

South Lindbergh ADA Improvements
Missouri Department of Transportation

June 2018

MoDOT Job No. J6S3281

Parsons Project No. 649106

Parsons

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MEMORANDUM

Missouri Department of Transportation

Date: June 15, 2018

To: Tom Montes de Oca, MoDOT Project Manager

From: Chris Watts

Project Manager

Subject: District St. Louis – Design

Route 67, St. Louis County

Route 67 ADA Improvements

Job No. J6S3281

Conceptual Study Report

Purpose of Study

The purpose of this conceptual study was to develop a detailed conceptual cost estimate to provide full ADA compliant pedestrian accommodations along both sides of the project corridor and rehabilitate the existing pavement. The existing corridor consists of a commercially established area, with a mix of residential. The existing sidewalks do not all meet current ADA standards. A conceptual design has been established to improve the existing sidewalks to reach ADA compliance throughout the project corridor.

Summary of Proposed Improvements

The 7-mile study corridor of Lindbergh Boulevard is split into three segments:

- Lindbergh Blvd. from the BNSF Railroad tracks to I-44 (designated Route 61/67)
- Lindbergh Blvd. from I-44 to Lemay Ferry (designated Route US 50/61/67)
- Lindbergh Blvd. from Lemay Ferry to Barracksview Drive (designated US 50)

For the purposes of this report, the entire project limits comprised of the three segments above if referred to as Lindbergh Blvd.

The Parsons team has worked with MoDOT to develop a conceptual plan to bring the approximate 7-mile Lindbergh Boulevard corridor between the BNSF Railroad crossing north of Big Bend Blvd. and Barracksview Rd. into compliance with current ADA standards. The project proposes replacing sidewalk, curb ramps, pedestrian signals and, where needed, curb and drainage facilities to provide for a fully compliant ADA pedestrian facility along the entire project corridor.

Below is a summary of information that was used for this conceptual design. This information includes conceptual cost estimates, existing facilities and proposed design criteria for the project.



J6S3281

DESIGN TRAFFIC

ADT (Const.) = 32,000 (2021)

ADT (Design) = 30,000 (2041)

CONCEPTUAL COST

Right of Way: \$452,350

Construction: \$9,970,546

(See Appendix A – Cost Estimate)

% Trucks = 5%

Operational (Posted) Speed – 35 - 40 mph

Functional Classification - Principal Arterial (Major Route)

Existing Facilities

- 2 x 11' – 12' through lanes in each direction throughout the project limits
- Right and left-turn lanes at intersections
- Shared bi-directional turn lane in median outside of intersections
- 8' – 10' concrete shoulder with Type A concrete curb in areas outside of intersections.
- Some sidewalks at intersections and isolated commercial developments, but not throughout the project limits
- Mainline Lindbergh Blvd. is HMA pavement on concrete base
- Normal Access Control
- R/W width varies from 50' to 80', but is generally 55-60' in width.

PROPOSED DESIGN CRITERIA – Match Existing

Functional Classification	Design Speed	No. & Width of Lanes	Roadbed Width	Right of Way	
				Width	Control
Principal Arterial	35-40 mph	4 x 12' (w/ 12' bi-directional left turn lane in median, plus dedicated right turn lanes at intersections)	Varies	60' Typical	Normal

ACCIDENT DATA AND SAFETY ENHANCEMENTS

The 7.256-mile study corridor of Lindbergh Blvd. through the project limits covered by this Conceptual Study Report has been broken up into three segments when analyzing accident data. The accident data has been included in Appendix C, and the segments have been broken down thusly:

- Segment 1: Lindbergh Blvd. from BNSF Railroad to I-55 (southbound – Designated as US 61 S in Appendix C)
- Segment 2: Lindbergh Blvd. from I-55 to the BNSF Railroad (northbound – Designated as US 61 N in Appendix C)
- Segment 3: Lindbergh Blvd. from I-55 to Barracksview Drive (Designated US 50 W in Appendix C)



J6S3281

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The Average Crash Rate per Segment was calculated using guidance from the MoDOT Engineering Policy Guide – Section 128.5 – Crash Rate Calculation:

- Segment 1: 788 crashes per hundred million vehicle miles of travel
- Segment 2: 250 crashes per hundred million vehicle miles of travel
- Segment 3: 2,629 crashes per hundred million vehicle miles of travel

When the segments lengths and number of crashes for all three segments are combined, and the AADT's for all three segments averaged, it yields a crash rate calculation of 640 crashes per hundred million vehicle miles of travel

The Statewide average crash rate for a Missouri designated route was 132 crashes per hundred million vehicle miles of travel from 2012 to 2016.

After examining the crash data, it would appear that there is a large number of rear end crashes throughout the corridor (280/year on Segment 1, 75/year on Segment 2, and 32/year on Segment 3). This crash type accounted for 60% of the total crashes throughout the corridor. Reasons for this number of crashes could be distracted drivers, speeding, and heavy traffic. Potential mitigation includes the lowering of the speed limit on Lindbergh Blvd. or potentially adding capacity. These options, among others, require further study and planning, and are not included as part of this Conceptual Study Report.

PROPOSED PAVEMENT DESIGN

Existing Pavement Conditions

The existing Lindbergh Blvd. corridor is in poor condition and is in need of pavement maintenance. The existing typical section of the roadway has two 12 foot thru-lanes in each direction with a combination of Type S Curb, Type A Curb, or Type A Curb and Gutter along both sides of the road. Right and left-turn lanes are provided at intersections throughout the project limits, as warranted by traffic. A center bi-directional turn lane is in the median throughout the project limits. It transitions to a dedicated left turn lane at intersections. The existing pavement consists of concrete base with asphalt overlay pavement.

Proposed Pavement Treatment

The proposed pavement treatment is a Mill and Overlay. The project has been estimated with a 2" Coldmill and replace with 1 ¾" SP125CLP w/ PG 70-22. The proposed limits of mill and overlay go from the southern limits of the BNSF Railroad crossing north of Big Bend Blvd. to Barracksview Rd. It is assumed that 1% of the Mill and Overlay area will require patching and full-depth pavement repair per MoDOT standards. The existing concrete shoulders are proposed to be left in-place, and not improved.

Additionally, the intersection of Lindbergh Blvd. and Denny Rd. is being improved as part of this project. The dedicated right-turn lane from Denny Rd. to northbound Lindbergh Blvd. will be realigned so that it meets Lindbergh Blvd. at a 90-degree angle. This will improve safety and eliminate a hazardous skewed intersection. The existing Denny Rd. will be widened to accommodate this re-aligned right-turn lane. For the purposes of this Conceptual Study Report, the typical section for this widening was quantified as 2" of Bituminous Pavement Mixture, SP125CLP on an 8" Concrete Base (Non-Reinforced) on 4" of Type 5 Aggregate for Base.

All pavement design will be confirmed by MoDOT prior to final design.



J6S3281

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PROPOSED PEDESTRIAN DESIGN

Below is a summary of the existing and proposed improvements along Lindbergh Blvd. within the project limits from the southern limits of the BNSF Railroad crossing north of Big Bend Blvd. to Barracksview Rd. The following discussions detail the existing pedestrian accommodations and explain the proposed conceptual design improvements to provide for a fully ADA compliant corridor. See Appendix B for Proposed Conceptual Plans and Typical Sections for Lindbergh Blvd.

BNSF Railroad tracks to WB I-44 On/Off Ramps (Approx. Sta. 660+30 to Sta. 692+70)

Existing Conditions

This existing section of Lindbergh Blvd. is within the city limits of Kirkwood. There are limited existing sidewalks within these limits, mostly at the Lindbergh Blvd. intersection with Big Bend Rd. Each of the quadrants of the Big Bend Intersection have pedestrian facilities, but most are not ADA compliant. Many are missing truncated domes where required, and the raised islands within the intersection do not provide ADA accessible routes.

To the south, the west side of Lindbergh has an existing sidewalk placed at the back of existing curb along the shoulder, or with a 2' minimum parkway between the curb and sidewalk. The signalized commercial entrance north of I-44 has crosswalk markings, but does not have ADA accessible pedestrian routes. The truncated domes are missing where required, and the raised islands do not have pedestrian ramps or cut-throughs.

There are not any existing pedestrian facilities south of the signalized commercial entrance.

Proposed Improvements and Right of Way Impacts

The proposed conceptual design for this section of Lindbergh Blvd. includes ADA improvements and pavement rehabilitation. The ADA improvements include removal and replacement of pedestrian facilities at the Big Bend Rd. intersection and signalized commercial entrance, and installation of new sidewalk, curb ramps, and paved approaches from Big Bend to the WB I-44 on and off ramps. New ADA compliant curb ramps will be provided per MoDOT standards where required. The existing pavement will be milled and overlaid.

The City of Kirkwood is currently in the process of upgrading the sidewalk from the BNSF Railroad tracks to the Big Bend intersection. This project will also include replacing all signals and islands at the Big Bend intersection. This work is being completed by others, and is not included within this Conceptual Study Report.

All four intersection islands at Big Bend will be removed and reconstructed. These new islands will have ADA accessible routes and truncated domes. The three intersection islands at the signalized commercial entrance will have the same proposed approach. Both intersections will require pedestrian signal upgrades to become ADA compliant.

The majority of the sidewalk will be placed behind the existing concrete curb. Along the west side of Lindbergh Blvd. just north of I-44, the existing curb will be removed and replaced with new concrete curb, Type S. The sidewalk will be placed behind this new curb, and the existing curb cuts will be replaced with new Drop Inlets, Type T. These inlets will outlet to the existing paved ditch. The existing



J6S3281

cantilever sign for WB I-44 traffic will need to be relocated, and a short retaining wall (height 3' and under) will be required to avoid impacting the existing paved ditch.

Proposed commercial and residential approaches will be removed and replaced with ADA-compliant approaches when pedestrian facilities are adjacent to them.

Nearly all of the proposed improvements remain within existing Right of Way. The lone exception is from Sta. 687+00 to 688+50 right. This existing sidewalk meanders off Right of Way to avoid the existing ditch. The proposed approach is to remove and replace this sidewalk in its current location. Some temporary easement work is proposed to replace driveway approaches and sidewalks which are close to existing Right of Way.

WB I-44 On/Off Ramps to Rott Rd / East Watson Rd (Approx. Sta. 692+70 to Sta. 725+20)

Existing Conditions

This existing section of Lindbergh Blvd. is within the city limits of Kirkwood and Sunset Hills. There are limited existing sidewalks within these limits, mostly at the Lindbergh Blvd. interchange with Watson Rd. The existing sidewalks at that interchange are generally asphalt sidewalks behind curb and gutter. Along the SB off-ramp to Watson Rd., the sidewalk is approximately 3' wide and adjacent to existing concrete retaining wall. There are not any ADA compliant facilities on Watson Rd. proper.

The existing signalized intersection at Sunset Hills Plaza is also not ADA compliant. There are striped crosswalks, but the islands do not have ADA compliant cut-throughs or any truncated domes where required.

Proposed Improvements and Right of Way Impacts

The proposed conceptual design for this section of Lindbergh Blvd. includes ADA improvements and pavement rehabilitation. The ADA improvements include removal and replacement of pedestrian facilities at the WB I-44 ramp intersection and the Sunset Hills Plaza intersection, and installation of new sidewalk, curb ramps, and paved approaches from the EB I-44 ramps to Rott Rd. / East Watson Rd. New ADA compliant curb ramps will be provided per MoDOT standards where required. The existing pavement will be milled and overlaid.

New sidewalks will be installed behind the back of curb under the I-44 bridge. These sidewalks will be narrowed down to 5' width under the bridge in order to fit between the existing curb and the existing bridge columns. This sidewalk immediately widens back to 6' outside of the bridge.

In order to provide connectivity to Watson Rd., sidewalks are proposed along the ramps of the Watson Rd. interchange. Due to space restrictions, pedestrian facilities are not provided on Lindbergh Blvd. beneath the Watson Rd. bridge. Pedestrians on Lindbergh wishing to cross Watson Rd. would use the sidewalks along interchange ramps, cross at the signalized intersections at the ramp terminals on Watson Rd., and then continue back to Lindbergh via sidewalks along the opposite ramps. This relocates the ramp crossings from higher speed locations to lower speed locations.

The southbound off ramp from Lindbergh to Watson is a unique area. The existing sidewalk is approximately 3', and it is bounded by a rolled curb on the ramp side and a concrete retaining wall on the other side. The proposed concept narrows the existing 24' ramp to 20', builds a new 6' sidewalk as



J6S3281

measured from the existing concrete retaining wall, and installs a new Concrete Curb and Gutter, Type A. This will provide a safe pedestrian route, and serve to calm higher speed traffic in the vicinity of the sidewalk. Sidewalk along the other three ramps at this interchange will be constructed at the back of existing curb.

Drainage along that southbound off ramp will need to be revised in order to accommodate the wider sidewalk. The proposed approach is to replace the existing grate inlets with new Drop Inlets, Type T, and connect the existing pipes to these new proposed inlets with pipe collars. The existing drainage patterns and outlets, as well as the majority of the enclosed drainage system would remain in place.

From the Sunset Hills Plaza intersection to Rott Rd., new sidewalk and curb ramps will be constructed on both sides of Lindbergh Blvd. The sidewalk on the northbound side will be constructed behind the back of existing curb. The sidewalk on the southbound side will be constructed with a green strip between the existing curb and the proposed edge of sidewalk.

Proposed commercial and residential approaches will be removed and replaced with ADA-compliant approaches when pedestrian facilities are adjacent to them.

The proposed improvements in this section remain within existing Right of Way. Some temporary easement work is proposed to replace driveway approaches and sidewalks which are close to existing Right of Way.

Rott Rd / East Watson Rd to Denny Rd (Approx. Sta. 725+20 to Sta. 803+40)

Existing Conditions

This existing section of Lindbergh Blvd. is within the city limits of Sunset Hills. There are very limited pedestrian facilities in this stretch of Lindbergh Blvd., with sidewalks only provided for approximately 140' between Maret Drive and Chrisann Lane.

Proposed Improvements and Right of Way Impacts

No proposed pedestrian improvements are included within these limits as part of this Conceptual Study Report. The City of Sunset Hills is currently undertaking a project to add pedestrian facilities to Lindbergh Blvd. from East Watson Rd. to West Watson Rd., so that stretch was not included in this project. There are not any pedestrian facilities south of West Watson Rd., and new facilities are not proposed. This area of the project is more residentially developed than commercially developed, and it did not appear to generate high pedestrian volumes. Pavement rehabilitation is included within this stretch of the project, and the existing pavement will be milled and overlaid.

Roadway work is proposed at Denny Rd. to improve safety at its intersection with Lindbergh Blvd. This approach proposes to remove the right-turn spur from Denny Rd. and widen existing Denny Rd. to accommodate a right turn lane which intersects Lindbergh at a 90-degree angle rather than a high angle skew. This work will require the relocation of a mast arm and signal head, but results in a much safer intersection. The proposed improvements in this section remain within existing Right of Way.



J6S3281

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Denny Rd to Baptist Church Rd (Approx. Sta. 803+40 to Sta. 894+05)

Existing Conditions

This existing section of Lindbergh Blvd. is within the city limits of Sunset Hills and Sappington. There are very limited existing pedestrian features within these limits. There are some pedestrian facilities at the Gravois Rd., Sappington Rd., Roxanne Dr. Hackberry Dr., and Baptist Church Rd. signalized intersections, but they are not complete nor ADA compliant. There are also sidewalks along northbound Lindbergh Blvd. between Roxana Dr. and Maple Ln, and between Hackberry Dr. and Baptist Church Rd.

Proposed Improvements and Right of Way Impacts

The proposed conceptual design for this section of Lindbergh Blvd. includes ADA improvements and pavement rehabilitation. The ADA improvements include removal and replacement of pedestrian facilities at the Gravois Rd., Sappington Rd., Roxanne Dr., Hackberry Dr., and Baptist Church Rd. signalized intersections, and installation of new sidewalk, curb ramps, and paved approaches from Gravois to Baptist Church Rd. New ADA compliant curb ramps will be provided per MoDOT standards where required. The existing pavement will be milled and overlaid.

Sidewalk is proposed on both sides of Lindbergh Blvd. from Gravois Rd. to Sappington Rd. South of Sappington, the sidewalk along the southbound side extends to the existing bus stop near the intersection and then terminates. It then starts up again south of Hackberry Dr. and continues to Baptist Church Rd. Continuous sidewalk is proposed on the northbound side of Lindbergh Blvd. from Gravois Rd. to Baptist Church Rd. Wherever possible, sidewalk is proposed with a green strip between the existing curb and the face of proposed sidewalk. When this is not feasible, the proposed sidewalk is placed at the back of existing curb.

There are three stretches of proposed sidewalk which may require special approaches to handle grading. The first two areas are along northbound Lindbergh Blvd. near Mimosa Dr. Here a Concrete Curb, Type S, Modified is proposed at the back edge of sidewalk along the properties. This curb will be a maximum 18" tall, and used to retain grading. The third area is along southbound Lindbergh Blvd. near Hackberry Dr. In order to properly grade the area, a short retaining wall in fill is proposed. This area may be able to be graded in final design, but this Conceptual Study Report includes a wall for this sidewalk.

The southwest quadrant of the Baptist Church Rd. intersection also required a unique design solution due to the amount of existing utilities present. The proposed approach is to incorporate a parallel-type curb ramp, and use tapered sidewalk alignments to avoid conflicts with utilities where possible. The current approach still requires the relocation of a pedestrian signal and a utility pole. It also possibly requires the relocation of an existing curb inlet.

Proposed commercial and residential approaches will be removed and replaced with ADA-compliant approaches when pedestrian facilities are adjacent to them.

The proposed improvements in this section remain within existing Right of Way. Some temporary easement work is proposed to replace driveway approaches and sidewalks which are close to existing Right of Way.



J6S3281

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Baptist Church Rd to Flori Rd (Approx. Sta. 894+05 to Sta. 950+60)

Existing Conditions

This existing section of Lindbergh Blvd. is within the city limits of Concord. There are very limited existing pedestrian features within these limits. There are some pedestrian facilities at Baptist Church Rd., Tesson Ferry Rd., Mueller Rd., and Flori Dr. signalized intersections, but they are not complete nor ADA compliant. Limited pedestrian facilities also exist at the unsignalized Lin Ferry Dr. intersection.

There are also sporadic sidewalk installations along both northbound and southbound Lindbergh Blvd. that were placed when individual parcels were commercially developed. These segments of sidewalk are rarely connected to intersections, bus stops, or any area outside of the parcel on which they were developed.

Proposed Improvements and Right of Way Impacts

The proposed conceptual design for this section of Lindbergh Blvd. includes ADA improvements and pavement rehabilitation. The ADA improvements include removal and replacement of sidewalk throughout the corridor, removal and replacement of curb ramps and detectable warning devices where required. New ADA compliant curb ramps will be provided per MoDOT standards where required. The existing pavement will be milled and overlaid.

The ADA improvements include removal and replacement of pedestrian facilities at the Baptist Church Rd., Tesson Ferry Rd., Mueller Rd., and Flori Dr. signalized intersections. The area near the Concord Village Ave. unsignalized intersection does not have existing pedestrian facilities and there are not any bus stops at this intersection which require connectivity. Therefore no new facilities were proposed at this intersection.

Sidewalk is proposed on both sides of Lindbergh Blvd. from Baptist Church Rd. to north of Concord Village Ave. These sidewalks pick back up again north of the Tesson Ferry Rd. intersection and continue to Flori Dr. Existing sidewalks are used in place where they are ADA compliant. Where they are not ADA compliant, they are proposed to be removed and replaced. Wherever possible, sidewalk is proposed with a green strip between the existing curb and the face of proposed sidewalk. When this is not feasible, the proposed sidewalk is placed at the back of existing curb.

The northbound side of Lindbergh Blvd. between Bohrer Park Rd. and 5 Oaks Pkwy. is a challenging stretch due to existing drainage features. The southern portion of these limits drains to a ditch along the northbound roadway via curb cuts in Lindbergh Blvd. North of the Walgreen's Pharmacy, the drainage converts to enclosed drainage, and Lindbergh drains to drop inlets which eventually drain to a low spot at Lin Ferry Dr. This Conceptual Study Report proposes to convert the open drainage portion of these limits to enclosed drainage. The existing curb would be removed and replaced with new Concrete Curb, Type A. The existing curb cuts would be replaced with Drop Inlets, Type T. This new enclosed drainage would start at the southern driveway to the Michael's / Shop 'n Save shopping plaza, and tie in to the existing enclosed drainage system at the northern entrance to Walgreen's. The existing trench drain at the southern Michael's / Shop 'n Save entrance would be tied into this new enclosed drainage system. The proposed sidewalk would be placed behind the new back of curb, and above the new enclosed drainage system.



J6S3281

Proposed commercial and residential approaches will be removed and replaced with ADA-compliant approaches when pedestrian facilities are adjacent to them.

The proposed improvements in this section remain within existing Right of Way. Some temporary easement work is proposed to replace driveway approaches and sidewalk which are close to existing Right of Way.

Flori Rd to SB I-55 On/Off Ramps (Approx. Sta. 950+60 to Sta. 1064+70)

Existing Conditions

This existing section of Lindbergh Blvd. is within the city limits of Concord. There are very limited existing pedestrian features within these limits. There are some pedestrian facilities at Flori Dr. and Concord Rd. signalized intersections, but they are not complete nor ADA compliant.

There are also sporadic sidewalk installations along both northbound and southbound Lindbergh Blvd. that were placed when individual parcels were commercially developed. These segments of sidewalk are rarely connected to intersections, bus stops, or any area outside of the parcel on which they were developed. These sidewalks exist between Flori Dr. and Concord Rd.

There are not any existing pedestrian facilities along Lindbergh Blvd. south of Concord Rd.

Proposed Improvements and Right of Way Impacts

The proposed conceptual design for this section of Lindbergh Blvd. includes ADA improvements and pavement rehabilitation. The ADA improvements include removal and replacement of sidewalk throughout the corridor, removal and replacement of curb ramps and detectable warning devices where required. New ADA compliant curb ramps will be provided per MoDOT standards where required. The existing pavement will be milled and overlaid.

The ADA improvements include removal and replacement of pedestrian facilities at the Flori Rd. and Concord Dr. signalized intersections. Sidewalk is proposed on both sides of Lindbergh Blvd. from Flori Dr. to south of Concord Rd. Existing sidewalks are used in place where they are ADA compliant. Where they are not ADA compliant, they are proposed to be removed and replaced. Wherever possible, sidewalk is proposed with a green strip between the existing curb and the face of proposed sidewalk. When this is not feasible, the proposed sidewalk is placed at the back of existing curb.

Proposed sidewalk and ADA compliant facilities are not proposed on Lindbergh Blvd. between Concord Rd. and south of the I-55 interchange as part of this Conceptual Study Report, with the exception of a connection to the Metro bus stop south of Concord Rd. along southbound Lindbergh Blvd. The existing Lindbergh Blvd. bridge over the railroad tracks is not currently wide enough to accommodate the addition of pedestrian facilities. Similarly, the Lindbergh Blvd. / I-55 Single-Point Urban Interchange (SPUI) does not have ramps or bridges wide enough to accommodate new pedestrian facilities. Pedestrian facilities will be upgraded with these bridges if they are replaced as part of future projects. There are no bus stops within these limits that require connectivity.

A proposed drainage culvert is proposed beneath new sidewalk along northbound Lindbergh Blvd. at the second entrance south of Couwels Dr. This entrance is the driveway for the Golden Corral restaurant. There is currently a deep swale with gradual sideslopes in this area. New embankment will carry the



J6S3281

proposed sidewalk across this swale, and a new pipe culvert will be installed to maintain positive drainage.

Proposed commercial and residential approaches will be removed and replaced with ADA-compliant approaches when pedestrian facilities are adjacent to them.

The proposed improvements in this section remain within existing Right of Way. Some temporary easement work is proposed to replace driveway approaches and sidewalk which are close to existing Right of Way.

SB I-55 On/Off Ramps to Barracksview Rd (Approx. Sta. 1064+70 to Sta. 17+50)

Existing Conditions

This existing section of Lindbergh Blvd. is within the city limits of Mehlville. There are very limited existing pedestrian features within these limits. There are some pedestrian facilities at Union Rd., Cordes Dr., and Lemay Ferry Rd. signalized intersections, but they are not complete nor ADA compliant.

There are also sporadic sidewalk installations along both northbound and southbound Lindbergh Blvd. that were placed when individual parcels were commercially developed. These segments of sidewalk are rarely connected to intersections, bus stops, or any area outside of the parcel on which they were developed.

Proposed Improvements and Right of Way Impacts

The proposed conceptual design for this section of Lindbergh Blvd. includes ADA improvements and pavement rehabilitation. The ADA improvements include removal and replacement of sidewalk throughout the corridor, removal and replacement of curb ramps and detectable warning devices where required. New ADA compliant curb ramps will be provided per MoDOT standards where required. The existing pavement will be milled and overlaid.

The ADA improvements include removal and replacement of pedestrian facilities at the Union Rd., Cordes Dr., and Lemay Ferry Rd. signalized intersections. Sidewalk is proposed on both sides of Lindbergh Blvd. from north of Crescent Dr. to north of Barracksview Dr. Existing sidewalks are used in place where they are ADA compliant. Where they are not ADA compliant, they are proposed to be removed and replaced. Wherever possible, sidewalk is proposed with a green strip between the existing curb and the face of proposed sidewalk. When this is not feasible, the proposed sidewalk is placed at the back of existing curb. This stretch of the project has existing curb and gutter at the edge of traveled way, and some instances of raised asphalt shoulder. The existing curb will remain in place where possible.

Proposed commercial and residential approaches will be removed and replaced with ADA-compliant approaches when pedestrian facilities are adjacent to them.

The proposed improvements in this section remain within existing Right of Way. Some temporary easement work is proposed to replace driveway approaches and sidewalk which are close to existing Right of Way. There are some existing sidewalks at the southern limits of this section which appear to lie outside of existing Right of Way. These sidewalks have been left in-place, and connections made to them where appropriate.



J6S3281

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OTHER DESIGN CONSIDERATIONS

Metro Bus Stops

There are multiple existing bus stops along Lindbergh Blvd. through the limits of this project. Most do not have direct connections with pedestrian facilities, and connecting these bus stops with ADA compliant facilities was a goal of this project.

Representatives from Metro in St. Louis met with the Project Team to discuss the existing bus routes along Lindbergh. For the purposes of this study, pedestrian connectivity has been provided to all existing bus stops, with the exception of those between West Watson Rd. and Gravois Rd. All stops should be reevaluated as this project moves towards preliminary plans.

Drainage Improvements

The majority of this project places proposed concrete sidewalk adjacent to existing curb. As such, existing drainage patterns were not modified, and existing sewers, swales, and crossings were used in-place. Deviations from this approach are noted in each of the sections above.

This project does impact a number of existing inlets and manholes. It is assumed that most will be adjusted to new ADA compliant elevations and slopes, while some will require reconstruction. These quantities have been included in the project cost estimate.

Proposed Traffic Signal Design

There are 18 existing signalized intersection within the project limits. Of these, all but three (Sappington Rd., Flori Rd., and Lemay Ferry Rd.) require upgrades to conform to ADA standards and requirements. The East Watson Rd. and West Watson Rd. intersections are under design as a City of Sunset Hills project, and ADA compliant signals and connections will be included as part of that project.

The remaining 13 intersections will require new curb ramps and raised islands which meet ADA criteria. Those intersections which required traffic signal upgrades include:

1. Big Bend Rd. – This intersection is being upgraded as part of a City of Kirkwood project, and is not included within this Conceptual Study Report.
2. Kirkwood Commons – New pedestrian heads and push buttons are required for the SW and SE quadrants.
3. I-44 WB Ramps – New pedestrian heads and push buttons are required.
4. I-44 EB Ramps – New pedestrian heads and push buttons are required.
5. Sunset Hills Plaza – Need new pedestrian signal heads.
6. Gravois Rd. – Needs new pedestrian signal heads and push buttons for all crossings.
7. Hackberry Drive – Needs new pedestrian signal heads and push buttons for some crossings.
8. Baptist Church Rd. – Needs new pedestrian signal heads and push buttons for some crossings.
9. Tesson Ferry Rd – Needs new pedestrian signal heads and push buttons for NW Quad.
10. Mueller Rd – Needs new pedestrian signal heads and push buttons for SE Quad.
11. Roxana Dr. – Needs new pedestrian signal heads and push buttons for all crossings.
12. Union Dr. – Needs new pedestrian signal heads and push buttons for all but one crossings.
13. Cordes Dr. – Needs new pedestrian signal heads and push buttons for all but one crossings.



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Utilities

The project limits occur in a mix of residential and commercial areas. As such, it is anticipated that there will be minor utility conflicts during the construction of this project. This work includes:

1. Power – The conceptual design shows a sidewalk design which avoids conflicts with most overhead utility poles. However, there are several conflicts with utility pole guy wires and support poles which will need to be addressed during the next phase of this project.
2. Water – There will be minor water valve adjustments required as part of this project.
3. Gas – There will be minor gas valve adjustments required as part of this project.
4. Sewer – It is anticipated that some existing sewer manholes will need to be adjusted as part of this project.
5. Signals / Fiber Optic – The conceptual design was laid out to avoid conflicts with signal or fiber optic cabinets. However, it is anticipated that handholes will need to be adjusted or reconstructed as part of this project.
6. Drainage Impacts – It is possible that proposed drainage improvements will result in conflicts with the existing utilities listed above. These improvements and conflicts are to be fully vetted during the next phase of design, and refinements made appropriately.

Right of Way

Minor property acquisition will be required as part of this project. A conceptual estimate of this acquisition is:

- Temporary Easement – 40,300 square feet
- New Right of Way – 0 square feet

Bicycle Facilities

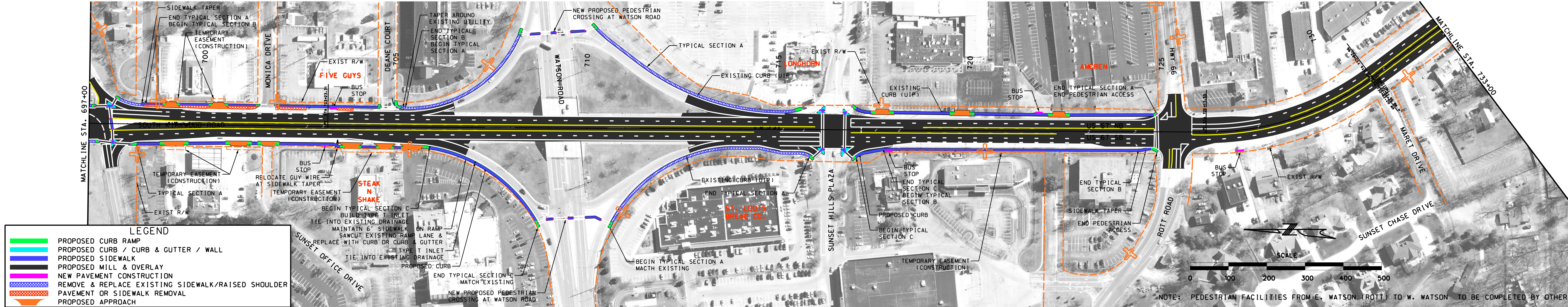
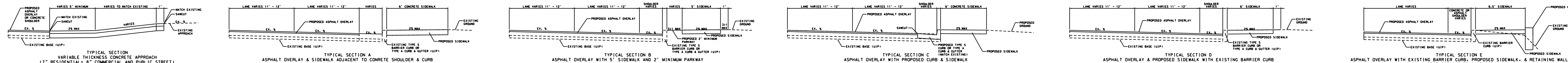
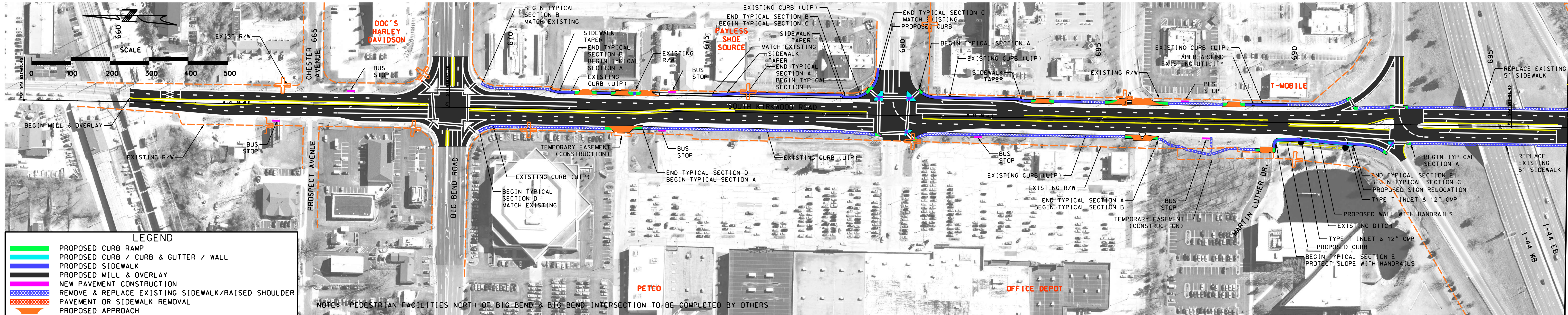
The project limits covered by this Conceptual Study Report are within the limits of the Gateway Bike Plan. The Gateway Bike Plan is the result of a cooperative effort between the Great Rivers Greenway District, East-West Gateway Council of Governments, City of St. Louis, the Counties of St. Louis and St. Charles, Metro, Trailnet and the Missouri Department of Transportation. Its goal is to provide connectivity for non-motorized users to greenways throughout the region.

The majority of Lindbergh Boulevard within the project limits has been designated as “paved shoulder” by the Gateway Bike Plan. This means that bicyclists would use the existing paved shoulder as a bicycle route. This paved shoulder designation does not have any additional pavement markings. The improvements proposed as part of this Conceptual Study Report keep the existing paved shoulder in-place and do not adversely affect the Gateway Bike Plan.

There are two stretches of Lindbergh Boulevard within the project limits that have been designated as “bike lane” by the Gateway Bike Plan. The first stretch is the from I-44 to Watson Road, and the second stretch is from Concord Lane to the end of the project limits. In order to accommodate a dedicated bike lane through these areas, Lindbergh Blvd. would need to be restriped. Additionally, the existing shoulder would need to be narrowed, or the pavement widened to accommodate the bike lane and a standard width shoulder. The improvements proposed as part of this Conceptual Study Report do not preclude either option.

Approved by _____
Tom Blair, PE
District Engineer

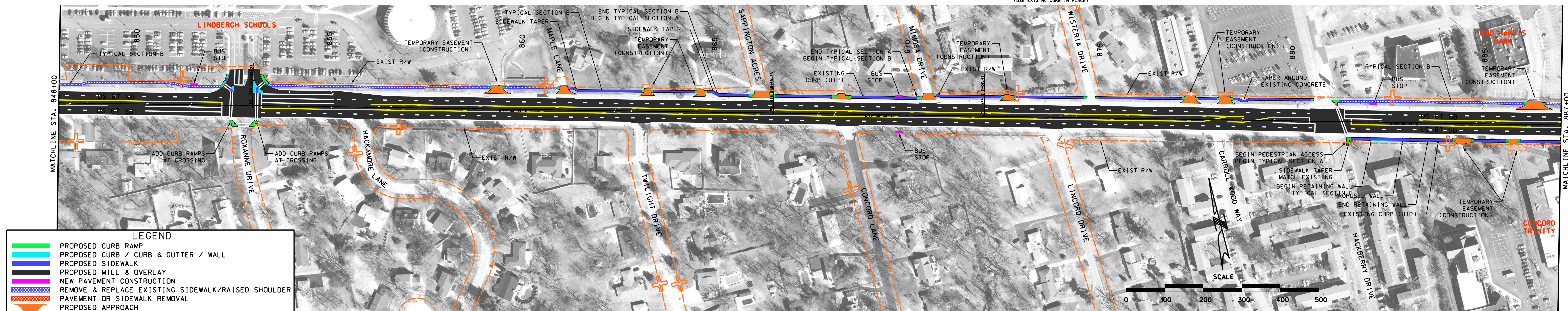
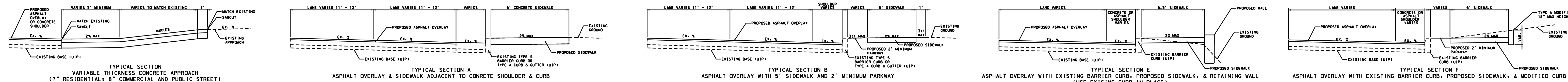
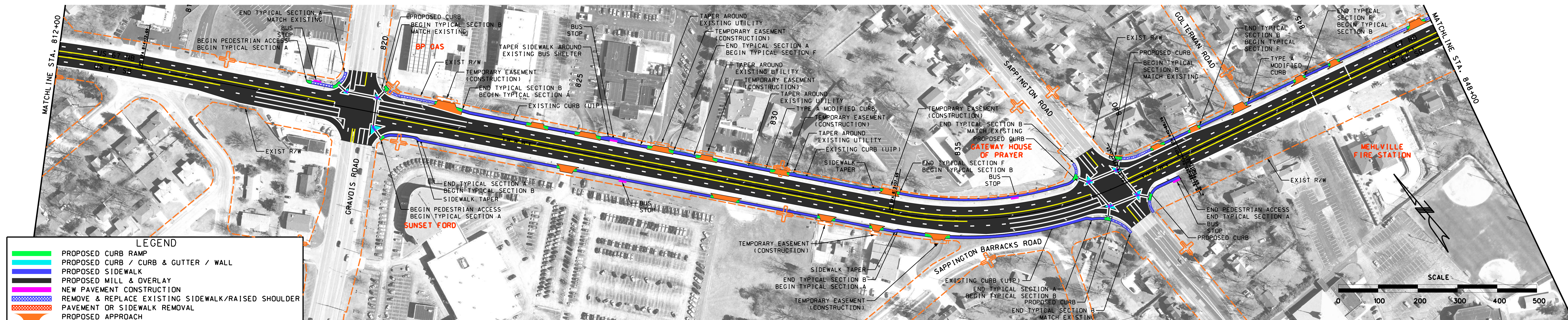
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Note: This drawing is not to scale. Follow dimensions. Sheet No. of

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CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
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PARSONS	
530 MARYVILLE CENTRE DRIVE, SUITE 400 ST. LOUIS, MISSOURI 63141 - 314.819.5010	
MO STATE CERTIFICATE OF AUTHORITY #00159 ENGINEERING	
1-888-ASK-MODOT (1-888-275-6636)	



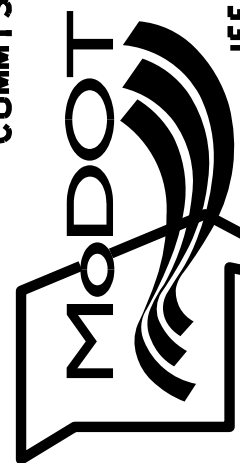
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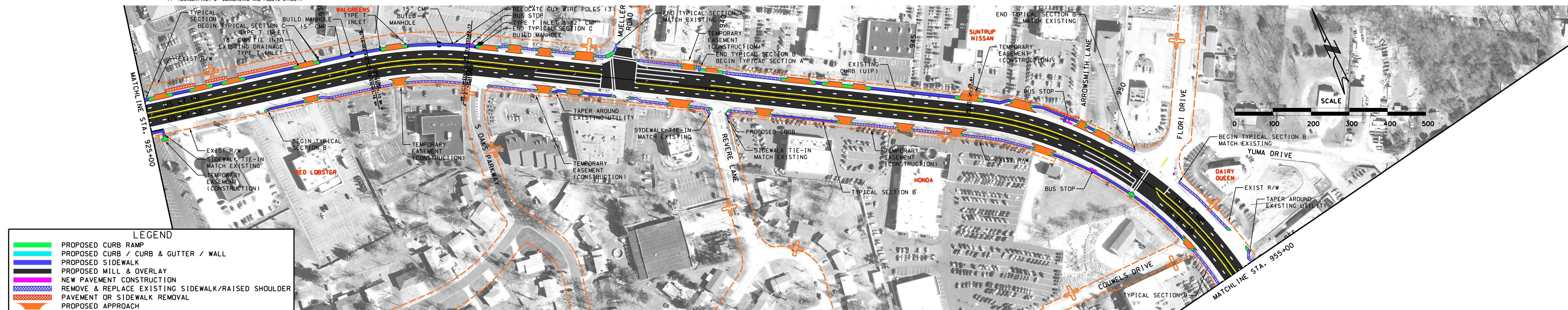
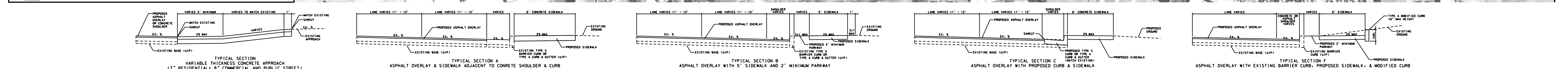
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COMMISSION

PARSONS
530 MARYVILLE CENTRE DRIVE, SUITE 400
ST. LOUIS, MISSOURI 63141 - 314.819.5010

MO STATE CERTIFICATE OF AUTHORITY #000159 ENGINEERING

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**105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)**

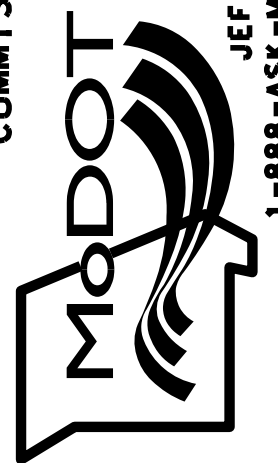


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Note: This drawing is not to scale. Follow dimensions.

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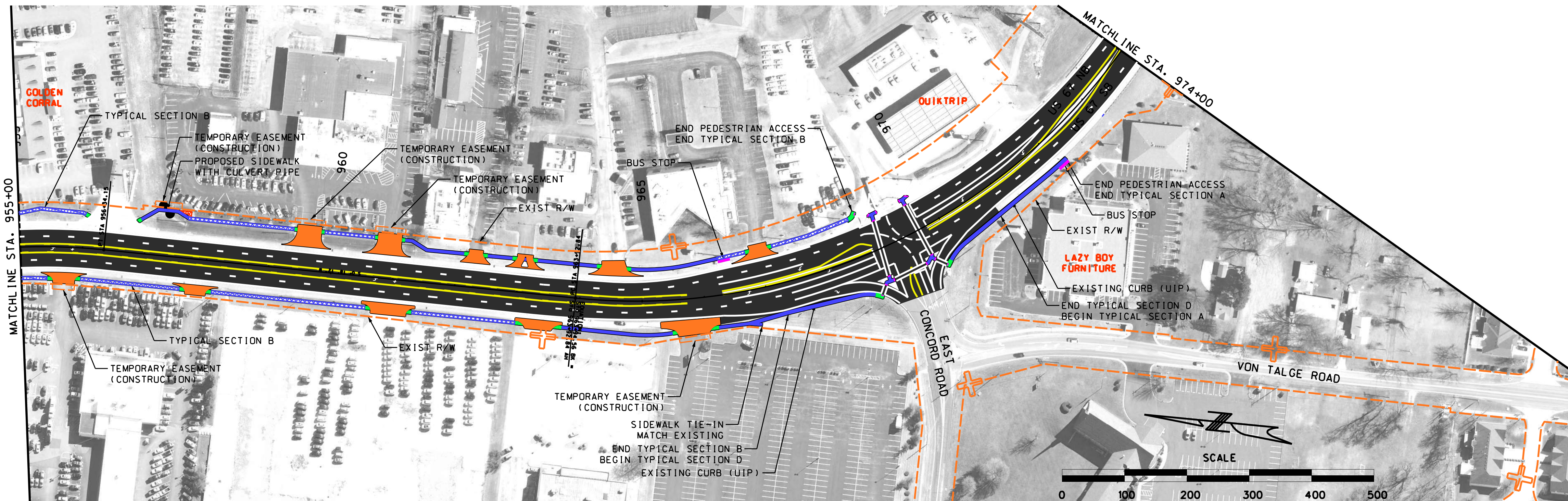
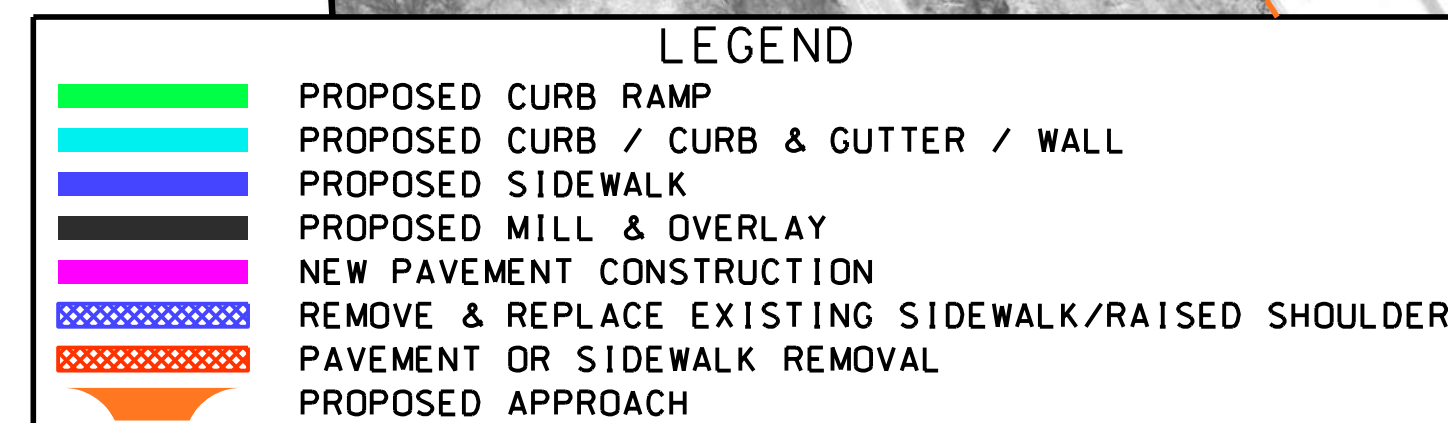
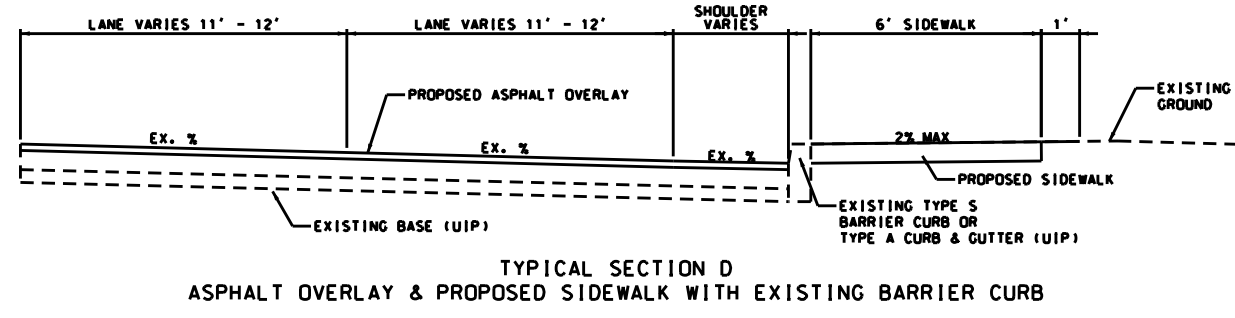
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COMMISSION

PARSONS
530 MARYVILLE CENTRE DRIVE, SUITE 400
ST. LOUIS, MISSOURI 63141 - 314.819.5010

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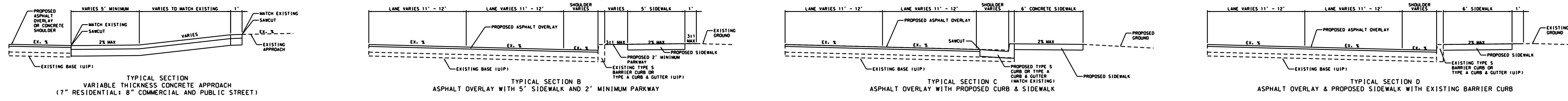
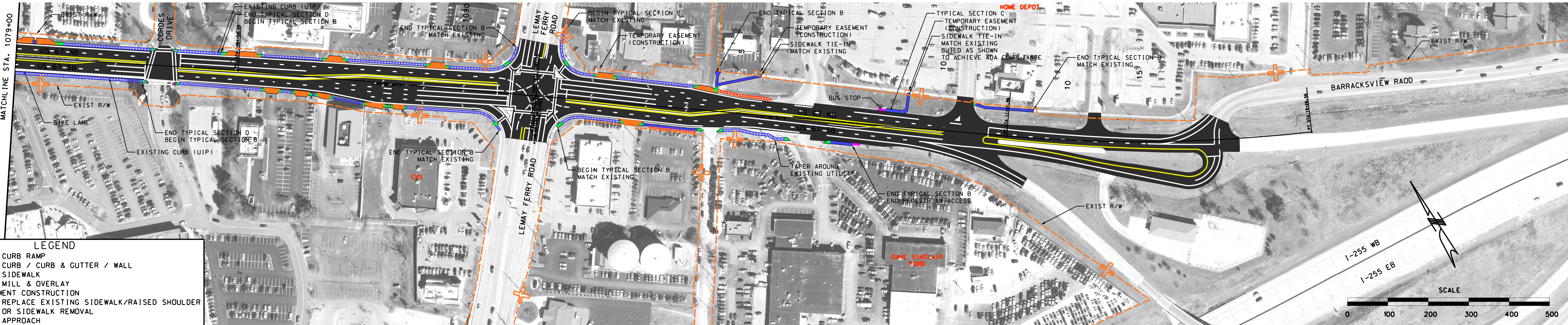
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PARSONS
530 MARYVILLE CENTRE DRIVE, SUITE 400
ST. LOUIS, MISSOURI 63141 - 314.819.5070
MISSOURI STATE CERTIFICATE OF AUTHORITY #0001159 ENGINEERING

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LEGEND

- PROPOSED CURB RAMP
- PROPOSED CURB / CURB & GUTTER / WALL
- PROPOSED SIDEWALK
- PROPOSED MILL & OVERLAY
- NEW PAVEMENT CONSTRUCTION
- REMOVE & REPLACE EXISTING SIDEWALK/RAISED SHOULDER
- PAVEMENT OR SIDEWALK REMOVAL
- PROPOSED APPROACH



Designed
Detailed
Checked

TS8

DATE PREPARED

SDATES

ROUTE

STATE

DISTRICT

BR

COUNTY

JOB NO.

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

PARSONS

530 MARYVILLE CENTRE DRIVE, SUITE 400
ST. LOUIS, MISSOURI 63141 - 314.819.5010

MO STATE CERTIFICATE OF AUTHORITY #00159 ENGINEERING

MoDOT

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Accident Summary

(Sheet 1 of 3)

US 61 S

J6S3281

OFFSET	TRAVEL WAY ID	DESIGN ATION	TRAVEL WAY NAME	DIRECTI ON	BEGIN LOG	END LOG	BEGIN DISTRIC T	END DISTRIC T	BEGIN COUNTY	END COUNTY	COUNTY BEGIN LOG	COUNTY END LOG	BEGIN DESCRIPTION	END DESCRIPTION
	11	US	61	S	169.172	176.112	5	5	ST. LOUIS	ST. LOUIS	19.636	26.576	.014 mile(s) after RR SL AND SF RAILROAD E (664305G)	.003 mile(s) after US 50 E

TYPE	2012	2013	2014	2015	2016	TOTAL
FATAL	2	2	1	0	0	5
DISABLING INJURY	8	5	2	5	5	25
MINOR INJURY	71	77	87	100	104	439
PROPERTY DAMAGE ONLY	440	356	372	423	447	2038
TOTAL	521	440	462	528	556	2507
AADT	24150	23933	23646	26809	26970	

1 Year Statewide Rate

TYPE	2012	2013	2014	2015	2016	Rate Level	5 Yr. Avg
CRASH RATE	851.66	725.78	771.32	777.5	813.84		788
STATE RATE-US	136.41	132.07	131.39	128.39	133.78	ROUTE DESG	132
MORE THAN 1 ROADWAY TYPE	0	0	0	0	0	ROADWAY TYPE	0

TYPE	2012	2013	2014	2015	2016	TOTAL
ANIMAL DRAWN VEH OR RIDDEN ANIMAL	0	0	0	0	0	0
ANIMAL NOT DEER/DOG/FARM ANIMAL	0	0	0	0	0	0
ANIMAL OTHER THAN DEER	0	0	0	0	0	0
AVOIDING	0	0	1	0	1	2
BACKING	0	1	3	1	2	7
CHANGING LANE	8	6	9	4	5	32
CROSS MEDIAN	0	0	0	0	0	0
DEBRIS	0	0	0	0	0	0
DEER	1	1	0	1	1	4
DOG	0	0	0	0	0	0
DUAL LEFTS COLLIDE	1	2	3	2	0	8
DUAL RIGHTS COLLIDE	2	2	1	1	0	6
FARM ANIMAL	0	0	0	0	0	0
FIXED OBJECT	0	1	2	0	0	3
HEAD ON	17	18	15	23	14	87
JACKKNIFE	0	0	0	0	0	0
LEFT TURN	52	40	51	61	47	251
LEFT TURN RIGHT ANGLE COLLISION	38	29	32	35	48	182
OTHER	3	3	2	1	4	13
OUT OF CONTROL	21	15	19	23	22	100
PARKING OR PARKED CAR	1	0	1	4	2	8
PASSING	38	28	36	31	49	182
PEDALCYCLE	0	0	0	1	3	4
PEDESTRIAN	2	4	2	3	3	14
REAR END	298	259	249	299	311	1416
RIGHT ANGLE	24	20	17	21	18	100
RIGHT TURN	2	5	4	4	13	28
RIGHT TURN RIGHT ANGLE COLLISION	10	5	12	11	10	48
SIDESWIPE	2	0	1	1	1	5
TOWED UNIT DISCONNECTS	0	0	0	0	0	0
U - TURN	1	1	2	1	2	7
WRONG WAY ON DIVIDED HIGHWAY	0	0	0	0	0	0
TOTAL	521	440	462	528	556	2507

This report contains information that is protected from disclosure by federal law.

Accident Summary

(Sheet 2 of 3)

US 61 N

J6S3281

OFFSET	TRAVEL WAY ID	DESIGN ATION	TRAVEL WAY NAME	DIRECTI ON	BEGIN LOG	END LOG	BEGIN DISTRIC T	END DISTRIC T	BEGIN COUNTY	END COUNTY	COUNTY BEGIN LOG	COUNTY END LOG	BEGIN DESCRIPTION	END DESCRIPTION
	7773	US	61	N	216.945	223.881	5	5	ST. LOUIS	ST. LOUIS	4.186	11.122	.003 mile(s) before US 50 E	.014 mile(s) before RR SL AND SF RAILROAD E (664305G)

TYPE	2012	2013	2014	2015	2016	TOTAL
FATAL	1	0	0	0	0	1
DISABLING INJURY	2	3	1	0	0	6
MINOR INJURY	15	13	19	19	24	90
PROPERTY DAMAGE ONLY	106	100	100	103	108	517
TOTAL	124	116	120	122	132	614
AADT	18064	17901	17686	22056	22189	

1 Year Statewide Rate

TYPE	2012	2013	2014	2015	2016	Rate Level	5 Yr. Avg
CRASH RATE	271.15	255.96	268.01	218.49	234.98		250
STATE RATE-US	136.41	132.07	131.39	128.39	133.78	ROUTE DESG	132
MORE THAN 1 ROADWAY TYPE	0	0	0	0	0	ROADWAY TYPE	0

TYPE	2012	2013	2014	2015	2016	TOTAL
ANIMAL DRAWN VEH OR RIDDEN ANIMAL	0	0	0	0	0	0
ANIMAL NOT DEER/DOG/FARM ANIMAL	0	0	0	0	0	0
ANIMAL OTHER THAN DEER	0	0	0	0	0	0
AVOIDING	0	0	0	0	0	0
BACKING	0	0	0	0	0	0
CHANGING LANE	0	1	4	1	1	7
CROSS MEDIAN	0	0	0	0	0	0
DEBRIS	0	0	0	0	0	0
DEER	0	0	0	0	0	0
DOG	0	0	0	0	0	0
DUAL LEFTS COLLIDE	0	1	0	1	0	2
DUAL RIGHTS COLLIDE	1	1	0	1	0	3
FARM ANIMAL	0	0	0	0	0	0
FIXED OBJECT	1	0	0	1	1	3
HEAD ON	3	4	3	3	3	16
JACKKNIFE	0	0	0	0	0	0
LEFT TURN	14	4	7	5	8	38
LEFT TURN RIGHT ANGLE COLLISION	6	12	10	5	8	41
OTHER	1	2	1	1	0	5
OUT OF CONTROL	5	3	12	11	7	38
PARKING OR PARKED CAR	0	1	1	1	0	3
PASSING	9	13	5	7	8	42
PEDALCYCLE	0	0	1	0	0	1
PEDESTRIAN	1	0	0	0	0	1
REAR END	72	71	70	72	87	372
RIGHT ANGLE	5	2	1	7	4	19
RIGHT TURN	2	0	1	4	4	11
RIGHT TURN RIGHT ANGLE COLLISION	3	1	2	2	1	9
SIDESWIPE	1	0	1	0	0	2
TOWED UNIT DISCONNECTS	0	0	0	0	0	0
U - TURN	0	0	1	0	0	1
WRONG WAY ON DIVIDED HIGHWAY	0	0	0	0	0	0
TOTAL	124	116	120	122	132	614

This report contains information that is protected from disclosure by federal law.

Accident Summary

(Sheet 3 of 3)

US 50 W

J6S3281

OFFSET	TRAVEL WAY ID	DESIGNATION	TRAVEL WAY NAME	DIRECTION	BEGIN LOG	END LOG	BEGIN DISTRICT	END DISTRICT	BEGIN COUNTY	END COUNTY	COUNTY BEGIN LOG	COUNTY END LOG	BEGIN DESCRIPTION	END DESCRIPTION
	3508	US	50	W	2.794	3.11	5	5	ST. LOUIS	ST. LOUIS	2.794	3.11	.006 mile(s) after CST LINDBERGH BLVD E	.002 mile(s) after US 61 S

TYPE	2012	2013	2014	2015	2016	TOTAL
FATAL	0	0	0	0	0	0
DISABLING INJURY	0	1	0	1	0	2
MINOR INJURY	4	7	6	4	9	30
PROPERTY DAMAGE ONLY	38	37	41	54	41	211
TOTAL	42	45	47	59	50	243
AADT	16164	16019	15827	16001	16097	

1 Year Statewide Rate

TYPE	2012	2013	2014	2015	2016	Rate Level	5 Yr. Avg
CRASH RATE	2252.79	2435.55	2574.66	3196.87	2693.05		2725
STATE RATE-US	136.41	132.07	131.39	128.39	133.78	ROUTE DESG	131.4
MORE THAN 1 ROADWAY TYPE	0	0	0	0	0	ROADWAY TYPE	0

TYPE	2012	2013	2014	2015	2016	TOTAL
ANIMAL DRAWN VEH OR RIDDEN ANIMAL	0	0	0	0	0	0
ANIMAL NOT DEER/DOG/FARM ANIMAL	0	0	0	0	0	0
ANIMAL OTHER THAN DEER	0	0	0	0	0	0
AVOIDING	0	0	0	0	0	0
BACKING	0	0	0	0	0	0
CHANGING LANE	0	0	1	0	1	2
CROSS MEDIAN	0	0	0	0	0	0
DEBRIS	0	0	0	0	0	0
DEER	0	0	0	0	0	0
DOG	0	0	0	0	0	0
DUAL LEFTS COLLIDE	0	1	0	0	0	1
DUAL RIGHTS COLLIDE	1	0	0	1	0	2
FARM ANIMAL	0	0	0	0	0	0
FIXED OBJECT	0	0	0	0	0	0
HEAD ON	1	2	0	2	0	5
JACKKNIFE	0	0	0	0	0	0
LEFT TURN	2	1	1	1	1	6
LEFT TURN RIGHT ANGLE COLLISION	2	0	1	1	0	4
OTHER	0	1	1	0	0	2
OUT OF CONTROL	4	2	5	3	4	18
PARKING OR PARKED CAR	0	0	0	0	0	0
PASSING	6	6	3	4	2	21
PEDALCYCLE	0	0	0	0	0	0
PEDESTRIAN	0	0	0	0	0	0
REAR END	24	31	30	38	38	161
RIGHT ANGLE	1	1	1	6	2	11
RIGHT TURN	0	0	1	1	2	4
RIGHT TURN RIGHT ANGLE COLLISION	1	0	2	2	0	5
SIDESWIPE	0	0	0	0	0	0
TOWED UNIT DISCONNECTS	0	0	0	0	0	0
U - TURN	0	0	1	0	0	1
WRONG WAY ON DIVIDED HIGHWAY	0	0	0	0	0	0
TOTAL	42	45	47	59	50	243

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