APPENDIX A

EVALUATION OF BUILD ALTERNATIVES

- I-229 Exit 5 (26th Street) Interchange Options Evaluation
- 26th Street/Southeastern Avenue Intersection Options Evaluation

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Technical Memo

To:	Steve Gramm, SDDOT
From: HDR	Project: I-229 Exit 5 (26th Street) Crossroad Corridor Study IM-PH 2292(06)5; PCN 4778
CC:	Mark Hoines, FHWA, Shannon Ausen, City of Sioux Falls
Date: July 19, 2013; revised 8/8/13, 9/12/13, 4/3/14	Job No: 179168

RE: I-229 Exit 5 (26th Street) Interchange Options Evaluation

Appendix A

BACKGROUND

Interchange Concept Build Options 1 to 9 were presented at the February 6, 2013 public meeting. Based on comments received at the public meeting and on feedback from the Study Advisory Committee, Options 10, 11, and 12 have been added. Variations to Options 1 to 9 have also been added. In total, 20 separate interchange options are evaluated in this memo.

The Interchange Build Option figures are provided in Attachment A of this memo. Reduced size versions of the option figures are also provided with the discussion of each option.

The purpose of this memo is to provide a brief evaluation of each of the Build Options and provide recommendations on which options to carry forward for further refinement and evaluation. A brief summary of the information in this memo is incorporated into Chapter 2 of the Environmental Assessment.

The main criteria used to evaluate the Build Options included (not necessarily in order of importance):

- Traffic operations
- Property acquisitions (residential and commercial)
- Impacts to Rotary Park, Riverdale Park, and Norlin Park[1]. All of these parks are managed by the Sioux Falls Parks and Recreation Department.
- Floodplain and wetland impacts
- Comparative construction costs

The complete Interchange Options Comparison Matrix is provided on page 24 of this memo. The matrix lists additional, although less critical, measures of comparison than those listed above.

The figures illustrating Rotary, Riverdale, and Norlin park impacts are provided in Attachment B of this memo.

The figures illustrating floodplain and wetland impacts are provided in Attachment C of this memo.

NO-BUILD OPTION

The No-Build Option will be carried forward as a base-line comparison for the build options. As noted in the Options Comparison Matrix, the No-Build Option **does not**:

- Meet design criteria or policy for interchange configuration.
- Resolve the existing and future traffic congestion at the interchange.

[1] If there is no anticipated adverse physical effect to the parks, or interference with the activities, features, or attributes of the parks, on either a temporary or permanent basis, the impact due to the roadway project could be considered minor or "*de minimis*".

BUILD OPTIONS EVALUATION

Options 1a and 1b – Single Point Interchange

- **Option 1a** (Figure 1a) proposes a single point interchange with realignment of 26th Street so the I-229/ 26th Street crossing angle is nearly perpendicular. The perpendicular alignments result in lower construction cost and better traffic efficiency than a single point interchange with skewed roadway alignments. To achieve the perpendicular crossing, 26th Street is realigned approximately 350 feet south of existing 26th Street east of I-229.

  Benefits of Option 1a include:

  - The single point interchange configuration is familiar and acceptable to area drivers.
  - Traffic Level of Service (LOS) B is forecast at the interchange for year 2035 conditions.
  - The interchange ramps take up a relatively small footprint.

  Drawbacks of Option 1a include:

  - The required realignment of 26th Street to achieve a perpendicular crossing of I-229 would result in the total acquisition of both the Cliff Avenue Greenhouse and YMCA Daycamp properties.
  - The large bridge structure and extensive retaining walls lead to a relatively high construction cost of $23.1 million.
  - The northeast ramp will impact Rotary Park. However, the main feature of the park on the west side of the river, the canoe launch, will not be affected.
  - The northeast ramp will impact the Big Sioux River floodplain.
  - Extension of 26th Street across the Big Sioux River will impact Norlin Park. However, the bridge will span across the bike trail and will not affect the function of the trail or any other features of Norlin Park.

  It is recommended that Option 1a be eliminated from further evaluation because of:

  - *Total acquisition of the Cliff Avenue Greenhouse and YMCA Daycamp properties*
  - *High construction cost*
  - *Floodplain impacts of northeast ramp*

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- **Option 1b** (Figure 1b) proposes a single point interchange with 26th Street remaining on its existing alignment. The skewed crossing angle of I-229 and 26th Street results in a larger footprint for the interchange to provide proper crossing angles at the intersection of the ramps and 26th Street.

  Benefits of Option 1b include:

  - Impacts to Cliff Avenue Greenhouse and the YMCA Daycamp are minimized.
  - Traffic LOS B is forecast at the interchange for year 2035 conditions.

  Drawbacks of Option 1b include:

  - Acquisition of 5 residential properties in the northwest quadrant of the interchange will be necessary because of the ramp configuration.
  - The large, skewed bridge structure and extensive retaining walls lead to a relatively high construction cost of $25.5 million.
  - The northeast quadrant ramp impacts Rotary Park. However, as with Option 1a, the canoe launch will not be affected.
  - The northeast ramp will impact the Big Sioux River floodplain.
  - Potential redevelopment of the southeast quadrant of the interchange is not feasible because the existing northbound off-ramp essentially serves as a levee for the Big Sioux River flood control system. Any modification of this ramp would have an impact on the flood control system.

It is recommended that Option 1b be eliminated from further evaluation because of:

- *Acquisition of the 5 residential properties in the northwest quadrant of the interchange*
- *High construction cost*
- *Floodplain impacts of northeast ramp*

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Option 2 – Tight Diamond Interchange on Realigned 26th Street

- **Option 2** (Figure 2) proposes a tight diamond interchange configuration with 26th Street realigned to the south by approximately 100 feet. With the tight diamond interchange, stacking of left turning traffic extends past the upstream (traffic-wise) ramp intersection. The 26th Street realignment is for constructability purposes, i.e. new construction can take place with minimal disruption to existing 26th Street.

  The figures illustrating the proposed northwest ramp adjacent to I-229 are provided in Attachment D of this memo.

  Benefits of Option 2 include:

  - The interchange ramps take up a relatively small footprint.
  - Traffic LOS A, B, or C is forecast at the interchange ramp terminals for year 2035.

  Drawbacks of Option 2 include:

  - The 8 lane bridge structure (needed to accommodate the side-by-side dual left turn lanes) and the extensive retaining walls along the ramps result in a relatively high construction cost.
  - The northeast ramp will impact Rotary Park. However, the main feature of the park on the west side of the river, the canoe launch, will not be affected.
  - The northeast ramp will impact the Big Sioux River floodplain.
  - Potential redevelopment of the southeast quadrant of the interchange is not feasible because the existing northbound off-ramp essentially serves as a levee for the Big Sioux River flood control system. Any modification of this ramp would have an impact on the flood control system.

  It is recommended that Option 2 be eliminated from further evaluation because of:

  - *High construction cost*
  - *Floodplain impacts of northeast ramp*

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Options 3a and 3b –Diverging Diamond Interchange on Realigned 26th Street

- **Option 3a** (Figure 3a) proposes a diverging diamond interchange with 26th Street realigned to the south by approximately 100 feet. The diverging diamond interchange is a relatively new interchange configuration in the United States but is rapidly gaining popularity due to its efficiency with traffic movement and it's relatively low cost in most applications.

  The figures illustrating the proposed northwest ramp adjacent to I-229 are provided in Attachment D of this memo.

  Benefits of Option 3a include:

  - The bridge structure needs to be only 4 lanes wide since the diverging diamond interchange does not generally utilize left turn lanes.
  - Traffic LOS B or C is forecast at the interchange for year 2035 conditions.

  Drawbacks of Option 3a include:

  - A diverging diamond interchange has not yet been constructed in South Dakota so drivers are not familiar with it.
  - New bridge structures and retaining walls result in a relatively high construction cost.
  - The northeast ramp will impact Rotary Park. However, the main feature of the park on the west side of the river, the canoe launch, will not be affected.
  - The northeast ramp will impact the Big Sioux River floodplain.
  - Potential redevelopment of the southeast quadrant of the interchange is not feasible because the existing northbound off-ramp essentially serves as a levee for the Big Sioux River flood control system. Any modification of this ramp would have an impact on the flood control system.

  It is recommended that Option 3a be eliminated from further evaluation because of:

  - *High construction cost*
  - *Floodplain impacts of northeast ramp*

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- **Option 3b** (Figure 3b) is the same as Option 3a except that the northwest corner of the bridge is angled to keep the ramp as close to I-229 as possible. SDDOT Office of Bridge design has expressed concern with the constructability and maintenance of this angled portion of the bridge.

  The figures illustrating the proposed northwest ramp adjacent to I-229 are provided in Attachment D of this memo.

  Benefits of Option 3b are the same as Option 3a except:

  - There is a greater separation between the northwest ramp and the adjacent residential properties when compared to Option 3a.

  Drawbacks of Option 3b are the same as Option 3a except:

  - Construction and maintenance of the angled portion of the northwest corner of the bridge result in higher initial and long term costs.

  It is recommended that Option 3a be eliminated from further evaluation because of:

  - *High construction cost*
  - *Floodplain impacts of northeast ramp*

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Option 4 – Tight Diamond Interchange on Existing 26th Street Alignment

- **Option 4** (Figure 4) is the same as Option 2 except that 26th Street stays on the existing alignment.

  The figures illustrating the proposed northwest ramp adjacent to I-229 are provided in Attachment D of this memo.

  Benefits of Option 4 include:

  - The interchange ramps take up a relatively small footprint.
  - Traffic LOS A, B, or C is forecast at the interchange ramp terminals for year 2035.

  Drawbacks of Option 4 include:

  - The 8 lane bridge structure (needed to accommodate the side-by-side dual left turn lanes) and the extensive retaining walls along the ramps result in a relatively high construction cost.
  - Maintenance of traffic on 26th Street during construction would be more difficult with 26th Street on the existing alignment in comparison to a shifted 26th Street alignment.
  - The northeast ramp will impact Rotary Park. However, the main feature of the park on the west side of the river, the canoe launch, will not be affected.
  - The northeast ramp will impact the Big Sioux River floodplain.
  - Potential redevelopment of the southeast quadrant of the interchange is not feasible because the existing northbound off-ramp essentially serves as a levee for the Big Sioux River flood control system. Any modification of this ramp would have an impact on the flood control system.

  It is recommended that Option 4 be eliminated from further evaluation because of:

  - *High construction cost*
  - *Floodplain impacts of northeast ramp*

Appendix A

Options 5a and 5b –West Side Diamond Adjacent Ramps on Existing 26th Street

- **Option 5a** (Figure 5a) proposes a diamond interchange configuration for the west side ramps while keeping the east side loop and ramp of the existing interchange. The west side ramps would be immediately adjacent to I-229 to minimize impacts to adjacent residential properties.

  The figures illustrating the proposed northwest ramp adjacent to I-229 are provided in Attachment D of this memo.

  Benefits of Option 5a include:

  - Lower construction cost than the full diamond interchange options because there is no ramp in the northeast quadrant of the interchange.
  - Minimal impact to Rotary Park and the Big Sioux River floodplain because there is no ramp in the northeast quadrant of the interchange.
  - Traffic LOS A, B, or C is forecast at the interchange for year 2035 conditions.
  - 26th Street widening does not extend west of Frederick Drive.

  Drawbacks of Option 5a include:

  - West side ramps immediately adjacent to I-229 will require a new bridge over I-229.

  It is recommended that Option 5a be carried forward for further refinement and evaluation because of:

  - *Adequate traffic capacity*
  - *Minimal impacts to parks and private property*
  - *Doesn't widen 26th Street west of Frederick Drive.*

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- **Option 5b** (Figure 5b) is the same as Option 5a except that a ramp is added in the northeast quadrant of the interchange. This ramp changes the dual left turn lanes for the westbound 26th Street/northbound I-229 movement to a free right turn lane.

  The figures illustrating the proposed northwest ramp adjacent to I-229 are provided in Attachment D of this memo.

  Benefits of Option 5b include:

  - Slightly lower traffic delays at the east ramp terminals in comparison to Option 5a.

  Drawbacks of Option 5b are the same as Option 5a except:

  - Higher cost than Option 5a because of the northeast ramp with its retaining walls and bridge over the Big Sioux River.
  - The northeast ramp will impact Rotary Park. However, the main feature of the park on the west side of the river, the canoe launch, will not be affected.
  - The northeast ramp will impact the Big Sioux River floodplain.

  It is recommended that Option 5b be eliminated from further consideration because of:

  - *High construction cost*
  - *Floodplain impacts of northeast ramp*

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Options 6a and 6b –Diverging Diamond Interchange on Existing 26th Street Alignment

- **Option 6a** (Figure 6a) proposes a diverging diamond interchange with 26th Street on its existing alignment. The discussion on the diverging diamond interchange provided under Option 3a also applies to Option 6a.

  Benefits of Option 6a are the same as Option 3a and include:

  - The bridge structure needs to be only 4 lanes wide since the diverging diamond interchange does not generally utilize left turn lanes.
  - Traffic LOS B or C is forecast at the interchange for year 2035 conditions.

  Drawbacks of Option 6a include:

  - A diverging diamond interchange has not yet been constructed in South Dakota so drivers are not familiar with it.
  - The northwest quadrant ramp would be immediately adjacent to the residential properties in the northwest quadrant of the interchange.
  - The northeast ramp will impact Rotary Park. However, the main feature of the park on the west side of the river, the canoe launch, will not be affected.
  - The northeast ramp will impact the Big Sioux River floodplain.
  - Maintenance of traffic on 26th Street during construction would be more difficult with 26th Street on the existing alignment in comparison to a shifted 26th Street alignment.
  - Potential redevelopment of the southeast quadrant of the interchange is not feasible because the existing northbound off-ramp essentially serves as a levee for the Big Sioux River flood control system. Any modification of this ramp would have an impact on the flood control system.

  It is recommended that Option 6a be eliminated from further consideration because of:

  - *High construction cost*
  - *Floodplain impacts of northeast ramp*

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- **Option 6b** (Figure 6b) is the same as Option 6a except that the northwest corner of the bridge is angled to keep the ramp as close to I-229 as possible. SDDOT Office of Bridge design has expressed concern with the constructability and maintenance of this angled portion of the bridge.

  The figures illustrating the proposed northwest ramp adjacent to I-229 are provided in Attachment D of this memo.

  Benefits of Option 6b are the same as Option 6a except:

  - There is a greater separation between the northwest ramp and the adjacent residential properties when compared to Option 6a.

  Drawbacks of Option 6b are the same as Option 6a except:

  - Construction and maintenance of the angled portion of the northwest corner of the bridge result in higher initial and long term costs.

  It is recommended that Option 6b be eliminated from further consideration because of:

  - *High construction cost*
  - *Floodplain impacts of northeast ramp*

Appendix A

Options 7a, 7b, 7c, and 7d –West Side Folded Diamond on Existing 26th Street Alignment

- **Option 7a** (Figure 7a) proposes a folded diamond interchange configuration for the west side ramps while keeping the east side loop and ramp of the existing interchange. Yeager Road is realigned to match Frederick Drive at 26th Street. This is essentially the same basic configuration as the existing interchange except that the west side loop and ramp connect to 26th Street instead of Yeager Road.

  Benefits of Option 7a include:

  - The west-side ramp/loop system is a standard interchange configuration which connects to arterial roadway 26th Street in comparison to the existing ramps which connect to collector roadway Yeager Road.
  - Lower construction cost than the other interchange options because there are no north-side ramps.
  - Minimal Rotary Park and floodplain impacts because there are no north-side ramps.
  - Traffic LOS A, B, or C is forecast at the interchange ramp intersections for year 2035 conditions.
  - Because Yeager Road is maintained, there would be minimal impact on local traffic patterns and streets in the area southwest of the interchange.

  Drawbacks of Option 7a include:

  - The loop from southbound I-229 to 26th Street provides for a relatively low (25 mph) design speed. See attachment E for an analysis of the proposed loop size and SDDOT concurrence with the analysis.
  - Widening of 26th Street from existing Yeager Road to Blauvelt Avenue will be necessary for merging of the dual left turn lanes from the southbound off ramp to westbound 26th Street.

  It is recommended that Option 7a be carried forward for further refinement and evaluation because of:

  - *Adequate traffic capacity*
  - *Minimal impacts to parks and private property*
  - *Low construction cost*

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- **Option 7b** (Figure 7b) is the same as Option 7a except that a ramp is added in the northeast quadrant of the interchange. This ramp changes the dual left turn lanes for the westbound 26th Street/northbound I-229 movement to a free right turn lane.

  Benefits of Option 7b are the same as Option 7a except:

  - Slightly lower traffic delays at the east ramp terminals in comparison to Option 7a.

  Drawbacks of Option 7b include:

  - The loop from southbound I-229 to 26th Street provides for a relatively low (25 mph) design speed. See attachment E for an analysis of the proposed loop size and SDDOT concurrence with the analysis.
  - Widening of 26th Street from existing Yeager Road to Blauvelt Avenue will be necessary for merging of the dual left turn lanes from the southbound off ramp to westbound 26th Street.
  - Higher cost than Option 7a because of the additional cost of the northeast ramp.
  - The northeast ramp will impact Rotary Park. However, the main feature of the park on the west side of the river, the canoe launch, will not be affected.
  - The northeast ramp will impact the Big Sioux River floodplain.

  It is recommended that Option 7b be eliminated from further consideration because of:

  - *Higher cost than Option 7a*
  - *Floodplain impacts of northeast ramp*

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- **Option 7c** (Figure 7c) is the same as Options 7a except that Yeager Road is eliminated.

  Benefits of Options 7c include:

  - The west-side ramp/loop system is a standard interchange configuration which connects to arterial roadway 26th Street in comparison to the existing ramps which connect to collector roadway Yeager Road.
  - Lower construction cost than the other interchange options because there are no north-side ramps.
  - Minimal Rotary Park and floodplain impacts because there are no north side ramps.
  - Traffic LOS A, B, or C is forecast at the interchange ramp intersections for year 2035 conditions.
  - Fewer residential property impacts than Option 7a because Yeager Road is eliminated.

  Drawbacks of Option 7c include:

  - The loop from southbound I-229 to 26th Street provides for a relatively low (25 mph) design speed. See attachment E for an analysis of the proposed loop size and SDDOT concurrence with the analysis.
  - Widening of 26th Street from existing Yeager Road to Blauvelt Avenue will be necessary for merging of the dual left turn lanes from the southbound off ramp to westbound 26th Street.
  - The majority of Yeager Road traffic would re-route to local streets and Cliff Avenue, thereby further deteriorating traffic conditions along Cliff Avenue and 26th Street. The Cliff Avenue/26th Street intersection currently operates at LOS F during peak hour periods.

  It is recommended that Option 7c be eliminated from further consideration because of:

  - *Traffic impacts on local streets, Cliff Avenue, and 26th Street due to elimination of Yeager Road. Feedback from the public was strongly opposed to this option, especially residents potentially affected by the increased traffic on local streets such as Blauvelt Avenue.*

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- **Option 7d** (Figure 7d) is the same as Options 7b except that Yeager Road is eliminated.

  Benefits of Option 7d include:

  - Slightly lower traffic delays at the east ramp terminals in comparison to Option 7c.
  - Fewer residential property impacts than Option 7b because Yeager Road is eliminated.

  Drawbacks of Option 7d include:

  - The loop from southbound I-229 to 26th Street provides for a relatively low (25 mph) design speed. See attachment E for an analysis of the proposed loop size and SDDOT concurrence with the analysis.
  - Widening of 26th Street from existing Yeager Road to Blauvelt Avenue will be necessary for merging of the dual left turn lanes from the southbound off ramp to westbound 26th Street.]
  - The northeast ramp will impact Rotary Park. However, the main feature of the park on the west side of the river, the canoe launch, will not be affected.
  - The northeast ramp will impact the Big Sioux River floodplain.
  - The majority of Yeager Road traffic would re-route to local streets and Cliff Avenue, thereby further deteriorating traffic conditions along Cliff Avenue and 26th Street. The Cliff Avenue/26th Street intersection currently operates at LOS F during peak hour periods.

  It is recommended that Option 7d be eliminated from further consideration because of:

  - *Traffic impacts on local streets, Cliff Avenue, and 26th Street due to elimination of Yeager Road. Feedback from the public was strongly opposed to this option, especially residents potentially affected by the increased traffic on local streets such as Blauvelt Avenue.*
  - *Higher cost than Option 7c*
  - *Floodplain impacts of northeast ramp*

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Option 8 – Offset Single Point Interchange on Existing 26th Street Alignment

- **Option 8** (Figure 8) proposes a configuration where all ramps begin and end at a single intersection on 26th Street. The concept is the same as a single point interchange except that the "single point" is offset to the east from I-229. The interchange would operate the same as a single point interchange such as Options 1a and 1b.

  Benefits of Option 8 include:

  - No residential property impacts.

  Drawbacks of Option 8 include:

  - The bike trail in Riverdale Park will be impacted due to the ramp in the northwest quadrant of the interchange.
  - The northeast ramp will impact Rotary Park. However, the main feature of the park on the west side of the river, the canoe launch, will not be affected.
  - The northwest and northeast ramps will impact the Big Sioux River floodplain.
  - High construction cost due to long curved bridges crossing over I-229.
  - The intersection east of I-229 would have to be elevated for the ramps crossing over I-229. This elevated intersection would result in partial acquisitions of Cliff Avenue Greenhouse and YMCA Daycamp properties.

  It is recommended that Option 8 be eliminated from further consideration because of:

  - *High construction cost*
  - *Impacts to the bike trail in Riverdale Park*
  - *Floodplain impacts of northwest and northeast ramps*

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Options 9a and 9b –West Side Diamond Detached Ramps on Existing 26th Street Alignment

- **Option 9a** (Figure 9a) proposes a diamond interchange configuration for the west side ramps while keeping the east side loop and ramp of the existing interchange. The west side ramps would be separated from the I-229 mainline to minimize retaining wall costs.

  Benefits of Option 9a include:

  - Lower construction cost than the full diamond interchange options because there is no ramp in the northeast quadrant of the interchange.
  - Lower construction cost than Options 5a and 5b (ramps immediately adjacent to I-229) because retaining wall costs are eliminated.
  - Traffic LOS B or C is forecast at the interchange for year 2035 conditions.

  Drawbacks of Option 9a include:

  - The detached northwest quadrant ramp results in total acquisition of up to 9 residential properties in the northwest quadrant of the interchange.
  - Impacts to the Big Sioux River floodplain due to the ramp in the northwest quadrant of the interchange.

  It is recommended that Option 9a be eliminated from further consideration because of:

  - *Impacts to 9 residential properties*
  - *Floodplain impacts of northwest ramp*

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- **Option 9b** (Figure 9b) is the same as Option 9a except that a ramp is added in the northeast quadrant of the interchange. This ramp changes the dual left turn lanes for the westbound 26th Street/northbound I-229 movement to a free right turn lane.

  Benefits of Option 9b include:

  - Slightly lower traffic delays at the east ramp terminals in comparison to Option 9a.

  Drawbacks of Option 9b are the same as Option 9a except:

  - Higher cost than Option 9a because of the northeast ramp with its retaining walls and bridge over the Big Sioux River.
  - The northeast ramp will impact Rotary Park. However, the main feature of the park on the west side of the river, the canoe launch, will not be affected.
  - Impacts to the Big Sioux River floodplain due to the ramp in the northwest quadrant of the interchange.

  It is recommended that Option 9b be eliminated from further consideration because of:

  - *Impacts to 9 residential properties*
  - *Floodplain impacts of the northwest and northeast quadrant ramps*

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Option10 –Roundabouts at Ramp Terminals

- **Option 10** (Figure 10) proposes roundabouts at the 26th Street ramp terminals. The alignment of 26th Street would need to be shifted approximately 160 feet south of existing to provide space for the roundabouts.

  Benefits of Option 10 include:

  - Relatively low construction cost because of limited retaining walls.

  Drawbacks of Option 10 include:

  - Even with 2 lanes, the traffic analysis showed LOS F for the roundabouts. This is mostly due to the unbalanced traffic volumes entering the roundabouts.
  - Acquisition of approximately 8 residential properties in the northwest quadrant of the interchange.
  - The northeast ramp will impact Rotary Park. However, the main feature of the park on the west side of the river, the canoe launch, will not be affected.
  - Impacts to the Big Sioux River floodplain due to the ramps in the northeast and northwest quadrants of the interchange.
  - Inadequate separation from Yeager Road to the west roundabout is a safety concern.
  - Potential redevelopment of the southeast quadrant of the interchange is not feasible because the existing northbound off-ramp essentially serves as a levee for the Big Sioux River flood control system. Any modification of this ramp would have an impact on the flood control system.

  It is recommended that Option 10 be eliminated from further consideration because of:

  - *Failure of traffic movements*
  - *Acquisition of 8 residential properties*
  - *Floodplain impacts of the northwest and northeast quadrant ramps*
  - *Inadequate separation to Yeager Road*

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Option11 –Diverging Diamond Interchange with 26th Street Alignment Shifted North

- **Option 11** (Figure 11) proposes a diverging diamond interchange with 26th Street shifted to the north between I-229 and the Big Sioux River. The north-shifted 26th Street alignment came about in an attempt to minimize impacts to the south side properties (Cliff Avenue Greenhouse and YMCA Daycamp).

  Benefits of Option 11 include:

  - Minimizes impacts to south side properties.

  Drawbacks of Option 11 include:

  - The north shift of 26th Street would impact the canoe launch area in Rotary Park.
  - The north shift of 26th Street and the northeast ramp would have more impact on the Big Sioux River floodplain in comparison with other options.
  - Severely skewed crossing angle of 26th Street over I-229. This would affect construction costs and interchange operations.
  - Potential redevelopment of the southeast quadrant of the interchange is not feasible because the existing northbound off-ramp essentially serves as a levee for the Big Sioux River flood control system. Any modification of this ramp would have an impact on the flood control system.

It is recommended that Option 11 be eliminated from further consideration because of:

- *Impacts to the Rotary Park canoe launch area*
- *Floodplain impacts of shifted 26th Street and the and northeast quadrant ramp*

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Option12 –Tight Diamond Interchange with 26th Street Alignment Shifted North

- **Option 12** (Figure 12) proposes a tight diamond interchange with 26th Street shifted to the north between I-229 and the Big Sioux River. The north-shifted 26th Street alignment came about in an attempt to minimize impacts to south side properties (Cliff Avenue Greenhouse and YMCA Daycamp).

  Benefits of Option 12 include:

  - Minimizes impacts to south side properties.

  Drawbacks of Option 12 include:

  - The north shift of 26th Street would impact the canoe launch area in Rotary Park.
  - The north shift of 26th Street and the northeast ramp would have more impact on the Big Sioux River floodplain in comparison with other options.
  - Severely skewed crossing angle of 26th Street over I-229. This would affect construction costs and interchange operations.
  - Potential redevelopment of the southeast quadrant of the interchange is not feasible because the existing northbound off-ramp essentially serves as a levee for the Big Sioux River flood control system. Any modification of this ramp would have an impact on the flood control system.

  It is recommended that Option 12 be eliminated from further consideration because of:

  - *Impacts to the Rotary Park canoe launch area*
  - *Floodplain impacts of shifted 26th Street and the and northeast quadrant ramp*

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BUILD OPTIONS EVALUATION SUMMARY

Options recommended to be carried forward for further refinement and evaluation

Option	Interchange Description	Main reason(s) for carrying forward
5a	West side diamond with adjacent ramps on existing 26th without NE ramp	• Adequate traffic capacity • Minimal impacts • Doesn't widen 26th St. west of Frederick Dr.
7a	West side folded diamond w/o NE ramp	• Adequate traffic capacity • Minimal cost and impacts in comparison to other options

Options recommended to be eliminated from further evaluation

Option	Interchange Description	Main reason(s) for elimination
1a	Single point on realigned 26th Street	High cost and Cliff Avenue Greenhouse/ YMCA Daycamp impacts
1b	Single point on existing 26th Street	High cost and residential properties impacts
2	Tight diamond on realigned 26th Street	High cost and floodplain impacts
3a	Diverging diamond on realigned 26th Street	High cost and floodplain impacts
3b	Diverging diamond on realigned 26th Street with angled bridge	High cost and floodplain impacts
4	Tight diamond on existing 26th Street	High cost and floodplain impacts
5b	West side diamond with adjacent ramps on existing 26th with NE ramp	High cost and floodplain impacts
6a	Diverging diamond on existing 26th Street	High cost and floodplain impacts
6b	Diverging diamond on existing 26th Street with angled bridge	High cost and floodplain impacts
7b	West side folded diamond with NE ramp	Higher cost than 7a and floodplain impacts
7c	West side folded diamond w/o Yeager Road and w/o NE ramp	Traffic impacts to local streets, Cliff Avenue, and 26th Street due to Yeager Road closure
7d	West side folded diamond w/o Yeager Road and with NE ramp	Traffic impacts to local streets, Cliff Avenue, and 26th Street due to Yeager Road closure
8	Offset single point on existing 26th Street	High cost and bike trail impacts
9a	West side diamond with detached ramps w/o NE ramp	Residential properties impacts
9b	West side diamond with detached ramps with NE ramp	Residential properties impacts
10	Roundabouts at ramp terminals	Failure of traffic movements
11	Diverging diamond on 26th Street realigned to the north	Canoe launch impacts and floodplain impacts
12	Tight diamond on 26th Street realigned to the north	Canoe launch impacts and floodplain impacts

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Interchange Options Comparison Matrix **I-229 Exit 5 (26th Street) Crossroad Corridor Study** **4/3/14**

I-229/26th Street Interchange Only Construction

Option	Description	Meets Purpose and Need		Public Response	Construction Impacts		Traffic Operations & Safety						Property Impacts				Environmental Impacts					Pedestrians	Construction Cost		
		Traffic capacity	Standard interchange configuration	Feedback via public meetings, comments, web site survey	Maintenance of traffic during construction	Allows for phased construction	Traffic operations at ramp intersections (year 2035)*		Merge distance to 1 lane west of ramps	26th St widening west of Frederick Dr	Spacing from ramp to Yeagar Road	Adds traffic to local streets	Total residential acquisitions	Partial residential acquisitions	Total commercial acquisitions	Partial commercial acquisitions	Rotary Park encroachment (1)	Riverdale Park encroachment (2)	Norlin Park encroachment (3)	Wetland impacts	Floodplain impacts	Pedestrian access	Structure cost	Roadway cost	Total cost
							Worst LOS AM/PM	Worst Delay AM/PM (sec)	feet	feet	feet		acres	acres	acres	acres	acres	acres	acres	acre	acre		M $	M$	M$
1a	Single point on realigned 26th	yes	yes	good	good	yes	B/B	15/16	700	0	300	no	0	0	2	0	0.37	0	0.49	0.02	5.15	sidewalk on both sides of 26th	$14.7	$8.4	$23.1
1b	Single point on existing 26th	yes	yes	NI	moderate	yes	B/B	15/16	800	0	180	no	5	0	0	0	0.45	0	0	0.01	4.43	sidewalk on both sides of 26th	$17.1	$8.4	$25.5
2	Tight Diamond on realigned 26th	yes	yes	moderate	good	yes	C/C	28/29	850	0	330	no	0	0	0	2	0.54	0	0	0.04	3.97	sidewalk on both sides of 26th	$13.0	$8.0	$21.0
3a	Diverging diamond on realigned 26th	yes	yes	NI	good	yes	B/C	22/25	730	0	360	no	0	0	0	2	0.56	0	0	0.03	4.39	sidewalk on both sides of 26th	$11.0	$7.8	$18.8
3b	Diverging diamond on realigned 26th with angled bridge	yes	yes	moderate	good	yes	B/C	22/25	700	0	360	no	0	0	0	2	0.56	0	0	0.03	4.07	sidewalk on both sides of 26th	$11.4	$7.8	$19.2
4	Tight Diamond on existing 26th	yes	yes	moderate	moderate	yes	C/C	29/29	850	0	330	no	0	0	0	0	0.67	0	0	0.07	3.65	sidewalk on both sides of 26th	$14.7	$7.4	$22.1
5a	West side diamond with adjacent ramps on existing 26th w/o NE ramp	yes	yes	NI	moderate	yes	C/C	24/26	850	0	360	no	0	0	0	0	0.04	0	0	0.05	1.08	sidewalk on both sides of 26th	$10.2	$5.6	$15.8
5b	West side diamond with adjacent ramps on existing 26th with NE ramp	yes	yes	moderate	moderate	yes	C/C	23/22	850	0	360	no	0	0	0	0	0.41	0	0	0.06	3.14	sidewalk on both sides of 26th	$12.7	$6.5	$19.2
6a	Diverging diamond on existing 26th	yes	yes	NI	moderate	yes	B/C	22/25	750	0	330	no	3	0	0	0	0.45	0	0	0.01	3.46	sidewalk on both sides of 26th	$10.8	$7.7	$18.5
6b	Diverging diamond on existing 26th with angled bridge	yes	yes	moderate	moderate	yes	B/C	22/25	750	0	330	no	0	0	0	0	0.45	0	0	0.01	3.28	sidewalk on both sides of 26th	$11.2	$7.6	$18.8
7a	West side folded diamond w/o NE ramp	yes	yes	moderate	moderate	yes	C/B	31/16	720	400	280	no	2	3	0	0	0.06	0	0	0.26	0.60	sidewalk on both sides of 26th	$3.1	$6.4	$9.5
7b	West side folded diamond with NE ramp	yes	yes	NI	moderate	yes	C/B	31/16	720	400	280	no	2	3	0	0	0.44	0	0	0.26	2.98	sidewalk on both sides of 26th	$5.4	$7.1	12.5
7c	West side folded diamond w/o Yeager Rd and w/o NE ramp	yes	yes	poor	moderate	yes	C/B	31/16	720	400	NA	yes	1	0	0	0	0.06	0	0	0.03	0.49	sidewalk on both sides of 26th	$3.1	$6.1	$9.2
7d	West side folded diamond with NE ramp and w/o Yeager Road	yes	yes	poor	moderate	yes	C/B	31/16	720	400	NA	yes	1	0	0	0	0.44	0	0	0.04	2.97	sidewalk on both sides of 26th	$5.6	$6.8	$12.4
8	Offset single point on existing 26th	yes	yes	moderate	moderate	yes	B/C	16/23	750	0	950	no	0	0	0	0	1.58	0.46	0	0.79	5.23	sidewalk on both sides of 26th	$17.6	$7.9	$25.5
9a	West side diamond with detached ramps w/o NE ramp	yes	yes	NI	moderate	yes	C/C	28/31	700	0	230	no	9	0	0	0	0.04	0	0	0.06	1.64	sidewalk on both sides of 26th	$5.3	$5.7	$11.0
9b	West side diamond with detached ramps with NE ramp	yes	yes	moderate	moderate	yes	C/C	27/26	700	0	230	no	9	0	0	0	0.41	0	0	0.06	3.68	sidewalk on both sides of 26th	$8.2	$6.6	$14.8
10	Roundabouts at ramp terminals	no	yes	NI	good	yes	F/F	NA	450	0	100	no	9	0	0	2	0.54	0	0	0.08	5.87	sidewalk on both sides of 26th	$8.0	$6.7	$14.7
11	Diverging Diamond on 26th Realigned to North	yes	yes	NI	moderate	yes	B/C	22/25	750	0	350	no	0	0	0	0	1.51	0	0	0.03	4.18	sidewalk on both sides of 26th	$11.5	$8.2	$19.7
12	Diamond on 26th Realigned to North	yes	yes	NI	moderate	yes	C/C	29/29	900	0	350	no	0	0	0	0	1.30	0	0	0.04	4.00	sidewalk on both sides of 26th	$13.5	$8.2	$21.7
NB	No-build	no	no	poor	NA	NA	F/F	4,251/267	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0	sidewalk on north side of 26th	NA	NA	NA

NI: Not Included in initial survey

Options recommended for elimination from further evaluation and reason(s)

*VISSIM analysis is the only effective way to analyze DDI. All others are HCS analysis

NA: Not Applicable

(1) The canoe launch in Rotary Park is only affected by Options 11 and 12.
(2) Option 8 will affect the bike path in Riverdale Park.
(3) Norlin Park impacts will not affect the bike path.

Construction cost does not include property acquisition costs.

Appendix A

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Attachment A
Interchange Options 1 to 12

Appendix A

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Concept Option 1a

Single Point on Realigned 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 1a

8/8/2013

Concept Option 1b

Single Point on Existing 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 1b

8/8/2013

Concept Option 2

Tight Diamond on Realigned 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 2

3/20/14

Concept Option 3a

Diverging Diamond on Realigned 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3a

8/8/2013

Concept Option 3b

Diverging Diamond on Realigned 26th Street with Angled Bridge Section

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3b

8/8/2013

Concept Option 4

Tight Diamond on Existing 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 4

3/20/14

Concept Option 5a

West Side Diamond Adjacent Ramps on Existing 26th Street w/o NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 5a

3/20/14

Concept Option 5b

West Side Diamond Adjacent Ramps on Existing 26th Street with NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 5b

3/20/14

Concept Option 6a

Diverging Diamond on Existing 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 6a

8/8/2013

Concept Option 6b

Diverging Diamond on Existing 26th Street with Angled Bridge Section

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 6b

8/8/2013

Appendix A

Concept Option 7a

West Side Folded Diamond on Existing 26th Street w/o NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 7a

3/20/14

Appendix A

Concept Option 7b

West Side Folded Diamond on Existing 26th Street with NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 7b

3/20/14

Concept Option 7c

West Side Folded Diamond on Existing 26th Street w/o Yeager Road and w/o NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 7c

3/20/14

Cost and Impact Summary

Construction Cost: $12.4 Million
Rotary Park Impact: 0.44 acres
Norlin Park Impact: 0.00 acres
Wetland Impact: 0.04 acres
Floodplain Impact: 2.97 acres
Total Residential Acquisitions: 1
Partial Residential Acquisitions: 0
Total Commercial Acquisitions: 0
Partial Commercial Acquisitions: 0

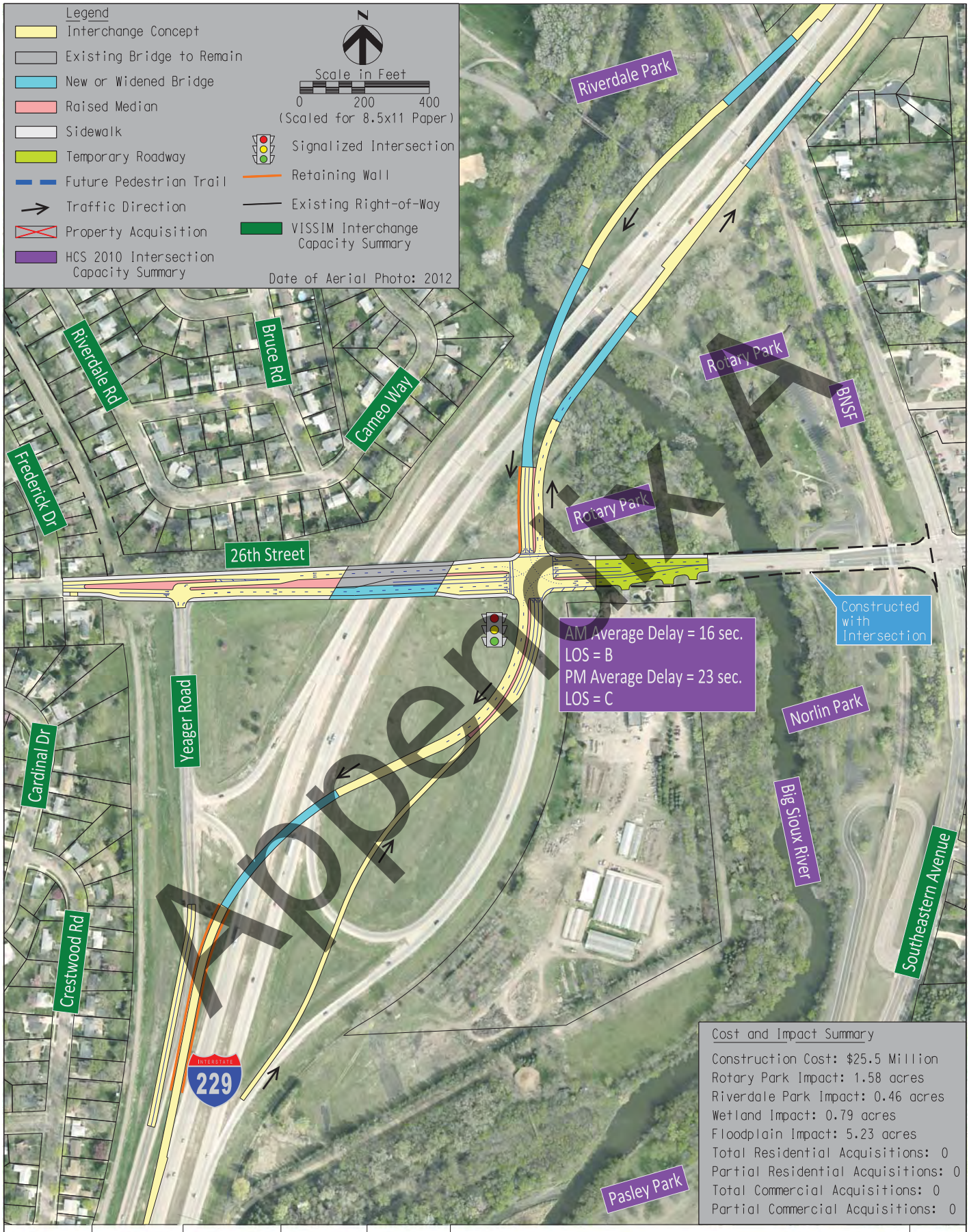
Concept Option 7d

West Side Folded Diamond on Existing 26th Street with NE Ramp and w/o Yeager Road

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 7d

3/20/14



Concept Option 8

Offset Single Point on Existing 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 8

8/8/2013

Appendix A

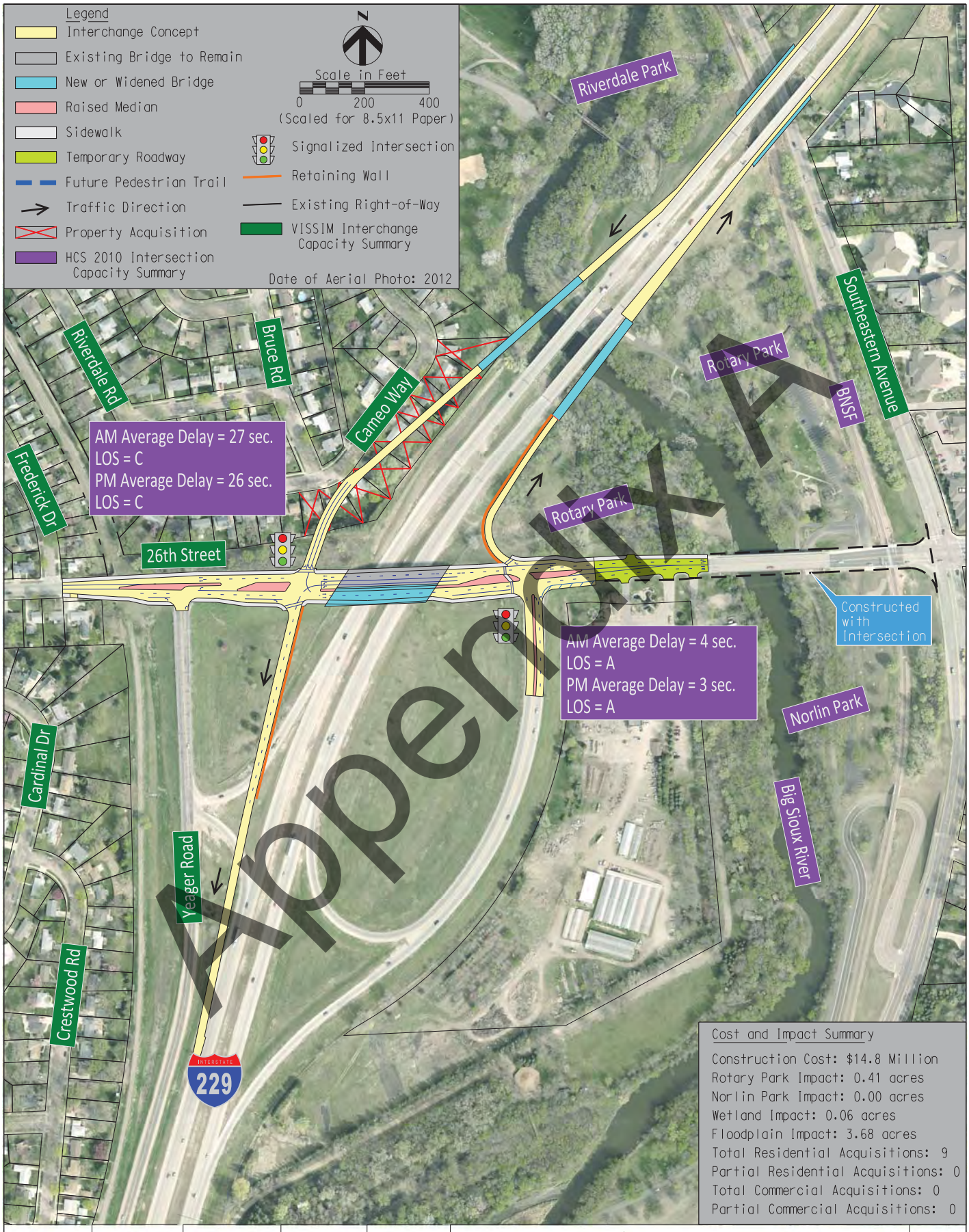
Concept Option 9a

West Side Diamond with Detached Ramps w/o NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 9a

3/20/14



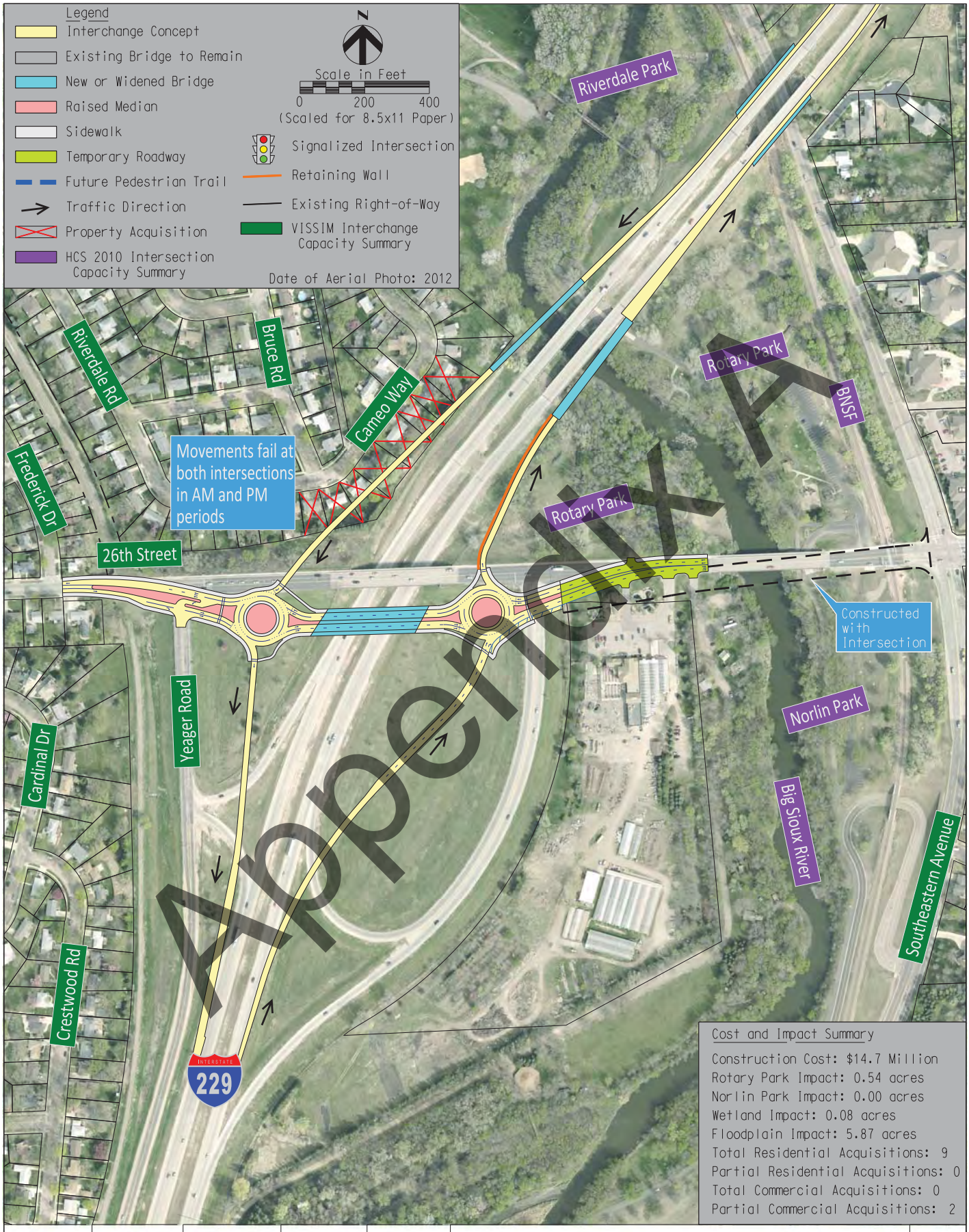
Concept Option 9b

West Side Diamond with Detached Ramps and with NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 9b

3/20/14



Concept Option 10

Roundabouts at Ramp Terminals

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 10

8/8/2013

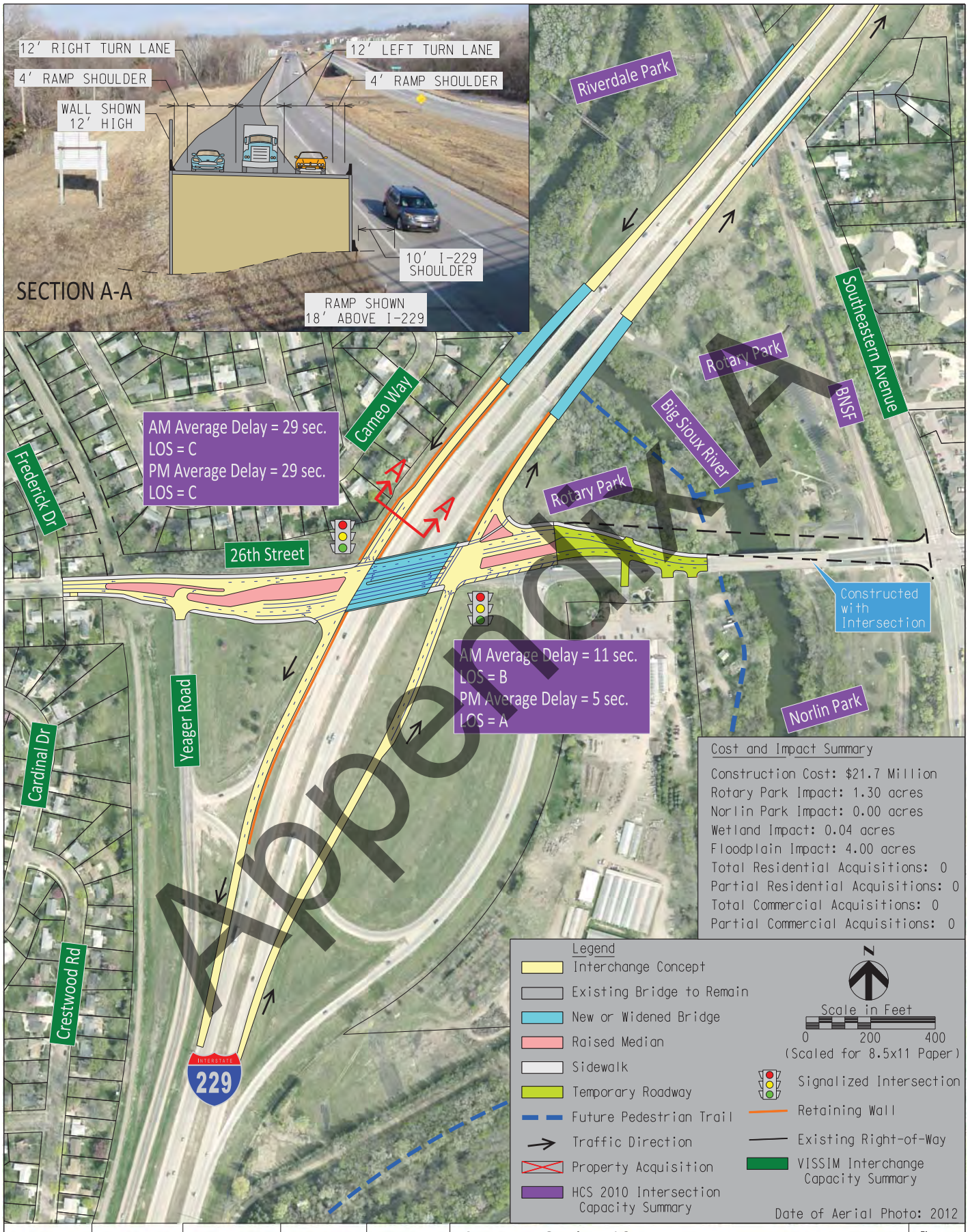
Concept Option 11

Diverging Diamond on 26th Street Realigned to the North

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 11

8/8/2013



Appendix A

Concept Option 12

Tight Diamond on 26th Street Realigned to the North

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 12

3/20/14

Attachment B
Park Impact Figures

Appendix A

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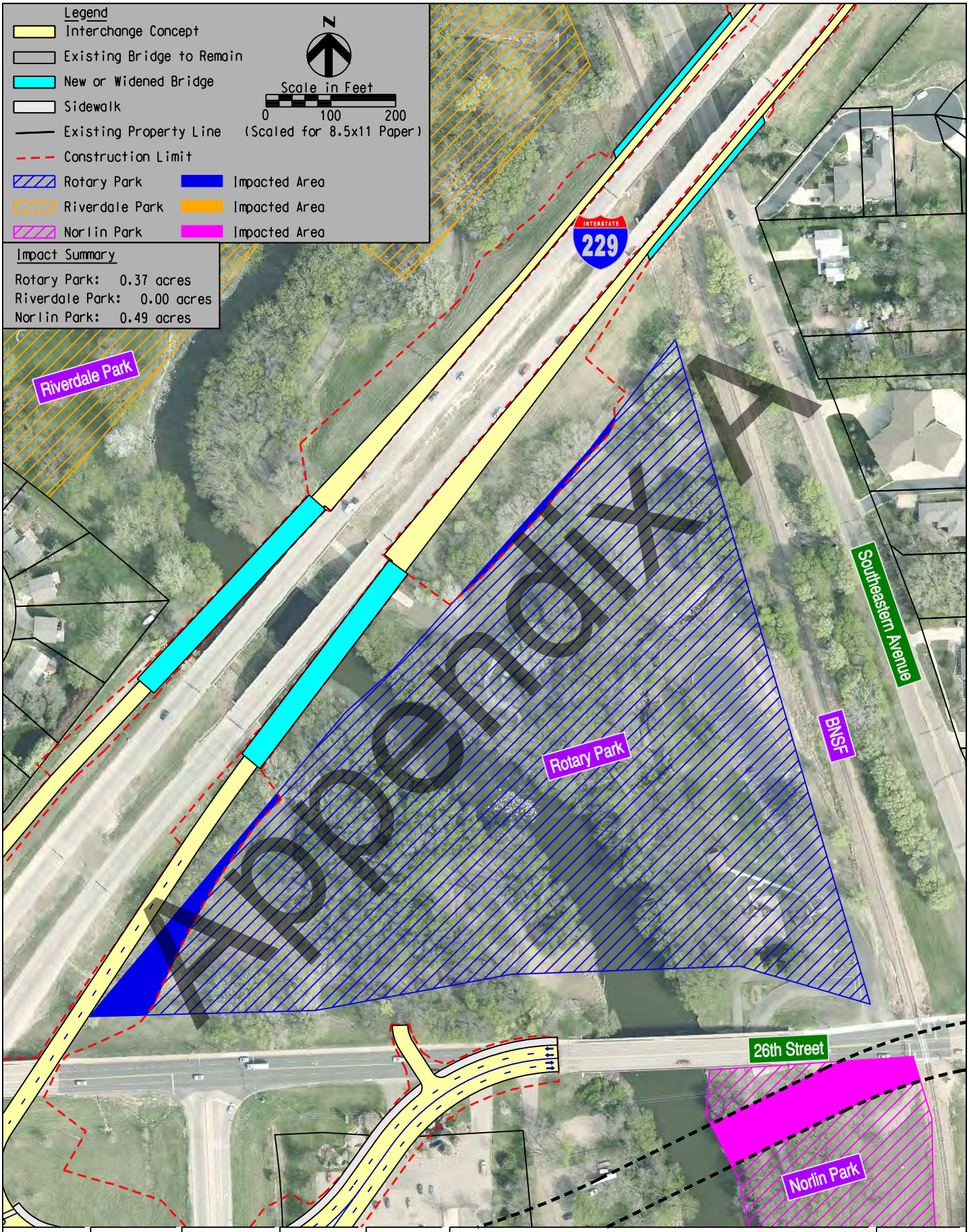


Concept Option 1a - Park Impacts

Single Point on Realigned 26th Street

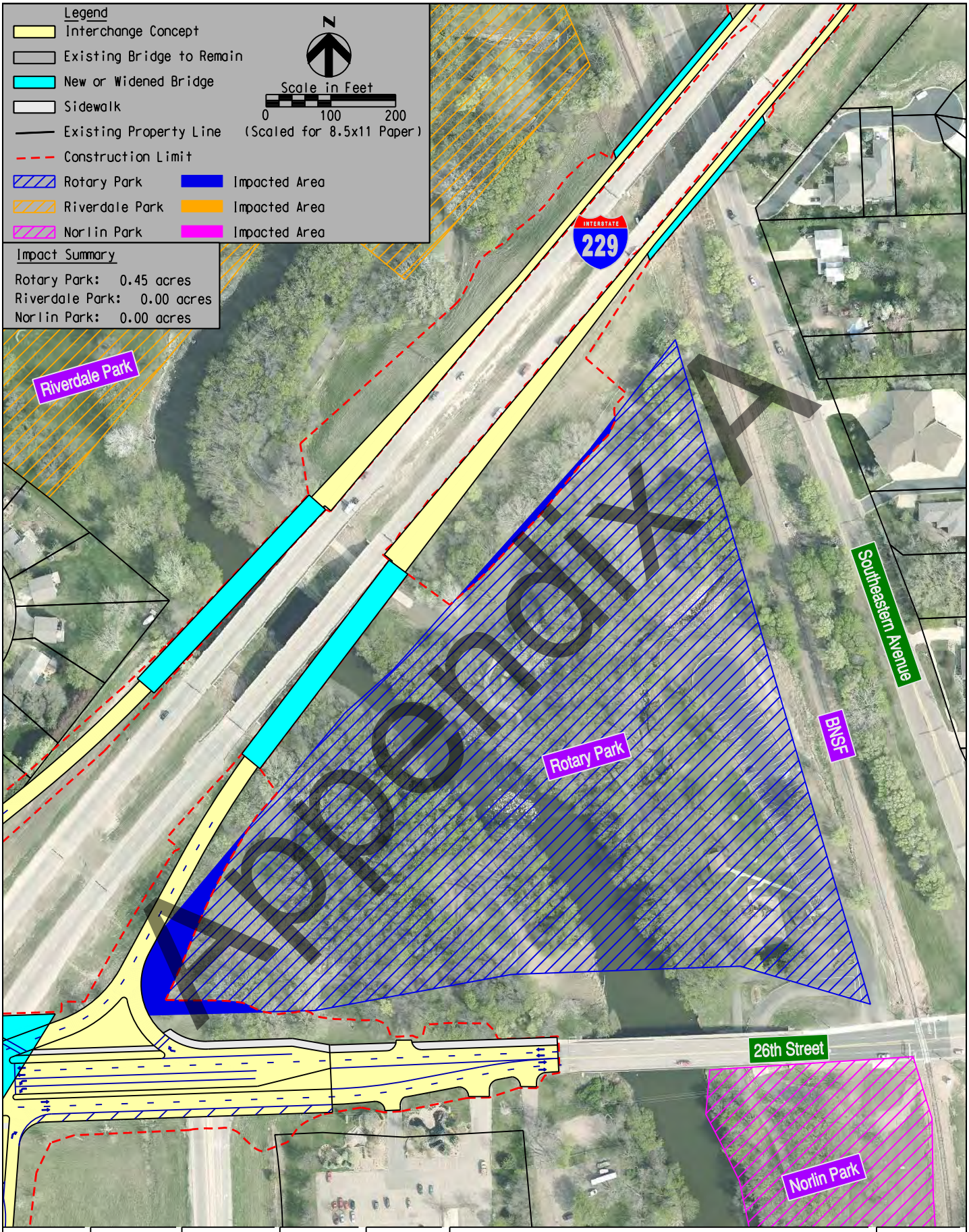
I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure

3.1.1a

8/8/2013



Concept Option 1b - Park Impacts

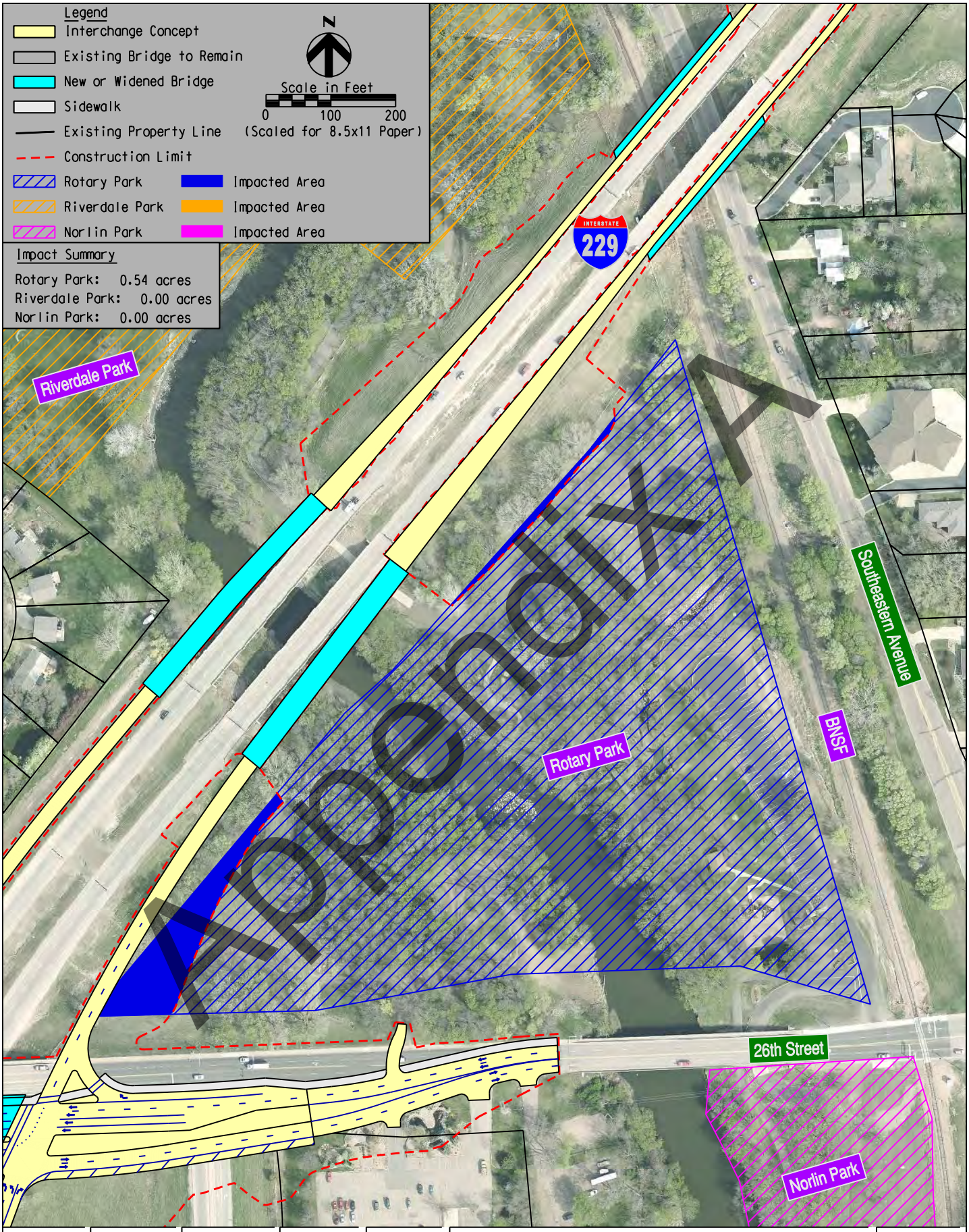
Single Point on Existing 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.2.1b

8/8/2013



Concept Option 2 - Park Impacts

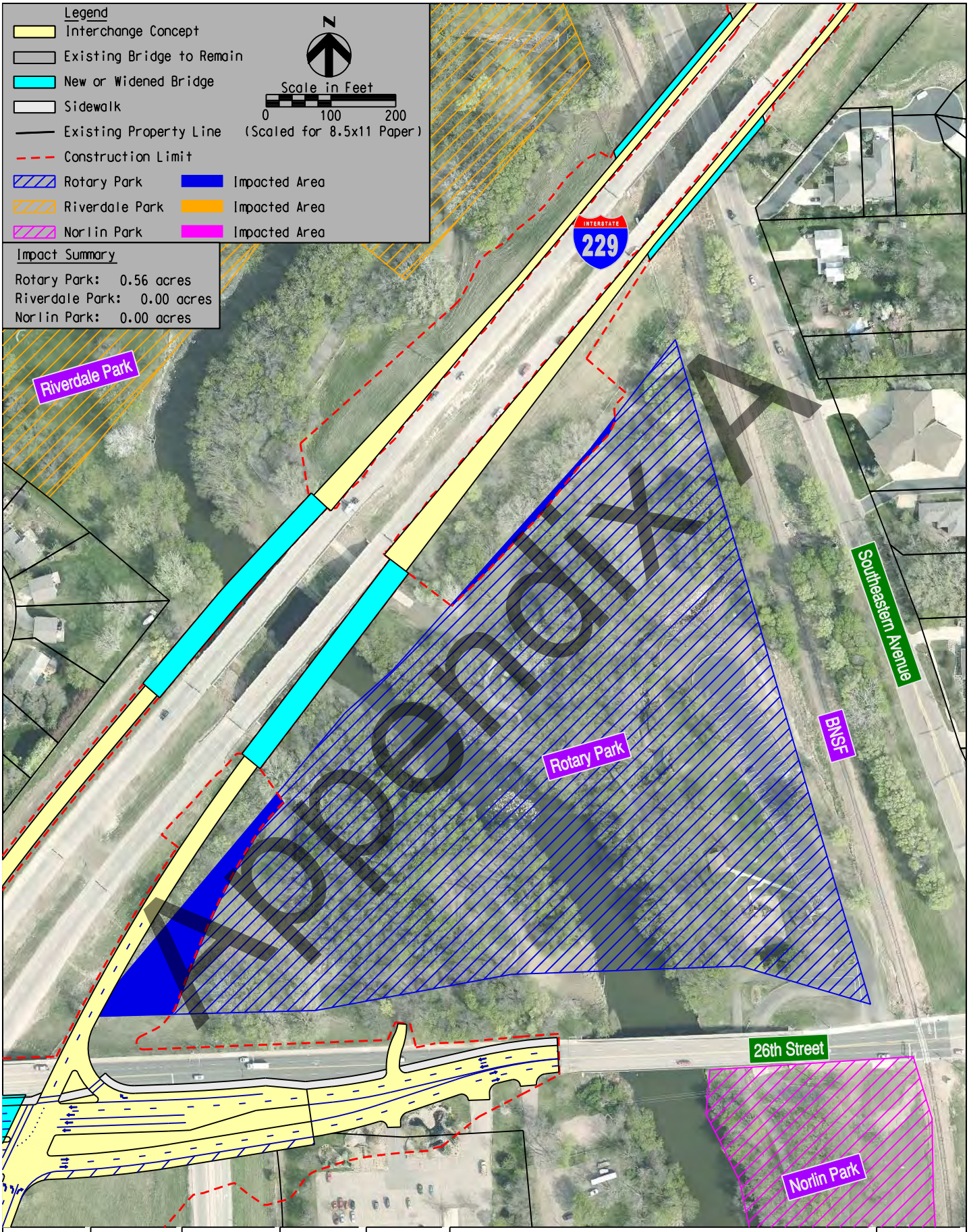
Tight Diamond on Realigned 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.1.2

8/8/2013



Concept Option 3a - Park Impacts

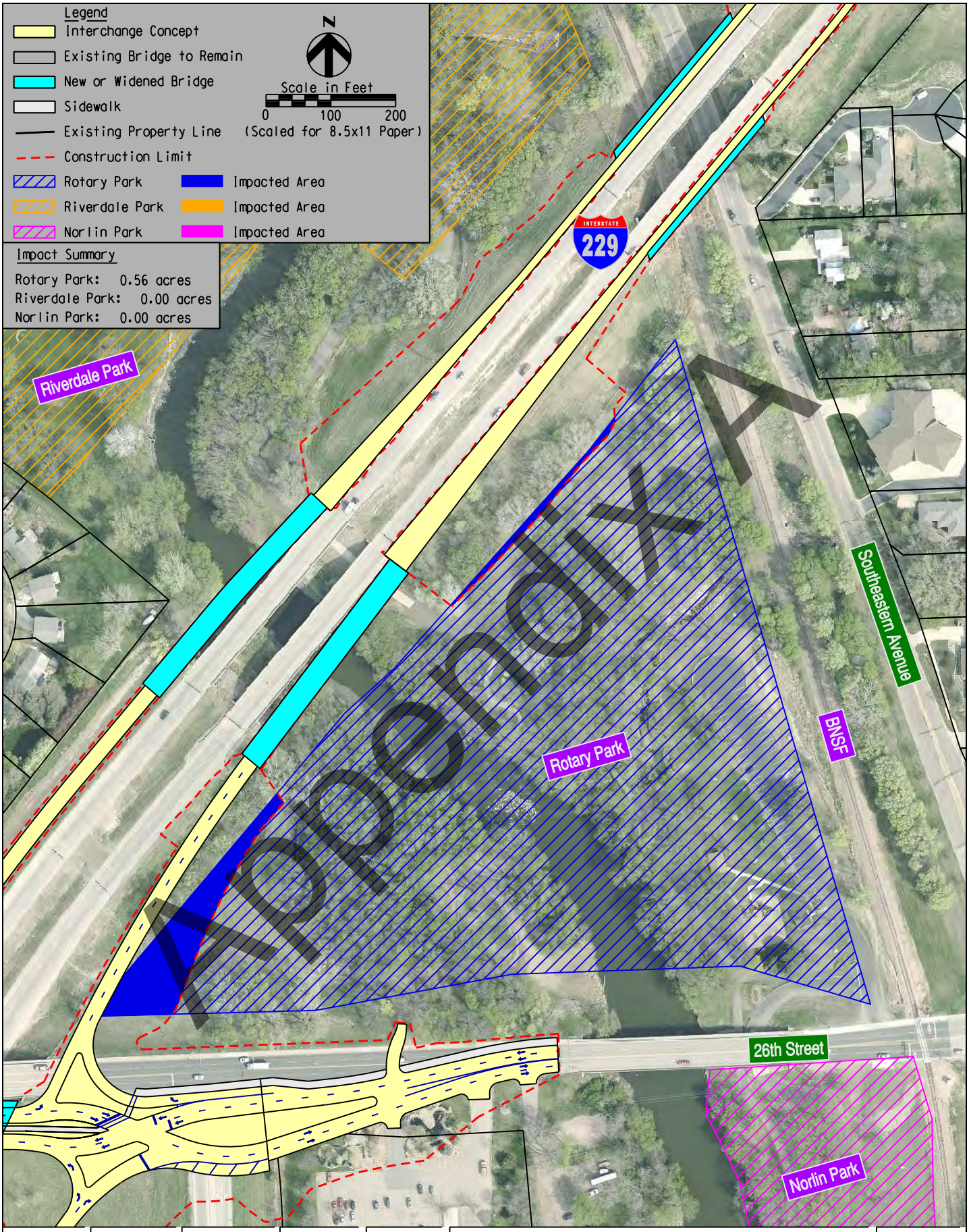
Diverging Diamond on Realigned 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.1.3a

8/8/2013



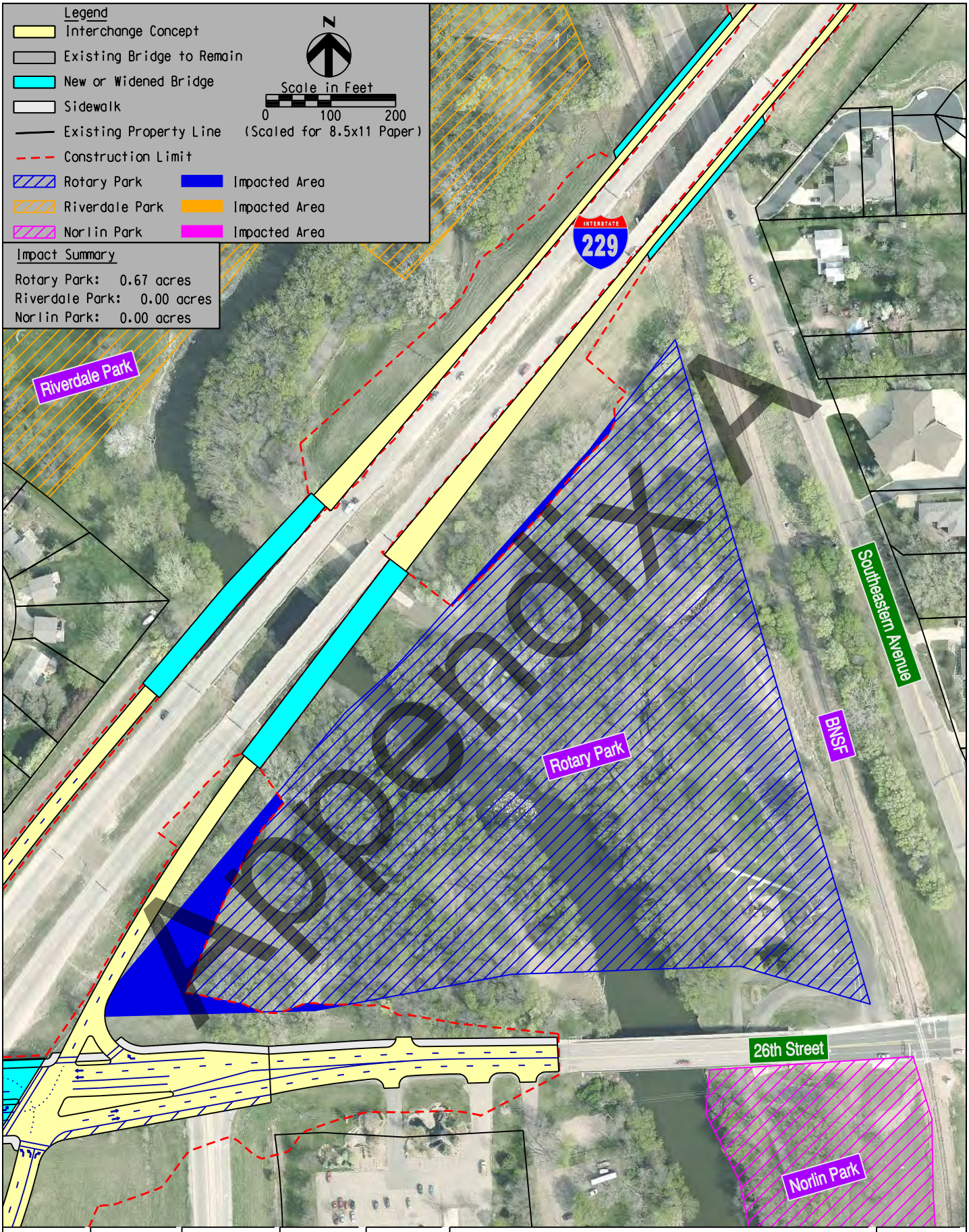
Concept Option 3b - Park Impacts

Diverging Diamond on Realigned 26th St. with Angled Bridge Section

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.3b

8/8/2013



Concept Option 4 - Park Impacts

Tight Diamond on Existing 26th Street

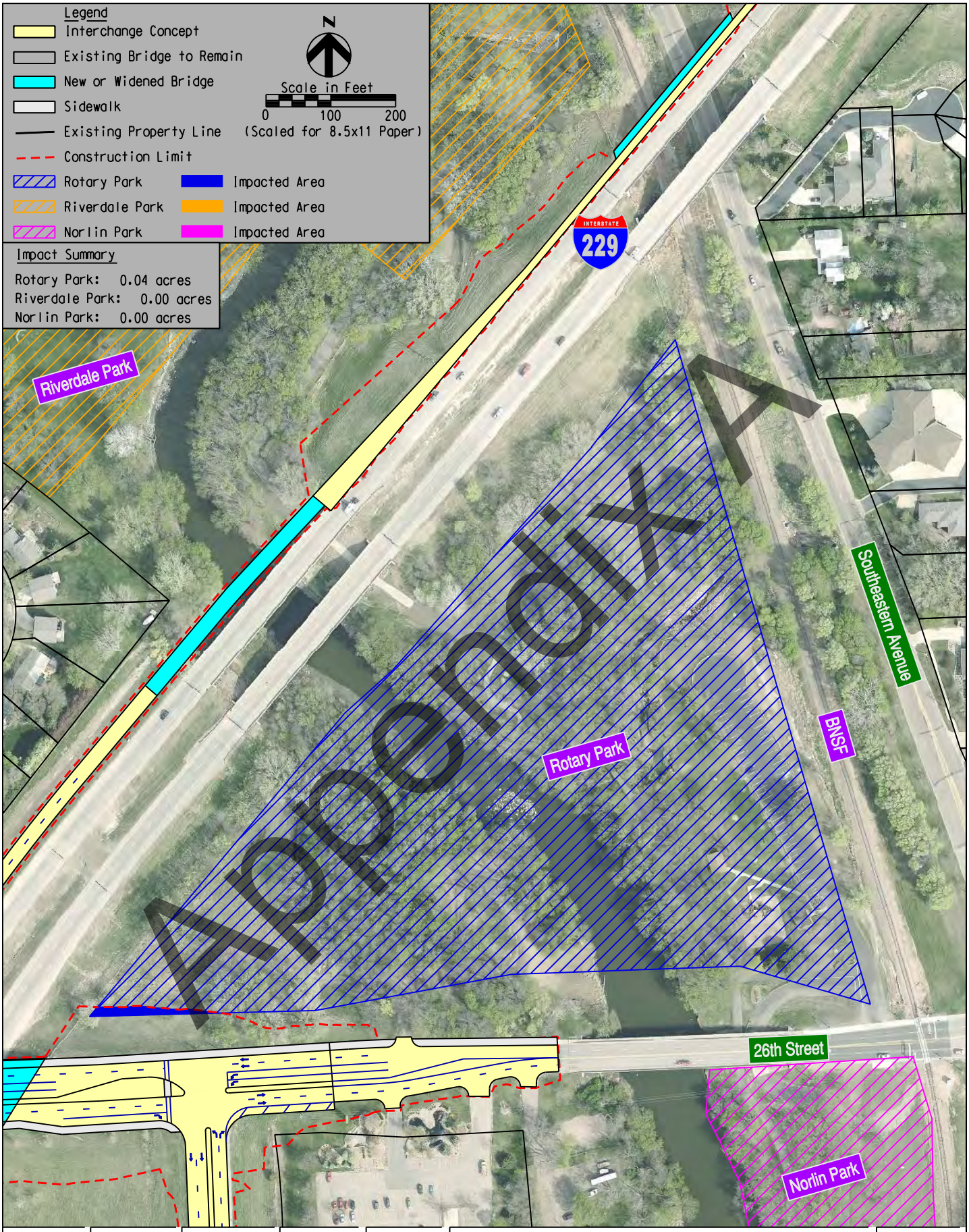
I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure

3.1.4

8/8/2013



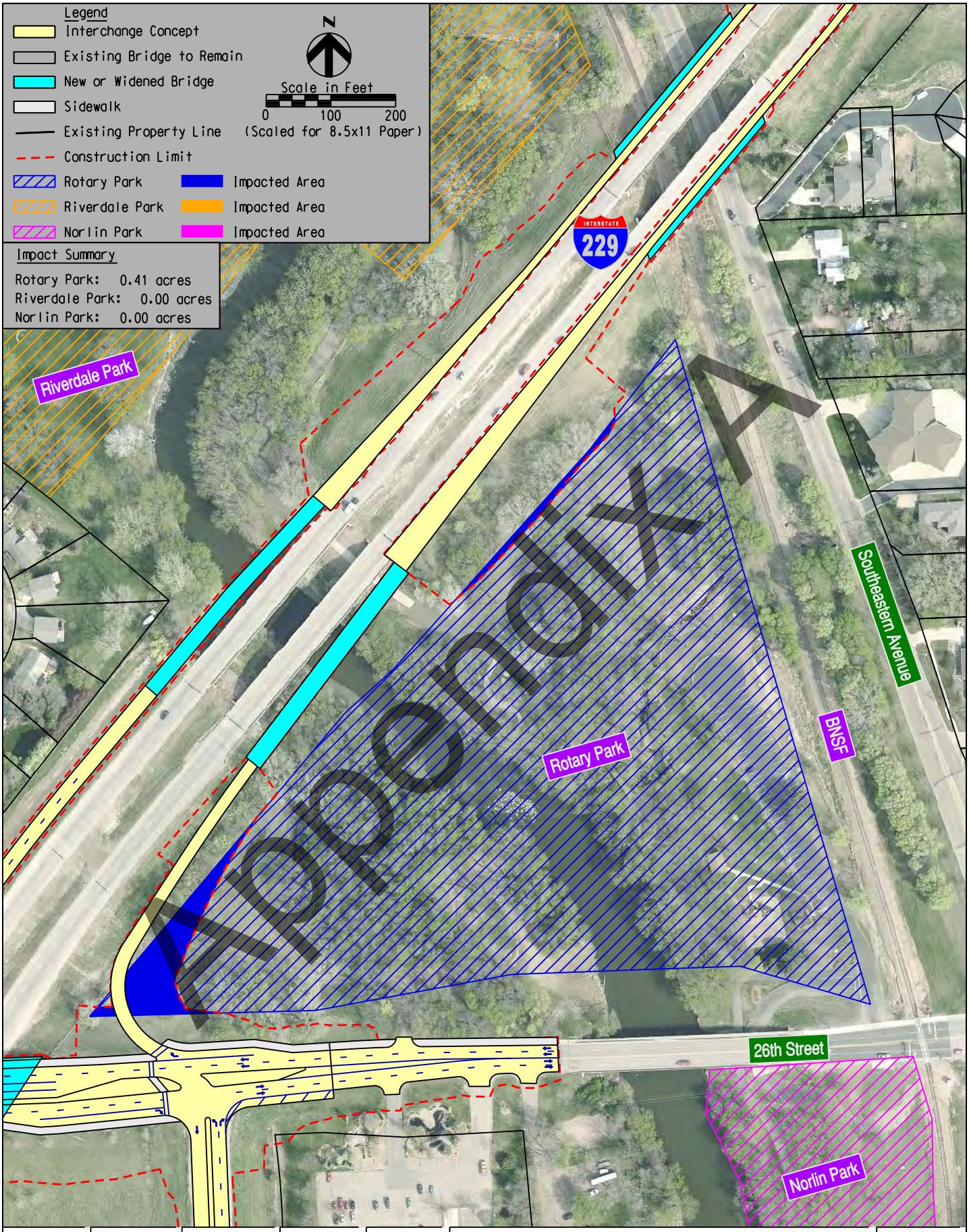
Concept Option 5a - Park Impacts

West Side Diamond Adjacent Ramps on Existing 26th Street w/o NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.5a

8/8/2013



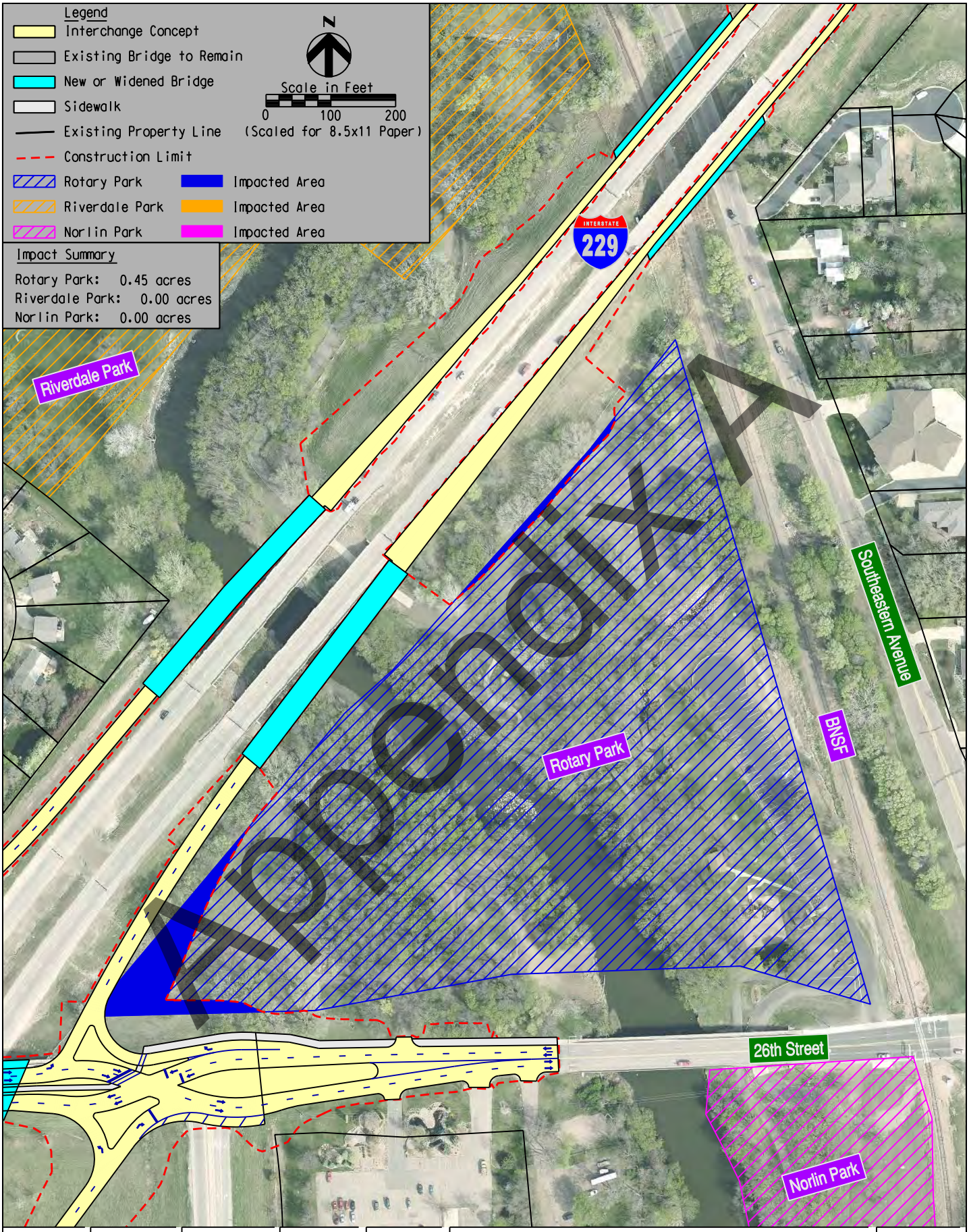
Concept Option 5b - Park Impacts

West Side Diamond Adjacent Ramps on Existing 26th Street with NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.5b

8/8/2013



Concept Option 6a - Park Impacts

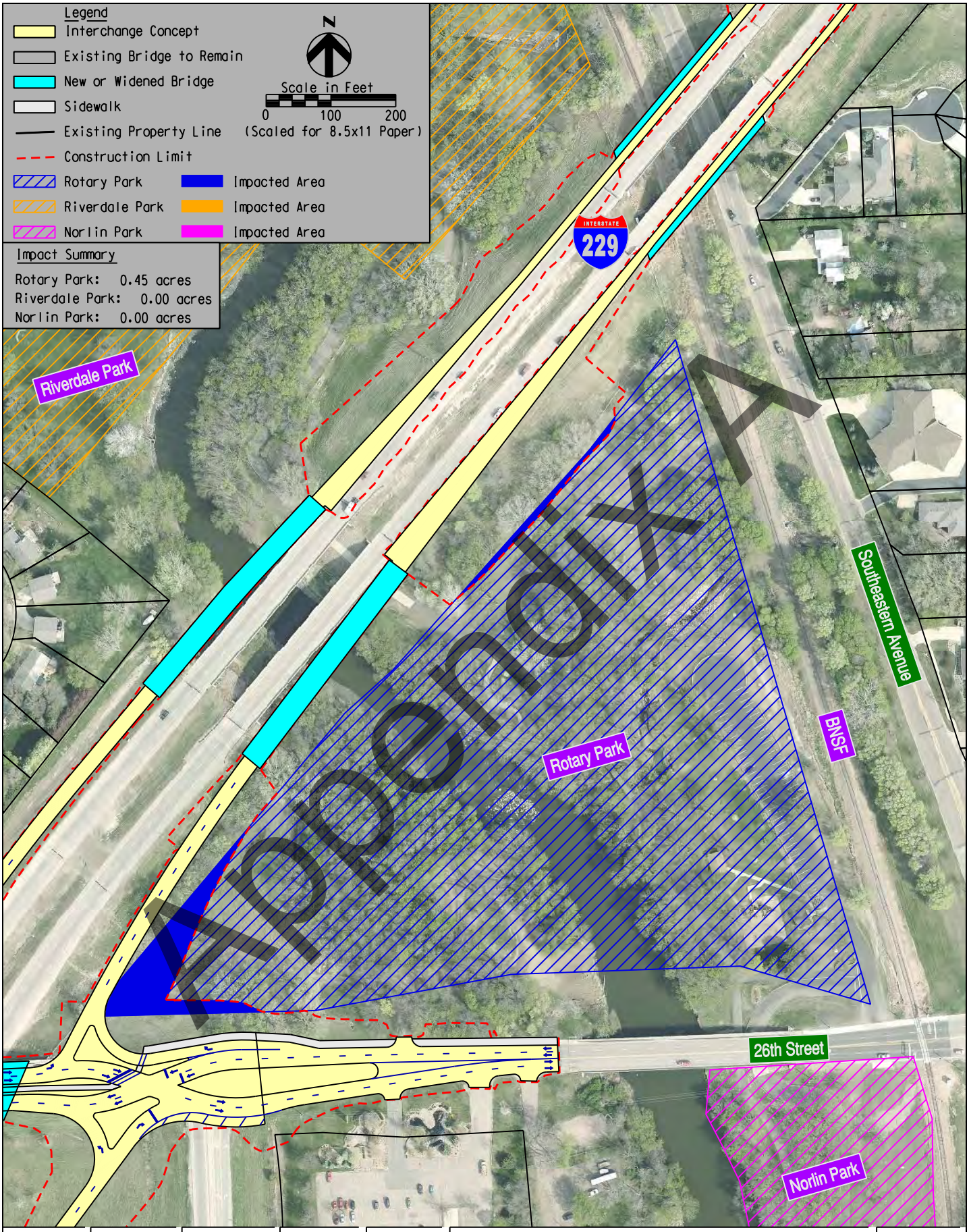
Diverging Diamond on Existing 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.1.6a

8/8/2013



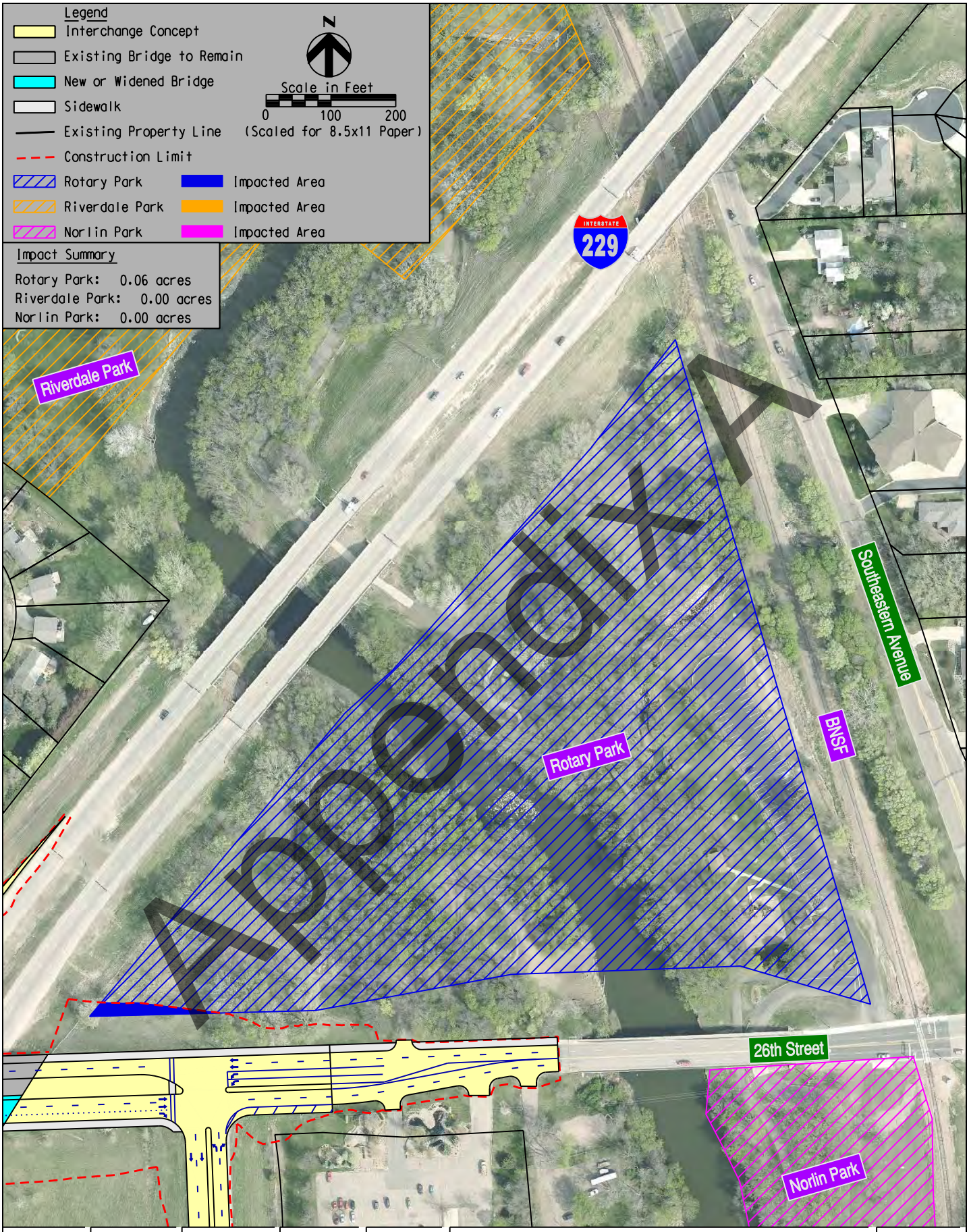
Concept Option 6b - Park Impacts

Diverging Diamond on Existing 26th St. with Angled Bridge Section

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.6b

8/8/2013



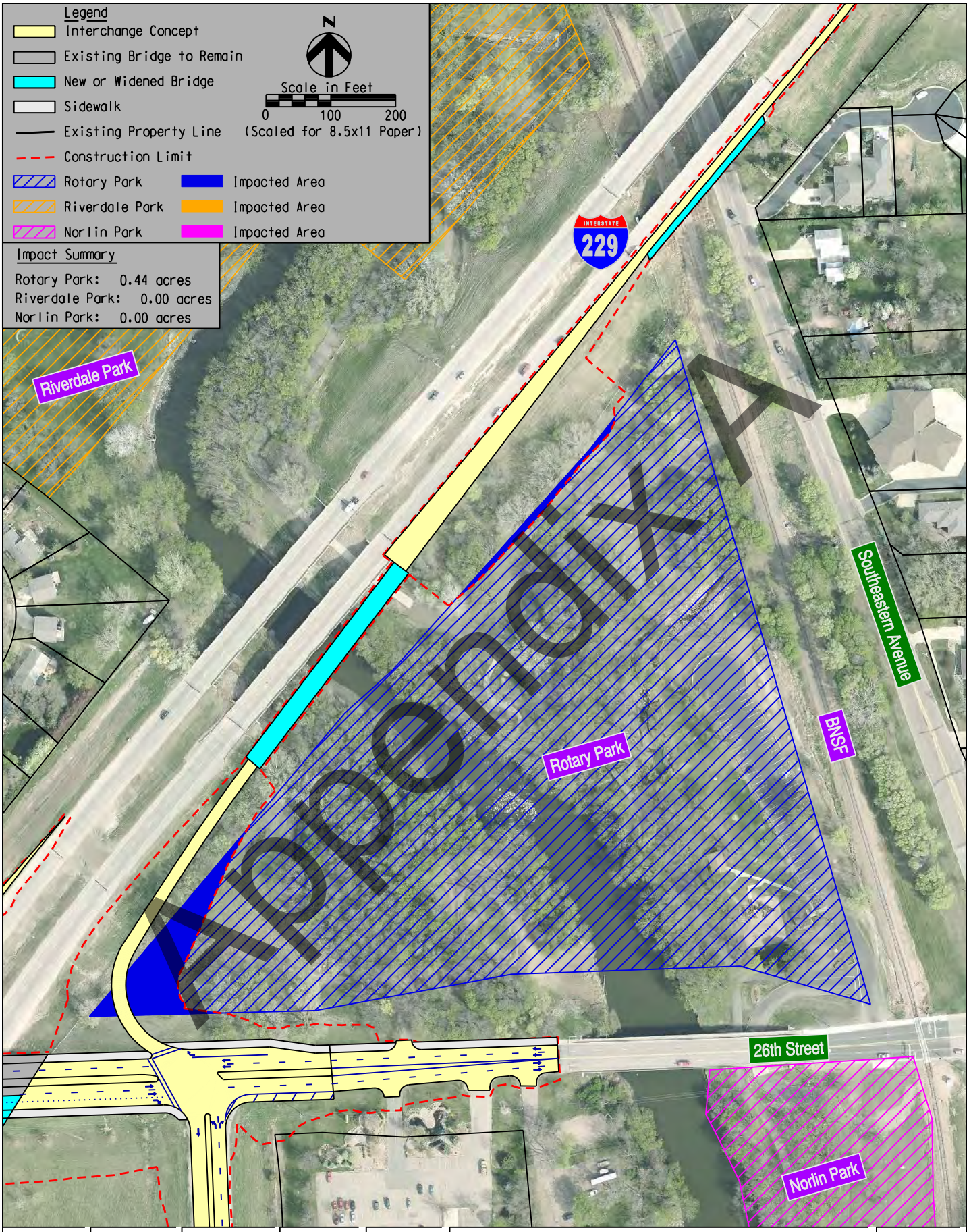
Concept Option 7a - Park Impacts

West Side Folded Diamond on Existing 26th Street w/o NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.7a

8/8/2013



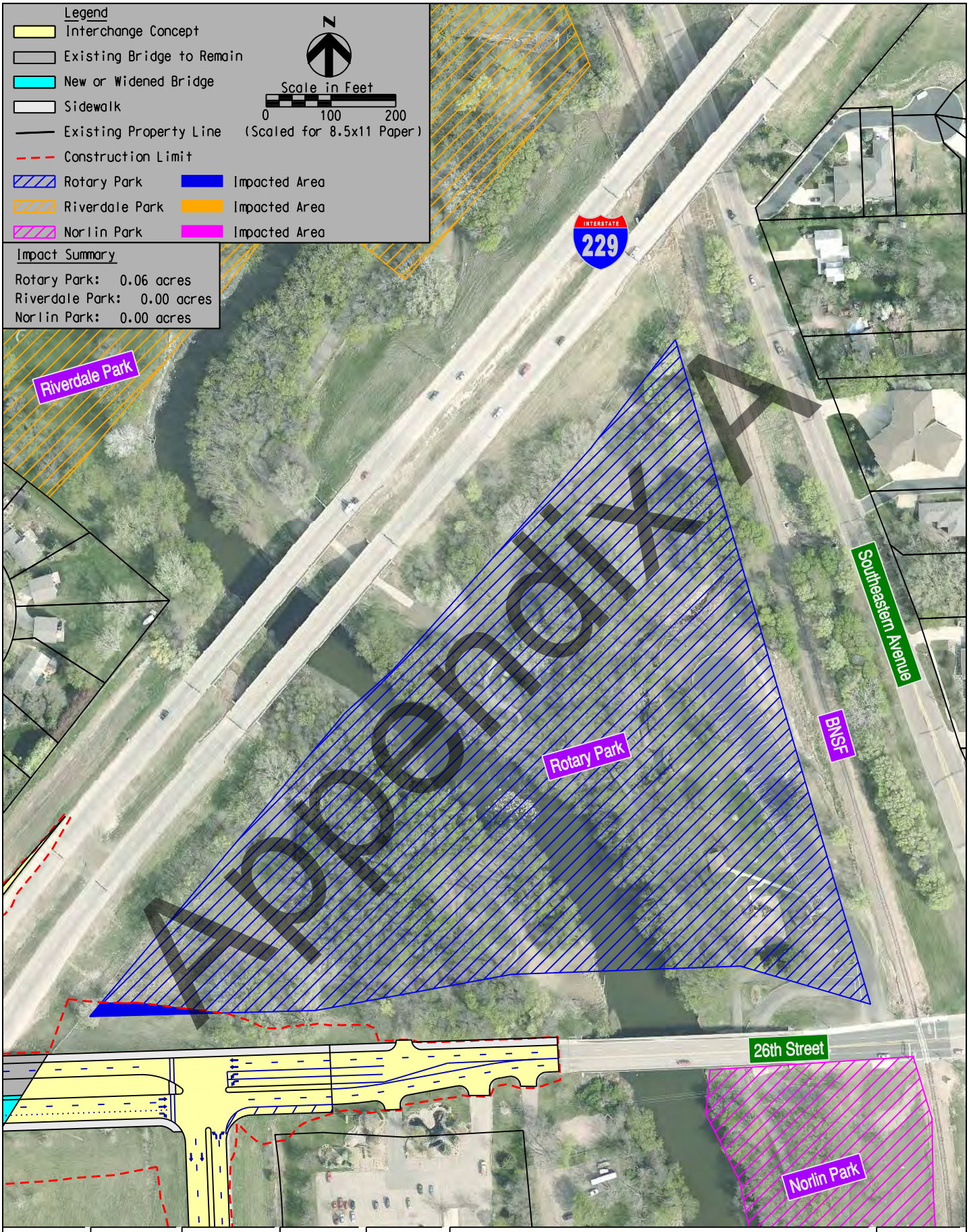
Concept Option 7b - Park Impacts

West Side Folded Diamond on Existing 26th Street with NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.7b

8/8/2013



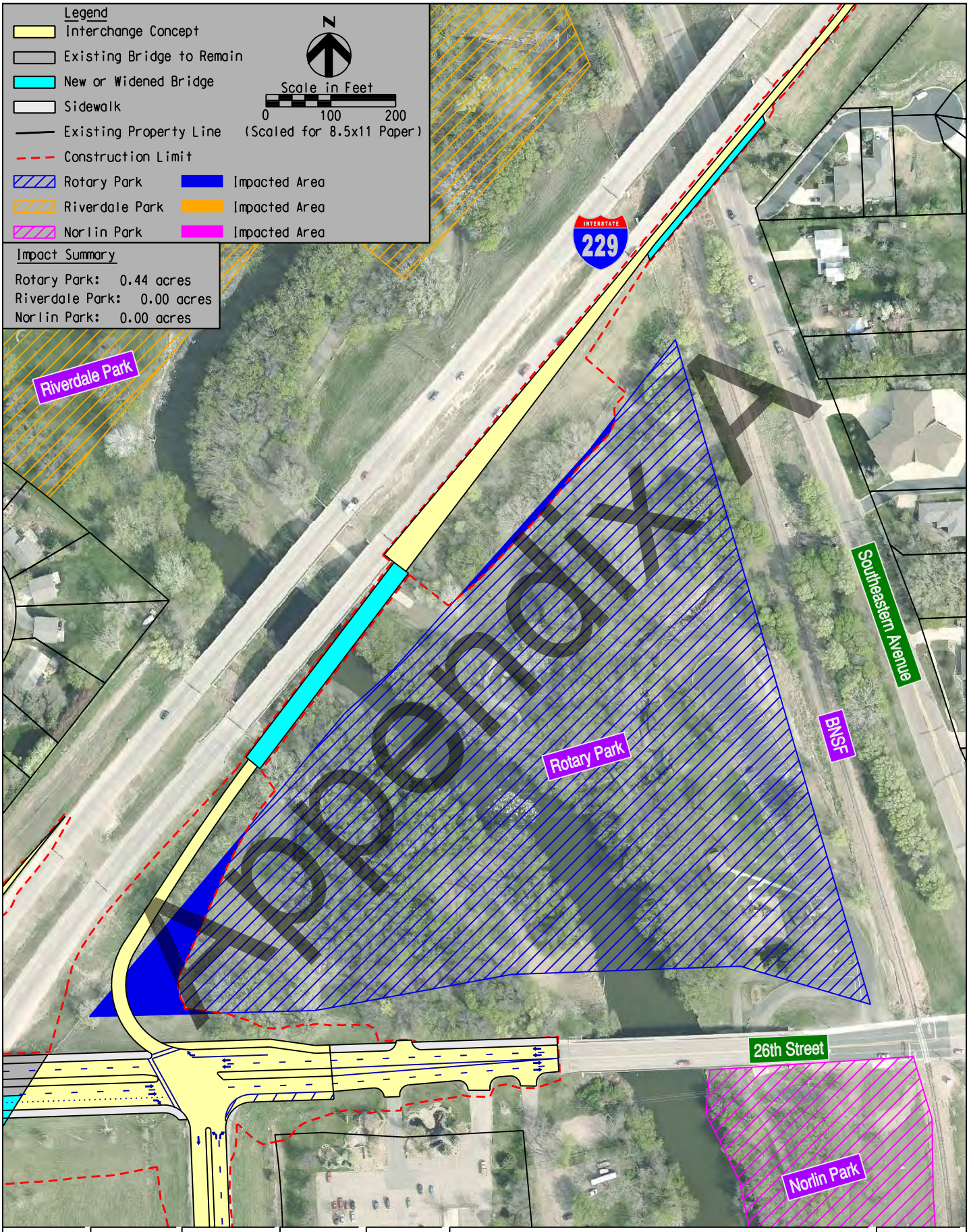
Concept Option 7c - Park Impacts

West Side Folded Diamond on Existing 26th Street w/o Yeager Road and w/o NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.7c

8/8/2013



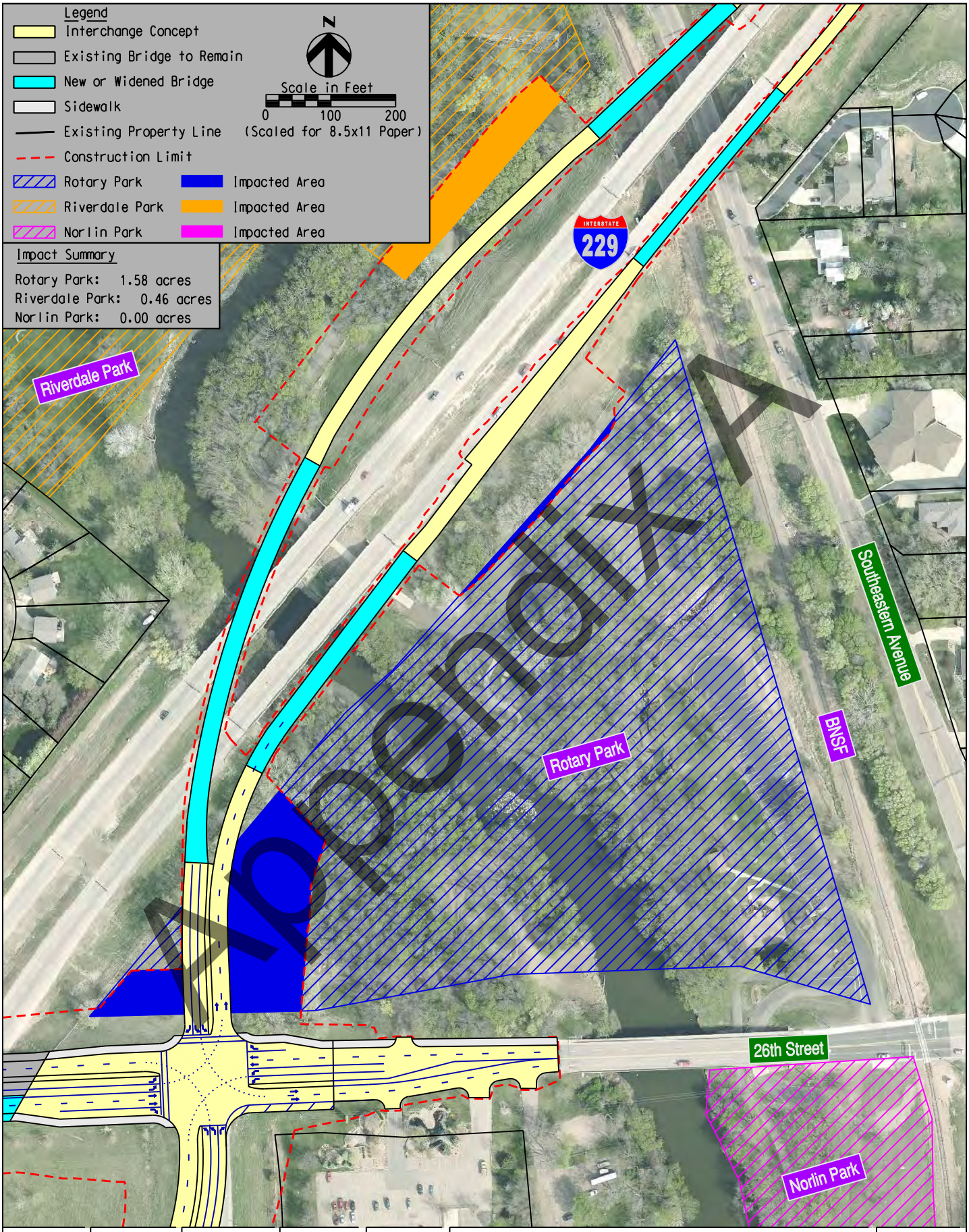
Concept Option 7d - Park Impacts

West Side Folded Diamond on Existing 26th Street with NE Ramp and w/o Yeager Road

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.7d

8/8/2013



Concept Option 8 - Park Impacts

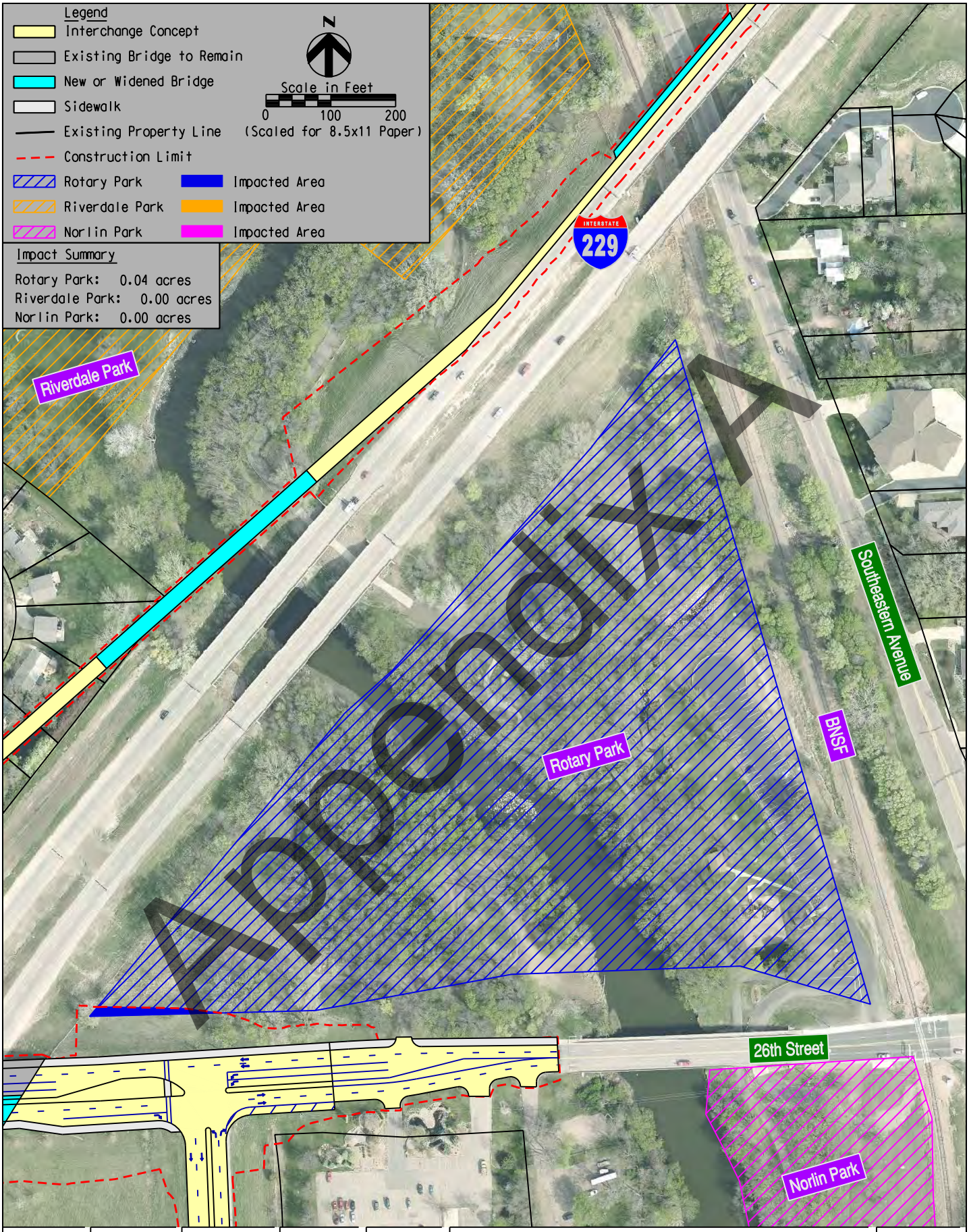
Offset Single Point on Existing 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.1.8

8/8/2013



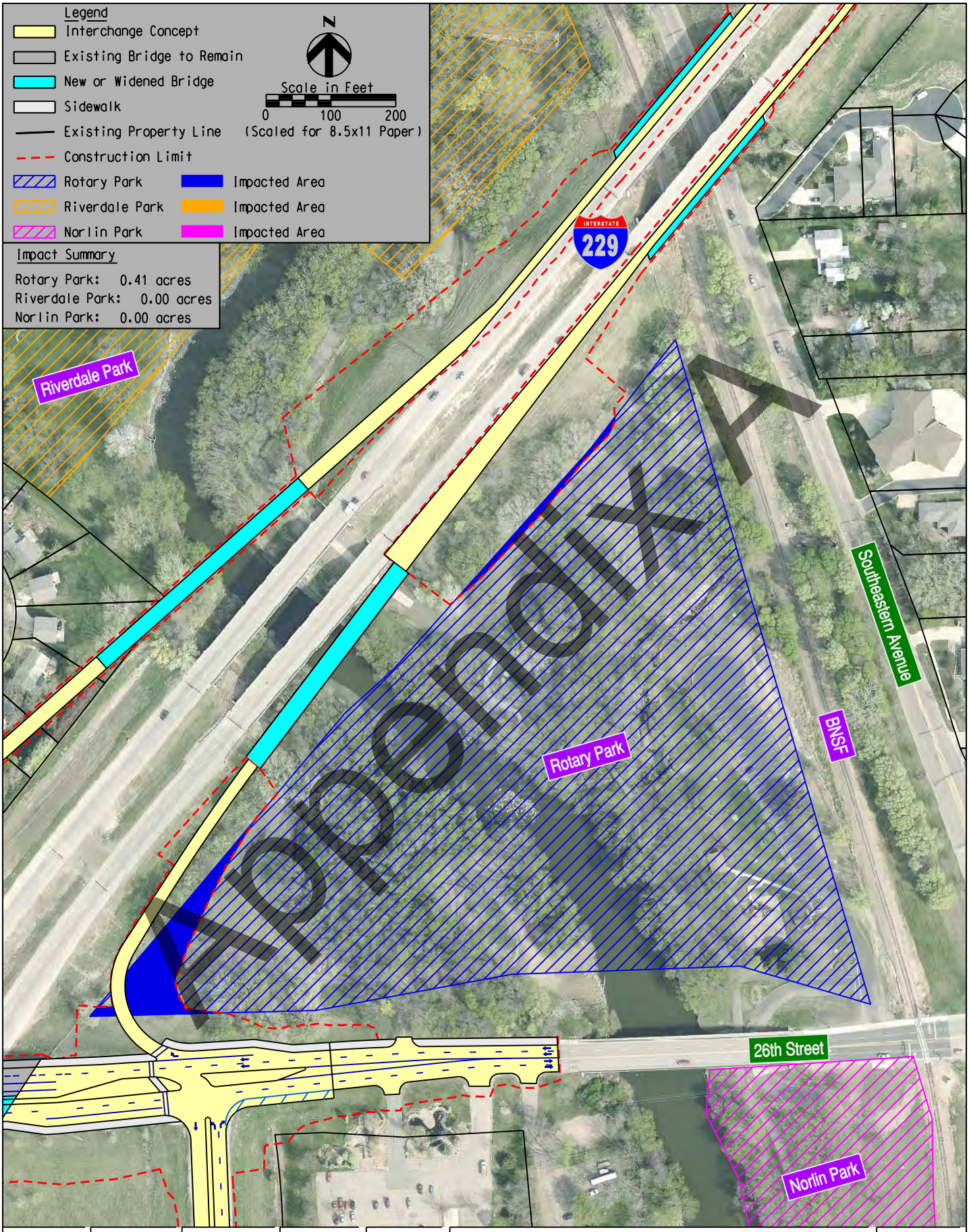
Concept Option 9a - Park Impacts

West Side Diamond with Detached Ramps w/o NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study Sioux Falls, SD

Figure 3.1.9a

8/8/2013



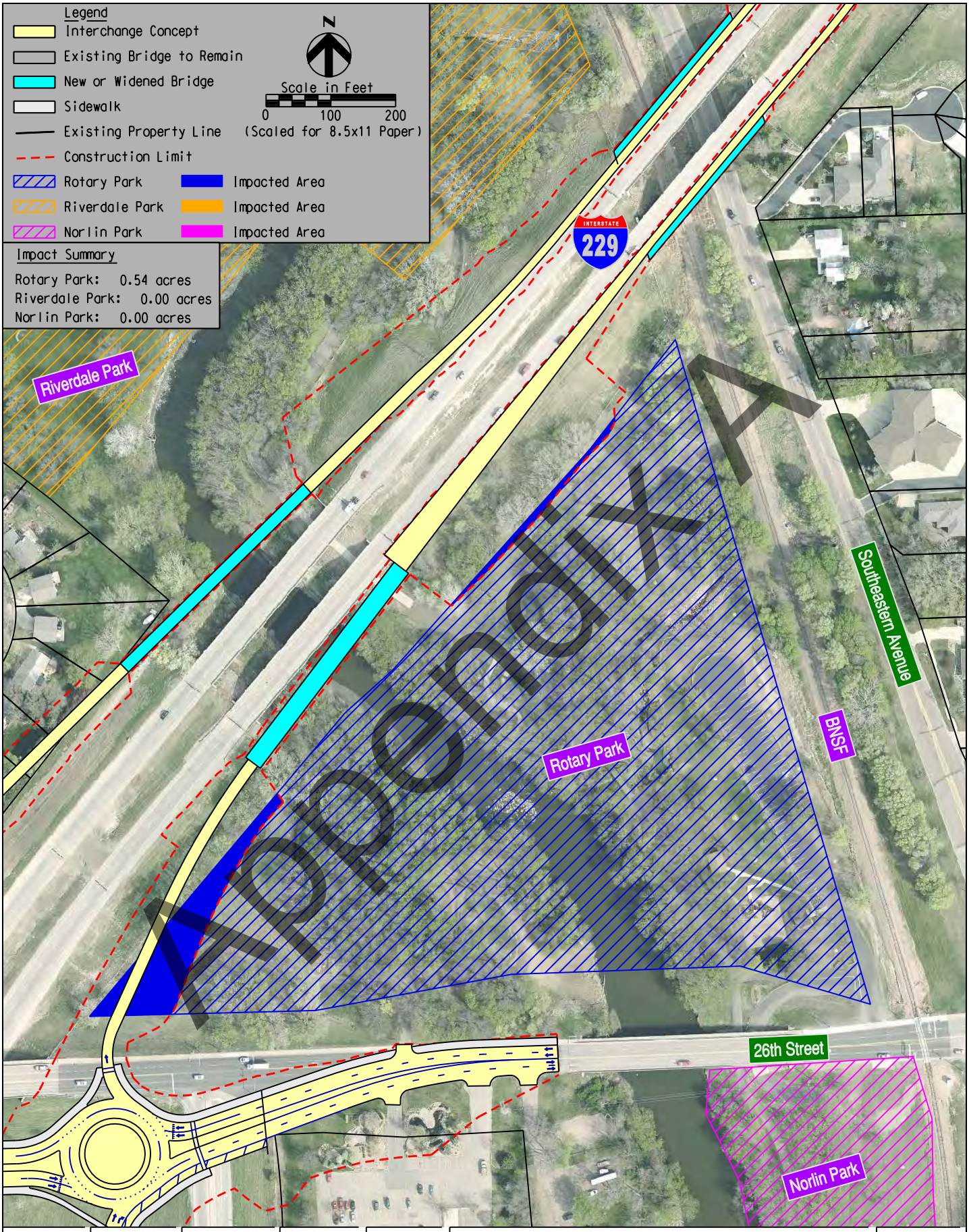
Concept Option 9b - Park Impacts

West Side Diamond with Detached Ramps and with NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.9b

8/8/2013



Concept Option 10 - Park Impacts

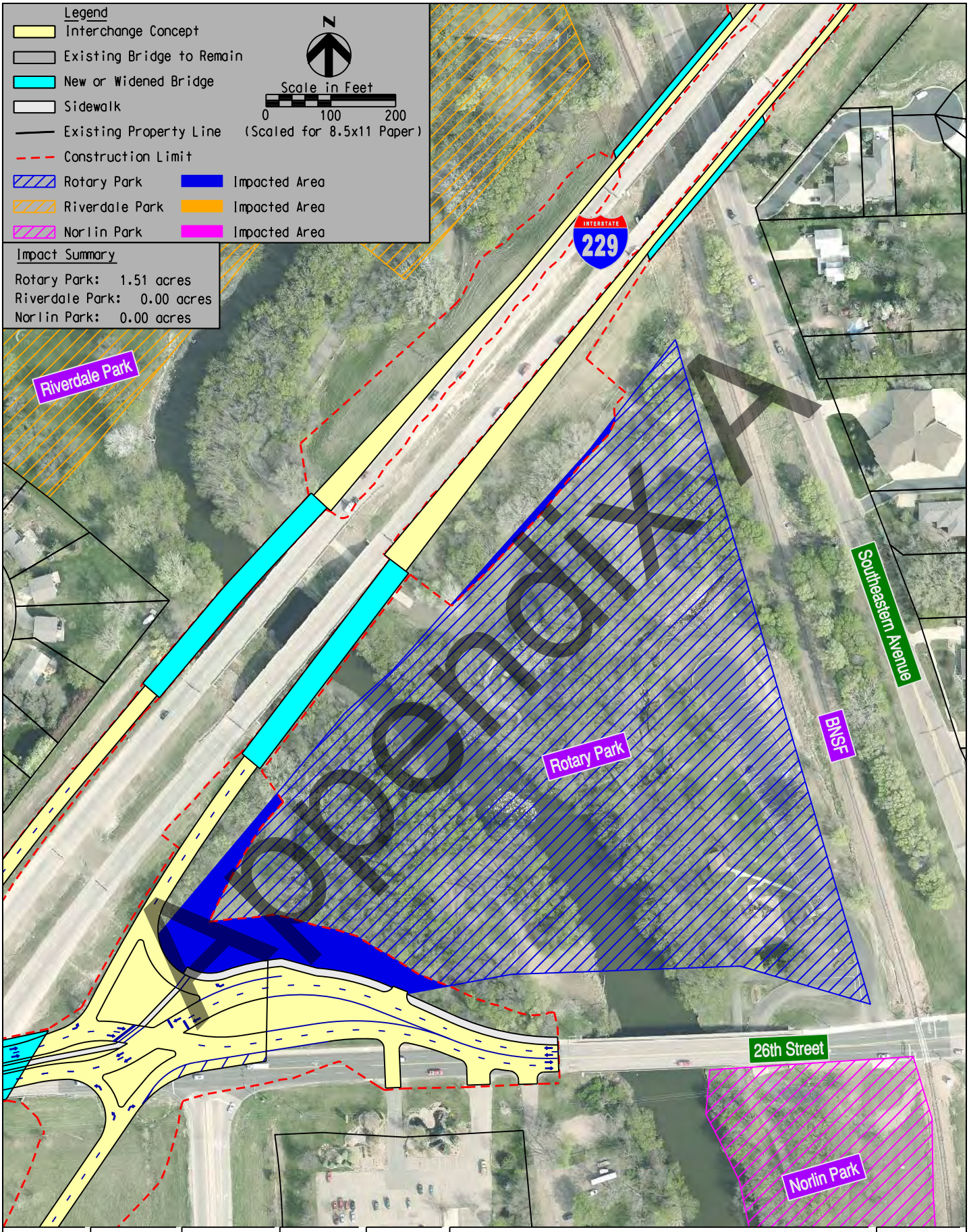
Roundabouts at Ramp Terminals

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.1.10

8/8/2013



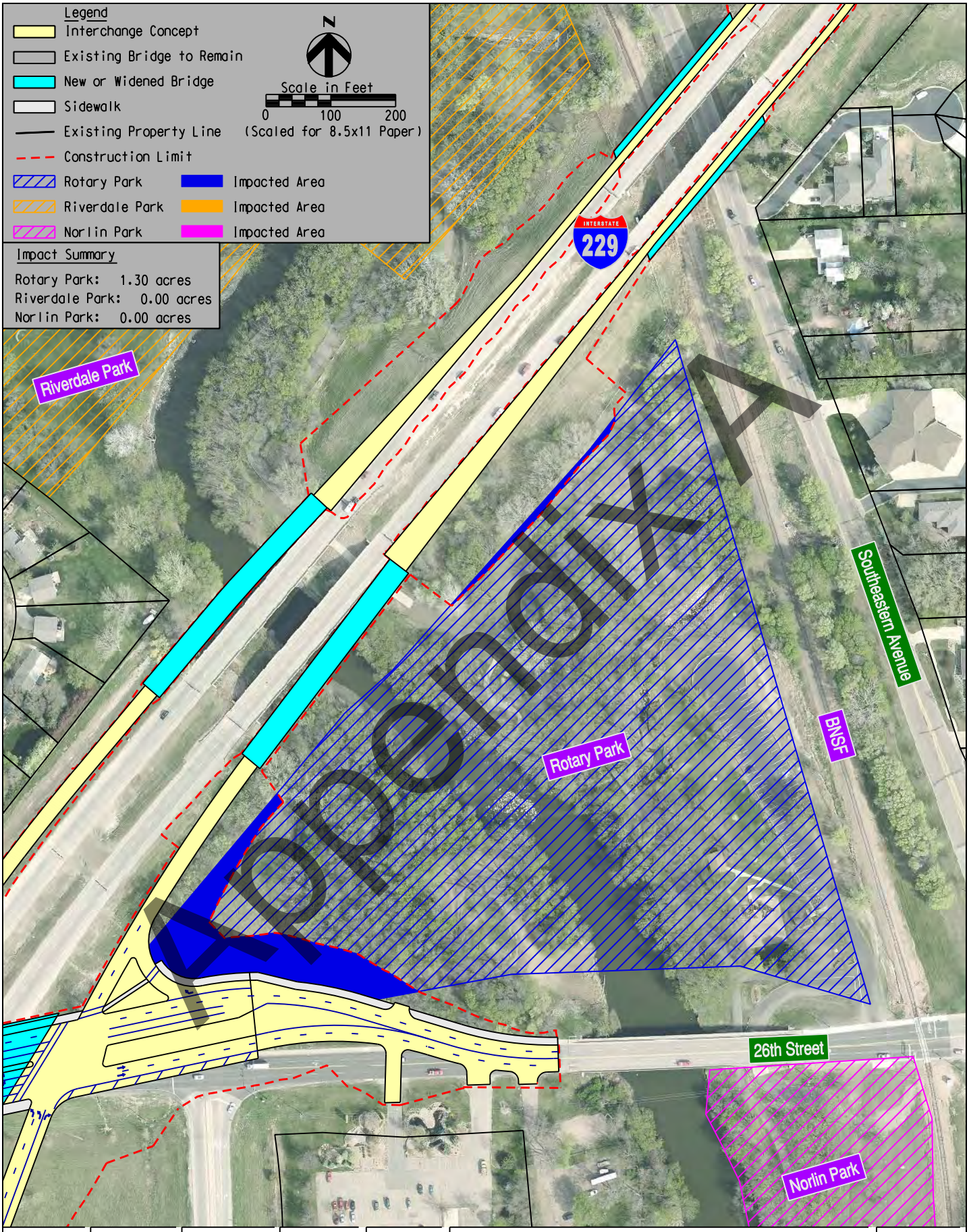
Concept Option 11 - Park Impacts

Diverging Diamond on 26th Street Realigned to the North

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.11

8/8/2013



Concept Option 12 - Park Impacts

Tight Diamond on 26th Street Realigned to the North

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.12

8/8/2013

Attachment C
Floodplain and Wetland Impact Figures

Appendix A

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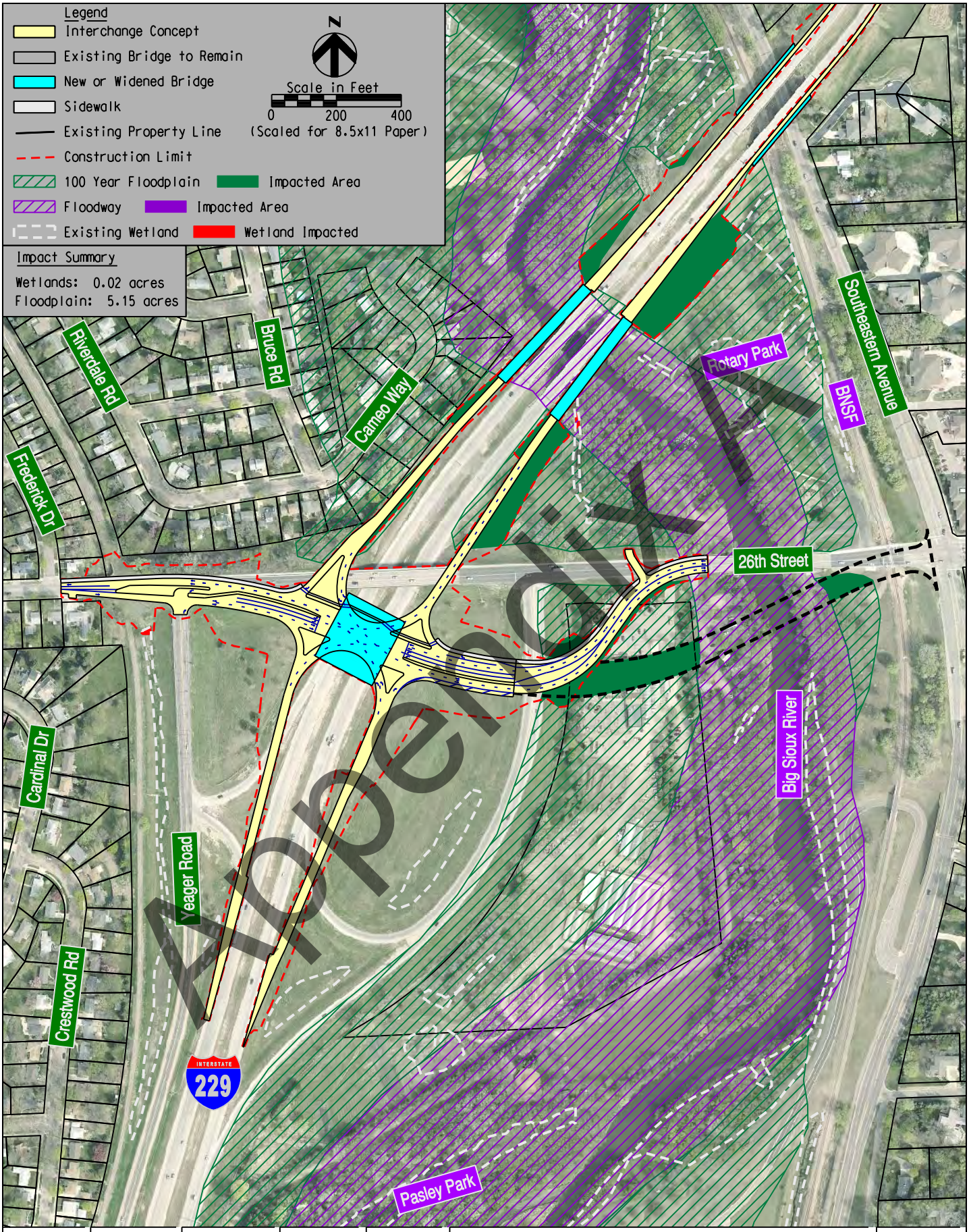


Concept Option 1a - Floodplain, Wetland Impacts

Single Point on Realigned 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.1a

8/8/2013

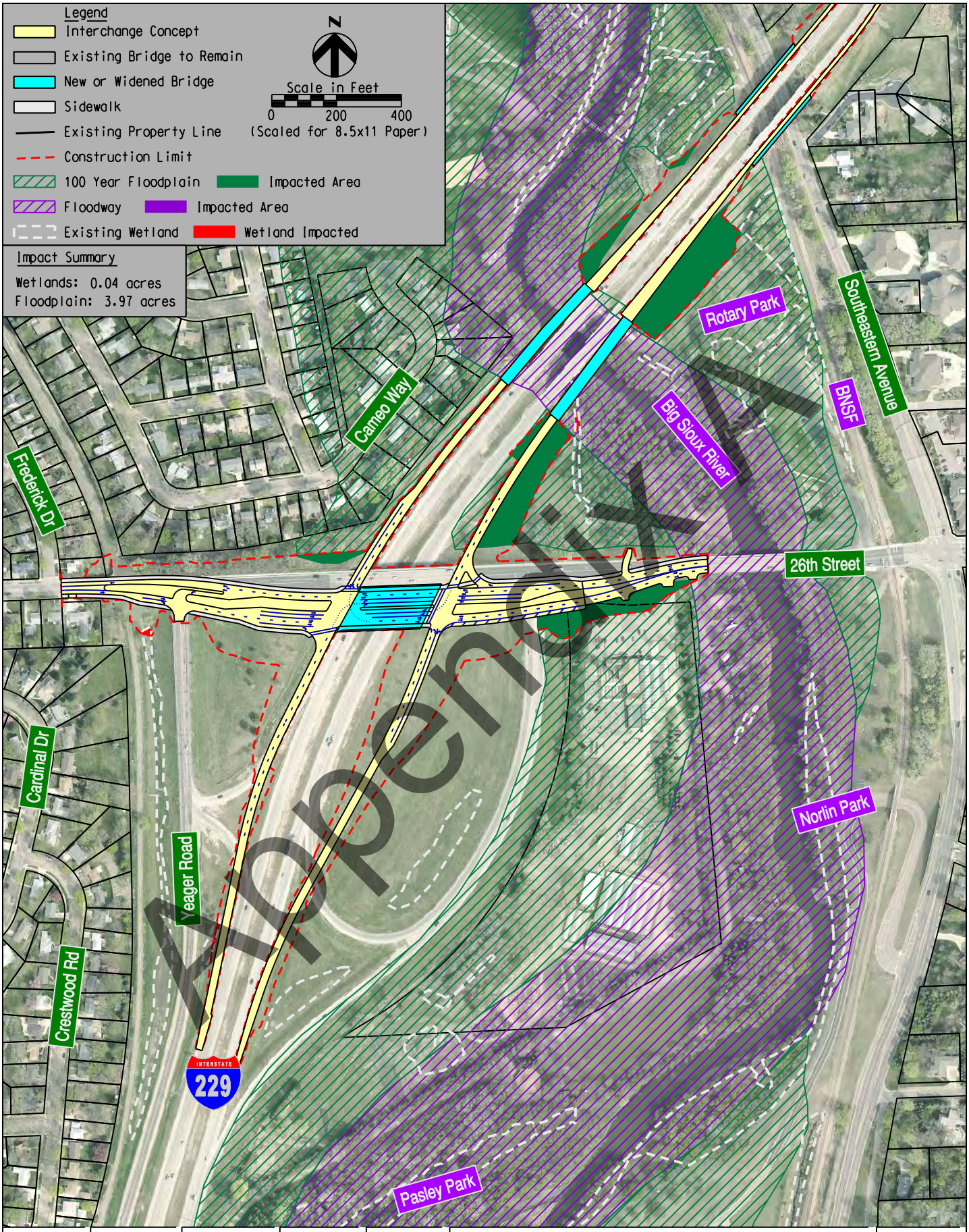
Concept Option 1b - Floodplain, Wetland Impacts

Single Point on Existing 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study Sioux Falls, SD

Figure 3.2.1b

8/8/2013



Concept Option 2 - Floodplain, Wetland Impacts

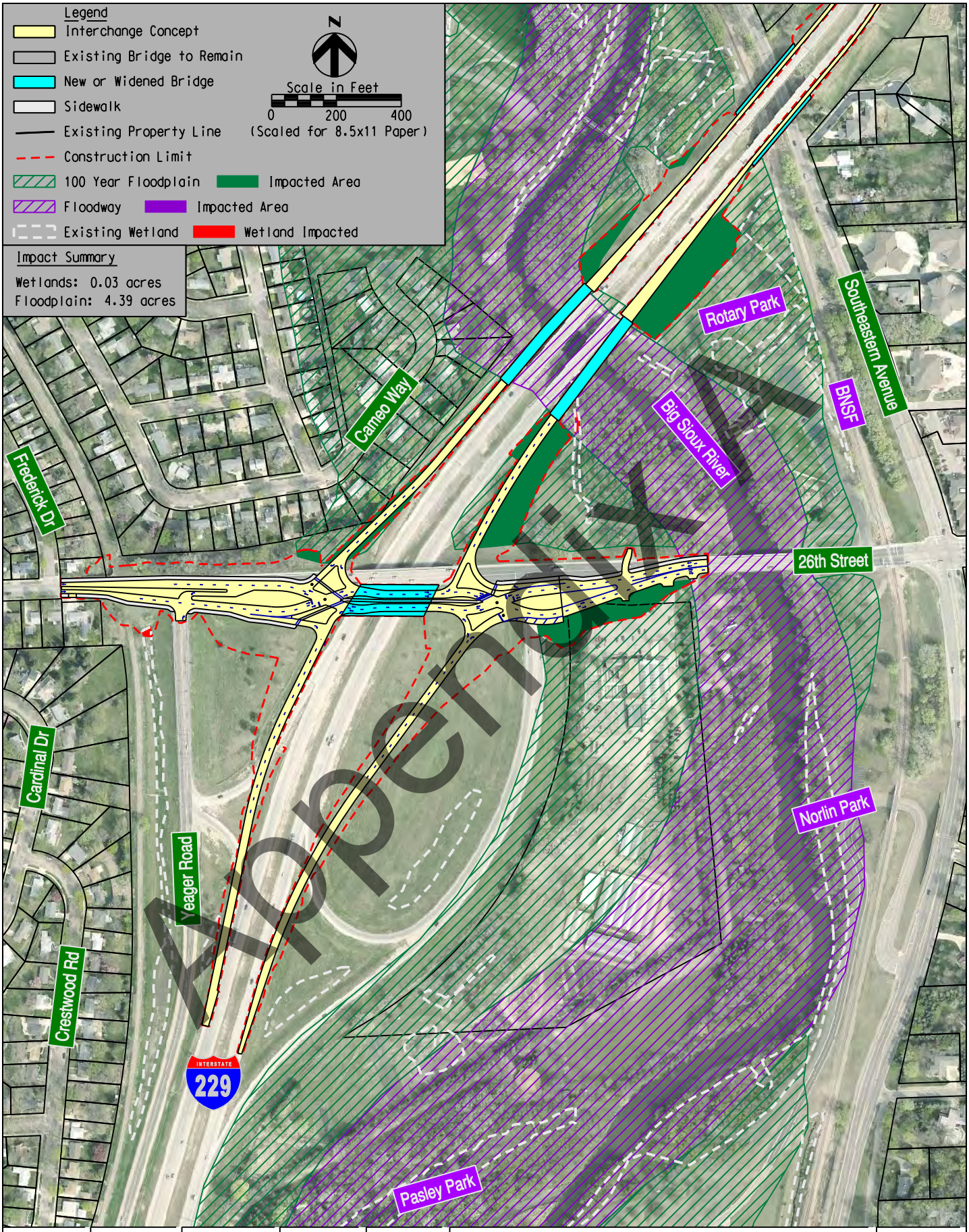
Tight Diamond on Realigned 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.2.2

8/8/2013



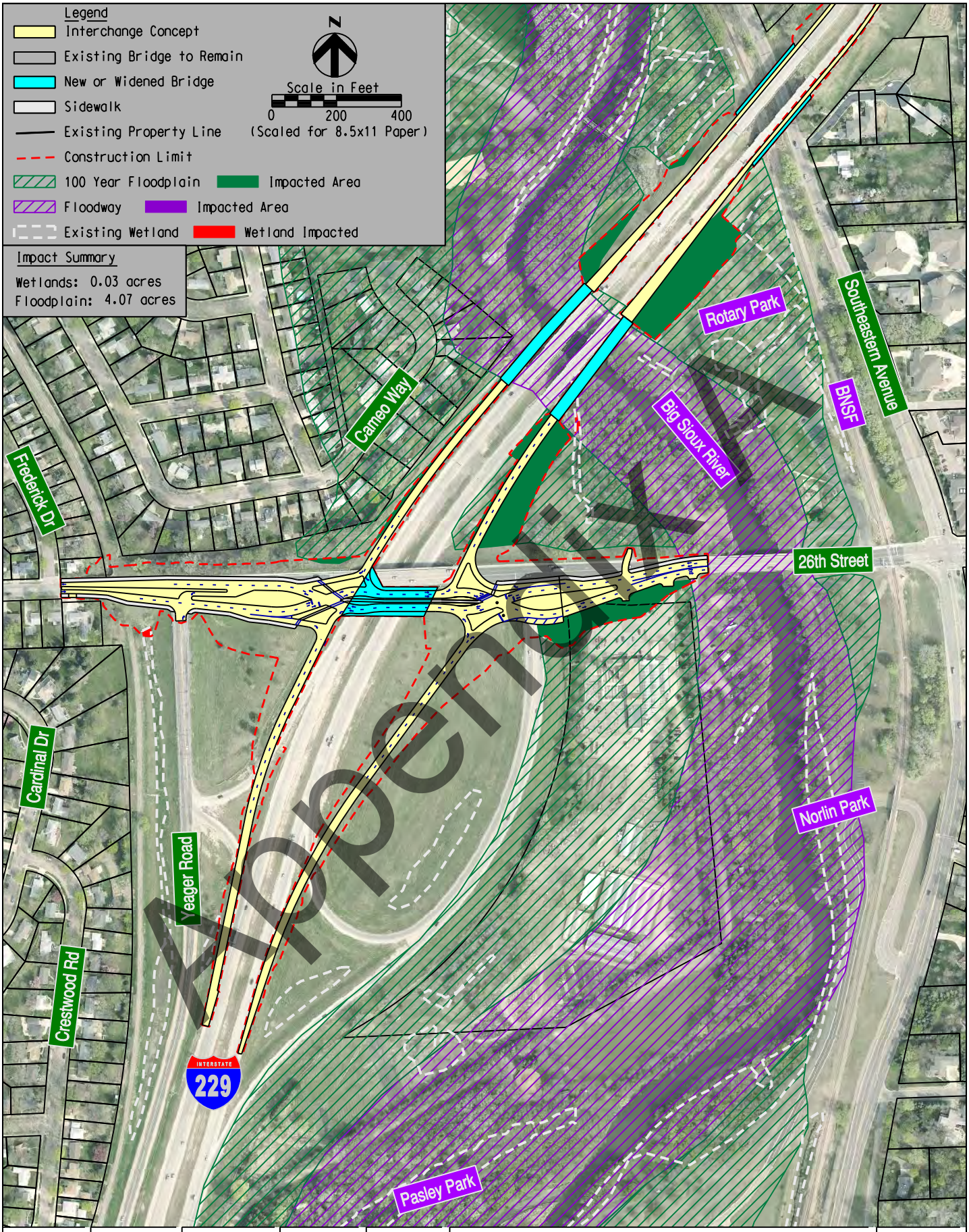
Concept Option 3a - Floodplain, Wetland Impacts

Diverging Diamond on Realigned 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.3a

8/8/2013



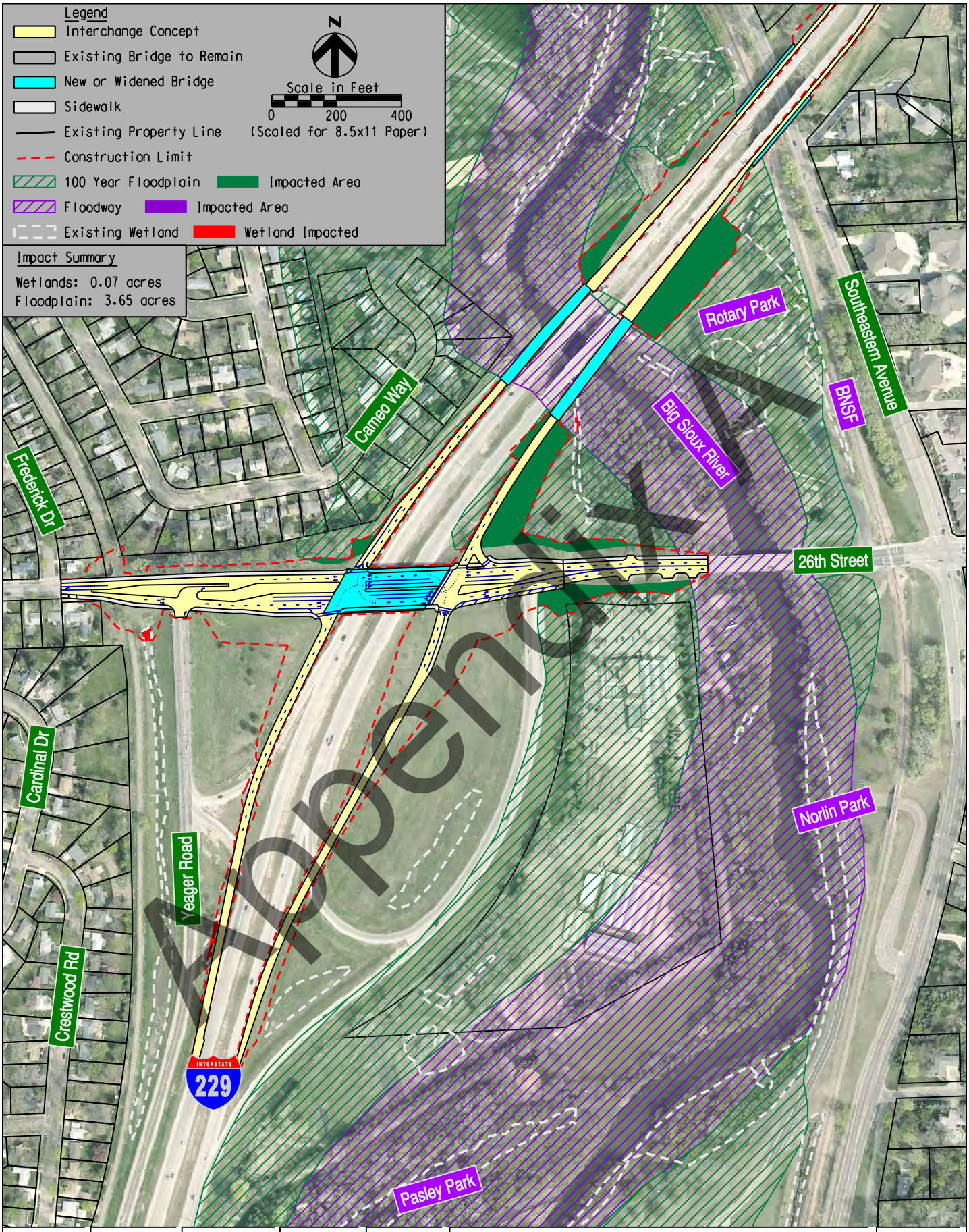
Concept Option 3b - Floodplain, Wetland Impacts

Diverging Diamond on Realigned 26th St. with Angled Bridge Section

I-229 Exit 5 (26th Street) Crossroad Corridor Study Sioux Falls, SD

Figure 3.2.3b

8/8/2013



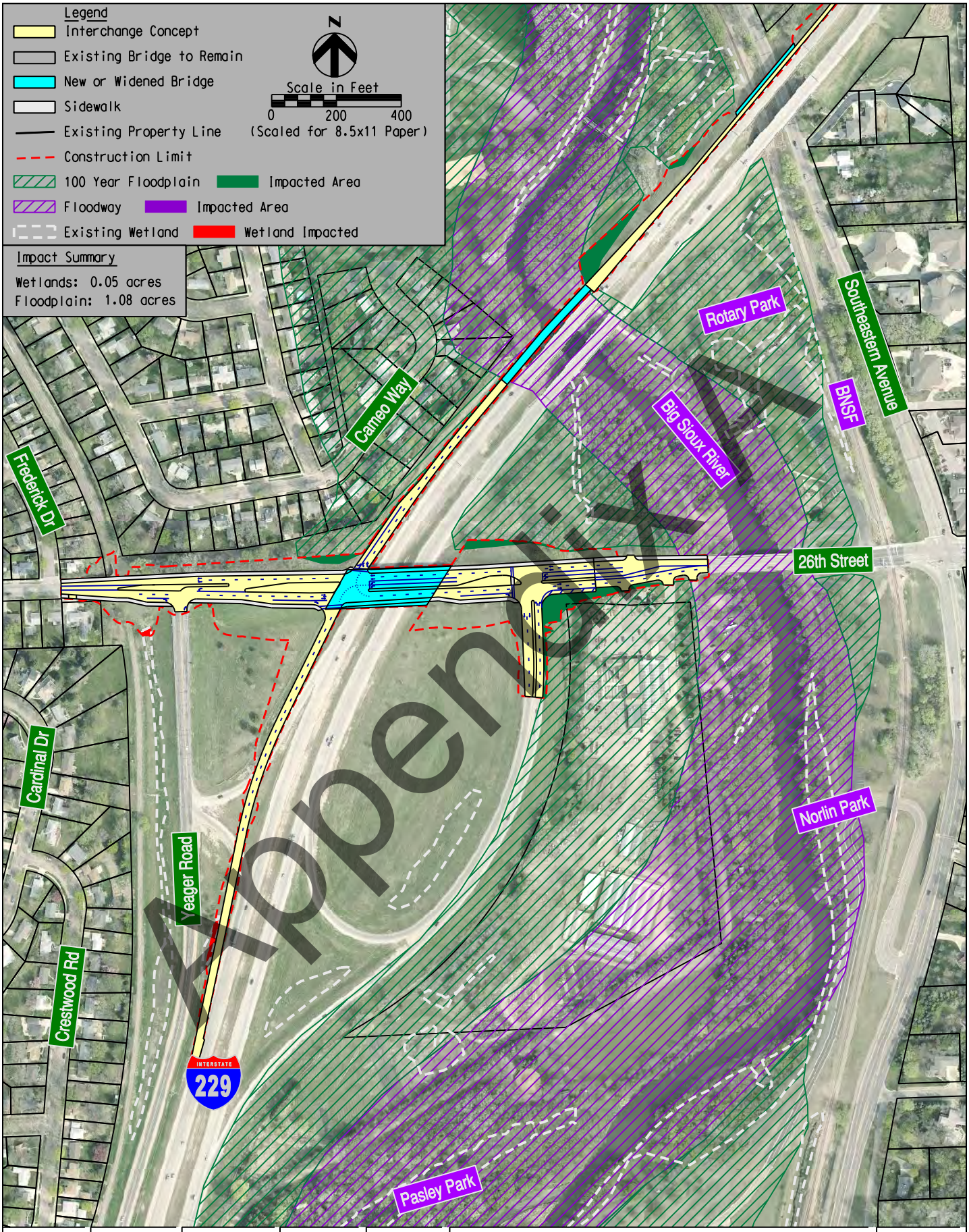
Concept Option 4 - Floodplain, Wetland Impacts

Tight Diamond on Existing 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.4

8/8/2013



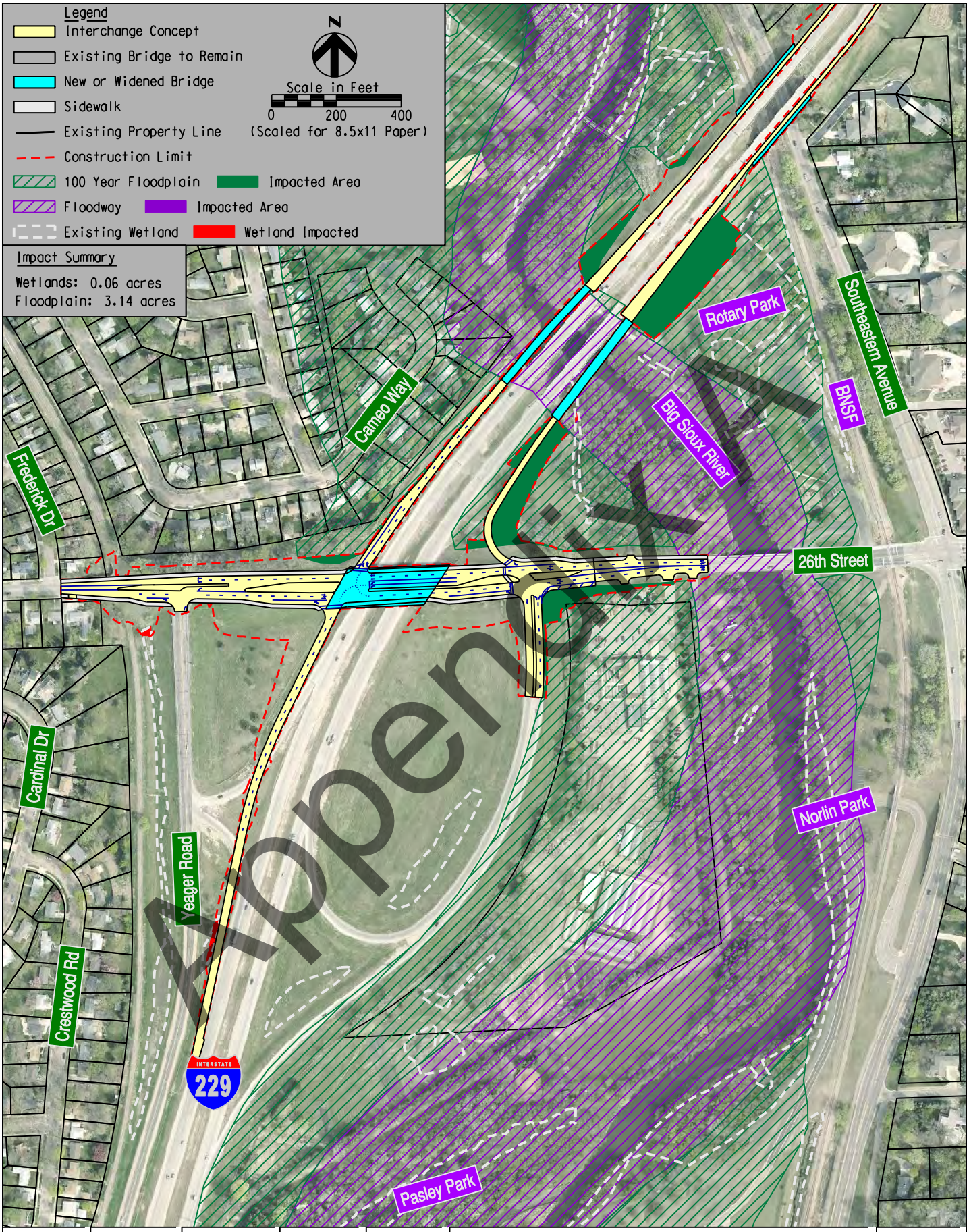
Concept Option 5a - Floodplain, Wetland Impacts

West Side Diamond Adjacent Ramps on Existing 26th Street w/o NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.5a

8/8/2013



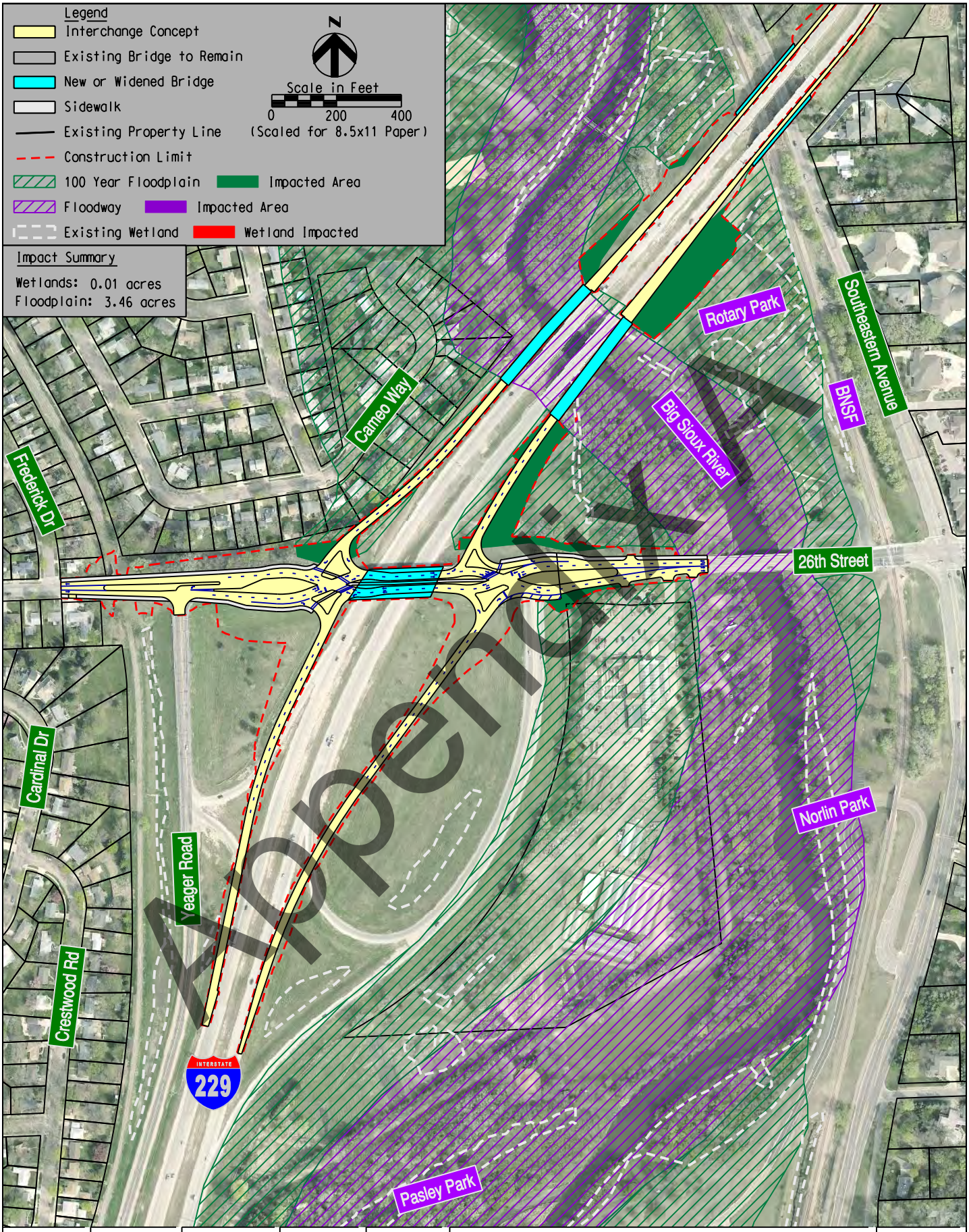
Concept Option 5b - Floodplain, Wetland Impacts

West Side Diamond Adjacent Ramps on Existing 26th Street with NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.5b

8/8/2013



Concept Option 6a - Floodplain, Wetland Impacts

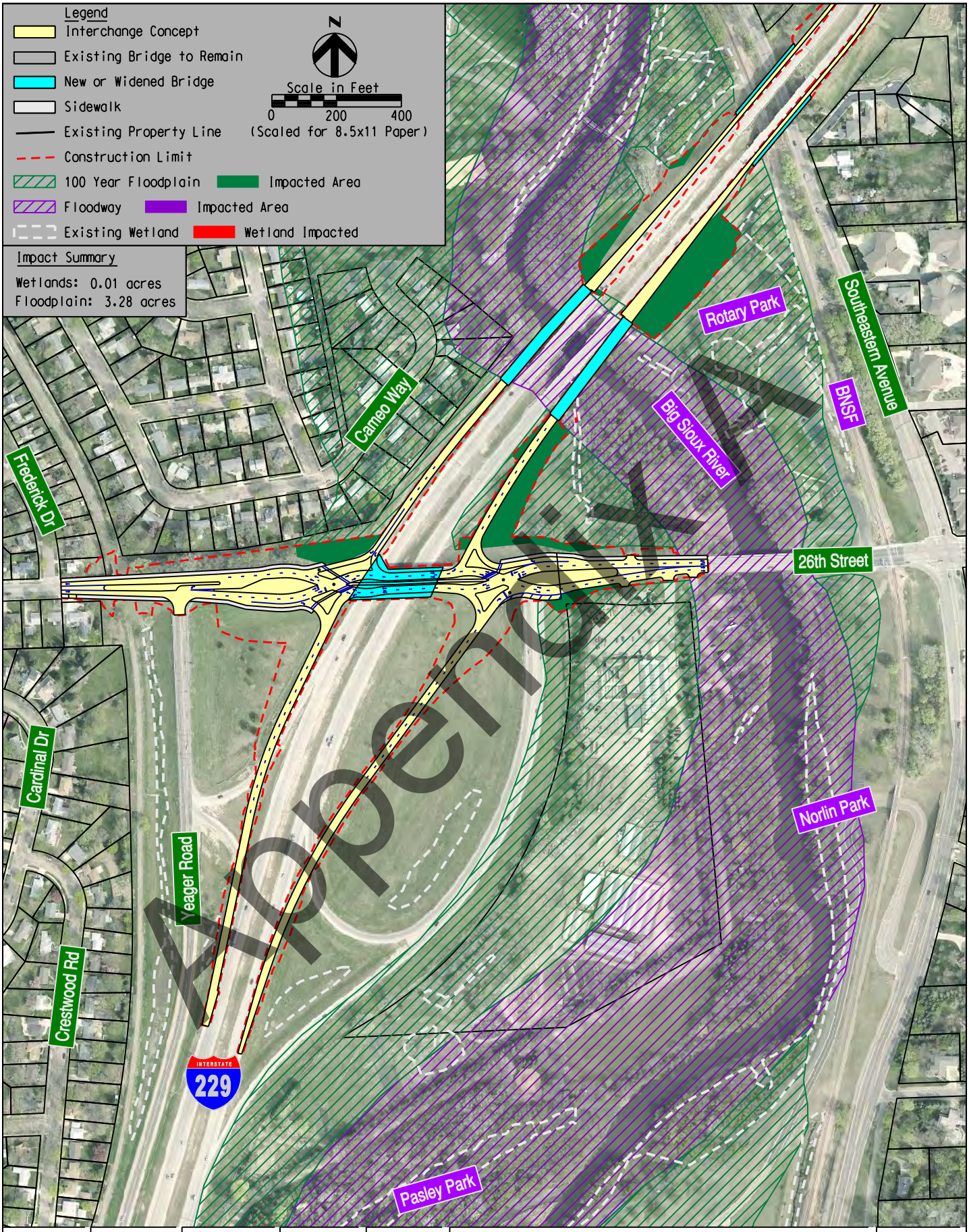
Diverging Diamond on Existing 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.2.6a

8/8/2013



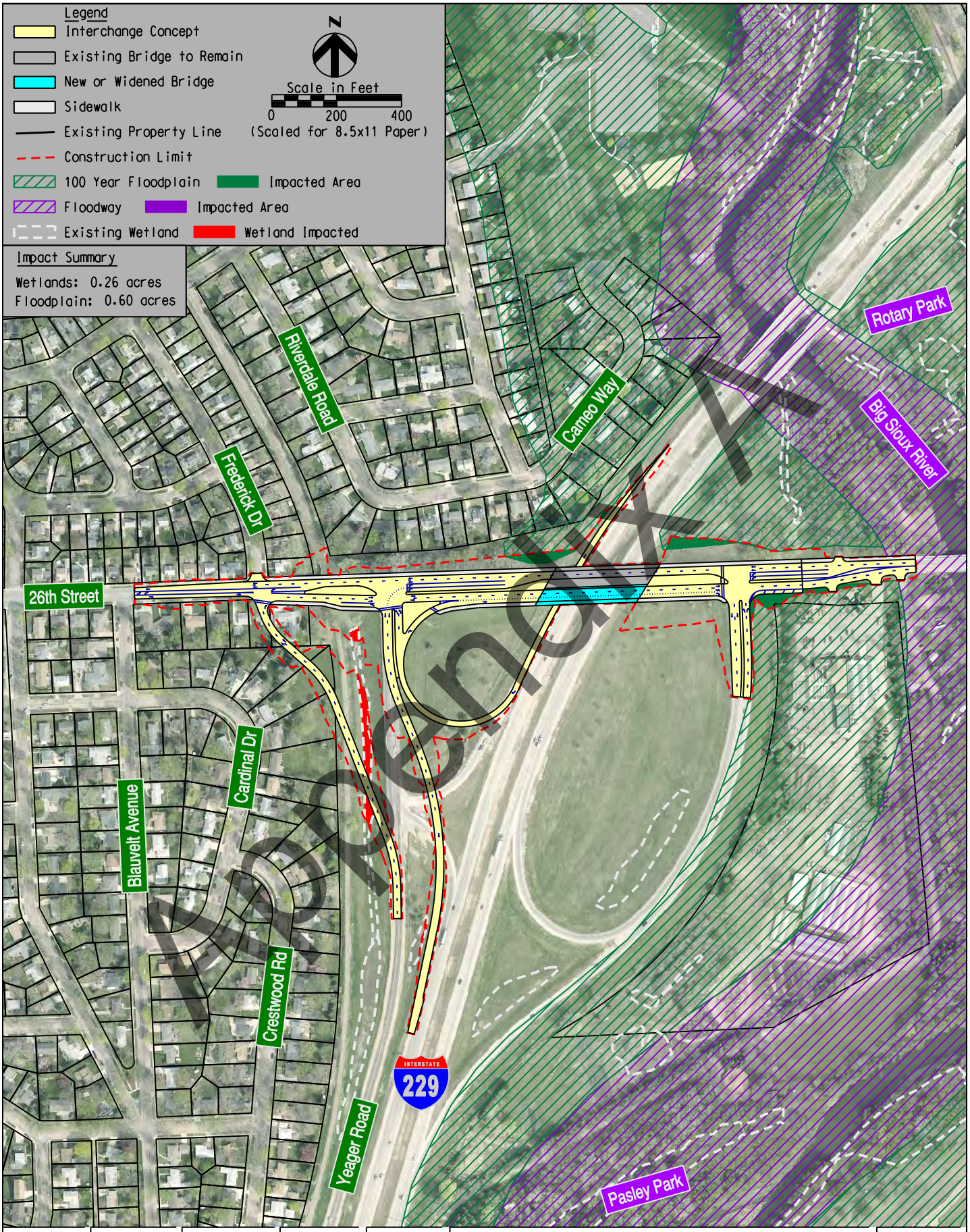
Concept Option 6b - Floodplain, Wetland Impacts

Diverging Diamond on Existing 26th Street with Angled Bridge Section

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.6b

8/8/2013



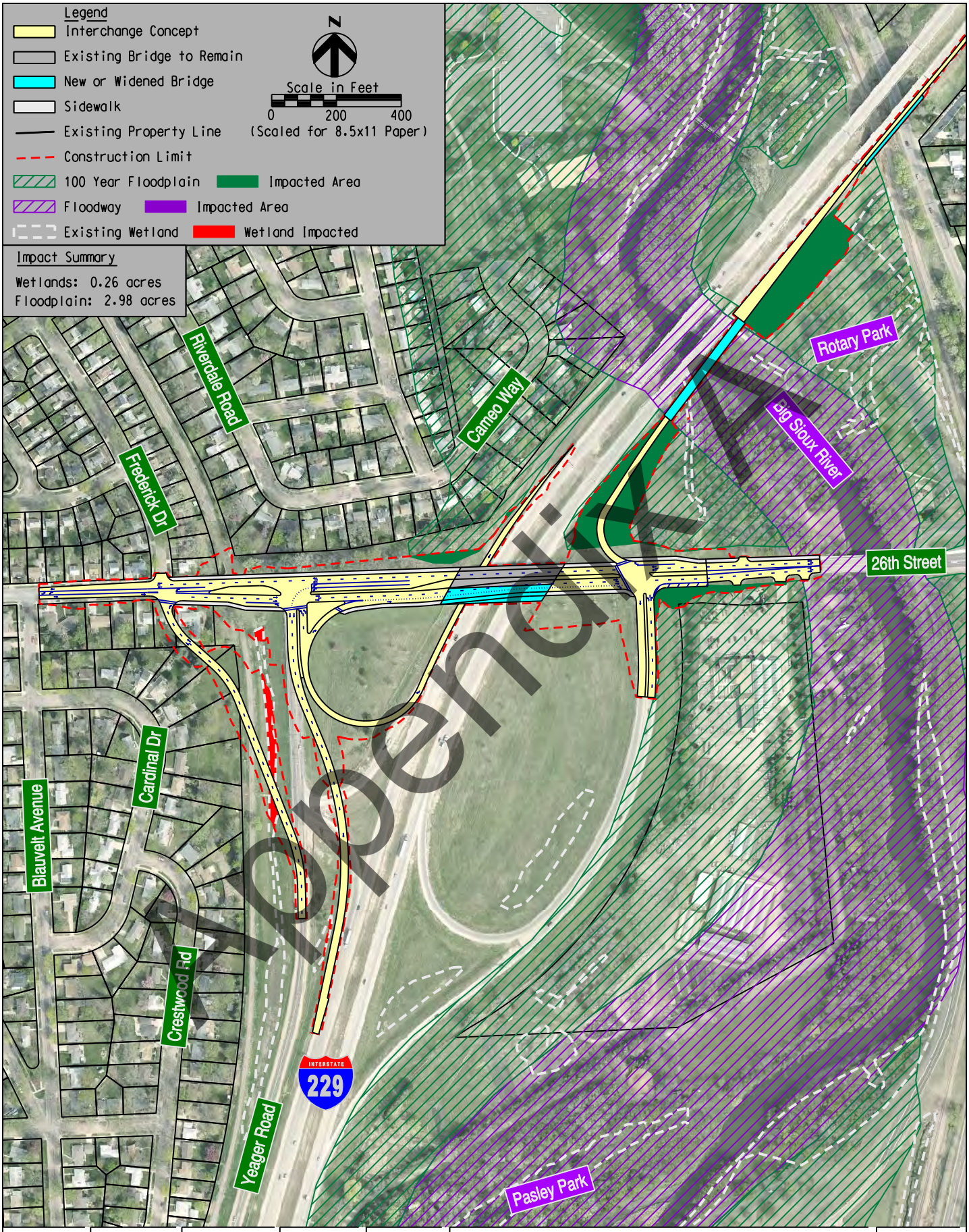
Concept Option 7a - Floodplain, Wetland Impacts

West Side Folded Diamond on Existing 26th Street w/o NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.7a

8/8/2013



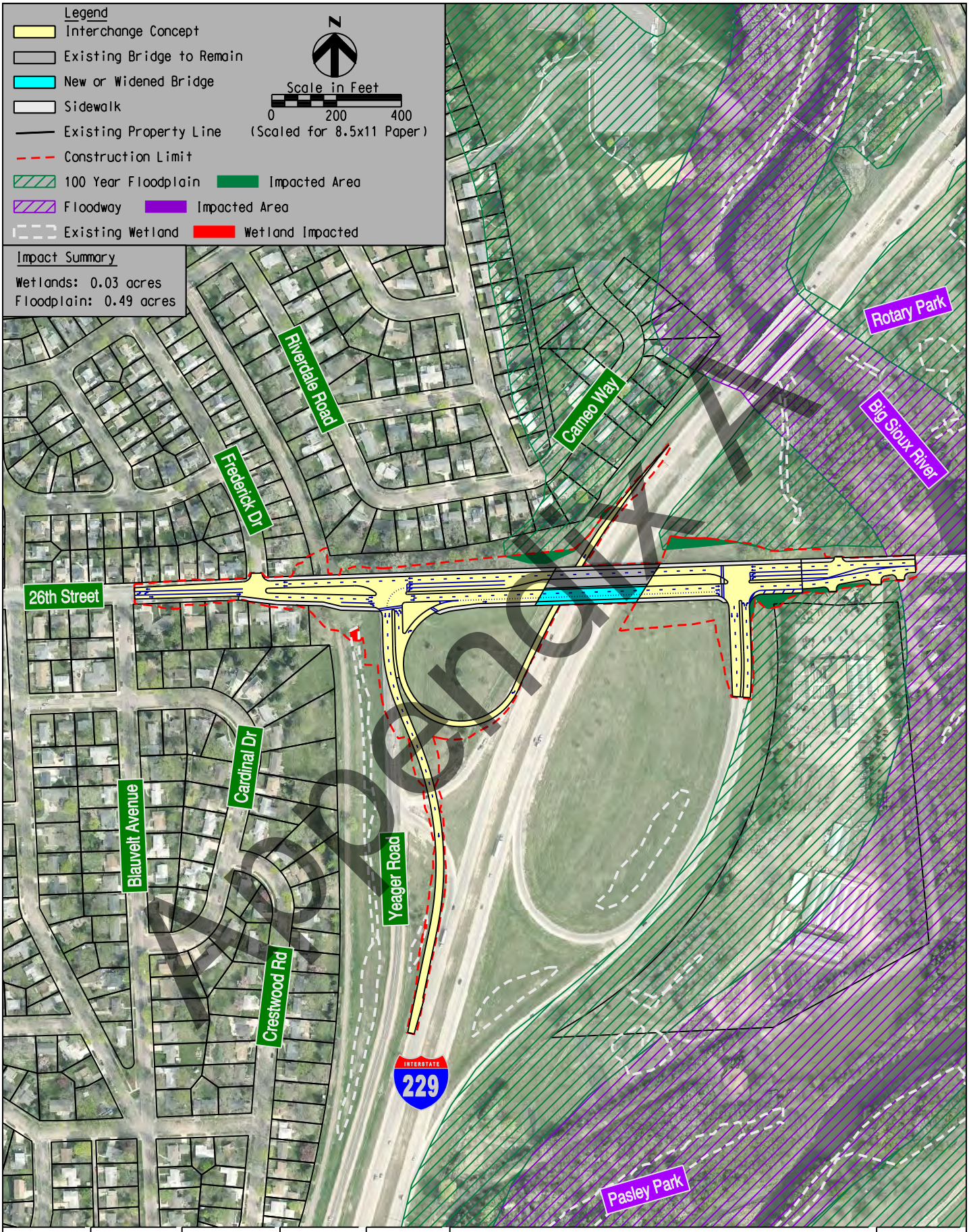
Concept Option 7b - Floodplain, Wetland Impacts

West Side Folded Diamond on Existing 26th St. with NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.7b

8/8/2013



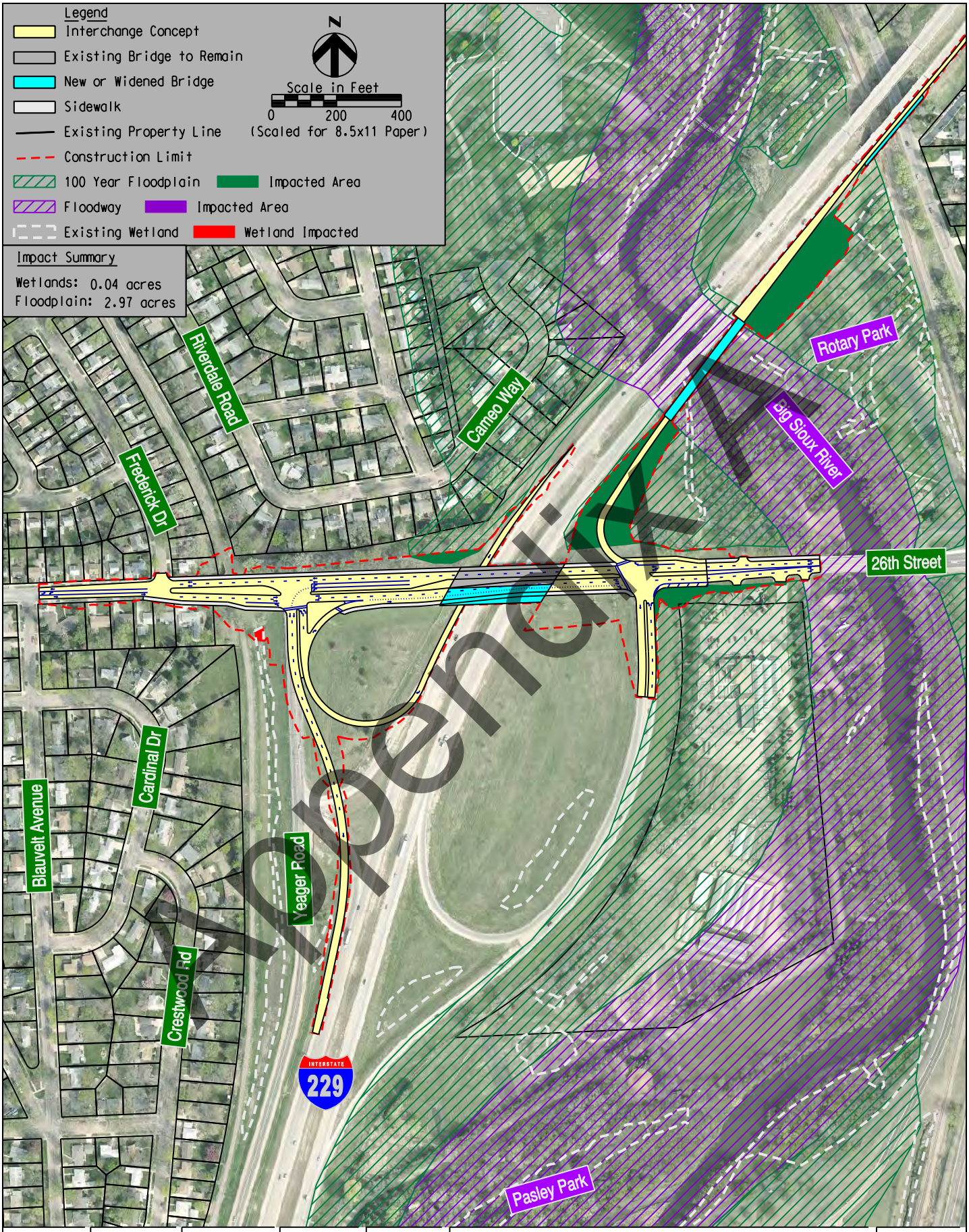
Concept Option 7c - Floodplain, Wetland Impacts

West Side Folded Diamond on Existing 26th Street
w/o Yeager Road and w/o NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.7c

8/8/2013



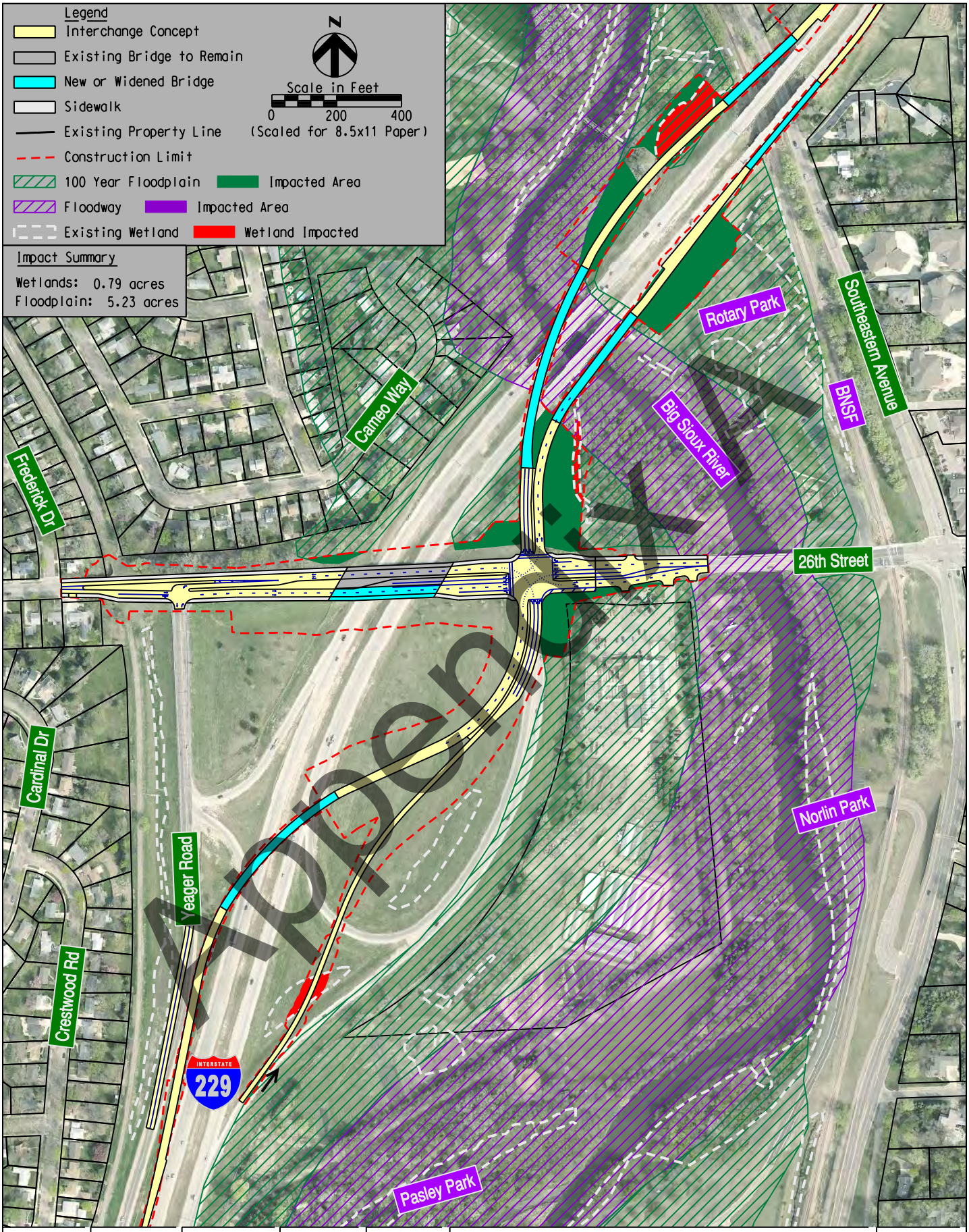
Concept Option 7d - Floodplain, Wetland Impacts

West Side Folded Diamond on Existing 26th Street with NE Ramp and w/o Yeager Road

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.7d

8/8/2013



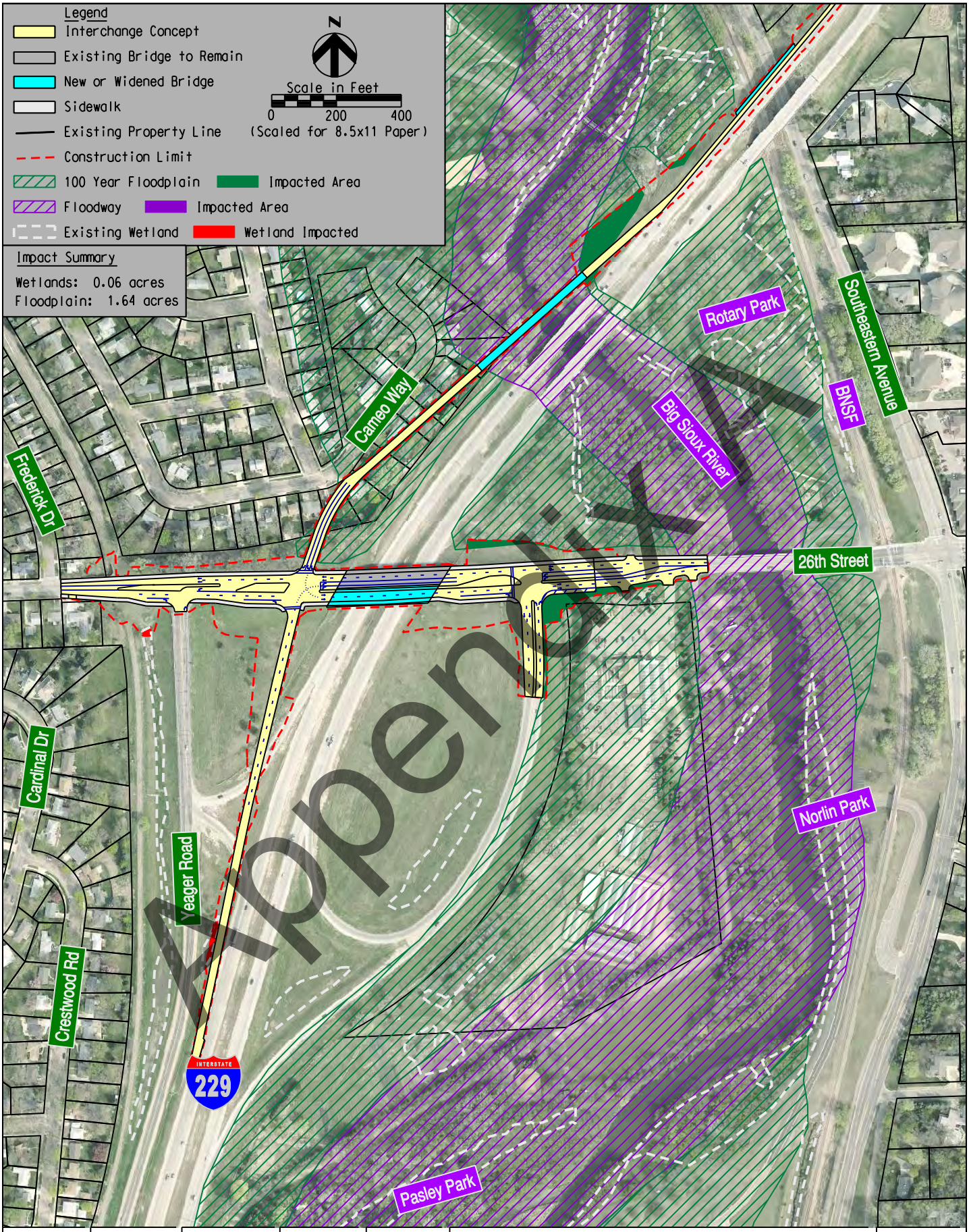
Concept Option 8 - Floodplain, Wetland Impacts

Offset Single Point on Existing 26th Street

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.8

8/8/2013



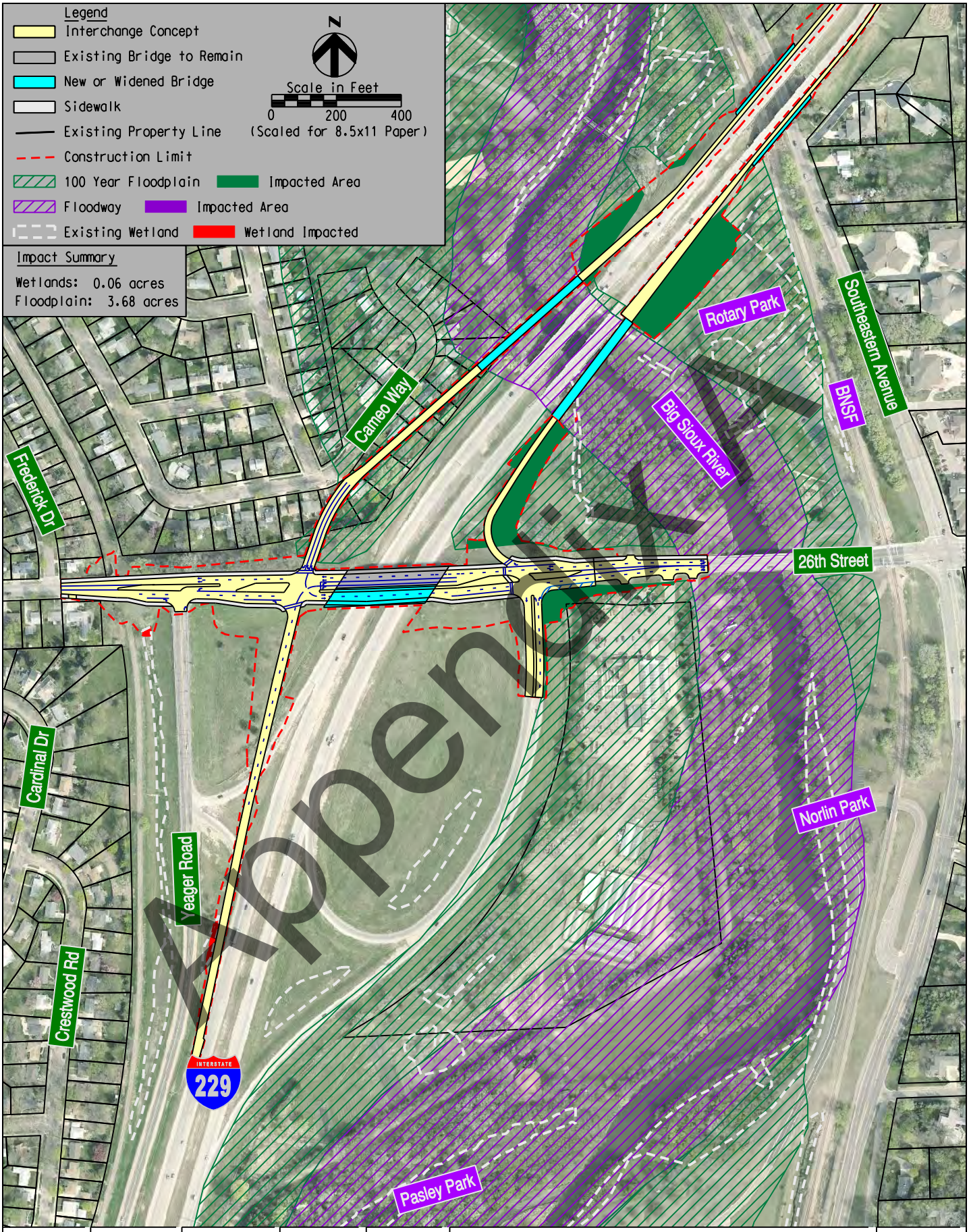
Concept Option 9a - Floodplain, Wetland Impacts

West Side Diamond with Detached Ramps w/o NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study Sioux Falls, SD

Figure 3.2.9a

8/8/2013



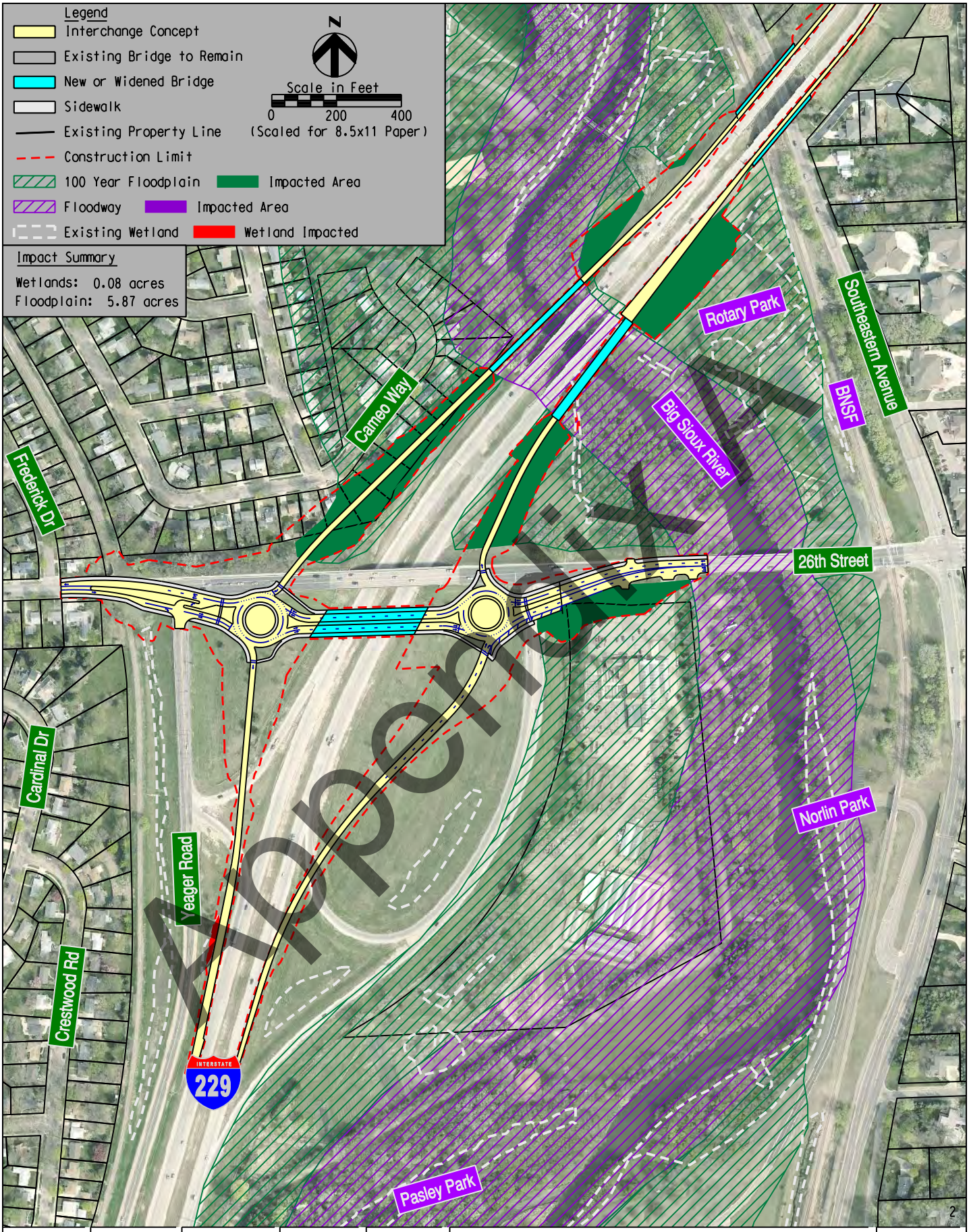
Concept Option 9b - Floodplain, Wetland Impacts

West Side Diamond with Detached Ramps and with NE Ramp

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.9b

8/8/2013



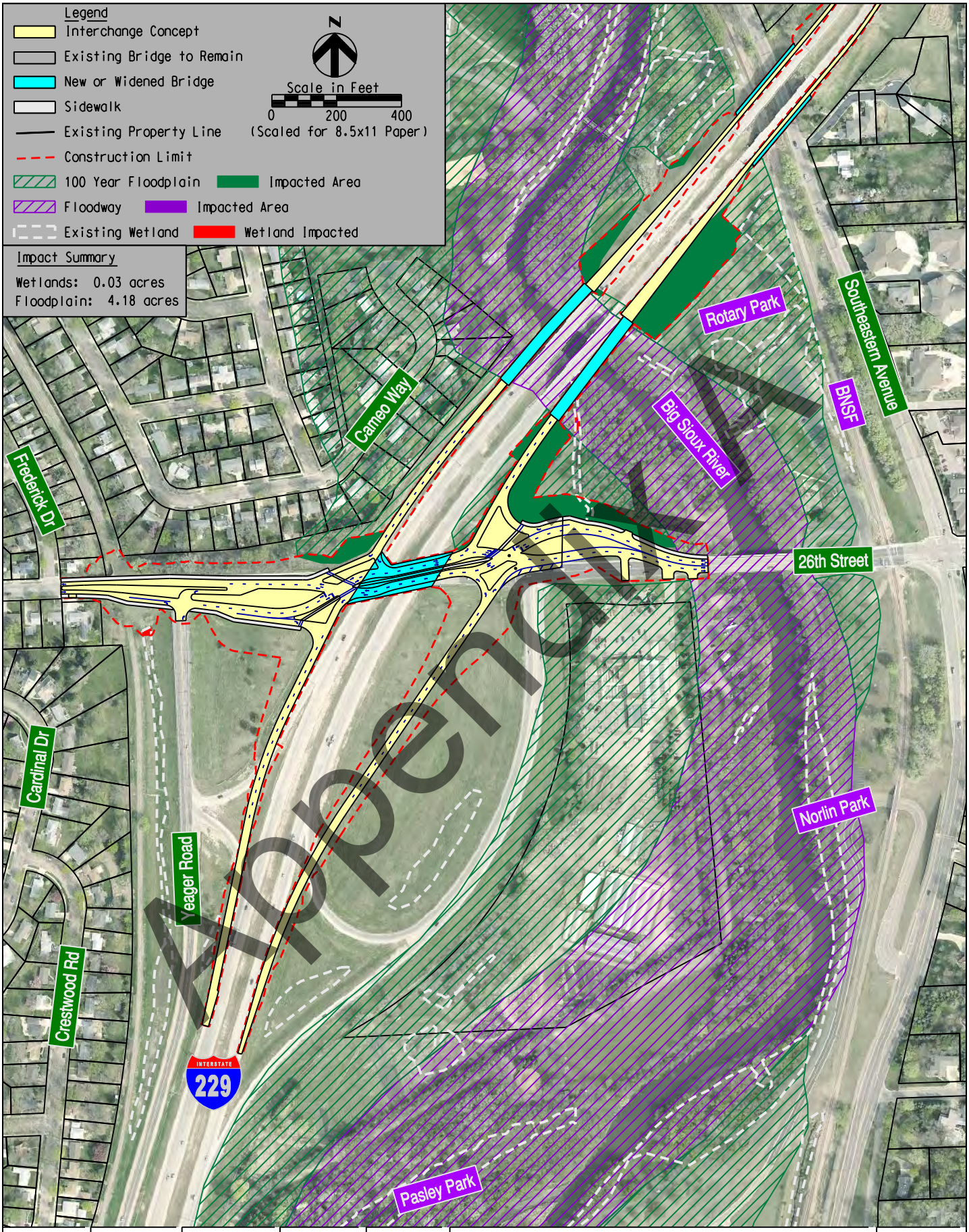
Concept Option 10 - Floodplain, Wetland Impacts

Roundabouts at Ramp Terminals

I-229 Exit 5 (26th Street) Crossroad Corridor Study Sioux Falls, SD

Figure 3.2.10

8/8/2013



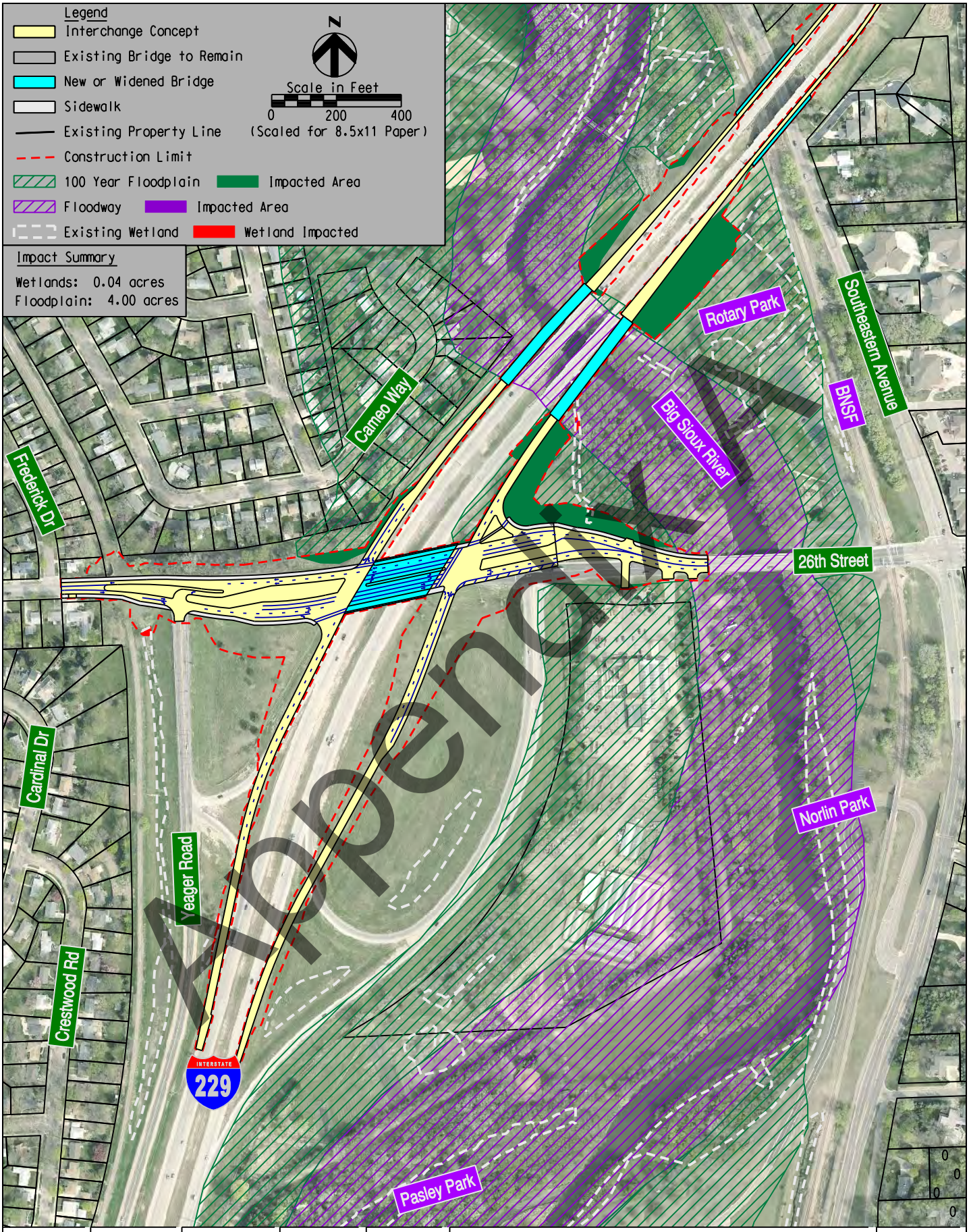
Concept Option 11 - Floodplain, Wetland Impacts

Diverging Diamond on 26th Street Realigned to the North

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.11

8/8/2013



Concept Option 12 - Floodplain, Wetland Impacts

Tight Diamond on 26th Street Realigned to the North

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.12

8/8/2013

Attachment D
Figures Illustrating Northwest Quadrant Ramp

Appendix A

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Photos courtesy of:
Bing Maps & Google Maps

I-40 / Louisiana Blvd
Interchange in
Albuquerque, NM

View A

View C

View B

Appendix A

What Would Northwest Ramp Look Like?
Interchange Options 1, 2, 3, 4, 5, 6

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 10

2/4/13

HDR | ONE COMPANY *Many Solutions*℠

Technical Memo

To:	Steve Gramm, SDDOT
From: HDR	Project: I-229 Exit 5 (26th Street) Crossroad Corridor Study (PL 0100(88); PCN 03KM)
CC:	Mark Hoines, FHWA, Shannon Ausen, City of Sioux Falls
Date: July 19, 2013; revised 8/8/13, 9/3/13	Job No: 179168

RE: 26th Street/Southeastern Avenue Intersection Options Evaluation

BACKGROUND

Intersection Concept Build Options A to F were presented at the February 6, 2013 public meeting. Based on comments received at the public meeting and on feedback from the Study Advisory Committee, refinements have been made to the intersection options but no new options have been added.

The Intersection Build Option figures are provided in Attachment A of this memo. Reduced size versions of the option figures are also provided with the discussion of each option.

The purpose of this memo is to provide a brief evaluation of each of the Build Options and provide recommendations on:

- Which options to carry forward for further evaluation.
- Which options to eliminate from further evaluation.

The information in this memo will be incorporated into Chapter 2 of the Environmental Assessment (EA). Most of the graphics and figures would be included in the EA appendix.

The main criteria used to evaluate the Intersection Build Options included:

- Traffic operations – Level of Service (LOS) D meets City of Sioux Falls criteria for arterial street intersections. To achieve LOS C would require 3 through lanes in each direction on 26th Street. With the fully developed properties adjacent to 26th Street, adding another through lane is not considered feasible.
- Property access impacts
- Property acquisitions (residential and commercial)
- Impacts to Rotary Park and Norlin Park[1] and wetland and floodplain impacts were the same for nearly all of the options except Option E so these impacts did not significantly influence the evaluation of the Build Options. Rotary Park and Norlin Park are managed by the Sioux Falls Parks and Recreation Department. It is anticipated that the Project will provide long term benefits to Rotary Park and Norlin Park by improving the safety of vehicular and pedestrian access.

The Intersection Options Comparison Matrix is provided on page 11 of this memo.

The figures illustrating Rotary and Norlin park impacts are provided in Attachment B of this memo.

The figures illustrating floodplain and wetland impacts are provided in Attachment C of this memo.

NO-BUILD OPTION

The No-Build Option will be carried forward as a base-line comparison for the build options. As noted in the Options Comparison Matrix, the No-Build Option **does not**:

- Meet the City's policy/project purpose and need of a grade-separated railroad crossing.
- Resolve the existing and future traffic congestion at the 26th Street/Southeastern Avenue intersection. Resolving the intersection congestion is also a purpose of the project.

[1] If there is no anticipated adverse physical effect to the parks, or interference with the activities, features, or attributes of the parks, on either a temporary or permanent basis, the impact due to the roadway project could be considered minor or "*de minimis*".

Appendix A

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BUILD OPTIONS EVALUATION

Option A – Elevated Intersection on Existing Southeastern Avenue Alignment

Option A (Figure A) proposes raising the 26th Street/Southeastern Avenue intersection up from its existing grade by approximately 25 feet. The elevation raise is necessary to attain grade separation over the BNSF railroad tracks. 26th Street and Southeastern Avenue stay on their existing horizontal alignments with this option.

Benefits of Option A include:

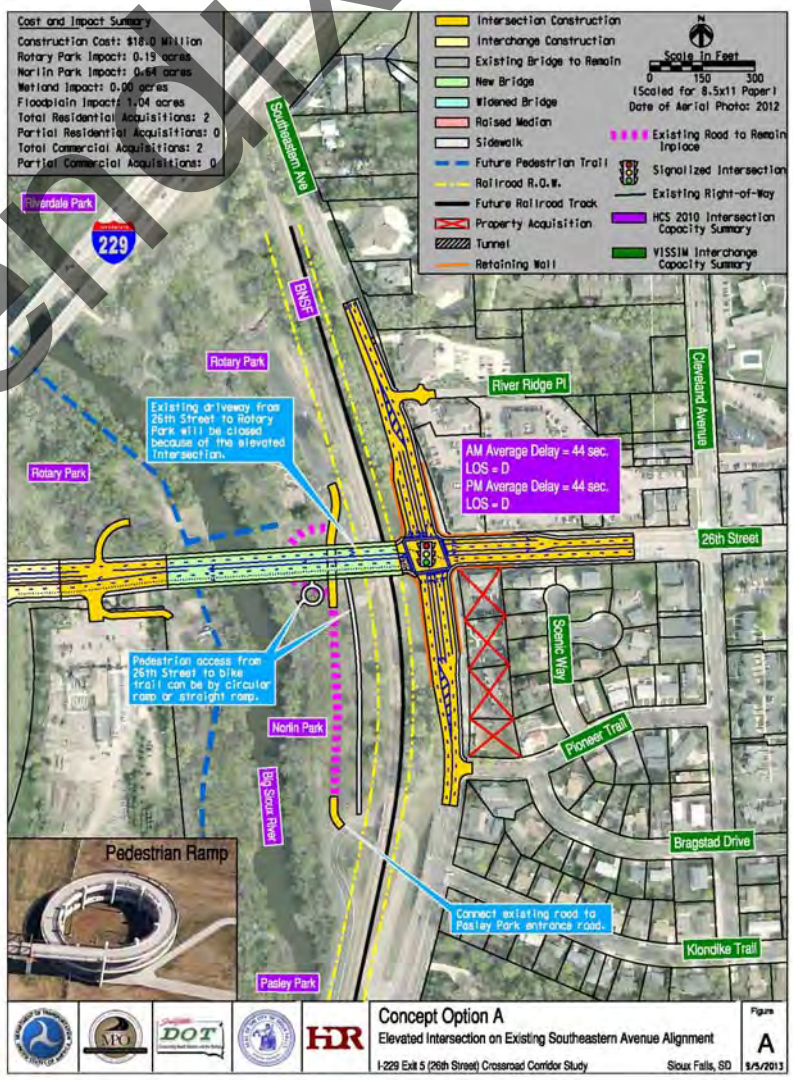
- Traffic Level of Service (LOS) D is forecast at the intersection for year 2035 conditions. This meets City of Sioux Falls criteria for arterial streets.
- Access to the properties in the northeast quadrant of the intersection stays the same as existing.
- Pedestrian connectivity between 26th Street and Southeastern Avenue is good.
- BNSF has noted their preference for this option.
- Access to Rotary Park and Norlin Park is relocated from 26th Street to the Pasley Park entrance road off of Southeastern Avenue. This will improve the safety of the access, especially during peak traffic periods.

Drawbacks of Option A include:

- Access is eliminated to the 2 commercial properties and 2 residential properties along Southeastern Avenue south of 26th Street. This results in acquisition of all 4 parcels. Discussions with the property owners to date have indicated willingness for acquisition of the properties.
- The long bridge across the Big Sioux River and BNSF railroad tracks and the extensive retaining walls lead to a relatively high construction cost of $18.0 million.
- Future expansion of this option via widening of 26th Street to 3 through lanes is limited by existing development along the corridor. Future expansion of Southeastern Avenue is not considered feasible, mostly because of the width limitations at the I-229 crossing.

It is recommended that this option be carried forward for further refinement and evaluation because:

- *Traffic LOS is acceptable.*
- *Purpose and Need of grade-separated railroad crossing is met.*
- *Full access to northeast quadrant properties is maintained.*
- *Pedestrian connectivity is adequate.*
- *Impacted properties are open to acquisition.*



Appendix A

Option B – Elevated Intersection with Southeastern Avenue Tunnels for Through Movements

Option B (Figure B) proposes raising 26th Street above the BNSF railroad tracks. For Southeastern Avenue, only the left turn and right turn lanes would be raised to meet 26th Street. The Southeastern Avenue through lanes would go underneath 26th Street.

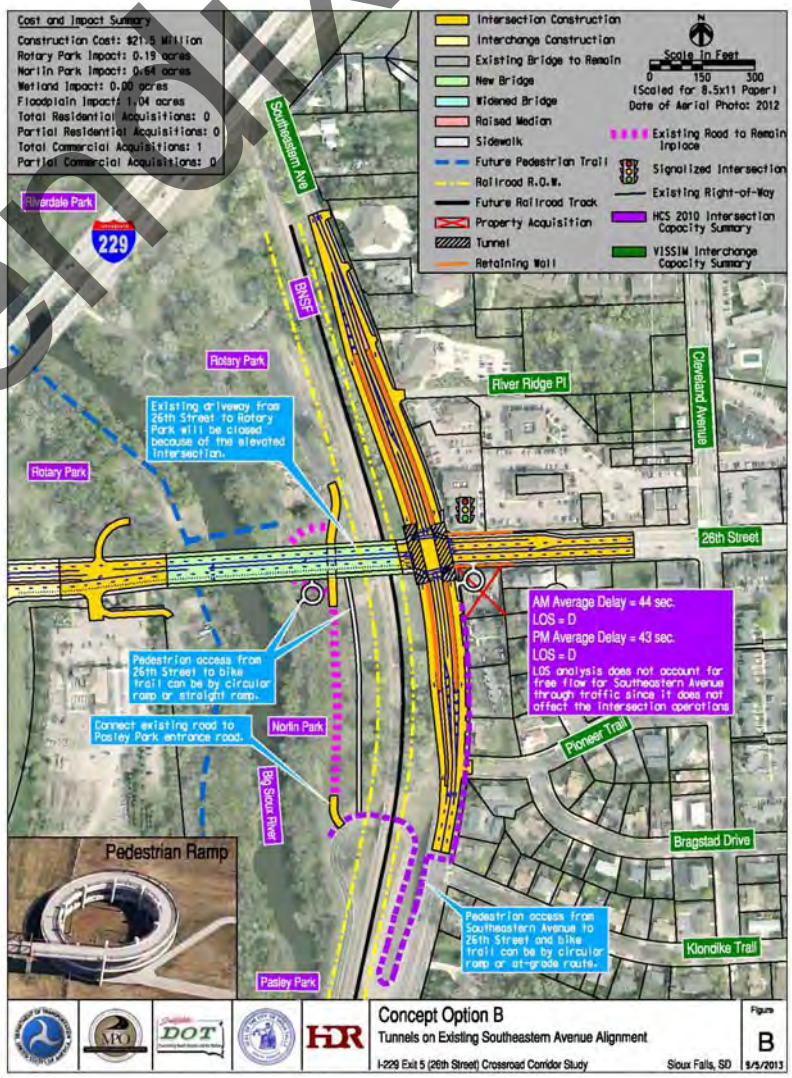
Renderings illustrating Option B are provided in Attachment D to this memo.

Benefits of Option B include:

- Traffic LOS D is forecast at the intersection of 26th Street and the Southeastern Avenue turning lanes for year 2035 conditions.
- Southeastern Avenue through traffic does not stop at 26th Street because they cross under 26th Street, thereby providing free-flow conditions for those northbound and southbound vehicles.
- Right-in/right-out access is provided to the properties along Southeastern Avenue south of 26th Street.
- Access to Rotary Park and Norlin Park is relocated from 26th Street to the Pasley Park entrance road off of Southeastern Avenue. This will improve the safety of the access, especially during peak traffic periods.

Drawbacks of Option B include:

- Access to River Ridge Place in the northeast quadrant of the intersection is reduced to right-in/right-out movements for vehicles on northbound Southeastern Avenue. Tenants in the River Ridge development viewed this as a major impact since many of their clients are coming on 26th Street from I-229 and then turn north/left at Southeastern Avenue and then enter River Ridge Place from Southeastern Avenue. With this option, vehicles will not be able to go from the Southeastern Avenue turn lanes to River Ridge Place due to the grade difference between the through lanes and turn lanes. The circulation within the River Ridge development is not conducive to getting the main access from Cleveland Avenue. Traffic counts taken at the River Ridge business development entrances are provided in Attachment E to this memo.
- The estimated cost of this option is $21.5 million. This is higher than Option A because of the tunnels for the Southeastern Avenue through lanes under 26th Street.
- Due to the grade separation of 26th Street and Southeastern Avenue, the connectivity for pedestrians between the two roadways is challenging. The current option shows a circular pedestrian ramp in the southeastern corner of the intersection, resulting in acquisition of one commercial property.



Appendix A

- The owner of the commercial property in the southeast quadrant of the intersection has expressed concern with the visual impact of the raised intersection and may request acquisition of his property even without the circular pedestrian structure.
- Future expansion of this option via widening of 26th Street to 3 through lanes is limited by existing development along the corridor. Future expansion of Southeastern Avenue to 2 lanes is problematic with this option because of the merge condition of through traffic and the turning traffic coming down the ramp.

It is recommended that this option be eliminated from further evaluation because:

- *Access is reduced to the properties in the northeast quadrant of the intersection Unlike Option A where the property owners in the southeast quadrant of the intersection have expressed willingness to have their properties acquired, neither the City nor the property owners want any acquisitions in the northeastern quadrant of the intersection.*

Appendix A

Option C – Elevated Intersection on Shifted Southeastern Avenue

Option C (Figure C) is the same as Option A except that Southeastern Avenue is shifted approximately 75 feet west of the existing roadway. This shift provides room for a service road that would give full access to several of the properties in the southeast quadrant of the intersection.

Benefits of Option C are the same as Option A except:

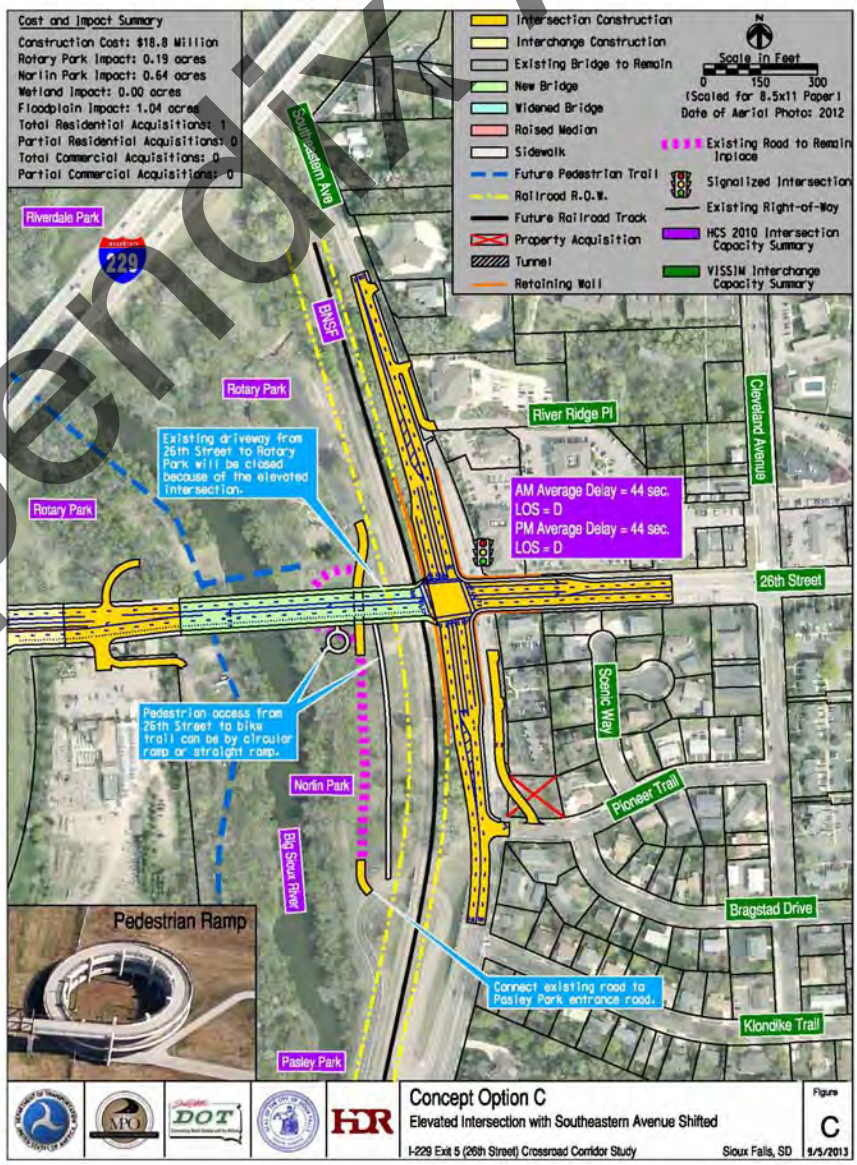
- Only one residential property would need to be acquired.

Drawbacks of Option C are the same as Option A except:

- The City of Sioux Falls maintenance department expressed concern with maintenance of the dead end service road proposed with this option.
- The owner of the commercial property in the southeast quadrant of the intersection would likely request acquisition of his property due to visual impacts of the raised intersection.

It is recommended that this option be carried forward for further refinement and evaluation because:

- *Traffic LOS is acceptable.*
- *Purpose and Need of grade-separated railroad crossing is met.*
- *Full access to northeast quadrant properties is maintained.*
- *Pedestrian connectivity is adequate.*
- *Southeast quadrant service road reduces the number of property acquisitions in comparison to Option A.*



Appendix A

Option D – Elevated Intersection with Shifted Southeastern Avenue and Tunnels for Through Movements

Option D (Figure D) is the same as Option B except that Southeastern Avenue is shifted approximately 75 feet west of the existing roadway. This shift provides room for a service road that would give full access to several of the properties in the southeast quadrant of the intersection.

Benefits of Option D are the same as Option B except:

- Full access is provided to the properties along Southeastern Avenue south of 26th Street.

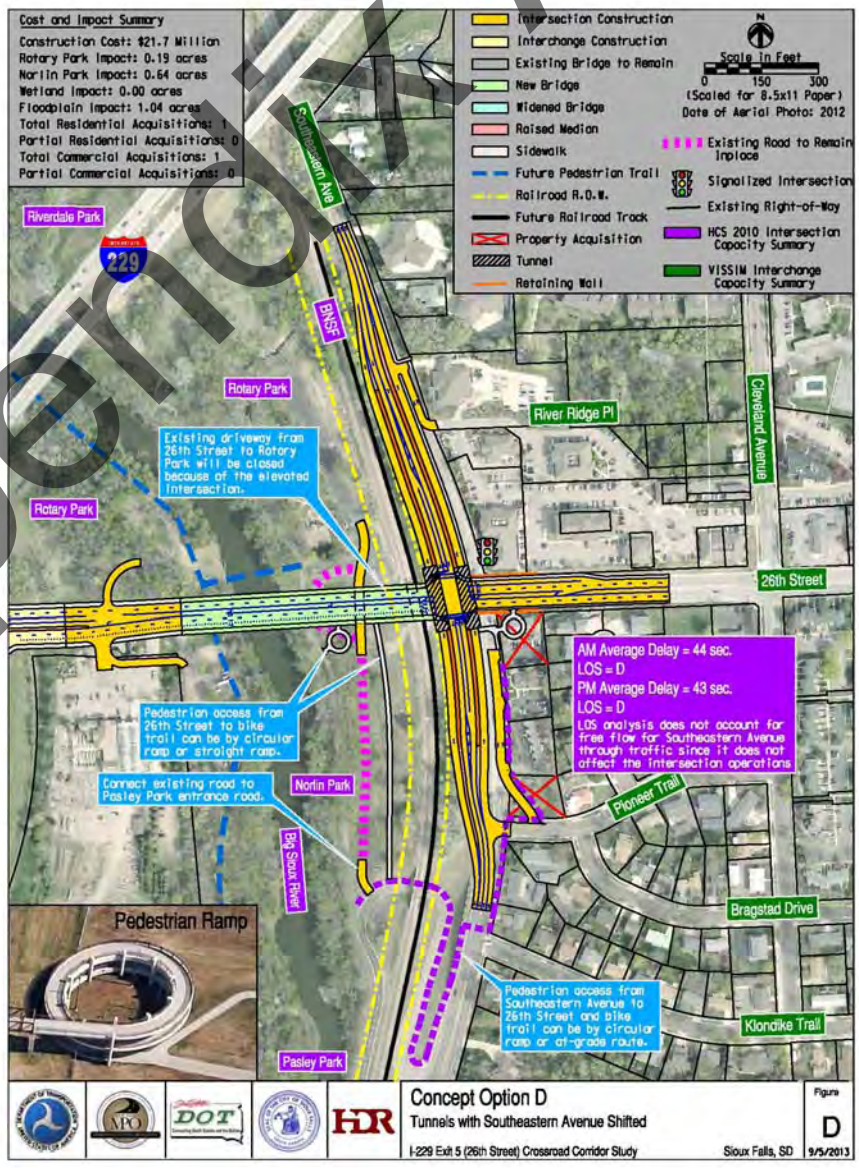
Drawbacks of Option D are the same as Option B except:

- The City of Sioux Falls maintenance department expressed concern with maintenance of the dead end service road proposed with this option.

It is recommended that this option be eliminated from further evaluation because:

- *Access is reduced to the properties in the northeast quadrant of the intersection.*

Appendix A



Option E – Expanded 26th Street/Southeastern Avenue Intersection with At-grade RR crossing

Option E (Figure E) keeps the at-grade BNSF railroad crossing while expanding the 26th Street/Southeastern Avenue intersection to meet traffic needs.

Benefits of Option E include:

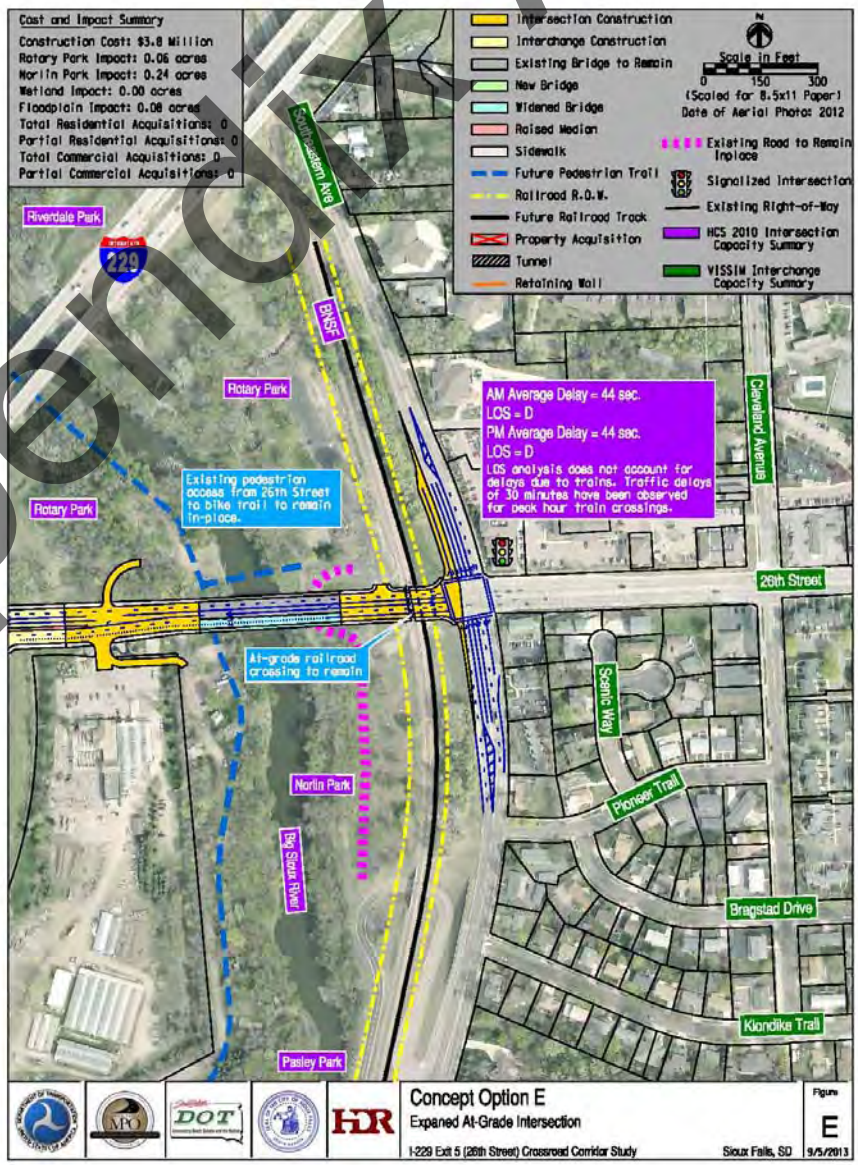
- Traffic LOS D is forecast at the intersection of 26th Street and the Southeastern Avenue for year 2035 conditions.
- Minimal impacts in comparison to the other intersection options.
- Low construction cost in comparison to the other intersection options.

Drawbacks of Option E include:

- Project goal of a grade-separated crossing of the BNSF railroad tracks is not met.
- Future expansion of this option via widening of 26th Street to 3 through lanes is limited by existing development along the corridor. Future expansion of Southeastern Avenue is not considered feasible, mostly because of the width limitations at the I-229 crossing.

It is recommended that this option be eliminated from further evaluation because:

- *The project goal of a grade separation with the railroad tracks is not met.*



Approx A

Option F –Grade-Separated Intersection

Option F (Figure F) proposes a 26th Street bridge over Big Sioux River, over the BNSF railroad tracks, and over Southeastern Avenue. There would be no direct connection between 26th Street and Southeastern Avenue. Traffic would go from Southeastern Avenue to 26th Street and vice versa via Pioneer Trail and Cleveland Avenue.

Benefits of Option F include:

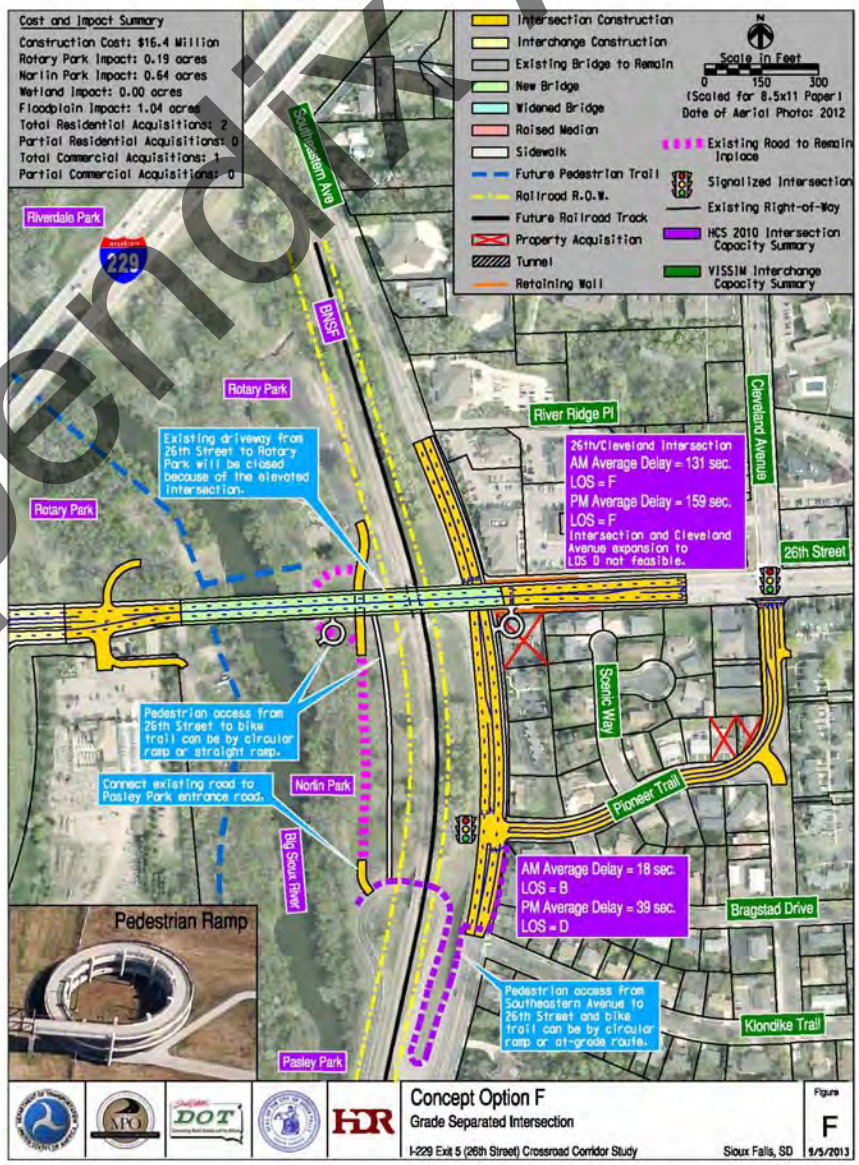
- The lack of a 26th Street/Southeastern Avenue intersection allows for unimpeded through traffic movements on both roadways at the grade separation crossing.

Drawbacks of Option F include:

- Most of the turning traffic is transferred to the Cleveland Avenue/26th Street intersection. Expansion of this intersection to achieve LOS D traffic conditions is not feasible due to impacts to adjacent properties.
- Additional traffic on Pioneer Trail, currently a local street, is not desirable.
- Realignment of Pioneer Trail to make it a through street would result in two residential property acquisitions.

It is recommended that this option be eliminated from further evaluation because of:

- *Impacts along Pioneer Trail and at the 26th Street/Cleveland Avenue intersection.*



Appendix A

BUILD OPTIONS EVALUATION SUMMARY

Options recommended to be carried forward for further refinement and evaluation

Option	Intersection Description	Main reason(s) for carrying forward
A	Elevated intersection on existing Southeastern Avenue alignment	• Provides RR overpass • Improves traffic conditions • Landowners in southeast quadrant accept acquisition of properties
C	Elevated intersection on shifted Southeastern Avenue	• Provides RR overpass • Improves traffic conditions • Fewer southeast quadrant acquisitions than Option A

Options recommended to be eliminated from further evaluation

Option	Interchange Description	Main reason for elimination
B	Elevated intersection with Southeastern Avenue tunnels for through movements	Impacts to River Ridge Place access
D	Elevated intersection with shifted Southeastern Avenue and tunnels for through movements	Impacts to River Ridge Place access
E	Expanded 26th/Southeastern Intersection with at-grade RR crossing	Does not meet project purpose and need of grade separated RR crossing
F	Grade separated intersection	Impacts to Pioneer Trail and Cleveland Avenue/26th Street intersection

Appendix A

Intersection Options Comparison Matrix
26th Street/Southeastern Avenue Intersection

I-229 Exit 5 (26th Street) Crossroad Corridor Study

9/3/13

Option	Description	Design	Driver/Public Perception		Construction		Traffic Operations and Safety				City	BNSF	Property Impacts						Environmental Impacts				Pedestrians	Construction Cost		
		Meets Purpose & Need	Driver familiarity/ expectancy	Public perception via Survey Monkey	Maintenance of traffic during construction	Allows for phased construction	Traffic Operations (Year 2035) Worst LOS AM/PM	Traffic Operations (Year 2035) Worst Delay AM/PM (sec)	Southeastern Avenue Through Traffic LOS AM/PM	Allows for future expansion	Service road maintenance	BNSF acceptance	Total residential acqusitions	Partial residential acqusitions	Total commercial acquisitions	Partial commercial acquisitions	Access impacts after construction	Visual impacts	Rotary Park encroachment (3) acres	Norlin Park encroachment (3) acres	Wetland impacts acres	Floodplain impacts acres	Pedestrian access	Structure cost M $	Roadway cost M $	Total cost M $
A	Elevated intersection on existing SE Ave	yes	good	good	moderate	yes	D/D	44/44	D	no	NA	good	2	0	2	0	major (2)	major	0.19	0.64	0	1.04	good	$12.5	$5.5	$18.0
B	Elevated intersection with SE Ave tunnels for through movements	yes	moderate	good	poor	yes	D/D	44/43	A	no	NA	moderate	0	0	1	0	major	major	0.19	0.64	0	1.04	moderate	$15.1	$6.4	$21.5
C	Elevated intersection on shifted SE Ave	yes	good	good	moderate	yes	D/D	44/44	D	no	Poor	moderate	1	0	0	0	moderate	major	0.19	0.64	0	1.04	good	$12.6	$6.2	$18.8
D	Elevated intersection with shifted SE Ave alignment and tunnels	yes	moderate	good	poor	yes	D/D	44/43	A	no	Poor	moderate	1	0	1	0	major	major	0.19	0.64	0	1.04	moderate	$15.0	$6.7	$21.7
E	Expanded at-grade intersection	no	good	moderate	good	yes	D/D	44/44	D	no	NA	poor	0	0	0	0	moderate	none	0.06	0.24	0	0.08	good	$1.7	$2.1	$3.8
F	Grade separation at 26th St/SE Ave	yes	good	poor	moderate	yes	F/F (1)	131/159	A	no	NA	good	2	0	1	0	major	moderate	0.19	0.64	0	1.04	moderate	$10.7	$5.7	$16.4
NB	No-build	no	good	poor	NA	NA	F/F	98/127	F	NA	NA	poor	0	0	0	0	NA	NA	0	0	0	0	good	NA	NA	NA

NA: Not Applicable
(1) At Cleveland Avenue/26th Street intersection; necessary improvements to provide LOS D are not feasible.
(2) Southeast quadrant property owners are open to acquisition for elimination of access to properties
Options recommended for elimination from further evaluation and reason(s)

(3) It is anticipated that the Project will provide long term benefits to Rotary Park and Norlin Park by improving the safety of vehicular and pedestrian access.

Construction cost does not include property acquisition costs.

Appendix A

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Attachment A
Intersection Options A to F

Appendix A

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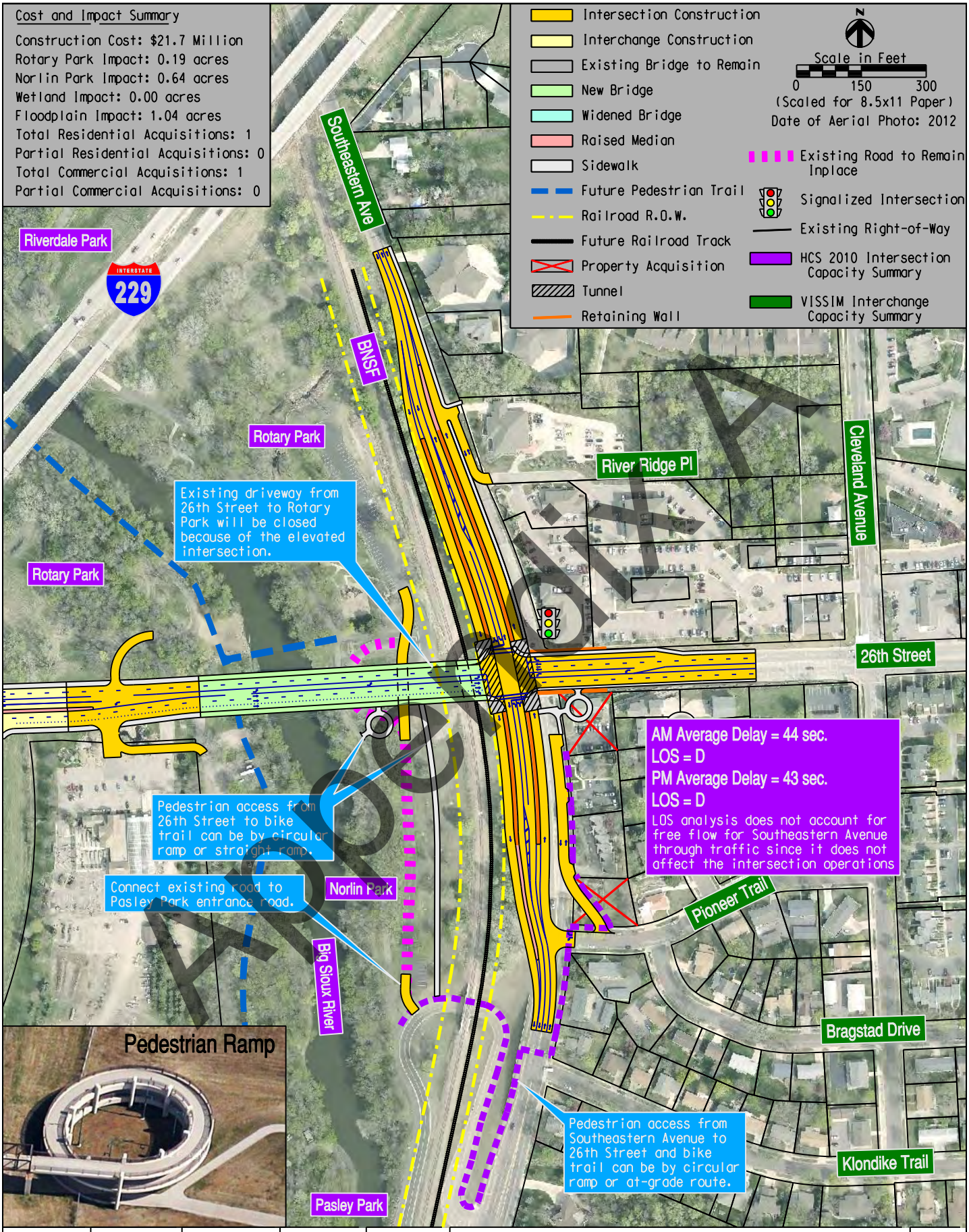
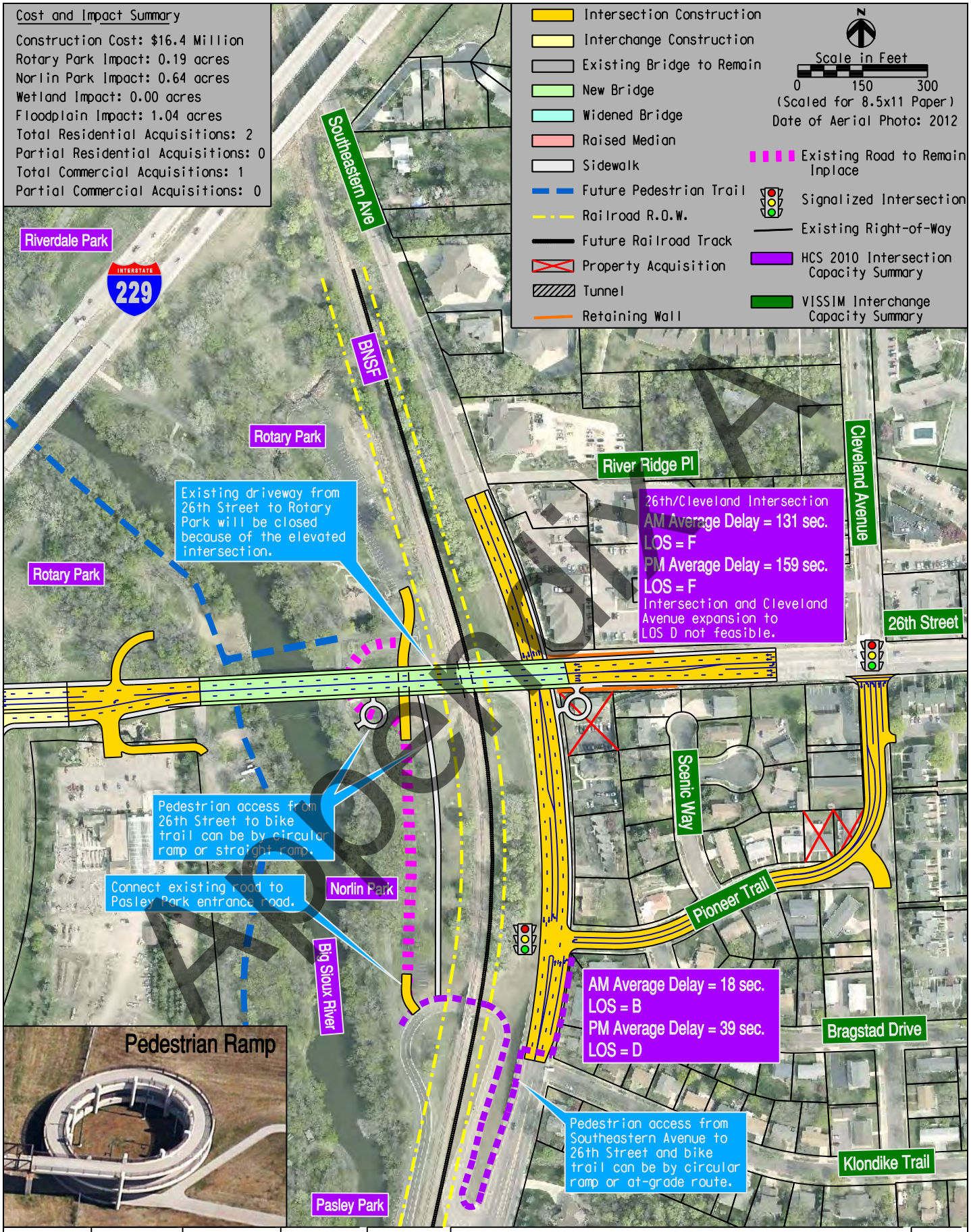
Cost and Impact Summary
Construction Cost: $18.0 Million
Rotary Park Impact: 0.19 acres
Norlin Park Impact: 0.64 acres
Wetland Impact: 0.00 acres
Floodplain Impact: 1.04 acres
Total Residential Acquisitions: 2
Partial Residential Acquisitions: 0
Total Commercial Acquisitions: 2
Partial Commercial Acquisitions: 0
Intersection Construction
Interchange Construction
Existing Bridge to Remain
New Bridge
Widened Bridge
Raised Median
Sidewalk
Future Pedestrian Trail
Railroad R.O.W.
Future Railroad Track
Property Acquisition
Tunnel
Retaining Wall
N
Scale in Feet
0 150 300
(Scaled for 8.5x11 Paper)
Date of Aerial Photo: 2012
Existing Road to Remain Inplace
Signalized Intersection
Existing Right-of-Way
HCS 2010 Intersection Capacity Summary
VISSIM Interchange Capacity Summary
Southeastern Ave
Riverdale Park
INTERSTATE 229
BNSF
Rotary Park
Rotary Park
Existing driveway from 26th Street to Rotary Park will be closed because of the elevated intersection.
River Ridge Pl
Cleveland Avenue
AM Average Delay = 44 sec.
LOS = D
PM Average Delay = 44 sec.
LOS = D
26th Street
Scenic Way
Pedestrian access from 26th Street to bike trail can be by circular ramp or straight ramp.
Norlin Park
Pioneer Trail
Big Sioux River
Bragstad Drive
Connect existing road to Pasley Park entrance road.
Klondike Trail
Pasley Park
Pedestrian Ramp
Concept Option A
Elevated Intersection on Existing Southeastern Avenue Alignment
I-229 Exit 5 (26th Street) Crossroad Corridor Study
Sioux Falls, SD
Figure
A
9/5/2013


Cost and Impact Summary
Construction Cost: $21.5 Million
Rotary Park Impact: 0.19 acres
Norlin Park Impact: 0.64 acres
Wetland Impact: 0.00 acres
Floodplain Impact: 1.04 acres
Total Residential Acquisitions: 0
Partial Residential Acquisitions: 0
Total Commercial Acquisitions: 1
Partial Commercial Acquisitions: 0
Intersection Construction
Interchange Construction
Existing Bridge to Remain
New Bridge
Widened Bridge
Raised Median
Sidewalk
Future Pedestrian Trail
Railroad R.O.W.
Future Railroad Track
Property Acquisition
Tunnel
Retaining Wall
N
Scale in Feet
0 150 300
(Scaled for 8.5x11 Paper)
Date of Aerial Photo: 2012
Existing Road to Remain Inplace
Signalized Intersection
Existing Right-of-Way
HCS 2010 Intersection Capacity Summary
VISSIM Interchange Capacity Summary
Southeastern Ave
Riverdale Park
INTERSTATE 229
BNSF
Rotary Park
Existing driveway from 26th Street to Rotary Park will be closed because of the elevated intersection.
Rotary Park
River Ridge Pl
Cleveland Avenue
26th Street
AM Average Delay = 44 sec.
LOS = D
PM Average Delay = 43 sec.
LOS = D
LOS analysis does not account for free flow for Southeastern Avenue through traffic since it does not affect the intersection operations
Pedestrian access from 26th Street to bike trail can be by circular ramp or straight ramp.
Connect existing road to Pasley Park entrance road.
Norlin Park
Pioneer Trail
Big Sioux River
Bragstad Drive
Pedestrian access from Southeastern Avenue to 26th Street and bike trail can be by circular ramp or at-grade route.
Klondike Trail
Pasley Park
Pedestrian Ramp
Concept Option B
Tunnels on Existing Southeastern Avenue Alignment
I-229 Exit 5 (26th Street) Crossroad Corridor Study
Sioux Falls, SD
Figure
B
9/5/2013


Cost and Impact Summary
Construction Cost: $18.8 Million
Rotary Park Impact: 0.19 acres
Norlin Park Impact: 0.64 acres
Wetland Impact: 0.00 acres
Floodplain Impact: 1.04 acres
Total Residential Acquisitions: 1
Partial Residential Acquisitions: 0
Total Commercial Acquisitions: 0
Partial Commercial Acquisitions: 0
Intersection Construction
Interchange Construction
Existing Bridge to Remain
New Bridge
Widened Bridge
Raised Median
Sidewalk
Future Pedestrian Trail
Railroad R.O.W.
Future Railroad Track
Property Acquisition
Tunnel
Retaining Wall
N
Scale in Feet
0 150 300
(Scaled for 8.5x11 Paper)
Date of Aerial Photo: 2012
Existing Road to Remain Inplace
Signalized Intersection
Existing Right-of-Way
HCS 2010 Intersection Capacity Summary
VISSIM Interchange Capacity Summary
Southeastern Ave
Riverdale Park
INTERSTATE 229
BNSF
Rotary Park
Rotary Park
River Ridge Pl
Cleveland Avenue
Existing driveway from 26th Street to Rotary Park will be closed because of the elevated intersection.
AM Average Delay = 44 sec.
LOS = D
PM Average Delay = 44 sec.
LOS = D
26th Street
Scenic Way
Pedestrian access from 26th Street to bike trail can be by circular ramp or straight ramp.
Norlin Park
Pioneer Trail
Big Sioux River
Bragstad Drive
Connect existing road to Pasley Park entrance road.
Klondike Trail
Pasley Park
Pedestrian Ramp
Concept Option C
Elevated Intersection with Southeastern Avenue Shifted
I-229 Exit 5 (26th Street) Crossroad Corridor Study
Sioux Falls, SD
Figure
C
9/5/2013


Cost and Impact Summary
Construction Cost: $21.7 Million
Rotary Park Impact: 0.19 acres
Norlin Park Impact: 0.64 acres
Wetland Impact: 0.00 acres
Floodplain Impact: 1.04 acres
Total Residential Acquisitions: 1
Partial Residential Acquisitions: 0
Total Commercial Acquisitions: 1
Partial Commercial Acquisitions: 0
Intersection Construction
Interchange Construction
Existing Bridge to Remain
New Bridge
Widened Bridge
Raised Median
Sidewalk
Future Pedestrian Trail
Railroad R.O.W.
Future Railroad Track
Property Acquisition
Tunnel
Retaining Wall
N
Scale in Feet
0 150 300
(Scaled for 8.5x11 Paper)
Date of Aerial Photo: 2012
Existing Road to Remain Inplace
Signalized Intersection
Existing Right-of-Way
HCS 2010 Intersection Capacity Summary
VISSIM Interchange Capacity Summary
Southeastern Ave
Riverdale Park
INTERSTATE 229
BNSF
Rotary Park
Rotary Park
River Ridge Pl
Cleveland Avenue
Existing driveway from 26th Street to Rotary Park will be closed because of the elevated intersection.
26th Street
AM Average Delay = 44 sec.
LOS = D
PM Average Delay = 43 sec.
LOS = D
LOS analysis does not account for free flow for Southeastern Avenue through traffic since it does not affect the intersection operations
Pedestrian access from 26th Street to bike trail can be by circular ramp or straight ramp.
Connect existing road to Pasley Park entrance road.
Norlin Park
Pioneer Trail
Big Sioux River
Bragstad Drive
Pedestrian access from Southeastern Avenue to 26th Street and bike trail can be by circular ramp or at-grade route.
Klondike Trail
Pasley Park
Pedestrian Ramp
Concept Option D
Tunnels with Southeastern Avenue Shifted
I-229 Exit 5 (26th Street) Crossroad Corridor Study
Sioux Falls, SD
Figure
D
9/5/2013


Cost and Impact Summary
Construction Cost: $3.8 Million
Rotary Park Impact: 0.06 acres
Norlin Park Impact: 0.24 acres
Wetland Impact: 0.00 acres
Floodplain Impact: 0.08 acres
Total Residential Acquisitions: 0
Partial Residential Acquisitions: 0
Total Commercial Acquisitions: 0
Partial Commercial Acquisitions: 0
Intersection Construction
Interchange Construction
Existing Bridge to Remain
New Bridge
Widened Bridge
Raised Median
Sidewalk
Future Pedestrian Trail
Railroad R.O.W.
Future Railroad Track
Property Acquisition
Tunnel
Retaining Wall
N
Scale in Feet
0 150 300
(Scaled for 8.5x11 Paper)
Date of Aerial Photo: 2012
Existing Road to Remain Inplace
Signalized Intersection
Existing Right-of-Way
HCS 2010 Intersection Capacity Summary
VISSIM Interchange Capacity Summary
Southeastern Ave
Riverdale Park
INTERSTATE 229
BNSF
Rotary Park
Rotary Park
Existing pedestrian access from 26th Street to bike trail to remain in-place.
AM Average Delay = 44 sec.
LOS = D
PM Average Delay = 44 sec.
LOS = D
LOS analysis does not account for delays due to trains. Traffic delays of 30 minutes have been observed for peak hour train crossings.
Cleveland Avenue
26th Street
At-grade railroad crossing to remain
Scenic Way
Pioneer Trail
Norlin Park
Big Sioux River
Bragstad Drive
Klondike Trail
Pasley Park
Concept Option E
Expaned At-Grade Intersection
I-229 Exit 5 (26th Street) Crossroad Corridor Study
Sioux Falls, SD
Figure
E
9/5/2013
Approved



Concept Option F

Grade Separated Intersection

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure F

9/5/2013

Attachment B
Park Impact Figures

Appendix A

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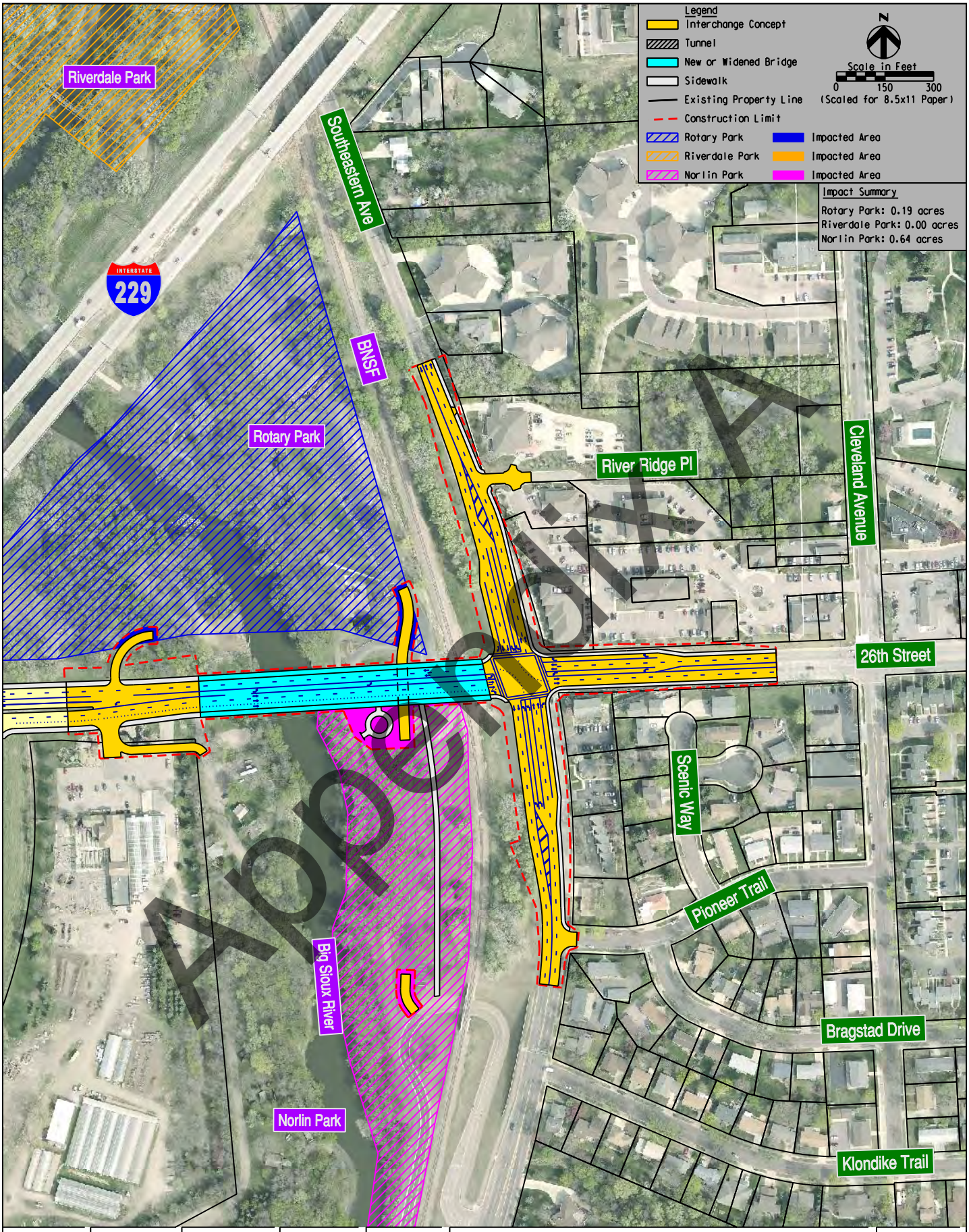


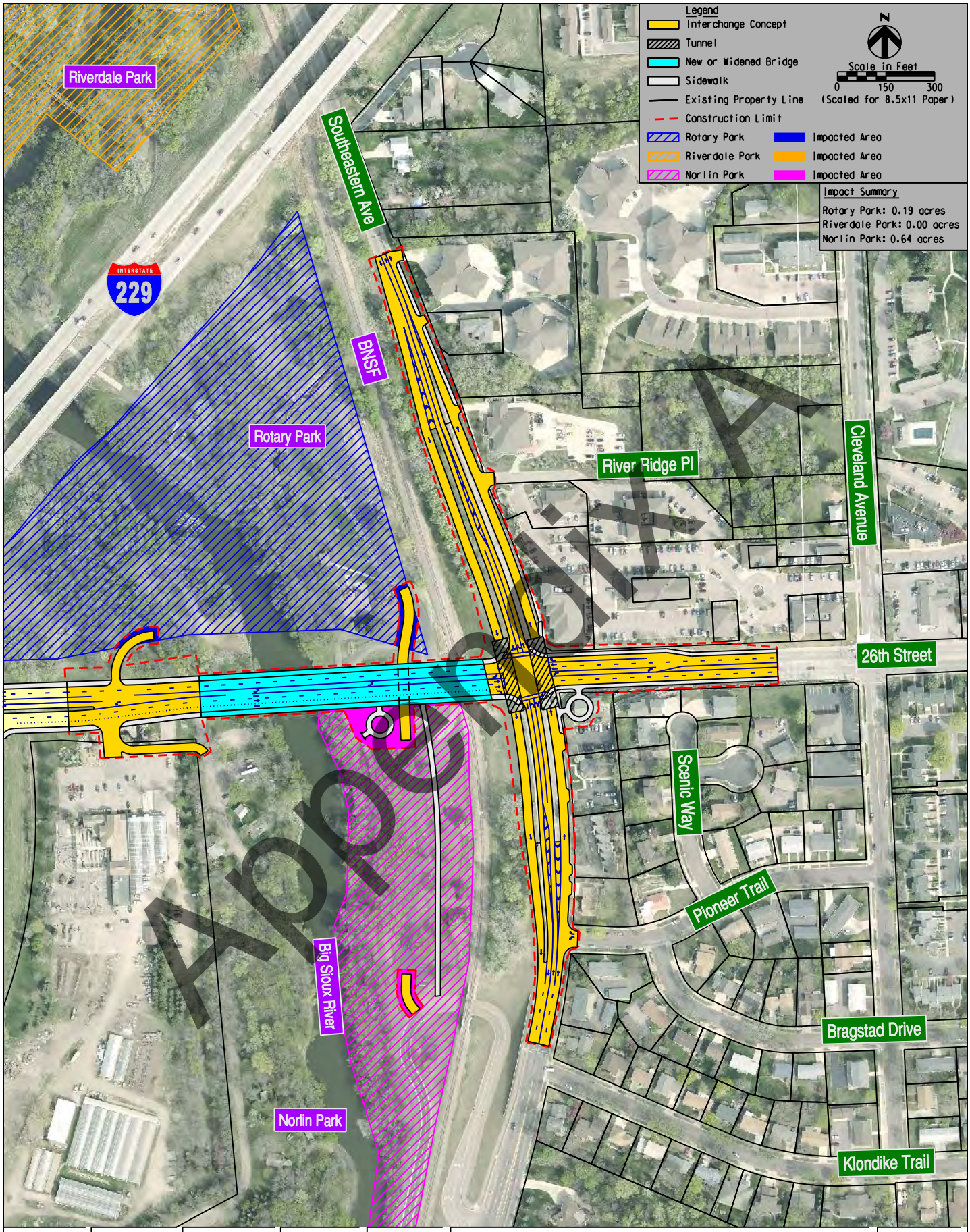
Concept Option A - Park Impacts

Elevated Intersection on Existing Southeastern Ave. Alignment

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.A

9/5/2013



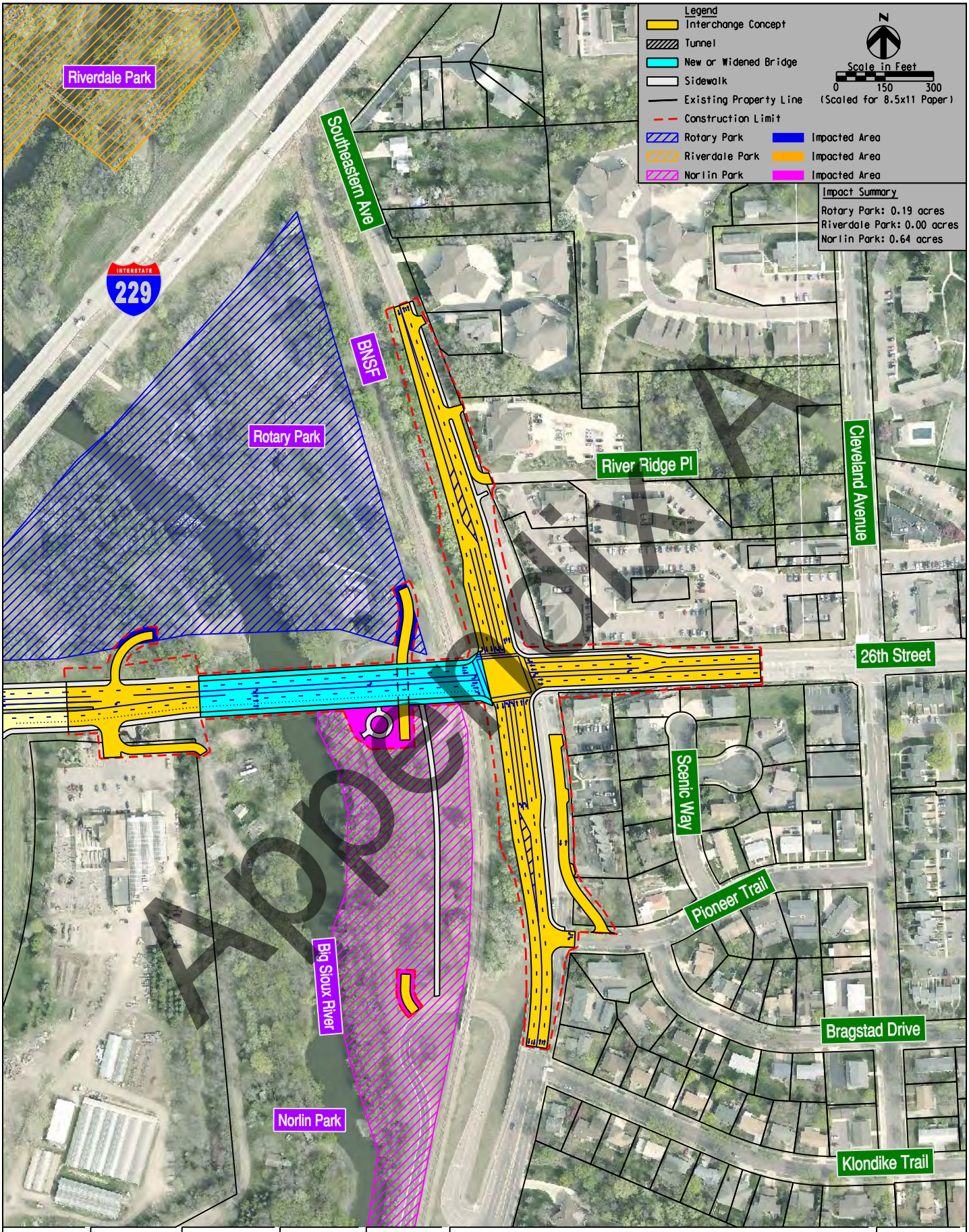
Concept Option B - Park Impacts

Tunnels on Existing Southeastern Avenue Alignment

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.B

9/5/2013



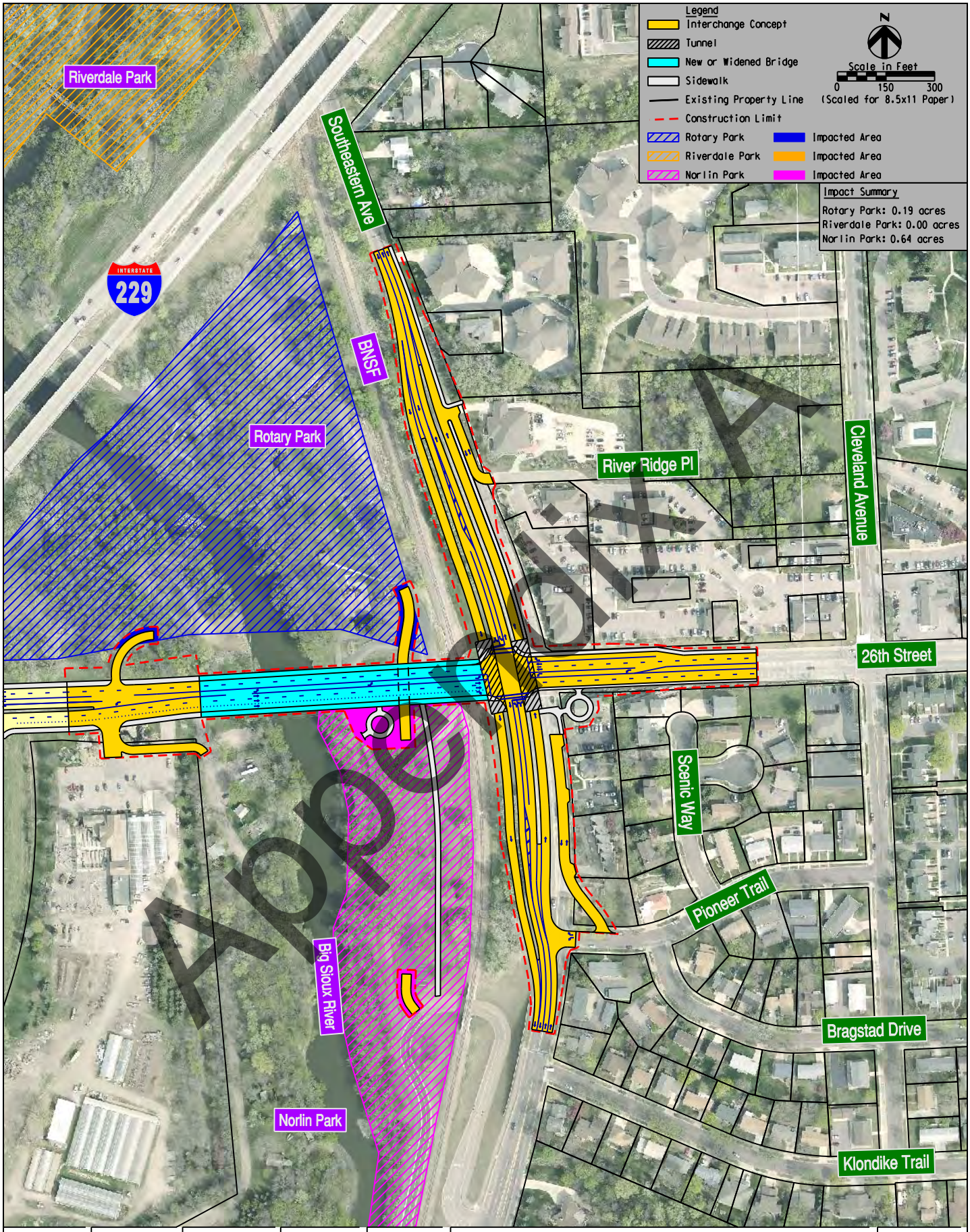
Concept Option C - Park Impacts

Elevated Intersection with Southeastern Avenue Shifted

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.1.C

9/5/2013



Concept Option D - Park Impacts

Tunnels with Southeastern Avenue Shifted

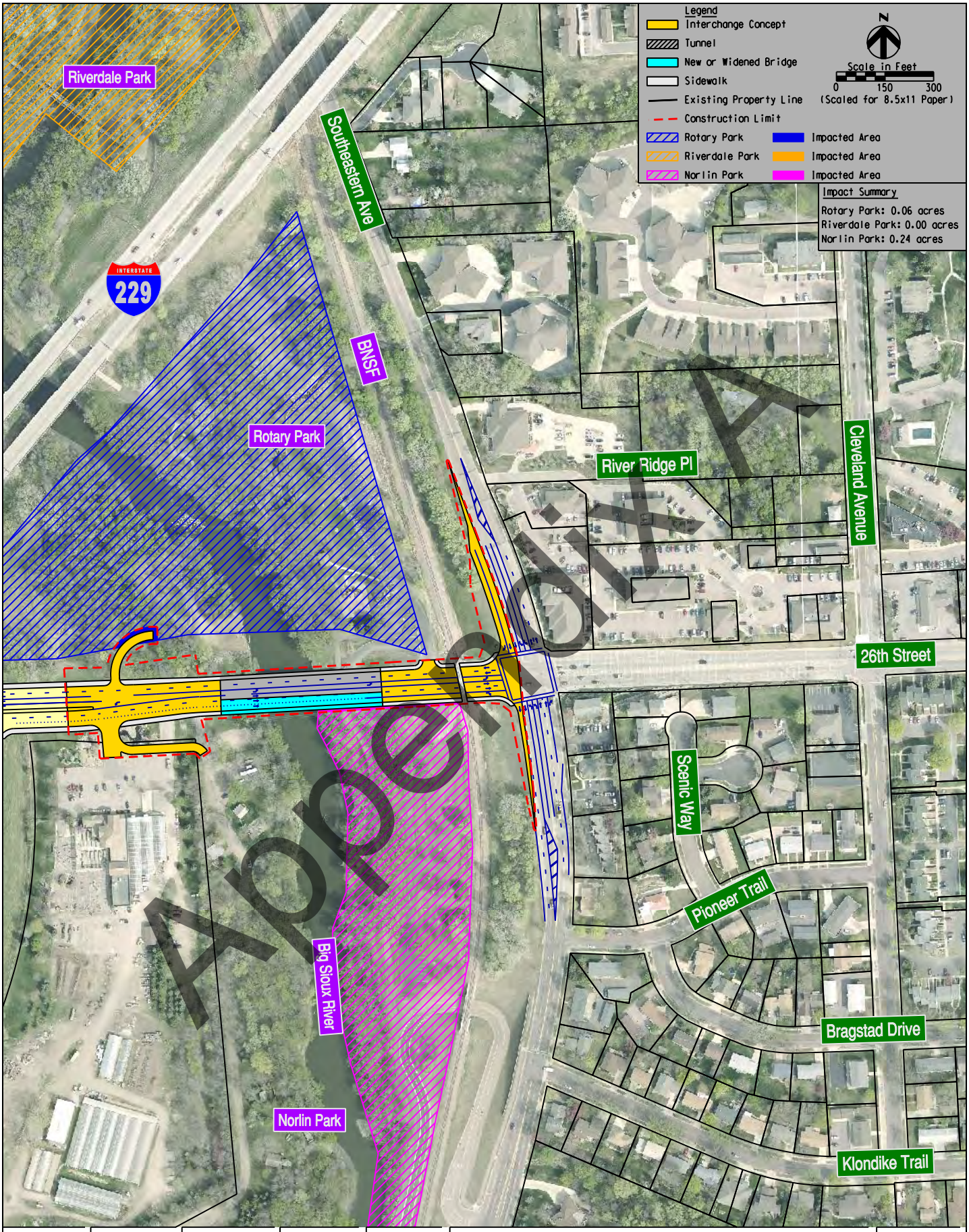
I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure

3.1.D

9/5/2013



Concept Option E - Park Impacts

Expaned At-Grade Intersection

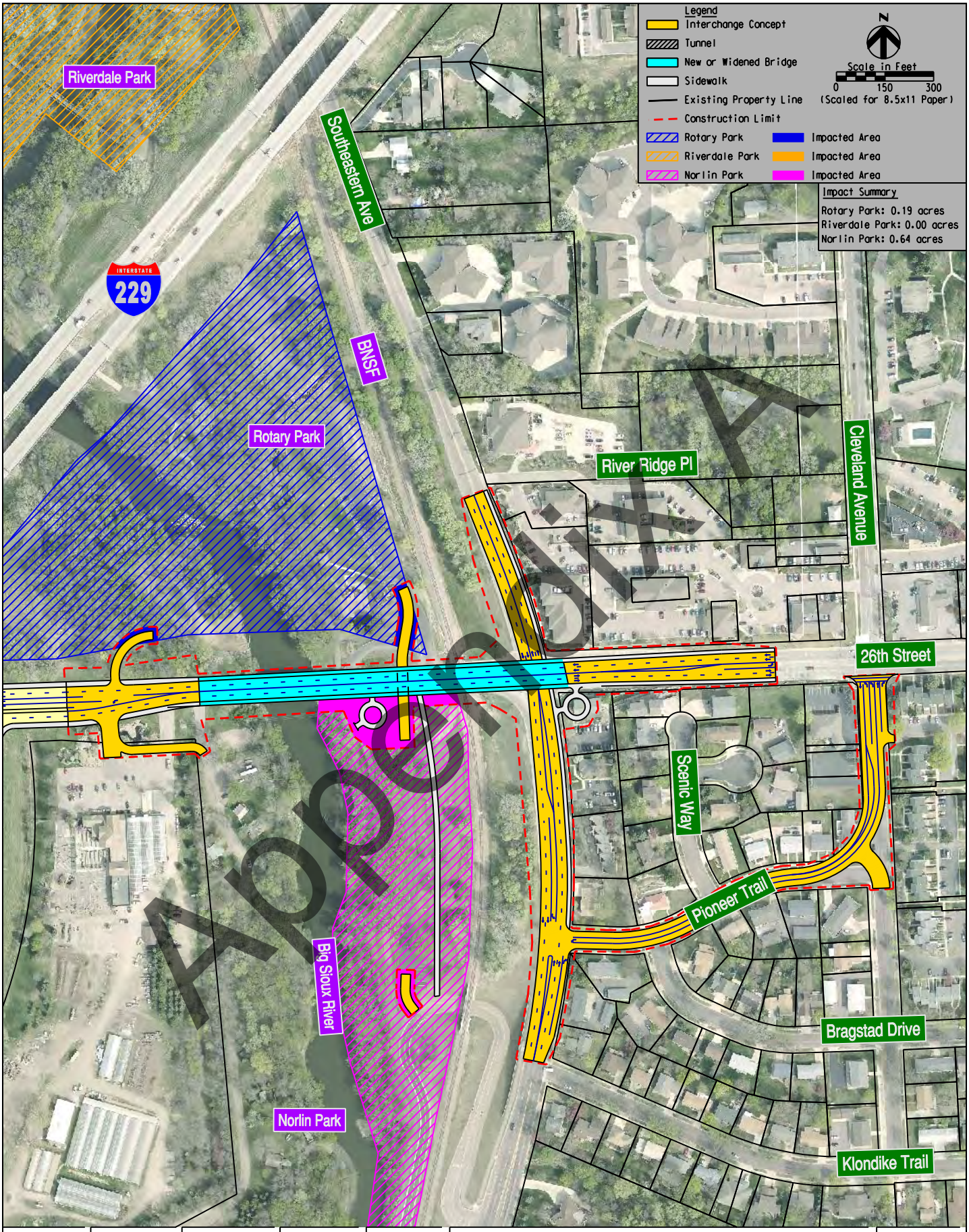
I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure

3.1.E

9/5/2013



Concept Option F - Park Impacts

Grade Separated Intersection

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.1.F

9/5/2013

Attachment C
Floodplain and Wetland Impact Figures

Appendix A

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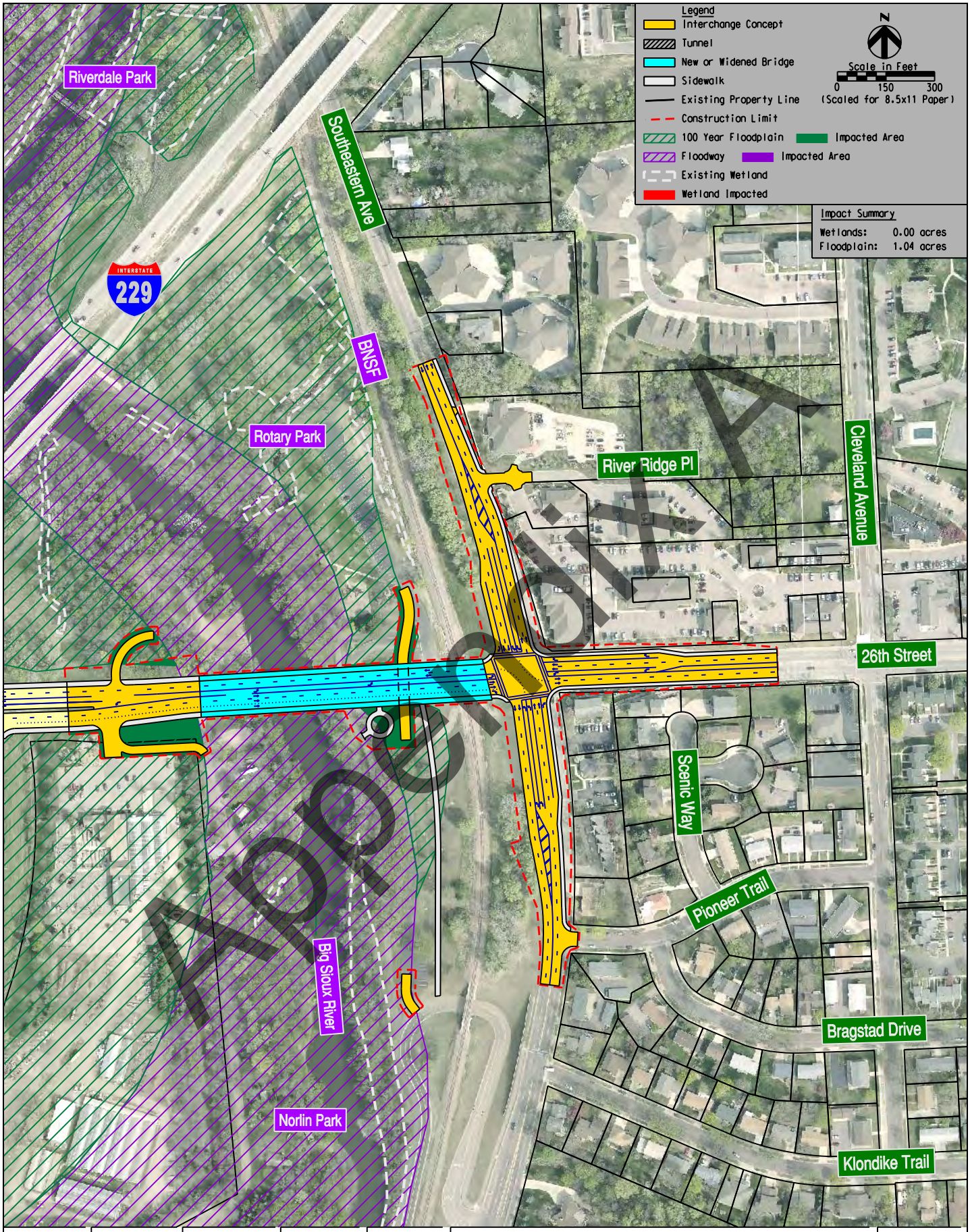


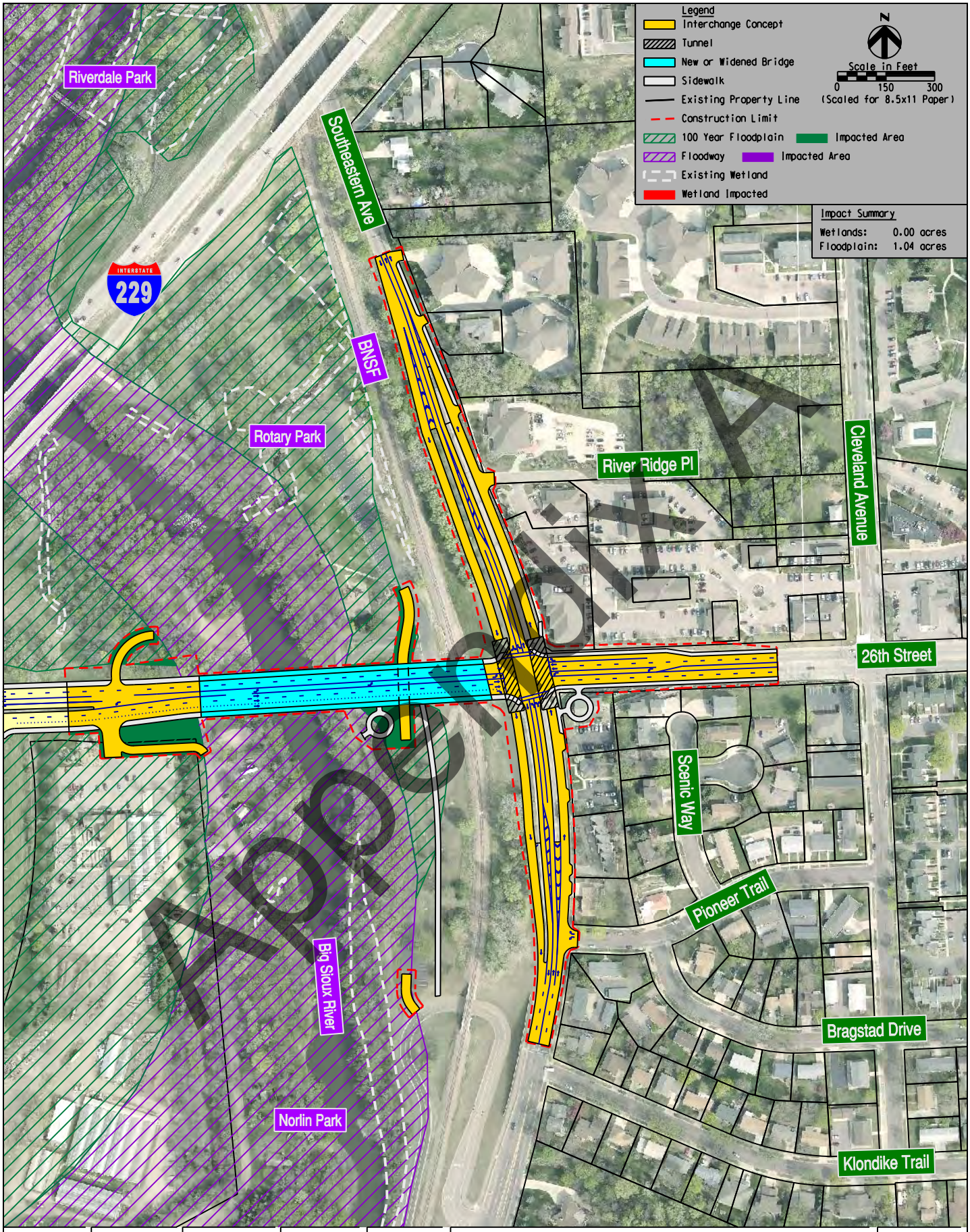
Concept Option A - Floodplain, Wetland Impacts

Elevated Intersection on Existing Southeastern Ave. Alignment

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.A

9/5/2013



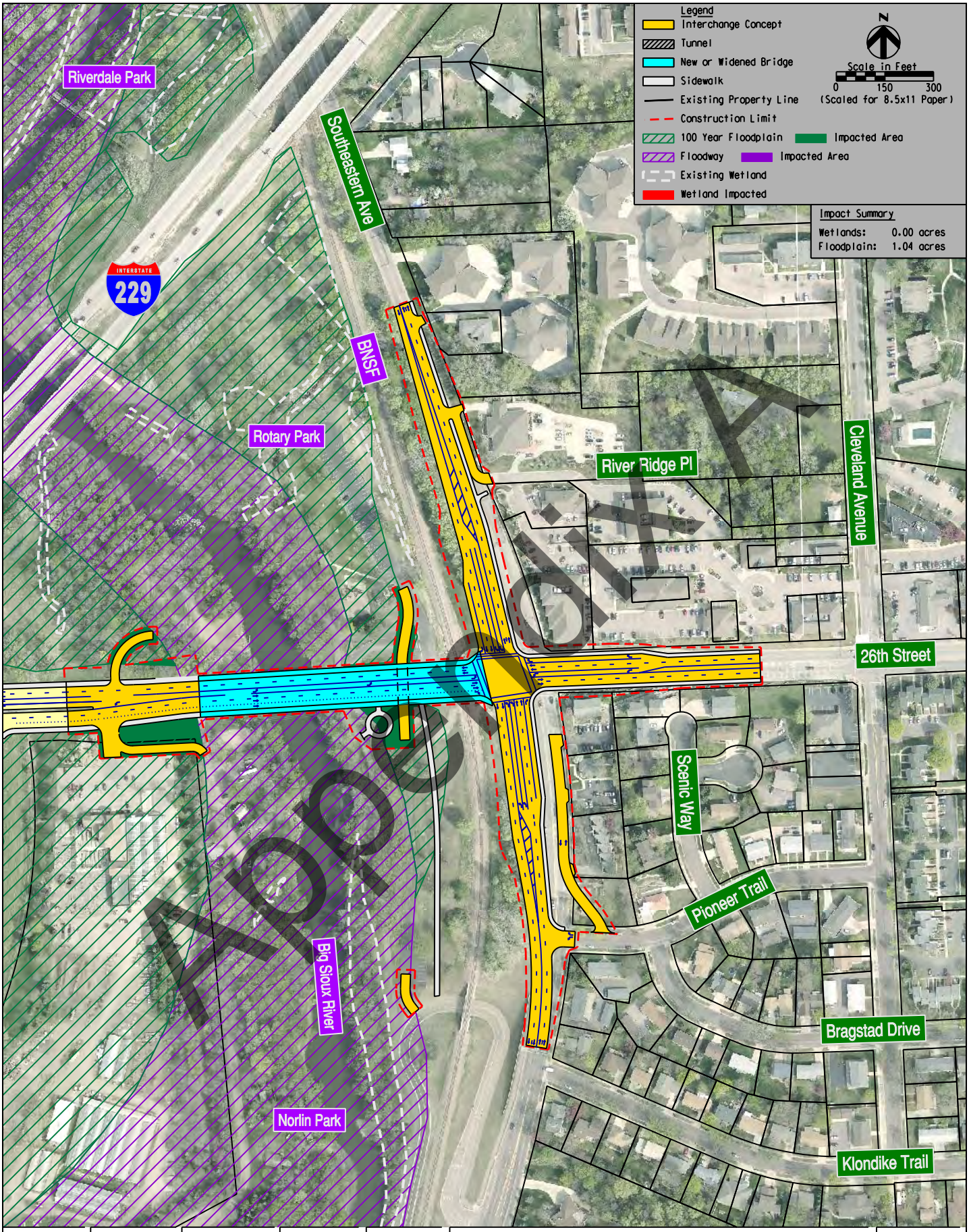
Concept Option B - Floodplain, Wetland Impacts

Tunnels on Existing Southeastern Avenue Alignment

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure 3.2.B

9/5/2013



Concept Option C - Floodplain, Wetland Impacts

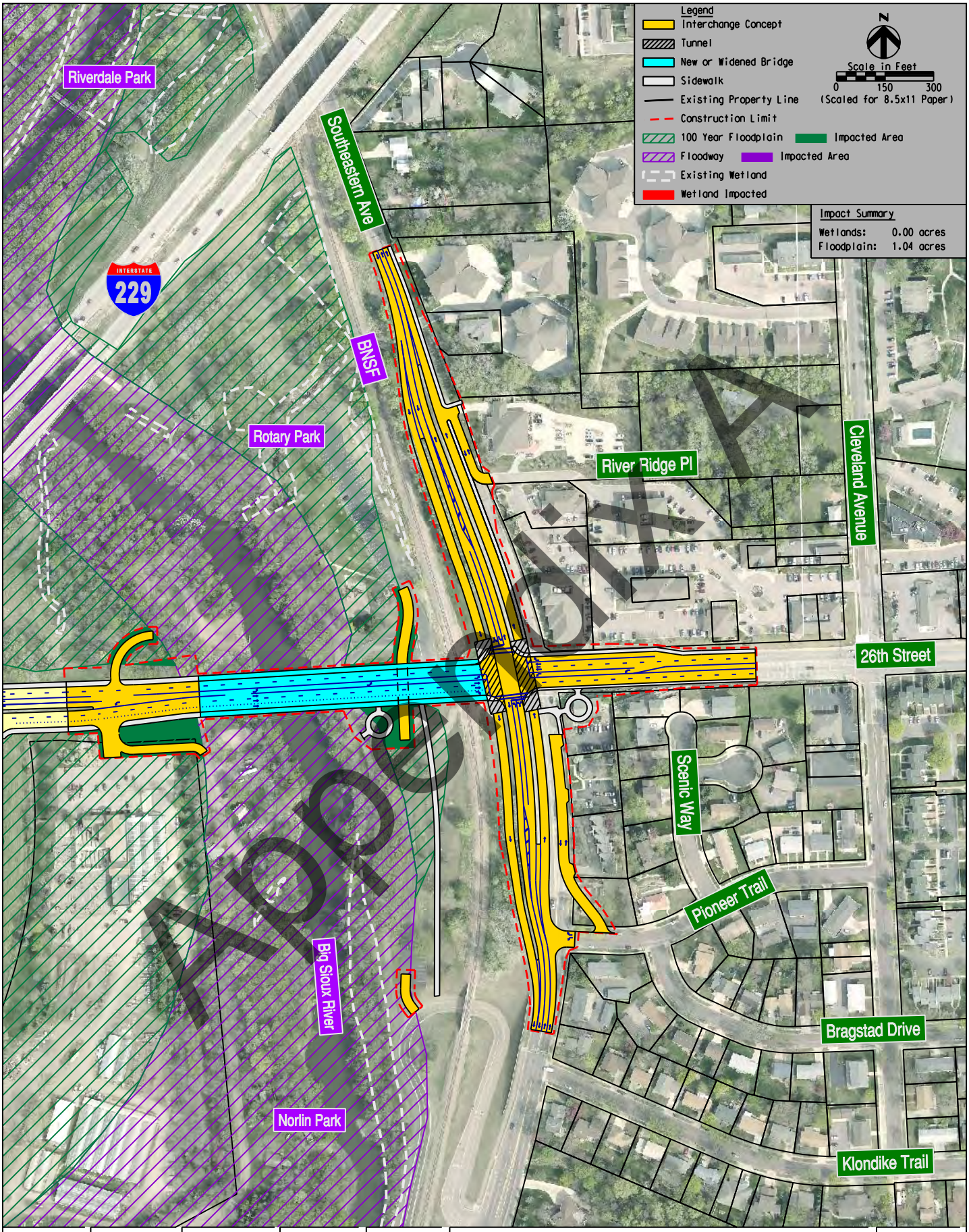
Elevated Intersection with Southeastern Avenue Shifted

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.2.C

9/5/2013



Concept Option D - Floodplain, Wetland Impacts

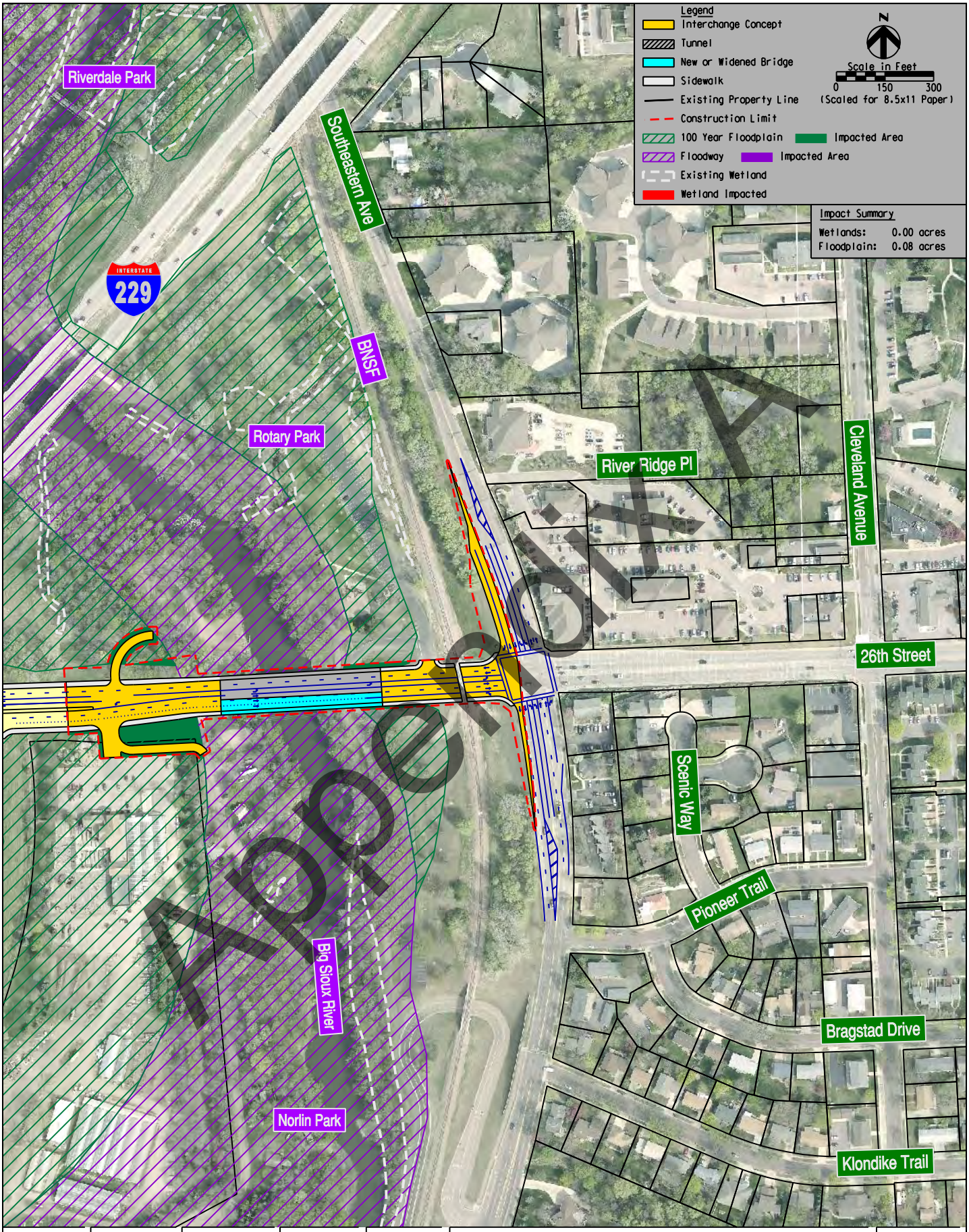
Tunnels with Southeastern Avenue Shifted

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.2.D

9/5/2013



Concept Option E - Floodplain, Wetland Impacts

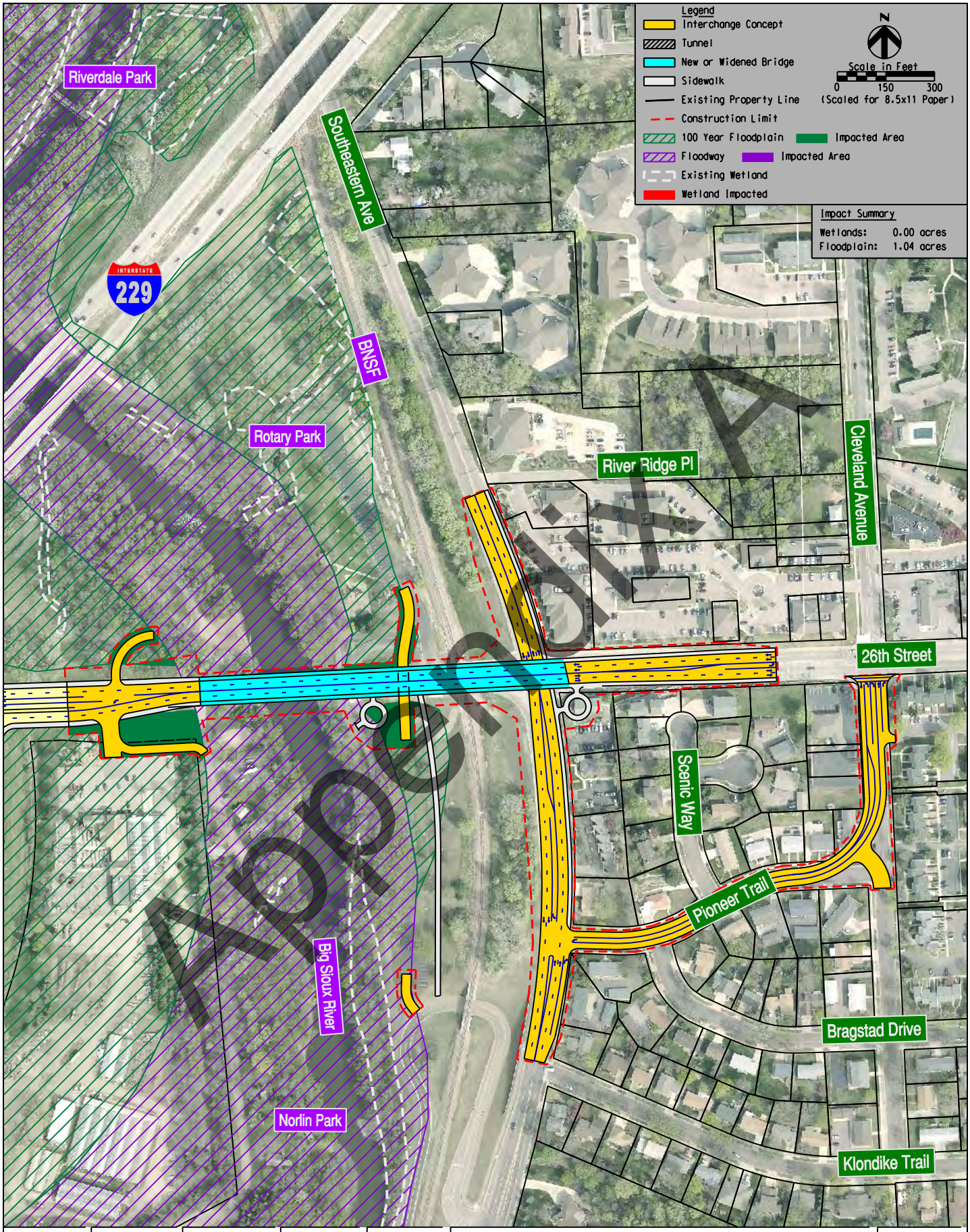
Expaned At-Grade Intersection

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.2.E

9/5/2013



Concept Option F - Floodplain, Wetland Impacts

Grade Separated Intersection

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 3.2.F

9/5/2013

Attachment D
Renderings Illustrating Option B

Appendix A

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Existing View Looking Southeast

Proposed View Looking Southeast

Appendix A

Concept Option B Rendering

Looking Southeast

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure B1

Existing View Looking Northwest

Proposed View Looking Northwest

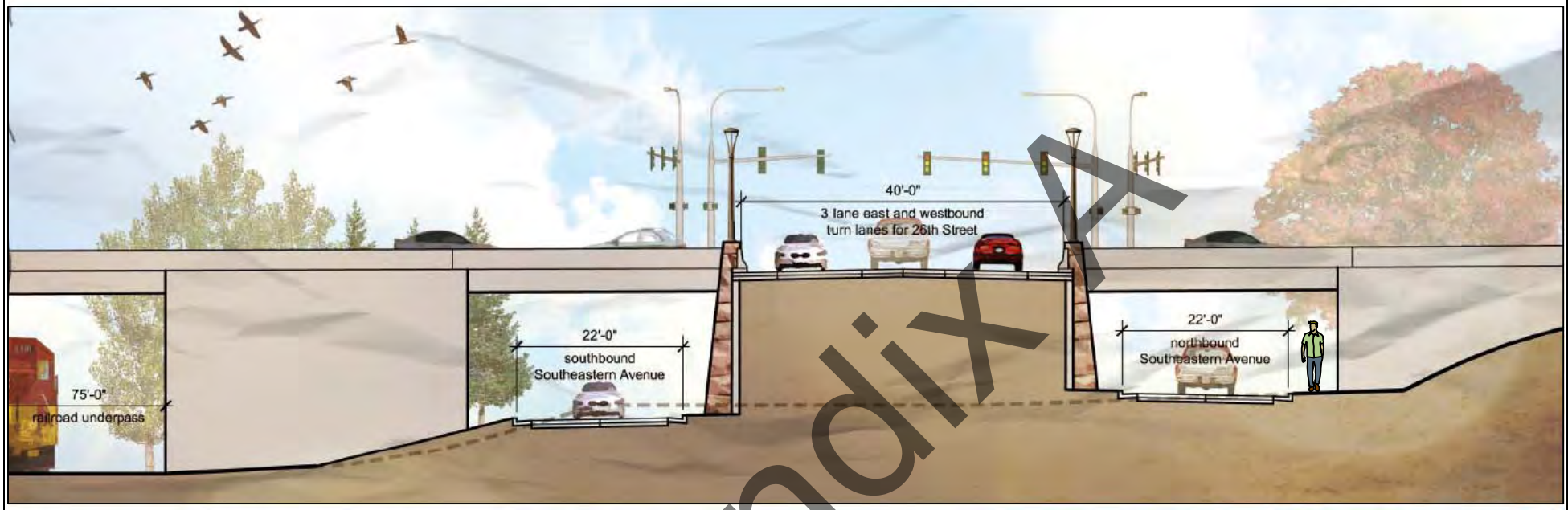
Appendix A

Concept Option B Rendering

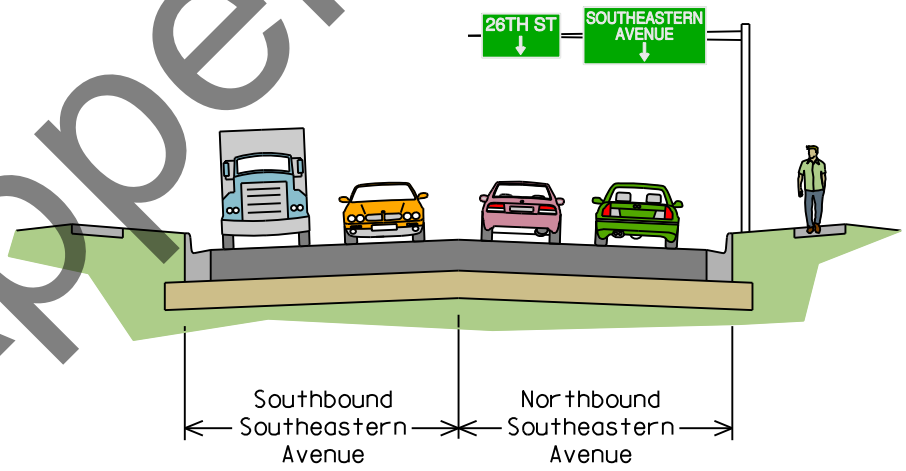
Looking Northwest

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure B2



Section View Looking North



Appendix A

Concept Option B Rendering

Sections and Views

I-229 Exit 5 (26th Street) Crossroad Corridor Study — Sioux Falls, SD

Figure B3

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Attachment E
Traffic Counts at Entrances to the River Ridge Business Development

Appendix A

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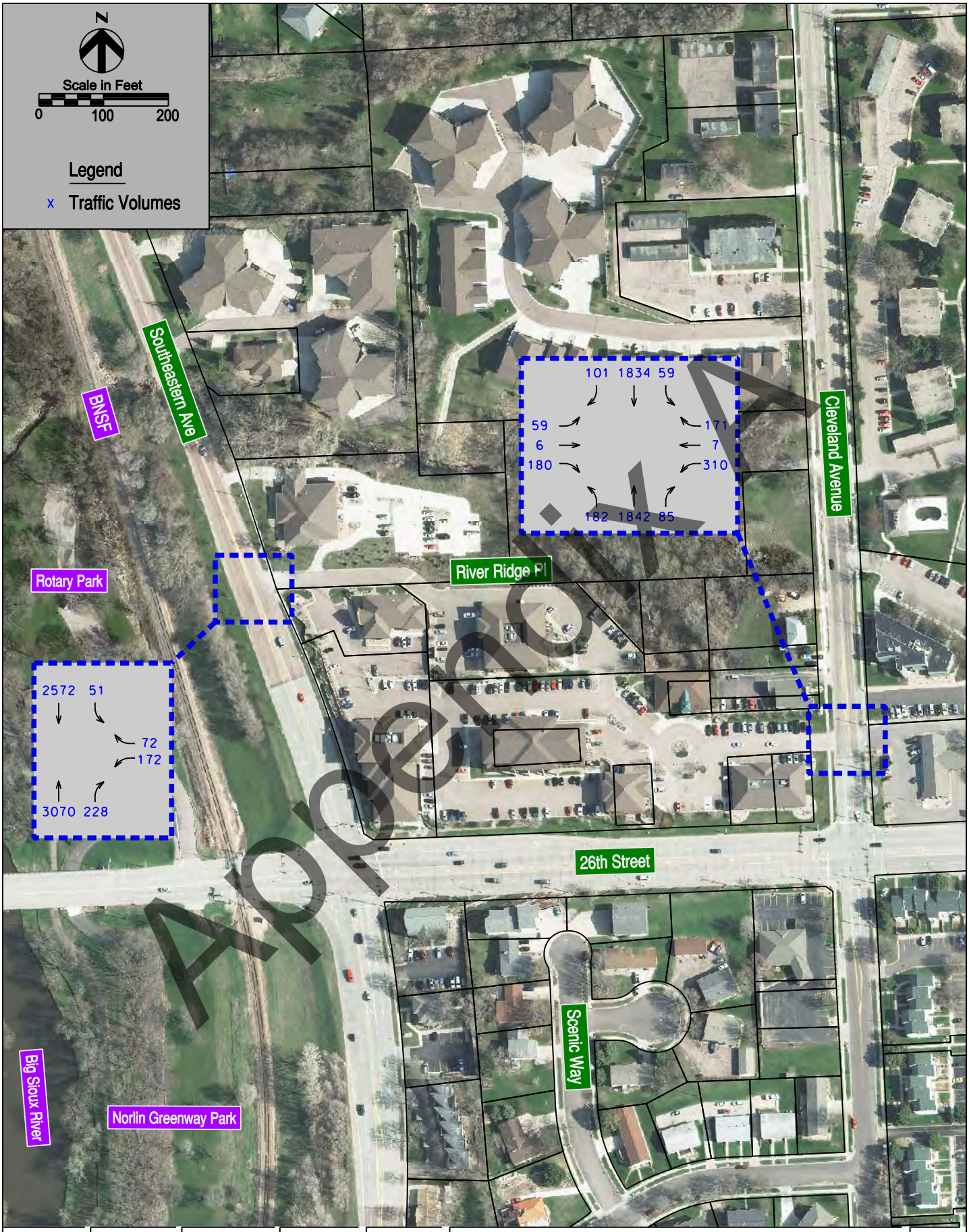

Appendix A

Northeast Quadrant Traffic Counts - 7 AM to 6 PM

I-229 Exit 5 (26th Street) Crossroad Corridor Study

Sioux Falls, SD

Figure 1

1/28/13

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APPENDIX B

ALTERNATIVE 7a LOOP DESIGN ANALYSIS

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HDR | ONE COMPANY *Many Solutions*℠

Memo

To:	Steve Gramm, SDDOT
From: HDR	Project: I-229 Exit 5 (26th Street) Interchange Environmental Assessment IM-PH 2292(06)5 P; PCN 4778
CC:	Mark Hoines, FHWA; Shannon Ausen, City of Sioux Falls
Date:	April 18, 2014; revised 8/26/14 Job 179168

RE: Interchange Loop Design Analysis

1. Purpose

Regarding interchange loop design, the SDDOT Road Design Manual states:

> *A design speed of 30 mph is preferred for loop ramps. A lower design speed may be used, but must be approved by the Chief Road Design Engineer. A corresponding radius that meets or exceeds the design speed should be selected based on balancing the needs for traffic and impacts to the surrounding properties. Where right of way costs are high (urban) a smaller radius may be selected.* (SDDOT Road Design Manual page 13-13).

The existing and proposed loops for the I-229 Exit 5 (26th Street) interchange improvement project do not provide the preferred loop design speed. SDDOT has decided to prepare a formal Design Exception for the proposed loops to allow for FHWA approval. This memo is intended to provide the data necessary for SDDOT to complete the design exception (C2C) application.

2. Southeast Quadrant Loop

The existing 26th Street westbound to I-229 northbound loop is a compound curve loop that was prevalent with the design and construction of the original interstate system (see Figure 1). The drawback of these loops was that traffic would speed up on the large radius curve and then have slow down to negotiate the tight curve. The tight curve of the southeast quadrant loop has a 205' radius which corresponds to approximately a 27 mph design speed. The curve is posted with a 25 mph sign. Current interchange design practice generally provides a constant radius curve for loops so vehicles can maintain a constant speed around the loop.

2.1 2000/2001 I-229 Reconstruction – I-229 was reconstructed in 2000 and 2001 from Western Avenue to Benson Road. Auxiliary lanes were added between most interchanges; the I-229 ramps northbound on/off ramps at 26th Street were reconstructed on the same alignments as the original ramps because:

- There was no evidence, based on crash data, that indicated a problem with the curve.
- In the original Exit 5 construction, acceleration lane length on I-229 for the northbound on-ramp was only 400 feet with the merge taper ending prior to the 26th Street bridge as shown in the left photo below. The 2001 reconstruction of the I-229 northbound lanes and the northbound on-ramp extended the acceleration lane length to 900 feet. However, SDDOT did not desire to widen the I-229 northbound bridge over the Big Sioux River to provide the desired 1,420 foot acceleration lane length because the bridge and approaches had just been re-built in the early 1990s. The right photo below is approaching the I-229 northbound Big Sioux River bridge.

NB I-229 at 26th Street bridge in June 2000

NB I-229 at Big Sioux bridge in June 2000

Appendix B

2.2 ***2009 to 2012 Crash analysis*** – The I-229/26th Street (Exit 5) Corridor Study, as well as the I-229 Major Investment Study, evaluated crash records for the years 2009-2012 and compared crash rates for interstate mainline segments, interstate ramps, arterial street segments, and arterial intersections to critical crash rates for the I-229 Exit 5 facilities***. It was found that the crash incidence on the 26th Street westbound to I-229 northbound loop was below the critical rate***. Five total crashes were reported for the 2009 to 2012 period with no injuries or fatalities. Four of the five crashes involved drivers striking signs or delineators under a variety of driving conditions, while the fifth crash involved a driver striking debris in the roadway. The crash rate spreadsheet, crash map and crash records are provided in Attachment A to this memorandum.

2.3 ***Acceleration distance*** – The current acceleration lane length for the northbound on-ramp is 900 feet; per the SDDOT Road Design Manual, 1420' should be provided for the existing loop. It is anticipated that an auxiliary lane will be constructed in the future from 26th Street to 10th Street for southbound and northbound I-229. This would resolve the inadequate acceleration lane length. Construction of an auxiliary lane will entail widening the I-229 bridges over the Big Sioux River and BNSF railroad tracks.

2.4 ***Loop size options*** – Figure 1 shows three loop size/location options:

- A 265' radius loop (shown in purple in Figure 1) is the largest radius that could be provided without moving the northbound off-ramp intersection at 26th Street. This <u>is not recommended</u> because:
  - The acceleration length on I-229 is reduced from the existing 900' to 650'. The required acceleration length per the SDDOT Road Design Manual is 1350'.
  - The design speed improvement is not significant.
  - The merge length is shortened to approximately 500' for the dual left turn lane movement from 26th Street. This is not considered adequate (see sections 2.5 and 2.6).
- A 230' foot radius loop (shown in green in Figure 1) could be used to eliminate the compound curve at the I-229 end of the loop. This is a practice SDDOT has implemented at other interchange loops as part of interstate resurfacing work. This option is not considered warranted as part of the currently proposed interchange reconstruction project because of:
  - The relatively recent reconstruction of the loop (2001)
  - The lack of safety problems at the existing loop

  However, this option could be implemented as a small project when the existing pavement has reached the end of its design life.

Maintaining the existing 205' radius loop <u>is recommended</u> because:

- The most recently available crash data did not indicate a safety issue with the relatively small radius of the existing loop.
- With the dual left turn movement from 26th Street westbound to I-229 northbound, an adequate merge length is needed. The proposed 1000' merge length is considered adequate (see sections 2.5 and 2.6).
- The pavement width is adequate for 2 lanes of traffic within the merge section. As shown in the typical section B-B view in Figure 2, the addition of a shoulder along the inside edge of the loop within the merge section would be beneficial and will be further defined during final design. Near 26th Street, the entire ramp will need to be reconstructed because the intersection will be raised from the existing elevation.
- Reconstruction of the loop with minimal improvement for drivers would not be cost effective, especially since the loop was just reconstructed in 2001.

Appendix B

2.5 Ramp Merge Length Computational Analysis – Dual left turn lanes are proposed for the 26th Street westbound to I-229 northbound movement. Similar to a single point interchange, two ramp receiving lanes are required for the dual left turning traffic; sections A-A and B-B on Figure 2 illustrates this. Generally, the dual receiving lanes are wider than standard traffic lanes to provide a buffer/comfort area between the turning vehicles.

The vehicles will be in 2 lanes separated by a standard skip stripe for 500 feet as shown on Figure 3. Vehicles in the right lane can move to the left lane in this section in anticipation of the upcoming merge. Guidance in AASHTO reflects on the needed sight distance for this type of maneuvering. Table 3-3 below lists avoidance maneuver distances that can provide us with information for these types of lane-change maneuvers.

Table 3-3. Decision Sight Distance

Metric						U.S. Customary					
Design Speed (km/h)	Decision Sight Distance (m) Avoidance Maneuver					Design Speed (mph)	Decision Sight Distance (ft) Avoidance Maneuver				
	A	B	C	D	E		A	B	C	D	E
50	70	155	145	170	195	30	220	490	450	535	620
60	95	195	170	205	235	35	275	590	525	625	720
70	115	325	200	235	275	40	330	690	600	715	825
80	140	280	230	270	315	45	395	800	675	800	930
90	170	325	270	315	360	50	465	910	750	890	1030
100	200	370	315	355	400	55	535	1030	865	980	1135
110	235	420	330	380	430	60	610	1150	990	1125	1280
120	265	470	360	415	470	65	695	1275	1050	1220	1365
130	305	525	390	450	510	70	780	1410	1105	1275	1445
						75	875	1545	1180	1365	1545
						80	970	1685	1260	1455	1650

Avoidance Maneuver A: Stop on rural road—t = 3.0 s

Avoidance Maneuver B: Stop on urban road—t = 9.1 s

Avoidance Maneuver C: Speed/path/direction change on rural road—t varies between 10.2 and 11.2 s

Avoidance Maneuver D: Speed/path/direction change on suburban road—t varies between 12.1 and 12.9 s

Avoidance Maneuver E: Speed/path/direction change on urban road—t varies between 14.0 and 14.5 s

From: *A Policy on Geometric Design of Streets and Highways (AASHTO 2011)*

Appendix B

If we extrapolate the table for avoidance maneuver E (which would represent an urban area), at 15 mph (anticipated turning speed), it would take 320' to negotiate a lane change. If we assume it will take a driver 100' to make the turn and get oriented prior to making this maneuver, a total distance of 420' is needed (rounded up to 500' on Figure 3 for design adaptability during final design).

At the end of the 2-lane section, a merge taper is required to narrow to the standard loop width (see Figure 3). It is anticipated that the width of this merge taper will be a maximum of 9'. In accordance with generally accepted traffic guidelines, a merge taper should be accomplished in accordance with the equation L = W x S where L is the taper length in feet, S is the taper width in feet, and S is the anticipated speed of vehicles in miles per hour. The posted ramp speed is 25 miles per hour. The required taper length is therefore 9 x 25 = 225'. The available distance of 500' shown on Figure 3 is expected to be more than adequate to accommodate merging traffic.

From a computational perspective, the 1000' total length proposed for going from a 2-lane ramp to a single lane for the 26th Street westbound to I-229 northbound movement is considered adequate for driver comfort and safety.

2.6 ***Ramp Merge Length Comparative Analysis*** – In addition to the computational analysis, it was deemed appropriate to make a comparison with other similar ramp merge conditions in Sioux Falls. Figures 3 and 4 illustrate comparable ramp locations where dual left turn lanes merge to a single lane before entry onto the interstate. The table below provides specific comparisons of the pertinent features of each of the ramps considered.

Location	26th WB to I-229 NB (Fig 3 top)	12th WB to I-29 SB (Fig 3 center)	12th EB to I-29 NB (Fig 3 bottom)	Madison WB to I-29 SB (Fig 4 top)	Madison EB to I-29 NB (Fig 4 bottom)
Peak Hour dual left turn lane volume (year)	440 (2035)	655 (2014)	192 (2014)	See Note 1	See Note 1
Loop/ramp design speed before interstate (mph)	27	50	50	50	50
2 lanes with skip stripe (ft)	500 (proposed)	600	346	614	433
Merge 2 lanes to 1 lane (ft)	500 (proposed)	550	525	574	621
Single lane (ft)	925 (proposed)	800	700	250	550

Note 1: Turning movement count data was not gathered for the purposes of this memo.

The conclusion to note from this table is that the proposed 2-lane, merge, and single lane lengths are generally in the same range. At each location, site conditions and traffic volumes dictated the specific design of the ramp.

Crash data is generally considered a good indicator of traffic operations. Research on the specific crashes for years 2009 to 2012 for each of these existing ramps with a merge condition resulted in this data:

- 12th Street westbound to I-29 southbound – 3 crashes on ramp, 1 related to the merge activity (rear-end crash on 11/17/2010 at 5:53 PM, no injury, dry roadway, clear sky, driver cited for following too closely.)
- 12th Street eastbound to I-29 northbound – 3 crashes on ramp, 0 related to the merge activity.
- Madison Street westbound to I-29 southbound – 2 crashes on ramp, 0 related to the merge activity.
- Madison Street eastbound to I-29 northbound – 2 crashes on ramp, 1 related to the merge activity (sideswipe crash on 8/2/2010 at 3:55 PM, no injury, dry roadway, no citations.)

The logical conclusion from the crash analysis is that safety of the merge condition is not a concern at any of these existing ramps.

2.7 ***Conclusion*** – Based on the computational and comparative analyses, it is anticipated that traffic operations and safety of the merge condition at the 26th Street westbound to I-229 northbound loop with the proposed design will be adequate.

Appendix B

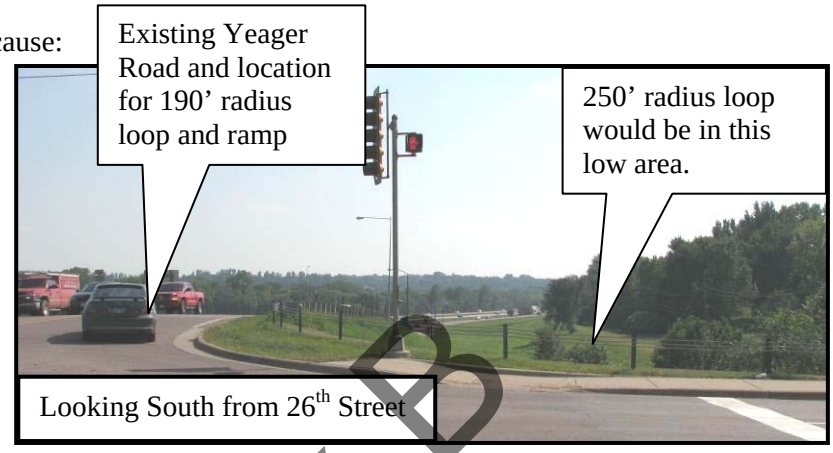
3. Southwest Quadrant Loop

Reconfiguration of the southwest quadrant of the interchange is necessary to provide a direct connection from the ramps to 26th Street (an arterial street) rather than the existing connection to Yeager Road (a collector street). Providing a standard interchange configuration for the southwest quadrant is a main purpose of the interchange improvement project and will improve traffic operations and safety.

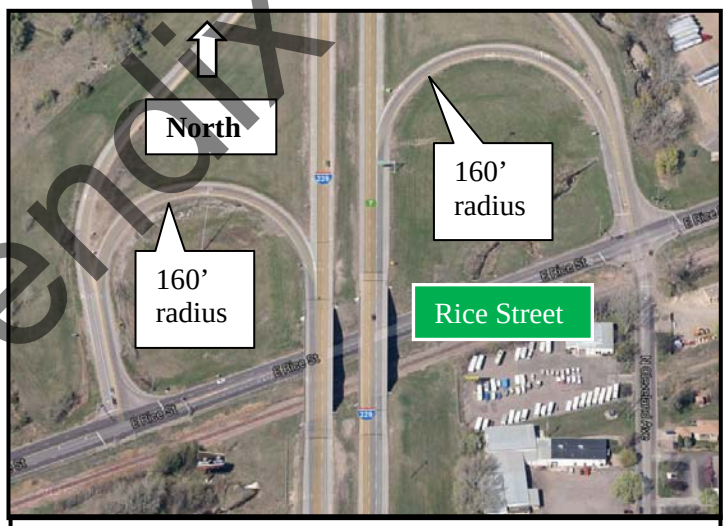
Figure 1 shows two loop size options.

The 190' radius loop is recommended because:

- The ramp and loop follow the existing Yeager Road embankment to 26th Street as shown in the photo to the right. Realigned Yeager Road will be able to better follow the existing topography.
- The 190' loop radius provides for an approximate 25 mph design speed. The SDDOT required deceleration lane length of 550' can be provided on I-229.
- The 190' radius loop is consistent with/larger than the 160' radius loops provided at the Rice Street interchange (see photo at right). Crash records from 2009 to 2012 at the Rice Street interchange showed that crash rates are below the critical rate. In fact, only one crash was recorded for the northbound off ramp for the 2009 to 2012 period. The crash data is included in Attachment A to this memo. At 26th Street, loop traffic will be going up a 4.5% grade which helps slow the vehicles. At Rice Street, I-229 is above and off-ramp traffic is going downhill. Therefore, based on the comparison with the Rice Street loop, the proposed 190' radius loop at 26th Street should not pose a safety issue.



Looking South from 26th Street



I-229/Rice Street Interchange

The 250' radius loop is not recommended because:

- Four additional residential properties would need to be acquired because of the larger ramp and accompanying shift of Yeager Road to the west. One or two of the acquisitions may be partial takes instead of a total takes.
- Spacing from the ramp intersection to the Yeager Road/Frederick Drive intersection is reduced to just over 100'. This meets FHWA criteria but is not desirable for traffic operations.
- Shifting the ramp/loop to the west will require construction of a large embankment section as noted in the photo above.
- The additional 5 mph loop design speed in comparison to the 190' radius loop is not justified.
- Southbound on-ramp is extended further to the south and closer to the Cliff Avenue interchange.

Appendix B

A comparison table for the southwest quadrant loop options is shown below.

Loop Option	190’ radius	250’ radius
Design speed (mph)	25	30
Profile grade	4.5%	4%
Residential acquisitions		
Total	2	6
Partial	2	0
Construction Cost	$1.9M	$2.6M
Property Acquisition Cost	$0.4M	$1.2M
Total cost	$2.3M	$3.8M

Appendix B

Loop Design Analysis - Alternative 7a Layout

I-229 Exit 5 (26th Street) Interchange Environmental Assessment
Sioux Falls, SD

Figure 1

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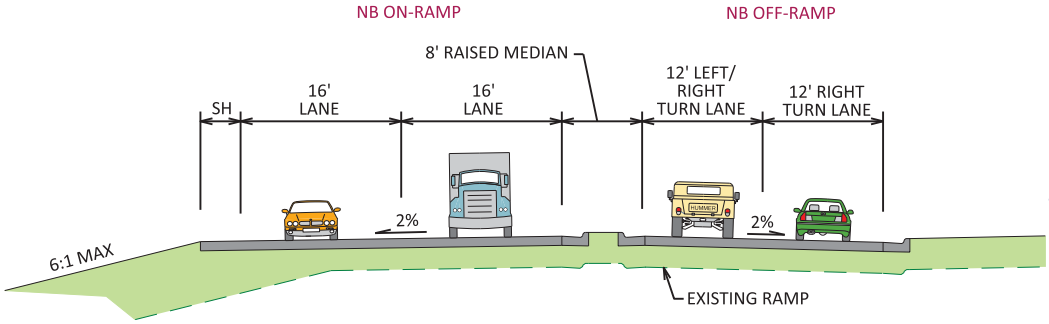
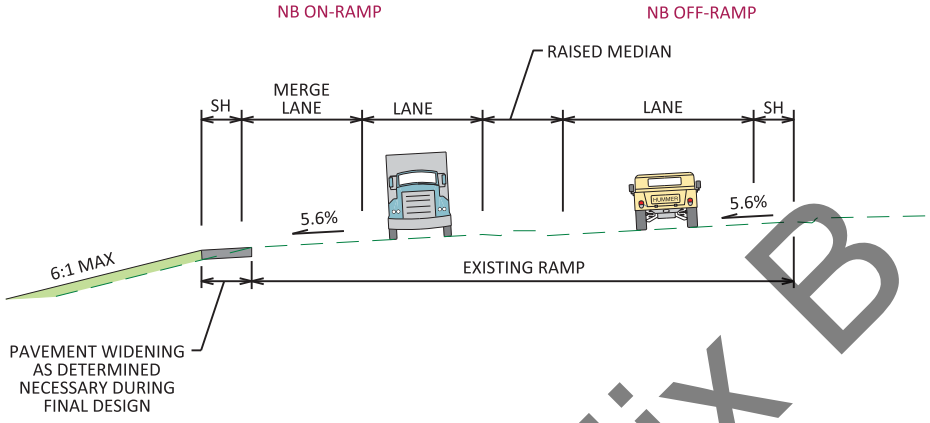
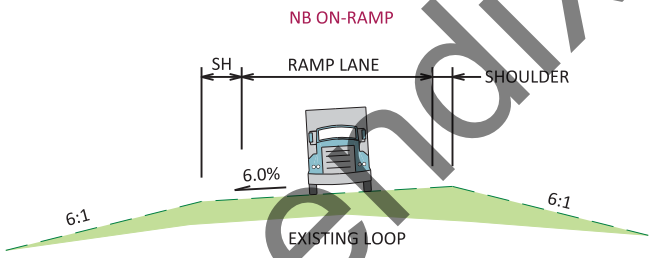


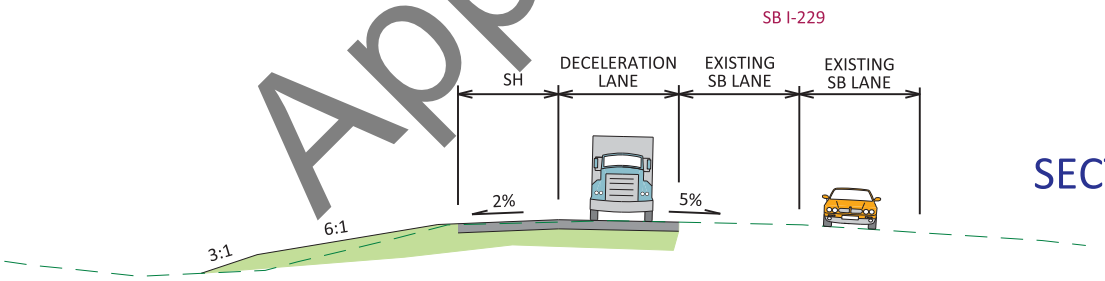
SECTION A-A



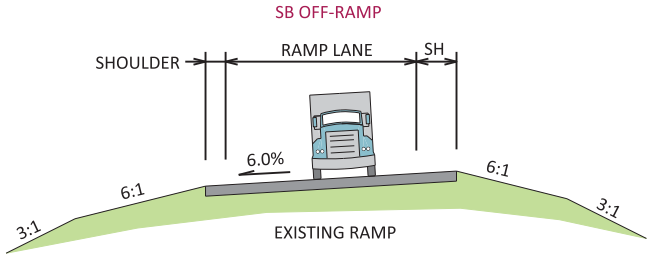
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

Appendix B

Drawn By: B.Miller 7-25-14

Chked By: J.Unruh 7-25-14

Revision: 8-26-14

Loop Design Analysis - Alt. 7a Typical Sections

I-229 Exit 5 (26th Street) Interchange Environmental Assessment
Sioux Falls, SD

Figure 2

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Appendix B

Drawn By: B.Miller
Date: 8-14-14
Chked By: J. Unruh
Date: 8-14-14
Revision: 8-26-14

Ramp/Loop Merge Length Analysis/Comparison

I-229 Exit 5 (26th Street) Interchange Environmental Assessment
Sioux Falls, SD

Figure 3

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Appendix B

Drawn By: B.Miller
Date: 8-14-14
Chked By: J. Unruh
Date: 8-14-14
Revision: 8-26-14

Ramp/Loop Merge Length Analysis/Comparison

I-229 Exit 5 (26th Street) Interchange Environmental Assessment
Sioux Falls, SD

Figure 4

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Attachment A

Crash Data Figures and Tables

Appendix B

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TABLE 2 - INTERSTATE RAMP CRASH RATES (2009-2012)

I-229 MIS

TRAVEL DIRECTION	SEGMENT	NUMBER CRASHES	SEGMENT LENGTH	DAILY VOLUME	MVMT[1]	CRASH RATE	*TEV*R*[2]	CRITICAL RATE	DIFFERENCE
SB	BENSON OFF RAMP	1	0.403	1090	0.64	1.56	1699.58	5.50	-3.94
SB	BENSON ON RAMP	0	0.332	7840	3.80	0.00	0.00	3.19	-3.19
SB	RICE OFF RAMP	0	0.292	2060	0.88	0.00	0.00	4.88	-4.88
SB	RICE ON RAMP	4	0.194	3540	1.00	3.99	14122.30	4.66	-0.67
SB	10TH OFF RAMP	3	0.264	5210	2.01	1.49	7783.31	3.74	-2.25
SB	10TH ON RAMP	7	0.165	7000	1.69	4.15	29057.70	3.94	**0.22**
SB	26TH OFF RAMP	2	0.138	3120	0.63	3.18	9926.54	5.55	-2.36
SB	26TH ON RAMP	1	0.096	6400	0.90	1.11	7134.70	4.84	-3.73
SB	CLIFF OFF RAMP	2	0.310	2900	1.31	1.52	4418.91	4.25	-2.73
SB	CLIFF ON RAMP	1	0.210	5300	1.62	0.62	3261.58	3.98	-3.36
SB	MINNESOTA OFF RAMP	4	0.193	4080	1.15	3.48	14195.47	4.44	-0.96
SB	MINNESOTA ON RAMP	2	0.233	5300	1.80	1.11	5879.24	3.86	-2.75
SB	WESTERN OFF RAMP	0	0.184	7700	2.07	0.00	0.00	3.71	-3.71
SB	WESTERN ON RAMP	3	0.160	2700	0.63	4.76	12842.47	5.54	-0.78
SB	LOUISE OFF RAMP	4	0.355	8900	4.61	0.87	7717.54	3.06	-2.19
SB	LOUISE ON RAMP	5	0.439	4610	2.95	1.69	7801.04	3.38	-1.69
NB	LOUISE OFF RAMP	8	0.466	3600	2.45	3.27	11758.48	3.55	-0.28
NB	LOUISE LOOP RAMP	0	0.351	4800	2.46	0.00	0.00	3.54	-3.54
NB	LOUISE ON RAMP	3	0.418	3460	2.11	1.42	4915.78	3.69	-2.27
NB	WESTERN OFF RAMP	1	0.204	2900	0.86	1.16	3357.51	4.91	-3.75
NB	WESTERN ON RAMP	2	0.249	7500	2.73	0.73	5501.46	3.45	-2.72
NB	MINNESOTA OFF RAMP	6	0.181	4100	1.08	5.54	22704.91	4.53	**1.01**
NB	MINNESOTA ON RAMP	1	0.211	4670	1.44	0.70	3246.12	4.13	-3.44
NB	CLIFF OFF RAMP	6	0.206	4800	1.44	4.16	19949.46	4.13	**0.03**
NB	CLIFF ON RAMP	0	0.272	3370	1.34	0.00	0.00	4.23	-4.23
NB	26TH OFF RAMP	10	0.444	6300	4.08	2.45	15426.39	3.14	-0.69
NB	26TH ON RAMP	5	0.353	2670	1.38	3.63	9701.58	4.19	-0.56
NB	10TH OFF RAMP	9	0.189	6750	1.86	4.83	32615.79	3.82	**1.01**
NB	10TH ON RAMP	4	0.238	5640	1.96	2.04	11511.45	3.77	-1.73
NB	RICE OFF RAMP	1	0.177	3590	0.93	1.08	3869.67	4.78	-3.71
NB	RICE ON RAMP	2	0.252	2130	0.78	2.55	5435.96	5.09	-2.54
NB	BENSON OFF RAMP	8	0.400	7440	4.34	1.84	13698.63	3.10	-1.26
NB	BENSON ON RAMP	0	0.291	1320	0.56	0.00	0.00	5.81	-5.81

[1]MVMT = MILLION VEHICLE MILES TRAVELED

[2]TEV*R = TOTAL ENTERING VEHICLES TIMES CRASH RATE

SOURCE: HIGHWAY SAFETY MANUAL, FIRST EDITION, 2010, AASHTO

Appendix B

Interstate Ramp – 26th Street NB On Ramp

N

Crash Summary - 26th St. NB on

OBJE	ACCIDENT	LIGHTCON	MANNERO	FIRSTHAR	INJURYSE	ROADSURI	JUNCTION	VEHICLEM	VEHCONTI	ROADCON	DRIVERCO	WEATHER
2294	2/4/2012 9:47:00 AM	Daylight	No collision between 2 MV in transport	Highway traffic sign post/sign	No injury	Dry	Interchange area	Straight ahead	None	None	Other	Cloudy
2296	2/16/2012 4:58:00 PM	Daylight	No collision between 2 MV in transport	Highway traffic sign post/sign	No injury	Dry	Interchange area	Straight ahead	None	None	Exceeded posted speed limit	Clear
2297	12/27/2012 10:15:00 AM	Daylight	No collision between 2 MV in transport	Delineator post	No injury	Snow	Interchange area	Straight ahead	None	None	Running off road	Snow
2298	3/10/2010 9:15:00 AM	Daylight	No collision between 2 MV in transport	Highway traffic sign post/sign	No injury	Wet	Interchange area	Straight ahead	None	None	Running off road	Rain
2315	7/29/2011 5:00:00 PM	Daylight	No collision between 2 MV in transport	Other movable object	No injury	Dry	Interchange area	Straight ahead	None	Debris	None	Clear

Appendix B

Interstate Ramp – Rice Street SB On Ramp

N

Crash Summary - Rice St. SB on ramp

OBJE	ACCIDENT	LIGHTCON	MANNERO	FIRSTHAR	INJURYSE	ROADSURI	JUNCTION	VEHICLEM	VEHCONTI	ROADCON	DRIVERCO	WEATHER
4532	8/7/2009 1:00:00 PM	Daylight	No collision between 2 MV in transport	Guardrail face	No injury	Oil	Interchange area	Straight ahead	None	Road surface condition wet, icy, snow, slush, etc.	None	Clear
4544	11/18/2009 7:45:00 AM	Daylight	No collision between 2 MV in transport	Guardrail face	No injury	Dry	Interchange area	Straight ahead	None	None	Running off road	Clear
4548	6/23/2012 3:43:00 PM	Daylight	No collision between 2 MV in transport	Overturn/rollover	Non-incapacitating	Dry	Interchange area	Straight ahead	None	None	Over-correcting/over-steering	Clear
4550	5/24/2009 4:10:00 PM	Daylight	Wild animal hit - damage only	Animal - wild	Wild animal hit	Dry	Interchange area	Wild animal hit - damage only	Wild animal hit	Wild animal hit - damage only	Wild animal hit - damage only	Clear

Appendix B

Interstate Ramp – Rice Street NB Off Ramp

N

Crash Summary - Rice St. NB off ramp

OBJE	ACCIDENT	LIGHTCON	MANNERO	FIRSTHAR	INJURYSE	ROADSURI	JUNCTION	VEHICLEM	VEHCONTI	ROADCON	DRIVERCO	WEATHER
4555	10/23/2012 6:03:00 AM	Dark - roadway not lighted	Rear-end front to rear	Motor vehicle in transport	No injury	Wet	Interchange area	Slowing in traffic lane	None	None	None	Fog, smog, smoke

Appendix B

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APPENDIX C

ACQUISITION ANALYSIS FOR PROPERTIES AT SE QUADRANT OF 26TH STREET/SOUTHEASTERN AVENUE INTERSECTION

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HDR | ONE COMPANY *Many Solutions*℠

Memo

To:	Steve Gramm, SDDOT
From:	HDR Project: I-229 Exit 5 (26th Street) Crossroad Corridor Study (PL 0100(88); PCN 03KM)
CC:	Mark Hoines, FHWA; Shannon Ausen, City of Sioux Falls
Date:	March 21, 2014 Job No: 179168

RE: Acquisition analysis for properties at SE quadrant of 26th Street/Southeastern Avenue intersection

Background

Intersection Option A includes acquisition of all properties along Southeastern Avenue between 26th Street and Pioneer Trail due to loss of access to the properties.

Intersection Option C includes acquisition of a single-family residential property at the northeast quadrant of the Southeastern Avenue/Pioneer Trail intersection. All other properties were shown to be left intact. Following the January 15, 2014 public meeting, the owner of the Southeastern Dental Clinic sent a letter to the City requesting acquisition of his property for both Options A and C. The owner expressed these concerns with Option C verbally and in a follow-up letter (see letter from Dan Goede in Attachment A):

- Visual impact due to retaining walls blocking the view to the Big Sioux River and adjacent parks,
- Access limitations and snow removal delays for the dead-end service road,
- Overall property devaluation resulting from reconstruction of the intersection.
- Access and property impacts during construction.

Many of the public comments regarding the intersection options have been similar to Dan Goede's concerns.

Purpose

This memo evaluates the various property acquisition options for the southeast quadrant of the 26th Street/Southeastern Avenue. This evaluation was deemed necessary during a February 7, 2014 meeting with City Staff.

Figure A illustrates the acquisitions and utility work associated with intersection Option A.

Figures C1 to C3 illustrate the following conditions associated with intersection Option C:

- C1 – Acquire single family residence at 1916 Southeastern Avenue as shown at the January 15, 2014 public meeting
- C2 – Acquire:
  - single family residence at 1916 Southeastern Avenue
  - commercial properties at 1800 and 1808 Southeastern Avenue
- C3 – Acquire all properties along Southeastern Avenue from 26th Street to Pioneer Trail.

Property Values and Acquisition Costs

Minnehaha County Assessor records were reviewed to determine property values as shown in Table 1 below. Estimated acquisition and various site costs are also shown.

Table 1 – Property Values and Acquisition Costs

			Assessed Value (from Minnehaha Co.)			Acquisition Cost		Building	Site
			Land	Building	Total	x assessed		Removal	Restoration
Address	Owner	Discription	$	$	$	value	$	$	$
1800	Goede	commercial	98,682	286,134	384,816	2.5	962,040	30,000	30,000
1808	Klooster	commercial	90,804	161,533	252,337	2.0	504,674	30,000	30,000
1900	Wiebers	townhouse	5,686	84,523	90,209	1.5	135,314	5,000	5,000
1902	Weber	townhouse	5,686	80,934	86,620	1.5	129,930	5,000	5,000
1904	Dornbusch	townhouse	5,686	80,638	86,324	1.5	129,486	5,000	5,000
1906	Hammer	townhouse	5,686	80,934	86,620	1.5	129,930	5,000	5,000
1908	Pribbenow	townhouse	5,686	80,638	86,324	1.5	129,486	5,000	5,000
1910	Meyer	townhouse	5,686	96,928	102,614	1.5	153,921	5,000	5,000
1916	VanDyke	single family	41,731	87,325	129,056	1.5	193,584	15,000	15,000

Appendix C

Options Cost Comparisons

Previous option cost comparisons did not include property acquisition costs and the potential resale of properties for redevelopment. Table 2 lists the construction and property acquisition costs for Option A and for Option C with various property acquisition scenarios. The overall cost differential between the options is minimal and is not considered a criteria for a preferred option.

Table 2 – Construction and Acquisition Cost Summary

		Roadway Constuction Cost (1)	Additional Utility Costs		Acquisition and Restoration Costs				Resale (= land value)	**Total Const & Acq Cost**
Option	Description		Watermain	Sanitary Sewer	Property Acqusition	Eliminate Retaining Wall	Building Removal	Site Restoration		
		M$	M$	M$	M$	M$	M$	M$	M$	**M$**
A	Acquire all properties - no redevelopment	$18.0	$0.01	$0.11	$2.47	($0.28)	$0.11	$0.11	$0.0	**$20.5**
C1	Acquire 1 residential property	$18.8	$0.00	$0.11	$0.19	$0.00	$0.02	$0.02	$0.0	**$19.1**
C2	Acquire 1 residential and 2 commercial properties	$18.8	$0.01	$0.11	$1.66	($0.28)	$0.08	$0.08	($0.19)	**$20.3**
C3	Acquire all properties	$18.8	$0.01	$0.11	$2.47	($0.28)	$0.11	$0.11	($0.27)	**$21.1**

(1) From Options Evaluation Memo dated 9/6/13

Property Impact Analysis

For Option A, acquisition of all properties along Southeastern Avenue from 26th Street to Pioneer Trail is necessary.

For Option C, acquisition of the single family residence at 1916 Southeastern Avenue is necessary to provide an access road to the other properties. The impact of the 26th Street/Southeastern Avenue project to the remaining properties is somewhat subjective. From a strictly engineering perspective, the impacts are minimal. From property owner feedback, there is a difference of opinion. Some of the property owners consider that their property will be devalued to the extent the acquisition and relocation are justified. Other property owners, such as some of the townhouse owners, have stated that the impacts are minor and they would prefer to remain at their existing location.

In an attempt to evaluate the visual impacts to properties, HDR prepared a series of engineered renderings. These renderings have been shown to the property owners and are provided in Attachment B.

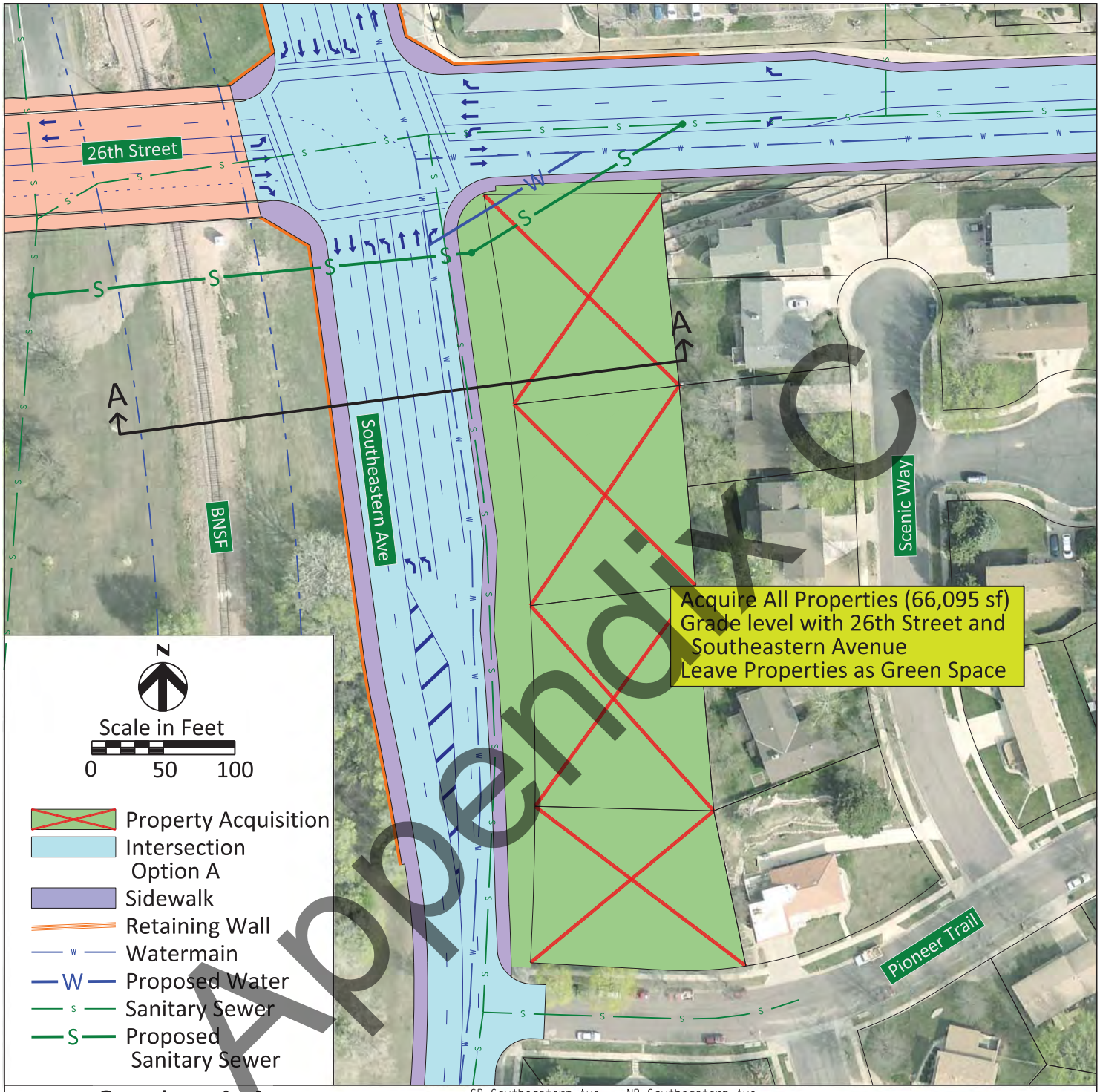
Recommendations

SDDOT has indicated that the City of Sioux Falls is responsible for identification of a preferred option and associated property acquisitions at the 26th Street/Southeastern Avenue intersection.

The City of Sioux Falls has indicted these preferences:

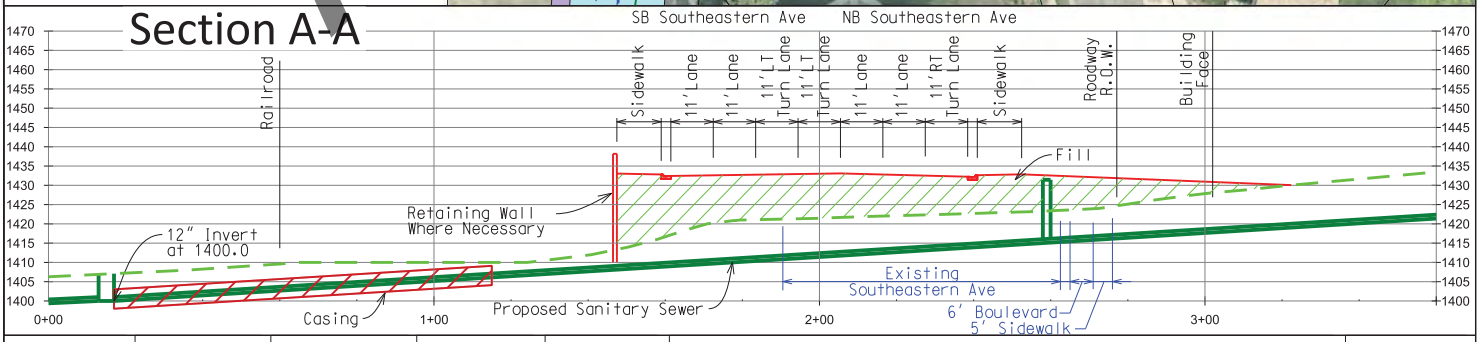
- Option A is not preferred due to:
  1. With lack of access, there is limited potential for redevelopment of the acquired properties.
  2. Long term maintenance of the acquired properties will be the responsibility of the City.
- Option C1 is not preferred due to:
  1. Landowner concerns about property impacts are considered legitimate and keeping the properties in place does not address those concerns.
- Option C2 is preferred due to:
  1. Acquisition of the commercial properties addresses landowner concerns.
  2. Retaining walls and roadside barriers in the southeast quadrant are eliminated, thereby lowering construction costs and improving intersection sight distances.
  3. Properties can be re-developed to a more appropriate use such as multi-family.
  4. Acquired properties could be used as a construction staging area.
  5. Intersection construction is simplified because of additional working space.
  6. The length of the service road is less than Option C1.
- Option C3 is not preferred at this time due to:
  1. There are no project-related impacts that justify acquisition of the townhouses.

Appendix C



Appendix C

Section A-A

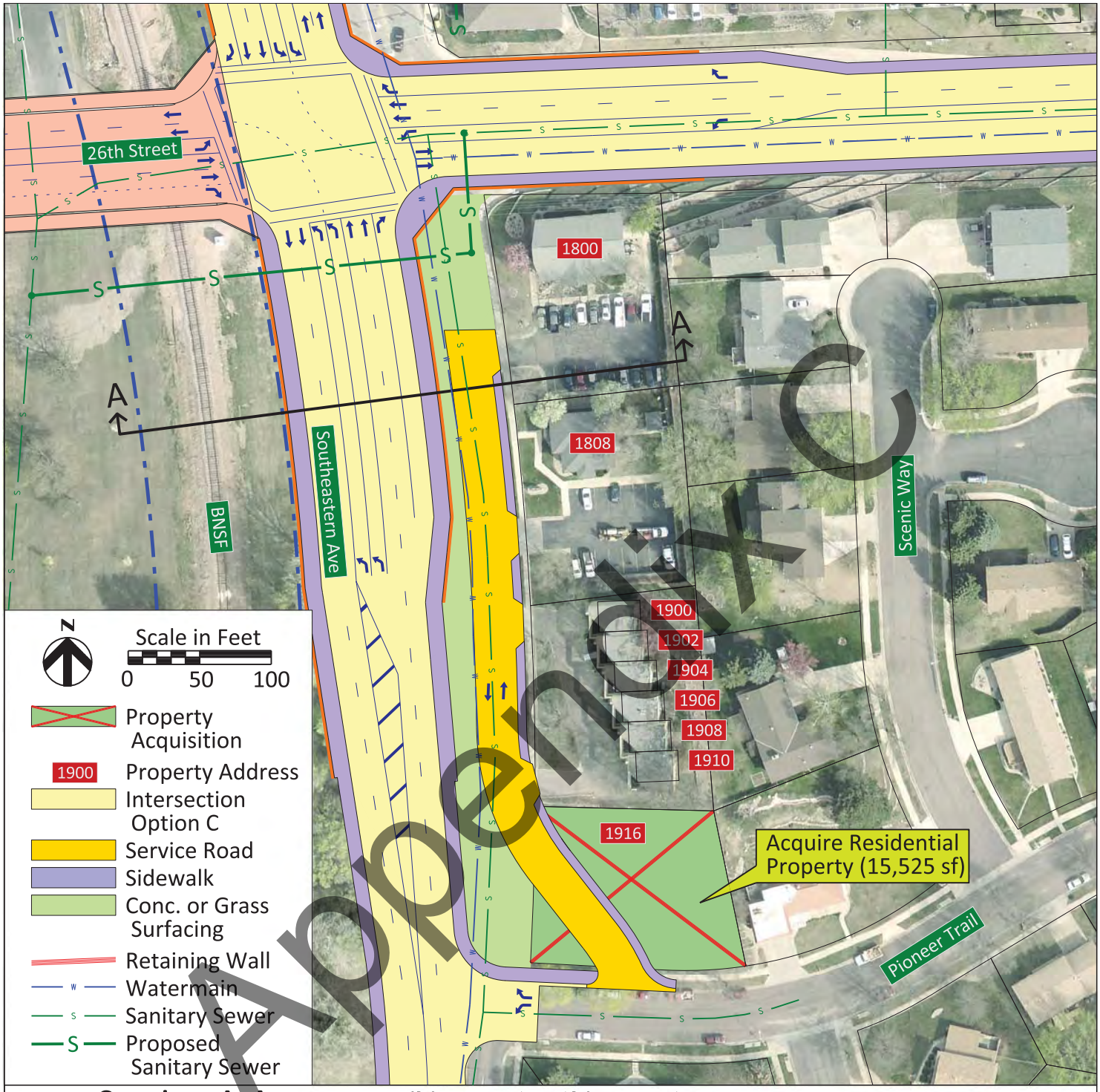


Impacts at Intersection - SE Quadrant
Option A - Acquire All Properties

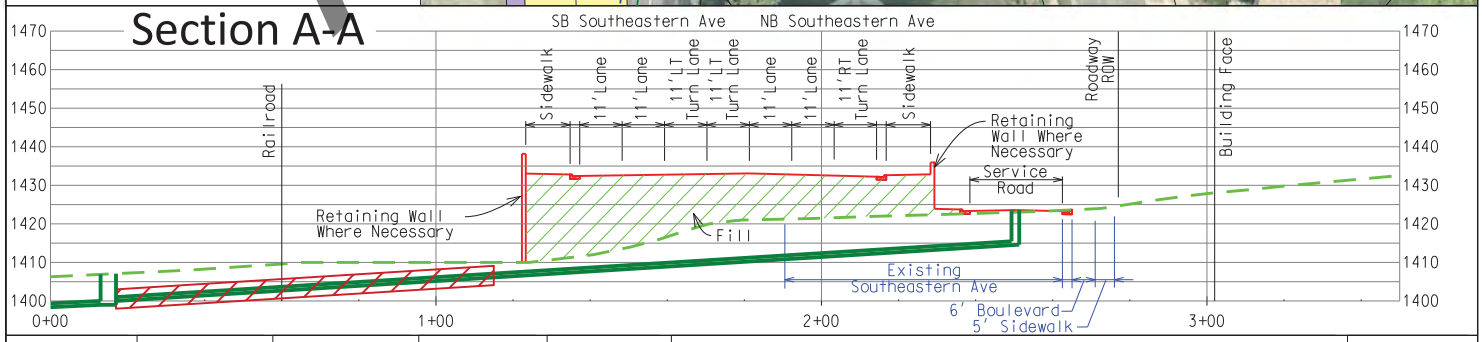
I-229 Exit 5 (26th Street) Crossroad Corridor Study Sioux Falls, SD

Figure A

3-20-14

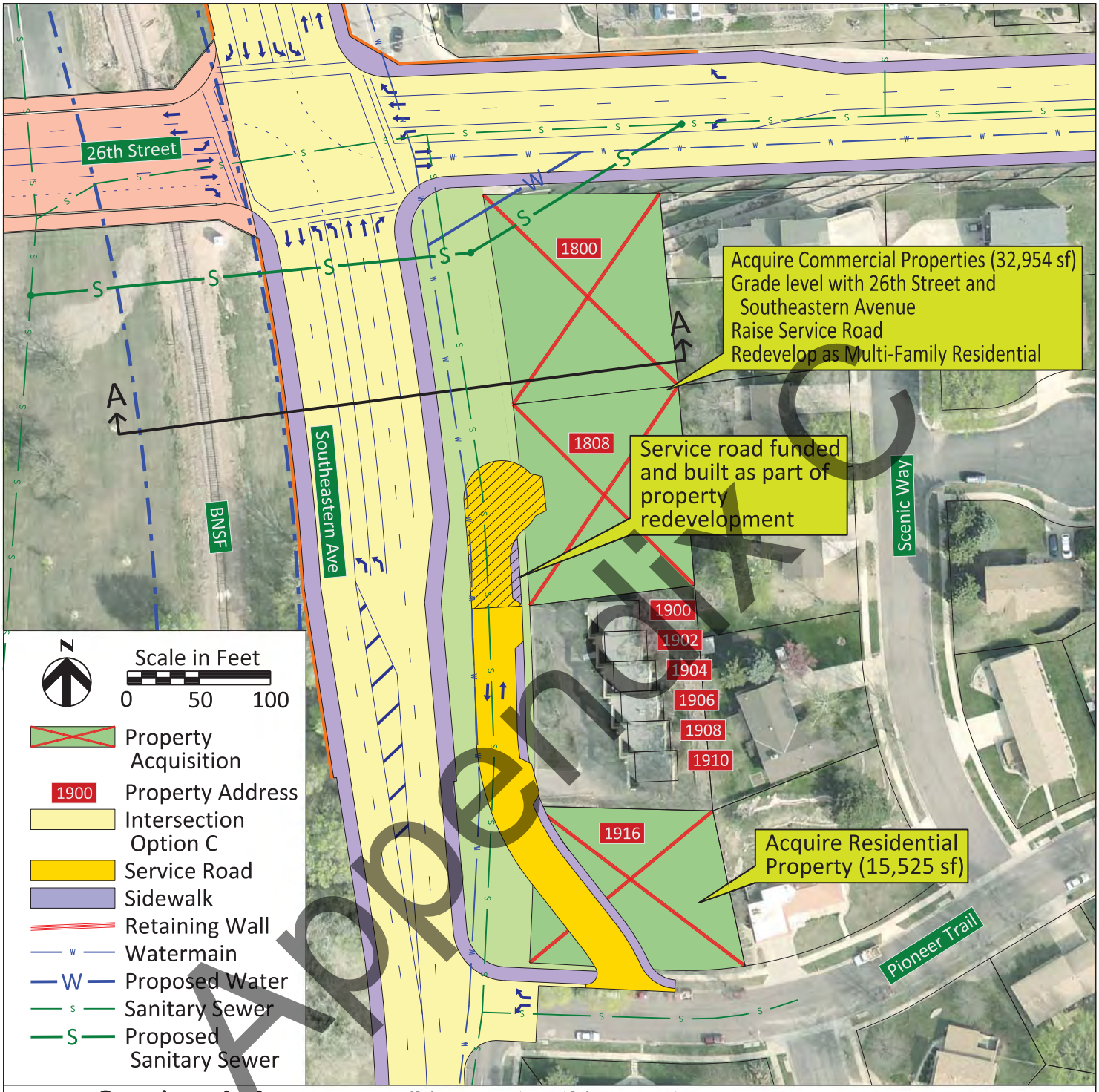


Appendix C



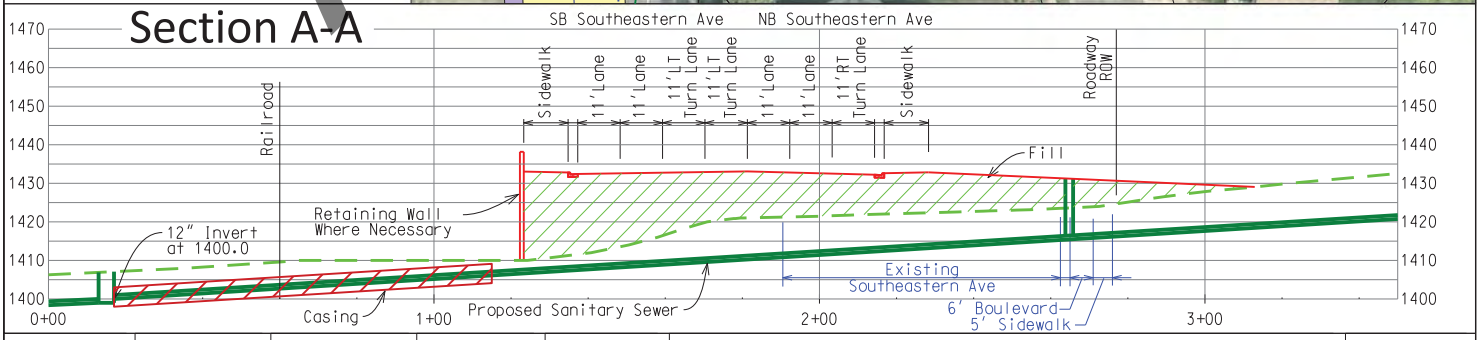
Impacts at Intersection - SE Quadrant
Option C1 - Acquire 1 Residential Property
I-229 Exit 5 (26th Street) Crossroad Corridor Study Sioux Falls, SD

Figure C1
3-20-14



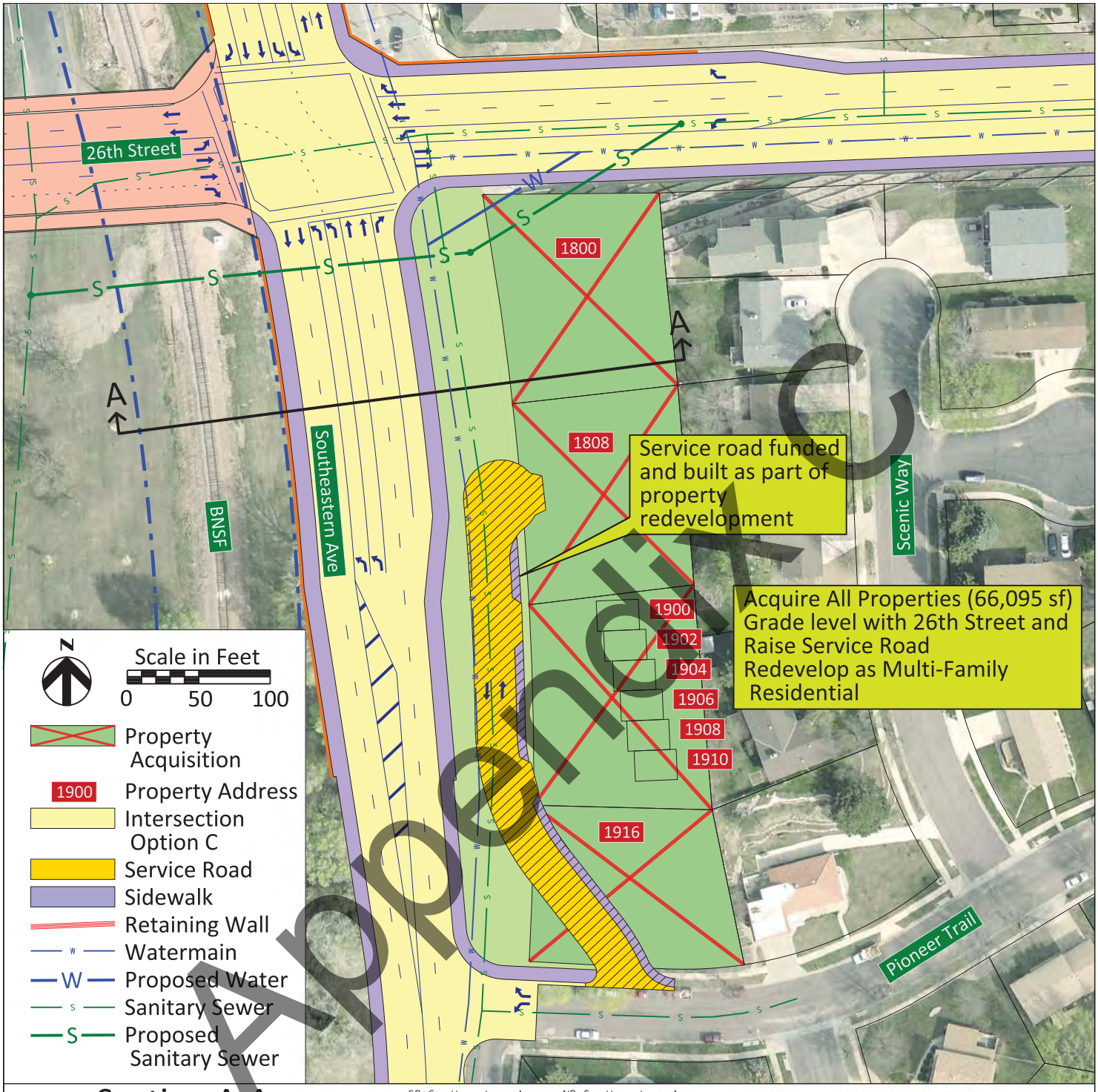
Appendix C

Section A-A



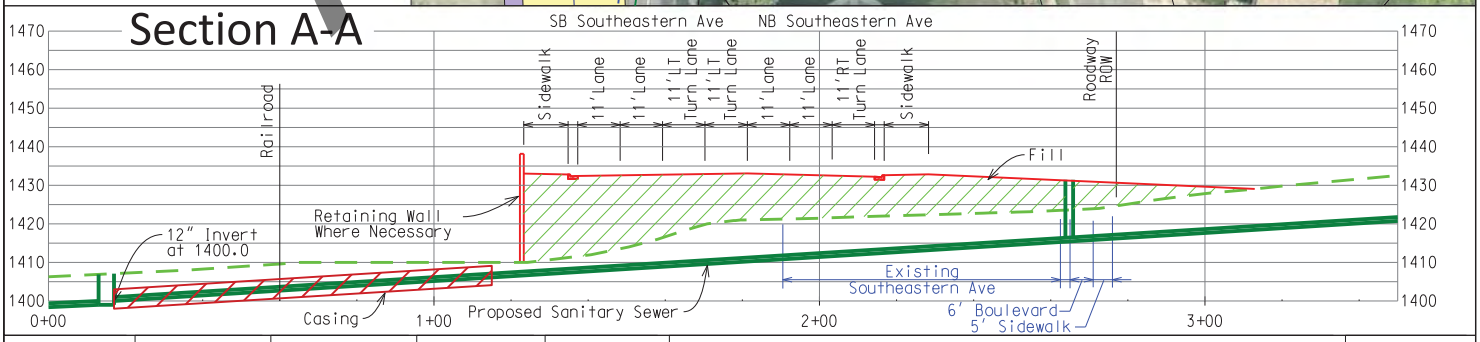
Impacts at Intersection - SE Quadrant
Option C2 - Acquire 1 Residential and 2 Commercial Properties
I-229 Exit 5 (26th Street) Crossroad Corridor Study Sioux Falls, SD

Figure C2
4-4-14



Appendix C

Section A-A



Impacts at Intersection - SE Quadrant
Option C3 - Acquire All Properties

I-229 Exit 5 (26th Street) Crossroad Corridor Study Sioux Falls, SD

Figure C3

4-4-14

Attachment A

Dan Goede Letter (dated 1/29/14)

Appendix C

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Daniel J. Goede. D.D.S.
Southeastern Dental Center

Family Dentistry

Southeastern Dental Center
1800 Southeastern Drive, Suite 200
Sioux Falls, SD 57103
(605) 335-8030

HDR Engineering, Inc.
Attn: Jason Kjenstad (jason.kjenstad@hdrinc.com)
6300 S. Old Village Place, Suite 100
Sioux Falls, SD 57108-2102

Re: I-229 Exit 5 (26th Street) Crossroad Corridor Study
Intersection of 26th Street and Southeastern Avenue

As you are aware, I am the owner of the building located on the southeast corner of the intersection of 26th Street and Southeastern Avenue. The address of my building is 1800 S. Southeastern Avenue. I have owned this property since 1991, and have established and operated a successful dentistry practice in this building since 1991. I have also leased a portion of the building to another dentist, who has also operated a long and successful dentistry practice from this location.

I have closely followed the discussions regarding the planned modifications to the 26th Street/Southeastern Avenue intersection. Based on the public meeting held on January 15, the City has narrowed the options to Option A and Option C. Both options would have a profound and detrimental impact on my property and dentistry practice. Under Option A, my building would be purchased by the City. Under Option C, my building, if not acquired by the City, would ultimately find itself located immediately across from a high retaining wall, rather than the river greenway and open public view it currently possesses.

While neither option is a good one and I'd prefer no change to the intersection at all, of the two options presented by the City I strongly prefer Option A. Both options will have a significant impact on the dentistry practices conducted in my building. Option A will have a significant short-term impact, requiring a relocation of the practices. Option C will have a different, but no less significant, impact on the practices. It will substantially diminish the public visibility and presence of the practices, which is vital for a dentistry practice, which relies on a continual stream of new patients. The lost visibility will seriously harm the viability of the practice. In addition, Option C will considerably devalue my building, taking away its river greenway view and its visibility to thousands of cars and potential customers per day, and replacing it with the view of a retaining wall and increased noise. The financial harm would be very significant.

It is my understanding per the community meeting presentation of January 15 and from the website data that the railroad also prefers Option A as it keeps the road farther from the tracks, making a safer roadway for travelers. Even putting my property issues aside, I agree that Option A makes the most sense for the community as a whole.

Appendix C

Daniel J. Goede. D.D.S.

Southeastern Dental Center

Family Dentistry

Southeastern Dental Center
1800 Southeastern Drive, Suite 200
Sioux Falls, SD 57103
(605) 335-8030

As I indicated, I ask that the City move forward with Option A. If Option C is instead selected, Option C should include the acquisition of my building to avoid the ongoing and long-term financial harm that Option C would bring to my building and business. This aspect of Option C was included in previous information provided by the City, but was not included in the information presented at the January 15 meeting. Please confirm whether this acquisition remains part of Option C.

Open communication as this process moves forward is very important. In 1993, this same intersection was lowered approximately 15 feet. It was a significant project that involved an easement, some loss of property and limited access. Even though this was not an ideal situation, I fully cooperated with City representatives and engineers, as the construction was to enhance community safety. I was communicated with appropriately and in a timely manner. I was kept apprised of details, time line and scope of the project.

The larger scope of the current project makes communication even more important. While I have been generally "kept in the loop", there are questions about timeline and options that aren't being dealt with in a very clear, timely or forthcoming manner. The public website does not deal in specifics that impact my situation. Nor does it allow for public input on preferred options.

A reliable timetable is of utmost concern as I am entering the phase of my practice where a retirement strategy requires much planning. The patients I've served in this community are important to me and providing quality, trusted care for these families has been my main focus for 32 years. I intend to keep them fully informed on the continuity of care into the future and to ensure that they are served efficiently and fairly.

Along with this reliable timetable, I ask that discussions begin as soon as possible regarding the sale of my property. To try mitigate the negative impact of the project on my practice, it's important that I get started as soon as possible to try ensure no disruption to patient care or the employment of my employees.

My two most valued assets are my dentistry practice and my building. It is important that a strategy be devised that does not subject me to their loss of value. I will reiterate that Option A is the option that best serves my patients, employees and the future of my practice. I would like to schedule a meeting between me, my attorney Dan Harmelink of Woods, Fuller, Shultz & Smith, and you at your earliest convenience so that we can discuss these important matters. I look forward to hearing from you.

Sincerely,

Dan Goede

Daniel Goede

1-29-14

Appendix C

Attachment B

Southeast Quadrant Renderings

Appendix C

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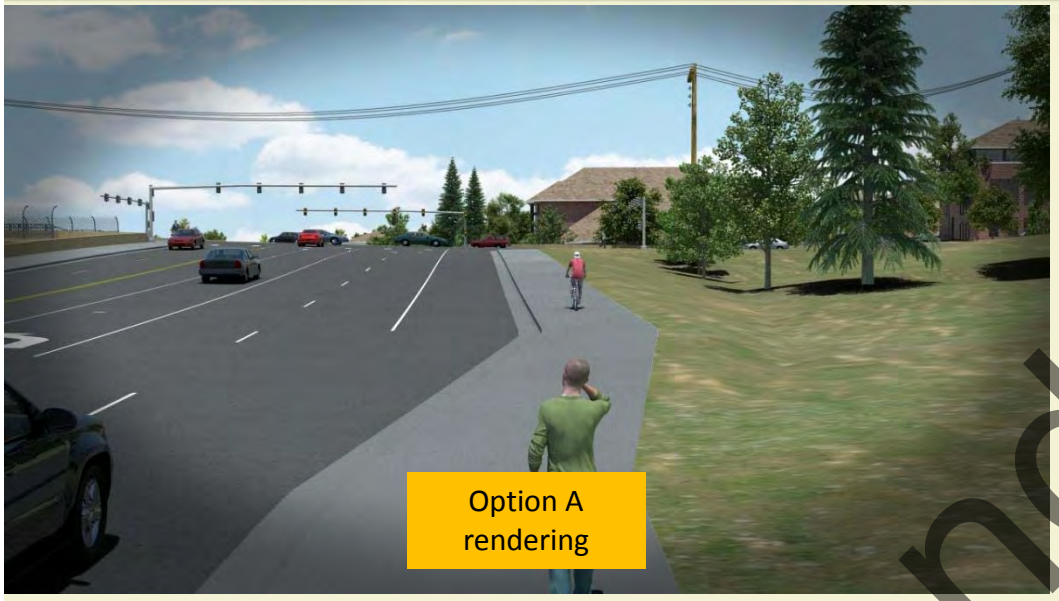
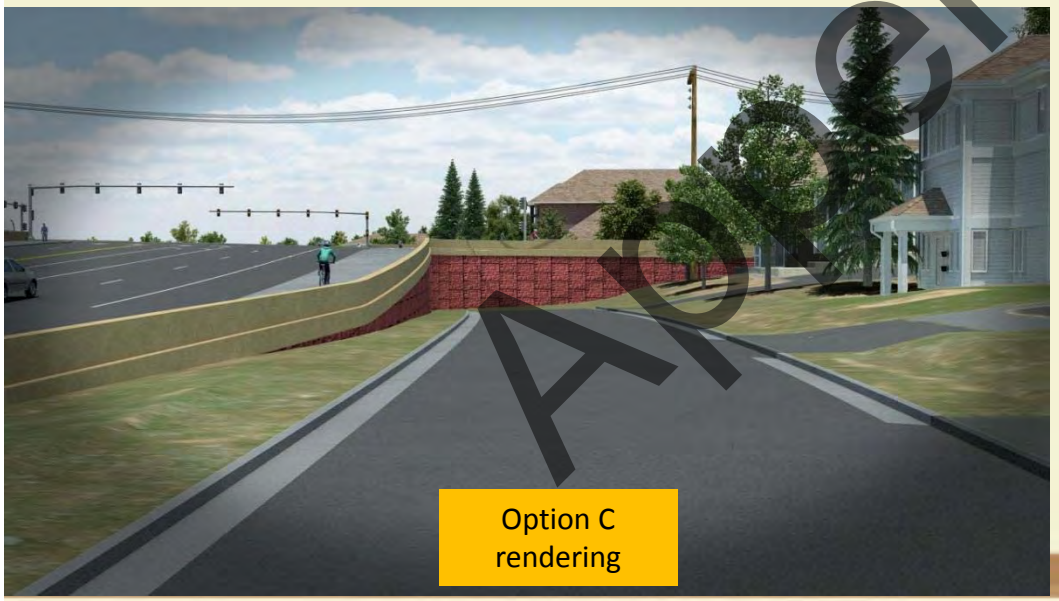
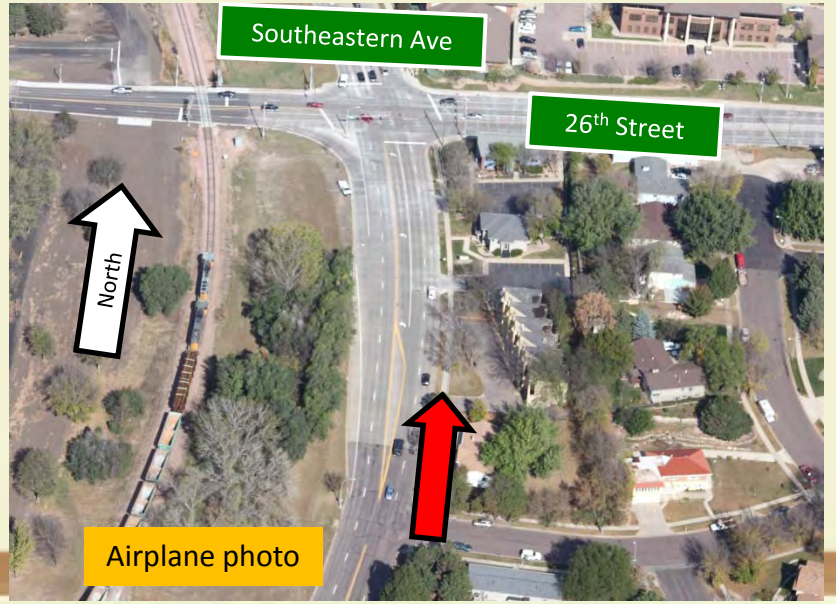
View from near townhomes (ground level)







Appendix C

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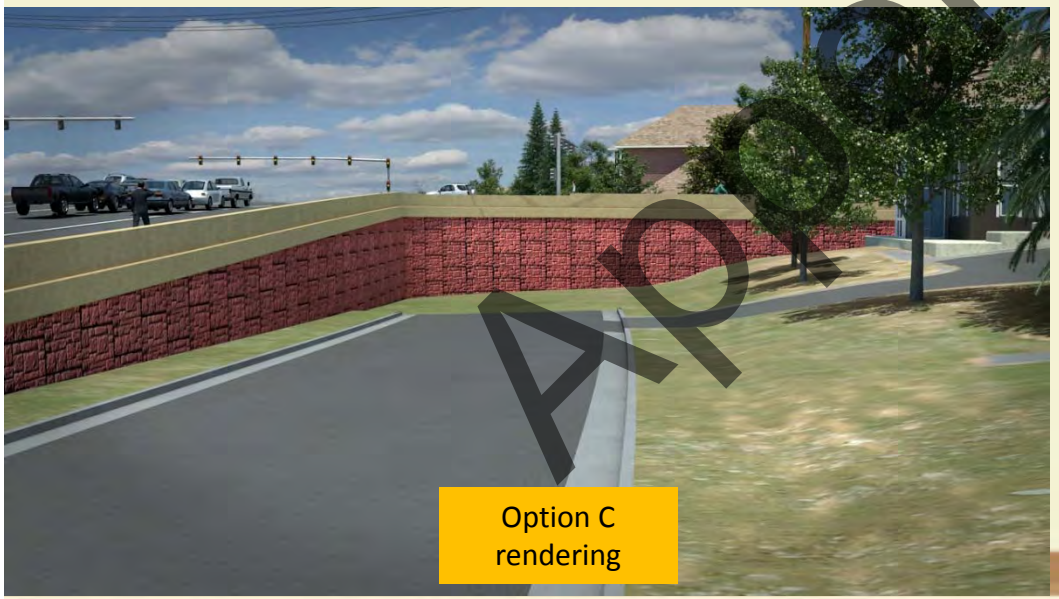
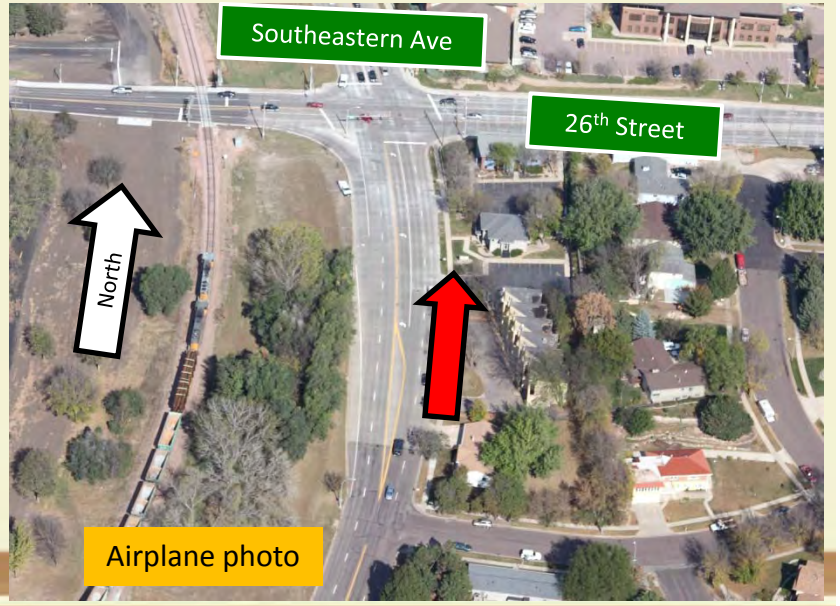
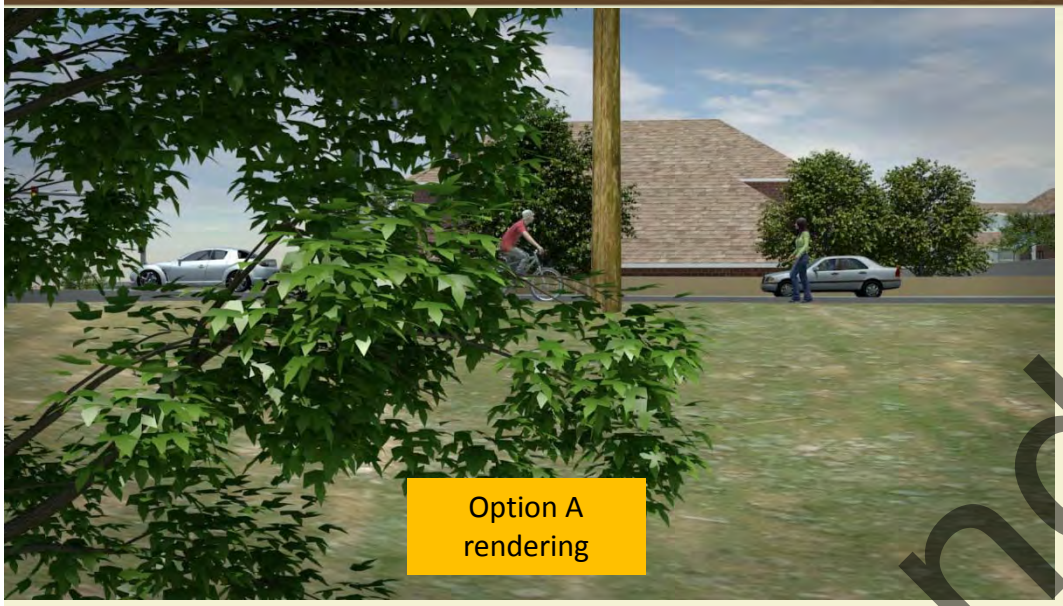
View near Headhunters building (ground level)

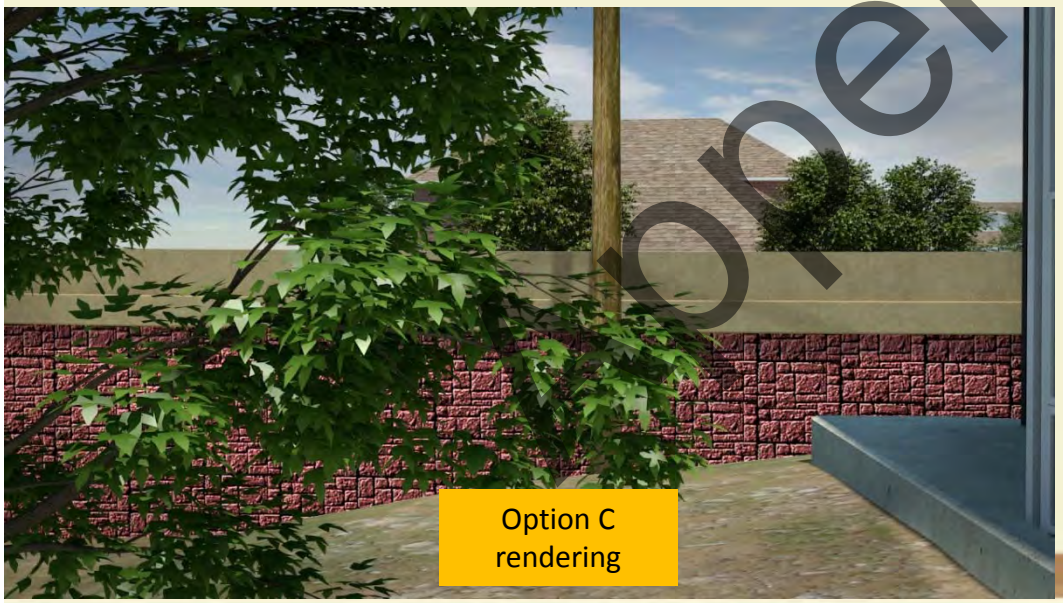


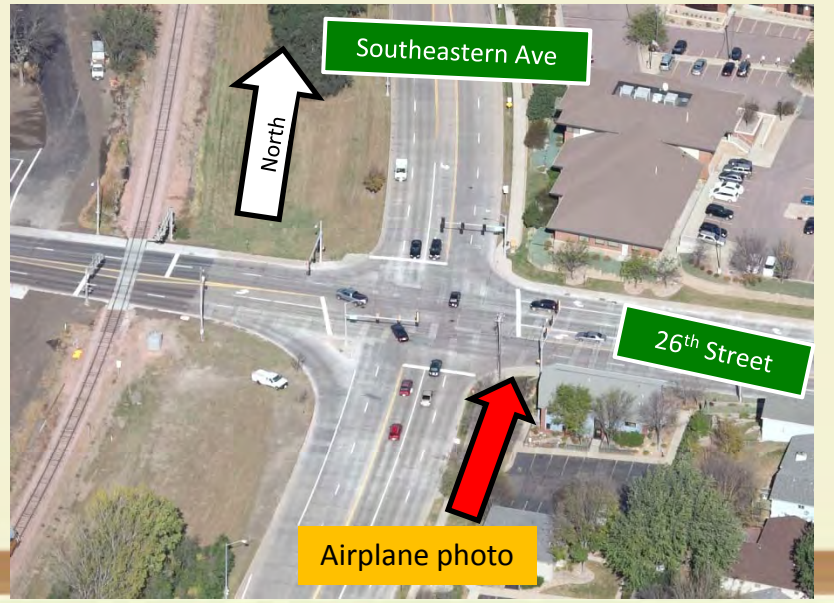


Appendix C

View from SE Dental Center (ground level)

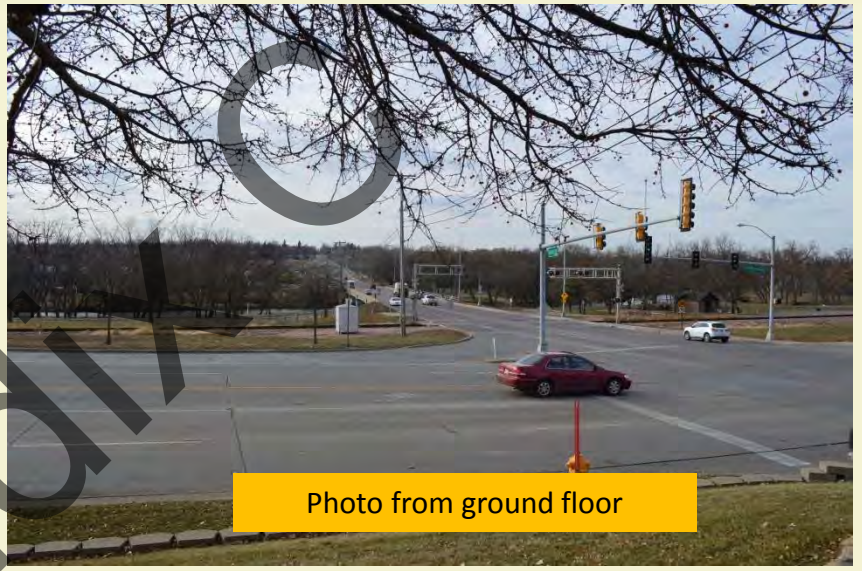


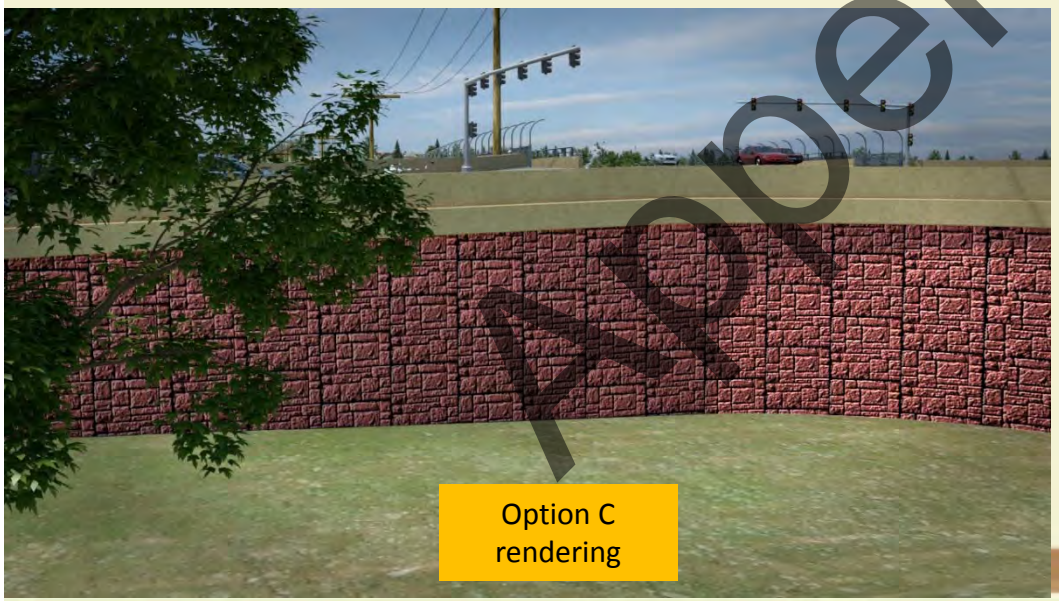


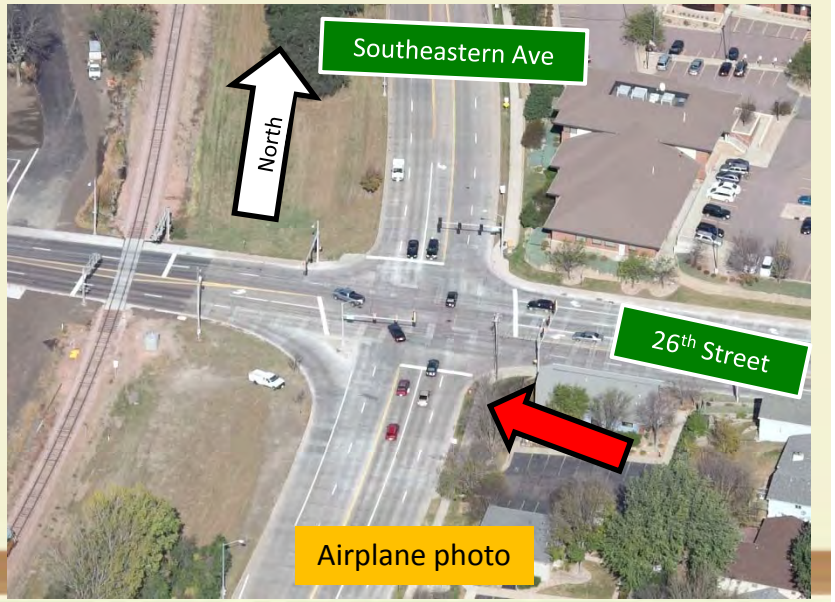


Appendix C

View from SE Dental Center (ground level)

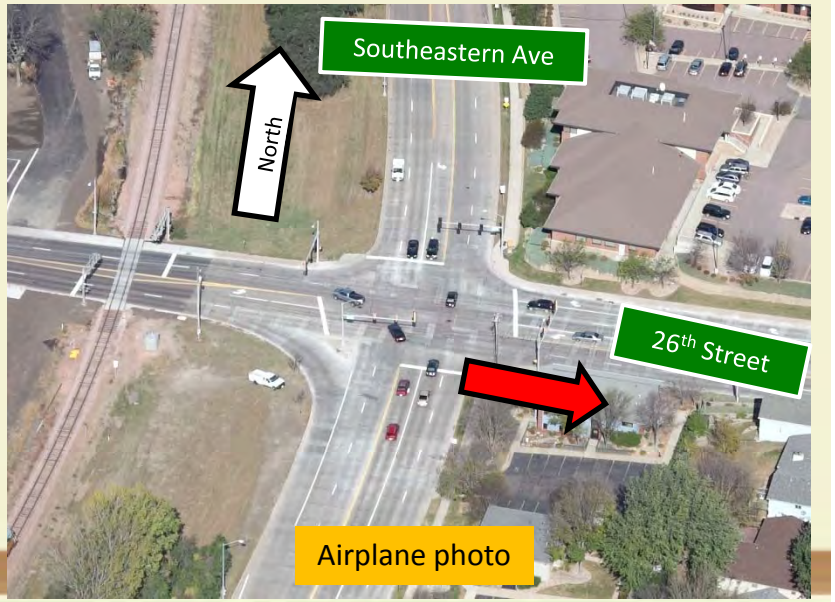






Appendix C

View from SE Dental Center (ground level)



Appendix C

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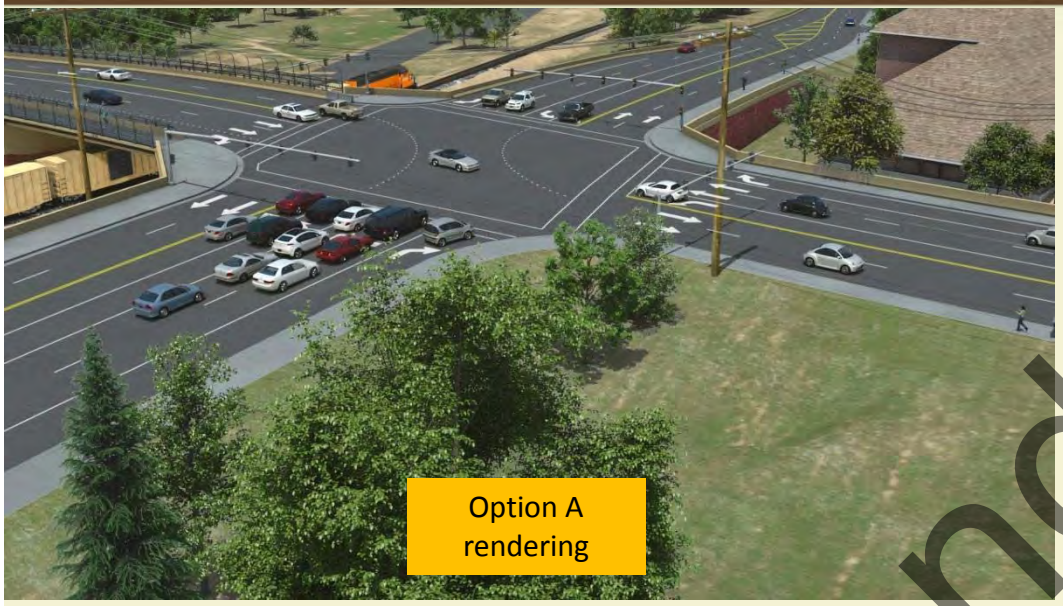
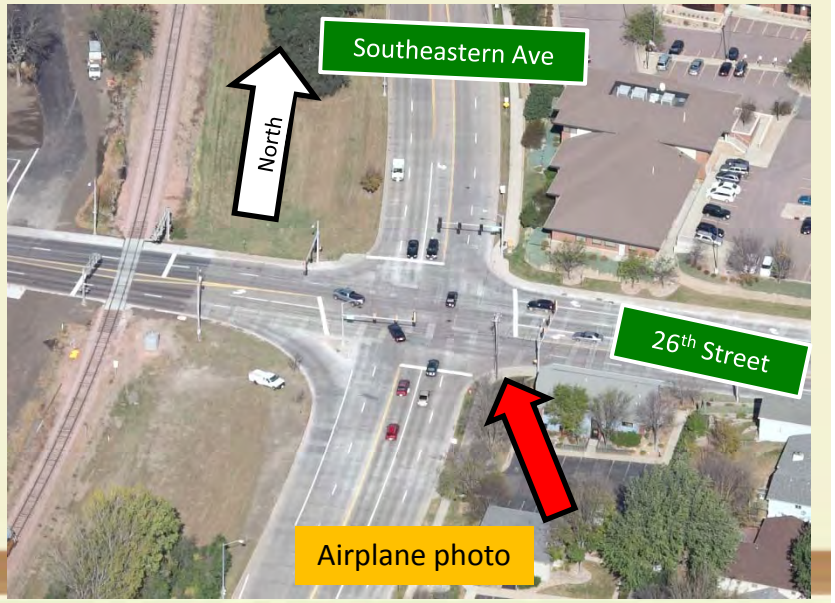
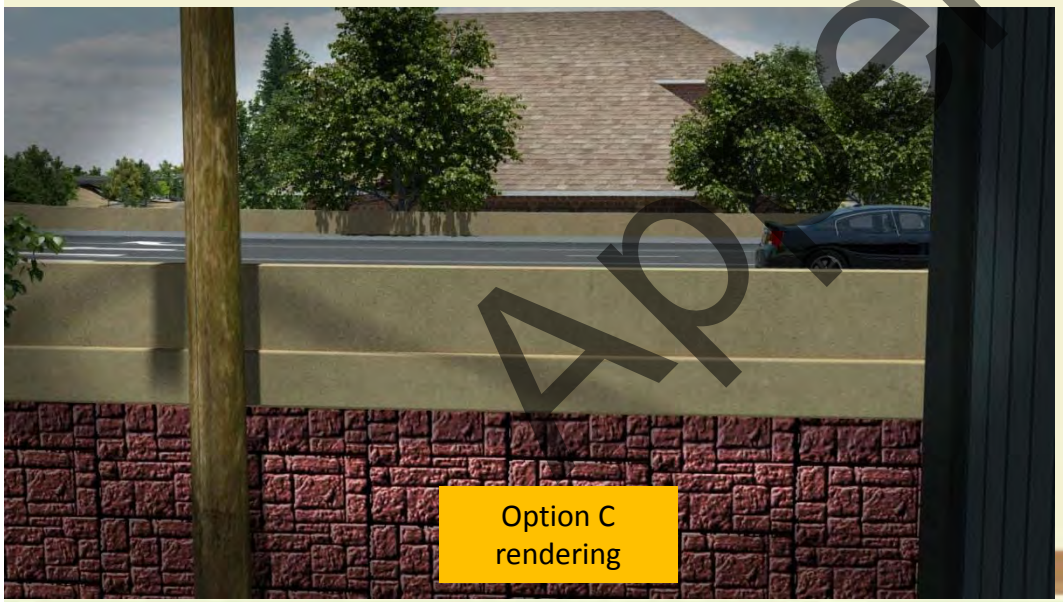
View from SE corner of intersection

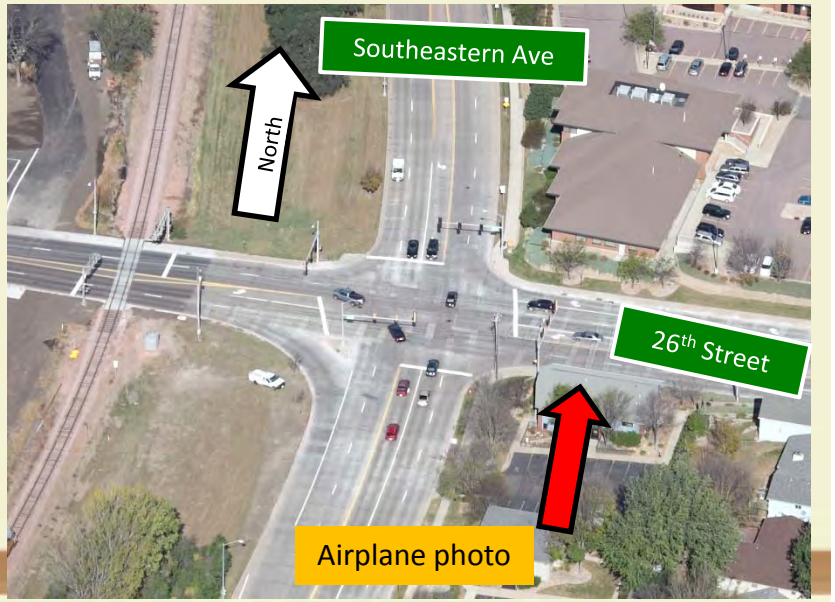




Appendix C

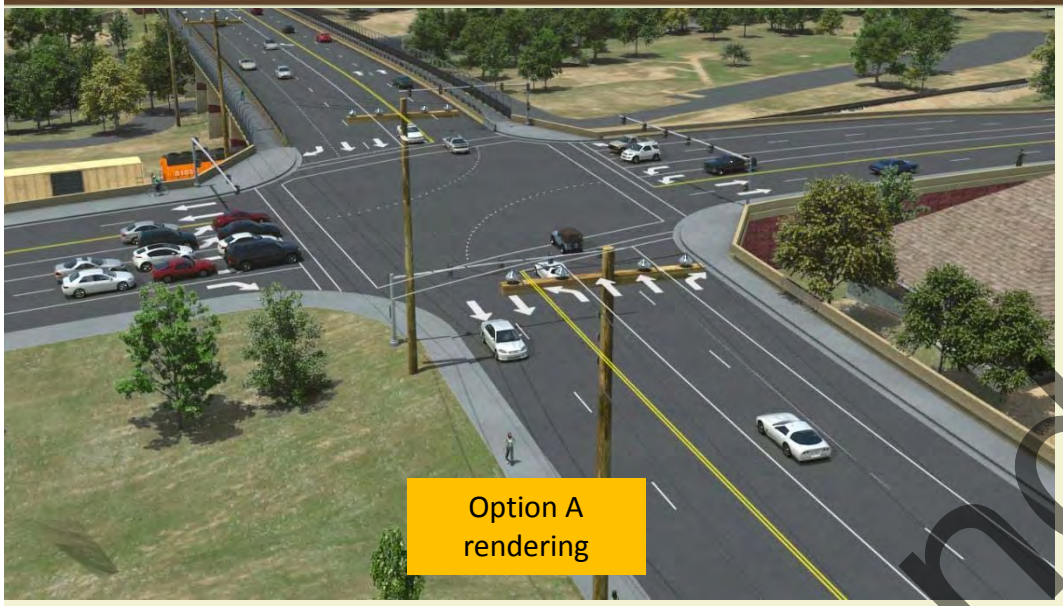
View from SE Dental Center (2nd floor)

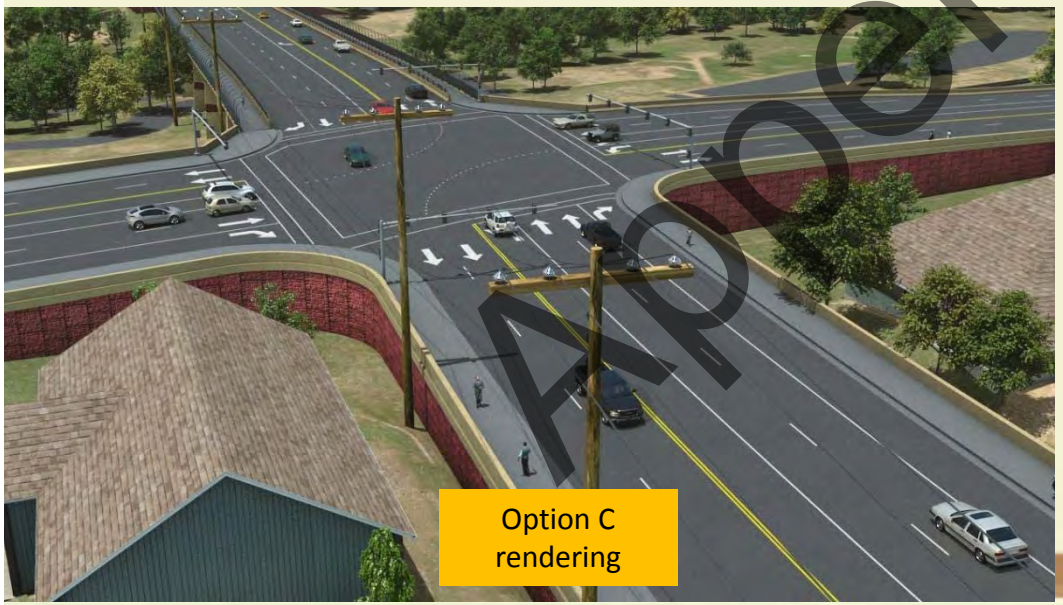


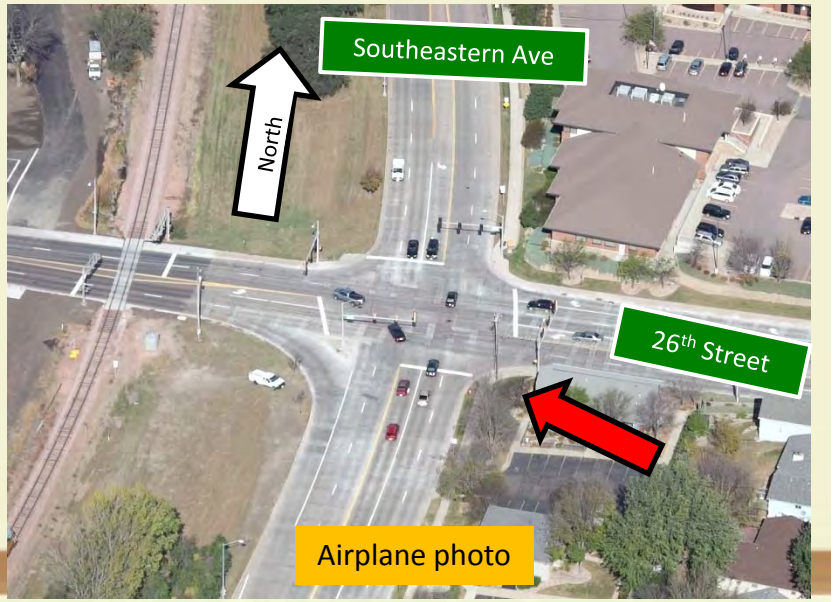


Appendix C

View from east of intersection

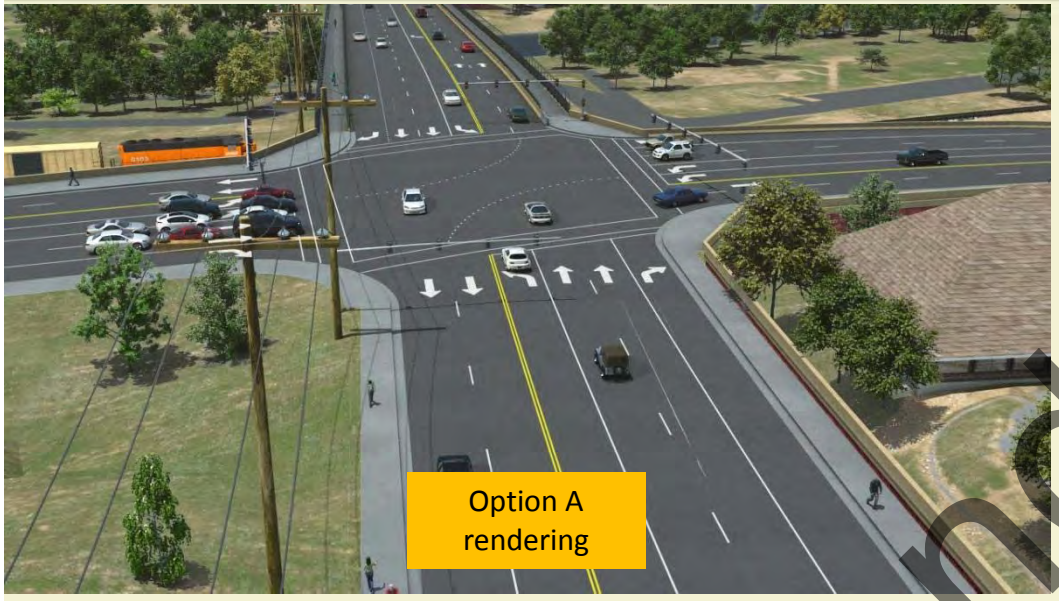


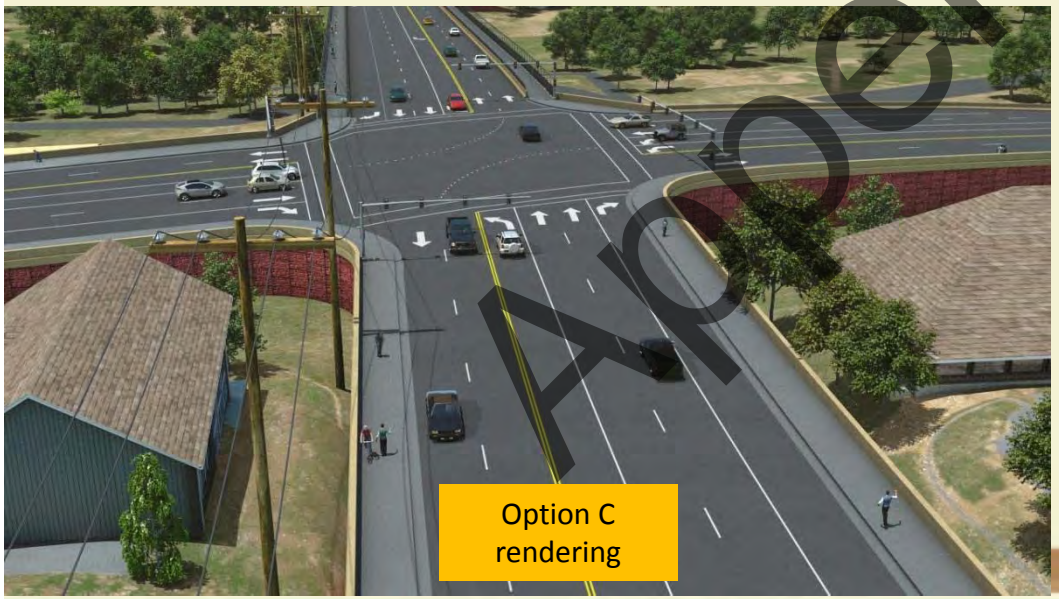


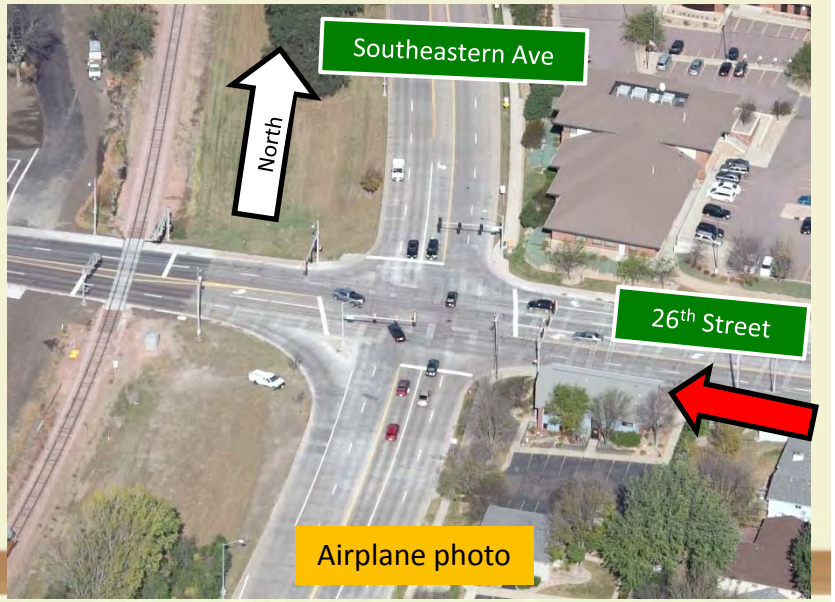


Appendix C

View from east of intersection







Appendix C

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APPENDIX D

WETLAND FINDING

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South Dakota Department of Transportation
Federal Highway Administration

E.O. 11990 – Wetland Finding

FOR

I-229 Exit 5 (26th Street) Interchange
Environmental Assessment

Minnehaha County
South Dakota

October 2014

This action complies with Executive Order 11990, Protection of Wetlands

Approved _____ 10/31/2014
FHWA Environmental Engineer Date

Approved _____ 11/14/2014
SDDOT Environmental Engineer Date

Appendix D

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South Dakota Department of Transportation
Federal Highway Administration

E.O. 11990 Wetland Finding

This statement sets forth the basis for a preliminary finding that there is no practicable, prudent or economical alternative to the placing of fill for highway construction in certain wetlands within the future right-of-way of the proposed improvements to I-229 Exit 5 (26th Street) Interchange and the intersection of 26th Street and Southeastern Avenue (see Attachment 1, Figure 1). All practicable measures to minimize the fill areas and to reduce harm to wetlands have been taken.

Project Description

The South Dakota Department of Transportation (SDDOT) and the City of Sioux Falls (the City) have initiated a study to consider transportation improvements in the vicinity of the I-229 26th Street Interchange and the intersection of 26th Street and Southeastern Avenue (the Project). The purpose of the Project is to improve the I-229 Exit 5 Interchange and identify improvements to the roadway corridors identified in Figure 1 (see Attachment 1, Figure 1). The improvements would need to meet current design standards and accommodate existing and future traffic needs by meeting Federal, State, and City capacity and level of service criteria. Improvements being considered at this time include:

- Modification of the interchange to a standard interchange configuration,
- Replacement of the 26th Street Bridge over the Big Sioux River, and
- Construction of a 26th Street overpass of the BNSF railroad tracks.

See Chapter 2, Alternatives, in the I-229 Exit 5 (26th Street) Interchange Environmental Assessment (EA) for further discussion of the proposed Project.

Alternatives Considered

The No-Build and four Build Alternatives were further considered for this Project. The four Build Alternatives include: Alternatives 5aA, 5aC, 7aA, and 7aC. Alternative 7aC has been recommended as the preferred alternative.

Basis for Determining the Proposed Action Includes All Practicable Measures to Minimize Harm to Wetlands

Mitigation measures to minimize adverse impacts to wetlands were discussed and considered throughout all aspects of the planning and design of the project. Impacts to wetlands and other waters of the U.S. were considered for all Build Alternatives. The EA examined all impacts and compared the Build Alternatives.

Impacted Wetlands

Wetland impact analysis for the preferred alternative was completed utilizing delineated and desktop determined wetland boundaries and preliminary working limits. Preliminary working limits for Alternative 7aC were completed for the EA. If a Finding of No Significance Impact (FONSI) is approved for the preferred alternative, this Build Alternative would move forward into final design. The final design working limits would be utilized to determine the final wetland impact numbers for the preferred alternative and would be compared to what is noted here and in the Section 404 permit. If the calculations differ, the wetland finding would be amended. Consistent with USACE permit requirements and Statewide Wetland Finding, should the final impacts be 1.0 acres or greater, the wetland finding will be amended.

The preferred alternative would impact a total of 0.19 acres of wetlands. A summary of the wetland impacts is presented below. The wetland number corresponds to their identified locations on Figures 2

Appendix D

(see Attachment 1, Figure 2). Efforts to minimize wetland impacts would be incorporated into the final design.

Table 1. I-229 Exit 5 (26th Street) Interchange Wetland Impacts

Wetland No.	Permanent Impact within Preliminary Limits (Acres)
8	0.19

Mitigation Goals

The SDDOT proposes to mitigate for the loss of wetlands through either a mitigation bank, off site, or on site.

Coordination

The Project and wetland finding have been and will continue to be coordinated with the following agencies:

- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- SD Department of Game, Fish and Parks
- SD Department of Environment and Natural Resources

The permit application(s) will be submitted to the responsible permitting agencies for the review and approval prior to construction of the construction of the I-229 Exit 5 (26th Street) Interchange in anticipation of issuance of a Section 404/401 Permit under the Clean Water Act.

Mitigation Success Criteria and Protection

Mitigation for the Project would be either through a mitigation bank, off site, or on site. If a mitigation bank is chosen for mitigation, a potential credit methodology would be the Hydro Geomorphic (HGM) Assessment. HGM would be utilized and the credits needed to replace the function and quality of the impacted wetlands would be purchased. The determinations for mitigation would be finalized during final design.

Finding

In accordance with Executive Order 11990, NEPA and the Federal Highway Act it has been determined that there is no feasible or practical alternative to the proposed construction. All practical measures to avoid wetland areas have been considered and initiated.

Appendix D

Attachment 1

Figures

Appendix D

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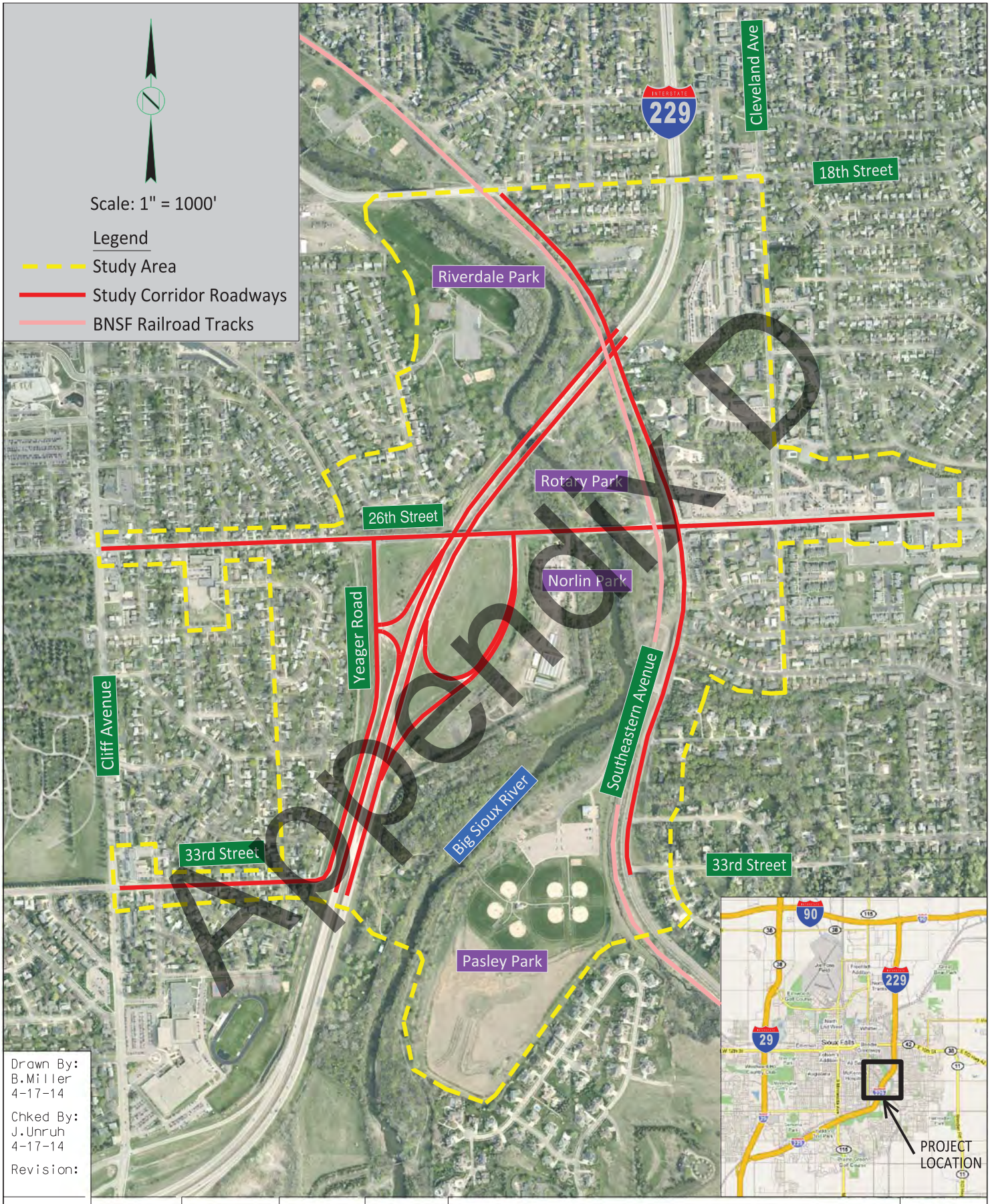

Project Location

I-229 Exit 5 (26th Street) Interchange Environmental Assessment
Sioux Falls, South Dakota

Figure
1

Drawn By: B.Miller
Date: 1-3-2014
Chked By: J.Unruh
Date: 1-3-2014
Revision: 4-4-14

Wetland and Other Waters of the U.S. and Floodway/Floodplain Impacts - Option 7aC

I-229 Exit 5 (26th Street) Interchange Environmental Assessment Sioux Falls, SD

Figure 2

APPENDIX E

SECTION 4(F) AND 6(F) COORDINATION

- Section 4(f) Coordination
  - Meeting Notes dated May 10, 2012
  - Meeting Notes dated January 30, 2013
  - Meeting Notes dated January 14, 2014
  - Email dated January 24, 2014
  - Meeting Notes dated April 1, 2014
  - Letter dated September 8, 2014

- Section 6(f) Coordination
  - Email dated February 12, 2014
  - Meeting Notes dated March 18, 2014
  - Letter dated June 24, 2014
  - Email dated July 9, 2014
  - Letter dated June 24, 2014
  - Meeting Notes dated July 18, 2014

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HDR | ONE COMPANY *Many Solutions*℠

Meeting Notes

Subject:	Sioux Falls Parks Department Coordination
Client:	SDDOT, City of Sioux Falls, MPO
Project:	I-229 Exit 5 (26th Street) Crossroad Corridor Study — Project No: PL 0100(88), 3616 P, PCN 03KM
Meeting Date:	5/10/12; 8:30 a.m. — Meeting Location: Parks Dept. conf. room
Notes by:	HDR — Notes to: Study Advisory Team

Attendees:
City of Sioux Falls: Shannon Ausen, Sam Trebilcock; SDDOT: Darin Johnson
SF Parks Dept.: Don Kearney, Dave Fischer, Alicia Luther, Diane Gildemaster, Kelby Mieras, Tory Miedema, MPO: Amber Gibson; Confluence: Jon Jacobson; HDR: Jason Kjenstad, James Unruh

1. Jason Kjenstad provided an overview of the project which included (PowerPoint slides reviewed during the meeting are attached to these meeting notes):
- **1.1.** Schedule
- **1.2.** Goals
- **1.3.** I-229/26th Street interchange options
- **1.4.** 26th Street/Southeastern Avenue/RR crossing options
- **1.5.** Rotary Park considerations
- **1.6.** Canoe launch considerations

2. Canoe launch potential improvements with the 26th Street reconstruction:
- **2.1.** Realign the roadway within the canoe launch area to allow better maneuvering for vehicles with trailers
- **2.2.** Add a parking area
- **2.3.** Add a bridge across the Big Sioux River (BSR). This could be used during 26th Street construction to maintain pedestrian access to the bike trail and Rotary Park.
- **2.4.** Relocate the entrance to further to the west to line up with an access to Cliff Avenue Greenhouse

3. YMCA/Leif Ericson Day Camp:
- **3.1.** The camp is considering relocation because of BSR flooding issues.

4. Rotary Park:
- **4.1.** The picnic shelter gets lots of use.
- **4.2.** Rotary Park generally floods before Pasley Park.
- **4.3.** Drainage from 26th Street onto the park access road and then into the park currently is a problem.
- **4.4.** There is a drainage culvert under Southeastern Avenue and then another culvert under the BNSF railroad tracks that can cause problems in the park.
- **4.5.** Raising 26th Street for a railroad overpass bridge would eliminate the entrance to Rotary Park from 26th Street. A connecting roadway from the Pasley Park entrance road to Rotary Park may be a possibility. However, SF Parks wants to see more details before making a determination if that would be adequate. The raised 26th Street bridge would allow for a good connecting roadway.

Appendix E

5. Pasley Park:
   - **5.1.** In 2011, BSR flooding closed the entrance to Pasley Park from Southeastern Avenue.
   - **5.2.** Left turns out of Pasley Park are difficult during evening activities at the ball diamonds.
   - **5.3.** Additional parking is needed at Pasley Park. Some evenings, there are up to 200 vehicles in the park.
6. Bike trail
   - **6.1.** The trail under the 26th Street bridge needs to be concrete rather than asphalt.
   - **6.2.** Anchor mat on the slopes adjacent to the trail under the bridge is preferred to rip-rap. SF Parks likes the slope treatment at the new 41st Street bridge over the BSR.
   - **6.3.** Steel railing along the bike trail is preferred to wood railing
   - **6.4.** Lighting under the bridge for the trail is needed.
   - **6.5.** Bridge pier walls adjacent to the bike trail should have some kind of anti-graffiti surface.
   - **6.6.** A trail on the west side of the BSR north of 26th Street should be considered.
   - **6.7.** Trail access should be maintained during 26th Street reconstruction. A trail on the west side of the BSR may be beneficial for maintaining trail use during construction.
7. Yeager Road:
   - **7.1.** SF Parks maintains the area north of 26th Street across from Yeager Road. There are steep slope from 26th Street down to the houses along Riverdale Road. Trees have overgrown these slopes and may cause problems for the homeowners.
   - **7.2.** SF Parks also maintains the area along Yeager Road.
8. *Follow-up tasks:*
   - **8.1.** *SF Parks will research the original funding source of the trails.*
   - **8.2.** *A representative of SF Parks needs to be attendance when a meeting is held with the YMCA Day Camp.*
   - **8.3.** *SF Parks would like to preview the public meeting information/presentation.*
   - **8.4.** *The project team will place a sign along the bike path about the 26th Street corridor study.*
   - **8.5.** *HDR to review pedestrian bridge north of the existing 26th Street Bridge to determine if possible and costs associated with a structure of that length.*
   - **8.6.** *Confluence to review parking lot for a trail head at the canoe launch area if deemed feasible.*

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Meeting Notes

Subject:	Parks Department Meeting #2
Client:	SDDOT, City of Sioux Falls, MPO
Project:	I-229 Exit 5 (26th Street) Crossroad Corridor Study
Project No:	PL 0100(88), 3616 P, PCN 03KM
Meeting Date:	1/30/13; 3:30 p.m.
Meeting Location:	Morningside Community Center
Notes by:	HDR
Notes to:	Study Advisory Team

Attendees:
City of Sioux Falls: Shannon Ausen, Chad Huwe; SDDOT: Travis Dressen, Brooke White
SF Parks: Don Kearney, Kelby Mieras, Diane Gildemaster; Confluence: Jon Jacobson
HDR: Jason Kjenstad, James Unruh

1. **Project overview of the project public and agency involvement to date**:
   - Parks Coordination Meeting #1 – May 10th, 2012
   - BNSF Coordination Meeting #1 – July 10th, 2012
   - Public Meeting #1: July 17th, 2012
   - Small Group Business Owner Meetings: August 2012
     - YMCA
     - Cliff Avenue Greenhouse
     - NE Quad 26th and Southeastern
     - SE Quad 26th and Southeastern

   Jason briefly reviewed the items discussed at the first meeting with the SF Parks department. Jason noted that the overall project has changed since our 7/10/12 meeting with BNSF from a Corridor Study to an Environmental Assessment (EA). Preliminary design would begin immediately after completion of the EA. Funding for project improvements is programmed for year 2017.

2. **Travel survey responses related to parks and trails (see Attachment A**) – This was reviewed by Jason.

3. **YMCA Day Camp relocation status** – Don Kearney noted that there are no new developments in the efforts to relocate the camp. They are looking at a couple of alternative sites but no definite plans have been made.

4. **Interchange concept options review (see Attachment B):**
   - NW quadrant ramp – Options with a ramp in the northeast quadrant of the interchange will impact Rotary Park on the west side of the Big Sioux River. Don noted that there are minimal activities in that area except for dog walkers. There are no improved trails. The Parks Department does not want to have negative impacts to the canoe launch.
   - 26th Street widening – All options show some widening of 26th Street between Frederick Drive and I-229. The Parks Department is responsible for maintaining the steep slope along the north side of 26th Street. They have just let the volunteer trees grow because of the steep slope. The homeowners along Cameo Way now consider the trees a buffer between them and 26th Street. 26th Street widening will be on the south side and 26th Street may be lowered by several feet between Frederick Drive and I-229. That would allow for flattening of the north side slope and potentially installing plantings to serve as a visual buffer.
   - Sidewalks – The concept options show sidewalk at back-of-curb along both sides of 26th Street. At this point the standard 6' wide sidewalk is proposed. Parks staff noted that a separated sidewalk or shared use path would be preferred, if space is available.
   - Trail on west side of Big Sioux River – All interchange options show a future pedestrian trail on the west side of the river and a pedestrian bridge crossing the river north of 26th Street. The pedestrian

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bridge may or may not be needed to maintain trail access during construction of a new 26th Street bridge. The Parks Department is in favor of allowing for the future west side trail and river crossing.

5. 26th Street/Southeastern Avenue concept options (see Attachment C):

- Rotary Park entrance – All of the intersections with a RR overpass eliminate the driveway from 26th Street to Rotary Park. A connection from Pasley Park entrance road to Rotary Park under 26th Street is proposed to replace the 26th Street driveway. Don Kearney noted that the Pasley Park entrance road is subject to flooding both from rain events and from high flows in the Big Sioux River. Don is concerned about having access to both Rotary Park and Pasley Park from the same access roadway.

- Pedestrian connection from 26th Street to bike trail/parks – The 26th Street RR overpass requires a re-routing for pedestrians to get from 26th Street to the bike trail, Rotary Park, and Pasley Park. The intersection options showed several options for these connections:

  - 700' long ramp from 26th Street south to Pasley Park entrance road (shown on options A, B, C, D, and F – This connection would provide a feasible connection but does require walkers and bikers to take an extra long route to get to destinations on the north side of 26th Street.

  - Option D showed a pedestrian route along the east side of Southeastern Avenue with an at-grade crossing of Southeastern Avenue at Klondike Trail. Parks Department staff noted that traffic does not stop for pedestrians at the existing crossing at that location.

6. *Follow-up:*

- *Concept options should be presented at an upcoming parks board meeting.*

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Meeting Notes

Subject:	Parks Department Meeting #3
Client:	SDDOT, City of Sioux Falls, MPO
Project:	I-229 Exit 5 (26th Street) Crossroad Corridor Study — Project No: PL 0100(88), 3616 P, PCN 03KM
Meeting Date:	1/14/14; 8:00 a.m. — Meeting Location: Parks Dept. conf. room
Notes by:	HDR — Notes to: Study Advisory Team

Attendees:
City of Sioux Falls: Shannon Ausen, Trent Lubbers SF Parks: Don Kearney
Confluence: Jon Jacobson, Chad Kucker; HDR: Jason Kjenstad, James Unruh

1 Project overview provided by Shannon Ausen:

1.1 The activities since the 1/30/13 meeting with Parks Department staff have been related to development, refinement, review, and impact analysis of options at the I-229/26th Street interchange and at the 26th Street/Southeastern Avenue intersection. Impacts to the parks and bike trail were similar for virtually all of the options.

1.2 Interchange improvements are in the SDDOT developmental program for 2019. Intersection improvements are desired by the City to take place in 2018 or 2019.

1.3 The public meeting on 1/15/14 is to present to the public the options recommended for further evaluation in the Environmental Assessment.

2 Jason Kjenstad reviewed meeting notes that discussed park and bike trail issues:

2.1 Parks coordination meeting #1 (5/10/12) – Overall project goals were discussed at this meeting as related to parks and bike trail considerations.

2.2 Parks coordination meeting #2 (1/30/13) – Specific interchange and intersection options were reviewed. The meeting notes documented Don Kearney's concerns about providing access to Rotary Park from the Pasley Park entrance road.

2.3 BNSF coordination (1/31/13) – It was noted at this meeting that BNSF policy calls for removal of two at-grade rail crossing for each new crossing.

2.4 Area bicycle committee (6/19/13) – Strategies to provide access from 26th Street to the bike path were discussed at this meeting.

2.5 City utility coordination regarding Pasley Park entrance (8/6/13) – It was noted at this meeting that the drainage problems on the Pasley Park entrance road had generally been fixed with the Central Main sanitary sewer replacement project.

2.6 Study team meeting (12/16/13) – Existing park features and impacts associated with the intersection improvements were discussed at this meeting.

3 Park impacts discussion (slides reviewed from the public meeting presentation are attached to these meeting notes):

3.1 Don Kearney stated that providing access to Rotary Park solely via the Pasley Park entrance is not an equitable or acceptable solution to closing the existing Rotary Park entrance from 26th Street. Don's main concerns are:

- Traffic congestion at the Southeastern Avenue/Pasley Park entrance road; Don does not consider a traffic signal as adequate to solve the congestion.
- Narrowness of the Pasley Park entrance road and the safety concern with the sidewalk/trail that is immediately adjacent to the entrance road.
- Distance from Rotary Park to the Pasley Park entrance road.
- Additional drainage issues of the Pasley Park entrance road such as high groundwater flooding the roadway. Trent Lubbers noted that the drainage repairs made with the sanitary sewer project have not yet been fully tested by significant rainfall events.

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- A parallel BNSF track in the future would be difficult to accommodate at the Paisley Park entrance.

3.2 Jason noted these potential Rotary Park entrance options that will be examined:
- Entrance from Southeastern Avenue north of 26th Street with a new BNSF tracks crossing.
- Entrance from canoe launch area on the west side of the river; parking would be provided in the canoe launch area with a pedestrian bridge to the east side of the river.

3.3 Don noted that the additional open area under the new and significantly higher 26th Street bridge may not be considered as benefiting Rotary and/or Norlin Parks. Chad Kucker wondered if there was bridge column that could be placed that was more open?

4 Bike trail impacts discussion – Jason noted that a temporary precast concrete box culvert is proposed to allow the bike trail to remain open during project construction. Don had no comment on this item.

5 Selection of raised intersection options

5.1 The City's arterial street/railroad grade separation policy was the main determinant for developing and selecting options with an elevated 26th Street/Southeastern Avenue intersection. The environmental assessment process (which is dictated by FHWA) required adherence to the City's policy. The impact of closing the existing Rotary Park entrance from 26th Street can be reasonably mitigated.

6 Next Steps:

6.1 Public meeting will be held on 1/15/14 to solicit feedback on proposed interchange and intersection options and on park and bike trail options.

6.2 Confluence will develop options to provide access to Rotary Park.

6.3 HDR to develop a concept layout for an at-grade railroad crossing at the location used during the sanitary sewer project north of 26th Street.

6.4 Confluence will also look at opportunities for streetscape and pedestrian improvements throughout the project limits.

6.5 Meeting will be held in early February with the design team and Parks Department to review all aspects of the project as related to park and bike trail impacts. The main contact for the Parks Department will be Don Kearney.

6.6 Meeting participants agreed that there is a significant amount of work to do before the parks and bike trail access issues are resolved.

Appendix E

Drawn By: B.Miller 2-7-14

Chked By: J.Unruh 2-7-14

Revision:

BNSF Railroad Crossing to Rotary Park

I-229 Exit 5 (26th Street) Crossroad Corridor Study Sioux Falls, SD

Figure 1

Appendix E

TRAIL
±1438 proposed
SOUTHEASTERN AVENUE
EX PASLEY PARK ENTRANCE
EX VEHICLE UNDERPASS
FUTURE TRAIL CONNECTION
FENCE
EX RAILROAD
FLOODPLAIN
FLOODWAY
EX RESTROOM ±1401 ex
EX PLAY ±1398 ex
±1398 ex
FITNESS STATIONS
PARALLEL TRAILS 12' WIDE
NORLIN PARK
12' TRAIL
EX TRAIL
PARK SIGNAGE
BIG SIOUX RIVER
ROTARY PARK
RELOCATE EX BRIDGE (±10' WIDE)
STATION POINT
EX SHELTER ±1396 ex
EX TRAIL
EX CANOE PORTAGE
LOW BRIDGE ±1395
±1393 ex
LEIF ERICSON DAY CAMP
±1412 proposed
12' TRAIL
NEW BRIDGE (±12' WIDE)
CANOE LAUNCH
EX FISHING
PARK SIGNAGE
PARKING (±46)
±1395
±1403 proposed
FISHING
PLAY ±1398
CLIFF AVENUE GREENHOUSE
I 229 NORTHBOUND
I 229 SOUTHBOUND
±1395 parking
SHELTER ±1398
RESTROOM & TRAILHEAD ±1401
PARK SIGNAGE
EAST 26th STREET
NOTE: FILL REQUIRED IN FLOODWAY/FLOODPLAIN TO ASSURE FLOOD RISK OF PROPOSED PARK ELEMENTS DOES NOT EXCEED EXISTING PARK RISK
EXIT 5 OFF RAMP
FUTURE TRAIL
ROTARY PARK
SCALE:1"=80'
0' 40' 80' 160'

CONFLUENCE
March 3, 2014

I-229 Exit 5 Study
Rotary-Norlin Park Access Option C2
Sioux Falls, South Dakota

Unruh, James

From: Kjenstad, Jason
Sent: Friday, January 24, 2014 11:31 AM
To: dkearney@siouxfalls.org
Cc: Kjenstad, Jason; Unruh, James
Subject: Parks Dept Meeting Minutes - 26th Street Corridor Study
Attachments: Mtg Min Parks Dept 01 14 14 rev1.pdf

Don,
Thanks again for your time to discuss the corridor study on Jan 14th, please review the minutes before I send out to the group to ensure we have captured your concerns. If you agree with our notes I will send to Trent, Shannon, & Confluence.

Shannon is looking at calendars now and I believe is looking to the week of Febr 10th for another meeting to discuss both vehicle and ped access to the parks along 26th Street.

Jason

JASON KJENSTAD
P.E., L.S.I.T.
ASSOCIATE

HDR Engineering
Civil Engineer

6300 S. Old Village Place, Suite 100 | Sioux Falls, SD 57108
605.977.7755 | c: 605.360.6595
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Appendix E

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Meeting Notes

Subject:	Parks Committee Meetings April 1st, April 3rd, April 8th 2014
Client:	SDDOT, City of Sioux Falls, and MPO
Project:	26th Street Corridor Study — Project No: 179168
Meeting Date:	April 1st — Meeting Location: Parks Conference Room
Notes by:	HDR

Attendees: Don K, Jon J, Jason K, Shannon A, Dave F, Parks Board Members

Topics Discussed: HDR and Confluence provided a brief overview of the corridor project and its relation to the Rotary Park and Norlin Park access closure. HDR discussed the grade separation of the BNSF and how that feature would impact the existing access to Rotary Park. Jon Jacobson provided an overview of the C2 graphic supported by the parks department.

Action/Notes from April 1st Meeting: The following items need to be addressed

- Would an underpass like what was constructed at Pasley Park work to gain separated access to Rotary Park?
- Update the park intersection graphic to allow for a few vehicles to be stored outside the through lane for EB 26th Street.
- Parks Board member indicated that they would like direct access to the signal at the interchange; HDR indicated that FHWA or MUTCH guidance would not allow that connection
- Emergency vehicle access to Rotary or Norlin Park could be gained by using the Bike Trail from Pasley park and going north on the 12' wide trail. The bridge clearance after construction would be enough to allow any type of vehicle traffic for emergency purposes
- Discussed issues with at-grade rail crossing and trains parked across crossing
- Discussed box culvert to keep trail open during construction
- Discussed construction in the year 2018 or 219

Action/Notes from April 3rd Meeting: The following items need to be addressed

- Concerns existed in regards to access, wants to make sure a left turn lane is available for eastbound traffic to park access
- Would like the connection roadway from Leif Erickson to Rotary Park in plan
- Wants to make sure Canoe's can make it through this area when flows are high enough to do so

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September 8, 2014

Mr. Don Kearney, Director
Sioux Falls Parks and Recreation
100 East 6th Street
Sioux Falls, SD 57104-5929

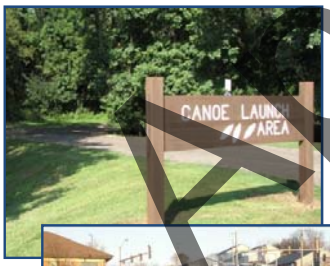
RE: Section 4 (f) *De Minimis* Finding for I-229 Exit 5 (26th Street) Environmental Assessment
IM-PH 2292(06)5 P, PCN 4778, Minnehaha County

Dear Mr. Kearney:

Thank you for your continued coordination throughout the Environmental Assessment (EA) process for the Interstate 229 (I-229) Exit 5 (26th Street) Interchange (the Project). This Project was initiated by South Dakota Department of Transportation (SDDOT) and the City of Sioux Falls (the City) to consider:

- The existing interchange at I-229 Exit 5 and potential Build Alternatives for its reconstruction.
- A potential 26th Street grade separated crossing of the Burlington Northern Santa Fe (BNSF) railroad tracks.
- Expansion of the 26th Street and Southeastern Avenue intersection.

The purpose of the letter is to inform the City's Parks and Recreation Department of the intent to make a *de minimis* finding for the impacts to Section 4 (f) properties that are under your jurisdiction prior to the release of the public availability copy of the EA for the Project. After the public comment period has ended, your department will be provided the public meeting documents, which will includes all public comments. At that time, written concurrence for the *de minimis* finding will be requested. The *de minimis* finding is based on all information that has been previously coordinated with your department and is within this letter. The letter includes the following sections: Section 4(f) Resources Identified, Build Alternatives Analysis, and Mitigation and Enhancements.



Section 4(f) Properties Identified

Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. 303), declares that it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.

The following Section 4(f) properties are owned by the City of Sioux Falls and are under the jurisdiction of the City of Sioux Falls Parks and Recreation Department were identified within the Study Area of the Project (see Figures 1 and 2-1):

- **Rotary Park** is surrounded entirely by roadways, including I-229 to the northwest, 26th Avenue to the south, and Southeastern Avenue to the east. Rotary Park provides approximately 13.5 acres of public recreational area. The park contains a 62 space parking area, playground equipment, restroom facilities, and a sheltered picnic area. The sheltered picnic area is one of the most utilized in the park system. The park provides access to the Big Sioux River Bike Trail system,

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fishing, canoeing, and kayaking. The Big Sioux River runs through the center of this park. There is an entrance to both the west side and east side of the Big Sioux River off of 26th Street. The east side entrance is a paved roadway connecting Rotary Park's parking lot and Norlin Park's parking lot by passing under the 26th Street Big Sioux River Bridge (see Figure 3-4). The west side entrance is a gravel roadway providing access to the existing canoe launch.

- **Norlin Park** is located south of 26th Street between the Big Sioux River and Southeastern Avenue. Norlin Park provides approximately 35.8 acres of public recreational area. The park includes a nine space parking area and access to the Big Sioux River Bike Trail system. As described above, the Norlin Park parking area is accessed from Rotary Park by the paved roadway under the Big Sioux River Bridge. The existing 7' of vertical clearance limits the use of this access and the roadway is not maintained during the winter months.
- **Riverdale Park** is located north and west of I-229 and the Big Sioux River runs along the east side of the park. Riverdale Park provides approximately 42.3 acres of public recreational area. Park amenities include accessible restrooms and picnic shelters. Recreational facilities include playgrounds, accessible basketball courts, tennis courts, league football fields, sand volleyball courts, and access to the Big Sioux River Bike Trail system.
- **Pasley Park** abuts the south end of Norlin Park. Pasley Park provides approximately 24.9 acres of public recreational area. The park contains accessible restrooms, picnic shelters, and playgrounds. The park also includes league baseball fields and a bike trail access point. Pasley Park is accessed from Southeastern Avenue, south of 26th Street. The roadway goes under the BNSF railway and in the past has flooded.
- The **Big Sioux River Bike Trail**, owned by the City of Sioux Falls, runs along the Big Sioux River corridor connecting Cherry Rock, Riverdale, Rotary, Norlin, and Pasley Parks within the Study Area (see Figure 2-1). This trail is approximately 12 feet wide within the limits of the Project Area. Small segments of shared use paths identified on Figure 2-1 provide connections to the Big Sioux Bike Trail. As recreational facilities, the Big Sioux River Trail and connections to the Big Sioux River are identified as Section 4(f) properties.

Sidewalks present within the Study Area are utilized for the purpose of transportation, not solely for recreational purposes. Therefore, the sidewalks are not considered Section 4(f) properties.

Section 6(f) of the Land and Water Conservation Fund Act of 1965 was established to protect federal investments and maintain high-quality recreation resources. The National Park Service administers Section 6(f). Coordination for this Project and Section 6(f) occurred with the SDGFP liaison. The Section 6(f) resources identified in the Study Area include: Norlin, Riverdale, and Rotary Parks, as well as the Big Sioux Bike Trail segment. Further coordination has occurred with the SDGFP and National Park Service to determine the Project effects on Section 6(f) resources, these effects and resources are further discussed in the EA.

Build Alternatives Analysis

After the identification of Section 4(f) properties adjacent to the Project, the SDDOT analyzed the Build Alternatives carried forward for further consideration for the Project. Section 4(f) specifies that the Secretary of Transportation may only approve the use of Section 4(f) property only if:

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(a) The Administration, for this Project would be the Federal Highway Administration (FHWA) determines:

(1) There is no feasible and prudent avoidance alternative to the use of land from the property; and

(2) The action includes all possible planning to minimize harm to the property resulting from such use; or

(b) The FHWA determines that the use of the property, including any measure(s) to minimize harm (such as any avoidance, minimization, mitigation, or enhancement measures), will have a *de minimis* impact on the property.

During the EA process, four Build Alternatives were carried forward for detailed evaluation; Figures 3-4 to 3-7 that display Alternative 5aA, 5aC, 7aA, and 7aC are attached to this letter. Avoidance of all Section 4(f) properties was not possible due to the nature of the Project. At this point in the EA process, a preferred alternative has not been selected, but the impacts to Section 4(f) properties would be similar for all the Build Alternatives carried forward. The following discusses the impacts, as well as avoidance and minimization efforts:

- *Park Access* – At the existing park entrance of Rotary and Norlin Parks, the Project would modify the 26th Street Big Sioux River Bridge to be approximately 25' higher than the existing roadway. This change in height would require the elimination of the current park entrance into Rotary Park that extends under the 26th Street Big Sioux Bridge into the parking lot in Norlin Park. In the Mitigation and Enhancement section below, the option that was chosen to access the parks is further discussed. The following are the options that were reviewed and eliminated:
    - *Utilizing the entrance into Pasley Park to connect to Norlin Park's access road*- Connecting the Pasley Park's access road to Norlin Park's access road would be difficult due to the difference in grade. Drivers would have limited sight distance at the connection point between the two access roads. Also, during baseball and softball season traffic on Pasley Park access road has higher volumes. Utilizing the entrance to Pasley Park for three parks would create further congestion. This would also create a conflict between pedestrians utilizing the sidewalk along the Pasley Park's access road to cross the entrance to Norlin Park. Therefore, at the request of the City's Parks and Recreation Department, this option was eliminated.
    - *Crossing the BNSF railway to connect to the Rotary Park*- Creating a new entrance on the north side of Rotary Park off of Southeastern Avenue across the BNSF rail line. This would connect Rotary Park to Southeastern Avenue and the access to Norlin Park would continue to be the paved road that goes under the 26th Street Bridge. Coordination occurred with BNSF for this option due to the need for a new at-grade crossing. In order to open a new at-grade crossing of the BNSF, two existing at-grade crossings would need to be closed. Also, the BNSF parks their trains in this area. Due to the frequency of parking in this area not being at specific times, BNSF was not able to provide the duration of the time trains would be parked at this entrance. During times that the train is parked, vehicles would not be able to

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enter or leave Rotary and Norlin Parks. Due to uncertainty of the wait time for traffic to enter or leave the parks, this option was eliminated.

During construction, access to Rotary Park will be maintained. Three potential options are included for the Build Alternatives. One of these three options, or any other additional options determined during final design, would be coordinated during final design to allow access to Rotary Park to continue:

- Construction of the new 26th Street Bridge over the railroad tracks would make access to Rotary Park during construction difficult to maintain. It is anticipated that a temporary access across the railroad tracks from Southeastern Avenue north of 26th Street would be allowed. This temporary access was utilized for construction and local traffic access during work on the sanitary sewer pipe in Rotary Park in 2011. The location of this temporary access is along Southeastern Avenue, north of 26th Street. This temporary crossing of the railroad tracks has been discussed with BNSF, and during final design would need to be approved, or
- If the temporary crossing of the BNSF cannot be utilized, construction of the parking lot on the west side of the Big Sioux River and the pedestrian bridge would need to be completed before the current access to Rotary and Norlin Parks would be eliminated. This would allow park visitors to still be able to access facilities on the east side, a temporary situation until facilities (i.e. restrooms) are constructed on the west side.
- Temporary access from Pasley Park entrance into Norlin Park. A temporary access road would be constructed and after construction returned to preconstruction conditions.

- *Park Area*- No ROW will be acquired from any of the parks, Riverdale, Rotary, and Norlin Parks. The Norlin Park boundary is show to overlap with the improvements proposed the 26th Street Big Sioux River Bridge. The area under and adjacent to the bridge would be temporarily impacted during the construction of the bridge. After the construction, this area would be benefited with more space under the bridge. The Rotary Park boundary overlaps with the proposed improvements to 26th Street. The area is currently a sloped part of the roadway embankment and would be temporarily impacted during construction. These areas would be considered temporary construction easements. As discussed in Section 4(f) guidance, these areas would qualify as a temporary construction easements since they are short in duration, would not change the ownership of the areas, do not result in temporary or permanent adverse changes to the activities in the parks, and includes only a minor amounts of land.
- *Big Sioux River Trail*- The Big Sioux River Trail would remain on the same alignment. The higher bridge proposed would change the vertical clearance under the Big Sioux River Bridge to approximately 18' from the existing 7' clearance. During construction, a concrete box culvert would be placed to maintain trail use throughout the duration of the Project.

Mitigation and Enhancements

Figure 3-15 is a conceptual Rotary-Norlin Park Mitigation Plan. This plan is included for illustration and is subject to minor changes during final design. The improvements covered through federal funding and City's Public Works Department will be programmed to occur

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one year before construction of the Project. The Project is tentatively programmed for 2019; therefore the park improvements would tentatively be for 2018.

The following are parts of the plan that are covered through federal funding:

- The access road and parking area on the west side of the Big Sioux River.
- A pedestrian bridge over the Big Sioux River.
- The existing parking lots and paved roadway on the east side of Rotary Park and within Norlin Park would be removed and repurposed as a trail. This trail would also serve as a bike path loop around the two parks.
- The Big Sioux River Trail would remain on the same alignment. Construction of the new Big Sioux River Bridge would change the vertical clearance under the bridge from the existing 7' clearance to approximately 18'. After construction, there will be additional useable open space with better natural lighting under the bridge for park and trail use.

The following are parts of the plan that are covered through the City's Public Works Department through the City's sales tax fund:

- A new playground, shelter, and restroom within Rotary Park on the west side of the Big Sioux River. This includes the sewer and water facilities to the restroom.

Additional features were discussed during coordination meetings that will not be part of the 26th Street project. These features included exercise equipment along the new bike trail loop, a new fishing pier, canoe portage, and a future access road under 26th Street between the park and the Cliff Avenue Greenhouse driveway. These features and any additional features that are not noted in this letter would be separate items that the City's Parks Department could add and fund in the future.

After the public comment period has expired for the public availability copy of the EA, SDDOT will request a signed concurrence from you on the Section 4(f) *de minimis* finding.

If there are any questions, please contact me at (605) 977-7756.

Sincerely,
HDR Engineering

Rebecca Baker

Rebecca Baker
Environmental Scientist

Attachments
Figure 1 Study Area Map
Figure 2-1 Existing Conditions
Figures 3-4 to 3-7 Acquisitions and Park Impacts
Figure 3-15 Rotary and Norlin Parks Mitigation Plan

Cc: Marion Barber, FHWA
Tom Lehmkuhl, SDDOT
Shannon Ausen, City of Sioux Falls

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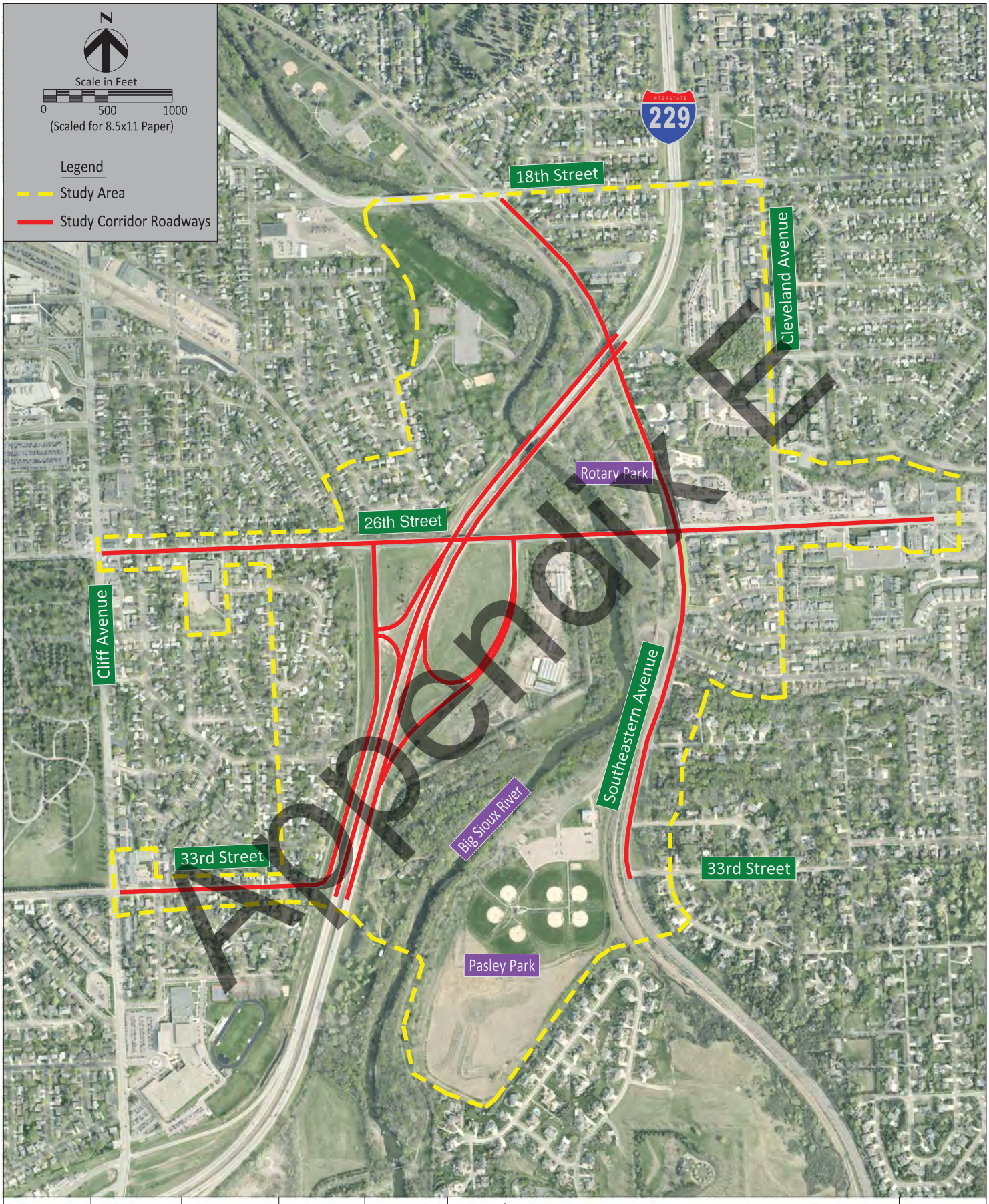


Study Area

I-229 Exit 5 (26th Street) Crossroad Corridor Study Sioux Falls, SD

Figure 1

3/24/14

Drawn By: B.Miller
Date: 1-7-2014
Chked By: J.Unruh
Date: 1-7-2014
Revision: 4-4-14

Existing Conditions

I-229 Exit 5 (26th Street) Interchange Environmental Assessment — Sioux Falls, SD

Figure 2-1

Drawn By: B.Miller
Date: 1-8-2014
Chked By: J.Unruh
Date: 1-8-2014
Revision: 4-17-14

Acquisitions and Park Impacts - Option 5aA

I-229 Exit 5 (26th Street) Interchange Environmental Assessment Sioux Falls, SD

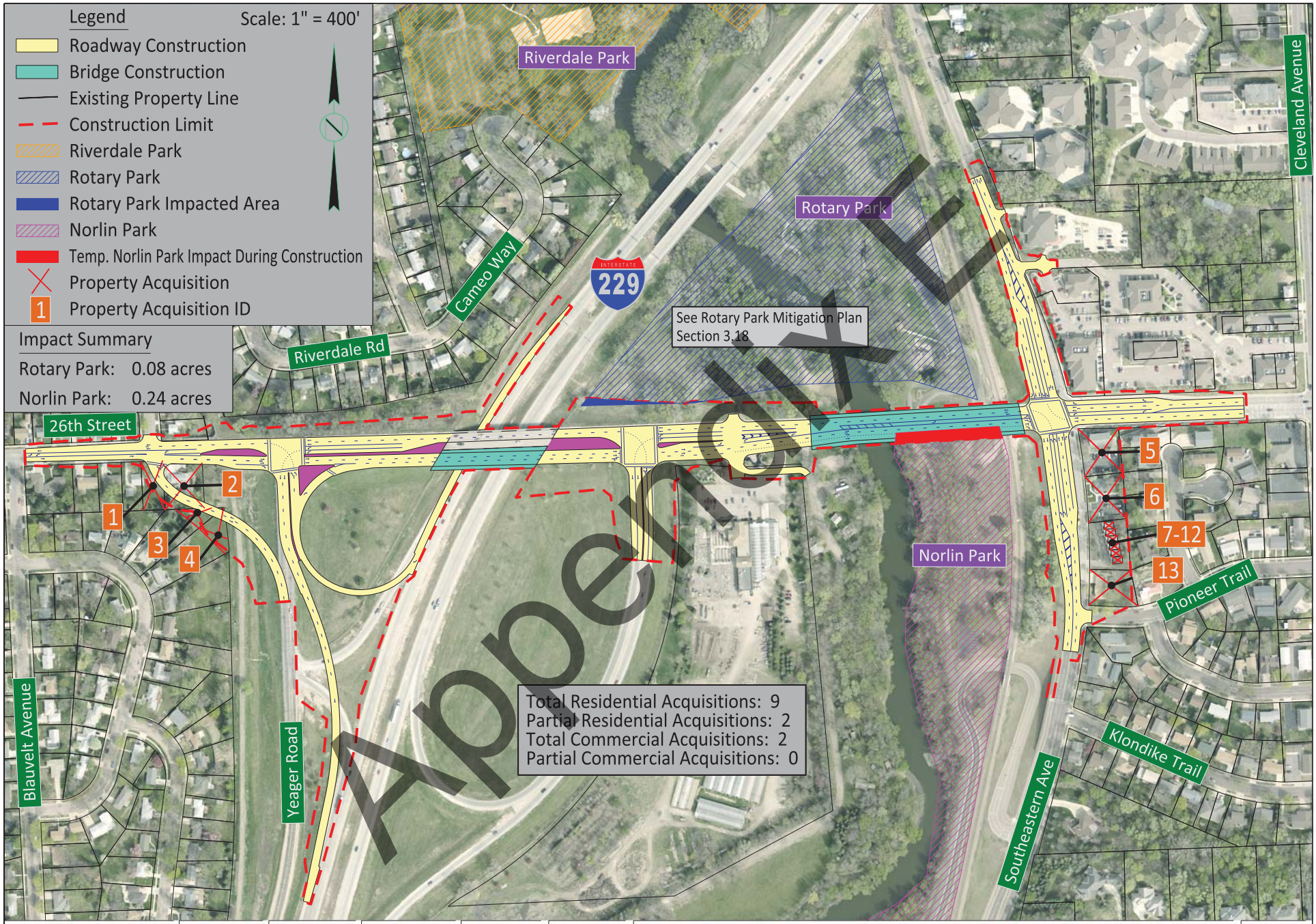
Figure 3-4

Drawn By: B.Miller
Date: 1-8-2014
Chked By: J.Unruh
Date: 1-8-2014
Revision: 4-17-14

Acquisitions and Park Impacts - Option 5aC

I-229 Exit 5 (26th Street) Interchange Environmental Assessment Sioux Falls, SD

Figure 3-5

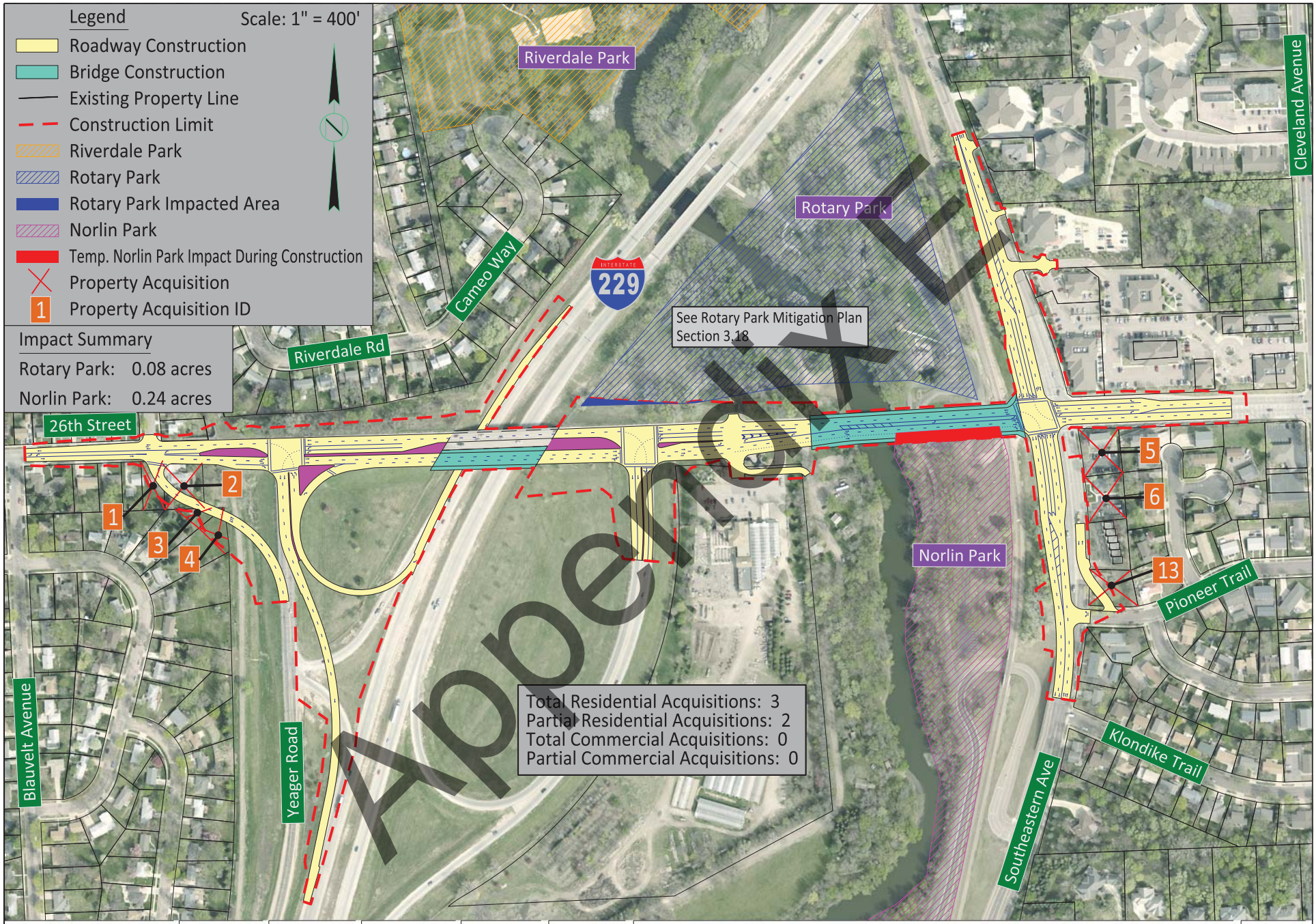


Drawn By: B.Miller
Date: 1-8-2014
Chked By: J.Unruh
Date: 1-8-2014
Revision: 4-17-14

Acquisitions and Park Impacts - Option 7aA

I-229 Exit 5 (26th Street) Interchange Environmental Assessment Sioux Falls, SD

Figure 3-6

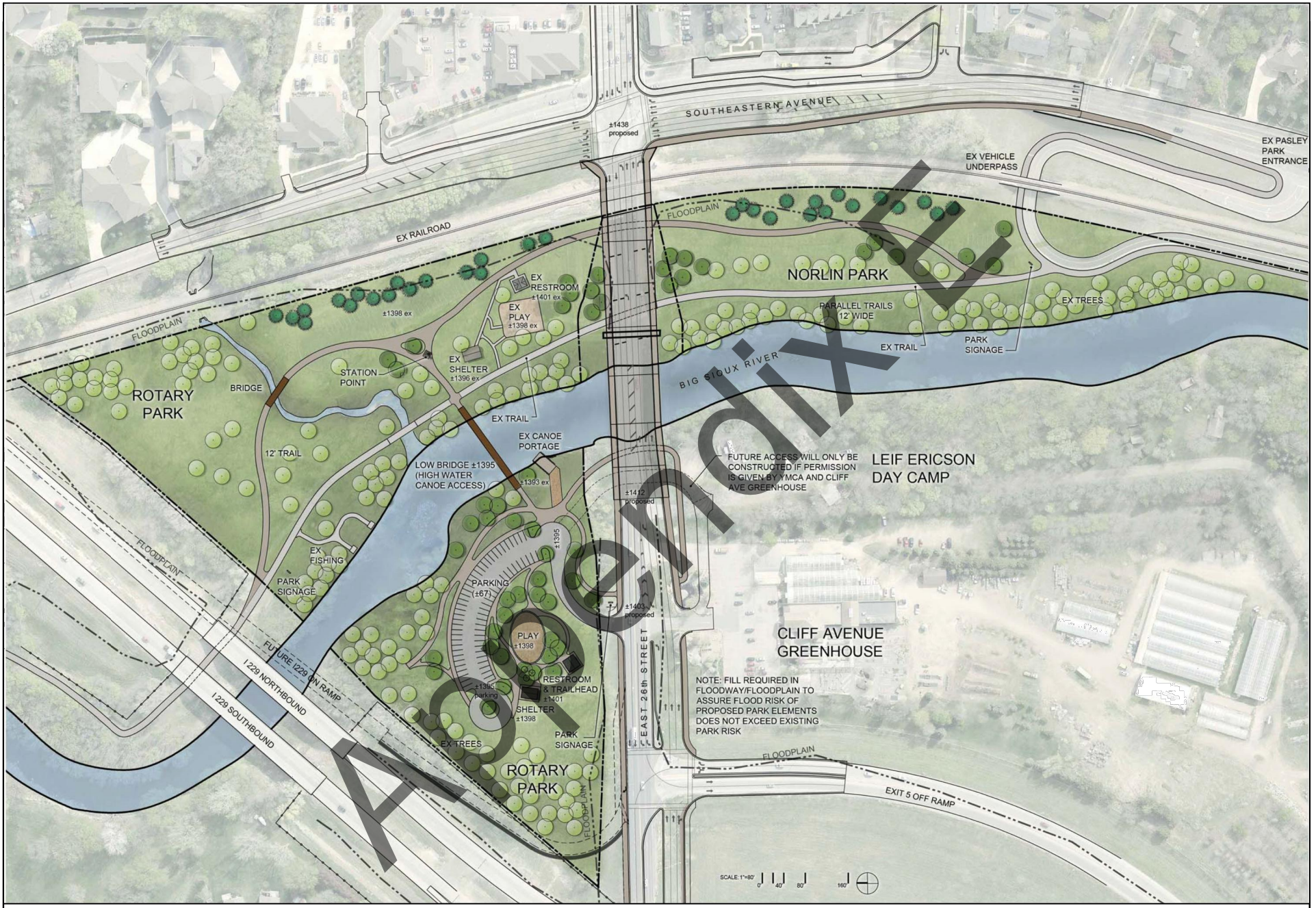


Drawn By: B.Miller
Date: 1-8-2014
Chked By: J.Unruh
Date: 1-8-2014
Revision: 4-17-14

Acquisitions and Park Impacts - Option 7aC

I-229 Exit 5 (26th Street) Interchange Environmental Assessment Sioux Falls, SD

Figure 3-7



Appendix L

Drawn By: J.Coryell
Date: 6-6-2014
Chked By: C.Kucker
Date: 6-6-2014
Revision: 6-6-2014

Rotary-Norlin Park Mitigation Plan

I-229 Exit 5 (26th Street) Interchange Environmental Assessment Sioux Falls, SD

Figure 3-15

Baker, Rebecca

From: Kittle, Randy <Randy.Kittle@state.sd.us>
Sent: Wednesday, February 12, 2014 1:34 PM
To: Erickson, Jessica
Cc: Baker, Rebecca
Subject: RE: I-229 Exit 5 (26th Street) Crossroad Corridor Study

Jessica,

After a brief look at the project files, Cherry Creek, Norlin, Riverdale and Rotary Parks as well as the bike trail have all been recipients of LWCF funding at least once. With this information, each of these parks has Section 6(f) protection. I am still working on the maps so we can see the property boundaries.

I'll stay in touch.

Randy Kittle
Grants Coordinator
SD Division of Parks & Recreation
Pierre SD
605.773.5490

From: Erickson, Jessica [mailto:Jessica.Erickson@hdrinc.com]
Sent: Monday, February 10, 2014 4:52 PM
To: Kittle, Randy
Cc: Baker, Rebecca
Subject: I-229 Exit 5 (26th Street) Crossroad Corridor Study

Hi Randy,

Thanks for taking the time to talk through a couple of the projects with Becky today. I'm just following up with some of the materials that will help to look at the area. I've attached figures describing the existing conditions and preliminary park impacts and a Pedestrian Park Access Memo that was prepared for the project.

Please look over the attachments and we will be in touch soon to discuss the resources within the area. I'll send over the SD100 map soon in a separate email.

Thanks!
Jessica

JESSICA ERICKSON | **HDR Engineering**
Environmental Scientist

6300 S. Old Village Place, Suite 100 | Sioux Falls, SD 57108
605.782.8118 | c: 712.490.4074
jessica.erickson@hdrinc.com | hdrinc.com

Appendix E

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Meeting Notes

Subject:	26th Street Section 6(f) Resources
Client:	SDDOT
Project:	I-229 Exit 5 (26th Street) Interchange EA
Project No:	
Meeting Date:	March 18, 2014
Meeting Location:	Online Meeting
Notes by:	JCE, HDR

Appendix E

Attendees:

Randy Kittle, SDGFP
Rebecca Baker, HDR
Jessica Erickson, HDR

Topics Discussed:

1. Introductions
2. Confirm 6(f) resources
    a. Norlin Park
    b. Rotary Park
    c. Riverdale Park
    d. Cherry Rock Park
    e. Big Sioux River Bike Trail- Segments of the bike trail are considered to be 6(f) resources. The Park Service views the boundaries to be the park boundaries at the time they are considered 6(f), however not everyone has that liberal of a viewpoint.
3. Walk through alternatives
    a. Improvement to Exit 5 and 26th Street
    b. 6 alternatives were considered until recently, when the Project Team is considering discarding two alternatives. The park impacts for the alternatives are similar.
    c. 5aA, 5aC, 7aA, 7aC, (7cA and 7cC proposed to be removed) are the remaining alternatives
4. Impacts to park areas
    a. An overpass is proposed, instead of an at-grade intersection near Southeastern and 26th Street.
    b. Floodplain standards will need to be met, affecting the height of the bridge and how much the intersection is planned to be raised.
    c. Existing entrance of Rotary Park will no longer be available after the project is completed.
    d. Norlin Park access would be relocated as well.
    e. During construction the project team is looking at providing temporary access or a bridge crossing.
    f. Area of impacts
        i. 0.21 Temporary occupancy of Rotary Park- This impact will follow the stipulation of less than 180 days for occupancy (6 months).
    g. City of Sioux Falls park boundaries were utilized to determine impacts.
    h. Route is access for canoe launch
    i. Specific park discussions
        i. Big Sioux River Bike Trail
            1. No proposal to move alignment
            2. 7ft clearance to 18ft clearance
            3. Precast lighting box as a potential option to retain access for pedestrians

ii. Riverdale
    1. Alternative will stay in ROW
iii. Rotary Park
    1. Access closed to west side of river
    2. Existing canoe access, improved with parking lot
    3. Talked about facilities on west side of river
    4. Shared plans for park, design from City and Confluence (see follow up attachment)
    5. Pedestrian bridge- low rise/break away bridge is possible for the future.
    6. Roadway- replace with trail loop, don't get caught with trains, ensure continuous access.

5. Any additional questions
    a. Additional graphics helped to describe situation.
    b. 0.21 acre is temporary which will help the situation, in addition to gaining land under the bridge.
    c. It will be easier to deal with a temporary easement.
    d. A Temporary Non-Conforming Use will be applied to the Project. HDR will fill out a letter request that will give the details of the impacts, specifically relating to the size and duration of impacts. The Parks officer has been good at responding to requests, but will be retiring at the end of May.

Action:

1. HDR will email Randy the current plans developed by the City and Confluence for the park areas.
2. HDR will also attach a letter to Randy containing the details of the impacts.
3. Send renderings to Randy so he can visualize and use them for discussions with the Parks.

Appendix E

June 24, 2014

Mr. Randy Kittle
South Dakota Game, Fish, and Parks
Joe Foss Building, 523 East Capitol Avenue
Pierre, SD 57501

Dear Mr. Kittle,

Thank you for your continued coordination throughout the Environmental Assessment (EA) process for the Interstate 229 (I-229) Exit 5 (26th Street) Interchange (the Project). This Project was initiated to consider:

- The existing interchange at I-229 Exit 5 and potential Build Alternatives for its reconstruction.
- A potential 26th Street grade separated crossing of the Burlington Northern Santa Fe (BNSF) railroad tracks.
- Expansion of the 26th Street and Southeastern Avenue intersection.

As previously discussed, the Project Team would like to coordinate with your office and National Park Service (NPS) to determine the effects of the Project on Section 6(f) properties. To date, the Section 6(f) properties identified within the Study Area include: Riverdale Park, Cherry Rock Park, Norlin Park, Riverdale Park, and the Big Sioux River Bike Trail. Appreciate your coordination to identify the properties within the Study Area. For Rotary Park, we would like to request additional information such as a Grant Element Title that shows the entire park qualifies as a Section 6(f) property.

Due to the project schedule, it was assumed that the Section 6(f) properties listed above and the boundaries on Figure 3-4, required analysis to review the potential use of the resources. Situations that may not trigger a conversion if the NPS determines that certain criteria are met include:

1) Underground utility easements
2) Proposals to construct public facilities
3) Proposals for "temporary non-conforming uses"
4) Proposals to build sheltered facilities or to shelter existing facilities
5) Proposals for changing the overall outdoor recreation use of a Section 6(f) area from that intended in the original LWCF project agreement.

Appendix E

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During the EA process, four Build Alternatives were carried forward for detailed evaluation; figures that display Alternative 5aA, 5aC, 7aA, and 7aC are attached to this letter. Avoidance of all the Section 6(f) properties was not possible due to the nature of the Project. At this point in the EA process, a preferred alternative has not been selected, but the impacts to Section 6(f) properties would be similar for all the Build Alternatives carried forward. As described below, this Project proposes a temporary non-conforming use of Norlin Park, Rotary Park, and the Big Sioux River Trail.

- *Riverdale and Cherry Rock Parks*- The Project Team has been determined that Riverdale and Cherry Rock Parks would not be affected by any of the Project's planned activities.
- *Norlin and Rotary Parks* – No right-of-way (ROW) would be acquired from Rotary and Norlin Parks. The Norlin Park boundary, provided by the City of Sioux Falls GIS Department, is shown to overlap with the construction limits for the proposed the 26th Street Big Sioux River Bridge (see Figures 3-4 to 3-7 from the EA). The area under and adjacent to the bridge would be temporarily impacted during the construction of the crossing. After the construction, this area would be benefited with more space under the bridge for pedestrians and cyclists (see Photos 1 and 2). The Rotary Park boundary also overlaps with the construction limits north of 26th Street, east of I-229. As discussed in Section 6(f) guidance, it is proposed that these areas would qualify as a temporary non-conforming use since construction would be short in duration (less than 180 days), would not result in permanent damage, and the areas would be restored similar to their current conditions, or better.

  At the existing park entrance of Rotary and Norlin Parks, the Project would modify the 26th Street Bridge to be approximately 25' higher than the existing roadway (see Photos 1 and 2). The change in height would require the elimination of the current park entrance into Rotary and Norlin Parks from 26th Street. Coordination occurred with the City's Parks and Recreation Department and Project Team to analyze mitigation options for access to the parks. A Rotary and Norlin Parks Mitigation Plan was developed please see the attached figure.
- *Big Sioux River Trail*- The Big Sioux River Trail would remain on the same alignment. The higher bridge proposed would change the vertical clearance under the Big Sioux River Bridge to approximately 18' from the existing 7' clearance. During construction, a concrete box culvert would be placed to maintain trail use throughout the duration of the Project. This area would be considered a temporary non-conforming use. As discussed in Section 6(f) guidance, this area would qualify as a temporary non-conforming use since construction would be short in duration (less than 180 days), would not result in permanent damage, and would be restored to its current condition or better.

Appendix E

HDR seeks signed concurrence from you (either via comment letter or email) for the temporary non-conforming use proposed for the Section 6(f) properties affected by this Project.

If there are any questions, please contact me at (605) 977-7756.

Sincerely,

Rebecca Baker

Rebecca Baker
Environmental Scientist

Attachments

Figure 1 Study Area Map
Figures 3-4 to 3-7 Acquisitions and Park Impacts
Figure 3-15 Rotary- Norlin Park Mitigation Plan

Cc: Marion Barber, FHWA
Steve Gramm, SDDOT
Shannon Ausen, City of Sioux Falls

Appendix E

Photo 1. Existing 26th Street Big Sioux River Bridge

Photo 2. Proposed 26th Street Big Sioux River Bridge

Appendix F

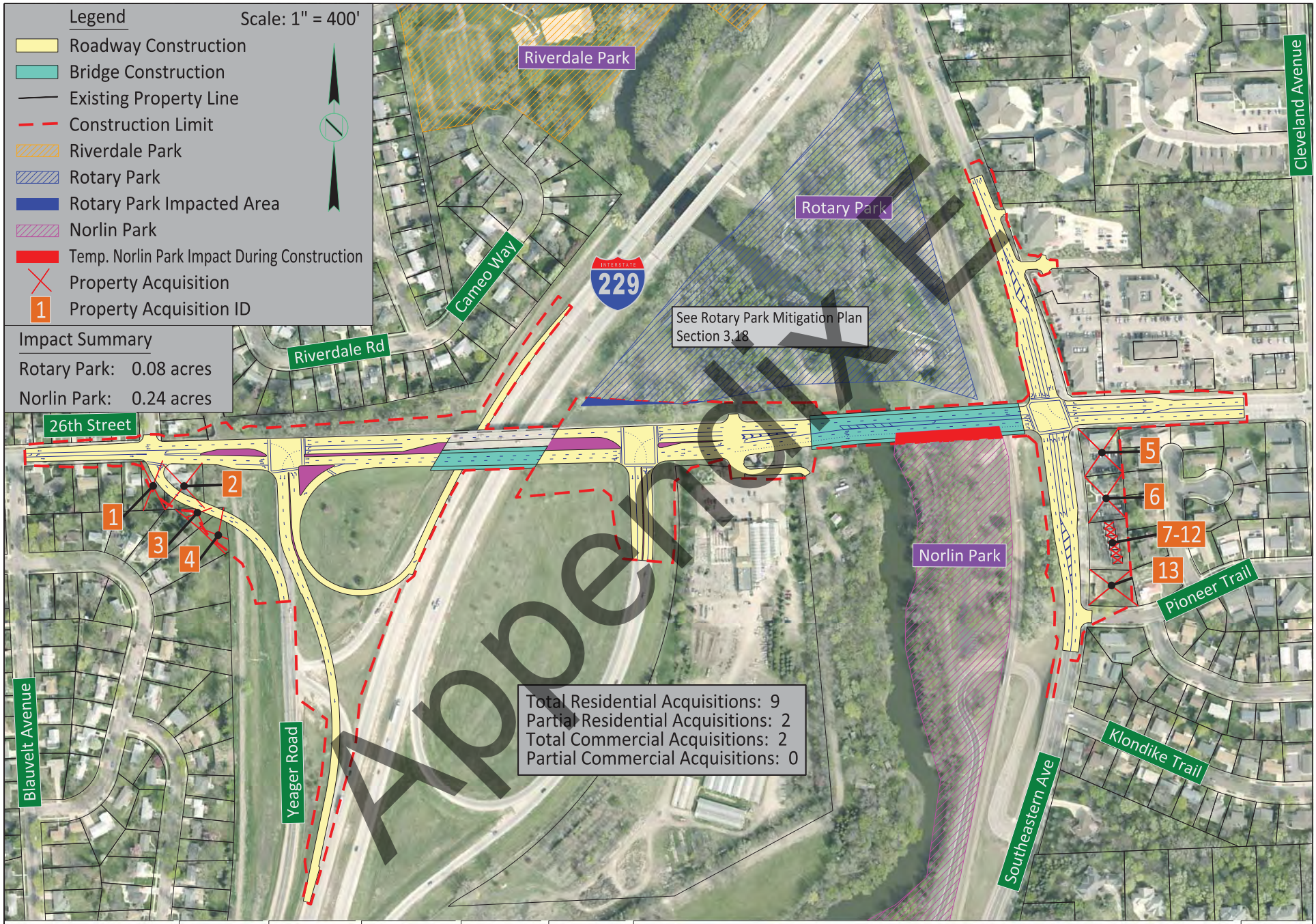
Drawn By: B.Miller
Date: 1-8-2014
Chked By: J.Unruh
Date: 1-8-2014
Revision: 4-17-14

Acquisitions and Park Impacts - Option 5aA

I-229 Exit 5 (26th Street) Interchange Environmental Assessment — Sioux Falls, SD

Figure 3-4


Legend
Scale: 1" = 500'
Roadway Construction
Bridge Construction
Existing Property Line
Construction Limit
Riverdale Park
Rotary Park
Rotary Park Impacted Area
Norlin Park
Temp. Norlin Park Impact During Construction
Property Acquisition
1
Property Acquisition ID
Impact Summary
Rotary Park: 0.08 acres
Norlin Park: 0.24 acres
Riverdale Park
Rotary Park
See Rotary Park Mitigation Plan Section 3.18
Norlin Park
Cameo Way
Riverdale Rd
26th Street
Yeager Road
Blauvelt Avenue
Cleveland Avenue
Pioneer Tr
Klondike Trail
Southeastern Ave
5
6
13
Total Residential Acquisitions: 1
Partial Residential Acquisitions: 0
Total Commercial Acquisitions: 2
Partial Commercial Acquisitions: 0
Appendix F
Drawn By: B.Miller
Date: 1-8-2014
Chked By: J.Unruh
Date: 1-8-2014
Revision: 4-17-14
Acquisitions and Park Impacts - Option 5aC
I-229 Exit 5 (26th Street) Interchange Environmental Assessment
Sioux Falls, SD
Figure
3-5

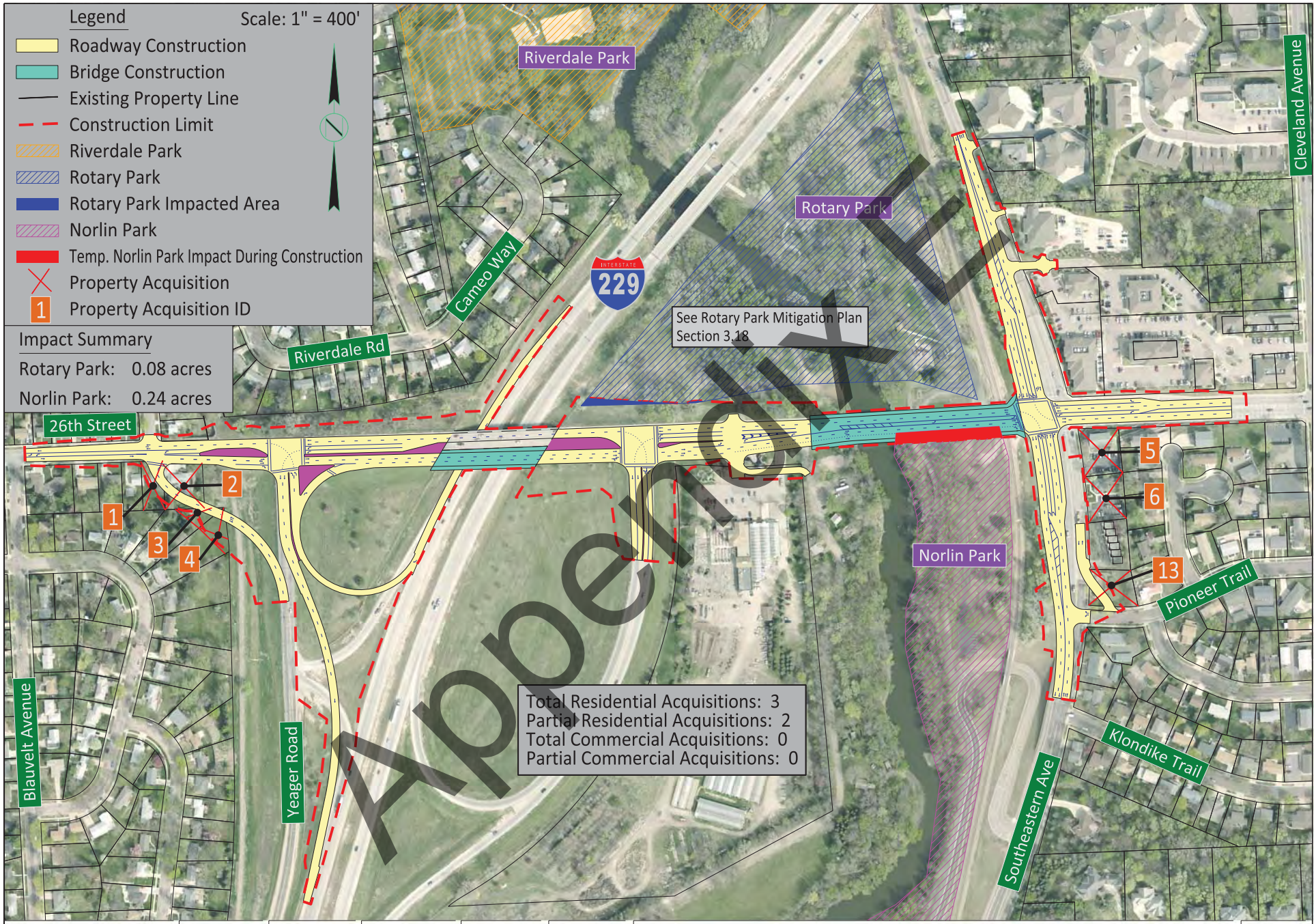


Drawn By: B.Miller
Date: 1-8-2014
Chked By: J.Unruh
Date: 1-8-2014
Revision: 4-17-14

Acquisitions and Park Impacts - Option 7aA

I-229 Exit 5 (26th Street) Interchange Environmental Assessment Sioux Falls, SD

Figure 3-6



Drawn By: B.Miller
Date: 1-8-2014
Chked By: J.Unruh
Date: 1-8-2014
Revision: 4-17-14

Acquisitions and Park Impacts - Option 7aC

I-229 Exit 5 (26th Street) Interchange Environmental Assessment Sioux Falls, SD

Figure 3-7

Appendix L

Drawn By: J.Coryell
Date: 6-6-2014
Chked By: C.Kucker
Date: 6-6-2014
Revision: 6-6-2014

Rotary-Norlin Park Mitigation Plan

I-229 Exit 5 (26th Street) Interchange Environmental Assessment Sioux Falls, SD

Figure 3-15

Baker, Rebecca

From: Kittle, Randy <Randy.Kittle@state.sd.us>
Sent: Wednesday, July 09, 2014 10:39 AM
To: Baker, Rebecca
Subject: Sioux Falls LWCF Info
Attachments: GFPR1P0620140707155656.pdf

Rebecca,

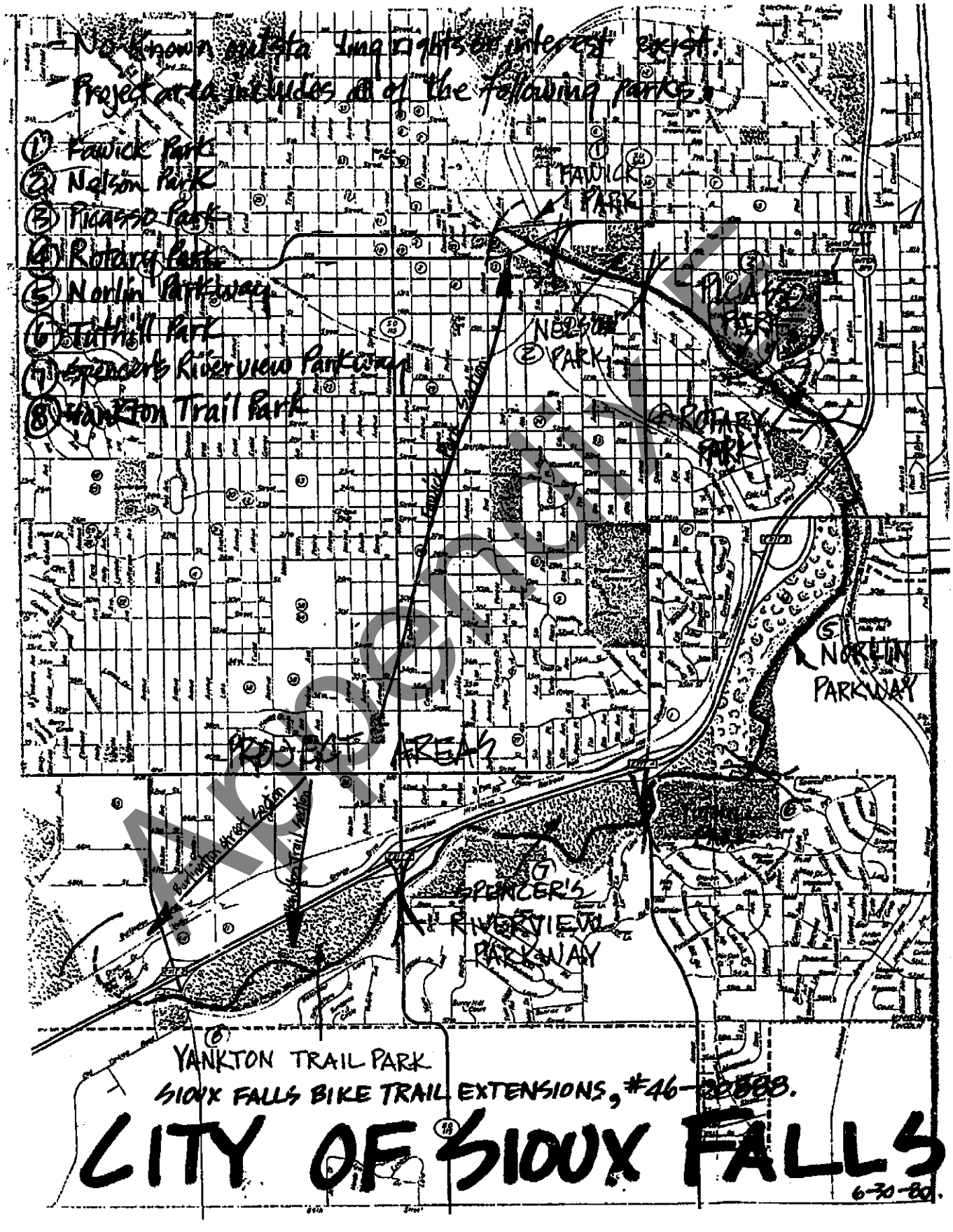
I received your letter dated June 24, 2014 requesting additional information regarding LWCF encumbrance on Rotary Park. I have sent a note to the Sioux Falls Park Department requesting that we discuss this, one of the parties will be out of the office this week. Without being able to have a discussion with the city, I wanted to share the information I have in the file. Attached is a cop of the map from project 46-00888 Sioux Falls Bike Trail Extensions, as you can see from the notes that were written on the left side of the map, Rotary Park is included in the list of parks encumbered under this grant.

Once I have a chance to visit with the city, I will share with you any additional information they can provide on Rotary Park.

Hope this helps.

Randy Kittle
Grants Coordinator
SD Division of Parks & Recreation
Pierre SD
605.773.5490

Appendix E



STATE OF SOUTH DAKOTA MICROFILM CERTIFICATE OF AUTHENTICITY
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June 24, 2014

Mr. Randy Kittle
South Dakota Game, Fish, and Parks
Joe Foss Building, 523 East Capitol Avenue
Pierre, SD 57501

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5) Proposals for changing the overall outdoor recreation use of a Section 6(f) area from that intended in the original LWCF project agreement.

Appendix E

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Appendix E

HDR seeks signed concurrence from you (either via comment letter or email) for the temporary non-conforming use proposed for the Section 6(f) properties affected by this Project.

If there are any questions, please contact me at (605) 977-7756.

Sincerely,

Rebecca Baker

Rebecca Baker
Environmental Scientist

Attachments

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Figures 3-4 to 3-7 Acquisitions and Park Impacts
Figure 3-15 Rotary- Norlin Park Mitigation Plan

Cc: Marion Barber, FHWA
Steve Gramm, SDDOT
Shannon Ausen, City of Sioux Falls

Appendix E

Photo 1. Existing 26th Street Big Sioux River Bridge

Photo 2. Proposed 26th Street Big Sioux River Bridge

Appendix F

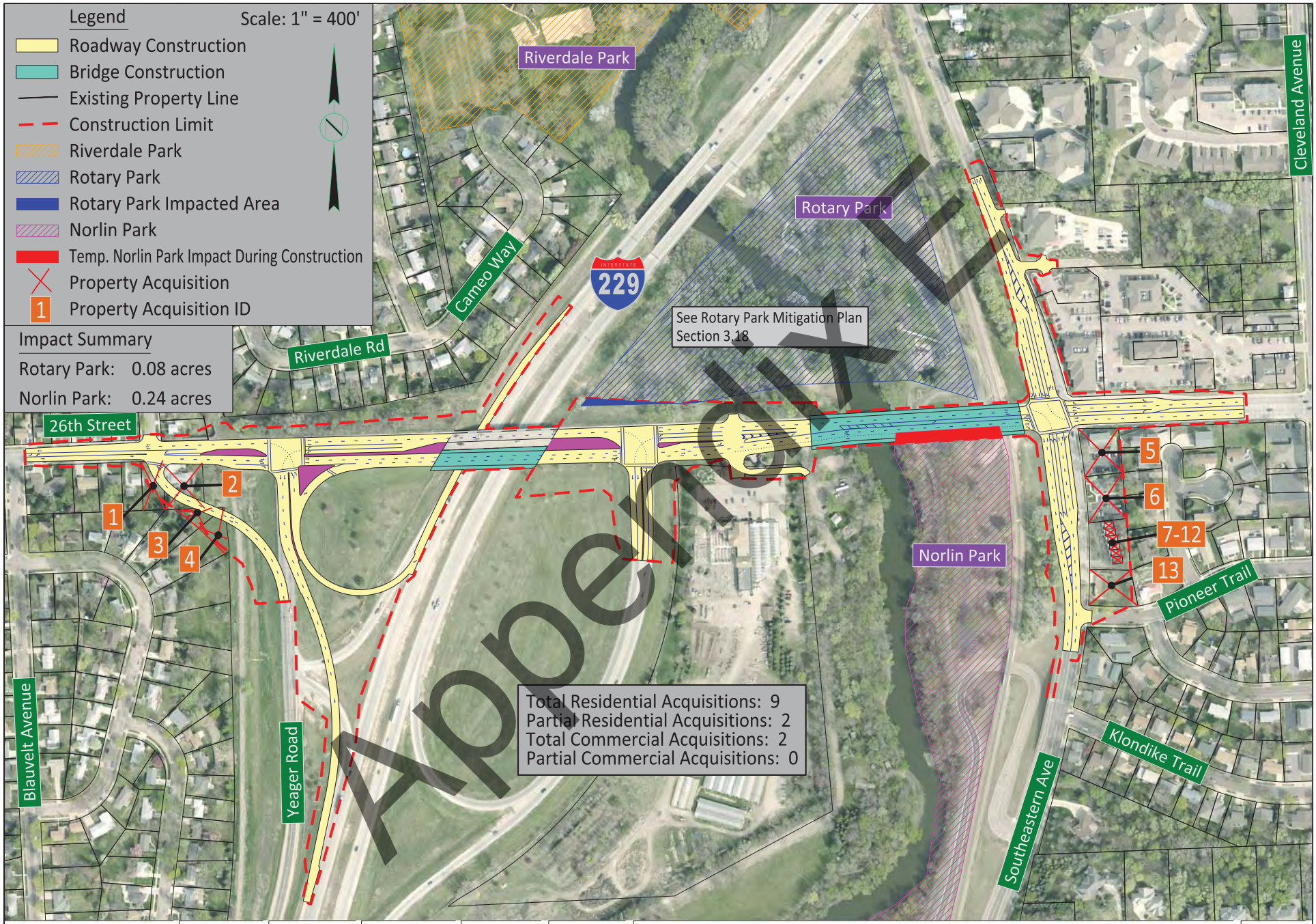
Drawn By: B.Miller
Date: 1-8-2014
Chked By: J.Unruh
Date: 1-8-2014
Revision: 4-17-14

Acquisitions and Park Impacts - Option 5aA

I-229 Exit 5 (26th Street) Interchange Environmental Assessment — Sioux Falls, SD

Figure 3-4


Legend
Scale: 1" = 500'
Roadway Construction
Bridge Construction
Existing Property Line
Construction Limit
Riverdale Park
Rotary Park
Rotary Park Impacted Area
Norlin Park
Temp. Norlin Park Impact During Construction
Property Acquisition
1
Property Acquisition ID
Impact Summary
Rotary Park: 0.08 acres
Norlin Park: 0.24 acres
Riverdale Park
Rotary Park
See Rotary Park Mitigation Plan Section 3.18
Norlin Park
Cameo Way
Riverdale Rd
26th Street
Yeager Road
Blauvelt Avenue
Cleveland Avenue
Pioneer Tr
Klondike Trail
Southeastern Ave
5
6
13
Total Residential Acquisitions: 1
Partial Residential Acquisitions: 0
Total Commercial Acquisitions: 2
Partial Commercial Acquisitions: 0
Appendix F
Drawn By: B.Miller
Date: 1-8-2014
Chked By: J.Unruh
Date: 1-8-2014
Revision: 4-17-14
Acquisitions and Park Impacts - Option 5aC
I-229 Exit 5 (26th Street) Interchange Environmental Assessment
Sioux Falls, SD
Figure
3-5

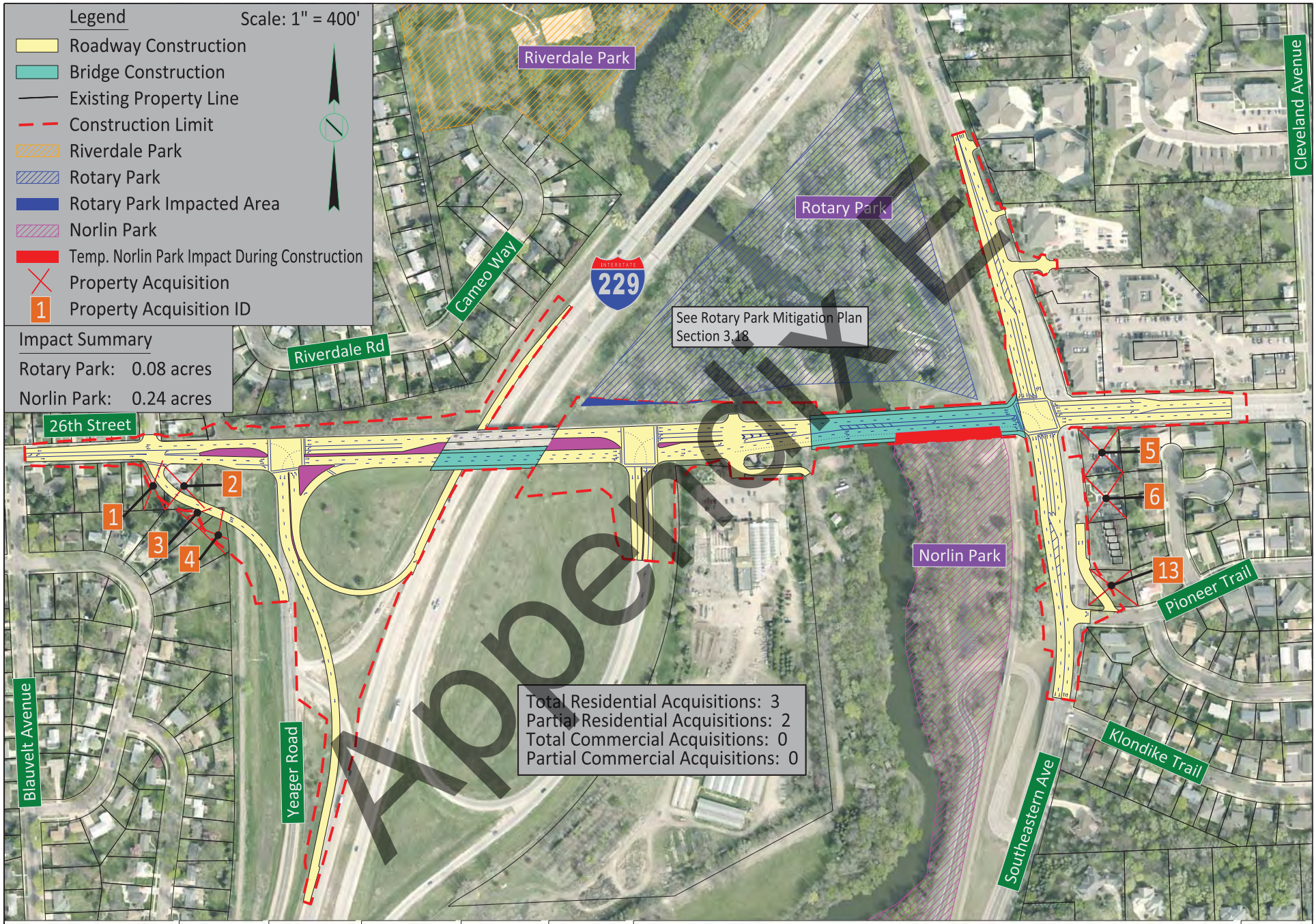


Drawn By: B.Miller
Date: 1-8-2014
Chked By: J.Unruh
Date: 1-8-2014
Revision: 4-17-14

Acquisitions and Park Impacts - Option 7aA

I-229 Exit 5 (26th Street) Interchange Environmental Assessment Sioux Falls, SD

Figure 3-6



Drawn By: B.Miller
Date: 1-8-2014
Chked By: J.Unruh
Date: 1-8-2014
Revision: 4-17-14

Acquisitions and Park Impacts - Option 7aC

I-229 Exit 5 (26th Street) Interchange Environmental Assessment Sioux Falls, SD

Figure 3-7

Appendix L

Drawn By: J.Coryell
Date: 6-6-2014
Chked By: C.Kucker
Date: 6-6-2014
Revision: 6-6-2014

Rotary-Norlin Park Mitigation Plan

I-229 Exit 5 (26th Street) Interchange Environmental Assessment Sioux Falls, SD

Figure 3-15

Meeting Minutes

Project:	I-229 Exit 5 (26th Street) Interchange
Subject:	Section 6(f) Coordination
Date:	Friday, July 18, 2014
Location:	Telephone conversation
Attendees:	Randy Kittle, SDGFP Grant Coordinator Becky Baker, HDR

Randy has been coordinating with NPS for the Project. The construction of the Project will not be until 2018 or 2019. A non-conforming temporary use concurrence is only for 6 months. NPS will not respond at this time due to the construction not being within 12 months. It is anticipated that Project would be a non-conforming temporary use. Randy recommends having a stipulation in the EA that requires the SDDOT to coordinate approximately 10 months before the construction of the Project. At this time, Randy anticipates the NPS will concur with a non-conforming temporary use.

Appendix E

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T 605.977.7740 **F** 605.977.7747