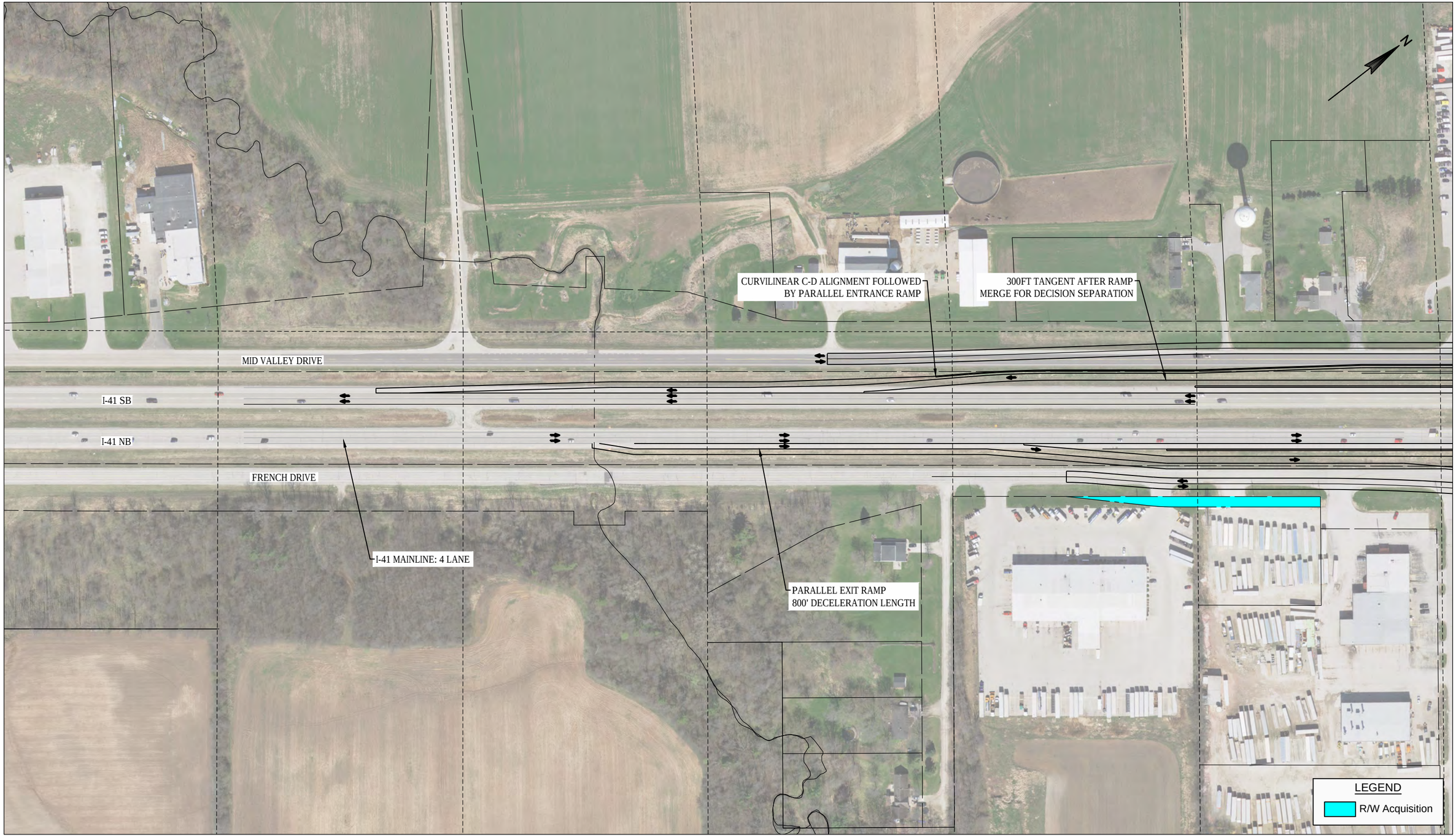
Job #7944
6/10/2018 - 6:13PM

Southern Arterial Concept - Alternative 2B

Brown County
I-41

Figure B.2 - OVERVIEW

SCALE: 1 IN:1000 FT



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SRF Consulting Group, Inc.

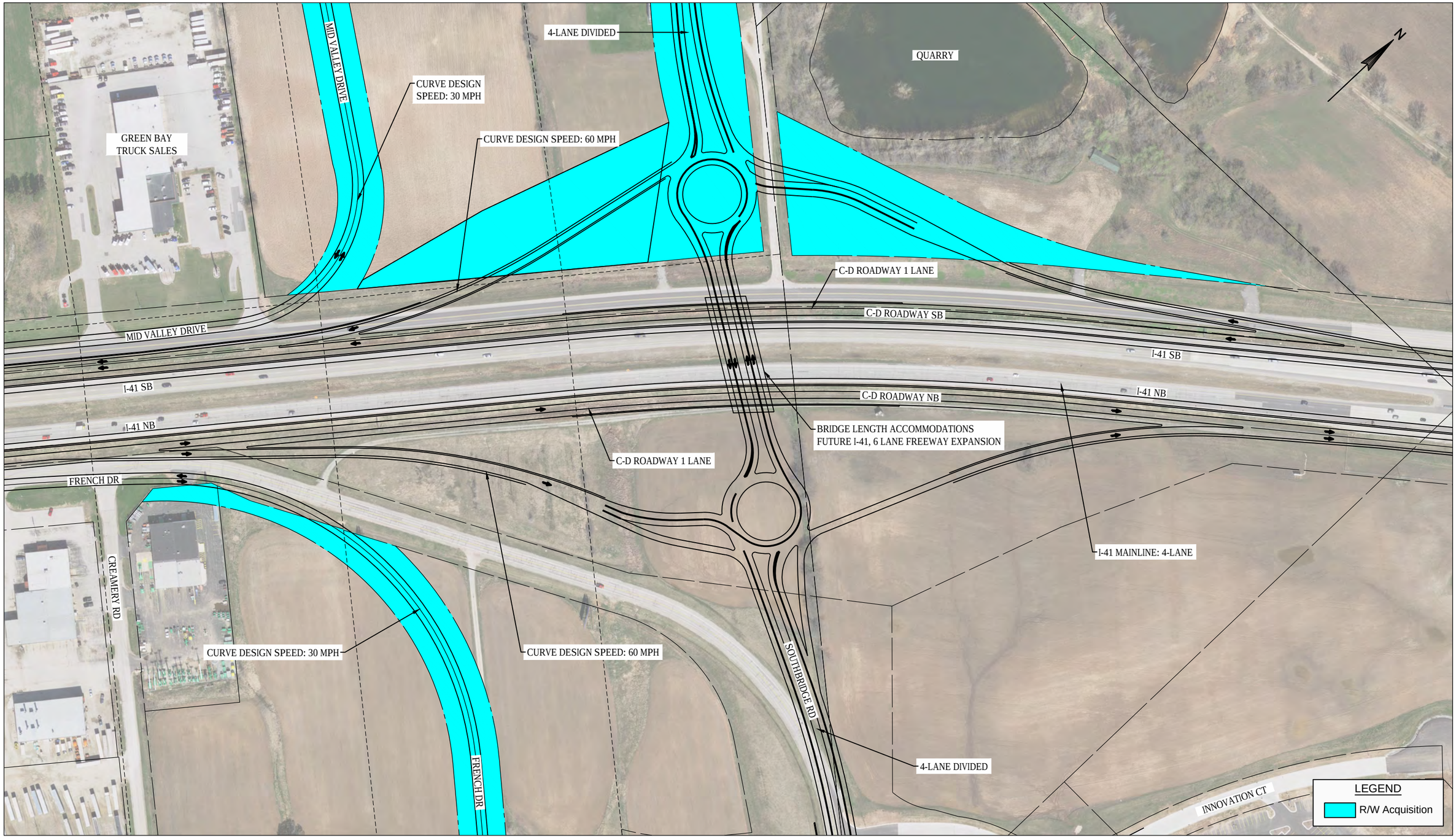
Job #7944
6/10/2018 - 6:14PM

Southern Arterial Concept - Alternative 2B

Brown County
I-41

Figure B.2 - SHEET 1 OF 7

SCALE: 1 IN:200 FT



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Consulting Group, Inc.

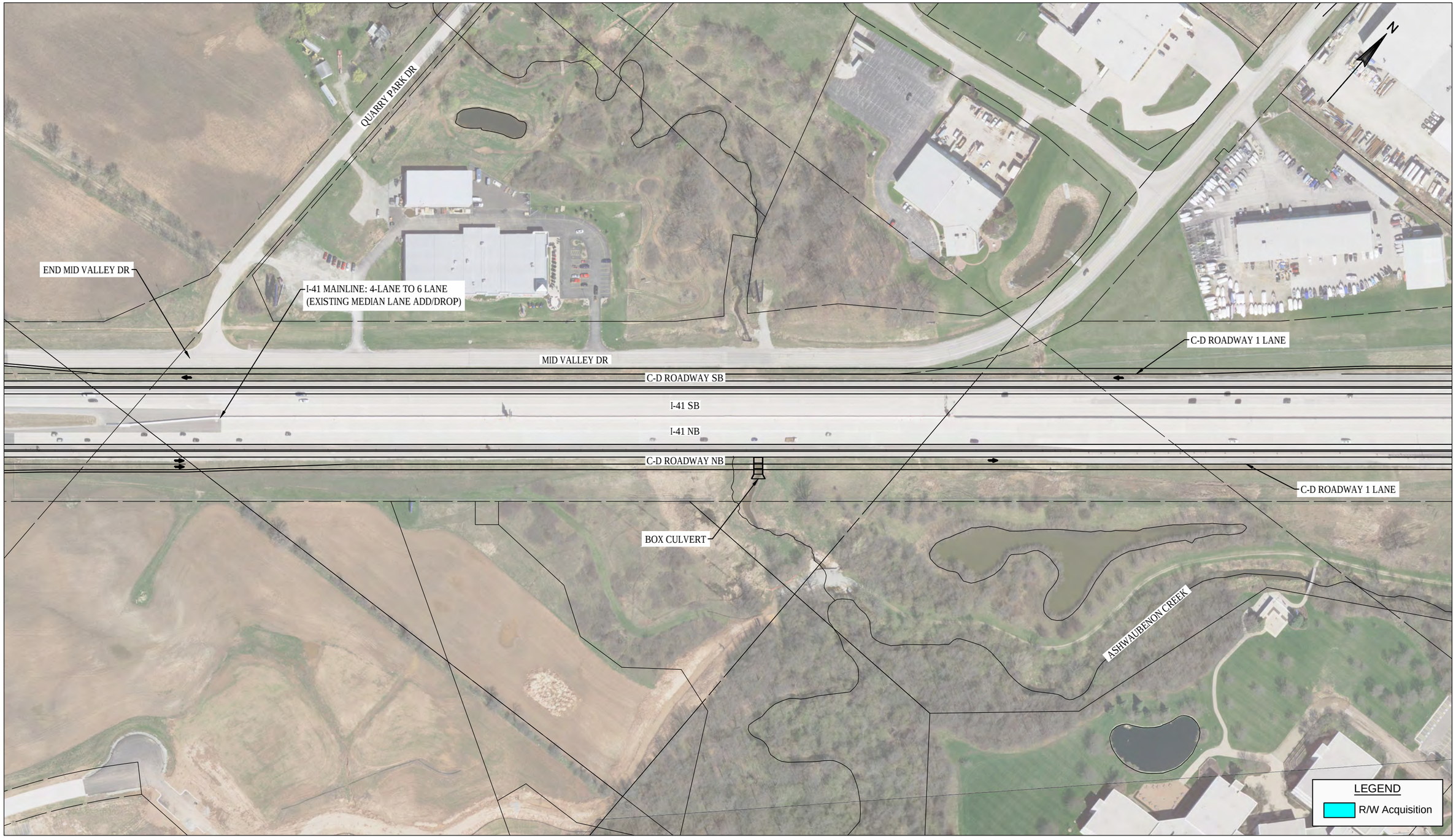
Job #7944
6/10/2018 - 6:14PM

Southern Arterial Concept - Alternative 2B

Brown County
I-41

Figure B.2 - SHEET 2 OF 7

SCALE: 1 IN:200 FT



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SRF Consulting Group, Inc.

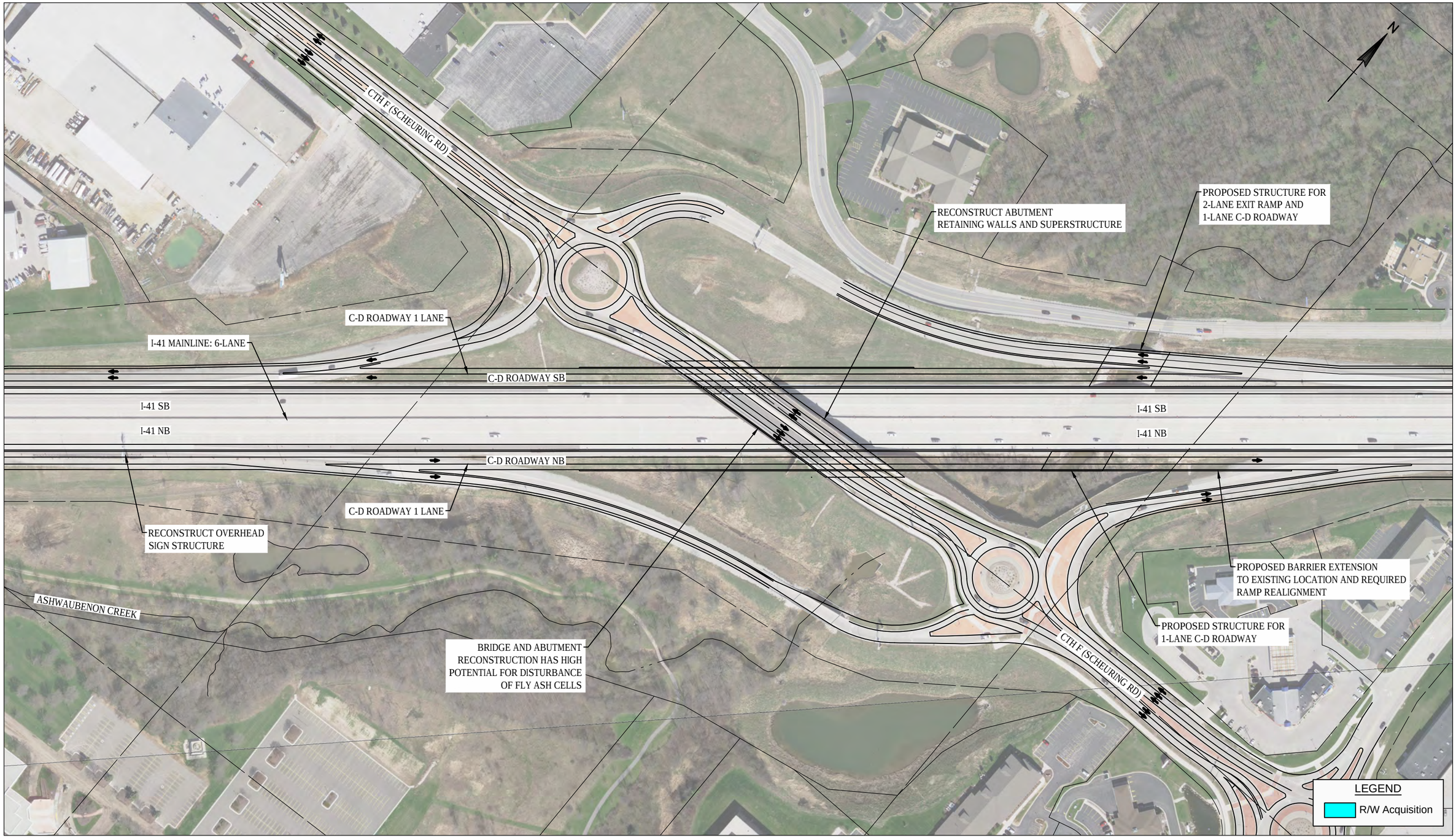
Job #7944
6/10/2018 - 6:14PM

Southern Arterial Concept - Alternative 2B

Brown County
I-41

Figure B.2 - SHEET 3 OF 7

SCALE: 1 IN:200 FT



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SRF Consulting Group, Inc.

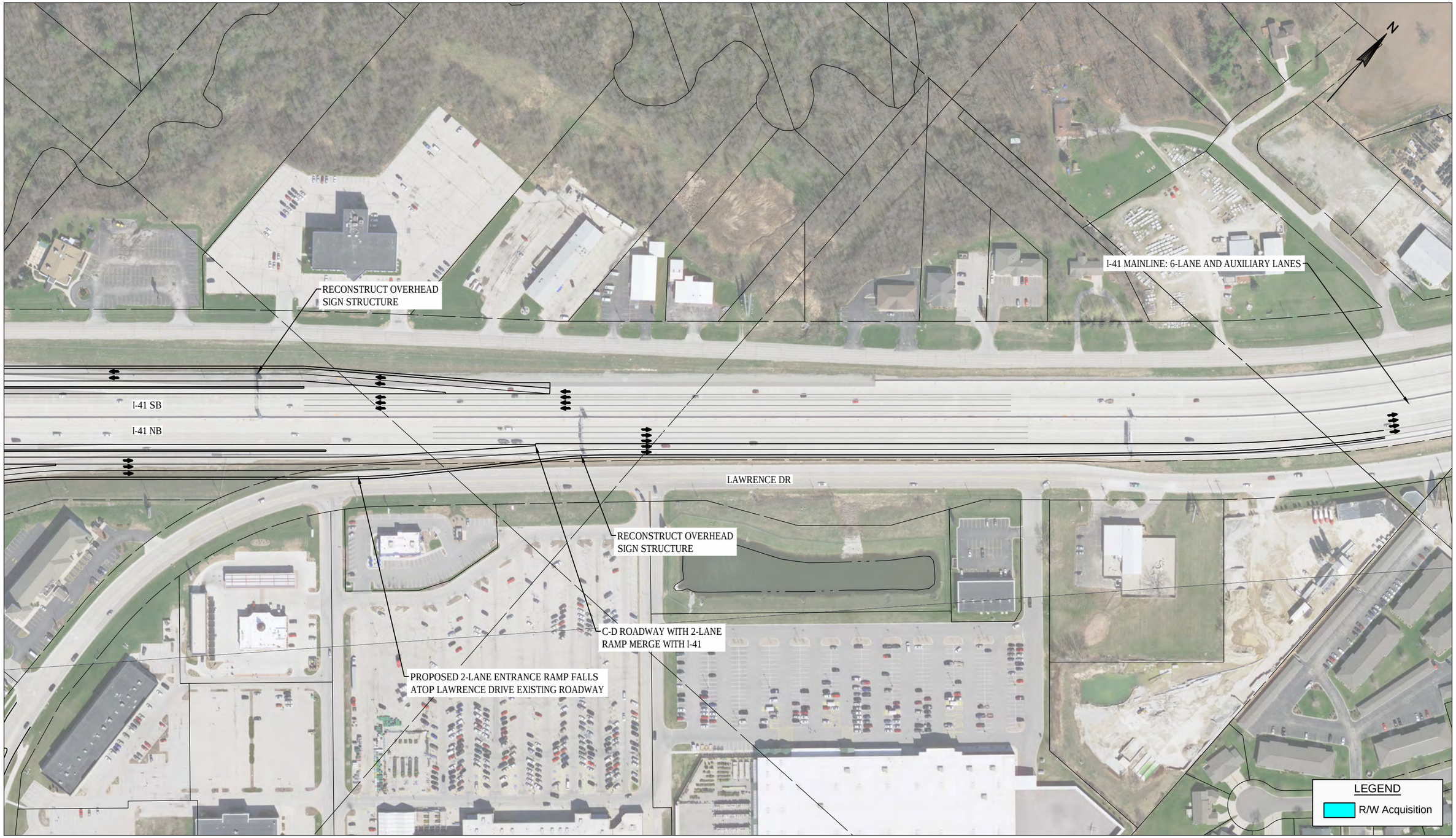
Job #7944
6/10/2018 - 6:14PM

Southern Arterial Concept - Alternative 2B

Brown County
I-41

Figure B.2 - SHEET 4 OF 7

SCALE: 1 IN:200 FT



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SRF Consulting Group, Inc.

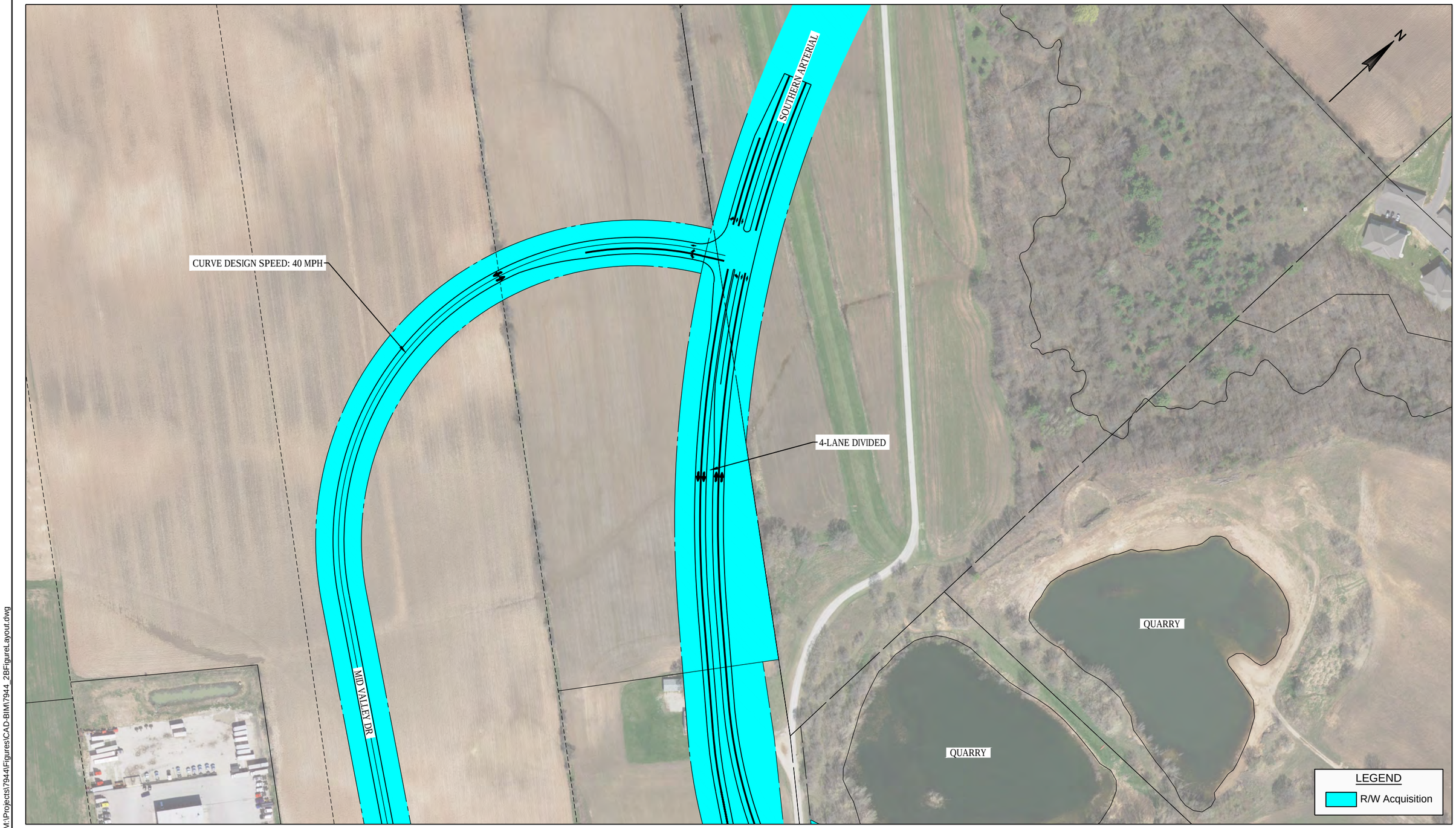
Job #7944
6/10/2018 - 6:14PM

Southern Arterial Concept - Alternative 2B

Brown County
I-41

Figure B.2 - SHEET 5 OF 7

SCALE: 1 IN:200 FT



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SRF Consulting Group, Inc.

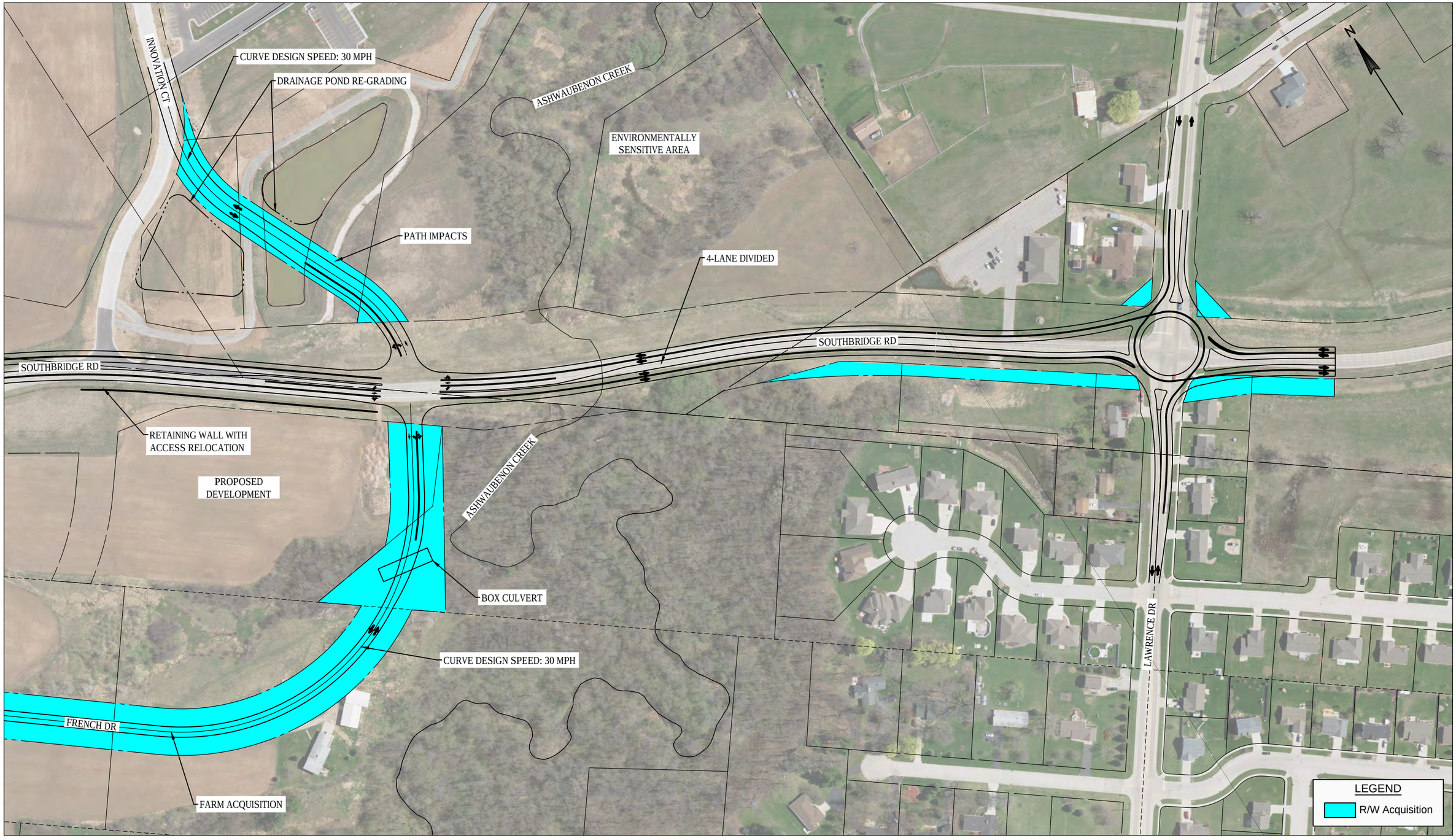
Job #7944
6/10/2018 - 6:14PM

Southern Arterial Concept - Alternative 2B

Brown County
I-41

Figure B.2 - SHEET 6 OF 7

SCALE: 1 IN:200 FT



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Consulting Group, Inc.

Job #7944
6/10/2018 - 6:14PM

Southern Arterial Concept - Alternative 2B

Brown County
I-41

Figure B.2- SHEET 7 OF 7

SCALE: 1 IN:200 FT

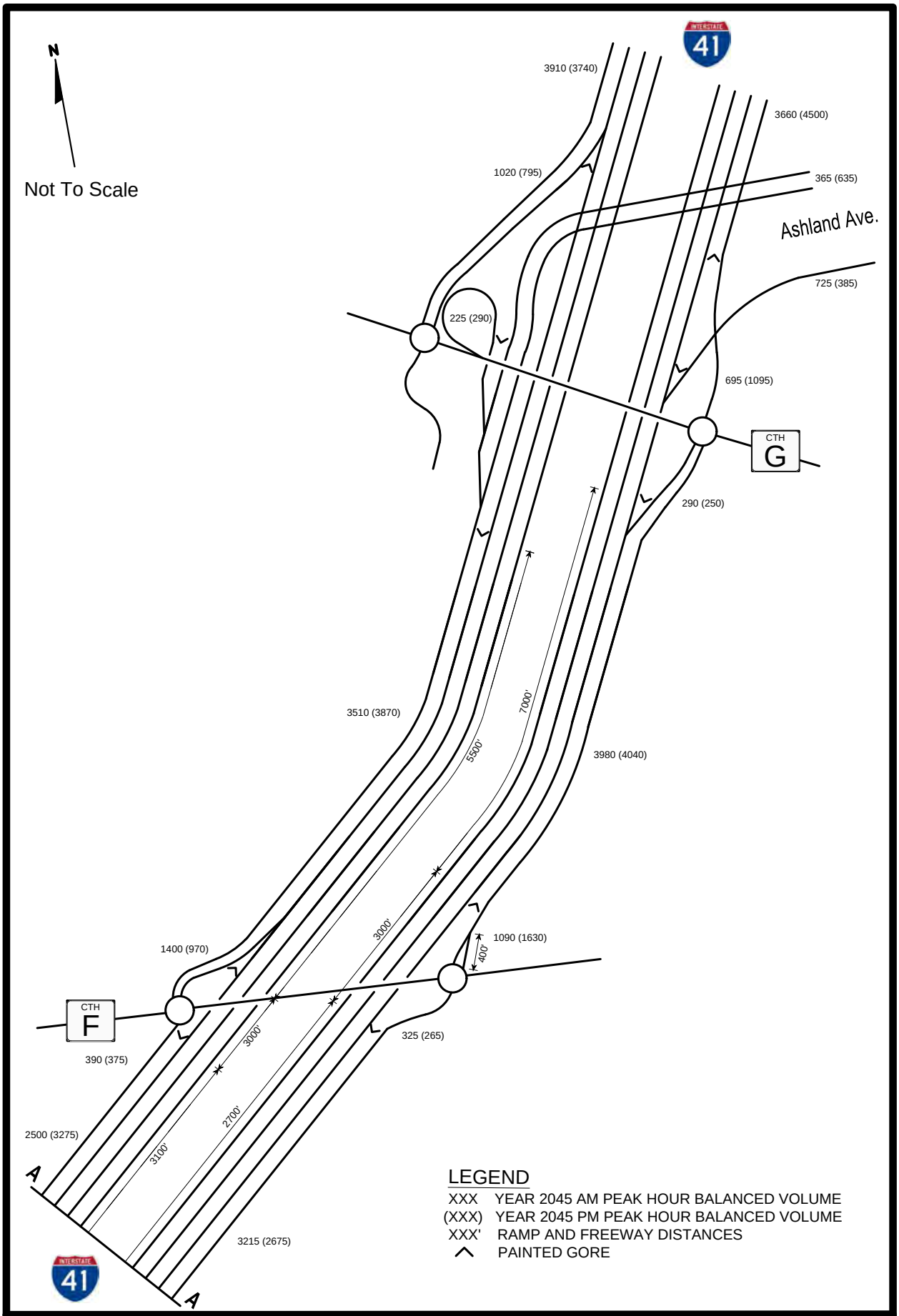
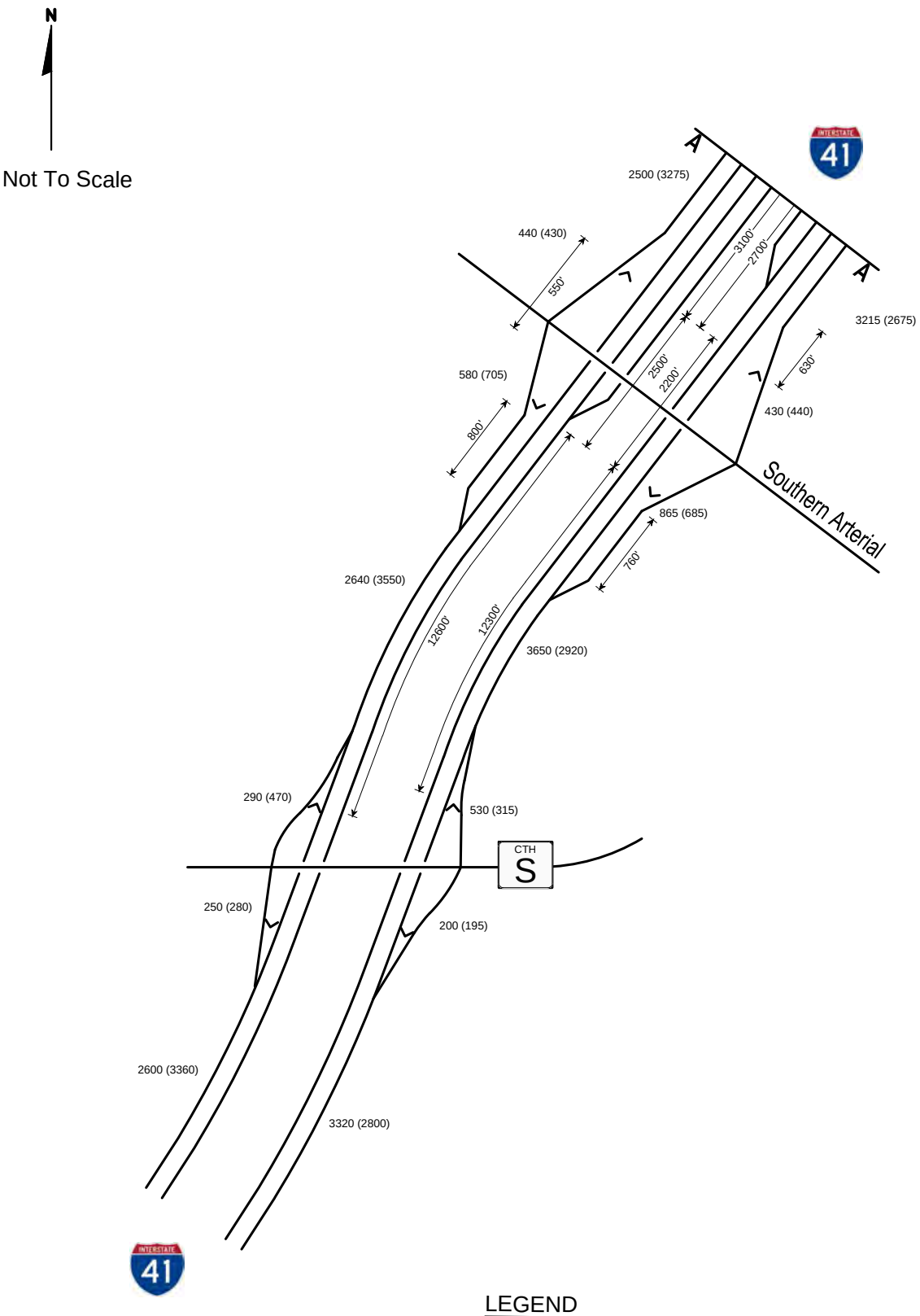


Figure B.3

1 of 2

Year 2045 Build (Alternative 2A)

Southern Arterial PEOR Traffic Analysis
Brown County, Wisconsin



LEGEND

XXX YEAR 2045 AM PEAK HOUR BALANCED VOLUME
(XXX) YEAR 2045 PM PEAK HOUR BALANCED VOLUME
XXX' RAMP AND FREEWAY DISTANCES
^ PAINTED GORE

Figure B.3
2 of 2

Year 2045 Build (Alternative 2A)

Southern Arterial PEOR Traffic Analysis
Brown County, Wisconsin

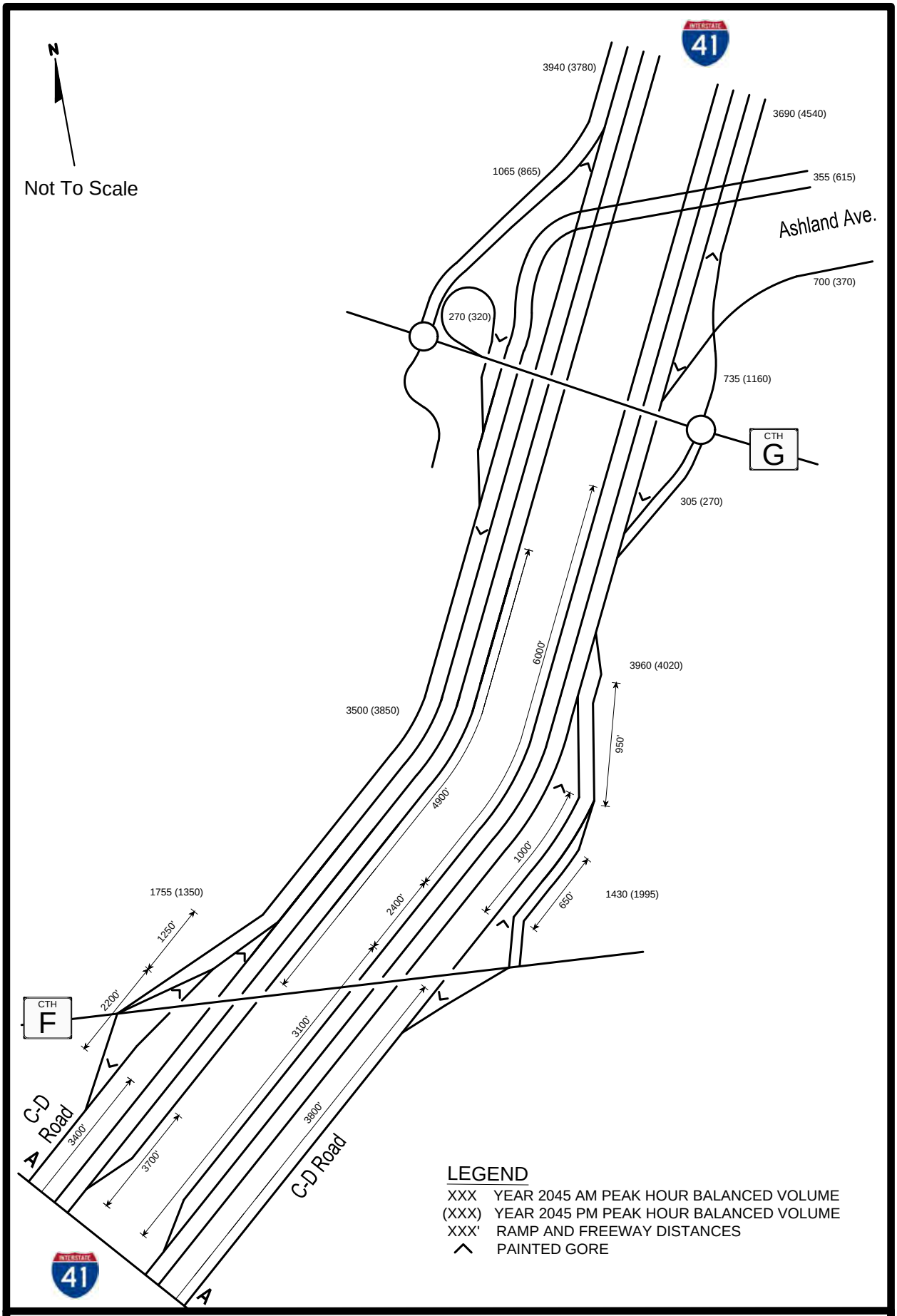
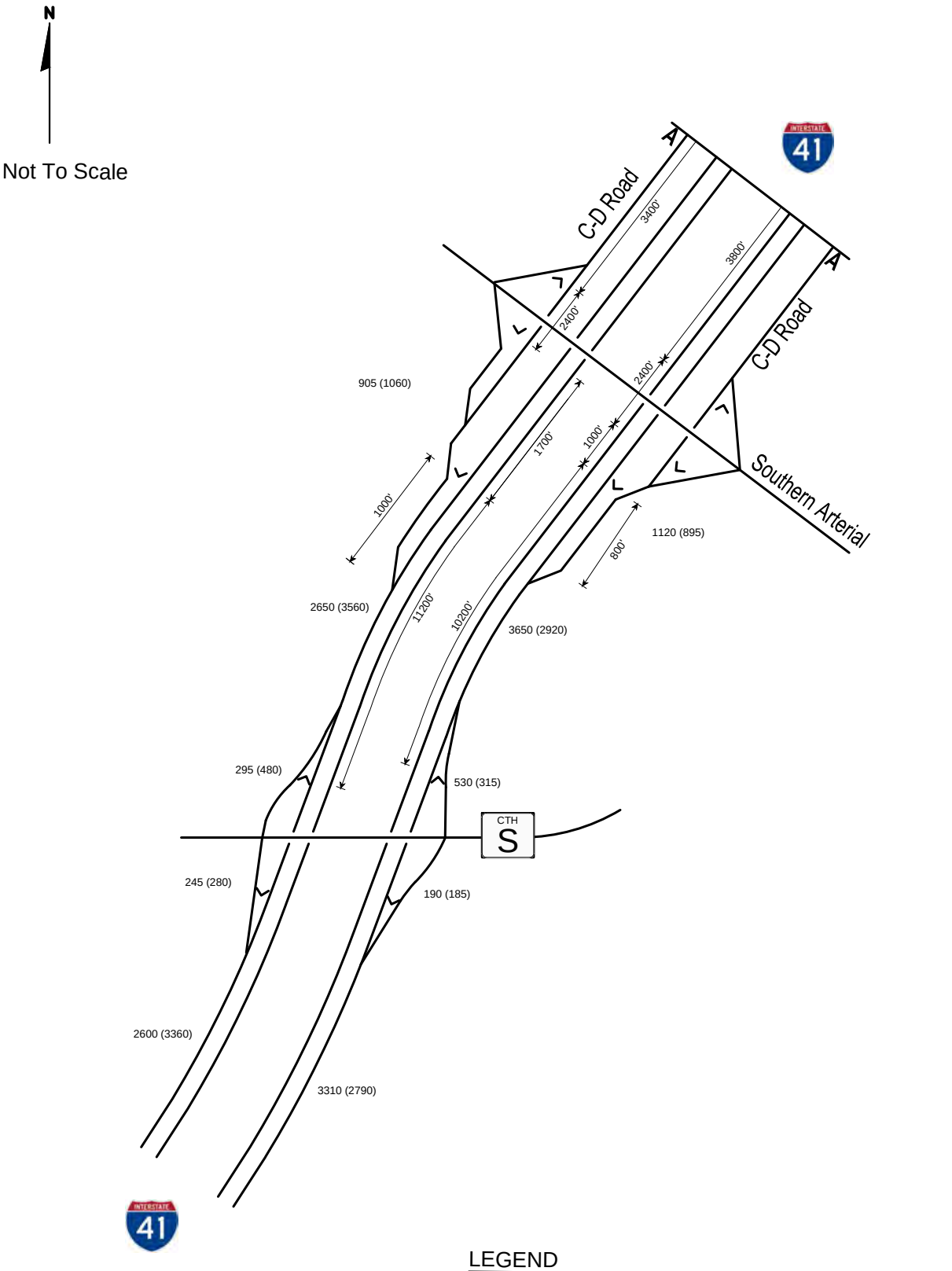


Figure B.4

1 of 2

Year 2045 Build (Alternative 2B)

Southern Arterial PEOR Traffic Analysis
Brown County, Wisconsin



LEGEND

XXX YEAR 2045 AM PEAK HOUR BALANCED VOLUME
(XXX) YEAR 2045 PM PEAK HOUR BALANCED VOLUME
XXX' RAMP AND FREEWAY DISTANCES
^ PAINTED GORE

Figure B.4
2 of 2

Year 2045 Build (Alternative 2B)

Southern Arterial PEOR Traffic Analysis
Brown County, Wisconsin

APPENDIX C

EXISTING AND ALTERNATIVE 2A/2B TYPICAL SECTIONS

Figure C.1

Proposed Typical Section at Scheuring Road Overpass
Alternative 2B (Collector–Distributor Road)
Southern Bridge Crossing Study
I–41, Brown County

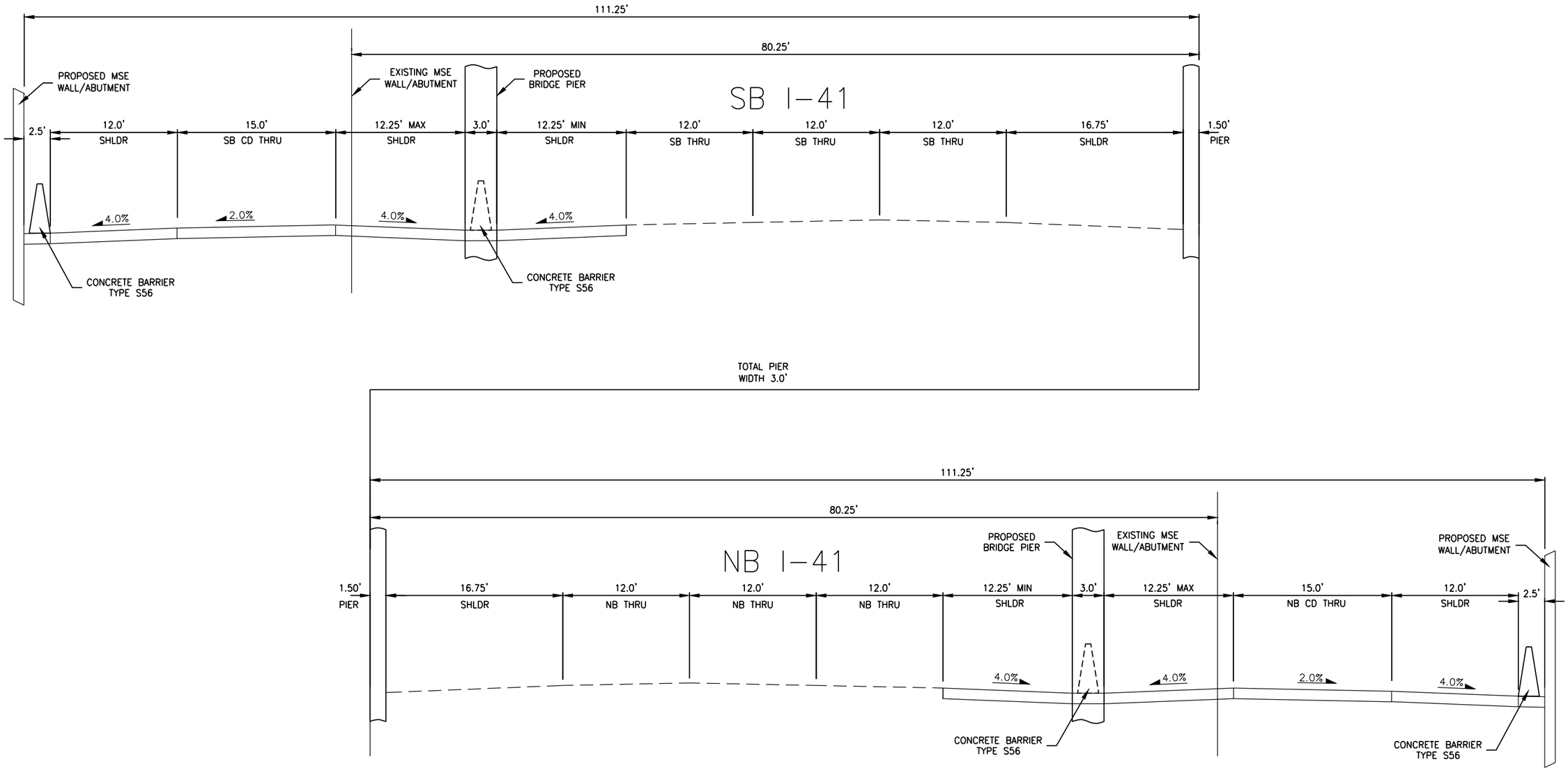


Figure C.2

Proposed Typical Section of I-41
Alternative 2B (Collector-Distributor Road)
Southern Bridge Crossing Study
I-41, Brown County

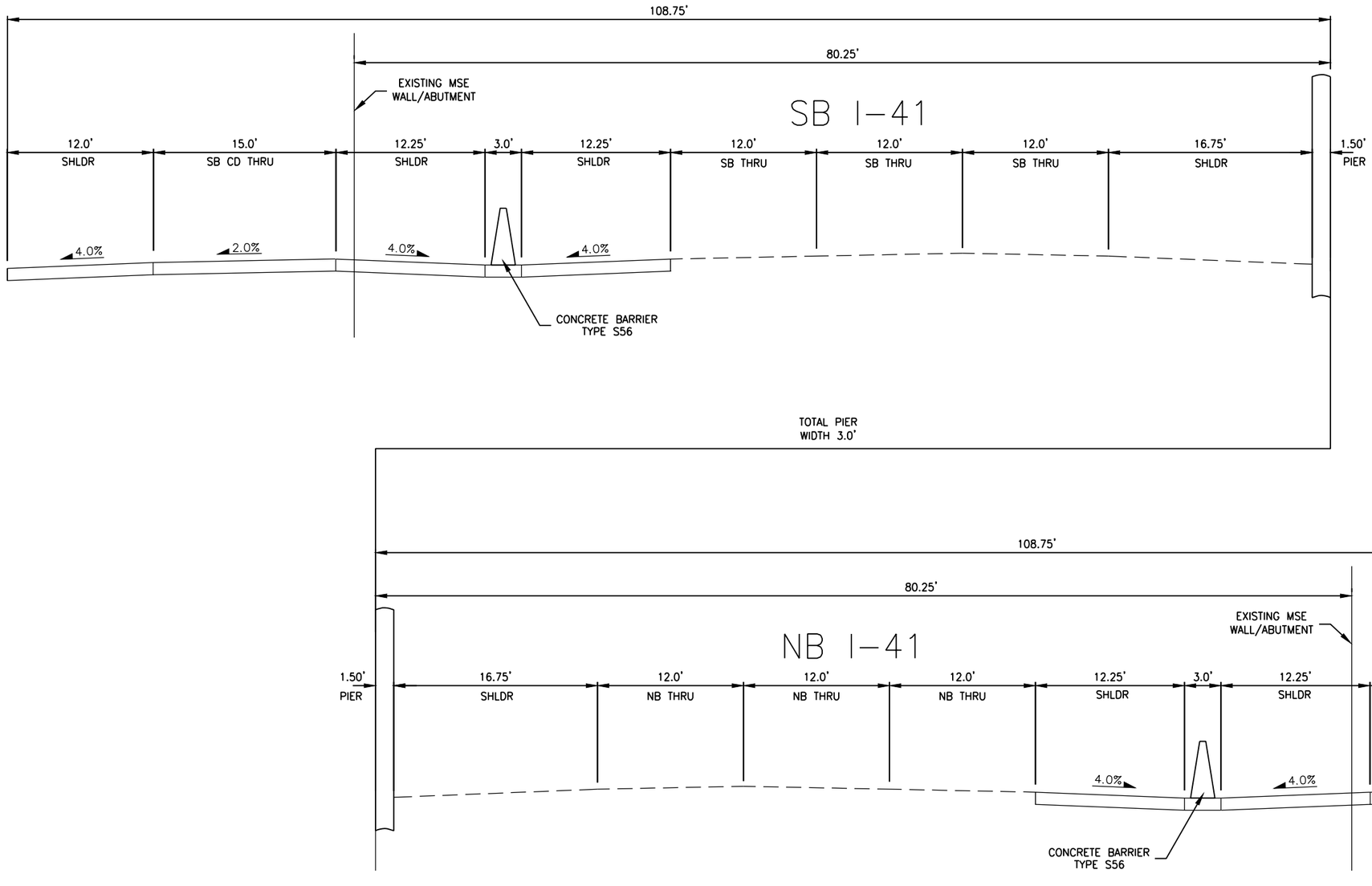


Figure C.3

BENCH MARKS

BM #	STATOIN	OFFSET	DESCRIPTION	ELEVATION
BM5	675+30.11 NB	38.67' RT	DISC SET ON SE WINGWALL OF NB USH 41 BRIDGE OVER ASHWAUBNON CREEK	613.88

SANITARY TOWN OF LAWRENCE
WATER TOWN OF LAWRENCE
COMMUNICATION NET, LEC
COMMUNICATION ATT
COMMUNICATION TIME WARNER
R/W
GAS WPS
ELECTRIC WPS
TOWN OF LAWRENCE
COMMUNICATION ATT
MID VALLEY DRIVE
CTH F
EXISTING UNDERDRAIN LOCATED INFRONT OF RETAINING WALL TO REMAIN IN PLACE
ASHWAUBENON CREEK
BEGIN CONSTRUCTION STA 677FC+06.67
DRAIN TILE EXPLORATION
EXISTING TYPICAL SECTION C-5
EXISTING TYPICAL SECTION C-4
SLOPE INTERCEPT
R/L SOG
676FC
RAMP FC
678FC
USH 41 SB
USH 41 NB
666SOG
668SOG
670SOG
672SOG
674SOG
676SOG
678SOG
666NOG
668NOG
670NOG
672NOG
674NOG
676NOG
678NOG
B-05-604
B-05-605
BM #5
MATCHLINE 665NOG+00
MATCHLINE 680NOG+00
R/L NOG
SLOPE INTERCEPT
678FB
RAMP FB
676FB
RIPRAP
COMMUNICATION ATT
COMMUNICATION TDS TELECOM
RAMP FA
R/W
CITY OF DEPERE
WETLAND BOUNDARY, TYP.
CTH F
LAND GALLERY LLC
SCHURING ROAD LLP
SIGN
CANOPY

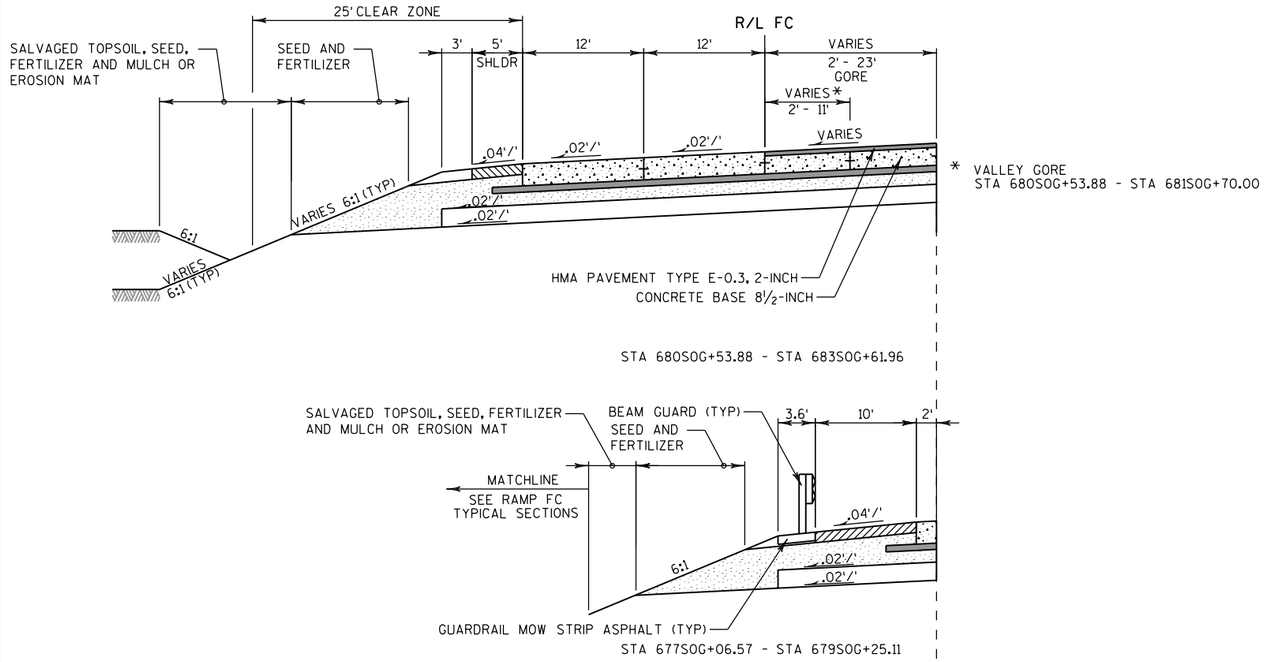
PROJECT NO: 1133-06-71	HWY: USH 41	COUNTY: BROWN	PLAN SHEET - USH 41 MAINLINE	SHEET 879	E

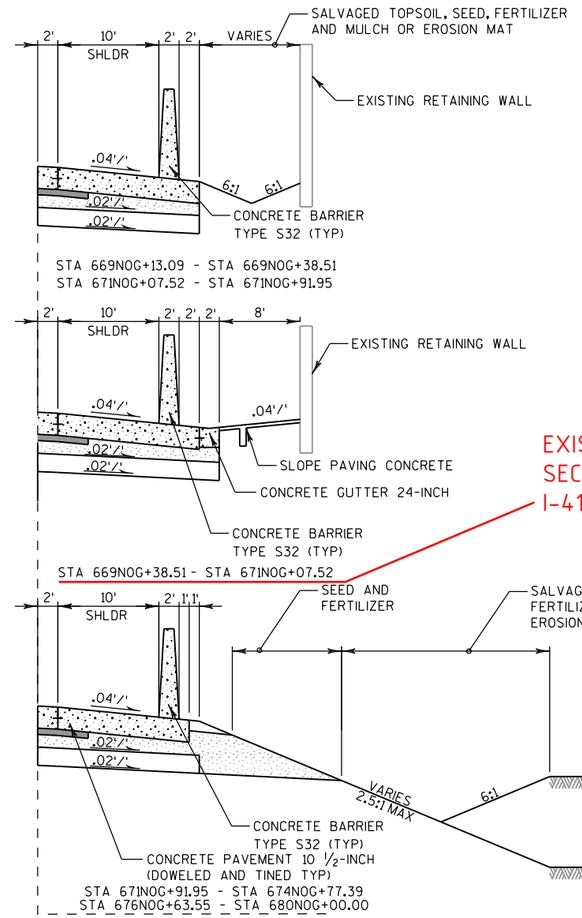
FILE NAME : I:\43170\0600\0671_Mainline-CTH_G\eb_050204_pn.dgn PLOT DATE : 9/21/2011 PLOT BY : lzidek PLOT NAME : PLOT SCALE : 100:1

WISDOT/CADDS SHEET 44

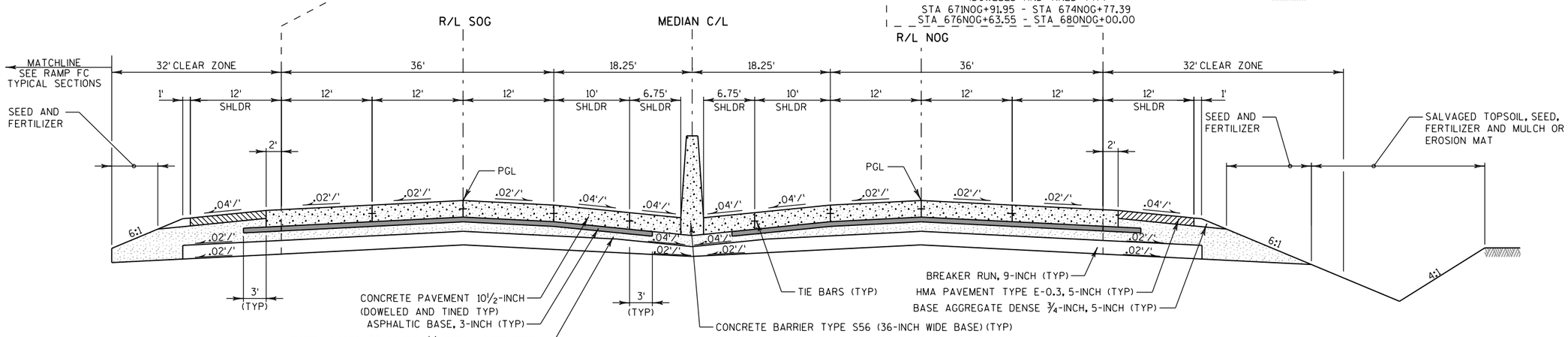
Figure C.4

Existing Typical Sections





EXISTING TYPICAL SECTION C.4
I-41 AT SCHEURING ROAD



TYPICAL FINISHED SECTION

USH 41 MAINLINE

STA 677SOG+06.57 TO STA 683SOG+61.96 STA 669NOG+13.09 TO STA 681NOG+41.11
NOTE: STA 675SOG+20.41 - STA 677SOG+06.57 STR B-05-604
STA 674NOG+77.39 - STA 676NOG+63.55 STR B-05-605

NOTE:

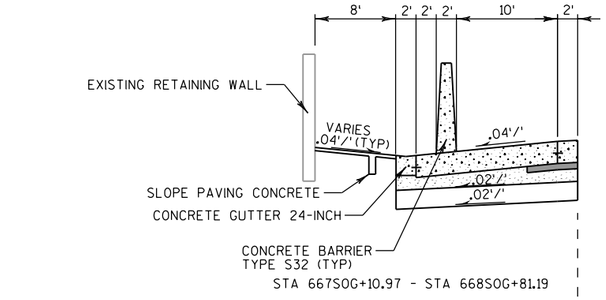
SEE CONSTRUCTION DETAILS FOR BASE AGGREGATE DENSE AND BREAKER RUN TRANSTIONS.

PROJECT NO: 1133-06-71	HWY: USH 41	COUNTY: BROWN	TYPICAL SECTIONS	SHEET 30	E

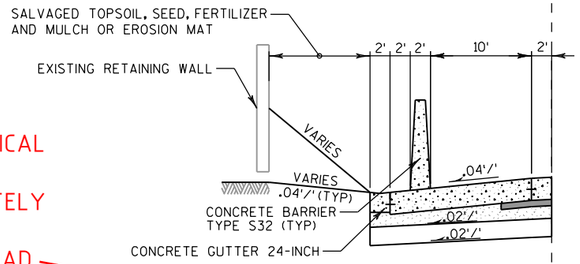
FILE NAME : \\milw00\ingrproj\43170\0600\0671_Mainline-CTH_G\eb_020303_ts.dgn PLOT DATE : 10/4/2011 PLOT BY : lzidek PLOT NAME : PLOT SCALE : 15:1

Figure C.5

Existing Typical Sections

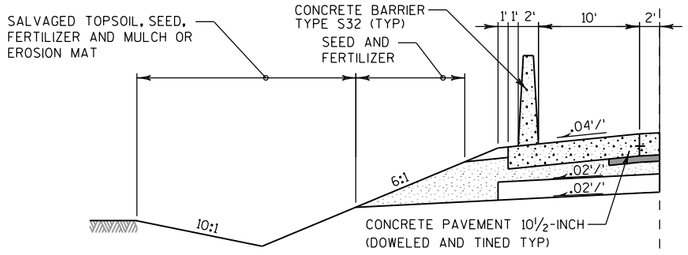


STA 667SOG+10.97 - STA 668SOG+81.19

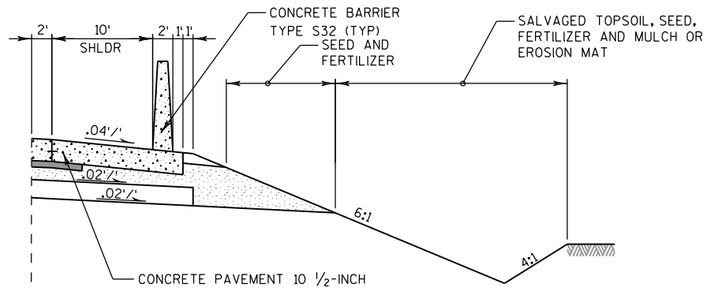


EXISTING TYPICAL SECTION C.5 I-41, IMMEDIATELY SOUTH OF SCHEURING ROAD

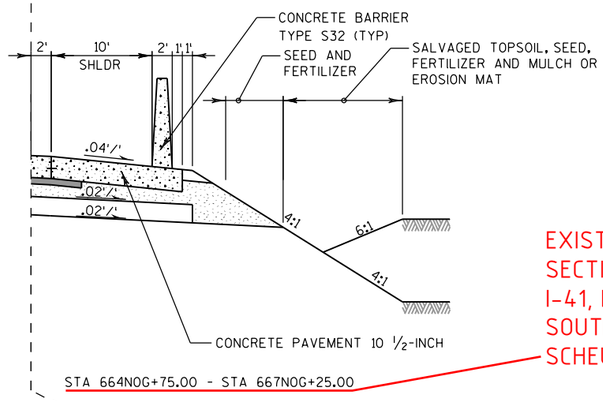
STA 664SOG+75.00 - STA 667SOG+10.97
STA 668SOG+81.19 - STA 669SOG+75.00



STA 664SOG+00.00 - STA 664SOG+75.00
STA 669SOG+75.00 - STA 675SOG+20.41

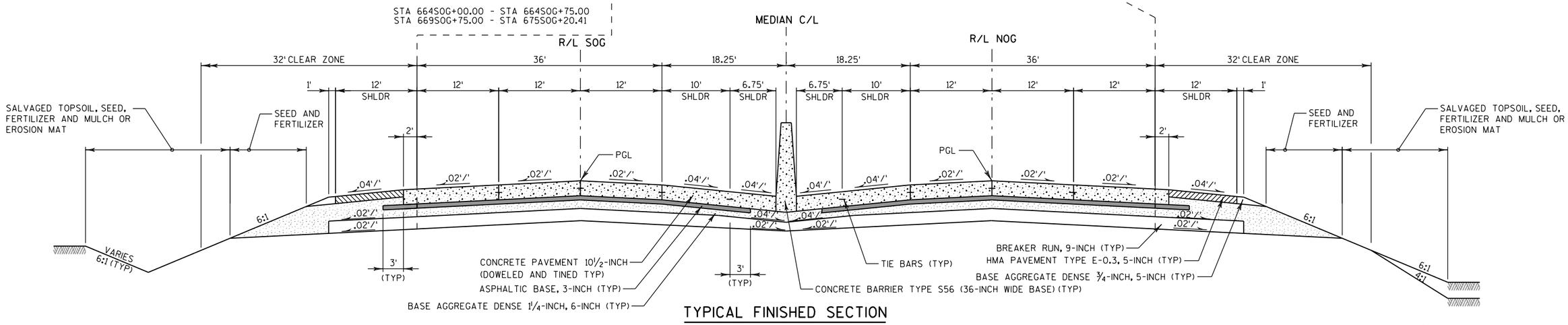


STA 667NOG+25.00 - STA 669NOG+13.09



EXISTING TYPICAL SECTION C.5 I-41, IMMEDIATELY SOUTH OF SCHEURING ROAD

STA 664NOG+75.00 - STA 667NOG+25.00



TYPICAL FINISHED SECTION

USH 41 MAINLINE

STA 657SOG+80.10 TO STA 675SOG+20.41 STA 659NOG+93.41 TO STA 669NOG+13.09
NOTE: STA 675SOG+20.41 - STA 677SOG+06.57 STR B-05-604
STA 674NOG+77.39 - STA 676NOG+63.55 STR B-05-605

NOTE:

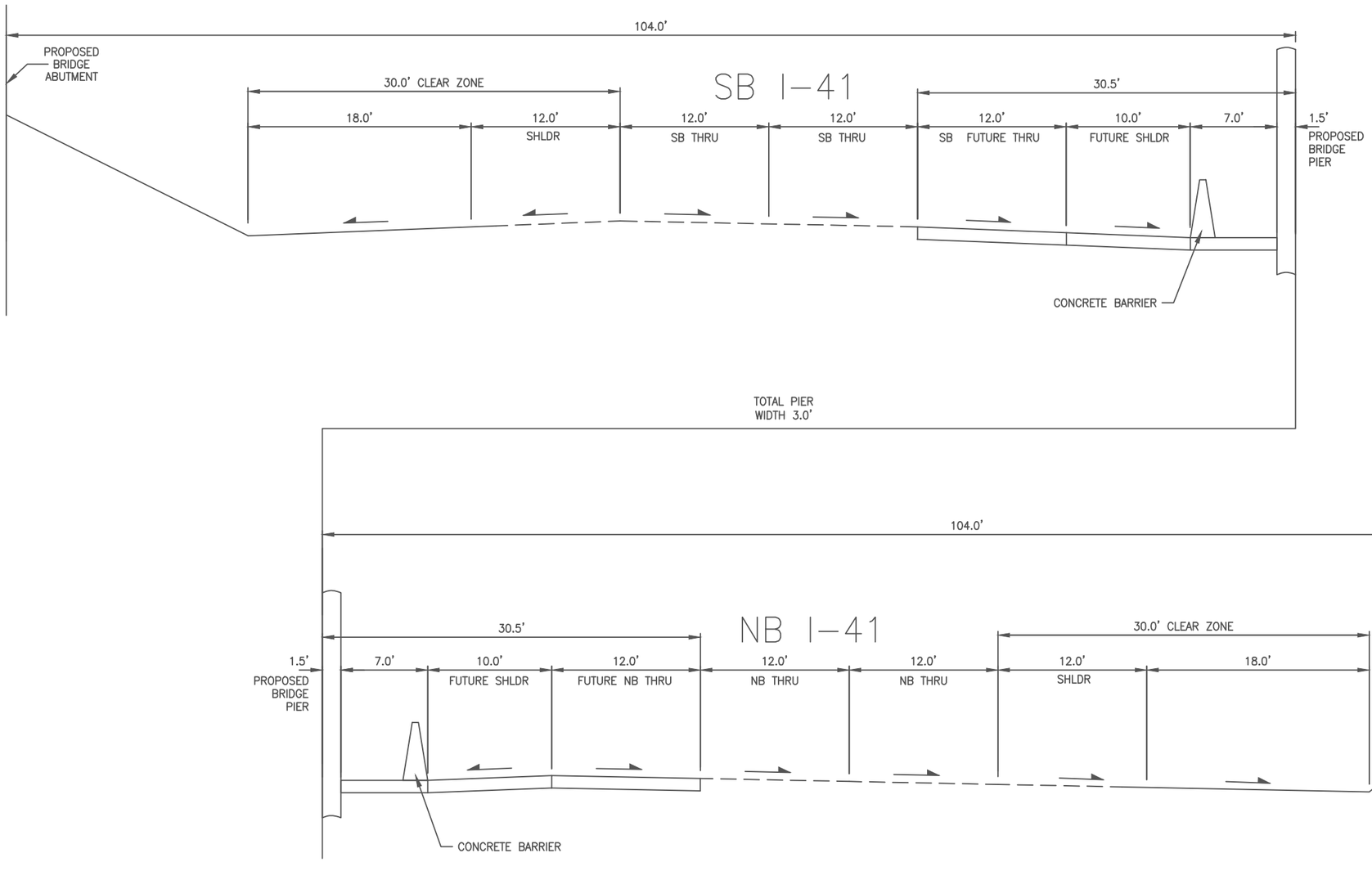
SEE CONSTRUCTION DETAILS FOR BASE AGGREGATE DENSE AND BREAKER RUN TRANSTIONS.

PROJECT NO: 1133-06-71	HWY: USH 41	COUNTY: BROWN	TYPICAL SECTIONS	SHEET	E

FILE NAME : \\milw00\ingrproj\43170\0600\0671_Mainline-CTH_G\eb_020303_ts.dgn PLOT DATE : 10/4/2011 PLOT BY : lzidek PLOT NAME : PLOT SCALE : 15:1

Figure C.6

Proposed Typical Section of I–41 at Southern Bridge Overpass
Alternative 2A
Southern Bridge Crossing Study
I–41, Brown County



APPENDIX D

CONSTRUCTION COSTS AND RIGHT OF WAY IMPACTS

Table D.1
Construction Cost Details

	CONCEPTUAL RATE	CONCEPT 2A		CONCEPT 2B	
		LENGTH	COST [2] [3] [4] [5]	LENGTH	COST [1] [4] [5]
ROAD CONSTRUCTION	[DOL/MILE]	[MILE]	[DOL]	[MILE]	[DOL]
I-41	16,900,000	0.0	0	2.0	33,800,000
Ramps	3,600,000	3.3	11,880,000	2.8	10,080,000
S. Arterial	9,300,000	1.7	15,810,000	1.7	15,810,000
Local	3,300,000	1.0	3,300,000	1.6	5,280,000
CTH F (Scheuring Rd)	3,300,000	0.4	1,320,000	0.4	1,320,000
Lawrence	3,300,000	0.0	0	0.1	330,000
Conc. Median Barrier Ext.	550,000	0.4	220,000	0.0	0
SUBTOTAL			**32,530,000**		**66,620,000**

		CONCEPTUAL RATE	CONCEPT 2A		CONCEPT 2B	
			QTY	COST [6]	QTY	COST [7] [8] [10]
BRIDGES		[DOL/EACH]	[EACH]	[DOL]	[EACH]	[DOL]
2A	S. Arterial	4,600,000	1	4,600,000	0	0
2B	S. Arterial	5,700,000	0	0	1	5,700,000
	Scheuring	13,900,000	0	0	1	13,900,000
	US 41 NB/SB CD Roadways	4,200,000	0	0	1	4,200,000
SUBTOTAL				**4,600,000**		**23,800,000**

	CONCEPTUAL RATE	CONCEPT 2A		CONCEPT 2B	
		QTY	COST	QTY	COST [9]
WALLS	[DOL/EACH]	[EACH]	[DOL]	[EACH]	[DOL]
Southbridge	675,000	1	675,000	1	675,000
Scheuring	1,500,000	0	0	1	1,500,000
NB Southbridge On Ramp	1,500,000	0	0	1	1,500,000
SUBTOTAL			**675,000**		**3,675,000**

	CONCEPTUAL RATE	CONCEPT 2A		CONCEPT 2B	
		QTY	COST	QTY	COST
LIGHTING	[DOL/EACH]	[EACH]	[DOL]	[SF]	[DOL]
Interchange	100,000	1	100,000	2	200,000
Roundabout	50,000	2	100,000	2	100,000
SUBTOTAL			**200,000**		**300,000**

	CONCEPTUAL RATE	CONCEPT 2A		CONCEPT 2B	
		QTY	COST	QTY	COST
CULVERT RECONSTR.	[DOL/EACH]	[EACH]	[DOL]	[EACH]	[DOL]
I-41	150,000	0	0	1	150,000
SUBTOTAL			**0**		**150,000**

	CONCEPT 2A	CONCEPT 2B
CONCEPT TOTAL =	**$38,005,000**	**$94,545,000**

NOTES:
(1) FOR CONCEPT 2B, I-41 COST IS PRIMARILY THE C-D ROADWAYS.
(2) FOR CONCEPT 2A, I-41 SOUTHBOUND MAINLINE LEFT LANE DROP EXTENSION CONSTRUCTION (3000 FT BEYOND SOUTHERN BRIDGE OVERPASS) IS INCLUDED IN THE RAMP COST.
(3) IN CONCEPT 2A, FULL AUXILIARY LANES BETWEEN THE SOUTHERN ARTERIAL AND CTH F ARE INCLUDED IN THE RAMP QUANTITY.
(4) SOUTHERN ARTERIAL LIMITS: APPROXIMATELY 300FT WEST OF MID VALLEY TO APPROXIMATELY 300FT EAST OF LAWRENCE
(5) LOCAL ROAD LINE ITEM INCLUDES MIDVALLEY, FRENCH AND INNOVATION REALIGNMENTS
(6) 2A, BRIDGE COSTS ARE BASED ON AN AREA OF 17,800 SF FOR S. ARTERIAL (TO ACCOMMODATE A FUTURE 6-LANE I-41)
(7) 2B, BRIDGE COSTS ARE BASED ON AREAS OF 22,100 SF (S. ARTERIAL; FUTURE 6-LANE I-41 PLUS C-D ROADWAYS); 42,700 SF (SCHEURING) AND 16,000 SF US41 AT ASHWAUBENON
(8) 2B, SCHEURING BRIDGE RECONSTRUCTION IS ASSUMED DUE TO NEED FOR INSTALLATION OF 2 ADDITIONAL BRIDGE PIERS
(9) 2B, RETAINING WALL RECONSTRUCTION AT SW AND NE QUADRANTS FOR SCHEURING BRIDGE RECONSTRUCTION
(10) CTH F SCHEURING ROAD COSTS DO NOT INCLUDE LIGHTING IN THE ESTIMATE
(11) CTH F SCHEURING ROAD INCLUDES RECONFIGURATION OF THE 4 INTERSECTIONS AND RECONFIGURATION OF THE ROADWAY OVER THE BRIDGE (3-LANES TO 5-LANES)

GENERAL NOTES:
COST ESTIMATE DOES NOT INCLUDE COSTS ASSOCIATED WITH RIGHT OF WAY ACQUISITIONS, UTILITY RELOCATIONS, ENGINEERING AND CONSTRUCTION SERVICES.

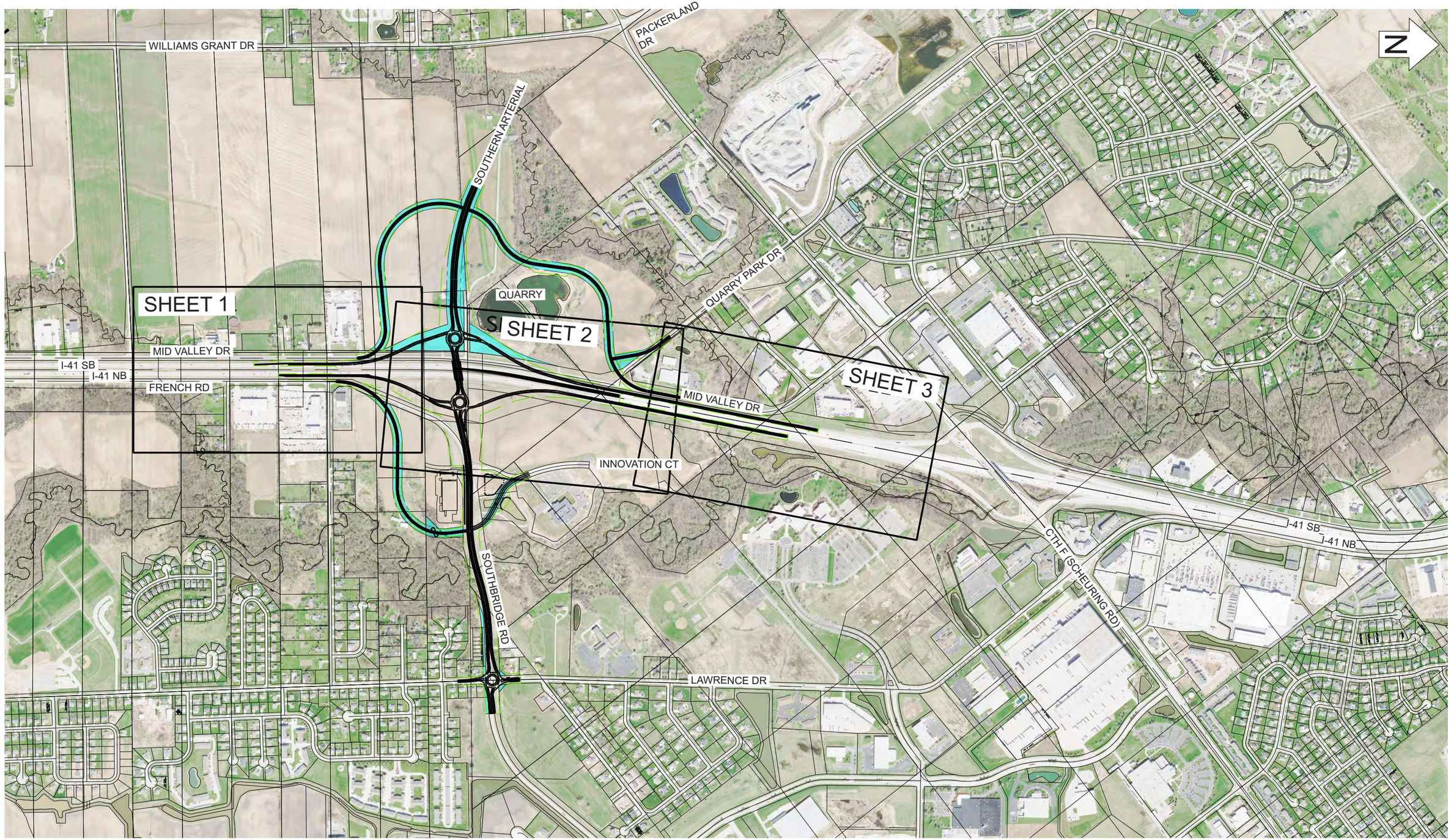
Table D.2
Right of Way Impacts

CONCEPT	DESCRIPTION	NUMBER OF PRIVATE PARCELS IMPACTED	GENERAL OFFSET RIGHT OF WAY IMPACTS	GENERAL OFFSET RIGHT OF WAY IMPACTS
		[EACH]	[SQ FT]	[ACRE]
2A	I-41	0	0	0.0
	RAMPS	1	205,528	4.7
	S. ARTERIAL	7	502,872	11.5
	MIDVALLEY	1	220,520	5.1
	FRENCH	6	217,461	5.0
	INNOVATION	4	41,939	1.0
	TOTAL	**19**		**27.3**

CONCEPT	DESCRIPTION	NUMBER OF PRIVATE PARCELS IMPACTED	GENERAL OFFSET RIGHT OF WAY IMPACTS	GENERAL OFFSET RIGHT OF WAY IMPACTS
		[EACH]	[SQ FT]	[ACRE]
2B	I-41	0	0	0.0
	RAMPS	1	208,002	4.8
	S. ARTERIAL	7	502,872	11.5
	MIDVALLEY	1	220,261	5.1
	FRENCH	8	231,738	5.3
	INNOVATION	4	41,939	1.0
	TOTAL	**21**		**27.7**

APPENDIX E

CONCEPT SIGN PLANS



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Southern Arterial Concept - Alternative 2A Concept Sign Plan

Brown County
I-41

Figure E.1 - OVERVIEW

LEGEND

- Signs on Sign Bridge
- Signs on Sign Bridge Cantilever
- Signs on Sign Bridge Single Pole
- Type I Sign Ground Mounted
- R/W Acquisition
- Construction Limits

Note: All signs are new unless noted otherwise

N

MID VALLEY DR

GREEN BAY TRUCK SALES

MID VALLEY DR

MID VALLEY DR

I-41 SB

I-41 NB

I-41 NB

I-41 Mainline: 4-Lane

FRENCH DR

FRENCH DR

CREAMERY RD

EXIT 160

EXIT 160

EXIT 160

De Pere
NEXT 4 EXITS

Replace Existing Sign
at Existing Location
on Existing Type I Sign Ground Mounted

0.75 Miles

Southbridge Rd
1 MILE

New Sign
at New Location
on New Type I Sign Ground Mounted

1 Mile

Southbridge Rd

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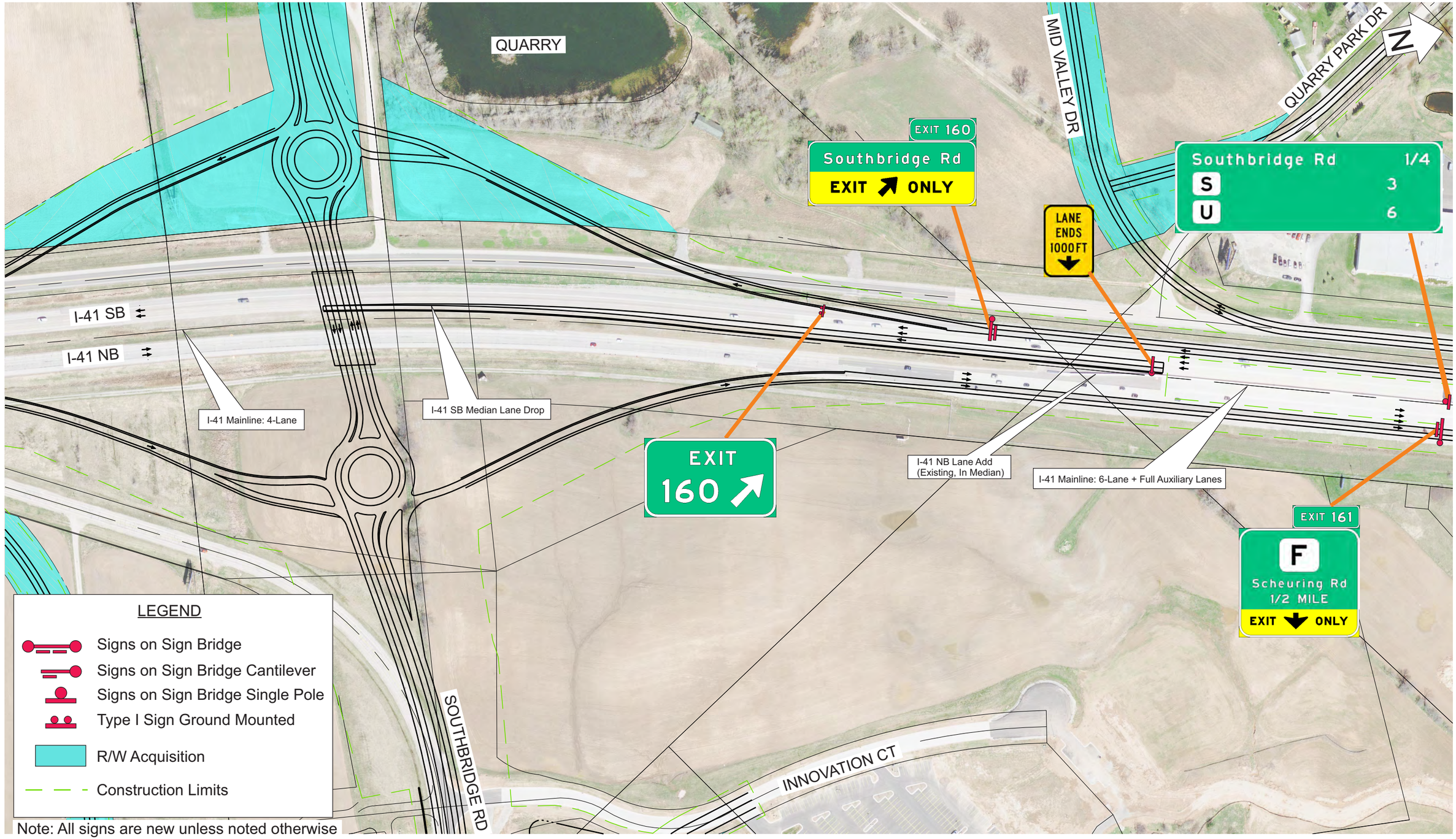
Brown County
I-41

Figure E.1 - 1 of 3

SCALE, FEET 0 100 200



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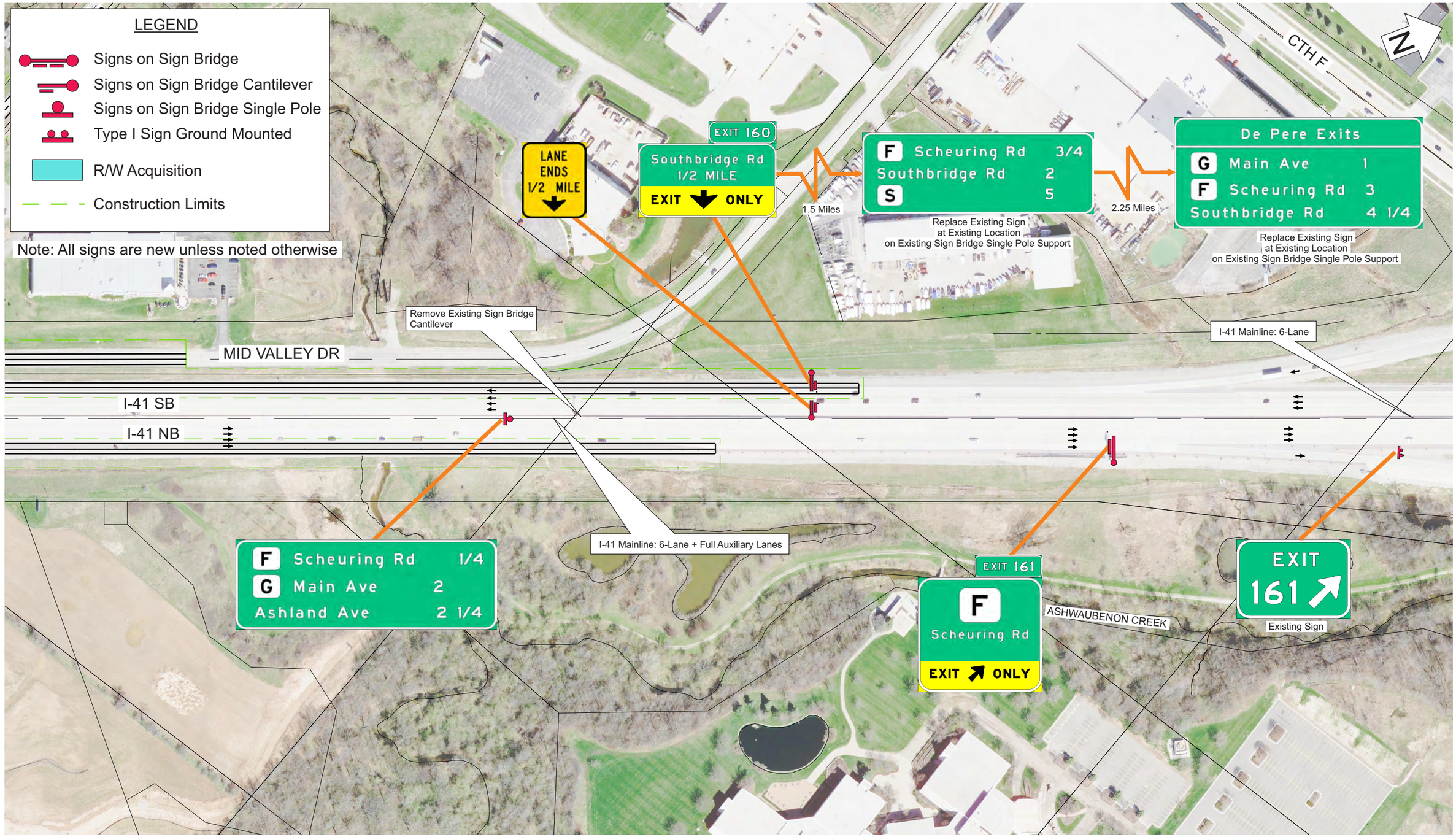
Brown County
I-41

Figure E.1 - 2 of 3

SCALE, FEET 0 100 200



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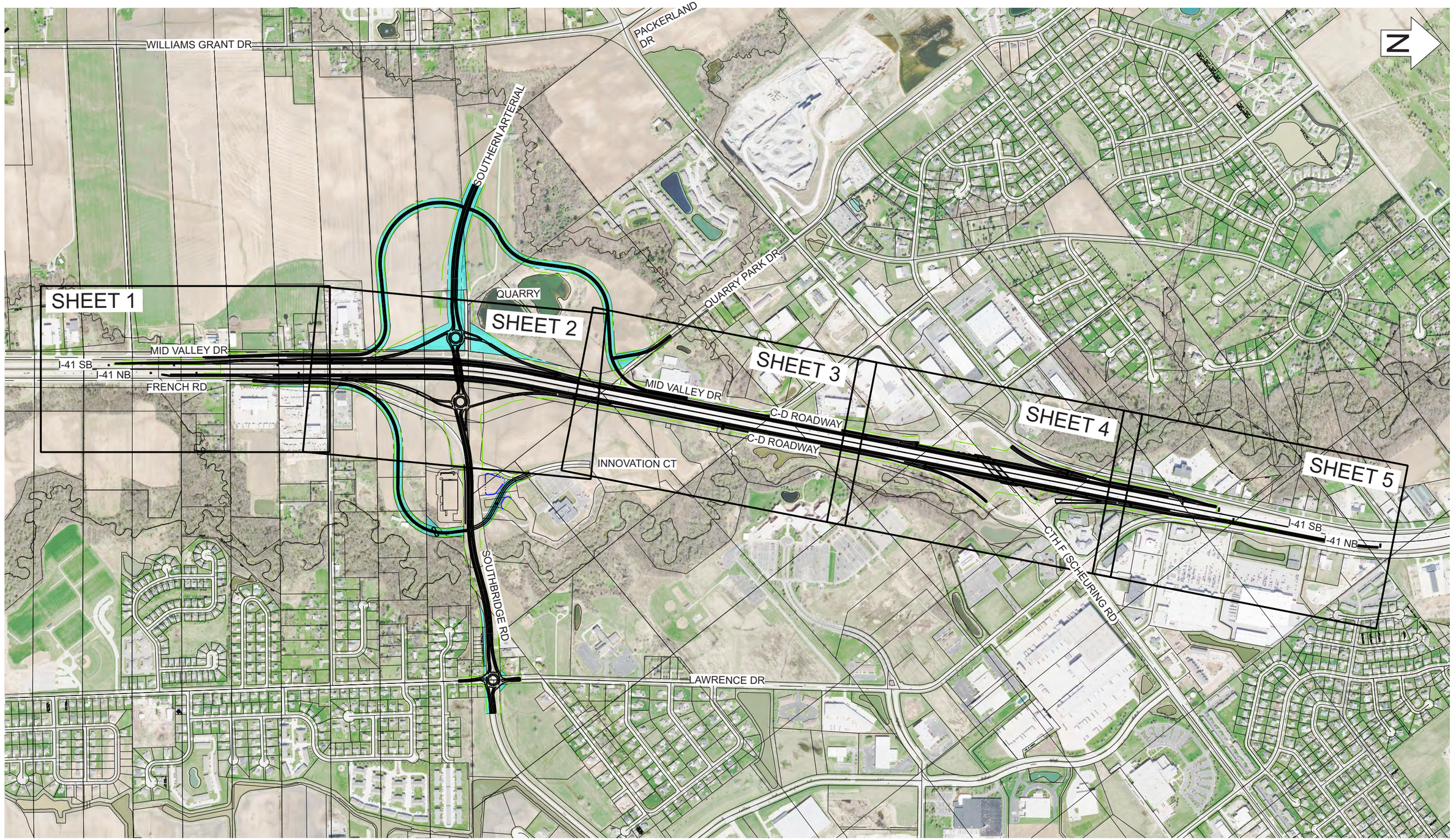
Brown County
I-41

Figure E.1 - 3 of 3

SCALE, FEET 0 100 200



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Southern Arterial Concept - Alternative 2B Concept Sign Plan

Brown County
I-41

Figure E.2 - OVERVIEW

LEGEND

- Signs on Sign Bridge
- Signs on Sign Bridge Cantilever
- Signs on Sign Bridge Single Pole
- Type I Sign Ground Mounted
- R/W Acquisition
- Construction Limits

Note: All signs are new unless noted otherwise

N

MID VALLEY DR

I-41 SB

I-41 NB

De Pere
NEXT 4 EXITS

Replace Existing Sign
at Existing Location
on Existing Type I Sign Ground Mounted Support

0.5 Miles

EXIT 160A-B
F
Scheuring Rd
Southbridge Rd
1 MILE

New Sign
at New Location
on New Type I Sign Ground Mounted

1 Mile

EXIT 160A-B
F
Scheuring Rd
Southbridge Rd

EXIT
160
A-B

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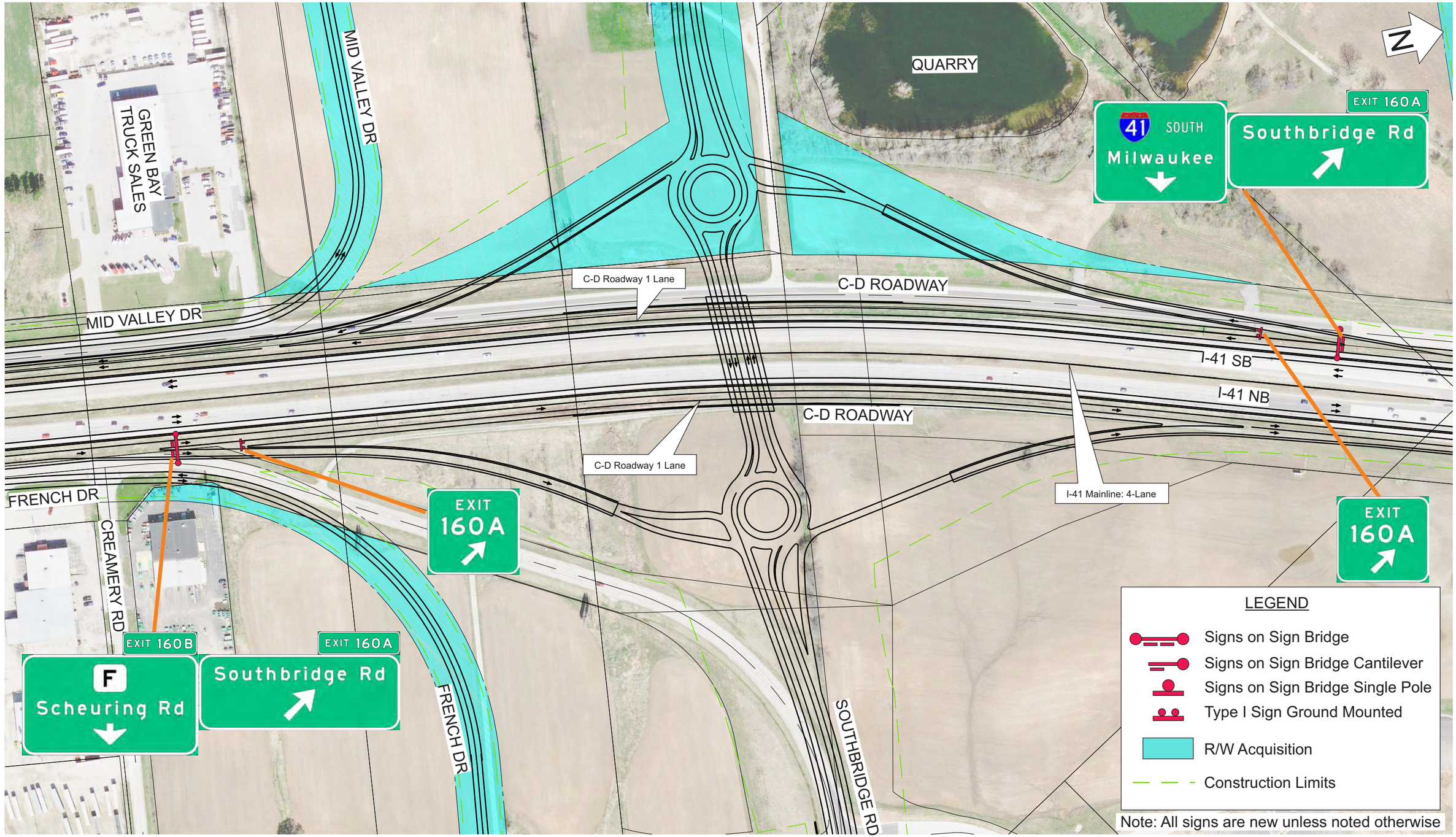
I-41

Figure E.2 - 1 of 5

SCALE, FEET 0 100 200



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Southern Arterial Concept - Alternative 2B Concept Sign Plan

Brown County
I-41

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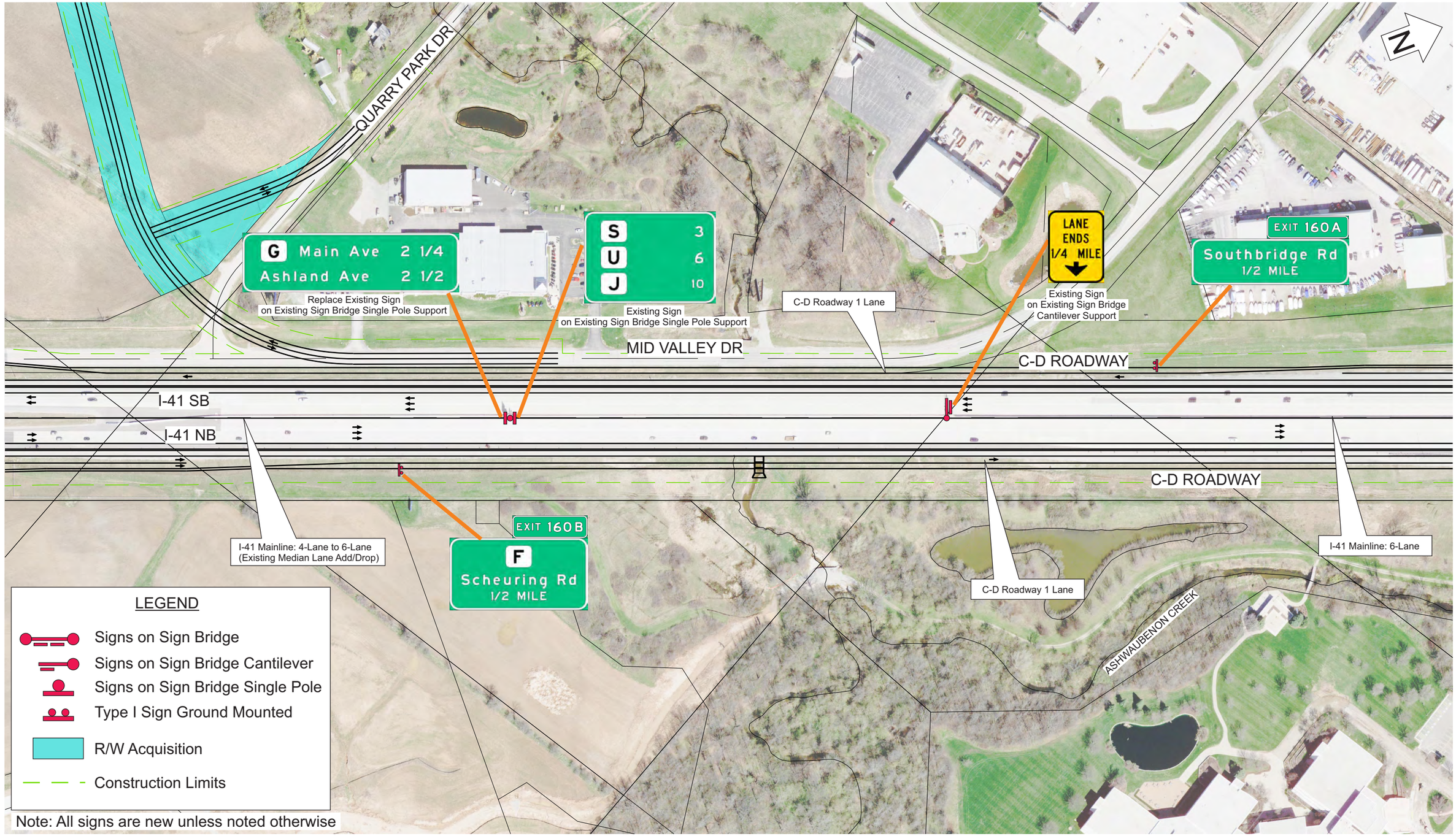
Figure E.2 - 2 of 5

SCALE, FEET 0 100 200



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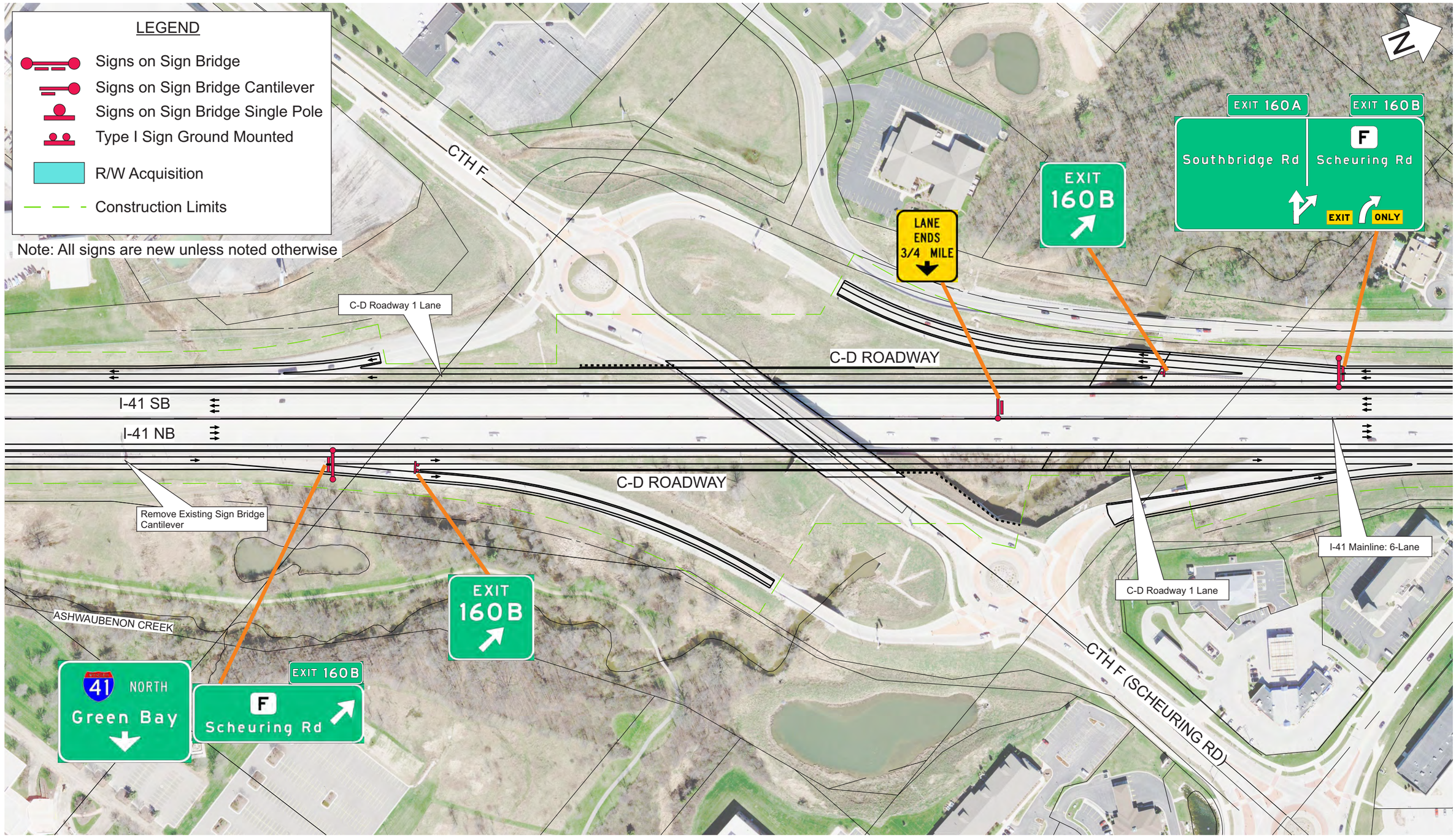
I-41

Figure E.2 - 3 of 5

SCALE, FEET 0 100 200



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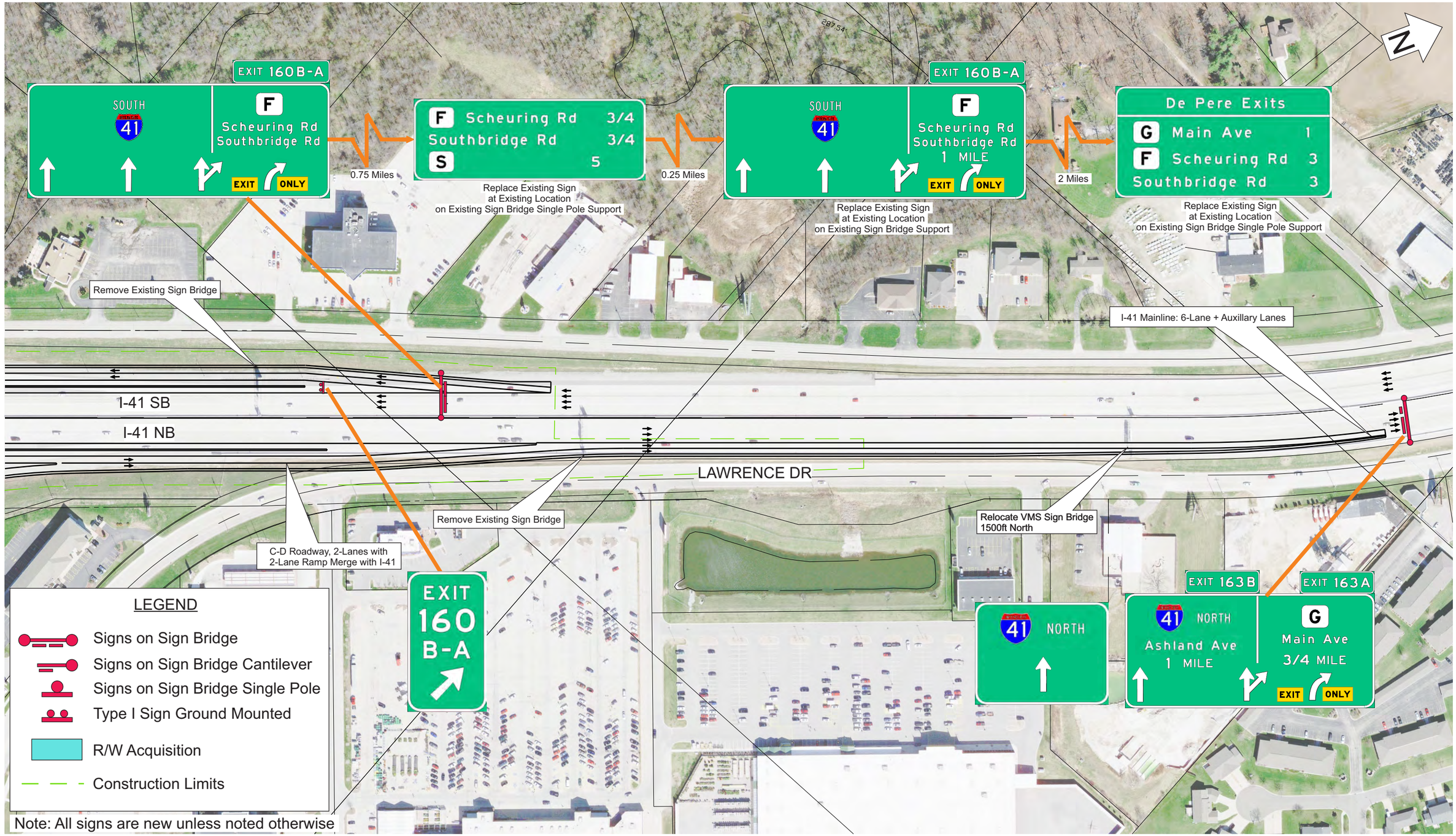
Brown County
I-41

Figure E.2 - 4 of 5

SCALE, FEET 0 100 200



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Southern Arterial Concept - Alternative 2B Concept Sign Plan

Brown County
I-41

Figure E.2 - 5 of 5

SCALE, FEET 0 100 200